From: noreply@formstack.com
To: Fire Prevention and Building and Safety Commission
Subject: Code Comments, Proposals and Advice
Date: Thursday, May 6, 2021 6:33:32 PM

Formstack Submission For: 4202

Submitted at 05/06/21 6:33 PM

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Indiana Code You Are Commenting On:	2014 Indiana Building Code
Comment or Proposal:	See attached document which was developed by a committee of structural engineers tasked with reviewing the current Indiana Building Code and identifying reasons for adopting the 2021 International Building Code as the model code.
File:	View File

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2021 International Building Code – Reasons for Adoption by the State of Indiana

1. Latest Research and Design Procedures
    a. References most recent standards (i.e. ASCE, ACI, AISC, NDS, etc.) which incorporate the latest research for design.
2. Revenue to Indiana
    a. Maintain Indiana as a desirable location to locate high tech and engineering businesses, support Indiana's world class university system, assist with employee attraction and retention, and prevent brain drain by staying current with the latest research and industry best practices.
    b. Chapter 16 Reference Standard ASCE 7-16 – Reduces basic wind speed for risk category II from 115 mph to 107 mph resulting in more economical structures.
    c. Chapter 16 Section 1607.12.1.2 – Clarifies live load reduction for live loads in excess of 100 psf. Previous code provisions were unclear, likely resulting in conservative designs.
    d. Chapter 18 Reference Standard AISC 360-16
        i. Revises HSS steel tube connection requirements from a prescriptive approach to a limit states approach allowing for more options in design and resulting in more economical structures.
        ii. More direct analysis of extended single plates, allowing for more accurate and economical designs
    e. Chapter 21 Section 2107.2.1 - Adds maximum limit for rebar lap splices of 72 d_b resulting in more economical masonry structures due to reduced splice lengths.
    f. Chapter 23 – Adds section for Cross Laminated Timber allowing for the use of new materials and reducing building cost via increased competition. Permits design of building using a sustainable material which will see increased demand in the future in order to reduce greenhouse gas emissions.
3. Life Safety
    a. Chapter 4 Section 423 - Requires storm shelters for 911 call stations, emergency operation centers, fire, rescue, ambulance and police stations and many K-12 schools (Group E with occupant load >50). This will increase building safety for these critical facilities.
    b. Chapter 16 Table 1607.1a - Increases design load of balconies to 1.5 occupancy live load not to exceed 100 psf due to recent failures of these building elements and acknowledgment that they are likely to experience higher live loads than the associated occupancy.
    c. Chapter 16 Section 1607.16.2 – adds minimum horizontal stability load for fire walls allowing for proper design of this critical element.
    d. Chapter 16 Sections 1607.11.3 and 1607.11.4 - adds requirements for loads to be resisted by elements supporting hoists, façade access equipment and fall arrest systems due to the critical nature of these elements.
    e. Chapter 18 Reference Standard AISC 360-16 – adds specifications for design for structural integrity where required by the model code (high rise structures in risk category III or IV) allowing for proper design of these critical elements.

f. Chapter 19 Reference Standard ACI 318-19 – adds chapter for design of diaphragm and collector elements in low seismic zone allowing for proper design of these critical elements.
g. Chapter 21 Reference Standard TME 402-16 – Adds requirements for shear friction capacity of masonry shear walls allowing for proper design of these critical elements.
h. Chapter 23 Section 2304.12.2.5 - Adds ventilation requirements below balconies reducing a common risk of wood rot and collapse.
i. Parapets of a minimum height are now required for aggregate-surfaced roofs to prevent blow-off protecting the public from wind-born debris.
j. AISC
    i. More accurate equations for lateral torsional buckling, shear lag, fatigue, built up compression members, HSS/Box Sections, eccentrically loaded weld groups, tension field action of built-up members
    ii. Adds specifications, guidance, and provisions for design for structural integrity where required by the model code (high rise structures in risk category III or IV) allowing for proper design of critical building components
k. AISI
    i. Increase in factor of safety required for connections, for both LRFD and ASD designs
    ii. Allows for DSM use in roof, floor, and wall assemblies
l. ANIS RMI
    iii. More safety for seismic loading, with introduction of redundancy factor in load combinations
    iv. Specifications provided for cantilever column type storage rack systems, providing guidance and safety requirements for these type of structures

4. Sustainable Design
    a. Chapter 16 Section 1607.14.2.2 – adds guidance on allowable live loads and live load reduction for green roofs and occupiable roofs allowing for the proper design of this common sustainable building feature.
    b. Chapter 16 Section 1607.14.4 – Adds live loads for photovoltaic panels allowing for the proper design of building roofs supporting this renewable and increasingly common energy source.
    c. Chapter 16 and Chapter 16 Reference Standard ASCE 7-16 - add loading requirements for solar panels allowing for the proper design of this common sustainable energy source.
    d. Chapter 21 Reference Standard TMS 402-16 – Better accommodates increased insulation thickness and energy efficiency by expanding prescriptive veneer anchor requirements for increased cavity widths of up to 6-5/8”.
    e. The use of intermodal shipping containers as buildings is now specifically addressed through provisions intended to supplement existing applicable IBC requirements. This allows for the reuse of a building material for sustainable design.
    f. Chapter 23 – Cross Laminated Timber
        i. LEED
            1. Carbon storage
            2. Reduce carbon footprint of steel and concrete production.

ii. CLT allows smaller diameter trees to be used in the production, which allows for better forest management.

Chapter 17 Special Inspections and Tests

Recommend inclusion of Chapter 17 Special Inspections for following reasons.

1. Life-Safety:
    a. Increased compliance with design intent.
    b. The Engineer of Record cannot observe everything, all of the time. Special inspection assures the vast majority of the structure is built per the construction documents.
    c. In general, the building structure is the only part of a building that can kill, or injure, multiple people. Every year, there are structural failures in the U.S. that result in loss of life and property damage. It only makes sense to have another set of eyes observing construction.
2. Job Creation:
    a. Indeed has approximately 2,200 job opportunities for Special Inspectors. This doesn't include listings for steel, concrete, wood and masonry inspectors.
    b. These jobs appear to pay $15/hr to $50/hr.
    c. New small and medium size firms will emerge specializing in inspections.
    d. Training programs can be setup. This creates additional companies and jobs.
3. Revenue to Indiana:
    a. Yearly certification revenue.
    b. Tax revenue from new firms and increased work from existing firms.
4. Overall building cost increase for non-residential buildings:
    a. Example of added project cost for a 200,000 s.f., three-story office building:
        i. Full-time inspection: 40 hours x 8 weeks = 320 hours.
        ii. Assumed inspection cost = $150/hr.
        iii. Inspection cost = 320 hours x $150/hr = $48,000.
        iv. Assume total building cost = 200,000 sf x $250/sf = $50,000,000.
        v. Inspection cost = $48,000/$50,000,000 = 0.10% of total cost.
    b. As shown in the above example, the inspection cost is extremely low relative to the building cost.