Comments on Application for Variance or Appeal filed on behalf of Cornell by Thomas D. Hoard, HOLT Architects, P.C., dated 13 September 2013

Submitted by Jonathan Ochshorn, Oct. 10, 2013

Contact information
Jonathan Ochshorn
207 Water Street
Ithaca, NY 14850

Phone: 607 255-1194
Email: jo24@cornell.edu

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Introductory summary of arguments and comments

Milstein Hall is an addition to both Rand and Sibley Halls on the Cornell University campus in Ithaca, NY that created a single building, Rand-Sibley-Milstein Hall. A certificate of occupancy was issued on Feb. 24, 2012. The variance application submitted by Thomas Hoard on behalf of Cornell University to place a noncompliant library assembly occupancy on the second and third floors of Rand Hall (part of Rand-Sibley-Milstein Hall) should be seen in the following context:

First, Rand-Sibley-Milstein Hall is a *nonconforming* building that greatly exceeds the allowable area permitted under Chapter 5 of *all* recent Building Codes of New York State [BCNYS], including the 2002, 2007, and 2010 editions. This is true because of its VB construction type, but it would be equally true even if the entire combined building were upgraded to Type IIB construction. Furthermore, Section K902.2 of the 2002 BCNYS – under which the addition of Milstein Hall was allowed to increase the areas of the existing buildings beyond that permitted by Chapter 5 of the Code – was no longer available under the 2007 or 2010 Codes, which explains why a building permit for Milstein Hall was rushed for approval just before the 2002 Code was set to expire. In other words, Rand-Sibley-Milstein Hall, even before any variances are requested, is already built to a far less rigorous standard of fire safety than would be applied to a new building in New York State under either the 2007 or 2010 BCNYS.

Second, placing an A-3 occupancy on the second floor of Rand Hall (part of Rand-Sibley-Milstein Hall) would not be permitted under any recent BCNYS for new construction, including the 2002, 2007, or 2010 editions. However, the Existing Building Code of New York State [EBCNYS] includes an exception for changes from a lower to a higher hazard occupancy within an existing building, an exception which *further reduces the level of fire safety* compared to what would be required in new construction (assuming that this exception is even applicable).

Third, even with these two sequential reductions in fire safety – the first allowed per Section K902.2 of the 2002 BCNYS for additions and the second allowed per the exception in Section 912.5.1 of the 2010 EBCNYS for changes to a higher hazard occupancy in an existing building – the placement of an A-3 library occupancy on the *third* floor of Rand Hall would still be noncompliant. This noncompliant status was confirmed by the Capital Region-Syracuse Board of Review in their decision regarding Petition No. 2013-0250, Exhibit 8, which is reproduced by the current petitioner in his Exhibit 3.

A variance to place an A-3 occupancy on the *third floor* of Rand-Sibley-Milstein Hall is therefore taking a nonconforming Type VB building that already has *two and a half times* the floor area allowed per Chapter 5 the Code (*any* edition) – and that would exceed this allowable floor area even if its construction were upgraded to Type VA, Type IIIA, Type IIIB, or Type IIB – and sanctioning, forever, a noncompliant assembly occupancy where none had previously existed.

A variance to place an A-3 occupancy on the *second floor* of Rand-Sibley-Milstein Hall by reducing the fire-resistance ratings required of fire barriers under the 2010 EBCNYS would *further reduce* the level of fire safety in the building beyond the *already reduced* levels of fire safety permitted by the addition of Milstein Hall under the 2002 BCNYS.

Thus, the petitioner's contention that this variance would not reduce, or would even improve, the fire safety of Rand-Sibley-Milstein Hall is patently absurd. Rand-Sibley-Milstein Hall should be required to meet fire safety standards embedded in the 2010 EBCNYS, not granted the right to lock in, forever, a noncompliant use within a nonconforming building.

This variance request contains numerous misleading statements, half-truths, and outright falsehoods, summarized in the final section of these comments (p. 37). But if one cuts through all the specious arguments, the request boils down to a single question: should a library in a *nonconforming* space in Sibley Hall be permitted to move to a *noncompliant* space in Rand Hall?

The petitioner argues that the library should be permitted to move, on the grounds that such a move would not decrease, and might possibly even increase, the level of fire safety in Rand-Sibley-Milstein Hall. Yet no evidence is provided that would support this contention. In fact, Rand Hall, looked at as a separate building, has the second worse construction type allowed by the Building Code, as does Milstein Hall. The un-fireproofed IIB construction in Rand and Milstein (considered as separate buildings) is equivalent to combustible Type IIIB construction – both construction types have the same low tabular allowances for floor area and building height. The only thing worse is the Type VB construction of Sibley Hall, and the only thing preventing Sibley Hall from having the same fire safety values as Rand and Milstein Halls (as measured by Table 503 in the BCNYS) is the small amount of wood framing in its third floor exterior walls. Were those third-floor walls upgraded to 2-hour construction, even using fire-retardant wood, all three buildings, considered as separate structures, would have the same level of fire safety. And to repeat: this level of fire safety for a sprinklered building would be at the second-to-last rung of the construction type ladder, only VB being worse, and would still not meet floor area requirements under Table 503 of the BCNYS.

Moreover, a library in Rand Hall has a greater density of stacks than a library in Sibley would have, owing to the greater strength of Rand Hall's steel beams (the low-capacity wood joists of Sibley Hall require a low-density arrangement of book stacks there). Because of this, it is not at all self-evident that the higher density of books (i.e., the total available combustion content, or "fire load") in a Rand Hall library would create a situation that is safer than would the low-density arrangement of books stacks in Sibley Hall. In both cases, a fire in the library stacks would threaten the floor-ceiling or roof assemblies above, neither of which has any fire-resistance rating, and the greater fire load in the dense Rand Hall stack areas could create a far more dangerous situation than a fire in the less-dense stack areas of East Sibley Hall.

And even if one could make the case that a library in Rand Hall would be safer than one

in Sibley Hall based on specific evidence derived from fire science principles or Building Code analysis – something not even attempted by the petitioner – it is still not clear why a variance should be granted. Cornell has willfully and knowingly created the very problem that it now seeks forgiveness for, by connecting Rand Hall to Sibley Hall with an addition. This addition not only made the third floor of Rand Hall off-limits for an A-3 assembly use because of its new VB construction type, but also made the entire Rand-Sibley-Milstein Hall nonconforming because of the enormous size of the combined floor area – a floor area that is substantially larger than what would be permitted for a new building, even with sprinklers and fire barriers, and even if the entire complex were to be upgraded to Type IIB construction. Cornell had other options rather than designing a building addition that created this nonconformity, and Cornell has other options in either relocating the Fine Arts Library elsewhere, or upgrading the construction of Rand-Sibley-Milstein Hall so that a variance is not required.

It should also be remembered that this unprecedented and dangerous increase in building area was accomplished by exploiting a loophole in Appendix K of the 2002 BCNYS that has since been eliminated from the BCNYS, and that never appeared in any of the *International Building Codes* from which New York State codes derive. The petitioner is thus starting with an existing building that was knowingly created to be nonconforming (and therefore, from the standpoint of modern building codes, unsafe), and then is requesting a Code variance to permit, in this deliberately nonconforming existing building, a noncompliant occupancy.

As a minimum condition for granting a variance, the Review Board must find that at least one of the six arguments presented by the petitioner is valid, as follows:

1. *Would the denial of this variance create an excessive and unreasonable economic burden?* This is almost a joke: Cornell has just spent in excess of $50 million to create the very Code nonconformities that it now seeks to overcome through this variance process. Given the large sums of money that Cornell has already spent to build the Milstein Hall addition and the large sums of money currently earmarked for (a) a major renovation of the third floor of East Sibley Hall and (b) a major upgrade to the Fine Arts Library, it is inconceivable that the modest upgrades mandated by the 2010 EBCNYS to place a library in Rand Hall (i.e., upgrading the third-floor Mansard walls in Sibley Hall; and providing a more robust fire barrier between Rand and Milstein Halls) should be characterized as "excessive and unreasonable." It is also possible to relocate the Fine Arts Library to a code-compliant space so that not only would no variance be needed, but much less of an "economic burden" would be created compared to the enormous costs already earmarked for the creation of a new library space in Rand Hall.

2. *Would the denial of this variance not achieve its intended objective?* On the contrary, if this variance is denied, Cornell would either (a) need to upgrade the Rand-Sibley-Milstein Hall complex and in doing so, improve its fire safety, or (b) place the Fine Arts Library in another location, of which several have already been suggested, including the A-3 space under Sibley Dome. If the objective of the Building Code is to enforce

standards for fire safety, then denying this variance would absolutely achieve that objective.

3. *Would denial of this variance inhibit achievement of some other important public policy?* Absolutely not. There are no public policy issues at stake here. The petitioner's attempt to invoke a historic preservation argument, when absolutely no change to the exterior portion of this building is envisioned or required, is ludicrous.

4. *Would denial of this variance be physically or legally impracticable?* Creating a compliant fire barrier between Milstein and Rand Halls and/or upgrading the third-floor Mansard walls of Sibley Hall might cost some money (although a negligible amount compared to the money already spent to *create* these problems), but neither operation is physically or legally impracticable. Fire barriers between Rand and Milstein need to be fixed in any case, since even the 1-hour barriers required under the 2002 BCNYS for the construction of the Milstein Hall addition were never completed properly. Upgrading the third-floor walls of Sibley Hall is a relatively minor operation, since almost the entire exterior facade of Sibley Hall is *already* of masonry construction with at least a 2-hour fire-resistance rating. Finally, denial of this variance would not prevent Cornell from moving the library to code-compliant space in the Sibley Dome, an option that is both physically and legally practical.

5. *Would denial of this variance be unnecessary in light of alternatives which, without a loss in the level of safety, achieve the intended objectives of the code?* The petitioner has not provided any evidence, either in the form of an analysis based on fire science principles, or in the form of an analysis based on the BCNYS, that denial of this variance is unnecessary. On the contrary, it seems plausible that putting dense library stacks in Rand Hall could *reduce* the level of fire safety compared with leaving widely spaced library stacks as they were in Sibley Hall. But even if evidence were to be provided that the level of fire safety wouldn't be reduced by granting this variance (and such evidence was not presented), other alternatives are available that would not only make this variance unnecessary, but would *increase* the fire safety of Rand-Sibley-Milstein Hall. Specifically, the library could be relocated elsewhere, for example to Sibley Dome, where it used to be housed.

6. *Would denial of this variance entail a change so slight as to produce a negligible additional benefit consonant with the purpose of the code?* On the contrary, denial of this variance might compel Cornell University to upgrade Rand-Sibley-Milstein Hall with respect to fire safety. Because Rand and Sibley Halls were made substantially less safe by joining them together with the addition of Milstein Hall (the combined building complex has more than *double the floor area* than what would have been allowed under the 2007 or 2010 BCNYS, and, in fact, could not have even been built under the 2007 or 2010 BCNYS), it would be more than a negligible benefit if Cornell were prevented from making these buildings *even less safe* by changing existing classroom/studios to a higher hazard occupancy, in violation of the Code.

Application:

Comments on Part 2 of the Application – Minimum Building Information

1. Gross Area (all floors) is listed as 172,486 square feet. This number is apparently found by adding floor areas (see Cornell's "Find facility information" website at http://www.fs.cornell.edu/fs_facilFind.cfm accessed 9/26/13) which correspond to the actual combined gross areas of Rand, Milstein, and Sibley Halls; that is, 56,025 + 30,379 + 86,112 = 172,516 square feet. It should be noted, however, that this number includes the *basement* area of Sibley Hall (Rand Hall has no habitable basement and Milstein Hall's basement is considered a "story above grade plane"), which seems inconsistent with common metrics used to assess fire safety issues based on floor area.

2. Construction type is listed incorrectly as IIB and VB. Rand-Milstein-Sibley Hall is a single building and, as such, can only have a single construction type, based on the most restrictive condition in the combined building portions. Therefore, as indicated in the decision of the Capital Regional-Syracuse Board of Review (Petition No. 2013-0250) the construction type is VB. The Decision of the Capital Region-Syracuse Board of Review regarding petition 2013-0250 states explicitly: "The petition pertains to a B occupancy and an A-3 occupancy, mixed occupancy, three stories in height of square footage numbers as noted in the submittal of *Type VB construction*..." Charles Bliss, representative of the Southern Tier Regional Office of the DCEA, in his testimony at the Hearing, also agreed that the entire combined building is of construction type VB. The findings of the Board of Review on Petition No. 2013-0250 have been provided in this variance request application as Exhibit 3.

