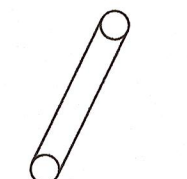
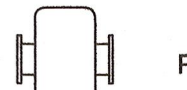
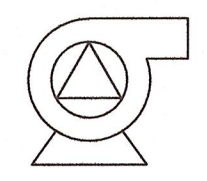

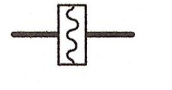

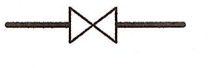
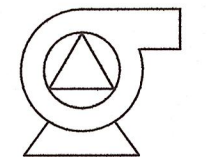



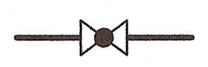

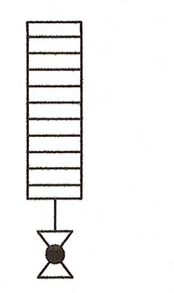

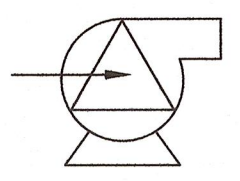


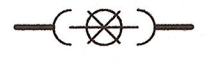

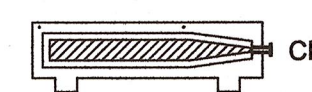
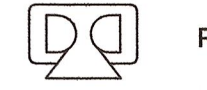

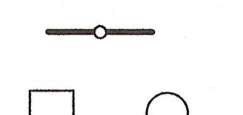

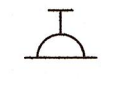
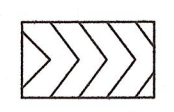
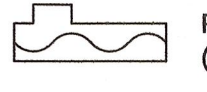

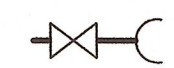



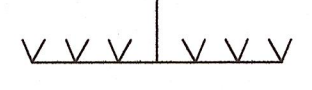
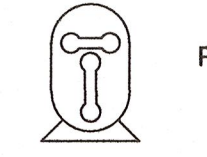

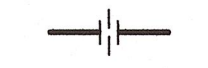
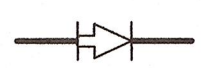

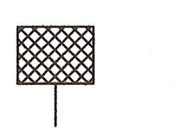
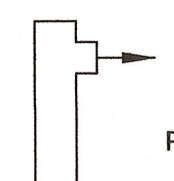
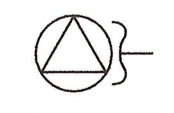
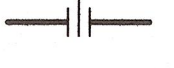
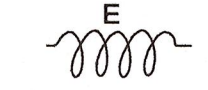
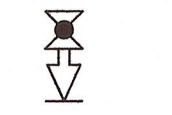

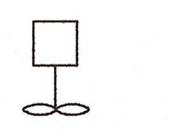
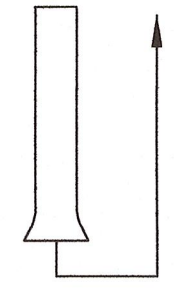
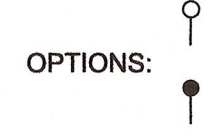


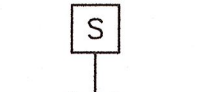

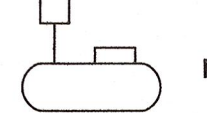


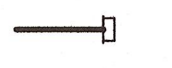
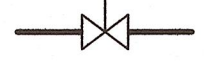
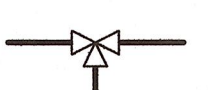
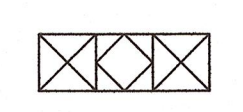
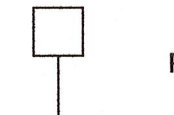

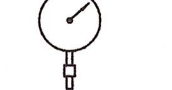
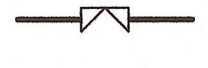
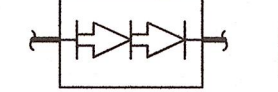
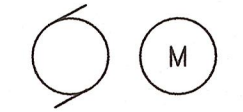
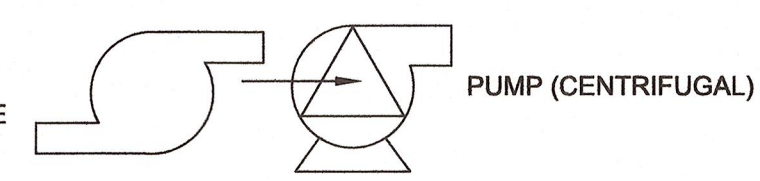

