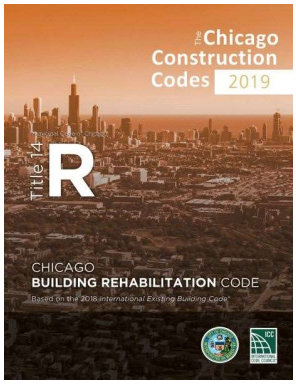
Introduction

- About the *Chicago Building Rehabilitation Code*
- Intent of the Rehab Code
- Reason for the Rehab Code
- Applicability of the Rehab Code
- Baseline Requirements
- Compliance Options
- Organization of the Rehab Code

About the Code

- Title 14R of the *Municipal Code of Chicago*
- Full citation to section is:

  14R-[Chapter #]-[Section #]
- Replaces Chapter 13-200
  - Optional December 1, 2019
  - Mandatory August 1, 2020



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Arthur Siegel / Chicago Historical Society

KEY CONCEPT

Intent of the *Chicago Building Rehabilitation Code*

The intent of this code is to provide flexibility to allow the use of alternative approaches to achieve compliance with minimum requirements to safeguard the public health, safety and welfare insofar as they are affected by the *repair*, *alteration, change of occupancy*, *addition*, and relocation of *existing buildings*.

Section 14R-1-101.3

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Reasons for the Code

- Existing buildings do not comply with new construction requirements
- Full compliance with new construction requirements is cost-prohibitive and sometimes physically impossible
- CBRC provides greater predictability about what is "better than it was" in the context of rehabilitation work
- Additional flexibility for historic buildings

KEY CONCEPT

Applicability of the *Chicago Building Rehabilitation Code*

- Previously-occupied buildings
  May comply with CBC or CBRC
- Not-previously-occupied buildings and spaces
  Must comply with CBC (new construction)
- Porches, decks, balconies, accessory structures
  May be repaired or replaced with matching structure
- Any project may elect to fully comply with new construction requirements (Title 14B)

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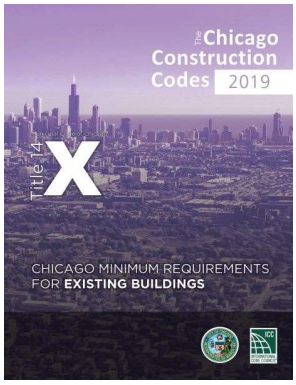
Baseline Requirements

- All buildings must comply with *Chicago Minimum Requirements for Existing Buildings*

Ch. 3: Property Maintenance
Ch. 4: Residential Occupancies
Ch. 5: Fire Safety Requirements
Ch. 6: Light and Ventilation
Ch. 7: Electrical Requirements
Ch. 8: Heating, Cooling, and Mechanical
Ch. 9: Plumbing Systems and Fixtures
Ch. 10: Elevators & Conveyance Devices
Ch. 12: Vacant Buildings



- Replaces Chapter 13-196

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KEY CONCEPT

Compliance Options

- Repairs
- Prescriptive Compliance Method
- Work Area Compliance Method
- Performance Compliance Method
- Relocated Buildings

or *Chicago Building Code* (New Construction)

Repairs (Chapter 4)

Chapter 4 governs the repair of existing buildings. The provisions describe conditions under which repairs may be made using materials like those of the original construction and where repairs must comply with requirements for new buildings.

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Prescriptive Compliance Method (Chapter 5)

- Simplest, but also the most conservative, approach for alteration, addition, or change of occupancy
- Different rules based on type of rehabilitation work
- Requires compliance with Chapters 3 and 5

12

Work Area Compliance Method (Chapters 6-12)

- Proportional approach to code compliance
- As scope increases, so do requirements to upgrade
  - Floor area
  - Types of work
- Requires compliance with Chapters 3 and 6 to 12

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Performance Compliance Method (Chapter 13)

- Evaluation conducted using scoring system (similar to LSE program)
- Allows trade-offs between above-code and below-code conditions in scope of work
- Requires compliance with Chapters 3 and 13
- Reports will initially be evaluated by Committee on Standards and Tests

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CODE BOOK

Relocated or Moved Buildings (Chapter 14)

- Applies to any building that is relocated, either on same lot or from one lot to another
- If scope includes other types of rehabilitation work, must comply with one of the compliance options

Wolfe House & Building Movers / Wikimedia Commons

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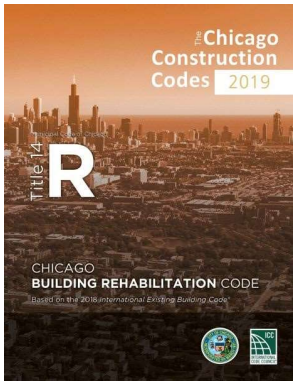
KEY CONCEPT

Code Organization

Chapter(s)	Subject(s)
1–2	Administrative requirements and definitions
3	Provisions for all compliance methods
4	Repairs
5	Prescriptive compliance method
6–12	Work area compliance method
13	Performance compliance method
14	Relocated buildings
15	Work site safety and operations
16	Referenced standards
17	Information on fire performance of archaic building materials



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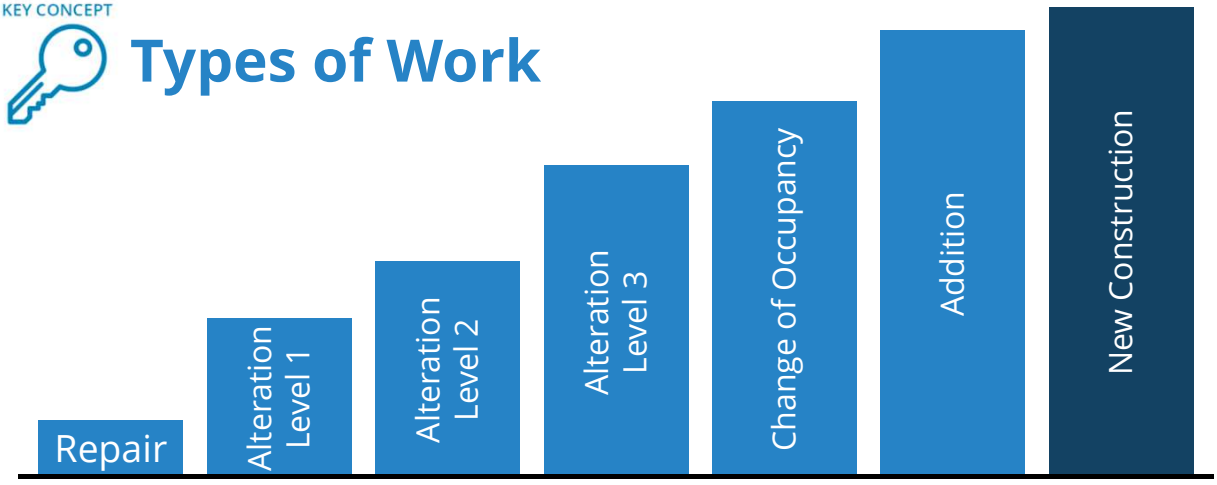
KEY CONCEPT

Types of Work

- Repair
- Alteration
- Incidental / code-mandated work
- Change of occupancy
- Addition
- Relocated building

KEY CONCEPT

Types of Work



+ *Chicago Minimum Requirements for Existing Buildings* (Title 14X)

- Special provisions for historic buildings (Chapter 12)

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KEY CONCEPT

Repair

REPAIR. The reconstruction, replacement or renewal of any part of an *existing building* for the purpose of its maintenance or to correct damage.

- Some "repairs" may be classified as "alterations" for purposes of accessibility compliance, including plumbing fixture replacement (*See* definition of "Alteration (for Section 305)")

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KEY CONCEPT

Alteration

ALTERATION. Any construction or renovation to an *existing structure* other than a *repair* or *addition*.

KEY CONCEPT

Alteration—Level 1

Level 1 *alterations* include the removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose. (602.1)

- No reconfiguration of space or building features/systems
- No new building features/systems

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FOR EXAMPLE

Alteration—Level 1 Examples

- Replacement finish flooring or installing new finish flooring over existing floor surface
- Installation of decorative paneling on existing walls
- Installation of new exterior siding
- Window or door replacement (in existing openings)
- Replacement of existing mechanical, electrical, or plumbing fixtures with more efficient models
- Roof recover or roof replacement
- Drop ceiling (as long as min. ceiling height maintained)

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KEY CONCEPT

Alteration—Level 2

Level 2 *alterations* include the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment. (603.1)

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FOR EXAMPLE

Alteration—Level 2 Examples

1) Reconfiguration of space
New or relocated walls, means of egress, natural light

2) Addition or elimination of any door or window
(self-explanatory)

3) Reconfiguration or extension of any system
New or relocated plumbing, ductwork, electrical

4) Installation of any additional equipment
Adding air conditioning (no AC before)

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KEY CONCEPT

Work Area

WORK AREA. That portion or portions of a building consisting of all reconfigured spaces as indicated on the construction documents. Work area excludes other portions of the building where incidental work entailed by the intended work must be performed and portions of the building where work not initially intended by the owner is specifically required by this code.

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Work Area (continued)

WORK AREA. That portion or portions of a building consisting of all reconfigured spaces as indicated on the construction documents. Work area excludes other portions of the building where incidental work entailed by the intended work must be performed and portions of the building where work not initially intended by the owner is specifically required by this code.

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Work Area (continued)

- Work area ≠ Level 2 alterations
  - Installation of AC throughout building (previously no AC) is Level 2 alteration, but only *reconfigured space* = work area
- Incidental work
  - Areas disturbed to run new electrical conduit for new lighting or ductwork for new HVAC ≠ work area
- Code-mandated work
  - Areas disturbed to install code-required sprinkler system ≠ work area

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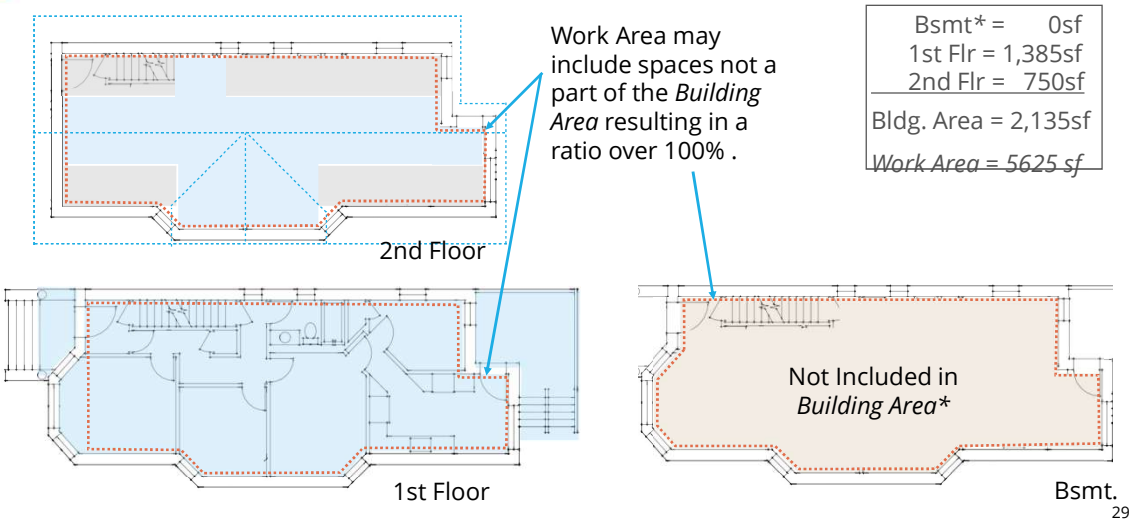
FOR EXAMPLE

