

Elevated PV Support Structures (7528)

IBC: 202 (New), 3111.3.5 (New), 3111.3.5.1 (New), 3111.3.5.2 (New), 3111.3.6, 3111.3.6.1

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2021 International Building Code

Add new text as follows:

202 Definitions

PHOTOVOLTAIC (PV) PANEL SYSTEM, GROUND-MOUNTED. An independent photovoltaic (PV) panel system without useable space underneath, installed directly on the ground.

PHOTOVOLTAIC (PV) SUPPORT STRUCTURE, ELEVATED. An independent photovoltaic (PV) panel support structure designed with useable space underneath with minimum clear height of 7 feet 6 inches (2286 mm), intended for secondary use such as providing shade or parking of motor vehicles.

3111.3.5 Elevated photovoltaic (PV) support structures *Elevated PV support structures shall comply with either 3111.3.5.1 or 3111.3.5.2.*

Exception: *Elevated PV support structures that are installed over agricultural use.*

3111.3.5.1 PV panels installed over open-grid framing or non-combustible deck. *Elevated PV support structures with PV panels installed over open-grid framing or over a noncombustible deck shall have PV panels tested, listed, and labeled with a fire type rating in accordance with UL 1703 or with both UL 61730-1 and UL 61730-2. Photovoltaic panels marked “not fire rated” shall not be installed on elevated PV support structures.*

3111.3.5.2 PV panels installed over a roof assembly *Elevated PV support structures with a PV panel system installed over a roof assembly shall have a fire classification in accordance with Section 1505.9.*

Revise as follows:

3111.3.5.6 Ground-mounted photovoltaic (PV) panel systems. Ground-mounted photovoltaic panel systems shall be designed and installed in accordance with Chapter 16 and the *International Fire Code*.

3111.3.5.6.1 Fire separation distances. Ground-mounted photovoltaic panel systems shall be subject to the *fire separation distance* requirements determined by the local jurisdiction.

Reason: The primary purpose of this proposal is to establish appropriate fire testing and listing criteria for overhead photovoltaic (PV) support structures that could have people or vehicles in the space beneath them. Sometimes referred to as “solar shade structures,” they are most commonly constructed over vehicle parking spaces of surface parking lots, are sometimes built on the uppermost level of parking garages, but could be built in a variety of locations with or without cars parked beneath. Overhead PV structures are referenced in 2021 IBC Section 1607.14.4, and in 2019 California Building Code Section 503.1, but without any definitions.

In 2021 IBC Section 1607.14.4.3, these structures are described as “Structures with open grid framing and without a roof deck or sheathing supporting photovoltaic panel systems.”

In 2019 California Building Code Section 503.1, Exception 2, these structures are described as: “... solar photovoltaic panels supported by a structure with no use underneath...” In Exception 3, there is a more-specific description by location: “... solar photovoltaic panels supported by a structure over parking stalls ...”

Ground-mounted photovoltaic panel systems are referenced in the 2021 I-codes, in IBC Sections 1607.4.4 and 3111.3.5; in IRC Section R324.7; and in IFC Section 1205.5.

For the proposed definition of Elevated PV Support Structure note the minimum height threshold of 7'-6" is consistent with IBC 1003.2.

Most PV panels in the marketplace have been fire tested and assigned a “type rating” in accordance with UL 1703. However, some PV panels might not have that fire testing, and could be marked “not fire rated.” This proposal

clarifies that PV panels marked “not fire rated” cannot be used on elevated/overhead PV structures that could have people or cars beneath them, with or without a full roof assembly.

Where elevated PV structures have PV panels mounted over open-grid framing with no roof deck or sheathing cannot achieve a “fire classification” because there is no combustible roof covering to ignite in a UL 2703 spread-of-flame or burning brand test. Therefore, it is sufficient protection to install only type-rated modules. The same is true when PV panels are installed directly over noncombustible metal sheathing without a stand-off mounting system.

Where elevated PV structures have a roof assembly and PV panels are rooftop mounted over that roof assembly, then those structures must have a fire classification according to Section 1505.9. There are several different stakeholder groups that will benefit from this proposal.

This proposal was prepared by the Sustainable Energy Action Committee (SEAC), a forum for all stakeholders (including, but not limited to, AHJs, designers, engineers, contractors, first responders, manufacturers, suppliers, utilities, and testing labs) to collaboratively identify and find solutions for issues that affect the installation and use of solar energy systems, energy storage systems, demand response, and energy efficiency. The purpose is to facilitate the deployment and use of affordable, clean and renewable energy in a safe, efficient, and sustainable manner.

All recommendations from SEAC are approved by diverse stakeholders through a consensus process.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. It encourages the use of solar without adversely impacting safety.