

Code Compliance Alternatives for Historic Buildings

- **A Greater Understanding of Ohio Building Code Chapter 34**
- 2015 Heritage Ohio Annual Preservation & Revitalization Conference
- Presenter:
- **Robert Vilkas, AIA, CBO, LEED AP O+M**
 - Sandvick Architects, Inc.



Introductions

- Me?
 - Robert Vilkas
 - Sr. Architect/
 - Code Consultant
 - Former Cleveland Building Commissioner and City Architect
 - rvilkas@sandvickarchitects.com
- You?



Learning Objectives

- Become familiar with OBC Chapter 34 for Existing Buildings as it affects existing and in particular, Historic Buildings
- Become familiar with OBC Section 3411 for Accessibility requirements in existing buildings
- Become familiar with OBC Section 3412 for Compliance Alternatives procedures and options
- Become familiar with plan review and inspection requirements when Section 3412 is being employed

Topics of Interest

- Challenges of Existing Buildings
- “Grandfathering”
- Certificate of Occupancy
- Zoning & Design Review
- Ohio Building Code
- Chapter 34
 - ADA & Alternative Compliance
- Working with the Building Dept.



Why do we have codes?

- Response to man-made tragedies
 - Great Chicago Fire (1871), Beverly Hills Super Club Fire (1977), World Trade Center 1 (1993), World Trade Center 2 (9/11/2001), Rhode Island Nite Club (2012)
- Response to safety hazards
 - Fire and Contamination
- Response to natural disasters
 - Hurricanes, Wildfires, Tornadoes, Floods
 - Response to insurance companies



Challenges of Existing Buildings

- **Starting with a legacy**
 - The “box” is set...location, entrances/exits, height, area, elevators, & stairs
- **Maintenance & Modifications**
 - Probably varied over the years and poorly documented... “Boot-legged”.
- **Hidden Conditions**
 - No X-ray vision. Expect the unexpected.
- **Antiquated uses**
 - Multi-storied Warehouses, industrial plants, offices, etc.

Challenges of Existing Buildings

Typical Constraints

- Inappropriate layouts
- Inadequate mechanical and electrical systems
- Inaccessible to handicapped
- Inadequate floor loading
- Inadequate fire protection systems



Challenges of Existing Buildings

Common Terms

- Adaptive re-use: New uses from old
- Sustainability: Efficiency with least impact
- Accessibility: Access for all
- ROI (Return on Investment): Renovate vs. New
- Site constraints, i.e. parking , access, etc.

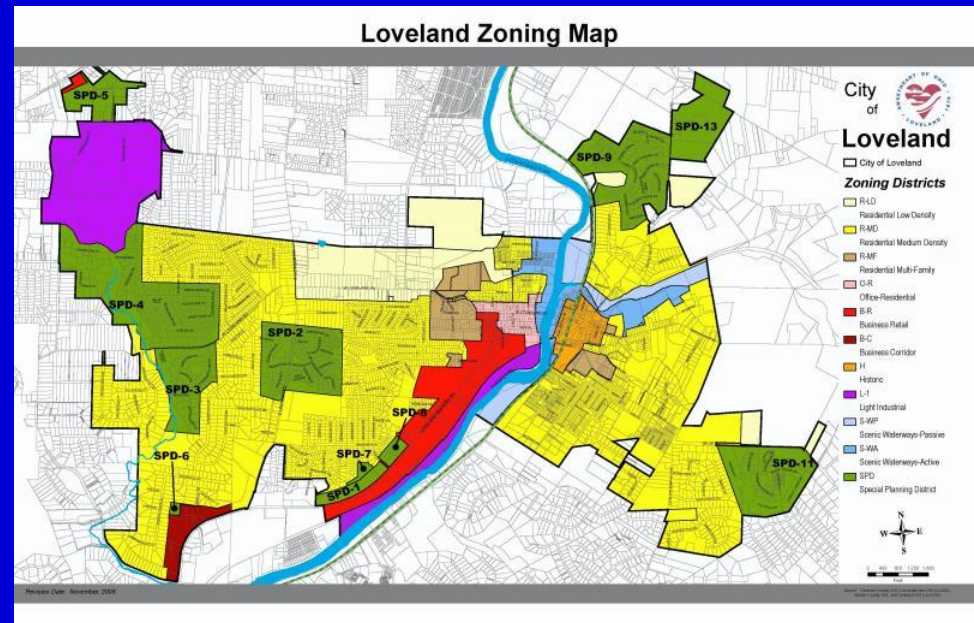
“Grandfathering”

