Addendum to "Application for Variance or Appeal," based on 2002 Building Code of NYS assembly exit requirements affecting crit room size (Exhibit 1) and mezzanine definition (Exhibit 4).

Jonathan Ochshorn
May 31, 2013

Section 1008 (Assembly) of the 2002 New York State Building Code contains requirements specific to NYS that differ from the model IBC code. These NYS requirements have major impacts on the crit room space below the dome in Milstein Hall as well as on the possibility of defining the ground-level lobby as a mezzanine.

Changes to Exhibit 1. The 2002 Building Code of NYS has the following, more stringent, exit requirements for assembly spaces [Section 1008.2]:

For up to 349 occupants, two exits are required.
For 350 to 700 occupants, three exits are required.
For more than 700 occupants, at least four exits are required.

Maximum allowable floor area is determined by number of exits, type of occupancy, and function of the space. The 2002 Building Code of NYS does not permit rooms or spaces to be larger than the floor area corresponding to the maximum occupancy of that space.

The crit room, under the dome in Milstein Hall, is a multi-use space that must satisfy requirements for A-3 occupancy. Its function and corresponding floor area (per occupant) fall under "Assembly without fixed seats" (2002 Building Code of NYS, Table 1003.2.2.2). Within that category, the only viable choices are: 7 square feet per occupant, corresponding to "Concentrated (chairs only – not fixed)," and 5 square feet per occupant, corresponding to "Standing space." Since the crit room is often used for functions corresponding to "Standing space" (see Figure 1 in Exhibit 1), an area of 5 square feet per occupant governs the design of that room.

Therefore, the maximum floor area of the crit room—dependent upon the number of exits provided—is as follows (see right column in Table 1):

Table 1. Maximum crit room area

Number of exits provided	Maximum number of occupants	Max. crit room area, "concentrated" @ 7 sq.ft. per occupant (square feet)	Max. crit room area, "standing space" @ 5 sq.ft. per occupant (square feet)
2	349	2443	**1745**
3	700	4900	**3500**

Currently, there is only one compliant exit from the crit room space, as documented in Exhibit 1. If an additional exit is provided (for a total of two exits), the crit room

space *must be reduced in size* from 4978 square feet to 1745 square feet so that its floor area does not exceed the maximum area corresponding to its occupancy and function.

Even with three exits—and note that all three exits must be "arranged a reasonable distance apart" per Section 1004.2.2.2 of the Code, so that the existing stair from the crit room to the bridge would not count as an additional exit—the maximum area of the crit room would be 3500 square feet, still far smaller than the 4978 square foot area tabulated for the crit room in the Milstein Hall working drawings.

Changes to Exhibit 4. Milstein Hall's three levels of interconnected spaces are predicated on the assumption that there are only two interconnected *stories*, with the third—middle—level being defined as a mezzanine space. According to the Milstein Hall Dec. 5, 2008 "Issued for Construction" working drawings, the total area of this middle level, consisting of a lobby (545 sq.ft.), bridge (513 sq.ft.) and entry vestibule (187 sq.ft.) is 1245 square feet. As shown in Table 2 (right column), this is greater than the maximum allowable area for a mezzanine—computed as one third the area of the crit room—that is designed to be "within" the crit room space. Even with three exits in the crit room, and a maximum crit room area of 3500 square feet, the mezzanine exceeds the allowable area limit of 1167 square feet.

If the entry vestibule is excluded from the area calculations for the mezzanine, then the mezzanine would have a total area of 1058 square feet. In this case, the mezzanine, as built, would be compliant *only if the crit room space were reconfigured with three exits and a maximum area of 3500 square feet*.

Table 2. Maximum mezzanine area

Number of exits provided	Maximum number of occupants	Concentrated @ 7 sq.ft. per occupant		Standing space @ 5 sq.ft. per occupant	
		Max. crit room area (square feet)	Max. mezz. area (square feet)	Max. crit room area (square feet)	Max. mezz. area (square feet)
2	349	2443	814	1745	**582**
3	700	4900	1633	3500	**1167**

Remedies. Because the crit room egress issue is connected to the mezzanine issue, any remedy must resolve both problems. At least two solutions are possible:

The crit room could be reconfigured so that its floor area is reduced to 3500 sq. ft. Two additional (new) exits would need to be built, "arranged a reasonable distance apart," and presumably including stairs up to the glazed opening fronting on University Avenue. Such a remedy still relies on the determination that the mezzanine is "in" the crit room space (as discussed in Exhibit 4), and the entry vestibule would need to be excluded from the calculation of mezzanine area.

Alternatively, the crit room could be reconfigured so that its floor area is reduced to 1745 square feet. In that case, only one new exit would be required from the crit room. However, the existing lobby and bridge would not qualify as a mezzanine.

Therefore, the building would count as a 3-story structure and the crit room space under the dome would need to be separated from the lobby by a smoke barrier. Access to toilet rooms from the upper level of Milstein Hall is apparently already based on Rand Hall access, so no additional toilet facilities would be needed if the Rand Hall facilities are deemed adequate.

Disclaimers:

1. In reducing the size of the crit room so that its floor area corresponds to its occupancy, exits, and function, it is important to note that any residual space thereby created cannot be occupied in such a way that the occupants must egress through the newly-configured crit room. Instead, such space would need to be used for storage, or possibly for new exit stairs.

2. These remedies only address problems considered in Exhibits 1 and 4. None of the code problems documented in Exhibits 2,3, 5, 6, 7, and 8 are considered, or resolved, by this addendum.

Addendum 2 to "Application for Variance or Appeal," pertaining to Exhibit 1 and Exhibit 4 (Rev.1)

Jonathan Ochshorn
June 11, 2013

Questions per June 9, 2013 email from Charles Bliss:

"On figure 2, you show dimensions D and d. I don't see where these dimensions are defined in your exhibits. For areas like this, you should submit scalable drawings with dimensions so that the Board can easily look at the numbers or provide enough number so that the board can understand the problems. I am assuming that E1 and E2 are exits. Where do these exits go?

"For the mezzanine issue, please provide sq. ft. numbers so the allowable area of the mezzanine can be calculated."

Response:

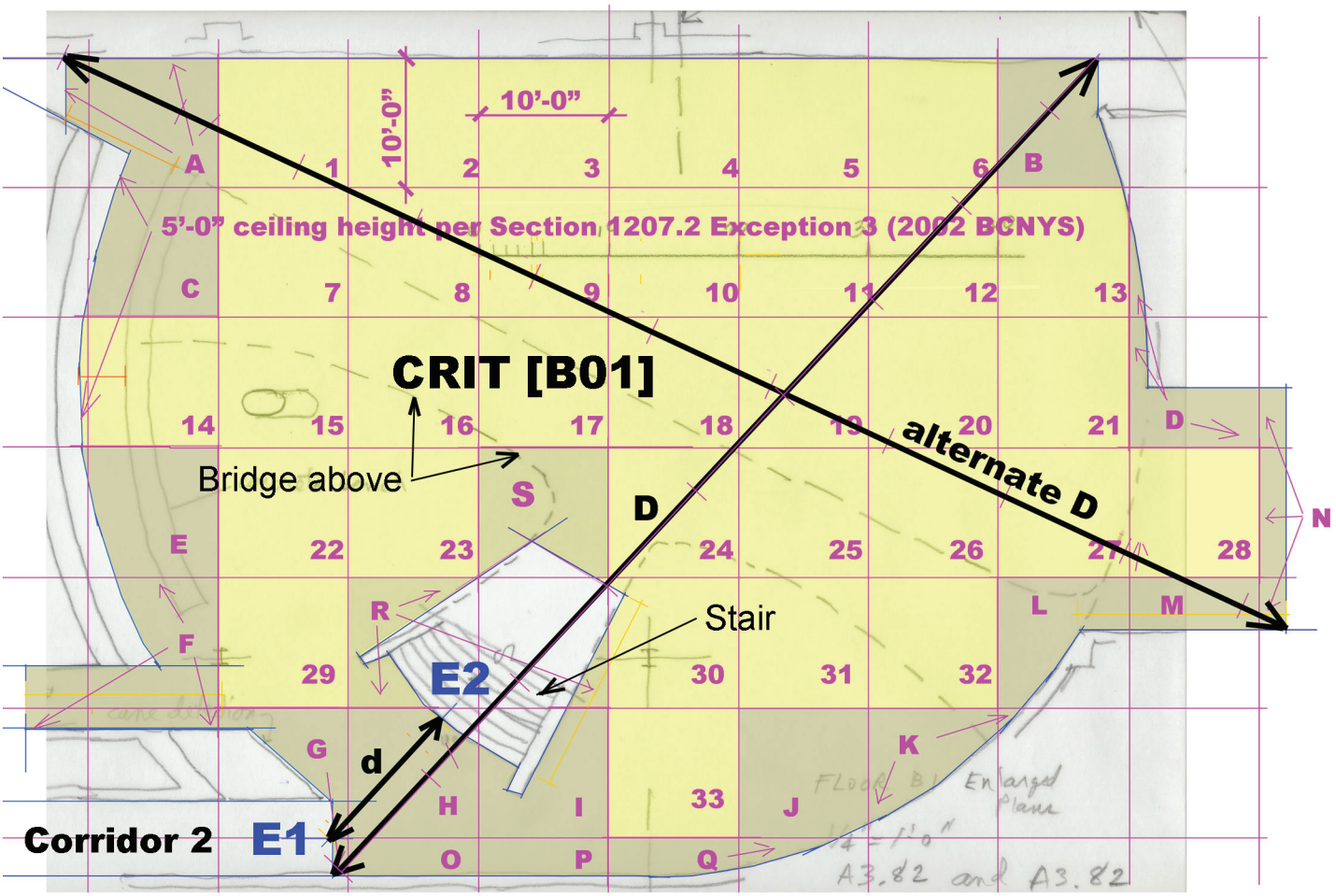
I do not have scalable drawings, as they are the property of Cornell University and have not been made available to me, except for a half-size "Construction" set, dated Dec. 5, 2008, in the Fine Arts Library that I can examine but not photocopy. However, I have provided a carefully traced plan of the Crit room on page 2 of this addendum on which I have drawn a scaled 10-foot grid. These drawings show that the distance, *d*, between exits E1 and E2 (shown in Figure 2 of Exhibit 1) is **12'-0"** and that the "diagonal" distance, *D*, shown in the same figure, is **85'-0"**. I have confirmed the 12'-0" exit separation distance with a tape measure in the actual space.

