



Envelope Compliance Certificate

2003 IECC

Section 1: Project Information

Project Type: **New Construction**

Project Title : 2008-9, Fairfield Inn & Suites, Fredericksburg

Construction Site:
513 Friendship Lane
Fredericksburg, TX 78624

Owner/Agent:
Harish Patel

Designer/Contractor:
TX

Section 2: General Information

Building Location (for weather data): **Fredericksburg, Texas**
Climate Zone: **5a**
Heating Degree Days (base 65 degrees F): **2012**
Cooling Degree Days (base 65 degrees F): **2286**
Vertical Glazing / Wall Area Pct.: **15%**

Building Type **Floor Area**
Hotel Function 52289

Section 3: Requirements Checklist

Envelope PASSES: Design 48% better than code.

Climate-Specific Requirements:

Component Name/Description	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor ^(a)
Roof 1: Attic Roof with Wood Joists Comments: 12"-20" trusses, filled avg R42 insulation max R63 with 2" insulation on deck	14198	38.0	24.0	0.017	0.070
Roof 2: Attic Roof with Wood Joists Comments: vestibule	106	19.0	0.0	0.054	0.070
Roof 3: Attic Roof with Wood Joists Comments: stairs to roof	315	30.0	12.0	0.025	0.070
Roof 4: Attic Roof with Wood Joists Comments: elevator roof	133	19.0	12.0	0.033	0.070
Roof 5: Attic Roof with Wood Joists Comments: parapet areas with no rigid insulation on deck	1462	38.0	0.0	0.028	0.070
Floor 1: Slab-On-Grade:Unheated	776	---	---	---	---
Floor 2: Wood-Framed Comments: Upper floor Areas Above outside air	140	19.0	0.0	0.049	0.145
Exterior Wall 1: Wood-Framed, 16" o.c. Comments: Front is East	2497	19.0	0.0	0.068	0.190
Window 1: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/36	128	---	---	0.430	1.230
Window 2: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/40	128	---	---	0.430	1.230
Window 3: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/42	64	---	---	0.430	1.230
Window 4: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 4/6 at low mansard awning	96	---	---	0.430	1.230
	32	---	---	0.430	1.230

Window 5: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/30 at main arch					
Window 6: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.70, PF 1.00 Comments: Transom at Auto Doors	16	---	---	0.800	1.230
Door 1: Glass (> 50% glazing), Other, SHGC 0.87, PF 1.00 Comments: Auto Doors	96	---	---	0.350	1.230
Exterior Wall 2: Wood-Framed, 16" o.c. Comments: Back is West	2497	19.0	0.0	0.068	0.190
Window 7: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/36	64	---	---	0.430	1.230
Window 8: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/40	64	---	---	0.430	1.230
Window 9: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/42	64	---	---	0.430	1.230
Window 10: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 7/8 at breakfast	32	---	---	0.430	1.230
Window 11: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/6 at low awnings	128	---	---	0.430	1.230
Window 12: Other Glass Block, Clear, SHGC 0.60 Comments: PF 2/36 Glass block at Water Heater Room	11	---	---	0.600	1.230
Door 2: Glass (> 50% glazing), Other, SHGC 0.25 Comments: PF 2/39 At Pool	90	---	---	0.350	1.230
Door 3: Glass (> 50% glazing), Other, SHGC 0.25 Comments: From Breakfast Great Room	45	---	---	0.350	1.230
Door 4: Solid (<= 50% glazing) Comments: Utility Doors	76	---	---	0.600	0.307
Exterior Wall 3: Wood-Framed, 16" o.c. Comments: Side 1st floor	1343	19.0	0.0	0.068	0.190
Window 23: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/42 Side of Lobby (new)	32	---	---	0.430	1.230
Window 45: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.70 Comments: Vestibule sidelite	20	---	---	0.800	1.230
Door 5: Glass (> 50% glazing), Other, SHGC 0.25 Comments: Corridor Inclusive of sidelite	36	---	---	0.350	1.230
Door 6: Glass (> 50% glazing), Other, SHGC 0.25 Comments: Stair	22	---	---	0.350	1.230
Exterior Wall 4: Wood-Framed, 16" o.c. Comments: Side 1st floor	1343	19.0	0.0	0.068	0.190
Window 24: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 4/42 Side Manager Office	32	---	---	0.500	1.230
Window 43: Other glass block, Clear, SHGC 0.60 Comments: Glass block at laundry	11	---	---	0.600	1.230
Window 44: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.70 Comments: Vestibule sidelite	60	---	---	0.800	1.230
Door 7: Glass (> 50% glazing), Other, SHGC 0.25, PF 0.30 Comments: Corridor Inclusive of sidelite	36	---	---	0.350	1.230
Door 8: Glass (> 50% glazing), Other, SHGC 0.25 Comments: Stair 4' wide door	29	---	---	0.350	1.230
Exterior Wall 5: Wood-Framed, 16" o.c. Comments: East Side Masonry Portion of 2nd Floor only	486	19.0	0.0	0.068	0.190
Window 13: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: 4 Windows at Masonry Walls	128	---	---	0.430	1.230
Exterior Wall 6: Wood-Framed, 16" o.c. Comments: East Side Wall EIFS 2nd Floor with 1.5" exterior insulation	1698	19.0	5.0	0.051	0.190

