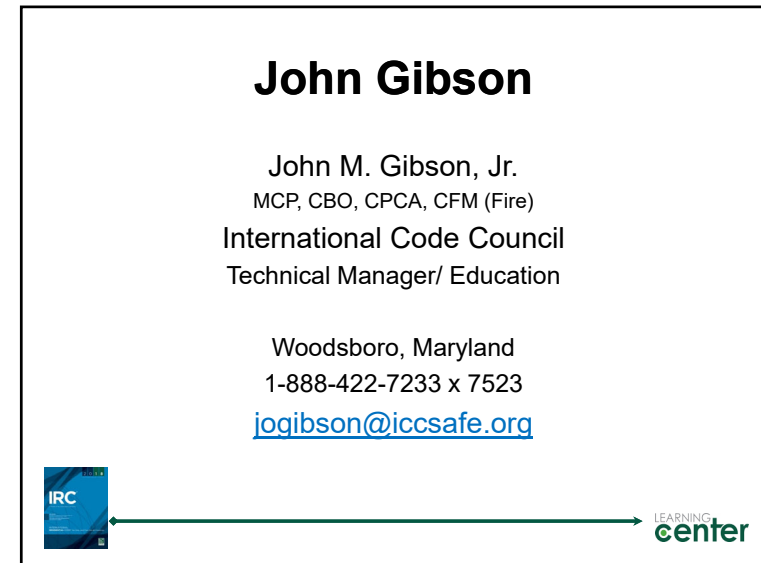
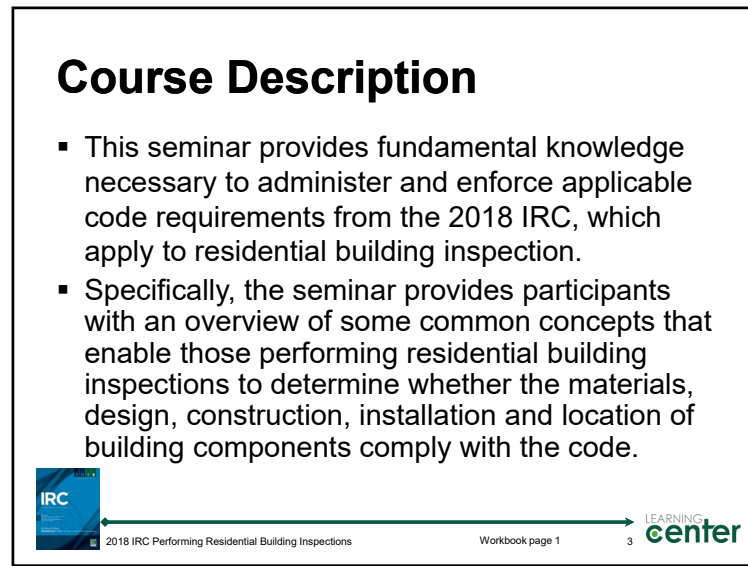




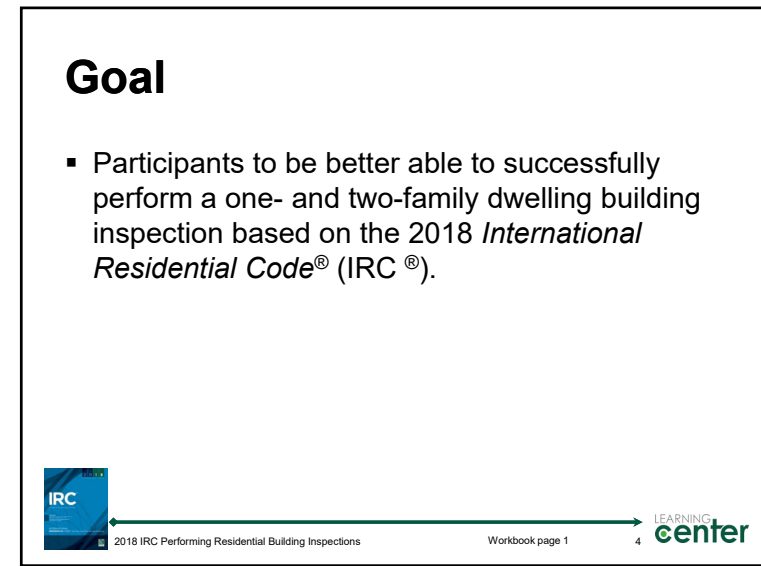
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Objectives

Upon completion, participants will be better able to:

1. Describe the preparation for performing residential building inspections.
2. Describe the residential building inspection process.
3. Explain concepts of some specific requirements focusing on Chapters 3-10.
4. Recognize the applicability of some 2018 IRC provisions to one- or two-family dwellings and qualifying townhouses.



2018 IRC Performing Residential Building Inspections

Workbook page 1



5

Seminar Contents

Inspection Preparation
 Inspection Process
 Footing Inspections
 Foundation Inspections
 Concrete Slab-On-Ground Inspections
 Rough-in Inspections
 Decay and Termite Protection Inspections
 Floor and Ceiling Framing Inspections
 Wall Framing Inspections
 Roof Framing Inspections
 Sheathing Inspections
 Roof Covering Inspections
 Safety Inspections



2018 IRC Performing Residential Building Inspections



6

Inspection Preparation

7

Roles of Inspector

- Ambassador
- Educator
- Facilitator



Inspector Skills



8

Approach to Inspection

- Inspector's
 - **Attitude**
 - Behavior
 - Methods
 - Actions
- Profound effect on the outcome



Inspector Skills

9

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center

9

Approach

- Positive approach
- Respect, courtesy and diplomacy
- Raise bar of professionalism
- Improve image of inspector
- Makes life easier all around



Inspector Skills

10

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ATTITUDE

- “Our Attitude governs our thoughts...
- Which controls our actions...
- Which becomes our habits...
- Which shapes our character...
- Which therefore determines our destiny!”



Inspector Skills

11

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11

First Impressions

- “7/11” rule
 - 1) Cleanliness 2) Attractiveness 3) Credible
 - 4) Knowledgeable 5) Responsive 6) Friendly
 - 7) Helpful 8) Empathetic 9) Courteous
 - 10) Confident 11) **Professional**
- a) Like b) Don't like c) Don't trust



Inspector Skills

12

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12

Professionalism

- Not easily defined
- Appearance is one small part
 - Varies based
 - role and duties
 - local expectations
 - Not offensive to public
 - (Do you see this as location dependent?)



Inspector Skills

13



13

Professionalism (continued)

- Specialized expertise
- Integrity
- Honesty
- Respectfulness
- Effective communication
- Reliability
- Confidence
- Fairness
- Responsibility
- Punctuality
- Team-oriented attitude
- Appropriate appearance

Any other qualities?



Inspector Skills

14



14

Skills for Getting Along

- Respectful
- Helpful
- Open minded
- Fair
- Empathetic

Empathy: The ability to understand and be sensitive to another person's feelings on a personal level.

Sympathy: To understand another's perspective



Inspector Skills

15



15

Barriers to Getting Along

- Most inspectors get it right
- May unintentionally create barriers
 - What we say
 - How we say it
 - Actions at jobsite



Inspector Skills

16



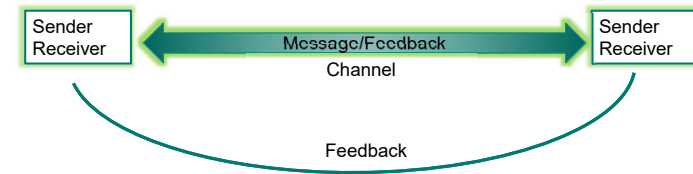
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No matter what job you have in life, your success will be determined 5% by your academic credentials, 15% by your professional experiences, and 80% by your communication skills.



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Communication Model



18

Communication

- Written
 - Verbal
 - Non-verbal (93% of the message is not the words)
 - 55% Body language
 - 38% Tone of Voice
 - 7% Words
- (Albert Mehrabian)



19

Expectations of you

- Accurate information
- Answers to inquiries
- Follow-up when promised
- Punctuality
- Courteous behavior



20

Receiving the Message

- Look at the person
- Pay attention to his or her body language
- Nod and smile to acknowledge points
- Allow the person to speak
- Don't interrupt



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Reasons for not Listening

- Already made up mind
- Hearing only what you want to hear
- Jumping to conclusions
- Lack of interest
- Being angry, upset, or worried about other things



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Listening

- Listener is Listening 25% of the time.
- Listener is Thinking up a response 75%.
- Spoken words approx. 180 wpm
- Brain can process spoken words @ approx. 500 wpm
- Brain can visually process @ approx. 80,000 wpm



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Why are People Difficult?

- People
 - Are rushed – not enough time
 - Feel insecure
 - Feel angry
 - Have some need or interest
 - Are stressed



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Conversations with Difficult People

DO	DON'T
Defuse	Escalate
Stay calm	Argue
Listen	Interrupt
Let them vent	Blame
Speak quietly	Raise your voice
Be objective	Criticize
Remain confident and positive	Take it personally



Inspector Skills

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Doing the Right Thing

- Job subject to public scrutiny
- Good inspectors welcome that scrutiny
- Embrace ethical principles of honesty and lawfulness
- To benefit society
- Apply rules fairly and objectively with no vested interest



Inspector Skills

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Ethical Decisions

- Butterfly Test
- Authority Test
- Public Scrutiny Test



Inspector Skills

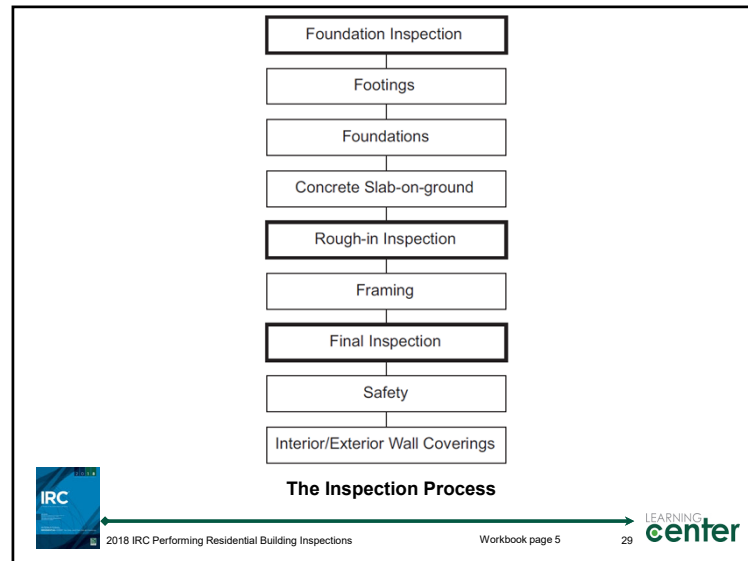
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27

The Inspection Process

28



29



30

Purpose

The purpose of the footing inspection task is to verify that footings comply with the code requirements.



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Footing Inspection Tasks

1. Footing Environment Inspection.
2. Footing Size and Strength Inspection.
3. Footing Placement Inspection.
4. Footing Continuity, Surface and Step Inspection.



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Footing Environment Inspection

Determine if the soil has a minimum bearing capacity of 1,500 psf or if it provides the minimum bearing capacity required by the engineered design approved by the building official. (T- R401.4.1)

If a complete soil investigation report is not available, then determine the load-bearing values from Table R401.4.1. (pg. 89)



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2018 IRC
Table
R401.4.1
Page 89

Footing Environment Inspection

TABLE R401.4.1
PRESUMPTIVE LOAD-BEARING
VALUES OF FOUNDATION MATERIALS*

CLASS OF MATERIAL	LOAD-BEARING PRESSURE (pounds per square foot)
Crystalline bedrock	12,000
Sedimentary and foliated rock	4,000
Sandy gravel and/or gravel (GW and GP)	3,000
Sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, SM, SC, GM and GC)	2,000
Clay, sandy, silty clay, clayey silt, silt and sandy siltclay (CL, ML, MH and CH)	1,500 ^b

For SI: 1 pound per square foot = 0.0479 kPa.

a. Where soil tests are required by Section R401.4, the allowable bearing capacities of the soil shall be part of the recommendations.

b. Where the building official determines that in-place soils with an allowable bearing capacity of less than 1,500 psf are likely to be present at the site, the allowable bearing capacity shall be determined by a soils investigation.



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Soils Investigation Report RECORD OF SUBSURFACE EXPLORATION

CLIENT: _____ PROJECT NAME: _____ PROJECT LOCATION: _____

DATE: _____ HANDED TO: _____ HANDED BY: _____

TEST DATA:

DEPTH (ft)	SOIL CLASSIFICATION	TEST DATA	REMARKS
0.0	FINISHED NATURAL GRADE		
0.5	GRAVEL		
1.0	GRAVEL		
1.5	GRAVEL		
2.0	GRAVEL		
2.5	GRAVEL		
3.0	GRAVEL		
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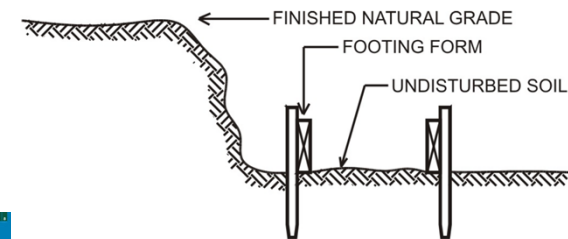
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Footing Environment Inspection

- Determine if the soil in the area of the footing is undisturbed – NOT filled.
- (R403.1, pg. 90)

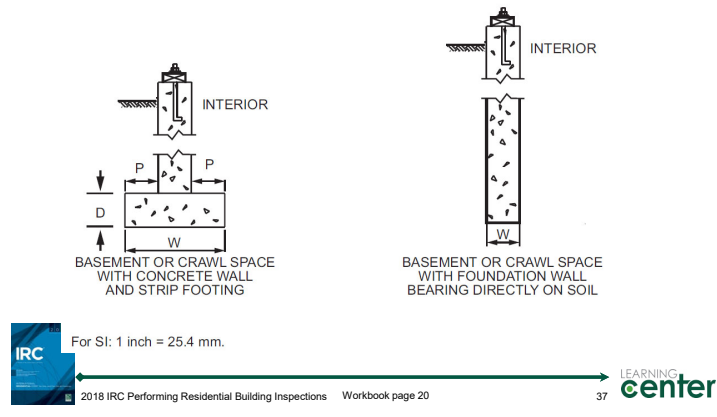


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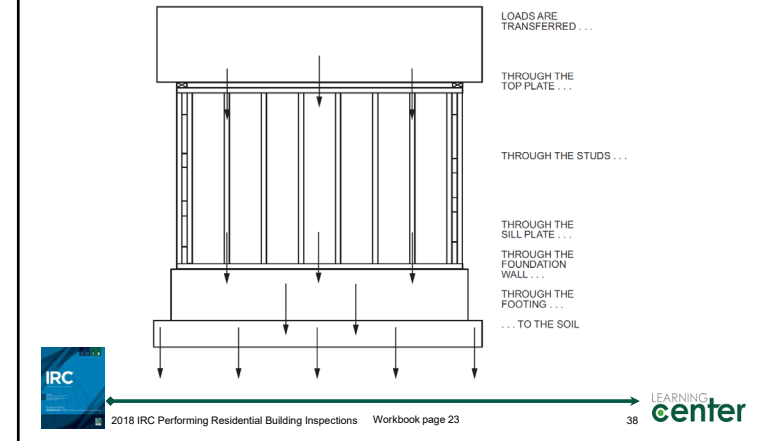
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Footing Size and Strength Inspection



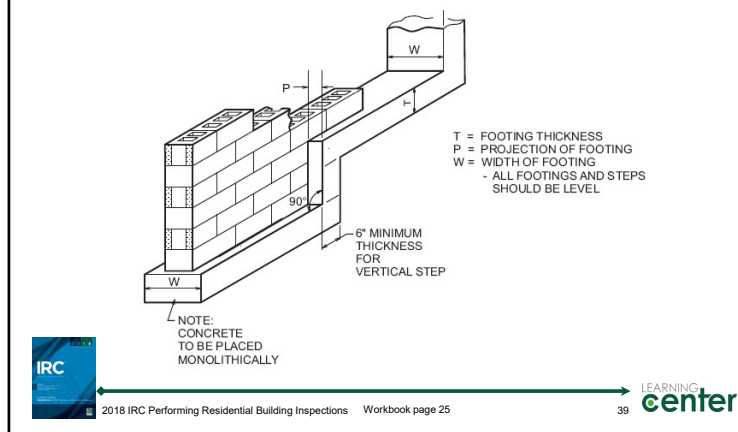
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Footing Purpose



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Footing Placement Inspection



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Foundation Inspection



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Purpose

The purpose of the foundation inspection task is to verify that the foundation meets minimum code requirements for size, height, strength, drainage and moisture protection.



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Foundation Inspection Tasks

1. Foundation Construction Inspection.
2. Minimum Foundation Wall Thickness and Maximum Unbalanced Backfill Height Inspection.
3. Foundation Drainage Inspection.
4. Basement Dampproofing or Waterproofing Inspection.

