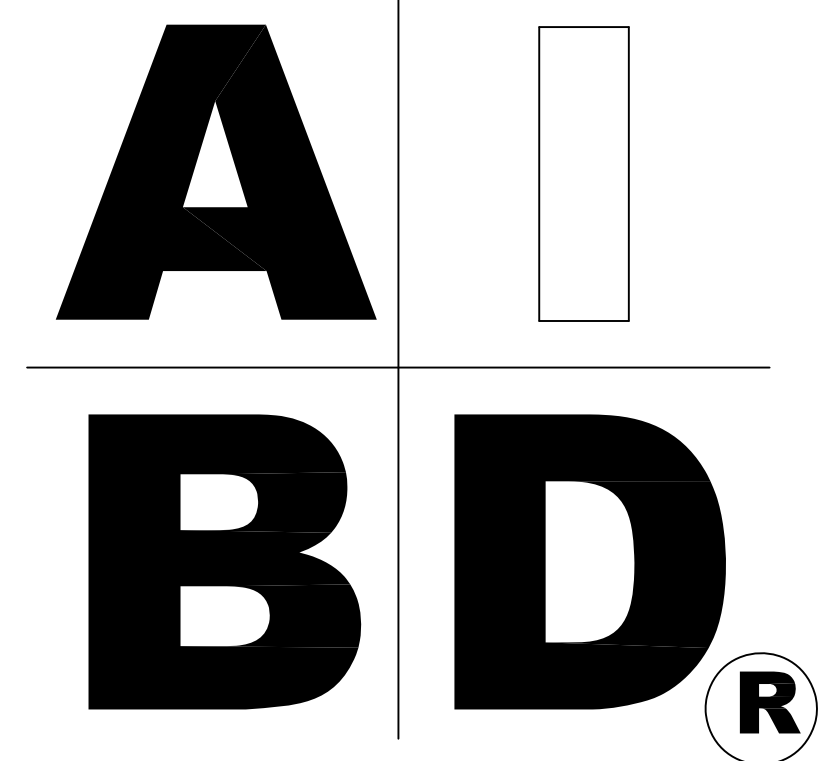


House Plan Zone, LLC

# House Plan Zone, LLC.

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 Fax: 1-800-574-1387



## STANDARD ABBREVIATIONS

@	AT	LT.	LIGHT
#	FOUND(S)	LIN.	LINEN
APPROX. APPROXIMATELY			
BASE.	BASEMENT	MANUF.	MANUFACTURER
BIT	BETWEEN	MAS.	MASONRY
BLK.	BLOCK	MAX.	MAXIMUM
BLK'G	BLOCKING	MTL.	METAL
BD.	BOARD	MIN.	MINIMUM
BRD.	BOARD	N.I.C.	NOT IN CONTRACT
BOT.	BOTTOM	O.C.	ON CENTER
BLDG.	BUILDING	O/C	ON CENTER
CAB.	CABINET	OPT.	OPTIONAL
CLG.	CEILING	O.S.B.	ORIENTED STRAND BOARD
CLR.	CLEAR	OTS	OWNER TO SELECT
CLOS.	CLOSET	O.T.S	OWNER TO SELECT
COL.	COLUMN	PG.	PAGE
COLS.	COLUMNS	PAN.	PANTRY
CONC.	CONCRETE	PL.	PLATE
CMU	CONCRETE MASONRY UNIT	P	PLATE
C.U.	CONDENSOR UNIT	PLY'ND	PLYWOOD
CONN.	CONNECTION	PLY'ND	PLYWOOD
CONT.	CONTINUOUS	POLY.	POLYETHYLENE
COVER'G	COVERING	PSI	POUNDS PER SQUARE INCH
CS	GRAVEL SPACE	PRE-FAB	PREFABRICATED
DECO.	DECORATIVE	RE.	REFERENCE
DET.	DETAIL	REF	REFRIGERATOR
DIA.	DIAMETER	REINF.	REINFORCED
DN	DISHWASHER	R	RESISTANCE
DBL.	DOUBLE	R.A.	RETURN AIR
DF	DOUGLAS FIR	R.A.G	RETURN AIR GRILLE
D	DRYER	REQ'D	REQUIRED
EA.	EACH	SCR	SCREEN
ELEV.	ELEVATION	SHLVs.	SHELVES
ENG.	ENGINEER	SHR.	SHOWER
FT.	FEET	SHWR.	SHOWER
F.F.L.	FINISHED FLOOR LINE	SST.	SIMPSON STRONG TIE
FIN.	FINISH	SP	SOUTHERN PINE
F.C.	FIRE CODE	SPECS.	SPECIFICATIONS
FLR.	FLOOR	SQ.	SQUARE
FTG.	FOOTING	S.F.	SQUARE FOOTAGE
FOUND.	FOUNDATION	STL.	STEEL
FND.	FOUNDATION	THK.	THICK
FR.	FREEZER	THK.	THICKNESS
GA.	GAUGE	TBD.	TO BE DETERMINED
GALV.	GALVANIZED	TR.	TRANSOM
GYP.	GYP-SUM	TYP.	TYPICAL
HDR.	HEADER	U.T.C.	UNDER THE COUNTER
HVAC	HEATING, VENTILATION & AIR CONDITIONING	UTIL.	UTILITY
HT.	HEIGHT	VAN.	VANITY
HTS.	HEIGHTS	VERT.	VERTICAL
HORIZ.	HORIZONTAL	WH	WATER HEATER
IN.	INCHES	W	WASHER
INCL.	INCLUDE	WT.	WEIGHT
INSUL.	INSULATION	WIN.	WINDOW
JT.	JOINT	W.M.	WIRE MESH
JST.	JOIST	W	WITH
JSTS.	JOISTS	WD.	WOOD
		WFCM	WOOD FRAME CONSTRUCTION MANUAL



## SHEET INDEX:

- 1 COVER SHEET
- 2 FOUNDATION PLAN
- 3 FLOOR PLAN
- 4 EXTERIOR ELEVATIONS
- 5 EXTERIOR ELEVATIONS
- 6 CROSS SECTION & CABINETS
- 7 ROOF PLANS
- 8 ELECTRICAL PLAN

\*\*\*REGISTER MODIFICATION\*\*\*

LIC. NO.: 3391-022

# BB-1675-2R

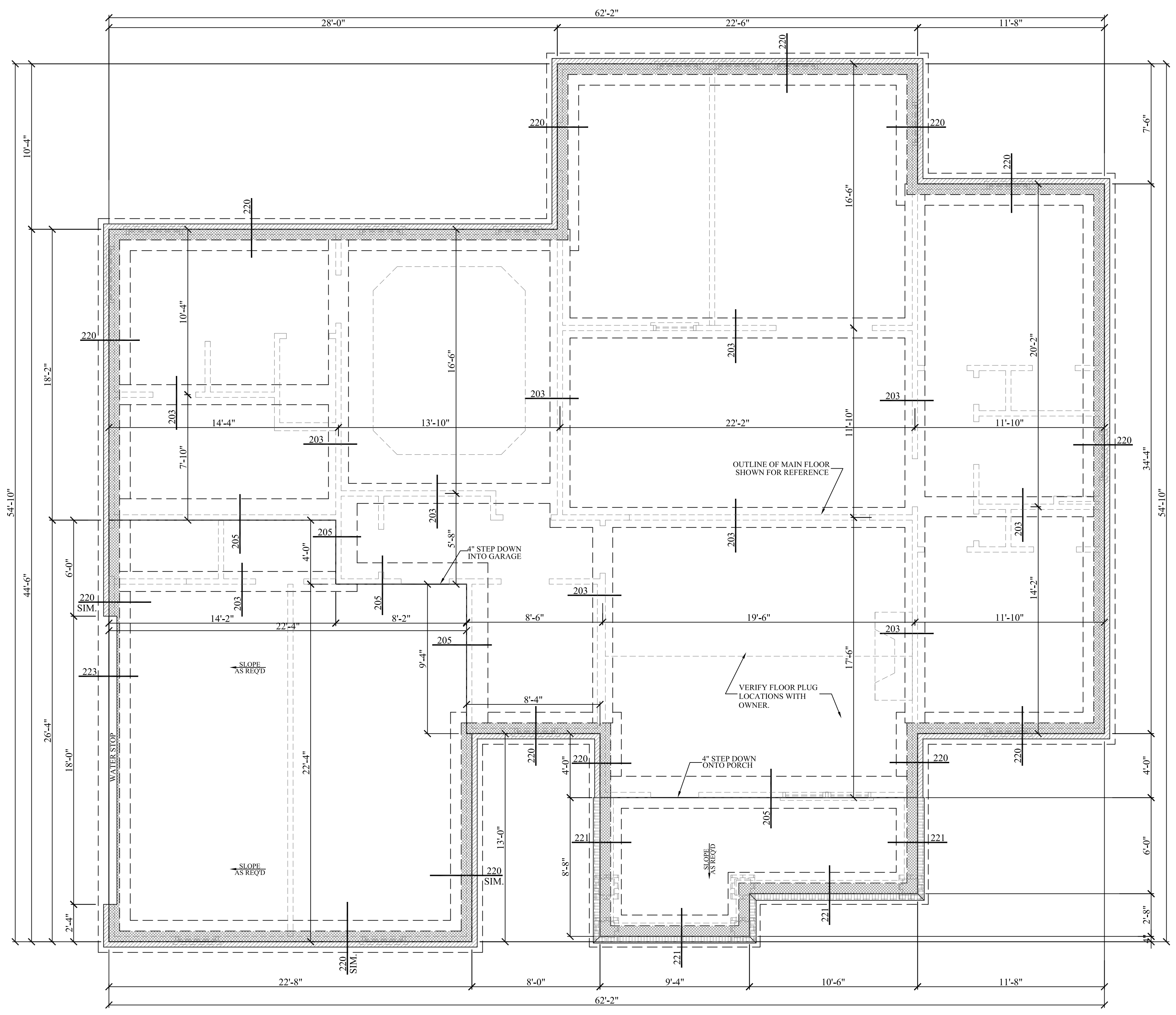
CODE DISCLAIMER:  
 1. THESE PLANS WERE DESIGNED TO MEET IRC 2018 AT THE TIME OF THEIR CREATION AND MORE SPECIFICALLY THE MINIMAL LOCAL CODES OF THE SOUTH MISSISSIPPI AREA. IT IS HIGHLY RECOMMENDED THAT THESE PLANS BE REVIEWED BY A LOCAL STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION.  
 2. BEAMS AND FLOOR JOISTS ARE NOT SIZED DUE TO THE MANY GEOGRAPHIC LOCATIONS THESE PLANS ARE SOLD. THESE ITEMS SHALL BE SIZED BY A LOCAL ENGINEER OR MANUFACTURER.  
 3. ALL CEILING & FLOOR JOISTS (IF CONVENTIONAL FRAMING) SHOULD BE SIZED USING THE LATEST VERSION OF THE IRC OR APPLICABLE CODES AT SITE TO MEET THE LOCAL REQUIREMENTS SUCH AS SNOW LOADS AND OTHER FACTORS. THE CEILING JOISTS SIZES LABELED (IF PRESENT) WERE SIZED USING THE 2018 IRC AT THE TIME OF THEIR CREATION. THEY MUST BE VERIFIED AND MODIFIED AS REQUIRED TO MEET THE LATEST EDITION OF THE (IRC) INTERNATIONAL RESIDENTIAL CODE.  
 4. ALL FOUNDATIONS AND FOOTING DETAILS SHALL BE REVIEWED AND APPROVED BY A LOCAL ENGINEER.  
 5. CONTRACTOR SHALL PROVIDE ALL HIGH WIND STRAPPING AND ANCHOR BOLTS AS REQUIRED BY THE LOCAL CODE REQUIREMENTS AND THE LATEST VERSION OF THE IRC.

Date: 06.06.13

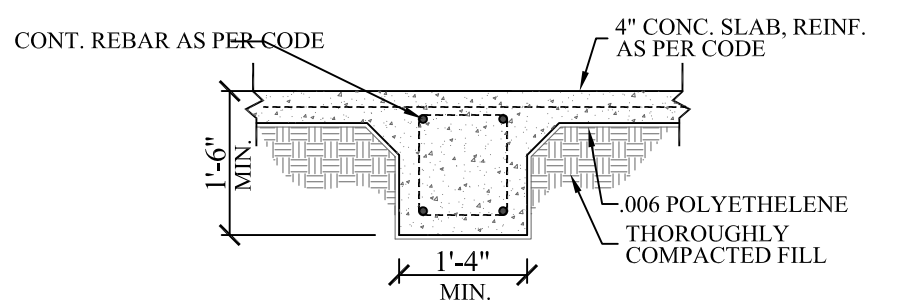
Drawn By:

SHEET NUMBER

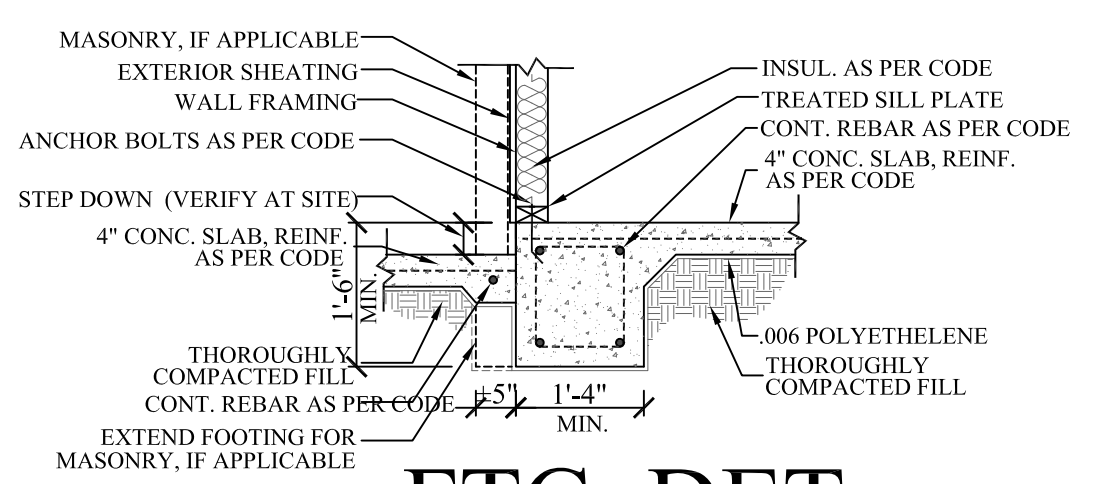
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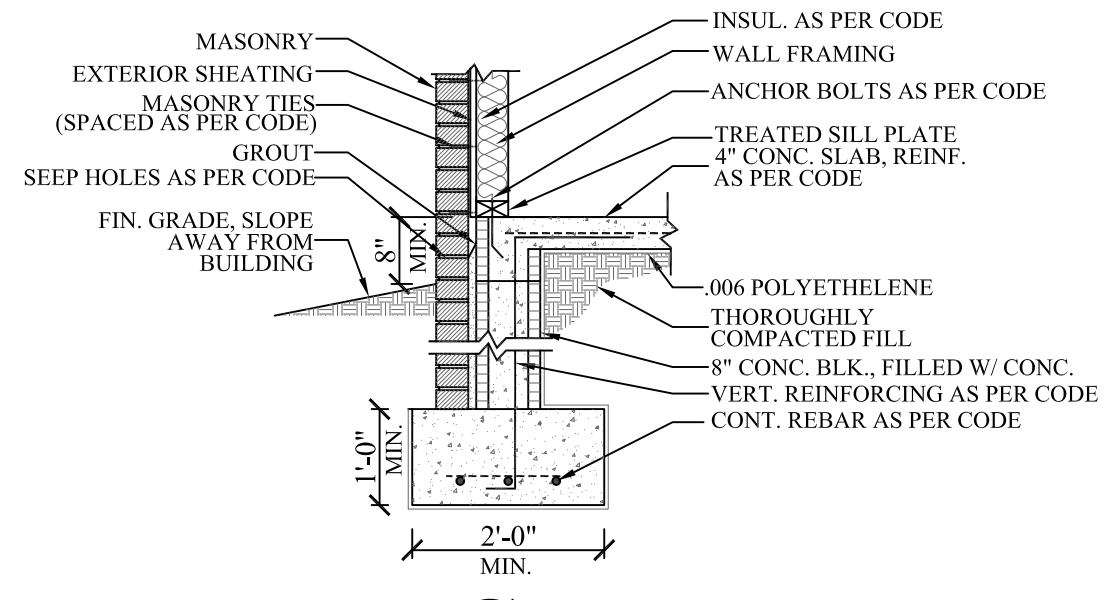
**201 FOUNDATION PLAN**  
 SCALE ----- 1/4" = 1'-0"



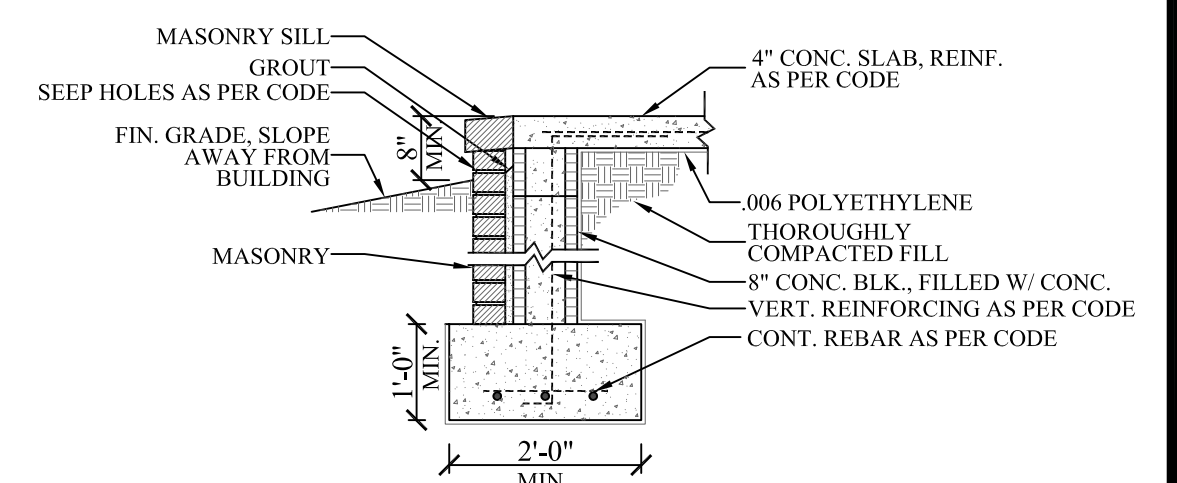
**203 FTG. DET.**



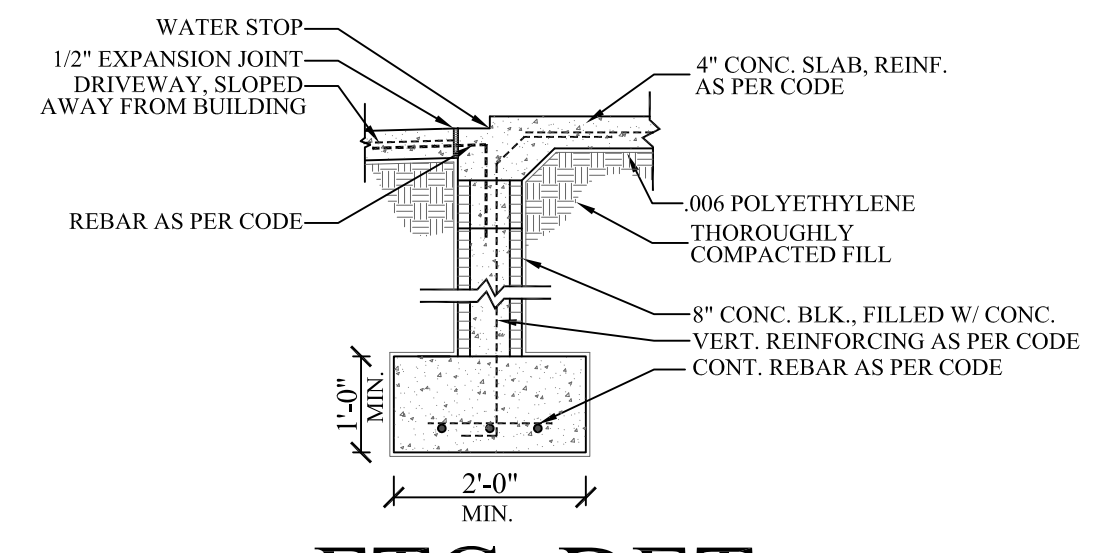
**205 FTG. DET.**



**220 FTG. DET.**

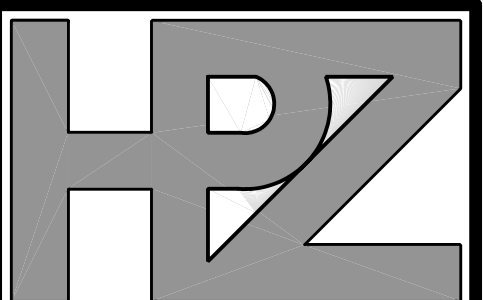


**221 FTG. DET.**



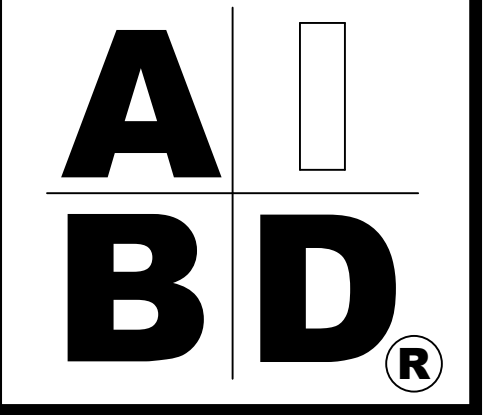
**223 FTG. DET.**

- SLAB FOUNDATION NOTES:**
1. ALL FOOTING SIZES AND LOCATIONS TO BE VERIFIED BY A LICENSED STRUCTURAL ENGINEER.
  2. CONTRACTOR TO ADAPT PLANS AS REQUIRED TO MEET ALL APPLICABLE CODES AT SITE.
  3. CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH FLOOR PLAN PRIOR TO CONSTRUCTION AND MAKE ANY NECESSARY ADJUSTMENTS.
  4. CONTRACTOR TO PROVIDE WATERPROOFING AS REQ'D TO MEET ALL APPLICABLE CODES AND TYPICAL BUILDING PRACTICES.
  5. CONCRETE SLABS TO BE 4" (3000 psi MIN.), REINFORCED AS PER CODE OR AS DETERMINED BY LICENSED ENGINEER.



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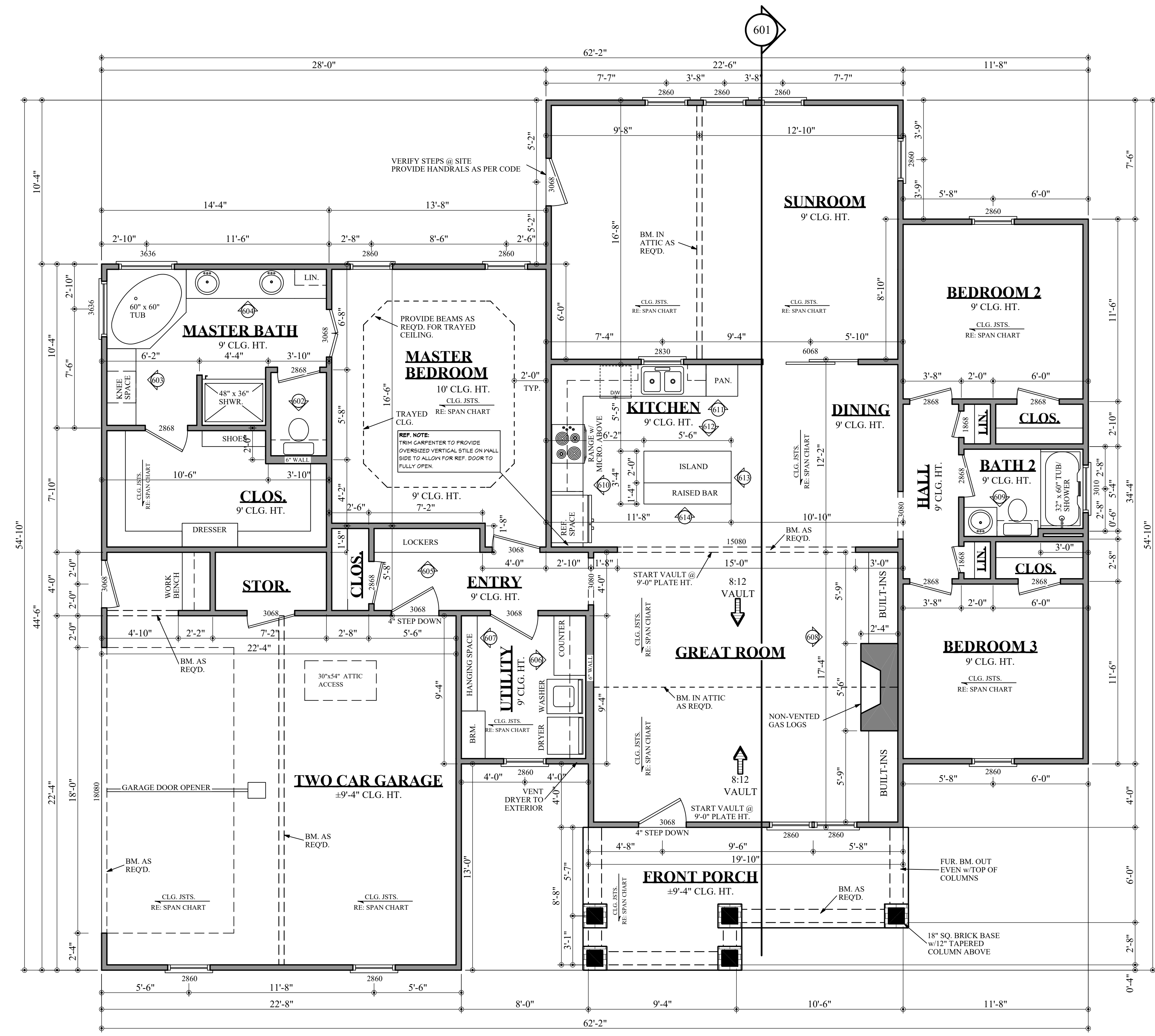
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Plan ID:  
**BB-1675-2R**

Date: 06.06.13  
Drawn By: C.T.B.

