

# Residential Construction Guide

For detached single story buildings and additions less than 800 square feet

This guide describes the prescriptive construction requirements of the International Residential Code and is not intended to relieve other requirements of the code.

## Worksheet

Fill out the worksheet on the following page.

- Describe use of building or addition.
- Select construction details you plan to use from sheets 3 through 10 and fill in information on page 2.
- Sheets 11, 12, and 13 are drawing samples only.

## Floor plans and elevations

- Applicant must provide two (2) copies of floor plans and elevation.
- Floor plans must be drawn to  $\frac{1}{4}'' = 1'$  scale.
- If adding on to an existing home, please show existing rooms adjoining the addition. Label use of each room and show all doors, windows etc.

Additional information and or requirements may apply. Contact a Permit Technician.

Clark County Building Safety adopted the 2012 International Building and Residential Code on July 1, 2013. Please note below additional requirements based on the 2012 IRC:

Winds Speed: 105 MPH, 3 second gust

Exposure: B

Seismic: Zone D1

Snow: Minimum roof snow load 25 psf, no reductions, 30 psf ground

Allowable bearing pressure: 1500 psf without a geotechnical report.

Revised 12/14/15



Community Development  
1300 Franklin Street, Vancouver, Washington  
Phone: (360) 397-2375 Fax: (360) 397-2011  
[www.clark.wa.gov/development](http://www.clark.wa.gov/development)



For an alternate format,  
contact the Clark County  
ADA Compliance Office.  
Phone: (360) 397-2322  
Relay: 711 or (800) 833-6384  
E-mail: [ADA@clark.wa.gov](mailto:ADA@clark.wa.gov)



# Clark County Building Safety Division

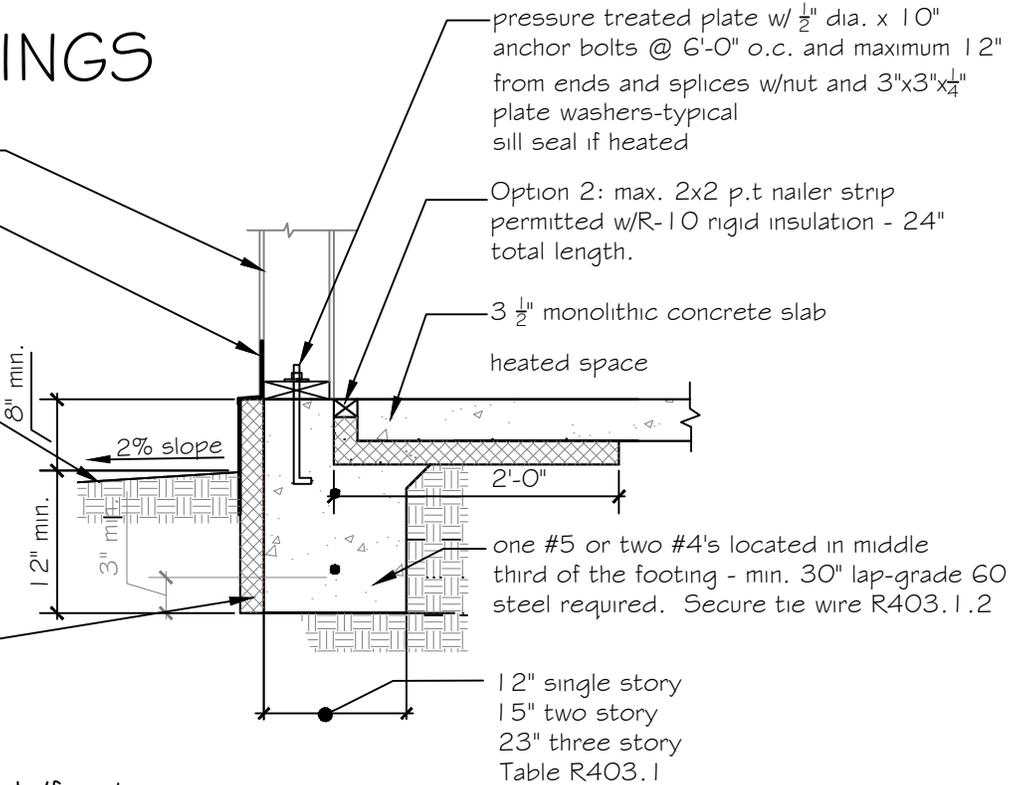
## FOOTINGS

2x wall (see details on page 6)

26 gauge galvanized iron flashing or approved equal

grade surface water away from foundation a min. 6" within the first 10'-0" or slope to drain or swale R401.3

Option 1: R-10 perimeter insulation for heated structures w/flashing and protection board or coating



pressure treated plate w/ 1/2" dia. x 10" anchor bolts @ 6'-0" o.c. and maximum 12" from ends and splices w/nut and 3"x3"x1/4" plate washers-typical sill seal if heated

Option 2: max. 2x2 p.t. nailer strip permitted w/R-10 rigid insulation - 24" total length.

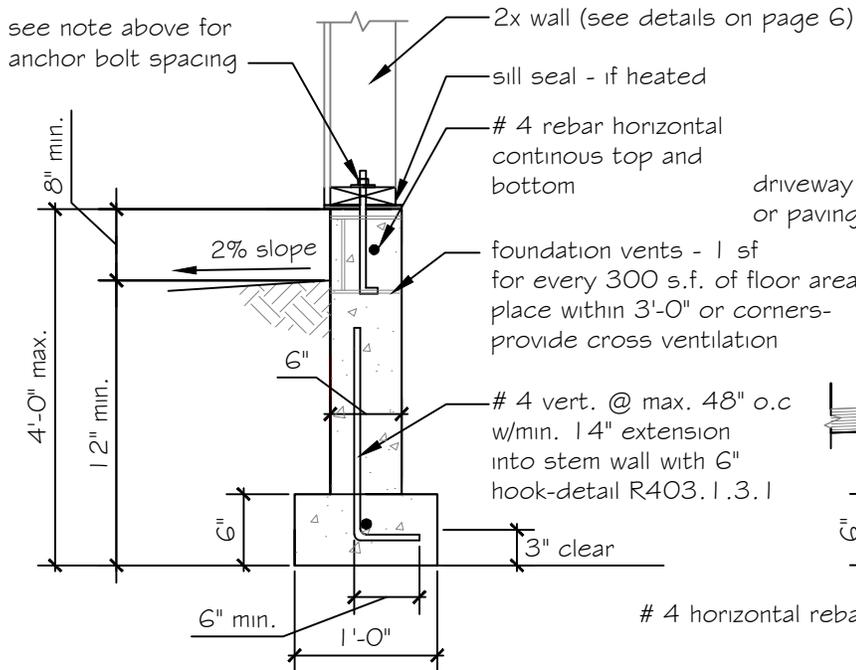
3 1/2" monolithic concrete slab heated space

one #5 or two #4's located in middle third of the footing - min. 30" lap-grade 60 steel required. Secure tie wire R403.1.2

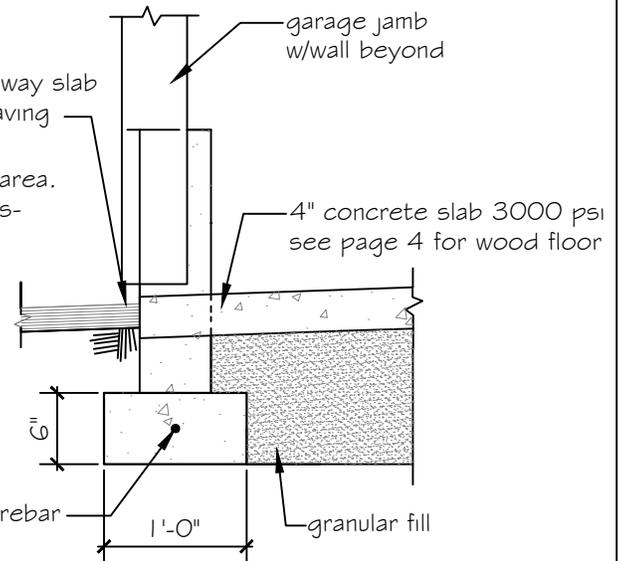
12" single story  
15" two story  
23" three story  
Table R403.1

### 1 Monolithic slab/footing

see note above for anchor bolt spacing



note: 2'-0" wide shear walls and portal frame will require larger continuous footings at garage opening



