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MICHIGAN RESIDENTIAL CODE BOOKLET 2015

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2015 MICHIGAN RESIDENTIAL CODE RESIDENTIAL
PLAN REVIEW
* IMPORTANT INFORMATION *

As a Building Permit Holder, please be advised of the following very important information:

PLAN REVIEW:

This plan review lists typical BASIC REQUIREMENTS. It does not list all of the requirements of the Michigan Residential or Energy Code. The issuance of a permit based on construction documents and other data shall not prevent the Code Official from requiring the correction of errors in the construction documents and other data. The permit holder is responsible to see that construction complies with all Code requirements (R105.4) (R105.8).

REVIEWED PLANS &JOB WEATHER CARD:

Maintain the plans which are stamped "Reviewed Plans" on site for all inspections (R106.3.1). The building permit or copy thereof shall be kept on the site of the work until completion of the project (R 105.7).

CALLING FOR INSPECTIONS:

It is the permit holder's responsibility to notify the Construction Code Office of the readiness of the construction for each of the 3 (three) required inspections and obtain approval for: (1) Foundation, prior to covering any portion with backfill; (See Notes A thru C below); (2) Framing and/or Masonry, Framing inspections shall be made after the roof, all framing, firestopping, draftstopping and bracing are in place, and after the plumbing, mechanical and electrical rough inspections are approved. Masonry inspections shall be made after completed installation of base course flashing as specified in section R703.4 and water resistive barrier as specified in section R703.2; and (3) Final, prior to occupancy of the building/structure. If a reinspection is necessary because construction was not ready for inspection, or when the construction fails to pass an inspection, a reinspection fee will be charged. (R109.1).

Note A: When concrete reinforcing is required by an Architect, Engineer or Manufacturer, then additional inspections will be required after reinforcing is secured in place and prior to placing concrete.
Note B: All monolithic slabs shall be inspected prior to placing concrete.
Note C: When exterior foamboard sheathing is applied as the required basement insulation, it shall be secured in place prior to requesting the foundation inspection (MEC402.4.2.2).

CERTIFICATE OF OCCUPANCY:

A building/structure or portion thereof shall not be used or occupied until a Certificate of Occupancy has been issued in accordance with the Act. Address numbers posted on the home a minimum 4" high and contrasting color from their background (R319.1) and at the street (per County Ordinance) and approvals from the Building, Plumbing, Electrical and Mechanical Inspections must be obtained before occupancy can occur. Occupancy of a building or structure without a Certificate of Occupancy is a violation of state Law (Section 13 Public Act 230 of 1972).

TEMPORARY CERTIFICATE OF OCCUPANCY:

A Temporary Certificate of Occupancy may be issued before the completion of the entire work covered by the permit, provided that such portion or portions shall be occupied safely. This includes full or temporary approvals for Plumbing, Electrical & Mechanical work, completion of handrails, guards, smoke detectors, carbon monoxide detectors, egress requirements, fire doors, fire separation walls, safety glazing, address numbers, etc., plus an operable kitchen sink and a full bathroom. Issuance of Temporary Certificate of Occupancy is a special inspection and will require payment of an additional fee with a written request to be submitted by the permit holder (Section 13 Public Act 230 of 1972, as amended).

EXPIRATION

Every permit issued shall become invalid unless the work authorized by such permit is commenced within 180 days after issuance, or if the work authorized by such permit is suspended or abandoned for a period of 180 days after the time the work has commenced. The building official is authorized to grant, in writing, one or more extensions for a time period of not more than 180 days each. The extension shall be requested in writing, demonstrating justifiable cause (R105.5).

PLAN REVIEW FOR ONE AND TWO FAMILY DWELLINGS
MICHIGAN RESIDENTIAL CODE 2015

PERMIT NO: _____

TOWNSHIP: _____ SITE ADDRESS: _____
DATE: _____ REVIEWED BY: _____

Key to Code Comments:

OK = Applies (plans indicate code compliance) N/A = Does not apply (according to plans submitted)
Alert = Alert (plans do not address a code requirement, or code requirement is not shown in compliance)

FOOTING AND FOUNDATIONS

OK	N/A	Alert	
OK	N/A	Alert	Soil Bearing Capacity: Foundation construction shall be capable of accommodating all loads and transmitting the resulting loads to the supporting soils (R401.2). In lieu of a complete geotechnical evaluation, the load-bearing values in Table R401.4.1 shall be assumed (R401.4.1). Fill soils shall be designed, installed, and tested in accordance with accepted engineering practice (R401.2).

Table R401.4.1

Class of Materials	Load-Bearing Pressure
Crystalline Bedrock	12,000 PSF
Sedimentary and Foliated rock	4,000 PSF
Sandy gravel and/or gravel	3,000 PSF
Sand, silty sand, clayey sand, silty gravel, and clayey gravel	2,000 PSF
Clay, sandy clay, silty clay, clayey silt, silt, and sandy silt	1,500 PSF

OK	N/A	Alert	
OK	N/A	Alert	Minimum compressive strength of concrete required: (Table R402.2) Basement walls/footings/basement slabs (not exposed to weather): 2500 PSI at 28 days.* Basement/foundation walls (exposed to water): 3000 PSI at 28 days.** Garage floors/exterior concrete: 3500 PSI at 28 days.** *Air-entrained if subject to freeze/thaw during construction. **Air-entrained.
OK	N/A	Alert	Protection from freezing during construction: Protection of masonry foundation walls during construction is required when either the ambient temperature or temperature of the masonry units less than 40°F. Refer to requirements found in ACI 530.1 (R404.1.2). Concrete in locations subject to freezing and thawing during construction shall be air-entrained with total air content not less than 5% or more than 7%. Refer to Table R402.2 footnote cd, requirements found in ACI 318, ACI 332 or PCA 100 (R404.1.3).
OK	N/A	Alert	Frost protection: Frost protection is not required for light frame construction of detached accessory structures not exceeding 600 sq ft. (R403.1.4.1)
OK	N/A	Alert	Minimum footing size: Minimum width shall be in accordance with Table R403.1(1) through R403.1(3) and figure R403.1(1). **See following page for chart**
OK	N/A	Alert	Minimum thickness of masonry and concrete foundation walls: Masonry wall thickness shall comply with the requirements of Table R404.1.1(1) thru (4). Concrete wall thickness shall comply with Tables R404.1.2(2) thru (8) (R404.1.3).
OK	N/A	Alert	Minimum horizontal reinforcement for concrete walls: Horizontal reinforcing shall be installed per Table R404.1.2.(1).
OK	N/A	Alert	Foundation wall reinforcement per reviewed plans: Wall type: ____ Wall thickness: ____ Wall height: ____ Max backfill: ____ Reinforcement required: _____

OK	N/A	Alert	<u>Drainage system:</u> Concrete or masonry foundations that retain earth and enclose habitable or usable space located below grade shall be provided with approved drainage systems unless installed on well drained Group I soils (R405.1). Exceptions: A drainage system is not required where the foundation is installed on well-drained ground or sand-gravel mixture soil according to the Unified Soil Classification System, Group I soils, as detailed in Table R405.1.
OK	N/A	Alert	<u>Dampproofing:</u> Except where required to be waterproofed per section R406.2, concrete, or masonry foundations that retain earth and enclose interior spaces and floors below grade shall be dampproofed from the top of the footing to finished grade. See section R406.1 for the list of approved dampproofing methods (R406.1)
OK	N/A	Alert	<u>Waterproofing:</u> In areas where high a water table or other severe soil-water conditions are known to exist, exterior foundations that retain earth and enclose interior spaces and floors below grade shall be waterproofed from top of the footing to the finished grade. See section R406.2 for the list of approved waterproofing methods (R406.2).

Table R405.1
Properties of Soils Classified According to the Unified Soil Classification System

SOIL GROUP	UNIFIED SOIL CLASSIFICATION SYSTEM SYMBOL	SOIL DESCRIPTION	DRAINAGE CHARACTERISTICS[a]	FROST HEAVE POTENTIAL	VOLUME CHANGE POTENTIAL EXPANSION[b]
GROUP I	GW	Well graded gravels, gravel sand mixtures, little or no fines	Good	Low	Low
	GP	Poorly graded gravels or gravel sand mixtures, little or no fines	Good	Low	Low
	SW	Well graded sands, gravelly sands, little or no fines	Good	Low	Low
	SP	Poorly graded sands or gravelly sands, little or no fines	Good	Low	Low
	GM	Silty gravels, gravel-sand-silt mixtures	Good	Medium	Low
	SM	Silty sand, sand-silt mixtures	Good	Medium	Low
GROUP II	GC	Clayey gravels, gravel-sand-clay mixture	Medium	Medium	Low
	SC	Clayey sands, sand-clay mixture	Medium	Medium	Low
	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	Medium	High	Low
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	Medium	Medium	Medium to Low
GROUP III	CH	Inorganic clays of high plasticity, fat clays	Poor	Medium	High
	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	Poor	High	High
GROUP IV	OL	Organic silts and organic silty clays of low plasticity	Poor	Medium	Medium
	OH	Organic clays of medium to high plasticity, organic silts	Unsatisfactory	Medium	Medium
	Pt	Peat and other highly organic soils	Unsatisfactory	Medium	High

For SI: 1 inch = 25.4 mm

a. The percolation rate for good drainage is over 4'' per hour, medium drainage is 2'' to 4'' per hour, and poor is less than 2'' per hour.

b. Soils with low potential expansion typically have plasticity index (PI) of 0 to 15, soils with a medium potential expansion have PI of 10 to 35 and soils with high potential expansion have a PI greater than 20.

R403.1.1
MINIMUM WIDTH AND THICKNESS OF CONCRETE FOOTINGS (inches)

	LOAD-BEARING VALUE OF SOIL (psf)					
	1,500	2,000	2,500	3,000	3,500	4,000
Conventional light-frame construction TABLE R403.1(1)						
1 story slab-on-grade	12x6	12x6	12x6	12x6	12x6	12x6
1 story with crawl space	17x6	13x6	12x6	12x6	12x6	12x6
1 story plus basement	23x7	17x6	14x6	12x6	12x6	12x6
2 story slab-on-grade	15x6	12x6	12x6	12x6	12x6	12x6
2 story with crawl space	20x6	15x6	13x6	12x6	12x6	12x6
2 story plus basement	26x8	20x6	16x6	13x6	12x6	12x6
3 story slab-on-grade	18x6	14x6	12x6	12x6	12x6	12x6
3 story with crawl space	24x7	18x6	14x6	12x6	12x6	12x6
3 story plus basement	29x10	22x6	18x6	15x6	12x6	12x6
Conventional light-frame construction with brick veneer TABLE R403.I(2)						
1 story slab-on-grade	14x6	12x6	12x6	12x6	12x6	12x6
1 story with crawl space	19x6	15x6	12x6	12x6	12x6	12x6
1 story plus basement	25x8	19x6	15x6	13x6	12x6	12x6
2 story slab-on-grade	19x6	15x6	12x6	12x6	12x6	12x6
2 story with crawl space	25x8	19x6	15x6	13x6	12x6	12x6
2 story plus basement	31x11	23x7	19x6	16x6	14x6	12x6
3 story slab-on-grade	25x8	19x6	14x6	13x6	12x6	12x6
3 story with crawl space	30x10	23x7	18x6	15x6	13x6	12x6
3 story plus basement	36x13	27x9	22x6	18x6	16x6	14x6
Cast-in-place concrete or fully grouted masonry wall construction TABLE R403.1(3)						
1 story slab-on-grade	18x6	14x6	12x6	12x6	12x6	12x6
1 story with crawl space	24x7	18x6	14x6	12x6	12x6	12x6
1 story plus basement	29x10	22x6	18x6	15x6	13x6	12x6
2 story slab-on-grade	28x9	21x6	17x6	14x6	12x6	12x6
2 story with crawl space	33x12	25x6	20x6	17x6	15x6	13x6
2 story plus basement	39x15	29x8	24x6	20x6	17x6	15x6
3 story slab-on-grade	37x14	28x10	22x6	19x6	16x6	14x6
3 story with crawl space	42x16	32x9	25x6	21x6	18x6	16x6
3 story plus basement	48x19	36x13	29x10	24x7	12x6	18x6

The tables above are based on 32-foot-wide house with load-bearing center wall that carries half of the tributary attic, and floor framing. For every 2 feet of adjustment to the width of the house add or subtract 2 inches of footing width and 1 inch of footing thickness (but not less than 6 inches thick).

