THIS PLAN IS DESIGNED TO MEET THE REQUIREMENTS OF THE NORTH CAROLINA RESIDENTIAL CODE 2018 EDITION

NOTICE TO CONTRACTOR
All construction must comply with current NC Building Codes and is subject to field inspection and verification.

APPROVED
Limited building only review
Permit holder responsible for full compliance with the code
11/01/2023

Harnett County
North Carolina

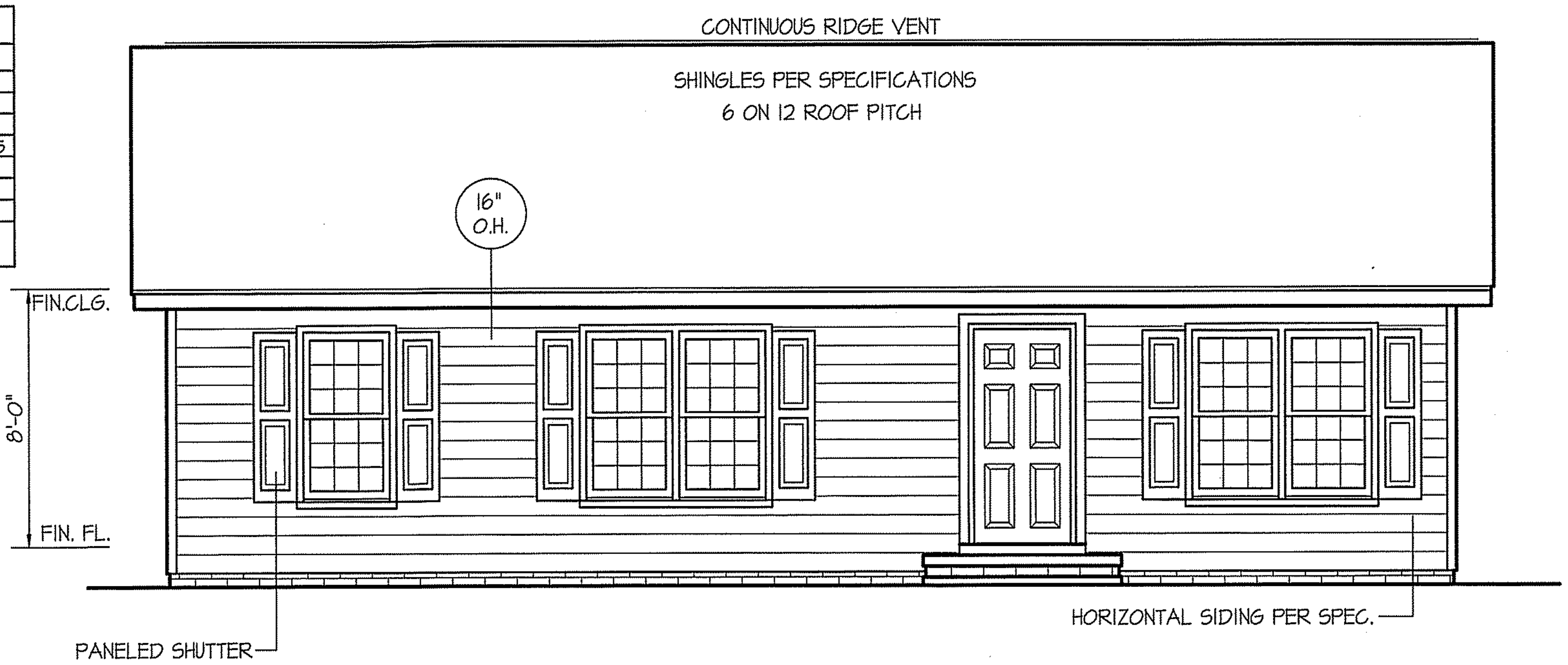
DATE:
OCT. 19, 2023

WELLONS HOMES
P.O. BOX 730
DUNN, N.C. - 28335
O: (910) 892-3123 FAX: (910) 892-5032
© 2023, WELLONS HOMES

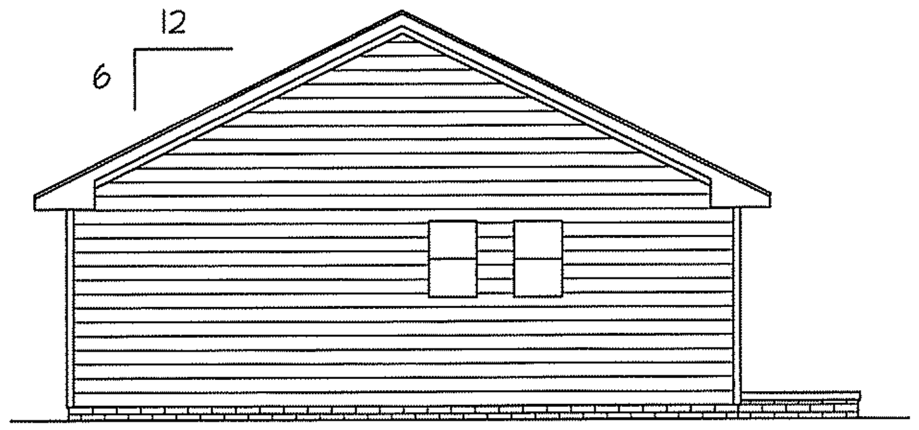
INSULATION and FENESTRATION REQUIREMENTS		
CLIMATE ZONE	ZONE-3	ZONE-4
FENESTRATION U-FACTOR	0.35	0.35
GLAZED FENESTRATION SHGC	0.30	0.30
MINIMUM CEILING R-VALUE	R-38	R-38
MINIMUM WALL R-VALUE	R-15, 13+2.5	R-15, 13+2.5
MINIMUM FLOOR R-VALUE	R-19	R-19
MIN. CRAWL SPACE WALL R-VALUE	5/13	10/15
MIN. SLAB R-VALUE	0	R-10
PROVIDE STEPS AS REQUIRED GRADE MAY VARY - BUILDER TO VERIFY		

WIND ZONES (PER TABLE R301.2(4)	
COUNTY	MPH
HARNETT	120
JOHNSTON	120
SAMPSON	130
WAKE	115

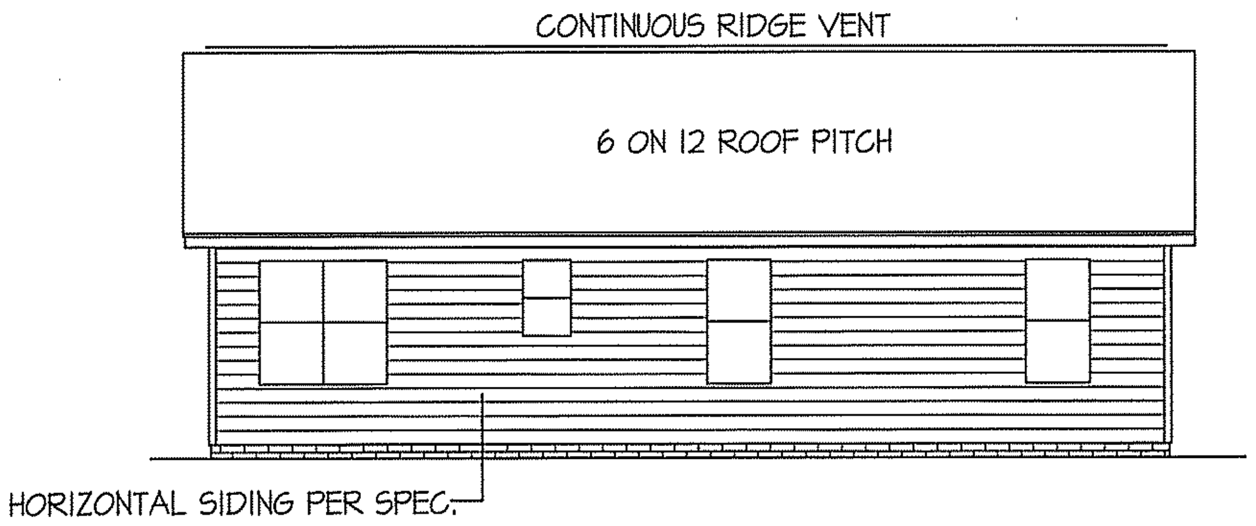
ALL EXTERIOR WALLS TO BE SHEATHED WITH CS-WSP (7/16" OSB) IN ACCORDANCE WITH SECTION R602.10.3 UNLESS OTHERWISE NOTED.



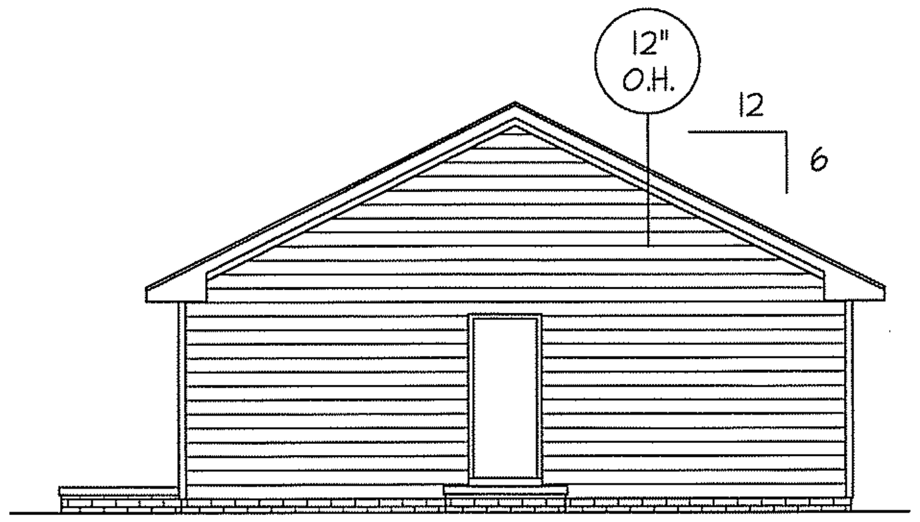
FRONT ELEVATION
SCALE: 1/4" = 1'-0"



LEFT ELEVATION
SCALE: 1/8" = 1'-0"



REAR ELEVATION
SCALE: 1/8" = 1'-0"



RIGHT ELEVATION
SCALE: 1/8" = 1'-0"

PROVIDE STEPS AS REQUIRED
BUILDER TO VERIFY GRADE

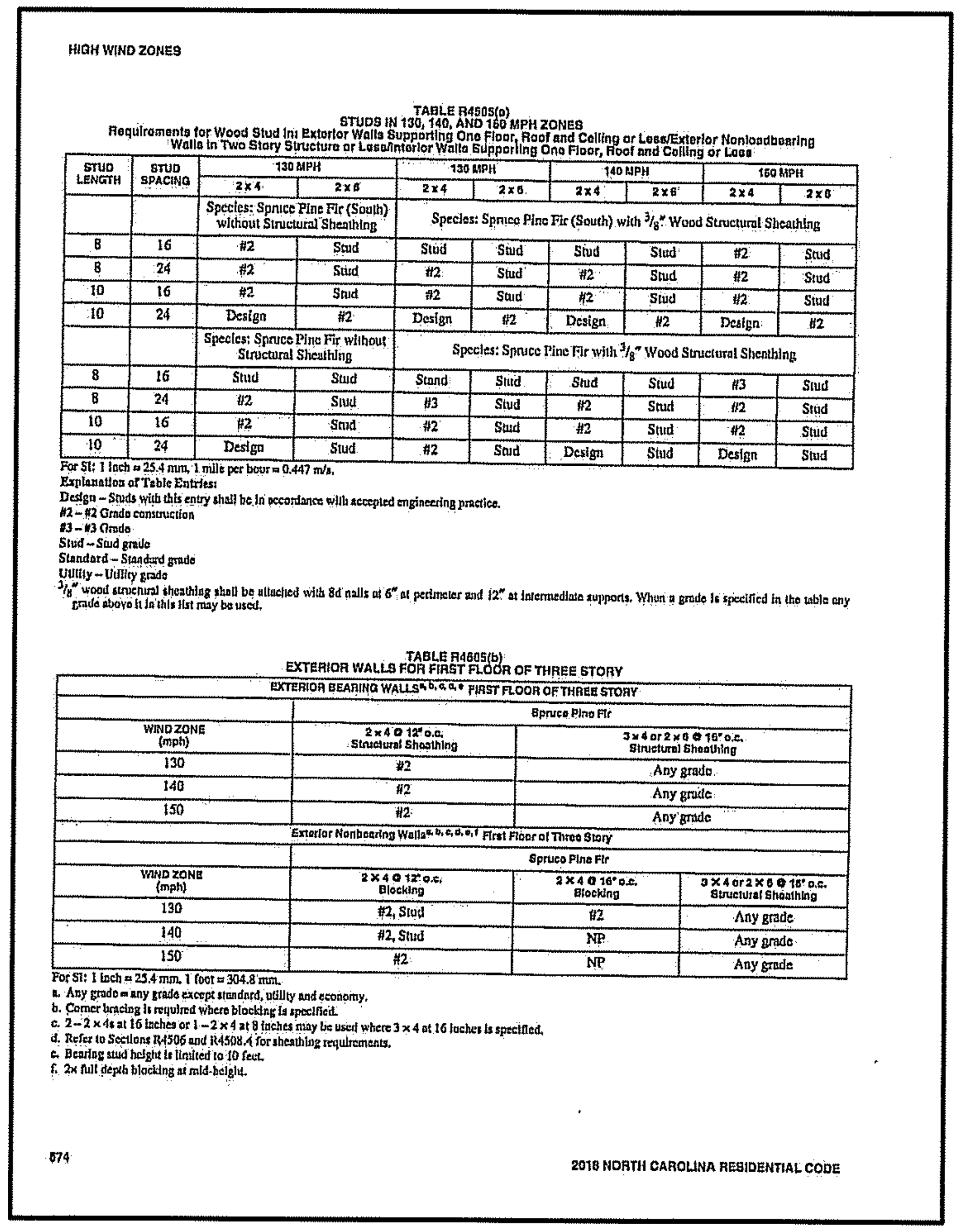
ROOF VENTILATION REQ'MTS.
1120 ATTIC SQ. FT. / 300 = 3.73
PROVIDED ON PLAN
40 L.F. RIDGE VENT = 7.5
80 L.F. SOFFIT VENT = 5.00
TOTAL = 12.50 S.F. FREE NET AREA

EXCLUSIVE PLAN FOR
WELLONS HOMES

PLAN:
Freedom -III (Crystal)

SHEET NO.
1

C.F.~ "WELLONS HOME" FILE NAME "FREEDOM I, II, & III" AUGUST-2023



HIGH WIND ZONES

TABLE R4505(a)
STUDS IN 130, 140, AND 150 MPH ZONES

Requirements for Wood Stud in: Exterior Walls Supporting One Floor, Roof and Ceiling or Less/Exterior Nonloadbearing Walls in Two Story Structure or Less/Interior Walls Supporting One Floor, Roof and Ceiling or Less

STUD LENGTH	STUD SPACING	130 MPH		130 MPH		140 MPH		150 MPH	
		2 x 4	2 x 6	2 x 4	2 x 6	2 x 4	2 x 6	2 x 4	2 x 6
		Species: Spruce Pine Fir (South) without Structural Sheathing		Species: Spruce Pine Fir (South) with 3/8" Wood Structural Sheathing					
8	16	#2	Stud	Stud	Stud	Stud	Stud	#2	Stud
8	24	#2	Stud	#2	Stud	#2	Stud	#2	Stud
10	16	#2	Stud	#2	Stud	#2	Stud	#2	Stud
10	24	Design	#2	Design	#2	Design	#2	Design	#2
		Species: Spruce Pine Fir without Structural Sheathing		Species: Spruce Pine Fir with 3/8" Wood Structural Sheathing					
8	16	Stud	Stud	Stand	Stud	Stud	Stud	#3	Stud
8	24	#2	Stud	#3	Stud	#2	Stud	#2	Stud
10	16	#2	Stud	#2	Stud	#2	Stud	#2	Stud
10	24	Design	Stud	#2	Stud	Design	Stud	Design	Stud

For SI: 1 inch = 25.4 mm, 1 mile per hour = 0.447 m/s.