SHEET NUMBER  
**3**



- FLOOR PLAN NOTES: (2018 IRC)**
1. ALL DIMENSIONS & SITE CONDITIONS TO BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION.
  2. ALL EXTERIOR DIMENSIONS ARE TO THE OUTSIDE FACE OF THE STUD AND DO NOT INCLUDE EXTERIOR FINISHES SUCH AS SIDING, BRICK, STUCCO, ETC.
  3. ALL FINISHES (INTERIOR & EXTERIOR) TO BE VERIFIED WITH OWNER PRIOR TO CONSTRUCTION.
  4. VERIFY ALL DOOR AND WINDOW STYLES AND SIZES WITH OWNER PRIOR TO CONSTRUCTION. MANUFACTURER TO SUPPLY ALL ROUGH OPENING SIZES.
  5. CONTRACTOR TO VERIFY ALL CLEARANCES OF ALL DOORS, WINDOWS AND OTHER ITEMS THAT ARE CRITICAL, PRIOR TO CONSTRUCTION.
  6. CONTRACTOR TO ADAPT PLANS AS REQUIRED TO MEET ALL APPLICABLE CODES AT SITE.
  7. ALL BEAMS TO BE SIZED BY A LICENSED STRUCTURAL ENGINEER.
  8. PORCHES, BALCONIES OR RAISED FLOOR SURFACES LOCATED MORE THAN 30 INCHES ABOVE THE FLOOR OR GRADE BELOW AT ANY POINT WITHIN 36 INCHES HORIZONTALLY SHALL HAVE GUARDS NOT LESS THAN 36 INCHES IN HEIGHT. OPEN SIDES OF STAIRS WITH A TOTAL RISE OF MORE THAN 30 INCHES ABOVE THE FLOOR OR GRADE BELOW SHALL HAVE GUARDS NOT LESS THAN 34 INCHES IN HEIGHT MEASURED VERTICALLY FROM THE NOSING OF THE TREADS. INSECT SCREENING SHALL NOT BE CONSIDERED AS A GUARD. IRC 2018, R312.1.1 & R312.1.2
  9. M1305.1.2 APPLIANCES IN ATTICS. ATTICS CONTAINING APPLIANCES SHALL BE PROVIDED WITH AN OPENING AND A CLEAR AND UNOBSTRUCTED PASSAGEWAY LARGE ENOUGH TO ALLOW REMOVAL OF THE LARGEST APPLIANCE, BUT NOT LESS THAN 30 INCHES HIGH AND 22 INCHES WIDE AND NOT MORE THAN 20 FEET LONG MEASURED ALONG THE CENTERLINE OF THE PASSAGEWAY FROM THE OPENING TO THE APPLIANCE. THE PASSAGEWAY SHALL HAVE CONTINUOUS SOLID FLOORING IN ACCORDANCE WITH CHAPTER 5 NOT LESS THAN 24 INCHES WIDE. A LEVEL SERVICE SPACE AT LEAST 30 INCHES DEEP AND 30 INCHES WIDE SHALL BE PRESENT ALONG ALL SIDES OF THE APPLIANCE WHERE ACCESS IS REQUIRED. THE CLEAR ACCESS OPENING DIMENSIONS SHALL BE A MINIMUM OF 20 INCHES BY 30 INCHES, AND LARGE ENOUGH TO ALLOW REMOVAL OF THE LARGEST APPLIANCE. EXCEPTIONS: (A) THE PASSAGEWAY AND LEVEL SERVICE SPACE ARE NOT REQUIRED WHERE THE APPLIANCE CAN BE SERVICED AND REMOVED THROUGH THE REQUIRED OPENING. (B) WHERE THE PASSAGEWAY IS UNOBSTRUCTED AND NOT LESS THAN 6 FEET HIGH AND 22 INCHES WIDE FOR ITS ENTIRE LENGTH, THE PASSAGEWAY SHALL BE NOT MORE THAN 50 FEET LONG.
  10. APPLIANCE ACCESS FOR INSPECTION SERVICE, REPAIR AND REPLACEMENT. APPLIANCES SHALL BE ACCESSIBLE FOR INSPECTION, SERVICE, REPAIR AND REPLACEMENT WITHOUT REMOVING PERMANENT CONSTRUCTION, OTHER APPLIANCES, OR ANY OTHER PIPING OR DUCTS NOT CONNECTED TO THE APPLIANCE BEING INSPECTED, SERVICED, REPAIRED OR REPLACED. A LEVEL WORKING SPACE AT LEAST 30 INCHES DEEP AND 30 INCHES WIDE SHALL BE PROVIDED IN FRONT OF THE CONTROL SIDE TO SERVICE AN APPLIANCE. M1305.1.1
  11. EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL BE OPERATIONAL FROM THE INSIDE OF THE ROOM WITHOUT THE USE OF KEYS, TOOLS OR SPECIAL KNOWLEDGE. WINDOW OPENING CONTROL DEVICES COMPLYING WITH ASTM F 2090 SHALL BE PERMITTED FOR USE ON WINDOWS SERVING AS A REQUIRED EMERGENCY ESCAPE AND RESCUE OPENING. ALL SLEEPING ROOMS TO HAVE AN EXTERIOR ACCESS THROUGH A DOOR OR WINDOW WITH A MINIMUM OF 5.7 SQUARE FEET NET CLEAR OPENING AS PER IRC 2018 R310.2.1. EXCEPTION: GRADE FLOOR OR BELOW GRADE OPENINGS SHALL HAVE A MINIMUM NET CLEAR OPENING OF 5 SQUARE FEET. MAXIMUM SILL HEIGHT TO BE 44 INCHES. MINIMUM NET CLEAR OPENING HEIGHT TO BE 24 INCHES. MINIMUM NET CLEAR OPENING WIDTH TO BE 20 INCHES.
  12. ALL RETURN AIR GRILLS ARE TO BE LOCATED TO COMPLY WITH SECTION M1602 OF THE IRC 2018.
  13. ALL SQUARE FOOTAGE MEASUREMENTS ARE APPROXIMATE AND MAY DIFFER FROM ACTUAL CONSTRUCTED RESIDENCE OR BUILDING. FOOTAGES SHOWN ARE TO THE OUTSIDE OF THE STUDY WALL AND DO NOT INCLUDE THE EXTERIOR FINISH MATERIAL SUCH AS SIDING, BRICK, STONE ETC.
  14. FIRE SPRINKLER SYSTEM TO BE DESIGNED AND INSTALLED (IF REQUIRED BY LOCAL CODES) AS PER THE IRC 2018 AND BY A LICENSED PROFESSIONAL IN THE AREA OF CONSTRUCTION.
  15. ALL BATHROOM EXHAUST VENTS SHALL BE VENTED DIRECTLY TO THE EXTERIOR OF THE HOME AND NOT INTO THE ATTIC. IRC 2018, M1505.2

NOTE: CONTRACTOR TO LOCATE WATER HEATER AND HVAC UNITS AT SITE.

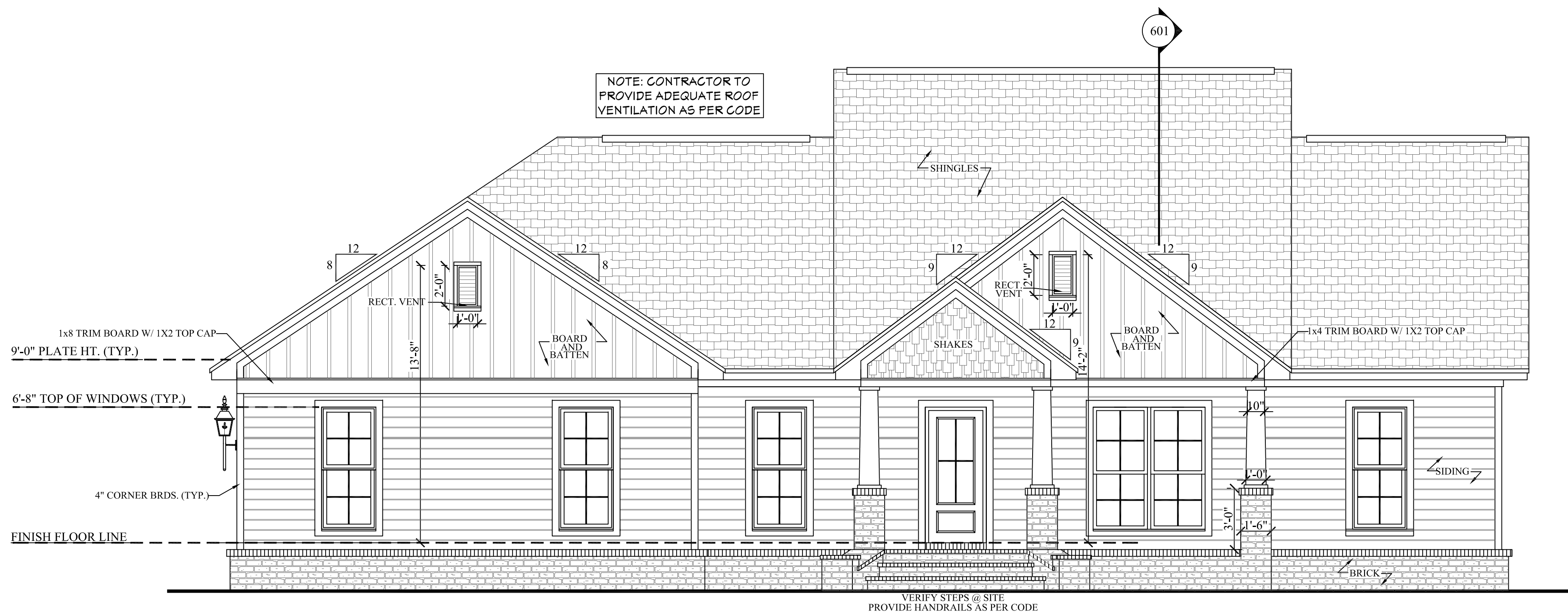
# BB-1675-2R FLOOR PLAN

SCALE: 1/4" = 1'-0"

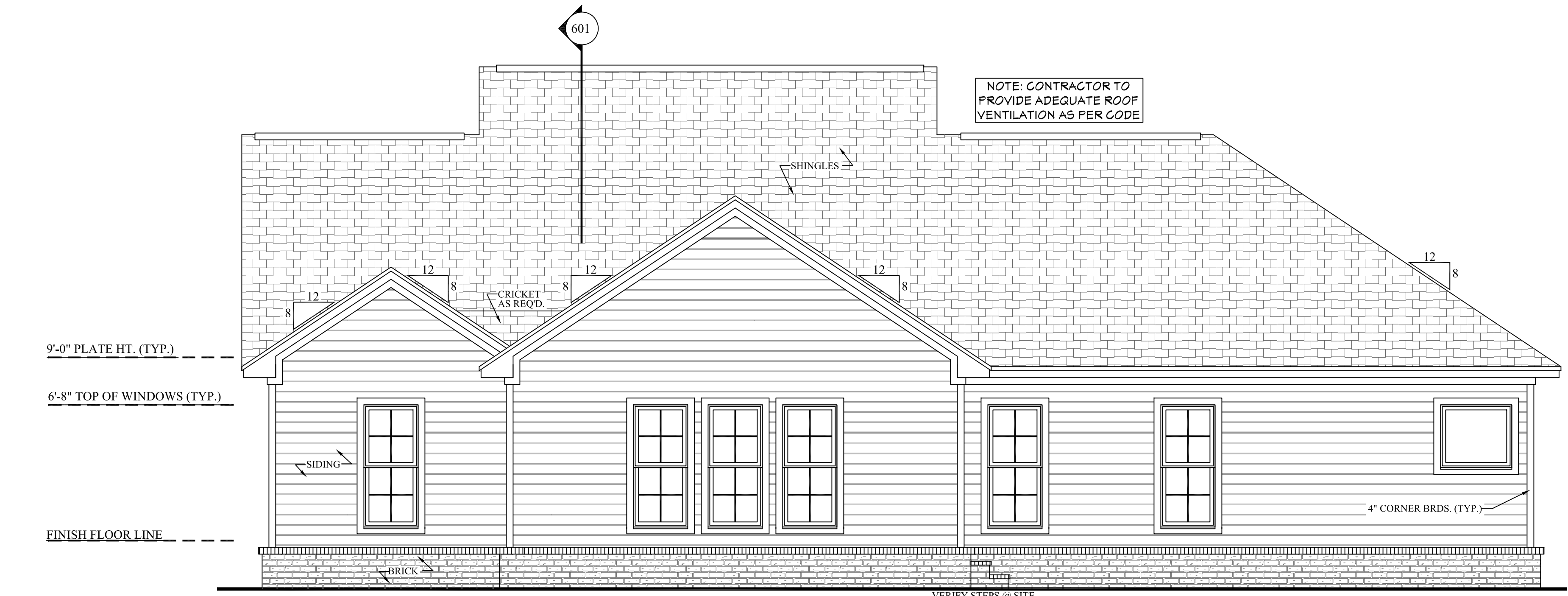
AREAS:	
2038	S.F. HEATED- TOTAL
144	S.F. UNHEATED - FRONT PORCH
530	S.F. UNHEATED - TWO CAR GARAGE
29	S.F. UNHEATED - STORAGE
703	S.F. UNHEATED TOTAL
2741	S.F. TOTAL UNDER ROOF

**EXTERIOR ELEVATION NOTES:**

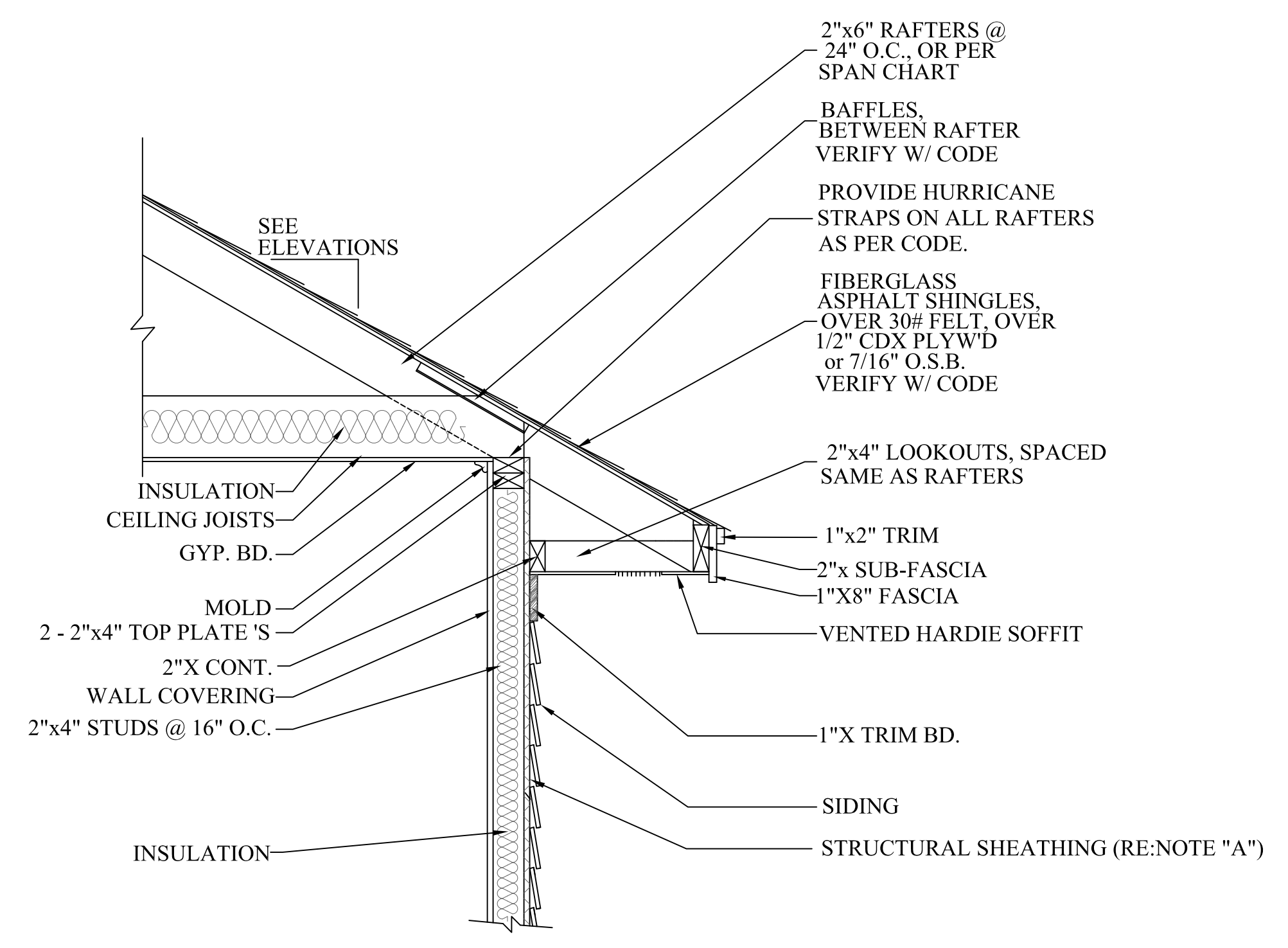
1. CONTRACTOR TO VERIFY ALL WINDOW AND DOOR STYLES AND SIZES WITH OWNER PRIOR TO CONSTRUCTION.
2. PROVIDE STEPS AND GUARD RAILS AS PER CODE BASED ON SITE CONDITIONS.
3. GROUND LINES SHOWN FOR REFERENCE ONLY AND VARY DEPENDING ON SITE CONDITIONS.
4. ALL FINISH MATERIALS TO BE VERIFIED WITH OWNER PRIOR TO CONSTRUCTION.
5. REFER TO TYPICAL WALL DETAIL FOR FRAMING METHODS AND OTHER MISC. INFORMATION.
6. CONTRACTOR TO PROVIDE ADEQUATE ROOF VENTILATION AS REQ'D BY CURRENT CODES.



**401 FRONT VIEW**  
 SCALE-----1/4" = 1'-0"

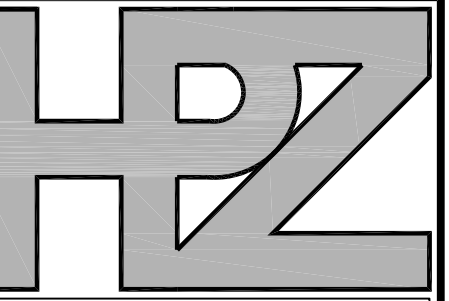


**402 REAR VIEW**  
 SCALE-----1/4" = 1'-0"



NOTE "A": PROVIDE A MINIMUM OF 7/16" STRUCTURAL WOOD PANEL ATTACHED w/ 8d COMMON OR 10d BOX NAILS AT 4" SPACING ON EDGE AND 12" IN FIELD.  
 NOTE "B": CORNICE DETAIL FOR REFERENCE ONLY. REFER TO BUILDER SPECS FOR ACTUAL MATERIALS.

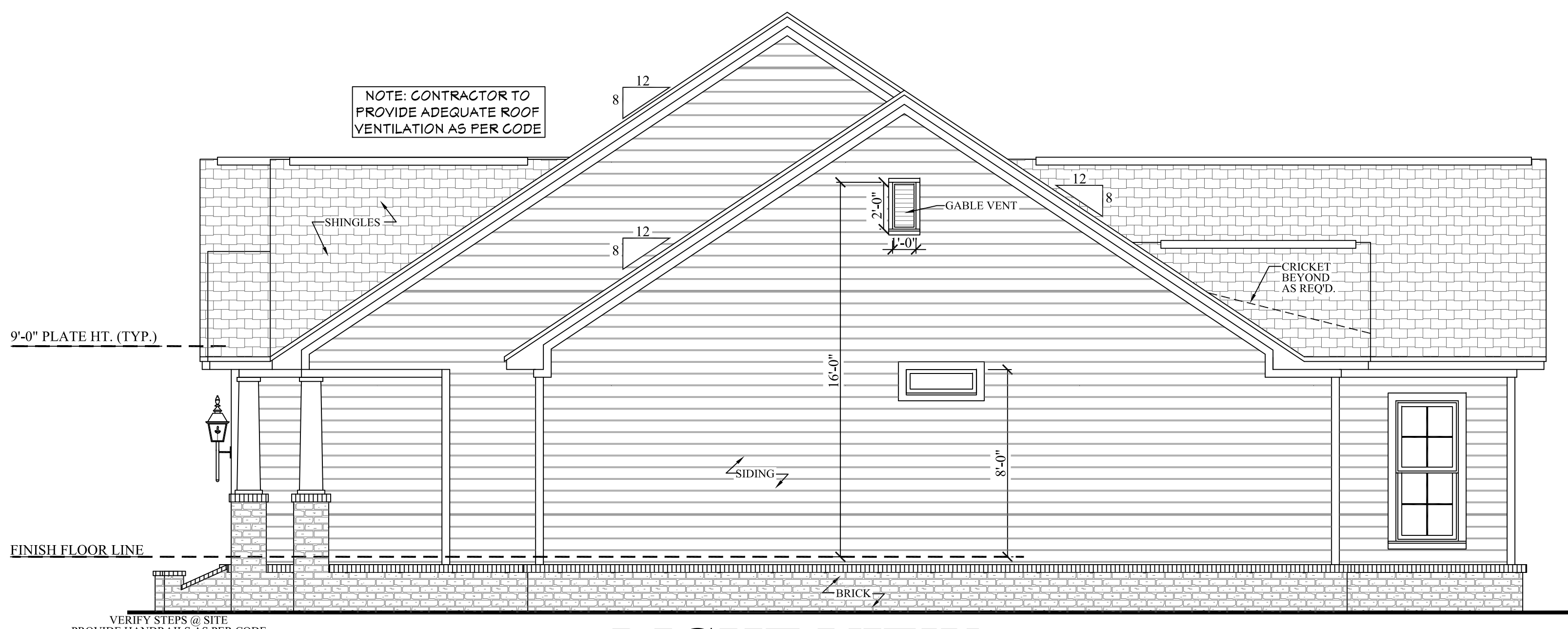
**403 TYP. CORNICE DETAIL**  
 SCALE-----3/4"=1'-0"



