

EXPAND BLDG 1 FOR PATIENT ALIGNED CARE TEAMS (PACT) VA Iowa City Healthcare System Code Analysis

Date: December 15, 2014
Project Name: Expand Building 1 for Patient Aligned Care Teams (PACT)
Location: Iowa City, Iowa
Architect: Heery International, Inc., 125 South Dubuque St., Suite 500
Fire Protection: F&C Consultants Inc., 1520 Main St.

Applicable Codes: Life Safety Code, NFPA 101, 2009 Edition
2009 International Building Code (IBC)
Accessibility Guidelines for Buildings and Facilities (ADAAG)
ANSI A117.1 2003
2010 AIA Guidelines

Occupancy: NFPA 101: New and Existing Health Care Occupancies (Chapters 18-19)
IBC: I-2 (Institutional Group), B (Business)

Construction (Fully Sprinklered): Type I (332) (NFPA)

2.7.2 BUILDING CLASSIFICATIONS AND LIMITATIONS

A. Use Group: Health Care Occupancy
Business Occupancy

Accessory Use Areas. A fire barrier is not required to separate accessory use areas provided the accessory use area occupies an area not more than 10 percent of the building area of the story in which it is located and does not exceed the tabular values in Table 503 for the allowable height or area for such use.

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Incidental Use Areas - Areas that are incidental to the main occupancy will be separated and protected in accordance with IBC Table 508.2.5 and will be classified in accordance with the main occupancy.

B. Proposed Type of Construction (IBC Table 601): Type I(B)

C. Allowable Building Height (IBC Table 503):

Table with 5 columns: Code, Building Construction Type, Allowable Height, and Provided (Actual).

D. Allowable Building Area (IBC Table 503):

Table with 5 columns: Code, Building Use, Construction Type, Allowable Area, and Provided.

2.7.3 MEANS OF EGRESS

Means of egress are designed in accordance with NFPA 101, Life Safety Code, 2009 edition.

A. OCCUPANCY LOADS

Table with 2 columns: Use and NFPA 101 Table 7.3.1.2 Occupant Load Factors.

B. OCCUPANCY LOADS CALCULATION and EGRESS REQUIREMENTS

Table with 5 columns: Location Calculated, Use, Gross Floor Area (SF), Occ. Load Factor SF/Person, and No. of Occupants.

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Table with 4 columns: Level, Healthcare, 6,339, 240 gross, 27.

Egress Capacity

Table with 3 columns: Use Group, Egress Components, and Egress Width (NFPA 101, 7.3.3.1).

CALCULATIONS OF EXITING BY FLOOR

Table with 7 columns: Floor, Occupant Load, Number of Exits, Provided Exit Capacity, and Provided Exit Capacity (Persons).

C. Number of Means of Egress Business and Assembly

Table with 2 columns: Number of exits per NFPA 101 (7.4.1.2) and Exits.

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D. Remoteness of Exits
In the building protected throughout by an approved supervised automatic sprinkler system, the minimum separation distance between at least two exits on each floor or area shall be at least one third the length of the maximum overall diagonal dimensions of the building or area to be served.

Table with 4 columns: Floor/Area, Maximum Diagonal, Separation Required, and Separation of Exits.

E. Discharge from Exits
All exits shall terminate at public way or at an exterior exit discharge.

Exception - Not more than 50% of the required number of exits, and not more than 50% of the required egress capacity, shall be permitted to discharge through areas on the level of discharge, provided such way is readily visible and identifiable from the point of discharge from the exit, and the level of discharge is protected throughout by an approved, automatic sprinkler system; and the entire floor area on the level of discharge shall be separated from areas below by construction having a fire resistance rating at least that required for the exit enclosure.

The two stairs serving the PACT Expansion exit directly to the exterior. One stair exits at the lower (basement) level and one stair exits at level 1.

F. Corridors

1. Definitions

a. Exit Access Corridors - Corridors used as exit access and serving an area having an occupant load of more than 30 shall be separated from other parts of the building by walls having a 1-hr fire resistance rating (NFPA 101 - 7.1.3.1)

Exception: Corridors within buildings protected throughout by a sprinkler system (NFPA 101 - 18.3.6.2 and 38.3.6.1) are not required to be rated but must resist the passage of smoke.

Exception: Doors within buildings protected throughout by a sprinkler system (18.3.6.3.1) are not required to be rated but must resist the passage of smoke.

