

Errata

First Printing of ASCE 7-02 Minimum Design Loads for Buildings and Other Structures

This errata sheet contains confirmed errata as of **June 28, 2007**. Additional errata will be added as they are identified. We apologize for any inconvenience.

Errata Posted on June 28, 2007

Chapter 6, Section 6.5.12.4.3, page 29:

Revise Section 6.5.12.4.3 as shown below:

6.5.12.4.3 Alternative Design Wind Pressures for Components and Cladding in Buildings with 60 ft (18.3 m) < h < 90 ft (27.4 m). Alternative to the requirements of Section 6.5.12.4.2, the design of components and cladding for buildings with a mean roof height greater than 60 ft (18.3 m) and less than 90 ft (27.4 m) values from Figs. 6-11 through ~~6-15~~ ~~6-17~~ shall be used only if the height to width ratio is one or less (except as permitted by Note 6 of Fig. 6-17) and Eq. 6-22 is used.

INTRODUCTORY PAGES

Page i: Delete the words “Special Edition containing provisions referenced in the International Building Code”

Page iii: Change the second sentence of the paragraph as follows:

All such standards are developed by a consensus process managed by the Codes and Standards Activities Committee (CSAC) Management Group F (MGF), Codes and Standards.

Page vii: Add Joseph P. Hartman to list of committee members; correct the spelling of Sanjeev Malushte’s last name – the “h” is missing.

Page vii: Correct spelling of first name of Ravindra as Mayasandra.

SECTION 6 – WIND LOADS

Page 24: Revise the definition of **Glazing, Impact Resistant** as follows (add “E” before “1996”):

Glazing, impact resistant: glazing which has been shown by testing in accordance with ASTM E 1886 [6-1] and ASTM E 1996 [6-2] or other approved test methods to withstand the impact of wind borne missiles likely to be generated in wind borne debris regions during design winds.

Page 30, Section 6.5.8.2: Revise the formula for R_ℓ when $\ell = B$ to read “ $R_\ell = R_B$ setting $\eta = 4.6n_1B/\bar{V}_z$ ” (the value “B” is missing from the right-hand side of the equation).

Page 30, Section 6.5.8.2: Revise the text immediately following Eq. 6-13b and text for β to read as follows:

where the subscript ℓ in Eq. 6-13 shall be taken as h, B, and L respectively where h, B, L are defined in Section 6.3.

β = damping ratio, percent of critical ~~h, B, L are defined in Section 6.3;~~ and

Page 33: Revise Equation 6-21 of Section 6.5.12.3 as follows (include “1 + ” in the denominator:

$$e = \frac{e_Q + 1.7 I_z \sqrt{(g_Q Q e_Q)^2 + (g_R R e_R)^2}}{1 + 1.7 I_z \sqrt{(g_Q Q)^2 + (g_R R)^2}} \quad (\text{Eq. 6-21})$$

Page 34: Revise Item 3 of Section 6.6.2 as follows:

3. the modeled building or other structure and surrounding structures and topography are geometrically similar to their full-scale counterparts, except that, for low-rise buildings meeting the requirements of Section 6.5.1, tests shall be permitted for the modeled building in a single exposure site as defined in ~~Section 6.5.6.1~~ 6.5.6.3;

Page 51, Figure 6-6 (con’t): In the table, for Wind Direction “Normal to ridge for $\theta < 10$ an Parallel to ridge for all θ ” in the section for $h/L \leq 0.5$, change the second range shown under “Horiz distance from windward edge” from “H/2 to h” to “h/2 to h” (change the capital “H” to a lowercase “h”).

Page 51, Figure 6-6 (con’t): The area associated with the Reduction Factor of 0.9 should be 250 sq ft rather than 200 sq ft.

Page 56, Figure 6-10 (con’t): Change the title block to read “**External Pressure Coefficients, G_{C_p}** ” (the G is missing in the title block).

Page 56, Figure 6-10 (con’t): add the words “to the ridge line” between the word “extending” and the word “shall” in Note 8.

Page 57, Figure 6-11A: Change the title block to read “**External Pressure Coefficients, G_{C_p}** ” (the subscript on the C in the title block should be “p” not “p’”).

SECTION 7 – SNOW LOADS

Page 77: Remove the definition of “L” – this term is not used in Section 7.

Page 80: Section 7.7.2 – revise the last sentence to read:

The separation distance, s , between the roof and adjacent structure or terrain feature shall reduce applied drift loads on the lower roof by the factor $(20 - s) / 20$ where s is in ft (**$[6.1 - s] / 6.1$ where s is in m**).

