

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.

DETAILED PIPING SPECIFICATION

Chemical Feeds, Flushing Water in New Building

GENERAL					
PROCESS FLUID	SYMBOL	MAXIMUM CONDITIONS		TEST CONDITIONS	
		PRESSURE (kPa)	TEMP. (°C)	PRESSURE (kPa)	DURATION (Min.)
Flushing Water, Mixed Polymer	FSW (W3), MP	750	0-30	1125	120
PIPE					
LOCATION	SIZE (mm)	MATERIAL	RATING	SPECIFICATIONS	REMARKS
All	10 – 300	PVC	Schedule 80	ASTM D1785, CSA 137.3	
JOINTS					
LOCATION	SIZE (mm)	TYPE	MAXIMUM SPACING	SPECIFICATIONS	REMARKS
All	All	Grooved or Flanges	12 m	ASTM D2467, D2564 ASTM D2467	Note 1
FITTINGS AND APPURTENANCES					
ITEM	SIZE (mm)	MATERIAL	RATING	SPECIFICATIONS	REMARKS
Flanges	10 – 300	PVC	Schedule 80		
ELL - Short Radius ELL - Long Radius, Couplings, Tees, Reducers, Reducing Outlets and Laterals	10 – 300	PVC	Schedule 80	ASTM D2467, Grooved or flanged	
ITEM	SIZE (mm)	MATERIAL	RATING	SPECIFICATIONS	REMARKS
Plug	10 – 300	PVC	Schedule 80	ASTM D2467, Flanged	
Cap	≥75	PVC	Blind Flange Schedule 80		
Flange Hardware		316SS			
Flange Gaskets		Neoprene, Viton		ASTM F477	Note 3
PVC Solvent				ASTM D2564	Note 3
NOTES					
<ol style="list-style-type: none"> 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. 					

DETAILED PIPING SPECIFICATION

Drains, Vent to Outside in New Building

GENERAL					
PROCESS FLUID	SYMBOL	MAXIMUM CONDITIONS		TEST CONDITIONS	
		PRESSURE (kPa)	TEMP. (°C)	PRESSURE (kPa)	DURATION (Min.)
Drain, Vent,	DRA, VNT, FLT	750	0-30	1125	120
PIPE					
LOCATION	SIZE (mm)	MATERIAL	RATING	SPECIFICATIONS	REMARKS
All	10 – 300	PVC	Schedule 80	ASTM D1785, CSA 137.3	
JOINTS					
LOCATION	SIZE (mm)	TYPE	MAXIMUM SPACING	SPECIFICATIONS	REMARKS
All	All	Grooved or Butt Welded or Socket Solvent Welded or Flanges	12 m	ASTM D2467, D2564 ASTM D2467	Note 1
FITTINGS AND APPURTENANCES					
ITEM	SIZE (mm)	MATERIAL	RATING	SPECIFICATIONS	REMARKS
Flanges	10 – 300	PVC	Schedule 80		
ELL - Short Radius ELL - Long Radius, Couplings, Tees, Reducers, Reducing Outlets and Laterals	10 – 300	PVC	Schedule 80	ASTM D2467, Grooved or flanged	
ITEM	SIZE (mm)	MATERIAL	RATING	SPECIFICATIONS	REMARKS
Plug	10 – 300	PVC	Schedule 80	ASTM D2467, Flanged	
Cap	≥75	PVC	Blind Flange Schedule 80		
Flange Hardware		316SS			
Flange Gaskets		Neoprene, Viton		ASTM F477	Note 3
PVC Solvent				ASTM D2564	Note 3
NOTES					
<ol style="list-style-type: none"> 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. 					

DETAILED PIPING SPECIFICATION

Process Piping (Inside Buildings)

GENERAL					
PROCESS FLUID	SYMBOL	MAXIMUM CONDITIONS		TEST CONDITIONS	
		PRESSURE (kPa)	TEMP. (°C)	PRESSURE (kPa)	DURATION (Min.)
Flushing Water, Scum, Filtrate, Process Drain	FSW (W3), SCP, FLT, PD	750	0-30	1125	120
PIPE					
LOCATION	SIZE (mm)	MATERIAL	RATING	SPECIFICATIONS	REMARKS
Inside Buildings	10 – 300	Stainless Steel 316	Schedule 40S	ASTM A312	
JOINTS					
LOCATION	SIZE (mm)	TYPE	MAXIMUM SPACING	SPECIFICATIONS	REMARKS
All	≥38	Butt Weld or Grooved Flanged to Equipment	N/A		Note 1
FITTINGS AND APPURTENANCES					
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 or Nitrile Type T		AWWA C606	
Grooved Joint and Fittings	>38	Stainless Steel 316			
NOTES					
1. Provide, as a minimum flanges, and flange adaptors to allow for pipe and equipment disassembly and reassembly.					

DETAILED PIPING SPECIFICATION

Outdoor Piping

GENERAL					
PROCESS FLUID	SYMBOL	MAXIMUM CONDITIONS		TEST CONDITIONS	
		PRESSURE (kPa)	TEMP. (°C)	PRESSURE (kPa)	DURATION (Min.)
Flushing Water, Scum, Filtrate, Process Drain	FSW (W3), SCP, FLT, PD	750	0-30	0-1125	120
PIPE					
LOCATION	SIZE (mm)	MATERIAL	RATING	SPECIFICATIONS	REMARKS
All	10-900	HDPE	DR17	ASTM D3350	
JOINTS					
LOCATION	SIZE (mm)	TYPE	MAXIMUM SPACING	SPECIFICATIONS	REMARKS
All	10-900	Thermal butt fusion	N/A	ANSI/AWWA C207	
FITTINGS AND APPURTENANCES					
ITEM	SIZE (mm)	MATERIAL	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 kPa	ASTM A105	
NOTES					

DETAILED PIPING SPECIFICATION

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

GENERAL					
PROCESS FLUID	SYMBOL	OPERATING LIMITS		TEST CONDITIONS	
		PRESSURE (kPa)	TEMP. (°C)	PRESSURE (kPa)	DURATION (Min.)
Flushing Water, Vent, Scum, Filtrate, Mixed Polymer, Process Drain	FSW (W3), VNT, SCP, FLT, MP, PD	0-750	0-50	1200	120
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 Grooved Joint	N/A 20 m	AWWA C606	
FITTINGS AND APPURTENANCES					
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					
1. Piping located in the headspace of tanks is considered "submerged".					

END OF SECTION