

# 2021 Building-related Codes Training

## Residential Code

Greater San Antonio Builders Association (GSABA)

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October 19, 2022

Presented by:

Eloy Resendez, Chief Residential Inspector



2021

2021 BUILDING RELATED CODES

**CODE UPDATES**

DEVELOPMENT SERVICES DEPARTMENT





## USEFUL TIPS

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Helpful information to know

# PERFORMANCE



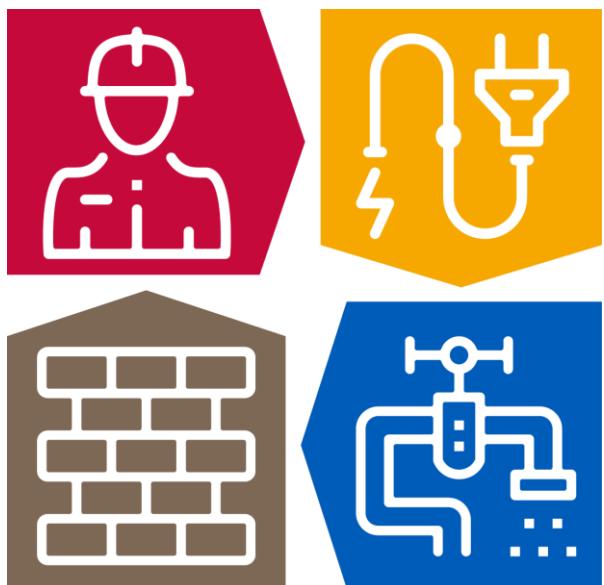
## DEVELOPMENT SERVICES



Metrics	Goals	FY2022													
		FY21	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	FY2022
<b>No. of Building Plans Submitted</b>															
Standard Submittal	No Goal	4,166	275	182	268	296	298	417	367	439	271	167	173	149	3,302
After Hour Submittal	No Goal	2,000	176	160	124	197	192	252	221	222	182	69	67	53	1,915
All Residential Plans	No Goal	6,166	451	342	392	493	490	669	588	661	453	236	240	202	5,217
<b>Average Business Days for Initial Plan Review</b>															
All Plan Reviews	3 Days	3	7	2	3	3	3	3	3	2	2	3	2	2	3
<b>Completeness Reviews</b>															
All Plan Reviews	3 Days	*	*	*	*	*	*	4	2	2	3	3	2	3	3
<b>No. of Scheduled Residential Inspections</b>															
Building	No Goal	40,099	3,130	3,329	3,552	4,621	4,487	5,328	5,274	5,055	5,528	5,009	5,762	5,291	56,366
Electrical	No Goal	34,502	2,447	2,486	3,503	4,521	3,982	4,930	4,877	5,139	4,968	4,297	5,149	4,800	51,099
Mechanical	No Goal	15,765	1,007	939	1,556	1,703	1,661	2,248	2,016	2,246	2,441	2,217	2,677	2,479	23,190
Plumbing	No Goal	51,355	3,928	3,697	5,212	6,004	5,916	7,448	7,640	7,186	7,651	6,354	6,734	6,670	74,440
<b>Total</b>	No Goal	141,721	10,512	10,451	13,823	16,849	16,046	19,954	19,807	19,626	20,588	17,877	20,322	19,240	205,095
<b>No. of Residential Inspections Completed as Scheduled</b>															
Building	No Goal	38,097	2,775	2,819	3,030	3,207	4,320	5,164	4,918	4,861	5,270	4,807	5,585	5,022	51,778
Electrical	No Goal	31,193	2,080	2,041	2,721	3,361	3,833	4,754	4,336	4,907	4,776	4,060	5,008	4,512	46,389
Mechanical	No Goal	15,041	847	748	1,367	1,289	1,625	2,207	1,897	2,203	2,368	2,095	2,609	2,388	21,643
Plumbing	No Goal	44,805	3,802	3,290	4,176	5,580	5,898	7,418	7,556	7,164	7,641	6,350	6,726	6,639	72,240
<b>Total</b>	No Goal	129,136	9,504	8,898	11,294	13,437	15,676	19,543	18,707	19,135	20,055	17,312	19,928	18,561	192,050
<b>% of Residential Inspections Completed as Scheduled</b>															
Building	95%	95%	89%	85%	85%	69%	96%	97%	93%	96%	95%	96%	97%	95%	92%
Electrical	95%	90%	85%	82%	78%	74%	96%	96%	89%	95%	96%	94%	97%	94%	91%
Mechanical	95%	95%	84%	80%	88%	76%	98%	98%	94%	98%	97%	94%	97%	96%	93%
Plumbing	95%	87%	97%	89%	80%	93%	100%	100%	99%	100%	100%	100%	100%	100%	97%
<b>Total</b>	95%	91%	90%	85%	82%	80%	98%	98%	94%	97%	97%	97%	98%	96%	94%
<b>Framing</b>															
First Inspection	No Goal	61%	53%	47%	53%	48%	49%	52%	52%	56%	54%	49%	51%	47%	53%
Second Inspection	No Goal	86%	81%	76%	78%	78%	79%	78%	81%	81%	82%	79%	80%	77%	80%
Third Inspection	No Goal	94%	92%	91%	92%	90%	91%	90%	92%	93%	92%	92%	90%	92%	92%
Fourth Inspection	No Goal	98%	97%	96%	96%	95%	96%	96%	97%	97%	98%	97%	97%	96%	97%
Fifth Inspection	No Goal	99%	99%	98%	99%	98%	99%	99%	99%	99%	99%	99%	99%	100%	100%
<b>Final</b>															
First Inspection	No Goal	67%	63%	59%	68%	67%	71%	71%	70%	70%	65%	61%	68%	68%	69%
Second Inspection	No Goal	93%	92%	91%	92%	92%	94%	92%	91%	93%	93%	91%	93%	94%	93%
Third Inspection	No Goal	99%	98%	99%	99%	98%	98%	98%	98%	98%	99%	97%	99%	99%	99%
Fourth Inspection	No Goal	100%	99%	100%	100%	99%	99%	100%	100%	98%	100%	99%	99%	100%	100%
Fifth Inspection	No Goal	100%	100%	100%	100%	100%	100%	100%	100%	99%	100%	100%	100%	100%	100%

- Performance measures are available on website [www.sanantonio.gov/DSD](http://www.sanantonio.gov/DSD) Under "About", "Performance"

