

HUMBOLDT COUNTY  
CITY OF WINNEMUCCA  
BUILDING DEPARTMENTS

**SINGLE FAMILY RESIDENTIAL ONE STORY DETACHED GARAGE**

This handout was developed as a basic plan submittal under the 2012 International Residential Code. It is not intended to cover all circumstances

How to Use this Guide

1. Complete Building Guide by filling in the blanks on pages two, three and eight. Provide a floor plan in addition to page two indicating the door, window & braced wall locations.
2. Submit a site plan indicating the location of the garage, distance from residence, property lines, sewage disposal system and any other buildings on the property.

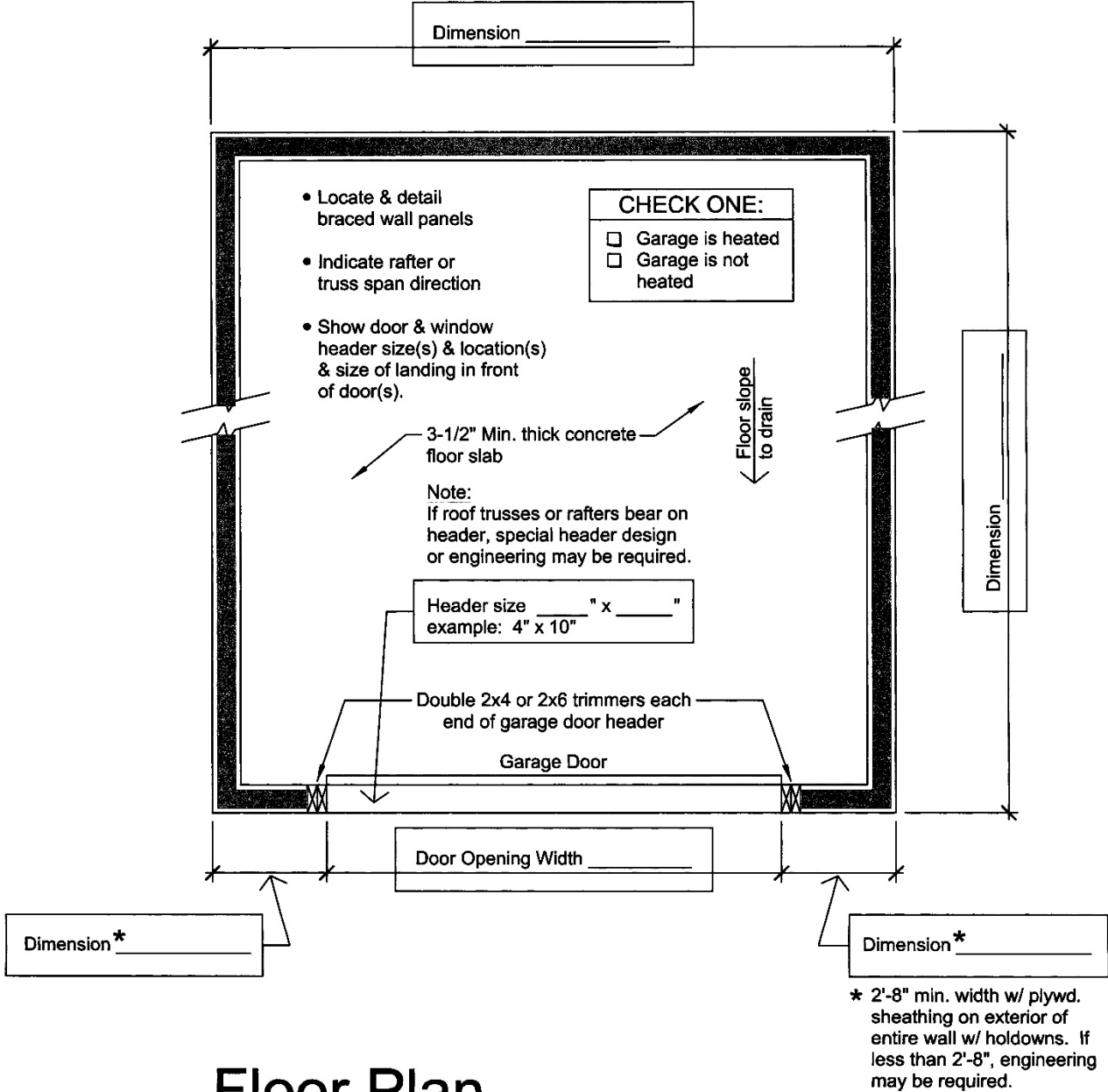


# Single Family Residential One-Story Detached Garage

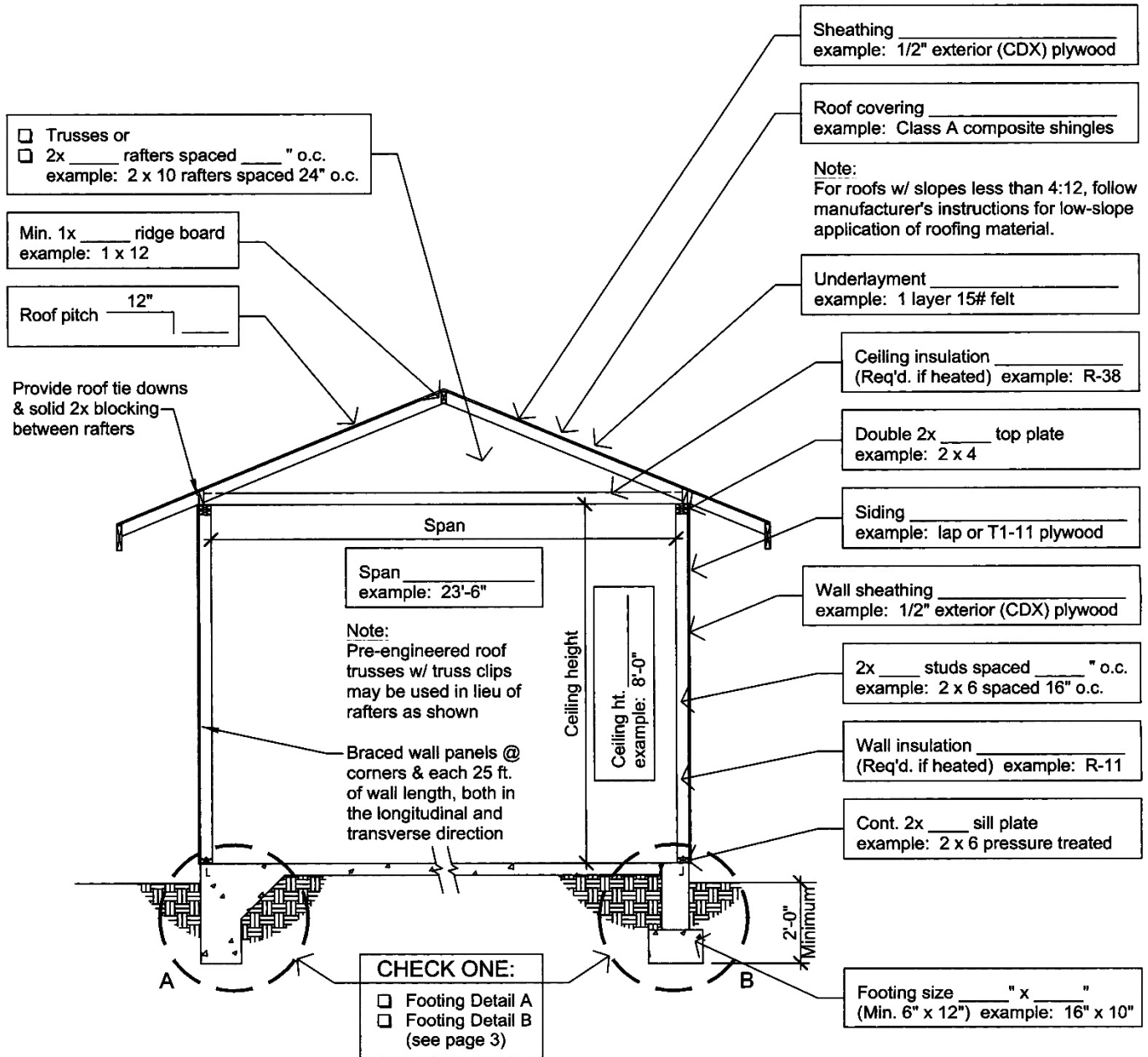
**Directions:**

1. Fill in the blanks with dimensions and materials which will be used to build the structure. Please print legibly.
2. Indicate in the check boxes which details from page 3 will be used.

