780 CMR 2 through 35

(Tables and Figures only; without exception all are unique to Massachusetts)

Sections replaced, added, or with text modified following the October 13, 2015 BBRS meeting are shown in **blue** font.

Sections where modification is recommended for discussion at the Nov. 10, 2015 BBRS meeting are shown in **orange** font.

Sections where modification occurred during / after the November 10, 2015 BBRS meeting are shown in **purple** font.

CHAPTER 4

TABLE 427.4 FIRE PROTECTION REQUIREMENTS

Commodity Class[1]	Size of High-Piled Display Area[2] (sq. ft.)	Fire Protection Requirements				
		Fire Suppression System (427.5)	Fire Alarm/Notification (427.14)	Fire Department Access Doors (427.8)	Hose Connections (427.7)	Manual Smoke and Heat Vents (427.16)
I-IV	0 to 2,500	NR	NR	NR	NR	NR
	2,501 to 12,000	Yes	NR	NR	NR	NR
	Over 12,000	Yes	Yes	Yes	Yes	Yes
High Hazard	0 to 500	NR	NR	NR	NR	NR
	501 to 2,500	Yes	NR	NR	NR	NR
	2,501 to 12,000	Yes	NR	Yes	Yes	NR
	Over 12,000	Yes	Yes	Yes	Yes	Yes

NR = Not required.

1. For commodity classifications definitions, *see* subsection 427.3.
2. Areas that are separated by 60 ft of display area with such areas not used for high piled storage, or that are separated with a one-hour fire resistance-rated separation barrier, can be considered as separated high piled areas.
3. If the building is required to be sprinklered under this code, then the sprinkler system protecting the high piled storage area and 15 ft beyond shall be designed in accordance with the appropriate NFPA Standard(s).

TABLE 427.13 DENSITY FACTOR FOR HAZARDOUS MATERIALS EXEMPTIONS CALCULATIONS

Material	Class	Solids in lbs.[1]	Liquid in gallons[1] (lbs.)	Gas in cubic feet[1]
Oxidizers	4	NP[2]	NP[2]	NP[2]
	3	0.75	(0.75)	112.5
	2	1.5	(1.5)	9
	1	12	(12)	4.5
Unstable (reactive)	4	NP[2]	NP[2]	NP[2]
	3	0.375	(0.375)	3.75
	2	0.3	(0.3)	1.5
	1	Unlimited	Unlimited	2.25
Toxics	All	0.65	(0.65)	1.053
Corrosives	All	6.5	0.65	1.053
Highly Toxic	All	0.0013	(0.0013)	0.026
Water Reactive	3	0.375	(0.0375)	Not applicable
	2	0.3	(0.3)	
	1	0.375	(0.0375)	

1. Quantities may be increased by 100% in sprinklered buildings.
2. Not Permitted

CHAPTER 9

TABLE 903.2 OCCUPANCY AUTOMATIC SPRINKLER REQUIREMENTS

Building having occupancy	Provide automatic fire sprinkler system throughout building if one (1) of the following conditions will exist (*see* Note a)		
	Fire Area	Building occupant load	Occupancy location
A-1	>0 ft^2	> 0	Any level
A-2 [Nightclub]	>5,000 ft^2	≥ 50	Any floor other than the *level of exit discharge* for A-2 Use
A-2 [all others]	>5,000 ft^2	≥ 100	Any floor other than the *level of exit discharge* for A-2 Use
A-3	>5,000 ft^2	≥ 300	Any floor other than the *level*

			of exit discharge for A-3 Use
A-4	>7,500 ft^2	≥ 300	Any floor other than the *level of exit discharge* for A-5 Use
A-5	*See* Note b		
Assembly occupancies on roofs	*See* Note c		
Multiple fire areas of Group A-1, A-2, A-3, or A-4	*See* Node d		
B [Ambulatory Health Care]	*See* Note e		
B	>12,000 ft^2	---	---
E [below level of exit discharge]	*See* Note f		
E [all others]	>12,000 ft^2	---	---
F-1 [Woodworking Operations]	*See* Note g		
F-1 [all others]	>12,000 ft^2	---	More than three (3) stories above *grade plane*
F-1 [all types]	>24,000 ft^2	---	Combined area of all Group F-1 *fire areas* on all floors, including mezzanines.
H [Pyroxylin Plastics]	*See* Note h		
H-5	*See* Note i		
H [all others]	>0 ft^2	> 0	Any level
I[a]	>0 ft^2	> 0	Any level
M [bulk merchandising]	>0 ft^2	> 0	Any level
M [upholstered furniture display/sale]	>0 ft^2	> 0	Any level
M [storage of merchandise in high-piled or rack storage arrays]	*See* Note j		
M [all others]	>12,000 ft^2	---	More than three (3) stories above *grade plane*
M [all types]	>24,000 ft^2	---	Combined area of all Group M *fire areas* on all floors, including mezzanines.
R[a]	>0 ft^2	> 0	Any level
S-1 [upholstered furniture or mattresses/storage]	>2,500 ft^2	--	More than three (3) stories above *grade plane*
S-1 [with commercial motor vehicles]	>5,000 ft^2	---	More than three (3) stories above *grade plane*
S-1 [with repair garage, building two (2) or more stories above grade]	>10,000 ft^2	---	1. In basement; or 2. More than three (3) stories above *grade plane*
S-1 [with repair garage, building one (1) story above grade]	>12,000 ft^2	---	In basement
S-1 [with commercial motor vehicles]	>5,000 ft^2	---	1. In basement; or 2. More than three (3) stories above *grade plane*
S-1 [with tire storage]	*See* Note k		
S-1 [all others]	>12,000 ft^2	---	More than three (3) stories above *grade plane*
S-1 [all types]	>24,000 ft^2	---	Combined area of all Group M *fire areas* on all floors, including mezzanines.
S-2	*See* Notes l & m		

Note a:

1. For Use Group R and I-1 buildings with an aggregate building area of 12,000 ft^2 or more, and Mixed Use Buildings containing R-Uses, the sprinkler system shall be designed and installed throughout the structure in accordance with NFPA-13
2. Buildings of entire R-Use, other than R-1 Occupancies and R-2 Dormitories, having no more than three dwelling units and also less than a 12,000 ft^2 *Fire Area* shall be permitted to have an *automatic fire suppression* system installed in accordance with Section 903.3.1.3; provided that every *automatic sprinkler system* shall have at least one (1) automatic water supply, or a stored water supply source, in accordance with NFPA-13D where the minimum quantity of stored water shall equal the water demand rate times twenty (20) minutes.
3. An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in Group R-3 occupancies.
4. An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in Group R-4 Condition 1 occupancies.
5. An *automatic sprinkler system* installed in accordance with Section 903.3.1.2 shall be permitted in Group R-4 Condition 2 occupancies. Attics shall be protected as follows:
    a. Attics used for living purposes, storage or fuel-fired equipment shall be protected with an *automatic sprinkler system* installed in accordance with Section 903.3.1.2.
    b. Attics not used for living purposes, storage or fuel-fired equipment shall be protected with one (1) of the following:
        i. Attics protected throughout by a heat detector system arranged to activate the building fire alarm system in accordance with Section 907.2.10.
        ii. Attics constructed of noncombustible materials.
        iii. Attics constructed of fire-retardant-treated wood framing complying with Section 2303.2.
        iv. The *automatic sprinkler system* shall be extended to provide protection throughout the attic space.
6. An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in care facilities with five (5) or fewer individuals in a single-family dwelling.
7. Townhouses are required to be protected by *automatic sprinkler systems*.

