

**ERRATA SHEET FOR FIRST AND SECOND PRINTING
ANSI/ASHRAE/IESNA STANDARD 90.1-1999 (I-P edition)
Energy Standard for Buildings Except Low-Rise Residential Buildings**

December 15, 2001

The corrections listed in this errata sheet apply to the first and second printing of ASHRAE/IESNA Standard 90.1-1999, I-P edition. The outside back cover marking identifying the first printing is “GG 1/00” and is “GG 1/01” for the second printing. The shaded items have been added since the previous published errata sheet dated August 20, 2001 was distributed and since the ANSI approved version of the standard (second printing) was printed in January 2001. Erratum identified with an asterisk “*” have already been incorporated into the editions printed January 2001 and later.

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/STANDARDS/listservers.htm>.

Page Erratum

- Cover John K. Holton was incorrectly identified as a member of voting status (*) when
* the document was approved for publication.
- 15* **Section 4.1.2.2(b).** The term “design professional” should be italicized.
- 22* **Table 5.3.2.3.** In the second column of the header, replace “All Orientations”
with “All Other Orientations”.
- 26 **Table 6.2.1A, Electrically Operated Unitary Air Conditioners and
Condensing Units-Minimum Efficiency Requirements.** Under Air
Conditioners, Water, and Evaporatively Cooled, change the inequality sign for
“> 240,000 Btu/h” to “≥ 240,000 Btu/h”.
- 28 **Table 6.2.1B, Electrically Operated Unitary and Applied Heat Pumps -
Minimum Efficiency Requirements.** Under column 3, titled ‘**Subcategory or
Rating Condition**’, rows 18 and 19, corresponding to ‘**Equipment Type**’, Air
Cooled (Heating Mode), add “17°F db/15°F wb Outdoor Air”, directly below
“47°F db/43°F wb Outdoor Air”. Under columns 4 and 5, row 18, Size Category
≥65,000 BTU/h and < 135,000 BTU/h (Cooling Capacity), corresponding to the
“17°F db/15°F wb Outdoor Air”, add “2.0 COP” as the Minimum Efficiency and
“2.2 COP” as the Efficiency as of 10/29/2001. Under columns 4 and 5, row 19,
Size Category ≥ 135,000 Btu/h (Cooling Capacity), corresponding to the “17°F

db/15°F wb Outdoor Air”, add “2.0 COP” as the Minimum Efficiency and “2.0 COP” as the Efficiency as of 10/29/2001.

- 30* **Table 6.2.1D.** Incorrect values are shown for efficiencies in the first four rows of the fourth and fifth columns. Replace “10.02.93” with “10.0” in the first four rows of the fourth column. Replace “12.53.66” with “12.5”, “10.93.19” with “10.9”, “12.33.60” with “12.3”, and “10.83.16” with “10.8” in the first four rows of the fifth column, respectively. In the tenth row of the fifth column, delete the “2” after 9.7EER.
- 31* **Table 6.2.1F.** Second column; rows 2, 6, and 9. The “<” symbol preceding 300,000 Btu/h should be replaced with “≥”.
- Table 6.2.1F. Third column; rows 3, 7, and 10: insert “Minimum Capacity^{***}” below existing text “Maximum Capacity^{***}”. Fourth column; rows 3, 7 and 10: insert “80% E_c”, “83% E_c”, and “83% E_c”, respectively, to correspond with the “Minimum Capacity^{***}” text in the third column.
- 33 **Table 6.2.1I, COPs and IPLVs for Non-Standard Centrifugal Chillers <150 tons, £300 tons:** In the title and in the first row of the table, replace “<150 tons,” with “≥150 tons,”.
- 37 **Table 6.2.4.2A, Minimum Duct Insulation R-Value,* Cooling and Heating Only Supply Ducts and Return Ducts:** In the first column titled “**Envelop Criteria Table**”, change “Envelop” to “Envelope” in the title and change the envelope table designations from “5-1 through 5-26” to “B-1 through B-26”.
- 38 **Table 6.2.4.2B, Minimum Duct Insulation R-Value,* Combined Heating and Cooling Ducts:** In the first column titled “**Envelop Criteria Table**”, change the envelope table designations from “5-1 through 5-26” to “B-1 through B-26”.
- 43* **Section 6.3.3.** In the third line, replace “6.3.3.3” with “6.3.3.2”.
- 43 **Exceptions to 6.3.2.1 Zone Controls.** In Exceptions to 6.3.2.1 (c) italicize the terms “site-recovered” and “site solar energy” and add a hyphen between the word “site” and “solar” as follows: “*site-recovered*” and “*site-solar energy*”.
- 44* **Table 6.3.3.1.** In the first column, third row; replace “≥ 20,000 cfm⁹” with “≥ 20,000 cfm”.
- 44 **Section 6.3.3.1 Fan Power Limitation.** Following the Allowable Fan System Power equation change the term “Temperature Ratio = (T_{t-stat} – T_s)/20 (11.1)” to “Temperature Ratio = (T_{t-stat} – T_s)/20”.
- 47* **Table 7.2.2.** In the fifth column titled “Performance Required 10/29/2001”, in rows 3, 6, 7, 10,12,13,16, 18, and 19 (nine places), change the symbol “√” in

