CITY OF BEAUMONT WWTP SALT MITIGATION UPGRADE PROJECT

CHANGE ORDER PROPOSAL (COP) # 067
(By Contractor)

To (Engineer/CM):	**From (Contractor)**:
MWH Constructors Attention: Charles Reynolds Phone: 702-497-8024 Email: Charles.w.reynolds@mwhconstructors.com	W.M. Lyles Co. Attention: Oscar Mendoza Phone: 619-565-6064 Email: omendoza@wmlylesco.com

PCO/DCM No.: N/A

Subject: Membrane Replacement for Trains 1-4 and Membrane Addition to Trains 5 & 6

Reference Documents: Aqua Conceptual Design Drawings Sheets

DESCRIPTION

Please review the attached change order pricing for removing and replacing the membranes in tanks 1 – 4 and populating membranes in tanks 5 & 6. It is W.M. Lyles understanding that once approved the final design will be completed by Aqua engineering. At that time WML will update our pricing and scope to make sure no added scope was added to the change order. In addition, WML shall receive contractual mark-ups for all labor and materials purchased through contingency.

Inclusions:

- Please see the attached breakdown of cost showing details of scope of work and material items being provided by WML.
- Purchase and install of Suez Membrane Equipment

Exclusions:

- Process or Performance Guarantee of any kind. WML will install only.
- Startup & Commissioning
- Trash bins to dispose of existing membranes
- Builders Risk Insurance Policy
- Inline Magmeters

COST ESTIMATE

Total cost $ 5,143,400.00 – see attached breakdown

SCHEDULE IMPACT

A TIA showing the schedule impact will be provided once the Issue For Construction drawings are finalized. In addition, please pay special attention to the following:

1. Allied Steel's quote for grating is only good for 14 Days as of 12/13/21.
2. VFD procurement lead time is 18-20 weeks.

Received by MWH Constructors (Date):

RESPONSE

Response By:	**Date**:

Final Distribution: Oscar Mendoza, W.M. Lyles Co.
Grant Gourley, W.M. Lyles Co.
Brian Knoll, Webb Associates
MWH Inspector

W. M. Lyles Co.
42142 Roick Drive
Temecula, CA 92590

Date: 16-Dec-21

Attention: City of Beaumont

JOB LOCATION: Beaumont CA

DESCRIPTION: Remove and Replace Membranes on Train 1-4 and Add new Membranes to Trains 5 & 6

Item:			Unit	Total MH	Total MH Cost	Eq. Cost	Material	Subcont.	Total Cost
1	Suez Purchase Order		LS	0	$ -	$ -	$ 2,925,951.25	$ -	$ 2,925,951.25
2	Phase 1 - Basins 5 & 6		LS	1544	$ 138,271.55	$ 26,098.84	$ 495,427.27	$ 110,058.62	$ 769,856.27
3	Phase 2 - Basins 3 & 4		LS	1108	$ 97,796.85	$ 16,592.64	$ 85,868.13	$ 10,000.00	$ 210,257.62
4	Phase 3 - Basins 1 & 2		LS	1108	$ 97,796.85	$ 17,975.36	$ 85,868.13	$ 10,000.00	$ 211,640.34
5	Overhead		LS	1116	$ 67,082.00	$ -	$ 17,276.00	$ -	$ 84,358.00
6				0	$ -	$ -	$ -	$ -	$ -
Total Costs				4876	$ 400,947.24	$ 60,666.84	$ 3,610,390.78	$ 130,058.62	$ 4,202,063.48

Subtotal		$	4,202,063.48
Mark-up - Labor	15%	$	60,142.09
Mark-up - Equipment	15%	$	9,100.03
Mark-up - Materials	15%	$	102,665.93
Mark-up - Suez	10%	$	292,595.13
Mark-up - Subcontractor	5%	$	6,502.93
Small Tools	0.5%	$	23,365.35
Bond	1%	$	46,964.35
Contingency		$	400,000.00
Total This Change Order		**$**	**5,143,400.00**

Comments:

Suez Purchase Order

A. Labor

Description	Carp FM			Cement Mason			Cement Mason			Carp			Carp								
	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		Rate			Hours			
Name		ST	PT	DT	ST	PT	DT	Extension
Carp FM		$91.64	$113.33	$142.59	0	0	0	$0.00
Cement Mason		$84.74	$102.37	$127.00	0	0	0	$0.00
Cement Mason		$84.74	$102.37	$127.00	0	0	0	$0.00
Carp		$87.43	$107.54	$134.87	0	0	0	$0.00
Carp		$87.43	$107.54	$134.87	0	0	0	$0.00
	0	$0.00	$0.00	$0.00	0	0	0	$0.00
	0	$0.00	$0.00	$0.00	0	0	0	$0.00
	0	$0.00	$0.00	$0.00	0	0	0	$0.00
	0	$0.00	$0.00	$0.00	0	0	0	$0.00
					0	0	0	$0.00
					0	0	0	
						Total Labor =		**$0.00**

B. Equipment

Description	17.231						
	0	0	0	0	0	0	0

Number	Description	Rate	Hours	Extension
17.231	#N/A	#N/A	0	#N/A
0	#N/A	#N/A	0	#N/A
0	#N/A	#N/A	0	#N/A
0	#N/A	#N/A	0	#N/A
0	#N/A	#N/A	0	#N/A
0	#N/A	#N/A	0	#N/A
0	#N/A	#N/A	0	#N/A
0	#N/A	#N/A	0	#N/A
0	#N/A	#N/A	0	#N/A
0	#N/A	#N/A	0	#N/A
			0	
		Total Equipment =		**$0.00**

C. Materials

	Quantity	Unit	Price		Extension
Suez Membranes	1	LS	$	2,715,500.00	$2,715,500.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
Tax	7.750%				$210,451.25
Freight					$0.00
			Total Material =		**$2,925,951.25**

D. Subcontractor

Quantity	Unit	Price	Extension
1	LS	$0.00	$0.00
1	LS	$0.00	$0.00
1	LS	$0.00	$0.00
1	LS	$0.00	$0.00
1	LS	$0.00	$0.00
1	LS	$0.00	$0.00
			$0.00
			$0.00
			$0.00
		Total Subcontract =	**$0.00**

Phase 1 - Basins 5 & 6

A. Labor

Description	Carp FM			Carp			Carp			Carp			Carp			Welder											
	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT
Demolish Concrete Wall	12			12			12			12			12														
Demolish Grating, Support Beams & Ledger	16			16			16			16			16														
Modify Handrail & Grating	4			4			4			4			4														
Install New Permeate Pumps (2ea) & Concrete Pad	16			16			16			16			16														
Install Chemical Valves & Piping to Basins	16			16			16			16			16														
Install Actuated Gates	16			16			16			16			16														
Extend Existing 20" Air Scour Piping & Supports	8			8			8			8			8														
Extend Existing Permiate Pipe with Tee Added	16			16			16			16			16			16											
Install New Permiate Pipe to Membranes	32			32			32			32			32			16											
Install New Air Scour Pipe to Membranes	32			32			32			32			32														
Install Ejector Assemby & Turbidity Meter (Pipe Inc.)	12			12			12			12			12														
Extend 1" Air to Pneumatic Valves	4			4			4			4			4														
Install New Membranes (10 Cassetts & Framing)	80			80			80			80			80														
Install New Grating	32			32			32			32			32														
Drypac Supports				16																							
Install Drain Line from Pump to Drain	8			8																							
	304	0	0	320	0	0	296	0	0	296	0	0	296	0	0	32	0	0	0	0	0	0	0	0	0	0	0

Name	Rate ST	Rate PT	Rate DT	Hours ST	Hours PT	Hours DT	Extension	
Carp FM	$91.64	$113.33	$142.59	304	0	0	$27,857.44	
Carp	$87.43	$107.54	$134.87	320	0	0	$27,977.25	38
Carp	$87.43	$107.54	$134.87	296	0	0	$25,878.95	
Carp	$87.43	$107.54	$134.87	296	0	0	$25,878.95	
Carp	$87.43	$107.54	$134.87	296	0	0	$25,878.95	
Welder	$150.00	$0.00	$0.00	32	0	0	$4,800.00	
0	$0.00	$0.00	$0.00	0	0	0	$0.00	
0	$0.00	$0.00	$0.00	0	0	0	$0.00	
0	$0.00	$0.00	$0.00	0	0	0	$0.00	
				1544	0	0		
				Total Labor =			**$138,271.55**	

B. Equipment

Description	18.310.	32.043								
Demolish Concrete Wall	12	12								
Demolish Grating, Support Beams & Ledger	16	16								
Modify Handrail & Grating	2	2								
Install New Permeate Pumps	8	8								
Install Chemical Valves & Piping to Basins	16	16								
Install Actuated Gates	16	16								
Extend Existing 20" Air Scour Piping & Supports	8	8								
Extend Existing Permiate Pipe with Tee Added	16	16								
Install New Permiate Pipe to Membranes	40	40								
Install New Air Scour Pipe to Membranes	40	40								
Install Ejector Assemby	4	4								
Extend 1" Air to Pneumatic Valves	4	4								
Install New Membranes (5 Cassetts & Framing)	80	80								
Install New Grating	40	40								
	302	302	0	0	0	0	0	0	0	0

Number	Description	Rate	Hours	Extension
18.310.	1 Ton PickupFordF350 Crew SVC Bo	$28.46	302	$8,594.92
32.043	ReachliftJLG1255	$57.96	302	$17,503.92

Total Equipment = **$26,098.84**

C. Materials

	Quantity	Unit	Price	Extension
Handrail Parts	1	LS	$ 500.00	$500.00
Chemical Valves	4	EA	$ 417.16	$1,668.64
Chemcial Pipe (760LF)	1	LS	$ 4,726.14	$4,726.14
Chemical Pipe Clamps (150 ea)	150	EA	$ 25.18	$3,777.00
Stainless Steel Pipe	1	LS	$ 135,000.00	$135,000.00
Pipe Supports	1	LS	$ 79,495.00	$79,495.00
1" Air Tubing (SS) & Ejector Pipe	1	LS	$ 1,625.00	$1,625.00
New Grating	1	LS	$ 76,667.00	$76,667.00
BNG Kits (SS)	26	EA	$ 700.39	$18,210.09
Chemical Injection Quills	4	EA	$ 1,063.50	$4,254.00
Actuated Weir Gates	2	EA	$ 14,470.00	$28,940.00
Concrete	10	CY	$ 1,300.00	$13,000.00
Flange Adaptors	16	EA	$ 5,200.13	$83,202.08
Grout for Supports	1	LS	$ 300.00	$300.00
Epoxy for Anchors	1	LS	$ 1,100.00	$1,100.00
12" SS Vic Coupling	2	EA	$ 3,664.17	$7,328.34
				$0.00
Tax	7.750%			$35,633.98
Freight				$0.00
			Total Material =	**$495,427.27**

D. Subcontractor

	Quantity	Unit	Price	Extension
				$0.00
Southern Contracting	1	LS	$108,058.62	$108,058.62
Wall Sawing	8	HR	$250.00	$2,000.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
			Total Subcontract =	**$110,058.62**

Basins 3 & 4

Phase 2 - Basins 3 & 4

A. Labor

Description	Carp FM			Carp			Carp			Carp			Carp														
	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT
Demolish all Membranes, Grating & Pipe	48			48			48			48			48														
Install New Permeate Pipe to Membranes	20			20			20			20			20														
Install New Air Scour Pipe to Membranes	20			20			20			20			20														
Install Ejector Assemby	8			8			8			8			8														
Extend 1" Air to Pneumatic Valves	4			4			4			4			4														
Install New Membranes (10 Cassetts & Framing)	80			80			80			80			80														
Install New Grating	32			32			32			32			32														
Relocate Chemical Lines	8			8			8																				
Drypac Supports				24																							
	220	0	0	244	0	0	220	0	0	212	0	0	212	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Name	Rate ST	Rate PT	Rate DT	Hours ST	Hours PT	Hours DT	Extension	
Carp FM		$91.64	$113.33	$142.59	220	0	0	$20,159.99	
Carp		$87.43	$107.54	$134.87	244	0	0	$21,332.65	27.5
Carp		$87.43	$107.54	$134.87	220	0	0	$19,234.36	
Carp		$87.43	$107.54	$134.87	212	0	0	$18,534.93	
Carp		$87.43	$107.54	$134.87	212	0	0	$18,534.93	
	0	$0.00	$0.00	$0.00	0	0	0	$0.00	
	0	$0.00	$0.00	$0.00	0	0	0	$0.00	
	0	$0.00	$0.00	$0.00	0	0	0	$0.00	
	0	$0.00	$0.00	$0.00	0	0	0	$0.00	
					1108	0	0		
					Total Labor =			**$97,796.85**	

B. Equipment

Description	18.310.	32.043							
Demolish all Membranes, Grating & Pipe	24	24							
Install New Permiate Pipe to Membranes	20	20							
Install New Air Scour Pipe to Membranes	20	20							
Install Ejector Assemby	4	4							
Extend 1" Air to Pneumatic Valves	4	4							
Install New Membranes (10 Cassettes & Framing	80	80							
Install New Grating	40	40							
	192	192	0	0	0	0	0	0	0

Number	Description	Rate	Hours	Extension
18.310.	1 Ton PickupFordF350 Crew SVC	$28.46	192	$5,464.32
32.043	ReachliftJLG1255	$57.96	192	$11,128.32
0				
0				
0				
0				
0				
0				
0				
		Total Equipment =		**$16,592.64**

C. Materials

	Quantity	Unit	Price	Extension
				$0.00
New Grating	1	LS	$ 76,667.00	$76,667.00
1" Air Tubing (SS) & Ejector Pipe	1	LS	$1,625.00	$1,625.00
Grout for Supports	1	LS	300	$300.00
Epoxy for Anchors	1	LS	$ 1,100.00	$1,100.00
				$0.00
				$0.00
				$0.00
				$0.00
Tax	7.750%			$6,176.13
Freight				$0.00
			Total Material =	**$85,868.13**

D. Subcontractor

	Quantity	Unit	Price	Extension
				$0.00
Southern	1	LS	$10,000.00	$10,000.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
			Total Subcontract =	**$10,000.00**

Basins 1 & 2

Phase 3 - Basins 1 & 2

A. Labor

Description	Carp FM			Carp			Carp			Carp			Carp														
	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT
Demolish all Membranes, Grating & Pipe	48			48			48			48			48														
Install New Permiate Pipe to Membranes	20			20			20			20			20														
Install New Air Scour Pipe to Membranes	20			20			20			20			20														
Install Ejector Assemby	8			8			8			8			8														
Extend 1" Air to Pneumatic Valves	4			4			4			4			4														
Install New Membranes (10 Cassetts & Framin	80			80			80			80			80														
Install New Grating	32			32			32			32			32														
Relocate Chemical Lines	8			8			8																				
Drypac Supports				24																							
	220	0	0	244	0	0	220	0	0	212	0	0	212	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		Rate			Hours				
Name		ST	PT	DT	ST	PT	DT	Extension	
Carp FM		$91.64	$113.33	$142.59	220	0	0	$20,159.99	
Carp		$87.43	$107.54	$134.87	244	0	0	$21,332.65	27.5
Carp		$87.43	$107.54	$134.87	220	0	0	$19,234.36	
Carp		$87.43	$107.54	$134.87	212	0	0	$18,534.93	
Carp		$87.43	$107.54	$134.87	212	0	0	$18,534.93	
	0	$0.00	$0.00	$0.00	0	0	0	$0.00	
	0	$0.00	$0.00	$0.00	0	0	0	$0.00	
	0	$0.00	$0.00	$0.00	0	0	0	$0.00	
	0	$0.00	$0.00	$0.00	0	0	0	$0.00	
					1108	0	0		
					Total Labor =			**$97,796.85**	

B. Equipment

Description	18.310.	32.043							
Demolish all Membranes, Grating & Pipe	24	24							
Install New Permiate Pipe to Membranes	20	20							
Install New Air Scour Pipe to Membranes	20	20							
Install Ejector Assemby	4	4							
Extend 1" Air to Pneumatic Valves	4	4							
Install New Membranes (10 Cassetts & Framin	80	80							
Install New Grating	24	24							
Relocate Chemical Lines	8	8							
Drypac Supports	24	24							
	208	208	0	0	0	0	0	0	0

Number	Description	Rate	Hours	Extension
18.310.	1 Ton PickupFordF350 Crew S\	$28.46	208	$5,919.68
32.043	ReachliftJLG1255	$57.96	208	$12,055.68
0				
0				
0				
0				
0				
0				
0				
	Total Equipment =			**$17,975.36**

C. Materials

	Quantity	Unit	Price	Extension
				$0.00
				$0.00
New Grating	1	LS	$ 76,667.00	$76,667.00
1" Air Tubing (SS) & Ejector Pipe	1	LS	1625	$1,625.00
Grout for Supports	1	LS	300	$300.00
Epoxy for Anchors	1	LS	$ 1,100.00	$1,100.00
				$0.00
				$0.00
				$0.00
Tax	7.750%			$6,176.13
Freight				$0.00
			Total Material =	**$85,868.13**

D. Subcontractor

	Quantity	Unit	Price	Extension
				$0.00
Southern	1	LS	$10,000.00	$10,000.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
			Total Subcontract =	**$10,000.00**

Overhead

A. Labor

Description	PM			Toilet			Carp			Carp			Carp														
	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT	ST	PT	DT
Management	320																										
Superintendent	158																										
Toilets				638																							
	478	0	0	638	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Rate			Hours			
Name	ST	PT	DT	ST	PT	DT	Extension
PM	$135.00	$0.00	$0.00	478	0	0	$64,530.00
Toilet	$4.00	$0.00	$0.00	638	0	0	$2,552.00
Carp	$87.43	$107.54	$134.87	0	0	0	$0.00
Carp	$87.43	$107.54	$134.87	0	0	0	$0.00
Carp	$87.43	$107.54	$134.87	0	0	0	$0.00
0	$0.00	$0.00	$0.00	0	0	0	$0.00
0	$0.00	$0.00	$0.00	0	0	0	$0.00
0	$0.00	$0.00	$0.00	0	0	0	$0.00
0	$0.00	$0.00	$0.00	0	0	0	$0.00
				1116	0	0	
				Total Labor =			**$67,082.00**

$40.00

B. Equipment

Description	18.310.	32.043							
	0	0	0	0	0	0	0	0	0

Number	Description	Rate	Hours	Extension
			0	$0.00
			0	$0.00
0				
0				
0				
0				
0				
0				
0				
		Total Equipment =		**$0.00**

C. Materials

	Quantity	Unit	Price	Extension
				$0.00
Dumpsters	4	Mths	$4,000.00	$16,000.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
Tax	7.975%			$1,276.00
Freight				$0.00
			Total Material =	**$17,276.00**

D. Subcontractor

	Quantity	Unit	Price	Extension
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
			Total Subcontract =	**$0.00**

2 Scope of Supply

2.1 Scope of Supply by SUEZ

2.1.1 Scope of Supply by SUEZ – Phase 1

Membrane Basins: Refer to PI-09			**supply by**	
Equipment	**Tag #**	**Qty**	**SUEZ**	**Others**
ZeeWeed membrane cassette mounting assemblies, beam design type	N/A	lot	√	
ZeeWeed membrane cassette frames	N/A	10	√	
ZeeWeed 500d membrane modules	N/A	520	√	
permeate collection headers (12") (316SS)	N/A	2	√	
permeate header cassette isolation valves	HV-353xA, 363xA	10	√	
cassette – permeate header connection hardware incl. camlock connectors, hoses & clamps	N/A	lot	√	
membrane air scour headers (304SS) (8") – *header will include a 12x8 reducer and 12" tie point*	N/A	2	√	
air header cassette isolation valves	HV-353xB, 363xB	10	√	
cassette – air header connection hardware incl. camlock connectors, hoses & clamps	N/A	lot	√	
316SS fasteners for SUEZ supplied header piping (excludes fasteners at points where piping connects to piping that will be supplied by others)	N/A	lot	√	
membrane tank level switch high	LSH-3512,3612	2	√	
membrane tank level switch low	LSL-3512,3612	2	√	
membrane tank level transmitter	LIT-3511,3611	2	√	
permeate/backpulse pressure transmitter	PIT-3542,3642	2	√	
vacuum ejector assembly Note 1	N/A	2	√	
air supply assembly Note 1	N/A	2	√	
cassette lifting module	N/A	1	√	
membrane air scour flow control valve	FV-3521,3621	2	√	
membrane air scour flow meter and flow conditioner	FE/M-3522,3622	2	√	
membrane tank drain valve	HV-3511,3611	2		√
membrane tank influent gate	G-3501, 3601	2		√

Note 1: The Ejector Assembly and Air Supply Assembly are shipped as separate, assembled units for installation by Others.

Permeate Pumps: Refer to PI-10			Supply by	
Equipment	**Tag #**	**Qty**	**SUEZ**	**Others**
citric acid solution injection valves	CV-5145,5146 HV-5145,5156	2 2	√	
sodium hypochlorite solution injection valves	CV-5055,5056 HV-5055,5056	2 2	√	
permeate pump suction flow valve	FV-3571,3671	2	√	
permeate pump suction isolation valve	HV-3572,3672	2	√	
permeate pump suction pressure gauge	PI-3581A,3681A	2	√	
permeate pump suction pressure gauge isolation valve	HV-3581A,3681A	2	√	
permeate pump suction pressure switch high	PSH-3581A,3681A	2	√	
permeate pump	P-3581,3681	2	√	
permeate pump VFDs	N/A	2		√
permeate pump discharge pressure switch high	PSH-3581B,3681B	2	√	
permeate pump discharge pressure gauge isolation valve	HV-3581B,3681B	2	√	
permeate pump discharge pressure gauge	PI-3581B,3681B	2	√	
permeate pump discharge isolation valve	HV-3591,3691	2	√	
permeate isolation valve	HV-3592, 3692	2	√	
permeate pump drain valve	HV-3594,3694	2	√	
permeate flow transmitter	M-3592,3692	2	√	
permeate turbidimeter panel, HACH TU5300sc with auto cleaning module + SC4500 2 channel - Analyzer/Transmitter Note 1	AE3593, 3693 AIT 3593	2, 1	√	
shelf spare permeate pump	n/a	1	√	

Note 1: Turbidimeter panels are shipped as separate, assembled units for installation by Others. One SC4500 is included per pair of TU5x00sc instruments.

2.1.2 Scope of Supply by SUEZ – Phase 2

Membrane Basins: Refer to PI-09			supply by	
Equipment	**Tag #**	**Qty**	**SUEZ**	**Others**
ZeeWeed membrane cassette mounting assemblies	N/A	lot	√	
ZeeWeed membrane cassette frames	N/A	10	√	
ZeeWeed 500d membrane modules	N/A	520	√	

Membrane Basins: Refer to PI-09			supply by	
Equipment	**Tag #**	**Qty**	**SUEZ**	**Others**
permeate collection headers (12") (316SS)	N/A	2	√	
permeate header cassette isolation valves	HV-333xA, 343xA	10	√	
cassette – permeate header connection hardware incl. camlock connectors, hoses & clamps	N/A	lot	√	
membrane air scour headers (304SS) (8") – *header will include a 12x8 reducer and 12" tie point*	N/A	2	√	
air header cassette isolation valves	HV-333xB, 343xB	10	√	
cassette – air header connection hardware incl. camlock connectors, hoses & clamps	N/A	lot	√	
316SS fasteners for SUEZ supplied header piping (excludes fasteners at points where piping connects to piping that will be supplied by others)	N/A	lot	√	
vacuum ejector assembly Note 1	N/A	2	√	
air supply assembly Note 1	N/A	2	√	

Note 1: The Ejector Assembly and Air Supply Assembly are shipped as separate, assembled units for installation by Others.

2.1.1 Scope of Supply by SUEZ – Phase 3

Membrane Basins: Refer to PI-09			supply by	
Equipment	**Tag #**	**Qty**	**SUEZ**	**Others**
ZeeWeed membrane cassette mounting assemblies	N/A	lot	√	
ZeeWeed membrane cassette frames	N/A	4	√	
ZeeWeed 500d membrane modules	N/A	208	√	
permeate collection headers (12") (316SS)	N/A	2	√	
permeate header cassette isolation valves	HV-313xA	4	√	
cassette – permeate header connection hardware incl. camlock connectors, hoses & clamps	N/A	lot	√	
membrane air scour headers (304SS) (8") – *header will include a 12x8 reducer and 12" tie point*	N/A	2	√	
air header cassette isolation valves	HV-313xB	4	√	
cassette – air header connection hardware incl. camlock connectors, hoses & clamps	N/A	lot	√	
316SS fasteners for SUEZ supplied header piping (excludes fasteners at points where	N/A	lot	√	

Membrane Basins: Refer to PI-09			supply by	
Equipment	**Tag #**	**Qty**	**SUEZ**	**Others**
piping connects to piping that will be supplied by others)				
vacuum ejector assembly Note 1	N/A	2	√	
air supply assembly Note 1	N/A	2	√	

Note 1: The Ejector Assembly and Air Supply Assembly are shipped as separate, assembled units for installation by Others.

2.1.2 Scope of Supply by SUEZ – General

General	
Included	Seismic anchorage calculations (supply and installation by Others)
Included	Equipment general arrangement drawings for SUEZ supplied equipment
Included	Control Narrative for SUEZ supplied equipment
Included	Operating & maintenance manuals
Included	Installation, Commissioning, Start-up and Training Services • 55 days support over 5 site visits from SUEZ field-service personnel for installation technical assistance, commissioning, plant start-up and operator training
Included	SUEZ Equipment Controls Integration • 10 days support (in addition to those listed in line item above) from SUEZ field-service personnel for assistance in the integration of SUEZ controls with overall plant controls. Site visits included in line item above.
Included	Aftermarket Services • Process Analyst Service – 1 year, includes access to InSight – Asset Performance Management Platform • 24/7 Emergency Phone Support – 1 year
Included	Warranties • Equipment mechanical warranty - 1 year or 18 months from shipment • Membrane warranty – 15-year (5-year full replacement plus 10 year prorated) Please refer to **Section 3 - Warranties** for a full description of the warranties included in SUEZ's offer

2.1.3 General Scope Notes

- VFDs for SUEZ supplied permeate pumps by Others
- SUEZ assumes the following equipment from each of Trains 1,2,3 and 4 will be reused:
  - Membrane tank gate valve, drain valve
  - Membrane tank level switches and transmitter

- Permeate header drain valve
- Permeate pressure transmitter
- Air Scour flow control valve and transmitter
- Permeate pump with associated isolation valves and instrumentation
- Permeate turbidimeter

- SUEZ assumes the following balance of plant equipment is adequately sized and will therefore be reused (preliminary review has not highlighted any areas of concern):
  - RAS pumps (PI-08)
  - Membrane air scour blowers (PI-11)
  - Compressed air system (PI-10A)
  - Membrane Cleaning Chemical Dosing Equipment (PI-12)
- Electrical and Controls Scope: SUEZ assumes the following is by Others:
  - All electrical wiring and control panels (if required) for trains 5 & 6
  - All programing and integration of trains 5 & 6.
  - All electrical wiring and controls for trains 1 to 4, as required
  - All programing and integration of train 1 to 4.

2.2 Scope of Supply by Others

SUEZ has provided a detailed list of the equipment and services to be provided. All equipment or services not specified in the scope of supply by SUEZ are to be provided by others. Supply by installation contractor or others includes but is not limited to:

General Scope

- Overall plant design.
- Hazardous area classification - Unless stated otherwise, the equipment & instrumentation quoted is to be installed in a NFPA 820 non-classified area.
- Stamping, signing or sealing of general drawings as per Federal, Provincial or local regulations or codes, where required
- All required permits and permissions including but not limited to: civil works, mechanical and electrical works, environmental permits or other permits to allow operation.

Civil Scope – Design, Supply, and Installation of:

- Provision of main plant structures including - existing tank modifications, buildings, equipment foundation pads, concrete work, etc.
- Equipment access platforms, walkways, stairs, safety tie off points, handrails, grating, ladders, full floor coverage equipment contact pads, etc.

- Membrane tank covers, walkways, stairs, safety tie off points, handrails, grating, ladders, as required, etc.
- Isolation gates between structures, as needed
- Overhead traveling beam crane above the membrane tanks for installation and removal of the membrane cassettes (10,000 lbs capacity)

Mechanical Scope – Design, Supply, and Installation of:

- Supply and installation of anchor bolts, brackets and fasteners for SUEZ supplied equipment.
- Weather protection as required for all SUEZ supplied equipment. Equipment and electrical panels are designed for indoor operation and will need shelter from the elements. Includes heat tracing, insulation, sunshades, etc., of equipment and instrumentation
- Piping interfaces including, but not limited to:
- Installation of supplied permeate and air header pipes that run the length of the membrane tanks, to the end of the membrane gallery. Supply and installation of pipe supports and hangers for this piping. Pipe supports under the SUEZ-supplied headers on each train are to be provided by others.
- Design, supply and installation of process and utilities piping, pipe supports, hangers, valves, etc., to and from SUEZ supplied equipment.
- Temporary piping systems required for the start-up and commissioning of the SUEZ equipment. Typically, the provision of a re-circulation loop between the permeate header and the tank inlet channel/pipe is required for the start-up of the SUEZ system to allow for testing prior delivery of water the distribution system.
- Any heat tracing, insulation and cladding on any piping systems as required.

Electrical – Design, Supply, and Installation of:

- Panel boards, transformers, and other equipment as necessary to provide power distribution and control for all SUEZ supplied membrane system equipment.
- Variable frequency drives for SUEZ supplied equipment.
- All power distribution and instrumentation interconnecting wiring, optical fibers, conduit and appurtenances, as follows.
  - Power connections as needed from the owner supplied MCC/VFDs to SUEZ supplied equipment.
  - Connections as needed between the various SUEZ supplied field-mounted instruments and valve actuators to the plant control panel.

  The electrical installation should meet the requirements of best practice guidelines which include standards for facility grounding, lightning protection, transient control, single-point grounding, load-balancing and management of harmonics.
- Control of equipment supplied by SUEZ.

Start-up and Commissioning

- Unloading of delivered equipment and membranes at the defined point of destination including receiving, sign-off and safe storage of equipment at site until ready for installation.
- Storage of membrane cassettes, if required. SUEZ will provide storage specifications.
- Installation of all SUEZ supplied equipment and membranes.
- Mechanical and electrical support labor for commissioning activities
- Installation & removal of suitable temporary screens (if required) on all process lines entering the membrane basins to prevent foreign construction related debris from coming in contact with the membranes.
- Raw materials, chemicals and utilities during equipment start-up and operation including a supply of raw water feed that meets all design parameters for the successful commissioning of the membrane equipment.
- Supply and installation of all required oil and lubricants for equipment start-up and initial operation per the manufacturer's specifications.
- Replacement of lubricants in all drives and intermediate drives of mechanical equipment after initial break-in of the equipment
- Flushing of all piping and membrane tanks and verification of removal of all residual debris from construction.
- Laboratory services, operating and maintenance personnel during equipment checkout, start-up and operation.
- Temporary piping/hosing may be required for the commissioning of the plant before effluent distribution is authorized.
- Contractor checklists are required complete prior to commissioning.
- Continuity checks for all electrical field wiring per installation checklist.
- Hydro-testing of all field installed piping.
- Supply and installation of a suitable secure remote internet connection for 24/7 emergency telephone technical service.
- Alignment of rotating equipment
- Any on-site touch-up primer or painting of equipment supplied by SUEZ
- Disposal of initial start-up wastewater and associated chemicals
- Energy/power measurement and equipment for startup, acceptance and confirmation testing.
- Provide trailers/offices and washroom facilities for the SUEZ site personnel and its representatives.

3 Warranties

3.1 Introduction

The seller offers a comprehensive three-part warranty for the Lovely Hills Upgrade Project as follows:

- **Mechanical Warranty:** seller will repair or replace any device or part thereof that was supplied by the seller that proves to be defective. This warranty excludes the membrane modules.
- **Membrane Warranty:** This warranty provides protection and assurances to the buyer/owner with respect to the membrane modules.
- **Performance Test:** This warranty provides protection and assurances to the buyer/owner with respect to the ability of the seller's system to meet the established performance criteria.

The start date for all warranties is upon substantial completion or six (6) months from equipment shipment, whichever occurs first. Substantial completion is defined as when the buyer/owner makes beneficial use of the equipment supplied by the seller.

3.2 Mechanical Warranty

Material and Workmanship Warranty

The mechanical warranty is only applicable to equipment supplied by the seller. Seller's obligation under this warranty is to the repair or replace, at its factory, of any device or part thereof, which shall prove to have been thus defective. The mechanical warranty period on all equipment supplied, unless otherwise noted, is twelve (12) months from the date of substantial completion or eighteen (18) months from equipment shipment, whichever occurs first. Warranty repair, replacement or re-performance by seller shall not extend or renew the applicable warranty period.

Seller assumes no liability for any damage to equipment caused by inadequate storage or handling per manufacturer's recommendations in supplied technical literature, or by defective or sub-standard workmanship or materials provided by the buyer/owner or any other third party responsible for handling, storing or installing the equipment.

The buyer/owner undertakes to give immediate notice to seller if goods or performance appear defective and to provide seller with reasonable opportunity to make inspections and tests. If seller is not at fault, the buyer/owner shall pay seller the costs and expenses of the inspections and tests.

Goods shall not be returned to seller without seller's permission. Seller will provide buyer/owner with a "return goods authorization" (RGA) number to use for returned goods. All returns are F.C.A. – Oakville, Ontario, Canada. All costs associated with the removal and shipment of the defective part from the buyer/owner's facility to the seller's factory and all costs related to return shipment to the buyer/owner's facility and installation of a repaired or replacement part shall be the buyer/owner's responsibility.

Implied warranties, including but not limited to warranties of fitness for particular purpose, use or application, and all other obligations or liabilities on the part of the seller, unless such warranties, obligations or liabilities are expressly agreed to in writing by seller, are null and void.

3.3 Membrane Warranty

A fifteen (**15**) year prorated warranty is offered on the membrane modules with the first sixty (**60**) months offered as a full replacement warranty and the remaining one hundred twenty (**120**) months as a prorated warranty. Refer to **Appendix A – ZeeWeed Membrane Module Prorated Warranty** for a detailed description of the membrane warranty offered.

3.3.1 Warranty Provisions

In addition to the membrane warranty limitations as defined in Appendix A, the membrane warranty is subject to the following provisions:

- the equipment is operated and maintained at all times in accordance with the seller's operations and maintenance manual,
- the equipment is operated within the mixed liquor characteristics defined in table 1 of this section; any value above or below the ranges stated may not automatically invalidate the membrane warranty but rather they would impact the system performance;
- seller has, until performance of its obligation herein is met, reasonable access to the equipment and the operational data relating thereto,
- the buyer/owner furnishes adequate and competent operating, supervisory and maintenance staff, and necessary laboratory facilities with test equipment and personnel,
- the buyer/owner utilizes the services of seller until its performance obligations are met
- the buyer/owner supplies all necessary raw materials and services of a quantity and of a quality specified by the Seller,
- an adequate and continuous power supply is available that will enable operation of all required equipment,
- the following pre-treatment guidelines are followed:
  - ***fats, oil and grease (FOG)*** – FOG concentration shall not exceed 150 mg/L of emulsified FOG in the feed with no free oil and less than 10 mg/L of mineral or non-biodegradable oil.
  - ***pretreatment*** - A punched hole or woven wire mesh screen with a maximum size opening of no greater than 2 mm and without possibility of bypass of any particle larger than 2 mm in all directions must be included in the headwork's. Seller must be consulted regarding the type, capacity,

and size opening of the screens. It is understood and acceptable that screening will be done using 2mm Huber drum screens.

- ***process chemical additives*** - The use of any chemicals added to the wastewater treatment process (e.g.: polymers, flocculants, coagulants, antifoams) that may come in contact with the ZeeWeed membranes must be approved by seller prior to use. This includes chemicals used in processes outside of the seller's system that may be transferred to the seller's system, such as in solids handling facilities.

Table 1: Mixed Liquor Characteristics for Warranty Purposes

Parameter	Design Value	Accepted Operating Range
Mixed liquor temperature (°C)	15	15 – 30
MLSS concentration in membrane tanks (mg/L) [1]	10,000	≤12,000
pH of mixed liquor in membrane tanks (SU)	7.0	6.5 – 7.5
Soluble $cBOD_5$ concentration in mixed liquor entering membrane tanks (mg/L)	5	≤ 5
NH_3-N concentration in mixed liquor entering membrane tanks (mg/L)	0.5	≤ 1.0
Colloidal TOC (cTOC) concentration in mixed liquor entering membrane tanks (mg/L) [2]	7	≤ 10
Soluble alkalinity of mixed liquor entering membrane tanks (mg/L as $CaCO_3$)	100	50 – 150
Time to filter (TTF) of mixed liquor in membrane tanks [3]	100	≤ 200
Material greater than 2-mm in size in mixed liquor in membrane tanks (mg/L) [4]	0	≤ 1
Fats, oil & grease (FOG) (mg/L)	Refer to Note 6	
Instantaneous air flow rate to independent membrane modules during air scour at diffuser (scfm per module)	1.95 (LEAPLO) 3.9 (LEAPHI)	1.7 – 4.3

Note 1: Membrane tank MLSS concentration of 12,000 mg/L is permissible during MDF and PHF events only. Membrane tank MLSS concentration to be up to 10,000 mg/L during all other flow conditions.

Note 2: Colloidal TOC (cTOC) is the difference between the TOC measured in the filtrate passing through a 1.5 µm filter paper and the TOC measured in the ZeeWeed membrane permeate.

Note 3: Per seller's standard Time to Filter (TTF) procedure (available upon request).

Note 4: Per seller's standard sieve test procedure (available upon request).

Note 5: Chemicals that are not compatible with the ZeeWeed PVDF membrane are not permitted in the membrane tank.

Note 6: FOG concentration shall not exceed 150 mg/L of emulsified FOG in the feed with no free oil and less than 10 mg/L of mineral or non-biodegradable oil.

3.3.2 Membrane Performance

Seller warrants, subject to the provisions set forth above, that after stable operation of the seller's system has been attained and operators have acquired reasonable skills, the membrane modules supplied for this project will be capable of producing the results set forth in table 2.

Table 2: Guaranteed Membrane Filtration System Performance

Parameter	Guaranteed Values
Membrane Filtration System Hydraulic Capacity	
Average day flow, ADF, with all trains in service (MGD) [1]	≤ 6.0
Average day flow with one membrane train out of service (N-1) (MGD)[1]	≤ 6.0
Peak hour flow, PHF, with all trains in service (gpm) [1]	≤ 8,854
Membrane Filtration System Permeate Quality[3]	
TSS (mg/L)	≤ 2
Turbidity (NTU)	≤ 0.2 95% of the time ≤ 0.5 100% of the time
Silt density index (SDI)[2]	≤3

1. The flow conditions are defined as follows:

   Average Day Flow (ADF) – The average flow rate occurring over a 24-hour period based on annual flow rate data.

   Peak Hour Flow (PHF) – The maximum flow rate sustained over a 2-hour period based on annual flow rate data.

2. Guaranteed values are for SDI15 as measured on the permeate for each train and are contingent upon proper maintenance of the UF membrane system. The SDI is to be measured according to the ASTM standard test method (ASTM D 4189-07). The guarantee for this parameter is based on a 30-day running average.
3. All permeate quality parameters are applicable to each train individually.

3.3.3 Performance Test

Performance of the membrane system will be demonstrated by two (2) seven (7) day performance tests, delivered as follows:

1. The first performance test will be performed after the startup of the Phase 1 installation. This test will demonstrate the capacity of the two new membrane trains to provide confidence to the owner of the new system, so that they can confidently take two of the existing trains out of operation to begin the next phase of the retrofit.

The test will run the two SUEZ membrane trains at up to their average day capacity of 1.75MGD each, provided that this flow is available to the plant. At the completion of this test, a brief report will be provided to summarize and validate the performance such that work can begin on the next Phase.

2. The second performance test will be performed at the completion of Phase 3, to demonstrate the complete operation and capacity of the full system. Each train will be run at the average day (ADF) design condition for a set duration to demonstrate capacity, and the remaining time will allow the system to run in automated flow control, demonstrating reliable plant operation.

Each seven (7) day performance test is to be carried out to demonstrate the ability of the seller's system to meet the performance warranty requirements. Within thirty (30) days of installation of the membrane modules, the buyer/owner shall start-up the Equipment. Thereafter, the buyer/owner shall use its reasonable best efforts to maintain continuous and stable operation of the system until the seller's obligation under this performance guarantee has been discharged. The buyer/owner shall notify the Seller that the system is ready for the performance test or notify why the system is not ready and the party responsible for the lack of readiness shall promptly take the appropriate remedial action.

The buyer/owner shall afford the seller full access to the system and to all operating data pertaining to system performance until discharge of the latter's obligations hereunder. The performance test shall be conducted by the buyer/owner in accordance with a mutually agreeable test protocol and applicable standard techniques and operating procedures specified by seller in the operations and maintenance manual.

The performance warranty values are based on a minimum of four (4) 24-hour composite samples collected at regular intervals with testing performed to applicable industry-approved standards. On-line instrumentation provided and grab sample testing performed is included as indications of the performance of the plant and to assist in the proper operation and control of the system. These results may include values beyond the stated warranty values (during process upsets or if instrument poorly/not calibrated, etc.) and additional composite testing as above must be performed to establish that the plant is not meeting performance requirements. All analytical work shall be carried out by the buyer/owner.

During the performance test, the MBR system operation should be according to the seller's operations and maintenance manual and the operating parameters specified in this section.

In the event of an interruption during the performance test due to any of the following events, the test shall be extended by the period of the interruption plus the time required to re-attain operating conditions in effect at the time of the interruption and data recorded during that period shall not be included:

1) power interruption in excess of sixty (60) minutes per day.

2) mechanical failure of the system.

3) any influent or operating parameter outside the accepted operating ranges defined in this section.

If during the execution of the performance test the wastewater flow and/or load into the plant are outside the specified acceptable operating ranges in this document, the seller will modify the test protocol within reason to mimic the design condition. The seller is not responsible for any limitations on the performance test protocol or results due to wastewater flow and/or load that is outside of the specified acceptable operating ranges.

When seller is of the opinion (based on the results obtained at the completion of the performance test), that the system has fulfilled the performance guarantees herein contained, it shall give written notice to the buyer/owner to that effect. Within two (2) weeks immediately following receipt of such notice, the buyer/owner shall notify the seller in writing that it accepts the system, or that it does not accept the system, in which latter case the buyer/owner shall state the specific reason for non-acceptance. In the absence of such reply from the buyer/owner within the two (2) week period, the system shall be deemed to have been accepted and the seller's obligation under this performance warranty shall be discharged.

If, after the system has been operated pursuant to the conditions hereinabove set forth, it becomes reasonably apparent, based on the results obtained at the completion of the performance test, that the system performance is short of the guaranteed performance, then additional performance tests of the system shall be conducted by the buyer/owner whenever seller shall reasonably request. In such event, seller shall be responsible to undertake all necessary reasonable corrective measures in an effort, consistent with commercial and technical reasonableness, to bring the system up to the guaranteed performance levels.

If for any reason outside seller's control, the performance test cannot be completed within sixty (60) days after installation of the membrane modules, OR EIGHTEEN MONTHS FROM SHIPMENT or if any changes are made to the system without the seller's written consent that would affect the seller's ability to meet this performance warranty, then all obligations to the buyer/owner under this performance warranty will be deemed fulfilled.

Once the performance test has been satisfactorily completed, mechanical and membrane warranty provisions shall apply.

3.3.4 Membrane Module Replacement Price (MMRP)

The price of replacement ZeeWeed 500 membrane modules for this project is $1450 USD per module. Seller will guarantee this price for twenty (20) years subject to adjustment for inflation according to the US BLS Consumer Price Index + 1.0% or a maximum equivalent price per gallon of treatment capacity in the event that the module area/permeability etc. changes such that the same amount of feed water can be treated with fewer modules of the next generation design.

The membrane replacement price quoted refers to the Owner purchasing membranes under the following two scenarios:

- Replacement of membrane modules due to violation of the membrane warranty and therefore not covered by the proposed pro-rated membrane warranty
- New or additional membrane modules to increase hydraulic capacity within the existing proposed membrane tanks

Under the first scenario, membrane modules replaced due to warranty violation shall assume the remainder of the originally proposed membrane warranty duration, or a standard (2) year full replacement warranty, whichever is greater.

Under the second scenario, new or additional membrane modules purchased to increase the plant's flow capacity within the existing proposed membrane tanks shall assume a standard two (2) year full replacement warranty.

Membrane module replacement price includes bagging, boxing, crating, and will be shipped based on INCOTERMS 2020, **FCA SUEZ Manufacturing Facility**. Membrane module replacement price is quoted without taxes.

SOLD TO:

WM LYLES COMPANY
PO BOX 28130
FRESNO, CA. 93729

JOB ADDRESS:

W.M. LYLES CO
715 W. 4TH STREET
BEAUMONT, CA. 92223

Quote

Date

12/13/2021

www.WestPacProducts.com
Bolts-Gaskets-Strut/Fittings-PipeSupports

Quote # P/S Pricing Rep SP FOB Norco, Ca.

Description	Qty	U/M	Cost	Total
HDG SUPPORT ESTIMATE (6) SUPPORT #253- MBR TANKS (12) SUPPORT #254 (2) 12"ADJ W/UBOLT W/ANCHORS (5) 20" ADJ W/UBOLT W/ANCHORS (2)304SS FLANGE SUPPORT(RACK) WITH ANCHORS **144-5/8 X 9" ANCHOR RODS (288)NUTS/WASHERS EPOXY**	1	ea	77,895.00	77,895.00T
ADDED 12/14/2021 (FOR) (6) SUPPORT #253- MBR TANKS (rework) CUT EXISTING PLATES PROVIDE NEW 3/4 X 10 X 10 GALVANIZED / WELDED BACK TO SUPPORTS	1	ea	1,600.00	1,600.00T
Sales Tax Riverside 2017			7.75%	6,160.86
			Total	$85,655.86

Chemline Plastics Limited
55 Guardsman Road
Phone: 905-889-7890
Fax :

Thornhill
ON, CA, L3T 6L2

Sold To: W.M. Lyles Co.
715 W 4th Street

Beaumont
CA 92223 US

Ship To: W.M. Lyles Co.
715 W 4th Street

Beaumont
CA 92223 US

Order No. : 00020680
Order Date: Dec07/21

Cust.	Ship Via	Cancel Date	Terms	Tax Lic. 1	Tax Lic. 2	Freight Terms	Page
WMLTEL	CHEMLINE		NONE @THIS TIME			PCharge	1

Date Printed	Store	Department	Salesrep	Customer PO
Dec13/21 11:47:40			MICHAEL MCLENNAN	Q21-8133

Product Code	Order	SKU	Description	Net Price	Per	Extension	Expected Ship Date
			US FUNDS				
			DUTY AND BROKERAGE PP AND				
			CHARGE				
			5594877915				
21A010VC	2	EA	1 PVC TYPE 21 TU BALL VALVE	37.96	EA	75.92	Dec31/21
			VITON SEALS, COMBO ENDS				
			COMPLETE WITH				
21010-ERS20.12	2	EA	ERS20 ACT 115 -230VAC - REVERS	379.20	EA	758.40	Dec31/21
			MTG FOR 1 TYPE 21 VALVE (230PSI)				
21A010VC	2	EA	1 PVC TYPE 21 TU BALL VALVE	37.96	EA	75.92	Dec31/21
			VITON SEALS, COMBO ENDS				
			COMPLETE WITH				
VENT HOLE	2	EA	OFF-GASSING HOLE DRILLED INTO	22.00	EA	44.00	Dec31/21
			BALL i.e. SODIUM HYPO SERVICE				
			COMPLETE WITH				
21010-ERS20.12	2	EA	ERS20 ACT 115 -230VAC - REVERS	379.20	EA	758.40	Dec31/21
			MTG FOR 1 TYPE 21 VALVE (230PSI)				
			DUTY & BROKERAGE			78.37	

			Subtotal			1791.01	
						---	
			* ORDER CONFIRMATION * Total			1791.01	
						==========	
			U.S. FUNDS				

FERGUSON WATERWORKS #1088
1502 COLUMBIA AVE
RIVERSIDE, CA 92507-2014

Phone: 951-674-1323
Fax: 951-674-1084

Deliver To:
From: John Jacoste
Comments:

FERGUSON WATERWORKS #1083
Price Quotation
Phone: 951-674-1323
Fax: 951-674-1084

Bid No: B415190
Bid Date: 12/14/21
Quoted By: JPB

Cust Phone: 559-487-7915
Terms: NET 10TH PROX

Customer:
WM LYLES CO
551173-BEAUMONT WW TRTMT
PO BOX 28130
FRESNO, CA 93729

Ship To:
WM LYLES CO
551173-BEAUMONT WW TRTMT
PO BOX 28130
FRESNO, CA 93729

Cust PO#:

Job Name: 55.1173-BEAUMONT WW TRTMT

Item	Description	Quantity	Net Price	UM	Total
SS6BNS20	20 SS 316 N&B SET	26	571.428	EA	14857.13
SP-T1LGF8G3000/20	20 150# FF GSKT 1/8 GRLK 3000 NA	26	128.960	EA	3352.96
VL200741GE0-NR	20 GALV GRV FLG ADPT E GSKT 741	16	5200.130	EA	83202.08
V20016348529-NR	12 316 SS 77S FLEX GRV COUP	2	3664.170	EA	7328.34
CP80PG	1X20 CPVC S80 PIPE	760	440.260	C	3345.98
PF34255	1 POLY CTS 2H PIPE CLMP	150	25.180	EA	3777.00
CP80SCG	1 CPVC S80 SXS COUP	75	9.360	EA	702.00
CP80S4G	1 CPVC S80 SXS 45 ELL	8	13.220	EA	105.76
CP80S9G	1 CPVC S80 SXS 90 ELL	60	9.540	EA	572.40

Net Total:	$117243.65
Tax:	$9789.85
Freight:	$0.00
Total:	$127033.50

Item Code	Description	Notice
CP80PG	1X20 CPVC S80 PIPE	⚠ WARNING: Cancer and Reproductive Harm - www.P65warnings.ca.gov
PF34255	1 POLY CTS 2H PIPE CLMP	⚠ WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov
CP80SCG	1 CPVC S80 SXS COUP	⚠ WARNING: Cancer and Reproductive Harm - www.P65warnings.ca.gov
CP80S4G	1 CPVC S80 SXS 45 ELL	⚠ WARNING: Cancer and Reproductive Harm - www.P65warnings.ca.gov
CP80S9G	1 CPVC S80 SXS 90 ELL	⚠ WARNING: Cancer and Reproductive Harm - www.P65warnings.ca.gov

HOW ARE WE DOING? WE WANT YOUR FEEDBACK!
Scan the QR code or use the link below to
complete a survey about your bids:
https://survey.medallia.com/?bidsorder&fc=1083&on=25463

FERGUSON WATERWORKS #1083
Price Quotation

Fax: 951-674-1084

16:48:30 DEC 14 2021

Reference No: B415190

Quoted prices are based upon receipt of the total quantity for immediate shipment (48 hours). SHIPMENTS BEYOND 48 HOURS SHALL BE AT THE PRICE IN EFFECT AT TIME OF SHIPMENT UNLESS NOTED OTHERWISE. QUOTES FOR PRODUCTS SHIPPED FOR RESALE ARE NOT FIRM UNLESS NOTED OTHERWISE.

