DEPARTMENT OF ADMINISTRATIVE SERVICES

PROPOSED CHANGE OF THE CONNECTICUT STATE BUILDING CODE AND FIRE SAFETY CODE

DATE SUBMITTED: 4/11/2024

CODE INFORMATION

Proposed change to: ☑ Building Code ☐ Fire Safety Code

Code section(s): 2022 CSBC: 1611.1 (del)
2024 IBC: 1611.1 (amd)

PROPONENT INFORMATION

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PROPOSAL INFORMATION

Description of change and reason for change (attach additional information as needed):

Amend rain load requirements of 2022 CSBC to align with 2024 IBC. See attachment.

Proposed text change, addition or deletion (attach additional information as needed):

See attachment.

Supporting data and documents (attach additional information as needed)

☑ **This Proposal is original material.** (Note: Original material is considered to be the submitter's own idea based on or as a result of his/her own experience, thought or research and, to the best of his/her knowledge, is not copied from another source.)

☐ **This Comment is not original material, its source (if known) is as follows:** (such as material / code development proposal from a prior development cycle or proposal submitted to model code committee etc.)

☐ **I would like to make an in-person presentation of my proposal.**

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Proponent's Signature

Thomas Bronson

Printed Name

PLEASE EMAIL (PREFERRED) TO DAS.CodesStandards@CT.GOV OR MAIL OR FAX (SEE BELOW)

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DESCRIPTION FOR CHANGE AND REASON FOR CHANGE:

While rain load requirements in past editions of the IBC were the same in a given locale regardless of the building occupancy, the rain load requirements in the 2024 IBC vary based on Risk Category. The rain load map that had been contained in past editions of the IBC has been deleted, and the design rainfall intensity is not provided within the body of the IBC. In order to identify the design rainfall intensity in a given location, it would be necessary to utilize a third-party utility such as the NOAA Precipitation Frequency Data Server or the ASCE Hazard Tool.

In the past, Connecticut deleted the map within the IBC and established a single rainfall intensity to be utilized consistently throughout the State. This proposal takes a similar approach and provides a single rainfall intensity throughout the State for each Risk Category. Using the ASCE Hazard Tool (https://ascehazardtool.org/), rainfall intensities were identified at a variety of locations throughout the State. For this proposal, the highest rainfall intensity within the State was identified and rounded up to the nearest ¼ inch per hour.

Rain Load Comparison - ASCE 7-22

Location	**15-minute Rainfall Intensity** (inches/hour)		
	RC I, II	RC III	RC IV
Greenwich	5.87	6.49	7.36
Bridgeport	6.29	7.02	8.07
New Haven	***6.42***	***7.20***	***8.34***
New London	6.08	6.83	7.93
Stonington	6.08	6.83	7.98
Thompson	5.86	6.54	7.49
Enfield	6.30	7.06	8.14
Salisbury	5.82	6.47	7.36
Hartford	6.38	7.17	8.29
Middletown	6.41	7.20	8.32

***PROPOSED TEXT CHANGES*:**

2022 CSBC – 2021 IBC Amendments – CHAPTER 16

(Del) ~~**1611.1 Design rain loads.** Each portion of a roof shall be designed to sustain the load of rainwater as per the requirements of Chapter 8 of ASCE 7 except the design rainfall shall be based on twice the 100- year hourly rainfall rate and shall be 6.0 inches.~~

~~$R = 5.2(d_s + d_h)$ (Equation 16-19)~~

~~For SI: $R = 0.0098(d_s + d_h)$~~

~~where:~~

~~d_h = Additional depth of water on the undeflected roof above the inlet of secondary drainage system at its design flow (in other words, the hydraulic head), in inches (mm).~~

~~d_s = Depth of water on the undeflected roof up to the inlet of secondary drainage system when the primary drainage system is blocked (in other words, the static head), in inches (mm).~~

~~R = Rain load on the undeflected roof, in psf (kN/m^2). Where the phrase "undeflected roof" is used, deflections from loads (including dead loads) shall not be considered when determining the amount of rain on the roof.~~

IBC 2024 – CHAPTER 16

(Amd) 1611.1 Design rain loads.

Each portion of a roof shall be designed to sustain the *load* of rainwater as per the requirements of Chapter 8 of ASCE 7. Rain loads shall be based on the summation of the static head, *ds*, hydraulic head, *dh*, and ponding head, *dp*, using Equation 16-20. The hydraulic head shall be based on hydraulic test data or hydraulic calculations assuming a flow rate corresponding to a rainfall intensity equal to or greater than the 15-minute duration storm with return period given in Table 1611.1. Rainfall intensity shall be determined in inches per hour ~~for 15-minute duration storms~~ for the risk categories given in Table 1611.1. The ponding head shall be based on structural analysis as the depth of water due to deflections of the roof subjected to unfactored rain load and unfactored *dead load*.

$$R = 5.2(d_s + d_h + d_p) \qquad \text{(Equation 16-20)}$$

For SI: $R = 0.0098(ds + dh + dp)$ where:

dh = Hydraulic head equal to the depth of water on the undeflected roof above the inlet of the secondary drainage system for structural loading (SDSL) required to achieve the design flow, in inches (mm).
dp = Ponding head equal to the depth of water due to deflections of the roof subjected to unfactored rain load and unfactored *dead load*, in inches (mm).
ds = Static head equal to the depth of water on the undeflected roof up to the inlet of the secondary drainage system for structural loading (SDSL), in inches (mm).
R = Rain load, in pounds per square foot (kN/m^2).
SDSL is the roof drainage system through which water is drained from the roof when the drainage systems listed in ASCE 7 Section 8.2 (a) through (d) are blocked or not working.

TABLE 1611.1
DESIGN 15-MINUTE DURATION STORM ~~RETURN PERIOD~~RAINFALL INTENSITY BY RISK CATEGORY

RISK CATEGORY	DESIGN STORM RETURN PERIOD	RAINFALL INTENSITY (inches/hour)
I & II	100 years	6.50
III	200 years	7.25
IV	500 years	8.50