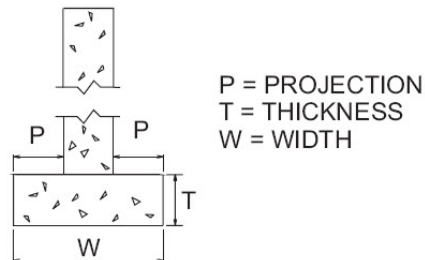


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Foundation Construction Inspection



FOUNDATION SECTION



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Foundation Construction Inspection

Verify that the anchor bolts are:

- Set at least 7 inches into concrete or masonry foundation.
- Not more than 6 feet on center.
- Not more than 12 inches from the ends of each plate or less than seven bolt diameters from each end of the plate section.
- Placed in the middle third of the width of sill plate.
- At least ½ inch in diameter.
- Attached to plate with washer and nut tightened down to plate. (R403.1.6, pg. 99)
- Special considerations for Seismic Design Category C, D₀, D₁ or D₂. (R403.1.6.1, pg. 100)



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Foundation Construction Inspection

If other foundation anchorage is used, determine that:

- It is an approved type.
- It is installed in accordance with the manufacturer's installation manual.
- If straps are used, they must be spaced to provide equivalent anchorage to ½-inch anchor bolts in accordance with the manufacturer's installation instructions. (R403.1.6, pg. 99)



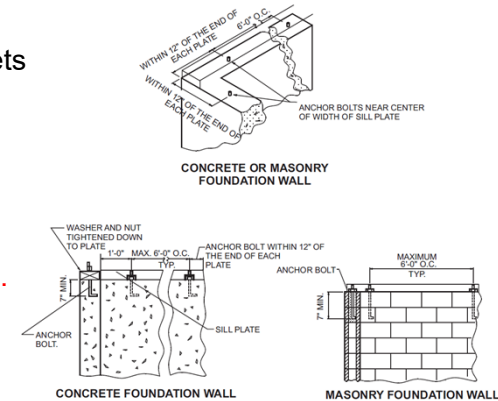
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- Confirm that concrete meets or exceeds the strength requirements in Table R402.2.

(R404.1.3.3, pg. 124)

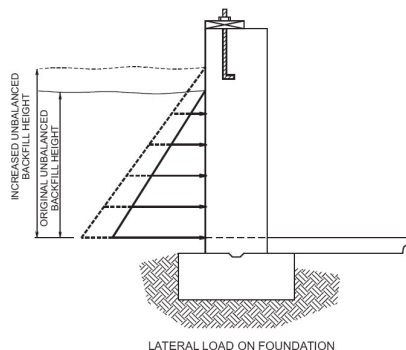


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Minimum Foundation Wall Thickness and Maximum Unbalanced Backfill Height Inspection



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Minimum Foundation Wall Thickness and Maximum Unbalanced Backfill Height Inspection

Measure the foundation wall thickness.
Determine the height of unbalanced backfill.
Identify the type of construction material and type of support.

Identify and/or determine the soil classification.
Check for No. 4 horizontal reinforcing bars in all concrete foundation walls. (T-R404.1.2(1) pg. 116)

, R404.1.3.2, pg. 124)



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Minimum Foundation Wall Thickness and Maximum Unbalanced Backfill Height Inspection

If walls will be subject to hydrostatic pressure from groundwater or will support more than 48 inches of unbalanced backfill and do not have permanent lateral support at top and bottom, then design is required in accordance with engineering practice.

(R404.1.1 #1, pg. 111)



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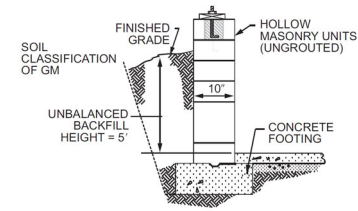


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Minimum Foundation Wall Thickness and Maximum Unbalanced Backfill Height Inspection

For concrete foundation walls without vertical reinforcing, use Table R404.1.2(1) and Tables R404.1.2(2) through R404.1.2(8).

(R404.1.3.2, pg. 124)



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Minimum Foundation Wall Thickness and Maximum Unbalanced Backfill Height Inspection

Plain masonry foundation walls located in SDC D₀, D₁ or D₂, must:

- Not exceed 8 feet in height.
- Not support more than 4 feet of unbalanced backfill.
- Be a minimum 8 inches nominal in thickness.
- Have on #3 vertical bar at 4 feet on center.
- Have two #4 horizontal bars within the top 12 inches. (R404.1.4.1, pg. 126)



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Minimum Foundation Wall Thickness and Maximum Unbalanced Backfill Height Inspection

Concrete foundation walls without vertical reinforcing and located in SDC D₀, D₁ or D₂, must:

- Not exceed 8 feet in height.
- Not support more than 4 feet of unbalanced backfill.
- Be a minimum 6 inches thick for up to a 4½-foot-tall wall of 7½ inches thick, if taller.

(R404.1.4.2, pg. 127)



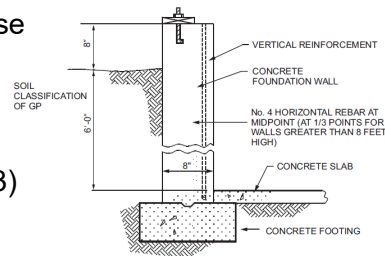
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Minimum Foundation Wall Thickness and Maximum Unbalanced Backfill Height Inspection

For concrete foundation walls with reinforcing, use Tables R404.1.2(1) through R404.1.2(8) or for masonry with reinforcing, use Tables R404.1.1(2), R404.1.1(3) or R404.1.1(4)



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Minimum Foundation Wall Thickness and Maximum Unbalanced Backfill Height Inspection

Masonry foundation walls located in SDC D₀, D₁ or D₂ and supporting more than 4 feet of unbalanced backfill or exceeding 8 feet in height must:

- Have two No. 4 horizontal bars located in the upper 12 inches of the wall.
- Have vertical reinforcing in accordance with Table R404.1.1(2), R404.1.1(3) or R404.1.1(4).



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Minimum Foundation Wall Thickness and Maximum Unbalanced Backfill Height Inspection

Concrete foundation walls located in SDC D₀, D₁ or D₂ and supporting more than 4 feet of unbalanced backfill or exceeding 8 feet in height or less than 7.5 inches in thickness must:

- Have vertical reinforcement in accordance with Tables R404.1.1(2) through R404.1.1(8).
- Have not less than No. 4 vertical bars spaced at 48 inches if Tables R404.1.2(2) through R404.1.2(8) do not require vertical reinforcement.



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Foundation Drainage Inspection

The purpose is to check that free groundwater will be drained away to prevent seepage into below-grade construction and surface water enclosing habitable or usable spaces, and to relieve hydrostatic pressure.



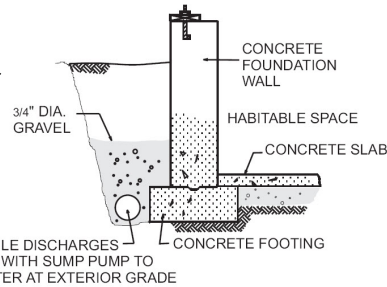
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Foundation Drainage Inspection

Determine if drain tiles, gravel or crushed stone drains, perforated pipe or other approved systems or materials are installed at or below the area to be protected. (R405.1, pg. 130)



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Foundation Drainage Inspection

- Determine if drain tiles or pipe discharge into an approved drainage system.
- Follow drains to examine where drainage water will be discharged.
 - Drain tile shall discharge by gravity to approved natural grade drainage or to an approved sump pump that discharges to grade or a storm sewer.
 - Most jurisdictions do not allow storm drainage into sanitary sewers.



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Foundation Drainage Inspection

Determine if drain tiles or pipe are installed on at least 2 inches of gravel that is larger than the pipe perforations or tile joints.

Determine if drain tiles or pipe are covered by at least 6 inches of gravel.

(R405.1, pg. 131)

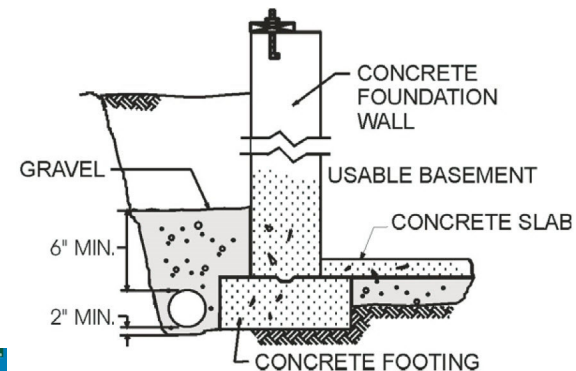


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Foundation Drainage Inspection



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Foundation Drainage Inspection

Verify that perforated pipe is surrounded with a filter membrane or that a filter membrane covers the gravel over the pipe.

If the drain tile has open joints, then verify that joints are covered with strips of building paper.

(R405.1, pg. 131)



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Foundation Dampproofing and Waterproofing Inspection

The purpose is to determine if the:

- Foundation wall is protected from ground water and surface water to minimize the entry of moisture into below-grade usable of habitable spaces.
- Exterior masonry foundation walls of habitable or usable areas are adequately parged with cement and coated with a bituminous coating or waterproofing.
- Exterior concrete foundation walls of habitable or usable areas are adequately dampproofed with bituminous material or waterproofed.



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Foundation Dampproofing and Waterproofing Inspection

If masonry foundation walls enclose habitable or usable space, verify that they are covered with 3/8-inch parging of Portland cement from footing to finished grade. (R406.1, pg. 132)

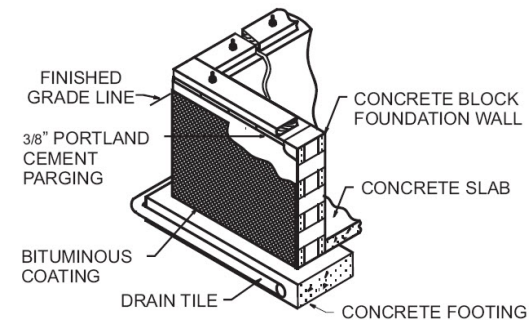


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Foundation Dampproofing and Waterproofing Inspection



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Foundation Dampproofing and Waterproofing Inspection

If masonry or concrete foundation walls enclose habitable or usable space, then verify that dampproofing of approved bituminous material is applied from footing to finished grade over concrete or parged walls.



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Foundation Dampproofing and Waterproofing Inspection

If a high water table or other severe soil-water conditions exist, then verify that the approved waterproofing membrane was applied from top of footing to finished grade over concrete or parged masonry foundation walls.

Membrane joints must be lapped and sealed.

(R406.2, pg. 132)

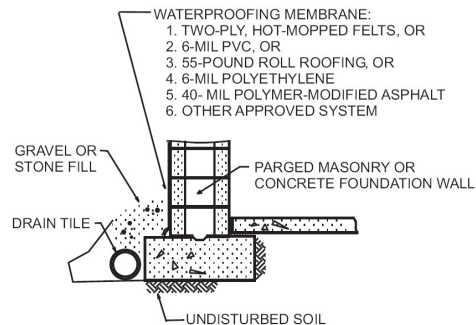


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66

Foundation Dampproofing and Waterproofing Inspection



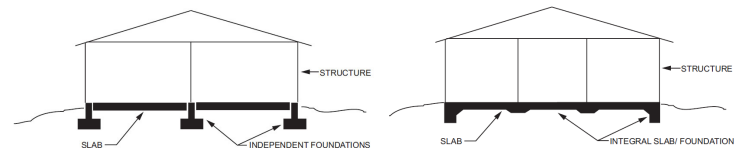
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67

Concrete Slab-on-ground Inspection Tasks

1. Subgrade, Base and Vapor Retarder Inspection.
2. Concrete Slab Construction Inspection.

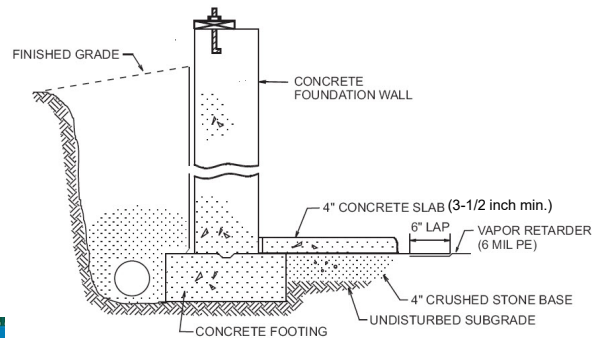


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Concrete Slab Construction Inspection



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69

Rough-in Inspection Orientation



70

Purpose

The IRC requires a frame and masonry inspection after the roof, masonry, all framing, firestopping, draftstopping and bracing are in place and after the plumbing, mechanical and electrical rough inspections are approved.



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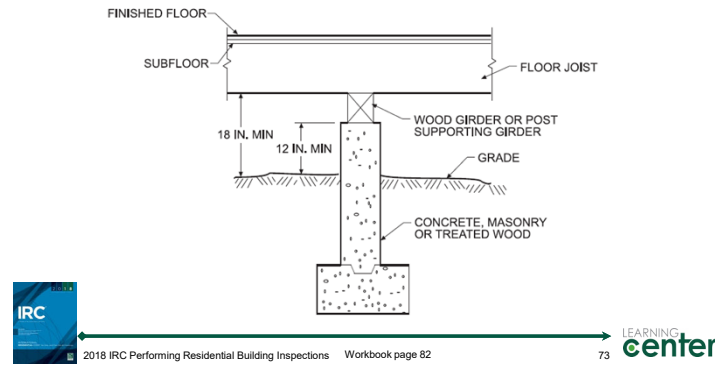
Decay and Termite Protection Inspection



72

Decay Protection Inspection

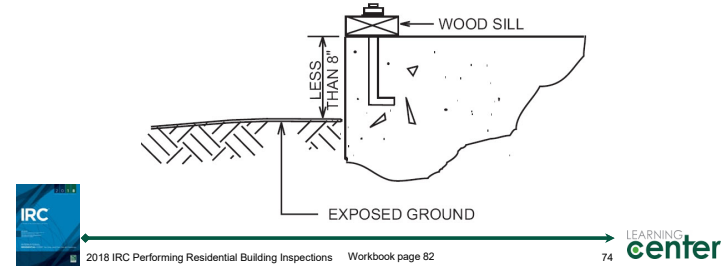
- Girders less than 12 inches from exposed ground.



73

Decay Protection Inspection

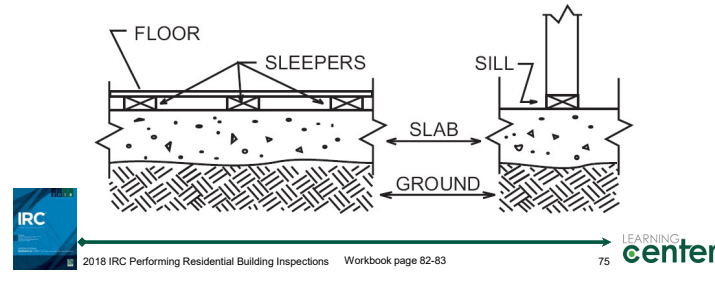
- All wood framing members (sills and plates) that rest on concrete or masonry exterior foundation walls and are less than 8 inches from the exposed ground.



74

Decay Protection Inspection

- Sills and sleepers on a concrete or masonry slab that is in direct contact with the ground; unless the sills and sleepers are separated from the slab by an impervious moisture barrier.



75

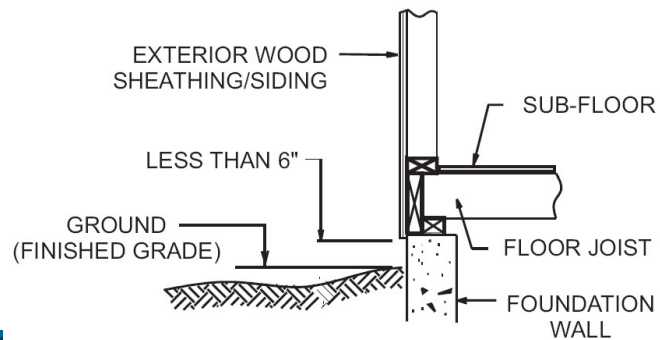
Decay Protection Inspection

- Wood girders (solid-sawn lumber or engineered wood products) entering exterior masonry or concrete walls with less than a 1/2-inch clearance on top, sides or ends between wood and masonry or concrete.



76

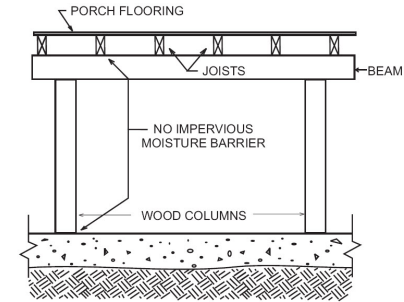
Decay Protection Inspection



77

Decay Protection Inspection

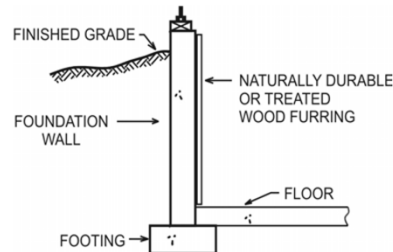
- Wood structural members that support moisture-permeable floors or roofs exposed to the weather and that are not separated from the floor/roof by an impervious moisture barrier.



78

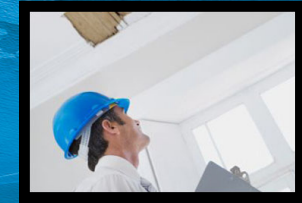
Decay Protection Inspection

- Furring and other wood elements attached to masonry or concrete walls below grade, except when an approved vapor retarder is applied to the interior of the exterior wall.



79

Floor and Ceiling Framing Inspection



80

Floor and Ceiling Framing Inspection Tasks

1. Allowable Spans and Materials Inspection.
2. Joist, Beam and Girder Bearing Inspection.
3. Cutting, Notching and Bored Holes Inspection.
4. Floor Framing Construction Inspection.
5. Floor and Ceiling Header Inspection.
6. Joist Lateral Support and Bridging Inspection.