{add a minus sign between the “20” and the “s” in the first equation and between the “6.1” and the “s” in the metric equivalent equation. Also reverse the “[” and the “(“ at the beginning of the metric equivalent equation}

Page 80: Remove the comma at the end of the second line of Section 7.10 so that the sentence reads as follows:

For locations where p_g is 20 lb/ft² (0.96 kN/m²) or less, but not zero, all roofs with a slope less than 1/2 in./ft (2.38°) shall have a 5 lb/ft² (0.24 kN/m²) rain-on-snow surcharge load applied to establish the design snow loads.

Page 84, Figure 7-2: In portion 7-2a of the figure, change the text shown in the figure as follows (change the second “30” to “20”):

Unobstructed Slippery Surfaces with $R \geq 30^*$ (5.3**) for Unventilated Roofs or $R \geq 20^*$ ~~30*~~ for Ventilated Roofs

And change the sub-headings as follows:

7-2a: Warm roofs with $C_t < 1.0$ $C_t \leq 1.0$ *{change the subscript to a “t” and change < to ≤}*

7-2b: Cold roofs with $C_t = 1.1$ $C_t = 1.1$ *{change the subscript to a “t”}*

7-2c: Cold roofs with $C_t = 1.2$ $C_t = 1.2$ *{change the subscript to a “t”}*

SECTION 9 – EARTHQUAKE LOADS

Page 96, Section 9.1.2.4.1: Change the first sentence of the section to read as follows (remainder of section is unchanged):

9.1.2.4.1 New Buildings New buildings and structures shall be designed and constructed in accordance with the quality assurance requirements of Section 9.4.3 ~~9.2.1~~.

Section 9.2.1, Definitions: Change the following definitions as shown below:

Gravity load (W): The total dead load and applicable portions of other loads as defined in Section 9.5.3 ~~9.5.3.2~~.

Designated seismic systems: The seismic force-resisting system and those architectural, electrical, and mechanical systems or their components that require design in accordance with Section 9.6.1 and for which the component importance factor, I_p , is > 1.0 . *(Staff note: the change is the addition of the “greater than” sign between the word “is” and “1.0.”)*

Live load: The load superimposed by the use and occupancy of the building not including the wind load, earthquake load, or dead load; see Section 9.5.3 ~~9.5.3.2~~.

Seismic design category: A classification assigned to a structure based on its Seismic Use Group and the severity of the design earthquake ground motion at the site as defined in Section 9.4.2 ~~9.1.2.5~~.

Seismic response coefficient: Coefficient C_s as determined from Section 9.5.5.2.1 ~~9.5.3.2.1~~.

Story drift: The difference of horizontal deflections at the top and bottom of the story as determined in Section 9.5.5.7.1 ~~9.5.3.7.1~~.

Story drift ratio: The story drift, as determined in Section 9.5.5.7.1 ~~9.5.3.7.1~~, divided by the story height.

Page 107, Section 9.4.1.2: Change the first sentence to read as follows:

9.4.1.2 General Procedure for Determining Maximum Considered Earthquake and Design Spectral Response Accelerations The mapped maximum considered earthquake spectral response acceleration at short periods (S_s) and at 1 sec (S_1) shall be determined ~~respectively~~ from Figures 9.4.1.1(a) through 9.4.1.1(j) ~~Spectral Acceleration Maps 1 through 32~~.

Pages 115 to 127: Change the headings of the titles of the maps as follows:

Page 115 – remove the word “- continued”

Pages 133 - 135, Heading of Table 9.5.2.2: Change symbol for System Overstrength Factor from “ W_o ” to “ Ω_o ” and change the superscript on Seismic Design Category E from an “e” to a “d” so that footnote d applies to SDC E.

Page 135 – in Note e change the referenced section from 9.5.2.2.4.5 to 9.5.2.2.4.1.

Page 135 – in Note g change symbol for System Overstrength Factor from “ W_o ” to “ Ω_o ”.

Page 136, Section 9.5.2.2.4.1. Add clarification as shown below:

9.5.2.2.4.1 Increased Building Height Limit The height limits in Table 9.5.2.2 are permitted to be increased from 160 ft (50 m) to 240 ft (75 m) in buildings that have steel braced frames or concrete cast-in-place shear walls and that meet the requirements of this section. In such buildings the braced frames or cast-in-place special reinforced concrete shear walls in any one plane shall resist no more than 60% of the total seismic forces in each direction, neglecting torsional effects. The seismic force in any braced frame or shear wall in any one plane resulting from torsional effects shall not exceed 20% of the total seismic force in that braced frame or shear wall.