The exit paths are shown superimposed on plans available on Cornell's Milstein Hall website, reproduced on page 3 of this addendum. Exit E1 goes down a corridor labeled "Corridor 2" on the working drawings and exits through a door to a below-grade exterior passageway leading to a parking lot. Exit E2 goes up a stair within the Crit room to a "bridge" that leads to the ground level lobby and entry vestibule. These are the only exits from the Crit room space.

Mezzanine floor areas were provided in the first Addendum, based on the "Code and Life Safety Analysis" in the Dec. 5, 2008 "Construction" set for Milstein Hall: the total area of the mezzanine level, consisting of a lobby (545 sq.ft.), bridge (513 sq.ft.) and entry vestibule (187 sq.ft.) is 1245 square feet. If we omit the entry vestibule, then the **total mezzanine area = 545 + 513 = 1058 square feet**.

From the carefully scaled Crit room plan shown on page 2 of this addendum, the **Crit room floor area is 4580 square feet**. This is based on the total area, excluding the stair, up to a point where the domed ceiling height is 5 feet above the finish floor, per Section 1207.2 of the 2002 Building Code of NYS, Exception 3. This differs from the 4978 square foot figure provided by the Architects, but does not change any of the conclusions about the allowable Crit room size based on the number of exits (see the first Addendum).

As I demonstrated in the first Addendum, the maximum Crit room area is determined by its occupancy and by the number of exits provided. Currently, there is only one compliant exit. If two exits are provided, the maximum allowable Crit room area (assuming 5 square feet per occupant, standing space) is 1745 square feet and the maximum allowable mezzanine area is 1745 / 3 = 582 square feet, much less than the actual mezzanine area of 1058 square feet. If three exits are provided, the maximum Crit room area is 3500 square feet, and the maximum mezzanine area is 3500 / 3 = 1167 square feet. This all presumes that the mezzanine is, in fact, "within" the Crit room space, and that the Crit room space remains undivided, neither of which is necessarily true.



Crit room area:

Numbered squares

33 @ 100 s.f. = 3300 s.f.

0 10 20 30 40 ft

Scale

Lettered squares (approximate)

A = 100	H = 95	O = 30
B = 80	I = 80	P = 30
C = 90	J = 95	Q = 40
D = 50	K = 50	R = 70
E = 90	L = 60	S = 80
F = 120	M = 40	
G = 40	N = 40	

A - S = 1280 s.f.

Exit distances

d = 12'-0"

D = 85'-0"

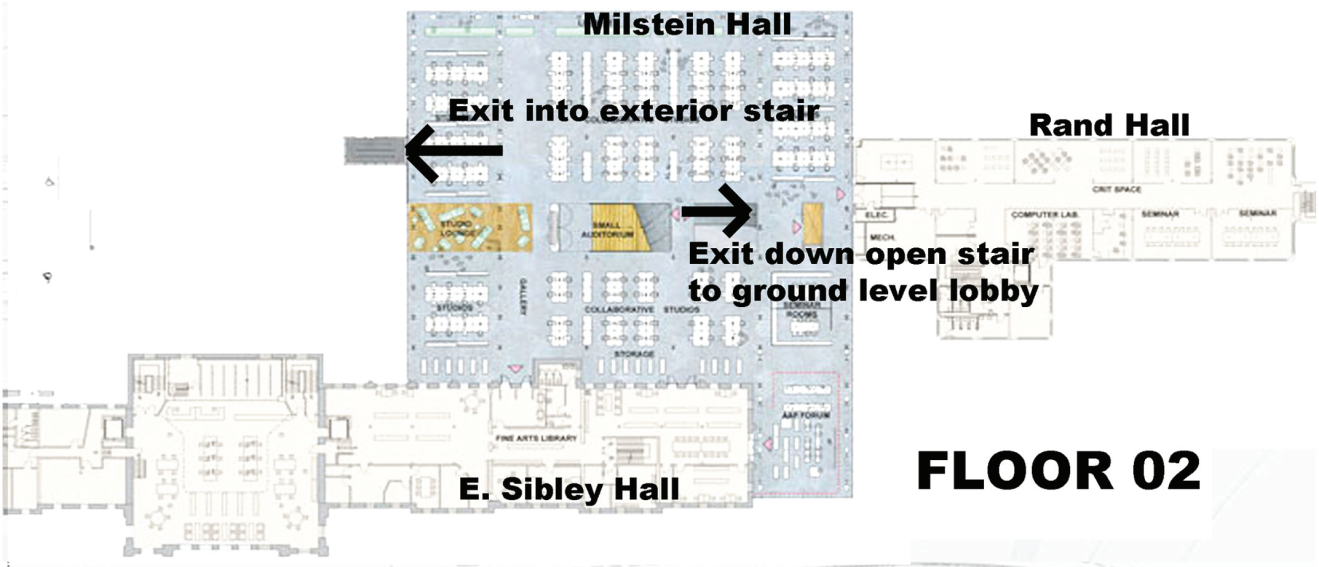
alt. D = 105'-0"

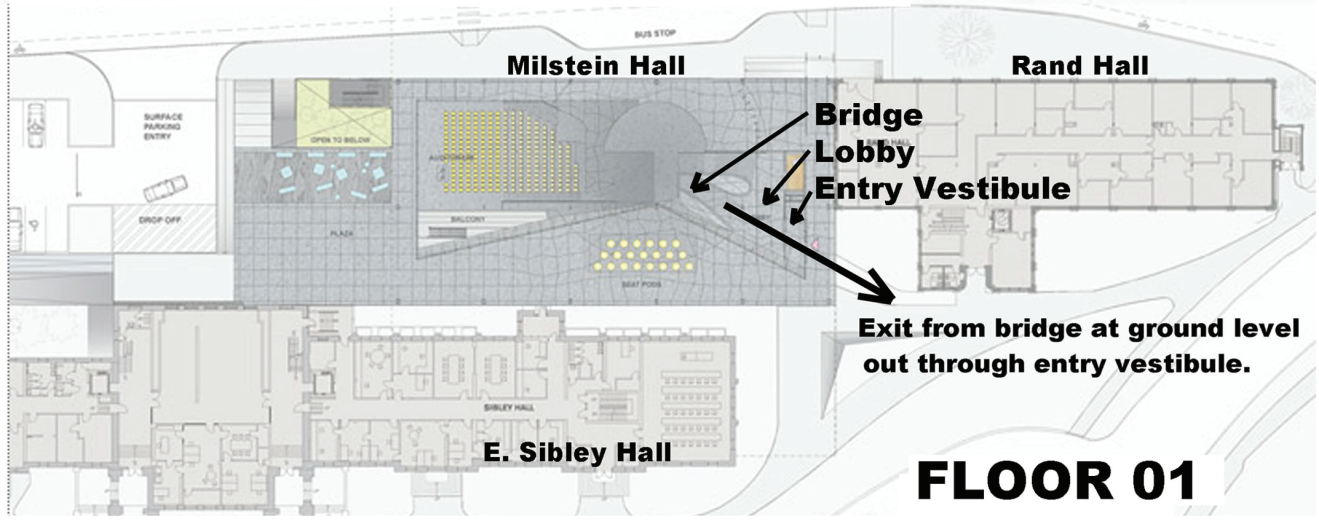
TOTAL AREA = 3300 + 1280 = 4580 s.f.

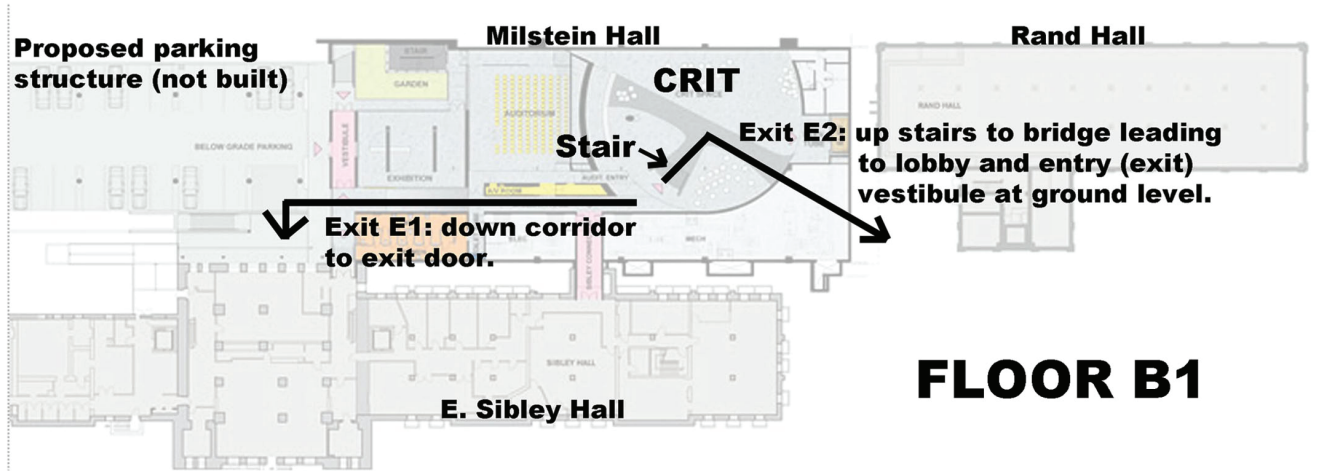
FLOOR B1 ENLARGED PLANS

Dwg. Nos. A3.82 and A3.83, traced and annotated by J. Ochshorn 6/10/13 - 6/11/13 from Dec. 5, 2008 "Construction" drawings of Milstein Hall.

5'-0" ceiling height and distance "d" measured. Scale as shown.







MILSTEIN HALL FLOOR PLANS

Based on floor plans available on Cornell's Milstein Hall web site at:
http://aap.cornell.edu/milstein/news/gallery-plans.cfm
Annotated by J. Ochshorn 6/10/13 - 6/11/13

Addendum 3 to "Application for Variance or Appeal": Review of documents in the City of Ithaca Building Department files

Jonathan Ochshorn
June 25, 2013

On June 20, 2013, June 21, 2013, and June 24, 2013, I reviewed documents and drawings relating to the construction of Milstein Hall at the City of Ithaca Building Department, pursuant to a request under the Freedom of Information Act. The following excerpts and comments, based on these drawings and documents, are relevant to various exhibits in my Code Appeal. In general, they provide some evidence as to the thinking underlying Code interpretations for Milstein Hall made by both the architects of Milstein Hall and by the City of Ithaca Building Department. Nothing herein changes any of the conclusions presented in my original appeal.