3. Occupancy is listed incorrectly as "B, Education above the 12th Grade, With A-3 Uses." The actual occupancy is a mixed occupancy designed for nonseparated uses, and includes Occupancy Groups B, A-3, F-1, and S-2. Group B refers to offices, classrooms, and studio space (for educational occupancy above the 12th grade and less than 50 students per classroom space); Group A-3 refers to the auditorium, large lecture halls or large classrooms, and library uses; F-1 refers to the large wood shop in the Rand Hall portion of the building; and S-2 is used to designate that portion of University Avenue which is covered by the cantilevered floor area of Milstein Hall and is therefore, per Section 502 of the Building Code, considered to be part of the building area (see definition of "area, building"). Since these are nonseparated uses, the allowable building area and heights for the entire combined building (Rand-Milstein-Sibley Hall) are determined by the most restrictive occupancy and construction type: *A-3 and VB*, respectively.

Comments on Part 3 of the Application – Applicable Building Code and Relief Requested

The petitioner has *not requested appropriate relief*. Instead, the four types of relief sought by the petitioner either not needed (e.g., to classify a classroom with more than 49 persons as an A-3 occupancy); or else the relief requested is impossible to grant, as it

requires the Review Board to validate something that isn't true (e.g., determining that replacing an A-3 studio with an A-3 library is not a change in use or occupancy). A variance should not ask the Review Board to determine that the Code itself is incorrect, or to say that something false is actually true. Rather, a variance request should simply indicate why the petitioner's proposal is noncompliant, and what Code Sections need to be waived (i.e., what "relief is sought") so that the proposal can be built *without* complying with those Code sections. The petitioner has not done this.

What the petitioner should have requested, but didn't, are the following two forms of relief:

1. For a library on the *third floor* of Rand Hall: to be permitted to exceed the height limits in Table 503 in the 2010 BCNYS; and

2. For a library on the *second floor* of Rand Hall: to be permitted to use a 1-hour fire barrier in lieu of a fire wall rather than satisfy the requirements of Section 912.5.1 in the 2010 EBCNYS, which contains an exception that may allow a 2-hour or 3-hour fire barrier to be used in lieu of a fire wall, or may not, depending upon how its Code language is interpreted (more on this below).

My row-by-row analysis of the "relief requested" is as follows:

a) Row 1: For Code Section 2010 EBCNYS 912, Change of Occupancy, the *Relief Sought* states: "Determination that replacing an A-3 Studio use with an A-3 Library is not a change in occupancy/use."

It is not clear why the petitioner seeks such relief, since if the existing classroom/studios were classified as A-3 occupancies, no variance would be required. Section 912.5.2 of the 2010 EBCNYS (Height and area for change to equal or lesser hazard category) states: "When a change of occupancy classification is made to an equal or lesser hazard category as shown in Table 912.5, the height and area of the existing building shall be deemed acceptable." Furthermore, asking the Board of Review to agree that replacing an A-3 studio with an A-3 library is *not* a change in use is entirely inappropriate, because the statement is false. Section 912.1 of the 2010 EBCNYS states clearly that: "The provisions of this section shall apply to buildings or portions thereof undergoing a change of occupancy classification. *This includes a change of occupancy classification within a group* as well as a change of occupancy classification from one group to a different group" (emphasis added). The purpose of a variance is not to change the meaning of the Code; rather, the purpose is to ask that a Code provision be waived.

In any case, voiding this provision of the building code through a variance request would in no way further the petitioner's objectives, since his proposed A-3 library is *not replacing* an A-3 studio. The proposed A-3 library use is, in fact, replacing Group B studio classroom use, not an "A-3 Studio use." This is because the classroom/studios are limited to 12-16 students, far less than a 50-student classroom that would trigger an A-3 classification. The one possible exception is the large first-year studio on the second floor of Rand Hall, which contains desks for 60-70 students. This one studio may be classified

as an A-3 classroom, so that Rand Hall, by itself, could be considered as mixed occupancy (Groups B, A-3 and F-1) with nonseparated uses. In any case, such a mixed occupancy classification has no impact on the determination that a library would constitute a change of occupancy to a higher hazard, since the A-3 library would be replacing Group B classroom/studios on both the third and second floors. This conclusion was supported by the decision of the Capital Region-Syracuse Board of Review in its hearing on Petition No. 2013-0250 and is documented in Figure 17 of Exhibit 8 (from Petition No. 2013-0250) as well as in Figure 4 below. These two figures reproduce Fire Safety and Property Maintenance Inspection reports from Feb. 26, 2013 and Feb. 26, 2013, respectively, and show "B – Business" listed as the occupancy type. The "Operating Permits" cited by the petitioner in his Exhibit 4 as evidence of assembly occupancy in Rand Hall will be discussed later.

Older inspection reports, issued under pre-IBC New York State Building Codes, show a Group C5.5 occupancy for the Rand Hall studios. This is a category described in the old New York State Code as being appropriate for "schools, colleges and similar places of education," and so is clearly analogous to the modern Code occupancy classifications of either Group B ("Educational occupancies above the 12th grade") or Group E ("...educational purposes through the 12th grade"). Such educational uses were placed under the "assembly" (Group C5) category in the old NYS Code, but are in no way analogous to modern definitions of A-3 assembly use. Modern definitions of A-3 assembly uses do *not* include any studio/classroom uses except for large lecture halls, auditoriums, or classrooms with 50 or more occupants.

Therefore, the relief sought incorrectly characterizes the proposed change of occupancy as one from A-3 studio to A-3 library, whereas the actual proposed change is from Group B studio to A-3 library.

b) Row 2: For Code Section 2010 BCNYS Table 503, Use and Occupancy, the *Relief Sought* states: "Determination that college studios/teaching labs with more than 49 occupants is an A-3 Assembly occupancy/use."

Again, it is not clear why the petitioner seeks relief on these grounds, since the single second-floor classroom/studio in Rand Hall with more than 49 occupants is already classified as an A-3 occupancy. It is situated within a mixed use, nonseparated building in which the majority of classroom/studios have 12-16 students and are classified as Group B occupancies.

If the petitioner is attempting to "upgrade" the occupancy group of small classroom/studios – which are properly classified as Group B "Educational occupancy above the 12th grade" – to A-3 assembly occupancies, the relief sought does not accomplish that objective. Furthermore, it is clear that such an "upgrade" is desired not because small classroom/studios actually correspond to an A-3 use, but only in a cynical attempt to "grandfather" an existing use – one that doesn't actually exist – for the purposes of constructing a new A-3 library in a space wherein it is clearly noncompliant.

That the *total* occupant load on the 3rd floor of Rand Hall exceeds 49 persons is irrelevant in terms of its classification within a particular occupancy group. Only classroom/studios with 50 or more occupants are classified as A-3 (see *Commentary to the 2009 IBC* for this explanation: "Classrooms and laboratories that are located in colleges, universities and academies for educating students above the 12th grade and that have an occupant load of less than 50 are classified in Group B. Classrooms with an occupant load of 50 or more are classified in Group A-3"). Because the classroom/studios on the third floor of Rand Hall are limited to 12-16 students, as shown clearly in the petitioner's own documentation in Exhibit 5, they fall under the Group B classification. That the total floor occupancy is greater than 49 persons is similarly irrelevant in determining the occupancy classification. As can be seen in Table 1015.1 of the 2010 BCNYS (Figure 1), many occupancies, including A, B, E, F, M, and U, can have an occupant load either less than or greater than 49 persons. All that changes when the space has more than 49 occupants is that the required number of means of egress increases.

TABLE 1015.1 SPACES WITH ONE MEANS OF EGRESS

OCCUPANCY	MAXIMUM OCCUPANT LOAD
A, B,E[a], F, M, U	49
H-1, H-2, H-3	3
H-4, H-5, I-1, I-3, I-4, R	10
S	29

Figure 1. Table 1015.1 from the 2010 BCNYS

c) Row 3: For Code Section 2010 BCNYS 303, Assembly Group A, the *Relief Sought* states: "Determination that use described above falls under A-3, 'other uses not classified elsewhere in group A.'"

No relief is necessary for the "use described above," as it is already classified as an A-3 occupancy. However, if the relief that the petitioner actually wants, but did not request, is for the small Group B classroom/studios in Rand Hall to be classified as A-3 occupancies, then such relief is completely inappropriate and should be denied. Section 302.1 of the 2012 BCNYS states: "Where a structure is proposed for a purpose that is not specifically provided for in this code, *such structure shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard involved*" (emphasis added). The occupancy group that most nearly resembles the classroom/studio use in Rand Hall is clearly Group B (Educational occupancies above the 12th grade), and so a designation of such a space as an A-3 occupancy would be in violation of the Building Code. Claiming that the designation of the 12-16 person classroom/studios in Rand Hall should be changed from Group B to A-3 has no rational basis, and is only being requested to avoid triggering Building Code provisions for changes from a lower- to a higher-hazard occupancy.

d) Row 4: For Code Section 2010 BCNYS 304, Business Use/Occupancy, the *Relief Sought* states: "Determination that overall classification of a building for Educational Uses above the 12th grade is in fact a B classification."

It is not clear what relief is sought in this case. Does the petitioner seek relief to change the building classification for Rand-Sibley-Milstein Hall from mixed occupancy, nonseparated use, to Group B; or does the petitioner seek relief to supersede or change an alleged Group B "overall classification," which doesn't actually exist? Either way, this makes no sense in the context of this variance request application. The actual occupancy classification of Rand-Sibley-Milstein Hall is, in fact, a mixed occupancy designed for nonseparated uses that includes Occupancy Groups B, A-3, F-1, and S-2, as regulated under Section 508.3.2 (Nonseparated occupancies). If it is re-classified as "Group B," per the petitioner's "relief sought," then his proposal to build an A-3 library would constitute a change to a higher hazard occupancy, and would be noncompliant.

Comments on Part 5 of the Application – Additional Contact Information

This section of the Application form asks for contact information for "Other interested person or organization." Only Shirley Egan, the Associate University Counsel for Cornell University, was listed. Jonathan Ochshorn, who filed the petition (No. 2013-0250, listed under Part 4 – Previous action) that led to the overturning of the City of Ithaca Code Enforcement Official's determination, which in turn triggered this very application for a variance – and who therefore, by definition, *is an interested party* – was not listed.

Comments on Part 6 of the Application – Building Status and Project Information

A. Occupancy classification is incorrectly shown as Groups A-3 and B. The actual nonseparated mixed occupancies within the building (Rand-Sibley-Milstein Hall is a single building) include Groups F-1 (wood shop in Rand) and S-2 (University Avenue within the building area of Milstein) in addition to Groups A-3 and B.

Occupancy C5.5 Educational is also checked, even though it no longer applies to the studio/classrooms of Rand Hall. Group C5.5 is an old, and obsolete, designation based upon language in NYS Building Codes prior to the adoption of regulations based on the *International Building Code* by New York State in 2002. As stated above, the most recent Fire Safety and Property Maintenance Inspection Reports documents in the City of Ithaca Building Department files for Rand Hall show a Group B occupancy classification for classroom/studios, which were formerly designated as C5.5.

B. Building Description and Project Information repeats errors from Part 2. The construction type is incorrectly listed as "IIB and VB" when, in fact, the construction type is VB. Only one construction type can be listed for a single building. The Decision of the Capital Region-Syracuse Board of Review, dated 8/20/13, regarding Petition No. 2013-0250 states explicitly: "The petition pertains to a B occupancy and an A-3 occupancy,

mixed occupancy, three stories in height of square footage numbers as noted in the submittal of *Type VB construction*..." (emphasis added).

The total floor area of the largest story (square feet) is neither provided, nor are the numbers that are listed separately for the three components of Rand-Sibley-Milstein Hall consistent with the total gross area of the entire building. This is because the total gross building area includes *all* of Sibley Hall (including the basement), whereas the total floor area of the largest story only includes East Sibley Hall. Since East Sibley Hall is not separated from the rest of Sibley Hall by a fire wall, the area of the largest story in Rand-Sibley-Milstein Hall should include the entire floor area of Sibley Hall. Only fire walls create separate buildings for the purposes of computing building floor area. The total single-floor area is thus approximately 9,826 (Rand) + 25,000 (Milstein) + 22,000 (Sibley) = *56,826 square feet*, and not 42,426 square feet (the number found by adding together the separate floor areas provided by the petitioner: 9,826, 25,000, and 7,600).

The "project type/status" is listed incorrectly as "Other: Use of existing building." The correct designation is "Change of Occupancy" since the existing Group B (classroom/studio) occupancy is being changed to a Group A-3 (library) occupancy.

Exhibit 1 – Petition Narrative

Comments on Executive Summary: Explanation

The petitioner states: "Rand Hall is fully sprinklered and is separated by two sets of fire barriers in lieu of a fire wall, and by a distance of 60 feet from a type VB building (East Sibley Hall), which is also fully sprinklered."