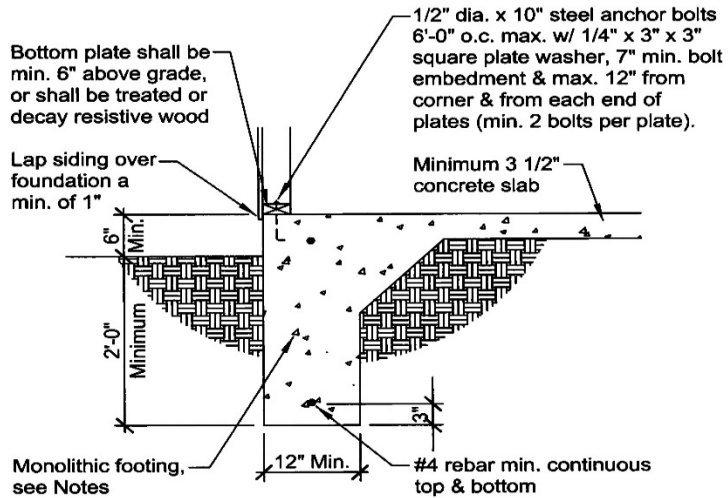
Note: Heated garages must conform to the 2006 International Energy Conservation Code (IECC).



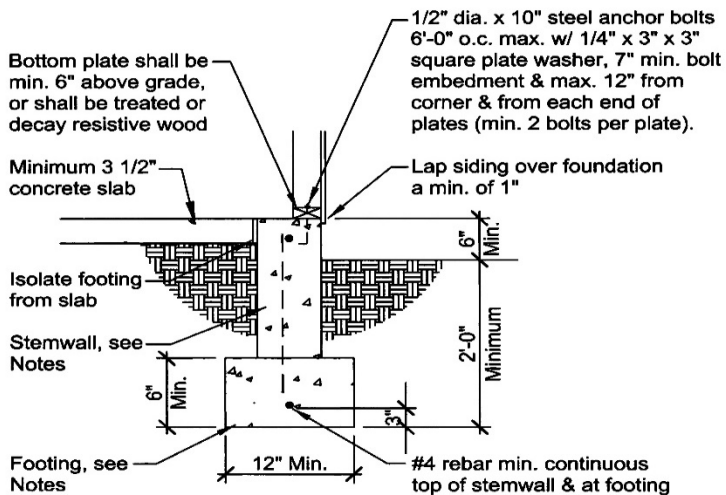
**Floor Plan**



# Building Section



## Detail A



## Detail B

Monolithic foundations shall have a min. of (1) #4 rebar top and bottom. Where the slab is not cast monolithically with footing #3 or larger vertical dowels with standard hook on each end shall be provided. Section R403.1.3.2

Footing/Stemwall: There shall be a min. of one (1) #4 continuous rebar in the top 1/3 of all foundation stemwalls, and one (1) #4 continuous rebar in the footing. When the footing and stemwall are placed separately, #4 vertical bars @ 48" o.c. shall be used to connect the footing with the stemwall. The vertical rebar shall extend 3" clear of bottom of footing & have a standard hook & extend a min. of 14" into stemwall. Masonry walls shall be solidly grouted. Section R403.1.3