CONTACT YOUR SALES REPRESENTATIVE IMMEDIATELY FOR ASSISTANCE WITH DBE/MBE/WBE/SMALL BUSINESS REQUIREMENTS.

Seller not responsible for delays, lack of product or increase of pricing due to causes beyond our control, and/or based upon Local, State and Federal laws governing type of products that can be sold or put into commerce. This Quote is offered contingent upon the Buyer's acceptance of Seller's terms and conditions, which are incorporated by reference and found either following this document, or on the web at https://www.ferguson.com/content/website-info/terms-of-sale
Govt Buyers: All items are open market unless noted otherwise.

LEAD LAW WARNING: It is illegal to install products that are not "lead free" in accordance with US Federal or other applicable law in potable water systems anticipated for human consumption. Products with *NP in the description are NOT lead free and can only be installed in non-potable applications. Buyer is solely responsible for product selection.
WATER FLOW RATE NOTICE: Lavatory Faucets with flow rates over 0.5 GPM are not allowed for 'public use' in California.

Southern Contracting Company
P.O. Box 445 San Marcos, CA 92079-0445
Tel 760-744-0760 Fax 760-744-6475
website: www.southerncontracting.com
email: info@southerncontracting.com

Change Order Request

103801 — Wastewater Treatment Plant Salt Mitigation Upgrade

COR Subject: MBR Canges as well as add MBR 5 & 6

To
Juan C. Ahumada
W.M. Lyles
42142 Roick Drive
Temecula, CA 92590
951-973-7393

Return To
Dan Alcantar
Southern Contracting Company
760-744-0760x621
619-778-0681
DAlcantar@southerncontracting.com

Contract No: **55.1173**
COR Number: **103801-COR#034**
COR Revision Number: **0**
COR Date: 12/14/2021
Work Type: Price / Do Not Proceed
Days Valid: **5**

Scope Of Work / Time Extension Request

The work associated with the MBR changes to 1-4 and the addition of MBR 5 & 6 is a change to Southern Contracting Company's scope of work in which a change in Contract Price and Time is to be considered.

Accordingly, Southern Contracting Company requests a Contract Change Order in the amount of $128,058.62

Scope of Work is as follows:
- Provide and install new wall mounted VFD for MBR 6 . Provide and Install 100 amp trip Breaker in SWBD DP. Provide and install cable tray cable where applicable. Provide and install all Conduit, wire and Supports to connect power and controls to NEW MBR train filters 5 and 6 Pumps and instrumentation. Remove and replace instrumentation, FCV's, and actuators on piping for MBR tanks 1 through 4 (locations of the instruments, FCV's and actuators are to be within reach of the existing conduit and wire for 1 thru 4. Modifications to LCP-5031 and 5121 for chemical injection functionality of MBR tank 6. Hand stations for tank 5 and 6.

Long Lead Items:

VFD MBR 6 - 18 to 20 weeks

Exclusions: Extensions for existing Installation of inline instrumentation, Installation of UV Equipment, Set up of network and SCADA updates, programming, concrete, concrete pads, dry pack, digging, backfill, surface restoration, Overtime.

Change in time: 5 weeks after MBR 5 and 6 are mechanically complete.

Southern Contracting reserves all rights to additional costs and time for changes not identified in the documents

furnished, and is not responsible for additional costs or time for work which is not part of our contract scope of work, unless stipulated above. Should additional information or clarification be required, please contact me at your convenience.

Summary

Total: **$128,058.62**

Reservation of Rights

This COR does not include any amount for impacts such as interference, disruptions, rescheduling, changes in the sequence of work, delays and/or associated acceleration. We expressly reserve the right to submit our request for any of these items.

Signed By: 

Dated: 12/14/2021

Daniel Alcantar

PM

Bid Summary Report

BEAUMONT MBR MODIFICATIONS **Estimator: Philip Waterman** **Job #3726**

Job Name: BEAUMONT MBR MODIFICATIONS

Contractor:

Estimator: Philip Waterman

Notes:

Bid Date:

Summary Description	Material			Labor		
	Extended	%	Adjusted	Extended	%	Adjusted
BID MBR Changes	$21,593.19	100.00%	$21,593.19	402.39	100.00%	402.39

Top Sheet

Raw Cost		$107,826.89	Sales per Month	$0.00
Tax		$3,528.43	Return per Month	$0.00
Raw Cost with Tax		$111,355.32	Price per Square Foot	$0.00
Overhead		$0.00	Hours per Square Foot	0.00
Profit		$16,703.30	Square Feet	0.00
Total Return Amount		$16,703.30	Job Months	0.00
Total Return %		13.04%	Hours per Week	40.00
Price		$128,058.62	Workers per Day	0.00
Bond		$0.00	Total Hours	402.39
Sell Price		**$128,058.62**	Markup Sales Tax (Overhead)	Yes
Adjusted Sell ()		$0.00	Markup Sales Tax (Profit)	Yes
Adjusted Sell Return	0.00 %	$0.00	Use Bond Table	No

Labor

Class Description	Percent of Total	Hours Distributed	Hourly Rate	Burden Rate	Burden Percent	Labor Cost
General Foreman	20.00%	80.48	$105.53	$0.00	0.00%	$8,492.94
Electrician	100.00%	402.39	$90.43	$0.00	0.00%	$36,388.56
Totals	120.00%	482.87	$92.95	$0.00	0.00%	$44,881.50

Mark Ups

	Total		OVERHEAD %	OVERHEAD Amount		PROFIT %	PROFIT Amount
Materials	$21,593.19	+	0.00%	$21,593.19	+	15.00%	$24,832.16
Labor	$44,881.50	+	0.00%	$44,881.50	+	15.00%	$51,613.72
Supplier Quotes	$34,512.00	+	0.00%	$34,512.00	+	15.00%	$39,688.80
SubContractors	$0.00	+	0.00%	$0.00	+	5.00%	$0.00

Bid Summary Report

BEAUMONT MBR MODIFICATIONS **Estimator: Philip Waterman** **Job #3726**

Direct Job Expense	$5,153.00	+	0.00%	$5,153.00	+	15.00%	$5,925.95
Equipment Rental	$1,687.20	+	0.00%	$1,687.20	+	15.00%	$1,940.28
Totals	**$107,826.89**		**0.00%**	**$107,826.89**		**15.00%**	**$124,000.92**

Tax Report

	Taxed Amount	Tax Rate %	Tax Amount
Materials	$21,593.19	7.75%	$1,673.47
Labor	$44,881.50	0.00%	$0.00
Supplier Quotes	$23,935.00	7.75%	$1,854.96
SubContractors	$0.00	7.75%	$0.00
Direct Job Expense	$0.00	7.75%	$0.00
Equipment Rental	$0.00	7.75%	$0.00
		Total Tax:	$3,528.43

Supplier Quotes

Name	Supplier	Tax (7.8 %)	Unit Cost	Multiplier	Amount
Switchgear	plug	Yes	$23,935.00	1.00	$23,935.00
NETA Breaker Testing	plug	No	$2,500.00	1.00	$2,500.00
LCP Panel Mods	TSI	No	$8,077.00	1.00	$8,077.00
				Total:	$34,512.00

Direct Job Expense

Name	Supplier	Tax (7.8 %)	Unit Cost	Multiplier	Amount
Telephone	per month	No	$125.00	1.00	$125.00
Office Trailer	per month	No	$100.00	0.00	$0.00
-delivery charge	each	No	$250.00	0.00	$0.00
Storage Trailer	per month	No	$100.00	0.00	$0.00
-delivery charge	each	No	$250.00	0.00	$0.00
Trash Dumpster (40Y)	per month	No	$40.00	0.00	$0.00
-haul off (8 tons)	each	No	$350.00	0.00	$0.00
Port. Toilet / Water	per month	No	$125.00	0.00	$0.00
-delivery charge	each	No	$100.00	0.00	$0.00
Truck	per hour	No	$25.14	200.00	$5,028.00
Job Truck	per hour	No	$10.00	0.00	$0.00
Submittals	lot	No	$200.00	0.00	$0.00
CPM Schedule	per hour	No	$80.00	0.00	$0.00
Loop Drawings	per loop	No	$500.00	0.00	$0.00
Seismic Calc's	each	No	$150.00	0.00	$0.00
Subsistence	per day	No	$150.00	0.00	$0.00
				Total:	$5,153.00

Equipment Rental

Name	Supplier	Tax (7.8 %)	Unit Cost	Multiplier	Amount
Fork Lift - 6000lbs	per month	No	$3,000.00	0.00	$0.00

Bid Summary Report

BEAUMONT MBR MODIFICATIONS **Estimator: Philip Waterman** **Job #3726**

Scissor Lift - 16'	per month	No	$700.00	0.00	$0.00
Scissor Lift - 26'	per hour	No	$29.68	40.00	$1,187.20
Equip Move-on/off	each	No	$250.00	2.00	$500.00
Bobcat - 853	per month	No	$2,100.00	0.00	$0.00
- bobcat attachment	per month	No	$600.00	0.00	$0.00
15 Ton Crane	per hour	No	$200.00	0.00	$0.00
-crane haul	each occurance	No	$150.00	0.00	$0.00
-crane crew	per hour	No	$100.00	0.00	$0.00
SCC Boom Truck	per hour	No	$30.00	0.00	$0.00
Generator - 1000KW	per hour	No	$125.00	0.00	$0.00
Generator - 65KW	per day	No	$125.00	0.00	$0.00
Light Tower	per day	No	$100.00	0.00	$0.00
Cat D-6 Dozer	per month	No	$7,600.00	0.00	$0.00
Cat 950F Loader 4yd	per month	No	$6,000.00	0.00	$0.00
Skip Loader	per month	No	$1,800.00	0.00	$0.00
Cat 307 Excavator	per month	No	$2,160.00	0.00	$0.00
Cat 320 Excavator	per month	No	$5,400.00	0.00	$0.00
Additional Bucket	per month	No	$1,000.00	0.00	$0.00
Sheeps Foot	per month	No	$1,400.00	0.00	$0.00
57" Double Vib. 7 ton	per month	No	$3,600.00	0.00	$0.00
84" Roller Vib. 11 ton	per month	No	$4,680.00	0.00	$0.00
Water Truck 2Kgall.	per month	No	$1,800.00	0.00	$0.00
				Total:	$1,687.20

Item #	Item Name	Quantity	Unit Price	U	Ext Price	Unit Labor	U	Ext Labor
Label Set: Combined, Combined, Combined, Combined, Combine					**$21,593.19**			**402.39**
Cost Code: 010 - Conduit/Raceway					$10,317.64			141.53
2,440	1/4"x1" CAPSCREW	28.00	$6.22	C	$1.74	17.58	C	4.92
2,455	1/4" WASHER	28.00	$137.50	C	$38.50	0.00	X	0.00
2,463	1/4" NUT	28.00	$21.92	C	$6.14	0.00	X	0.00
2,517	1/4" WEDGE ANCHOR	38.00	$21.57	C	$8.20	20.10	C	7.64
2,519	1/2" WEDGE ANCHOR	32.00	$55.20	C	$17.66	25.12	C	8.04
2,536	1 5/8 KINDORF-SLOTTED HDG	10.00	$864.00	C	$86.40	13.82	C	1.38
2,677	1 5/8 STRUT-STAINLESS	20.00	$1,704.00	C	$340.80	18.84	C	3.77
2,682	POST BASE SS (1-5/8 strut)	6.00	$60.00	E	$360.00	0.63	E	3.77
2,703	3/4 GRC/PVC COATED	130.00	$498.25	C	$647.72	10.05	C	13.06
2,704	1 GRC/PVC COATED	100.00	$645.04	C	$645.04	12.56	C	12.56
2,706	1 1/2 GRC/PVC COATED	50.00	$1,024.28	C	$512.14	18.84	C	9.42
2,718	3/4 GRC/PVC COUP	25.00	$534.88	C	$133.72	11.30	C	2.83
2,719	1 GRC/PVC COUP	22.00	$695.27	C	$152.96	12.56	C	2.76
2,721	1 1/2 GRC/PVC COUP	11.00	$963.79	C	$106.02	16.33	C	1.80
2,733	3/4 GRC/PVC ELBOW	6.00	$1,905.38	C	$114.32	69.08	C	4.14
2,734	1 GRC/PVC ELBOW	6.00	$2,185.35	C	$131.12	81.64	C	4.90
2,736	1 1/2 GRC/PVC ELBOW	3.00	$3,299.51	C	$98.99	125.60	C	3.77
2,810	3/4 GRC/PVC HUB	8.00	$53.82	E	$430.58	50.24	C	4.02
2,811	1 GRC/PVC HUB	8.00	$67.26	E	$538.08	62.80	C	5.02
2,813	1 1/2 GRC/PVC HUB	4.00	$88.42	E	$353.67	94.20	C	3.77
2,868	3/4 GRC/PVC LB BODY	4.00	$53.94	E	$215.75	81.64	C	3.27
2,893	3/4 GRC/PVC T BODY	4.00	$70.34	E	$281.37	125.60	C	5.02
2,965	3/4 GRC/PVC 1H STRAP	8.00	$768.64	C	$61.49	5.02	C	0.40
2,966	1 GRC/PVC 1H STRAP	6.00	$792.62	C	$47.56	5.02	C	0.30
2,990	3/4 GRC/PVC CHNL STP	26.00	$737.20	C	$191.67	3.77	C	0.98
2,991	1 GRC/PVC CHNL STP	20.00	$764.60	C	$152.92	3.77	C	0.75
2,993	1 1/2 GRC/PVC CHNL STP	10.00	$1,038.35	C	$103.83	5.02	C	0.50
3,017	3/4 GRC/PVC CLAMP BAK	8.00	$1,251.60	C	$100.13	6.28	C	0.50

Item #	Item Name	Quantity	Unit Price	U	Ext Price	Unit Labor	U	Ext Labor
3,018	1 GRC/PVC CLAMP BAK	6.00	$1,631.70	C	$97.90	7.54	C	0.45
3,876	1/2 FLEX WP	100.00	$133.65	C	$133.65	7.54	C	7.54
3,880	1 1/2 FLEX WP	10.00	$450.45	C	$45.04	25.12	C	2.51
3,977	1/2" FLEX WP OCAL STR CONN	50.00	$52.44	E	$2,622.00	15.07	C	7.54
3,981	1-1/2" FLEX WP OCAL STR CONN	4.00	$133.50	E	$534.00	37.68	C	1.51
15,802	8x6x4 N4X FG PULLBOX	1.00	$99.32	E	$99.32	1.38	E	1.38
15,807	12x10x6 N4X FG PULLBOX	2.00	$93.60	E	$187.20	1.88	E	3.77
15,808	14x12x8 N4X FG PULLBOX	4.00	$180.00	E	$720.00	1.88	E	7.54
Cost Code: 020 - Wire/Cable					$7,618.46			210.61
4	16 TSP - SHIELDED CABLE BELDEN	2,100.00	$720.00	M	$1,512.00	12.56	M	26.38
43	14 THHN CU STRANDED	8,000.00	$146.88	M	$1,175.04	6.28	M	50.24
44	12 THHN CU STRANDED	1,500.00	$225.31	M	$337.96	7.54	M	11.30
46	8 THHN CU STRANDED	200.00	$592.29	M	$118.46	12.56	M	2.51
48	4 THHN CU STRANDED	600.00	$1,482.88	M	$889.73	17.58	M	10.55
570	8/4 MC PVC CABLE	350.00	$1,920.00	M	$672.00	45.22	M	15.83
604	14/7 MC PVC CABLE	1,200.00	$1,470.00	M	$1,764.00	40.19	M	48.23
760	CGB -PSC FITTING	10.00	$23.42	E	$234.24	20.10	C	2.01
4,155	8 GA TERMINATION	4.00	$154.00	C	$6.16	0.31	E	1.26
4,156	6 GA TERMINATION	12.00	$154.00	C	$18.48	0.38	E	4.52
4,164	4/0 TERMINATION	4.00	$210.00	C	$8.40	1.13	E	4.52
4,174	BRASS / SS CONDUIT TAG	12.00	$9.10	E	$109.20	7.54	C	0.90
4,179	#14 CONTROL TERMINATON	184.00	$4.20	E	$772.80	0.18	E	32.35
Cost Code: 030 - Power Distribution					$0.00			13.56
7,816	50HP DRIVE(#3) -MCC	1.00	$0.00	Q	$0.00	12.56	E	12.56
60,030	EATON HFD 3P-25AMP BREAKER	1.00	$0.00	Q	$0.00	1.00	E	1.00
Cost Code: 140-Instrumentation					$3,657.08			36.70
15,918	ALUM - STANCHION, CONTROL	2.00	$450.00	E	$900.00	1.88	E	3.77
15,924	4'x8' 3/16" ALUM BACKPANEL	1.00	$605.00	E	$605.00	1.26	E	1.26
15,955	2PB ENCLOSURE, FRP-4X	4.00	$241.20	E	$964.80	0.75	E	3.01
15,971	3POS SELECTOR SWITCH	4.00	$63.60	E	$254.40	0.63	E	2.51

Item #	Item Name	Quantity	Unit Price	U	Ext Price	Unit Labor	U	Ext Labor
15,976	NO/NC CONTACT BLOCK	8.00	$51.36	E	$410.88	0.31	E	2.51
15,977	LEGEND PLATE	4.00	$6.00	E	$24.00	0.13	E	0.50
16,009	22-14 TERMINAL BLOCK	20.00	$1.86	E	$37.20	0.38	E	7.54
16,010	IDEC SPDT 24V RELAY 6MM	4.00	$9.60	E	$38.40	0.38	E	1.51
16,011	30AMP-250V 1P FUSE BLOCK	2.00	$12.00	E	$24.00	0.38	E	0.75
16,012	UTG GROUND TERMINAL	4.00	$7.20	E	$28.80	0.38	E	1.51
16,013	DIN RAIL - 3'	2.00	$10.80	E	$21.60	0.48	E	0.95
16,017	POWER SUPPLY 120VAC-24VDC 120W D	2.00	$174.00	E	$348.00	0.44	E	0.88
60,034	MODIFY LCP-5031 (PARTS BY TSI)	1.00	$0.00	X	$0.00	4.00	E	4.00
60,035	MODIFY LCP-5121 (PARTS BY TSI)	1.00	$0.00	X	$0.00	4.00	E	4.00
60,038	MODIFY RIO-MB (PARTS BY TSI)	1.00	$0.00	X	$0.00	2.00	E	2.00
[Items and ByProducts] Total:					**$21,593.19**			**402.39**

TSI
Technical Systems Incorporated

2303 196th Street SW
Lynnwood, WA 98036
Tel: (425) 775-5696
Fax: (425) 775-9074
info@tsicontrols.com

Scope Letter: 2 pages

December 6, 2021 Quote Number: CO#13

To: Southern Contracting
Attn: Dan Alcantar

Project: Beaumont WWTP Salt Mitigation
Beaumont Wastewater Treatment Plant

Reference: **Chemical Feed LCP Modifications**

Bid Date: N/A Bid Time: N/A

Technical Systems, Inc. (TSI) is pleased to provide a quote for the above referenced project. Material for this project will be shipped FOB Lynnwood WA, complete, ready for field termination by others. TSI's price includes CA sales tax and does not include the cost to bond TSI's portion of the project.

TSI's price for the scope of work detailed on the following pages:

Change Order Proposal Pricing: **$8,077.00**

Change Scope as Follows:

- Modify LCP-5031 and LCP-5121 As Follows
  - Add New Hand Switch, Circuit Breaker, Relays, and Terminals for FV-5056 and FV-5146, respectively
  - Install Hardware (Wiring by Others) and provide startup support
- Add Terminals and Fuses as required in RIO-MB
- Update Drawings and O&M
  - Revise LCP-5031 Drawings
  - Revise LCP-5212 Drawings
  - Revise RIO-MB Drawings
  - Update O&M

Terms: Net 30
FOB: Lynnwood WA
Freight: Prepaid

This quote is valid for 90 days.

Please call with any questions you may have concerning pricing or any technical questions.

Sincerely,

Colin Dightman-Kovak

Colin Dightman-Kovak
Technical Systems, Inc.
1-425-678-4116

Scope of Work

Misc Equipment:

Including:

1. Hardware Procurement
2. Required Testing
3. O&M, drawings updates

GENERAL

1. TSI supplies a bill of materials, CAD-based drawings, and Operations and Maintenance Manuals for all equipment furnished by TSI.

2. TSI supplies the required field startup services for this project.

3. Panels fabricated by TSI are UL 508 labeled.

STANDARD INCLUSIONS

We provide the following unless specifically excluded on our bill of material:

1) Equipment shipped FOB factory with freight allowed, tailgate, destination.
2) Field wiring diagrams showing interconnection of field instruments and instrumentation panels.
3) Instruction manuals as required.
4) All necessary field start-up and calibration of the equipment we supply.

STANDARD EXCLUSIONS

We do NOT include the following unless specifically included in our bill of material:

1) Pipe, tubing, valves or fittings between the instrument and the process.
2) Conduit, wire or cable not an integral part of the instrument.
3) Mounting brackets, stanchions, supports or mounting pads not an integral part of the instrument.
4) Labor to install the equipment.
5) The Cost, (if due to local union regulations), to have local craftsman make adjustments or wiring modifications to our equipment during start-up and calibration.
6) Any material or services not in our quoted sections.
7) This proposal is based on award of a supply purchase order and does not include any of the costs associated with bonding or subcontract administration. If bonding or a subcontract is required they can be provided for additional cost.

SPECIFIC EXCLUSIONS

1) Wiring to be done by electrician.

Consolidated Electrical Distributors, Inc.
5457 Ruffin Road San Diego, CA 92123
Main Phone 858.268.1020 Fax 858.974.6372
Projects Phone 858.496.2547 Fax 858.496.2542

QUOTATION*

Customer: SOUTHERN Date: 12/14/2021

Attn: DANEIL Quote No.

Job: BEAUMONT VFD AND BREAKER Your Ref #

QUOTE EXPIRES

QUANTITY	TYPE	TYPE/DESCRIPTION	PRICE	UNIT	EXTENSION
1	CH	N1 VFD			
1	CH	HFD 3P 100A BREAKER			
		TOTAL	$ 23,935.00	E	

TERMS	TAX NOT INCLUDED	NO TAX INCL
		$-

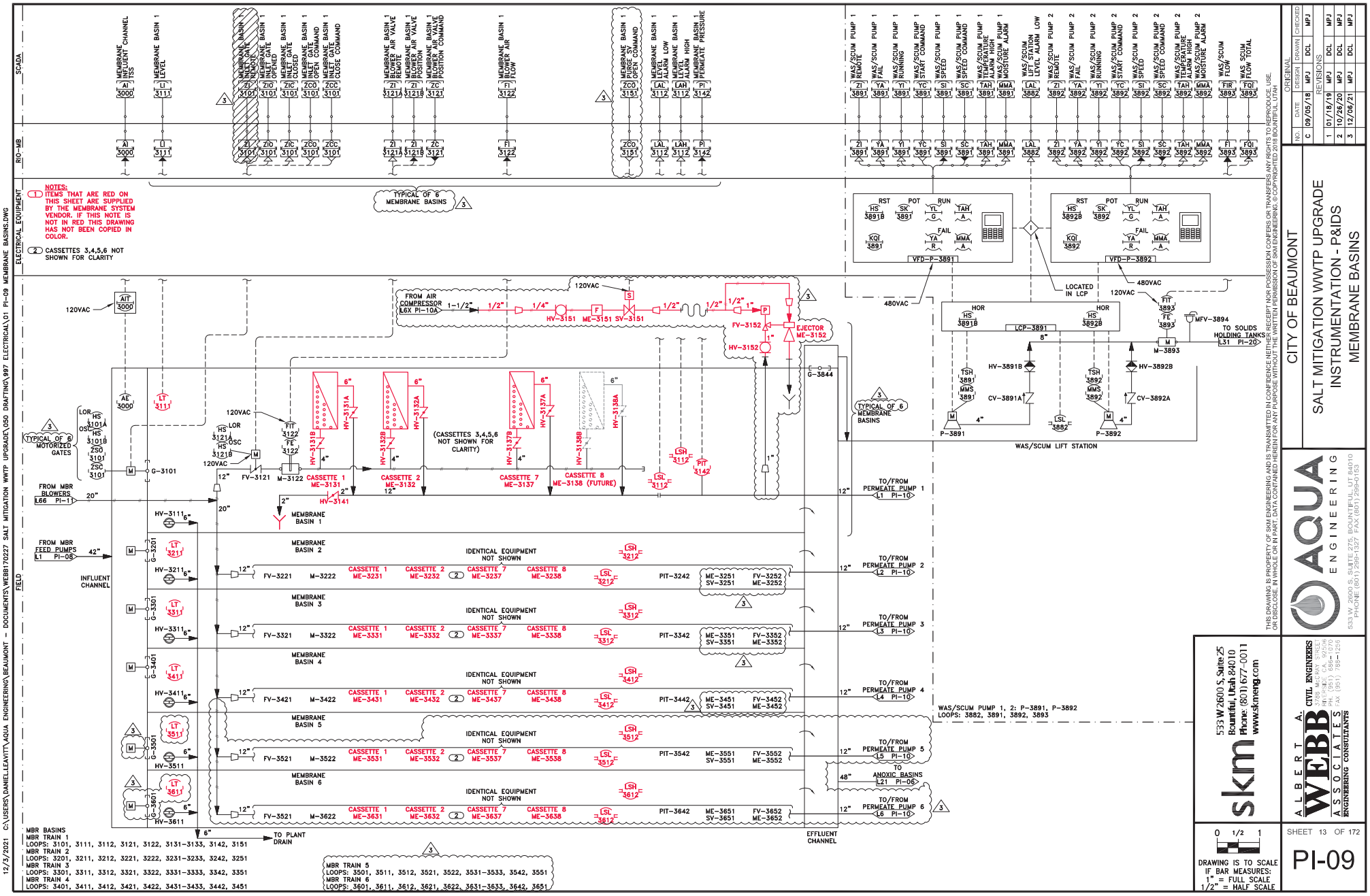
Respectfully,

CONSOLIDATED ELECTRICAL DISTRIBUTORS, INC.

GREGORY FURTON

Revised 10/17/06

* PLEASE NOTE: This is not an offer to contract, but merely a quotation of current prices for your convenience and information. Orders based on this quotation are subject to our acceptance of the terms and conditions stated in our written Acknowledgment of order. We make no representations with respect to compliance with job specifications. Above prices do not included accessories unless otherwise stated.



NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	01/18/19	MPJ	DCL	MPJ
2	10/26/20	MPJ	DCL	MPJ
3	12/06/21	MPJ	DCL	MPJ

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
INSTRUMENTATION - P&IDS
MEMBRANE BASINS

AQUA ENGINEERING
533 W 2600 S, SUITE 275, BOUNTIFUL, UT 84010
PHONE (801) 298-1327 FAX (801) 298-0153

skm
533 W 2600 S, Suite 25
Bountiful, Utah 84010
Phone: (801) 677-0011
www.skmeng.com

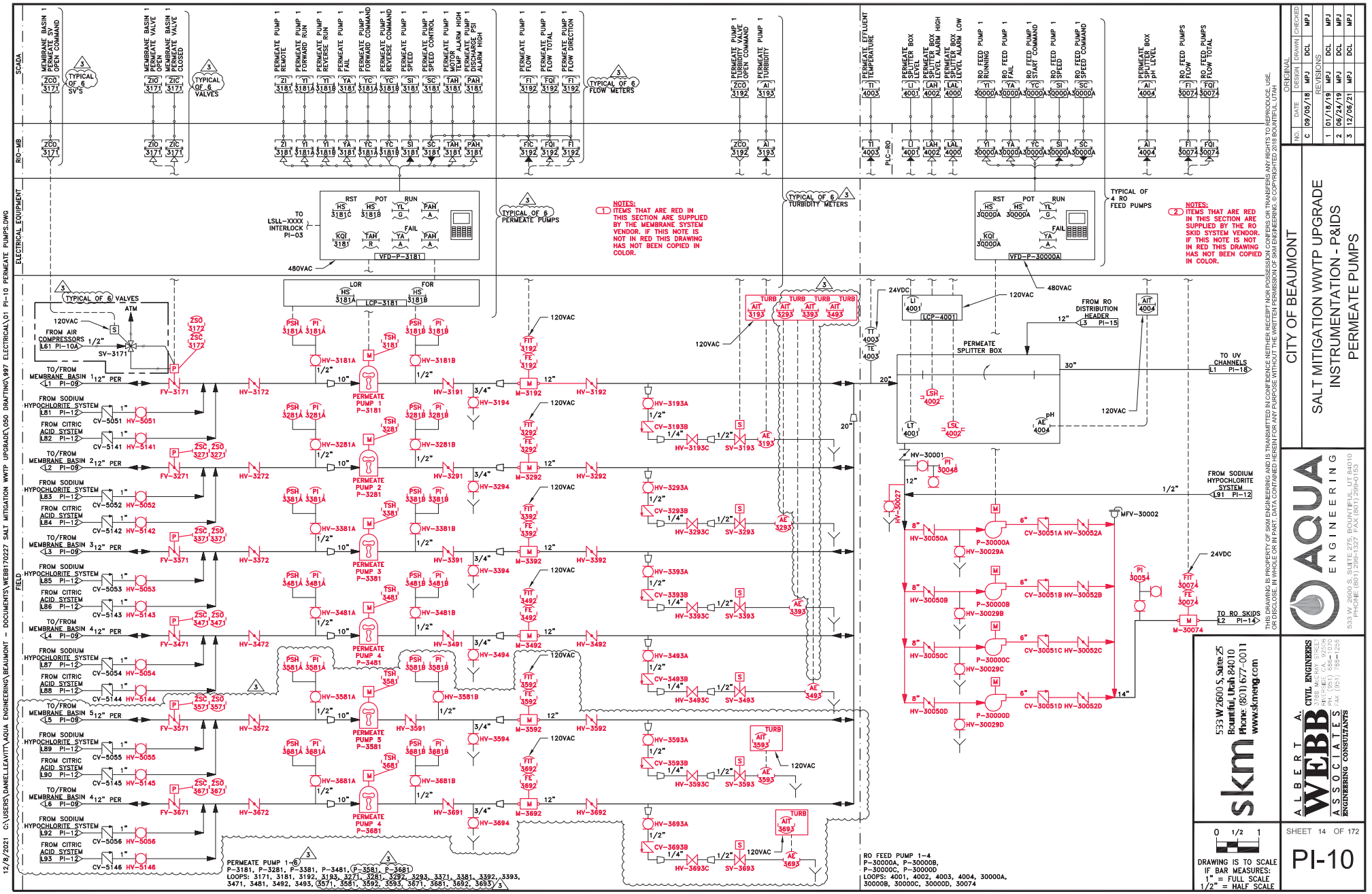
ALBERT A. WEBB ASSOCIATES
CIVIL ENGINEERS
3788 McCRAY STREET
RIVERSIDE, CA 92506
PHONE (951) 686-1070
FAX (951) 788-1256
ENGINEERING CONSULTANTS

0 1/2 1
DRAWING IS TO SCALE IF BAR MEASURES: 1" = FULL SCALE 1/2" = HALF SCALE

SHEET 13 OF 172

PI-09

12/3/2021 C:\USERS\DANIELLEAVITT\AQUA ENGINEERING\BEAUMONT - DOCUMENTS\WEBB170227 SALT MITIGATION WWTP UPGRADE\050 DRAFTING\997 ELECTRICAL\01 PI-09 MEMBRANE BASINS.DWG



ORIGINAL

NO.	DATE	DESIGN	DRAWN	CHECKED
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REVISIONS

1	01/18/19	MPJ	DCL	MPJ
2	06/24/19	MPJ	DCL	MPJ
3	12/06/21	MPJ	DCL	MPJ

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
INSTRUMENTATION - P&IDS
PERMEATE PUMPS

AQUA ENGINEERING
533 W 2600 S, SUITE 275, BOUNTIFUL, UT 84010
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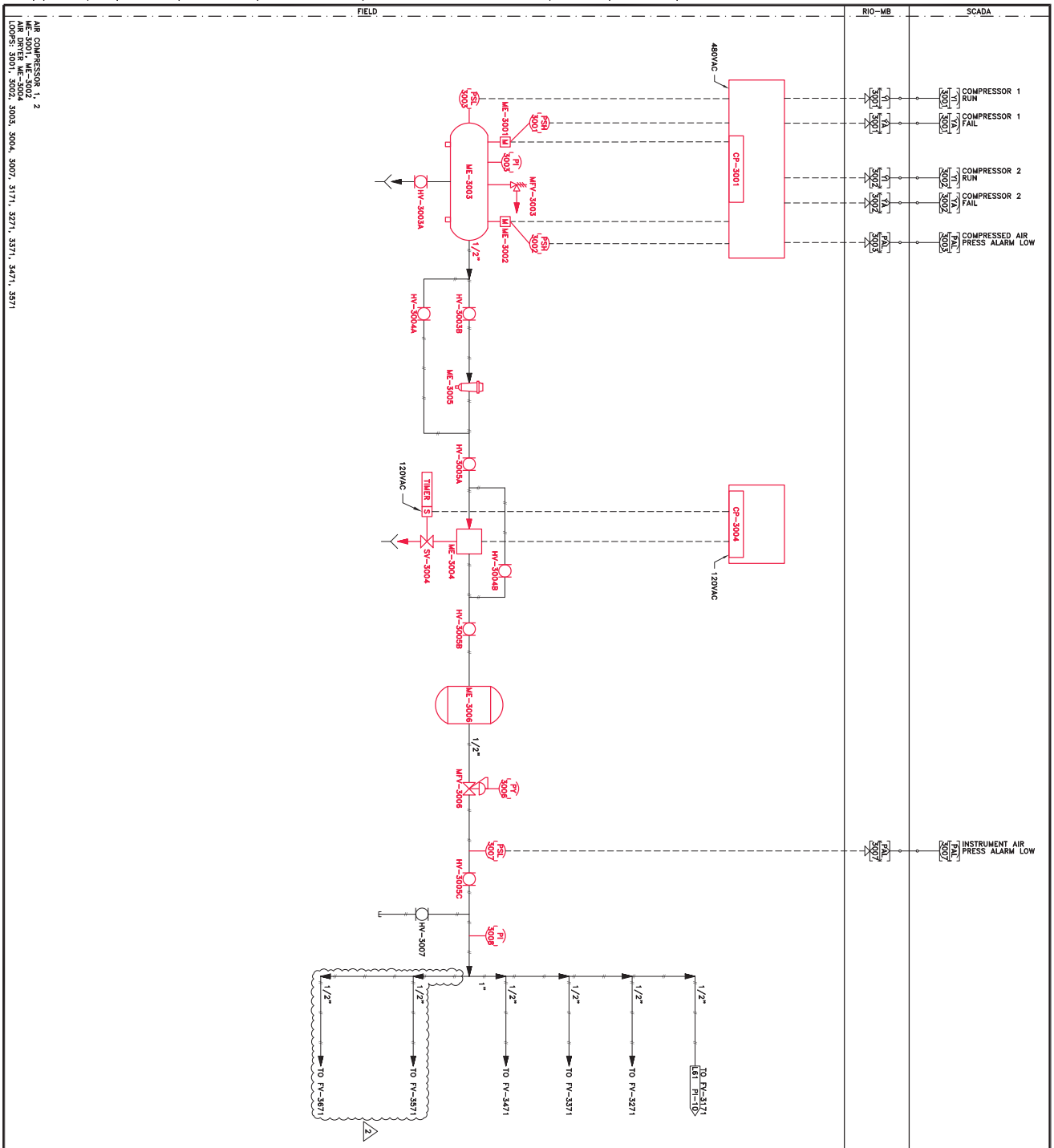
SHEET 14 OF 172

PI-10

12/2/2021 C:\USERS\DANIEL.LEAVITT\AQUA ENGINEERING\BEAUMONT – DOCUMENTS\WEBB170227 SALT MITIGATION WWTP UPGRADE\050 DRAFTING\997 ELECTRICAL\01 PI-10A AIR COMPRESSOR SYSTEM.DWG

AIR COMPRESSOR 1, 2
AIR DRYER ME-3004
AIR DRYER ME-3004
LOOPS: 3001, 3002, 3003, 3004, 3007, 3171, 3271, 3371, 3471, 3571



DRAWING IS TO SCALE IF BAR MEASURES: 1/2" = FULL SCALE

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Bountiful, Utah 84010
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www.skmeng.com

PI-10A

SHEET 14A OF 172

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FAX (951) 788-1256

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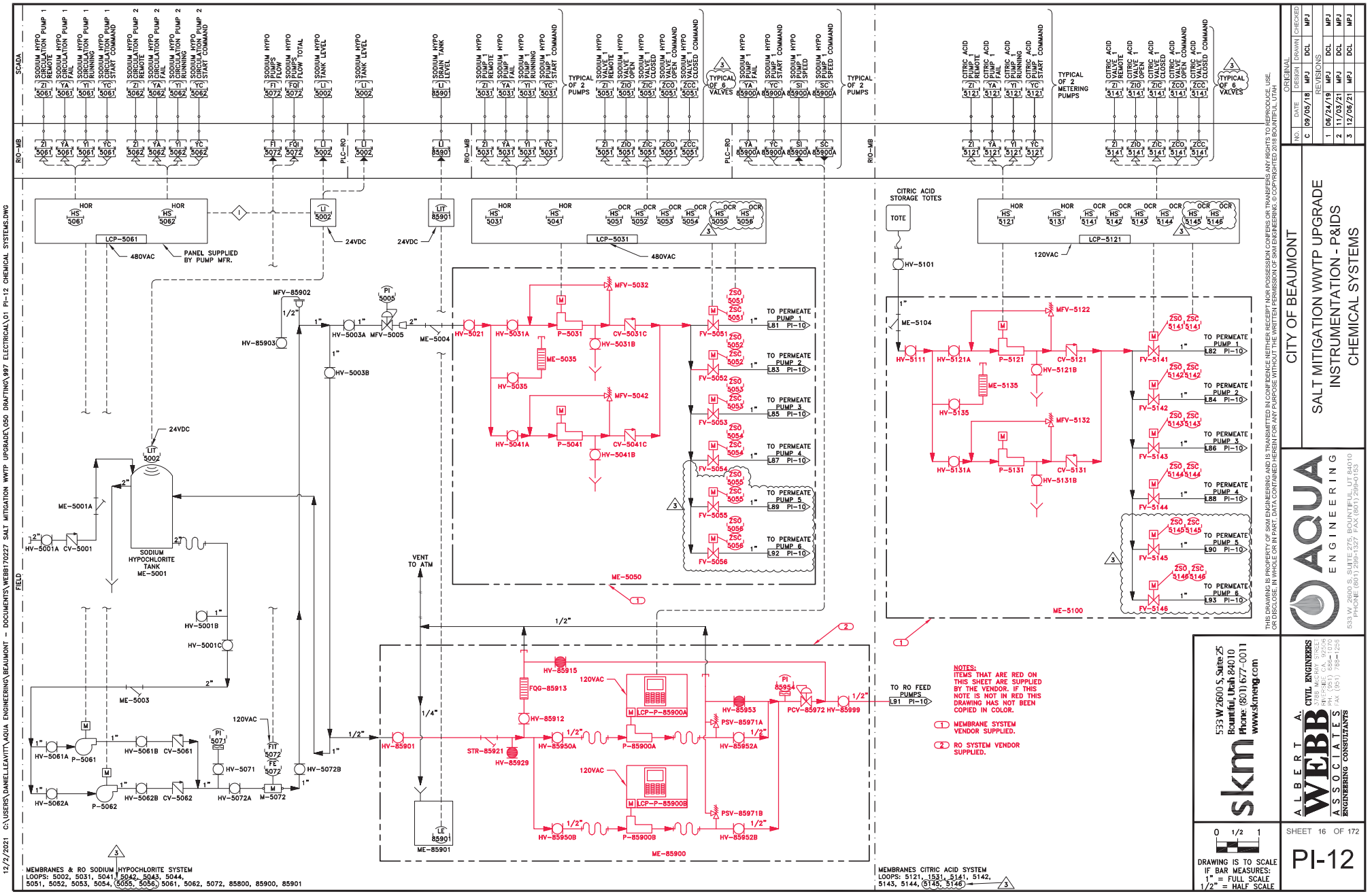
CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
INSTRUMENTATION - P&IDS
AIR COMPRESSOR SYSTEM

ORIGINAL				
NO.	DATE	DESIGN	DRAWN	CHECKED
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	01/18/19	MPJ	DCL	MPJ
2	12/06/21	MPJ	DCL	MPJ



NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	06/24/19	MPJ	DCL	MPJ
2	11/03/21	MPJ	DCL	MPJ
3	12/06/21	MPJ	DCL	MPJ

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
INSTRUMENTATION - P&IDS
CHEMICAL SYSTEMS

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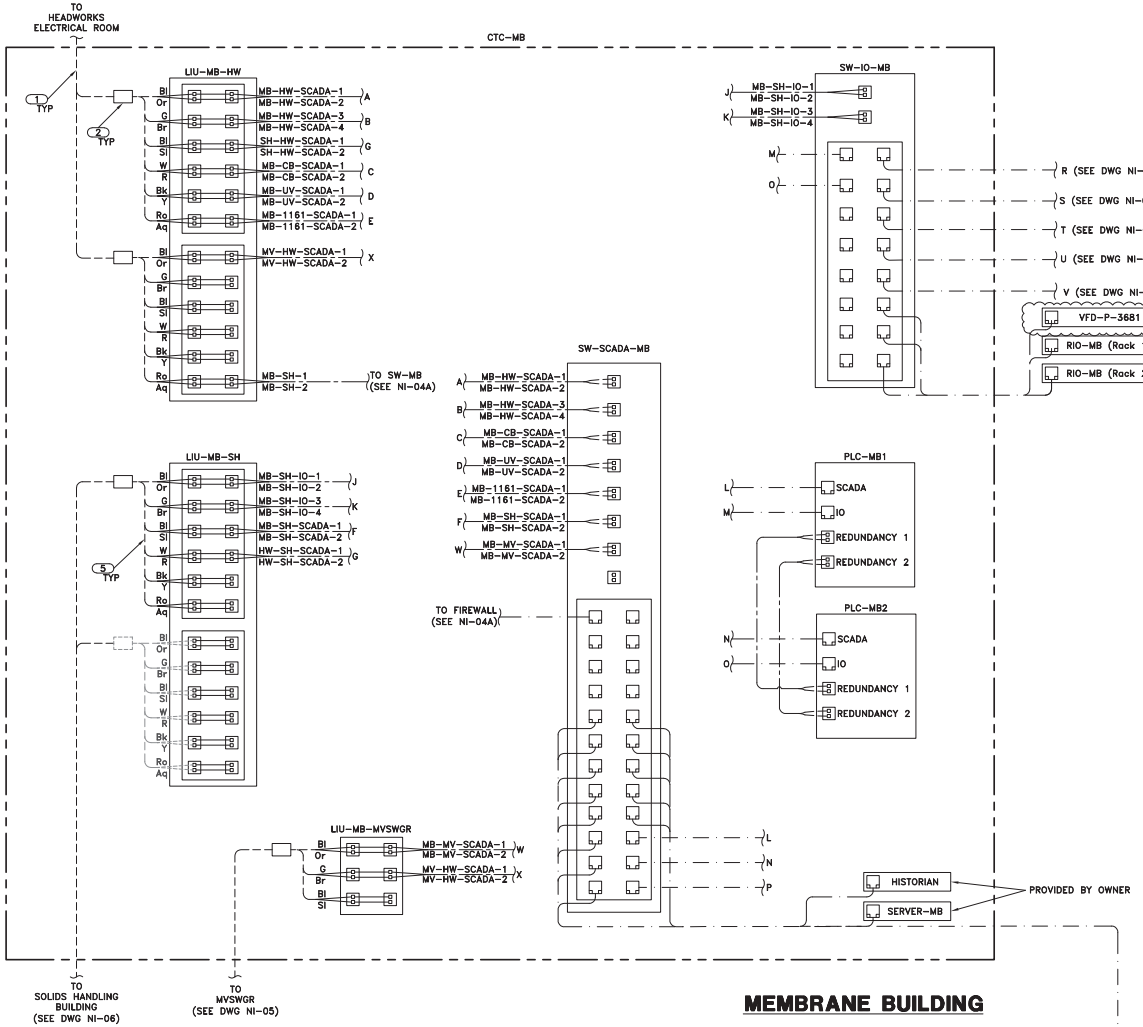
DRAWING IS TO SCALE IF BAR MEASURES:
1" = FULL SCALE
1/2" = HALF SCALE

SHEET 16 OF 172

PI-12



MEMBRANE BUILDING

LEGEND

- CAT6 NETWORK CABLE ETHERNET
- SINGLEMODE FIBER OPTIC CABLE
- SINGLEMODE DUPLEX PATCH CABLE
- RS-485 RATED CABLE
- ETHERNET PORT
- LC TYPE FIBER OPTIC CONNECTOR
- SC TYPE FIBER OPTIC CONNECTOR
- ST TYPE FIBER OPTIC CONNECTOR

NOTES

1. 24 STRAND SINGLEMODE FIBER CABLE.
2. FANOUT KIT OR FUSION KIT.
3. PROGRAMMING TO BE PROVIDED BY OWNERS SYSTEM INTEGRATOR.
4. CONTRACTOR IS RESPONSIBLE FOR TERMINATING, INSTALLING, AND TESTING ALL COMMUNICATION CABLING ENTERING AND EXITING THE OWNER PROVIDED PANEL.
5. CONTRACTOR TO TERMINATE 12 STRANDS OF THE 24 STRAND CABLE. THE SAME 12 STRANDS SHALL BE TERMINATED AT EACH END.