each equation to a square root.

58* **Section 11.4.1.** In the first sentence that reads, “The *budget building design* shall...”, change “11.4” to “11.3”.

58 **Section 11.4.1.** In the second sentence that reads, “Except as specifically instructed...”, change “11.3” to “11.4”. (This erratum applies only to those editions of the standard printed in January 2001, or later)

74 **TABLE A-9 (Section A3.2), Assembly U-Factors for Metal Buildings.** In the seventh column under **R-16.8, for Single Layer of Mineral Fiber, R-10**, change the Overall U-Factor from “0.051” to “0.041”.

79 **TABLE A-14 (Section A5.3), Assembly U-Factors for Steel Joist Floors.** In the title of the first row, second column, change “(effective installed)” to “(effective installed [see Table A-20])”.

79 **TABLE A-14 (Section A5.3), Assembly U-Factors for Steel Joist Floors.** In the second column change the cavity insulation effective installed R-values as follows:

Under heading “**Steel Joist Floor with Spray-on Insulation**”

For R-4 change “(4.0)” to “(3.88)”

For R-8 change “(8.0)” to “(7.52)”

For R-12 change “(12.0)” to “(10.80)”

For R-16 change “(16.0)” to “(13.92)”

For R-20 change “(20.0)” to “(17.00)”

For R-24 change “(24.0)” to “(19.68)”

Under heading “**Steel Joist Floor with Batt Insulation**”

For R-11 change “(11.0)” to “(10.01)”

For R-13 change “(13.0)” to “(11.70)”

For R-15 change “(15.0)” to “(13.20)”

For R-19 change “(18.0)” to “(16.34)”

For R-21 change “(21.0)” to “(17.64)”

For R-25 change “(25.0)” to “(20.25)”

For R-30C change “(30.0)” to “(23.70)”

For R-30 change “(30.0)” to “(23.70)”

For R-38C change “(38.0)” to “(28.12)”

For R-38 change “(38.0)” to “(28.12)”

91- **Tables B-1 to B-26.** Reformat all six columns titled “Assembly Maximum” and 116* Insulation Min. R-Value” so the values are aligned left.