Window 14: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: 4 windows at PF 2/23	128	---	---	0.430	1.230
Window 15: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: 4 windows PF 4/18 at 4 ft overhang 2nd floor	128	---	---	0.430	1.230
Window 16: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: 2 windows PF 2/28 at high parapet	64	---	---	0.430	1.230
Window 17: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/19 at main arch 2nd floor	64	---	---	0.430	1.230
Exterior Wall 7: Wood-Framed, 16" o.c. Comments: West Side Masonry Portion 2nd floor only	486	19.0	0.0	0.068	0.190
Window 18: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: 4 window at masonry walls	128	---	---	0.430	1.230
Exterior Wall 8: Wood-Framed, 16" o.c. Comments: 2nd floor EIFS	1698	19.0	5.0	0.051	0.190
Window 19: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: 4 win at PF 2/23	128	---	---	0.430	1.230
Window 20: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: 4 win @ PF 2/18 at 2 ft overhang 2nd floor	128	---	---	0.430	1.230
Window 21: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: 4 win PF 2/28 at high parapet	128	---	---	0.430	1.230
Window 22: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/19 at main arch 2nd floor	64	---	---	0.430	1.230
Exterior Wall 9: Wood-Framed, 16" o.c. Comments: 2nd Side Masonry Only	360	19.0	0.0	0.068	0.190
Exterior Wall 10: Wood-Framed, 16" o.c. Comments: 2nd side EIFS only	733	19.0	5.0	0.051	0.190
Window 25: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 1.5/18 Corridor	20	---	---	0.430	1.230
Exterior Wall 11: Wood-Framed, 16" o.c. Comments: 2nd side masonry only	360	19.0	0.0	0.068	0.190
Exterior Wall 12: Wood-Framed, 16" o.c. Comments: 2nd side EIFS only	733	19.0	5.0	0.051	0.190
Window 27: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 1.5/18 Corridor	20	---	---	0.430	1.230
Exterior Wall 13: Wood-Framed, 16" o.c. Comments: 3rd floor East side masonry only	486	19.0	0.0	0.068	0.190
Window 29: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: 4 windows at masonry walls	128	---	---	0.430	1.230
Exterior Wall 14: Wood-Framed, 16" o.c. Comments: 3rd floor east side EIFS (FRONT)	1698	19.0	5.0	0.051	0.190
Window 30: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/12 4 win	128	---	---	0.430	1.230
Window 31: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 4/7, 4 win	128	---	---	0.430	1.230
Window 32: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/16 high parapet	64	---	---	0.430	1.230
Window 33: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/8 center arch	64	---	---	0.430	1.230
Exterior Wall 15: Wood-Framed, 16" o.c. Comments: West Back Masonry 3rd floor	486	19.0	0.0	0.068	0.190
Window 34: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29	128	---	---	0.430	1.230

