

UFC 3-310-01  
25 May 2005  
Including change 2, 5 December 2007

# UNIFIED FACILITIES CRITERIA (UFC)

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## STRUCTURAL LOAD DATA



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**UFC 3-310-01**  
**25 May 2005**  
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## **UNIFIED FACILITIES CRITERIA (UFC)**

### **STRUCTURAL LOAD DATA**

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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/)

| <b>Change No.</b> | <b>Date</b>       | <b>Location</b>                                   |
|-------------------|-------------------|---|
| <u>1</u>          | <u>Dec 2005</u>   | <u>FOREWORD</u>                                   |
| <u>2</u>          | <u>5 Dec 2007</u> | <u>Changes not indicated - see change summary</u> |
|                   |                   |   |

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

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## FOREWORD

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.

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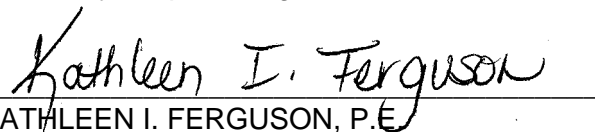
- Whole Building Design Guide web site <http://dod.wbdg.org/>.

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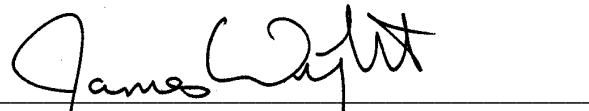
### AUTHORIZED BY:




DONALD L. BASHAM, P.E.  
Chief, Engineering and Construction Division  
U.S. Army Corps of Engineers



KATHLEEN I. FERGUSON, P.E.  
The Deputy Civil Engineer  
DCS/Installations & Logistics  
Department of the Air Force



DR. JAMES W. WRIGHT, P.E.  
Chief Engineer  
Naval Facilities Engineering Command



Dr. GET W. MOY, P.E.  
Director, Installations Requirements and  
Management  
Office of the Deputy Under Secretary of Defense  
(Installations and Environment)

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## **UNIFIED FACILITIES CRITERIA (UFC) REVISION SUMMARY SHEET**

**Document:** UFC 3-310-01, *Design: Structural Load Data, change 2*

**Superseding:** UFC 3-310-01, *Design: Structural Load Data*, dated 25 May 2005

**Description of Changes:** This update to UFC 3-310-01 incorporates changes and eliminates conflicts associated with the adoption of the International Building Code (IBC) 2006 in place of the IBC 2003, as enacted by the update of UFC 1-200-01, "General Building Requirements". This update also includes the structural loading data at a small number of additional DoD locations, and revises the data at locations where more accurate information has been made available.

### **Reasons for Changes:**

- UFC 1-200-01 has been updated and adopts the IBC 2006 as the basic building code for the DoD, replacing the IBC 2003.
- A limited number of additional locations where loading information is required have been identified.
- Additional, more accurate loading information has been collected at select locations.

**Impact:** There are negligible cost impacts. However, the following benefits should be realized.

- Ensuring that the guidance in UFC 3-310-01 is consistent with the requirements of the updated UFC 1-200-01 by eliminating conflicts and inconsistencies.
- Ensuring that the locations identified and the loadings described are complete and current with the most up to date available information.

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## 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 1613 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)*, 2006 (<http://www.iccsafe.org/>)
- *Earthquake Ground Motion Parameters Calculator*, Version 5.0.8, United States Geological Survey (USGS), for the 2006 version of the International Building Code. (<http://earthquake.usgs.gov/research/hazmaps/design/index.php>)

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 and commentary.

1-6.1 **IBC Section 1604 – GENERAL DESIGN REQUIREMENTS.**

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1-6.1.1 **Replacement.** Replace IBC section 1604.5 with the following:

**1604.5 Occupancy category.** Buildings shall be assigned an occupancy category in accordance with Table 1 of UFC 3-310-01. Importance factors for snow load, wind load and seismic load for each occupancy category are also shown in Table 1 of UFC 3-310-01.

**Note:** IBC section 1604.5.1 shall remain in effect as written.

1-6.1.2 **Replacement.** Replace Table 1604.5 of the IBC with Table 1 of this UFC. (All references in the IBC to Table 1604.5 shall be interpreted as a reference to Table 1 of this UFC.)

**TABLE 1**  
**OCCUPANCY CATEGORY OF BUILDINGS AND OTHER STRUCTURES**

| Occupancy Category | Nature of Occupancy   | Seismic Factor<br>$I_E$ | Snow Factor<br>$I_S$ | Wind Factor<br>$I_W$ |
|--------------------|---|-------------------------|----------------------|----------------------|
| <b>I</b>           | <b>Buildings and other structures that represent a low hazard to human life in the event of failure, including, but not limited to:</b> <ul style="list-style-type: none"> <li>• Agricultural facilities</li> <li>• Certain temporary facilities</li> <li>• Minor storage facilities</li> </ul>   | 1.00                    | 0.8                  | 0.87 <sup>a</sup>    |
| <b>II</b>          | <b>Buildings and other structures except those listed in Categories I, III, IV and V</b>  | 1.00                    | 1.00                 | 1.00                 |
| <b>III</b>         | <b>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:</b> <ul style="list-style-type: none"> <li>• Buildings and other structures where more than 300 people congregate in one area</li> <li>• Buildings and other structures with elementary school, secondary school, or daycare facilities with an occupant load greater than 250</li> <li>• Buildings and other structures with an occupant load greater than 500</li> <li>• Health care facilities with an occupant load of 50 or more resident patients, but not having surgery or emergency treatment facilities</li> <li>• Jails and detention facilities</li> <li>• 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</li> <li>• 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</li> <li>• Facilities having high-value equipment, as designated by the using agency</li> </ul> | 1.25                    | 1.10                 | 1.15                 |
|                    |   |                         |                      |                      |

| Occupancy Category | Nature of Occupancy  | Seismic Factor<br>$I_E$ | Snow Factor<br>$I_S$ | Wind Factor<br>$I_W$ |
|--------------------|--|-------------------------|----------------------|----------------------|
| IV                 | <p><b>Buildings and other structures designed as essential facilities, including, but not limited to:</b></p> <ul style="list-style-type: none"> <li>• Hospitals and other health care facilities having surgery or emergency treatment facilities</li> <li>• Fire, rescue, and police stations, and emergency vehicle garages</li> <li>• Designated earthquake, hurricane, or other emergency shelters</li> <li>• Designated emergency preparedness, communication, and operation centers, and other facilities required for emergency response</li> <li>• Power-generating stations and other utility facilities required for primary power or as emergency backup facilities for Category IV structures</li> <li>• 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)</li> <li>• Aviation control towers, air traffic control centers, and emergency aircraft hangars that house aircraft required for post-earthquake emergency response</li> <li>• 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</li> <li>• Water treatment facilities required to maintain water pressure for fire suppression</li> </ul> | 1.50                    | 1.20                 | 1.15                 |
| V <sup>b</sup>     | <p><b>Facilities designed as national strategic military assets, including, but not limited to:</b></p> <ul style="list-style-type: none"> <li>• Key national defense assets (e.g. National Missile Defense facilities), as designated by the using agency</li> <li>• Facilities involved in operational missile control, launch, tracking, or other critical defense capabilities</li> <li>• Emergency backup power-generating facilities required for primary power for Category V structures</li> <li>• Power-generating stations and other utility facilities required for primary power for Category V structures, if emergency backup power generating facilities are not available</li> <li>• 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.</li> </ul>  | N/A <sup>b</sup>        | 1.50 <sup>b</sup>    | 1.70 <sup>b</sup>    |

Notes to Table 1, "OCCUPANCY CATEGORIES OF BUILDINGS AND OTHER STRUCTURES"

a. In hurricane-prone regions with  $V > 100$  miles per hour,  $I_W$  shall be 0.77 for category I structures.

b. 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.

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**1-6.2 IBC Section 1607 – LIVE LOADS.**

Table B-1 of this UFC 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 are shown in bold italics within Table B-1.

**1-6.2.1 Replacement.** Replace IBC section 1607.1 with the following:

**1607.1 General.** Live loads are those loads defined in Section 1602.1. Table B-1 of UFC 3-310-01 defines Minimum uniformly distributed live loads and minimum concentrated live loads for the design of buildings.

**1-6.2.2 Replacement.** Replace Table 1607.1 of the IBC with Table B-1 of this UFC. (All references in the IBC to Table 1607.1 shall be interpreted as a reference to Table B-1 of this UFC.)

**1-6.3 IBC Section 1608 – SNOW LOADS.**

**1-6.3.1 Addition.** Add the following sections to the IBC:

**1608.3 Specific Locations Within the United States.** Ground snow loads at DoD installations within the United States, territories and possessions are identified in table C-1 of UFC 3-310-01, to facilitate consistent interpretation of the information provided in Figure 1608.2 and Table 1608.2.

**1608.4 Specific Locations 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 of UFC 3-310-01. 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 IBC Section 1609 – WIND LOADS.**

**1-6.4.1 Revision.** Change the section number of IBC section 1609.3.1 to section 1609.3.3

**1-6.4.2 Addition.** Add the following sections to the IBC:

**1609.3.1 Specific Locations Within the United States.** Basic wind speeds at DoD installations within the United States, territories and possessions are identified in table C-1 of UFC 3-310-01 to facilitate consistent interpretation of the information provided in Figure 1609.

**1609.3.2 Specific Locations 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 of UFC 3-310-01. At locations where the basic wind speed is not provided, use the best available locality information. For additional guidance contact the authorizing design agency. **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 1613 – EARTHQUAKE LOADS.**

1-6.5.1 **Addition.** Add the following sections to the IBC.

**1613.5.1.1 Specific Locations Within the United States.** Mapped seismic acceleration parameters at DoD installations within the United States, territories and possessions are identified in table C-2 of UFC 3-310-01 to facilitate consistent interpretation of the information provided in Figures 1613.5(1) through 1613.5(14).

The values in table C-2 were determined utilizing the web based United States Geological Survey (USGS) Earthquake Ground Motion Parameters Calculator, Version 5.0.8, for the 2006 version of the International Building Code utilizing latitude and longitude data. This tool or other approved software may be used to determine seismic design data where site-specific location information is available, with the approval of the authorizing design agency.

The mapped seismic acceleration parameters in table C-2 were typically determined 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 appropriate 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 Figures 1613.5(1) through 1613.5(14) or by approved computerized tools for determining seismic ground motion parameters. For additional guidance contact the authorizing design agency.

**1613.5.1.2 Specific Locations Outside of the United States.** Seismic ground motion parameters  $S_S$  and  $S_1$  at specific locations outside of the United States, territories and possessions are identified in table D-2 and E-1 of UFC 3-310-01. For locations not shown, the best available information shall be used with the approval of the authorizing design agency.

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1-6.6 **IBC Section 1805.2.1 – Frost Protection.**

1-6.6.1 **Addition.** Add the following section to the IBC:

**1805.2.2 Frost Line Depth.** Depths to the frost line at specific locations within the United States, territories and possessions are identified in table C-1 of UFC 3-310-01. Frost line depths at specific locations outside of the United States are identified in table D-1 of UFC 3-310-01. At locations where frost depths are not provided, use the best available locality information. 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, its 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 web based United States Geological Survey (USGS) Earthquake Ground Motion Parameters Calculator, Version 5.0.8,, for the 2006 version of the International Building Code utilizing latitude and longitude data.

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.

**APPENDIX A**

**ABBREVIATIONS**

**10/50 S<sub>1</sub>.** ... Spectral acceleration of 5% damped short period (0.2 second) response corresponding to an earthquake with a 10% probability of being exceeded in 50 years

**10/50 S<sub>s</sub>.** ... Spectral acceleration of 5% damped long period (1.0 second) response corresponding to an earthquake with a 10% probability of being exceeded in 50 years

**CS.** ..... Case Study

**DOD.** ..... Department of Defense

**%g.** ..... Percent Gravity

**in<sup>2</sup>.** ..... Square Inches

**IP.** ..... Inch-Pound

**kg/m<sup>3</sup>.** ..... Kilogram per Cubic Meter

**km/h.** ..... Kilometer per Hour

**kN.** ..... Kilo Newton

**kN/m<sup>2</sup>.** ..... Kilo Newton per Square Meter

**kPa.** ..... Kilopascal

**lbs.** ..... Pounds

**mm.** ..... Millimeter

**mm<sup>2</sup>.** ..... Square Millimeter

**mph.** ..... Miles per Hour

**psf.** ..... Pounds per Square Foot

**S<sub>s</sub>.** ..... Spectral Accelerations for Short Periods as determined by IBC Section 1613.5.1

**S<sub>1</sub>.** ..... Spectral Accelerations for 1 Second Periods as determined by IBC Section 1613.5.1

## 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) 2006. Table B-1 includes the IBC 2006 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<sup>9</sup>**

| 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  |
| <b>2. Ammunition Storage</b>  |             |            |              |        |
| <i>High explosives (one story)</i>  | <b>23.9</b> | <b>500</b> | ---          | ---    |
| <i>Inert explosives (one story)</i>   | <b>23.9</b> | <b>500</b> | ---          | ---    |
| <i>Pyrotechnics (one story)</i>   | <b>23.9</b> | <b>500</b> | ---          | ---    |
| <i>Small arms (one story)</i>   | <b>23.9</b> | <b>500</b> | ---          | ---    |
| <i>Torpedo (one story)</i>  | <b>16.8</b> | <b>350</b> | ---          | ---    |
| 3. Armories and drill rooms   | 7.2         | 150        | ---          | ---    |
| 4. Assembly areas and theaters  |             |            |              |        |
| Fixed seats (fastened to floor)   | 2.9         | 60         | ---          | ---    |
| Follow spot, projection and control rooms   | 2.4         | 50         | ---          | ---    |
| Lobbies   | 4.8         | 100        | ---          | ---    |
| Movable seats   | 4.8         | 100        | ---          | ---    |
| Stages and platforms  | 6.0         | 125        | ---          | ---    |
| 5. Balconies  | 4.8         | 100        | ---          | ---    |
| On one- and two-family residences only, and not exceeding 9.3m <sup>2</sup> (100 ft. <sup>2</sup> ) | 2.9         | 60         | ---          | ---    |
| <b>6. Battery charging room</b>   | <b>9.6</b>  | <b>200</b> | ---          | ---    |
| <b>7. Boiler houses</b>   | <b>9.6</b>  | <b>200</b> | ---          | ---    |
| 8. Bowling alleys   | 3.6         | 75         | ---          | ---    |
| 9. Catwalks   | 1.9         | 40         | 1.33         | 300    |
| <b>10. Cleaning gear / trash room compactor</b>   | <b>3.6</b>  | <b>75</b>  | ---          | ---    |
| <b>11. Cold Storage (Food or provision freezer)</b>   |             |            |              |        |
| <i>First floor</i>  | <b>19.2</b> | <b>400</b> | ---          | ---    |
| <i>Upper floors</i>   | <b>14.4</b> | <b>300</b> | ---          | ---    |
| <b>12. Command Duty Officer Day room</b>  | <b>2.9</b>  | <b>60</b>  | ---          | ---    |
| 13. Cornices  | 2.9         | 60         | ---          | ---    |

