PLANS DESIGNED TO THE **2018 NORTH CAROLINA STATE RESIDENTIAL BUILDING CODE**

MEAN ROOF HEIGHT 18'-0" HEIGHT TO RIDGE 24'-2" CLIMATE ZONE ZONE 3A ZONE 4A ZONE 5A ENESTRATION U-FACTOR 0.35 0.35 0.35 0.55 0.30 0.55 0.30 KYLIGHT U-FACTO LAZED FENESTRATION SHG 0.30 EILING R-VALUE <u>38 or 30ci 38 or 30ci 38 or 30ci</u> NALL R-VALUE LOOR R-VALUE BASEMENT WALL R-VALUE 5/13 10/15 10/15 SLAB R-VALU 10/19

* CRAWL SPACE WALL R-VALUE 5/13 10/15 * "10/13" MEANS R-10 SHEATHING INSULATION OR R-13 CAVITY INSULATION

** INSULATION DEPTH WITH MONOLITHIC SLAB 24" OR FROM INSPECTION GAP TO BOTTOM OF FOOTING; INSULATION DEPTH WITH STEM WALL SLAB 24" OR TO BOTTOM OF FOUNDATION WALL DESIGNED FOR WIND SPEED OF 120 MPH 3 SECOND GUST (93 FASTEST MILE) EXPOSURE "R"

DESIGNED FOR WIN	D SPEED	OF 120 MF	PH, 3 SECC	OND GUST	(93 FAST	EST MILE)	EXPOSUR	<u>E "B"</u>
COMPONENT	' & CLA	DDING	DESIG	NED FC	DR THE	FOLLO	WING	LOADS
MEAN ROOF	UP T	O 30'	30'-1"	TO 35'	35'-1"	TO 40'	40'-1"	TO 45'
ZONE 1	14.2	-15.0	14.9	-15.8	15.5	-16.4	15.9	-16.8
ZONE 2	14.2	-18.0	14.9	-18.9	15.5	-19.6	15.9	-20.2
ZONE 3	14.2	-18.0	14.9	-18.9	15.5	-19.6	15.9	-20.2
ZONE 4	15.5	-16.0	16.3	-16.8	16.9	-17.4	17.4	-17.9
ZONE 5	15.5	-20.0	16.3	-21.0	16.9	-21.8	17.4	-22.4
DESIGNED FOR WIN	D SPEED	OF 130 MF	H, 3 SECO	OND GUST	(101 FAS	TEST MILE	E) EXPOSU	IRE "B"
COMPONENT	' & CLA	DDING	DESIG	NED FC	DR THE	FOLLO	WING	LOADS
MEAN ROOF	UP T	O 30'	30'-1"	TO 35'	35'-1"	TO 40'	40'-1"	TO 45'
ZONE 1	16.7	-18.0	17.5	-18.9	18.2	-19.6		-20.2
ZONE 2	16.7	-21.0	17.5	-22.1	18.2	-22.9	18.7	-23.5
ZONE 3	16.7	-21.0	17.5	-22.1	18.2	-22.9	18.7	-23.5
ZONE 4	18.2	-19.0	19.1	-20.0	19.8	-20.7	20.4	-21.3
ZONE 5	18.2	-24.0	19.1	-25.2	19.8	-26.2	20.4	-26.9

ROOF VENTILATION

SECTION R806

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. Ventilation openings shall have a least dimension of 1/16 inch (1.6 mm) minimum and 1/4 inch (6.4 mm) maximum. Ventilation openings having a least dimension larger than 1/4 inch (6.4 mm) shall be provided with corrosion-resistant wire cloth screening, hardware cloth, or similar material with openings having a least dimension of 1/16 inch (1.6 mm) minimum and 1/4 inch (6.4 mm) maximum. Openings in roof framing members shall conform to the requirements of Section R802.7.

R806.2 Minimum area. The total net free ventilating area shall not be less than 1/150 of the area of the space ventilated except that reduction of the total area to 1/300 is permitted provided that at least 50 percent and not more than 80 percent of the required ventilating area is provided by

ventilators located in the upper portion of the space to be ventilated at least 3 feet (914 mm) above the eave or cornice vents with the balance of the required ventilation provided by eave or cornice vents. As an alternative, the net free cross-ventilation area may be reduced to 1/300 when a Class I or II vapor retarder is installed on the warm-in-winter side of the ceiling. Exceptions:

1. Enclosed attic/rafter spaces requiring less than 1 square foot (0.0929 m2) of ventilation may be vented with continuous soffit ventilation only. 2. Enclosed attic/rafter spaces over unconditioned space may be vented with

continuous soffit vent only. SQUARE FOOTAGE OF ROOF TO BE VENTED = 2,168 SQ.FT.

NET FREE CROSS VENTILATION NEEDED:

WITHOUT 50% TO 80% OF VENTING 3'-0" ABOVE EAVE = 14.45 SQ.FT. WITH 50% TO 80% OF VENTING 3'-0" ABOVE EAVE; OR WITH CLASS I OR II VAPOR RETARDER ON WARM-IN-WINTER SIDE OF CEILING = 7.23 SQ.FT.

GUARD RAIL NOTES

SECTION R312

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

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

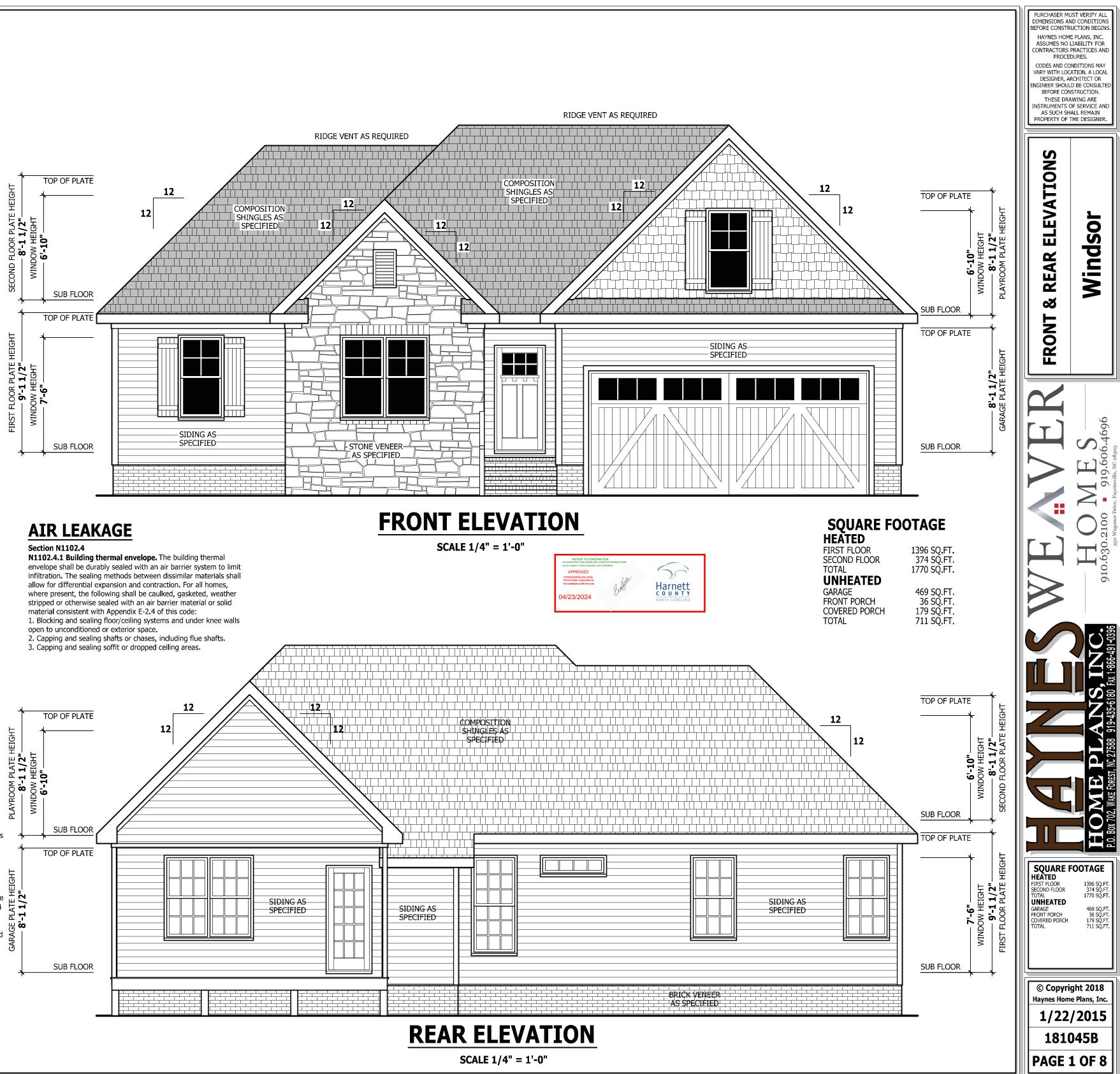
1. *Guards* on the open sides of stairs shall have a height not less than 34 inches (864 mm) measured vertically from a line connecting the leading edges of the treads.