Work Area Examples



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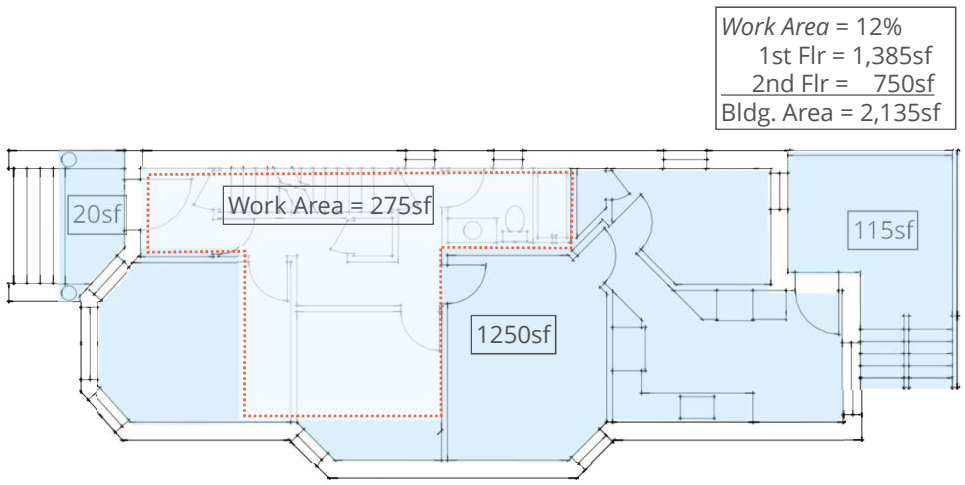
FOR EXAMPLE

Work Area Examples



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KEY CONCEPT

Alteration—Level 3

Level 3 *alterations* apply where the *work area* exceeds 50 percent of the *building area* during any consecutive 36-month period. (603.1)

- Requires checking recent permit activity
- Because *building area* generally excludes *basements*, work area can exceed 100% of building area

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CHICAGO AMENDMENT

Change of Occupancy

CHANGE OF OCCUPANCY. A change in the use of a *building* or a portion of a *building* that results in any of the following:

1. A change of classification to a different major occupancy group (for example, from Group A-2 to Group B).
2. A change of classification from one group to another group within a major occupancy group (for example, from Group A-2 to Group A-3).

. . .

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CHICAGO AMENDMENT

Change of Occupancy (continued)

> . . .
>
> 3. A change of classification from one condition to another condition within an occupancy group (for example, from Group I-2, Condition 1 to Group I-2, Condition 2).
>
> A change of use that does not result in a change of occupancy classification (for example, from a restaurant to a tavern, which are both classified as Group A-2 occupancies) is not a *change of occupancy*.

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FOR EXAMPLE

Change of Occupancy Examples

- Adaptive reuse of former elementary school building for small business incubator
- Restaurant moving into retail space previously used as cell phone store
- Operating real estate office out of building originally built as single-family home (no alterations)
- Converting upper floors of department store to business offices.

Remember: The new use and occupancy must also be allowed by the zoning classification of the property.

KEY CONCEPT

Addition

ADDITION. An extension or increase in floor area, number of stories, or *building height* of an *existing building*.

- Not necessarily change in building envelope
- Could be adding floor area within envelope (mezzanine, infill floor, etc.)

KEY CONCEPT

Relocated or Moved Buildings

- Applies to any building that is relocated, either on same lot or from one lot to another
- If scope includes other types of rehabilitation work, must comply with one of the compliance options

Chicago Minimum Requirements for Existing Buildings

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KEY CONCEPT

Chicago Minimum Requirements

- regulate the condition and maintenance of existing buildings, existing structures, and outdoors areas,
- establish responsibilities of owners
- establish minimum requirements for:
  - light
  - ventilation
  - space
  - security
  - electricity
  - plumbing
  - heating
  - cooling
  - sanitation
  - weather protection
  - fire protection

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Chicago Minimum Requirements—Organization

Applies retroactively and prospectively. (14X-1-101.2)

Ch. 3: Property Maintenance
Ch. 4: Residential Occupancies
Ch. 5: Fire Safety Requirements
Ch. 6: Light and Ventilation
Ch. 7: Electrical Requirements
Ch. 8: Heating, Cooling, and Mechanical
Ch. 9: Plumbing Systems and Fixtures
Ch. 10: Elevators & Conveyance Devices
Ch. 12: Vacant Buildings

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Property Maintenance (Chapter 3)

- Outdoor areas (grading, drainage, fences, pavement, vegetation, rodent harborage, exhaust)
- Exterior structure (structural integrity, weather protection, insect screens)
- Interior structure (structural integrity, maintenance)
- Component serviceability (unsafe conditions)
- Handrails and guards (number, height, openings)
- Rubbish, garbage, and pest management

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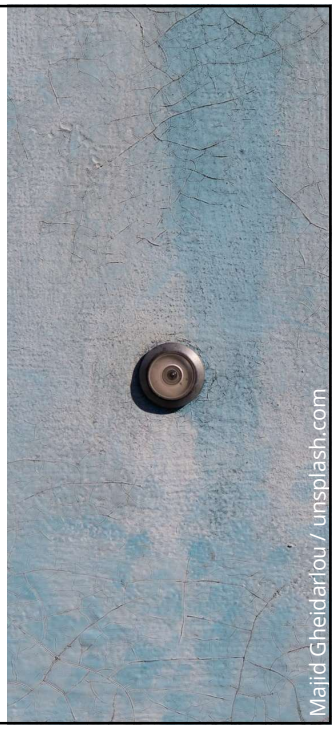
CODE BOOK

Residential Occupancies (Chapter 4)

- Arrangement and minimum dimensions (minimum area per occupant for units and bedrooms, access to water closets)
- Security devices (locked entrances, unit doors and locks, viewing device(peephole), locks for windows and doors accessible from a balcony or the ground)



CODE BOOK

Fire Safety Requirements (Chapter 5)

- Fire and smoke protection features (maintenance of fire-resistive construction and opening protective; protection of vertical openings, shafts and chutes; required door closers)
- Fire protection and life safety systems (retroactive requirements for: sprinkler and fire alarm systems; fire extinguisher requirements; high-rise voice communication systems; smoke alarms and CO alarms)
- Means of egress (Minimum maintenance, dimension and illumination requirements; panic hardware; exit signs; storage beneath stairways; fire escapes)
- Life safety compliance plan (features installed under LSE program must be maintained)

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CODE BOOK

Light and Ventilation (Chapter 6)

- Light (natural light, artificial light, means of egress lighting, emergency lighting)
- Ventilation (natural ventilation, mechanical ventilation, bath and toilet room ventilation, process ventilation, clothes dryer exhaust)

CODE BOOK

Electrical Requirements (Chapter 7)

- Electrical system (minimum service, labeling of panel, electrical hazards caused by water or fire exposure)
- Electrical equipment (installation requirements, unsafe equipment, abandoned electrical equipment and wiring, minimum receptacles and luminaires, electric motor maintenance)
- Emergency electrical system (Refers to *Chicago Electrical Code*, Art. 700)
- Electrical hazards (extension cords, electric space heaters)

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Heating, Cooling, and Mechanical Systems (Chapter 8)

- Heating systems (maintenance, heat requirements for dwelling units and workplaces, responsibility to provide energy/fuel for heating)
- Cooling equipment (required for nursing homes)
- Mechanical equipment (maintenance of mechanical appliances and equipment, including chimneys and flues, limitation on cooking in SROs and dormitory sleeping rooms)
- Duct systems (maintenance)

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Plumbing Systems and Fixtures (Chapter 9)

- Required fixtures (dwelling units, congregate living, public toilet facilities)
- Toilet rooms and bathrooms (privacy, location/access, floor finishes)
- Operations and maintenance (maintenance, clearances, plumbing hazards)
- Water systems (hot or tempered water required, cross-contamination, pressure)
- Sanitary and storm drainage (maintenance, grease interceptors, nuisance conditions and discharge onto adjoining lots)
- Swimming pools, spas and hot tubs (maintenance)

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CODE BOOK

Elevators & Conveyance Devices (Chapter 10)

- General (maintenance and certificate of operation required per *Chicago Conveyance Device Code*)
- Elevators (where passenger elevator(s) provided, at least one passenger elevator must be kept in service when building is occupied)

Jason Dent / unsplash.com

Provisions for All Compliance Methods

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Photo courtesy Papageorge Haymes / Ken DeMuth

Provisions for All Compliance Methods

- Chapter 3 includes provisions that apply to all compliance options and methods
  - General (302)
  - Structural requirements (303 and 304)
  - Accessibility (305)
  - Reroofing (306)
  - Fire escapes (307)
  - Electrical (308)
  - Residential occupancies (309)

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General Provisions (Section 302)

- DOB may require dangerous conditions to be eliminated (302.2)
- Existing materials (if allowed at time of installation may remain, unless dangerous) (302.4)
- New materials must generally comply with new construction requirements (302.5)
- Like-kind materials may be used for repairs and alterations if it will not create an unsafe condition (302.5)
- Occupancy classification is based on CBC—updated at time of rehabilitation work (302.6)

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KEY CONCEPT

Structural (Sections 303 and 304)

- If addition or alteration does not increase live load, existing structure may remain (303.1)
- Permanent placards must be posted for areas designed based on reduced live load (303.1)
- Allows DOB to require notification of owners of adjacent lower roof within 20 feet (horizontally) of potential change in snow load (303.2)
- Allows use of reduced seismic forces for some rehabilitation work (303.3)

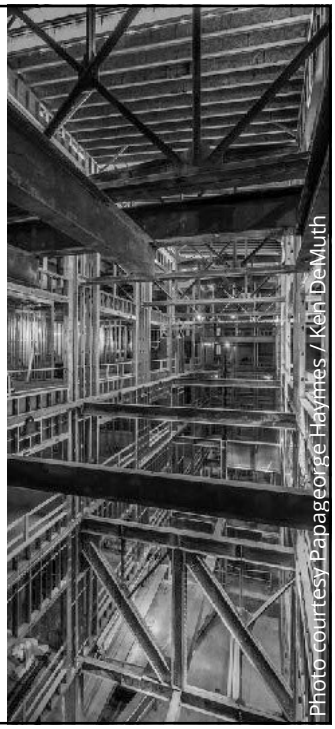

Photo courtesy Papageorge Haymes / Ken DeMuth

KEY CONCEPT

Accessibility (Section 305)

- Generally, rehabilitation work must comply with accessibility requirements unless:
  - Technically infeasible
  - Scoping exception applies
- Rehabilitation work generally cannot remove features of accessibility (305.2)

Matt Artz / unsplash.com

Accessibility (continued)

TECHNICALLY INFEASIBLE. An *alteration* of a *facility* that has little likelihood of being accomplished because the existing structural conditions require the removal or *alteration* of a load-bearing member that is an essential part of the *primary structural frame*, or because other existing physical or *site* constraints prohibit modification or addition of *elements*, *spaces* or features which are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility.