TABLE R404.1.2(3)
MINIMUM VERTICAL REINFORCEMENT FOR 8 INCH (203mm) NOMINAL FLAT CONCRETE BASEMENT WALLS [b c d e f g h i j]

MAXIMUM UNSUPPORTED WALL HEIGHT (feet)	MAXIMUM UNBALANCED BACKFILL HEIGHT[g] (feet)	MINIMUM VERTICAL REINFORCEMENT-BAR SIZE AND SPACING (inches)		
		Soil classes[a] and design lateral soil (psf per foot of depth)		
		GW, GP, SW, SP 30	GM, GC, SM, SM-SC and ML 45	SC, ML-CL and inorganic CL 60
8	4	NR	NR	NR
	5	NR	NR	NR
	6	NR	NR	6 @ 37
	7	NR	6 @ 36	6 @ 35
	8	6 @ 41	6 @ 35	6 @ 26
9	4	NR	NR	NR
	5	NR	NR	NR
	6	NR	NR	6 @ 37
	7	NR	6 @ 35	6 @ 35
	8	6 @ 36	6 @ 32	6 @ 23
	9	6 @ 35	6 @ 25	6 @ 18
10	4	NR	NR	NR
	5	NR	NR	NR
	6	NR	NR	6 @ 35
	7	NR	6 @ 35	6 @ 29
	8	6 @ 35	6 @ 29	6 @ 21
	9	6 @ 34	6 @ 22	6 @ 16
	10	6 @ 27	6 @ 17	6 @ 13

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot per foot = 0.1571 kPa²/m, 1 pound per square inch = 6.895 kPa.
NR = Not required.
a. Soil classes are in accordance with the Unified Soil Classification System. Refer to Table R405.1.
b. Table values are based on reinforcing bars with a minimum yield strength of 60,000 psi, concrete with a minimum specified compressive strength of 2,500 psi and vertical reinforcement being located at the centerline of the wall. See Section R404.1.3.3.7.2.
c. Vertical reinforcement with a yield strength of less than 60,000 psi and/or bars of a different size than specified in the table are permitted in accordance with Section R404.1.3.3.7.6 and Table R404.1.2(9).
d. NR indicates no vertical reinforcement is required.
e. Deflection criterion is L/240, where L is the height of the basement wall in inches.
f. Interpolation is not permitted.
g. Where walls will retain 4 feet or more of unbalanced backfill, they shall be laterally supported at the top and bottom before backfilling.
h. See Section R404.1.3.2 for minimum reinforcement required for basement walls supporting above-grade concrete walls.
i. See Table R608.3 for tolerance from nominal thickness permitted for flat walls.
j. The use of this table shall be prohibited for soil classifications not shown.

TABLE R404.1.2(4)
MINIMUM VERTICAL REINFORCEMENT FOR 10 INCH NOMINAL FLAT CONCRETE BASEMENT WALLS [b c d e f h i j]

MAXIMUM UNSUPPORTED WALL HEIGHT (feet)	MAXIMUM UNBALANCED BACKFILL HEIGHT[g] (feet)	MINIMUM VERTICAL REINFORCEMENT-BAR SIZE AND SPACING (inches)		
		Soil classes[a] and design lateral soil (psf per foot of depth)		
		GW, GP, SW, SP 30	GM, GC, SM, SM-SC and ML 45	SC, ML-CL and inorganic CL 60
8	4	NR	NR	NR
	5	NR	NR	NR
	6	NR	NR	NR
	7	NR	NR	NR
	8	6 @ 48	6 @ 35	6 @ 28
9	4	NR	NR	NR
	5	NR	NR	NR
	6	NR	NR	NR
	7	NR	NR	6 @ 31
	8	NR	6 @ 31	6 @ 28
	9	6 @ 37	6 @ 28	6 @ 24
10	4	NR	NR	NR
	5	NR	NR	NR
	6	NR	NR	NR
	7	NR	NR	6 @ 28
	8	NR	6 @ 28	6 @ 28
	9	6 @ 33	6 @ 28	6 @ 21
	10	6 @ 28	6 @ 23	6 @ 17

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot per foot = 0.1571 kPa²/m, 1 pound per square inch = 6.895 kPa.
NR = Not required.
a. Soil classes are in accordance with the Unified Soil Classification System. Refer to Table R405.1.
b. Table values are based on reinforcing bars with a minimum yield strength of 60,000 psi, concrete with a minimum specified compressive strength of 2,500 psi and vertical reinforcement being located at the centerline of the wall. See Section R404.1.3.3.7.2.
c. Vertical reinforcement with a yield strength of less than 60,000 psi and/or bars of a different size than specified in the table are permitted in accordance with Section R404.1.3.3.7.6 and Table R404.1.2(9).
d. NR indicates no vertical reinforcement is required.
e. Deflection criterion is L/240, where L is the height of the basement wall in inches.
f. Interpolation is not permitted.
g. Where walls will retain 4 feet or more of unbalanced backfill, they shall be laterally supported at the top and bottom before backfilling.
h. See Section R404.1.3.2 for minimum reinforcement required for basement walls supporting above-grade concrete walls.
i. See Table R608.3 for tolerance from nominal thickness permitted for flat walls.
j. The use of this table shall be prohibited for soil classifications not shown.

FOOTINGS AND FOUNDATIONS

OK	N/A	Alert	Backfill placement: Backfill shall not be placed against the wall until the wall has sufficient strength and has been anchored to the floor above or has been sufficiently braced to prevent damage by the backfill (R404.1.7). Bracing is not required for walls supporting less than 4 feet of unbalanced fill.
OK	N/A	Alert	Exterior foam board insulation: When using foam board sheathing on the exterior of foundation walls for basement insulation, apply a compatible dampproofing or waterproofing material as required, install, and secure the foam board in place and request an inspection prior to backfill (R109.1.5) (MEC402.4.2.2).
OK	N/A	Alert	Minimum slab thickness: The minimum thickness of concrete floor slabs supported by non-expansive soils shall be not less than 3½'' (R506.1).
OK	N/A	Alert	Vapor barrier under concrete slabs: A 6-mil polyethylene or approved vapor retarder with joints lapped not less than 6" shall be placed between the base course or the prepared subgrade and the concrete floor slab. (R506.2.3) Exception: A vapor barrier may be omitted from detached garages, utility buildings & other accessory structures, and elsewhere when approved by the building official based upon local conditions (R506.2.3). Basement floors of wood foundations must have a vapor barrier place between the porous base and the floor (405.2.2).
OK	N/A	Alert	Insulation for slab on grade floors: Insulate slab on grade floors per 2015 Michigan Energy Code (MEC)
OK	N/A	Alert	Wood foundations systems: Wood foundation wall shall be constructed in accordance with section R404.2 or with AWCPWF-2015(R401.1). Fasteners used for wood foundations shall be Type 304 or 316 stainless steel (see exceptions)(R402.1.1). All lumber/plywood shall be pressure-preservative treated and dried in accordance with AWPA UI and properly labeled for Permanent Wood Foundation use. Cuts shall be field treated with copper naphthenate (R402.1.2).
OK	N/A	Alert	Finished grade: Surface drainage shall be diverted to a storm sewer conveyance or other approved point of collection that does not create a hazard. Lots shall be graded to drain surface water away from foundation walls. The grade shall fall not fewer than 6 inches (152 mm) within the first 10 feet (3048mm). (R401.3).
OK	N/A	Alert	Foundation anchorage: Sill plates and walls supported directly on continuous foundations shall be anchored to foundations with ½" minimum diameter anchor bolts spaced a maximum of 6' on center and shall extend a minimum of 7'' into concrete or grouted cells of concrete masonry units. There shall be a minimum of two anchor bolts per plate section and located within 12'' from each end. Where other anchors are used, they shall provide equivalent anchorage to ½" diameter anchor bolts and shall be installed per the manufacturer's instructions (R403.1.6).
OK	N/A	Alert	Crawl space ventilation: The under-floor space between the bottom of the floor joists and the earth shall be ventilated by openings in the exterior foundation walls. Openings shall have a net area of not less than 1 sq ft for each 150 sq ft of foundation floor space or 1 sq ft for each 1500 sq ft where the ground surface is covered with a vapor retarder. One such opening shall be located within 3' of each comer of the building (R408.1).
OK	N/A	Alert	Unvented crawl spaces: Ventilation openings are not required where the exposed earth is covered with a vapor retarder, perimeter walls are insulated per MEC 2015 and one of the following is provided for: a) Continuously operated mechanical exhaust ventilation at (1) cfm for each 50 sq ft of floor. b) Conditioned air supply with return air at (1) cfm for each 50 sq ft of floor area. c) Plenum complying with the mechanical code section MI601.5 (R408.3).
OK	N/A	Alert	Crawl space access: Access shall be provided to all under-floor spaces. Access openings through the floor shall be a minimum of 18''x 24''. Openings through a perimeter wall shall be not less than 16'' x 24''. See section M 1305.1.4 of the Mechanical Code for access requirements where mechanical equipment is located under floors (R408.4). Access doors from conditioned spaces to unconditioned spaces shall be weather-stripped and insulated per 2015 Michigan Energy Code section 402.2.3.
OK	N/A	Alert	Additional foundation requirements: _____ _____

WOOD FRAMING

OK	N/A	Alert	Structural Wood: All structural wood members and connections shall be sufficient size, spacing. grade, species. etc., to carry all design loads without exceeding allowable design values specified in AF&PA Wood Frame Construction Manual (WFCFM) (R301.1 501.2, 602.3, 801.2). Engineered framing systems, i.e.: TJI, BCI, Beams, Columns, Trusses, etc., shall be accompanied by approve shop drawings, calculations, and/or span tables from the manufacturer submitted prior to scheduling a framing inspection (R106.1).
OK	N/A	Alert	Continuous support of concentrated loads: All load bearing columns, such as supporting beams, headers, girder trusses, etc., shall be continuous to a supporting foundation. Install blocking in voids as necessary R106.1).
OK	N/A	Alert	Design Loads: Buildings and structures shall be designed and constructed to safely support all loads, without exceeding allowable stresses. Some minimum live loads are: 1. Snow loads: 60 psf (Figure R301.2(5)) Roof snow live load: The live load resulting from roof snow may be determined by assuming a uniform ground snow load of 60 psf without adjustments (R301.6) or by an alternative evaluation under ASCE-7 which reflects adjustments for roof slope, sliding and drifting snow (R301.2.3). 2. Wind speed: 90 mph (Table R301.2(1)) 3. Floor load: 40 lbs / ft2 for non-sleeping areas (TableR301.5) 30 lbs / ft2 for sleeping areas 40 lbs / ft2 for exterior balconies and decks 50 lbs / ft2 for non-elevated garage floors 4. Attic load: 30 lbs / ft2 for habitable attics and attics with fixed stairs (Table R301.5) 20 lbs / ft2 for attics with limited storage 10 lbs / ft2 for attics without storage
OK	N/A	Alert	Post attachment: Where posts are used to support loads, posts shall be fastened at the top and bottom with positive connections to ensure against uplift and lateral displacement (R502.9).
OK	N/A	Alert	Treated wood: Protection of wood and wood-based products from decay shall be provided by the use of naturally durable wood and wood that preservative-treated accordance with AWPA U1 R317.1
			Treated or naturally durable wood shall be used in the following locations: (R317.1)
OK	N/A	Alert	1. Wood joists or the bottom of a wood structural floor when closer than 18" or wood girders when closer than 12" to the exposed ground in crawl spaces or unexcavated areas located within the perimeter of the building foundation.
OK	N/A	Alert	2. All wood framing members that rest on concrete or masonry exterior walls and are less than 8" from exposed ground.
OK	N/A	Alert	3. Sills and sleepers on a concrete or masonry slab that is in direct contact with the ground unless separated by an impervious moisture barrier.
OK	N/A	Alert	4. The ends of wood girders entering exterior masonry or concrete walls having less than 1½"air space on tops, sides and ends.
OK	N/A	Alert	5. Wood siding, sheathing, and wall framing on the exterior of a building having a clearance of less than 6” from the ground or less than 2" from horizontal concrete surfaces.
OK	N/A	Alert	6. Wood structural members supporting moisture permeable floors or roofs, such as concrete or masonry slabs, that are exposed to the weather unless separated from such floors or roofs by an impervious moisture barrier.
OK	N/A	Alert	7. Wood furring strips or other wood framing members attached directly to the interior of exterior masonry or concrete walls below grade except where an approved vapor retarder is applied between the wall and the furring strips or framing members.
OK	N/A	Alert	8. Exposed horizontal & vertical members of balconies, porches, decks, etc. (R317.1.3)
OK	N/A	Alert	Floor cantilevers: Cantilever spans shall not exceed the nominal depth of the floor joist (R502.3.3). Cantilevers constructed in accordance with Table R502.3.3(1) shall be permitted when supporting a light-frame bearing wall and roof only. Floor cantilevers supporting an exterior balcony are permitted to be constructed in accordance with Table R502.3.3(2).
OK	N/A	Alert	Load-bearing walls: Wall construction shall be capable of accommodating all loads imposed and transferring the resulting loads to the supporting structural elements (R601.2).

