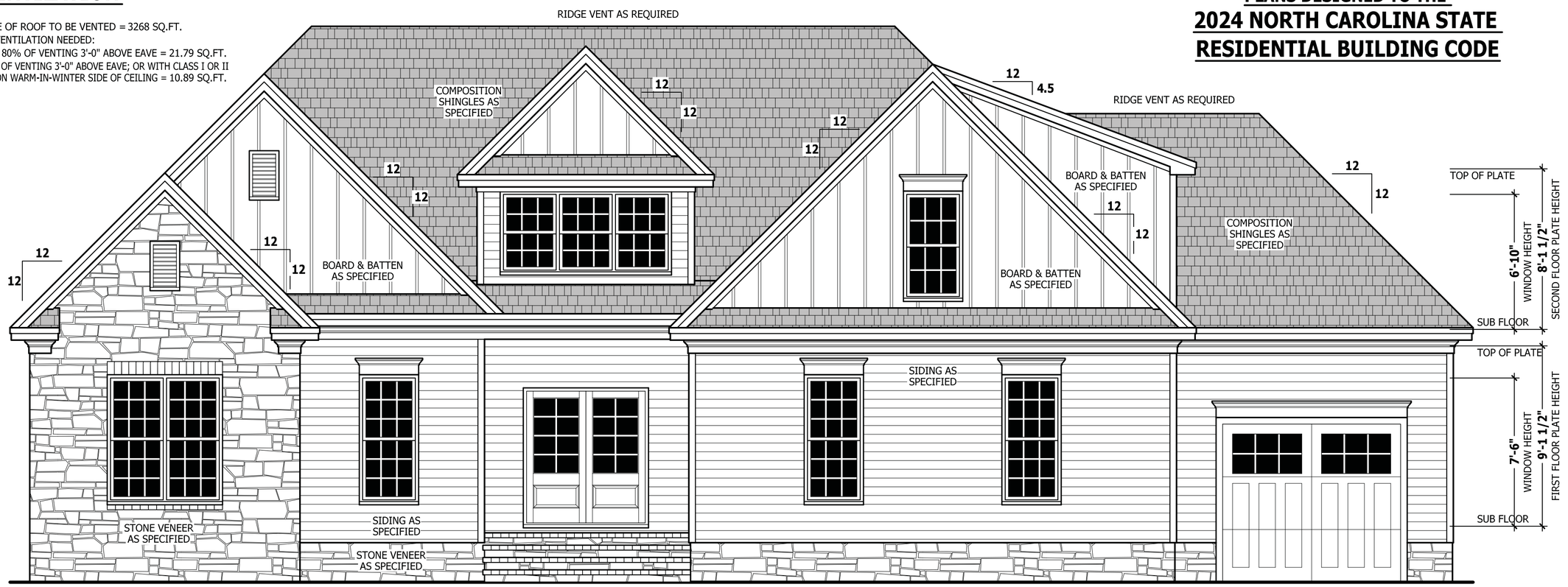
ROOF VENTILATION

SECTION R806

SQUARE FOOTAGE OF ROOF TO BE VENTED = 3268 SQ.FT.
NET FREE CROSS VENTILATION NEEDED:
WITHOUT 50% TO 80% OF VENTING 3'-0" ABOVE EAVE = 21.79 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 = 10.89 SQ.FT.



MEAN ROOF HEIGHT: 0'-0" HEIGHT TO RIDGE: 0'-0"

CLIMATE ZONE	ZONE 3A	ZONE 4A	ZONE 5A
FENESTRATION U-FACTOR	0.35	0.35	0.35
SKYLIGHT U-FACTOR	0.55	0.55	0.55
GLAZED FENESTRATION SHGC	0.30	0.30	0.30
CEILING R-VALUE	38 or 30ci	38 or 30ci	38 or 30ci
WALL R-VALUE	15	15	19
FLOOR R-VALUE	19	19	30
* BASEMENT WALL R-VALUE	5/13	10/15	10/15
** SLAB R-VALUE	0	10	10
* CRAWL SPACE WALL R-VALUE	5/13	10/15	10/19