Comments: 4 windows at masonry walls					
Exterior Wall 16: Wood-Framed, 16" o.c. Comments: West 3rd Floor EIFS	1698	19.0	5.0	0.051	0.190
Window 35: Metal Frame:Double Pane, Clear, SHGC 0.29 Comments: PF 2/12 four windows	128	---	---	0.430	1.230
Window 36: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/7 four windows	128	---	---	0.430	1.230
Window 37: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/16 high parapet	128	---	---	0.430	1.230
Window 38: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: PF 2/8 center arch	64	---	---	0.430	1.230
Exterior Wall 17: Wood-Framed, 16" o.c. Comments: 3rd floor masonry only side	360	19.0	0.0	0.068	0.190
Exterior Wall 18: Wood-Framed, 16" o.c. Comments: 3rd floor side eifs	733	19.0	5.0	0.051	0.190
Window 39: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: 3rd corridor window PF 1.5/8	20	---	---	0.430	1.230
Exterior Wall 19: Wood-Framed, 16" o.c. Comments: 3rd floor South masonry	360	19.0	0.0	0.068	0.190
Exterior Wall 20: Wood-Framed, 16" o.c. Comments: 3rd floor south eifs	733	19.0	5.0	0.051	0.190
Window 41: Metal Frame:Double Pane with Low-E, Clear, SHGC 0.29 Comments: 3rd corridor window	20	---	---	0.430	1.230
Exterior Wall 21: Wood-Framed, 16" o.c. Comments: stair	2520	19.0	0.0	0.068	0.190
Door 9: Solid (<= 50% glazing) Comments: stair access	28	---	---	0.600	0.307
Exterior Wall 22: Solid Concrete or Masonry <= 8", Furring: None Comments: elevator enclosure walls above roof	312	---	0.0	0.505	0.190

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.

Air Leakage, Component Certification, and Vapor Retarder Requirements:

- 1. All joints and penetrations are caulked, gasketed or covered with a moisture vapor-permeable wrapping material installed in accordance with the manufacturer's installation instructions.
- 2. Windows, doors, and skylights certified as meeting leakage requirements.
- 3. Component R-values & U-factors labeled as certified.
- 4. Insulation installed according to manufacturer's instructions, in substantial contact with the surface being insulated, and in a manner that achieves the rated R-value without compressing the insulation.
- 5. Stair, elevator shaft vents, and other dampers integral to the building envelope are equipped with motorized dampers.
- 6. Cargo doors and loading dock doors are weather sealed.
- 7. Recessed lighting fixtures are: (i) Type IC rated and sealed or gasketed; or (ii) installed inside an appropriate air-tight assembly with a 0.5 inch clearance from combustible materials and with 3 inches clearance from insulation material.
- 8. Building entrance doors have a vestibule equipped with closing devices.

Exceptions:

Building entrances with revolving doors.

Doors that open directly from a space less than 3000 sq. ft. in area.

Note: Vapor retarder not required in this location.

Section 4: Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed envelope system has been designed to meet the 2003 IECC requirements in COMcheck Version 3.7.1 and to comply with the mandatory requirements in the Requirements Checklist.

MICHAEL W. HALL

Name - Title

Signature

Date

Project Notes:

Terry F. Brewer & Associates
619 Mercury Ave., Suite 108
Duncanville, TX 75137

Reviewed By: Terry F. Brewer
Architect
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(972) 298-3521 Fax

Commercial Energy Inspector, No. 5116886-77
Expiration date: July 18, 2011

Reviewed By: Michael W. Hall
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(972) 298-3521 Fax

Commercial Energy Plans Examiner, No. 5270212-77
Expiration date: September 18, 2011



Interior Lighting Compliance Certificate

2003 IECC

Section 1: Project Information

Project Type: **New Construction**

Project Title : 2008-9, Fairfield Inn & Suites, Fredericksburg

Construction Site:
513 Friendship Lane
Fredericksburg, TX 78624

Owner/Agent:
Harish Patel

Designer/Contractor:
TX

Section 2: General Information

Building Use Description by:

<u>Building Type</u>	<u>Floor Area</u>
Hotel Function	52289

Section 3: Requirements Checklist

Interior Lighting:

1. Total proposed watts must be less than or equal to total allowed watts.

<u>Allowed Watts</u>	<u>Proposed Watts</u>	<u>Complies</u>
52289	35725	YES

2. Exit signs 5 Watts or less per sign.

Exterior Lighting:

3. Efficacy greater than 45 lumens/W.

Exceptions:

Specialized lighting highlighting features of historic buildings; signage; safety or security lighting; low-voltage landscape lighting.