- What is it?
- Why is it important?
- OBC 102.7 Existing Structures
 - *The occupancy of any structure currently existing on the date of the adoption of this code shall be permitted to continue without change provided there are no orders of the Building Official pending, no evidence of fraud, or no serious safety or sanitation hazards.*



Zoning (Local Requirements)

- Permitted Uses
- Setbacks
- Overlay Districts
- Not regulated by Ohio Building Code but still a necessary step in the approval process
 - Can be a big hurdle depending on the new use
 - Existing Non-Conforming Use issues



Design Review (Local Requirements)



- Must meet local design and landmarks commissions guidelines and procedures
- Historic Tax Credit Projects must meet NPS standards

Ohio Building Code

- Use Groups
 - Change of Use
- Construction Type
 - Floor Loads
- Exits, Stairs, Elevators
- Sprinklers, Alarms & Smoke Detectors
- Fire Separation



3 Levels of Existing Buildings



- Any building occupied yesterday
- Any building built before July 1, 1979
- Any building designated or listed as historic

Certificate of Occupancy

- Establishes a Baseline
 - Location, date, description, & conditions
- New Construction
 - *Partial Occupancy*
 - *Time-limited Occupancy*
- Alterations
 - *Unaltered spaces may continue to be occupied if approved by BO.*
- Existing Buildings
 - Sec. 111.2 ...



Section 111.2 Existing Buildings

- *Upon written request from the Owner of an existing building or structure, the Building Official shall issue a certificate of occupancy, provided there are no violations of law or orders of the Building Official pending, and it is established after inspection and investigation that the alleged occupancy of the building or structure has previously existed...*

Section 111.2 Existing Buildings

- *...This code shall not require the removal, alteration or abandonment of, or prevent the continuance of, the occupancy of a lawfully existing building or structure, unless such use is deemed to endanger public safety and welfare.*
- “Serious Hazard” does not equal “Non-code compliant”.

Seismic Requirements (OBC 3401.5)



- Historic buildings are old buildings;
- Old building designs did not adequately consider seismic forces
- Adaptive reuse must review Sec. 3401.5 for seismic evaluation by Design Professional

Seismic Requirements (OBC 3401.5)



- Ohio is not earthquake-free.
- North-east and Central-west portions of Ohio have elevated earthquake risks.
- New uses can trigger more stringent requirements.

Flood Plain Requirements (OBC 3403.2)



- Existing structures and uses are usually “grandfathered”
- New uses may trigger flood-proofing requirements
- Check most current FEMA maps

OBC 3409 – Historic Buildings



- *The provisions of this code relating to the construction, repair, alteration, addition, restoration and movement of structures, and change of occupancy shall not be mandatory for historic buildings where such buildings are judged by the Building Official to not constitute a distinct life safety hazard.*

OBC 3411 – Accessibility for Existing Buildings



- Don't refer to Chapter 11 unless specifically directed there.
- Follow the guidelines to the extent...
- **TECHNICALLY FEASIBLE.**

Accessibility Priorities

- OBC 3411
 - At least one accessible building entrance
 - At least one accessible route from entry to primary function
 - Complying signage



Accessibility Priorities

- Accessible Parking
- At least one accessible passenger loading zone
- Accessible route from parking to entry
- Comply unless “Technically Infeasible”.



