2009 MICHIGAN RESIDENTIAL CODE

IMPORTANT INFORMATION

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

(A) PLAN REVIEW:

This plan review lists typical BASIC REQUIREMENTS, includes **complete construction documents**, **manufacturers** installation requirements, **areas prone to flooding**, **truss design data, energy compliance certificate**, **site plan** and all other pertinent permits required for building. It does not list all the requirements of the Michigan State Residential 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. **It shall be the duty of every person who performs work for the project, for which this code is applicable, to comply with the code.**

(B) CALLING FOR INSPECTIONS:

It is the **permit holder's** responsibility to notify the Benzie County Code Dept. of the readiness of the construction for each of the required inspections & obtain approval for: **Footings** with rerod in place and prior to concrete pouring, **foundation** prior to any backfill; **(See Notes A, B, C)**. **Frame** and **Masonry**, after all required electrical, plumbing and mechanical rough inspections have been performed, and prior to concealing any framing and **Insulation** prior to concealment. **Final**, prior to occupancy of the building/structure and after all final inspections for electrical, mechanical and plumbing. If a reinspection is necessary it is the permit holder's responsibility to notify the Code Dept when the construction is ready for reinspection. Be certain the construction is ready for inspection. A reinspection fee will be assessed if the construction or trade fails to pass inspection or is not ready for inspection. (Section R-109)

NOTE: **(A) Benzie County Building Safety & Code Enforcement Dept requires open footing inspections with required enforcing steel and bonding in place. (B) Extra inspections may be required, but not limited to(and fees), for flood plain, insulation, shower pan and concrete walls requiring reinforcing steel in walls. (C) All monolithic slabs require inspections prior to pouring concrete with re-bar in place.**

(C) CERTIFICATE OF USE AND OCCUPANCY:

A building/structure must not be occupied until a final inspection has passed and a Certificate of Use and Occupancy has been issued. A Temporary Certificate may be issued as described in (D) of this general information. House numbers posted on home & street (as per County Ordinance) and approvals from the Electrical, Mechanical, Plumbing and Building Inspectors must be obtained before occupancy can occur. Occupancy of a building/structure without a Certificate of Use and Occupancy is a violation of **State Law**. (Section 13 Public Act 230 of 1972, as amended).

(D) TEMPORARY CERTIFICATE OF USE AND OCCUPANCY:

A Temporary Certificate of Use and Occupancy may be issued providing an inspection discloses that A full bathroom and a kitchen sink are in operation and that **ALL** life/safety requirements of the Code are met, Such as, but not limited to: handrails, guards, smoke detectors, egress requirements, fire doors and fire separation walls fire blocking, and approvals from Electrical, Mechanical & Plumbing Inspectors (at least temporary approval). Inspection for a Temporary Certificate of Use and Occupancy is a special inspection and will require payment of an additional $50 fee and a written request has to be submitted by the permit holder.(Section 13 Public Act 230 of 1972, as amended)

(E) JOB WEATHER CARD:

Please read & post Job Weather Card, issued with permit, in a conspicuous site, visible to the inspectors from road and the address shall be plainly displayed for site identification.

(F) **IF QUESTIONS ARISE, PLEASE CALL THIS OFFICE AT 231-882-9673**.

PLAN REVIEW FOR USE GROUP R-3
MICHIGAN RESIDENTIAL CODE 2009

PROPERTY NO: 10-_____ SITE ADDRESS: _____
TOWNSHIP/CITY _____ REVIEWED BY: _____
DATE: _____

Key to Code comments: **PLEASE USE RED OR BLUE INK TO MARK PLAN REVIEW**

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 compliance with)
Info Alert	May not be addressed on plan, but will be looked at during inspections, or seasonally

1. FOOTINGS AND/OR FOUNDATIONS:

OK N/A Alert **(A) Minimum compressive strength of concrete required:** (Table R402.2)
Basement Walls/Footings/Basement slabs: 2500 psi at 28 days.
Basement/Foundation walls: 3000 psi at 28 days if exposed to weather.*
Garage Floors/Exterior Conc: 3500 psi at 28 days.*

OK N/A Alert **(B) Minimum Size:**
Spread footings shall at least be 6" in thickness. Footing projections shall be at least 2" on each side of foundation and shall not exceed the thickness of the footing. Minimum width shall be in accordance with Table R403.1 based on load-bearing capacity of soil. (R403.1.1) Fill soils shall be designed, installed and tested in accordance with accepted engineering practice (R401.2).

TABLE R403.1
MINIMUM WIDTH OF CONCRETE, PRECAST OR MASONRY FOOTINGS (inches)[a]

	LOAD-BEARING VALUE OF SOIL (psf)			
	1,500	2,000	3,000	4,000
Conventional light-frame construction				
1-story	12	12	12	12
2-story	15	12	12	12
3-story	23	17	12	12
4-inch brick veneer over light frame or 8-inch hollow concrete masonry				
1-story	12	12	12	12
2-story	21	16	12	12
3-story	32	24	16	12
8-inch solid or fully grouted masonry				
1-story	16	12	12	12
2-story	29	21	14	12
3-story	42	32	21	16

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kN/m2.
a. Where minimum footing width is 12 inches, use of a single wythe of solid or fully grouted 12-inch nominal concrete masonry units is permitted.

SOIL CLASSIFICATIONS R405.1

Description of Soil/Backfill Material		Class	Description of Soil/Backfill Material			Class
GROUP I	Well-graded, clean gravels; gravel-sand mixes	GW	GROUP II	Clayey sands, poorly graded sand-clay mixes		SC
	Poorly graded clean gravels; gravel-sand mixes	GP		Inorganic clays of low to medium plasticity		ML
	Silty gravels, poorly graded gravel-sand mixes	GM		Mixture of inorganic silt and clay		ML-CL
	Silty sands, poorly graded sand-silt mixes	SM		Inorganic clays of low to medium plasticity		CL
	Well-graded, clean sands; gravelly-sand mixes	SW	GROUP III	Inorganic clays of high plasticity		CH
	Poorly graded clean sands; sand-gravel mixes	SP		Inorganic clayey silts, elastic silts		MH
GROUP II	Clayey gravels, poorly graded gravel-and-clay mixes	GM	GROUP IV	Organic silts and silt-clays, low plasticity		OL
	Sand-silt clay mix with plastic fines	SM-SC		Peat/highly org	Pt	Organic clays and silty clays	OH

TABLE R404.1.1(1)
PLAIN MASONRY FOUNDATION WALLS

MAXIMUM WALL HEIGHT (feet)	MAXIMUM UNBALANCED BACKFILL HEIGHT[c] (feet)	PLAIN MASONRY[a] MINIMUM NOMINAL WALL THICKNESS (inches)		
		Soil Classes[b]		
		GW, GP, SW and SP	GM, GC, SM, SM-SC and ML	SC, MH, ML-CL and inorganic CL
5	4 5	6 solid[d] or 8 6 solid[d] or 8	6 solid[d] or 8 8	6 solid[d] or 8 10
6	4 5 6	6 solid[d] or 8 6 solid[d] or 8 8	6 solid[d] or 8 8 10	6 solid[d] or 8 10 12
7	4 5 6 7	6 solid[d] or 8 6 solid[d] or 8 10 12	8 10 12 10 solid[d]	8 10 10 solid[d] 12 solid[d]
8	4 5 6 7 8	6 solid[d] or 8 6 solid[d] or 8 10 12 10 solid	6 solid[d] or 8 10 12 12 solid[d] 12 solid[d]	8 12 12 solid[d] Footnote e Footnote e
9	4 5 6 7 8 9	6 solid[d] or 8 8 10 12 12 solid[d] Footnote e	6 solid[d] or 8 10 12 12 solid[d] Footnote e Footnote e	8 12 12 solid[d] Footnote e Footnote e Footnote e

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 Pa.

a. Mortar shall be type M or S and masonry shall be laid in running bond. Ungrouted hollow masonry units are permitted except where otherwise indicated.

b. Soil classes are in accordance with the Unified Soil Classification System. Refer to Table R405.1.

c. Unbalanced backfill height is the difference in height between the exterior finish ground level and the lower of the top of the concrete footing that supports the foundation wall or the interior finish ground level.. Where an interior concrete slab-on-grade is provided and is in contact with the interior surface of the foundation wall, measurement of the unbalanced backfill height from the exterior finish ground level to the top of the interior concrete slab is permitted.

d. Solid grouted hollow units or solid masonry units.

e. Wall construction shall be in accordance with either Table R404.1.1(2), Table R404.1.1.(3), Table R404.1.1(4) or a design shall be provided.

OK N/A Alert **(C) Minimum slab thickness:**

Concrete slab-on-ground floors shall be a minimum 3-1/2” thick, supported by non expansive soils. At least a 4-inch base course consisting of clean graded sand, gravel, crushed stone, or crushed blast-furnace slag passing a 2-inch sieve shall be placed on the prepared subgrade when the slab is below grade. (R506.1) (R506.2.2)

OK N/A Alert Vapor retarder:

A 6 mil polyethylene or approved vapor retarder with joints lapped not less than 6 inches shall be placed between the concrete floor slab and the base course or the prepared subgrade where no base course exists. (R506.2.3)

OK N/A Alert **(C)** Exception: A vapor barrier/retarder may be omitted from garages, utility buildings and other unheated accessory structures. From driveways, walks, patios and other flatwork not likely to be enclosed and heated at a later date. Where approved by the building official, based on local site conditions. (R506.2.3)&(R506.2.3)(1)(2)(3)(4)

Foundation walls: Determine thickness/reinforcement requirements for walls based on code section 404.1. Tables R404.1.1(1), R404.1.1(2), Does not include walls taller than 10 feet. Also in code book Tables R404.1.1(3), R404.1.1(4) and R404.1.2(1)(2)(3)(4)(5)(6)(7).

TABLE R404.1.1(2)
8-INCH MASONRY FOUNDATION WALLS WITH REINFORCING WHERE d ≥ 5 INCHES[a,]

WALL HEIGHT (feet-inches)	UNBALANCED BACKFILL HEIGHT[e] (feet-inches)	MINIMUM VERTICAL REINFORCEMENT [b,c]		
		Soil classes and lateral soil load[d] (psf per foot below grade)		
		GW, GP, SW and SP soils 30	GM, GC, SM, SM-SC and ML soils 45	SC, MH, ML-CL and inorganic CL soils 60
6-8	4(or less) 5 6-8	#4 at 48" o. c. #4 at 48" o. c. #4 at 48" o. c.	#4 at 48" o. c. #4 at 48" o. c. #5 at 48" o. c.	#4 at 48" o. c. #4 at 48" o. c. #6 at 48" o. c.
7-4	4 (or less) 5-0 6-0 7-4	#4 at 48" o. c. #4 at 48" o. c. #4 at 48" o. c. #5 at 48" o. c.	#4 at 48" o. c. #4 at 48" o. c. #5 at 48" o. c. #6 at 48" o. c.	#4 at 48" o. c. #4 at 48" o. c. #5 at 48" o. c. #6 at 40" o. c.
8-0	4 (or less) 5-0 6-0 7-0 8-0	#4 at 48" o. c. #4 at 48" o. c. #4 at 48" o. c. #5 at 48" o. c. #5 at 48" o. c.	#4 at 48" o. c. #4 at 48" o. c. #5 at 48" o. c. #6 at 48" o. c. #6 at 48" o. c.	#4 at 48" o. c. #4 at 48" o. c. #5 at 48" o. c. #6 at 40" o. c. #6 at 32" o. c.
8-8	4 (or less) 5-0 6-0 7-0 8-8	#4 at 48" o. c. #4 at 48" o. c. #4 at 48" o. c. #5 at 48" o. c. #6 at 48" o. c.	#4 at 48" o. c. #4 at 48" o. c. #5 at 48" o. c. #6 at 48" o. c. #6 at 32" o. c.	#4 at 48" o. c. #5 at 48" o. c. #6 at 48" o. c. #6 at 40" o. c. #6 at 24" o. c.
9-4	4 (or less) 5-0 6-0 7-0 8-0 9-4	#4 at 48" o. c. #4 at 48" o. c. #4 at 48" o. c. #5 at 48" o. c. #6 at 48" o. c. #6 at 40" o. c.	#4 at 48" o. c. #4 at 48" o. c. #5 at 48" o. c. #6 at 48" o. c. #6 at 40" o. c. #6 at 24" o. c.	#4 at 48" o. c. #5 at 48" o. c. #6 at 48" o. c. #6 at 40" o. c. #6 at 24" o. c. #6 at 16" o. c.
10-0	4 (or less) 5-0 6-0 7-0 8-0 9-0 10-0	#4 at 48" o. c. #4 at 48" o. c. #4 at 48" o. c. #5 at 48" o. c. #6 at 48" o. c. #6 at 40" o. c. #6 at 32" o.c.	#4 at 48" o. c. #4 at 48" o. c. #5 at 48" o. c. #6 at 48" o. c. #6 at 32" o. c. #6 at 24" o. c. #6 at 16" o.c.	#4 at 48" o. c. #5 at 48" o. c. #6 at 48" o. c. #6 at 32" o.c. #6 at 24" o.c. #6 at 16" o.c. #6 at 16" o.c.

a. Mortar shall be type M or S and masonry shall be laid in running bond.
b. Alternative reinforcing bar sizes and spacings having an equivalent cross-sectional area of reinforcement per lineal foot of wall shall be permitted provided the spacing of the reinforcement does not exceed 72 inches.
c. Vertical reinforcement shall be Grade 60 minimum. The distance from the face of the soil side of the wall to the center of vertical reinforcement shall be at least 5 inches.
d. Soil classes are in accordance with the Unified Soil Classification System and design lateral soil loads are for moist conditions without hydrostatic pressure. Refer to Table R405.1.
e. Unbalanced backfill height is the difference in height between the exterior finish ground level and the lower of the top of the concrete footing that supports the foundation wall or the interior finish ground level.. Where an interior concrete slab-on-grade is provided and is in contact with the interior surface of the foundation wall, measurement of the unbalanced backfill height from the exterior finish ground level to the top of the interior concrete slab is permitted.

