UFC 3-310-01
25 May 2005

UNIFIED FACILITIES CRITERIA (UFC)

STRUCTURAL LOAD DATA

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STRUCTURAL LOAD DATA

U.S. ARMY CORPS OF ENGINEERS

NAVAL FACILITIES ENGINEERING COMMAND (Preparing Activity)

AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

Record of Changes (changes are indicated by **1**\ ... /**1**/)

Change No.	Date	Location
1	Dec 2005	FOREWORD

This UFC supersedes UFC 3-310-01, dated 30 June 2000.

FOREWORD

\1\
The Unified Facilities Criteria (UFC) system is prescribed by MIL-STD 3007 and provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to the Military Departments, the Defense Agencies, and the DoD Field Activities in accordance with USD(AT&L) Memorandum dated 29 May 2002. UFC will be used for all DoD projects and work for other customers where appropriate. All construction outside of the United States is also governed by Status of forces Agreements (SOFA), Host Nation Funded Construction Agreements (HNFA), and in some instances, Bilateral Infrastructure Agreements (BIA.) Therefore, the acquisition team must ensure compliance with the more stringent of the UFC, the SOFA, the HNFA, and the BIA, as applicable.

UFC are living documents and will be periodically reviewed, updated, and made available to users as part of the Services' responsibility for providing technical criteria for military construction. Headquarters, U.S. Army Corps of Engineers (HQUSACE), Naval Facilities Engineering Command (NAVFAC), and Air Force Civil Engineer Support Agency (AFCESA) are responsible for administration of the UFC system. Defense agencies should contact the preparing service for document interpretation and improvements. Technical content of UFC is the responsibility of the cognizant DoD working group. Recommended changes with supporting rationale should be sent to the respective service proponent office by the following electronic form: Criteria Change Request (CCR). The form is also accessible from the Internet sites listed below.

UFC are effective upon issuance and are distributed only in electronic media from the following source:

- Whole Building Design Guide web site http://dod.wbdg.org/.

Hard copies of UFC printed from electronic media should be checked against the current electronic version prior to use to ensure that they are current. /1/

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Unified Facilities Criteria (UFC)
Revision Summary Sheet

Subject: UFC 3-310-01, *Design: Structural Load Data*
Cancels: UFC 3-310-01, *Load Assumptions for Buildings*, dated 30 June 2000

Description of Change: This update to UFC 3-310-01 compiles and updates the structural loading data to be used in the design of buildings and other structures. The International Building Code (IBC) has been adopted as the buildings code for the Department of Defense, as modified by UFC 1-200-01. The load data included in UFC 3-310-01 compliments and expands the usage of the IBC for DoD facilities in the following ways:

- The minimum live load table is expanded to include DoD unique occupancies or functions.
- The design wind speed, ground snow loading, frost penetration depth, and seismic spectral accelerations are identified at specific DoD facilities within the U.S. its territories and possessions.
- The best available design wind speed, ground snow loading, frost penetration depth, and seismic spectral accelerations are identified at specific DoD facilities outside if the U.S. its territories and possessions.
- The best available design seismic spectral accelerations are provided at additional locations overseas.

Reasons for Change: The existing guidance was inadequate for the following reasons:

- The minimum live load data in the existing UFC 3-310-01 did not mesh well with the data in the IBC due to differences in terminology and conflicting / out of date guidance.
- The existing lists of DoD locations, both within the United States and overseas, were incomplete and didn't reflect many locations where installations had been eliminated.
- The design wind speed and ground snow loading data in the existing UFC 3-310-01 was out of date and did not agree with the requirements of the IBC.
- The design seismic spectral accelerations for specific DoD sites within the U.S. were not available.
- The listing of design seismic spectral accelerations outside of the U.S. was inadequate, the data was out of date, and inaccurate.

Impact: The following direct benefits will result from the update of UFC 3-310-01:

- Creation of a single source reference for structural loading requirements that provide clear and consistent guidance for the design of DoD facilities.
    - Eliminates interpretation and ambiguity that could lead to design and construction conflicts.
    - Facilitates update and revision as better information becomes available.
- Creation of up to date load data that compliments the IBC and allows the use of a common minimum structural safety standards for all DoD facilities.

(The evaluation / update of the design seismic spectral accelerations at overseas sites ensures that structures are designed to the appropriate level. Revision of the seismic design values will typically result in reduced constructions costs since the previous values were approximations that were often overly conservative.)

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TABLES

INTRODUCTION

1-1 **PURPOSE AND SCOPE**. This UFC provides structural loading data for the planning, design and construction of buildings for the Department of Defense (DOD). The loading data includes available site-specific ground snow load, basic wind speed, seismic spectral accelerations, and frost penetration at significant DOD installations worldwide. Also included are minimum live loadings for various facility occupancies and uses.

1-2 **BACKGROUND**. UFC 1-200-01 adopts and modifies the International Building Code (IBC) as the building code for DOD. Structural loading data including minimum live loads, ground snow load, basic wind speed, and seismic spectral accelerations, is provided for locations within the United States in chapters 1607, 1608, 1609, and 1615 of the IBC. The information included in UFC 3-310-01 is intended as a tool to assist in the consistent interpretation of the data in the IBC at significant DOD installations within the United States, and as the basis for applying the provisions of the UFC 1-200-01 to significant DOD installations outside of the United States.

1-3 **APPLICABILITY**. This UFC applies to all service elements and contractors involved in the planning, design and construction of DOD facilities worldwide.

1-4 **CONFLICTS.** This UFC supplements the information contained in the IBC as modified by UFC 1-200-01. All sections of the IBC as modified by UFC 1-200-01 remain in effect. If any conflicts or disagreements exist, the IBC as modified by UFC 1-200-01, will govern. Bring all apparent conflicts to the attention of the authorizing design agency for additional guidance.

1-5 **REFERENCES**.

- UFC 1-200-01, *Design: General Building Requirements* (http://dod.wbdg.org/)
- *International Building Code* (IBC), 2003 (http://www.iccsafe.org/)
- *Seismic Design Parameters* (Version 3.10), International Council of Building Officials and the International Code Council in conjunction with the United States Geological Survey, the Building Seismic Safety Council, the Federal Emergency Management Agency, E.V. Leyendecker, A.D. Frankel, and K.S. Rukstales. Copies available from: Building Seismic Safety Council, 1090 Vermont Avenue, NW, Suite 700, Washington, DC 20005 (telephone: 202-289-7800; fax: 202-289-1092; web site: http://www.bssconline.org/index.html).

1-6 **TECHNICAL GUIDANCE.** The provisions of the IBC, as modified by UFC 1-200-01, govern the structural design of buildings, structures and portions thereof, with the following modifications.

1-6.1 **IBC Section 1604.5 – Importance factors.** Use Table 1 below to determine the importance factor for snow load, wind load and seismic load in lieu of Table 1604-5, "Classification of Buildings and Other Structures for Importance Factors".

TABLE 1
CLASSIFICATION OF BUILDINGS AND OTHER STRUCTURES FOR IMPORTANCE FACTORS

Seismic Use Group	Occupancy Category	Nature of Occupancy	Seismic Factor I_E	Snow Factor I_S	Wind Factor I_W
I	I	**Buildings and other structures that represent a low hazard to human life in the event of failure, including, but not limited to:** • Agricultural facilities • Certain temporary facilities • Minor storage facilities	1.00	0.8	0.87[a]
	II	**Buildings and other structures except those listed in Categories I, III, IV and V**	1.00	1.00	1.00
II	III	**Buildings and other structures that represent a substantial hazard to human life or represent significant economic loss in the event of failure, including, but not limited to:** • Buildings and other structures where more than 300 people congregate in one area • Buildings and other structures with elementary school, secondary school, or daycare facilities with an occupant load greater than 250 • Buildings and other structures with an occupant load greater than 500 • Health care facilities with an occupant load of 50 or more resident patients, but not having surgery or emergency treatment facilities • Jails and detention facilities • Structures and equipment in power-generating stations; water treatment facilities that are required for primary treatment and disinfecting of potable water; waste water treatment facilities that are required for primary treatment; and other public utility facilities that are not included in Categories IV and V • Buildings and other structures not included in Categories IV and V containing sufficient quantities of toxic, flammable, or explosive substances to be dangerous to the public if released • Facilities having high-value equipment, as designated by the using agency	1.25	1.10	1.15

Seismic Use Group	Occupancy Category	Nature of Occupancy	Seismic Factor I_E	Snow Factor I_S	Wind Factor I_W
III	IV	**Buildings and other structures designed as essential facilities, including, but not limited to:** • Hospitals and other health care facilities having surgery or emergency treatment facilities • Fire, rescue, and police stations, and emergency vehicle garages • Designated earthquake, hurricane, or other emergency shelters • Designated emergency preparedness, communication, and operation centers, and other facilities required for emergency response • Power-generating stations and other utility facilities required for primary power or as emergency backup facilities for Category IV structures • Structures containing highly toxic materials as defined by Section 307, where the quantity of material exceeds the maximum allowable quantities of Table 307.7(2) • Aviation control towers, air traffic control centers, and emergency aircraft hangars that house aircraft required for post-earthquake emergency response • Buildings and other structures not included in Category V, having DOD mission-essential command, control, primary communications, data handling, and intelligence functions that are not duplicated at geographically separate locations, as designated by the using agency • Water treatment facilities required to maintain water pressure for fire suppression	1.50[b]	1.20	1.15
IV[C]	V[C]	**Facilities designed as national strategic military assets, including, but not limited to:** • Key national defense assets (e.g. National Missile Defense facilities), as designated by the using agency • Facilities involved in operational missile control, launch, tracking, or other critical defense capabilities • Emergency backup power-generating facilities required for primary power for Category V structures • Power-generating stations and other utility facilities required for primary power for Category V structures, if emergency backup power generating facilities are not available • Facilities involved in storage, handling, or processing of nuclear, chemical, biological, or radiological materials, where structural failure could have widespread catastrophic consequences, as designated by the using agency.	N/A[C]	1.50[C]	1.70[C]

Notes to Table 1, "CLASSIFICATION OF BUILDINGS AND OTHER STRUCTURES FOR IMPORTANCE FACTORS"

a. In hurricane-prone regions with V>100 miles per hour, I_w shall be 0.77.
b. In the Optional Procedure for the Design of SUG III-A Facilities, I_E = 1.0 (See IBC Section 1616.6.2).
c. A new Category and Seismic Use Group have been added to address national strategic military assets. A Seismic Importance Factor, I_E, is not required for the design of these facilities.

1-6.2 **IBC Section 1607 – LIVE LOADS.** Replace table 1607.1, Minimum Uniformly Distributed Live Loads and Minimum Concentrated Live Loads, with table B-1 of this UFC. Table B-1 includes IBC Table 1607.1 with additional Occupancy or Use classifications for military facilities. The additional classifications that have been added to IBC Table 1607.1 for military facilities are shown in bold italics within Table B-1.

1-6.3 **IBC Section 1608 – SNOW LOADS.** Ground snow loads are identified in Appendices C and D for specific locations.

Locations with ground snow load of 'CS' indicates that site specific Case Studies are required to establish ground snow loads due to potential extreme local variations in local ground snow loads.

1-6.3.1 **Within the United States.** Ground snow loads at DOD installations within the United States, territories and possessions are identified in table C-1 to facilitate consistent interpretation of the information provided in figure 1608.2 and table 1608.2 of the IBC.

1-6.3.2 **Outside of the United States.** Ground snow loads at specific locations outside of the United States, territories and possessions are identified in table D-1. At locations where the ground snow load is not provided, use the best available locality information. For additional guidance contact the authorizing design agency.

1-6.4 **Section 1609 – WIND LOADS.** Basic wind speeds (3-second gust) are identified in Appendices C and D for specific locations.

Mountainous terrain, gorges, ocean promontories, and locations designated as 'Special' must be examined for unusual wind conditions.

1-6.4.1 **Within the United States.** Basic wind speeds at DOD installations within the United States, territories and possessions are identified in table C-1 to facilitate consistent interpretation of the information provided in figure 1609 of the IBC.

1-6.4.2 **Outside of the United States.** Basic wind speeds at specific locations outside of the United States, territories and possessions are identified in table D-1. At locations where the basic wind speed is not provided, use the best available locality information. For additional guidance contact the authorizing design agency.

The wind speed data in table D-1 was derived from MILITARY HANDBOOK 1002/2A, adjusted to reflect a 50-year recurrence interval, and supplemented with available site specific evaluations. If reliable local information is available it may be used in lieu of the listed data with the approval of the authorizing design agency. As better site-specific information becomes available Appendix D will be revised accordingly. **Use a minimum wind speed of 137 km/h (85 mph) at all locations unless a lower wind speed is approved by the authorizing design agency.**

1-6.5 **IBC Section 1615 – EARTHQUAKE LOADS– SITE GROUND MOTION.** Seismic spectral response acceleration data is provided in appendices C and D for specific locations. The short period spectral acceleration corresponding to a period of 0.2 seconds (S_S) and the 1-second spectral period acceleration (S_1) have been identified for both the Maximum Considered Earthquake (MCE) and the 10/50 Earthquake, defined as an earthquake with a 10 percent probability of being exceeded in 50 years.

The seismic design parameters in appendices C and D are typically provided at the approximate geographical centroid of the installation / city. For larger installations and where the potential seismic accelerations vary considerably over relative short distances, it may not be adequate to use the acceleration values at the installation centroid. At select locations the maximum and minimum value of S_S and S_1 within the installation is listed. Use the maximum values unless site-specific location (latitude / longitude) information is available and lesser values can be justified by the use of figure 1615 of the IBC or by approved computerized tools for determining seismic design parameters. For additional guidance contact the authorizing design agency.

1-6.5.1 **Within the United States.** Seismic design data at DOD installations within the United States, territories and possessions is identified in table C-2 to facilitate consistent interpretation of the information provided in figure 1615 of the IBC. The data was determined using the software, “Seismic Design Parameters” Version 3.10, and is based upon geographical location data for each installation. This program or other similar software may be used to determine seismic design data where site-specific location information is available, with the approval of the authorizing design agency.

1-6.5.2 **Outside of the United States.** Seismic design data at specific locations outside of the United States is identified in table D-2. Use the best available locality information at locations where the earthquake accelerations are not provided. The information shown is, with a few exceptions, not based upon detailed site-specific assessments. If better information is available at a specific location it may be used with the approval of the authorizing design agency.

Table E-1 in Appendix E provides best available seismic design data at additional locations outside of the United States.

1-6.6 **IBC Section 1805.2.1 – Frost Protection.** The minimum depth of footings below the undisturbed ground surface must be 305 mm (12 inches). Protect foundation walls, piers and other permanent supports of buildings and structures from frost as described in the IBC as modified by UFC 1-200-01.

Depths to the frost line have been identified in table C-1 for locations within the United States, territories and possessions, and in table D-1 for specific locations outside of the United States. Use the best available locality information at locations where frost depth values are not provided. For additional guidance contact the authorizing design agency.

1-7 **REVISIONS.** The information in this UFC will be revised on an as needed basis as DOD installations close or new installations are added. In addition, structural load data will be revised or supplemented as new or better information comes available. Contact a representative to the DOD Structural Discipline Working Group to recommend additions or changes.

1-8 **CREDITS.** The climatic loading data for locations within the United States, its territories and possessions is based upon figures 1608.2 and 1609 of the 2003 IBC supplemented with additional data taken from the previous edition of UFC 3-310-01 and Military Handbook 1002/2A. The International Code Council provided electronic versions of the figures from the IBC. These electronic maps greatly facilitated this effort and enhanced the accuracy of the information at individual locations.

The climatic loading data for locations outside of the United States, it territories and possessions represents the best available information to date based upon the previous edition of UFC 3-310-01, and Military Handbook 1002/2A, supplemented by recommendations from regional engineers and the Pond & Company study *Structural Engineering Design Parameters for OCONUS Locations,* 21 September 2001.

The earthquake loading data for locations within the United States, its territories and possessions was determined utilizing the software, “Seismic Design Parameters”, Version 3.10 that was developed by International Council of Building Officials and the International Code Council in conjunction with the United States Geological Survey, the Building Seismic Safety Council, the Federal Emergency Management Agency, E.V. Leyendecker, A.D. Frankel, and K.S. Rukstales.

Dr. E.V. Leyendecker of the United States Geological Survey (USGS) provided the earthquake loading data for locations outside of the United States its territories and possessions. The Global Seismic Hazard Assessment Program provided the basis for this effort.

Dr. John R. Hayes, Jr. (Jack) of the Engineer Research and Development Center, Army Corps of Engineers, Construction Engineering Research Laboratory provided Table 1, “CLASSIFICATION OF BUILDINGS AND OTHER STRUCTURES FOR IMPORTANCE FACTORS”. This table is based on table 1604.5 of the 2003 IBC as modified for unique facilities within the Department of Defense.

