ADAPTIVE REUSE BUILDING CODE STUDY

Department of City Planning
City of Pittsburgh

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1.0 EXECUTIVE SUMMARY

As part of the current effort to develop a new Downtown Plan, the City of Pittsburgh is examining strategies to encourage reuse of older structures in the Golden Triangle. In part, this study is a response to expressions of confusion by building owners and developers over application of the building code to certain older downtown buildings. More broadly, the study addresses the fact that the reuse of many downtown buildings—particularly above the first floor level—has been deterred by a number of building code requirements, most of them related to the safety and access provisions.

Goals For Adaptive Reuse Building Code Study

It should be emphasized that this study does not intend to address the code relative to all existing buildings, but rather focuses on a relatively small but important group of building types that are currently underutilized in prime locations downtown—the so-called sliver buildings.

The goals for this study must also be placed within the context of our modern code system which, while sometimes daunting to the uninitiated, incorporates decades of research into how fires grow and spread, how people are protected, and how fire protection systems and fire fighters can combat fires safely and effectively.

The goals for this project are to:

- Develop building code strategies that result in more effective reuse of underutilized or vacant structures;
- Clarify building code interpretations relative to the identified building types;
- Demonstrate project viability through case studies;
- Promote awareness of alternative code com pliance concepts that make redevelopment a more predictable process.

700 Block Penn Avenue

The buildings which are most frequently affected by these code issues are those which are two to eight stories high, fairly limited in floor plate and characterized by the lack of a second means of upper floor egress. Such structures are called 'sliver' buildings in this report, due to their narrow primary facades. Their construction dates range from the early nineteenth to the mid-twentieth century. Because of the single exit stair and the limited street front access, building code and practical considerations make the upper floors of these buildings extremely difficult to rehabilitate for any occupancy type. Moreover, sliver buildings of over six stories must meet more stringent high-rise building code standards, as determined by the reach of fire department equipment and fire fighting practices.

This report also examines early skyscrapers. From nine to twenty stories and of steel frame construction, these buildings also frequently possess small floor plates and single upper floor egress. Early skyscrapers are possible candidates for future housing conversions.

A survey of underutilized structures in the downtown area was conducted as part of this study. While the survey found that such buildings (largely comprising sliver buildings and early skyscrapers) constitute a minor percentage of the total aggregate downtown floor area, it further found that they are often architecturally distinguished and occupy key locations in the Cultural, First Side and retail districts. Thus, although many sliver buildings are currently under-occupied or vacant, they present significant potential as economic catalysts if code and market obstacles can be successfully addressed.

Abandoned Sliver Building- First Side

The greatest deterrent to the reuse of sliver buildings and early skyscrapers is the difficulty an owner or developer may have in determining appropriate safety standards. Since building regulations have tended to be written for new construction, the code review and approval process for existing structures is often fraught with (real or perceived) uncertainty. Further, when an applicant has not engaged a knowledgable design professional, the process becomes considerably more difficult for all parties.

The City of Pittsburgh has adopted (with amendments) the BOCA (Building Officials & Code Administrators) National Building Code. The code is administered by the City's Bureau of Building Inspection (BBI). According to the provisions of the code, any alteration of an existing building must either:

- Be approved by BBI staff as conforming to the BOCA standards for new construction.
- Be approved by BBI staff under the provisions of Chapter 34 of the BOCA Code.
- Seek approval by appealing to the Board of Standards and Appeals for a variance from the required application of the code.

Nearly all recent requests for building permits for sliver buildings and early skyscrapers have necessitated variance hearings before the Board of Standards and Appeals seeking approval of alternative safety measures. In the absence of accepted standards for evaluating such situations, the Board, BBI staff and applicants have tended to consider certain provisions of the BOCA National Property Maintenance Code.

Recent practice demonstrates that the City of Pittsburgh is committed to flexibility in the application of the codes to ensure the continued viability of the existing building stock. However an analysis of the code review process for sliver buildings and early skyscrapers highlights the fact that each existing building is unique, and that code compliance requires careful attention by owner, BBI staff and the Board of Standards and Appeals. If inadequately prepared, a building permit applicant (sometimes acting as his or her own design professional) can meet with unanticipated hearings, costs and delays. As a result, some owners postpone initiating projects, deterred by the fear of high cost and perceived complexity.

The current practice of BBI and the Board in reviewing renovations or changes of use to existing buildings is to apply a combination of BOCA Property Maintenance Code standards and the BOCA National Building Code. While the requirement to apply the BOCA Property Maintenance Code and/or the National Building Code provisions is effective from a safety standpoint, it can also be complex. Confusion and misunderstanding regarding this process serves neither the safety and public welfare goals of the building code nor the needs of building owners and their tenants.

First Side Lofts

In recommending strategies to address code issues in existing structures, this study has considered the current effort by public and private agencies to develop a national building code within the next decade which will most likely address code compliance issues in existing buildings in greater clarity than at present.

At the same time, adoption of a statewide building code, applicable to Pittsburgh, is under active consideration in Pennsylvania. As a result, we do not propose amendments to Pittsburgh's code in our recommendations. The study also examined the approach other cities have taken to similar issues, particularly the issue of loft housing conversions from office or mercantile use. In general, the study found that, although attempts to simplify and clarify the review process for existing structures are widespread, no jurisdiction surveyed permits single exit buildings without careful review of the circumstances of each structure and appropriate offsetting safety improvements. These findings serve to confirm the recommendations of this report.

The three case studies (low rise sliver, high rise sliver and old skyscraper), contained in this report illustrate typical conditions found in each of the key building types addressed in this report, as well as the outcome of a building code analysis using the existing building checklist proposed in this study. They also provide a graphic expression of the complex technical issues expressed in the body of this study.

Summary of Recommendations

In order to provide a uniform process of code review for existing structures, this study provides recommendations and implementation suggestions in three areas (see Section 5 of this report for for more detailed description of recommendations):

1. Improve the project review and appeal process:
    - Develop a checklist for applicant, staff and board reviews.
    - Develop or update the appeal application for existing structures.
    - Interdepartmental coordination of reviews, clarification of policies.

2. Technical Assistance: Provide ways to assess complex code issues and thereby increase number of successful projects.
    - Fund code assistance grants for reuse project planning.
    - Create commercial renovation network for professional assistance.
    - Improve professional skills through professional continuing education programs such as AIA or BOCA.

3. Public Awareness: Promote understanding by the general public, owners and the real estate community.
    - Publish a guide to the code process for existing buildings.
    - Advocate for appropriate state and national building code provisions.
    - Publicize the process for existing buildings via media and speakers
    - Develop cost profile database for reuse projects.

We note that the Department of Building Inspection has facilitated a number of single exit approvals of this type in the past. When the applicant has consulted with BBI's sfatt and a knowledgable architect (and supporting engineering professionals), the results have always been positive for the applicant.

Cultural District Alley

800 Block Penn Avenue

Liberty Avenue

700 Block Penn Avenue

900 Block Liberty Avenue

First Side Lofts

HIGH RISE SLIVERS

Wood Street

Fifth Avenue

First Side

Wood Street

Fifth Avenue

First Side

LOW RISE SLIVERS

Fourth Avenue Benedum Trees

Fourth Avenue Arrott Building

Fourth Avenue Bank Tower

OLD SKYSCRAPERS

2.0 BACKGROUND: HISTORY AND DOWNTOWN SURVEY

2.1 History

The history of building in the Golden Triangle gives some clues as to why the sliver building configuration developed. When built in the mid to late 1800s, they typically served mercantile and warehousing needs near the waterfronts of the Allegheny and Monongahela Rivers or retail and office uses in the central downtown district. Typically these structures were built on earlier plans of lots laid out at fifteen and twenty foot intervals.

As demand for warehousing and mercantile space increased, especially in the river front areas, the narrow street frontages were translated into taller and deeper configurations, resulting in buildings with footprints that are seventeen to twenty feet wide and up to eight stories in height. The heights were often driven by what was conventional for mill type construction: masonry bearing walls with heavy timber floor structures. However, the construction techniques used were not consistent since there was little regulation and the sources of materials changed over time.

Although there was much concern about how to protect an owner's investment in a structure, there was less concern about building occupants. Measures to make a building safe for egress were not generally considered, especially since many of the structures were warehouses in which typically only the first two floors were occupied. In some cases the structures did not have more than an iron ship's ladder or winder stair to access upper floors when the freight elevator broke down.

Early skyscrapers, built after the introduction of the elevator in the mid-1800s, are typically from nine to twenty stories high. These buildings also were frequently built with the small floor plates and single upper floor egress which characterize sliver buildings. While most such buildings are currently legally occupied as existing uses under the BOCA Property Maintenance Code, they may pose code challenges similar to those of sliver buildings if proposed for housing or other new uses.

2.2 Recent Developments

With the rise of the historic preservation movement over the last three decades, American cities, including Pittsburgh, have begun to look at these buildings as assets. However with demand for larger, modern office floor plates in the downtown during Renaissance I and II, and no history of housing conversions as in New York or Chicago, Pittsburgh has lagged behind in the reuse of these structures.

Over the last 50 years, the upper floors of many of these buildings have been abandoned or used only for storage. Where buildings have continued to be used on the upper floors for offices, BBI has treated them as "grandfathered" existing uses, and therefore exempt from many current code provisions. In the 1980s, working with the Existing Structures and Fire Prevention Code, BBI recognized the dangers of obsolete egress systems in high rise construction (over six stories) and required owners to install automatic systems with smoke detectors, fire alarms and enunciator panels when a building underwent major renovation or changed uses.

Sliver buildings in the Cultural District/ Penn Liberty Historic District were the subject of previous reports studying adaptive reuse. In a study completed by LP Perfido Architects for the Cultural Trust, a number of solutions attempted to solve exit problems by combining structures. This approach to rehabilitation has been rarely used in the Golden Triangle to date. Multiple owners and unrealistic real estate values have often prevented such projects.

The study occurred at time when few, if any, single exit stair exceptions were approved by the Board of Standards & Appeals. A "by the book approach" to BOCA prevented the occupancy of these buildings when a change of use is proposed, the principal cause for permit denial usually being lack of a second means of egress. The District has been the subject of recent activity relative to potential conversions, and since many, if not all, of the Cultural District's code issues relate to structures of the types addressed by this

report, the adaptive reuse strategies set forth here may be most pertinent to current market needs.

Previous Approvals Statistics
• Appeals have been granted for single stair occupancies a relatively small number of times based on information gathered from BBI files. The enclosed map shows these in green. It should be noted that almost all appeals filed have been granted by the Board.

• Only one code appeal specifically for lofts (the eight unit Bruno Building on Liberty Avenue) has occurred since this study was commenced. Earlier last year, a First Side loft and an office occupancy sliver building at 808 Penn Avenue was approved. All of the above projects involved single stair circumstances.

2.3 Other Recent Development Impediments

Owners' Unrealistic Expectations: Many owners have a hard time understanding that the use of a single stair structure for a high occupancy load is unrealistic. In some cases they may not understand the principles of making a building safe from fire spread (enclosure details, etc.) especially when the building has been occupied for many years in a substandard condition.

Additionally, owner expectations either as to the market value of the property or the programmatic use of the structure can cause problems. For example, a single loft unit per floor is inherently more safe and flexible than multiple apartment units in the same space, where the greater density of occupants creates more life safety code problems.

Real Estate Market Perceptions: Generally the real estate development community has not seen these buildings as opportunities. It has taken developers with a different view of market niches, such as loft housing promoters, to achieve a breakthrough in the public perception of these buildings. The nature of the development of these buildings is not typical and goes against the conventional wisdom of the development establishment.

2.4 Survey of Underutilized or Vacant Upper Floors of Existing Structures

In October 1997, Pfaffmann + Associates conducted a survey of existing structures in Downtown Pittsburgh with the objective of identifying the general distribution and character of underutilized structures. We sought to identify and quantify those buildings that were vacant or underutilized. Due to the constraints of the survey, building status often had to be judged by outward indications that the upper floors were not used or underutilized. We have also included some buildings that would be considered by commercial real estate professionals as Class C office space, with the idea that these structures have good potential for conversion to housing.

