

IBC — Structural



2022 GROUP A PUBLIC COMMENT AGENDA

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DAVID L. LAWRENCE CONVENTION CENTER
PITTSBURGH, PA

2021 Public Comment Agenda

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S10-21

Proposed Change as Submitted

Proponents: Mike Nugent, Chair, representing ICC Building Code Action Committee (bcac@iccsafe.org); Michael O'Brian, Chair, representing FCAC (fcac@iccsafe.org)

THIS CODE CHANGE WILL BE HEARD BY THE IBC-FIRE SAFETY CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THAT COMMITTEE.

2021 International Building Code

Add new definition as follows:

RAISED-DECK SYSTEM. (For application to Chapter 15 only). A system consisting of decking or pavers supported by pedestals installed over a roof assembly to provide a walking surface.

Add new text as follows:

1511.9 Raised-deck systems installed over a roof assembly.

Raised-deck systems installed above a roof assembly shall comply with Sections 1511.9.1 through 1511.9.5.

1511.9.1 Installation.

The installation of a raised-deck system shall comply with all of the following:

1. The perimeter of the raised-deck system shall be surrounded on all sides by parapet walls or by a noncombustible enclosure approved to prevent fire intrusion below the raised-deck system. The parapet wall or enclosure shall extend above the plane of the top surface of the raised deck system.
2. A raised-deck system shall be installed above a listed roof assembly.

Exception:

Where the roof assembly is not required to have a fire classification in accordance with Section 1505.2.

3. A raised-deck system shall be installed in accordance with the manufacturer's installation instructions.
4. A raised-deck system shall not obstruct or block plumbing or mechanical vents, exhaust, or air inlets.

1511.9.2 Fire classification.

The raised-deck system shall be tested, listed and labeled with a fire classification in accordance with Section 1505. The fire classification of the raised deck system shall be not less than the fire classification for the roof covering over which it is installed.

Exception: Where the top surface of the raised deck system consists of brick, masonry or concrete materials, a fire classification is not required.

1511.9.3 Pedestals or supports.

The pedestals or supports for the raised deck system shall be installed in accordance with manufacturer's installation instructions.

1511.9.4 Structural requirements.

The raised-deck system shall be designed for wind loads in accordance with Chapter 16 and Section 1504.5. The raised-deck system shall be designed for seismic loads in accordance with Chapter 16.

1511.9.5 Roof drainage.

The raised-deck system shall not impede the operation of the roof drainage system as required by Section 1502 and the International Plumbing Code.

1511.9.6 Access and Egress.

Access to the raised-deck system shall be in accordance with Chapter 11 and egress shall be in accordance with Chapter 10.

Reason: Currently the IBC does not have any specific provisions for the design and installation of raised-deck systems. These provisions should be a subsection to Section 1511 because these systems are a roof structure over a roof assembly. A definition of "raised deck systems" is needed to ensure correct application of new requirements for these systems. This term is applicable only to Chapter 15 (same "Chapter 15 restriction" as the definition for roof assembly).

Fire test requirements for the raised deck systems are based on research studies performed for PV panels on low and steep-sloped roofs; which have general applicability to Raised Deck Systems. The following is a link to the reports for those studies:

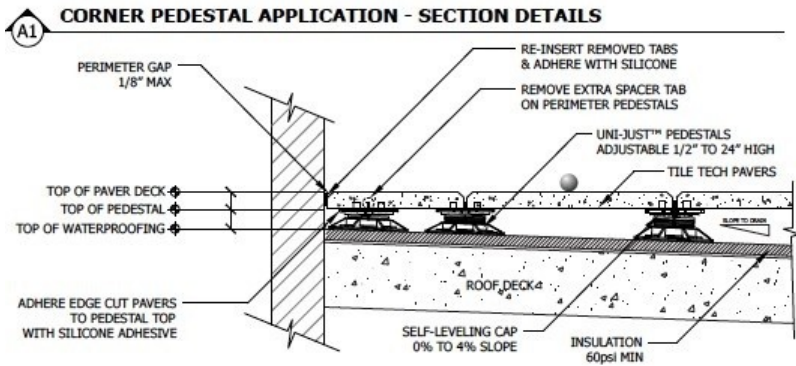
<http://www.solarabcs.org/about/publications/reports/flammability-testing/index.html>. These studies showed that when fire was able to enter the

space between the roof assembly and the panel above, it could significantly alter the original test results for the fire classification of the roof assembly. By providing a protective barrier at the perimeter such as a parapet wall, roof curb or intersection with vegetative roof to prevent fire intrusion into the space, there would not be any concern with affects to the fire classification of the roof assembly underneath.