* "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

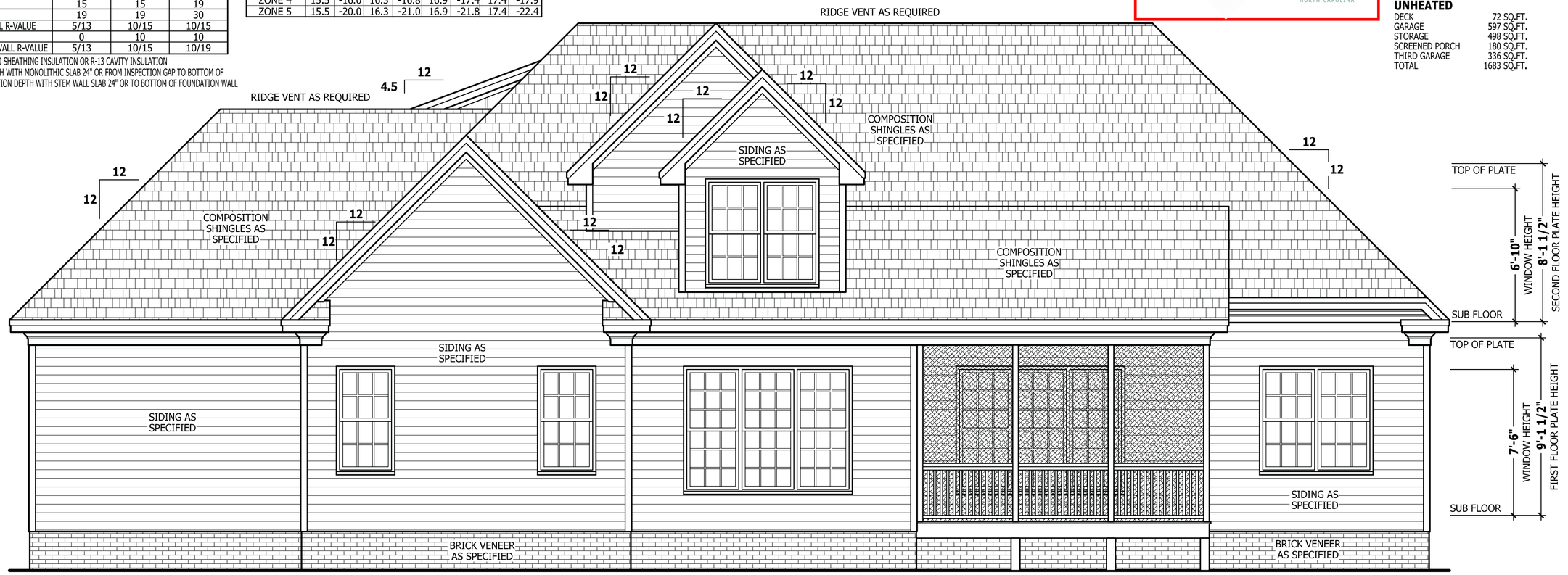
DESIGNED FOR WIND SPEED OF 120 MPH, 3 SECOND GUST (93 FASTEST MILE) EXPOSURE "B"

COMPONENT & CLADDING DESIGNED FOR THE FOLLOWING LOADS								
MEAN ROOF	UP TO 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

RAIL AS NEEDED PER CODE

FRONT ELEVATION

SCALE 1/4" = 1'-0"



REAR ELEVATION

SCALE 1/4" = 1'-0"

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
07/07/2025
Harnett COUNTY NORTH CAROLINA

SQUARE FOOTAGE

HEATED

FIRST FLOOR	2280 SQ.FT.
PLAYROOM	400 SQ.FT.
BEDROOM 4	374 SQ.FT.
TOTAL	3054 SQ.FT.

UNHEATED

DECK	72 SQ.FT.
GARAGE	597 SQ.FT.
STORAGE	498 SQ.FT.
SCREENED PORCH	180 SQ.FT.
THIRD GARAGE	336 SQ.FT.
TOTAL	1683 SQ.FT.

PURCHASER MUST VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE CONSTRUCTION BEGINS.

