



# APPENDICES

DESIGN AND CONSTRUCTION MANUAL

## Vertical Municipal Infrastructure Standards



# REVISION TRACKING

EXISTING VERSION	VERSION NUMBER
March 2019	N: V1 - Original Final Submission
December 2020	V2
May 2022	V3
January 2023	V4
March 2024	V5

# 2024 REVISION SUMMARY

SECTION	MODIFICATION & COMMENTARY

APPENDICES  
**STANDARD DEVIATION FORM**



### DEVIATION REQUEST FORM Design & Construction Manual

#### TO BE COMPLETED BY APPLICANT

<b>To:</b>	
<b>From:</b> (Applicant Name & Company)	
<b>Phone:</b>	
<b>Email:</b>	
<b>Date:</b>	
<b>Re:</b>	

#### Summary of Proposed Deviations from City of Brantford Design and Construction Manual Vertical Municipal Infrastructure Standards

Ref #	Type of Infrastructure	Related Brantford Standard Reference	Summary of Deviation Request / Brief Rationale	D.C.R.C.
1				
2				
3				

#### Revision Request Process:

1. All deviation requests are to be submitted to the City. The City will initiate review of the deviation request by relevant departments and inform the applicant of the tentative period of approval. Three (3) weeks will be provided to the City departments for review. Depending on the nature of the deviation request, the City's response may require additional review time.
2. Incomplete submissions (e.g. forms and drawings) of deviation request with insufficient supporting documentation will be returned to the applicant without review. The onus is on the applicant to provide a complete submission, which fully supports the deviation request.
3. The City will review the deviation request and advise the director for approval or refusal.
4. If the deviation request is accepted, the applicant will be provided with further instructions on how the change may be applied to the subject or pending works.
5. If the deviation request is rejected, the City will provide the applicant with reasons for the rejection. The applicant may elect to resubmit the deviation request, provided the City's reasons for initial rejection are fully addressed in the subsequent submission.



**DEVIATION REQUEST FORM**  
Design & Construction Manual

**TO BE COMPLETED BY APPLICANT**

<b>1. General Information</b>			
<b>Description of Work Undertaken</b>			
<b>Location of Work Completed</b>		<b>Project ID (if applicable)</b>	
<b>Location of Deviation in Design Submission</b>		<b>Contact Phone No.</b>	

<b>2. Reason / Justification for Deviation</b>	
<b>2.1. Background Information / Rationale for Deviation</b>	
<b>2.2. Potential Benefits of Deviation</b>	
<b>2.3. Potential Disadvantages of Deviation</b>	
<b>2.4. Information Gathered During the Deviation Review Process</b>	



**DEVIATION REQUEST FORM**  
Design & Construction Manual

**FOR INTERNAL USE ONLY**

3. Reviewers	
<input type="checkbox"/> Engineering Services <input type="checkbox"/> Environmental Services <input type="checkbox"/> Facilities & Asset Management	<input type="checkbox"/> Operational Services <input type="checkbox"/> Fleet & Transit Services <input type="checkbox"/> Development <input type="checkbox"/> Other
3.1. Comments	
3.2. Rationale for the Accept/Reject Decision	
3.3. Should the Existing Standard(s) Be Updated? Why?	

The changes above have been reviewed and accepted by the relevant stakeholders.

4. Acceptance			
Title	Name (Print)	Signature	Date (MM/DD/YYYY)
Manager			
Director			

APPENDICES  
**PROPOSED DESIGN  
STANDARD CHANGE FORM**



DESIGN STANDARD CHANGE FORM  
INTERNAL USE ONLY



PROPOSED DESIGN STANDARD CHANGE FORM  
CITY OF BRANTFORD

**Mail to:** Environmental Services  
Attention: Design Review Advisory Panel  
Corporation of the City of Brantford  
324 Grand River Ave., Brantford, Ontario

**Name:** \_\_\_\_\_ **Phone ( )** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**Company or Organization:** \_\_\_\_\_  
**E-mail Address:** \_\_\_\_\_