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	10/09/18	MPJ	DCL	MPJ
2	12/02/19	MPJ	BB	MPJ
3	12/06/21	MPJ	DCL	MPJ

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
INSTRUMENTATION - NETWORK
MEMBRANE BUILDING NETWORK DIAGRAM I

AQUA ENGINEERING
533 W 2600 S, SUITE 275, BOUNTIFUL, UT 84010
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0 1/2 1
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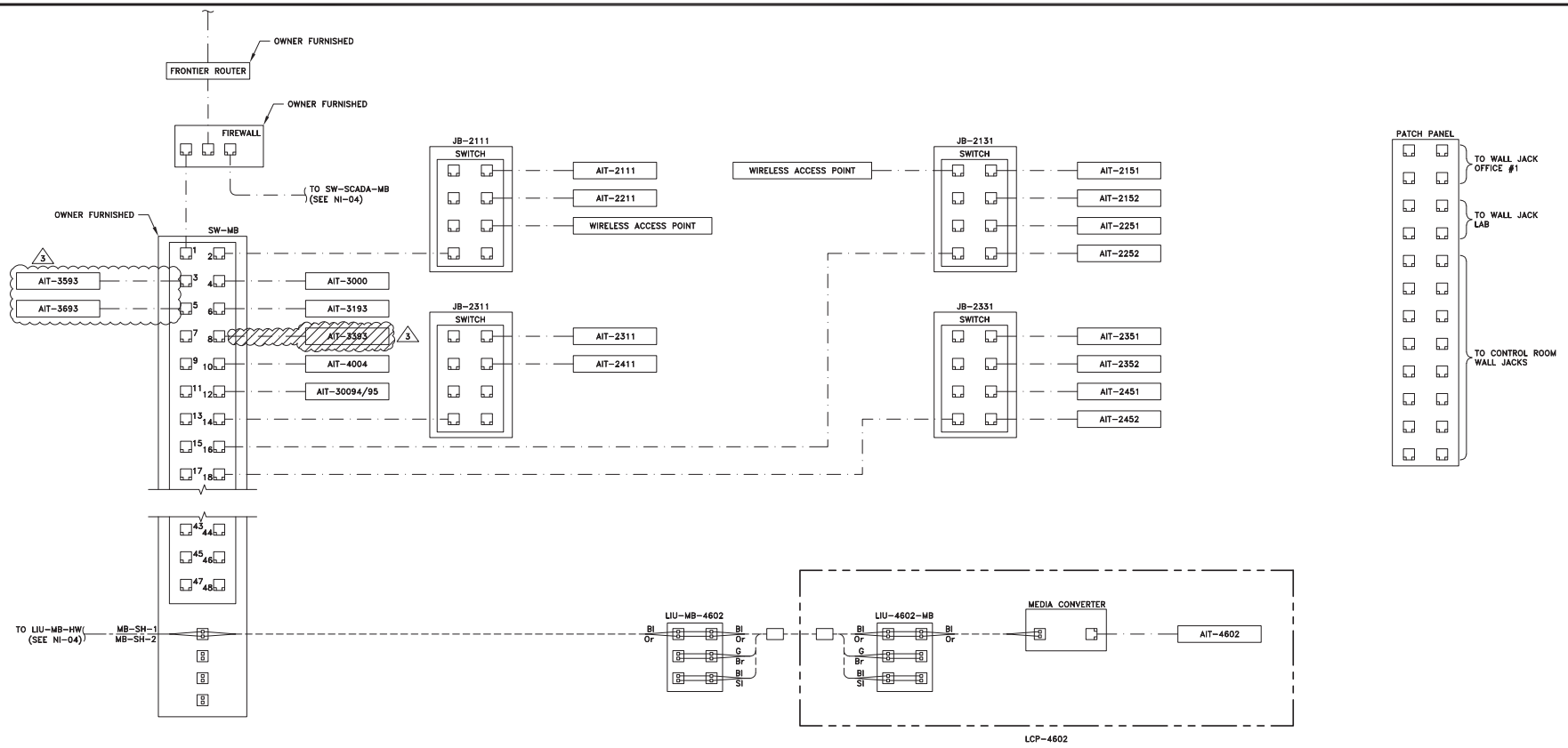
SHEET 33 OF 172

NI-04



LEGEND

- CAT6 NETWORK CABLE ETHERNET
- SINGLEMODE FIBER OPTIC CABLE
- SINGLEMODE DUPLEX PATCH CABLE
- RS-485 RATED CABLE
- ETHERNET PORT
- LC TYPE FIBER OPTIC CONNECTOR
- SC TYPE FIBER OPTIC CONNECTOR
- ST TYPE FIBER OPTIC CONNECTOR

NOTES

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NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	12/02/19	MPJ	BB	MPJ
2	12/07/20	MPJ	DCL	MPJ
3	12/06/21	MPJ	DCL	MPJ

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
INSTRUMENTATION - NETWORK
MEMBRANE BUILDING NETWORK DIAGRAM IA

AQUA ENGINEERING
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ENGINEERING CONSULTANTS

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SHEET 33 OF 172

NI-04A

12/8/2021 C:\USERS\DANIELLEAVITT\AQUA ENGINEERING\BEAUMONT - DOCUMENTS\WEBB170227 SALT MITIGATION WWTP UPGRADE\050 DRAFTING\997 ELECTRICAL\02 NI-04A MEMBRANE BUILDING NETWORK DIAGRAM IA.DWG

TYPE	LOOP POWERED	SLOT:POINT	TAGNAME	DESCRIPTION	P&ID SHEET	STATUS
Ethernet			ZI-1311	INFLUENT PUMP 1 REMOTE	PI-04	NEW
Ethernet			YI-1311	INFLUENT PUMP 1 RUNNING	PI-04	NEW
Ethernet			YA-1311	INFLUENT PUMP 1 FAIL	PI-04	NEW
Ethernet			TAH-1311	INFLUENT PUMP 1 HIGH TEMPERATURE	PI-04	NEW
Ethernet			MMA-1311	INFLUENT PUMP 1 MOISTURE ALARM	PI-04	NEW
Ethernet			YC-1311	INFLUENT PUMP 1 START CMD	PI-04	NEW
Ethernet			SI-1311	INFLUENT PUMP 1 SPEED	PI-04	NEW
Ethernet			SC-1311	INFLUENT PUMP 1 SPEED CMD	PI-04	NEW
Ethernet			ZI-1312	INFLUENT PUMP 2 REMOTE	PI-04	NEW
Ethernet			YI-1312	INFLUENT PUMP 2 RUNNING	PI-04	NEW
Ethernet			YA-1312	INFLUENT PUMP 2 FAIL	PI-04	NEW
Ethernet			TAH-1312	INFLUENT PUMP 2 HIGH TEMPERATURE	PI-04	NEW
Ethernet			MMA-1312	INFLUENT PUMP 2 MOISTURE ALARM	PI-04	NEW
Ethernet			YC-1312	INFLUENT PUMP 2 START CMD	PI-04	NEW
Ethernet			SI-1312	INFLUENT PUMP 2 SPEED	PI-04	NEW
Ethernet			SC-1312	INFLUENT PUMP 2 SPEED CMD	PI-04	NEW
Ethernet			ZI-1313	INFLUENT PUMP 3 REMOTE	PI-04	NEW
Ethernet			YI-1313	INFLUENT PUMP 3 RUNNING	PI-04	NEW
Ethernet			YA-1313	INFLUENT PUMP 3 FAIL	PI-04	NEW
Ethernet			TAH-1313	INFLUENT PUMP 3 HIGH TEMPERATURE	PI-04	NEW
Ethernet			MMA-1313	INFLUENT PUMP 3 MOISTURE ALARM	PI-04	NEW
Ethernet			YC-1313	INFLUENT PUMP 3 START CMD	PI-04	NEW
Ethernet			SI-1313	INFLUENT PUMP 3 SPEED	PI-04	NEW
Ethernet			SC-1313	INFLUENT PUMP 3 SPEED CMD	PI-04	NEW
Ethernet			ZI-1314	INFLUENT PUMP 4 REMOTE	PI-04	NEW
Ethernet			YI-1314	INFLUENT PUMP 4 RUNNING	PI-04	NEW
Ethernet			YA-1314	INFLUENT PUMP 4 FAIL	PI-04	NEW
Ethernet			TAH-1314	INFLUENT PUMP 4 HIGH TEMPERATURE	PI-04	NEW
Ethernet			MMA-1314	INFLUENT PUMP 4 MOISTURE ALARM	PI-04	NEW
Ethernet			YC-1314	INFLUENT PUMP 4 START CMD	PI-04	NEW
Ethernet			SI-1314	INFLUENT PUMP 4 SPEED	PI-04	NEW
Ethernet			SC-1314	INFLUENT PUMP 4 SPEED CMD	PI-04	NEW
Ethernet			ZI-1315	INFLUENT PUMP 5 REMOTE	PI-04	NEW
Ethernet			YI-1315	INFLUENT PUMP 5 RUNNING	PI-04	NEW
Ethernet			YA-1315	INFLUENT PUMP 5 FAIL	PI-04	NEW
Ethernet			TAH-1315	INFLUENT PUMP 5 HIGH TEMPERATURE	PI-04	NEW
Ethernet			MMA-1315	INFLUENT PUMP 5 MOISTURE ALARM	PI-04	NEW
Ethernet			YC-1315	INFLUENT PUMP 5 START CMD	PI-04	NEW
Ethernet			SI-1315	INFLUENT PUMP 5 SPEED	PI-04	NEW
Ethernet			SC-1315	INFLUENT PUMP 5 SPEED CMD	PI-04	NEW
Ethernet			ZI-1811	STORM DRAIN PUMP 1 REMOTE	PI-17	NEW
Ethernet			YI-1811	STORM DRAIN PUMP 1 RUNNING	PI-17	NEW
Ethernet			YA-1811	STORM DRAIN PUMP 1 FAIL	PI-17	NEW
Ethernet			YC-1811	STORM DRAIN PUMP 1 START COMMAND	PI-17	NEW
Ethernet			SI-1811	STORM DRAIN PUMP 1 SPEED	PI-17	NEW
Ethernet			SC-1811	STORM DRAIN PUMP 1 SPEED COMMAND	PI-17	NEW
Ethernet			TAH-1811	STORM DRAIN PUMP 1 TEMP ALARM HIGH	PI-17	NEW
Ethernet			MMA-1811	STORM DRAIN PUMP 1 MOISTURE ALARM	PI-17	NEW
Ethernet			ZI-1811	STORM DRAIN PUMP 1 REMOTE	PI-17	NEW
Ethernet			YI-1811	STORM DRAIN PUMP 1 RUNNING	PI-17	NEW
Ethernet			YA-1811	STORM DRAIN PUMP 1 FAIL	PI-17	NEW
Ethernet			YC-1811	STORM DRAIN PUMP 1 START COMMAND	PI-17	NEW
Ethernet			SI-1811	STORM DRAIN PUMP 1 SPEED	PI-17	NEW
Ethernet			SC-1811	STORM DRAIN PUMP 1 SPEED COMMAND	PI-17	NEW
Ethernet			TAH-1811	STORM DRAIN PUMP 1 TEMP ALARM HIGH	PI-17	NEW
Ethernet			MMA-1811	STORM DRAIN PUMP 1 MOISTURE ALARM	PI-17	NEW
Ethernet			ZI-6401	NPW PUMP 1 AUTO	PI-19	NEW
Ethernet			TAH-6401	NPW PUMP 1 TEMPERATURE ALARM HIGH	PI-19	NEW
Ethernet			YA-6401	NPW PUMP 1 FAIL	PI-19	NEW
Ethernet			YI-6401	NPW PUMP 1 RUN	PI-19	NEW
Ethernet			YC-6401	NPW PUMP 1 START COMMAND	PI-19	NEW
Ethernet			SI-6401	NPW PUMP 1 SPEED	PI-19	NEW
Ethernet			SC-6401	NPW PUMP 1 SPEED CONTROL	PI-19	NEW
Ethernet			ZI-6402	NPW PUMP 2 AUTO	PI-19	NEW
Ethernet			TAH-6402	NPW PUMP 2 TEMPERATURE ALARM HIGH	PI-19	NEW
Ethernet			YA-6402	NPW PUMP 2 FAIL	PI-19	NEW
Ethernet			YI-6402	NPW PUMP 2 RUN	PI-19	NEW
Ethernet			YC-6402	NPW PUMP 2 START COMMAND	PI-19	NEW
Ethernet			SI-6402	NPW PUMP 2 SPEED	PI-19	NEW
Ethernet			SC-6402	NPW PUMP 2 SPEED CONTROL	PI-19	NEW
Ethernet			ZI-6403	NPW PUMP 3 AUTO	PI-19	NEW
Ethernet			TAH-6403	NPW PUMP 3 TEMPERATURE ALARM HIGH	PI-19	NEW
Ethernet			YA-6403	NPW PUMP 3 FAIL	PI-19	NEW
Ethernet			YI-6403	NPW PUMP 3 RUN	PI-19	NEW
Ethernet			YC-6403	NPW PUMP 3 START COMMAND	PI-19	NEW
Ethernet			SI-6403	NPW PUMP 3 SPEED	PI-19	NEW
Ethernet			SC-6403	NPW PUMP 3 SPEED CONTROL	PI-19	NEW
Ethernet			ZI-6404	NPW PUMP 4 AUTO	PI-19	NEW
Ethernet			TAH-6404	NPW PUMP 4 TEMPERATURE ALARM HIGH	PI-19	NEW
Ethernet			YA-6404	NPW PUMP 4 FAIL	PI-19	NEW
Ethernet			YI-6404	NPW PUMP 4 RUN	PI-19	NEW
Ethernet			YC-6404	NPW PUMP 4 START COMMAND	PI-19	NEW
Ethernet			SI-6404	NPW PUMP 4 SPEED	PI-19	NEW
Ethernet			SC-6404	NPW PUMP 4 SPEED CONTROL	PI-19	NEW
Ethernet			ZI-7111	RECYCLED WATER LIFT PUMP 1 REMOTE	PI-19	NEW
Ethernet			YI-7111	RECYCLED WATER LIFT PUMP 1 RUN	PI-19	NEW
Ethernet			YA-7111	RECYCLED WATER LIFT PUMP 1 FAIL	PI-19	NEW
Ethernet			TAH-7111	RECYCLED WATER LIFT PUMP 1 TEMP ALARM HIGH	PI-19	NEW
Ethernet			MAH-7111	RECYCLED WATER LIFT PUMP 1 MOISTURE ALARM	PI-19	NEW
Ethernet			YC-7111	RECYCLED WATER LIFT PUMP 1 START COMMAND	PI-19	NEW
Ethernet			SI-7111	RECYCLED WATER LIFT PUMP 1 SPEED	PI-19	NEW
Ethernet			SC-7111	RECYCLED WATER LIFT PUMP 1 SPEED COMMAND	PI-19	NEW
Ethernet			ZI-7112	RECYCLED WATER LIFT PUMP 2 REMOTE	PI-19	NEW
Ethernet			YI-7112	RECYCLED WATER LIFT PUMP 2 RUN	PI-19	NEW
Ethernet			YA-7112	RECYCLED WATER LIFT PUMP 2 FAIL	PI-19	NEW
Ethernet			TAH-7112	RECYCLED WATER LIFT PUMP 2 TEMP ALARM HIGH	PI-19	NEW

I/O LIST RIO-HW CONTINUED

TYPE	LOOP POWERED	SLOT:POINT	TAGNAME	DESCRIPTION	P&ID SHEET	STATUS
Ethernet			MAH-7112	RECYCLED WATER LIFT PUMP 2 MOISTURE ALARM	PI-19	NEW
Ethernet			YC-7112	RECYCLED WATER LIFT PUMP 2 START COMMAND	PI-19	NEW
Ethernet			SI-7112	RECYCLED WATER LIFT PUMP 2 SPEED	PI-19	NEW
Ethernet			SC-7112	RECYCLED WATER LIFT PUMP 2 SPEED COMMAND	PI-19	NEW
Ethernet			ZI-7113	RECYCLED WATER LIFT PUMP 3 REMOTE	PI-19	NEW
Ethernet			YI-7113	RECYCLED WATER LIFT PUMP 3 RUN	PI-19	NEW
Ethernet			YA-7113	RECYCLED WATER LIFT PUMP 3 FAIL	PI-19	NEW
Ethernet			TAH-7113	RECYCLED WATER LIFT PUMP 3 TEMP ALARM HIGH	PI-19	NEW
Ethernet			MAH-7113	RECYCLED WATER LIFT PUMP 3 MOISTURE ALARM	PI-19	NEW
Ethernet			YC-7113	RECYCLED WATER LIFT PUMP 3 START COMMAND	PI-19	NEW
Ethernet			SI-7113	RECYCLED WATER LIFT PUMP 3 SPEED	PI-19	NEW
Ethernet			SC-7113	RECYCLED WATER LIFT PUMP 3 SPEED COMMAND	PI-19	NEW
Ethernet			ZI-8101	FEED PUMP 1 REMOTE	PI-20	NEW
Ethernet			TAH-8101	FEED PUMP 1 TEMPERATURE ALARM HIGH	PI-20	NEW
Ethernet			PAH-8101	FEED PUMP 1 PRESSURE ALARM HIGH	PI-20	NEW
Ethernet			YA-8101	FEED PUMP 1 FAIL	PI-20	NEW
Ethernet			YI-8101	FEED PUMP 1 RUNNING	PI-20	NEW
Ethernet			YC-8101	FEED PUMP 1 START COMMAND	PI-20	NEW
Ethernet			SI-8101	FEED PUMP 1 SPEED	PI-20	NEW
Ethernet			SC-8101	FEED PUMP 1 SPEED COMMAND	PI-20	NEW
Ethernet			FAL-8101	FEED PUMP 1 SEAL WATER FLOW ALARM LOW	PI-20	NEW
Ethernet			SCO-8101	FEED PUMP 1 SEAL WATER VALVE OPEN COMMAND	PI-20	NEW
Ethernet			ZI-8102	FEED PUMP 2 REMOTE	PI-20	NEW
Ethernet			TAH-8102	FEED PUMP 2 TEMPERATURE ALARM HIGH	PI-20	NEW
Ethernet			PAH-8102	FEED PUMP 2 PRESSURE ALARM HIGH	PI-20	NEW
Ethernet			YA-8102	FEED PUMP 2 FAIL	PI-20	NEW
Ethernet			YI-8102	FEED PUMP 2 RUNNING	PI-20	NEW
Ethernet			YC-8102	FEED PUMP 2 START COMMAND	PI-20	NEW
Ethernet			SI-8102	FEED PUMP 2 SPEED	PI-20	NEW
Ethernet			SC-8102	FEED PUMP 2 SPEED COMMAND	PI-20	NEW
Ethernet			FAL-8102	FEED PUMP 2 SEAL WATER FLOW ALARM LOW	PI-20	NEW
Ethernet			SCO-8102	FEED PUMP 2 SEAL WATER VALVE OPEN COMMAND	PI-20	NEW
Ethernet			ZI-8103	FEED PUMP 3 REMOTE	PI-20	NEW
Ethernet			TAH-8103	FEED PUMP 3 TEMPERATURE ALARM HIGH	PI-20	NEW
Ethernet			PAH-8103	FEED PUMP 3 PRESSURE ALARM HIGH	PI-20	NEW
Ethernet			YA-8103	FEED PUMP 3 FAIL	PI-20	NEW
Ethernet			YI-8103	FEED PUMP 3 RUNNING	PI-20	NEW
Ethernet			YC-8103	FEED PUMP 3 START COMMAND	PI-20	NEW
Ethernet			SI-8103	FEED PUMP 3 SPEED	PI-20	NEW
Ethernet			SC-8103	FEED PUMP 3 SPEED COMMAND	PI-20	NEW
Ethernet			FAL-8103	FEED PUMP 3 SEAL WATER FLOW ALARM LOW	PI-20	NEW
Ethernet			SCO-8103	FEED PUMP 3 SEAL WATER VALVE OPEN COMMAND	PI-20	NEW

I/O LIST RIO-HW CONTINUED

TYPE	LOOP POWERED	RACK:SLOT:POINT	TAGNAME	DESCRIPTION	P&ID SHEET	STATUS
DI		1:1:00	LAL-2752	DRAIN PUMP STATION LEVEL ALARM LOW	PI-07	NEW
DI		1:1:01	LIH-2752	DRAIN PUMP STATION LEVEL HIGH	PI-07	NEW
DI		1:1:02	LIHH-2752	DRAIN PUMP STATION LEVEL HIGH HIGH	PI-07	NEW
DI		1:1:03	LAL-3112	MEMBRANE BASIN 1 LEVEL ALARM LOW	PI-09	NEW
DI		1:1:04	LAH-3112	MEMBRANE BASIN 1 LEVEL ALARM HIGH	PI-09	NEW
DI		1:1:05		INSTALLED SPARE		
DI		1:1:06		INSTALLED SPARE		
DI		1:1:07		INSTALLED SPARE		
DI		1:1:08		INSTALLED SPARE		
DI		1:1:09	ZIO-3171	MEMBRANE BASIN 1 INLET PERMEATE VALVE OPEN	PI-10	NEW
DI		1:1:10	ZIC-3171	MEMBRANE BASIN 1 INLET PERMEATE VALVE CLOSED	PI-10	NEW
DI		1:1:11				
DI		1:1:12				
DI		1:1:13	LAL-3212	MEMBRANE BASIN 2 LEVEL ALARM LOW	PI-09	NEW
DI		1:1:14	LAH-3212	MEMBRANE BASIN 2 LEVEL ALARM HIGH	PI-09	NEW
DI		1:1:15		INSTALLED SPARE		
DI		1:1:16		INSTALLED SPARE		
DI		1:1:17		INSTALLED SPARE		
DI		1:1:18		INSTALLED SPARE		
DI		1:1:19	ZIO-3271	MEMBRANE BASIN 2 INLET PERMEATE VALVE OPEN	PI-10	NEW
DI		1:1:20	ZIC-3271	MEMBRANE BASIN 2 INLET PERMEATE VALVE CLOSED	PI-10	NEW
DI		1:1:21				
DI		1:1:22				
DI		1:1:23	LAL-3312	MEMBRANE BASIN 3 LEVEL ALARM LOW	PI-09	NEW
DI		1:1:24	LAH-3312	MEMBRANE BASIN 3 LEVEL ALARM HIGH	PI-09	NEW
DI		1:1:25		INSTALLED SPARE		
DI		1:1:26		INSTALLED SPARE		
DI		1:1:27		INSTALLED SPARE		
DI		1:1:28		INSTALLED SPARE		
DI		1:1:29	ZIO-3371	MEMBRANE BASIN 3 INLET PERMEATE VALVE OPEN	PI-10	NEW
DI		1:1:30	ZIC-3371	MEMBRANE BASIN 3 INLET PERMEATE VALVE CLOSED	PI-10	NEW
DI		1:1:31		INSTALLED SPARE		
DI		1:2:00				
DI		1:2:01				
DI		1:2:02	LAL-3412	MEMBRANE BASIN 4 LEVEL ALARM LOW	PI-09	NEW
DI		1:2:03	LAH-3412	MEMBRANE BASIN 4 LEVEL ALARM HIGH	PI-09	NEW
DI		1:2:04		INSTALLED SPARE		
DI		1:2:05		INSTALLED SPARE		
DI		1:2:06		INSTALLED SPARE		
DI		1:2:07		INSTALLED SPARE		
DI		1:2:08	ZIO-3471	MEMBRANE BASIN 4 INLET PERMEATE VALVE OPEN	PI-10	NEW
DI		1:2:09	ZIC-3471	MEMBRANE BASIN 4 INLET PERMEATE VALVE CLOSED	PI-10	NEW
DI		1:2:10				
DI		1:2:11				
DI		1:2:12	LAL-3512	MEMBRANE BASIN 5 LEVEL ALARM LOW	PI-09	NEW
DI		1:2:13	LAH-3512	MEMBRANE BASIN 5 LEVEL ALARM HIGH	PI-09	NEW
DI		1:2:14	ZIO-3571	MEMBRANE BASIN 5 INLET PERMEATE VALVE OPEN	PI-10	NEW
DI		1:2:15	ZIC-3571	MEMBRANE BASIN 5 INLET PERMEATE VALVE CLOSED	PI-10	NEW

I/O LIST RIO-MB

TYPE	LOOP POWERED	RACK:SLOT:POINT	TAGNAME	DESCRIPTION	P&ID SHEET	STATUS
DI		1:2:16	LAL-3612	MEMBRANE BASIN 6 LEVEL ALARM LOW	PI-09	NEW
DI		1:2:17	LAH-3612	MEMBRANE BASIN 6 LEVEL ALARM HIGH	PI-09	NEW
DI		1:2:18	ZIO-3671	MEMBRANE BASIN 6 INLET PERMEATE VALVE OPEN	PI-10	NEW
DI		1:2:19	ZIC-3671	MEMBRANE BASIN 6 INLET PERMEATE VALVE CLOSED	PI-10	NEW
DI		1:2:20		INSTALLED SPARE		
DI		1:2:21		INSTALLED SPARE		
DI		1:2:22	LAH-3802	MBR FEED PUMP WET WELL LEVEL ALARM HIGH	PI-08	NEW
DI		1:2:23	LAL-3802	MBR FEED PUMP WET WELL LEVEL ALARM LOW	PI-08	NEW
DI		1:2:24	LAL-3882	WAS/SCUM LIFT STATION LEVEL ALARM LOW	PI-09	NEW
DI		1:2:25	ZI-5031	SODIUM HYPO PUMP 1 REMOTE	PI-12	NEW
DI		1:2:26	YI-5031	SODIUM HYPO PUMP 1 RUNNING	PI-12	NEW
DI		1:2:27	YA-5031	SODIUM HYPO PUMP 1 FAIL	PI-12	NEW
DI		1:2:28	ZI-5041	SODIUM HYPO PUMP 2 REMOTE	PI-12	NEW
DI		1:2:29	YI-5041	SODIUM HYPO PUMP 2 RUNNING	PI-12	NEW
DI		1:2:30	YA-5041	SODIUM HYPO PUMP 2 FAIL	PI-12	NEW
DI		1:2:31		INSTALLED SPARE		
DI		1:3:00	ZI-5051	SODIUM HYPO VALVE 1 REMOTE	PI-12	NEW
DI		1:3:01	ZIO-5051	SODIUM HYPO VALVE 1 OPEN	PI-12	NEW
DI		1:3:02	ZIC-5051	SODIUM HYPO VALVE 1 CLOSED	PI-12	NEW
DI		1:3:03	ZI-5052	SODIUM HYPO VALVE 2 REMOTE	PI-12	NEW
DI		1:3:04	ZIO-5052	SODIUM HYPO VALVE 2 OPEN	PI-12	NEW
DI		1:3:05	ZIC-5052	SODIUM HYPO VALVE 2 CLOSED	PI-12	NEW
DI		1:3:06	ZI-5053	SODIUM HYPO VALVE 3 REMOTE	PI-12	NEW
DI		1:3:07	ZIO-5053	SODIUM HYPO VALVE 3 OPEN	PI-12	NEW
DI		1:3:08	ZIC-5053	SODIUM HYPO VALVE 3 CLOSED	PI-12	NEW
DI		1:3:09	ZI-5054	SODIUM HYPO VALVE 4 REMOTE	PI-12	NEW
DI		1:3:10	ZIO-5054	SODIUM HYPO VALVE 4 OPEN	PI-12	NEW
DI		1:3:11	ZIC-5054	SODIUM HYPO VALVE 4 CLOSED	PI-12	NEW
DI		1:3:12	ZI-5055	SODIUM HYPO VALVE 5 REMOTE	PI-12	NEW
DI		1:3:13	ZIO-5055	SODIUM HYPO VALVE 5 OPEN	PI-12	NEW
DI		1:3:14	ZIC-5055	SODIUM HYPO VALVE 5 CLOSED	PI-12	NEW
DI		1:3:15	ZI-5121	CITRIC ACID PUMP 1 REMOTE	PI-12	NEW
DI		1:3:16	YI-5121	CITRIC ACID PUMP 1 RUNNING	PI-12	NEW
DI		1:3:17	YA-5121	CITRIC ACID PUMP 1 FAIL	PI-12	NEW
DI		1:3:18	ZI-5131	CITRIC ACID PUMP 2 REMOTE	PI-12	NEW
DI		1:3:19	YI-5131	CITRIC ACID PUMP 2 RUNNING	PI-12	NEW
DI		1:3:20	YA-5131	CITRIC ACID PUMP 2 FAIL	PI-12	NEW
DI		1:3:21	ZI-5141	CITRIC ACID VALVE 1 REMOTE	PI-12	NEW
DI		1:3:22	ZIO-5141	CITRIC ACID VALVE 1 OPEN	PI-12	NEW
DI		1:3:23	ZIC-5141	CITRIC ACID VALVE 1 CLOSED	PI-12	NEW
DI		1:3:24	ZI-5142	CITRIC ACID VALVE 2 REMOTE	PI-12	NEW
DI		1:3:25	ZIO-5142	CITRIC ACID VALVE 2 OPEN	PI-12	NEW
DI		1:3:26	ZIC-5142	CITRIC ACID VALVE 2 CLOSED	PI-12	NEW
DI		1:3:27	ZI-5143	CITRIC ACID VALVE 3 REMOTE	PI-12	NEW
DI		1:3:28	ZIO-5143	CITRIC ACID VALVE 3 OPEN	PI-12	NEW
DI		1:3:29	ZIC-5143	CITRIC ACID VALVE 3 CLOSED	PI-12	NEW
DI		1:3:30				
DI		1:3:31				
DI		1:4:00	ZI-5144	CITRIC ACID VALVE 4 REMOTE	PI-12	NEW
DI		1:4:01	ZIO-5144	CITRIC ACID VALVE 4 OPEN	PI-12	NEW
DI		1:4:02	ZIC-5144	CITRIC ACID VALVE 4 CLOSED	PI-12	NEW
DI		1:4:03	ZI-5145	CITRIC ACID VALVE 5 REMOTE	PI-12	NEW
DI		1:4:04	ZIO-5145	CITRIC ACID VALVE 5 OPEN	PI-12	NEW
DI		1:4:05	ZIC-5145	CITRIC ACID VALVE 5 CLOSED	PI-12	NEW
DI		1:4:06	YI-3001	COMPRESSOR 1 RUN	PI-10A	NEW
DI		1:4:07	YA-3001	COMPRESSOR 1 FAIL	PI-10A	NEW
DI		1:4:08	YI-3002	COMPRESSOR 2 RUN	PI-10A	NEW
DI		1:4:09	YA-3002	COMPRESSOR 2 FAIL	PI-10A	NEW
DI		1:4:10	PAL-3003	COMPRESSED AIR PRESS ALARM LOW	PI-10A	NEW
DI		1:4:11	ZI-5061	SODIUM HYPO CIRCULATION PUMP 1 REMOTE	PI-12	NEW
DI		1:4:12	YI-5061	SODIUM HYPO CIRCULATION PUMP 1 RUN	PI-12	NEW
DI		1:4:13	YA-5061	SODIUM HYPO CIRCULATION PUMP 1 FAIL	PI-12	NEW
DI		1:4:14	ZI-5062	SODIUM HYPO CIRCULATION PUMP 2 REMOTE	PI-12	NEW
DI		1:4:15	YI-5062	SODIUM HYPO CIRCULATION PUMP 2 RUN	PI-12	NEW
DI		1:4:16	YA-5062	SODIUM HYPO CIRCULATION PUMP 2 FAIL	PI-12	NEW
DI		1:4:17				
DI		1:4:18	ZI-5056	SODIUM HYPO VALVE 6 REMOTE	PI-12	NEW

I/O LIST RIO-MB CONTINUED

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	01/18/19	MPJ	DCL	MPJ
2	06/24/19	MPJ	DCL	MPJ
3	12/06/21	MPJ	DCL	MPJ

CITY OF BEAUMONT

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0 1/2 1
DRAWING IS TO SCALE IF BAR MEASURES:
1" = FULL SCALE
1/2" = HALF SCALE

SHEET 51 OF 172

I-15

TYPE	LOOP POWERED	RACK:SLOT:POINT	TAGNAME	DESCRIPTION	P&ID SHEET	STATUS
DI		1:4:19	ZIO-5056	SODIUM HYPO VALVE 6 OPEN	PI-12	NEW
DI		1:4:20	ZIC-5056	SODIUM HYPO VALVE 6 CLOSED	PI-12	NEW
DI		1:4:21	ZI-5146	CITRIC ACID VALVE 6 REMOTE	PI-12	NEW
DI		1:4:22	ZIO-5146	CITRIC ACID VALVE 6 OPEN	PI-12	NEW
DI		1:4:23	ZIC-5146	CITRIC ACID VALVE 6 CLOSED	PI-17	NEW
DI		1:4:24		INSTALLED SPARE		
DI		1:4:25		INSTALLED SPARE		
DI		1:4:26		INSTALLED SPARE		
DI		1:4:27		INSTALLED SPARE		
DI		1:4:28		INSTALLED SPARE		
DI		1:4:29		INSTALLED SPARE		
DI		1:4:30		INSTALLED SPARE		
DI		1:4:31		INSTALLED SPARE		
DO		1:8:00	ZCO-3151	MEMBRANE BASIN 1 PURGE SV OPEN COMMAND	PI-09	NEW
DO		1:8:01		INSTALLED SPARE		
DO		1:8:02		INSTALLED SPARE		
DO		1:8:03		INSTALLED SPARE		
DO		1:8:04	ZCO-3171	MEMBRANE BASIN 1 PERMEATE SV OPEN COMMAND	PI-10	NEW
DO		1:8:05				
DO		1:8:06		INSTALLED SPARE		
DO		1:8:07		INSTALLED SPARE		
DO		1:8:08	ZCO-3193	PERMEATE PUMP 1 TURBIDITY VALVE OPEN COMMAND	PI-10	NEW
DO		1:8:09	ZCO-3251	MEMBRANE BASIN 2 PURGE SV OPEN COMMAND	PI-09	NEW
DO		1:8:10		INSTALLED SPARE		
DO		1:8:11		INSTALLED SPARE		
DO		1:8:12		INSTALLED SPARE		
DO		1:8:13	ZCO-3271	MEMBRANE BASIN 2 PERMEATE SV OPEN COMMAND	PI-10	NEW
DO		1:8:14				
DO		1:8:15		INSTALLED SPARE		
DO		1:8:16		INSTALLED SPARE		
DO		1:8:17	ZCO-3293	PERMEATE PUMP 2 TURBIDITY VALVE OPEN COMMAND	PI-10	NEW
DO		1:8:18	ZCO-3351	MEMBRANE BASIN 3 PURGE SV OPEN COMMAND	PI-09	NEW
DO		1:8:19		INSTALLED SPARE		
DO		1:8:20		INSTALLED SPARE		
DO		1:8:21		INSTALLED SPARE		
DO		1:8:22	ZCO-3371	MEMBRANE BASIN 3 PERMEATE SV OPEN COMMAND	PI-10	NEW
DO		1:8:23		INSTALLED SPARE		
DO		1:8:24		INSTALLED SPARE		
DO		1:8:25	ZCO-3393	PERMEATE PUMP 3 TURBIDITY VALVE OPEN COMMAND	PI-10	NEW
DO		1:8:26	ZCO-3451A	MEMBRANE BASIN 4 UV VALVE A OPEN COMMAND	PI-09	NEW
DO		1:8:27	ZCO-3451	MEMBRANE BASIN 4 PURGE SV OPEN COMMAND	PI-09	NEW
DO		1:8:28		INSTALLED SPARE		
DO		1:8:29		INSTALLED SPARE		
DO		1:8:30		INSTALLED SPARE		
DO		1:8:31		INSTALLED SPARE		
DO		1:9:00	ZCO-3471	MEMBRANE BASIN 4 PERMEATE SV OPEN COMMAND	PI-10	NEW
DO		1:9:01		INSTALLED SPARE		
DO		1:9:02		INSTALLED SPARE		
DO		1:9:03	ZCO-3493	PERMEATE PUMP 4 TURBIDITY VALVE OPEN COMMAND	PI-10	NEW
DO		1:9:04	ZCO-3551	MEMBRANE BASIN 5 PURGE SV OPEN COMMAND	PI-09	NEW
DO		1:9:05	ZCO-3651	MEMBRANE BASIN 6 PURGE SV OPEN COMMAND	PI-09	NEW
DO		1:9:06	ZCC-3671	MEMBRANE BASIN 6 PERMEATE SV CLOSE COMMAND	PI-10	NEW
DO		1:9:07	ZCO-3692	PERMEATE PUMP 6 TURBIDITY VALVE OPEN COMMAND	PI-10	NEW
DO		1:9:08	ZCC-3671	MEMBRANE BASIN 5 PERMEATE SV CLOSE COMMAND	PI-10	NEW
DO		1:9:09	ZCO-5056	SODIUM HYPO VALVE 6 OPEN COMMAND	PI-12	NEW
DO		1:9:10	ZCC-5056	SODIUM HYPO VALVE 6 CLOSE COMMAND	PI-12	NEW
DO		1:9:11	ZCO-3592	PERMEATE PUMP 5 TURBIDITY VALVE OPEN COMMAND	PI-10	NEW
DO		1:9:12	ZCO-5146	CITRIC ACID VALVE 6 OPEN COMMAND	PI-12	NEW
DO		1:9:13	ZCC-5146	CITRIC ACID VALVE 6 CLOSE COMMAND	PI-12	NEW
DO		1:9:14	YC-3906	MBR PROCESS ROOM NORTH START COMMAND		NEW
DO		1:9:15	YC-3907	MBR PROCESS ROOM SW HEATERS START COMMAND		NEW
DO		1:9:16	YC-3910	MBR PROCESS ROOM SOUTH HEATERS START COMMAND		NEW
DO		1:9:17	YC-3913	MBR PROCESS ROOM NW HEATERS START COMMAND		NEW
DO		1:9:18	YC-5031	SODIUM HYPO PUMP 1 START COMMAND	PI-12	NEW
DO		1:9:19	YC-5041	SODIUM HYPO PUMP 2 START COMMAND	PI-12	NEW
DO		1:9:20	ZCO-5051	SODIUM HYPO VALVE 1 OPEN COMMAND	PI-12	NEW
DO		1:9:21	ZCC-5051	SODIUM HYPO VALVE 1 CLOSE COMMAND	PI-12	NEW
DO		1:9:22	ZCO-5052	SODIUM HYPO VALVE 2 OPEN COMMAND	PI-12	NEW
DO		1:9:23	ZCC-5052	SODIUM HYPO VALVE 2 CLOSE COMMAND	PI-12	NEW
DO		1:9:24	ZCO-5053	SODIUM HYPO VALVE 3 OPEN COMMAND	PI-12	NEW
DO		1:9:25	ZCC-5053	SODIUM HYPO VALVE 3 CLOSE COMMAND	PI-12	NEW
DO		1:9:26	ZCO-5054	SODIUM HYPO VALVE 4 OPEN COMMAND	PI-12	NEW
DO		1:9:27	ZCC-5054	SODIUM HYPO VALVE 4 CLOSE COMMAND	PI-12	NEW
DO		1:9:28	ZCO-5055	SODIUM HYPO VALVE 5 OPEN COMMAND	PI-12	NEW
DO		1:9:29	ZCC-5055	SODIUM HYPO VALVE 5 CLOSE COMMAND	PI-12	NEW
DO		1:9:30	YC-5121	CITRIC ACID PUMP 1 START COMMAND	PI-12	NEW
DO		1:9:31	YC-5131	CITRIC ACID PUMP 2 START COMMAND	PI-12	NEW
DO		1:10:00	ZCO-5141	CITRIC ACID VALVE 1 OPEN COMMAND	PI-12	NEW
DO		1:10:01	ZCC-5141	CITRIC ACID VALVE 1 CLOSE COMMAND	PI-12	NEW
DO		1:10:02	ZCO-5142	CITRIC ACID VALVE 2 OPEN COMMAND	PI-12	NEW
DO		1:10:03	ZCC-5142	CITRIC ACID VALVE 2 CLOSE COMMAND	PI-12	NEW
DO		1:10:04	ZCO-5143	CITRIC ACID VALVE 3 OPEN COMMAND	PI-12	NEW
DO		1:10:05	ZCC-5143	CITRIC ACID VALVE 3 CLOSE COMMAND	PI-12	NEW
DO		1:10:06	ZCO-5144	CITRIC ACID VALVE 4 OPEN COMMAND	PI-12	NEW
DO		1:10:07	ZCC-5144	CITRIC ACID VALVE 4 CLOSE COMMAND	PI-12	NEW
DO		1:10:08	ZCO-5145	CITRIC ACID VALVE 5 OPEN COMMAND	PI-12	NEW
DO		1:10:09	ZCC-5145	CITRIC ACID VALVE 5 CLOSE COMMAND	PI-12	NEW
DO		1:10:10	YC-5061	SODIUM HYPO CIRCULATION PUMP 1 START COMMAND	PI-12	NEW
DO		1:10:11	YC-5062	SODIUM HYPO CIRCULATION PUMP 2 START COMMAND	PI-12	NEW
DO		1:10:12	ZCO 3101	MEMBRANE BASIN 1 INLET GATE OPEN COMMAND	PI-09	NEW
DO		1:10:13	ZCC-3101	MEMBRANE BASIN 1 INLET GATE CLOSE COMMAND	PI-09	NEW
DO		1:10:14				
DO		1:10:15	ZCO-3201	MEMBRANE BASIN 2 INLET GATE OPEN COMMAND	PI-09	NEW

I/O LIST RIO-MB CONTINUED

TYPE	LOOP POWERED	RACK:SLOT:POINT	TAGNAME	DESCRIPTION	P&ID SHEET	STATUS
DO		1:10:16	ZCC-3201	MEMBRANE BASIN 2 INLET GATE CLOSE COMMAND	PI-09	NEW
DO		1:10:17				
DO		1:10:18	ZCO-3301	MEMBRANE BASIN 3 INLET GATE OPEN COMMAND	PI-09	NEW
DO		1:10:19	ZCC-3301	MEMBRANE BASIN 3 INLET GATE CLOSE COMMAND	PI-09	NEW
DO		1:10:20				
DO		1:10:21	ZCO-3401	MEMBRANE BASIN 4 INLET GATE OPEN COMMAND	PI-09	NEW
DO		1:10:22	ZCC-3401	MEMBRANE BASIN 4 INLET GATE CLOSE COMMAND	PI-09	NEW
DO		1:10:23		INSTALLED SPARE		
DO		1:10:24	ZCO-3501	MEMBRANE BASIN 5 INLET GATE OPEN COMMAND	PI-09	NEW
DO		1:10:25	ZCC-3501	MEMBRANE BASIN 5 INLET GATE CLOSE COMMAND	PI-09	NEW
DO		1:10:26		INSTALLED SPARE		
DO		1:10:27	ZCO-3601	MEMBRANE BASIN 6 INLET GATE OPEN COMMAND	PI-09	NEW
DO		1:10:28	ZCC-3601	MEMBRANE BASIN 6 INLET GATE CLOSE COMMAND	PI-09	NEW
DO		1:10:29		INSTALLED SPARE		
DO		1:10:30		INSTALLED SPARE		
DO		1:10:31		INSTALLED SPARE		
AI	No	2:1:00	AI-2131	ANOXIC BASIN 1 ORP	PI-06	NEW
AI	No	2:1:01	ZI-2131B	AERATION BASIN 1 VALVE POSITION	PI-06	NEW
AI	No	2:1:02	FI-2132	AERATION BASIN 1 AIR FLOW	PI-06	NEW
AI	No	2:1:03	AI-2151	AERATION BASIN 1 DO 1	PI-06	NEW
AI	No	2:1:04	AI-2152	AERATION BASIN 1 DO 2	PI-06	NEW
AI	No	2:1:05	AI-2161	ANAEROBIC BASIN 1 ORP	PI-06	NEW
AI	No	2:1:06	AI-2211	ANOXIC BASIN 2 ORP	PI-06	NEW
AI	No	2:1:07	ZI-2231B	AERATION BASIN 2 VALVE POSITION	PI-06	NEW
AI	No	2:1:08	FI-2232	AERATION BASIN 2 AIR FLOW	PI-06	NEW
AI	No	2:1:09	AI-2251	AERATION BASIN 2 DO 1	PI-06	NEW
AI	No	2:1:10	AI-2252	AERATION BASIN 2 DO 2	PI-06	NEW
AI	No	2:1:11	AI-2252	ANAEROBIC BASIN 2 ORP	PI-06	NEW
AI	No	2:1:12	AI-2311	ANOXIC BASIN 3 ORP	PI-07	NEW
AI	No	2:1:13	ZI-2331B	AERATION BASIN 3 VALVE POSITION	PI-07	NEW
AI	No	2:1:14	AI-2332	AERATION BASIN 3 AIR FLOW	PI-07	NEW
AI	No	2:1:15	AI 2351	AERATION BASIN 3 DO 1	PI 07	NEW
AI	No	2:2:00	AI-2352	AERATION BASIN 3 DO 2	PI-07	NEW
AI	No	2:2:01	AI-2362	ANAEROBIC BASIN 3 ORP	PI-07	NEW
AI	No	2:2:02	AI-2411	ANOXIC BASIN 4 ORP	PI-07	NEW
AI	No	2:2:03	ZI-2431B	AERATION BASIN 4 VALVE POSITION	PI-07	NEW
AI	No	2:2:04	FI-2432	AERATION BASIN 4 AIR FLOW	PI-07	NEW
AI	No	2:2:05	AI-2451	AERATION BASIN 4 DO 1	PI-07	NEW
AI	No	2:2:06	AI-2452	AERATION BASIN 4 DO 2	PI-07	NEW
AI	No	2:2:07	AI 2462	ANAEROBIC BASIN 4 ORP	PI-07	NEW
AI	Yes	2:2:08	PI-2641	AERATION BASINS AIR PRESSURE	PI-11	NEW
AI	Yes	2:2:09	TI-2642	AERATION BASINS AIR TEMPERATURE	PI-11	NEW
AI	No	2:2:10	ZI-2651	AERATION BASINS AIR BLOW OFF VALVE POSITION	PI-11	NEW
AI	No	2:2:11	FI-2764	DRAIN PUMP STATION FLOW	PI-07	NEW
AI	Yes	2:2:12	LI-3111	MEMBRANE BASIN 1 LEVEL	PI-09	NEW
AI	No	2:2:13	ZI-3121B	MEMBRANE BASIN 1 BLOWER AIR VALVE POSITION	PI-09	NEW
AI	No	2:2:14	FI-3122	MEMBRANE BASIN 1 BLOWER AIR FLOW	PI-09	NEW
AI	Yes	2:2:15	PI-3142	MEMBRANE BASIN 1 PERMEATE PRESSURE	PI-09	NEW
AI	No	2:3:00	FI-3192	PERMEATE PUMP 1 FLOW	PI-10	NEW
AI	No	2:3:01	AI-3193	PERMEATE PUMP 1 TURBIDITY	PI-10	NEW
AI	Yes	2:3:02	LI-3211	MEMBRANE BASIN 2 LEVEL	PI-09	NEW
AI	No	2:3:03	ZI-3221B	MEMBRANE BASIN 2 BLOWER AIR VALVE POSITION	PI-09	NEW
AI	No	2:3:04	FI-3222	MEMBRANE BASIN 2 BLOWER AIR FLOW	PI-09	NEW
AI	Yes	2:3:05	PI-3242	MEMBRANE BASIN 2 PERMEATE PRESSURE	PI-09	NEW
AI	No	2:3:06	FI-3292	PERMEATE PUMP 2 FLOW	PI-10	NEW
AI	No	2:3:07	AI-3293	PERMEATE PUMP 2 TURBIDITY	PI-10	NEW
AI	Yes	2:3:08	LI-3311	MEMBRANE BASIN 3 LEVEL	PI-09	NEW
AI	No	2:3:09	ZI-3321B	MEMBRANE BASIN 3 BLOWER AIR VALVE POSITION	PI-09	NEW
AI	No	2:3:10	FI-3322	MEMBRANE BASIN 3 BLOWER AIR FLOW	PI-09	NEW
AI	Yes	2:3:11	PI-3342	MEMBRANE BASIN 3 PERMEATE PRESSURE	PI-09	NEW
AI	No	2:3:12	FI-3392	PERMEATE PUMP 3 FLOW	PI-10	NEW
AI	No	2:3:13	AI-3393	PERMEATE PUMP 3 TURBIDITY	PI-10	NEW
AI	Yes	2:3:14	LI-3411	MEMBRANE BASIN 4 LEVEL	PI-09	NEW
AI	No	2:3:15	ZI-3421B	MEMBRANE BASIN 4 BLOWER AIR VALVE POSITION	PI-09	NEW
AI	No	2:4:00	FI-3422	MEMBRANE BASIN 4 BLOWER AIR FLOW	PI-09	NEW
AI	Yes	2:4:01	PI-3442	MEMBRANE BASIN 4 PERMEATE PRESSURE	PI-09	NEW
AI	No	2:4:02	FI-3492	PERMEATE PUMP 4 FLOW	PI-10	NEW
AI	No	2:4:03	AI-3493	PERMEATE PUMP 4 TURBIDITY	PI-10	NEW
AI	Yes	2:4:04	LI-3511	MEMBRANE BASIN 5 LEVEL	PI-09	NEW
AI	No	2:4:05	ZI-3521B	MEMBRANE BASIN 5 BLOWER AIR VALVE POSITION	PI-09	NEW
AI	No	2:4:06	FI-3522	MEMBRANE BASIN 5 BLOWER AIR FLOW	PI-09	NEW
AI	Yes	2:4:07	PI-3542	MEMBRANE BASIN 5 PERMEATE PRESSURE	PI-09	NEW
AI	No	2:4:08	FIC-3592	PERMEATE PUMP 5 FLOW	PI-10	NEW
AI	No	2:4:09	AI-3593	PERMEATE PUMP 5 TURBIDITY	PI-10	NEW
AI	Yes	2:4:10	PI-3741	MEMBRANES AIR PRESSURE	PI-11	NEW
AI	Yes	2:4:11	TI-3742	MEMBRANES AIR TEMPERATURE	PI-11	NEW
AI	No	2:4:12	ZI-3751	MEMBRANES AIR BLOW OFF VALVE POSITION	PI-11	NEW
AI	Yes	2:4:13	LI-3801	MBR FEED PUMP WET WELL LEVEL	PI-08	NEW
AI	No	2:4:14	FI-3861	MBR FEED FLOW	PI-08	NEW
AI	No	2:4:15	FI-3893	WAS/SCUM FLOW	PI-09	NEW
AI	No	2:5:00	AI-4602	BRINE LINE pH LEVEL	PI-17	NEW
AI	No	2:5:01	AI-4603	BRINE LINE CONDUCTIVITY	PI-17	NEW
AI	No	2:5:02	FI-4605	BRINE LINE FLOW	PI-17	NEW
AI	No	2:5:03	LI-5002	SODIUM HYPO TANK LEVEL	PI-12	NEW
AI	Yes	2:5:04	TI-3916	MBR PROCESS ROOM SE TEMPERATURE		NEW
AI	Yes	2:5:05	TI-3917	MBR PROCESS ROOM SOUTH TEMPERATURE		NEW
AI	Yes	2:5:06	TI-3918	MBR PROCESS ROOM NW TEMPERATURE		NEW
AI	Yes	2:5:07	TI 3919	MBR PROCESS ROOM NORTH TEMPERATURE		NEW
AI	Yes	2:5:08	TI-3971	MBR ELECTRICAL ROOM TEMPERATURE		NEW
AI	No	2:5:09	AI-3972	AMMONIA ROOM GAS DETECTOR		NEW
AI	No	2:5:10	FI-5072	SODIUM HYPO CIRCULATION PUMPS FLOW	PI-12	NEW