Tables 1 and B-1 are based on tables 1604.5 and 1607.1 of the 2003 IBC, and are reproduced with permission of the International Code Council.

APPENDIX A

ABBREVIATIONS

10/50. …… Earthquake with a10% probability of being exceeded in 50 years

CS. …… Case Study

DOD. ……. Department of Defense

%g. …… Percent Gravity

HVAC. ….. Heating Venting and Air Conditioning

in^2. …… Square Inches

IP. ……. Inch-Pound

kg/m^3. ….. Kilogram per Cubic Meter

km/h. ……. Kilometer per Hour

kN. ……. Kilo Newton

kN/m^2. …… Kilo Newton per Square Meter

kPa. …… Kilopascal

lbs. …… Pounds

MCE. ……. Maximum Considered Earthquake (2% probability of being exceeded in 50 years)

mm. ……. Millimeter

mm^2. ……. Square Millimeter

mph. ……. Miles per Hour

psf. …… Pounds per Square Foot

S_S. …… Spectral Response Acceleration at Short Period (5% Critical Damping, Site Class B)

S_1. …… Spectral Response Acceleration at 1 Second Period (5% Critical Damping, Site Class B)

APPENDIX B

MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS AND MINIMUM CONCENTRATED LIVE LOADS

B-1 REFERENCES. All section references are to the International Building Code (IBC) 2003. Table B-1 includes the IBC 2003 Table 1607.1 with additional Occupancy or Use classification for military facilities that are shown in Bold-Italics.

TABLE B-1 MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS AND MINIMUM CONCENTRATED LIVE LOADS[g]

OCCUPANCY OR USE	UNIFORM		CONCENTRATED	
	kPa	(psf)	kN	(lbs.)
1. Access floor systems				
Office use	2.4	50	8.9	2,000
Computer use	4.8	100	8.9	2,000
2. Ammunition Storage				
High explosives (one story)	***23.9***	***500***		
Inert explosives (one story)	***23.9***	***500***	---	---
Pyrotechnics (one story)	***23.9***	***500***		
Small arms (one story)	***23.9***	***500***		
Torpedo (one story)	***16.8***	***350***		
3. Apartments (see residential)	---	---	---	---
4. Armories and drill rooms	7.2	150	---	---
5. Assembly areas and theaters				
Fixed seats (fastened to floor)	2.9	60		
Lobbies	4.8	100		
Movable seats	4.8	100	---	---
Stages and platforms	6.0	125		
Follow spot, projection and control rooms	2.4	50		
Catwalks	1.9	40		
6. Balconies (exterior)	4.8	100		
On one- and two-family residences only, and not exceeding 9.3m^2 (100 ft.^{2})	2.9	60	---	---
7. Battery charging room	***9.6***	***200***	***---***	***---***
8. Boiler houses	***9.6***	***200***	***---***	***---***
9. Bowling alleys	3.6	75	---	---
10. Cleaning gear / trash room compactor	***3.6***	***75***	***---***	***---***
11. Cold Storage (Food or provision freezer)				
First floor	***19.2***	***400***		
Upper floors	***14.4***	***300***		
12. Command Duty Officer Day room	***2.9***	***60***	***---***	***---***
13. Cornices	2.9	60		
14. Corridors, except as otherwise indicated	4.8	100	---	---
15. Court rooms	***3.8***	***80***	***---***	***---***
16. Dance halls and ballrooms	4.8	100	---	---

OCCUPANCY OR USE	UNIFORM		CONCENTRATED	
	kPa	(psf)	kN	(lbs.)
17. Dining rooms and restaurants	4.8	100	---	---
18. Decks	Same as Occupancy Served[h]	Same as Occupancy Served[h]	---	---
19. Dwellings (see residential)	---	---	---	---
20. Elevator machine room grating (on area of 2600 mm^2 (4 $in.^2$))	---	---	1.33	300
21. Finish light floor plate construction (on area of 650 mm^2 (1 $in.^2$))	---	---	0.89	200
22. Fire escapes On single-family dwellings only	4.8 1.9	100 40	---	---
23. Galleys				
Dishwashing rooms	***14.4***	***300***		
General kitchen area	***12.0***	***250***		
Provision storage (not refrigerated)	***9.6***	***200***	***---***	***---***
Preparation room				
Meat	***12.0***	***250***		
Vegetable	***4.8***	***100***		
24. Garages (passenger vehicles only) Trucks & buses	1.9 See Section 1607.6 - IBC	40 See Section 1607.6 - IBC	Note a See Section 1607.6 - IBC	Note a See Section 1607.6 - IBC
25. Generator rooms	***9.6***	***200***	***---***	***---***
26. Grandstands (see stadium and arena bleachers)	---	---	---	---
27. Guard House	***3.6***	***75***	***---***	***---***
28. Gymnasiums, main floors and balconies	4.8	100	---	---
29. Handrails, guards and grab bars	Section 1607.7 - IBC	Section 1607.7 - IBC	Section 1607.7 - IBC	Section 1607.7 - IBC
30. Hospitals				
Operating rooms, laboratories	2.9	60	4.45	1,000
Private rooms	1.9	40	4.45	1,000
Wards	1.9	40	4.45	1,000
Corridors above first floor	3.8	80	4.45	1,000
31. Hotels (see residential)	---	---	---	---
32. Incinerators; charging room	***7.2***	***150***	***---***	***---***
33. Laboratories, normal scientific equipment	***6.0***	***125***	***---***	***---***
34. Latrines / Heads / Toilets / Washroom	***3.6***	***75***	***---***	***---***
35. Libraries				
Reading rooms	2.9	60	4.45	1,000
Stack rooms	7.2[b]	150[b]	4.45	1,000
Corridors above first floor	3.8	80	4.45	1,000
36. Manufacturing				
Light	6.0	125	8.9	2,000
Heavy	12.0	250	13.34	3,000
37. Marquees and canopies	3.6	75	---	---
38. Mechanical equipment room (general)	***4.8***	***100***	***---***	***---***
39. Mechanical room (HVAC)	***6.0***	***125***	***---***	***---***

OCCUPANCY OR USE	UNIFORM		CONCENTRATED	
	kPa	(psf)	kN	(lbs.)
40. Mechanical telephone and radio equipment room	***7.2***	***150***	***---***	***---***
41. Morgue	***4.8***	***100***	***---***	***---***
42. Office buildings				
File and computer rooms shall be designed for heavier loads based on anticipated occupancy				
Lobbies and first floor corridors	4.8	100	8.9	2,000
Offices	2.4	50	8.9	2,000
Corridors above first floor	3.8	80	8.9	2,000
43. Penal Institutions				
Cell blocks	1.9	40	---	---
Corridors	4.8	100		
44. Post offices				
General area	***4.8***	***100***	***---***	***---***
Work rooms	***6.0***	***125***		
45. Power plants	***9.6***	***200***	***---***	***---***
46. Projection booths	***4.8***	***100***	***---***	***---***
47. Promenade roof	***2.9***	***60***	***---***	***---***
48. Pump houses	***4.8***	***100***	***---***	***---***
49. Recreation room	***4.8***	***100***	***---***	***---***
50. Receiving rooms (radio) including roof areas supporting antennas and electronic equipment	***7.2***	***150***	***---***	***---***
51. Refrigeration storage rooms				
Dairy	***9.6***	***200***		
Meat	***12.0***	***250***	***---***	***---***
Vegetable	***13.2***	***275***		
52. Residential				
One & two family dwellings				
Uninhabitable attics without storage	0.5	10		
Uninhabitable attics with storage	1.0	20		
Habitable attics and sleeping areas	1.4	30	---	---
All other areas except balconies and decks	1.9	40		
Hotels and multifamily dwellings				
Private rooms & corridors serving them	1.9	40		
Public rooms and corridors serving them	4.8	100		
53. Reviewing stands, grandstands and bleachers	Note c	Note c	---	---
54. Roofs	Section 1607.11 - IBC	Section 1607.11 - IBC	Section 1607.11 - IBC	Section 1607.11 - IBC
55. Schools				
Classrooms	1.9	40	4.45	1,000
Corridors above first floor	3.8	80	4.45	1,000
First floor corridors	4.8	100	4.45	1,000

OCCUPANCY OR USE	UNIFORM		CONCENTRATED	
	kPa	(psf)	kN	(lbs.)
56. Scuttles, skylight ribs, and accessible ceilings	---	---	0.89	200
57. Shops: Manufacturing and Industrial				
Aircraft utility	***9.6***	***200***		
Assembly and repair	***12.0***	***250***	***---***	***---***
Bombsite (w/o shielding)	***6.0***	***125***		
Carpenter	***6.0***	***125***		
Electrical	***14.4***	***300***		
Engine overhaul	***14.4***	***300***		
58. Sidewalks, vehicular driveways and yards, subject to trucking	12.0[d]	250[d]	35.6[e]	8,000[e]
59. Skating rinks	4.8	100	---	---
60. Stadiums and arenas				
Bleachers	4.8[c]	100[c]	---	---
Fixed seats (fastened to floor)	2.9[c]	60[c]		
61. Stairs and exits	4.8	100		
One- and two-family dwellings	1.9	40	Note f	Note f
All other	4.8	100		
62. Storage warehouses (shall be designed for heavier loads if required for anticipate storage)				
General				
Light	6.0	125		
Heavy	11.97	250		
Aircraft	***9.58***	***200***	---	---
Building Materials	***11.97***	***250***		
Drugs, paint, oil	***9.58***	***200***		
Dry Provisions	***14.36***	***300***		
Groceries, wine, Liquor	***14.36***	***300***		
Light Tools	***7.2***	***150***		
Pipe & metal	***47.88***	***1000***		
Paint and oil (one story)	***23.94***	***500***		
Hardware	***14.36***	***300***		
63. Stores				
Retail				
First floor	4.8	100	4.45	1,000
Upper floors	3.6	75	4.45	1,000
Wholesale, all floors	6.0	125	4.45	1,000
64. Tailor shop	***3.6***	***75***	***---***	***---***
65. Telephone exchange rooms and central computer IT server spaces	***7.2***	***150***	***8.9***	***2000***
66. Vehicle barriers	Section 1607.7 - IBC	Section 1607.7 - IBC	Section 1607.7 - IBC	Section 1607.7 - IBC
67. Walkways and elevated platforms (other than exit ways)	2.9	60	---	---
68. Yards and terraces, pedestrian	4.8	100	---	---

Notes to Table B-1, "MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS AND MINIMUM CONCENTRATED LIVE LOADS"

For SI: 1 square inch = 645.16 mm^2, 1 pound per square foot = 0.0479 kN/m^2 = *0.0479 kPa*, 1 pound = 0.004448 kN, 1 pound per cubic foot = 16 kg/m^3.

a. Floors in garages or portions of building used for the storage of motor vehicles shall be designed for the uniformly distributed live loads shown or the following concentrated loads: (1) for passenger cars accommodating not more than nine passengers, 13.34 kN (3,000 pounds) acting on an area of 114 mm x 114 mm (4.5 inches x 4.5 inches); (2) for mechanical parking structures without slab or deck which are used for storing passenger vehicles only, 10.0 kN (2,250 pounds) per wheel.

b. The loading applies to stack room floors that support non-mobile, double-faced library book stacks, subject to the following limitations:

   1) The nominal book stack unit height shall not exceed 2,290mm (90 inches).

   2) The nominal shelf depth shall not exceed 305mm (12 inches) for each face; and

   3) Parallel rows of double-faced book stacks shall be separated by aisles not less than 915 mm (36 inches) wide.

c. Design in accordance with the ICC *Standard on Bleachers, Folding and Telescoping Seating and Grandstands*.

d. Other uniform loads in accordance with an approved method which contains provisions for truck loadings shall also be considered where appropriate.

e. The concentrated wheel load shall be applied on an area of 12,900 mm^2 (20 square inches).

f. Minimum concentrated load on stair treads (on area of 2,600 mm^2 (4 square inches)) is 1.3 kN (300 pounds).

g. Where snow loads occur that are in excess of the design conditions, the structure shall be designed to support the loads due to the increased loads caused by drift buildup or a greater snow design determined by the building official. (See IBC Section 1608). For special-purpose roofs, see IBC Section 1607.11.2.2.

h. See IBC Section 1604.8.3 for decks attached to exterior walls.

APPENDIX C

SITE SPECIFIC STRUCTURAL LOADING DATA – UNITED STATES, ITS TERRITORIES AND POSSESSIONS

C-1 Climatic Loading Data Table. Site-specific structural climatic loading data for DoD locations within the United States, its territories and possessions is provided in Table C-1.

C-2 Earthquake Loading Data Table. Site-specific earthquake loading data for DoD locations within the United States, its territories and possessions is provided in Table C-2.

TABLE C-1 STRUCTURAL CLIMATIC LOADING DATA – UNITED STATES, ITS TERRITORIES AND POSSESSIONS

TABLE C-1		Ground Snow	Wind Speed	Frost Penetration	Ground Snow	Wind Speed	Frost Penetration
State	Base / City	(psf)	(mph)	(inches)	kPa	km/h	mm
Alabama	Anniston Army Depot	5	90	6	0.24	145	152
	Birmingham	5	90	6	0.24	145	152
	Fort McClellan	5	90	6	0.24	145	152
	Fort Rucker	0	107	0	0.00	172	0
	Maxwell-Gunther AFB / Montgomery	5	97	4	0.24	156	102
	Mobile	0	130	0	0.00	209	0
	Redstone Arsenal / Huntsville	10	90	9	0.48	145	229
Alaska	Clear AS	60	90		2.87	145	
	Eielson AFB	60	90	permafrost	2.87	145	permafrost
	Elmendorf AFB	50	100	129	2.40	161	3277
	Fort Richardson	50	100	129	2.40	161	3277
	Fort Wainwright	60	90	permafrost	2.87	145	permafrost
	Galena AFB	60	100		2.87	161	
	Juneau	60	105	86	2.87	169	2184
	Ketchikan		115		0.00	185	
	Kodiak	30	130	86	1.44	209	2184
	Sitka	50	122	56	2.40	196	1422
	Valdez	160	100	136	7.66	161	3454
Arizona	Davis-Monthan AFB / Tucson AFB	0	90	0	0.00	145	0
	Fort Huachuca	10	90	0	0.48	145	0
	Luke Air Force Base	0	90	5	0.00	145	127

TABLE C-1

State	Base / City	Ground Snow (psf)	Wind Speed (mph)	Frost Penetration (inches)	Ground Snow kPa	Wind Speed km/h	Frost Penetration mm
Arizona	Phoenix	**0**	**90**	**0**	**0.00**	**145**	**0**
	Yuma MCB	**0**	**90**	**0**	**0.00**	**145**	**0**
	Yuma Proving Ground	**0**	**90**	**0**	**0.00**	**145**	**0**
Arkansas	Little Rock AFB	**10**	**90**	**14**	**0.48**	**145**	**356**
	Pine Bluff Arsenal	**10**	**90**	**9**	**0.48**	**145**	**229**
California	Alameda	**0**	**85**		**0.00**	**137**	
	MCLB Barstow	**0**	**85**	**18**	**0.00**	**137**	**457**
	Beale AFB	**0**	**85**		**0.00**	**137**	
	MCMTC Bridgeport	**150**	**100**	**36**	**7.19**	**161**	**914**
	Camp Pendleton	**0**	**85**	**4**	**0.00**	**137**	**102**
	NWS China Lake	**0**	**85**	**22**	**0.00**	**137**	**559**
	NSWC Corona	**0**	**85**	**0**	**0.00**	**137**	**0**
	Edwards AFB	**0**	**85 Special**	**22**	**0.00**	**137 Special**	**559**
	El Centro NAF	**0**	**85**	**0**	**0.00**	**137**	**0**
	Fort Irwin	**0**	**85**	**22**	**0.00**	**137**	**559**
	Fresno ANG	**0**	**85**	**0**	**0.00**	**137**	**0**
	NAS Lemoore	**0**	**85**	**0**	**0.00**	**137**	**0**
	Los Angeles AFB / El Segundo	**0**	**85**	**0**	**0.00**	**137**	**0**
	Los Angeles	**0**	**85**	**0**	**0.00**	**137**	**0**
	March ARB	**0**	**85**	**0**	**0.00**	**137**	**0**
	McClellan AFB / Sacremento	**0**	**85**	**5**	**0.00**	**137**	**127**
	NWC Mohave Range	**0**	**85**	**22**	**0.00**	**137**	**559**
	Presidio of Monterey	**0**	**85**	**4**	**0.00**	**137**	**102**
	Point Mugu / Port Hueneme	**0**	**85**	**0**	**0.00**	**137**	**0**
	San Diego Region NAS North Island NAB Coronada MCRD Miramar Naval Medical Ctr San Diego NS Point Loma	**0**	**85**	**0**	**0.00**	**137**	**0**