**PROPOSED CHANGE:**  
(including proposed new or revised wording, or identification of wording to be deleted)

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







**REASON FOR CHANGE:**

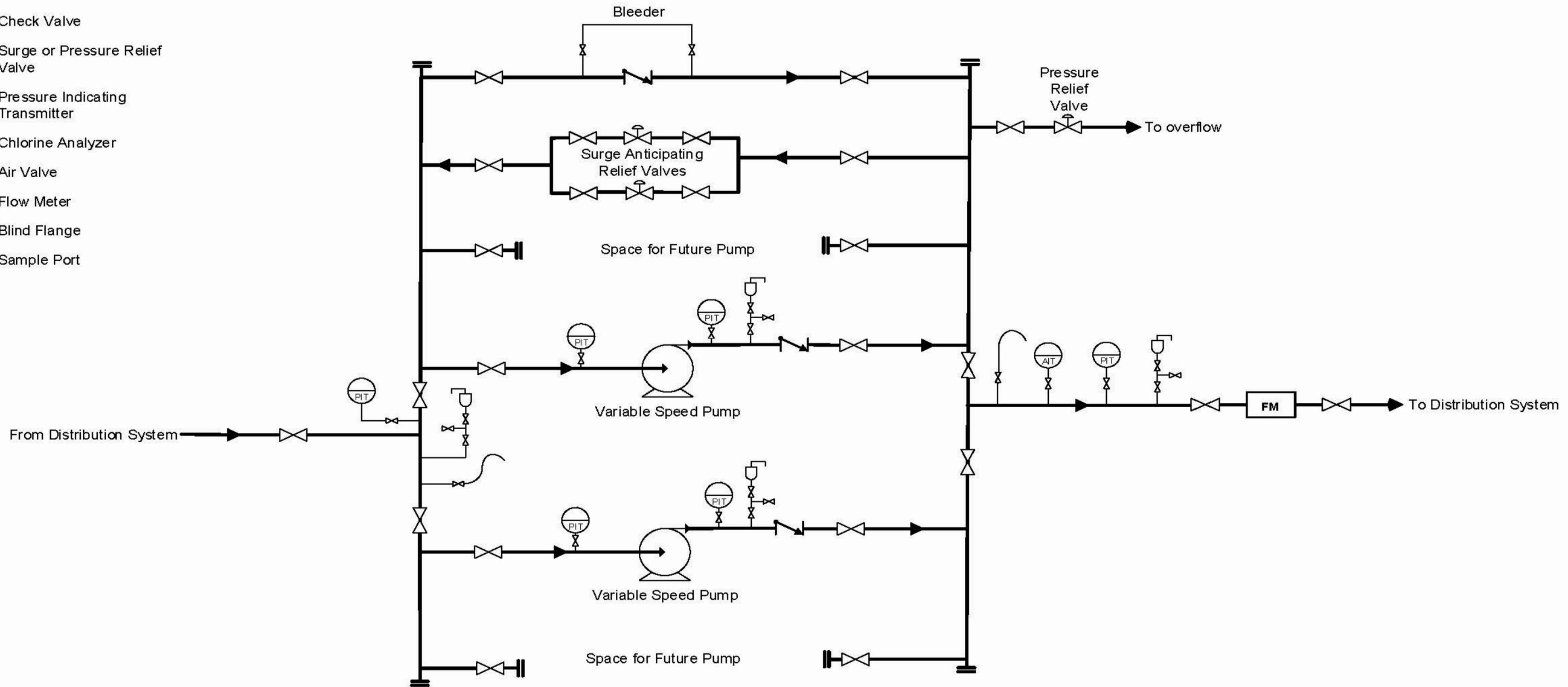
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(attach additional information if required)

APPENDICES  
**STANDARD SCHEMATICS  
FOR PUMPING STATIONS**

Legend:

-  Pump
-  Manual Isolation Valve
-  Check Valve
-  Surge or Pressure Relief Valve
-  Pressure Indicating Transmitter
-  Chlorine Analyzer
-  Air Valve
-  Flow Meter
-  Blind Flange
-  Sample Port



Notes:

1. This schematic should be read in conjunction with the Design and Construction Manual: Vertical Municipal Infrastructure Standards.
2. This schematic is intended to depict the general process flow and layout of the facility. It is not intended to depict a complete design.
3. This schematic shows two pumps with provisions for two future pumps for illustration purposes only. The Proponent is responsible for providing the required number of pumps to meet the design flow.
4. A vent and drain port (c/w ball valve) shall be included in each piping section between all isolation valves.