Rand Hall is part of a larger single building consisting of Rand, Milstein, and Sibley Halls. The *entire* building is designated as Type VB construction, not just the part called East Sibley Hall.

To suggest that Rand Hall is separated from East Sibley Hall "by a distance of 60 feet" is inaccurate and misleading. Rand Hall is *not separated from*, but is connected to Sibley Hall. That connection is precisely what the addition of Milstein Hall, built between Sibley and Rand Halls, accomplished.

It should also be noted that the "two sets of fire barriers" provided between Rand Hall and Milstein Hall, and between Sibley Hall and Milstein Hall, do *not* meet the requirements for fire barriers as outlined in the 2010 EBCNYS, the Code under which the permit for an A-3 occupancy was sought (and under which the proposed library occupancy was found to be noncompliant by the Capital Region-Syracuse Review Board in its findings related to Petition No. 2013-0250). Section 912.5.1 of the 2010 EBCNYS states: "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." Chapter 5 of the 2010 Building Code doesn't "upgrade" the nonconforming fire barriers of Milstein-Rand-Sibley that were put in place based on Section K902.2 of the 2002 Building Code, and Chapter 5 only permits portions of a building to be considered separate buildings when "included within the exterior walls or the exterior walls and fire walls" (Section 503.1). Therefore the combined Rand-Sibley-Milstein building has a Construction Type of VB under the new 2010 Building Code, and the placement of a library (A-3 occupancy group) on the third floor of Rand violates the 2-story limit for A-3 occupancies in VB sprinklered construction.

There is an exception to Section 912.5.1 which permits fire barriers to substitute for fire walls, but this exception only applies to *area* increases, and so is not applicable to this case, which involves a *height* increase. Moreover, this exception only permits an area increase if the fire barriers have fire-resistive ratings per 705.4 of the 2010 Building Code of NYS, which requires a 2-hour fire-resistance rating when separating Type II or V construction; and only if such fire barriers comply with Section 706 which, by reference to Table 715.4, requires minimum 1-1/2 hr ratings for fire shutters, and doesn't seem to permit fire-rated glazing assemblies at all, except when tested per ASTM E 119. The existing fire barriers between Milstein, Sibley, and Rand Halls do not meet the requirements of this exception, so even an *area* increase would not be permitted.

And finally, the exception to Section 912.5.1 of the 2010 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 of Rand Hall, 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. The existing fire barriers separating Rand Hall from Milstein and Sibley Halls were designed as 1-hour fire-resistance rated barriers, and so do not even come close to meeting the requirements of this exception. In addition, the exception to Section 912.5.1 of the 2010 EBCNYS does not even apply to Group F-1 occupancies, so it is not at all clear if *any* substitution of a fire barrier for a fire wall would be permitted, in any case.

Again, none of this matters, since the exception to Section 912.5.1 *only covers area increases*, and the library on the third floor of Rand Hall violates the height limitation, a conclusion sustained by the Review Board that originally examined this case.

The petitioner describes Milstein Hall as a Type IIB Building. In fact, it is not, and never was, a separate building with its "own" construction type. It is an addition to Rand and Sibley Halls, and the combined building (Rand-Sibley-Milstein Hall) is a Type VB building. The claim that "...therefore all three buildings are classified as *Type IIB* in accordance with Section 1002 of the 2010 Existing Building Code of New York State" is either incoherent or a typographical error, since the following sentence states: "The resulting *Type VB* classification would not otherwise permit use of the third floor for A-3 college library purposes without a variance" (emphasis added). It is also misleading to claim that only a variance would permit the use of the third floor for a library: upgrading the construction type of Rand-Sibley-Milstein Hall is perfectly feasible and would allow a library to be placed on the third floor without a variance.

The petitioner claims that: "All other Life Safety aspects (means of egress, fire protection, etc.) are in compliance with the applicable codes." This is not correct: neither of the exits in Rand Hall has a guardrail, and so both would be noncompliant if a library were to be placed in Rand Hall, under provisions of the 2010 EBCNYS. But even without a library, the main stair in Rand Hall is already noncompliant under the 2002 BCNYS, as it serves as a required exit from the Milstein Hall addition.

In other words, whether examining the 2002 BCNYS (for the construction of the Milstein Hall addition) or the 2010 EBCNYS (for the construction of a library in Rand Hall), the existing main stair in Rand Hall would need to comply with egress standards in the *current* BCNYS, including the requirement for guards. Section 912.4.2 of the 2010 EBCNYS (Means of egress for change of use to equal or lower hazard category) states: "When a change of occupancy classification is made to an equal or lesser hazard category (higher number) as shown in Table 912.4, existing elements of the means of egress shall

comply with the requirements of Section 805 for the new occupancy classification. *Newly constructed or configured means of egress shall comply with the requirements of Chapter 10 of the Building Code of New York State."*

A similar stipulation appears in the 2002 BCNYS. Section 1003.2.12.1 requires that guards "shall form a protective barrier not less than 42 inches high..." There are no 42-inch-high guards on the Rand Hall stair. That the Rand Hall stair must be upgraded if it is to count as a required exit for Milstein Hall is clear from Section K901.2 (Creation of nonconformity) in the 2002 Code: "An addition shall not *create or extend* any nonconformity in the existing building for which the addition is constructed with regard to accessibility, structural strength, fire safety, means of egress, or the capacity of mechanical, plumbing or electrical systems" (emphasis added). While the nonconforming exit stair in Rand was not "created" by Milstein Hall, its nonconformity was certainly "extended" by the addition of Milstein Hall, since its required use as a means of egress now encompasses not only the existing occupants of Rand Hall, but also the occupants of Milstein Hall. This lack of a guardrail is shown by the petitioner, but not acknowledged, in Exhibit 7 photographs, pages 1 and 2.

The petitioner incorrectly characterizes the "two sets of fire barriers" as having been used "in lieu of a fire wall." Section K902.2 of the 2002 BCNYS, under which these fire barriers were provided, only permits an addition to increase the area of an existing building, and *does not* upgrade the fire barriers provided to the status of fire walls. Only a proposed *change of occupancy* that meets the more rigorous standards of the 2010 EBCNYS would allow fire barriers to be considered "in lieu of" fire walls. Moreover, not only are the existing fire barriers *not* fire walls, and not only are they *not* as fire resistive as would be required for a change of occupancy under the 2010 EBCNYS, but these fire barriers required under the 2002 BCNYS – and cited by the petitioner as a reason for granting a variance – are not even compliant for the purposes they currently serve, in at least three important respects.

First, the fire barrier between Milstein and Sibley Hall at the second-floor level does not meet the minimal requirements for a 1-hour fire-rated wall under the 2002 BCNYS – Cornell admitted in testimony at the Hearing for Petition No. 2013-0250 that opening protectives for window areas, in excess of the allowable 25% aggregate width limit, were covered with 3/4-hour fire-resistance rated glazing instead of the required 1-hour fire-resistance rated glazing. An attempt to remedy this error by providing Tyco Model WS Specific Application Window Sprinklers was conditionally approved by the Review Board at the Hearing for Petition No. 2013-0250 (Exhibit 3), subject to a "submittal from the City of Ithaca on the testified approvals from the compliance testing lab." The submitted document, incredibly, contains the same NER-516 "Legacy Report" that Cornell had already referred to at the Hearing – a report that specifically *prohibits* the use of Tyco sprinklers in the way that Cornell used them. As shown in Figure 2 below, this system is noncompliant if the glazing has intermediate horizontal mullions, *or* if combustible material is within two inches of the glazing. The Sibley-Milstein fire barrier openings fail not only one of these tests, but fail both of them. In other words, the petitioner is requesting a variance to *leave existing fire barriers in place*, rather than

upgrading the Rand-Milstein fire barrier per the requirements for changes of occupancy under the 2010 EBCNYS, yet even the minimal standards for a 1-hour fire-resistance rating, mandated by Section K902.2 of the 2002 BCNYS, have not been complied with.

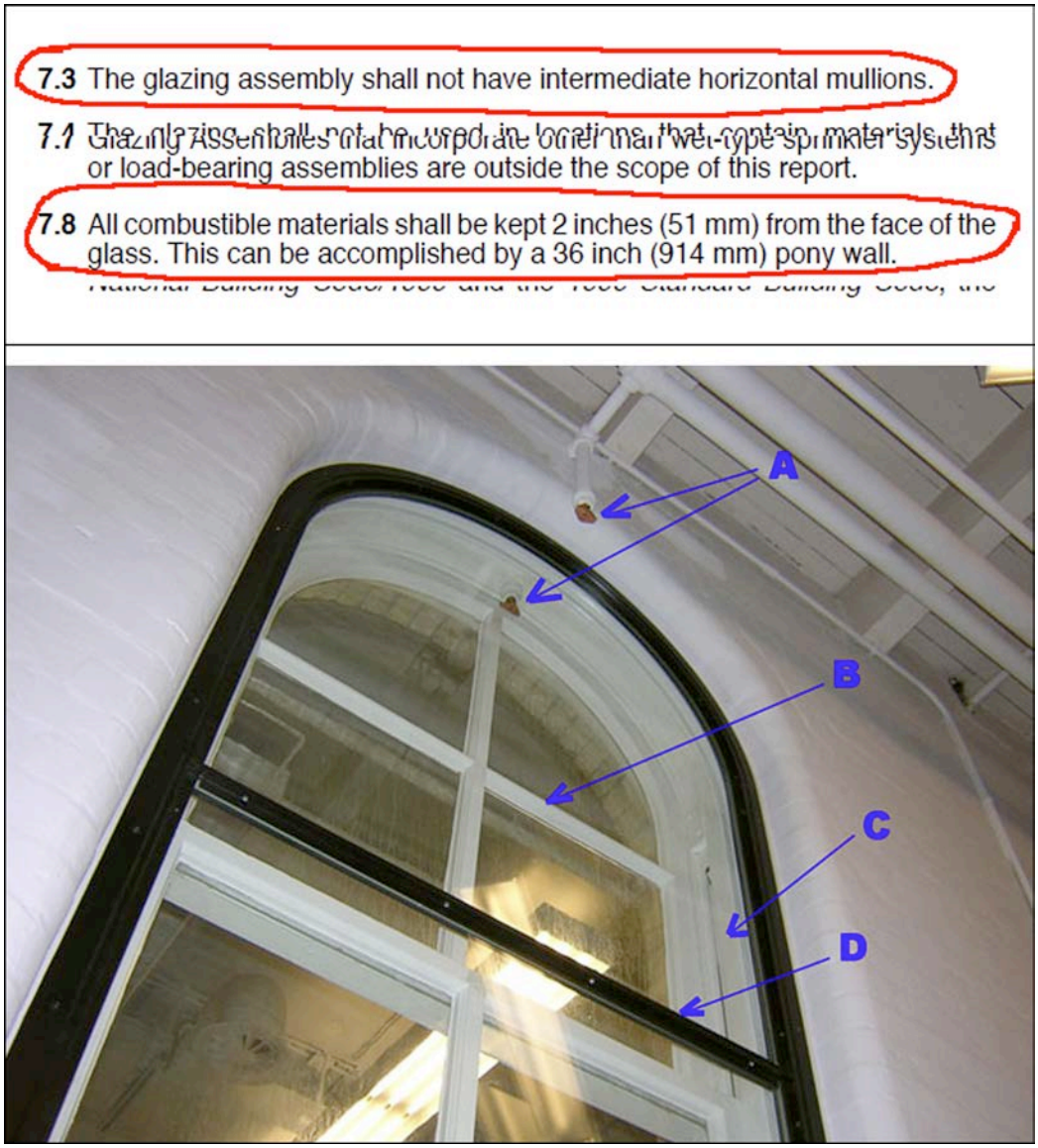

Figure 2. Fire-rated glazing with special Tyco sprinklers (bottom image, photo by J. Ochshorn) does not meet the requirements for a 1-hour fire-resistance rating outlined in the NER-516 "Legacy Report" submitted by Cornell; the system as installed by Cornell has intermediate horizontal mullions (labeled as "D" in the photo) and combustible material within two inches of the glazing (labeled as "C" in the photo), either of which render the entire assembly noncompliant. The specific NER-516 requirements are reproduced at the top of the figure.

Second, the required fire barrier between Sibley and Milstein Hall at the basement and ground-floor levels has only been provided with Tyco sprinklers on one side, rather than on both sides of the glazing, as required. Cornell has referenced the requirements for "exterior walls required to be rated for protection" as a justification for using 1-sided sprinkler protection here, yet this description does not apply to fire barriers at all, nor are

fire-barrier walls in this location required to be "protected" from fires in *adjacent* buildings. In other words, two-sided sprinklers – which are themselves noncompliant when used with glazing containing horizontal mullions and combustible material as described above – were replaced with an even more inappropriate *1-sided* sprinkler system.