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FOR EXAMPLE

Accessibility (continued)

Technically infeasible conditions:

- conflicts with applicable building, plumbing, or other codes (such as when combining two toilet stalls to create an accessible stall would violate the plumbing code's required fixture count)
- meeting slope requirements on developed site located on steep terrain where necessary re-grading and other design solutions are not feasible
- work that would impact load-bearing walls and other essential components of the structural frame, including structural reinforcement of the floor slab

US Access Board, *Guide to the ADA Standards*

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Accessibility—Scoping

- Repair (305.2.1)
- Alteration (305.6)
- Alteration affecting primary function area (305.7)
- Addition (305.5)
- Partial change of occupancy (305.4.1)
- Complete change of occupancy (305.4.2)
- Change of occupancy to residential (305.4.3)

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Accessibility—Scoping (continued)

Where an alteration affects the access to or contains a primary function area, an accessible route must be provided for the primary function area and toilet and drinking fountains serving the primary function area.

Exception: Cost of providing accessible route not required to exceed 20% of the cost of the alterations to the primary function area

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REFERENCE

Accessibility—More Info

- US Access Board, *Guide to the ADA Standards,* Chapter 2: Alterations and Additions
- International Code Council, 2018 *International Existing Building Code Commentary*
- Capital Development Board, *Illinois Accessibility Code* (2018)

KEY CONCEPT

Reroofing (Section 306)

- Roof repair (comply with Ch. 4) allowed up to 25% of roof surface area. (306.1)
  - more than 2 layers of roofing requires sign-off from design professional that structure is adequate (306.2, Ex.)
- Roof recover allows 2 layers max, or design professional condition report (306.3.1)
- Roof replacement (tear-off) allowed 3 exceptions from new roof requirements (306.1)

KEY CONCEPT

Fire Escapes (Section 307)

- Fire escapes not allowed for new buildings (307.1)
- Fire escapes may be approved (ACAR) for existing buildings (307.1.3)
- Fire escapes limited to 50% required egress capacity (307.1.4)
- Fire escapes must provide 12' clearance over sidewalk or 14' clearance over alley

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Fire Escapes (continued)

- Construction and dimensional requirements (307.3, 307.4)
- Openings within 10' of fire escape stairway in non-sprinklered buildings must have 45 min. fire protection rating (no requirement for sprinklered building) (307.5)
- Removal of existing fire escape requires ACAR signed by DOB and CFD based on substantial compliance of remaining means of egress with CBC requirements (307.6)

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KEY CONCEPT

Electrical (Section 308)

Change of use to any of the following specialized uses must comply with *Chicago Electrical Code:*

- Hazardous locations
- Commercial garages, repair garages, storage garages
- Aircraft hangers
- Bulk storage plants
- Spray applications, dipping
- Health care facilities
- Places of assembly
- Film and TV studios
- Agricultural buildings

RachelBostwick / pixabay.com

KEY CONCEPT

Residential Occupancies (Section 309)

- Group R building adding 1 dwelling unit (309.1.1)
- Group R building adding 2 or more dwelling units (309.1.2)
- Alteration for use as congregate living facilities (309.2)
- Natural light and ventilation, pre-1958 openings for Group R (309.3)

Photo courtesy of George Haymes / Ken DeMuth

Residential Occupancies—1 Additional Unit

- Number of stories limited by construction type (Table 309.1.1)
- For basement units, walls must be impervious to leakage
- Minimum room dimensions (floor area, ceiling height) must meet CBC 1207
- Natural light and ventilation per CBC
- Means of egress required per CBC, except one means of egress may pass through heating plant
- Separation from other units by ½-hour construction or plaster and lath (walls and floor-ceiling)
- Separation from incidental uses per CBC Table 509

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Residential Occupancies—2+ Additional Units

- All requirements applicable to adding 1 unit
- Interior exit stairways must be enclosed with 2-hour construction (1-hour if connecting 3 or fewer stories)
- Construction separating existing units from corridors must have 30-minute fire-resistance rating
- Construction separating new units from corridors and other units must have 1-hour fire-resistance rating
- New and existing unit doors must be 1¾" solid wood, 20 minute archaic assemblies, or per CBC
- Exit stairway and unit doors must be self-closing
- All incidental uses in building must be enclosed per CBC Table 509
- Basement ceiling construction must be 1-hour rated per CBC 605.4.

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Change of Use to Congregate Living Facility

Triggered by alteration or permit for use as congregate living facilities for first time:

- If more than 3 sleeping units (separately-rented bedrooms), NFPA 13 or 13R sprinkler system is required throughout building.

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Pre-1958 Openings for Light and Ventilation

In Group R occupancies constructed or occupied for residential purposes before January 1, 1958, the minimum dimension of yards and courts for natural light in CBC Section 1205 may be reduced 6 inches.

- New or existing openings in pre-1958 exterior walls
- Not for change of occupancy to Group R

KEY CONCEPT

Repair

REPAIR. The reconstruction, replacement or renewal of any part of an *existing building* for the purpose of its maintenance or to correct damage.

- Chapter 4 defines when repairs can be made with like materials and methods or must comply with the *Chicago Building Code*.

Chapter 3 (All)

+

Chapter 4 (Repair)

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KEY CONCEPT

Repair Basics

- **Cannot make building less compliant than before damage or maintenance.** (401.2)
  - Cannot reduce (active or passive) fire protection. (403.1)
  - Cannot reduce protection for means of egress. (404.1)
- Replacement glazing in hazardous locations must comply with new construction reqs (402.1)


Annie Gray/ unsplash.com

Repair Basics (continued)

- **Electrical** wiring and equipment may be repaired or replaced with like material (406.1)
  - Special rules for receptacles and Group I-2 receptacles
  - Alternative grounding allowed per *Chicago Electrical Code*
- **Mechanical** draft systems allowed for fireplaces (407.2)
  - Natural light and ventilation may not be less compliant (409.1)
- **Plumbing** materials used for repairs must be allowed by *Chicago Plumbing Code* (408.1)
  - New toilets must meet water use limits (408.2)

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Repair—Structural

Structural damage to a building can occur to buildings for a number of reasons—caused by nature or humans

- Repairs to buildings with less than *substantial structural damage* can restore structural elements to pre-damaged condition (405.2.1)
- Substantial structural damage defined in Chapter 2
- Snow damage must be repaired to meet new construction snow load requirements (405.2.1.1)

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Repair—Structural (continued)

- Repairs to buildings with *substantial structural damage* must be based on evaluation by a registered design professional (405.2.3)
- If gravity load-carrying elements have substantial structural damage, the structure must be upgraded to meet current loading reqs. (405.2.4)
- Roof repairs limited to 25% of roof area (306.1)

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CHICAGO AMENDMENT

Fire Damage

- Where *repair* is made necessary by reason of damage by fire, that fact must be stated on the permit application. (14A-4-410.3(1.1))

KEY CONCEPT

Alterations—Level 1 Requirements

- Work areas that involve removal and replacement or the covering of existing materials, elements, equipment or fixtures using new materials, elements, equipment or fixtures that serve the same purpose.
- Requirements in Chapter 7

Chapter 3 (All)
+
Chapter 7 (Level 1)

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KEY CONCEPT

Alterations—Level 1 (continued)

- Only involves replacement of components
- Does not include reconfiguration of rooms or spaces
- No area limitations
- Alterations, typically, must comply with new construction requirements of CBC

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FOR EXAMPLE

Alteration—Level 1 Examples

- Replacement finish flooring or installing new finish flooring over existing floor surface
- Installation of decorative paneling on existing walls
- Installation of new exterior siding
- Window or door replacement (in existing openings)
- Replacement of existing mechanical, electrical, or plumbing fixtures with more efficient models
- Roof recover or roof replacement
- Drop ceiling (as long as min. ceiling height maintained)

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Alterations—Level 1 Key Concept

- **Work cannot make building less compliant** (701.2)
  - Cannot reduce (active or passive) fire protection. (703.1)
  - Cannot reduce protection for means of egress. (704.1)

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Alterations—Level 1 Key Concept (continued)

- **New work and materials** must comply with *Chicago Construction Codes* for new construction. (702.6)
  - Exceptions for fuel gas installations
- Newly installed interior finish materials and trim must comply with Chapter 8 of CBC. (702.1 - 702.3)

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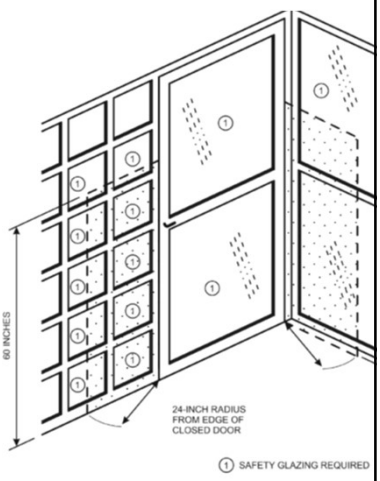
Alterations—Level 1 Replacement Glazing

Replacement glazing in hazardous locations – must comply with CBC Section 2406

- Doors and sidelights
- Guards and Railings
- Rooms or areas with wet surfaces
- Adjacent to stairs



For more information, see *Chicago Plan Review Manual* Volume II, Task 6.4

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Alterations—Level 1 Replacement Windows

- Replacement windows (sash and glazing) in Group R must have opening control devices or fall prevention device (ASTM F2090) where: (702.4)
  - Sill is less than 36" AFF in Groups R-1, R-2, R-3, R-4
  - Sill is less than 24" AFF in Group R-5 or townhouse

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Alterations—Level 1 Structural

- If alteration increases design dead, live, or snow load >5%, graving load-carrying structure must be upgraded to new construction requirements, except:
  - Group R-5 that complies with conventional light frame construction requirements
  - Where increased dead load is due entirely to the addition of a second layer of roof covering over existing single layer of roof covering
- Additional requirements for reroofing Risk Category IV

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KEY CONCEPT

Alterations—Level 1 Energy Conservation Code

- Entire building not required to comply with IECC only new/rebuilt elements
  - Replacement windows
  - Replacement HVAC/water heating equipment
  - Replacement light fixtures
  - Insulate open wall/roof cavities

KEY CONCEPT

Alterations—Level 2 Requirements

- Comply with Level 1 (Ch. 7) and Level 2 (Ch. 8) requirements (proportional approach) (801.1)
- Reconfiguration work that is solely to provide accessible route to primary function area only need comply with Ch. 7. (801.1, Ex.)

Chapter 3 (All)
+
Chapter 7 (Level 1)
+
Chapter 8 (Level 2)

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KEY CONCEPT

Alterations—Level 2

- Level 2 alterations involve: (a) reconfiguration of space, (b) addition or elimination of door or window, (c) reconfiguration or extension of system, or (d) installation of additional equipment
- The aggregate area of *work areas* (reconfigured space) must be < 50% of the overall *building area*.