Public Works Commission

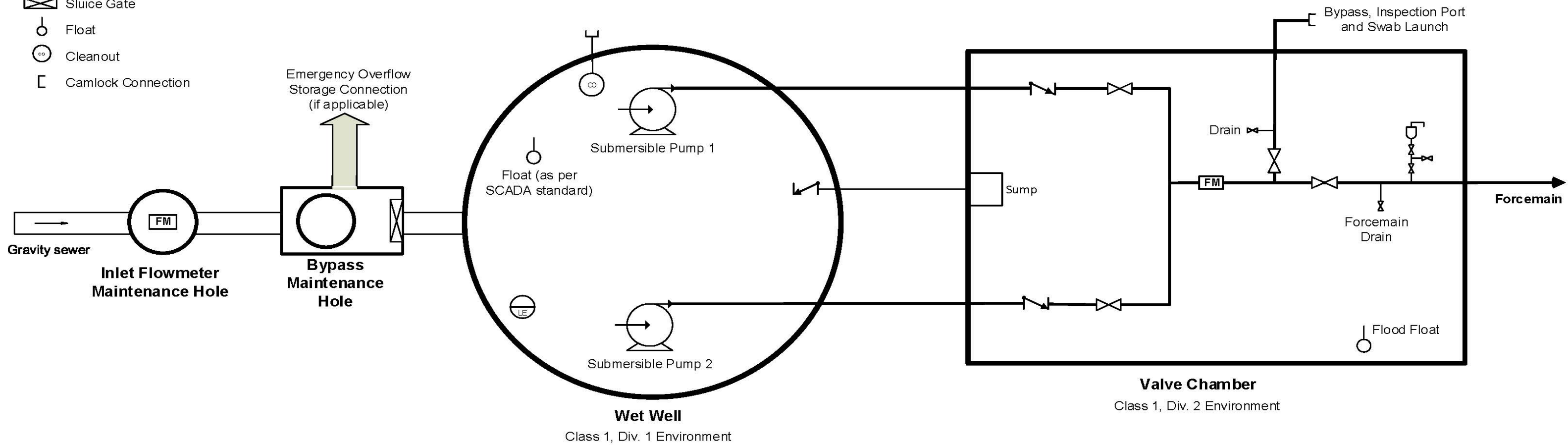
Design and Construction Manual  
Vertical Municipal Infrastructure Standards

Water Booster Station

			DRAWING NUMBER:
			WBS-1
			SCALE:
			Not to Scale
0	ORIGINAL/FINAL SUBMISSION	MAR-19	
NO.	REVISION	DATE	

Legend:

-  Pump
-  Manual Isolation Valve
-  Motorized Valve
-  Check Valve
-  Level Instrument
-  Air Valve
-  Flow Meter
-  Blind Flange