Page 138, Table 9.5.2.3.3: Revise Type 4 and 5 as follows:

4.	<p>In-Plane Discontinuity in Vertical Lateral Force-Resisting Elements: In-plane discontinuity in vertical lateral force-resisting elements shall be considered to exist where an in-plane offset of the lateral force-resisting elements is greater than the length of those elements or there exists a reduction in stiffness of the resisting element in the story below.</p>	<p>9.5.2.5.1 and 9.5.2.6.2.11</p> <p><u>9.5.2.6.4.2</u></p>	<p>B, C, D, E, and F</p> <p>D, E, and F</p>
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5.	Discontinuity in Lateral Strength - Weak Story: A weak story is one in which the story lateral strength is less than 80 percent of that in the story above. The story strength is the total strength of all seismic-resisting elements sharing the story shear for the direction under consideration.	9.5.2.6.2.2	B, C, D, E, and F
		9.5.2.5.3	D, E, and F
		9.5.2.6.5.1	E and F

Page 139: Revise Section 9.5.2.5 as follows:

9.5.2.5.1 Analysis Procedures The structural analysis required by Section ~~5.2.5~~ 9.5.2.5 shall consist of one of the types permitted in Table 9.5.2.5.1, based on the structure's Seismic Design Category, structural system, dynamic properties and regularity, or with the approval of the authority having jurisdiction, an alternative generally accepted procedure shall be permitted to be used.

Page 143: Revise the Exception in Section 9.5.2.6.3.1 as follows:

Exception: In structures or portions thereof braced entirely by light-frame shear walls, collector elements, splices, and connections to resisting elements need only be designed to resist forces in accordance with Section ~~9.5.2.5.4~~, 9.5.2.6.4.4.

Page 144: Revise the first sentence of the second paragraph of Section 9.5.2.6.4.2 as follows:

For structures having a plan structural irregularity of Type 1, 2, 3, or 4 in Table 9.5.2.3.2 or a vertical structural irregularity of Type 4 in Table 9.5.2.3.3, the design forces determined from Section ~~9.5.3.2~~ 9.5.5.2 shall be increased 25% for connections of diaphragms to vertical elements and to collectors and for connections of collectors to the vertical elements.

Page 144: Section 9.5.2.7, revise the sentences immediately preceding Eqs. 9.5.2.5-1 and 9.5.2.5-2 as follows:

for load combination 5 in Section 2.3.2 or load combinations ~~4~~ 5 and 6 in Section 2.4.1:

$$E = \rho Q_E + 0.2 S_{DS}D \quad (\text{Eq. 9.5.2.7-1})$$

for load combination ~~6~~ 7 in Section 2.3.2 or load combination ~~3~~ 8 in 2.4.1:

$$E = \rho Q_E - 0.2 S_{DS}D \quad (\text{Eq. 9.5.2.7-2})$$

Page 145, Section 9.5.2.7.1: Revise the section as shown below:

9.5.2.7.1 Special Seismic Load Where specifically indicated in this standard, the special seismic load of Eq. 9.5.2.7.1-1 shall be used to compute E for use in load combination 5 in Section 2.3.2 or load combinations ~~3~~ 5 and 6 in 2.4.1 and the special seismic load of Eq. 9.5.2.7.1-2 shall be used to compute E in load combination 7 in Section 2.3.2 or load combination ~~5~~ 8 in Section 2.4.1:

$$E = \Omega_0 Q_E + 0.2 S_{DS}D \quad (\text{Eq. 9.5.2.7.1-1})$$

$$E = \Omega_0 Q_E - 0.2 S_{DS}D \quad (\text{Eq. 9.5.2.7.1-2})$$

The value of the quantity $\Omega_o Q_E$ in Eqs. 9.5.2.7.1-1 and 9.5.2.7.1-2 need not be taken greater than the capacity of other elements of the structure to transfer force to the component under consideration.

Where allowable stress design methodologies are used with the special load of this section applied in load combinations ~~3 or 5~~ **5, 6 or 8** of Section 2.4.1, allowable stresses are permitted to be determined using an allowable stress increase of 1.2. This increase shall not be combined with increases in allowable stresses or load combination reductions otherwise permitted by this standard or the material reference standard except that combination with the duration of load increases permitted in Ref. 9-12.1 is permitted.