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| OCCUPANCY OR USE   | UNIFORM                               |                                       | CONCENTRATED                       |                                    |
|--|---------------------------------------|---------------------------------------|------------------------------------|------------------------------------|
|  | kPa                                   | (psf)                                 | kN                                 | (lbs.)                             |
| 14. Corridors, except as otherwise indicated   | 4.8                                   | 100                                   | ---                                | ---                                |
| <b>15. Court rooms</b>   | <b>3.8</b>                            | <b>80</b>                             | ---                                | ---                                |
| 16. Dance halls and ballrooms  | 4.8                                   | 100                                   | ---                                | ---                                |
| 17. Dining rooms and restaurants   | 4.8                                   | 100                                   | ---                                | ---                                |
| 18. Decks  | Same as Occupancy Served <sup>h</sup> | Same as Occupancy Served <sup>h</sup> | ---                                | ---                                |
| 19. Dwellings (see residential)  | ---                                   | ---                                   | ---                                | ---                                |
| 20. Elevator machine room grating (on area of 2600 mm <sup>2</sup> (4 in. <sup>2</sup> ))        | ---                                   | ---                                   | 1.33                               | 300                                |
| 21. Finish light floor plate construction (on area of 650 mm <sup>2</sup> (1 in. <sup>2</sup> )) | ---                                   | ---                                   | 0.89                               | 200                                |
| 22. Fire escapes<br>On single-family dwellings only  | 4.8<br>1.9                            | 100<br>40                             | ---                                | ---                                |
| <b>23. Galleys</b>   |                                       |                                       |                                    |                                    |
| <i>Dishwashing rooms</i>   | <b>14.4</b>                           | <b>300</b>                            |                                    |                                    |
| <i>General kitchen area</i>  | <b>12.0</b>                           | <b>250</b>                            |                                    |                                    |
| <i>Provision storage (not refrigerated)</i>  | <b>9.6</b>                            | <b>200</b>                            | ---                                | ---                                |
| <i>Preparation room</i>  |                                       |                                       |                                    |                                    |
| <i>Meat</i>  | <b>12.0</b>                           | <b>250</b>                            |                                    |                                    |
| <i>Vegetable</i>   | <b>4.8</b>                            | <b>100</b>                            |                                    |                                    |
| 24. Garages (passenger vehicles only)<br>Trucks & buses  | 1.9<br>See Section 1607.6 - IBC       | 40<br>See Section 1607.6 - IBC        | Note a<br>See Section 1607.6 - IBC | Note a<br>See Section 1607.6 - IBC |
| <b>25. Generator rooms</b>   | <b>9.6</b>                            | <b>200</b>                            | ---                                | ---                                |
| 26. Grandstands (see stadium and arena bleachers)  | ---                                   | ---                                   | ---                                | ---                                |
| <b>27. Guard House</b>   | <b>3.6</b>                            | <b>75</b>                             | ---                                | ---                                |
| 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  |                                       |                                       |                                    |                                    |
| Corridors above first floor  | 3.8                                   | 80                                    | 4.45                               | 1,000                              |
| Operating rooms, laboratories  | 2.9                                   | 60                                    | 4.45                               | 1,000                              |
| Private rooms  | 1.9                                   | 40                                    | 4.45                               | 1,000                              |
| 31. Hotels (see residential)   | ---                                   | ---                                   | ---                                | ---                                |
| <b>32. Incinerators; charging room</b>   | <b>7.2</b>                            | <b>150</b>                            | ---                                | ---                                |
| <b>33. Laboratories, normal scientific equipment</b>   | <b>6.0</b>                            | <b>125</b>                            | ---                                | ---                                |
| <b>34. Latrines / Heads / Toilets / Washroom</b>   | <b>3.6</b>                            | <b>75</b>                             | ---                                | ---                                |
| 35. Libraries  |                                       |                                       |                                    |                                    |
| Reading rooms  | 2.9                                   | 60                                    | 4.45                               | 1,000                              |
| Stack rooms  | 7.2 <sup>b</sup>                      | 150 <sup>b</sup>                      | 4.45                               | 1,000                              |
| Corridors above first floor  | 3.8                                   | 80                                    | 4.45                               | 1,000                              |

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| OCCUPANCY OR USE   | UNIFORM     |            | CONCENTRATED |        |
|--|-------------|------------|--------------|--------|
|  | kPa         | (psf)      | kN           | (lbs.) |
| 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         | ---          | ---    |
| <b>38. Mechanical equipment room (general)</b>   | <b>4.8</b>  | <b>100</b> | ---          | ---    |
| <b>39. Mechanical room (HVAC)</b>  | <b>6.0</b>  | <b>125</b> | ---          | ---    |
| <b>40. Mechanical telephone and radio equipment room</b>   | <b>7.2</b>  | <b>150</b> | ---          | ---    |
| <b>41. Morgue</b>  | <b>4.8</b>  | <b>100</b> | ---          | ---    |
| 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        | ---          | ---    |
| <b>44. Post offices</b>  |             |            |              |        |
| General area   | <b>4.8</b>  | <b>100</b> | ---          | ---    |
| Work rooms   | <b>6.0</b>  | <b>125</b> | ---          | ---    |
| <b>45. Power plants</b>  | <b>9.6</b>  | <b>200</b> | ---          | ---    |
| <b>46. Projection booths</b>   | <b>4.8</b>  | <b>100</b> | ---          | ---    |
| <b>47. Promenade roof</b>  | <b>2.9</b>  | <b>60</b>  | ---          | ---    |
| <b>48. Pump houses</b>   | <b>4.8</b>  | <b>100</b> | ---          | ---    |
| <b>49. Recreation room</b>   | <b>4.8</b>  | <b>100</b> | ---          | ---    |
| <b>50. Receiving rooms (radio) including roof areas supporting antennas and electronic equipment</b> | <b>7.2</b>  | <b>150</b> | ---          | ---    |
| <b>51. Refrigeration storage rooms</b>   |             |            |              |        |
| Dairy  | <b>9.6</b>  | <b>200</b> | ---          | ---    |
| Meat   | <b>12.0</b> | <b>250</b> | ---          | ---    |
| Vegetable  | <b>13.2</b> | <b>275</b> | ---          | ---    |

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| OCCUPANCY OR USE  | UNIFORM               |                    | CONCENTRATED |        |
|---|-----------------------|--------------------|--------------|--------|
|   | kPa                   | (psf)              | kN           | (lbs.) |
| 52. Residential   |                       |                    |              |        |
| One & two family dwellings  |                       |                    |              |        |
| Uninhabitable attics without storage <sup>i</sup>   | 0.5                   | 10                 | ---          | ---    |
| Uninhabitable attics with limited storage <sup>ij,k</sup>   | 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             | Note c       | Note c |
| 54. Roofs   |                       |                    |              |        |
| All roof surfaces subject to maintenance workers  | ---                   | ---                | 1.33         | 300    |
| Awnings and canopies  |                       |                    |              |        |
| Fabric construction supported by a light weight rigid skeleton structure  | 0.23<br>Nonreduceable | 5<br>Nonreduceable | ---          | ---    |
| All other construction  | 1.0                   | 20                 | ---          | ---    |
| Ordinary flat, pitched, and curved roofs  | 1.0                   | 20                 | ---          | ---    |
| Primary roof members, exposed to a work floor:  |                       |                    |              |        |
| Single panel point of lower chord of roof trusses or any point along primary structural members supporting roofs: |                       |                    |              |        |
| Over manufacturing, storage warehouses, and repair garages  | ---                   | ---                | 8.9          | 2000   |
| All other occupancies   | ---                   | ---                | 1.33         | 300    |
| Roofs used for special purposes   | Note I                | Note I             | Note I       | Note I |
| Roofs used for promenade purposes   | 2.9                   | 60                 | ---          | ---    |
| Roofs used for roof gardens or assembly purposes  | 4.8<br>---            | 100                | ---          | ---    |
| 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  |
| 56. Scuttles, skylight ribs, and accessible ceilings  | ---                   | ---                | 0.89         | 200    |

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| OCCUPANCY OR USE  | UNIFORM                |                        | CONCENTRATED           |                        |
|---|------------------------|------------------------|------------------------|------------------------|
|   | kPa                    | (psf)                  | kN                     | (lbs.)                 |
| <b>57. Shops: Manufacturing and Industrial</b>  |                        |                        |                        |                        |
| <i>Aircraft utility</i>   | 9.6                    | 200                    | ---                    | ---                    |
| <i>Assembly and repair</i>  | 12.0                   | 250                    | ---                    | ---                    |
| <i>Bombsite (w/o shielding)</i>   | 6.0                    | 125                    | ---                    | ---                    |
| <i>Carpenter</i>  | 6.0                    | 125                    | ---                    | ---                    |
| <i>Electrical</i>   | 14.4                   | 300                    | ---                    | ---                    |
| <i>Engine overhaul</i>  | 14.4                   | 300                    | ---                    | ---                    |
| 58. Sidewalks, vehicular driveways and yards, subject to trucking                               | 12.0 <sup>d</sup>      | 250 <sup>d</sup>       | 35.6 <sup>e</sup>      | 8,000 <sup>e</sup>     |
| 59. Skating rinks   | 4.8                    | 100                    | ---                    | ---                    |
| 60. Stadiums and arenas   |                        |                        |                        |                        |
| Bleachers   | 4.8 <sup>c</sup>       | 100 <sup>c</sup>       | ---                    | ---                    |
| Fixed seats (fastened to floor)   | 2.9 <sup>c</sup>       | 60 <sup>c</sup>        |                        |                        |
| 61. Stairs and exits  |                        |                        |                        |                        |
| 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                    |                        |                        |
| <i>Aircraft</i>   | 9.58                   | 200                    | ---                    | ---                    |
| <i>Building Materials</i>   | 11.97                  | 250                    |                        |                        |
| <i>Drugs, paint, oil</i>  | 9.58                   | 200                    |                        |                        |
| <i>Dry Provisions</i>   | 14.36                  | 300                    |                        |                        |
| <i>Groceries, wine, Liquor</i>  | 14.36                  | 300                    |                        |                        |
| <i>Light Tools</i>  | 7.2                    | 150                    |                        |                        |
| <i>Pipe &amp; metal</i>   | 47.88                  | 1000                   |                        |                        |
| <i>Paint and oil (one story)</i>  | 23.94                  | 500                    |                        |                        |
| <i>Hardware</i>   | 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                  |
| <b>64. Tailor shop</b>  | <b>3.6</b>             | <b>75</b>              | <b>---</b>             | <b>---</b>             |
| <b>65. Telephone exchange rooms and central computer IT server spaces</b>                       | <b>7.2</b>             | <b>150</b>             | <b>8.9</b>             | <b>2000</b>            |
| 66. Vehicle barriers  | Section 1607.7.3 - IBC | Section 1607.7.3 - IBC | Section 1607.7.3 - IBC | Section 1607.7.3 - 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<sup>2</sup>, 1 pound per square foot = 0.0479 kN/m<sup>2</sup> = 0.0479 kPa, 1 pound = 0.004448 kN, 1 pound per cubic foot = 16 kg/m<sup>3</sup>.

- 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<sup>2</sup> (20 square inches).
- f. Minimum concentrated load on stair treads (on area of 2,600 mm<sup>2</sup> (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.
- i. Attics without storage are those where the maximum clear height between the joist and rafter is less than 42 inches, or where there are not two or more adjacent trusses with the same web configuration capable of containing a rectangle 42 inches high by 2 feet wide, or greater, located within the plane of the truss. For attics without storage, this live load need not be assumed to act concurrently with any other live load requirements.

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- j. For attics with limited storage and constructed with trusses, this live load need only be applied to those portions of the bottom chord where there are two or more adjacent trusses with the same web configuration capable of containing a rectangle 42 inches high by 2 feet wide or greater, located within the plane of the truss. The rectangle shall fit between the top of the bottom chord and the bottom of any other truss member, provided that each of the following criteria is met:
  - 1. The attic area is accessible by a pull-down stairway or framed opening in accordance with Section 1209.2, and
  - 2. The truss shall have a bottom chord pitch less than 2:12
  - 3. Bottom chords of trusses shall be designed for the greater of actual imposed dead load or 10 psf, uniformly distributed over the entire span.
- k. Attic spaces served by a fixed stair shall be signed to support the minimum live load specified for habitable attics and sleeping rooms.
- l. Roofs used for other special purposes shall be designed for appropriate loads as approved by the building official.

## 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**

| <b>TABLE C-1</b> |                                  | <b>Ground Snow</b> | <b>Wind Speed</b> | <b>Frost Penetration</b> | <b>Ground Snow</b> | <b>Wind Speed</b> | <b>Frost Penetration</b> |
|------------------|----------------------------------|--------------------|-------------------|--------------------------|--------------------|-------------------|--------------------------|
| <b>State</b>     | <b>Base / City</b>               | <b>(psf)</b>       | <b>(mph)</b>      | <b>(inches)</b>          | <b>kPa</b>         | <b>km/h</b>       | <b>mm</b>                |
| <b>Alabama</b>   | 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                      |
| <b>Alaska</b>    | Clear AS                         | 70                 | 90                |                          | 3.35               | 145               |                          |
|                  | Eielson AFB                      | 75                 | 90                | permafrost               | 3.58               | 145               | permafrost               |
|                  | Elmendorf AFB                    | 65                 | 100               | 129                      | 3.11               | 161               | 3277                     |
|                  | Fort Greely                      | 60                 | 90                | Permafrost               | 2.87               | 145               | permafrost               |
|                  | Fort Richardson                  | 65                 | 110               | 129                      | 3.11               | 177               | 3277                     |
|                  | Fort Wainwright                  | 75                 | 90                | permafrost               | 3.58               | 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                     |
| <b>Arizona</b>   | Sitka                            | 50                 | 122               | 56                       | 2.40               | 196               | 1422                     |
|                  | Valdez                           | 160                | 100               | 136                      | 7.66               | 161               | 3454                     |
|                  | Davis-Monthan AFB / Tucson AFB   | 0                  | 90                | 0                        | 0.00               | 145               | 0                        |

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**TABLE C-1**

| State                        | Base / City                     | Ground Snow | Wind Speed    | Frost Penetration | Ground Snow | Wind Speed     | Frost Penetration |
|------------------------------|---------------------------------|-------------|---------------|-------------------|-------------|----------------|-------------------|
|                              |                                 | (psf)       | (mph)         | (inches)          | kPa         | km/h           | mm                |
| <b>Arizona</b>               | Fort Huachuca                   | 10          | 90            | 0                 | 0.48        | 145            | 0                 |
|                              | Luke Air Force Base             | 0           | 90            | 5                 | 0.00        | 145            | 127               |
|                              | 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                 |
| <b>Arkansas</b>              | Little Rock AFB                 | 10          | 90            | 14                | 0.48        | 145            | 356               |
|                              | Pine Bluff Arsenal              | 10          | 90            | 9                 | 0.48        | 145            | 229               |
| <b>California</b>            | Alameda                         | 0           | 85            |                   | 0.00        | 137            |                   |
|                              | MCLB Barstow                    | 0           | 85            | 18                | 0.00        | 137            | 457               |
|                              | Beale AFB                       | 0           | 85            |                   | 0.00        | 137            |                   |
|                              | MCMTTC 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                 |
|                              | NRTF Dixon                      | 0           | 85            | 0                 | 0.00        | 137            | 0                 |
|                              | Edwards AFB                     | 0           | 85<br>Special | 22                | 0.00        | 137<br>Special | 559               |
|                              | EI 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 /<br>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 /<br>Sacramento   | 0           | 85            | 5                 | 0.00        | 137            | 127               |
| NWC Mohave<br>Range          | 0                               | 85          | 22            | 0.00              | 137         | 559            |                   |
| Presidio of<br>Monterey      | 0                               | 85          | 4             | 0.00              | 137         | 102            |                   |
| Point Mugu / Port<br>Hueneme | 0                               | 85          | 0             | 0.00              | 137         | 0              |                   |