-  Sluice Gate
-  Float
-  Cleanout
-  Camlock Connection



Notes:

1. This schematic should be read in conjunction with the Design and Construction Manual: Vertical Municipal Infrastructure Standards.
2. This schematic is intended to depict the general process flow and layout of the facility. It is not intended to depict a complete design.

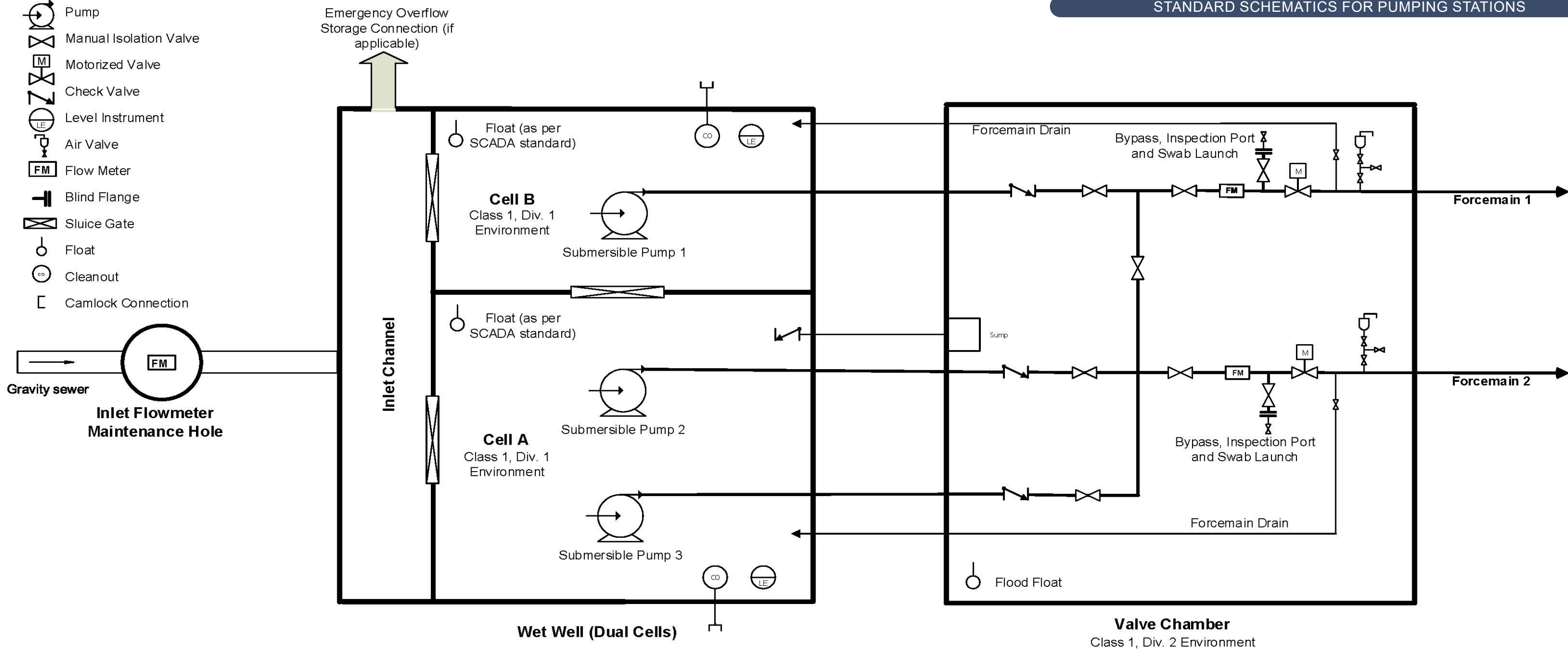
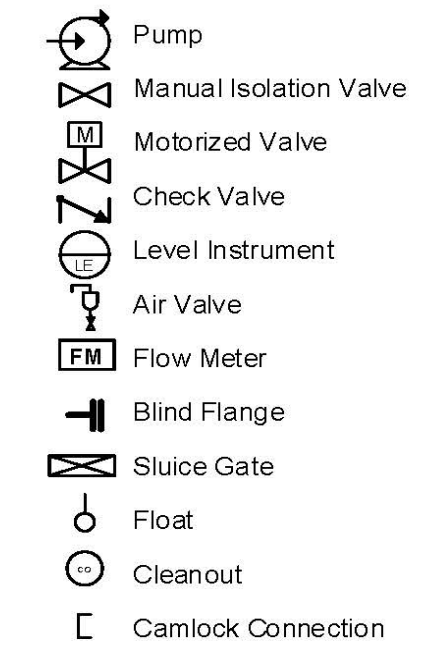