Third, opening protectives for the required fire barrier between Rand and Milstein Halls at the ground floor level were never provided. As shown in Figure 3, the existing windows and exhaust ducts in that location have neither opening protectives nor fire dampers.

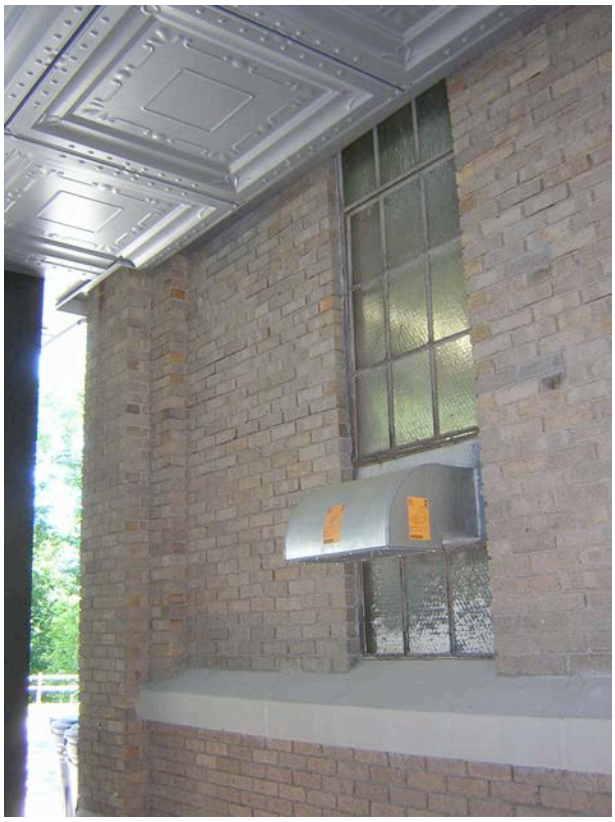

Figure 3. Lack of opening protectives in fire barrier between Rand and Milstein Hall (photo by J. Ochshorn, June 2013)

Comments on Narrative:

"Background" section. The petitioner states that college library use would have been permitted on the third floor of Rand Hall under prior (pre-IBC-based) New York State Codes. That a noncompliant occupancy *would have been* permitted under an obsolete Building Code is not only irrelevant but was found to be irrelevant by the Review Board that overturned the City of Ithaca's Code initial ruling on this matter. Modern building codes have criteria, based on the relative hazard presented by any change of occupancy, that specifically preclude the type of change proposed in this variance.

The petitioner repeats the inaccurate assertion that a "permit [was] issued by the City of Ithaca for a new addition of Type IIB construction, now known as Milstein Hall." First, the permit was incorrectly filed and issued for a "new building" and not for an "addition," an error admitted by the City of Ithaca in testimony presented at the Review Board hearing that successfully challenged the ruling for which this variance has now been submitted. Second, there is nothing in the Building Code that supports the contention that a part of a Type VB building can be characterized as having Type IIB construction. The entire building, including the part known as Milstein Hall, is governed by Type VB construction. That there is a structural steel frame in Milstein Hall is as irrelevant as the fact that there are masonry exterior walls below the third floor of Sibley Hall. It is the small quantity of *combustible wood-framed exterior bearing walls* on the third floor of Sibley Hall that gave both Sibley Hall (when it was a free-standing building), as well as Rand-Sibley-Milstein Hall (as it is currently configured) their VB construction type.

It should also be noted that Rand-Sibley-Milstein Hall would still be a nonconforming building with respect to floor area even if Sibley Hall were upgraded so that the entire complex was of Type IIB construction. The allowable floor area for an A-3 occupancy of *Type IIB construction* (assuming sprinklers and maximum frontage) is 9,500 x 3.75 = 35,625 square feet, which is still far *less than* the actual floor area of Rand-Sibley-Milstein Hall (approximately 56,826 square feet), and would remain less than the actual floor area even if the contribution of West Sibley and Sibley Dome were excluded. Therefore, even if the Rand-Sibley-Milstein Hall complex were to be upgraded to Type IIB construction, a change of occupancy to a library on the *second* floor of Rand Hall would still be noncompliant unless a fire wall (or fire barrier per Section 912.5.1 exception, if allowed) was provided.

The petitioner describes the construction of Milstein Hall as having been "downgraded" by virtue of its connection to Sibley Hall and states that providing "a fire barrier" [the petitioner must mean "fire wall" here, since a "fire barrier" *was* provided] separating Sibley from Milstein Hall was rejected "because of concerns for the historic character of East Sibley." First, to argue that fire walls were not provided out of concern for issues of historic preservation is disingenuous, irrelevant, and untrue. Fire walls were not provided because the architects for Cornell University, supported by City of Ithaca Code Officials, made the determination that fire walls were not required under Appendix K of the 2002 BCNYS.

Second, the implication that only a fire wall would have allowed Milstein and Rand Halls to be freed from the constraints imposed by Sibley Hall's Type VB construction is simply untrue. Sibley Hall's construction type can be changed at any time to Type IIIB by simply upgrading the sloping third-story exterior wood bearing walls so that they have a 2-hour rating (even using fire-retardant-treated wood framing per Section 602.3 of the 2010 BCNYS). While this would be inconvenient, it is hardly impossible – especially since the entire third floor of East Sibley Hall is currently vacant and slated for a substantial renovation.

Third, it was always possible to create a fire wall between Milstein and Rand Halls, neither of which have any historic designations (only Sibley Hall is so designated). Creating such a fire wall would have allowed Rand Hall to be considered a separate building of Type IIB construction, so that a proposed library occupancy on its third floor (or second floor) would have been compliant. That Cornell chose not to build such a fire wall between Rand and Milstein Halls, when it had the opportunity to do so, cannot be blamed on any alleged sensitivity to "historic character."

The petitioner states: "In an abundance of caution, the petition is for A-3 approval for both floors, although an A-3 occupancy is permitted on the second floor of even a sprinklered Type VB building, per 2010 BCNYS Chapter 5, and Table 503." This is incorrect, for the following reason. While it is true that Table 503 permits A-3 occupancies on the second floor of a sprinklered Type VB building, the same Table 503 limits the *tabular area* for such an occupancy and construction type to 6,000 square feet. Including increases for sprinklers and frontage (even using the *maximum* possible frontage coefficient of 0.75), the allowable per-floor area of such an occupancy would be 6,000 x 3.75 = 22,500 square feet. The actual second-floor area of Rand-Sibley-Milstein Halls is far greater than this (approximately 56,826 square feet). The fire barrier exception to Section 912.5.1 of the EBCNYS may or may not be applicable (see discussion above in my comments on the petition narrative) but, in any case, would require a greater fire-resistance rating than was required for the existing fire barrier provided per Appendix K for the construction of the Milstein Hall addition.

1. Building Construction

Comments on Building Construction, item a. The petitioner claims that the "only reason" for "downgrading" the construction type of Rand Hall (and Milstein Hall) from Type IIB to Type VB construction is that they are connected to Sibley Hall. This attempt to minimize the dangers inherent in connecting combustible and non-fire-rated construction types with noncombustible construction types is, fortunately, not something that is supported by the Building Code. Furthermore, even if the entire Rand-Sibley-Milstein Hall complex were upgraded to Type IIB construction, a change of occupancy to a library on the second floor of Rand Hall would still not be permitted, except possibly by constructing a fire barrier between Rand and Milstein Halls with a 2- or 3-hour fire-resistance rating (it's not clear whether *any* fire barrier would qualify under the exception to Section 912.5.1 of the 2010 EBCNYS, discussed above).

The petitioner states that Section 1001 of the 2010 EBCNYS "mitigates that issue by stating in part that '[a]n addition to a building or structure shall comply with the Codes of New York State without requiring the existing building or structure to comply with any requirements of those codes or of those provisions, except as required by his chapter.'" First, this quote is inaccurate, as it leaves out the phrase, "as adopted for new construction" immediately after "Codes of New York State." Second, this whole discussion is irrelevant, since Chapter 10 of the 2010 EBCNYS concerns *additions*,

whereas this variance concerns a *change of occupancy* in an existing building, not an addition.

The petitioner states that the "only provision of Chapter 10 [of the 2010 EBCNYS] that is of issue is Section 1002.2, Area Limitations, which does not permit an increase in area of an existing building beyond that allowed by Chapter 5 of the BCNYS. That issue was resolved by the Board of Review in its decision on Petition No. 2013-0250, when it upheld the Authority Having Jurisdiction's issuing of a building permit to allow the Milstein Hall addition to Rand Hall and East Sibley Hall, separated by fire barriers in lieu of fire walls under provisions of Section 902.2 of Appendix K of the 2002 BCNYS."

First as mentioned above, Chapter 10 of the 2010 EBCNYS is not relevant to the variance being sought, since Chapter 10 concerns *additions* to existing buildings and not *changes of occupancy* (Chapter 9) within an existing building.

Second, it is not true that only area limitations are at issue. As stated earlier, and as supported by the findings of the Review Board that adjudicated this issue (Petition No. 2013-0250, Exhibit 8), height limitations are also at issue.

Third, the issue of area limits for an A-3 occupation of the second floor of Rand Hall was not only *not* resolved by the Board of Review, but *never even was discussed* in the Hearing referenced above. The petitioner is confusing the Review Board's prior ruling (Petition No. 2013-0250) on area limits under Appendix K of the 2002 BCNYS – for new additions to existing buildings – with the requirements for changes of occupancy to a higher hazard under the 2010 EBCNYS. In the former case, additions are permitted to increase the area of existing buildings if fire barriers – meeting fire barrier requirements in the 2002 BCNYS – are provided. In the latter case, changes to a higher hazard occupancy within an existing building are subject to a completely different, and more stringent, standard: in these cases, fire barriers must meet the fire-resistance standards for *fire walls* (not fire barriers). The fire barriers provided under the provisions of Appendix K of the 2002 BCNYS *do not* meet the requirements for fire barriers under the 2010 EBCNYS.

Fourth, the petitioner states that the fire barriers provided under Appendix K of the 2002 BCNYS are used "in lieu of fire walls." This is a complete fabrication, as the provisions of Appendix K, Section K902.2, *do not* state that fire barriers provided under that section take the place of (i.e., are used "in lieu of") fire walls. They are, and remain, fire barriers. They do *not* create separate buildings, as only a fire wall can. This crucial point was sustained by the Review Board (Petition No. 2013-0250), which concluded that the entire combined building consisting of Rand-Sibley-Milstein Halls was a *single* building with a *single* construction type.

Comments on Building Construction, item b. The petitioner states: "No part of Rand Hall is directly connected to East Sibley Hall. As stated above, the link to East Sibley is the Milstein Hall addition, a fully sprinklered Type IIB building. Rand Hall and East Sibley are 60 feet apart at their closest point, from the southwest corner of Rand Hall to the

Northeast corner of East Sibley. It is very unlikely that a fire originating in East Sibley, a fully sprinklered building, would travel through Milstein Hall, a fully sprinklered building, to Rand Hall, also a fully sprinklered building."

The claim that no part of Rand Hall is directly connected to East Sibley Hall is both misleading and irrelevant. It is misleading because, as described in the very next sentence, Milstein Hall connects Rand Hall directly to Sibley Hall: they are *not* two separate buildings, but rather part of a *new single building* consisting of Rand-Sibley-Milstein Hall. Moreover, Milstein Hall is hardly a mere "link" connecting the two existing buildings. Rather, its "footprint" of approximately 25,000 square feet is substantially larger than that of Rand and East Sibley Halls combined, and its physical connection to Rand and Sibley Halls covers hundreds of feet measured horizontally.

Furthermore, there are no continuous and fire-rated floor-ceiling assemblies in Rand-Sibley-Milstein Hall that would prevent the rapid spread of fire between stories in the combined building. In fact, the library proposed for the second and third floors of Rand Hall (for which this variance is requested) would almost certainly have interconnected floors with neither shaft walls nor fire-rated assemblies providing compartmentation of one floor from the other. Therefore, the portion of the library on the third floor would not be isolated *in any meaningful way* from the portion of the library on the second floor, and any fire originating in Sibley Hall would have a direct pathway to the Rand Hall library space, separated only by 1-hour fire barriers that are completely nonconforming with respect to both current fire safety standards for new construction, as well as changes to a higher hazard occupancy.