Explanation of Table Entries:

Design – Studs with this entry shall be in accordance with accepted engineering practice.

#2 – #2 Grade construction

#3 – #3 Grade

Stud – Stud grade

Standard – Standard grade

Utility – Utility grade

3/8" wood structural sheathing shall be attached with 8d nails at 6" at perimeter and 12" at intermediate supports. When a grade is specified in the table any grade above it in this list may be used.

TABLE R4505(b)
EXTERIOR WALLS FOR FIRST FLOOR OF THREE STORY

EXTERIOR BEARING WALLS[a, b, c, d, e] FIRST FLOOR OF THREE STORY		
	Spruce Pine Fir	
WIND ZONE (mph)	2 x 4 @ 12" o.c. Structural Sheathing	3 x 4 or 2 x 6 @ 16" o.c. Structural Sheathing
130	#2	Any grade
140	#2	Any grade
150	#2	Any grade

Exterior Nonbearing Walls[a, b, c, d, e, f] First Floor of Three Story			
	Spruce Pine Fir		
WIND ZONE (mph)	2 X 4 @ 12" o.c. Blocking	2 X 4 @ 16" o.c. Blocking	3 X 4 or 2 X 6 @ 16" o.c. Structural Sheathing
130	#2, Stud	#2	Any grade
140	#2, Stud	NP	Any grade
150	#2	NP	Any grade

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Any grade = any grade except standard, utility and economy.

b. Corner bracing is required where blocking is specified.

c. 2 – 2 × 4s at 16 inches or 1 – 2 × 4 at 8 inches may be used where 3 × 4 at 16 inches is specified.

d. Refer to Sections R4506 and R4508.4 for sheathing requirements.

e. Bearing stud height is limited to 10 feet.

f. 2x full depth blocking at mid-height.

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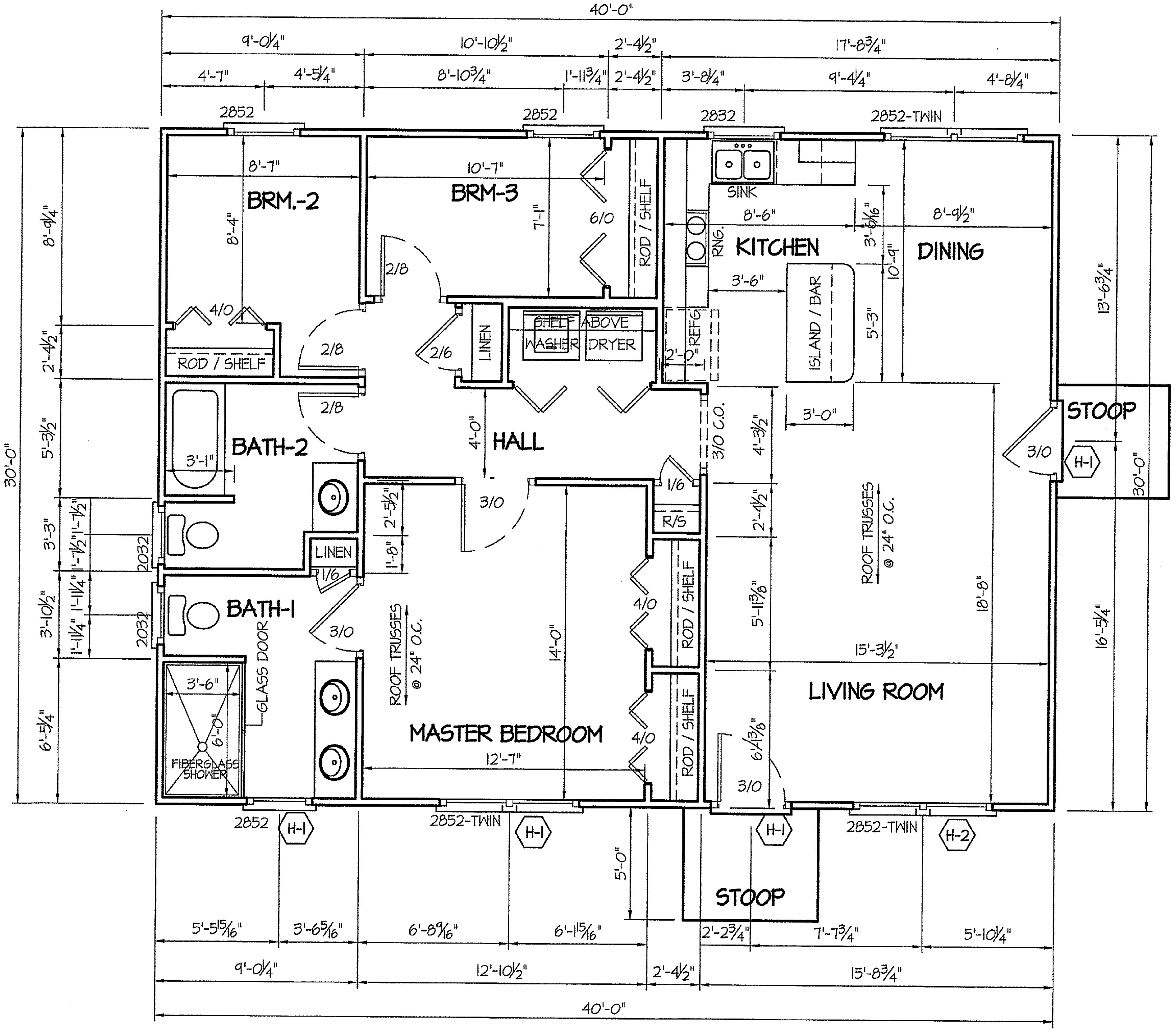

8' CEILING (UNLESS OTHERWISE NOTED)

FLOOR PLAN

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

1200 S.F. (FRAME-HEATED)
55 S.F. (STOOP)

ALL INTERIOR AND EXTERIOR LOAD BEARING HEADERS WILL BE 2x10 #2 SPF UNLESS OTHERWISE NOTED.

GIRDER AND HEADER SIZES AND JACK STUD REQUIREMENTS ON EXTERIOR AND INTERIOR LOAD BEARING WALLS ARE TO COINCIDE WITH TABLE EXT.~R602.7 (1) AND INT.~R602.7 (2).

SECTION R407~COLUMNS

R407.3 STRUCTURAL REQUIREMENTS.
THE COLUMNS SHALL BE RESTRAINED TO PREVENT LATERAL DISPLACEMENT AT THE TOP AND BOTTOM END. WOOD COLUMNS SHALL BE NOT LESS IN NOMINAL SIZE THAN 4 INCHES BY 4 INCHES (102 mm BY 102 mm). STEEL COLUMNS SHALL BE NOT LESS THAN 3-INCH-DIAMETER (76 mm) SCHEDULE 40 PIPE MANUFACTURED IN ACCORDANCE WITH ASTM A53 GRADE B OR APPROVED EQUIVALENT.

TABLE R602.7.5
MINIMUM NUMBER OF FULL HEIGHT STUDS AT EACH END OF HEADERS IN EXTERIOR WALLS

HEADER SPAN (feet)	MAX. STUD SPACING (inches) [per Table R602.3(5)]	
	16	24
< 3'	1	1
4'	2	1
8'	3	2
12'	5	3
16'	6	4

HEADER SCHEDULE

SYMBOL #	SIZE	JACKS
H-1	(2) 2x10	1
H-2	(2) 2x10	2
H-3	(2) 2x8	2
H-4	(2) 2x12	2
H-5	(2) 1.75 x 9.25 LVL	3

WIND ZONES (PER TABLE R301.2(4)

COUNTY	MPH
HARNETT	120
JOHNSTON	120
SAMPSON	130
WAKE	115

ALL EXTERIOR WALLS TO BE SHEATHED WITH CS-WSP (7/16" OSB) IN ACCORDANCE WITH SECTION R602.10.3 UNLESS OTHERWISE NOTED.

C.F.~ "WELLONS HOME" FILE NAME "FREEDOM I, II, & III" AUGUST-2023

DATE:
OCT. 19, 2023

WELLONS HOMES
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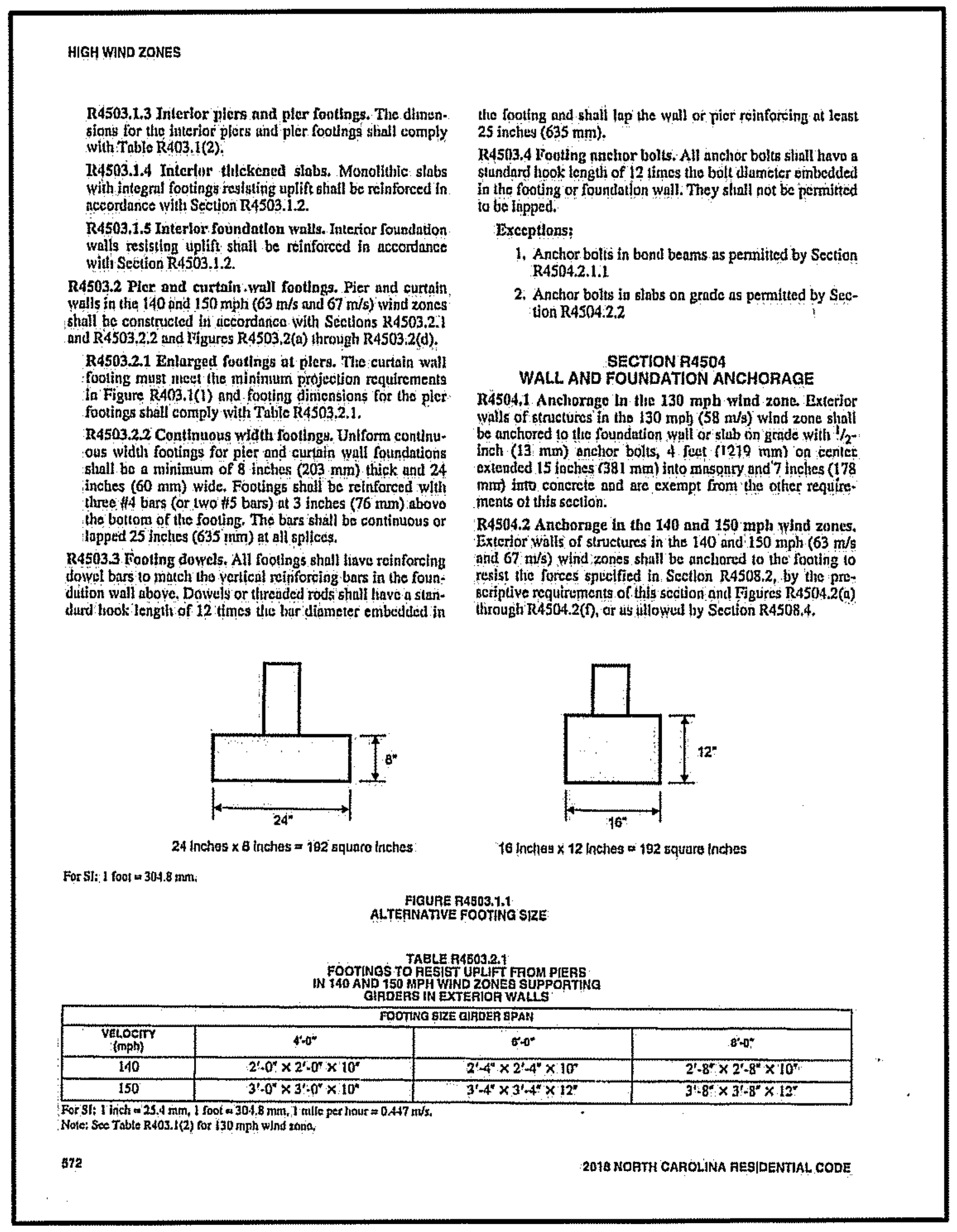
DUNN, N.C. - 28335
O: (910) 892-3123 FAX: (910) 892-5032

EXCLUSIVE PLAN FOR WELLONS HOMES

PLAN:
Freedom -III (Crystal)

SHEET NO.
2



HIGH WIND ZONES

R4503.1.3 Interior piers and pier footings. The dimensions for the interior piers and pier footings shall comply with Table R403.1(2).

R4503.1.4 Interior thickened slabs. Monolithic slabs with integral footings resisting uplift shall be reinforced in accordance with Section R4503.1.2.

R4503.1.5 Interior foundation walls. Interior foundation walls resisting uplift shall be reinforced in accordance with Section R4503.1.2.

R4503.2 Pier and curtain wall footings. Pier and curtain walls in the 140 and 150 mph (63 m/s and 67 m/s) wind zones shall be constructed in accordance with Sections R4503.2.1 and R4503.2.2 and Figures R4503.2(a) through R4503.2(d).

R4503.2.1 Enlarged footings at piers. The curtain wall footing must meet the minimum projection requirements in Figure R403.1(1) and footing dimensions for the pier footings shall comply with Table R4503.2.1.

R4503.2.2 Continuous width footings. Uniform continuous width footings for pier and curtain wall foundations shall be a minimum of 8 inches (203 mm) thick and 24 inches (60 mm) wide. Footings shall be reinforced with three #4 bars (or two #5 bars) at 3 inches (76 mm) above the bottom of the footing. The bars shall be continuous or lapped 25 inches (635 mm) at all splices.

R4503.3 Footing dowels. All footings shall have reinforcing dowel bars to match the vertical reinforcing bars in the foundation wall above. Dowels or threaded rods shall have a standard hook length of 12 times the bar diameter embedded in the footing and shall lap the wall or pier reinforcing at least 25 inches (635 mm).

R4503.4 Footing anchor bolts. All anchor bolts shall have a standard hook length of 12 times the bolt diameter embedded in the footing or foundation wall. They shall not be permitted to be lapped.