(D) The minimum depth of footings/foundations below finished grade.

OK N/A Alert 1. All exterior footings and foundation systems shall extend a minimum of 42" below actual grade. (R403.1.4)

OK N/A Alert 2. When approved by the building official may reduce depth to 24" in clean sand and clean sand-gravel soils. (R403.1.4 exception)

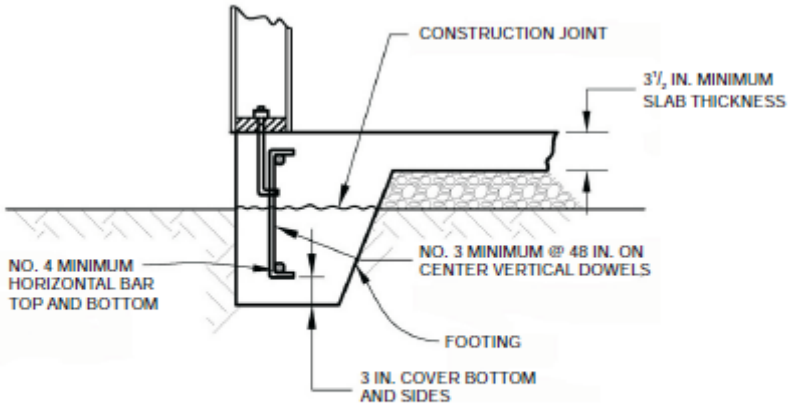
FOOTINGS AND/OR FOUNDATIONS…cont.

OK N/A Alert 3. The footings in freestanding accessory structures of light-framed construction not exceeding 600 sq. ft. in area or 10’ in height shall extend 12 inches below grade to undisturbed soil or soils of sufficient bearing capacity. (R403.1.4.1 exception 1)

OK N/A Alert 4. **R403.1.3.1 Foundations with stemwalls.** Foundations with stem walls shall have installed a minimum of one No. 4 bar within 12 inches (305 mm)of the top of the wall and one No. 4 bar located 3 inches (76 mm) to 4 inches (102 mm) from the bottom of the footing.

OK N/A Alert 5. **R403.1.3.2 Slabs-on-ground with turned-down footings.** Slabs on ground with turned down footings shall have a minimum of one No. 4 bar at the top and the bottom of the footing.

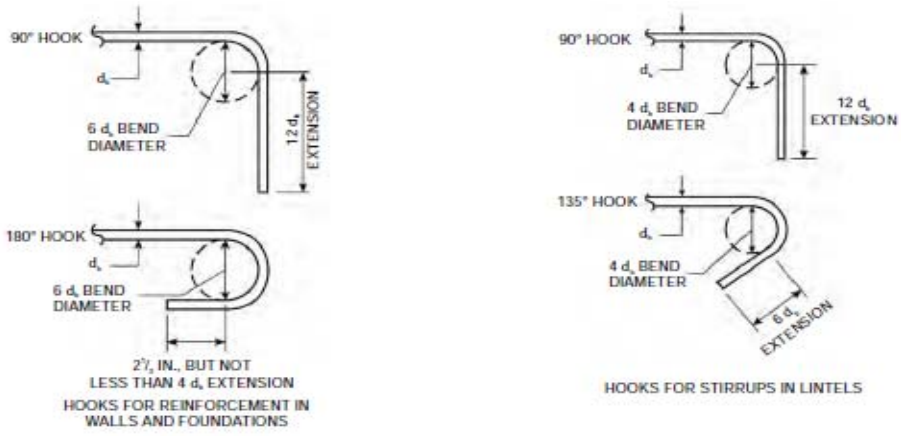
Exception: For slabs-on-ground cast monolithically with the footing, locating one No. 5 bar or two No. 4 bars in the middle third of the footing depth shall be permitted as an alternative to placement at the footing top and bottom. Where the slab is not cast monolithically with the footing, No. 3 or larger vertical dowels with standard hooks on each end shall be provided in accordance with Figure R403.1.3.2. Standard hooks shall comply with Section R611.5.4.5.



25.4 mm.

FIGURE R403.1.3.2
DOWELS FOR SLABS-ON-GROUND WITH TURNED-DOWN FOOTINGS

OK N/A Alert 6. **R611.5.4.5 Standard hooks.** Where reinforcement is required by this code to terminate with a standard hook, the hook shall comply with Figure R611.5.4(3).



1 inch = 25.4 mm, 1 degree = 0.0175 rad.

FIGURE R611.5.4(3)
STANDARD HOOKS

OK N/A Alert 7. **R403.4 Footings for precast concrete foundations.** Footings for precast concrete foundations shall comply with Section R403.4.

OK N/A Alert 8. **R403.4.1 Crushed stone footings.** Clean crushed stone shall be free from organic, clayey or silty soils. Crushed stone shall be angular in nature and meet ASTM C 33, with the maximum size stone not to exceed 1/2 inch (12.7 mm) and the minimum stone size not to be smaller than 1/16-inch (1.6 mm). Crushed stone footings for precast foundations shall be installed in accordance with Figure R403.4(1) and Table R403.4. Crushed stone footings shall be consolidated using a vibratory plate in a maximum of 8-inch lifts. Crushed stone footings shall be limited to Seismic Design Categories A, B and C.

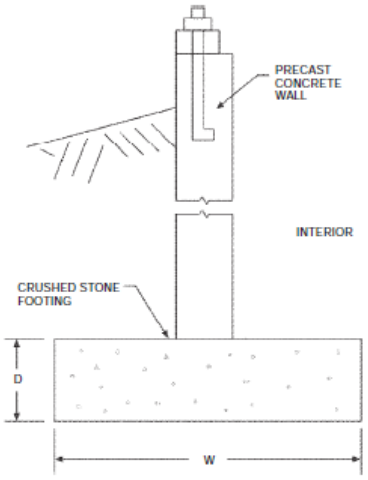


FIGURE R403.4(1)
BASEMENT OR CRAWL SPACE WITH PRECAST FOUNDATION WALL BEARING ON CRUSHED STONE

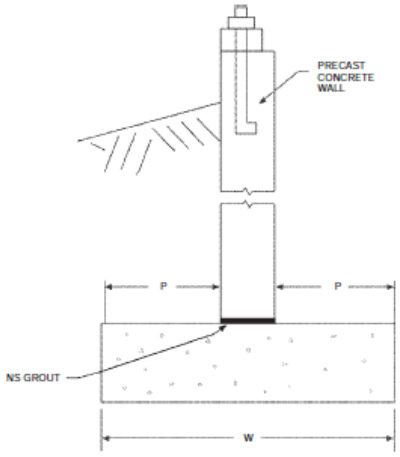


FIGURE R403.4(2)
BASEMENT OR CRAWL SPACE WITH PRECAST FOUNDATION WALL ON SPREAD FOOTING

OK N/A Alert 9. **R403.4.2 Concrete footings.** Concrete footings shall be installed in accordance with Section R403.1 and Figure R403.4(2).

(E) Protection from freezing:

Cold weather construction: Protect concrete and masonry work when subject to freezing.

INFO ALERT 1. Concrete used 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%. (R402.2, Table R402.2 footnote [cd], R404.1, ACI 318, ACI 306R – Cold Weather Concreting)

INFO ALERT 2. Masonry Foundation walls: Protection required when either the ambient temperature or the temperature of the masonry units are less than 40 degrees F. Refer to requirements found in ACI 530.1, Sec 2.3.2.2. (R404.1)

OK N/A Alert **(F) Minimum thickness of concrete and masonry foundation walls:**

Shall comply with the requirements of Table R404.1.1(1) for plain masonry and concrete walls or Table R404.1.1(2)(3)(4) for reinforced concrete or masonry walls. Foundation walls not within the parameters of Table R404.1.1(1) or Tables R401.1.1(2)(3)(4) shall be designed in accordance with ACI 530, ASCE 5, TMS 402 or ACI 318. (404.1)

OK N/A Alert **(G) Energy Code 402.2.8 Slab-on-grade floors.** Slab-on-grade floors with a floor surface less than 12 inches (305 mm) below grade shall be insulated in accordance with Table 402.1.1. The insulation shall extend downward from the top of the slab on the outside or inside of the foundation wall. Insulation located below grade shall be extended the distance provided in Table 402.1.1 by any combination of vertical insulation, insulation extending under the slab or insulation extending out from the building. Insulation extending away from the building shall be protected by pavement or by a minimum of 10 inches (254 mm) of soil. The top edge of the insulation installed between the *exterior wall* and the edge of the interior slab shall be permitted to be cut at a 45-degree (0.79 rad) angle away from the *exterior wall*. Slab-edge insulation is not required in jurisdictions designated by the *code official* as having a very heavy termite infestation.

FOOTINGS AND/OR FOUNDATIONS…cont.

OK N/A Alert **(H) Concrete or masonry foundations:**

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)

TABLE R404.1.2(8)
MINIMUM VERTICAL REINFORCEMENT FOR 6-, 8-, 10-INCH AND 12-INCH NOMINAL FLAT BASEMENT WALLS[b, c, d, e, f, h, i, k, n]

MAXIMUM 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			
		Minimum nominal wall thickness (inches)											
		6	8	10	12	6	8	10	12	6	8	10	12
5	4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
6	4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	NR	NR	NR[l]	NR	NR	4 @ 35	NR[l]	NR	NR
	6	NR	NR	NR	NR	5 @ 48	NR	NR	NR	5 @ 36	NR	NR	NR
7	4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	NR	NR	NR	NR	NR	5 @ 47	NR	NR	NR
	6	NR	NR	NR	NR	5 @ 42	NR	NR	NR	6 @ 43	5 @ 48	NR[l]	NR
	7	5 @ 46	NR	NR	NR	6 @ 42	5 @ 46	NR[l]	NR	6 @ 34	6 @ 48	NR	NR
8	4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	NR	4 @ 38	NR[l]	NR	NR	5 @ 43	NR	NR	NR
	6	4 @ 37	NR[l]	NR	NR	5 @ 37	NR	NR	NR	6 @ 37	5 @ 43	NR[l]	NR
	7	5 @ 40	NR	NR	NR	6 @ 37	5 @ 41	NR[l]	NR	6 @ 34	6 @ 43	NR	NR
	8	6 @ 43	5 @ 47	NR[l]	NR	6 @ 34	6 @ 43	NR	NR	6 @ 27	6 @ 32	6 @ 44	NR
9	4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	NR	4 @ 35	NR[l]	NR	NR	5 @ 40	NR	NR	NR
	6	4 @ 34	NR[l]	NR	NR	6 @ 48	NR	NR	NR	6 @ 36	6 @ 39	NR[l]	NR
	7	5 @ 36	NR	NR	NR	6 @ 34	5 @ 37	NR	NR	6 @ 33	6 @ 38	5 @ 37	NR[l]
	8	6 @ 38	5 @ 41	NR[l]	NR	6 @ 33	6 @ 38	5 @ 37	NR[l]	6 @ 24	6 @ 29	6 @ 39	4 @ 48[m]
	9	6 @ 34	6 @ 46	NR	NR	6 @ 26	6 @ 30	6 @ 41	NR	6 @ 19	6 @ 23	6 @ 30	6 @ 39
10	4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	NR	4 @ 33	NR[l]	NR	NR	5 @ 38	NR	NR	NR
	6	5 @ 48	NR[l]	NR	NR	6 @ 45	NR	NR	NR	6 @ 34	5 @ 37	NR	NR
	7	6 @ 47	NR	NR	NR	6 @ 34	6 @ 48	NR	NR	6 @ 30	6 @ 35	6 @ 48	NR[l]
	8	6 @ 34	5 @ 38	NR	NR	6 @ 30	6 @ 34	6 @ 47	NR[l]	6 @ 22	6 @ 26	6 @ 35	6 @ 45[m]
	9	6 @ 34	6 @ 41	4 @ 48	NR[l]	6 @ 23	6 @ 27	6 @ 35	4 @ 48[m]	DR	6 @ 22	6 @ 27	6 @ 34
	10	6 @ 28	6 @ 33	6 @ 45	NR	DR[j]	6 @ 23	6 @ 29	6 @ 38	DR	6 @ 22	6 @ 22	6 @ 28

For SI: 1 foot = 304.8 mm; 1 inch = 25.4 mm; 1 pound per square foot per foot = 0.1571 kPa/m, 1 pound per square inch = 6.895 kPa.