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**TABLE C-1**

| <b>State</b>                       | <b>Base / City</b>  | <b>Ground Snow<br/>(psf)</b> | <b>Wind Speed<br/>(mph)</b> | <b>Frost Penetration<br/>(inches)</b> | <b>Ground Snow<br/>kPa</b> | <b>Wind Speed<br/>km/h</b> | <b>Frost Penetration<br/>mm</b> |             |
|------------------------------------|---|------------------------------|-----------------------------|---------------------------------------|----------------------------|----------------------------|---------------------------------|-------------|
| <b>California</b>                  | <b>San Diego Region</b><br>NAS North Island<br>NAB Coronada<br>MCRD<br>Miramar<br>Naval Medical Ctr<br>San Diego NS<br>Point Loma | <b>0</b>                     | <b>85</b>                   | <b>0</b>                              | <b>0.00</b>                | <b>137</b>                 | <b>0</b>                        |             |
|                                    | Moffett Field -<br>Onizuka /<br>Sunnyvale   | <b>0</b>                     | <b>85</b>                   | <b>0</b>                              | <b>0.00</b>                | <b>137</b>                 | <b>0</b>                        |             |
|                                    | San Clemente<br>Island Naval<br>Reservation   | <b>0</b>                     | <b>85</b>                   | <b>0</b>                              | <b>0.00</b>                | <b>137</b>                 | <b>0</b>                        |             |
|                                    | San Nicolas Island  | <b>0</b>                     | <b>85</b>                   | <b>0</b>                              | <b>0.00</b>                | <b>137</b>                 | <b>0</b>                        |             |
|                                    | Seal Beach NWS  | <b>0</b>                     | <b>85</b>                   | <b>0</b>                              | <b>0.00</b>                | <b>137</b>                 | <b>0</b>                        |             |
|                                    | Seal Beach NWS –<br>Concord<br>Detachment   | <b>0</b>                     | <b>85</b>                   | <b>0</b>                              | <b>0.00</b>                | <b>137</b>                 | <b>0</b>                        |             |
|                                    | Sierra Army Depot /<br>Herlong  | <b>15</b>                    | <b>85</b>                   | <b>54</b>                             | <b>0.72</b>                | <b>137</b>                 | <b>1372</b>                     |             |
|                                    | Stockton / San<br>Joaquin   | <b>0</b>                     | <b>85</b>                   | <b>4</b>                              | <b>0.00</b>                | <b>137</b>                 | <b>102</b>                      |             |
|                                    | Travis AFB  | <b>0</b>                     | <b>85</b>                   | <b>0</b>                              | <b>0.00</b>                | <b>137</b>                 | <b>0</b>                        |             |
|                                    | Twentynine Palms  | <b>0</b>                     | <b>85</b>                   | <b>5</b>                              | <b>0.00</b>                | <b>137</b>                 | <b>127</b>                      |             |
|                                    | Vandenberg AFB  | <b>0</b>                     | <b>85</b>                   | <b>0</b>                              | <b>0.00</b>                | <b>137</b>                 | <b>0</b>                        |             |
|                                    | <b>Colorado</b>   | Buckley AFB /<br>Aurora      | <b>20</b>                   | <b>90</b>                             | <b>52</b>                  | <b>0.96</b>                | <b>145</b>                      | <b>1321</b> |
|                                    |   | Denver                       | <b>20</b>                   | <b>90</b>                             | <b>52</b>                  | <b>0.96</b>                | <b>145</b>                      | <b>1321</b> |
| Fort Carson                        |   | <b>15</b>                    | <b>Special</b>              | <b>38</b>                             | <b>0.72</b>                | <b>Special</b>             | <b>965</b>                      |             |
| Cheyenne<br>Mountain AS /<br>NORAD |   | <b>15</b>                    | <b>Special</b>              | <b>38</b>                             | <b>0.72</b>                | <b>Special</b>             | <b>965</b>                      |             |
| Peterson AFB /<br>Colorado Springs |   | <b>30</b>                    | <b>90</b>                   | <b>38</b>                             | <b>1.44</b>                | <b>145</b>                 | <b>965</b>                      |             |
| Schriever AFB                      |   | <b>CS</b>                    | <b>90</b>                   |                                       | <b>CS</b>                  | <b>145</b>                 |                                 |             |
| USAF Academy                       |   | <b>30</b>                    | <b>Special</b>              | <b>38</b>                             | <b>1.44</b>                | <b>Special</b>             | <b>965</b>                      |             |
| <b>Connecticut</b>                 | NSB New London /<br>Groton  | <b>30</b>                    | <b>120</b>                  | <b>38</b>                             | <b>1.44</b>                | <b>193</b>                 | <b>965</b>                      |             |

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**TABLE C-1**

| State                       | Base / City   | Ground Snow | Wind Speed | Frost Penetration | Ground Snow | Wind Speed | Frost Penetration |
|-----------------------------|---|-------------|------------|-------------------|-------------|------------|-------------------|
|                             |   | (psf)       | (mph)      | (inches)          | kPa         | km/h       | mm                |
| <b>Delaware</b>             | Dover AFB   | 25          | 95         | 22                | 1.20        | 153        | 559               |
| <b>District of Columbia</b> | <b>Washington Region</b><br>Bolling AFB<br>Anacostia NS<br>Fort McNair<br>Marine Barracks<br>NRL Washington<br>NDW / Anacostia<br>Pentagon<br>Walter Reed | 25          | 90         | 26                | 1.20        | 145        | 660               |
| <b>Florida</b>              | 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           | 115        | 0                 | 0.00        | 185        | 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                 |
| <b>Georgia</b>              | 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                 |

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**TABLE C-1**

| State           | Base / City   | Ground Snow | Wind Speed | Frost Penetration | Ground Snow | Wind Speed | Frost Penetration |
|-----------------|---|-------------|------------|-------------------|-------------|------------|-------------------|
|                 |   | (psf)       | (mph)      | (inches)          | kPa         | km/h       | mm                |
| <b>Georgia</b>  | 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                 |
| <b>Hawaii</b>   | PMRF Barking Sands, Kauai   | 0           | 105        | 0                 | 0.00        | 169        | 0                 |
|                 | MCBH Kaneohe Bay  | 0           | 105        | 0                 | 0.00        | 169        | 0                 |
|                 | Pohakuloa Training Area   | 0           | 105        | 0                 | 0           | 169        | 0                 |
|                 | <b>Pearl Harbor Region:</b><br>Camp H.M. Smith<br>Fort Shafter<br>Hickam AFB<br>Pearl Harbor<br>Tripler AMC | 0           | 105        | 0                 | 0.00        | 169        | 0                 |
|                 | <b>Wahiawa Region:</b><br>Lualualei<br>Wahiawa Naval Reservation<br>Wheeler AFB<br>Schofield Barracks       | 0           | 105        | 0                 | 0.00        | 169        | 0                 |
| <b>Idaho</b>    | ARD Bayview   | 10          | 90         |                   | 0.48        | 145        |                   |
|                 | Boise ANG   | 10          | 90         |                   | 0.48        | 145        |                   |
|                 | Mountain Home AFB   | 20          | 90         | 64                | 0.96        | 145        | 1626              |
| <b>Illinois</b> | 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        |                   |
| <b>Indiana</b>  | Crane NWSC  | 20          | 90         | 36                | 0.96        | 145        | 914               |
|                 | Grissom ARB   | 20          | 90         | 49                | 0.96        | 145        | 1245              |

**TABLE C-1**

| <b>State</b>     | <b>Base / City</b>                         | <b>Ground Snow<br/>(psf)</b> | <b>Wind Speed<br/>(mph)</b> | <b>Frost Penetration<br/>(inches)</b> | <b>Ground Snow<br/>kPa</b> | <b>Wind Speed<br/>km/h</b> | <b>Frost Penetration<br/>mm</b> |
|------------------|--|------------------------------|-----------------------------|---------------------------------------|----------------------------|----------------------------|---------------------------------|
| <b>Indiana</b>   | Fort Benjamin Harrison / Indianapolis      | 20                           | 90                          | 44                                    | 0.96                       | 145                        | 1118                            |
| <b>Iowa</b>      | Des Moines                                 | 25                           | 90                          | 82                                    | 1.20                       | 145                        | 2083                            |
| <b>Kansas</b>    | 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                             |
| <b>Kentucky</b>  | 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                               |
| <b>Louisiana</b> | Barksdale AFB                              | 5                            | 90                          | 7                                     | 0.24                       | 145                        | 178                             |
|                  | Fort Polk / Leesville                      | 5                            | 95                          | 0                                     | 0.24                       | 153                        | 0                               |
|                  | NAS JRB New Orleans / Belle Chasse         | 0                            | 130                         | 0                                     | 0.00                       | 209                        | 0                               |
| <b>Maine</b>     | NAS Brunswick                              | 50                           | 100                         | 86                                    | 2.40                       | 161                        | 2184                            |
|                  | NRTF Cutler                                | 50                           | 98                          | 86                                    | 2.40                       | 158                        | 2184                            |
|                  | PNSY Kittery                               | 50                           | 100                         | 64                                    | 2.40                       | 161                        | 1626                            |
|                  | Winter Harbor NSGA                         | 50                           | 98                          | 86                                    | 2.40                       | 158                        | 2184                            |
| <b>Maryland</b>  | 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                             |

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**TABLE C-1**

| State                | Base / City                   | Ground Snow | Wind Speed | Frost Penetration | Ground Snow | Wind Speed | Frost Penetration |
|----------------------|-------------------------------|-------------|------------|-------------------|-------------|------------|-------------------|
|                      |                               | (psf)       | (mph)      | (inches)          | kPa         | km/h       | mm                |
| <b>Maryland</b>      | U.S Naval Academy / Annapolis | 25          | 90         | 26                | 1.20        | 145        | 660               |
| <b>Massachusetts</b> | 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              |
| <b>Michigan</b>      | 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              |
| <b>Minnesota</b>     | Minneapolis – St Paul         | 50          | 90         | 125               | 2.40        | 145        | 3175              |
| <b>Mississippi</b>   | Stennis / Bay St. Louis       | 0           | 130        |                   | 0.00        | 209        |                   |
|                      | Columbus AFB                  | 10          | 90         | 7                 | 0.48        | 145        | 178               |
|                      | Gulfport                      | 0           | 135        | 0                 | 0.00        | 217        | 0                 |
|                      | Jackson                       | 5           | 92         | 5                 | 0.24        | 148        | 127               |
|                      | Keesler AFB                   | 0           | 140        | 0                 | 0.00        | 225        | 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        |                   |
| <b>Missouri</b>      | 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              |
| <b>Montana</b>       | Great Falls ANG               | 20          | 90         | 107               | 0.96        | 145        | 2718              |
|                      | Malmstrom AFB                 | 20          | 90         | 107               | 0.96        | 145        | 2718              |
| <b>Nebraska</b>      | Offutt AFB                    | 25          | 90         | 73                | 1.20        | 145        | 1854              |
|                      | Lincoln                       | 25          | 90         | 64                | 1.20        | 145        | 1626              |
| <b>Nevada</b>        | 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               |

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| State                 | Base / City  | Ground Snow | Wind Speed    | Frost Penetration | Ground Snow | Wind Speed     | Frost Penetration |
|-----------------------|--|-------------|---------------|-------------------|-------------|----------------|-------------------|
|                       |  | (psf)       | (mph)         | (inches)          | kPa         | km/h           | mm                |
| <b>Nevada</b>         | Nellis AF Range  | 5           | 90            | 7                 | 0.24        | 145            | 178               |
| <b>New Hampshire</b>  | Portsmouth Naval Shipyard                                    | 50          | 100           | 64                | 2.40        | 161            | 1626              |
| <b>New Jersey</b>     | 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               |
| <b>New Jersey</b>     | 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               |
| <b>New Mexico</b>     | 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               |
| <b>New York</b>       | 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            |                   |
|                       | Griffis AFB / Rome   | 60          | 90            | 86                | 2.87        | 145            | 2184              |
|                       | NIAGARA FALLS IAP  | 35          | 90            | 59                | 1.68        | 145            | 1499              |
|                       | NSU Saratoga Springs   | 50          | 90            |                   | 2.40        | 145            |                   |
|                       | Stewart ANG / Newburgh                                       | 35          | 90            | 54                | 1.68        | 145            | 1372              |
|                       | Syracuse   | 40          | 90            | 73                | 1.92        | 145            | 1854              |
|                       | West Point   | 30          | 90<br>Special | 54                | 1.44        | 145<br>Special | 1372              |
|                       | Watervliet Arsenal / Albany                                  | 40          | 90            | 82                | 1.92        | 145            | 2083              |
| <b>North Carolina</b> | MCAS Cherry Point  | 10          | 128           | 0                 | 0.48        | 206            | 0                 |
|                       | Fort Bragg   | 10          | 95            | 0                 | 0.48        | 153            | 0                 |
|                       | <b>Jacksonville Region</b><br>Camp Lejeune<br>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            |                   |

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**TABLE C-1**

| <b>State</b>          | <b>Base / City</b>                         | <b>Ground Snow<br/>(psf)</b> | <b>Wind Speed<br/>(mph)</b> | <b>Frost Penetration<br/>(inches)</b> | <b>Ground Snow<br/>kPa</b> | <b>Wind Speed<br/>km/h</b> | <b>Frost Penetration<br/>mm</b> |
|-----------------------|--|------------------------------|-----------------------------|---------------------------------------|----------------------------|----------------------------|---------------------------------|
| <b>North Carolina</b> | Seymour Johnson AFB                        | 10                           | 100                         | 4                                     | 0.48                       | 161                        | 102                             |
| <b>North Dakota</b>   | Grand Forks AFB                            | 60                           | 90                          | 156                                   | 2.87                       | 145                        | 3962                            |
|                       | NRTF La Moure                              | 40                           | 90                          |                                       | 1.92                       | 145                        |                                 |
|                       | Minot AFB                                  | 40                           | 90                          | 163                                   | 1.92                       | 145                        | 4140                            |
| <b>Ohio</b>           | Cleveland                                  | 20                           | 90                          | 52                                    | 0.96                       | 145                        | 1321                            |
|                       | DSC Whitehall / Columbus                   | 20                           | 90                          | 46                                    | 0.96                       | 145                        | 1168                            |
|                       | Wright-Patterson AFB                       | 20                           | 90                          | 49                                    | 0.96                       | 145                        | 1245                            |
|                       | Youngstown ARS / Vienna                    | 20                           | 90                          |                                       | 0.96                       | 145                        |                                 |
| <b>Oklahoma</b>       | 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                             |
| <b>Oregon</b>         | Portland                                   | 10                           | 85                          | 14                                    | 0.48                       | 137                        | 356                             |
| <b>Pennsylvania</b>   | ARS Coraopolis / Pittsburg                 | 25                           | 90                          | 38                                    | 1.20                       | 145                        | 965                             |
|                       | Carlisle Barracks                          | 25                           | 90                          | 36                                    | 1.20                       | 145                        | 914                             |
|                       | 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                               |
| <b>Rhode Island</b>   | NS Newport                                 | 30                           | 115                         | 35                                    | 1.44                       | 185                        | 889                             |
| <b>South Carolina</b> | MCAS Beaufort                              | 5                            | 122                         | 0                                     | 0.24                       | 196                        | 0                               |