M. HAYNES DESIGNS ASSUMES NO LIABILITY FOR CONTRACTORS PRACTICES AND PROCEDURES.

CODES AND CONDITIONS MAY VARY WITH LOCATION. A LOCAL DESIGNER, ARCHITECT OR ENGINEER SHOULD BE CONSULTED BEFORE CONSTRUCTION.

THESE DRAWING ARE INSTRUMENTS OF SERVICE AND AS SUCH SHALL REMAIN PROPERTY OF THE DESIGNER.

PLANS DESIGNED TO THE
2024 NORTH CAROLINA STATE RESIDENTIAL BUILDING CODE

FRONT & REAR ELEVATIONS

Fletcher

Asset Development, Inc.
3900 Dunn Road
Roseboro, NC 28382
910-6246942

M. HAYNES DESIGNS
2821 ALDERSHOT DRIVE, WAKE FOREST, NC
919-740-0997 mhaynes1@nc.rr.com

SQUARE FOOTAGE
HEATED
FIRST FLOOR 2280 SQ.FT.
PLAYROOM 400 SQ.FT.
BEDROOM 4 374 SQ.FT.
TOTAL 3054 SQ.FT.
UNHEATED
DECK 72 SQ.FT.
GARAGE 597 SQ.FT.
STORAGE 498 SQ.FT.
SCREENED PORCH 180 SQ.FT.
THIRD GARAGE 336 SQ.FT.
TOTAL 1683 SQ.FT.