Note b: Group A-5. An *automatic sprinkler system* shall be provided in concession stands, retail areas, press boxes, and other accessory use areas in excess of 1,000 ft^2 (93m^2).
Note c: Assembly occupancies on roofs. Where an occupied roof has an Assembly Occupancy with an *occupancy load* exceeding: 1. 100 for Group A-2; and 2. 300 for all other Group A occupancies, All floors between the occupied roof and the *level of exit discharge* shall be equipped with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2, when applicable **Exception:** Open parking garages in Type I or Type II construction.
Note d: Multiple fire areas. An *automatic sprinkler system* shall be provided where multiple *fire areas* of Group A-1, A-2, A-3 or A-4 occupancies share exit or exit access components and the combined *occupant load* of these *fire areas* is 300 or more.
Note e: Group B ambulatory health care facilities. An *automatic sprinkler system* shall be installed throughout all *fire areas* containing a Group B ambulatory health care facility occupancy when either one of the following conditions exists at any time: 1. Four (4) or more care recipients are incapable of self-preservation. 2. One (1) or more care recipients who are incapable of self-preservation are located at other than the *level of exit discharge* serving such an occupancy. In buildings where ambulatory care is provided on levels other than the *level of exit discharge*, and *automatic sprinkler system* shall be installed throughout the entire floor where such care is provided as well as all floors below, and all floors between the level of ambulatory care and the nearest *level of exit discharge*, including the *level of exit discharge.*
Note f: Group E. An *automatic sprinkler system* shall be provided as follows: 1. Throughout all Group E *fire areas* greater than 12,000 ft^2 in area. 2. Throughout every portion of educational buildings below the lowest *level of exit discharge* serving that portion of the building.
Note g: Group F-1 [Woodworking Operations]. An *automatic sprinkler system* shall be installed throughout buildings that contain woodworking operation[s] in excess of 2,500 square feet (232 m^2) in area that generate[s] finely divided combustible waste or use[s] finely divided combustible materials.
Note h: Pyroxylin Plastics. An *automatic sprinkler system* shall be provided in buildings, or portions thereof, where cellulose nitrate film or pyroxylin plastics are manufactured, stored or handled in quantities exceeding 100 pounds.
Note i: Group H-5. An *automatic sprinkler system* shall be installed throughout buildings containing Group H-5 occupancies. The design of the sprinkler system shall be not less than that required by this code for the occupancy hazard classifications in accordance with Table 903.2.1. Where the design area of the sprinkler system consists of a *corridor* protected by one row of sprinklers, the maximum number of sprinklers required to be calculated is 13.
Note j: High-piled storage. An *automatic sprinkler system* shall be provided in accordance with the IFC, and applicable provisions of 527 CMR, in all buildings of Group M where storage of merchandise is in high-piled or rack storage arrays.
Note k: Bulk storage of tires. An *automatic sprinkler system* shall be provided throughout buildings and structures where the area for the storage of tires exceeds 20,000 cubic feet (566 m^3), in accordance with Section 903.3.1.1.
Note l: Group S-2. An *automatic sprinkler system* shall be provided for Group S-2 occupancies as follow: 1. Throughout buildings classified as Group S-2 Enclosed Parking. 2. Throughout Group S-2 Enclosed Parking located beneath other groups. **Exception**: Enclosed parking garages located beneath R-3 occupancies.
Note m: Commercial Parking Garages. An *automatic sprinkler system* shall be provided throughout buildings having storage of commercial motor vehicles where the aggregate area used for parking exceeds 5,000 ft^2 (464m^2).

CHAPTER 13

TABLE 401.2.2 SITE TO SOURCE FUEL CONVERSION FACTORS

Load Type	Factor
Electric power use at the utility meter	3.01
Natural Gas	1.09
Fuel Oil	1.13
LPG	1.12
Purchased District Heating	
Hot Water	1.35
Steam	1.45
Purchased District Cooling	0.99
Fossil fuels not listed	1.1
Purchased Combined Heat and Power District Heat	*

*A source fuel conversion for purchased district heat supplied by a combined heat and power central utility will be published by the MA Dept. of Energy Resources on a per district system basis.

CHAPTER 16

TABLE 1604.11 SNOW LOADS, WIND SPEEDS, AND SEISMIC PARAMETERS

	SNOW LOADS		BASIC WIND SPEED, V_{ult} (mph)			SEISMIC PARAMETERS (g)	
City/Town	Ground Snow Load, P_g (psf)	Minimum Flat Roof Snow Load, P_f[1] (psf)	Risk Category I	Risk Category II	Risk Category III or IV	S_s	S_1

	SNOW LOADS		BASIC WIND SPEED, V_{ult} (mph)			SEISMIC PARAMETERS (g)	
City/Town	**Ground Snow Load, P_g (psf)**	**Minimum Flat Roof Snow Load, P_f[1] (psf)**	**Risk Category I**	**Risk Category II**	**Risk Category III or IV**	**S_s**	**S_1**
Abington	35	30	122	132	143	0.196	0.065
Acton	50	35	114	124	134	0.213	0.070
Acushnet	30	30	129	138	149	0.172	0.059
Adams[2]	60	40	105	115	120	0.172	0.069
Agawam	35	35	109	120	128	0.174	0.065
Alford[2]	40	40	105	115	120	0.169	0.066
Amesbury	50	30	113	123	134	0.267	0.078
Amherst	40	35	106	118	125	0.172	0.066
Andover	50	30	114	124	135	0.247	0.075
Aquinnah (Gay Head)	25	25	133	140	154	0.141	0.052
Arlington	40	30	117	127	138	0.219	0.070
Ashburnham	60	35	108	118	128	0.200	0.071
Ashby	60	35	108	119	128	0.210	0.072
Ashfield	50	40	105	115	120	0.170	0.067
Ashland	40	35	116	127	137	0.190	0.066
Athol	60	35	106	117	125	0.183	0.069
Attleboro	35	30	122	132	143	0.181	0.063
Auburn	50	35	114	125	135	0.177	0.065
Avon	35	35	121	131	142	0.196	0.065
Ayer	50	35	111	122	132	0.212	0.071
Barnstable	30	25	132	140	152	0.152	0.055
Barre	50	35	109	120	130	0.180	0.067
Becket[2]	60	40	105	115	120	0.168	0.066
Bedford	50	30	115	125	136	0.221	0.071
Belchertown	40	35	109	119	129	0.173	0.066
Bellingham	40	35	118	129	139	0.181	0.064
Belmont	40	30	117	127	138	0.215	0.070
Berkley	30	30	125	135	146	0.181	0.061
Berlin	50	35	113	124	134	0.193	0.068
Bernardston	60	35	105	115	120	0.176	0.069
Beverly	50	30	117	127	138	0.245	0.073
Billerica	50	30	114	124	135	0.229	0.073
Blackstone	40	35	119	129	140	0.177	0.063
Blandford	50	40	105	116	122	0.171	0.065
Bolton	50	35	113	123	134	0.199	0.069
Boston	40	30	118	128	139	0.217	0.069
Bourne	30	25	130	139	150	0.168	0.058
Boxborough	50	35	113	123	134	0.208	0.070
Boxford	50	30	115	125	136	0.252	0.075
Boylston	50	35	113	123	134	0.191	0.068
Braintree	35	30	120	131	142	0.203	0.066
Brewster	25	25	132	140	152	0.147	0.054
Bridgewater	30	30	124	134	145	0.188	0.063
Brimfield	40	35	112	123	133	0.173	0.065
Brockton	35	30	122	132	143	0.193	0.064
Brookfield	50	35	112	122	132	0.174	0.065
Brookline	40	30	118	128	139	0.211	0.068
Buckland[2]	60	40	105	115	120	0.171	0.068
Burlington	50	30	115	125	136	0.227	0.072
Cambridge	40	30	117	128	139	0.216	0.069
Canton	40	35	120	130	141	0.195	0.065
Carlisle	50	30	114	124	135	0.222	0.072
Carver	30	30	127	136	147	0.182	0.061
Charlemont[2]	60	40	105	115	120	0.172	0.068
Charlton	50	35	114	124	135	0.174	0.064
Chatham	25	25	134	140	154	0.135	0.051
Chelmsford	50	30	113	123	134	0.229	0.073

