EXPLODED VIEW OF FLANGED CONNECTION

TYPICAL FOR ALL EXHAUST DUCTS
NOT TO SCALE
DE-IONIZED WATER INSTALLATION DETAIL

NOTES:

1. ALL CONNECTOR FITTINGS SHALL BE WITH THREADED CONNECTIONS WITH O-RINGS, COMPRESSION FITTINGS ARE NOT ALLOWED.

2. LEAK DETECTION MODULE SHALL BE SERIES 1000 LEAK-STOPPER, OR APPROVED EQUIVALENT FOR LARGE DISTRIBUTED SYSTEMS. AUTOMATIC FLOW LIMITING DEVICES MAY BE REQUIRED IN PLACE OF LEAK DETECTION. (PROVIDE FLOWLOGIC SYSTEM OR EQUIVALENT)

3. FLOOR DRAINS SHALL BE REQUIRED FOR INSTALLATIONS IN NEW BUILDING BUT FOR RENOVATIONS SHALL BE CONSIDERED ON A CASE-BY-CASE SCENARIO.

4. P RV SHALL BE BRASS CONSTRUCTION (WAFITS OR APPROVED EQUIVALENT)

5. GFCI RECEPTACLE SHALL BE REQUIRED WHEN NECESSARY AS REQUIRED TO MEET CODE.

6. ALL SHOWN RIGID PIPE (COPPER, STAINLESS STEEL, OR POLYPROPYLENE) SHALL BE INSTALLED BY A PROFESSIONAL PLUMBER (FMD OR A PLUMBING CONTRACTOR).

7. ALL INSTALLATIONS MUST BE APPROVED BY FMD, DEPENDING UPON LOCATION RELATIVE TO SENSITIVE EQUIPMENT (ELECTRICAL ROOMS, RESEARCH EQUIPMENT, ETC.) REQUIREMENTS MAY VARY.

8. ANY PIPING DISTRIBUTION BEYOND THE FINAL FILTER SHALL BE STAINLESS STEEL OR HEAT-FUSION PolyPROPYLENE AND SHALL BE PROPERLY SUPPORTED WITH PIPE HANGERS, SADDLES, PIPING CLAMPS, ETC. UNLESS THE END SOURCE IS DIRECTLY ADJACENT TO THE DI TANKS, THEN POLYETHYLENE TUBING IS ACCEPTABLE.
EXTERNAL DUCT WRAP INSULATION

EXTERNALLY INSULATED DUCT

WRAP VAPOR-PROOF FACING BEYOND POLYISOCYANURATE BOARD AND TAPE SECURELY.

POLYISOCYANURATE BOARD INSULATION, SAME THICKNESS AS FLEXIBLE DUCT WRAP INSULATION

TRAPEZE HANGER INSULATION DETAIL

NO SCALE
A.H.U. COIL PIPING DETAIL – SINGLE COIL

NOTES:

1. ALL SUPPLY AND RETURN HEADERS TO BE FULL SIZE FROM MAIN (SEE PLANS FOR PIPE SIZE).

2. ALL HORIZONTAL CONNECTIONS TO COILS FROM VERTICAL HEADERS TO BE SIZE OF COIL CONNECTIONS.

3. ALL COMPONENTS, INCLUDING DRAIN VALVE ADAPTER CAPS, TO BE RATED FOR FULL SYSTEM OPERATING PRESSURE.

4. CIRCUIT SETTER SHALL BE TOUR AND ANDERSON, MODEL STAD, OR APPROVED EQUAL.

5. INSTALL CONTROL VALVE PACKAGE IN HORIZONTAL PIPE RUN AS REQUIRED TO FACILITATE COIL REMOVAL.

A.H.U. COIL PIPING DETAIL – SINGLE COIL
SCHEMATIC ONLY
1. ALL SUPPLY AND RETURN HEADERS TO BE FULL SIZE FROM MAIN (SEE PLANS FOR PIPE SIZE).
2. ALL HORIZONTAL CONNECTIONS TO COILS FROM VERTICAL HEADERS TO BE SIZE OF COIL CONNECTIONS.
3. ALL COMPONENTS, INCLUDING DRAIN VALVE ADAPTER CAPS, TO BE RATED FOR FULL SYSTEM OPERATING PRESSURE.
4. CIRCUIT SETTER SHALL BE TORO ANDERSON, MODEL STAD, OR APPROVED EQUAL.
5. INSTALL CONTROL VALVE PACKAGE IN HORIZONTAL PIPE RUN AS REQUIRED TO FACILITATE COIL REMOVAL.