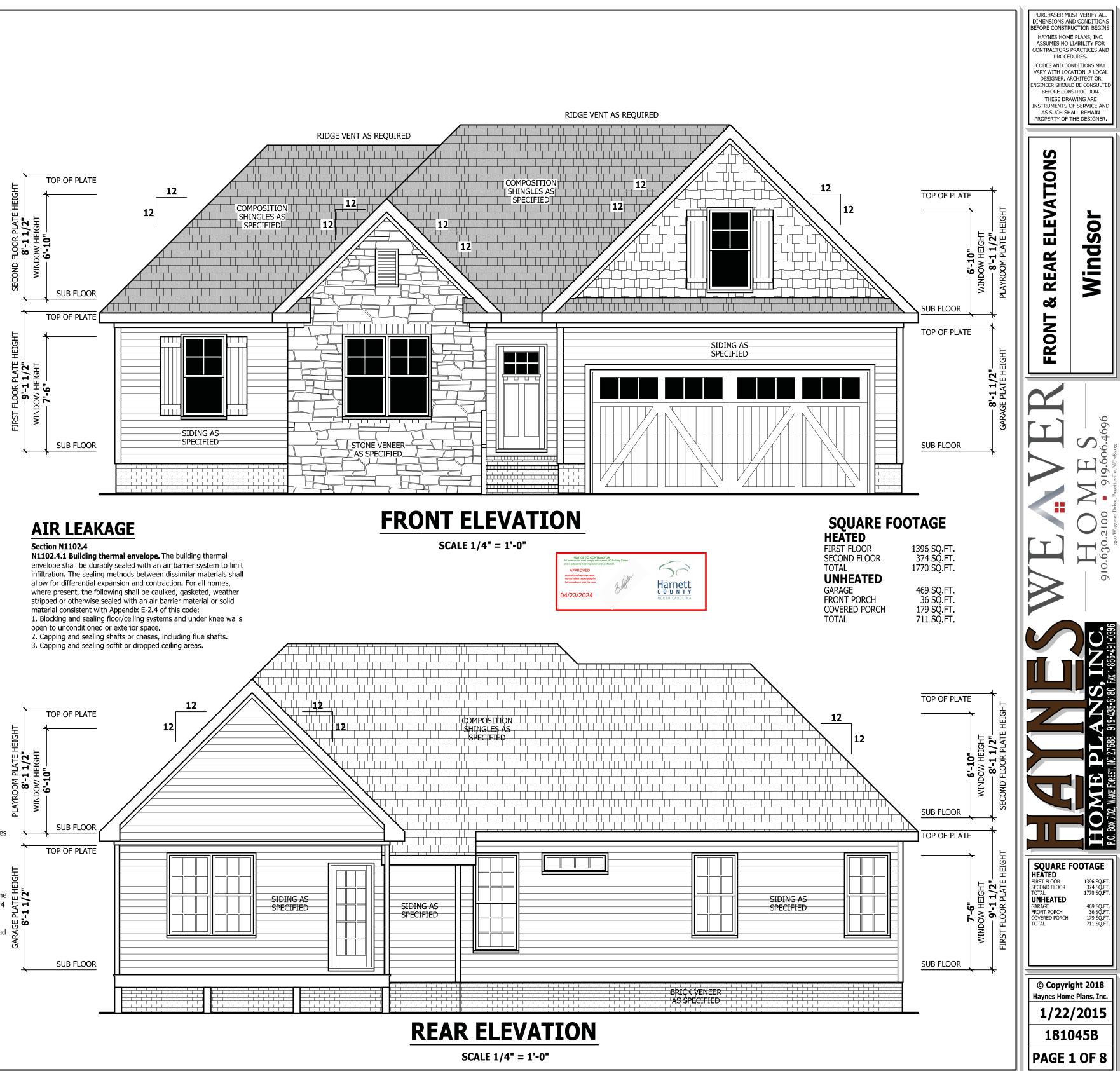
2. Where the top of the *guard* also serves as a handrail on the open sides of stairs, the top of the guard shall not be not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting 员 the leading edges of the treads.

R312.3 Opening limitations. Required *guards* shall not have openings from the walking surface to the required *guard* height which allow passage of a sphere 4 inches (102 mm)in diameter. Exceptions:

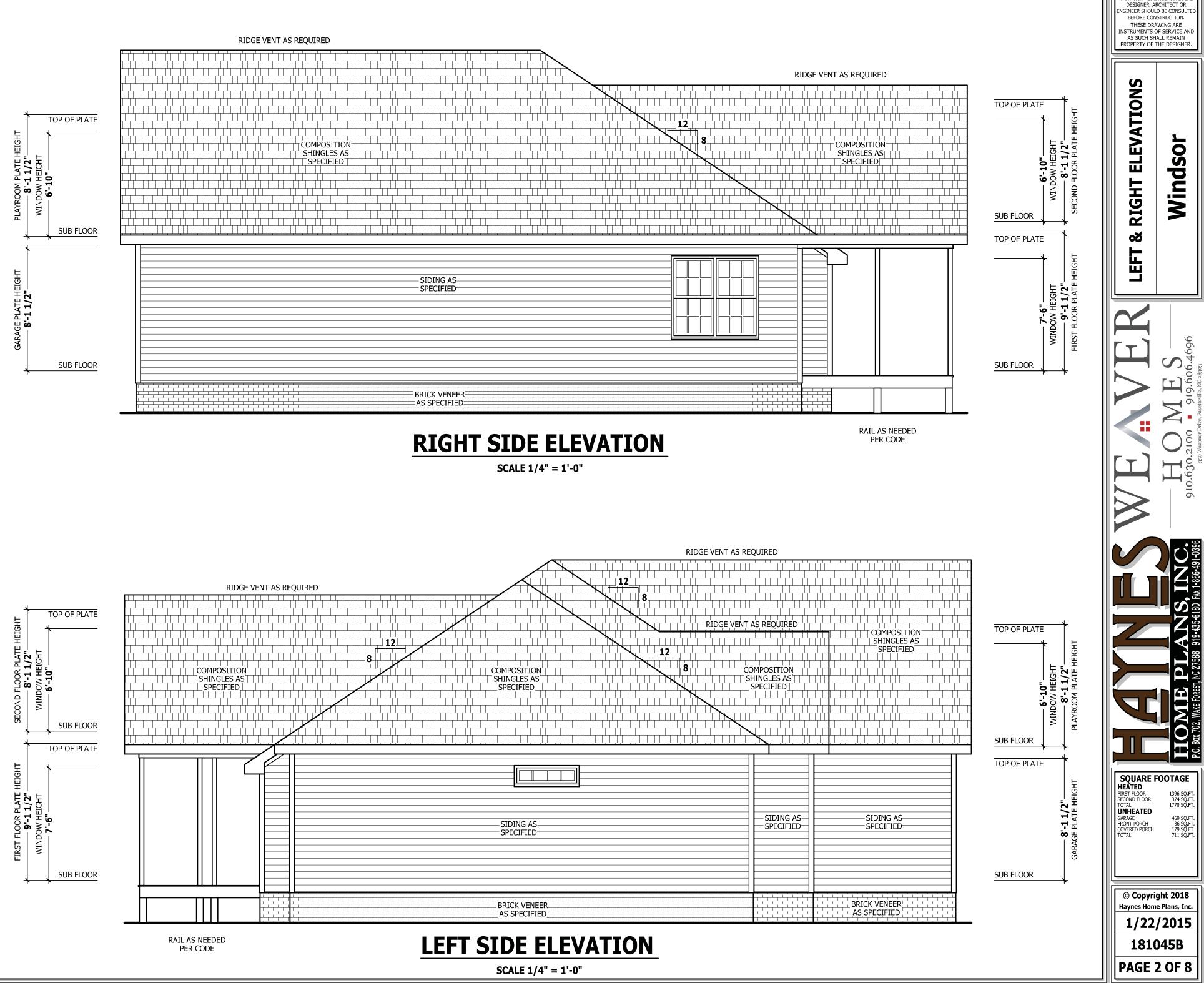
1. The triangular openings at the open side of a stair, formed by the riser, tread \widecheck{a} and bottom rail of a *guard*, shall not allow passage of a sphere 6 inches (153 mm) in diameter.

2. Guards on the open sides of stairs shall not have openings which allow passage of a sphere 4 3/8 inches (111 mm) in diameter.