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.

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 R404.1.2.3.7.6 and Table R404.1.2(9).

d. NR indicates no vertical wall reinforcement is required, except for 6-inch nominal walls formed with stay-in-place forming systems in which case vertical reinforcement shall be #4@48 inches on center.

e. Allowable deflection criterion is $L/240$, where L is the unsupported 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. Vertical reinforcement shall be located to provide a cover of 1.25 inches measured from the inside face of the wall. The center of the steel shall not vary from the specified location by more than the greater of 10 percent of the wall thickness or $^3/_8$-inch.

i. Concrete cover for reinforcement measured from the inside face of the wall shall not be less than $^3/_4$-inch. Concrete cover for reinforcement measured from the outside face of the wall shall not be less than $1^1/_2$ inches for No. 5 bars and smaller, and not less than 2 inches for larger bars.

j. DR means design is required in accordance with the applicable building code, or where there is no code in accordance with ACI 318.

k. Concrete shall have a specified compressive strength, f'_c, of not less than 2,500 psi at 28 days, unless a higher strength is required by footnote l or m.

l. The minimum thickness is permitted to be reduced 2 inches, provided the minimum specified compressive strength of concrete, f'_c, is 4,000 psi.

m. A plain concrete wall with a minimum nominal thickness of 12 inches is permitted, provided minimum specified compressive strength of concrete, f'_c, is 3,500 psi.

n. See Table R611.3 for tolerance from nominal thickness permitted for flat walls.

OK N/A Alert **(I) R401.3 Drainage.** 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 a minimum of 6 inches (152 mm)within the first 10 feet (3048 mm).

Exception: Where *lot lines*, walls, slopes or other physical barriers prohibit 6 inches (152 mm) of fall within 10 feet (3048 mm), drains or swales shall be constructed to ensure drainage away from the structure. Impervious surfaces within 10 feet (3048 mm)of the building foundation shall be sloped a minimum of 2 percent away from the building.

OK N/A Alert **(J) Dampproofing:**

Except where required to be waterproofed by section R406.2, foundation walls that retain earth and enclose interior spaces and floors located below grade shall be dampproofed from the top of the footing to finished grade. (R406.1)

OK N/A Alert **(K) Waterproofing:**

Where high water tables or other soil-water conditions are know to exist, exterior foundation walls that retain earth and enclose habitable or usable spaces located below grade shall be waterproofed with a membrane extending from the top of the footing to the finished grade. (R406.2)

OK N/A Alert **(L) Foundation Anchorage:**

Sill plates shall be anchored to foundations with ½" minimum diameter anchor bolts spaced a maximum of 6' on center. Anchor bolts shall be located within 12 inches from the end of each plate section. Anchor bolts shall be embedded in concrete or grouted masonry a minimum of 7". Where "equivalent anchors" are used in lieu of anchor bolts they shall provide equivalent anchorage and shall be installed per manufacturer's instructions, including spacing. Spacing varies among manufacturers. (R403.1.6)

OK N/A Alert **(M) Wood foundation systems:**

Shall be designed, fabricated and installed in accordance with AF&PA PWF .
All lumber and plywood shall be treated in accordance with AWPA U1 standards and shall bear the label of an accredited agency.(R401.1)(R402.1.2) Fasteners used below grade to attach plywood to exterior side of exterior basement or crawlspace walls and fasteners used in knee wall construction shall be stainless steel Type 304 or 316. R402.1.1
(Refer to wood foundation supplement)

OK N/A Alert **(N) Permanent wood foundation wall sections:**

Permanent wood foundation basement walls shall comply with Figure R403.1(2). Permanent wood foundation crawl space walls shall comply with Figure R403.1(3).

OK N/A Alert **(O) 303.2.1 Protection of exposed foundation insulation.** Insulation applied to the exterior of basement walls, crawlspace walls and the perimeter of slab-on-grade floors shall have a rigid, opaque and weather-resistant protective covering to prevent the degradation of the insulation's thermal performance. The protective covering shall cover the exposed exterior insulation and extend a minimum of 6 inches (153 mm) below grade. (MUEC – 2009)

OK N/A Alert **(P) Notes/Additional requirements regarding FOUNDATIONS:**

_____
_____
_____
_____

2. WOOD FRAMING

OK N/A Alert **(A) Treated Wood:**

Wood <u>above ground</u> and in <u>ground contact</u>, required to be treated, shall be treated with preservatives in accordance with AWPA C2 or C9. (R317.1)(R317.1.1)

OK N/A Alert 1. When wood joists or the bottom of wood structural floor without joists are closer than 18", or wood girders are closer than 12" to the exposed ground in crawl spaces or unexcavated areas located within the perimeter of the building foundation, they shall be approved naturally durable or preservative-treated wood. R317.1(1)

OK N/A Alert 2. All wood framing members that rest on concrete or masonry exterior walls and are less than 8 inches from exposed earth shall be of approved naturally durable or preservative-treated wood. R317.1(2)

OK N/A Alert 3. Sills, sleepers and posts on a concrete or masonry slab which is in direct contact with the ground shall be of approved naturally durable or preservative-treated wood, unless separated from such slab by an impervious moisture barrier. R317.1(3)

OK N/A Alert 4. The ends of wood girders entering exterior masonry or concrete walls shall be provided with a ½" air space on top, sides and end, unless approved naturally durable or preservative-treated wood is used. R317.1(4)

OK N/A Alert 5. Wood siding, sheathing and wall framing on the exterior of a building having a clearance of less than 6 inches (152 mm) from the ground or less than 2 inches (51 mm) measured vertically from concrete steps, porch slabs, patio slabs, and similar horizontal surfaces exposed to the weather. R317.1(5)

OK N/A Alert 6. Wood structural members supporting moisture permeable floors or roofs that are exposed to the weather shall be naturally durable or preservative-treated wood unless separated from such floors or roofs by an impervious moisture barrier. R317.1(6)

OK N/A Alert 7. Wood furring strips or other wood framing members attached directly to the interior of exterior masonry walls or concrete walls below *grade* except where an *approved* vapor retarder is applied between the wall and the furring strips or framing members. (R317.1.7)

OK N/A Alert **(B) Floor cantilevers:**
Cantilevers span not exceed the nominal depth of the floor joist. Those constructed per Table R502.3.3(1) shall be permitted when supporting 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 **(C) Wind bracing:**
Approved bracing is required at each end and at least 25 feet on center but not less than 16% of braced wall. Refer to Section 602.10 for detailed specific information on approved bracing methods. Braced wall panels shall begin no more than 12.5' from each end of a braced wall line and shall be line except that offsets out-of-plane of up to 48 inches shall be permitted provided that the total out-to-out offset dimensions in any braced wall line is not more than 8 feet. (R602.10.1 thru R602.10.7)

OK N/A Alert **(D) Load-bearing walls:** Wall construction shall be capable of accommodating all loads imposed according to Section R301 and of transmitting the resulting loads to the supporting structural elements. (R601.2)

OK N/A Alert 1. **Wall framing:** Studs shall be placed with wide dimension perpendicular to the wall. Not less than 3 studs shall be installed at each corner of an exterior wall. Figure R602.10.4.4(1).

OK N/A Alert 2. **Top plate:** Wood stud walls shall be capped with a double plate installed to provide overlapping at corners and intersections with bearing partitions. End joints in top plates shall be offset at least 24 inches. Plates shall be a nominal 2" depth and have a width at

least equal to the width of studs. (R602.3.2)

OK N/A Alert 3. **Bearing Studs:** Where joints, trusses or rafters are spaced more than 16 inches on center and the bearing studs below are spaced 24 inches on center, and top plates are less than 2x6 inch, such members shall bear within 5 inches of the studs beneath. (R602.3.3)

OK N/A Alert 4. **Stud size, height and spacing:** The size, height and spacing of studs shall be in accordance with Table R602.3.(5).

OK N/A Alert 5. **Girder/Header spans:** For girder/header spans see Tables R502.5(1) and R502.5(2).

OK N/A Alert **(E) R601.3 Vapor retarders.** Class I or II vapor retarders shall be provided on the interior side of frame walls in zones 5, 6, 7, 8 and marine 4.

Exceptions:

1. Class III vapor retarders shall be installed on the interior side of frame walls when insulating sheathing having a class I or II perm rating is installed on the exterior side of the wall.
2. Class I or II vapor retarders shall not be installed on the interior side of either of the following:
    a. Frame basement walls.
    b. The below grade portion of any frame wall.
3. Construction where moisture or its freezing will not damage the materials.

VAPOR RETARDER CLASS. A measure of the ability of a material or assembly to limit the amount of moisture that passes through that material or assembly. Vapor retarder class shall be defined using the desiccant method with Procedure A of ASTM E 96 as follows:

Class I: 0.1 perm or less Class II: 0.1 < perm δ 1.0 perm Class III: 1.0 < perm δ 10 perm

OK N/A Alert **(F)** 1. **R302.6 Dwelling/garage fire separation.** The garage shall be separated as required by Table R302.6. Openings in garage walls shall comply with Section R302.5. This provision does not apply to garage walls that are perpendicular to the adjacent *dwelling unit* wall.

OK N/A Alert 2. Floors shall be noncombustible and shall slope to a drain or the main vehicle entry.(R309.1)

OK N/A Alert 3. **R302.5.1 Opening protection.** Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 13/8 inches (35 mm) in thickness, solid or honeycomb core steel doors not less than 13/8 inches (35 mm) thick, or 20-minute fire-rated doors.

OK N/A Alert **(G) Allowable joist spans:** Spans for floor joists shall be in accordance with Tables R502.3.1(1) and R502.3.1(2). For other grades & species & for other loading conditions, refer to the AF&PA Span Tables for joists and Rafters. (R502.3)

OK N/A Alert **(H) R602.10 Wall bracing.** Buildings shall be braced in accordance with this section. Where a building, or portion thereof, does not comply with one or more of the bracing requirements in this section, those portions shall be designed and constructed in accordance with Section R301.1.

OK N/A Alert **(I) R602.10.1 Braced wall lines.** *Braced wall lines* shall be provided in accordance with this section. The length of a *braced wall line* shall be measured as the distance between the ends of the wall line. The end of a *braced wall line* shall be considered to be either:

1. The intersection with perpendicular exterior walls or projection thereof,
2. The intersection with perpendicular *braced wall lines*.

The end of the *braced wall line* shall be chosen such that the maximum length results.

OK N/A Alert **(J) R602.10.1.1 Braced wall panels.** *Braced wall panels* shall be constructed in accordance with the intermittent bracing methods specified in Section R602.10.2, or the continuous sheathing methods specified in Sections R602.10.4 and R602.10.5. Mixing of bracing method shall be permitted as follows:

1. Mixing bracing methods from *story* to *story* is permitted.
2. Mixing bracing methods from *braced wall line* to *braced wall line* within a *story* is permitted, except that continuous sheathing methods shall conform to the additional requirements of Sections R602.10.4 and R602.10.5.
3. Mixing bracing methods within a *braced wall line* is permitted only in Seismic Design Categories A and B, and detached *dwellings* in Seismic Design Category C. The length of required bracing for the *braced wall line* with mixed sheathing types shall have the higher bracing length requirement, in accordance with Tables R602.10.1.2(1) and R602.10.1.2(2), of all types of bracing used. Read remainder of section for code compliance.

OK N/A Alert **(K) R602.10.2 Intermittent braced wall panel construction methods.** The construction of intermittent *braced wall panels* shall be in accordance with one of the methods listed in Table R602.10.2. Read remainder of section for code compliance.

OK N/A Alert **(L) R602.10.3 Minimum length of braced panels.** For Methods DWB, WSP, SFB, PBS, PCP and HPS, each *braced wall panel* shall be at least 48 inches (1219 mm) in length, covering a minimum of three stud spaces where studs are spaced 16 inches (406 mm) on center and covering a minimum of two stud spaces where studs are spaced 24 inches (610 mm) on center. For Method GB, each *braced wall panel* and shall be at least 96 inches (2438 mm) in length where applied to one face of a *braced wall panel* and at least 48 inches (1219 mm) where applied to both faces. For Methods DWB, WSP, SFB, PBS, PCP and HPS, for purposes of computing the length of panel bracing required in Tables R602.10.1.2(1) and R602.10.1.2(2), the effective length of the *braced wall panel* shall be equal to the actual length of the panel. When Method GB panels are applied to only one face of a *braced wall panel*, bracing lengths required in Tables R602.10.1.2(1) and R602.10.1.2(2) for Method GB shall be doubled. Read remainder of section for code compliance.