A.H.U. COIL PIPING DETAIL - MULTIPLE COILS
SCHEMATIC ONLY

The University of Georgia
Engineering Department  Facilities Management Division

23 20 00-B
A.H.U. COIL PIPING DETAIL:
HOT WATER COIL WITH LOOP PUMP & 2-WAY VALVE

NOTES:
1. ALL SUPPLY AND RETURN HEADERS TO BE FULL SIZE FROM MAIN (SEE PLANS FOR PIPE SIZE).
2. ALL HORIZONTAL CONNECTIONS TO COILS FROM VERTICAL HEADERS TO BE SIZE OF COIL CONNECTIONS.
3. ALL COMPONENTS, INCLUDING ORAN VALVE ADAPTER CAPS, TO BE RATED FOR FULL SYSTEM OPERATING PRESSURE.
4. CIRCUIT SETTER SHALL BE TOUR AND ANDERSON, MODEL STAG, OR APPROVED EQUAL.
5. INSTALL CONTROL VALVE PACKAGE IN HORIZONTAL PIPE RUN AS REQUIRED TO FACILITATE COIL REMOVAL.

LOOP PUMP SEQUENCE OF OPERATION:
1. WHEN THE OUTSIDE AIR TEMPERATURE DROPS BELOW 50° F (ADJ), THE LOOP PUMP SHALL BE ENERGIZED.
2. THE TWO-WAY CONTROL VALVE SHALL MODULATE AS REQUIRED TO MAINTAIN 55° F SUPPLY AIR DISCHARGE TEMPERATURE.
3. THE LOOP PUMP SHALL SHUT OFF WHEN THE OUTSIDE AIR TEMPERATURE RISES ABOVE 52° F (ADJ).
4. DESIGNER NOTE: LOOP PUMP SEQUENCE OF OPERATION TO BE INCLUDED IN AIR HANDLING UNIT SEQUENCE OF OPERATION.
FAN COIL UNIT & TERMINAL UNIT COIL PIPING DETAIL

2-WAY VALVE CONFIGURATION

(BOX SHAPED ONLY)

NOTES:
1. ARRANGE ALL PIPING TO ALLOW REMOVAL OF COIL.
2. PIPING SHOWN IS DIAGRAMATIC.
3. ALL COMPONENTS, INCLUDING DRAIN VALVE ADAPTER CAPS, TO BE RATED FOR FULL SYSTEM OPERATING PRESSURE.
4. CIRCUIT SETTERS SHALL BE TOUR AND ANDERSON, MODEL STAD, OR APPROVED EQUAL.

FAN COIL UNIT & TERMINAL UNIT COIL PIPING DETAIL

3-WAY VALVE CONFIGURATION

(BOX SHAPED ONLY)

NOTES:
1. ARRANGE ALL PIPING TO ALLOW REMOVAL OF COIL.
2. PIPING SHOWN IS DIAGRAMATIC.
3. ALL COMPONENTS, INCLUDING DRAIN VALVE ADAPTER CAPS, TO BE RATED FOR FULL SYSTEM OPERATING PRESSURE.
4. CIRCUIT SETTERS SHALL BE TOUR AND ANDERSON, MODEL STAD, OR APPROVED EQUAL.
1. All condensate drain lines shall be full size of drain pan outlet.
2. Do not penetrate floor slab with trap.

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### Blow-Through Condensate Drain Traps

**Scale:** None

Notes:
1. All condensate drain lines shall be full size of drain pan outlet.
2. Do not penetrate floor slab with trap.

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### Draw-Through Condensate Drain Traps

**Scale:** None

Notes:
1. All condensate drain lines shall be full size of drain pan outlet.
2. Do not penetrate floor slab with trap.

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### Condensate Drain Traps

**Scale:** None

Notes:
1. All condensate drain lines shall be full size of drain pan outlet.
2. Do not penetrate floor slab with trap.

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BUTTERFLY VALVE – TYP.
SUPPLY/RETURN

SUCTION DIFFUSER SIZE SHALL BE SAME AS PIPE SIZE.

COMBINATION IN/OUTLET SUCTION DIFFUSER SIZE FOR MAX. 1” P.D.

SUCTION DIFFUSER STRAINER
PULL CLEARANCE AREA – KEEP CLEAR

ADJUSTABLE SUPPORT FOOT EXTEND TO CONC. PAD OR ISOLATION BASE BELOW SUCTION DIFFUSER FOOT. SUPPORT ALL PIPING SO PUMP CARRIES NONE OF PIPING WEIGHT.

"PIPE SIZE" STAINLESS STEEL BRAIDED TYPE ISOLATOR – TYP. SUPPLY/RETURN.