Documents pertaining to Exhibit 1: Inadequate exits from Milstein Hall "crit room" assembly space

A plan of the crit room, found in the Building Department files for Milstein Hall, shows a 71-foot "Common Path" drawn as a straight line from the northeast "corner" of the room to the edge of the stair. As described in Exhibit 1, the common path of egress travel should be "assumed to be the natural path of travel without obstruction," and not an abstract "as-the-crow-flies" straight line. This is especially true now that permanent partitions have been installed in the room; such partitions can be configured so that the common path of egress travel cannot possibly be within the 75-foot limit (see Figure 1 based on "Moveable Wall Plans" prepared by OMA Architects).

But even without those partitions, the common path of egress travel requirement is not met in the crit room space, except by abstracting from all consideration of chairs, tables, or other impediments.

As explained in my first Addendum, the occupancy of the crit room is determined by its area and by its use. As an assembly space with 4580 square feet (see my Addendum 2), the number of occupants would be 916 people (assuming 5 square feet per occupant) or 654 people (assuming 7 square feet per occupant). No other assumption can be justified based upon the actual use of the space, as shown in Figure 1 of Exhibit 1. However, crit room data available in the building department file shows the following:

	Sq. ft.	Factor	Occupants
Crit Assembly	--	actual*	300.00

*per code, the actual number of occupants is used because it is greater than the code required.

The claim that "the actual number of occupants is used because it is greater than the code required" is puzzling on two counts. First, this so-called "actual number of occupants" is far *less* than the Code-computed occupancy, as can be seen simply by dividing the floor area by the square feet assigned to each occupant, as I have done. Second, there is no basis for the claim that the "actual number of occupants" is 300. In fact, the various uses

of the space – for exhibition, performance, receptions, and critiques – have no inherent limits that could, in and of themselves, be used to determine an "actual number of occupants." For this reason alone, Code-based occupancy numbers must be used.

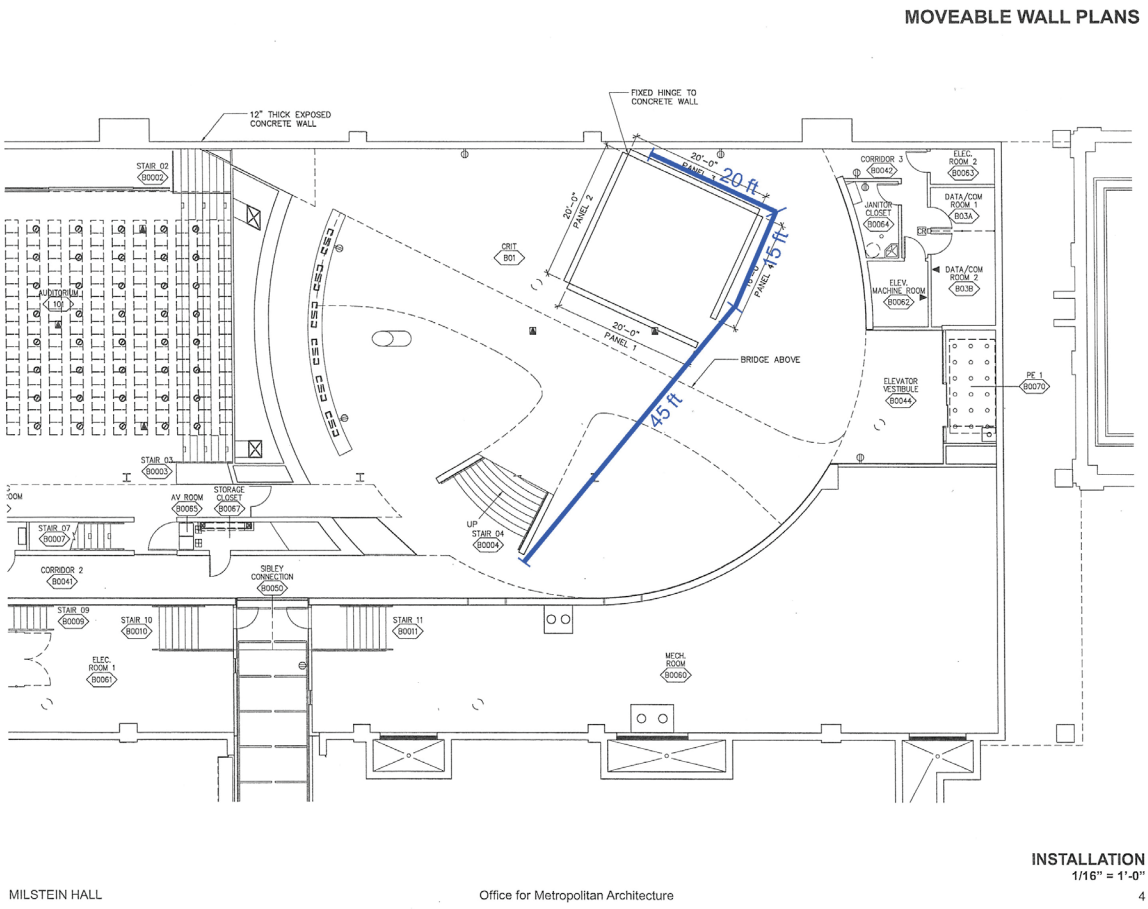


Figure 1. Common path of egress travel shown superimposed over "moveable wall plans" provided by the building architects on Dec. 10, 2010 exceeds 75 feet (email from Kim Cleveland of Accufab to Ziad Shehab of OMA Architects; blue lines and dimensions added by J. Ochshorn)

Yet, even if the room were to be designed for only 300 occupants, there would still need to be two remote exits, rather than the single compliant exit that was provided.

Milstein Hall, however, was initially designed and permitted as if the crit room only had 49 occupants. This calculation appears on the "Issued for Construction" drawings, and again on an "Occupant Load" table prepared by KHA Architects and included with plans showing fire separation dated May 5, 2009 (see Figure 2).

Room (Classification)		Sq. Ft.	Factor	Occupants	Stair Width	Door Width
Floor B1	(Group A/B Occupancy)					
Auditorium	Assembly					
Fixed chairs			actual*	138.00	2.30	1.73
Chairs only - not fixed			actual*	136.00	2.27	1.70
Standing only		125	5	25.00	0.42	0.31
Balcony (from Floor 1)	Assembly		actual*	50.00	0.83	0.63
Exhibition	Assembly	970	5	194.00	3.23	2.43
Crit	Business	4935	100	49.35	0.82	0.62
Toilet Room	Business	841	100	8.41	0.14	0.11

Figure 2. Crit room occupancy incorrectly calculated as 49 occupants on this document dated 5/5/09 prepared by KHA Architects.

Documents pertaining to Exhibit 2: Noncompliant protruding objects in egress path.

The upper level floor plan in the "Issued for Construction" drawings for Milstein Hall dated Dec 5, 2008 shows "cane detection" barriers around *all* sloping structural elements on the upper level of Milstein Hall, and refers to detail drawings on sheet A9.41 which, in turn, show each of the barrier types and dimensions. It is unclear to me why they were not actually constructed at all sloping elements.

On the other hand, *no such barriers are shown*, or provided, at the bottom of the protruding guards for the sloped seating area.

Documents pertaining to Exhibit 3: Inadequate fire barrier between Milstein and E. Sibley Hall

Fire barriers between Milstein Hall and the existing buildings (Sibley and Rand Halls) do not appear to be shown at all in the "Issued for Construction" Dec. 5, 2008 drawings. However, they *are* shown in a series of plans dated May 5, 2009, prepared by KHA Architects.

In these May 5, 2009 plans, one-hour fire separation is shown between the basement of Sibley and Milstein Halls (Figure 3), but only at the points of connection, and not for the windows in the basement of Sibley (although fire protection at those windows appears to have been provided).

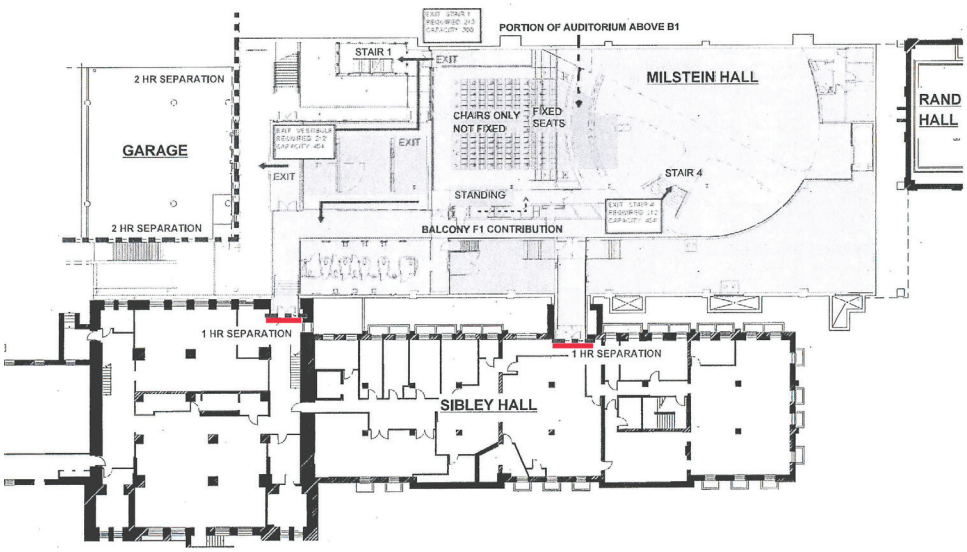


Figure 3. Fire separation shown separating the basement of Sibley from Milstein Hall (red lines have been added by J. Ochshorn to match what appeared in the original colored drawings, prepared by KHA Architects, dated 5/5/09).

One-hour fire separation is shown between the first floors of Sibley and Milstein Hall and between Rand Hall and Milstein Hall (Figure 4). Fire protection at Rand Hall does not appear to have been provided, as a window and exhaust duct remain in that wall without any fire-resistance rating.