OK	N/A	Alert	Top plates: Wood stud walls shall be capped with a double top plate installed to provide overlapping at corners and intersections with bearing partitions. End joints in top plates shall be offset at least 24''. Joints in plates need not occur over studs. See exceptions (R602.3.2).
OK	N/A	Alert	Wall bracing Buildings shall be braced to resist wind loads (R602.10). Braced wall lines shall incorporate braced wall panels constructed in accordance with intermittent bracing methods or continuous sheathing methods (R602.10.1 thru R602.10.2).
OK	N/A	Alert	Braced wall panel location: Braced wall panels shall be located not more than 20' feet on center. A braced wall panel shall begin within 10' feet from each end of a braced wall line as determined in Section R602.10.1.1. The distance between adjacent edges of braced wall panels along a braced wall line shall not be greater than 20' ft as shown in Figure R602.10.2.2.
OK	N/A	Alert	Minimum length of intermittent braced panels: Intermittent braced wall panels shall be at least 48'' inches in length for walls not exceeding 10' feet in height. See Table R602.10.5. See R602.10.4 for bracing method and connections.
OK	N/A	Alert	Continuous sheathing braced wall panels: Continuous sheathing methods require structural panel sheathing to be used on all sheathable surfaces on one side of a braced wall line. Continuous sheathing shall be installed and fastened as listed in Table R602.10.4 (R602.10.4 & R602.10.4.2).
OK	N/A	Alert	Braced wall panels at garage door openings: Braced wall panels at garage door openings shall be constructed per "Intermittent Portal Frame at Garage" ((PFG) method section R602.10.6.3 or per "Continuous Sheathing Portal Frame" (CS-PF) method section R602.10.6.4). Braced panel anchors, tension straps (where required), width to height ratios and nailing patterns shall be followed per Figures R602.10.6.2 or R602.10.6.3 & R606.10.6.4 (R602.10.6.3) (R602.0.6.4).
OK	N/A	Alert	Truss to wall connection: Trusses shall connect to wall plates by use of approved connectors having resistance to uplift not less than 175 lbs or per Table 802.11 (R802.11.1.1).
OK	N/A	Alert	Ceiling joist and rafter connections: Ceiling joists and rafters shall be connected per TableR802.5.1(9) and fastened to the top wall plate per Table R602.3(1). Where ceiling joists or rafter ties are not provided, the ridge formed by these rafters shall be structural (R802.3.1).
OK	N/A	Alert	Collar ties: Collar ties or straps to resist wind uplift shall be connected in the upper third of the attic space Table R602.3(1). Collar ties shall be spaced not more than 4 on center (R802.3.1)
OK	N/A	Alert	Vented roof spaces: Enclosed attics and rafter spaces formed where ceilings are applied directly to the underside of roof rafters shall have cross ventilation for each separate space with openings protected against the entrance of rain or snow. The minimum net free ventilating area shall be 1/150 of the area of the space ventilated, except that the area is permitted to be reduced to 1/300 provided a class I or II vapor retarder is installed on the warm side of the ceiling: At least 40% (not to exceed 50%) of the ventilation is provided by ventilators located in the upper portion of the space to be ventilated at least 3 feet above eave or cornice vents with the balance of the required ventilation provided by eave/cornice vents (R806.1) (R806.2). Unvented attic assemblies are permitted when the conditions of section R806.5 are met.
OK	N/A	Alert	Attic access: Provide a minimum 22"x30" access to any attic area greater than 30 sq ft and a clear height greater than 30". Locate the access in the hallway or other readily accessible location (R807.1). Access doors from conditioned spaces to unconditioned spaces shall be weather-stripped and insulated per 2015 Michigan Energy Code section 402.2.3.
OK	N/A	Alert	Fireblocking and draftstopping inspection: Fireblocking and draftstopping to be inspected and approved prior to covering.(R109.1.4)
OK	N/A	Alert	Fireblocking: Fireblocking shall be provided in the following locations:(R302.11) In concealed spaces of stud walls and partitions at the ceiling levels and at 10' foot intervals horizontally. At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings, cove ceilings, and similar locations. At openings around vents, pipes, ducts, cables, wires. chimneys and fireplaces at ceiling and floor levels.

OK	N/A	Alert	Fireblocking materials: Fireblocking shall consist of 2" nominal lumber installed with tight joints, two thicknesses of 1'' nominal lumber with broken lap joints, or one thickness of 23/32" wood structural panel with joints backed by 23/32" wood structural panel, ½'' gypsum board, or approved installation of mineral wool/fiberglass insulation batts (see R302.11.1). Loose-fill insulation material shall not be used as fireblocking unless specifically tested for this use (R302.11.1).
OK	N/A	Alert	Draftstopping materials: Where there is usable space both above and below the concealed space of a floor/ceiling assembly, draftstops shall be installed so that the area of the concealed space does not exceed 1,000 square feet. Draftstopping materials shall not be less than ½" gypsum board, ⅜" wood structural panels or other approved materials (R302.12).
OK	N/A	Alert	Vapor retarder: Class I and II vapor retarders shall be installed on the interior side of framed walls (R702.7). (Note: Class I - sheet polyethylene, unperforated aluminum; Class II - kraft faced fiberglass batts; Class III - latex or enamel paint). Exceptions: Class I or II vapor retarders shall not be installed on the interior of basement walls or below grade portions of any framed wall. Construction where moisture or its freezing will not damage the materials. Class III vapor retarders shall be permitted on the interior when insulated sheathing with an R-value of 7.5 or greater over 2x4 walls or R-value of 11.25 over 2x6 wall is applied to the exterior (Table R702.7.1).
OK	N/A	Alert	Water-resistive sheathing paper: A minimum of one layer No.15 asphalt felt complying with ASTM D 226 or other approved weather resistive materials shall be applied over all exterior walls (Table R703.3(1)). Such felt or weather resistant material shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2". Where vertical joints occur, felt shall be lapped not less than 6". Building paper or other approved material shall be continuous to the top of the wall and terminated at penetrations and building appendages in such a manner as to meet the requirements of the exterior wall envelope as described in section R703.1(R703.2).
OK	N/A	Alert	Additional framing requirements: _____ _____ _____
			EGRESS
OK	N/A	Alert	Required egress door: Not less than one exit door shall be provided to the exterior of the dwelling without travel through a garage. The egress door shall be side-hinged & provide a minimum clear width of 32" between the face of the door and the stop when open at 90°. The minimum clear height shall not be less than 78". The required egress door shall be readily openable from the inside without the use of a key, special knowledge, or effort (R311.1(2))
OK	N/A	Alert	Landings at doors: There shall be a floor or landing on each side of each exterior door not more than 1½" below the top of the threshold. Exception: exterior landings can be 7¾'' below the top of the threshold provided the door does not swing over the landing (R311.3). Landings can be omitted at other exterior doors where a stairway of two or less risers to grade are provided and the door does not swing over the stairs (R311.3.2).
OK	N/A	Alert	Deck attachment to dwelling: Exterior landings, decks, balconies, and stairs shall be positively anchored to the primary structure to resist both vertical and lateral forces or be designed as self-supporting. The attachment shall not be accomplished by the use of toenails or nails subject to withdrawal (R311.5.1). Also, see Table R507.2 for size and space of lags or bolts.
OK	N/A	Alert	General requirements for stairways: Minimum stairway width is 36" (R311.7.1). Minimum head room of 6' 8'' in all parts of a stairway (R311.7.2). Maximum riser height of 8¼" with a variance no more than ⅜'' (R311.7.5.1) Minimum tread depth (nose to nose) of 9" with a variance no more than ⅜" (R311.7.5.2). A nosing of ¾" to 1¼" shall be provided on stairs with solid risers. Solid risers are not required provided that the openings between treads do not exceed 4" (R311.7.5.3). Required landing width not less than the stairway served, minimum depth of 36" (R311.7.6) Interior stairs shall be illuminated above each landing or centered over each flight of stairs. Exterior stairs shall be illuminated at the top landing (bottom landing if stairs are from a basement that leads up to grade) (R303.7 and R303.8)

OK	N/A	Alert	Stairway landings: There shall be a floor or landing at the top and bottom of each stairway. A landing is not required at the top of interior stairs provided a door does not swing over the stairs. A flight of stairs shall not have a vertical rise greater than 147" between floor levels or landings (R311.7.3 and R311.7.6).
OK	N/A	Alert	Winders: Winder treads shall have a minimum tread depth of 10" measured at a point 12" from the narrow side. The minimum tread width at the narrow side shall be 6" (R311.7.5.2.1).
OK	N/A	Alert	Spiral stairways: Minimum width of spiral stairways shall be 26". Minimum headroom shall be 6'-6". Each tread must have a minimum depth of 6¾" at a point 12" out from the narrow edge with all treads being identical. Maximum riser height is 9½" (R311.7.10.1).
OK	N/A	Alert	Under stair protection: Framing of enclosed accessible space under stairs shall be protected on the enclosed side with ½" gypsum board (R302.7).
OK	N/A	Alert	Handrails: Handrails shall be provided on at least one side of each continuous run of treads with four or more risers (R311.7.8). The handrail height shall be a minimum 34" and maximum 38" high, measured vertically from the tread nosing (R311.7.8.1). Handrails shall be continuous for the full length of the flight. Ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 1½" between the wall and the handrail (R311.7.8.2).
OK	N/A	Alert	Handrail grasp: Handrails shall have a graspable cross section of Type I or Type II per R311.7.8.3 or equivalent (Michigan Building Code Handrail Grip-size. Technical Bulletin 13 R311.7.8.3).
OK	N/A	Alert	Guards adjacent to walking surfaces: Porches, balconies or raised floor surfaces located more than 30" above the grade or floor below within a distance of 36" horizontally from the open side shall have guards not less than 36" in height above the adjacent walking surface or fixed seating. Insect screening shall not be considered as a guard (R312.1.1) (R312.1.2).
OK	N/A	Alert	Guards adjacent to stairways: Open sides of stairways with a total rise of more than 30" above the floor or grade below shall have guards not less than 34" in height measured vertically from the nosing of the treads (R312.1.2).
OK	N/A	Alert	Guard opening limitations: Guards shall not have openings which allow passage of a sphere 4"in diameter. Exceptions: 1) The triangular opening formed by the tread. riser and bottom rail of guard shall be less than 6" in diameter. 2) Openings of the guard along stairs shall be less than 4⅜" in diameter (R312.1.3).
OK	N/A	Alert	Additional egress requirements: _____ _____ _____ _____
			MISCELLANEOUS
OK	N/A	Alert	Emergency escape/recue windows and doors: Basements, habitable attics, and every sleeping room shall have at least one escape/rescue opening complying with all the following (R310.1). 1) Minimum net clear opening area is 5.7ft². Clear opening dimensions shall be obtained by the normal operation of the window from the inside. Grade floor opening may be reduced to a minimum net clear opening area of 5.0ft² (R310.2.1). 2) Minimum net clear opening height of 24" (R310.2.1). 3) Minimum net clear opening width of 20" (R310.2.1). 4) Maximum height of the bottom of the clear opening above the floor of 44" (R310.2.2). 5) Bars, grilles, or screens placed over emergency escape windows shall be releasable or removeable from the inside without the use of key, tool, or force greater than that which is required for normal operation of the window (R310.4).

OK	N/A	Alert	Window wells: Window wells required for escape/rescue openings below grade shall have a minimum horizontal area of 36"x36" and allow the door or window to be fully opened. Window wells with a vertical depth greater than 44" below adjacent ground level shall be equipped with a permanently affixed ladder or steps usable with the window in the fully open position (R310.2.3 & R310.2.3.1).
OK	N/A	Alert	Minimum ceiling heights: Habitable space, hallways, and portions of basements with these spaces shall have a ceiling height of not less than 7ft. Bathrooms, toilet rooms and laundry rooms shall have a ceiling height of not less than 6'8''(R305.1).
OK	N/A	Alert	Exceptions to ceiling height: 1) For rooms with sloped ceilings, at least 50% of the required floor area of the room must have a ceiling height of at least 7ft, with no portion of the required floor area having a ceiling height less than 5ft in height (R305.1.1) 2) Bathrooms shall have a minimum ceiling height of 6'8'' over the fixture and at the front clearance area. A shower or tub equipped with a showerhead shall have a minimum ceiling height of 6'8'' above a minimum area 30"x30" at the showerhead (R305.1.2).
OK	N/A	Alert	Basement ceilings: Ceilings in basements without habitable spaces may project to within 6'8'' of the finish floor. Beams, girders, ducts or obstructions may project to within 6'4'' of finished floor (R305.1.1).
OK	N/A	Alert	Light and ventilation: Habitable rooms shall have a glazing area not less than 8% of the floor area. Ventilation to outdoor air shall be provided by a minimum openable area of 4%, (see exceptions) (R303.1).
OK	N/A	Alert	Safety glazing: Safety glazing is required in the some of the following locations with exceptions: (R308.4). 1) In and adjacent to doors within 24" of the edges in a closed position. 2) Surrounding showers and tubs within 60" of the standing surface. 3) Panes of glass within 18" of the floor and larger than 9 sq. ft. 4) Guards and pool enclosures. 5) Adjacent to stairs, landings, and ramps.
OK	N/A	Alert	Windowsill height Where the opening of an operable window is located more than 72" above grade below, the lowest part of the clear opening shall be a minimum of 24" above the finished floor (R312.2.1). Exceptions : 1) Where window openings do not allow passage of a 4" sphere. 2) Windows protected with limiting devices per ASTM F2090 or section (R312.2.2).
OK	N/A	Alert	Smoke detectors: All smoke alarms shall be listed with UL 217 and installed under the provisions of this code and NFPA 72 (R314.1).
OK	N/A	Alert	Smoke detector locations: Smoke alarms shall be installed in all the following locations: 1) In each sleeping room. 2) Outside each separate sleeping area in the immediate vicinity of the bedrooms. 3) On each story within the dwelling, including basements and habitable attics. When more than one alarm is required to be installed, the detectors shall be wired in such a manner that the actuation of one alarm will actuate all of the alarms in the unit (R314.3).
OK	N/A	Alert	Smoke detector power source: Power supply for smoke alarms shall be from permanent wiring with battery backup when the primary power is interrupted (R314.6).
OK	N/A	Alert	Updating smoke detectors: When interior alterations, repairs, or additions requiring a building or electrical permit occur, or when one or more sleeping rooms are added or created in existing buildings, the dwelling unit shall be provided with smoke alarms located as required for new dwellings. The smoke alarms shall be interconnected and hard wired where feasible using access through attics, crawl spaces or basements (R314.2.2) (R314.4).
OK	N/A	Alert	Carbon monoxide alarms: Carbon monoxide alarms shall be installed in immediate vicinity outside sleeping areas for new construction where fuel-fired appliances are installed or have attached garage. Where work requiring a building permit occurs in existing dwelling units with attached garage or fuel-fired appliance, carbon monoxide alarms shall be installed as above (R315.1) (R315.2). Power supply shall be from building wiring and permanent (R315.5).