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FOR EXAMPLE

Alterations—Level 2 Examples

1) Reconfiguration of space
New or relocated walls, means of egress, natural light

2) Addition or elimination of any door or window
(self-explanatory)

3) Reconfiguration or extension of any system
New or relocated plumbing, ductwork, electrical

4) Installation of any additional equipment
Adding air conditioning (no AC before)

88

Alterations—Level 2
New Work

New work must comply with the CBC, except:

- Where windows are added, not required to meet light and ventilation
- New electrical equipment to comply with Section 807
- Length of dead end corridors only required to meet Sec. 805.7
- Ceiling height of newly-created habitable areas and corridors can be 7'-0"
- New escalators in below-grade transit stations width of 32"
- New structural members and connections may comply with Sect. 302 (801.3)

89

Alterations—Level 2
Existing Vertical Openings

- Within *work areas,* all existing vertical openings connecting two or more stories must be enclosed with approved assemblies of one-hour fire-resistance-rated construction and approved protected openings. (802.2.1)
- 10 exceptions, including:
  - Where not required by CBC
  - Groups R-3, R-4 and R-5
  - Exceptions for installation of fire protections systems; height and area limitations, etc.

90

Alterations—Level 2 Existing Vertical Openings (continued)

Where *work areas* on any story > 50% of that gross floor area, vertical opening enclosure requirements apply to all vertical openings throughout the story. (802.2.2)

- Applies only to portion of vertical openings on the story where triggering *work area(s)* is/are located
- Does not apply to stairways or vertical openings in tenant spaces entirely outside the *work area(s)*.

91

Alterations—Level 2 Existing Stairway Openings

Where the *work area(s)* on any story exceeds 50% of the gross floor area, stairways serving as mean of egress for the work area must:

- Be enclosed with smoke tight construction.
- Must be enclosed on highest work area story and all stories below.
- Openings must be smoke protected assemblies but not fire protection rated.
- Opening protectives must be self-closing upon activation of fire alarm system.

(802.2.3)

92

Alterations—Level 2
Group I-2 Smoke Compartments

In Group I-2 occupancies where:

- *Work area* is located on a story used for sleeping rooms
- More than 30 patients

Story must be divided into at least two smoke compartments with smoke barriers in accordance with Section 407.5 of the IBC. (802.3)

Alterations—Level 2
Interior Finish

Interior finish on walls and ceilings within corridors in any *work area* must:

- Comply with interior finish requirements of the CBC.
- Finishes that do not comply may be treated with an approved fire-retardant coating per manufacturer's instructions. (802.4)

94

Alterations—Level 2 Interior Finish (continued)

Where the *work area(s)* on any story exceeds 50% of the gross floor area of the story, wall and ceiling finishes in corridors and exits serving the work area(s) must:

- Comply with interior finish requirements of the CBC.
- Finishes that do not comply may be treated with an approved fire-retardant coating per manufacturer's instructions.

Applies throughout the story of each *work area*. (802.4.1)

95

Alterations—Level 2 Guards

- Guards must be provided where a walking surface :
  - Is more than 30 inches above the floor or exterior grade, and do not have any guard, or
  - The existing guards are considered to be in danger of failure
- Applies to means of egress stairs/ramps from *work area* to level of exit discharge.
- New guards must be designed per CBC.

(802.5, 805.11)

96

Alterations—Level 2 Fire-Resistance Ratings

- Where a complete automatic, supervised NFPA 13 or 13R sprinkler system has been installed throughout the building:
  - Required fire-resistance ratings of the existing structural elements of the building are allowed to meet the requirements of the current building code. (For example: old Type IA to new Type IA)
  - Requires approval (ACAR) based on documents indicating which building elements and materials the applicant wants DOB to evaluate for compliance with the fire resistance requirements of CBC.

(802.6)

Alterations—Level 2 Fire-Resistance Ratings (continued)

- Where a complete automatic, supervised NFPA 13 or 13R sprinkler system has been installed throughout a story and covers stairway landings serving the story and intermediate landings immediately above and below:
  - Corridor rating may be reduced to requirements of CBC for new construction.
  - Requires approval (ACAR) based on documents indicating which building elements and materials the applicant wants DOB to evaluate for compliance with the fire resistance requirements of CBC.

(802.6.1)

98

Alterations—Level 2 Automatic Sprinkler System

Three triggers for automatic sprinkler system in Level 2 alterations:

- High-rise buildings (803.2.1)
- Windowless stories (803.2.3)
- Occupancy would require sprinklers under CBC* (803.2.2)

Must be supervised if required by CBC. (803.2.4)

Remember: Sprinkler requirements in *Chicago Minimum Requirements for Existing Buildings*

Tim Riley / flickr.com

99

Alterations—Level 2 Automatic Sprinkler System (continued)

- In nonsprinklered **high-rise buildings** an automatic sprinkler system must be added to *work area* where *work areas*: (803.2.1)
  - Have exits or corridors shared by more than tenant
  - Have exits or corridors serving an occupant load of more than 30; and
  - Are located on a story that has an adequate water supply from an existing standpipe or sprinkler riser serving that story
- Where *work area(s)* > 50% of aggregate area of story:
  - Sprinkler protection must be provided throughout the entire story
  - Occupied tenant spaces outside *work area* are exempt

100

Alterations—Level 2 Automatic Sprinkler System (continued)

- *Work areas* in **windowless stories** that are required to be protected in accordance with the CBC (Section 903.2.11.1), must be sprinklered. (803.2.3)

  Exception: Where building does not have sufficient water supply without the installation of a fire pump or new water service.

101

Alterations—Level 2 Automatic Sprinkler System (continued)

An automatic sprinkler system is required for Level 2 alterations in Group A, B, E, F-1, H, I, R-1, R-2, R-4 or S occupancies where the *work area*:

- Is required to have automatic sprinkler protection by the CBC (Section 903) for new construction
- Includes *work area(s)* involving exits and corridors shared by multiple tenants and having an occupant load > 30, and
- *Work area(s)* exceed 50% of the gross floor area of the story

(803.2.2)

102

KEY CONCEPT

Alterations—Level 2 Automatic Sprinkler System (continued)

Exceptions to Occupancy-based Sprinkler Requirement

- The building does not have adequate water supply available without the installation of a fire pump or new water service
- Group R-2 occupancies (not congregate living) with no more than 4 stories above grade and no more than 20 dwelling units
- If an automatic fire suppression system cannot be installed, the *work area* must be provided with a complete automatic smoke detection system throughout all occupiable spaces except for sleeping units or individual dwelling units

103

Alterations—Level 2 Standpipes

- Standpipe systems in accordance with CBC are required where *work areas*:
  - Involve exits or corridors shared by multiple tenants, and
  - Are located on a story more than 50 feet above or below grade plane (803.3)
- Exception 1 allows elimination of pump in some cases. Interconnection is not required.

Alterations—Level 2 Fire Alarm Systems

- Fire alarm system requirements are tied to *Chicago Minimum Requirements for Existing Buildings* (so they are required regardless of permitted work.)
  - Limited to work areas which are less than 50% of the area of the story. (803.4.1)
  - Must be permitted for installation throughout story when work area exceeds 50% of area of story. (803.4.2)
  - Existing previously-permitted fire alarm systems may remain.

105

Alterations—Level 2 Fire Alarm Systems (continued)

- Fire alarm systems are required, per the *Chicago Minimum Requirements for Existing Buildings* in the following occupancies:
  - Group B (adult education)
  - Group E
  - Group I
  - Group R-1
  - Group R-2 (student housing or congregate living)
  - Group R-4

106

Alterations—Level 2 Smoke Alarms

Smoke alarms are required in *work areas* in group R occupancies and I-1 care/assisted living facilities in:

- Individual sleeping areas
- Individual dwelling units
- Smoke alarms must be installed in accordance with *Chicago Minimum Requirements for Existing Buildings*
- Interconnection of smoke alarms within living units is required
- Smoke alarms outside of work areas do not require interconnection

107

Alterations—Level 2 Carbon Monoxide Alarms

- When a Level 2 alteration is made a building which is required to have carbon monoxide alarms by the *Chicago Minimum Requirements for Existing Buildings* (Section 504.9), the entire existing building must be provided with carbon monoxide alarms in accordance with that section as part of the permitted work. (804.1)
- **Exceptions:** Exterior work only or MEP work (not involving fuel-burning equipment) only

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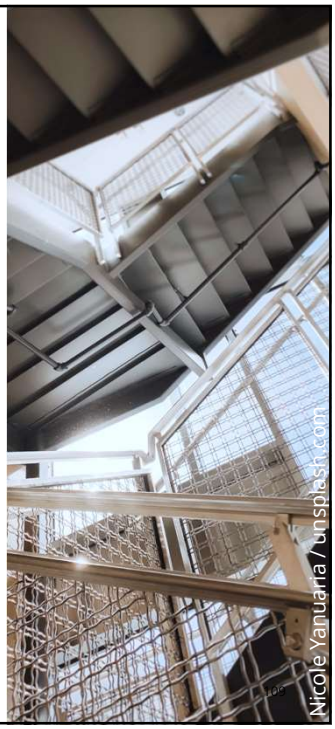
108

Alterations—Level 2 Means of Egress

These requirements apply to *work areas* that include exits or corridors shared by more than one tenant. (805.1)

- **Alternative:** Means of egress complying with the requirements of the building code under which the building was constructed is allowed if not a distinct hazard

Remember: Means of egress requirements in *Chicago Minimum Requirements for Existing Buildings*



Alterations—Level 2 Means of Egress (continued)

- Number of exits in every story where *work areas* are located must comply with CBC Chapter 10 based on:
  - occupancy classification, and
  - occupant load of the story (805.3.1)
- Existing conditions outside of *work area(s)* can remain, provided they are existing approved conditions. (805.2, exception)
- Fire escapes recognized for limited purposes. (805.3.1.2)

110

Alterations—Level 2 Means of Egress (continued)

For assembly occupancy with occupant load > 300:

- Main entrance must accommodate 50% of total occupant load
- If main exit is not defined, exits must be distributed around perimeter of building and must provide 100% of required total capacity (805.3.3)

Museum of Modern Art, New York City

111

Alterations—Level 2 Means of Egress (continued)

Two exit access doorways are required: (805.4.1.1)

- When *work areas* include rooms or spaces with an occupant load of more than 50 people or where the common path of egress travel exceeds 75 feet (or more if greater value allowed by CBC for sprinklered building)
- Storage rooms only require one exit when occupant load ≤ 10

112

Alterations—Level 2 Means of Egress (continued)

In Group I-2 occupancies, patient sleeping rooms or patient sleeping suites greater than 1,000 ft² within a Level 2 alteration work area requires a remotely located second means of egress from the room or suite. (805.4.1.2)

113

Alterations—Level 2 Means of Egress (continued)

- Any doors located in work area and along the path of travel from the work areas to the exit discharge, serving an occupant load > 50 people, must swing in the direction of egress travel
- When work area > 50% of area of story, requirement applies throughout story

114

Alterations—Level 2
Means of Egress (continued)

- Any doors located within work area and opening into an exit enclosure (exit passageway, exit ramp, or exit stairway) must be self-closing or automatic-closing by listed closing devices. (805.4.3)
  - Except occupied tenant spaces outside work area
- Where work area > 50% area of story, applies throughout story and to level of exit discharge. (805.4.3.1)

115

Alterations—Level 2
Means of Egress (continued)

- Egress doors in Group A occupancies in work area or in the path of travel from work area to the exit discharge, with an occupant load > 100 must have panic hardware. (805.4.4)
- Where work area > 50% area of story, applies throughout story, except within tenant space completely outside work area. (805.4.4.1)

Chaiwat Srijanku / shutterstock.com

116

Alterations—Level 2 Means of Egress (continued)

Requirements for openings in corridor walls:

- Corridor doors (805.5.1)
  - No hollow core, no louvers
- Transoms (805.5.2)
  - Fixed wire glass or sealed w/ fire-resistance rated construction in Group I-1 or R
- Other corridor openings (805.5.3)

Where *work area* > 50% area of story, requirements apply throughout story. (805.5.4)

117

Alterations—Level 2 Means of Egress (continued)

- Dead end corridors cannot exceed 35 feet unless permitted by CBC. (3 exceptions) (805.6)
- Means of egress lighting within work area must meet CBC and CEC requirements. (805.7)
  - When work area > 50% area of story, applies throughout story.
- Exit signs within work area must meet CBC requirements. (805.8)
  - When work area > 50% area of story, applies throughout story.