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Allowable Spans and Materials Inspection

- Floor Joists in Dining Room.
- Clear Span of 11 feet, 11 inches, 2 × 8 @ 16 inches on center (o.c.).
- Dead Load = 10 psf. (Example for floor joist in [Workbook, pg. 100](#))

1. Locate the grade mark on the joist to determine grade and species.
2. Measure and determine size, clear span and spacing of the joists.
3. Compare findings with design specifications/ drawings. Note any discrepancies.



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82

Allowable Spans and Materials Inspection

Based on Table R502.3.1(1) or Table R502.3.1(2), determine the allowable span for the required live load and dead load. (pgs. 127-140)

Verify that the actual joist is equal to or greater than the specified joist.



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Allowable Spans and Materials Inspection

- (Example for Girder in [workbook, pg. 102](#))
- Two-story dwelling with basement. A 28-foot width, 2 × 10 joists @ 16 inches on center (o.c.), joist spans of 13 feet and 15 feet, wood girder (three 2 × 12s Douglas fir-larch - No. 2) with span of 6 feet, 2 inches and design floor live load of 40 psf. Girder is for an interior bearing wall supporting two floors. (pgs. 186-188)

Locate the grade mark on the girder to determine grade and species.

Measure and determine size of girder, width of structure, and span of the girder.

Repeat Step 6 for girders and headers.

Determine the allowable span for actual and specified girder.

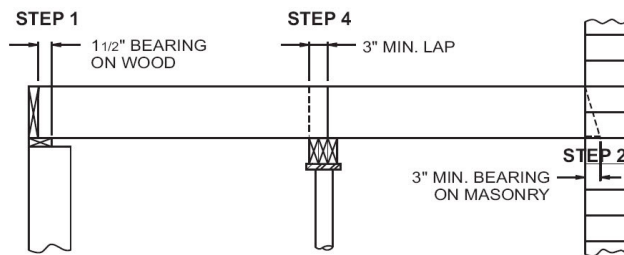


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84

Joist, Beam and Girder Bearing Inspection



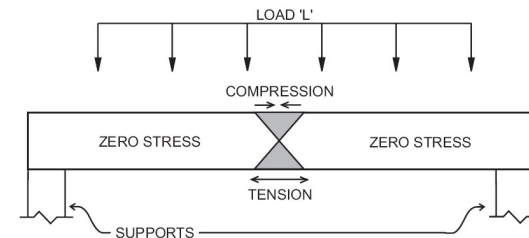
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LEARNING center

85

Cutting, Notching and Bored Holes Inspection

- In a simple span, the top of the member is in compression and the bottom is in tension.



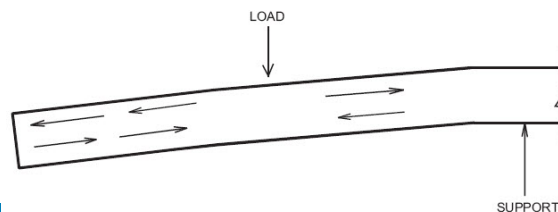
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86
LEARNING center

86

Cutting, Notching and Bored Holes Inspection

- In cantilevers, these stresses are reversed. The top of the member is in tension and the bottom is in compression.



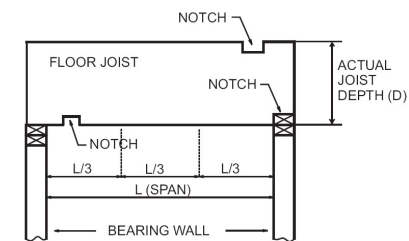
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87

Cutting, Notching and Bored Holes Inspection

- Verify that there are no notches in the middle third of any solid joist or beam span. (502.8.1, pg. 141)



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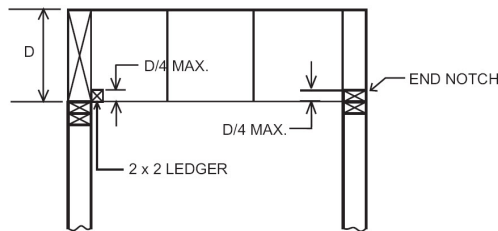
88
LEARNING center

88

Cutting, Notching and Bored Holes Inspection

Verify that notches on the ends of the joist do not exceed one quarter the depth of the joist.

(502.8.1, pg. 141)



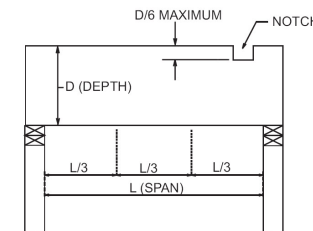
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89

Cutting, Notching and Bored Holes Inspection

Verify that notches between the end and middle third of the span do not exceed 1/6 of the depth of the joist. (502.8.1, pg. 141)



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90

Cutting, Notching and Bored Holes Inspection

Verify that notches are not longer than a third the depth of the member.

Verify that the tension side of members 4 inches or greater in nominal thickness are not notched, except at the end of the member.

(502.8.1, pg. 141)



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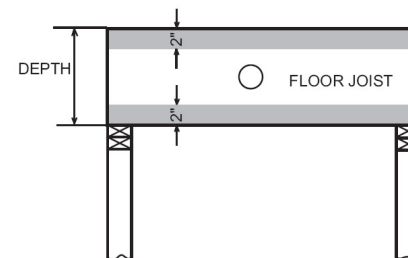


91

Cutting, Notching and Bored Holes Inspection

Check that there are no bored holes within 2 inches of the top or bottom of the joist.

(502.8.1, pg. 141)



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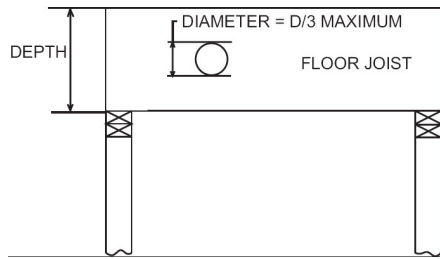


92

Cutting, Notching and Bored Holes Inspection

Confirm that the diameter of bored holes does not exceed a third the depth of the joist.

(502.8.1, pg. 141)



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LEARNING center

93

Cutting, Notching and Bored Holes Inspection

Check that there are no holes within 2 inches of another hole or notch in the same member.

(502.8.1, pg. 141)



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LEARNING center

94

Floor Framing Construction Inspection

The purpose is to check that:

- Joists are nailed in accordance with code to prevent displacement.
- Positive connections exist wherever posts, beams or girders are used to prevent uplift and lateral displacement.



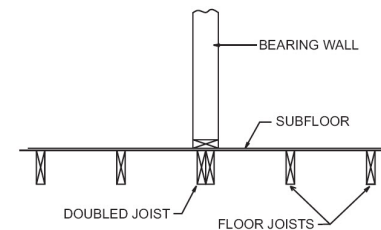
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LEARNING center

95

Floor and Ceiling Header Inspection

Determine if the joists parallel to bearing walls above are of an adequate size to support the load. (502.4, pg. 141)



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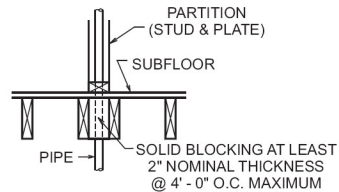
LEARNING center

96

Floor and Ceiling Header Inspection

Check to see if bearing partitions framed perpendicular to joists are not offset more than the joist depth.

Verify that full depth solid blocking is installed no more than 4 feet on center if joists have been separated to accommodate piping or vents. (502.4, pg. 141)



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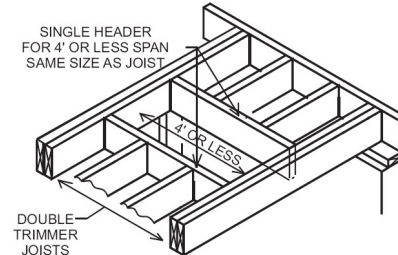
97
LEARNING center

97

Floor and Ceiling Header Inspection

For headers at floor and ceiling openings, determine if the span is 4 feet or less.

(502.10, pg. 141-143)



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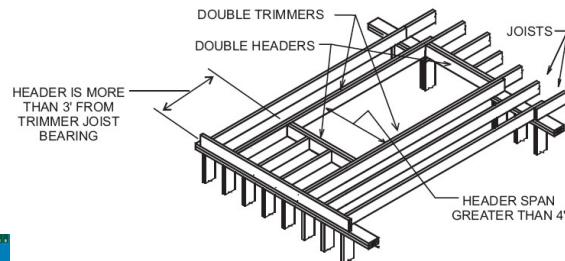
98
LEARNING center

98

Floor and Ceiling Header Inspection

Determine if the header is greater than 4 feet.

(502.10, pg. 141-143)



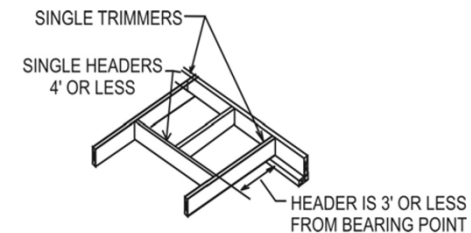
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99
LEARNING center

99

Floor and Ceiling Header Inspection

Determine if the trimmer joists at the opening are single members. (502.10, pg. 141-143)



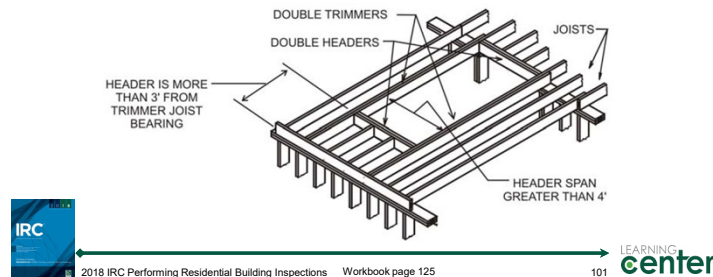
2018 IRC Performing Residential Building Inspections Workbook page 124

100
LEARNING center

100

Floor and Ceiling Header Inspection

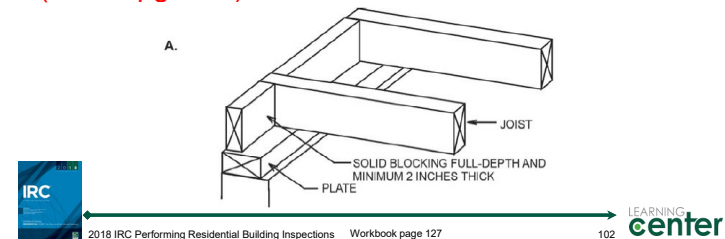
Determine if the trimmer joists are doubled when the header is more than 3 feet from the trimmer joist bearing.



101

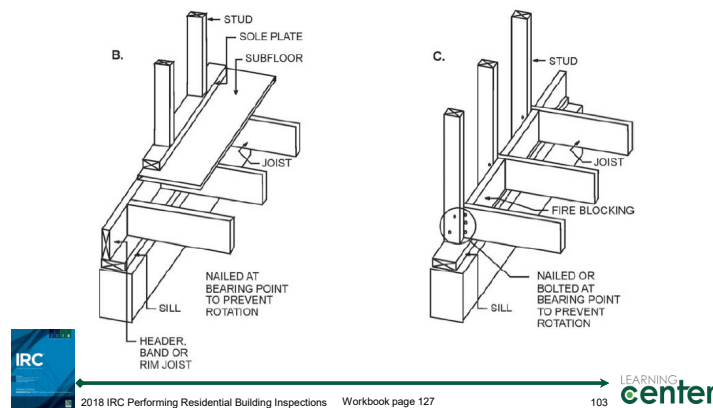
Joist Lateral Support and Bridging Inspection

Determine if the ends of the joists are laterally supported by full-depth 2-inch-thick solid blocking, a header, band or rim joist or an adjoining stud.
(502.7, pg. 141)



102

Joist Lateral Support and Bridging Inspection

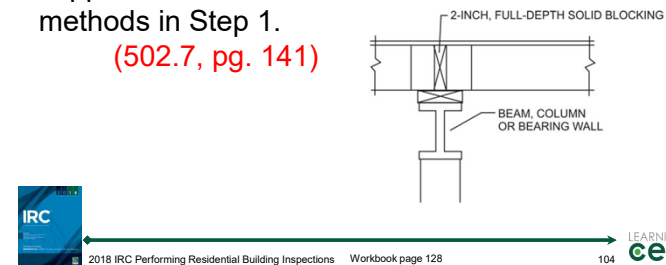


103

Joist Lateral Support and Bridging Inspection

If in Seismic Design Category D_0 , D_1 or D_2 , determine that the joists over an intermediate support have lateral restraint by one of the methods in Step 1.

(502.7, pg. 141)



104

Joist Lateral Support and Bridging Inspection

Determine that joists exceeding 2-inches by 12-inches are supported laterally by solid blocking, diagonal bridging or a 1-inch by 3-inch strip nailed to the bottom of joists at intervals not exceeding 8 feet. (502.7.1, pg. 141)

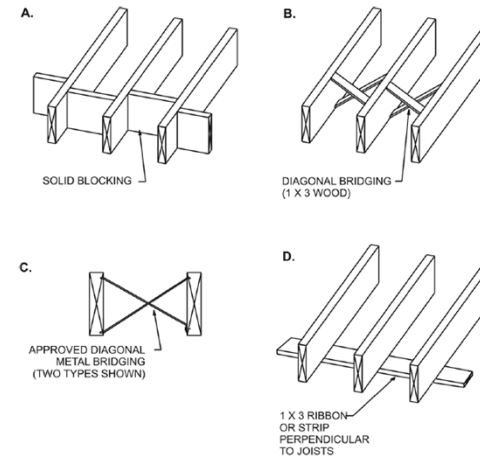


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105



105



Note: All types of bridging or blocking must be at 8-foot maximum intervals.

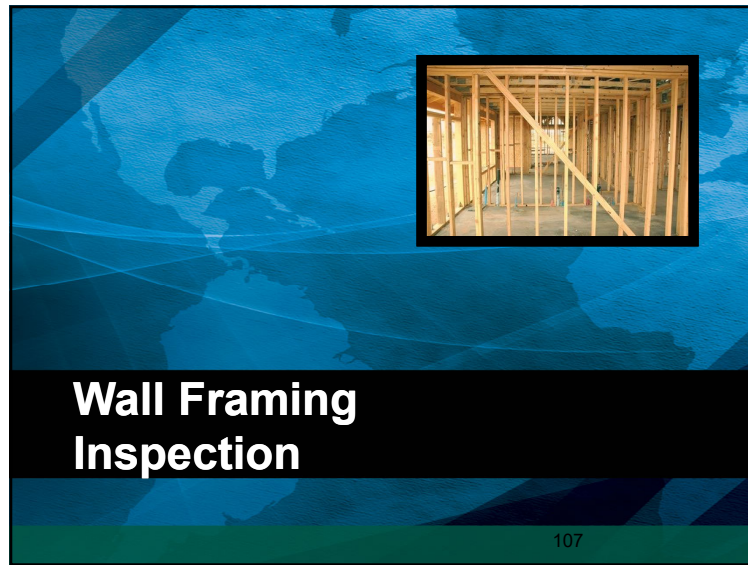


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106



107

Purpose

The purpose of the wall framing inspection task is to determine if wall framing complies with code requirements for bearing walls, cutting, notching and bored holes, wall headers, wall bracing and fireblocking.



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108

Bearing Wall Inspection

The purpose is to check that:

- Vertical wall framing members have the load-bearing capacity required.
- Framing requirements are met.
- Construction standards are met.



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109

Bearing Wall Inspection

Examine the bearing studs to determine grade and species.

Determine the nominal size and spacing of studs.

Compare bearing studs (size, spacing, grade and species) to the requirements indicated on approved plans.



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110



110

Bearing Wall Inspection

Compare actual studs (size, spacing, grade) to Table R602.3(5). (pg.181)

Determine that stud length is not greater than 10 feet. If so, go to Step 6. If stud length is greater than 10 feet, verify that stud and spacing conforms to Table R602.3(6) or a design in accordance with accepted engineering practice. (pg.181)



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111



111

Bearing Wall Inspection

If exterior walls have a top plate that is doubled, the plates must overlap at corners and intersections with bearing walls. The top plate end joints must have a 24-inch minimum offset.

Determine if double top plate exists.