In addition to sidewalk surveys, data has been collected from a variety of sources provided by the Department of City Planning, the Cultural Trust, and real estate companies. The survey pays particular attention to sliver buildings, since their exit configuration, floor plate geometry, and height make them particularly difficult to reuse. There are several districts where buildings are surrounded on three sides eliminating the opportunity to provide a remote second exit.

Downtown Statistics
To place our survey numbers in perspective, it is useful to know the following larger statistics about downtown:

• According to real estate industry statistics, the Golden Triangle contains over 40 million square feet of office space, of which 15 million square feet is Class C space (about 38% of downtown).

• In order to assess the physical capacity of downtown for loft type units, we assumed only Sliver-type Class C structures would be used for such conversions. These structures total approximately 2.175 million square feet out of 15 million square feet existing Class C structures.

• We have estimated that 25% of existing sliver buildings are abandoned or under-used.

• Because the 1997 Pittsburgh Downtown Plan identifies the development of housing as an issue, it is useful to know that the Golden Triangle currently contains 1,900 households (3,500 persons) according to the Downtown Housing Action Plan.

Recent sliver building reuse has been limited to the development of one seven unit loft conversion project on the First Side. During the course of this study interest on the part of media and developers has markedly increased, with at least ten proposed projects in the downtown area.

• The potential exists for downtown housing conversions totaling over 900 units according to our survey. The survey is calculated on the assumption that typical occupancies would be a single 2,400 gsf floor plate (including common spaces and structure) on average. This assumption relates to our recommendation that low occupancy loads be permitted in substandard single exit structures.

When screened by such factors as desirable building types, locations and views, the number of potential housing units drops considerably. Although not great in number, even a relative handful of conversions to loft housing can greatly impact public perceptions about the quality of residential life downtown.

The most desirable areas for loft type housing have generally been identified to be the historic warehouse areas within the Cultural District and First Side.

Additional areas that should not be ruled out are along Fifth and Forbes Avenues. Many of these structures have substantial upper floor space vacant, but seem to be less desirable for housing. This area may be better suited for loft-type single tenant office uses with retail below. (See case study on the low-rise sliver building.) A live/work photographic studio or a restaurant are other possibilities for such buildings

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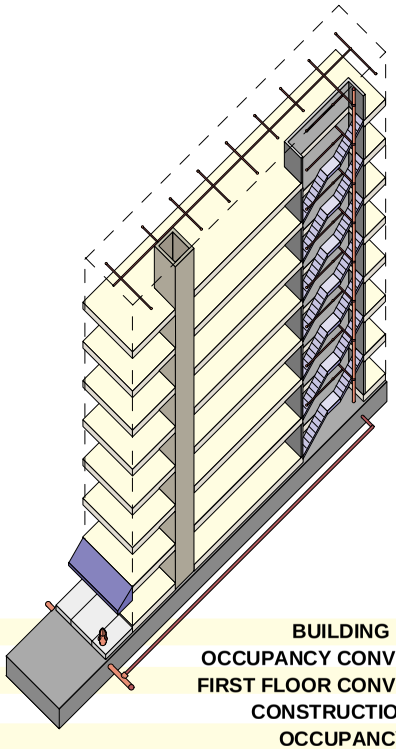
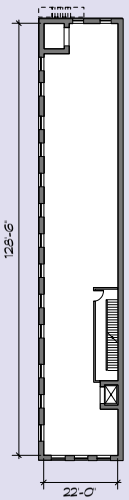
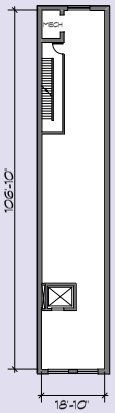
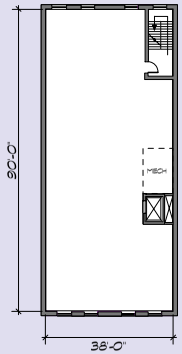
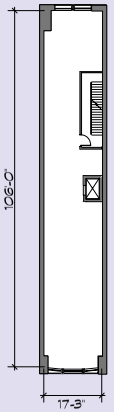
The map and charts illustrate the relative numbers of sliver structures in the downtown district. They also indicate the few cases of single stair conversions that have been approved over the last decade. Not shown are the limited number of projects in which adjacent structures were combined to provide two means of egress. This remedy has been infrequent, as the project must have close alignment of floor heights and the cooperation of individual building owners.

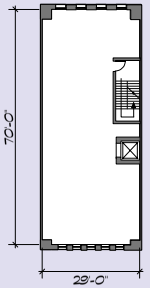










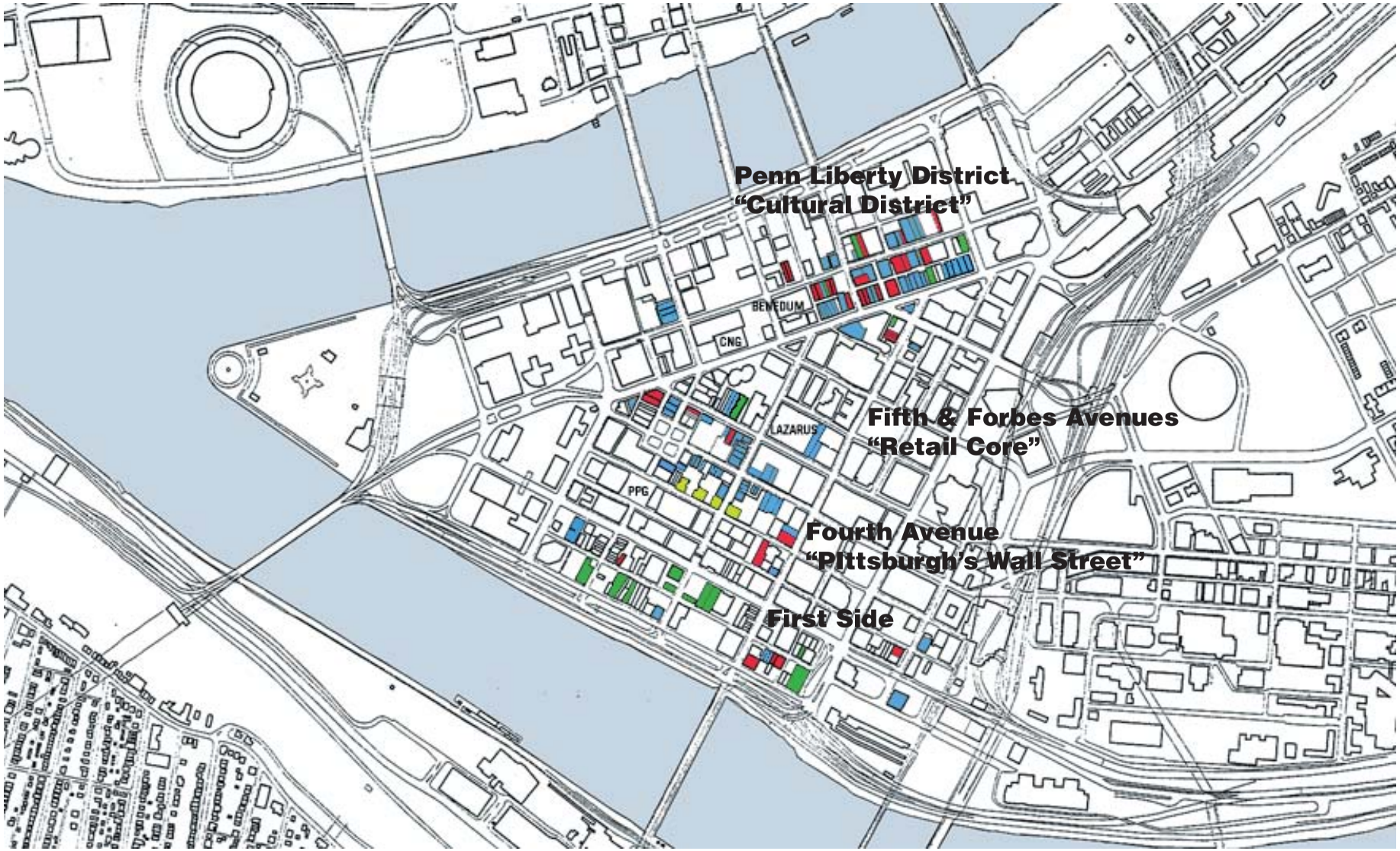


	711 PENN AVE	808 PENN AVE	111 WOOD ST	945 LIBERTY AVE	429 FIRST AVE
BUILDING HEIGHT:	8 Floors	8 Floors	7 Floors	7 Floors	8 Floors
OCCUPANCY CONVERSION:	Office → Residential	Warehouse → Office	Warehouse → Office	Warehouse → Residential	Warehouse → Residential
FIRST FLOOR CONVERSION:	Restaurant → Restaurant	Commercial → Commercial	Commercial → Office	Commercial → Commercial	Commercial → Commercial
CONSTRUCTION TYPE:	Type 3A	Type 4	Type 4/3A	Type 4/3A	Type 3A → 3B
OCCUPANCY LOAD:	12 / flr.	17 / flr.	30 / flr.	8 / flr	9 / flr
OCCUPIED FLOOR AREA:	2,507 sq ft	1,686 sq ft	3,042 sq ft	1,632 sq ft	1,817 sq ft
STAIR WIDTH:	36 inches	36 inches	42 inches	36 inches	42 inches
STAIR OCCUPANT CAPACITY:	180	180	210	180	210
MAXIMUM TRAVEL DISTANCE:	84 feet	95 feet	86 feet	57 feet	86 feet
ELEVATOR RECALL BACK-UP	NO	NO	YES	NO	RETURN ONLY
SPRINKLERS?	YES	YES	YES	YES	YES
STANDPIPE?	YES	YES	YES	YES	YES
FIRE PUMP?	NO	NO	YES	NO	NO
EMERGENCY GENERATOR?	NO	NO	YES	NO	NO
FIRE ALARM?	YES	YES	YES	YES	YES
FIRE ESCAPE?	YES	NO	NO	NO	NO
PRESSURIZED STAIR?	NO	NO	NO	NO	NO

PFAFFMANN + ASSOCIATES
with Maureen Guttman, AIA

"SLIVER" HIGH RISE BUILDING COMPARISONS

ADAPTIVE REUSE BUILDING CODE STUDY



PITTSBURGH DOWNTOWN PLAN
ADAPTIVE REUSE BUILDING SURVEY
DEPARTMENT OF CITY PLANNING

- High Rise
- Low Rise Sliver
- Old Skyscrapers
- Previous Approvals

3.0 BUILDING CODE APPEAL PROCESS

3.1 Overview Of BOCA Code

The City of Pittsburgh has adopted the BOCA National Building Code. The 1996 BOCA Code is one of three model building codes widely used in the US.

The goal of the BOCA code is contained in its Statement of Intent:
"[T]o ensure public safety, health, and welfare, insofar as they are affected by building construction, through structural strength, adequate means of egress facilities, sanitary equipment, light and ventilation, and fire safety."

Building standards covered by BOCA include the following:

- Occupancy
- Types of Construction
- Fire Resistance
- Means of Egress
- Accessibility
- Energy Conservation
- Structural loading criteria

3.2. Existing Process

According to the provisions of the code, any alteration of an existing building must be approved through one of the following processes:

- Standard BOCA Approval: Be approved by BBI staff as conforming to the BOCA Building Code standards for alteration of an existing structure.
- Chapter 34 Approval: Be approved by BBI staff under the provisions of Chapter 34 of the BOCA Building Code which provides for project approval by using a complex point system to rate safety features. Chapter 34, however, provides no means to mitigate the lack of a second means of egress in a multistory building, making it impossible for such buildings to be approved under this part of the code.
- Appeal: Seek approval by appealing to the Board of Standards and Appeals for a variance from the strict application of the code, permitting use of an alternative or equivalent measure which will not reduce the level of life safety, public health and general welfare required by the code. Such an appeal requires a showing that the strict application of the code would result in undue hardship; an appeal based on cost is not allowed.