TABLE C-1

State	Base / City	Ground Snow (psf)	Wind Speed (mph)	Frost Penetration (inches)	Ground Snow kPa	Wind Speed km/h	Frost Penetration mm
California	Moffett Field - Onizuka / Sunnyvale	**0**	**85**	**0**	**0.00**	**137**	**0**
	San Clemente Island Naval Reservation	**0**	**85**	**0**	**0.00**	**137**	**0**
	San Nicolas Island	**0**	**85**	**0**	**0.00**	**137**	**0**
	Seal Beach NWS	**0**	**85**	**0**	**0.00**	**137**	**0**
	Seal Beach NWS - Concord Detachment	**0**	**85**	**0**	**0.00**	**137**	**0**
	Sierra Army Depot / Herlong	**15**	**85**	**54**	**0.72**	**137**	**1372**
	Stockton / San Joaquin	**0**	**85**	**4**	**0.00**	**137**	**102**
	Travis AFB	**0**	**85**	**0**	**0.00**	**137**	**0**
	Twentynine Palms	**0**	**85**	**5**	**0.00**	**137**	**127**
	Vandenberg AFB	**0**	**85**	**0**	**0.00**	**137**	**0**
Colorado	Buckley AFB / Aurora	**20**	**90**	**52**	**0.96**	**145**	**1321**
	Denver	**20**	**90**	**52**	**0.96**	**145**	**1321**
	Fort Carson	**15**	**90 Special**	**38**	**0.72**	**145 Special**	**965**
	Cheyenne Mountain AS / NORAD	**15**	**90 Special**	**38**	**0.72**	**145 Special**	**965**
	Peterson AFB / Colorado Springs	**30**	**90**	**38**	**1.44**	**145**	**965**
	Schriever AFB	**CS**	**90**		**CS**	**145**	
	USAF Academy	**30**	**90 Special**	**38**	**1.44**	**145 Special**	**965**
Connecticut	NSB New London / Groton	**30**	**120**	**38**	**1.44**	**193**	**965**
Delaware	Dover AFB	**25**	**95**	**22**	**1.20**	**153**	**559**
District of Columbia	**Washington Region** Bolling AFB Anacostia NS Fort McNair Marine Barracks NRL Washington NDW / Anacostia Pentagon	**25**	**90**	**26**	**1.20**	**145**	**660**

TABLE C-1

State	Base / City	Ground Snow (psf)	Wind Speed (mph)	Frost Penetration (inches)	Ground Snow kPa	Wind Speed km/h	Frost Penetration mm
	Walter Reed						
Florida	Avon Park AS	**0**	**110**	**0**	**0.00**	**177**	**0**
	Cape Canaveral AFS	**0**	**125**	**0**	**0.00**	**201**	**0**
	Eglin AFB	**0**	**133**	**0**	**0.00**	**214**	**0**
	Homestead	**0**	**150**	**0**	**0.00**	**241**	**0**
	Hurlburt Field	**0**	**135**		**0.00**	**217**	
	NAS Jacksonville / Jacksonville	**0**	**110**	**0**	**0.00**	**177**	**0**
	NAS Key West	**0**	**150**	**0**	**0.00**	**241**	**0**
	MacDill AFB	**0**	**120**	**0**	**0.00**	**193**	**0**
	NAS Mayport	**0**	**120**	**0**	**0.00**	**193**	**0**
	HQ Southcom / Miami	**0**	**140**	**0**	**0.00**	**225**	**0**
	Orlando	**0**	**108**	**0**	**0.00**	**174**	**0**
	NAS Panama City	**0**	**130**	**0**	**0.00**	**209**	**0**
	Patrick AFB	**0**	**125**	**0**	**0.00**	**201**	**0**
	NAS Pensacola	**0**	**140**	**0**	**0.00**	**225**	**0**
	Tampa	**0**	**118**	**0**	**0.00**	**190**	**0**
	Tyndall AFB	**0**	**130**	**0**	**0.00**	**209**	**0**
	NAS Whiting Field / Milton	**0**	**125**	**0**	**0.00**	**201**	**0**
Georgia	MC Logistics Support / Albany	**0**	**98**	**0**	**0.00**	**158**	**0**
	Athens NCSC	**5**	**90**		**0.24**	**145**	
	Dobbins AFB / Atlanta NAS	**5**	**90**		**0.24**	**145**	
	Fort Benning	**5**	**95**	**0**	**0.24**	**153**	**0**
	Fort Gordon	**10**	**93**	**0**	**0.48**	**150**	**0**
	Fort McPherson / Fort Gillem	**5**	**90**		**0.24**	**145**	
	Fort Stewart	**0**	**110**	**0**	**0.00**	**177**	**0**
	Hunter Army Airfield / Savannah	**0**	**120**	**0**	**0.00**	**193**	**0**
	NSB Kings Bay	**0**	**120**	**0**	**0.00**	**193**	**0**
	Moody AFB	**0**	**98**	**0**	**0.00**	**158**	**0**
	Robins AFB	**5**	**92**	**0**	**0.24**	**148**	**0**
Hawaii	PMRF Barking Sands, Kauai	**0**	**105**	**0**	**0.00**	**169**	**0**

TABLE C-1

State	Base / City	Ground Snow (psf)	Wind Speed (mph)	Frost Penetration (inches)	Snow kPa	Wind Speed km/h	Frost Penetration mm
Hawaii	MCBH Kaneohe Bay	**0**	**105**	**0**	**0.00**	**169**	**0**
	Pearl Harbor Region: Camp H.M. Smith Fort Shafter Hickam AFB Pearl Harbor Tripler AMC	**0**	**105**	**0**	**0.00**	**169**	**0**
	Wahiawa Region: Lualualei Wahiawa Naval Reservation Wheeler AFB Schofield Barracks	**0**	**105**	**0**	**0.00**	**169**	**0**
Idaho	ARD Bayview	**10**	**90**		**0.48**	**145**	
	Boise ANG	**10**	**90**		**0.48**	**145**	
	Mountain Home AFB	**20**	**90**	**64**	**0.96**	**145**	**1626**
Illinois	Fort Sheridan / Chicago	**25**	**90**	**59**	**1.20**	**145**	**1499**
	Great Lakes	**25**	**90**	**64**	**1.20**	**145**	**1626**
	Rock Island Arsenal	**20**	**90**	**64**	**0.96**	**145**	**1626**
	Scott AFB	**20**	**90**	**38**	**0.96**	**145**	**965**
	Springfield	**20**	**90**		**0.96**	**145**	
Indiana	Crane NWSC	**20**	**90**	**36**	**0.96**	**145**	**914**
	Grissom ARB	**20**	**90**	**49**	**0.96**	**145**	**1245**
	Fort Benjamin Harrison / Indianapolis	**20**	**90**	**44**	**0.96**	**145**	**1118**
Iowa	Des Moines	**25**	**90**	**82**	**1.20**	**145**	**2083**
Kansas	Fort Leavenworth	**20**	**90**	**54**	**0.96**	**145**	**1372**
	Fort Riley	**20**	**90**	**52**	**0.96**	**145**	**1321**
	McConnell AFB	**25**	**90**	**38**	**1.20**	**145**	**965**
Kentucky	Fort Campbell	**15**	**90**	**22**	**0.72**	**145**	**559**
	Fort Knox	**15**	**90**	**32**	**0.72**	**145**	**813**
	Louisville	**15**	**90**	**32**	**0.72**	**145**	**813**
	Richmond	**15**	**90**		**0.72**	**145**	**0**
Louisiana	Barksdale AFB	**5**	**90**	**7**	**0.24**	**145**	**178**
	Fort Polk / Leesville	**5**	**95**	**0**	**0.24**	**153**	**0**

TABLE C-1

State	Base / City	Ground Snow (psf)	Wind Speed (mph)	Frost Penetration (inches)	Ground Snow kPa	Wind Speed km/h	Frost Penetration mm
Louisiana	NAS JRB New Orleans / Belle Chasse	**0**	**130**	**0**	**0.00**	**209**	**0**
Maine	NAS Brunswick	**50**	**100**	**86**	**2.40**	**161**	**2184**
	Winter Harbor NSGA	**50**	**98**	**86**	**2.40**	**158**	**2184**
Maryland	Aberdeen Proving Ground	**25**	**90**	**29**	**1.20**	**145**	**737**
	Adelphi	**25**	**90**	**24**	**1.20**	**145**	**610**
	Andrews AFB	**25**	**90**	**26**	**1.20**	**145**	**660**
	Carderock NSWC / Bethesda	**25**	**90**	**20**	**1.20**	**145**	**508**
	Bloods Island	**20**	**102**		**0.96**	**164**	
	Edgewood Arsenal	**25**	**90**	**29**	**1.20**	**145**	**737**
	Fort Detrick / Fredrick	**30**	**90**	**29**	**1.44**	**145**	**737**
	Fort Meade	**25**	**90**	**26**	**1.20**	**145**	**660**
	Indian Head NSWC	**25**	**90**	**22**	**1.20**	**145**	**559**
	Martin State ANG	**25**	**90**	**29**	**1.20**	**145**	**737**
	NS Pax River , Webster Field / St. Inigoes	**20**	**90**	**26**	**0.96**	**145**	**660**
	U.S Naval Academy / Annapolis	**25**	**90**	**26**	**1.20**	**145**	**660**
Massachusetts	Fort Devens / Ayer	**50**	**97**	**64**	**2.40**	**156**	**1626**
	Hanscom AFB	**50**	**100**	**54**	**2.40**	**161**	**1372**
	Natick	**50**	**100**		**2.40**	**161**	
	Otis AGB / Falmouth	**25**	**115**	**38**	**1.20**	**185**	**965**
	Westover ARB	**35**	**95**	**64**	**1.68**	**153**	**1626**
Michigan	Battle Creek	**30**	**90**		**1.44**	**145**	
	Detroit Arsenal / Warren	**25**	**90**	**61**	**1.20**	**145**	**1549**
	Selfridge ANG Base	**25**	**90**	**59**	**1.20**	**145**	**1499**
Minnesota	Minneapolis - St Paul	**50**	**90**	**125**	**2.40**	**145**	**3175**
Mississippi	Stennis / Bay St. Louis	**0**	**130**		**0.00**	**209**	
	Columbus AFB	**10**	**90**	**7**	**0.48**	**145**	**178**

TABLE C-1

State	Base / City	Ground Snow (psf)	Wind Speed (mph)	Frost Penetration (inches)	Ground Snow kPa	Wind Speed km/h	Frost Penetration mm
	Gulfport	0	135	0	0.00	217	0
Mississippi	Jackson	5	92	5	0.24	148	127
	Keesler AFB	0	135	0	0.00	217	0
	NAS Meridian	5	97	5	0.24	156	127
	Pascagoula NS	0	150	0	0.00	241	0
	Vicksburg	5	90		0.24	145	
Missouri	Fort Leonard Wood	20	90	36	0.96	145	914
	Kansas City	20	90	49	0.96	145	1245
	Overland	20	90		0.96	145	
	St. Louis	20	90	38	0.96	145	965
	Whiteman AFB	20	90	46	0.96	145	1168
Montana	Great Falls ANG	20	90	107	0.96	145	2718
	Malmstrom AFB	20	90	107	0.96	145	2718
Nebraska	Offutt AFB	25	90	73	1.20	145	1854
	Lincoln	25	90	64	1.20	145	1626
Nevada	NAS Fallon	5	90	23	0.24	145	584
	Indian Springs AFS	5	90	7	0.24	145	178
	Nellis AFB	5	90	7	0.24	145	178
	Nellis AF Range	5	90	7	0.24	145	178
New Hampshire	Portsmouth Naval Shipyard	50	100	64	2.40	161	1626
New Jersey	NWS Earle / Colts Neck	20	110		0.96	177	
	Fort Dix / Trenton	25	105	29	1.20	169	737
	Fort Monmouth	20	110	38	0.96	177	965
	Lakehurst	25	105	29	1.20	169	737
	McGuire AFB	25	105	29	1.20	169	737
	Picatinny Arsenal	35	90	32	1.68	145	813
New Mexico	Albuquerque	10	90	18	0.48	145	457
	Cannon AFB	15	90	18	0.72	145	457
	Holloman AFB	5	90	4	0.24	145	102
	Kirtland AFB	10	(a)	18	0.48	(a)	457
	White Sands	5	90	4	0.24	145	102
New York	Buffalo	45	90	59	2.16	145	1499
	Fort Drum	70	90	94	3.35	145	2388
	Fort Hamilton / Brooklyn	25	90		1.20	145	

TABLE C-1

State	Base / City	Ground Snow (psf)	Wind Speed (mph)	Frost Penetration (inches)	Snow kPa	Wind Speed km/h	Frost Penetration mm
	Griffis AFB / Rome	60	90	86	2.87	145	2184
New York	NIAGARA FALLS IAP	35	90	59	1.68	145	1499
	NSU Saratoga Springs	50	90		2.40	145	
	Stewart ANG / Newburgh	35	100	54	1.68	161	1372
	Syracuse	40	90	73	1.92	145	1854
	West Point	30	90 Special	54	1.44	145 Special	1372
	Watervliet Arsenal / Albany	40	90	82	1.92	145	2083
North Carolina	MCAS Cherry Point	10	128	0	0.48	206	0
	Fort Bragg	10	95	0	0.48	153	0
	Jacksonville Region Camp Lejeune MCAS New River	10	130	0	0.48	209	0
	Pope AFB	10	95	0	0.48	153	0
	Raleigh	15	93		0.72	150	
	Seymour Johnson AFB	10	100	4	0.48	161	102
North Dakota	Grand Forks AFB	60	90	156	2.87	145	3962
	Minot AFB	40	90	163	1.92	145	4140
Ohio	Cleveland	20	90	52	0.96	145	1321
	DSC Whitehall / Columbus	20	90	46	0.96	145	1168
Ohio	Wright-Patterson AFB	20	90	49	0.96	145	1245
	Youngstown ARS / Vienna	20	90		0.96	145	
Oklahoma	Altus AFB	10	90	14	0.48	145	356
	Fort Sill	10	90	14	0.48	145	356
	McAlester Army Ammunition Plant	10	90	16	0.48	145	406
	Tinker AFB / Oklahoma City	10	90	17	0.48	145	432
	Tulsa	10	90	23	0.48	145	584
	Vance AFB	15	90	22	0.72	145	559
Oregon	Portland	10	85	14	0.48	137	356
Pennsylvania	ARS Coraopolis / Pittsburg	25	90	38	1.20	145	965

TABLE C-1

State	Base / City	Ground Snow (psf)	Wind Speed (mph)	Frost Penetration (inches)	Snow kPa	Wind Speed km/h	Frost Penetration mm
	Carlisle Barracks	25	90	36	1.20	145	914
Pennsylvania	Fort Indiantown Gap / Annville	35	90	49	1.68	145	1245
	Letterkenny / Chambersburg	30	90	36	1.44	145	914
	Mechanicsburg	25	90		1.20	145	
	Philadelphia	25	90	30	1.20	145	762
	New Cumberland / Defense Depot Susquehanna	25	90		1.20	145	0
	Tobyhanna Army Depot	50	90	52	2.40	145	
	Willow Grove ARS / NAS	30	90		1.44	145	0
Rhode Island	NS Newport	30	115	35	1.44	185	889
South Carolina	MCAS Beaufort	5	122	0	0.24	196	0
	Charleston Region: Charletion AFB NWS Charleston	5	125	0	0.24	201	0
	Columbia Region: McEntire Fort Jackson Shaw AFB	10	97	0	0.48	156	0
	MCRD Parris Island	0	125	0	0.00	201	0
South Dakota	Ellsworth AFB	20	90	86	0.96	145	2184
Tennessee	Arnold AFB	10	90		0.48	145	
	NSWC LCC / Memphis	10	90	0	0.48	145	0
	NSA Mid-South / Millington	10	90		0.48	145	
	Nashville	10	90	22	0.48	145	559
Texas	NAS JRB, Carswell / Fort Worth	5	90	7	0.24	145	178
	NAS Corpus Christi	0	130	0	0.00	209	0
	Dallas / Irving	5	90	7	0.24	145	178
	Dyess AFB	5	90	7	0.24	145	178
	Ellington ANG / Houston	0	115	0	0.00	185	0
	Fort Bliss / El Paso	5	90	0	0.24	145	0
	Fort Hood / Killeen	5	90	6	0.24	145	152