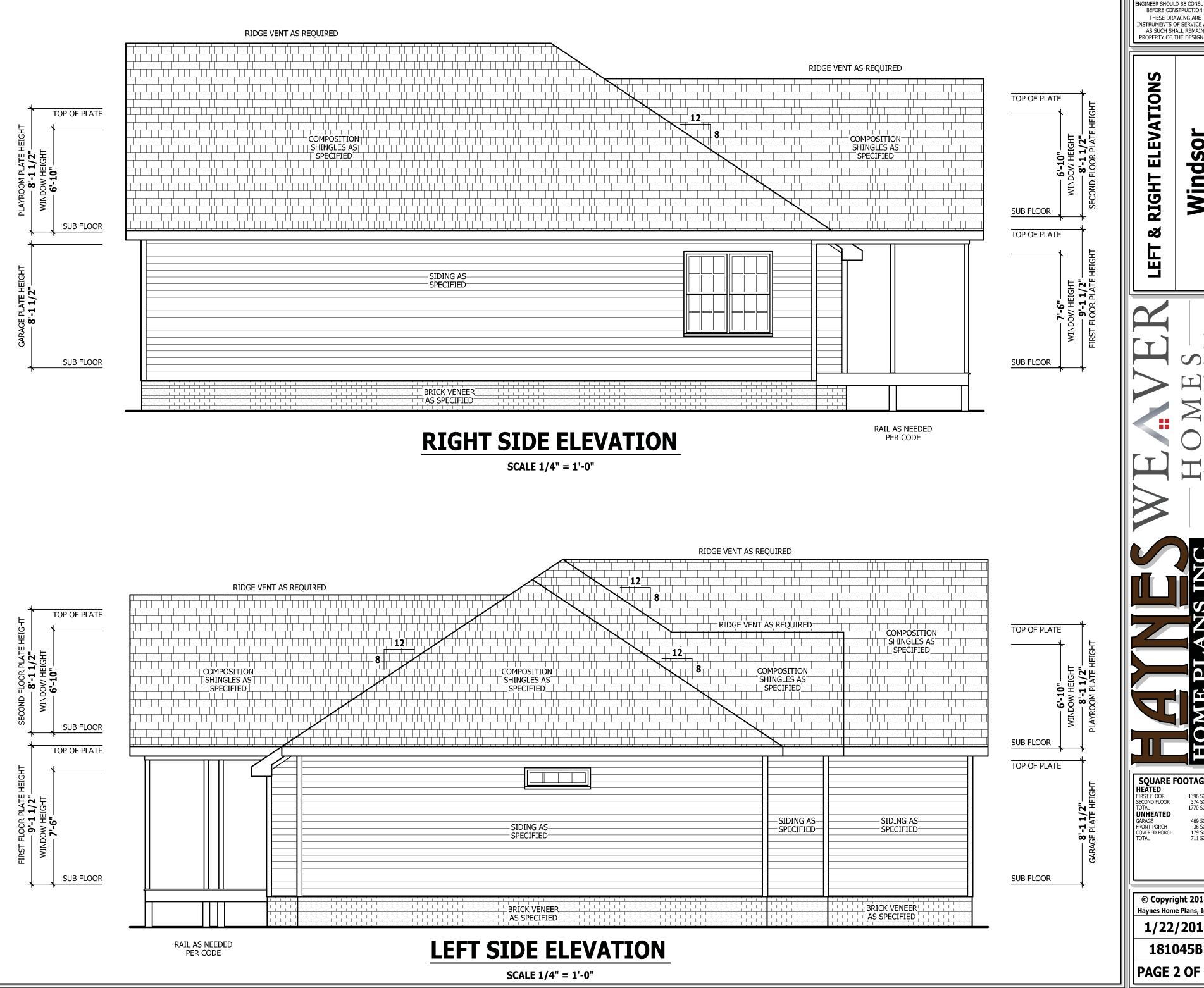


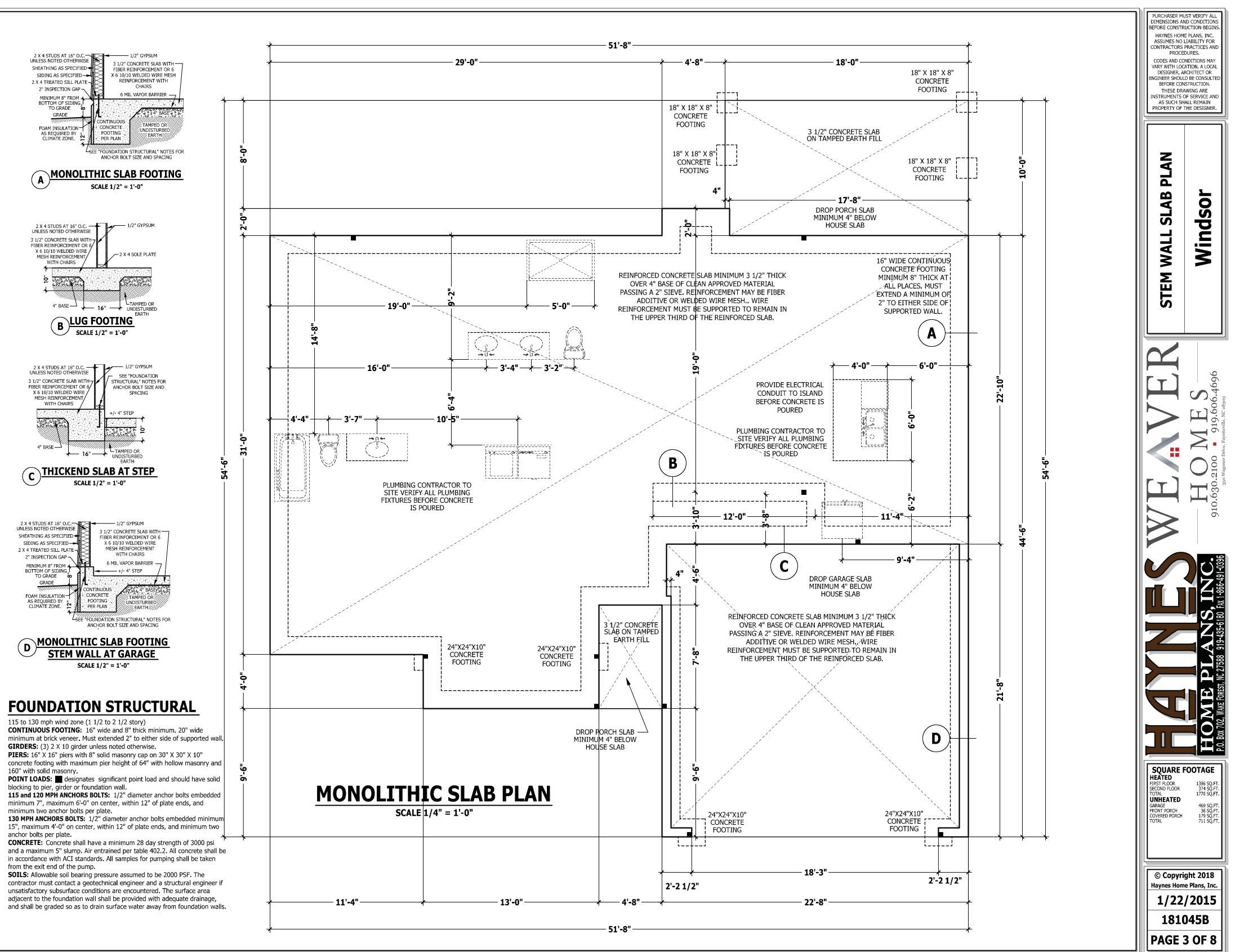


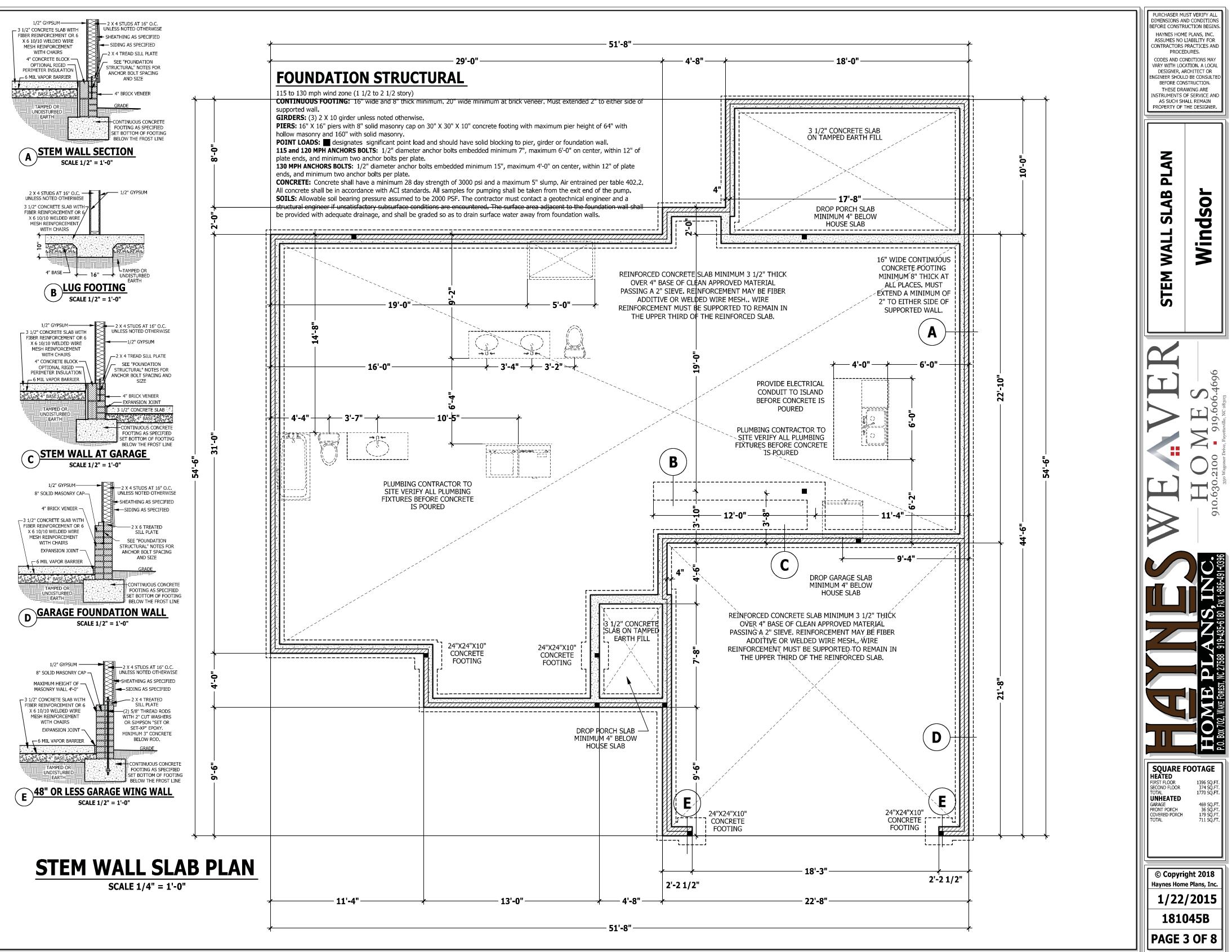


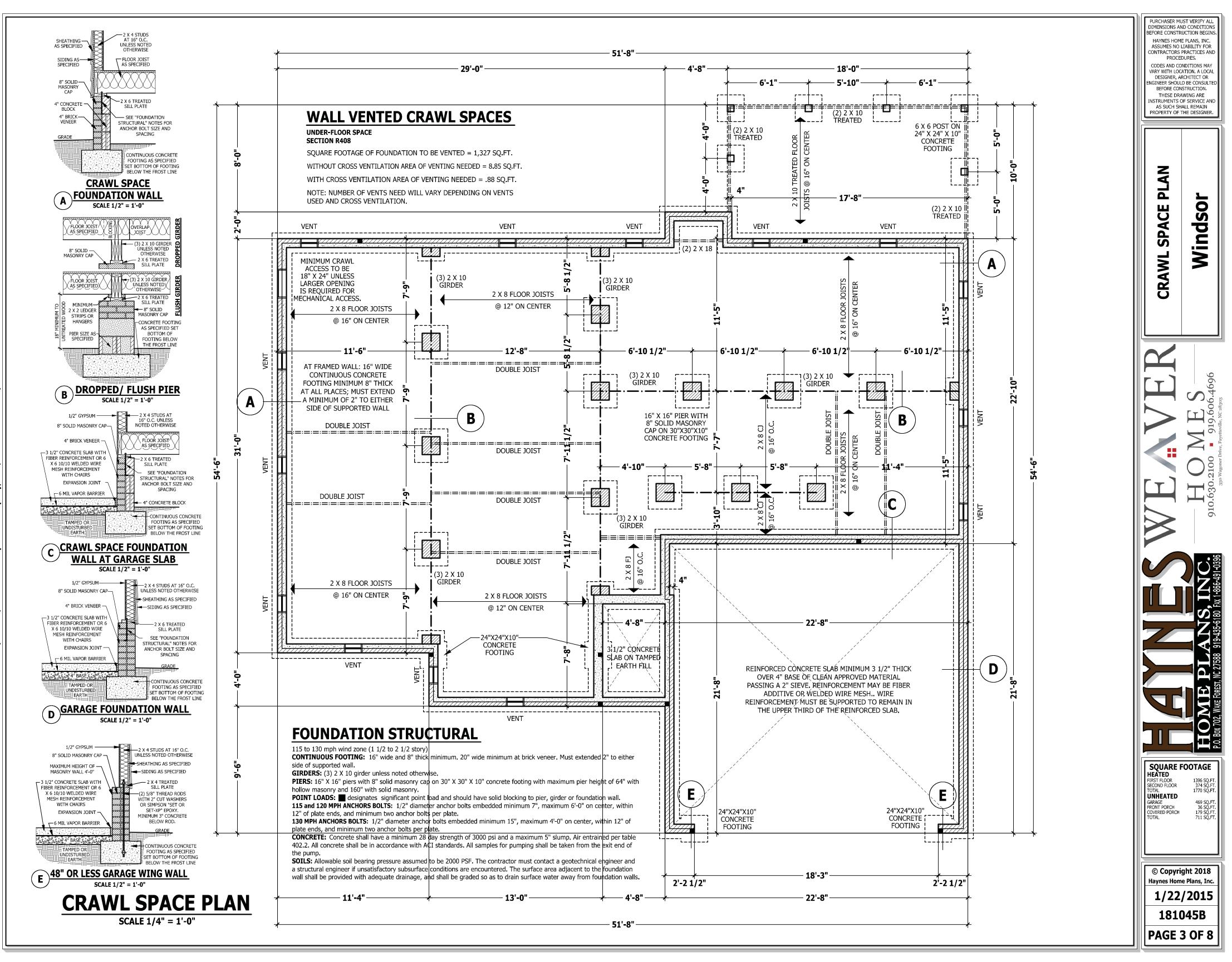


PURCHASER MUST VERIFY ALL DIMENSIONS AND CONDITIONS EFORE CONSTRUCTION BEGINS HAYNES HOME PLANS, INC. ASSUMES NO LIABILITY FOR CONTRACTORS PRACTICES AND PROCEDURES. CODES AND CONDITIONS MAY VARY WITH LOCATION. A LOCAL