3.2.1 Use of BOCA Property Maintenance Code

In order to facilitate the reuse of older buildings, the Bureau of Building Inspection has been very cooperative in assisting building owners and their design professionals in identifying alternative solutions that can be acceptable to the Board of Standards and Appeals. The single-exit "sliver" buildings present a particular challenge in identifying acceptable safety provisions. One method used in recent years has been to allow building owners to design to the lesser requirements of the BOCA Property Maintenance Code instead of the Building Code. The rationale for the application of this code has been that the Property Maintenance Code does make allowances for single-exit high-rise buildings.

The Property Maintenance Code governs the maintenance of safety conditions in existing buildings and is not intended for use when significant renovations are undertaken. As such, the requirements in this code are somewhat less stringent than those for new construction or renovation under the Building Code. When a change of use is planned, such as renovating an office building for residential occupancy, the standards of the Building Code are to be used. Further, while minor renovations and repairs can occur under the Property Maintenance Code, the code mandates that more extensive modifications comply with the Building Code.
Nonetheless, the Board of Standards and Appeals has granted variances to allow use of the Property Maintenance Code for projects where there has been a change of use, and in which major renovations have taken place.

In exchange, they typically have accepted the inclusion of: a fire alarm system, a smokeproof stair, and a fully automatic sprinkler system as adequate equivalent safety measures. Under these conditions, the Board of Standards and Appeals has approved a dozen or so major renovation projects for use under the Property Maintenance Code since 1993

3.2.2 Use of BOCA Chapter 34
The BOCA Code is primarily focused on standards for new construction and substantial renovation, but does offer an opportunity for compliance that takes into account the particular requirements of existing structures. Chapter 34 of the 1996 BOCA Code contains an evaluation process that allows building owners to address code deficiencies inherent in some older buildings by providing additional safety features beyond those otherwise required.

The compliance alternative worksheet found in Chapter 34 is seldom used by building owners or design professionals in the City of Pittsburgh. Not only is the exercise fairly complex, but this evaluation process does not allow any alternative that can compensate for the lack of a second means of egress in a multi-story building. For the Pittsburgh sliver buildings which lack two stairways, the strict application of Chapter 34 has not been a viable option for redevelopment planning. However, while the single egress mutiple story structure is a condition not recognized by BOCA (except in the Property Maintanence Code), it is a highly developable building type, given continued strategic flexibility in the application of the codes.

3.3 Other Code Process Related Issues

3.3.1 "By the Book" Interpretations of Design Professionals
Architects and engineers often prepare code analyses"by the book" and do not purse creative alternatives with the Board. There is not a widespread understanding that over the last decade the City has accepted unconventional methods, such as the use of the BOCA Property Maintenance Code, to be effective tools to design safe alternatives for existing buildings.

3.3.2 Poor preparation for Code Review
To make matters worse, some building owners do not use the services of a design professional at all to assess an existing building, and often misjudge the code requirements. Based on a general frustration with the complexity of the regulations, many building owners will deem the prospects of reusing the buildings as hopeless. An architect experienced with such building types will more often than not help a developer to accurately forecast the success of his project.

3.3.3 Multiple Departmental Approvals
In addition to approval by BBI, a project may need approvals from the Zoning Board, the Planning Commission and the Department of Public Works. Other requirements come from Engineering & Construction and the Historic Review Commission. For architects and developers familiar with the procedures and requirements of each of these entities, the process is relatively swift compared to other American cities, especially those in high growth areas. For out-of-town developers and building owners not familiar with the process it is easy to miss a few important approvals, such as the planning module for water and sewer, or other utility requirements from Duquesne Light and Equitable Gas. City agencies are authorized to conduct a comprehensive departmental approval process for large projects, but this has been done infrequently, according to officials interviewed. We suggest the city consider a streamlined, unified review process that includes as many approvals as possible. The City of San Diego has attempted to assign a project manager or "ombudsman" to each proposed development in the city. The cadre of ombudsmen are drawn from the various departments (zoning, building inspection, public works). Unfortunately, this results in an uneven application of expertise (for example a public works engineer may be assigned an historic preservation project). In order to be effective, the various city employees would need to be better trained in navigating a project through the review processes of numerous agencies.

3.4 Other Codes & Policies

Because Pittsburgh's efforts come twenty years after the loft housing boom in other cities, the present study is a straightforward part of a mainstream movement to bring housing into the downtown. Nonetheless, in a phone survey of building officials in other cities such as San Diego, Chicago and Boston, we have not found radical change in codes to accommodate loft or downtown housing.

San Diego has created a live/work code to address the inclusion of residential use within a building for business. They define the residential component as an ancillary use, limited to 33% of the area within any office/manufacturing unit. The ancillary use is not technically a change of use, so the expensive code-related upgrades are kept toa realistic minimum. A copy of this code is in the appendix.

Boston's live/work rules apply only to those individuals specifically identified as artists working for a living. In Chicago, Boston and San Diego officials could not identify "sliver building" configurations quite like those we have in Pittsburgh. In addition no city surveyed has been as innovative with single exit high rise buildings as Pittsburgh.

It is useful to remember that some aspects of building conversions have happened without the endorsement of code enforcement and economic development organizations. According to the book, *Pioneering the Urban Wilderness*, illegal loft conversions in New York were commonplace throughout the sixties until legalization around 1970. Code officials recognized that low density conditions could allow some loosening of code requirements and used techniques such as asking for sprinklers in lieu of a second means of egress or a fire escape. Many of Lower Manhattan's loft conversions happened quietly overnight out of view of inspectors. Later on as loft conversions became less artist oriented and gentrified by high income residents, lofts were subject more often to modern code requirements. However, many were also "grandfathered," creating the appearance that a city like New York is more liberal in its policies when in reality its codes are among the most stringent in the nation, often requiring developers to hire "code facilitators" to navigate the approvals.

Today, there is evidence that additional reform of codes is required for existing structures. The basic premise for this research is that new code provisions must be specifically written for existing structures rather than reviewing them under new construction regulations. Each city and state has taken varying interpretations of present code provisions when evaluating existing structures. Although BOCA created Chapter 34 over a decade ago to address existing structures, the process is fairly complicated and cannot be used if only one stair exists. The principles behind Chapter 34 are good ones wherebysixteen criteria are calculated, evaluated and weighted according to their relative value in achieving an acceptable degree of occupant safety.

3.5 New Code Development

As part of a larger code revision effort, HUD is currently engaged in drafting new code standards for construction in existing buildings. The NAARP (National Applicable Recommended Provisions) now under development is expected to be adopted as a national model by 2005. The new code will recognize the implications that full-code compliance has on varying degrees of work in existing structures. The basic principal of the proposed NAARP code is to define the nature of existing structures work into a hierarchy of categories:

Repair
Renovation
Alteration
Reconstruction
Change of Occupancy

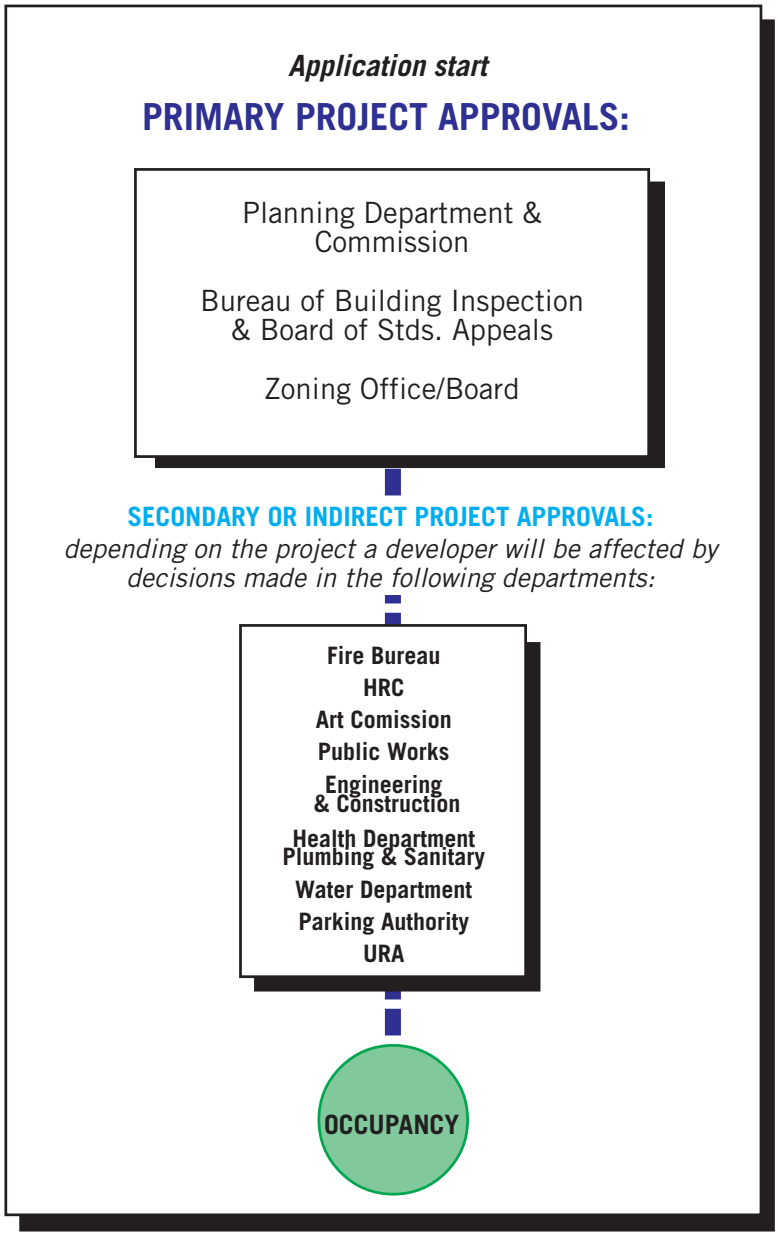
The NAARP code is based on "The Code for Rehabilitating Existing Buildings" in New Jersey , and Chapter 32 of the Massachusetts Code which in turn have their roots in Chapter 34 of BOCA.

The City will need to review the possibility that a NAARP derived code will provide further guidance as to the standards of life-safety upgrades that should be expected in each category of building reuse. The BOCA code is updated every three years. The 1996 edition was adopted by the city of Pittsburgh in the summer of 1997. Since the HUD has just released the report, a 2005 time frame for adoption of the new International Building Code (IBC) by BOCA is possible.

In light of these pending changes, we recommend that substantive amendments not be made at this time to the BOCA code as adopted by the City of Pittsburgh, but rather that the BBI continue to evaluate each project on its own merits in accordance with the process recommended in this study.

4.3 OLD SKYSCRAPER (SINGLE EXIT HIGH RISE ABOVE 8 STORIES):

NAVIGATING THE DEVELOPMENT APPROVAL PROCESS FOR AN ADAPTIVE REUSE:



4.0 NEW REVIEW CHECKLISTS

Introduction

Recent practice demonstrates that the City of Pittsburgh is committed to strategic flexibility in the application of the codes to ensure the continued viability of the downtown building stock. The Board of Standards and Appeals is empowered to approve reasonable variances from the code, and has been appropriately amenable to the granting of such variances, while vigorously safeguarding the interests of the public welfare. While continuing to maintain these standards of safety, the following proposals will make the process of seeking variances for occupancy of single-exit sliver buildings more straightforward and more predictable.

General Commentary on Checklists

Property Maintenance Code and *Changes of Use*

We recommend that the department clarify their use of Property Maintenance Code to architects and developers when its use is mixed with BOCA and involves a change of use. Older downtown buildings most certainly have other code deficiencies that cannot be addressed under the sole application of the Property Maintenance Code.The additional life safety measures that have been required by the City are excellent improvements to many downtown buildings, but in our opinion need to be communicated to both owner and design professional.