One-hour fire separation is shown at the second floor of Sibley and Rand Halls (Figure 5). Exhibit 3 describes how these fire barriers, as designed and built, do not appear to satisfy Code requirements that limit the aggregate opening width.

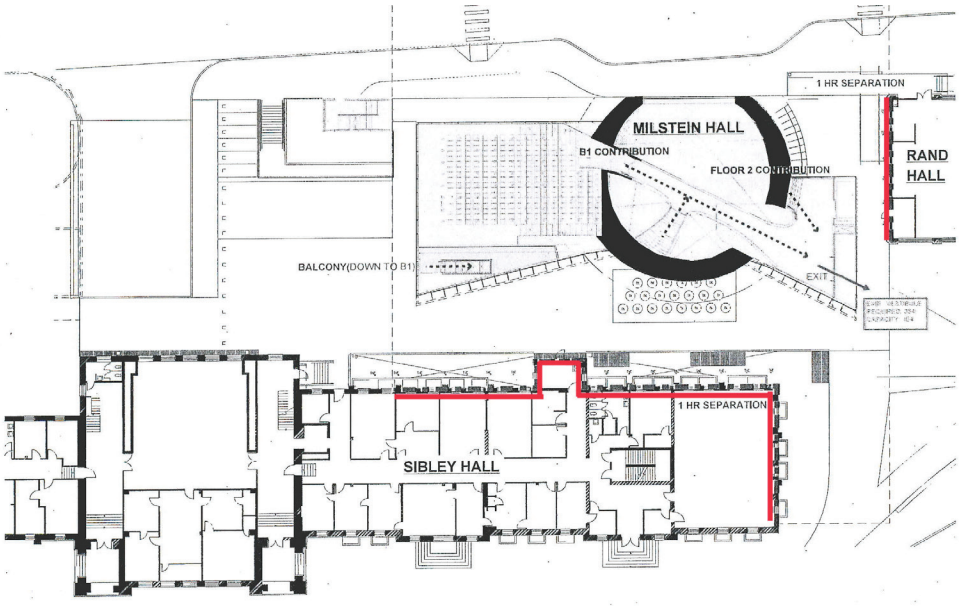


Figure 4. Fire separation at the ground level of Milstein Hall (red lines have been added by J. Ochshorn to match what appeared in the original colored drawings, prepared by KHA Architects, dated 5/5/09).

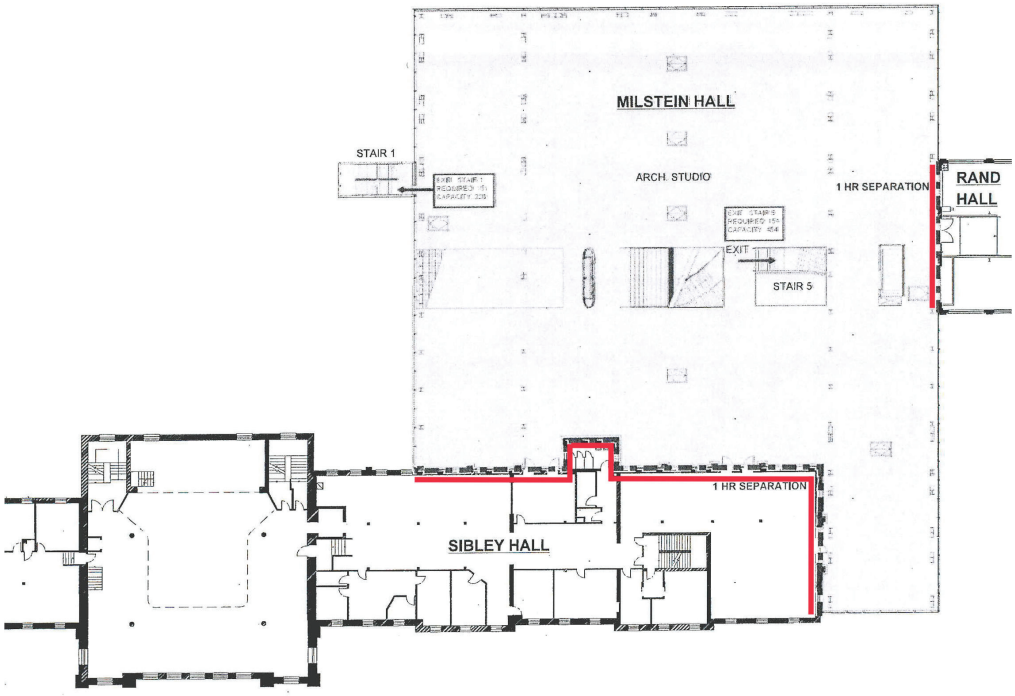


Figure 5. Fire separation shown at the upper level of Milstein Hall (red lines have been added by J. Ochshorn to match what appeared in the original colored drawings, prepared by KHA Architects, dated 5/5/09).

Documents pertaining to Exhibit 4: Improper mezzanine designation

An email conversation between Larry Burns (KHA Architects) and Ziad Shehab (OMA Architects) shows that preliminary assumptions governing the designation of the lobby and bridge in Milstein Hall as a mezzanine were flawed. In order to increase the area of the room in which the mezzanine was located, that "room" was defined as a combination of the crit room, the lower part of the auditorium, *and* the corridor that connects the two spaces (see Figure 6 below). The building plans were altered subsequent to this email, so it is difficult to know exactly what the current assumptions are. The email thread reads as follows:

DATE: April 14, 2007, 11:05 am
FROM: Larry Burns [KHA]
TO: Ziad Shehab [OMA]
SUBJECT: Spec Division 1

Ziad, do you have a total gross area calculated based on the current plans? I also need the Floor 1 area broken out to confirm it still complies with our definition of mezzanine for the B1 level..."

DATE: April 16, 2007, 4:17 pm
FROM: Ziad Shehab [OMA]
TO: Larry Burns [KHA]
SUBJECT: Spec Division 1

Larry,
Lower level 13,722
Mezzanine 5,642
Upper level 25,851
The total gross area calculation 45,215sq. ft.
Mezzanine above includes the auditorium. If we take just the bridge, lobby and vestibule there is only 1,330sq. ft on that level..."

DATE: April 18, 2007, 12:07 pm
FROM: Ziad Shehab [OMA]
TO: Larry Burns [KHA]
SUBJECT: Spec Division 1

"...If we calculate the auditorium as B1 space and therefore the lobby and bridge are the only areas of the mezzanine the area is 1,330sq. ft."

DATE: April 18, 2007, 12:47 pm
FROM: Larry Burns (KHA)
TO: Ziad Shehab (OMA)
SUBJECT: Spec Division 1

Ziad, we have a problem. **With the increased Mezzanine area we now exceed the definition of mezzanine below** and will be considered an atrium again..." (emphasis added).

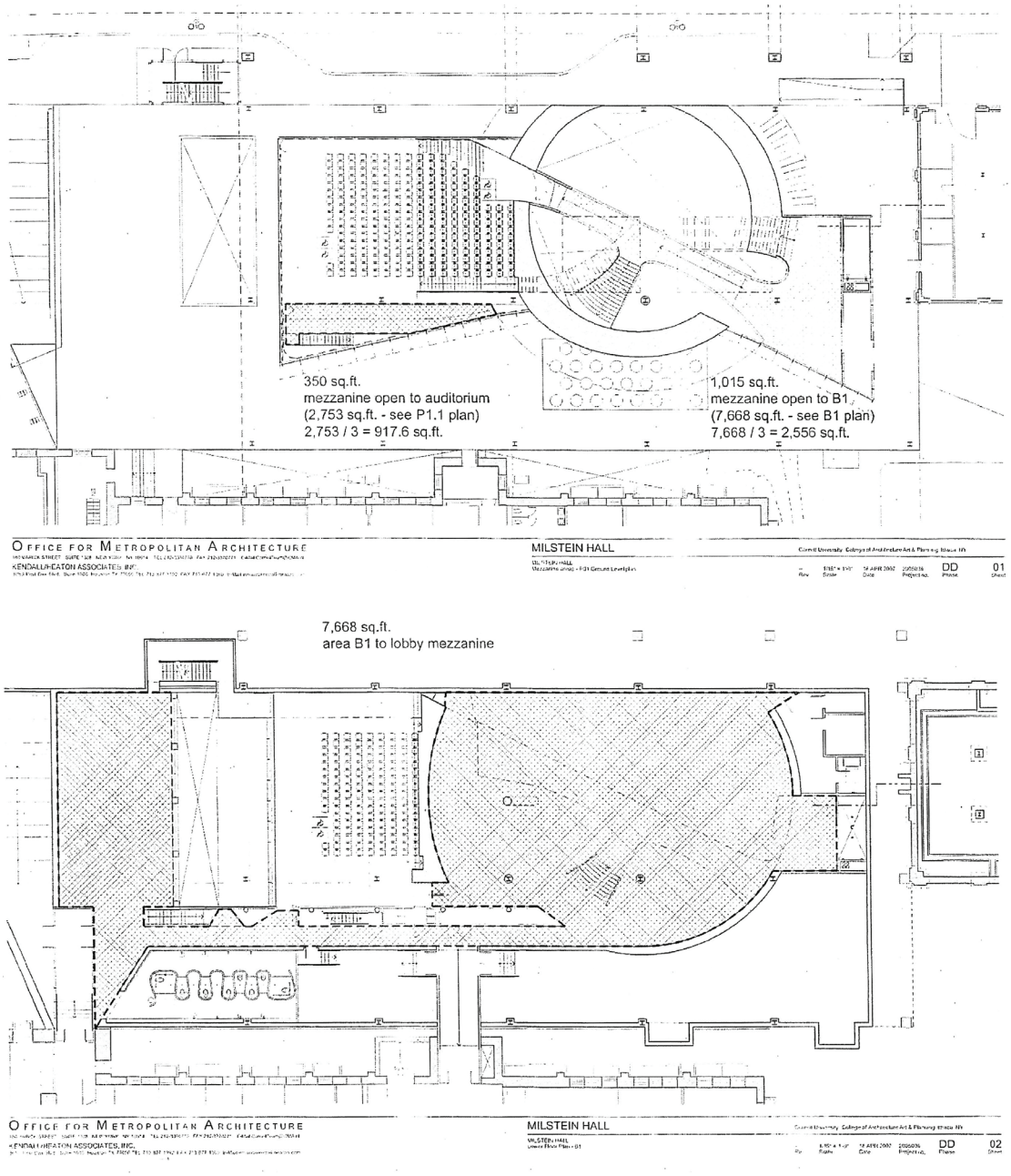


Figure 6 Plans show mezzanine as though it is within the combined crit room, auditorium, and the corridor connecting them.