(R602.3.2, pg.177)



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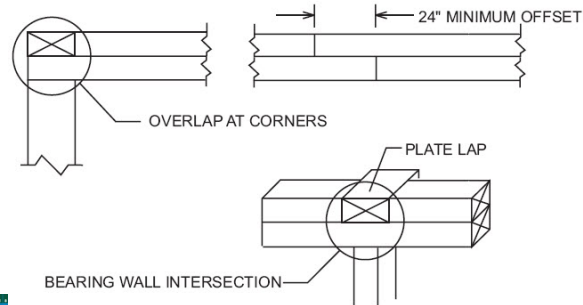
112



112

Bearing Wall Inspection

DOUBLE TOP PLATES



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113 LEARNING center

113

Bearing Wall Inspection

If a single top plate is used, check that it is tied with a 3-inch by 6-inch by 0.036-inch-thick galvanized steel plate nailed to each wall segment with 6-8d nails on each side and rafters or joists are centered within 1 inch of supporting studs. (R602.3.2, pg.177)

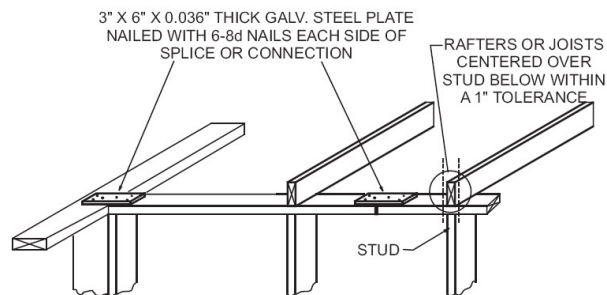


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114 LEARNING center

114

Bearing Wall Inspection



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115 LEARNING center

115

Bearing Wall Inspection

Locate the position of bearing points of floor joists and floor or roof trusses relative to supporting studs below when studs are spaced at 24 inches on center. (R602.3.3, pg.177)

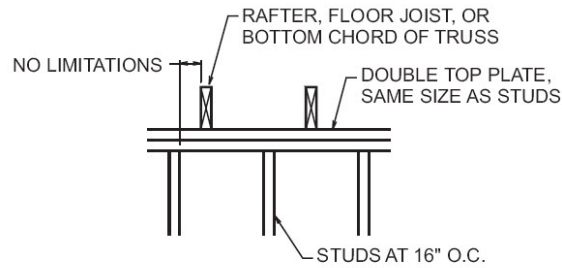


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116 LEARNING center

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Bearing Wall Inspection

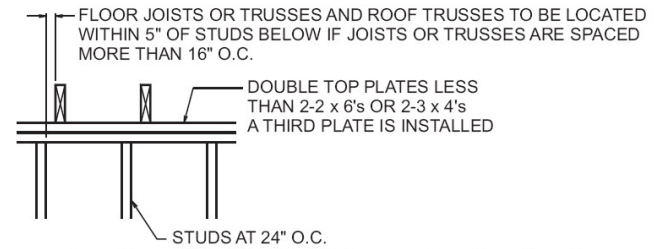


Location of Bearing for 16" on center Stud Wall



117

Bearing Wall Inspection

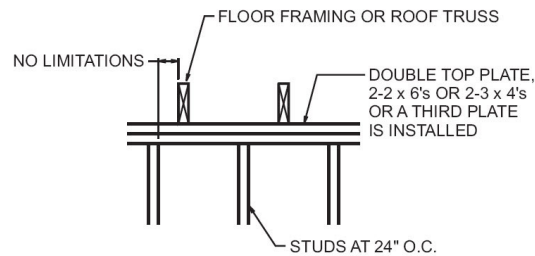


Location of Bearing for 24" on center Stud Spacing
(Top plates less than 2-2x6's or 2-3x4's)



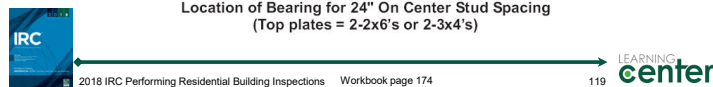
118

Bearing Wall Inspection



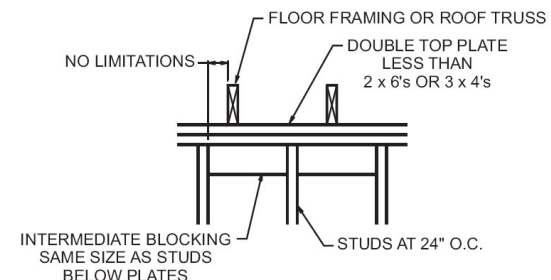
NOTE:
NO LIMIT ON FLOOR FRAMING OR ROOF TRUSS CHORD LOCATION

Location of Bearing for 24" On Center Stud Spacing
(Top plates = 2-2x6's or 2-3x4's)



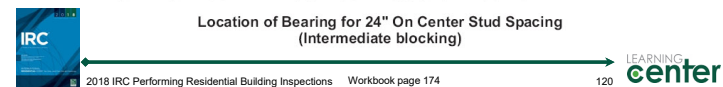
119

Bearing Wall Inspection



NOTE:
NO LIMIT ON FLOOR FRAMING OR ROOF TRUSS CHORD LOCATION

Location of Bearing for 24" On Center Stud Spacing
(Intermediate blocking)



120

Bearing Wall Inspection

Examine foundation studs in cripple walls to check that the studs are the same size dimensional lumber as studs above the foundation. (R602.9, pg.190)



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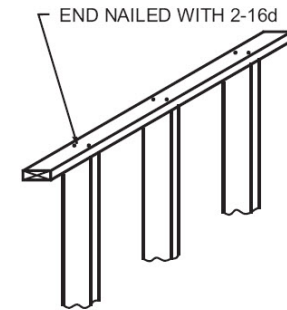
121



121

Bearing Wall Inspection

If plates are nailed to studs, examine studs to determine that top plate and sole plate are end nailed to studs with at least 2-16d nails.



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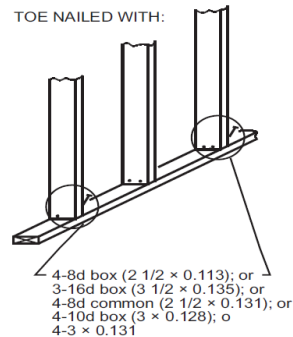
122



122

Bearing Wall Inspection

Determine If studs are not end nailed, determine if studs are toe nailed to sole plates with at least 4-8d box (2 1/2 × 0.113); or 3-16d box (3 1/2 × 0.135); or 4-8d common (2 1/2 × 0.131); or 4-10d box (3 × 0.128); or 4-3 × 0.131nails (R602.3, T-R602.3(1), pgs. 175,173)



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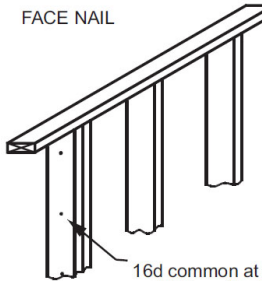
123



123

Bearing Wall Inspection

Determine if double studs are face nailed with 16d common nails at 24 inches on center; or 10d box (3 × 0.128) or 3 × 0.131 nails at 16 inches on center.



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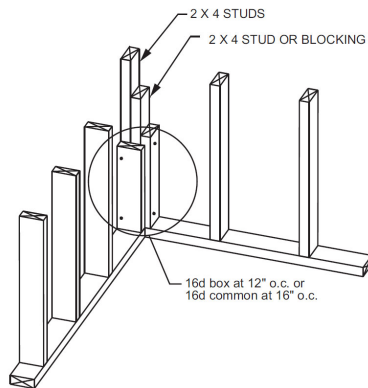


124

Bearing Wall Inspection

Determine if built-up corner studs are face nailed with 16d common nails at 24 inches on center.

-Wall corners are 16d commons at 16 inches on center



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Cutting, Notching and Bored Holes Inspection

The purpose is to verify that the load-bearing and structural integrity of the bearing wall is not compromised by excessive cutting, notching and bored holes in bearing studs, sole or top plates.



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Cutting, Notching and Bored Holes Inspection

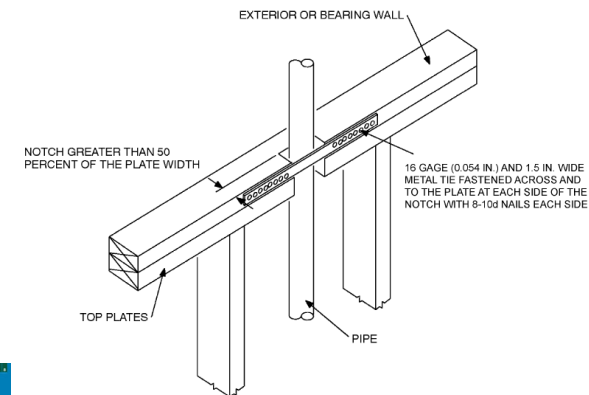
If notches in top plates exceed 50 percent, verify that the top plate is reinforced with a galvanized metal tie not less than 0.054 inch thick (16 gage) and 1 1/2 inches wide fastened across the cut plate with 10d (0.148 inch diameter) nails having a minimum length of 1 1/2 inches on each end. The metal tie shall extend a minimum of 6 inches past each end of the openings. (R602.6.1, pg.178)



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Cutting, Notching and Bored Holes Inspection

Inspect bearing or exterior wall studs to verify that notches do not exceed 25 percent of the stud width.

Inspect interior nonbearing partitions to verify that notches in studs do not exceed 40 percent of the stud width.

Inspect bearing or exterior wall studs for bored holes and check that the diameter of the hole does not exceed 40 percent unless it complies with Steps 5 and 6. (R602.6, pg.178)



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Cutting, Notching and Bored Holes Inspection

If the diameter of the hole in a bearing or exterior wall is greater than 40 percent, but does not exceed 60 percent, then the bored stud must be doubled.

If there are bored studs that are doubled and the diameter of the hole in a bearing or exterior wall is greater than 40 percent, determine that there are not more than two successive doubled bored studs. (R602.6, pg.178)



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Cutting, Notching and Bored Holes Inspection

Determine that bored holes are at least 5/8 inch from the edge of the stud.

Determine that bored holes are not in the same cross section as notches.

(R602.6, pg.178)

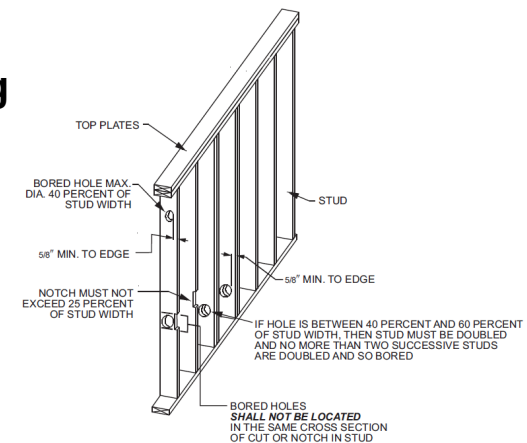


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Bearing Wall



NOTE: CONDITION FOR BEARING AND EXTERIOR WALLS

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Wall Header Inspection

The purpose is to check that headers over doors and windows are large enough to span the opening and transfer loads to jack studs or trimmers.



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133

Wall Header Inspection

Determine the grade and species of the headers from the grade mark on the lumber. Note the ground snow load and building width.

Measure the clear span of the header, then determine the depth of the header and what the header is supporting.



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Wall Header Inspection

Locate the maximum header span from Table R602.7(1), R602.7(2), or Table R602.7(3) based on determined information. (pgs.186-188)

Compare the actual header span to the span tables and note if it is in compliance.

If sizes and spans are correct, but the grade is different from that specified on drawings or specifications, determine if the grade used is equivalent or better than that required.



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135



135

Wall Bracing Inspection

The purpose is to check that exterior walls can resist lateral loads imposed by wind (racking) and seismic activity.



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136

Wall Bracing Inspection

Determine if each 1-inch by 4-inch brace is:

- Placed at an angle from horizontal between 45 and 60 degrees.
- Let into both top and bottom plates and adjoining studs.
- Correctly fastened. (T-R602.10.4, pg.202)

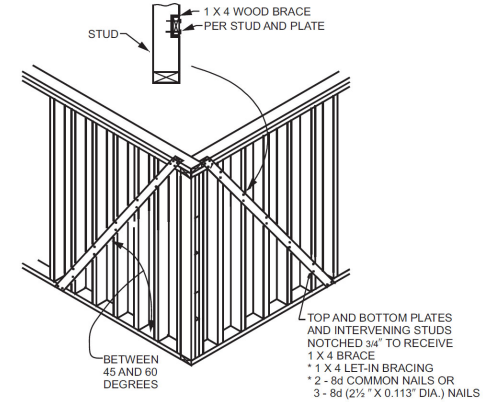


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137

Wall Bracing Inspection



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138

Wall Bracing Inspection

If metal bracing is used, verify that the metal braces are installed in accordance with the manufacturer's specifications or installation instructions.

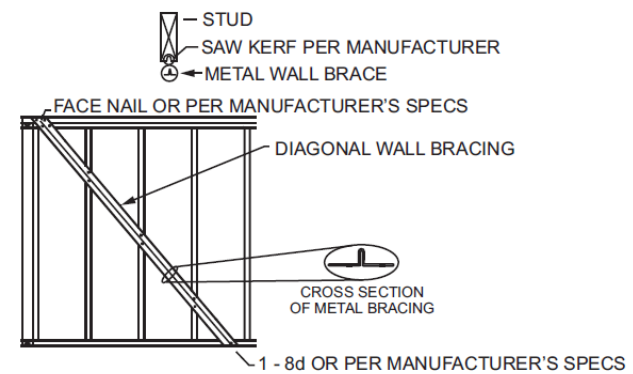


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139

Wall Bracing Inspection



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140

Fireblocking Inspection

The purpose is to check that:

- All vertical and horizontal concealed combustible draft openings are cut off and a fire barrier is formed between stories and between the top story and the roof space.



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141

Fireblocking Inspection

(R302.11, pg.62)

In all locations in the steps below except Step 5, determine if the fireblocking is one of the following:

- 2-inch nominal lumber.
- 2 thicknesses of 1-inch nominal lumber with broken lap joints.
- 1 thickness of 23/32-inch wood structural panels with joints backed by 23/32 inch wood structural panels.
- 1 thickness of 23/32-inch particleboard with joints backed by 1/2-inch particleboard.
- 1/2-inch gypsum board.
- 1/4-inch cement-based millboard.
- Mineral wool or fiberglass batts (full cross section and 16 inches high).
- Cellulose insulation installed as tested for the specific application.



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142

Fireblocking Inspection

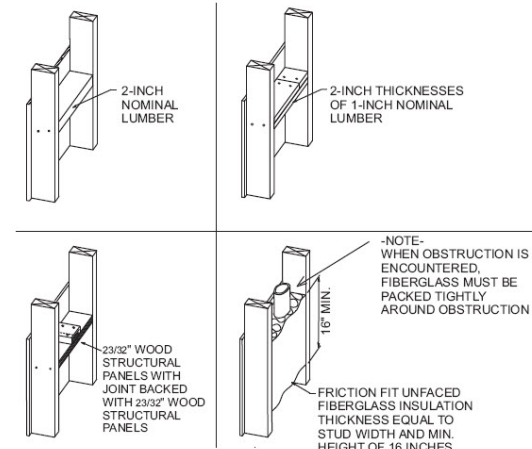
Examine all concealed spaces of stud walls and partitions (including furred spaces) to determine if fireblocking is provided vertically at ceiling and floor levels and horizontally at 10-foot intervals.



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143



Examples of Fireblocking Materials for Concealed Spaces in (stud) Walls and Partitions

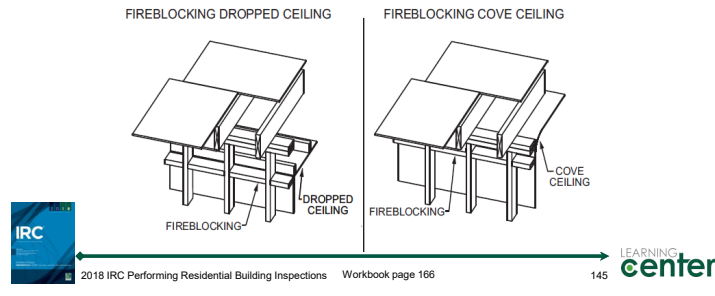
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144

Fireblocking Inspection

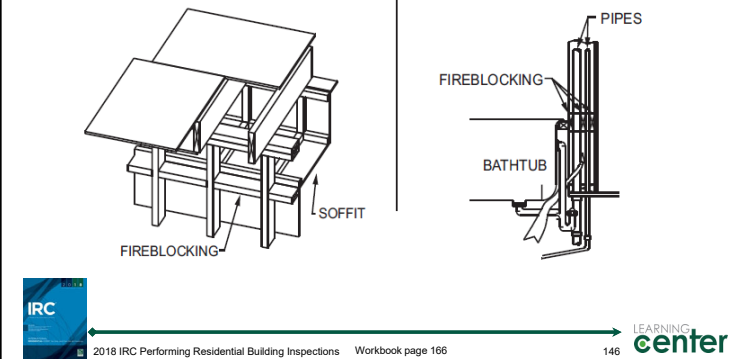
Examine all interconnections between concealed vertical and horizontal framing (soffits, dropped and cove ceilings) to determine if fireblocking is provided.



145

FIREBLOCKING FURRED SOFFIT

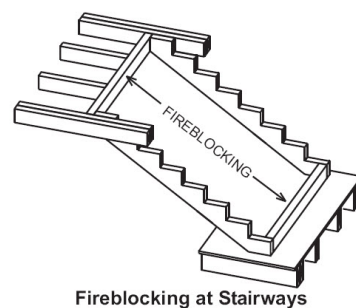
FIREBLOCKING AT BATHTUB



146

Fireblocking Inspection

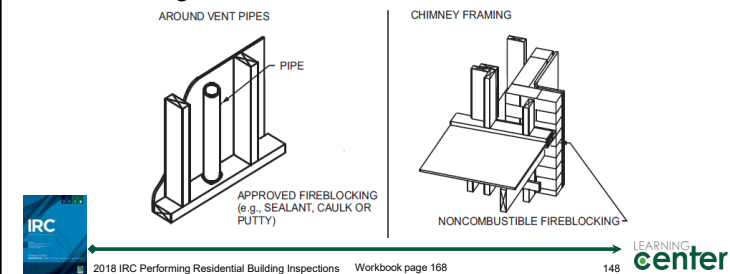
Examine all concealed spaces between stair stringers at the top and bottom of the run to determine if fireblocking material is in place.