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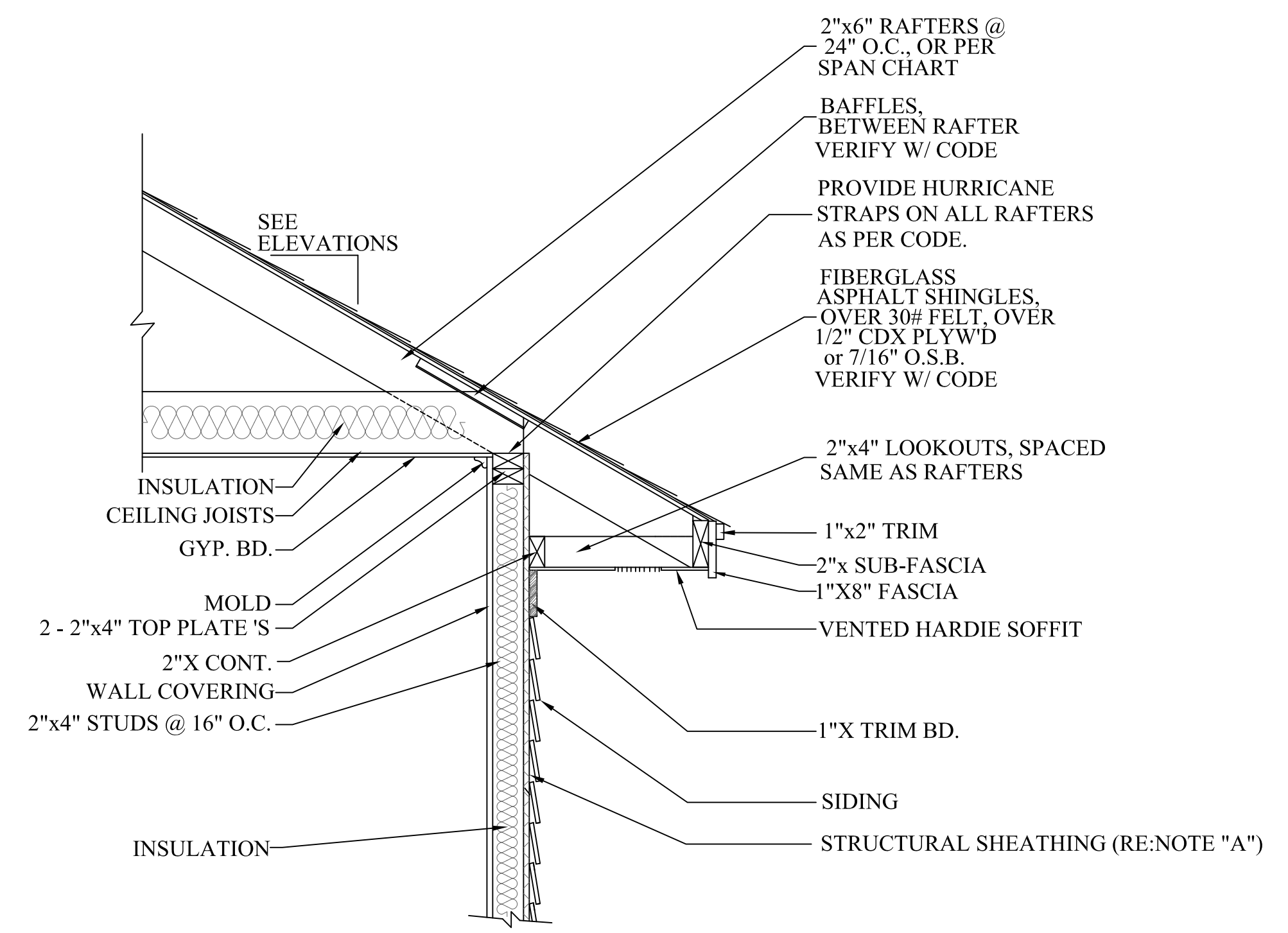
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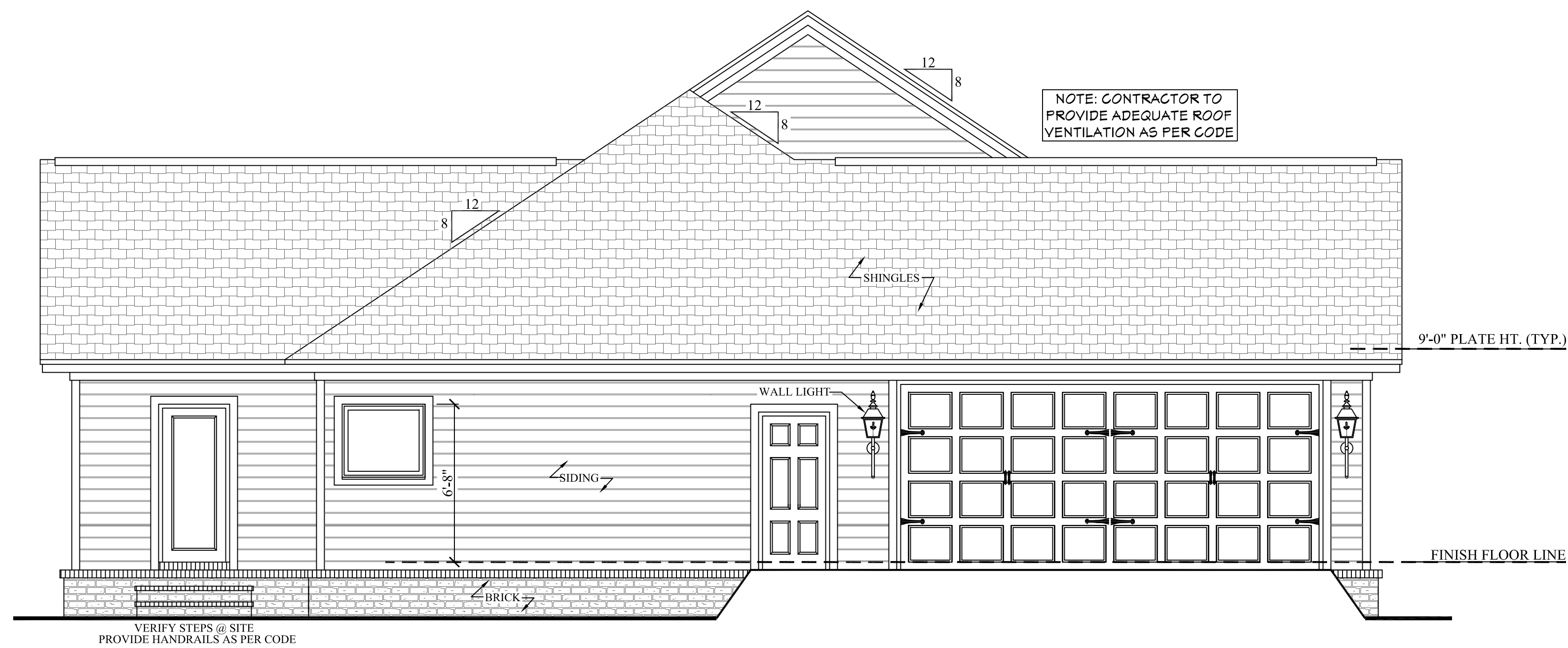


501 RIGHT VIEW  
SCALE-----1/4" = 1'-0"

**EXTERIOR ELEVATION NOTES:**  
1. CONTRACTOR TO VERIFY ALL WINDOW AND DOOR STYLES AND SIZES WITH OWNER PRIOR TO CONSTRUCTION.  
2. PROVIDE STEPS AND GUARD RAILS AS PER CODE BASED ON SITE CONDITIONS.  
3. GROUND LINES SHOWN FOR REFERENCE ONLY AND VARY DEPENDING ON SITE CONDITIONS.  
4. ALL FINISH MATERIALS TO BE VERIFIED WITH OWNER PRIOR TO CONSTRUCTION.  
5. REFER TO TYPICAL WALL DETAIL FOR FRAMING METHODS AND OTHER MISC. INFORMATION.  
6. CONTRACTOR TO PROVIDE ADEQUATE ROOF VENTILATION AS REQ'D BY CURRENT CODES.



503 TYP. CORNICE DETAIL  
SCALE-----3/4" = 1'-0"



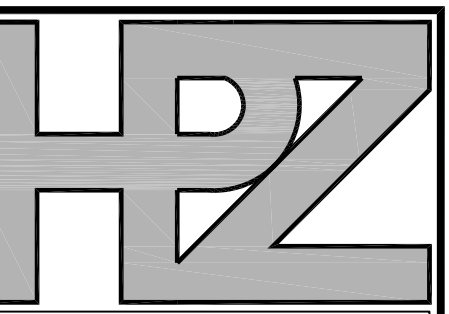
502 LEFT VIEW  
SCALE-----1/4" = 1'-0"

A  
BD

Plan ID:  
BB-1675-2R

Date: 06.06.13  
Drawn By: C.T.B.

SHEET NUMBER  
5



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ABD<sup>®</sup>

Plan ID: BB-1675-2R

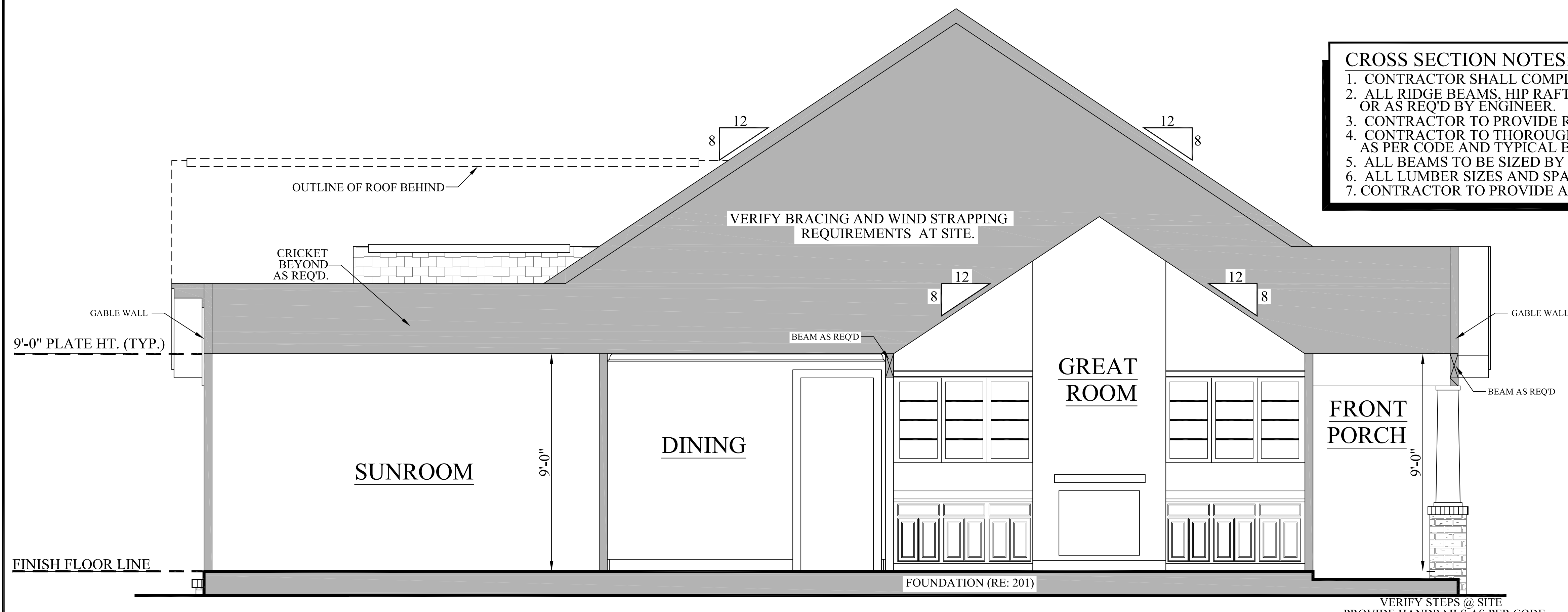
Date: 06.06.13

Drawn By: C.T.B.

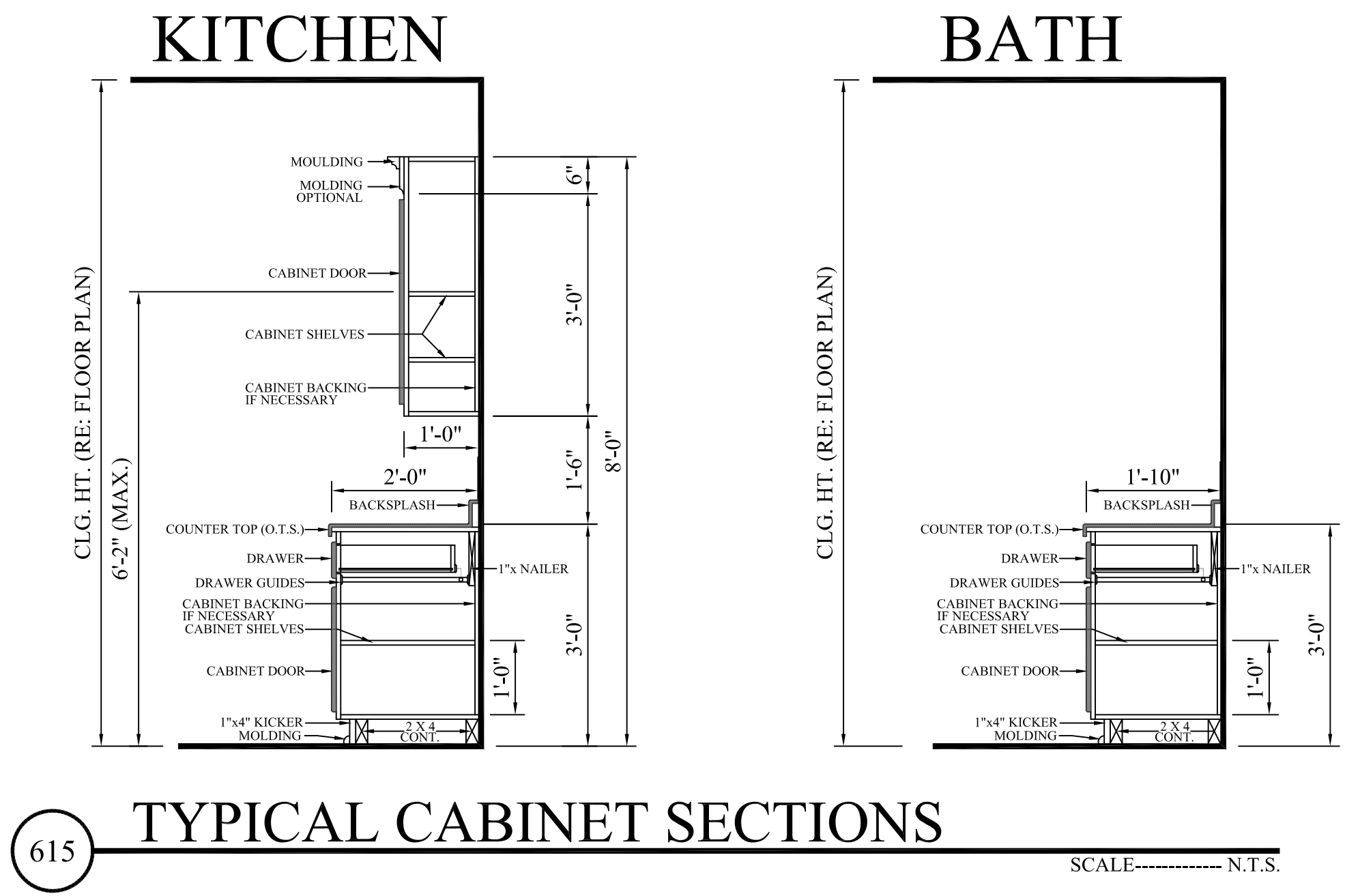
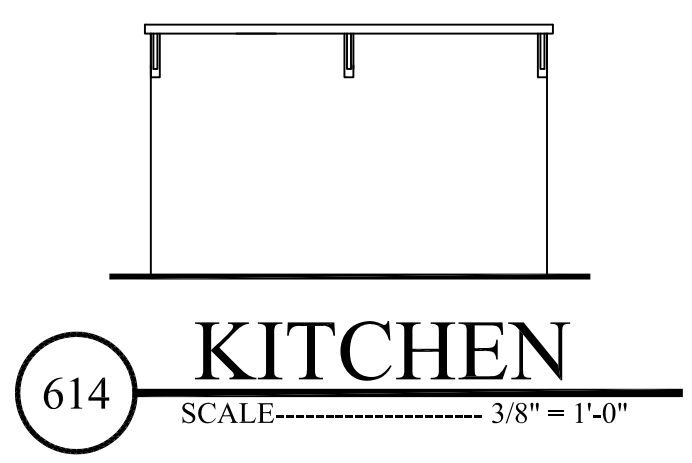
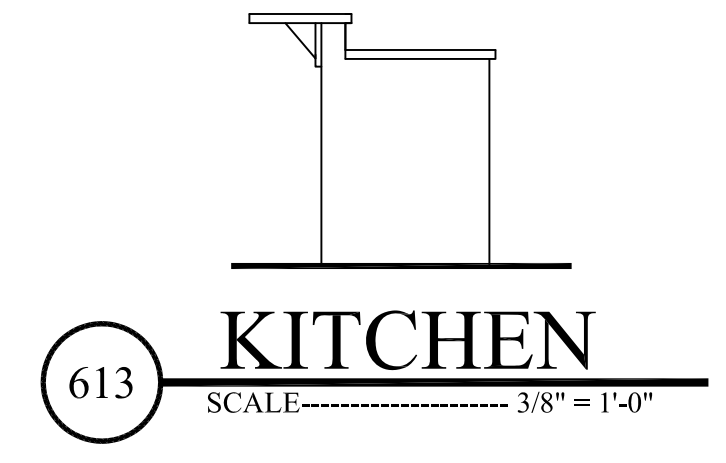
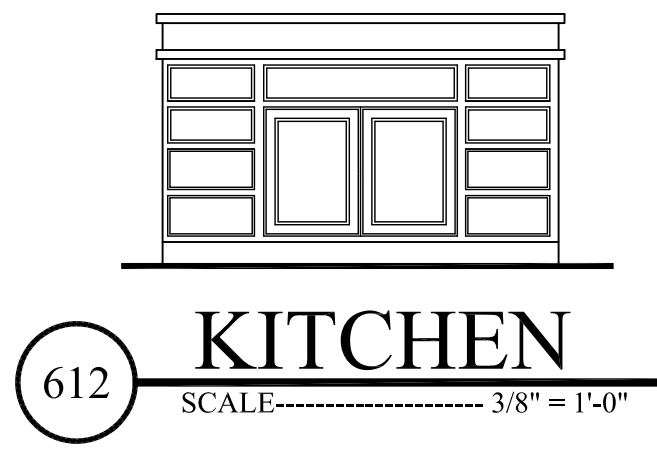
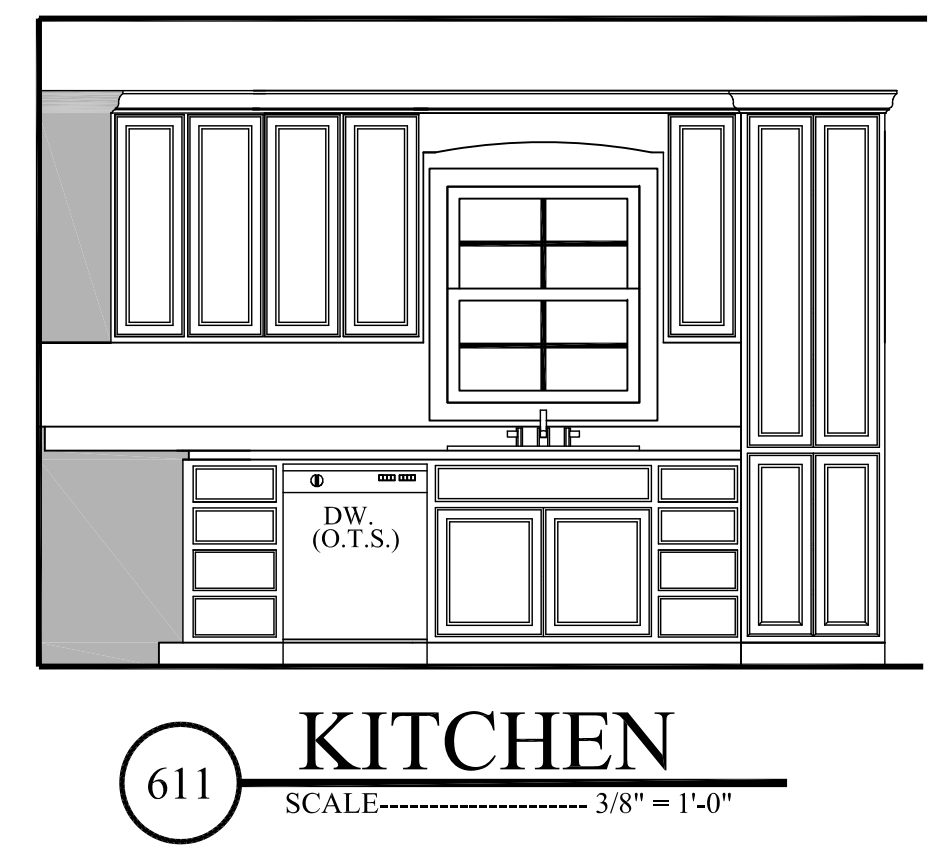
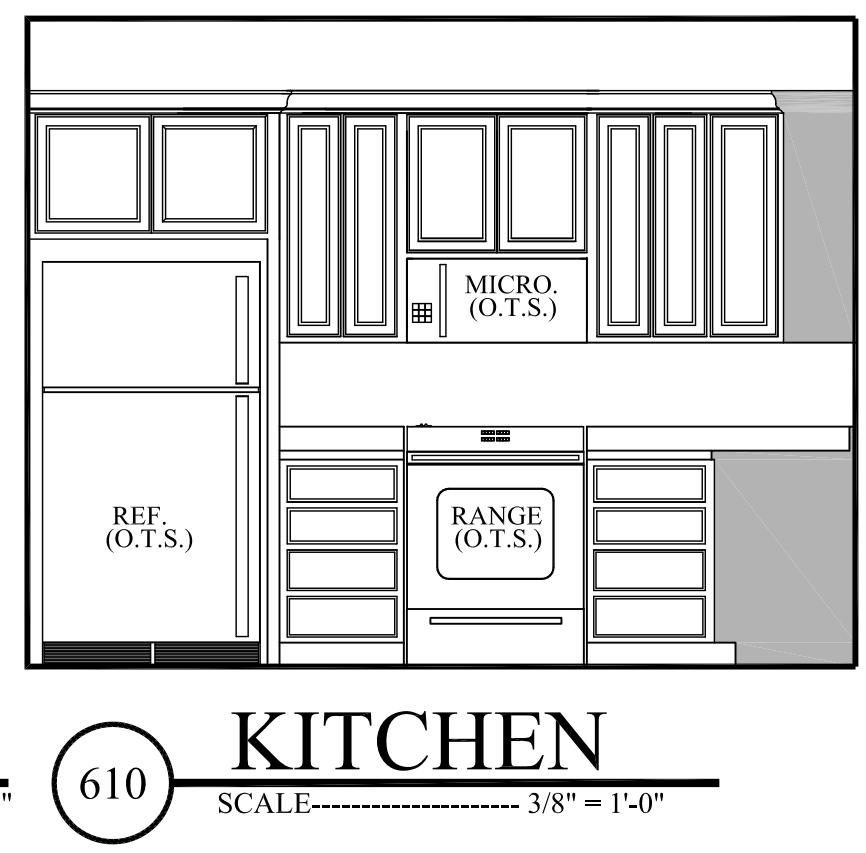
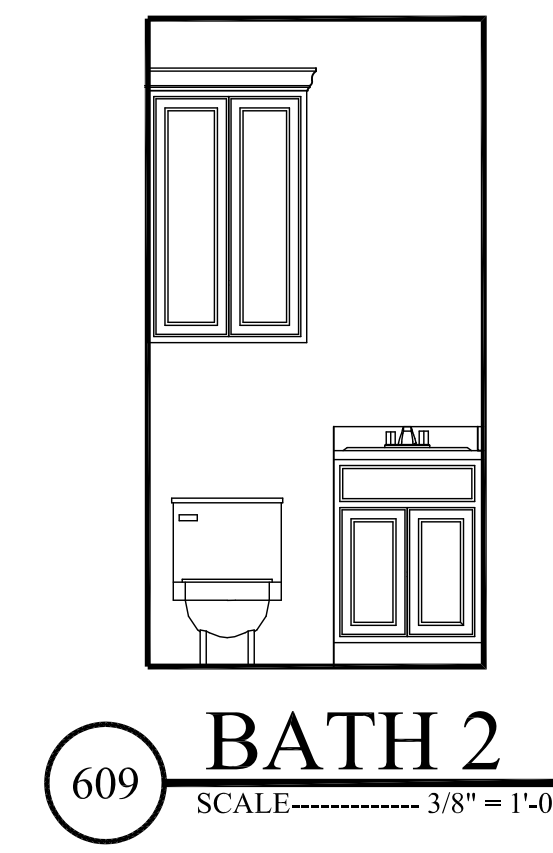
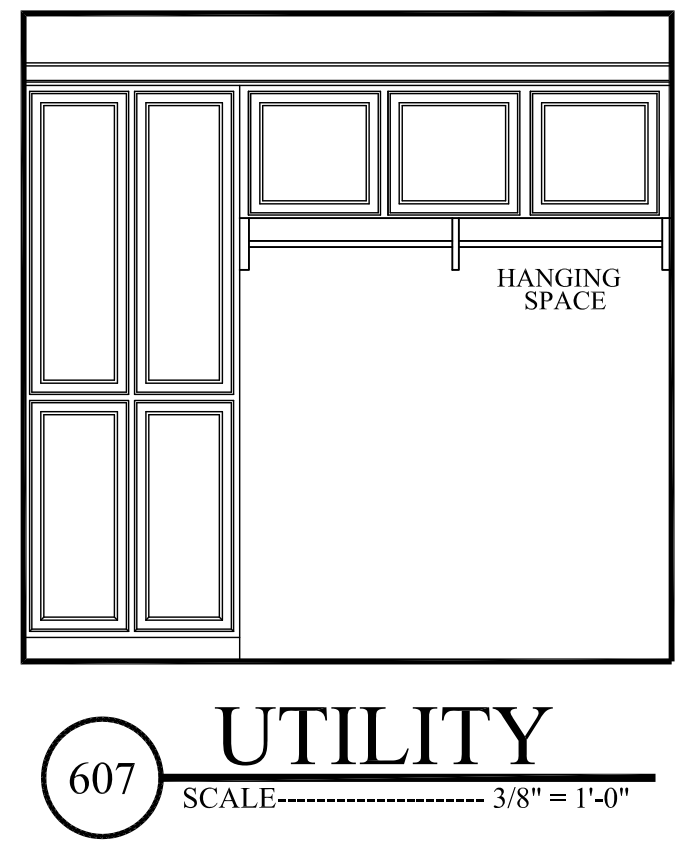
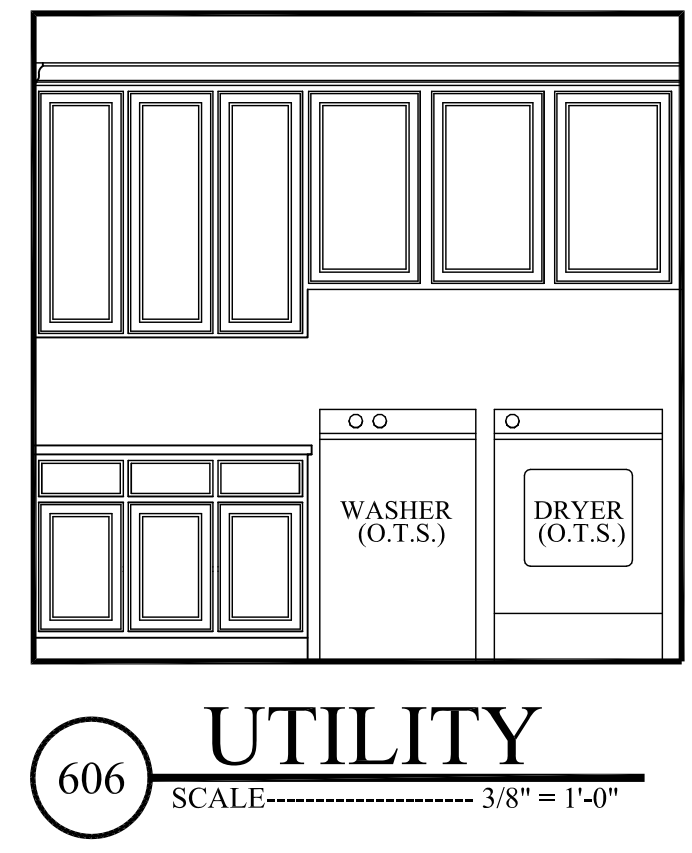
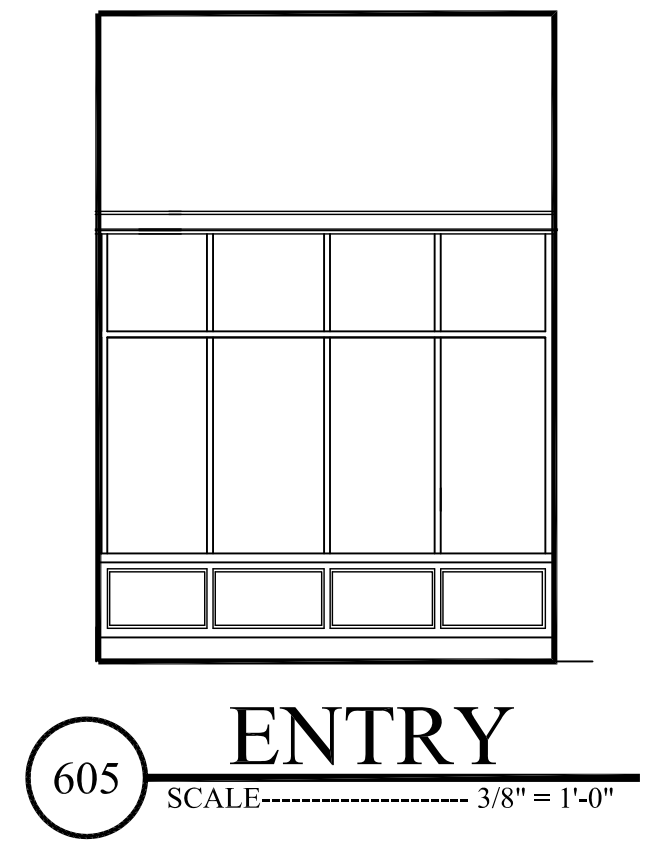
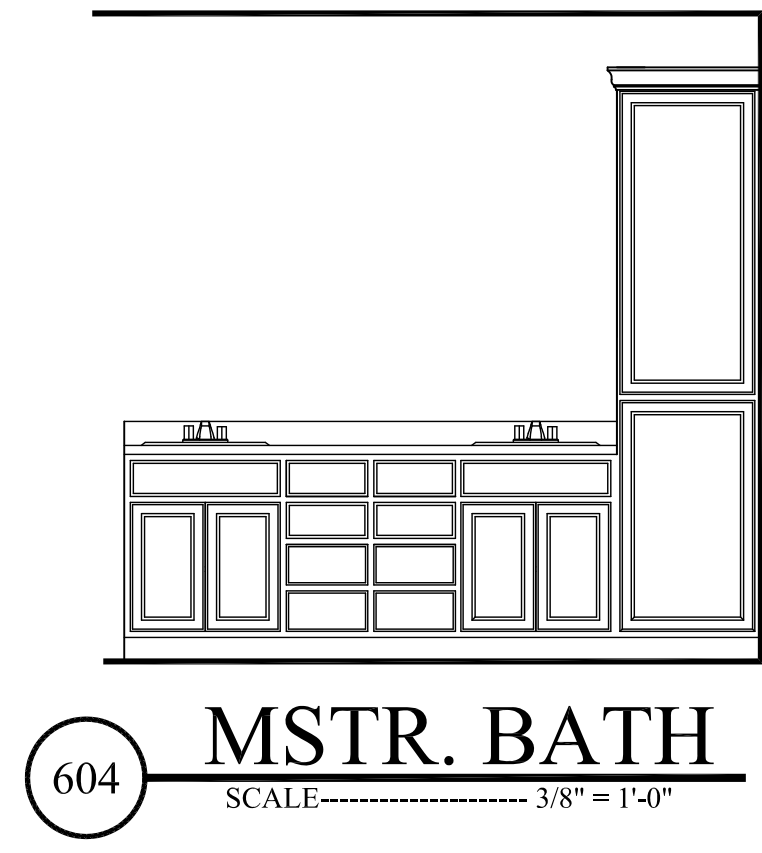
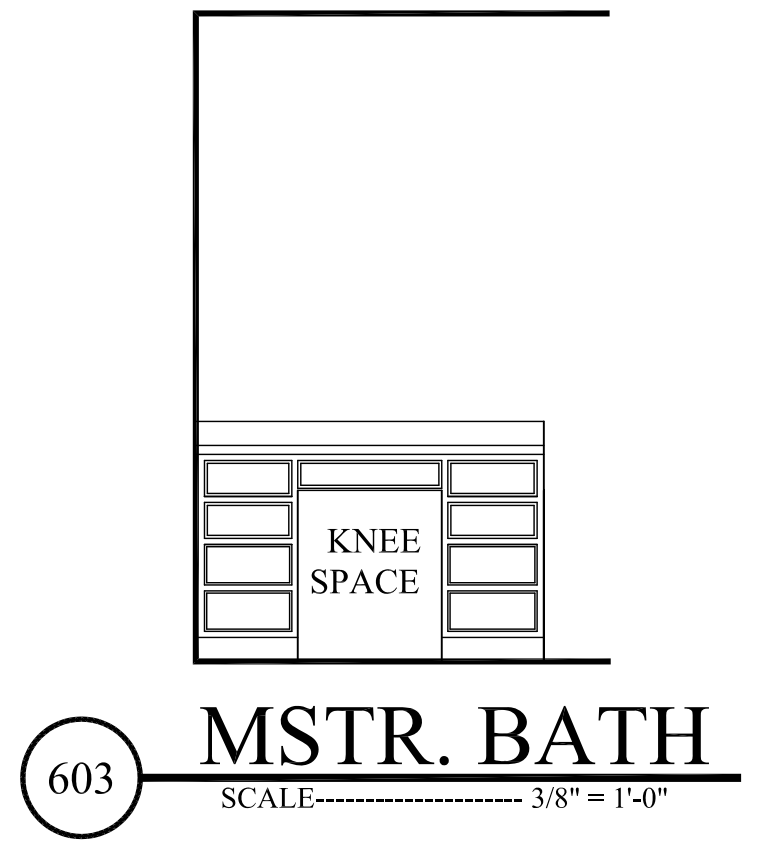
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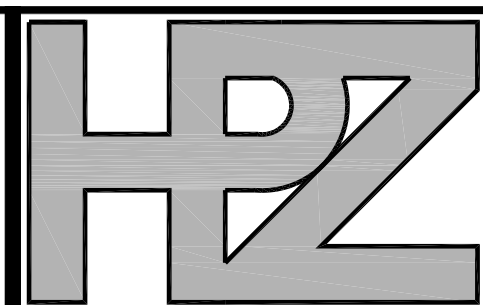
6

