SHEET: COW-A1 (05/2005)

MISCELLANEOUS EQUIPMENT SYMBOLS

- ORIFICE PLATE
- FLANGE
- PIPE REDUCER
- PUMP
- FAN/BLOWER
- PROPELLER OR TURBINE METER
- STRAINER
- DRAIN
- UNION
- TE — TEMPERATURE ELEMENT WITH THERMOWELL
- SCREWED CAP
- FIRE HYDRANT
- HOSE STATION
- ANNUNCIATIOR HORN
- GROUND
- C — CORIOLIS MASS FLOWMETER
- FLOAT LEVEL ELEMENT
- FT — FLOW ELEMENT INTEGRAL WITH TRANSMITTER (MASS FLOW, ETC)
- SONIC FLOWMETER (DOPPLER OR TRANSIT TIME)
- EJECTOR
- FILTER
- SILENCER
- GRINDER
- STOP LOG
- LEVEL CONTROL GATE
- FILTER
- M — MAGNETIC FLOW METER ELEMENT
- EXPANSION JOINT
- T — TRAP
- MIX TEE
- DUPLEX STRAINER
- MIXER, INLINE STATIC
- FLOW NOZZLE
- FLOAT
- SINGLE PORT PITOT TUBE
- AVERAGING PITOT TUBE
- SLUICE GATE
- SLIDE GATE
- VARIABLE AREA FLOW INDICATOR (ROTAMETER)
- VORTEX FLOW METER
- GENERATOR
- HEAT EXCHANGER
- FLAME CHECK
- CALIBRATION CHAMBER
- EMERGENCY EYE WASH AND SHOWER
- BOILER
- RECEIVER OR PRESSURE VESSEL
- TANK, DOUBLE WALLED
- TANK
- LIQUID SEPARATOR
- PUMP, SUBMERSIBLE
- PUMP, VERTICAL
- FLOW STRAIGHTENING VANES
- AIR FILTER (HVAC)
- MIXER
- PUMP, DIAPHRAGM
- PUMP, DIAPHRAGM OPERATED
- PUMP, GEAR
- PULSATION DAMPER
- AIR SEPARATOR
- MIXER
- SITE GLASS
- COMPRESSOR ROTARY SCREEN
- FLEXIBLE HOSE
- $ — IN-LINE FLOW METER
- INJECTOR
- M — EQUIPMENT MOTOR
- WEIR
- PUMP, ROTARY LOBE
- PUMP, METERING
- PUMP, PROGRESSIVE CAVITY
- BAR SCREEN, MECHANICAL
- DIFFUSER HEADER
- ENGINE

VALVES

VALVE BODIES

- GATE NO — NORMALLY OPEN GATE VALVE
- GATE NC — NORMALLY CLOSED GATE VALVE
- GLOBE NO — NORMALLY OPEN GLOBE VALVE
- GLOBE NC — NORMALLY CLOSED GLOBE VALVE
- BALL NO — NORMALLY OPEN BALL VALVE
- BALL NC — NORMALLY CLOSED BALL VALVE
- BUTTERFLY — BUTTERFLY
- NEEDLE — NEEDLE
- CHECK — CHECK
- PLUG — PLUG
- K, KNIFE — KNIFE
- PINCH — PINCH
- BALL CHECK — BALL CHECK
- DBLE L CHECK — DOUBLE LEAF CHECK
- ANGLEVALVE — ANGLE
- ANG PRES REL, GTE PRE REL — ANGLE AND GATE PRESSURE RELIEF VALVE
- IN SAFE — IN-LINE SAFETY
- STP CHK — STOP CHECK
- SPNG CHECK — SPRING OPERATED CHECK
- AIR CHK — AIR ASSISTED CHECK
- COCK V — COCK VALVE
- DUCKY — DUCKBILL VALVE
- DIA V — DIAPHRAGM VALVE
- FLAP — FLAP VALVE
- FLOATIES — FLOAT VALVE
- MUD VALVE
- MED VALVE — QUICK CONNECT AIR HOSE COUPLING
- QC AIR — TELESCOPIC VALVE
- BLASTED — BLAST GATE
- SPECTACLE BLIND (OPEN)
- SPECTACLE BLIND (CLOSED)
- UNCLASSIFIED WRITE TYPE OF BODY ADJACENT TO SYMBOL
- AIR AND VACUUM RELIEF VALVE