93 **Table B-3, Building Envelope Requirements (HDD65: 0-900, CDD50: 7201-**

- 9000).** Under **Opaque Elements**, Roofs, Attic and Other, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-30.0” to “R-38.0”.
- 94 **Table B-4, Building Envelope Requirements (HDD65: 0-900, CDD50: 0-7200).** Under **Fenestration**, Vertical Glazing 40.1-50.0 % of Wall, in the second column (under Nonresidential) titled “**Assembly Max. SHGC (All Orientations/North-Oriented)**”, change “ $SHGC_{north-0.47}$ ” to “ $SHGC_{north-0.46}$ ”.
- 94 **Table B-4, Building Envelope Requirements (HDD65: 0-900, CDD50: 0-7200).** Under **Fenestration**, Vertical Glazing 40.1-50.0 % of Wall, in the second column (under Residential) titled “**Assembly Max. SHGC (All Orientations/North-Oriented)**”, change “ $SHGC_{north-0.47}$ ” to “ $SHGC_{north-0.46}$ ”.
- 97 **Table B-7, Building Envelope Requirements (HDD65: 901-1800, CDD50: 0-5400).** Under **Opaque Elements**, Roofs, Insulation Entirely above Deck, in the first column (under Semiheated) titled “**Assembly Maximum**”, change “U-0.282” to “U-0.218”.
- 99 **Table B-9, Building Envelope Requirements (HDD65: 1801-2700, CDD50: 0-5400).** Under **Opaque Elements**, Roofs, Attic and Other, in the first column (under Residential) titled “**Assembly Maximum**”, change “U-0.027” to “U-0.034”.
- 99 **Table B-9, Building Envelope Requirements (HDD65: 1801-2700, CDD50: 0-5400).** Under **Opaque Elements**, Walls, Above Grade, Metal Building, in the second column (under Semiheated) titled “**Insulation Min. R-value**”, change “NR” to “R-6.0”.
- 100 **Table B-10, Building Envelope Requirements (HDD65: 2701-3600, CDD50: 5401+).** Under **Fenestration**, Vertical Glazing 10.1-20.0 % of Wall, in the second column (under Residential) titled “**Assembly Max. SHGC (All Orientations/North-Oriented)**”, change “ $SHGC_{all-0.25}$ ” to “ $SHGC_{all-0.39}$ ”.
- 102 **Table B-12, Building Envelope Requirements (HDD65: 2701-3600, CDD50: 0-3600).** Under **Opaque Elements**, Floors, Wood Framed and Other, in the first column (under Residential) titled “**Assembly Maximum**”, change “U-0.033” to “U-0.051”.
- 103 **Table B-13, Building Envelope Requirements (HDD65: 3601-5400, CDD50: 3601+).** Under **Fenestration**, Skylight with Curb, Glass, % of Roof, 0-2.0%, in the first column (under Residential) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.17}$ ” to “ $U_{all-0.98}$ ”.
- 103 **Table B-13, Building Envelope Requirements (HDD65: 3601-5400, CDD50: 3601+).** Under **Fenestration**, Skylight with Curb, Glass, % of Roof, 2.1-5.0%, in

- the first column (under Residential) titled “**Assembly Max. U (Fixed/ Operable)**”, change “ $U_{all-1.17}$ ” to “ $U_{all-0.98}$ ”.
- 103 **Table B-13, Building Envelope Requirements (HDD65: 3601-5400, CDD50: 3601+)**. Under **Fenestration**, Skylight without Curb, All, % of Roof, 0-2.0%, in the first column (under Residential) titled “**Assembly Max. U (Fixed/ Operable)**”, change “ $U_{all-0.69}$ ” to “ $U_{all-0.58}$ ”.
- 103 **Table B-13, Building Envelope Requirements (HDD65: 3601-5400, CDD50: 3601+)**. Under **Fenestration**, Skylight without Curb, All, % of Roof, 2.1-5.0%, in the first column (under Residential) titled “**Assembly Max. U (Fixed/ Operable)**”, change “ $U_{all-0.69}$ ” to “ $U_{all-0.58}$ ”.
- 104 **Table B-14, Building Envelope Requirements (HDD65: 3601-5400, CDD50: 1801-3600)**. Under **Fenestration**, Skylight with Curb, Glass, % of Roof, 0-2.0%, in the second column (under Residential) titled “**Assembly Max. SHGC (All Orientations/North-Oriented)**”, change “ $SHGC_{all-0.36}$ ” to “ $SHGC_{all-0.49}$ ”.
- 104 **Table B-14, Building Envelope Requirements (HDD65: 3601-5400, CDD50: 1801-3600)**. Under **Fenestration**, Skylight with Curb, Glass, % of Roof, 2.1-5.0%, in the second column (under Residential) titled “**Assembly Max. SHGC (All Orientations/North-Oriented)**”, change “ $SHGC_{all-0.19}$ ” to “ $SHGC_{all-0.39}$ ”.
- 104 **Table B-14, Building Envelope Requirements (HDD65: 3601-5400, CDD50: 1801-3600)**. Under **Fenestration**, Skylight with Curb, Plastic, % of Roof, 0-2.0%, in the second column (under Residential) titled “**Assembly Max. SHGC (All Orientations/North-Oriented)**”, change “ $SHGC_{all-0.27}$ ” to “ $SHGC_{all-0.77}$ ”.
- 104 **Table B-14, Building Envelope Requirements (HDD65: 3601-5400, CDD50: 1801-3600)**. Under **Fenestration**, Skylight with Curb, Plastic, % of Roof, 2.1-5.0%, in the second column (under Residential) titled “**Assembly Max. SHGC (All Orientations/North-Oriented)**”, change “ $SHGC_{all-0.27}$ ” to “ $SHGC_{all-0.34}$ ”.
- 104 **Table B-14, Building Envelope Requirements (HDD65: 3601-5400, CDD50: 1801-3600)**. Under **Fenestration**, Skylight without Curb, All, % of Roof, 0-2.0%, in the second column (under Residential) titled “**Assembly Max. SHGC (All Orientations/North-Oriented)**”, change “ $SHGC_{all-0.36}$ ” to “ $SHGC_{all-0.49}$ ”.
- 104 **Table B-14, Building Envelope Requirements (HDD65: 3601-5400, CDD50: 1801-3600)**. Under **Fenestration**, Skylight without Curb, All, % of Roof, 2.1-5.0%, in the second column (under Residential) titled “**Assembly Max. SHGC (All Orientations/North-Oriented)**”, change “ $SHGC_{all-0.19}$ ” to “ $SHGC_{all-}$ ”.