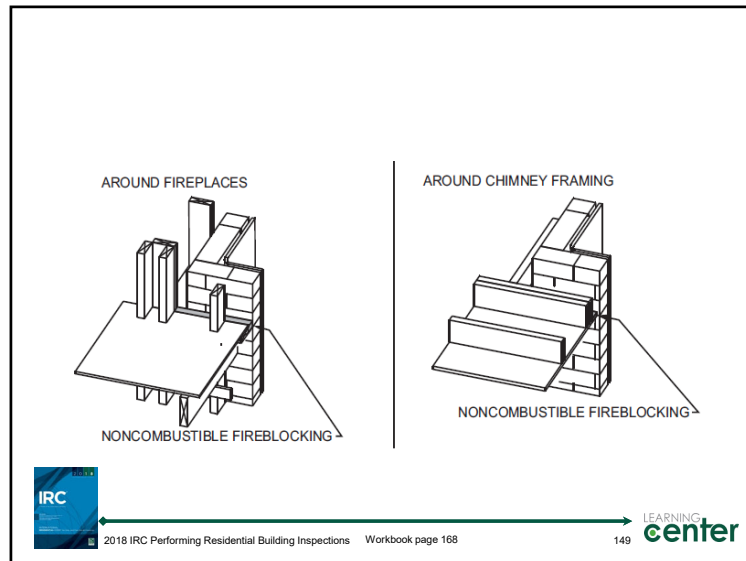
147

Fireblocking Inspection

Examine all openings around vents, pipes, ducts, chimneys and fireplaces at ceiling and floor level to determine if approved materials are provided for fireblocking.



148



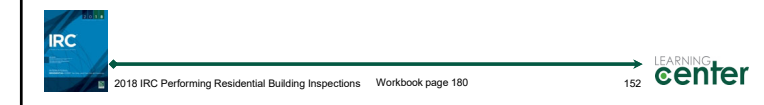
Purpose

The purpose of the roof framing inspection task is to verify that roof framing complies with code requirements.



Roof Framing Inspection Tasks

1. Rafter Materials and Allowable Spans Inspection.
2. Rafter Cutting, Notching and Bored Holes Inspection.
3. Roof Framing Construction Inspection.
4. Roof Truss and Tie-down Inspection.



Rafter Materials and Allowable Spans Inspection

The purpose is to check that:

- Dimension lumber used as rafters is an appropriate size, species, grade and condition to perform load bearing.
- Actual spans compare with those shown on the working drawings.



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Rafter Materials and Allowable Spans Inspection

Locate the grade mark on the rafters to determine grade and species.

Measure and determine size, span and spacing of the rafters.

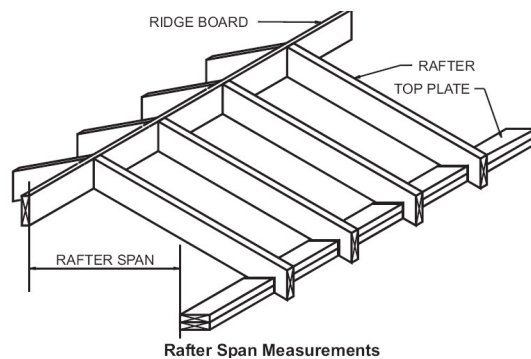


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154

154

Rafter Materials and Allowable Spans Inspection



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155

155

Rafter Materials and Allowable Spans Inspection

Compare findings with design specifications/drawings. Note any discrepancies.

If sizes and spans are correct, but the species and grade are different from those indicated on specifications/drawings, then determine if the species and grade used is equivalent to or better than that specified by locating the maximum span in the table and verifying that it meets the actual span.



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156

Rafter Materials and Allowable Spans Inspection

If the size or the clear span of the rafter is greater than that specified, note the actual clear span and/or size. This information will be necessary later for resolution of this discrepancy.



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Rafter Cutting, Notching and Bored Holes Inspection

The purpose is to check that the structural integrity of the rafters is not compromised by cuts, notches and bored holes in rafters.



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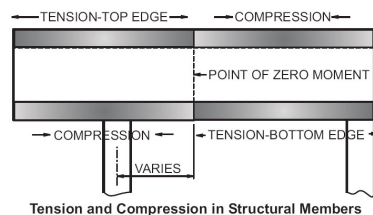
158



158

Rafter Cutting, Notching and Bored Holes Inspection

Examine lumber that is 4 inches or thicker to verify that there are no notches on the tension side except at the ends.



Tension and Compression in Structural Members



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159

Rafter Cutting, Notching and Bored Holes Inspection

Examine rafters to verify that there are no notches in the middle third of the span and notches located in the top or bottom of the rafter do not exceed one-sixth the rafter depth. Verify that notches are not longer than one-third of the joist depth.



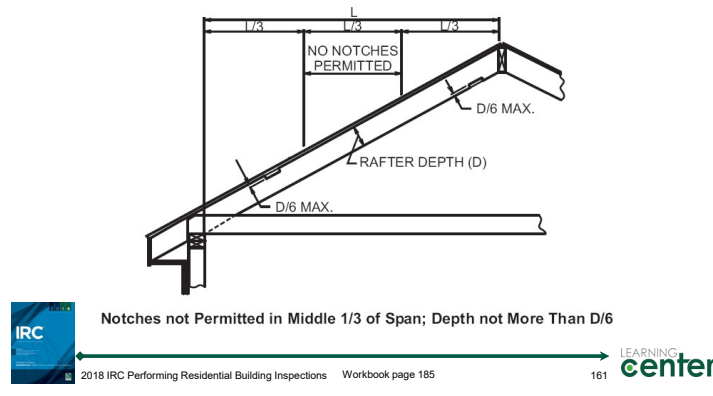
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160



160

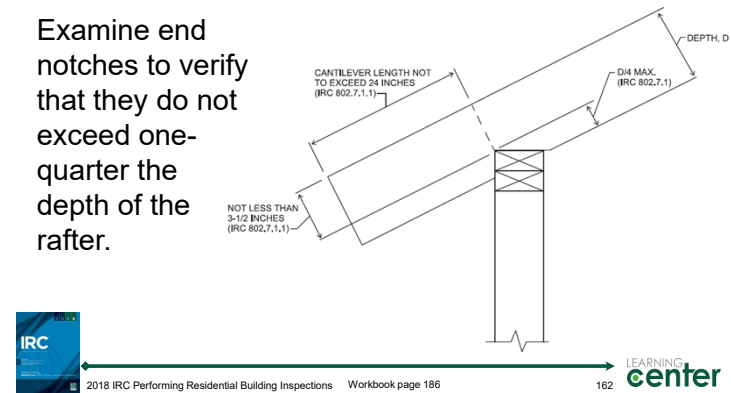
Rafter Cutting, Notching and Bored Holes Inspection



161

Rafter Cutting, Notching and Bored Holes Inspection

Examine end notches to verify that they do not exceed one-quarter the depth of the rafter.



162

Rafter Cutting, Notching and Bored Holes Inspection

Examine rafters to determine that there is no bored hole within 2 inches of the top or bottom of the rafter.

Examine the bored hole (more than 2 inches from the top or bottom of the rafter) to check that the hole diameter does not exceed one-third the depth of the rafter.



163

Rafter Cutting, Notching and Bored Holes Inspection

If there are notches on cantilevered (overhang) portions of rafters, verify that the remaining portion of the rafter is not less than 3½ inches nominal dimension and length of cantilever is not more than 24 inches.



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Roof Framing Construction Inspection

The purpose is to determine if:

- Ceiling joists or rafter ties form a continuous connection to rafters between exterior walls to resist rafter thrust.
- Rafters are framed to ridge board or each other.
- Ridge board is designed as a beam for low pitched roofs or when there are no rafter ties.
- Roof framing details and connections are adequate to support the loads.



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165

Roof Framing Construction Inspection

Examine rafters that are parallel to ceiling joists to determine if joists are nailed to each rafter to form a continuous tie between exterior walls.



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166

Roof Framing Construction Inspection

Determine if each joist is face nailed to the rafter in accordance with Table R802.5.2 based on roof pitch, span, snow load and rafter spacing.

- Determine that lapped joists are nailed together in accordance with Table 802.5.2 or that butted joists are tied together with plate to resist rafter thrust.
- Check that ceiling joists are toe nailed to top plate.



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167

Roof Framing Construction Inspection

Examine rafters that are not parallel to ceiling joists to determine method of rafter tie; if rafter tie is used, then continue Step 3, if not, go to Step 4. Then verify:

- That rafter ties are face nailed to rafters in accordance with the requirements of Table R802.5.2.
- Rafter tie is a minimum of at least a 2-inch by 4-inch member.



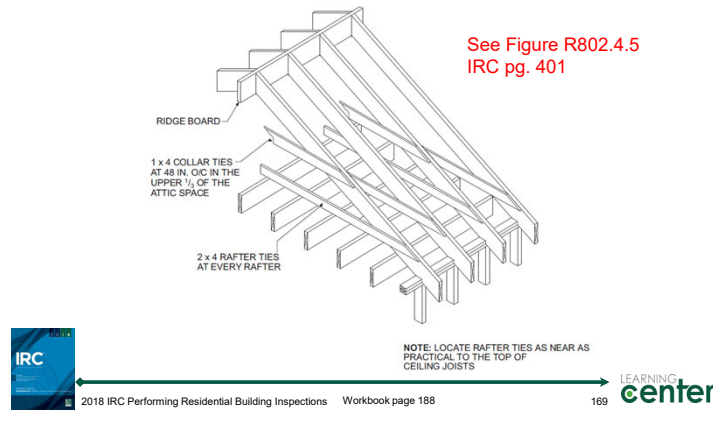
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168

Roof Framing Construction Inspection



169

Roof Framing Construction Inspection

Verify that where ceiling joists or rafter ties are not provided, the load of the rafters are supported by a wall or girder designed in accordance with accepted engineering practice.

Determine if roof rafters are toe nailed to the plate with 3-16d box nails ($3 \frac{1}{2} \times 0.135$); or 3-10d common nails (3×0.148); or 4-10d box (3×0.128); or 4-3 $\times 0.131$ nails with two toe nails on one side and one toe nail on the other side per Table R602.3(1).



170

Roof Framing Construction Inspection

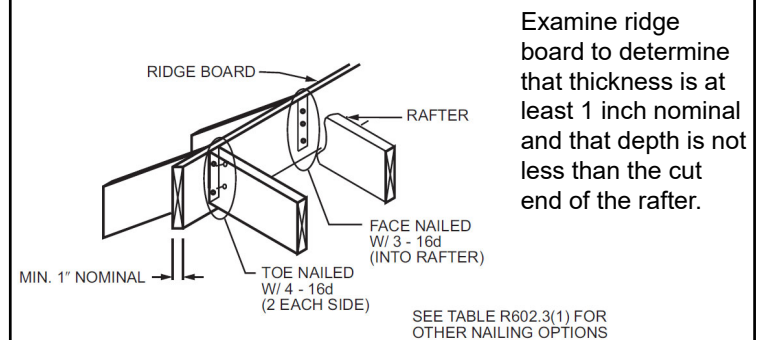
Collar ties or ridge straps to resist wind uplift shall be connected in the upper third of the attic space in accordance with Table R602.3(1).

(Collar ties shall be a minimum of 1 inch by 4 inches (nominal), spaced not more than 4 feet on center.)



171

Roof Framing Construction Inspection



172

Roof Framing Construction Inspection

Determine that roof rafters are toe nailed to the ridge board with 3-16d box $3\frac{1}{2} \times 0.135$; or 2-16d common ($3\frac{1}{2} \times 0.162$); or 3-10d box (3×0.128); or 3-3 $\times 0.131$ nails or end nailed with 3-16d box $3\frac{1}{2} \times 0.135$; or 2-16d common ($3\frac{1}{2} \times 0.162$); or 3-10d box (3×0.128); or 3-3 $\times 0.131$ nails. If there is no ridge board, then rafters must be framed together with a gusset plate.

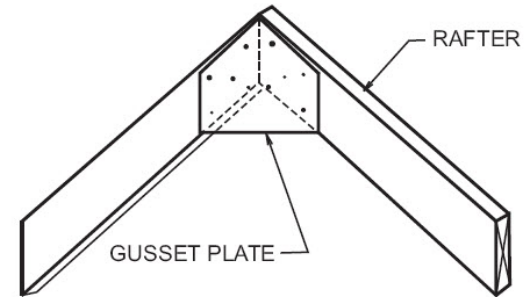


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173

Roof Framing Construction Inspection



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174

Roof Framing Construction Inspection

If there are hip and valley rafters, determine that thickness is not less than 2 inches nominal and that depth is not less than the cut end of the roof rafter. If not, go to Step 12.

Determine if all hip and valley rafters are supported at the ridge by a brace to a bearing partition or are designed to carry and distribute the specific load at that point.



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175

Roof Framing Construction Inspection

Determine if the roof rafters are toe nailed to hip and valley rafters in accordance with Table R602.3(1). (nailing requirements match those for the rafter-to-ridge connection).



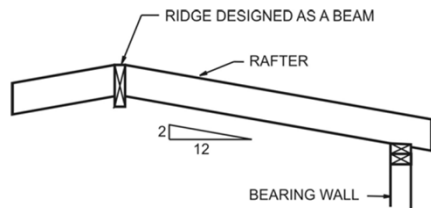
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176

Roof Framing Construction Inspection

If the roof pitch is less than 3:12, determine if all roof framing members that support rafters and ceiling joists are designed as beams.



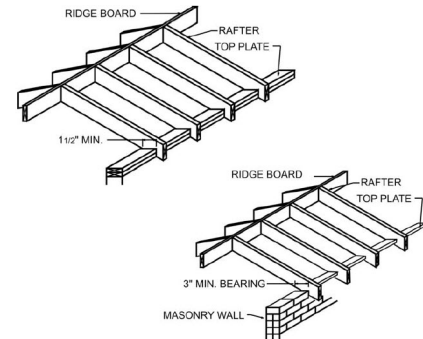
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177 LEARNING center

177

Roof Framing Construction Inspection

Determine that the end of each rafter has 1½ inches of bearing on wood or 3 inches of bearing on masonry.



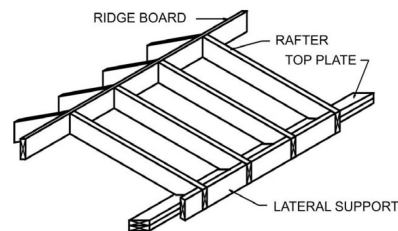
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178 LEARNING center

178

Roof Framing Construction Inspection

Determine that rafters having a depth to thickness ratio exceeding 5:1 ($> 2 \times 10$) have lateral support at bearing points to prevent rotation.



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179 LEARNING center

179

Roof Framing Construction Inspection

If the header in the roof opening is 4 feet or less, verify that it is a single member the same size as the rafter and that the trimmer rafters are doubled, unless the header is located within 3 feet of the trimmer rafter bearing.



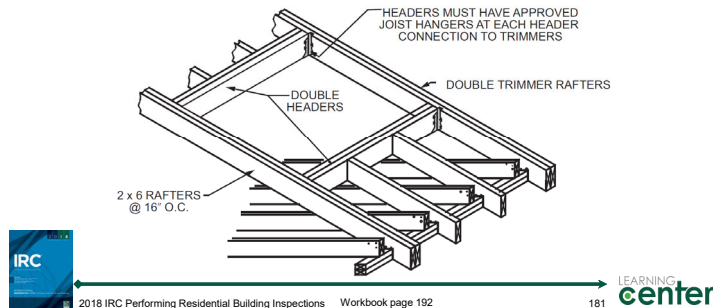
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180 LEARNING center

180

Roof Framing Construction Inspection

Joist hangers or other supports are required header and rafter connections, where header span > 6 feet.



181

Roof Framing Construction Inspection

Tail rafters > 12 feet must be supported at the header by:

- Framing anchors (joist hangers), or
- 2-inch by 2-inch minimum ledger strips.



182

Roof Truss and Tie-Down Inspection

The purpose is to check that:

- Roof truss design drawings have been provided and approved.
- Roof truss design and installation comply with the truss design drawings.
- Truss plates meet specifications.
- Bracing and bearing comply with truss design drawings.



183

Roof Truss and Tie-Down Inspection

The purpose of the roof truss and tie-down inspection is to check that:

- Roof truss design drawings have been provided and approved.
- Roof truss design and installation comply with the truss design drawings.
- Truss plates meet specifications.
- Bracing and bearing comply with truss design drawings.
- Truss-to-wall connection is in accordance with Section R802.11.1.1, Table R802.11 and Table R602.3(1).
- Rafter-to-wall connection is in accordance with Section R802.11.1.2, Table R802.11 and Table R602.3(1).



184

Roof Truss and Tie-Down Inspection

Verify that the wood roof trusses have been designed in accordance with accepted engineering practice.

Determine if the roof truss design drawings have been received and approved by the building official.

Determine if the roof truss construction and installation conform to the approved truss design drawings.



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185

Roof Truss and Tie-Down Inspection

Determine if permanent bracing has been installed in accordance with the truss design drawings.

Check that no roof truss member has been cut, notched, drilled, spliced or altered in any way without approval of a registered design professional.



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186

Roof Truss and Tie-Down Inspection

Determine if the trusses are bearing at the proper bearing points marked on the truss specifications.

Verify that the connections for truss to girder-truss, truss ply to ply and field splices conform to the requirements of the truss design drawings and the construction documents.



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187

Roof Truss and Tie-Down Inspection

Determine if roof rafters or truss assemblies are attached to their supporting wall assemblies with connections in accordance with Section R802.11.1 and Table R802.11.