4/17/2025

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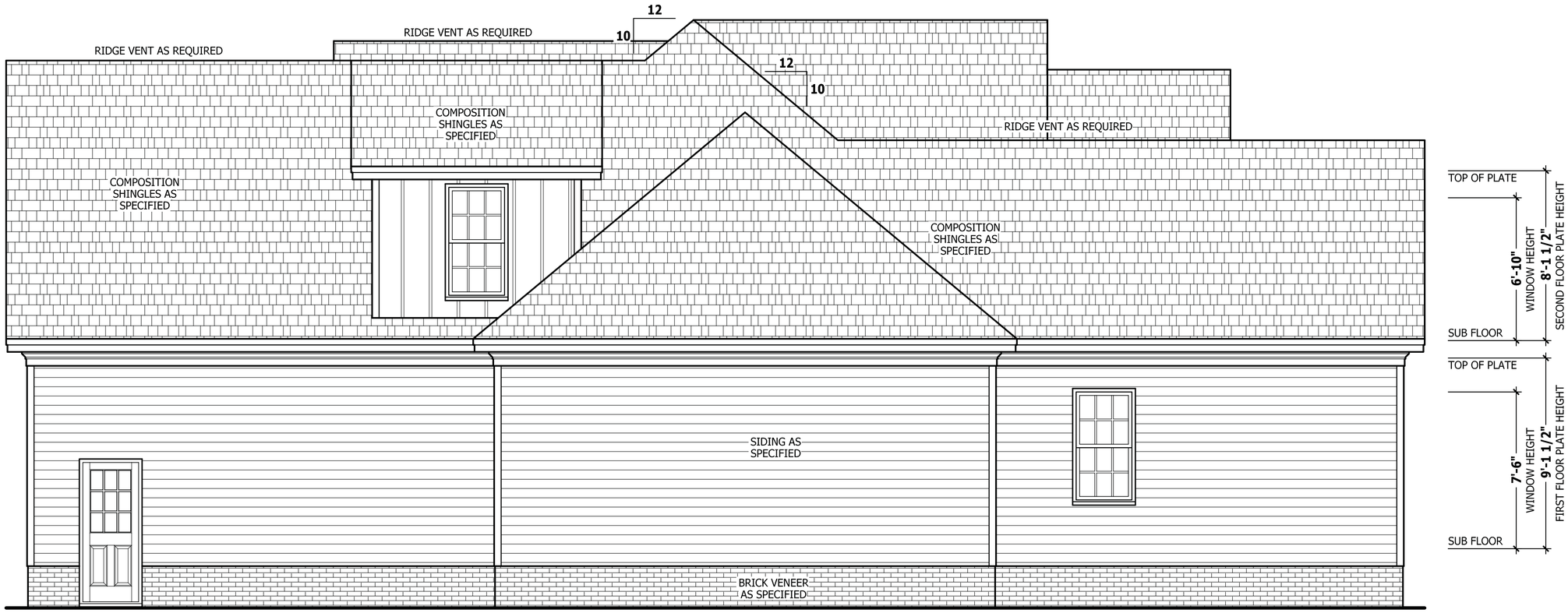
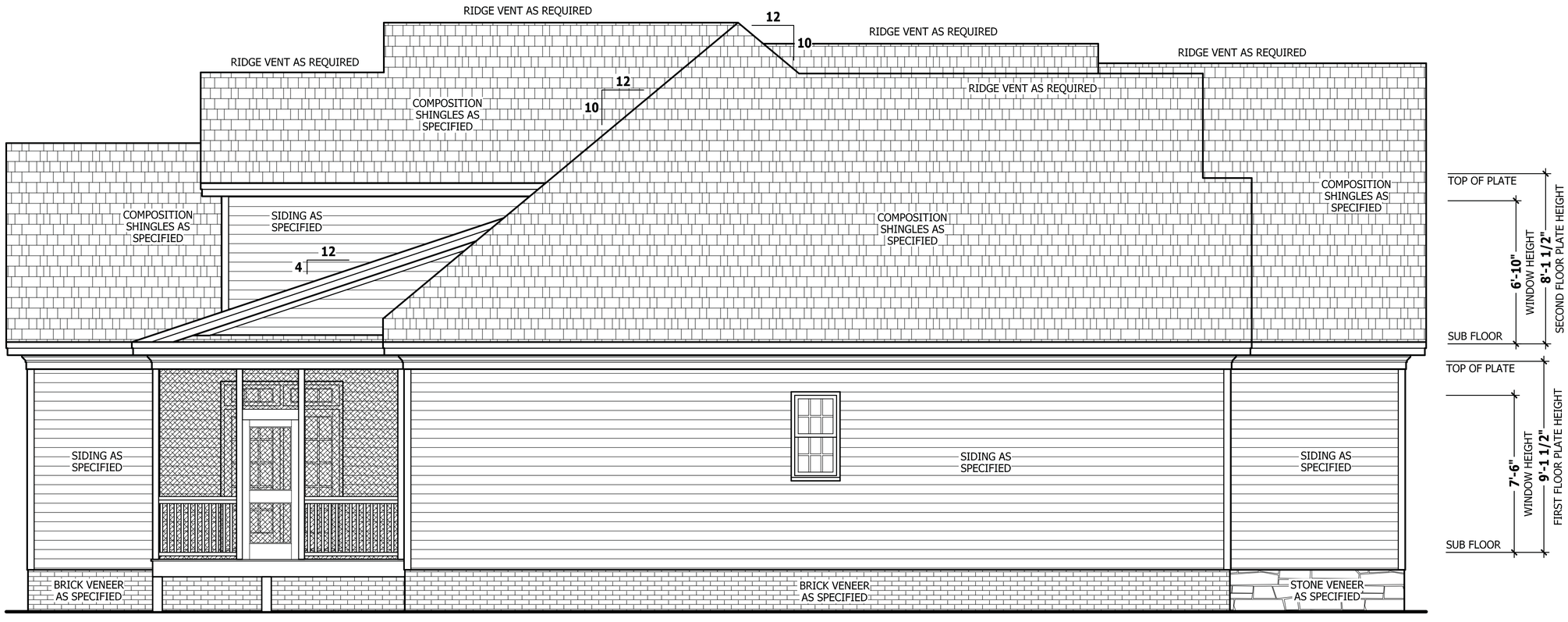


RIGHT SIDE ELEVATION

SCALE 1/4" = 1'-0"



LEFT SIDE ELEVATION

SCALE 1/4" = 1'-0"