# CONTRACTOR CONNECT

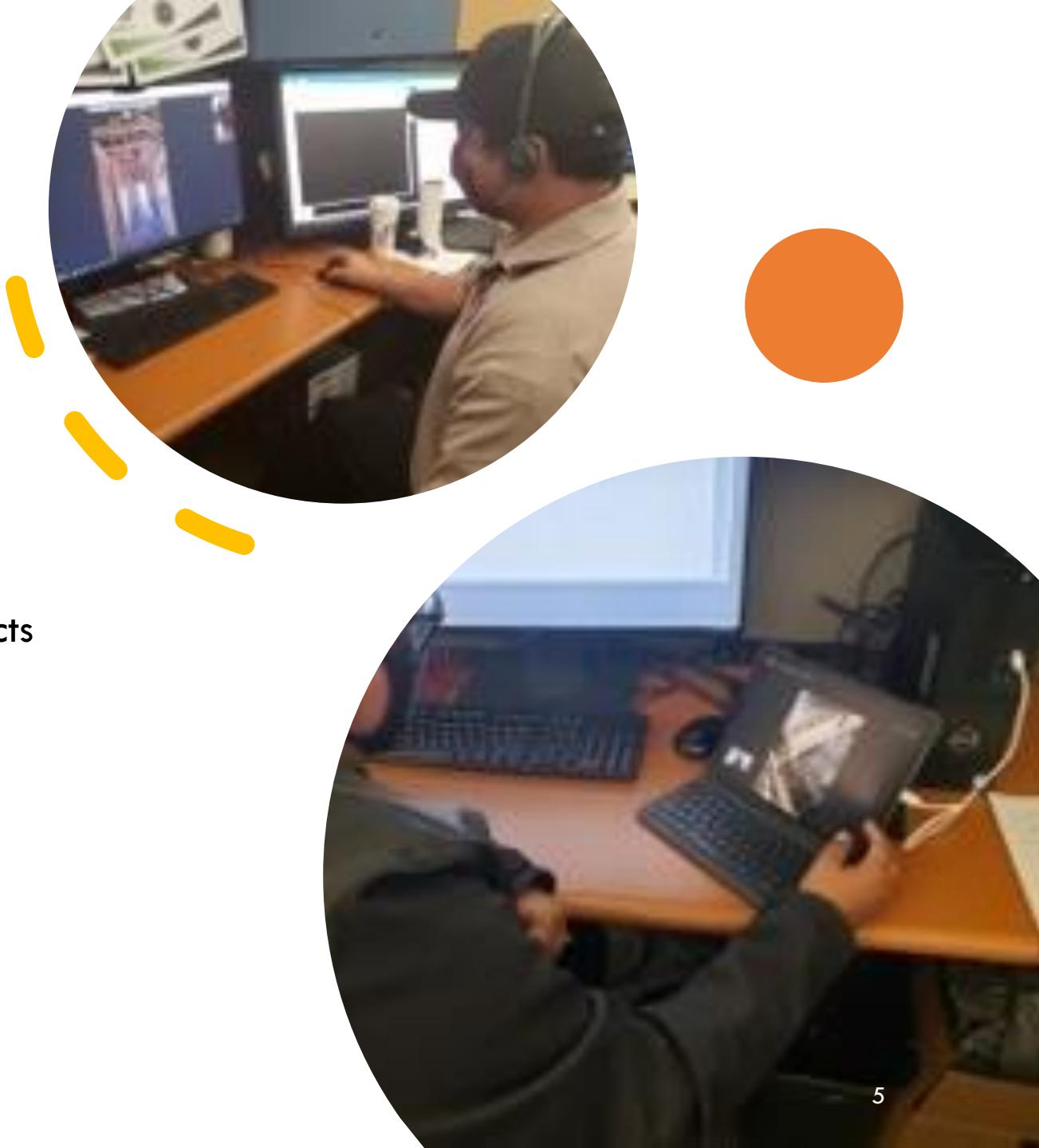


**CONTRACTOR  
CONNECT**

CONTRACTOR REQUIREMENTS	REGISTERED CONTRACTOR	REGISTERED CONTRACTOR PLUS	PREMIER
<b>Application &amp; registration fee</b>	✓	✓	✓
<b>Code of Ethics Acknowledgement Form</b>	✓	✓	✓
<b>General Insurance Requirements</b>	✓	✓	✓
<b>FBI Background</b>	✓	✓	✓
<b>Current Permitting Fees</b>		✓	✓
<b>No building-related contractor infractions or complaints</b>		✓	✓
<b>Building-related training through DSD University</b> • minimum of two DSD training events per year, or • other training approved by the Building Official		✓	✓
<b>Minimum Five Year Registration with DSD</b>	✓		✓
<b>One contractor agent maintains any:</b> • residential International Code Council Certification (ICC), or <a href="https://www.iccsafe.org/certification-exam-catalog/">https://www.iccsafe.org/certification-exam-catalog/</a> • other certification approved by the Building Official			✓

# REMOTE VIDEO INSPECTIONS (RVIs)

- RVIs offered for the following inspections:
  - Building
  - Mechanical
  - Electrical
  - Plumbing
- First time inspections, and reinspection for projects with 4 violations or less
- Offered at no additional cost
  - Promotes and facilitates local economic growth
- Option to ensure permitted work complies with adopted building-related safety codes
- More information on IB 240



# NEW CONSTRUCTION

- When pulling permits:
  - All trades and inspections will be under combination permit
  - [Buildsaocmteam@sanantonio.gov](mailto:Buildsaocmteam@sanantonio.gov)
- Make sure general contractor includes all sub-contractor trades on combination permit so they can call in inspections
- An Engineers letter is **not** an automatic approval for frame inspection (done in phases)

## Sec. 10-11. - Inspections and testing.

- (a) **General.** Construction or work for which a permit is required is subject to inspection by the *Building Official* and such construction work **shall remain accessible and exposed for inspection purposes until approved**. Approval following an inspection is not an approval of a violation of the provisions of this chapter or of other ordinances of the city. Inspections presuming to give authority to violate or cancel the provisions of this chapter or of other ordinances of the jurisdiction are not valid. **It is the duty of the permit applicant to cause the work to remain accessible and exposed for inspection purposes.** Neither the *Building Official* nor the city are liable for expense entailed in the removal or replacement of any material required to allow inspection.
- (7) **Frame inspection.** Framing inspections shall be made after the roof deck or sheathing, all framing, fireblocking and bracing are in place and pipes, chimneys and vents to be concealed are complete and the rough electrical, plumbing, heating wires, pipes and ducts are approved.

# INSPECTION PROCESS

- Frame #1 includes 2 inspections – Frame Tie down/wind bracing and frame and soffit (exterior perimeter inspection)
- Frame #2 – After all trades are completed and roof is dried, remainder of frame can be inspected
- Final inspection:
- TOPs is approved after frame and foundation inspections have been approved
- Insulation is cleared under IB167 along with the following inspections:
  - Insulation
  - Insulation with letter
  - Energy – Air Leakage Blower Door
  - Energy – Residential electrical system
  - Energy – hot water system
  - Energy - Residential insulation air barrier
  - Energy - Residential mechanical system
  - Energy – residential windows



# RESIDENTIAL ENERGY COMPLIANCE FORM



## Residential Energy Compliance Form – Directions for Use:

Depending on the Compliance Path chosen, the following tables indicates which portions of the following form are required to be submitted in BuildSA as pdf attachments to the permit record.

Submittal will create a review for the City who will then clear the appropriate Energy inspections.

The Simulated Performance Path report, the ERI report, and the HERS report may be submitted either as a report or as a certification using the following form. If not using this form, submit a pdf printout of energy testing results during or after construction.

<b>New Construction</b>			
<b>Prescriptive Path R401 through R404</b> <ul style="list-style-type: none"> <li>Building Envelope Air Leakage Test</li> <li>HVAC Duct Leakage Test</li> <li>Insulation materials, R-Value, and Continuous Air Barrier</li> <li>UA Tradeoff/Fenestration U-Factors, Solar Heat Gain Coefficients</li> <li>Mechanical System - whole house ventilation and insulation</li> <li>Plumbing System - insulation and hot water loops</li> <li>Lighting System - Percent high efficacy lamps</li> </ul>	<b>Simulated Performance R405</b> <ul style="list-style-type: none"> <li>Performance Path Compliance Report or Certification</li> <li>Building Envelope Air Leakage Test</li> <li>Fenestration U-Factors, Solar Heat Gain Coefficients</li> <li>HVAC Duct Leakage Test</li> <li>Mechanical System - whole house ventilation and insulation</li> <li>Plumbing System - insulation and hot water loops</li> <li>Lighting System - Percent high efficacy lamps</li> </ul>	<b>Energy Rating Index R406</b> <ul style="list-style-type: none"> <li>ERI Report – As Built or Certification</li> <li>Plumbing System - insulation of hot water piping</li> </ul>	<b>Home Energy Rating System</b> <ul style="list-style-type: none"> <li>RESNET HERS report or Certification</li> </ul>
<b>Residential Additions</b>			
<b>Required Sections:</b> <ul style="list-style-type: none"> <li>Insulation Materials, R-Value</li> <li>Fenestration U-Factors, Solar Heat Gain</li> </ul>	<b>If Applicable, Sections:</b> <ul style="list-style-type: none"> <li>HVAC Duct Air Leakage</li> <li>Mechanical System (HVAC)</li> <li>Plumbing Hot Water System</li> <li>Lighting - LED</li> </ul>		



CITY OF SAN ANTONIO  
DEVELOPMENT SERVICES DEPARTMENT  
P. O. BOX 839966 | SAN ANTONIO, TEXAS 78283-3966



## RESIDENTIAL ENERGY COMPLIANCE FORM

Project Address: \_\_\_\_\_

Owner/Builder: \_\_\_\_\_

Building Permit Number: \_\_\_\_\_

Project is a (check one) New Building: \_\_\_\_\_ Addition: \_\_\_\_\_

Indicate the **Compliance Path** chosen by the home designer (check one):

Prescriptive \_\_\_\_\_ Performance \_\_\_\_\_ ERI \_\_\_\_\_ HERS \_\_\_\_\_

### TEST CERTIFICATIONS:

**Building Envelope Air Leakage Tests** Test/Inspection Date: \_\_\_\_\_

By entering AP# & Date above, I certify that the building envelope has been tested per ASTM E 779 or ASTM E 1827 and the air leakage does not exceed five air changes per hour per Section R402.4.1.2 of the 2018 IECC.

Date:	Phone:	Certification Number or Accredited Rating Provider:
Certifying Company Name:	Certifying Company Address:	
Certifying Name (print or type):		Signature:

**Batch Testing** of the Building Envelope and Ducts for Air Leakage – R-2, R-3 and R-4 Occupancies (Not applicable for Single Family, Duplex or Townhomes)

Total Number of Dwelling Units \_\_\_\_\_ Number of Dwelling Units Tested \_\_\_\_\_  
(Sign the Certification Statement on the next page)

**HVAC Duct Air Leakage Tests** Test/Inspection Date: \_\_\_\_\_

(For all new buildings as well as residential additions with installation of a new separate HVAC system)

By entering AP# & Date above, I certify that the rough-in construction duct test results for air leakage meet the requirement of Section 403.3.3 of the 2018 IECC.  
(Sign the Certification Statement on the next page)

**Performance Path, ERI Path, or HERS Path** (if either compliance path used in the energy design)

By checking this box, I certify that the Performance Path report, the ERI report, or the HERS report shows that the home meets the IECC or RESNET minimum energy conservation requirements. (Alternatively, to submittal of this form submit the actual as-built report in a pdf format. The ERI or HERS report must be by and signed by a RESNET Certified Home Energy Rater.)