### 2 Footing with stem wall

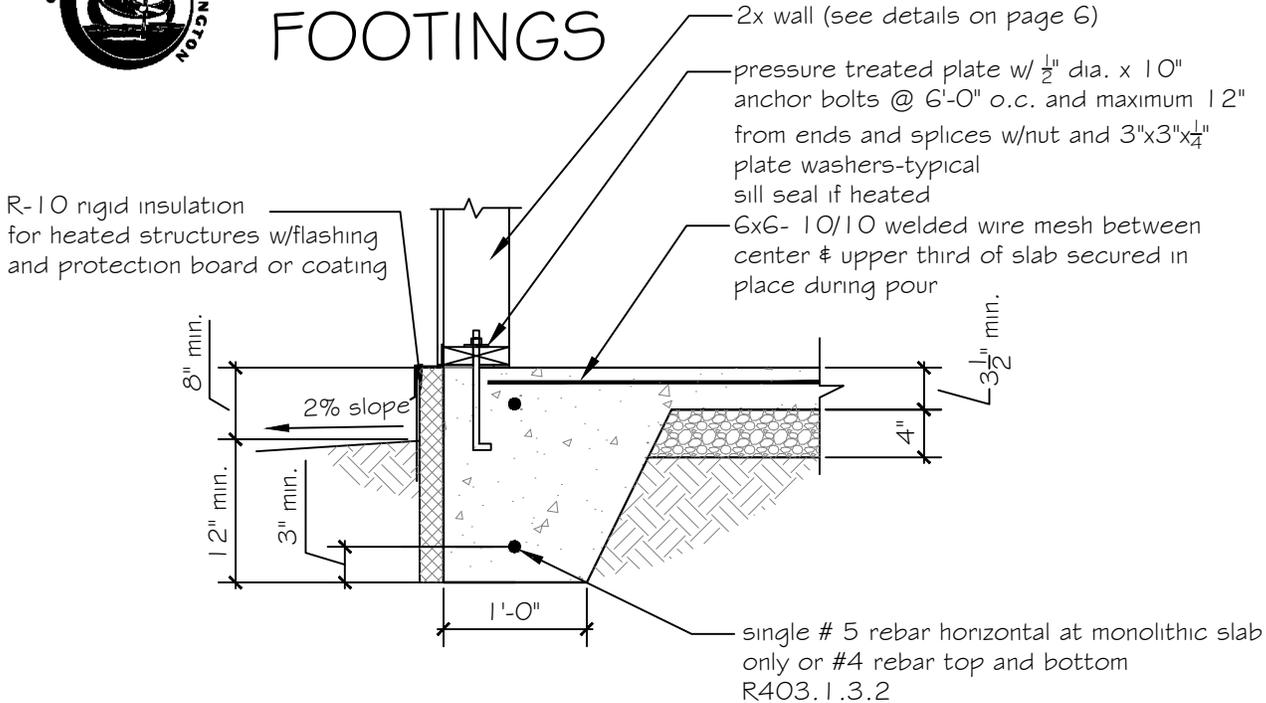
### 3 Footing at door opening

NOTE: \* Footings over 4'-0" high are required to be designed as retaining walls  
\* Minimum concrete strength 2500 p.s.i. Lap rebar min. 60 diameters at splices-secure with tie wire



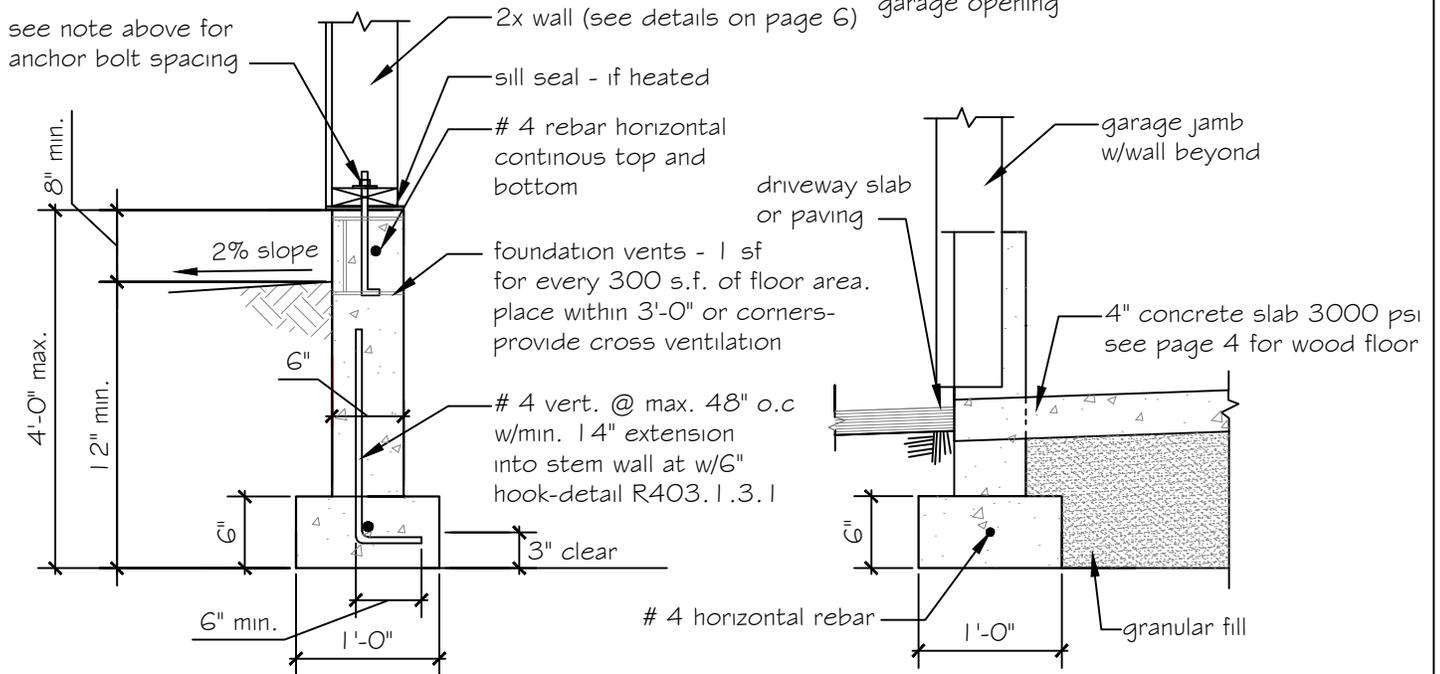
# Clark County Building Safety Division

## FOOTINGS



1  
3 Monolithic slab/footing

note: 2'-0" wide shear walls and portal frame will require larger continous footings at garage opening



2  
3 Footing with stem wall

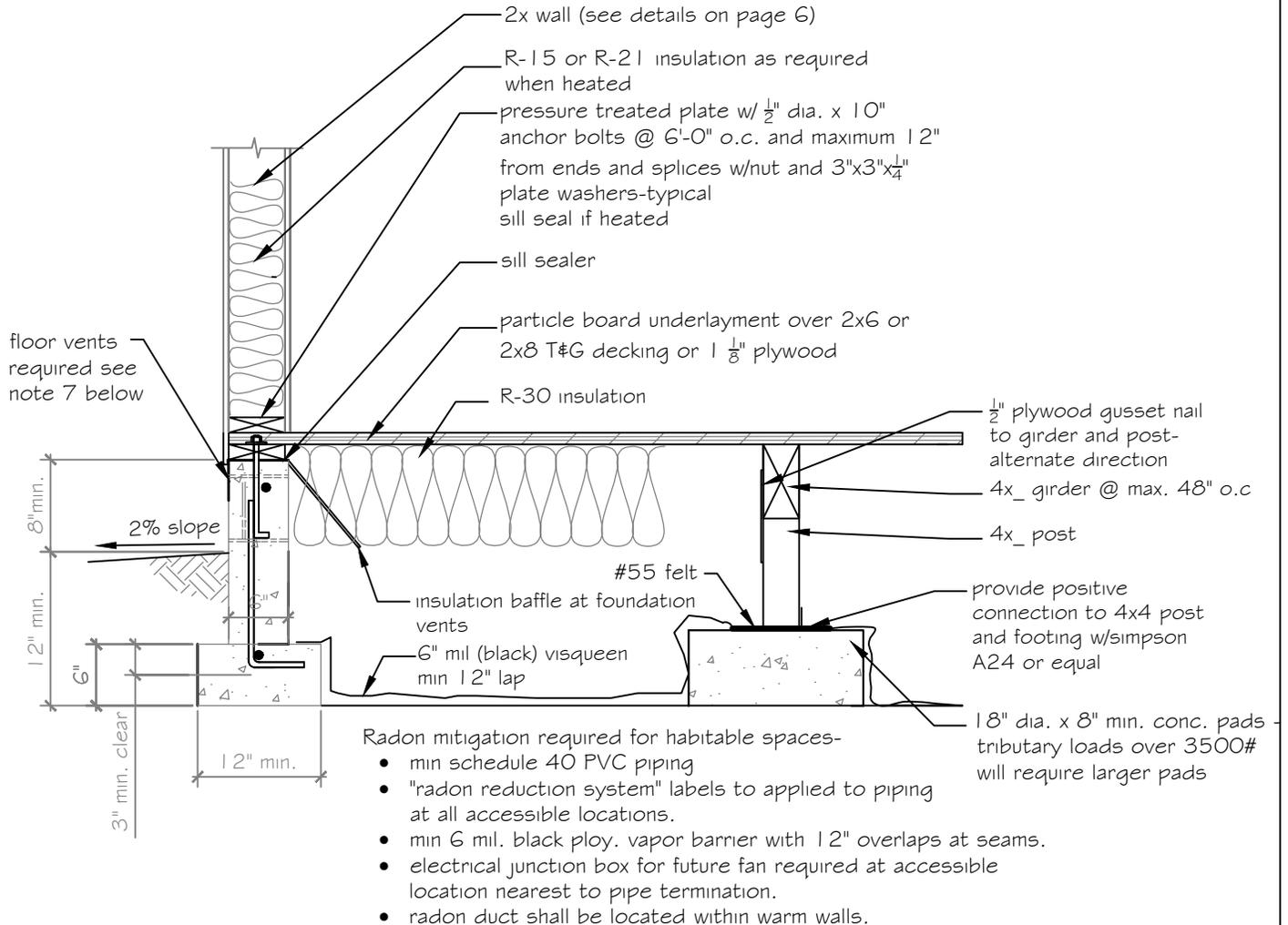
3  
3 Footing at door opening

NOTE: \* Footings over 4'-0" high are required to be designed as retaining walls  
\* Minimum concrete strength 2500 p.s.i. Lap rebar min. 40 diameters at splices-secure with tie wire