Documents pertaining to Exhibit 5: Milstein-Sibley-Rand Halls exceed floor limits under Appendix K

It is not clear whether Milstein Hall is being considered as a separate building, or as an addition to an existing building. Documents in the Building Department files do not provide much clarity. This is of crucial importance since only if Milstein Hall is considered as a separate building, with its own construction type, can it satisfy floor area limitations in Table 503 of the Code. Here are some excerpts from the documents:

(1) "I do believe we can go with separate fire area, which would mean it is all one building... The separate building would require a fire wall **"** (City of Ithaca Deputy Building Commissioner Mike Niechwiadowicz, March 2005)

(2) "I do not see how an addition of the proposed size can be incorporated since Sibley currently exceeds the allowable area for Type 5 construction and the new construction to be inserted would increase the size." (KHA Architects, March 2006)

(3) "As Milstein is an addition to Sibley and Rand there shall be one fire control system for all three buildings." (Fire and Code Meeting Report sent by OMA Architects, Jan. 2007)

(4) "The existing code allows a fire barrier to provide separation between the existing construction and the new building and can terminate at the rated roof construction of Milstein Hall." (Building Code and Fire Protection Meeting Report prepared by KHA Architects, March 2007)

(5) Milstein Hall is a "New Building" rather than an addition (City of Ithaca Building Permit received May 18, 2007 – see Figures 7 and 8)

(6) "It is our understanding that the addition of fire barriers between Milstein and Sibley and Milstein and Rand allows the new addition to govern use and construction type... Several past codes have dealt with separation between building types such as buildings with adjacent garages with different types of construction on each side of the fire barrier without limiting the area of the combined building based on the most restrictive use group and building type" (Larry Burns, KHA Architects, Oct. 2008)

The first three documents, up until Jan. 2007, presume that Milstein Hall is an addition to two existing buildings; all three buildings together act as a single building unless a fire wall is provided. The fourth document, dated March 2007, mentions a fire barrier providing separation, but isn't clear whether, or how, such a fire barrier would make Milstein Hall a separate building – it also mentions that such a fire barrier can terminate at the "rated roof construction of Milstein Hall" even though the roof construction of Milstein Hall has no fire-resistance rating. The fifth document, a building permit filed on May 18, 2007, lists the project as a "New Building" and makes no mention of Sibley or Rand Hall.

The sixth, and last, document gives the clearest rationale and explanation for what is now apparently being claimed: that the floor area of Milstein Hall can be calculated on the basis of its own construction type – i.e., as if it were a separate building. Rather than pointing to any specific Code language that supports such an interpretation (since there is none), Larry Burns of KHA Architects makes reference to the special provisions for parking garages found in Chapter 5 of the Building Code, in order to demonstrate that it is possible for a fire barrier to create two separate buildings. While it is true that 3-hour fire-resistance-rated horizontal assemblies (not fire barriers) can be used in this way, the Code makes it absolutely clear that these are "special conditions" and that portions of such a building can – to cite but one example – "be considered as a **separate and distinct building for the purpose of determining area limitations**..." (Section 508.2 of the 2002 BCNYS, emphasis added). In other words, when the Code describes such an exception, or special condition, that modifies the specific content of other sections of the Code, it is explicit about what the conditions are and how they are to be satisfied. In contrast to such special Code sections, Section K902.2 of Appendix K in the 2002 BCNYS does not say anything about using a fire barrier to create a separate building, or using a fire barrier in lieu of a fire wall.

What Appendix K actually says is almost exactly what the two advanced Existing Building Codes and model codes of the time – the New Jersey Rehab Code and the *Nationally Applicable Recommended Rehabilitation Provisions* – say, except that "fire wall" has been replaced with "fire barrier." When "fire wall" is used, the requirements and ramifications are clear from the rest of the Building Code: an addition separated from the existing structure by a fire wall can be considered as a separate building, allowing its area is to be calculated based on the occupancy and construction type of the addition considered as a separate building.

On the other hand, when "fire barrier" is used – as it is in Appendix K of the 2002 BCNYS – one must examine how fire barriers can increase floor area. In fact, Section K902.2 – by requiring that any fire barrier used to increase floor area be built "in accordance with Section 706 of the Building Code" – shows exactly how this can be done. Provisions for using fire barriers to separate uses in mixed occupancies – provisions that are found in Chapter 5 of more recent NYS Building Codes – are *found in Chapter 3* of the 2002 BCNYS; for that reason, they are consistent with the stipulation in Appendix K, Section K902.2, which states that floor area increases "beyond that permitted under the applicable provisions of Chapter 5" are possible when fire barriers are used. Section 706 states that for "Separation of occupancies and fire areas" (Section 706.3.5), the fire-resistance rating shall be that indicated in Section 302.3.3 of the Building Code, but only where "the provisions of Section 302.3.3 are applicable."

Section 302.3.3 is only applicable when its provisions are met: "Each portion of the building shall be individually classified as to use and shall be completely separated from adjacent areas by fire barrier walls or horizontal assemblies or both having a fire-resistance rating determined in accordance with Table 302.3.3 for the uses being separated. Each fire area shall comply with the code based on the use of that space. Each fire area shall comply with the height limitations based on the use of that space and the

type of construction classification. In each story, **the building area shall be such that the sum of the ratios of the floor area of each use divided by the allowable area for each use shall not exceed 1."** (emphasis added). This stipulation in Chapter 3 of the 2002 BCNYS provides for increased floor area if fire barriers are used to separate uses. Applying this criterion to Milstein Hall, as is required by Section K902.2, it is clear that the various floor areas separated by fire barriers still do not even come close to meeting allowable area limits. This is because all the attached buildings are considered to be a single building under this section of the Building Code, and therefore all allowable floor areas must be calculated based on the most restrictive (V-B) construction type within Milstein-Sibley-Rand Halls.

What this discussion shows is that a literal reading of Section K902.2 of the 2002 BCNYS leads to a consistent and logical application of the Building Code for additions separated by fire barriers. Making an assumption that such fire barriers are permitted to be considered as fire walls – without a single piece of evidence to support such an interpretation and in contradiction to every other Building Code used before or after in New York State – is both unwarranted and unsafe.

A more complete version of the five documents cited above follows:

1. March 3, 2005 Telephone Conference Meeting, minutes by OMA dated 3/7/2005 (MN refers to City of Ithaca Deputy Building Commissioner Mike Niechwiadowicz): "5.2 MN: The fire barrier allows you to build a separate fire area. You must build a separate fire area, because construction type of Sibley and or Rand does not allow them to be expanded under the current code for its construction type... 5.3 MN: the question is do we go with separate building or fire area. I do believe we can go with separate fire area, which would mean it is all one building. All Rand, Sibley has the same type of sprinkler system, tied together they function as one building. Based on assembly and business use you could go with separate fire areas. The separate building would require a fire wall which requires structural independence on both sides of the fire wall. Either structure can fall away the fire wall stays in place. Much more difficult to accomplish but does get you the advantage of separate building... 5.6 MN: A fire area, fire barrier will be easier to do."

2. March 28, 2006 Building Code Summary (KHA06001): "Note. If the existing north and west exterior walls were retained with some openings into Milstein, the openings could be protected rated openings with doors or fire shutters. It must be determined if there is a way to consider the Milstein Hall plate as an addition to Sibley and an alteration in Sibley or if it must be built as a separate structure requiring rated separation between Sibley and Milstein at P2. Due to the wood construction at Sibley, I do not see how an addition of the proposed size can be incorporated since Sibley currently exceeds the allowable area for Type 5 construction and the new construction to be inserted would increase the size." (p.7 of 7)

3. Jan. 17, 2007 Fire and Code Meeting Report sent by OMA Architects: "...9. As Milstein is an addition to Sibley and Rand there shall be one fire control system for all three buildings."

4. March 13, 2007 Building Code and Fire Protection Meeting Report:

I. BUILDING CONSTRUCTION AND SEPARATION

A. The requirements for fire walls between new and existing construction will be difficult to achieve with the design of Milstein Hall so 50% CD documents will be submitted to the City for review before 1 August 2007 when the new code is expected to be adopted.

1. The new code will require a fire wall rated for 2 hours in each building that would remain intact if the construction of adjacent building burned and would require rated construction along Sibley unless the existing exterior wall construction qualifies as 2 HR rated construction.
2. The present design must comply with New York State code, 2002 and Appendix K.
3. The existing code allows a fire barrier to provide separation between the existing construction and the new building and can terminate at the rated roof construction of Milstein Hall.

B. The fire barrier between the existing and new construction must be fire shutters or rated construction since sprinklers at each side of the wall are not permitted by code.

1. Windows in Sibley could be replaced, upgraded with hollow metal frames and 1/4" wire glass limited in area by code (1296 sq. in. for 3/4 hours and 100 sq. in. for 1 hour and 1 1/2 hour construction) for each piece of glass or fire shutters at each opening or rated walls that protect multiple openings could be provided.
2. Openings in the fire barrier can have rated doors on hold-opens tied into the fire alarm system or shutters.

C. Egress from Milstein Hall is not allowed through Sibley since the rated doors must be closed by the fire alarm system when there is an emergency.

