DETAILED PIPING SPECIFICATION

1. GENERAL

1.1 Work Included

- .1 The piping specification sheets on the following pages detail the requirements for each type of process pipe included in the Work.
- .2 The piping materials are listed on the specification sheets.

1.2 Definition

.1 Abbreviations used in the Detailed Piping Specification Sheets.

Abbreviation	Commodity	Pipe Material
FSW (W3)	Flushing Water	New Dewatering Building: PVC Schedule 80
		(connections to SS) - Interior
		Stainless Steel in the Control Chamber Building- Interior
		HDPE DR 17- exterior
DRA	Drain	PVC Schedule 80 - interior
VNT	Vent	PVC Schedule 80 - interior
SCP	Scum	Stainless Steel - interior
		HDPE DR17 - exterior
FLT	Filtrate	Stainless Steel - Interior
PD	Process Drain	Stainless Steel -Interior
		HDPE DR17 exterior
LCP	Liquid Polymer	PE tubing - interior
MP	Mixed Polymer	PVC Schedule 80 - interior
FOA	Foul Air	FRP - interior
		FRP - exterior, heat traced
PW	Potable Water	HDPE Series 160

2. PRODUCTS

2.1 Schedule

- .1 Detailed Pipe Specification Sheets follow.
- .2 Connections to all major equipment and valves shall be flanged. Grooved, butt welded or solvent welded connections are not permitted without prior approval from the Contract Administrator.
- .3 Transitions between pipe materials are not shown on Contract Drawings and are incidental to Contract Work.

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DETAILED PIPING SPECIFICATION

Chemical Feeds, Flushing Water in New Building

	MAXIMUM CONDITIONS			TEST CONDITIONS			
SYMBOL	PRESSURE (kPa)	TEMP. (°C)	Р	RESSURE (kPa)		ATION lin.)	
FSW (W3), MP	750	0-30	112		120	•	
SIZE (mm)	MATERIAL	RATING	SPE	CIFICATIONS	REM	ARKS	
10 – 300	PVC	Schedule 80					
SIZE (mm)	TYPE		_	SPECIFIC	ATIONS	REMARKS	
All	Grooved or Flanges	12 m				Note 1	
URTENANCE	S	•					
SIZE (mm)	MATERIAI	L RAT	ING	SPECIFIC	ATIONS	REMARKS	
10 – 300	PVC	Sched	ule 80				
10 – 300	PVC	Sched	ule 80	ASTM D2467 or flanged	, Grooved		
SIZE (mm)	MATERIAL	RATIN	G	SPECIFICAT	IONS	REMARKS	
10 – 300	PVC	Sched	ule 80	ASTM D2467	, Flanged		
≥75	PVC						
	316SS						
	Neoprene, Vito	n		ASTM F477		Note 3	
				ASTM D2564		Note 3	
•	SIZE (mm) AII URTENANCE SIZE (mm) 10 – 300 10 – 300 10 – 300 SIZE (mm) 10 – 300	SYMBOL PRESSURE (kPa) FSW (W3), MP 750 SIZE (mm) MATERIAL 10 - 300 PVC SIZE (mm) TYPE All Grooved or Flanges URTENANCES SIZE (mm) MATERIAL 10 - 300 PVC 10 - 300 PVC SIZE (mm) MATERIAL 10 - 300 PVC ≥75 PVC 316SS	SYMBOL PRESSURE (kPa) TEMP. (°C) FSW (W3), MP 750 0-30 SIZE (mm) MATERIAL RATING 10 - 300 PVC Schedule 80 SIZE (mm) TYPE MAXI SPAC 12 m 12 m URTENANCES SIZE (mm) MATERIAL RAT 10 - 300 PVC Schedule 80 VIC Schedule 80 12 m SIZE (mm) MATERIAL RAT 10 - 300 PVC Schedule 80 SIZE (mm) MATERIAL RATIN 10 - 300 PVC Schedule 80 SIZE (mm) MATERIAL RATIN 10 - 300 PVC Schedule 80	SYMBOL PRESSURE (kPa) TEMP. (°C) PRESSURE (kPa) TEMP. (°C) PRESSURE (kPa) PRESSURE (kPa)	SYMBOL PRESSURE (kPa) TEMP. (°C) PRESSURE (kPa) FSW (W3), MP 750 0-30 1125 SIZE (mm) MATERIAL NATING SPECIFICATIONS SPECIFICATIONS ASTM D1785, CSA 137.3 SIZE (mm) TYPE MAXIMUM SPACING NATING SPECIFIC NATIONS AII Grooved or Flanges 12 m ASTM D2467 ASTM D2467 ASTM D2467 URTENANCES SIZE (mm) MATERIAL RATING SPECIFIC NATIONS 10 - 300 PVC Schedule 80 ASTM D2467 Or flanged SIZE (mm) MATERIAL RATING SPECIFICAT ASTM D2467 Or flanged SIZE (mm) MATERIAL RATING SPECIFICAT ASTM D2467 Or flanged SIZE (mm) MATERIAL RATING SPECIFICAT ASTM D2467 Or flanged SIZE (mm) MATERIAL RATING SPECIFICAT ASTM D2467 Or flanged SIZE (mm) MATERIAL RATING SPECIFICAT ASTM D2467 Or flanged	SYMBOL PRESSURE (kPa) TEMP. (°C) PRESSURE (kPa) DUR (kPa) FSW (W3), MP 750 0-30 1125 120 SIZE (mm) MATERIAL NATING SPECIFICATIONS REM D1785, CSA 137.3 SIZE (mm) TYPE SPACING SPACING SPACING SPACING ASTM D2467, D2564 ASTM D2467, D2564 ASTM D2467 ASTM D2467, D2564 ASTM D2467 URTENANCES SIZE (mm) MATERIAL RATING SPECIFICATIONS 10 - 300 PVC Schedule 80 10 - 300 PVC Schedule 80 SIZE (mm) MATERIAL RATING SPECIFICATIONS 10 - 300 PVC Schedule 80 ASTM D2467, Grooved or flanged SIZE (mm) MATERIAL RATING SPECIFICATIONS Blind Flange Schedule 80 ASTM D2467, Flanged ≥75 PVC Blind Flange Schedule 80 316SS Schedule 80	

