

Summary of Modifications/Changes in this Update

This Summary of Changes is for information only.
It is not a part of the referenced document, and should not be used for project documentation.

U.S. Department of Veterans Affairs ♦ Office of Construction & Facilities Management

DATE OF THIS VERSION (new)

February 1, 2014

TITLE OF DOCUMENT (new title if applicable):

Structural Design Manual for Hospital Projects

DATE OF VERSION BEING SUPERSEDED (old):

August 1, 2009

DESCRIPTION OF DOCUMENT (previous title, number, other identifying data):

Structural Design Manual for Hospital Projects

SUMMARY OF CHANGES IN THIS VERSION:

1. Reference of ACI 318, AISC, and IBC changed to Latest Edition;
2. Deleted metric units of Design Loads; and
3. Updated Strctural Spec. Sections with latest revisions.

February 1, 2014

DEPARTMENT OF VETERANS AFFAIRS

DESIGN INSTRUCTIONS TO ARCHITECTS AND ENGINEERS

LOCATION: VAMC,

PROJECT TITLE:

PROJECT NO.

SCHEMATICS

DESIGN
DEVELOPMENT

CONSTRUCTION
DOCUMENTS

STRUCTURAL

STRUCTURAL DESIGN MANUAL FOR HOSPITAL / REPLACEMENT HOSPITAL /
CLINICAL ADDITION / DOMICILIARY / NURSING HOME / PSYCHIATRIC
BUILDING / OUTPATIENT CLINIC / VETERINARY MEDICAL UNIT PROJECTS
(February 1, 2014)

FROM:

DATE:

Package Preparer:

Telephone Number:

**STRUCTURAL DESIGN MANUAL
FOR HOSPITAL PROJECTS
DEPARTMENT OF VETERANS AFFAIRS**

Table of Contents

| Subject | Page No |
|---|---------|
| 1. Criteria Unique to VA | 1 |
| 2. General..... | 1 |
| 3. Structural Design Load Requirements | 2 |
| 4. Table 1 - Minimum Uniformly Distributed Live Loads | 3 |
| 5. Table 2 - Special Load Requirements | 4 |
| 6. Applicable Structural Master Specifications Index | 5 |

**STRUCTURAL DESIGN MANUAL
FOR HOSPITAL PROJECTS
DEPARTMENT OF VETERANS AFFAIRS
February 1, 2014**

1. CRITERIA UNIQUE TO VA:

A. All new facilities, new additions, and existing buildings requiring major renovation and/or seismic strengthening shall be designed in accordance with VA Handbook H-18-8, "Seismic Design Requirements".

B. All new buildings, additions and major alterations shall be designed to meet the requirements of Physical Security Design Manual for VA Facilities.

2. GENERAL:

2.1 Structural design of VA facilities shall comply with the latest editions of the following:

A. Reinforced concrete design - , "Building Code Requirements for Reinforced Concrete and Commentary", ACI 318, Latest Edition.

B. Structural steel design - "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings", American Institute of Steel Construction, AISC, Latest Edition.

C. Unless otherwise noted above - "International Building Code", IBC Latest Edition.

D. Significant variations from the above in local building codes shall be brought to the attention of the Director, Area Team Project Management Office, for approved substitution prior to their use in the structural design.

2.2 Where applicable, verify the load-bearing capability of the existing structural elements to support the new design loads.

2.3 Where alterations are made to the structural elements in existing buildings, these elements individually and the buildings as units, must maintain adequate strength to safely resist both gravity and lateral loads. Any resulting deficiencies must be reinforced accordingly.

- 2.4 Follow the Fire Protection Design Manual for fireproofing requirements of structural elements.

3. STRUCTURAL DESIGN LOAD REQUIREMENTS:

- 3.1 Minimum uniform basic design live loads shall conform to IBC requirements, except as shown in Table 1 and Table 2.
- 3.2 Allowance of 20 psf shall be made for partitions on floors where specified live load is less than 100 psf, in addition to all other loads. Where live loads are 100 psf and greater, specific partition locations may be used for design; however, appropriate notes must be made on the drawings.
- 3.3 Provision shall be made in designing floors for a concentrated load of 2000 lb, placed upon any space 2.5 ft square, wherever this load upon an otherwise unloaded floor would produce stresses greater than those caused by the uniform load. On walk-on ceiling the design concentrated load shall be 300 lb.
- 3.4 In order to provide a flexible design allowing certain range of occupancy changes in the future, generalized live load categories should be applied to large areas preferably one category to any one floor.
- 3.5 Roof live loads shall be based on geographical location and local governing building code requirements; however, they shall not be 20 psf.
- 3.6 Where actual occupancy load requirements or concentrated equipment loads distributed over a reasonable area exceed the equivalent generalized uniform live loads, the areas in question shall be designed to meet the specific load conditions. Refer to Table 2 of selected functional areas with special uniform load requirements and heavy equipment loads that may require special consideration.