# Clark County Building Safety Division

## POST & BEAM FOOTING



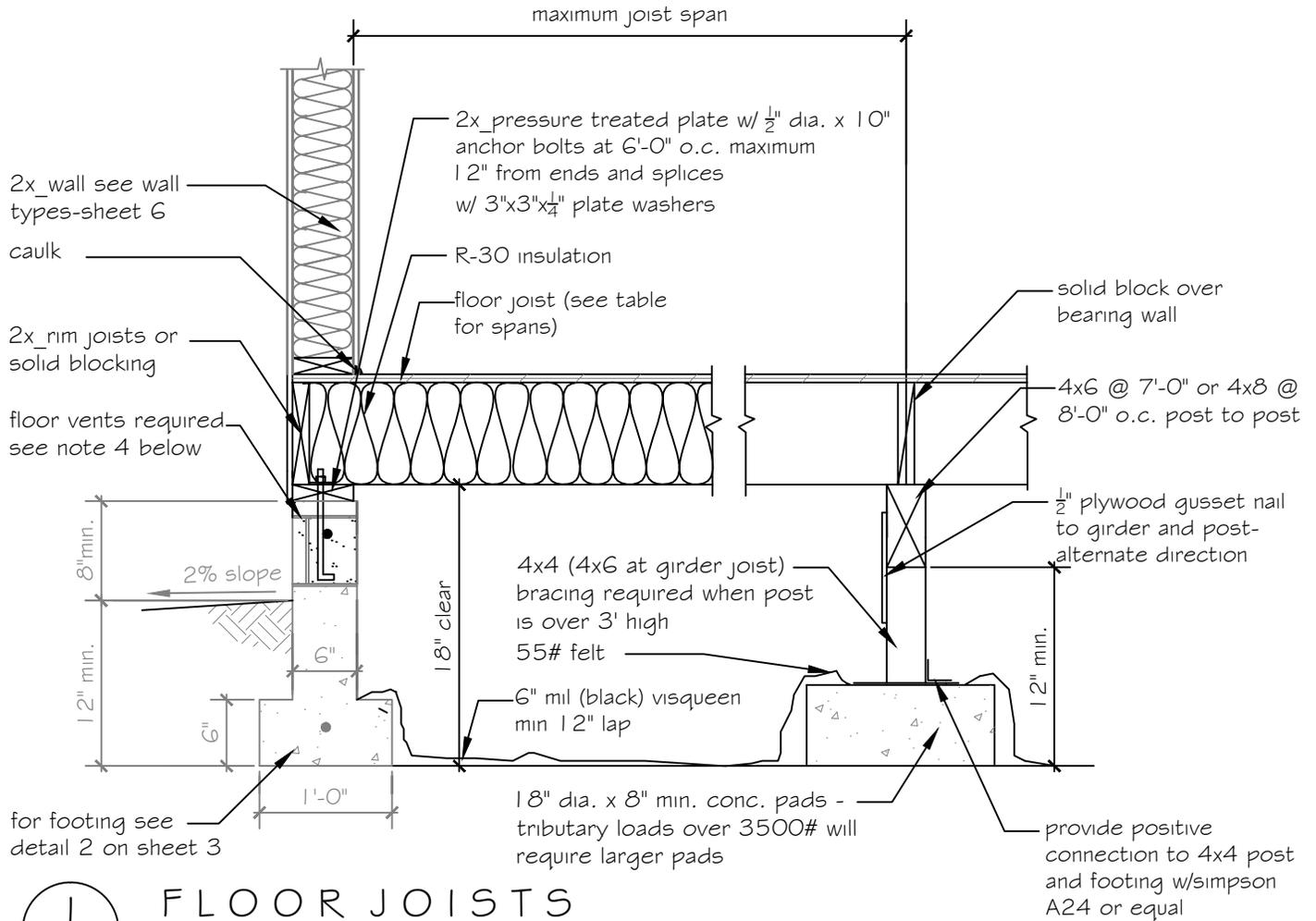
### POST & BEAM

#### NOTES:

1. 4x6 D.F. # 2 girders - maximum 7'-0" span. 4x8 maximum 8'-0" span.
2. 4x4 D.F. #2 post. 4x6 required at girder splices.
3. 2x decking must be covered with 3/8" plywood or approved underlayment.
4. 4x post over 3'-0" high must be braced.
5. See page 6 for rebar requirement in footing.
6. Support insulation at 24" o.c. to hold tight to underside of floor deck - do not compress -WSEC R402.2.7.
7. Foundation vents required 1sf for each 300 s.f. of under-floor area-distribute approximately equally on at least two sides. Recommend starting placement within 3' of corners. R408.
8. Minimum concrete strength 2500 p.s.i. lap rebar min. 60 diameters at splices-secure with tie wire. See IRC Table R611.5.4(1).



# Clark County Building Safety Division FLOOR JOIST



## 1 FLOOR JOISTS

5 Not to scale

Table R502.3.1(2)

Floor joist	12" o.c.	16" o.c.	24" o.c.
2x6	10'-9"	9'-9"	8'-1"
2x8	14'-2"	12'-7"	10'-3"
2x10	17'-9"	15'-5"	12'-7"
2x12	20'-7"	17'-10"	14'-7"

Table R503.2.1 Subfloor spans

grade	16" o.c.	20" o.c.	24" o.c.
1	1/2"	5/8"	3/4"

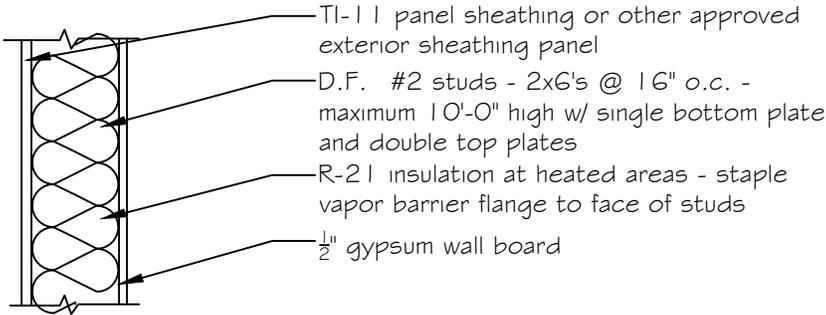
NOTES:

1. Floor joist to be minimum Douglas Fir #2. Code loading requirements- 40# live and 10# dead.
2. Minimum spans for subfloor-underlayment see subfloor span table this sheet.
3. Minimum concrete strength 2500 psi, lap rebar min. 60 diam. at slices-secure with tie wire.
4. Foundation vents required 1sf for each 300 s.f. of under-floor area-distribute approximately equally on at least two sides. Recommend starting placement within 3' of corners. R408.