Page 145, Section 9.5.2.8: Revise the section as shown below:

9.5.2.8 Deflection, Drift Limits and Building Separation: The design story drift (Δ) as determined in Sec. 9.5.5.7 or 9.5.6.6, shall not exceed the allowable story drift (Δ_a) as obtained from Table 9.5.2.8 for any story. For structures with significant torsional deflections, the maximum drift shall include torsional effects. All portions of the structure shall be designed and constructed to act as an integral unit in resisting seismic forces unless separated structurally by a distance sufficient to avoid damaging contact under total deflection (δ_x) as determined in Sec. ~~9.5.3.7.1~~ 9.5.5.7.1.

Page 149:

Section 9.5.5.7.1: Revise the third and fourth paragraphs as shown below:

The elastic analysis of the seismic force-resisting system shall be made using the prescribed seismic design forces of Section ~~9.5.3.4~~ 9.5.5.4. For the purpose of this section, the value of the base shear, V , used in Eq. ~~9.5.3.2~~ 9.5.5.2-1 need not be limited by the value obtained from Eq. 9.5.5.2.1-3.

For determining compliance with the story drift limitation of Section 9.5.2.8, the deflections at the center of mass of Level x (δ_x) (in. or mm) shall be calculated as required in this section. For the purposes of this drift analysis only, the upper-bound limitation specified in Section ~~9.5.3.3~~ 9.5.5.3 on the computed fundamental period, T , in sec, of the building does not apply for computing forces and displacements.

Section 9.5.5.7.2: Revise the definition for Δ to read:

Δ = the design story drift as defined in Section ~~9.5.3.7.1~~ 9.5.5.7.1 occurring simultaneously with V_x , (in. or mm)

Page 154, Equation 9.5.9.2.1-2: Change equation by adding a “ Δ ” at the beginning as shown below:

Existing Equation:

$$V = \left[C_s - \tilde{C}_s \left(\frac{0.05}{\tilde{\beta}} \right)^{0.4} \right] \bar{W} \leq 0.3V$$

Revised Equation:

$$\Delta V = \left[C_s - \tilde{C}_s \left(\frac{0.05}{\tilde{\beta}} \right)^{0.4} \right] \bar{W} \leq 0.3V$$

Page 154, Section 9.5.9.2.1.1: Change the first sentence by adding a “ \sim ” above the symbol “ T ” as follows:

9.5.9.2.1.1 Effective Building Period The effective period (\tilde{T}) shall be determined as follows:
(remainder of section is unchanged)

Page 163: Section 9.6.2.4.1d: Revise the equation reference as follows:

- d. All fasteners in the connecting system such as bolts, inserts, welds, and dowels and the body of the connectors shall be designed for the force (F_p) determined by ~~Eq. 9.6.1.3-2~~ **Eq. 9.6.1.3-1** with values of R_p and a_p taken from Table 9.6.2.2 applied at the center of mass of the panel.

Page 168: The reference referred to in paragraph a of Section 9.6.3.11.4 should be Ref. 9.6-15 not Ref. 9.6-14.

Page 169: Delete Section 9.6.3.11.4-d-4 - This paragraph is pre-empted by the Exceptions listed in Section 9.6.1 and therefore is never applicable.

Page 174: Section 9.9, modify reference 9.9-1 as follows:

Reference 9.9-1 American Concrete Institute, *Building Code Requirements for Structural Concrete*, ACI 318-02. ~~excluding Appendix A, 1992.~~

Page 177, Section 9.13.3.3.2: Revise definition of W as follows:

W = total seismic dead load weight of the structure above the isolation interface as defined in Sections 9.5.3 ~~9.5.3.2 and 9.5.5.3~~ (kip or kN)

Page 187: Modify Ref. 9.14-3 as follows:

Ref. 9.14-3 American Concrete Institute (ACI). (~~1999~~ 2001). “Standard Practice for the Seismic Design of Liquid-Containing Concrete Structures.” *ACI 350.3/350.3R*. Detroit, Mich.