- CROSS SECTION NOTES:**
1. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES AT SITE.
  2. ALL RIDGE BEAMS, HIP RAFTERS, & VALLEY RAFTERS TO BE 2" x 10", OR AS REQ'D BY ENGINEER.
  3. CONTRACTOR TO PROVIDE RAFTER BRACING TO MEET APPLICABLE CODES.
  4. CONTRACTOR TO THOROUGHLY WATERPROOF ALL EXTERIOR INTERSECTIONS AS PER CODE AND TYPICAL BUILDING PRACTICES.
  5. ALL BEAMS TO BE SIZED BY A LICENSED STRUCTURAL ENGINEER.
  6. ALL LUMBER SIZES AND SPACING TO BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION.
  7. CONTRACTOR TO PROVIDE ADEQUATE ROOF VENTILATION AS REQ'D. BY CURRENT CODES.



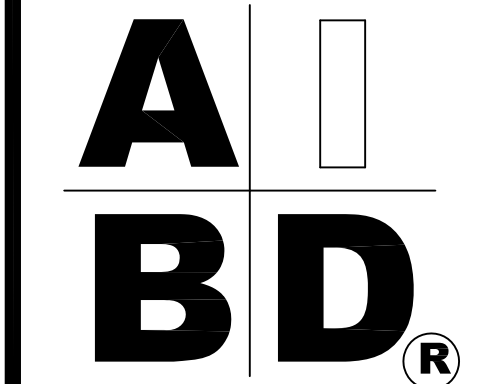
601 CROSS SECTION SCALE-----3/8"=1'-0"





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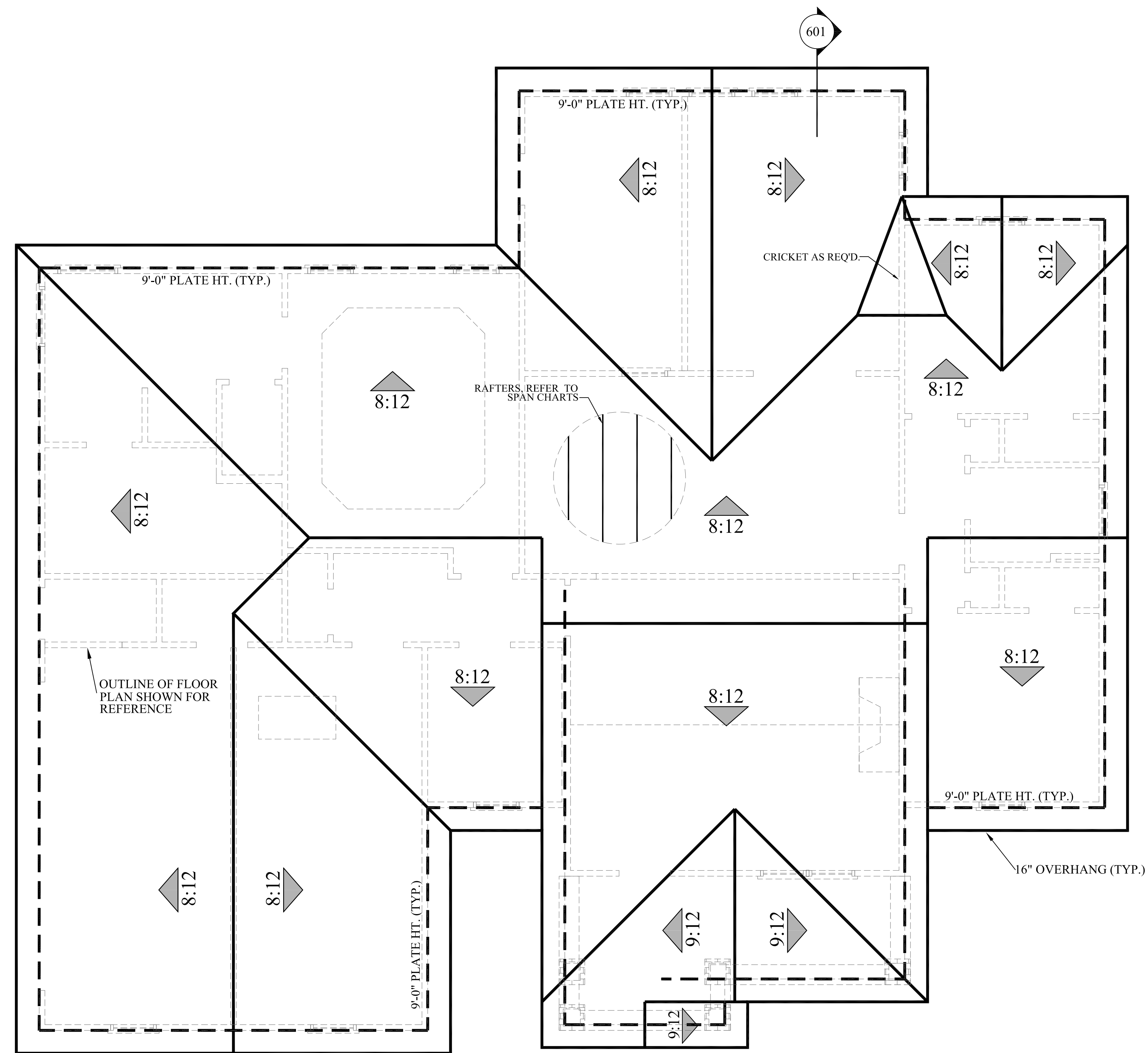
Plan ID:  
**BB-1675-2R**

Date:  
06.06.13

Drawn By:  
C.T.B.

SHEET NUMBER

**7**



**701** **ROOF PLAN**  
SCALE----- 1/4" = 1'-0"

- ROOF PLAN NOTES:**
1. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES AT SITE.
  2. ALL RIDGE BEAMS, HIP RAFTERS, & VALLEY RAFTERS TO BE 2" X 10", No.2 S.Y.P. OR AS REQ'D BY ENGINEER.
  3. ALL RAFTERS TO BE SIZED AS PER SPAN CHART.
  4. CONTRACTOR TO WATERPROOF ALL ROOF INTERSECTIONS AS PER CODE.
  5. CONTRACTOR TO VERIFY ALL ROOF PITCHES WITH EXTERIOR ELEVATIONS PRIOR TO CONSTRUCTION.
  6. CONTRACTOR TO PROVIDE ADEQUATE ROOF VENTILATION AS REQ'D BY CURRENT CODES.
  7. ALL ROOF PENETRATIONS TO BE ON SIDES OR REAR OF RESIDENCE. ALL PVC VENTS SHALL BE PAINTED BLACK OR TO MATCH ROOFING.

**RAFTER LENGTH CHART**

ROOF PITCH	FACTOR
3/12	1.05
4/12	1.07
5/12	1.10
6/12	1.14
7/12	1.17
8/12	1.20
9/12	1.25
10/12	1.30
11/12	1.35
12/12	1.40
14/12	1.54
16/12	1.70

MULTIPLY HORIZONTAL SPAN OF MEMBER BY FACTOR CHOOSE APPROPRIATE FACTOR BY ROOF PITCH.

**HIP/ VALLEY CONVERSION**

IF COMMON RAFTER ROOF PITCH IS...		THEN HIP/ VALLEY RAFTER ROOF PITCH BECOMES...	
RISE/ RUN	SLOPE	RISE/ RUN	SLOPE
1/12	5°	1/17	3°
2/12	10°	2/17	7°
3/12	14°	3/17	10°
4/12	18°	4/17	13°
5/12	23°	5/17	16°
6/12	27°	6/17	19°
7/12	30°	7/17	22°
8/12	34°	8/17	25°
9/12	37°	9/17	28°
10/12	40°	10/17	30°
11/12	42°	11/17	33°
12/12	45°	12/17	35°

CONVERSION CHART FOR SIMPLE ROOFS ONLY. CHART DOES NOT APPLY FOR DUAL PITCH ROOFS.

**RAFTER SPANS**  
RAFTER SPANS FOR SOUTHERN PINE SPECIES  
LIVE LOAD=30psf, LΔ=180 DEAD LOAD = 10psf

SIZE	SPACING (INCHES)	SPANS (MAXIMUM RAFTER SPANS BETWEEN BRACING) (FT. - IN.)
2 x 6	12.0	12-11
	16.0	11-2
	19.2	10-2
	24.0	9-2
2 x 8	12.0	16-4
	16.0	14-2
	19.2	12-11
	24.0	11-7
2 x 10	12.0	19-5
	16.0	16-10
	19.2	15-4
	24.0	13-9
2 x 12	12.0	22-10
	16.0	19-10
	19.2	18-1
	24.0	16-2

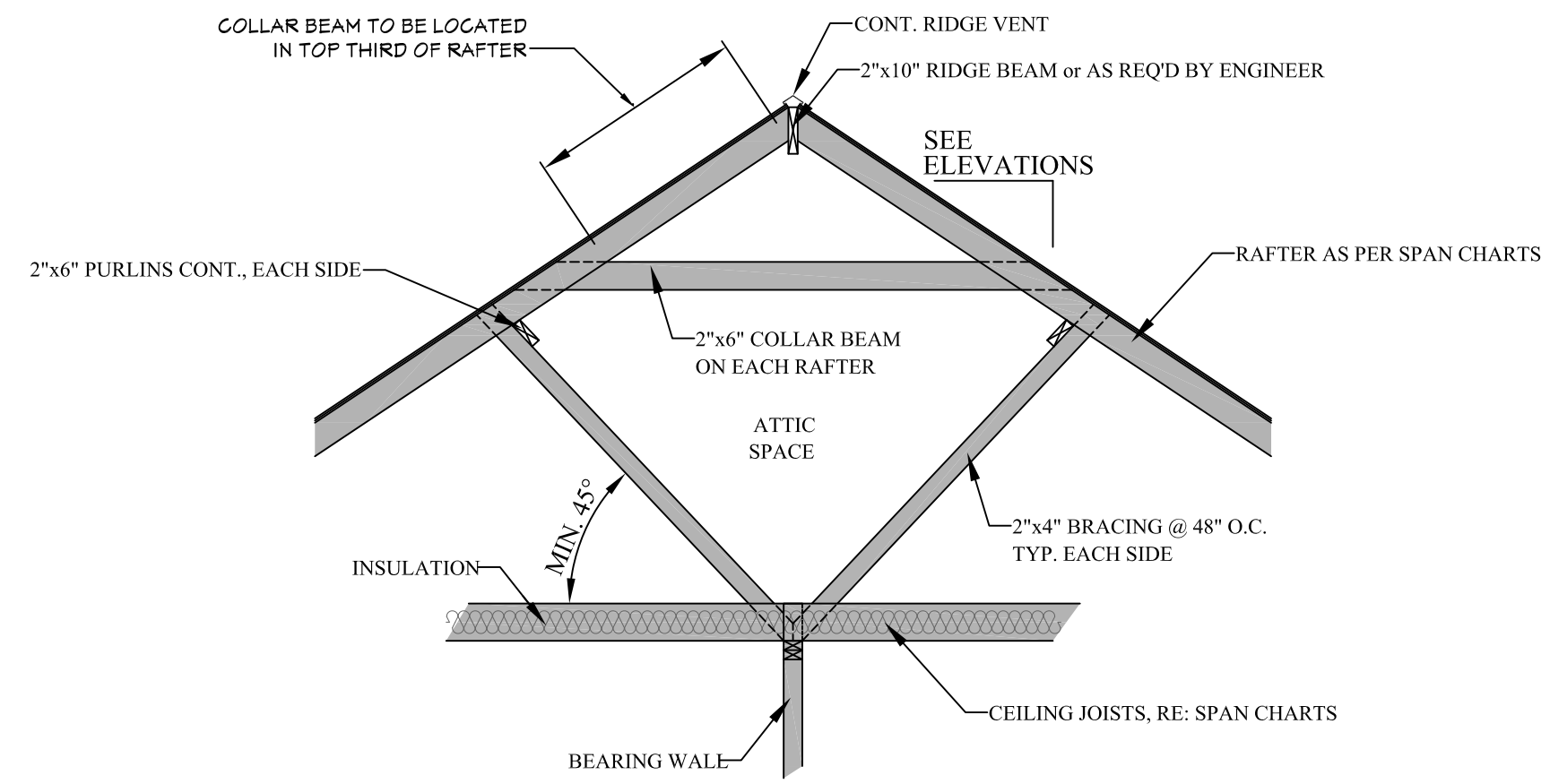
NOTES:  
The above tables are based on the IRC 2018 TABLE R802.4.1(3)

**CEILING JOIST SPANS**  
CEILING JOIST SPANS FOR SOUTHERN PINE SPECIES  
(UNINHABITABLE ATTICS WITH LIMITED STORAGE, LIVE LOAD = 20psf, LΔ=240)DEAD LOAD = 10psf

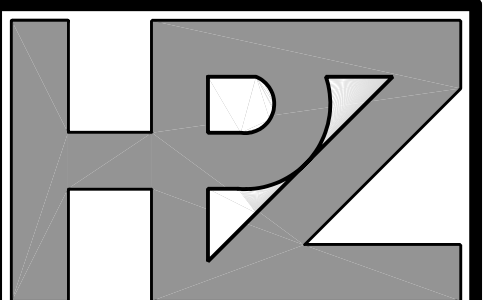
\*\*\*IF HABITABLE ATTIC SPACE IS DESIRED, REFER TO THE INTERNATIONAL RESIDENTIAL CODE, SPAN TABLES.\*\*\*

SIZE	SPACING (INCHES)	VISUALLY GRADED #2 SOUTHERN PINE (MAXIMUM CEILING JOIST SPANS) (FT. - IN.)
2 x 4	12.0	9-3
	16.0	8-0
	19.2	7-4
	24.0	6-7
2 x 6	12.0	13-11
	16.0	12-0
	19.2	11-0
	24.0	9-10
2 x 8	12.0	17-7
	16.0	15-3
	19.2	13-11
	24.0	12-6
2 x 10	12.0	20-11
	16.0	18-1
	19.2	16-6
	24.0	14-9