# Clark County Building Safety Division

## EXTERIOR WALL TYPES



TI-11 panel sheathing or other approved exterior sheathing panel

D.F. #2 studs - 2x6's @ 16" o.c. - maximum 10'-0" high w/ single bottom plate and double top plates

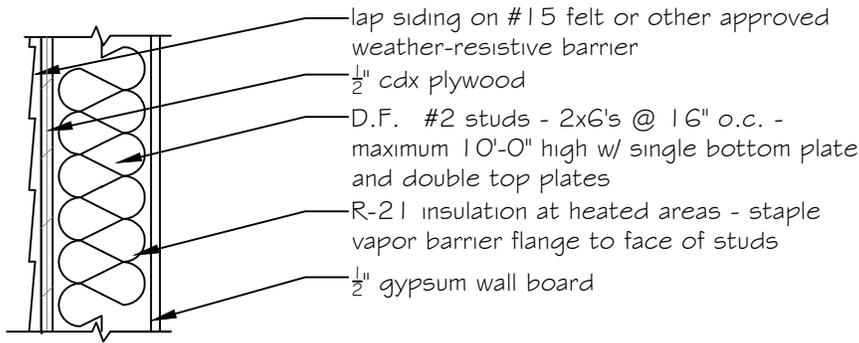
R-21 insulation at heated areas - staple vapor barrier flange to face of studs

1/2" gypsum wall board

1  
6

### 2 X 6 WALL WITH EXTERIOR SHEATHING

scale- 1" = 1'-0"



lap siding on #15 felt or other approved weather-resistive barrier

1/2" cdx plywood

D.F. #2 studs - 2x6's @ 16" o.c. - maximum 10'-0" high w/ single bottom plate and double top plates

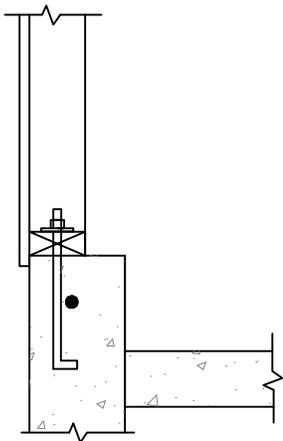
R-21 insulation at heated areas - staple vapor barrier flange to face of studs

1/2" gypsum wall board

2  
6

### 2 X 6 WALL WITH SIDING AND SHEATHING

scale- 1" = 1'-0"



Douglas Fir #2 studs at 16" o.c.  
 2x6 maximum 10'-0" high  
 2x4's maximum 10'-0" high  
 single bottom and double top plates  
 plates on concrete to be pressure treated  
 no insulation required at unheated areas  
 unfinished heated areas must have exposed  
 insulation with flame spread 25 vapor barrier

Glazing U-value at heated space
U-.30 unlimited glazing percentage

3  
6

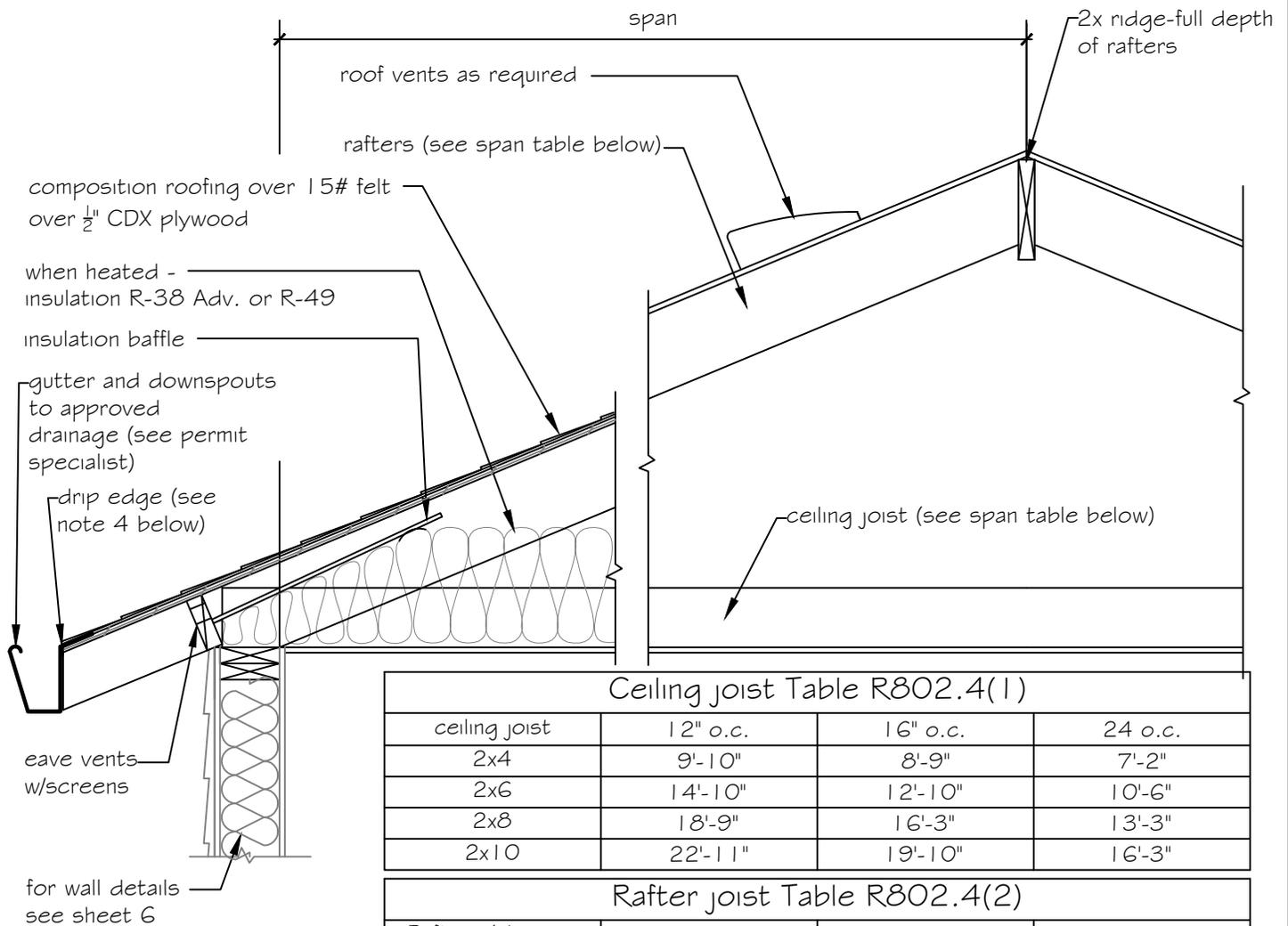
### 2 x 4 or 2 x 6 WALL - UNHEATED

scale- 1" = 1'-0"



# Clark County Building Safety Division

## ROOF TYPES (Rafters w/Ceiling Joists)



Ceiling joist Table R802.4(1)

ceiling joist	12" o.c.	16" o.c.	24 o.c.
2x4	9'-10"	8'-9"	7'-2"
2x6	14'-10"	12'-10"	10'-6"
2x8	18'-9"	16'-3"	13'-3"
2x10	22'-11"	19'-10"	16'-3"

Rafter joist Table R802.4(2)

Rafters (slope > 3:12)	12" o.c.	16" o.c.	24" o.c.
2x4	8'-7"	7'-10"	6'-8"
2x6	13'-6"	11'-11"	9'-9"
2x8	17'-5"	15'-1"	12'-4"
2x10	21'-4"	18'-5"	15'-1"
2x12	24'-8"	21'-5"	17'-6"

drip edge (see note 4 below)



Section @ gable or rake R905.2.8.5

1  
7

### CONVENTIONAL FRAMING

scale- 1" = 1'-0"

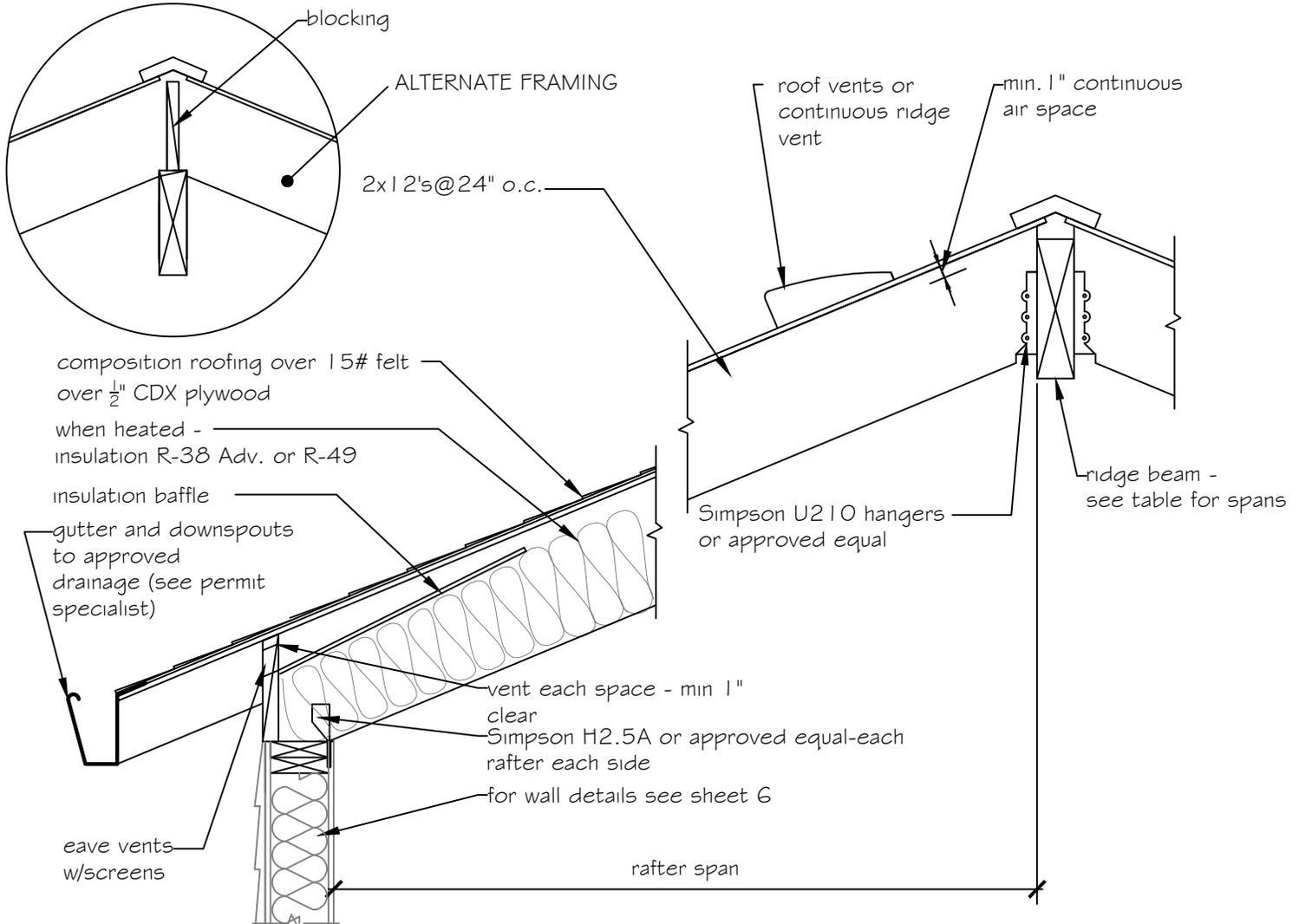
NOTES:

1. Ceiling joists to be Douglas Fir #2 or better.
2. Rafters to be Douglas Fir or better. Roof slopes greater than 3:12. (see sheet 10 for slopes less than 3:12). Rafters are for light roof coverings only - 30# ground snow - 10# dead load.
3. Roof vent total net area to be 1/300 of roof area if half of required vents are 3'-0" above eave, otherwise 1/150 of roof area is required in roof vents R806.2
4. Provide a drip edge that overlaps a min. of 2" and extends a 1/4" below roof sheathing. Fastened to roof deck 12" o.c. Install underlayment over the drip edge along the eaves and under the drip edge on gables. Unless specified by manufacturer. Shingles are permitted to be flush with the edge.



# Clark County Building Safety Division

## ROOF TYPES (Rafters w/ridge beam)



- NOTES:
1.  $3\frac{1}{8}$ ",  $3\frac{1}{2}$ ",  $5\frac{1}{8}$ ",  $5\frac{1}{2}$ " and  $6\frac{3}{4}$ " glu-lam beams  
Fb = 2400
  2. 2x, 4x and 6x Douglas Fir #2 unless otherwise noted.
  3. Ridge beam to be supported by vertical wall or post to footings.

		Beam Span							
		10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"
Rafter Span	10'-0"	4 x 10	4 x 12	6 x 12 #1	$3\frac{1}{8}$ x $13\frac{1}{2}$	$5\frac{1}{8}$ x $10\frac{1}{2}$	$5\frac{1}{8}$ x 12	$5\frac{1}{8}$ x $13\frac{1}{2}$	$6\frac{3}{4}$ x $13\frac{1}{2}$
	12'-0"	4 x 12	6 x 12	6 x 14	$3\frac{1}{8}$ x 15	$3\frac{1}{8}$ x $22\frac{1}{2}$	$5\frac{1}{8}$ x $13\frac{1}{2}$	$5\frac{1}{8}$ x 14	$5\frac{1}{8}$ x 15
	14'-0"	4 x 14 #1	$3\frac{1}{8}$ x $10\frac{1}{2}$ 6 x 14	$3\frac{1}{8}$ x $13\frac{1}{2}$ 6 x 14 #1	$3\frac{1}{8}$ x 18 $5\frac{1}{8}$ x $10\frac{1}{2}$	$3\frac{1}{2}$ x 18 $5\frac{1}{8}$ x 12	$3\frac{1}{2}$ x $25\frac{1}{2}$ $5\frac{1}{8}$ x $13\frac{1}{2}$	$5\frac{1}{8}$ x 15 $5\frac{1}{2}$ x 14	$5\frac{1}{8}$ x 16 $5\frac{1}{2}$ x 16
	16'-0"	6 x 12	6 x 14	$3\frac{1}{8}$ x 14 $5\frac{1}{8}$ x $9\frac{1}{2}$	$3\frac{1}{8}$ x 15 $5\frac{1}{8}$ x 12	$3\frac{1}{2}$ x 21 $5\frac{1}{8}$ x $13\frac{1}{2}$	$5\frac{1}{8}$ x $13\frac{1}{2}$	$5\frac{1}{8}$ x 16	$5\frac{1}{8}$ x 18
	18'-0"	6 x 12	6 x 16	$3\frac{1}{8}$ x 16 $5\frac{1}{8}$ x $10\frac{1}{2}$	$3\frac{1}{2}$ x $16\frac{1}{2}$ $5\frac{1}{8}$ x 12	$3\frac{1}{2}$ x 24 $5\frac{1}{8}$ x $13\frac{1}{2}$	$5\frac{1}{8}$ x 15 $5\frac{1}{2}$ x 14	$5\frac{1}{8}$ x $16\frac{1}{2}$ $5\frac{1}{2}$ x 16	$5\frac{1}{8}$ x $19\frac{1}{2}$ $5\frac{1}{2}$ x 18
	20'-0"								

1  
8

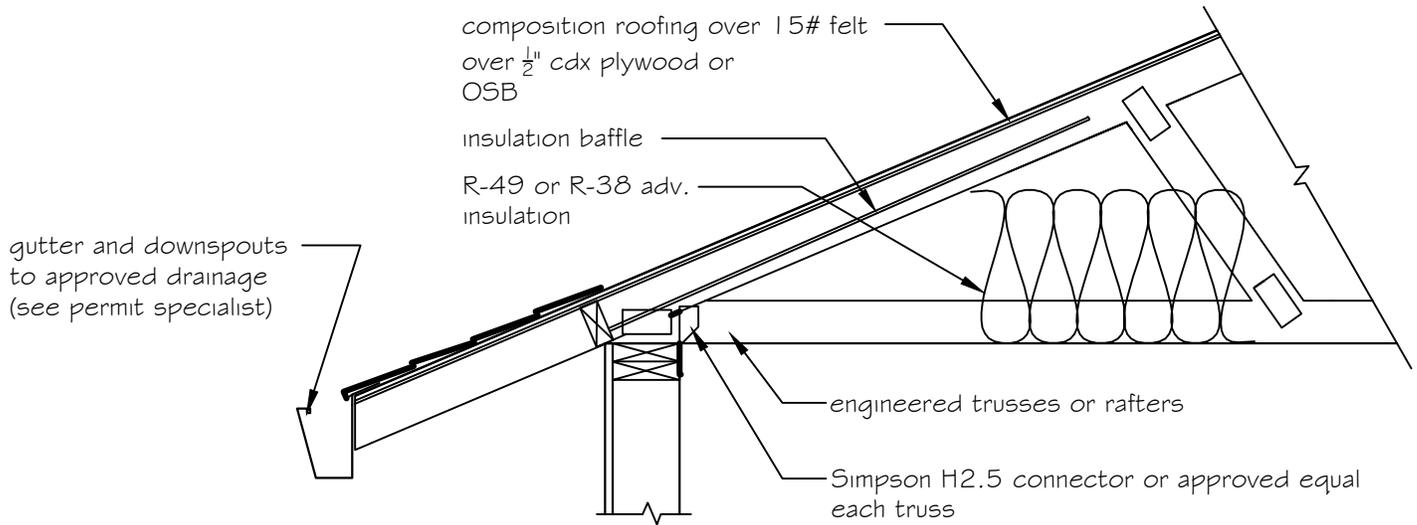
### ROOF FRAMING (VAULTED)