118

Alterations—Level 2 Means of Egress (continued)

- Existing stairways serving as a means of egress to a work area with at least three risers must have at least one handrail. (805.9.1)
- Where existing stairways do not have a handrail or the existing handrail(s) are in danger of failure, not less than one handrail complying with CBC requirements for new handrails must be provided. (805.9.2)
- Handrails are required on both sides of stairways with width > 66". (805.9.1)

119

Alterations—Level 2 Means of Egress (continued)

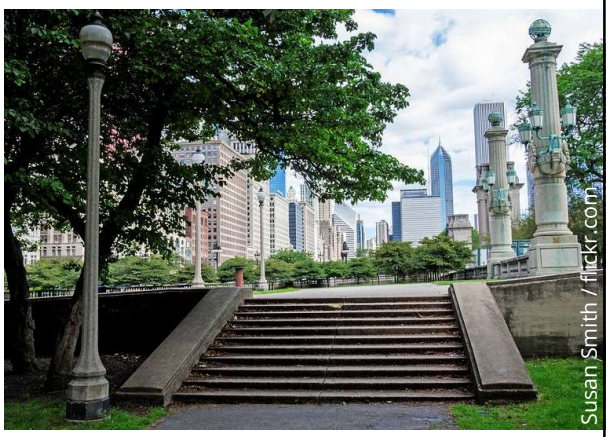
Where alterations will affect a refuge area for ambulatory care, health care and institutional occupancies that follow a defend-in-place strategy or horizontal exit, the CBC-required capacity must be maintained. (805.10)

- Group I-1, Condition 2 (CBC 420.6.1)
- Group I-2 (CBC 407.5.1)
- Group I-3 (CBC 408.6.2)
- Ambulatory care (CBC 422.2)
- Horizontal exit (CBC 1026.4)

120

Alterations—Level 2 Means of Egress (continued)

- Guard is required at open side of stairway, landing or balcony that is more than 30" above surface below, or where existing guards are in danger of collapse. (805.11.1)
- New guards must comply with CBC requirements for guards. (805.11.2)



121

Alterations—Level 2 Means of Egress (continued)

- Existing stairways and extensions of existing stairways are not required to comply with CBC dimensional / design requirements where the existing space does not allow a reduction in pitch or slope. (805.12)
- Existing stairways may be rebuilt without complying with CBC requirements for new stairways. (805.12)

122

Alterations—Level 2 Structural

- Where an alteration causes an increase in design dead, live or snow load **> 5%**, the gravity load-carrying elements must be replaced or altered to meet new construction requirements. (Exception for second layer of roof covering weighing less than 3 psf) (806.2)
- If an existing gravity load-carrying element has its capacity reduced as part of an alteration (notching a beam) the reduced capacity must meet new construction requirements. (806.2)

123

Alterations—Level 2 Structural (continued)

- Existing structural elements resisting lateral must meet Section 1609 and 1612 of the IBC when Level 2 alteration causes: (806.3)
  - An increase in design lateral loads, or
  - The alteration creates prohibited structural irregularity as defined in ASCE 7, or
  - Where the alteration decreases the existing capacity of any lateral load-carrying structural element,
  - Reduced seismic loads are allowed using the evaluation of the demand-capacity ratios
- **Exception:** < 10% increase in demand-capacity ratio.

124

Alterations—Level 2 Structural (continued)

Voluntary structural work intended to improve an existing lateral force-resisting system, is not required to meet the IBC provided: (806.4)

- The capacity of existing structural systems is not reduced, and
- Any new structural elements, whether connecting to existing or new structural elements, must comply with the IBC for new construction, and
- New or relocated non-structural elements, whether connecting to existing or new structural elements, must comply with the IBC for new construction, and
- The alterations cannot create a structural irregularity as defined by ASCE 7 or make any existing structural irregularity more severe

125

Alterations—Level 2 Electrical

- New electrical equipment and wiring must comply with the applicable requirements of the *Chicago Electrical Code.* (807.1)
- Existing wiring in Group A-1, A-5, H, and I occupancies must be upgraded to comply with new construction requirements. (807.2, 308.1)
- *Work areas* in *dwelling units* in Group R-2, R-3, R-4 and R-5 occupancies must be upgraded to meet minimum requirements in Art. 570 of the *Chicago Electrical Code* and:

Alterations—Level 2 Electrical (continued)

- Every enclosed area, other than closets, kitchens, unfinished basements, garages, hallways, laundry areas, utility areas, storage areas, toilet rooms and bathrooms must have:
  - 2 duplex receptacle outlets
  - 1 duplex receptacle outlet and 1 ceiling- or wall-type lighting outlet (807.3.1)
  - Kitchens must have no fewer that 2 duplex receptacle outlets (807.3.2)
  - Laundry areas must have no fewer than 1 duplex receptacle outlet (807.3.3)
  - Newly installed receptacle outlets shall be GFCI per the CEC (807.3.4)
- At least 1 lighting outlet is required in every unfinished basement, utility room, bathroom, hallway, stairway, attached garage and detached garage with electric power and at outdoor entrances and exits (807.3.5, 807.3.6)
- Clearance for electrical equipment must be per the CEC (807.3.7)

127

Alterations—Level 2 Mechanical

- Spaces that are reconfigured into habitable or occupiable spaces must be provided with natural and/or mechanical ventilation in accordance with the *Chicago Construction Codes.* (808.1)
- Existing and reconfigured mechanical ventilation systems must provide at least 5 cfm/person outdoor air and at least 15 cfm/person. (808.2)
- New sources of irritating odors, fumes or vapors must be provided with local exhaust (808.3)

128

Alterations—Level 2 Plumbing

Where the occupant load of a story is increased by **> 20%** as a result of a Level 2 alteration:

- Additional plumbing fixtures (for that story only) must be provided as required by the *Chicago Plumbing Code* based on the increased occupant load. (809.1)
- (or ACAR)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KEY CONCEPT

Alterations—Level 2 Energy Conservation

- Level 2 alterations do not require the entire building to comply with the energy requirements of the *Chicago Energy Conservation Code* (CECC). (810.1)
- Work associated with the Level 2 alteration project must comply with the CECC for rehabilitation. (CECC Ch. C5/R5)


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KEY CONCEPT

Alterations—Level 3

- Level 3 Alterations involve *work areas* (space reconfiguration) **> 50%** of the *building area* over a 36-month period. (604.1)
- Additional building feature upgrades are triggered beyond the *work areas,* affecting parts of the building where no alterations are planned.
- Requirements are found in Chapter 9.

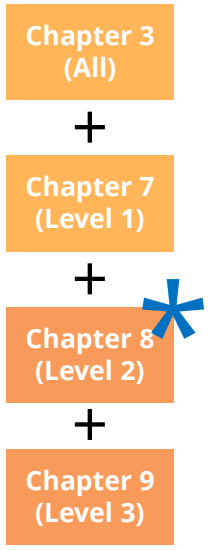
Chapter 3 (All)
+
Chapter 7 (Level 1)
+
Chapter 8 (Level 2)
+
Chapter 9 (Level 3)

132

KEY CONCEPT

Alterations—Level 3 (continued)

- The scope of certain provisions of Chapter 8 (Alterations—Level 2) is expanded to apply to all work areas, regardless of number of tenants and occupant load: (901.2)
  - 802: Building Elements and Materials
  - 803: Fire Protection
  - 804: Carbon Monoxide Detection
  - 805: Means of Egress



133

Alterations—Level 3 High-rise Buildings

- Recirculating air or exhaust systems with capacity > 15,000 CFM must be equipped with smoke or heat detection devices in accordance with the *Chicago Mechanical Code*. (902.1.1)
- Elevators for public use with vertical travel in excess of 25’ above or below main floor and serving *work areas* must be provided with emergency operations in accordance with *Chicago Conveyance Device Code*.
- New elevators must be provided with Phase I and Phase II operations.

134

Alterations—Level 3
Boiler and Furnace Equipment Rooms

- In E, I and R occupancies, boiler and furnace equipment rooms must be enclosed as required by CBC Section 509 (Incidental Uses). (902.2)
  - **Exception:** Boiler or furnace equipment within and serving a single dwelling unit.

135

Alterations—Level 3
Existing Shafts and Vertical Openings

- Existing exit stairways that are part of the means of egress must be enclosed as required by Section 802.2.1 (Existing Vertical Openings) from the highest story containing a *work area* down to, and including, the level of exit discharge and all floors below the level of exit discharge.

Alterations—Level 3 Townhouses

Where *work area* is in attached dwelling unit or townhouse:

- Walls separating dwelling units that are not continuous from foundation to underside of roof sheathing must be improved to provide such separation using:
  - construction materials consistent with existing wall
  - or requirements for new construction
- Work must be performed on the side of the wall that is part of the *work area*.

Photo courtesy Papageorge Haymes / Ken DeMuth

Alterations—Level 3 Interior Finishes

- Interior finish in exits serving the work area must comply with Section 802.4 between the highest level on which there is a work area to (and including) the level of exit discharge. (903.3)

A. Davey / flickr.com

Alterations—Level 3 Automatic Sprinkler Systems

- In high-rise buildings an automatic sprinkler system must be installed throughout *work areas*. Where a new fire pump or risers are required, they must be sized for future installation of sprinklers throughout the building. (904.1.1)
- In rubbish and linen chutes located within the *work area* if required by the CBC for new construction. (904.1.2)
- In *work areas* in occupancy groups F-1, M or S where upholstered furniture and mattresses are manufactured, stored or displayed. (904.1.3)

139

Alterations—Level 3 Automatic Sprinkler Systems (continued)

- In buildings and areas listed in CBC Table 903.2.11.8*, work areas* that include exits or corridors shared by more than one tenant serving an occupant load > 30 must be provided with an automatic sprinkler system: (904.1.4)
  - High-rise buildings
  - Atriums
  - Underground buildings
  - Group I-2
  - Stages
  - Special amusement buildings
  - Airport control towers
  - Aircraft hangars
  - Incidental uses

140

Alterations—Level 3 Fire Alarm and Detection

- Fire alarm and detection systems must be provided per CBC 907 as required for new construction. (904.2)
- Where manual fire alarm system is required by the CBC for a specific occupancy, must be provided throughout *work areas*.
- Fire alarm system is not required to be extended into existing occupied tenant spaces on floors located entirely outside of the *work areas*.