TABLE C-1

State	Base / City	Ground Snow (psf)	Wind Speed (mph)	Frost Penetration (inches)	Snow kPa	Wind Speed km/h	Frost Penetration mm
	Goodfellow AFB	5	90	5	0.24	145	127
Texas	NS Ingleside	0	130	0	0.00	209	0
	NAS Kingsville	0	115	0	0.00	185	0
	Laughlin AFB	0	90	0	0.00	145	0
	Red River Army Depot / Texarkana	5	90	8	0.24	145	203
	San Antonio Region Brooks AFB Fort Sam Houston Kelly AFB Lackland AFB Randolph AFB	5	90	0	0.24	145	0
	Sheppard AFB	5	90	11	0.24	145	279
Utah	Dugway Proving Ground	10	90	54	0.48	145	1372
	Hill AFB	40	90	73	1.92	145	1854
	Salt Lake City	15	90	59	0.72	145	1499
	Tooele Army Depot	25	90	52	1.20	145	1321
Virginia	Dahlgren	25	90		1.20	145	
	Dam Neck / Virginia Beach Ocean front	10	115	5	0.48	185	127
	Fort A. P. Hill	25	90		1.20	145	
	Fort Belvoir	25	90	26	1.20	145	660
	Fort Eustis	15	97	9	0.72	156	229
	Fort Lee	20	90	14	0.96	145	356
	Fort Monroe	10	105	9	0.48	169	229
	Fort Myer	25	90	26	1.20	145	660
	Fort Story	10	113	9	0.48	182	229
	Henderson Hall / Arlington	25	90	26	1.20	145	660
	Langley AFB / Hampton	10	105	9	0.48	169	229
	NAB Little Creek	10	110	9	0.48	177	229
	Norfolk Region: Camp Elmore Craney Island Depot Norfolk Naval Base	10	107	9	0.48	172	229

TABLE C-1

State	Base / City	Ground Snow (psf)	Wind Speed (mph)	Frost Penetration (inches)	Snow kPa	Wind Speed km/h	Frost Penetration mm
	Norfolk Shipyard - Naval Hospital / Portsmouth	10	105	9	0.48	169	229
Virginia	NSA Northwest / Chesapeake	10	105	9	0.48	169	229
	NAS Oceana / Virginia Beach	10	113	9	0.48	182	229
	Quantico	25	90	22	1.20	145	559
	Defense Supply Ctr / Richmond	20	90	18	0.96	145	457
	Wallops Island	20	115		0.96	185	
	Yorktown Region: Camp Perry Cheatham Annex Yorktown NWS	15	95	9	0.72	153	229
Washington	NS Everett	15 (b)	85		0.72(b)	137	
	Fairchild AFB	42	85	64	2.01	137	1626
	Fort Lewis / Tacoma	15 (b)	85	9	0.72(b)	137	229
	Indian Island SWC	15 (b)	85		0.72(b)	137	
	NRS Jim Creek	15 (b)	85		0.72(b)	137	
	Keyport / Bangor Engin. Sta Annex	15 (b)	85	9	0.72(b)	137	229
	McChord AFB	15	85	9	0.72	137	229
	Puget Sound Region: Bangor NSB Bremerton NS Puget Sound NSY	15 (b)	85	9	0.72(b)	137	229
	NAS Whidbey Island / Oak Harbor	15 (b)	85		0.72(b)	137	
	Seattle	15	85	9	0.72	137	229
West Virginia	Beckley	30	90		1.44	145	
	Huntington	20	90	22	0.96	145	559
	Sugar Grove NRS	30	90	38	1.44	145	965
Wisconsin	Fort McCoy	40	90	114	1.92	145	2896
	General Mitchell AFRC / Milwaukee	30	90	75	1.44	145	1905
	Madison	30	90	75	1.44	145	1905
Wyoming	F. E. Warren AFB	20	90	59	0.96	145	1499

TABLE C-1

State	Base / City	Ground Snow (psf)	Wind Speed (mph)	Frost Penetration (inches)	Snow kPa	Wind Speed km/h	Frost Penetration mm
American Somoa	Pago Pago / Tutuila Island	**0**	**125**	**0**	**0.00**	**201**	**0**
Mariana Islands	Guam	**0**	**170**	**0**	**0.00**	**274**	**0**
Mariana Islands	Saipan / Tinian	**0**	**150**	**0**	**0.00**	**241**	**0**
Puerto Rico	All	**0**	**145**	**0**	**0.00**	**233**	**0**

Notes to TABLE C-1, "STRUCTURAL CLIMATIC LOADING DATA – UNITED STATES, ITS TERRITORIES AND POSSESSIONS"

(a) - Wind speed equals 125 mph (201 km/h) in the south sector of Kirtland AFB.
Wind speed equals 100 mph (161 km/h) on the remainder of the base.

(b) – Ground snow load to be used for Navy facilities at identified locations in Washington State equals 25 psf (1.20 kPa).

CS – Site specific case studies are required to establish ground snow loads.

Special - Special wind regions where unusual geographic conditions require consideration for potential unusual wind conditions. The wind speeds shown are minimum values. The potential for higher wind speeds due to unusual geographic conditions should also be considered.

TABLE C-2 EARTHQUAKE LOADING DATA – UNITED STATES, ITS TERRITORIES AND POSSESSIONS

TABLE C-2

State	Base / City	Seismic Data (Site Class B) MCE S_S (%g)	MCE S_1 (%g)	10/50 S_S (%g)	10/50 S_1 (%g)
Alabama	Anniston Army Depot	**31**	**12**	**11**	**4**
	Birmingham	**32**	**12**	**11**	**4**
	Fort McClellan	**31**	**12**	**11**	**4**
	Fort Rucker	**12**	**7**	**4**	**2**
	Maxwell-Gunther AFB / Montgomery	**17**	**8**	**6**	**3**
	Mobile	**12**	**6**	**4**	**2**
	Redstone Arsenal / Huntsville	**29**	**13**	**11**	**4**
Alaska	Clear AS	**108**	**30**	**47**	**14**
	Eielson AFB	**106**	**29**	**44**	**14**
	Elmendorf AFB	**149**	**55**	**100**	**30**
	Fort Richardson	**152**	**57**	**101**	**31**
	Fort Wainwright	**111**	**31**	**49**	**14**
	Galena AFB	**35**	**10**	**15**	**4**
	Juneau	**57**	**27**	**27**	**14**
	Ketchikan	**23**	**14**	**11**	**8**
	Kodiak	**179**	**66**	**116**	**37**
	Sitka	**102**	**52**	**52**	**31**
	Valdez	**147**	**57**	**93**	**30**
Arizona	Davis-Monthan AFB / Tucson AFB	**31**	**9**	**13**	**4**
	Fort Huachuca	**28**	**8**	**12**	**3**
	Luke Air Force Base	**24**	**7**	**11**	**3**
	Phoenix	**23**	**7**	**11**	**3**
	Yuma MCB	**68**	**24**	**37**	**14**
	Yuma Proving Ground	**59 Max 27 Min**	**20 Max 10 Min**	**29 Max 15 Min**	**11 Max 6 Min**
Arkansas	Little Rock AFB	**54**	**19**	**14**	**4**
	Pine Bluff Arsenal	**41**	**16**	**11**	**4**
California	Alameda	**150**	**60**	**123**	**55**
	MCLB Barstow	**127**	**47**	**61**	**22**
	Beale AFB	**43**	**19**	**26**	**11**
	MCMTC Bridgeport	**124**	**43**	**63**	**21**
	Camp Pendleton	**116**	**42**	**61**	**25**
California	NWS China Lake	**132 Max**	**51 Max**	**80 Max**	**27 Max**

TABLE C-2

State	Base / City	Seismic Data (Site Class B) MCE S_S (%g)	MCE S_1 (%g)	10/50 S_S (%g)	10/50 S_1 (%g)
		119 Min	**38 Min**	**61 Min**	**19 Min**
	NSWC Corona	**164**	**60**	**127**	**47**
	Edwards AFB	**128 Max** **90 Min**	**60 Max** **40 Min**	**85 Max** **47 Min**	**39 Max** **21 Min**
	El Centro NAF	**195 Max** **150 Min**	**66 Max** **60 Min**	**160 Max** **128 Min**	**54 Max** **39 Min**
	Fort Irwin	**197 Max** **78 Min**	**91 Max** **27 Min**	**144 Max** **40 Min**	**55 Max** **15 Min**
	Fresno ANG	**43**	**20**	**27**	**12**
	NAS Lemoore	**99**	**32**	**49**	**20**
	Los Angeles AFB / El Segundo	**174**	**63**	**113**	**39**
	Los Angeles	**193**	**76**	**119**	**42**
	March ARB	**150**	**60**	**127**	**50**
	McClellan AFB / Sacremento	**45**	**20**	**28**	**13**
	NWC Mohave Range	**212 Max** **99 Min**	**90 Max** **32 Min**	**106 Max** **49 Min**	**36 Max** **20 Min**
	Presidio of Monterey	**174**	**64**	**105**	**37**
	Point Mugu / Port Hueneme	**181**	**99**	**128**	**54**
	San Diego Region				
	NAS North Island	**145**	**59**	**66.4**	**24.8**
	NAB Coronada	**130**	**50**	**62.8**	**22.8**
	MCRD	**155**	**72**	**67.5**	**25.4**
	Miramar	**147**	**55**	**64.8**	**24.1**
	Naval Medical Ctr	**154**	**79**	**63.4**	**24.3**
	San Diego NS	**138**	**54**	**60.8**	**22.2**
	Point Loma	**149**	**60**	**72.5**	**26.1**
	Moffett Field - Onizuka / Sunnyvale	**150**	**60**	**125**	**57**
	San Clemente Island Naval Reservation	**63**	**21**	**31**	**12**
	San Nicolas Island	**53**	**18**	**26**	**10**
	Seal Beach NWS	**185**	**75**	**110**	**37**
	Seal Beach NWS - Concord Detachment	**165**	**61**	**145**	**55**
	Sierra Army Depot / Herlong	**108**	**34**	**48**	**16**
	Stockton / San Joaquin	**140**	**50**	**76**	**26**

TABLE C-2

State	Base / City	Seismic Data (Site Class B) MCE S_S (%g)	MCE S_1 (%g)	10/50 S_S (%g)	10/50 S_1 (%g)
California	Travis AFB	**152**	**60**	**111**	**37**
	Twentynine Palms	**155 Max 83 Min**	**60 Max 26 Min**	**102 Max 39 Min**	**32 Max 14 Min**
	Vandenberg AFB	**151 Max 118 Min**	**62 Max 34 Min**	**64 Max 53 Min**	**24 Max 19 Min**
Colorado	Buckley AFB / Aurora	**19**	**6**	**7**	**2**
	Denver	**19**	**6**	**8**	**2**
	Fort Carson	**18**	**6**	**7**	**2**
	Cheyenne Mountain AS / NORAD	**18**	**6**	**7**	**2**
	Peterson AFB / Colorado Springs	**18**	**6**	**7**	**2**
	Schriever AFB	**17**	**6**	**7**	**2**
	USAF Academy	**19**	**6**	**8**	**2**
Connecticut	NSB New London / Groton	**25**	**8**	**8**	**3**
Delaware	Dover AFB	**19**	**6**	**7**	**2**
District of Columbia	**Washington Region** Bolling AFB Anacostia NS Fort McNair Marine Barracks NRL Washington NDW / Anacostia Pentagon Walter Reed	**18**	**6**	**6**	**2**
Florida	Avon Park AS	**10**	**4**	**2**	**1**
	Cape Canaveral AFS	**10**	**5**	**3**	**1**
	Eglin AFB	**10**	**6**	**3**	**2**
	Homestead	**6**	**2**	**1**	**0**
	Hurlburt Field	**10**	**5**	**3**	**2**
	NAS Jacksonville / Jacksonville	**14**	**7**	**5**	**2**
	NAS Key West	**3**	**1**		
	MacDill AFB	**8**	**4**	**2**	**1**
	NAS Mayport	**15**	**8**	**5**	**2**
	HQ Southcom / Miami	**6**	**2**	**1**	**1**
	Orlando	**11**	**5**	**3**	**1**
	NAS Panama City	**13**	**7**	**3**	**2**
	Patrick AFB	**10**	**4**	**2**	**1**

TABLE C-2

State	Base / City	Seismic Data (Site Class B) MCE S_S (%g)	MCE S_1 (%g)	10/50 S_S (%g)	10/50 S_1 (%g)
Florida	NAS Pensacola	**10**	**6**	**3**	**2**
	Tampa	**9**	**4**	**2**	**1**
	Tyndall AFB	**9**	**5**	**3**	**2**
	NAS Whiting Field / Milton	**11**	**6**	**4**	**2**
Georgia	MC Logistics Support / Albany	**14**	**8**	**5**	**3**
	Athens NCSC	**28**	**12**	**12**	**5**
	Dobbins AFB / Atlanta NAS	**28**	**11**	**11**	**4**
	Fort Benning	**16**	**9**	**6**	**3**
	Fort Gordon	**39**	**14**	**14**	**5**
	Fort McPherson / Fort Gillem	**25**	**11**	**10**	**4**
	Fort Stewart	**28**	**12**	**9**	**4**
	Hunter Army Airfield / Savannah	**38**	**14**	**12**	**4**
	NSB Kings Bay	**17**	**9**	**6**	**3**
	Moody AFB	**14**	**8**	**5**	**3**
	Robins AFB	**21**	**10**	**8**	**4**
Hawaii	PMRF Barking Sands, Kauai	**19**	**6**	**8**	**2**
	MCBH Kaneohe Bay	**63**	**18**	**30**	**8**
	Pearl Harbor Region: Camp H.M. Smith Fort Shafter Hickam AFB Pearl Harbor Tripler AMC	**61**	**18**	**29**	**8**
	Wahiawa Region: Lualualei Wahiawa Naval Res Wheeler AFB Schofield Barracks	**59**	**17**	**28**	**8**
Idaho	ARD Bayview	**40**	**11**	**17**	**5**
	Boise ANG	**34**	**10**	**16**	**5**
	Mountain Home AFB	**29**	**9**	**14**	**4**
Illinois	Fort Sheridan / Chicago	**17**	**6**	**5**	**2**
	Great Lakes	**16**	**6**	**5**	**2**
	Rock Island Arsenal	**13**	**6**	**5**	**2**

TABLE C-2

State	Base / City	Seismic Data (Site Class B) MCE S_S (%g)	MCE S_1 (%g)	10/50 S_S (%g)	10/50 S_1 (%g)
Illinois	Scott AFB	**64**	**20**	**24**	**6**
	Springfield	**26**	**12**	**10**	**4**
Indiana	Crane NWSC	**38**	**14**	**13**	**4**
	Grissom ARB	**15**	**8**	**6**	**3**
	Fort Benjamin Harrison / Indianapolis	**18**	**9**	**7**	**3**
Iowa	Des Moines	**7**	**4**	**3**	**1**
Kansas	Fort Leavenworth	**13**	**6**	**4**	**2**
	Fort Riley	**21**	**6**	**6**	**2**
	McConnell AFB	**14**	**6**	**5**	**2**
Kentucky	Fort Campbell	**76 Max 56 Min**	**24 Max 20 Min**	**24 Max 18 Min**	**6 Max 6 Min**
	Fort Knox	**26**	**13**	**10**	**4**
	Louisville	**25**	**12**	**10**	**4**
	Richmond	**25**	**10**	**10**	**4**
Louisiana	Barksdale AFB	**17**	**8**	**5**	**2**
	Fort Polk / Leesville	**14**	**6**	**4**	**2**
	NAS JRB New Orleans / Belle Chasse	**12**	**6**	**4**	**1**
Maine	NAS Brunswick	**34**	**10**	**12**	**4**
	Winter Harbour NSGA	**25**	**8**	**8**	**3**
Maryland	Aberdeen Proving Ground	**24**	**7**	**8**	**2**
	Adelphi	**18**	**6**	**6**	**2**
	Andrews AFB	**18**	**6**	**6**	**2**
	Carderock NSWC / Bethesda	**18**	**6**	**6**	**2**
	Bloods Island	**15**	**6**	**5**	**2**
	Edgewood Arsenal	**23**	**7**	**7**	**2**
	Fort Detrick / Fredrick	**19**	**6**	**7**	**2**
	Fort Meade	**18**	**6**	**6**	**2**
	Indian Head NSWC	**18**	**6**	**7**	**2**
	Martin State ANG	**21**	**6**	**7**	**2**
	NS Pax River , Webster Field / St. Inigoes	**16**	**6**	**6**	**2**
	U.S Naval Academy / Annapolis	**18**	**6**	**6**	**2**
Massachusetts	Fort Devens / Ayer	**32**	**9**	**11**	**3**
	Hanscom AFB	**33**	**9**	**11**	**3**
	Natick	**29**	**9**	**10**	**3**