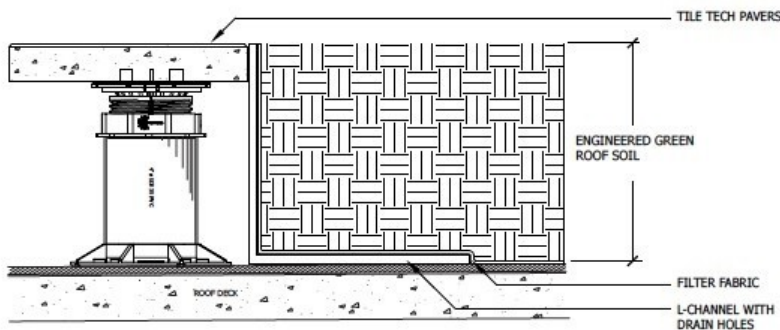
The manufacturer’s installation instructions cover how the pedestals and supports are to be installed for these systems.

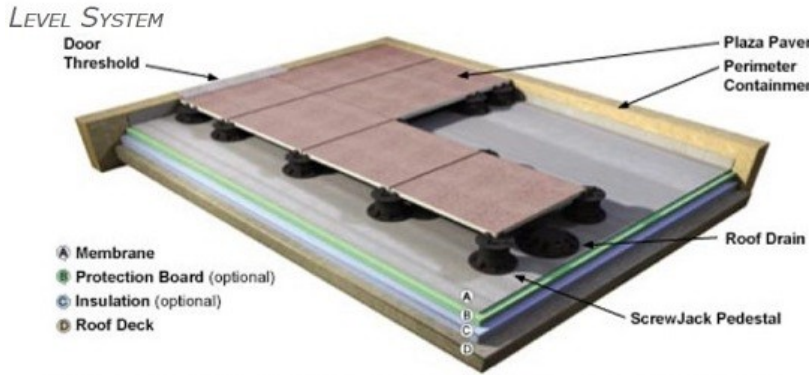
Three pointers (code references) for structural; roof water drainage; and access and egress are provided to ensure that these other safety and performance requirements essential for roofs are applied to Raised Deck Systems. The pictures included with this code change illustrate examples of what a typical raised deck system consists of, including a photograph of an actual rooftop pool deck, two cross-sections of a typical raised deck system, and an isometric view of the typical components.

This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2020 the BCAC has held several virtual meetings open to any interested party. In addition, there were numerous virtual Working Group meetings for the current code development cycle, which included members of the committee as well as interested parties. Related documents and reports are posted on the BCAC website at BCAC.



GREEN ROOF CONTAINMENT





Cost Impact: The code change proposal will increase the cost of construction. The code change will increase the cost of construction, for those who decide to install these types of systems. However, this provides clarity on what requirements are to be applied for these installations.

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Public Hearing Results

Committee Action:

As Modified

Committee Modification:

1511.9.1 Installation. The installation of a *raised-deck system* shall comply with all of the following:

1. The perimeter of the *raised-deck system* shall be surrounded on all sides by parapet walls or by a noncombustible enclosure approved to prevent fire intrusion below the *raised-deck system*. The parapet wall or enclosure shall extend ~~above the plane of~~ at least to the top surface of the *raised deck system*.
2. A *raised-deck system* shall be installed above a listed roof assembly.

Exception:

Where the roof assembly is not required to have a fire classification in accordance with Section 1505.2.

3. A *raised-deck system* shall be installed in accordance with the manufacturer's installation instructions.
4. A *raised-deck system* shall not obstruct or block plumbing or mechanical vents, exhaust, or air inlets.

1511.9.2 Fire classification. The *raised-deck system* shall be ~~tested, listed and labeled~~ identified with a fire classification in accordance with Section 1505 ~~and shall be tested in accordance with either Section 1511.9.2.1 or Section 1511.9.2.2.~~ The fire classification of the *raised deck system* shall be not less than the fire classification for the *roof covering* over which it is installed.

~~**Exception:** Where the top surface of the *raised deck system* consists of brick, masonry or concrete materials, a fire classification is not required.~~

1511.9.2.1 Fire testing of the raised deck system installed over a classified roof assembly. The *raised deck system* shall be tested separately from the roof assembly over which it is installed. The fire classification of the *raised deck system* shall be not less than the fire classification for the roof assembly over which it is installed.

~~**Exception:** Where the top surface of the *raised deck system* consists of brick, masonry or concrete materials, fire testing of the *raised deck system* is not required.~~

1511.9.2.2 Fire testing of the raised deck system together with the roof assembly. The roof assembly and the *raised deck system* shall be tested together.

1511.9.4 Structural requirements. The *raised-deck system* shall be designed for ~~wind~~ all applicable loads in accordance with Chapter 16 and performance requirements in Section 1504.5. ~~The *raised-deck system* shall be designed for seismic loads in accordance with Chapter 16.~~

Committee Reason: The committee determined the modification corrects terminology problems, identified multiple test path methods, and corrects wind and seismic load requirements. The proposal provides design options and reduces the potential hazard. One of the committee members asked

the proponent to address the following in the public comment phase:

- 1) Identify parapet.
- 2) Section 1511.9.5 needs to address the snow accumulation issue.
- 3) Section 1511.9.1, #4 needs to address obstruction of roof drainage.
- 4) Section 1511.9.2 exception could include a material standard for thickness.
- 5) Section 1511.9.3 needs to address the load distribution of the intersect between roof membrane with foam plastic underneath.
- 6) Consider the dead load of this system on the roof structure.

