PROCESS FLOW DIAGRAMS AND P&ID SYMBOLS (GENERAL INSTRUMENT OR FUNCTION SYMBOLS)

REVISION 1, DATE 8-16-2004

SYMBOL	DESCRIPTION
	ANGLE VALVE
	BUTTERFLY VALVE
	ROTARY VALVE
	3-WAY VALVE
	4-WAY VALVE
	90 & Y VALVE
	DIAPHRAM VALVE
	PRESSURE RELIEF
	DIAPHRAM ACTUATOR
	TWO-WAY VALVE, FAIL CLOSED
	TWO-WAY VALVE, FAIL OPEN
	3-WAY VALVE W/DIAPHRAM ACTUATOR
	4-WAY VALVE W/DIAPHRAM ACTUATOR
	SPRING-OPPOSED SINGLE-ACTING ACTUATOR
	SPRING-OPPOSED DOUBLE-ACTING ACTUATOR
	ELECTRO-HYDRAULIC ACTUATOR
	HAND ACTUATOR OR HANDWHEEL
	REDUCTION ORIFICE IN PROCESS LINE
	RESTRICTION ORIFICE DRILLED IN VALVE
	FLOW STRAIGHTING VANE
	DIAPHRAM PRESSURE-BALANCED
	PRESSURE-REDUCING REGULATOR, SELF-CONTAINED, WITH HANDWHEEL ADJUSTABLE SET POINT
	PRESSURE REDUCING REGULATOR WITH EXTERNAL PRESSURE TAP
	DIFFERENTIAL-PRESSURE-REDUCING REGULATOR WITH INTERNAL AND EXTERNAL TAPS
	BACKPRESSURE REGULATOR, SELF-CONTAINED
	BACKPRESSURE REGULATOR WITH EXTERNAL PRESSURE TAP
	PRESSURE-REDUCING REGULATOR WITH INTEGRAL OUTLET PRESSURE RELIEF VALVE, AND OPTIONAL PRESSURE INDICATOR
	PRESSURE INDICATOR
	FLOW DIRECTION
	PRESSURE RELIEF OR SAFETY VALVE
	VACUUM RELIEF VALVE
	PRESSURE RELIEF OR SAFETY VALVE, STRAIGHT-THROUGH PATTERN, SPRING- OR WEIGHT-LOADED, OR WITH INTREGAL PILOT
	RUPTURE DISK OR SAFETY HEAD FOR VACUUM RELIEF

SYMBOL	DESCRIPTION
	RUPTURE DISK OR SAFETY HEAD FOR PRESSURE RELIEF
	PILOT LIGHT X=COLOR R=RED G=GREEN
	FLEX CONNECTION (RUBBER)
	FLEX CONNECTION (STEEL BRAIDED)
	SINGLE PITOT TUBE OR PITOT VENTURI TUBE
	FLOW METER
	FLOW NOZZLE OR VENTURI
	REDUCER
	SCREWED CAP
	PIPE CAP
	HOSE CONNECTION
	FLANGED CONNECTION (PIPING OR EQUIP)
	FLOW ORIFICE FIXED
	STRAINER WITH VALVE
	Y-STRAINER
	COMPRESSED AIR
	DUCTED AIR FLOW FROM SPACE
	CAPPED AIR DUCT
	GATE VALVE (OPEN)
	GATE VALVE (CLOSED)
	GLOBE VALVE (OPEN)
	GLOBE VALVE (CLOSED)
	NEEDLE VALVE (OPEN)
	NEEDLE VALVE (CLOSED)
	PLUG VALVE (OPEN)
	PLUG VALVE (CLOSED)
	BALL VALVE (OPEN)
	BALL VALVE (CLOSED)
	CHECK VALVE
	SPRING CHECK VALVE
	ANGLE VALVE (OPEN)
	ANGLE VALVE (CLOSED)
	SAFETY OR RELIEF VALVE (INLET PORT SHOWN CLOSED)
	THREE-WAY VALVE (CLOSED PORT DARKENED)
	FOUR-WAY VALVE (ARROWS INDICATE FLOW DIRECTION)
	BALL-CHECK VALVE
	DUAL PURGE VALVE
	ALARM VALVE
	AIR INTAKE FILTER
	ALARM
	BUBBLE GAUGE