CONTROL VALVES

- ROTARY BALL VALVE
- CYLINDER-ACTUATED SINGLE-ACTING
- CYLINDER-ACTUATED DOUBLE-ACTING
- PCV — PRESSURE-REDUCING REGULATOR, SELF-CONTAINED
- PCV — PRESSURE-REDUCING REGULATOR, WITH EXTERNAL PRESSURE TAP
- VALVE W B — VALVE WITH BLEED
- PCV — BACKPRESSURE REGULATOR, SELF-CONTAINED
- PCV — BACKPRESSURE REGULATOR, WITH EXTERNAL PRESSURE TAP
- CONE VALVE
- THREE — THREE-WAY VALVE
- 4 WAY — FOUR-WAY VALVE
- AIR RELEASE VALVE

VALVE ACTUATORS/OPERATORS

- HAND OPERATOR
- DIAPHRAGM OPERATOR
- S, SOL, FY — SOLENOID OPERATOR
- M — MOTOR OPERATOR
- PNEUMATIC CYLINDER
- DIAPHRAGM OPERATOR WITH POSITIONER
- DIAPHRAGM OPERATOR WITH POSITIONER FAIL OPEN
- DIAPHRAGM OPERATOR WITH POSITIONER FAIL CLOSE

MISCELLANEOUS

LINE SYMBOLS – PROCESS & INSTRUMENTATION DIAGRAMS

- MAIN PROCESS LINES
- SECONDARY PROCESS LINES
- ALL OTHER MECHANICAL LINES
- ELECTRIC SIGNAL
- ELECTRICAL BINARY (ON/OFF) SIGNAL
- PNEUMATIC SIGNAL
- PNEUMATIC BINARY SIGNAL
- CAPILLARY TUBING
- HYDRAULIC SIGNAL
- INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)
- ELECTROMAGNETIC or SONIC SIGNAL (GUIDED AND NOT GUIDED)
- TELEMETERED SIGNAL
- SUPPLY CONTRACTOR PACKAGE
- VENDOR PACKAGE
- LOCAL CONTROL PANEL/MCC

INSTRUMENT SUPPLY OR CONNECTION TO PROCESS DESIGNATED AS FOLLOWS:

AS =
ES = AIR SUPPLY
GS = ELECTRICAL SUPPLY
HS = GAS SUPPLY
NS = HYDRAULIC SUPPLY
SS = NITROGEN SUPPLY
WS = STEAM SUPPLY
WATER SUPPLY

PID STANDARDS

1. DRAWINGS UTILIZE CITY OF WINNIPEG STANDARDS FOR BORDER AND TITLE BLOCK. ALL DRAWINGS ARE PRODUCED ON AUTOCAD (LATEST REV., R2000 OR LATER).
2. ALL UNITS ARE IN METRIC, EXCEPT AS NOTED OTHERWISE. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS (mm).
3. DRAWING CONTENT GENERALLY CONFORMS TO ANSI/ISA STANDARDS S5.1 & S5.3.
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 LABELLED AS TO FUNCTION WITH DESIGN SIZES AND RATINGS.
7. ALL PROCESS LINES ARE LABELLED ACCORDING TO FUNCTION AND SIZE UTILIZING SYSTEM CODES DEFINED HEREIN.
8. EACH SYSTEM INTERCONNECTION POINT BETWEEN DRAWINGS IS LABELLED WITH A SOURCE DRAWING NUMBER OR DESTINATION DRAWING NUMBER. ARROWS ON PROCESS PIPING INDICATE DIRECTION OF FLOW BETWEEN DRAWINGS.

MISCELLANEOUS SYMBOLS

- WATER LEVEL SYMBOL
- E — ELECTRICAL HEAT TRACING
- FLOW DIRECTION ARROWS
- WALL
- GRADE

APEGM
Certificate of Authorization
Earth Tech Canada Inc.
No. 730 Expiry: April 30, 2006

B.M.
ELEV.

NO.	REVISIONS	DATE	BY
00	ISSUED FOR TENDER	06/03/07	LAE

CH2MHILL
Frederickson Cooper ARCHITECTS
EarthTech A Tyco International Ltd. Company

DESIGNED BY	SWT	CHECKED BY	SWT
DRAWN BY	LAE	APPROVED BY	
SCALE:	NONE	RELEASED FOR CONSTRUCTION BY:	
DATE	2005/12/21	DATE	

ENGINEER'S SEAL

CONSULTANT DRAWING NO.
WL-P0004

Winnipeg
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT
ENGINEERING DIVISION

WATER TREATMENT PLANT
CONSTRUCTION OF DEWATERING CELLS

CITY FILE NUMBER
SHEET OF

CONSTRUCTION STANDARDS
PROCESS AND INSTRUMENTATION
SYMBOLS

CITY DRAWING NUMBER
1-0601L-D-P0004-001-00D

Last Save: 2006-03-07 12:30 PM

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