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188

Connections

BWP Connection Requirements to Roof Framing


SDC Wind Speed	Distance (bottom of roof sheathing to top of plate)	Blocking
SDC A, B, C	9.25" or less	Not required, attach per R602.3(1)
	9.25" to 15.25"	Per R602.10.8.2 Item 1 and Figure R602.10.8.2(1)
SDC D ₀ , D ₁ , D ₂	15.25" or less	Per R602.10.8.2 Item 2 and Figure R602.10.8.2(1)
All SDCs	15.25" to 48"	Per R602.10.8.2 Item 3 and Figure R602.10.8.2(2) or R602.10.8.2(3) or engineered design



2018 IRC Wood Wall Bracing Provisions

R602.10.8.2

189



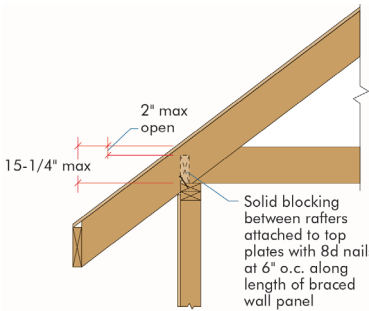
189


Connections

BWP Perpendicular to Rafters or Roof Trusses

For SDC A, B and C,

- Where distance from top of the rafters to perpendicular top plates is > 9.25" and ≤ 15.25".
- Connect rafters to top plates of braced wall panels with blocking [Figure R602.10.8.2(1) and Table R602.3(1)].






2018 IRC Wood Wall Bracing Provisions

Figure R602.10.8.2(1)

190



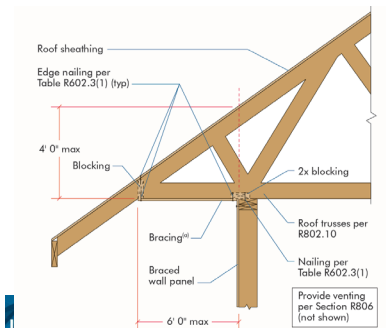
190


Connections

BWP Perpendicular to Rafters or Roof Trusses

For all Seismic Design Categories,

- Where distance from top of rafters or roof trusses to perpendicular top plates is > 15.25"
- Connect rafters to the top plates of braced wall panels [Figure R602.10.8.2(2) or Figure R602.10.8.2(3)]






2018 IRC Wood Wall Bracing Provisions

Figure R602.10.8.2(2)

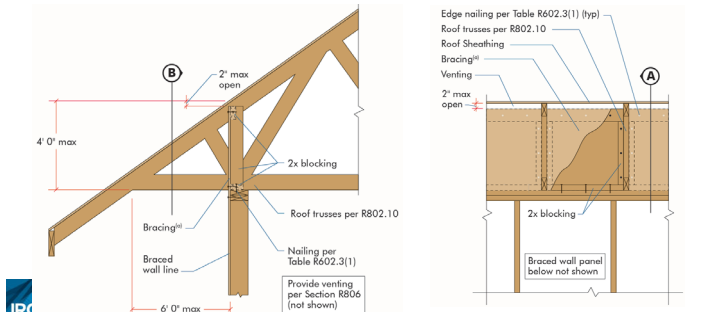
191




191

Connections

BWP Perpendicular to Rafters or Roof Trusses






2018 IRC Wood Wall Bracing Provisions

Figure R602.10.8.2(3)

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Sheathing Inspection Tasks

1. Floor Sheathing Inspection.
2. Roof Sheathing Inspection.
3. Wall Bracing Inspection.
4. Portal Frame Bracing Methods Inspection.
5. Simplified Wall Bracing Inspection.



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Floor & Roof Sheathing Inspection

Determine the wood structural panel characteristics from the grade mark:

- Span rating
- Nominal thickness or performance category
- Conformance to DOC PS 1, DOC PS 2, CSA O437 or CSA O325 for structural purposes
- Bond (glue and exposure) classification



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APA
C-D PLUGGED
GROUP 2
EXPOSURE 1

000
PS1 - 95

APA
RATED SHEATHING
24/0 3/8 INCH
SIZED FOR SPACING
EXPOSURE 1

000
STRUCTURAL I RATED
DIAPHRAGM - SHEAR WALLS
NER - QA397 PPR 108

APA
THE ENGINEERED WOOD ASSOCIATION

Panel's Face Grade & Back Grade
B-C GROUP 1

Bond Durability Classification
EXTERIOR

Product and/or Performance Standard
PS 1

Correct Panel Selection

APA
THE ENGINEERED WOOD ASSOCIATION

RATED SHEATHING
32/16 15/32 INCH
SIZED FOR SPACING
EXPOSURE 1

ROOF 30 psf LL
10 psf DL

FLOOR 100 psf LL
10 psf DL

PS1 - PPR 108



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196

Floor Sheathing Inspection

Determine that the floor sheathing installation complies with the maximum span rating requirements. The floor span rating is indicated in the grade mark as the second of two numbers.

Determine if the floor panels are installed with the long dimension (strength axis) perpendicular to the joists and span at least 2 joist spaces (supported by at least 3 joists).



197

Floor Sheathing Inspection

Determine if the unsupported edges have tongue-and-groove joints or are supported by blocking installed perpendicular to the joists unless a 1/4-inch-thick underlayment is installed with all edge joints offset by at least 2 inches or a 3/4-inch wood finish floor is installed at right angles to the joists.



198

Floor Sheathing Inspection

Determine if the fasteners for the floor sheathing comply with the requirements in Table R602.3(1) or Table R602.3(2).



199

Roof Sheathing Inspection

Determine from the grade mark on the wood structural panel if it is rated as Exterior or Exposure 1. Either is acceptable when a roof covering is applied. Most roof sheathing will be identified as Exposure 1.



200

Roof Sheathing Inspection

Determine that the roof sheathing installation complies with the maximum span rating requirements.

Determine if the wood structural panels are installed with the long dimension (strength axis) perpendicular to the rafters or trusses and span at least 2 spaces (supported by at least 3 rafters or roof trusses).



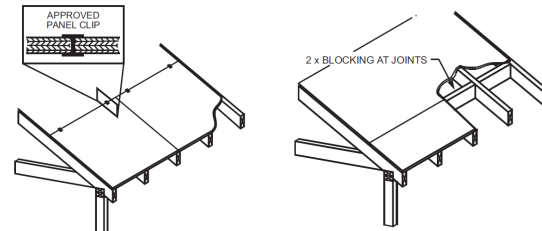
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201

Roof Sheathing Inspection

Determine if the unsupported panel edges require additional support, such as edge clips (H-clips), blocking or tongue-and-groove joints.



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202

Roof Sheathing Inspection

Determine if the fasteners for the roof sheathing comply with the requirements in Table R602.3(1) or Table R602.3(2).



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Wall Bracing Inspection

Determine that wood structural panels are being used for wall bracing (other panels such as structural fiberboard, gypsum board, hardboard, and particle board are also acceptable for designated construction methods).

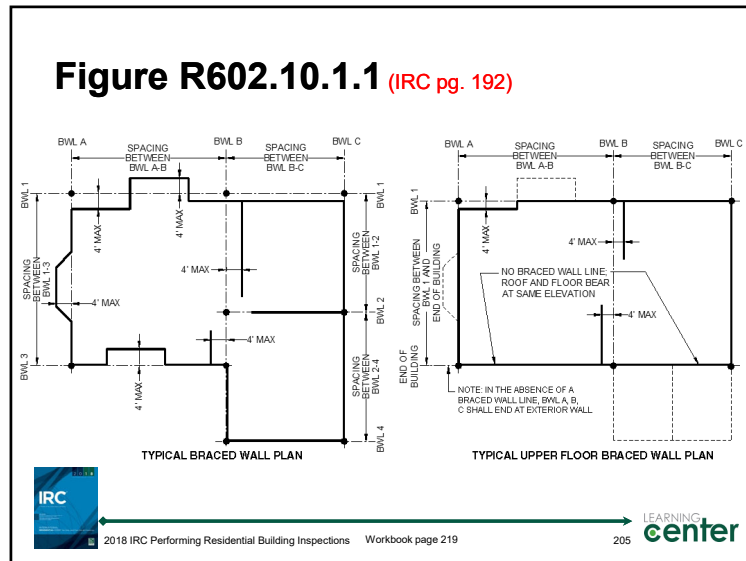
Determine the location of the braced wall lines and that offsets do not exceed 4 feet on either side of the braced wall line.



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Figure R602.10.1.1 (IRC pg. 192)

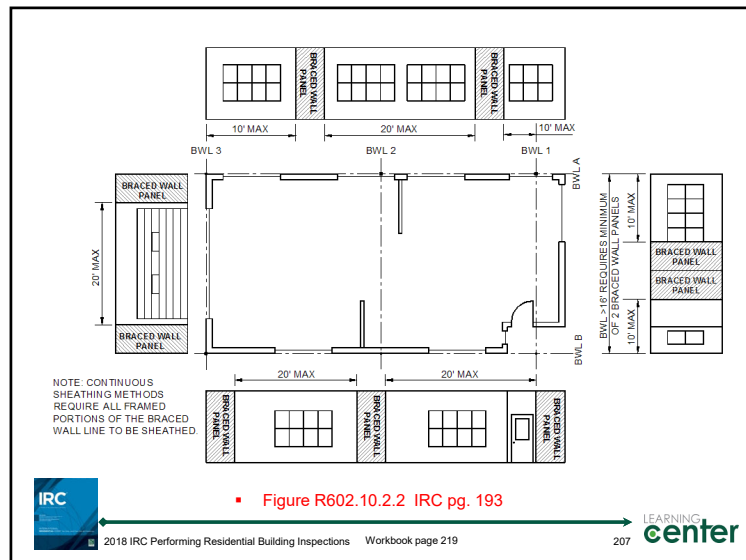
205

Wall Bracing Inspection

Verify that braced wall panel locations comply. Spacing is limited to 20 feet measured from edge to edge. The first braced wall panel must be within 10 feet of the end of the braced wall line. Braced wall lines with a length of 16 feet or less require one 48-inch braced wall panel. Braced wall lines exceeding 16 feet require a minimum of two qualifying braced wall panels, with Section R602.10.2.



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Wall Bracing Inspection

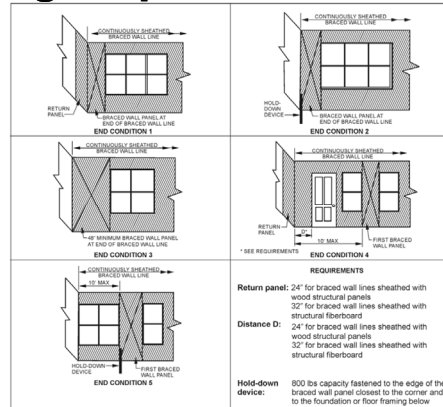
Determine if the braced wall panels meet the minimum length requirements of Table R602.10.5. Verify that the minimum required length of bracing is provided (Tables R602.10.3(1),(3)). Determine from the construction documents and verify at final inspection that at least ½-inch-thick gypsum wall board is installed on the side of the wall opposite the bracing material.



208

Wall Bracing Inspection

For method CS-WSP, verify that the ends of braced wall lines comply with one of the five end conditions in Figure R602.10.7.



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209

Wall Bracing Inspection

Determine if the minimum thickness of wood structural panels is 3/8 inch for either the intermittent or continuous sheathing method.

Verify that attachment for sheathing on exterior walls meets the requirements of Table R602.3(3) based on stud spacing, panel thickness, wind speed and wind exposure category.

Verify that horizontal joints in braced wall panels occur over, and are fastened to, a least 1½-inch-thick blocking.



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Portal Frame Bracing Methods Inspection

The purpose is to determine if the portal frame bracing is properly installed to adequately resist the lateral forces of wind and seismic loads.



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211

Portal Frame Bracing Methods Inspection

Determine if the method of portal frame construction is appropriate for the location.

Determine if the concrete foundation size and reinforcing for method PFH complies with Figure R602.10.6.2.

Determine if the method of portal frame construction complies with height or other limitations.



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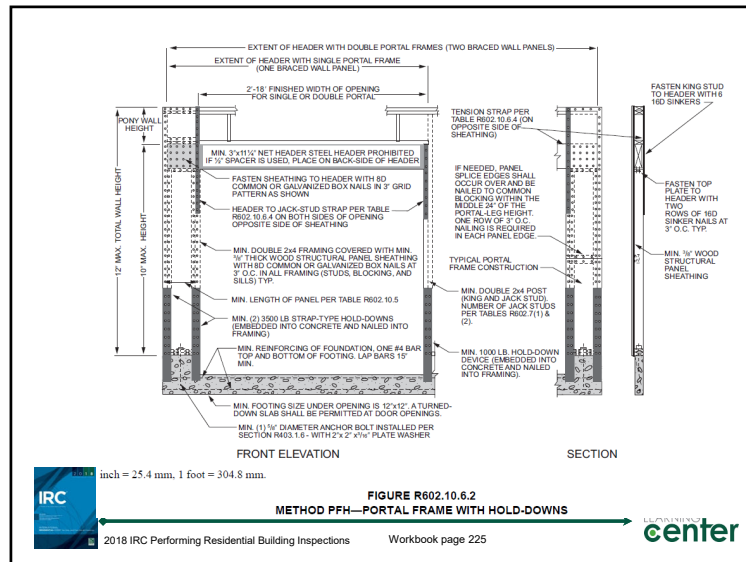


212

Determine if the header is a minimum of 3 inches by 11¼ inches wood and is continuous to the outside stud of the portal frame. Verify that the maximum opening width is 18 feet.



213



215

Verify the size, location, fastening and capacity of tension straps on the back side of the opening at each end of openings using any of the portal frame options.

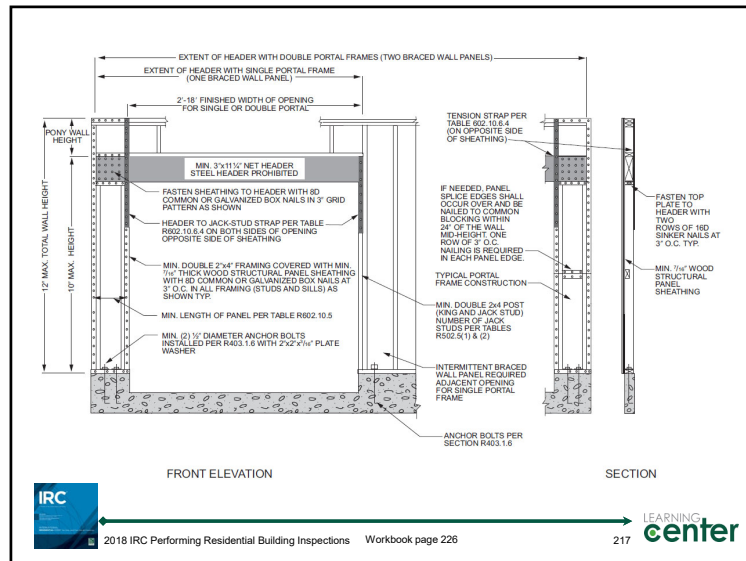


214

Determine if the thickness of the portal frame wood structural panels is at least 3/8 inch for method PFH and at least 7/16 inch for methods PFG and CS-PF.



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217

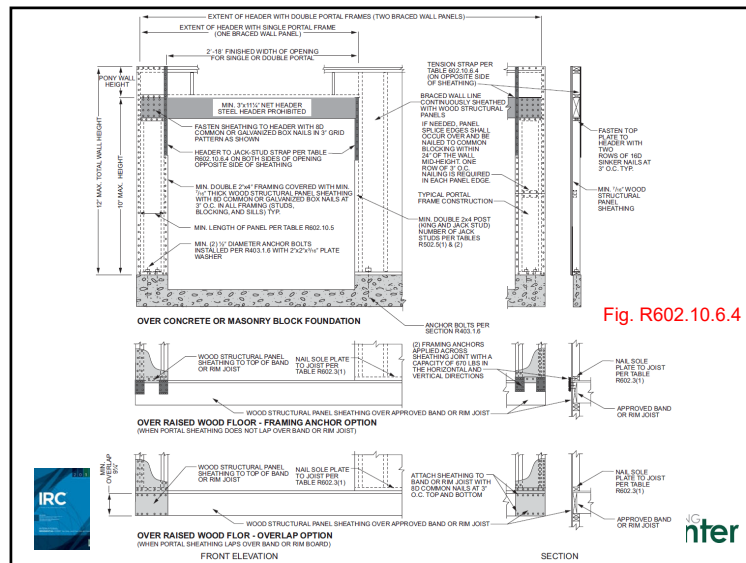
Portal Frame Bracing Methods Inspection

Determine if the required minimum length of the bracing panel complies with Table R602.10.5 based on the wall height.

Determine the contributing length of each portal frame when calculating the required length of bracing in the braced wall line.



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Simplified Wall Bracing Inspection

Verify that the simplified wall bracing methods meet all conditions of Section R602.12 and that the methods are not mixed with methods in Section R602.10. Determine if the simplified wall bracing provisions can be used based on geographical location.



220

Simplified Wall Bracing Inspection

Determine if the simplified wall bracing provisions can be used based on conditions related to:

- No more than three stories above the top of a concrete or masonry foundation or basement wall. Permanent wood foundations are not permitted.
- Floors cannot cantilever more than 24 inches beyond the foundation or bearing wall below.
- Wall height is limited to 10 feet.
- The roof eave-to-ridge height is limited to 15 feet.



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Simplified Wall Bracing Inspection

Determine if all exterior walls have minimum 1/2-inch gypsum board installed on the interior side. Verify that there are no cripple walls in a three-story dwelling.



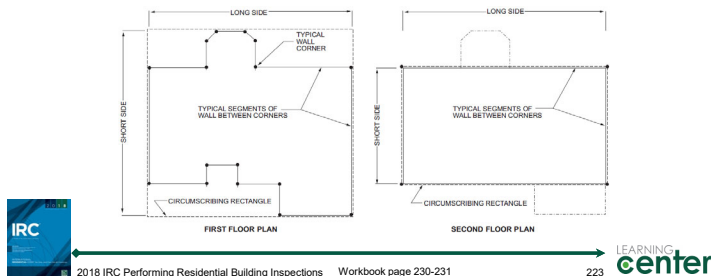
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Simplified Wall Bracing Inspection

Determine the dimensions of a circumscribed rectangle around the entire building. Verify that no side of the rectangle is more than 60 feet and that the ratio of the long side to the short side does not exceed 3:1.



