

HVAC Mandatory Provisions

Part II, Page 1 of 3

Project Name:			
Project Address:		Date:	
HVAC System Designer of Record:		Telephone:	
Contact Person:		Telephone:	
City:	Climate Zone:		
Zip:	1% Summer DB Temp:	1% Summer WB Temp:	99.6% Winter Temp:

Mandatory Equipment Efficiency Worksheet (Section 6.4.1.1)

System Tag	Equipment Type (Tables 6.8.1-1 through 6.8.1-16)	Size Category (Tables 6.8.1-1 through 6.8.1-16)	Subcategory or Rating Condition (Tables 6.8.1-1 through 6.8.1-16)	Units of Efficiency (Tables 6.8.1-1 through 6.8.1-16)	Minimum Efficiency (Tables 6.8.1-1 through 6.8.1-13) Rated ≥ Required
					≥
					≥
					≥
					≥
					≥
					≥

Mandatory Nonstandard Centrifugal Chiller Worksheet (Section 6.4.1.1)

Chiller Tag	Leaving Evaporator Temperature (°F or °C)	Leaving Condenser Temperature (°F or °C)	Factors for Adjusted Efficiency (Section 6.4.1.2) A/B	Type and Size Category (Table 6.8.1-3)	Path (A or B)	Table 6.8.1-3 Minimum Efficiency and Adjusted Efficiency Table 6.8.1-3 Value/Adjusted Value	Minimum Efficiency (Tables 6.8.1-8 through 6.8.1-10) Rated ≥ Required
			/			/	≥
			/			/	≥
			/			/	≥
			/			/	≥

General Mandatory Requirements

- All heating and cooling equipment meet minimum efficiencies as required in Tables 6.8.1-1 through 6.8.1-16.
- Load calculations are provided for selection of all equipment and systems (Section 6.4.2.1).
- Pump head calculations are provided for selection of all pumps (Section 6.4.2.2).
- Zone control complies with the requirements of Section 6.4.3.1.
- Off hour controls comply with the requirements of Section 6.4.3.3.
- Stair and elevator shaft vents are provided with motorized dampers (Section 6.4.3.4.1)
- Ventilation fans with motors greater than 0.75 hp (0.56 kW) have automatic controls complying with Section 6.4.3.4.4.

- Enclosed parking garage ventilation systems meet the requirements of Section 6.4.3.4.5.
- Direct digital controls (DDC) are installed to comply with the requirements of Section 6.4.3.10.
- Air-cooled DX units with economizers have fault detection and diagnostic (FDD) systems which comply the requirements of Section 6.4.3.12.
- Piping insulation meets or exceeds the requirements of Section 6.4.4.1.3.
- Construction documents require record drawings (Section 6.7.2.1), manuals (Section 6.7.2.2), system balancing (Section 6.7.2.3) and system commissioning (Section 6.7.2.4).

Special Mandatory Requirements

- Freeze protection or snow/ice-melting systems (if any) have controls to prevent

- operation in warm weather (Section 6.4.3.7).
- High occupancy density areas are equipped with demand control ventilation (Section 6.4.3.8).
- HVAC systems serving vestibules have thermostats limiting heating and cooling (Section 6.4.3.9).
- Independent perimeter heating systems (if any) comply with the control requirements of Section 6.4.3.1.1.
- Independent heating and cooling thermostatic controls (if any) are interlocked to prevent crossover of setpoints (Section 6.4.3.2).
- Sensible heating panels are insulated per Section 6.4.4.1.4.
- Radiant floor heating is insulated per Section 6.4.4.1.5.
- Walk-in coolers and walk-in freezers comply with 6.4.5.

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Project Name:	
Contact Person:	Telephone:

Walk-In Coolers and Freezers Worksheet (Section 6.4.5)

Walk-in Freezer/Cooler Tag						
Doors are provided with closers (Section 6.4.5(a))						
Doorways have a means to reduce infiltration when door is open (Section 6.4.5(b))						
Walk-in cooler wall, ceiling, and door insulation is R-25 (R-4.4) or greater (Section 6.4.5(c))						
Walk-in freezer wall, ceiling, and door insulation is R-32 (R-5.6) or greater (Section 6.4.5(c))						
Walk-in freezer floor insulation is R-28 (R-4.9) or greater (Section 6.4.5(d))						
Evaporator fan motors are electronically commutated or three-phase (Section 6.4.5(e))						
Lights meet the minimum efficacy requirement (Section 6.4.5(f))						
Minimum insulation properties for windows and transparent reach-in door in freezers are met (Section 6.4.5(g))						
Minimum insulation properties for windows and transparent reach-in door in coolers are met (Section 6.4.5(h))						
Antisweat heaters meet the maximum power limitation or the controls requirement (Section 6.4.5(i) and Section 6.4.5(j))						
Condenser fan motors are electronically commutated, permanent split capacitor, or three-phase (Section 6.4.5(k))						
Freezer includes temperature-based defrost termination control (Section 6.4.5(l))						

Refrigerated Display Case Worksheet (Section 6.4.6)

Refrigerated Display Case Tag						
Meets the requirements of Section 6.4.1.1 and the performance requirements of Table 6.8.1-1 through Table 6.8.1-16 (Section 6.4.6(a))						
The lighting is automatically controlled by time clock or motion (Section 6.4.6(b))						
Low-temperature display cases include temperature-based defrost termination control (Section 6.4.6(c))						
Antisweat heater power is reduced in response to %RH outside the case (Section 6.4.6(d))						

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Systems Worksheet (Section 6.4)