3412 Compliance Alternatives

- *Compliance Alternatives Approach*

- **What is it?**
 - Trade-offs, What-if's
- **Pros**
 - Flexibility & Cost-effective
 - Overcomes the impossible!
- **Cons**
 - Tedious, Time-consuming analysis



Compliance Alternatives: How to's Initial Tasks

- Determine when building was built
 - July 1, 1979 or earlier
- Determine if more than one “Building”
- Determine likely “Fire Areas”
- Determine Height and Areas, Use Groups and Construction Types of Fire Areas
- Review Scoring needed for compliance

Compliance Alternatives: How to's

- **Evaluate existing facilities**
- **Prioritize “easy” points, “harder” points**
 - Prepare on spreadsheet to maximize “What if” process
 - Engage cost estimator to assist on economic impact
 - Engage mechanical and fire protection engineers

Compliance Alternatives: How to's

- To make decision-making easier provide Owner with options for consideration with:
 - **Cost impacts**
 - **Timing impacts**
 - **Disruption impacts**



Compliance Alternatives: How to's Final Decisions

- Based on final decisions:
 - Incorporate the specific items in the Construction Documents
 - Prepare a Summary Sheet on Construction Documents
 - Invite Building Official and Plans Examiner to meet to review the analysis.



Compliance Alternatives: OBC 3412 Overview

Limited Applicability

- July 1, 1979 or earlier

Investigation

- Structural analysis

Evaluation Topics

- Fire Safety
- Means of Egress
- General Safety



Compliance Alternatives: Specific Issues

- **Building Height**
- **Building Area**
- **“Compartmentation”**
- **Vertical Openings**
- **HVAC Systems**
- **Automatic Smoke Detection**
- **Fire Alarm Systems**
- **Smoke Control...**



Compliance Alternatives: Specific Issues

- **Means of Egress
Capacity and
Number**
- **Dead End
Corridors**
- **Elevator Controls**
- **Means of Egress
Lighting...**



Compliance Alternatives: Specific Issues

- **Mixed Occupancies**
- **Automatic Sprinklers**
- **Incidental Use**



Compliance Alternatives: Scoring

- **Building Safety Scores**
 - **Fire Safety**
 - **Means of Egress**
 - **General Safety**

**MUST PASS ALL 3
IF NOT MAKE
ADJUSTMENTS**



Suggestions for Approval



- Compartmentation
 - Provide passive protection of occupants by dividing the building into compartments protected by fire barriers.

Suggestions for Approval

- Tenant Separation
 - Try to achieve one-hour rating
 - If not, at least smoke barriers



Suggestions for Approval



- Corridors & Shafts
- Corridors – One-Hour
- Vertical Shafts – Two-Hour

Suggestions for Approval



- HVAC Systems
 - Limit system connecting multiple floors
 - At least limit air movement in egress elements

Suggestions for Approval



- Fire Detection
 - Smoke detectors on all floors other than individual sleeping units or tenant spaces – Good
 - Throughout - Better

Suggestions for Approval



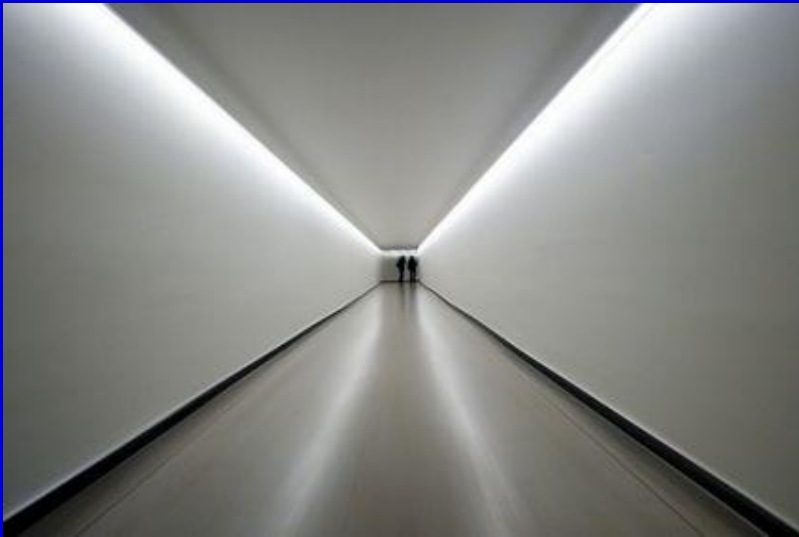
- Fire Alarm System
 - None – Very Bad
 - Manual system – Good
 - Automatic with notification and command center - Best