Further, we recommend that the department clarify the use of the Property Maintenance Code when in the "gray" areas of minor renovations *(no change of use)*. The proposed existing structures code changes in the coming years should improve this situation considerably.

Chapter 34 derived checklist

While Chapter 34 of the Building Code cannot be used to approve work on a single-exit building, the principles behind this process are valid and applicable to the review of applications to the Board of Standards and Appeals for variances. Optional safe exiting measures, as well as fire detection and separation issues, are assigned weighted values, which are used to determine a final score for the proposed building changes. Under Chapter 34, minimum scores must be met in the categories of Fire Safety, Means of Egress and General Safety. It is useful to repeat here the definitions of Fire Safety, Means of Egress and General Safety from the Chapter 34:

Fire Safety

Included within the Fire Safety category are the structural resistance, automatic fire detection, fire alarm and fire suppression features of the facility.

Means of Egress

Included within the Means of Egress category are the configuration, characteristics and support features for means of egress in the facility.

General Safety

Included within the General Safety category the fire safety parameters and the means of egress parameters.

The checklists in this report do not attempt to revise or recreate the Chapter 34 numerical calculation, but they do provide the general priorities based on the values inherent in Chapter 34's design. The Case Studies presented in this report include actual Chapter 34 evaluations of three typical sliver buildings, existing conditions vs. proposed renovations. A brief review of those tables will indicate that there are specific safety elements which, when included in the building, offer significant payoff in terms of improved safety score.

Although the requirements for high-rise and low-rise structures differ somewhat, the basic principles for safeguarding the building's occupants remain constant. The most critical safety upgrades are the addition of a fully automatic sprinkler system and smokeproof, fire-rated construction of all vertical shafts through the building.

For the purposes of effective preliminary review of proposed renovations in existing single-exit buildings, the following checklists for high-rise and low-rise sliver buildings are organized into three weighted levels of safety improvements. Level "A" consists of those improvements that are based on the height of the building, and which must, according to the code, be included in any renovation or change-of-use project. There are, of course, more of these mandatory items for high-rise than for low-rise buildings.

Level "B" improvements are those which are recommended as equivalent mitigation for the single means of egress condition. These are the safety features which greatly increase the Means of Egress and General Safety scores when evaluated using Chapter 34. It is recommended that the Board require **all** Level "B" improvements when a building lacks a second exit.

The items under Level "C" are those that may be considered as opportunities to improve the overall safety of the building when other building code deficiencies exist. The Level "C" improvements are not required by code, but should be included in the project if an evaluation using Chapter 34 would produce substandard scores.

We anticipate that these checklists will be made part of the application for variance on sliver buildings. The intent of the checklists is not to provide guaranteed approvals on variance applications, but to assist developers and building owners in understanding the City's expectations for a successful appeal. At the same time, the Board will have a guideline as to appropriate measures of safety equivalency that should be required in a single-exit building.

The checklist is NOT a formal amendment to the adopted code, but rather a customized method for an applicant to assess the overall life safety components of a proposed project before it is considered by the Board of Standards & Appeals.

4.1 LOW RISE SLIVER BUILDINGS COMMENTARY

Typical conditions
Pittsburgh's downtown contains a number of three to six story buildings that are not subject to the more stringent provisions required for high rise construction, but still suffer due to lack of egress and access on their upper floors. Often the buildings are hemmed in by other structures on three sides. The Cultural District tends to have buildings that are well accessed from a common alley (Exchange Way), providing the possibility of a second, remote means of egress to grade.

Another difficulty is access to the upper floors. Often the stair to the upper floor conflicts with retail storefront demands for space. As the case study floor plan shows, providing stair access to the upper floors along with elevator service is often physically impossible while maintaining a traditional storefront. The solution, although far from ideal, would be to provide elevator access from the first floor retail space, recognizing that that this would severely limit the retailer because of security and space concerns. In the Fifth and Forbes corridor there major block with no alley access making it much more difficult to provide a second means of egress.

Overview of Code Strategies for low-rise single-exit buildings:
The checklist for low-rise structures of this type is similar to the high-rises with some exceptions. The code does not require automatic fire alarm systems or emergency back-up on the elevator for buildings under seven stories in height. Since firefighters can gain access to the low rise structure with ladders, these safety measures are optional, and may need to be considered in order to offset code deficiencies.

Sprinklers:
The provision of sprinklers to offset the lack of a second means of egress is the mandatory starting point for project approval by the Board of Standards and Appeals. As noted earlier, the City BBI staff and the Board have approved a number of projects subject to, at minimum, the installation of a sprinkler system.

Vertical Openings:
In these structures the greatest risk to the structure is substantially reduced by the presence of the sprinkler system. The next priority should be the prevention of fire and smoke penetration through shafts, fire doors and other openings. The fire-resistance and smokeproof qualities of the single exit shaft are imperative to the safe exiting of building occupants in an emergency. In all instances, existing shaft enclosures and floor separation ratings must meet the rating requirements for the building's construction type. This will require some modifications within the building and some flexibility at the City in allowing existing assemblies to meet those requirements.

Occupancy Load:
The major benefit of the sliver building is its small floor area, which limits allowable occupancy load in the building as well as travel distances to exit enclosures. However, with only one means of egress, we believe that offices or apartments should be limited to one per floor and that partitioning within units should kept to a minimum so that egress and firefighter access are unrestricted. Any use that places too high a demand on the single stair (especially if it is narrower than the norm) should be discouraged or rejected.

Mixed use separation:
Mixed uses in existing low-rise structures downtown are common and should be encouraged from an economic development point of view. The code requires fire separation (usually two hours) between uses, such as retail on the ground floor and residential above. Each project's construction type needs to be evaluated to determine whether additional fire separation is required.

Other issues:
New fire escapes should be considered as a way of improving the existing situation for multiple tenant occupancies on buildings up to six stories. However, since the buildings are often of high architectural quality, a fire escape on the front facade should be discouraged wherever possible. In some circumstances, a horizontal connection to the roof of an adjacent building could be considered (access easements or encroachments might be required). An example of this condition is on lower Fifth Avenue between GC Murphy's upper floors and the CandyRama building.

LOW RISE SLIVER BUILDING CHECKLIST

This checklist represents our recommendations where an appeal to the Board of Standards and Appeals is necessary due to the lack of a second means of egress in an existing low rise building. An applicant who is able to meet each of the following items for his proposed project should have a reasonable comfort level that his application will be favorably reviewed by the Board.

LEVEL I-INFORMATIONAL

Buildings/projects that meet these criteria may be aided by the use of this checklist in requesting a variance.

❑ **BUILDING HEIGHT**
Building may not exceed 6 stories above grade.

❑ **SINGLE MEANS OF EGRESS**
Proposed renovation will not add a second means of egress.

❑ **BUILDING AREA**
Building may not exceed 3,500 s.f per floor (gross). This area is small, allowing low rates of occupancy and short travel distances to the means of egress. We recommend a higher area per occupant for business uses than allowed by code so that the number of occupants per floor will be adequately served by the limited capacity of the single stair.

LEVEL A - Mandatory Improvements due to Building Height

❑ **STANDPIPE SYSTEM**
Standpipe systems must be installed in accordance with BOCA and as amended by the City of Pittsburgh.

❑ **EMERGENCY LIGHTING**
Means of egress lighting must be provided with independent emergency power in accordance with BOCA.

LEVEL B - Recommended Improvements to offset Single Means of Egress

❑ **AUTOMATIC SPRINKLER SYSTEM**
The entire building must be provided with an automatic sprinkler system.

❑ **VERTICAL OPENINGS**
All vertical exit enclosures, elevator shafts, other shaft enclosures, and all openings between 2 or more floors must have a fire resistance rating of 2 hours or more.

❑ **MIXED USE GROUPS**
Where a building has 2 or more occupancies that are not in the same use group classification, the separation between the mixed use groups shall be a minimum 2 hour fire separation assembly.

❑ **AUTOMATIC FIRE DETECTION**
Smoke detectors must be installed throughout the entire building. Auto detection in dwelling units may not be rquired for R–2 occupancy in the judgement of the Board.

❑ **FIRE ALARM SYSTEM**
A fire alarm system in accordance with Section 918.0 of the BOCA code shall be installed throughout the building.

❑ **SMOKE CONTROL**
The exit stair and elevator shaft shall be pressurized. Where there is only one means of egress, the safety of that means of egress is vital. We recommend that a carefully sealed and pressurized stair will provide a high degree of safety value for the building's occupants.

❑ **MEANS OF EGRESS CAPACITY**
The capacity of the means of egress must meet or exceed the BOCA require ments, with a minimum stair width of 36".

❑ **TENANT AND DWELLING UNIT SEPARATION**
Floors and walls separating tenants must provide a smoke barrier and have a fire resistance rating of 1 hour or greater.

LEVEL C - Recommended Improvements to offset other deficiencies
Examples might include (but are not limited to): construction type, stair width, etc.

❑ **CORRIDOR WALLS**
Corridor walls must have a fire resistance rating of 1 hour or greater.

❑ **HVAC SYSTEM**
HVAC systems must be independent for each tenant, or provide central boiler/ chiller system without ductwork connecting 2 or more stories.

❑ **DEAD ENDS**
No dead end corridor over 10' long will be permitted on any floor.

❑ **TRAVEL DISTANCE**
Maximum travel distance to an exit shall not exceed 75'.

❑ **ELEVATOR CONTROL**
Fireman's recall, requiring battery back-up power.

4.2 HIGH RISE SLIVER BUILDINGS

As with the low rise structure, any single-exit building that is a candidate for conversion with a single stair must have a small floor plate and thus a small allowable occupancy.

The BOCA code as amended by the City defines high-rise construction as any building having occupied floors located more than 75 feet above the lowest level of fire department vehicle access, or more than six stories. This delineation is made based on the ability of fire-fighters to access all parts of the building. In a fire, the fire-fighters work one story below the fire. Therefore their ability to get to the sixth floor of a building from the building exterior allows them to fight a potential fire on the roof of that building. Once a building surpasses the six story, 75' limit, the firefighters must use internal stairs and the elevator to get to the upper floors and/or roof in the event of a fire.

Typical conditions

The code requirements for new high-rise construction limits the types of construction, typically to protected steel or concrete frames. Existing structures built of heavy timber or unprotected steel before these categories were created (typically 3A, 3B and 4) often exceed the height limitations imposed by the BOCA Code.

Additional life-safety measures must be in place to insure the safe exit of occupants from the building, and to protect the building for a period of time that allows the safe travel of fire-fighters within the building. Among these requirements are an automatic sprinkler system throughout the building, standpipe systems, automatic fire detection in certain mechanical equipment rooms, a voice/alarm signaling system, emergency power and light, and emergency elevator service. It is also possible that a fire pump may be required to supplement water pressure to the standpipe system and sprinklers. While emergency lighting is easily accomplished through battery packs located at the lighting source, emergency power for fire pumps and elevator back-up must be provided through a generator.

We have defined our high-rise "sliver" buildings in downtown Pittsburgh to be seven and eight stories in height. Recognizing the limitations of fire-fighting and life-safety access in single-stair buildings of this height, we recommend that the following checklist of life-safety systems be required in the redevelopment of this building type.

Overview of Code Strategies for high-rise single exit stair buildings:

It is our recommendation that the application process for this particular building type be in three parts: those requirements that must be met for high-rise construction, those requirements that are recommended mitigation for the single stair condition, and additional safety features that may be used to offset other deficiencies in the project.

Sprinklers:

A fully automatic sprinkler system is mandated by the BOCA chapter on high-rise construction. Any proposed change of use to an existing building must include the provision of such a system.

Vertical Openings:

As with low-rise buildings, preventing the spread of flames and smoke via vertical shafts through the building is vital to occupant safety. It is our observation that one of the more useful improvements in safety in a single stair structures is the ability to keep smoke out of the vertical shafts through pressurization. Furthermore, in all instances, existing shaft enclosures and floor separation ratings must meet the rating requirements for the building's construction type.