"PIPE SIZE" NON-SLAM WAFFER CHECK VALVE FOR MULTIPLE PUMP INSTALLATION.
LONG RADIUS ELBOW

"PUMP SIZE" X "PIPE SIZE" CONCENTRIC REDUCER

"PUMP SIZE" FLAT FACE WELD NECK FLANGE 1–1/4" GROUT MOUNT PUMP ON HOUSEKEEPING PAD

PETE’S PLUG (TYP. 3)

BALL VALVE W/ UNION AFTER EACH TAP.

BLOW DOWN DRAIN W/ HOSE END ADAPTER, CAP & CHAIN.

MANIFOLD DRAIN–ROUTE TO FLOOR DRAIN.

4 1/2”Ø GUAGE SIZE, GLYCERIN FILLED W/ 1/2‰‰ ACCURACY.
NOTES:
1. VENT ALL HIGH POINTS AS INDICATED ABOVE.
2. PROVIDE BALL VALVE IN ACCESSIBLE LOCATION WHERE DISCHARGE FROM TUBING CAN BE OBSERVED. PROVIDE AAV WHERE INDICATED. PROVIDE BALL VALVE AHEAD OF AAV.

AUTOMATIC AIR VENT DETAIL
SCALE: NONE

AUTOMATIC AIR VENT
PIECE TO FLOOR OR INDIRECT DRAIN, FULL SIZE OF CONNECTION

BALL VALVE (TYP.)

1/2" x 4" NIPPLE

FULL PIPE SIZE

DIRECTION OF FLOW

MANUAL AIR VENT DETAIL
SCALE: NONE

NOTES:
1. VENT ALL HIGH POINTS AS INDICATED ABOVE.
2. PROVIDE BALL VALVE IN ACCESSIBLE LOCATION WHERE DISCHARGE FROM TUBING CAN BE OBSERVED.
NOTES:
1. IDENTIFY ALL "TIE DOWNS" INCLUDING ON STRAIGHT RUNS OF PIPE WITH 4" WIDE PLASTIC ADHESIVE BANDS TAPE ALL AROUND AND MARKED "VAPOR PROOFED TO PIPE" PROVIDE TIE-DOWNS EVERY 21 FEET ON STRAIGHT RUNS OF PIPE.
2. DO NOT DAMAGE "TIE DOWNS/EQUIPMENT" ON EXISTING WORK WHEN ADDING NEW WORK, REPAIR ANY DAMAGE DONE.
3. PROVIDE INSULATION ON ALL INSTRUMENTS, VALVES, PROBES, PITS, PLUGS, TO PREVENT CONDENSATION/DIPPING. INSULATION MAY BE "ARMIFLEX" OR OTHER APPROVED FLEXIBLE CELLULAR INSULATION FIXED WITH MANUFACTURER'S APPROVED ADHESIVE OR "NO DIP" TAPE NEATLY APPLIED. THE CELLULAR INSULATION SHALL BE FormED INTO A CUP OF SUITABLE DIAMETER TO FIT OVER THE VALUE, PROBE, ETC. AND TAPE TO THE SURFACE OF THE PIPE INSULATION.

CONTINUE SPECIFIED INSULATION ACROSS VALVE, FITTING

NOTE 1 (TYP.)
INSULATION TIE DOWN AT FLANGES, VALVES & UNIONS OF CHILLED WATER PIPING

INSULATION TIE DOWN AT EQUIPMENT COLD PIPING

GLUED JOINTS
CELLULAR INSULATION
TAPE ALL AROUND

VAPORE PROOFING

SEE NOTE 3 (TYP.)

VALVE CLUSTER INSULATION
PIPE INSULATION

SCALE: NONE

INSULATION TIE DOWN/SEAL OFF POINTS FOR CHILLED WATER PIPE DETAIL
DUCT TRANSITIONS
SCALE: NONE

1. DIVERGING DUCT TRANSITION
UNLESS NOTED OTHERWISE ON PLANS, ANGLES SHOWN SHALL APPLY

2. TRANSITION AT EQUIPMENT
UNLESS NOTED OTHERWISE ON PLANS, ANGLES SHOWN SHALL APPLY

3. CONVERGING DUCT TRANSITION
UNLESS NOTED OTHERWISE ON PLANS, ANGLES SHOWN SHALL APPLY
NOTE:
1. WHERE EXTERNAL DUCT WRAP INSULATION IS UTILIZED, POLYISOCYANURATE BOARD INSULATION WILL BE USED AT BETWEEN SUPPORT AND DUCT WITH SAME THICKNESS AS EXTERNAL DUCT WRAP INSULATION.
2. WRAP VAPOR-PROOF FACING BEYOND POLYISOCYANURATE BOARD INSULATION AND TAPE SECURELY.
3. ONE-HALF-ROUND MAY BE USED IF DUCT RETAINS ITS SHAPE.