Public Works Commission

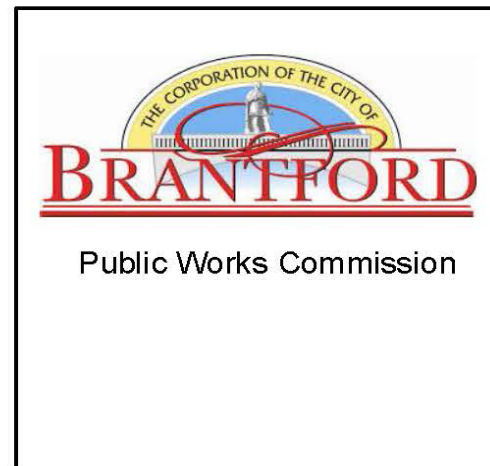
Design and Construction Manual  
Vertical Municipal Infrastructure Standards

Wastewater Pumping Station – Type I (<76 L/s)

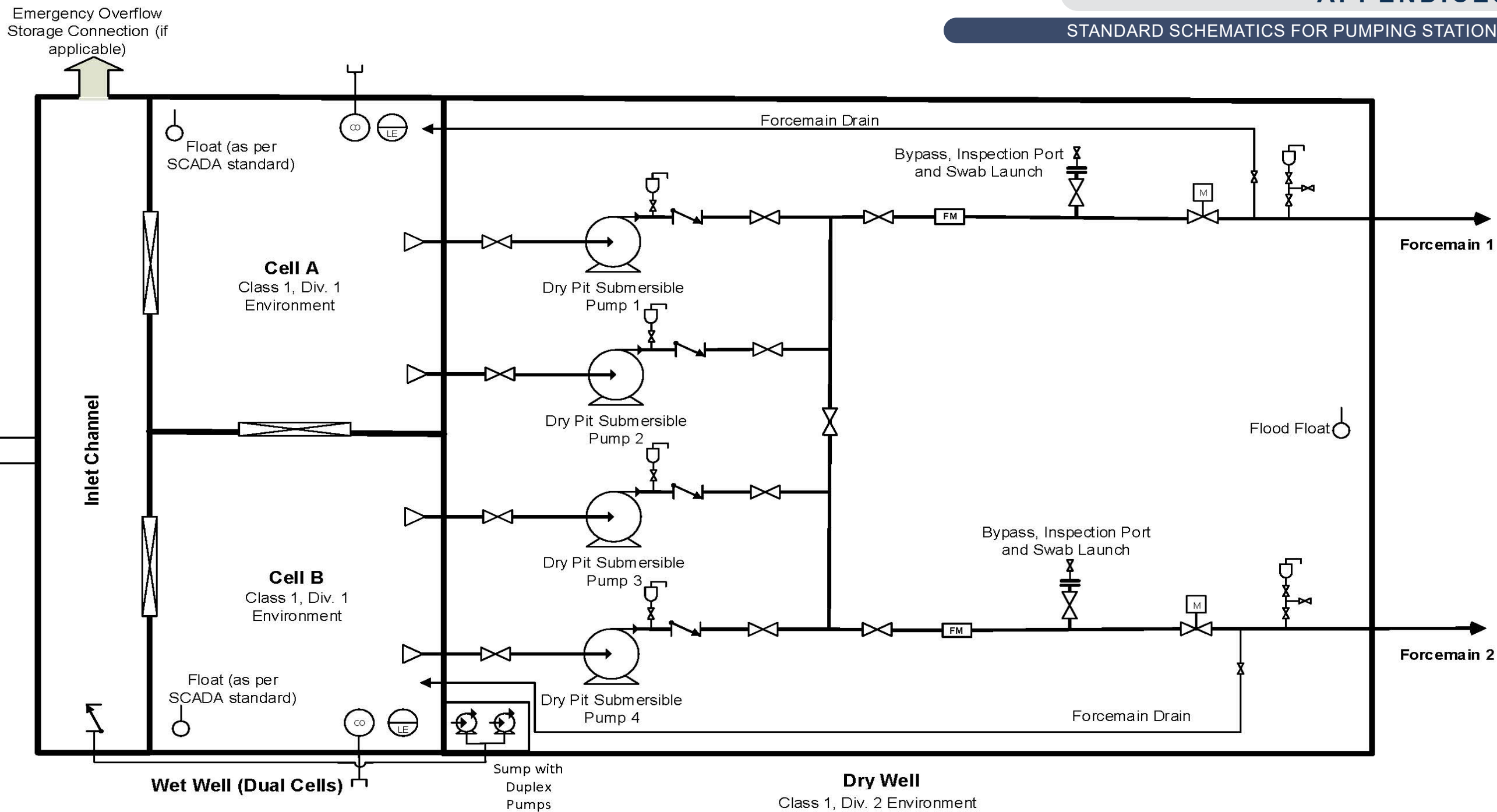
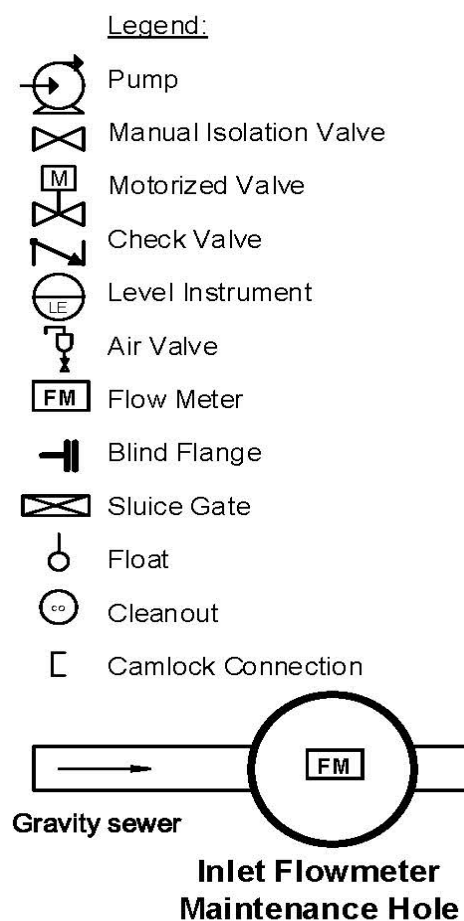
			DRAWING NUMBER:
			WWPS-T1
			SCALE:
			Not to Scale
NO.	REVISION	DATE	
0	ORIGINAL FINAL SUBMISSION	MAR-19	



- Notes:
1. This schematic should be read in conjunction with the Design and Construction Manual: Vertical Municipal Infrastructure Standards.
  2. This schematic is intended to depict the general process flow and layout of the facility. It is not intended to depict a complete design.



<b>Design and Construction Manual</b>		
<b>Vertical Municipal Infrastructure Standards</b>		
<b>Wastewater Pumping Station – Type II (76 to 119 L/s)</b>		
		DRAWING NUMBER: WWPS-T2
0	ORIGINAL FINAL SUBMISSION	MAR-19
NO.	REVISION	DATE
		SCALE: Not to Scale



- Notes:
1. This schematic should be read in conjunction with the Design and Construction Manual: Vertical Municipal Infrastructure Standards.
  2. This schematic is intended to depict the general process flow and layout of the facility. It is not intended to depict a complete design.