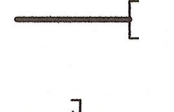
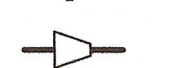
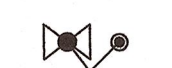
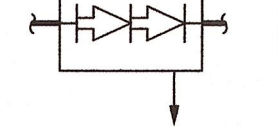
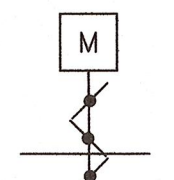
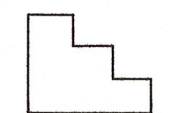
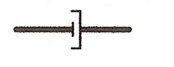
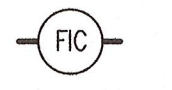

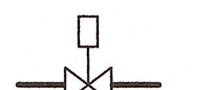
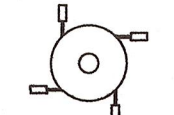



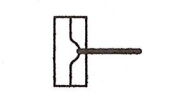


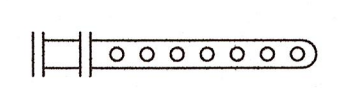
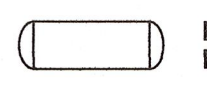
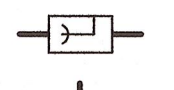



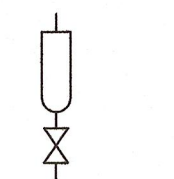
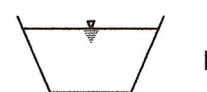


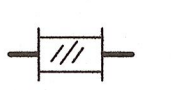
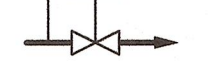

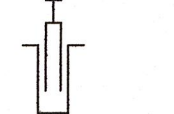
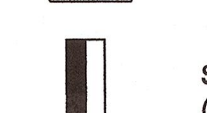

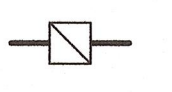


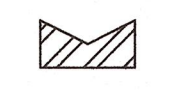
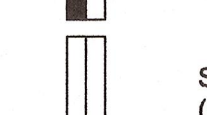


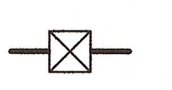

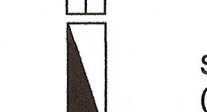

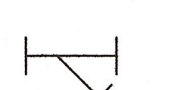




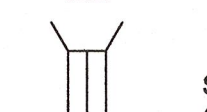
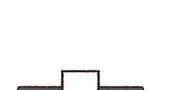
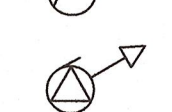
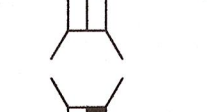

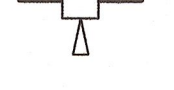

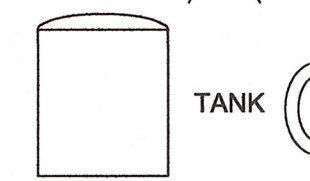


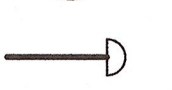
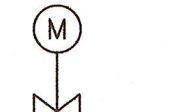
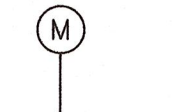
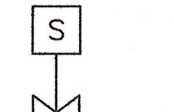
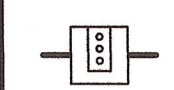
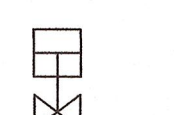
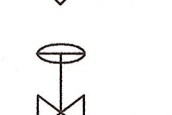

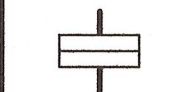



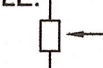


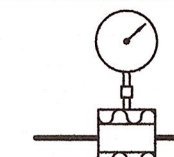






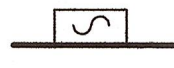
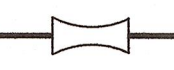
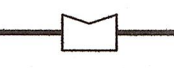
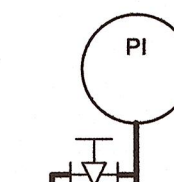
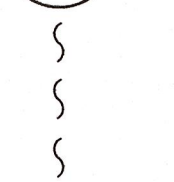