Emergency Power Back-Up For Elevator:

Emergency power back-up for elevator is required in order to safely and effectively fight a fire in the seven to eight story range. There may be cases where alternative access for the Fire Department could be achieved from an adjacent structure, but in those unlikely circumstances, the proposal would need to be evaluated very carefully by the staff and Board on an individual basis. BBI will has indicated they will discourage any such proposal.

Maximum Floor Area and Occupancy Load:
Most of the single-stair "sliver" buildings in downtown Pittsburgh have a floor plate area of less than 3500 s.f. At 100 s.f. gross per occupant for a Business occupancy (see BOCA Table 1008.1.2), that would mean a maximum of 35 occupants allowed per floor.

According to Table 1009.2, the required egress width per occupant of doors and corridors is 0.15 inches per person in a fully sprinklered building. At a maximum of 35 occupants, that translates into a required door and corridor width of 5.25 inches significantly within the safety range of the minimum required exit width of 36 inches.

To provide a factor of safety cognizant of the higher hazard inherent in the single-stair condition, we recommend a maximum floor area of 3,500 be allowed to support a single exit situation, with an allowable Business occupancy of 23 persons, or 150 s.f./ occupant maximum. The occupancy for Residential use would remain as 200 s.f./ person gross (Table 1008.1.2), for a maximum residential occupancy of 17 per floor.

Further, we would suggest a limitation of two R-2 dwelling units (or 4 R-1 sleeping units) per floor in any single stair situation.

Travel Distance:
In order to permit single-exit use in a high-rise (eight story maximum) building, we recommend that the travel distance from any point in the building to the exit enclosure be limited to 75 feet.

Section 1006.5 in the BOCA code limits the length of exit access travel in new construction or renovations. Assuming two exits would be provided in new construction, occupancies in Use Groups B, M and R are limited to a travel distance of 250 feet in a fully sprinklered building. Table 1010.3 (which allows one-exit buildings only in building 3 stories in height, maximum) limits travel distance for use groups B, M and R to 75 feet, but places no additional requirements on sprinklers, alarms, detection systems, etc.

HIGH RISE SLIVER BUILDING CHECKLIST

This checklist represents our recommendations where an appeal to the Board of Standards and Appeals is necessary due to the lack of a second means of egress in an existing high rise building. An applicant who is able to meet each of the following items for his proposed project should have a reasonable comfort level that his application will be favorably reviewed by the Board.

LEVELI I - Informational
Buildings/projects that meet these criteria may be aided by the use of this checklist in requesting a variance.

❑ **BUILDING HEIGHT**
Building may not exceed 8 stories above grade.

❑ **SINGLE MEANS OF EGRESS**
Proposed renovation will not add a second means of egress.

❑ **BUILDING AREA**
Building may not exceed 3,500 s.f per floor (gross). This area is the upper limit of the 6 to 8 story buildings; it is a small area, allowing low rates of occupancy and short travel distances to the means of egress.

LEVEL A - Mandatory Improvements due to Building Height

❑ **AUTOMATIC SPRINKLER SYSTEM**
The entire building must be provided with an automatic sprinkler system.

❑ **VERTICAL OPENINGS**
All vertical exit enclosures, elevator shafts, other shaft enclosures, and all openings between 2 or more floors must have a fire resistance rating of 2 hours or more.

❑ **STANDPIPE SYSTEM**
Standpipe systems must be installed in accordance with BOCA and amended by the City of Pittsburgh.

❑ **ELEVATOR CONTROL**
Fireman's operation and recall, requiring emergency generator.

❑ **EMERGENCY LIGHTING**
Means of egress lighting must be provided with independent emergency power in accordance with BOCA.

❑ **FIRE ALARM SYSTEM**
A fire alarm system in accordance with Section 918.0 of the BOCA code shall be installed throughout the building, with a voice/alarm signaling system and a fire command station that contains the voice/alarm signaling system con trols, fire department communication system controls and other controls as required by code.

❑ **AUTOMATIC FIRE DETECTION**
Smoke detectors must be installed throughout the entire building.

LEVEL B - Recommended Improvements to offset Single Means of Egress

❑ **SMOKE CONTROL**
The exit stair and elevator shaft shall be pressurized. Where there is only one means of egress, the safety of that means of egress is vital. We recommend that a carefully sealed and pressurized stair will provide a high degree of safety value for the building's occupants.

❑ **MEANS OF EGRESS CAPACITY**
The capacity of the means of egress must meet or exceed the BOCA require ments, with a minimum stair width of 36". We recommend a higher area per occupant for business uses in the single exit stair so that the number of occupants per floor will be adequately served by the capacity of the single means of egress.

❑ **DEAD ENDS**
No dead end corridor over 10' long will be permitted on any floor.

❑ **TRAVEL DISTANCE**
Maximum travel distance to an exit shall not exceed 75'.

❑ **MIXED USE GROUPS**
Where a building has 2 or more occupancies that are not in the same use group classification, the separation between the mixed use groups shall be a minimum 2 hour fire separation assembly.

❑ **TENANT AND DWELLING UNIT SEPARATION**
Floors and walls separating tenants must provide a smoke barrier and have a fire resistance rating of 1 hour or greater.

LEVEL C - Recommended Improvements to offset other deficiencies

Examples might include (but are not limited to): construction type, stair width, etc.

❑ **CORRIDOR WALLS**
Corridor walls must have a fire resistance rating of 1 hour or greater.

❑ **HVAC SYSTEM**
HVAC systems must be independent for each tenant, or provide central boiler/ chiller system without ductwork connecting 2 or more stories.

4.3 OLD SKYSCRAPER SINGLE EXIT HIGH RISE ABOVE 8 STORIES

Typical conditions
The City of Pittsburgh contains a small but significant group of high rise structures in the 15-20 story range. These structures are common on Fourth Avenue (Benedum Trees, Investment Building, Arrott, and Bank Tower). They are historically significant as a group of towers that represented the early financial growth of Pittsburgh.

Today they contain Class B and C office space that is no longer competitive for businesses that require large floor plates of 20,000 sf or larger. The average floor plate of these structures is 3,500 to 9,000 sf. Buildings such as the Investment Building have relatively low floor-to-floor heights preventing modern central HVAC systems from being installed.

The buildings have adapted well to smaller professional businesses, such as architects, doctors, dentists, and accountants. These businesses are attracted to these locations due to historic character, lower rent and location. It would be inaccurate to say these buildings are completely obsolete for office use, as is evidenced by their high occupancy rates.

In the 1980's these buildings were made safer by the City requirement to add fire alarm systems and to enclose and pressurize the single stair wells. Each of the buildings vary in their general safety. For example, the Bank Tower has a wide, easy-to-navigate winding stair that can accommodate the office loads comfortably in an emergency situation. The issue of most concern would be maintaining adequate smoke barriers through positive pressurization. The elegant historic lobby is the only way in or out of the structure.

The Investment Building and the Benedum Trees Building are equipped with smaller stairs that are of concern in panic situations. Options for improved safety could include sprinklers, stairway pressurization, and areas of refuge at the roof. The Investment Building is of particular concern in that the stair contains the main electrical bus for the structure, increasing the risk of electrical related fires that could potentially block use of the stair.

Future Code & Occupancy Strategies
The height of these structures, at 15-20 stories, requires that serious consideration be given to a second means of egress if a change of occupancy were to occur. Although the cost would not be small, it might make sense if the market for downtown housing increased. It is probable that these structures will remain as office use for the foreseeable future.

However, if national trends of live/work housing lifestyles grow in Pittsburgh as well, the City could one day face issues of safety when tenants decide to live where they work. Today the city does not directly prohibit live/work, but it could become controversial if incremental conversions occur. Currently most leases and landlords would prohibit outright use of space for living. San Diego's attempts accommodate live/work use have been "too successful" and the 33% size limit on the space used within in a business occupancy is sometimes violated to the concern of fire officials. The theory behind the limit is twofold: to prevent overcrowding and to maintain a balance towards business use that maintains the business occupancy definition for code purposes. BOCA's 10% limit of accessory use would need to be modified or excepted by the Board.

Sprinklers:
If living spaces become desirable in these structures, it required that at minimum the use of sprinklers in these units (currently three stories or more; we include two story buildings as well with one story).

Occupancy:
Maintaining a low occupancy load on each floor should be a the goal for any use because of the limited capacity of the stairs.

Egress paths:
Larger, less densely occupied units of office or residential use are preferred to maintain a clear path from the space and to provide easier access for fire fighters. Studio type occupancies, lofts, open plans should be encouraged for this reason. A special inspection program for fire safety could be implemented in these few but important buildings to head off problems before they occur.

Emergency back-up systems (for elevators):
Currently these buildings have no emergency back-up for the elevator system. For example the Benedum Trees building has an emergency back-up but it is sized for detection and emergency exits in common spaces only. As with all high rise structures, an emergency back-up system is mandatory.

No checklist is provided for old skyscrapers, since they require two means of egress and represent a small and unique condition. A Chapter 34 type analysis is provided in the case studies to demonstrate the impact of improvements on these structures.

5.0 CASE STUDIES

This study developed a series of case studies that illustrate how the code is typically applied to the subject building types: low rise sliver buildings, high rise sliver buildings and early skyscrapers.

The primary building type is the sliver building: a small floor plate, low rise (6 or less stories) or high rise (7 and 8 stories) building typically located in the Cultural District, in the First Side district, and, to a lesser extent, along Smithfield, Forbes and Fifth Avenues. Most are under-utilized or abandoned on their upper floors. Sliver buildings are impacted by requirements related to:

- Egress system: inadequate single exit stairs with no or inadequate enclosure
- High rise (above 6 stories)
- Fire protection systems: standpipes, sprinklers, and alarms
- Narrow width (15'-30')
- Small floor plate (typically 1,000-4,000 s.f.)
- Site access (in some cases none except street)
- Density of occupancy, mixed occupancies

The other building type studied, early skyscrapers of 9 or more stories, is impacted by many of the code factors listed above, particularly single exit stairs and other egress issues. The selected case study subjects include:

- High rise sliver building, 7 and 8 stories (711 Penn Avenue or equivalent)
- Low rise sliver building, 6 or less stories (242 Forbes Avenue or equivalent)
- Early skyscraper, 9 or more stories (Investment Building or equivalent)

The map in the survey section of this report illustrates three basic building types with underutilized or abandoned upper floors, as well as previously approved projects.

Safety evaluation worksheets

The following worksheets evaluate the safety condition of the case study buildings based on the principles of BOCA Chapter 34. Where available, we have used the values given in Chapter 34 for each category. In those categories where BOCA does not give a value (because the condition is not permissible at all under the code), we have indicated that condition as NP - not permitted.

We subjected each of the three case study buildings to review under two scenarios. In the columns marked "Proposed", we are assuming major renovations to the building, including a change of use from Business to Residential R-3. Using the above Code Review Checklist as a guide, we have applied each of the mandates or recommendations from the checklist levels (A,B,C) into the theoretical renovation.

Under the columns marked "Existing" we have assigned values that represent existing conditions in the buildings as they stand today, under Business occupancy. None of the three case study buildings could come close to passing such a safety evaluation given their current conditions. However, each of them is at least partially occupied, with some level of comfort with that situation on the part of the City.

In the scenario of the proposed renovation, each of the buildings fares substantially better than in its current state. While the change of use from Business to Residential creates a more hazardous occupancy, the overall effect on the safety of the building is vastly improved. The City would have the opportunity to impose sprinkler systems on the high rise buildings, and the Fire Department would gain full use of the elevators in the event of a power failure.

