

DISCLAIMER: The *Approved Product and Equipment List (APEL)* is Section 27 of the Water & Wastewater Division’s “Project Design and Technical Specifications Manual” (PDTSM). The PDTSM is one within a series of Niagara Region’s design standards and guidelines. Inclusion onto the *APEL* does not constitute mandatory use of the product in the Region’s contract documents. The approved manufacturer(s) on the *APEL* must meet the specifications as outlined in Niagara Region’s tender or quotation. Products are not necessarily listed in preferential order. Niagara Region reserves the right to list manufacturer(s) for specialized equipment and applications outside the *APEL* in tender or quotation specifications as per Section 1 of the PDTSM.

<b>Control &amp; Instrumentation</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
AC Current Sensor		Troy Control Limited	KATY Inst. Model 420 02 420L
		Hammond	
		Multi-Lin	
AC Voltage Sensor		Pribusin	
		Tie-Mark	
Air Flow Meter		Kurz	Kurz 555
		Dwyer Instruments	
		Bailey	
Chlorine Residual Analyzer Continuous On-Line (potable water)		Prominent	Series 1870E
		Hach	SC100
Gas Monitoring (fixed instruments)		Armstrong	
		B & W	
		General Instrument	
		Industrial Scientific	
		MSA Combustible Gas Analyzer	
Conductivity Level Switches		Warrick	
Control and Relay Panel	Note: Locks not required. Provide standard lever handle to open/close door.	Hammond	CSA EEMAC 4X or Type 7
		Ralston	
Control Circuit Transformer	Provide slow blow fuse to be mounted on transformer. Tolerance to be +25% of specified rated capacity.	Hammond	
		Rex	

<b>Control &amp; Instrumentation</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Control Circuit Breaker		Entelec	
		Phoenix	
		Weidmuller	
		Westinghouse	
DC Loop Power Supply		Honeywell	
Doppler / Transit Time Flow Meter	Strap-on type	ABB	
		Endress+Hauser	Proline Prosonic.
		Fuji	
		Polysonics	Polysonics Model LCDT
Diaphragm Seal for Pressure Gauges		Ashcroft Duragauge	
		Viton	Low pressure
		WIKA	
Ultrasonic Transmitter		Miltronic's	MultiRanger 100 or 200
Differential Pressure Switch	Blower Filter	Dwyer	Series 3000
		Magnahelic	
Differential Pressure Transmitter		Rosemount	
		ABB	
Dissolved Oxygen Sensor / Analyzer	<b>If used in potable waster, must be NSF/AWWA certified</b>	ABB	
		Aysix Technologies	
		Fisher-Porter	
		GLI International	
		Hach	
		Zullig	Great Lakes Model Z63/5040, Model 5042DO
Float Switches		ABS	
		Flygt	
		Honeywell	
		Siemens	

<b>Control &amp; Instrumentation</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Heat Detector – Fire Alarm		Edwards	P/N: 281C
Interposing Relays		Entelec	DIN Rail Mounted
Indicating Lights	Replacement of light bulbs must be accessible from the front.	ABB	
		Allen Bradley	
		Cutler Hammer	
		Square D	
LED Digital Panel Indicator		Metermaster	
Liquid Level Transmitter	(Pressure)	ABB	
		Miltronic's	
		Rosemount	Model 1151LLT
Magnetic Flow Meter		Bailey	
		Endress & Hauser	
		Fisher & Porter	
		McCrometer	
		Rosemount	
pH Measurement	In-line Analyzer	Beckman	
		Hach	
		Orion	
Power Failure Relay		Potter Brumfield	
		Agastat	
Pressure Switch	(Wastewater)	Ashcroft	101ES or 102ES 316SS Diaphragm Type 101
		Rosemount	
Pressure Switch	(Chemical)	Ashcroft	PVC Diaphragm
Pressure Transmitter		ABB	
		Ashcroft	Duratron-Bourdon Tube
		Rosemount	Rosemount 1151 Strain Gauge