Exceptions:

1. Anchor bolts in bond beams as permitted by Section R4504.2.1.1
2. Anchor bolts in slabs on grade as permitted by Section R4504.2.2

SECTION R4504
WALL AND FOUNDATION ANCHORAGE

R4504.1 Anchorage in the 130 mph wind zone. Exterior walls of structures in the 130 mph (58 m/s) wind zone shall be anchored to the foundation wall or slab on grade with $^{1}/_{2}$-inch (13 mm) anchor bolts, 4 feet (1219 mm) on center extended 15 inches (381 mm) into masonry and 7 inches (178 mm) into concrete and are exempt from the other requirements of this section.

R4504.2 Anchorage in the 140 and 150 mph wind zones. Exterior walls of structures in the 140 and 150 mph (63 m/s and 67 m/s) wind zones shall be anchored to the footing to resist the forces specified in Section R4508.2, by the prescriptive requirements of this section and Figures R4504.2(a) through R4504.2(f), or as allowed by Section R4508.4.

24 inches x 8 inches = 192 square inches

16 inches x 12 inches = 192 square inches

For SI: 1 foot = 304.8 mm.

FIGURE R4503.1.1
ALTERNATIVE FOOTING SIZE

TABLE R4503.2.1
FOOTINGS TO RESIST UPLIFT FROM PIERS
IN 140 AND 150 MPH WIND ZONES SUPPORTING
GIRDERS IN EXTERIOR WALLS

VELOCITY (mph)	FOOTING SIZE GIRDER SPAN		
	4'-0"	6'-0"	8'-0"
140	2'-0" × 2'-0" × 10"	2'-4" × 2'-4" × 10"	2'-8" × 2'-8" × 10"
150	3'-0" × 3'-0" × 10"	3'-4" × 3'-4" × 12"	3'-8" × 3'-8" × 12"

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s.
Note: See Table R403.1(2) for 130 mph wind zone.

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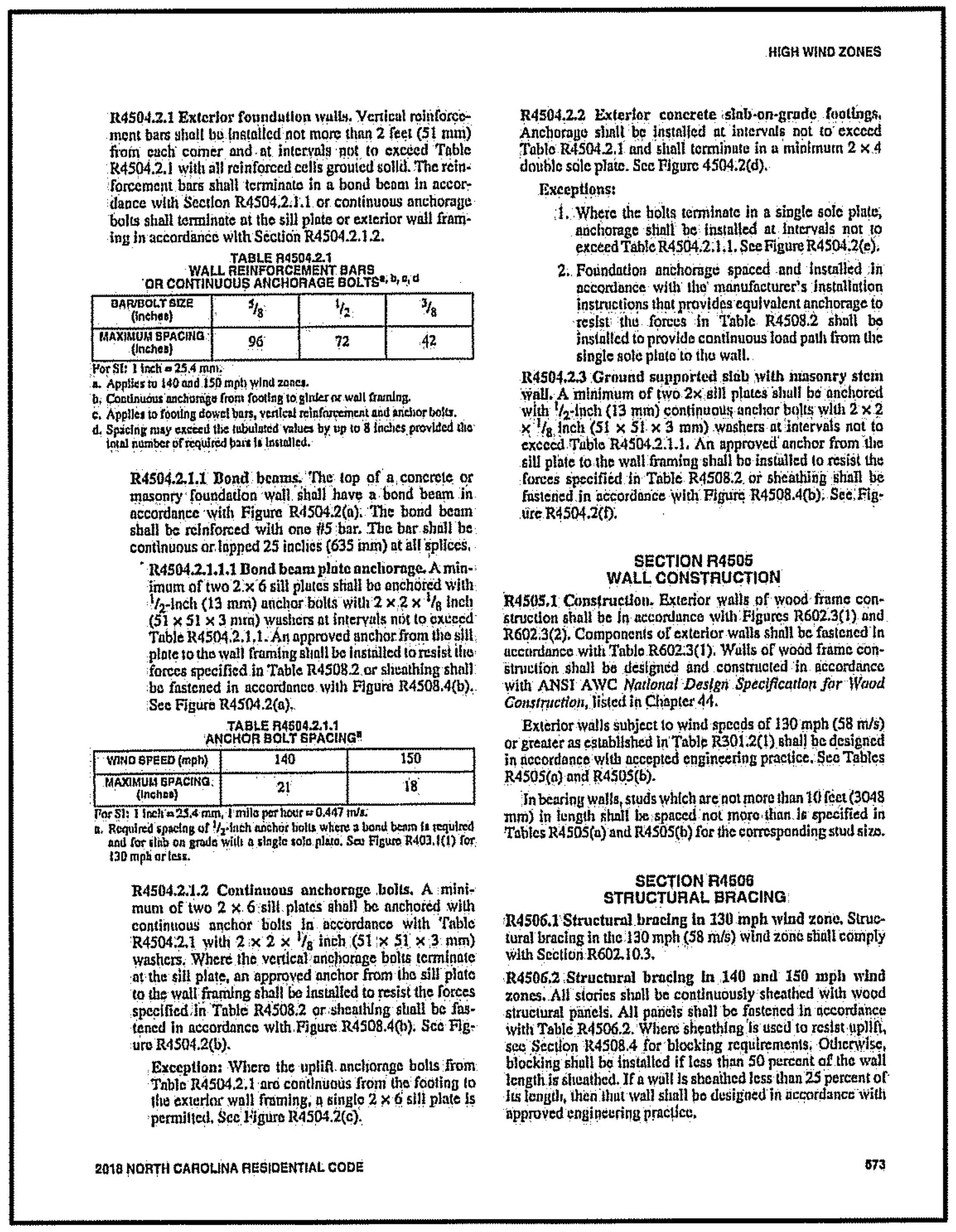

HIGH WIND ZONES

R4504.2.1 Exterior foundation walls. Vertical reinforcement bars shall be installed not more than 2 feet (51 mm) from each corner and at intervals not to exceed Table R4504.2.1 with all reinforced cells grouted solid. The reinforcement bars shall terminate in a bond beam in accordance with Section R4504.2.1.1 or continuous anchorage bolts shall terminate at the sill plate or exterior wall framing in accordance with Section R4504.2.1.2.

TABLE R4504.2.1
WALL REINFORCEMENT BARS
OR CONTINUOUS ANCHORAGE BOLTS[a, b, c, d]

BAR/BOLT SIZE (inches)	$^{5}/_{8}$	$^{1}/_{2}$	$^{3}/_{8}$
MAXIMUM SPACING (inches)	96	72	42

For SI: 1 inch = 25.4 mm.
a. Applies to 140 and 150 mph wind zones.
b. Continuous anchorage from footing to girder or wall framing.
c. Applies to footing dowel bars, vertical reinforcement and anchor bolts.
d. Spacing may exceed the tabulated values by up to 8 inches provided the total number of required bars is installed.

R4504.2.1.1 Bond beams. The top of a concrete or masonry foundation wall shall have a bond beam in accordance with Figure R4504.2(a). The bond beam shall be reinforced with one #5 bar. The bar shall be continuous or lapped 25 inches (635 mm) at all splices.

R4504.2.1.1.1 Bond beam plate anchorage. A minimum of two 2 × 6 sill plates shall be anchored with $^{1}/_{2}$-inch (13 mm) anchor bolts with 2 × 2 × $^{1}/_{8}$ inch (51 × 51 × 3 mm) washers at intervals not to exceed Table R4504.2.1.1. An approved anchor from the sill plate to the wall framing shall be installed to resist the forces specified in Table R4508.2 or sheathing shall be fastened in accordance with Figure R4508.4(b). See Figure R4504.2(a).

TABLE R4504.2.1.1
ANCHOR BOLT SPACING[a]

WIND SPEED (mph)	140	150
MAXIMUM SPACING (inches)	21	18

For SI: 1 inch = 25.4 mm, 1 mile per hour = 0.447 m/s.
a. Required spacing of $^{1}/_{2}$-inch anchor bolts where a bond beam is required and for slab on grade with a single sole plate. See Figure R403.1(1) for 130 mph or less.

R4504.2.1.2 Continuous anchorage bolts. A minimum of two 2 × 6 sill plates shall be anchored with continuous anchor bolts in accordance with Table R4504.2.1 with 2 × 2 × $^{1}/_{8}$ inch (51 × 51 × 3 mm) washers. Where the vertical anchorage bolts terminate at the sill plate, an approved anchor from the sill plate to the wall framing shall be installed to resist the forces specified in Table R4508.2 or sheathing shall be fastened in accordance with Figure R4508.4(b). See Figure R4504.2(b).

Exception: Where the uplift anchorage bolts from Table R4504.2.1 are continuous from the footing to the exterior wall framing, a single 2 × 6 sill plate is permitted. See Figure R4504.2(c).

R4504.2.2 Exterior concrete slab-on-grade footings. Anchorage shall be installed at intervals not to exceed Table R4504.2.1 and shall terminate in a minimum 2 × 4 double sole plate. See Figure 4504.2(d).

Exceptions:

1. Where the bolts terminate in a single sole plate, anchorage shall be installed at intervals not to exceed Table R4504.2.1.1. See Figure R4504.2(e).
2. Foundation anchorage spaced and installed in accordance with the manufacturer's installation instructions that provides equivalent anchorage to resist the forces in Table R4508.2 shall be installed to provide continuous load path from the single sole plate to the wall.

R4504.2.3 Ground supported slab with masonry stem wall. A minimum of two 2× sill plates shall be anchored with $^{1}/_{2}$-inch (13 mm) continuous anchor bolts with 2 × 2 × $^{1}/_{8}$ inch (51 × 51 × 3 mm) washers at intervals not to exceed Table R4504.2.1.1. An approved anchor from the sill plate to the wall framing shall be installed to resist the forces specified in Table R4508.2 or sheathing shall be fastened in accordance with Figure R4508.4(b). See Figure R4504.2(f).

SECTION R4505
WALL CONSTRUCTION

R4505.1 Construction. Exterior walls of wood frame construction shall be in accordance with Figures R602.3(1) and R602.3(2). Components of exterior walls shall be fastened in accordance with Table R602.3(1). Walls of wood frame construction shall be designed and constructed in accordance with ANSI AWC *National Design Specification for Wood Construction*, listed in Chapter 44.

Exterior walls subject to wind speeds of 130 mph (58 m/s) or greater as established in Table R301.2(1) shall be designed in accordance with accepted engineering practice. See Tables R4505(a) and R4505(b).

In bearing walls, studs which are not more than 10 feet (3048 mm) in length shall be spaced not more than is specified in Tables R4505(a) and R4505(b) for the corresponding stud size.

SECTION R4506
STRUCTURAL BRACING

R4506.1 Structural bracing in 130 mph wind zone. Structural bracing in the 130 mph (58 m/s) wind zone shall comply with Section R602.10.3.

R4506.2 Structural bracing in 140 and 150 mph wind zones. All stories shall be continuously sheathed with wood structural panels. All panels shall be fastened in accordance with Table R4506.2. Where sheathing is used to resist uplift, see Section R4508.4 for blocking requirements. Otherwise, blocking shall be installed if less than 50 percent of the wall length is sheathed. If a wall is sheathed less than 25 percent of its length, then that wall shall be designed in accordance with approved engineering practice.

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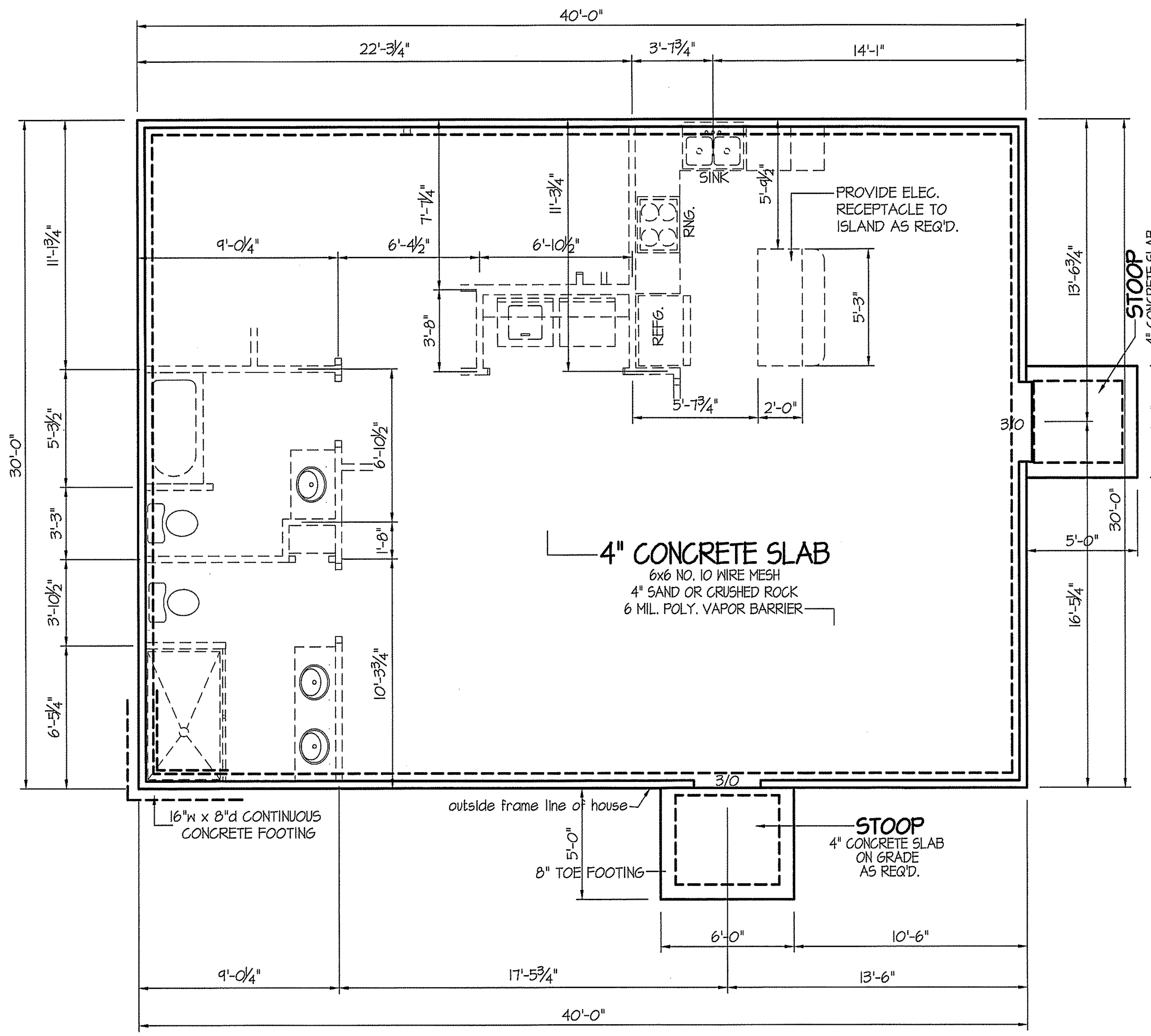