Controls, Switching, and Wiring:

4. Independent controls for each space (switch/occupancy sensor).

Exceptions:

Areas designated as security or emergency areas that must be continuously illuminated.

Lighting in stairways or corridors that are elements of the means of egress.

5. Master switch at entry to hotel/motel guest room.
 6. Individual dwelling units separately metered.
 7. Each space provided with a manual control to provide uniform light reduction by at least 50%.

Exceptions:

Only one luminaire in space;

An occupant-sensing device controls the area;

The area is a corridor, storeroom, restroom, public lobby or guest room;

Areas that use less than 0.6 Watts/sq.ft.

8. Automatic lighting shutoff control in buildings larger than 5,000 sq.ft.

Exceptions:

Areas with only one luminaire, corridors, storerooms, restrooms, or public lobbies.

9. Photocell/astronomical time switch on exterior lights.

Exceptions:

Lighting intended for 24 hour use.

- 10. Tandem wired one-lamp and three-lamp ballasted luminaires (No single-lamp ballasts).

Exceptions:

Electronic high-frequency ballasts; Luminaires on emergency circuits or with no available pair.

Section 4: Compliance Statement

Compliance Statement: The proposed lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 2003 IECC, Chapter 8, requirements in COMcheck Version 3.7.1 and to comply with the mandatory requirements in the Requirements Checklist.

MICHAEL W. HALL

Name - Title

Signature

Date



Interior Lighting Application Worksheet

2003 IECC

Section 1: Allowed Lighting Power Calculation

A	B Floor Area	C Allowed Watts / ft2	D Allowed Watts
Hotel Function	52289	1	52289
Total Allowed Watts =			52289

Section 2: Proposed Lighting Power Calculation

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Hotel Function (52289 sq.ft.)				
Compact Fluorescent 9: D03: Stairs / Twin Tube 13W / Electronic	2	22	26	572
HID 1: D28: Pool Room Walls-Uplight / Ceramic Metal Halide 150W / Standard	1	8	180	1440
Compact Fluorescent 14: D72 and LM407: Fireplace sides / Quad 4-pin 13W / Electronic	2	3	26	78
Compact Fluorescent 10: D73 and PG407: Corridor Sconce / Quad 2-pin 13W / Electronic	1	34	13	442
Compact Fluorescent 11: D74 and BL400: Library Pendant / Triple 4-pin 26W / Electronic	1	4	26	104
Compact Fluorescent 12: D78 and LM409: Lobby, Breakfast Pendant / Triple 4-pin 13W / Electronic	5	2	65	130
Incandescent 3: D80 and LM412: Elevator Lobby Flush Pendant / Incandescent 60W	2	2	120	240
Compact Fluorescent 13: D84 and LM401: Public Restroom Vanity / Twin Tube 18W / Electronic	3	2	54	108
HID 2: D125: Track at "Market" / Ceramic Metal Halide 39W / Standard	3	1	120	120
Incandescent 4: O-01: Utility Globe Vaporproof / Incandescent 100W	1	16	100	1600
Linear Fluorescent 1: D26 and X406: Guest Bath Ceiling Surface / 48" T8 32W / Electronic	1	77	32	2464
Linear Fluorescent 2: D70 and X401: Guest Vanity ADA / 24" T8 17W / Electronic	2	5	34	170
Linear Fluorescent 3: D71 and X408: Guest Vanity / 48" T8 32W / Electronic	2	72	64	4608
Compact Fluorescent 1: D81 and X404: Guest Wall Sconce / Quad 2-pin 26W / Electronic	1	25	26	650
Compact Fluorescent 2: D81A and X404A: Guest Wall Sconce ADA / Quad 2-pin 26W / Electronic	1	3	26	78
Linear Fluorescent 4: D82 and X407: Guest Entry Ceiling Surface / 24" T12U 40W / Electronic	1	77	40	3080
Compact Fluorescent 3: D139 and X409: Guest Suite Wall Sconce / Quad 2-pin 13W / Electronic	1	49	13	637
Incandescent 1: R26: Guest Suite Bed Soffit Recessed / Incandescent 50W	1	120	50	6000
Compact Fluorescent 4: F19: Guest Minibar / Twin Tube 13W / Electronic	1	51	13	663
Compact Fluorescent 5: R16: Main Recessed / Triple 4-pin 32W / Electronic	1	154	32	4928
Compact Fluorescent 6: R17: Wall Wash Recessed / Triple 4-pin 32W / Electronic	1	6	32	192
Halogen 1: R20: Fireplace Niche Recessed / Halogen MR-16 50W	1	2	50	100
Incandescent 2: R26: Meeting Room Recessed / Incandescent 50W	1	9	50	450
Compact Fluorescent 7: R30: Guest Door Corridor Recessed / Triple 4-pin 18W / Electronic	1	80	18	1440
Linear Fluorescent 5: F05: Meeting Room Troffer 2x2 / 24" T5 40W / Electronic	3	20	120	2400
Linear Fluorescent 6: F07: Strip Ceiling Surface / 48" T8 32W / Electronic	2	36	64	2304
Linear Fluorescent 7: F09: Troffer 2x4 / 48" T8 32W / Electronic	4	3	128	384
Compact Fluorescent 8: F19: Break Room Undercounter / Twin Tube 13W / Electronic	1	3	13	39
Linear Fluorescent 8: F30: Exercise Room / 46" T5 28W / Electronic	2	4	56	224
Linear Fluorescent 9: D82 and X407: Guest Entry Ceiling Surface / 24" T12U 40W / Electronic	1	2	40	80