Page 190: In Table 9.14.5.1.1, revise a portion of the table as shown below:

Nonbuilding Structure Type	R	Ω_0	C_d	Structural System and Height Limits (ft) ^b			
				Seismic Design Category			
				A & B	C	D	E & F

Nonbuilding Structure Type	R	Ω_0	C_d	Structural System and Height Limits (ft) ^b			
				Seismic Design Category			
				A & B	C	D	E & F
Flat bottom, ground supported tanks, or vessels:							
Anchored (welded or bolted steel)	3	2	2-1/2	NL	NL	NL	NL
Unanchored (welded or bolted steel)	2-1/2	2	2	NL	NL	NL	NL
Reinforced or pre-stressed concrete:							
Tanks with reinforced nonsliding base	2	2	2	NL	NL	NL	NL
Tanks with anchored flexible-base	3	2	2	NL	NL	NL	NL
Tanks with unanchored and unconstrained:							
Flexible base	1-1/2	1-1/2	1-1/2	NL	NL	NL	NL
Other material	1-1/2	1-1/2	1-1/2	NL	NL	NL	NL
<u>Tanks with unanchored and unconstrained flexible base:</u>	<u>1 1/2</u>	<u>1 1/2</u>	<u>1 1/2</u>	<u>NL</u>	<u>NL</u>	<u>NL</u>	<u>NL</u>
<u>Other material:</u>	<u>1 1/2</u>	<u>1 1/2</u>	<u>1 1/2</u>	<u>NL</u>	<u>NL</u>	<u>NL</u>	<u>NL</u>

Page 193, Section 9.14.6.3 item 3: Change referenced section as follows:

3. For storage racks located at or below grade, the value of C_S used shall not be less than 0.14 S_{DS} . For storage racks located above grade, the value of C_S used shall not be less than the value for F_p determined in accordance with Section 9.6.2.4.1c ~~9.6.2~~ of this standard where R_p is taken as equal to R from Ref. 9.14-25 and a_p is taken as equal to 2.5.

Page 199, Section 9.14.7.3.7.1 c : Change referenced section as follows:

- c. Sloshing height shall be calculated per Section 9.14.7.3.6.1.2 ~~9.14.7.3.7.1.2~~ instead of Eq. 13-26 of Ref. 9.14-15.

APPENDIX A.9 – SUPPLEMENTAL PROVISIONS

Page 217: Sub-paragraph iv of paragraph 2 of Section A.9.3.1, revise items 4, 5, and 6 as follows (replace the commas with slashes):

- (4) Stiffness irregularity \rightarrow ∠ soft story,
- (5) Stiffness irregularity \rightarrow ∠ extreme soft story,
- (6) Discontinuity in capacity \rightarrow ∠ weak story.

Page 223: Revise Section A.9.8.5.1 as follows: **A.9.8.5.1** ~~Ref. 9.8-4-B~~ Revise ~~A~~ Section A5.1.3 of Ref. 9.8-4 by ... (remainder of section is unchanged).

Page 223: Revise Section A.9.8.4 as follows:

A.9.8.4 Seismic Design Categories D, E and F Steel structures assigned to Seismic design Category D, E and F shall be designed and detailed in accordance with Ref. 9.8-3 Part I or Part III or Section A.9.8.6 for light framed cold-formed steel wall systems.

COMMENTARY

Page 272: Second column, first paragraph, third line: change “refuge” to “refuse.”

Page 288, Loads on Components and Cladding: In third sentence of the first paragraph, change “Figure C6-7” to “Figure C6-4”.

Page 325: Reference C7-58: change the page numbers from 470-471 to 74-79.

Page 326: Reference C7-63: revise as follows:

[C7-63] Tobiasson, W., Buska, J., Grestorex, A., Tirey, J., Fisher, J., and Johnson, S. “Ground snow loads for New Hampshire,” U.S. Army Corps of Engineers, ~~Engineering Engineer~~ Research and Development Center (ERDC), Cold Regions Research and Engineering Laboratory (CRREL) Technical Report ~~ERDL/CRREL~~ ERDC/CRREL TR-02-6, Hanover, NH, ~~2001~~ 2002.

Page 327: Replace Figure C7-3 with the pdf file titled “Corrected Figure C7-3”.

Page 336: Eq. C8-1, revise as follows:

$$Q = 0.0104A_i \quad Q = 0.0104A_i$$

{the “i” should not be a subscript – it is the symbol for the design rainfall intensity}

Page 339, Section C9.0: Revise last sentence of second paragraph to read:

The 2002 edition continues to utilize spectral response seismic design maps that reflect seismic hazards on the basis of contours. These maps were completed by the U.S. Geological Survey (USGS). Since these maps were developed, the USGS also created a companion CD-ROM which provides mapped spectral values for a specific site based on site’s longitude, latitude and site soil classification. Longitude and latitude for a given address can be found at web sites such as www.geocode.com (the EZ locate option). The CD-ROM should be used for establishing spectral values for design since the maps found in ASCE 7 and at web sites are at too large a scale to provide accurate spectral values for most sites. The CD-ROM may be purchased from BSSC. It is provided upon request with the purchase of the International Building Code.