STEM WALL SLAB

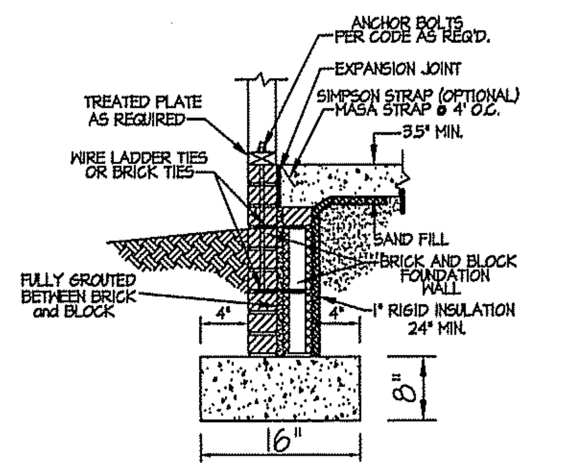
FOUNDATION PLAN

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

PROVIDE HOSE BIBBS AS PER SPECIFICATIONS

WIND ZONES (PER TABLE R301.2(4)	
COUNTY	MPH
HARNETT	120
JOHNSTON	120
SAMPSON	130
WAKE	115

N.C. SPECIFIC
COMcheck or ASHRAE 90.1
2013 COMcheck SHALL BE PERMITTED
TO DEMONSTRATE COMPLIANCE
WITH THE N.C. 2018 ENERGY
CONSERVATION CODES.
(SECTION C401.2 (3)



TYP. FND. DETAIL

DATE:
OCT. 19, 2023

WELLONS HOMES
P.O. BOX 730
DUNN, N.C. - 28335
O: (910) 892-3123 FAX: (910) 892-5032

EXCLUSIVE PLAN FOR
WELLONS HOMES

PLAN:
Freedom -III (Crystal)

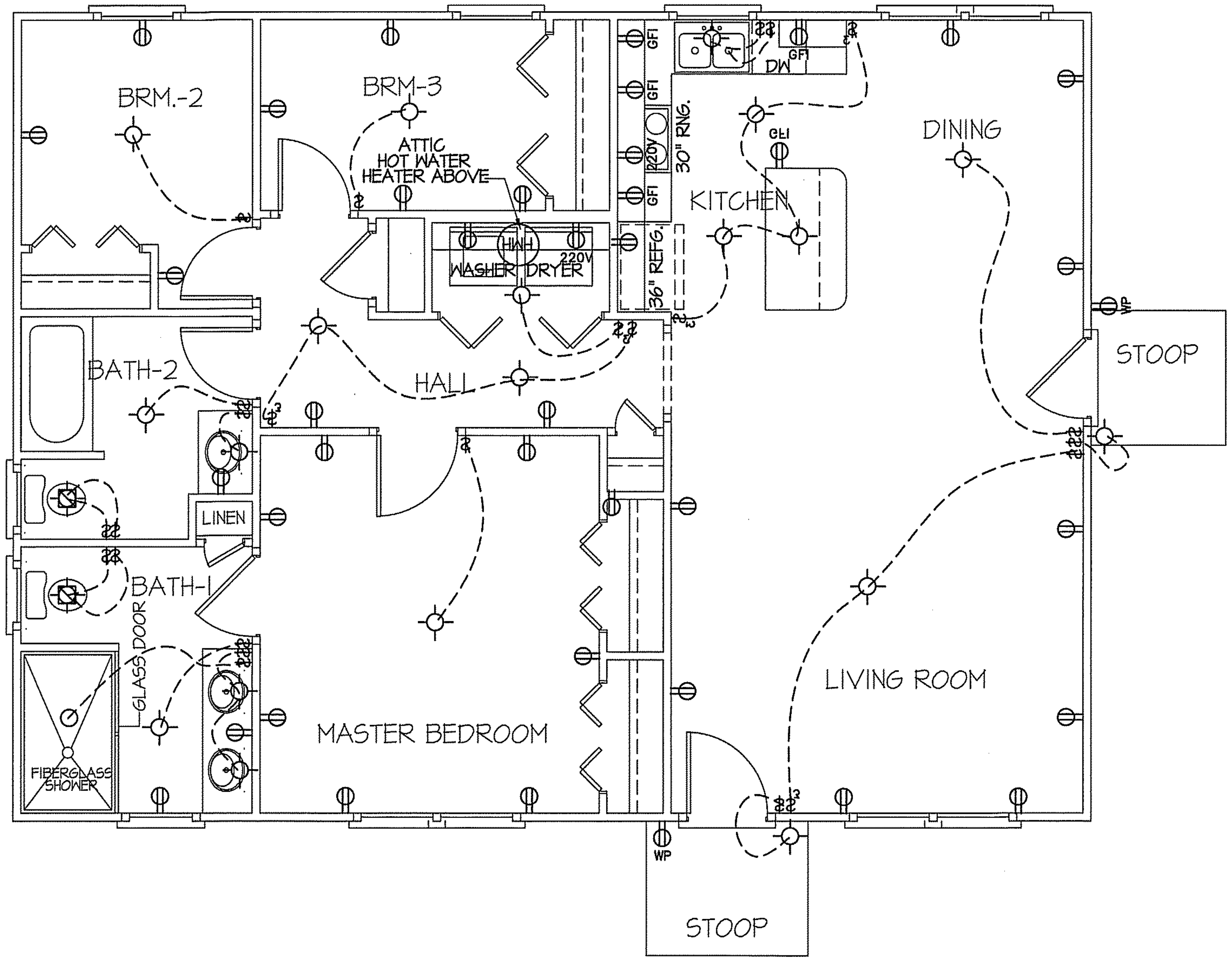
SHEET NO.
3

C.F.~ "WELLONS HOME" FILE NAME "FREEDOM I, II, & III" AUGUST-2023

ELECTRICAL LEGEND

PROVIDE BURGLAR/SMOKE AND FIRE DETECTORS AS PER MANUFACTURER'S SPECIFICATIONS.
PROVIDE CENTRAL VACCUUM SYSTEM AS PER MANUFACTURER'S SPECIFICATIONS.
ALL FANS ARE TO BE CONTROLLED BY VAR/SPEED AND DIRECTIONAL SWITCHES

⌖	SURF. MOUNTED LIGHT	⊖	TYPICAL WALL RECEP.	$	TYPICAL SWITCH
○	RECESSED LIGHT	⊖	TOP 1/2 HOT W/SWITCH	$3	3-WAY SWITCH
○>	EYEBALL LIGHT	⊟	CEILING RECEPTACLE	$4	4-WAY SWITCH
⌖	FAN/LIGHT COMB.	◎	FLOOR RECEPTACLE	$D	DIMMER SWITCH
—	FLUORESCENT TUBE	⊖WP	WATERPROOF RECEP.	EP	ELEC. PANEL BOX
▭	FLUOR. LIGHT FIXTURE	⊖GFI	GROUND FAULT	⊡	T.V. CABLE RECEP.
⊘	EXHAUST FAN	⊚D	DISPOSAL UNIT	◁	TELEPHONE JACK
⊗	CL'G. FAN	⊖220V	220 VOLT RECEPTACLE	©	COMPUTER JACK
⌖	FLOOD LIGHT				



8' CEILING (UNLESS OTHERWISE NOTED)

ELECTRICAL FLOOR PLAN

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

1200 S.F. (FRAME-HEATED)
55 S.F. (STOOPS)

DATE:
OCT. 19, 2023

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EXCLUSIVE PLAN FOR WELLONS HOMES

PLAN:
Freedom -III (Crystal)

SHEET NO.
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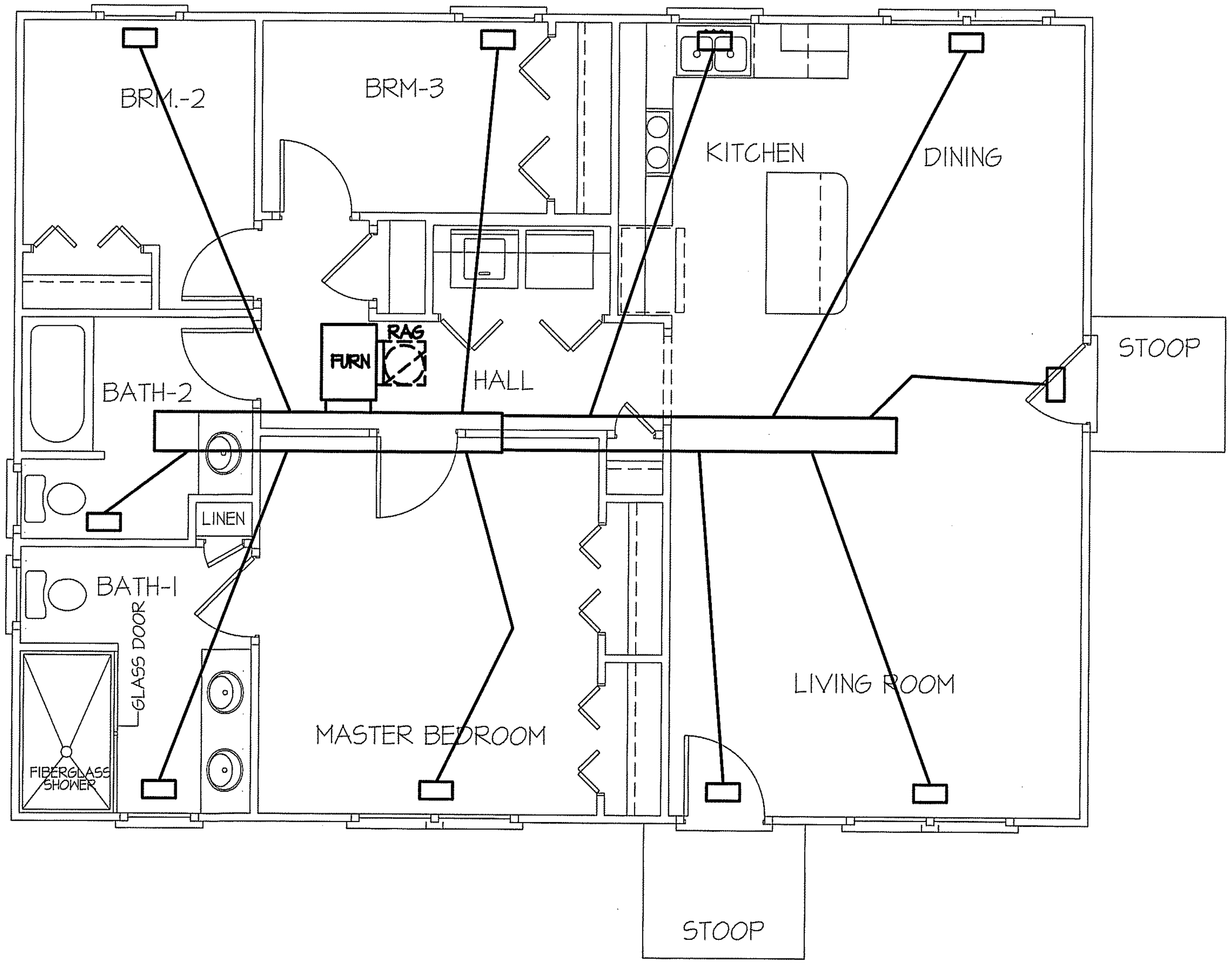
C.F.~ "WELLONS HOME" FILE NAME "FREEDOM I, II, & III" AUGUST-2023



TOTAL HEAT GAIN = 19,320 B.T.U.H.
TOTAL HEAT LOSS = 30,540 B.T.U.H.

8' CEILING (UNLESS OTHERWISE NOTED)

HVAC FLOOR PLAN

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

1200 S.F. (FRAME-HEATED)
55 S.F. (STOOP)

NOTE:
HVAC CONTRACTOR TO PROVIDE OWNERS AND BUILDERS UNIT INFORMATION, DUCT LAYOUTS, AND VERIFY B.T.U.H. REQUIREMENTS BEFORE CONSTRUCTION BEGINS.

C.F.~ "WELLONS HOME" FILE NAME "FREEDOM I, II, & III" AUGUST-2023

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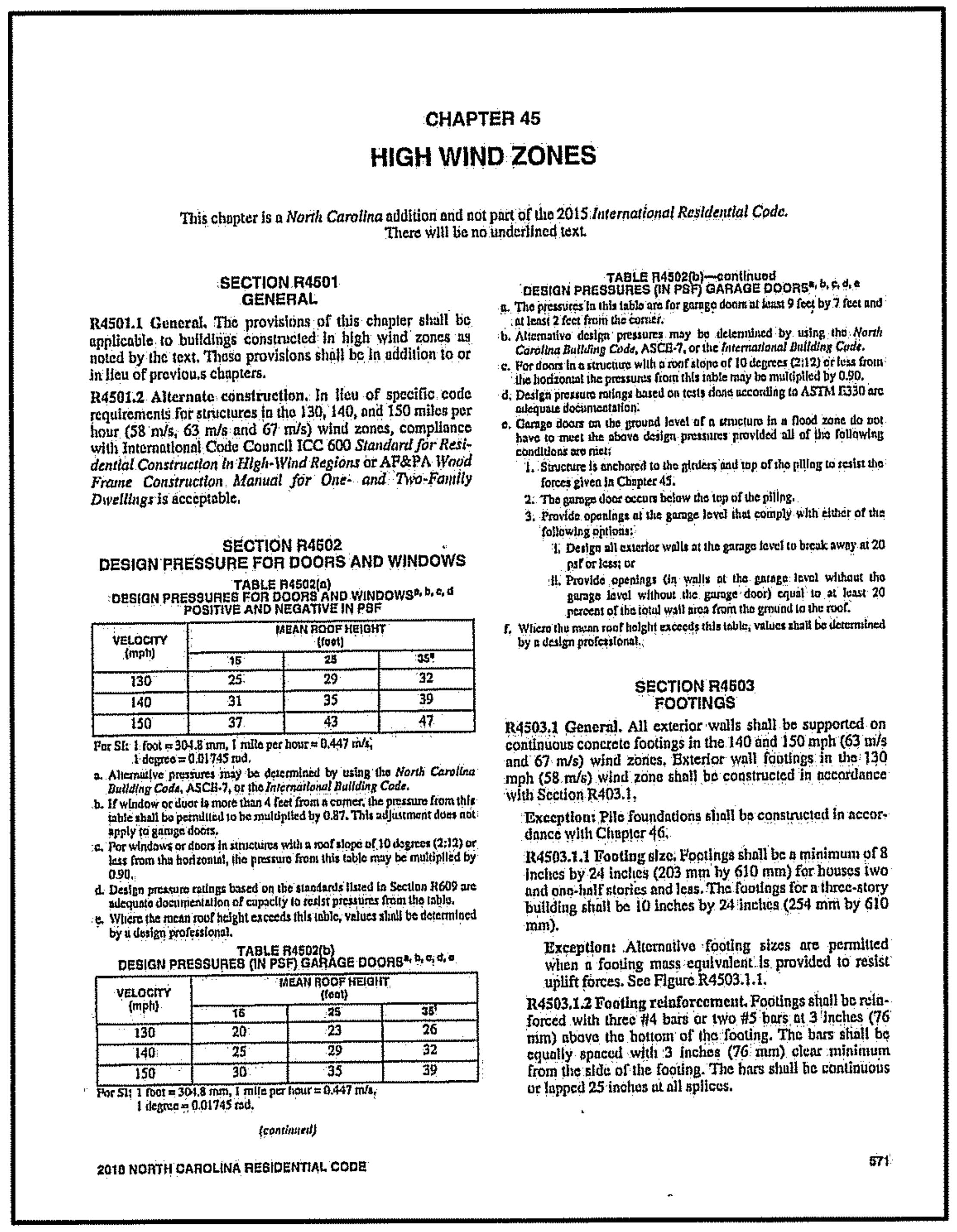
EXCLUSIVE PLAN FOR WELLONS HOMES

PLAN:
Freedom -III (Crystal)

SHEET NO.
5



CHAPTER 45

HIGH WIND ZONES

This chapter is a *North Carolina* addition and not part of the 2015 *International Residential Code.* There will be no underlined text.