0.39”.

- 105 **Table B-15, Building Envelope Requirements (HDD65: 3601-5400, CDD50: 0-1800).** Under **Fenestration**, Skylight with Curb, Plastic, % of Roof, 0-2.0%, in the first column (under Residential) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.30}$ ” to “ $U_{all-1.10}$ ”.
- 105 **Table B-15, Building Envelope Requirements (HDD65: 3601-5400, CDD50: 0-1800).** Under **Fenestration**, Skylight with Curb, Plastic, % of Roof, 2.1-5.0%, in the first column (under Residential) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.30}$ ” to “ $U_{all-1.10}$ ”.
- 106 **Table B-16 Building Envelope Requirements (HDD65: 5401-7200, CDD50: 3601+).** Under **Opaque Elements**, Walls, Above Grade, Mass, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-7.6 ci” to “R-11.4 ci”.
- 106 **Table B-16, Building Envelope Requirements (HDD65: 5401-7200, CDD50: 3601+).** Under **Fenestration**, Skylight with Curb, Glass, % of Roof, 0-2.0%, in the first column (under Residential) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.17}$ ” to “ $U_{all-0.98}$ ”.
- 106 **Table B-16, Building Envelope Requirements (HDD65: 5401-7200, CDD50: 3601+).** Under **Fenestration**, Skylight with Curb, Glass, % of Roof, 2.1-5.0%, in the first column (under Residential) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.17}$ ” to “ $U_{all-0.98}$ ”.
- 106 **Table B-16, Building Envelope Requirements (HDD65: 5401-7200, CDD50: 3601+).** Under **Fenestration**, Skylight without Curb, All, % of Roof, 0-2.0%, in the first column (under Residential) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-0.69}$ ” to “ $U_{all-0.58}$ ”.
- 106 **Table B-16, Building Envelope Requirements (HDD65: 5401-7200, CDD50: 3601+).** Under **Fenestration**, Skylight without Curb, All, % of Roof, 2.1-5.0%, in the first column (under Residential) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-0.69}$ ” to “ $U_{all-0.58}$ ”.
- 108 **Table B-18, Building Envelope Requirements (HDD65: 5401-7200, CDD50: 0-1800).** Under **Fenestration**, Skylight with Curb, Plastic, % of Roof, 0-2.0%, in the first column (under Nonresidential) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.30}$ ” to “ $U_{all-1.10}$ ”.
- 108 **Table B-18, Building Envelope Requirements (HDD65: 5401-7200, CDD50: 0-1800).** Under **Fenestration**, Skylight with Curb, Plastic, % of Roof, 2.1-5.0%, in the first column (under Nonresidential) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.30}$ ” to “ $U_{all-1.10}$ ”.