Alterations—Level 3 Automatic Fire (Smoke) Detection

- When required by the CBC for new construction, automatic fire (smoke) detection must be provided throughout the *work area.* (904.2.2)
  - See CBC Section 907.2, for example:
    - Ambulatory care
    - Equipment rooms
    - Institutional and residential occupancies

142

Alterations—Level 3 Means of Egress

- The means of egress in a Level 3 Alterations project must comply with Section 805 (Means of Egress) for Level 2 Alterations throughout all work areas regardless of tenants and occupant load. (905.1)
- Means of egress lighting within exit enclosures must be upgraded to new construction standards from the highest work area to the level of exit discharge.
- Exit signs must be upgraded to new construction standards from the highest work area to the level of exit discharge.

143

Alterations—Level 3 Structural

- When s*ubstantial structural alterations* are being made, the lateral load-resisting system of the altered building must be evaluated and shown to comply with CBC Sections 1609 (Wind Loads) and 1613 (Earthquake Loads). Reduced seismic forces are allowed to be used as part of the design. (906.2)

SUBSTANTIAL STRUCTURAL ALTERATION. An alteration in which the gravity load-carrying structural elements altered within a 5-year period support more than 30 percent of the total floor and roof area of the building or structure. The areas to be counted toward the 30 percent shall include mezzanines, penthouses, and in-filled courts and shafts tributary to the altered structural elements.

144

Alterations—Level 3 Structural (continued)

For buildings in *Seismic Design Category* C or D:

- Masonry walls of buildings with flexible roof diaphragms (typ. Type III or IV construction) must be anchored. (906.4)
- Unreinforced masonry walls, partitions and parapets require evaluation or anchoring. (906.5-906.7)

145

KEY CONCEPT

Alterations—Level 3 Energy Conservation

- Level 3 alterations do not require the entire building to comply with the energy requirements of the *Chicago Energy Conservation Code* (CECC). (907.1)
- Work associated with the Level 3 alteration project must comply with the CECC for rehabilitation. (CECC Ch. C5/R5)

146

KEY CONCEPT

Change of Occupancy

- The requirements of Chapter 10 are typically in addition to the requirements of Chapters 7, 8, and 9.
- Unlike the IEBC, the CBRC does not include a change of use without change of occupancy classification as a change of occupancy.
- A permit (*with plans*) is required for a change of occupancy. (1001.2)

Chapter 3 (All)
+
Chapter 7 (Level 1)
+
Chapter 8 (Level 2)
+
Chapter 9 (Level 3)
+
Chapter 10 (Change of Occupancy)

148

Change of Occupancy—Definition

CHANGE OF OCCUPANCY. A change in the use of a *building* or a portion of a *building* that results in any of the following:

1. A change of classification to a different major occupancy group (for example, from Group A-2 to Group B).

2. A change of classification from one group to another group within a major occupancy group (for example, from Group A-2 to Group A-3).

. . .

149

Change of Occupancy—Definition (continued)

. . .

3. A change of classification from one condition to another condition within an occupancy group (for example, from Group I-2, Condition 1 to Group I-2, Condition 2).

A change of use that does not result in a change of occupancy classification (for example, from a restaurant to a tavern, which are both classified as Group A-2 occupancies) is not a *change of occupancy*.

150

Change of Occupancy—Creation of Incidental or Special Use

- Where a change of occupancy involves creating an incidental use listed in CBC Table 509 or one of the following special uses or occupancies described in CBC Chapter 4, the incidental or special use must comply with the CBC. (1002.1)
  - Ambulatory care facilities
  - Atriums
  - Group I-2 occupancies
  - Hazardous materials
  - Motor vehicle-related occupancies
  - Motion picture projection rooms
  - Special amusement buildings
  - Stages and platforms
  - Underground buildings

151

Change of Occupancy—Structural

- Structural elements carrying tributary live loads must be evaluated based on design live loads from CBC Section 1607 for new occupancy/use. (1006.1)
  - Structural elements whose demand-capacity ratio based on the change of occupancy **≤ 5%** greater than the demand-capacity ration based on the previously approved design live loads are allowed to remain as-is.
  - If new demand-capacity ratio **> 5%**, structural element must be upgraded.

152

Change of Occupancy—Structural (continued)

- Where change of occupancy results in building being assigned to a higher risk category (CBC Section 1604.5), the structure must be evaluated for compliance with CBC Section 1608 (Snow Loads) and Section 1609 (Wind Loads) based on the new risk category. (1006.2)
  - Exception if the area of the new occupancy is less than 10 percent of the building area.
  - Cumulative effective of occupancy changes over time must be considered.

153

Change of Occupancy—Structural (continued)

- When change of occupancy results in the building being assigned to Risk Category IV, the structure must comply with IBC Section 1613 (Earthquake Loads) based on the new risk category. (1006.3)
- Structural upgrades also required to any building/structure which provides operational access to (or egress from) an area which, because of a change of occupancy, is in Risk Category IV. (1006.4)
- Where access to a Risk Category IV structure is less than 10 feet from an abutting property line or another structure, protection from falling debris is required. (1006.4)

154

Change of Occupancy—Electrical

- Upon change of occupancy, unsafe conditions must be corrected, but the electrical system is not required to fully comply with CEC new construction requirements. (1007.2)
- Electrical service must be evaluated based on the new occupancy and upgraded if required by the CEC. (1007.3)
- Minimum number of electrical outlets (receptacle and lighting) from CEC based on new occupancy. (1007.4)

Remember: Electrical change of use requirements in Section 308.1. These will also apply to many changes of occupancy.

Change of Occupancy—Mechanical

- There are two triggers for compliance with new construction requirements of the *Chicago Mechanical Code:*
  - New occupancy has different kitchen exhaust requirements
  - New occupancy has increased mechanical ventilation requirement

(1008.1)

Change of Occupancy—Plumbing

- If the occupancy has increased or different fixture requirements, fixtures must be provided per the *Chicago Plumbing Code.* (1009.1)
- If the occupancy has increased water supply requirements, the new occupancy must comply with the intent of the CPC. (1009.1)
- If the new occupancy will produce chemical wastes, chemicals must be neutralized before entering plumbing or plumbing materials made compatible. (1009.4)
- If the occupancy is changed to Group I-2, the plumbing must comply with new construction requirements. (1009.5)

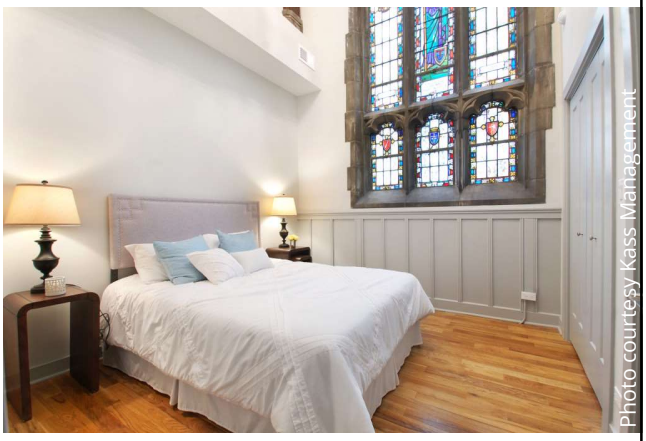
157

Change of Occupancy—Plumbing (continued)

- Any existing sanitary waste lines above food or drink preparation or storage areas must be panned or protected to prevent leaking pipes or condensation from contaminating food or drink. (1009.2)
- New drainage lines may not be installed above food or drink preparation or storage areas. (1009.2)
- If the new occupancy will produce grease- or oil-laden wastes, grease interceptor is required. (1009.3)

Change of Occupancy—Light and Ventilation

- Natural light and ventilation must be provided as required by the CBC (Sections 1202.1 and 1204.1) for the new occupancy.
  - Group I-1, I-2, and R dwelling units and sleeping units
  - Group E and I-4 childcare spaces and regular classrooms



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Change of Occupancy—Separation Options

- If the changed occupancy is **separated** from other occupancies in the building in accordance with CBC Section 508.4, the requirements of Chapters 7, 8 & 9 apply throughout the changed occupancy and do not apply in the remainder of the building. (1011.1.1.2)
- If the changed occupancy is **not separated** from other occupancies, the requirements of Chapters 7, 8 & 9 apply throughout the building. (1011.1.1.1)

160

Change of Occupancy—Fire Protection Systems

- If CBC Chapter 9 requires sprinkler system for new occupancy, sprinkler system must be installed throughout [fire] area. (1011.2.1)
- If CBC Chapter 9 requires fire alarm or detection system for new occupancy, system must be installed through area of changed occupancy. (1011.2.2)
- New alarm system must be integrated with existing system as directed by CFD. (1011.2.2)

161

Change of Occupancy—Interior Finish

- In areas of a building undergoing a change of occupancy, the interior wall and ceiling finishes and floor finishes must comply with interior finish requirement in CBC Chapter 8 based on the new occupancy. (1011.3)

Change of Occupancy— Means of Egress

- Occupancy groups are ranked based on their relative risk with regards to the requirements for means of egress per Table 1011.4.
  - Occupancies with hazardous materials (Group H) and defend-in-place protocols (Groups I-2, I-3, I-4) are the greatest risk.
  - Non-residential occupancies with minimal fuel loads are and low density occupant loads are considered the lowest risk.

163

Change of Occupancy— Means of Egress (continued)

TABLE 1011.4
Means of Egress Hazard Categories

Relative Hazard	Occupancy Classification
1 (Highest Hazard)	H
2	I-2; I-3; I-4
3	A; E; I-1; M; R-1; R-2; R-4, Condition 2
4	B; F-1; R-3; R-4, Condition 1; R-5; S-1
5	F-2; S-2; U

164

Change of Occupancy— Means of Egress (continued)

Where change is made to a **higher** hazard category (lower number) the means of egress must be upgraded to meet CBC Chapter 10 with the following exceptions: (1011.4.1)

- Stairway enclosure per CBRC 903
- Existing stairways, including handrails and guards unless determined to be unsafe by Department
- With ACAR, rebuilt stairway slope and pitch, rise and tread, use of winders, where restricted by existing construction
- Existing corridor walls of wood lath and plaster or ½" gypsum wallboard
- Existing corridor openings per CBRC 805.5
- Existing dead-end corridors per CBRC 805.6

165

Change of Occupancy— Means of Egress (continued)

Where change is made to a **lesser or equal** hazard category:

- Existing means of egress components must comply w/ CBRC 905 for the new occupancy.
- New means of egress components must comply with CBC Chapter 10.
  - Stairways replacing an existing stairway in a space where the pitch or slope cannot be reduced because of existing construction are not required to comply with the rise and run requirements of CBC.