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**TABLE C-1**

| State          | Base / City  | Ground Snow | Wind Speed | Frost Penetration | Ground Snow | Wind Speed | Frost Penetration |
|----------------|--|-------------|------------|-------------------|-------------|------------|-------------------|
|                |  | (psf)       | (mph)      | (inches)          | kPa         | km/h       | mm                |
| South Carolina | <b>Charleston Region:</b><br>Charleston AFB<br>NWS Charleston  | 5           | 125        | 0                 | 0.24        | 201        | 0                 |
|                | <b>Columbia Region:</b><br>McEntire<br>Fort Jackson<br>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 /<br>Memphis  | 10          | 90         | 0                 | 0.48        | 145        | 0                 |
|                | NSA Mid-South /<br>Millington  | 10          | 90         |                   | 0.48        | 145        |                   |
|                | Nashville  | 10          | 90         | 22                | 0.48        | 145        | 559               |
| Texas          | NAS JRB, Carswell<br>/ 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 /<br>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               |
|                | Goodfellow AFB   | 5           | 90         | 5                 | 0.24        | 145        | 127               |
|                | 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<br>Depot / Texarkana  | 5           | 90         | 8                 | 0.24        | 145        | 203               |
|                | <b>San Antonio Region</b><br>Brooks AFB<br>Fort Sam Houston<br>Kelly AFB<br>Lackland AFB<br>Randolph AFB | 5           | 90         | 0                 | 0.24        | 145        | 0                 |
| Sheppard AFB   | 5  | 90          | 11         | 0.24              | 145         | 279        |                   |

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**TABLE C-1**

| State                            | Base / City   | Ground Snow | Wind Speed | Frost Penetration | Ground Snow | Wind Speed | Frost Penetration |
|----------------------------------|---|-------------|------------|-------------------|-------------|------------|-------------------|
|                                  |   | (psf)       | (mph)      | (inches)          | kPa         | km/h       | mm                |
| 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               |
|                                  | <b>Norfolk Region:</b><br>Camp Elmore<br>Craney Island<br>Depot<br>Norfolk Naval Base | 10          | 107        | 9                 | 0.48        | 172        | 229               |
|                                  | Norfolk Shipyard –<br>Naval Hospital /<br>Portsmouth                                  | 10          | 105        | 9                 | 0.48        | 169        | 229               |
|                                  | NSA Northwest /<br>Chesapeake   | 10          | 105        | 9                 | 0.48        | 169        | 229               |
|                                  | NAS Oceana /<br>Virginia Beach  | 10          | 113        | 9                 | 0.48        | 182        | 229               |
|                                  | Quantico  | 25          | 90         | 22                | 1.20        | 145        | 559               |
| Radford AAP                      | 25  | 90          |            | 1.20              | 145         |            |                   |
| Defense Supply Ctr<br>/ Richmond | 20  | 90          | 18         | 0.96              | 145         | 457        |                   |
| Wallops Island                   | 20  | 115         |            | 0.96              | 185         |            |                   |

**TABLE C-1**

| State           | Base / City   | Ground Snow | Wind Speed | Frost Penetration | Ground Snow | Wind Speed | Frost Penetration |
|-----------------|---|-------------|------------|-------------------|-------------|------------|-------------------|
|                 |   | (psf)       | (mph)      | (inches)          | kPa         | km/h       | mm                |
| Virginia        | <b>Yorktown Region:</b><br>Camp Perry<br>Cheatham Annex<br>Yorktown NWS     | 15          | 95         | 9                 | 0.72        | 153        | 229               |
|                 | NS Everett  | 15 (b)      | 85         |                   | 0.72(b)     | 137        |                   |
|                 | Fairchild AFB   | 42          | 85         | 64                | 2.01        | 137        | 1626              |
| Washington      | 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               |
|                 | <b>Puget Sound Region:</b><br>Bangor NSB<br>Bremerton NS<br>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   | Allegheny Ballistics Lab  | CS          | 90         |                   | CS          | 145        |                   |
|                 | 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              |
| American Samoa  | Pago Pago / Tutuila Island  | 0           | 125        | 0                 | 0.00        | 201        | 0                 |
| Mariana Islands | Guam  | 0           | 170        | 0                 | 0.00        | 274        | 0                 |
|                 | Saipan / Tinian   | 0           | 150        | 0                 | 0.00        | 241        | 0                 |
| Puerto Rico     | All   | 0           | 145        | 0                 | 0.00        | 233        | 0                 |
|                 |   |             |            |                   |             |            |                   |
|                 |   |             |            |                   |             |            |                   |

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**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**

| <b>TABLE C-2</b>  |                                     | <b>Seismic Data (Site Class B)</b> |                               |                                     |                                     |
|-------------------|-------------------------------------|------------------------------------|-------------------------------|-------------------------------------|-------------------------------------|
| <b>State</b>      | <b>Base / City</b>                  | <b>S<sub>s</sub><br/>(%g)</b>      | <b>S<sub>1</sub><br/>(%g)</b> | <b>10/50 S<sub>s</sub><br/>(%g)</b> | <b>10/50 S<sub>1</sub><br/>(%g)</b> |
| <b>Alabama</b>    | Anniston Army Depot                 | 28                                 | 9                             | 11                                  | 4                                   |
|                   | Birmingham                          | 30                                 | 10                            | 11                                  | 4                                   |
|                   | Fort McClellan                      | 28                                 | 9                             | 11                                  | 4                                   |
|                   | Fort Rucker                         | 11                                 | 6                             | 4                                   | 2                                   |
|                   | Maxwell-Gunther AFB /<br>Montgomery | 16                                 | 7                             | 6                                   | 3                                   |
|                   | Mobile                              | 12                                 | 5                             | 4                                   | 2                                   |
|                   | Redstone Arsenal /<br>Huntsville    | 30                                 | 11                            | 11                                  | 4                                   |
| <b>Alaska</b>     | Clear AS                            | 108                                | 30                            | 47                                  | 14                                  |
|                   | Eielson AFB                         | 106                                | 29                            | 44                                  | 14                                  |
|                   | Elmendorf AFB                       | 149                                | 55                            | 100                                 | 30                                  |
|                   | Fort Greely                         | 81                                 | 38                            | 34                                  | 14                                  |
|                   | 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                                  |                                     |
| <b>Arizona</b>    | Davis-Monthan AFB /<br>Tucson AFB   | 28                                 | 8                             | 13                                  | 4                                   |
|                   | Fort Huachuca                       | 26                                 | 8                             | 12                                  | 3                                   |
|                   | Luke Air Force Base                 | 17                                 | 6                             | 11                                  | 3                                   |
|                   | Phoenix                             | 18                                 | 6                             | 11                                  | 3                                   |
|                   | Yuma MCB                            | 68                                 | 26                            | 37                                  | 14                                  |
|                   | Yuma Proving Ground                 | 47 Max<br>20 Min                   | 23 Max<br>14 Min              | 29 Max<br>15 Min                    | 11 Max<br>6 Min                     |
| <b>Arkansas</b>   | Little Rock AFB                     | 57                                 | 18                            | 14                                  | 4                                   |
|                   | Pine Bluff Arsenal                  | 44                                 | 15                            | 11                                  | 4                                   |
| <b>California</b> | Alameda                             | 150                                | 60                            | 123                                 | 55                                  |
|                   | MCLB Barstow                        | 133                                | 48                            | 61                                  | 22                                  |
|                   | Beale AFB                           | 44                                 | 20                            | 26                                  | 11                                  |

**TABLE C-2**

| State                                 | Base / City                  | Seismic Data (Site Class B) |                        |                              |                              |
|---------------------------------------|------------------------------|-----------------------------|------------------------|------------------------------|------------------------------|
|                                       |                              | S <sub>s</sub><br>(%g)      | S <sub>1</sub><br>(%g) | 10/50 S <sub>s</sub><br>(%g) | 10/50 S <sub>1</sub><br>(%g) |
| California                            | MCMTC Bridgeport             | 110                         | 39                     | 63                           | 21                           |
|                                       | Camp Pendleton               | 139 Max<br>111 Min          | 51 Max<br>42 Min       | 61                           | 25                           |
|                                       | NWS China Lake               | 136 Max<br>109 Min          | 45 Max<br>38 Min       | 80 Max<br>61 Min             | 27 Max<br>19 Min             |
|                                       | NSWC Corona                  | 169                         | 60                     | 127                          | 47                           |
|                                       | NRTF Dixon                   | 129                         | 42                     |                              |                              |
|                                       | Edwards AFB                  | 115 Max<br>86 Min           | 59 Max<br>39 Min       | 85 Max<br>47 Min             | 39 Max<br>21 Min             |
|                                       | El Centro NAF                | 190 Max<br>150 Min          | 66 Max<br>60 Min       | 160 Max<br>128 Min           | 54 Max<br>39 Min             |
|                                       | Fort Irwin                   | 197 Max<br>78 Min           | 95 Max<br>29 Min       | 144 Max<br>40 Min            | 55 Max<br>15 Min             |
|                                       | Fresno ANG                   | 49                          | 22                     | 27                           | 12                           |
|                                       | NAS Lemoore                  | 89                          | 33                     | 49                           | 20                           |
|                                       | Los Angeles AFB / El Segundo | 150                         | 60                     | 113                          | 39                           |
|                                       | Los Angeles                  | 188                         | 68                     | 119                          | 42                           |
|                                       | March ARB                    | 150                         | 60                     | 127                          | 50                           |
|                                       | McClellan AFB / Sacramento   | 48                          | 22                     | 28                           | 13                           |
|                                       | NWC Mohave Range             | 197 Max<br>94 Min           | 95 Max<br>33 Min       | 106 Max<br>49 Min            | 36 Max<br>20 Min             |
|                                       | Presidio of Monterey         | 151                         | 63                     | 105                          | 37                           |
|                                       | Point Mugu / Port Hueneme    | 219                         | 91                     | 128                          | 54                           |
|                                       | <b>San Diego Region</b>      |                             |                        |                              |                              |
|                                       | NAS North Island             | 146                         | 56                     | 66.4                         | 24.8                         |
|                                       | NAB Coronada                 | 157                         | 63                     | 62.8                         | 22.8                         |
| MCRD                                  | 163                          | 65                          | 67.5                   | 25.4                         |                              |
| Miramar                               | 137                          | 51                          | 64.8                   | 24.1                         |                              |
| Naval Medical Ctr                     | 155                          | 60                          | 63.4                   | 24.3                         |                              |
| San Diego NS                          | 140                          | 54                          | 60.8                   | 22.2                         |                              |
| NS Point Loma                         | 154                          | 61                          | 72.5                   | 26.1                         |                              |
| Moffett Field – Onizuka / Sunnyvale   | 150                          | 60                          | 125                    | 57                           |                              |
| San Clemente Island Naval Reservation | 83                           | 26                          | 31                     | 12                           |                              |
| San Nicolas Island                    | 62                           | 22                          | 26                     | 10                           |                              |

**TABLE C-2**

| State                   | Base / City   | Seismic Data (Site Class B) |                        |                              |                              |
|-------------------------|---|-----------------------------|------------------------|------------------------------|------------------------------|
|                         |   | S <sub>s</sub><br>(%g)      | S <sub>1</sub><br>(%g) | 10/50 S <sub>s</sub><br>(%g) | 10/50 S <sub>1</sub><br>(%g) |
| California              | Seal Beach NWS  | 164                         | 61                     | 110                          | 37                           |
|                         | Seal Beach NWS –<br>Concord Detachment  | 150                         | 60                     | 145                          | 55                           |
|                         | Sierra Army Depot /<br>Herlong  | 95                          | 35                     | 48                           | 16                           |
|                         | Stockton / San Joaquin  | 148                         | 48                     | 76                           | 26                           |
|                         | Travis AFB  | 186                         | 60                     | 111                          | 37                           |
|                         | Twentynine Palms  | 162 Max<br>88 Min           | 58 Max<br>30 Min       | 102 Max<br>39 Min            | 32 Max<br>14 Min             |
|                         | Vandenberg AFB  | 138 Max<br>105 Min          | 49 Max<br>36 Min       | 64 Max<br>53 Min             | 24 Max<br>19 Min             |
| Colorado                | Buckley AFB / Aurora  | 20                          | 5                      | 7                            | 2                            |
|                         | Denver  | 21                          | 6                      | 8                            | 2                            |
|                         | Fort Carson   | 21                          | 6                      | 7                            | 2                            |
|                         | Cheyenne Mountain AS /<br>NORAD   | 21                          | 6                      | 7                            | 2                            |
|                         | Peterson AFB / Colorado<br>Springs  | 20                          | 6                      | 7                            | 2                            |
|                         | Schriever AFB   | 19                          | 6                      | 7                            | 2                            |
|                         | USAF Academy  | 22                          | 6                      | 8                            | 2                            |
| Connecticut             | NSB New London / Groton   | 21                          | 6                      | 8                            | 3                            |
| Delaware                | Dover AFB   | 16                          | 5                      | 7                            | 2                            |
| District of<br>Columbia | <b>Washington Region</b><br>Bolling AFB<br>Anacostia NS<br>Fort McNair<br>Marine Barracks<br>NRL Washington<br>NDW / Anacostia<br>Pentagon<br>Walter Reed | 15                          | 5                      | 6                            | 2                            |
| Florida                 | Avon Park AS  | 8                           | 3                      | 2                            | 1                            |
|                         | Cape Canaveral AFS  | 9                           | 4                      | 3                            | 1                            |
|                         | Eglin AFB   | 10                          | 5                      | 3                            | 2                            |
|                         | Homestead   | 5                           | 2                      | 1                            | 0                            |
|                         | Hurlburt Field  | 9                           | 5                      | 3                            | 2                            |
|                         | NAS Jacksonville /<br>Jacksonville  | 14                          | 6                      | 5                            | 2                            |
|                         | NAS Key West  | 3                           | 1                      |                              |                              |