**LOAD BEARING EXTERIOR HEADERS-ROOF & CEILING ONLY (IRC TABLE R502.5(1))**

<b>BUILDING WIDTH</b>						
	<b>20'</b>		<b>28'</b>		<b>36'</b>	
Size	Span	# of Jack Studs	Span	# of Jack Studs	Span	# of Jack Studs
2-2x4	3'6"	1	3'2"	1	2'10"	1
2-2x6	5'5"	1	4'8"	1	4'2"	1
2-2x8	6'10"	1	5'11"	2	5'4"	2
2-2x10	8'5"	2	7'3"	2	6'6"	2
2-2x12	9'9"	2	8'5"	2	7'6"	2
2-2x8	8'4"	1	7'5"	2	6'8"	2
3-2x10	10'6"	1	9'1"	2	8'2"	2
3-2x12	12'2"	2	10'7"	2	9'5"	2
4-2x8	9'2"	1	8'4"	1	7'8"	1
4-2x10	11'8"	1	10'6"	1	9'5"	2
4-2x12	14'1'	1	12'2"	2	10'11"	2

**LOAD BEARING INTERIOR HEADERS-ROOF & CEILING ONLY (IRC TABLE R502.2(2))**

<b>BUILDING WIDTH</b>						
	<b>20'</b>		<b>28'</b>		<b>36'</b>	
Size	Span	# of Jack Studs	Span	# of Jack Studs	Span	# of Jack Studs
2-2x4	3'1"	1	2'8"	1	2'5"	1
2-2x6	4'6"	1	3'11"	1	3'6"	1
2-2x8	5'9"	1	5'0"	2	4'5"	2
2-2x10	7'0"	2	6'1"	2	5'5"	2
2-2x12	8'1"	2	7'0"	2	6'3"	2
3-2x8	7'2"	1	7'7"	2	6'9"	2
3-2x10	8'9"	1	7'7"	2	6'9"	2
3-2x12	10'2"	2	8'10"	2	7'10"	2
4-2x8	9'0"	1	7'8"	1	6'9"	1
4-2x10	10'1"	1	8'9"	1	7'10"	2
4-2x12	11'9"	1	10'2"	2	9'1"	2

**SPANS FOR MIN. #2 GRADE SINGLE HEADER SUPPORTING ROOF & CEILING ONLY (IRC TABLE R602.7.1)**

<b>BUILDING WIDTH</b>			
	<b>20'</b>	<b>28'</b>	<b>36'</b>
2x8	5'3"	4'6"	4'0"
2x10	6'8"	5'8"	5'1"
2x12	8'1"	6'11"	7'2"

Wood Structural Panel(WSP), Alternative Braced Wall(ABW), Portal Frame with Hold-Downs(PFH)

This handout summarizes typical conventional light-frame construction bracing requirements of a one story structure with maximum wall height of 10' based on common construction methods in the City of Winnemucca and Humboldt County. Concrete continuous footings; wood framing; exterior braced walls with wood structural panel; and interior gypsum board braced walls (this handout does not cover masonry stem walls or hardboard panel siding (HPS). The user of this handout will need to access to an IRC book to calculate required braced wall lengths and some knowledge of angled walls, 4' offset requirements, walls less than 16', redesignation of cripple walls, etc., which are not included in this handout.

**\*Important: In seismic design category D1 you cannot mix intermittent bracing and continuous bracing methods within one story (you can only mix these methods from story to story). If you are using gypsum board for interior braced panels and wood structural panel on the exterior, refer to WSP for all bracing requirements and lengths rather than CS-WP (continue sheathing – not included in this handout). You may mix intermittent bracing methods for braced wall line to braced wall line, but you may not mix intermittent methods within the same braced wall line.**

A braced wall line is required every 25' measured to the outermost ends of the panel and shall intersect with a perpendicular braced wall line, an angled braced wall line, or an exterior wall. One room, usually the garage, may have one room with a 35' braced wall line spacing in one direction to accommodate a room up to 900 s.f. The maximum distance between the inner edges of braced panels is 20'.