TABLE C-2

State	Base / City	Seismic Data (Site Class B) MCE S_S (%g)	MCE S_1 (%g)	10/50 S_S (%g)	10/50 S_1
Massachusetts	Otis AGB / Falmouth	**25**	**7**	**8**	**2**
	Westover ARB	**26**	**9**	**9**	**3**
Michigan	Battle Creek	**12**	**5**	**4**	**2**
	Detroit Arsenal / Warren	**12**	**4**	**4**	**2**
	Selfridge ANG Base	**11**	**4**	**4**	**2**
Minnesota	Minneapolis - St Paul	**6**	**3**	**2**	**1**
Mississippi	Stennis / Bay St. Louis	**15**	**6**	**4**	**2**
	Columbus AFB	**25**	**12**	**8**	**4**
	Gulfport	**15**	**6**	**4**	**2**
	Jackson	**19**	**10**	**6**	**3**
	Keesler AFB	**14**	**6**	**4**	**2**
	NAS Meridian	**19**	**9**	**7**	**3**
	Pascagoula NS	**13**	**6**	**4**	**2**
	Vicksburg	**19**	**9**	**6**	**3**
Missouri	Fort Leonard Wood	**28**	**13**	**10**	**4**
	Kansas City	**12**	**6**	**4**	**2**
	Overland	**54**	**17**	**19**	**5**
	St. Louis	**59**	**19**	**21**	**6**
	Whiteman AFB	**13**	**8**	**5**	**2**
Montana	Great Falls ANG	**26**	**8**	**13**	**4**
	Malmstrom AFB	**24**	**8**	**12**	**4**
Nebraska	Offutt AFB	**12**	**4**	**4**	**1**
	Lincoln	**18**	**5**	**5**	**2**
Nevada	NAS Fallon	**101**	**29**	**43**	**14**
	Indian Springs AFS	**50**	**15**	**24**	**8**
	Nellis AFB	**53**	**16**	**26**	**9**
	Nellis AF Range	**78 Max 60 Min**	**24 Max 19 Min**	**37 Max 28 Min**	**13 Max 9 Min**
New Hampshire	Portsmouth Naval Shipyard	**40**	**10**	**13**	**4**
New Jersey	NWS Earle / Colts Neck	**37**	**9**	**11**	**3**
	Fort Dix / Trenton	**32**	**8**	**10**	**3**
	Fort Monmouth	**37**	**9**	**11**	**3**
	Lakehurst	**30**	**8**	**10**	**3**
	McGuire AFB	**32**	**8**	**10**	**3**
	Picatinny Arsenal	**38**	**9**	**12**	**3**

TABLE C-2

State	Base / City	Seismic Data (Site Class B) MCE S_S (%g)	MCE S_1 (%g)	10/50 S_S (%g)	10/50 S_1 (%g)
New Mexico	Albuquerque	**62**	**19**	**27**	**7**
	Cannon AFB	**11**	**4**	**4**	**1**
	Holloman AFB	**35**	**10**	**13**	**4**
	Kirtland AFB	**61**	**18**	**27**	**7**
	White Sands	**39**	**12**	**13**	**4**
New York	Buffalo	**32**	**7**	**9**	**2**
	Fort Drum	**32**	**10**	**12**	**4**
	Fort Hamilton / Brooklyn	**42**	**9**	**12**	**3**
	Griffis AFB / Rome	**24**	**9**	**9**	**3**
	NIAGARA FALLS IAP	**31**	**7**	**9**	**2**
	NSU Saratoga Springs	**31**	**10**	**11**	**4**
	Stewart ANG / Newburgh	**33**	**9**	**11**	**3**
	Syracuse	**19**	**8**	**8**	**3**
	West Point	**37**	**9**	**12**	**3**
	Watervliet Arsenal / Albany	**27**	**9**	**10**	**3**
North Carolina	MCAS Cherry Point	**18**	**8**	**5**	**2**
	Fort Bragg	**29**	**13**	**9**	**4**
	Jacksonville Region Camp Lejeune MCAS New River	**22**	**10**	**6**	**3**
	Pope AFB	**28**	**13**	**9**	**4**
	Raleigh	**21**	**10**	**8**	**4**
	Seymour Johnson AFB	**21**	**10**	**7**	**3**
North Dakota	Grand Forks AFB	**5**	**2**	**2**	**0**
	Minot AFB	**7**	**2**	**2**	**1**
Ohio	Cleveland	**21**	**6**	**6**	**2**
	DSC Whitehall / Columbus	**16**	**7**	**7**	**3**
	Wright-Patterson AFB	**22**	**8**	**8**	**3**
	Youngstown ARS / Vienna	**17**	**6**	**6**	**2**
Oklahoma	Altus AFB	**21**	**7**	**6**	**2**
	Fort Sill	**36**	**9**	**8**	**2**
	McAlester Army Ammunition Plant	**20**	**8**	**7**	**2**
Oklahoma	Tinker AFB / Oklahoma City	**34**	**9**	**10**	**3**
	Tulsa	**16**	**7**	**6**	**2**
	Vance AFB	**22**	**6**	**7**	**2**
Oregon	Portland	**103**	**32**	**43**	**17**

TABLE C-2

State	Base / City	Seismic Data (Site Class B) MCE S_S (%g)	MCE S_1 (%g)	10/50 S_S (%g)	10/50 S_1 (%g)
Pennsylvania	ARS Coraopolis / Pittsburg	**13**	**6**	**5**	**2**
	Carlisle Barracks	**19**	**6**	**7**	**2**
	Fort Indiantown Gap / Annville	**26**	**7**	**8**	**2**
	Letterkenny / Chambersburg	**19**	**6**	**6**	**2**
	Mechanicsburg	**20**	**6**	**7**	**2**
	Philadelphia	**33**	**8**	**10**	**3**
	New Cumberland / Defense Depot Susquehanna	**21**	**6**	**7**	**2**
	Tobyhanna Army Depot	**26**	**8**	**9**	**3**
	Willow Grove ARS / NAS	**33**	**8**	**11**	**3**
Rhode Island	NS Newport	**26**	**8**	**8**	**2**
South Carolina	MCAS Beaufort	**74**	**22**	**19**	**6**
	Charleston Region:				
	Charletion AFB	**154**	**43**	**34**	**8**
	NWS Charleston	**160**	**45**	**36**	**8**
	Columbia Region:				
	McEntire	**67**	**21**	**22**	**6**
	Fort Jackson	**61**	**20**	**20**	**6**
	Shaw AFB	**80**	**24**	**22**	**6**
	MCRD Parris Island	**62**	**20**	**18**	**5**
South Dakota	Ellsworth AFB	**14**	**4**	**5**	**2**
Tennessee	Arnold AFB	**30**	**13**	**12**	**5**
	NSWC LCC / Memphis	**137**	**42**	**28**	**7**
	NSA Mid-South / Millington	**158**	**47**	**32**	**7**
	Nashville	**30**	**14**	**12**	**5**
Texas	NAS JRB, Carswell / Fort Worth	**11**	**5**	**4**	**2**
	NAS Corpus Christi	**9**	**2**	**2**	**1**
	Dallas / Irving	**12**	**6**	**4**	**2**
	Dyess AFB	**8**	**4**	**3**	**1**
	Ellington ANG / Houston	**10**	**4**	**3**	**1**
	Fort Bliss / El Paso	**35**	**11**	**14**	**4**
	Fort Hood / Killeen	**8**	**4**	**3**	**1**
	Goodfellow AFB	**8**	**3**	**3**	**1**
	NS Ingleside	**10**	**3**	**2**	**1**
	NAS Kingsville	**10**	**2**	**2**	**1**
	Laughlin AFB	**7**	**2**	**2**	**1**

TABLE C-2

State	Base / City	Seismic Data (Site Class B) MCE S_S (%g)	MCE S_1 (%g)	10/50 S_S (%g)	10/50 S_1
Texas	Red River Army Depot / Texarkana	**18**	**9**	**6**	**2**
	San Antonio Region				
	Brooks AFB	**13**	**3**	**3**	**1**
	Fort Sam Houston	**12**	**3**	**3**	**1**
	Kelly AFB	**12**	**3**	**3**	**1**
	Lackland AFB	**12**	**3**	**3**	**1**
	Randolph AFB	**12**	**4**	**3**	**1**
	Sheppard AFB	**17**	**6**	**5**	**2**
Utah	Dugway Proving Ground	**34**	**12**	**17**	**6**
	Hill AFB	**138**	**46**	**50**	**17**
	Salt Lake City	**177**	**79**	**61**	**20**
	Tooele Army Depot	**78**	**26**	**35**	**12**
Virginia	Dahlgren	**18**	**6**	**6**	**2**
	Dam Neck / Virginia Beach Ocean front	**12**	**6**	**4**	**2**
	Fort A. P. Hill	**22**	**7**	**7**	**2**
	Fort Belvoir	**18**	**6**	**6**	**2**
	Fort Eustis	**14**	**6**	**5**	**2**
	Fort Lee	**23**	**8**	**7**	**3**
	Fort Monroe	**14**	**6**	**5**	**2**
	Fort Myer	**18**	**6**	**6**	**2**
	Fort Story	**12**	**6**	**4**	**2**
	Henderson Hall / Arlington	**18**	**6**	**6**	**2**
	Langley AFB / Hampton	**14**	**6**	**5**	**2**
	NAB Little Creek	**13**	**6**	**5**	**2**
	Norfolk Region: Camp Elmore Craney Island Depot Norfolk Naval Base	**13**	**6**	**5**	**2**
	Norfolk Shipyard - Naval Hospital / Portsmouth	**13**	**6**	**5**	**2**
	NSA Northwest / Chesapeake	**13**	**6**	**5**	**2**
	NAS Oceana / Virginia Beach	**12**	**6**	**4**	**2**
	Quantico	**19**	**7**	**7**	**2**
	Defense Supply Ctr / Richmond	**28**	**8**	**8**	**3**
	Wallops Island	**12**	**5**	**4**	**2**

TABLE C-2

State	Base / City	Seismic Data (Site Class B) MCE S_S (%g)	MCE S_1 (%g)	10/50 S_S (%g)	10/50 S_1
Virginia	**Yorktown Region:** Camp Perry, Cheatham Annex, Yorktown NWS	**16**	**6**	**5**	**2**
Washington	NS Everett	**123 (a)**	**40 (b)**	**62**	**20**
	Fairchild AFB	**30**	**9**	**13**	**4**
	Fort Lewis / Tacoma	**120 (a)**	**38 (b)**	**59**	**20**
	Indian Island SWC	**126 (a)**	**45 (b)**	**63**	**21**
	NRS Jim Creek	**120 (a)**	**37 (b)**	**59**	**19**
	Keyport / Bangor Engin. Sta Annex	**128 (a)**	**45 (b)**	**69**	**22**
	McChord AFB	**122**	**38**	**61**	**20**
	Puget Sound Region:				
	Bangor NSB	**149 (a)**	**51 (b)**	**76**	**23**
	Bremerton NS	**138 (a)**	**48 (b)**	**72**	**23**
	Puget Sound NSY	**138 (a)**	**48 (b)**	**73**	**23**
	NAS Whidbey Island / Oak Harbor	**119 (a)**	**39(b)**	**59**	**20**
	Seattle	**158**	**55**	**75**	**22**
West Virginia	Beckley	**29**	**10**	**10**	**4**
	Huntington	**21**	**9**	**8**	**3**
	Sugar Grove NRS	**20**	**8**	**7**	**3**
Wisconsin	Fort McCoy	**7**	**3**	**2**	**1**
	General Mitchell AFRC / Milwaukee	**12**	**5**	**4**	**1**
	Madison	**11**	**5**	**4**	**1**
Wyoming	F. E. Warren AFB	**19**	**6**	**8**	**2**
American Somoa	Pago Pago / Tutuila Island	**100**	**40**	**50**	**20**
Mariana Islands	Guam	**150**	**60**	**75**	**30**
	Saipan / Tinian	**150**	**60**	**75**	**30**
Puerto Rico	All	**100**	**40**	**50**	**20**

Notes to TABLE C-2, "EARTHQUAKE LOADING DATA – UNITED STATES, ITS TERRITORIES AND POSSESSIONS"

(a) – MCE S_S to be used for Navy facilities at identified locations in Washington State equals 150 %g.

(b) – MCE S_1 to be used for Navy facilities at identified locations in Washington State equals 50 %g.

APPENDIX D

SITE SPECIFIC STRUCTURAL LOADING DATA – OUTSIDE OF THE UNITED STATES, ITS TERRITORIES AND POSSESSIONS

D-1 Climatic Loading Data Table. Site-specific structural climatic loading data for potential DoD locations outside of the United States, its territories and possessions is provided in Table D-1.

D-2 Earthquake Loading Data Table. Site-specific earthquake loading data for potential DoD locations outside of the United States, its territories and possessions is provided in Table D-2.

TABLE D-1 STRUCTURAL CLIMATIC LOADING DATA – OUTSIDE OF THE UNITED STATES, ITS TERRITORIES AND POSSESSIONS

TABLE D-1			Ground Snow	Wind Speed	Frost Penetration	Ground Snow	Wind Speed	Frost Penetration
Continent / Region	Country	Base / City	(psf)	(mph) Note (a)	(inches)	kPa	km/h Note (a)	mm
Africa	Egypt	Alexandria	0	85	0	0.00	137	0
	Morocco	Casablanca	0	90	0	0.00	145	0
Asia	Afghanistan	Kabul						
	Bahrain	NSA Bahrain	0	85	0	0.00	137	0
	India	Bombay	0	91	0	0.00	146	0
		Calcutta	0	114	0	0.00	183	0
		Madras	0	92	0	0.00	148	0
		New Delhi	0	91	0	0.00	146	0
	Iraq	Baghdad						
		Basra						
	Japan	NAF Atsugi	15	120	25	0.72	193	635
		MCAS Iwakuni	12	120	10	0.57	193	254
		Misawa AFB	40	101	30	1.92	163	762
		Okinawa Camp Butler (Leshima, Camps Gonsalves, Hansen, Schwab, Kinser, Foster, Lester) MCAS Futenma Kakena AB Torii Station White Beach	0	180	0	0.00	290	0

TABLE D-1

Continent / Region	Country	Base / City	Ground Snow (psf)	Wind Speed (mph) Note (a)	Frost Penetration (inches)	Ground Snow kPa	Wind Speed km/h Note (a)	Frost Penetration mm
Asia	**Japan**	Sagamihara	**12**	**100**	**10**	**0.57**	**161**	**254**
		Sasebo	**12**	**100**	**5**	**0.57**	**161**	**127**
		Tokyo	**12**	**100**	**6**	**0.57**	**161**	**152**
		COMFLTACT Yokosuka	**12**	**100**	**5**	**0.57**	**161**	**127**
		Yokata AFB, Honshu						
		Wakkanai	**55**	**130**	**36**	**2.63**	**209**	**914**
		Camp Zama						
	Kuwait	Kuwait City	**0**		**0**	**0.00**		**0**
	Oman	Areas south and west of Jabal Akehadar						
		- Ibri	**0**	**105**	**0**	**0.00**	**169**	**0**
		- Nazwa	**0**	**105**	**0**	**0.00**	**169**	**0**
		Batinah Coast						
		- Ash Shinash	**0**	**105**	**0**	**0.00**	**169**	**0**
		- Sib	**0**	**105**	**0**	**0.00**	**169**	**0**
		- Suhar	**0**	**105**	**0**	**0.00**	**169**	**0**
		Central, Southern, and Coastal Areas Sur to Sarfait						
		- Barik	**0**	**115**	**0**	**0.00**	**185**	**0**
		- Dawqa	**0**	**115**	**0**	**0.00**	**185**	**0**
		- Hayma	**0**	**115**	**0**	**0.00**	**185**	**0**
		- Salalah	**0**	**115**	**0**	**0.00**	**185**	**0**
		- Shalim	**0**	**115**	**0**	**0.00**	**185**	**0**
		High Jabal Locations						
		- Miskin	**0**	**115**	**0**	**0.00**	**185**	**0**
		- Sumail	**0**	**115**	**0**	**0.00**	**185**	**0**
		- Rikshah	**0**	**115**	**0**	**0.00**	**185**	**0**
		- Shaww	**0**	**115**	**0**	**0.00**	**185**	**0**
		Kuria Muria Island	**0**	**120**	**0**	**0.00**	**193**	**0**
		Masirah Island	**0**	**120**	**0**	**0.00**	**193**	**0**
	Oman	Mussandam Island	**0**	**120**	**0**	**0.00**	**193**	**0**