The claim is also irrelevant, since the Building Code defines what constitutes a connection between buildings, and distinguishes between "pedestrian walkways and tunnels" which connect two *separate* buildings (Section 3104 of either the 2002, 2007, or 2010 BCNYS), and additions to buildings, which create a new, *single*, building. If Cornell had desired to connect Rand, Sibley, and Milstein Hall with "pedestrian walkways and tunnels," as described in Section 3104 the Building Code, then the three buildings could have remained as separate buildings, and their connections could accurately have been described as "links." Instead, Milstein Hall was built, not as a "link," but as a substantial addition to the existing buildings.

That sections of Rand-Sibley-Milstein Hall are 60 feet apart is completely irrelevant. *All* buildings that are larger than 60 feet in any dimension have sections that are more than 60 feet apart. The only possible motivation for mentioning such a distance is to suggest, but not to actually state, that this distance is somehow equivalent to the 60-foot building separation distance described in Section 507 of the 2010 BCNYS. That section of the Building Code permits unlimited area where a building is "surrounded and adjoined by public ways or yards *not less than 60 feet* (18 288 mm) in width" (emphasis added) and is no more than 2 stories high (among other restrictions). Rand-Sibley-Milstein Hall is a single building and therefore is not, by definition, separated by "public ways or yards" from itself.

The petitioner states that Milstein Hall is a "fully sprinklered Type IIB building." This is not true: Milstein Hall is not a separate building with its own Type IIB construction type, but rather is a part of a combined single building (Rand-Sibley-Milstein Hall) of Type VB construction. That this single combined building is "fully sprinklered" is true, but not relevant to the variance requested. The Building Code already has taken into account the fact that this building is fully sprinklered in permitting floor area increases as well as an additional story in the calculation of allowable areas and heights. If the building were not sprinklered, the height limit for an A-3 occupancy in Type VB construction would have been one story. With sprinklers, the height limit is increased to two stories. In other words, even as a fully sprinklered building, *an A-3 occupancy still cannot be placed on the third story*. The petitioner has already received a "height bonus" for providing sprinklers in this building, and the proposed library occupancy remains noncompliant. Using the fact that there are sprinklers as an argument for violating Code limits concerning heights for sprinklered buildings makes no sense.

The petitioner seems quite impressed that both Rand and Milstein Halls, if considered as separate buildings, would be classified as having Type IIB construction. This construction type – with no fire-resistance rating on any part of the structural frame or floor/roof assemblies – is hardly a panacea for mitigating fire safety concerns. In fact, even if the entire combined Rand-Sibley-Milstein Hall were to be upgraded to Type IIB construction, the building would *still exceed allowable areas* based on Table 503 in the 2002, 2007, or 2010 Building Codes of New York State, even with fire barriers provided between the buildings and all buildings fully sprinklered. This is a nonconforming building, and it would have been nonconforming even if Sibley Hall matched the construction type of Milstein and Rand Halls. Only Appendix K in the 2002 BCNYS allowed this building to be built to standards substantially below those that would have been required under any other New York State Building Code. Any request for a Code variance should be understood in this context.

The petitioner states that it is "very unlikely" that a fire would spread from East Sibley Hall to Rand Hall. Building fires are low-probability events, and so it is true that such a fire is unlikely. A fire in *any particular building* is unlikely. But this is not a reason for making buildings less safe: the low risk of fire in modern buildings is a result of *following* the prescriptions in Building Codes, not a result of *violating* those prescriptions. Furthermore, fires in buildings, looking at the total class of buildings in New York State, for example, happen with disturbing frequency. Even looking at the smaller sub-class of buildings at Cornell University, we can see that fires in campus buildings occur each year.

In New York State alone, structural fires cause hundreds of injuries and deaths each year, both to civilians and fire fighters. Loss of property is measured in the hundreds of millions of dollars annually, again, just in New York State.

At Cornell University, fires routinely occur in both lab buildings and dormitories, and numerous Cornell students have been killed in off-campus houses and clubs. Even buildings designed by noted architects like OMA/Rem Koolhaas (the "design" architect for the Milstein Hall addition) have been damaged by fire. OMA's New York City Prada

store "became one of Prada's most successful stores, but on Saturday night [Jan. 21, 2006] a fire that began in neighboring American Eagle Outfitters injured seven people, including six firefighters, and caused extensive water and smoke damage throughout the building" (Eric Wilson, "Prada Store Wrings Out," *New York Times*, Jan. 26, 2006). More recently, OMA's 34-story hotel under construction as part of the China Central Television headquarters in Beijing was engulfed by "a fierce blaze started by an illegal fireworks show" (Andrew Jacobs, "Fire Ravages Renowned Building in Beijing," *New York Times*, Feb. 9, 2009).

Comments on Building Construction, item c. The petitioner states: "The fire barrier between Rand Hall and Milstein Hall has a 1 hour fire resistance rating. This separates A-3 uses between the two buildings per the 2002 BCNYS. Section 706.3.5 of the 2002 BCNYS required a 2 hour separation between adjacent A-3 occupancies (Table 302.3.3), but this was reduced by 1 hour to a 1 hour requirement by Exception 1 to Section 302.3.3, and reduced further to require no fire separation requirement by Table 508.3.3 of the 2010 BCNYS."

This paragraph correctly describes the requirement for a 1-hour fire-resistance rating for the fire barrier between the Milstein Hall addition and the two existing buildings it is attached to, based on provisions in section K902.2 of the 2002 BCNYS. This 1-hour fire barrier permitted the addition to increase the area of the existing buildings beyond that permitted by Chapter 5 area limits, but it should be emphasized that Rand-Sibley-Milstein Hall was *already nonconforming* by the time its building permit was issued on this basis on January 28, 2009 (since both the 2007 BCNYS, as well as the 2010 BCNYS, do *not* permit a building addition to increase the area of an existing building beyond the limits specified in Chapter 5, except by providing a *fire wall*, not a fire barrier).

The statement by the petitioner that the required fire resistance of the fire barrier walls between Milstein and Rand Halls was "reduced further to require no fire separation" under the 2010 BCNYS is therefore completely false. Table 508.3.3 in the 2010 BCNYS describes required fire resistance ratings for "separated occupancies" in new construction, a criterion that is completely irrelevant to the issue at hand. First, the floor areas of Rand, Sibley, and Milstein Halls – even treated as separated occupancies – do not satisfy the floor area limits for separated occupancies under either the 2002, the 2007, or the 2010 Building Codes of New York State. Second, the purpose of the fire barriers that were provided between Milstein and Rand Halls had nothing to do with the requirements for separated occupancies (Section 302.3.3 in the 2002 BCNYS and Section 508.3.3 in the 2010 BCNYS), but rather had to do with floor area increases allowed per Section K902.2 of the 2002 BCNYS for additions. The floor area increases allowed by Section K902.2 were completely independent of, and in fact contradicted, the requirements for separated occupancies in Chapter 3 of that Code (moved to Chapter 5 in the 2007 and 2010 BCNYS). To be clear: Rand-Sibley-Milstein Hall, even if proposed as new construction under the 2010 BCNYS, and even if built entirely as Type IIB construction, *would still be noncompliant* whether or not various fire areas were created using fire barriers, and whether or not these fire areas consisted of nonseparated or separated occupancies with or without required fire-rated separation. The combined building is simply too big.

Comments on Building Construction, item d. The petitioner claims that "[n]o addition shall increase the height of an existing building beyond that permitted under the applicable provision [sic] of Chapter 5 of the building code for new buildings" under Section 1002.1 of the 2010 EBCNYS. This fact is completely irrelevant to the variance being requested, since there are no "additions" at issue; rather, there is an existing building in which a change of occupancy is proposed. The relevant section of the 2010 EBCNYS is therefore Section 912 dealing with changes in occupancy classification. The Review Board that met in July, 2013, to consider Petition No. 2013-0250 Exhibit 8, has already determined that the proposed library for the third floor of Rand Hall constitutes a change from a Group B to a higher hazard Group A-3 occupancy and has already overturned the ruling of City of Ithaca Code Enforcement Officials that would have permitted this noncompliant change of occupancy. This is why the current petitioner is requesting a variance.

The petitioner states that there is no change to a higher hazard occupancy when existing classroom/studios (Group B) are replaced with a library (Group A-3). This claim is based on the incorrect contention that all "three stories of Rand Hall were of A-3 occupancy." This exact argument – that the existing classroom/studios in Rand Hall are A-3 occupancies and that therefore the proposed library does not constitute a change to a higher hazard occupancy – was found to be flawed by the Review Board that rendered a decision on this case (Petition No. 2013-0250). To repeat the *same* flawed argument in order to justify a variance is, on the face of it, absurd.

2. Use/Occupancy

Comments on Use/Occupancy, item a. The petitioner states that the original occupancy classification for Rand Hall classroom/studios, under pre-IBC New York State Codes, was C5.5, and that such spaces are now classified as Group B (for college buildings). This is precisely correct, and contradicts prior claims by the petitioner that such classroom/studios should now be classified as A-3 assembly spaces. In any case, that the proposed library in Rand Hall constitutes a change of occupancy from Group B to Group A-3 has already been established by the Hearing Board in its findings regarding Petition No. 2013-0250, Exhibit 8.

Comments on Use/Occupancy, item b. The petitioner claims that "previous use of the third floor, and the existing uses of the first and second floors had or have occupant loads exceeding 49 occupants and are clearly assembly uses, and fall under the 'and other uses not classified elsewhere in Group A...' clause of 303.1, under A-3. None of the floors would meet any of the exceptions in 303.1, which would otherwise permit a Group B occupancy classification."

First, the total occupant load of a floor is not relevant in determining whether an occupancy falls under the "assembly" classification, as explained above in reference to Table 1015.1 of the 2010 BCNYS. In the case of Rand Hall's classroom/studios, the total

number of desks on the floor is not relevant in determining the occupancy classification. These are not A-3 lecture halls with a high density of fixed seats, nor are these assembly uses as defined in Table 1004.1.1 with 5, 7, or 15 square feet allocated per occupant. Instead, these are extremely low-density classrooms with approximately 50 square feet per person and only 12-16 students in each space. In no way is "assembly" an appropriate classification, especially since the Code provides an unambiguous alternative – Group B – that is intended precisely for educational occupancies above the 12th grade including classrooms with 49 or fewer occupants.

Second, this argument may have been appropriate at the July, 2013, Board of Review Hearing for Petition No. 2013-0250 where the question of the prior occupancy of Rand Hall was actually argued and settled. That Review Board panel found that the proposed library constituted a change to a higher hazard occupancy, from Group B to Group A-3. This question has therefore been settled, and it is entirely inappropriate to rehash such discredited arguments in an application for a variance. For if this argument had any validity (which it doesn't), then a variance request would be moot.

"Reasons" for granting a variance.

Comments on 1. Established Uses, item a. The petitioner claims that the classroom/studios in Rand Hall "are not to be construed as classrooms; BCNYS Section 303.1 does not permit classifying classrooms with 50 or more occupants as a B occupancy; they fall under Use Subgroup A-3, Assembly."

Please see my comments immediately above concerning "Use/Occupancy, item b." This question was already argued by the current petitioner in the July, 2013, Hearing that challenged the City of Ithaca's ruling permitting the change of occupancy on the third floor of Rand Hall (Petition No. 2013-0250, Exhibit 8). The City of Ithaca's ruling was overturned. This same argument, found to be invalid in the prior Hearing, cannot now be used as a reason to grant a variance.

Comments on 1. Established Uses, item b. The petitioner references Fire Department Operating Permits for Rand Hall, some of which designate Rand Hall as an "Assembly Occupancy." Such a designation contradicts the Group B designation shown on Fire Safety and Property Maintenance Inspection Reports issued by the same Fire Department (for further discussion on these permits, see my comments pertaining to Exhibit 4).

Comments on 1. Established Uses, item c. The petitioner refers to various documents (Exhibit 5) that show classroom/studio uses in Rand Hall beginning in the mid-1970s, and claims that these documents "show the continuous assembly uses of the second and third floors in 1977, 1987, 1992 and 2006-2007..." This is both incorrect and misleading, since there is not a single mention of "assembly uses" in any of the documents referenced. No one has suggested that Rand Hall did not contain classroom/studios since the mid 1970s. The only relevant question is whether these classroom/studios are Group B or Group A-3 occupancies. This question is not addressed in the current petitioner's

Exhibit 5, and has already been addressed by the Hearing Board panel that decided this question in their decision with respect to Petition No. 2013-0250, Exhibit 8.

Comments on 2. Occupancy Classification. The petitioner claims that "there was a change in name only because of differences in code language, but no actual change in occupancy. There was also no change to a higher hazard category as described in Section 912. Moving the A-3 library into space previously used for A-3 studio use is in harmony with Section 912 [of the 2010 EBCNYS], and does not involve a change of occupancy group."

