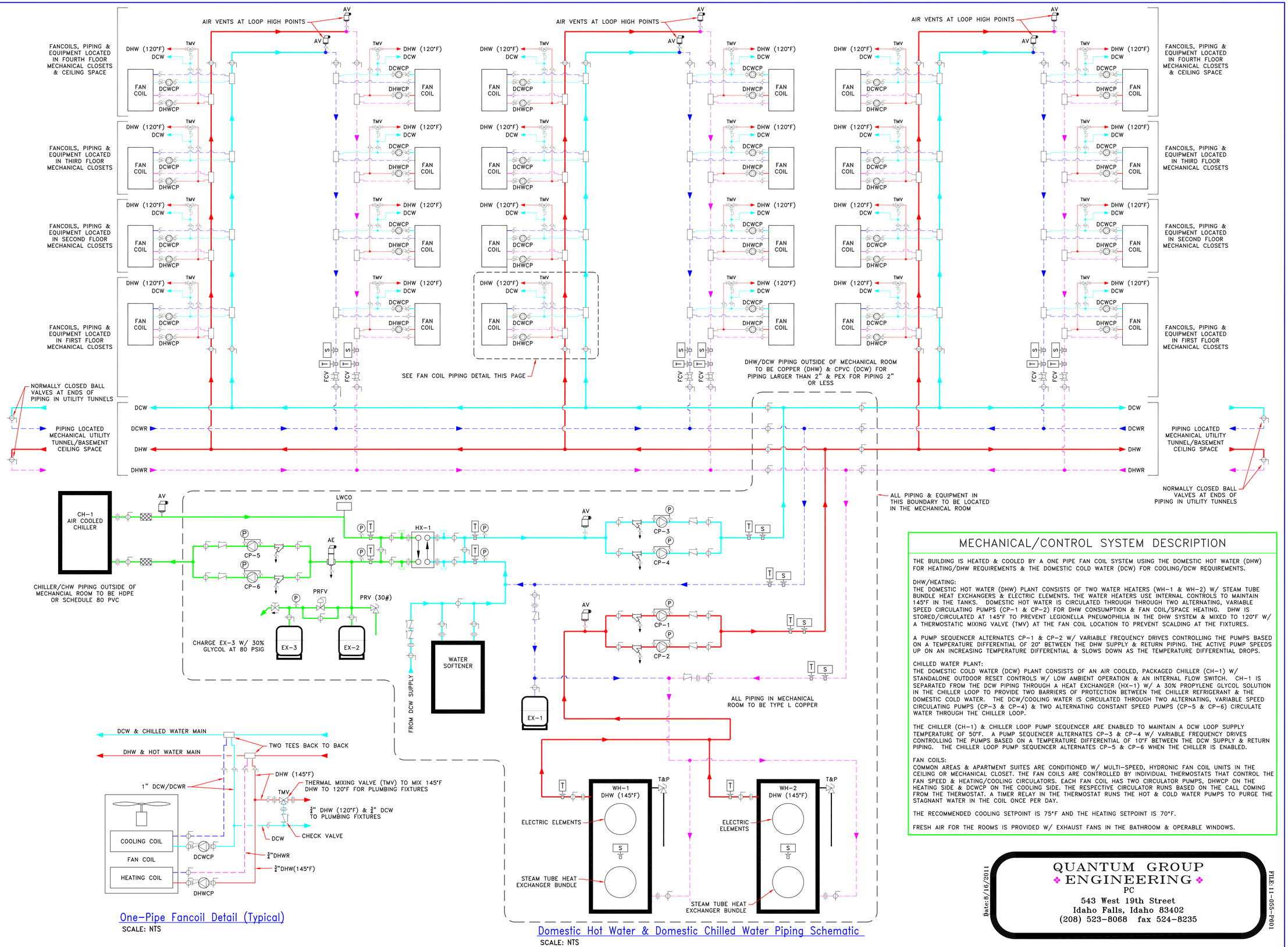

One-Pipe Fancoil Detail (Typical)
SCALE: NTS

Domestic Hot Water & Domestic Chilled Water Piping Schematic
SCALE: NTS

MECHANICAL/CONTROL SYSTEM DESCRIPTION

THE BUILDING IS HEATED & COOLED BY A ONE PIPE FAN COIL SYSTEM USING THE DOMESTIC HOT WATER (DHW) FOR HEATING/DHW REQUIREMENTS & THE DOMESTIC COLD WATER (DCW) FOR COOLING/DCW REQUIREMENTS.

DHW/HEATING:
THE DOMESTIC HOT WATER (DHW) PLANT CONSISTS OF TWO WATER HEATERS (WH-1 & WH-2) W/ STEAM TUBE BUNDLE HEAT EXCHANGERS & ELECTRIC ELEMENTS. THE WATER HEATERS USE INTERNAL CONTROLS TO MAINTAIN 145°F IN THE TANKS. DOMESTIC HOT WATER IS CIRCULATED THROUGH THROUGH TWO ALTERNATING, VARIABLE SPEED CIRCULATING PUMPS (CP-1 & CP-2) FOR DHW CONSUMPTION & FAN COIL/SPACE HEATING. DHW IS STORED/CIRCULATED AT 145°F TO PREVENT LEGIONELLA PNEUMOPHILIA IN THE DHW SYSTEM & MIXED TO 120°F W/ A THERMOSTATIC MIXING VALVE (TMV) AT THE FAN COIL LOCATION TO PREVENT SCALDING AT THE FIXTURES.