LEFT & RIGHT ELEVATIONS

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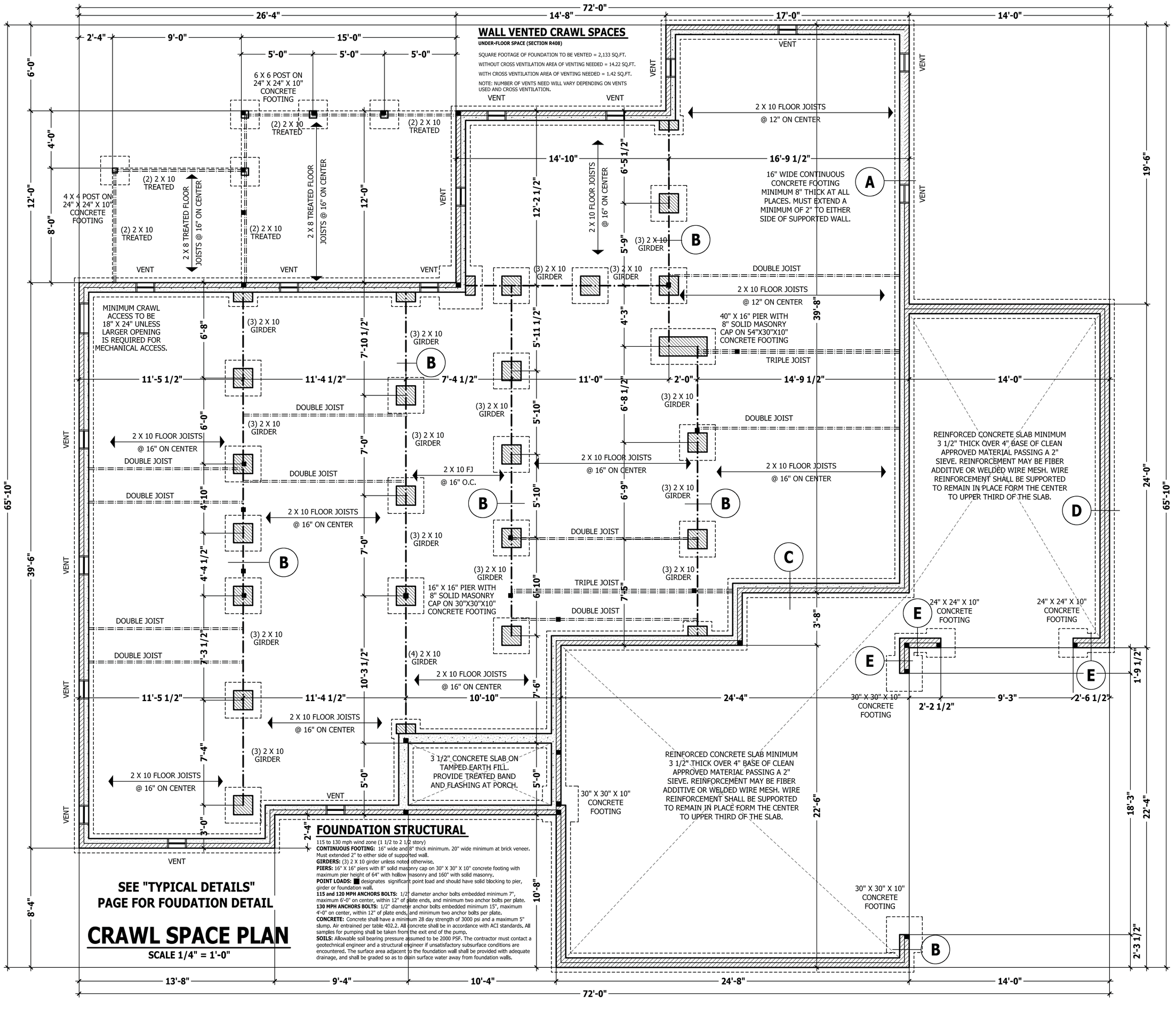

SEE "TYPICAL DETAILS" PAGE FOR FOUDATION DETAIL

CRAWL SPACE PLAN

SCALE 1/4" = 1'-0"

FOUNDATION STRUCTURAL

115 to 130 mph wind zone (1 1/2 to 2 1/2 story)

CONTINUOUS FOOTING: 16" wide and 8" thick minimum. 20" wide minimum at brick veneer. Must extended 2" to either side of supported wall.