<b>Control &amp; Instrumentation</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Pressure Gauge		Ashcroft	Ashcroft Duragauge 1279S or 2462
		Marshall Town	
		Terice	
Pressure Manometer		Meriam	Meriam 40HE35
Push Button		Allen Bradley	AB 800T
		Square D	
Selector Switch	Make before break type.	Allen Bradley	AM 800T
		Square D	
Signal Converter		Omron	
		Phoenix	
		Pribusin	Series IUC
Sludge Density Monitor		BTG Inc.	BTG MEX-3
		Micro-Motion	
Solid State Timing Relay		Allen-Bradley	
		Omron	
		Potter & Brumfield	
		Square D	
Surge Protection Device		Total Protection Solution	
Temperature Gauge		Ashcroft	T498A
		Honeywell	
		Rosemount	
		Terice	
Temperature Indicator/Transmitter		Ashcroft	
		Hach	
		Honeywell	
		Rosemount	Rosemount 444
Thermostat	Low temperature thermostat	Ashcroft	
		Honeywell	
		Rosemount	

<b>Control &amp; Instrumentation</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Thermowells		Cleveland Electric	
		Honeywell	
		Thermo Electric	
		Thermo Kinetic	
Timer		Omron	Omron H3BA
Turbidity Meter	On-line	Hach	Model 1720D Latest Model
Uninterruptible Power Supply	Minimum UPS capacity to be equal to 150% of system full load.	APC Back-UPS	
		MGE – True On Line	
		Powerware	
		SOLA	
Valve Limit Switch		Micro-Switch	LS/200LS
Venturi Flow Meter	Components to be single sourced	Fisher Porter	
		Rosemount	
Vibration Transducer		IRD	IRD 942
Voltage to Current Transducer		Phoenix	
		Pribusin	
		Control Microsystems	
Watts Sensor		Ashcroft	
		Crompton	
		Pribusin	

<b>Crane and Hoist</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Trolleys, hoist, chain And controls		Columbus	
		Demag	
		Provincial	
		Richards-Wilcox	
		Steelway Material Handling	

<b>Digesters</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Digester Tank Cover	Primary tank, secondary tank and sludge storage tank.	Eimco Process Equipment	Steel cover only – no exception.
		OTI	
		Westech	

<b>Electric</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Electric Motor	For all applications:  1. Service Factor: 1.15 2. Frame & Bracket: Cast Iron 3. Enclosure >40°C Ambient <90°C, ODP >40°C Ambient <80°C, TEFC 4. Electric motor used for VFD application must be inverter rated	Canadian General Electric	
		Etect	
		LeRoy Somers	
		U.S. Motors	
		Westinghouse	
		Toshiba	
		Baldor	
Motor Control Centre	All analog signals to be split out in a separate area of the panel	ABB	
		Allen-Bradley	
		Square D	
		Siemens	
Soft Start/Soft Stop Controls		Allen-Bradley	
		Benshaw	
		Eaton	
Variable Frequency Drives		ABB	
		Allen-Bradley	
		Danfoss	

<b>Emergency Standby Power</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Engine/Generator	Standard prime mover is diesel engine. Natural gas engine to be used by exception only.	Caterpillar Genset	
		Crothers Genset	
		Cummins/Onan Genset	
		Detroit Diesel Genset	
		Kohler Power Systems Genset	
Pyrometer		Marsh	
		Thermo Electric	
Flexible Connector - Exhaust		Flextronics	SS Type RF44 unbraided.
Battery Charger		Dynatron	
		Thompson Technology	
		Vulcan	
Automatic Transfer Switch		Asco	
		Siemens	
		Thompson Technology	
		Westinghouse	Robonic
Vibration Isolator		Korfund	
		Vibron	

<b>Process Equipment</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Air Blower	Positive Displacement	Aerezen	
		Hibon	
	Centrifugal	Hoffman	
		Lamson	
		HSI	