OK	N/A	Alert	Garage/dwelling separation doors: Openings between a garage and the dwelling shall be equipped with solid wood doors not less than 1⅜" in thickness, solid or honeycomb core steel doors not less than 1⅜" thick or 20-minute fire-rated doors. Doors from a garage to sleeping rooms are not permitted (R302.5.1).
OK	N/A	Alert	Dwelling/garage fire separation: The garage shall be separated from the residence and its attic area by not less than ½'' gypsum board applied to the garage side. Garages beneath habitable rooms shall be separated from the rooms above by not less than ⅝" type X gypsum wall board or equivalent. Structures supporting the floor/ceiling assemblies for habitable space above shall be protected by not less than ½" gypsum board or equivalent. See Table R302.6.
OK	N/A	Alert	Detached garage separation: Detached garages located less than 3 feet from a dwelling on the same lot shall be protected with not less than 1/2" gypsum board on the interior side of the exterior garage wall within this area (R302.6).
OK	N/A	Alert	Garage floors: Floor shall be noncombustible and slope to drain or the main vehicle entry floor (R309.1).
OK	N/A	Alert	Foam plastic: Unless otherwise allowed, foam plastic shall be separated from the interior of a building with a thermal barrier of "drywall or approved equivalent (R316.4). Foam plastics in attics and crawl spaces shall be protected with an ignition barrier unless specifically approved to be left exposed per section R316.6 (R316.5.3) (R316.5.4).
OK	N/A	Alert	Asphalt shingles: Asphalt shingles shall be fastened to solidly sheathed roof decks with a slope of 2:12 or greater (R905.2.1) (R905.2.2). For roof slopes from 2:12 up to 4:12, install a double layer of underlayment per section R905.1.1. For roof slopes of 4:12 or greater, a single layer of underlayment shall be applied. Attach with fasteners as required by the manufacturer and section R905.2.6 (R905.2).
OK	N/A	Alert	Ice barrier: An ice barrier consisting of at least two layers of underlayment cemented together or a self-adhering polymer modified bitumen sheet shall extend from the lowest edges of all roof surfaces to a point at least 24" inside the exterior wall line of the building (R905.2.7 & R905.1.2)
OK	N/A	Alert	Michigan Energy Code (N1101.1)(R101.1): Provide calculations/documentation to show that the proposed construction complies with the energy usage and exterior envelope requirements of the 2015 Michigan Energy Code (R102.4).
OK	N/A	Alert	Additional code requirements: _____ _____ _____ _____

Note: This plan review is not a substitute for field inspections. Its purpose is to identify only general code requirements and will not detect each and every code violation at the pre-construction stage. The degree of accuracy of any plan review cannot be higher than degree of accuracy of the submitted drawings. The staff of our office is genuinely interested in your building project, so if you have questions concerning codes as they relate to this project, please give us a call.

1. **Article 250.52(a)(3) of the Michigan Electrical Code.**
   E3508.1.2 of the Michigan Residential Code.

All building electrical services shall be grounded to the steel reinforcing bars encased by at least 2" of concrete, located within and near the bottom of the concrete foundation or footing that is in direct contact with the earth, consisting of at least 20’ of one or more bare or zinc-galvanized or other electrically conductive coated shell reinforcing bars or rods of not less than ½" diameter.

Any questions contact grand Traverse County Electrical division (231) 995-6044.

Locations of bonding required:

- Commercial
- New House
- House addition and upgrading electrical service
- House addition and moving electrical meter
- Detached utility building with electrical panel; two or more circuits

Locations not required:

- Detached utility building with no service
- Detached utility building with one circuit for a light and a plug

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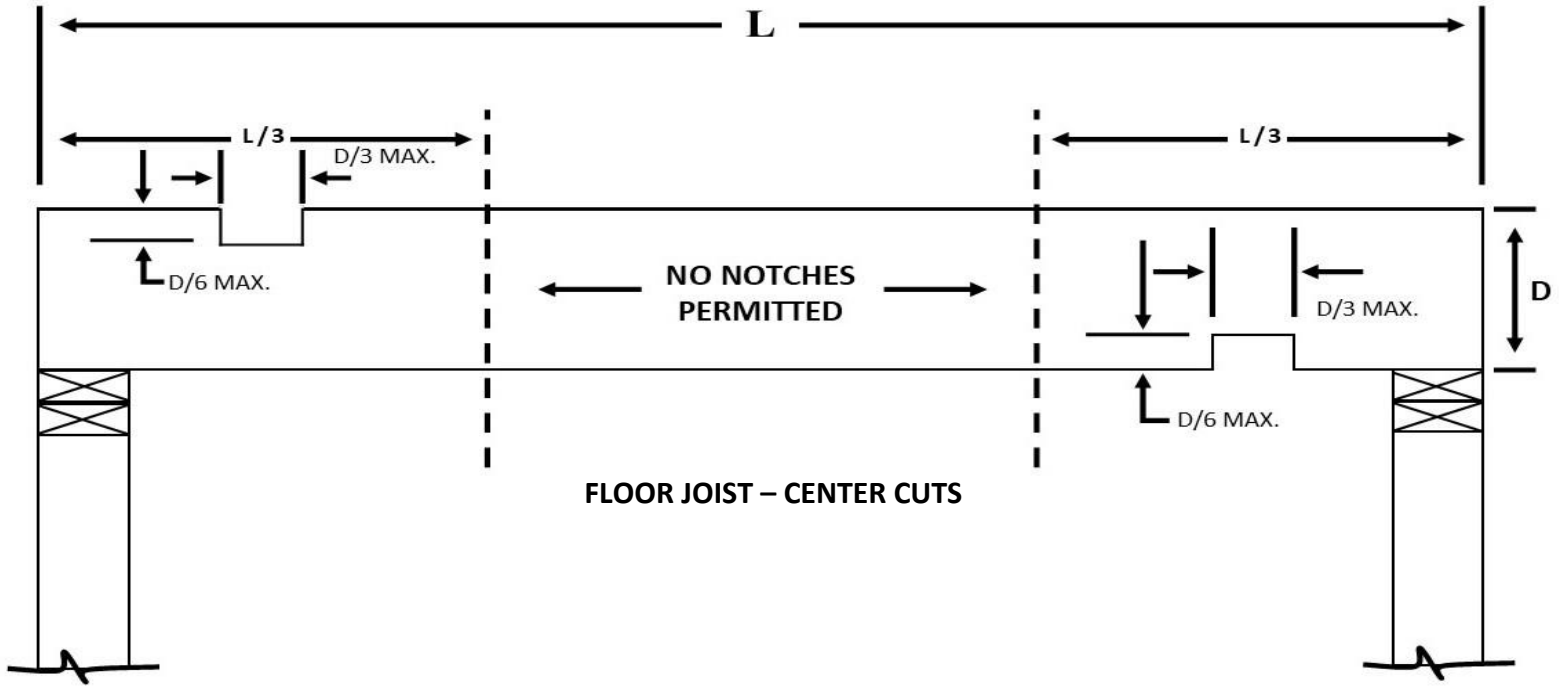
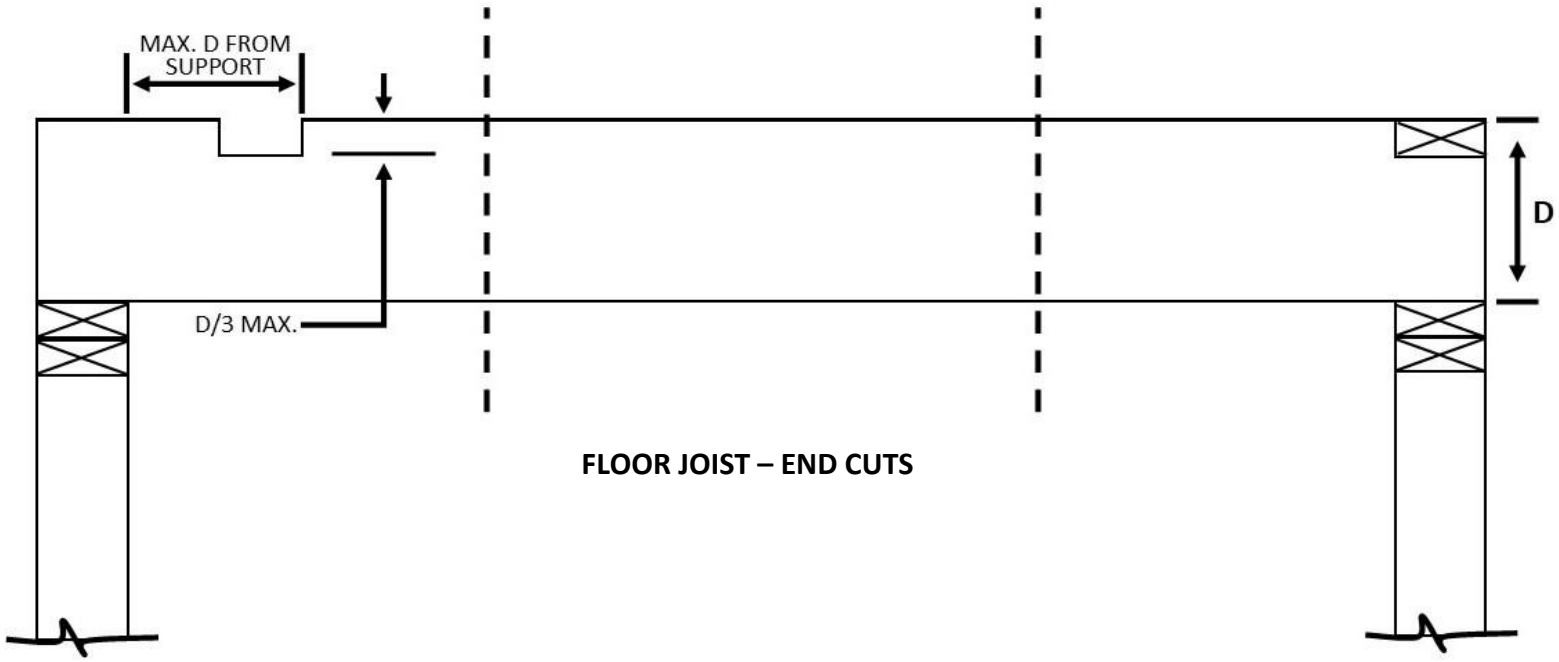
Wood Truss Council of Michigan Truss Installation Check List

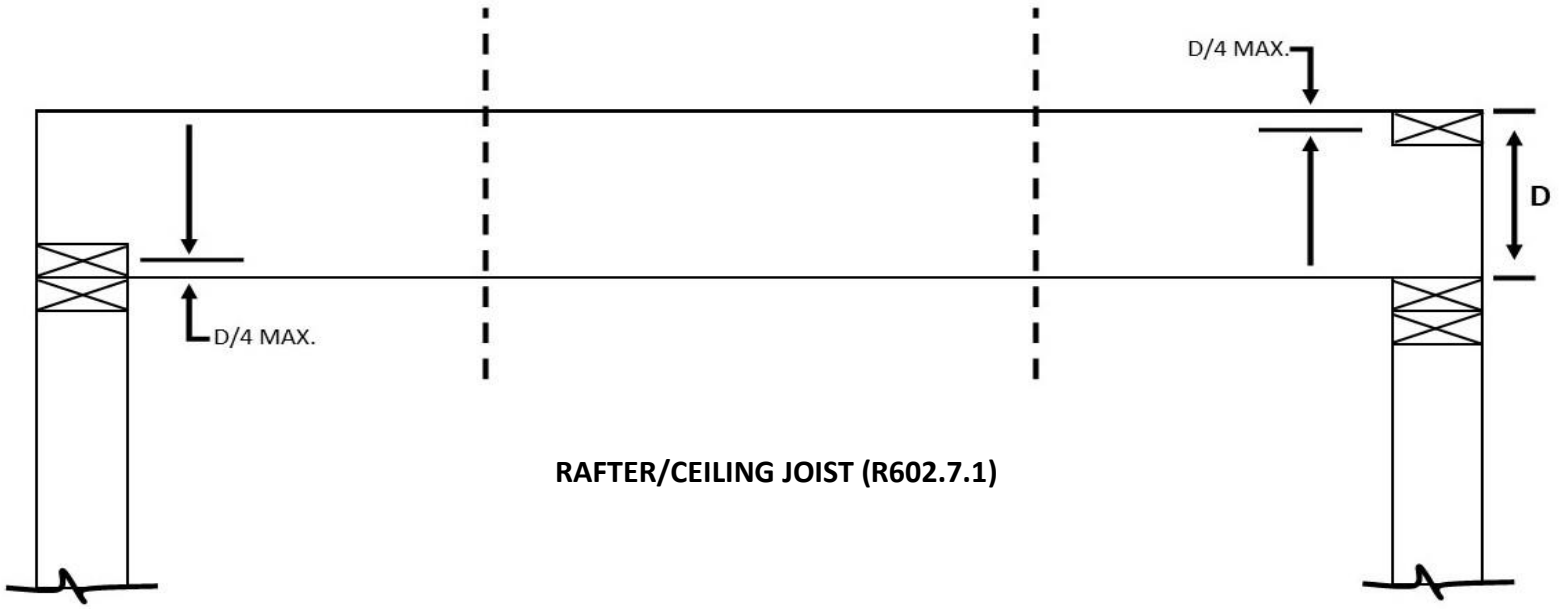
1. Is the proper permanent bracing installed?
2. Check for missing lateral bracing on long webs at bearings.
3. Look for lateral bracing at piggyback flat tops.
4. Check for correct number of girder plies.
5. Check for proper fastening of girder plies.
6. Check for correct hanger connections and proper hanger fastening.
7. Make sure interior bearing walls are in contact with trusses.
8. Look for load bearing walls between panel points.
9. Check for trusses installed backwards.
10. Look for trusses without triangles. (There are a few exceptions.)
11. Make sure flat trusses are not installed upside down.
12. Look for trusses cut out for chimney or stairwell openings.
13. Check for trusses that have been repaired or altered in the field.
14. Check for top cords with no decking of bracing.
15. Look for floor trusses that have been cut for pipes or ductwork.
16. Look for broken members or missing truss plate.
17. Look for large mechanical units sitting on common trusses.
18. Look for trusses installed out of plumb or over spaced.
19. Look for trusses with 2X4 cords that have been drilled or notched.
20. Make sure gable end trusses have continuous bottom cord support.
21. Last, but not least make sure the installed trusses matched the engineered drawings!!



