



Minimum Design Loads and Associated Criteria for Buildings and Other Structures

ASCE/SEI 7-16

Errata 1

Effective: July 9, 2018

This document contains errata to the above title, which is posted in the ASCE Library at
<https://doi.org/10.1061/9780784414248>

THIS TYPE AND SIZE FONT INDICATES DIRECTIVE TEXT THAT IS NOT PART OF THE TITLE. CHANGES ARE INDICATED USING STRIKE-OUT AND UNDERLINE TEXT.

Acknowledgments

“SEISMIC TASK SUBCOMMITTEE ON NONLINEAR GENERAL PROVISIONS” AND “SEISMIC TASK COMMITTEE ON SEISMIC ISOLATION” SHOULD ACKNOWLEDGE:

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Chapter 4

IN TABLE 4.3-1, CORRECT THE L_o VALUES AS FOLLOWS:

Roofs

Roof areas used for assembly purposes 100 (~~4.70~~ 4.79)

Vegetative and landscaped roofs

Roof areas used for assembly purposes 100 (~~4.70~~ 4.79)

EXAMPLE

Transsect points, i, toward ocean starting at the Runup Point

Input → Coordinates x_R and z_R of Runup Point

At this location
NAVD-88 4.78 = MHW

Enter Transsect Profile

Ground slope Manning

Friction Slope

Solution for Energy Head, Depth, Velocity

Notes:

- Structures located entirely within inundation depths of 3 ft or less need not be designed for tsunamis
- Scour depth is permitted to be reduced per Section 6.12.2.4.1, where the calculated Froute number is less than 0.5

Calculate from Runup Point along the transect towards the ocean

	x_i (ft)	z_i (ft)	Δx_i (ft)	Δz_i (ft)	ϕ_i (ft)	η_i (ft)	x/x_R	F_R (see note 2)	s_i	$E_{g,i}$ Energy Head (ft)	h_i inundation depth (see note 1) (ft)	u_i (ft/sec)	u_{max} for hydrodynamic forces §6.6.1 (ft/sec)	Inundation Elevation Distance Inland from Shoreline (ft)
0	1506.55	26.87				0.0330	1.0000	0.000000		0.9	0.10	0.0	10.0	26.87
1	1489.1	26.72	16.4	1.14	0.0634	0.0330	0.989	0.104		1.15	1.14	0.6	10.0	26.87
2	1472.1	24.53	16.4	1.20	0.0731	0.0330	0.978	0.148		2.35	2.32	1.3	10.0	26.86
3	1452.2	23.11	16.4	1.42	0.0895	0.0330	0.967	0.181		3.77	3.71	2.0	10.0	26.82
4	1439.8	21.69	16.4	1.42	0.0895	0.0330	0.956	0.209		5.20	5.09	2.7	10.0	26.78
5	1423.4	21.03	16.4	0.66	0.0402	0.0330	0.945	0.234		5.87	5.71	3.2	10.0	26.74
6	1407.0	20.68	16.4	0.37	0.0225	0.0330	0.935	0.256		6.25	6.05	3.6	10.0	26.71
7	1393.6	20.79	16.4	-0.13	-0.0079	0.0330	0.924	0.276		6.12	5.90	3.8	10.0	26.69
8	1374.1	21.29	16.4	-0.50	-0.0305	0.0330	0.913	0.295		5.64	5.40	3.9	10.0	26.69
9	1357.7	21.92	16.4	-0.63	-0.0383	0.0330	0.902	0.313		5.02	4.78	3.9	10.0	26.70
10	1341.3	22.55	16.4	-0.63	-0.0384	0.0330	0.891	0.330		4.40	4.17	3.8	10.0	26.72
11	1324.9	22.89	16.4	-0.34	-0.0207	0.0330	0.880	0.346		4.08	3.85	3.9	10.0	26.74
12	1308.5	22.67	16.4	0.22	0.0134	0.0330	0.869	0.362		4.32	4.05	4.1	10.0	26.72
13	1292.0	22.42	16.4	0.25	0.0152	0.0330	0.858	0.377		4.58	4.28	4.4	10.0	26.70
14	1275.6	21.55	16.4	0.87	0.0530	0.0330	0.847	0.391		5.47	5.09	5.0	10.0	26.64
15	1259.2	20.76	16.4	0.79	0.0481	0.0330	0.836	0.404		6.29	5.81	5.5	10.0	26.57
16	1242.8	19.76	16.4	1.00	0.0609	0.0330	0.825	0.418		7.31	6.72	6.1	10.0	26.48
17	1226.4	18.87	16.4	0.86	0.0542	0.0330	0.815	0.431		8.22	7.52	6.7	10.0	26.39
18	1209.9	18.73	16.4	0.74	0.0451	0.0330	0.804	0.443		8.96	8.18	7.2	10.0	26.31
19	1193.5	17.47	16.4	0.60	0.0402	0.0330	0.793	0.455		9.66	8.75	7.6	10.0	26.22
20	1177.1	16.76	16.4	0.71	0.0432	0.0330	0.782	0.467		10.39	9.37	8.1	10.0	26.13
21	1160.7	16.06	16.4	0.70	0.0406	0.0330	0.771	0.479		11.12	9.97	8.6	10.0	26.03
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Chapter 7