I/O LIST RIO-MB CONTINUED

TYPE	LOOP POWERED	RACK:SLOT:POINT	TAGNAME	DESCRIPTION	P&ID SHEET	STATUS
AI		2:5:11	AI-3000	MEMBRANE INFLUENT CHANNEL TSS	PI-09	NEW
AI		2:5:12	TE-4003	PERMEATE SPLITTER BOX INFLUENT TEMPERATURE	PI-10	NEW
AI		2:5:13		INSTALLED SPARE		
AI		2:5:14		INSTALLED SPARE		
AI		2:5:15		INSTALLED SPARE		
AI		2:6:00	LI-3611	MEMBRANE BASIN 6 LEVEL	PI-09	NEW
AI		2:6:01	ZI-3621B	MEMBRANE BASIN 6 BLOWER AIR VALVE POSITION	PI-09	NEW
AI		2:6:02	FI-3622	MEMBRANE BASIN 6 BLOWER AIR FLOW	PI-09	NEW
AI		2:6:03	PI-3642	MEMBRANE BASIN 6 PERMEATE PRESSURE	PI-09	NEW
AI		2:6:04	FIC-3692	PERMEATE PUMP 6 FLOW	PI-10	NEW
AI		2:6:05	AI-3693	PERMEATE PUMP 6 TURBIDITY	PI-10	NEW
AI		2:6:06		INSTALLED SPARE		
AI		2:6:07		INSTALLED SPARE		
AI		2:6:08		INSTALLED SPARE		
AI		2:6:09		INSTALLED SPARE		
AI		2:6:10		INSTALLED SPARE		
AI		2:6:11		INSTALLED SPARE		
AI		2:6:12		INSTALLED SPARE		
AI		2:6:13		INSTALLED SPARE		
AI		2:6:14		INSTALLED SPARE		
AI		2:6:15		INSTALLED SPARE		
AO		2:9:00	ZC-2131	AERATION BASIN 1 VALVE POSITION COMMAND	PI-06	NEW
AO		2:9:01	ZC-2231	AERATION BASIN 2 VALVE POSITION COMMAND	PI-06	NEW
AO		2:9:02	ZC-2331	AERATION BASIN 3 VALVE POSITION COMMAND	PI-07	NEW
AO		2:9:03	ZC-2431	AERATION BASIN 4 VALVE POSITION COMMAND	PI-07	NEW
AO		2:9:04	ZC-2651	AERATION BASINS AIR BLOW OFF VALVE POSITION COMMAND	PI-11	NEW
AO		2:9:05	ZC-3121	MEMBRANE BASIN 1 BLOWER AIR VALVE POSITION COMMAND	PI-09	NEW
AO		2:9:06	ZC 3221	MEMBRANE BASIN 2 BLOWER AIR VALVE POSITION COMMAND	PI-09	NEW
AO		2:9:07	ZC-3321	MEMBRANE BASIN 3 BLOWER AIR VALVE POSITION COMMAND	PI-09	NEW
AO		2:10:00	ZC-3421	MEMBRANE BASIN 4 BLOWER AIR VALVE POSITION COMMAND	PI-09	NEW
AO		2:10:01	ZC-3521	MEMBRANE BASIN 5 BLOWER AIR VALVE POSITION COMMAND	PI-09	NEW
AO		2:10:02	ZC-3751	MEMBRANES AIR BLOW OFF VALVE POSITION COMMAND	PI-11	NEW
AO		2:10:03	QC-4604	BRINE LINE SAMPLER FLOW	PI-17	NEW
AO		2:10:04	ZC-3621	MEMBRANE BASIN 6 BLOWER AIR VALVE POSITION COMMAND	PI-09	NEW
AO		2:10:05		INSTALLED SPARE		
AO		2:10:06		INSTALLED SPARE		
AO		2:10:07		INSTALLED SPARE		
DI		2:14:00	ZI-2131A	AERATION BASIN 1 VALVE REMOTE	PI-06	NEW
DI		2:14:01	ZI-2231A	AERATION BASIN 2 VALVE REMOTE	PI-06	NEW
DI		2:14:02	ZI-2331A	AERATION BASIN 3 VALVE REMOTE	PI-07	NEW
DI		2:14:03	ZI-2431A	AERATION BASIN 4 VALVE REMOTE	PI-07	NEW
DI		2:14:04	ZI-2651	AERATION BASINS AIR BLOW OFF VALVE REMOTE	PI-11	NEW
DI		2:14:05	FQI-2764	DRAIN PUMP STATION FLOW TOTAL PULSE	PI-07	NEW
DI		2:14:06	ZI-3121A	MEMBRANE BASIN 1 BLOWER AIR VALVE REMOTE	PI-09	NEW
DI		2:14:07	FQI-3192	PERMEATE PUMP 1 FLOW TOTAL PULSE	PI-10	NEW
DI		2:14:08	FZI-3192	PERMEATE PUMP 1 FLOW DIRECTION	PI-10	NEW
DI		2:14:09	ZI-3221A	MEMBRANE BASIN 2 BLOWER AIR VALVE REMOTE	PI-09	NEW
DI		2:14:10	FQI-3292	PERMEATE PUMP 2 FLOW TOTAL PULSE	PI-10	NEW
DI		2:14:11	FZI-3292	PERMEATE PUMP 2 FLOW DIRECTION	PI-10	NEW
DI		2:14:12	ZI-3321A	MEMBRANE BASIN 3 BLOWER AIR VALVE REMOTE	PI-09	NEW
DI		2:14:13	FQI-3392	PERMEATE PUMP 3 FLOW TOTAL PULSE	PI-10	NEW
DI		2:14:14	FZI-3392	PERMEATE PUMP 3 FLOW DIRECTION	PI-10	NEW
DI		2:14:15	ZI 3421A	MEMBRANE BASIN 4 BLOWER AIR VALVE REMOTE	PI-09	NEW
DI		2:14:16	FQI-3492	PERMEATE PUMP 4 FLOW TOTAL PULSE	PI-10	NEW
DI		2:14:17	FZI-3492	PERMEATE PUMP 4 FLOW DIRECTION	PI-10	NEW
DI		2:14:18	ZI-3521A	MEMBRANE BASIN 5 BLOWER AIR VALVE REMOTE	PI-09	NEW
DI		2:14:19	FQI-3592	PERMEATE PUMP 5 FLOW TOTAL PULSE	PI-10	NEW
DI		2:14:20	FZI-3592	PERMEATE PUMP 5 FLOW DIRECTION	PI-10	NEW
DI		2:14:21	ZI-3751	MEMBRANES AIR BLOW OFF VALVE REMOTE	PI-11	NEW
DI		2:14:22	FQI-3861	MBR FEED FLOW TOTAL PULSE	PI-08	NEW
DI		2:14:23	FQI-3893	WAS/SCUM FLOW TOTAL	PI-09	NEW
DI		2:14:24	FQI-4605	BRINE LINE FLOW TOTAL PULSE	PI-17	NEW
DI		2:14:25	FAH-5402	EYEWASH SHOWER FLOW ALARM HIGH	PI-13	NEW
DI		2:14:26	FAH-5412	EYEWASH SHOWER FLOW ALARM HIGH	PI-13	NEW
DI		2:14:27	FAH-5422	EYEWASH SHOWER FLOW ALARM HIGH	PI-13	NEW

I/O LIST RIO-MB CONTINUED

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533 W 2600 S, Suite 275
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Phone: (801) 677-0011
www.skmeng.com

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DRAWING IS TO SCALE IF BAR MEASURES: 1" = FULL SCALE 1/2" = HALF SCALE

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	01/18/19	MPJ	DCL	MPJ
2	06/24/19	MPJ	DCL	MPJ
3	10/26/20	MPJ	DCL	MPJ
4	12/06/21	MPJ	DCL	MPJ

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
INSTRUMENTATION - PLC DRAWINGS
INPUT OUTPUT LIST III

AQUA ENGINEERING
533 W. 2600 S. SUITE 275, BOUNTIFUL, UT 84010
PHONE (801) 298-1327 FAX (801) 298-0153

ALBERT A. WEBB ASSOCIATES
CIVIL ENGINEERS
3788 MCCRAY STREET
RIVERSIDE, CA. 92506
(951) 686-1070 FAX (951) 788-1256
ENGINEERING CONSULTANTS

SHEET 52 OF 172

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12/3/2021 C:\USERS\DANIELLEAVITT\AQUA ENGINEERING\BEAUMONT - DOCUMENTS\WEBB\70227 SALT MITIGATION WWTP UPGRADE\050 DRAFTING\997 ELECTRICAL\04 I-16 INPUT OUTPUT LIST III.DWG

TYPE	LOOP POWERED	RACK:SLOT:POINT	TAGNAME	DESCRIPTION	P&ID SHEET	STATUS
DI		2:14:28	PAL-3007	INSTRUMENT AIR PRESSURE ALARM LOW	PI-10A	NEW
DI		2:14:29	FQI-5072	SODIUM HYPO CIRCULATION PUMPS FLOW TOTAL PULSE	PI-17	NEW
DI		2:14:30		INSTALLED SPARE		
DI		2:14:31		INSTALLED SPARE		
DI		2:15:00	ZIO-3101	MEMBRANE BASIN 1 INLET GATE OPENED	PI-09	NEW
DI		2:15:01	ZIC-3101	MEMBRANE BASIN 1 INLET GATE CLOSED	PI-09	NEW
DI		2:15:02	ZIO-3201	MEMBRANE BASIN 2 INLET GATE OPENED	PI-09	NEW
DI		2:15:03	ZIC-3201	MEMBRANE BASIN 2 INLET GATE CLOSED	PI-09	NEW
DI		2:15:04	ZIO-3301	MEMBRANE BASIN 3 INLET GATE OPENED	PI-09	NEW
DI		2:15:05	ZIC-3301	MEMBRANE BASIN 3 INLET GATE CLOSED	PI-09	NEW
DI		2:15:06	ZIO-3401	MEMBRANE BASIN 4 INLET GATE OPENED	PI-09	NEW
DI		2:15:07	ZIC-3401	MEMBRANE BASIN 4 INLET GATE CLOSED	PI-09	NEW
DI		2:15:08	ZIO-3501	MEMBRANE BASIN 5 INLET GATE OPENED	PI-09	NEW
DI		2:15:09	ZIC-3501	MEMBRANE BASIN 5 INLET GATE CLOSED	PI-09	NEW
DI		2:15:10	ZIO-3601	MEMBRANE BASIN 6 INLET GATE OPENED	PI-09	NEW
DI		2:15:11	ZIC-3601	MEMBRANE BASIN 6 INLET GATE CLOSED	PI-09	NEW
DI		2:15:12	ZI-3621A	MEMBRANE BASIN 6 BLOWER AIR VALVE REMOTE	PI 09	NEW
DI		2:15:13	FQI-3692	PERMEATE PUMP 6 FLOW TOTAL PULSE	PI-10	NEW
DI		2:15:14	FZI-3692	PERMEATE PUMP 6 FLOW DIRECTION	PI 10	NEW
DI		2:15:15		INSTALLED SPARE		
DI		2:15:16		INSTALLED SPARE		
DI		2:15:17		INSTALLED SPARE		
DI		2:15:18		INSTALLED SPARE		
DI		2:15:19		INSTALLED SPARE		
DI		2:15:20		INSTALLED SPARE		
DI		2:15:21		INSTALLED SPARE		
DI		2:15:22		INSTALLED SPARE		
DI		2:15:23		INSTALLED SPARE		
DI		2:15:24		INSTALLED SPARE		
DI		2:15:25		INSTALLED SPARE		
DI		2:15:26		INSTALLED SPARE		
DI		2:15:27		INSTALLED SPARE		
DI		2:15:28		RIO-MB SPD FAIL		
DI		2:15:29		RIO-MB 24VDC PSA ALARM		
DI		2:15:30		RIO MB 24VDC PSB ALARM		
DI		2:15:31		SW-MB-IO ALARM		
Ethernet			ZI-2171	RECYCLE PUMP 1 REMOTE	PI-06	NEW
Ethernet			YI-2171	RECYCLE PUMP 1 RUN	PI-06	NEW
Ethernet			YA-2171	RECYCLE PUMP 1 FAIL	PI-06	NEW
Ethernet			YC-2171	RECYCLE PUMP 1 START COMMAND	PI-06	NEW
Ethernet			SI-2171	RECYCLE PUMP 1 SPEED	PI-06	NEW
Ethernet			SC-2171	RECYCLE PUMP 1 SPEED COMMAND	PI-06	NEW
Ethernet			TAH-2171	RECYCLE PUMP 1 MOTOR TEMPERATURE ALARM HIGH	PI-06	NEW
Ethernet			MMA-2171	RECYCLE PUMP 1 MOISTURE ALARM	PI-06	NEW
Ethernet			ZI-2271	RECYCLE PUMP 2 REMOTE	PI-06	NEW
Ethernet			YI-2271	RECYCLE PUMP 2 RUN	PI-06	NEW
Ethernet			YA-2271	RECYCLE PUMP 2 FAIL	PI-06	NEW
Ethernet			YC-2271	RECYCLE PUMP 2 START COMMAND	PI-06	NEW
Ethernet			SI-2271	RECYCLE PUMP 2 SPEED	PI-06	NEW
Ethernet			SC-2271	RECYCLE PUMP 2 SPEED COMMAND	PI-06	NEW
Ethernet			TAH-2271	RECYCLE PUMP 2 MOTOR TEMPERATURE ALARM HIGH	PI-06	NEW
Ethernet			MMA-2271	RECYCLE PUMP 2 MOISTURE ALARM	PI 06	NEW
Ethernet			ZI-2371	RECYCLE PUMP 3 REMOTE	PI-07	NEW
Ethernet			YI-2371	RECYCLE PUMP 3 RUN	PI-07	NEW
Ethernet			YA-2371	RECYCLE PUMP 3 FAIL	PI 07	NEW
Ethernet			YC-2371	RECYCLE PUMP 3 START COMMAND	PI-07	NEW
Ethernet			SI-2371	RECYCLE PUMP 3 SPEED	PI-07	NEW
Ethernet			SC-2371	RECYCLE PUMP 3 SPEED COMMAND	PI-07	NEW
Ethernet			TAH-2371	RECYCLE PUMP 3 MOTOR TEMPERATURE ALARM HIGH	PI-07	NEW
Ethernet			MMA-2371	RECYCLE PUMP 3 MOISTURE ALARM	PI-07	NEW
Ethernet			ZI-2471	RECYCLE PUMP 4 REMOTE	PI-07	NEW
Ethernet			YI-2471	RECYCLE PUMP 4 RUN	PI-07	NEW
Ethernet			YA-2471	RECYCLE PUMP 4 FAIL	PI-07	NEW
Ethernet			YC-2471	RECYCLE PUMP 4 START COMMAND	PI 07	NEW
Ethernet			SI-2471	RECYCLE PUMP 4 SPEED	PI-07	NEW
Ethernet			SC-2471	RECYCLE PUMP 4 SPEED COMMAND	PI-07	NEW
Ethernet			TAH-2471	RECYCLE PUMP 4 MOTOR TEMPERATURE ALARM HIGH	PI-07	NEW
Ethernet			MMA-2471	RECYCLE PUMP 4 MOISTURE ALARM	PI-07	NEW
Ethernet			ZI-2761	DRAIN PUMP 1 REMOTE	PI-07	NEW
Ethernet			YI-2761	DRAIN PUMP 1 RUN	PI-07	NEW
Ethernet			YA-2761	DRAIN PUMP 1 FAIL	PI-07	NEW
Ethernet			YC-2761	DRAIN PUMP 1 START COMMAND	PI-07	NEW
Ethernet			TAH-2761	DRAIN PUMP 1 MOTOR TEMPERATURE ALARM HIGH	PI 07	NEW
Ethernet			MMA-2761	DRAIN PUMP 1 MOISTURE ALARM	PI-07	NEW
Ethernet			ZI-2762	DRAIN PUMP 2 REMOTE	PI-07	NEW
Ethernet			YI-2762	DRAIN PUMP 2 RUN	PI-07	NEW
Ethernet			YA-2762	DRAIN PUMP 2 FAIL	PI-07	NEW
Ethernet			YC-2762	DRAIN PUMP 2 START COMMAND	PI-07	NEW
Ethernet			TAH-2762	DRAIN PUMP 2 MOTOR TEMPERATURE ALARM HIGH	PI-07	NEW
Ethernet			MMA-2762	DRAIN PUMP 2 MOISTURE ALARM	PI-07	NEW
Ethernet			ZI-3181	PERMEATE PUMP 1 REMOTE	PI-10	NEW
Ethernet			YI-3181A	PERMEATE PUMP 1 FORWARD RUN	PI 10	NEW
Ethernet			YI-3181B	PERMEATE PUMP 1 REVERSE RUN	PI-10	NEW
Ethernet			YA-3181	PERMEATE PUMP 1 FAIL	PI-10	NEW
Ethernet			YC-3181A	PERMEATE PUMP 1 FORWARD COMMAND	PI-10	NEW
Ethernet			YC-3181B	PERMEATE PUMP 1 REVERSE COMMAND	PI-10	NEW
Ethernet			SI-3181	PERMEATE PUMP 1 SPEED	PI-10	NEW
Ethernet			SC-3181	PERMEATE PUMP 1 SPEED CONTROL	PI-10	NEW
Ethernet			TAH-3181	PERMEATE PUMP 1 MOTOR TEMP ALARM HIGH	PI-10	NEW
Ethernet			PAH-3181A	PERMEATE PUMP 1 FORWARD FLOW PRES ALARM HIGH	PI-10	NEW
Ethernet			PAH-3181B	PERMEATE PUMP 1 REVERSE FLOW PRES ALARM HIGH	PI 10	NEW
Ethernet			ZI-3281	PERMEATE PUMP 2 REMOTE	PI-10	NEW
Ethernet			YI-3281A	PERMEATE PUMP 2 FORWARD RUN	PI-10	NEW
Ethernet			YI-3281B	PERMEATE PUMP 2 REVERSE RUN	PI-10	NEW

I/O LIST RIO-MB CONTINUED

TYPE	LOOP POWERED	RACK:SLOT:POINT	TAGNAME	DESCRIPTION	P&ID SHEET	STATUS
Ethernet			YA-3281	PERMEATE PUMP 2 FAIL	PI-10	NEW
Ethernet			YC-3281A	PERMEATE PUMP 2 FORWARD COMMAND	PI-10	NEW
Ethernet			YC-3281B	PERMEATE PUMP 2 REVERSE COMMAND	PI-10	NEW
Ethernet			SI-3281	PERMEATE PUMP 2 SPEED	PI-10	NEW
Ethernet			SC-3281	PERMEATE PUMP 2 SPEED CONTROL	PI-10	NEW
Ethernet			TAH-3281	PERMEATE PUMP 2 MOTOR TEMP ALARM HIGH	PI-10	NEW
Ethernet			PAH-3281A	PERMEATE PUMP 2 FORWARD FLOW PRES ALARM HIGH	PI-10	NEW
Ethernet			PAH-3281B	PERMEATE PUMP 2 REVERSE FLOW PRES ALARM HIGH	PI-10	NEW
Ethernet			ZI-3381	PERMEATE PUMP 3 REMOTE	PI-10	NEW
Ethernet			YI-3381A	PERMEATE PUMP 3 FORWARD RUN	PI-10	NEW
Ethernet			YI-3381B	PERMEATE PUMP 3 REVERSE RUN	PI-10	NEW
Ethernet			YA-3381	PERMEATE PUMP 3 FAIL	PI-10	NEW
Ethernet			YC-3381A	PERMEATE PUMP 3 FORWARD COMMAND	PI-10	NEW
Ethernet			YC-3381B	PERMEATE PUMP 3 REVERSE COMMAND	PI-10	NEW
Ethernet			SI-3381	PERMEATE PUMP 3 SPEED	PI-10	NEW
Ethernet			SC-3381	PERMEATE PUMP 3 SPEED CONTROL	PI-10	NEW
Ethernet			TAH-3381	PERMEATE PUMP 3 MOTOR TEMP ALARM HIGH	PI-10	NEW
Ethernet			PAH-3381A	PERMEATE PUMP 3 FORWARD FLOW PRES ALARM HIGH	PI-10	NEW
Ethernet			PAH 3381B	PERMEATE PUMP 3 REVERSE FLOW PRES ALARM HIGH	PI-10	NEW
Ethernet			ZI-3481	PERMEATE PUMP 4 REMOTE	PI-10	NEW
Ethernet			YI-3481A	PERMEATE PUMP 4 FORWARD RUN	PI-10	NEW
Ethernet			YI-3481B	PERMEATE PUMP 4 REVERSE RUN	PI-10	NEW
Ethernet			YA-3481	PERMEATE PUMP 4 FAIL	PI-10	NEW
Ethernet			YC-3481A	PERMEATE PUMP 4 FORWARD COMMAND	PI-10	NEW
Ethernet			YC-3481B	PERMEATE PUMP 4 REVERSE COMMAND	PI-10	NEW
Ethernet			SI-3481	PERMEATE PUMP 4 SPEED	PI-10	NEW
Ethernet			SC-3481	PERMEATE PUMP 4 SPEED CONTROL	PI-10	NEW
Ethernet			TAH-3481	PERMEATE PUMP 4 MOTOR TEMP ALARM HIGH	PI-10	NEW
Ethernet			PAH-3481A	PERMEATE PUMP 4 FORWARD FLOW PRES ALARM HIGH	PI-10	NEW
Ethernet			PAH-3481B	PERMEATE PUMP 4 REVERSE FLOW PRES ALARM HIGH	PI-10	NEW
Ethernet			ZI-3581	PERMEATE PUMP 5 REMOTE	PI-10	NEW
Ethernet			YI-3581A	PERMEATE PUMP 5 FORWARD RUN	PI-10	NEW
Ethernet			YI-3581B	PERMEATE PUMP 5 REVERSE RUN	PI-10	NEW
Ethernet			YA-3581	PERMEATE PUMP 5 FAIL	PI-10	NEW
Ethernet			YC-3581A	PERMEATE PUMP 5 FORWARD COMMAND	PI-10	NEW
Ethernet			YC-3581B	PERMEATE PUMP 5 REVERSE COMMAND	PI-10	NEW
Ethernet			SI-3581	PERMEATE PUMP 5 SPEED	PI-10	NEW
Ethernet			SC-3581	PERMEATE PUMP 5 SPEED CONTROL	PI-10	NEW
Ethernet			TAH-3581	PERMEATE PUMP 5 MOTOR TEMP ALARM HIGH	PI-10	NEW
Ethernet			PAH-3581A	PERMEATE PUMP 5 FORWARD FLOW PRES ALARM HIGH	PI-10	NEW
Ethernet			PAH-3581B	PERMEATE PUMP 5 REVERSE FLOW PRES ALARM HIGH	PI-10	NEW
Ethernet			ZI-3681	PERMEATE PUMP 6 REMOTE	PI-10	NEW
Ethernet			YI-3681A	PERMEATE PUMP 6 FORWARD RUN	PI-10	NEW
Ethernet			YI-3681B	PERMEATE PUMP 6 REVERSE RUN	PI-10	NEW
Ethernet			YA-3681	PERMEATE PUMP 6 FAIL	PI-10	NEW
Ethernet			YC-3681A	PERMEATE PUMP 6 FORWARD COMMAND	PI-10	NEW
Ethernet			YC-3681B	PERMEATE PUMP 6 REVERSE COMMAND	PI-10	NEW
Ethernet			SI-3681	PERMEATE PUMP 6 SPEED	PI-10	NEW
Ethernet			SC-3681	PERMEATE PUMP 6 SPEED CONTROL	PI-10	NEW
Ethernet			TAH-3681	PERMEATE PUMP 6 MOTOR TEMP ALARM HIGH	PI-10	NEW
Ethernet			PAH-3681A	PERMEATE PUMP 6 FORWARD FLOW PRES ALARM HIGH	PI-10	NEW
Ethernet			PAH-3681B	PERMEATE PUMP 6 REVERSE FLOW PRES ALARM HIGH	PI-10	NEW
Ethernet			ZI-3811	MBR FEED PUMP 1 REMOTE	PI-08	NEW
Ethernet			YI-3811	MBR FEED PUMP 1 RUN	PI-08	NEW
Ethernet			YA-3811	MBR FEED PUMP 1 FAIL	PI-08	NEW
Ethernet			YC-3811	MBR FEED PUMP 1 START COMMAND	PI-08	NEW
Ethernet			SI-3811	MBR FEED PUMP 1 SPEED	PI-08	NEW
Ethernet			SC-3811	MBR FEED PUMP 1 SPEED COMMAND	PI-08	NEW
Ethernet			TAH-3811	MBR FEED PUMP 1 MOTOR TEMPERATURE ALARM HIGH	PI-08	NEW
Ethernet			FAL-3816	MBR FEED PUMP 1 SEAL WATER FLOW ALARM LOW	PI-08	NEW
Ethernet			ZI-3821	MBR FEED PUMP 2 REMOTE	PI-08	NEW
Ethernet			YI-3821	MBR FEED PUMP 2 RUN	PI-08	NEW
Ethernet			YA-3821	MBR FEED PUMP 2 FAIL	PI-08	NEW
Ethernet			YC-3821	MBR FEED PUMP 2 START COMMAND	PI-08	NEW
Ethernet			SI-3821	MBR FEED PUMP 2 SPEED	PI-08	NEW
Ethernet			SC-3821	MBR FEED PUMP 2 SPEED COMMAND	PI-08	NEW
Ethernet			TAH-3821	MBR FEED PUMP 2 MOTOR TEMPERATURE ALARM HIGH	PI-08	NEW
Ethernet			FAL-3826	MBR FEED PUMP 2 SEAL WATER FLOW ALARM LOW	PI-08	NEW
Ethernet			ZI-3831	MBR FEED PUMP 3 REMOTE	PI-08	NEW
Ethernet			YI-3831	MBR FEED PUMP 3 RUN	PI-08	NEW
Ethernet			YA-3831	MBR FEED PUMP 3 FAIL	PI-08	NEW
Ethernet			YC-3831	MBR FEED PUMP 3 START COMMAND	PI-08	NEW
Ethernet			SI-3831	MBR FEED PUMP 3 SPEED	PI-08	NEW
Ethernet			SC-3831	MBR FEED PUMP 3 SPEED COMMAND	PI-08	NEW
Ethernet			TAH-3831	MBR FEED PUMP 3 MOTOR TEMPERATURE ALARM HIGH	PI-08	NEW
Ethernet			FAL-3836	MBR FEED PUMP 3 SEAL WATER FLOW ALARM LOW	PI-08	NEW
Ethernet			ZI-3841	MBR FEED PUMP 4 REMOTE	PI-08	NEW
Ethernet			YI-3841	MBR FEED PUMP 4 RUN	PI-08	NEW
Ethernet			YA-3841	MBR FEED PUMP 4 FAIL	PI-08	NEW
Ethernet			YC-3841	MBR FEED PUMP 4 START COMMAND	PI-08	NEW
Ethernet			SI-3841	MBR FEED PUMP 4 SPEED	PI-08	NEW
Ethernet			SC-3841	MBR FEED PUMP 4 SPEED COMMAND	PI-08	NEW
Ethernet			TAH-3841	MBR FEED PUMP 4 MOTOR TEMPERATURE ALARM HIGH	PI-08	NEW
Ethernet			FAL-3846	MBR FEED PUMP 4 SEAL WATER FLOW ALARM LOW	PI-08	NEW
Ethernet			ZI-3851	MBR FEED PUMP 5 REMOTE	PI-08	NEW
Ethernet			YI-3851	MBR FEED PUMP 5 RUN	PI-08	NEW
Ethernet			YA-3851	MBR FEED PUMP 5 FAIL	PI-08	NEW
Ethernet			YC-3851	MBR FEED PUMP 5 START COMMAND	PI-08	NEW
Ethernet			SI-3851	MBR FEED PUMP 5 SPEED	PI-08	NEW
Ethernet			SC-3851	MBR FEED PUMP 5 SPEED COMMAND	PI-08	NEW
Ethernet			TAH-3851	MBR FEED PUMP 5 MOTOR TEMPERATURE ALARM HIGH	PI-08	NEW
Ethernet			FAL-3856	MBR FEED PUMP 5 SEAL WATER FLOW ALARM LOW	PI-08	NEW
Ethernet			ZI-3891	WAS/SCUM PUMP 1 REMOTE	PI-09	NEW
Ethernet			YI-3891	WAS/SCUM PUMP 1 RUNNING	PI-09	NEW
Ethernet			YA-3891	WAS/SCUM PUMP 1 FAIL	PI-09	NEW
Ethernet			YC-3891	WAS/SCUM PUMP 1 START COMMAND	PI-09	NEW

I/O LIST RIO-MB CONTINUED

TYPE	LOOP POWERED	RACK:SLOT:POINT	TAGNAME	DESCRIPTION	P&ID SHEET	STATUS
Ethernet			SI-3891	WAS/SCUM PUMP 1 SPEED	PI-09	NEW
Ethernet			SC-3891	WAS/SCUM PUMP 1 SPEED COMMAND	PI-09	NEW
Ethernet			TAH-3891	WAS/SCUM PUMP 1 MOTOR TEMP ALARM HIGH	PI-09	NEW
Ethernet			MMA-3892	WAS/SCUM PUMP 1 MOISTURE ALARM	PI-09	NEW
Ethernet			ZI-3892	WAS/SCUM PUMP 2 REMOTE	PI-09	NEW
Ethernet			YI-3892	WAS/SCUM PUMP 2 RUNNING	PI-09	NEW
Ethernet			YA-3892	WAS/SCUM PUMP 2 FAIL	PI-09	NEW
Ethernet			YC-3892	WAS/SCUM PUMP 2 START COMMAND	PI-09	NEW
Ethernet			SI-3892	WAS/SCUM PUMP 2 SPEED	PI-09	NEW
Ethernet			SC-3892	WAS/SCUM PUMP 2 SPEED COMMAND	PI-09	NEW
Ethernet			TAH-3892	WAS/SCUM PUMP 2 MOTOR TEMP ALARM HIGH	PI-09	NEW
Ethernet			MMA-3892	WAS/SCUM PUMP 2 MOISTURE ALARM	PI-09	NEW
Ethernet			ZI-3901	EXHAUST FAN 1 REMOTE		NEW
Ethernet			YI-3901	EXHAUST FAN 1 RUNNING		NEW
Ethernet			YA-3901	EXHAUST FAN 1 FAIL		NEW
Ethernet			YC-3901	EXHAUST FAN 1 START COMMAND		NEW
Ethernet			ZI-3902	EXHAUST FAN 2 REMOTE		NEW
Ethernet			YI-3902	EXHAUST FAN 2 RUNNING		NEW
Ethernet			YA-3902	EXHAUST FAN 2 FAIL		NEW
Ethernet			YC-3902	EXHAUST FAN 2 START COMMAND		NEW
Ethernet			ZI-3903	EXHAUST FAN 3 REMOTE		NEW
Ethernet			YI-3903	EXHAUST FAN 3 RUNNING		NEW
Ethernet			YA-3903	EXHAUST FAN 3 FAIL		NEW
Ethernet			YC-3903	EXHAUST FAN 3 START COMMAND		NEW
Ethernet			ZI-3904	EXHAUST FAN 4 REMOTE		NEW
Ethernet			YI-3904	EXHAUST FAN 4 RUNNING		NEW
Ethernet			YA-3904	EXHAUST FAN 4 FAIL		NEW
Ethernet			YC-3904	EXHAUST FAN 4 START COMMAND		NEW

I/O LIST RIO-MB CONTINUED

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	10/20/20	MPJ	DCL	MPJ
2	12/06/21	MPJ	DCL	MPJ

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
INSTRUMENTATION - PLC DRAWINGS
INPUT OUTPUT LIST IV

AQUA ENGINEERING
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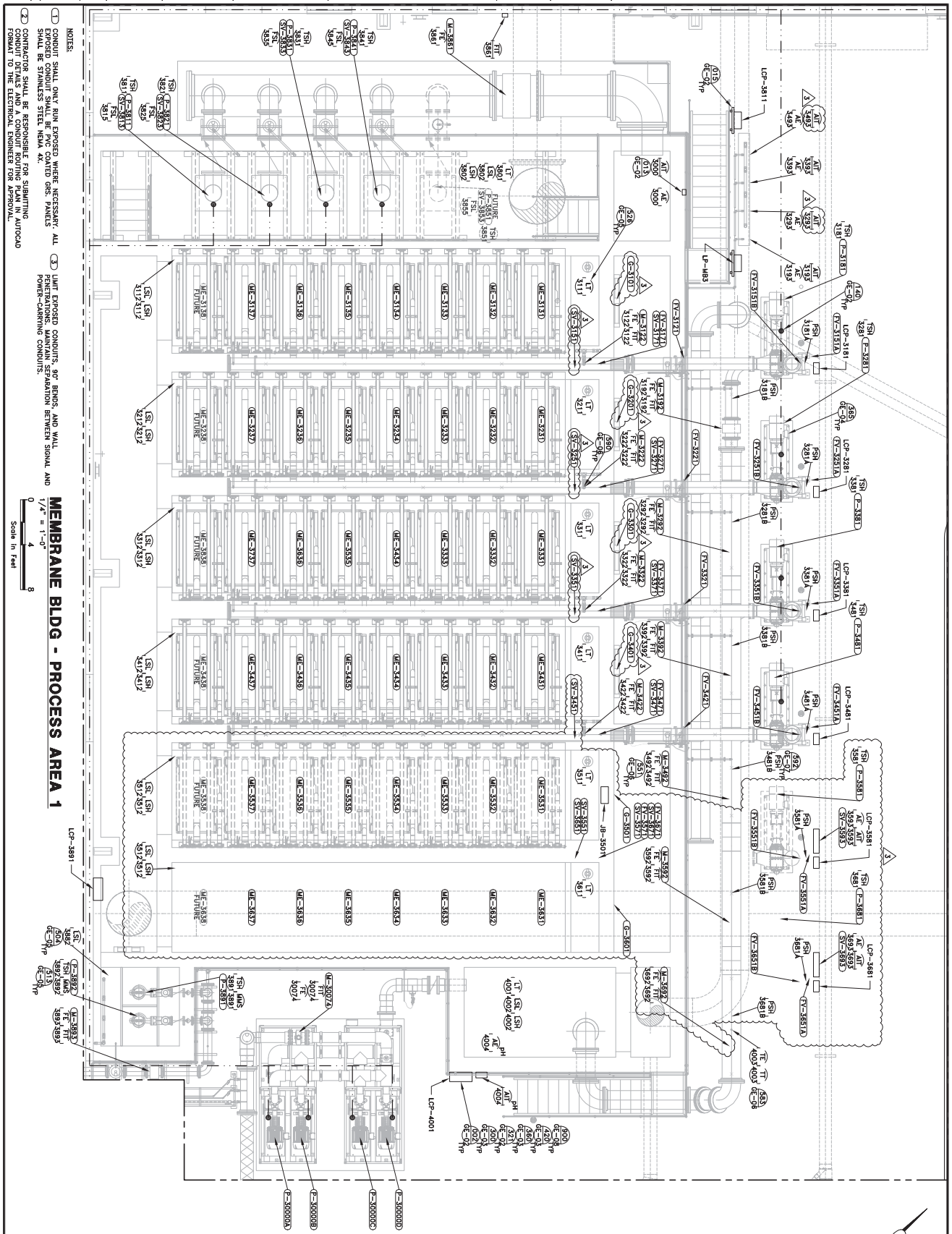
ENGINEERING CONSULTANTS

0 1/2 1
DRAWING IS TO SCALE IF BAR MEASURES: 1" = FULL SCALE 1/2" = HALF SCALE

12/8/2021 C:\USERS\DANIEL.LEAVITT\AQUA ENGINEERING\BEAUMONT - DOCUMENTS\WEBB170227 SALT MITIGATION WWTP UPGRADE\050 DRAFTING\997 ELECTRICAL\13 LE-09 MEMBRANE BLDG - PROCESS AREA 1.DWG



MEMBRANE BLDG - PROCESS AREA 1

1/4" = 1'-0"

Scale In Feet

NOTES:

1. CONDUIT SHALL ONLY RUN EXPOSED WHERE NECESSARY. ALL EXPOSED CONDUIT SHALL BE POWDER COATED GRS. PANELS SHALL BE STAINLESS STEEL NEMA 4X.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING CONDUIT ROUTING SOLUTION IN AUTOCAD FORMAT TO THE ELECTRICAL ENGINEER FOR APPROVAL.
3. LIMIT EXPOSED CONDUITS. 90° BENDS, AND WALL PENETRATIONS. MAINTAIN SEPARATION BETWEEN SIGNAL AND POWER-CARRYING CONDUITS.

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DRAWING IS TO SCALE IF BAR MEASURES: 1/2" = FULL SCALE

LE-09

SHEET 102 OF 172

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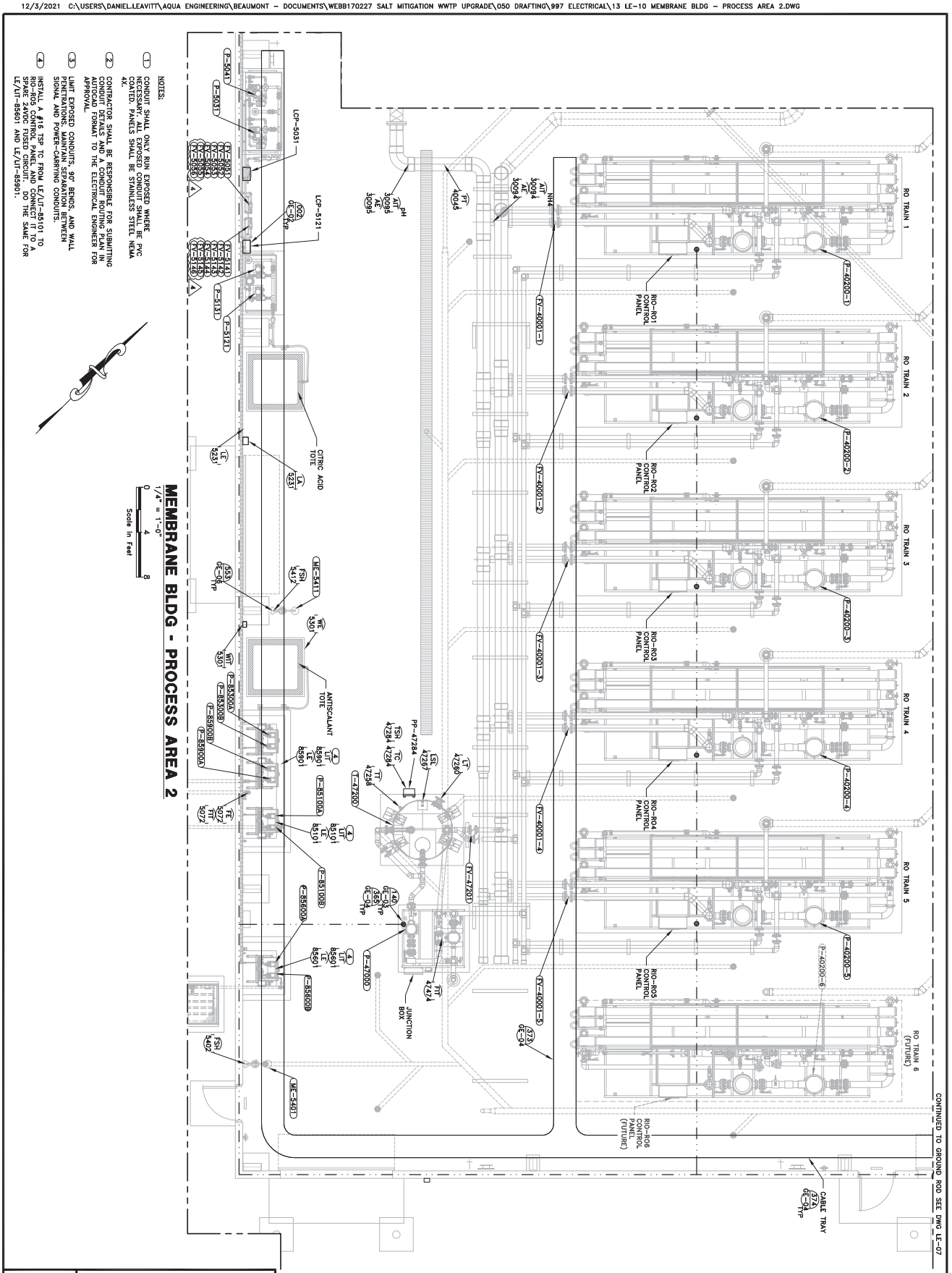
SALT MITIGATION WWTP UPGRADE
ELECTRICAL - LAYOUT
MEMBRANE BLDG - PROCESS AREA 1

ORIGINAL				
NO.	DATE	DESIGN	DRAWN	CHECKED
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	01/18/19	MPJ	DCL	MPJ
2	06/24/19	MPJ	DCL	MPJ
3	10/26/20	MPJ	DCL	MPJ
4	12/06/21	MPJ	DCL	MPJ



NOTES:

1. CONDUIT SHALL ONLY RUN EXPOSED WHERE NECESSARY. ALL EXPOSED CONDUIT SHALL BE PVC COATED. PANELS SHALL BE STAINLESS STEEL NEMA 4X.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING CONDUIT DETAILS AND A CONDUIT ROUTING PLAN IN AUTOCAD FORMAT TO THE ELECTRICAL ENGINEER FOR APPROVAL.
3. LIMIT EXPOSED CONDUITS, 90° BENDS, AND WALL PENETRATIONS. MAINTAIN SEPARATION BETWEEN SIGNAL AND POWER-CARRYING CONDUITS.
4. INSTALL A #16 TSP TC FROM LE/LIT-85101 TO RIO-RO5 CONTROL PANEL AND CONNECT IT TO A SPARE 24VDC FUSED CIRCUITS. DO THE SAME FOR LE/LIT-85601 AND LE/LIT-85901.

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DRAWING IS TO SCALE IF BAR MEASURES: 1/2" = HALF SCALE

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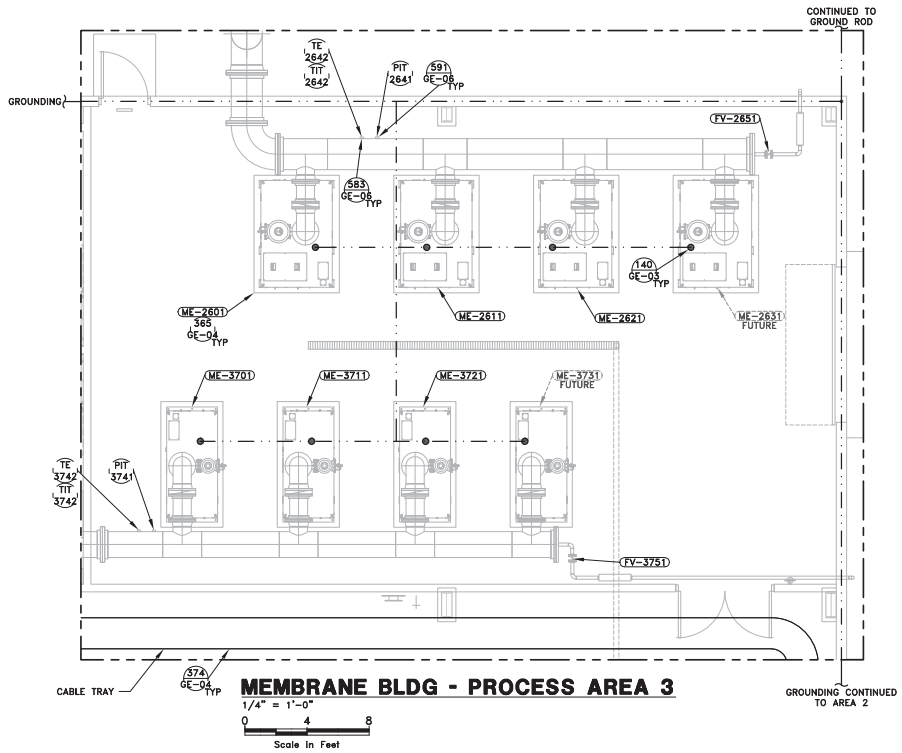
CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
ELECTRICAL - LAYOUT
MEMBRANE BLDG - PROCESS AREA 2

ORIGINAL				
NO.	DATE	DESIGN	DRAWN	CHECKED
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	04/22/19	MPJ	DCL	MPJ
2	06/24/19	MPJ	DCL	MPJ
3	11/03/21	MPJ	DCL	MPJ
4	12/06/21	MPJ	DCL	MPJ

LE-10 SHEET 103 OF 172

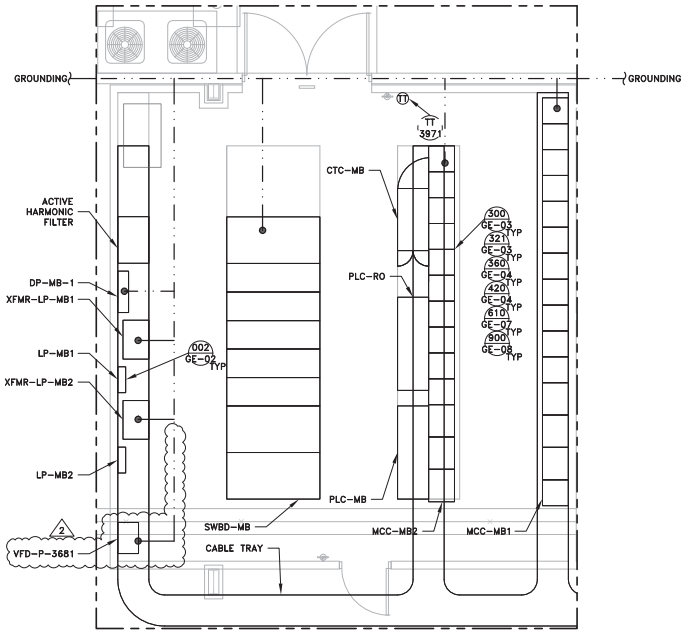


MEMBRANE BLDG - PROCESS AREA 3

1/4" = 1'-0"

0 4 8

Scale In Feet



MEMBRANE BLDG - ELECTRICAL ROOM

1/4" = 1'-0"

0 4 8

Scale In Feet

NOTES:

1. CONDUIT SHALL ONLY RUN EXPOSED AS NECESSARY. ALL EXPOSED CONDUIT SHALL BE GRS. PANELS SHALL BE STAINLESS STEEL NEMA 4X.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING CONDUIT DETAILS AND A CONDUIT ROUTING PLAN IN AUTOCAD FORMAT TO THE ELECTRICAL ENGINEER FOR APPROVAL.
3. LIMIT EXPOSED CONDUITS, 90° BENDS, AND WALL PENETRATIONS. MAINTAIN SEPARATION BETWEEN SIGNAL AND POWER-CARRYING CONDUITS.