**Design and Construction Manual  
Vertical Municipal Infrastructure Standards**

**Wastewater Pumping Station – Type III (>120 L/s)**

		DRAWING NUMBER:	
		WWPS-T3	
		SCALE:	
		Not to Scale	
0	ORIGINAL FINAL SUBMISSION	MAR-19	
NO.	REVISION	DATE	

APPENDICES  
**APPROVED PRODUCTS LIST  
FOR WATER FACILITIES**

Equipment Type	Brand Name	Comments
<b>1. VALVES</b>		
Elastomeric Check Valve (Duckbill)	Cla Val	
	Tideflex	
Flexible Disc Check Valve	Cla Val	c/w backflow actuator
	Henry Pratt	
	Mueller	
	Val-Matic	
Tilted Disc Check Valve	Cla Val	opening and closing dash pot with speed control
	Henry Pratt	
	Val-Matic	
Globe Style Valve (Control, PRV, SRV, PSV)	Singer	SS accessories
	Cla Val	
Gate Valve (Resilient Seat)	Mueller	
	Henry Pratt	
	Val-Matic	
	Clow	
	AVK	
Sluice Gate	Dynamic	
	Fontaine-Aquanox	
	BNW	
	Orbinox	
Butterfly Valve	Henry Pratt	adjustable external limit stops
	Val-Matic	
	Cla Val	
	Clow	
	Mueller	
	DeZURIK	
Air Release / Vacuum	A.R.I.	
	Val-Matic	
	Cla Val	
Ball Valve and Electric Actuators (Chemical Application Only)	Chemline Plastics	
	Hayward	
Ball Valve, SS (≤ 50 mm)	Pinnacle	
	Watts	
	Apollo	
Solenoid Valve	ASCO / Emerson	
	Burkert	
Valve Actuator - Electric	Auma	
	Limitorque	
	Rotork	
	Haws	
Eye Wash Station	Bradley	c/w tempered water system
Backflow Preventer	Watts	reduced pressure zone assembly



Equipment Type	Brand Name	Comments
<b>2. PUMPS</b>		
Centrifugal Pump - Horizontal Split Case	ITT Goulds / Xylem	
	Pentair / Aurora	
	Fairbanks Morse	
Centrifugal Pump - Vertical Inline	ITT Goulds	
	Grundfos	
	Pentair / Aurora	
	Rotech	
Centrifugal Pump - End Suction (Rubber Lined)	Flowserve	
	ITT Goulds	
	KSB	
Centrifugal Pump - End Suction	ITT Goulds	
	Gorman Rupp	
	Grundfos	
	Aurora / Pentair	
Vertical Turbine Pump	RuhrPumpen	
	National PC	
	ITT Goulds / Xylem	
	Grundfos / Peerless	
<b>3. CHEMICAL METERING PUMPS</b>		
Peristaltic Pump	Cole-Parmer	
	Blue-White	
	ProMinent	
	Pulsafeeder	
Progressive Cavity Pump	Moyno	
	SEEPEX	
Diaphragm Pump	Pulsafeeder	
	ProMinent	
	Encore / USGI Chemical Feed	
	Grundfos / Peerless	

Equipment Type	Brand Name	Comments
<b>4. INSTRUMENTATION EQUIPMENT</b>		
<b>Analytical Instruments</b>		
Chlorine Residual Analyzer	Prominent	
	Rosemount / Emerson	
	Wallace & Tiernan	
Fluoride Analyzers	HACH	
	Siemens	
Chlorine Gas Monitoring (Fixed)	ATI	
	MSA	
	Siemens	
Ozone Gas Monitoring	BMT	
	HACH	
	Teledyne	
Turbidity Analyzer	HACH	
<b>Flow Instruments</b>		
Flow Meters-Magnetic	ABB	
	Endress + Hauser	
	Krohne	
<b>Level Instruments</b>		
Liquid Level Transmitter	Endress + Hauser	
	Rosemount	
	Siemens	
<b>Pressure Instruments</b>		
Pressure Transmitter	ABB	
	Allen Bradley	
	Endress + Hauser	
	Rosemount	
Pressure Gauges	WIKA	
	Ashcroft	
	Rosemount	dual scale, kPa/psi
	WIKA	
<b>Temperature Instruments</b>		
Temperature Transmitter	ABB	
	Allen Bradley	
	Ashcroft	
	Endress + Hauser	
	Honeywell	
Rosemount		
<p><b>The above equipment shall meet the following applicable standards:</b></p> <ul style="list-style-type: none"> <li>- All valves shall meet applicable AWWA standards</li> <li>- All equipment shall be certified by ANSI/NSF Standard 61</li> </ul>		

- All valves shall be equipped with internal and external fusion bonded epoxy coating (except SS body) - All equipment to be supplied with stainless steel hardware (nuts, bolts, washers)		
Equipment Type	Brand Name	Comments
<b>5. MISCELLANEOUS MECHANICAL</b>		
Access Hatches	BILCO	c/w lift assist, hold open arm, pad lockable and secondary fall protection grating
	Halliday	
	MSU Mississauga	
Crane Systems	Konecranes	
	Richard-Wilcox	
Gearboxes	Nord	
	SPX Flow / Lightning	
	SEW Eurodrive	
Submersible Pump	Goulds / Xylem	
	Gorman Rupp	
	Grundfos	
	Flygt	
<b>6. RESIDUAL MANAGEMENT FACILITY</b>		
Progressive Cavity - Rotor	Moyno	
	Seepex	
Knife Gate Valve	Trueline	bi-directional
	DeZURIK	
	Orbinox	
	Stafsjo	
Plug Valve	Val-Matic	
	Dezurik	
	Golden Anderson	
<b>7. STANDBY POWER SYSTEMS</b>		
Packaged Standby Power Generators	Toromont CAT	
	Cummins	
	Kohler	
<b>8. BLOWERS</b>		
Lobe Blowers	Robuschi	
	SutorBilt	
	Gardner Denver	