CASE STUDY NO. 1: FOTOHUT BUILDING

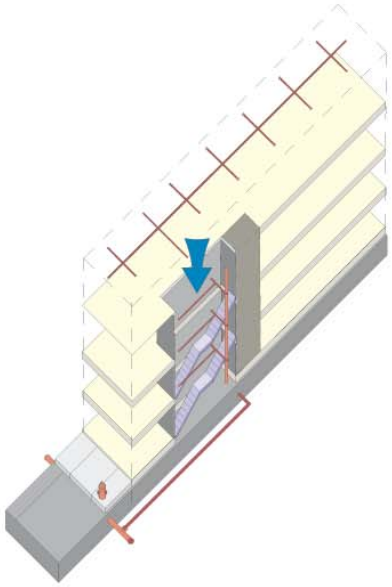
A serious drawback to the existing conditions in this building is the lack of a proper enclosure at the stair to the upper floors. The addition of a sprinkler system and appropriate fire rated enclosures help to raise the overall score by as much as 99 points. While a sprinkler system would not be required in this building for either Business or R-3 occupancy, the provision of one, along with pressurization of the exit stair, could be considered to substantially mitigate the single-stair condition.

In a four story building with R-3 use, neither a fire alarm system nor automatic detection systems are required by the Code, but might be required in a project similar to this to offset any other deficiencies in the existing building or the project.

It should be noted that no elevator exists in this building. The ADA and BOCA allows an exemption from the requirement for an elevator when a building is less than 3 stories high, and less than 3,000 s.f. per floor. Unless a mercantile use or doctor's offices were proposed for the upper floor of a two story building, no elevator would be necessary to meet codes.

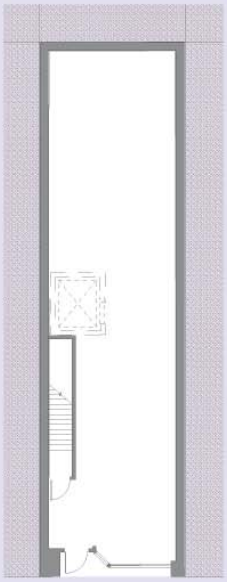
ARTICLE 34 BASED ASSESSMENT - FOTOHUT BUILDING

	Fire Safety		Means of Egress		General Safety	
	Proposed	Existing	Proposed	Existing	Proposed	Existing
Building height	0	-4	0	-4	0	-4
Building area	17	14	17	14	17	14
Fire area	22	15	22	15	22	15
Tenant separation	0	-4	0	-4	0	-4
Corridor walls	0	-5	0	-5	0	-5
Vertical openings	7	-28	7	-28	7	-28
HVAC systems	5	0	5	0	5	0
Auto fire detection	6	-4	6	-4	6	-4
Fire signaling	7	0	7	0	7	0
Smoke control	****	****	0	0	0	0
Exit capacity	****	****	NP	NP	NP	NP
Dead ends	****	****	2	2	2	2
Travel distance	****	****	14	13	14	13
Elevator control	-4	-4	-4	-4	-4	-4
Emergency light	****	****	0	0	0	0
Mixed uses	0	0	****	****	****	0
Auto sprinklers	12	0	6	0	6	0
Building score	72	-20	82	-7	88	-7
Mandatory score	17	24	34	34	34	34
Differential	55	-44	48	-41	54	-41



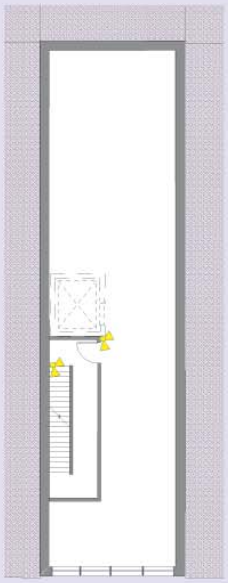
AXONOMETRIC

Building Height: 4 stories



TYPICAL GROUND FLOOR PLAN

Area: 1330 sqft



TYPICAL UPPER FLOOR PLAN

Area: 1220 sqft

LOW RISE BUILDING CHECKLIST

1. **BUILDING HEIGHT**
   BUILDING MAY NOT EXCEED 6 STORIES ABOVE GRADE
2. **BUILDING AREA**
   BUILDING MAY NOT EXCEED 3,500 S.F PER FLOOR (GROSS).
3. **COMPARTMENTATION**
   EACH TENANT SHALL BE SEPARATED WITH A 1-HOUR ENCLOSURE IF SPRINKLERS ARE INSTALLED THROUGHOUT.
4. **TENANT AND DWELLING UNIT SEPARATION**
   FLOORS AND WALLS SEPARATING TENANTS MUST HAVE A FIRE RESISTANCE RATING OF 1 HOUR OR GREATER.
5. **CORRIDOR WALLS**
   CORRIDOR WALLS MUST HAVE A FIRE RESISTANCE RATING OF 1 HOUR OR GREATER.
6. **VERTICAL OPENINGS**
   ALL VERTICAL EXIT ENCLOSURES, ELEVATOR SHAFTS, OTHER SHAFT ENCLOSURES, AND ALL OPENINGS BETWEEN TWO OR MORE FLOORS MUST HAVE A FIRE RESISTANCE RATING OF 2 HOURS OR MORE.
7. **HVAC SYSTEM**
   HVAC SYSTEMS MUST BE INDEPENDENT FOR EACH TENANT, OR PROVIDE CENTRAL BOILER/CHILLER SYSTEM WITHOUT DUCTWORK CONNECTING TWO OR MORE STORIES.
8. **AUTOMATIC FIRE DETECTION**
   SMOKE DETECTORS MUST BE INSTALLED THROUGHOUT THE ENTIRE BUILDING.
9. **FIRE ALARM SYSTEM**
   A FIRE ALARM SYSTEM IN ACCORDANCE WITH THE BOCA CODE SHALL BE INSTALLED THROUGHOUT THE BUILDING.
10. **SMOKE CONTROL**
    A CAREFULLY SEALED STAIR AND PRESSURIZATION WHEN OTHER SEPARATION REQUIREMENTS CANNOT BE FULLY MET IN THE JUDGEMENT OF THE BOARD.
11. **MEANS OF EGRESS CAPACITY**
    OCCUPANT LOAD SHALL BE BASED UPON 150 GROSS S.F./OCCUPANT FOR BUSINESS USE, AND 200 GROSS S.F./OCCUPANT FOR RESIDENTIAL USE.
12. **DEAD ENDS**
    NO DEAD END CORRIDOR OVER 15' LONG WILL BE PERMITTED ON ANY FLOOR.
13. **TRAVEL DISTANCE**
    MAXIMUM TRAVEL DISTANCE TO AN EXIT SHALL NOT EXCEED 75'.
14. **ELEVATOR CONTROL**
    FIREMAN'S RECALL, USING BATTERY PACK.
15. **EMERGENCY LIGHTING**
    MEANS OF EGRESS LIGHTING MUST BE PROVIDED WITH BACKUP POWER
16. **MIXED USE GROUPS**
    THE SEPARATION BETWEEN MIXED USE GROUPS SHALL BE A 2 HOUR FIRE SEPARATION ASSEMBLY. WHEN FULLY SPRINKLERED, 1 HOUR WILL BE CONSIDERED.
17. **AUTOMATIC SPRINKLER SYSTEM**
    THE ENTIRE BUILDING MUST BE PROVIDED WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 906.2. TO OFFSET THE LACK OF A SECOND STAIR AND CHANGE OF USE.
18. **STANDPIPE SYSTEM**
    STANDPIPE SYSTEMS MUST BE INSTALLED AS AMENDED BY THE CITY OF PITTSBURGH,

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	FIRE SAFETY		MEANS OF EGRESS		GENERAL SAFETY	
	Proposed	Existing	Proposed	Existing	Proposed	Existing
BUILDING SCORE	72	-20	82	-7	88	-7
MANDATORY SCORE	17	24	34	34	34	34
DIFFERENTIAL	55	-44	48	-41	54	-41

ADAPTIVE REUSE BUILDING CODE STUDY

PFAFFMANN + ASSOCIATES
with Maureen Guttman, AIA

SLIVER LOW RISE: 6 or LESS STORIES • CASE STUDY #1

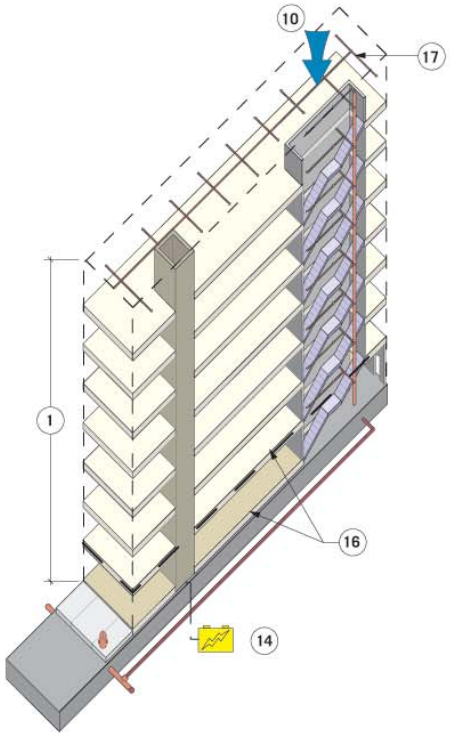
FOTOHUT BUILDING 242 FORBES
CONVERSION TO OFFICE AND LOFT

CASE STUDY NO. 2: 711 PENN AVENUE

The Code Review Checklist outlined above is most directly applicable to this category of the sliver building: the 7 to 8 story, single-stair high-rise. The inclusion of each of those elements in needed to raise the final score to a point where the liability of the single means of egress is overshadowed. While we cannot presume to assign a value to the lack of a second exit in these buildings, we do suggest that a 100% increase in the safety value is at least worthy of consideration as a reasonable alternative.

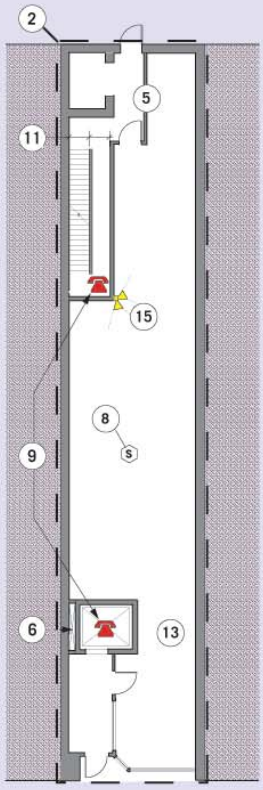
ARTICLE 34 BASED ASSESSMENT - 711 PENN AVENUE

	Fire Safety		Means of Egress		General Safety	
	Proposed	Existing	**Proposed**	Existing	**Proposed**	Existing
Building height	-10	-14	-10	-14	-10	-14
Building area	20	16	20	16	20	16
Fire area	16	0	16	0	16	0
Tenant separation	0	0	0	0	0	0
Corridor walls	0	0	0	0	0	0
Vertical openings	5	3	5	3	5	3
HVAC systems	5	5	5	5	5	5
Auto fire detection	6	4	6	4	6	4
Fire signaling	7	0	7	0	7	0
Smoke control	****	****	4	0	4	0
Exit capacity	****	****	**NP**	-1	**NP**	-1
Dead ends	****	****	2	2	2	2
Travel distance	****	****	14	12	14	12
Elevator control	4	**NP**	4	**NP**	4	**NP**
Emergency light	****	****	1	0	1	0
Mixed uses	0	0	****	****	0	0
Auto sprinklers	4	-12	2	-24	4	-12
Building score	78	15	76	3	78	15
Mandatory score	17	24	34	34	34	34
Differential	61	-9	42	-31	44	-19