scale-  $3/4"$  =  $1'-0"$



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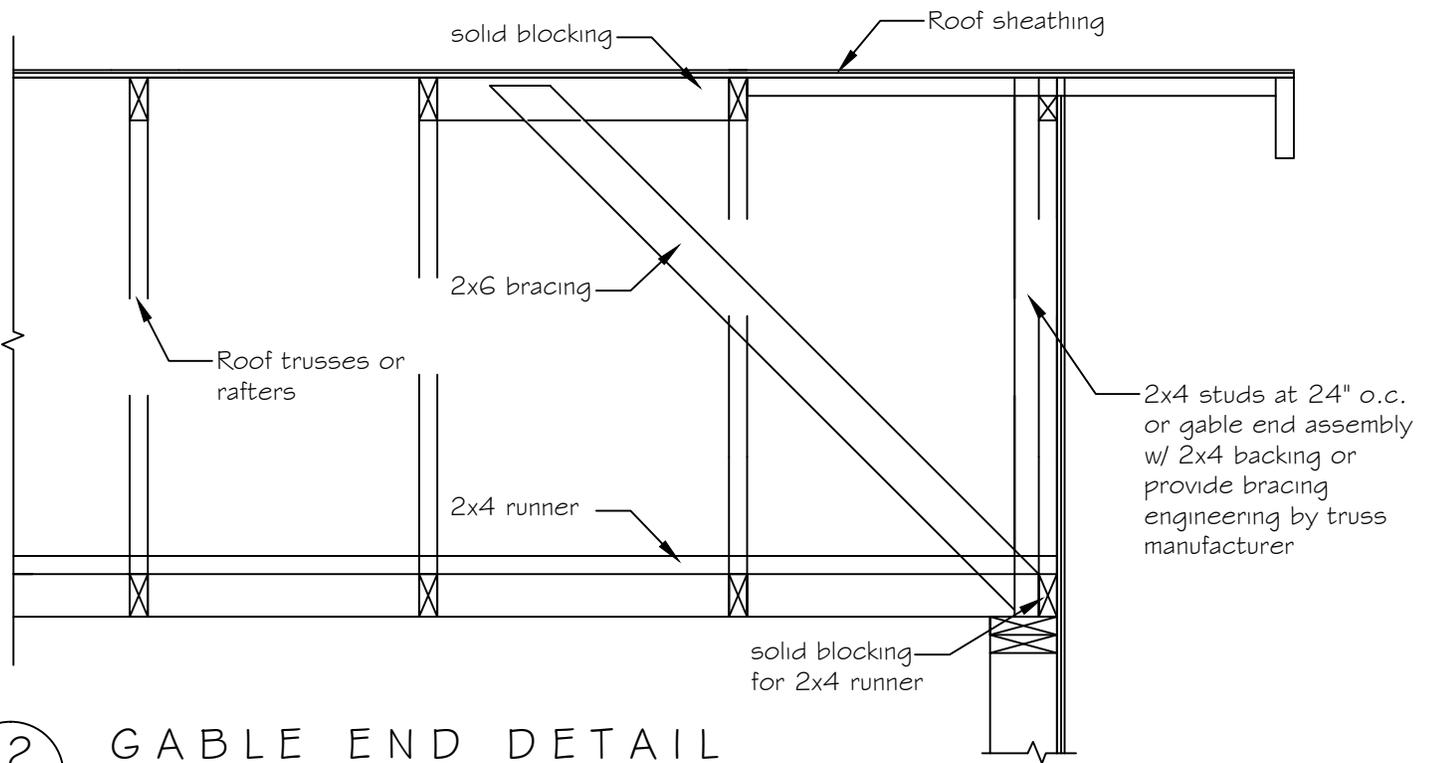
## ROOF TYPES (engineered trusses)



1  
9

### ROOF TRUSSES (ENGINEERED)

scale- 3/4" = 1'-0"



2  
9

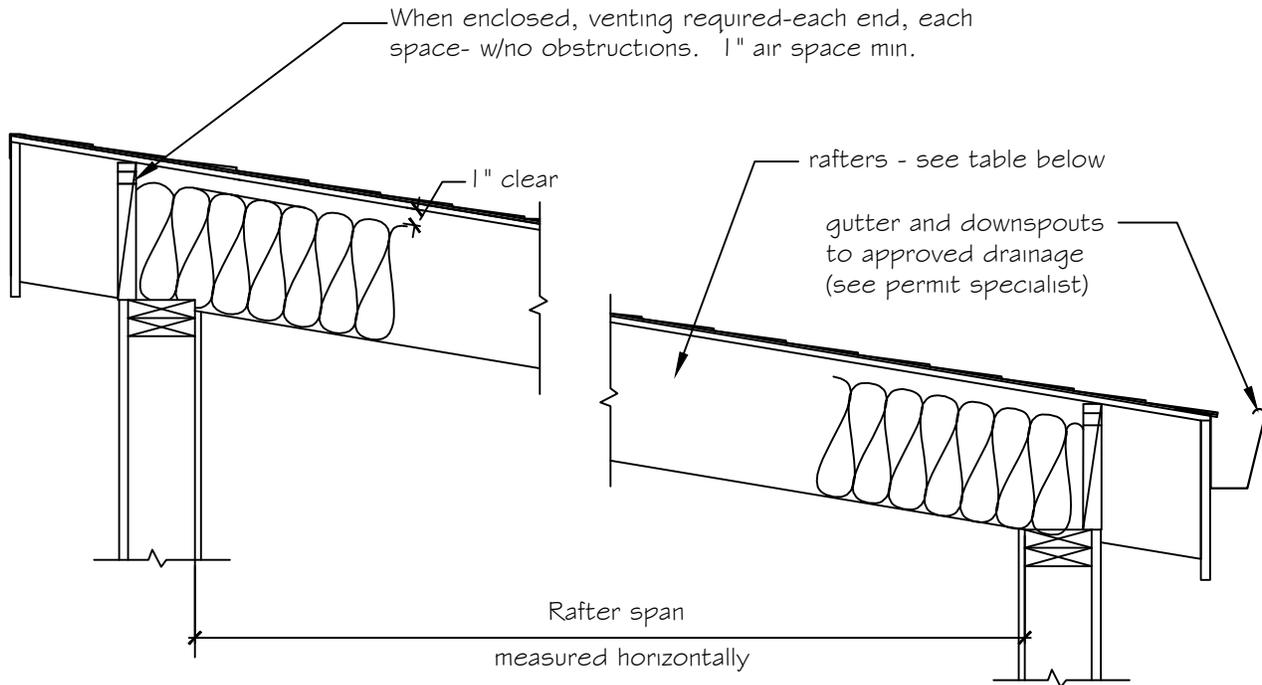
### GABLE END DETAIL

scale- 3/4" = 1'-0" (trusses shown- conventionally framed gable end bracing similar)



# Clark County Building Safety Division

## ROOF TYPES (shed)



1  
10

### ROOF FRAMING (shed)

scale- 3/4" = 1'-0"

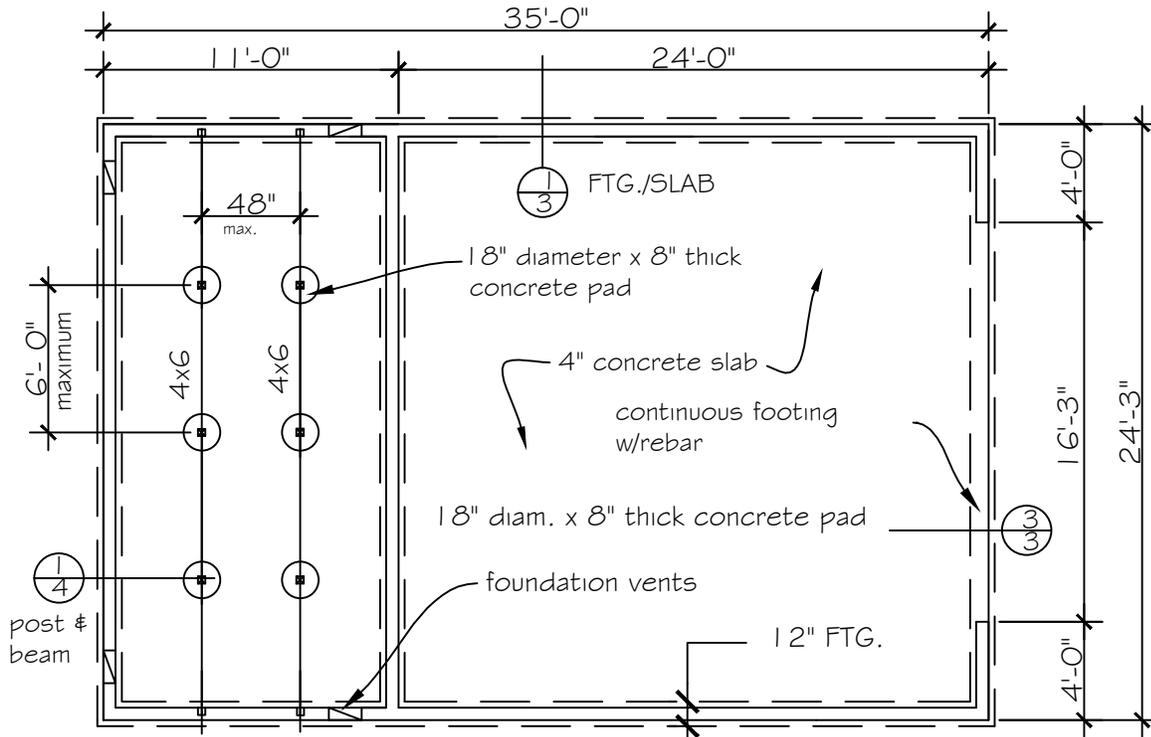
	12" o.c.	16" o.c.	24" o.c.
2x4	8'-7"	7'-10"	6'-8"
2x6	13'-6"	11'-11"	9'-9"
2x8	17'-5"	15'-1"	12'-4"
2x10	21'-4"	18'-5"	15'-1"
2x12	24'-8"	21'-5"	17'-6"