Change of Occupancy—Means of Egress (continued)

- Egress capacity must meet or exceed the occupant load calculated per CBC Section 1004. (1011.4.3)
- Existing stairway handrails must comply with CBRC 805.9 in the area of the change of occupancy. (1011.4.4)
- Existing guards must comply with CBRC 805.11 in the area of the change of occupancy. (1011.4.5)

167

Change of Occupancy—Height and Area

TABLE 1011.5
Heights and Areas Hazard Categories

RELATIVE HAZARD	OCCUPANCY CLASSIFICATION
1 (Highest Hazard)	H
2	A-1; A-2; A-3; A-4; I; R-1; R-4, Condition 2
3	E; F-1; M; R-2; S-1
4 (lowest hazard)	A-5; B; F-2; S-2; R-3; R-4, Condition 1; U

168

Change of Occupancy—Height and Area (continued)

- Where change is made to a **higher** hazard category (lower number) the height and area must comply with CBC Chapter 5 (or 403). (1011.5.1)
  - **Exception:** For high-rise buildings constructed in compliance with a permit and equipped throughout with an NFPA 13 sprinkler system, rating reductions will be allowed as at the time of original construction.

169

Change of Occupancy—Height and Area (continued)

- Where change is made to a **higher** hazard category, fire barriers in separated mixed occupancies must meet CBC fire resistance requirements. (1011.5.1)
  - **Exception:** For fire barriers required to have a 1-hour fire-resistance rating, plaster-and-lath in good condition or ½-inch gypsum wallboard is acceptable.

170

Change of Occupancy—Height and Area (continued)

- Where change is made to a **lesser or equal** hazard category the height and area is deemed acceptable. (1011.5.2)
- For example: Group F-1 (factory) to R-2 (apartments)

171

Change of Occupancy—Exterior Walls

TABLE 1011.6
EXPOSURE OF EXTERIOR WALLS HAZARD CATEGORIES

RELATIVE HAZARD	OCCUPANCY CLASSIFICATION
1 (Highest Hazard)	H
2	F-1; M; S-1
3	A; B; E; I; R
4 (Lowest Hazard)	F-2; S-2; U

172

Change of Occupancy—Means of Egress

- Where change is made to a **higher** hazard category (lower number) exterior walls must comply with fire resistance and opening protective requirements of CBC. (1011.6.1)
  - Exterior opening protectives are not required in Group R buildings up to 4 stories. (1011.6.3, Ex. 2)
  - Exterior opening protectives are not required in fully-sprinklered buildings. (1011.6.3, Ex. 3)
- Where change is made to a **lesser or equal** hazard category exterior walls, including openings, are acceptable. (1011.6.2)

173

Change of Occupancy—Vertical Shafts

- Vertical shafts shall be designed per CBC for atriums or requirements of CBRC 1011.7. (1011.7.1)

Stairways

- Where means of egress hazard category is increased, interior stairways connecting more than 2 stories or in Group I occupancies must be enclosed as required by CBC. (1011.7.2)
- Where occupancy is changed to Group R, interior stairways must be enclosed as required by CBC 713, but stairs, elevators, and escalators may be in the same enclosure. (1011.7.4.1)

174

Change of Occupancy— Vertical Shafts (continued)

Other than Stairways

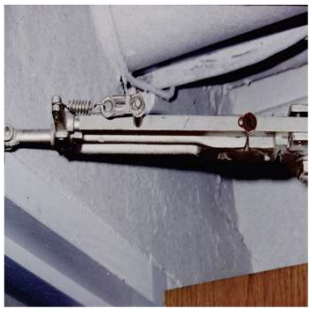
- Where means of egress hazard category is increased, vertical shafts other than stairways must be enclosed as required by CBC. (1011.7.3)
  - Existing 1-hour-rated enclosures are acceptable.
  - Existing vertical openings, up to 6 stories, are acceptable in fully sprinklered buildings (except Group I).
- Where means of egress hazard category is not increased, for other than Group R, the existing enclosure of vertical shafts is acceptable.

175

Change of Occupancy— Vertical Shafts (continued)

Opening Protectives

- Openings in existing shaft enclosures must be protected by minimum 1-hour fire protection rated assemblies.
  - must be self-closing or automatic-closing upon actuation of a local smoke detector.
  - Except for stairway enclosures, existing fusible link-type automatic door-closing devices are allowed to remain so long as the fusible link rating does not exceed 135°F.



176

KEY CONCEPT

Additions

- Additions must comply with the CBC except as provided in the CBRC. (1101.1)
- Additions cannot create or extend any code deficiency in an existing building. (1101.2)
- The existing building can remain without any alterations provided the addition does not impact the existing building. (1101.1)

Chicago Building Code

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Chapter 11 (Additions)

+

Chapter 3 (All)

178

Additions—Height and Area

- An addition cannot increase the height of an existing building beyond that permitted by Chapter 5 of the CBC. (1102.1)
- An addition cannot increase the area of an existing building beyond that permitted by the CBC for new construction. (1102.2)
  - But fire wall can be used to create separate building
- In-filling of existing floor openings and adding non-occupiable appendages, such as elevator hoistways and stairway shafts, is permitted beyond the area limitations allowed by the CBC. (1102.2, Ex.)

179

FOR EXAMPLE

Additions—Example

- The church was constructed in 1972 and exceeds the height and area limitations of the current code.
- The addition in the picture is allowable due to the fact that it is a nonoccupiable exit stairway connecting the sanctuary on the upper level to the parish hall on the lower level.

180

Additions—
Fire Protection Systems

- Where an existing *fire area* is increased in area by an addition, the entire resulting *fire area* must comply with the fire protection requirements of CBC Chapter 9 as applicable. (1102.3)
- Where the aggregate area or occupant load of *fire areas* is increased by an addition beyond a trigger in CBC Chapter 9, the addition and existing building must be made to comply with CBC Chapter 9. (1101.2)

181

Additions—
Structural

- Where an addition work will cause an increase in design dead, live or snow load **> 5%** on existing elements, the existing affected gravity load-carrying element(s) must be replaced or modified to carry the gravity loads required by the CBC for new construction. (1103.1)
- Any existing gravity load-carrying element(s) whose load-carrying capacity is decreased as part of the addition is an altered structural element and is subject to the requirements of Section 806.2. (1103.1)

Photo courtesy Papageorge Haymes / Ken DeMuth

182

Additions—Structural (continued)

- Any existing gravity load-carrying element(s) that will form part of lateral load path for the addition is considered an existing lateral load-carrying structural element and is subject to the requirements of Section 1103.3. (1103.1)
- There is an exception for existing Group R-5 buildings and additions that comply with conventional light-frame construction provisions of the CBC.

183

Additions—Structural (continued)

- Where the addition is **structurally independent** of the existing building, the existing lateral load-carrying elements can remain as-is.
- Where the addition is **not** structurally independent of the existing building, the existing building and the addition acting as a single structure must meet CBC Sections 1609 (Wind Loads) and 1613 (Earthquake Loads) using full seismic forces.

184

Additions—Structural (continued)

Exceptions:

- Existing Group R-5 buildings and additions that comply with conventional light-frame construction provisions of the CBC, or
- Existing lateral load-carrying structural elements whose demand-capacity ratio with the addition included is **< 10%** greater than its current condition without the addition, can remain as-is.

185

Additions—Smoke Alarms

- When an addition is made to a Group R or I-1 occupancy, the entire existing building must be provided with smoke alarms in accordance with Section 504.8 of the *Chicago Minimum Requirements for Existing Buildings*
  - Interconnected (unless no work to install wiring and wiring can be installed in attic or crawlspace)
  - Hard wired (unless no work to install wiring and wiring can be installed in attic or crawlspace)

186

Additions—
Carbon Monoxide Alarms

- When an addition is made a building which is required to have carbon monoxide alarms by the *Chicago Minimum Requirements for Existing Buildings* (Section 504.9), the entire existing building must be provided with carbon monoxide alarms in accordance with that section as part of the permitted work.

Additions—
Energy Conservation

- Additions to existing buildings must comply with the energy requirements of the *Chicago Energy Conservation Code* (CECC) for new construction. (1107.1)
- The CECC provides 3 options:
  - The addition alone complies
  - The existing building and addition comply when evaluated as a single building
  - The building with the addition will use no more energy than the existing building

(CECC C502.1, R502.1)

KEY CONCEPT

Historic Buildings (Chapter 12)

- Chapter 12 provides optional relief from some requirements for historic buildings
- To use Chapter 12 provisions, the building must be investigated and evaluated (in person) by an architect/engineer and a written report prepared and submitted (1201.2)
- Unsafe conditions must be remedied (1201.5)

Level of Work (R, L1, L2, etc.)

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Chapter 12 (Historic Buildings)

190

KEY CONCEPT

Historic Buildings (continued)

HISTORIC BUILDING. Any *building* or *structure* that is one or more of the following:

1. Listed, or certified as eligible for listing, by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places, in the National Register of Historic Places.
2. Designated, recommended or preliminarily recommended for designation as a Chicago Landmark, including as a contributing building in a Chicago Landmark district . . .
3. Certified as a contributing resource within a National Register historic district.

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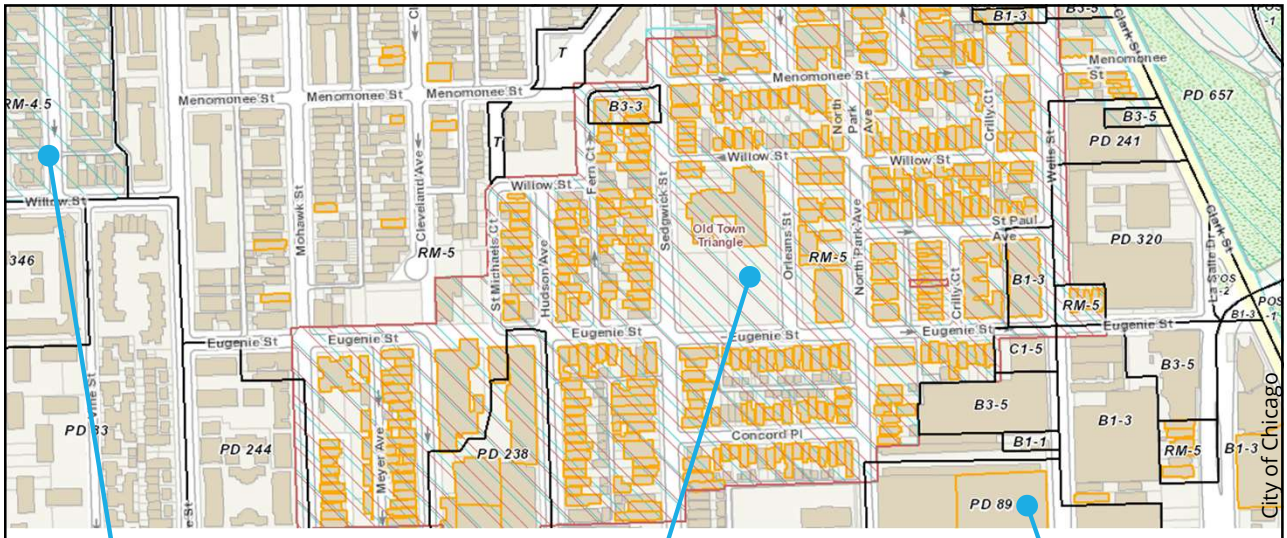


National Register district
Chicago Landmark district

NOT: Chicago Historic Resources Survey Orange/Red (only)

192

Historic Buildings—Evaluation Report

Written report must:

- ID building safety features that comply with code
- ID building features that are not in compliance
- Describe impact of strict compliance on contributing historic features
- Propose alternatives to achieve equivalent level of safety

*Written report requirement may be waived by DOB supervisor where warranted and equivalent information conveyed on construction documents.