**TABLE C-2**

| State          | Base / City   | Seismic Data (Site Class B) |                        |                              |                              |
|----------------|---|-----------------------------|------------------------|------------------------------|------------------------------|
|                |   | S <sub>s</sub><br>(%g)      | S <sub>1</sub><br>(%g) | 10/50 S <sub>s</sub><br>(%g) | 10/50 S <sub>1</sub><br>(%g) |
| <b>Florida</b> | MacDill AFB   | 7                           | 3                      | 2                            | 1                            |
|                | NAS Mayport   | 15                          | 6                      | 5                            | 2                            |
|                | HQ Southcom / Miami   | 5                           | 2                      | 1                            | 1                            |
|                | Orlando   | 10                          | 4                      | 3                            | 1                            |
|                | NAS Panama City   | 8                           | 5                      | 3                            | 2                            |
|                | Patrick AFB   | 8                           | 4                      | 2                            | 1                            |
|                | NAS Pensacola   | 10                          | 5                      | 3                            | 2                            |
|                | Tampa   | 8                           | 3                      | 2                            | 1                            |
|                | Tyndall AFB   | 8                           | 4                      | 3                            | 2                            |
|                | NAS Whiting Field / Milton  | 11                          | 5                      | 4                            | 2                            |
| <b>Georgia</b> | MC Logistics Support / Albany   | 13                          | 6                      | 5                            | 3                            |
|                | Athens NCSC   | 26                          | 9                      | 12                           | 5                            |
|                | Dobbins AFB / Atlanta NAS   | 25                          | 9                      | 11                           | 4                            |
|                | Fort Benning  | 15                          | 7                      | 6                            | 3                            |
|                | Fort Gordon   | 33                          | 11                     | 14                           | 5                            |
|                | Fort McPherson / Fort Gillem  | 22                          | 9                      | 10                           | 4                            |
|                | Fort Stewart  | 29                          | 10                     | 9                            | 4                            |
|                | Hunter Army Airfield / Savannah   | 38                          | 12                     | 12                           | 4                            |
|                | NSB Kings Bay   | 17                          | 7                      | 6                            | 3                            |
|                | Moody AFB   | 13                          | 6                      | 5                            | 3                            |
| <b>Hawaii</b>  | Robins AFB  | 19                          | 8                      | 8                            | 4                            |
|                | PMRF Barking Sands, Kauai   | 19                          | 6                      | 8                            | 2                            |
|                | MCBH Kaneohe Bay  | 63                          | 18                     | 30                           | 8                            |
|                | <b>Pearl Harbor Region:</b><br>Camp H.M. Smith<br>Fort Shafter<br>Hickam AFB<br>Pearl Harbor<br>Tripler AMC | 61                          | 18                     | 29                           | 8                            |
|                | <b>Pohakuloa Training Area</b>  | 150                         | 60                     |                              |                              |

**TABLE C-2**

| State            | Base / City                              | Seismic Data (Site Class B) |                          |                              |                              |
|------------------|--|-----------------------------|--------------------------|------------------------------|------------------------------|
|                  |  | S <sub>s</sub><br>(%g)      | S <sub>1</sub><br>(%g)   | 10/50 S <sub>s</sub><br>(%g) | 10/50 S <sub>1</sub><br>(%g) |
| <b>Hawaii</b>    | <b>Wahiawa Region:</b>                   |                             |                          |                              |                              |
|                  | Lualualei                                |                             |                          |                              |                              |
|                  | Wahiawa Naval Res                        | <b>59</b>                   | <b>17</b>                | <b>28</b>                    | <b>8</b>                     |
|                  | Wheeler AFB<br>Schofield Barracks        |                             |                          |                              |                              |
| <b>Idaho</b>     | ARD Bayview                              | <b>42</b>                   | <b>12</b>                | <b>17</b>                    | <b>5</b>                     |
|                  | Boise ANG                                | <b>30</b>                   | <b>10</b>                | <b>16</b>                    | <b>5</b>                     |
|                  | Mountain Home AFB                        | <b>26</b>                   | <b>9</b>                 | <b>14</b>                    | <b>4</b>                     |
| <b>Illinois</b>  | Fort Sheridan / Chicago                  | <b>15</b>                   | <b>6</b>                 | <b>5</b>                     | <b>2</b>                     |
|                  | Great Lakes                              | <b>14</b>                   | <b>5</b>                 | <b>5</b>                     | <b>2</b>                     |
|                  | Rock Island Arsenal                      | <b>13</b>                   | <b>6</b>                 | <b>5</b>                     | <b>2</b>                     |
|                  | Scott AFB                                | <b>66</b>                   | <b>19</b>                | <b>24</b>                    | <b>6</b>                     |
|                  | Springfield                              | <b>27</b>                   | <b>11</b>                | <b>10</b>                    | <b>4</b>                     |
| <b>Indiana</b>   | Crane NWSC                               | <b>35</b>                   | <b>12</b>                | <b>13</b>                    | <b>4</b>                     |
|                  | Grissom ARB                              | <b>15</b>                   | <b>7</b>                 | <b>6</b>                     | <b>3</b>                     |
|                  | Fort Benjamin Harrison /<br>Indianapolis | <b>18</b>                   | <b>8</b>                 | <b>7</b>                     | <b>3</b>                     |
| <b>Iowa</b>      | Des Moines                               | <b>8</b>                    | <b>4</b>                 | <b>3</b>                     | <b>1</b>                     |
| <b>Kansas</b>    | Fort Leavenworth                         | <b>13</b>                   | <b>6</b>                 | <b>4</b>                     | <b>2</b>                     |
|                  | Fort Riley                               | <b>19</b>                   | <b>5</b>                 | <b>6</b>                     | <b>2</b>                     |
|                  | McConnell AFB                            | <b>14</b>                   | <b>5</b>                 | <b>5</b>                     | <b>2</b>                     |
| <b>Kentucky</b>  | Fort Campbell                            | <b>74 Max<br/>59 Min</b>    | <b>22 Max<br/>19 Min</b> | <b>24 Max<br/>18 Min</b>     | <b>6 Max<br/>6 Min</b>       |
|                  | Fort Knox                                | <b>26</b>                   | <b>11</b>                | <b>10</b>                    | <b>4</b>                     |
|                  | Louisville                               | <b>25</b>                   | <b>10</b>                | <b>10</b>                    | <b>4</b>                     |
|                  | Richmond                                 | <b>23</b>                   | <b>9</b>                 | <b>10</b>                    | <b>4</b>                     |
| <b>Louisiana</b> | Barksdale AFB                            | <b>16</b>                   | <b>7</b>                 | <b>5</b>                     | <b>2</b>                     |
|                  | Fort Polk / Leesville                    | <b>12</b>                   | <b>5</b>                 | <b>4</b>                     | <b>2</b>                     |
|                  | NAS JRB New Orleans /<br>Belle Chasse    | <b>11</b>                   | <b>5</b>                 | <b>4</b>                     | <b>1</b>                     |
| <b>Maine</b>     | NAS Brunswick                            | <b>30</b>                   | <b>8</b>                 | <b>12</b>                    | <b>4</b>                     |
|                  | NRTF Cutler                              | <b>27</b>                   | <b>7</b>                 |                              |                              |
|                  | PNSY Kittery                             | <b>36</b>                   | <b>8</b>                 | <b>13</b>                    | <b>4</b>                     |
|                  | Winter Harbour NSGA                      | <b>21</b>                   | <b>6</b>                 | <b>8</b>                     | <b>3</b>                     |
| <b>Maryland</b>  | Aberdeen Proving Ground                  | <b>20</b>                   | <b>5</b>                 | <b>8</b>                     | <b>2</b>                     |
|                  | Adelphi                                  | <b>16</b>                   | <b>5</b>                 | <b>6</b>                     | <b>2</b>                     |
|                  | Andrews AFB                              | <b>15</b>                   | <b>5</b>                 | <b>6</b>                     | <b>2</b>                     |

**TABLE C-2**

| State                | Base / City                                | Seismic Data (Site Class B) |                        |                              |                              |
|----------------------|--|-----------------------------|------------------------|------------------------------|------------------------------|
|                      |  | S <sub>s</sub><br>(%g)      | S <sub>1</sub><br>(%g) | 10/50 S <sub>s</sub><br>(%g) | 10/50 S <sub>1</sub><br>(%g) |
| <b>Maryland</b>      | Carderock NSWC / Bethesda                  | 16                          | 5                      | 6                            | 2                            |
|                      | Bloods Island                              | 12                          | 5                      | 5                            | 2                            |
|                      | Edgewood Arsenal                           | 19                          | 5                      | 7                            | 2                            |
|                      | Fort Detrick / Fredrick                    | 16                          | 5                      | 7                            | 2                            |
|                      | Fort Meade                                 | 16                          | 5                      | 6                            | 2                            |
|                      | Indian Head NSWC                           | 16                          | 5                      | 7                            | 2                            |
|                      | Martin State ANG                           | 18                          | 5                      | 7                            | 2                            |
|                      | NS Pax River , Webster Field / St. Inigoes | 14                          | 5                      | 6                            | 2                            |
|                      | U.S Naval Academy / Annapolis              | 16                          | 5                      | 6                            | 2                            |
| <b>Massachusetts</b> | Fort Devens / Ayer                         | 28                          | 7                      | 11                           | 3                            |
|                      | Hanscom AFB                                | 28                          | 7                      | 11                           | 3                            |
|                      | Natick                                     | 26                          | 7                      | 10                           | 3                            |
|                      | Otis AGB / Falmouth                        | 20                          | 5                      | 8                            | 2                            |
|                      | Westover ARB                               | 23                          | 7                      | 9                            | 3                            |
| <b>Michigan</b>      | Battle Creek                               | 11                          | 5                      | 4                            | 2                            |
|                      | Detroit Arsenal / Warren                   | 12                          | 4                      | 4                            | 2                            |
|                      | Selfridge ANG Base                         | 11                          | 4                      | 4                            | 2                            |
| <b>Minnesota</b>     | Minneapolis – St Paul                      | 6                           | 3                      | 2                            | 1                            |
| <b>Mississippi</b>   | Stennis / Bay St. Louis                    | 12                          | 5                      | 4                            | 2                            |
|                      | Columbus AFB                               | 28                          | 11                     | 8                            | 4                            |
|                      | Gulfport                                   | 12                          | 5                      | 4                            | 2                            |
|                      | Jackson                                    | 20                          | 9                      | 6                            | 3                            |
|                      | Keesler AFB                                | 12                          | 5                      | 4                            | 2                            |
|                      | NAS Meridian                               | 20                          | 8                      | 7                            | 3                            |
|                      | Pascagoula NS                              | 11                          | 5                      | 4                            | 2                            |
|                      | Vicksburg                                  | 20                          | 9                      | 6                            | 3                            |
|                      | <b>Missouri</b>                            | Fort Leonard Wood           | 30                     | 12                           | 10                           |
| Kansas City          |  | 13                          | 6                      | 4                            | 2                            |
| Overland             |  | 52                          | 16                     | 19                           | 5                            |
| St. Louis            |  | 58                          | 17                     | 21                           | 6                            |
| Whiteman AFB         |  | 14                          | 7                      | 5                            | 2                            |
| <b>Montana</b>       | Great Falls ANG                            | 23                          | 8                      | 13                           | 4                            |
|                      | Malmstrom AFB                              | 20                          | 8                      | 12                           | 4                            |

**TABLE C-2**

| State                 | Base / City  | Seismic Data (Site Class B) |                        |                              |                              |
|-----------------------|--|-----------------------------|------------------------|------------------------------|------------------------------|
|                       |  | S <sub>s</sub><br>(%g)      | S <sub>1</sub><br>(%g) | 10/50 S <sub>s</sub><br>(%g) | 10/50 S <sub>1</sub><br>(%g) |
| <b>Nebraska</b>       | Offutt AFB   | 13                          | 4                      | 4                            | 1                            |
|                       | Lincoln  | 18                          | 5                      | 5                            | 2                            |
| <b>Nevada</b>         | NAS Fallon   | 81                          | 29                     | 43                           | 14                           |
|                       | Indian Springs AFS   | 45                          | 16                     | 24                           | 8                            |
|                       | Nellis AFB   | 50                          | 17                     | 26                           | 9                            |
|                       | Nellis AF Range  | 70Max<br>59 Min             | 26 Max<br>19 Min       | 37 Max<br>28 Min             | 13 Max<br>9 Min              |
| <b>New Hampshire</b>  | Portsmouth Naval Shipyard                                    | 36                          | 8                      | 13                           | 4                            |
| <b>New Jersey</b>     | NWS Earle / Colts Neck                                       | 30                          | 6                      | 11                           | 3                            |
|                       | Fort Dix / Trenton   | 26                          | 6                      | 10                           | 3                            |
|                       | Fort Monmouth  | 30                          | 6                      | 11                           | 3                            |
|                       | Lakehurst  | 25                          | 6                      | 10                           | 3                            |
|                       | McGuire AFB  | 26                          | 6                      | 10                           | 3                            |
|                       | Picatinny Arsenal  | 32                          | 7                      | 12                           | 3                            |
| <b>New Mexico</b>     | Albuquerque  | 55                          | 17                     | 27                           | 7                            |
|                       | Cannon AFB   | 11                          | 3                      | 4                            | 1                            |
|                       | Holloman AFB   | 32                          | 10                     | 13                           | 4                            |
|                       | Kirtland AFB   | 56                          | 17                     | 27                           | 7                            |
|                       | White Sands  | 41                          | 13                     | 13                           | 4                            |
| <b>New York</b>       | Buffalo  | 28                          | 6                      | 9                            | 2                            |
|                       | Fort Drum  | 30                          | 8                      | 12                           | 4                            |
|                       | Fort Hamilton / Brooklyn                                     | 35                          | 7                      | 12                           | 3                            |
|                       | Griffis AFB / Rome   | 22                          | 7                      | 9                            | 3                            |
|                       | NIAGARA FALLS IAP  | 28                          | 6                      | 9                            | 2                            |
|                       | NSU Saratoga Springs   | 26                          | 7                      | 11                           | 4                            |
|                       | Stewart ANG / Newburgh                                       | 28                          | 7                      | 11                           | 3                            |
|                       | Syracuse   | 18                          | 6                      | 8                            | 3                            |
|                       | West Point   | 31                          | 7                      | 12                           | 3                            |
|                       | Watervliet Arsenal / Albany                                  | 23                          | 7                      | 10                           | 3                            |
| <b>North Carolina</b> | MCAS Cherry Point  | 16                          | 7                      | 5                            | 2                            |
|                       | Fort Bragg   | 29                          | 10                     | 9                            | 4                            |
|                       | <b>Jacksonville Region</b><br>Camp Lejeune<br>MCAS New River | 21                          | 8                      | 6                            | 3                            |
|                       | Pope AFB   | 29                          | 10                     | 9                            | 4                            |

