

M E M O R A N D U M

Date: January 10, 2022
To: Mayor Dave Ruth Jr. and City Commissioners
Re: Proposed Ordinance Change

I am proposing an ordinance change. The result of the ordinance change will be to adopt and amend the 2021 editions of the International Building Code (IBC), International Mechanical Code (IMC), International Fire Code (IFC), International Residential Code (IRC), International Existing Building Code (IEBC), and International Property Maintenance Code (IPMC). These codes are published by the International Code Council (ICC). Currently Deadwood has adopted the 2018 editions of these same codes. In addition to the codes mentioned above I propose that Deadwood adopt the 2021 International Fuel Gas Code (IFGC). We have not formally adopted this code but there are requirements we do use in Deadwood. These codes are collectively referred to as the Building Code. New code editions are published every three years. Any changes to the code undergo hearings and comment periods and are voted on by members of the ICC. I am a member of the ICC on behalf of Deadwood. Code changes are generally the result of new building materials, new technology or methods, or to address some widespread failure in building systems that cause loss of life, injury or property damage. Sometimes a single tragedy can spur a code change. In the 2021 IBC and IFC there is a change directly related to a fire that occurred in an open parking garage in England. Due to widespread use of plastics and other composites in modern vehicles this fire spread rapidly and produced a large amount of toxic gasses not seen before in these types of fires. The resulting code change was to require fire sprinklers in new construction of these structures.

The effective date of this ordinance change will determine when the 2021 Building Code will be applied. All permits applied for and issued after that date will have to be in compliance with the 2021 Building Code. All previously issued, open permits will remain under the 2018 Building Code.

I foresee no negative impact on future building projects in Deadwood as a result of the differences between the 2018 and 2021 code requirements. Below is summary of what will be the major changes in each different code.



2021 International Building Code

This code applies to all buildings except detached one- and two-family dwellings and townhouses up to three stories. The 2021 IBC® contains many important changes such as:

- Puzzle rooms (escape rooms) are now defined and regulated as special amusement areas, requiring compliance with Section 411 and special means of egress requirements.
- For the purposes of determining the allowable number of control areas in a building, each portion separated by one or more fire walls is now considered as a separate building.
- In Group E occupancies, enhanced classroom acoustics in compliance with ICC A117.1 are to be provided in all classrooms having of volume of 20,000 cubic feet or less.
- The requirements for metal composite materials and systems (MCM) installed on the exterior walls of Types I, II, III and IV construction were simplified and sprinkler allowances were deleted
- The use of intermodal shipping containers as buildings is now specifically addressed through provisions intended to supplement existing applicable IBC requirements.
- Automatic sprinkler protection is now required in Group S-2 open parking garages where any fire area exceeds 48,000 square feet.
- The 2017 edition of ICC A117.1 was adopted.
- Parapets of a minimum height are now required for aggregate-surfaced roofs to prevent blow-off.
- Mixed occupancy buildings with assembly spaces are placed in Risk Category III when the total public assembly occupant load is greater than 2500 people.
- The 2021 IBC snow map is updated to match ASCE 7-16 snow maps by adding a reference to ASCE 7 snow tables in states with large case study areas.
- Secondary rain loads are updated to be consistent with ASCE 7.
- Special inspection requirements were added to address the anchorage and connection of mass timber structural elements.
- Installation of firestop, fire-resistant joint systems and perimeter fire barrier systems in residential-use buildings now requires special inspection in Group R fire areas having an occupant load exceeding 250 people.
- Frost protection for egress doors was added to the foundation requirements.
- ACI standards ACI 117 and ITG 7 were added by reference to provide acceptable tolerances for concrete construction.
- Three new types of construction (Types IV-A, IV-B, and IV-C) allow mass timber buildings of taller heights, more stories above grade, and greater allowable areas compared to existing provisions for heavy timber buildings.



2021 International Residential Code

This comprehensive code comprises all building, plumbing, mechanical, fuel gas and electrical requirements for one- and two-family dwellings and townhouses up to three stories. The 2021 IRC® contains many important changes such as:

- Braced wall lines must be placed on a physical wall or placed between multiple walls.
- The rated separation for two-family dwellings is 1 hour whether or not a lot line exists between units.
- Emergency escape and rescue openings require a clear 36-inch-wide path to a public way.
- An engineered design is required for storm shelters.
- A habitable attic is limited to one-half the area of the story below and the dwelling requires sprinklers.
- Updated Wind Speed maps match IBC and ASCE 7 maps.
- Deck design now considers snow load, tributary area for footing and post height.
- Component and cladding wind pressures in Table R301.2(2) are updated for new design wind speeds and hip or gable roof profiles.
- Minimum footing size tables are revised to more accurately reflect current practice.
- Cripple wall requirements apply only to exterior cripple walls.
- New appendices for cob construction and 3D printed construction are added.