223

Simplified Wall Bracing Inspection

Determine if wood structural panels with a minimum thickness of 3/8 inch are installed for each bracing unit.

Verify that attachment for sheathing on exterior walls meets the requirements of Table R602.3(3) based on stud spacing, panel thickness, wind speed and wind exposure category.



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Simplified Wall Bracing Inspection

Determine if all exterior walls are sheathed with wood structural panels including spaces between bracing units. If so, the minimum length of a bracing unit is 3 feet.

Determine if the number of bracing units on each side of the building complies with Table R602.12.4.



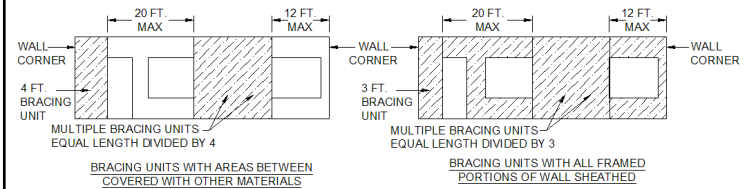
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225

Simplified Wall Bracing Inspection

Determine if the bracing units are properly distributed.



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Simplified Wall Bracing Inspection

Determine if any narrow panel bracing methods are used. Verify the corresponding requirements for methods CS-G, CS-PF, PFH and PFG.



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Purpose

The purpose of the roof covering inspection task is to verify that:

- Roof covering and underlayment complies with code requirements and to verify that construction will prevent water from damaging the structure below.
- There is proper ventilation for the control of condensation and heat build-up.



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Asphalt Shingle/ Underlayment Inspection

The purpose is to check that the roof covering underlayment and asphalt shingles are of adequate construction to prevent water from damaging the structure below.



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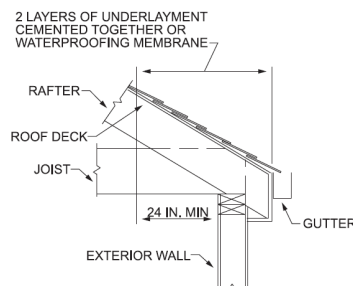
230

Asphalt Shingle/ Underlayment Inspection

Determine if the roof covering is designed to provide a weather barrier.

Determine if the roof is solidly sheathed and in good condition.

Determine if the required underlayment is laid parallel to the eaves.



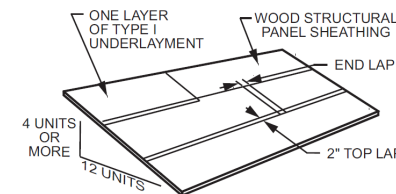
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Asphalt Shingle/ Underlayment Inspection

If the slope of the roof is four units in 12 units or greater, determine if a minimum of one layer of underlayment approved Type I is used and it has a 2-inch top lap, has an end lap and is nailed sufficiently to hold it in place.



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Asphalt Shingle/ Underlayment Inspection

If the slope of the roof is between 4 units in 12 units and 2 units in 12 units, determine if the underlayment consists of at least two layers of approved underlayment, and has a 19-inch starter strip at eave and is covered with a 36-inch-wide sheet (see Figure that follows). Additional sheets are lapped 19 inches to provide two layers of protection. All sheets should be fastened sufficiently to hold them in place.

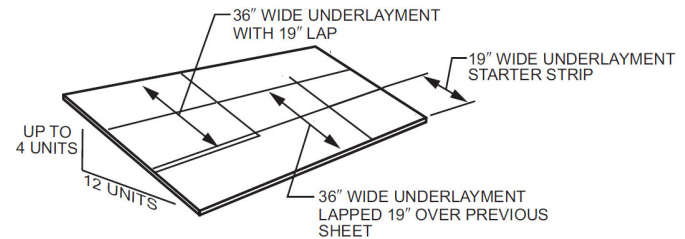


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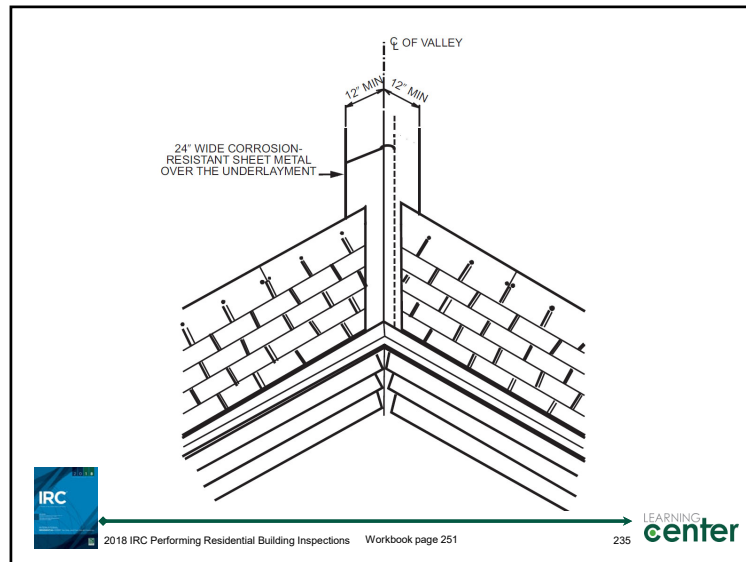
Asphalt Shingle/ Underlayment Inspection



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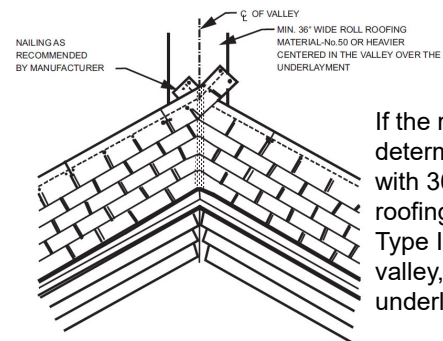


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Asphalt Shingle/ Underlayment Inspection



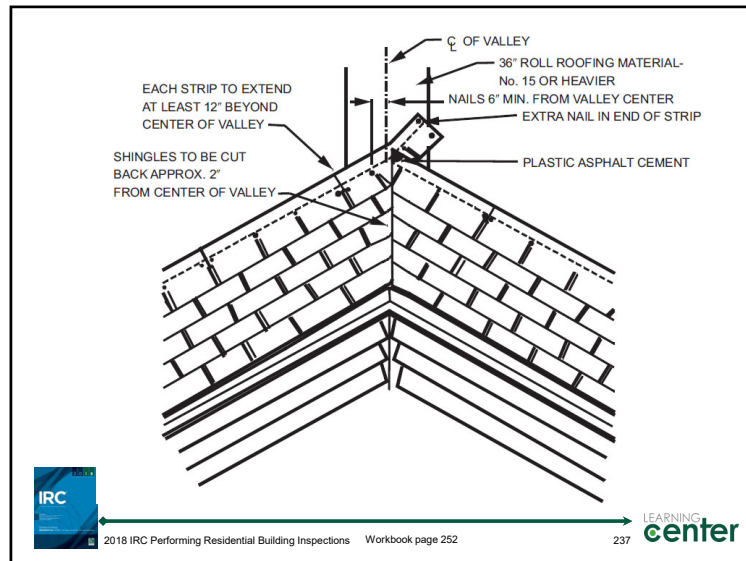
If the roof valley is closed, determine that it is flashed with 36-inch wide smooth roll roofing material not less than Type II or III centered in the valley, over the approved underlayment.



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Roof Ventilation and Attic Access Inspection

The purpose is to check that:

- Adequate roof ventilation is provided for control of condensation and heat build-up.
- An access to the attic is provided for inspection and repairs.



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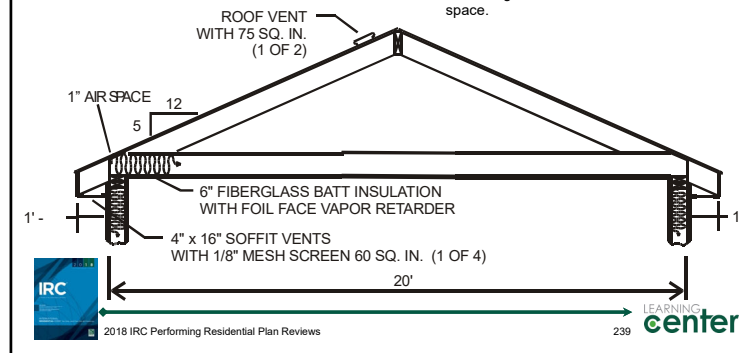
Attic Review

Roof Cross Section

Determine if the net free area of the openings is at least 1/150 of the space to be ventilated. The net free ventilation area may be reduced to 1/300 if:

A Class I or II vapor retarder is installed on the warm-in-winter side of the ceiling in Climate Zones 6, 7 and 8; and

40 to 50 percent of the required ventilating area is located in the upper portion of the space to be ventilated with the balance of the required ventilating area in the bottom third of the attic space.



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Attic Review

CLEAR HEIGHT IN ATTIC OVER 30", PROVIDE ACCESS

22" X 30" MINIMUM ACCESS IN HALLWAY OR OTHER READILY ACCESSIBLE LOCATION



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Roof Ventilation and Attic Access Inspection

Determine if unvented attic assemblies and unvented enclosed rafter assemblies meet all of the following conditions:

- Attic space is completely contained in the building envelope.
- No Class I vapor retarders are installed between the attic and the conditioned spaces below it.
- If wood shingles or shakes are installed a 1/4-inch minimum vented airspace between the shingles/shakes and the underlayment is required.
- Air-impermeable insulation installed in Climate Zones 5, 6, 7 or 8 must be a Class II vapor retarder.
- Check when preformed insulation board is being used as the air-impermeable insulation layer, that the perimeter of each sheet is sealed on the interior surface to form a continuous layer.



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Roof Ventilation and Attic Access Inspection

Determine if unvented attic assemblies and unvented enclosed rafter assemblies insulation complies with one of the following conditions:

- Meets one of four conditions regarding the air permeability insulation directly under the structural roof sheathing. (R806.5, condition 5.1 IRC pg. 428); or
- If Climate Zones 1, 2 or 3, meets ten conditions for air-impermeable insulation installed in unvented attics. (R806.5, condition 5.2 IRC pg. 428-429)



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Roof Ventilation and Attic Access Inspection

- Compliance with one of the following is required:
 - Air-impermeable insulation is in direct contact with the structural sheathing.
 - Air-permeable insulation is installed directly below the structural sheathing if rigid insulation, as specified in Table R806.5, is installed directly above the structural sheathing.
 - Air-impermeable insulation, as specified in Table R806.5, is installed in direct contact with the structural sheathing with air-permeable insulation directly underneath it.
 - Rigid board insulation installed directly above the structural roof sheathing that is capable of maintaining 45 degrees F on the underside of the sheathing.



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Roof Ventilation and Attic Access Inspection

- Climate Zones 1, 2 and 3 air-impermeable insulation compliance with the following is required:
 - Vapor-diffusion ports, having a perm rating of at least 20, with an area equal to 1/600 of the ceiling area installed within 12 inches of the highest portion of the roof.
 - Air is supplied via ductwork from conditioning system or a supply fan.
 - Vapor-diffusion port serves as the air barrier and shall protect the attic against rain and snow.
 - Roof slope is > 3:12 and framing members, sheathing and blocking are 2 inches minimum from the vapor-diffusion port.
 - Air-impermeable insulation located below the roof sheathing is installed in direct contact with the structural sheathing.



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Safety Inspection Tasks

1. Light and Ventilation Inspection.
2. Emergency Escape and Rescue Openings Inspection.
3. Glazing in Hazardous Locations Inspection.
4. Stair and Landing Inspection.
5. Fall Protection Inspection.
6. Automatic Fire Sprinkler System Inspection.
7. Smoke Alarm Inspection.
8. Carbon Monoxide Alarm Inspection.



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Light and Ventilation Inspection

For natural lighting, determine if habitable rooms have the required glazing of 8 percent of the floor area and bathrooms have 3 square feet of glazing.

For natural ventilation, determine if habitable rooms have the required openable area to the outdoors of 4 percent of the floor area and that bathrooms have 1½ square feet of openable area.



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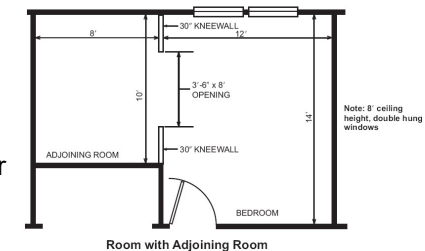
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Light and Ventilation Inspection

Determine if the adjoining room meets the natural light and ventilation requirements for combined floor areas or room and alcove.



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Emergency Escape and Rescue Openings Inspection

The purpose is to check that:

- Basements, habitable attics and every sleeping room has one window or door that can be opened from the inside to allow emergency escape or rescue.
- The emergency escape and rescue opening is required to meet the minimum size to allow a person to exit or a fire fighter in full gear to enter.

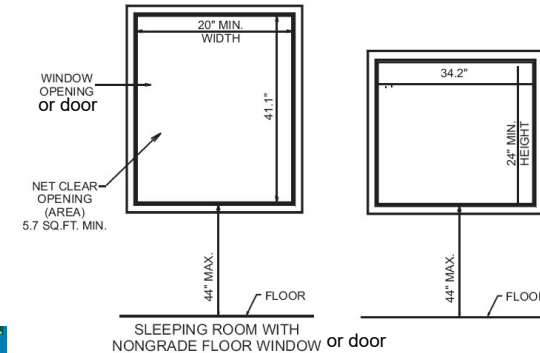


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Emergency Escape and Rescue Openings Inspection

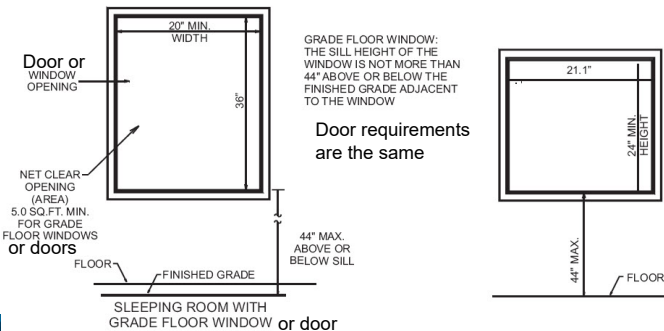


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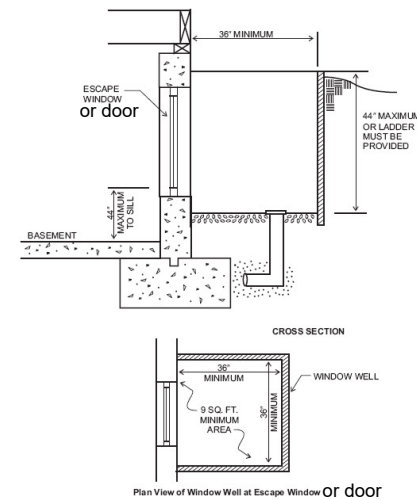
Emergency Escape and Rescue Openings Inspection



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Emergency Escape and Rescue Openings Inspection

If window or area well depth exceed 44 inches, check for:

- Permanently affixed ladder or steps.
- Minimum inside width of 12 inches on ladder or steps.
- 3-inch minimum projection from wall to rung.
- Maximum vertical spacing of 18 inches on center for rungs or steps.
- The ladder being the full height of the window or area well.



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Emergency Escape and Rescue Openings Inspection

If an emergency escape opening is installed beneath a deck or porch, check for:

- Location must permit the window or door to fully open.
- Provides a path with 36 inches minimum headroom.
- Path goes to a yard or court.



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Glazing in Hazardous Locations Inspection

The purpose is to check that the glazing material installed in hazardous locations is safety glazing to prevent injury to people.