GIRDERS: (3) 2 X 10 girder unless noted otherwise.

PIERS: 16" X 16" piers with 8" solid masonry cap on 30" X 30" X 10" concrete footing with maximum pier height of 64" with hollow masonry and 160" with solid masonry.

POINT LOADS: ■ designates significant point load and should have solid blocking to pier, girder or foundation wall.

115 and 120 MPH ANCHORS BOLTS: 1/2" diameter anchor bolts embedded minimum 7", maximum 6'-0" on center, within 12" of plate ends, and minimum two anchor bolts per plate.

130 MPH ANCHORS BOLTS: 1/2" diameter anchor bolts embedded minimum 15", maximum 4'-0" on center, within 12" of plate ends, and minimum two anchor bolts per plate.

CONCRETE: Concrete shall have a minimum 28 day strength of 3000 psi and a maximum 5" slump. Air entrained per table 402.2. All concrete shall be in accordance with ACI standards. All samples for pumping shall be taken from the exit end of the pump.

SOILS: Allowable soil bearing pressure assumed to be 2000 PSF. The contractor must contact a geotechnical engineer and a structural engineer if unsatisfactory subsurface conditions are encountered. The surface area adjacent to the foundation wall shall be provided with adequate drainage, and shall be graded so as to drain surface water away from foundation walls.

FOUNDATION PLAN

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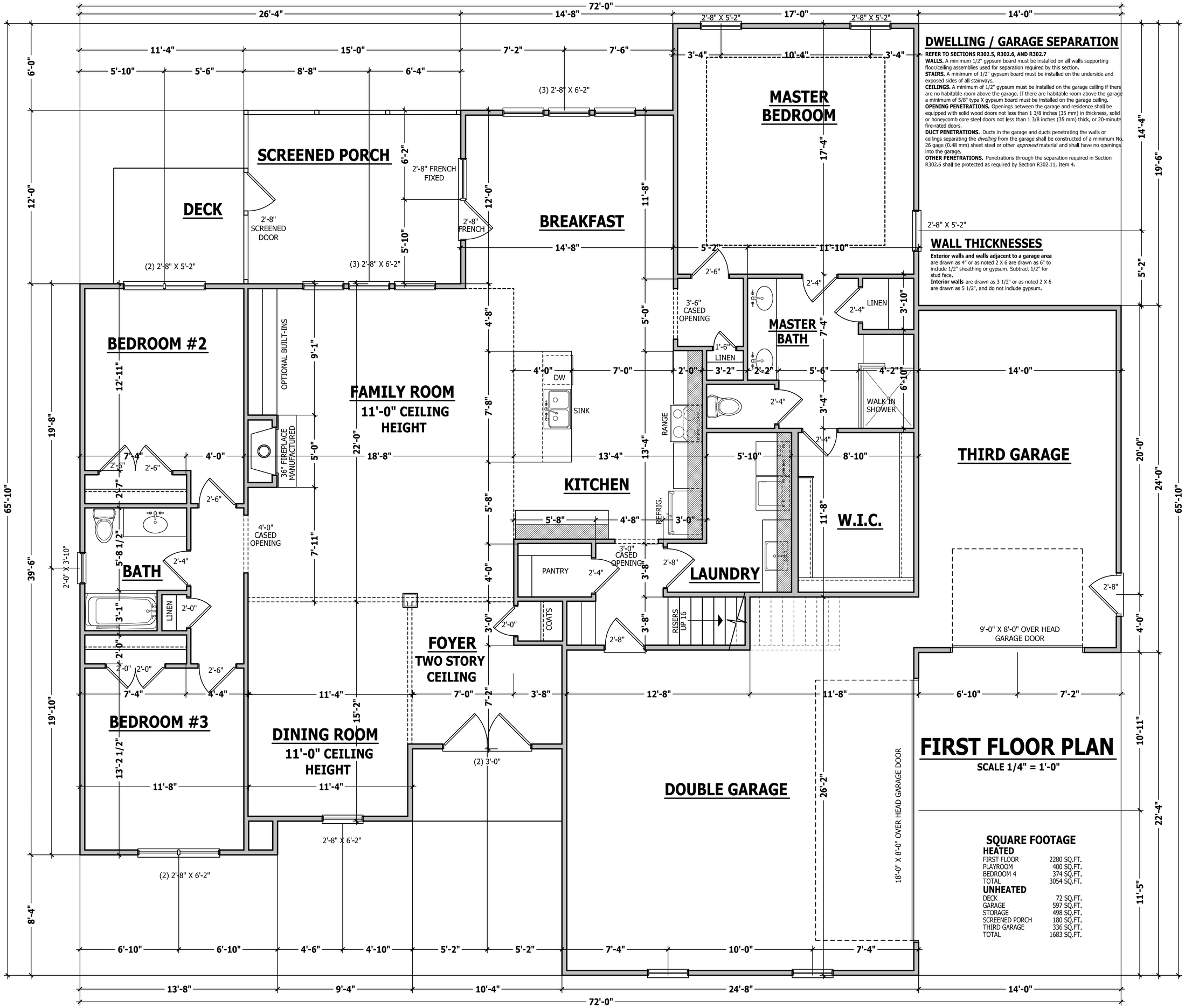