2. Minimum width (NFPA 101)

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a. 44 inches but not less than width necessary to accommodate occupant load served. Where serving an occupant load of 50 or less the corridor width shall not be less than 36 inches.

b. 96 inches in Group I-2 in areas required for bed movement (IBC).

3. Minimum height

a. At least 7 feet 6 inches with projections from the ceiling at least 6 feet 8 inches nominal height above the finished floor.

b. Headroom on stairs shall be a minimum of 6 ft. 8 in., and shall be measured vertically above a plane parallel to and tangent with the most forward projection of the stair tread.

4. Maximum dead ends (NFPA 101)

Table with 2 columns: Use Group and Health Care AHC / Business.

5. Maximum Common Path of Travel

Definitions: That portion of exit access that is traversed before two separate and distinct paths of travel to two exits is available. Paths that merge are common paths of travel.

Table with 2 columns: Use Group and Health Care, AHC, Bus.

G. Maximum Travel Distance

Table with 2 columns: Use Group and Health Care, AHC, Bus.

H. Stairways

- 1. Stair Width: 44 inches minimum 36 inches serving occupant load of 50 or less.
2. Stair Riser: Maximum: 7 inches Minimum: 4 inches
3. Open Risers: Not permitted on stairs required to be accessible; ADA

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4. Stair Treads: Maximum: Not limited. Minimum: 11 inches

5. Stair Headroom: 6 feet-8 inches;

6. Landing Criteria: Minimum Length must be no less than the width of stair. Exception: The landing does not need to exceed 48 inches when the stair has a straight run.

7. Doors at Landings/ Projections: During its swing, any door in a means of egress shall leave unobstructed at least one half of the required width of the aisle, corridor, passageway, or landing, nor project more than 7 in. into the required width of an aisle, corridor, passageway, or landing, when fully open. Doors shall not open immediately onto a stair without a landing. The landing shall have a width of least equal to the width of the door.

8. Door (at Stair) Construction: Fire resistive stair doors are required to be individually marked or labeled as means of egress fire doors and shall have a minimum rating of 60 min. for a 1 hour exit enclosure and 90 min. for 2 hour rated enclosures.

9. Height Between Landings: 12 feet maximum.

10. Handrails: Handrail grips are required to be continuous the full length of the stairs on both sides.

Height: 34-38 inches;

The height of required handrails that form part of a guard shall be permitted to be not more than 42" measured vertically to the top of the rail from the leading edge of the tread.

Ends or Extensions: Required to be returned or terminate into newel posts.

New handrails that are not continuous between flights shall extend horizontally, at the required height, at least 12 inches beyond the top riser and continue to slope for a depth of one tread beyond the bottom riser.

Handgrip: Circular cross-section of 1 1/2 inches in diameter or shall provide an equivalent gripping surface with a perimeter between 4 and 6 1/4 inches or rails with equivalent "graspability". Note: The ADA includes slightly different criteria: specifies 1 1/2 - 1 3/4 inches.

Distance from Handrails are required to provide a space between the wall of

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Wall not less than 2 1/4.

12. Guardrails: Means of egress that are more than 30 in. above the floor or grade below shall be provided with guards to prevent falls over the open side.

Height: Guards shall be at least 42 in. high.

Open Guards: Open guards shall have intermediate rails or an ornamental pattern such that a sphere 4 in. in diameter shall not pass through any opening up to a height of 34 in. The triangular openings formed by the riser, tread, and bottom element of a guardrail at the open side of a stair shall be of such size that a sphere 6 in. in diameter shall not pass through the triangular opening.

13. Access to Roof: Access to roof by stair or ladder required if more than three stories. Access to a rooftop mechanical penthouse may be provided by a roof hatch not less than 16 sq. ft. (it must have a minimum dimension of 2 ft.)

14. Discharge Barrier: Stairs that continue beyond the level of exit discharge must be interrupted at the level of exit discharge by partitions, doors or other effective means.

I. Elevators: An enclosed elevator lobby shall be provided at each floor where an elevator shaft connects more than three (3) stories (IBC 708.14.1 & NFPA 101 7.2.13.3).