NOTES

- 1. Provide, as a minimum, unions, flanges, and flange adapters to allow for pipe and equipment disassembly and reassembly.
- 2. Gaskets material to be compatible with designated chemical solution.
- 3. Provide pipe support. Piping supports are generally not shown on the Drawings, see Section 40 05 80 Process Pipe Hangers and Supports.
- 4. Male Adapters not to be used with PVC piping.

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DETAILED PIPING SPECIFICATION

Drains, Vent to Outside in New Building

GENERAL									
		MAXIMUM CONDITIONS				TEST CONDITIONS			
PROCESS FLUID	SYMBOL	PRESSURE (kPa)		EMP. (°C)	PRESSURE (kPa)			ATION lin.)	
-	DRA, VNT, FLT	750 0-30 1125		` '					
PIPE									
LOCATION	SIZE (mm)	MATERIAL	R	ATING SPE		CIFICATIONS	REM	IARKS	
All	10 – 300	PVC Sche		edule 80	ASTM D1785, CSA 137.3				
JOINTS									
LOCATION	SIZE (mm)	TYPE		MAXIN SPACI		SPECIFIC	ATIONS	REMARKS	
All	All Grooved or Butt 12 m Welded or Socket Solvent Welded or Flanges			ASTM D2467 ASTM D2467		Note 1			
FITTINGS AND APP	URTENANCE	S							
ITEM	SIZE (mm)	MATERIA	L	RATII	NG	SPECIFIC	ATIONS	REMARKS	
Flanges	10 – 300	PVC		Schedul	e 80				
ELL - Short Radius ELL - Long Radius, Couplings, Tees, Reducers, Reducing Outlets and Laterals	10 – 300	PVC		Schedul	e 80	ASTM D2467 or flanged	, Grooved		
ITEM	SIZE (mm)	MATERIAL		RATING	}	SPECIFICAT	IONS	REMARKS	
Plug	10 – 300	PVC		Schedul	e 80	ASTM D2467	, Flanged		
Сар	≥75	PVC		Blind Fla Schedul					
Flange Hardware		316SS							
Flange Gaskets		Neoprene, Vito	n			ASTM F477		Note 3	
PVC Solvent						ASTM D2564		Note 3	

NOTES

- 1. Provide, as a minimum, unions, flanges, and flange adapters to allow for pipe and equipment disassembly and reassembly.
- 2. Gaskets material to be compatible with designated chemical solution.
- 3. Provide pipe support. Piping supports are generally not shown on the Drawings, see Section 40 05 80 Process Pipe Hangers and Supports.
- 4. Male Adapters not to be used with PVC piping.

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DETAILED PIPING SPECIFICATION

Process Piping (Inside Buildings)