Suggestions for Approval



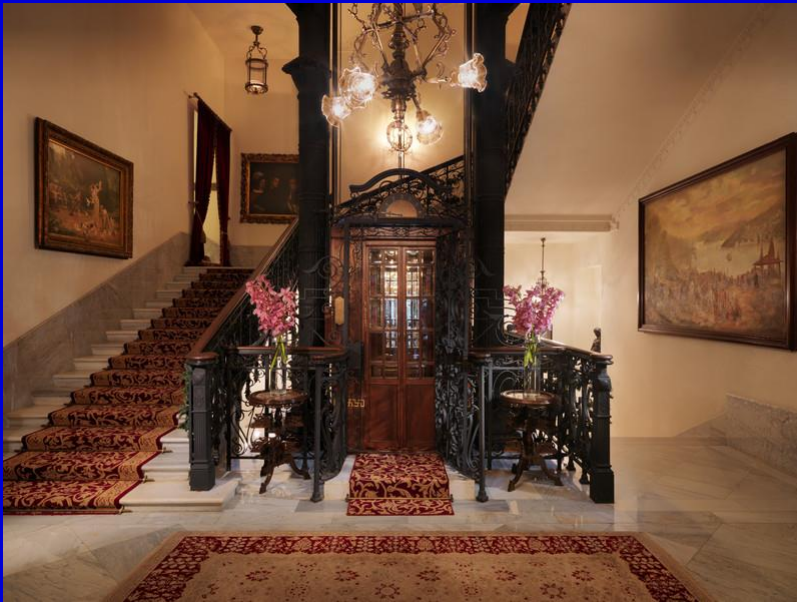
- Smoke Control
- If required and none provided – Very Bad
- Providing sprinklers and mechanical smoke control system
- Best

Suggestions for Approval



- Means of Egress and Dead End Corridors
 - Comply with minimum number
 - Limit dead end corridors to 35' in unsprinkler buildings and 70' in sprinklered buildings

Suggestions for Approval



- Elevator Controls
 - No elevator – Bad
 - Elevator with recall – Better
 - Elevator with recall and meets new elevator code - Best

Suggestions for Approval



- Means of Egress
Emergency
Lighting
- None is NOT
PERMITTED
- Sufficient lights
with emergency
power - Best

Suggestions for Approval

- Mixed Occupancies
 - No separation the worst
 - 1-hour separation better
 - 2-hour separation best



Suggestions for Approval



- Sprinklers and Standpipes
- If required and not provided – Bad
- If required and provided – Good
- If not required and provided - Best

Suggestions for Approval



- Incidental Uses

- Furnace and Boiler Rooms
- Storage Rooms
- Fire Pump Room
- Laundry and Trash Rooms
- 0-hour to 2-hour with/without sprinklers

Conclusions

- Compliance Alternatives is not a save-all but certainly an alternative worth investigating.
- Work with Design Professional, Contractor, and Building Official to develop a Compliance Team!



Questions?

- Robert Vilkas
 - Sandvick Architects, Inc
 - 1265 West 6th Street,
Suite 200
 - Cleveland, OH 44113
 - 216.621.8055 x119
 - rvilkas@sandvickarchitects.com