Section 3: Compliance Calculation

If the Total Allowed Watts minus the Total Proposed Watts is greater than or equal to zero, the building complies.

Total Allowed Watts = 52289
Total Proposed Watts = 35725
Project Compliance = 16564

Interior Lighting PASSES: Design 32% better than code.



Mechanical Compliance Certificate

2003 IECC

Section 1: Project Information

Project Type: **New Construction**

Project Title : 2008-9, Fairfield Inn & Suites, Fredericksburg

Construction Site:
513 Friendship Lane
Fredericksburg, TX 78624

Owner/Agent:
Harish Patel

Designer/Contractor:
TX

Section 2: General Information

Building Location (for weather data): **Fredericksburg, Texas**
Climate Zone: **5a**
Heating Degree Days (base 65 degrees F): **2012**
Cooling Degree Days (base 65 degrees F): **2286**

Section 3: Mechanical Systems List

Quantity System Type & Description

- 1 HVAC System 1: Heating: Radiant Heater, Electric, Capacity 12 kBtu/h / Cooling: Packaged Terminal Unit, Capacity 12 kBtu/h, Efficiency: 10.00 EER, Air-Cooled Condenser / Single Zone

Section 4: Requirements Checklist

Requirements Specific To: HVAC System 1 :

1. Equipment minimum efficiency: Packaged Terminal DX Unit: 9.9 EER

Generic Requirements: Must be met by all systems to which the requirement is applicable:

1. Load calculations per ASHRAE Fundamentals
2. Plant equipment and system capacity no greater than needed to meet loads
- Exception: Standby equipment automatically off when primary system is operating
 - Exception: Multiple units controlled to sequence operation as a function of load
3. Minimum one temperature control device per system
4. Minimum one humidity control device per installed humidification/dehumidification system
5. Automatic shut-off dampers on exhaust systems and supply systems with airflow >3,000 cfm
6. Outside-air source for ventilation; system capable of reducing OSA to required minimum
7. Hot water pipe insulation: 1 in. for pipes <=1.5 in. and 2 in. for pipes >1.5 in. Chilled water/refrigerant/brine pipe insulation: 1 in. for pipes <=1.5 in. and 1.5 in. for pipes >1.5 in. Steam pipe insulation: 1.5 in. for pipes <=1.5 in. and 3 in. for pipes >1.5 in.
- Exception: Piping within HVAC equipment.
 - Exception: Fluid temperatures between 55 and 105 degrees F.
 - Exception: Fluid not heated or cooled with renewable energy.
 - Exception: Runouts <4 ft in length.
8. Operation and maintenance manual provided to building owner
9. Thermostatic controls have 5 degrees F deadband
- Exception: Thermostats requiring manual changeover between heating and cooling
 - Exception: Special occupancy or special applications where wide temperature ranges are not acceptable and are approved by the authority having jurisdiction.