**TABLE C-2**

|                        |  | Seismic Data (Site Class B) |                        |                              |                              |
|------------------------|--|-----------------------------|------------------------|------------------------------|------------------------------|
| State                  | Base / City                                      | S <sub>s</sub><br>(%g)      | S <sub>1</sub><br>(%g) | 10/50 S <sub>s</sub><br>(%g) | 10/50 S <sub>1</sub><br>(%g) |
| <b>North Carolina</b>  | Raleigh  | 20                          | 8                      | 8                            | 4                            |
|                        | Seymour Johnson AFB                              | 20                          | 8                      | 7                            | 3                            |
| <b>North Dakota</b>    | Grand Forks AFB                                  | 5                           | 2                      | 2                            | 0                            |
|                        | NRTF La Moure                                    | 6                           | 2                      |                              |                              |
|                        | Minot AFB  | 7                           | 2                      | 2                            | 1                            |
| <b>Ohio</b>            | Cleveland  | 19                          | 5                      | 6                            | 2                            |
|                        | DSC Whitehall / Columbus                         | 15                          | 6                      | 7                            | 3                            |
|                        | Wright-Patterson AFB                             | 19                          | 7                      | 8                            | 3                            |
|                        | Youngstown ARS / Vienna                          | 17                          | 5                      | 6                            | 2                            |
| <b>Oklahoma</b>        | Altus AFB  | 20                          | 6                      | 6                            | 2                            |
|                        | Fort Sill  | 38                          | 9                      | 8                            | 2                            |
|                        | McAlester Army<br>Ammunition Plant               | 21                          | 7                      | 7                            | 2                            |
|                        | Tinker AFB / Oklahoma<br>City                    | 32                          | 7                      | 10                           | 3                            |
|                        | Tulsa  | 16                          | 7                      | 6                            | 2                            |
|                        | Vance AFB  | 23                          | 6                      | 7                            | 2                            |
| <b>Oregon</b>          | Portland   | 93                          | 32                     | 43                           | 17                           |
| <b>Pennsylvania</b>    | ARS Coraopolis / Pittsburg                       | 12                          | 5                      | 5                            | 2                            |
|                        | Carlisle Barracks                                | 17                          | 5                      | 7                            | 2                            |
|                        | Fort Indiantown Gap /<br>Annville                | 21                          | 6                      | 8                            | 2                            |
|                        | Letterkenny /<br>Chambersburg                    | 16                          | 5                      | 6                            | 2                            |
|                        | Mechanicsburg                                    | 18                          | 5                      | 7                            | 2                            |
|                        | Philadelphia                                     | 28                          | 6                      | 10                           | 3                            |
|                        | New Cumberland /<br>Defense Depot<br>Susquehanna | 19                          | 5                      | 7                            | 2                            |
|                        | Tobyhanna Army Depot                             | 22                          | 6                      | 9                            | 3                            |
| Willow Grove ARS / NAS | 28   | 6                           | 11                     | 3                            |                              |
| <b>Rhode Island</b>    | NS Newport                                       | 21                          | 6                      | 8                            | 2                            |
| <b>South Carolina</b>  | MCAS Beaufort                                    | 71                          | 19                     | 19                           | 6                            |
|                        | <b>Charleston Region:</b>                        |                             |                        |                              |                              |
|                        | Charleston AFB                                   | 192                         | 49                     | 34                           | 8                            |
| NWS Charleston         | 219  | 55                          | 36                     | 8                            |                              |

**TABLE C-2**

| State                 | Base / City                              | Seismic Data (Site Class B) |                        |                              |                              |
|-----------------------|--|-----------------------------|------------------------|------------------------------|------------------------------|
|                       |  | S <sub>s</sub><br>(%g)      | S <sub>1</sub><br>(%g) | 10/50 S <sub>s</sub><br>(%g) | 10/50 S <sub>1</sub><br>(%g) |
| <b>South Carolina</b> | <b>Columbia Region:</b>                  |                             |                        |                              |                              |
|                       | McEntire                                 | 56                          | 16                     | 22                           | 6                            |
|                       | Fort Jackson                             | 56                          | 15                     | 20                           | 6                            |
|                       | Shaw AFB                                 | 67                          | 18                     | 22                           | 6                            |
|                       | MCRD Parris Island                       | 62                          | 17                     | 18                           | 5                            |
| <b>South Dakota</b>   | Ellsworth AFB                            | 15                          | 4                      | 5                            | 2                            |
| <b>Tennessee</b>      | Arnold AFB                               | 30                          | 11                     | 12                           | 5                            |
|                       | NSWC LCC / Memphis                       | 141                         | 38                     | 28                           | 7                            |
|                       | NSA Mid-South / Millington               | 150                         | 43                     | 32                           | 7                            |
|                       | Nashville                                | 33                          | 13                     | 12                           | 5                            |
| <b>Texas</b>          | NAS JRB, Carswell / Fort Worth           | 11                          | 5                      | 4                            | 2                            |
|                       | NAS Corpus Christi                       | 8                           | 2                      | 2                            | 1                            |
|                       | Dallas / Irving                          | 12                          | 5                      | 4                            | 2                            |
|                       | Dyess AFB                                | 9                           | 4                      | 3                            | 1                            |
|                       | Ellington ANG / Houston                  | 9                           | 4                      | 3                            | 1                            |
|                       | Fort Bliss / El Paso                     | 31                          | 10                     | 14                           | 4                            |
|                       | Fort Hood / Killeen                      | 8                           | 4                      | 3                            | 1                            |
|                       | Goodfellow AFB                           | 8                           | 3                      | 3                            | 1                            |
|                       | NS Ingleside                             | 8                           | 2                      | 2                            | 1                            |
|                       | NAS Kingsville                           | 8                           | 2                      | 2                            | 1                            |
|                       | Laughlin AFB                             | 6                           | 2                      | 2                            | 1                            |
|                       | Red River Army Depot / Texarkana         | 17                          | 8                      | 6                            | 2                            |
|                       | <b>San Antonio Region</b>                |                             |                        |                              |                              |
|                       | Brooks AFB                               | 12                          | 3                      | 3                            | 1                            |
|                       | Fort Sam Houston                         | 11                          | 3                      | 3                            | 1                            |
|                       | Kelly AFB                                | 11                          | 3                      | 3                            | 1                            |
|                       | Lackland AFB                             | 11                          | 3                      | 3                            | 1                            |
|                       | Randolph AFB                             | 11                          | 3                      | 3                            | 1                            |
|                       | Sheppard AFB                             | 17                          | 6                      | 5                            | 2                            |
| <b>Utah</b>           | Dugway Proving Ground                    | 35                          | 14                     | 17                           | 6                            |
|                       | Hill AFB                                 | 114                         | 48                     | 50                           | 17                           |
|                       | Salt Lake City                           | 153                         | 60                     | 61                           | 20                           |
|                       | Tooele Army Depot                        | 73                          | 27                     | 35                           | 12                           |
| <b>Virginia</b>       | Dahlgren                                 | 16                          | 5                      | 6                            | 2                            |
|                       | Dam Neck / Virginia Beach<br>Ocean front | 11                          | 5                      | 4                            | 2                            |
|                       | Fort A. P. Hill                          | 18                          | 5                      | 7                            | 2                            |

**TABLE C-2**

| State                                | Base / City  | Seismic Data (Site Class B) |                        |                              |                              |
|--------------------------------------|--|-----------------------------|------------------------|------------------------------|------------------------------|
|                                      |  | S <sub>s</sub><br>(%g)      | S <sub>1</sub><br>(%g) | 10/50 S <sub>s</sub><br>(%g) | 10/50 S <sub>1</sub><br>(%g) |
| Virginia                             | Fort Belvoir   | 15                          | 5                      | 6                            | 2                            |
|                                      | Fort Eustis  | 13                          | 5                      | 5                            | 2                            |
|                                      | Fort Lee   | 19                          | 6                      | 7                            | 3                            |
|                                      | Fort Monroe  | 12                          | 5                      | 5                            | 2                            |
|                                      | Fort Myer  | 15                          | 5                      | 6                            | 2                            |
|                                      | Fort Story   | 11                          | 5                      | 4                            | 2                            |
|                                      | Henderson Hall / Arlington   | 15                          | 5                      | 6                            | 2                            |
|                                      | Langley AFB / Hampton  | 12                          | 5                      | 5                            | 2                            |
|                                      | NAB Little Creek   | 11                          | 5                      | 5                            | 2                            |
|                                      | <b>Norfolk Region:</b><br>Camp Elmore<br>Craney Island Depot<br>Norfolk Naval Base | 12                          | 5                      | 5                            | 2                            |
|                                      | Norfolk Shipyard – Naval<br>Hospital / Portsmouth                                  | 12                          | 5                      | 5                            | 2                            |
|                                      | NSA Northwest /<br>Chesapeake  | 12                          | 5                      | 5                            | 2                            |
|                                      | NAS Oceana / Virginia<br>Beach   | 11                          | 5                      | 4                            | 2                            |
|                                      | Quantico   | 17                          | 5                      | 7                            | 2                            |
|                                      | Defense Supply Ctr /<br>Richmond   | 22                          | 6                      | 8                            | 3                            |
|                                      | Radford AAP  | 32                          | 8                      |                              |                              |
|                                      | Wallops Island   | 10                          | 4                      | 4                            | 2                            |
|                                      | <b>Yorktown Region:</b><br>Camp Perry<br>Cheatham Annex<br>Yorktown NWS            | 13                          | 5                      | 5                            | 2                            |
|                                      | Washington   | NS Everett                  | 118(a)                 | 42(b)                        | 62                           |
| Fairchild AFB                        |  | 39                          | 11                     | 13                           | 4                            |
| Fort Lewis / Tacoma                  |  | 117                         | 41                     | 59                           | 20                           |
| Indian Island SWC                    |  | 127(a)                      | 46(b)                  | 63                           | 21                           |
| NRS Jim Creek                        |  | 110(a)                      | 38(b)                  | 59                           | 19                           |
| Keyport / Bangor Engin.<br>Sta Annex |  | 129(a)                      | 45(b)                  | 69                           | 22                           |
| McChord AFB                          |  | 119                         | 41                     | 61                           | 20                           |

**TABLE C-2**

| State           | Base / City                       | Seismic Data (Site Class B) |                        |                              |                              |
|-----------------|-----------------------------------|-----------------------------|------------------------|------------------------------|------------------------------|
|                 |                                   | S <sub>s</sub><br>(%g)      | S <sub>1</sub><br>(%g) | 10/50 S <sub>s</sub><br>(%g) | 10/50 S <sub>1</sub><br>(%g) |
| Washington      | <b>Puget Sound Region:</b>        |                             |                        |                              |                              |
|                 | Bangor NSB                        | 158(a)                      | 56(b)                  | 76                           | 23                           |
|                 | Bremerton NS                      | 150(a)                      | 53(b)                  | 72                           | 23                           |
|                 | Puget Sound NSY                   | 153(a)                      | 54(b)                  | 73                           | 23                           |
|                 | NAS Whidbey Island / Oak Harbor   | 133(a)                      | 47(b)                  | 59                           | 20                           |
|                 | Seattle                           | 151                         | 52                     | 75                           | 22                           |
| West Virginia   | Allegheny Ballistics Lab          | 13                          | 6                      |                              |                              |
|                 | Beckley                           | 26                          | 8                      | 10                           | 4                            |
|                 | Huntington                        | 19                          | 7                      | 8                            | 3                            |
|                 | Sugar Grove NRS                   | 18                          | 6                      | 7                            | 3                            |
| Wisconsin       | Fort McCoy                        | 6                           | 3                      | 2                            | 1                            |
|                 | General Mitchell AFRC / Milwaukee | 11                          | 5                      | 4                            | 1                            |
|                 | Madison                           | 11                          | 4                      | 4                            | 1                            |
| Wyoming         | F. E. Warren AFB                  | 20                          | 5                      | 8                            | 2                            |
| American Samoa  | Pago Pago / Tutuila Island        | 100                         | 40                     | 50                           | 20                           |
| Mariana Islands | Guam                              | 150                         | 60                     | 75                           | 30                           |
|                 | Saipan / Tinian                   | 150                         | 60                     | 75                           | 30                           |
| Puerto Rico     | NRTF Aguada                       | 119                         | 38                     |                              |                              |
|                 | Fort Buchanan                     | 89                          | 31                     | 50                           | 20                           |
|                 | Ramey AFB                         | 120                         | 38                     |                              |                              |
|                 | NS Roosevelt Roads                | 87                          | 28                     |                              |                              |
|                 | Sebana Seca NRS                   | 90                          | 31                     |                              |                              |
|                 |                                   |                             |                        |                              |                              |
|                 |                                   |                             |                        |                              |                              |

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

(a) – For Navy facilities at identified locations in Washington State use minimum S<sub>s</sub> of 150 %g.

(b) – For Navy facilities at identified locations in Washington State use minimum S<sub>1</sub> of 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**

| <b>TABLE D-1</b>                  |                    |                    | <b>Ground<br/>Snow</b> | <b>Wind<br/>Speed</b>         | <b>Frost<br/>Penetration</b> | <b>Ground<br/>Snow</b> | <b>Wind<br/>Speed</b>        | <b>Frost<br/>Penetration</b> |     |
|-----------------------------------|--------------------|--------------------|------------------------|-------------------------------|------------------------------|------------------------|------------------------------|------------------------------|-----|
| <b>Continent<br/>/ Region</b>     | <b>Country</b>     | <b>Base / City</b> | <b>(psf)</b>           | <b>(mph)<br/>Note<br/>(a)</b> | <b>(inches)</b>              | <b>kPa</b>             | <b>km/h<br/>Note<br/>(a)</b> | <b>mm</b>                    |     |
| <b>Africa</b>                     | <b>Egypt</b>       | Alexandria         | 0                      | 85                            | 0                            | 0.00                   | 137                          | 0                            |     |
|                                   | <b>Morocco</b>     | Casablanca         | 0                      | 90                            | 0                            | 0.00                   | 145                          | 0                            |     |
| <b>Asia</b>                       | <b>Afghanistan</b> | Kabul              |                        | 78                            |                              |                        | 125                          |                              |     |
|                                   | <b>Bahrain</b>     | NSA Bahrain        | 0                      | 85                            | 0                            | 0.00                   | 137                          | 0                            |     |
|                                   | <b>India</b>       |                    | 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   |
|                                   | <b>Iraq</b>        |                    | Baghdad                |                               |                              |                        |                              |                              |     |
|                                   |                    |                    | Basra                  |                               |                              |                        |                              |                              |     |
|                                   | <b>Japan</b>       |                    | NAF Atsugi             | 21                            | 100                          | 6                      | 1.00                         | 161                          | 152 |
|                                   |                    |                    | MCAS Iwakuni           | 12                            | 120                          | 10                     | 0.57                         | 193                          | 254 |
| Iwo Jima                          |                    |                    | 0                      | 210                           | 0                            | 0.00                   | 338                          | 0                            |     |
| Misawa AFB                        |                    |                    | 58                     | 101                           | 30                           | 2.78                   | 163                          | 762                          |     |
| Okinawa<br>(All<br>installations) |                    |                    | 0                      | 180                           | 0                            | 0.00                   | 290                          | 0                            |     |
| Sagamihara                        |                    |                    | 21                     | 100                           | 6                            | 1.00                   | 161                          | 152                          |     |
| Sasebo                            |                    |                    | 12                     | 100                           | 6                            | 0.57                   | 161                          | 152                          |     |
| Tokyo                             | 15                 | 100                | 6                      | 0.71                          | 161                          | 152                    |                              |                              |     |