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	02/15/19	MPJ	DCL	MPJ
2	12/06/21	MPJ	DCL	MPJ

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
ELECTRICAL - LAYOUT
MEMBRANE BLDG - PROCESS AREA 3 & 4

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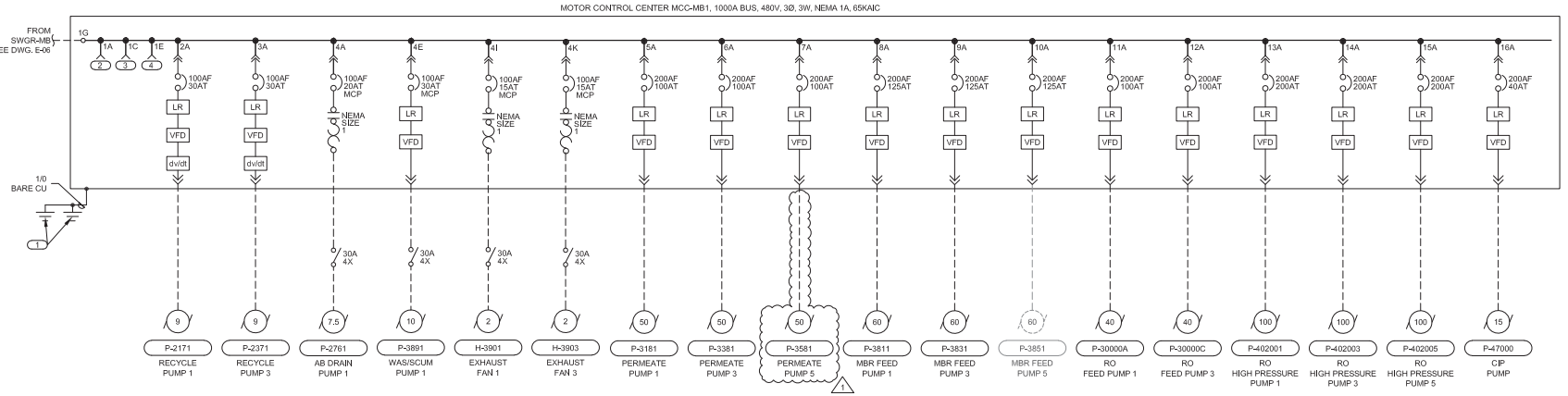
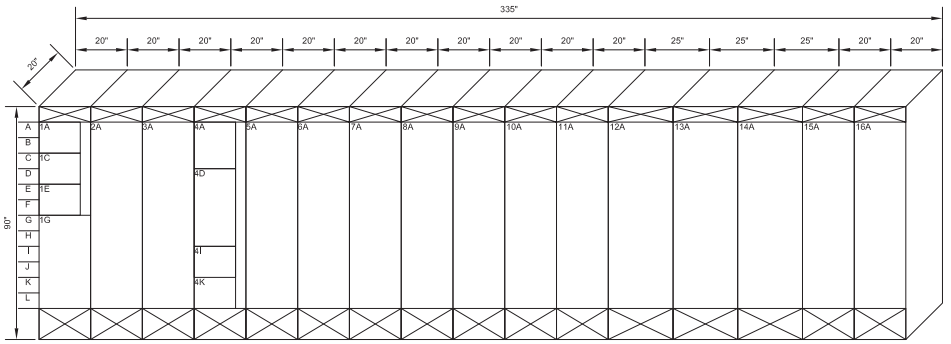
0 1/2 1

DRAWING IS TO SCALE IF BAR MEASURES:
1" = FULL SCALE
1/2" = HALF SCALE

LE-11



MCC-MB1 ONELINE DIAGRAM



MCC-MB1 SECTION

SCALE: 1/2" = 1'

NOTES:

1. GROUND GRID
2. ETHERNET SWITCH
3. ETHERNET POWER SUPPLY
4. SPACE FOR FUTURE VFD, STARTER OR FEEDER BREAKER.

ORIGINAL

NO.	DATE	DESIGN	DRAWN	CHECKED
C	09/05/18	MPJ	DCL	MPJ

REVISIONS

1	12/06/21	MPJ	DCL	MPJ

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
ELECTRICAL - POWER DISTRIBUTION
MCC-MB1 ONELINE

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FAX (951) 788-1256

0 1/2 1

DRAWING IS TO SCALE
IF BAR MEASURES:
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1/2" = HALF SCALE

SHEET 123 OF 172

E-07

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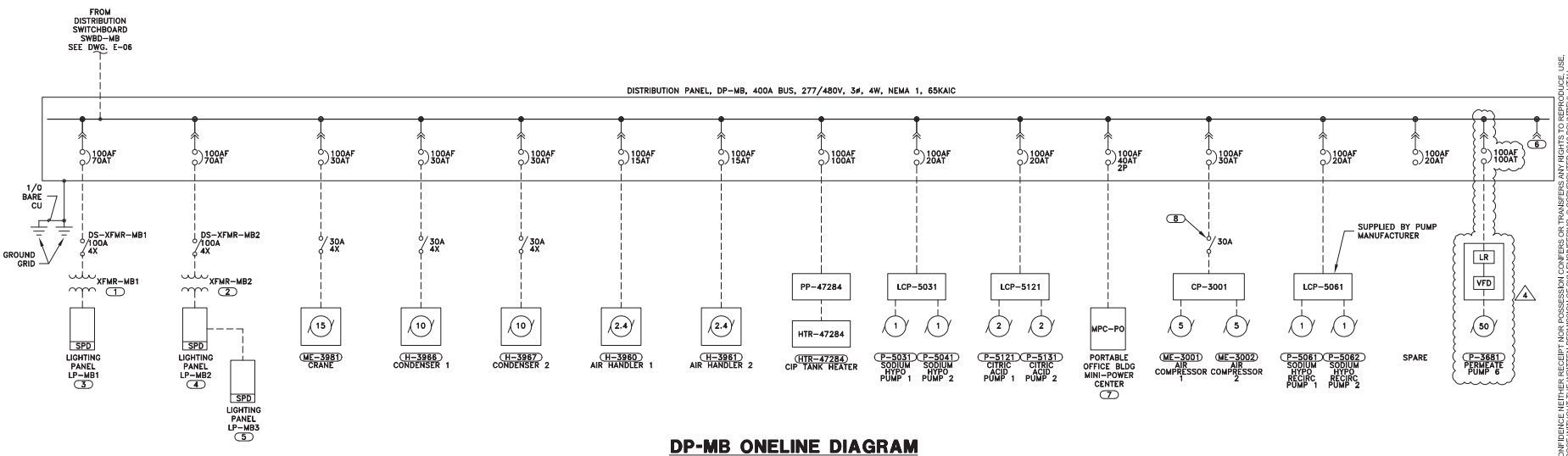
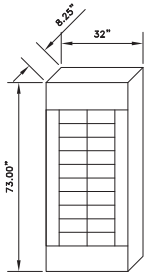


DP-MB ONELINE DIAGRAM



DP-MB ELEVATION

SCALE: 1/2" = 1'-0

NOTES:

1. 75KVA XFMR, 480V Δ PRIMARY 120V/208V Y SECONDARY FLOOR MOUNTED NEMA 3R.
2. 45KVA XFMR, 480V Δ PRIMARY 120V/208V Y SECONDARY FLOOR MOUNTED NEMA 3R.
3. LIGHTING PANEL LP-MB1, 120V/208V, 3# 4W, 200A, NEMA 1, 22KAIC.
4. LIGHTING PANEL LP-MB2, 120V/208V, 3# 4W, 125A, NEMA 1, 22KAIC.
5. LIGHTING PANEL LP-MB3, 120V/208V, 3# 4W, 100A, NEMA 4X, 22KAIC.
6. SPACE FOR FUTURE FEEDER BREAKER.
7. NEMA 3R, 1#, 3W, 10KAIC MINI-POWER CENTER. 480V TO 120/240V WITH PRIMARY AND SECONDARY MAIN BREAKERS AND 15KVA TRANSFORMER.
8. DISCONNECT IS PROVIDED LOOSE WITH CP-3001

NO.	DATE	DESIGN	DRAWN	CHECKED
		ORIGINAL		
C	09/05/18	MPJ	DCL	MPJ
		REVISIONS		
1	01/18/19	MPJ	DCL	MPJ
2	06/24/19	MPJ	DCL	MPJ
3	01/20/20	MPJ	DCL	MPJ
4	12/06/21	MPJ	DCL	MPJ

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
ELECTRICAL - POWER DISTRIBUTION
DP-MB ONELINE

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0 1/2 1
DRAWING IS TO SCALE IF BAR MEASURES:
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SHEET 125 OF 172

E-09

PANEL: LP-HW1		VOLTAGE: 120/208		MAIN CB: 125 AMP		BUS AMPS: 125 AMP		
CB TYPE: BOLT-ON		MOUNTING: SURFACE		BUS A I.C. 22KA		BKR AIC: 22KA		
CIRCUIT DESCRIPTION	BKR	CIRCUIT	PHASE A	PHASE B	PHASE C	CIRCUIT	BKR	CIRCUIT DESCRIPTION
CTC-HMV	30/1	1	1800					
			360			2	20/1	ELECTRICAL ROOM RECEPTACLES W
ELECTRICAL ROOM LIGHTING	20/1	3		400				
				50		4	20/1	ELECTRICAL ROOM EMERGENCY LIGHTING
EXISTING LDXT-1114 SCREEN 1 LEVEL	20/1	5			180			
					480	6	20/1	EXISTING ME-1164 INFLUENT SAMPLER
EXISTING LCP-1161 HW INSTRUMENT PANEL	20/1	7	500					
			456			8	20/1	FINE SCREEN LIGHTS AND RECEPTACLES
UT-1601 BQ BASIN 1 LEVEL	20/1	9		120				
				300		10	20/1	NPW PUMPS AREA LIGHTING
FIT-1602 STORM DRAIN FLOW	20/1	11			100			
					500	12	20/1	ME-6302 EFFLUENT SAMPLER
FIT-6420 NPW FLOW METER	20/1	13	180					
						14	20/1	SPARE
FIT-7122 RECYCLE WATER FLOW	20/1	15		100				
						16	20/1	SPARE
FIT-7251 PLANT EFFLUENT FLOW	20/1	17			100			
					100	18	20/1	AIT-7473 RW pH/CHLORINE ANALYZER
	20/1	19				20	20/1	
	20/1	21				22	20/1	
	20/1	23				24	20/1	
	20/1	25				26	20/1	
	20/1	27				28	20/1	
	20/1	29				30	20/1	
	20/1	31				32	20/1	
	20/1	33				34	20/1	
	20/1	35				36	20/1	
	20/1	37				38		
	20/1	39	1496			40	40/3	LP-HW
	20/1	41		1496				
					1600	42		
CONNECTED VA PER PHASE			4756.0	2348.0	3060.0	NOTES:		
CONNECTED AMPS PER PHASE			39.6	19.6	25.5			
25% OF CONTINUOUS & LIGHTING LOAD (VA)			450.0	100.0	45.0			
LARGEST MOTOR (25%)			0.0	0.0	0.0			
CODE VA PER PHASE			3206.0	2448.0	3105.0			
CODE AMPS PER PHASE			43.4	20.4	25.9			

LP-HW1 LOAD CALCULATIONS

PANEL: LP-HW2		VOLTAGE: 120/208		MAIN CB: 125 AMP		BUS AMPS: 125 AMP		
CB TYPE: BOLT-ON		MOUNTING: SURFACE		BUS A I.C. 22KA		BKR AIC: 22KA		
CIRCUIT DESCRIPTION	BKR	CIRCUIT	PHASE A	PHASE B	PHASE C	CIRCUIT	BKR	CIRCUIT DESCRIPTION
GENERATOR BATTERY CHARGER	20/1	1	500					
			360			2	20/1	ELECTRICAL ROOM RECEPTACLES E
		3		2000				
GENERATOR BLOCK HEATER	50/2			840		4	20/1	SWGR-HW BATTERY CHARGER
		5			2000			
					180	6	20/1	FIT-1342 INFLUENT PUMP FLOW TO EQ
CTC-HW	30/1	7	1800					
			180			8	20/1	FIT-1333 INFLUENT PUMP FLOW TO SCREENS
LDXT-1124 SCREEN 2 LEVEL	20/1	9		100				
				180		10	20/1	FIT-1532 EQ FLOW TO INFLUENT PUMPS
CP-1231A GRIT PUMP 1 PRIMING PANEL	20/1	11			360			
						12	20/1	
CP-1241A GRIP PUMP 2 PRIMING PANEL	20/1	13	360					
						14	20/1	
	20/1	15						
						16	20/1	
	20/1	17						
						18	20/1	
	20/1	19						
						20	20/1	
	20/1	21						
						22	20/1	
	20/1	23						
						24	20/1	
	20/1	25						
						26	20/1	
	20/1	27						
						28	20/1	
	20/1	29						
						30	20/1	
	20/1	31						
						32	20/1	
	20/1	33						
						34	20/1	
	20/1	35						
						36	20/1	
	20/1	37						
						38	20/1	
	20/1	39						
						40	20/1	
	20/1	41						
						42	20/1	
CONNECTED VA PER PHASE			3200.0	3120.0	2540.0	NOTES:		
CONNECTED AMPS PER PHASE			26.7	26.0	21.2			
25% OF CONTINUOUS & LIGHTING LOAD (VA)			125.0	500.0	500.0			
LARGEST MOTOR (25%)			0.0	0.0	0.0			
CODE VA PER PHASE			3325.0	3620.0	3040.0			
CODE AMPS PER PHASE			27.7	30.2	25.3			

LP-HW2 LOAD CALCULATIONS

PANEL: MPC-SP		VOLTAGE: 120/208		MAIN CB: 50 AMP		BUS AMPS: 100 AMP		
CB TYPE: BOLT-ON		MOUNTING: SURFACE		BUS A I.C. 22KA		BKR AIC: 22KA		
CIRCUIT DESCRIPTION	BKR	CIRCUIT	PHASE A	PHASE B	PHASE C	CIRCUIT	BKR	CIRCUIT DESCRIPTION
LIGHTING	20/1	1	300					
			100			2	20/1	LIT-7131 RECYCLED WATER TANK 1
RECEPTACLES	20/1	3		800				
				100		4	20/1	LIT-7141 RECYCLED WATER TANK 2
		5			1000			
SITE LIGHTING	20/2		1000		100	6	20/1	FIT-6403 SOLIDS TANK 1 AIR FLOW METER
		7	100			8	20/1	FIT-6403 SOLIDS TANK 2 AIR FLOW METER
	20/1	9						
						10	20/1	
	20/1	11						
						12	20/1	
	20/1	13						
						14	20/1	
	20/1	15						
						16	20/1	
	20/1	17						
						18	20/1	
	20/1	19						
						20	20/1	
	20/1	21						
						22	20/1	
	20/1	23						
						24	20/1	
	20/1	25						
						26	20/1	
	20/1	27						
						28	20/1	
	20/1	29						
						30	20/1	
CONNECTED VA PER PHASE			1500.0	800.0	1100.0	NOTES:		
CONNECTED AMPS PER PHASE			12.5	7.5	9.2			
25% OF CONTINUOUS & LIGHTING LOAD (VA)			375.0	200.0	250.0			
CODE VA PER PHASE			1875.0	1100.0	1350.0			
CODE AMPS PER PHASE			15.6	9.2	11.3			

MPC-SP LOAD CALCULATIONS

CIRCUIT/DESCRIPTION	KVA	HP	FLA
SWGR-HW			42.5
SWGR-MB			144.9
SWBD-SH			25.6
SUBTOTAL			213.0
+ 25% OF LARGEST MOTOR			3.6
TOTAL AMPS @ 12KV/3PHASE			216.6
SERVICE SIZE (AMPS)			400.0

MVSWGR LOAD CALCULATIONS

CIRCUIT/DESCRIPTION	KVA	HP	FLA
MOTOR LOADS			
MCC-MB1			838.4
MCC-MB2			641.4
AERATION BLOWER 1 ME-2601		300.0	361.0
AERATION BLOWER 2 ME-2611		300.0	361.0
AERATION BLOWER 3 ME-2621		300.0	361.0
AERATION BLOWER 4 ME-2631 (FUTURE)		300.0	*
MEMBRANE BLOWER 1 ME-3701		200.0	240.0
MEMBRANE BLOWER 2 ME-3711		200.0	240.0
MEMBRANE BLOWER 3 ME-3721		200.0	240.0
MEMBRANE BLOWER 4 ME-3731 (FUTURE)		200.0	*
DP-MB			264.6
NON-MOTOR LOADS			
MEMBRANE BUILDING LIGHTING	45.0		54.2
SUBTOTAL			3521.8
+ 25% OF LARGEST MOTOR			90.3
TOTAL AMPS @ 480V/3PHASE			3712.0
SERVICE SIZE (AMPS)			4000.0

SWGR-MB LOAD CALCULATIONS

CIRCUIT/DESCRIPTION	KVA	HP	FLA
MOTOR LOADS			
RECYCLE PUMP 1 P-2171		9.0	12.8
RECYCLE PUMP 3 P-2371		9.0	12.8
AB DRAIN PUMP 1 P-2751		7.5	11.0
WAS/SCUM PUMP 1 P-3891		10.0	14.0
PERMEATE PUMP 1 P-3181		50.0	65.0
PERMEATE PUMP 3 P-3381		50.0	65.0
PERMEATE PUMP 5 P-3581 (FUTURE)		50.0	*
RO FEED PUMP 1 P-30000A		40.0	52.0
RO FEED PUMP 3 P-30000C		40.0	52.0
MBR FEED PUMP 1 P-3811		60.0	77.0
MBR FEED PUMP 3 P-3331		60.0	77.0
MBR FEED PUMP 5 P-3951 (FUTURE)		60.0	*
RO HIGH PRESSURE PUMP 1 P-40200-1		100.0	124.0
RO HIGH PRESSURE PUMP 3 P-40200-3		100.0	124.0
RO HIGH PRESSURE PUMP 5 P-43400-5		100.0	124.0
CIP PUMP P-47000A		15.0	21.0
EXHAUST FAN 1 H-3901		2.0	3.4
EXHAUST FAN 1 H-3903		2.0	3.4
SUBTOTAL			836.4
+ 25% OF LARGEST MOTOR			31.0
TOTAL AMPS @ 480V/3PHASE			969.4
SERVICE SIZE (AMPS)			1000.0

MCC-MB1 LOAD CALCULATIONS

CIRCUIT/DESCRIPTION	KVA	HP	FLA
MOTOR LOADS			
RECYCLE PUMP 2 P-2271		9.0	12.8
RECYCLE PUMP 4 P-2471		9.0	12.8
AB DRAIN PUMP 2 P-2762		7.5	11.0
WAS/SCUM PUMP 2 P-3892		10.0	14.0
PERMEATE PUMP 2 P-3291		50.0	65.0
PERMEATE PUMP 4 P-3481		50.0	65.0
RO FEED PUMP 2 P-30000B		40.0	52.0
RO FEED PUMP 4 P-30000D		40.0	*
MBR FEED PUMP 2 P-3821		60.0	77.0
MBR FEED PUMP 4 P-3841		60.0	77.0
RO HIGH PRESSURE PUMP 2 P-40200-2		100.0	124.0
RO HIGH PRESSURE PUMP 4 P-40200-4		100.0	124.0
RO HIGH PRESSURE PUMP 6 P-40200-6 (FUTURE)		100.0	*
EXHAUST FAN 2 H-3902		2.0	3.4
EXHAUST FAN 4 H-3904		2.0	3.4
SUBTOTAL			641.4
+ 25% OF LARGEST MOTOR			31.0
TOTAL AMPS @ 480V/3PHASE			672.4
SERVICE SIZE (AMPS)			1000.0

MCC-MB2 LOAD CALCULATIONS

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	04/22/19	MPJ	DCL	MPJ
2	08/14/19	MPJ	DCL	MPJ
3	10/11/19	MPJ	DCL	MPJ
4	12/06/21	MPJ	DCL	MPJ

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PANEL: DP-MB		VOLTAGE: 277/480V		MAIN CB: NONE		BUS AMPS: 400 AMPS		
CB TYPE: BOLT-ON		MOUNTING: SURFACE		BUS A.I.C. 65KA		BKR AIC: N/A		
CIRCUIT DESCRIPTION	BKR	CIRCUIT	PHASE A	PHASE B	PHASE C	CIRCUIT	BKR	CIRCUIT DESCRIPTION
		1	5181			2		
CRANE	30/3	3	15456	5181		4	70/3	XFMR-MB1 / LP-MB1
		5		16905	5181	6		
		7	12667		16722	8		
HTR-47264		9	10919	12667		10		
RO SYSTEM CIP HEATER	100/2	11		9560	12667	12	70/3	XFMR-MB2 / LP-MB2
		13	3454		10919	14		
AC CONDENSER 1		15	829	3454		16	20/3	AC AIR HANDLER 1
H-3998	30/3	17		829	3454	18		H-3960
		19	3454		829	20		
AC CONDENSER 2		21	829	3454		22	20/3	AC AIR HANDLER 2
H-3997	30/3	23		829	3454	24		H-3961
		25	2140		829	26		
MPC-PO		27	3454	2540		28	20/3	CP-3001
PORTABLE OFFICE	40/2	29		3454		30		
MINI-POWER-CENTER		31	691		3454	32		
		33	1381	691		34	20/3	LCP-5121
LCP-5031	20/3	35		1381	691	36		
		37	691		1381	38		
		39		691		40	20/3	SPARE
LCP-6061	20/3	41			691	42		
		43	17269			44		
		45		17269		46		
VFD-P-3681	100/3	47			17269	48		
CONNECTED VA PER PHASE			78862.9	78803.3	76875.9	NOTES:		
CONNECTED AMPS PER PHASE			384.8	284.5	277.5			
25% OF CONTINUOUS & LIGHTING LOAD (VA)			6711.3	6591.4	6744.5			
CODE VA PER PHASE			85594.2	85394.8	83620.4			
CODE AMPS PER PHASE			309.0	308.3	301.8			

DP-MB LOAD CALCULATIONS

PANEL: MPC-PO		VOLTAGE: 120/240		MAIN CB: 70 AMP		BUS AMPS: 100 AMP	
CB TYPE: BOLT-ON		MOUNTING: MCC		BUS BRACING: 10KA		BKR AIC: 10KA	
CIRCUIT DESCRIPTION	BKR	CIRCUIT	LINE 1	LINE 2	CIRCUIT	BKR	CIRCUIT DESCRIPTION
PORTABLE OFFICE LIGHTS	20/1	1	300		2	20/1	PORTABLE OFFICE LIGHTS
			300				
PORTABLE OFFICE RECEPTACLES	20/1	3		540	4	20/1	GATE CONTROLLER
PORTABLE OFFICE RECEPTACLES	20/1	5	540	1000			
		7		1000	6	20/1	
PORTABLE OFFICE AC UNIT	20/3				8	20/1	
		9	1000		10	20/1	
	20/1	11			12	20/1	
	20/1	13			14	20/1	
	20/1	15			16	20/1	
	20/1	17			18	20/1	
CONNECTED VA PER PHASE			2140.0	2540.0	NOTES:		
CONNECTED AMPS PER PHASE			17.8	21.2			
25% OF CONTINUOUS & LIGHTING LOAD (VA)			535.0	635.0			
LARGEST MOTOR (25%)			0.0	0.0			
CODE VA PER PHASE			2675.0	3175.0			
CODE AMPS PER PHASE			22.3	26.5			

MPC-PO LOAD CALCULATIONS

PANEL: LP-MB1		VOLTAGE: 120/208		MAIN CB: 200 AMP		BUS AMPS: 200 AMP		
CB TYPE: BOLT-ON		MOUNTING: SURFACE		BUS A.I.C. 22KA		BKR AIC: 22KA		
CIRCUIT DESCRIPTION	BKR	CIRCUIT	PHASE A	PHASE B	PHASE C	CIRCUIT	BKR	CIRCUIT DESCRIPTION
MAIN PROCESS AREA LIGHTS (12, A)	20/1	1	1728					
			1728			3	20/1	MAIN PROCESS AREA LIGHTS (12, D)
MAIN PROCESS AREA LIGHTS (12, B)	20/1	3		1728				
				1728		4	20/1	MAIN PROCESS AREA LIGHTS (12, E)
MAIN PROCESS AREA LIGHTS (12, C)	20/1	5			1728			
					879	6	20/1	STORAGE AREA LIGHTS (15, G)
ELECTRICAL ROOM LIGHTS (9, S)	20/1	7	385					
			192			8	20/1	BREAK ROOM LIGHTS (4, T)
OFFICE LIGHTS (4, V)	20/1	9		230				
				459		10	20/1	CONTROL ROOM LIGHTS (8, U)
BLOWER ROOM LIGHTS (15, AA)	20/1	11			879			
					517	12	20/1	LAB LIGHTS (9, W)
WOMEN'S RESTROOM LIGHTS (3, X)	20/1	13	128					
						14	20/1	SPARE
MEN'S RESTROOM LIGHTS (3, Z)	20/1	15		128				
				31		16	20/1	EXIT SIGNS (13, J)
MECHANICAL ROOM LIGHTS (3, Y)	20/1	17			89			
					440	18	20/1	OUTDOOR LIGHTS (11, I)
CTC-MB	20/1	19	1200					
			874			20	20/1	H-3910, 3911 - SOUTH HEATERS
H-3906 PROCESS ROOM NORTH HEATER	30/1	21		312				
				654		22	20/1	H-3912, 3913 - NORTHWEST HEATERS
H-3907, 3908, 3909 - SOUTHEAST HEATERS	30/1	23			936			
					1000	24	20/1	FIRE ALARM CONTROL PANEL
STORAGE AREA OUTLETS (3, K)	20/1	25	540					
			540			26	20/1	MAIN PROCESS AREA OUTLETS (3, L)
MAIN PROCESS AREA OUTLETS (3, M)	20/1	27		540				
				540		28	20/1	PROCESS AREA OUTLETS (3, N)
MAIN PROCESS AREA OUTLETS (3, O)	20/1	29			540			
					540	30	20/1	PROCESS AREA/ELEC. RM. OUTLETS (3, P)
ELECTRICAL ROOM OUTLETS (3, AB)	20/1	31	540					
			540			32	20/1	BREAK ROOM OUTLETS (3, AC)
BREAK/CONTROL ROOMS OUTLETS (3, AD)	20/1	33		540				
				540		34	20/1	OFFICE OUTLETS (3, AE)
OFFICE/CONTROL ROOM OUTLETS (3, AF)	20/1	35			540			
					540	36	20/1	CONTROL ROOM OUTLETS (3, AG)
LAB OUTLETS (3, AH)	20/1	37	540					
			540			38	20/1	LAB OUTLETS (3, AI)
LAB OUTLETS (3, AJ)	20/1	39		540				
				720		40	20/1	LAB OUTLETS (4, AK)
WOMEN'S REST./MECH. RM. OUTLETS (3, AL)	20/1	41			540			
					540	42	20/1	MEN'S REST./MECH. ROOM OUTLETS (3, AM)
BLOWER ROOM OUTLETS (3, AN)	20/1	43	540					
			540			44	20/1	BLOWER ROOM OUTLETS (3, AO)
BREAK ROOM REFRIGERATOR	20/1	45		900				
				850		46	20/1	BREAK ROOM DISPOSAL
LAB REFRIGERATOR	20/1	47			900			
					850	48	20/1	LAB DISPOSAL
AIR DRYER ME-3004	20/1	49	370					
			150			50	20/1	LAB HOOD OUTLET
H-3905 LAB HOOD FAN	20/1	51		667				
				823		52	20/1	H-3940 GAS FURNACE
H-3942 AC UNIT	15/1	53			887			
						54	20/1	SPARE
SPARE	20/1	55						
						56	20/1	SPARE
SPARE	20/1	57						
						58	20/1	SPARE
SPARE	20/1	59						
						60	20/1	SPARE
SPARE	20/1	61						
						62	20/1	SPARE
SPARE	20/1	63						
						64	20/1	SPARE
SPARE	20/1	65						
						66	20/1	SPARE
		67	5000					
						68	20/1	SPARE
STANDBY GENERATOR POWER PANEL	60/3	69		5000				
						70	20/1	SPARE
		71			5000			
						72	20/1	SPARE
CONNECTED VA PER PHASE			15856.0	16905.4	16222.9	NOTES:		
CONNECTED AMPS PER PHASE			132.1	140.9	135.2			
25% OF CONTINUOUS & LIGHTING LOAD (VA)			3964.0	4201.4	4056.5			
CODE VA PER PHASE			19820.0	21008.8	20277.5			
CODE AMPS PER PHASE			165.2	175.1	169.0			

LP-MB1 LOAD CALCULATIONS

ORIGINAL

NO.	DATE	DESIGN	DRAWN	CHECKED
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	01/18/19	MPJ	DCL	MPJ
2	04/22/19	MPJ	DCL	MPJ
3	06/24/19	MPJ	DCL	MPJ
4	12/06/21	MPJ	DCL	MPJ

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E-14

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PANEL: LP-MB2 | VOLTAGE: 120/208 | MAIN CB: 125 AMP | BUS AMPS: 125 AMP
CB TYPE: BOLT-ON | MOUNTING: SURFACE | BUS A.I.C.: 22KA | BKR AIC: 22KA

CIRCUIT DESCRIPTION	BKR	CIRCUIT	PHASE A	PHASE B	PHASE C	CIRCUIT	BKR	CIRCUIT DESCRIPTION
CTC-MB	30/1	1	1200			2	20/1	AB 3&4 SOUTH LIGHTS / RECEPTACLES
AB 1&2 SOUTH LIGHTS / RECEPTACLES	20/1	3	600	600		4	20/1	AB 3&4 SOUTH LIGHTS / RECEPTACLES
AB 1&2 NORTH LIGHTS / RECEPTACLES	20/1	5			600	6	15/1	AIT-2362 ANOXIC / AEROBIC 3 ORP
AIT-2162 ANOXIC / AEROBIC 1 ORP	15/1	7	100		100	8	15/1	FV-2331 AERATION TANK 3 FLOW VALVE
FV-2131 AERATION TANK 1 FLOW VALVE	15/1	9	720	720		10	15/1	FIT-2332 AERATION TANK 3 AIR FLOW METER
FIT-2132 AERATION TANK 1 AIR FLOW METER	15/1	11			100	12	15/1	AIT-2351 AERATION BASIN 3 DO PROBE 1
AIT-2151 AERATION BASIN 1 DO PROBE 1	15/1	13	100		100	14	15/1	AIT-2352 AERATION BASIN 3 DO PROBE 2
AIT-2152 AERATION BASIN 1 DO PROBE 2	15/1	15		100		16	15/1	AIT-2362 ANOXIC / AEROBIC 4 ORP
AIT-2262 ANOXIC / AEROBIC 2 ORP	15/1	17			100	18	15/1	FV-2331 AERATION TANK 4 FLOW VALVE
FV-2231 AERATION TANK 2 FLOW VALVE	15/1	19	720		720	20	15/1	FIT-2332 AERATION TANK 4 AIR FLOW METER
FIT-2232 AERATION TANK 2 AIR FLOW METER	15/1	21	100	100		22	15/1	AIT-2351 AERATION BASIN 4 DO PROBE 1
AIT-2251 AERATION BASIN 2 DO PROBE 1	15/1	23		100	100	24	15/1	AIT-2362 AERATION BASIN 4 DO PROBE 2
AIT-2252 AERATION BASIN 2 DO PROBE 2	15/1	25	100		100	26	20/1	DRAIN PUMP STATION LIGHTS / RECEPTACLES
FIT-3393 WAS/SCUM FLOW METER	15/1	27	240	100		28	20/1	FIT-6072 SODIUM HYPO CIRC PUMP FLOW METER
RO-RO	20/1	29		100		30	20/1	P-85900A/B RO SYSTEM HYPO PUMPS
RO-RO1	20/1	31	500		500	32	20/1	WIT-8301 ANTISCALANT TOTE SCALE
RO-RO2	20/1	33	100		450	34	20/1	P-85300A/B RO ANTISCALANT PUMPS
RO-RO3	20/1	35		900		36	20/1	AIT-4004 PERMEATE SPLITTER BOX pH ANALYZER
RO-RO4	20/1	37	500	450	500	38	20/1	SPARE
RO-RO5	20/1	39			100	40	20/1	AUTOMATIC GATE
RO-RO6 (FUTURE)	20/1	41		500		42		
AIT-4602 BRINE LINE pH	15/1	43	100	1000	500	44	50/2	PORTABLE OFFICE BUILDING
AIT-4603 BRINE LINE CONDUCTIVITY	15/1	45	2500		2500	46	20/1	LA-6231 CHEMICAL LEAK DETECTOR
ME-4604 BRINE LINE SAMPLER	15/1	47		100		48	20/1	P-85100A, P-851008 AMMONIUM SULFATE PUMPS
FIT-4605 BRINE LINE FLOW METER	15/1	49	100		500	50	20/1	AIT-30094, AIT-30095 RO INFLUENT pH & NH4 ANALZRS
BRINE VAULT LIGHTS/RECEPTACLE	20/1	51	200	540	450	52	20/1	P-85600A, P-85600B SULFURIC ACID PUMPS
FIT-2764 DRAIN PUMP FLOW	20/1	53			100	54	20/1	CHEMICAL TANK AREA 1 LIGHTS (4) & OUTLETS (2)
	20/1	55			536	56	20/1	
	20/1	57				58	20/1	
	20/1	59				60	20/1	
	20/1	61				62	20/1	
	20/1	63				64	20/1	
	20/1	65				66	20/1	
		67	3000			68	20/1	
LP-MB3	70/3	69		2300		70	20/1	
		71			2500	72	20/1	
CONNECTED VA PER PHASE			10989.0	9560.0	10256.0	NOTES		
CONNECTED AMPS PER PHASE			91.6	79.7	85.5			
25% OF CONTINUOUS & LIGHTING LOAD (VA)			2747.3	2390.0	2689.0			
CODE VA PER PHASE		4	13736.3	11950.0	13445.0			
CODE AMPS PER PHASE			114.5	99.6	112.0			

LP-MB2 LOAD CALCULATIONS

PANEL: LP-MB3 | VOLTAGE: 120/208 | MAIN CB: 70 AMP | BUS AMPS: 125 AMP
CB TYPE: BOLT-ON | MOUNTING: SURFACE | BUS A.I.C.: 22KA | BKR AIC: 22KA

CIRCUIT DESCRIPTION	BKR	CIRCUIT	PHASE A	PHASE B	PHASE C	CIRCUIT	BKR	CIRCUIT DESCRIPTION
FV-3121 MBR 1 AIR VALVE	15/1	1	200			2	15/1	FV-3221 MBR 2 AIR VALVE
FIT-3122 MBR 1 AIR FLOW METER	15/1	3	200	100		4	15/1	FIT-3222 MBR 2 AIR FLOW METER
SV-3151 MBR 1 AIR PURGE SV	15/1	5		100	100	6	15/1	FV-3251 MBR 2 AIR PURGE SV
FV-3171 MBR 1 PERMEATE INLET VALVE	15/1	7	200	200		8	15/1	FV-3271 MBR 2 PERMEATE INLET VALVE
FV-3191 MBR 1 PERMEATE OUTLET VALVE	15/1	9	200			10	15/1	FV-3291 MBR 2 PERMEATE OUTLET VALVE
FIT-3192 MBR 1 PERMEATE FLOW METER	15/1	11		200	100	12	15/1	FIT-3292 MBR 2 PERMEATE FLOW METER
AIT-3193 MBR 1/2 TURBIDITY ANALYZER	15/1	13	100		100	14	15/1	FV-3421 MBR 4 AIR VALVE
FV-3321 MBR 3 AIR VALVE	15/1	15	200			16	15/1	FIT-3422 MBR 4 AIR FLOW METER
FIT-3322 MBR 3 AIR FLOW METER	15/1	17	200	100	100	18	15/1	FV-3451 MBR 4 AIR PURGE SV
SV-3351 MBR 3 AIR PURGE SV	15/1	19	100	100		20	15/1	FV-3471 MBR 4 PERMEATE INLET VALVE
FV-3371 MBR 3 PERMEATE INLET VALVE	15/1	21	200	200		22	15/1	FV-3491 MBR 4 PERMEATE OUTLET VALVE
FV-3391 MBR 3 PERMEATE OUTLET VALVE	15/1	23			200	24	15/1	FIT-3492 MBR 4 PERMEATE FLOW METER
FIT-3392 MBR 3 PERMEATE FLOW METER	15/1	25	100	100		26	15/1	AIT-3393 MBR 3/4 TURBIDITY ANALYZER
FV-3521 MBR 5 AIR VALVE	15/1	27	200			28	15/1	FV-3621 MBR 6 AIR VALVE
FIT-3522 MBR 5 AIR FLOW METER	15/1	29	200		100	30	15/1	FIT-3622 MBR 6 AIR FLOW METER
SV-3551 MBR 5 AIR PURGE SV	15/1	31	100	100	100	32	15/1	FV-3651 MBR 6 AIR PURGE SV
FV-3571 MBR 5 PERMEATE INLET VALVE	15/1	33		200		34	15/1	FV-3671 MBR 6 PERMEATE INLET VALVE
FV-3591 MBR 5 PERMEATE OUTLET VALVE	15/1	35		200	200	36	15/1	FV-3691 MBR 6 PERMEATE OUTLET VALVE
FIT-3592 MBR 5 PERMEATE FLOW METER	15/1	37	100		200	38	15/1	FIT-3692 MBR 6 PERMEATE FLOW METER
AIT-3593 MBR 5/2 TURBIDITY ANALYZER	15/1	39	100	100		40	15/1	FIT-3881 MBR FEED FLOW METER
AIT-3699 MBR TSS ANALYZER	15/1	41			100	42	15/1	G-3201 MBR 3 INLET GATE
G-3101 MBR 1 INLET GATE	15/1	43	500		500	44	15/1	G-34-01 MBR 4 INLET GATE
G-3301 MBR 3 INLET GATE	15/1	45	500	500		46	15/1	G-3601 MBR 6 INLET GATE
G-3501 MBR 5 INLET GATE	15/1	47			500	48	15/1	
	15/1	49				50	15/1	
	15/1	51				52	15/1	
	15/1	53				54	15/1	
CONNECTED VA PER PHASE			3000.0	3300.0	2600.0	NOTES:		
CONNECTED AMPS PER PHASE			25.0	27.8	21.7			
25% OF CONTINUOUS & LIGHTING LOAD (VA)		4	750.0	825.0	650.0			
CODE VA PER PHASE			3750.0	4125.0	3250.0			
CODE AMPS PER PHASE			31.3	34.4	27.1			

LP-MB3 LOAD CALCULATIONS

ORIGINAL

NO.	DATE	DESIGN	DRAWN	CHECKED
C	09/05/18	MPJ	DCL	MPJ

REVISIONS

1	04/22/19	MPJ	DCL	MPJ
2	06/24/19	MPJ	DCL	MPJ
3	10/28/20	MPJ	DCL	MPJ
4	12/08/21	MPJ	DCL	MPJ

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
ELECTRICAL - POWER DISTRIBUTION
CALCULATIONS 4

AQUA ENGINEERING
533 W 2600 S, SUITE 275, BOUNTIFUL, UT 84010
PHONE (801) 298-1327 FAX (801) 298-0153

skm
533 W 2600 S, Suite 25
Bountiful, Utah 84010
Phone: (801) 677-0011
www.skmeng.com

ALBERT A. WEBB ASSOCIATES
CIVIL ENGINEERS
3788 McCRAY STREET
RIVERSIDE, CA 92506
PH (951) 686-1070
FAX (951) 788-1256
ENGINEERING CONSULTANTS

0 1/2 1
DRAWING IS TO SCALE
IF BAR MEASURES:
1" = FULL SCALE
1/2" = HALF SCALE

E-15

ALBERT A. WEBB ASSOCIATES
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FAX (951) 788-1256

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skm
533 W 2600 S, Suite 25
Bountiful, Utah 84010
Phone: (801) 677-0011
wwwskmeng.com

SHEET 164 OF 172

CE-22

DRAWING IS TO SCALE IF BAR MEASURES: 1" = FULL SCALE 1/2" = HALF SCALE

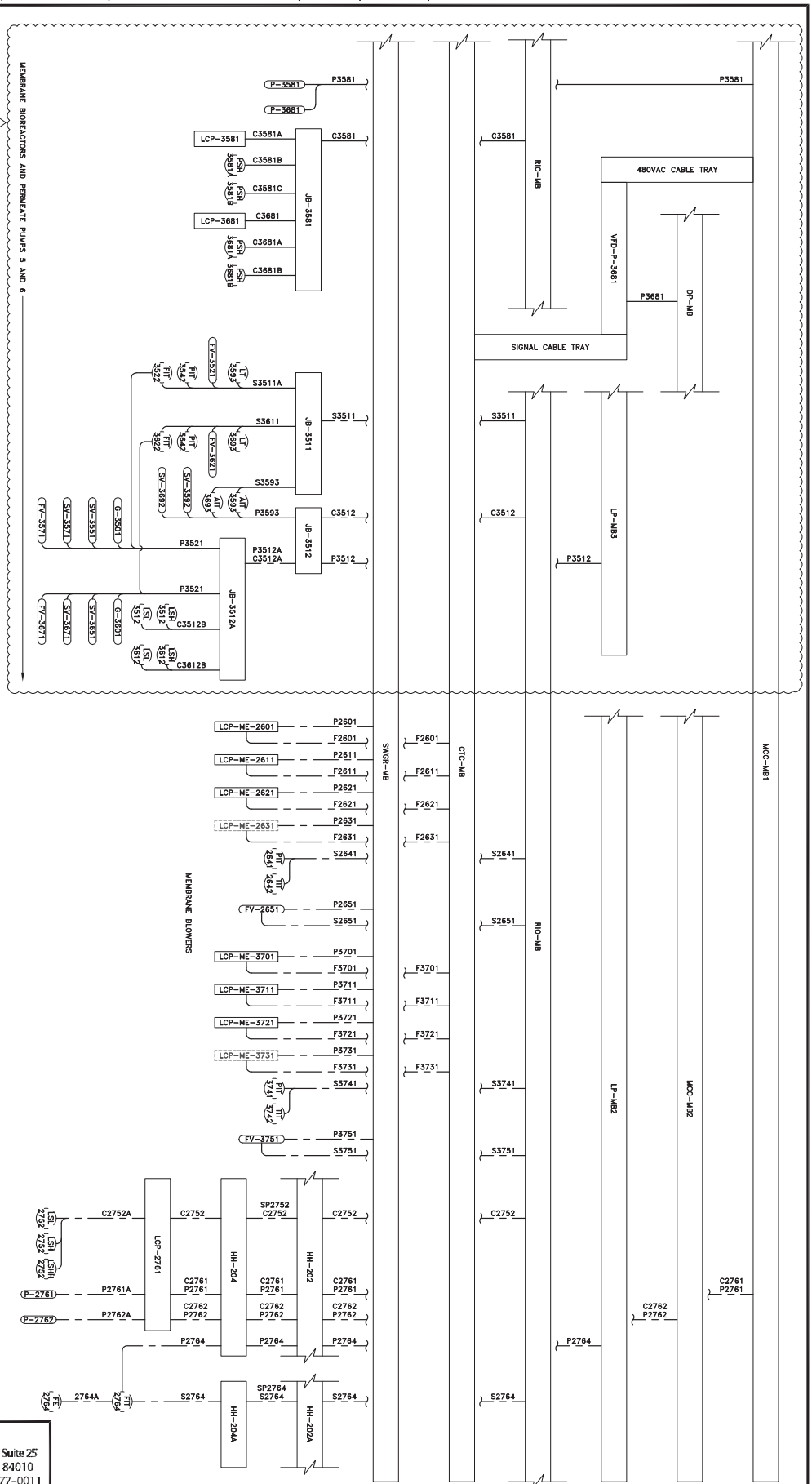
0 1/2 1

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
ELECTRICAL - CONDUITS AND DUCTBANKS
CONDUIT DEVELOPMENT 11

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				

REVISIONS			
3	12/06/21	MPJ	DCL	MPJ
2	10/26/20	MPJ	DCL	MPJ
1	06/24/19	MPJ	DCL	MPJ
C	09/05/18	MPJ	DCL	MPJ



NOTES:

1. CONDUITS THAT ARE COMBINED BETWEEN PULL POINTS ARE DENOTED WITH A + (PLUS) SYMBOL. SEE THE COMBINED CONDUITS SCHEDULE ON SHEET CE-23.1. CONDUITS THAT HAVE BEEN COMBINED SHALL BE LABELED WITH MULTIPLE CONDUIT TAGS, ONE FOR EACH CONDUIT THAT HAS BEEN COMBINED.
2. THE CONDUIT DEVELOPMENT AND SCHEDULE DOES NOT SHOW CONDUIT AND CONDUCTORS FOR LIGHTS, RECEPTACLES, AND DATA JACKS. IT ALSO DOESN'T SHOW CONDUIT AND CONDUCTORS FOR THE MBR BUILDING'S HVAC AND APPLIANCES FOR THE OFFICE, BREAK ROOM, CONTROL ROOM, FLR MECHANICAL ROOM AND RESTROOMS. THE CONTRACTOR IS RESPONSIBLE TO INCLUDE THESE CONDUITS AND CONDUCTORS IN THEIR WORK AND IN THEIR SUBMITTED CONDUIT ROUTING PLAN.

skm
533 W 2600 S, Suite 25
Bountiful, Utah 84010
Phone: (801) 677-0011
www.skmeng.com

DRAWING IS TO SCALE IF BAR MEASURES: 1/2" = HALF SCALE

0 1/2 1

CE-23

SHEET 166 OF 172

ALBERT A. WEBB ASSOCIATES
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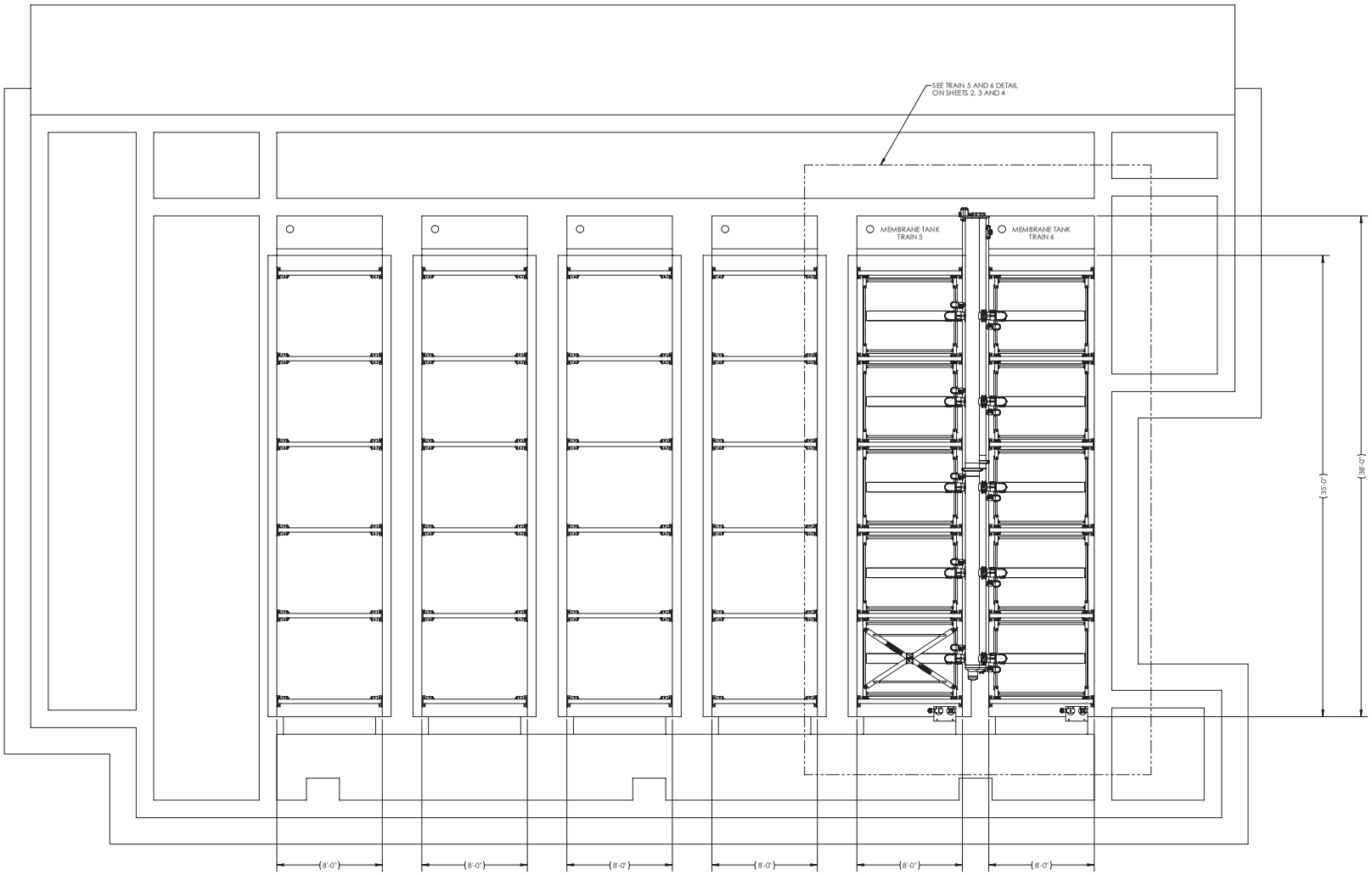
CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
ELECTRICAL - CONDUITS AND DUCTBANKS
CONDUIT DEVELOPMENT 12

ORIGINAL				
NO.	DATE	DESIGN	DRAWN	CHECKED
C	09/05/18	MPJ	DCL	MPJ
REVISIONS				
1	12/06/21	MPJ	DCL	MPJ



SUEZ WTS CONTROLLED DOCUMENT

REV	DESCRIPTION	ECO	DWN	APPR	APPR	DATE
A	ISSUED FOR APPROVAL		ES	NY	JC	30 Nov 21

TOLERANCES UNLESS NOTED
DECIMALS: .X ±0.1, .XX ±0.01, .XXX ±0.005
ANGLES: ±1°
FRAC: ±1/64

suez

CUSTOMER INFORMATION

LOVELY HILL WWTP
MEMBRANE RETROFIT

GENERAL ARRANGEMENT
MEMBRAIN TANKS
TRAIN 5 AND TRAIN 6

DRAWING NUMBER	REVISION
508999-WTS-ME-667-1010-DA-001	A

REF.: | DOC. OWNER:

PROJECT NO.	PART/MATERIAL NO.	SCALE	SIZE	SHEET
508999		1:48	D	1 OF 4

LAST SAVED: Tuesday, November 30, 2021 4:24:08 PM

REF. LOCATION: C:\SHP\DWM\508999 - LOVELY HILL WWTP MEMBRANE RETROFIT\2 Mechanical Drawings\

NOTES:

1. UNLESS NOTED OTHERWISE, DIMENSIONS GIVEN FOR INSTALLATION HAVE THE FOLLOWING TOLERANCES: DIMENSIONS TO INTERFACE/NOZZLES: ± 3/8"; ANGLES: ± 0.5°. ALL DIMENSIONS SHOWN ARE FINAL DIMENSIONS INSIDE THE TANK.
2. DESIGN DATA:
   - EST. CASSETTE SHIPPING WEIGHT: 4,820 lbs [2,190 kg]
   - EST. CASSETTE MAX. WEIGHT (SLUDGED): 9,500 lbs [4,310 kg] (INCLUDING LIFTING MODULE)
   - RECOMMENDED CRANE LIFTING CAPACITY: 10,000 lbs [4,535 kg]. THE SUEZ DESIGN GUIDELINE LISTED BELOW.
3. USE CRANE SCALE IF CASSETTE'S WEIGHT IS UNKNOWN. THE SUEZ CRANE SCALE USE GUIDE LISTED BELOW.
4. CRANE HOIST CHAINFALL SHOULD BE IN LINE WITH CASSETTE CENTERLINE, FOR BOTH ALONG AND ACROSS THE TANK, BEFORE LIFTING CASSETTE.
5. LIFTING MODULE IS NOT TO BE LEFT INSIDE MEMBRANE TANK DURING OPERATION. A STORAGE SPACE WILL BE REQUIRED WHEN LIFTING MODULE IS NOT IN USE.
6. FOR SCOPE OF SUEZ SUPPLIED EQUIPMENT AND TECHNICAL DATA REFER TO THE P&IDS AND EQUIPMENT BILL OF MATERIAL.
7. DESIGN, SUPPLY AND INSTALLATION OF MEMBRANE TANK DISTRIBUTION CHANNEL/SPLITTER BOX, SLUICE AND WEIR GATES, EMERGENCY OVERFLOW, AND/OR WALKWAYS/HANDRAILS ON TOP OF WALLS (IF REQUIRED) ARE BY OTHERS. THESE ARE NOT SHOWN FOR CLARITY.
8. DESIGN AND SUPPLY OF MEMBRANE TANK COVERS ARE BY OTHERS (TANK MUST BE VENTED). THE SUEZ DESIGN GUIDELINE LISTED BELOW. WALL BRACKETS/BEAMS ELEVATION SHOULD BE COORDINATED WITH TANK COVER THICKNESS (CURRENT SUEZ STANDARD IS 3").
9. DO NOT PUT THE CASSETTE ON TOP OF TANK COVER UNLESS THE TANK COVER WAS DESIGNED TO TAKE SLUDGED CASSETTE WEIGHT.
10. DESIGN AND SUPPLY OF SUPPORTS FOR PERMEATE AND AIR HEADERS ARE BY OTHERS. OVERALL SYSTEM ENGINEER TO DETERMINE DESIGN, NUMBER AND LOCATION OF SUPPORTS.

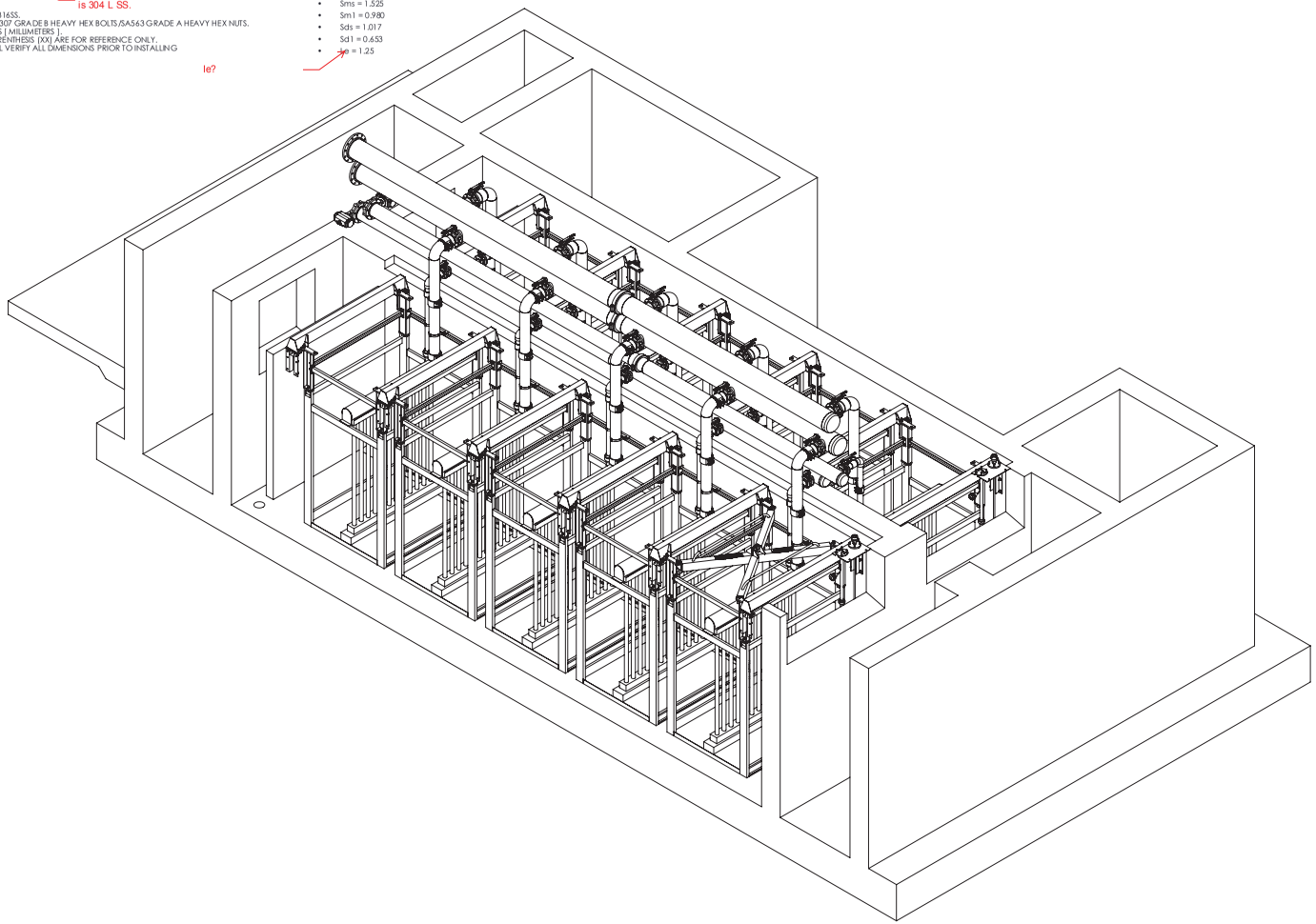
To be provided later.

