Date (mmm dd yyyy)	Issued For	Rev.
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12-07-2007	TITLE II DESIGN 30% REVIEW SUBMITTAL	C
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08-25-2008	TITLE II DESIGN 100% OWNER REVIEW	F
02-19-2009	TITLE II CONSTRUCTION BID ISSUE	0

CONTROL SYMBOLS – GENERAL

- INSTRUMENT AIR SUPPLY
- ELECTRICAL CONTROL WIRING FOR CONTROL WIRING AND SPECIAL CONTROL WIRING WHERE NOTED.
- ELECTRICAL CONTROL WIRING FOR CONTROL LADDER DIAGRAMS AND PLC CABLES.
- PNEUMATIC CONTROL SIGNAL
- PRIMARY FLOW
- SECONDARY FLOW
- FIELD MOUNTED DEVICE TO CONTROL SYSTEM
- EQUIPMENT
- PASSIVE DEVICE
- ANNUNCIATOR POINT
- GRAPHIC ALARM INDICATOR WITH ENGRAVING INDICATED
- GRAPHIC INDICATOR WITH ENGRAVING INDICATED

FIELD DEVICE (LOCAL)

- GAUGE (PI/TI)
- VFD
- INTERLOCK

CONTROL VALVE AND DAMPER ACTUATOR SYMBOLS

- PNEUMATIC CONTROL VALVE AND PNEUMATIC DAMPER ACTUATOR
- ELECTRIC VALVE AND ELECTRIC DAMPER ACTUATOR
- PNEUMATIC CONTROL VALVE AND PNEUMATIC DAMPER ACTUATOR WITH CURRENT-TO-PNEUMATIC TRANSDUCER/POSITIONER
- AUTOMATIC THREE-WAY GLOBE-STYLE CONTROL VALVE (MIXING OR DIVERTING AS INDICATED)
- AUTOMATIC BUTTERFLY AND HIGH-PERFORMANCE BUTTERFLY CONTROL VALVE
- AUTOMATIC ROTARY CONTROL VALVES INCLUDES BALL AND PLUG
- AUTOMATIC GLOBE-STYLE CONTROL VALVE INCLUDES ECCENTRICALLY-ROTATING PLUG
- SOLENOID VALVE ACTUATOR
- THREE-WAY SOLENOID VALVE (NC, C, NO, VENT)
- TWO-WAY SOLENOID VALVE (NC (OR NO))

FLOW DEVICES

- FM — FLOW METER

LEVEL DEVICES

- LS — LEVEL SWITCH ASSEMBLY WITH DISCRETE LEVEL(S)
- LT — LEVEL SENSOR

PRESSURE DEVICES

- PS — PRESSURE SWITCH
- PDS (H, L) — DIFFERENTIAL PRESSURE SWITCH
- PT (H) — PRESSURE TRANSMITTER
- PDT (H, L) — DIFFERENTIAL PRESSURE TRANSMITTER

TEMPERATURE DEVICES

MISCELLANEOUS CONTROL SYMBOLS

- DUCT MOUNTED AIR FLOW STATION
- SD — SMOKE DETECTOR, DUCT-MOUNTED
- MT — HUMIDITY DEVICE, DUCT-MOUNTED
- INLET VANE/ VORTEX DAMPER
- CONTROL DAMPER-PARALLEL BLADE
- CONTROL DAMPER-OPPOSED BLADE
- ADJUSTABLE RESTRICTOR
- MANUAL GLOBE VALVE, NORMALLY OPEN
- MANUAL GLOBE VALVE, NORMALLY CLOSED
- MANUAL BALL VALVE, NORMALLY OPEN
- MANUAL BALL VALVE, NORMALLY CLOSED
- PUMP
- SOLENOID VALVE
- BUTTERFLY VALVE
- STRAINER
- CHECK VALVE