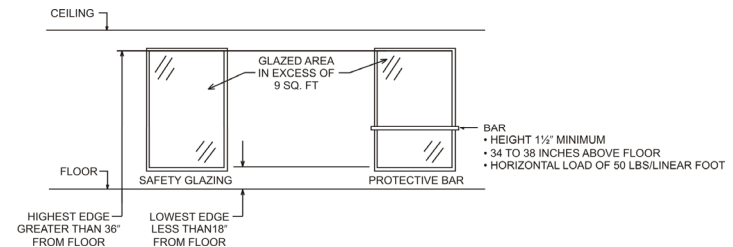


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Glazing in Hazardous Locations Inspection

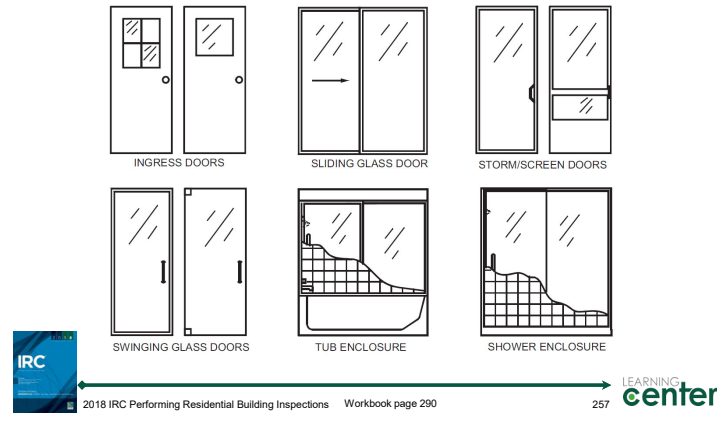


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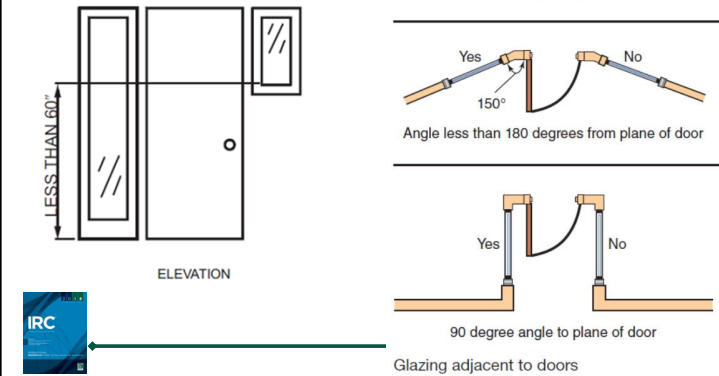
256

Glazing in Hazardous Locations Inspection



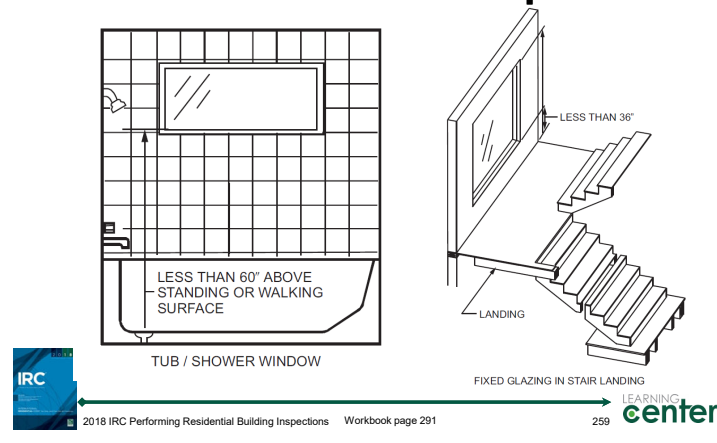
257

R308.4.2 Glazing Adjacent to Doors



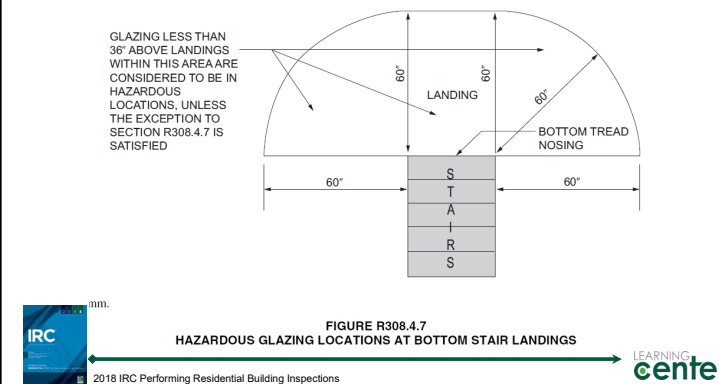
258

Glazing in Hazardous Locations Inspection



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Glazing in Hazardous Locations Inspection



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Glazing in Hazardous Locations Inspection

Check the skylights and sloped glazing to determine if screens are required. See IRC Section R308.6.5 pg. 68.

Determine if the skylights require 4 inch minimum curbs by examining if the roof pitch is $< 3:12$.



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Stairs and Landings Inspection

The purpose is to check that stairs and landings are installed correctly to provide a means of egress and reduce the possibility of falls and injuries.



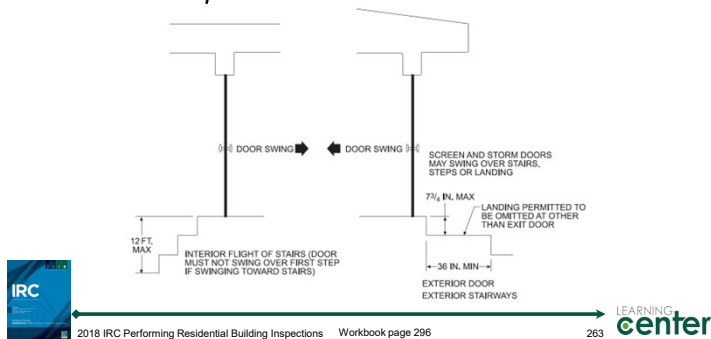
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Stairs and Landings Inspection

Determine if landings at exterior doors meet the dimension requirements of the code.



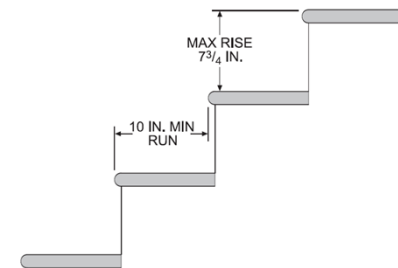
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Stairs and Landings Inspection

Determine if stairs meet the dimension requirements of the code.

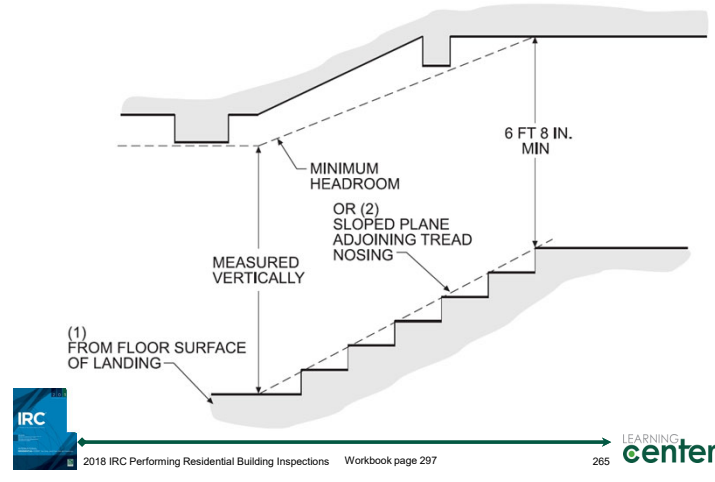


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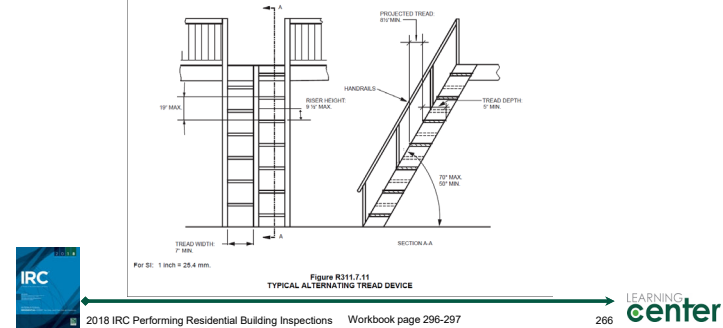
Headroom for Stairway



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Stairs and Landings Inspection

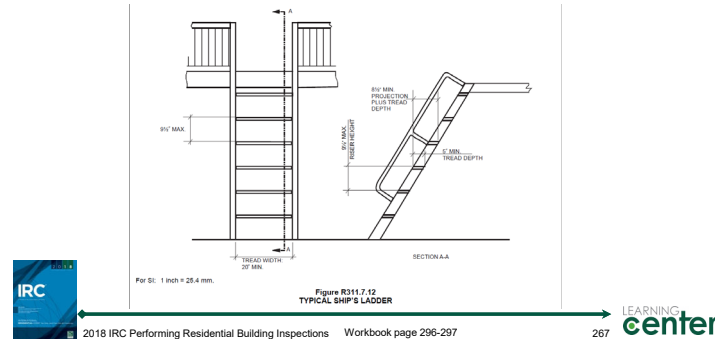
Determine if stairs meet the dimension requirements of the code for lofts, mezzanines <200 gross sq. ft., not a kitchen or bath.



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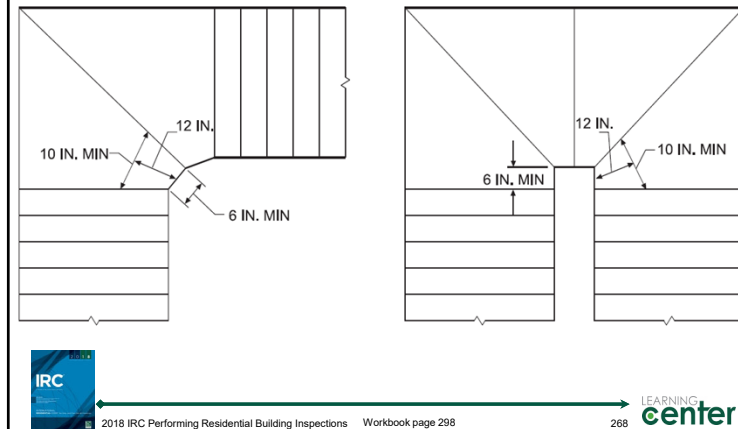
Stairs and Landings Inspection

Determine if stairs meet the dimension requirements of the code for lofts, mezzanines <200 gross sq. ft., not a kitchen or bath.



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Winder Requirements



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Fall Protection Inspection

The purpose is to check that handrails, guards and window sill heights meet the code requirements to protect against falls and injuries.

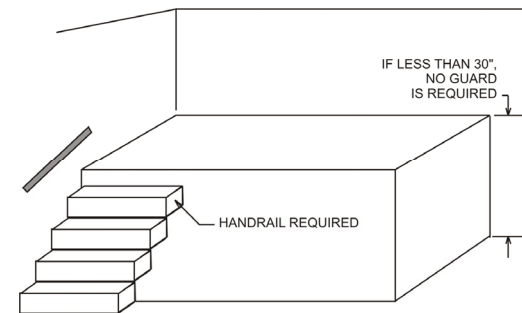


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Fall Protection Inspection

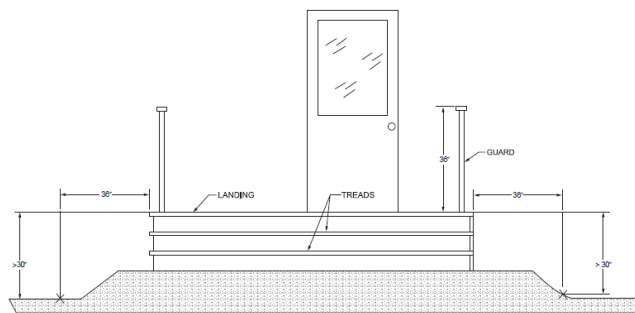


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Location of Guards



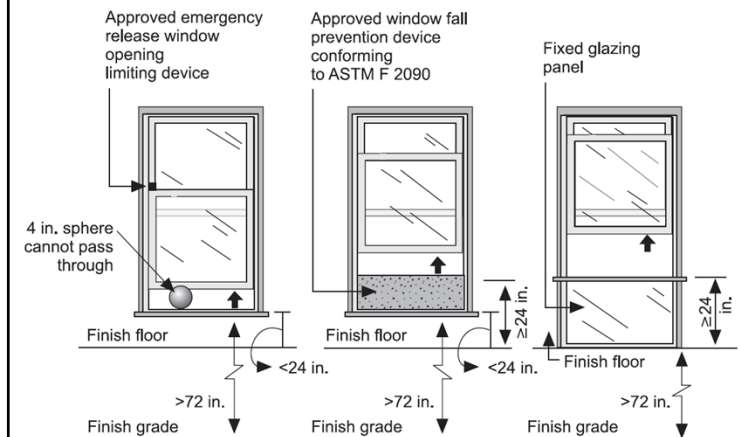
For SI: 1 inch = 25.4 mm.

Figure R312.1.1
DROP OFF AND GUARD HEIGHT REQUIREMENTS

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Automatic Fire Sprinkler System Inspection

The purpose is to check that every residence is properly protected by providing an automatic fire protection system capable of extinguishing or controlling a fire until the fire department can arrive to complete the task.



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Pre-concealment Automatic Fire Sprinkler System Inspection

Verify that sprinklers are provided in all areas where required. Verify the sprinklers are placed in such a way to ensure that a single sprinkler head covers no more than 400 square feet or area.

Verify that sprinklers are installed in areas where they are not obstructed.

Verify that nonmetallic pipes are properly protected from potential damage the construction process.

Verify that all piping is supported in accordance with the pipe and sprinkler manufacturer's installation instructions.

Ensure the piping system is tested with an air test of 50 pounds for not less than 15 minutes.



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TABLE P2904.2.2

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Table
P2904.2.2
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HEAT SOURCE	RANGE OF DISTANCE FROM HEAT SOURCE WITHIN WHICH INTERMEDIATE TEMPERATURE SPRINKLERS ARE REQUIRED ^{a, b} (inches)
Fireplace, side of open or recessed fireplace	12 to 36
Fireplace, front of recessed fireplace	36 to 60
Coal and wood burning stove	12 to 42
Kitchen range top	9 to 18
Oven	9 to 18
Vent connector or chimney connector	9 to 18
Heating duct, not insulated	9 to 18
Hot water pipe, not insulated	6 to 12
Side of ceiling or wall warm air register	12 to 24
Front of wall mounted warm air register	18 to 36
Water heater, furnace or boiler	3 to 6
Luminaire up to 250 watts	3 to 6
Luminaire 250 watts up to 499 watts	6 to 12

For SI: 1 inch = 25.4 mm.

a. Sprinklers shall not be located at distances less than the minimum table distance unless the sprinkler listing allows a lesser distance.

b. Distances shall be measured in a straight line from the nearest edge of the heat source to the nearest edge of the sprinkler.



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Final Automatic Fire Sprinkler System Inspection

1. Verify that sprinklers have not been painted or otherwise altered in a way to cause difficulty in operation.
2. Verify that, if a water pump has been required to provide appropriate hydraulic pressure and flow to the system, the pump starts automatically upon system demand.
3. Verify that any pressure-reducing valves, water softeners, water filters and other devices and impairments have not been installed unless such devices were considered and included in the approved design.
4. Verify that a sign or valve tag has been installed and an owner's manual for the system is present.



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Smoke Alarm and Carbon Monoxide Alarm Inspections

1. Check for smoke alarm in each sleeping room.
2. Check for smoke and carbon monoxide alarms outside of and in vicinity of sleeping rooms.
3. Check for smoke alarms on each floor.
4. Check for smoke alarm near bathroom doors.
5. Check for smoke alarms in split level drawings.
6. Check for smoke alarms near cooking appliances
7. Check for interconnection and installation.
8. Check power source.
9. Check for smoke alarms throughout dwelling, if addition or alteration.



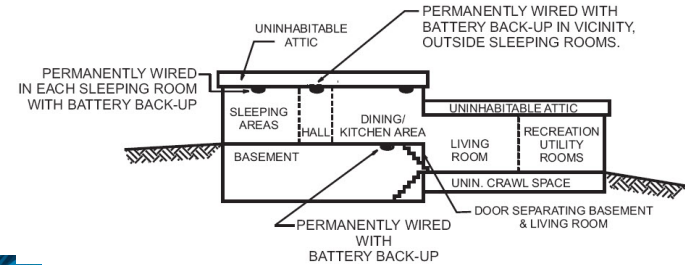
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Smoke Alarm Inspection

Determine if a smoke alarm must be installed on each level of a split level.



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Smoke Alarm Inspection

Verify that smoke alarms meet the minimum clearance distances from bathrooms and cooking appliances.

- At least 3 feet from the door of a bathroom
- Ionization smoke alarms at least 20 feet from cooking appliance
- Ionization smoke alarms with an alarm-silencing switch at least 10 feet from cooking appliance
- Photoelectric smoke alarms at least 6 feet from cooking appliance



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Smoke Alarm Inspection

Verify that the smoke alarms receive primary power from the building wiring, have a battery back-up and that wiring is permanent and without a disconnect switch.

If a building has undergone an addition or alteration requiring a permit, confirm that smoke alarms have been installed in the entire building located as required for new construction.



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Carbon Monoxide Alarm Inspection

The purpose is to check that there is a carbon monoxide alarm near each sleeping area in a dwelling unit containing a fuel-fired appliance or an attached garage, and in an existing building that has an attached garage or within which fuel-fired appliances exist.

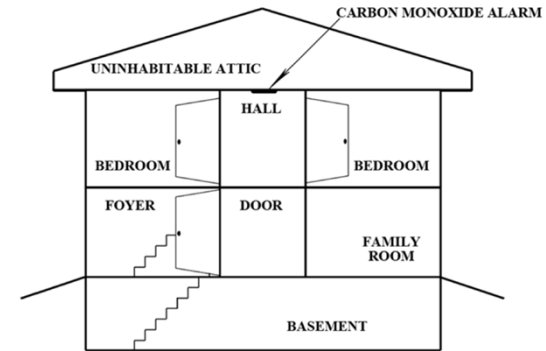


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Carbon Monoxide Alarm Inspection



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Carbon Monoxide Alarm Inspection

Verify that each carbon monoxide alarm is listed in accordance with UL 2034. Combination carbon monoxide and smoke alarms require listing in accordance with UL 2034 and UL 217.

Verify that the carbon monoxide alarms receive primary power from the building wiring, have a battery back-up and that wiring is permanent and without a disconnect switch.

Verify that the carbon monoxide alarms are interconnected when more than one carbon monoxide alarm is installed.



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Carbon Monoxide Alarm Inspection

If a building has undergone an addition or alteration requiring a permit, confirm that carbon monoxide alarms have been installed and are located as required for new construction. Carbon monoxide alarms are permitted to be battery powered in this case. This retroactive requirement does not apply in the case of exterior work or a porch or deck addition.



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