

**ERRATA SHEET FOR FIRST PRINTING AND REPRINT 2/02  
ANSI/ASHRAE/IESNA STANDARD 90.1-2001 (SI edition)  
Energy Standard for Buildings Except Low-Rise Residential Buildings**

**March 23, 2007**

The corrections listed in this errata sheet apply to the first printing and reprint of ANSI/ASHRAE/IESNA Standard 90.1-2001, SI edition. The outside back cover marking identifying the reprint is “86247 PC 2/02” and is blank for the first edition. Shaded items have been added since the previously published errata sheet dated April 20, 2005 was distributed.

**More than one errata sheet may be required for a specific document. Please review the entire list on the ASHRAE website related to the applicable document and download all that apply.**

**NOTICE:** ASHRAE now has a list server for Standing Standards Project Committee 90.1 (SSPC 90.1). Interested parties can now subscribe and unsubscribe to the list server and be automatically notified via e-mail when activities and information related to the Standard and the User’s Manual is available. To sign up for the list server please visit **Standards List Servers** on the Standards and Codes section of the ASHRAE website at <http://www.ashrae.org/publications/detail/15620>.

**Page(s)    Erratum**

- 5        **Section 3.2 Definitions.** Delete the “*Design A*”, “*Design B*”, “*Design E*” definitions in Section 3.2.
  
- 17       **Section 4.4.6 Packaged Terminal Air Conditioners.** Delete “16 in.” and “42 in.” in the first sentence. These are the corresponding I-P units and should not be included.
  
- 22       **Table 5.3.2.3, SHGC Multipliers for Permanent Projections.** In the first column titled “Projection Factor” change all of the inequality signs from less than “<” to greater than “>”.
  
- 24       **Section 6. Heating, Ventilation, and Air Conditioning.** To be consistent throughout Section 6 (and with ASHRAE Standard 62) change all references to the term “outside air” to “outdoor air”. At minimum this affects Sections 6.1.3c, 6.1.3e, 6.2.3.2.4, Exception to 6.2.3.2.4(a), 6.2.3.3.3, 6.2.3.8, 6.3.1.1.1, 6.3.1.1.3, 6.3.1.1.4, 6.3.1.1.5, 6.3.1.2.1, Exception to 6.3.1.2.1, Exception to 6.3.2.1(a), 6.3.2.2.2a, 6.3.4.3, 6.3.6.1 and Table 6.3.1.1.3B.
  
- 25       **TABLE 6.1.3 Eliminate Required Economizer by Increasing Cooling Efficiency.** In footnote “a” change the “0.2” value to “0.0586”.
  
- 26       **Table 6.2.1A, Unitary Air Conditioners and Condensing Units, Electrically Operated, Minimum Efficiency Requirements.** In the sixth column titled “Test Procedure<sup>b</sup>” for equipment types “Air Conditioners, Air Cooled” and “Air Conditioners, Water and Evaporatively Cooled” change the test procedure for the size category “≥19kW and <40kW” from “ARI 210/240” to “ARI 340/360”.
  
- 28       **Table 6.2.1B, Unitary and Applied Heat Pumps, Electrically Operated, Minimum**

**Efficiency Requirements.** In the sixth column titled “Test Procedure<sup>b</sup>” for equipment types “Air Cooled (Cooling Mode)” and “Air Cooled (Heating Mode)” change the test procedure for the size category “≥19kW and <40kW” from “ARI 210/240” to “ARI 340/360”.