ELECTRICAL CONTROL SYMBOLS FOR CONTROL WIRING DIAGRAMS

- COIL OR CONTROL RELAY, TIMING RELAY OR MOTOR STARTER HOLDING COIL
- AB — ALARM BELL, (AH) ALARM HORN
- PILOT LIGHT, PUSH TO TEST
- PILOT LIGHT, NON PUSH TO TEST (ON-OFF)
- RELAY CONTACT, NORMALLY OPEN
- RELAY CONTACT, NORMALLY CLOSED
- START PUSH BUTTON
- STOP PUSH BUTTON
- NOTC — "ON DELAY" TIMING RELAY CONTACT- NORMALLY OPEN TIMED CONTACT, TIMED CLOSED AFTER COIL ENERGIZATION
- NCTO — "ON DELAY" TIMING RELAY CONTACT- NORMALLY CLOSED TIMED CONTACT, TIMED OPEN AFTER COIL ENERGIZATION
- NOTO — "OFF DELAY" TIMING RELAY CONTACT- NORMALLY OPEN TIMED CONTACT, TIMED OPEN AFTER COIL DE-ENERGIZATION
- NCTC — "OFF DELAY" TIMING RELAY CONTACT- NORMALLY CLOSED TIMED CONTACT, TIMED CLOSED AFTER COIL DE-ENERGIZATION
- THREE-POSITION SELECTOR SWITCH (HAND, OFF, AUTO; XOO, OOX)
- TWO-POSITION SELECTOR SWITCH (HAND, AUTO; XO, OX)
- FLOW SWITCH, NORMALLY OPEN CONTACT
- FLOW SWITCH, NORMALLY CLOSED CONTACT
- LEVEL SWITCH, NORMALLY OPEN CONTACT
- LEVEL SWITCH, NORMALLY CLOSED CONTACT
- LIMIT SWITCH, NORMALLY OPEN
- NOHC — LIMIT SWITCH, NORMALLY OPEN HELD CLOSED
- LIMIT SWITCH, NORMALLY CLOSED
- NCHO — LIMIT SWITCH, NORMALLY CLOSED HELD OPEN
- PRESSURE SWITCH, NORMALLY OPEN CONTACT
- PRESSURE SWITCH, NORMALLY CLOSED CONTACT
- DIFFERENTIAL PRESSURE SWITCH, NORMALLY OPEN CONTACT
- DIFFERENTIAL PRESSURE SWITCH, NORMALLY CLOSED CONTACT
- SOLENOID VALVE
- TEMERATURE SWITCH – CLOSED ABOVE SETPOINT, OPENS BELOW SETPOINT
- TEMPERATURE SWITCH – CLOSED BELOW SETPOINT, OPENS ABOVE SETPOINT
- TEMPERATURE SWITCH – OPENS BELOW SETPOINT, CLOSES ABOVE SETPOINT
- TEMPERATURE SWITCH – OPEN ABOVE SETPOINT, CLOSES BELOW SETPOINT