- 10. Stair and elevator shaft vents are equipped with motorized dampers

Section 5: Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2003 IECC requirements in COMcheck Version 3.7.1 and to comply with the mandatory requirements in the Requirements Checklist.

MICHAEL W. HALL

Name - Title

Signature

Date



COMcheck Software Version 3.7.1

Mechanical Requirements Description

2003 IECC

The following list provides more detailed descriptions of the requirements in Section 4 of the Mechanical Compliance Certificate.

Requirements Specific To: HVAC System 1 :

1. The specified heating and/or cooling equipment is covered by ASHRAE 90.1 Code and must meet the following minimum efficiency:
Packaged Terminal DX Unit: 9.9 EER

Generic Requirements: Must be met by all systems to which the requirement is applicable:

1. Design heating and cooling loads for the building must be determined using procedures in the ASHRAE Handbook of Fundamentals or an approved equivalent calculation procedure.
2. All equipment and systems must be sized to be no greater than needed to meet calculated loads. A single piece of equipment providing both heating and cooling must satisfy this provision for one function with the capacity for the other function as small as possible, within available equipment options.
 - Exception: The equipment and/or system capacity may be greater than calculated loads for standby purposes. Standby equipment must be automatically controlled to be off when the primary equipment and/or system is operating.
 - Exception: Multiple units of the same equipment type whose combined capacities exceed the calculated load are allowed if they are provided with controls to sequence operation of the units as the load increases or decreases.
3. Each heating or cooling system serving a single zone must have its own temperature control device.
4. Each humidification system must have its own humidity control device.
5. Outdoor-air supply systems with design airflow rates >3,000 cfm of outdoor air and all exhaust systems must have dampers that are automatically closed while the equipment is not operating.
6. The system must supply outside ventilation air as required by Chapter 4 of the International Mechanical Code. If the ventilation system is designed to supply outdoor-air quantities exceeding minimum required levels, the system must be capable of reducing outdoor-air flow to the minimum required levels.
7. All pipes serving space-conditioning systems must be insulated as follows: Hot water piping for heating systems: 1 in. for pipes \leq 1 1/2-in. nominal diameter, 2 in. for pipes >1 1/2-in. nominal diameter. Chilled water, refrigerant, and brine piping systems: 1 in. insulation for pipes \leq 1 1/2-in. nominal diameter, 1 1/2 in. insulation for pipes >1 1/2-in. nominal diameter. Steam piping: 1 1/2 in. insulation for pipes \leq 1 1/2-in. nominal diameter, 3 in. insulation for pipes >1 1/2-in. nominal diameter.
 - Exception: Pipe insulation is not required for factory-installed piping within HVAC equipment.
 - Exception: Pipe insulation is not required for piping that conveys fluids having a design operating temperature range between 55 degrees F and 105 degrees F.
 - Exception: Pipe insulation is not required for piping that conveys fluids that have not been heated or cooled through the use of fossil fuels or electric power.
 - Exception: Pipe insulation is not required for runout piping not exceeding 4 ft in length and 1 in. in diameter between the control valve and HVAC coil.
8. Operation and maintenance documentation must be provided to the owner that includes at least the following information: a) equipment capacity (input and output) and required maintenance actions b) equipment operation and maintenance manuals c) HVAC system control maintenance and calibration information, including wiring diagrams, schematics, and control sequence descriptions; desired or field-determined set points must be permanently recorded on control drawings, at control devices, or, for digital control systems, in programming comments d) complete narrative of how each system is intended to operate.
9. Thermostats controlling both heating and cooling must be capable of maintaining a 5 degrees F deadband (a range of temperature where no heating or cooling is provided).
 - Exception: Deadband capability is not required if the thermostat does not have automatic changeover capability between heating and cooling.
 - Exception: Special occupancy or special applications where wide temperature ranges are not acceptable and are approved by the authority having jurisdiction.
10. Stair and elevator shaft vents must be equipped with motorized dampers capable of being automatically closed during normal building operation and interlocked to open as required by fire and smoke detection systems. All gravity outdoor air supply and exhaust hoods, vents, and ventilators must be equipped with motorized dampers that will automatically shut when the spaces served are not in use.
 - Exception: Gravity (non-motorized) dampers are acceptable in buildings less than three stories in height above grade.

- Exception: Ventilation systems serving unconditioned spaces.