

# Winton Scott Architects, PA

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## Cumberland Cold Storage Building Renovations

### Conversion from Storage Use to Business Use

Merrill's Wharf, Portland

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## 2006 NFPA 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 Use (B) Offices

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 (200)– 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.

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 7.3.3.1) Minimum clear width of new stairs is 44" for occupant load <2,000 (Table 7.2.2.2.1.2(B)).*

**Both Stairwells have 48" clear width.**

**Typical occupancy load per floor = 19,025 /100 =191 people.**

**Each stair has an egress width capacity = 48"/.3" = 160 people**

**Total capacity of 2 stairs = 160x2 = 320.**

**All doors are 36" width yielding a 34" clear opening.**

**34"/.2" = 170 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"/.2" = 170 people x 3 = 510 people.**

Travel Distance Limits:

*Common Path Limit: 100' (sprinklered-Table A.7.6)*

*Dead-end Corridor: 50' (sprinklered--Table A.7.6))*

*Travel Distance: 300' (sprinklered--Table A.7.6))*

**Requirements Met – See drawings**

Remoteness of Exits:

*(7.5.1.3.2) Where two exits or exit access doors are required, they shall be located at a distance from one another not less than one half the length of the maximum overall diagonal dimension of the building or area served, measured in a straight line between the nearest edge of the exit doors or exit access doors.....*

*(7.5.1.3.3) In buildings protected throughout by an approved supervised sprinkler system... the minimum distance is reduced to 1/3 the maximum overall diagonal dimension.*

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

Required Fire Resistance Rating:

*(8.6.5) Enclosures for floor openings connecting four stories or more in new construction require a 2 hour rating . **All enclosed stairs, elevator shafts and mechanical shafts are 2 hour rated.***

*(38.3.6.1) Exit access corridors require a fire resistance rating of 1 hour. Exception: (A.38.3.6.1(3)) No rating is required in buildings protected throughout by an approved supervised automatic sprinkler system. **Requirement Met.***

*Walls separating tenant spaces: **No Requirements***

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:*

**Storage (low to ordinary hazard):** 2 hr. separation required reduced to 1 hr. if bldg. is sprinklered.

**Dormitory:** 2 hr. separation required reduced to 1 hr. if bldg. is sprinklered.

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

Accessory Assembly Uses:

*(A6.1.14.1.3)- Where incidental to another occupancy, areas used as follows shall be permitted to be considered part of the predominant occupancy and shall be subject to the provisions of the code that apply to the predominant occupancy. (A.6.1.14.1.3(2) Assembly use with fewer than 50 persons within a business occupancy.*

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 generating an occupant load (using Assembly Use –Loose Tables & Chairs -15 s.f. per person) of less than 50 people therefore they meet the Accessory Assembly Area definition and do not require a Use Group separation.

**Requirement Met.**

Exit Access Doorways:

*(38.2.4.2) A single exit shall be permitted for a room or area with a total occupant load of fewer than 100 persons.*

**Requirement Met.**

*(7.5.1.3.3) In buildings protected throughout by an approved supervised automatic sprinkler system, the minimum separation distance between two exits or exit access doors shall be not less than one-third the length of the maximum overall diagonal dimension of the building area to be served.*

**Requirement Met.**

*(7.2.1.4.2) Doors required to be of the side hinged or pivoted swing type shall swing in the direction of egress travel where serving a room or area with an occupant load of 50 or more...*

**Requirement Met.**

Exit Doorways:

*(7.2.1.5.7) Every door in a stair enclosure serving more than four stories, unless permitted by 7.2.1.5.7.2 shall meet one of the following: (2) An automatic release that is actuated with the initiation of the building fire alarm system shall be provided to unlock all stair enclosure doors to allow re-entry.*

**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.

*(7.7.2) Discharge through Areas on Level of Exit Discharge: Not more than 50% of the required number of exits, and not more than 50% of the required egress capacity are permitted to discharge through areas on the Level of Exit Discharge, unless otherwise permitted in 7.7.2.1 and 7.7.2.2 and provided that the criteria of 7.7.2.3 through 7.7.2.7 also are met.*

**7.7.2.1 – Not applicable.**

7.7.2.2 – **Not applicable.**

7.7.2.3 *The discharge specified in 7.7.2 shall lead to a free and unobstructed way to the exterior of the building and such way shall be readily visible and identifiable from the point of discharge from the exit.* **Requirement Met.**

7.7.2.4 *The level of discharge shall be protected throughout by an approved supervised automatic sprinkler system ....*

**Requirement Met.**

7.7.2.5 - **Not applicable.**

7.7.2.6 *The entire area on the level of exit discharge shall be separated from areas below by construction having a fire resistance rating not less than than that required for the exit enclosure unless otherwise provided in 7.7.2.7*

7.7.2.7-*Not applicable.*