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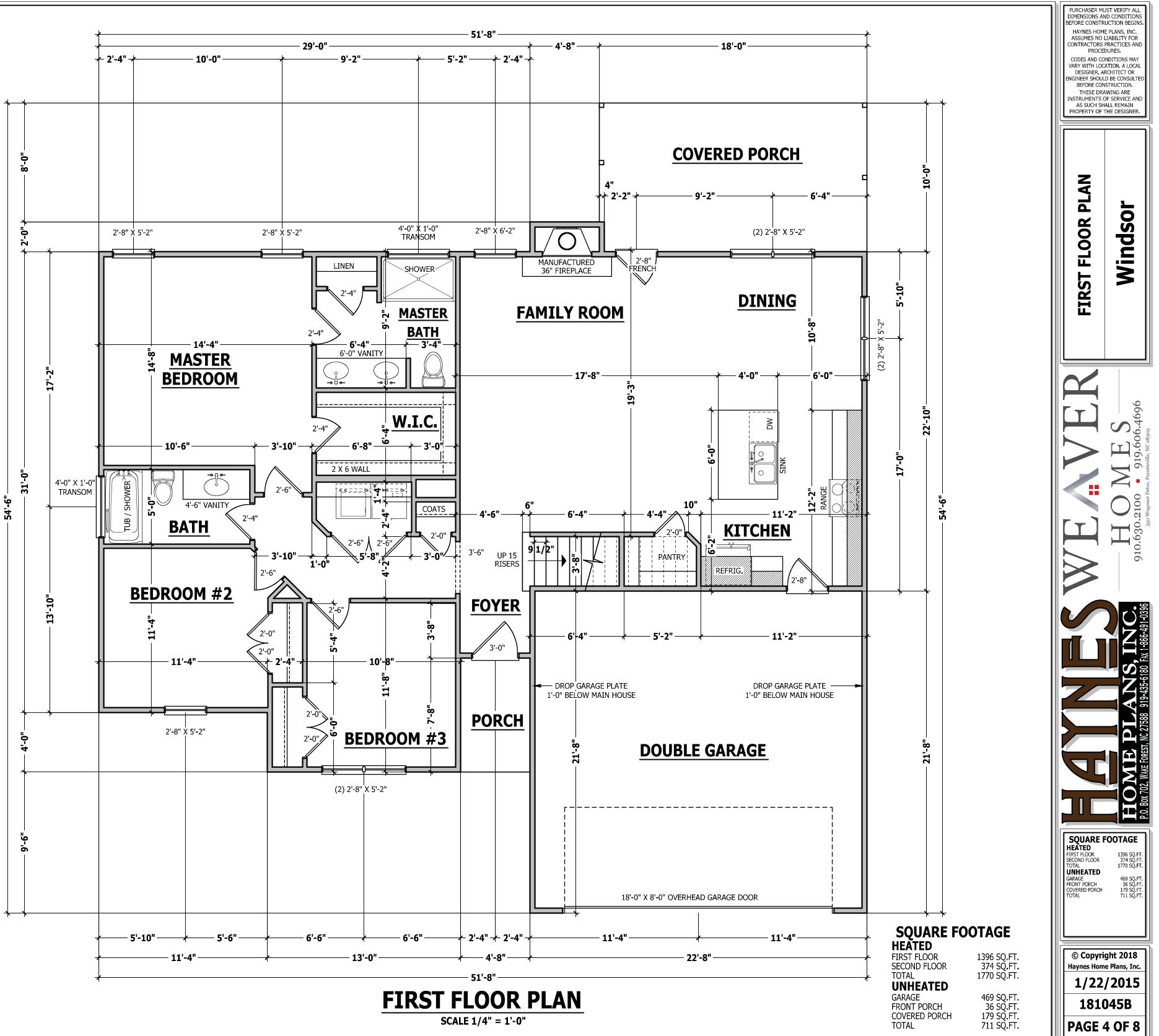
DWELLING / GARAGE SEPARATION

REFER TO SECTIONS R302.5, R302.6, AND R302.7 **WALLS.** A minimum 1/2" gypsum board must be installed on all walls supporting floor/ceiling assemblies used for separation required by this section. **STAIRS.** A minimum of 1/2" gypsum board must be

installed on the underside and exposed sides of all stairways.

CEILINGS. A minimum of 1/2" gypsum must be installed on the garage ceiling if there are no habitable room above the garage. If there are habitable room above the garage a minimum of 5/8" type X gypsum board must be installed on the garage ceiling. **OPENING PENETRATIONS.** Openings between the

garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) in thickness, solid or honeycomb core steel doors not less than 1 3/8 inches (35 mm) thick, or 20-minute fire-rated doors. **DUCT PENETRATIONS.** Ducts in the garage and ducts penetrating the walls or ceilings separating the dwelling from the garage shall be constructed of a minimum No. 26 gage (0.48 mm) sheet steel or other approved material and shall have no openings into the garage. **OTHER PENETRATIONS.** Penetrations through the separation required in Section R302.6 shall be protected as required by Section R302 11, Item 4



STRUCTURAL NOTES

All construction shall conform to the latest requirements of the 2018 North Carolina Residential Building Code, plus all local codes and regulations. This document in no way shall be construed to supersede the code. JOB SITE PRACTICES AND SAFETY: Haynes Home Plans, Inc. assumes no liability for contractors practices and procedures or safety program. Haynes Home Plans, Inc. takes no responsibility for the contractor's failure to carry out the construction work in accordance with the contract documents. All members shall be framed, anchored, and braced in accordance with good construction practice and the building code.

DESIGN LOADS	LIVE LOAD	DEAD LOAD	DEFLECTION
USE	(PSF)	(PSF)	(LL)
Attics without storage	10		L/240
Attics with limited storage	20	10	L/360
Attics with fixed stairs	40	10	L/360
Balconies and decks	40	10	L/360
Fire escapes	40	10	L/360
Guardrails and handrails	200		
Guardrail in-fill components	50		
Passenger vehicle garages	50	10	L/360
Rooms other than sleeping	40	10	L/360
Sleeping rooms	30	10	L/360
Stairs	40		L/360
Snow	20		

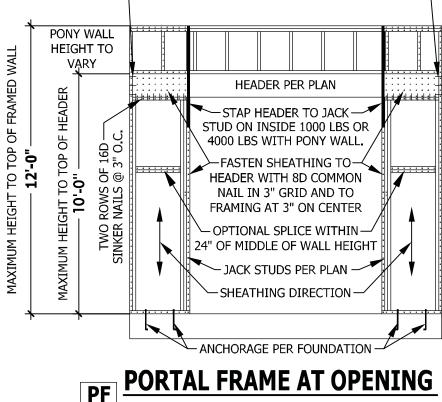
FRAMING LUMBER: All non treated framing lumber shall be SPF #2 (Fb = 875 PSI) or SYP #2 (Fb = 750 PSI) and all treated lumber shall be SYP #2 (Fb = 750 PSI) unless noted other wise.

ENGINEERED WOOD BEAMS:

Laminated veneer lumber (LVL) = Fb=2600 PSI, Fv=285 PSI, E=1.9x106 PSI Parallel strand lumber (PSL) = Fb=2900 PSI, Fv=290 PSI, E=2.0x106 PSI Laminated strand lumber (LSL) Fb=2250 PSI, Fv=400 PSI, E=1.55x106 PSI Install all connections per manufacturers instructions.

TRUSS AND I-JOIST MEMBERS: All roof truss and I-joist layouts shall be prepared in accordance with this document. Trusses and I-joists shall be installed according to the manufacture's specifications. Any change in truss or I-joist layout shall be coordinated with Haynes Homes Plans, Inc. **LINTELS:** Brick lintels shall be 3 1/2" x 3 1/2" x 1/4" steel angle for up to 6'-0" span. 6" x 4" x 5/16" steel angle with 6" leg vertical for spans up to 9'-0" unless noted otherwise. 3 1/2" x 3 1/2" x 1/4" steel angle with 1/2" bolts at 2'-0" on center for spans up to 18'-0" unless noted otherwise. CONCRETE AND SOILS: See foundation notes.

- 6-16D SINKER NAILS FROM KING STUD TO HEADER-



(METHOD PF PER FIGURE AND SECTION R602.10.1) SCALE 1/4" = 1'-0"

BRACE WALL PANEL NOTES

EXTERIOR WALLS: All exterior walls to be sheathed with CS-WSP or CS-SFB in accordance with section R602.10.3 unless noted otherwise.

GYPSUM: All interior sides of exterior walls and both sides interior walls to have 1/2" gypsum installed. When not using method GB gypsum to be fastened per table R702.3.5. Method GB to be fastened per table R602.10.1.

REQUIRED LENGTH OF BRACING: Required brace wall length for each side of the circumscribed rectangle are interpolated per table R602.10.3. Methods CS-WSP and CS-SFB contribute their actual length. Method GB contributes 0.5 it's actual length. Method PF contributes 1.5 times its actual length. HD: 800 lbs hold down hold down device fastened to the edge of the brace wall panel closets to the corner.