System Tag						
Supply Airflow						
Direct-Expansion Cooling Capacity						
Supply Motor Power						
Outdoor Airflow						
Deadband (Section 6.4.3.1.2)						
Automatic Shutdown (Section 6.4.3.3.1)						
Setback Controls (Section 6.4.3.3.2)						
Setup Controls (Section 6.4.3.3.2)						
Optimum Start (Section 6.4.3.3.3)						
Zone Isolation (Section 6.4.3.3.4)						
Hotel/Motel Guest Room Controls (Section 6.4.3.3.5)						
Outdoor Air Shutoff Dampers (Section 6.4.3.4.2)						
Exhaust/Relief Shutoff Dampers (Section 6.4.3.4.2)						
Damper Leakage (Section 6.4.3.4.3)						
Heat Pump Auxiliary Heat (Section 6.4.3.5)						
Humidification/Dehumidification Deadband (Section 6.4.3.6)						
Ventilation Control for High Occupancy Areas (Section 6.4.3.8)						
Duct/Plenum Insulation (Section 6.4.4.1.2)						
Duct Sealing Levels Supply/Return (Section 6.4.4.2.1)						
Duct Leakage Test (Section 6.4.4.2.2)						

In the table above, enter the appropriate codes from this list:

- | | | |
|--|---|---|
| <p>Deadband (Section 6.4.3.1.2)</p> <ul style="list-style-type: none"> • C1 Dual-setpoint control • C2 Manual changeover control | <ul style="list-style-type: none"> • N2 N/A heating and cooling ≤ 15 kBtu/h (4.4 kW) and manual on/off • N3 N/A radiant heating | <ul style="list-style-type: none"> • N4 N/A Outdoor air/exhaust air ≤5,000 cfm (2,400 L/s) • N5 N/A Exhaust flow < 10% |
| <p>Automatic Shutdown (Section 6.4.3.3.1)</p> <ul style="list-style-type: none"> • C1 Complying seven-day time clock with override • C2 Complying occupant sensor • C3 Complying manually operated time switch • C4 Complying security system interlock • C5 Complying residential system with two-day time clock • N1 N/A continuous operation • N2 N/A heating and cooling ≤ 15 kBtu/h (4.4 kW) and manual on/off | <p>Setup Controls (Section 6.4.3.3.2)</p> <ul style="list-style-type: none"> • C1 Setup provided • N1 N/A continuous operation <p>Optimum Start (Section 6.4.3.3.3)</p> <ul style="list-style-type: none"> • C1 Optimum start provided • N1 N/A continuous operation <p>Zone Isolation (Section 6.4.3.3.4)</p> <ul style="list-style-type: none"> • C1 Isolation areas provided • N1 N/A Continuous operation | <p>Hotel/Motel Guest Room Controls (Section 6.4.3.3.5)</p> <ul style="list-style-type: none"> • C1 Setpoint control provided • C2 Ventilation control provided • N1 N/A Continuous operation • N2 N/A heating and cooling ≤ 15 kBtu/h (4.4 kW) and manual on/off • N3 N/A 50 guest rooms or less <p>OSA Shutoff Dampers (Section 6.4.3.4.2)</p> <ul style="list-style-type: none"> • C1 Motorized shutoff dampers • C2 Gravity shutoff dampers on outdoor air and building in Climate Zone 0, 1, 2, or 3 • N1 N/A Outdoor air ≤ 300 cfm (140 L/s) |
| <p>Setback Controls (Section 6.4.3.3.2)</p> <ul style="list-style-type: none"> • C1 Setback provided • N1 N/A continuous operation | <p>Exhaust/Relief Shutoff Dampers (Section 6.4.3.4.2)</p> <ul style="list-style-type: none"> • C1 Motorized shutoff dampers on exhaust and relief | |

Compliance Forms | HVAC Systems

- *C2 Gravity shutoff dampers on exhaust and relief and the building is less than three stories in height*

Damper Leakage (Section 6.4.3.4.3)

- *C1 Outdoor air, exhaust, and relief dampers comply with Table 6.4.3.4.3*

Heat Pump Auxiliary Heat (Section 6.4.3.5)

- *C1 Complying controls provided*
- *N1 N/A system is not a heat pump*
- *N2 N/A auxiliary is not electric or is not provided*
- *N3 N/A heat pump covered by NAECA*

Humidification/Dehumidification Deadband (Section 6.4.3.6)

- *C1 Complying controls provided*

- *N1 N/A no humidification and/or dehumidification*
- *N2 N/A Desiccant with direct evap. cooling*

- *N3 N/A Specific humidity levels or precision control required*

Ventilation Control for High-Occupancy Areas (Section 6.4.3.8)

- *C1 All zones comply with Section 6.4.3.8*
- *N1 N/A Space $\leq 500 \text{ ft}^2$ (50 m²) or < 25 people/1000 ft² (25 people/10m²)*
- *N2 N/A System does not qualify*
- *N3 N/A exhaust air energy recovery complies with Section 6.5.6.1*
- *N4 N/A system is multiple zone and has pneumatic controls*

- *N5 N/A design outdoor air $< 750 \text{ cfm}$ (375 L/s)*
- *N6 N/A Transfer (or makeup air) $> 75\%$ of design outdoor air*

Duct/Plenum Insulation (Section 6.4.4.1.2)

- *C1 Complying insulation provided*
- *N1 N/A all ducts located in conditioned space*

Duct Sealing (Section 6.4.4.2.1)

- *Enter highest seal level (A, B, or C) for supply and return*

Duct Leakage Test (Section 6.4.4.2.2)

- *Y Ducts will be tested for leakage*
- *N Ducts will not be tested for leakage*