FLOOR JOIST – CENTER CUTS



FLOOR JOIST – END CUTS



RAFTER/CEILING JOIST (R602.7.1)

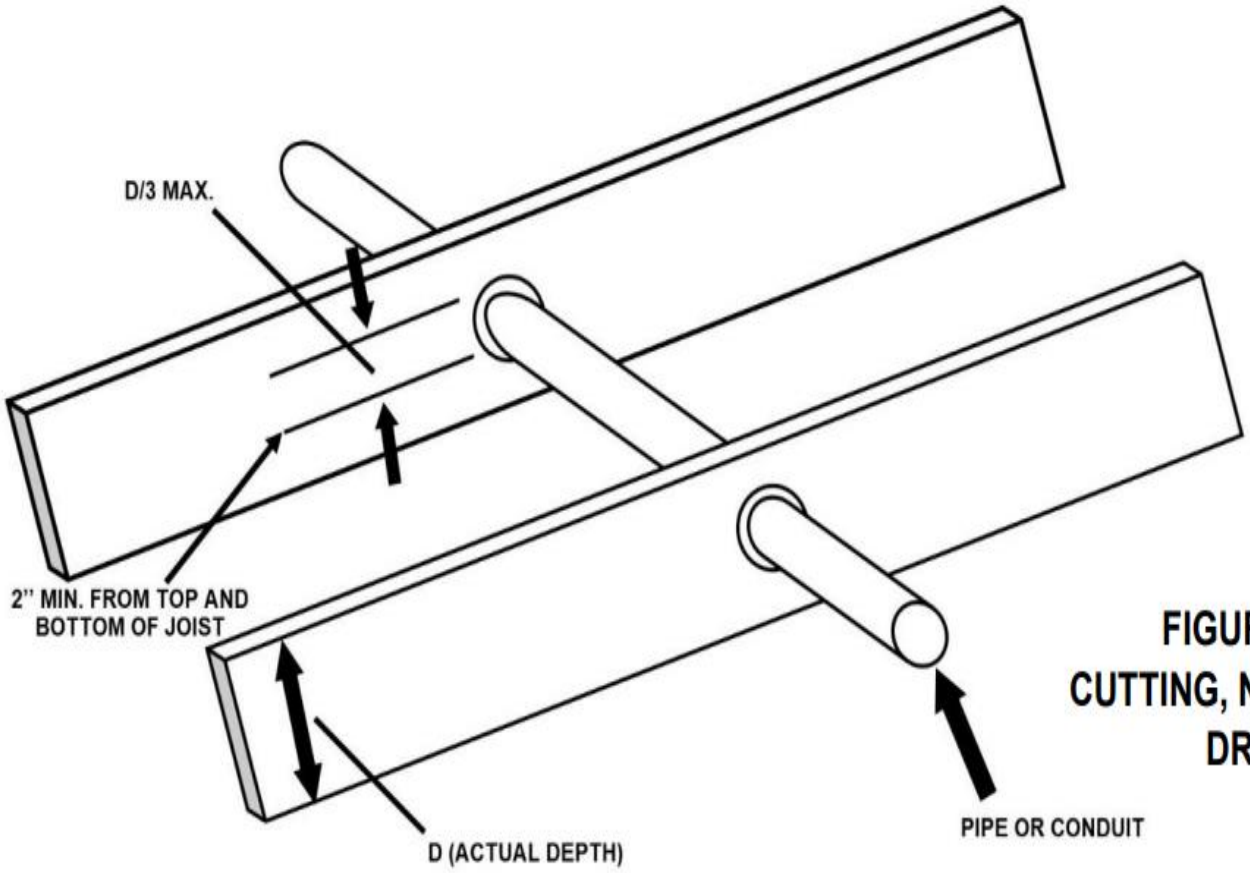
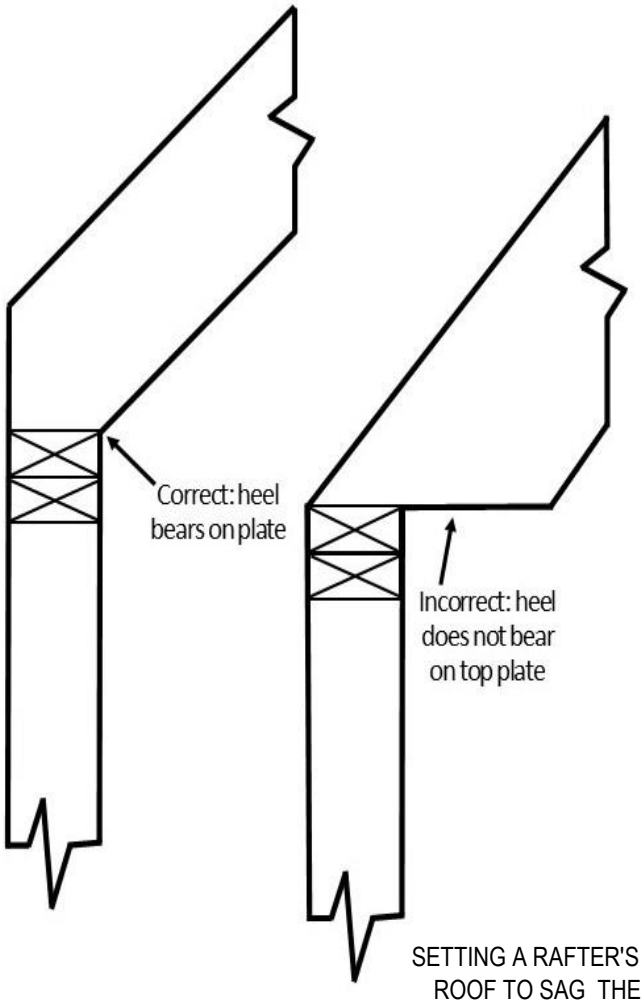


FIGURE R502.8
CUTTING, NOTCHING AND DRILLING



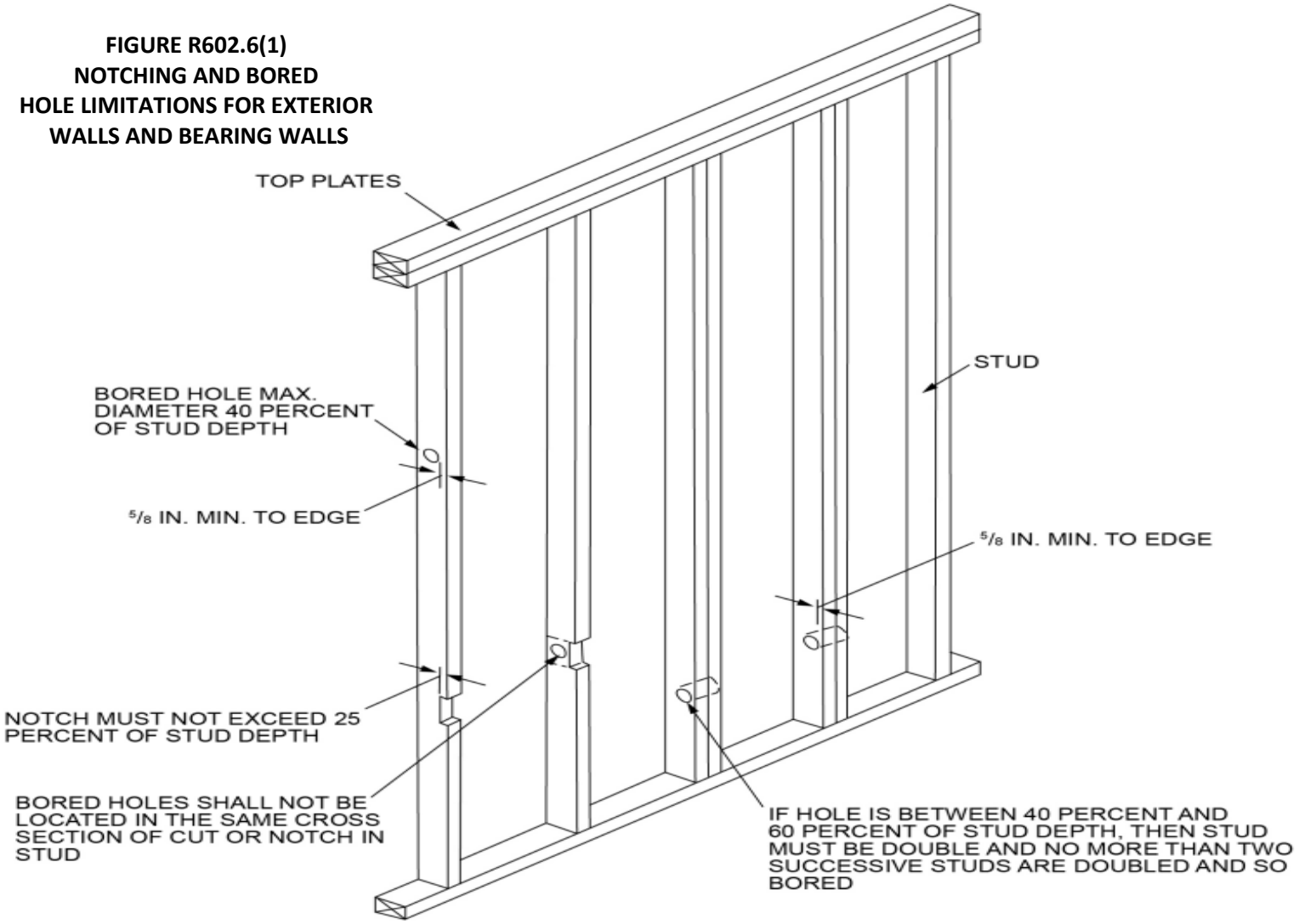
Bolting Schedule for Deck Bands											
Joist Span	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
Bolt Size	½''	½''	½''	½''	½''	½''	½''	½''	½''	⅝''	⅝''
			⅝''	⅝''	⅝''	⅝''	⅝''		¾''		
Bolt Spacing	24''	24''	18''	18''	16''	12''	12''	12''	12''	12''	12''
			24''	21''	18''	18''	16''		16''		
16d Nail Spacing	9''	8''	7''	6''	5''	5''	4''	4''	4''	3''	3''

Note: This table assumes a deck design load of 50 psi (40 psi live load, 10 psi dead load), and Southern Pine 2 - by dimension lumber. As an example, for a deck spanning 8 foot, you can use ½ - inch bolts on 18-inch centers or ¾ - inch bolts on 24-inch centers.

RAFTERS

SETTING A RAFTER'S TOE ON THE TOP PLATE (RIGHT) RISKS SPLITTING THE RAFTER AND CAUSING THE ROOF TO SAG THE INSIDE EDGE OF THE LEVEL CUT, OR HEEL, SHOULD REST ON THE PLATE (LEFT)