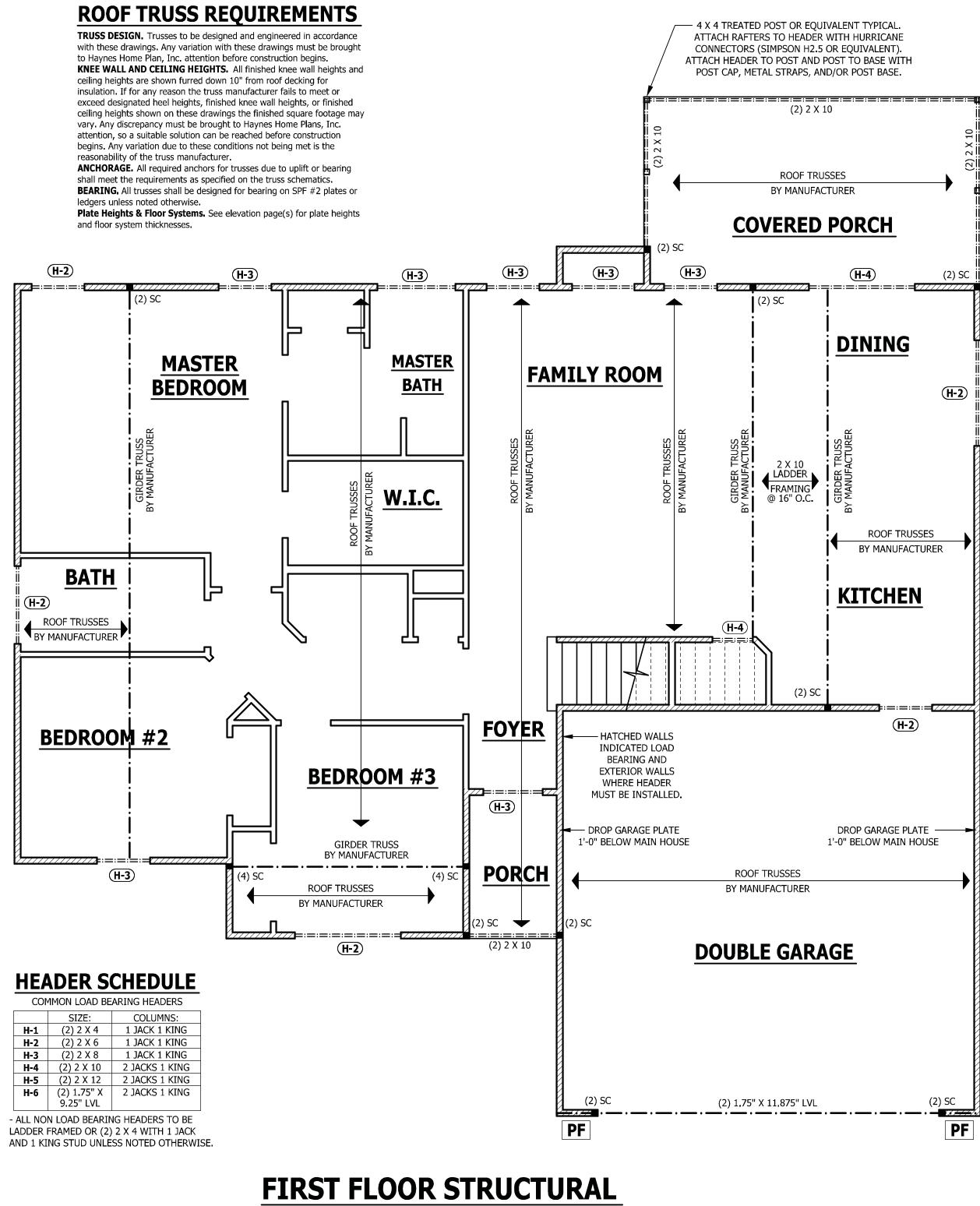
Methods Per Table R602.10.1

CS-WSP: Shall be minimum 3/8" OSB or CDX nailed at 6" on center at edges and 12" on center at intermediate supports with 6d common nails or $8d(2 1/2" \log x 0.113" diameter)$. **CS-SFB:** Shall be minimum 1/2" structural fiber board nailed at 3" on center at edges and 3" on center at intermediate supports with 1 1/2" long x 0.12" diameter galvanized roofing nails.

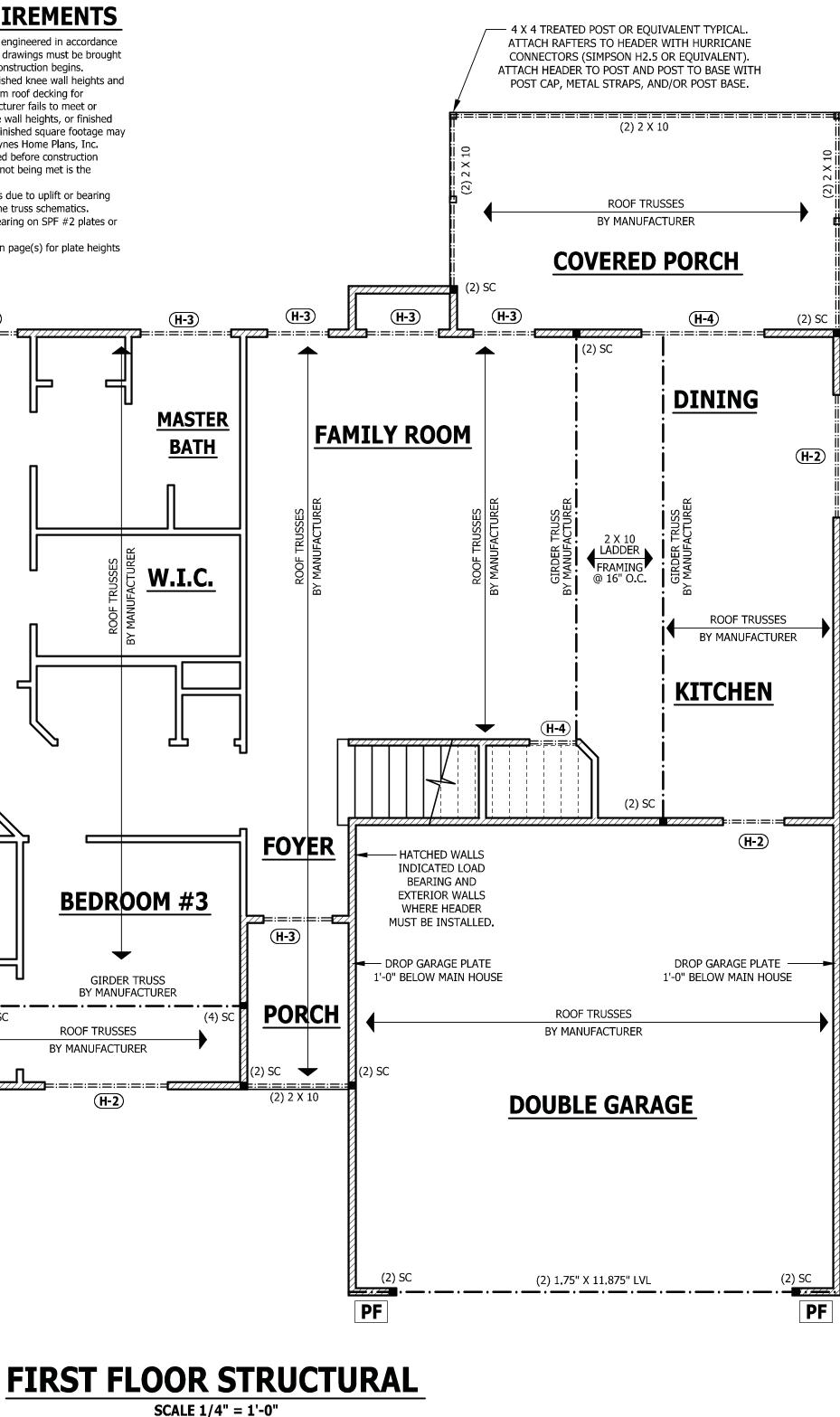
GB: Interior walls show as GB are to have minimum 1/2" gypsum board on both sides of the wall fastened at 7" on center at edges and 7" on center at intermediate supports with minimum 5d cooler nails or #6 screws. **PF**: Portal fame per figure R602.10.1

with these drawings. Any variation with these drawings must be brought vary. Any discrepancy must be brought to Haynes Home Plans, Inc.

and floor system thicknesses.



COMMON LOAD BEARING HEADERS							
	SIZE:	COLUMNS:					
H-1	(2) 2 X 4	1 JACK 1 KING					
H-2	(2) 2 X 6	1 JACK 1 KING					
H-3	(2) 2 X 8	1 JACK 1 KING					
H-4	(2) 2 X 10	2 JACKS 1 KING					
H-5	(2) 2 X 12	2 JACKS 1 KING					
H-6	(2) 1 .7 5" X	2 JACKS 1 KING					
	9.25" LVL						