1. Designate exterior braced wall lines on the plan (max spacing 25' with 20' max between panels – one room exception).
2. Designate interior braced wall lines on plan (max spacing 25" with 20' max between panels – one room exception)
3. Determine the minimum length of bracing required on each wall line by calculating the greater value from wind and seismic adjustment tables. All adjustment factors must be addressed. For a garage with exterior braced walls of wood structural panels and interior walls of gypsum board, the typical method used will be the WSP column for exterior walls and the GB column for interior.
  - a. Wind Table IRC 602.10.3(3) with adjustments from Table 602.10.3(2) or
  - b. Seismic Table IRC 602.10.2(3) with adjustments from Table 602.10.3(4)
4. Each braced panel is to be a minimum of 4' wide unless one of the following options is met. Note: The following options may only be used with a min. 12" footing under the opening. Therefore this will negate using methods where there is a footing with a stemwall rather than a turned down footing.
  - a. Alternate braced wall panel (ABW). This method may only be used with a min. 12"x12" footing under opening. Panel width is 32" for 8' and 9' walls; and 34" for a 10' wall (equivalent to 48" of bracing). Min. 1800# hold downs required (Figure R6025.10.6.1),
  - b. Portal frame with hold downs (PFH). This method may be used only with a min. 12"x12" footing under opening. Panel width is 16" (equivalent to 48" of bracing). This method calls for a 4200# strap which may not be available in SDC D1. Header size is a min. of 3"x11 ¼". Top straps are sized by Table 602.10.4. Strap capacity is determined by the size of the studs, height of pony wall above the header, height of the wall, and width of the opening. Figure 602.10.61.

5. Identify the specific panels that are braced along each braced wall line and specify the contributing lengths of the panels. Braced wall panels must be located at each end of the braced wall line, with the exception that a **WSP** braced wall panel may *begin a maximum of 10' from each end if*:
  - a. A qualifying sheath braced wall panel at end of braced wall line and a 24" return panel at the corner. (Condition 1 illustration, Figure 602.10.7)
  - b. Narrow braced wall panel with 800# hold down. This end condition provides for an 800# hold down in lieu of return corner required in End Condition 1 (Illustration 2, Figure 602.107)
  - c. A min. 24" panel is applied to each side of a garage corner (Condition 4 illustration, Figure 602.10.7)
  - d. The end of the braced panel closest to the end of the braced wall line has a 1,800# hold down (Condition 5 illustration, Figure 602.10.7)
6. Provide a legend on the plan indicating the bracing methods (i.e. exterior braced wall panels 7/16" WSP nailed 6" on edges, 12" field; interior braced wall panels ½" gyp board with screws spaced 7" o.c. – note required attachment of gyp board for bracing purposes is 7" o.c. min., including at top and bottom plate, etc.
7. Blocking is required between rafters or trusses **exterior** braced wall panels in accordance with R602.10.8.2.

### How To Calculation Amount of Bracing Required In A Braced Wall

Required bracing amount shall be figured for both wind and seismic

Table 1 - Bracing Requirements Based on Wind Speed (Table R602.10.3(1))

The min. total feet goes in the Length of Wall to be braced line on the wind portion of the worksheet .

Braced Wall Length	Min. Total Feet Using Wood Structural Panel
10'	2'
20'	4'
30'	5.5'
40'	7.5
50'	9.0

Table 2 - Bracing Requirements Based on Seismic Design Category D1 (Table 602.10.3(3))

The min. total feet goes in the Length to be braced line on the seismic portion of the worksheet.

Braced Wall Line Length	Min. Total Feet Using Wood Structural Panel
10'	2'
20'	4'
30'	6'
40'	12'
50'	15'

**Amount of Bracing Required in a Braced Wall Line Worksheet**  
 One Story Structure, max. 10' wall height

**Wind – both directions** – One separate calculation needed for each wall

		Length of wall to be braced per Table 1	_____
x	1.20	Exposure C factor	_____
x	.70	eave to roof ridge 5' or less	_____
	1.00	10'	
	1.30	15'	
	1.60	20'	
x	.90	8' wall height	_____
	.95	9' wall height	
	1.00	10' wall height	
x	1.00	2-braced walls per direction	
	1.30	3-braced walls per direction	
	1.45	4-braced walls per direction	
	1.60	5>braced walls per direction	
x	1.40	If no interior gypsum (except CS-PF, ABW, PFH)	_____
	1.00	w/interior gypsum Must be fastened at 7" o.c. including gables	_____
	.70	gyp board fastening @ 4" @ panel Edges & top/bottom plates, 7" in field	_____