IN COMMENTARY TABLE C7.2-1, CORRECT THE NEW HAMPSHIRE LOCATION AS FOLLOWS:

New Hampshire

All cities

Chapter 12

REVISE SECTION 12.11.2.1 TO REFERENCE SECTION 12.11.1, AS FOLLOWS:

Where the anchorage is not located at the roof and all diaphragms are not flexible, the value from Eq. (12.11-1) is permitted to be multiplied by the factor $(1 + 2z/h)/3$, where z is the height of the anchor above the base of the structure and h is the height of the roof above the base; however, F_p shall not be less than required by Section 12.11.2 12.11.1 with a minimum anchorage force of $F_p = 0.2W_p$.

Chapter 13

REVISE SECTION 13.1.4 ITEMS 5 AND 6 AS FOLLOWS:

5. Mechanical and electrical components in Seismic Design Category C provided that either
 - a. The component Importance Factor, I_p , is equal to 1.0 and the component is positively attached to the structure; or
 - b. The component weighs 20 lb (89 N) or less or, in the case of a distributed system, 5 lb/ft (73 N/m) or less.
6. Discrete mechanical and electrical components in Seismic Design Categories D, E, or F that are positively attached to the structure, provided that either
 - a. The component weighs 400 lb (1,779 N) or less, the center of mass is located 4 ft (1.22 m) or less above the adjacent floor level, flexible connections are provided between the component and associated ductwork, piping, and conduit, and the component Importance Factor, I_p , is equal to 1.0; or
 - b. The component weighs 20 lb (89 N) or less or, in the case of a distributed system, 5 lb/ft (73 N/m) or less; and.

MODIFY SECTION 13.3.2.1 TO DEFINE THE TERMS USED IN EQS. (13.3-7) AND (13.3-8), AS FOLLOWS:

13.3.2.1 Displacements within Structures. For two connection points on the same structure A or the same structural system, one at a height h_x and the other at a height h_y , D_p shall be determined as

$$D_p = \Delta\delta_{xA} - \Delta\delta_{yA} \quad (13.3-7)$$

where

D_p = relative seismic displacement that the component must be designed to accommodate;

δ_{xA} = deflection at building level x of structure A, determined in accordance with Eq. (12.8-15);

δ_{yA} = deflection at building level y of structure A, determined in accordance with Eq. (12.8-15).

Alternatively, D_p is permitted to be determined using modal procedures described in Section 12.9, using the difference in story deflections calculated for each mode and then combined using appropriate modal combination procedures. D_p is not required to be taken as greater than

$$D_p = \frac{(h_x - h_y) \Delta_{aA}}{h_{sx}} \quad (13.3-8)$$

where

Δ_{aA} = allowable story drift for structure A as defined in Table 12.12-1;

h_{sx} = story height used in the definition of the allowable drift Δ_a in Table 12.12-1.

