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Cumberland Cold Storage Building Renovations

Conversion from Storage Use to Business Use

Merrill's Wharf, Portland

2003 IBC CODE SUMMARY

8.4.10

Background Information:

Project Architect: Stephen Weatherhead, Winton Scott Architects 774-4811 ext. 3

General Building Description: The existing Cumberland Cold Storage Building consists of a five story brick building with a four story wing at the north end totaling approximately 94,000 S.F. of area excluding the basement. The structure consists of heavy timber primary beams and columns with wood joists and wood floor decks.

Renovation Scenario: The building renovation will create commercial office space on the top four floors with floors 3, 4, and 5 being occupied by a single tenant and the floor 2 being multi-tenant. The ground floor will also consist of rentable tenant space for a variety of marine related businesses.

The renovation scope includes structural repairs and reinforcements, exterior masonry restoration, new roofing, windows, and building insulation. The south wall facing the water will be modified to add new window openings and related structural reinforcements. In addition, new building systems will be installed including HVAC, plumbing, electrical, fire alarm, telecom, and sprinklers. An existing freight elevator will remain in operation and two passenger elevators and fire exit stairs will be added.

Square Footage:	First Floor:	19,025 S.F.
	Second Floor:	19,025 S.F.
	Third Floor:	19,025 S.F.
	Fourth Floor:	19,025 S.F.
	Fifth Floor:	17,565 S.F.
	TOTAL AREA:	93,665 S.F.

Business Description: Multi -Tenant Office /Business Use

Occupancy Classification: Business Group B

Sprinkler & Fire Alarm: Building will be equipped with an approved automatic, supervised

Sprinkler system per NFPA 13 and fire alarm system.

Construction Type:

Type III B (unprotected)– Non combustible construction for exterior walls and all interior construction consisting of any material permitted by code.

Existing building consists of solid brick masonry exterior walls with heavy timber primary beams and columns with wood joists and deck.

Area & Height Limitations:

Type III B Construction, Business Use =
4 stories/ 19,000 S.F. per floor. Max. Height 55’.

Sprinklered building increases the above height limits to (per table 503): 5 stories / Max. Height 75’

Building frontage on public way increases the above area limits to:

Area increase(%) = $100 * [\text{perimeter of bldg. facing open public way} / \text{total perimeter} - .25] * \text{width of public way} / 30 =$

$100 * [363' / 847' - 0.25] * 48' / 30 = 28.5\% \text{ increase} =$
 $19,000 * 1.285 = 24,415 \text{ S.F. Max Area per Floor.}$

Area & Height Limitations Met.

Occupancy Loads:

Business Use @ 100 s.f./person:

Floor 1: = 191 people

Floor 2: = 191 people

Floor 3: = 191 people

Floor 4: = 191 people

Floor 5: = 176 people

TOTAL: = 940 People total.

Applicable Primary Requirements:

1. General Egress Components / Ratings

Egress Capacity Factors:

Stairs .3"/person for stairways; .2"/person for level components and ramps (Table 1005.1) Reduced to .2" and .15" respectively if sprinklered. Minimum clear width of new stairs is 44" (Section 1009.1).

Both Stairwells have 48" clear width.

**Typical occupancy load per floor = 19,025 /100 =191 people.
Each stair has an egress width capacity = 48"/.2" = 240 people
Total capacity of 2 stairs = 220x2 = 480 people.**

**All doors are 36" width yielding a 34" clear opening.
34"/.15" = 226 people. A single 36" door at each stair has
sufficient capacity to meet the stair capacity.**

**Ground level exit doors = (3) 36" wide doors:
34"/.15" = 226 people x 3 = 678 people**

Travel Distance Limits:

*Common Path Limit: 100' (sprinklered-Section 1013.3.1)
Dead-end Corridor: 50' (sprinklered- Section 1016.3.2)
Travel Distance: 300' (sprinklered-Table 1015.1)*
Requirements Met – See drawings

Remoteness of Exits:

