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**Flood Resistant Design Review**

Includes Recommendations of the Technical Advisory Group

September 2021

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## Technical Advisory Group Review of Flood Resistant Design

### Introduction

The Commissioner of the Department of Labor and Industry has the authority to establish a code of standards for the construction, reconstruction, alteration, and repair of buildings. The building code is to conform to the model building codes generally in use, but with necessary modifications for their use in Minnesota. The Commissioner must consult with the Construction Codes Advisory Council (CCAC) to establish the code.<sup>1</sup> The CCAC reviews model codes and provides recommendations regarding their adoption and any recommended revisions to current Minnesota Rules. To facilitate their review of the existing floodproofing requirements and a model code for potential adoption, the CCAC appointed a Flood Resistant Design Technical Advisory Group (TAG).<sup>2</sup>

The Flood Resistant Design TAG was tasked with reviewing the existing floodproofing regulations. Currently, Minnesota Rules, chapter 1335, adopts the 1972 edition of “Flood Proofing Regulations” (FPR) as promulgated by the U.S Army Office of the Chief Engineers, with amendments. This document has not been updated since 1972 and is difficult for flood plain administrators and the public to access and apply. It has not kept up with technological improvements and changing environmental conditions in flood prone areas of Minnesota. *ASCE/SEI 24-14 Flood Resistant Design and Construction (ASCE-24)* is a similar referenced standard published in the existing International Model Codes (I-codes) by the American Society of Civil Engineers (ASCE). This standard addresses the minimum requirements and expected performance for the siting, design, and construction of buildings and structures in flood hazard areas that are subject to Minnesota State Building Code requirements. It is updated frequently, and FEMA deems ASCE 24 to meet or exceed the minimum National Flood Insurance Program (NIFLP) requirements for buildings and structures located in flood prone areas. Accordingly, to advance new construction methods and materials, technological improvements, public welfare and safety, and building efficiency and use, the CCAC appointed members to the Flood Resistant Design TAG to review existing chapter 1335 and compare it to the *ASCE/SEI 24-14* standard and report their findings.

The Flood Resistant Design TAG conducted open meetings to allow the public to attend and participate in the review and discussion about proposed changes to the floodproofing code. As a result, TAG members and the public identified concerns and discussed the issues raised by those concerns. This report highlights TAG members’ recommendations to the CCAC.

Many of the Flood Resistant Design TAG code change proposals were necessary to align flood design requirements with existing practices in flood hazard areas in Minnesota or deleting code sections that are no longer necessary because ASCE 24 has adopted similar requirements. These types of changes recommended by TAG members do not present meaningful or substantive changes to the provisions of ASCE 24 or current Minnesota rules.

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<sup>1</sup> See [Minnesota Statutes Section 326B.106, subdivision 1.](#)

<sup>2</sup> See [Minnesota Statutes Section 326B.07, subdivision 2.](#)

This report highlights some of the more significant changes between ASCE 24 and the current requirements and code change proposals that TAG members recommend to the CCAC.

### **Flood Resistant Design TAG (Chapter 1335)**

The Flood Resistant Design TAG met five times between June 22, 2021, and August 17, 2021, to review ASCE 24 and Minnesota Rules, chapter 1335, which adopts the 1972 FPR with amendments. The Flood Resistant Design TAG members recommended adopting ASCE 24 with the following significant proposed changes:

#### ***Recommended code changes***

1. Amend the existing rule so that the duties and powers of the Floodplain Administrator are equivalent to those of the Building Official with respect to administrative enforcement of Minnesota Rules, chapter 1335, and allows for the use of Minnesota Rules, chapter 1300, Minnesota Building Code Administration.
2. Modify ASCE 24 to add requirements for non-conforming uses as follows:
  - No increases to the non-conformity are permitted so alterations and new work must comply with current requirements.
  - A non-conforming use that is discontinued for 12 months must conform to chapter 1335 requirements in order to resume the previous use.
  - Uses that are nuisances are not permitted to continue as non-conforming uses.
  - Additions and alterations to nonconforming uses must comply with chapter 1335 but the existing nonconforming use is not required to comply unless the work meets the definition of substantial improvement.
3. Modify ASCE 24, section 1.2, definition of “Substantial Damage,” to read “damage that the cost of which to repair equals or exceeds 50 percent of the market value of the structure at the time just before the damage occurred.” The model code definition of “substantial damage” is based on the value of the building at the time of the non-conformity, which for older buildings can be a low threshold. The TAG members also recommend an exception for “one-for-one equipment replacement,” unless the equipment is relocated to a compliant location, because the cost of equipment relocation can be substantial.
4. Modify ASCE 24, section 1.2, definition of “substantial improvement,” to read “the cost of any work considered in conjunction with other work that has occurred within the past five years that equals or exceeds 50 percent of the current market value of the structure.” The previous definition for “substantial improvement” only included work that was completed within the previous year, so many properties were annually improved at less than 50 percent of the market value of the structure. These

annual improvements resulted in an overall substantial improvement without compliance with chapter 1335. The TAG members also recommended that historical buildings be exempt from requirements for substantial improvements.

5. Modify requirements for residential buildings to permit dry floodproofing in accordance with ASCE 24 when a residential building is constructed in accordance with FEMA Technical Bulletin 10-01 or is in a jurisdiction with a FEMA basement exception.
6. Modify ASCE 24, section 6.2.2, to add waterproofing criteria to allow for the accumulation of less than 3 pounds of water per 1000 square feet in 24 hours for residential buildings constructed in accordance with FEMA Technical Bulletin 10-01 or in a jurisdiction with a FEMA basement exception.

***Significant changes in the ASCE 24 from current requirements***

1. Fill is no longer required, but remains one of several flood resistant design strategies.
2. Municipalities may institute contingency plans involving human intervention to provide supplemental protection to municipal systems.

Appendix A – Technical Advisory Group Members

## Flood Resistant Design Technical Advisory Group Members

Name	Role	Organization	Representing
Greg Metz, AIA	TAG Lead, Building Plan Review Manager	DLI/CCLD	N/A
Andrea Crabtree Naves	Utilities Engineer	City of Moorhead	Municipal Engineering
Vincent DiGiorno, AIA	Commercial Architect	KOMA Architects & Engineers	Architectural Design/MN AIA
Christian Faste	Building Official	City of Burnsville	Municipal Code Enforcement
Dan Korf, PE	Construction Engineer	Houston Engineering	Engineering Design
Chris Rosival, CBO	HVACR Code Specialist	DLI/CCLD	HVAC and Refrigeration Regulation
Ceil Strauss	State Floodplain Manager	MN DNR	State Land Conservation