	SNOW LOADS		BASIC WIND SPEED, V_{ult} (mph)			SEISMIC PARAMETERS (g)	
City/Town	**Ground Snow Load, P_g (psf)**	**Minimum Flat Roof Snow Load, P_f[1] (psf)**	**Risk Category I**	**Risk Category II**	**Risk Category III or IV**	**S_s**	**S_1**
Chelsea	40	30	118	128	139	0.221	0.070
Cheshire[2]	60	40	105	115	120	0.171	0.068
Chester	60	40	105	115	120	0.169	0.066
Chesterfield	50	40	105	115	120	0.169	0.067
Chicopee	35	35	108	119	127	0.172	0.065
Chilmark	25	25	134	140	154	0.140	0.052
Clarksburg[2]	60	40	105	115	120	0.175	0.069
Clinton	50	35	113	123	133	0.194	0.068
Cohasset	35	30	122	131	142	0.211	0.067
Colrain[2]	60	40	105	115	120	0.174	0.069
Concord	50	35	114	125	136	0.214	0.070
Conway	50	40	105	115	120	0.171	0.067
Cummington[2]	60	40	105	115	120	0.169	0.067
Dalton[2]	60	40	105	115	120	0.169	0.067
Danvers	50	30	116	126	137	0.245	0.074
Dartmouth	30	30	129	139	150	0.169	0.058
Dedham	40	35	119	129	140	0.201	0.067
Deerfield	50	35	105	115	120	0.172	0.068
Dennis	30	25	132	140	152	0.150	0.054
Dighton	30	30	125	135	146	0.180	0.061
Douglas	40	35	117	127	138	0.175	0.064
Dover	40	35	118	128	139	0.196	0.067
Dracut	50	30	112	122	133	0.240	0.075
Dudley	50	35	116	126	136	0.173	0.064
Dunstable	50	35	111	121	132	0.231	0.074
Duxbury	30	30	125	135	146	0.192	0.063
E. Bridgewater	35	30	123	133	144	0.191	0.064
E. Brookfield	50	35	112	122	133	0.175	0.065
E. Longmeadow	35	35	110	121	130	0.174	0.065
Eastham	25	25	132	140	152	0.146	0.054
Easthampton	40	35	106	117	124	0.171	0.066
Easton	35	30	122	132	143	0.187	0.064
Edgartown	25	25	135	140	155	0.136	0.051
Egremont[2]	40	40	105	115	120	0.169	0.065
Erving	50	35	105	116	122	0.178	0.069
Essex	50	30	117	127	138	0.253	0.075
Everett	40	30	117	128	139	0.222	0.070
Fairhaven	30	30	129	139	150	0.169	0.058
Fall River	30	30	126	137	148	0.176	0.060
Falmouth	30	25	132	140	152	0.154	0.055
Fitchburg	60	35	110	120	130	0.202	0.071
Florida[2]	60	40	105	115	120	0.173	0.069
Foxborough	35	35	120	131	142	0.186	0.064
Framingham	40	35	116	127	137	0.194	0.067
Franklin	40	35	119	129	140	0.183	0.064
Freetown	30	30	126	137	147	0.178	0.060
Gardner	60	35	108	119	128	0.191	0.070
Georgetown	50	30	114	124	135	0.258	0.076
Gill	50	35	105	115	120	0.177	0.069
Gloucester	50	30	118	128	139	0.252	0.074
Goshen	50	40	105	115	120	0.169	0.067
Gosnold	30	25	132	140	152	0.153	0.055
Grafton	50	35	115	126	136	0.180	0.065
Granby	35	35	108	119	127	0.172	0.066
Granville	50	40	106	117	125	0.173	0.065
Great Barrington[2]	50	40	105	115	120	0.169	0.066
Greenfield	50	35	105	115	120	0.173	0.068

	SNOW LOADS		BASIC WIND SPEED, V_{ult} (mph)			SEISMIC PARAMETERS (g)	
City/Town	Ground Snow Load, P_g (psf)	Minimum Flat Roof Snow Load, P_f[1] (psf)	Risk Category I	Risk Category II	Risk Category III or IV	S_s	S_1
Groton	60	35	111	121	132	0.218	0.072
Groveland	50	30	113	123	134	0.259	0.077
Hadley	40	35	106	117	124	0.171	0.066
Halifax	30	30	124	134	145	0.189	0.063
Hamilton	50	30	116	126	137	0.253	0.075
Hampden	35	35	111	122	131	0.173	0.065
Hancock[2]	50	40	105	115	120	0.172	0.068
Hanover	35	30	123	133	144	0.198	0.065
Hanson	35	30	123	133	144	0.195	0.064
Hardwick	50	35	110	120	130	0.176	0.066
Harvard	50	35	112	123	133	0.206	0.070
Harwich	25	25	133	140	153	0.141	0.053
Hatfield	40	35	106	117	124	0.171	0.066
Haverhill	50	30	112	123	134	0.260	0.077
Hawley[2]	60	40	105	115	120	0.171	0.068
Heath[2]	60	40	105	115	120	0.173	0.069
Hingham	35	30	121	131	142	0.210	0.067
Hinsdale[2]	60	40	105	115	120	0.169	0.067
Holbrook	35	30	121	131	142	0.198	0.065
Holden	50	35	112	122	133	0.183	0.067
Holland	40	35	114	124	134	0.173	0.064
Holliston	40	35	117	128	138	0.188	0.066
Holyoke	35	35	107	118	126	0.172	0.065
Hopedale	40	35	117	128	138	0.181	0.065
Hopkinton	40	35	116	127	137	0.186	0.066
Hubbardston	50	35	109	120	130	0.185	0.068
Hudson	50	35	114	124	135	0.197	0.068
Hull	35	30	120	130	141	0.215	0.068
Huntington	50	40	105	116	122	0.170	0.066
Ipswich	50	30	116	126	137	0.257	0.076
Kingston	30	30	125	135	146	0.188	0.062
Lakeville	30	30	126	136	147	0.181	0.061
Lancaster	50	35	112	122	133	0.197	0.069
Lanesborough[2]	50	40	105	115	120	0.171	0.068
Lawrence	50	30	113	123	134	0.250	0.076
Lee[2]	50	40	105	115	120	0.169	0.066
Leicester	50	35	113	123	134	0.178	0.066
Lenox[2]	50	40	105	115	120	0.169	0.066
Leominster	60	35	111	121	131	0.199	0.070
Leverett	40	35	105	117	124	0.173	0.067
Lexington	40	30	116	126	137	0.218	0.070
Leyden[2]	60	40	105	115	120	0.176	0.069
Lincoln	40	35	115	126	136	0.213	0.070
Littleton	50	35	112	123	133	0.214	0.071
Longmeadow	35	35	109	120	129	0.174	0.065
Lowell	50	30	112	123	134	0.235	0.074
Ludlow	35	35	109	120	129	0.173	0.065
Lunenburg	60	35	110	120	131	0.207	0.071
Lynn	40	30	117	128	139	0.233	0.071
Lynnfield	50	30	116	126	137	0.237	0.073
Malden	40	30	117	127	138	0.224	0.070
Manchester	50	30	117	128	139	0.249	0.074
Mansfield	35	30	121	131	142	0.186	0.064
Marblehead	40	30	118	128	139	0.239	0.072
Marion	30	30	129	139	150	0.170	0.058
Marlborough	50	35	114	125	135	0.194	0.068
Marshfield	35	30	124	134	145	0.196	0.064

