# International Existing Building Code

An Overview for Council
August 28, 2018

# Council Goals

- Expand Sustainability Efforts
  - Task 1 – The Fire Chief will make a presentation to the City Council in March 2018 regarding the International Existing Building Code, which provides flexibility in renovating existing older buildings.

# Existing Buildings

- Due to regular code updates, many existing buildings do not comply with current building code requirements
- Rehabilitation of these structures can be quite costly
- Necessary to regulate construction to ensure the current level of safety is maintained or improved

# International Existing Building Code (IEBC)

- The intent of this code is to provide flexibility to permit 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 building. (2015 IEBC Sec. 101.3 Intent)
- Takes into consideration existing conditions and ensures that the most important safety factors can be achieved

# IEBC Components

- Three main components:
  - Prescriptive Method (Chapter 4)
    - Compliance with IBC with minor exceptions
  - Work Area Method (Chapters 5-13)
    - Repairs, Alterations Level 1-3, Change of Occupancy, Additions, Historic Bldgs., Relocated Bldgs.
  - Performance Method (Chapter 14)
    - Overall assessment of building – allows building to be compliant when meeting a minimum level of safety though it may be missing a required component

# Prescriptive Method

- Basic requirements for repairs, alterations, additions, changes of occupancy, historic buildings and moved structures
- Establishes minimum accessibility criteria for existing buildings
- Goal is for buildings to become more accessible over time – not to upgrade everything at once

# Work Area Method

- Repairs (Chapter 6): reconstruction of part of an existing bldg. for the purpose of its maintenance or to correct damage
- Alterations:
  - Level 1 (Chapter 7): removal & replacement of existing materials that serve the same purpose (shingles, aluminum to vinyl siding)
  - Level 2 (Chapter 8): reconfiguration of space, addition or elimination of any door or window, extension of systems
  - Level 3 (Chapter 9): applies when the work area exceeds 50% of the bldg. area

# Work Area Method, cont.

- Change of Occupancy: any change of use within a group, classification, or change of classification
- Addition: an extension or increase in floor area, stories, or height of a bldg.
- Historic Buildings: classified as historic by a qualified agency
- Relocated Buildings: moved to a new location or lot

# Change of Occupancy

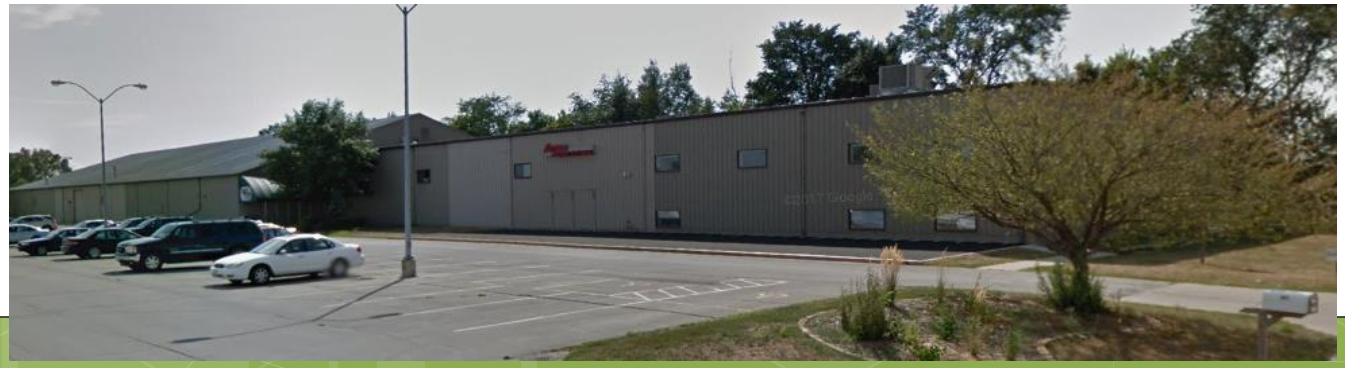
- A change of occupancy is when the use of an existing space changes, including within the same occupancy classification
  - Bank to a Beauty Shop (B-B)
  - Office space to apartments (B-R2)
  - Storage space to offices (S1-B)
- Examples
  - 131 Main Street – AVEC Design (B-B, S-B)
  - 320 S.17th Street – Harvest Vineyard Church (A-E)