DWELLING / GARAGE SEPARATION

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.

WALL THICKNESSES

Exterior walls and walls adjacent to a garage area are drawn as 4" or as noted 2 X 6 are drawn as 6" to include 1/2" sheathing or gypsum. Subtract 1/2" for stud face.

Interior walls are drawn as 3 1/2" or as noted 2 X 6 are drawn as 5 1/2", and do not include gypsum.

FIRST FLOOR PLAN

SCALE 1/4" = 1'-0"

SQUARE FOOTAGE

HEATED	
FIRST FLOOR	2280 SQ.FT.
PLAYROOM	400 SQ.FT.
BEDROOM 4	374 SQ.FT.
TOTAL	3054 SQ.FT.
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FIRST FLOOR PLAN

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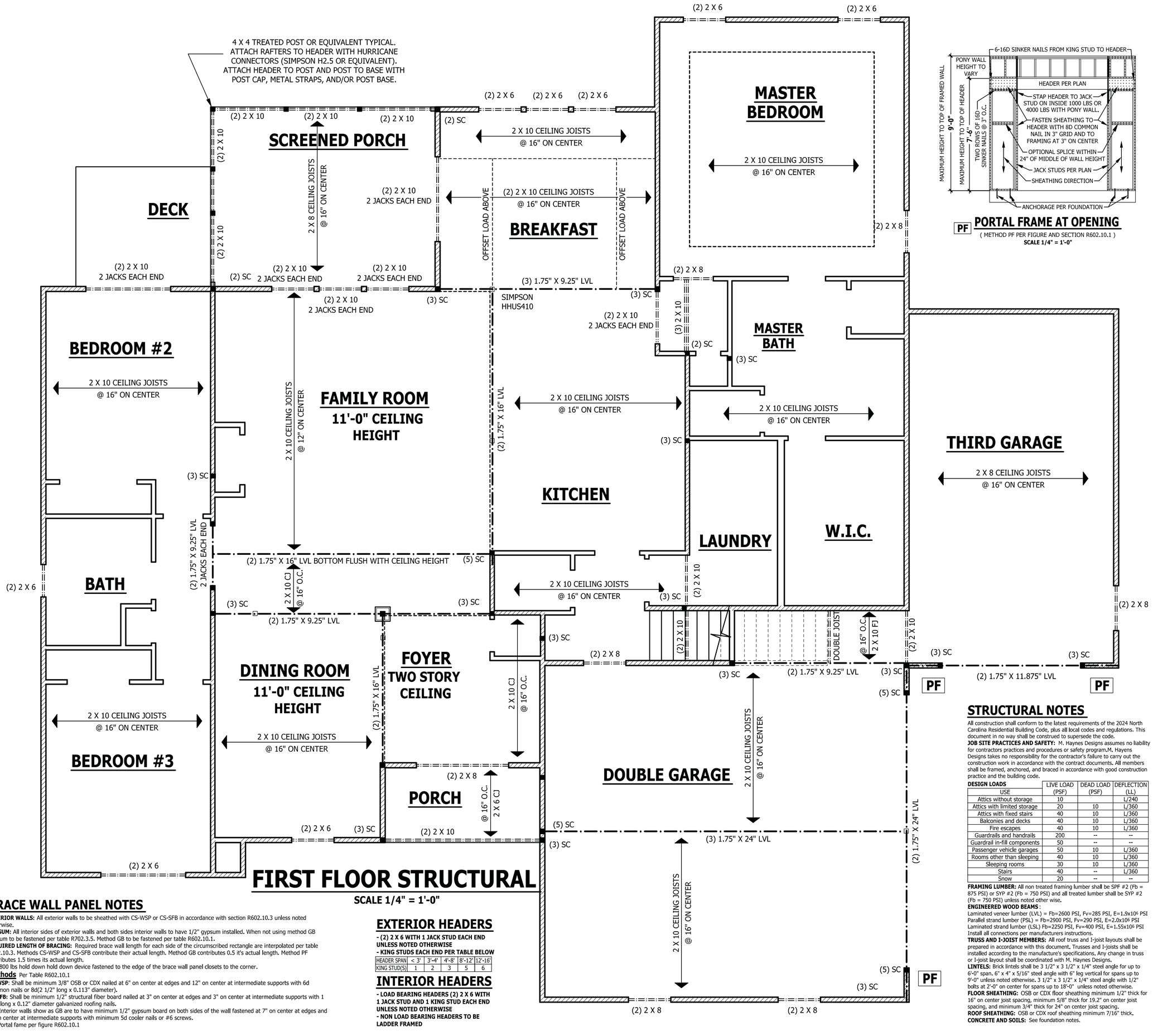