First, if the petitioner's contention is true, then why is he requesting a Code variance? A variance is only needed in order to do something otherwise prohibited by the Building Code; therefore, if the proposal to put a library on the second and third floor of Rand Hall does *not* constitute a change to a higher hazard occupancy, then no variance is needed. What this petitioner refuses to acknowledge is that the Review Board that heard testimony regarding Petition No. 2013-0250, Exhibit 8, overturned the City of Ithaca's code interpretation and held that replacing classroom/studios with a library *does* constitute a change to a higher-hazard occupancy and is therefore noncompliant.

Second, with respect to the "change in name only," by which the petitioner appears to mean the change from the C5.5 occupancy classification (in the old pre-IBC New York State codes) to Group E and Group B occupancy classifications in modern codes, the petitioner argues that because this old designation was in an "assembly" category, that classroom/studios formerly designated as C5.5 uses should therefore now be designated as assembly (A-3) uses. According to this incoherent logic, there would be no need for any Group E or Group B (for college uses) occupancies in New York State, since all of these uses (i.e., educational purposes through the 12th grade; and educational occupancies for students above the 12th grade) should similarly be replaced with the A-3 assembly designation.

The old pre-IBC New York State codes grouped "schools, colleges and similar places of education" (C5.5) with various sorts of assembly uses, while modern building codes based on the IBC – adopted in New York State beginning in 2002 – do *not* place educational uses in the Assembly Group (except for specific assembly uses like libraries, lecture halls, auditoriums, and classrooms with more than 49 occupants). This is a significant difference between the old and new codes, and is hardly a "change in name only."

Comments on 3. Life Safety Matters, item a (occupant loads). The petitioner states: "Table 1004.1.1 of the 2010 BCNYS indicates that the calculated occupant loads of a library (100 gsf per occupant for stack areas and 50 nsf per occupant for reading areas) are less than that of the architectural studio/laboratory spaces with unconcentrated areas with tables and chairs (15 nsf/occupant). This results in a lower load on the egress system (which meets code requirements for either use)."

First, occupant load is one of several factors used when rating occupancies in terms of hazard. To assess the relative hazard of one occupancy compared to another, the relevant code section is not Table 1004.11 of the 2010 BCNYS, but rather Table 912.5 (Heights and Areas Hazard Categories) of the 2010 EBCNYS. This latter table shows unambiguously that a library (Group A-3 with a relative hazard of 2) has a higher hazard designation than a college-level classroom/studio (Group B with a relative hazard of 4 – lowest hazard). Library stack areas present a relatively high hazard, not because of a high occupant load, but because of the large quantity of "fuel" stored on bookshelves.

Second, the occupant load for design studios is hardly represented by 15 square feet per occupant as the petitioner claims (a number based on "tables and chairs" for assembly use without fixed seats). The calculated occupant load in Rand Hall – based on plans submitted by the petitioner in his Exhibit 5 – is much closer to 50 square feet per student, and is therefore comparable to the occupant density in library reading areas. Claiming that the change of occupancy from classroom/studio to library results in a "lower load on the egress system" is therefore not only irrelevant in determining the relative hazard of these occupancies, but is contradicted by the petitioner's own documentation.

Third, and directly relevant to the absurdity of the petitioner's claim that the occupant load of classroom/studios should be measured as "unconcentrated [assembly] areas with tables and chairs" at "15 nsf/occupant," the very building addition that made the proposed change to a higher hazard library occupancy in Rand Hall noncompliant – Milstein Hall – itself was designed with a single 25,000 square foot area containing precisely the same type of classroom/studios found in Rand Hall, except not articulated as separate spaces with partitions. These Milstein Hall classroom/studios were *permitted as a Group B occupancy*, not as an A-3 assembly space. Had the occupant load for these classroom/studios been calculated on the basis of unconcentrated assembly areas at 15 nsf/occupant, as is suggested by the petitioner for the Rand Hall classroom/studios, the calculated number of occupants would exceed 1,500 and four exits would be required. In fact, only two exits were initially provided, with a third exit added in 2013 based on a revised calculation for total occupancy of 530 persons. That Milstein Hall is a nonseparated mixed use building with both Group B and Group A-3 occupancies is not relevant: the classroom/studio spaces must still be individually classified according to their specific occupancy (see Section 508.3.2.1 of the 2010 BCNYS).

Comments on 3. Life Safety Matters, item b (means of egress). The petitioner states that the "means of egress for Rand Hall are more than adequate for the A-3 uses..." In fact, the main exit stair in Rand Hall is already noncompliant, and both exit stairs in Rand Hall would be noncompliant under any change to a higher hazard occupancy. These stairs do not have guards meeting the requirements of Section 1013.2 of the 2010 BCNYS.

Exhibit 2 – Responses to Part 7 – Required Arguments for Variance

Comments on Argument 1 (would create an excessive and unreasonable burden). The petitioner states: "Constructing a fire wall, or the equivalent of a fire wall (adding a 2 HR exterior wall to Milstein Hall at rand Hall) would be extremely costly and disruptive. Rebuilding Sibley Hall, a 'contributing historic structure', to III-A construction is not sensitive to its historic character and prominence and therefore not likely to gain approval from the Ithaca Landmarks Preservation Commission and Cornell's own guidelines for treating its historic buildings. Additionally, the cost of demolishing the third floor structure and replacing it with noncombustible construction is excessive and unreasonable, given that the building and the adjacent buildings are protected throughout with automatic fire-sprinklers."

In order to place an A-3 occupancy on the third floor of Rand Hall, only one option appears to be viable, since building a fire wall at this time – after Milstein Hall has already been constructed – is less practical than it would have been before Milstein Hall was built. As I explained in my comments concerning the petitioner's executive summary (explanation) in Exhibit 1, a 2-hour fire-rated fire barrier, used in lieu of a fire wall, does *not* permit an A-3 occupancy on the 3rd floor of Rand Hall, and, in any case, does not satisfy Code requirements for fire-rating based on the required rating for a *fire wall*, which is 3 hours (*not* 2 hours) when separating the F-1 occupancy (wood shop) in Rand Hall, if this fire barrier exception is allowed at all.

It is not necessary to upgrade the construction type of Rand-Sibley-Milstein Hall from VB to IIIA, as the petitioner suggests. He is presumably referring to the "relief sought" in Petition No. 2013-0250 for Exhibit 8 (Noncompliant A-3 library occupancy of Rand Hall, third floor), which suggests upgrading Sibley Hall to Type IIIA construction as one compliance option. However, upgrading to *Type IIIB construction* is sufficient to allow A-3 occupancies on the third floor of sprinklered buildings.

Per Table 503 of the 2010 BCNYS (with the automatic sprinkler system height increase allowed per Section 504.2), an A-3 occupancy *can* be placed on the 3rd floor of a sprinklered Type IIIB building. It would still be necessary to address the area limits for any A-3 occupancy proposed for the second floor of Rand Hall, but the exception in Section 912.5.1 *may* allow the use of a fire barrier, in lieu of fire walls, depending on how the exclusion within this exception of certain occupancy groups, including F-1, is interpreted. Since most of the wall separating Rand from Milstein Hall consists of brick masonry, presumably with a 2-hour fire-resistance rating, all that needs upgrading are the openings in this wall (unless a 3-hour rating is required because of the F-1 wood shop occupancy in Rand Hall). Given the need to create a fire barrier between Milstein and Rand Halls in any case – something never properly completed in order to meet the requirements of Appendix K in the 2002 BCNYS for the Milstein Hall addition – the provision of an adequate fire barrier at this point may not be difficult, and needs to happen in any case.

Upgrading the third floor of Sibley Hall so that Sibley Hall's construction improves from Type VB to Type IIIB is similarly a relatively straightforward operation. All of the masonry exterior walls of Sibley Hall, and all of the combustible wood floor and roof construction can remain in place – these existing elements are consistent with Type IIIB construction (see Table 601 of the 2010 BCNYS). Also, per Section 602.3 of the Code, "Type III construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of any material permitted by this code. Fire-retardant-treated wood framing complying with Section 2303.2 shall be permitted within exterior wall assemblies of a 2-hour rating or less." Therefore, only the sloping wood-framed "Mansard" exterior walls at the upper part of Sibley's third floor need to be replaced with noncombustible materials or even fire-retardant wood with a 2-hour fire-resistance rating. The existing combustible roof and floor joists can remain in place (along with the fire sprinklers).

East Sibley Hall is currently slated for a major renovation involving precisely this third floor space. According to plans revealed to College faculty by the College Dean on September 26, 2013, an interior load-bearing brick wall within the space will be entirely removed and replaced with a steel moment frame. The exterior wall is also getting a major energy-driven upgrade, including replacement and upgrading of all the "historic" wood windows. To cry poverty and to complain about the difficulty of upgrading a small portion of the exterior walls – while simultaneously producing working drawings for a major renovation of this very space that includes demolition of an entire third-floor brick load-bearing wall and its replacement with a steel moment-frame – is the height of hypocrisy.

Clearly, the petitioner's references to historic preservation, in this context, are without foundation, especially since an upgrade to Type IIIA construction, which requires fire-resistance ratings for floor-ceiling assemblies and structural frame elements, is not required. An upgrade to *Type IIIB* construction, as mentioned earlier, requires *no change* to any of the floors, ceilings, roofs, or structural columns and girders in Sibley Hall.

Only the sloping "Mansard" walls at the upper part of the third floor need to be upgraded. Almost all of Cornell's historic campus buildings have undergone successful renovations without compromising their historic designations. Sibley Hall itself has undergone major interior renovations over the years, and its historic designation ("the Arts Quadrangle Historic District is a local district only, not on the National Register" according to *Design Guidelines for the City of Ithaca*) is for the exterior only, and is therefore not threatened by fire safety upgrades that have no impact on its exterior form.

In fact, Cornell's current proposal to remove a load-bearing brick wall on the third floor of Sibley Hall as part of its proposed renovation is far more threatening to the historic character of Sibley Hall's interior space than any upgrading of the exterior Mansard wall would be. To raise this issue is therefore not only irrelevant (since no exterior changes to Sibley Hall would be required), but also hypocritical.

Comments on Argument 2 (would not achieve its intended objective). The petitioner states that fire safety is improved by moving the library from Sibley Hall to Rand Hall

since Sibley Hall, where the library had been, was of Type VB construction, while Rand Hall, where the library is proposed, was of Type IIB construction before being connected to Sibley Hall by the addition of Milstein Hall.

First, no evidence – based on principles of fire science – is presented to demonstrate that a library in Rand Hall would be safer than a library in Sibley Hall. It is important to note that the book stacks in East Sibley Hall had been spaced quite far apart due to constraints in loading the floors of this wood-framed building. On the other hand, the current spacing of library book stacks in Rand Hall is much denser, so that the quantity of "fuel" in Rand Hall – the total available combustion content known as the fire load – may well be greater than the fire load created by having a library in East Sibley Hall. Because neither Rand nor Sibley Hall has any fire-resistance rated construction for its structural frame or floor/roof/ceiling assemblies, both buildings would be threatened by a library stack fire. Sibley Hall, taken by itself, almost qualifies as Type IIIB construction; only the sloped Mansard exterior walls on the third floor prevent this designation, and these walls could, and should, be upgraded to 2-hour fire-rated construction in order to meet this standard. As a Type IIIB building, the entire Rand-Sibley-Milstein Hall complex would have the same level of fire safety, since Type IIB (Rand and Milstein Halls taken by themselves) and Type IIIB (Sibley Hall, if upgraded in this way) are treated as equivalent in Table 503 of the BCNYS in terms of allowable area and height. However, even if Sibley Hall's Mansard walls are not upgraded, there is still no evidence presented that a *nonconforming* library on the third floor of Sibley Hall (with a relatively small fire load because of the required wide spacing of book stacks) would pose a greater danger than a *noncompliant* library on the third floor of Rand Hall (with a greater fire load corresponding to its denser stack spacing). Both buildings are fully sprinklered, and both buildings have relatively low-grade construction types (Type IIB being the second worse type allowed by the Code).

Second, there are alternative locations for the Fine Arts Library that do not raise any of these issues. As but one example, the library could be returned to the A-3 assembly space under the dome in Sibley Hall – this space, like Rand Hall, also has a masonry, steel, and reinforced concrete structure, and is of comparable size to the third floor of Rand Hall.

Third, if additional library floor area is desired, then alternate and compliant space should be found elsewhere (the Cornell library administration would be delighted to move the Fine Arts Library to one of their existing facilities, or to split the collection between the Sibley Hall Dome and other campus or "annexed" locations), or available space in Rand-Sibley-Milstein Hall should be properly upgraded so that such a move is compliant and safe. Requesting a variance to move a *nonconforming* use to a *noncompliant* location without providing any analysis of the actual fire safety risk involved in such a move demonstrates a lack of seriousness and denigrates the importance of fire safety in building design.