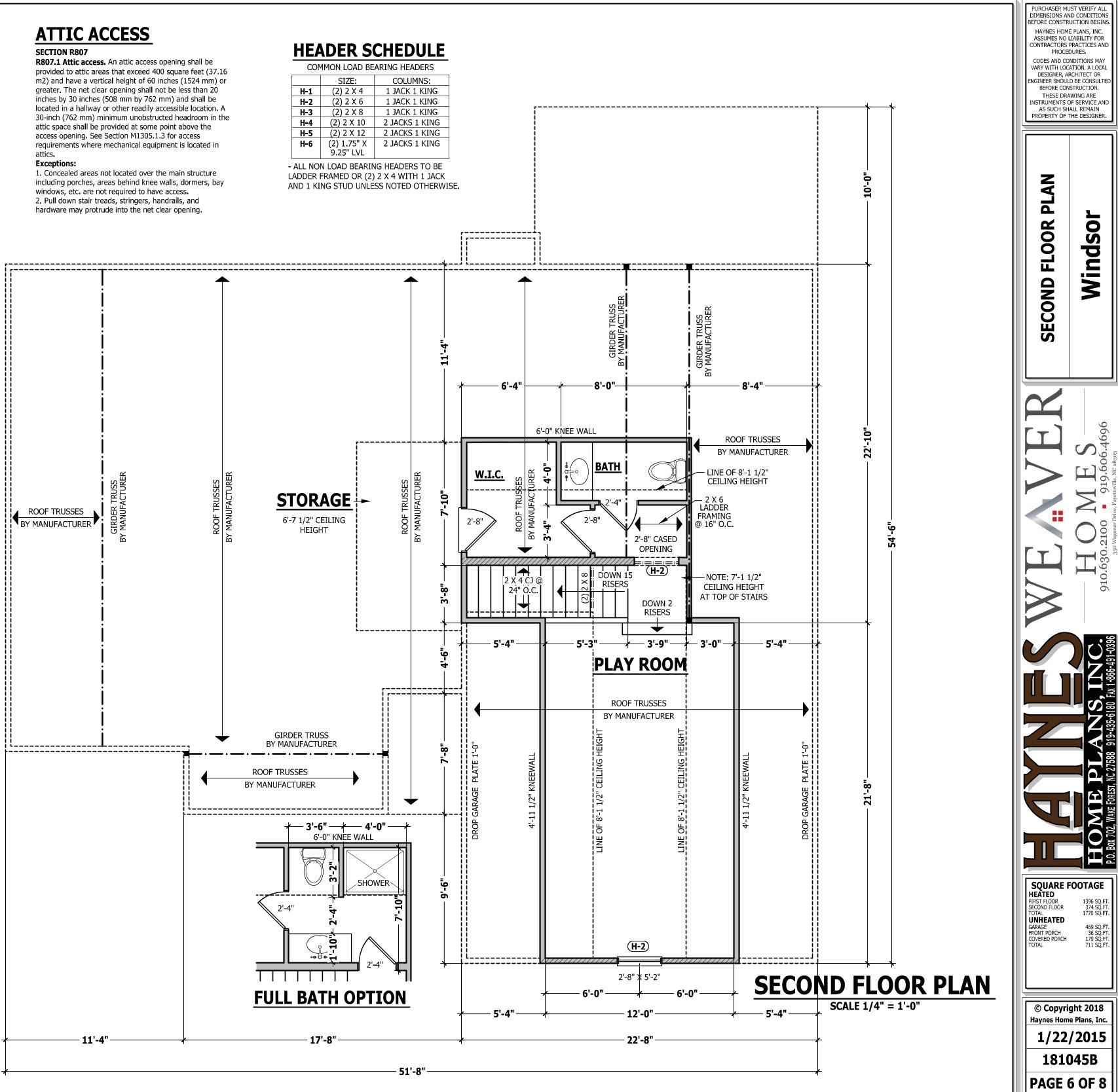
ROOF TRUSS REQUIREMENTS

TRUSS DESIGN. Trusses to be designed and engineered in accordance with these drawings. Any variation with these drawings must be brought to Haynes Home Plan, Inc. attention before construction begins. KNEE WALL AND CEILING HEIGHTS. All finished knee wall heights and ceiling heights are shown furred down 10" from roof decking for insulation. If for any reason the truss manufacturer fails to meet or exceed designated heel heights, finished knee wall heights, or finished ceiling heights shown on these drawings the finished square footage may vary. Any discrepancy must be brought to Haynes Home Plans, Inc. attention, so a suitable solution can be reached before construction begins. Any variation due to these conditions not being met is the reasonability of the truss manufacturer.

ANCHORAGE. All required anchors for trusses due to uplift or bearing shall meet the requirements as specified on the truss schematics. **BEARING.** All trusses shall be designed for bearing on SPF #2 plates or ledgers unless noted otherwise.

Plate Heights & Floor Systems. See elevation page(s) for plate heights and floor system thicknesses.

Common load bearing h						
	SIZE: CO					
H-1	(2) 2 X 4	1 JAC				
H-2	(2) 2 X 6	1 JAC				
H-3	(2) 2 X 8	1 JAC				
H-4	(2) 2 X 10	2 Jack				
H-5 (2) 2 X 12 2 JA						
H-6	(2) 1.75" X 9.25" LVL	2 Jack				



BRACING NOT SHOWN ON UPPER STORY PER R602.10.3.2 (5) & (6)

STRUCTURAL NOTES

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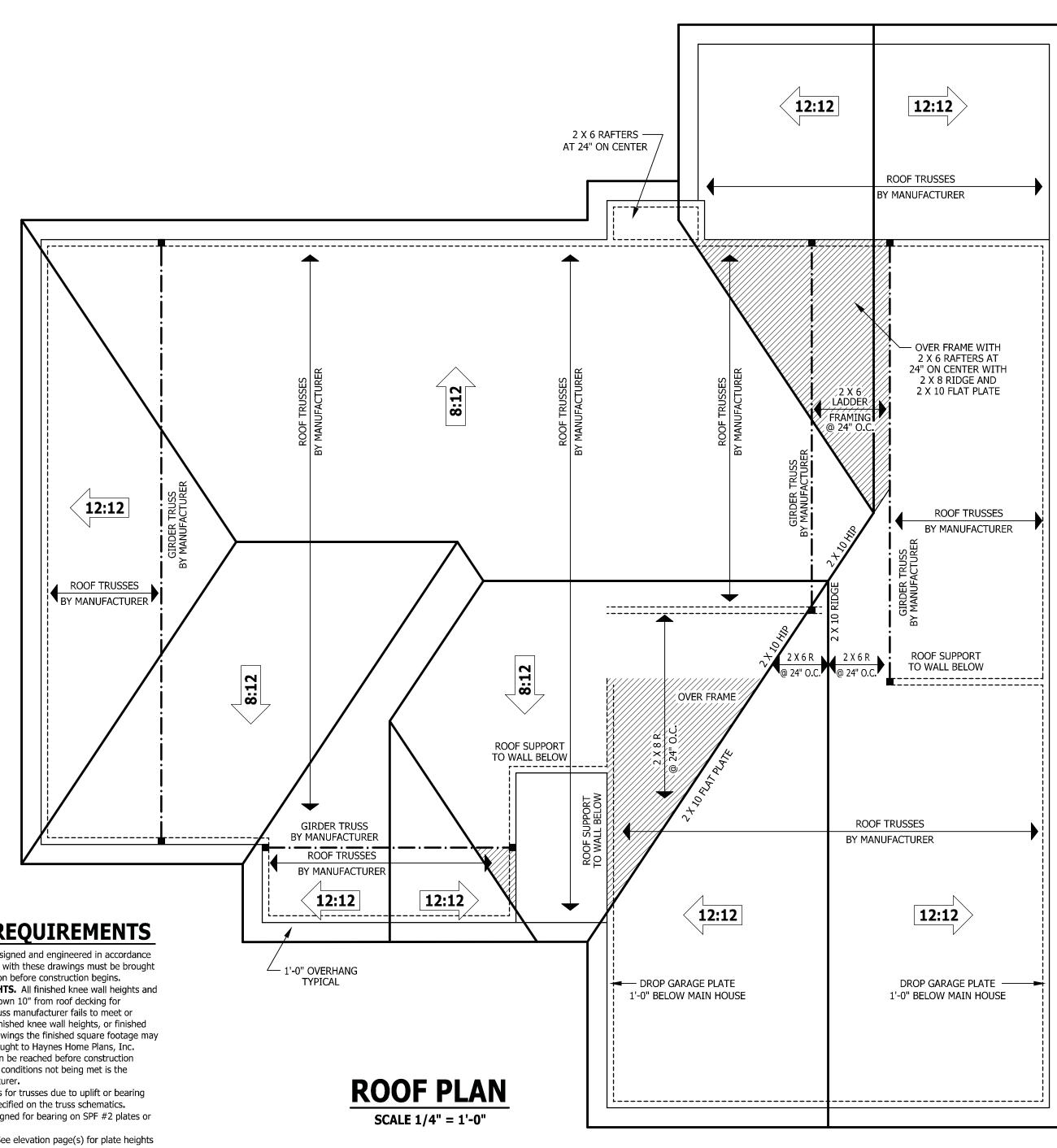
liability for contractors practices and procedures or safety program. Haynes Home Plans, Inc. takes no responsibility for the contractor's failure to carry out the construction work in accordance with the contract documents. All members shall be framed, anchored, and braced in accordance with good construction practice and the building code.

DESIGN LOADS	LIVE LOAD	DEAD LOAD	DEFLECTION
USE	(PSF)	(PSF)	(LL)
Attics without storage	10		L/240
Attics with limited storage	20	10	L/360
Attics with fixed stairs	40	10	L/360
Balconies and decks	40	10	L/360
Fire escapes	40	10	L/360
Guardrails and handrails	200		
Guardrail in-fill components	50		
Passenger vehicle garages	50	10	L/360
Rooms other than sleeping	40	10	L/360
Sleeping rooms	30	10	L/360
Stairs	40		L/360
Snow	20		

FRAMING LUMBER: All non treated framing lumber shall be SPF #2 (Fb = 875 PSI) or SYP #2 (Fb = 750 PSI) and all treated lumber shall be SYP #2 (Fb = 750 PSI) unless noted other wise. **ENGINEERED WOOD BEAMS :**

Laminated veneer lumber (LVL) = Fb=2600 PSI, Fv=285 PSI, E=1.9x10⁶ PSI Parallel strand lumber (PSL) = Fb=2900 PSI, Fv=290 PSI, E=2.0x106 PSI Laminated strand lumber (LSL) Fb=2250 PSI, Fv=400 PSI, E=1.55x106 PSI Install all connections per manufacturers instructions.

TRUSS AND I-JOIST MEMBERS: All roof truss and I-joist layouts shall be prepared in accordance with this document. Trusses and I-joists shall be installed according to the manufacture's specifications. Any change in truss or I-joist layout shall be coordinated with Havnes Homes Plans, Inc. **LINTELS:** Brick lintels shall be 3 1/2" x 3 1/2" x 1/4" steel angle for up to 6'-0" span. 6" x 4" x 5/16" steel angle with 6" leg vertical for spans up to 9'-0" unless noted otherwise. 3 1/2" x 3 1/2" x 1/4" steel angle with 1/2" bolts at 2'-0" on center for spans up to 18'-0" unless noted otherwise. **CONCRETE AND SOILS:** See foundation notes.



ROOF TRUSS REQUIREMENTS

TRUSS DESIGN. Trusses to be designed and engineered in accordance with these drawings. Any variation with these drawings must be brought to Haynes Home Plan, Inc. attention before construction begins. KNEE WALL AND CEILING HEIGHTS. All finished knee wall heights and ceiling heights are shown furred down 10" from roof decking for insulation. If for any reason the truss manufacturer fails to meet or exceed designated heel heights, finished knee wall heights, or finished ceiling heights shown on these drawings the finished square footage may vary. Any discrepancy must be brought to Haynes Home Plans, Inc. attention, so a suitable solution can be reached before construction begins. Any variation due to these conditions not being met is the reasonability of the truss manufacturer.

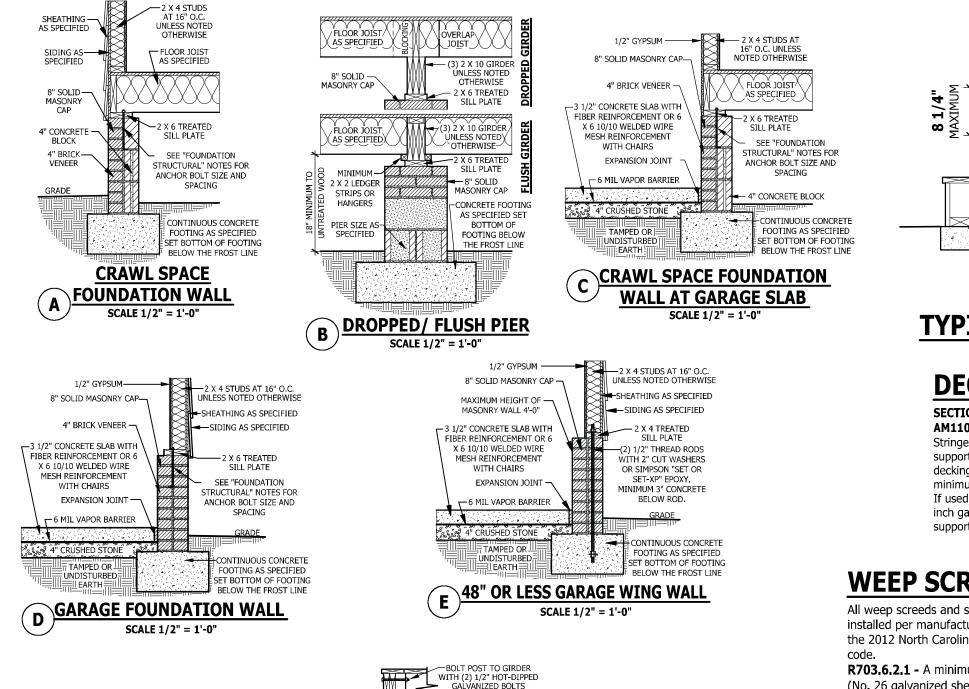
ANCHORAGE. All required anchors for trusses due to uplift or bearing shall meet the requirements as specified on the truss schematics. BEARING. All trusses shall be designed for bearing on SPF #2 plates or ledgers unless noted otherwise.