193

Historic Buildings—Repair

- Allowed to use original or like materials and methods of construction
- No hazardous materials (asbestos, mercury, lead, etc.)
- Replacement glazing must meet safety glazing requirements (exceptions: glass block, decorative glass, louvers)
- Historic features may be rebuilt, even if they do not meet current requirements (low guards, narrow door openings)

(1202)

194

Historic Buildings—Alterations

Fire-resistive Construction

- Stairway enclosures up to 3 stories only required to limit spread of smoke with tight-fitting doors (1203.6)
- Lath (wood or metal) and plaster construction always accepted in lieu of 1-hour fire-resistance-rating (1203.7)
- Glazing and transoms allowed to remain in construction required to have 1-hour fire-resistance rating where sprinkler system provided (1203.4, 1203.8)
- CFD may approve automatic fire-extinguishing system or life-safety system as alternative (1203.12)

195

Historic Buildings—Alterations (continued)

Means of Egress

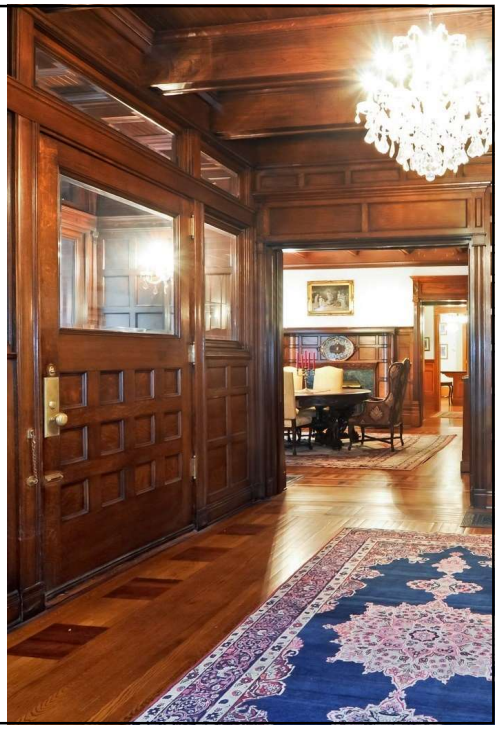
- Existing door, corridor, and stairway widths, less than required, may be approved (ACAR) (1203.3)
- Door swing variances may be approved (ACAR) (1203.3)
- Handrail and guard requirements do not apply to historically-significant open stairs (1203.9)
- Other handrails and guards may remain if they are not structurally unsound; historic opening patterns may remain or be rebuilt (1203.9, 1203.10)
- CFD may approve alternative exit signage (1203.11)

196

Historic Buildings—Alterations (continued)

Interior Finishes

- Existing historic interior finishes are acceptable as-is (1203.5)



Historic Buildings—Change of Occupancy

Height and Fire Separation Distance

- Allowable floor area may exceed CBC Ch. 5 limit by 20% (1204.2)
- Fire-resistance requirements for opening protectives, exterior walls, and exterior wall projections based on fire separation distance may be met with alternative methods (1204.3)

  (Only triggered if hazard index increase per Table 1011.6)

198

Historic Buildings—Change of Occupancy (continued)

Interior and Exterior Finishes

- Interior finishes must be Class C, surfaced with an *approved* fire-retardant paint or finish, or the building must be protected with an automatic sprinkler system (1204.9)
- Roof covering must be at least Class C (1204.5)

Historic Buildings—Change of Occupancy (continued)

Fire-resistive Construction

- Lath and plaster construction always accepted in lieu of 1-hour fire-resistance-rating (1204.10)
- Transoms allowed to remain in construction required to have 1-hour fire-resistance rating where sprinkler system provided, or in 2-hour walls or nonsprinklered building if fixed wire glass installed on one side (1204.8)
- Existing stairways may comply with requirements applicable to alterations (1204.11)

200

Historic Buildings—Change of Occupancy (continued)

Means of Egress

- Existing door, corridor, and stairway widths, less than required, and occupant load may be limited by approved operational controls (ACAR) (1204.6)
- Door swing variances may be approved (ACAR) (1204.7)
- Handrails and guards may comply with requirements for alterations (1204.11)
- CFD may approve alternative exit sign locations (1203.11)
- Historic stairs (Group B or R) may have 75 psf live load (1204.13)

201

Historic Buildings—Structural

- Existing floors and existing live loads may be approved (ACAR) based on operational controls (1205.1, Ex. 1)
- Repair of substantial structural damage may comply with lesser requirements (1205.1, Ex. 2)
- Dangerous conditions, as determined by DOB, must be remedied. No further structural work is required. (1205.2)

202

Historic Buildings—Relocated

- New foundation must comply with new construction requirements (1206.1)
- Exterior wall and opening protection requirements may comply with new construction or historic building provisions (*as if always on new site*) (1206.1)

Wolfe House & Building Movers / Wikimedia Commons

CODE BOOK

Historic Buildings—Energy Conservation

- Historic buildings may also use a report to modify energy conservation requirements for rehabilitation projects.
- Report must establish that compliance with specific requirement to be waived would "threaten, degrade or destroy historic form, fabric or function" of the building.
  - *Chicago Energy Conservation Code* C501.6
  - *Chicago Energy Conservation Code* R501.6

204

CODE BOOK

Historic Buildings—Accessibility

- Only the Illinois Historic Preservation Agency (IHPA) can approve alternatives to accessibility requirements for accessible routes, entrances, or toilet rooms where:
  - Compliance is **not** technically infeasible
  - The alternative is sought to protect the historic significance of the facility (305.9)

See Section 202.5 of the *Illinois Accessibility Code* for more information.

KEY CONCEPT

Relocated Buildings

- Requirements for Relocating a Buildings are in Chapter 14.
- Any associated, repairs, alterations, or change of occupancy must also comply with those provisions.

Chapter 3 (All)

+

Chapter 14 (Moved Bldg)

207

Relocated Buildings (continued)

- The foundation for a relocated building and connections between the building and its foundation must comply with the CBC for new construction. (1402.2)
- The new location on the building site must comply with CBC for new construction and the Chicago Zoning Ordinance. (1402.1)

208

Relocated Buildings (continued)

- The building must comply with CBC wind loads at the new location, unless stress increase **≤ 10%.** (1402.3)
- The building must comply with CBC seismic loads at the new location, unless stress increase **≤ 10%.** (1402.4)
- The building must comply with CBC snow loads at the new location, unless stress increase **≤ 5%.** (1402.5)
- DOB may require inspections and repairs. (1402.6)

209

KEY CONCEPT

Building Rehabilitation Code—Intent

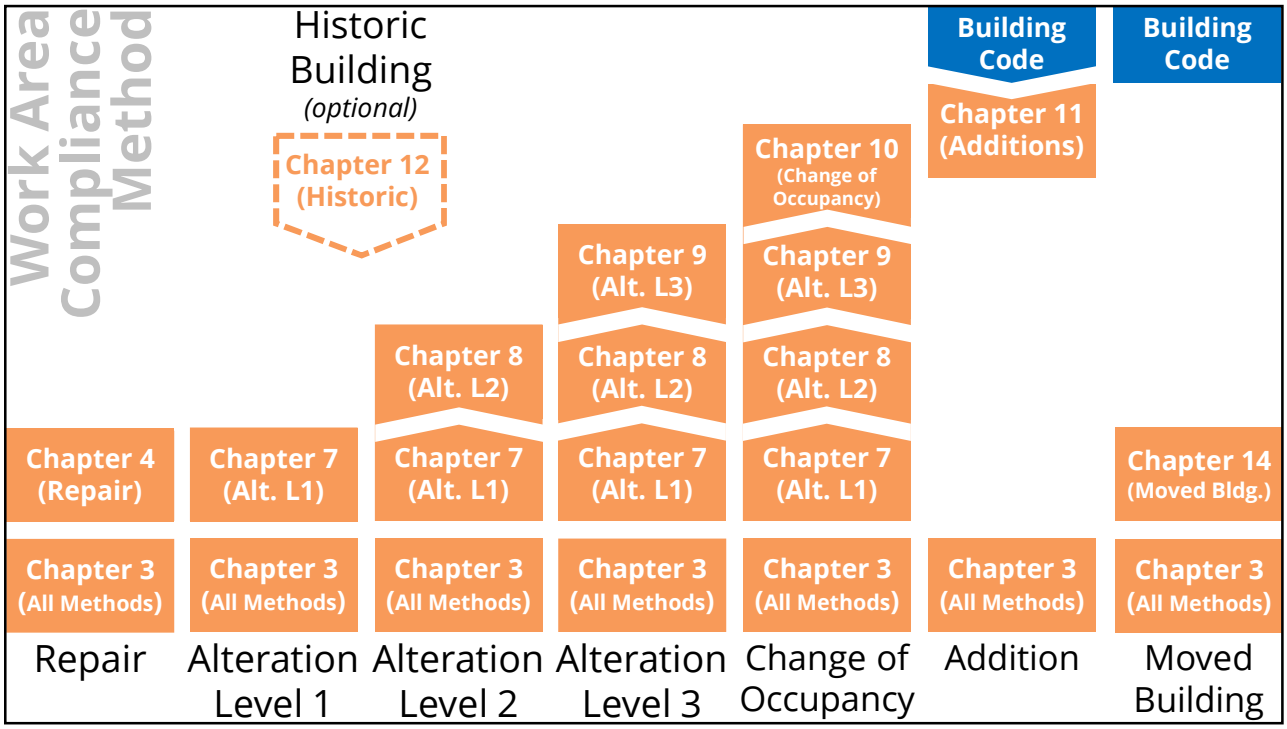
- Rehabilitation work cannot create or expand nonconformity.
- Newly built features/elements/spaces comply with new construction requirements.
- Existing spaces that are altered subject to modified requirements.
- Level 3 alterations and change of occupancy may trigger work outside *work area*.

KEY CONCEPT

Types of Work
Work Area Method

- Repair
- Alteration
- Incidental / code-mandated work
- Change of occupancy
- Addition
- Relocated building

+ Optional special rules for historic buildings.


Work Area Compliance Method
Historic Building
(optional)
Chapter 12 (Historic)
Building Code
Chapter 11 (Additions)
Building Code
Chapter 10 (Change of Occupancy)
Chapter 9 (Alt. L3)
Chapter 8 (Alt. L2)
Chapter 7 (Alt. L1)
Chapter 4 (Repair)
Chapter 3 (All Methods)
Chapter 14 (Moved Bldg.)
Repair
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Questions and Answers
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