TABLE D-1

Continent / Region	Country	Base / City	Ground Snow (psf)	Wind Speed (mph) Note (a)	Frost Penetration (inches)	Ground Snow kPa	Wind Speed km/h Note (a)	Frost Penetration mm
Asia	Pakistan	Peshawar	10	88	6	0.48	142	152
	Quatar	Doha	0		0	0.00		0
	Saudi Arabia	Dhahran	0	87	0	0.00	140	0
		Hafr al Batin	0	80	0	0.00	129	0
		Khamis Mushayt	0	80	0	0.00	129	0
		Jeddah	0	80	0	0.00	129	0
		Jubail	0	80	0	0.00	129	0
		Qadimah	0	80	0	0.00	129	0
		Riyadh	0	80	0	0.00	129	0
		Tabuk	0	80	0	0.00	129	0
	South Korea	Camp Casey						
		Camp Hialeah, Pusan						
		Camp Humphreys / Pyongtaek	0	95	45	0.00	153	1143
		Chinhae	20	105	24	0.96	169	610
		Kimpo AFB	20	105	48	0.96	169	1219
		Kunsan / Kunsan City	0	100	30	0.00	161	762
		Osan AFB / Songtan	0	95	45	0.00	153	1143
		Pohang	20	110	24	0.96	177	610
		Seoul	20	105	48	0.96	169	1219
		Taegu	0	115	40	0.00	185	1016
		Uijongbu	20	105	48	0.96	169	1219
		Yongsan / Seoul	20	105	45	0.96	169	1143
	Vietnam	Da Nang	0	120	0	0.00	193	0
		Ho Chi Minh City	0	95	0	0.00	153	0
		Nha Trang	0	95	0	0.00	153	0
	Taiwan	Tainan	0	120	0	0.00	193	0
		Taipei	0	130	0	0.00	209	0
		Tsoying						
	Thailand	Bangkok	0	80	0	0.00	129	0
		Chiang Mai	0	95	0	0.00	153	0
		Sattahip	0	85	0	0.00	137	0
	Thailand	Udonthani	0	85	0	0.00	137	0

TABLE D-1

Continent / Region	Country	Base / City	Ground Snow (psf)	Wind Speed (mph) Note (a)	Frost Penetration (inches)	Ground Snow kPa	Wind Speed km/h Note (a)	Frost Penetration mm
Asia	**Turkey**	Ankara	**20**	**99**	**24**	**0.96**	**159**	**610**
		Incirlik AB / Adana	**0**	**70**	**5**	**0.00**	**113**	**127**
		Izmir AS						
		Karamursel	**15**	**95**	**12**	**0.72**	**153**	**305**
Central America	**Canal Zone**		**0**	**95**	**0**	**0.00**	**153**	**0**
Europe	**Belgium**	Brussels						
		Kester						
		Kleine Brogel						
		Shape - Chievres						
	Bosnia - Hertzegovina	Tulza AFB						
	England	RAF Alconbury, Molesworth / Huntingdon						
		Birmingham	**15**	**89**	**12**	**0.72**	**143**	**305**
		RAF Croughton / Brackley	**15**	**100**	**15**	**0.72**	**161**	**381**
		RAF Fairford						
		RAF Lakenheath / Lakeheath Village	**15**	**100**	**15**	**0.72**	**161**	**381**
		USNA UK / London	**15**	**95**	**12**	**0.72**	**153**	**305**
		RAF Menwith Hill / Harrogate						
		RAF Mildenhall	**15**	**104**	**12**	**0.72**	**167**	**305**
		Plymouth	**10**	**94**	**12**	**0.48**	**151**	**305**
		RAF Upwood / Ramsey						
		JMF St. Mawgan / Cornwall						
		Sculthorpe AB	**15**	**99**	**12**	**0.72**	**159**	**305**
		Southport	**10**	**104**	**12**	**0.48**	**167**	**305**
		South Shields	**15**	**99**	**12**	**0.72**	**159**	**305**
		Spurn Head	**15**	**99**	**12**	**0.72**	**159**	**305**
	Germany	Ansbach						
		Bamberg						

TABLE D-1

Continent / Region	Country	Base / City	Ground Snow (psf)	Wind Speed (mph) Note (a)	Frost Penetration (inches)	Ground Snow kPa	Wind Speed km/h Note (a)	Frost Penetration mm
Europe	**Germany**	Baumholder						
		Bremen	**25**	**85**	**30**	**1.20**	**137**	**762**
		Buechel Air Base / Cochem						
		Darmstadt						
		Garmisch AST						
		Geilenkirchen						
		Grafenwoehr	**25**	**90**	**0**	**1.20**	**145**	**0**
		Hanau	**25**	**55**	**25**	**1.20**	**89**	**635**
		Heidelberg	**25**	**55**	**30**	**1.20**	**89**	**762**
		Hohenfels						
		Illesheim						
		Kaiserslautern						
		Kalkar						
		Mannheim						
		Munich	**40**	**98**	**36**	**1.92**	**158**	**914**
		Ramstein AB						
		Rhein-Main Air Base	**25**	**85**	**30**	**1.20**	**137**	**762**
		Schweinfurt						
		Spangdahlem Air Base	**25**	**55**	**30**	**1.20**	**89**	**762**
		Stuttgart	**45**	**90**	**36**	**2.16**	**145**	**914**
		Vilseck						
		Wiesbaden / Mainz / Dexheim						
		Wuerzburg / Kitzingen / Giebelstadt	**25**	**90**	**35**	**1.20**	**145**	**889**
	Greece	Athens	**5**	**92**	**0**	**0.24**	**148**	**0**
		Larissa						
		NAS Soudi Bay / Mouzouras	**5**	**86**	**0**	**0.24**	**138**	**0**
	Iceland	Keflavik - NSA	**30**	**115**	**24**	**1.44**	**185**	**610**
		Thorshofn	**30**	**146**	**36**	**1.44**	**235**	**914**
	Italy	Aviano AB	**10**	**80**	**18**	**0.48**	**129**	**457**
		Brindisi / San Vito	**5**	**110**	**6**	**0.24**	**177**	**152**

TABLE D-1

Continent / Region		Base / City	Ground Snow (psf)	Wind Speed (mph) Note (a)	Frost Penetration (inches)	Ground Snow kPa	Wind Speed km/h Note (a)	Frost Penetration mm
Europe	**Italy**	Camp Darby Livorno						
		Gaeta - NSA	**20**	**80**	**0**	**0.96**	**129**	**0**
		Ghedi						
		NSA La Maddalena	**20**	**80**	**5**	**0.96**	**129**	**127**
		NSA Naples	**20**	**80**	**5**	**0.96**	**129**	**127**
		NAS Sigonella	**20**	**90**	**5**	**0.96**	**145**	**127**
		Vicenza	**35**	**80**	**25**	**1.68**	**129**	**635**
	Netherlands	Volkel Air Base						
		AF North Brunssum						
		Schinnen	**15**	**70**	**120**	**0.72**	**113**	**3048**
	Northern Ireland	Londonderry	**15**	**133**	**12**	**0.72**	**214**	**305**
	Norway	Stavanger						
	Portugal	Azores / Lajes Field	**0**	**120**	**0**	**0.00**	**193**	**0**
		Southlant / Oeiras						
	Scotland	Aberdeen	**15**	**90**	**12**	**0.72**	**145**	**305**
		Edinburgh	**15**	**99**	**12**	**0.72**	**159**	**305**
		Edzell	**15**	**85**	**12**	**0.72**	**137**	**305**
		Glasgow	**15**	**99**	**12**	**0.72**	**159**	**305**
		Prestwick	**15**	**100**	**12**	**0.72**	**161**	**305**
		Stornoway	**15**	**120**	**12**	**0.72**	**193**	**305**
		Thurso	**15**	**105**	**12**	**0.72**	**169**	**305**
	Spain	Madrid / JHQ SW	**10**	**83**	**6**	**0.48**	**134**	**152**
		Moron AB						
		NS Rota	**5**	**90**	**5**	**0.24**	**145**	**127**
		San Pablo	**5**	**117**	**6**	**0.24**	**188**	**152**
		HRF Valencia						
		Zaragoza	**10**	**117**	**6**	**0.48**	**188**	**152**
North America	**Canada**	Argentia NAS, Newfoundland	**47**	**115**	**36**	**2.25**	**185**	**914**
		Churchill, Manitoba	**66**	**107**	**permafrost**	**3.16**	**172**	**permafrost**
		Cold Lake, Alberta	**41**	**81**	**72**	**1.96**	**130**	**1829**
		Edmonton, Alberta	**27**	**84**	**60**	**1.29**	**135**	**1524**

TABLE D-1

Continent / Region		Base / City	Ground Snow (psf)	Wind Speed (mph) Note (a)	Frost Penetration (inches)	Ground Snow kPa	Wind Speed km/h Note (a)	Frost Penetration mm
North America	Canada	E. Harmon AFB, Newfoundland	86	113	60	4.12	182	1524
		Fort William, Ontario	73	81	60	3.50	130	1524
		Frobisher, N.W.T.	50	107	permafrost	2.40	172	permafrost
		Goose Airport, Newfoundland	100	89	60	4.79	143	1524
		Ottawa, Ontario	60	90	48	2.87	145	1219
		St. John's, Newfoundland	72	114	36	3.45	183	914
		Toronto, Ontario	40	90	36	1.92	145	914
		Winnipeg, Manitoba	45	82	60	2.16	132	1524
	Greenland	Narsarssuak AB	30	139	60	1.44	224	1524
		Simiutak AB	25	166	60	1.20	267	1524
		Sondrestrom AB	20	120	permafrost	0.96	193	permafrost
		Thule AB	25	135	permafrost	1.20	217	permafrost
Atlantic Ocean	Ascension Island		0	67	0	0.00	108	0
Caribbean Sea	The Bahamas	Eleuthera Island	0	148	0	0.00	238	0
		Grand Bahama Island	0	148	0	0.00	238	0
		Grand Turk Island	0	161	0	0.00	259	0
		Great Exuma Island	0	148	0	0.00	238	0
	Cuba	NS Guantanamo Bay	0	105	0	0.00	169	0
Caribbean Sea	Trinidad Island	Port of Spain	0	59	0	0.00	95	0
Indian Ocean	British Indian Ocean Territory	NSF Diego Garcia		105	0	0.00	169	0
Pacific Ocean	Caroline Islands	Koror, Paulau Islands	0	95	0	0.00	153	0
		Ponape	0	110	0	0.00	177	0
	Johnston Atoll		0	85	0	0.00	137	0
	Marcus Island		0	150	0	0.00	241	0
	Marshall Islands	Kwajalein	0	105	0	0.00	169	0

TABLE D-1

Continent / Region		Base / City	Ground Snow (psf)	Wind Speed (mph) Note (a)	Frost Penetration (inches)	Ground Snow kPa	Wind Speed km/h Note (a)	Frost Penetration mm
Pacific Ocean	**Marshall Islands**	Wake Island	**0**	**110**	**0**	**0.00**	**177**	**0**
	Midway Island		**0**	**95**	**0**	**0.00**	**153**	**0**
	Phillipine Is.	Clark AFB	**0**	**90**	**0**	**0.00**	**145**	**0**
		Sangley Point	**0**	**90**	**0**	**0.00**	**145**	**0**
		Subic Bay	**0**	**90**	**0**	**0.00**	**145**	**0**
	Samoa	Apia / Upolu	**0**	**150**	**0**	**0.00**	**241**	**0**
	Volcano Island	Iwo Jima	**0**	**210**	**0**	**0.00**	**338**	**0**

Notes to Table D-1, "STRUCTURAL CLIMATIC LOADING DATA – OUTSIDE OF THE UNITED STATES, ITS TERRITORIES AND POSSESSIONS"

Note (a) – Use a minimum wind speed of 85 mph (137 km/h) for all locations

TABLE D-2 EARTHQUAKE LOADING DATA – OUTSIDE OF THE UNITED STATES, ITS TERRITORIES AND POSSESSIONS

TABLE D-2

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S_1 (%g)**	**10/50 S_S (%g)**	**10/50 S_1 (%g)**
Africa	**Egypt**	Alexandria	**23**	**9**	**11**	**5**
	Morocco	Casablanca	**25**	**10**	**13**	**5**
Asia	**Afghanistan**	Kabul	**128**	**51**	**64**	**26**
	Bahrain	NSA Bahrain	**31**	**12**	**15**	**6**
	India	Bombay	**26**	**10**	**13**	**5**
		Calcutta	**50**	**20**	**25**	**10**
		Madras	**14**	**6**	**7**	**3**
		New Delhi	**71**	**28**	**35**	**14**
	Iraq	Baghdad	**124 (a)**	**56 (a)**	**62 (a)**	**29 (a)**
		Basra	**98**	**39**	**49**	**20**
	Japan	NAF Atsugi	**259**	**104**	**130**	**52**
		MCAS Iwakuni	**94**	**38**	**47**	**19**
		Misawa AFB	**104**	**42**	**52**	**21**
		Okinawa Camp Butler (Leshima, Camps Gonsalves, Hansen, Schwab, Kinser, Foster, Lester) MCAS Futenma Kakena AB Torii Station White Beach	**165 (a)**	**75 (a)**	**83 (a)**	**38 (a)**
		Sagamihara	**325**	**130**	**162**	**65**
		Sasebo	**91**	**36**	**45**	**18**
		Tokyo	**187**	**75**	**94**	**37**
		COMFLTACT Yokosuka	**313**	**125**	**157**	**63**
		Yokata AFB, Honshu	**200**	**80**	**100**	**40**
		Wakkanai	**54**	**22**	**27**	**11**
		Camp Zama	**334**	**134**	**167**	**67**
	Kuwait	Kuwait City	**54**	**22**	**27**	**11**
	Oman	Areas south and west of Jabal Akehadar				
		- Ibri	**91**	**36**	**46**	**18**
		- Nazwa	**88**	**35**	**44**	**18**
		Batinah Coast				
		- Ash Shinash	**166**	**66**	**83**	**33**

TABLE D-2

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S_1 (%g)**	**10/50 S_S (%g)**	**10/50 S_1 (%g)**
Asia	**Oman**	- Sib	**129**	**52**	**65**	**26**
		- Suhar	**149**	**60**	**75**	**30**
		Central, Southern, and Coastal Areas Sur to Sarfait				
		- Barik				
		- Dawqa	**3**	**1**	**2**	**1**
		- Hayma	**0**	**0**	**0**	**0**
		- Salalah	**8**	**3**	**4**	**2**
		- Shalim	**0**	**0**	**0**	**0**
		High Jabal Locations				
		- Miskin	**107**	**43**	**54**	**21**
		- Sumail				
		- Rikshah	**98**	**39**	**49**	**20**
		- Shaww	**99**	**40**	**50**	**20**
		Kuria Muria Island				
		Masirah Island	**19**	**8**	**9**	**4**
		Mussandam Island				
	Pakistan	Peshawar	**105**	**42**	**53**	**21**
	Quatar	Doha	**6 (a)**	**6 (a)**	**3 (a)**	**3 (a)**
	Saudi Arabia	Dhahran	**10**	**4**	**5**	**2**
		Hafr al Batin				
		Khamis Mushayt	**6**	**2**	**3**	**1**
		Jeddah	**49**	**20**	**24**	**10**
		Jubail	**35**	**14**	**18**	**7**
		Qadimah	**24**	**10**	**12**	**5**
		Riyadh	**6 (a)**	**6 (a)**	**3 (a)**	**3 (a)**
		Tabuk	**28**	**11**	**14**	**6**
	South Korea	Camp Casey	**15**	**6**	**7**	**3**
		Camp Hialeah, Pusan	**30**	**12**	**15**	**6**
		Camp Humphreys / Pyongtaek	**19**	**7**	**9**	**4**
		Chinhae	**17**	**7**	**8**	**3**
		Kimpo AFB	**15**	**6**	**8**	**3**
		Kunsan / Kunsan City	**17**	**7**	**8**	**3**
		Osan AFB / Songtan	**19**	**7**	**9**	**4**
		Pohang	**14**	**6**	**7**	**3**
		Seoul	**17**	**7**	**8**	**3**