SECTION R4501 GENERAL

R4501.1 General. The provisions of this chapter shall be applicable to buildings constructed in high wind zones as noted by the text. These provisions shall be in addition to or in lieu of previou.s chapters.

R4501.2 Alternate construction. In lieu of specific code requirements for structures in the 130, 140, and 150 miles per hour (58 m/s, 63 m/s and 67 m/s) wind zones, compliance with International Code Council ICC 600 *Standard for Residential Construction in High-Wind Regions* or AF&PA *Wood Frame Construction Manual for One- and Two-Family Dwellings* is acceptable.

SECTION R4502 DESIGN PRESSURE FOR DOORS AND WINDOWS

TABLE R4502(a)
DESIGN PRESSURES FOR DOORS AND WINDOWS[a, b, c, d]
POSITIVE AND NEGATIVE IN PSF

VELOCITY (mph)	MEAN ROOF HEIGHT (feet)		
	15	25	35[e]
130	25	29	32
140	31	35	39
150	37	43	47

For SI: 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s, 1 degree = 0.01745 rad.

a. Alternative pressures may be determined by using the *North Carolina Building Code*, ASCE-7, or the *International Building Code.*

b. If window or door is more than 4 feet from a corner, the pressure from this table shall be permitted to be multiplied by 0.87. This adjustment does not apply to garage doors.

c. For windows or doors in structures with a roof slope of 10 degrees (2:12) or less from the horizontal, the pressure from this table may be multiplied by 0.90.

d. Design pressure ratings based on the standards listed in Section R609 are adequate documentation of capacity to resist pressures from the table.

e. Where the mean roof height exceeds this table, values shall be determined by a design professional.

TABLE R4502(b)
DESIGN PRESSURES (IN PSF) GARAGE DOORS[a, b, c, d, e]

VELOCITY (mph)	MEAN ROOF HEIGHT (feet)		
	15	25	35[f]
130	20	23	26
140	25	29	32
150	30	35	39

For SI: 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s, 1 degree = 0.01745 rad.

(continued)

TABLE R4502(b)—continued
DESIGN PRESSURES (IN PSF) GARAGE DOORS[a, b, c, d, e]

a. The pressures in this table are for garage doors at least 9 feet by 7 feet and at least 2 feet from the corner.

b. Alternative design pressures may be determined by using the *North Carolina Building Code*, ASCE-7, or the *International Building Code.*

c. For doors in a structure with a roof slope of 10 degrees (2:12) or less from the horizontal the pressures from this table may be multiplied by 0.90.

d. Design pressure ratings based on tests done according to ASTM E330 are adequate documentation.

e. Garage doors on the ground level of a structure in a flood zone do not have to meet the above design pressures provided all of the following conditions are met:
  1. Structure is anchored to the girders and top of the piling to resist the forces given in Chapter 45.
  2. The garage door occurs below the top of the piling.
  3. Provide openings at the garage level that comply with either of the following options:
    i. Design all exterior walls at the garage level to break away at 20 psf or less; or
    ii. Provide openings (in walls at the garage level without the garage level without the garage door) equal to at least 20 percent of the total wall area from the ground to the roof.

f. Where the mean roof height exceeds this table, values shall be determined by a design professional.

SECTION R4503 FOOTINGS

R4503.1 General. All exterior walls shall be supported on continuous concrete footings in the 140 and 150 mph (63 m/s and 67 m/s) wind zones. Exterior wall footings in the 130 mph (58 m/s) wind zone shall be constructed in accordance with Section R403.1.

Exception: Pile foundations shall be constructed in accordance with Chapter 46.

R4503.1.1 Footing size. Footings shall be a minimum of 8 inches by 24 inches (203 mm by 610 mm) for houses two and one-half stories and less. The footings for a three-story building shall be 10 inches by 24 inches (254 mm by 610 mm).

Exception: Alternative footing sizes are permitted when a footing mass equivalent is provided to resist uplift forces. See Figure R4503.1.1.

R4503.1.2 Footing reinforcement. Footings shall be reinforced with three #4 bars or two #5 bars at 3 inches (76 mm) above the bottom of the footing. The bars shall be equally spaced with 3 inches (76 mm) clear minimum from the side of the footing. The bars shall be continuous or lapped 25 inches at all splices.

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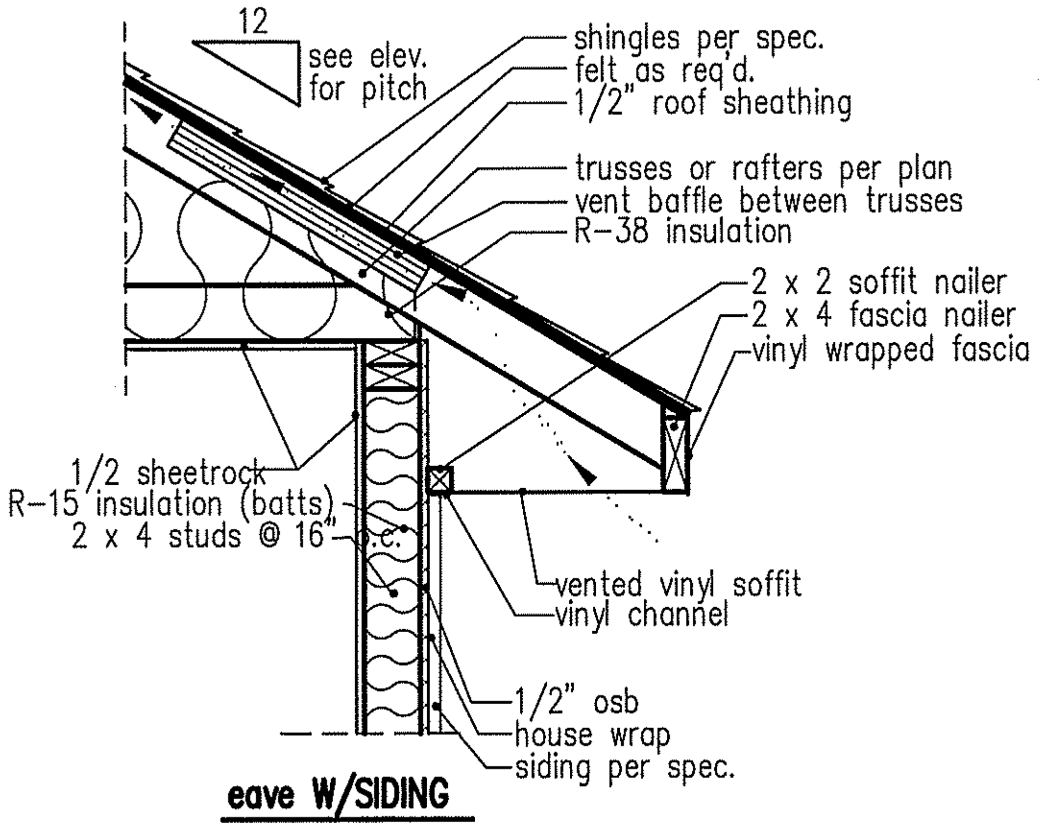
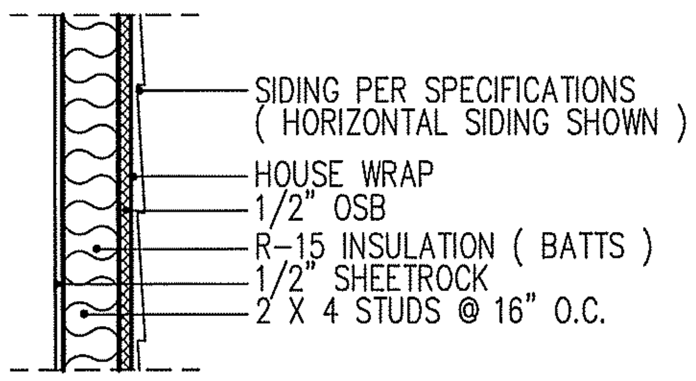


eave W/SIDING

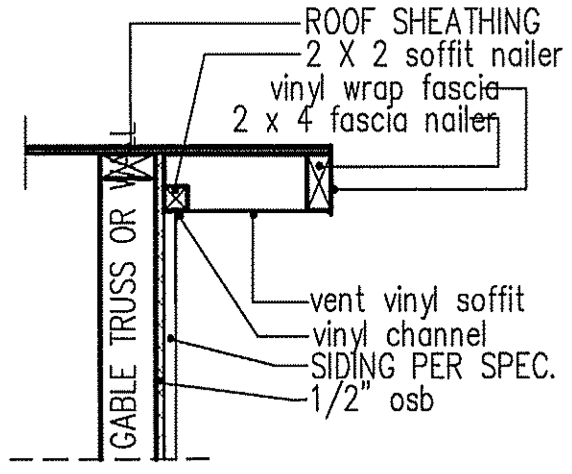
NOTE: OVERHANG DISTANCE NOTED ON ELEVATION SHEET IS ALWAYS MEASURED FROM FRAME LINE

standard eave details



WALL W/siding

intermediate wall details



RAKE w/SIDING

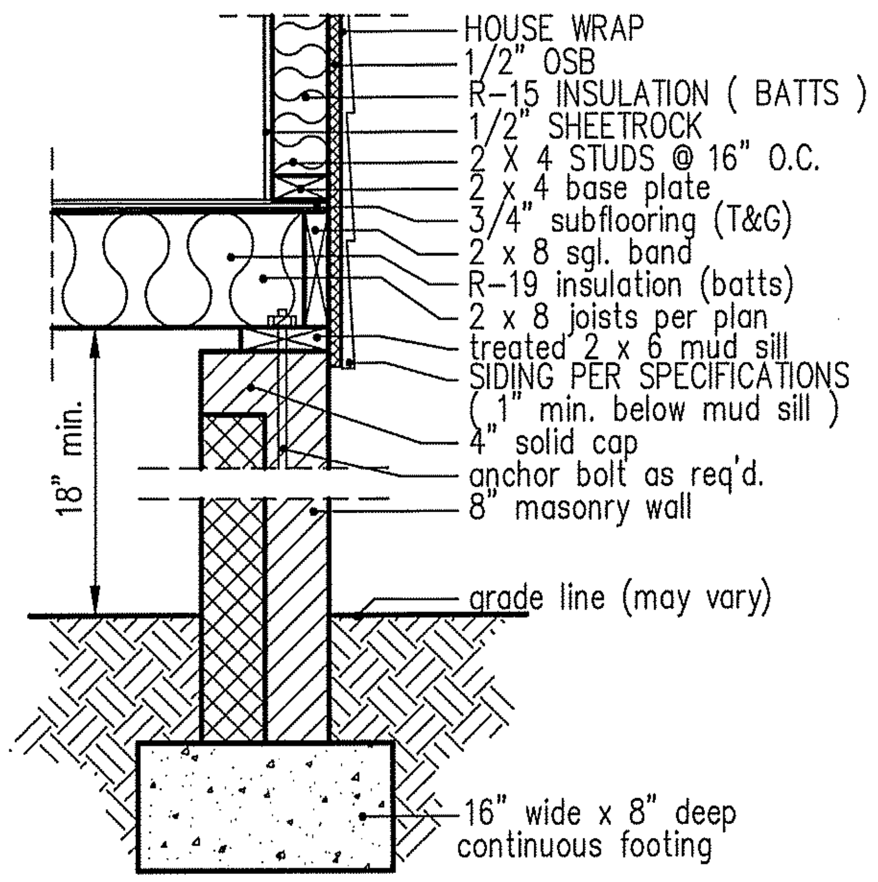
NOTE: OVERHANG DISTANCE NOTED ON ELEVATION SHEET IS ALWAYS MEASURED FROM FRAME LINE

TABLE R602.7.5
MINIMUM NUMBER OF FULL HEIGHT STUDS AT EACH END OF HEADERS IN EXTERIOR WALLS

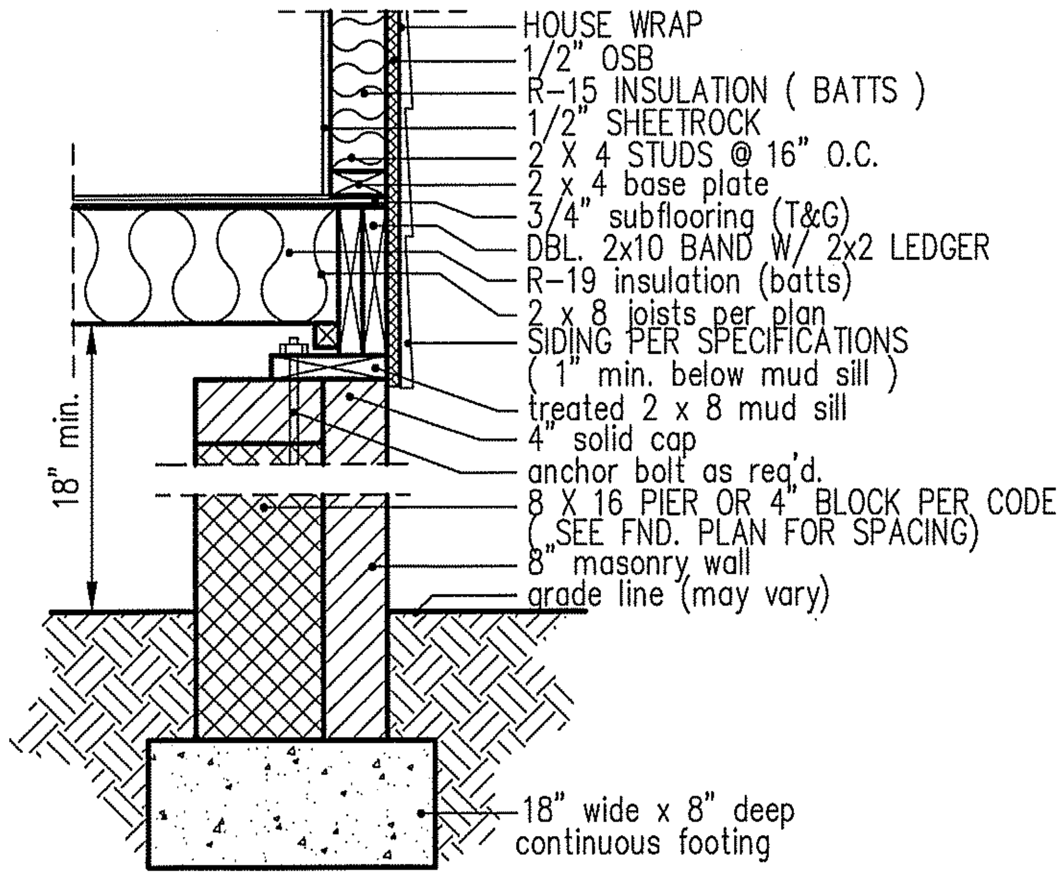
HEADER SPAN (feet)	MAX. STUD SPACING (inches) [per Table R602.3(5)]	
	16	24
< 3'	1	1
4'	2	1
8'	3	2
12'	5	3
16'	6	4

GIRDER AND HEADER SIZES AND JACK STUD REQUIREMENTS ON EXTERIOR AND INTERIOR LOAD BEARING WALLS ARE TO COINCIDE WITH TABLE EXT.~R602.7 (1) AND INT.~R602.7 (2).