	SNOW LOADS		BASIC WIND SPEED, V_{ult} (mph)			SEISMIC PARAMETERS (g)	
City/Town	**Ground Snow Load, P_g (psf)**	**Minimum Flat Roof Snow Load, P_f[1] (psf)**	**Risk Category I**	**Risk Category II**	**Risk Category III or IV**	**S_s**	**S_1**
Mashpee	30	25	131	140	152	0.156	0.055
Mattapoisett	30	30	129	139	150	0.169	0.058
Maynard	50	35	114	124	135	0.206	0.069
Medfield	40	35	118	129	139	0.191	0.066
Medford	40	30	117	127	138	0.221	0.070
Medway	40	35	118	129	139	0.185	0.065
Melrose	40	30	117	127	138	0.227	0.071
Mendon	40	35	118	128	138	0.179	0.064
Merrimac	50	30	112	123	133	0.265	0.078
Methuen	50	30	112	122	133	0.251	0.076
Middleborough	30	30	125	135	146	0.183	0.062
Middlefield	60	40	105	115	120	0.169	0.066
Middleton	50	30	115	125	136	0.245	0.074
Milford	40	35	117	128	138	0.182	0.065
Millbury	50	35	115	125	136	0.178	0.065
Millis	40	35	118	129	139	0.188	0.065
Millville	40	35	118	129	139	0.177	0.063
Milton	40	30	119	130	141	0.205	0.067
Monroe[2]	60	40	105	115	120	0.174	0.069
Monson	40	35	111	122	132	0.173	0.065
Montague	50	35	105	116	122	0.173	0.068
Monterey	50	40	105	116	122	0.170	0.065
Montgomery	40	40	105	117	123	0.171	0.066
Mount Washington[2]	40	40	105	115	120	0.171	0.065
Nahant	40	30	118	128	139	0.229	0.071
Nantucket	25	25	139	140	158	0.113	0.047
Natick	40	35	117	127	138	0.197	0.067
Needham	40	35	118	128	139	0.201	0.067
New Ashford[2]	50	40	105	115	120	0.173	0.068
New Bedford	30	30	129	139	150	0.170	0.058
New Braintree	50	35	111	121	131	0.176	0.066
New Marlborough	50	40	105	115	120	0.171	0.065
New Salem	50	35	106	117	125	0.177	0.068
Newbury	50	30	114	125	136	0.263	0.077
Newburyport	50	30	114	124	135	0.265	0.078
Newton	40	30	117	127	138	0.208	0.068
Norfolk	40	35	119	129	140	0.186	0.065
North Adams[2]	60	40	105	115	120	0.175	0.069
North Andover	50	30	113	123	134	0.251	0.076
North Attleborough	35	30	121	131	142	0.180	0.063
North Brookfield	50	35	112	122	132	0.176	0.066
North Reading	50	30	115	125	136	0.240	0.073
Northampton	40	35	106	117	124	0.171	0.066
Northborough	50	35	114	124	135	0.188	0.067
Northbridge	40	35	116	127	137	0.179	0.065
Northfield	60	35	105	115	120	0.179	0.069
Norton	35	30	122	133	144	0.184	0.063
Norwell	35	30	123	133	144	0.203	0.065
Norwood	40	35	119	129	140	0.195	0.066
Oak Bluffs	25	25	133	140	154	0.144	0.053
Oakham	50	35	111	121	131	0.179	0.067
Orange	60	35	106	117	124	0.180	0.069
Orleans	25	25	132	140	152	0.144	0.053
Otis	50	40	105	115	120	0.170	0.066
Oxford	50	35	115	125	136	0.174	0.064
Palmer	40	35	111	121	131	0.173	0.065
Paxton	50	35	112	122	133	0.180	0.066

	SNOW LOADS		BASIC WIND SPEED, V_{ult} (mph)			SEISMIC PARAMETERS (g)	
City/Town	**Ground Snow Load, P_g (psf)**	**Minimum Flat Roof Snow Load, P_f[1] (psf)**	**Risk Category I**	**Risk Category II**	**Risk Category III or IV**	**S_s**	**S_1**
Peabody	50	30	117	127	138	0.240	0.073
Pelham	40	35	107	118	126	0.173	0.067
Pembroke	30	30	124	134	145	0.195	0.064
Pepperell	60	35	110	120	131	0.223	0.073
Peru[2]	60	40	105	115	120	0.169	0.067
Petersham	50	35	108	118	127	0.180	0.068
Phillipston	60	35	108	118	127	0.185	0.069
Pittsfield[2]	50	40	105	115	120	0.170	0.067
Plainfield[2]	60	40	105	115	120	0.170	0.067
Plainville	40	35	121	131	142	0.182	0.063
Plymouth	30	30	126	136	147	0.185	0.061
Plympton	30	30	125	135	146	0.187	0.062
Princeton	50	35	111	121	131	0.188	0.068
Provincetown	25	25	128	138	148	0.177	0.060
Quincy	40	30	120	130	141	0.208	0.067
Randolph	35	30	121	131	142	0.198	0.066
Raynham	35	30	123	134	145	0.185	0.063
Reading	50	30	116	126	137	0.234	0.072
Rehoboth	35	30	124	134	145	0.179	0.062
Revere	40	30	118	128	139	0.224	0.070
Richmond[2]	50	40	105	115	120	0.169	0.067
Rochester	30	30	128	138	149	0.176	0.059
Rockland	35	30	122	132	143	0.198	0.065
Rockport	50	30	118	128	139	0.255	0.074
Rowe[2]	60	40	105	115	120	0.173	0.069
Rowley	50	30	115	125	136	0.259	0.076
Royalston	60	35	106	116	123	0.188	0.070
Russell	40	40	105	116	123	0.171	0.065
Rutland	50	35	111	121	132	0.182	0.067
Salem	50	30	117	127	138	0.240	0.073
Salisbury	50	30	113	124	134	0.266	0.078
Sandisfield	50	40	105	115	120	0.171	0.065
Sandwich	30	25	130	139	150	0.165	0.057
Saugus	40	30	117	127	138	0.230	0.071
Savoy[2]	60	40	105	115	120	0.170	0.068
Scituate	35	30	123	133	144	0.207	0.066
Seekonk	35	30	123	134	145	0.177	0.061
Sharon	35	35	120	130	141	0.191	0.065
Sheffield[2]	40	40	105	115	120	0.171	0.065
Shelburne	50	40	105	115	120	0.172	0.068
Sherborn	40	35	117	127	138	0.192	0.066
Shirley	60	35	111	121	132	0.207	0.071
Shrewsbury	50	35	114	124	135	0.184	0.066
Shutesbury	40	35	106	117	125	0.174	0.067
Somerset	30	30	126	136	147	0.178	0.061
Somerville	40	30	117	127	139	0.218	0.070
South Hadley	35	35	107	118	126	0.171	0.066
Southampton	40	35	106	117	124	0.171	0.066
Southborough	40	35	115	125	136	0.191	0.067
Southbridge	40	35	114	125	135	0.173	0.064
Southwick	40	35	107	118	126	0.174	0.065
Spencer	50	35	113	123	133	0.176	0.066
Springfield	35	35	109	120	128	0.173	0.065
Sterling	50	35	112	122	132	0.192	0.068
Stockbridge[2]	50	40	105	115	120	0.169	0.066
Stoneham	40	30	116	126	137	0.229	0.071
Stoughton	35	35	121	131	142	0.194	0.065