SYMBOL	DESCRIPTION
	IN-LINE FILTER
	ATMOSPHERIC FILTER
	DOUBLE BASKET STRAINER
	HOSE REEL
	OPEN DRAIN (SHOWN)
XX	XX- DRAIN SYSTEM ANNOTATIONS DRAIN (PLAN VIEW)
	CLEANOUT (PLAN VIEW)
	SANITARY VENT
	SILENCER/MUFFLER
	SPACE PENETRATIONS
	FIXED LOUVERS
	TRAP XX ANNOTATES FUNCTION
	LUBRICATOR
	55 GALLON DRUM
	THERMOSTATIC VENT
	SPRINKLER ALARM (WATER MOTOR GONG)
	FLOW ALARM VALVE
	COOLING TOWER
	CHILLER
	HORIZONTAL CENTRIFUGAL PUMP
	CENTRIFUGAL FAN WITH VARIABLE INLET VANES
	BLOWER/CENTRIFUGAL FAN
	ROTARY PUMP
	VERTICAL WET PIT PUMP
	PROGRESSIVE CAVITY PUMP
	VERTICAL SUMP PUMP
	HEATER
	HEAT EXCHANGER

SYMBOL	DESCRIPTION
	AXIAL FAN
	AXIAL FAN WITH VARIABLE INLET VANES
	2-STAGE RECIPROCATING AIR COMPRESSOR
	SINGLE STAGE RECIPROCATING AIR COMPRESSOR
	2-STAGE ROTARY SCREW AIR COMPRESSOR
	RECIPROCATING PUMP
	PRESSURE VESSELS, VERTICAL (SHOWN) OR HORIZONTAL (TANKS, RECEIVERS, SEPARATORS, SUMPS ETC.)
	TANK
	HVAC COIL (A) HW HEATING WATER DX DIRECT EXPANSION CH CHILLED WATER STM STEAM (B) HCL HEATING COIL DCL COOLING COIL
	UNIT HEATER (A) HW HEATING WATER DX DIRECT EXPANSION STM STEAM (B) HCL HEATING COIL
	PRESSURIZED GAS BOTTLE
	DOUBLE CONTAINMENT TANK
	HUMIDIFIER
	MANUAL BALANCE DAMPER
	MULTI POINT PITOT TUBE ARRAY
NORMALLY OPEN / NORMALLY CLOSED	DAMPER (NORMALLY OPEN) OR NORMALLY CLOSED
	EVAPORATIVE AIR COOLER
	OPPOSED BLADE DAMPER FOR HVAC EQUIPMENT
	BACKDRAFT DAMPER

SYMBOL	DESCRIPTION
	SINGLE DUCT VARIABLE VOLUME BOX
	WING TYPE FACE AND BYPASS DAMPER (A) HW HEATING WATER DX DIRECT EXPANSION CH CHILLED WATER STM STEAM (B) HCL HEATING COIL DCL COOLING COIL
	COLLECTION BIN
	CYCLONE SEPARATOR
	FLUID RECOVERY PUMP
	DUAL SERVICE HEAT EXCHANGER
	MULTI BLADE DAMPER
	SINGLE BLADE DAMPER
M	MOTOR
	TEST PORT
	PILOT LIGHT
	SEPARATOR
	MIST ELIMINATOR
	HEPA FILTER
	CARBON ABSORBER FILTER
	FILTER
	SUCTION DIFFUSER

GENERAL NOTES

1. M-0001 IS A STANDARD PIPING AND INSTRUMENTATION DIAGRAM LEGEND SHEET.
2. FOR DRAWING TITLE BLOCK CONTENTS REFER TO THE DRAFTING MANUAL SECTION 20Z-10.
3. THE SHEET NUMBER IN THE TITLE BLOCK IS A REFERENCE NUMBER FOR THIS MANUAL.

NO	DATE	CLASS REV	KOC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP

FWO
FACILITY & WASTE OPERATIONS
DESIGN ENGINEERING CONSTRUCTION SERVICES

PROCESS FLOW DIAGRAMS AND P&ID SYMBOLS

PROCESS FLOW AND P&ID AND INSTRUMENTATION DIAGRAM LEGEND

DRAWN	DRAFTER
DESIGN	DESIGN(A)
CHECKED	CHECKER
DATE	MM-DD-YY

BLDG XX TA-XX

SUBMITTED / PROJECT ENGINEER — APPROVED FOR RELEASE / PROJECT TEAM LEADER

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