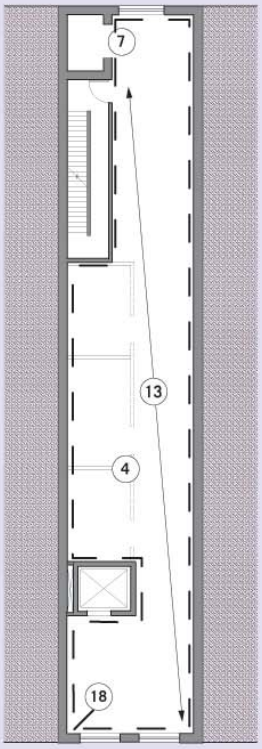
AXONOMETRIC

Building Height: 8 stories



TYPICAL GROUND FLOOR PLAN

Area: 2480 sqft



TYPICAL UPPER FLOOR PLAN

Area: 2480 sqft

HIGH RISE SLIVER BUILDING CHECKLIST

1. **BUILDING HEIGHT**
   BUILDING MAY NOT EXCEED 8 STORIES ABOVE GRADE.
2. **BUILDING AREA**
   BUILDING MAY NOT EXCEED 3,500 GSF PER FLOOR
3. **COMPARTMENTATION**
   2-HOUR USE COMPARTMENTATION AS PER BOCA
4. **TENANT AND DWELLING UNIT SEPARATION**
   1 HOUR FIRE RESISTANCE FOR FLOORS AND WALLS
5. **CORRIDOR WALLS**
   1 HOUR FIRE RESISTANCE FOR CORRIDOR WALLS
6. **VERTICAL OPENINGS**
   2-HOUR USE SEPARATION AS PER BOCA
7. **HVAC SYSTEM**
   HVAC DUCTWORK MUST BE INDEPENDENT FOR EACH TENANT
8. **AUTOMATIC FIRE DETECTION**
   SMOKE DETECTORS MUST BE INSTALLED THROUGHOUT THE ENTIRE BUILDING.
9. **FIRE ALARM SYSTEM**
   A BOCA COMPLIANT FIRE ALARM SYSTEM WITH A SIGNALING SYSTEM AND A FIRE COMMAND STATION.
10. **SMOKE CONTROL**
    THE EXIT STAIR AND ELEVATOR SHAFT SHALL BE PRESSURIZED
11. **MEANS OF EGRESS CAPACITY**
    OCCUPANT LOAD SHALL BE BASED UPON 150 GROSS S.F./OCCUPANT FOR BUSINESS USE, AND 200 GROSS S.F./OCCUPANT FOR RESIDENTIAL USE.
12. **DEAD ENDS**
    NO DEAD END CORRIDOR OVER 7' LONG WILL BE PERMITTED ON ANY FLOOR.
13. **TRAVEL DISTANCE**
    MAXIMUM TRAVEL DISTANCE TO AN EXIT SHALL NOT EXCEED 75'.
14. **ELEVATOR CONTROL**
    FIREMAN'S OPERATION AND RECALL, REQUIRING EMERGENCY GENERATOR.
15. **EMERGENCY LIGHTING**
    MEANS OF EGRESS LIGHTING (BATTERY-PACK EMERGENCY LIGHTING ALLOWED)
16. **MIXED USE GROUPS**
    THE SEPARATION BETWEEN THE MIXED USE GROUPS SHALL BE 2 HOURS.
17. **AUTOMATIC SPRINKLER SYSTEM**
    THE ENTIRE BUILDING MUST BE PROVIDED WITH AN AUTOMATIC SPRINKLER SYSTEM.
18. **STANDPIPE SYSTEM**
    STANDPIPE SYSTEMS MUST BE INSTALLED AS REQUIRED BY THE CITY OF PITTSBURGH,

	FIRE SAFETY		MEANS OF EGRESS		GENERAL SAFETY	
	Proposed	Existing	Proposed	Existing	Proposed	Existing
BUILDING SCORE	78	15	76	3	78	15
MANDATORY SCORE	17	24	34	34	34	34
DIFFERENTIAL	61	-9	42	-31	44	-19

ADAPTIVE REUSE BUILDING CODE STUDY

PFAFFMANN + ASSOCIATES
with Maureen Guttman, AIA

SLIVER HIGH RISE 7-8 STORIES • CASE STUDY #2
711 PENN AVENUE BUILDING
CONVERSION TO HOUSING

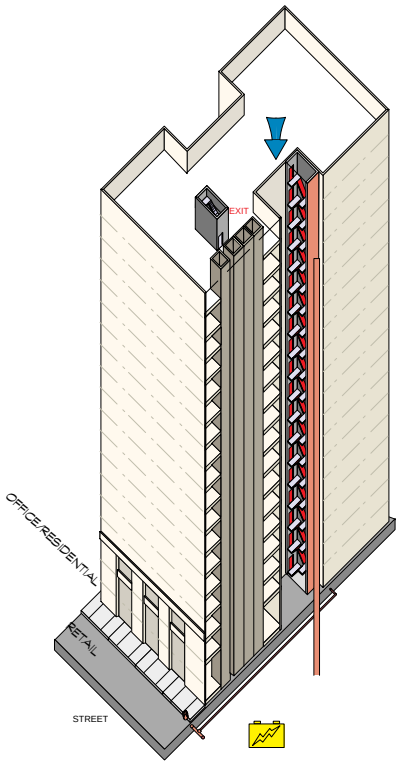
CASE STUDY NO. 3: INVESTMENT BUILDING

A quick study of this chart confirms that it is not easy to compensate for the deficiencies inherent in such a tall building with only one means of egress. The aggregate result of applying all the Checklist recommendations to this building is not enough to even achieve a score in the positive range, much less to meet the mandatory minimum.

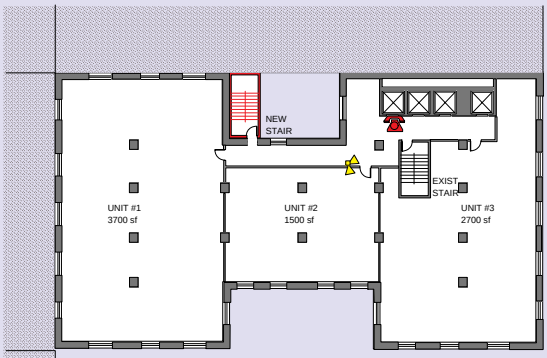
In light of this, we would suggest that there is no circumstance under which one of these very high-rise (over 8 stories) buildings should be renovated without the addition of a second means of egress. BOCA Chapter 34 should then be applied in a normal manner.

ARTICLE 34 BASED ASSESSMENT - INVESTMENT BUILDING

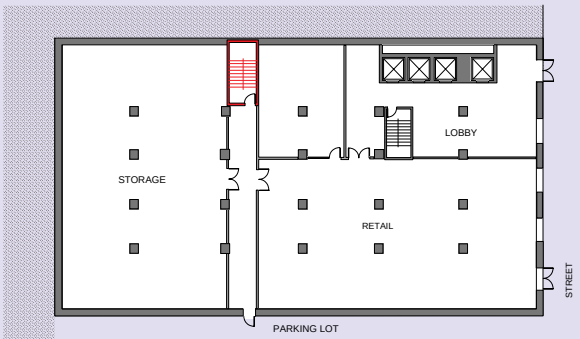
	Fire Safety		Means of Egress		General Safety	
	Proposed	Existing	Proposed	Existing	Proposed	Existing
Building height	-38	-42	-38	-42	-38	-42
Building area	9	1	9	1	9	1
Fire area	4	4	4	4	4	4
Tenant separation	0	-4	0	-4	0	-4
Corridor walls	0	-5	0	-5	0	-5
Vertical openings	5	-100	5	-100	5	-100
HVAC systems	0	5	0	5	0	5
Auto fire detection	6	8	6	8	6	8
Fire signaling	7	0	7	0	7	0
Smoke control	****	****	4	0	4	0
Exit capacity	****	****	NP	NP	NP	NP
Dead ends	****	****	2	-2	2	-2
Travel distance	****	****	14	9	14	9
Elevator control	4	NP	4	NP	4	NP
Emergency light	****	****	4	0	4	0
Mixed uses	0	0	****	****	0	0
Auto sprinklers	4	-12	2	-24	4	-12
Building score	1	-145	23	-150	23	-150
Mandatory score	17	24	34	34	34	34
Differential	-16	-169	-11	-184	-11	-184



AXONOMETRIC
Building Height: 23 stories



TYPICAL UPPER FLOOR PLAN
Area: 10,500 sqft



TYPICAL GROUND FLOOR PLAN
Area: 11,800 sqft

OLD SKYSCRAPER CHECKLIST

1. **BUILDING HEIGHT**
ANY BUILDING OVER 8 STORIES MUST PROVIDE A SECOND MEANS OF EGRESS, IF USE CHANGE IS PROPOSED.

2. **BUILDING AREA**
BUILDING MAY NOT EXCEED 9000 S.F PER FLOOR (GROSS) WITH A TWO STAIR CONFIGURATION ASSUMING ONE STAIR IS IS SUBSTANDARD.

3. **COMPARTMENTATION**
EACH TENANT SHALL BE SEPARATED WITH A 2-HOUR ENCLOSURE.

4. **TENANT AND DWELLING UNIT SEPARATION**
FLOORS AND WALLS SEPARATING TENANTS MUST HAVE A FIRE RESISTANCE RATING OF 1 HOUR OR GREATER.

5. **CORRIDOR WALLS**
CORRIDOR WALLS MUST HAVE A FIRE RESISTANCE RATING OF 1 HOUR OR GREATER.

6. **VERTICAL OPENINGS**
ALL VERTICAL EXIT ENCLOSURES, ELEVATOR SHAFTS, OTHER SHAFT ENCLOSURES MUST HAVE A FIRE RESISTANCE RATING OF 2 HOURS.

7. **HVAC SYSTEM**
HVAC SYSTEMS MUST BE INDEPENDENT FOR EACH TENANT, OR PROVIDE CENTRAL BOILER/CHILLER SYSTEM WITHOUT DUCTWORK.

8. **AUTOMATIC FIRE DETECTION**
SMOKE DETECTORS MUST BE INSTALLED THROUGHOUT THE ENTIRE BUILDING.

9. **FIRE ALARM SYSTEM**
A FIRE ALARM SYSTEM SHALL BE INSTALLED THROUGHOUT THE BUILDING, WITH A VOICE/ALARM SIGNALING SYSTEM AND A FIRE COMMAND STATION.

10. **SMOKE CONTROL**
THE EXIT STAIR AND ELEVATOR SHAFT SHALL BE PRESSURIZED.

11. **MEANS OF EGRESS CAPACITY**
OCCUPANT LOAD SHALL BE BASED UPON 150 GROSS S.F./OCCUPANT FOR BUSINESS USE, AND 200 GROSS S.F./OCCUPANT FOR RESIDENTIAL USE.

12. **DEAD ENDS**
NO DEAD END CORRIDOR OVER 15' LONG WILL BE PERMITTED ON ANY FLOOR.

13. **TRAVEL DISTANCE**
MAXIMUM TRAVEL DISTANCE TO AN EXIT SHALL NOT EXCEED 75'.

14. **ELEVATOR CONTROL**
FIREMAN'S OPERATION AND RECALL, REQUIRING EMERGENCY GENERATOR.

15. **EMERGENCY LIGHTING**
MEANS OF EGRESS LIGHTING MUST BE PROVIDED WITH INDEPENDENT EMERGENCY POWER

16. **MIXED USE GROUPS**
SEPARATION BETWEEN THE MIXED USE GROUPS SHALL BE A MINIMUM 2 HOUR FIRE SEPARATION ASSEMBLY.

17. **AUTOMATIC SPRINKLER SYSTEM**
THE ENTIRE BUILDING MUST BE PROVIDED WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 906.2. THE BOCA CODE CALLS FOR AUTOMATIC SPRINKLER SYSTEMS FOR ALL HIGH-RISE BUILDINGS.

18. **STANDPIPE SYSTEM**
STANDPIPE SYSTEMS MUST BE INSTALLED IN ACCORDANCE WITH SECTION 915.0. AS AMENDED BY THE CITY OF PITTSBURGH, STANDPIPES ARE REQUIRED ON ALL BUILDINGS 4 STORIES OR MORE IN HEIGHT.