INSTRUMENTATION AND CONTROL DEVICE DESIGNATORS & ABBREVIATIONS

INSTRUMENT AND CONTROL DEVICE DESIGNATORS

AE	ANALYSIS ELEMENT, AS DEFINED
AIC	ANALYSIS INDICATING CONTROLLER
AIT	ANALYSIS INDICATING TRANSMITTER, AS DEFINED
AY	ANALYSIS LOGIC, COMPUTATION OR OUTPUT DEVICE
CV	CONTROL VALVE (LIMITED USE)
D	DAMPER
DDC	DIRECT DIGITAL CONTROLLER
DM	DAMPER ACTUATOR
DV	DRAIN VALVE (LIMITED USE)
FAH	FLOW ALARM HIGH
FAL	FLOW ALARM LOW
FALH	FLOW ALARM LIGHT HIGH
FALL	FLOW ALARM LIGHT LOW
FE	FLOW ELEMENT
FI	FLOW INDICATOR
FIC	FLOW INDICATING CONTROLLER
FIT	FLOW INDICATING TRANSMITTER
FQI	FLOW TOTALIZER
FQY	FLOW INTEGRATOR
FR	FLOW RECORDER
FS	FLOW SWITCH
FSH	FLOW SWITCH HIGH
FSL	FLOW SWITCH LOW
FT	FLOW TRANSMITTER
FCV	FLOW CONTROL VALVE, SELF-CONTAINED
FV	FLOW CONTROL VALVE
FY	FLOW LOGIC, COMPUTATION OR OUTPUT DEVICE
HIC	AUTO/MANUAL INDICATING CONTROL STATION
HS	MANUAL SELECTOR SWITCH
KQI	RUNNING TIME METER
LAH	LEVEL ALARM HIGH
LAL	LEVEL ALARM LOW
LALH	LEVEL ALARM LIGHT HIGH
LALL	LEVEL ALARM LIGHT LOW
LC	LEVEL CONTROLLER
LE	LEVEL ELEMENT
LI	LEVEL INDICATOR
LIT	LEVEL INDICATING TRANSMITTER
LS	LEVEL SWITCH
LSHH	LEVEL SWITCH HIGH HIGH
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW LOW
LT	LEVEL TRANSMITTER
LCV	LEVEL CONTROL VALVE, SELF-CONTAINED
LV	LEVEL CONTROL VALVE
LY	LEVEL LOGIC, COMPUTATION OR OUTPUT DEVICE
MC	MOISTURE CONTROLLER
ME	MOISTURE ELEMENT
MOVC	MAKE UP VALVE CLOSED
MOVO	MAKE UP VALVE OPEN
MT	RELATIVE HUMIDITY TRANSMITTER
MTT	DEWPOINT OR SPECIFIC HUMIDITY TRANSMITTER, AS INDICATED
MY	MOISTURE LOGIC, COMPUTATION OR OUTPUT DEVICE
NI	TONNAGE INDICATOR, REFRIGERATION
NY	TONNAGE LOGIC OR COMPUTATION DEVICE
PAH	PRESSURE ALARM HIGH
PAL	PRESSURE ALARM LOW
PALH	PRESSURE ALARM LIGHT HIGH
PALL	PRESSURE ALARM LIGHT LOW
PDI	PRESSURE DIFFERENTIAL INDICATOR
PDIC	PRESSURE DIFFERENTIAL INDICATING CONTROLLER
PDIS	PRESSURE DIFFERENTIAL INDICATING SWITCH
PDS	PRESSURE DIFFERENTIAL SWITCH
PDSH	PRESSURE DIFFERENTIAL SWITCH HIGH
PDSL	PRESSURE DIFFERENTIAL SWITCH LOW
PDT	PRESSURE DIFFERENTIAL TRANSMITTER
PDCV	PRESSURE DIFFERENTIAL CONTROL VALVE, SELF-CONTAINED
PDV	PRESSURE DIFFERENTIAL CONTROL VALVE
PI	PRESSURE INDICATOR
PIC	PRESSURE INDICATING CONTROLLER
PS	PRESSURE SWITCH
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
PT	PRESSURE TRANSMITTER
PCV	PRESSURE CONTROL VALVE, SELF-CONTAINED
PV	PRESSURE CONTROL VALVE
PY	PRESSURE LOGIC, COMPUTATION OR OUTPUT DEVICE
SD	SMOKE DETECTOR
SV	SOLENOID VALVE
TAH	TEMPERATURE ALARM HIGH
TAL	TEMPERATURE ALARM LOW
TAH	TEMPERATURE ALARM HIGH
TAL	TEMPERATURE ALARM LOW
TALH	TEMPERATURE ALARM LIGHT HIGH
TALL	TEMPERATURE ALARM LIGHT LOW
TC	TEMPERATURE CONTROLLER
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATOR
TR	TEMPERATURE RECORDER
TS	TEMPERATURE SWITCH
TSH	TEMPERATURE SWITCH HIGH
TSL	TEMPERATURE SWITCH LOW
TT	TEMPERATURE TRANSMITTER
TCV	TEMPERATURE CONTROL VALVE, SELF-CONTAINED
TV	TEMPERATURE CONTROL VALVE
TY	TEMPERATURE LOGIC, COMPUTATION OR OUTPUT DEVICE
UA	MULTI-VARIABLE ALARM FUNCTION (DEFINED ON DRAWING)
UR	MULTI-VARIABLE RECORDER
UY	MULTI-VARIABLE COMPUTATION OR LOGIC FUNCTION
VAH	VIBRATION ALARM HIGH
VSH	VIBRATION SWITCH HIGH
ZS	POSITION SWITCH
ZSC	POSITION SWITCH, CLOSED (POSITION)
ZSO	POSITION SWITCH, OPEN (POSITION)
ZY	POSITION LOGIC, COMPUTATION OR OUTPUT DEVICE
I/P	CURRENT-TO-PNEUMATIC TRANSDUCER OR CURRENT-TO-PNEUMATIC TRANSDUCER/POSITIONER AS INDICATED BY THE DAMPER SYMBOL
P/I	PNEUMATIC-TO-CURRENT TRANSDUCER
P/P	PNEUMATIC POSITIONER