- 109 **Table B-19, Building Envelope Requirements (HDD65: 7201-9000, CDD50: 1801+).** Under **Opaque Elements**, Slab-On-Grade Floors, Heated, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-10.0” to “R-10.0 Full”.
- 110 **Table B-20, Building Envelope Requirements (HDD65: 7201-9000, CDD50: 0-1800).** Under **Opaque Elements**, Slab-On-Grade Floors, Heated, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-10.0” to “R-10.0 Full”.
- 111 **Table B-21, Building Envelope Requirements (HDD65: 9001-10800, CDD50: 1801+).** Under **Opaque Elements**, Walls, Above Grade, Mass, in the second column (under Nonresidential) titled “**Insulation Min. R-value**”, change “R-9.5 ci” to “R-11.4 ci”.
- 111 **Table B-21, Building Envelope Requirements (HDD65: 9001-10800, CDD50: 1800+).** Under **Opaque Elements**, Slab-On-Grade Floors, Heated, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-10.0” to “R-10.0 Full”.
- 111 **Table B-21, Building Envelope Requirements (HDD65: 9001-10800, CDD50: 1801+).** Under **Opaque Elements**, Walls Above Grade for Metal Buildings, in the second column (under Nonresidential) titled “**Assembly Maximum**”, change “U-0.1057” to “U-0.057”.
- 111 **Table B-21, Building Envelope Requirements (HDD65: 9001-10800, CDD50: 1801+).** Under **Fenestration**, Vertical Glazing 10.1-20 % of Wall, in the second column (under Nonresidential) titled “**Assembly Max. SHGC (All Orientations/North-Oriented)**”, change “SHGC_{all}-0.46” to “SHGC_{all}-0.36” and “SHGC_{north}-0.36” to “SHGC_{north}-0.46”.
- 112 **Table B-22, Building Envelope Requirements (HDD65: 9001-10800, CDD50: 0-1800).** Under **Opaque Elements**, Wall, Below Grade, Below Grade Wall, in the second column (under Nonresidential) titled “**Insulation Min. R-value**”, change “NR” to “R-7.5 ci”.
- 112 **Table B-22, Building Envelope Requirements (HDD65: 9001-10800, CDD50: 0-1800).** Under **Opaque Elements**, Slab-On-Grade Floors, Heated, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-10.0” to “R-10.0 Full”.
- 113 **Table B-23, Building Envelope Requirements (HDD65: 10801-12600, CDD50: 0+).** Under **Opaque Elements**, Slab-On-Grade Floors, Heated, in the first column (under Nonresidential) titled “**Assembly Maximum**”, change “F-0.8550” to “F-0.550”.

- 113 **Table B-23, Building Envelope Requirements (HDD65: 10801-12600, CDD50: 0+).** Under **Opaque Elements**, Slab-On-Grade Floors, Heated, in the second column (under Nonresidential) titled “**Insulation Min. R-value**”, change “R-10.0” to “R-10.0 Full”.
- 113 **Table B-23, Building Envelope Requirements (HDD65: 10801-12600, CDD50: 0+).** Under **Opaque Elements**, Slab-On-Grade Floors, Heated, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-10.0” to “R-15.0 Full”.
- 113 **Table B-23, Building Envelope Requirements (HDD65: 10801-12600, CDD50: 0+).** Under **Fenestration**, Skylight with Curb, Plastic, % of Roof, 0-2.0%, in the first column (under Semiheated) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.90}$ ” to “ $U_{all-1.30}$ ”.
- 113 **Table B-23, Building Envelope Requirements (HDD65: 10801-12600, CDD50: 0+).** Under **Fenestration**, Skylight with Curb, Plastic, % of Roof, 2.1-5.0%, in the first column (under Semiheated) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.90}$ ” to “ $U_{all-1.30}$ ”.
- 113 **Table B-23, Building Envelope Requirements (HDD65: 10801-12600, CDD50: 0+).** Under **Fenestration**, Footnote at bottom of page, change “Exception 6.3.1.2a applies” to “Exception 5.3.1.2a applies”.
- 114 **Table B-24, Building Envelope Requirements (HDD65: 12601-16200, CDD50: 0+).** Under **Opaque Elements**, Roofs, Metal Building, in the second column (under Nonresidential) titled “**Insulation Min. R-value**”, change “R-13.0 + R-13.0” to “R-13.0 + R-19.0”.
- 114 **Table B-24, Building Envelope Requirements (HDD65: 12601-16200, CDD50: 0+).** Under **Opaque Elements**, Roofs, Metal Building, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-13.0 + R-13.0” to “R-13.0 + R-19.0”.
- 114 **Table B-24, Building Envelope Requirements (HDD65: 12601-16200, CDD50: 0+).** Under **Opaque Elements**, Slab-On-Grade Floors, Heated, in the second column (under Nonresidential) titled “**Insulation Min. R-value**”, change “R-10.0” to “R-10.0 Full”.
- 114 **Table B-24, Building Envelope Requirements (HDD65: 12601-16200, CDD50: 0+).** Under **Opaque Elements**, Slab-On-Grade Floors, Heated, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-15.0” to “R-15.0 Full”.
- 114 **Table B-24, Building Envelope Requirements (HDD65: 12601-16200,**