**MIN TOTAL LENGTH OF BRACED WALL PANEL** \_\_\_\_\_

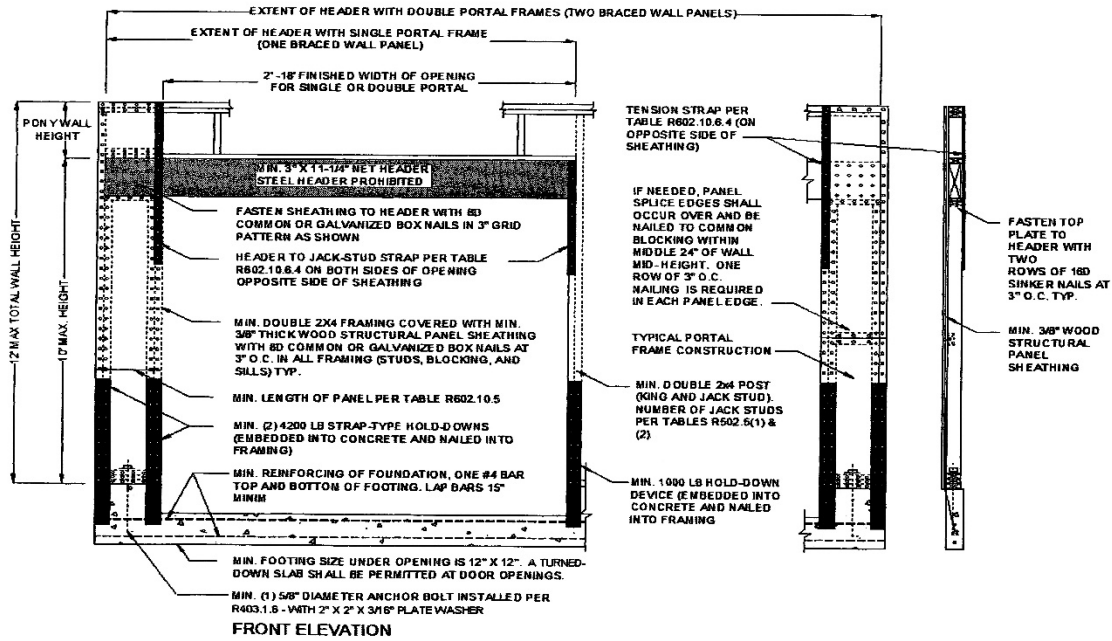
**Seismic** – Multiply the braced wall length as show in Table 2.

		Length of wall of braced wall	_____
		Length of wall to be braced per Table 2	_____
x	1.2	braced wall line spacing >25' to 30' or less	_____
x	1.4	braced wall line spacing >30'	_____
x	1.0	wall dead load >8 and <15 psf	_____
	.85	<8 psf	
x	1.2	Roof/ceiling load is > 15 psf	_____
x	1.5	If no interior gypsum board Must be fastened at 7" o.c. to count (not required on ABW, PFH, CS-PF)	_____
x	1.0	w/interior gypsum board (also on gables)	_____

