

VALVE SYMBOLS

	NORMALLY OPEN GATE VALVE	NORMALLY		CHECK VALVE
	NORMALLY CLOSED GATE VALVE	NORMALLY		STOP CHECK VALVE
	GATE WITH HAND CONTROL	NORMALLY		AIR ASSISTED CHECK VALVE
	ANGLE	NORMALLY		SPRING OPERATED CHECK VALVE
	BUTTERFLY VALVE	NORMALLY		COCK VALVE
	BALL VALVE	NORMALLY		QUICK CONNECT AIR HOSE COUPLING
	BALANCING VALVE	NORMALLY		PLUG VALVE
	GLOBE VALVE	NORMALLY		AUTOMATIC FLOW CONTROL VALVE
	IN-LINE SAFETY VALVE	NORMALLY		DIAPHRAGM VALVE
	FLOAT VALVE	NORMALLY		PINCH VALVE
	NEEDLE VALVE	NORMALLY		THREE WAY VALVE
	KNIFE GATE VALVE			FOUR WAY VALVE
				AIR RELEASE VALVE

GATE SYMBOLS

	FLAP GATE
	SLIDE GATE (N.C.)
	SLIDE GATE (N.O.)
	WEIR GATE
	STOP LOG (N.C.)
	STOP LOG (N.O.)

INSTRUMENT SYMBOLS

	DISCRETE INSTRUMENTS FIELD MOUNTED		PILOT LIGHT (FIELD)
	DISCRETE INSTRUMENTS PRIMARY LOCATION (CONTROL ROOM) FRONT PANEL MOUNTED		PILOT LIGHT (CONTROL ROOM)
	DISCRETE INSTRUMENTS PRIMARY LOCATION (CONTROL ROOM) REAR PANEL MOUNTED		PILOT LIGHT (FIELD PANEL)
	DISCRETE INSTRUMENTS AUXILIARY LOCATION (NORMALLY ACCESSIBLE) FRONT PANEL MOUNTED		PILOT LIGHT (FIELD PANEL, REAR MOUNTED)
	DISCRETE INSTRUMENTS AUXILIARY LOCATION (NORMALLY ACCESSIBLE) REAR PANEL MOUNTED		INTERLOCK
	DCS FUNCTION DATA ACCESSIBLE TO OPERATOR		RESET
	PLC FUNCTION AUXILIARY LOCATION DATA NOT ACCESSIBLE TO OPERATOR		KEYED INTERLOCK
	PLC FUNCTION PRIMARY LOCATION DATA NOT ACCESSIBLE TO OPERATOR		
	OTHER COMPUTER FUNCTION		
	DISCRETE INSTRUMENTS FIELD MOUNTED NO LOOP IDENTIFIER		

AI = ANALOG INPUT	AO = ANALOG OUTPUT
DI = DIGITAL INPUT	DO = DIGITAL OUTPUT

W = WHITE
R = RED
G = GREEN
A = AMBER
B = BLUE
Y = YELLOW

ACTUATOR SYMBOLS

	DIAPHRAGM OPERATED		PRESSURE REGULATOR, SELF CONTAINED
	DIAPHRAGM OPERATED WITH POSITIONER		BACK PRESSURE REGULATOR, SELF CONTAINED
	DIAPHRAGM OPERATED WITH POSITIONER, FAIL CLOSE		PRESSURE REGULATOR, SELF CONTAINED WITH HAND ADJUSTMENT
	DIAPHRAGM OPERATED WITH POSITIONER, FAIL OPEN		BACK PRESSURE REGULATOR, SELF CONTAINED WITH HAND ADJUSTMENT
	DIAPHRAGM OPERATED VALVE WITH HAND ADJUSTMENT FAIL CLOSED		PRESSURE REGULATOR, EXTERNAL TAP
	DIAPHRAGM OPERATED VALVE WITH HAND ADJUSTMENT FAIL OPEN		BACK PRESSURE REGULATOR, EXTERNAL TAP
	MOTOR OPERATED		CYLINDER OPERATED
			CYLINDER OPERATED WITH POSITIONER
			DOUBLE ACTING CYLINDER

ACCESSORY DEVICE SYMBOLS

	ORIFICE PLATE		FILTER		COOLING COIL
	FLANGE		EXPANSION JOINT		DIRECT EXPANSION (EVAPORATOR)
	PIPE REDUCER		VENTURI TUBE		HEATING COIL
	DAMPER		SINGLE PORT PITOT TUBE		ELECTRIC HEATING COIL
	BACKDRAFT DAMPER		AVERAGING PITOT TUBE		CONDENSOR
	PUMP		MIX TEE		TRAP
	BLOWER / FAN		VARIABLE AREA FLOW INDICATOR (ROTAMETER)		S-TRAP PRESSURE RELIEF
	MOTOR		VORTEX FLOW METER		VENT TO ATMOSPHERE
	DRAIN		DUPLEX STRAINER		FLOW CONTROL VALVE RESTRICTED FLOW LEFT FREE FLOW RIGHT
	UNION		MIXER		RUPTURE DISC
	TEMPERATURE ELEMENT WITH THERMOWELL		FLOW NOZZLE		BACKFLOW PREVENTER DOUBLE CHECK TYPE
	SCREWED CAP		AIR INTAKE / RELEASE		GAUGE ISOLATOR
	HOSE CONNECTION		DIAPHRAGM SEAL		
	BLIND FLANGE		AIR VENT		
			HEAT TRACING		
			HEAT EXCHANGER		