#### NOTES:

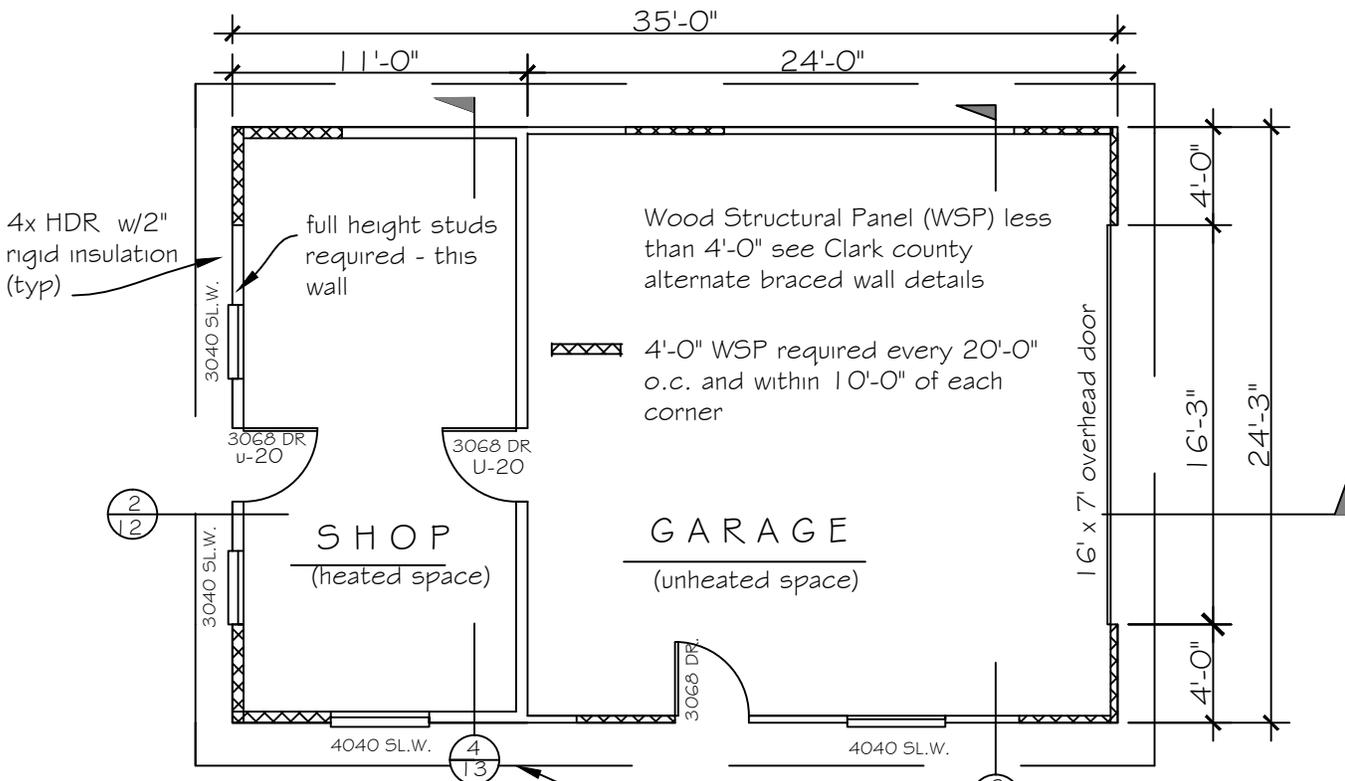
- 2:12 slope min. for 3 tab composition roofing - for slopes 2:12 to 4:12, two layers of 15# felt required, applied shingle fashion. R905.2.7.
- Pitches less than 2:12 are to be hot mop, metal, sheet metal, rolled roofing or other approved material, applied as directed in approved manufacture's instructions.
- When ceiling is applied, vent each rafter space continuously through top and bottom blocking. When heated, insulate with R-38 insulation, using 2x12 rafters to allow one inch vent space R806.3
- When attaching to existing building show ledger, size and method of fastening joist and ledger. Show required flashing.
- Rafters are D.F. #2 per IRC Table R802.5.1(5).



# Clark County Building Safety Division



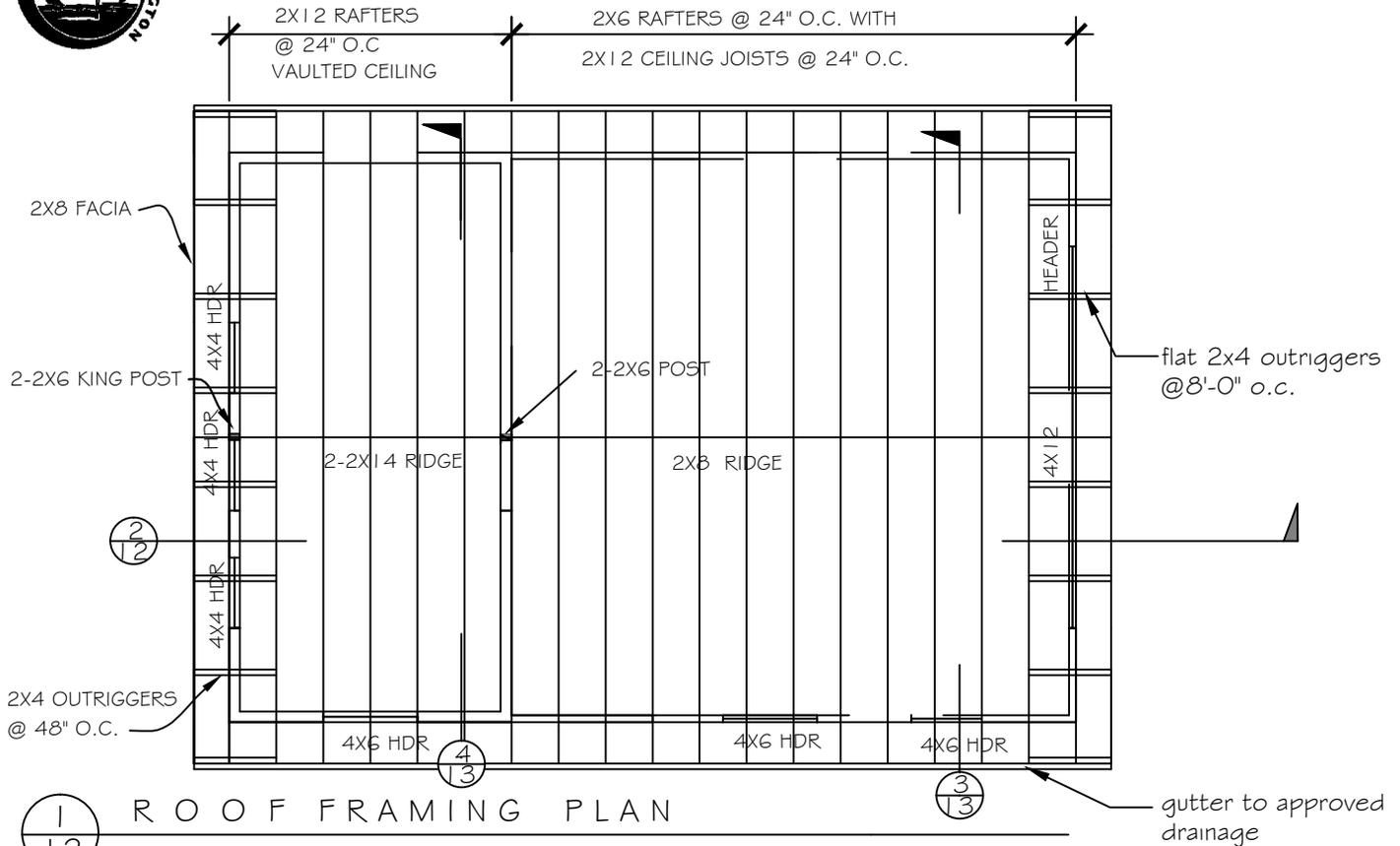
**1** FOUNDATION/FLOOR FRAMING PLAN note: if attaching addition to an existing residence, show adjoining rooms of existing home  
 scale- 1/4" = 1'-0" (REDUCED SCALE EXAMPLE)



