Building Codes – What is in the Book?

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This is the third in a series of articles to help educate the public on Building Codes and their use in the built environment around us. Through the proper use and application of building codes, the citizens of our community can rest assured that construction around them will meet the minimum standards necessary to safeguard the public safety, health and general welfare. Building codes address affordability, structural strength, means of egress, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment. They also provide safety to fire fighters and emergency responders during emergency operations.

The combination of three widely known legacy code organizations from around the United States in the late 1990s resulted in the creation of the International Code Council. The ICC has become the nation’s primary source for guidance in creating construction codes. Building codes are a written reference standard that provide a minimum standard for the construction process and construction-related installations.

Meeting annually in various locations around the United States, ICC members have the ability to participate in code change review hearings. The committee reviews the codes, bringing code change proposals to the membership for a vote on each proposed change. New and revised codes appear on a three-year approval cycle. The most recently approved ICC codes have been published as the “2018 ICC Codes.” The ICC Codes are the base code used by many states that develop their own “state” codes.

In the latter part of the 1990’s, the State of Michigan chose to create its own model codes as a standard for construction and construction-related installations. Based on the ICC Codes, the “Michigan Codes” went into use in 2001. The Bureau of Construction Codes is the body that reviews them for possible revision. As at the national level, code review and revision has occurred about every three years. State officials, along with committee members appointed with approval from the governor’s office, review current codes, updated ICC Codes, and code change proposals submitted to the State for potential inclusion in the revised version of the codes.

After the committee completes its review process, a request goes out for public comment on the proposed code updates. The approval process then has several more steps of review and scrutiny before final approval and adoption. Once a new code is approved and enacted by the State, all jurisdictions enforcing the codes in Michigan must update to the new version. Michigan recently opted to retain the 2015 Michigan Residential Code and not move forward with a revised residential code for 2018. It is likely that the current residential code may remain in effect for the next three years, without revision on the normal cycle.

The codes currently approved for use in the State of Michigan include:

- The 2015 Michigan Residential Code, MRC, for One and Two Family Dwellings
- The 2015 Michigan Building Code, MBC, which applies to all buildings that cannot be considered under the MRC.
- The 2014 National Electrical Code, NEC, with Michigan Part 8 Amendments (2017 NEC is currently under review for adoption)
- The 2015 Michigan Mechanical Code
- The 2015 Michigan Plumbing Code
- The 2015 Michigan Rehabilitation Code for Existing Buildings
- The 2015 Michigan Energy Code (residential and commercial)

In Michigan, the most well-known code book is the Michigan Residential Code, known as the “MRC.” The MRC is a single book containing all of the codes that apply to the construction of single-family, two-family and townhouse style construction up to 3 stories in height including building, electrical, mechanical and plumbing requirements. The Michigan Building Code and separate codes related to each trade apply to buildings not fitting the scope of work allowed under the MRC.

Persons licensed as residential builders and/or maintenance and alteration contractors in the State of Michigan are required to own and use the current MRC. They must provide proof of possession of the MRC upon renewal of their license. Persons licensed in the trades including electrical, mechanical and plumbing should all maintain an up-to-date code book for reference on their projects. Design professionals should design buildings and structures to the current codes, and should also maintain a library of current codes for reference as they plan and detail buildings and structures on their plans.

The answer to the question, “What is in the book?” is not a simple and short answer. The codes have chapters addressing various parts of each trade’s construction and installation. Each code is similar in lay out for the first two chapters’ content, and each chapter contains “sections” that detail various code requirements.
Chapter 1 of each of the codes covers its scope, purpose and intent; providing guidance on when permits are required; required contents on permit applications; plan submittal requirements; lists required inspections; and guidance for local departments on the assessment of permit fees, issuance of certificates of occupancy, and how to address code violation issues.

Chapter 2 of each of the codes provides a list of definitions for terms in the codes. The clarity of these definitions play an important role when code interpretation is necessary.

Beginning with Chapter 3, each code book moves in a direction specific to subject matter of the respective code. Regardless of the type of code, each chapter breaks down the requirements for various aspects of construction and installations applicable to that code, with clear requirements for each type of installation.

For purposes of detailing the chapters of a code book, and with the MRC being the better known of the codes, the following applies to the guidance found in the MRC. Again, the MRC is specific to single and two family homes and townhouse construction up to three stories in height.

Chapter 3 - Building Planning: Design load criteria; fire rated construction; light, ventilation and heating; minimum room size requirements; minimum ceiling heights; sanitation; bathroom requirements; glazing; garage construction; emergency egress and escape; means of egress; guardrails, handrails and fall protection; smoke and carbon monoxide alarms; foam plastics; protection of wood and wood products against decay; elevators and lifts; flood resistant construction; storm shelters; solar energy systems; swimming pools, spas and hot tubs

Chapter 4 – Foundation Construction: Construction of footings and foundations; retaining walls; foundation drainage; damp-proofing and waterproofing; columns and piers; under floor spaces

Chapter 5 – Floor Construction: Construction of wood-framed floors and decks; floor sheathings; steel framed floors and concrete floors

Chapter 6 – Wall Construction: Construction of wood-framed walls; concrete walls; masonry walls; wood structural panels; structural insulated panels; and exterior door and window installations

Chapter 7 – Wall Coverings: Installation of interior and exterior wall finish materials

Chapter 8 – Roof and Ceiling Construction: Construction of wood-framed roofs and ceilings; roof sheathings; steel roof framing; ceiling finishes; roof and attic ventilation and attic access requirements

Chapter 9 – Roof Assemblies: Installation of roof finish materials including weather protection; underlayment and flashing materials; rooftop insulation and reroofing requirements

Chapter 10 – Chimneys and Fireplaces: Construction of masonry fireplaces, heaters and chimneys; the installation of factory built fireplaces, heaters and chimneys and exterior air supply requirements

Chapter 11 – Energy Efficiency: “Michigan Energy Code” requirements addressing the insulation of various parts of the exterior envelope of a building; exterior envelope sealing; air leakage allowances, air exchange systems, and requirements specific to energy efficiency of electrical, mechanical and plumbing systems

Chapters 12 to 24: Residential mechanical installation requirements
Chapters 25 to 33: Residential plumbing installation requirements
Chapters 34 to 43: Residential electrical installation requirements

Through the proper application of the codes by all parties involved in construction projects; including designers, engineers, architects, builders, contractors, the construction of buildings and structures should meet the minimum standards of construction detailed throughout the codes, to provide safe and structurally sound buildings and structures for our citizens and those visiting our communities. Ever since the first construction regulations were developed, safety in the built environment has been the goal of building codes. The goal is to provide us with safe buildings and structures in which we can all live, congregate, work and play.