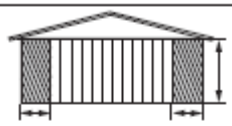
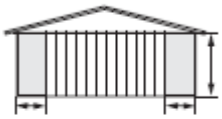
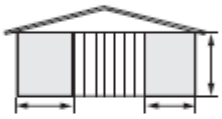
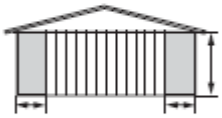
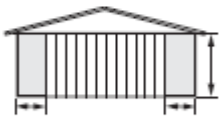
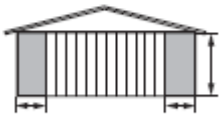
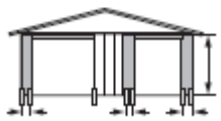
OK N/A Alert **(M) R602.10.4 Continuous sheathing.** *Braced wall lines* with continuous sheathing shall be constructed in accordance with this section. All *braced wall lines* along exterior walls on the same *story* shall be continuously sheathed. Read remainder of section for code compliance.

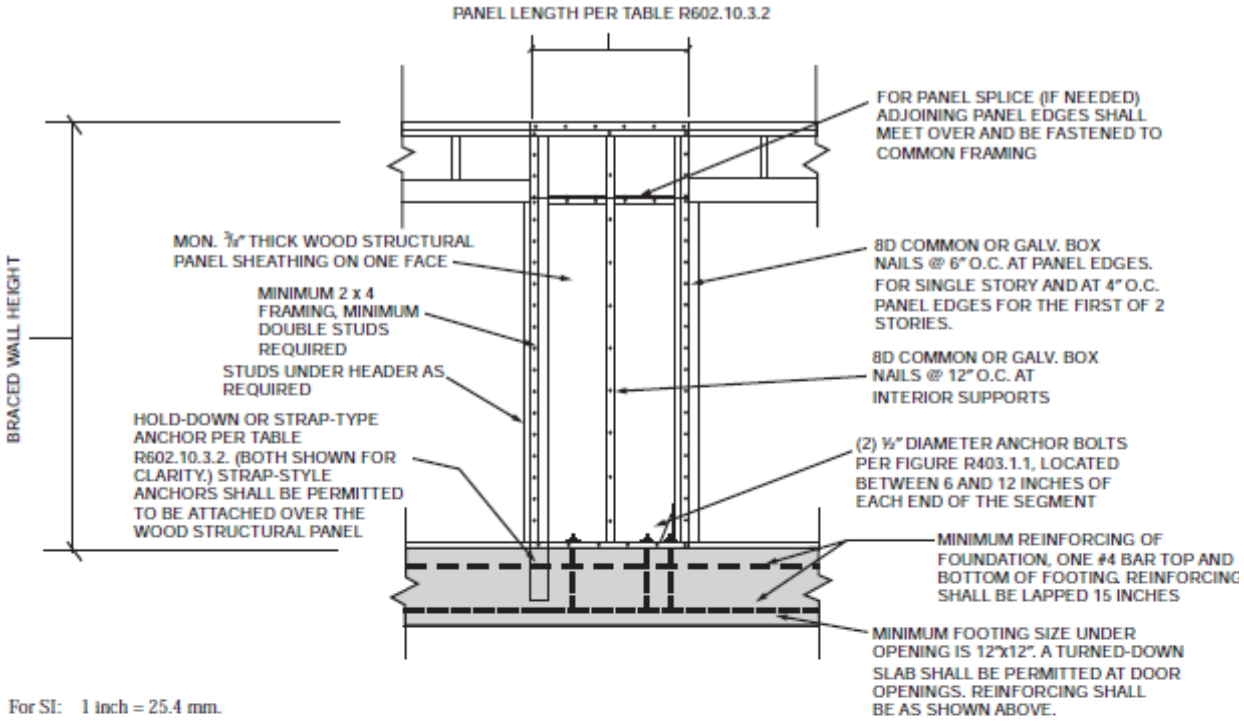
OK N/A Alert **(N) R602.10.4.4 Continuously sheathed braced wall panel location and corner construction.** For all continuous sheathing methods, full-height *braced wall panels* complying with the length requirements of Table R602.10.4.2 shall be located at each end of a *braced wall line* with continuous sheathing and at least every 25 feet (7620 mm) on center. A minimum 24 inch (610 mm) wood structural panel corner return shall be provided at both ends of a *braced wall line* with continuous sheathing in accordance with Figures R602.10.4.4(1) and R602.10.4.4(2). In lieu of the corner return, a hold-down device with a minimum uplift design value of 800 pounds (3560 N) shall be fastened to the corner stud and to the foundation or framing below in accordance with Figure R602.10.4.4(3). Read remainder of section for code compliance.

OK N/A Alert **(O) R602.10.5 Continuously-sheathed braced wall line using Method CS-SFB (structural fiberboard sheathing).** Continuously sheathed *braced wall lines* using structural fiberboard sheathing shall comply with this section. Different bracing methods shall not be permitted within a continuously sheathed *braced wall line*. Other bracing methods prescribed by this code shall be permitted on other *braced wall lines* on the same *story* level or on different *story* levels of the building.

WOOD FRAMING …cont.

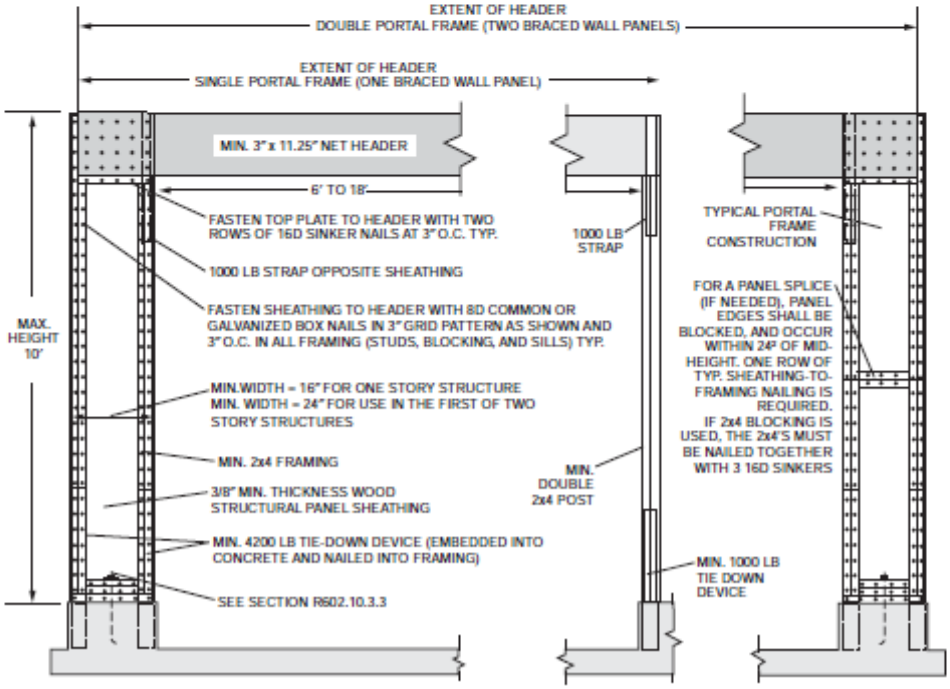
TABLE R602.10.2
INTERMITTENT BRACING METHODS

METHOD	MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA
LIB	Let-in-bracing	1 × 4 wood or approved metal straps at 45° to 60° angles for maximum 16″ stud spacing		Wood: 2-8d nails per stud including top and bottom plate metal: per manufacturer
DWB	Diagonal wood boards	$^3/_4$″ (1″ nominal) for maximum 24″ stud spacing		2-8d ($2^1/_2$″ × 0.113″) nails or 2 staples, $1^3/_4$″ per stud
WSP	Wood structural panel (see Section R604)	$^3/_8$″		For exterior sheathing see Table R602.3(3) For interior sheathing see Table R602.3(1)
SFB	Structural fiberboard sheathing	$^1/_2$″ or $^{25}/_{32}$″ for maximum 16″ stud spacing		$1^1/_2$″ galvanized roofing nails or 8d common ($2^1/_2$″ × 0.131) nails at 3″ spacing (panel edges) at 6″ spacing (intermediate supports)
GB	Gypsum board	$^1/_2$″		Nails or screws at 7″ spacing at panel edges including top and bottom plates; for all braced wall panel locations for exterior sheathing nail or screw size, see Table R602.3(1); for interior gypsum board nail or screw size, see Table R702.3.5
PBS	Particleboard sheathing (see Section R605)	$^3/_8$″ or $^1/_2$″ for maximum 16″ stud spacing		$1^1/_2$″ galvanized roofing nails or 8d common ($2^1/_2$″ × 0.131) nails at 3″ spacing (panel edges) at 6 spacing (intermediate supports)
PCP	Portland cement plaster	See Section R703.6 For maximum 16″ stud spacing		$1^1/_2$″, 11 gage, $^7/_{16}$″ head nails at 6″ spacing or $^7/_8$″, 16 gage staples at 6″ spacing
HPS	Hardboard panel siding	$^7/_{16}$″ For maximum 16″ stud spacing		0.092″ dia., 0.225″ head nails with length to accommodate $1^1/_2$″ penetration into studs at 4″ spacing (panel edges), at 8″ spacing (intermediate supports)
ABW	Alternate braced wall	See Section R602.10.3.2		See Section R602.10.3.2
PFH	Intermittent portal frame	See Section R602.10.3.3		See Section R602.10.3.3
PFG	Intermittent portal frame at garage	See Section R602.10.3.4		See Section R602.10.3.4



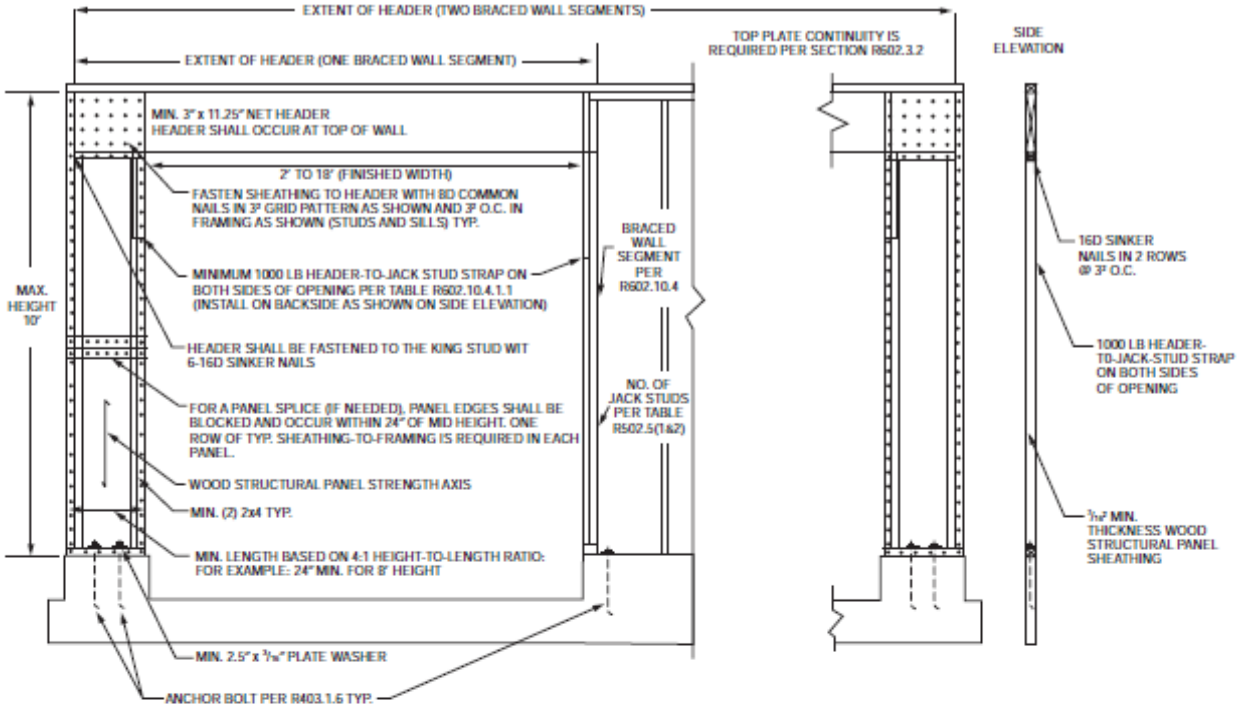
For SI: 1 inch = 25.4 mm.

FIGURE R602.10.3.2
ALTERNATE BRACED WALL PANEL



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound force = 4.448 N.