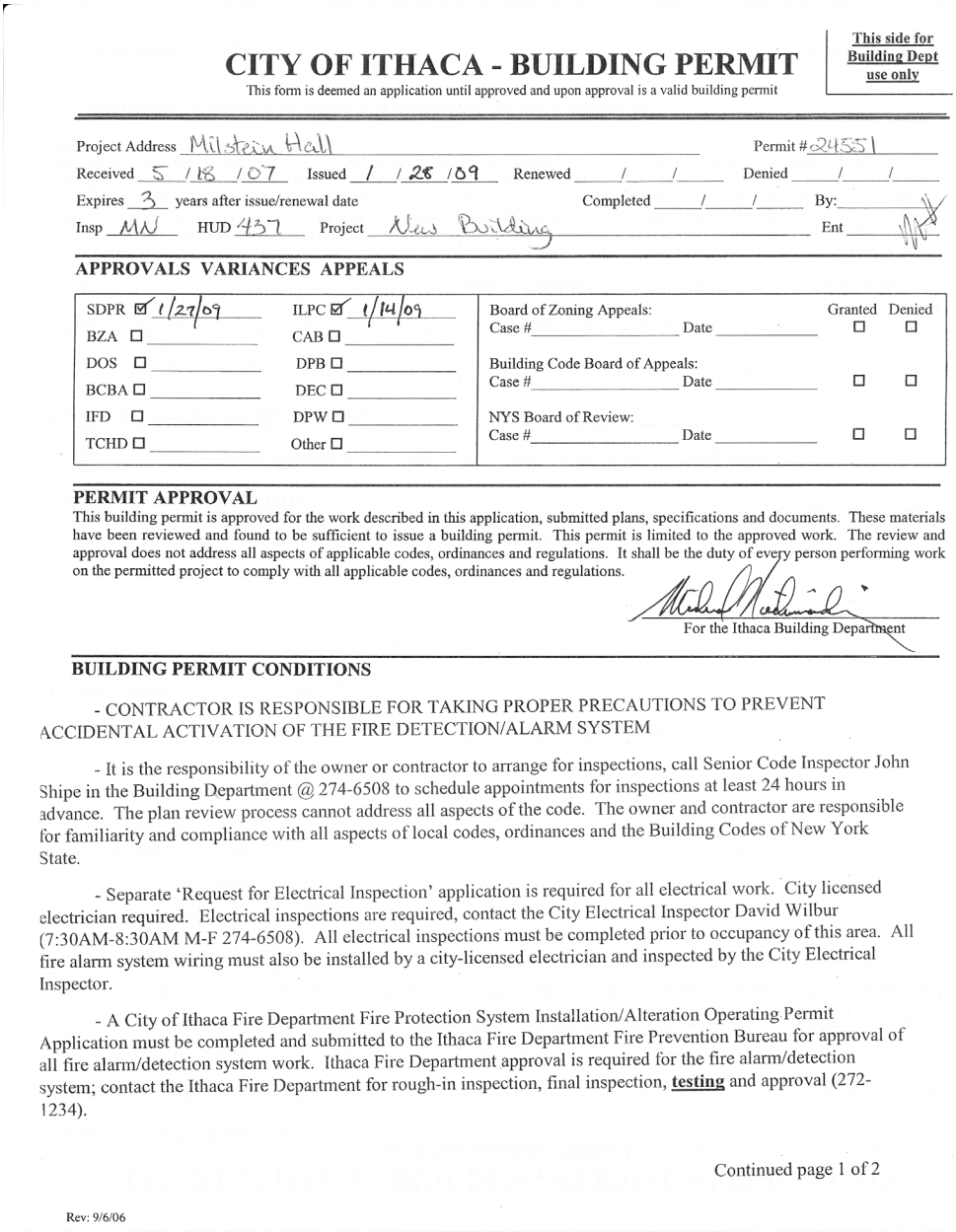
1. Egress from Milstein into Rand will only be allowed if the corridor is brought up to code in all respects and exit signs clearly provide direction to the exit.
2. The exterior stair from Floor 2 to grade must be designed as an exit stair with code compliant dimensions and handrails.

II. FIRE ALARM SYSTEMS

A. Milstein Hall is an addition to Sibley Hall and Rand Hall so the fire alarm systems for the three buildings must be combined into one addressable system..."

5. A Building Permit for Milstein Hall (Figures 7 and 8) was filed by Andrew Magre of Cornell University and received by the City of Ithaca Building Department on May 18, 2007. The permit was issued Jan. 28, 2009. The only official drawings on file at the Building Department (that were made available to me under a FOIA request on June 21, 2013 and June 24, 2013) are "Issued for Construction" "Permit" drawings dated Dec. 5, 2008 – a full year and a half after the permit was filed. It is clear from documents in the Building Department file that the architects for Milstein Hall were well aware that their building design would be unambiguously noncompliant under the 2007 BCNYS, the Code that would be in effect when Milstein Hall's construction documents were actually complete. KHA Architects put it this way in their "Building Code and Fire Protection

Meeting Report" dated March 13, 2007 (Figure 9): "The requirements for fire walls between new and existing construction will be difficult to achieve with the design of Milstein Hall so 50% CD documents will be submitted to the City for review before 1 August 2007 when the new code is expected to be adopted." For that reason, a permit was filed when the older 2002 BCNYS was still in effect, even though the building design was not yet complete. As of June 25, 2013, I have not been able to determine whether any "permit drawings" were filed with the initial permit application on May 18, 2007.



CITY OF ITHACA - BUILDING PERMIT

This form is deemed an application until approved and upon approval is a valid building permit

This side for Building Dept use only

Project Address: Milstein Hall — Permit #: 24551

Received: 5/18/07 — Issued: 1/28/09 — Renewed: ___/___/___ — Denied: ___/___/___

Expires: 3 years after issue/renewal date — Completed: ___/___/___ — By: ___

Insp: MW — HUD: 437 — Project: New Building — Ent: ___

APPROVALS VARIANCES APPEALS

SDPR ☑ 1/27/09	ILPC ☑ 1/14/09	Board of Zoning Appeals: Case # ___ Date ___		Granted ☐	Denied ☐
BZA ☐	CAB ☐				
DOS ☐	DPB ☐	Building Code Board of Appeals: Case # ___ Date ___		☐	☐
BCBA ☐	DEC ☐				
IFD ☐	DPW ☐	NYS Board of Review: Case # ___ Date ___		☐	☐
TCHD ☐	Other ☐				

PERMIT APPROVAL

This building permit is approved for the work described in this application, submitted plans, specifications and documents. These materials have been reviewed and found to be sufficient to issue a building permit. This permit is limited to the approved work. The review and approval does not address all aspects of applicable codes, ordinances and regulations. It shall be the duty of every person performing work on the permitted project to comply with all applicable codes, ordinances and regulations.

For the Ithaca Building Department

BUILDING PERMIT CONDITIONS

- CONTRACTOR IS RESPONSIBLE FOR TAKING PROPER PRECAUTIONS TO PREVENT ACCIDENTAL ACTIVATION OF THE FIRE DETECTION/ALARM SYSTEM

- It is the responsibility of the owner or contractor to arrange for inspections, call Senior Code Inspector John Shipe in the Building Department @ 274-6508 to schedule appointments for inspections at least 24 hours in advance. The plan review process cannot address all aspects of the code. The owner and contractor are responsible for familiarity and compliance with all aspects of local codes, ordinances and the Building Codes of New York State.

- Separate 'Request for Electrical Inspection' application is required for all electrical work. City licensed electrician required. Electrical inspections are required, contact the City Electrical Inspector David Wilbur (7:30AM-8:30AM M-F 274-6508). All electrical inspections must be completed prior to occupancy of this area. All fire alarm system wiring must also be installed by a city-licensed electrician and inspected by the City Electrical Inspector.

- A City of Ithaca Fire Department Fire Protection System Installation/Alteration Operating Permit Application must be completed and submitted to the Ithaca Fire Department Fire Prevention Bureau for approval of all fire alarm/detection system work. Ithaca Fire Department approval is required for the fire alarm/detection system; contact the Ithaca Fire Department for rough-in inspection, final inspection, **testing** and approval (272-1234).

Continued page 1 of 2

Rev: 9/6/06

Figure 7 City of Ithaca Building Permit for Milstein Hall (front page) issued May 18, 2007, a full year an a half before the permit was actually issued.

CITY OF ITHACA - BUILDING PERMIT APPLICATION

This side to be completed by the applicant

PROJECT INFORMATION

Address: UNIVERSITY AVENUE, CORNELL UNIVERSITY, ITHACA, NY 1485

Tax Parcel Number (e.g. 55.-5-5): 30-1-1.2 Building/Room: MILSTEIN HALL

Project Type: New Building ☑ Demolition/Removal ☐ Relocation ☐ Site Work ☐ Fill/Stock Piling ☐

Repair ☐ Renovation ☐ Alteration ☐ Reconstruction ☐ Change of Occupancy ☐ Addition ☐

Estimated Cost: $24,500,000 Permit Fee: $171,500 Receipt # 35629

General Contractor TO BE NAMED Tel

_____ Contractor Tel

Licensed Electrical Contr. Tel

Licensed Plumbing Contr. Tel

City Registered Heating Contr. Tel

Existing Use NONE Proposed Use NEW BUILDING

Project Description: PER ATTACHED DRAWINGS

Attached: Plans ☑ Specifications ☐ Other documentation ☐

PROPERTY INFORMATION

Zone U-1 Historic/Landmark Dist/Site ☑ Fire Limits: A ☐ B ☐ Flood Zone: 100yr ☐ 500yr ☐

OWNER/APPLICANT INFORMATION

Owner CORNELL UNIVERSITY Address DAY HALL, ITHACA, NY 14853 Tel 255-6258

Applicant ANDREW MAGRE Address 102 HSB, CU, ITHACA, NY 14853 Tel 255-9778

Required liability and Workmen's Compensation insurance carried by Owner ☐ Contractors ☐ will be in force at all times throughout operations

I am the owner or agent of the owner of the premises in the City of Ithaca, New York described in this application. I hereby apply for a permit to perform the work described in this application and on attached plans, specifications and other documents. I will comply with all provisions of applicable ordinances, codes and regulations in the performance of this work whether specified herein or not. Any amendment to this application, plans, specifications or other documents upon which this permit was issued will be filed with the Ithaca Building Department for approval before such changes are made in the actual work. I hereby request that all work be inspected and approved by the appropriate inspectors. I certify that every person performing work on the permitted project will comply with all applicable codes, ordinances and regulations.

By my signature I certify I have read and understand the above paragraph.

Applicant Signature (AGENT) Date 5/16/07

Figure 8. City of Ithaca Building Permit for Milstein Hall (back page) showing that the project was filed as a "New Building" rather than as an "Addition."