	SNOW LOADS		BASIC WIND SPEED, V_{ult} (mph)			SEISMIC PARAMETERS (g)	
City/Town	**Ground Snow Load, P_g (psf)**	**Minimum Flat Roof Snow Load, P_f[1] (psf)**	**Risk Category I**	**Risk Category II**	**Risk Category III or IV**	**S_s**	**S_1**
Stow	50	35	114	124	135	0.204	0.069
Sturbridge	40	35	114	124	134	0.173	0.064
Sudbury	40	35	115	125	136	0.203	0.069
Sunderland	40	35	105	116	122	0.172	0.067
Sutton	50	35	115	126	136	0.177	0.065
Swampscott	40	30	118	128	139	0.234	0.072
Swansea	30	30	126	136	147	0.177	0.061
Taunton	35	30	124	134	145	0.183	0.062
Templeton	60	35	108	118	127	0.187	0.069
Tewksbury	50	30	113	124	135	0.237	0.074
Tisbury	25	25	133	140	153	0.146	0.053
Tolland	50	40	105	115	122	0.172	0.065
Topsfield	50	30	115	125	136	0.251	0.075
Townsend	60	35	109	119	130	0.216	0.073
Truro	25	25	129	139	149	0.164	0.057
Tyngsborough	50	30	111	121	132	0.234	0.074
Tyringham[2]	50	40	105	115	120	0.169	0.066
Upton	40	35	116	127	137	0.181	0.065
Uxbridge	40	35	117	128	138	0.177	0.064
Wakefield	50	30	116	126	137	0.232	0.072
Wales	40	35	113	123	133	0.173	0.064
Walpole	40	35	119	130	141	0.190	0.065
Waltham	40	30	116	127	138	0.211	0.069
Ware	40	35	110	120	131	0.174	0.066
Wareham	30	30	129	138	149	0.173	0.059
Warren	40	35	111	121	132	0.173	0.065
Warwick	60	35	105	115	121	0.183	0.070
Washington[2]	60	40	105	115	120	0.168	0.066
Watertown	40	30	117	127	138	0.213	0.069
Wayland	40	35	116	126	137	0.203	0.068
Webster	50	35	116	126	136	0.173	0.064
Wellesley	40	35	117	127	138	0.200	0.067
Wellfleet	25	25	130	140	150	0.157	0.056
Wendell	50	35	105	117	123	0.177	0.068
Wenham	50	30	116	126	137	0.249	0.074
W. Boylston	50	35	112	123	133	0.186	0.067
W. Bridgewater	35	30	123	133	144	0.189	0.063
W. Brookfield	40	35	112	122	132	0.174	0.065
W. Newbury	50	30	113	123	134	0.263	0.078
W. Springfield	35	35	108	119	128	0.173	0.065
W. Stockbridge[2]	40	40	105	115	120	0.169	0.066
W. Tisbury	25	25	134	140	154	0.141	0.052
Westborough	50	35	115	125	136	0.186	0.066
Westfield	40	35	107	118	125	0.172	0.065
Westford	50	35	112	123	133	0.223	0.072
Westhampton	50	40	105	116	122	0.170	0.066
Westminster	60	35	109	120	130	0.194	0.069
Weston	40	35	116	126	137	0.207	0.069
Westport	30	30	128	139	149	0.172	0.059
Westwood	40	35	119	129	140	0.196	0.066
Weymouth	35	30	121	131	142	0.206	0.067
Whately	50	35	105	116	122	0.171	0.067
Whitman	35	30	123	133	144	0.194	0.064
Wilbraham	35	35	110	121	130	0.173	0.065
Williamsburg	50	40	105	116	121	0.170	0.067
Williamstown[2]	50	40	105	115	120	0.176	0.070
Wilmington	50	30	115	125	136	0.233	0.073

City/Town	SNOW LOADS		BASIC WIND SPEED, V_{ult} (mph)			SEISMIC PARAMETERS (g)	
	Ground Snow Load, P_g (psf)	Minimum Flat Roof Snow Load, P_f[1] (psf)	Risk Category I	Risk Category II	Risk Category III or IV	S_s	S_1
Winchendon	60	35	107	117	125	0.197	0.071
Winchester	40	30	116	126	137	0.224	0.071
Windsor[2]	60	40	105	115	120	0.169	0.067
Winthrop	40	30	118	129	140	0.222	0.070
Woburn	50	30	116	126	137	0.226	0.071
Worcester	50	35	114	124	134	0.180	0.066
Worthington	60	40	105	115	120	0.169	0.067
Wrentham	40	35	120	130	141	0.184	0.064
Yarmouth	30	25	132	140	152	0.149	0.054

1. The design flat roof snow load shall be the larger of the calculated flat roof snow load using Pg or the value of P_f listed in this table.
2. Special Wind Region. Local conditions may cause higher wind speeds than the tabulated values. See ASCE/SEI 7.