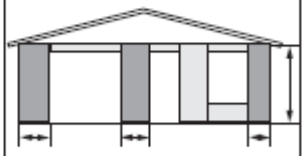
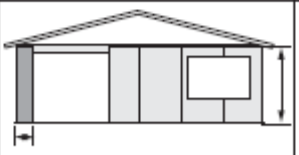
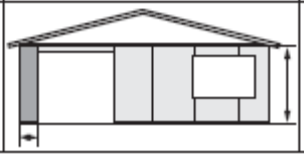
FIGURE R602.10.3.3
METHOD PFH: PORTAL FRAME WITH HOLD-DOWNS



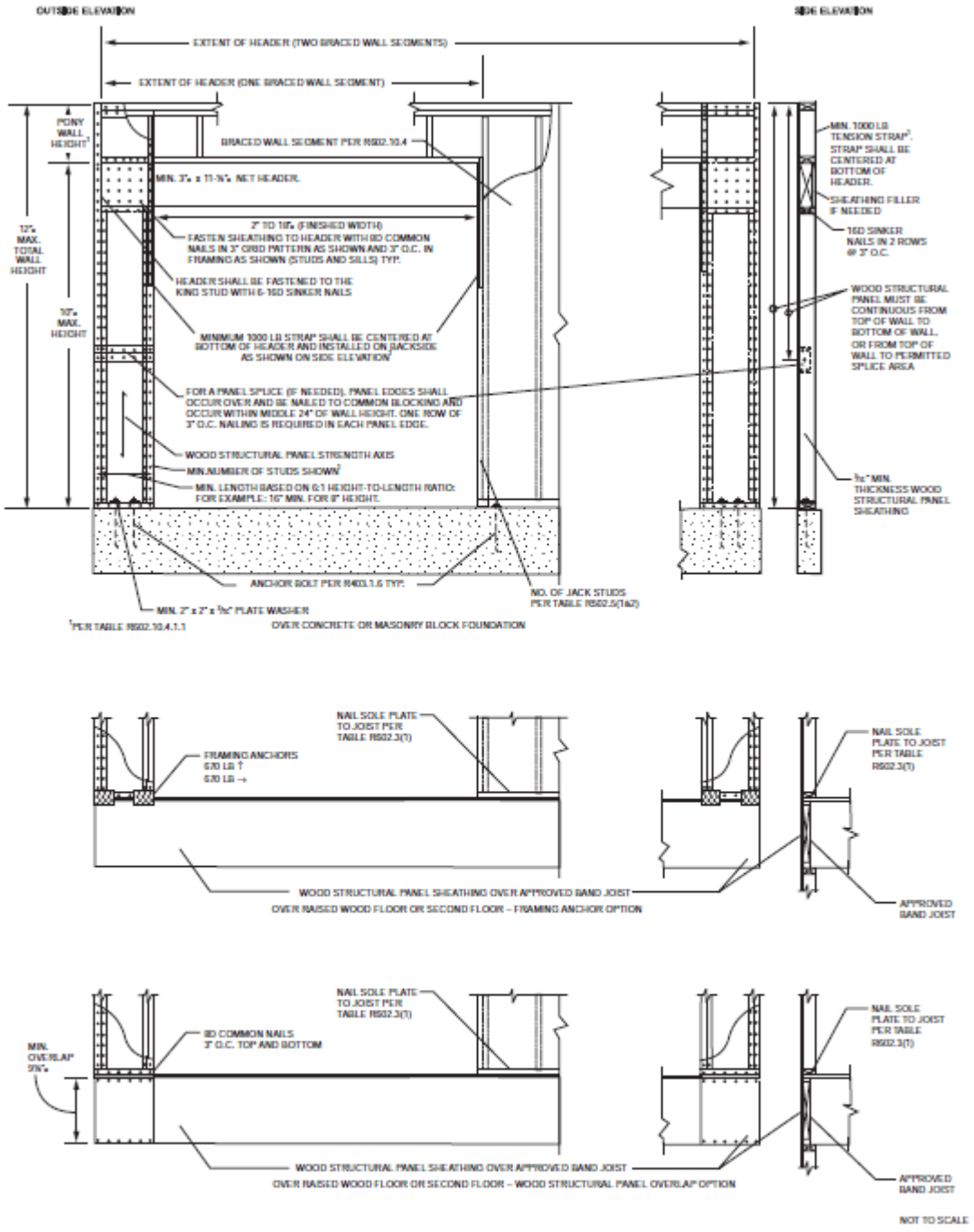
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound force = 4.448 N.

FIGURE R602.10.3.4
METHOD PFG PORTAL FRAME AT GARAGE DOOR OPENINGS IN SEISMIC DESIGN CATEGORIES A, B AND C

TABLE R602.10.4.1
CONTINUOUS SHEATHING METHODS

METHOD	MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA
CS-WSP	Wood structural panel	3/8"		6d common (2" × 0.113") nails at 6" spacing (panel edges) and at 12" spacing (intermediate supports) or 16 ga. × 1 3/4 staples at 3" spacing (panel edges) and 6" spacing (intermediate supports)
CS-G	Wood structural panel adjacent to garage openings and supporting roof load only[a,b]	3/8"		See Method CS-WSP
CS-PF	Continuous portal frame	See Section R602.10.4.1.1		See Section R602.10.4.1.1

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 47.89 Pa.
a. Applies to one wall of a garage only.
b. Roof covering dead loads shall be 3 psf or less.



: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound force = 4.448 N.

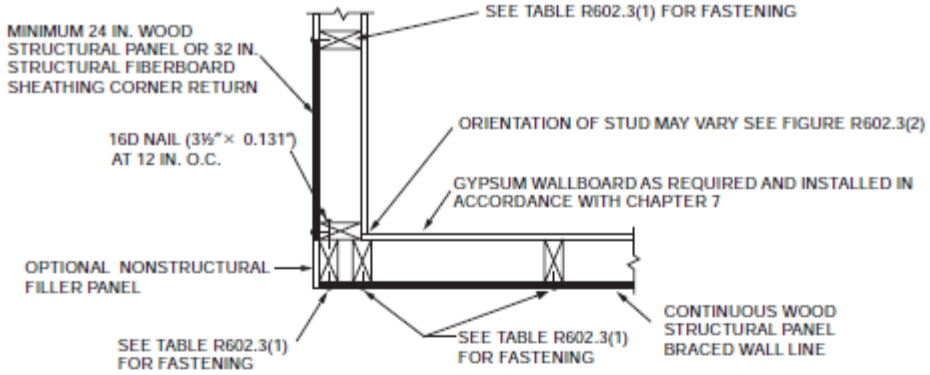
FIGURE R602.10.4.1.1
METHOD CS-PF: CONTINUOUS PORTAL FRAME PANEL CONSTRUCTION

OK N/A Alert **(P) R602.10.6 Braced wall panel connections.** *Braced wall panels* shall be connected to floor framing or foundations as follows:

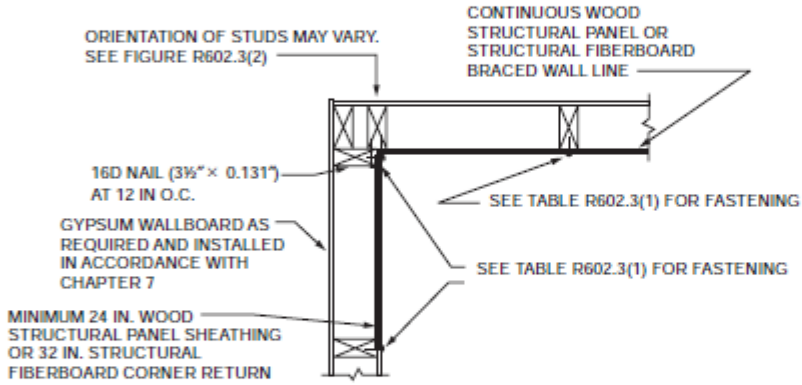
1. Where joists are perpendicular to a *braced wall panel* above or below, a rim joist, band joist or blocking shall be provided along the entire length of the *braced wall panel* in accordance with Figure R602.10.6(1). Fastening of top and bottom wall plates to framing, rim joist, band joist and/or blocking shall be in accordance with Table R602.3(1).
2. Where joists are parallel to a *braced wall panel* above or below, a rim joist, end joist or other parallel framing member shall be provided directly above and below the *braced wall panel* in accordance with Figure R602.10.6(2). Where a parallel framing member cannot be located directly above and below the panel, full-depth blocking at 16 inch (406 mm) spacing shall

be provided between the parallel framing members to each side of the *braced wall panel* in accordance with Figure R602.10.6(2). Fastening of blocking and wall plates shall be in accordance with Table R602.3(1) and Figure R602.10.6(2).

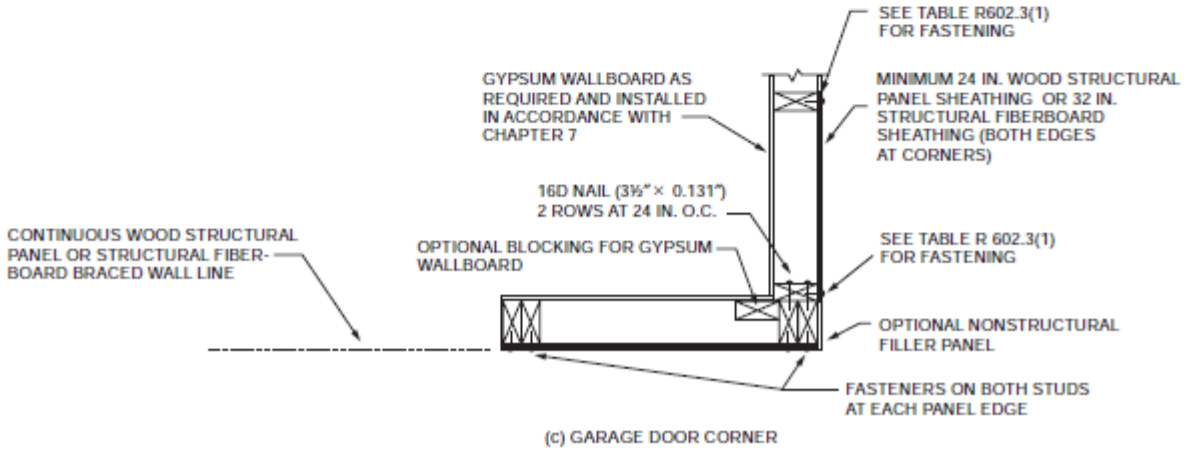
3. Connections of *braced wall panel*s to concrete or masonry shall be in accordance with Section R403.1.6.



(a) OUTSIDE CORNER DETAIL



(b) INSIDE CORNER DETAIL



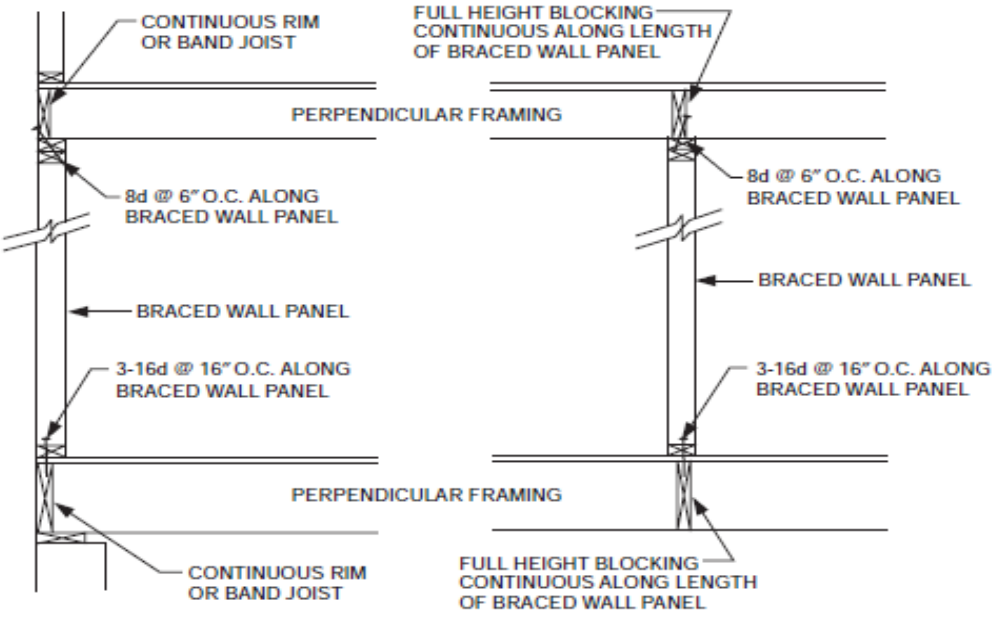
(c) GARAGE DOOR CORNER

For SI: 1 inch = 25.4 mm, 1 foot = 305 mm.