<b>Process Equipment</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
	Turbo	Hibon	
		HSI	
		Neuros	
		KTURBO	
		Siemens Turbo Compressor (formerly Turblex)	
Boilers	Dual gas systems	Cleaver-Brook	
		Donlee	
		Volcano	
Collector Chain (Non-Metallic)		Envirex	
		Poly Chem	
		Viking	
Digester Waste Gas Burner		Westech	
Fine Bubble Aeration System		Sanitaire	
		OTT	
		Tideflex	
		Aquarius	
Grit Collection Equipment		Eimco Process Equipment	
		Arlat	Shaftless Screw.
		Mabarex	Vistex Grit Removal & Classifier
		Wemco Canada	
Cyclone & Classifier		Wemco Canada	
		Smith-Loveless	
Grinder/Comminuter		JWC	Muffin Monster
		Franklin Miller	
		Moyno	For light duty applications
		Vogelsang	
Tube-in-tube Heat Exchanger	For digester sludge	Napier Reid	Preferred method of heat

<b>Process Equipment</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
		Claro	exchangers in WW
Rectangle Heat Exchanger		DDI	
Spiral Heat Exchanger	For digester sludge	Alfa Laval	
		Dorr Oliver Long	
Bar Screens		Arlat	
		Duperon	
		US Filter ( Envirex )	Rex Link Belt
		Headworks	Mahr Bar Screen
Sludge & Scum Removal Equipment		Eimco Process Equipment	
		US Filter ( Envirex )	
		WesTech	COP WW Clarifier
Sludge Dewatering/Thickening		Phoenix Process Equipment	Belt Filter Press Models LC, MC, WX-E/G/H, WXG-W, WXH-W
Spiral Dewatering Press		Arlat	

<b>Pumps - Dynamic (Centrifugal)</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Axial Flow		Fairbanks Morse	
Screw Centrifugal		Hidrostal	
		XCS	
Centrifugal Chopper		Vaughn Chopper Pump	
		Wemco Chopper Pump	
		CHOPX Chopper Pump	
Modified radial flow: vertical turbine	For wastewater effluent applications	Byron Jackson	
		Johnson	
		Layne	Orig.l Manufacturer

<b>Pumps - Dynamic (Centrifugal)</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
			only
Modified radial flow: vertical turbine	For potable water applications	Fairbanks Morse	
		Worthington	
		Peerless	
Radial Flow, Mixed Flow and Standard Centrifugal		Fairbanks Morse	
		Gorman Rupp	
		Wemco	
		Hidrostal	
		Worthington	
		Hayward Gordon	Torus Recessed Impeller Vortex Pump
Submersible Pump	Both dry and wet pit applications in wastewater	Flygt	
		ABS	
		Hidrostal	
Vertical centrifugal pump		Cornell	
		Smart Turner	

<b>Pumps - Displacement (Rotary)</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Single rotor	Includes vane, piston, flexible member, screw, peristaltic	Moyno	Screw pump
		Seepex	Screw pump
		ITT Marlow	Piston pump
		Watson Marlow	
		Blue-White Industries	Flex-Pro M Series Peristaltic Pumps
Multiple rotor	Includes gear, lobe, multiple	Vogelsang	Lobe

<b>Pumps - Displacement (Rotary)</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
	screw, circumferential piston		

<b>Pumps - Displacement (Reciprocating)</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Diaphragm		Fisher-Porter	Simplex
		Penn Valley	Dual Disc
Electronically Actuated Diaphragm	Used for chemical metering	Grundfos Alldos	
		Prominent	

<b>Pumps</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Mechanical Seals	Tungsten carbide/Tungsten Carbide	Alpha Seal	
		A.W. Chesterton	
		John Crane	Type 1
		Burgmann	Type M-3
Pump Strainer		Hayward Mfg.	
		SST Mfg.	

<b>Valves</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Air Valve	Includes Air Release, Air/Vacuum and Combination	Val-Matic	
		A.R.I.	