FIGURE 1608.5.1

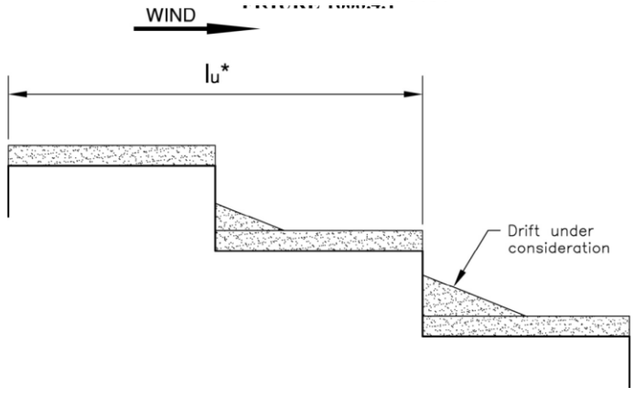

FIGURE 1608.5.2

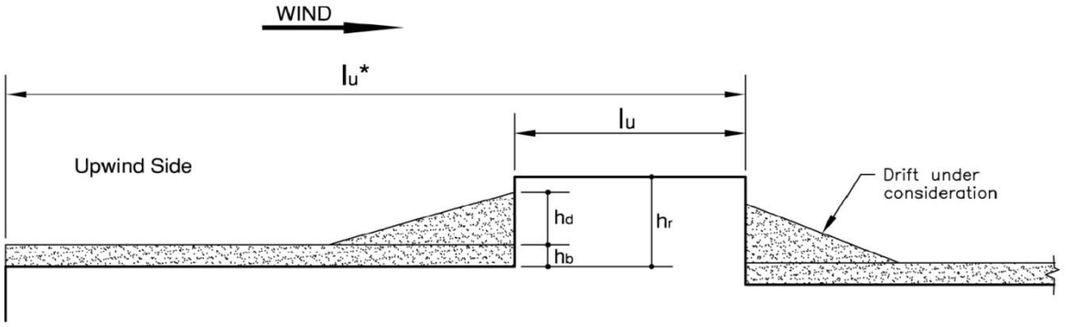

TABLE 1806.2a PRESUMPTIVE ALLOWABLE VERTICAL BEARING PRESSURES

Material Class	Description	Notes	Consistency in Place	Net Bearing Pressure (tons/ft^2)[1,2,3]
1a	Massive bedrock: Granite, diorite, gabbro, basalt, gneiss	4	Hard, sound rock, minor jointing	100
1b	Quartzite, well cemented conglomerate	4	Hard, sound rock moderate jointing	60
2	Foliated bedrock: slate, schist	4	Medium hard rock, minor jointing	40
3	Sedimentary bedrock: cementation shale, siltstone, sandstone, limestone, dolomite, conglomerate	4	Soft rock, moderate jointing	20
4	Weakly cemented sedimentary bedrock: compaction shale or other similar rock in sound condition	4	Very soft rock	10
5	Weathered bedrock: any of the above except shale.	5	Very soft rock, weathered and/or major jointing and fracturing	8
6	Slightly cemented sand and/or gravel, glacial till (basal or lodgement), hardpan	6	Very dense	10
7	Gravel, widely graded sand and gravel; and granular ablation till	6	Very dense Dense Medium dense Loose Very loose	8 6 4 2 Note 9
8	Sands and non-plastic silty sands with little or no gravel (except for Class 9 materials)	6, 7	Dense Medium dense Loose Very loose	4 3 1 Note 9
9	Fine sand, silty fine sand, and non-plastic inorganic silt	6, 7	Dense Medium dense Loose Very loose	3 2 1 Note 9
10	Inorganic sandy or silty clay, clayey sand, clayey silt, clay, or varved clay; low to high plasticity	8	Hard Stiff Medium Soft	4 2 1 Note 9
11	Organic soils: peat, organic silt, organic clay	8,9		Note 9

Notes:

1. Net bearing pressure shall consist of the bearing pressure applied at the bottom of the foundation, including the weight of the foundation and any soil immediately overlying the foundation, minus the pressure calculated for a height of soil extending from the bottom of the foundation to the lowest ground surface level immediately adjacent to the foundation.
2. Where the load-bearing layer directly below the foundation is underlain by a weaker layer, the bearing pressure on the weaker layer shall be checked by assuming that the load is spread uniformly at an angle of 30 degrees with the vertical, or by using another suitable method to determine the bearing pressure on the weaker layer.
3. The bearing strata shall be adequately protected against disturbance. If the bearing materials are disturbed from any cause, for example, by flow of water, freezing or construction activities, the extent of the disturbance shall be evaluated by a registered design professional to determine appropriate remedial measures or reduced allowable bearing pressures.
4. The allowable bearing pressures may be increased by an amount equal to 10% for each foot of depth below the surface of sound rock; however, the increase shall not exceed two times the value given in the table.
5. Weathered shale and/or weathered compaction shale shall be included in Material Class 10. Other highly weathered rocks and/or residual soils shall be treated as soil under the appropriate description in Material Classes 6 to 10. Where the transition between residual soil and bedrock is gradual, a registered design professional shall make a judgment as to the appropriate bearing pressure.
6. Allowable bearing pressures may be increased by an amount equal to 5% for each foot of depth of the bearing area below the minimum required in section 1806.0; however, the bearing pressure shall not exceed two times the value given in the table. For foundation bearing areas having a least lateral dimension smaller than three feet, the allowable bearing pressure shall be ♉ 1/3 of the tabulated value times the least dimension in feet.
7. Evaluate susceptibility to liquefaction in accordance with section 1806.4.
8. Evaluate long-term settlement due to consolidation for these materials.
9. A *registered design professional* shall be engaged to provide recommendations for these special cases.