A PUMP SEQUENCER ALTERNATES CP-1 & CP-2 W/ VARIABLE FREQUENCY DRIVES CONTROLLING THE PUMPS BASED ON A TEMPERATURE DIFFERENTIAL OF 20° BETWEEN THE DHW SUPPLY & RETURN PIPING. THE ACTIVE PUMP SPEEDS UP ON AN INCREASING TEMPERATURE DIFFERENTIAL & SLOWS DOWN AS THE TEMPERATURE DIFFERENTIAL DROPS.

CHILLED WATER PLANT:
THE DOMESTIC COLD WATER (DCW) PLANT CONSISTS OF AN AIR COOLED, PACKAGED CHILLER (CH-1) W/ STANDALONE OUTDOOR RESET CONTROLS W/ LOW AMBIENT OPERATION & AN INTERNAL FLOW SWITCH. CH-1 IS SEPARATED FROM THE DCW PIPING THROUGH A HEAT EXCHANGER (HX-1) W/ A 30% PROPYLENE GLYCOL SOLUTION IN THE CHILLER LOOP TO PROVIDE TWO BARRIERS OF PROTECTION BETWEEN THE CHILLER REFRIGERANT & THE DOMESTIC COLD WATER. THE DCW/COOLING WATER IS CIRCULATED THROUGH TWO ALTERNATING, VARIABLE SPEED CIRCULATING PUMPS (CP-3 & CP-4) & TWO ALTERNATING CONSTANT SPEED PUMPS (CP-5 & CP-6) CIRCULATE WATER THROUGH THE CHILLER LOOP.

THE CHILLER (CH-1) & CHILLER LOOP PUMP SEQUENCER ARE ENABLED TO MAINTAIN A DCW LOOP SUPPLY TEMPERATURE OF 50°F. A PUMP SEQUENCER ALTERNATES CP-3 & CP-4 W/ VARIABLE FREQUENCY DRIVES CONTROLLING THE PUMPS BASED ON A TEMPERATURE DIFFERENTIAL OF 10°F BETWEEN THE DCW SUPPLY & RETURN PIPING. THE CHILLER LOOP PUMP SEQUENCER ALTERNATES CP-5 & CP-6 WHEN THE CHILLER IS ENABLED.

FAN COILS:
COMMON AREAS & APARTMENT SUITES ARE CONDITIONED W/ MULTI-SPEED, HYDRONIC FAN COIL UNITS IN THE CEILING OR MECHANICAL CLOSET. THE FAN COILS ARE CONTROLLED BY INDIVIDUAL THERMOSTATS THAT CONTROL THE FAN SPEED & HEATING/COOLING CIRCULATORS. EACH FAN COIL HAS TWO CIRCULATOR PUMPS, DHWCP ON THE HEATING SIDE & DCWCP ON THE COOLING SIDE. THE RESPECTIVE CIRCULATOR RUNS BASED ON THE CALL COMING FROM THE THERMOSTAT. A TIMER RELAY IN THE THERMOSTAT RUNS THE HOT & COLD WATER PUMPS TO PURGE THE STAGNANT WATER IN THE COIL ONCE PER DAY.

THE RECOMMENDED COOLING SETPOINT IS 75°F AND THE HEATING SETPOINT IS 70°F.

FRESH AIR FOR THE ROOMS IS PROVIDED W/ EXHAUST FANS IN THE BATHROOM & OPERABLE WINDOWS.

QUANTUM GROUP
ENGINEERING
PC
543 West 19th Street
Idaho Falls, Idaho 83402
(208) 523-8068 fax 524-8235

Date:8/16/2011
FILE:11-055-P601

design west | architects
255 SOUTH 300 WEST LOGAN UT 84321
795 NORTH 400 WEST SALT LAKE CITY UT 84103

HOGAN & ASSOCIATES CONSTRUCTION

NEW STUDENT HOUSING
100 SOUTH / 100 NORTH, EPHRAIM, UTAH
SNOW COLLEGE
STRUCTURAL PKG
DFCM PROJECT # 10290700

MARK:	DATE:	DESCRIPTION:

PROJECT #: 311025
DRAWN BY: ADDERLEY
CHECKED BY: THEOBALD
ISSUED: JULY 18, 2011

DHW/DCW PIPING SCHEMATIC

P-601

© COPYRIGHT DESIGN WEST ARCHITECTS

8/16/11 Z:\Projects\2011\Comfort Systems USA-Utah\11-055-IPS Dormitory at Snow College\Mechanical\P601.dwg