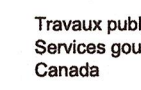


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EQUIPMENT		EQUIPMENT REQUIRING DRIVES:	PIPING SYMBOLS		VALVE LABELLING SYSTEM	
 BAR SCREEN, MECHANICAL	 PUMP (GRINDER)	<p>EQUIPMENT TYPES:</p>  BLOWER OR FAN	 AIR INTAKE	 INSTRUMENT CHEMICAL DIAPHRAGM SEAL	 BALL CHECK VALVE	 GATE/MANUAL VALVE
 BLOWER OR CENTRIFUGAL FAN	 HOSE PUMP (DIGESTED SLUDGE)		 AIR VENT	 LINE SLOPE	 BALL VALVE	 GLOBE VALVE
 CALIBRATION COLUMN CONTROL DAMPER	 PUMP (PERISTALTIC/HOSE)	 CENTRIFUGAL PUMP	 ANNULAR TYPE INLINE PRESSURE SENSOR	 LIQUID LEVEL	 BLAST GATE (BG)	 KNIFE GATE VALVE
 CENTRIFUGE	 PUMP (DUAL DIAPHRAGM)		 BLIND FLANGE	 IN-LINE INSTRUMENT	 BUTTERFLY VALVE	 MUD VALVE
 COMPRESSOR, ROTARY SCREW	 PUMP (PROGRESSIVE CAVITY)	<p>DRIVES</p> <p>DRIVE TYPES:</p>  DRIVE-HYDRAULIC, PNEUMATIC, TURBINE OR INTERNAL COMBUSTION ENGINE	 CAMLOCK (UTILITY STATION)	 PIPE INSULATION	 BUTTERFLY VALVE DAMPER VALVE	 NEEDLE VALVE
 DIFFUSER HEADER	 PUMP (ROTARY LOBE) OR BLOWER		 CAP OR PLUG	 ORIFICE PLATE	 CHECK VALVE	 PINCH VALVE
 FILTER OR FILTER-SILENCER INLET AIR	 PUMP (VERTICAL)	<p>MODIFICATIONS:</p>  BACKSTOP, BRAKE OR CLUTCH	 CIRCULAR BLANK OR SPECTACLE BLIND	 PIPE HEAT TRACING E=ELECTRIC S=STEAM	 CHEMICAL INJECTION DIFFUSER	 PLUG VALVE
 MIXER	 PUMP (LINE SHAFT)		 OPTIONS: ○ NORMALLY OPEN ● NORMALLY CLOSED	 PIPE MATERIAL OR SIZE OR NEW / OLD JUNCTION	 COMBINATION AIR VALVE	 SOLENOID VALVE
 MIXER, HORIZONTAL SURFACE	 PUMP (SUMP)	<p>EXISTING DRIVE</p>  EXISTING DRIVE	 DESUPERHEATER INLINE	 PIPE PLUG	 CONTROL VALVE	 THREE-WAY VALVE
 MIXER, INLINE STATIC	 PUMP (VERTICAL)		 DRAIN	 PRESSURE GAUGE	 DIAPHRAGM VALVE	 DOUBLE CHECK VALVE BACKFLOW PREVENTER
 MOTOR (MAYBE ELECTRIC, HYDRAULIC OR PNEUMATIC)	 PUMP (CENTRIFUGAL)	<p>NEW DRIVE</p>  NEW DRIVE	 DRAIN/FUNNEL	 REDUCER	 FLOAT VALVE	 REDUCED PRESSURE BACKFLOW PREVENTER
 MOTORIZED CONTROL DAMPER	 PUMP (METERING)		 DRAIN TO FLOOR	 FLOW INDICATOR CONTROLLER	 FOOT VALVE	 ON/OFF VALVE
 MICROTURBINE	 CHEMICAL INJECTION PUMP	<p>REVERSIBLE</p>  REVERSIBLE	 DRAIN TO TRENCH	 RUPTURE DISC	 FOUR-WAY VALVE	 PRESSURE RELIEF VALVE
 OUTFALL DIFFUSER	 RECEIVER OR PRESSURE VESSEL		 EJECTOR	 SENSOR	 PRESSURE REDUCING	 PRESSURE AND VACUUM RELIEF VALVE
 PULSATION DAMPER	 RESERVOIR	<p>VARIABLE SPEED</p>  VARIABLE SPEED	 EQUIPMENT INSULATION	 SIGHT GLASS	 PRESSURE REGULATING MODULATING VALVE,	 SAFETY RELIEF VALVE
 TELESCOPIC GATE VALVE	 SLIDE GATE (NORMALLY CLOSED)		 EXPANSION JOINT	 STEAM TRAP WITHOUT BYPASS	 PRESSURE REGULATING VALVE (EXTERNAL SENSING)	 VACUUM RELIEF VALVE