<b>Valves</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
		Cla-Val	
Altitude Valve		Singer	
		Cla-Val	
Duck Bill Check Valve		EVR	
		Red Valve	
Electric Valve Actuator	Modulating and Non-modulating	Limitorque	
		Rotork	
		Auma	
Backflow Preventer		Watts	
Ball Valve	PVC	Chemline	
		Ipex	
Butterfly Valve	Adjustable Seat Required	Clow	
		Dezurik	
		Henry Pratt Company	
		Singer	
		Val-Matic	
Check Valve		APCO	
		Golden Anderson	
		Val-Matic	
Flexible Disc Check Valve		Val-Matic	<b>Swing Flex Check Valve</b>
Gate Valve	Process Valve	AVK	
		Clow Canada	
		Dezurik	
		Mueller	
		Watts	
Globe Valve	Process Valve	Jenkins	<b>≤ 75mm Fig. 106A</b>
Globe Valve - Angle		Jenkins	<b>≥ 75mm Fig. 142</b>

<b>Valves</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
			<b>≤ 75mm Fig. 108A</b>
Knife Gate Valve	For use in wastewater only	Orbinox	
		Stafsjo	<b>MV-A or BV-A as required</b>
		Trueline	<b>F8112</b>
		Val-Matic	
Mud Valve		BNW	
		Clow Canada	
		Dezurik	
		Val-Matic	
Plug Valve		Dezurik	
		Milican	
		Homestead	<b>Eccentric Plug Valve</b>
		Val-Matic	
Automatic Hydraulically Actuated Control Valve	Includes pressure reducing and pressure reducing/pressure sustaining valves.	Cla-Val	
		Dezurik	
		Golden Anderson	
		Singer	
Relief Valve	Includes backpressure relief	Singer	
		Val-Matic	
		Cla-Val	
Sluice Gates		B.N.W. Mfg.	<b>Series 77</b>
	For use in wastewater only	Dynamic	
	For use in wastewater only	Fontaine	
	For use in wastewater only	Orbinox	
Surge Anticipator Valve		Golden Anderson	
		Cla-Val	
Tilted Disc Check Valve		APCO	<b>Supplied with bottom or top mounted dash-pot control.</b>
		Val-Matic	

<b>Valves</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Inflow Preventer		Val-Matic	Floodsafe

<b>Ventilation/Heating Equipment</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Globe Valve		Crane	<b>Fig. 428 &amp; 465-1/2</b>
		Jenkins	<b>Fig 810 &amp; 677-A</b>
		Val-Matic	
Check Valve		Crane	<b>Fig 137 &amp; 373</b>
		Golden Anderson	
		Jenkins	
Radiator Valve		Sarco	<b>Type RP</b>
Three Way Valve		Neo	<b>PR Lubricated Plug Valve.</b>
		Sarco	
Air Flow Control Valve		Fisher Control	
		Honeywell	
		Asco	
		North American	
Temperature Control Valve		Sarco	<b>Trerice</b>
Strainer		Hayward	
		Spirax-Sarco	<b>Type BT, IF-125 or AF25</b>
		SSI	
Air Vents (Recirculation System)		Armstrong	<b>No. 1-AV</b>
		Spirax-Sarco	<b>AE</b>
Hot Water Circulating Pump		S.A. Armstrong Ltd.	<b>Series 4300</b>
Air Conditioning/Heating		Carrier Ltd.	
		Trane Canada Ltd.	
Fans	Centrifugal	Twin City	

<b>Ventilation/Heating Equipment</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
		Canadian Blower	
		Greenbeck Fan Corp.	
	In-line Centrifugal	Twin City	
		Loren Cook Ltd.	
	Direct Drive	Loren Cook Ltd.	
	Heavy Duty Propeller	Canadian Blower	
	Light Duty Propeller	Twin City	
		Canadian Blower	
Greenbeck Fan Corp.			
Ventilators	Twin City		
Fire Damper	Curtain Type	Nailor Hart	
		American Warming & Ventilating	
Motorized Damper	UL Standard 873 listed CSA Class 4813 certified	Belimo	
		Honeywell	
Access Door		Nail or Hart	
		American Warming & Ventilating	
		Ruskin	

<b>Miscellaneous Equipment</b>			
<b>Equipment</b>		<b>Manufacturer</b>	<b>Comment</b>
Automatic Samplers		ISCO	
		Sigma	
Hatch Covers		Bilco	
		Emco	
		Flygt	
		MSU Mississauga Limited	