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By checking the following, and signing below, I certify that the indicated energy systems were installed per the energy conservation design and meets the minimum requirements of the 2018 International Energy Conservation Code or RESNET.

**Insulation Materials, R-Value, and Continuous Air Barrier as installed:**

R-Value Walls \_\_\_\_\_ R-Value Ceiling \_\_\_\_\_ R-Value Floor (pier on beam) \_\_\_\_\_

**Fenestration U-Factors, Solar Heat Gain Coefficients as installed:**

Window U-Factor \_\_\_\_\_ Window SHGC \_\_\_\_\_

**Mechanical System Insulation, Equipment Size/Efficiencies, and Mechanical Whole Home Ventilation**

Measured whole house ventilation rate (cfm) \_\_\_\_\_  
Timer Settings for percent % run time if ventilation is not continuous: \_\_\_\_\_

**Plumbing System Hot Water Piping Insulation and Controls for Hot Water Loop Systems**

R-Value of hot water piping insulation \_\_\_\_\_

**Lighting System**

Percent of High Efficacy Lamps as installed \_\_\_\_\_

### CERTIFICATION STATEMENT:

At the time of this test/inspection, all items checked and noted above were tested and/or inspected in accordance with the requirements of the Residential provisions of the 2018 International Energy Conservation Code or RESNET, and were found to be in conformance with the energy model as designed and approved by the City of San Antonio.

Date:	Phone:	Company Name
Company Address:		
Certifying Name (print or type):		Certifying Name (Signature):

# VENTILATION

- Proper code ventilation still required when no soffit ventilation is provided due to fire rated requirements

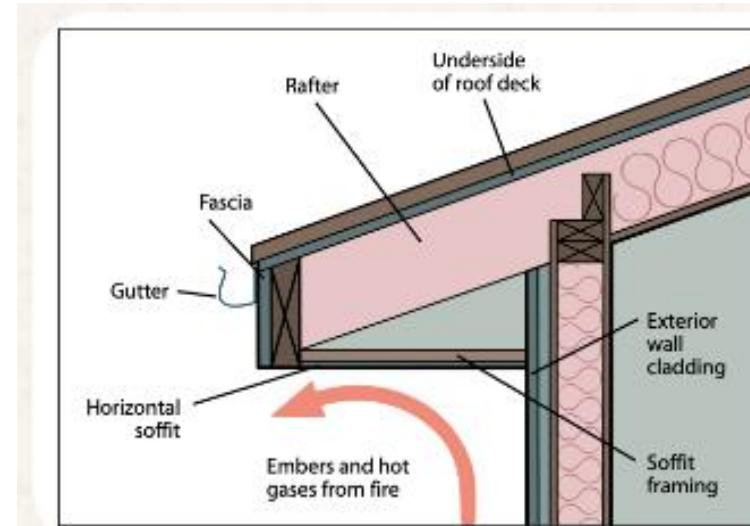
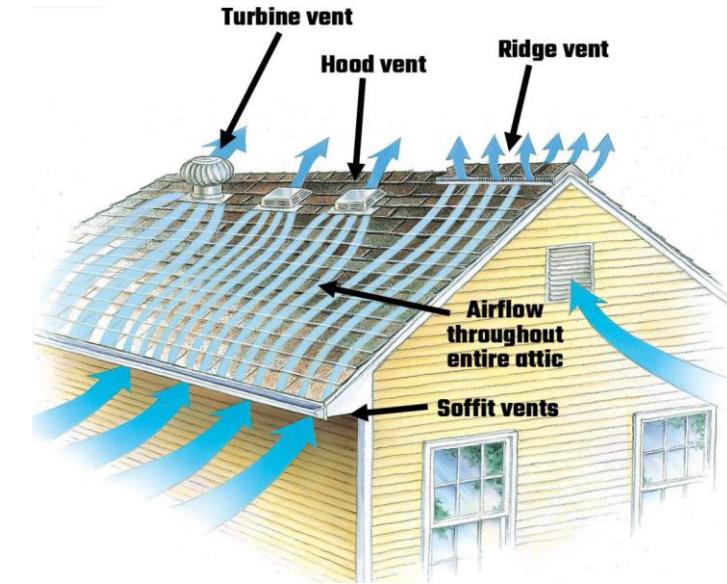


Figure 3. An enclosed overhang with a horizontal soffit.



CITY OF SAN ANTONIO  
DEVELOPMENT SERVICES DEPARTMENT  
MEMORANDUM

# RADIANT BARRIER

- If radiant barrier is not installed, please provide alternative

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TO: All Development Services Customers  
FROM: Amin Tohmaz, PE, CBO  
SUBJECT: Radiant Barrier Material Shortage  
DATE: March 26, 2021 / April 12, 2021 /January 3, 2022/revised September 23,2022

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#### SUMMARY:

The COVID-19 pandemic has had an impact on the construction industry in several ways and has required adjustments in the construction process as well as in our department. Recently, Development Services has been notified by home builders and customers about the upcoming material shortage of radiant barrier decking. Per Section 10-92 of the Chapter 10 Amendments, a radiant barrier is a requirement. Along with the exceptions listed below, Development Services shall also allow alternative materials or options for the duration of six months. This period shall begin on September 23, 2022 and end on March 31, 2023. On March 31<sup>st</sup>, Development Services will re-evaluate the radiant barrier shortage and determine if an extension is warranted.

#### CODE REQUIREMENT:

*Sect. 10-92*

*Section R402.6, Radiant Barrier, is added to read as follows:*

**R402.6 Radiant Barrier.** In new dwellings, a roof radiant barrier with an emittance of 0.10 or less as tested in accordance with ASTM C-1371 or ASTM E-408 is required above conditioned spaces. The radiant barrier shall be installed according to the manufacturer's instructions.

#### Exceptions:

1. Roofs covered with materials that have a solar reflectance of 0.4 or greater.
2. Residential buildings with sealed attics such as foam type insulation or similar.
3. Residential buildings with all mechanical equipment and all ductwork located wholly within the conditioned space.

#### ALTERNATIVES:

1. Radiant barrier installed at bottom side of roof deck meeting "e" value (emissivity) of .23 or better in accordance with ASTM C-1371.
2. Sprayed on radiant barrier product meeting ASTM C-1371 or ASTM E-408.
3. For an alternate material, design or method of construction, provide information indicating the equivalency of the alternative to the radiant barrier. The supporting documentation may be submitted by an Engineer, Architect or Certified Home Energy Rater. Please submit information to the Building Official for approval.
4. If the builder is providing an alternative to the radiant barrier, the builder can no longer advertise the use of radiant barrier for the period of September 23, 2022 to March 31, 2023.

Please submit product data sheet information to Chief Combination Inspector Eloy Resendez or contact him at 210 207-0148.