MODIFY SECTION 13.5.9.1 AS FOLLOWS:

13.5.9.1 General. Glass in glazed curtain walls, glazed storefronts, and glazed partitions shall meet the relative displacement requirement of Eq. (13.5-2):

$$\Delta_{\text{fallout}} \geq 1.25 D_{pl} \quad (13.5-2)$$

or 0.5 in. (13 mm), whichever is greater, where:

Δ_{fallout} = the relative seismic displacement (drift) at which glass fallout from the curtain wall, storefront wall, or partition occurs (Section 13.5.9.2);

D_{pl} = the relative seismic displacement that the component must be designed to accommodate (Section 13.3.2) (D_{pl} shall be applied over the height of the glass component under consideration); and

I_e = the Importance Factor determined in accordance with Section 11.5.1.

MODIFY TABLE 13.6-1 AS FOLLOWS:

- Under “Mechanical and Electrical Components,” insert a row for “Manufacturing or process conveyors (nonpersonnel)” with $a_p^a = 2 \frac{1}{2}$, $R_p^b = 3$, and $\Omega_0^c = 2$.
- Under “Distribution Systems,” change all three instances of “ductwork” to “duct systems”.
- Under “Distribution Systems,” change “Electrical conduit and cable trays” to “Electrical conduit, cable trays, and raceways”

MODIFY SECTION 13.6.6 AS FOLLOWS:

13.6.6 Distribution Systems: Duct Systems. HVACR and other duct systems shall be designed for seismic forces and seismic relative displacements as required in Section 13.3.

EXCEPTIONS: The following exceptions pertain to ductwork not designed to carry toxic, highly toxic, or flammable gases or not used for smoke control:

1. Design for the seismic forces and relative displacements of Section 13.3 shall not be required for duct systems with $I_p = 1.0$ where flexible connections or other assemblies are provided to accommodate the relative displacement between the duct system and associated components, the duct system is positively attached to the structure, and where one of the following apply:
 - a. Trapeze assemblies with 3/8-in. (10-mm) diameter rod hangers not exceeding 12 in. (305 mm) in length from the duct support point to the connection at the supporting structure are used to support duct, and the total weight supported by any single trapeze is less than 100 lb (445 N) 10 lb/ft (146 N/m) or less, or
 - b. Trapeze assemblies with 1/2-in. (13-mm) diameter rod hangers not exceeding 12 in. (305 mm) in length from the duct support point to the connection at the supporting structure are used to support the duct, and the total weight supported by any single trapeze is 200 lb (890 N) or less, or
 - c. Trapeze assemblies with 1/2-in. (13-mm) diameter rod hangers not exceeding 24 in. (610 mm) in length from the duct support point to the connection at the supporting structure are used to support the duct, and the total weight supported by any single trapeze is 100 lb (445 N) or less, or
 - d. The duct is supported by individual rod hangers 3/8 in. (10 mm) or 1/2 in. (13 mm) in diameter, and each hanger in the duct run is 12 in. (305 mm) or less in length from the duct support point to the connection at the supporting structure, and the total weight supported by any single rod is 50 lb (220 N) or less.
2. Design for the seismic forces and relative displacements of Section 13.3 shall not be required where provisions are made to avoid impact with other ducts or mechanical components or to protect the ducts in the event of such impact, the distribution system is positively attached to the structure, and HVACR ducts have a cross-sectional area of less than 6 ft² (0.557 m²) and weigh 20 lb/ft (292 N/m) or less.

Components that are installed in line with the duct system and have an operating weight greater than 75 lb (334 N), such as fans, terminal units, heat exchangers, and humidifiers, shall be supported and laterally braced independent of the duct system, and such braces shall meet the force requirements of Section 13.3.1. Components that are installed in line with the duct system, have an operating weight of 75 lb (334 N) or less, such as small terminal units, dampers, louvers, and diffusers, and are otherwise not independently braced shall be positively attached with mechanical fasteners to the rigid duct on both sides. Piping and conduit attached to in-line equipment shall be provided with adequate flexibility to accommodate the seismic relative displacements of Section 13.3.2.