**MIN. TOTAL LENGTH OF BRACED WALL PANEL** \_\_\_\_\_

**The total length of the braced wall panel shall be the greater amount**

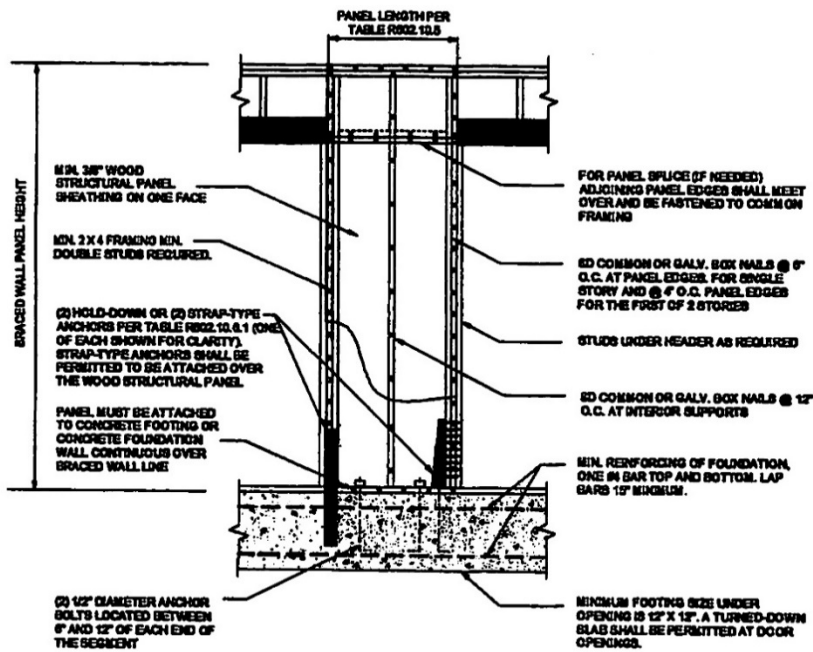




**FIGURE R602.10.6.2**  
**METHOD PFH—PORTAL FRAME WITH HOLD-DOWNS**

Alternate Braced Wall Panels (ABW) shall be construction in accordance with Figure R602.10.6.1. Hold-down force shall be in accordance with Table R602.10.6.1.

	Wall Height				
	8'	9'	10'	11'	12'
Min. Length	32"	32"	34"	NP	NP
Hold-Down	1,800 lb	1,800 lb	1,800 lb	NP	NP



For SI: 1 inch = 25.4 mm.

## General Notes

- ❑ **Square footage** – Maximum square footage is 3,000 square feet without installing firewalls.
- ❑ **Foundations** – all garage foundations shall comply with the minimum County standards as designated by the International Residential Code. See Humboldt County handouts for minimum foundation details.
- ❑ Footings shall be continuous on the perimeter of the building and under garage door openings.
- ❑ All framing shall comply with minimum County standards as designated by the International Residential Code. See Humboldt County handout for minimum wall framing. Provide fire blocking per IRC Section 602.8. 10' max. wall stud height.
- ❑ Install positive connections on each truss or rafter at the double plate.
- ❑ **Wall Bracing** – IRC Section R602.10.1. **Please fill out attached required braced wall worksheet**
- ❑ **Beams – Versalam beams shall be enclosed with weather resistant materials and shall be sized by the manufacturer/Lumber Company**
- ❑ **Doors** – a man door shall be provided in addition to the garage doors. This exit doorway shall be of a size as to permit the installation of a door not less than 3 feet in width and not less than 6'8" in height. Exit doors shall be capable of opening so that the clear width of the exit door is not less than 32". IRC Section R311.4.3
- ❑ **Fire Protection**
  - ❑ Exterior walls shall be protected by a (1) hour fire resistive rating (approved assembly) when less than (5) feet from property line or (3) feet to another building. IRC R302.1
  - ❑ Openings shall not be permitted in exterior walls with a fire separation distant of less than 3 feet. IRC Section R302.2. Openings in exterior walls shall be ¾ hour rated and provided with a self closure. IBC Table 715.3
  - ❑ All drywall joints shall be taped.
  - ❑ Where a breezeway separates a single-family dwelling and a garage, the interior wall and gable end wall of the garage adjacent to the dwelling shall be protected by one layer of ½" sheetrock from the floor to the underside of the roof sheathing.
- ❑ **Garages Adjacent to a Manufactured Home**
  - ❑ Under floor vents must be closed off with concrete/grout if enclosed inside the garage and on the firewall between the house and the garage.
  - ❑ No openings are permitted except for an approved 20-minute rated door. Appliance access doors must also be rated & combustion opening must comply
  - ❑ Bedrooms shall not be accessible from the garage.
  - ❑ Dyer ducts must be ducted to the outside of the garage with rigid metal pipe supported and complying with maximum length of the code with an elbow.
  - ❑ All over flow and condensate lines must be terminated to the outside with elbow turndowns.
  - ❑ The door from the house to the garage is a required exit from the house per Manufactured Housing and the man door from the garage must be in close proximity to the man door from the house.
  - ❑ Garage shall be independently supported from the manufactured house. Dormers may be constructed to provide an attachment. The size and construction of dormer will determine if engineering is required.
  - ❑ Existing appliance vents, exhaust ducts and plumbing vents must extend thru the new roof and terminate per minimum code requirements.
  - ❑ You may be requested to obtain Nevada Division of Manufactured Housing approval if attachment to the manufactured home is in questions.
  - ❑ Egress windows must be maintained from existing bedrooms in a manufactured house.
  - ❑ Two exits are required from a manufactured house and must be maintained.
  - ❑ Egress may pass thru an awning, garage or addition if directly accessible to an exterior door from the room.