- CDD50: 0+).** Under **Fenestration**, Skylight with Curb, Glass, % of Roof, 0-2.0%, in the first column (under Semiheated) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.98}$ ” to “ $U_{all-1.30}$ ”.
- 114 **Table B-24, Building Envelope Requirements (HDD65: 12601-16200, CDD50: 0+).** Under **Fenestration**, Skylight with Curb, Glass, % of Roof, 2.1-5.0%, in the first column (under Semiheated) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.98}$ ” to “ $U_{all-1.30}$ ”.
- 114 **Table B-24, Building Envelope Requirements (HDD65: 12601-16200, CDD50: 0+).** Under **Fenestration**, Skylight with Curb, Plastic, % of Roof, 0-2.0%, in the first column (under Semiheated) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.90}$ ” to “ $U_{all-1.10}$ ”.
- 114 **Table B-24, Building Envelope Requirements (HDD65: 12601-16200, CDD50: 0+).** Under **Fenestration**, Skylight with Curb, Plastic, % of Roof, 2.1-5.0%, in the first column (under Semiheated) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.90}$ ” to “ $U_{all-1.10}$ ”.
- 114 **Table B-24, Building Envelope Requirements (HDD65: 12601-16200, CDD50: 0+).** Under **Fenestration**, Skylight with Curb, All, % of Roof, 0-2.0%, in the first column (under Semiheated) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.36}$ ” to “ $U_{all-0.81}$ ”.
- 114 **Table B-24, Building Envelope Requirements (HDD65: 12601-16200, CDD50: 0+).** Under **Fenestration**, Skylight with Curb, All, % of Roof, 2.1-5.0%, in the first column (under Semiheated) titled “**Assembly Max. U (Fixed/Operable)**”, change “ $U_{all-1.36}$ ” to “ $U_{all-0.81}$ ”.
- 114 **Table B-24, Building Envelope Requirements (HDD65: 12601-16200, CDD50: 0+).** Footnote at bottom of page, change “Exception 6.3.1.2a applies” to “Exception 5.3.1.2a applies”.
- 115 **Table B-25, Building Envelope Requirements (HDD65: 16201-19800, CDD50: 0+).** Under **Opaque Elements**, Roofs, Metal Building, in the second column (under Nonresidential) titled “**Insulation Min. R-value**”, change “ $R-13.0 + R-13.0$ ” to “ $R-13.0 + R-19.0$ ”.
- 115 **Table B-25, Building Envelope Requirements (HDD65: 16201-19800, CDD50: 0+).** Under **Opaque Elements**, Roofs, Metal Building, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “ $R-13.0 + R-13.0$ ” to “ $R-13.0 + R-19.0$ ”.
- 115 **Table B-25, Building Envelope Requirements (HDD65: 16201-19800, CDD50: 0+).** Under **Opaque Elements**, Walls, Above Grade, Metal Building, in the first column (under Residential) titled “**Assembly Maximum**”, change “U-