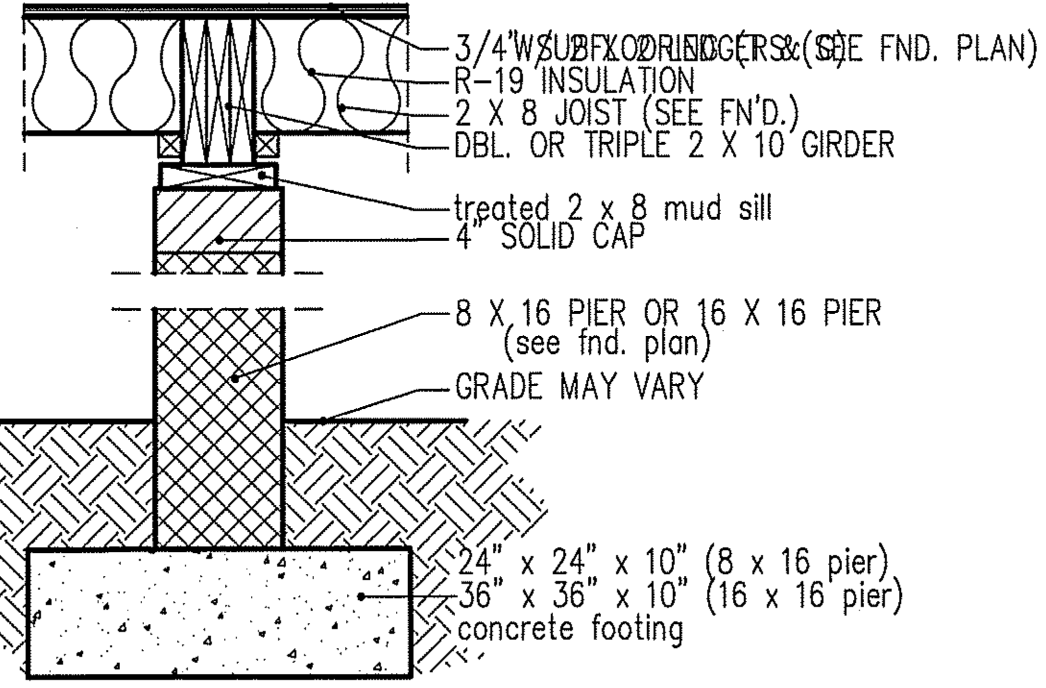
WIND ZONES (PER TABLE R301.2(4)	
COUNTY	MPH
HARNETT	120
JOHNSTON	120
SAMPSON	130
WAKE	115



8" BOX SILL FOUNDATION WALL



PIER and CURTAIN FOUNDATION WALL



PIER and GIRDER DETAIL

C.F.~ "WELLONS HOME" FILE NAME "FREEDOM I, II, & III" AUGUST-2023

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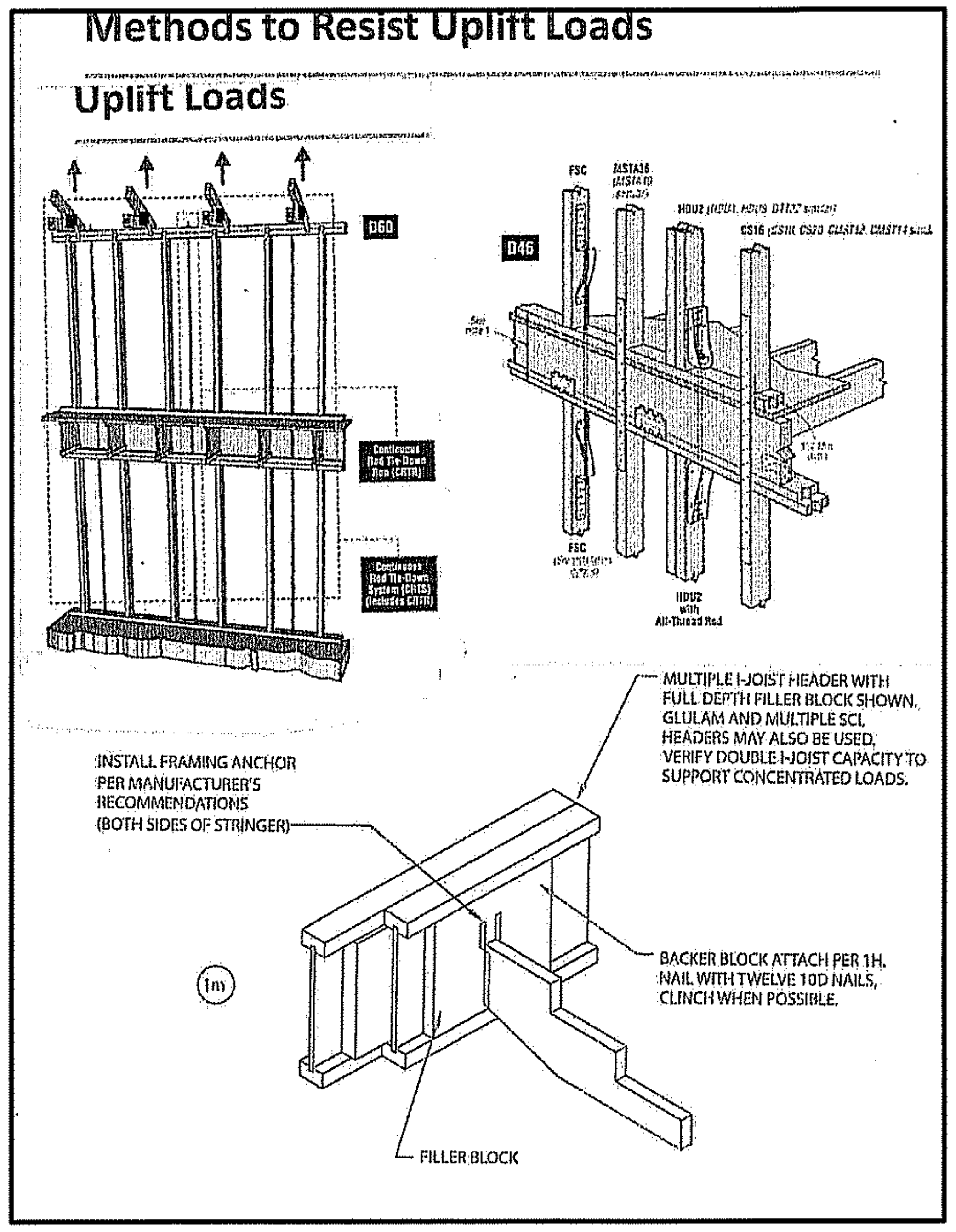


Methods to Resist Uplift Loads

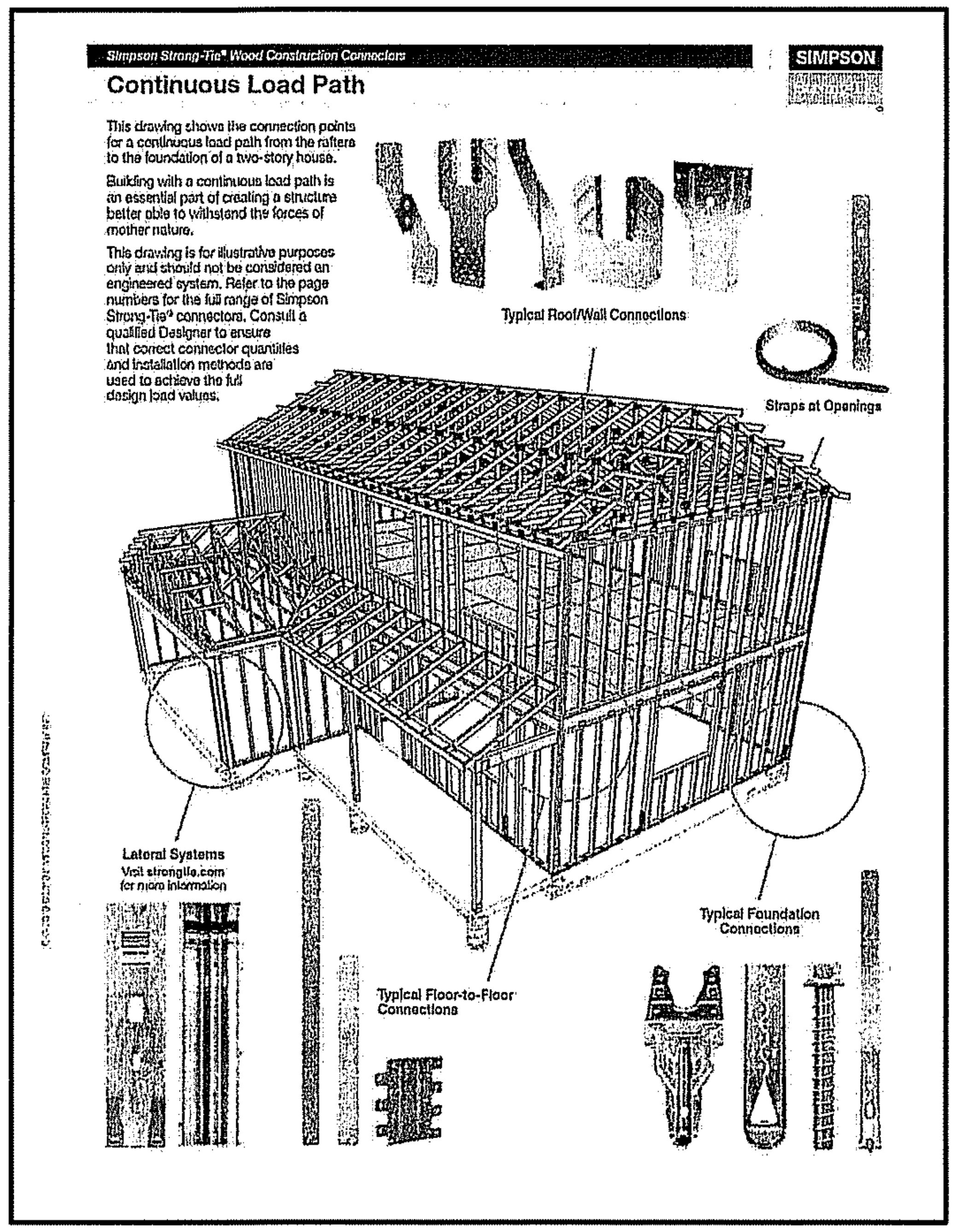
Uplift Loads

MULTIPLE I-JOIST HEADER WITH FULL DEPTH FILLER BLOCK SHOWN. GLULAM AND MULTIPLE SCL HEADERS MAY ALSO BE USED. VERIFY DOUBLE I-JOIST CAPACITY TO SUPPORT CONCENTRATED LOADS.

INSTALL FRAMING ANCHOR PER MANUFACTURER'S RECOMMENDATIONS (BOTH SIDES OF STRINGER)

BACKER BLOCK ATTACH PER 1H. NAIL WITH TWELVE 10D NAILS, CLINCH WHEN POSSIBLE.

FILLER BLOCK



Simpson Strong-Tie® Wood Construction Connectors

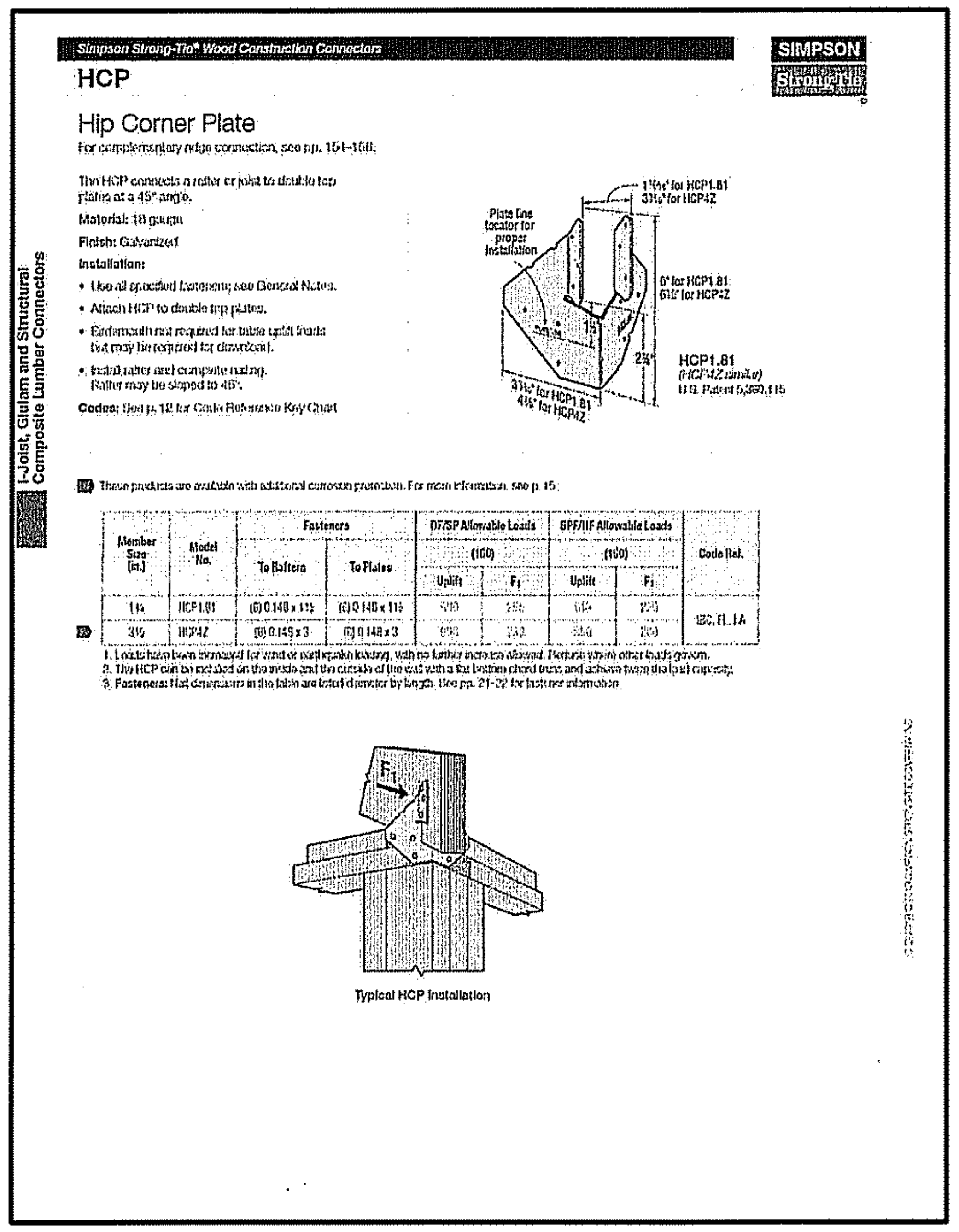
SIMPSON

Continuous Load Path

This drawing shows the connection points for a continuous load path from the rafters to the foundation of a two-story house.

