SHEET: COW-A1 (05/2005)

MISCELLANEOUS EQUIPMENT SYMBOLS

ORIFICE PLATE
FLANGE
PIPE REDUCER
PUMP
FAN/BLOWER
PROPELLER OR TURBINE METER
STRAINER
DRAIN
UNION
TEMPERATURE ELEMENT WITH THERMOWELL
SCREWED CAP
FIRE HYDRANT
HOSE STATION
ANNUNCIATOR HORN
GROUND
CORIOLIS MASS FLOWMETER
FLOAT LEVEL ELEMENT
FLOW ELEMENT INTEGRAL WITH TRANSMITTER (MASS FLOW, ETC)
SONIC FLOWMETER (DOPPLER OR TRANSIT TIME)
EJECTOR
FILTER
SILENCER
GRINDER
STOP LOG
LEVEL CONTROL GATE

FILTER
MAGNETIC FLOW METER ELEMENT
EXPANSION JOINT
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
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
KNIFE — KNIFE
PINCH — PINCH
BALL CHECK — BALL CHECK
DBLE L CHECK — DOUBLE LEAF CHECK
ANGLEVALVE — ANGLE
NG PRES RE / 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
MED VALVE — MUD VALVE
QC AIR — QUICK CONNECT AIR HOSE COUPLING
BLASTED — TELESCOPIC VALVE
BLAST GATE
SPECTACLE BLIND (OPEN)
SPECTACLE BLIND (CLOSED)
UNCLASSIFIED WRITE TYPE OF BODY ADJACENT TO SYMBOL

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
DIAPHRAM OPERATOR
S SOL FY — SOLENOID OPERATOR
M — MOTOR OPERATOR
PNEUMATIC CYLINDER

DIAPHRAM OPERATOR WITH POSITIONER
DIAPHRAM OPERATOR WITH POSITIONER FAIL OPEN
DIAPHRAM OPERATOR WITH POSITIONER FAIL CLOSE

MISCELLANEOUS

LINE SYMBOLS – PROCESS & INSTRUMENTATION DIAGRAMS

NEW PROCESS LINES
EXISTING 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
PACKAGED UNIT
INSTRUMENT SUPPLY OR CONNECTION TO PROCESS DESIGNATED AS FOLLOWS:
AS = AIR SUPPLY
ES = ELECTRICAL SUPPLY
GS = GAS SUPPLY
HS = HYDRAULIC SUPPLY
NS = NITROGEN SUPPLY
SS = STEAM SUPPLY
WS = WATER SUPPLY
CONTAINMENT

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

B.M.
ELEV.

NO.	REVISIONS	DATE	BY
–	UPDATED	05/05/25	TL
00	ISSUED FOR FINAL REVIEW	05/04/29	LAE

CH2MHILL Frederickson Cooper ARCHITECTS
EarthTech A Tyco International Ltd. Company

DESIGNED BY	SWT	CHECKED BY	SWT
DRAWN BY	CPG	APPROVED BY	
SCALE:	NONE	RELEASED FOR CONSTRUCTION BY:	
DATE	2004/09/28	DATE	

ENGINEER'S SEAL
PRELIMINARY
NOT FOR CONSTRUCTION

CONSULTANT DRAWING NO.
WM-P0002

Winnipeg
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT
ENGINEERING DIVISION

WATER TREATMENT PLANT

CONSTRUCTION STANDARDS
PROCESS AND INSTRUMENTATION
SYMBOLS

CITY FILE NUMBER
SHEET OF
CITY DRAWING NUMBER

Last Save: 2005-08-19 8:59 AM

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