# TOP 10 BUILDING FRAME TURNDOWNS

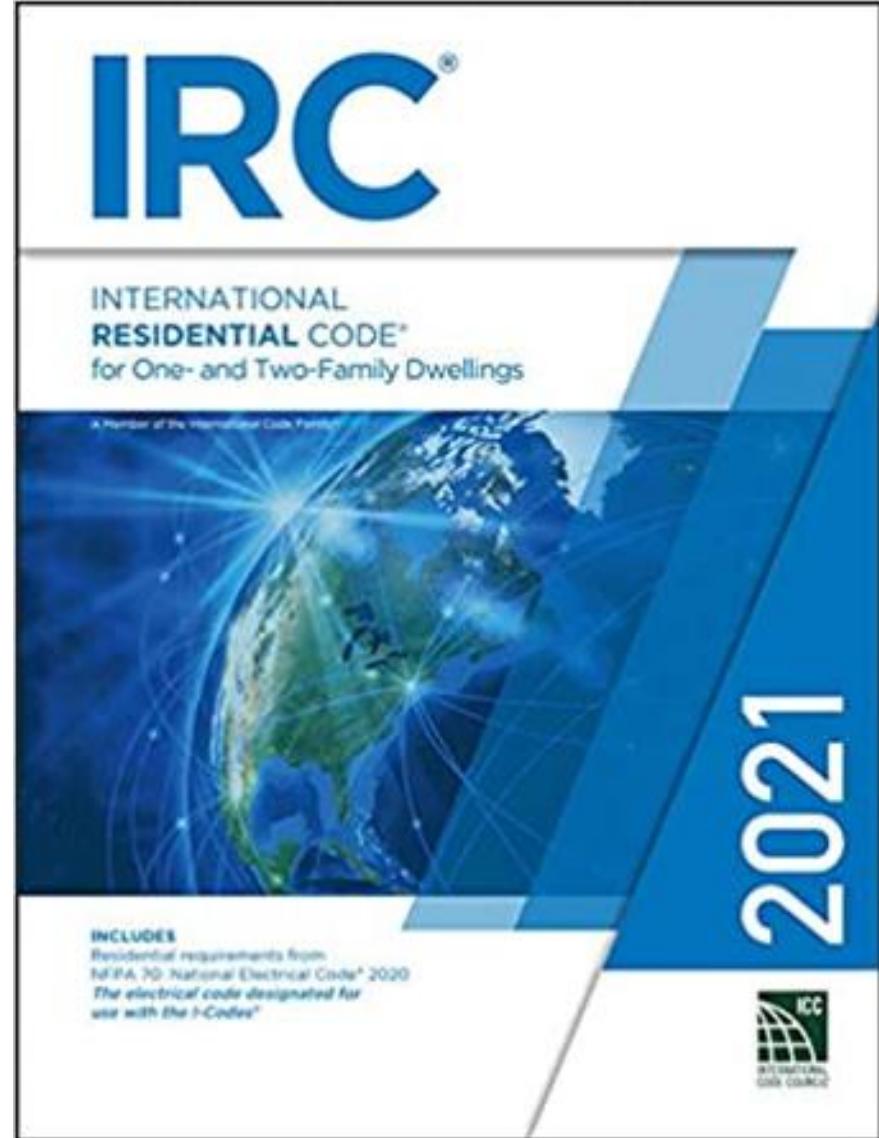
<b>1</b>	No plans onsite
<b>2</b>	Wind bracing not installed as per plan
<b>3</b>	Improper installation/bracing on trusses (lateral bracing)
<b>4</b>	Load bearing/shear walls (anchors, spacing, hold down or straps)
<b>5</b>	Open penetrations not sealed; or fire blocking required
<b>6</b>	Engineered structural damage or modified Engineer letter required
<b>7</b>	Not ready (incomplete trade permits & previous corrections)
<b>8</b>	Missing lintels or not properly attached
<b>9</b>	Beam and soffit covered prior inspection
<b>10</b>	Load bearing walls over bored or over notched
<b>11</b>	Stairs not in compliance – stair rise and run

# TOP 10 BUILDING FINAL TURNDOWNS

<b>1</b>	Address not posted
<b>2</b>	House locked; no contact information left on inspection request
<b>3</b>	No plans onsite
<b>4</b>	Missing safety glazing where required
<b>5</b>	Stairs not in compliance – stair rise, run, handrail & guardrail
<b>6</b>	Not ready for inspection, previous corrections not completed
<b>7</b>	Missing smoke/carbon monoxide detectors
<b>8</b>	Self closing devices missing on door leading to garage
<b>9</b>	Missing Energy Compliance sticker on electric panel
<b>10</b>	UD design not met on height of thermostat and light switches. UD design ramps exceed approved grade.

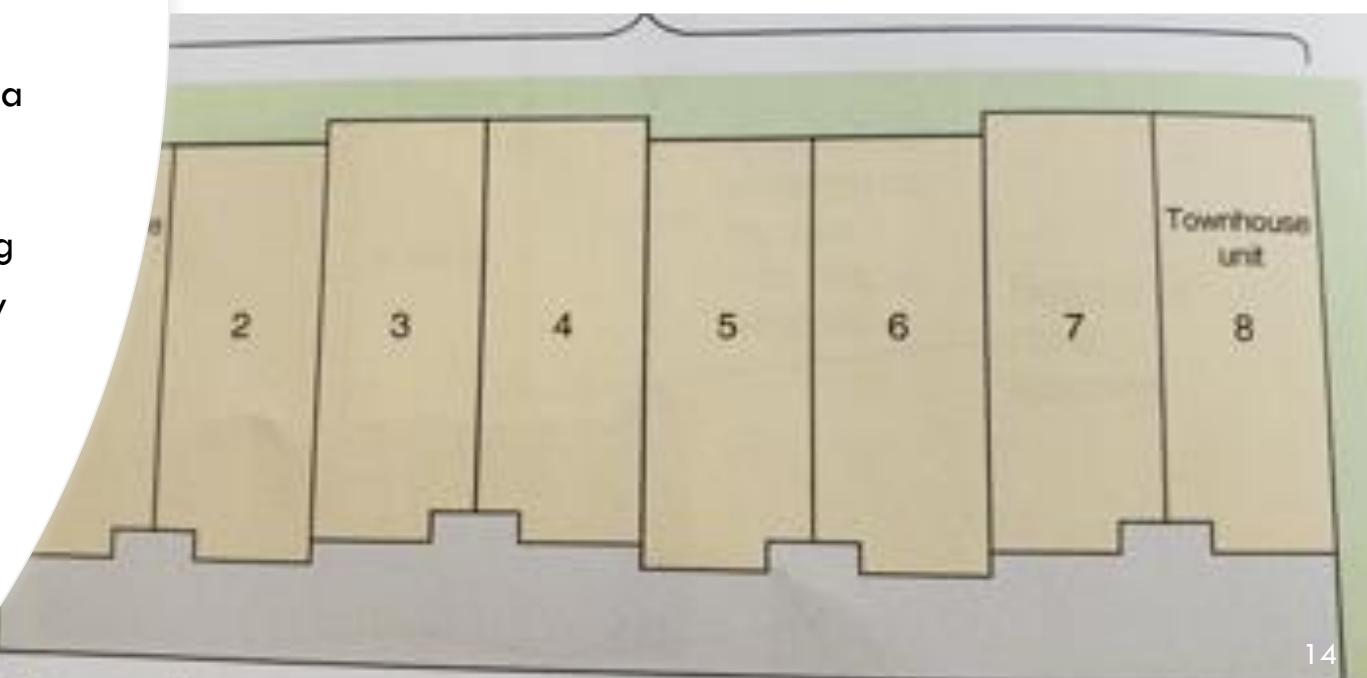
# 2021 IRC

## Significant Code Changes



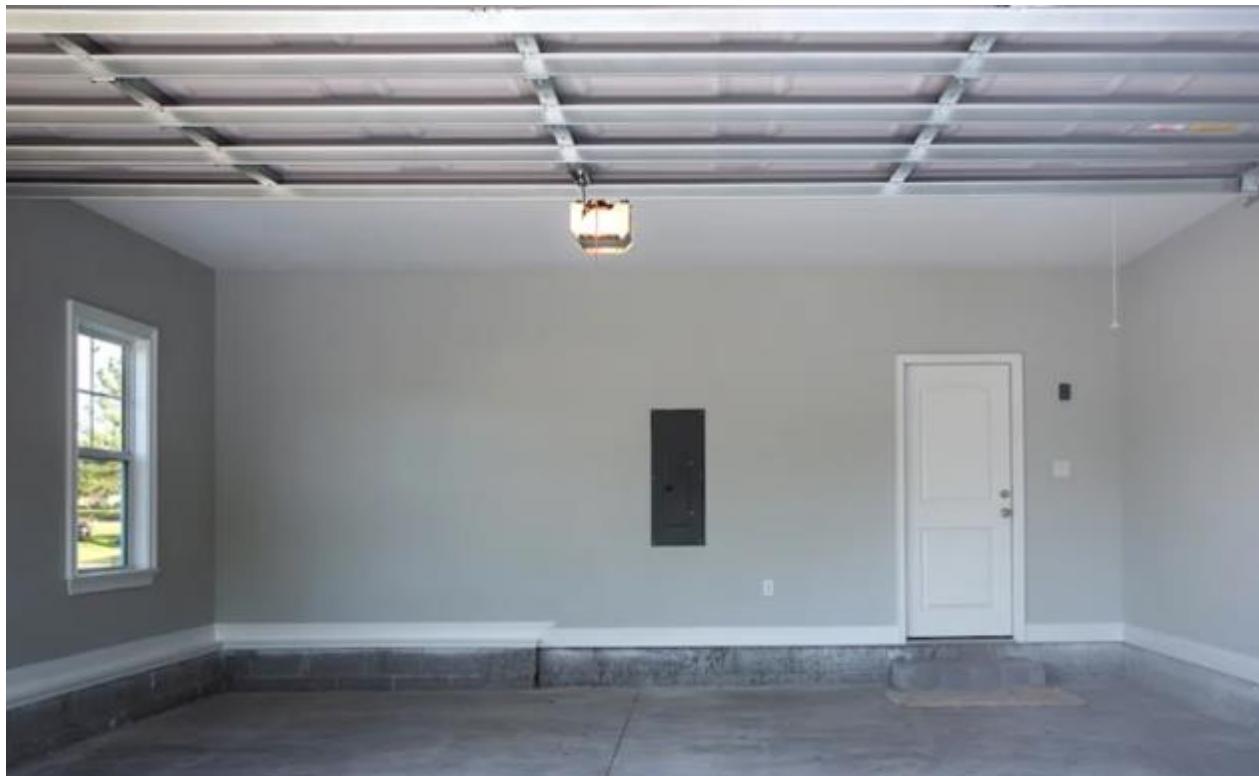
## R202 - DEFINITIONS

- Townhouse Unit - A single-family dwelling unit in a townhouse extending from foundation to roof and having a yard or public way on not less than two sides
- Change:
  - Previously defined as single-family dwelling unit in a group of 3 or more dwelling units in one building
  - Term was used interchangeably to describe entire building and individual dwelling units within building
  - New definitions intends to remedy that inconsistency
  - Townhouse unit describes each individual single-family dwelling unit in a townhouse building
  - Definition - townhouse is a building containing 3 or more townhouse units.