- 0.057” to “U-0.055”.
- 115 **Table B-25, Building Envelope Requirements (HDD65: 16201-19800, CDD50: 0+).** Under **Opaque Elements**, Walls, Above Grade, Metal Building, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-13.0 + R-13.0” to “R-16.0 + R-13.0”.
- 115 **Table B-25, Building Envelope Requirements (HDD65: 16201-19800, CDD50: 0+).** Under **Opaque Elements**, Wall, Below Grade, Below Grade Wall, in the first column (under Residential) titled “**Assembly Maximum**”, change “C-0.119” to “C-0.075”.
- 115 **Table B-25, Building Envelope Requirements (HDD65: 16201-19800, CDD50: 0+).** Under **Opaque Elements**, Wall, Below Grade, Below Grade Wall, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-7.5 ci” to “R-12.5 ci”.
- 115 **Table B-25, Building Envelope Requirements (HDD65: 16201-19800, CDD50: 0+).** Under **Opaque Elements**, Slab-On-Grade Floors, Heated, in the second column (under Nonresidential) titled “**Insulation Min. R-value**”, change “R-15.0” to “R-15.0 Full”.
- 115 **Table B-25, Building Envelope Requirements (HDD65: 16201-19800, CDD50: 0+).** Under **Opaque Elements**, Slab-On-Grade Floors, Heated, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-15.0” to “R-15.0 Full”.
- 116 **Table B-26, Building Envelope Requirements (HDD65: 19801+, CDD50: 0+).** Under **Opaque Elements**, Walls, Above Grade, Metal Building, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-13.0 + R-16.0” to “R-16.0 + R-13.0”.
- 116 **Table B-26, Building Envelope Requirements (HDD65: 19801+, CDD50: 0+).** Under **Opaque Elements**, Slab-On-Grade Floors, Heated, in the second column (under Nonresidential) titled “**Insulation Min. R-value**”, change “R-15.0” to “R-15.0 Full”.
- 116 **Table B-26, Building Envelope Requirements (HDD65: 19801+, CDD50: 0+).** Under **Opaque Elements**, Slab-On-Grade Floors, Heated, in the second column (under Residential) titled “**Insulation Min. R-value**”, change “R-20.0” to “R-20.0 Full”.

- 125 **Section C6.10.1.** Change Equation C-20 from

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

to

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

The following errata applies to **Table D-1, U.S. Climate Data**, which starts on page 125:

- 125* Move the title and introductory paragraph for Normative Appendix D, Climate Data, from the bottom of page 125 to the top of page 126 just prior to the start of Table D-1, U.S. Climate Data.
- 126* Alaska (AK): Climate data is misplaced for the first, second, third, and sixth locations (Anchorage, Barrow, Fairbanks, and Nome). For these locations, the values in the final four columns should be shifted one column to the left, and the final column should have the values "521", "N.A.", "682", and "210" inserted, respectively.
- 126- Center the data under the heading "CDD50" for states: Alabama (AL), Alaska
129* (AK), Arizona (AZ), Arkansas (AR), California (CA), and Colorado (CO).
- 127* Arkansas (AR): The longitude of Ft. Smith, AR is "94.37".
- 129* Florida (FL): Climate data is misplaced for Key West. For this location, the values in the final three columns should be shifted one column to the left, and the final column should have the value "N.A." inserted.
- 135- Minnesota (MN): Climate data is misplaced for the third, seventh, and twelfth
136* locations (Bemidji Airport, International Falls, and Virginia). For these locations, the values in the final four columns should be shifted one column to the left, and the final column should have the values "N.A.", "656" and "N.A." inserted, respectively.
- 138* New Jersey (NJ): Shown as subheadings for New Hampshire. The state heading should be moved further left with a horizontal line inserted above.
- 139* North Carolina (NC): For Durham, replace "B-1336.03" with "B-13".
- 146* Virginia (VA): Shown as subheadings for Vermont. The state heading should be moved further left with a horizontal line inserted above.

The following errata applies to **Table D-3, International Climate Data**, which starts on page 152:

- 152* Change the second column heading to "Province or Region" (throughout table).
- 157* Puerto Rico: Climate data should be shifted one column to the left, and the final column should have the value "78" inserted.

- 158- The table heading should be formatted with a double-underline.
159*
- 158* South Africa: Shown as subheading for Singapore (page 157). The country heading, South Africa, should have a horizontal line inserted above it.