- 35 **Table 6.2.1K IPLV/NPLV for Centrifugal Chillers < 528 kW.** For “Leaving Chilled Water Temperature” of 6.7°C and “Entering Condenser Water Temperature” of 23.9°C (3<sup>rd</sup> row) add the NPLV value “5.67” for the Condenser Flow Rate of 10.2 l/min·kW.
- 35 **Table 6.2.1K IPLV/NPLV for Centrifugal Chillers < 528 kW.** For “Leaving Chilled Water Temperature” of 5.6°C and an “Entering Condenser Water Temperature” of 26.7°C (12<sup>th</sup> row) change the “LIFT” from “21.7°C” to “21.1°C” (3<sup>rd</sup> column).
- 35,36, and 37 **Tables 6.2.1K, 6.2.1L and 6.2.1M IPLV/NPLV for Centrifugal Chillers.** In footnote “b” delete “gpm/ton” immediately following “15.3 l/min·kW”.
- 43 **Table 6.2.4.2.1A (Table 6.2.4.3A in earlier editions) Minimum Duct Seal Level.** Change the word “definition” to “description” in footnote “a”.
- 47 **Section 6.3.3.1 Fan Power Limitation.** In the equation for “Allowable Fan System Power” change the formulas for the air flow variables and their definitions as follows:
- (Note: Deletions are shown in strikethrough and additions are shown in underline)*
- Table 6.3.3.1 Fan Power Limitation = Table Value x  $\frac{\text{CFM}_h \text{ L/S}_n}{1000}$
- Relief Fan Credit  $\text{HP}$  (kW) =  $F_R \text{ HP}$  (kW) x [1 - ( $\frac{\text{CFM}_{RF} \text{ L/S}_{RF}}{\text{CFM}_h \text{ L/S}_n}$ )]
- $\text{CFM}_h \text{ L/S}_n$  = supply air volume of the unit with the filtering system (L/s)
- $\text{CFM}_{HR} \text{ L/S}_{HR}$  = supply air volume of heat recovery coils or direct evaporative humidified/cooler (L/s)
- $\text{CFM}_{RF} \text{ L/S}_{RF}$  = relief fan air volume at normal cooling design operation (L/s)
- 50 **Table 7.2.2 Performance Requirements for Water Heating Equipment.** For Gas Instantaneous Water Heaters relocate the superscript “c” from size category “>14.66 kW and <58.62 kW” to size category “≥58.62 kW” so it now reads “≥58.62 kW<sup>c</sup>”. In addition, change the existing size category “>58.62 kW” to read “≥58.62 kW”.
- 59 **Table 10.2, Minimum Nominal Efficiency for General Purpose Design A and Design B Motors.** The terms “Design A” and “Design B” in the title should not be italicized. Also, add the following text to the current footnote “a” in Table 10.2: “Design A and Design B are National Electric Manufacturers Association (NEMA) design class designations for fixed frequency small and medium AC squirrel-cage induction motors.”
- 66 **Section 12 Normative References.** Change reference “ARI 310/380-93” to “ARI 310/380-2004”.

- 72 **Table A-5 (Section A3.1) Assembly U-Factors for Above-Grade Concrete Walls and Masonry Walls.** Revise the Framing Type as shown:

“25 mm metal clips at ~~24 in.~~ 600 mm on center horizontally and 400 mm vertically.”

(Note: Deletions are shown in strikethrough)

- 78 **Section A3.4 Wood-Framed Walls.** In Section A3.4b *Advanced Framing* change “.572 mm” to “572 mm”.

- 82, 83 and 84 **Tables A-13, A-14, and A-15.** In the third column change the heading from “Overall U-Factor for Entire Base Wall Assembly” to “Overall U-Factor for the Entire Base Floor Assembly”.

- 123 **Section C6.3 HVAC.** Change the terms in Equation C-3 as follows:

(Note: Deletions are shown in strikethrough and additions are shown in underline)

$$\text{HVAC}_{\text{surface}} = \text{COOL} + \text{HEAT} \quad (\text{C-3})$$

where

COOL = cooling factor for the surface calculated according to the appropriate equation in ~~C-14, C-19, or C-22~~ C-14, C-19, or C-22

HEAT = heating factor for the surface calculated according to the appropriate equation in ~~C-16, C-18, or C-23~~ C-16, C-18, or C-23