Townhouse with 8 townhouse units

## R302.5.1 – OPENING PROTECTION



- Openings from private garage directly into a room used for sleeping purposes shall not be permitted
- Other openings between garage and residence shall be equipped with:
  - Solid wood doors not less than 1-3/8" in thickness
  - Solid or honeycomb-core steel doors not less than 1-3/8" thick, or
  - 20-minute fire rated doors
  - Door shall be self-latching and equipped with a self-closing or automatic-closing device

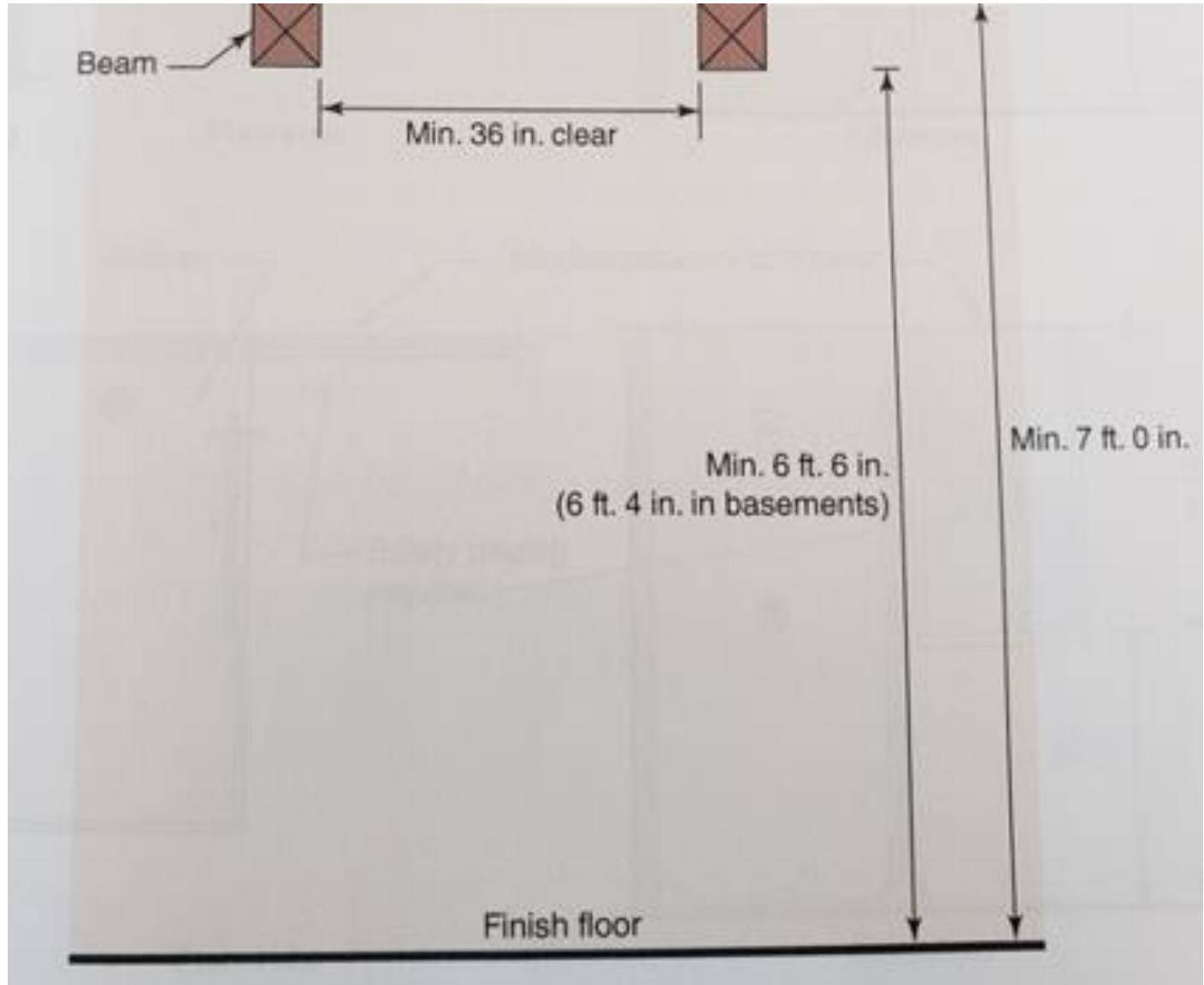


## R303.1 – HABITABLE ROOMS

- Habitable rooms shall have an aggregate glazing area of not less than 8% of the floor area of such rooms.
  - Natural ventilation through windows, skylights, doors, louvers or other approved openings to outdoor air
  - Openings shall have ready access or be readily controllable by the building occupants.
  - The openable area shall be not less than 4% of the floor area being ventilated
  - Exceptions:
    - **Habitable rooms other than kitchens** - glazed areas need not be openable when opening not required by Section R303.1 and a whole-house mechanical ventilation system or a **mechanical ventilation system capable of production 0.35 air changes per hour** in the habitable rooms is installed in accordance with Section M1505.
    - **Kitchens** - glazed areas need not be openable when opening is not required by Section R303.1 and a local exhaust system is installed in accordance with Section M1505.
- Change: Intent to exception in Sec. R303.1 is to require local mechanical exhaust in kitchen if natural ventilation through openable windows and doors is not provided

## R303.1 – HABITABLE ROOMS

- Habitable space, hallways and portions of basements containing these spaces shall have a ceiling height of not less than 7'-0"
- Bathrooms, toilet rooms and laundry rooms shall have a ceiling height of not less than 6'-8"
- Exceptions:
  - Beams and girders spaced apart not less than 36" in clear finished width shall project not more than 78" from the finish floor



