

Cambridge Citizens for Liveable Neighborhoods Inc

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*And Director

Thursday, August 16, 1990

MR PAUL DIETRICH

CHAIRMAN, CAMBRIDGE PLANNING BOARD

c/o Cambridge Community Development Department
57 Inman Street
Cambridge, MA 02139

Dear Mr Dietrich:

We've been following the progress of design development of the Harvard Inn at Quincy Square. Along with Gladys Gifford of the Harvard Square Defense Fund, John Pitkin of the Mid-Cambridge Neighborhood Association, and Frankie Lieberman of the Mid-Cambridge Neighborhood Conservation District, we believe that the current design for this structure is too tall, too close to Harvard Street, or both. Inspectional Services, however, believes that this structure is zoning-legal.

This controversy is related chiefly to how the Zoning Ordinance allows for computation of "average height" (using multiple plane formulae) and "mean grade" around the building. As you are aware, our Ordinance grants a set-back relief bonus (via the H+L/X+2 formula) for building which are less than 40 feet tall. Accordingly, Cambridge regularly receives applications for buildings which are declared to be just barely under 40 feet tall. The Harvard Inn, at "39.5 feet tall", is one of these designs.

Needless to say, it's not always easy for the average citizen to understand how a building with many major elements over 50 feet tall is less than 40 feet tall. So we have carefully reviewed the project drawings and the zoning rule interpretations with Inspectional Services, and here is what we understand:

- 1 **Mechanical equipment enclosures ("penthouses") are unrestricted in height, location or design provided that they occupy less than 33.3% of the roof area.**

The construction documents for the Harvard Inn declare the "roof" to be a flat surface established at nominal datum 82.0 ft. But in addition, the design creates rooftop bulk (slated, hipped roof constructs) at all four corners of the structure, and along the Quincy square facade. Most of this construction is around 12 feet taller than the "roof". However, because it has some HVA/C equipment within it, these bulks are "mechanical penthouses", exempt from both (1) height limits, and also (2) inclusion in the height averaging formula. For height measurement purposes, they do not exist.

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We think the folks who wrote the penthouse definition (found in the State Building Code) pictured in their minds some anonymous boxes in the middle of flat roofs, not the ornamental architectonics prominent at the perimeter of the Harvard Inn. In any event, it seems illogical to us that these constructs convert from measurable "roofs" to unmeasurable "penthouses" due solely to the inclusion of completely invisible equipment. What this means, in fact, is that I can lower the measurable (but not visible) height of my own house by installing attic fans and declaring my attic to be a plenum — something which I do not believe to be the intent of the Ordinance.

Are these constructs less than one-third of the roof area? We took the Gund drawing A2.5 Roof Plan (1 June 1990) and checked areas. We found the following:

"Penthouses"	5,888 sq ft
"Skylight"	2,747
"Roof"	9,030
TOTAL	17,665 sq ft

"Penthouse" area seems to be 33.33% of total area, so obviously somebody in the drafting department has been paying close attention to this interpretation.

- 2 Unenclosed mechanical equipment is unrestricted in size, height or location so long as it is "appurtenant".**

Of the 9,030 sq ft of "roof", about 700 sq ft is occupied by ductwork (2 feet taller than the roof) which floats along the edge of the "skylight". This ductwork, "appurtenant" to the building, is not measurable for height; furthermore, it is not part of "penthouse" construction because it has an aluminum, rather than slate, covering; thus its area of coverage does not add to the "penthouse" area, which would boost the "penthouses" into the "roof" category.

- 3 Skylights are not limited in size, shape or location so long as they are made (mostly) of glass (or plastic).**

At the Harvard Inn, we're not talking about a little plastic bubble over the stairwell. The "skylight" is a construct of 2,747 sq ft in plan area, and about 14,000 cubic feet in volume (a bulk not much smaller than my 48 Banks Street house). Yet as a "skylight", it is exempt from the height computations.

- 4 BUT: Skylights are measured in plan as part of the roof area.**

Now this part is interesting: While the Zoning Officer's ruler cannot measure a "skylight" vertically (because it is an "appurtenance", not a "roof"), his/her ruler can measure a "skylight" horizontally, and add its plan footprint into the "roof" area. In other words, a skylight viewed from the side is *not* a roof, but viewed from the top, *is* a roof. This is a good thing for the Harvard Inn, because if 2,747 sq ft were deducted from the total area, then the unmeasurable "penthouses" would be 39.5% of the plan area, and thereby become measurable "roofs". Further, if the

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"skylight" and companion ductwork (which serves as the emergency smoke exhaust plenum) were also counted as accommodating mechanical equipment (which they do) then total "penthouse" area would be more than half of the "roof" area.