J. Exit Sign Requirements: Exits shall be marked by an approved sign readily visible from any direction of exit access.

Access to exits shall be marked by approved readily visible signs in all cases where the exit or way to reach it is not readily apparent to the occupants. Sign placement shall be such that no point in the exit access corridor is more than 100 ft. from the nearest sign. Every sign shall be suitable illuminated by a reliable light source. Externally and internally illuminated signs shall be legible in both the normal and emergency mode.

K. Illumination of Means of Egress Illumination of means of egress shall be provided as follows.

Egress Illumination Requirements: The floors and other walking surfaces within an exit and within the portions of the exit access and

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exit discharge shall be illuminated to values of at least 1 ft-candle measured at the floor.

Emergency Illumination: Emergency illumination shall be provided for duration of one and one-half hours minimum.

L. Doors

Minimum Leaf Width: One side of a pair of doors must provide a minimum of 32 inches clear.

Minimum Clear Width: 32 inches; 6 feet-8 inches;

Exit Door Swing: Exit doors are required to be side hinged or pivoted-swinging type. Exit door serving 50 or more persons are required to swing in the direction of egress.

Exit door where serving a high hazard contents area or where used in an exit enclosure are required to swing in the direction of egress.

Door (Panic) Hardware Requirements: Door handles and other devices to be placed > 30 inches but < 44 inches.

M. Door Locking: For security reasons, doors in certain areas of the building will be locked. These doors will allow free egress at all times from the non-secure side. In this case the doors do not require any special hardware to release the lock since the door is not locked on the non-secure side. In general, this door hardware arrangement is used to separate the public waiting spaces from the treatment or exam areas. Egress is not required from the secure side (public waiting areas) since adequate egress will be available without the use of these doors.

N. Areas of Refuge: Provided, as a story in a building where such building is protected throughout by an approved, supervised automatic sprinkler system.

O. Subdivision of Building Spaces: Smoke barrier shall be provided to divide every story into not less than two smoke compartments with a maximum area per compartment of 22,600 sq. ft. Wall to have a rating of not less than 1 hour with 20 minute doors (NFPA 101 - 18.3.7.7).

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2.7.4 INCIDENTAL USE AREA

Areas that are incidental to the main occupancy shall be separated and protected in accordance with IBC 508.2 and shall be classified in accordance with the main occupancy. Also Hazardous areas as defined by NFPA shall be protected in accordance with the requirements defined by NFPA 101 or applicable referenced code.

Table with 2 columns: Use/Occupancy and Required rating/Code.

2.7.5 FIRE-RESISTIVE REQUIREMENTS FOR ELEMENTS OF THE STRUCTURE

Structural and Exterior Elements

The following structural element and fire-resistive requirements are documented from NFPA 101 Table A.8.2.1

Table with 3 columns: Building Element, Supporting more than one floor, columns, or other bearing walls, and Fire Resistance.

2.7.6 AUTOMATIC FIRE SUPPRESSION

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A. As required by code, automatic sprinkler protection is to be provided throughout all areas of the building. Sprinklers will be designed in accordance with NFPA 13.

2.7.7 AUTOMATIC FIRE ALARM

A. Strobe lights will be provided for visual notification and will be installed in accordance with NFPA 72 and ADA guidelines.

B. Fire alarm circuits will be installed to meet Class A requirements. Fire alarm wiring will be installed within rigid EMT (conduit).

2.7.8 FIRE DEPARTMENT ACCESS AND WATER SUPPLIES

A. One existing stairway includes a fire hose standpipe.

B. A new fire hydrant will be located near the level 1 west exit of the PACT Expansion.

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Project information block including: PROJECT: IC-VANS-EXPAND BLDG 1 FOR PACT PROJECT, SHEET TITLE: F:\V\125503\00\_CD\01-02-12\0200-142.dwg, PROJECTED BY: JAC/ASD, PROJECTED DATE: 12/15/2014, PROJECT NO: 636-201, DRAWING NO: 1-G2, DATE: 12/15/2014, PROJECT TITLE: EXPAND BLDG. 1 FOR PACT AMBULATORY CARE & RADIOLOGY, BUILDING NO: BLDG 1, CHECKED: MW, DRAWN: RAD, LOCATION: ICVA HEALTH CARE SYSTEM, PROJECT NUMBER: 11-25503, DRAWING TITLE: LIFE SAFETY PLAN CODE REVIEW, CONSTRUCTION DOCUMENTS, OFFICE OF FACILITIES, DEPARTMENT OF VETERANS AFFAIRS.