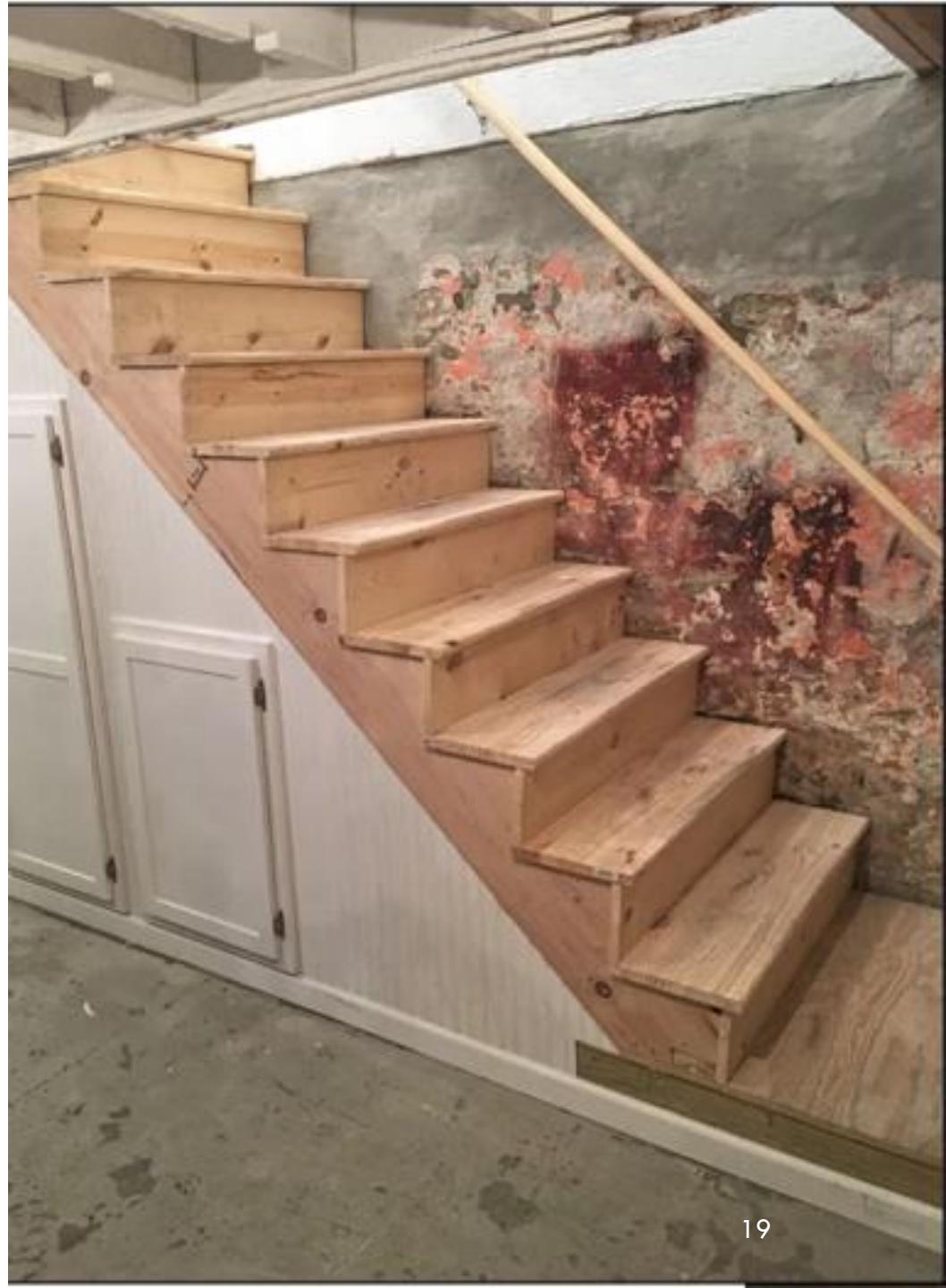
## R308.4.5 – GLAZING AND WET SURFACES

- Glazing in walls, enclosures or fences containing or adjacent to hot tubs, spas, whirlpools, saunas, steam rooms, bathtubs, showers and indoor or outdoor swimming pools where the bottom exposed edge of the glazing is less than 60" measured vertically above any standing or walking surface shall be considered to be a hazardous location.



## R311.7 - STAIRWAYS

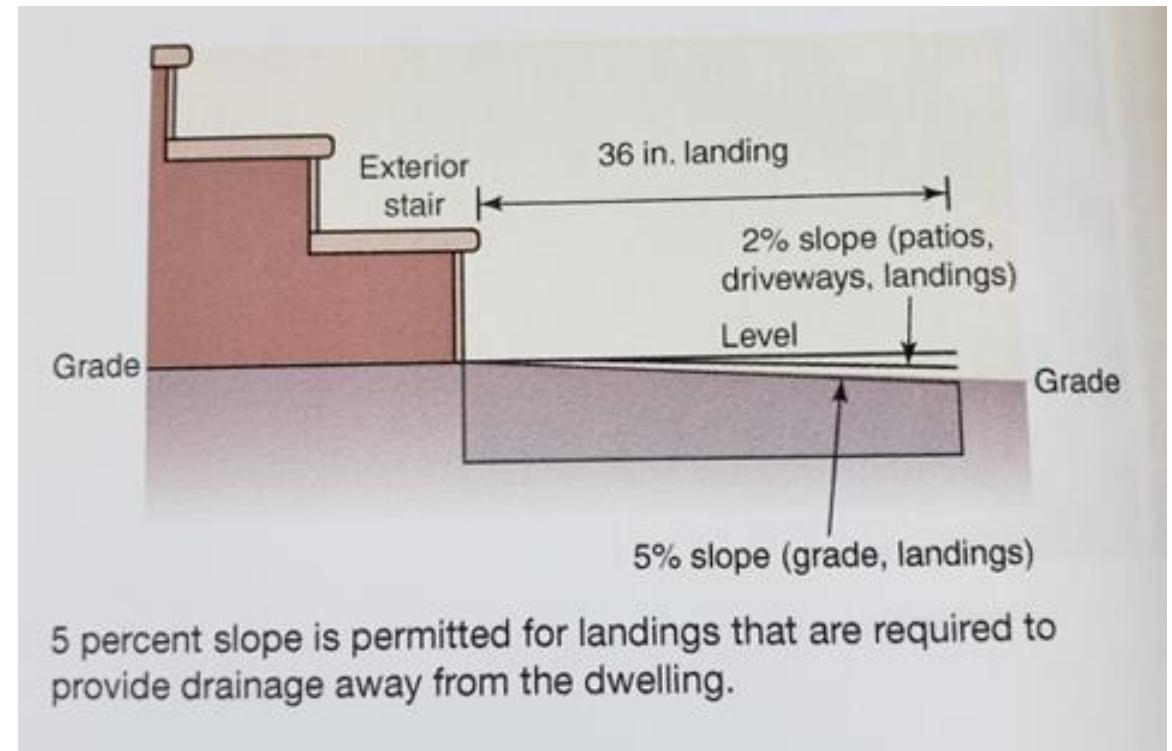
- Where required by this code or provided, stairways shall comply with this section.
  - Exceptions:
  - Stairways not within or serving a building, porch or deck.
  - Stairways leading to non-habitable attics.
  - Stairways leading to crawl spaces.



# R311.7.7 – Stairway walking surface



- Walking surface of treads and landings of stairways shall be sloped not steeper than 1 unit vertical in 48 units horizontal (2-percent slope)
- Exception: Where surface of landing is required elsewhere in code to drain surface water, the walking surface of landing shall be sloped not steeper than 1 unit vertical in 20 units horizontal (5-percent slope) in the direction of travel



5 percent slope is permitted for landings that are required to provide drainage away from the dwelling.

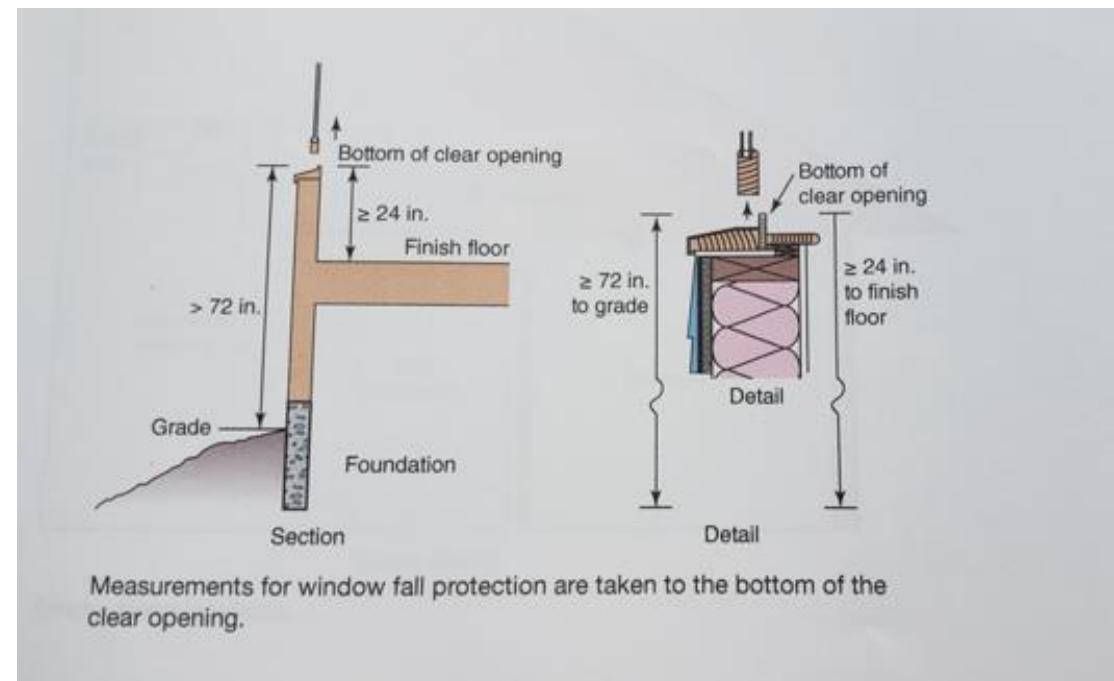


## R311.7.8.4 – CONTINUITY

- Handrails shall be continuous for full length of flight, from a point directly above top riser to a point directly above lowest riser of the flight. Handrail ends shall be returned toward a wall, guard walking surface continuous to itself, or terminate to a post.