GENERAL									
		MAXIMUM CONDI				ITIONS TEST CONDITION			
PROCESS FLUID	SYMBOL	PRESSURE (kPa)	Т	EMP. (°C)	Р	RESSURE (kPa)		ATION lin.)	
Flushing Water, Scum, Filtrate, Process Drain	FSW (W3), SCP, FLT, PD	750	0-30		112	5	120		
PIPE									
LOCATION	SIZE (mm)	MATERIAL	R	ATING	SPE	CIFICATIONS	REM	IARKS	
Inside Buildings	10 – 300	Stainless Steel 316	Scho 40S	edule	lule ASTM A312				
JOINTS									
LOCATION	SIZE (mm)	TYPE		MAXIN SPAC		SPECIFIC	ATIONS	REMARKS	
All	≥38	Butt Weld or Grooved Flanged to Equipment		N/A				Note 1	
FITTINGS AND APP	URTENANCE	S							
ITEM	SIZE (mm)	MATERIAL		RATII	NG	SPECIFIC	ATIONS	REMARKS	
Flanges, FF or RF	≥38	Stainless Steel	316	Class 1	50	Material: Sam Dimensions: A B16.5 ANSI B16.9	•		
ELL – Short Radius ELL – Long Radius, Tees, Reducers, Reducing Outlets, Laterals and Caps	≥38	Stainless Steel	316	Same as Pipe	S	Material: Sam Dimensions: A B16.9	•		
Plug	≥38	Stainless Steel	316	Class 18 Blind Fla		Material: Sam Dimensions: A B16.5	•		
ITEM	SIZE (mm)	MATERIAL		RATING	}	SPECIFICAT	IONS	REMARKS	
Flanged Adaptors	≥38	Same as Pipe		Same a	S	Flange: ANSI	B16.5		
Flanged Gaskets		Neoprene				ASTM F477			
Grooved Joint Gaskets	≥38	Neoprene or Nitrile Type T				AWWA C606			
Grooved Joint and Fittings	>38	Stainless Steel	316						
NOTES									

^{1.} Provide, as a minimum flanges, and flange adapters to allow for pipe and equipment disassembly and reassembly.

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DETAILED PIPING SPECIFICATION

Outdoor Piping

GENERAL									
		MAXIMUM C	OND	ITIONS		TEST C	ONDITIONS		
PROCESS FLUID	SYMBOL	PRESSURE (kPa)	Т	EMP. (°C)	PRESSURE (kPa)		DURATION (Min.)		
Flushing Water, Scum, Filtrate, Process Drain	FSW (W3), SCP, FLT, PD	750	0-30	` '		25	120		
LOCATION	SIZE (mm)	MATERIAL	R	ATING	SPE	CIFICATIONS	REM	ARKS	
All	10-900	HDPE	DR1	7	AST	M D3350			
JOINTS			•		1				
LOCATION	SIZE (mm)	TYPE		MAXIN SPAC		SPECIFIC	ATIONS	REMARKS	
All	10-900	Thermal butt fusion		N/A A		ANSI/AWWA C207			
FITTINGS AND APP	URTENANCE	S							
ITEM	SIZE (mm)			RATING		SPECIFICATIONS		REMARKS	
PP Compression Fittings	10-32	PP				Design Standard Cepex Performance Series			
ELL - Short Radius ELL - Long Radius, Couplings, Tees, Reducers, Reducing Outlets and Laterals	40-900	HDPE		1100 kF	Pa	ASTM A105			
NOTES	·			-					

DETAILED PIPING SPECIFICATION

All Inside Pipes Passing through Concrete Slabs, Floor, Wall and Submerged Pipes

GENERAL					
		OPERATING	LIMITS	TEST CONDIT	TIONS
PROCESS FLUID	SYMBOL	PRESSURE (kPa)	TEMP. (°C)	PRESSURE (kPa)	DURATION (Min.)
Flushing Water,	FSW (W3),	0-750	0-50	1200	120
Vent, Scum, Filtrate,	VNT, SCP,				
Mixed Polymer,	FLT, MP,				
Process Drain	PD				
PIPE					
LOCATION	SIZE (mm)	MATERIAL	RATING	SPECIFICATIONS	REMARKS
Below Structures	≥38	Stainless Steel 316	Schedule 40S	ASTM A312	
Submerged	≥38	Stainless Steel 316	Schedule 40S	ASTM A312	Note 1
JOINTS					
LOCATION	SIZE (mm)	TYPE	MAXIMUM SPACING	SPECIFICATIONS	REMARKS
Below Structures	≥38	Butt Weld	N/A		
Submerged	≥38	Butt Weld	N/A	AWWA C606	
ŭ		Grooved Joint	20 m		
FITTINGS AND APP	URTENANC	ES		•	1
ITEM	SIZE (mm)	MATERIAL	RATING	SPECIFICATIONS	REMARKS
Flanges, FF or RF	≥38	Stainless Steel 316	Class 150	Material: Same as Pipe Dimensions: ANSI B16.5 ANSI B16.9	
ELL – Short Radius ELL – Long Radius, Tees, Reducers, Reducing Outlets, Laterals and Caps	≥38	Stainless Steel 316	Same as Pipe	Material: Same as Pipe Dimensions: ANSI B16.9	
Plug	≥38	Stainless Steel 316	Class 150 Blind Flange	Material: Same as Pipe Dimensions: ANSI B16.5	
ITEM	SIZE (mm)	MATERIAL	RATING	SPECIFICATIONS	REMARKS
Flanged Adaptors	≥38	Same as Pipe	Same as Pipe	Flange: ANSI B16.5	
Flanged Gaskets		Neoprene		ASTM F477	
Grooved Joint Gaskets	≥38	Neoprene		AWWA C606	
Grooved Joint and Fittings	>38	Stainless Steel 316			
NOTES					
	the headspa	ce of tanks is consid	ered "subme	rged".	