Plate Heights & Floor Systems. See elevation page(s) for plate heights and floor system thicknesses.

HEEL HEIGHT ABOVE FIRST FLOOR PLATE

HEEL HEIGHT ABOVE





DECK BRACING

SECTION AM109

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AM109.1 Deck bracing. Decks shall be braced to provide lateral stability. The following are acceptable means to provide lateral stability.

AM109.1.1. When the deck floor height is less than 4'-0" above finished grade per Figure AM109 and the deck is attached to the structure in accordance with Section AM104, lateral bracing is not required

AM109.1.2. 4 x 4 wood knee braces may be provided on each column in both directions. The knee braces shall attach to each post at a point not less than 1/3 of the post length from the top of the post, and the braces shall be angled between 45 degrees and 60 degrees from the horizontal. Knee braces shall be bolted to the post and the girder/double band with one 5/8 inch hot dipped galvanized bolt with nut and washer at both ends of the brace per Figure AM109.1

AM109.1.3. For freestanding decks without knee braces or diagonal bracing, lateral stability may be provided by embedding the post in accordance with Figure AM109.2 and the following:

POS SIZ	ST E	MÃX TRIBUTARY ARFA	MAX. POST HEIGHT	EMBEDMENT DEPTH	CONCRETE DIAMETER
4 X		48 SF	4'-0"	2'-6"	1'-0"
6 X		120 SF	6'-0"	3'-6"	1'-8"

AM109.1.4. 2 x 6 diagonal vertical cross bracing may be provided in two perpendicular directions for freestanding decks or parallel to the structure at the exterior column line for attached decks. The 2 x 6's shall be attached to the posts with one 5/8 inch hot dipped galvanized bolt with nut and washer at each end of each bracing member per Figure AM109.3. AM109.1.5. For embedment of piles in Coastal Regions, see Chapter 45.

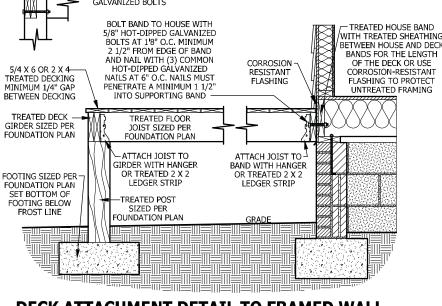
CARBON MONOXIDE ALARMS

SECTION R315

R315.1 Carbon monoxide alarms. In new construction, dwelling units shall be provided with an approved carbon monoxide alarm installed outside of each separate sleeping area in the immediate vicinity of the bedroom(s) as directed by the alarm manufacturer.

R315.2 Where required in existing dwellings. In existing dwellings, where interior alterations, repairs, fuel-fired appliance replacements, or additions requiring a permit occurs, or where one or more sleeping rooms are added or created, carbon monoxide alarms shall be provided in accordance with Section 315.1.

R315.3 Alarm requirements. The required carbon monoxide alarms shall be audible in all bedrooms over background noise levels with all intervening doors closed. Single station carbon monoxide alarms shall be listed as complying with UL 2034 and shall be installed in accordance with this code and the manufacturer's installation instructions.



DECK ATTACHMENT DETAIL TO FRAMED WALL SCALE 1/2" = 1'-0"

SMOKE ALARMS

SECTION R314

n. All smoke alarms shall be listed in accordance with UL 217 and installed in accordance with the provisions of this code and the household fire warning *equipment* provisions of NFPA 72. R314.2 Smoke detection systems. Household fire alarm systems installed in accordance with NFPA 72 that include smoke alarms, or a combination of smoke detector and audible notification device installed as required by this section for smoke alarms, shall be permitted. The household fire alarm system shall provide the same level of smoke detection and alarm as required by this section for smoke alarms. Where a household fire warning system is installed using a combination of smoke detector and audible notification device(s), it shall become a permanent fixture of the occupancy and owned by the homeowner. The system shall be monitored by an *approved* supervising station and be maintained in accordance with NFPA 72. Exception: Where smoke alarms are provided meeting the requirements of

Section R314.4. **R314.3 Location.** Smoke alarms shall be installed in the following locations:

1. In each sleeping room. 2. Outside each separate sleeping area in the immediate vicinity of the bedrooms.

3. On each additional *story* of the *dwelling*, including *basements* and habitable attics (finished) but not including crawl spaces, uninhabitable (unfinished) attics and uninhabitable (unfinished) attic-stories. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

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

R314.4 Power source. Smoke alarms shall receive their primary power from the building wiring when such wiring is served from a commercial source, and when 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. Smoke alarms shall be interconnected.

4

FIGURE AM110 TYPICAL DECK STAIR DETAIL SCALE 3/4" = 1'-0" **DECK STAIR NOTES**

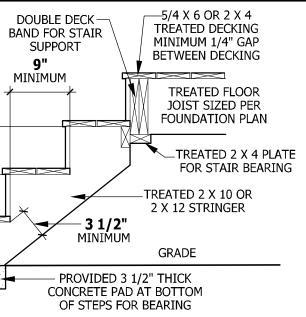
SECTION AM110 AM110.1 Stairs shall be constructed per Figure AM110. Stringer spans shall be no greater than 7 foot span between supports. Spacing between stringers shall be based upon decking material used per AM107.1. Each Stringer shall have minimum 3 1/2 inches between step cut and back of stringer. If used, suspended headers shall shall be attached with 3/8 inch galvanized bolts with nuts and washers to securely support stringers at the top.

WEEP SCREEDS

All weep screeds and stone veneer to be installed per manufactures instructions and per the 2012 North Carolina Residential Building

R703.6.2.1 - A minimum 0.019-inch (0.5 mm) (No. 26 galvanized sheet gage), corrosion-resistant weep screed or plastic weep screed, with a minimum vertical attachment flange of 31/2 inches (89 mm) shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C 926. The weep screed shall be placed a minimum of 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas and shall be of a type that will allow trapped water to drain to the exterior of the building. The weather-resistant barrier shall lap the attachment flange. The exterior lath shall cover and terminate on the attachment flange of the weep screed.

treads Exceptions: tread. handrails. Exceptions into the wall.



STAIRWAY NOTES

R311.7.2 Headroom. The minimum headroom in all parts of the stairway shall not be less than 6 feet 8 inches (2032 mm) measured vertically from the sloped line adjoining the tread nosing or from the floor surface of the landing or platform on that portion of the stairway.

SHEATHING

AS SPECIFIED

LATH-

SEE FOUNDATION

FOR FOUNDATION

DETAILS

R

WEEP SCREED

SCALE 3/4" = 1'-0"

GRADE

R311.7.4 Stair treads and risers. Stair treads and risers shall meet the requirements of this section. For the purposes of this section all dimensions and dimensioned surfaces shall be exclusive of carpets, rugs or runners. **R311.7.4.1 Riser height.** The maximum riser height shall be 8 1/4 inches (210 mm). The riser shall be measured vertically between leading edges of the adjacent

R311.7.4.2 Tread depth. The minimum tread depth shall be 9 inches (229 mm). The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge, Winder treads shall have a minimum tread depth of 9 inches (229 mm) measured as above at a point 12 inches (305 mm) from the side where the treads are narrower. Winder treads shall have a minimum tread depth of 4 inches (102 mm) at any point.

R311.7.4.3 Profile. The radius of curvature at the nosing shall be no greater than 9/16 inch (14 mm). A nosing not less than 3/4 inch (19 mm) but not more than 1 1/4 inches (32 mm) shall be provided on stairways with solid risers.

R311.7.7 Handrails. Handrails shall be provided on at least one side of each continuous run of treads or flight with four or more risers.

R311.7.7.1 Height. Handrail height, measured vertically from the sloped plane adjoining the tread nosing, or finish surface of ramp slope, shall be not less than 34 inches (864 mm)and not more than 38 inches (965 mm).

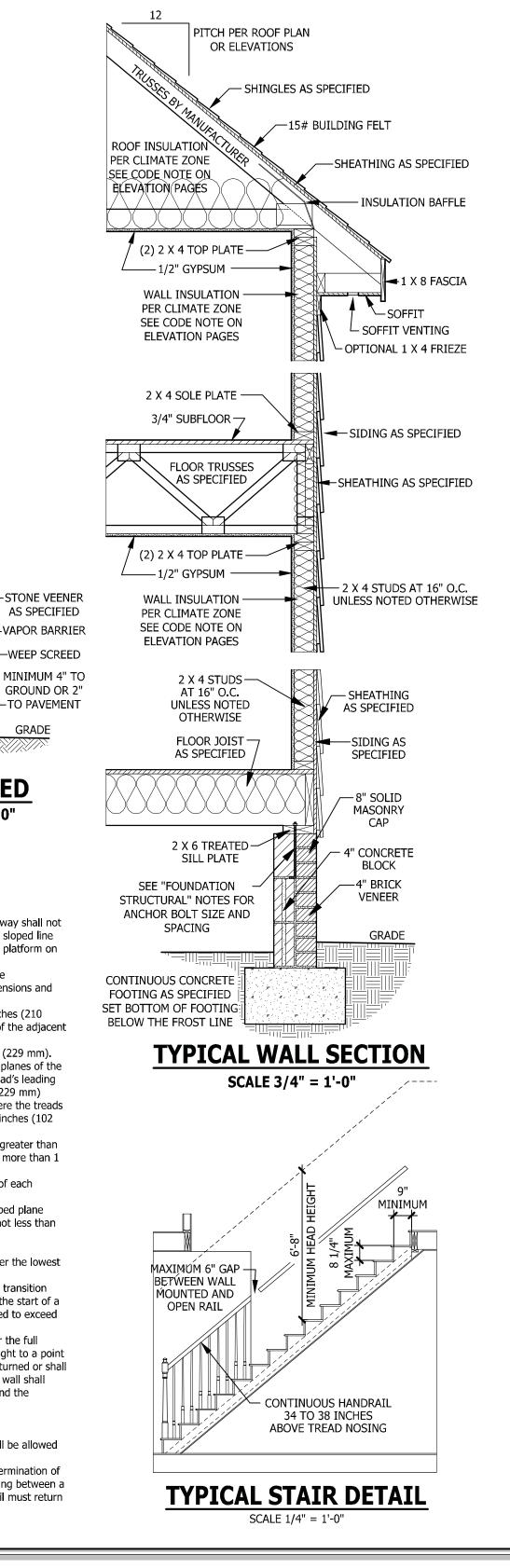
1. The use of a volute, turnout or starting easing shall be allowed over the lowest

2. When handrail fittings or bendings are used to provide continuous transition between flights, the transition from handrail to guardrail, or used at the start of a flight, the handrail height at the fittings or bendings shall be permitted to exceed the maximum height.