5 Mean grade is computed as average height of dirt at the building's edge.

We've carefully measured the Gund drawing L1.1 Grading Plan (1 June 1990): This structure has a total perimeter of about 660 lineal feet, and along that perimeter, 22 separate elevation datums. Using standard procedures for interpolation between points, we calculate the mean grade to be at 41.8 feet. Since various dormers and copings¹ are at heights somewhat above the declared "roof" datum of 82.0, we conclude that the "roof" itself is really around 40.5 feet tall.

By this reckoning, the Harvard Street facade is ineligible for the setback bonus — but not to worry: This apparent height problem can be resolved by having the landscape subcontractor push more dirt (about 8 more inches) against the building wall. And thus we arrive at the real "mean grade" issue:

To achieve a calculated mean grade of 41.8 feet, the landscape designer has *already* raised the dirt level around the building edge. At most points along the building perimeter, a narrow dirt berm is one to two feet *above* the sidewalk, and one to two feet *above* finish first floor inside. In other words, about 170 cubic yards of dirt (approximate value of \$2,500) has created zoning relief roughly equal to 700 cubic yards of habitable building (approximate value of \$200,000). Not a bad deal.

In summary: The Harvard Inn has a flat roof which is rarely less than 40 feet above sidewalk and finish first floor grades. On top of this flat roof, it carries a variety of visually prominent "things" having heights well above 50 feet. The man on the street would see all these "things" as "roofs", but by an excruciatingly intricate series of selective interpretations, someone is trying to claim that these "things" are not "roofs", and that the building is less than forty feet tall.

None of the above interpretations seems unreasonable when considered on its own, and out of context. But in the context of the Harvard Inn design, and in combination with a setback relief formula which offers an abrupt "step function" bonus for the 39.99 ft tall building, these interpretations combine to permit a building whose bulk, heights, and/or setbacks are well in excess of the intent of the Ordinance. In further illustration of this, we send you our "ZONING PUZZLE OF THE MONTH", which shows how the above interpretations can combine to create a truly ridiculous consequence.

We're advised by our attorney that seemingly reasonable zoning rules (such as exemptions from height calculations) can be declared invalid if they are shown

¹ Which raises the additional conundrum of how continuous parapets above the roof plane get factored, or not, in the height calculation...

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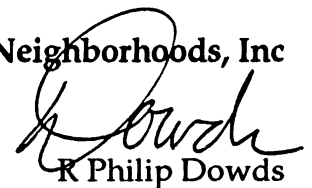
to yield unpredictable and inappropriate results which defeat the intent of the Ordinance. The whole point of our commercial parking freeze litigation was to compel responsible authorities to correctly enforce and administer regulations as adopted, without resort to hair-splitting and ultimately silly interpretations which defeat the purpose of the regulation. We are prepared to pursue similar litigation with respect to the Zoning Ordinance if necessary.

However, CCLN does not want to be in a permanent adversarial relationship with the City, and we think that the outcome of the parking freeze controversy shows that an adversarial relationship is no longer necessary nor desirable. Quite the contrary, we believe that CCLN's goals for City planning and zoning are increasingly convergent with your own, and those of the CDD, and that we should all be working together. Accordingly, we'd like the Planning Board, Inspectional Services, and other City agencies to join with us in effective and timely effort to close loopholes, simplify administration, improve reliability, and eliminate anomalies from the Cambridge Zoning Ordinance. So we suggest two things:

- (1) You (the Board) should consider the issues we've raised, and if you come to share our view that that height rule interpretations we've flagged are inappropriate, and establishing bad precedents, you should take action to advise Inspectional Services regarding design changes required to validate a building permit for the Harvard Inn. And,
- (2) You should embark upon a comprehensive re-thinking of how height is measured and governed. We will call you soon to discuss the possibility of arranging for a Planning Board meeting with CCLN or public hearing to review height rules and possible reforms thereof.

In the meantime, feel free to contact us if you have questions or requests of your own.