FIGURE R602.6(1)
NOTCHING AND BORED HOLE LIMITATIONS FOR EXTERIOR WALLS AND BEARING WALLS



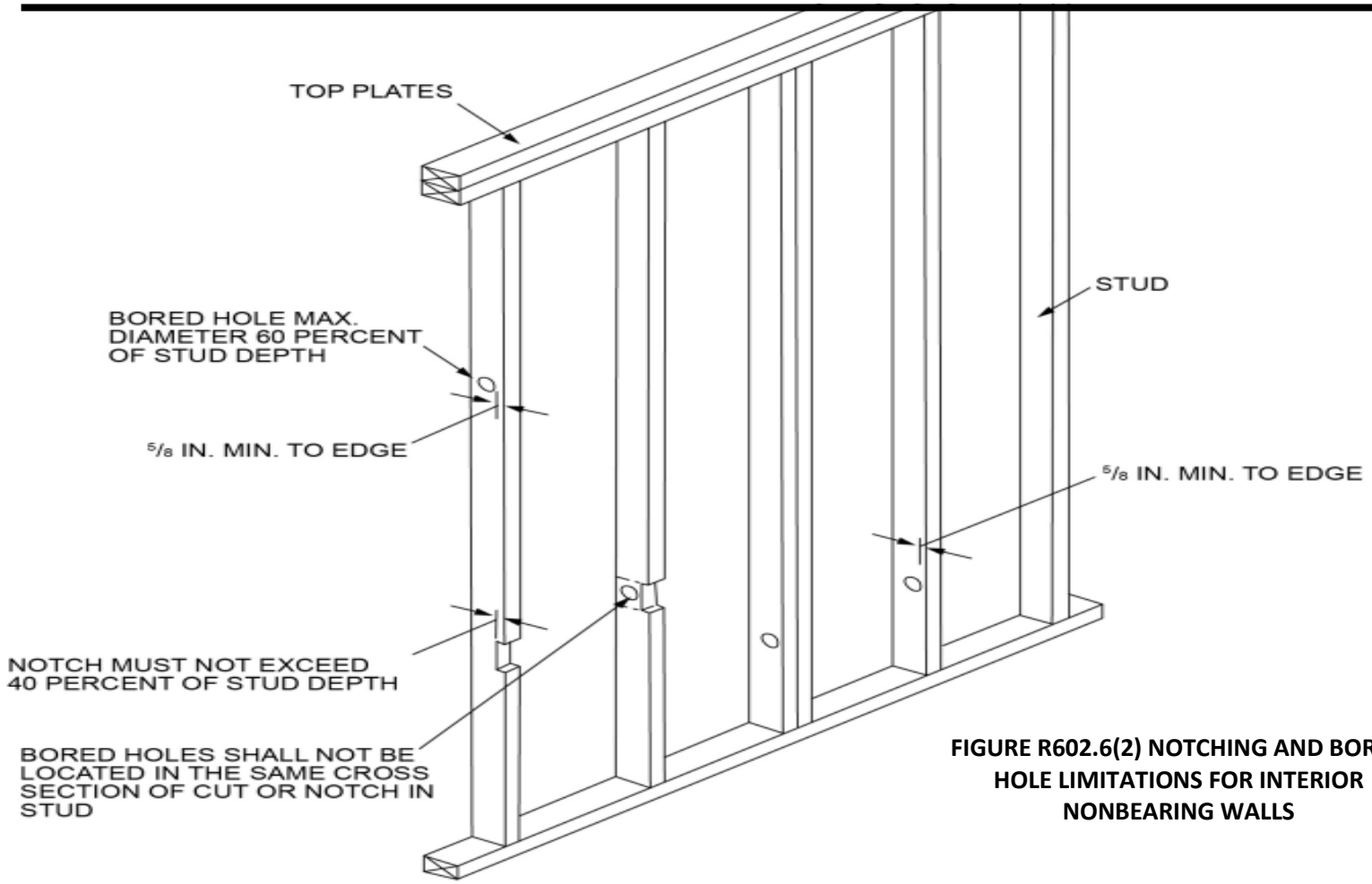
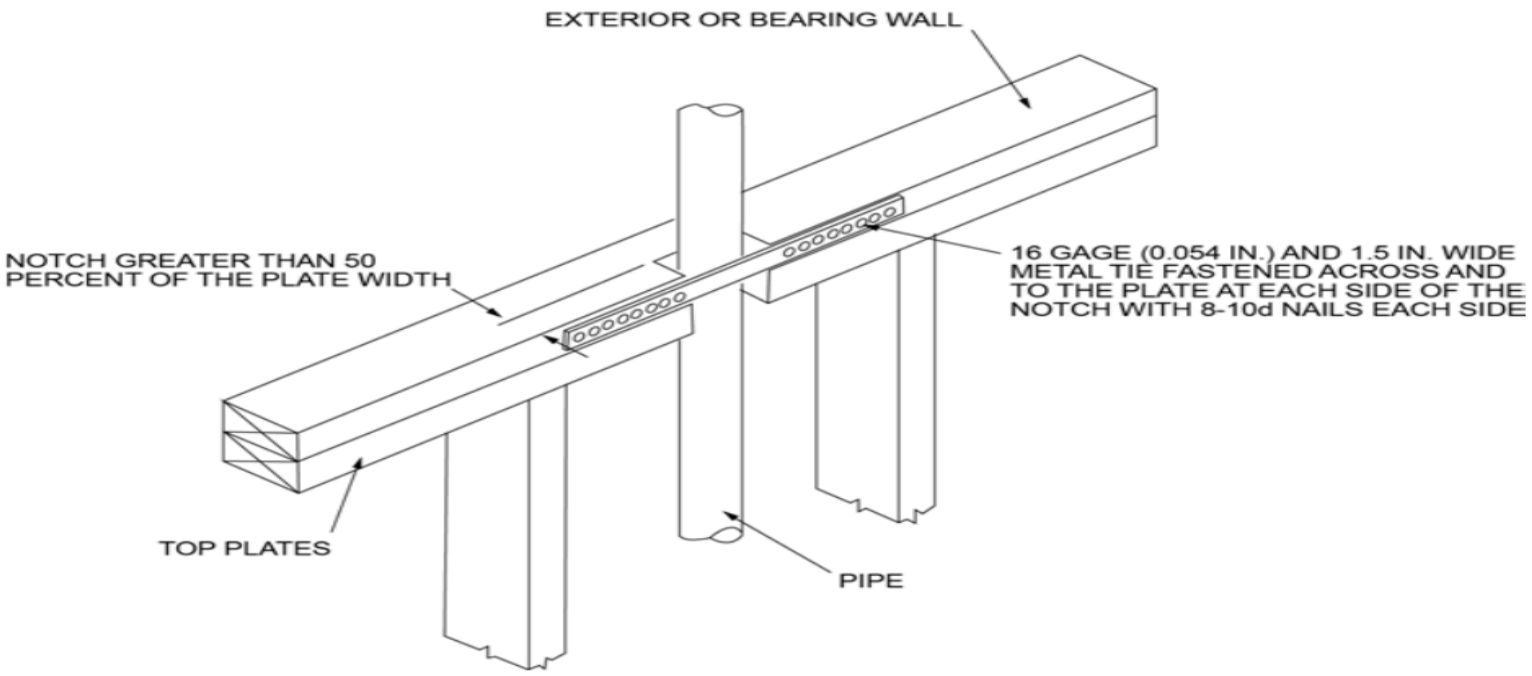


FIGURE R602.6(2) NOTCHING AND BORED HOLE LIMITATIONS FOR INTERIOR NONBEARING WALLS



Though the prescribed slopes as previously discussed are concerned with the first 10 feet away from the structure, the IRC also has requirements for drainage to an approved location such as a storm drain, storm sewer inlet, or the street gutter that leads to a storm drain. The drainage design must consider the entire lot for any impediments to drainage during heavy rains. (Ref. R401.3,R403.1.7.3)

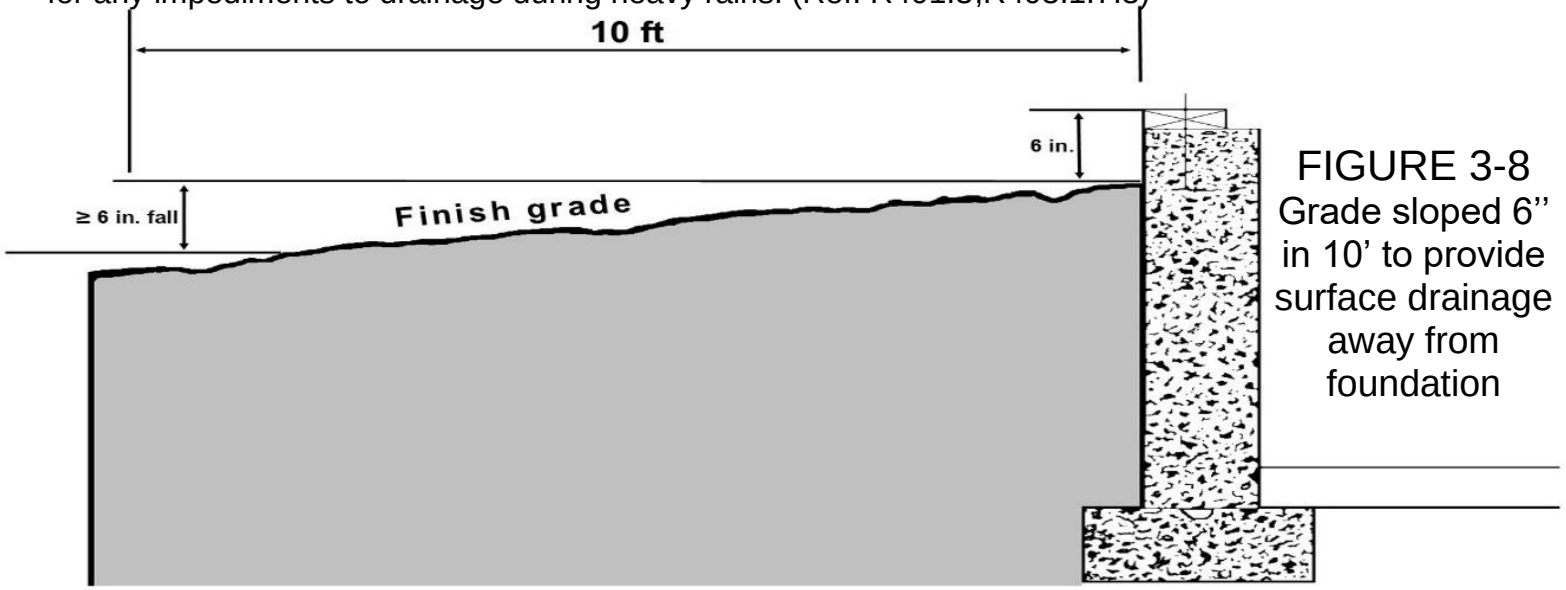


FIGURE 3-8
Grade sloped 6'' in 10' to provide surface drainage away from foundation

