

EVALUATION OF A CHANGE IN OCCUPANCY FROM F-1 to R-2
2005 CONNECTICUT STATE BUILDING CODE

PART C - CT Building Code Chapter 34 (Section 3410)

Prepared for

SPRING 2010 Career Development
Office of Education and Data Management

Prepared by

Bruce J. Spiewak, AIA
Consulting Architect, LLC

375 Morgan Lane #405
West Haven, CT 06516
(203) 931-9945

May, 2010

**CONNECTICUT BUILDING CODE 2005
CHAPTER 34 EVALUATION - BUILDING PARAMETERS**

Existing Use Group: <u>F-1</u>	Proposed Use Group: <u>R-2</u>
Year Building was Constructed: <u>1813</u>	No. of Stories: <u>4</u> Ht. in Ft.: <u>64</u>
Type of Construction: <u>Originally IV Heavy Timber (Make it IIIB)</u>	Area per Floor: <u>20,000 s.f. (100' x 200')</u>
Percentage of Open Perimeter: <u>50%</u>	[Percentage of Height Reduction:]
Completely suppressed: yes <input checked="" type="checkbox"/> NFPA 13 no <input type="checkbox"/>	Corridor wall rating: <u>1/2</u>
Compartmentation: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>	Required Door Closers: yes <input checked="" type="checkbox"/> no <input type="checkbox"/>
Fireresistance Rating of Vertical Opening Enclosures: <u>2 hours</u>	
Type of HVAC System: <u>Individual d.u. systems with ducts. Corridor fresh air and exhaust - central.</u>	Serving Number of Floors: <u>Corridor system - 4 floors</u>
Automatic Fire Detection yes <input checked="" type="checkbox"/> no <input type="checkbox"/>	Type and Location: <u>S.D. throughout common areas, and in d.u.</u>
Fire Alarm System: yes <input checked="" type="checkbox"/> no <input type="checkbox"/>	Type: <u>Per Section 907</u>
Smoke Control: yes <input checked="" type="checkbox"/> no <input type="checkbox"/>	Type: <u>windows in stairs</u>
Adequate Exit Routes: yes <input checked="" type="checkbox"/> no <input type="checkbox"/>	Dead Ends: yes <input checked="" type="checkbox"/> no <input type="checkbox"/>
Max. Exit Access Travel Dist.: <u>225 ft.</u>	Elevator Controls: yes <input checked="" type="checkbox"/> no <input type="checkbox"/>
Means of Egress Emergency Lighting: yes <input checked="" type="checkbox"/> no <input type="checkbox"/>	Mixed Occupancies: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>

CONNECTICUT BUILDING CODE 2005
CHAPTER 34 EVALUATION - SUMMARY SHEET - BUILDING SCORE

SAFETY PARAMETERS	FIRE SAFETY	MEANS OF EGRESS	GENERAL SAFETY
	(FS)	(ME)	(GS)
3410.6.1 Building Height	.88	.88	.88
3410.6.2 Building Area	12	17	17
3410.6.3 Compartmentation	0	0	0
3410.6.4 Tenant and dwelling unit separations	-2	-2	-2
3410.6.5 Corridor Walls	-3	-3	-3
3410.6.6 Vertical Openings	7	7	7
3410.6.7 HVAC Systems	0	0	0
3410.6.8 Automatic Fire Detection	6	6	6
3410.6.9 Fire Alarm System	0	0	0
3410.6.10 Smoke Control	*****	4	4
3410.6.11 Means of egress	*****	0	0
3410.6.12 Dead Ends	*****	0	0
3410.6.13 Max. Exit Access Travel Distance	*****	2.0	2.0
3410.6.14 Elevator Control	4	4	4
3410.6.15 Means of Egress Emergency Lighting	*****	0	0
3410.6.16 Mixed Occupancies	0	*****	0
3410.6.17 Automatic Sprinklers	4	2	4
3410.6.18 Incidental Use	0	0	0
BUILDING SCORE - TOTAL VALUE	28.88	37.88	39.88
(MANDATORY SCORE)	24	34	34
ALL > 0 REQUIRED	4.88	3.88	5.88

PASSED !!!

3410.6.1 Building Height (R-2, IIIB) Allowed 5 st, 75 ft. T 501 w/ NFPA 13 sprinkler increases

$$\begin{aligned} \text{Height Value, Feet:} &= (\text{AH}) - (\text{EBH}) / 12.5 \quad \times \text{CF} \\ &= (75 - 64) / 12.5 \quad \times 1 = .88 \end{aligned}$$

$$\begin{aligned} \text{Height Value, Stories:} &= (\text{AS} - \text{EBS}) \quad \times \text{CF} \\ &= (5-4) \times 1 = 1 \end{aligned}$$

Use .88

3410.6.2 Building Area (R-2, IIIB) Allowable area = 16,000 x 3.25 = 52,000

$$\begin{aligned} 52,000 / 1,200 \times [1 - (20,000/52,000)] &= \\ 43.333 \times [1 - .385] &= \\ 43.333 \times .615 &= 26.65 \end{aligned}$$

Maximum limited to 50% of the mandatory safety scores. 24, 34, 34 therefore limited to 12, 17, 17.

3410.6.3 Compartmentation Assume category a (Compartment size \geq 15,000 s.f.) **Use 0**

3410.6.4 Tenant and Dwelling Unit Separations Assume category b (1/2 hour - less than 1 hour) **Use -2**

3410.6.5 Corridor Walls Assume category b (1/2 hour - less than 1 hour) **Use -3**

3410.6.6 Vertical Openings VO = PV x CF
Use 2 hour enclosures **2 x 3.5 = 7**

3410.6.7 HVAC Systems Assume Category d (compliance with code) = **0**

3410.6.8 Automatic Fire Detection Assume Category e (Smoke detection throughout the fire area) = **6**

3410.6.9 Fire Alarm System Assume Category c (Fire alarm system in accordance with Section 907) = **0**

3410.6.10 Smoke Control Assume Category f (Each stairway with operable windows) = 4

3410.6.11 Means of Egress Assume Category b (number and capacity of means of egress is in compliance) = 0

3410.6.12 Dead Ends Assume Category b (dead end of 20 ft or less) = 0

3410.6.13 Max. Exit Access Travel Distance

Points = 20 x $\frac{\text{Maximum allowable} - \text{Maximum actual}}{\text{Maximum allowable}}$

Points = 20 x $\frac{250 - 225}{250}$ = 20 x 25/250 = 2.0

3410.6.14 Elevator Control Assume Category d (new elevator with Phase I and II recall and meets code for new elevator) = 4

3410.6.15 Means of Egress Emergency Lighting Assume Category b (emergency power as required for new) = 0

3410.6.16 Mixed Occupancies For buildings without mixed occupancies the value = 0

3410.6.17 Automatic Sprinklers

Assume category e (sprinklers required and provided) = 4

3410.6.18 Incidental Use Assume protection provided as required Table 302.1.1 = 0