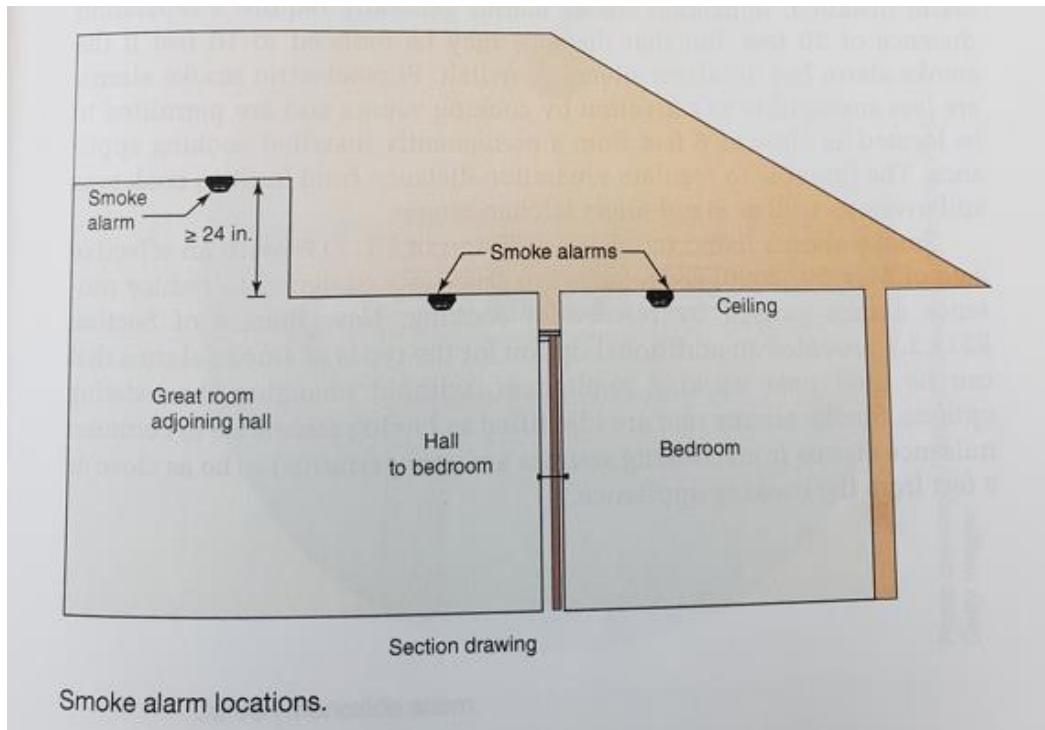
## R312.2.1- WINDOW OPENING HEIGHT

- In dwelling units, where **bottom of clear opening** of operable window opening is located less than 24" above finished floor and greater than 72" above finish grade or other surface below on exterior of building, the operable window shall **comply with one of the following:**
  - Will not allow a 4-inch-diameter sphere to pass through where openings are in their largest opened position
  - Provided with window **opening control devices** or fall prevention devices complying with ASTM F2090



## R314.3 – SMOKE ALARM LOCATION

- Smoke alarms shall be installed in the following locations:
  - Hallway and in room open to hallway in dwelling units where ceiling height of a room open to a hallway serving bedrooms exceeds that of the hallway by 24" or more





# HARDWIRE SMOKE ALARM

120V Alarm Detects Smoke and Fire

Advanced sensor detects more types of fires and reduces cooking nuisance alarms.  
Meets new industry standards for advanced smoke alarm protection.



## R314.3.1 – INSTALLATION NEAR COOKING APPLIANCES

- Smoke alarms shall not be installed in the following locations unless this would prevent placement of a smoke alarm in a location required by Section R314.3
- Smoke alarms listed and marked “helps reduce cooking nuisance alarms” shall not be installed less than 6 feet horizontally from a permanently installed cooking appliance

## R317.1 – PROTECTION OF WOOD & WOOD-BASED PRODUCTS AGAINST DECAY

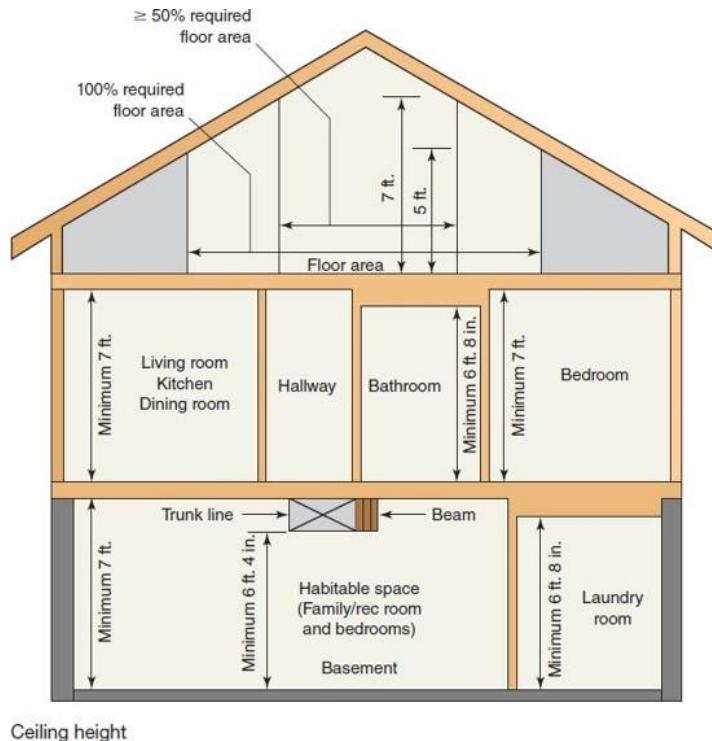
- Wood framing members, including columns, resting directly on concrete or masonry exterior foundation walls and are less than 8" from the exposed ground



## R324.6 – ROOF ACCESS AND PATHWAYS

- New Exception:
- BIPV systems listed in accordance with Section 690.12(B)(2) of NFPA 70, where the removal or cutting away of portions of the BIPV system during fire-fighting operations has been determined to not expose a fire fighter to electrical shock hazards





## R326 – HABITABLE ATTICS

- Habitable attics shall comply with Sections R326.2 and R326.3
- A habitable attic shall have a floor area in accordance with Section R304 and a ceiling height in accordance with Section R305



## R326.3 – STORY ABOVE GRADE PLANE

- A habitable attic shall be considered a story above grade plane
- Exceptions: not considered to be a story above grade when it meets all of the following:
  - Aggregate area is either:
    - Not greater than 1/3 of floor area of story below
    - Not greater than ½ of floor area of story below where habitable attic is located within a dwelling unit with fire sprinkler system I accordance to Sec. P2904
  - Occupiable space is enclosed by roof assembly above, knee walls, if applicable, on side and floor-ceiling assembly below
  - Floor does not extend beyond exterior walls of story below
  - Where located above a third story, the dwelling unit or townhome shall have a fire sprinkler in accordance with Sec. P2904

## R328 – ENERGY STORAGE SYSTEMS

- One device or multiple devices, assembled together, capable of storing electrical energy to be supplied at a future time.
- Examples:
  - Stationary Fuel cell power system
  - Stationary Engine Generators



## R328.7 – FIRE DETECTION

- Rooms and areas within dwelling units, basements and attached garages in which ESS are installed shall be protected by smoke alarms in accordance with Section R314.
- A heat detector, listed and interconnected to the smoke alarms, shall be installed in location within dwelling units an attached garages where smoke alarms cannot be installed based on their listing.



## R506.2.3 – VAPOR RETARDER



- A minimum 10-mil (was 6 mil) vapor retarder conforming to ASTM E1745 Class A requirements with joints lapped not less than 6" shall be placed between the concrete floor slab and base course or the prepared subgrade where a base course does not exist.

## R507.3 – FOOTINGS

- Exceptions:
- Footings shall not be required for free-standing decks meeting all the following criteria:
  - Joists bear directly on precast concrete pier blocks at grade without support by beams or posts
  - Area of the deck does not exceed 200 SF
  - Walking surface is not more than 20" above grade at any point within 36" measured horizontally from the edge



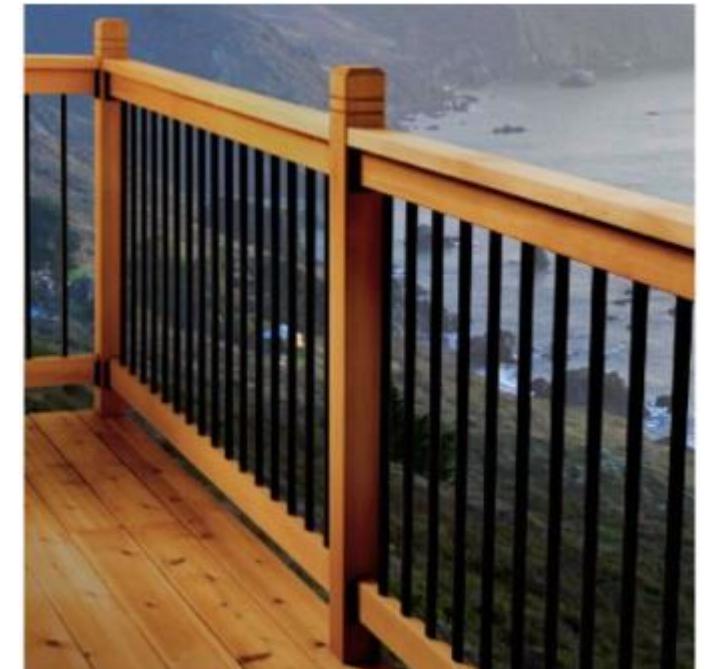
## R507.3.2 – MINIMUM DEPTH

- Deck footings shall be placed not less than 12" below undisturbed ground surface