Cambridge Citizens for Liveable Neighborhoods, Inc



R Philip Dowds

For the University Task Force

Enclosures

ZONING PUZZLE OF THE MONTH

Copies w/ Enclosures

Cambridge City Council

(via the Clerk);

Commissioner Joseph Celluci

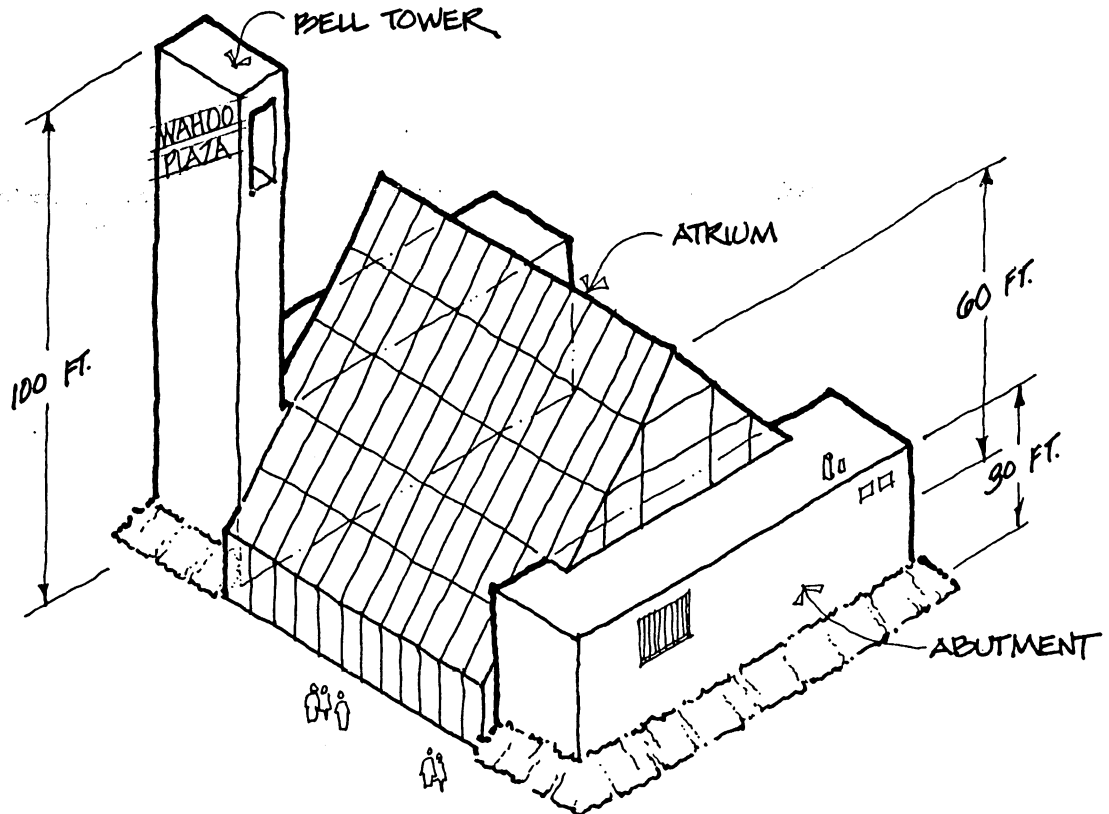
Marilyn O'Connell

Graham Gund Architects

ZONING PUZZLE OF THE MONTH

Cambridge zoning says building height is "the vertical distance of the highest point of the roof above the mean grade of the ground adjoining the building". So...

Q: How tall is this building?



A:

NOT 100 FT: Spires and towers of less than 10% of the lot area are not governed by height limits.
NOT 60 FT: The glass roof of the atrium is a skylight, and is exempted from height limits. (Nothing in the ordinance limits how big a "skylight" is relative to a "roof".)
NOT 30 FT: The upper halves of the abutments have fans in them, and are actually mechanical penthouses. "Appurtenances" like penthouses (which can be as large as one third of the plan area) are exempt from height limits.

So: The only part of this structure which potentially meets the zoning ordinance definition of roof is the floor of the mechanical penthouse, which is 15 feet above the floor of the atrium.

BUT: Dirt and groundcover have been piled up around the edges of the abutments to a height of 6 feet, and height is measured from grade adjoining the building, so the right answer is:

9 Feet Yes, measured according to the rules of Cambridge zoning, this building is 9 feet tall.

17.

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Comm. from CCLN relative to the design
development of the Harvard Inn at Quincy Square.

Placed in file

In City Council,

Sept. 10, 1990