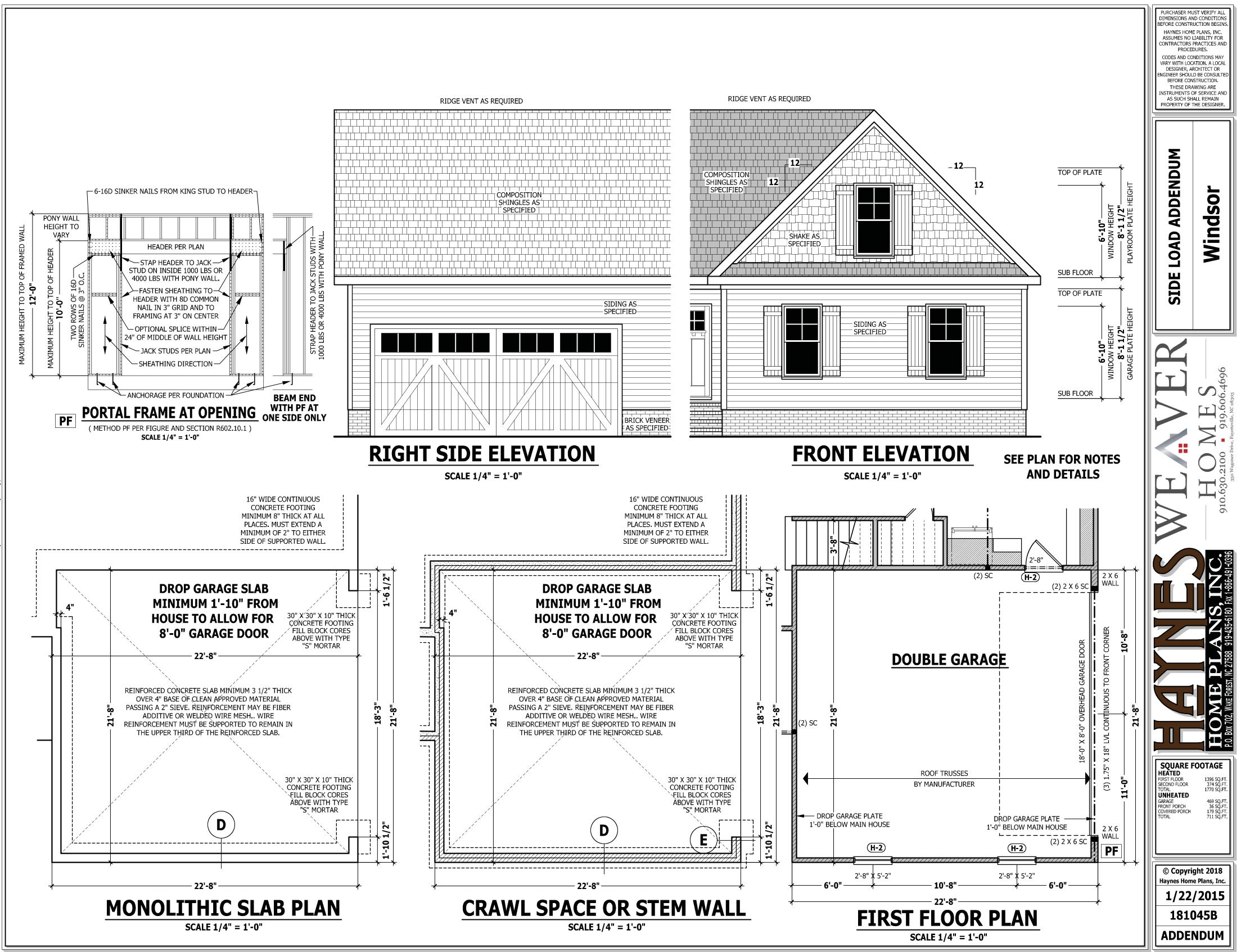
R311.7.7.2 Continuity. Handrails for stairways shall be continuous for the full length of the flight, from a point directly above the top riser of the flight to a point directly above the lowest riser of the flight. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 11/2 inch (38 mm) between the wall and the

1. Handrails shall be permitted to be interrupted by a newel post. 2. The use of a volute, turnout, starting easing or starting newel shall be allowed over the lowest tread.

3. Two or more separate rails shall be considered continuous if the termination of the rails occurs within 6 inches (152 mm) of each other. If transitioning between a wall-mounted handrail and a guardrail/handrail, the wall-mounted rail must return







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13			Address.				oject #:		OK				
GDH 18'	FL Kert	o-S LVL	1.750"	X 14.000"	2-Ply -	PASSE	D	Level: Leve	9				
		2											
				1									
• • •	- Pitte			all the second				Win.	•			M	1'2"
1 SPF End	· ·									2 SPF End	Grain	W	
<u> </u>				19'									1/2"
<u> </u>				10								. 10	172
/lember Inf			- F			Reaction							
Type: Plies:	Girder 2		Application: Design Meth	Floor nod: ASD		Brg Dire	ection ical	Live		Dead 2573	Snow 0	Wind 0	Co
Moisture Cond			Building Co		5	2 Vert		(2573	0	0	
Deflection LL:	480		Load Sharin	•									
Deflection TL:	360		Deck:	Not Checked	ł								
Importance: Temperature:	Normal - II Temp <= 10	No₀⊏											
remperature.	iemp <= it	JU F				Bearing	5						
						Bearing		n Dir.	Can	React D/L lb	Total	Ld. Case	Ld. Cor
						1 - SPF	Ũ	Vert	25%	2573 / 0		Uniform	D
						End	0.000		2070	201070	2010		5
Analysis Res	sults					Grain							-
Analysis	Actual	Location	Allowed C	apacity Comb.	Case	2 - SPF End	3.500"	Vert	25%	2573 / 0	2573	Uniform	D
Moment	11641 ft-lb			479 (48%) D	Uniform	Grain							
Unbraced	11641 ft-lb	9'6"		.999 D 00%)	Uniform								
Shear	2191 lb	17'6 1/2"		.233 (23%) D	Uniform								
LL Defl inch	0.000 (L/999)		999.000 (L/0) 0		onnonn								
TL Defl inch	. ,		0.618 (L/360) 0		Uniform								
	. ,	00 11 10			Childhi	4							
Design Not		toral movomon	t and rotation at	the end bearings. La	toral support	4							
	e required at the ir				terar support								
2 Fasten all p to exceed 6		of 10d Box nai	ls (.128x3") at 12	" o.c. Maximum end	distance not								
	t page of calculati	ons for fastene	ers required for s	pecified loads.									
	designed to be su			nly.									
	nust be supported e laterally braced												
•	at be laterally brac												
8 Lateral slen	derness ratio bas	ed on single pl	y width.										
ID	Load Type	I	Location Trib	Width Side	Dead 0.9	Live	1 Sno	w 1.15	Wind 1	.6 Const. 1.	25 Co	mments	
1	Uniform			Тор	200 PLF	0 PLI	F	0 PLF	0 PI	.F 0 P	LF GA	BLE END	
2	Uniform			Тор	60 PLF	0 PLI	F	0 PLF	0 PI	.F 0 P	LF DE	AD WALL	
	Self Weight				11 PLF								
Notes		chemica	als	6 For	flat roofs provide p	proper drainage to	prevent	Manufactu	rer Info		Comtech		
Calculated Structured I	Designs is responsible on	ly of the Handling	g & Installation	pon	ding	p aramayo tu		Metsä Woo			 Reilly Ro USA 28309 	ad Industrial Par	к Р.О. Вох 404
design criteria and responsibility of the ci	of this component based loadings shown. It ustomer and/or the contra	is the 2. Refer	to manufacturer's p	roduct information				301 Merritt Norwalk, C	T 06851	2nd Floor	28309 910-864-	8787	
ensure the compone	ent suitability of the i fy the dimensions and load	ntended fastenin	ng installation requing details, beam streng	h values, and code				(800) 622-5 www.metsa	850	/us			
		3. Damage	ed Beams must not be u										
umber	ons, unless noted otherwis		assumes top edge is late lateral support at bea				1						

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2		ient: SOUTHERN TOUC	H Date: Input		Page 2 of 2
isDesig	in Ad	ddress:		lame: WINDSOR	
GDH 18' FL	Kerto-S LVL	1.750" X 14.000	" 2-Ply - PASSED		
· · · ·	· · ·	· · · ·		· · · · ·	
1 SPF End Grain	· · · ·	· · · ·	· · · · ·	2 SPF Er	
}			19'		3 1/2"
<u> </u>			19'		
Iulti-Ply Analysis					
asten all plies using	g 3 rows of 10d Bo	x nails (.128x3") at 12"	o.c Maximum end distanc	e not to exceed 6".	
apacity oad	0.0 % 0.0 PLF				
eld Limit per Foot eld Limit per Fastener	245.6 PLF 81.9 lb.				
eld Mode	IV				
lge Distance n. End Distance	1 1/2" 3"				
ad Combination	5				
uration Factor	1.00				
				Manufacturer Info	Comtech
Notes Calculated Structured Designs is resp	chemicals ponsible only of the Handling		For flat roofs provide proper drainage to prev ponding	Metsä Wood	 Reilly Road Industrial Park P.O. Box 40408, USA
structural adequacy of this compor design criteria and loadings sl	hent based on the 1. LVL beam hown, It is the 2 Pofor to	s must not be cut or drilled manufacturer's product information		301 Merritt 7 Building, 2nd Floor Norwalk, CT 06851	28309 910-864-8787
esponsibility of the customer and/o nsure the component suitability pplication, and to verify the dimensio	of the intended fastening	installation requirements, multi-ply details, beam strength values, and code		(800) 622-5850	
Lumber	3. Damaged	Beams must not be used sumes top edge is laterally restrained		www.metsawood.com/us	
 Dry service conditions, unless not LVL not to be treated with fire ret 	5. Provide la	iteral support at bearing points to avoid placement and rotation	This design is valid until 11/2/2021		соттесн
			This design is valid until 11/3/2024	i i	