## 9. ELECTRICAL

<b>VFD / Soft Starts</b>	ABB	
	Allen Bradley	
	Siemens	
<b>Automatic Transfer Switches</b>	ASCO	
	Allen Bradley	
	Eaton / Culter Hammer	
<b>Motor Control Centre (MCC) / Panel Board</b>	Allen Bradley	
	Eaton	
	Siemens	

APPENDICES  
**APPROVED PRODUCTS LIST FOR  
WASTEWATER FACILITIES**

Equipment Type	Brand Name	Comments
<b>1. VALVES</b>		
Knife Gate Valve	Trueline	Stainless Steel
	DeZURIK	
	Orbinox	
	Stafsjo	
Plug Valve	Val-Matic	
	DeZURIK	
	Golden Anderson	
Elastomeric Check Valve (Duckbill)	Cla Val	
	Tidflex	
Flexible Disc Check Valve	Cla Val	c/w backflow actuator
	Henry Pratt	
	Val-Matic	
Tilted Disc Check Valve	Cla Val	opening and closing dash pot with speed control
	Henry Pratt	
	Val-Matic	
Globe Style Valve (Control, PRV, SRV, PSV)	Singer	SS accessories
	Cla Val	
Gate Valve (Resilient Seat)	Mueller	
	Henry Pratt	
	Val-Matic	
	Clow	
	AVK	
Sluice Gate	Dynamic	
	Fontaine-Aquanox	
	BNW	
	Orbinox	
Butterfly Valve	Henry Pratt	adjustable external limit stops
	Val-Matic	
	Cla Val	
	Clow	
	Mueller	
Air Release / Vacuum	DeZURIK	
	A.R.I.	
	Val-Matic	
	Cla Val	

Equipment Type	Brand Name	Comments
<b>1. VALVES - CONT'D</b>		
<b>Ball Valve and Electric Actuators (Chemical Application Only)</b>	Chemline Plastics	
	Hayward	
<b>Ball Valve, SS (≤ 50 mm)</b>	Pinnacle	
	Watts	
	Apollo	
<b>Solenoid Valve</b>	ASCO / Emerson	
	Burkert	
<b>Valve Actuator - Electric</b>	Auma	
	Limitorque	
	Rotork	
<b>Eye Wash Station</b>	Haws	c/w tempered water system
	Bradley	
<b>Backflow Preventer</b>	Watts	reduced pressure zone assembly
<b>2. PUMPS</b>		
<b>Sewage Lift- Centrifugal Pump</b>	Xylem/ Flygt	
	KSB	
	Sulzer	
<b>Solids Handling- Centrifugal Pump</b>	Hidrostal	
	Xylem/ Flygt	
	KSB	
<b>Rotary Lobe- Positive Displacement Pump</b>	Vogelsang	
<b>Screw Pump- Positive Displacement Pump</b>	Spanns Babcock	
	Lakeside Equipment	
<b>3. CHEMICAL METERING PUMPS</b>		
<b>Diaphragm- Positive Displacement Pump</b>	Pulsafeeder	
	ProMinent	
	Encore / USGI Chemical Feed	
	Grundfos / Peerless	

Equipment Type	Brand Name	Comments
<b>4. INSTRUMENTATION EQUIPMENT</b>		
<b>Analytical Instruments</b>		
Chlorine Analyzer/ Probe	Prominent	
	Rosemount / Emerson	
	HACH	
Sodium Bispluite Analyzer/ Probe	ProMinent	
	Rosemount/ Emerson	
	HACH	
Atmospheric Monitoring (Hazardous Areas- Fixed)	MSA	
	Siemens	
	ATI	
Dissolved Oxygen Probes/ Analyzer	HACH	
<b>Flow Instruments</b>		
Flow Meters-Magnetic/ Open Channel	Krohne	
	Endress + Hauser	
	Siemens/ Milltronics	
	ABB	
<b>Level Instruments</b>		
Liquid Level Transmitter	Rosemount	
	Miltronics	
<b>Pressure Instruments</b>		
Pressure Transmitter	Rosemount	
	E&H	
	ABB	
Pressure Gauges	Ashcroft	dual scale, kPa/psi
	WIKA	
	Rosemount	
<b>Temperature Instruments</b>		
Temperature Transmitter	Rosemount	
	Ashcroft	
	Honeywell	
	ABB	
<p><b>The above equipment shall meet the following applicable standards:</b></p> <ul style="list-style-type: none"> <li>- All valves shall meet applicable AWWA standards</li> <li>- All equipment shall be certified by ANSI/NSF Standard 61</li> <li>- All valves shall be equipped with internal and external fusion bonded epoxy coating (except SS body)</li> <li>- All equipment to be supplied with stainless steel hardware (nuts, bolts, washers)</li> </ul>		