FIGURE 1806.4.a

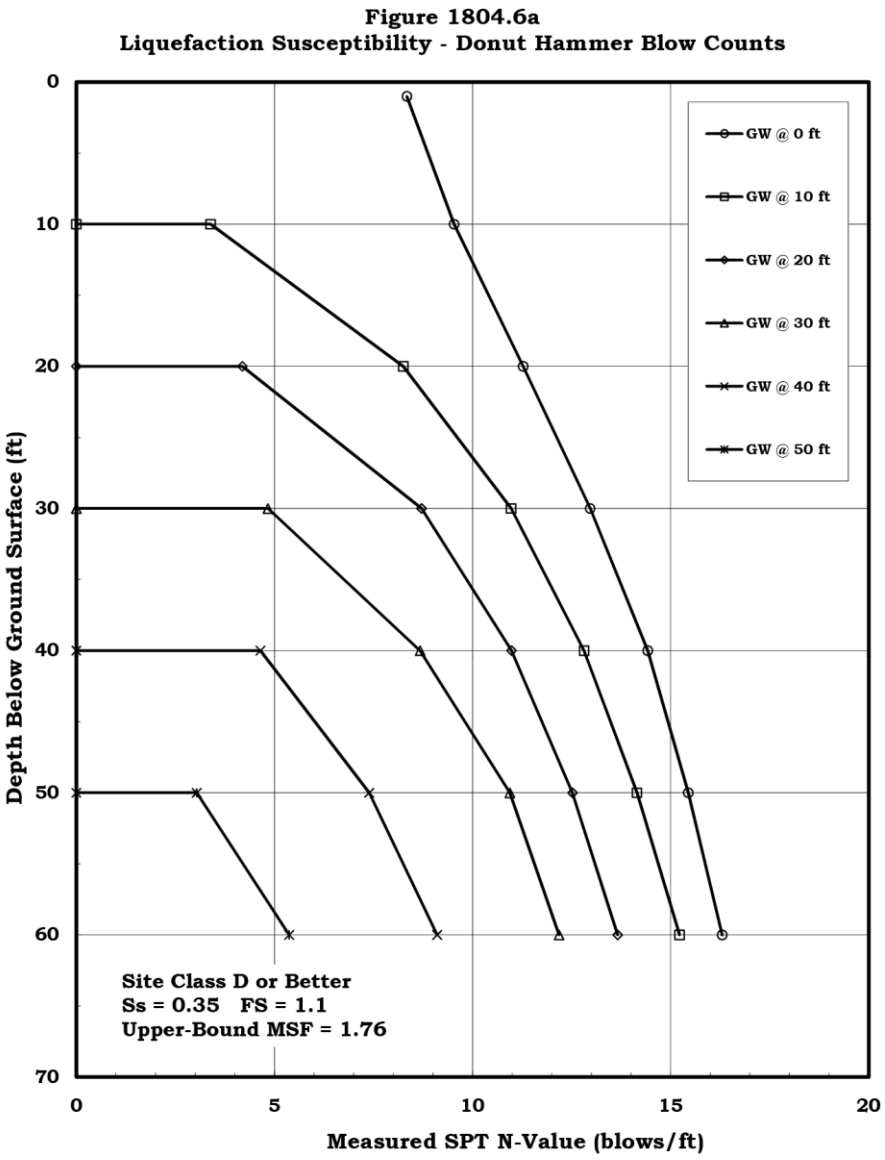

FIGURE 1806.4.b

Figure 1804.6b
Liquefaction Susceptibility - Safety Hammer Blow Counts

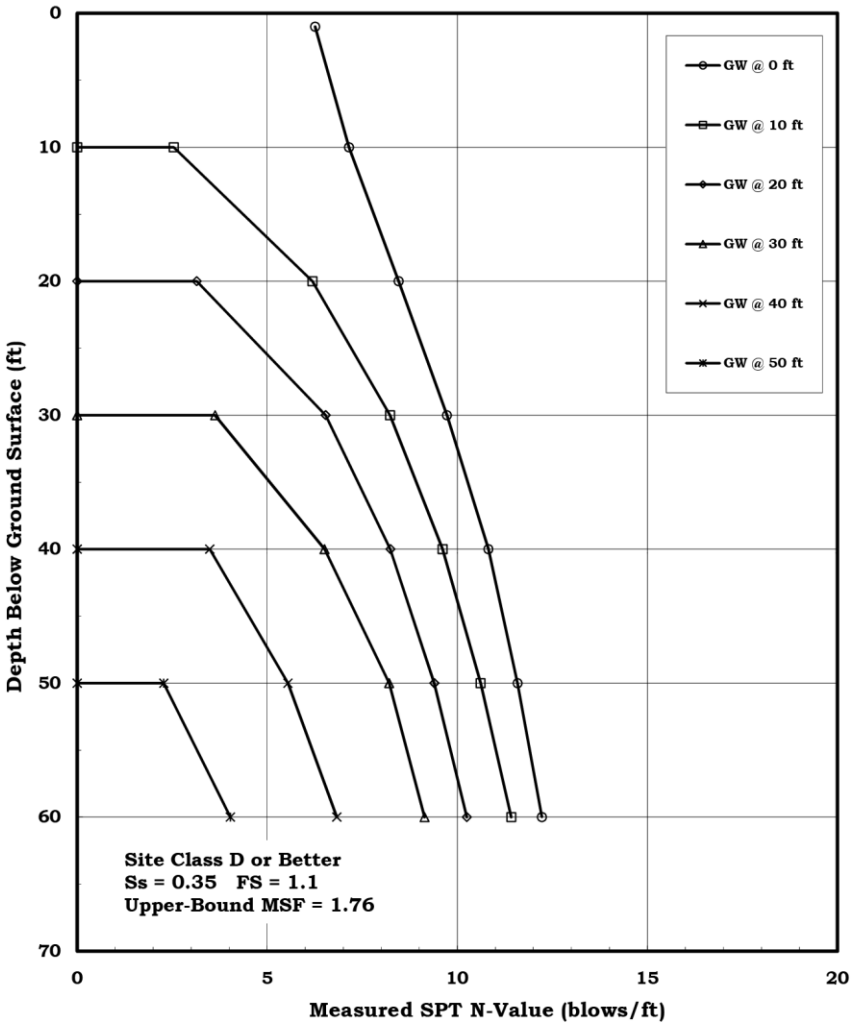

FIGURE 1806.4.c

Figure 1804.6c
Liquefaction Susceptibility - Automatic Hammer Blow Counts

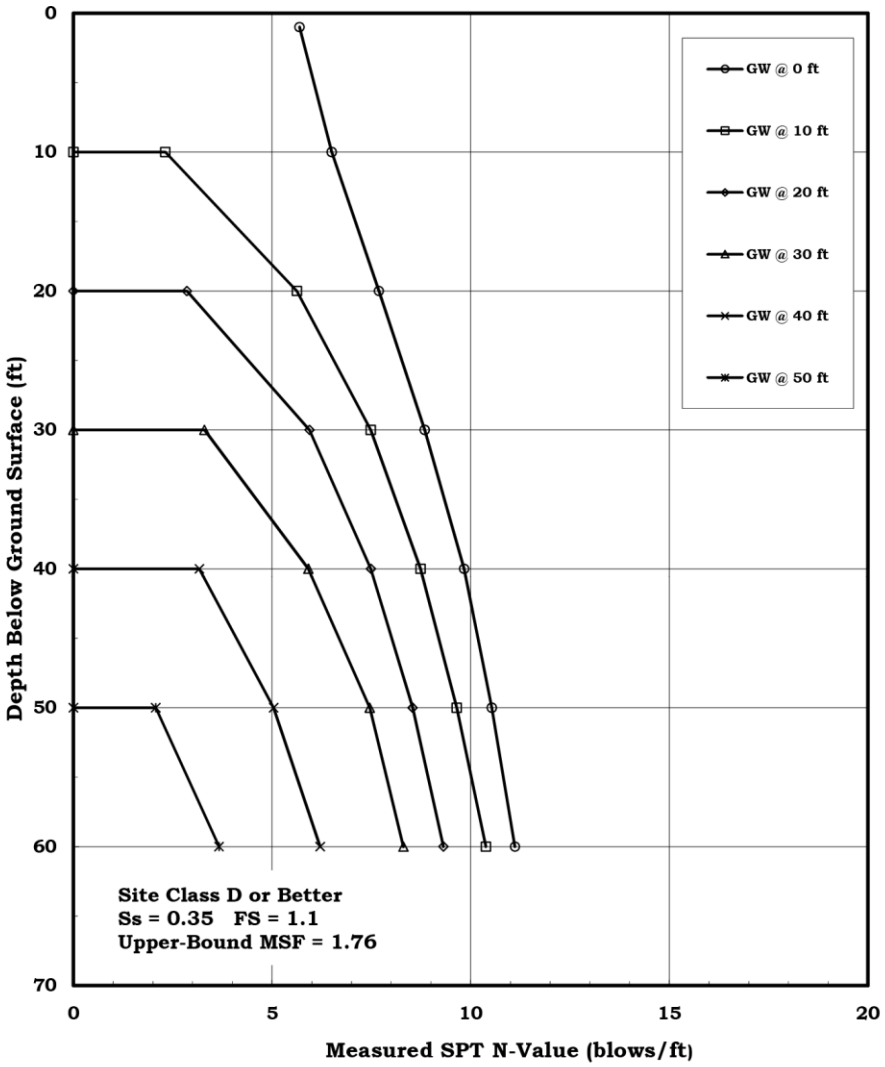

TABLE 1810.3.3.1

R (tons)	Energy, E (foot-pounds)	C	Standard Batch Volume (cubic feet)
over 100	140,000	18	5
51 to 100	100,000	18	5
25 to 50	60,000	30	2

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CHAPTER 23

TABLE 2303.1.14 NATIVE LUMBER - ALLOWABLE STRESSES

Nominal Size	Actual Lumber Size (closest size which does not exceed the size shown) width (in.) x height (in.)	Multiplier factor based on lumber width	Value to be added to multiplier factor for lumber with larger widths than those shown in column 2 for width increases:	
			> ¼ and ≤ ½ in.	> ½ and ≤ 1 in.
3 x 8	2 ½ x 7 ½ 2 ½ x 7 ¾ 2 ½ x 8	1.0 x Fs 1.07 1.14	0.10	0.20
3 x 10	2 ½ x 9 ½ 2 ½ x 9 ¾ 2 ½ x 10	1.0 1.05 1.11	0.10	0.20
3 x 12	2 ½ x 11 ½ 2 ½ x 11 ¾ 2 ½ x 12	1.0 1.04 1.09	0.10	0.20
3 x 14	2 ½ x 13 ½ 2 ½ x 13 ¾ 2 ½ x 14	1.0 1.04 1.07	0.10	0.20
4 x 10	3 ½ x 9 ½ 3 ½ x 9 ¾ 3 ½ x 10	1.0 1.05 1.11	0.07	0.14
4 x 12	3 ½ x 11 ½ 3 ½ x 11 ¾ 3 ½ x 12	1.0 1.04 1.09	0.07	0.14
4 x 14	3 ½ x 13 ½ 3 ½ x 13 ¾ 3 ½ x 14	1.0 1.04 1.08	0.07	0.14