FIGURE R602.10.4.4(1)
TYPICAL EXTERIOR CORNER FRAMING FOR CONTINUOUS SHEATHING

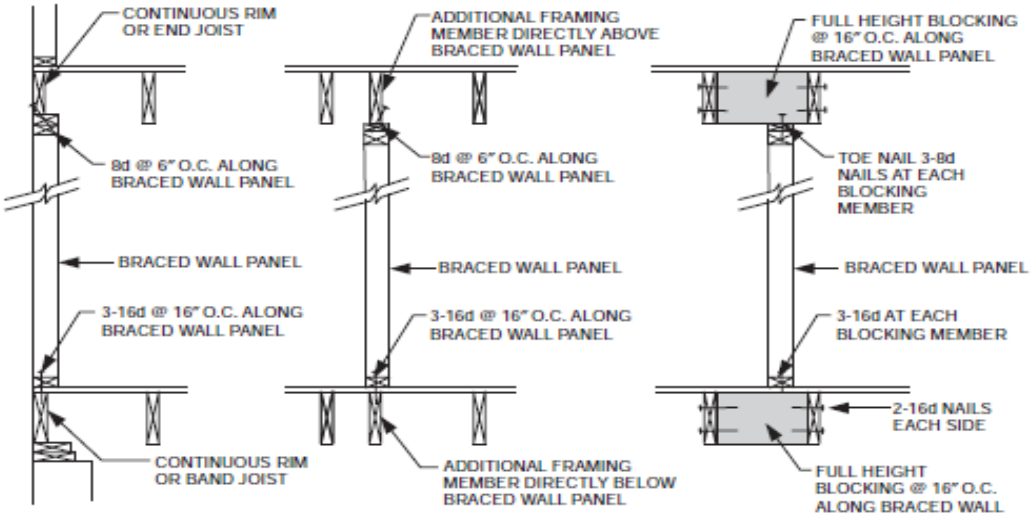
OK N/A Alert **(Q) R602.10.7 Braced wall panel support.** *Braced wall panel* support shall be provided as follows:

1. Cantilevered floor joists, supporting *braced wall lines*, shall comply with Section R502.3.3. Solid blocking shall be provided at the nearest bearing wall location. In Seismic Design Categories A, B and C, where the cantilever is not more than 24 inches (610 mm), a full height rim joist instead of solid blocking shall be provided.
2. Elevated post or pier foundations supporting *braced wall panels* shall be designed in accordance with accepted engineering practice.
3. Masonry stem walls with a length of 48 inches (1220 mm) or less supporting *braced wall panels* shall be reinforced in accordance with Figure R602.10.7. Masonry stem walls with a length greater than 48 inches (1220 mm) supporting *braced wall panels* shall be constructed in accordance with Section R403.1 *Braced wall panels* constructed in accordance with Sections R602.10.3.2 and R602.10.3.3 shall not be attached to masonry stem walls.



For SI: 1 inch = 25.4 mm.

FIGURE R602.10.6(1)
BRACED WALL PANEL CONNECTION WHEN PERPENDICULAR TO FLOOR/CEILING FRAMING



For SI: 1 inch = 25.4 mm.

FIGURE R602.10.6(2)
BRACED WALL PANEL CONNECTION WHEN PARALLEL TO FLOOR/CEILING FRAMING

OK N/A Alert **(R) R602.10.8 Panel joints.** All vertical joints of panel sheathing shall occur over, and be fastened to common studs. Horizontal joints in *braced wall panels* shall occur over, and be fastened to common blocking of a minimum 11/2 inch (38 mm) thickness.

OK N/A Alert **(S) R602.10.9 Cripple wall bracing.** In Seismic Design Categories other than D2, cripple walls shall be braced with a length and type of bracing as required for the wall above in accordance with Tables R602.10.1.2(1) and R602.10.1.2(2) with the following modifications for cripple wall bracing:
1. The length of bracing as determined from Tables R602.10.1.2(1) and R602.10.1.2(2) shall be multiplied by a factor of 1.15, and
2. The wall panel spacing shall be decreased to 18 feet (5486 mm) instead of 25 feet (7620 mm).

OK N/A Alert **(T) R602.11 Wall anchorage.** *Braced wall line* sills shall be anchored to concrete or masonry foundations in accordance with Sections R403.1.6 and R602.11.1.

OK N/A Alert **(U) R602.12 Wall bracing and stone and masonry veneer.** Where stone and masonry veneer is installed in accordance with Section R703.7, wall bracing shall comply with this section. For all buildings in Seismic Design Categories A, B and C, wall bracing at exterior and interior *braced wall lines* shall be in accordance with Section R602.10 and the additional requirements of Table R602.12(1).

INFO ALERT **(V)** All structural wood members and connections shall be of sufficient size or capacity to carry all design loads without exceeding the allowable design values specified in National Design Specifications for Wood Construction – American Forest & Paper Association. Engineered framing systems i.e.: **TJI, BCI, Beams, Columns, Trusses, etc, shall be accompanied by approved shop drawings, calculations, and/or span tables from manufacturer.** (R502.3.1-3, R502.11.4, R602.3, R802.10)

Submit a minimum of 24 hrs Prior to calling for inspection

INFO ALERT **(W) Engineered framing systems:** Prior to calling for rough inspection furnish manufacture's technical data which confirm that all engineered components are structurally adequate for the loads imposed, to the code department. Include manufactured beams and columns. **Do not conceal engineered components** prior to field inspection of the components.
Other load bearing components: Ensure that size, spacing, grade. specie, etc. have all been considered in the selection of dimensional lumber for load bearing members. All load bearing columns, such as those supporting beams, girder trusses, etc., shall be continuous to a supporting foundation. Install blocking in voids as necessary. (R301.1)

OK N/A Alert **Notes/Additional requirements regarding WOOD FRAMING:**

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3. EGRESS DOOR, STAIRWAYS AND DECKS:

OK N/A Alert **(A) General requirements for stairways:**

1. Minimum stairway width is 36".(R311.7.1)
2. Minimum landing width/depth is 36" or width of stairway served. (R311.7.5)
3. Maximum riser height is 8 ¼". (R311.7.4.1)
4. Minimum tread (nose to nose) is 9". (R311.7.4.2)
5. A nosing of not less than ¾" or greater than 1 ¼" shall be provided on stairs with solid risers. Solid risers are not required provided that the openings between treads

do not exceed 4 inches. (R311.7.4.3)

6. Minimum head room in all parts of a stairway is 6'8". (311.7.2)

OK N/A Alert **(B) Landings for stairways:** There shall be a floor or landing at the top and bottom of each stairway. A flight of stairs shall not have a vertical rise greater than 12 feet between floor levels or landings. (R311.7.5)

Exception: A floor or landing is not required at the interior flight of stairs, including stairs in an enclosed garage, provided a door does not swing over the stairs.

OK N/A Alert **(C) R311.2 Egress door.** At least one egress door shall be provided for each *dwelling* unit. The egress door shall be side-hinged, and shall provide a minimum clear width of 32 inches (813 mm) when measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). The minimum clear height of the door opening shall not be less than 78 inches (1981 mm) in height measured from the top of the threshold to the bottom of the stop. Other doors shall not be required to comply with these minimum dimensions. Egress doors shall be readily openable from inside the *dwelling* without the use of a key or special knowledge or effort.

OK N/A Alert **(D) R311.3 Floors and landings at exterior doors.** There shall be a landing or floor on each side of each exterior door. The width of each landing shall not be less than the door served. Every landing shall have a minimum dimension of 36 inches (914 mm) measured in the direction of travel. Exterior landings shall be permitted to have a slope not to exceed 1/4 unit vertical in 12 units horizontal (2-percent).

OK N/A Alert **(E) R311.3.1 Floor elevations at the required egress doors.** Landings or floors at the required egress door shall not be more than 11/2 inches (38 mm) lower than the top of the threshold.

Exception: The exterior landing or floor shall not be more than 73/4 inches (196 mm) below the top of the threshold provided the door does not swing over the landing or floor.

OK N/A Alert **(F) Winders:** Winder treads shall have a minimum tread depth of 10 inches (254 mm) measured as above at a point 12 inches (305 mm) from the side where the treads are narrower. Winder treads shall have a minimum tread depth of 6 inches (152 mm) at any point. Within any flight of stairs, the greatest winder tread depth at the 12-inch (305 mm) walk line shall not exceed the smallest by more than 3/8 inch (9.5 mm). (R311.7.4.2)

OK N/A Alert **(G) Spiral Stairways:** Spiral stairways are permitted, provided the minimum width shall be 26 inches with each tread having a 7 ½ inches minimum tread depth at 12 inches from the narrower edge. All treads shall be identical, and the rise shall be no more than 9 ½ inches. A minimum headroom of 6 feet 6 inches shall be provided. (R311.7.9.1)

OK N/A Alert **(H) R502.2.2 Decks.** Where supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads as applicable. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self- supporting. For decks with cantilevered framing members, connections to exterior walls or other framing members, shall be designed and constructed to resist uplift resulting from the full live load specified in Table R301.5 acting on the cantilevered portion of the deck.

Decks shall comply with The Benzie County Building Safety and Code Enforcement Departments, Deck Spec's hand out or engineered plans. The deck spec hand out covers footings, carriers, spans, different types of treated woods, loads, ect.

OK N/A Alert 1. **R502.2.2.1 Deck ledger connection to band joist.** For decks supporting a total design load of 50 pounds per square foot (2394 Pa) [40 pounds per square foot (1915 Pa) live load plus 10 pounds per square foot (479 Pa) dead load], the connection between a deck ledger of pressure preservative-treated Southern Pine, incised pressure-preservative-treated Hem-Fir or *approved*

decay- resistant species, and a 2-inch (51 mm) nominal lumber band joist bearing on a sill plate or wall plate shall be constructed with 1/2-inch (12.7 m) lag screws or bolts with washers in accordance with Table R502.2.2.1. Lag screws, bolts and washers shall be hot-dipped galvanized or stainless steel.

OK N/A Alert **2. R502.2.2.1.1 Placement of lag screws or bolts in deck ledgers.** The lag screws or bolts shall be placed 2 inches (51 mm)in from the bottom or top of the deck ledgers and between 2 and 5 inches (51 and 127 mm) in from the ends. The lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger.

OK N/A Alert **3. R502.2.2.2 Alternate deck ledger connections.** Deck ledger connections not conforming to Table R502.2.2.1 shall be designed in accordance with accepted engineering practice. Girders supporting deck joists shall not be supported on deck ledgers or band joists. Deck ledgers shall not be supported on stone or masonry veneer.

OK N/A Alert **4. R502.2.2.3 Deck lateral load connection.** The lateral load connection required by Section R502.2.2 shall be permitted to be in accordance with Figure R502.2.2.3. Hold-down tension devices shall be installed in not less than two locations per deck, and each device shall have an allowable stress design capacity of not less than 1500 pounds (6672 N).

OK N/A Alert **5. R502.2.2.4 Exterior wood/plastic composite deck boards.** Wood/plastic composite deck boards shall be installed in accordance with the manufacturer's instructions.

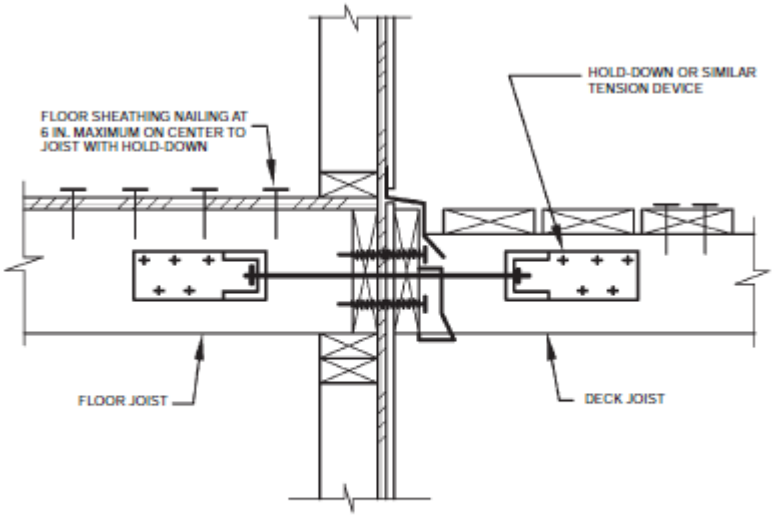

FIGURE R502.2.2.3
DECK ATTACHMENT FOR LATERAL LOADS

(I) Guards and Handrails:

OK N/A Alert **1. Guards: R312.1 Where required.** *Guards* shall be located along open-sided walking surfaces, including stairs, ramps and landings, that are located more than 30 inches (762 mm) measured vertically to the floor or *grade* below at any point within 36 inches (914 mm) horizontally to the edge of the open side. Insect screening shall not be considered as a *guard*.

OK N/A Alert **R312.2 Height.** Required *guards* at open-sided walking surfaces, including stairs, porches, balconies or landings, shall be not less than 36 inches (914 mm) high measured vertically above the adjacent walking surface, adjacent fixed seating or the line connecting the leading edges of the treads.

Exceptions: 1. *Guards* on the open sides of stairs shall have a height not less than 34 inches (864 mm) measured vertically from a line connecting the leading edges of the treads.

2. Where the top of the *guard* also serves as a handrail on the open sides of stairs, the top of the *guard* shall not be not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the leading edges of the treads.

OK N/A Alert **R312.3 Opening limitations.** Required *guards* shall not have openings from the walking surface to the required *guard* height which allow passage of a sphere 4 inches (102 mm)in diameter.
Exceptions:
1. The triangular openings at the open side of a stair, formed by the riser, tread and bottom rail of a *guard*, shall not allow passage of a sphere 6 inches (153 mm) in diameter.
2. *Guards* on the open sides of stairs shall not have openings which allow passage of a sphere 43/8 inches (111 mm) in diameter.