# AVEC Design
# 131 Main

- Upstairs will remain offices (B-B) – required to create a fire-rated corridor and stair tower because exit path exceeded allowable distance for a single exit (2015 IEBC Alteration Level 2)
- Main floor was gutted- new work must meet current code including accessibility requirements (2015 IEBC)
- Basement changed use from storage to conference room (S-B). Sprinkler required due to it being a window-less story.
- Chose to sprinkle whole building instead of creating fire rated corridor and stair tower since they were already sprinkling the basement

# Harvest Vineyard Church
# 320 S. 17th

- Change of use (A-E) requires a fire sprinkler and accessible restrooms to comply with 2015 IBC
- 20% of the cost of the project needs to be spent on accessible upgrades, but code does not dictate where
  - Elevator, flooring, hardware, wider doors, etc.
  - Recommend upgrades at the primary function area



# Performance Method

- Objective: to provide an alternative compliance option that enables improvements to be made that will raise the score to a minimum level without strict compliance with all the provisions of the IBC
- Owners/designers that propose an alternative method are required to complete an evaluation of the building in relation to 21 safety parameters
- Evaluation requirements and equations are in Chapter 14 of the IEBC

# Chapter 14

- Three Categories:
  - Fire Safety
  - Means of Egress
  - General Safety
- Each type of occupancy has a different minimum score for these three categories
- 21 Safety parameters are measured

# Safety Parameters

- Building Height
- Building Area
- Compartmentation
- Tenant/Unit Separations
- Corridor Walls
- Vertical Openings
- HVAC
- Automatic Fire Detection
- Fire Alarm Systems
- Smoke Control
- Means of Egress
- Dead Ends
- Exit Travel Distance
- Elevator Control
- Egress Lighting
- Mixed Occupancies
- Automatic Sprinklers
- Standpipes
- Incidental Uses
- Smoke Compartmentation
- Patient Abilities/Concentration

# Mandatory Safety Scores

| Occupancy | Fire Safety | Means of Egress | General Safety |
|---|---|---|---|
| A-1 | 20 | 31 | 31 |
| A-2 | 21 | 32 | 32 |
| A-3 | 22 | 33 | 33 |
| A-4, E | 29 | 40 | 40 |
| B | 30 | 40 | 40 |
| F | 24 | 34 | 34 |
| I-2 | 19 | 34 | 34 |
| M | 23 | 40 | 40 |
| R | 21 | 38 | 38 |
| S-1 | 19 | 29 | 29 |
| S-2 | 29 | 39 | 39 |

CODE SUMMARY
TABLE 3410.7
2401 CHAMBERLAIN ST.
AMES, IOWA

| SUMMARY SHEET-BUILDING CODE | | | TABLE 3410.7 | |
|---|---|---|---|---|
| EXISTING OCCUPANCY | B (BUSINESS) | PROPOSED OCCUPANCY | A-2 | |
| YEAR BUILDING WAS CONSTRUCTED | 1999 | NUMBER OF STORIES: 3 | HEIGHT IN FEET: 36' | |
| TYPE OF CONSTRUCTION | V B | AREA PER FLOOR | 3076 / 3133 / 3164 | |
| PERCENTAGE OF OPEN PERIMETER | 0.09% | REDUCTION | 40% | |
| COMPLETELY SUPPRESSED | NO | CORRIDOR WALL RATING | ONE (1) HOUR | |
| COMPARTMENTATION | YES | REQUIRED DOOR CLOSERS | YES | |
| FIR-RESISTANCE RATING OF VERTICAL OPENING ENCLOSURES | | ONE (1) HOUR | | |
| TYPE OF HVAC SYSTEM | ROOFTOP / GFA / CENTRAL | | | |
| AUTOMATIC FIRE DETECTION: | YES | TYPE AND LOCATION: | N.E. ENTRANCE | |
| FIRE ALARM SYSTEM: | YES | TYPE: | AUTOMATIC | |
| SMOKE CONTROL: | NO | TYPE | N/A | |
| ADEQUATE EXIT ROUTES: | YES | DEAD ENDS: (0) | NO | |
| MAXIMUM EXIT ACCESS TRAVEL DISTANCE | 34' | ELEVATOR CONTROLS: | NO | |
| MEANS OF EGRESS EMERGENCY LIGHTING: | YES | MIXED OCCUPANCIES: | NO | |