Building with a continuous load path is an essential part of creating a structure better able to withstand the forces of mother nature.

This drawing is for illustrative purposes only and should not be considered an engineered system. Refer to the page numbers for the full range of Simpson Strong-Tie® connectors. Consult a qualified Designer to ensure that correct connector quantities and installation methods are used to achieve the full design load values.



Simpson Strong-Tie® Wood Construction Connectors

SIMPSON Strong-Tie

HCP

Hip Corner Plate

For complementary ridge connection, see pp. 151–166.

The HCP connects a rafter or joist to double top plates at a 45° angle.

Material: 18 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes.
- Attach HCP to double top plates.
- Birdsmouth not required for table uplift loads but may be required for download.
- Install rafter and complete nailing. Rafter may be sloped to 45°.

Codes: See p. 12 for Code Reference Key Chart

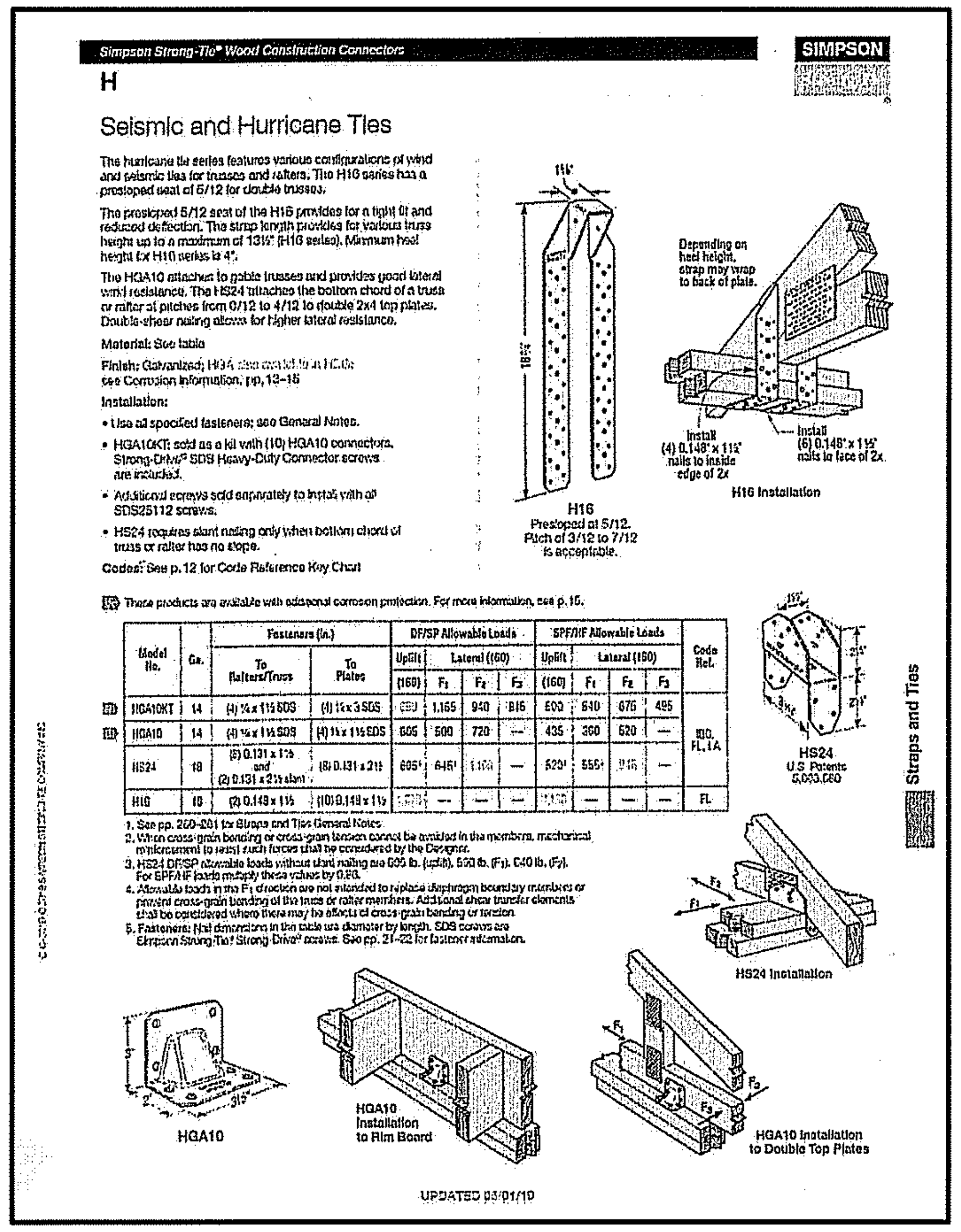
These products are available with additional corrosion protection. For more information, see p. 15.

Member Size (in.)	Model No.	Fasteners		DF/SP Allowable Loads (160)		SPF/HF Allowable Loads (160)		Code Ref.
		To Rafters	To Plates	Uplift	F_1	Uplift	F_1	
1½	HCP1.81	(6) 0.148 x 1½	(6) 0.148 x 1½	[illegible]	[illegible]	[illegible]	[illegible]	IBC, FL, LA
3½	HCP4Z	(6) 0.148 x 3	(6) 0.148 x 3	[illegible]	[illegible]	[illegible]	[illegible]	

1. Loads have been increased for wind or earthquake loading, with no further increase allowed. Reduce where other loads govern.
2. The HCP can be installed on the inside and the outside of the wall with a flat bottom chord truss and achieve twice the load capacity.
3. Fasteners: Nail dimensions in the table are listed diameter by length. See pp. 21-22 for fastener information.

I-Joist, Glulam and Structural Composite Lumber Connectors

Typical HCP Installation



Simpson Strong-Tie® Wood Construction Connectors

SIMPSON

H

Seismic and Hurricane Ties

The hurricane tie series features various configurations of wind and seismic ties for trusses and rafters. The H16 series has a presloped seat of 5/12 for double trusses.

The presloped 5/12 seat of the H16 provides for a tight fit and reduced deflection. The strap length provides for various truss height up to a maximum of 13½" (H16 series). Minimum heel height for H16 series is 4".

The HGA10 attaches to gable trusses and provides good lateral wind resistance. The HS24 attaches the bottom chord of a truss or rafter at pitches from 0/12 to 4/12 to double 2x4 top plates. Double-shear nailing allows for higher lateral resistance.

Material: See table

Finish: Galvanized; HGA [illegible]; see Corrosion Information, pp. 13–15

Installation:

- Use all specified fasteners; see General Notes.
- HGA10KT: sold as a kit with (10) HGA10 connectors. Strong-Drive® SDS Heavy-Duty Connector screws are included.
- Additional screws sold separately to install with all SDS25112 screws.
- HS24 requires slant nailing only when bottom chord of truss or rafter has no slope.

Codes: See p. 12 for Code Reference Key Chart

H16
Presloped at 5/12.
Pitch of 3/12 to 7/12 is acceptable.

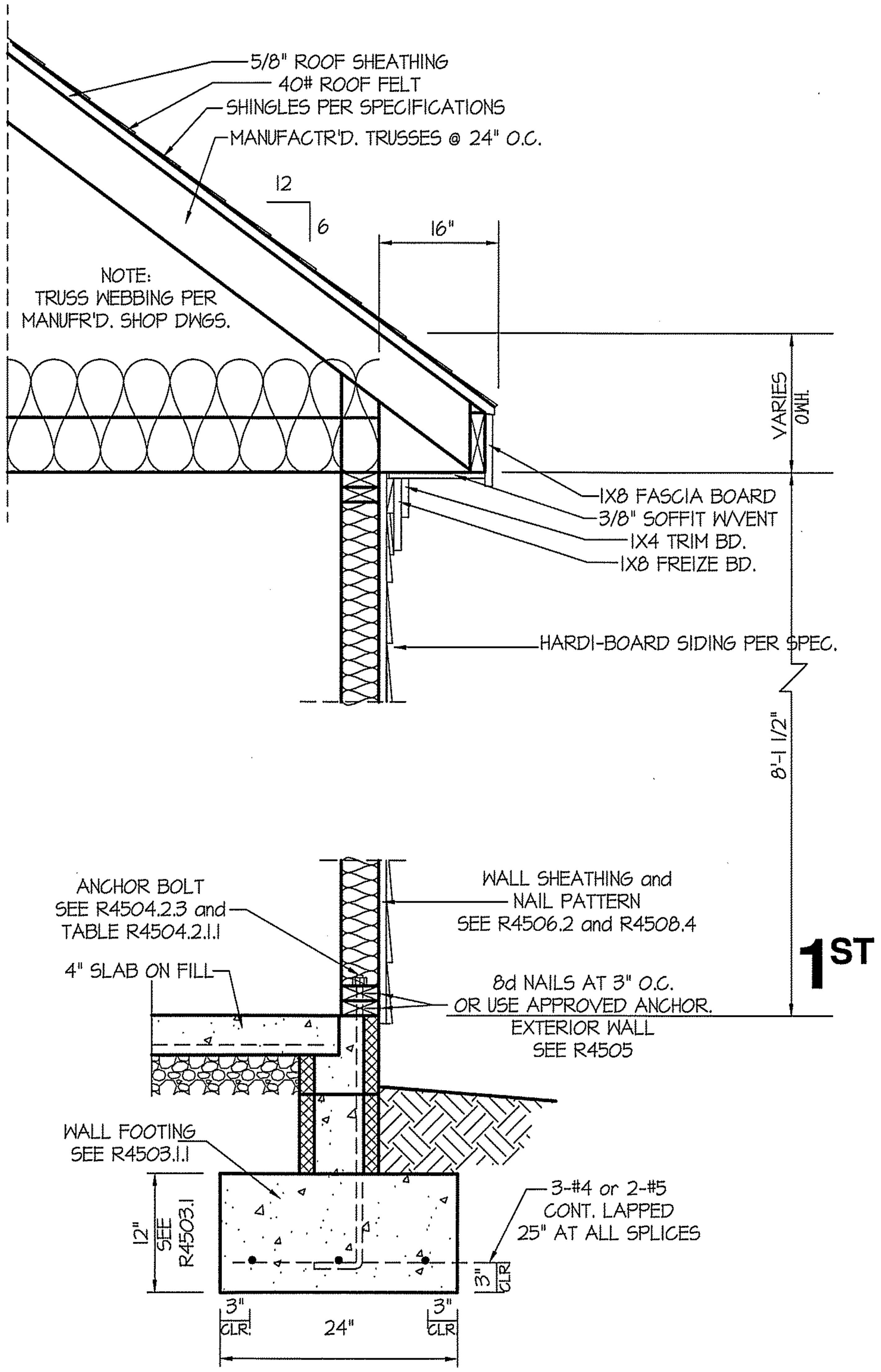
These products are available with additional corrosion protection. For more information, see p. 15.

Model No.	Ga.	Fasteners (in.)		DF/SP Allowable Loads				SPF/HF Allowable Loads				Code Ref.
		To Rafters/Truss	To Plates	Uplift (160)	Lateral (160) F_1	Lateral (160) F_2	Lateral (160) F_3	Uplift (160)	Lateral (160) F_1	Lateral (160) F_2	Lateral (160) F_3	
HGA10KT	14	(4) ¼ x 1½ SDS	(4) ¼ x 3 SDS	[illegible]	1,165	940	815	500	640	675	495	IBC, FL, LA
HGA10	14	(4) ¼ x 1½ SDS	(4) ¼ x 1½ SDS	605	500	720	—	435	360	520	—	
HS24	18	(8) 0.131 x 1½ and (2) 0.131 x 2½ slant	(8) 0.131 x 2½	605[4]	645[4]	[illegible]	—	520[4]	555[4]	[illegible]	—	
H16	18	(2) 0.148 x 1½	(10) 0.148 x 1½	[illegible]	—	—	—	[illegible]	—	—	—	FL

1. See pp. 260-261 for Straps and Ties General Notes.
2. When cross-grain bending or cross-grain tension cannot be avoided in the members, mechanical reinforcement to resist such forces shall be considered by the Designer.
3. HS24 DF/SP allowable loads without slant nailing are 605 lb. (uplift), 500 lb. (F_1), 640 lb. (F_2). For SPF/HF loads multiply these values by 0.86.
4. Allowable loads in the F_2 direction are not intended to replace diaphragm boundary members or prevent cross-grain bending of the truss or rafter members. Additional shear transfer elements shall be considered where there may be effects of cross-grain bending or torsion.
5. Fasteners: Nail dimensions in the table are diameter by length. SDS screws are Simpson Strong-Tie® Strong-Drive® screws. See pp. 21-22 for fastener information.

Straps and Ties

UPDATED 03/01/10



TYPICAL WALL SECTION

SCALE: 1" = 1'-0"

ALL EXTERIOR WALLS TO BE SHEATHED WITH CS-WSP (7/16" OSB) IN ACCORDANCE WITH SECTION R602.10.3 UNLESS OTHERWISE NOTED.