NOTES:  
The above tables are based on the IRC 2018 TABLE R802.5.1(2)

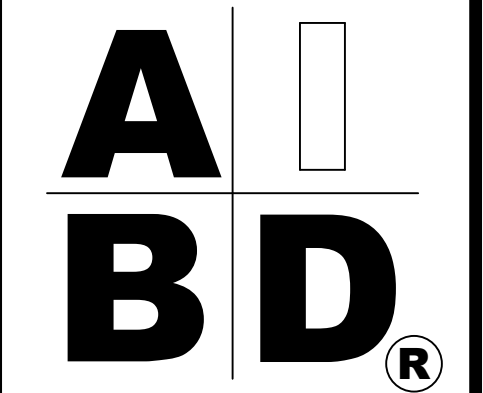


**702** **TYP. ROOF BRACING**  
SCALE----- N.T.S.



House Plan Zone, LLC

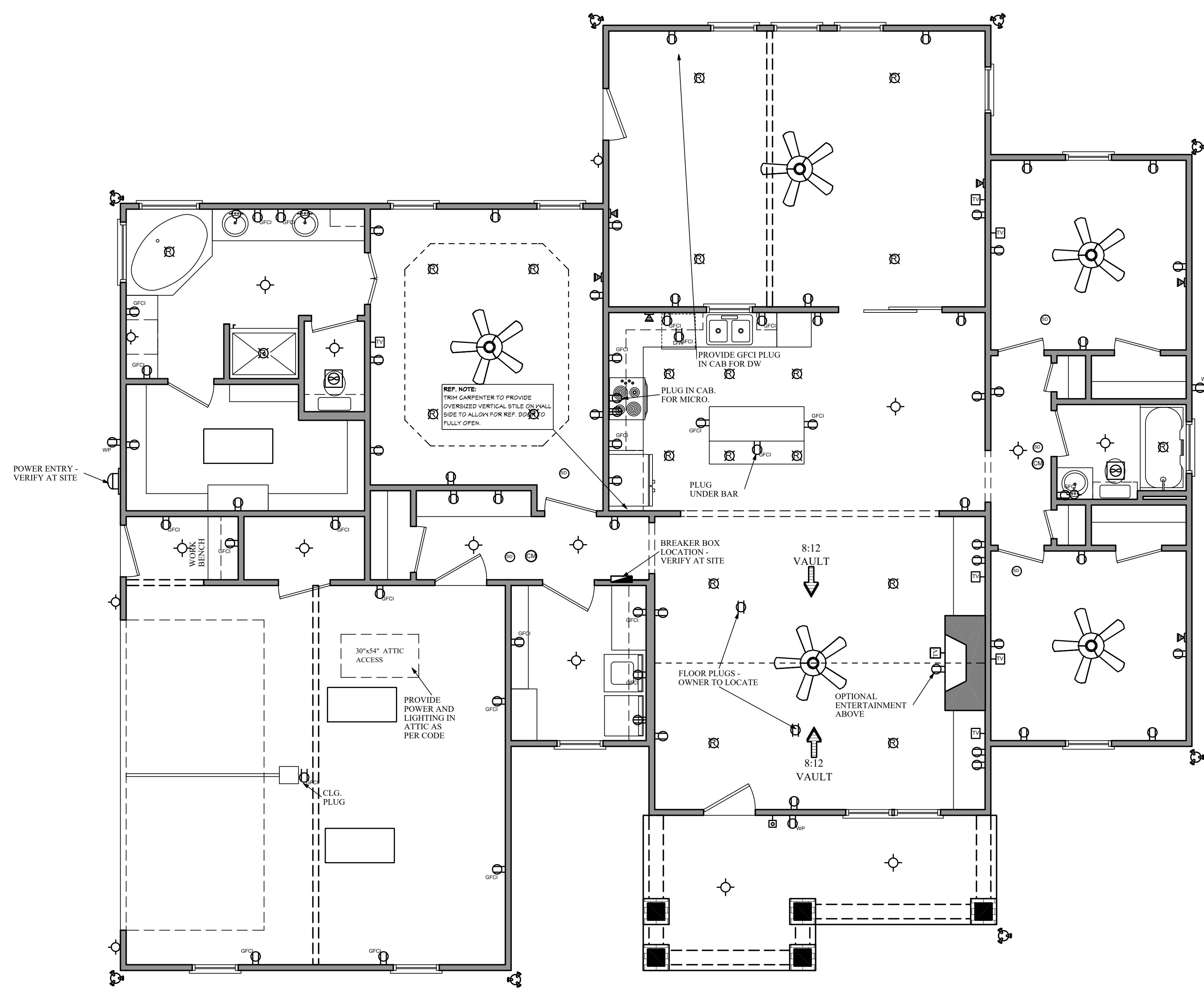
House Plan Zone, LLC  
Email: sales@hpszplans.com  
Fax: 1-800-574-1387



Plan ID:  
**BB-1675-2R**

Date:  
06.06.13  
Drawn By:  
C.T.B.

SHEET NUMBER  
**8**



# BB-1675-2R ELECTRICAL PLAN

SCALE: 1/4" = 1'-0"

NOTE: SWITCHES AND ELECTRICAL CONNECTIONS ARE NOT SHOWN. OWNER TO LOCATE THESE ITEMS DURING ELECTRICAL WALK-THROUGH WITH ELECTRICAL CONTRACTOR AT SITE.

ELECTRICAL SYMBOLS LEGEND	
SYMBOL	DESCRIPTION
	110 VOLT OUTLET
	GROUND FAULT PROTECTED OUTLET
	WEATHERPROOF OUTLET
	220 VOLT RECEPTACLE
	FLOOR OUTLET (OWNER TO LOCATE)
	CEILING HUNG FIXTURE
	OVERHANG MOUNTED FLOODLIGHTS
	WALL MOUNTED FLOODLIGHTS
	RECESSED CEILING FIXTURE
	FLUORESCENT LIGHT
	CARBON MONOXIDE DETECTOR
	SMOKE DETECTOR
	SWITCH
	THREE WAY SWITCH
	WALL MOUNTED LIGHT
	DIMMER SWITCH (OWNER TO LOCATE)
	DOOR ACTIVATED SWITCH
	WEATHERPROOF OUTLET
	CATS NETWORKING JACK (OWNER TO LOCATE)
	TELEPHONE OUTLET (OWNER TO LOCATE)
	TELEVISION OUTLET (OWNER TO LOCATE)
	DOORBELL BUTTON (CONTRACTOR TO LOCATE)
	THERMOSTAT (CONTRACTOR TO LOCATE)
	CEILING EXHAUST FAN, VENT TO EXTERIOR
	TV SPEAKER
	RADIO SPEAKER
	CEILING FAN ONLY, NO LIGHT KIT
	CEILING FAN WITH LIGHT KIT
	TRACK LIGHTING (OWNER TO LOCATE)
	WALL SCONCE (OWNER TO LOCATE)
	CHANDELIER 1 (O.T.S.)
	CHANDELIER 2 (O.T.S.)
	UNDER COUNTER LIGHTING
	EMERGENCY LIGHTING/EXIT SIGN

**ELECTRICAL NOTES: (2018 IRC)**

- ALL WORK SHALL COMPLY WITH ALL CODES APPLICABLE AT SITE.
- SMOKE ALARMS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS: EACH SLEEPING ROOM, OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS, ON EACH ADDITIONAL STORY OF THE DWELLING, INCLUDING BASEMENTS AND HABITABLE ATTICS. WHEN MORE THAN ONE SMOKE ALARM IS REQUIRED TO BE INSTALLED WITHIN A DWELLING THE ALARM DEVICES SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTUATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE UNIT. SMOKE ALARMS SHALL BE HARD WIRED WITH A BATTERY BACK UP.
- CARBON MONOXIDE ALARMS 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 WITH ATTACHED GARAGES.
- A 125 VOLT, SINGLE PHASE, 15-20 AMPERE RATED RECEPTACLE OUTLET SHALL BE INSTALLED AT AN ACCESSIBLE LOCATION FOR THE SERVICING OF HEATING, AIR CONDITIONING AND REFRIGERATION EQUIPMENT. THE RECEPTACLE SHALL BE LOCATED ON THE SAME LEVEL AND WITHIN 25 FEET OF THE EQUIPMENT. THE RECEPTACLE OUTLET SHALL NOT BE CONNECTED TO THE LOAD SIDE OF THE HVAC EQUIPMENT DISCONNECTING MEANS.





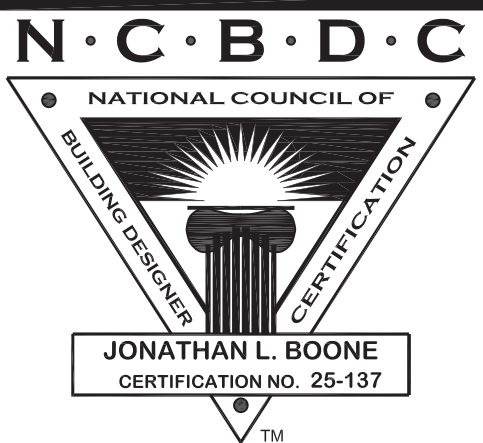
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Code Year: 2018  
International Residential Code  
Construction Specifications and Methodologies

IMPORTANT: THESE CONSTRUCTION SPECIFICATIONS ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THE USER IS ADVISED TO OBTAIN THE MOST CURRENT EDITION OF THE INTERNATIONAL RESIDENTIAL CODE (IRC) AND THE INTERNATIONAL BUILDING CODE (IBC) AND TO CHECK WITH THE LOCAL AGENCIES FOR THE APPLICABLE EDITIONS OF THE CODE AND TO BE AWARE THAT THE INFORMATION IS ALSO A GENERAL SUMMARY OF THE CODE AND IT IS RECOMMENDED THAT YOU BECOME FAMILIAR WITH THE FULL EXTENT OF THE ACTUAL CODE. THE NOTES AND SPECIFICATIONS MAY HAVE TO BE AMENDED DUE TO VARIATIONS IN LOCAL CODES AND GEOLOGICAL AND SOIL CONDITIONS. IT IS RECOMMENDED THAT YOU CONSULT A LOCAL ARCHITECT OR ENGINEER OF YOUR CHOICE AND CHECK WITH LOCAL BUILDING OFFICIALS PRIOR TO ANY ACTUAL CONSTRUCTION. SPECIAL ENGINEERING MAY REQUIRE THAT THESE SPECIFICATIONS BE CHANGED OR AMENDED TO CONFORM WITH SEISMIC, WIND, OR OTHER SPECIAL CONDITIONS AS REQUIRED BY LOCAL CONSTRUCTION METHODOLOGIES AND LOCAL CODES.

Date:  
02.10.20

SHEET NUMBER  
**N2**

**R311.8.3 HANDRAILS REQUIRED.**  
HANDRAILS SHALL BE PROVIDED ON NOT LESS THAN ONE SIDE OF RAMPS EXCEEDING A SLOPE OF ONE UNIT VERTICAL IN 12 UNITS HORIZONTAL (8.33-PERCENT SLOPE).

**R311.8.3.1 HEIGHT.**  
HANDRAIL HEIGHT, MEASURED ABOVE THE FINISHED SURFACE OF THE RAMP, SHALL BE NOT LESS THAN 34 INCHES (864 MM) AND NOT MORE THAN 38 INCHES (965 MM).

**R311.8.3.2 GRIP SIZE.**  
HANDRAILS ON RAMPS SHALL COMPLY WITH SECTION R311.7.8.5.

**R311.8.3.3 CONTINUITY.**  
HANDRAILS WHERE REQUIRED ON RAMPS SHALL BE CONTINUOUS FOR THE FULL LENGTH OF THE RAMP. 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 1/2 INCHES (38 MM) BETWEEN THE WALL AND THE HANDRAILS.

**SECTION R312 GUARDS AND WINDOW FALL PROTECTION**

**R312.1 GUARDS.**  
GUARDS SHALL BE PROVIDED IN ACCORDANCE WITH SECTIONS R312.1.1 THROUGH R312.1.4.

**R312.1.1 WHERE REQUIRED.**  
GUARDS SHALL BE PROVIDED FOR THOSE PORTIONS OF 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.

**R312.1.2 HEIGHT.**  
REQUIRED GUARDS AT OPEN-SIDED WALKING SURFACES, INCLUDING STAIRS, PORCHES, BALCONIES OR LANDINGS, SHALL BE NOT LESS THAN 36 INCHES (914 MM) IN HEIGHT AS MEASURED VERTICALLY ABOVE THE ADJACENT WALKING SURFACE OR THE LINE CONNECTING THE NOSINGS.

NOTE: SEE SECTION 312.1.2 FOR EXCEPTIONS

**R312.1.3 OPENING LIMITATIONS.**  
REQUIRED GUARDS SHALL NOT HAVE OPENINGS FROM THE WALKING SURFACE TO THE REQUIRED GUARD HEIGHT THAT ALLOW PASSAGE OF A SPHERE 4 INCHES (102 mm) IN DIAMETER.

NOTE: SEE SECTION 312.1.3 FOR EXCEPTIONS

**R312.1.4 EXTERIOR PLASTIC COMPOSITE GUARDS.**  
PLASTIC COMPOSITE EXTERIOR GUARDS SHALL COMPLY WITH THE REQUIREMENTS OF SECTION R317.4.

**R312.2 WINDOW FALL PROTECTION.**  
WINDOW FALL PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH SECTIONS R312.2.1 AND R312.2.2.

**R312.2.1 WINDOW SILLS.**  
IN DWELLING UNITS, WHERE THE TOP OF THE SILL OF AN OPERABLE WINDOW OPENING IS LOCATED LESS THAN 24 INCHES (610 MM) ABOVE THE FINISHED FLOOR AND GREATER THAN 72 INCHES (1829 MM) ABOVE THE FINISHED GRADE OR OTHER SURFACE BELOW ON THE EXTERIOR OF THE BUILDING, THE OPERABLE WINDOW SHALL COMPLY WITH ONE OF THE FOLLOWING:

1. OPERABLE WINDOW OPENINGS WILL NOT ALLOW A 4-INCH-DIAMETER (102 MM) SPHERE TO PASS THROUGH WHERE THE OPENINGS ARE IN THEIR LARGEST OPENED POSITION.
2. OPERABLE WINDOWS ARE PROVIDED WITH WINDOW FALL PREVENTION DEVICES THAT COMPLY WITH ASTM F2090.
3. OPERABLE WINDOWS THAT ARE PROVIDED WITH WINDOW 4. OPENING CONTROL DEVICES THAT COMPLY WITH SECTION R312.2.2.

**R312.2.2 WINDOW OPENING CONTROL DEVICES.**  
WINDOW OPENING CONTROL DEVICES SHALL COMPLY WITH ASTM F2090. THE WINDOW OPENING CONTROL DEVICE, AFTER OPERATION TO RELEASE THE CONTROL DEVICE ALLOWING THE WINDOW TO FULLY OPEN, SHALL NOT REDUCE THE NET CLEAR OPENING AREA OF THE WINDOW UNIT TO LESS THAN THE AREA REQUIRED BY SECTION R310.2.1.

**SECTION R313 AUTOMATIC FIRE SPRINKLER SYSTEMS**

**313.1 TOWNHOUSE AUTOMATIC FIRE SPRINKLER SYSTEMS.**  
AN AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEM SHALL BE INSTALLED IN TOWNHOUSES.

NOTE: SEE SECTION 313.1 FOR EXCEPTION

**R313.1.1 DESIGN AND INSTALLATION.**  
AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEMS FOR TOWNHOUSES SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH SECTION P2904 OR NFPA 13D.

**R313.2 ONE- AND TWO-FAMILY DWELLINGS AUTOMATIC FIRE SPRINKLER SYSTEMS.**  
AN AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEM SHALL BE INSTALLED IN ONE- AND TWO-FAMILY DWELLINGS.

NOTE: SEE SECTION 313.2 FOR EXCEPTION

**R313.2.1 DESIGN AND INSTALLATION.**  
AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEMS SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH SECTION P2904 OR NFPA 13D.

**SECTION R314 SMOKE ALARMS**

**R314.1 GENERAL.**  
SMOKE ALARMS SHALL COMPLY WITH NFPA 72 AND SECTION R314.

**R314.1.1 LISTINGS.**  
SMOKE ALARMS SHALL BE LISTED IN ACCORDANCE WITH UL 217, COMBINATION SMOKE AND CARBON MONOXIDE ALARMS SHALL BE LISTED IN ACCORDANCE WITH UL 217 AND UL 2034.

**R314.2 WHERE REQUIRED.**  
SMOKE ALARMS SHALL BE PROVIDED IN ACCORDANCE WITH THIS SECTION.

**R314.2.1 NEW CONSTRUCTION.**  
SMOKE ALARMS SHALL BE PROVIDED IN DWELLING UNITS.

**R314.2.2 ALTERATIONS, REPAIRS AND ADDITIONS.**  
WHERE ALTERATIONS, REPAIRS OR ADDITIONS REQUIRING A PERMIT OCCUR, THE INDIVIDUAL DWELLING UNIT SHALL BE EQUIPPED WITH SMOKE ALARMS LOCATED AS REQUIRED FOR NEW DWELLINGS.

SEE SECTION 314.2.2 FOR EXCEPTIONS

**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 ATTIC AND HABITABLE ATTICS AND 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.  
4. SMOKE ALARMS SHALL BE INSTALLED NOT LESS THAN 3 FEET (914 MM) HORIZONTALLY FROM THE DOOR OR OPENING OF A BATHROOM THAT CONTAINS A BATHTUB OR SHOWER UNLESS THIS WOULD PREVENT PLACEMENT OF A SMOKE ALARM REQUIRED BY THIS SECTION.

**R314.3.1 INSTALLATION NEAR COOKING APPLIANCES.**  
SMOKE ALARMS SHALL NOT BE INSTALLED IN THE FOLLOWING LOCATIONS UNLESS THIS WOULD PREVENT PLACEMENT OF A SMOKE ALARM IN A LOCATION REQUIRED BY SECTION R314.3.

1. IONIZATION SMOKE ALARMS SHALL NOT BE INSTALLED LESS THAN 20 FEET (6096 MM) HORIZONTALLY FROM A PERMANENTLY INSTALLED COOKING APPLIANCE.
2. IONIZATION SMOKE ALARMS WITH AN ALARM-SILENCING SWITCH SHALL NOT BE INSTALLED LESS THAN 10 FEET (3048 mm) HORIZONTALLY FROM A PERMANENTLY INSTALLED COOKING APPLIANCE.
3. PHOTOELECTRIC SMOKE ALARMS SHALL NOT BE INSTALLED LESS THAN 6 FEET (1829 MM) HORIZONTALLY FROM A PERMANENTLY INSTALLED COOKING APPLIANCE.

**R314.4 INTERCONNECTION.**  
WHERE MORE THAN ONE SMOKE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT IN ACCORDANCE WITH SECTION R314.3, 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 DWELLING UNIT. PHYSICAL INTERCONNECTION OF SMOKE ALARMS SHALL NOT BE REQUIRED WHERE LISTED WIRELESS ALARMS ARE INSTALLED AND ALL ALARMS SOUND UPON ACTIVATION OF ONE ALARM.

**R314.5 COMBINATION ALARMS.**  
COMBINATION SMOKE AND CARBON MONOXIDE ALARMS SHALL BE PERMITTED TO BE USED IN LIEU OF SMOKE ALARMS.

**R314.6 POWER SOURCE.**  
SMOKE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WHERE SUCH WIRING IS SERVED FROM A COMMERCIAL SOURCE AND, WHERE PRIMARY POWER IS INTERRUPTED, SHALL RECEIVE POWER FROM A BATTERY. WIRING SHALL BE PERMANENT AND WITHOUT A DISCONNECTING SWITCH OTHER THAN THOSE REQUIRED FOR OVERCURRENT PROTECTION.

NOTE: SEE SECTION 314.6 FOR EXCEPTIONS

**R314.7 FIRE ALARM SYSTEMS**  
FIRE ALARM SYSTEMS SHALL BE PERMITTED TO BE USED IN LIEU OF SMOKE ALARMS AND SHALL COMPLY WITH SECTIONS R314.7.1 THROUGH R314.7.4.

**SECTION R315 CARBON MONOXIDE ALARMS**

**R315.1 GENERAL.**  
CARBON MONOXIDE ALARMS SHALL COMPLY WITH SECTION R315.

**R315.1.1 LISTINGS.**  
CARBON MONOXIDE ALARMS SHALL BE LISTED IN ACCORDANCE WITH UL 2034. COMBINATION CARBON MONOXIDE AND SMOKE ALARMS SHALL BE LISTED IN ACCORDANCE WITH UL 2034 AND UL 217.

**R315.2 WHERE REQUIRED.**  
CARBON MONOXIDE ALARMS SHALL BE PROVIDED IN ACCORDANCE WITH SECTIONS R315.2.1 AND R315.2.2.

**R315.2.1 NEW CONSTRUCTION.**  
FOR NEW CONSTRUCTION, CARBON MONOXIDE ALARMS SHALL BE PROVIDED IN DWELLING UNITS WHERE EITHER OR BOTH OF THE FOLLOWING CONDITIONS EXIST.

1. THE DWELLING UNIT CONTAINS A FUEL-FIRED APPLIANCE.
2. THE DWELLING UNIT HAS AN ATTACHED GARAGE WITH AN OPENING THAT COMMUNICATES WITH THE DWELLING UNIT.

**R315.2.2 ALTERATIONS, REPAIRS AND ADDITIONS.**  
WHERE ALTERATIONS, REPAIRS OR ADDITIONS REQUIRING A PERMIT OCCUR, THE INDIVIDUAL DWELLING UNIT SHALL BE EQUIPPED WITH CARBON MONOXIDE ALARMS LOCATED AS REQUIRED FOR NEW DWELLINGS.

EXCEPTIONS:

NOTE: SEE SECTION 315.2.2 FOR EXCEPTIONS

**R315.3 LOCATION.**  
CARBON MONOXIDE ALARMS IN DWELLING UNITS SHALL BE INSTALLED OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS, WHERE A FUEL-BURNING APPLIANCE IS LOCATED WITHIN A BEDROOM OR ITS ATTACHED BATHROOM, A CARBON MONOXIDE ALARM SHALL BE INSTALLED WITHIN THE BEDROOM.

**R315.4 COMBINATION ALARMS.**  
COMBINATION CARBON MONOXIDE AND SMOKE ALARMS SHALL BE PERMITTED TO BE USED IN LIEU OF CARBON MONOXIDE ALARMS.

**R315.5 INTERCONNECTIVITY.**  
CARBON MONOXIDE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT IN ACCORDANCE WITH SECTION R315.3. 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 DWELLING UNIT. PHYSICAL INTERCONNECTION OF CARBON MONOXIDE ALARMS SHALL NOT BE REQUIRED WHERE LISTED WIRELESS ALARMS ARE INSTALLED AND ALL ALARMS SOUND UPON ACTIVATION OF ONE ALARM.

NOTE: SEE SECTION 315.5 FOR EXCEPTIONS

**R315.6 POWER SOURCE.**  
CARBON MONOXIDE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WHERE SUCH WIRING IS SERVED FROM A COMMERCIAL SOURCE AND, WHERE PRIMARY POWER IS INTERRUPTED, SHALL RECEIVE POWER FROM A BATTERY. WIRING SHALL BE PERMANENT AND WITHOUT A DISCONNECTING SWITCH OTHER THAN THOSE REQUIRED FOR OVER-CURRENT PROTECTION.

NOTE: SEE SECTION 315.5 FOR EXCEPTIONS

**R315.7 CARBON MONOXIDE DETECTION SYSTEMS.**  
CARBON MONOXIDE DETECTION SYSTEMS SHALL BE PERMITTED TO BE USED IN LIEU OF CARBON MONOXIDE ALARMS AND SHALL COMPLY WITH SECTIONS R315.6.1 THROUGH R315.6.4.

**SECTION R321 ELEVATORS AND PLATFORM LIFTS**

**R321.1 ELEVATORS.**  
WHERE PROVIDED, PASSENGER ELEVATORS, LIMITED-USE AND LIMITED-APPLICATION ELEVATORS OR PRIVATE RESIDENCE ELEVATORS SHALL COMPLY WITH ASME A17.1/CSA B44.