Building Code and Fire Protection Meeting –Report **CORNELL MILSTEIN HALL** KHA 06015

13 March 2007 at Cornell 4:00 PM Ithaca, New York Page 1 of 3

DISTRIBUTION

	Mohsen Mostafavi	CU		Robert Silman	RSA		Suzan Tillotson	TDA
*	John McKeown	CU		Nat Oppenheimer	RSA		Christopher Cheap	TDA
*	Andrew Magre	CU		Alastair Elliott	RSA		Larry Philbrick	AI
*	Don Gordon	CU	*	Mark Malekshahi	PG		Kate Orff	SCAPE
	David Newman	CU	*	Marina Solovchuk	PG		Betsy Stoel	SCAPE
	Greg Crossett	CU	*	Arcady Fishman	PG		Bruce Darling	BPD
*	Shohei Shigematsu	OMA		Peter Veldhuizen	GIE		Ron Krukowski	TCC
*	Ziad Shehab	OMA		David Herrick	TGM		Dwight Sickler	TCC
	Jason Long	OMA		Frank Santelli	TGM		Sal D'Aniello	TCC
*	Michael Smith	OMA		Renz van Luxemburg	DHV		David Elwyn	FG
*	Troy Schaum	OMA		Bruce Nichol	FRONT	*	Mike Niechwiadowicz	CofIBD
*	Larry Burns	KHA		John Gilbert	PHA	*	Tom Parsons	CofIFD

*Attending

ACTION	SUBJECT
	I. BUILDING CONSTRUCTION AND SEPARATION
ALL	A. The requirements for fire walls between new and existing construction will be difficult to achieve with the design of Milstein Hall so 50% CD documents will be submitted to the City for review before 1 August 2007 when the new code is expected to be adopted.
	1. The new code will require a fire wall rated for 2 hours in each building that would remain intact if the construction of the adjacent building burned and would require rated construction along Sibley unless the existing exterior wall construction qualifies as 2 HR rated construction.
ALL	2. The present design must comply with New York State code, 2002 and Appendix K.
	3. The existing code allows a fire barrier to provide separation between the existing construction and the new building and can terminate at the rated roof construction of Milstein Hall.
PG	B. The fire barrier between the existing and new construction must be fire shutters or rated construction since sprinklers at each side of the wall are not permitted by code.
OMA, KHA	1. Windows in Sibley could be replaced, upgraded with hollow metal frames and 1/4" wire glass limited in area by code (1296 sq. in. for 3/4 hours and 100 sq. in. for 1 hour and 1 1/2 hour construction) for each piece of glass or fire shutters at each opening or rated walls that protect multiple openings could be provided.
OMA	2. Openings in the fire barrier can have rated doors on hold-opens tied into the fire alarm system or shutters.

Figure 9. Excerpt from March 13, 2007 Building Code and Fire Protection Meeting Report.

6. Oct. 4, 2008 Email from Larry Burns (KHA Architects) to Andrew Magre (Cornell)
RE: Milstein Hall Code Review Response Revised

"2. Allowable area:
Section 302.3.1, Nonseparated uses. Each portion of the building shall be individually classified as to use. The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building...

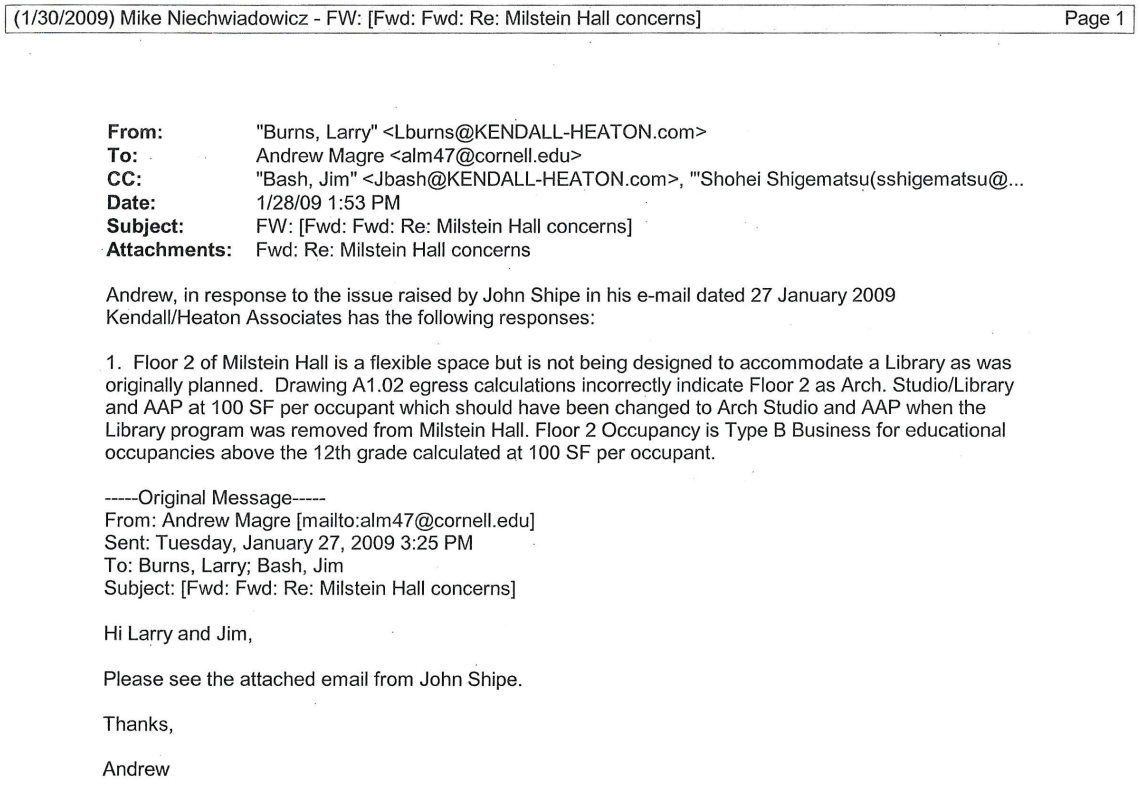
"It is our understanding that the addition of fire barriers between Milstein and Sibley and Milstein and Rand allows the new addition to govern use and construction type. We do not understand Mr. Ochshorn's statement that 'Nothing in Appendix K permits additions to existing buildings to have more area than is permitted under Chapter 3.' Several past

codes have dealt with separation between building types such as buildings with adjacent garages with different types of construction on each side of the fire barrier without limiting the area of the combined building based on the most restrictive use group and building type as suggested by Mr. Ochshorn. We believe that the requirements of nonseparated uses applies to each portion of the building and do not restrict the areas of the entire building."

Documents pertaining to Exhibit 6: Improper occupancy class designation

An email from Larry Burns of KHA Architects to Andrew Magre at Cornell, dated Jan. 28, 2009, supports my contention that the upper level of Milstein Hall is not a combined group A3/B space, but is entirely a Group B occupancy (Figure 10). The email states:

"1. Floor 2 of Milstein Hall is a flexible space but is not being designed to accommodate a Library as was originally planned. Drawing A1.02 egress calculations incorrectly indicate Floor 2 as Arch. Studio/Library and AAP at 100 SF per occupant which should have been changed to Arch Studio and AAP when the Library program was removed from Milstein Hall. **Floor 2 Occupancy is Type B Business for educational occupancies above the 12th grade calculated at 100 SF per occupant..."** (emphasis added)



(1/30/2009) Mike Niechwiadowicz - FW: [Fwd: Fwd: Re: Milstein Hall concerns] Page 1

From: "Burns, Larry" <Lburns@KENDALL-HEATON.com>
To: Andrew Magre <alm47@cornell.edu>
CC: "Bash, Jim" <Jbash@KENDALL-HEATON.com>, "'Shohei Shigematsu(sshigematsu@...
Date: 1/28/09 1:53 PM
Subject: FW: [Fwd: Fwd: Re: Milstein Hall concerns]
Attachments: Fwd: Re: Milstein Hall concerns

Andrew, in response to the issue raised by John Shipe in his e-mail dated 27 January 2009 Kendall/Heaton Associates has the following responses:

1. Floor 2 of Milstein Hall is a flexible space but is not being designed to accommodate a Library as was originally planned. Drawing A1.02 egress calculations incorrectly indicate Floor 2 as Arch. Studio/Library and AAP at 100 SF per occupant which should have been changed to Arch Studio and AAP when the Library program was removed from Milstein Hall. Floor 2 Occupancy is Type B Business for educational occupancies above the 12th grade calculated at 100 SF per occupant.

-----Original Message-----
From: Andrew Magre [mailto:alm47@cornell.edu]
Sent: Tuesday, January 27, 2009 3:25 PM
To: Burns, Larry; Bash, Jim
Subject: [Fwd: Fwd: Re: Milstein Hall concerns]

Hi Larry and Jim,

Please see the attached email from John Shipe.

Thanks,

Andrew

Figure 10. Email dated Jan. 28, 2009 clarifying occupancy of Milstein Hall's upper level.

Documents pertaining to Exhibit 8: Noncompliant A-3 library occupancy of Rand Hall, third floor.

Plans dated May 5, 2009 (see Figures 4 and 5 above) show that a one-hour fire-resistance-rated fire barrier was proposed to separate Milstein Hall from Sibley and Rand Halls at the basement, ground floor, and second-floor levels. This barrier was never properly completed between Milstein and Sibley Halls (see Exhibit 3).

The plans show that a fire barrier was intended for the first floor between Rand and Milstein Halls. That fire barrier was never completed, as there are ducts and non-rated windows penetrating the boundary between Rand and Milstein Halls at that level, as documented in the "email thread" copied below.

More importantly, the plans show that only a one-hour fire-resistance-rated fire barrier is specified. This is consistent with the actual fire-rated construction put in place on the second floor, and is inadequate to separate any new higher-hazard occupancies proposed under the 2010 Existing Building Code of NYS.

Email thread concerning the fire barrier between Milstein and Rand Halls: from June 17, 2013 - June 19, 2013 (with contact information and certain Cc: field names redacted)

From: Charles Bliss
Date: Monday, June 17, 2013 10:55 AM
To: Jonathan Ochshorn
Subject: petition

What type of fire barrier/fire wall exists between Milstein and Rand Halls.

Charles P. Bliss, PE

From: Jonathan Ochshorn
Sent: Monday, June 17, 2013 11:23 AM
To: Bliss, Charles (DOS)
Subject: Re: petition

There is **no fire wall** between Milstein and Rand Halls.