4. **TABLE 1 - MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS *:**

| <u>OCCUPANCY OR USE</u> | <u>LIVE LOADS</u> (psf) |
|--|----------------------------|
| All Future Floors (Unless Otherwise Noted) | 100 |
| Interstitial Floor (Walk-on Ceilings) | 25** |
| Loading Docks and Platforms | 250 |
| Lobbies | 100 |
| Mechanical Rooms | 150 |
| Administrative Services | 80 |
| Clinical and Support Services | 80 |
| Corridors: | |
| In Wards | 60 |
| All Others | 100 |
| File and Computer Rooms | 125 |
| Kitchen and Dining Areas | 100 |
| Pharmacy and Retail | 100 |
| Ward Rooms | 40 |
| Research and Education Buildings | 100 |

Footnotes:

* Design Live Loads shall be noted on the drawings in general notes and on plans to indicate specific areas designed for different loads. Column design loads shall be noted in column schedules.

** This load may be reduced to 15 psf in combination with floor live load.

TABLE 2 - SPECIAL LOAD REQUIREMENTS:

| <u>FUNCTIONAL DEPARTMENTS</u> | <u>SPECIAL AREAS UNIFORM LOAD</u> | <u>LOADS</u> <u>psf</u> | <u>SPECIAL EQUIPMENT LOADS</u> |
|--------------------------------|--|----------------------------|---|
| Audiology and Speech Pathology | | | Audiometric Room |
| Dietetic Service | Refrigeration & Frozen Storage | 200 | Baking Oven, Cooking Oven, Refrigerators, Ice-making Machines, Dishwashers |
| Engineering Service | Maintenance & Repair Shops | 150 | |
| General Offices | | | Addressograph, Power File Record Retriever |
| Laboratory Service | Morgue | 150 | |
| Laundry | Washers/Dryers | 200 | Flat Work Ironer Monorail, Washer-Extractor |
| Medical Research | Gas Cylinder Storage | 250 | Mechanical Cage Washer, Concrete Dog Cages |
| Radiology Service | X-Ray Film Storage Stationary Files Mobile (Rolling) | 250 400 | Radiographic & Fluoroscope Equip, Tomograph Table Cobalt 60 Units, Linear Accelerators, Overhead Equipment |
| Rehabilitation Medicine | | | Hubbard Tank, Therapy Tank & Pool, Overhead Equipment |
| Supply Service | Light Storage Heavy Storage/ Warehouse Loading Dock | 150 250 250 | Automatic Cart Washer, Heavy Sterilizer, Storage Tank, Vaults |
| Miscellaneous Services | Mobile (Rolling) Storage & Record Files | 300 | |

6. APPLICABLE STRUCTURAL MASTER SPECIFICATIONS INDEX:

| <u>SECTION</u> | <u>DATE</u> | <u>TITLE</u> |
|----------------|-------------|--|
| 01 45 29 | 07-13 | TESTING LABORATORY SERVICES |
| 02 41 00 | 03-13 | DEMOLITION |
| 31 23 19 | 10-12 | DEWATERING |
| 31 20 00 | 10-12 | EARTH MOVING |
| 31 23 23.33 | 10-12 | FLOWABLE FILL |
| 31 62 00 | 10-12 | DRIVEN PILES |
| 31 63 16 | 10-12 | AUGER-CAST GROUT PILES |
| 31 63 26 | 10-12 | DRILLED CAISSONS |
| 03 23 00 | 07-11 | STRESSING TENDONS |
| 03 30 00 | 10-12 | CAST-IN-PLACE CONCRETE |
| 03 30 53 | 10-12 | (SHORT FORM) CAST-IN-PLACE CONCRETE |
| 03 37 13 | 07-11 | SHOTCRETE |
| 03 41 33 | 07-11 | PRECAST STRUCTURAL PRETENSION CONCRETE |
| 05 12 00 | 11-12 | STRUCTURAL STEEL FRAMING |
| 05 21 00 | 03-10 | STEEL JOIST FRAMING |
| 05 31 00 | 10-12 | STEEL DECKING |
| 05 36 00 | 07-11 | COMPOSITE METAL DECKING |
| 05 40 00 | 07-11 | COLD-FORMED METAL FRAMING |

Note: Specification sections include metric units.

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