**SECTION R322 FLOOD-RESISTANT CONSTRUCTION**

**R322.1 GENERAL.**  
BUILDINGS AND STRUCTURES CONSTRUCTED IN WHOLE OR IN PART IN FLOOD HAZARD AREAS, INCLUDING A OR V ZONES AND COASTAL A ZONES, AS ESTABLISHED IN TABLE R301.2(1), AND SUBSTANTIAL IMPROVEMENT AND REPAIR OF SUBSTANTIAL DAMAGE OF BUILDINGS AND STRUCTURES IN FLOOD HAZARD AREAS, SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS CONTAINED IN THIS SECTION. BUILDINGS AND STRUCTURES THAT ARE LOCATED IN MORE THAN ONE FLOOD HAZARD AREA SHALL COMPLY WITH THE PROVISIONS APPLICABLE TO THE MOST RESTRICTIVE FLOOD HAZARD AREA. BUILDINGS AND STRUCTURES LOCATED IN WHOLE OR IN PART IN IDENTIFIED FLOODWAYS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ASCE 24.

**R322.1.2 STRUCTURAL SYSTEMS.**  
STRUCTURAL SYSTEMS OF BUILDINGS AND STRUCTURES SHALL BE DESIGNED, CONNECTED AND ANCHORED TO RESIST FLOTATION, COLLAPSE OR PERMANENT LATERAL MOVEMENT DUE TO STRUCTURAL LOADS AND STRESSES FROM FLOODING EQUAL TO THE DESIGN FLOOD ELEVATION.

**R322.1.3 FLOOD-RESISTANT CONSTRUCTION.**  
BUILDINGS AND STRUCTURES ERECTED IN AREAS PRONE TO FLOODING SHALL BE CONSTRUCTED BY METHODS AND PRACTICES THAT MINIMIZE FLOOD DAMAGE.

**R322.1.4 ESTABLISHING THE DESIGN FLOOD ELEVATION.**  
THE DESIGN FLOOD ELEVATION SHALL BE USED TO DEFINE FLOOD HAZARD AREAS. AT A MINIMUM, THE DESIGN FLOOD ELEVATION SHALL BE THE HIGHER OF THE FOLLOWING:

1. THE BASE FLOOD ELEVATION AT THE DEPTH OF PEAK ELEVATION OF FLOODING, INCLUDING WAVE HEIGHT, THAT HAS A 1 PERCENT (100-YEAR FLOOD) OR GREATER CHANCE OF BEING EXCEEDED OR EXCEEDED IN AN OPEN YEAR.
2. THE ELEVATION OF THE DESIGN FLOOD ASSOCIATED WITH THE AREA DESIGNATED ON A FLOOD HAZARD MAP ADOPTED BY THE COMMUNITY, OR OTHERWISE LEGALLY DESIGNATED. FOR DETERMINING DESIGN FLOOD ELEVATIONS AND IMPACTS REFER TO SECTIONS R322.1.4.1 AND R322.1.4.2

**R322.1.5 LOWEST FLOOR.**  
THE LOWEST FLOOR SHALL BE THE LOWEST FLOOR OF THE LOWEST ENCLOSED AREA, INCLUDING BASEMENT, AND EXCLUDING ANY UNFINISHED FLOOD-RESISTANT ENCLOSURE THAT IS USEABLE SOLELY FOR VEHICLE PARKING, BUILDING ACCESS OR LIMITED STORAGE PROVIDED THAT SUCH ENCLOSURE IS NOT BUILT TO SUPPORT THE BUILDING OR STRUCTURE IN VIOLATION OF THIS SECTION.

**R322.1.6 PROTECTION OF MECHANICAL, PLUMBING AND ELECTRICAL SYSTEMS.**  
ELECTRICAL SYSTEMS, EQUIPMENT AND COMPONENTS; HEATING, VENTILATING, AIR CONDITIONING, PLUMBING APPLIANCES AND PLUMBING FIXTURES; DUCT SYSTEMS; AND OTHER SERVICE EQUIPMENT SHALL BE LOCATED AT OR ABOVE THE ELEVATION REQUIRED IN SECTION R322.2 OR R322.3. IF REPLACED AS PART OF A SUBSTANTIAL IMPROVEMENT, ELECTRICAL SYSTEMS, EQUIPMENT AND COMPONENTS; HEATING, VENTILATING, AIR CONDITIONING AND PLUMBING APPLIANCES AND PLUMBING FIXTURES; DUCT SYSTEMS; AND OTHER SERVICE EQUIPMENT SHALL MEET THE REQUIREMENTS OF THIS SECTION. SYSTEMS, FIXTURES, AND EQUIPMENT AND COMPONENTS SHALL NOT BE MOUNTED ON OR PENETRATE THROUGH WALLS INTENDED TO BREAK AWAY UNDER FLOOD LOADS.

NOTE: SEE SECTION 322.1.6 FOR EXCEPTION

**R322.1.7 PROTECTION OF WATER SUPPLY AND SANITARY SEWAGE SYSTEMS.**  
NEW AND REPLACEMENT WATER SUPPLY SYSTEMS SHALL BE DESIGNED TO MINIMIZE OR ELIMINATE INFILTRATION OF FLOOD WATERS INTO THE SYSTEMS IN ACCORDANCE WITH THE PLUMBING PROVISIONS OF THIS CODE. NEW AND REPLACEMENT SANITARY SEWAGE SYSTEMS SHALL BE DESIGNED TO MINIMIZE OR ELIMINATE INFILTRATION OF FLOODWATERS INTO SYSTEMS AND DISCHARGES FROM SYSTEMS INTO FLOODWATERS IN ACCORDANCE WITH THE PLUMBING PROVISIONS OF THIS CODE AND CHAPTER 3 OF THE INTERNATIONAL PRIVATE SEWAGE DISPOSAL CODE.

**R322.2.2 ENCLOSED AREA BELOW DESIGN FLOOD ELEVATION.**  
ENCLOSED AREAS, INCLUDING CRAWL SPACES, THAT ARE BELOW THE DESIGN FLOOD ELEVATION SHALL:  
1. BE USED SOLELY FOR PARKING OF VEHICLES, BUILDING ACCESS OR STORAGE.  
2. BE PROVIDED WITH FLOOD OPENINGS THAT MEET THE FOLLOWING CRITERIA AND ARE INSTALLED IN ACCORDANCE WITH SECTION R322.2.2.1 SECTIONS 2.1 THROUGH 2.3, AS WELL AS, SECTIONS:

- R322.2.2.1 FOR INSTALLATION OF OPENINGS.
- R322.2.3 FOUNDATION DESIGN AND CONSTRUCTION.
- R322.2.4 TANKS.

REFER TO SECTION R322.3 FOR COASTAL HIGH-HAZARD AREAS (INCLUDING V ZONES) AND COASTAL A ZONES, WHERE DESIGNATED), INCLUDING:

- R322.3.1 LOCATION AND SITE PREPARATION
- R322.3.2 ELEVATION REQUIREMENTS
- R322.3.3 FOUNDATIONS
- R322.3.4 CONCRETE SLABS
- R322.3.5 WALLS BELOW DESIGN FLOOD ELEVATION
- R322.3.6 ENCLOSED AREAS BELOW DESIGN FLOOD ELEVATION.
- R322.3.7 STAIRWAYS AND RAMPS
- R322.3.8 DECKS AND PORCHES
- R322.3.9 CONSTRUCTION DOCUMENTS
- R322.3.10 TANKS

**SECTION R323 STORM SHELTERS**

**R323.1 GENERAL.**  
THIS SECTION APPLIES TO STORM SHELTERS WHERE CONSTRUCTED AS SEPARATE DETACHED BUILDINGS OR WHERE CONSTRUCTED AS SAFE ROOMS WITHIN BUILDINGS FOR THE PURPOSE OF PROVIDING REFUGE FROM STORMS THAT PRODUCE HIGH WINDS, SUCH AS TORNADOS AND HURRICANES. IN ADDITION TO OTHER APPLICABLE REQUIREMENTS IN THIS CODE, STORM SHELTERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ICC/NSSA-500.

**SECTION R326 SWIMMING POOLS, SPAS AND HOT TUBS**

**R326.1 GENERAL.**  
THE DESIGN AND CONSTRUCTION OF POOLS AND SPAS SHALL COMPLY

**CHAPTER 4 :: FOUNDATIONS**

**SECTION R401 GENERAL**

**R401.2 REQUIREMENTS.**  
FOUNDATION CONSTRUCTION SHALL BE CAPABLE OF ACCOMMODATING ALL LOADS IN ACCORDANCE WITH SECTION R301 AND OF TRANSMITTING THE RESULTING LOADS TO THE SUPPORTING SOIL. FILL SOILS THAT SUPPORT FOOTINGS AND FOUNDATIONS SHALL BE DESIGNED, INSTALLED AND TESTED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE.

**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 NOT FEWER THAN 6 INCHES (152 MM) WITHIN THE FIRST 10 FEET (3048 MM).

NOTE: SEE SECTION R401.3 FOR EXCEPTIONS

**R401.4 SOIL TESTS.**  
WHERE QUANTIFIABLE DATA CREATED BY ACCEPTED SOIL SCIENCE METHODOLOGIES INDICATE EXPANSIVE SOILS, COMPRESSIBLE SOILS, SHIFTING SOILS, OR OTHER QUESTIONABLE SOIL CHARACTERISTICS ARE LIKELY TO BE PRESENT, THE BUILDING OFFICIAL SHALL DETERMINE WHETHER TO REQUIRE A SOIL TEST TO DETERMINE THE SOIL'S CHARACTERISTICS AT A PARTICULAR LOCATION. THIS TEST SHALL BE DONE BY AN APPROVED AGENCY USING AN APPROVED METHOD.

**SECTION R402 MATERIALS**

**R402.1 WOOD FOUNDATIONS.**  
WOOD FOUNDATION SYSTEMS SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF THIS CODE.

**R402.1.1 FASTENERS.**  
FASTENERS USED BELOW GRADE TO ATTACH PLYWOOD TO THE EXTERIOR SIDE OF EXTERIOR BASEMENT OR CRAWL SPACE WALL STUDS, OR FASTENERS USED IN KNEE WALL CONSTRUCTION, SHALL BE OF TYPE 304 OR 316 STAINLESS STEEL. FASTENERS USED ABOVE GRADE TO ATTACH PLYWOOD AND ALL LUMBER-TO-LUMBER FASTENERS EXCEPT THOSE USED IN KNEE WALL CONSTRUCTION SHALL BE OF TYPE 304 OR 316 STAINLESS STEEL, SILICON BRONZE, COPPER, HOT-DIPPED GALVANIZED (ZINC COATED) STEEL NAILS, OR ELECTRO-GALVANIZED (ZINC COATED) STEEL NAILS. NUTO- GALVANIZED STEEL NAILS AND GALVANIZED (ZINC COATED) STEEL STAPLES SHALL NOT BE PERMITTED.

**R402.1.2 WOOD TREATMENT.**  
LUMBER AND PLYWOOD SHALL BE PRESSURE-PRESERVATIVE TREATED AND DRIED AFTER TREATMENT IN ACCORDANCE WITH AWP A1 (COMMODITY SPECIFICATION A, SPECIAL REQUIREMENT 4.2), AND SHALL BEAR THE LABEL OF AN ACCREDITED AGENCY. WHERE LUMBER OR PLYWOOD IS CUT OR DRILLED AFTER TREATMENT, THE TREATED SURFACE SHALL BE FIELD TREATED WITH COPPER NAPHTHENATE. THE CONCENTRATION OF WHICH SHALL CONTAIN NOT LESS THAN 2-PERCENT COPPER METAL. BY REPEATED BRUSHING, DIPPING OR SOAKING UNTIL THE WOOD CANNOT ABSORB MORE PRESERVATIVE.

**R402.2 CONCRETE.**  
CONCRETE SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF F' - SC, AS SHOWN IN TABLE R402.2. CONCRETE SUBJECT TO MODERATE OR SEVERE WEATHERING AS INDICATED IN TABLE R301.2(1) SHALL BE AIR ENTRAINED AS SPECIFIED IN TABLE R402.2. THE MAXIMUM WEIGHT OF FLY ASH, OTHER POZZOLANS, SILICA FUME, SLAG OR BLENDED CEMENTS THAT IS INCLUDED IN CONCRETE MIXTURES FOR GARAGE FLOOR SLABS AND FOR EXTERIOR PORCHES, CARPORT SLABS AND STEPS THAT WILL BE EXPOSED TO DEICING CHEMICALS SHALL NOT EXCEED THE PERCENTAGES OF THE TOTAL WEIGHT OF CEMENTITIOUS MATERIALS SPECIFIED IN SECTION 19.3.3.4 OF ACI MATERIALS USED TO PRODUCE CONCRETE AND TESTING THEREOF SHALL CONFORM TO THE APPLICABLE STANDARDS LISTED IN CHAPTERS 19 AND 20 OF ACI 318 OR ACI 332. R402.2.1

**SECTION 403 FOOTINGS**

**R403.1 GENERAL.**  
ALL EXTERIOR WALLS SHALL BE SUPPORTED ON CONTINUOUS SOLID OR FULLY GROUTED MASONRY OR CONCRETE FOOTINGS, CRUSHED STONE FOOTINGS, WOOD FOUNDATIONS, OR OTHER APPROVED STRUCTURAL SYSTEMS THAT SHALL BE OF SUFFICIENT DESIGN TO ACCOMMODATE ALL LOADS ACCORDING TO SECTION R301 AND TO TRANSMIT THE RESULTING LOADS TO THE SOIL WITHIN THE LIMITATIONS AS DETERMINED FROM THE CHARACTER OF THE SOIL. FOOTINGS SHALL BE SUPPORTED ON UNDISTURBED NATURAL SOILS OR ENGINEERED FILL. CONCRETE FOOTINGS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF SECTION R403 OR IN ACCORDANCE WITH ACI 332.

**R403.1.1 MINIMUM SIZE.**  
THE MINIMUM WIDTH, W, AND THICKNESS, T, FOR CONCRETE FOOTINGS SHALL BE IN ACCORDANCE WITH TABLES R403.1(1) THROUGH R403.1(3) AND FIGURE R403.1(1) OR R403.1.3, AS APPLICABLE. THE FOOTING WIDTH SHALL BE BASED ON THE LOAD-BEARING VALUE OF THE SOIL IN ACCORDANCE WITH TABLE R401.4.1. FOOTING PROJECTIONS, P, SHALL BE NOT LESS THAN 2 INCHES (51 MM) AND SHALL NOT EXCEED THE THICKNESS OF THE FOOTING. FOOTING THICKNESS AND PROJECTION FOR FIREPLACES SHALL BE IN ACCORDANCE WITH SECTION R1001.2. THE SIZE OF FOOTINGS SUPPORTING PIERS AND COLUMNS SHALL BE BASED ON THE TRIBUTARY LOAD AND ALLOWABLE SOIL PRESSURE IN ACCORDANCE WITH TABLE R401.4.1. FOOTINGS FOR WOOD FOUNDATIONS SHALL BE IN ACCORDANCE WITH THE DETAILS SET FORTH IN SECTION R403.2, AND FIGURES R403.1(2) AND R403.1(3). FOOTINGS FOR PRECAST FOUNDATIONS SHALL BE IN ACCORDANCE WITH THE DETAILS SET FORTH IN SECTION R403.4, TABLE R403.4, AND FIGURES R403.4(1) AND R403.4(2).

REFER TO THESE SECTIONS FOR THE FOLLOWING TOPICS:  
-R403.1.2 CONTINUOUS FOOTING IN SEISMIC DESIGN CATEGORIES D0, D1 AND D2.  
-R403.1.3 FOOTING AND STEM WALL REINFORCING IN SEISMIC DESIGN CATEGORIES D0, D1 AND D2.

- R403.1.3.4 INTERIOR BEARING AND BRACED WALL PANEL FOOTINGS IN SEISMIC DESIGN CATEGORIES D0, D1 AND D2.
- R403.1.3.5 REINFORCEMENT.
- R403.1.3.6 ISOLATED CONCRETE FOOTINGS.

**R403.1.4 MINIMUM DEPTH.**  
EXTERIOR FOOTINGS SHALL BE LACED NOT LESS THAN 12 INCHES (305 MM) BELOW THE UNDISTURBED GROUND SURFACE. WHERE APPLICABLE, THE DEPTH OF FOOTINGS SHALL ALSO CONFORM TO SECTIONS R403.1.4.1 THROUGH R403.1.4.2.

**R403.1.4.1 FROST PROTECTION.**  
EXCEPT WHERE OTHERWISE PROTECTED FROM FROST, FOUNDATION WALLS, PIERS AND OTHER PERMANENT SUPPORTS OF BUILDINGS AND STRUCTURES SHALL BE PROTECTED FROM FROST BY ONE OR MORE OF THE FOLLOWING METHODS:  
1. EXTENDED BELOW THE FROST LINE SPECIFIED IN TABLE R301.2(1).  
2. CONSTRUCTED IN ACCORDANCE WITH SECTION R403.3.  
3. CONSTRUCTED IN ACCORDANCE WITH ASCE 32.  
4. ERECTED NO SOLID ROCK.

FOOTINGS SHALL NOT BEAR ON FROZEN SOIL UNLESS THE FROZEN CONDITION IS PERMANENT.

NOTE: SEE SECTION R403.1.4.1 FOR EXCEPTIONS

**R403.1.5 SLOPE.**  
THE TOP SURFACE OF FOOTINGS SHALL BE LEVEL. THE BOTTOM SURFACE OF FOOTINGS SHALL NOT HAVE A SLOPE EXCEEDING ONE UNIT VERTICAL IN 10 UNITS HORIZONTAL (10-PERCENT SLOPE). FOOTINGS SHALL BE STEPPED WHERE IT IS NECESSARY TO CHANGE THE ELEVATION OF THE TOP SURFACE OF THE FOOTINGS OR WHERE THE SLOPE OF THE BOTTOM SURFACE OF THE FOOTINGS WILL EXCEED ONE UNIT VERTICAL IN 10 UNITS HORIZONTAL (10-PERCENT SLOPE).

**R403.1.6 FOUNDATION ANCHORAGE.**  
WOOD SILL PLATES SHALL BE SUPPORTED DIRECTLY ON CONTINUOUS FOUNDATIONS SHALL BE ANCHORED TO THE FOUNDATION IN ACCORDANCE WITH THIS SECTION. COLD-DRILLED STEEL FRAMING SHALL BE ANCHORED DIRECTLY TO THE FOUNDATION OR FASTENED TO WOOD SILL PLATES IN ACCORDANCE WITH SECTION R505.3.1 OR R603.3.1, AS APPLICABLE. WOOD SILL PLATES SUPPORTING COLD-FORMED STEEL FRAMING SHALL BE ANCHORED TO THE FOUNDATION IN ACCORDANCE WITH THIS SECTION.

WOOD SOLE PLATES AT ALL EXTERIOR WALLS ON MONOLITHIC SLABS, WOOD SOLE PLATES OF BRACED WALL PANELS AT BUILDING INTERIORS ON MONOLITHIC SLABS AND ALL WOOD SILL PLATES SHALL BE ANCHORED TO THE FOUNDATION WITH MINIMUM 1/2-INCH DIAMETER (12.7 MM) ANCHOR BOLTS SPACED NOT GREATER THAN 6 FEET (1829 MM) ON CENTER OR APPROVED ANCHORS OR ANCHOR STRAPS SPACED AS REQUIRED TO PROVIDE EQUIVALENT ANCHORAGE TO 1/2-INCH-DIAMETER (12.7 MM) ANCHOR BOLTS. BOLTS SHALL EXTEND NOT LESS THAN 7 INCHES (178 MM) INTO CONCRETE OR GROUTED CELLS OF CONCRETE MASONRY UNITS. THE BOLTS SHALL BE LOCATED IN THE MIDDLE THIRD OF THE WIDTH OF THE PLATE. A NUT AND WASHER SHALL BE TIGHTENED ON EACH ANCHOR BOLT. THERE SHALL BE NOT FEWER THAN TWO BOLTS PER PLATE SECTION WITH ONE BOLT LOCATED NOT MORE THAN 12 INCHES (305 MM) OR LESS THAN SEVEN BOLT DIAMETERS FROM EACH END OF THE PLATE. SECTION. INTERIOR BEARING WALL SOLE PLATES ON MONOLITHIC SLAB FOUNDATION THAT ARE NOT PART OF A BRACED WALL PANEL SHALL BE POSITIVELY ANCHORED WITH APPROVED FASTENERS. SILL PLATES AND SOLE PLATES SHALL BE PROTECTED AGAINST DECAY AND TERMITES WHERE REQUIRED BY SECTIONS R317 AND R318.

NOTE: SEE SECTION 403.1.6 FOR EXCEPTIONS

**R403.1.6.1 FOUNDATION ANCHORAGE IN SEISMIC DESIGN CATEGORIES C, D0, D1 AND D2.**  
WOOD SILL PLATES AND ANCHOR BOLTS OF SECTION R403.1.6. THE FOLLOWING REQUIREMENTS SHALL APPLY TO WOOD LIGHT-FRAME STRUCTURES IN SEISMIC DESIGN CATEGORIES D0, D1 AND D2 AND WOOD LIGHT-FRAME TOWNHOUSES IN SEISMIC DESIGN CAT. C.

NOTE: SEE SECTION 403.1.6.1 FOR REQUIREMENTS

**R403.1.7 FOOTINGS ON OR ADJACENT TO SLOPES.**  
THE PLACEMENT OF BUILDINGS AND STRUCTURES ON OR ADJACENT TO SLOPES STEEPER THAN ONE UNIT VERTICAL IN THREE UNITS HORIZONTAL (33.3-PERCENT SLOPE) SHALL CONFORM TO SECTIONS R403.1.7.1 THROUGH R403.1.7.4

**R403.1.8 FOUNDATIONS ON EXPANSIVE SOILS.**  
FOUNDATION AND FLOOR SLABS FOR BUILDINGS LOCATED ON EXPANSIVE SOILS SHALL BE DESIGNED IN ACCORDANCE WITH SECTION 1808.6 OF THE INTERNATIONAL BUILDING CODE.

NOTE: SEE SECTION 403.1.8 FOR EXCEPTION AND EXPANSIVE SOILS CLASSIFICATIONS.

**R403.2 FOOTINGS FOR WOOD FOUNDATIONS.**  
FOOTINGS FOR WOOD FOUNDATIONS SHALL BE IN ACCORDANCE WITH FIGURES R403.1(2) AND R403.1(3). GRAVEL SHALL BE WASHED AND WELL GRADED. THE MAXIMUM SIZE STONE SHALL NOT EXCEED 3/4 INCH (19.1 MM). GRAVEL SHALL BE FREE FROM ORGANIC, CLAYEY OR SILTY SOILS. SAND SHALL BE COARSE, NOT SMALLER THAN 1/16-INCH (1.6 MM) GRAINS AND SHALL BE FREE FROM ORGANIC, CLAYEY OR SILTY SOILS.

**R502.5 ALLOWABLE GIRDER AND HEADER SPANS.**  
THE ALLOWABLE SPANS OF GIRDERS AND HEADERS FABRICATED OF DIMENSION LUMBERS SHALL NOT EXCEED THE VALUES SET FORTH IN TABLES R602.7(1), R602.7(2) AND R602.7(3).

**R502.6 BEARING.**  
THE ENDS OF EACH JOIST, BEAM OR GIRDER SHALL HAVE NOT LESS THAN 1 1/2 INCHES (38 MM) OF BEARING ON WOOD OR METAL, NOT LESS THAN 3 INCHES (76 MM) OF BEARING ON MASONRY OR CONCRETE TO BE SUPPORTED BY APPROVED JOIST HANGERS. ALTERNATIVELY, THE ENDS OF JOISTS SHALL BE SUPPORTED ON A 1-INCH BY 4-INCH (25 MM BY 102 MM) RIBBON STRIP AND SHALL BE NAILED TO THE ADJACENT STUD. THE BEARING ON MASONRY OR CONCRETE SHALL BE DIRECT, OR A SILL PLATE OF 2-INCH-MINIMUM (51 MM) NOMINAL THICKNESS SHALL BE PROVIDED UNDER THE JOIST, BEAM OR GIRDER. THE SILL PLATE SHALL PROVIDE A MINIMUM NOMINAL BEARING AREA OF 48 SQUARE INCHES (30 865 MM<sup>2</sup>). SEE SECTIONS 502.6.1 THROUGH 502.6.2 FOR FURTHER SPECIFICATIONS.

REFER TO THE IRC FOR FURTHER INFORMATION ON THE FOLLOWING AREAS:

- R502.7 LATERAL RESTRAINT AT SUPPORTS.
- R502.8 CUTTING, DRILLING AND NOTCHING.
- R502.9 FASTENING.
- R502.10 FRAMING OF OPENINGS.
- R502.11 WOOD TRUSSES.
- R502.12 DRAFTSTOPPING REQUIRED.
- R502.13 FIREBLOCKING REQUIRED.