CHAPTER 31

TABLE 3112.6 LIMITATIONS OF USE

Use Limitations for Temporary Overnight Shelters									
Location in Building	Building Construction Type								
	IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
Basement (without direct access to outside)	PS	PS	PS	PS	NP	NP	PS	NP	NP
Basement (with direct access to outside)	P	P	P	P	P	P	P	P	PS
1st Floor	P	P	P	P	P	P	P	P	P
2nd Floor	P	P	P	P	P	P	P	P	P
3rd Floor	P	P	P	P	PS	PS	PS	PS	PS
4th Floor and above	PS	PS	PS	PS	PS	PS	PS	PS	NP

P= Permitted, *see* Section 3112.6. PS= Permitted with sprinklers, *see* Section 3112.6. NP = Not Permitted.

CHAPTER 34

TABLE 301.1.4.1 BASIC SEISMIC-FORCE-RESISTING SYSTEM

NOTE: References are currently being updated by SAC. No technical changes are anticipated

BASIC SEISMIC-FORCE-RESISTING SYSTEM	R	Ω_0	C_d
Bearing Wall Systems			
Steel concentrically braced frame (CBF) with diagonal [3] or X-bracing			
CBF per 6th Edition SBC[2] except for section 9.5 of 1992 AISC Seismic Provisions	3.5	2	3.5
Otherwise[4]	3	3	3
Steel CBF with V, Inverted V or K bracing			
V or Inverted V bracing per 6th Edition SBC[2]	3	3	3
V or Inverted V bracing, otherwise[4]	3	3	3
K bracing	1.25	1.25	1.25
Reinforced concrete shear walls with boundary elements and without coupling beams, in accordance with 780 CMR 1113.5.1.4a, 9th Edition	5	2.5	5
Reinforced concrete shear walls with reinforcing steel less than required by, or with spacing greater than permitted by Section 11.9.9 of ACI 318-08	1.5	1.5	1.5
Unreinforced concrete shear walls	1.25	1.25	1.25
Reinforced masonry shear walls			
Class A[5]	4.5	2.5	3.5
Class B[6]	2.25	2.25	2.25
Class C[7]	1.25	1.25	1.25
Unreinforced masonry shear walls	1.25	1.25	1.25
Light-framed walls sheathed with wood structural panels or diagonal sheathing	4	2.5	3
Other light-framed walls[10]	2	2	2
Building Frame Systems			
Steel concentrically braced frame (CBF) with diagonal [3] or X-bracing			
CBF per 6th Edition SBC[2] except for section 9.5 of 1992 AISC Seismic Provisions	4	2	3.5
Otherwise[4]	3	3	3
Steel CBF with V, Inverted V or K bracing			
V or Inverted V bracing per 6th Edition SBC[2]	3	3	3
V or Inverted V bracing, otherwise[4]	3	3	3
K bracing	1.5	1.5	1.5
Reinforced concrete shear walls with boundary elements and without coupling beams, in accordance with 780 CMR 1113.5.1.4a, 5th Edition	6	2.5	5
Reinforced concrete shear walls with reinforcing steel less than required by, or with spacing greater than permitted by section 11.9.9 of ACI 318-08	1.5	1.5	1.5
Unreinforced concrete shear walls	1.5	1.5	1.5
Reinforced masonry shear walls			
Class A[5]	5	2.5	4
Class B[6]	2.25	2.25	2.25
Class C[7]	1.5	1.5	1.5
Unreinforced masonry shear walls	1.5	1.5	1.5
Light-framed walls sheathed with wood structural panels or diagonal sheathing	4	2.5	3
Other light-framed walls[10]	2.5	2.5	2.5
Moment Resisting Frame Systems			
Steel moment frames			

Special Moment Frame per 6th Edition SBC[2]	8	3	5.5
Ordinary Moment Frame per 6th Edition SBC[2]	3.5	3.5	3.5
Moment frame, otherwise[4]	3	3	3
Reinforced concrete moment frames			
Class A[8]	5	3	4.5
Class B[9]	2.5	2.5	2.5
Dual Systems (See ASCE 7, Section 12.2.5.1)			
Steel concentrically braced frame (CBF) with steel moment frames (MF)			
CBF and Special Moment Frame, per 6th Edition SBC[2]	5	2.5	4.5
CBF and Moment Frame per 1st through 5th Editions SBC[2], except V, Inverted V or K Braced Frames	3.5	2.5	3.5
CBF and Moment Frame per 1st through 5th Editions SBC[2], with V, Inverted V or K Braced Frames	3	2.5	3
Otherwise	1.5	1.5	1.5
Reinforced concrete shear walls with boundary elements and without coupling beams, in accordance with 780 CMR 1113.5.1.4a, 5th Edition, with reinforced concrete moment frames, Class A[8]	6	2.5	5
Ordinary reinforced concrete shear walls, as defined in 8th Edition SBC, with reinforced concrete moment frames, Class A[8]	5.5	2.5	4.5

Notes:

1. Systems of previous editions of the State Building Code that meet the ductility requirements of the 8 th Edition of the Code are not included in this table.
2. SBC refers to 780 CMR Commonwealth of Massachusetts State Building Code.
3. A diagonal brace is one that frames from a beam-to-column connection diagonally to another beam-to-column connection or to a column at its base plate.
4. The seismic resistance of the frame shall be based on its seismic connections being subject to two times the computed forces and moments resulting from seismic load.
5. Class A reinforced masonry shear walls have a minimum total area of reinforcement in the vertical and horizontal direction at least 0.0020 times the gross cross-sectional area of the wall, with a minimum area in each direction at least 0.0007 times the gross cross-sectional area of the wall. Maximum spacing of reinforcing steel bars in grouted cells or bond courses is 6'-0" in one direction and 4'-0" in the other direction, but not more than ♉ of the length or height of the wall, whichever is less, in each direction. Class A walls satisfy other requirements for reinforced masonry of the base code.
6. Class B reinforced masonry shear walls satisfy all requirements for Class A walls, except that spacing limits for reinforcing steel bars are exceeded.
7. Class C reinforced masonry shear walls satisfy all requirements for reinforced masonry of the base code.
8. Class A reinforced concrete moment frames satisfy requirements of Sections 1113.5.1, 1113.5.1.1, 1113.5.1.2 and 1113.5.1.3 of 780 CMR 5th Edition and Sections 11.12.1.1 and 11.12.1.2 of ACI 318-83 for reinforcing of beam to column joints.
9. Class B reinforced concrete moment frames do not satisfy requirements for Class A reinforced concrete moment frames.
10. Wood siding over horizontal or diagonal boards, plaster on wood or metal lath, and stucco on metal lath may be used to resist in-plane shear, where the walls are anchored to floors and to the floor or roof construction above such that they can transfer the shear between floors and to the foundation. Gypsum sheathing, lath, wall board, drywall, fiberboard and particle board are not permitted to resist in-plane shear unless originally designed in accordance with 780 CMR for that purpose.