**TABLE D-1**

| Continent / Region | Country      | Base / City  | Ground Snow | Wind Speed        | Frost Penetration | Ground Snow | Wind Speed       | Frost Penetration |
|--------------------|--------------|--|-------------|-------------------|-------------------|-------------|------------------|-------------------|
|                    |              |  | (psf)       | (mph)<br>Note (a) | (inches)          | kPa         | km/h<br>Note (a) | mm                |
| Asia               | Japan        | COMFLTACT<br>Yokosuka  | 12          | 100               | 6                 | 0.57        | 161              | 152               |
|                    |              | Yokota AFB,<br>Honshu  | 21          | 100               | 6                 | 1.00        | 161              | 161               |
|                    |              | Camp Zama  | 21          | 100               | 6                 | 1.00        | 161              | 152               |
|                    | Kuwait       | Kuwait City  | 0           |                   | 0                 | 0.00        |                  | 0                 |
|                    | Oman         | Areas south and<br>west of Jabal<br>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,<br>Southern, and<br>Coastal Areas<br>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<br>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<br>Island  | 0           | 120               | 0                 | 0.00        | 193              | 0                 |
|                    |              | Masirah Island   | 0           | 120               | 0                 | 0.00        | 193              | 0                 |
|                    |              | Mussandam<br>Island  | 0           | 120               | 0                 | 0.00        | 193              | 0                 |
|                    | Pakistan     | Peshawar   | 10          | 88                | 6                 | 0.48        | 142              | 152               |
|                    | Qatar        | Doha   | 0           |                   | 0                 | 0.00        |                  | 0                 |
|                    | Saudi Arabia | Dhahran  | 0           | 87                | 0                 | 0.00        | 140              | 0                 |

**TABLE D-1**

| Continent / Region | Country          | Base / City                | Ground Snow | Wind Speed        | Frost Penetration | Ground Snow | Wind Speed       | Frost Penetration |
|--------------------|------------------|----------------------------|-------------|-------------------|-------------------|-------------|------------------|-------------------|
|                    |                  |                            | (psf)       | (mph)<br>Note (a) | (inches)          | kPa         | km/h<br>Note (a) | mm                |
| Asia               | Saudi Arabia     | 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                 | 20          | 105               | 48                | 0.96        | 169              | 1219              |
|                    |                  | Camp Hialeah, Pusan        | 20          | 110               | 24                | 0.96        | 177              | 610               |
|                    |                  | Camp Humphreys / Pyongtaek | 20          | 95                | 45                | 0.96        | 153              | 1143              |
|                    |                  | Chinhae                    | 20          | 105               | 24                | 0.96        | 169              | 610               |
|                    |                  | Kimpo AFB                  | 20          | 105               | 48                | 0.96        | 169              | 1219              |
|                    |                  | Kunsan / Kunsan City       | 20          | 100               | 30                | 0.96        | 161              | 762               |
|                    |                  | Osan AFB / Songtan         | 20          | 95                | 45                | 0.96        | 153              | 1143              |
|                    |                  | Pohang                     | 20          | 110               | 24                | 0.96        | 177              | 610               |
| Vietnam            | Seoul            | 20                         | 105         | 48                | 0.96              | 169         | 1219             |                   |
|                    | Taegu            | 20                         | 115         | 40                | 0.96              | 185         | 1016             |                   |
|                    | Uijongbu         | 20                         | 105         | 48                | 0.96              | 169         | 1219             |                   |
| Taiwan             | Yongsan          | 20                         | 105         | 45                | 0.96              | 169         | 1143             |                   |
|                    | Da Nang          | 0                          | 120         | 0                 | 0.00              | 193         | 0                |                   |
|                    | Ho Chi Minh City | 0                          | 95          | 0                 | 0.00              | 153         | 0                |                   |
| Thailand           | Nha Trang        | 0                          | 95          | 0                 | 0.00              | 153         | 0                |                   |
|                    | Tainan           | 0                          | 120         | 0                 | 0.00              | 193         | 0                |                   |
|                    | Taipei           | 0                          | 130         | 0                 | 0.00              | 209         | 0                |                   |
| Thailand           | Tsoying          | 0                          | 110         | 0                 | 0.00              | 177         | 0                |                   |
|                    | Bangkok          | 0                          | 80          | 0                 | 0.00              | 129         | 0                |                   |
|                    | Chiang Mai       | 0                          | 95          | 0                 | 0.00              | 153         | 0                |                   |
| Thailand           | Sattahip         | 0                          | 85          | 0                 | 0.00              | 137         | 0                |                   |
|                    | Udonthani        | 0                          | 85          | 0                 | 0.00              | 137         | 0                |                   |
| Turkey             | Ankara           | 20                         | 99          | 24                | 0.96              | 159         | 610              |                   |

**TABLE D-1**

| Continent / Region | Country    | Base / City          | Ground Snow                            | Wind Speed        | Frost Penetration | Ground Snow | Wind Speed       | Frost Penetration |     |
|--------------------|------------|----------------------|--|-------------------|-------------------|-------------|------------------|-------------------|-----|
|                    |            |                      | (psf)                                  | (mph)<br>Note (a) | (inches)          | kPa         | km/h<br>Note (a) | mm                |     |
| Asia               | Turkey     | 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 - Herzegovina | 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 | Wind Speed        | Frost Penetration | Ground Snow | Wind Speed       | Frost Penetration |
|-------------------------------------|----------------|---------------------------|-------------|-------------------|-------------------|-------------|------------------|-------------------|
|                                     |                |                           | (psf)       | (mph)<br>Note (a) | (inches)          | kPa         | km/h<br>Note (a) | 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      | 35                        | 80          | 18                | 1.68              | 129         | 457              |                   |

**TABLE D-1**

| Continent / Region | Country           | Base / City                | Ground Snow          | Wind Speed        | Frost Penetration | Ground Snow | Wind Speed       | Frost Penetration |     |
|--------------------|-------------------|----------------------------|----------------------|-------------------|-------------------|-------------|------------------|-------------------|-----|
|                    |                   |                            | (psf)                | (mph)<br>Note (a) | (inches)          | kPa         | km/h<br>Note (a) | mm                |     |
| Europe             | Italy             | Brindisi / San Vito        | 5                    | 110               | 6                 | 0.24        | 177              | 152               |     |
|                    |                   | 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               |     |
|                    |                   | Niscemi                    | 20                   | 90                | 5                 | 0.96        | 145              | 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                | 20          | 0.72             | 113               | 508 |
|                    |                   | 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               |     |

**TABLE D-1**

| Continent / Region | Country                        | Base / City                 | Ground Snow | Wind Speed        | Frost Penetration | Ground Snow | Wind Speed       | Frost Penetration |
|--------------------|--------------------------------|-----------------------------|-------------|-------------------|-------------------|-------------|------------------|-------------------|
|                    |                                |                             | (psf)       | (mph)<br>Note (a) | (inches)          | kPa         | km/h<br>Note (a) | mm                |
| North America      | Canada                         | 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              |
|                    |                                | E. Harmon AFB, Newfoundland | 86          | 113               | 60                | 4.12        | 182              | 1524              |
|                    |                                | Fort William, Ontario       | 73          | 81                | 60                | 3.50        | 130              | 1524              |
|                    |                                | Frobisher, NWT              | 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      | Australia                      | H.E. Holt / N.W. Cape       | 0           | 130               | 0                 | 0           | 209              | 0                 |

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**25 May 2005**  
**Including change 2, 5 December 2007**

**TABLE D-1**

| Continent / Region | Country          | Base / City           | Ground Snow | Wind Speed        | Frost Penetration | Ground Snow | Wind Speed       | Frost Penetration |
|--------------------|------------------|-----------------------|-------------|-------------------|-------------------|-------------|------------------|-------------------|
|                    |                  |                       | (psf)       | (mph)<br>Note (a) | (inches)          | kPa         | km/h<br>Note (a) | mm                |
| Pacific Ocean      | Australia        | Woomera               | 0           | 80                | 0                 | 0           | 129              | 0                 |
|                    | Caroline Islands | Koror, Paulau Islands | 0           | 95                | 0                 | 0.00        | 153              | 0                 |
|                    |                  | Ponape                | 0           | 110               | 0                 | 0.00        | 177              | 0                 |
|                    | Johnston Atoll   |                       | 0           | 95                | 0                 | 0.00        | 137              | 0                 |
|                    | Marcus Island    |                       | 0           | 150               | 0                 | 0.00        | 241              | 0                 |
|                    | Marshall Islands | Kwajalein             | 0           | 105               | 0                 | 0.00        | 169              | 0                 |
|                    |                  | 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                 |

**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**

| <b>TABLE D-2</b>          |   |                                | <b>Seismic Loading (Site Class B)</b> |                           |                                 |                                 |
|---------------------------|---|--------------------------------|---------------------------------------|---------------------------|---------------------------------|---------------------------------|
| <b>Continent / Region</b> | <b>Country</b>  | <b>Base / City</b>             | <b>S<sub>s</sub> (%g)</b>             | <b>S<sub>1</sub> (%g)</b> | <b>10/50 S<sub>s</sub> (%g)</b> | <b>10/50 S<sub>1</sub> (%g)</b> |
| <b>Africa</b>             | <b>Egypt</b>  | Alexandria                     | <b>23</b>                             | <b>9</b>                  | <b>11</b>                       | <b>5</b>                        |
|                           | <b>Morocco</b>  | Casablanca                     | <b>25</b>                             | <b>10</b>                 | <b>13</b>                       | <b>5</b>                        |
| <b>Asia</b>               | <b>Afghanistan</b>  | Kabul                          | <b>128</b>                            | <b>51</b>                 | <b>64</b>                       | <b>26</b>                       |
|                           | <b>Bahrain</b>  | NSA Bahrain                    | <b>31</b>                             | <b>12</b>                 | <b>15</b>                       | <b>6</b>                        |
|                           | <b>India</b>  | Bombay                         | <b>26</b>                             | <b>10</b>                 | <b>13</b>                       | <b>5</b>                        |
|                           |   | Calcutta                       | <b>50</b>                             | <b>20</b>                 | <b>25</b>                       | <b>10</b>                       |
|                           |   | Madras                         | <b>14</b>                             | <b>6</b>                  | <b>7</b>                        | <b>3</b>                        |
|                           |   | New Delhi                      | <b>71</b>                             | <b>28</b>                 | <b>35</b>                       | <b>14</b>                       |
|                           | <b>Iraq</b>   | Baghdad                        | <b>124</b>                            | <b>56</b>                 | <b>62</b>                       | <b>29</b>                       |
|                           |   | Basra                          | <b>98</b>                             | <b>39</b>                 | <b>49</b>                       | <b>20</b>                       |
|                           | <b>Japan</b>  | NAF Atsugi                     | <b>187</b>                            | <b>75</b>                 |                                 |                                 |
|                           |   | MCAS Iwakuni                   | <b>94</b>                             | <b>38</b>                 | <b>47</b>                       | <b>19</b>                       |
|                           |   | Iwo Jima                       | <b>89</b>                             | <b>36</b>                 | <b>45</b>                       | <b>18</b>                       |
|                           |   | Misawa AFB                     | <b>124</b>                            | <b>56</b>                 |                                 |                                 |
|                           |   | Okinawa<br>(All installations) | <b>165</b>                            | <b>75</b>                 | <b>83</b>                       | <b>38</b>                       |
|                           |   | Sagamihara                     | <b>187</b>                            | <b>75</b>                 |                                 |                                 |
|                           |   | Sasebo                         | <b>91</b>                             | <b>36</b>                 | <b>45</b>                       | <b>18</b>                       |
|                           |   | Tokyo                          | <b>187</b>                            | <b>75</b>                 | <b>94</b>                       | <b>37</b>                       |
|                           |   | COMFLTACT<br>Yokosuka          | <b>187</b>                            | <b>75</b>                 |                                 |                                 |
|                           |   | Yokota AFB, Honshu             | <b>200</b>                            | <b>80</b>                 | <b>100</b>                      | <b>40</b>                       |
|                           |   | Camp Zama                      | <b>187</b>                            | <b>75</b>                 |                                 |                                 |
|                           | <b>Kuwait</b>   | Kuwait City                    | <b>54</b>                             | <b>22</b>                 | <b>27</b>                       | <b>11</b>                       |
| <b>Oman</b>               | Areas south and west<br>of Jabal Akehadar                 |                                |                                       |                           |                                 |                                 |
|                           | - Ibri  | <b>91</b>                      | <b>36</b>                             | <b>46</b>                 | <b>18</b>                       |                                 |
|                           | - Nazwa   | <b>88</b>                      | <b>35</b>                             | <b>44</b>                 | <b>18</b>                       |                                 |
|                           | Batinah Coast   |                                |                                       |                           |                                 |                                 |
|                           | - Ash Shinash   | <b>166</b>                     | <b>66</b>                             | <b>83</b>                 | <b>33</b>                       |                                 |
|                           | - Sib   | <b>129</b>                     | <b>52</b>                             | <b>65</b>                 | <b>26</b>                       |                                 |
|                           | - Suhar   | <b>149</b>                     | <b>60</b>                             | <b>75</b>                 | <b>30</b>                       |                                 |
|                           | Central, Southern,<br>and Coastal Areas<br>Sur to Sarfait |                                |                                       |                           |                                 |                                 |
|                           | - Barik   |                                |                                       |                           |                                 |                                 |

**TABLE D-2**

| Continent / Region   | Country          | Base / City                | Seismic Loading (Site Class B) |                     |                           |                           |
|----------------------|------------------|----------------------------|--------------------------------|---------------------|---------------------------|---------------------------|
|                      |                  |                            | S <sub>s</sub> (%g)            | S <sub>1</sub> (%g) | 10/50 S <sub>s</sub> (%g) | 10/50 S <sub>1</sub> (%g) |
| Asia                 | Oman             | - 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                        |
|                      | Qatar            | Doha                       | 6                              | 6                   | 3                         | 3                         |
|                      | 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                         |                           |
| Taegu                |                  | 29                         | 11                             | 14                  | 6                         |                           |
| Uijongbu             | 17               | 7                          | 8                              | 3                   |                           |                           |
| Yongsan / Seoul      | 17               | 7                          | 9                              | 3                   |                           |                           |
| Vietnam              | Da Nang          | 18                         | 7                              | 9                   | 4                         |                           |

**TABLE D-2**

|                    |                      |  | Seismic Loading (Site Class B) |                     |                           |                           |
|--------------------|----------------------|--|--------------------------------|---------------------|---------------------------|---------------------------|
| Continent / Region | Country              | Base / City                            | S <sub>s</sub> (%g)            | S <sub>1</sub> (%g) | 10/50 S <sub>s</sub> (%g) | 10/50 S <sub>1</sub> (%g) |
| Asia               | Vietnam              | 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                        |
| 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 - Herzegovina | 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                         |
|                    |                      | JMF St. Mawgan / Cornwall              | 20                             | 4                   | 10                        | 2                         |
|                    |                      | Sculthorpe AB                          | 16                             | 6                   | 8                         | 3                         |