11. INFLUENT DEFLECTOR PLATE IS REQUIRED TO PREVENT DIRECT IMPACT OF FEED WATER ON CASSETTES. THE SUEZ DESIGN GUIDELINE LISTED BELOW.
12. MEMBRANE TANK COVERS DESIGN TO BE COORDINATED WITH SUEZ TEAM FROM INITIAL STAGES OF COVER DESIGN. THE SUEZ DESIGN GUIDELINE LISTED BELOW.
13. THE FOLLOWING DESIGN GUIDELINES ARE AVAILABLE FROM SUEZ UPON REQUEST:
    - E000001-WTS-ME-T02-8522-SG-001 - MEMBRANE TOLERANCES.
    - E000001-WTS-ME-T02-8522-SG-016 - ZeeWeed 500D SERIES MEMBRANE LIFTING EQUIPMENT GUIDELINE
    - E000001-WTS-ME-T02-8522-SG-013 - BAFFLE DESIGN
    - CRANE SCALE INSTALLATION AND USE (IN SERV-0083 ZW500 CASSETTE SOLIDS REMOVAL PROCEDURE).
    - E000001-WTS-ME-T02-8522-SG-017 - MEMBRANE TANK COVERS DESIGN GUIDELINE.
14. ANY ANCHOR BOLT TO BE MINIMUM 4" AWAY FROM CONCRETE EDGES.
15. FOR INTERIOR TANK WALLS THAT HAVE BRACKETS ON BOTH SIDES, IF THE ANCHOR EMBEDMENT PLUS TWO TIMES THE ANCHOR DIAMETER IS GREATER THAN HALF OF TANK WALL THICKNESS, THEN THRU-WALL THREADED RODS MUST BE USED TO FIT 0.6875" DIA. HOLE (RODS TO BE SUPPLIED BY OTHERS)
16. PIPING MATERIAL:
    - AIR: SCH. 10, 304L SS AND SCH. 80, CPVC
    - PERMEATE: SCH. 10, 316L SS
17. GASKET MATERIAL:
    - SS LINES: EPDM
18. FASTENER MATERIAL:
    - CASSETTE HARD WARE : 316SS.
    - PIPING AND VALVES : SA307 GRADE B HEAVY HEX BOLTS/SA563 GRADE A HEAVY HEX NUTS.
19. ALL DIMENSIONS IN INCHES [MILLIMETERS].
20. DIMENSION SHOWN IN PARENTHESIS (XX) ARE FOR REFERENCE ONLY.
21. CONTRACTOR/SHOP SHALL VERIFY ALL DIMENSIONS PRIOR TO INSTALLING PIPING/EQUIPMENT.

Note that the current is 304 L SS.

le?

22. REFERENCE - PIPING & INSTRUMENTATION DIAGRAM: 508999-WTS- PR-SYS-EN21-DS-104
23. UNLESS NOTED OTHERWISE, ALL FLANGE BOLT HOLES TO BE STRADDLE MAJOR CENTERLINES.
24. ALL MATING FLANGES SHALL HAVE PARALLEL FACE WITH NO OFFSET BETWEEN PIPE CENTERLINES. COLD SPRINGING OF PIPING DURING INSTALLATION IS NOT ALLOWED.
25. EJECTOR TO BE CONNECTED TO A PIPE OR VERT AT PIPE'S HIGHEST POINT BETWEEN PERMEATE HEADER TIE POINT AND PERMEATE PUMP SUCTION.
26. WALL BRACKETS , CASSETTES HANGER ARMS, BRACINGS ARE DESIGNED TO FOLLOWING SEISMIC CONDITIONS:
    - RISK CATEGORY = III
    - SEISMIC DESIGN CATEGORY = D
    - SITE CLASS = D
    - Ss = 1.525
    - S1 = 0.653
    - Fa = 1.0
    - Fv = 1.5
    - Sms = 1.525
    - Sm1 = 0.980
    - Sds = 1.017
    - Sd1 = 0.653
    - Ip = 1.25



REV	DESCRIPTION	ECO	DWN	APPR	APPR	DATE
A	ISSUED FOR APPROVAL		ES	NY	JC	30 Nov 21

TOLERANCES UNLESS NOTED
DECIMALS .X .XX .XXX
ANGLES °
FRAC

CUSTOMER INFORMATION

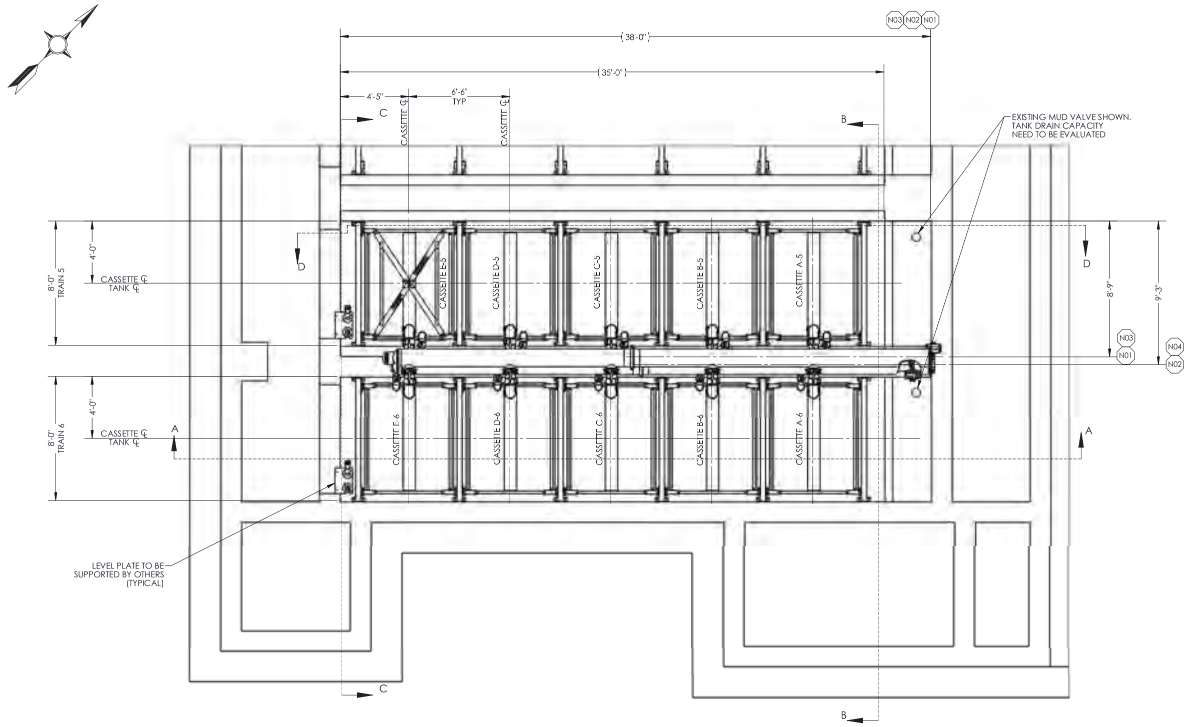
LOVELY HILL WWTP
MEMBRANE RETROFIT

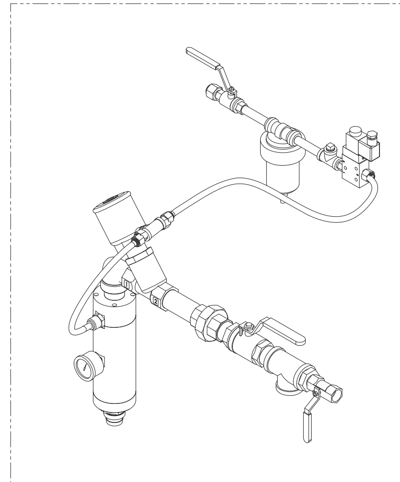
GENERAL ARRANGEMENT
MEMBRAIN TANKS
TRAIN 5 AND TRAIN 6

DRAWING NUMBER: 508999-WTS-ME-667-1010-DA-001
REVISION: A
REF.:
DOC. OWNER:
PROJECT NO.: 508999
PART/MATERIAL NO.:
SCALE: 1:48
SIZE: D
SHEET: 2 OF 4

LAST SAVED: Tuesday, November 30, 2021 4:24:08 PM

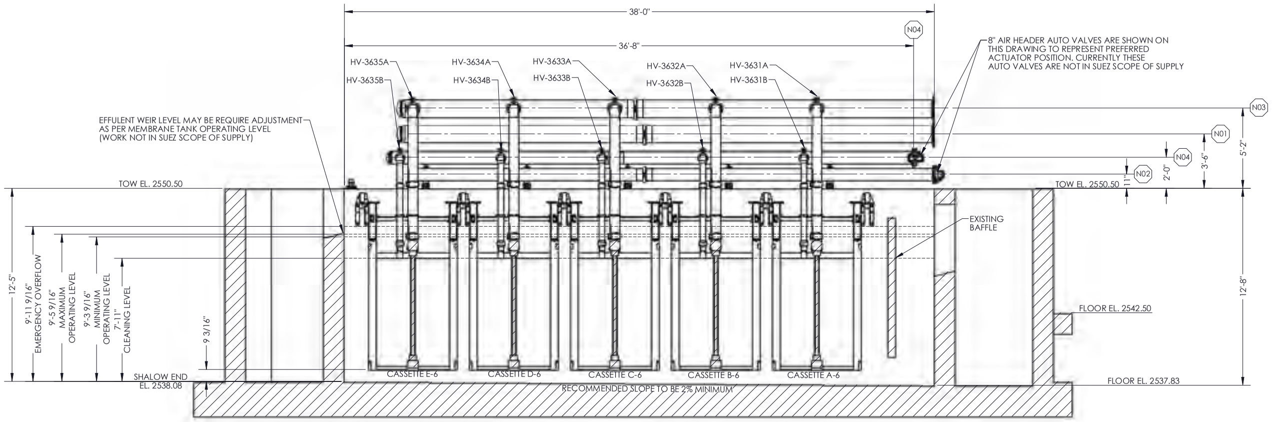
REF.LOCATION: C:\SHP\WIP\MAM\508999 - LOVELY HILL WWTP MEMBRANE RETROFIT\2 Mechanical Drawings\



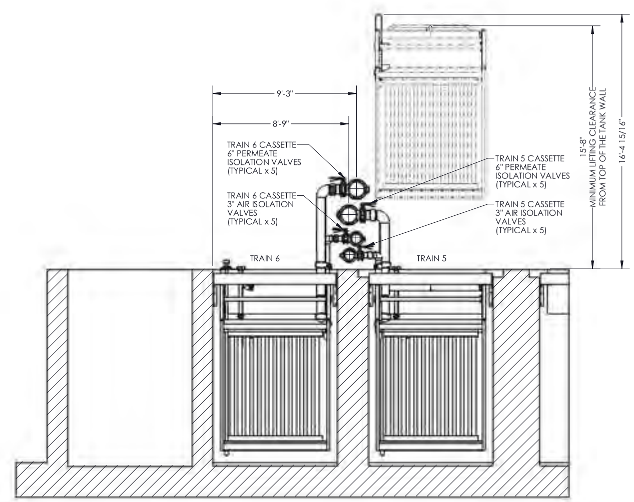


NOZZLE SCHEDULE

NOZZLE	DESCRIPTION	TYPE	SIZE
N01	PERMEATE/BACKPULSE OUTLET/INLET - TRAIN 5	150# RF FLG	12"
N02	AIR INLET FROM BLOWERS - TRAIN 5	150# RF FLG	8"
N03	PERMEATE/BACKPULSE OUTLET/INLET - TRAIN 6	150# RF FLG	12"
N04	AIR INLET FROM BLOWERS TRAIN 6	150# RF FLG	8"



SECTION A-A



SECTION B-B

A	ISSUED FOR APPROVAL	ES	NY	JC	30 Nov 21
REV	DESCRIPTION	DWN	APPR	APPR	DATE

ECO

TOLERANCES UNLESS NOTED
DECIMALS .X .XX .XXX
ANGLES °
FRAC

suez

CUSTOMER INFORMATION

LOVELY HILL WWTP
MEMBRANE RETROFIT

GENERAL ARRANGEMENT
MEMBRAIN TANKS
TRAIN 5 AND TRAIN 6

DRAWING NUMBER	REVISION
508999-WTS-ME-667-1010-DA-001	A

REF.: | DOC. OWNER:

PROJECT NO.	PART/MATERIAL NO.	SCALE	SIZE	SHEET
508999		1:48	D	3 OF 4

LAST SAVED: Tuesday, November 30, 2021 4:24:08 PM
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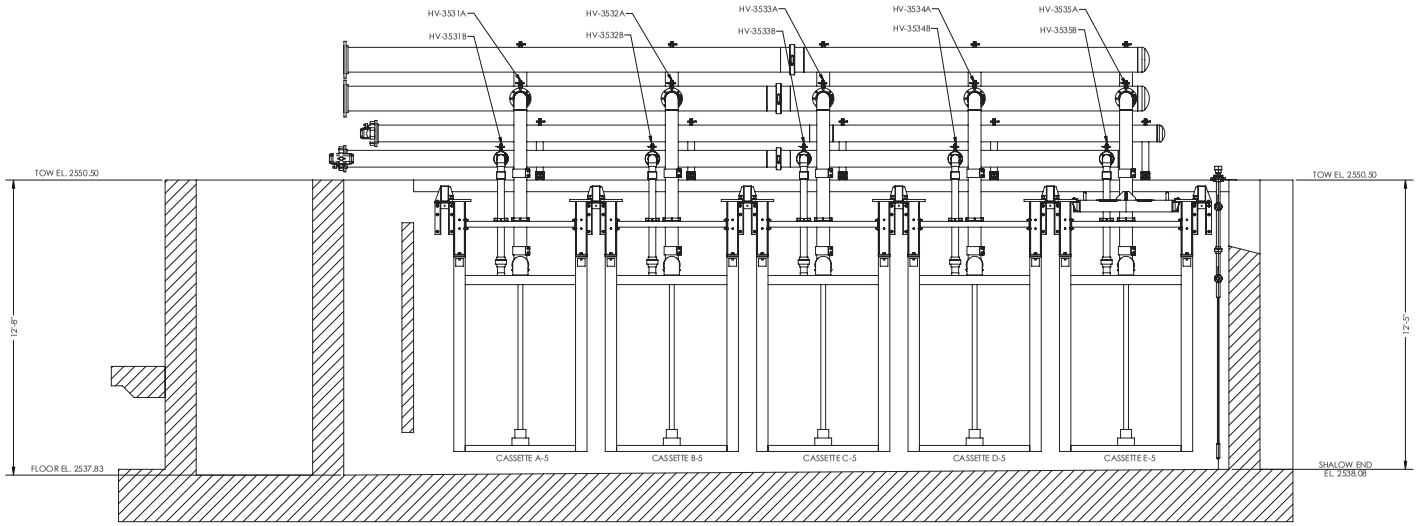
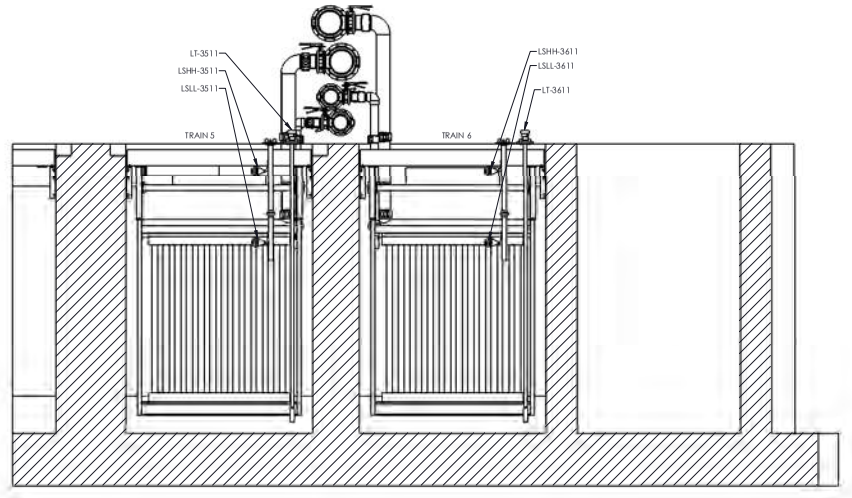


SECTION D-D



SECTION C-C

REV	DESCRIPTION	ECO	DWN	APPR	APPR	DATE
A	ISSUED FOR APPROVAL		ES	NY	JC	30 Nov 21

TOLERANCES UNLESS NOTED
DECIMALS ANGLES
.X °
.XX FRAC
.XXX

CUSTOMER INFORMATION

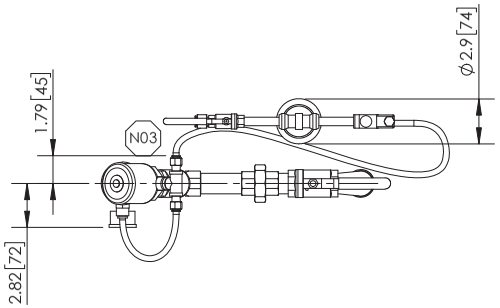
LOVELY HILL WWTP
MEMBRANE RETROFIT

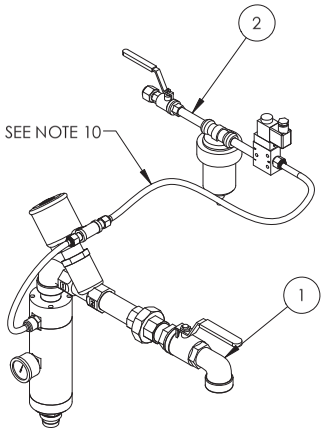
GENERAL ARRANGEMENT
MEMBRAIN TANKS
TRAIN 5 AND TRAIN 6

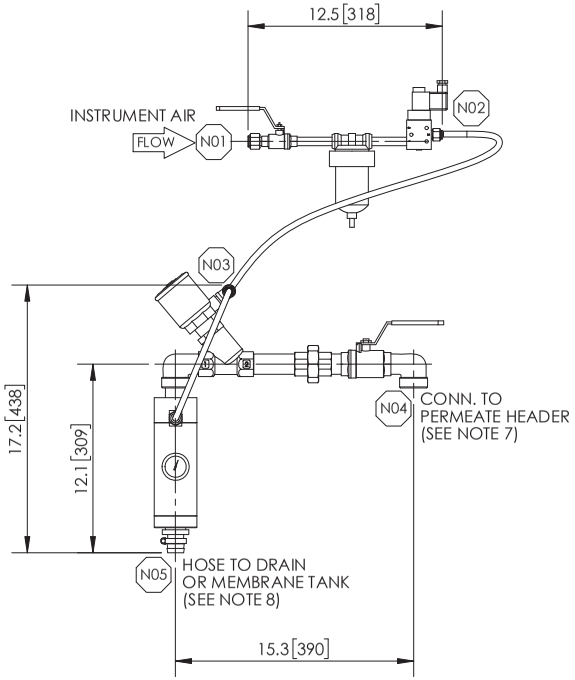
DRAWING NUMBER: 508999-WTS-ME-667-1010-DA-001
REVISION: A
REF.:
DOC. OWNER:
PROJECT NO.: 508999
PART/MATERIAL NO.:
SCALE: 1:32
SIZE: D
SHEET: 4 OF 4

LAST SAVED: Tuesday, November 30, 2021 4:24:08 PM

REF LOCATION: C:\SWPAM\MAM\508999 - LOVELY HILL WWTP MEMBRANE RETROFIT\2. Mechanical Drawings\







NOZZLE SCHEDULE			
NOZZLE	**DESCRIPTION**	**TYPE**	**SIZE**
N01	PLANT INSTRUMENT AIR	ODT	0.50
N02	INSTRUMENT AIR TO EJECTOR SPOOL	ODT	0.38
N03	INSTRUMENT AIR FROM AIR SPOOL	ODT	0.38
N04	PERMEATE/AIR FROM TOP OF PERMEATE PIPE	F-NPT	1.00
N05	TO OPEN DRAIN/MEMBRANE TANK (AIR GAP)	BARB	1.00

NOTES:

1. SHIPPING WEIGHT OF EJECTOR SPOOL - 11.0 LB/[5 KG]
2. SHIPPING WEIGHT OF SOLENOID SPOOL - 4.5 LB/[2 KG]
3. ALL PIPING & EQUIPMENT SHOWN SHALL BE FULLY SUPPORTED BY OTHERS.
4. ALL VALVES & INSTRUMENTS TO BE PROPERLY TAGGED.
5. PIPING MATERIAL:
   - HIGH PRESSURE: SCH. 10, 316 SS / PE TUBING
   - LOW PRESSURE: SCH. 10, 316 SS / PE TUBING
6. ALL DIMENSIONS IN INCHES [MILLIMETERS]
7. CONNECTION TO BE PROVIDED AT HIGHEST POINT ON PIPING BETWEEN PERMEATE HEADER AND PUMP.
8. AIR GAP IS REQUIRED ON EJECTOR DISCHARGE LINE EXHAUST TO MEMBRANE TANK OR DRAIN. 1" BRAIDED HOSE RECOMMENDED (HOSE BY OTHERS).
9. EJECTOR MUST BE INSTALLED VERTICALLY DOWNWARD.
10. THE 3/8" PE TUBING THAT CONNECTS THE TWO SPOOLS TOGETHER IS TO BE PROVIDED AND INSTALLED ONSITE BY OTHERS. UV RATED TUBING SHOULD BE USED IF INSTALLED OUTSIDE.

MM# 3178078 - W/ 24VDC SOLENOID - PLUMBING TABLE					
ITEM	QTY.	SAP	DOC#	DESCRIPTION	U/M
1	1	3178020	1319223	PLMB-EJECTOR,316,1.00X0.25,PE TUBE	EA
2	1	3178022	1319225	PLMB-AIR,316,0.25,24VDC,PE TUBE	EA

MM# 3178079 - W/ 120VAC SOLENOID - PLUMBING TABLE					
ITEM	QTY.	SAP	DOC#	DESCRIPTION	U/M
1	1	3178020	1319223	PLMB-EJECTOR,316,1.00X0.25,PE TUBE	EA
2	1	3178023	1319226	PLMB-AIR,316,0.25,120VAC,PE TUBE	EA

REV	DESCRIPTION	ECO	DWN	APPR	APPR	DATE
A	INITIAL DESIGN	135731	XC	RJ	SA	08 Apr 20

TOLERANCES UNLESS NOTED
DECIMALS: X; XX +/-0.50; XXX
ANGLES: +/-0.5°
FRAC: +/- 1/2"

CUSTOMER INFORMATION

ASSY-EJECTOR,316,1.00X0.25,PE TUBE

DRAWING NUMBER	REVISION
1319243	A

REF.:	DOC. OWNER:

PROJECT NO.	PART/MATERIAL NO.	SCALE	SIZE	SHEET
	3178078, 3178079	1:8	B	1 OF 1

LAST SAVED: Wednesday, April 8, 2020 9:05:17 AM

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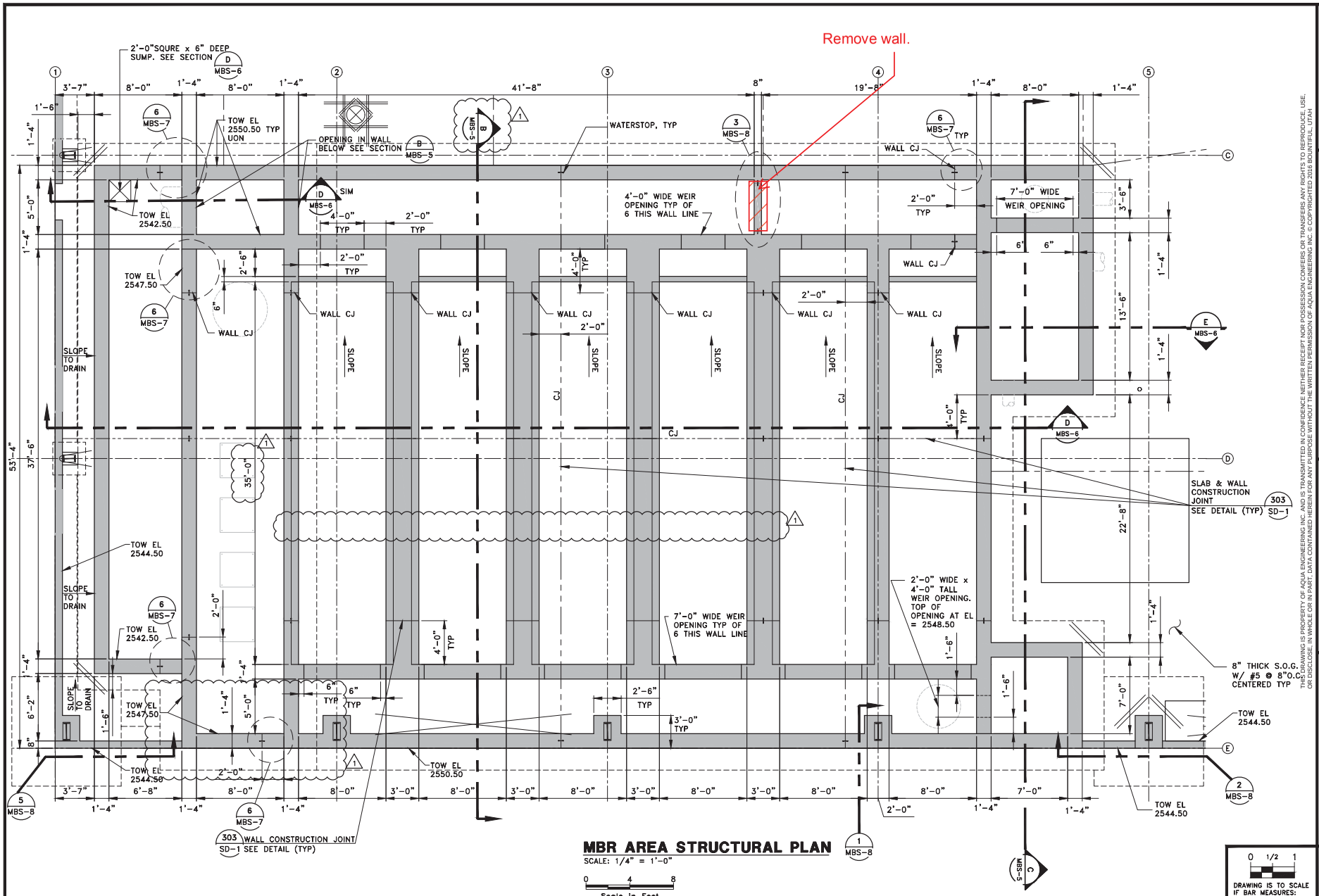

MBR AREA STRUCTURAL PLAN

SCALE: 1/4" = 1'-0"

0 4 8
Scale in Feet

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	CN	SML	EN
REVISIONS				
1	01/18/19	CN	SML	EN

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
MEMBRANE BUILDING
MBR AREA STRUCTURAL PLAN

AQUA ENGINEERING
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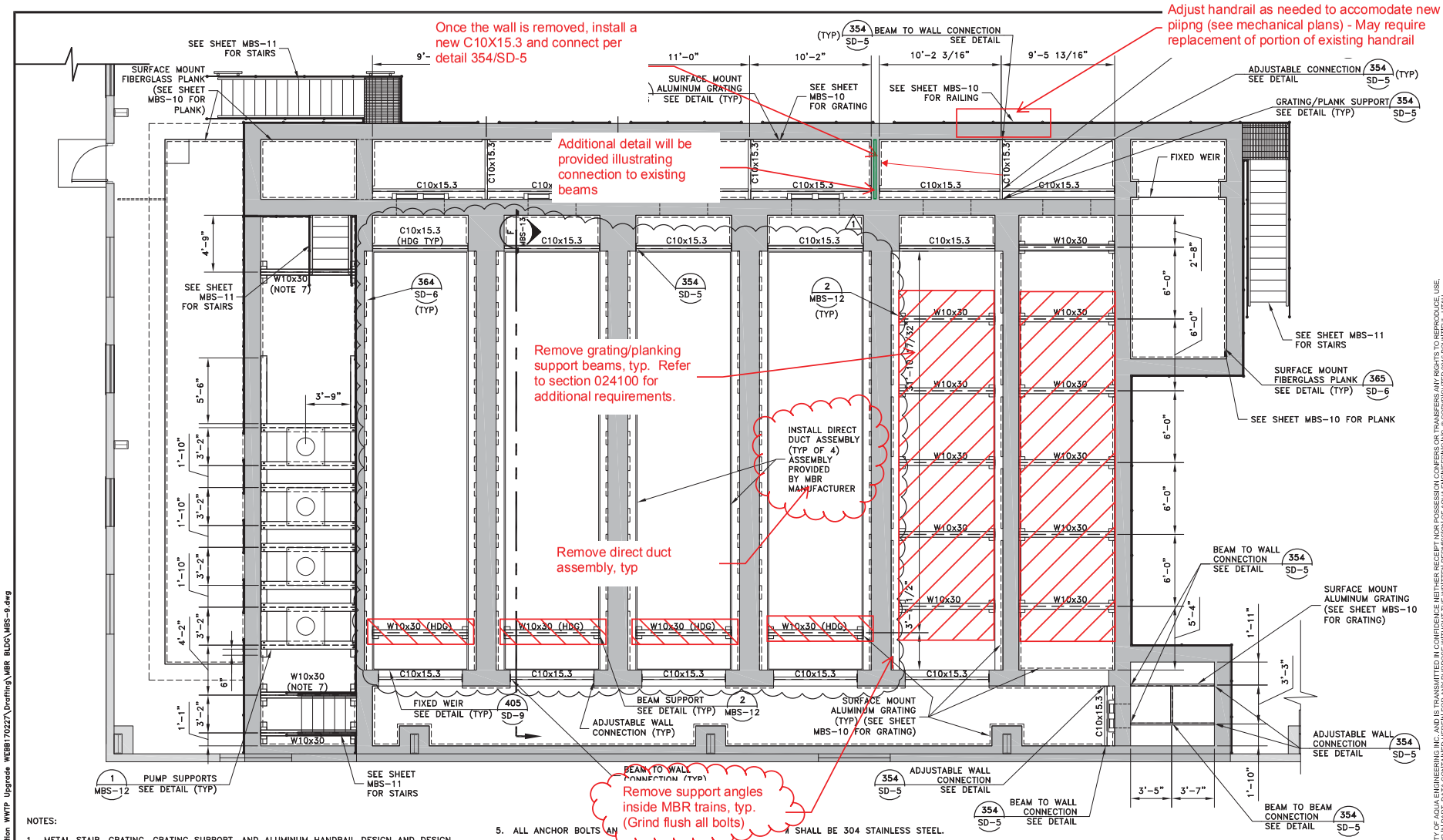
(951) 686-1070
FAX (951) 788-1256

0 1/2 1
DRAWING IS TO SCALE IF BAR MEASURES:
1" = FULL SCALE
1/2" = HALF SCALE

SHEET
MBS-3



PLANK & GRATING SUPPORT PLAN

SCALE: 1/4"=1'-0"

0 4 8

Scale in Feet

NOTES:

1. METAL STAIR, GRATING, GRATING SUPPORT, AND ALUMINUM HANDRAIL DESIGN AND DESIGN DETAILS ARE PROVIDED AS GUIDANCE ONLY.
2. METAL STAIR GRATING, GRATING SUPPORTS, AND ALUMINUM HANDRAIL DESIGN SHALL BE A DEFFERED SUBMITTAL AND SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA. IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS
   - 051200 (STRUCTURAL STEEL)
   - 051400 (STRUCTURAL ALUMINUM)
   - 055213 (PIPE AND TUBE RAILINGS)
   - 055100 (METAL STAIRS)
   - 055300 (METAL GRATINGS)
3. HOT DIP GALVANIZE FABRICATED METAL ASSEMBLIES FOLLOWING WELDING AND/ OR DRILLING.
4. REPAIR DAMAGED GALVANIZING IN ACCORDANCE WITH TECHNICAL SPECIFICATION 098000.
5. ALL ANCHOR BOLTS AN[illegible] SHALL BE 304 STAINLESS STEEL.
6. ALUMINUM IN CONTACT WITH OTHER METALS AND/ OR CONCRETE SHALL BE COATED PER SPECIFICATION 098000.
7. ALTERNATE SUPPORT BEAM OR MODIFIED C10x15.3 MAY BE USED AS REQUIRED TO SUPPORT STAIR STRINGERS.
8. DIRECT DUCT ASSEMBLY SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AND REQUIREMENTS.
9. USE 316 STAINLESS STEEL ANCHORS FOR ANCHORING OF THE FRAME TO BASIN CONCRETE.

NO.	DATE	DESIGN	DRAW.	CHK.
ORIGINAL				
C	09/05/18	BP	CAL	
REVISIONS				
1	01/18/19	BP	KRB	JRL

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
MEMBRANE BUILDING
PLANK & GRATING SUPPORT PLAN

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RIVERSIDE, CA. 92506
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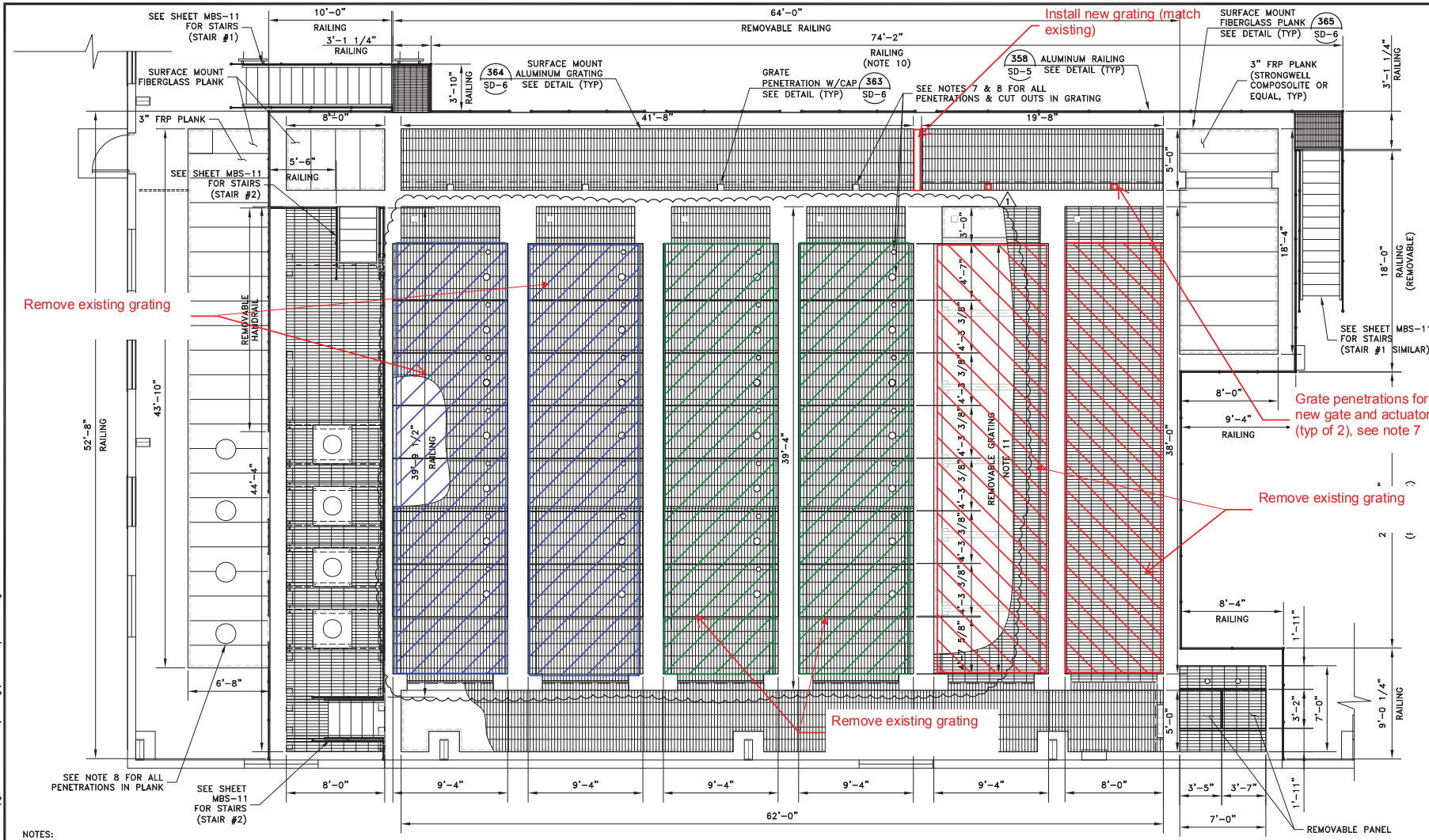
FAX (951) 788-1256

0 1/2 1

DRAWING IS TO SCALE IF BAR MEASURES:
1" = FULL SCALE
1/2" = HALF SCALE

SHEET
MBS-9

CAL 01/22/2019 X:\Beaumont\Salt Mitigation WWTP Upgrade WEBB170227\Drafting\MBR BLDG\MBS-9.dwg



NOTES:

1- METAL STAIR, GRATING, GRATING SUPPORT, AND ALUMINUM HANDRAIL DESIGN AND DESIGN DETAILS ARE PROVIDED AS GUIDANCE ONLY.

2- METAL STAIR GRATING, GRATING SUPPORTS, AND ALUMINUM HANDRAIL DESIGN SHALL BE A DEFERRED SUBMITTAL AND SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS
051200 (STRUCTURAL STEEL)
051400 (STRUCTURAL ALUMINUM)
055213 (PIPE AND TUBE RAILINGS)
055100 (METAL STAIRS)
055300 (METAL GRATINGS)

3- HOT DIP GALVANIZE FABRICATED METAL ASSEMBLIES FOLLOWING WELDING AND/ OR DRILLING.

4- REPAIR DAMAGED GALVANIZING IN ACCORDANCE WITH TECHNICAL SPECIFICATION 098000.

5- ALL ANCHOR BOLTS AND BOLTS IN CONTACT WITH ALUMINUM SHALL BE 304 STAINLESS STEEL.

6- ALUMINUM IN CONTACT WITH OTHER METALS AND/ OR CONCRETE SHALL BE COATED PER SPECIFICATION 098000.

7- BAND GRATING AT ALL PENETRATIONS AND CUT OUTS.

8- VERIFY ALL DIMENSIONS AND LOCATIONS OF PENETRATIONS IN GRATING AND PLANK.

9- GRATING SUPPORTED BY MBR CASSETTE FRAME. VERIFY LOCATION AND DIMENSIONS.

10- ALL HANDRAIL SHALL BE SIDE-WALL MOUNTED UON.

11- MAXIMUM DEPTH OF GRATING IN THE MBR TRAINS IS 1.5" (1)

STAIR, HANDRAIL, & GRATING PLAN

SCALE: 1/4"=1'-0"

0 4 8
Scale In Feet

Phase 1
Phase 2
Phase 3

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	BP	CAL	JRL
REVISIONS				
1	01/18/19	BP	KRB	JRL

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
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STAIR, HANDRAIL, & GRATING PLAN

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ENGINEERING CONSULTANTS

0 1/2 1
DRAWING IS TO SCALE IF BAR MEASURES:
1" = FULL SCALE
1/2" = HALF SCALE

SHEET
MBS-10

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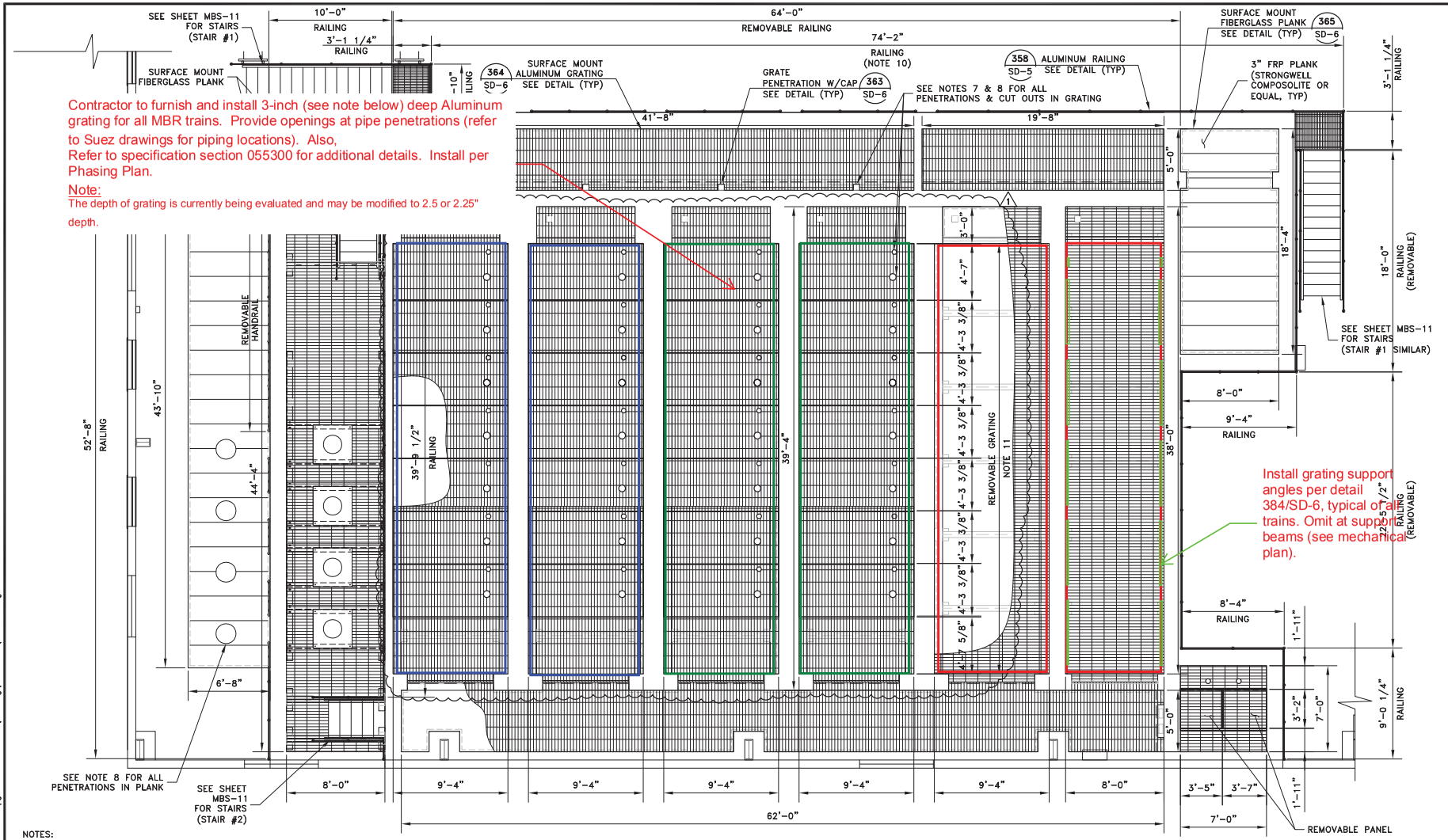

Contractor to furnish and install 3-inch (see note below) deep Aluminum grating for all MBR trains. Provide openings at pipe penetrations (refer to Suez drawings for piping locations). Also,
Refer to specification section 055300 for additional details. Install per Phasing Plan.

Note:
The depth of grating is currently being evaluated and may be modified to 2.5 or 2.25" depth.

NOTES:

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2- METAL STAIR GRATING, GRATING SUPPORTS, AND ALUMINUM HANDRAIL DESIGN SHALL BE A DEFERRED SUBMITTAL AND SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS
051200 (STRUCTURAL STEEL)
051400 (STRUCTURAL ALUMINUM)
055213 (PIPE AND TUBE RAILINGS)
055100 (METAL STAIRS)
055300 (METAL GRATINGS)

3- HOT DIP GALVANIZE FABRICATED METAL ASSEMBLIES FOLLOWING WELDING AND/ OR DRILLING.

4- REPAIR DAMAGED GALVANIZING IN ACCORDANCE WITH TECHNICAL SPECIFICATION 098000.

5- ALL ANCHOR BOLTS AND BOLTS IN CONTACT WITH ALUMINUM SHALL BE 304 STAINLESS STEEL.

6- ALUMINUM IN CONTACT WITH OTHER METALS AND/ OR CONCRETE SHALL BE COATED PER SPECIFICATION 098000.

7- BAND GRATING AT ALL PENETRATIONS AND CUT OUTS.

8- VERIFY ALL DIMENSIONS AND LOCATIONS OF PENETRATIONS IN GRATING AND PLANK.

9- GRATING SUPPORTED BY MBR CASSETTE FRAME. VERIFY LOCATION AND DIMENSIONS.

10- ALL HANDRAIL SHALL BE SIDE-WALL MOUNTED UON.

11- MAXIMUM DEPTH OF GRATING IN THE MBR TRAINS IS 1.5" (1)

STAIR, HANDRAIL, & GRATING PLAN

SCALE: 1/4"=1'-0"

0 4 8
Scale In Feet

Phase 1
Phase 2
Phase 3

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	BP	CAL	JRL
REVISIONS				
1	01/18/19	BP	KRB	JRL

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
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0 1/2 1
DRAWING IS TO SCALE IF BAR MEASURES:
1" = FULL SCALE
1/2" = HALF SCALE

SHEET
MBS-10

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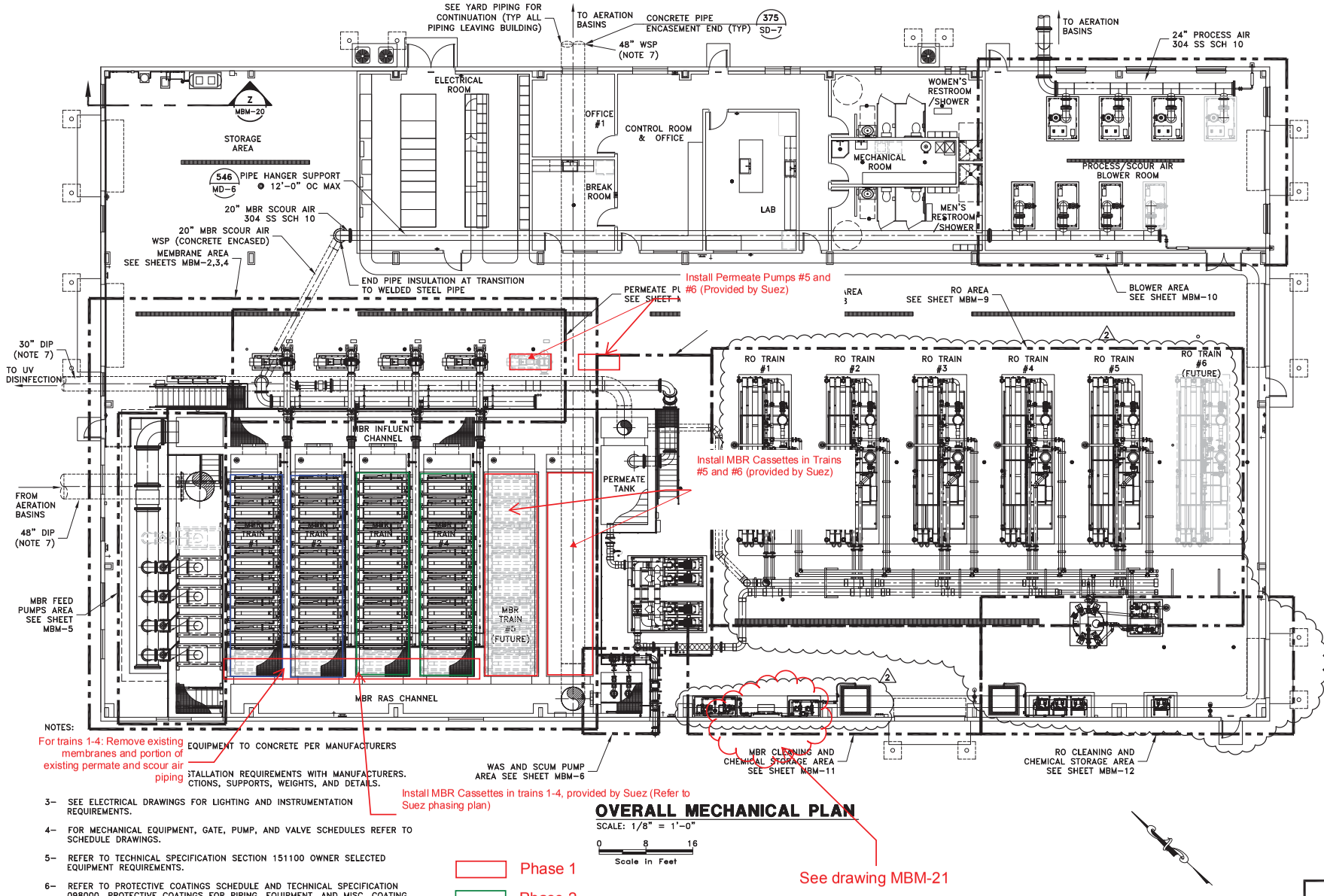

NOTES:

EQUIPMENT TO CONCRETE PER MANUFACTURERS

STALLATION REQUIREMENTS WITH MANUFACTURERS. CTIONS, SUPPORTS, WEIGHTS, AND DETAILS.

3– SEE ELECTRICAL DRAWINGS FOR LIGHTING AND INSTRUMENTATION REQUIREMENTS.

4– FOR MECHANICAL EQUIPMENT, GATE, PUMP, AND VALVE SCHEDULES REFER TO SCHEDULE DRAWINGS.

5– REFER TO TECHNICAL SPECIFICATION SECTION 151100 OWNER SELECTED EQUIPMENT REQUIREMENTS.

6– REFER TO PROTECTIVE COATINGS SCHEDULE AND TECHNICAL SPECIFICATION 098000, PROTECTIVE COATINGS FOR PIPING, EQUIPMENT, AND MISC. COATING REQUIREMENTS.

7– INSTALL A FLEXIBLE PIPE CONNECTION (MJ SLEEVE) 5' FROM TERMINATION OF PIPE CONCRETE ENCASEMENT. IF A FITTING PREVENTS INSTALLATION OF THE SLEEVE, INSTALL SLEEVE AFTER THE FITTINGS.