OK N/A Alert **2. Handrails:** Handrails shall be provide on at least one side of each continuous run of treads or flight with four or more risers. (R311.7.7)

OK N/A Alert **Height:** Handrail height, measured vertically from the slope plane adjoining the tread nosing, or finish surface of ramp slope, shall be not less than 34 inches and not more than 38 inches. (R311.7.7.1)

OK N/A Alert **Continuity:** Handrails for stairways shall be continuous for the full length of the flight, from a point directly above the top riser of the flight to a point directly above lowest riser of the flight. Handrail 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 1 ½ inch between the wall and the handrails. (R311.7.7.2)
Exceptions: 1. Handrails shall be permitted to be interrupted by a newel post at a turn.
2. The use of a volute, turnout, starting easing or starting newel shall be allowed over the lowest tread.

OK N/A Alert **(J) Under stair protection:** Enclosed accessible space under stairs shall have walls, under-stair surface and any soffits protected on the enclosed side with ½ inch gypsum board.(R302.7)

INFO ALERT **(K) Illumination:** All stairs shall be provided with illumination in accordance with Section R303.6. (R311.7.8)

OK N/A Alert **(L) Notes/Additional requirements regarding STAIRS and DECKS:**

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4. EXTERIOR COVERING:

OK N/A Alert **(A) R703.1 General.** Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing as described in Section R703.8.

OK N/A Alert **(B) R703.1.1 Water resistance.** The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a water-resistant barrier behind the exterior veneer as required by Section R703.2 and a means of draining to the exterior water that enters the assembly. Protection against condensation in the exterior wall assembly shall be provided in accordance with Section R601.3 of this code.

EXTERIOR COVERING cont:

OK N/A Alert **(C) R703.8 Flashing.** *Approved* corrosion-resistant flashing shall be applied shingle-fashion in a manner to prevent entry of water into the wall cavity or penetration of water to the building structural framing components. Self-adhered membranes used as flashing shall comply with AAMA 711. The flashing shall extend to the surface of the exterior wall finish. *Approved* corrosion- resistant flashings shall be installed at all of the following locations:

1. Exterior window and door openings. Flashing at exterior window and door openings shall extend to the surface of the exterior wall finish or to the water-resistive barrier for subsequent drainage.
2. At the intersection of chimneys or other masonry construction with frame or stucco walls, with projecting lips on both sides under stucco copings.
3. Under and at the ends of masonry, wood or metal copings and sills.
4. Continuously above all projecting wood trim.
5. Where exterior porches, decks or stairs attach to a wall or floor assembly of wood-frame construction.
6. At wall and roof intersections.
7. At built-in gutters.

OK N/A Alert **(D) Masonry veneer wall details:** See Figures R703.7 Through R703.7.2.2.

OK N/A Alert **(E) Notes/Additional requirements regarding EXTERIOR COVERING:**

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5. ROOFS:

OK N/A Alert **(A) Requirements:** Roof and ceiling construction shall be capable of accommodating all loads imposed according to Section R301 and of transmitting the resulting loads to the supporting structural elements. (R801.2)

OK N/A Alert **(B) Ceiling joist and rafter connections:** Ceiling joists and rafters shall be nailed to each other in accordance with Tables R602.3(1) and R802.5.1(9), and the assembly shall be nailed to the top wall plate in accordance with R602.3(1).

Where ceiling joists or rafter ties are not provided at the top plate, the ridge formed by these rafters shall also be supported by a girder designed in accordance with accepted engineering practice.

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 spaced not more than 4 feet on center. (R802.3.1)

OK N/A Alert **(C) Allowable ceiling joist spans:** Spans for ceiling joists shall be in accordance with Tables R802.4(1) thru R802.4(2). For other grades and species and for other loading conditions refer to the AF&PA Span Tables for Joists and Rafters.

OK N/A Alert **(D) Allowable rafter spans:** Spans for rafters shall be in accordance with Tables R802.5.1(1) through R802.5.1(8). For other grades and species and for other loading conditions refer to the AF&PA Span Tables for Joists and Rafters. The span of each rafter shall be measured along the horizontal projection of the rafter.

OK N/A Alert **(E) Truss design drawings:** Truss design drawings, prepared in conformance with section R802.10.1, shall be provided to the building official and approved prior to installation. The truss design data sheet, figure R802.10.1, may be provided to the building official at the time of permit application, as an alternative to design drawings as permitted in section R106.1.4. (R802.10.1)

ROOFS….cont.

OK N/A Alert **(F) R802.10.5 Truss to wall connection.** Trusses shall be connected to wall plates by the use of *approved* connectors having a resistance to uplift of not less than 175 pounds (779 N) and shall be installed in accordance with the manufacturer's specifications. For roof assemblies subject to wind uplift pressures of 20 pounds per square foot (960 Pa) or greater, as established in Table R301.2(2), adjusted for height and exposure per Table R301.2(3), see section R802.11.

OK N/A Alert **(G) Roof Sheathing:** Lumber sheathing. Allowable spans for lumber used as roof sheathing shall conform to table R803.1. Spaced lumber sheathing for wood shingle and shake roofing shall conform to requirements of Sections R905.7 and R905.8. (R803.1)
Minimum sheathing, for 60 pound ground snow load shall be ½" osb or plywood with rafters/ trusses 24 inches o. c. or per Table R803.1 for lumber.

OK N/A Alert **(H) Asphalt shingles:** Asphalt shingles shall have self-seal strips of be interlocking, and comply with ASTM D 225 or D 3462. (R905.2.4) **Slope:** Asphalt shingles shall only be used on roof slopes of two units vertical in 12 units horizontal (2:12) or greater. For roof slopes from two units vertical in 12 units horizontal (2:12) up to four units vertical in 12 units horizontal (4:12) double underlayment application is required in accordance with Section R905.2.7.

1. Underlayment: Unless otherwise noted, required underlayment shall conform with ASTM D 226, Type I, or ASTM D 4869, Type I. Self-adhering polymer modified bitumen sheet shall comply with ASTM D 1970. (R905.2.3) Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches, fastened sufficiently to hold in place. End laps shall be offset by 6 feet. (R905.2.7)

2. Ice protection: An ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet, shall be used in lieu of normal underlayment and extended from the eave's edge to a point at least 24 inches inside the exterior wall line of the building. (R905.2.7.1)
Exception: Detached accessory structures that contain no conditioned floor area.
3. R905.2.8 Flashing. Flashing for asphalt shingles shall comply with this section.

OK N/A Alert **(I) Clay and concrete tile:** Shall comply with section R905.3.
OK N/A Alert **(J) Metal roof shingles:** Shall comply with section R905.4.
OK N/A Alert **(K) Mineral-surfaced roll roofing:** Shall comply with section R905.5.
OK N/A Alert **(L) Slate and slate-type shingles:** Shall comply with section R905.6.
OK N/A Alert **(M) Wood shingles:** Shall comply with section R905.7.
OK N/A Alert **(N) Wood shakes:** Shall comply with section R905.8.
OK N/A Alert **(O) Built-up roofs:** Shall comply with section R905.9.
OK N/A Alert **(P) Metal roof panels:** Shall comply with section R905.10
OK N/A Alert **(Q) Modified bitumen roofing:** Shall comply with section R905.11.
OK N/A Alert **(R) Thermoset single-ply roofing: R905.12 -- Thermoplastic single-ply roofing: R905.13 – Sprayed polyurethane foam roofing: R905.14 or Liquid-applied coatings: R905.15.**

OK N/A Alert **(S) Notes/Additional Code requirements ROOFS:**

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6. VENTING and SPECIAL SPACES:

OK N/A Alert **(A) Roof Spaces: Ventilation required;** Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters shall have cross ventilation openings protected against the entrance of snow or rain. (R806.1) Minimum area shall meet section R806.2.

OK N/A Alert **(B) R806.4 Unvented attic assemblies.** Unvented *attic* assemblies (spaces between the ceiling joists of the top *story* and the roof rafters) shall be permitted if all the following conditions are met:

1. The unvented *attic* space is completely contained within the *building thermal envelope*.
2. No interior vapor retarders are installed on the ceiling side (*attic* floor) of the unvented *attic* assembly.
3. Where wood shingles or shakes are used, a minimum 1/4 inch (6 mm) vented air space separates the shingles or shakes and the roofing underlayment above the structural sheathing.
4. In climate zones 5, 6, 7 and 8, any *air-impermeable insulation* shall be a vapor retarder, or shall have a vapor retarder coating or covering in direct contact with the underside of the insulation.
5. Either Items 5.1, 5.2 or 5.3 shall be met, depending on the air permeability of the insulation directly under the structural roof sheathing.

5.1. *Air-impermeable insulation* only. Insulation shall be applied in direct contact with the underside of the structural roof sheathing.

5.2. Air-permeable insulation only. In addition to the air-permeable installed directly below the structural sheathing, rigid board or sheet insulation shall be installed directly above the structural roof sheathing as specified in Table R806.4 for condensation control.

5.3. Air-impermeable and air-permeable insulation. The *air-impermeable insulation* shall be applied in direct contact with the underside of the structural roof sheathing as specified in Table R806.4 for condensation control. The air-permeable insulation shall be installed directly under the *air-impermeable insulation*.

OK N/A Alert **(B) Attic Access:** In buildings with combustible ceiling or roof construction, an attic access opening shall be provided to attic areas that exceed 30 square feet and have a vertical height of 30 inches or greater. (R807.1)

The rough-frame opening shall not be less than 22 inches by 30 inches and shall be located in a. hallway or other readily accessible location. (R807.1)

OK N/A Alert **(C) Under-Floor Space:** Ventilation; The under-floor space between the bottom of the floor joists and the earth under any building (except space occupied by a basement or cellar) shall be provided with ventilation openings through foundation walls or exterior walls.(R408.1) Insulation shall be provided, with R-10 for crawl space walls if exterior continuous or R-13 for interior insulation with no vents and crawl a conditioned space. (MUEC Part 10-2009)

OK N/A Alert **(D) Under-Floor Space – Access:** Access shall be provided to all under-floor spaces. Access openings through the floor shall be a minimum of 18 inches by 24 inches. Openings through the perimeter wall shall be 16 inches by 24 inches. (R408.4)

OK N/A Alert **(E) Notes/Additional Code Requirements VENTING & SPECIAL PLACES:**

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7. WINDOWS:

OK N/A Alert **(A) R310.1 Emergency escape and rescue required.** *Basements,* habitable attics and every sleeping room shall have at least one operable emergency escape and rescue opening. Where *basements* contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room. Where emergency escape and rescue openings are provided they shall have a sill height of not more than 44 inches (1118 mm) above the floor. Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section R310.3. The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2. Emergency escape and rescue openings shall open directly into a public way, or to a *yard* or court that opens to a public way.

Exception: *Basements* used only to house mechanical *equipment* and not exceeding total floor area of 200 square feet (18.58 m2).

R310.1.1 Minimum opening area. All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet (0.530 m2).

Exception: *Grade* floor openings shall have a minimum net clear opening of 5 square feet (0.465 m2).

R310.1.2 Minimum opening height. The minimum net clear opening height shall be 24 inches (610 mm).

R310.1.3 Minimum opening width. The minimum net clear opening width shall be 20 inches (508 mm).

R310.1.4 Operational constraints. Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys, tools or special knowledge

.OK N/A Alert **(B) Window wells:** The minimum horizontal area of the window well shall be 9 square feet, with a minimum horizontal projection and width of 36 inches. The area of the window well shall allow the emergency escape and rescue opening to be fully opened. (R310.2)

OK N/A Alert **(C) Window well, Ladder and Steps:** Window wells with a vertical depth greater than 44 inches shall be equipped with a permanently affixed ladder or steps usable with the window in the fully open position. Ladders or rungs shall have an inside width of at least 12 inches, shall project at least 3 inches from the wall and shall be spaced not more than 18 inches on center vertically for the full height of the window well. (R310.2.1)

OK N/A Alert **(D) R612.2 Window sills.** In *dwelling* units, where the opening of an operable window is located more than 72 inches (1829 mm) above the finished *grade* or surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches (610 mm) above the finished floor of the room in which the window is located. Operable sections of windows shall not permit openings that allow passage of a 4 inch (102 mm) diameter sphere where such openings are located within 24 inches (610 mm) of the finished floor.

Exceptions: 1. Windows whose openings will not allow a 4-inch diameter (102 mm) sphere to pass through the opening when the opening is in its largest opened position.