**TABLE D-2**

| Continent /<br>Region | Country                                | Base / City                  | Seismic Loading (Site Class B) |                        |                              |                              |
|-----------------------|--|------------------------------|--------------------------------|------------------------|------------------------------|------------------------------|
|                       |  |                              | S <sub>s</sub><br>(%g)         | S <sub>1</sub><br>(%g) | 10/50 S <sub>s</sub><br>(%g) | 10/50 S <sub>1</sub><br>(%g) |
| Europe                | England                                | 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 /<br>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<br>Base                | 24                           | 10                             | 12                     | 5                            |                              |
|                       | Stuttgart                              | 44                           | 18                             | 22                     | 9                            |                              |
|                       | Vilseck                                | 22                           | 9                              | 11                     | 4                            |                              |
|                       | Wiesbaden / Mainz /<br>Dexheim         | 38                           | 15                             | 19                     | 8                            |                              |
|                       | Wuerzburg / Kitzingen<br>/ Giebelstadt | 21                           | 9                              | 11                     | 4                            |                              |
|                       | Greece                                 | Athens                       | 81                             | 32                     | 40                           | 16                           |
|                       |  | Larissa                      | 140                            | 26                     | 70                           | 13                           |
|                       |  | NAS Soudi Bay /<br>Mouzouras | 120                            | 34                     | 60                           | 17                           |
|                       | Iceland                                | Keflavik - NSA               | 100                            | 40                     | 50                           | 20                           |
|                       |  | Thorshofn                    | 49                             | 19                     | 24                           | 10                           |

**TABLE D-2**

|                    |                  |                             | Seismic Loading (Site Class B) |                     |                           |                           |
|--------------------|------------------|-----------------------------|--------------------------------|---------------------|---------------------------|---------------------------|
| Continent / Region | Country          | Base / City                 | S <sub>s</sub> (%g)            | S <sub>1</sub> (%g) | 10/50 S <sub>s</sub> (%g) | 10/50 S <sub>1</sub> (%g) |
| Europe             | 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                         |
|                    |                  | NSA Naples                  | 67                             | 27                  | 34                        | 14                        |
|                    |                  | Niscemi                     | 120                            | 31                  | 60                        | 16                        |
|                    |                  | 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                              | 6                   | 3                         | 3                         |
|                    | 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                         |
|                    | 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                         |

**TABLE D-2**

|                    |                                |                             | Seismic Loading (Site Class B) |                     |                           |                           |    |
|--------------------|--------------------------------|-----------------------------|--------------------------------|---------------------|---------------------------|---------------------------|----|
| Continent / Region | Country                        | Base / City                 | S <sub>s</sub> (%g)            | S <sub>1</sub> (%g) | 10/50 S <sub>s</sub> (%g) | 10/50 S <sub>1</sub> (%g) |    |
| North America      | Canada                         | Fort William, Ontario       |                                |                     |                           |                           |    |
|                    |                                | Frobisher, NWT              | 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                             | 14                  | 16                        | 7                         |    |
|                    |                                | Greenland                   | Narsarsuak AB                  | 31                  | 14                        | 16                        | 7  |
|                    |                                |                             | Simiutak AB                    | 31                  | 14                        | 16                        | 7  |
|                    |                                |                             | 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 Territory | NSF Diego Garcia            | 70                             | 28                  | 35                        | 14                        |    |
| Pacific Ocean      | Australia                      | H.E. Holt / N.W. Cape       | 47                             | 19                  | 23                        | 9                         |    |
|                    |                                | Woomera                     | 47                             | 19                  | 23                        | 9                         |    |
|                    | 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                  |                             |                                |                     |                           |                           |    |
|                    | Phillipine Is.                 | Clark AFB                   | 159                            | 64                  | 79                        | 32                        |    |
|                    |                                | Sangley Point               | 195                            | 78                  | 97                        | 39                        |    |
| Subic Bay          |                                | 177                         | 71                             | 88                  | 35                        |                           |    |

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**TABLE D-2**

|                    |         |              | Seismic Loading (Site Class B) |                     |                           |                           |
|--------------------|---------|--------------|--------------------------------|---------------------|---------------------------|---------------------------|
| Continent / Region | Country | Base / City  | S <sub>s</sub> (%g)            | S <sub>1</sub> (%g) | 10/50 S <sub>s</sub> (%g) | 10/50 S <sub>1</sub> (%g) |
| Pacific Ocean      | Samoa   | Apia / Upolu | 158                            | 63                  | 79                        | 32                        |

## 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**

| <b>TABLE E-1</b>              |  |                    | <b>Seismic Loading (Site Class B)</b> |                               |                                     |                                     |
|-------------------------------|--|--------------------|---------------------------------------|-------------------------------|-------------------------------------|-------------------------------------|
| <b>Continent /<br/>Region</b> | <b>Country</b>                           | <b>Base / City</b> | <b>S<sub>s</sub><br/>(%g)</b>         | <b>S<sub>1</sub><br/>(%g)</b> | <b>10/50 S<sub>s</sub><br/>(%g)</b> | <b>10/50 S<sub>1</sub><br/>(%g)</b> |
| <b>Africa</b>                 | <b>Algeria</b>                           | Alger              | <b>96.1</b>                           | <b>38.4</b>                   | <b>48.0</b>                         | <b>19.2</b>                         |
|                               |  | Oran               | <b>60.0</b>                           | <b>24.0</b>                   | <b>30.0</b>                         | <b>12.0</b>                         |
|                               | <b>Angola</b>                            | Luanda             | <b>5.6</b>                            | <b>2.2</b>                    | <b>2.8</b>                          | <b>1.1</b>                          |
|                               | <b>Benin</b>                             | Cotonou            | <b>10.9</b>                           | <b>4.4</b>                    | <b>5.4</b>                          | <b>2.2</b>                          |
|                               | <b>Botswana</b>                          | Gaborone           | <b>2.6</b>                            | <b>1.0</b>                    | <b>1.3</b>                          | <b>0.5</b>                          |
|                               | <b>Burkina Faso</b>                      | Kampala            | <b>44.1</b>                           | <b>17.7</b>                   | <b>22.1</b>                         | <b>8.8</b>                          |
|                               | <b>Burundi</b>                           | Bujumbura          | <b>66.1</b>                           | <b>26.5</b>                   | <b>33.1</b>                         | <b>13.2</b>                         |
|                               | <b>Cameroon</b>                          | Douala             | <b>15.8</b>                           | <b>6.3</b>                    | <b>7.9</b>                          | <b>3.2</b>                          |
|                               |  | Yaounde            | <b>26.0</b>                           | <b>10.4</b>                   | <b>13.0</b>                         | <b>5.2</b>                          |
|                               | <b>Central African Republic</b>          | Bangui             | <b>26.0</b>                           | <b>10.4</b>                   | <b>13.0</b>                         | <b>5.2</b>                          |
|                               | <b>Chad</b>                              | Ndjamena           | <b>5.6</b>                            | <b>2.2</b>                    | <b>2.8</b>                          | <b>1.1</b>                          |
|                               | <b>Congo</b>                             | Brazzaville        |                                       |                               |                                     |                                     |
|                               | <b>Congo, Democratic Republic of the</b> | Bukavu             | <b>74.0</b>                           | <b>29.6</b>                   | <b>37.0</b>                         | <b>14.8</b>                         |
|                               |  | Kinshasa           |                                       |                               |                                     |                                     |
|                               |  | Lubumbashi         | <b>37.4</b>                           | <b>14.9</b>                   | <b>18.7</b>                         | <b>7.5</b>                          |
|                               | <b>Cote d'Ivoire</b>                     | Abidjan            | <b>3.7</b>                            | <b>1.5</b>                    | <b>1.8</b>                          | <b>0.7</b>                          |
|                               | <b>Djibouti</b>                          | Djibouti           | <b>81.5</b>                           | <b>32.6</b>                   | <b>40.7</b>                         | <b>16.3</b>                         |
|                               | <b>Egypt</b>                             | Cairo              | <b>67.2</b>                           | <b>26.9</b>                   | <b>33.6</b>                         | <b>13.4</b>                         |
|                               |  | Port Said          | <b>65.1</b>                           | <b>26.1</b>                   | <b>32.6</b>                         | <b>13.0</b>                         |
|                               | <b>Equatorial Guinea</b>                 | Malabo             | <b>15.8</b>                           | <b>6.3</b>                    | <b>7.9</b>                          | <b>3.2</b>                          |
| <b>Eritrea</b>                | Asmara                                   | <b>43.0</b>        | <b>17.2</b>                           | <b>21.5</b>                   | <b>8.6</b>                          |                                     |
| <b>Ethiopia</b>               | Addis Ababa                              | <b>55.3</b>        | <b>22.1</b>                           | <b>27.6</b>                   | <b>11.1</b>                         |                                     |

**TABLE E-1**

|                    |               |               | Seismic Loading (Site Class B) |                     |                           |                           |     |
|--------------------|---------------|---------------|--------------------------------|---------------------|---------------------------|---------------------------|-----|
| Continent / Region | Country       | Base / City   | S <sub>s</sub> (%g)            | S <sub>1</sub> (%g) | 10/50 S <sub>s</sub> (%g) | 10/50 S <sub>1</sub> (%g) |     |
| Africa             | Gabon         | Libreville    | 26.0                           | 10.4                | 13.0                      | 5.2                       |     |
|                    | 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                       |     |
|                    | Nigeria       | 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                      |     |

**TABLE E-1**

|                    |              |                     | Seismic Loading (Site Class B) |                     |                           |                           |
|--------------------|--------------|---------------------|--------------------------------|---------------------|---------------------------|---------------------------|
| Continent / Region | Country      | Base / City         | S <sub>s</sub> (%g)            | S <sub>1</sub> (%g) | 10/50 S <sub>s</sub> (%g) | 10/50 S <sub>1</sub> (%g) |
| Asia               | Brunei       | Bandar Seri Begawan | 37.2                           | 14.9                | 18.6                      | 7.4                       |
|                    | Burma        | Mandalay            | 201.0                          | 80.4                | 100.5                     | 40.2                      |
|                    |              | 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                      |                           |
|                    | Osaka        | 178.1               | 71.2                           | 89.0                | 35.6                      |                           |
|                    | Sapporo      | 100.4               | 40.2                           | 50.2                | 20.1                      |                           |
|                    | Yokohama     | 187                 | 75                             |                     |                           |                           |
| 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                      |                           |

**TABLE E-1**

|                    |                |                      | Seismic Loading (Site Class B) |                     |                           |                           |      |
|--------------------|----------------|----------------------|--------------------------------|---------------------|---------------------------|---------------------------|------|
| Continent / Region | Country        | Base / City          | S <sub>s</sub> (%g)            | S <sub>1</sub> (%g) | 10/50 S <sub>s</sub> (%g) | 10/50 S <sub>1</sub> (%g) |      |
| Asia               | Pakistan       | Lahore               | 117.1                          | 46.8                | 58.5                      | 23.4                      |      |
|                    |                | Singapore            | All                            | 37.5                | 15.0                      | 18.8                      | 7.5  |
|                    |                | Sri Lanka            | Colombo                        | 2.6                 | 1.0                       | 1.3                       | 0.5  |
|                    |                | South Korea          | Kimhae                         | 18.3                | 7.3                       | 9.2                       | 3.7  |
|                    |                |                      | Kwangju                        | 12.9                | 5.2                       | 6.5                       | 2.6  |
|                    |                | 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  |
|                    |                |                      | Udon                           | 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                       |      |

**TABLE E-1**

|                    |                     |                            | Seismic Loading (Site Class B) |                     |                           |                           |      |
|--------------------|---------------------|----------------------------|--------------------------------|---------------------|---------------------------|---------------------------|------|
| Continent / Region | Country             | Base / City                | S <sub>s</sub> (%g)            | S <sub>1</sub> (%g) | 10/50 S <sub>s</sub> (%g) | 10/50 S <sub>1</sub> (%g) |      |
| Europe             | Germany             | Frankfurt am Main          | 37.7                           | 15.1                | 18.8                      | 7.5                       |      |
|                    |                     | Giebelstadt                | 21.9                           | 8.8                 | 11.0                      | 4.4                       |      |
|                    |                     | 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  |
|                    |                     |                            | Warszawa                       | 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                       |      |

**TABLE E-1**

|                    |                       |                      | Seismic Loading (Site Class B) |                     |                           |                           |
|--------------------|-----------------------|----------------------|--------------------------------|---------------------|---------------------------|---------------------------|
| Continent / Region | Country               | Base / City          | S <sub>s</sub> (%g)            | S <sub>1</sub> (%g) | 10/50 S <sub>s</sub> (%g) | 10/50 S <sub>1</sub> (%g) |
| Europe             | 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                      |
|                    | 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                       |
| 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                       |
|                    | Chile                 | Sao Paulo            | 0.5                            | 0.2                 | 0.3                       | 0.1                       |
|                    |                       | 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                      |
| Ecuador            |                       | Guayaquil            | 136.9                          | 54.8                | 68.5                      | 27.4                      |
|                    |                       | Quito                | 204.6                          | 81.8                | 102.3                     | 40.9                      |

**TABLE E-1**

|                    |                                  |                  | Seismic Loading (Site Class B) |                     |                           |                           |
|--------------------|----------------------------------|------------------|--------------------------------|---------------------|---------------------------|---------------------------|
| Continent / Region | Country                          | Base / City      | S <sub>s</sub> (%g)            | S <sub>1</sub> (%g) | 10/50 S <sub>s</sub> (%g) | 10/50 S <sub>1</sub> (%g) |
| South America      | 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                      |
|                    | Venezuela                        | Maracaibo        | 104.4                          | 41.8                | 52.2                      | 20.9                      |
| Caribbean Sea      | Bahamas                          | 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                       |
|                    | 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                      |
|                    | Marshall Islands                 | Majuro           | 121.4                          | 48.6                | 60.7                      | 24.3                      |
|                    | New Zealand                      | Auckland         | 83.8                           | 33.5                | 41.9                      | 16.8                      |

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**25 May 2005**  
**Including change 2, 5 December 2007**

**TABLE E-1**

|                       |                     |              | Seismic Loading (Site Class B) |               |                     |                     |
|-----------------------|---------------------|--------------|--------------------------------|---------------|---------------------|---------------------|
| Continent /<br>Region | Country             | Base / City  | $S_s$<br>(%g)                  | $S_1$<br>(%g) | 10/50 $S_s$<br>(%g) | 10/50 $S_1$<br>(%g) |
| Pacific Ocean         | New Zealand         | Wellington   | <b>228.2</b>                   | <b>91.3</b>   | <b>114.1</b>        | <b>45.6</b>         |
|                       | Papau New<br>Guinea | Port Moresby | <b>78.1</b>                    | <b>31.3</b>   | <b>39.1</b>         | <b>15.6</b>         |
|                       | Phillipine Is.      | Baguio       | <b>164.0</b>                   | <b>65.6</b>   | <b>82.0</b>         | <b>32.8</b>         |
|                       |                     | Cebu         | <b>114.0</b>                   | <b>45.6</b>   | <b>57.0</b>         | <b>22.8</b>         |
|                       |                     | Manila       | <b>193.2</b>                   | <b>77.3</b>   | <b>96.6</b>         | <b>38.6</b>         |
|                       | Saipan              | Capitol Hill | <b>99.8</b>                    | <b>39.9</b>   | <b>49.9</b>         | <b>20.0</b>         |
|                       | Tinian              |              | <b>99.4</b>                    | <b>39.8</b>   | <b>49.7</b>         | <b>19.9</b>         |