For the group B hearing, one of the committee members suggested that the proponent consider introducing more details for Ballasted photovoltaic panel systems. The only reference for those systems is in section 1607.14.4.5, Ballasted photovoltaic panel systems).(Vote: 12-1)

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Individual Consideration Agenda

Public Comment 1:

IBC: 1511.9.1, 1511.9.2.1, 1511.9.5, 1511.9.6

Proponents: Mike Nugent, representing ICC Building Code Action Committee (bcac@iccsafe.org); Michael O'Brian, representing FCAC (fcac@iccsafe.org) requests As Modified by Public Comment

Further modify as follows:

2021 International Building Code

1511.9.1 Installation . The installation of a *raised-deck system* shall comply with all of the following:

1. The perimeter of the *raised-deck system* shall be surrounded on all sides by ~~parapet~~walls or by a noncombustible enclosure approved to prevent fire intrusion below the *raised-deck system*. The ~~parapet~~ wall or enclosure shall extend at least from the roof assembly to the top surface of the raised deck system. The enclosure shall not impede roof drainage in accordance with Section 1511.9.5.
2. A *raised-deck system* shall be installed above a listed roof assembly.

Exception: Where the roof assembly is not required to have a fire classification in accordance with Section 1505.2.

3. A *raised-deck system* shall be installed in accordance with the manufacturer's installation instructions.
4. A *raised-deck system* shall not ~~obstruct or block~~ impede the operation of plumbing or mechanical vents, exhaust, or air inlets, or roof drains. Where required, access for inspection, cleaning or maintenance shall be provided .

1511.9.2.1 Fire testing of the raised deck system installed over a classified roof assembly . The raised deck system shall be tested separately from the roof assembly over which it is installed. The fire classification of the raised deck system shall be not less than the fire classification for the roof assembly over which it is installed.

Exception: Where the ~~top surface decking or pavers~~ of the raised deck system consists of brick, masonry, ~~or concrete materials, or other noncombustible materials,~~ fire testing of the raised deck system is not required.

1511.9.5 Roof drainage . The raised-deck system, including the wall or enclosure between the roof assembly and the raised deck, shall be designed and installed to not impede allow for the operation of the roof drainage system as required by Section 1502 and the International Plumbing Code. The roof structure shall be designed to support any standing water resulting from the installation of the raised-deck system.

1511.9.6 Access-Accessibility and Egress . ~~Access to the the~~ The raised-deck system shall be accessible in accordance with Chapter 11 and means of egress shall be provided in accordance with Chapter 10.

Commenter's Reason: This Public Comment is in response to the request from the Code Development Committee (CDC) to further refine the proposed new section for raised deck systems. The BCAC worked with the CDC member to make sure the specific concerns were properly addressed.

Fundamentally, the concerns were to clarify necessary roof drainage and roof structure support, while not adversely impacting fire safety, which were specifically addressed as follows:

- 1) Identify parapet. – The term “parapet” is proposed to be removed from Section 1511.9.1. This action re-focuses the purpose of the enclosure surrounding the raised deck system. The “enclosure” is intended to serve as a flame “shield” to prevent flame propagation underneath the raised deck.

- 2) Section 1511.9.5 needs to address the snow accumulation issue. – Snow accumulation varies depending on the location. Proposed change requires the registered design professional and the installer to appropriately design and install to address for local conditions to ensure roof drainage. The design shall consider water migration through the deck system and for water flow to drains from other portions of the roof.
- 3) Section 1511.9.1, #4 needs to address obstruction of roof drainage. – Roof drains have been added to the list of what shall not be obstructed. Requirement for access to be provided for inspection, cleaning, and maintenance have been added to provide suitable means to address any field issues.
- 4) Section 1511.9.2 exception could include a material standard for thickness. – The concern raised was to address the potential of a thin superstrate of noncombustible material, backed with combustible material, being accepted without appropriate fire testing. Instead of specifying a thickness of the top surface, where decking or pavers are noncombustible, the system is not required to be fire tested, even in those situations where the support structure underneath utilizes combustible materials.
- 5) Section 1511.9.3 needs to address the load distribution of the intersect between roof membrane with foam plastic underneath. – This is addressed through both the manufacturer’s installation instructions, and also the requirements in Section 1511.9.4 for addressing all structural loading.
- 6) Consider the dead load of this system on the roof structure. – The floor modification at the Code Action Hearing (Thai 12), which was part of the modifications approved by the Committee addressed this in Section 1511.9.4 already.

Additional editorial cleanup is proposed for Section 1511.9.6 for clarification and consistency with G1-21.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. The code change will increase the cost of construction, for those who decide to install these types of systems. However, this provides clarity on what requirements are to be applied for these installations.

Public Comment# 2656