TABLE D-2

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S_1 (%g)**	**10/50 S_S (%g)**	**10/50 S_1 (%g)**
Asia	**South Korea**	Taegu	**29**	**11**	**14**	**6**
		Uijongbu	**17**	**7**	**8**	**3**
		Yongsan / Seoul	**17**	**7**	**9**	**3**
	Vietnam	Da Nang	**18**	**7**	**9**	**4**
		Ho Chi Minh City	**14**	**6**	**7**	**3**
		Nha Trang	**13**	**5**	**6**	**3**
	Taiwan	Tainan	**239**	**96**	**120**	**48**
		Taipei	**325**	**130**	**162**	**65**
		Tsoying	**251**	**100**	**125**	**50**
	Thailand	Bangkok	**28**	**11**	**14**	**6**
		Chiang Mai	**27**	**11**	**14**	**5**
		Sattahip	**21**	**9**	**11**	**4**
		Udonthani	**24**	**10**	**12**	**5**
	Turkey	Ankara	**99**	**40**	**49**	**20**
		Incirlik AB / Adana	**105**	**42**	**52**	**21**
		Izmir AS	**242**	**97**	**121**	**48**
		Karamursel	**139**	**56**	**70**	**28**
Central America	**Canal Zone**		**93**	**37**	**46**	**19**
Europe	**Belgium**	Brussels	**32**	**13**	**16**	**6**
		Kester	**36**	**14**	**18**	**7**
		Kleine Brogel	**31**	**13**	**16**	**6**
		Shape - Chievres	**54**	**22**	**27**	**11**
	Bosnia - Hertzegovina	Tulza AFB	**92**	**37**	**46**	**18**
	England	RAF Alconbury, Molesworth / Huntingdon	**18**	**7**	**9**	**4**
		Birmingham	**22**	**9**	**11**	**4**
		RAF Croughton / Brackley	**28**	**11**	**14**	**6**
		RAF Fairford	**16**	**6**	**8**	**3**
		RAF Lakenheath / Lakeheath Village	**15**	**6**	**8**	**3**
		USNA UK / London	**13**	**3**	**6**	**1**
		RAF Menwith Hill / Harrogate	**21**	**9**	**11**	**4**
		RAF Mildenhall	**15**	**6**	**8**	**3**
		Plymouth	**20**	**8**	**10**	**4**
		RAF Upwood / Ramsey	**16**	**6**	**8**	**3**

TABLE D-2

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S_1 (%g)**	**10/50 S_S (%g)**	**10/50 S_1 (%g)**
Europe	**England**	JMF St. Mawgan / Cornwall	**20**	**4**	**10**	**2**
		Sculthorpe AB	**16**	**6**	**8**	**3**
		Southport	**23**	**9**	**12**	**5**
		South Shields	**11**	**5**	**6**	**2**
		Spurn Head				
	Germany	Ansbach	**24**	**10**	**12**	**5**
		Bamberg	**21**	**8**	**10**	**4**
		Baumholder	**25**	**10**	**13**	**5**
		Bremen	**10**	**4**	**5**	**2**
		Buechel Air Base / Cochem	**33**	**13**	**16**	**7**
		Darmstadt	**40**	**16**	**20**	**8**
		Garmisch AST	**46**	**18**	**23**	**9**
		Geilenkirchen	**55**	**22**	**27**	**11**
		Grafenwoehr	**24**	**10**	**12**	**5**
		Hanau	**38**	**15**	**19**	**8**
		Heidelberg	**38**	**15**	**19**	**8**
		Hohenfels	**26**	**10**	**13**	**5**
		Illesheim	**23**	**9**	**11**	**5**
		Kaiserslautern	**25**	**10**	**13**	**5**
		Kalkar	**22**	**9**	**11**	**4**
		Mannheim	**40**	**16**	**20**	**8**
		Munich	**26**	**10**	**13**	**5**
		Ramstein AB	**24**	**10**	**12**	**5**
		Rhein-Main Air Base	**39**	**16**	**20**	**8**
		Schweinfurt	**21**	**8**	**10**	**4**
		Spangdahlem Air Base	**24**	**10**	**12**	**5**
		Stuttgart	**44**	**18**	**22**	**9**
		Vilseck	**22**	**9**	**11**	**4**
		Wiesbaden / Mainz / Dexheim	**38**	**15**	**19**	**8**
		Wuerzburg / Kitzingen / Giebelstadt	**21**	**9**	**11**	**4**
	Greece	Athens	**81**	**32**	**40**	**16**
		Larissa	**140**	**26**	**70**	**13**
		NAS Soudi Bay / Mouzouras	**120**	**34**	**60**	**17**
	Iceland	Keflavik - NSA	**100**	**40**	**50**	**20**

TABLE D-2

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S_1 (%g)**	**10/50 S_S (%g)**	**10/50 S_1 (%g)**
Europe	**Iceland**	Thorshofn	**49**	**19**	**24**	**10**
	Italy	Aviano AB	**115**	**46**	**57**	**23**
		Brindisi / San Vito	**37**	**15**	**18**	**7**
		Camp Darby Livorno	**62**	**25**	**31**	**12**
		Gaeta - NSA	**50**	**21**	**25**	**11**
		Ghedi	**71**	**29**	**36**	**14**
		NSA La Maddalena	**23**	**9**	**12**	**5**
		NSANaples	**67**	**27**	**34**	**14**
		NAS Sigonella	**120**	**31**	**60**	**16**
		Vicenza	**93**	**37**	**46**	**19**
	Netherlands	Volkel Air Base	**29**	**12**	**15**	**6**
		AF North Brunssum	**55**	**22**	**28**	**11**
		Schinnen	**6 (a)**	**6 (a)**	**3 (a)**	**3 (a)**
	Northern Ireland	Londonderry	**8**	**3**	**4**	**2**
	Norway	Stavanger				
	Portugal	Azores / Lajes Field	**165**	**75**	**83**	**38**
		Southlant / Oeiras	**61**	**25**	**31**	**12**
	Scotland	Aberdeen	**9**	**4**	**5**	**2**
		Edinburgh	**17**	**7**	**8**	**3**
		Edzell	**11**	**4**	**5**	**2**
		Glasgow	**21**	**9**	**11**	**4**
		Prestwick	**12**	**5**	**6**	**2**
		Stornoway	**10**	**4**	**5**	**2**
		Thurso	**9**	**3**	**4**	**2**
	Spain	Madrid / JHQ SW	**13**	**5**	**6**	**3**
		Moron AB	**61**	**24**	**31**	**12**
		NS Rota	**72**	**28**	**36**	**14**
		San Pablo				
		HRF Valencia	**66**	**27**	**33**	**13**
		Zaragoza	**15**	**6**	**8**	**3**
North America	**Canada**	Argentia NAS, Newfoundland	**21**	**8**	**10**	**4**
		Churchill, Manitoba	**1**	**0**	**0**	**0**
		Cold Lake, Alberta	**5**	**2**	**3**	**1**
		Edmonton, Alberta	**8**	**3**	**4**	**2**
		E. Harmon AFB, Newfoundland	**16**	**6**	**8**	**3**
		Fort William, Ontario				

TABLE D-2

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S_1 (%g)**	**10/50 S_S (%g)**	**10/50 S_1 (%g)**
North America	**Canada**	Frobisher, N.W.T.	**7**	**3**	**3**	**1**
		Goose Airport, Newfoundland	**16**	**6**	**8**	**3**
		Ottawa, Ontario	**91**	**36**	**46**	**18**
		St. John's, Newfoundland	**19**	**8**	**10**	**4**
		Toronto, Ontario	**36**	**15**	**18**	**7**
		Winnipeg, Manitoba	**31 (a)**	**14 (a)**	**16 (a)**	**7 (a)**
	Greenland	Narsarssuak AB	**31 (a)**	**14 (a)**	**16 (a)**	**7 (a)**
		Simiutak AB	**31 (a)**	**14 (a)**	**16 (a)**	**7 (a)**
		Sondrestrom AB	**22**	**9**	**11**	**4**
		Thule AB	**37**	**15**	**18**	**7**
Atlantic Ocean	**Ascension Island**					
Caribbean Sea	**The Bahamas**	Eleuthera Island	**2**	**1**	**1**	**0**
		Grand Bahama Island	**2**	**1**	**1**	**0**
		Grand Turk Island	**58**	**23**	**29**	**12**
		Great Exuma Island	**19**	**8**	**10**	**4**
	Cuba	NS Guantanamo Bay	**126**	**50**	**63**	**25**
	Trinidad Island	Port of Spain	**171**	**68**	**86**	**34**
Indian Ocean	**British Indian Ocean Territoty**	NSF Diego Garcia	**70**	**28**	**35**	**14**
Pacific Ocean	**Caroline Islands**	Koror, Paulau Islands	**70**	**28**	**35**	**14**
		Ponape	**103**	**41**	**51**	**21**
	Johnston Atoll		**136**	**54**	**68**	**27**
	Marcus Island		**95**	**38**	**47**	**19**
	Marshall Islands	Kwajalein	**119**	**48**	**60**	**24**
		Wake Island	**137**	**55**	**68**	**27**
	Midway Island					
Pacific Ocean	**Phillipine Is.**	Clark AFB	**159**	**64**	**79**	**32**
		Sangley Point	**195**	**78**	**97**	**39**
		Subic Bay	**177**	**71**	**88**	**35**
	Samoa	Apia / Upolu	**158**	**63**	**79**	**32**
	Volcano Island	Iwo Jima	**89**	**36**	**45**	**18**

Notes to Table D-2, "EARTHQUAKE LOADING DATA – OUTSIDE OF THE UNITED STATES, ITS TERRITORIES AND POSSESSIONS"

Note (a) – Values from TI 809-04, *Seismic Design for Buildings.* No updated data available.

APPENDIX E

EARTHQUAKE LOADING DATA AT ADDITIONAL SELECTED LOCATIONS OUTSIDE OF THE UNITED STATES, ITS TERRITORIES AND POSSESSIONS

E-1 Earthquake Loading Data Table. Earthquake loading data for additional selected cities outside of the United States, its territories and possessions is provided in Table E-1.

TABLE E-1 EARTHQUAKE LOADING DATA AT ADDITIONAL LOCATIONS OUTSIDE OF THE UNITED STATES, ITS TERRITORIES AND POSSESSIONS

TABLE E-1

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S**	**(%g)**	**10/50 S_1 (%g)**
Africa	**Algeria**	Alger	**96.1**	**38.4**	**48.0**	**19.2**
		Oran	**60.0**	**24.0**	**30.0**	**12.0**
	Angola	Luanda	**5.6**	**2.2**	**2.8**	**1.1**
	Benin	Cotonou	**10.9**	**4.4**	**5.4**	**2.2**
	Botswana	Gaborone	**2.6**	**1.0**	**1.3**	**0.5**
	Burkino Vaso	Kampala	**44.1**	**17.7**	**22.1**	**8.8**
	Burundi	Bujumbura	**66.1**	**26.5**	**33.1**	**13.2**
	Cameroon	Douala	**15.8**	**6.3**	**7.9**	**3.2**
		Yaounde	**26.0**	**10.4**	**13.0**	**5.2**
	Central African Republic	Bangui	**26.0**	**10.4**	**13.0**	**5.2**
	Chad	Ndjamena	**5.6**	**2.2**	**2.8**	**1.1**
	Congo	Brazzaville				
	Congo, Democratic Republic of the	Bukavu	**74.0**	**29.6**	**37.0**	**14.8**
		Kinshasa				
		Lubumbashi	**37.4**	**14.9**	**18.7**	**7.5**
	Cote d'Ivoire	Abidjan	**3.7**	**1.5**	**1.8**	**0.7**
	Djibouti	Djibouti	**81.5**	**32.6**	**40.7**	**16.3**
	Egypt	Cairo	**67.2**	**26.9**	**33.6**	**13.4**
		Port Said	**65.1**	**26.1**	**32.6**	**13.0**
	Equatorial Guinea	Malabo	**15.8**	**6.3**	**7.9**	**3.2**
	Eritrea	Asmara	**43.0**	**17.2**	**21.5**	**8.6**
	Ethiopia	Addis Ababa	**55.3**	**22.1**	**27.6**	**11.1**
	Gabon	Libreville	**26.0**	**10.4**	**13.0**	**5.2**

TABLE E-1

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S_1 (%g)**	**10/50 S_S (%g)**	**10/50 S_1 (%g)**
Africa	**Gambia**	Banjul				
	Ghana	Accra	**35.6**	**14.3**	**17.8**	**7.1**
	Guinea	Conakry	**36.1**	**14.5**	**18.1**	**7.2**
	Guinea-Bissau	Bissau	**0.9**	**0.4**	**0.5**	**0.2**
	Kenya	Nairobi	**30.7**	**12.3**	**15.3**	**6.1**
	Lesotho	Maseru	**6.3**	**2.5**	**3.1**	**1.3**
	Liberia	Monrovia	**21.4**	**8.5**	**10.7**	**4.3**
	Libya	Tripoli	**57.1**	**22.9**	**28.6**	**11.4**
	Madagascar	Tananarive	**18.4**	**7.3**	**9.2**	**3.7**
	Malawi	Blantyre	**46.3**	**18.5**	**23.1**	**9.3**
		Lilongwe	**26.3**	**10.5**	**13.2**	**5.3**
		Zomba	**48.3**	**19.3**	**24.2**	**9.7**
	Mali	Bamako				
	Mauritania	Nouakchott	**7.7**	**3.1**	**3.8**	**1.5**
	Morocco	Kenitra	**27.0**	**10.8**	**13.5**	**5.4**
		Rabat	**25.5**	**10.2**	**12.7**	**5.1**
		Tangier	**44.3**	**17.7**	**22.2**	**8.9**
	Mozambique	Maputo	**10.2**	**4.1**	**5.1**	**2.0**
	Niger	Niamey	**0.2**	**0.1**	**0.1**	**0.0**
	Nigera	Ibadan				
		Kaduna	**5.6**	**2.2**	**2.8**	**1.1**
		Lagos	**0.3**	**0.1**	**0.1**	**0.1**
	Rwanda	Kigali	**27.8**	**11.1**	**13.9**	**5.6**
	Senegal	Dakar	**7.7**	**3.1**	**3.8**	**1.5**
	Sierra Leone	Freetown	**34.9**	**14.0**	**17.4**	**7.0**
	Somalia	Mogadishu				
	South Africa	Cape Town	**26.0**	**10.4**	**13.0**	**5.2**
		Durban	**28.7**	**11.5**	**14.3**	**5.7**
		Johannesburg	**3.1**	**1.2**	**1.5**	**0.6**
		Natal	**6.4**	**2.6**	**3.2**	**1.3**
	Swaziland	Pretoria	**3.1**	**1.2**	**1.5**	**0.6**
	Tanzania	Dar es Salaam	**17.1**	**6.8**	**8.5**	**3.4**
		Mbabane	**17.9**	**7.2**	**9.0**	**3.6**
	Togo	Zanzibar	**11.5**	**4.6**	**5.7**	**2.3**
	Tunisia	Lome	**37.5**	**15.0**	**18.8**	**7.5**
	Uganda	Tunis	**91.0**	**36.4**	**45.5**	**18.2**
	Zambia	Ougadougou				
	Zimbabwe	Harare	**5.6**	**2.2**	**2.8**	**1.1**
		Lusaka	**21.9**	**8.8**	**11.0**	**4.4**
Asia	**Bahrain**	Manama	**26.9**	**10.8**	**13.5**	**5.4**
	Bangladesh	Dhaka	**69.5**	**27.8**	**34.8**	**13.9**
	Brunei	Bandar Seri Begawan	**37.2**	**14.9**	**18.6**	**7.4**
	Burma	Mandalay	**201.0**	**80.4**	**100.5**	**40.2**