OVERALL MECHANICAL PLAN

SCALE: 1/8" = 1'-0"

0 8 16
Scale in Feet

NO.	DATE	ORIGINAL DESIGN	DRAWN	CHECKED
C	09/05/18	BP	CAL	JRL
REVISIONS				
1	01/18/19	BP	CAL	JRL
2	04/22/19	BP	CAL	JRL

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
MEMBRANE BUILDING
OVERALL MECHANICAL PLAN

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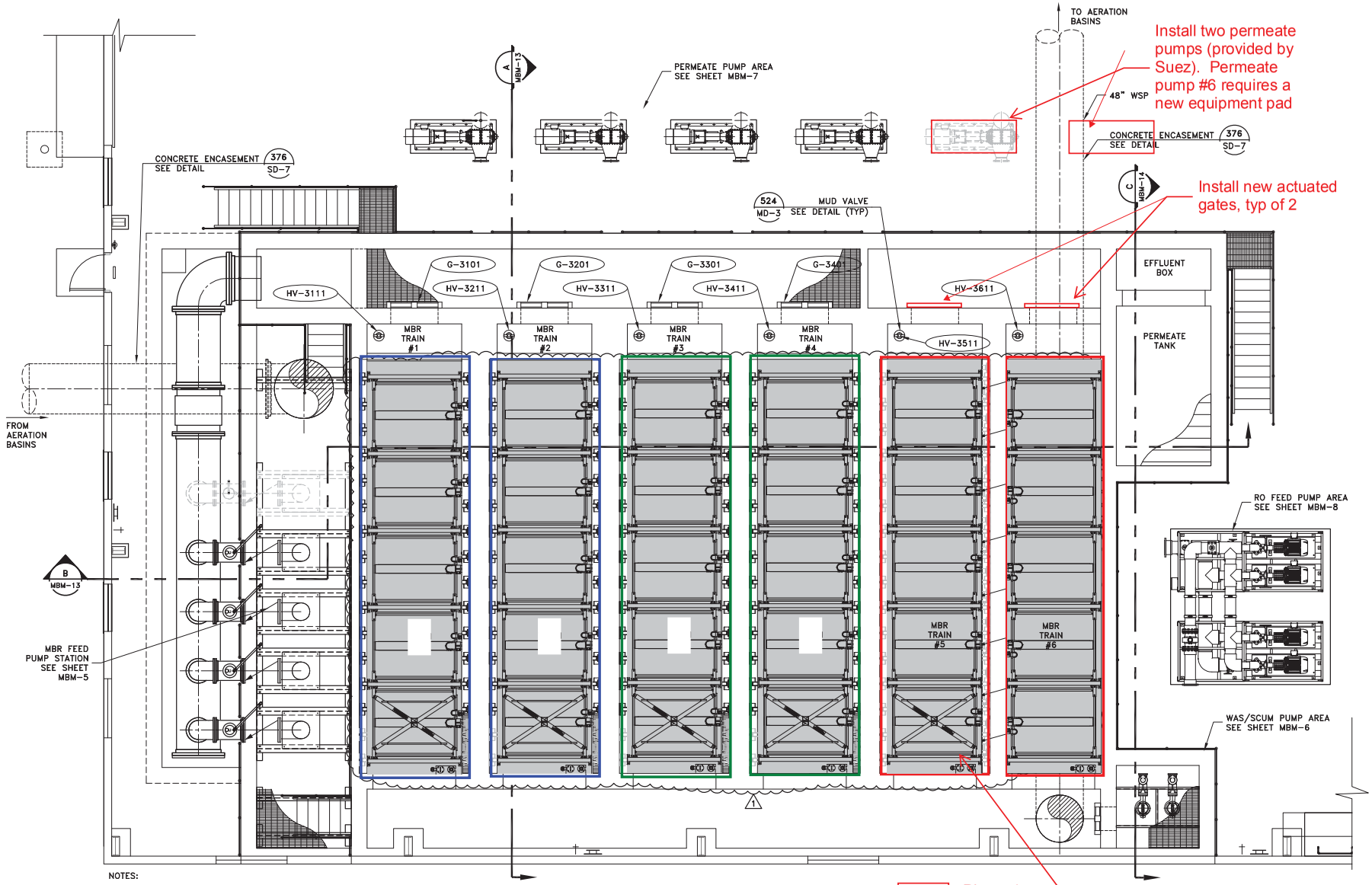
0 1/2 1
DRAWING IS TO SCALE IF BAR MEASURES:
1" = FULL SCALE
1/2" = HALF SCALE

SHEET
MBM-1



NOTES:

1– FOR MECHANICAL EQUIPMENT, GATE, PUMP, AND VALVE SCHEDULES REFER TO SCHEDULE DRAWINGS.

2– FOR PIPING SCHEDULE REFER TO DRAWING MBM-30.

3– BURIED RAS PIPE SHALL BE FULLY WELDED WITHOUT MECHANICAL JOINTS. PIPE SHALL BE PRESSURE TESTED PRIOR TO BACKFILL.

MBR AREA MECHANICAL PLAN

SCALE: 1/4"=1'-0"

0 4 8

Scale in Feet

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
REVISIONS				
C	09/05/18	BP	CAL	JRL
1	01/18/19	BP	CAL	JRL

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
MEMBRANE BUILDING
MBR AREA MECHANICAL PLAN

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DRAWING IS TO SCALE IF BAR MEASURES:
1" = FULL SCALE
1/2" = HALF SCALE

SHEET
MBM-2

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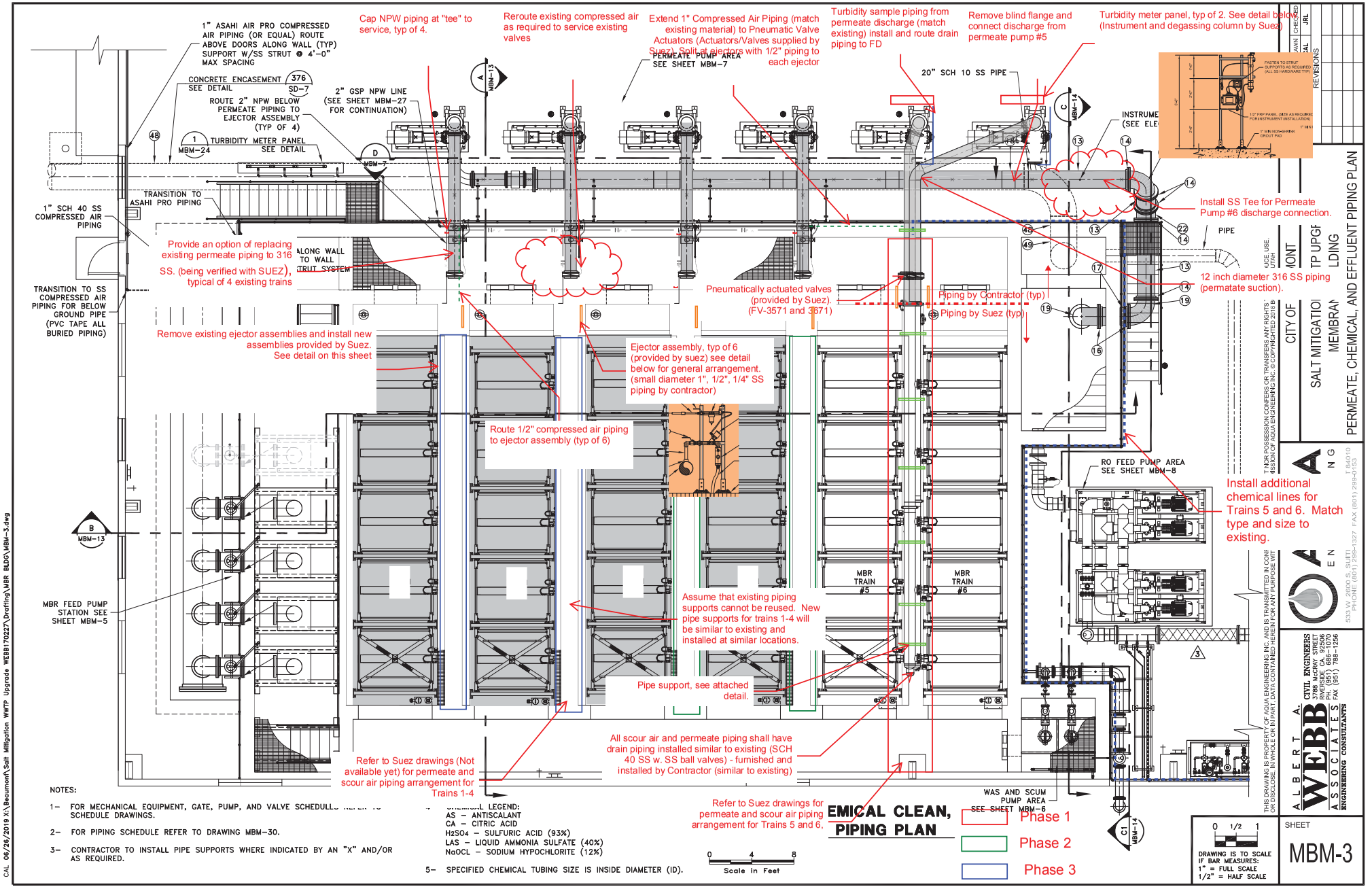
1" ASAHI AIR PRO COMPRESSED AIR PIPING (OR EQUAL) ROUTE ABOVE DOORS ALONG WALL (TYP) SUPPORT W/SS STRUT @ 4'-0" MAX SPACING
CONCRETE ENCASEMENT SEE DETAIL 376 SD-7
ROUTE 2" NPW BELOW PERMEATE PIPING TO EJECTOR ASSEMBLY (TYP OF 4)
1 MBM-24 TURBIDITY METER PANEL SEE DETAIL
2" GSP NPW LINE (SEE SHEET MBM-27 FOR CONTINUATION)
TRANSITION TO ASAHI PRO PIPING
1" SCH 40 SS COMPRESSED AIR PIPING
TRANSITION TO SS COMPRESSED AIR PIPING FOR BELOW GROUND PIPE (PVC TAPE ALL BURIED PIPING)
Cap NPW piping at "tee" to service, typ of 4.
Reroute existing compressed air as required to service existing valves
Extend 1" Compressed Air Piping (match existing material) to Pneumatic Valve Actuators (Actuators/Valves supplied by Suez). Split at ejectors with 1/2" piping to each ejector
PERMEATE PUMP AREA SEE SHEET MBM-7
Turbidity sample piping from permeate discharge (match existing) install and route drain piping to FD
Remove blind flange and connect discharge from permeate pump #5
Turbidity meter panel, typ of 2. See detail below (Instrument and degassing column by Suez)
20" SCH 10 SS PIPE
Install SS Tee for Permeate Pump #6 discharge connection.
12 inch diameter 316 SS piping (permatate suction).
Provide an option of replacing existing permeate piping to 316 SS. (being verified with SUEZ), typical of 4 existing trains
Pneumatically actuated valves (provided by Suez). (FV-3571 and 3671)
Piping by Contractor (typ)
Piping by Suez (typ)
Remove existing ejector assemblies and install new assemblies provided by Suez. See detail on this sheet
Ejector assembly, typ of 6 (provided by suez) see detail below for general arrangement. (small diameter 1", 1/2", 1/4" SS piping by contractor)
Route 1/2" compressed air piping to ejector assembly (typ of 6)
RO FEED PUMP AREA SEE SHEET MBM-8
Install additional chemical lines for Trains 5 and 6. Match type and size to existing.
MBR FEED PUMP STATION SEE SHEET MBM-5
MBR TRAIN #5
MBR TRAIN #6
Assume that existing piping supports cannot be reused. New pipe supports for trains 1-4 will be similar to existing and installed at similar locations.
Pipe support, see attached detail.
All scour air and permeate piping shall have drain piping installed similar to existing (SCH 40 SS w. SS ball valves) - furnished and installed by Contractor (similar to existing)
Refer to Suez drawings (Not available yet) for permeate and scour air piping arrangement for Trains 1-4
Refer to Suez drawings for permeate and scour air piping arrangement for Trains 5 and 6.
WAS AND SCUM PUMP AREA SEE SHEET MBM-6
ALONG WALL TO WALL TRUT SYSTEM
PIPE
INSTRUME (SEE ELE
FASTEN TO STRUT SUPPORTS AS REQUIRED (ALL SS HARDWARE TYP.)
1/2" FRP PANEL (SIZE AS REQUIRED FOR INSTRUMENT INSTALLATION)
3" MIN NON-SHRINK GROUT PAD
3" MIN
NOTES:
1- FOR MECHANICAL EQUIPMENT, GATE, PUMP, AND VALVE SCHEDULE SCHEDULE DRAWINGS.
2- FOR PIPING SCHEDULE REFER TO DRAWING MBM-30.
3- CONTRACTOR TO INSTALL PIPE SUPPORTS WHERE INDICATED BY AN "X" AND/OR AS REQUIRED.
CHEMICAL LEGEND:
AS - ANTISCALANT
CA - CITRIC ACID
H2SO4 - SULFURIC ACID (93%)
LAS - LIQUID AMMONIA SULFATE (40%)
NaOCL - SODIUM HYPOCHLORITE (12%)
5- SPECIFIED CHEMICAL TUBING SIZE IS INSIDE DIAMETER (ID).
0 4 8
Scale in Feet
EMICAL CLEAN, PIPING PLAN
Phase 1
Phase 2
Phase 3
0 1/2 1
DRAWING IS TO SCALE IF BAR MEASURES: 1" = FULL SCALE 1/2" = HALF SCALE
SHEET
MBM-3
CITY OF
SALT MITIGATIOI
MEMBRAI
LDING
TP UPGF
MONT
PERMEATE, CHEMICAL, AND EFFLUENT PIPING PLAN
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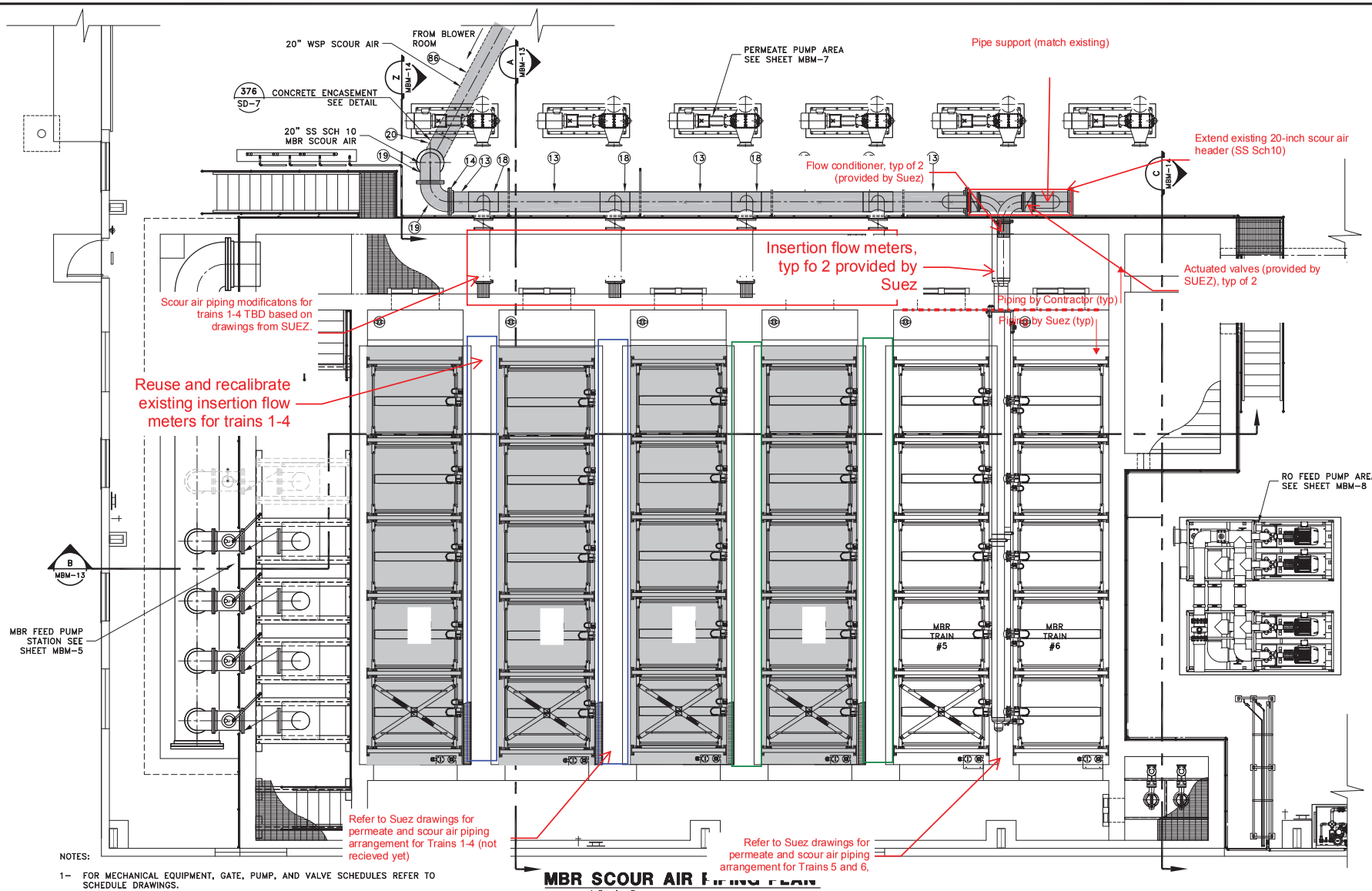

NOTES:

1- FOR MECHANICAL EQUIPMENT, GATE, PUMP, AND VALVE SCHEDULES REFER TO SCHEDULE DRAWINGS.

2- FOR PIPING SCHEDULE REFER TO DRAWING MBM-30.

3- ALL GASKET MATERIALS FOR SCOUR AIR PIPING SHALL BE SUITABLE FOR AIR SERVICE AND TEMPERATURES UP TO 230° FAHRENHEIT.

4- BURIED AIR PIPE SHALL BE FULL WELDED WITHOUT MECHANICAL JOINTS. PIPE SHALL BE PRESSURE TESTED PRIOR TO BACKFILL.

5- CONTRACTOR TO INSTALL PIPE SUPPORTS WHERE INDICATED WITH AN "X" AND/OR AS REQUIRED.

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	BP	CAL	JRL
REVISIONS				

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
MEMBRANE BUILDING
MBR SCOUR AIR PIPING PLAN

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DRAWING IS TO SCALE IF BAR MEASURES:
1" = FULL SCALE
1/2" = HALF SCALE

SHEET
MBM-4

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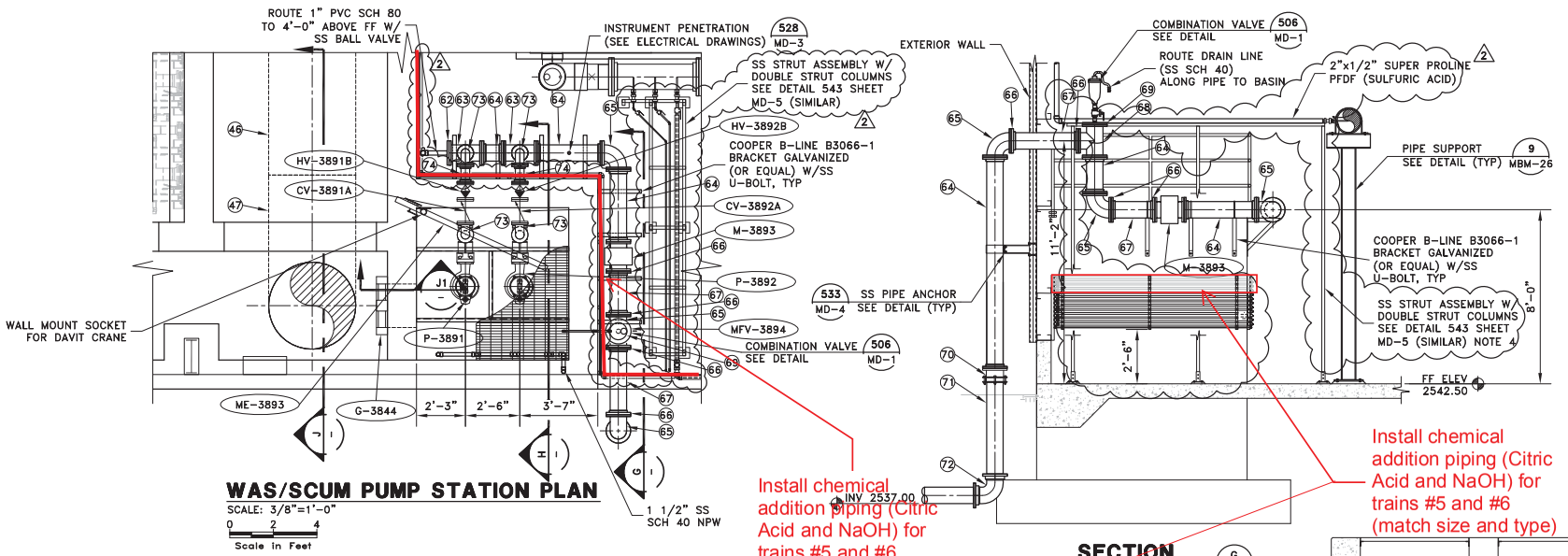

NOTES:

1- FOR MECHANICAL EQUIPMENT, GATE, PUMP, AND VALVE SCHEDULES REFER TO SCHEDULE DRAWINGS.

2- FOR PIPING SCHEDULE REFER TO DRAWING MBM-30.

3- BURIED WELDED STEEL PIPE SHALL BE TESTED IN ACCORDANCE WITH TESTING REQUIREMENTS LISTED IN THE YARD PIPING SCHEDULE. ALL TESTING SHALL BE DONE PRIOR TO CONCRETE ENCASEMENT AND BACKFILLING OF PIPE.

4- CONTRACTOR TO PROVIDE PROVISIONS FOR EXPANSION/CONTRACTION OF EXPOSED DOUBLE CONTAINMENT PIPING. 2

NO.	DATE	ORIGINAL DESIGN	DRAWN	CHECKED
C	09/05/18	BP	CAL	JRL
REVISIONS				
1	01/18/19	BP	CAL	JRL
2	06/24/19	BP	CAL	JRL

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
MEMBRANE BUILDING
WAS PUMP STATION PLAN AND SECTION

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0 1/2 1
DRAWING IS TO SCALE IF BAR MEASURES:
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1/2" = HALF SCALE

SHEET
MBM-6

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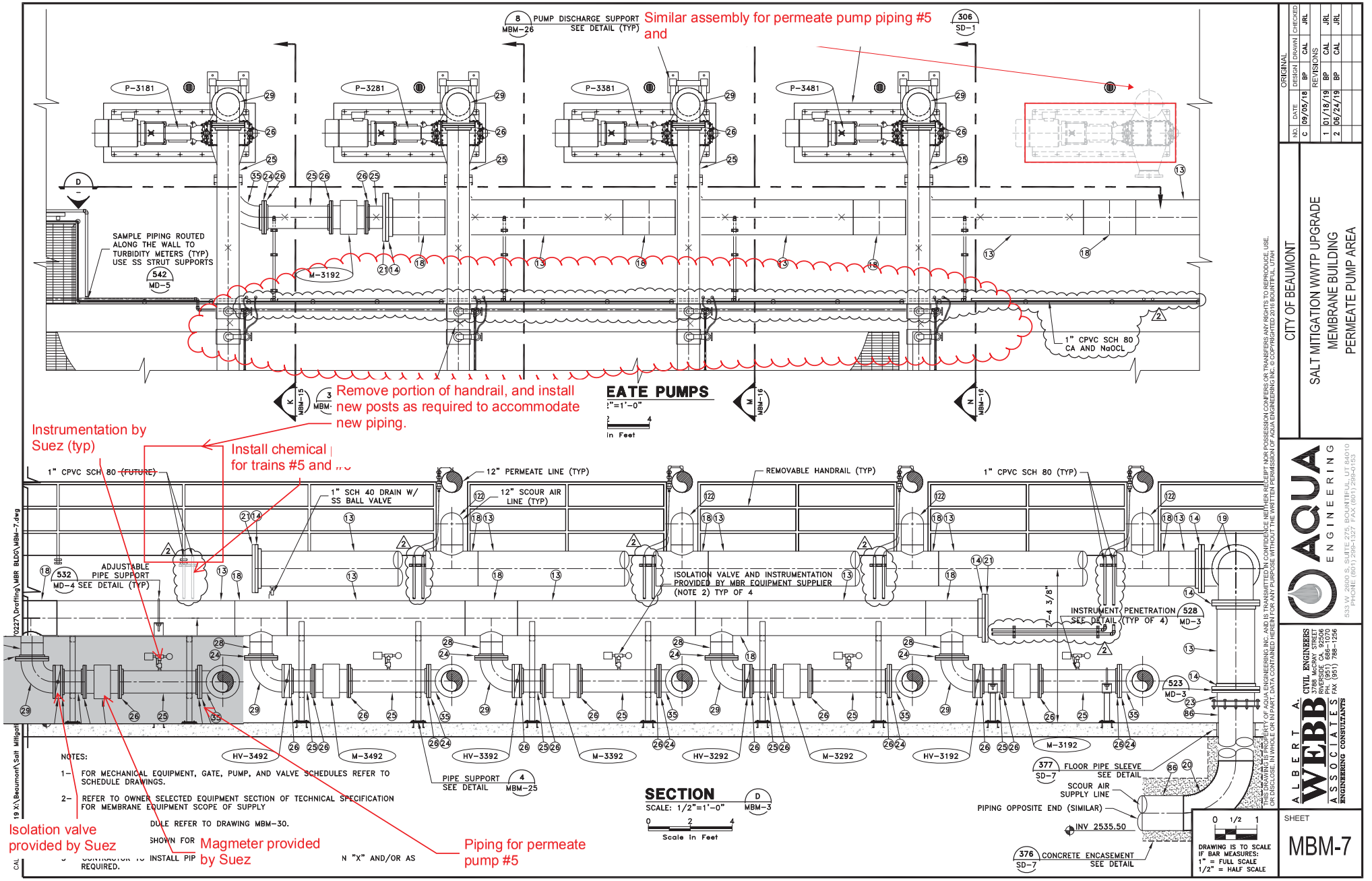

ORIGINAL

NO.	DATE	DESIGN	DRAWN	CHECKED
C	09/05/18	BP	CAL	JRL

REVISIONS

1	01/18/19	BP	CAL	JRL
2	06/24/19	BP	CAL	JRL

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
MEMBRANE BUILDING
PERMEATE PUMP AREA

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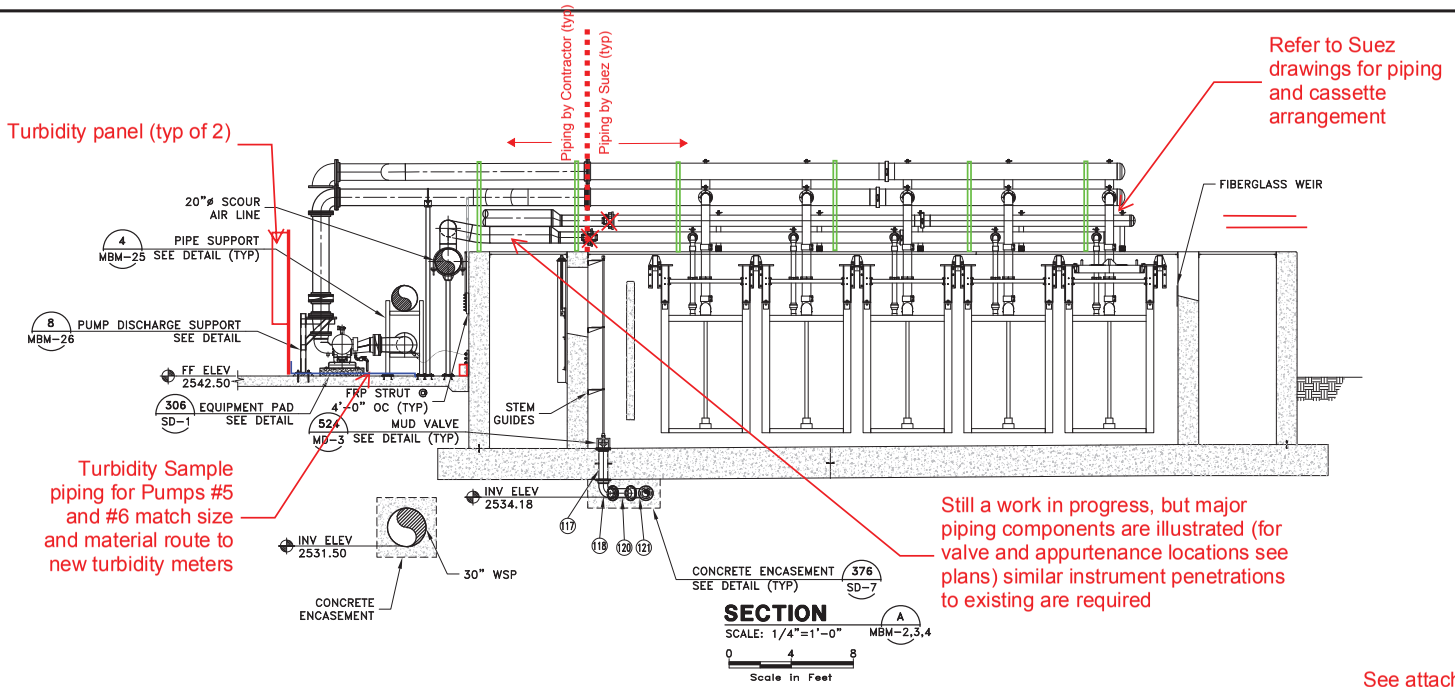
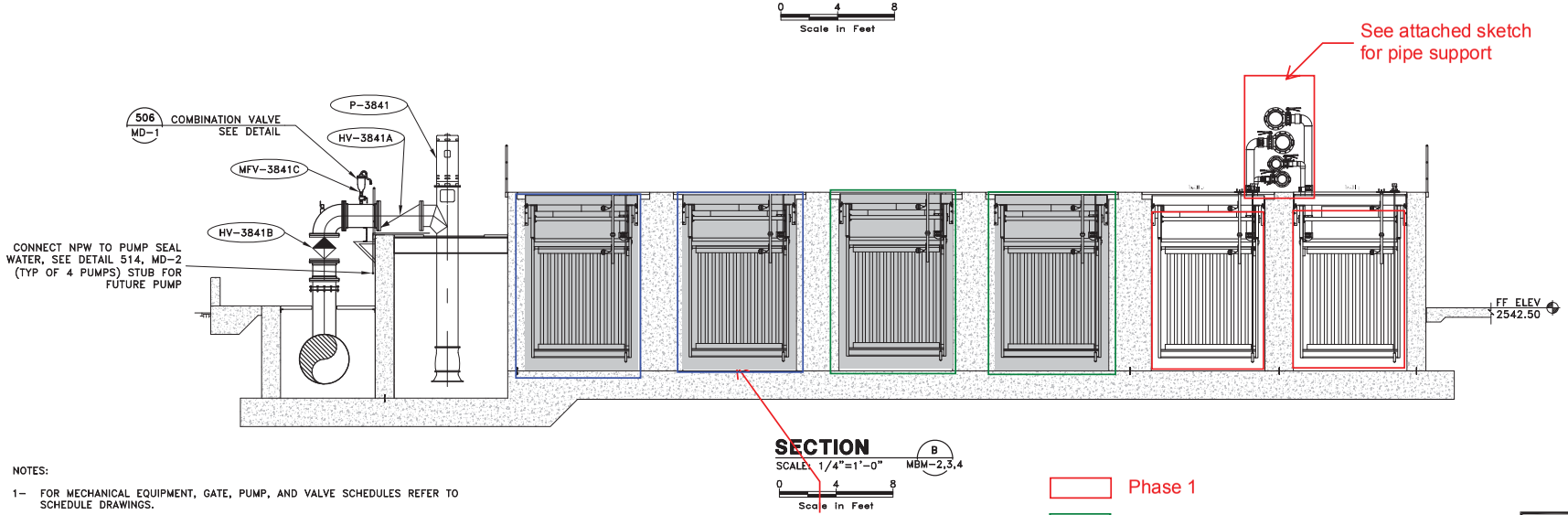
SHEET
MBM-7





NOTES:

1– FOR MECHANICAL EQUIPMENT, GATE, PUMP, AND VALVE SCHEDULES REFER TO SCHEDULE DRAWINGS.

2– FOR PIPING SCHEDULE REFER TO DRAWING MBM-30.

3– REFER TO OWNER SELECTED EQUIPMENT SECTION OF TECHNICAL SPECIFICATIONS FOR MBR EQUIPMENT SCOPE OF SUPPLY.

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	BP	CAL	JRL
REVISIONS				

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
MEMBRANE BUILDING
MECHANICAL SECTIONS

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0 1/2 1
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SHEET
MBM-13

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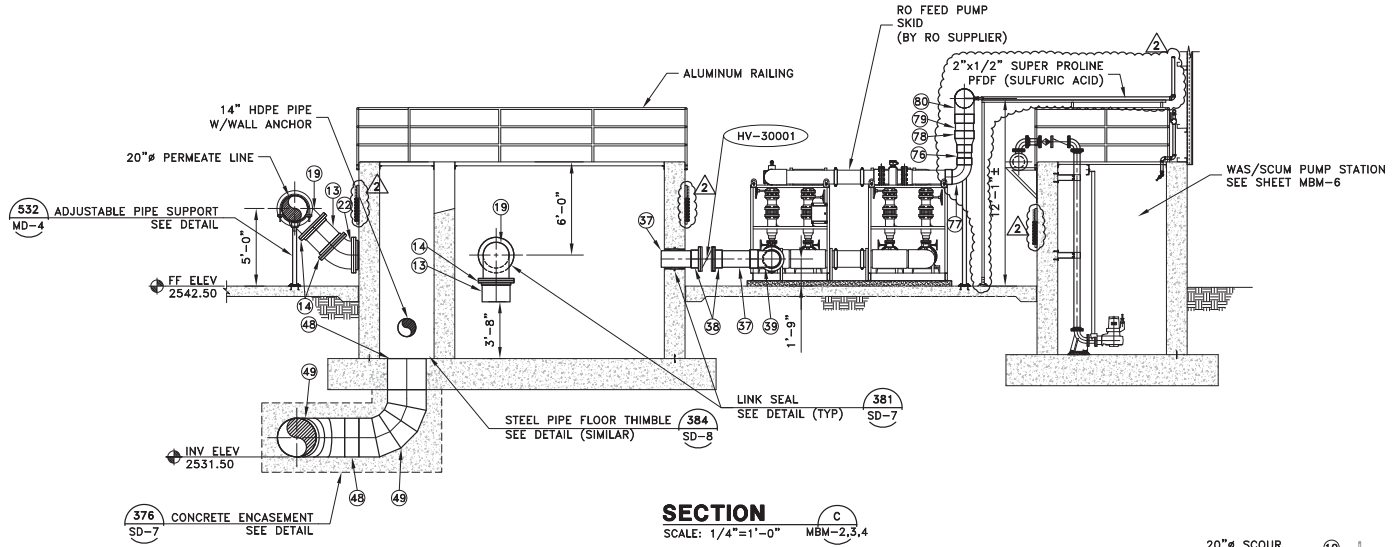
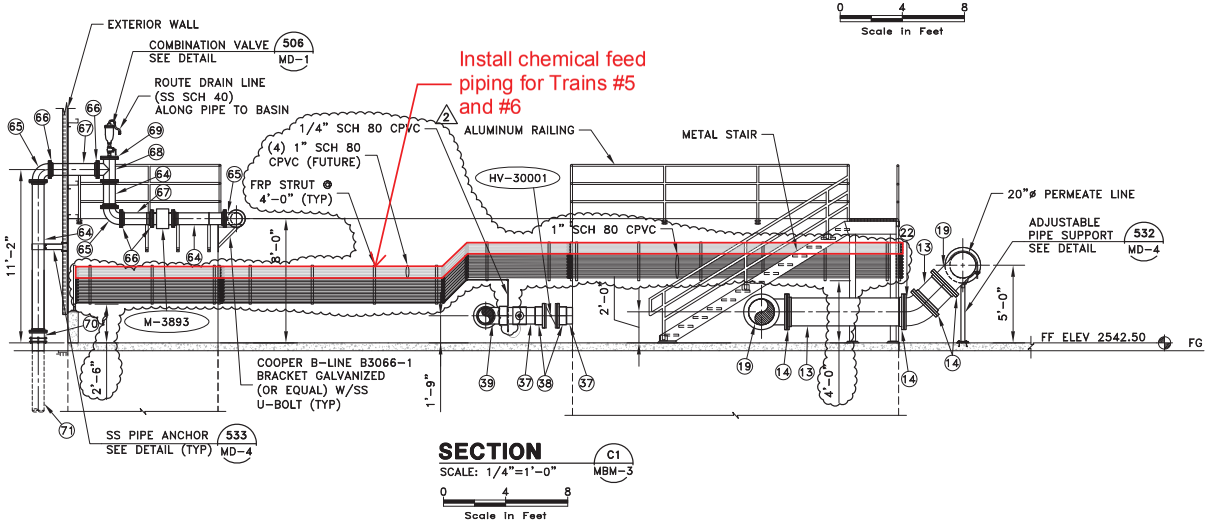
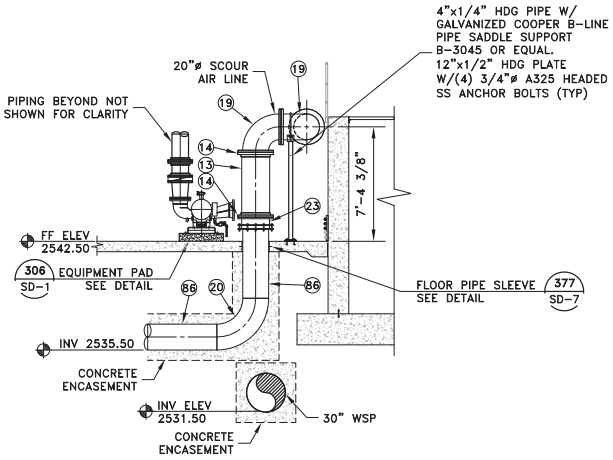


SECTION C
SCALE: 1/4"=1'-0" MBM-2,3,4
0 4 8
Scale In Feet



SECTION C1
SCALE: 1/4"=1'-0" MBM-3
0 4 8
Scale In Feet



SECTION Z
SCALE: 1/4"=1'-0" MBM-4
0 4 8
Scale In Feet

NOTES:

1- FOR MECHANICAL EQUIPMENT, GATE, PUMP, AND VALVE SCHEDULES REFER TO SCHEDULE DRAWINGS.

2- FOR PIPING SCHEDULE REFER TO DRAWING MBM-30.

NO.	DATE	DESIGN	DRAWN	CHECKED
ORIGINAL				
C	09/05/18	BP	CAL	JRL
REVISIONS				
1	01/18/19	BP	KRB	JRL
2	06/24/19	BP	CAL	JRL

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
MEMBRANE BUILDING
MECHANICAL SECTION

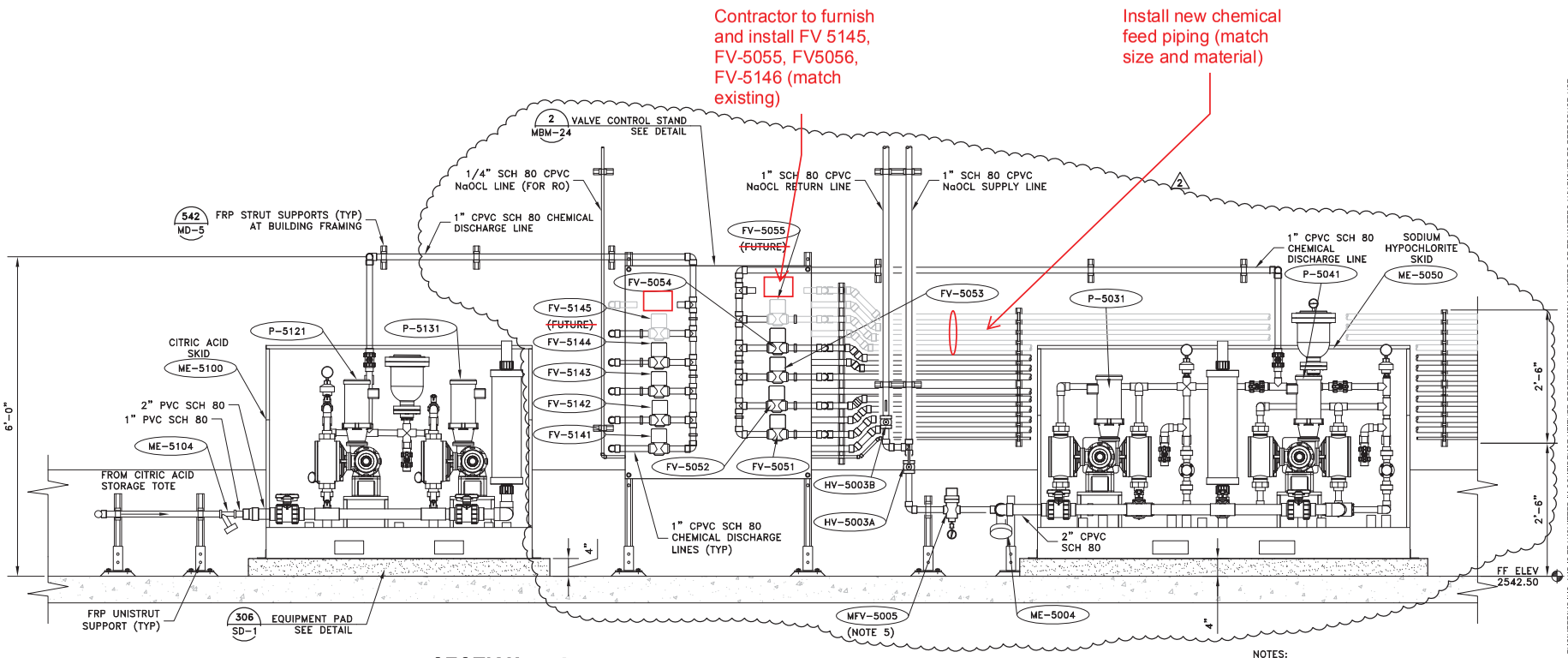
AQUA ENGINEERING
533 W. 2600 S., SUITE 275, BOUNTIFUL, UT 84010
PHONE (801) 295-1527 FAX (801) 295-0153

ALBERT A. WEBB ASSOCIATES
CIVIL ENGINEERS
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA. 92506
PH (951) 686-1070
FAX (951) 788-1256

0 1/2 1
DRAWING IS TO SCALE IF BAR MEASURES:
1" = FULL SCALE
1/2" = HALF SCALE

SHEET
MBM-14

CAL 06/21/2019 X:\Beaumont\Salt Mitigation WWTP Upgrade WEBB170227\Drafting\MBR BLDG\MBM-13,14.dwg



SECTION V MBM-11
SCALE: 1"=1'-0"
0 1 2
Scale In Feet

NOTES:

1– FOR MECHANICAL EQUIPMENT, PUMP, AND VALVE SCHEDULES REFER TO SCHEDULE DRAWINGS.

2– REFER TO OWNER SELECTED SECTION OF TECHNICAL SPECIFICATIONS FOR COMPLETE MEMBRANE AND RO EQUIPMENT SCOPE OF SUPPLY.

3– INSTALL LOAD CELLS PER MANUFACTURERS RECOMMENDATIONS.

4– REFER TO PROCESS AND INSTRUMENTATION DRAWINGS FOR ADDITIONAL DETAILS.

2 5– OUTLET PRESSURE SETTING = 5 PSI.