2021 International Mechanical Code

Establishes minimum regulations for mechanical systems using prescriptive and performance-related provisions. The IMC was developed with broad-based principles that make possible the use of new materials, methods and design.

Important changes in the 2021 IMC® include:

- Clothes dryer exhaust terminals required to be at least 3 feet from any opening into a building.
- Polyurethane spray-applied foam on the exterior of ducts in attics and crawl spaces required to meet specific smoke and flame index limits.
- Fire and smoke dampers must be provided with approved access for inspection and maintenance.
- Refrigerant tables updated to include new refrigerants.
- Addition of condensate termination identification markings and discharge restrictions.
- Approved factory-built combination intake/exhaust terminations permitted, relaxing separation requirement.
- 30% reduction in minimum mechanical ventilation for whole-house balanced ventilation systems.
- Continuous operation requirement for manicure and pedicure station exhaust systems.
- Grease duct horizontal cleanout required within 3 feet of a horizontal discharge fan.

2021 International Fire Code

The 2021 IFC® contains regulations to safeguard life and property from fires and explosion hazards. Topics include general precautions, emergency planning and preparedness, fire department access and water supplies, automatic sprinkler systems, fire alarm systems, special hazards, and the storage and use of hazardous materials. Key changes to the IFC include:

- Requirements for Additive Manufacturing (3-D Printing) equipment and operations for both non-industrial and industrial applications are now provided.
- Flame propagation performance of permanently installed artificial combustible vegetation is required to be verified when exceeding certain heights located on roofs or in close proximity to buildings.
- Provisions for emergency responder communication were revised to reflect the expansion of such systems beyond radios and the need for increased performance of such systems.
- Sprinkler requirements for the storage, manufacture and sale of upholstered furniture and mattresses were updated and clarified. Part of this update is a new exception for single-story self-storage facilities accessed directly from the exterior.
- An automatic sprinkler system is now required for open parking garages exceeding a certain fire area threshold.
- The requirements for energy storage system (ESS) were further refined to reflect the variety of new technologies and applications (in building and standalone) and the need for proper commissioning and decommissioning of such systems.
- A new chapter was added that provides clarification and specific requirements for the storage of distilled spirits and wines in barrels and casks.
- The provisions for construction fire safety were reorganized and expanded with an emphasis on the owner's responsibilities. The new language requires a site safety plan and designation of a site safety director.

2021 International Existing Building Code

Encourages the use and reuse of existing buildings. This code covers repair, alteration, addition and change of occupancy for existing buildings, and historic buildings, while achieving appropriate levels of safety without requiring full compliance with the new construction requirements contained in the other I-Codes. Key changes in the 2021 IEBC® include:

- For storm shelters, the required occupant capacity is now limited to the total occupant load of the classrooms, vocational rooms and offices in the school while the maximum distance of travel was deleted.
- When significant portions of a building's exterior wall coverings or exterior wall envelope are added or replaced, they must comply with the requirements of Chapters 14 and 26 of the IBC.
- Snow loads must be addressed during repair of substantial structural damage regardless of whether the damage was a result of snow.

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- Additions, Level 3 alterations and Changes of occupancy in Educational occupancies are now required to meet the enhanced classroom acoustic requirements of Section 808 of ICC A117.1.
- Additional equipment may be added to a roof without a full structural analysis when the equipment weighs less than 400 pounds and is less than 10 percent of the total roof dead load.
- With a change of occupancy, a seismic analysis is required for a Group S or Group U occupancy changing to a new occupancy.
- Furniture, such as office cubicles, reception desks or smaller bookcases, are exempt from a permit and not intended to be a Level 2 alteration.
- Sprinkler requirements for Level 2 and Level 3 alterations are revised for higher hazard areas.

The budget impact to the City of this ordinance change is the cost of new code books, which I budgeted for and purchased out of my 2021 budget. \$1,289.89 was the total.

Lastly, in anticipation of adopting the 2021 codes I have been working with the design teams for the following near future projects; the remodel of the elementary school and the new Lawrence County Public Safety building to ensure these projects will be in compliance with the new codes.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'Trent Mohr', with a long, sweeping horizontal line extending to the right.

Trent Mohr
Building Inspector