Comments on Argument 3 (would inhibit achievement of some other important public policy). The petitioner states that Milstein Hall was designed to "limit the disturbance of

the historic exterior features of Sibley Hall" and that a "fire wall at the Sibley – Milstein interface would have required substantial disturbance to Sibley's exterior walls..."

First, a fire wall between Sibley and Milstein Halls was never required in order to place an A-3 occupancy on the third floor or Rand Hall. For example, a fire wall could easily have been built between *Rand* and Milstein Halls, neither of which have any historic designations (only Sibley Hall has such a designation). Doing so would have allowed Rand Hall to be considered as a separate building with Type IIB construction, and so a library would have been compliant.

Second, there was never a compelling reason to create an addition to Sibley Hall. Many other options were possible for designing Milstein Hall as a separate building with or without connections to Sibley and Rand Halls. Cornell and its architects chose to construct Milstein Hall as an addition rather than as a separate building, knowing that such a design would be immediately nonconforming (because the 2007 BCNYS would not have allowed Milstein Hall to be built in this way). Cornell was advised that future changes to higher hazard occupancies might not be permitted, and still went ahead with this ill-conceived project. Now that the noncompliance of such changes of occupancy has been confirmed (see Petition No. 2013-0250, Exhibit 8 findings), Cornell – with incredible arrogance – still refuses to bring this building into compliance with fire safety provisions of the EBCNYS, and instead requests a variance.

Comments on Argument 4 (would be physically or legally impracticable). The petitioner states that constructing a fire wall between Rand and Milstein Halls – now that the Milstein Hall addition has been completed – is impracticable. The contention is also made that a 1-hour fire-resistance rated fire barrier between Rand and Milstein Halls (including existing brick masonry with a 2-hour fire-resistance rating) is "far more practicable and just as effective as construction of a fire wall between Rand Hall and Milstein Hall."

First, constructing such a fire wall would have been relatively easy had it been part of the original design and construction of Milstein Hall. Cornell, having calculated that such a fire wall would not be necessary, chose not to build one when it would have been relatively easy to do so. Instead, they rushed incomplete working drawings to the City of Ithaca Building Department just before Section K902.2 of the 2002 BCNYS was set to expire. Even though a building permit was not issued until after the 2007 BCNYS was already in place, the permit was approved based on the earlier 2002 Code. Cornell was aware that Milstein Hall would not have been permitted under the 2007 BCNYS without a fire wall, but opted to create a nonconforming building by rushing to file a permit under the 2002 Code. Now, having made such a serious miscalculation, they have the nerve to suggest that their own incompetence and lack of judgment should be taken as an argument for granting a variance.

Second, as explained elsewhere, other alternatives, such as upgrading Sibley Hall to Type IIIB construction, or moving the library to another location, are available and entirely practical.

Third, to suggest that a 1-hour fire barrier is "just as effective" as a fire wall between Rand and Milstein Hall is absurd. Furthermore, the 1-hour fire barrier between Rand and Milstein Hall is a result of Section K902.2 of the 2002 BCNYS and is neither "in lieu of," nor has any relationship to, the provision of a fire wall. The petitioner is confusing the requirements of Appendix K in the 2002 Code (for which the 1-hour fire barrier was appropriate in order to increase the area of the existing building with an addition) with the requirements of Section 912.5.1 of the 2010 EBCNYS (which permits fire barriers to substitute for fire walls for certain changes to higher hazard occupancies). As I have explained elsewhere, the requirements in the EBCNYS for changes to higher hazard occupancies may not permit this substitution of a fire barrier for a fire wall in this case, since the exception permitting this substitution is not valid for F-1 occupancies, and there is an F-1 occupancy in Rand Hall. But even if such an exception is granted, the required fire-resistance rating for the fire barrier used in lieu of a fire wall is either 3 hours (taking into account the F-1 occupancy) or 2 hours (ignoring the F-1 occupancy), but by no stretch of the imagination is a 1-hour fire barrier permitted.

It should also be noted that the fire barrier between Milstein and Rand Halls, per the requirements in Section K902.2 of the 2002 BCNYS, was never completed. The first floor fire barrier wall required between Rand and Milstein Halls still has no opening protectives for windows, and also is penetrated by exhaust ducts with no fire dampers. Also, as admitted by the petitioner, even the opening protectives at the second floor level are only designed with 1-hour fire-resistive ratings which were appropriate for the initial construction of Milstein Hall as an addition to Rand and Sibley Halls, but which are noncompliant for 2- or 3-hour fire barriers required for the proposed library move. Other portions of the required 1-hour fire barrier between Milstein and Sibley Halls are also problematic, as I have described in detail on pages 15-17 above.

Comments on Argument 5 (would be unnecessary in light of alternatives which, without a loss in the level of fire safety, achieve the intended objective of the code). The petitioner claims that providing a level of fire-resistance that is *less than* what is required by the 2010 BCNYS proves that there is no loss in the level of safety. This is an argument of such incoherence that it is hard to find ways to criticize it, other than to repeat its claim: the petitioner states that because a 1-hour fire barrier was provided between Rand and Milstein Halls, instead of the 2-hour (or 3-hour) fire barrier actually required between sprinklered fire areas in Rand and Milstein Halls, the "safety and intended objectives of the Code" are achieved.

Rand-Sibley-Milstein is a *sprinklered* building, but that can hardly be considered a "bonus" that provides equivalent safety for the existing 1-hour fire barrier wall, since the fire barrier exception in Section 912.5.1 of the 2010 BCNYS not only requires a 2-hour (or 3 hour) fire barrier, but also requires that the buildings be sprinklered.

It is also important to note that such fire barriers, even if upgraded to 2- or 3-hours per the exception in Section 912.5.1 of the 2010 BCNYS, only allow area increases (e.g., for a library at the second floor of Rand Hall), but *do not allow height increases*. Therefore,

placing a library on the third floor of Rand Hall would still not be permitted, even with an upgraded fire barrier. To place an A-3 occupancy on the third floor of Rand Hall, either a fire wall would need to be constructed, or the construction type of the combined buildings would need to be upgraded at least to Type IIIB.

Comments on Argument 6 (would entail a change so slight as to produce a negligible additional benefit consonant with the purpose of the code). The petitioner states that there is "some confusion regarding the actual use and classification of college studio spaces," that "spaces with more than 50 persons need to be categorized as assembly spaces," and that the proposed library occupancy therefore represents just a "slight" change from the prior classroom/studio occupancy.

First, the exception permitting a 2-hour (or 3-hour) fire barrier to be used in lieu of a fire wall in order for a second-floor library to exceed the area limits of Table 503 of the Code is already a *lessening* of fire safety requirements from what would be required in new construction. In other words, the 2010 EBCNYS provisions for changes to a higher hazard occupancy already provide the equivalent of a Code "variance" by permitting construction that is less robust from a fire-safety standpoint than what the 2010 BCNYS would require for new buildings. Therefore, what the petitioner is requesting is not just a variance that would reduce the level of fire safety, but a variance that would *further reduce* what already is a reduction in the level of fire safety in the 2010 EBCNYS compared to the 2010 BCNYS.

Second, the petitioner seems to have forgotten that the provisions he cites regarding *area increases* using fire barriers have little to do with his primary request, which concerns a *height increase* beyond what is permitted with a change to a higher hazard occupancy on the third floor of Rand Hall. In his background narrative the petitioner dismisses the need for a variance to place a library on the second floor of Rand Hall, claiming that this would be "permitted on the second floor of even a sprinklered Type VB building" without a variance, but that "[i]n an abundance of caution, the petition is for A-3 approval for both floors." Given that the petitioner believes that only the third floor A-3 occupancy change actually requires a variance, it's more than a bit strange that the arguments he puts forward for items 4, 5, and 6 do not address the issues raised by allowing an A-3 occupancy to exceed height limits regulated by the Building Code.

Exhibit 3 – Copy of Decision in Petition No. 2013-0250

The relevant section of this exhibit is Determination No. 8, which "reverses the determination of the [City of Ithaca] code enforcement official" regarding the noncompliant A-3 library occupancy of Rand Hall at the third floor. To be clear: City of Ithaca code enforcement officials, relying on a so-called code analysis prepared by the current petitioner, had granted a building permit for an A-3 library occupancy on the third floor of Rand Hall. It was this ruling that was reversed by the Capital Region-Syracuse Board of Review in their determination dated 8/20/13.

Exhibit 4 – Copies of Ithaca Fire Department Operating Permits

As discussed earlier, this exhibit contains copies of Ithaca Fire Department Operating Permits, some of which list Rand Hall as an "Assembly Occupancy." As there is at least one classroom/studio on the second floor of Rand Hall with more than 49 students, such a designation seems appropriate. However, as stated before, having a single large classroom in a classroom building does not change the fact that most of the studio/classrooms in Rand Hall are for 12-16 students and therefore are properly classified as Group B. These Group B uses within the mixed occupancy building with nonseparated uses must still be individually classified as to their use, and a change of occupancy in such a space must account for the specific occupancy being changed (Group B), not the most restrictive occupancy that may exist elsewhere in the building. A correct Group "B, A (occ 50-99)" designation for this mixed use building can be found in recent Fire Department "Fire Safety and property Maintenance Inspection" reports posted online through Cornell's own website (see Figure 4).

Fire Safety and Property Maintenance Inspection

City of Ithaca Fire Department
310 W Green St
Ithaca, NY 14850

Phone: 607-272-1234
Fax: 607-272-2793
Email: firemarshal@cityofithaca.org

Activity Date: 02/26/13 01:00:00 PM
Activity Number: FI-145-2013-0031
Activity Cause: Periodic
Inspector Name: Willis Sheldon
Inspector Phone: 607-272-1234
Status: Fail

Building Name
Rand Hall - 2017
Atten: Rich Jaenson
947 University Ave Rand Hall
Ithaca, NY 14853
Phone:

Building Manager:
Rich Jaenson
rjaenson@cornell.edu

Occupancy Type: B, A (occ 50-99)
Total Violations: 2
Corrected Violations: 0
Hours: 1.0000

Address Code:

Figure 4. Fire Safety and Property Maintenance Inspection report dated Feb. 26, 2013 shows "B, A (occ 50-99)" occupancy type for Rand Hall (from Cornell's Document Management Tool at https://rmps-prod.hosting.cornell.edu/access/doc_mgmt/index.cfm?facilCode=2017, accessed Oct. 4, 2013).

Exhibit 5 – Copies of Architecture, Art and Planning Documents

These documents are entirely irrelevant to the variance request being sought, as they establish only that classroom/studios have been in Rand Hall since the mid 1970s. This fact was never in contention and sheds no light on the appropriate occupancy classification for such classroom/studios.

Exhibit 6 – Copies of Plans at Rand/Milstein Adjacencies

This exhibit contains copies of reduced-scale "Issued for Construction" drawings for Milstein Hall, dated Dec. 5, 2008, showing plans, sections, and details at the intersection of Milstein and Rand Halls. Because I have examined half-size copies of these "permit" drawings that were formerly held in the Fine Arts Library at Cornell and are still available at the City of Ithaca Building Department, I have some idea of what they contain; otherwise, the incomplete and small-scale reproductions provided in this exhibit would be entirely useless as evidence of compliance or noncompliance with the 2002 BCNYS.

From what I can observe in the actual building, and from what I have seen in the half-scale permit drawings for Milstein Hall, the fire barrier required to be built at the first floor level of Rand Hall (see sheet A9.31) was never provided. Single-pane metal windows and exhaust ducts that penetrate the wall without any opening protectives are still in place.

Exhibit 7 – Photographs

Photographs provided by the petitioner actually show noncompliant (not just nonconforming) features of Rand-Sibley-Milstein Hall. On page 2, one can see that there is no guard provided on the main exit stair. Such a guard is required because the stair has been made part of a means of egress originating in the Milstein Hall addition. It would also be noncompliant under the proposed change to a higher hazard occupancy. A similar nonconforming stair, also without a guard, can be seen on page 1 for the east exit stair. On page 4 (top two images), one can see the covered building area under the cantilevered upper level of Milstein Hall. Per Section 502 of the 2002 BCNYS, such a covered area counts as "building area" and thus triggers the requirement for a fire barrier (per Appendix K of the same code) not only at the upper level of Milstein Hall, but at this ground-floor level. The photographs do not show the fire barrier wall, or more accurately, the *lack of* a fire barrier wall, at this ground floor location between Rand and Milstein Halls. My photograph, reproduced as Figure 3 above, shows the lack of any opening protectives in the first-floor "fire barrier" wall between Rand and Milstein Halls.