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	FIRE SAFETY		MEANS OF EGRESS		GENERAL SAFETY	
	Proposed	Existing	Proposed	Existing	Proposed	Existing
BUILDING SCORE	1	-145	23	-150	23	-150
MANDATORY SCORE	17	24	34	34	34	34
DIFFERENTIAL	-16	-169	-11	-184	-11	-184

ADAPTIVE REUSE BUILDING CODE STUDY

PFAFFMANN + ASSOCIATES
with Maureen Guttman, AIA

OLD SKYSCRAPER > 8 STORIES • CASE STUDY #3
INVESTMENT BUILDING
CONVERSION TO HOUSING

6.0 RECOMMENDATIONS & IMPLEMENTATION STRATEGY

This report divides its recommendations into three categories and follows each with implementation suggestions for both public and private organizations:

- Project Review Process (generally internal city policy and procedural changes)
- Technical Assistance (identification of project specific resources for owners and developers)
- Public Awareness (promotion of and education on policies and procedures)

6.1 PROJECT REVIEW PROCESS

6.1.1 Develop Checklists for Staff and Board Reviews

It is proposed that the Board adopt the checklist process outlined in this report to provide a reasonable amount of consistency in approach from one project to the next.

BBI staff should review a project scheduled for appeal and make a recommendation to the Board in a similar fashion to the Planning Commission, where a staff recommendation, while non-binding can negate the perception that the process is too unpredictable. Since the Board is unpaid and meets on a regular but limited basis, the more ground work done at the staff level the better.

Next actions: Review and comment on current draft in this report; set up focus group with BOCA local Chapter, AIA
Responsibility: BBI and consultants

6.1.2 Professional Certification Of Applications

Applications for appeal should be certified by a registered architect or engineer, to avoid poorly prepared applications and difficulties later during construction. To offset this cost to a potential investor or owner, a design assistance grant program for these specific buildings should be considered (see 6.2.1).

Next actions: Add to draft revision of appeal application
Responsibility: BBI

6.1.3 Develop a New or Revised Appeal Application

A new or revised appeal application for all existing structures can help prepare a project properly for submission. The proposed checklist and brochure could be attached as an addendum. A sample application, completed correctly, should be made available.

Next actions: Review and comment on current draft by BBI
Responsibility: BBI and consultants

6.1.4 Adopt BOCA Standard for Appeal

Section 121.1 of the BOCA National Building Code provides that:

"An application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply, or an equivalent form of construction is to be used."

The City of Pittsburgh, in adopting the BOCA code, amended Section 121.1 to read in relevant part:

"[A]ppeals for permission to use a requested alternative/equivalent in lieu of a provision of the code when the appellant believes that a strict application of the code provision would result in undue hardship, and that the requested alternative/equivalent will not reduce the level of life safety, public health and general welfare required by the code. An appeal based on cost will not be entertained."

By requiring a showing of undue hardship unrelated to cost, the city's amendment to

the code adds unnecessary complexity and uncertainty to the review process for existing structures. The city should return to the simpler formulation adopted by BOCA, and permit all appeals to go forward which seek to show that an equivalent form of construction will meet the safety standards of the code.

Next actions: BBI has not recommended the above change, due to abuses of the BOCA language by some landlords. No action required.

6.1.5 Coordinate Departmental Approvals.

Include Water Department, Utilities, and Public Works as part of the process, possibly creating an ombudsman to help guide small conversion projects. Because the Fire Bureau needs to understand the nature of appeals more specifically, we recommend a representative review the application with the BBI staff member prior to the Board meeting to prevent unnecessary surprises.

Next actions: DCP/BBI planning meeting
Responsibility: BBI, DCP, Zoning, E&C, URA, Water, DPW, Mayor's Office

6.1.6 Coordinate Field Inspections

Since existing conditions in older structures present challenges of interpretation, brief field inspection staff on appeals and consider field reviews prior to appeal. A consistency in understanding from beginning to end of the process is important to the developer. Since the design professional is responsible for site assessment, this is not likely to happen. However, there are number of instances where a field inspector may have a different view than the office based review staff.

Next actions: BBI reviews this report with field staff
Responsibility: BBI

6.1.7 Hydrant Flow Reliability And Testing

Two hydrants in the vicinity are usually tested when a project is planned. The city should find ways to collect a database of test results from previous projects to allow owners to quickly assess the likely compliance with the 500 gpm requirement. This is critical, due to the cost impact of a fire pump and the associated backup systems. We recognize that the reliability of the information changes over time, and therefore recommend that the city conduct an annual test for the three districts in this report.

Next actions: Review with City economic development staff
Responsibility: DCP, Water Department, Public Works, BBI

6.1.8 Clarify and Publish the Use Of Departmental Policies

The BBI currently uses a series of internal policy briefs on issues such as fire stairs that effectively expand upon and interpret the code. It is evident that these documents have previously not been consistently made available to building permit applicants. In order to assure fairness and legal validity, we suggest that these policies be either incorporated into the city's official amendments to BOCA or compiled as a comprehensive list of guidelines for interpretation readily available to design professionals, building owners and other interested parties.

Next actions: Task has been completed.
Responsibility: BBI to include with sales of BOCA 1996 with Pittsburgh amendments and notify AIA

6.1.9 Archaic Materials Profiles

Since recent discussions at the Board have centered on defining "archaic materials" and construction types such as heavy timber (Type 4) in a high rise, we recommend that sketches of existing conditions for floor and roof construction be included in all appeal applications to help expedite reviews.

Next actions: Suggest in updated application for appeal
Responsibility: BBI, Architects/engineers to stamp any drawings.

6.1.10 Elevator Recall And Back-Up Systems

After much discussion with the Fire Bureau about recent approvals of an elevator in high rise construction without emergency backup for fire fighters, we must clarify to appellants that this requirement is mandated.

Next actions: Clarify specific requirements, to reduce cost impact
Possible resources: Consulting engineers and vendors

6.1.11 Historic Building Exceptions

Exceptions for specific requirements such as enclosures at stairs of historically significant interiors, should be considered with the following prequalifications:

The project must be a National Register eligible building approved by the Planning Department preservation planner and reviewed by an architect to determine there is no alternative. A viable alternative to the enclosure must be presented. For the above example, San Diego and Boston allow review and alternatives such as smoke screens/ pressurization at the bottom of a qualifying historic lobby.

Next actions: Meet with DCP staff to discuss options; identify common code problems relative to historic fabric.
Possible resources: PHLF, AIA, preservation consultants

6.1.12 Live/Work Occupancy Definition

Although there are no specific exclusions, a more clear guide is needed for appropriate conversions that anticipate the need for balance of business and residential uses within a single tenant space. It is recommended that the city define this term in the zoning code to allow limited residential use in a building that is primarily a business occupancy.

San Diego's Live/Work code (33% maximum residential use within existing business or warehouse structures; 750 s.f. minimum floor area per unit) is a way to accomplish this. Under the San Diego code, such residential use in an existing industrial occupancy is not considered a change of use. (In Boston such a provision applies to artists only.) In San Diego, anyone can use the Live/Work code, but abuses have occurred regarding number of employees. A copy of the ordinance is included in the appendix. BOCA's 10% limit of accessory use would need to be modified or excepted by the Board to accomplish this.

Next actions: Review text of zoning code with Planning Department
Possible resources: DCP staff, Real estate professionals

6.2 TECHNICAL ASSISTANCE

6.2.1 Code Assistance Grants (Sliver Grants)

An applicant's (especially non-architects) reliance on design assistance becomes a problem for limited City staff and board resources. Therefore we recommend the City work with foundations and professional organizations to provide a program of technical assistance, possibly funded through foundation or corporate grants as has been done in Philadelphia through the Pew Charitable Trust. (see appendix)

Providing funding sources may also encourage creative reuse by building owners hesitant to invest due to the perceived complexity of the process. Building owners and managers need to understand the options available to complete and economically attractive reuse of historic structures, beyond facades.

A well developed feasibility study for these buildings should remove speculation about the code's impact on the value of a building. Owners who are demanding unrealistically high prices for a structure that needs substantial improvement would hopefully be induced to sell or renovate to increase the value of the structure.

Next actions: Meet with City Planning and URA to discuss possibilities
Possible resources: CDCP, foundations, corporations, Insurance and trade organizations.

6.2.2 Create a Commercial Renovation Network

The Community Design Center of Pittsburgh has programs that could be adapted to the issue of building code. One is the Home Renovation Network and the other is the prequalification process used for identification of specific architectural skills or expertise. These ideas could be adapted to promote use by developers or building owners in advance of project financing. Although the CDCP's focus is the neighborhoods, the Community Design Center could be an appropriate and visible resource. The presence of single stair exit low rise buildings in neighborhood commercial districts also may fit within the technical assistance realm of the CDCP.

Next actions: Meet with CDCP to discuss possibilities
Possible resources: Foundations, corporations, Insurance and trade organizations.

6.2.3 Improve Professional Assessment Skills And Advocacy

Improve professional assessment skills in a coordinated effort with BBI, engineers and architects. Professional organizations (AIA, BOCA, NFPA etc.) need to be actively involved in communicating specific Pittsburgh policies to their members, and must provide additional advocacy for change as the proposed international codes progress towards adoption in the next few years.

Next actions: Identify those who will conduct continuing education seminars
Possible resources: Approach AIA, PDTP, PE's, BOCA, etc.

6.3 PUBLIC AWARENESS

6.3.1 Develop A Guide To The Process

The guide would explain the philosophy and intent of the City with regard to the above policies and processes. The guide will explain the need for a design professional's involvement and make such involvement mandatory for any appeal or exceptions from BBI. It might also refer to sources that could provide financial or technical assistance, in the form of grants or loans to help a building owner assess what is needed.

Next action: Develop a brochure
Possible resources: AIA, BOMA, PDTP

6.3.2 Advocacy With State And National Code Bodies

The City and AIA will need to continue to stay abreast of state and national code developments. A key issue will be coordinating with the imminent adoption of BOCA as the statewide building code, which, while a positive move for the state (L&I is much more restrictive and inflexible), will cause potential difficulties in adopting interpretations and changes at a municipal level.

In addition, both the City and the design professions have an opportunity to promote adoption of the new national code for existing structures that is currently under development. This new code appears to provide a useful process for identifying the type of existing structure activity into categories (repair, renovation, alteration, reconstruction, change of occupancy).

In September 1998, the National BOCA Code Annual Meeting is to be held in Pittsburgh. This presents an opportunity to develop a dialogue and first hand reviews of the problems and opportunities presented by existing structures in the economic development process.

Next action: Develop a walking loft tour and seminar on the sliver buildings and distribute report to conference attendees.
Possible resources: AIA, Cultural Trust, BOCA

6.3.3 Convince Local Media To Cover The Issue

In coordination with current projects proposed in the downtown, encourage media interest. Two articles have already been published in the Post Gazette and Columns Magazine. (See Appendix.)

Next action: Additional coverage in PG, Columns, Business Times, etc.

6.3.4 Present To Local Organizations & Groups:

Work with local professional organizations and trade groups to explain the issues involved.

Next actions: Find sponsors to cover expenses, organize and schedule sessions with organizations:
American Institute of Architects (AIA) continuing education
BOCA local Chapter seminars
Pittsburgh History & Landmarks Foundation
Green Building Alliance
Consulting Engineers and Fire Protection Organizations/vendors
Insurance Industry
SIOR

6.3.5 Develop A Cost Profile For Typical Code-Driven Improvements To Sliver Buildings

Next action: Develop a proposal to develop a cost database for pro formas for use by economic development facilitators, and architects.

7.0 APPENDIX

(NOT INCLUDED IN CD ROM/PDF ELECTRONIC VERSION)

The following excerpts provide useful overview of efforts elsewhere. In addition copies of media coverage have been included.

7.1 Brochure
7.2 Philadelphia Study
7.3 San Diego Code Excerpt
7.4 BOCA 34 Excerpt
7.5 PG Articles
7.6 Columns Article
7.7 Survey detail sheets
7.8 Appeal Application revisions
7.9 Survey Detail Sheets