## **Electrical**

- ❑ Owner shall verify service size is adequate for an additional electric load. Only one service permitted on a residential lot.
- ❑ Submit number of fixtures including switches, lights, and outlets.
- ❑ This office recommends an owner not familiar with electrical installation of the NEC obtain a simple wiring booklet, which is written to comply with the 2011 National Electric Code. This type of book will contain more specific information regarding wiring methods, wiring sizes, supports, sub panels, overcurrent protection, connections, fixtures, working space, safety precautions, grounding, branch circuits, etc. There are various requirements that cannot be covered in a handout.
- ❑ All garage outlets shall be GFI (ground fault circuit interrupter) protected. See NEC Code for specific exceptions.
- ❑ Exterior outlets shall have weather tight covers, which will remain weather tight when a plug is inserted. (Bubble covers are required). NEC 406.9(2)(6)
- ❑ All exposed wiring shall be securely stapled or protected.
- ❑ If installing romex wiring (nonmetallic sheathed cable) wiring shall be protected from damage
- ❑ Provide individual ground rod and ground wire when more than (1) circuit is provided in garage. If a four-wire system is run from the service a ground rod is not required. (NEC 250.24)
- ❑ A disconnecting means and overcurrent protection shall be provided per NEC. Overcurrent protection requires the breaker to be rated for the amperage of the wire. #12 wire/20 amp breaker, #10 wire/30 amp breaker. See NEC for further information.
- ❑ Ground wire and neutral wires shall be separated/isolated as per NEC 250.32(B)(1).
- ❑ Feeder wires for the garage shall not be serviced from the manufactured/mobile home unless approved by Manufactured Housing Division.
- ❑ Schedule 80 (PVC) rigid nonmetallic electric conduit is required to protect above ground conductors. NEC Art. 230.50
- ❑ All wiring used underground shall be listed for wet location or underground use when installed in conduit. NEC 300.5(D)(5)
- ❑ Inform the Building Department if an upgraded service will be necessary.
- ❑ Contact NV Energy 800-962-0399 at (775) 623-3667 or Harney Electric at (775) 272-3336 for their requirements.

## **Plumbing**

- ❑ Locate your septic system before planning the garage construction. A minimum of 8 feet is required to the nearest portion of the septic tank.
- ❑ Permits are required for all plumbing fixture installations.
- ❑ A permanent source of heat is required in the area that plumbing is installed.

## **Heating/Mechanical (Including woodstoves)**

- ❑ Permits are required for all mechanical installations.
- ❑ All gas appliances shall be installed to manufacturer's installation instructions and to Uniform Mechanical Code requirements.
- ❑ Heating & cooling equipment located in a garage and which generates a glow, spark or flame capable of igniting flammable vapors shall be installed with the pilots and burners or heating elements and switches are at least 18 inches above floor level. IRC Section M1307.3
- ❑ Appliances located in a garage or carport shall be protected from impact by automobiles. IRC Section M1307.3.1
- ❑ Exhaust fans in bathroom are required or a window shall be installed. IRC Section R303.2

## **Safety Glass**

- ❑ Safety glass shall be provided at all hazardous locations, including doors, sidelights, windows within 18" of walking surface.

## **Inspections**

- Foundation
  - Footing
  - Stemwall
  - Underground electrical conduit/wire
- Framing & rough electric (Note: Framing & roughs inspections are performed at the same time)
  - Truss bracing (truss design shall be submitted to our office or have on site)
  - Anchor bolts & hold downs
  - Gas test (if applicable)
- Final
- Electrical Fixtures (GFCI)
- Braced wall panels