MODIFY SECTION 13.6.7.3 AS FOLLOWS:

13.6.7.3 Exceptions. Design for the seismic forces of Section 13.3 shall not be required for piping systems where flexible connections, expansion loops, or other assemblies are provided to accommodate the relative displacement between component and piping, where the piping system is positively attached to the structure, and where one of the following apply:

1. Trapeze assemblies are used to support piping whereby no single pipe exceeds the limits set forth in 5a, 5b, or 5c below and the total weight of the piping supported by the trapeze assemblies is less than 10 lb/ft (146 N/m).
2. Trapeze assemblies are supported by 3/8-in. (10-mm) diameter rod hangers not exceeding 12 in. (305 mm) in length from the pipe support point to the connection at the supporting structure, do not support piping with I_p greater than 1.0, and no single pipe exceeds the limits set forth in items 45a, 45b, or 45c below, and the total weight supported by any single trapeze is 100 lb (445 N) or less, or

- 3.2.** Trapeze assemblies are supported by 1/2-in. (13-mm) diameter rod hangers not exceeding 12 in. (305 mm) in length from the pipe support point to the connection at the supporting structure, do not support piping with I_p greater than 1.0, ~~and~~ no single pipe exceeds the diameter limits set forth in items **45a**, **45b**, or **45c** below, and the total weight supported by any single trapeze is 200 lb (890 N) or less, or
- 4.3.** Trapeze assemblies are supported by 1/2-in. (13-mm) diameter rod hangers not exceeding 24 in. (610 mm) in length from the pipe support point to the connection at the supporting structure, do not support piping with I_p greater than 1.0, ~~and~~ no single pipe exceeds the diameter limits set forth in items **45a**, **45b**, or **45c** below, and the total weight supported by any single trapeze is 100 lb (445 N) or less, or
- 5.4.** Piping that has an R_p in Table 13.6-1 of 4.5 or greater is either supported by rod hangers and provisions are made to avoid impact with other structural or nonstructural components or to protect the piping in the event of such impact, or pipes with $I_p = 1.0$ are supported by individual rod hangers 3/8 in. (10 mm) or 1/2 in. (13 mm) in diameter; where each hanger in the pipe run is 12 in. (305 mm) or less in length from the pipe support point to the connection at the supporting structure; and the total weight supported by any single hanger is 50 lb (220 N) or less. In addition, the following limitations on the size of piping shall be observed:
- In structures assigned to Seismic Design Category C where I_p is greater than 1.0, the nominal pipe size shall be 2 in. (50 mm) or less.
 - In structures assigned to Seismic Design Categories D, E, or F where I_p is greater than 1.0, the nominal pipe size shall be 1 in. (25 mm) or less.
 - In structures assigned to Seismic Design Categories D, E, or F where $I_p = 1.0$, the nominal pipe size shall be 3 in. (80 mm) or less.
- 6.5.** Pneumatic tube systems supported with trapeze assemblies using 3/8-in. (10-mm) diameter rod hangers not exceeding 12 in. (305 mm) in length from the tube support point to the connection at the supporting structure and the total weight supported by any single trapeze is 100 lb (445 N) or less.
- 7.6.** Pneumatic tube systems supported by individual rod hangers 3/8 in. (10 mm) or 1/2 in. (13 mm) in diameter, and each hanger in the run is 12 in. (305 mm) or less in length from the tube support point to the connection at the supporting structure, and the total weight supported by any single rod is 50 lb (220 N) or less.

MODIFY SECTION 13.6.8 TO REFERENCE SECTIONS 13.6.5 THROUGH 13.6.8, AS FOLLOWS:

13.6.8 Distribution Systems: Trapezes with a Combination of Systems. Trapezes that support a combination of distribution systems (electrical conduit, raceway, duct, piping, etc.) shall be designed using the most restrictive requirements for the supported distribution systems from Sections 13.6.5 through 13.6.8 for the aggregate weight of the supported system. If any distribution system on the trapeze is not exempted, the trapeze shall be braced.

MODIFY THE FIFTH PARAGRAPH OF COMMENTARY SECTION C13.3.1 TO REFERENCE SECTIONS 13.3.1.4.1 AND 13.3.1.4.2, AS FOLLOWS:

Dynamic amplification occurs where the period of a nonstructural component closely matches that of any mode of the supporting structure, although this effect may not be significant depending on the