0 1/2 1
DRAWING IS TO SCALE IF BAR MEASURES:
1" = FULL SCALE
1/2" = HALF SCALE

NO.	DATE	ORIGINAL DESIGN	DRAWN	CHECKED
C	09/05/18	BP	CAL	JRL
		REVISIONS		
1	04/22/19	BP	CAL	JRL
2	06/24/19	BP	CAL	JRL

CITY OF BEAUMONT

SALT MITIGATION WWTP UPGRADE
MEMBRANE BUILDING
SECTIONS

AQUA ENGINEERING
533 W. 2600 S., SUITE 275, BOUNTIFUL, UT 84010
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3788 McCRAY STREET
RIVERSIDE, CA 92506
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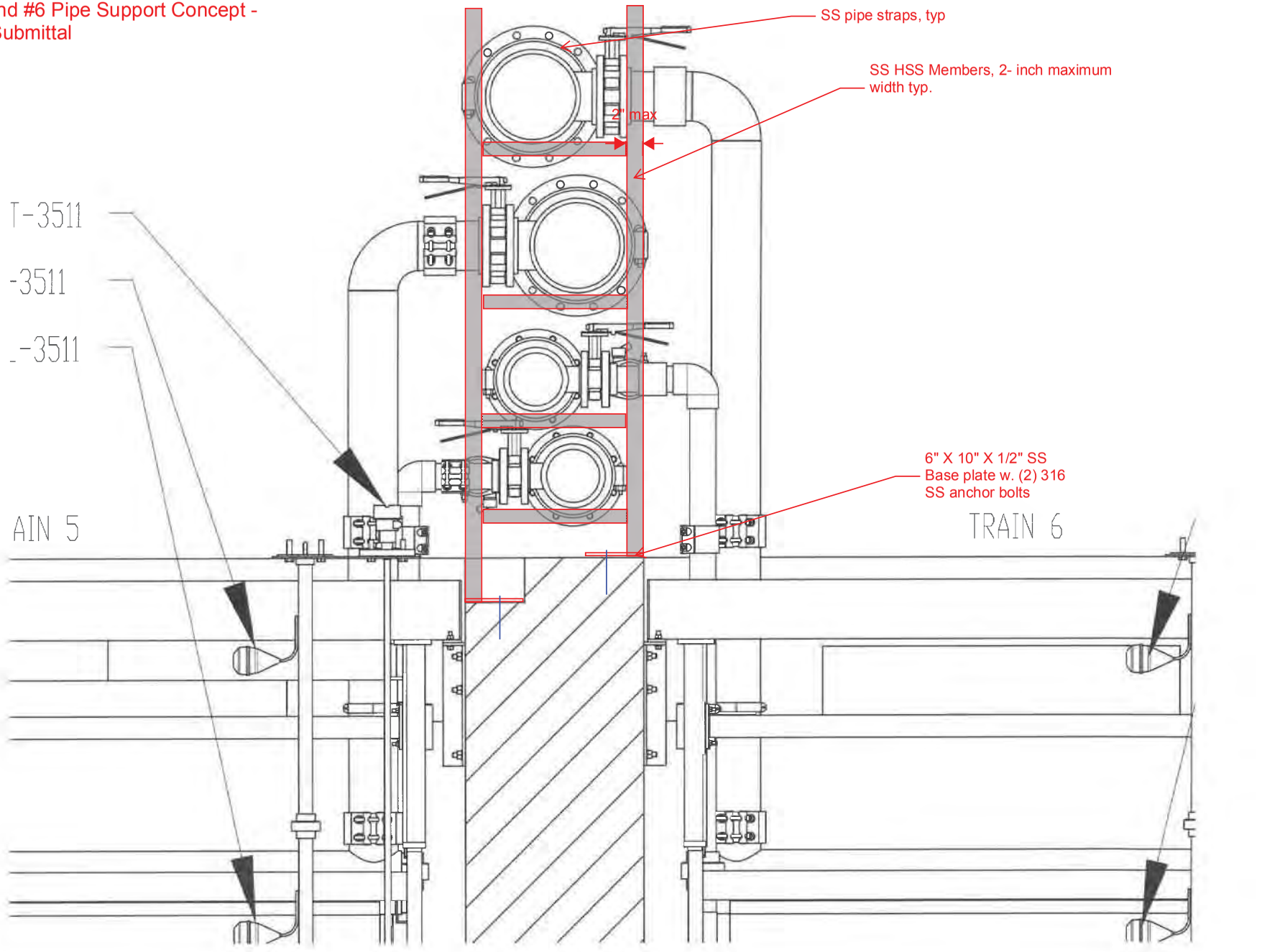
FAX (951) 788-1256

SHEET
MBM-21

CAL 06/24/2019 X:\Beaumont\Salt Mitigation WWTP Upgrade WEBB17022?\Drafting\MBR BLDG\MBM-21,22,23,24.dwg

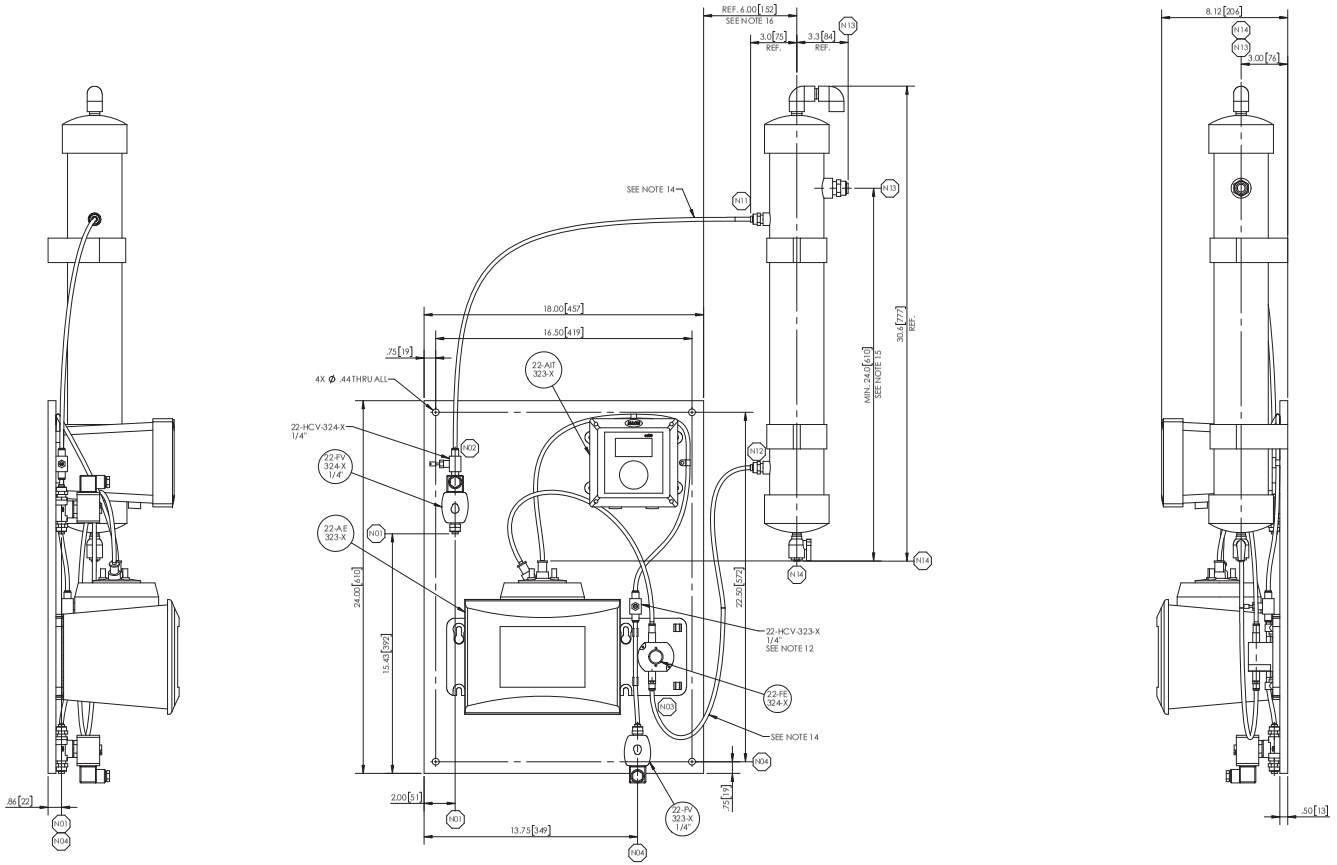
Train #5 and #6 Pipe Support Concept -
Deferred Submittal



MATERIAL #	DESCRIPTION
3177949	ASSY-TURBID,W/COLM,120V,SGL,HACH,TU5300
3178030	ASSY-TURBID,W/COLM,24V,SGL,HACH,TU5300
3178031	ASSY-TURBID,W/COLM,120V,SGL,HACH,TU5400
3178032	ASSY-TURBID,W/COLM,24V,SGL,HACH,TU5400

NOZZLE SCHEDULE

NOZZLE	DESCRIPTION	TYPE	SIZE
N01	SAMPLE FROM PERMEATE PIPE	ODT	0.25
N02	PANEL TO DEGASSING COLUMN	ODT	0.25
N03	DEGASSING COLUMN DISCHARGE TO PANEL	ODT	0.25
N04	TO OPEN DRAIN	ODT	0.25
N11	PANEL TO DEGASSING COLUMN	ODT	0.25
N12	DEGASSING COLUMN DISCHARGE TO PANEL	ODT	0.25
N13	DEGASSING COLUMN O/F TO OPEN DRAIN	ODT	0.50
N14	DEGASSING COLUMN TO OPEN DRAIN	ODT	0.25



NOTES:

1. TURBIDITY PANEL SHIPPING WEIGHT - 24 LB/[10.9 KG]
2. DEGASSING COLUMN SHIPPING WEIGHT - 7 LB/[3.2 KG]
3. TURBIDITY PANEL OPERATING WEIGHT - 25 LB/[11.3 KG]
4. DEGASSING COLUMN OPERATING WEIGHT - 13 LB/[5.9 KG]
5. ALL PIPING & EQUIPMENT SHOWN SHALL BE FULLY SUPPORTED BY SUEZ WT&S PRODUCTION.
6. ALL INTERCONNECTING PIPING SHALL BE FULLY & INDEPENDENTLY SUPPORTED BY OTHERS.
7. FASTENER MATERIAL:
   - SA307 GRADE B HEAVY HEX BOLTS/SA563 GRADE A HEAVY HEX NUTS
8. ALL VALVES & INSTRUMENTS TO BE PROPERLY TAGGED.
9. PIPING MATERIAL:
   - HIGH PRESSURE: N/A
   - LOW PRESSURE: SCH 80 PVC & PE TUBING
10. OPTIMAL SAMPLE FLOW RATE: 200-500 mL/min
11. THE DISTANCE FROM SAMPLE POINT MUST BE LESS THAN 12 FT [3.7 m]
12. FLOW REGULATOR VALVE IS REQUIRED TO CREATE BACK PRESSURE ON THE DRAIN LINE TO AVOID BUBBLES BEING CREATED AND EFFECTING TURBIDITY READINGS.
13. FLOW SET TO 3.3 GPH [210 ml/min]
14. 6FT [1.82m] OF 1/4" TUBING TO BE SHIPPED WITH PANEL FOR CONNECTING TO THE DEGASSING COLUMN ON SITE BY OTHERS.
15. DEGASSING COLUMN OVERFLOW CONNECTION IS TO BE MOUNTED A MINIMUM OF 24 in [610 mm] ABOVE THE TURBIDITY METER.
16. THERE IS NO SET DISTANCE THE TURBIDITY PANEL AND DEGASSING COLUMN SHOULD BE MOUNTED APPART. THIS DRAWING SHOWS THEM 6 in. [152 mm] AS REFERENCE ONLY. THE TOTAL MAXIMUM LENGTH OF TUBING CONNECTING THE PANEL AND DEGASSING COLUMN SHOULD BE UNDER 6 FT [1.82m].
17. ALL DIMENSIONS IN INCHES [MILLIMETERS]

REV	DESCRIPTION	ECO	DWN	APPR	APPR	DATE
A	INITIAL DESIGN	13.5720	JR	RP	RJ	07 Apr 20

TOLERANCES UNLESS NOTED
DECIMALS: .X +/-0.5 | .XX +/-0.50 | .XXX
ANGLES: +/-0.5° | FRAC +/- 1/2"

CUSTOMER INFORMATION

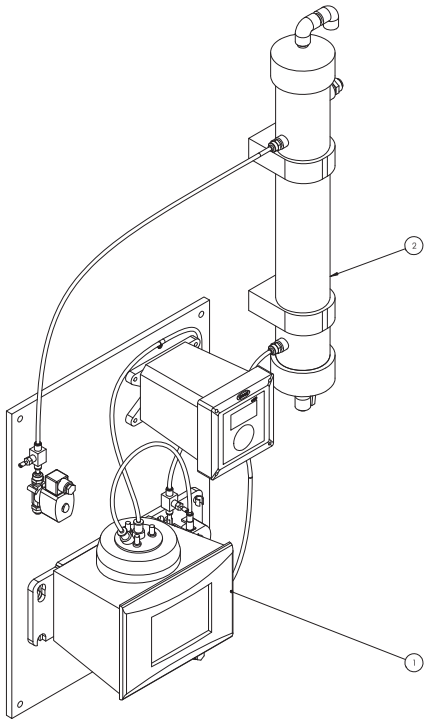
ASSY-TURBID,W/COLUMN,SGL,HACH,TU5X00

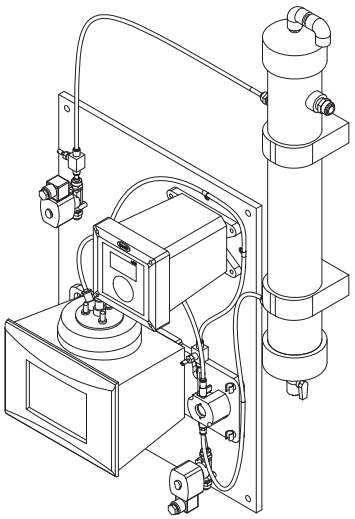
DRAWING NUMBER	REVISION
1319233	A

REF.: | DOC. OWNER:

PROJECT NO.	PART/MATERIAL NO.	SCALE	SIZE	SHEET
	3177949, 3178030, 3178031, 3178032	1:4	D	1 OF 2

LAST SAVED: Tuesday, April 7, 2020 2:20:39 PM





MM# 3177949 - TU5300, W/ 120V SOLENOIDS - EQUIPMENT TABLE				
ITEM	QTY.	SAP	DESCRIPTION	U/M
1	1	3177945	ASSY-TURBID,PERM,120VAC,SGL,HACH,TU5300	EA
2	1	3178033	ASSY-DESASSING,PVC,3.00,COLUMN	EA

MM# 3178030 - TU5300, W/ 24V SOLENOIDS - EQUIPMENT TABLE				
ITEM	QTY.	SAP	DESCRIPTION	U/M
1	1	3177946	ASSY-TURBID,PERM,24VDC,SGL,HACH,TU5300	EA
2	1	3178033	ASSY-DESASSING,PVC,3.00,COLUMN	EA

MM# 3178031 - TU5400, W/ 120V SOLENOIDS - EQUIPMENT TABLE				
ITEM	QTY.	SAP	DESCRIPTION	U/M
1	1	3177947	ASSY-TURBID,PERM,120VAC,SGL,HACH,TU5400	EA
2	1	3178033	ASSY-DESASSING,PVC,3.00,COLUMN	EA

MM# 3178032 - TU5400, W/ 24V SOLENOIDS - EQUIPMENT TABLE				
ITEM	QTY.	SAP	DESCRIPTION	U/M
1	1	3177948	ASSY-TURBID,PERM,24VDC,SGL,HACH,TU5400	EA
2	1	3178033	ASSY-DESASSING,PVC,3.00,COLUMN	EA

REV	DESCRIPTION	ECO	DWN	APPR	APPR	DATE
A	INITIAL DESIGN	13.5720	JR	RP	RJ	07 Apr 20

TOLERANCES UNLESS NOTED
DECIMALS ANGLES
.X +/-0.5°
.XX +/-0.50 FRAC
.XXX +/- 1/2"

CUSTOMER INFORMATION

ASSY-TURBID,W/COLUMN,SGL,HACH,TU5X00

DRAWING NUMBER	REVISION
1319233	A

REF.: DOC. OWNER:

PROJECT NO.	PART/MATERIAL NO.	SCALE	SIZE	SHEET
	3177949, 3178030, 3178031, 3178032	1:4	D	2 OF 2

LAST SAVED: Tuesday, April 7, 2020 2:20:39 PM

PDF Published October 25, 2021

ERS Series Electric Actuators

CHEMLINE PLASTICS
SUPERIOR FLOW SOLUTIONS

The Chemline **ERS Series** Electric Actuator is a reversible rotary unit with output torques up to 180 in.-lb. These units are ideal for all Chemline ball valves up to 2". The ERS Series is compact, light weight and has a plastic housing. A large black handle provides manual override and position indicator.

Chemline also offers complete actuated ball, butterfly and diaphragm valves, assembled and bench tested. Actuation service is also available for all quarter-turn metal valves.

for Chemline ball valves up to 2"

SERIES: ERS20 – 180 in.lb.

VOLTAGES: 115/220 VAC, 12/24 VDC, 24 VAC

ENCLOSURE: Polyamide 6.6
NEMA 4X

ERS Series on Type 21 True Union Ball Valve

features

Special Inspection Labelled by CSA
(Canadian Standards Association)

Approvals and Compliances
- CE
- EAC
- RoHS

Multiple Operation/Control Options
- 2 & 3-wire
- Adjustable Travel
- Manual Override
- Cold Weather Heater/Thermostat

Multiple Feedback Options[1]
- Visual
- Feedback Switches

NEMA 4X Enclosure
- Waterproof, corrosion proof with high impact Polyamide 6.6 housing and stainless steel fasteners

No Maintenance
- Permanently lubricated gear train
- Designed for 250,000 + cycles

Thermal Overload Protection
- Thermal switch embedded onto control board

Extended Operating Temperature Range
- –10 to 60C (15 to 140°F) (standard)

Irreversible Gearing
- No accidental backing off fully closed position
- No need for supplementary braking

Multi-Voltage Operation
- 115/220 VAC (standard)[2]
- 12/24 VDC or 12 VAC (optional)[3]

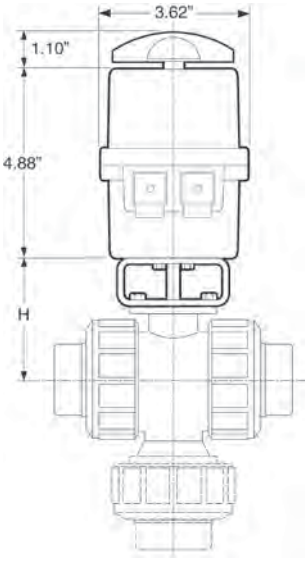
External DIN Connectors
- No need to open actuator enclosure for wiring
- 2 removeable grommets (standard)
- 2 x 1/2" removeable NPT (optional)

Standard Mounting Dimensions
- ISO-5211 mounting bolt circle and drive

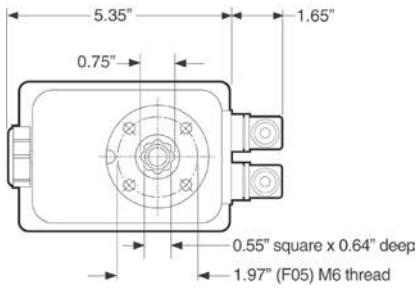
[1] For feedback options, see page 2
[2] Voltage range = 100 to 240 VAC 50/60Hz, 100 to 350 VDC
[3] Voltage range = 15 to 30 VAC 50/60Hz, 12 to 48 VDC

DIMENSIONS INCHES

Port View



Bottom View



Type 21 True Union and Type 23 Multi Port Ball Valves

DIMENSION "H" INCHES

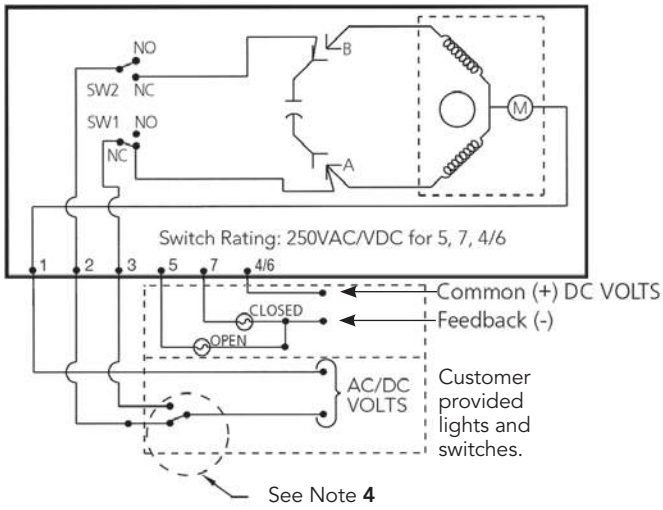
Valve Size	Valve Type
	Type 21 Ball/Type 23 Multiport Ball
1/2"	2.76
3/4"	3.01
1"	3.29
1-1/4"	3.64
1-1/2"	3.98
2"	4.43

Valves not to scale. For valve dimensions and parts refer to separate valve data sheets.

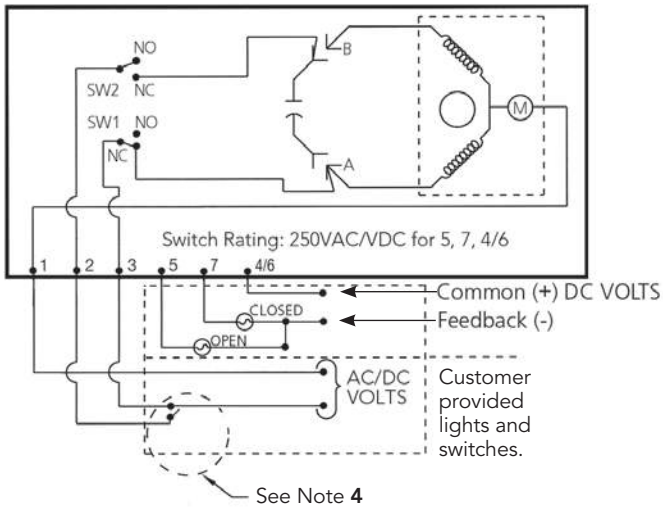
FEEDBACK OPTIONS

- **Extra Feedback Switches** – For extra end-of-travel position feedback. Rated up to 250VAC/VDC.
- **Feedback Potentiometer** – To feedback the precise valve position to a remote location, or to allow "jogging" control. 1,000 ohms rating.
- **Feedback Transmitter** – A circuit board coupled with a feedback potentiometer provides 4 to 20 mA output used by other equipment (PLC, data logger, etc.). Can be installed as a standalone module. No positioner required.

WIRING, 3-WIRE CONTROL



WIRING, 2-WIRE CONTROL



3-WIRE OPERATION

Neutral/Negative – To Terminal 1 (Constant)
To Open – Hot/Positive to Terminal 2
To Close – Hot/Positive to Terminal 3

2-WIRE OPERATION

Neutral/Negative – To Terminal 1 (Constant)
To Open – Jumper between Terminal 2 and Terminal 3
To Close – Hot/Positive to Terminal 3 (Constant)

NOTES:

1. Actuator shown in counter clockwise extreme of travel, or 'open' position.
2. Motor has a thermal protector as shown by (M) in the diagram.
3. ON-OFF actuator wiring shown. For other versions (Positioning, Failsafe) see operating manual.
4. Each actuator must be powered through its own individual switch contacts to avoid cross feeds.

SPECIFICATIONS

	Running Torques		115 VAC / 220 VAC (x=12)		12 to 24 VDC & 24 VAC (x=346)		Cycle Time/90°	Weight
Model	(in.-lbs.)	Nm	Power Draw (Watts)[1]	Duty Cycle	Power Draw (Watts)[1]	Duty Cycle	(fixed, sec.)	(lbs.)
ERS20	180	20	15W	50%	15W	50%	12	3.0

[1] Power draw values are for actuators with locked rotors.

Motor Direction • Reversing

CHEMLINE PLASTICS
SUPERIOR FLOW SOLUTIONS
55 Guardsman Road, Thornhill, ON, L3T 6L2, Canada | ISO 9001:2015 Certified
1.800.930.2436 (CHEM) | fax.905.889.8553 | request@chemline.com | chemline.com

From:	Grant Gourley
To:	Phil Waterman; Dan Alcantar
Subject:	FW: Beaumont
Date:	Monday, December 6, 2021 10:56:37 AM
Attachments:	Beaumont_MBR System Modifications.pdf C15 Suez- Pre-assembled Turb Panel 1319233.pdf 508999-WTS-ME-667-1010-DA-001.pdf A06 Ejector Assembly Dwg 1319243.pdf

Please see the below and the attached. This is what I received from the engineering team at Beaumont.

Thank You,

Grant Gourley | Vice President/Division Manager
W. M. LYLES CO. | Southern Division
42142 Roick Dr. | Temecula, CA 92590
O 951-973-7393 | C 951-760-4169
www.wmlylesco.com

From: Boris Petkovic <boris.petkovic@aquaeng.com>
Sent: Saturday, December 4, 2021 7:07 PM
To: Grant Gourley <ggourley@wmlylesco.com>
Cc: Brian Knoll <brian.knoll@webbassociates.com>; Justin Logan <Justin.Logan@aquaeng.com>; Mark Jeppsen <mark.jeppsen@skmeng.com>; Thaxton VanBelle <tvanbelle@beaumontca.gov>; Kristine Day <kday@beaumontca.gov>
Subject: Beaumont

Grant,
Attached are our initial markups for the MBR system modifications (removal, structural and process/mechanical). I believe the attached captures most of the work that will be required and provides a sufficient level of detail to assist in your plant walkthrough and as you prepare the cost proposal. On our end, we still need to clarify a few items and receive additional information from Suez. I tried to note these "gaps" in the attached and hope to get most of them resolved on Monday. Majority of these are related to existing Train 1-4 (potential reuse of pipe supports and scour air piping modifications) and to the operational liquid depths Suez is currently assuming (small potential to impact your scope). Once we get the required information we will provide additional details and/or clarifications. In addition, we will provide markups for the electrical portion of work on Monday as well. I also attached the current GA drawings from Suez for trains #5 and #6 for reference.

We will continue to fine tune the design and add details in the following days. However, if there is

anything you need in the meantime (information and/or details) as you are preparing your proposal please let me know.

Finally, there are a few items that need to be field verified. I will send a list to Brian Knoll tomorrow and I will copy you on it.
Thanks.
Regards,

Boris Petkovic, PE
Project Engineer

AQUA Engineering
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O: 801.299.1327 | F: 801.299.0153

aquaeng.com

From: Grant Gourley
To: Phil Waterman; Dan Alcantar
Subject: FW: Beaumont MBR
Date: Monday, December 6, 2021 10:54:11 AM
Attachments: image002.png
image003.png
image004.png
ERS Series ElectricActuator.10.25.2021 email.pdf

Please see the email below regarding the panel mods needed for the added chemical valves. I also attached the actuator we will be purchasing with these valves. There will be 4 of them.

Thank You,

Grant Gourley | Vice President/Division Manager
W. M. LYLES CO. | Southern Division
42142 Roick Dr. | Temecula, CA 92590
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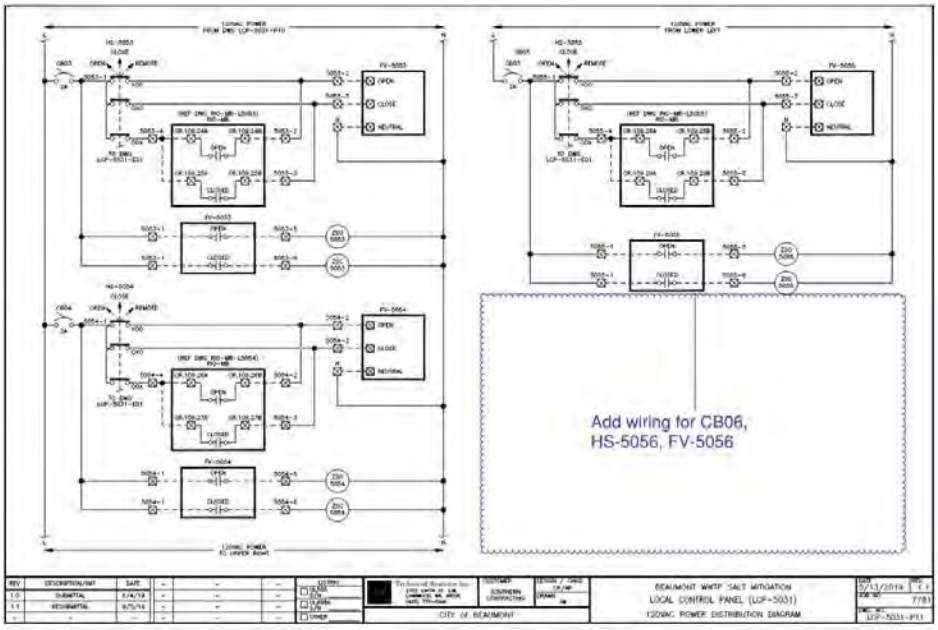
www.wmlylesco.com

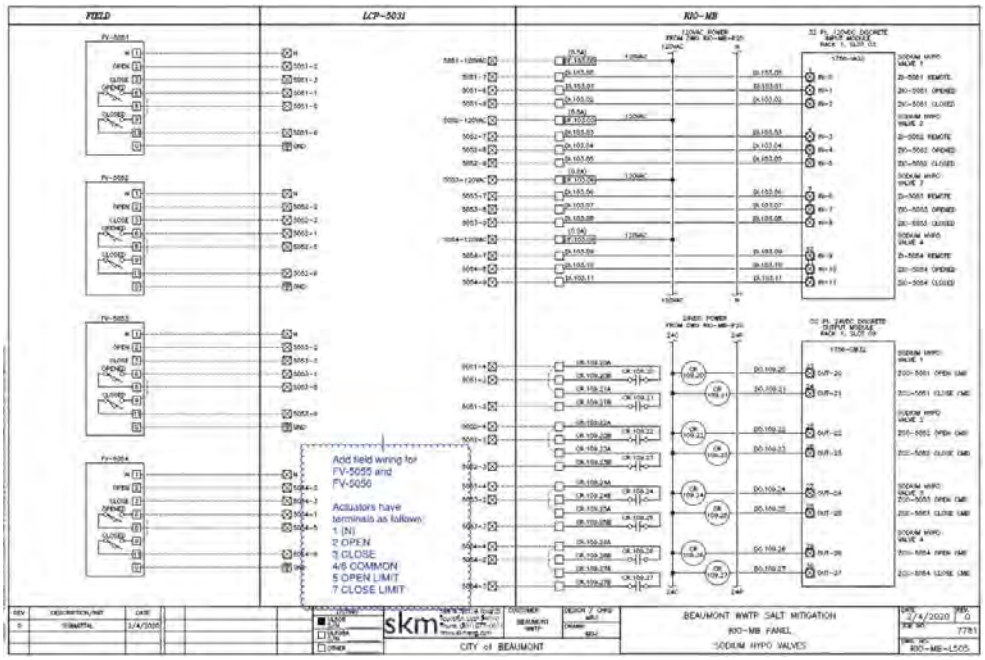
From: Boris Petkovic <boris.petkovic@aquaeng.com>
Sent: Sunday, December 5, 2021 5:07 PM
To: Grant Gourley <ggourley@wmlylesco.com>
Cc: Mark Jeppsen <mark.jeppsen@skmeng.com>; Brian Knoll <brian.knoll@webbassociates.com>; Justin Logan <Justin.Logan@aquaeng.com>
Subject: RE: Beaumont MBR

Grant,
The proposed valves and actuators are acceptable. However, while it is not specifically stated in the original description by Fibracast, the two new valves for the Sodium Hypo service (FV-5055 and FV-5056) should include the vented ball option. In addition, please see below for additional modifications that need to be made:

LCP-5031 needs to be updated by Southern to have the wiring and relays for train 6 as shown here:



The field wiring would be updated on the loop drawing as follows:



We would repeat this for the LCP-5121 and valves FV-5145 and 5146 for the Citric Acid system.

Please let me know if you have any questions. Thanks.
Regards,

Boris Petkovic, PE
Project Engineer

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From: Grant Gourley <ggourley@wmlylesco.com>
Sent: Friday, December 3, 2021 5:48 PM
To: Boris Petkovic <boris.petkovic@aquaeng.com>
Cc: Mark Jeppsen <mark.jeppsen@skmeng.com>; Brian Knoll <brian.knoll@webbassociates.com>; Justin Logan <Justin.Logan@aquaeng.com>
Subject: RE: Beaumont MBR

Boris,

The Chemical Feed Flow Actuated Ball Valves changed just a bit. Chemline discontinued the original valve models but provided me with pricing and cut sheets for their new comparable valves. They have 14 actuators in stock so I wanted to see if you can review the attached early next week and make sure these valves and actuators are acceptable to order. My quick review it seems all the materials match the original valves we provided. It is just new model numbers and higher torque ratings.

Please let me know if these are acceptable to procure so I can get them on hold for our project.

Talk Soon,

Grant Gourley | Vice President/Division Manager
W. M. LYLES CO. | Southern Division
42142 Roick Dr. | Temecula, CA 92590
O 951-973-7393 | C 951-760-4169
www.wmlylesco.com

From: Boris Petkovic <boris.petkovic@aquaeng.com>
Sent: Thursday, December 2, 2021 5:40 PM
To: Grant Gourley <ggourley@wmlylesco.com>
Cc: Justin Logan <Justin.Logan@aquaeng.com>; Thaxton VanBelle <tvanbelle@beaumontca.gov>; Kristine Day <kday@beaumontca.gov>; Brian Knoll <brian.knoll@webbassociates.com>; Mark Jeppsen <mark.jeppsen@skmeng.com>
Subject: Beaumont MBR

Grant,
We identified another item that is not included in Suez's scope and may potentially have a longer lead time. These are the chemical feed flow actuated ball vaves originally provided by Fibracast. Below is a description taken from the Fibracast BOM and attached is the submittal cut sheet. We need a total of 4 of these valves with tag numbers FV-5055, -5056 and FV-5145 and -5146. I also attached a marked up construction drawing for reference. Please let me know if you have any questions. Thanks.
Regards,

FV-5051 FV-5052 FV-5053 FV-5054 FV-5141 FV-5142 FV-5143	PVC Ball Valve, c/w Electric Actuator	1" Type 21 True Union Ball Valve, PVC Body and shaft, teflon seats, Viton O-Rings, c/w Q-Series Premier Reversible Electric Actuator, 115/230VAC, 50/60Hz, IP66 PA 6.6 enclosure, 2 feedback limit switches	Chemline	21A005VC c/w 21005-ERS20.12	1	in	6

Boris Petkovic, PE
Project Engineer

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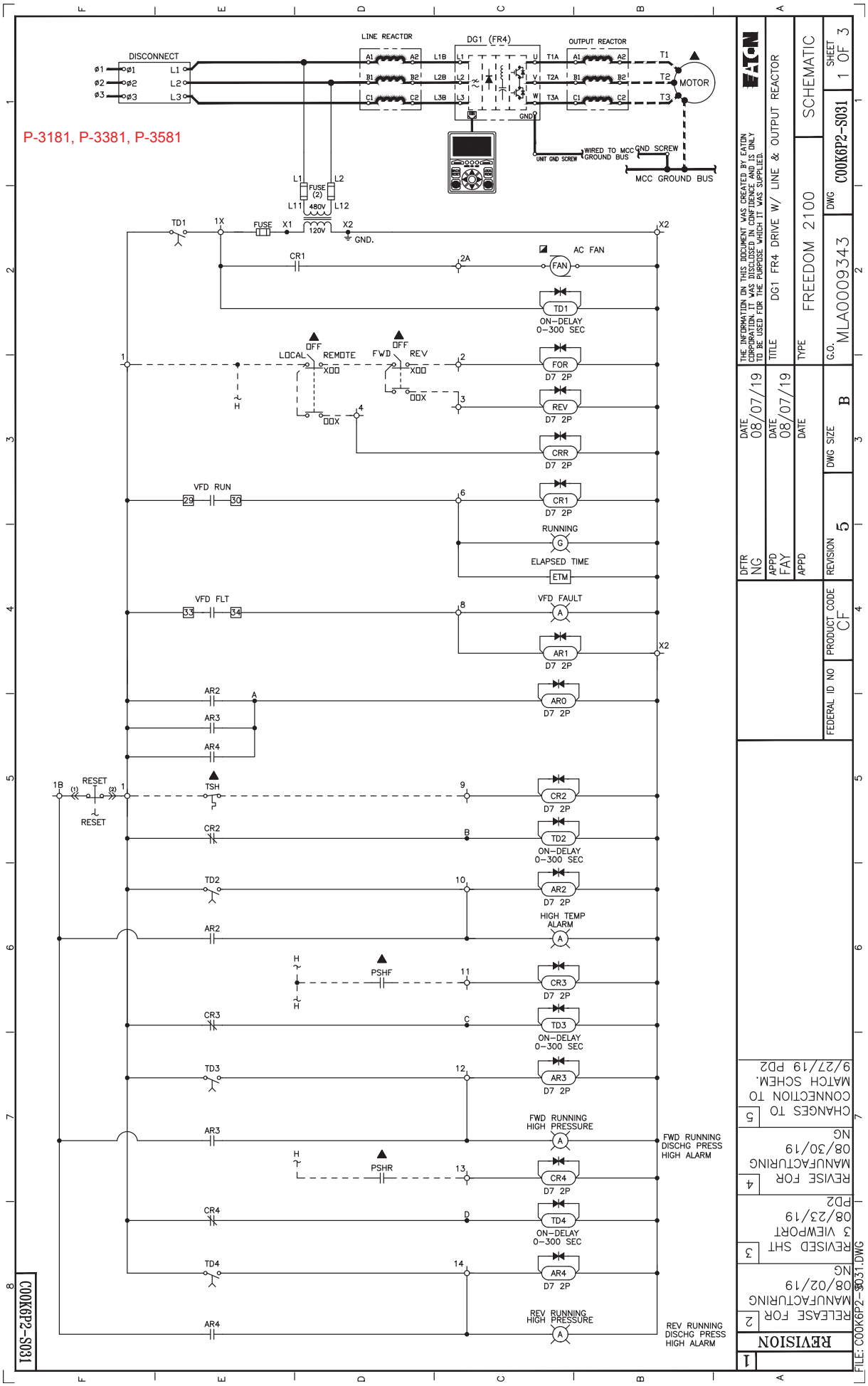
533 W 2600 S Suite 275, Bountiful, UT 84010
C: 801.386.1502 | D: 801.683.3734

O: 801.299.1327 | F: 801.299.0153
aquaeng.com



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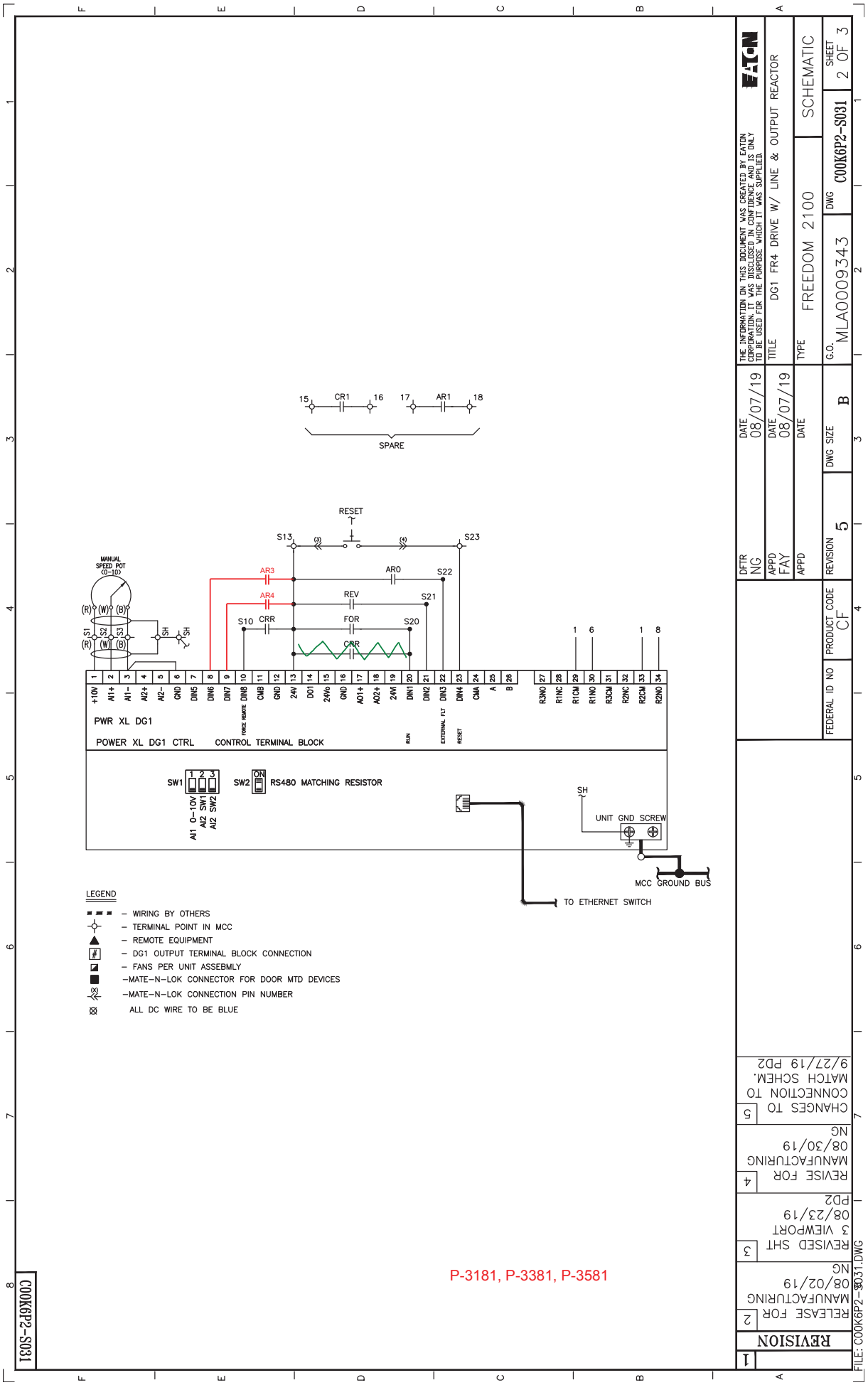
TITLE	DG1 FR4 DRIVE W/ LINE & OUTPUT REACTOR
TYPE	FREEDOM 2100 SCHEMATIC
G.O.	MLA00009343
DWG	COOK6P2-S031
SHEET	1 OF 3
DWG SIZE	B
REVISION	5
PRODUCT CODE	CF
FEDERAL ID NO	

	DATE	DFTR
	08/07/19	NG
	DATE	APPD
	08/07/19	FAY
	DATE	APPD

REVISION	
2	RELEASE FOR MANUFACTURING 08/02/19 NG
3	REVISED SHT 3 VIEWPORT 08/23/19 PD2
4	REVISE FOR MANUFACTURING 08/30/19 NG
5	CHANGES TO CONNECTION TO MATCH SCHEM. 9/27/19 PD2

COOK6P2-S031

FILE: COOK6P2-S031.DWG



P-3181, P-3381, P-3581

DFTR NG	DATE 08/07/19				
APPD FAY	DATE 08/07/19				
APPD	DATE				
REVISION 5	DWG SIZE B	PRODUCT CODE CF			
FEDERAL ID NO					

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TITLE DG1 FR4 DRIVE W/ LINE & OUTPUT REACTOR

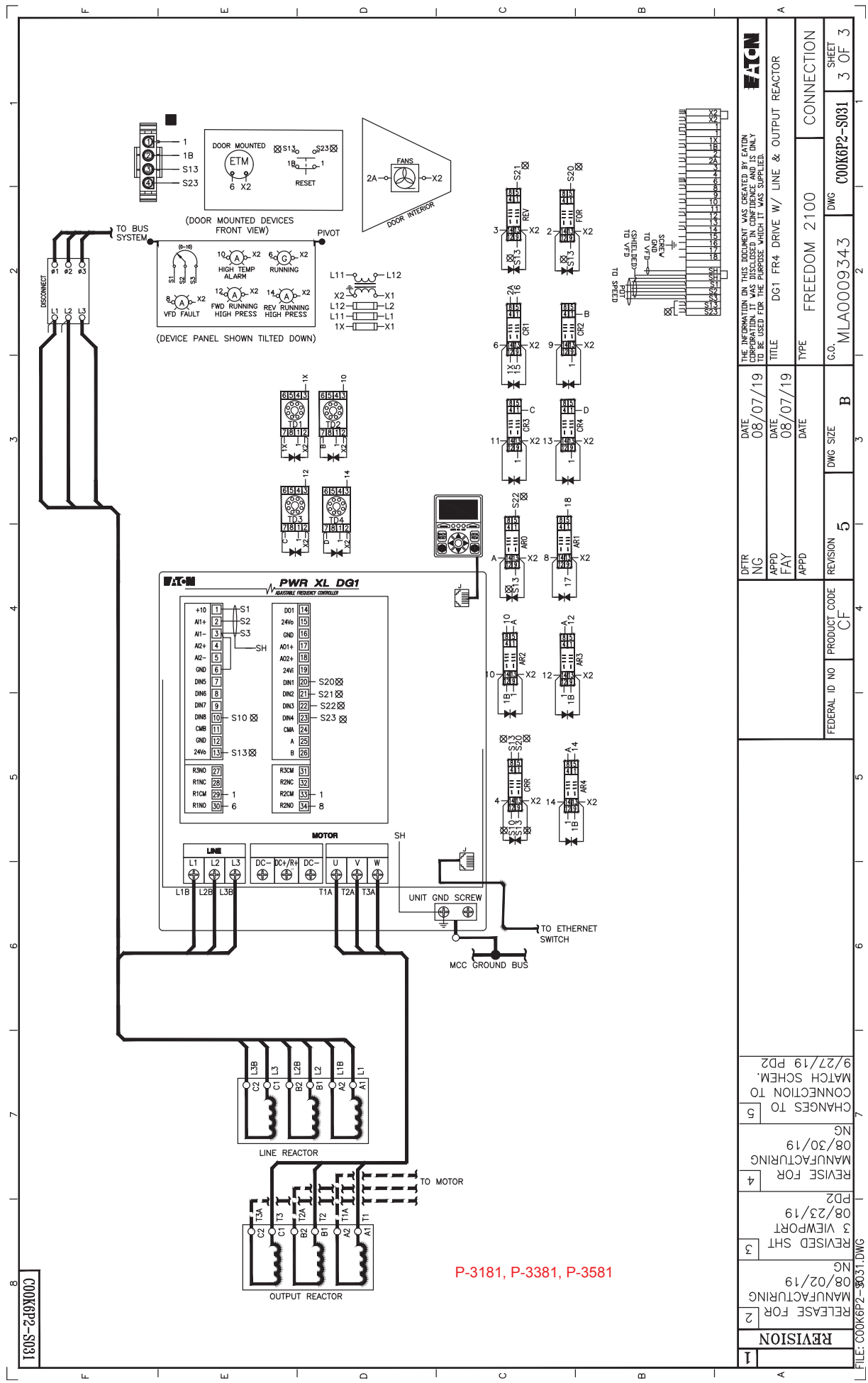
TYPE FREEDOM 2100 SCHEMATIC

G.O. MLA0009343 DWG COOK6P2-S031 SHEET 2 OF 3

REVISION		
1		
2	RELEASE FOR MANUFACTURING 08/02/19 NG	
3	REVISED SHT 3 VIEWPORT 08/23/19 PD2	
4	REVISE FOR MANUFACTURING 08/30/19 NG	
5	CHANGES TO CONNECTION TO MATCH SCHEM. 9/27/19 PD2	

COOK6P2-S031

FILE: COOK6P2-S031.DWG



REVISION				
1				
2	RELEASE FOR MANUFACTURING 08/02/19 NG			
3	REVISED SHT 3 VIEWPORT 08/23/19 PD2			
4	REVISE FOR MANUFACTURING 08/30/19 NG			
5	CHANGES TO CONNECTION TO MATCH SCHEM. 9/27/19 PD2			

DFTR	DATE
NG	08/07/19
APPD	DATE
FAY	08/07/19
APPD	DATE

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TITLE	TYPE	G.O.	DWG	SHEET
DG1 FR4 DRIVE W/ LINE & OUTPUT REACTOR CONNECTION	FREEDOM 2100	MLA00009343	COOK6P2-S031	3 OF 3

FEDERAL ID NO	PRODUCT CODE	REVISION	DWG SIZE
	CF	5	B

COOK6P2-S031

FILE: COOK6P2-S031.DWG

HYDRO GATE®
a MUELLER brand

Hydro Gate Sales
12000 E. 47th Ave.,
Suite 200
Denver, CO 80239

phone: 303-288-7873
fax: 303-287-8531
hydrogate.com

QUOTE #2112029

Date: December 9, 2021

Project Name: City of Beaumont - CA

Representative: Southwest Valve / Kelly Brians / 714-832-1090

We are pleased to offer for your consideration the following equipment for this project.

Quantities and descriptions listed in this quotation were based on the following:
Hydro Gate Drawing 2434453-10.

Please note these prices are based on receiving the entire order. Adjustments to item quantities or specifications may alter the pricing.

- Prices and lead times quoted are firm for acceptance within 30 days of the bid date and apply to this quotation only, subject to attached Terms & Conditions. Prices do not include sales or use tax. If this proposal is not accepted within 30 days after bid, Hydro Gate reserves the right to re-quote and price escalation may be necessary.

The equipment we have quoted meets or exceeds the specifications with the following clarifications:

NOTE: We have received no addendums for this project.

1. If awarded to Hydro Gate, we will need to be supplied with a full set of plans and specifications.

2. Prices do not include third party inspection services of gates and equipment unless specifically required by specifications that supplier (Hydro Gate) be responsible for cost of these inspections.

3. Hydro Gate will provide digital copies of all relevant Operation and Maintenance manuals. Contact Hydro Gate should custom manuals be required.

4. Please note these prices are based on receiving the entire order. Adjustments to item quantities or specifications may alter the pricing.

5. Prices do not include taxes.

6. Non-machined, submerged ferrous surfaces to be blast cleaned and painted with 2 shop coats of manufacturer's standard epoxy paint.

7. This quotation reflects our policy of sourcing raw materials in the most cost effective manner. Any requirement for specific U.S content shall require a revised quotation.

8. Prices do not include installation of gates and equipment or lubricants for stems, gear units and bearings.

9. Mastic, grout, gaskets and epoxy capsules for anchors not by Hydro Gate.

10. Upon placing an order with Hydro Gate, buyer must ensure that the approval of equipment be provided to Hydro Gate within 30 days of receiving submittals. Failure to do so may result in an increase of price in relation to market fluctuation of raw material costs.

11. The equipment quoted for this project includes electric motor actuators. Actuator controls cannot be adjusted or preset at the factory. Complete instructions for proper setting of components are included with the unit when shipped. This quotation does not include any field service to adjust electric actuators and lubricate equipment unless specifically required by project specification. If a factory technician is preferred, field service rates that are in effect at time service is required shall apply. Contact Hydro Gate with a purchase order if this service is required.

12. Please address all Purchase Orders to Henry Pratt Company, LLC 12000 East 47th Ave., Suite 200, Denver, CO 80239.

13. **Purchase Orders can be sent via email to HydroGateorders@muellerwp.com. Purchase Orders must include Hydro Gate Quote number reference.**

14. Hydro Gate Standard Terms and Conditions of Sale apply to this quotation and can be found at www.hydrogate.com/support.

15. Field service not included. If field service is needed, a charge of $1,500.00 will be made for each trip, plus $1,250.00 for each day including any holidays, weekends or other layovers made at the convenience of the contractor or engineer.

HYDRO GATE
a MUELLER brand

Quotation Number: 2112029

Item Number	:	01
Qty/Size	:	2 – 48" x 66"
Gate	:	Fabricated Weir Gate with Aluminum frame and slide, stainless steel fasteners and mounting bolts. Self-contained frame, polymer bearing bars in guide grooves and rubber "j" seals, downward opening slide.
Mounting	:	Stainless steel anchor bolts.
Lift	:	Pedestal mounted electric actuator for 460 Volt, 3-Phase, 60 hertz power, local electrical control station. Type 304 stainless steel stem and plastic stem cover with mylar position indicator.
Frame Height	:	9.92' (from centerline)
Gate Ship	:	10-12 weeks after drawing and credit approval.
Actuator Ship	:	12-14 weeks after drawing and credit approval.
Price Each	:	$ **11,720.00 ea**

Item Number	:	02
Misc.	:	Field Service trip Charge for a total of 1 trip and 1 day. If additional field service is required, please contact Hydro Gate for pricing adjustment. **$2,750.00**

Total price for items listed above: $ 25,540.00

The delivery lead times are based on stock inventory at the time of quotation. Stock quantities and quoted delivery times must be re-evaluated and verified at time of order and/or time of release to manufacturing.

Please see notes 1 through 15 in this quotation.

Quotation No.: 2112029

FREIGHT:
F.O.B. shipping point, full freight allowed. Seller will pay freight charges for standard shipments. Additional freight cost incurred to comply with buyer's special requirements will be added to the invoice.

FIELD SERVICE:
Hydro Gate will make every effort to provide a representative to meet your schedule, but due to conflicting requirements a request should be made no later than fourteen (14) days before a representative is required. Where previous commitments have been made, some flexibility in your schedule should be anticipated. All field service trips will require a written confirmation prior to arriving at the site.

DRAWINGS:
Submittal drawing lead time is 3 to 5 weeks after receipt of your written purchase order.

Thank you for your interest in our product. If any questions arise regarding this quotation, please contact Hydro Gate.

MUELLER

David Lowe
Hydro Gate® Specialty Products Engineer

12000 E. 47th Avenue - Suite 200 Denver, CO 80239
office: 303.253.6949 | **muellerwp.com**

ALLIED STEEL CO., INC.
Structural Steel & Misc. Metals Fabricators & Erectors

AISC CERTIFIED FABRICATOR & ERECTOR

December 10, 2021

W.M. Lyles Company
42142 Roick Dr.
Temecula, CA 92590

Attn: Grant Gourley

Re: Beaumont Salt Mitigation WWTP Upgrade

Subject: Membrane Building Grating

This letter will confirm our quote to furnish, fabricate, and deliver F.O.B. jobsite (6) anodized aluminum grating areas with supports per drawing MBS-10 for the above referenced project. Our quote includes all the bolts, anchors and engineer stamps for the grating.

Our price to do this work is **$230,000.00** tax included.

Please provide Allied Steel a change order if you would like us to proceed.

Sincerely,

Alex Majano

Digitally signed by Alex Majano
DN: C=US, E=alex@alliedsteelco.com, O=Allied Steel Co. Inc., OU=Project Manager, CN=Alex Majano

Alex Majano
Project Manager

LEVCO FAB INC.

PIPE FABRICATORS
10757 FREMONT AVE
ONTARIO CA, 91762

PHONE# 909 465-0840

FAX# 909 465-0943

TO: WM LYLES CO.
FROM: MIKE LEVACY

ATTN: GRANT
DATE: 12-13-21

QUOTE # 21-047

CITY OF BEAUMONT SALT MITIGATION WWTP UPGRADE
10",12" & 20" 304L SS SCH 10S FABRICATION PER SHOP DRAWINGS

1) MSA-200-C	20" X 20'-2 3/8" FLG X FLG HEADER W/2 12" 90 DEG BENDS FLG'D
2) MSA-203-A, MSA-204-A	12" X 5'-0" ROLLER GROOVE X ROLLER GROOVE
1) MPET-100-B	12" FLG X FLG 90 W/1" CPLG
1) MPET-100-B	20" X 12" RED TEE X 12" 90 DEG BEND W/1" CPLG FLG X FLG X FLG
2) MPET-3381-A, MPET-3481-A	12" X 1'-1 7/8" ROLLER GROOVE X ROLLER GROOVE
2) MPET-3381-B, MPET-3481-B	12" X 4'-1 13/16" ROLLER GROOVE X ROLLER GROOVE W/2 CPLGS
2) MPET-3381-C, MPET-3481-C	12" X 10" RED 90 1'-1 5/8" X 1'-10"
2 MPET-101-A, MPET-102-A	12" X 10" CON RED X 24" W/CPLG
2) MPET-101-B, MPET-102-B	12" X 1'-8" X 6'-4 15/16" FLG X ROLLER GROOVE 90 DEG BEND
2) MPET-101-C, MPET-102-C	12" X 13'-7 ¼" ROLLER GROOVE X ROLLER GROOVE W/2 CPLGS
2) MPET-100-D, MPET-100-D	20" X 7'-10 9/16" FLG X FLG SPOOL

TOTAL = $ 115,857.00 + TAX

NOT AIS MATERIAL
PICKLE & PASSIVATION INCLUDED

NOTES:
HARNESS RODS NOT INCLUDED
VALVES NOT INCLUDED
TAX NOT INCLUDED
PIPE SUPPORTS NOT INCLUDED
NUT/BOLTS GASKETS NOT INCLUDED
DELIVERY INCLUDED
DRAWINGS INCLUDED
TERMS NET 30 DAYS