TABLE E-1

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S_1 (%g)**	**10/50 S_S (%g)**	**10/50 S_1 (%g)**
Asia	**Burma**	Rangoon	**76.8**	**30.7**	**38.4**	**15.4**
	China	Beijing (Peking)	**55.9**	**22.4**	**28.0**	**11.2**
		Chengdu	**44.2**	**17.7**	**22.1**	**8.8**
		Chongqing	**8.4**	**3.4**	**4.2**	**1.7**
		Guangzhou (Canton)	**13.5**	**5.4**	**6.8**	**2.7**
		Harbin	**12.4**	**4.9**	**6.2**	**2.5**
		Nanjing	**23.4**	**9.4**	**11.7**	**4.7**
		Qingdao (Tsingtao)	**31.6**	**12.6**	**15.8**	**6.3**
		Shanghai	**17.3**	**6.9**	**8.7**	**3.5**
		Shengyang	**88.7**	**35.5**	**44.3**	**17.7**
		Tianjin (Tientsan)	**72.2**	**28.9**	**36.1**	**14.4**
		Wuhan	**7.3**	**2.9**	**3.7**	**1.5**
	Cyprus	Nicosia	**118.0**	**47.2**	**59.0**	**23.6**
	Hong Kong	Hong Kong	**12.8**	**5.1**	**6.4**	**2.6**
	Indonesia	Bandung	**164.3**	**65.7**	**82.1**	**32.9**
		Jakarta	**138.1**	**55.2**	**69.0**	**27.6**
		Medan	**111.5**	**44.6**	**55.7**	**22.3**
		Surabaya	**96.4**	**38.6**	**48.2**	**19.3**
	Iran	Isfahan	**90.8**	**36.3**	**45.4**	**18.2**
		Shiraz	**173.2**	**69.3**	**86.6**	**34.6**
		Tabriz	**181.2**	**72.5**	**90.6**	**36.2**
		Tehran	**205.0**	**82.0**	**102.5**	**41.0**
	Israel	Haifa	**136.9**	**54.7**	**68.4**	**27.4**
		Jerusalem	**106.9**	**42.8**	**53.4**	**21.4**
		Tel Aviv	**95.2**	**38.1**	**47.6**	**19.0**
	Japan	Fukuoka	**67.4**	**27.0**	**33.7**	**13.5**
		Itazuke AFB	**73.6**	**29.4**	**36.8**	**14.7**
		Kobe	**189.8**	**75.9**	**94.9**	**38.0**
		Naha, Okinawa				
		Osaka	**178.1**	**71.2**	**89.0**	**35.6**
		Sapporo	**100.4**	**40.2**	**50.2**	**20.1**
		Yokohama	**248.2**	**99.3**	**124.1**	**49.6**
	Jordan	Amman	**70.2**	**28.1**	**35.1**	**14.0**
	Kuwait	Ali Al Salem	**24.2**	**9.7**	**12.1**	**4.8**
	Laos	Vientiane	**53.9**	**21.6**	**27.0**	**10.8**
	Lebanon	Beirut	**149.7**	**59.9**	**74.9**	**29.9**
	Malaysia	Kuala Lumpur	**55.8**	**22.3**	**27.9**	**11.2**
	Nepal	Kathmandu	**245.5**	**98.2**	**122.8**	**49.1**
	Oman	Muscat	**123.6**	**49.5**	**61.8**	**24.7**
	Pakistan	Islamabad	**128.9**	**51.6**	**64.5**	**25.8**
		Karachi	**73.3**	**29.3**	**36.6**	**14.7**
		Lahore	**117.1**	**46.8**	**58.5**	**23.4**
	Singapore	All	**37.5**	**15.0**	**18.8**	**7.5**

TABLE E-1

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S_1 (%g)**	**10/50 S_S (%g)**	**10/50 S_1 (%g)**
Asia	**Sir Lanka**	Colombo	**2.6**	**1.0**	**1.3**	**0.5**
	South Korea	Kimhae	**18.3**	**7.3**	**9.2**	**3.7**
	South Korea	Kwangju	**12.9**	**5.2**	**6.5**	**2.6**
		Pusan	**32.8**	**13.1**	**16.4**	**6.6**
	Syria	Aleppo	**64.3**	**25.7**	**32.2**	**12.9**
		Damascus	**79.1**	**31.6**	**39.5**	**15.8**
	Taiwan	Changhua	**274.4**	**109.8**	**137.2**	**54.9**
		Kao-hsiung	**250.6**	**100.3**	**125.3**	**50.1**
	Thailand	Songkhla	**29.6**	**11.8**	**14.8**	**5.9**
		Udorn	**24.1**	**9.6**	**12.0**	**4.8**
	Turkey	Istanbul	**145.8**	**58.3**	**72.9**	**29.2**
	United Arab Emirates	Abu Dhabi	**107.0**	**42.8**	**53.5**	**21.4**
		Dubai	**168.4**	**67.4**	**84.2**	**33.7**
	Yemen	Aden City	**36.6**	**14.7**	**18.3**	**7.3**
		Sanaa	**34.3**	**13.7**	**17.2**	**6.9**
Central America	**Belize**	Belmopan	**53.7**	**21.5**	**26.8**	**10.7**
	Costa Rica	San Jose	**280.4**	**112.2**	**140.2**	**56.1**
	El Salvador	San Salvador	**170.8**	**68.3**	**85.4**	**34.2**
	Guatemala	Guatemala	**168.3**	**67.3**	**84.2**	**33.7**
	Honduras	Tegucigalpa	**99.9**	**40.0**	**50.0**	**20.0**
Europe	**Albania**	Tirana	**111.6**	**44.6**	**55.8**	**22.3**
	Austria	Salzburg	**41.5**	**16.6**	**20.7**	**8.3**
		Vienna	**49.3**	**19.7**	**24.7**	**9.9**
	Belgium	Antwerp	**19.7**	**7.9**	**9.9**	**3.9**
	Bulgaria	Sofia	**116.3**	**46.5**	**58.1**	**23.3**
	Czech Republic	Prague	**12.8**	**5.1**	**6.4**	**2.6**
	Denmark	Copenhagen	**11.6**	**4.7**	**5.8**	**2.3**
	England	Liverpool	**23.0**	**9.2**	**11.5**	**4.6**
	Finland	Helsinki	**5.1**	**2.0**	**2.6**	**1.0**
	France	Bordeaux	**16.4**	**6.6**	**8.2**	**3.3**
		Istres AFB	**36.2**	**14.5**	**18.1**	**7.2**
		Lyon	**28.6**	**11.4**	**14.3**	**5.7**
		Marseille	**44.4**	**17.8**	**22.2**	**8.9**
		Nice	**41.3**	**16.5**	**20.7**	**8.3**
		Strasbourg	**42.7**	**17.1**	**21.3**	**8.5**
	Germany	Babenhausen	**34.2**	**13.7**	**17.1**	**6.8**
		Berlin	**5.1**	**2.0**	**2.6**	**1.0**
		Bonn	**42.2**	**16.9**	**21.1**	**8.4**
		Dusseldorf	**30.6**	**12.3**	**15.3**	**6.1**
		Frankfurt am Main	**37.7**	**15.1**	**18.8**	**7.5**
		Giebelstadt	**21.9**	**8.8**	**11.0**	**4.4**

TABLE E-1

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S_1 (%g)**	**10/50 S_S (%g)**	**10/50 S_1 (%g)**
Europe	**Germany**	Hamburg	**9.2**	**3.7**	**4.6**	**1.8**
		Kitzingen	**21.2**	**8.5**	**10.6**	**4.2**
		Landstuhl	**23.7**	**9.5**	**11.9**	**4.7**
		Vaihingen an der Enz	**38.7**	**15.5**	**19.4**	**7.7**
	Greece	Kavalla	**108.2**	**43.3**	**54.1**	**21.6**
		Nea Makri	**86.7**	**34.7**	**43.4**	**17.3**
		Rhodes	**137.0**	**54.8**	**68.5**	**27.4**
		Thessaloniki	**142.1**	**56.8**	**71.0**	**28.4**
	Hungary	Budapest	**46.3**	**18.5**	**23.1**	**9.3**
		Taszar AB				
	Iceland	Reykjavik	**91.8**	**36.7**	**45.9**	**18.4**
	Italy	Florence	**96.4**	**38.6**	**48.2**	**19.3**
		Genoa	**66.1**	**26.4**	**33.0**	**13.2**
		Milan	**41.3**	**16.5**	**20.7**	**8.3**
		Palermo	**66.9**	**26.8**	**33.5**	**13.4**
		Rome	**89.8**	**35.9**	**44.9**	**18.0**
		Siculiana	**44.8**	**17.9**	**22.4**	**9.0**
		Trieste	**72.3**	**28.9**	**36.2**	**14.5**
		Turin	**53.7**	**21.5**	**26.8**	**10.7**
	Luxembourg	Luxembourg	**21.4**	**8.6**	**10.7**	**4.3**
	Malta	Valletta	**28.6**	**11.5**	**14.3**	**5.7**
	Netherlands	Amsterdam	**13.0**	**5.2**	**6.5**	**2.6**
	Northern Ireland	Belfast	**8.7**	**3.5**	**4.3**	**1.7**
	Norway	Oslo	**14.8**	**5.9**	**7.4**	**3.0**
	Poland	Krakow	**19.1**	**7.6**	**9.5**	**3.8**
		Poznan	**5.6**	**2.2**	**2.8**	**1.1**
		Waraszawa	**11.7**	**4.7**	**5.9**	**2.3**
		Warsow	**10.2**	**4.1**	**5.1**	**2.0**
	Portugal	Lisbon	**67.7**	**27.1**	**33.9**	**13.5**
		Oporto	**64.5**	**25.8**	**32.2**	**12.9**
	Republic of Ireland	Dublin	**9.4**	**3.8**	**4.7**	**1.9**
	Romania	Bucharest	**104.9**	**42.0**	**52.5**	**21.0**
	Russia	Kiev	**6.6**	**2.7**	**3.3**	**1.3**
		Moscow	**6.6**	**2.7**	**3.3**	**1.3**
		St. Petersburg (Leningrad)	**6.6**	**2.7**	**3.3**	**1.3**
	Scotland	Hamilton	**18.3**	**7.3**	**9.2**	**3.7**
		Renfrew	**21.6**	**8.6**	**10.8**	**4.3**
	Serbia and Montenegro	Belgrade	**97.2**	**38.9**	**48.6**	**19.4**
		Zagrebac	**103.9**	**41.6**	**52.0**	**20.8**
	Slovakia	Bratislava	**56.2**	**22.5**	**28.1**	**11.2**

TABLE E-1

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S_1 (%g)**	**10/50 S_S (%g)**	**10/50 S_1 (%g)**
Europe	**Spain**	Barcelona	**60.0**	**24.0**	**30.0**	**12.0**
		Bilbao	**32.1**	**12.9**	**16.1**	**6.4**
		Sevilleja de la Jara	**12.8**	**5.1**	**6.4**	**2.6**
	Sweden	Goteborg	**14.4**	**5.7**	**7.2**	**2.9**
		Stockholm	**7.7**	**3.1**	**3.8**	**1.5**
	Switzerland	Bern	**44.0**	**17.6**	**22.0**	**8.8**
		Geneva	**46.3**	**18.5**	**23.1**	**9.3**
		Zurich	**38.9**	**15.6**	**19.5**	**7.8**
North America	**Canada**	Calgary	**19.8**	**7.9**	**9.9**	**4.0**
		Halifax	**25.0**	**10.0**	**12.5**	**5.0**
		Montreal	**102.9**	**41.2**	**51.4**	**20.6**
		Vancouver	**90.4**	**36.2**	**45.2**	**18.1**
	Mexico	Ciudad Juarez	**18.2**	**7.3**	**9.1**	**3.6**
		Guadalajara	**146.9**	**58.8**	**73.4**	**29.4**
		Hermosillo	**46.3**	**18.5**	**23.1**	**9.3**
		Matamoros	**2.0**	**0.8**	**1.0**	**0.4**
		Mazatlan	**97.4**	**39.0**	**48.7**	**19.5**
		Merida	**3.6**	**1.4**	**1.8**	**0.7**
		Mexico City	**56.9**	**22.8**	**28.5**	**11.4**
		Monterrey	**21.5**	**8.6**	**10.8**	**4.3**
		Nuevo Laredo	**14.8**	**5.9**	**7.4**	**3.0**
		Tijuana	**92.7**	**37.1**	**46.4**	**18.5**
South America	**Argentina**	Buenos Aires	**6.6**	**2.7**	**3.3**	**1.3**
	Bolivia	La Paz	**111.0**	**44.4**	**55.5**	**22.2**
	Brazil	Belem	**0.5**	**0.2**	**0.3**	**0.1**
		Belo Horizonte	**0.5**	**0.2**	**0.3**	**0.1**
		Brasilia	**0.5**	**0.2**	**0.3**	**0.1**
		Manaus	**1.7**	**0.7**	**0.8**	**0.3**
		Porto Alegre	**0.5**	**0.2**	**0.3**	**0.1**
		Recife	**4.1**	**1.6**	**2.0**	**0.8**
		Rio de Janeiro	**0.5**	**0.2**	**0.3**	**0.1**
		Salvador	**0.5**	**0.2**	**0.3**	**0.1**
		Sao Paulo	**0.5**	**0.2**	**0.3**	**0.1**
	Chile	Santiago	**202.5**	**81.0**	**101.2**	**40.5**
		Valparaiso	**289.3**	**115.7**	**144.7**	**57.9**
	Colombia	Bogata	**166.4**	**66.6**	**83.2**	**33.3**
	Ecuador	Guayaquil	**136.9**	**54.8**	**68.5**	**27.4**
		Quito	**204.6**	**81.8**	**102.3**	**40.9**
	Paraguay	Asuncion	**15.3**	**6.1**	**7.7**	**3.1**
	Peru	Lima	**355.2**	**142.1**	**177.6**	**71.0**
		Piura	**188.3**	**75.3**	**94.1**	**37.7**
	Uruguay	Montevideo	**3.6**	**1.4**	**1.8**	**0.7**
	Venezuela	Caracas	**131.0**	**52.4**	**65.5**	**26.2**

TABLE E-1

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S_1 (%g)**	**10/50 S_S (%g)**	**10/50 S_1 (%g)**
South America	**Venezuela**	Maracaibo	**104.4**	**41.8**	**52.2**	**20.9**
Caribbean Sea	**Bahamas, The**	Nassau	**7.1**	**2.9**	**3.6**	**1.4**
	Barbados	Bridgetown	**37.4**	**15.0**	**18.7**	**7.5**
	Cuba	Havana	**25.5**	**10.2**	**12.8**	**5.1**
Caribbean Sea	**Dominica**	Roseau	**107.7**	**43.1**	**53.8**	**21.5**
	Dominican Republic	Santo Domingo	**173.6**	**69.5**	**86.8**	**34.7**
	Grenada	Saint Georges	**107.3**	**42.9**	**53.6**	**21.5**
	Guadeloupe	Basse-Terre	**131.0**	**52.4**	**65.5**	**26.2**
	Haiti	Port au Prince	**80.0**	**32.0**	**40.0**	**16.0**
	Jamaica	Kingston	**144.9**	**58.0**	**72.4**	**29.0**
	Martinique	Fort-de-France	**97.4**	**39.0**	**48.7**	**19.5**
	Montserrat	Plymouth	**162.4**	**65.0**	**81.2**	**32.5**
	Saint Kitts and Nevis	Basseterre	**149.6**	**59.8**	**74.8**	**29.9**
	Saint Lucia	Castries	**89.8**	**35.9**	**44.9**	**18.0**
	Saint Vincent and The Grenadines	Port Eliazabeth	**53.1**	**21.2**	**26.5**	**10.6**
	St. Croix	Frederiksted	**80.5**	**24.2**	**40.2**	**12.4**
	St. John	Bethany	**108.1**	**32.6**	**60.1**	**17.8**
	St. Thomas	Charlotte Amalie	**107.5**	**32.5**	**59.7**	**17.8**
	Trinidad & Tobago	Scarborough	**111.8**	**44.7**	**55.9**	**22.4**
	Trinidad	Trinidad NS	**0.0**	**0.0**	**0.0**	**0.0**
	Vieques	Isabel Segunda	**93.1**	**28.8**	**49.1**	**15.4**
Pacific Ocean	**Australia**	Brisbane	**30.6**	**12.2**	**15.3**	**6.1**
		Canberra	**46.4**	**18.6**	**23.2**	**9.3**
		Melbourne	**46.9**	**18.8**	**23.4**	**9.4**
		Perth	**45.1**	**18.0**	**22.5**	**9.0**
		Sydney	**43.9**	**17.6**	**21.9**	**8.8**
	Caroline Islands	Yap	**78.6**	**31.4**	**39.3**	**15.7**
	Fiji	Suva	**57.1**	**22.8**	**28.5**	**11.4**
	Guam	Agana	**100.0**	**40.0**	**50.0**	**20.0**
	Marshall Islands	Majuro	**121.4**	**48.6**	**60.7**	**24.3**
	New Zealand	Auckland	**83.8**	**33.5**	**41.9**	**16.8**
		Wellington	**228.2**	**91.3**	**114.1**	**45.6**
	Papau New Guinea	Port Moresby	**78.1**	**31.3**	**39.1**	**15.6**
	Phillipine Is.	Baguio	**164.0**	**65.6**	**82.0**	**32.8**
		Cebu	**114.0**	**45.6**	**57.0**	**22.8**
		Manila	**193.2**	**77.3**	**96.6**	**38.6**

TABLE E-1

			Seismic Loading (Site Class B)			
Continent / Region	**Country**	**Base / City**	**MCE S_S (%g)**	**MCE S_1 (%g)**	**10/50 S_S (%g)**	**10/50 S_1 (%g)**
Pacific Ocean	**Saipan**	Capitol Hill	**99.8**	**39.9**	**49.9**	**20.0**
	Tinian		**99.4**	**39.8**	**49.7**	**19.9**