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HIGH WIND ZONES

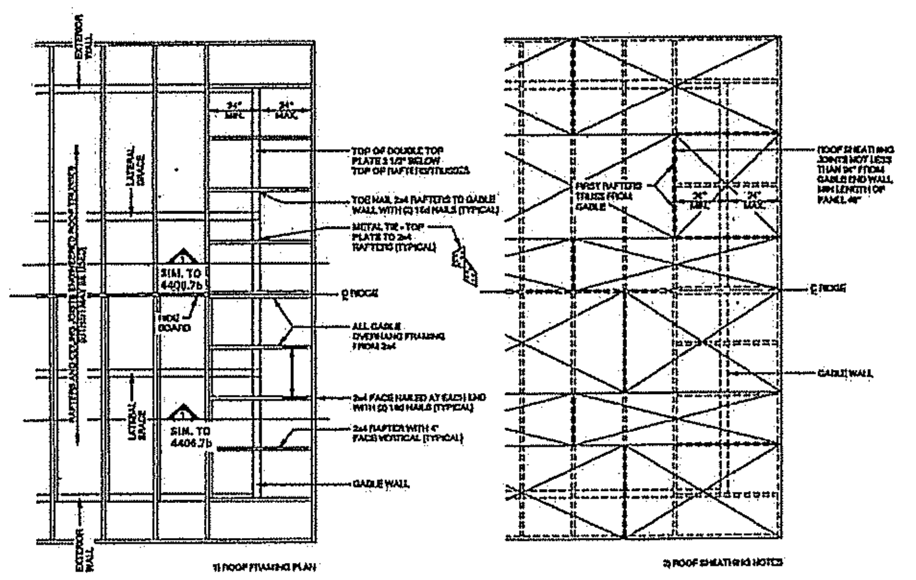

FIGURE R4508.7(c)
GABLE END OVERHANG

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HIGH WIND ZONES

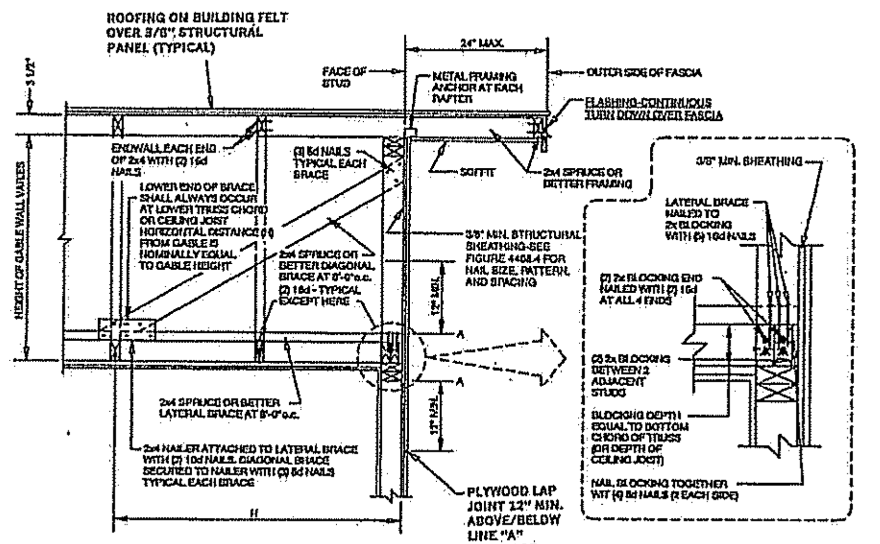


FIGURE R4508.7(b)
GABLE END OVERHANG

588 2018 NORTH CAROLINA RESIDENTIAL CODE

HIGH WIND ZONES

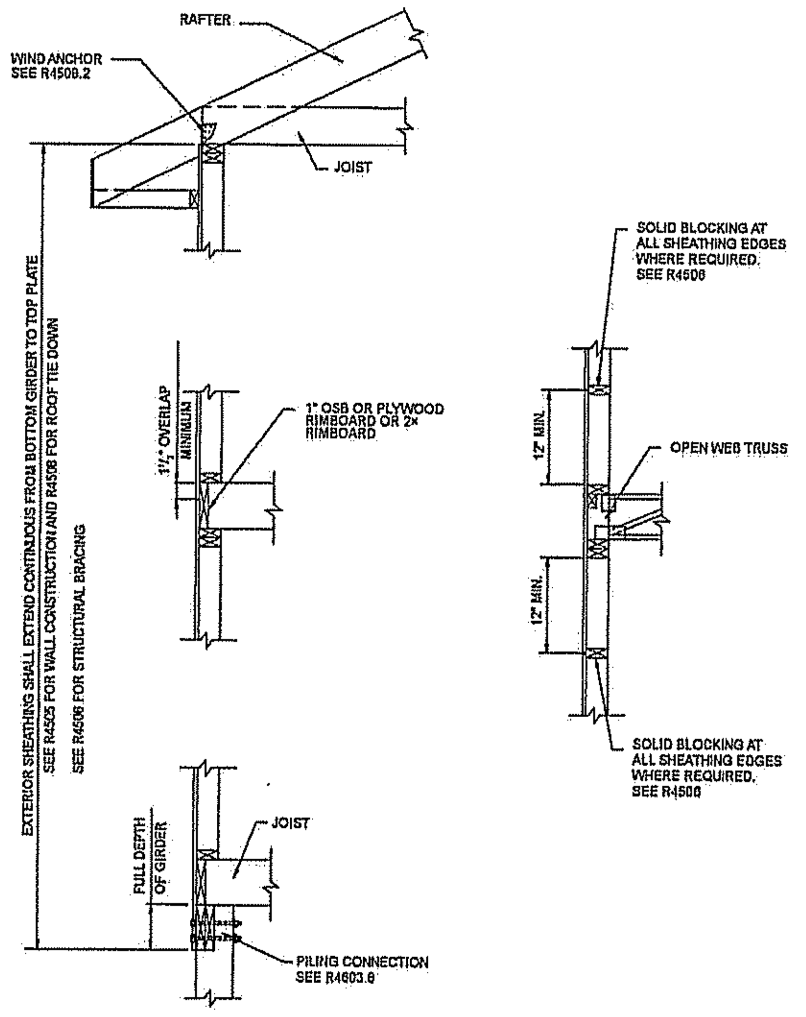
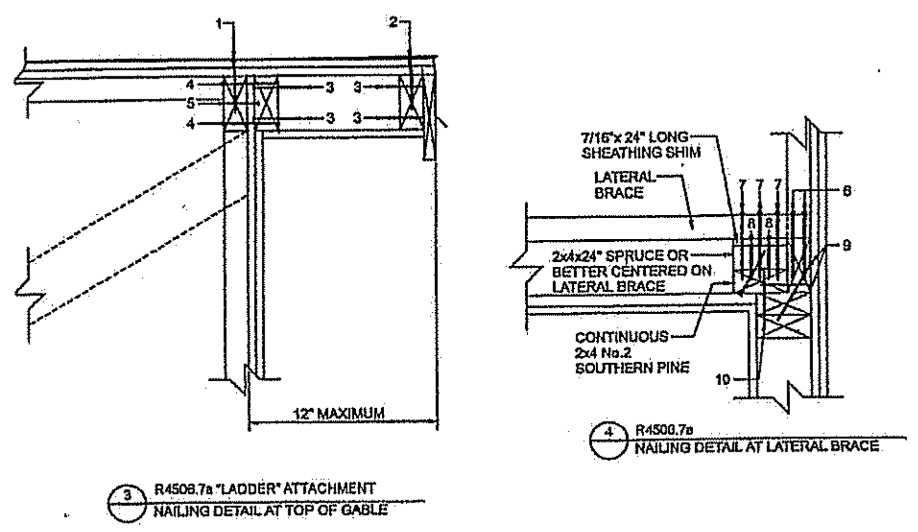


FIGURE R4508.4(a)
TWO STORY WALL SECTION—PANEL ATTACHMENT

594 2018 NORTH CAROLINA RESIDENTIAL CODE

HIGH WIND ZONES



③ R4508.7a "LADDER" ATTACHMENT
NAILING DETAIL AT TOP OF GABLE

④ R4508.7a
NAILING DETAIL AT LATERAL BRACE

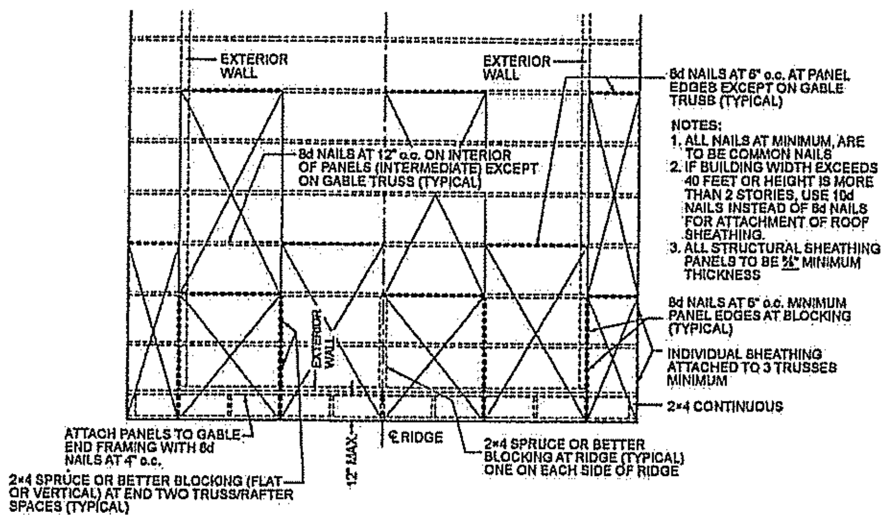
NAIL SCHEDULE

MARK	No. & SIZE	SPACING	REMARKS
1	8d	4"o.c.	
2	8d	6"o.c.	
3	(2) 16d		EACH SIDE
4	(2) 16d	24"o.c.	
5	8d	6"o.c.	
6	(2) 16d		EACH TRUSS
7	(5) 16d		TYPICAL
8	(6) 16d (* TO 2x4 BELOW)		ALTERNATE: (8) 8d
9	16d	6"o.c.	ALTERNATE TOENAIL & ENDNAIL
10	16d	6"o.c.	

FIGURE R4508.7a—continued
OVERHANG AT ENDWALLS

2018 NORTH CAROLINA RESIDENTIAL CODE 587

HIGH WIND ZONES



NOTES:
1. ALL NAILS AT MINIMUM, ARE TO BE COMMON NAILS
2. IF BUILDING WIDTH EXCEEDS 40 FEET OR HEIGHT IS MORE THAN 2 STORIES, USE 10d NAILS INSTEAD OF 8d NAILS FOR ATTACHMENT OF ROOF SHEATHING.
3. ALL STRUCTURAL SHEATHING PANELS TO BE 5/8" MINIMUM THICKNESS

FIGURE R4508.8
ROOF SHEATHING ATTACHMENT PLAN

590 2018 NORTH CAROLINA RESIDENTIAL CODE

HIGH WIND ZONES

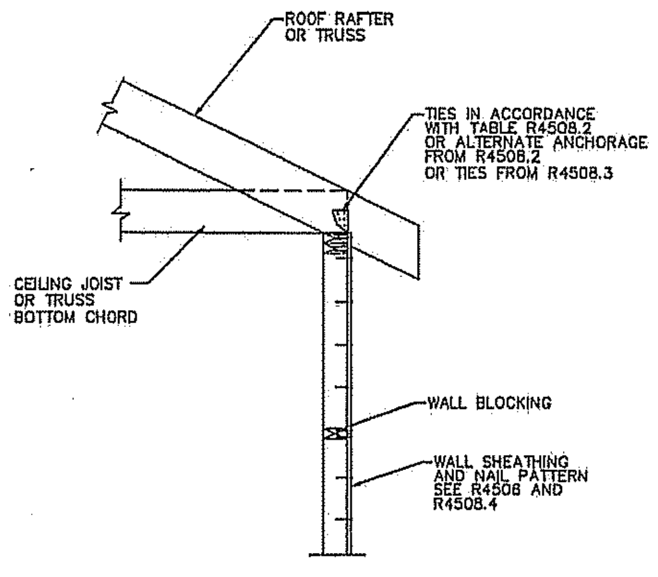


FIGURE R4508.3
ROOF RAFTER/TRUSS ANCHORAGE

2018 NORTH CAROLINA RESIDENTIAL CODE 593

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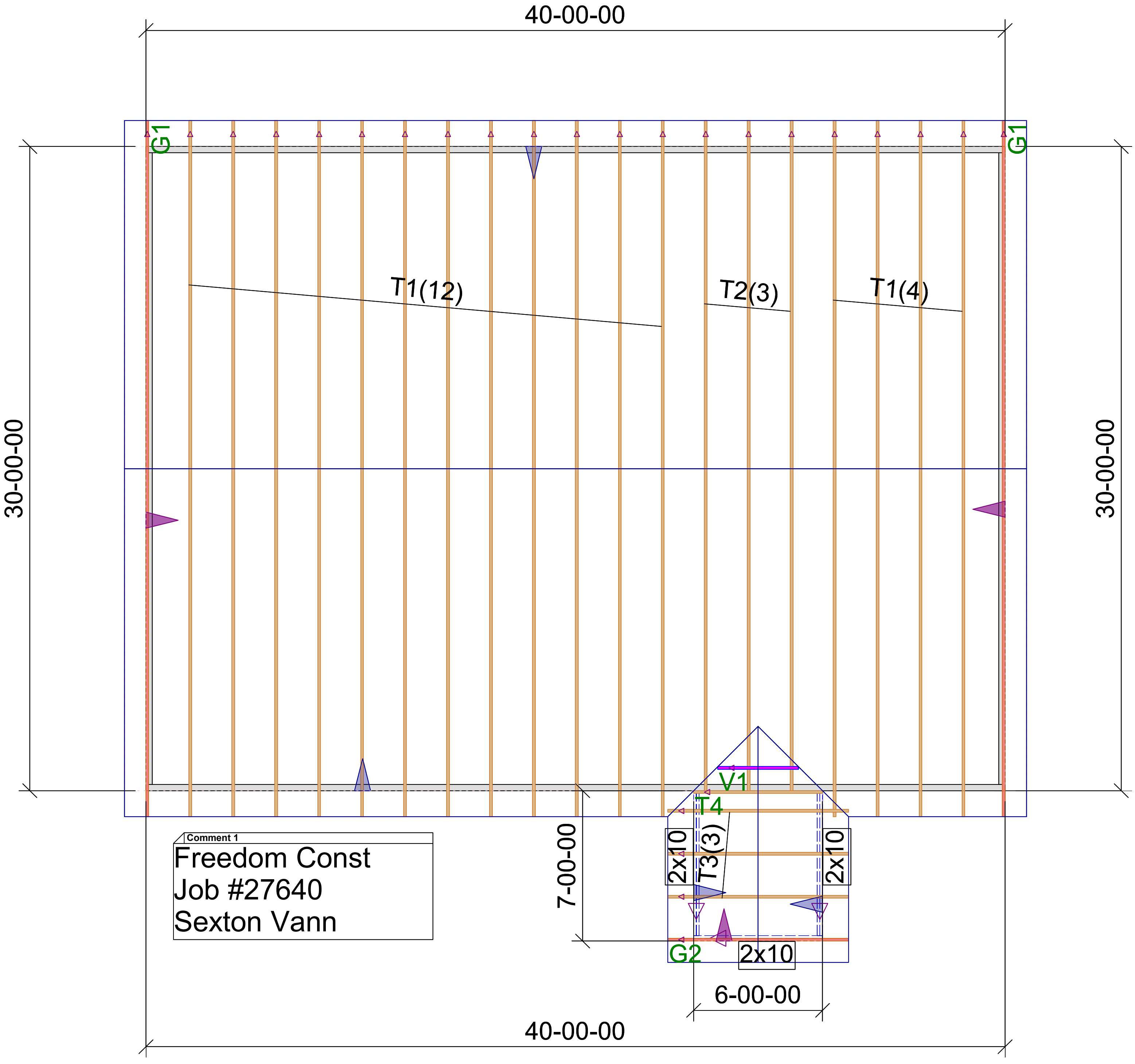

Comment 1

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