 WEIR	 SLIDE GATE (NORMALLY OPEN)	<p>BUBBLER SYSTEM</p>  BUBBLER SYSTEM	 FLAME ARRESTOR	 STEAM TRAP WITH BYPASS	 PRESSURE REGULATING VALVE (INTERNAL SENSING)	
	 SLUICE GATE (NORMALLY CLOSED)		 FLANGE	 STRAINER, Y-TYPE		
	 SLUICE GATE (NORMALLY OPEN)	<p>INTERLOCK - SEE CONTROL STRATEGY DESC.</p>  INTERLOCK - SEE CONTROL STRATEGY DESC.	 FLEXIBLE CONNECTOR	 STRAINER, BASKET TYPE		
	 STOP LOG (NORMALLY OPEN)		 GOOSE NECK VENT	 TYPICAL 3 OUTPUT SIGNAL TO CONTROL		
	 STOP LOG (NORMALLY CLOSED)	<p>PURGE OR FLUSHING DEVICE</p>  PURGE OR FLUSHING DEVICE	 GROUND (ELECTRICAL)	 UNION		
	 TANK			 ANY, DESIGNATES TYPE)		
	 TANK DOUBLE WALLED			 WELDED CAP		
			VALVE OPERATORS		PRIMARY ELEMENT SYMBOLS	
			 MOTOR ACTUATOR	 BLEED VALVE	 SOLENOID	 ANNUBAR
			 PNEUMATIC CYLINDER	 DIAPHRAGM (PRESSURE BALANCE)	 DIAPHRAGM (SPRING OPPOSED)	 ANNULAR TYPE DIAPHRAGM PRESSURE SEAL
			OPTIONS:  NORMALLY CLOSED  NORMALLY OPEN		FAIL OPTIONS: FO FAIL OPEN FC FAIL CLOSE FI FAIL INDETERMINATE FL FAIL LAST POSITION	
			EXAMPLE:  PNEUMATIC CONTROL LINE  ON-OFF VALVE  NORMALLY CLOSED  FC FAIL CLOSED		 IN-LINE ANNULAR TYPE PRESSURE SENSOR (WITH PRESSURE GAUGE)	
						 MAGNETIC FLOWMETER
						 NUCLEAR DENSITY METER
						 PITOT TUBE
						 ROTAMETER
						 1-10 GPM ROTAMETER W/ NEEDLE VALVE
						 TURBINE OR PROPELLER TYPE METER
						 ULTRASONIC METER (STRAP ON)
						 VENTURI OR FLOW TUBE ANEMOMETER
						 WEIR FLOWMETER
						 PRESSURE GAUGE ASSEMBLY
						 ULTRASONIC LEVEL METER



Public Works and Government Services Canada




Travaux publics et Services gouvernementaux Canada


REAL PROPERTY SERVICES

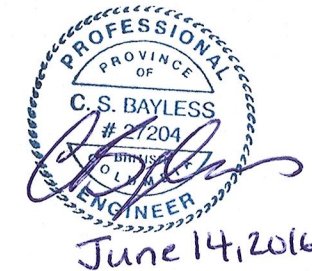
Pacific Region

SERVICES IMMOBILIERS

Région de Pacifique







PROFESSIONAL ENGINEER
C.S. BAYLESS
#27204
June 14, 2016

3	ISSUED FOR TENDER	2016/05/20
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PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project title/Titre du projet

GLACIER NATIONAL PARK WATER SOURCE CONVERSION

Consultant Signature Only

OPUS CONSULTANTS LTD.

Designed by/Concept par

Drawn by/Dessiné par

PWGSC Project Manager/Administrateur de Projets TPSGC

TOM DUNPHY

Regional Manager, Architectural and Engineering Services

Gestionnaire régionale, Services d'architectural et de génie, TPSGC

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P&ID STANDARD SYMBOLS, EQUIPMENT, VALVES AND INSTRUMENTATION

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