PID STANDARDS

1. DRAWINGS UTILIZE CITY OF WINNIPEG STANDARDS FOR BORDER AND TITLE BLOCK. ALL DRAWINGS ARE PRODUCED ON AUTOCAD (LATEST REV. R2006 OR LATER).
2. ALL UNITS ARE IN METRIC, EXCEPT AS NOTED OTHERWISE. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS (mm).
3. DRAWING CONTENT GENERALLY CONFORMS WITH TO ISA-5.1 STANDARD. AN EXCEPTION REGARDING EQUIPMENT TAGGING HAS BEEN MADE TO ALLOW BETTER CONFORMITY IN NAMING.
4. PID'S INDICATE MAJOR PROCESS PIPING AND EQUIPMENT AND ASSOCIATED LOCAL INSTRUMENTATION, DCS AND OTHER PROCESS I/O.
5. EQUIPMENT INCLUDING VESSELS, DRUMS, EXCHANGERS, HEATERS, PUMPS, COMPRESSORS, ETC. ARE ARRANGED IN SEQUENCE WITH PRINCIPLE FUNCTIONS AND FLOWS.
6. ALL MAJOR EQUIPMENT INCLUDING PUMPS, COMPRESSORS, TANKS, ETC. ARE LABELED AS TO FUNCTION WITH DESIGN SIZES AND RATINGS.
7. ALL PROCESS LINES ARE LABELED ACCORDING TO FUNCTION AND SIZE UTILIZING SYSTEM CODES DEFINED HEREIN.
8. EACH SYSTEM INTERCONNECTION POINT BETWEEN DRAWINGS IS LABELED WITH A SOURCE DRAWING NUMBER OR DESTINATION DRAWING NUMBER. ARROWS ON PROCESS PIPING INDICATE DIRECTION OF FLOW BETWEEN DRAWINGS.

CONNECTING ARROWS

	1-0102M-G-A0001	PROCESS / SIGNAL CONTINUATION ON INDICATED DRAWING
		SIGNAL CONTINUATION ON SAME DRAWING

ELECTRICAL SYMBOLS

	CIRCUIT BREAKER
	TRANSFORMER
	FLAME ARRESTER
	PRESSURE ARRESTER
	FLEX PIPE
	HOSE REEL
	LOW LIMIT
	PNEUMATIC SIGNAL
	ELECTRIC SIGNAL
	HYDRAULIC SIGNAL
	CAPILLARY TUBE
	ELECTROMAGNETIC OR SONIC SIGNAL GUIDED
	ELECTROMAGNETIC OR SONIC SIGNAL UNGUIDED
	ELECTRIC BINARY (ON/OFF) SIGNAL
	PNEUMATIC BINARY SIGNAL
	DATA / SERIAL LINK
	HVAC DUAL DUCT TERMINAL UNIT
	VOLTAGE / PNEUMATIC RELAY
	VOLTAGE / CURRENT RELAY

INSTRUMENT LINE SYMBOLS

	INSTRUMENT SUPPLY OR CONNECTION TO PROCESS
	PNEUMATIC SIGNAL
	ELECTRIC SIGNAL
	HYDRAULIC SIGNAL
	CAPILLARY TUBE
	ELECTROMAGNETIC OR SONIC SIGNAL GUIDED
	ELECTROMAGNETIC OR SONIC SIGNAL UNGUIDED
	ELECTRIC BINARY (ON/OFF) SIGNAL
	PNEUMATIC BINARY SIGNAL
	DATA / SERIAL LINK

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



LOCATION APPROVED UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE	DATE
NOTE: LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.	

B.M. ELEV.	
NO. REVISIONS	DATE BY

Stantec Consulting Ltd.	
905 Waverley Street, Winnipeg, Manitoba Tel 204-489-5900 Fax 204-453-9012	
DESIGNED BY: D.W.D.	CHECKED BY: B.S.J.
DRAWN BY: D.K.G.	APPROVED BY: D.W.D.
HOR. SCALE: -	RELEASED FOR CONSTRUCTION: -
VERTICAL: -	DATE: 2012.01.23

ENGINEER'S SEAL
BID OPPORTUNITY NO.

THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT	
Winnipeg	
NORTH END WATER POLLUTION CONTROL CENTRE REHABILITATION OF DIGESTER NO. II, SLUDGE HOLDING TANKS No. 5 AND No. 7 AND ASSOCIATED WORKS	
PROCESS & INSTRUMENTATION DIAGRAM LEGEND AND DETAILS-SHEET I	
CITY DRAWING NUMBER 187-2012_Drawing_A-I-RO	SHEET OF I OF I