2. Openings that are provided with window fall prevention devices that comply with Section R612.3.

3. Openings that are provided with fall prevention devices that comply with ASTM F 2090.

4. Windows that are provided with opening limiting devices that comply with Section R612.4.

OK N/A Alert **(E) Notes/Additional Code requirements WINDOWS:**

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8. MISCELLANEOUS:

OK N/A Alert **(A) Design Loads:** Building and structures shall be designed and constructed to support safely all loads, including dead loads, without exceeding allowable stresses. Some minimum live loads;

1. Snow loads: 60 psf ground(R301.5, Figure R301.2(5)
2. Wind Speed: 90 MPH (R301.2.1.4)
3. Seismic prov: Category A
4. Floor load 40 lbs. ft^2 for non sleeping areas.(R301.5)
   30 lbs. ft^2 for sleeping areas (R301.5)
   40 lbs. ft^2 for decks (R301.5)
   50 lbs. ft^2 for garage floors, elevated garage floors shall be capable of supporting 2,000-pound load applied over a 20-square-inch area. (R301.5)
   200 lbs. ft^2 Guardrails and handrails, a single concentrated load applied in any direction at any point along the top. (R301.5)
   60 lbs. ft^2 Exterior balconies (R301.5)
   20 lbs. ft^2 Attics with storage, no storage with roof slopes not over 3/12
   10 lbs. ft^2 Attics without storage

Roof snow live load: The live load resulting from roof snow may be determined by assuming a uniform roof snow load of 60 PSF ground, without adjustments (R301.5) or by an alternative evaluation under ASCE-7 (Chapters 4 & 7) which reflects adjustments for roof slope, sliding and drifting snow.

OK N/A Alert **(B) R316.4 Thermal barrier.** Unless otherwise allowed in Section R316.5 or Section R316.6, foam plastic shall be separated from the interior of a building by an *approved* thermal barrier of minimum 1/2 inch (12.7 mm) gypsum wallboard or an *approved* finish material equivalent to a thermal barrier material that will limit the average temperature rise of the unexposed surface to no more than 250°F (139°C) after 15 minutes of fire exposure complying with the ASTM E 119 or UL 263 standard time temperature curve. The thermal barrier shall be installed in such a manner that it will remain in place for 15 minutes based on NFPA 286 with the acceptance criteria of Section R302.9.4, FM 4880, UL 1040 or UL 1715.

(C) Minimum room sizes:

OK N/A Alert
1. Minimum area; Every dwelling shall have at least one habitable room that shall have not less than 120 square feet of gross floor area. (R304.1)
2. Other rooms; Other habitable rooms shall have a floor area of not less than 70 sq. ft. R304.2
3. Minimum dimensions; Habitable rooms shall not be less than 7 feet in any horizontal dimension. (R304.3)
4. Height effect on room area; Portions of a room with a sloping ceiling measuring less than 5 feet or a furred ceiling measuring less than 7 feet from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required habitable area for that room. (R304.4)

OK N/A Alert **(D) Minimum ceiling height:** Habitable space, hallways, corridors, bathrooms, toilet rooms laundry rooms and portions of basements containing these spaces shall have a ceiling height of not less than 7 feet. (R305.1)

Exceptions:

OK N/A Alert
1. Not more than 50 percent of the required floor area of a room or space is permitted to have a sloped ceiling less than 7 feet in height with no portion of the required floor area less than 5 feet in height.

OK N/A Alert
2. Bathrooms shall have a minimum ceiling height of 6 feet 8 inches over the fixture and at front clearance area for fixtures as shown in Figure R307.2. A shower or tub equipped with a showerhead shall have a minimum ceiling height of 6 feet 8 inches above a minimum area 30 inches by 30 inches at the showerhead.

Miscellaneous cont;

OK N/A Alert 3. Ceilings in basements without habitable spaces may project to within 6 feet, 8 inches of the finished floor; and beams, girders, ducts or other obstructions may project to within 6 feet, 4 inches of the finished floor. (R305.1.1)

OK N/A Alert **(E) Light and Ventilation:** Habitable rooms; All habitable rooms shall have an aggregate glazing area of not less than 8 percent of the floor area of such rooms. Natural ventilation shall be through windows, doors, louvers or other approved openings to the outdoor air. Such openings shall be provided with ready access or shall otherwise be readily controllable by the building occupants. The minimum openable area to the outdoors shall be 4 percent of the floor area being ventilated.

OK N/A Alert **(F) Means of egress:** Doors, not less than one exit door conforming to this section shall be provided for each dwelling. The required exit door shall be a side-hinged door not less than 3 feet in width and 6 feet, 8 inches in height. Other exterior hinged or sliding doors shall not be less than 24 inches in width and 6 feet, 6 inches in height. (R311.4)(R311.4.1)(R311.4.2)

OK N/A Alert **(G) Interior doors:** Interior doors shall be not less than 24 inches in width and 6 feet, 6 inches in height. (R311.4.2.1)

Exception: Doors to areas less than 10 square feet of floor area.

OK N/A Alert **(H) Hazardous locations:** Glazing in hazardous areas shall comply with section R308.4.

OK N/A Alert **(I) Skylights:** Skylights shall comply with section R308.6.

OK N/A Alert **(J) 303.1 Identification.** Materials, systems and equipment shall be identified in a manner that will allow a determination of compliance with the applicable provisions of this code.

OK N/A Alert **(K) 303.1.1 Building thermal envelope insulation.** An *R*-value identification mark shall be applied by the manufacturer to each piece of *building thermal envelope* insulation 12 inches (305 mm) or greater in width. Alternately, the insulation installers shall provide a certification listing the type, manufacturer and *R*-value of insulation installed in each element of the *building thermal envelope*. For blown or sprayed insulation (fiberglass and cellulose), the initial installed thickness, settled thickness, settled *R*-value, installed density, coverage area and number of bags installed shall be *listed* on the certification. For sprayed polyurethane foam (SPF) insulation, the installed thickness of the areas covered and *R*-value of installed thickness shall be *listed* on the certification. The insulation installer shall sign, date and post the certification in a conspicuous location on the job site. (MUEC – 2009)

OK N/A Alert **(L) 303.1.1.1 Blown or sprayed roof/ceiling insulation.** The thickness of blown-in or sprayed roof/ceiling insulation (fiberglass or cellulose) shall be written in inches (mm) on markers that are installed at least one for every 300 square feet (28 m2) throughout the attic space. The markers shall be affixed to the trusses or joists and marked with the minimum initial installed thickness with numbers a minimum of 1 inch (25 mm) in height. Each marker shall face the attic access opening. Spray polyurethane foam thickness and installed *R*-value shall be *listed* on certification provided by the insulation installer. (MUEC – 2009)

OK N/A Alert **(M) Michigan Energy Code:** Provide calculations/documentation to show that the exterior envelope of the proposed construction complies with the exterior requirements of the Michigan Uniform Energy Code, Chapter 11 of the 2003 edition of the IRC. Present form 1107.1 or Res check 4.2.0 for compliance. (MUEC – 2009)

OK N/A Alert **(N) 401.3 Certificate.** A permanent certificate shall be posted on or in the electrical distribution panel, and shall meet all of the following:

(a) Be affixed or attached so it does not cover or obstruct the visibility of the circuit directory label, service disconnect label, or other required labels.

(b) Be completed by the builder or registered design professional.

Miscellaneous cont;

(c) List the predominant *R*-values of insulation installed in or on ceiling/roof, walls, foundation (slab, basement wall, crawlspace wall and/or floor) and ducts outside conditioned spaces and U-factors for fenestration. If there is more than 1 value for each component, then the certificate shall list the value covering the largest area.
(d) List the types and efficiencies of heating, cooling and service water heating equipment.
(e) If a gas-fired unvented room heater, electric furnace, or baseboard electric heater is installed in the residence, then the certificate shall list "gas-fired unvented room heater," as appropriate. An efficiency shall not be listed for gas-fired unvented room heaters, electric furnaces, or electric baseboard heaters. (MUEC – 2009)

OK N/A Alert **(O)** **405.4.1 Compliance software tools.** Documentation verifying that the methods and accuracy of the compliance software tools conform to the provisions of this section shall be provided to the *code official*. (MUEC – 2009)

OK N/A Alert **(P)** **Smoke Alarms: R314.1 Smoke detection and notification.** All smoke alarms shall be listed in accordance with UL 217 and installed in accordance with the provisions of this code and the household fire warning equipment provisions of NFPA 72.

OK N/A Alert **(Q)** **R314.2 Smoke detection system.** Household fire alarm systems installed in accordance with NFPA 72 that include smoke alarms, or a combination of smoke detector and audible notification device installed as required by this section for smoke alarms, shall be permitted. The household fire alarm system shall provide the same level of smoke detection and alarm as required by this section for smoke alarms. Where a household fire warning system is installed using a combination of smoke detector and audible notification device(s), it shall become a permanent fixture of the occupancy and owned by the homeowner. The system shall be monitored by an *approved* supervising station and be maintained in accordance with NFPA 72.

R314.3 Location. Smoke alarms shall be installed in the following locations:

1. In each sleeping room.
2. Outside each separate sleeping area in the immediate vicinity of the bedrooms.
3. On each additional story of the dwelling, including basements but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

When more than one smoke alarm is required to be installed within an individual dwelling unit the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit.

OK N/A Alert **(R)** **R315.1 Carbon monoxide alarms.** For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms in *dwelling units* within which fuel-fired *appliances* are installed and in dwelling units that have attached garages.

OK N/A Alert **(S)** **Shower receptors: Construction.** Shower receptors shall have a finished curb threshold not less than 1 inch below the sides and back of the receptor. The curb shall be not less than 2 inches and not more than 9 inches in depth when measured from the top of the curb to the top of the drain. The finished floor shall slope uniformly toward the drain not less than one-forth unit vertical in 12 units horizontal (2-percent slope) nor more than 0.5 inch, and floor drains shall be flanged to provide a water-tight joint in the floor. (P2709, P2709.1)

Lining required: The adjoining walls and floor framing enclosing on-site built-up shower receptors shall be lined with sheet lead, copper, or a plastic liner material that complies with ASTM D 4068 or ASTM D 4551 listed in chapter 43. The lining material shall extend not less than 3 inches beyond or around the rough jambs and not less than 3 inches above the finished thresholds. (P2709.2)

Miscellaneous cont;

OK N/A Alert **(T)** **E3608.1 Grounding electrode system.** All electrodes specified in Sections E3608.1.1, E3608.1.2, E3608.1.3, E3608.1.4 and E3608.1.5 that are present at each building or structure served shall be bonded together to form the grounding electrode system. Where none of these electrodes are available, one or more of the electrodes specified in Sections E3608.1.3, E3608.1.4 and E3608.1.5 shall be installed and used.
Electrical Permit must be obtained and bonding must be inspected by the electrical inspector before footings are poured if rerod is used in footings.

OK N/A Alert **(U)** **M1503.4 Makeup air required.** Exhaust hood systems capable of exhausting in excess of 400 cubic feet per minute (0.19m3/s) shall be provided with makeup air at a rate approximately equal to the exhaust air rate. Such makeup air systems shall be equipped with a means of closure and shall be automatically controlled to start and operate simultaneously with the exhaust system.

OK N/A Alert **(V)** **402.2.11 Thermally isolated sunroom insulation.** The minimum ceiling insulation R-values shall be R-24 in zones 5 to 7. The minimum wall R-value shall be R-13 in all zones. New wall or walls separating a sunroom from conditioned space shall meet the building thermal envelope requirements. Percentage of window area _____% [] Complies [] Does not comply, will need to insulate to minimum residential requirements.
SUNROOM. A one-story structure attached to a dwelling with a glazing area in excess of 40 percent of the gross area of the structure's exterior walls and roof.

INFO ALERT **(W)** **Fireblocking:** Shall meet the requirements of section R302.11 and section R1003.19.
R302.12 Draftstopping. In combustible construction 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 (92.9 m2). Draftstopping shall divide the concealed space into approximately equal areas. Where the assembly is enclosed by a floor membrane above and a ceiling membrane below, draftstopping shall be provided in floor/ceiling assemblies under the following circumstances:

1. Ceiling is suspended under the floor framing.
2. Floor framing is constructed of truss-type open-web or perforated members.

INFO ALERT **(X)** **Additional Required inspections:** For this project **R109.1.5**
[] Firestopping and draftstopping shall not be concealed from view or wallboard joints taped or finished before inspected and approved. (R109.1.5.1)

[] Required Rebar in poured, ICF walls or retaining walls.

[] Insulation

[] Floodplain

[] Masonry after the flashing, base coarse and water-resistive barrier in R703.2 installed.

[] Other Inspections _____

INFO ALERT **(Y)** **Rough inspections:** Electrical, mechanical, gas and plumbing systems shall be inspected prior to concealment, before fixtures or appliances are set or installed, and prior to framing inspection. (R109.1.2)

INFO ALERT **(Z)** **R303.4.2 Exhaust openings.** Outside exhaust openings shall be located so as not to create a nuisance. Exhaust openings shall not be directed onto walkways. Exhaust openings shall not terminate within 3 feet of a ventilated section in a soffit.

Miscellaneous cont;

OK N/A Alert **Notes/Additional Code Requirements:**

_____
_____
_____
_____
_____
_____
_____

General Notes:

This plan review is not a substitute for field inspections. The purpose is to identify general code requirements, this 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 the degree of accuracy and detail of the submitted drawings. The staff of our department is interested in how your building project precedes, so if you have questions concerning codes as they relate to this project please give us a call at 231-882-9673.

OTHER CODE REQUIREMENTS

_____
_____
_____
_____
_____
_____

CORRECTION LIST		
No.	**DESCRIPTION**	**Code Section**

Last revision 06-09-2011