**REFER TO THE IRC FOR THE FOLLOWING SECTIONS:**

SECTION 503 FLOOR SHEATHING  
SECTION 504 PRESSURE PRESERVATIVE TREATED WOOD FLOORS  
SECTION 505 COLD-FORMED STEEL FLOOR FRAMING

**SECTION R506 CONCRETE FLOORS (ON GROUND)**

**R506.1 GENERAL.**  
CONCRETE SLAB-ON-GROUND FLOORS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS SECTION OR ACI 332. FLOORS SHALL BE A MINIMUM 3 1/2 INCHES (89 MM) THICK (FOR EXPANSIVE SOILS, SEE SECTION R403.1.8), THE SPECIFIED COMPRESSIVE STRENGTH OF CONCRETE SHALL BE AS SET FORTH IN SECTION R402.2.

**R506.2 SITE PREPARATION.**  
THE AREA WITHIN THE FOUNDATION WALLS SHALL HAVE ALL VEGETATION, TOP SOIL AND FOREIGN MATERIAL REMOVED.

**R506.2.1 FILL.**  
FILL MATERIAL SHALL BE FREE OF VEGETATION AND FOREIGN MATERIAL. THE FILL SHALL BE COMPACTED TO ENSURE UNIFORM SUPPORT OF THE SLAB, AND EXCEPT WHERE APPROVED, THE FILL DEPTHS SHALL NOT EXCEED 24 INCHES (610 MM) FOR CLEAN SAND OR GRAVEL AND 8 INCHES (203 MM) FOR EARTH.

**R506.2.2 BASE.**  
A 4-INCH-THICK (102 MM) BASE COURSE CONSISTING OF CLEAN GRADED SAND, GRAVEL, CRUSHED STONE, CRUSHED CONCRETE OR CRUSHED BLAST-FURNACE SLAG PASSING A 2-INCH (51 MM) SIEVE SHALL BE PLACED ON THE PREPARED SUBGRADE WHERE THE SLAB IS BELOW GRADE.

NOTE: SEE SECTION 506.2.2 FOR EXCEPTION

**R506.2.3 VAPOR RETARDER.**  
A 6-MIL (0.006 INCH; 152 MM) POLYETHYLENE OR APPROVED VAPOR RETARDER WITH JOINTS LAPPED NOT LESS THAN 6 INCHES (152 MM) SHALL BE PLACED BETWEEN THE CONCRETE FLOOR SLAB AND THE BASE COURSE OR THE PREPARED SUBGRADE WHERE A BASE COURSE DOES NOT EXIST.

NOTE: SEE SECTION R506.2.3 FOR EXCEPTIONS

**R506.2.4 REINFORCEMENT SUPPORT.**  
WHERE PROVIDED IN SLABS-ON-GROUND, REINFORCEMENT SHALL BE SUPPORTED TO REMAIN IN PLACE FROM THE CENTER TO UPPER ONE-THIRD OF THE SLAB FOR THE DURATION OF THE CONCRETE PLACEMENT.

**SECTION R507 DECKS**

**R507.1 DECKS.**  
WOOD-FRAMED DECKS SHALL BE IN ACCORDANCE WITH THIS SECTION. FOR DECKS USING MATERIALS AND CONDITIONS NOT PRESCRIBED IN THIS SECTIONS, REFER TO SECTION R301.

**R507.2 MATERIALS.**  
MATERIALS USED FOR THE CONSTRUCTION OF DECKS SHALL COMPLY WITH THIS SECTION.

**R507.2.1 WOOD MATERIALS.**  
WOOD MATERIALS SHALL BE NO. 2 GRADE OR BETTER LUMBER, PRESERVATIVE-TREATED IN ACCORDANCE WITH SECTION R317, OR APPROVED, NATURALLY DURABLE LUMBER, AND TERMITE PROTECTED WHERE REQUIRED IN ACCORDANCE WITH SECTION R318, WHERE DESIGN IN ACCORDANCE WITH SECTION R301 IS PROVIDED. WOOD STRUCTURAL MEMBERS SHALL BE DESIGNED USING THE WET SERVICE FACTOR DEFINED IN AWC NDS. CUTS, NOTCHES, AND DRILLED HOLES OF PRESERVATIVE TREATED WOOD MEMBERS SHALL BE TREATED IN ACCORDANCE WITH SECTION R317.1.1. ALL PRESERVATIVE-TREATED WOOD PRODUCTS IN CONTACT WITH THE GROUND SHALL BE LABELED FOR SUCH USAGE.

**R507.2.1.1 ENGINEERED WOOD PRODUCTS.**  
ENGINEERED WOOD PRODUCTS SHALL BE IN ACCORDANCE WITH SECTION R502.

**R507.2.2 PLASTIC COMPOSITE DECK BOARDS, STAIR TREADS, GUARDS, OR HANDRAILS.**  
PLASTIC COMPOSITE EXTERIOR DECK BOARDS, STAIR TREADS, GUARDS AND HANDRAILS SHALL COMPLY WITH THE REQUIREMENTS OF ASTM D7032 AND SECTION R507.3. SEE SECTIONS R507.2.2.1 THROUGH R507.2.2.5 AND SECTIONS R507.2.3 THROUGH R507.2.5 FOR FURTHER SPECIFICATIONS.

**R507.2.3 FASTENERS AND CONNECTORS.**  
METAL FASTENERS AND CONNECTORS USED FOR ALL DECKS SHALL BE IN ACCORDANCE WITH SECTION R317.3 AND TABLE R507.2.3.

**R507.3 FOOTINGS**  
REFER TO THE IRC FOR INFORMATION REGARDING FOOTINGS.

**R507.4 DECK POSTS.**  
FOR SINGLE-LEVEL WOOD-FRAMED DECKS WITH BEAMS SIZED IN ACCORDANCE WITH TABLE R507.5, DECK POST SIZE SHALL BE IN ACCORDANCE WITH TABLE R507.4.

**R507.4.1 DECK POST TO FOOTING CONNECTION.**  
WHERE POSTS BEAR ON CONCRETE FOOTINGS IN ACCORDANCE WITH SECTION R403 AND FIGURE R507.4.1, LATERAL RESTRAINT SHALL BE PROVIDED BY MANUFACTURED CONNECTORS OR A MINIMUM POST EMBEDMENT OF 12 INCHES (305 MM) IN SURROUNDING SOILS OR CONCRETE PIERS. OTHER FOOTING SYSTEMS SHALL BE PERMITTED.

NOTE: SEE SECTION R507.4.1 FOR EXCEPTIONS

**R507.5 DECK BEAMS.**  
MAXIMUM ALLOWABLE SPANS FOR WOOD DECK BEAMS, AS SHOWN IN FIGURE R507.5, SHALL BE IN ACCORDANCE WITH TABLE R507.5. BEAM PLIES SHALL BE FASTENED WITH TWO ROWS OF 100 (3/4-INCH X 0.128-INCH) NAILS MINIMUM AT 16 INCHES (406 MM) ON CENTER ALONG EACH EDGE. BEAMS SHALL BE PERMITTED TO CANTILEVER AT EACH END UP TO ONE-FOURTH OF THE ALLOWABLE BEAM SPAN. DECK BEAMS OF OTHER MATERIALS SHALL BE PERMITTED WHERE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICES.

**R507.7 DECKING.**  
MAXIMUM ALLOWABLE SPACING FOR JOISTS SUPPORTING DECKING SHALL BE IN ACCORDANCE WITH TABLE R507.7. WOOD DECKING SHALL BE ATTACHED TO EACH SUPPORTING MEMBER WITH NOT LESS THAN TWO 90 THREADED NAILS OR TWO NO. 8 WOOD SCREWS. OTHER APPROVED DECKING OR FASTENER SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION REQUIREMENTS.

**R507.8 VERTICAL AND LATERAL SUPPORTS.**  
WHERE SUPPORTING BY ATTACHMENT TO AN EXTERIOR WALL, DECKS SHALL BE POSITIVELY ANCHORED TO THE PRIMARY STRUCTURE AND DESIGNED FOR BOTH VERTICAL AND LATERAL LOADS. SUCH ATTACHMENT SHALL NOT BE ACCOMPLISHED BY THE USE OF TOENAILS OR NAILS SUBJECT TO WITHDRAWAL. FOR DECKS WITH CANTILEVERED FRAMING MEMBERS, CONNECTION 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, WHERE POSITIVE CONNECTION TO THE PRIMARY BUILDING STRUCTURE CANNOT BE VERIFIED DURING INSPECTION, DECKS SHALL BE SELF-SUPPORTING.

**R507.8.1 DECK POST TO DECK FOOTING.**  
POSTS SHALL BEAR ON FOOTINGS IN ACCORDANCE WITH SECTION R403 AND FIGURE R507.8.1. POSTS SHALL BE RESTRAINED TO PREVENT LATERAL DISPLACEMENT AT THE BOTTOM SUPPORT. SUCH LATERAL RESTRAINT SHALL BE PROVIDED BY MANUFACTURED CONNECTORS INSTALLED IN ACCORDANCE WITH SECTION R507 AND THE MANUFACTURER'S INSTRUCTIONS OR A MINIMUM POST EMBEDMENT OF 12 INCHES (305 MM) IN SURROUNDING SOILS OR CONCRETE PIERS.

## CHAPTER 6 :: WALL CONSTRUCTION

### SECTION R601 GENERAL

**R601.1 APPLICATION.**  
THE PROVISIONS OF THIS CHAPTER SHALL CONTROL THE DESIGN AND CONSTRUCTION OF WALLS AND PARTITIONS FOR BUILDINGS.

**R601.2 REQUIREMENTS.**  
WALL CONSTRUCTION SHALL BE CAPABLE OF ACCOMMODATING ALL LOADS IMPOSED IN ACCORDANCE WITH SECTION R301 AND OF TRANSMITTING THE RESULTING LOADS TO THE SUPPORTING STRUCTURAL ELEMENTS.

### SECTION R602 WOOD WALL FRAMING

**R602.1 GENERAL.**  
WOOD AND WOOD-BASED PRODUCTS USED FOR LOAD SUPPORTING PURPOSES SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THIS SECTION. SEE SECTIONS 602.6.1 THROUGH 602.6.10 FOR FURTHER SPECIFICATIONS.

**R602.2 GRADE.** STUDS SHALL BE A MINIMUM NO. 3, STANDARD OR STUD GRADE LUMBER.

NOTE: SEE SECTION 506.2.2 FOR EXCEPTION

**R602.3 DESIGN AND CONSTRUCTION.**  
EXTERIOR WALLS OF WOODFRAME CONSTRUCTION SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS CHAPTER AND FIGURES R602.3(1) AND R602.3(2), OR IN ACCORDANCE WITH AWC NDS. COMPONENTS OF EXTERIOR WALLS SHALL BE FASTENED IN ACCORDANCE WITH TABLES R602.3(1) THROUGH R602.3(4). WALL SHEATHING SHALL BE FASTENED DIRECTLY TO FRAMING MEMBERS AND, WHERE PLACED ON THE EXTERIOR SIDE OF AN EXTERIOR WALL, SHALL BE CAPABLE OF RESISTING THE WIND PRESSURES LISTED IN TABLE R301.2(3) AND SHALL CONFORM TO THE REQUIREMENTS OF TABLE R602.3(3). WALL SHEATHING USED ONLY FOR EXTERIOR WALL COVERING PURPOSES SHALL COMPLY WITH SECTION R703. STUDS SHALL BE CONTINUOUS FROM SUPPORT AT THE SOLE PLATE TO A SUPPORT AT THE TOP PLATE TO RESIST LOADS PERPENDICULAR TO THE WALL. THE SUPPORT SHALL BE FOUNDATION OR FLOOR, CEILING OR ROOF DIAPHRAGM OR SHALL BE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE.

NOTE: SEE SECTION 506.2.3 FOR EXCEPTION

SEE SECTIONS 602.3.1 THROUGH 603.3.5 FOR FURTHER SPECIFICATIONS.

REFER TO THE IRC FOR FURTHER INFORMATION ON THE FOLLOWING AREAS:

**R602.4 INTERIOR LOAD-BEARING WALLS.**  
**R602.5 INTERIOR NONBEARING WALLS.**  
**R602.6 DRILLING AND NOTCHING OF STUDS.**  
**R602.7 HEADERS.**  
**R602.8 FIREBLOCKING REQUIRED.**  
**R602.9 CRIPPLE WALLS.**

**R602.10 WALL BRACING.**  
BUILDINGS SHALL BE BRACED IN ACCORDANCE WITH THIS SECTION OR, WHEN APPLICABLE, SECTION R602.12, 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.

REFER TO SECTIONS 602.10.1 THROUGH 602.10.12 FOR BRACED WALL PANELS, DESIGN AND CRITERIA.

**REFER TO THE IRC FOR THE FOLLOWING SECTIONS:**

SECTION 603 COLD-FORMED STEEL WALL FRAMING  
SECTION 604 WOOD STRUCTURAL PANELS  
SECTION 605 PARTICLEBOARD  
SECTION 606 GENERAL MASONRY CONSTRUCTION  
SECTION 607 GLASS UNIT MASONRY  
SECTION 608 EXTERIOR CONG. WALL CONSTRUCTION  
SECTION 609 (SEE BELOW)  
SECTION R610 STRUCTURAL INSULATED PANEL WALL CONSTRUCTION

## SECTION R609 EXTERIOR WINDOWS AND DOORS.

**R609.1 GENERAL.**  
THIS SECTION PRESCRIBES PERFORMANCE AND CONSTRUCTION REQUIREMENTS FOR EXTERIOR WINDOWS AND DOORS INSTALLED IN WALLS. WINDOWS AND DOORS SHALL BE INSTALLED AND FLASHED IN ACCORDANCE WITH THE PENETRATION MANUFACTURER'S WRITTEN INSTRUCTIONS. WINDOW AND DOOR OPERATING SYSTEMS SHALL BE FLASHED IN ACCORDANCE WITH SECTION R714.4. WRITTEN INSTALLATION INSTRUCTIONS SHALL BE PROVIDED BY THE PENETRATION MANUFACTURER FOR EACH WINDOW OR DOOR.

**R609.2 PERFORMANCE.** EXTERIOR WINDOWS AND DOORS SHALL BE CAPABLE OF RESISTING THE DESIGN WIND LOADS SPECIFIED IN TABLE R301.2(2) ADJUSTED FOR HEIGHT AND EXPOSURE IN ACCORDANCE WITH TABLE R301.2(3) OR DETERMINED IN ACCORDANCE WITH ASCE 7 USING THE ALLOWABLE STRESS DESIGN LOAD COMBINATIONS OF ASCE 7. FOR EXTERIOR WINDOWS AND DOORS TESTED IN ACCORDANCE WITH SECTIONS R609.3 AND R609.5, REQUIRED DESIGN WIND PRESSURES DETERMINED FROM ASCE 7 USING THE ULTIMATE STRENGTH DESIGN (USD) ARE PERMITTED TO BE MULTIPLIED BY 0.6. DESIGN WIND LOADS FOR EXTERIOR GLAZING NOT PART OF A LABELED ASSEMBLY SHALL BE PERMITTED TO BE DETERMINED IN ACCORDANCE WITH CHAPTER 24 OF THE IRC. DESIGN WIND LOADS FOR EXTERIOR GLAZING NOT PART OF A LABELED ASSEMBLY SHALL BE PERMITTED TO BE DETERMINED IN ACCORDANCE WITH CHAPTER 24 OF THE INTERNATIONAL BUILDING CODE.

**R609.4 GARAGE DOORS.**  
GARAGE DOORS SHALL BE TESTED IN ACCORDANCE WITH EITHER ASTM E330 OR ANSIDASMA 108, AND SHALL MEET THE ACCEPTANCE CRITERIA OF ANSIDASMA 108.

## CHAPTER 7 :: INTERIOR COVERING

**R702.1 GENERAL.**  
INTERIOR COVERINGS OR WALL FINISHES SHALL BE INSTALLED IN ACCORDANCE WITH THIS CHAPTER AND TABLE R702.1(1), TABLE R702.1(2), TABLE R702.1(3) AND TABLE R702.3.5. INTERIOR MASONRY VENEER SHALL COMPLY WITH THE REQUIREMENTS OF SECTION R703.7.1. FASTENING AND ANCHORAGE SHALL BE AS ANCHORAGE, EXCEPT AIRSPACE IS NOT REQUIRED. INTERIOR FINISHES AND MATERIALS SHALL CONFORM TO THE FLAME SPREAD AND SMOKE DEVELOPMENT REQUIREMENTS OF SECTION R302.9. SEE SECTIONS 702.2 THROUGH 702.7 FOR FURTHER SPECIFICATIONS.

## SECTION R703 EXTERIOR COVERING

**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 R703.4.

**R703.2 WATER-RESISTIVE BARRIER.**  
ONE LAYER OF NO. 15 ASPHALT FELT, FREE FROM HOLES AND BREAKS, COMPLYING WITH ASTM D226 FOR TYPE 1 FELT OR OTHER APPROVED WATER-RESISTIVE BARRIER SHALL BE APPLIED OVER STUDS OR SHEATHING OF ALL EXTERIOR WALLS. NO. 15 ASPHALT FELT SHALL BE APPLIED CONTINUALLY WITH THE UPPER LAYER LAPPED OVER THE LOWER LAYER NOT LESS THAN 2 INCHES (51 MM), WHERE JOINTS OCCUR, FELT SHALL BE LAPPED NOT LESS THAN 6 INCHES (152 MM). OTHER APPROVED MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH THE WATER-RESISTIVE BARRIER MANUFACTURER'S INSTALLATION INSTRUCTIONS. NO. 15 ASPHALT FELT OR OTHER APPROVED WATER-RESISTIVE BARRIER MATERIAL SHALL BE CONTINUOUS TO THE TOP OF WALLS AND TERMINATED AT PENETRATIONS AND BUILDING APPENDAGES IN A MANNER TO MEET THE REQUIREMENTS OF THE EXTERIOR WALL ENVELOPE AS DESCRIBED IN SECTION R703.1.

**R703.3.3 FASTENERS.**  
EXTERIOR WALL COVERINGS AND ROOF OVERHANG SOFFITS SHALL BE SECURELY FASTENED WITH ALUMINUM, GALVANIZED, STAINLESS STEEL OR RUST-PREVENTATIVE COATED NAILS OR STAPLES IN ACCORDANCE WITH TABLE R703.3(1) OR WITH OTHER APPROVED CORROSION-RESISTANT FASTENERS IN ACCORDANCE WITH THE WALL COVERING MANUFACTURER'S INSTALLATION INSTRUCTIONS. NAILS AND STAPLES SHALL COMPLY WITH ASTM F1667. NAILS SHALL BE T-HEAD, MODIFIED ROUND HEAD, OR ROUND HEAD WITH SMOOTH OR DEFORMED SHANKS. STAPLES SHALL HAVE A MINIMUM CROWN WIDTH OF 7/16 INCH (11.1 MM) OUTSIDE DIAMETER AND BE MANUFACTURED OF MINIMUM 16-GAUGE WIRE. WHERE FIBERBOARD, GYPSUM OR FOAM PLASTIC SHEATHING BACKING IS USED, NAILS OR STAPLES SHALL BE DRIVEN INTO THE STUDS. WHERE WOOD OR WOOD STRUCTURAL PANEL SHEATHING IS USED, FASTENERS SHALL BE DRIVEN INTO STUDS UNLESS OTHERWISE PERMITTED TO BE DRIVEN INTO SHEATHING IN ACCORDANCE WITH EITHER THE SIDING MANUFACTURER'S INSTALLATION INSTRUCTIONS OR TABLE R703.3.2.

**R703.4 FLASHING.**  
APPROVED CORROSION-RESISTANT FLASHING SHALL BE APPLIED SINGLE-FASHION IN A MANNER TO PREVENT ENTRY OF WATER INTO THE WALL CAVITY OR PENETRATION OF WATER TO THE BUILDING STRUCTURE. MECHANICALLY ATTACHED, FLEXIBLE SELF-ADHERED MEMBRANES USED AS FLASHING SHALL COMPLY WITH AAMA 711. FLUID-APPLIED MEMBRANES USED AS FLASHING IN EXTERIOR WALLS SHALL COMPLY WITH AAMA 714. THE FLASHING SHALL EXTEND TO THE SURFACE OF THE EXTERIOR WALL FINISH. APPROVED CORROSION-RESISTANT FLASHINGS SHALL BE INSTALLED AT 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 COMPLYING WITH SECTION 703.2 FOR SUBSEQUENT DRAINAGE. MECHANICALLY ATTACHED FLEXIBLE FLASHINGS SHALL COMPLY WITH AAMA 712. FLASHING AT EXTERIOR WINDOW AND DOOR OPENINGS SHALL BE INSTALLED IN ACCORDANCE WITH ONE OR MORE OF THE FOLLOWING:

REFER TO SECTION 1.1 THROUGH 1.3 FOR FURTHER SPECIFICATIONS.

REFER TO THE IRC FOR FURTHER INFORMATION ON THE FOLLOWING AREAS:

- R703.5 WOOD, HARDBOARD AND WOOD STRUCTURAL PANEL SIDING.
- R703.6 WOOD SHAKES AND SHINGLES.
- R703.7 EXTERIOR PLASTER.
- R703.8 ANCHORED STONE AND MASONRY VENEER, GENERAL.
- R703.9 EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)/EIFS WITH DRAINAGE.
- R703.10 FIBER CEMENT SIDING.
- R703.11 VINYL SIDING.
- R703.12 ADHERED MASONRY VENEER INSTALLATION.
- R703.13 INSULATED VINYL SIDING.
- R703.14 POLYPROPYLENE SIDING.
- R703.15 CLADDING ATTACHMENT OVER FOAM SHEATHING TO WOOD FRAMING.
- R703.16 CLADDING ATTACHMENT OVER FOAM SHEATHING TO COLD-FORMED STEEL FRAMING.
- R703.17 CLADDING ATTACHMENT OVER FOAM SHEATHING TO MASONRY OR CONCRETE WALL CONSTRUCTION.

## CHAPTER 8 :: WOOD ROOF FRAMING

**R802.1 GENERAL.**  
WOOD AND WOOD-BASED PRODUCTS USED FOR LOAD SUPPORTING PURPOSES SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THIS SECTION.

SEE SECTIONS 802.1.1 THROUGH 802.1.7 FOR FURTHER SPECIFICATIONS.

**R802.2 DESIGN AND CONSTRUCTION.**  
THE FOLLOWING DETAILS REQUIRED IN SECTION R802 APPLY TO ROOFS HAVING A MINIMUM SLOPE OF THREE UNITS VERTICAL IN 12 UNITS HORIZONTAL (25-PERCENT SLOPE) OR GREATER. ROOF-CEILING SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS CHAPTER AND FIGURES R806.1(1)1, R806.1(1)2 AND R806.1(1)3 OR IN ACCORDANCE WITH AWC NDS. COMPONENTS OF ROOF-CEILINGS SHALL BE FASTENED IN ACCORDANCE WITH TABLE R802.3(1).

**R802.3 FRAMING DETAILS.**  
RAFTERS SHALL BE FLASHED NOT MORE THAN 1 1/2-INCHES (38 MM) OFFSET FROM EACH OTHER TO RIDGE BOARD OR DIRECTLY OFFSET FROM EACH OTHER WITH A GUSSET PLATE AS THE RIDGE BOARD SHALL BE NOT LESS THAN 1-INCH (25 MM) NOMINAL THICKNESS AND NOT LESS IN DEPTH THAN THE CUT END OF THE RAFTER. AT VALLEYS AND HIPS THERE SHALL BE A VALLEY OR HIP RAFTERNOT LESS THAN 2-INCH (51 MM) NOMINAL THICKNESS AND NOT LESS IN DEPTH THAN THE CUT END OF THE RAFTER. HIP AND VALLEY RAFTERS SHALL BE SUPPORTED AT THE RIDGE BY A BRACE TO A BEARING PARTITION OR BE DESIGNED TO CARRY AND DISTRIBUTE THE SPECIFIC LOAD AT THAT POINT, WHERE THE ROOF PITCH IS LESS THAN THREE UNITS VERTICAL IN 12 UNITS HORIZONTAL (25-PERCENT SLOPE), STRUCTURAL MEMBERS THAT SUPPORT RAFTERS AND CEILING JOISTS, SUCH AS RIDGE BEAMS, HIPS AND VALLEYS, SHALL BE DESIGNED AS BEAMS.