CONTROL, OPERATIONAL OR FUNCTIONAL DESIGNATORS

ATC	AIR-TO-CLOSE
ATO	AIR-TO-OPEN
C	COMMON
CC	CONTACT CLOSURE
CA	CRITICAL ALARM
MA	MAINTENANCE ALARM
DA	DIRECT ACTING
RA	REVERSE ACTING
I	INTERLOCK
L	LATCH
U	UNLATCH
FC	FAIL CLOSED
FO	FAIL OPEN
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NCHO	NORMALLY CLOSED, HELD OPEN
NOHC	NORMALLY OPEN, HELD CLOSED
NCTO	NORMALLY CLOSED, TIMED OPEN
NCTC	NORMALLY CLOSED, TIMED CLOSED
NOTO	NORMALLY OPEN, TIMED OPEN
NOTC	NORMALLY OPEN, TIMED CLOSED
PB	PROPORTIONAL BAND
PV	PROCESS VARIABLE
R/L	REMOTE/LOCAL
RSP	REMOTE SETPOINT
SP	SETPOINT
TR	THROTTLING RANGE

ELECTRICAL CONTROL DEVICE DESIGNATORS

AB	ALARM BELL
AH	ALARM HORN
CB	CIRCUIT BREAKER
CR	CONTROL RELAY
CRL	LATCHING RELAY
CT	CURRENT TRANSFORMER
DISC	DISCONNECT
SPDT	SINGLE POLE, DOUBLE THROW
SPST	SINGLE POLE, SINGLE THROW
DPDT	DOUBLE POLE, DOUBLE THROW
FU	FUSE
M	MOTOR STARTER (OR MOTOR)
OL	OVERLOAD
PB	PUSHBUTTON
PL	PILOT LIGHT
PT	POTENTIAL TRANSFORMER
SHLD	SHIELDED
SS	SELECTOR SWITCH
SV	SOLENOID VALVE
T	THERMOSTAT
TB	TERMINAL BLOCK
TC	TIME CLOCK
TR	TIMING RELAY
TRA	AMPERE TRANSDUCER
TRHZ	FREQUENCY TRANSDUCER
TRP	POWER FACTOR TRANSDUCER
TRV	KVAR TRANSDUCER
TRW	KILOWATT TRANSDUCER
VTR	VOLTAGE TRANSDUCER
WHM	WATT HOUR METER
HOA	HAND/OFF/AUTO SELECTOR SWITCH
OCA	OPEN/CLOSE/AUTO SELECTOR SWITCH

EQUIPMENT AND DEVICE LOCATION DESIGNATORS

A	ANNUNCIATOR
DDC	DIRECT DIGITAL CONTROLLER PANEL
F	FIELD LOCATED EQUIPMENT
FMAC	FACILITIES MONITORING AND CONTROL (SYSTEM)
G	GRAPHIC
LCP	LOCAL CONTROL PANEL
M	MOTOR STARTER
MCC	MOTOR CONTROL CENTER
MCP	MASTER CONTROL PANEL
MECP	MAIN ELECTRICAL CONTROL PANEL
PLC	PROGRAMMABLE LOGIC CONTROLLER
RCP	REMOTE CONTROL PANEL
RST	REMOTE STATION, DIGITAL INPUT/OUTPUT PANEL

MISCELLANEOUS DESIGNATORS

AI	ANALOG INPUT
AO	ANALOG OUTPUT
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
I/O	INPUT/OUTPUT
CHS	CHILLED WATER SUPPLY
CHR	CHILLED WATER RETURN
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
CAI	COMPRESSED AIR (INSTRUMENT)
MUVC	MAKE-UP WATER VALVE CLOSED
MUVO	MAKE-UP WATER VALVE OPEN

GENERAL NOTES

ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY NOT BE USED ON THIS PROJECT.
ONLY THOSE SYMBOLS SHOWN ON PLANS AND DIAGRAMS APPLY.

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UNDER CONTRACT WITH
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Project No.: SF070003

JOB TITLE	CENTRAL CHILLED WATER FAC PHASE II
DWG. TITLE	CONTROLS SYMBOLS & ABBREVIATIONS LIST
ILR,GPP,LNI, HEM	
DATE	
ACCT. NO.	
SHEET OF	
SCALE	NO SCALE
DWN. BY	MC
REV'D BY	MC
JOB NO.	11705
DWG. NO.	M-620
ESHQ RISK LEVEL	
APP'D. BY	W HARRISON
BLDG. NO.	600
PATH:	