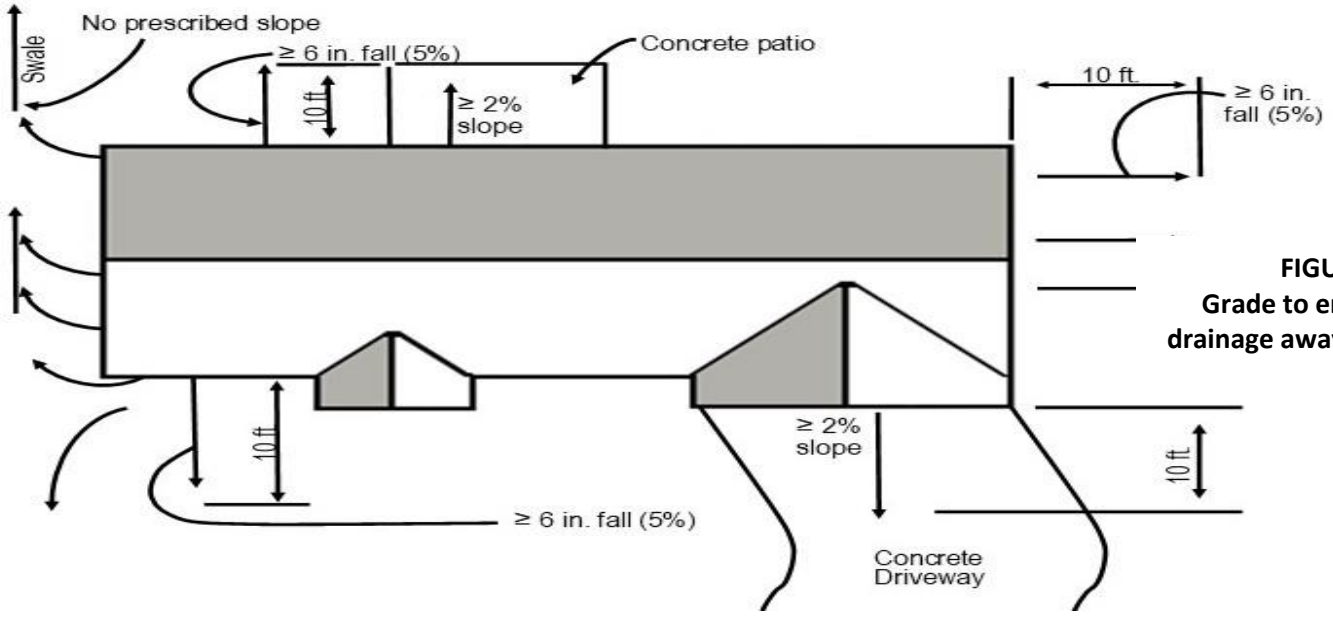


FIGURE 3-9
Grade to ensure surface drainage away from structure

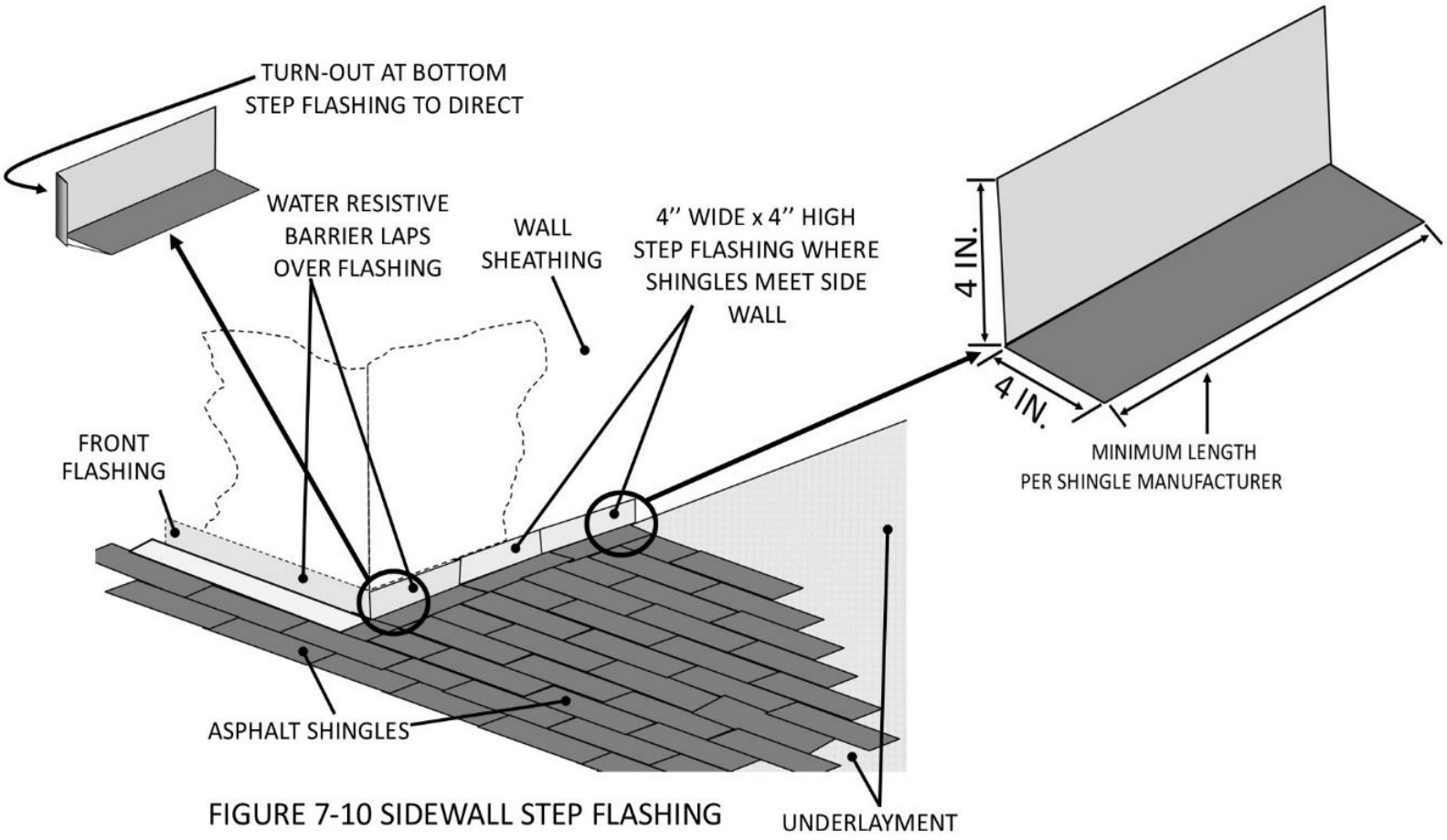


FIGURE 7-10 SIDEWALL STEP FLASHING

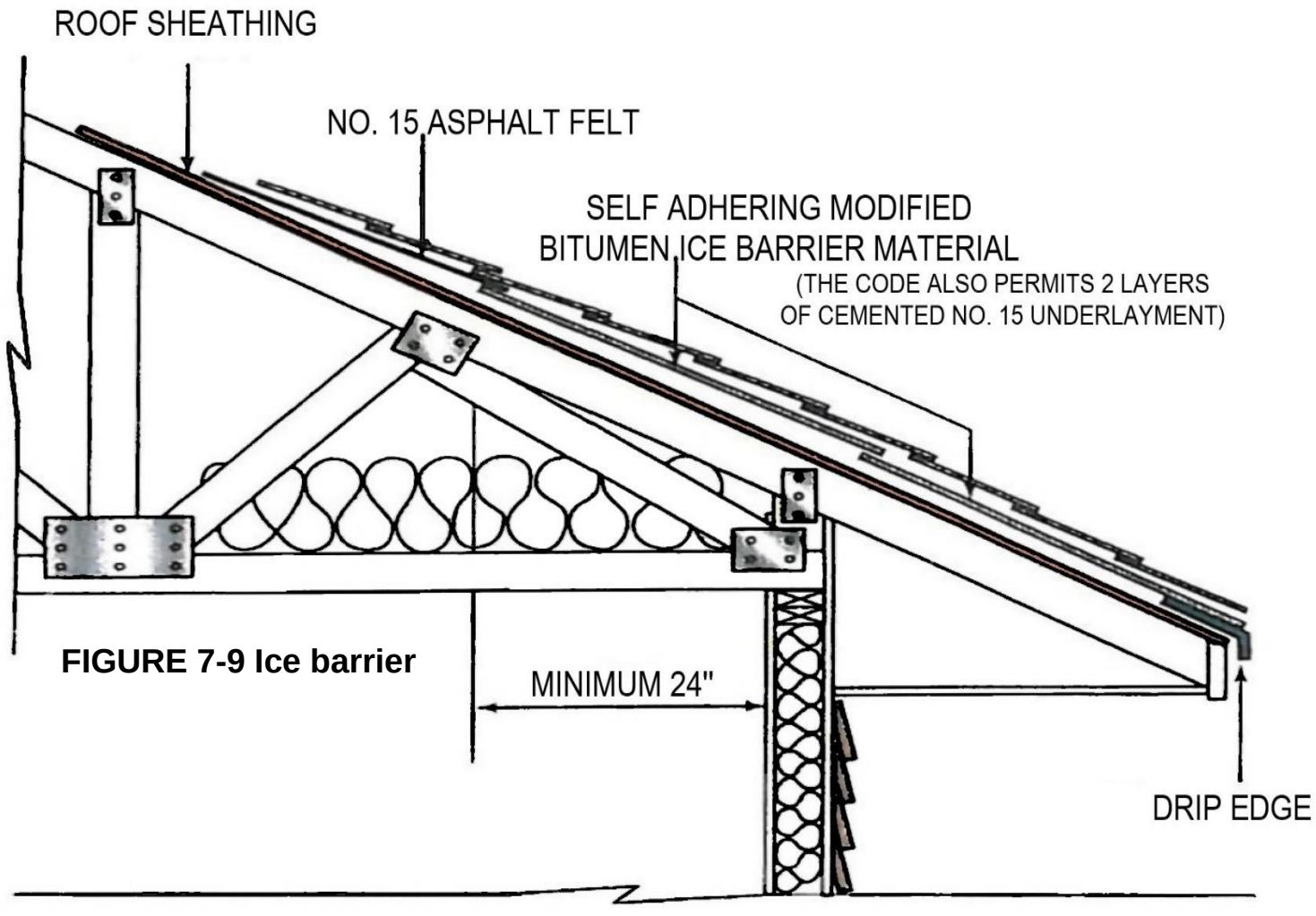


FIGURE 7-9 Ice barrier

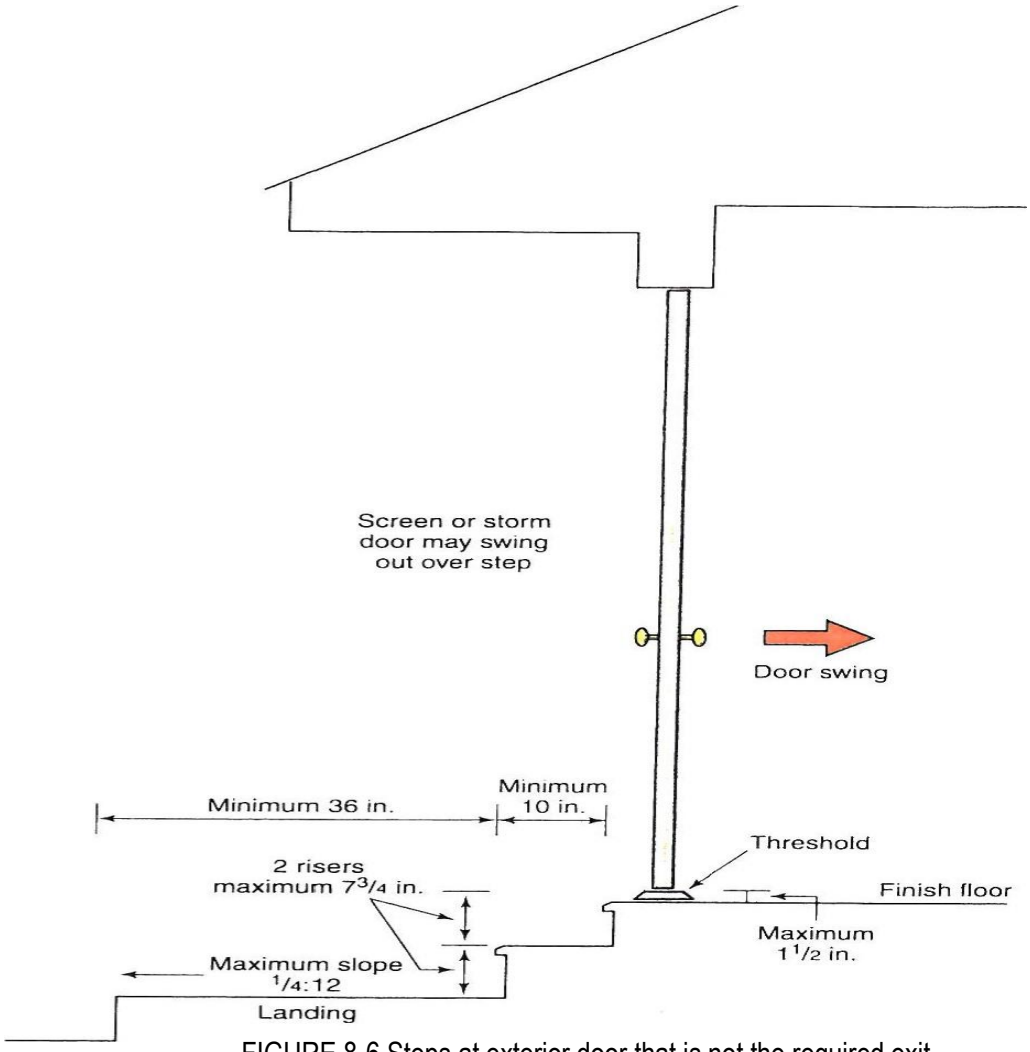


FIGURE 8-6 Steps at exterior door that is not the required exit

PROTECTION FROM FALLS

The IRC intends to protect dwelling occupants from fall injuries at prescribed locations considered hazardous by regulating the design and installation of guards and the height of windowsills.

GUARDS

The IRC generally requires a minimum 36-inch-high guard as protection against falling from a walking surface to a lower surface more than 30'' below.

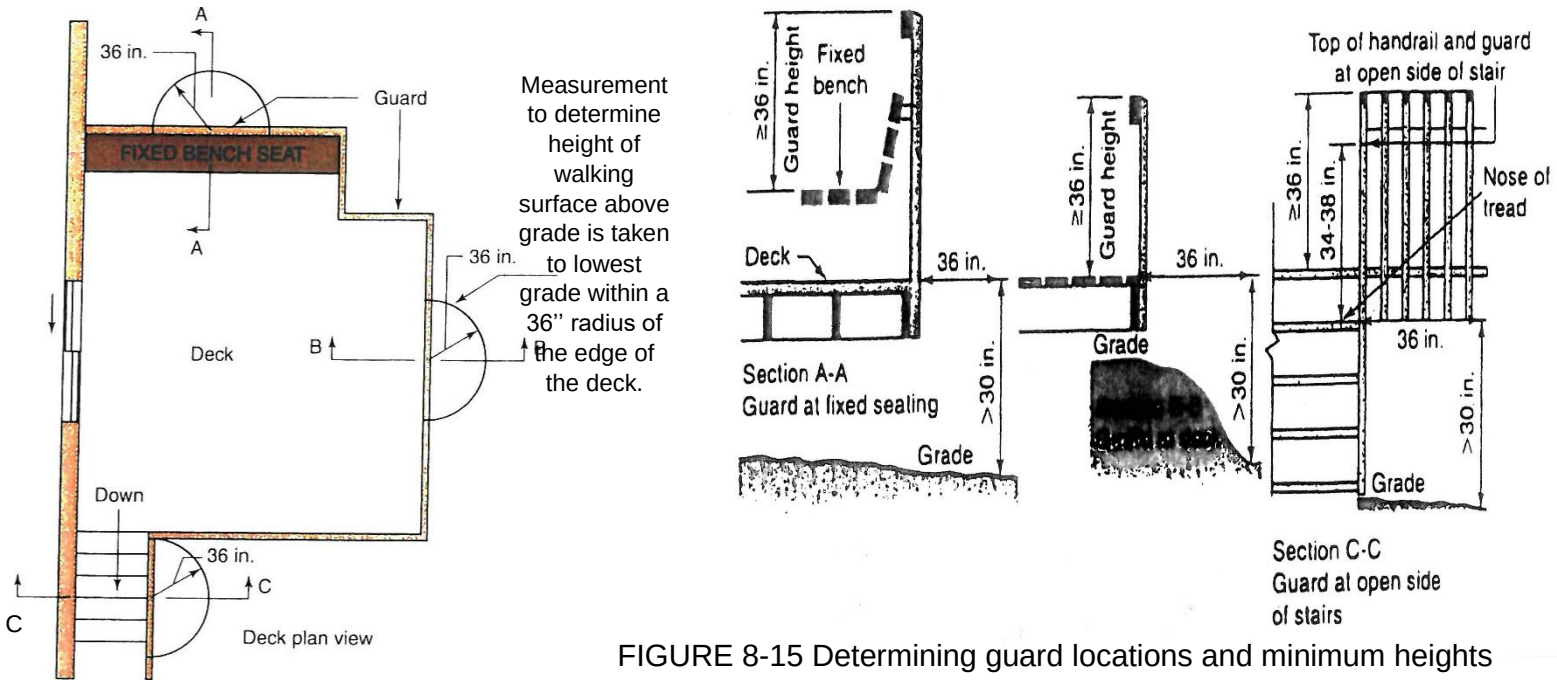


FIGURE 8-15 Determining guard locations and minimum heights

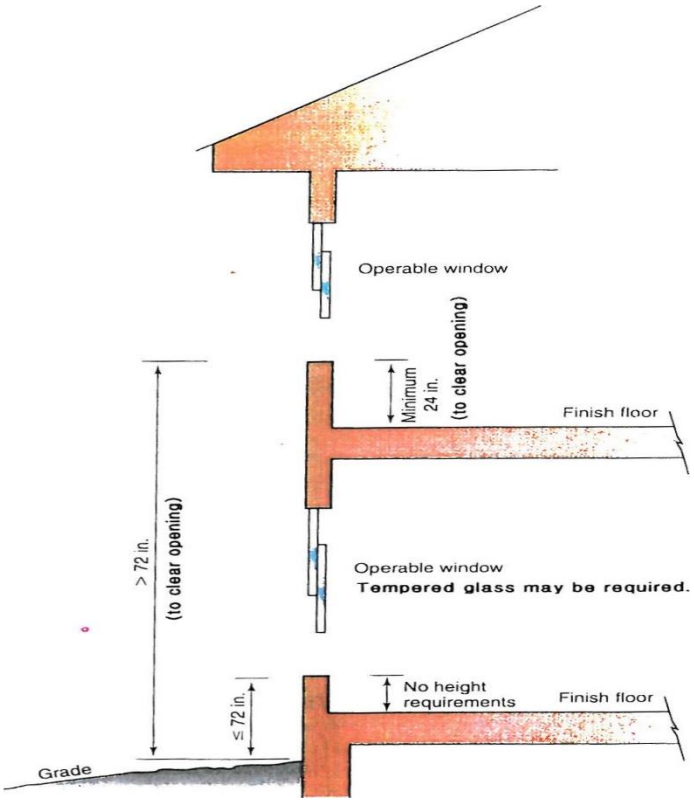


FIGURE 8-17 Windowsill height

EMERGENCY ESCAPE AND RESCUE OPENINGS

One of the most important safety provisions in the IRC concerns openings for emergency escapes and rescues. These openings provide alternate means to escape from a sleeping room or basement in the event that a fire or other emergency blocks the usual path of egress. They allow occupants to escape directly to the safety of the outdoors.