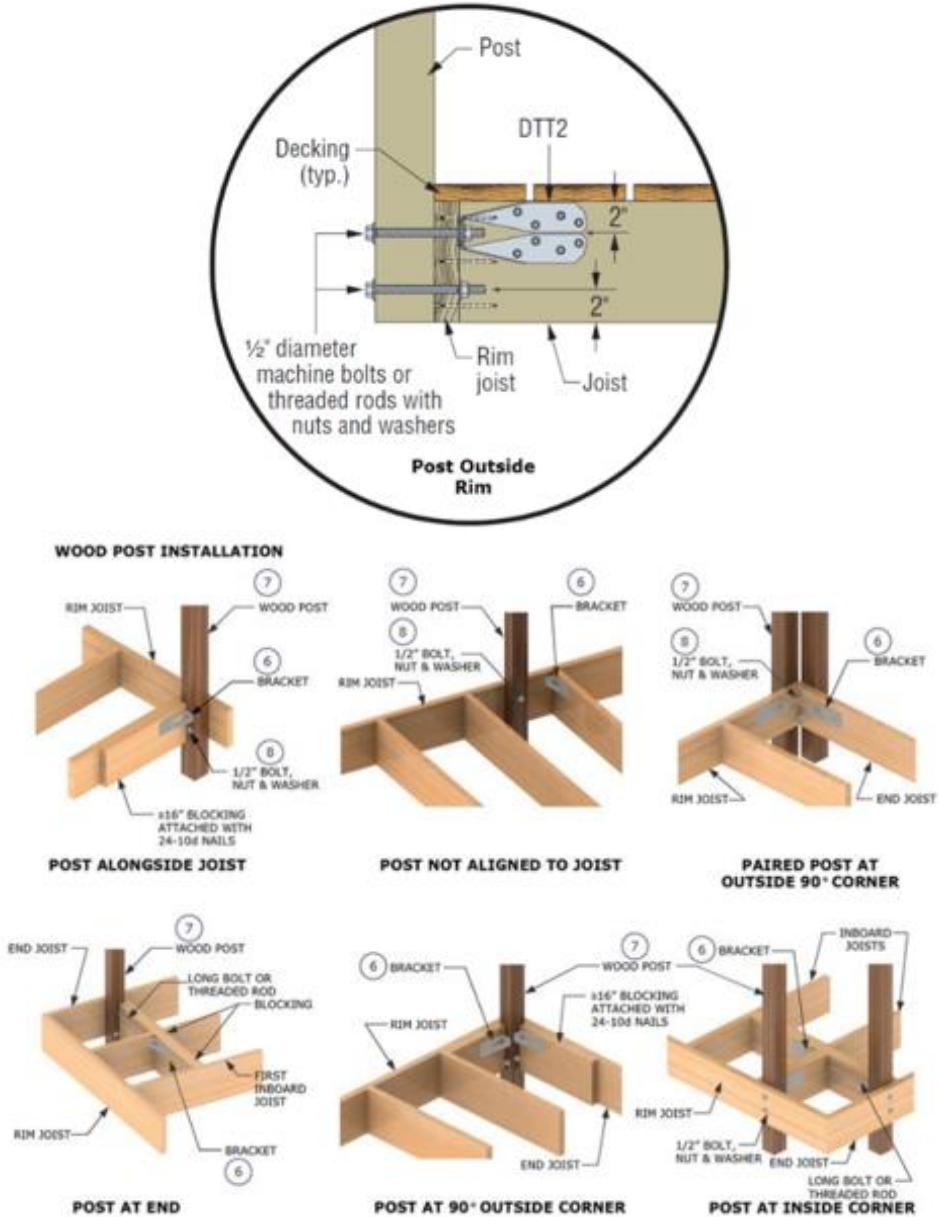
## R507.10.1 – EXTERIOR GUARDS SUPPORTS

- Where guards are supported on deck framing, guard loads shall be transferred to the deck framing with a continuous load path to the deck joists



## R507.10.1.1 – GUARDS SUPPORTED BY SIDE OF DECK FRAMING

- Where connected to interior or exterior side of deck joist or beam, joist or beam shall be connected to adjacent joists to prevent rotation of joist or beam
- Connections relying only on fasteners in end grain withdrawal are not permitted
- Where mounted on top of decking, guards shall be connected to deck framing or blocking and installed in accordance with manufacturer's instructions to transfer the guard loads to the adjacent joists



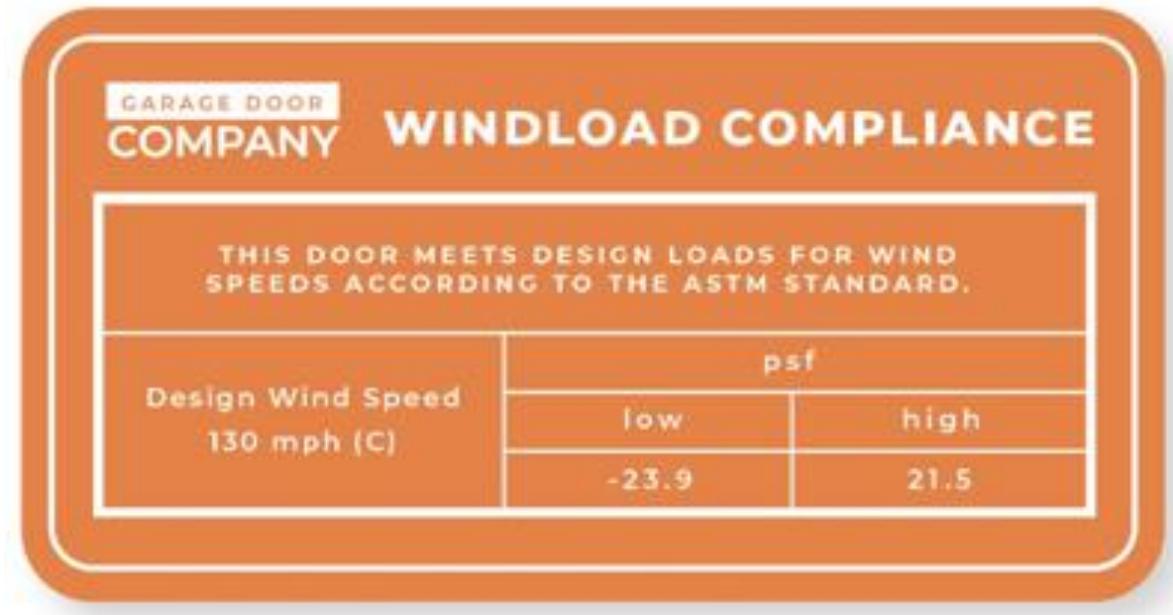
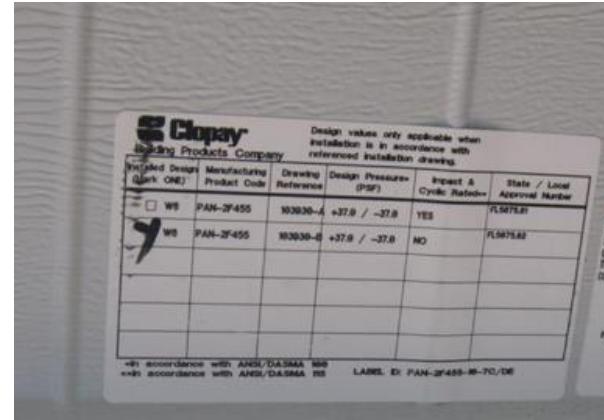
## R507.10.2 – WOOD POSTS AT DECK GUARDS



- Where 4-inch by 4- inch wood posts support guard loads applied to the top of the guard, such posts shall not be notched at the connection to the supporting structure.

## R609.4.1 – GARAGE DOOR LABELING

- Garage doors shall be labeled with a permanent label provided by the garage door manufacturer.
- Label shall identify the garage door manufacturer, the garage door model/series number, the positive and negative design wind pressure rating, the installation instruction drawing reference number, and the applicable test standard.





## R902.3 – BUILDING INTEGRATED PHOTOVOLTAIC PRODUCT

- Building-integrated photovoltaic (BIPV) products installed as the roof covering shall be tested, listed and labeled for fire classification in accordance with UL 7103.
- Class A, B or C BIPV products shall be installed where the edge of the roof is less than 3 feet from a lot line.

## R905.3.1 – DECK REQUIREMENTS

- Concrete and clay tile shall be installed only over solid sheathing
- Exception: Spaced lumber sheathing in accordance with Section R803.1 shall be permitted in Seismic Design Categories A, B and C.





# THANK YOU!

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