

OFFICE OF ENGINEERING SERVICES, REGION X  
CODES & INTERPRETATIONS COMMITTEE  
REVIEW SUMMARY

- REFERENCE: Bruce Etchison, Bemidji Area IHS, E-mail Message, Received May 22, 1996.
- ISSUE: Request for waiver of the requirement for a second means of egress from the second floor of an existing business occupancy (NFPA 101, 27 -2.4.2).
- LOCATION: Cass Lake Indian Hospital, Dental Clinic Building, Cass Lake, MN
- BACKGROUND: The Dental Clinic at the Cass Lake Indian Hospital is located in a two-story wood frame building with a full basement. The building is not sprinklered. Building construction is classified as Type V (000). The basement and second floor of the building house administrative and support functions, while all patient services are housed on the main floor. The building use is classified as Existing Business Occupancy; total occupant load is 63. The basement has three exits: 1) an enclosed stair directly to ground level on the south side from the conference room; 2) an enclosed interior stair on the north side; and 3) a horizontal exit to the main hospital via a tunnel on the east side. The main floor has two exits: 1) an enclosed interior stair on the north side; and 2) a direct exit to an exterior porch on the south side from the waiting room. The second floor has two exits: 1) an enclosed interior stair on the north side; and 2) a ladder from the window in the office immediately adjacent to the interior stairs. The interior north stair provides access to all three levels with doors provided at each level separating that floor from the stairs and remaining floors. Construction of the stair enclosure is wood frame with gypsum wallboard or plaster finish both sides of the walls and ceilings; and is assumed to be equivalent to at least Y2-hour fire resistive construction. Only the door accessing the stairs from the main level is self-closing. The interior stair does not meet the dimensional requirements for existing stairs in NFPA 101, Life Safety Code (LSC), 5-2.2.2.1; nor the enclosure requirement of self-closing, rated doors, NFPA 101, LSC, 5-1.3.1 and 6-2.3.3. (The building was originally constructed as a residence.) The ladder from the window on the second floor does not meet the requirements for a means of egress. Previous surveys and assessments of the building have noted the exiting deficiencies, most recently the JCAHO Statement of Conditions dated May 9, 1995. The Service Unit has been previously advised that the second floor space should not be occupied until a second means of egress is provided.
- DISCUSSION: NFPA 101, LSC, 27-2.4.2 specifically cites that two separate exits must be provided from each story and be accessible from every part of every story in a building. Four exceptions allow a single exit:

Exception (1)

- Occupant load less than 100,
- Direct exit to ground level,
- Distance from any point to exterior less than 100 feet,
- Stairs no more than 15 feet in height, and
- Stairs enclosed with **no openings to rest of the building.**

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## Exception (2)

- Building 3 stories or less,
- Occupant load 30 or less for each floor,
- Distance from any point to exterior less than 100 feet, and
- Stairs enclosed with no openings to rest of the building.

## Exception (3)

Mezzanines with common path of travel less than 75 feet, or 100 feet if sprinklered.

## Exception (4)

Two story building, fully sprinklered with total travel to exterior less than 100 feet.

None of these exceptions apply to the Cass Lake Dental Clinic Building. The north interior stairs cannot be modified to meet either exception (1) or (2) for second floor egress without impacting egress requirements from the main floor and the basement. Only a single outside stair meeting all the requirements of NFPA 101, LSC, 5-2.2.6.3, can serve all three levels as single means of egress. If the outside stair is a second means of egress and is remotely located from the primary exit on each floor, the outside stair need not meet protection requirements.

Acceptable exits in this particular building would be:

- Doors providing direct exit to exterior,
- Horizontal Exits,
- Stairs, Interior or Exterior,
- Fire Escape Stairs.

New fire escape stairs are allowed in existing buildings **when it has been determined that outside stairs are impractical**, such as insufficient space for an outside stair (NFPA 101 ,LSC, 5-2.8.1.3). Access to the fire escape stairs must be via a door; and ladders cannot be incorporated. Fire escape ladders would not be permitted in this building (NFPA 101 ,LSC, 5-2.9.1 ).

As part of the analysis of the existing conditions, an alternative approach to life safety was considered using the Fire Safety Evaluation System (FSES) for Business Occupancies. FSES is not a mandatory requirement of NFPA 101, however, as the Authority Having Jurisdiction (AHJ), we often use FSES to assess whether an equivalent level of fire safety exists that may justify a waiver. Based on the information immediately available to us, the evaluation shows the building does not currently meet an equivalent level of fire safety as prescribed for general purpose buildings.

**INTERPRETATION:** Two separate exits meeting the requirements of NFPA 101, LSC, are required from each story in the existing Cass Lake Dental Clinic Building as presently occupied. To meet the intent of the code, these two exits should be remotely located from each other.

Sufficient exits are provided from both the basement and the main floor to meet the requirements of NFPA 101, LSC ***provided the deficiencies at the north interior stairs are corrected to the maximum extent feasible.*** The second floor at this time has inadequate means of egress. We believe the most desirable solution is to provide an outside stair (or a fire escape stair with appropriate justification) from the second level. A waiver will not be granted for the second means of egress.

Two possible alternative solutions for consideration:

- (1) Eliminate the business occupancy on the second floor. Use the space for storage or other functions that are not typically occupied. Take any necessary measures to ensure separation between the second floor and main floor. This is the most economically feasible solution, but may not address your current space needs. We still recommend that ***the deficiencies at the north interior stairs are corrected to the maximum extent feasible.*** Otherwise, you will continue to be cited for deficiencies in your exiting from other levels.
- (2) An evaluation under FSES may justify a waiver if ***a smoke detection system was installed throughout the building and connected to the fire alarm system, and the deficiencies at the north interior stairs are corrected to the maximum extent feasible.*** Additional research of existing conditions would be required to verify this would provide an equivalent level of fire safety. To be acceptable building utilities must comply with NFPA 101, LSC, 7-1; air conditioning, heating, and ventilating systems must comply with NFPA 101, LSC, 7-2; and portable fire extinguishers must comply with NFPA 101, LSC, 27-3.5 and 7-7.4.1.

## SIGNATURES:

<input checked="" type="checkbox"/> Concur	<input type="checkbox"/> Do Not Concur	DATE: 6-11-96	/Diane Stewart Adams/ NAME: Diane Stewart Adams, AIA, WA #0004056
<input checked="" type="checkbox"/> Concur	<input type="checkbox"/> Do Not Concur	DATE: 6-11-96	/Paul Ninomura/ NAME: Paul T. Ninomura, P.E., WA #0018669
<input checked="" type="checkbox"/> Concur	<input checked="" type="checkbox"/> Do Not Concur	DATE: 6-11-96	/James L. Crawford/ NAME: James L. Crawford, Sr. P.E., WA #0021414