On page 8, the middle image shows a 1-hour fire-resistance rated door between Milstein and Rand Halls that does *not* satisfy the requirements for a fire barrier intended to be used in lieu of a fire wall (to permit a change to a higher hazard occupancy). On page 9, the bottom image shows a window in the Rand-Milstein fire barrier wall that is protected by

a rolling fire shutter, also with an inadequate fire-resistance rating (if intended to be used in lieu of a fire wall to permit a change to a higher hazard occupancy).

Exhibit 8 – Diagram Showing Closest Distance Between Rand and East Sibley Halls

The plan diagram reproduced as Exhibit 8 graphically shows a 60-foot distance between the closest corners of Sibley and Rand Halls. The point seems to be that this distance somehow correlates with increased fire safety. In fact, the opposite is true. Increased dimensions of buildings correlate with increased building areas, and those increased areas – rather than providing greater fire safety – make a building more dangerous. It is for this reason that Building Codes limit floor areas, based upon occupancy and construction type. The petitioner seems to be confusing the distance *between* buildings that is sometimes rewarded, for example in Section 507 (Unlimited Area Buildings) of the 2010 BCNYS, with the distance *within* buildings, which is rigorously limited and regulated in numerous ways. These limitations on distance within buildings appear not only in Table 503 (where floor area is regulated), but also in numerous sections in Chapter 10 where egress is regulated (e.g., common path of egress travel, exit access travel distance, and so on).

Furthermore, the petitioner seems to be suggesting that since the 3rd-floor library is *above* the second-floor roof of Milstein Hall, fire cannot possibly travel between Milstein Hall and this 3rd-floor space, or between Sibley Hall and this 3rd-floor space. Aside from the fact that fire safety decisions should be determined by fire science protocols or Code analysis and not by the petitioner's ill-informed intuition regarding the possible trajectories of a hypothetical fire, two important facts are omitted in this regard. First, the variance request is not only for a third-floor library occupancy, but also a second-floor library occupancy. Cornell has already published its intentions to build such a two-story library: "Scheduled for completion in 2017, the library will hold one of the country's most distinguished academic art and architecture collections in state-of-the-art, revamped facilities *on the top two floors of Rand Hall*, a 1912 campus icon" (Jose Perez Beduya, "$6 million gift funds Fine Arts Library transformation," *Cornell Chronicle*, July 11, 2013, emphasis added). In addition, the two proposed library floors will almost certainly be open to each other and interconnected without any shaft protection or fire-rated floor-ceiling assemblies, so that a fire in the second floor portion of the proposed library will instantly affect the third floor space as well.

In other words, what the diagram clearly shows is the separation that existed between Rand and Sibley Hall *before* Milstein Hall was built. At that time, both Rand Hall, with its IIB construction type, and Sibley Hall, with its VB construction type, were both conforming and compliant buildings in terms of floor area (the library occupancy on the third floor of East Sibley Hall was nonconforming in terms of height only). What Milstein Hall accomplished was to destroy this beneficial building separation by creating a single, integrated building with such a dangerously large total floor area that it would not have been permitted under the 2007 or 2010 BCNYS *even if the entire complex had been upgraded to Type IIB construction*. To suggest that this conceptual blunder is actually something that improves fire safety conditions is beyond ludicrous.

List of errors in Application for Variance

1. Petitioner incorrectly includes basement floor area of Sibley Hall in calculation of total gross building area.

This error is found in the following location:
Part 2 - Minimum Building Information (item 1)

2. Petitioner incorrectly lists building construction type as IIB and VB. A building can have only a single construction type, which is VB in this case.

This error is found in the following location:
Part 2 - Minimum Building Information (item 2)

3. Petitioner incorrectly lists building occupancy as B and A-3. The occupancy of Rand-Milstein-Hall is that of a mixed occupancy building with nonseparated uses, including A-3, B, F-1, and S-2 occupancies.

This error is found in the following locations:
Part 2 - Minimum Building Information (item 3)
Part 6 - Building Status and Project Information (Part A. Occupancy Classification)
Part 6 - Building Status and Project Information (Part B. Building Description and Project Information)

4. Petitioner incorrectly states that the current occupancy on the third floor of Rand Hall is "A-3 Studio use." The current use, per Code and per determination of the Review Board for Petition No. 2013-0250, is Group B for educational uses above the 12th grade.

This error is found in the following locations:
Part 3 - Applicable Building Code and Relief Requested, Tabular summary (row 1)
Exhibit 1 - Petition Narrative (1. Building Construction, item c)
Exhibit 1 - Petition Narrative (1. Building Construction, item d)
Exhibit 1 - Reasons for granting a variance (1. established uses, item b)
Exhibit 1 - Reasons for granting a variance (2. occupancy classification)

5. Petitioner incorrectly states that a floor with more than 49 occupants in classroom/studios is an A-3 Assembly occupancy/use. Only "classrooms" containing more than 49 persons constitute assembly occupancies. A floor with several smaller Group B classroom/studios – as is the case in Rand Hall – remains a Group B occupancy. The second floor of Rand Hall, with one large (A-3) classroom, and numerous smaller (Group B) classrooms, is a mixed occupancy space with nonseparated uses.

This error is found in the following locations:
Part 3 - Applicable Building Code and Relief Requested, Tabular summary (row 2)
Exhibit 1 - Petition Narrative (2. Use/Occupancy, item b)
Exhibit 1 - Reasons for granting a variance (1. established uses, item a)
Exhibit 2 - Required arguments for a variance (6. change so slight producing negligible additional benefit)

6. Petitioner incorrectly omits Jonathan Ochshorn from list of other "interested person or organization." As J. Ochshorn petitioned to challenge the City of Ithaca's Code ruling that led to this variance request, he is, by definition, as interested party.

This error is found in the following location:
Part 5 - Additional Contact Information

7. Petitioner incorrectly lists largest floor area as 42,426 square feet. This number excludes parts of Sibley Hall other than East Sibley Hall. The actual floor area should include all of Sibley Hall since it is not separated by a fire wall from East Sibley Hall, and is therefore part of the building. Only fire walls create separate buildings. Therefore, the correct floor area is approximately 56,826 square feet.

This error is found in the following location:
Part 6 - Building Status and Project Information (Part B. Building Description and Project Information)

8. Petitioner incorrectly lists project type/status as "Use of existing building." The correct designation is "Change of Occupancy."

This error is found in the following location:
Part 6 - Building Status and Project Information (Part B. Building Description and Project Information)

9. Petitioner incorrectly claims that Rand Hall is "separated" by a distance of 60 feet from Sibley Hall. In fact, Rand and Sibley Hall are connected, not separated, and are part of the same building.

This error is found in the following locations:
Exhibit 1 - Petition Narrative
Exhibit 1 - Petition Narrative (1. Building Construction, item b)

10. Petitioner incorrectly describes Milstein Hall as a Type IIB Building. Milstein Hall is not a separate building and so does not have its "own" construction type. It is a part of Rand-Sibley-Milstein Hall which has a VB Construction type.

This error is found in the following locations:
Exhibit 1 - Petition Narrative
Exhibit 1 - Petition Narrative (1. Building Construction, item b)

11. Petitioner incorrectly claims that all other life safety aspects comply with applicable codes. The exit stair in Rand Hall, used for egress from the Milstein portion of the building, is noncompliant. Both exit stairs in Rand Hall would also be noncompliant if a library occupancy were placed in Rand Hall, as they have no guards.

This error is found in the following locations:
Exhibit 1 - Petition Narrative
Exhibit 1 - Reasons for granting a variance (3. life safety matters, item b)

12. Petitioner incorrectly claims that the two fire barriers provided per the 2002 BCNYS to allow the addition of Milstein Hall to increase the area of Rand/Sibley Halls were used "in lieu of a fire wall." This is absolutely false, as these fire barriers have nothing to do with "fire walls." This confuses wording in Section K902.2 of the 2002 BCNYS with wording in Section 912.5.1 of the 2010 EBCNYS.

This error is found in the following locations:
Exhibit 1 - Petition Narrative
Exhibit 1 - Petition Narrative (1. Building Construction, item a)

13. Petitioner incorrectly claims that a fire wall was not built for the Milstein Hall addition because of concerns about "historic character." This is false: fire walls were not

built because the architects, supported by City of Ithaca Code Officials, concluded that they were not necessary under Section K902.2 of the 2002 BCNYS.

This error is found in the following locations:
Exhibit 1 - Petition Narrative
Exhibit 2 - Required arguments for a variance (1. excessive and unreasonable burden)
Exhibit 2 - Required arguments for a variance (3. would inhibit achievement of important public policy)

14. Petitioner incorrectly claims that problems with compliance are caused by "downgrading" the building's Construction Type to VB because of the connection to Sibley Hall. This is false, since even if the entire building were upgraded to Type IIB construction (Rand and Milstein's construction type, if considered as separate buildings), a library in Rand Hall would still be grossly noncompliant in terms of exceeding allowable second floor area.

This error is found in the following location:
Exhibit 1 - Petition Narrative (1. Building Construction, item a)

15. Petitioner incorrectly states that Section 1001 of the 2010 EBCNYS "mitigates" the problems of "downgraded" construction type because "an addition to a building… [need not] comply with any requirements of those codes or provisions…" This is only true for additions, and not for changes of occupancy within an existing building. The variance request has nothing to do with an "addition," and only with a change of occupancy, so this referenced Code section is irrelevant, and the claim of mitigation is false.

This error is found in the following location:
Exhibit 1 - Petition Narrative (1. Building Construction, item a)

16. Petitioner incorrectly claims that Chapter 10 of the 2010 EBCNYS, which limits the area of additions, is superseded by the determination of the Review Board in Petition No. 2013-0250, based on Section K902.2 of the 2002 BCNYS. This confuses the Review Board's ruling about an addition (Milstein Hall) under the 2002 BCNYS, with the change of occupancy (*not* an addition) under the 2010 EBCNYS, which is the subject of the variance request. The ruling on Section K902.2 of the 2002 BCNYS allows an addition to increase the area of existing buildings beyond the limits of Chapter 5 of the Code, but does not prevent such a building from immediately becoming nonconforming under subsequent Codes.

This error is found in the following location:
Exhibit 1 - Petition Narrative (1. Building Construction, item a)

17. Petitioner incorrectly claims that no fire-resistance rating is required in fire barriers between Milstein and Rand Halls due to Table 508.3.3 in the 2010 BCNYS. This table applies only to requirements for separated occupancies in new construction, which is not relevant to the provision of fire barriers either per Section K902.2 of the 2002 BCNYS, or to Section 912.5.1 of the 2010 EBCNYS. Furthermore, even if this proposed change in occupancy were *built as new construction* with separated occupancies per Table 506.3.3, as referenced by the petitioner, the building would still be grossly noncompliant because its floor area greatly exceeds the floor area allowed even with separated occupancies.

This error is found in the following location:
Exhibit 1 - Petition Narrative (1. Building Construction, item c)

18. Petitioner incorrectly claims that Cornell documents show "continuous assembly uses" in Rand Hall. These documents only show classroom/studio use, and make no mention of their occupancy classification.

This error is found in the following location:
Exhibit 1 - Reasons for granting a variance (1. established uses, item c)

19. Petitioner incorrectly claims that an "architectural studio/laboratory" has "unconcentrated areas with tables and chairs (15 nsf/occupant.)" The 15 nsf/occupant number cited is for an assembly occupancy and has nothing to do with the occupant load in classroom/studios. The petitioner's own documentation shows that even the crowded Rand Hall studios have an occupant load of approximately 50 nsf/person. If 15 nsf/occupant were applied to such studios, then the number of persons in existing studios in both Rand and Milstein Halls would greatly exceed the allowable occupancy for the number of exits provided.

This error is found in the following location:
Exhibit 1 - Reasons for granting a variance (3. life safety matters, item a)

20. Petitioner incorrectly claims that fire safety would be improved by moving the library from Sibley to Rand Halls. No evidence is presented to justify this claim. In fact, because of the much higher density of book stacks (fuel) in Rand vs. Sibley Hall, the opposite may well be true. Neither building, taken by itself, has a fire-resistance rated construction type, and so a book stack fire would threaten both structures.

This error is found in the following location:
Exhibit 2 - Required arguments for a variance (2. would not achieve its intended objective)

21. Petitioner incorrectly claims that a 1-hour fire-rated fire barrier is "just as effective" as a fire wall. This claim is simply absurd.

This error is found in the following location:
Exhibit 2 - Required arguments for a variance (4. would be physically or legally impracticable)

22. Petitioner incorrectly claims that providing *less* fire-resistance proves that there would be no loss in the level of safety. This claim is similarly absurd.

This error is found in the following location:
Exhibit 2 - Required arguments for a variance (5. unnecessary in light of alternatives that create no loss in the level of fire safety)