| SAFETY PARAMETERS | FIRE SAFETY (FS) | MEANS OF EGRESS (ME) | GENERAL SAFETY (GS) |
|---|---|---|---|
| 3410.6.1 BUILDING HEIGHT | -7.0 | -7.0 | -7.0 |
| 3410..6.2 BUILDING AREA | +3.83 | +3.83 | +3.83 |
| 3410.6.3 COMPARTMENTATION | +14.0 | +14.0 | +14.0 |
| 3410.6.4 TENANT AND DWELLING UNIT SEPARATIONS | +1.0 | +1.0 | +1.0 |
| 3410.6.5 CORRIDOR WALLS | 0 | 0 | 0 |
| 3410.6.6 VERTICAL OPENINGS | +7.0 | +7.0 | +7.0 |
| 3410.6.7 HVAC SYSTEMS | 0 | 0 | 0 |
| 3410.6.8 AUTOMATIC FIRE DETECTION | +9.0 | +9.0 | +9.0 |
| 3410.6.9 FIRE ALARM SYSTEMS | 0 | 0 | 0 |
| 3410.6.10 SMOKE CONTROL | ***** | 0 | 0 |
| 3410.6.11 MEANS OF EGRESS | ***** | +10.0 | +10.0 |
| 3410.6.12 DEAD ENDS | ***** | +2.0 | +2.0 |
| 3410.6.13 MAXIMUM EXIT ACCESS TRAVEL DISTANCE | ***** | +17.28 | +17..28 |
| 3410.6.14 ELEVATOR CONTROL | -4.0 | -4.0 | -4.0 |
| 3410.6.15 MEANS OF EGRESS EMERGENCY LIGHTING | ***** | 0 | 0 |
| 3410.6.16 MIXED OCCUPANCIES | 0 | ***** | 0 |
| 3410.6.17 AUTOMATIC SPRINKLERS | 2 | 2 / 2 = 1 | 2 |
| 3410.6.18 INCIDENTAL USE | 0 | 0 | 0 |
| BUILDING SCORE-TOTAL VALUE | 25.83 | 54.11 | 55.11 |

TABLE 3410.9
EVALUATION FORMULAS

| FORMULA | T.3409.7 | T.3409.8 | SCORE | PASS / FAIL |
|---|---|---|---|---|
| FS-MFS ≥ 0 | 25.83 (FS) | - 19 (MFS) = | 6.83 | PASS |
| ME-MME ≥ 0 | 54.11 (ME) | - 30 (MME) = | 24.11 | PASS |
| GS-MGS ≥ 0 | 55.11 (GS) | - 30 (MGS) = | 25.11 | PASS |

Going from a B occupancy to an A-2

The points they accumulated for fire safety, means of egress, and general safety controls increased their building score.

The minimum allowed score is subtracted from the building score. A positive score indicates compliance in that category

In this situation, the level of safety from other measures verified compliance in each category

# Chapter 14 Examples

- 720 Kellogg – used worksheet to show that they met an equivalent level of compliance to qualify for a condo regime
- 2401 Chamberlain
  - Converted office space to a bar
  - Building code prohibited the 3rd story as a bar because of the type of building (5B)
  - Using the worksheet, they were able to verify that public safety within the structure was maintained or increased despite the change in use, this allowed them to use the 3rd story
  - Worksheet example shows scoring

# Questions?