REFER TO THE IRC FOR FURTHER INFORMATION ON THE FOLLOWING AREAS:

**R802.4 ALLOWABLE CEILING JOIST SPANS.**  
**R802.5 ALLOWABLE RAFTER SPANS.**  
**R802.6 BEARING.**  
**R802.7 CUTTING, DRILLING AND NOTCHING.**  
**R802.8 LATERAL SUPPORT.**  
**R802.9 FRAMING OF OPENINGS.**

**R802.10 WOOD TRUSSES.**

**R802.10.1 TRUSS DESIGN DRAWINGS.** TRUSS DESIGN DRAWINGS, PREPARED IN CONFORMANCE TO SECTION R802.10.1, SHALL BE PROVIDED TO THE BUILDING OFFICIAL AND APPROVED PRIOR TO INSTALLATION. TRUSS DESIGN DRAWINGS SHALL BE PROVIDED WITH THE SHIPMENT OF TRUSSES DELIVERED TO THE JOB SITE. TRUSS DESIGN DRAWINGS SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING INFORMATION:

REFER TO SECTION 802.10.1 (1-12 FOR MINIMUM INFORMATION)

**R802.10.2 DESIGN.**  
WOOD TRUSSES SHALL BE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE. THE MANUFACTURE OF METAL-PLATE-CONNECTED WOOD TRUSSES SHALL COMPLY WITH ANSITP1. THE TRUSS DESIGN DRAWINGS SHALL BE PREPARED BY A REGISTERED PROFESSIONAL WHERE REQUIRED BY THE STATUTES OF THE JURISDICTION IN WHICH THE PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE WITH SECTION R106.1.

**R802.10.3 BRACING.**  
TRUSSES SHALL BE BRACED TO PREVENT ROTATION AND PROVIDE LATERAL STABILITY IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED IN THE CONSTRUCTION DOCUMENTS FOR THE BUILDING AND ON THE INDIVIDUAL TRUSS DESIGN DRAWINGS. IN THE ABSENCE OF SPECIFIC BRACING REQUIREMENTS, TRUSSES SHALL BE BRACED IN ACCORDANCE WITH ACCEPTED INDUSTRY PRACTICE SUCH AS THE SBCA BUILDING COMPONENT SAFETY INFORMATION (BDSI) GUIDE TO GOOD PRACTICE FOR HANDLING, INSTALLING & BRACING OF METAL PLATE CONNECTED WOOD TRUSSES.

**R802.10.4 ALTERATIONS TO TRUSSES.**  
TRUSS MEMBERS SHALL NOT BE CUT, NOTCHED, DRILLED, SPLICED OR OTHERWISE ALTERED IN ANY WAY WITHOUT THE APPROVAL OF A REGISTERED DESIGN PROFESSIONAL. ALTERATIONS RESULTING IN THE ADDITION OF LOAD SUCH AS HVAC EQUIPMENT WATER HEATER THAT EXCEEDS THE DESIGN LOAD FOR THE TRUSS SHALL NOT BE PERMITTED WITHOUT VERIFICATION THAT THE TRUSS IS CAPABLE OF SUPPORTING SUCH ADDITIONAL LOADING.

**R802.11 ROOF TIE-DOWN.**

**R802.11.1 UPLIFT RESISTANCE.** ROOF ASSEMBLIES SHALL HAVE UPLIFT RESISTANCE IN ACCORDANCE WITH SECTIONS R802.11.1.1 AND R802.11.1.2, WHERE THE UPLIFT FORCE DOES NOT EXCEED 200 POUNDS (90.8 KG). RAFTERS AND TRUSSES SPACED NOT MORE THAN 24 INCHES (610 MM) ON CENTER SHALL BE PERMITTED TO BE ATTACHED TO THEIR SUPPORTING WALL ASSEMBLIES IN ACCORDANCE WITH TABLE R602.3(1), WHERE THE BASIC WIND SPEED DOES NOT EXCEED 115 MPH, THE WIND EXPOSURE CATEGORY IS B, THE ROOF PITCH IS 5:12 (42-PERCENT SLOPE) OR GREATER, AND THE ROOF SPAN IS 32 FEET (9754 MM) OR LESS. RAFTERS AND TRUSSES SPACED NOT MORE THAN 24 INCHES (610 MM) ON CENTER SHALL BE PERMITTED TO BE ATTACHED TO THEIR SUPPORTING WALL ASSEMBLIES IN ACCORDANCE WITH TABLE R602.3(1).

**R802.11.1.1 TRUSS UPLIFT RESISTANCE.**  
TRUSSES SHALL BE ATTACHED TO SUPPORTING WALL ASSEMBLIES BY CONNECTIONS CAPABLE OF RESISTING UPLIFT FORCES AS SPECIFIED ON THE TRUSS DESIGN DRAWINGS. FOR THE ULTIMATE DESIGN WIND SPEED AS DETERMINED BY FIGURE R301.2(5)A AND LISTED IN TABLE R301.2(1),1) OR AS SHOWN ON THE CONSTRUCTION DOCUMENTS, UPLIFT FORCES SHALL BE PERMITTED TO BE DETERMINED AS SPECIFIED BY TABLE R802.11, IF APPLICABLE, OR AS DETERMINED BY ACCEPTED ENGINEERING PRACTICE.

**R802.11.1.2 RAFTER UPLIFT RESISTANCE.**  
INDIVIDUAL RAFTERS SHALL BE ATTACHED TO SUPPORTING WALL ASSEMBLIES BY CONNECTIONS CAPABLE OF RESISTING UPLIFT FORCES AS DETERMINED BY TABLE R802.11,1) OR AS DETERMINED BY ACCEPTED ENGINEERING PRACTICE. CONNECTIONS FOR BEAMS USED IN A ROOF SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE.

**REFER TO THE IRC FOR THE FOLLOWING SECTIONS:**

SECTION 803 ROOF SHEATHING  
SECTION 804 COLD-FORMED STEEL ROOF FRAMING

## SECTION 805 CEILING FINISHES

**R805.1 CEILING INSTALLATION.**  
CEILING SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS FOR INTERIOR WALL FINISHES AS PROVIDED IN SECTION R702.

## SECTION R806

**ROOF VENTILATION**  
R806.1 VENTILATION REQUIRED. ENCLOSED ATTICS AND ENCLOSED RAFTER SPACES FORMED WHERE CEILINGS ARE APPLIED DIRECTLY TO THE UNDERSIDE OF ROOF RAFTERS SHALL HAVE CROSS VENTILATION FOR EACH SEPARATE SPACE BY VENTILATING OPENINGS PROTECTED AGAINST THE ENTRANCE OF RAIN OR SNOW. VENTILATING OPENINGS SHALL HAVE A LEAST DIMENSION OF 1/16 INCH (1.6 MM) MINIMUM AND 1/4 INCH (6.4 MM) MAXIMUM. VENTILATING OPENINGS HAVING A LEAST DIMENSION LARGER THAN 1/4 INCH (6.4 MM) SHALL BE PROVIDED WITH CORROSION-RESISTANT WIRE CLOTH SCREENING. HARDWARE CLOTH PERFORATED VINYL OR SIMILAR MATERIAL WITH OPENINGS HAVING A LEAST DIMENSION OF 1/16 INCH (1.6 MM) MINIMUM AND 1/4 INCH (6.4 MM) NOMINAL, OPENINGS IN ROOF FRAMING MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF SECTION R802.7. REQUIRED VENTILATING OPENINGS SHALL OPEN DIRECTLY TO THE OUTSIDE AIR AND SHALL BE PROTECTED TO PREVENT THE ENTRY OF BIRDS, RODENTS, SNAKES, AND OTHER SIMILAR CREATURES.

**R806.2 MINIMUM VENT AREA.**  
THE MINIMUM NET FREE VENTILATING AREA SHALL BE 1/150 OF THE AREA OF THE VENTED SPACE.

NOTE: SEE SECTION 806.2 FOR EXCEPTION

**R806.3 VENT AND INSULATION CLEARANCE.**  
WHERE EAVE OR CORNICE VENTS ARE INSTALLED, BLOCKING, BRIDGING, AND INSULATION SHALL NOT BLOCK THE FREE FLOW OF AIR, NOT LESS THAN A 1-INCH (25 MM) SPACE SHALL BE PROVIDED BETWEEN THE INSULATION AND THE ROOF SHEATHING AND AT THE LOCATION OF THE VENT.

**R806.4 INSTALLATION AND WEATHER PROTECTION.**  
VENTILATORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INSTALLATION OF VENTILATORS IN ROOF SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION R803. INSTALLATION OF VENTILATORS IN WALL SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION R703.1.

**R806.5 UNVENTED ATTIC AND UNVENTED ENCLOSED RAFTER ASSEMBLIES.**  
UNVENTED ATTICS AND UNVENTED ENCLOSED ROOF FRAMING ASSEMBLIES CREATED BY CEILINGS THAT ARE APPLIED DIRECTLY TO THE UNDERSIDE OF THE ROOF FRAMING MEMBERS AND STRUCTURAL ROOF SHEATHING APPLIED DIRECTLY TO THE TOP OF THE ROOF FRAMING MEMBERS/RAFTERS, SHALL BE PERMITTED WHERE ALL THE FOLLOWING CONDITIONS ARE MET:

SEE CONDITIONS 806.5 (1 THROUGH 5)

## SECTION R807 ATTIC ACCESS

R807.1 ATTIC ACCESS. BUILDINGS WITH COMBUSTIBLE CEILING OR ROOF CONSTRUCTION SHALL HAVE AN ATTIC ACCESS OPENING TO ATTIC AREAS THAT HAVE A VERTICAL HEIGHT OF 30 INCHES (762 MM) OR GREATER OVER AN AREA OF NOT LESS THAN 30 SQUARE FEET (2.8 M<sup>2</sup>). THE VERTICAL HEIGHT SHALL BE MEASURED FROM THE TOP OF THE CEILING FRAMING MEMBERS TO THE UNDERSIDE OF THE ROOF FRAMING MEMBERS.

THE ROUGH-FRAMED OPENING SHALL BE NOT LESS THAN 22 INCHES BY 30 INCHES (559 MM BY 762 MM) AND SHALL BE LOCATED IN A HALLWAY OR OTHER LOCATION WITH READY ACCESS. WHERE LOCATED IN A WALL, THE OPENING SHALL BE NOT LESS THAN 22 INCHES WIDE BY 30 INCHES HIGH (559 MM WIDE BY 762 MM HIGH). WHERE THE ACCESS IS LOCATED IN A CEILING, MINIMUM UNOBSTRUCTED HEADROOM IN THE ATTIC SPACE SHALL BE 30 INCHES (762 MM) AT SOME POINT ABOVE THE ACCESS MEASURED VERTICALLY FROM THE BOTTOM OF CEILING FRAMING MEMBERS. SEE SECTION M1305.1.3 FOR ACCESS REQUIREMENTS WHERE MECHANICAL EQUIPMENT IS LOCATED IN ATTICS.

## CHAPTER 9 :: ROOF ASSEMBLIES

### SECTION R901 GENERAL

R901.1 SCOPE. THE PROVISIONS OF THIS CHAPTER SHALL GOVERN THE DESIGN, MATERIALS, CONSTRUCTION AND QUALITY OF ROOF ASSEMBLIES.

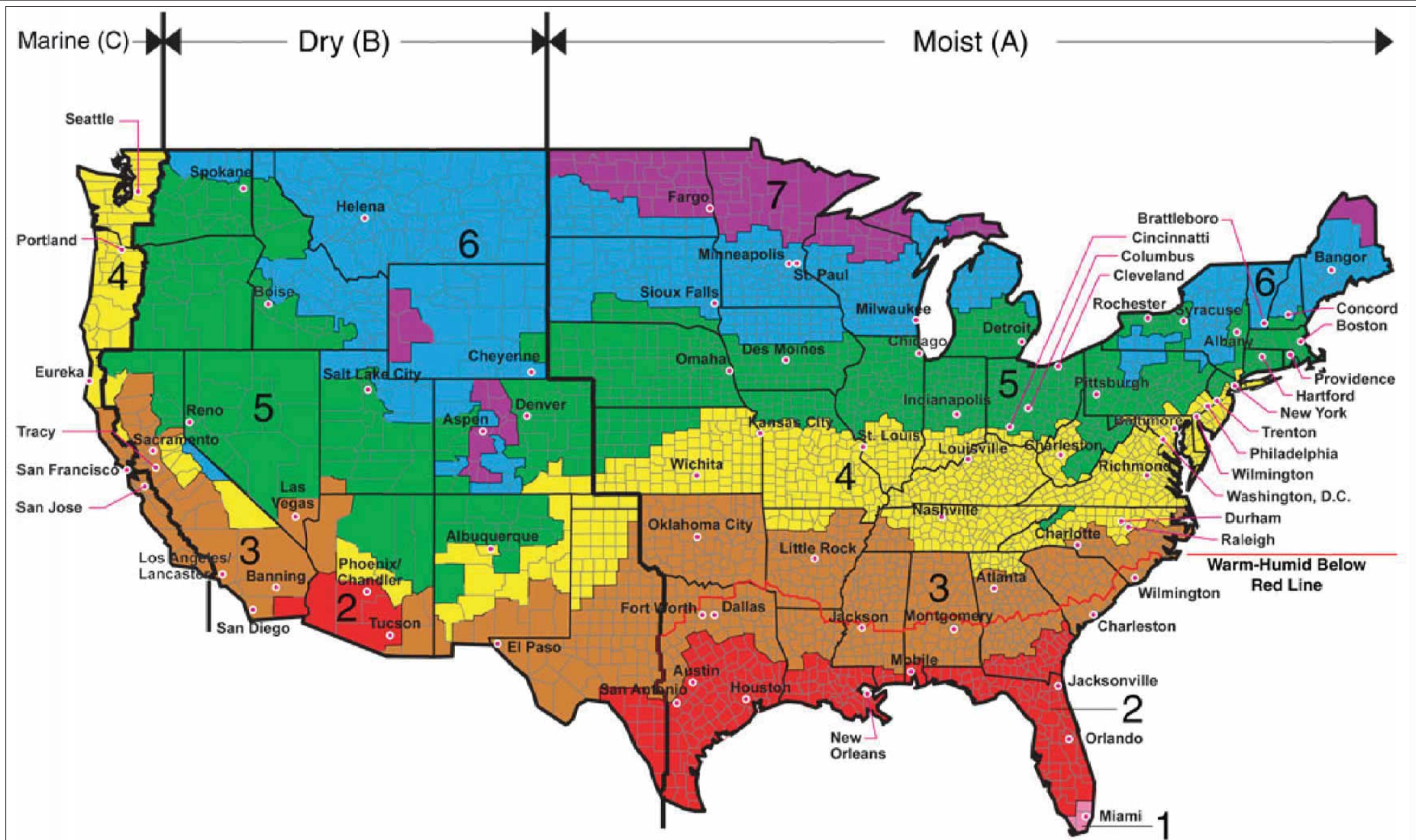
## CHAPTER 10 :: CHIMNEYS & FIREPLACES

**R1001.1 GENERAL.**  
MASONRY FIREPLACES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THIS SECTION AND THE APPLICABLE PROVISIONS OF CHAPTERS 3 AND 4.

FLOOR JOIST SPANS		
FLOOR JOIST SPANS FOR SOUTHERN PINE SPECIES (RESIDENTIAL LIVING AREAS, LIVE LOAD = 40psf, L/24=360) DEAD LOAD = 20psf		
SIZE	SPACING (INCHES)	VISUALLY GRADED #2 SOUTHERN PINE (MAXIMUM FLOOR JOIST SPANS) (FT. - IN.)
2 x 6	12.0	9-10
	16.0	8-6
	19.2	7-4
2 x 8	24.0	7-0
	16.0	12-6
	19.2	10-10
2 x 10	14.2	9-10
	24.0	8-10
	12.0	14-9
2 x 12	16.0	12-10
	19.2	11-8
	24.0	10-5
2 x 12	12.0	17-5
	16.0	15-1
	19.2	13-4
	24.0	12-4

NOTES:  
The above tables are based on the IRC 2018 TABLE R502.3.1(2)

RAFTER SPANS		
RAFTER SPANS FOR SOUTHERN PINE SPECIES LIVE LOAD=30psf, L/2=180 DEAD LOAD = 10psf		
SIZE	SPACING (INCHES)	SPANS (MAXIMUM RAFTER SPANS BETWEEN BRACING) (FT. - IN.)



All of Alaska in Zone 7 except for the following Boroughs in Zone 8: Bethel, Dellingham, Fairbanks, N. Star, Nome North Slope, Northwest Arctic, Southeast Fairbanks, Wade Hampton, and Yukon-Koyukuk

Zone 1 includes: Hawaii, Guam, Puerto Rico, and the Virgin Islands

TABLE N1102.1.2 (R402.1.2)  
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT<sup>a</sup>

CLIMATE ZONE	FENESTRATION U-FACTOR <sup>b</sup>	SKYLIGHT U-FACTOR <sup>d</sup>	GLAZED FENESTRATION SHGC <sup>b, e</sup>	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE <sup>e</sup>	FLOOR R-VALUE	BASEMENT <sup>c</sup> WALL R-VALUE	SLAB <sup>d</sup> R-VALUE & DEPTH	CRAWL SPACE <sup>c</sup> WALL R-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.32	0.55	0.25	38	20 or 13 + 5h	8/13	19	5/13 <sup>f</sup>	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 or 13 + 5h	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.30	0.55	NR	49	20 or 13 + 5h	13/17	30g	15/19	10, 2 ft	15/19
6	0.30	0.55	NR	49	20 + 5 or 13 + 10h	15/20	30g	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20 + 5 or 13 + 10h	19/21	38g	15/19	10, 4 ft	15/19

- For SI: 1 foot = 304.8 mm.
- a. R-values are minimums. U-factors and SHGC are maximums. When insulation is installed in a cavity which is less than the label or design thickness of the insulation, the installed R-value of the insulation shall not be less than the R-value specified in the table.
- b. The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration. Exception: Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.
- c. "15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home. "10/13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.
- d. R-5 shall be added to the required slab edge R-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less in Zones 1 through 3 for heated slabs.
- e. There are no SHGC requirements in the Marine Zone.
- f. Basement wall insulation is not required in warm-humid locations as defined by Figure N1101.10 and Table N1101.10.
- g. Or insulation sufficient to fill the framing cavity, R-19 minimum.
- h. The first value is cavity insulation, the second value is continuous insulation, so "13+5" means R-13 cavity insulation plus R-5 continuous insulation.
- i. The second R-value applies when more than half the insulation is on the interior of the mass wall.

TABLE N1102.1.4 (R402.1.4)  
EQUIVALENT U-FACTORS<sup>a</sup>

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT U-FACTOR	CEILING U-FACTOR	FRAME WALL U-FACTOR	MASS WALL U-FACTOR <sup>b</sup>	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR	CRAWL SPACE WALL U-FACTOR
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	0.060	0.098	0.047	0.091 <sup>c</sup>	0.136
4 except Marine	0.35	0.55	0.026	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	0.32	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055

- a. Nonfenestration U-factors shall be obtained from measurement, calculation or an approved source.
- b. When more than half the insulation is on the interior, the mass wall U-factors shall be a maximum of 0.17 in Zone 1, 0.14 in Zone 2, 0.12 in Zone 3, 0.087 in Zone 4 except Marine, 0.065 in Zone 5 and Marine 4, and 0.057 in Zones 6 through 8.
- c. Basement wall U-factor of 0.360 in warm-humid locations as defined by Figure N1101.10 (R301.1) and Table N1101.10 (R301.1).

TABLE N1102.4.1.1 (R402.4.1.1)  
AIR BARRIER AND INSULATION INSTALLATION (a)

COMPONENT	AIR BARRIER CRITERIA	INSULATION INSTALLATION CRITERIA
General requirements	A continuous air barrier shall be installed in the building envelope. The exterior thermal envelope contains a continuous air barrier. Breaks or joints in the air barrier shall be sealed.	Air-permeable insulation shall not be used as a sealing material.
Ceiling/attic	The air barrier in any dropped ceiling or soffit shall be aligned with the insulation and any gaps in the air barrier sealed. Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed.	The insulation in any dropped ceiling/soffit shall be aligned with the air barrier.
Walls	The junction of the foundation and sill plate shall be sealed. The junction of the top plate and the top of exterior walls shall be sealed. Knee walls shall be sealed.	Cavities within corners and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance of not less than R-3 per inch. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and in continuous alignment with the air barrier.
Windows, skylights and doors	The space between framing and skylights, and framing the jambs of windows and doors, shall be sealed.	
Rim joists	Rim joists shall include the air barrier.	Rim joists shall be insulated.
Floors (including above garage and cantilevered floors) and floors above garages.	The air barrier shall be installed at any exposed edge of insulation.	Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking. Alternatively floor framing cavity insulation shall be in contact with the top side of sheathing, or continuous insulation installed on the underside of floor framing; and extending from the bottom to the top of all perimeter floor framing members.
Crawl space walls	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.	Crawl space insulation, where provided instead of floor insulation, shall be permanently attached to the walls.
Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.	
Narrow cavities		Batts to be installed in narrow cavities shall be cut to fit, or narrow cavities shall be filled with insulation that on installation readily conforms to the available cavity space.
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.	
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be sealed to the finished surface.	Recessed light fixtures installed in the building thermal envelope shall be air tight and IC rated.
Plumbing and wiring		In exterior walls, batt insulation shall be cut neatly to fit around wiring and plumbing or insulation that on installation, readily conforms to available space, shall extend behind piping and wiring.
Shower/tub on exterior wall	The air barrier installed at exterior walls adjacent to showers and tubs shall separate the wall from the shower or tub.	Exterior walls adjacent to showers and tubs shall be insulated.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical and communication boxes. Alternatively, air-sealed boxes shall be installed.	
HVAC register boots	HVAC register boots that penetrate building thermal envelope shall be sealed to the subfloor or drywall.	
Concealed sprinklers	Where required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.	

(a) Inspection of log walls shall be in accordance with the provisions of ICC 400.  
2018 INTERNATIONAL RESIDENTIAL CODE ©

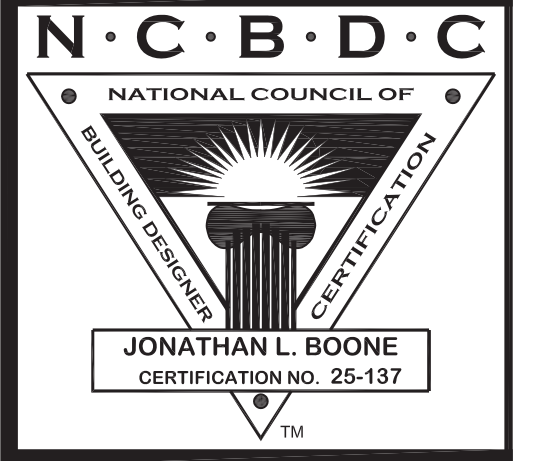


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Code Year: 2018

International Residential Code

Energy Efficiency and Conservation

IMPORTANT NOTE: THESE ARE PRELIMINARY SPECIFICATIONS TO BE USED BY ARCHITECTS AND BUILDERS TO PREPARE PERMITS AND CONTRACTS. THE FINAL VERSION OF THE CODE WILL BE PUBLISHED BY THE INTERNATIONAL RESIDENTIAL CODE BOARD (IRC) AND WILL BE AVAILABLE TO THE PUBLIC THROUGH THE IRC'S ONLINE STORE. THE INFORMATION IS ALSO A GENERAL SUMMARY OF THE CODE AND IT IS RECOMMENDED THAT YOU BECOME FAMILIAR WITH THE FULL EXTENT OF THE ACTUAL CODE. THE NOTES AND SPECIFICATIONS MAY HAVE TO BE AMENDED DUE TO VARIATIONS IN LOCAL CODES AND GEOLOGICAL AND STRUCTURAL CONDITIONS. IT IS RECOMMENDED THAT YOU CONSULT A LOCAL ARCHITECT OR ENGINEER OF YOUR CHOICE AND CHECK WITH LOCAL BUILDING OFFICIALS PRIOR TO THE START OF ACTUAL CONSTRUCTION. SPECIAL ENGINEERING MAY REQUIRE THAT THESE SPECIFICATIONS BE CHANGED OR AMENDED TO COMPLY WITH SEISMIC, WIND, OR OTHER SPECIAL CONDITIONS AS REQUIRED BY LOCAL CONSTRUCTION METHODOLOGIES AND LOCAL CODES.

Date: 02.10.20

SHEET NUMBER

# N4