- 124 **Section C6.7 Delta Load Factors for Mass Walls in the Exterior Building Envelope.** Change Equations CP<sub>7</sub> and CP<sub>8</sub> to read as follows:

$$\text{CP}_7 = C_{19} / (A_C^2 B^2) + C_{20} / (A_C B) + C_{21} A_C^2 / \sqrt{B} + C_{22}$$

$$\text{CP}_8 = C_8 / (A_C^2 B^2) + C_9 / (A_C B) + C_{10} A_C^2 / \sqrt{B} + C_{11}$$

Also in Section C6.7 (page 125) change Equation HP<sub>7</sub> to read as follows:

$$\text{HP}_7 = H_{17} / A_H^3 + H_{18}$$

- 125 **Section C6.7 Delta Load Factors for Mass Walls in the Exterior Building Envelope.** Change the last paragraph of Section C6.7 (below Table C6.7B) as follows:

(Note: Deletions are shown in strikethrough and additions are shown in underline)

The coefficients H<sub>1</sub> through H<sub>18</sub> depend on the position of the insulation in the wall and are taken from Table C6.7B. If the *U-factor* of mass wall is greater than ~~0.4 Btu/(h·ft<sup>2</sup>·°F)~~ 2.3 W/(m<sup>2</sup>·K), then the *U-factor* shall be set to ~~0.4 Btu/(h·ft<sup>2</sup>·°F)~~ 2.3 W/(m<sup>2</sup>·K). If the *U-factor* of the mass wall is less than ~~0.05 Btu/(h·ft<sup>2</sup>·°F)~~ 0.28 W/(m<sup>2</sup>·K), then the *U-Factor* shall be set to ~~0.05 Btu/(h·ft<sup>2</sup>·°F)~~ 0.28 W/(m<sup>2</sup>·K). If the wall heat capacity (HC) of the mass wall is greater than ~~20 Btu/(ft<sup>2</sup>·°F)~~ 409 kJ/(m<sup>2</sup>·K), then HC = ~~20 Btu/(ft<sup>2</sup>·°F)~~ 409 kJ/(m<sup>2</sup>·K) shall be used.

126 **Section C6.8.1 Effective Internal Gain.** In Equation C-13 change the “x” sign to a “+” sign so that the equation now reads “ $G = EPD + LPD_{adj_{zone}}$ ”.

129 **C6.10.1 U-Factor fir Below-Grade Walls.** Change Equation C-20 to read as follows:

$$U\text{-factor} = 1 / ((1 / C\text{-factor}) + 0.85 + R_{soil})$$

153 **Table D-2 Canadian Climatic Data.** The SI edition of Standard 90.1 incorrectly included I-P climatic data in Table D-2. See Table D-2 for changes (attached). Table changed to reflect SI units.  
*(Note: Additions are shown in underline and deletions are shown in strikethrough.)*

154 **Table D-2 Canadian Climatic Data.** Relocate the city “Resolute A” (including all associated climate data) from providence “Northwest Territories (NW)” to a new providence “Nunavut” and locate the new providence and city between “Nova Scotia (NS)” and “Ontario (ON)” in Table D-2.

**Table D-2  
Canadian Climatic Data**

Province City	Latitude	Longitude	Elev. (m)	HDD18	CDD10	Heating Design Temperature	Cooling Design Temperature	
						99.6%	Dry- Bulb	Wet- Bulb
						99.6%	1.0%	1.0%
<b>Alberta (AB)</b>								
Calgary International A	51.12 N	114.02 W	3533 1076	9,885 5,492	4,167 648	-22 -30	80 27	59 15
Edmonton International A	53.30 N	113.58 W	2345 714	11,023 6,124	4,069 594	-28.4 -33	78 26	63 17
Grande Prairie A	55.18 N	118.88 W	2185 665	11,240 6,244	4,034 573	-32 -36	78 26	60 16
Lethbridge A	49.63 N	112.80 W	3047 928	8,783 4,879	4,730 961	-22 -30	84 29	64 16