DUCT HANGER SUPPORT DETAIL
NO SCALE

DETAIL FOR DUCTWORK SUPPORTED FROM FLOOR
NO SCALE
MANUAL DAMPER WITH LOCKING QUADRANT
SINGLE BLADE UP TO 12"
OVER 12" OPPOSED BLADE

L=\frac{1}{4} \text{ W, 4" MIN}
\theta=45^\circ

SECURE TO TRUNK WITH SHEET METAL SCREWS AND SEAL AIR TIGHT

DUCT BRANCH TAKE-OFF DETAIL
NO SCALE
**FIRE DAMPER INSTALLATION DETAIL**

**SCALE:** 1/1

**Notes:**
- Install all fire dampers in accordance with NFPA 80A.
- Manufacturers' written UL installation instructions and any applicable local codes shall be followed. Fire dampers shall be sealed per UL 8340 and shall be fire rated per UL 2079.
- Fire dampers shall not adversely affect the UL listing and identification of the Fire Damper. The method of sealing the fire damper and the sealant used shall be approved by the manufacturer of the fire damper and the sealant.
- The sealant shall be applied to all joints, connections, and fittings to ensure an airtight seal.
- Apply sealant to join all around on both sides of wall, provide angles on all four sides of sleeve & both sides of wall.
- Fasten duct to sleeve with 3/8" slip on top & bottom and drive slip on sides.
- Retaining angle: do not secure to walls, provide angles on all four sides of sleeve & both sides of wall.

**Details:**
- Fire damper access door label: fire damper access.
- Fire damper sleeve.
- Fire damper access door label: fire damper access.
- Fire rated floor: see detail A where floor is constructed of wood or steel joists.
- Fasten duct to sleeve with 3/8" slip on top & bottom and drive slip on sides.
- Fire damper access door label: fire damper access.
- Fire damper sleeve.
- Fire damper access door label: fire damper access.
- Fire damper sleeve.
- Fire damper access door label: fire damper access.

**Section Through Fire Damper At Fire Rated Wall**

**Section Through Fire Damper At Fire Rated Floor**
DETAIL OF CONNECTION OF TRANSITE DUCTWORK AND STAINLESS STEEL DUCTWORK

SCALE: NONE
① DUCTED RETURN DETAIL
SCALE: NONE

② PLENUM RETURN DETAIL
SCALE: NONE

③ PLENUM RETURN DETAIL
SCALE: NONE

④ RETURN GRILLE CONNECTION DETAIL
SCALE: NONE
SHEET METAL EXHAUST AIR DUCTWORK.
VISIBLE PORTION TO BE PAINTED BLACK

HEIGHT DETERMINED BY BUILDING CONDITIONS

EXHAUST GRILLE; SIZE AS NOTED ON PLANS

EXHAUST GRILLE CONNECTION DETAIL
SCALE: NONE
NOTE:

CONSTRUCT TRANSFER DUCT SO ITS FLOW IS NO LESS THAN 500 FPM
SECURE FLEXIBLE DUCT TO METAL DUCT & DIFFUSER WITH STAINLESS STEEL SCREW AND CLAMP

DIFFUSER; SIZE AS NOTED ON PLANS

CEILING

INSULATED SUPPLY DUCT

U.L. LISTED CLASS 1 AIR DUCT CONNECTOR WITH STANDOFF BRACKET AND BALANCING DAMPER

INSULATED FLEXIBLE DUCT; INSIDE DIAMETER AS NOTED ON PLANS.

DIFFUSER NECK

SUPPORT FLEXIBLE DUCT TO MAXIMIZE FREE AREA AT 90° ELBOW (STRAP AROUND FLEXIBLE DUCT)

SCREW AND CLAMP (TYP.)

DIFFUSER NECK

DIFFUSER; SIZE AS NOTED ON PLANS

SUPPLY DUCT

CEILING

INSULATED FLEXIBLE DUCT; INSIDE DIAMETER AS NOTED ON PLANS. MAXIMUM LENGTH 5'-0".

SECURE FLEXIBLE DUCT TO METAL DUCT WITH STAINLESS STEEL SCREW AND CLAMP

U.L. LISTED CLASS 1 AIR DUCT CONNECTOR WITH STANDOFF BRACKET AND BALANCING DAMPER

DIFFUSER CONNECTION DETAIL

SCALE: NONE