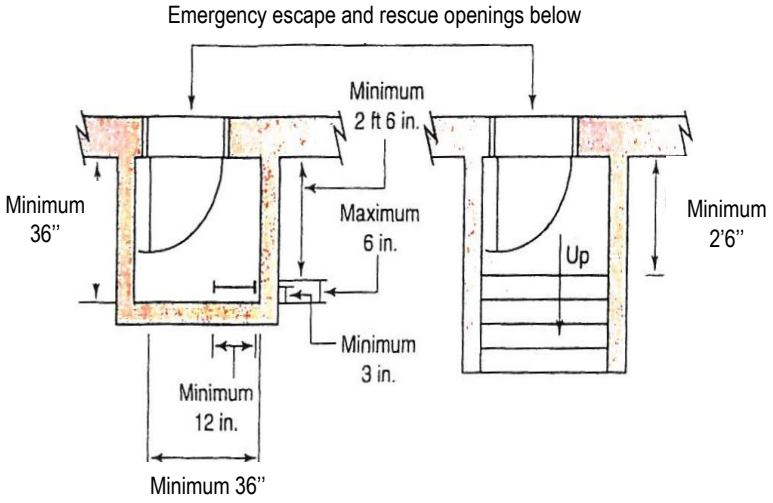
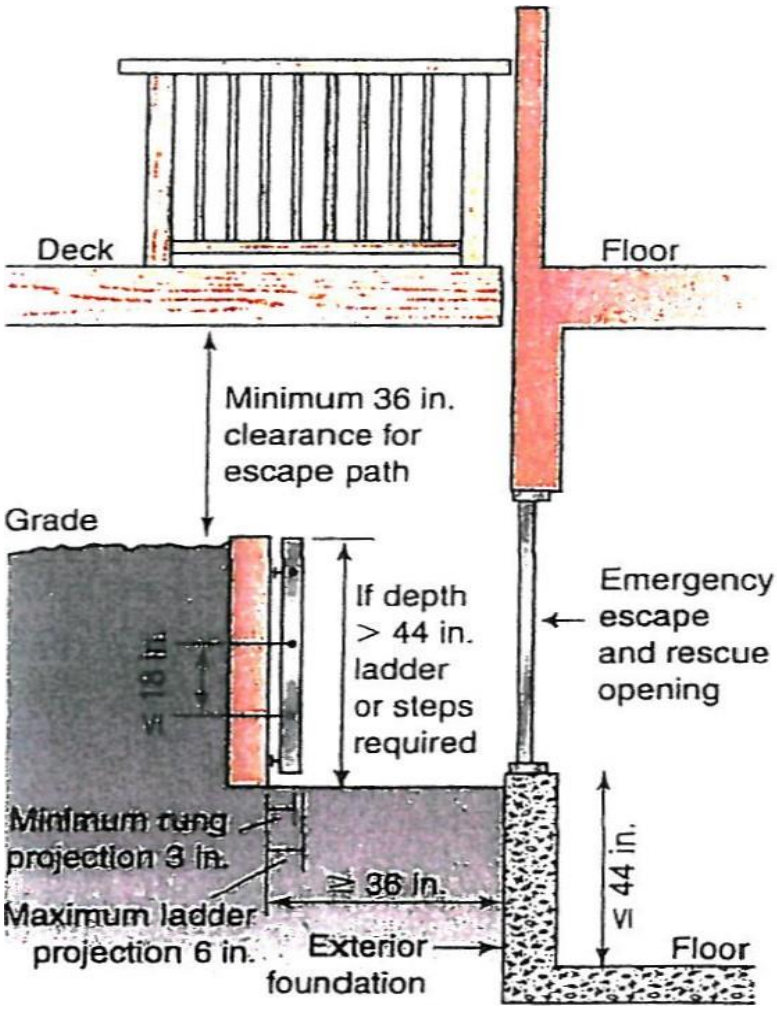


FIGURE 8-21 Window wells for emergency escape and rescue

Porch



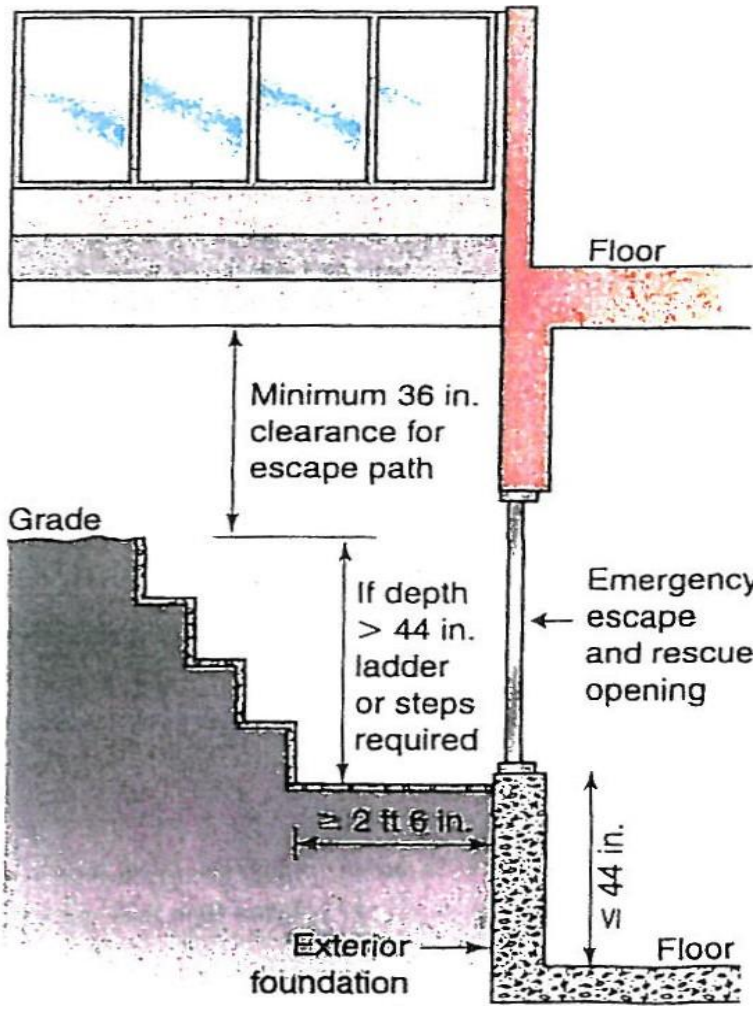


Figure 8-22 Window well section views

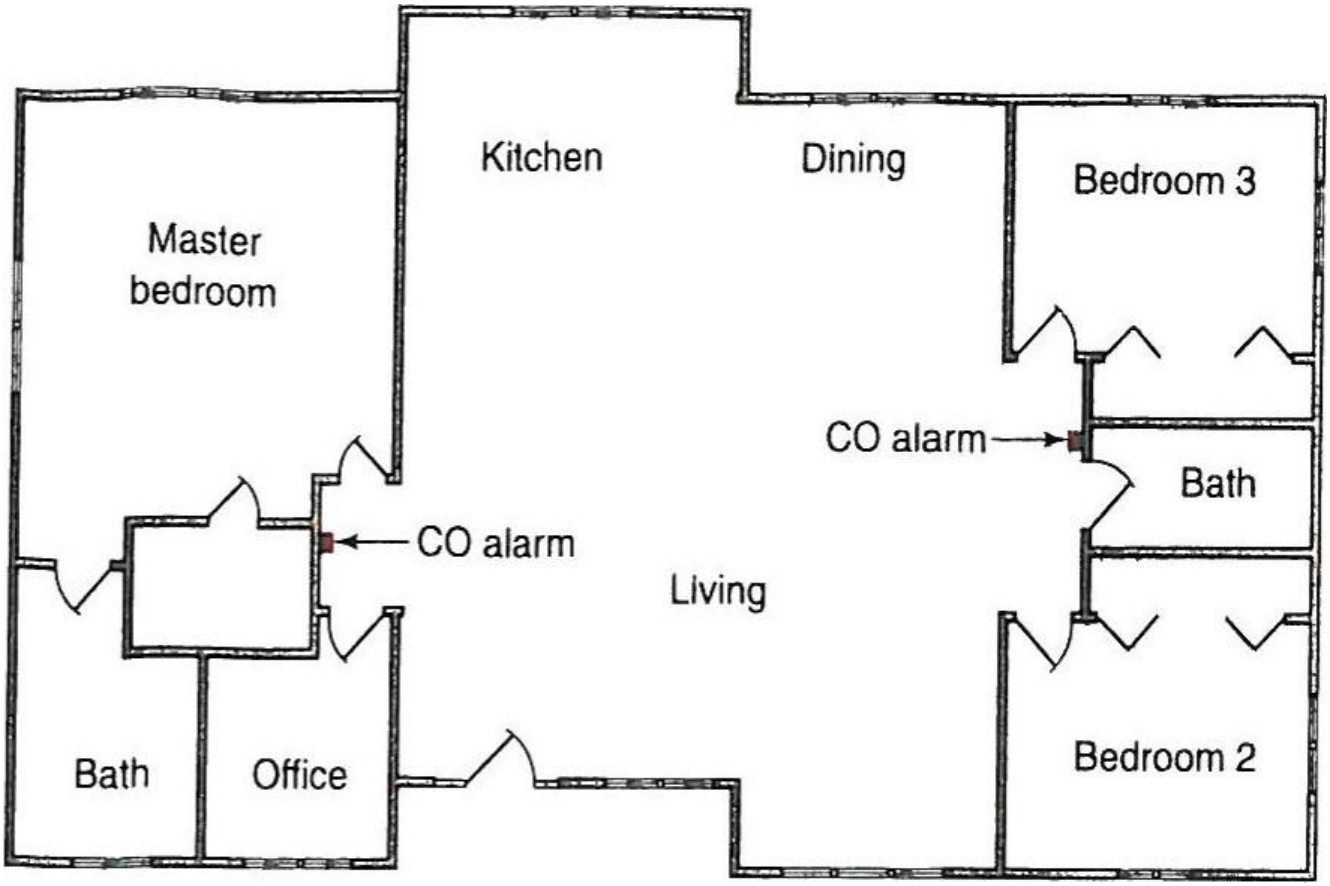


FIGURE 10-4

Carbon monoxide (CO) alarm installed in the immediate vicinity of each sleeping area and 2 feet from exterior walls. code does not require the installation of an air conditioning or comfort cooling system. When mechanical equipment for heating or cooling is installed, it must comply with the mechanical and fuel-gas provisions of the IRC (see Chapter 12 of this publication). (Ref. R303.8)

SANITATION

In the building planning chapter of the code, the IRC establishes basic requirements for bathroom and kitchen fixtures, clearance dimensions, hot and cold water, and sewer connection. Installation must also comply with the specific requirements of the IRC plumbing provisions (see Chapter 13 of this publication).

TOILET AND BATHING FACILITIES

In order to maintain a healthy and sanitary living environment, a residence must provide facilities for toilet, bathing, and handwashing purposes. The IRC requires at least one water closet, one lavatory, and a bathtub or shower in every dwelling unit. Each fixture must be connected to an approved water supply and sewer. Lavatories, bathtubs, showers, and bidets require connection to both hot and cold-water supply. (Ref. R306)

The IRC prescribes minimum clearance dimensions around bathroom fixtures so that occupants can reasonably access and use the fixtures. The minimum size of a shower is also set at 30”x30”, though the IRC plumbing provisions provide an alternative for a narrower shower compartment with a greater area. In this case, the minimum inside width of the shower compartment is 25”, and the minimum inside area is 1300²”, which correlates to the approximate inside dimensions.