On the ground level, there seems to be no fire barrier between the two buildings (exhaust ducts from the Rand Hall shop penetrate the brick cladding).

On the second level, there is a **1-hour fire-rated glass door** separating the two buildings. I cannot verify what the fire-resistive rating is for the rest of separation at the second-floor level: there is a duct enclosure that penetrates the brick wall between Rand and Milstein at that level; and there are rolling shutters protecting glass windows between the two buildings.

On the third level of Rand Hall, there is no fire barrier: there are ordinary windows in Rand Hall overlooking the roof of Milstein Hall, which does not have a third level.

Jonathan

From: <Bliss>, Charles Bliss
Date: Monday, June 17, 2013 11:45 AM
To: Jonathan Ochshorn
Subject: RE: petition

Thank you.

Charles P. Bliss, PE

From: Jonathan Ochshorn
Date: Monday, June 17, 2013 4:22 PM
To: Charles Bliss
Cc: Gary Norbert Wilhelm, Mike Niechwiadowicz [et *al.*]
Subject: Re: petition

Hi Charles,

I just realized that the 2010 Existing Building Code of NYS requires that any fire barrier used in lieu of a fire wall between Rand and Milstein Halls would need to have a fire-resistance rating of **3 hours**, not just 2 hours.

This is because there is a wood shop on the first floor of Rand Hall, which is (or should be) classified as an F-1 occupancy.

The exception to Section 912.5.1 of the EBCNYS requires that any fire barrier used in lieu of a fire wall must have "**a fire-resistance rating of not less than that specified in Table 705.4 of the *Building Code of New York State."*** Table 705.4 applies to fire walls, and a fire wall constructed according to Table 705.4 would need a fire-resistance rating of 3 hours, since its construction would be governed by the F-1 occupancy on the first floor, for which note "a," allowing a 2-hour barrier for groups A and B (with Types II or V construction), does not apply. Since a fire barrier, per the exception to Section 912.5.1, must have the same fire-resistance rating as the fire wall, and since the fire-resistance rating of the fire wall would be governed by the F-1 occupancy in the building, the fire barrier would need a 3 hour rating.

In my view, none of this matters, since the exception to Section 912.5.1 *only covers area increases*, and the library on the third floor violates the height limitation, as I described in my complaint. And, even if a 2-hour fire barrier was permitted, the 1-hour glass door between Rand and Milstein is not consistent with the opening protective requirements for a 2-hour barrier.

Below are the relevant excerpts from the 2010 Existing Building Code of NYS, along with Table 705.4 from the 2010 Building Code of NYS.

Jonathan

2010 Existing Building Code of NYS, **Section 912.5.1 Height and area for change to higher hazard category.** When a change of occupancy classification is made to a higher hazard category as shown in Table 912.5, heights and areas of buildings and structures shall comply with the requirements of Chapter 5 of the *Building Code of New York State* for the new occupancy classification.

Exception: In other than Groups H, F-1, I and S-1, in lieu of fire walls, use of fire barriers **having a fire-resistance rating of not less than that specified in Table 705.4 of the *Building Code of New York State***, constructed in accordance with Section 706 of the *Building Code of New York State*, shall be permitted to meet area limitations required for the new occupancy in buildings protected throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the *Fire Code of New York State*.

2010 Building Code of NYS, **TABLE 705.4FIRE WALL FIRE-RESISTANCE RATINGS**

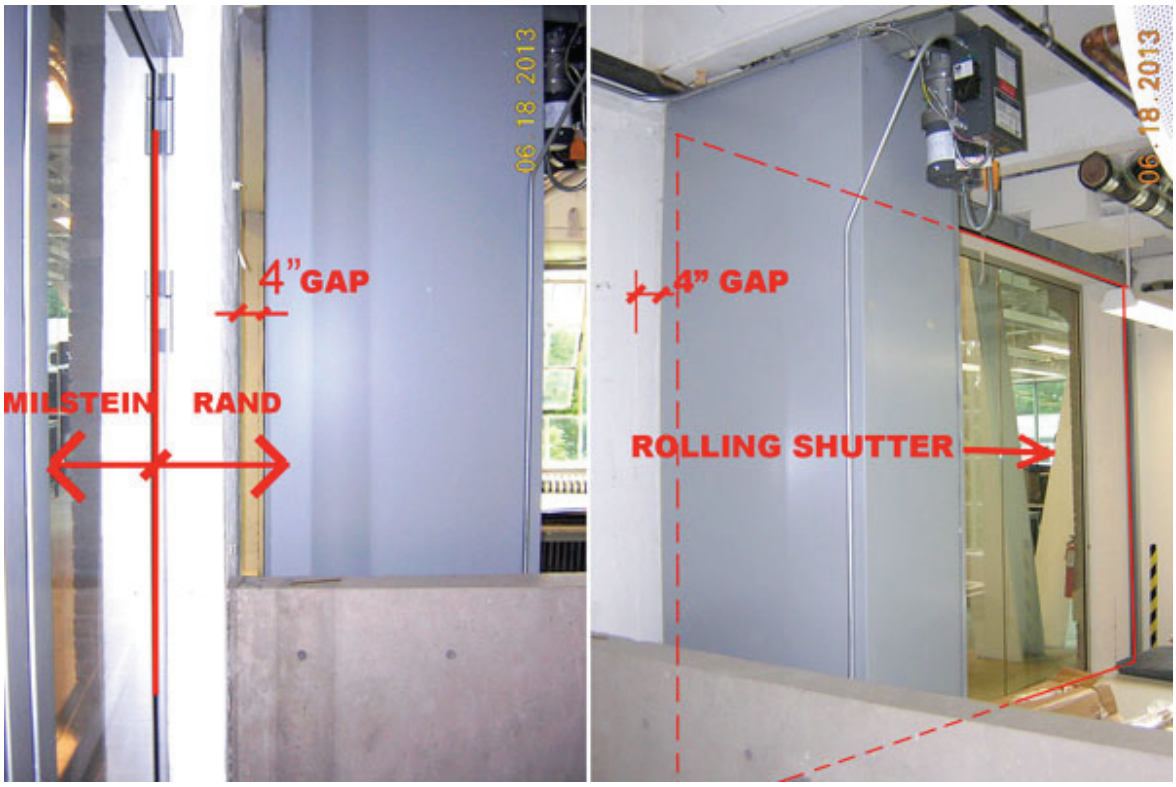
GROUP	FIRE-RESISTANCE RATING (hours)
A, B, E, H-4, I, R-1, R-2, U	3[a]
F-1, H-3[b], H-5, M, S-1	**3**
H-1, H-2	4[b]
F-2, S-2, R-3, R-4	2

a. Walls shall be not less than 2-hour fire-resistance rated where separating buildings of Type II or V construction.

From: Jonathan Ochshorn
Sent: Tuesday, June 18, 2013 12:29 PM
To: Charles Bliss **Cc:** Gary Norbert Wilhelm; Mike Niechwiadowicz; [*et al.*]
Subject: Re: petition

Hi Charles,

I noticed today that the fire shutter installed to protect the large window on the **second floor between Rand and Milstein Halls** has a 4"-wide floor-to-ceiling gap that would seem to void any fire-resistance rating in the fire barrier.



The image, taken today, shows the horizontal fire shutter in its "open" position, with the 4'-wide gap.

Jonathan

From: Gary Norbert Wilhelm
Date: Wednesday, June 19, 2013 8:55 AM
To: Jonathan Ochshorn, Charles Bliss
Cc: Mike Niechwiadowicz [*et al.*]
Subject: RE: petition

Professor Ochshorn—

Thank you for identifying this issue. I will have the gap infilled with rated construction as soon as possible.

Gary Wilhelm, AIA
Senior Project Manager
Cornell University
Capital Projects and Planning

From: Jonathan Ochshorn
Date: Wednesday, June 19, 2013 1:50 PM
To: Gary Norbert Wilhelm

Cc: Mike Niechwiadowicz [et *al.*]
Subject: Re: petition

Hi Gary,

Thanks for your two-sentence response. The implication is that I identified an "issue" (sentence one) and that you will have it fixed "as soon as possible" (sentence two).

However, having the "gap infilled with rated construction" doesn't address the more serious issues that I raised in my email: (1) that a 3-hour, rather than a 2-hour fire barrier would be needed; (2) that only a one-hour fire-resistance-rated door was apparently provided in the second-floor wall between Rand and Milstein Halls; and, (3) more importantly, that *any fire barrier separating Milstein and Rand Halls still does not permit a change to a higher hazard occupancy on the third-floor of Rand Hall*, since A-3 occupancies are not permitted on the third floors of sprinklered buildings governed by Type V-B construction (and the third floors of the combined Sibley/Rand/Milstein Halls *cannot be changed* to a higher-hazard occupancy, even under the most liberal reading of Appendix K in the 2002 Code and certainly not under the 2010 Existing Building Code of NYS, since such a move violates the height limits tabulated in Chapter 5 of the Code).

While on the subject of fire barriers between Rand and Milstein Hall, you still haven't created any sort of barrier between Rand and Milstein Halls on the ground level, in spite of the fact that the Rand Hall Wood Shop (occupancy group F-1) is immediately adjacent to Milstein Hall's covered passageway (see image).

Photos taken today showing Rand Hall exhaust duct and window from the outside, directly under Milstein Hall (left); and from the inside of the Rand Hall Wood Shop (right).

As you know, such covered areas are part of the building area of Milstein Hall (per Section 502.1 of the Code), so the lack of a fire barrier there seems inconsistent -- after all, fire barriers were specified for the ground level windows in Sibley Hall that face the covered space under Milstein Hall. If you believe that they're needed in Sibley Hall, why are they omitted in Rand Hall?

Finally, you were also copied on my prior emails in which I attached a Code Appeal and addenda that describe eight serious Code irregularities or violations in Sibley/Milstein/Rand Halls. Since sending these emails, I have not received a single comment from Cornell, from the Ithaca Building Department, or from the architects of record on the substance of this appeal. Does your lack of responsiveness indicate that you believe that the eight Exhibits contained in my appeal have no merit? I would certainly like to read your detailed response to each of those eight "issues."

Jonathan

P.S. The Code Appeal and all addenda can be downloaded from my web site: http://www.ochshorndesign.com/cornell/writings/milstein-critique/fire9.html