Equipment Type	Brand Name	Comments
<b>5. MISCELLANEOUS MECHANICAL</b>		
Access Hatches	BILCO	c/w lift assist, hold open arm, pad lockable and secondary fall protection grating
	Halliday	
	MSU Mississauga	
Crane Systems	Konecranes	
	Richard-Wilcox	
Gearboxes	Nord	
	SPX Flow / Lightning	
	SEW Eurodrive	
Submersible Pump	Goulds / Xylem	
	Gorman Rupp	
	Grundfos	
	Flygt	
<b>6. STANDBY POWER SYSTEMS</b>		
Packaged Standby Power Generators	Toromont CAT	
	Cummins	
	Kohler	
	MTU	
<b>7. BLOWERS</b>		
Lobe Blowers	Hibbon	
	SutorBilt	
	Gardner Denver	
<b>8. ELECTRICAL</b>		
VFD/ Soft Starters	Allen Bradley	
	Eaton	
	ABB	
Automatic Transfer Switches	ASCO / Emerson	
	Eaton/ Cutler Hammer	
<b>9. MECHANICAL</b>		
Clarifiers	Ovivo	
	Westech	
Mixers	Xylem/ Flygt	
	Sulzer	
	Ovivo	
Pre Treatment- Bar Screens, Compactors, Grit Separation	WTP	
	Maberex	
	Ovivo	

APPENDICES  
**PRODUCT APPLICATION FORM**

**PRODUCT APPLICATION FORM**  
*Roads, Watermain, Sewers and Traffic*



GENERAL INFORMATION & INSTRUCTIONS

1. Submittal of this form enables the Product Review Advisory Panel (**PRAP**) to assess the product identified.
2. Application must be completed in full in order for it to be considered for review.
3. A separate application **MUST** be submitted for each product.
4. Supporting documentation **MUST** be submitted with the application.
5. Incomplete applications will be returned to the applicant.
6. The vendor will be contacted if additional information is required.
7. The application form will be returned to the vendor with a file number and date to present.
8. Attach this application and supporting documentation in **ONE combined PDF document**.

Date of submission (mm/dd/yyyy): \_\_\_\_\_

Submission (name) by: \_\_\_\_\_

PLEASE submit your application by email : [PRAP@brantford.ca](mailto:PRAP@brantford.ca)

Email title should take the following format:

**ProductCategory\_CompanyName\_Product**

Example: WaterDistribution\_ABCWaterCo.\_Pumps

## PRODUCT APPLICATION FORM

1. Company Profile		
Name	Address	City/Town
Province/State/Territory	Postal/Zip Code	Country
Contact Person	Title	Email
Telephone Number	Cellular Number	Fax Number
Company Website		
Type of Business:		
<input type="checkbox"/> Manufacturer <input type="checkbox"/> Supplier <input type="checkbox"/> Other(Specify): _____		

2. Product Details (Attach Specifications) (PDF)	
Product Name	Model No.
Manufacturer Name	Location of Manufacturer
<u>Check</u> Product Category	
Water Distribution <input type="checkbox"/>	Wastewater Collection <input type="checkbox"/> Road <input type="checkbox"/> Traffic <input type="checkbox"/> Miscellaneous <input type="checkbox"/>
Water Treatment <input type="checkbox"/>	Wastewater Treatment <input type="checkbox"/> Storm <input type="checkbox"/>
Year Introduced	Number of Years Available
Product Description/Function and Special features	

3. Current Approvals (Ontario Only) (If Applicable)		
Municipality	Contact Person	Phone Number

4. Compliance with Industry Standard (Attach Proof of Certification) (AWWA, OPSS, OPSD, etc...)			
Standard	Section No.	Standard	Section No.

5. Product Suppliers and/or Distributors (If Applicable)			
Vendor Name	City	Contact Person	Phone Number

6. Locations for Product Service (If Applicable)

7. FOR OFFICE USE ONLY		
File Number		Reply to Submission Date (mm-dd-yyyy)
Status <input type="checkbox"/> Approved <input type="checkbox"/> Denied <input type="checkbox"/> Pending	Date (mm-dd-yyyy)	Comments: