

MECHANICAL NOTES - CHILLED WATER MALL

DOCUMENT REQUIREMENTS

- Tenant's drawings are to clearly show ALL modifications to existing installation that are required to accommodate Tenant improvements.
- This document is to be used as a checklist to verify compliance with Mall Design Criteria.

GENERAL NOTES

- Unless already existing and in compliance with Landlord's requirements, Tenant is required to install, upgrade and/or furnish any and all equipment, ductwork, etc. for Tenant's HVAC service installation.
- Any modification of existing base building services or construction must receive prior written approval from the Landlord, prior to drawing submission.
- Modifications to existing Landlord systems shall be performed by a contractor designated by the Landlord.
- Include a notation on the contract drawings requiring Tenant Contractor to employ a Contractor designated by the Landlord to complete all connections to Landlord equipment installations.
- If the Tenant's heat gains are in excess of the capacity allocation and upgrades to the central system is not available, supplemental equipment shall be provided by the Tenant with Landlord approval prior to drawing submission.
- Reuse of all or part of existing equipment is subject to the field verification of the capacity and condition of the components. Contract documents shall provide minimum performance parameters, refurbishing specifications and establish a verification procedure, including a mandatory written report. This report shall detail inspection and service to be performed, repair recommendations, additional recommendations, and performance test results. Copies of field verification report shall be submitted to the Landlord to validate reuse.

AHU MINIMUM REQUIREMENTS

- Cabinet shall be constructed with galvanized double wall panels, with the inner solid metal liner encapsulating a minimum of 1", 1 1/2" lb. density fiberglass insulation. No insulation may be exposed to the airstream.
- Access Panels and doors shall be gasketed.
- Condensate drain pan shall be stainless steel, with a mastic coating on the reverse side to prohibit sweating.
- Motors 1/2 HP and larger shall be 3 phase. Motors shall be mounted inside the unit casing. All drives to be variable pitch, with adjustable motor base.
- Fan shafts to be solid, not hollow tubing. Bearings shall be 200,000 hour pillow blocks. Inaccessible bearings shall have extended lubrication lines.
- Coils shall be a minimum 1/2" O.D., seamless copper tubing, (6) rows deep, with aluminum fins 8-14 FPI. Coils shall have copper headers and stainless steel casings. Coils to be "draw through".
- Provide a computer print-out of AHU & coil performance for Landlord review.

MOUNTING INSTALLATION

- Floor mounted or suspended equipment shall NOT transmit vibration to the building.
- Provide vibration isolators for all air handlers, fan coils and exhaust fans.

ELECTRIC HEAT

- Heat (if required) shall be supplied by an electric heat coil installed in the air handler or duct system. Provided with an independent disconnect switch.
- Electric heaters 3 KW and larger shall be 3 phase.
- Duct coils shall not be used for zone heating.

VALVES AND PIPING

- Shut-Off Valves are required at Tenant's connection in an accessible location.
- All piping shall be schedule 40 black steel or copper with di-electric unions, with insulation and plenum rated service jacket. NO PVC PIPING IS PERMITTED.
- Piping shall be cleaned, flushed and inspected by Landlord representative, prior to the building system.
- All Tenant chilled water piping shall be flushed clean, and inspected prior to connection to Landlord's system.

CEILING ACCESS

- Adequate access for periodic inspection, service and replacement consisting of access door or panel and platforms or catwalks, shall be provided for all equipment and components such as valves, cleanouts, dampers, controls, devices, etc. This requirement applies to both Tenant and Landlord systems within the space, or requiring access through a Tenant space.
- Access doors and panels shall be a minimum of 24" x 24" and shall be hinged or latched. Nailed or screwed attachment is not permitted.
- Knockout panels, removable ceilings or wall sections shall be provided for removal / replacement of equipment larger than will fit through the minimum standard 24" x 24" access size.

AIR DISTRIBUTION

- All ductwork shall be galvanized sheet-metal, designed, shop fabricated and installed to SMACNA standards.
- All supply air ductwork shall be externally insulated with thick foil face insulation.
- Internally lined ductwork may be used for acoustic purposes only. Ductboard is not permitted.
- Externally insulated flexible duct, not to exceed 5'-0" in length, may only be used for connection to supply diffusers.
- Install volume/control dampers as required for proper balancing of the supply and exhaust systems.
- Display windows must be ventilated to remove lighting heat gain.

OUTSIDE AIR

- Attach duct to top of mixing box section of air handling unit. Landlord's duct is uninsulated.
- Tenant shall install motorized damper which shall close upon deactivation of air handling unit. (See control components)
- Outside air duct for Tenant's connection at a location as determined by Landlord.

AIR BALANCE

- Tenant must employ an independent balancing firm designated by the Landlord. Provide a certified air & water balance report to the Landlord when construction has been completed. All balancing work shall be scheduled through the Landlord's Field Representative.
- Water balance and system flushed to Landlord satisfaction. This work performed by Landlord's designated contractor at Tenant's expense.
- Tenant shall also incorporate a Design Air Balance Summary onto the design drawings.

TOILET EXHAUST INFORMATION

- A Toilet Exhaust duct has been provided for Tenant's connection at a location as determined by Landlord.
- Tenant shall provide a ceiling exhaust fan, with a backdraft damper sized to overcome the resistance of Tenant installed components and ductwork. The toilet room light switch (with delay timer if included) shall control the fan to provide intermittent operation.
- Exhaust systems requiring continuous operation or exhaust requirements in excess of 150 CFM must be provided by the Tenant and routed independently to the building exterior.
- Only toilet exhaust may be connected to the Landlord's central toilet exhaust system.

LOAD CALCULATION INFORMATION

- Tenant must incorporate HVAC load calculations into their submission to the Landlord.
- All calculations shall be performed per ASHRAE.

ODOR PRODUCING TENANTS

- Spaces with internally generated odors or other contaminants such as, (Nail Salons, Hair Salons, Fabric Shops, Leather Shops, Pet Shops, Photo Processors, Candy Shops and ALL FOOD PREPARATION areas) are required to maintain a negative airflow of 50 F.P.M. through their storefront opening. Tenants are not required to "make-up" this air loss within their space, hence, are permitted to draw in air from the mall for these exhaust requirements. Any Deviations from this must be approved by the Landlord.

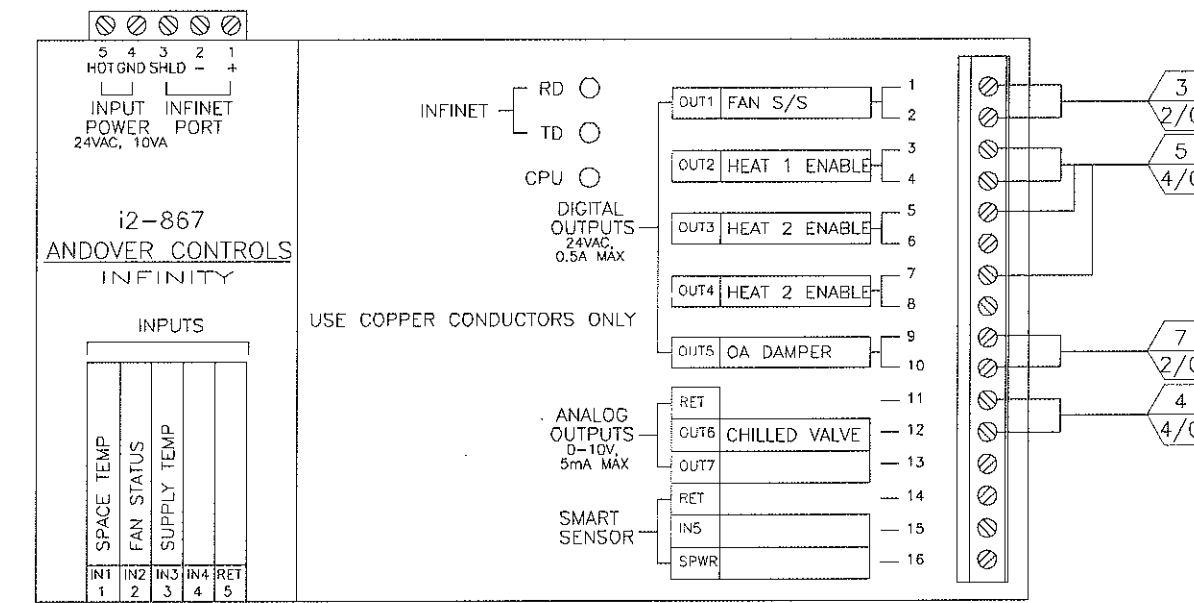
CONDENSATE DRAINAGE

- All units shall be supplied with a secondary drain pan with a 1" drain pipe terminated through ceiling, piped into mop sink or floor drain.
- Condensate drain to be Type M Copper. Condensate trap should be at a depth sufficient to overcome positive/negative static pressure of fan (3" minimum).
- Condensate drain piping shall be insulated.
- Condensate pumps are not permitted.

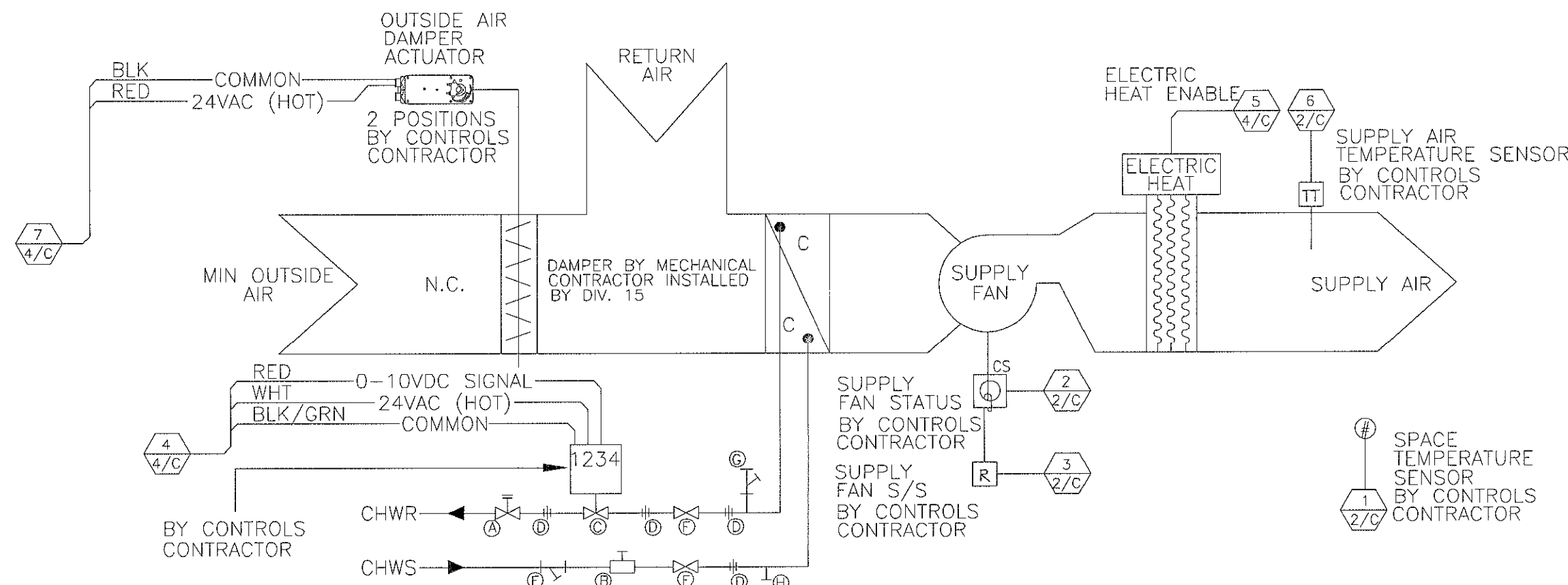
AIR HANDLING UNIT CONTROLS

- Smoke detectors are required at the return (and supply where applicable) air of the unit as required by code. Detectors shall communicate with the building control system.
- The Tenant is responsible for providing a stand-alone temperature control system with the capacity to interface with the Landlord Energy Management system. Connection to Landlord's system by Roth Bros. at Tenant's expense.
- The Landlord's recommended Contractor for installation of the control system is:

Patrick R. Armour
Operations Manager
C G Systems
1-(702) 798-0995
- A wall-mounted sensor shall be provided for each piece of heating and cooling equipment.
- Kitchen, supply and exhaust, odor or process fans, shall be in continuous operation throughout the duration of all odor producing processes.
- Controls shall provide for closure of outside air and exhaust dampers when fans are off to prevent uncontrolled exfiltration or infiltration of air. The outside air damper shall be opened during occupied operation.
- The Tenant shall complete the interface with the Landlord's Energy Management System and demonstrate the operation of the interface for the Landlord Field Representative prior to occupancy.
- Include a sequence of operation for all mechanical equipment.



TENANT FAN COIL UNIT CONTROLLER SCALE: NONE



TENANT FAN COIL UNIT CONTROL DIAGRAM SCALE: NONE

PIPING COMPONENTS

- Ⓐ - Calibrated circuit balance valve with "Pete's Plugs".
- Ⓑ - Pete's Plug #100 Pressure, and Temp.
- Ⓒ - 2-way Modulating, Electronic Control Valve.
- Ⓓ - Dielectric Unions, (Typ.)
- Ⓔ - Strainer.
- Ⓕ - Ball-valve.
- Ⓖ - Air-vent.
- Ⓗ - Drain valve w/ hose connection.
- Ⓘ - Drain valve w/ hose connection.

H.V.A.C. CALCULATION FORM									
SUMMER SPACE 75°F @ 50% R.H. OUTSIDE 108°F db/ 68°F wb HEATING SPACE 68°F OUTSIDE 27°F									
ITEM	QUANTITY	HEAT LOSS		SPACE SENSIBLE HEAT GAIN		PLENUM SENSIBLE HEAT GAIN		LATENT HEAT GAIN	
		FACTOR	BTUH	FACTOR	BTUH	FACTOR	BTUH	FACTOR	BTUH
1. ROOF AREA W/ CEILING	SQ. FT.	1.92		5.26		5.26			
2. ROOF AREA W/O CEILING	SQ. FT.	1.92		10.52					
3. CORRIDOR WALL:	SPACE	SQ. FT.	4.42	6.46			7.14		
	PLENUM	SQ. FT.	4.42						
4. OUTSIDE WALL:	SPACE	SQ. FT.	16.22		♦♦				
	PLENUM	SQ. FT.	16.22				♦♦		
5. RECESSED LIGHTS	KW				2048		1365		
6. SURFACE LIGHTS	KW				3413				
7. PEOPLE	*(GLA/100)=				250			200	
8. APPLIANCES	(SEE APPL. CALC. FORM)								
9. FAN MOTORS	STREET LEVEL:								
	(GLA) (0.3 CFM / SQ. FT.)=	CFM	87.48		14.04				19.11
10. REQUIRED OUTSIDE AIR PER LANDLORD CRITERIA	UPPER LEVEL:								
	(GLA) (0.2 CFM / SQ. FT.)=	CFM	87.48		14.04				19.11
11. HEAT LOSS AND GAIN TOTALS:									
12. TOTAL SENSIBLE HEAT GAIN: SPACE SENSIBLE + PLENUM SENSIBLE =									BTUH
13. TOTAL LATENT HEAT GAIN : =									BTUH
14. TOTAL HEAT GAIN : TOTAL SENSIBLE + TOTAL LATENT =									BTUH
15. AIR QUANTITY:		SPACE SENSIBLE							BTUH
		(1.08) (75° - LAT°)							CFM
LOAD CALCULATION KEYS: ♦ DATA FROM ELECTRIC SUMMARY ♦♦ OUTSIDE WALL FACTORS									CHILLED WATER DATA:
* = VARIES BASED ON TENANT TYPE REFER TO TENANT'S SPECIFIC CRITERIA									RETAIL: 6.9 GPM/1000 SQFT
GLA = GROSS LEASE AREA									RETAURANT: 16.2 GPM/1000 SQFT
LAT = LEAVING AIR TEMPERATURE (°F)									
REMARKS: - ALL CALCULATIONS SHALL BE PERFORMED PER ASHRAE. THIS FORM PROVIDED FOR TENANTS WHO PREFER NOT TO PERFORM AND SUBMIT FOR REVIEW MORE DETAILED CALCULATIONS.									
- PROVIDE A COMPUTER PRINT-OUT OF AHU & COIL PERFORMANCE FOR LANDLORD REVIEW. 44°F EWT / 60°F LWT									
- ALLOWABLE CHILLED WATER TEMPERATURE RISE IS 16°F. MINIMUM WITH A MINIMUM 6 ROW COIL. SELECTED.									
- TENANT SHALL ALSO INCORPORATE A DESIGN AIR BALANCE SUMMARY ONTO THE DESIGN DRAWINGS.									
- TENANT MUST SUBMIT COIL MANUFACTURER'S PERFORMANCE/ SELECTION DATA TO THE LANDLORD FOR APPROVAL.									

"EXPANSION AREA ONLY" (PHASE III)

SIMON
PROPERTY GROUP

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DATE ISSUED: 12/11/03



MECHANICAL CRITERIA STANDARD CHECKLIST

These criteria provide general design information and construction requirements. However, for specific information regarding the division of responsibilities of the Landlord and Tenant with respect to the Premises' construction, refer to the actual Tenant Lease or contact the Tenant Coordinator.

CONTACT INFORMATION

For questions regarding site access, storefront & architectural criteria, engineering design, delivery dates, construction rules & regulations, the scope of Landlord's and Tenant's work and store opening requirements, please contact your Tenant Coordinator or call 317-636-1600 for assistance.

MEP-1

08/22/03

MECHANICAL
CRITERIA
DRAWING