*(1014.2.1) Where two exits are required, their exit access
doorways shall be located a minimum distance apart equal to 50%
of the maximum diagonal length of the building. A reduction to
1/3 the diagonal distance is allowed if the building is sprinklered.*

**Requirement Met – Max. diagonal distance = 365' /3= 122'.
Exit access doors are 175' apart. See drawings**

Required Fire Resistance Ratings:

*(707.4) 2 hour rating required for floor openings connecting more
than 4 stories when enclosure is new construction. **All enclosed
stairs, elevator shafts and mechanical shafts are 2 hour rated.***

*(707.14.1) Elevator Lobby, Exceptions: In office buildings,
separations are not required from a street floor elevator lobby
provided the entire street floor is equipped with an automatic
sprinkler system. **Requirement Met.***

*(708.1.3) Walls separating tenant spaces have no rating
requirement.*

*(1016.1)- Table 1016.1 Corridors: No rating required for
corridors in Use Group B when building is sprinklered.
Requirement Met.*

Occupancy Separation:

*Floors 2-4 of the building will be occupied by Business Use
tenants (Office). The first floor has not been leased yet and tenants
are not known at this time. If tenants fall under a different use
group than Business, occupancy separations will be required.
Possible Use Groups that may be accommodated include:*

S2- Storage: 2 hr. separation required reduced to 1 hr. if bldg. is sprinklered. If the Storage Use Occupies less than 10% of the total area of the floor it resides on, no separation required.

R2-Residential: 2 hr. separation required reduced to 1 hr. if bldg. is sprinklered.

M-Mercantile: 2 hr. separation required reduced to 1 hr. if bldg. is sprinklered.

Accessory Assembly Uses:

(302.2.10) - Assembly Uses: Accessory assembly areas are not considered separate occupancies if the floor area is equal to or less than 750 S.F.

On floor 5 there are several conference rooms and an employee lunch room and adjacent roof deck. Each of these assembly areas are less than 750 sq. ft. in size and therefore, they meet the Accessory Assembly Area definition and do not require a Use Group separation. **Requirement Met.**

Exit Access Doorways:

(10.14.1 - Table 1014.1) If a space exceeds the maximum Occupant Loads listed in the Table, two exit access doors are required and they must be separated from each other by a distance of 1/3 the max. diagonal of the area served (if bldg. is sprinklered).

While the conference rooms and lunch room spaces are considered accessory, they are still treated as Assembly Use spaces for the purpose of calculating occupant load. Using 15 s.f. per person (loose table and chair arrangement) any Accessory Assembly Use space exceeding 750 S.F. in size (resulting in an occupant load of 50) requires 2 exit access doors located as described above. The 5th floor lounge requires two exit access doors.

Requirement Met.

Unique conditions:

At Fire Exit Stair #2, it is proposed to have the bottom flight of stairs to be open to the main lobby at ground level. Starting at the first intermediate landing at the top of the open stair run, the stair is enclosed with 2 hour rated partitions and rated doors for all of the upper levels served.

(1023.1-Exit Discharge) Exits shall discharge directly to the exterior of the building. The exit discharge shall be at grade or

or shall provide direct access to grade. The exit discharge shall not re-enter the building. Exception: A maximum of 50% of the number and capacity of the exit enclosures is permitted to egress through areas on the level of discharge provided all of the following criteria are met:

- 1.1 Such exit enclosures egress to a free and unobstructed way to the exterior of the building which is readily visible and identifiable from the point of termination of the exit enclosure.*
- 1.2 The entire area of the level of exit discharge is separated from areas below by construction conforming to the fire-resistance rating for the exit enclosure.*
- 1.3 The egress path from the exit enclosure on the level of exit discharge is protected throughout by an automatic sprinkler system. All portions of the level of discharge with access to the egress path shall either be protected throughout with an automatic sprinkler system Or separated from the egress path in accordance with the requirements for the enclosure of exits.*

This condition requires review by the authorities having jurisdiction to determine if the proposed design meets this requirement.