**2** FLOOR PLAN EXAMPLE  
 scale- 1/4" = 1'-0" (REDUCED EXAMPLE)

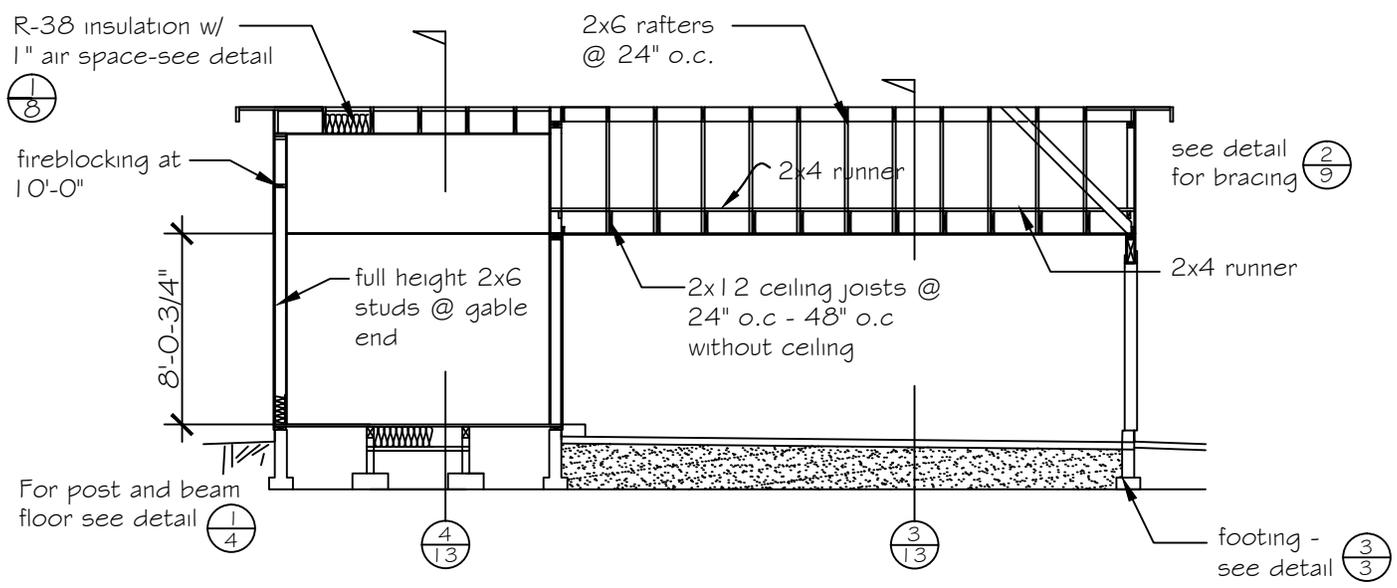


# Clark County Building Safety Division



**1** ROOF FRAMING PLAN  
 scale- 1/4" = 1'-0" (REDUCED EXAMPLE)

NOTE: If attaching to existing home- show attachment to existing and all structural modifications

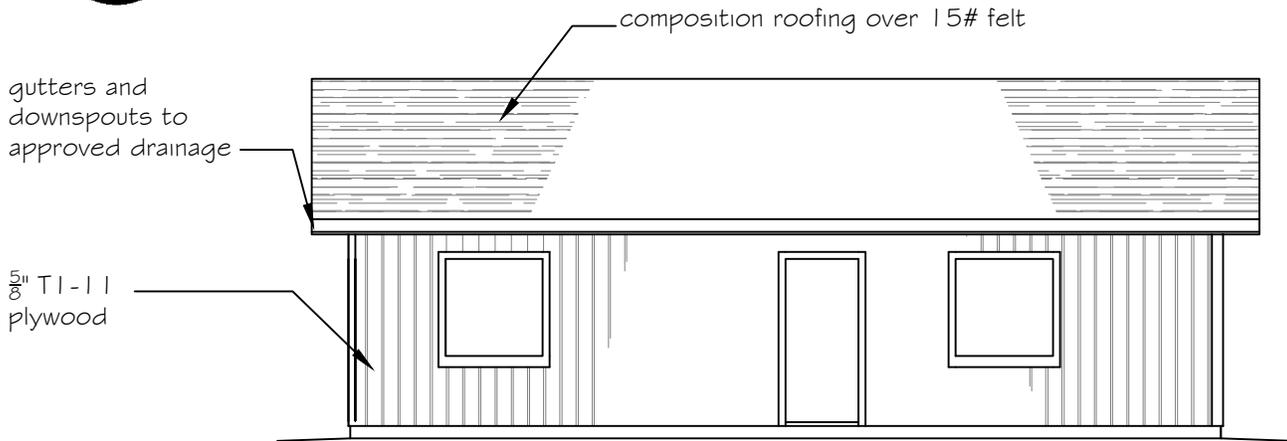


**2** LONGITUDINAL CROSS SECTION  
 scale- 1/4" = 1'-0" (REDUCED EXAMPLE)

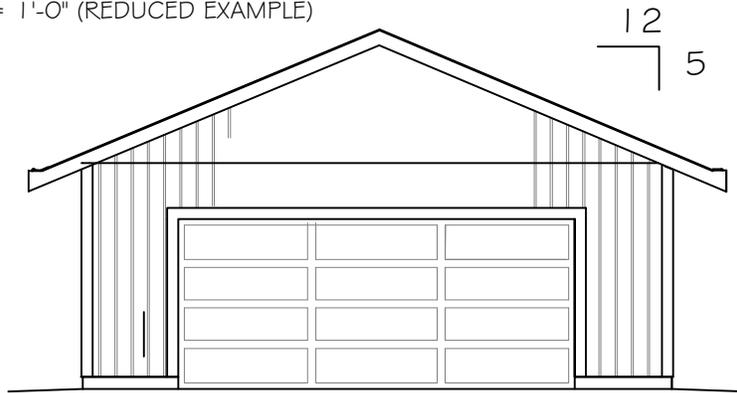
EXAMPLE



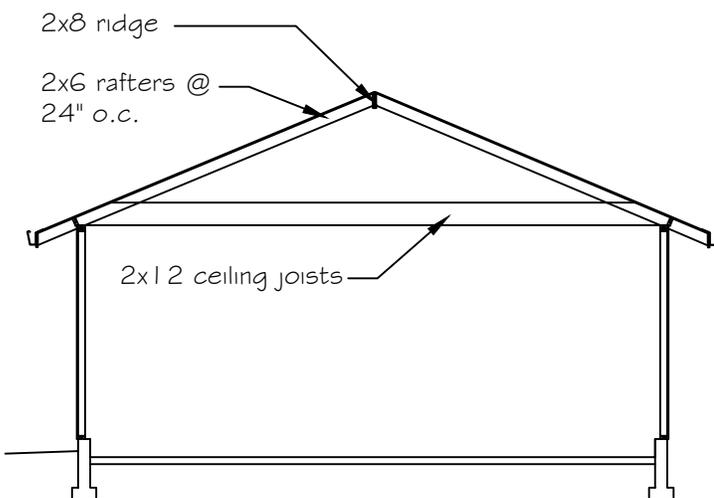
# Clark County Building Safety Division



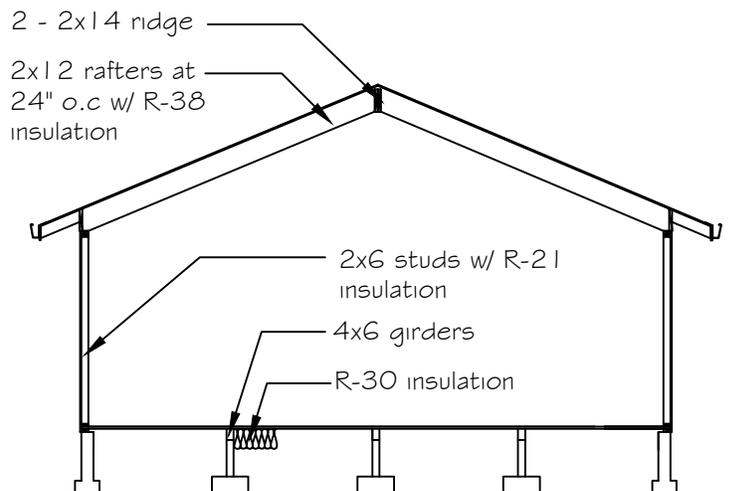
1  
13 SIDE ELEVATION  
scale- 1/4" = 1'-0" (REDUCED EXAMPLE)



2  
13 FRONT ELEVATION  
scale- 1/4" = 1'-0" (REDUCED EXAMPLE)



3  
13 SECTION (thru garage)  
scale- 1/4" = 1'-0" (REDUCED EXAMPLE)



4  
13 SECTION (thru shop)  
scale- 1/4" = 1'-0" (REDUCED EXAMPLE)

**Building Description**

Owner name: \_\_\_\_\_ Permit number: \_\_\_\_\_

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

Phone: \_\_\_\_\_ Email address: \_\_\_\_\_

Describe building use(s): \_\_\_\_\_

**Check the appropriate item for each category:**

**Building type**

Detached

Attached

Total square feet of project: \_\_\_\_\_

**Footing type** - see sheet 3

Monolithic

Slab

Other (provide detail)

Foundation

**Floor type** – see sheets 4 and 5

Slab

Post and beam

Floor joist

Other – provide detail, see example on sheet 11

**Wall type** – see sheet 6

Detail 1: 2x6 insulated with exterior sheathing (wall)

Detail 2: 2x6 insulated with siding and sheathing (double wall)

Detail 3: 2x4 or 2x6 unheated garage or shop

**Roof type** – see sheets 7 through 10

Conventional roof framing – rafters with ceiling joist (see sheet 7)

Vaulted ceiling – rafters with ridge beam (see sheet 8)

Engineered trusses (see sheet 9)

Shed roof (see sheet 10)