FIRST FLOOR STRUCTURAL

SCALE 1/4" = 1'-0"

PF **PORTAL FRAME AT OPENING**

(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" long 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

EXTERIOR HEADERS

- (2) 2 X 6 WITH 1 JACK STUD EACH END UNLESS NOTED OTHERWISE
- KING STUDS EACH END PER TABLE BELOW

HEADER SPAN	< 3'	3'-4'	4'-8'	8'-12'	12'-16'
KING STUD(S)	1	2	3	5	6

INTERIOR HEADERS

- LOAD BEARING HEADERS (2) 2 X 6 WITH 1 JACK STUD AND 1 KING STUD EACH END UNLESS NOTED OTHERWISE
- NON LOAD BEARING HEADERS TO BE LADDER FRAMED

STRUCTURAL NOTES

All construction shall conform to the latest requirements of the 2024 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: M. Haynes Designs assumes no liability for contractors practices and procedures or safety program.M. Hayens Designs 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

USE	LIVE LOAD (PSF)	DEAD LOAD (PSF)	DEFLECTION (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=1.9x10^6 PSI
Parallel strand lumber (PSL) = Fb=2900 PSI, Fv=290 PSI, E=2.0x10^6 PSI
Laminated strand lumber (LSL) Fb=2250 PSI, Fv=400 PSI, E=1.55x10^6 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 M. Haynes Designs.
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.
FLOOR SHEATHING: OSB or CDX floor sheathing minimum 1/2" thick for 16" on center joist spacing, minimum 5/8" thick for 19.2" on center joist spacing, and minimum 3/4" thick for 24" on center joist spacing.
ROOF SHEATHING: OSB or CDX roof sheathing minimum 7/16" thick.
CONCRETE AND SOILS: See foundation notes.

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FIRST FLOOR SDTRUCTURAL

Fletcher

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910-62469424

M. HAYNES DESIGNS
2821 ALDERSHOT DRIVE, WAKE FOREST, NC
919-740-0997 mhaynes1@nc.crr.com

SQUARE FOOTAGE

HEATED	
FIRST FLOOR	2280 SQ.FT.
PLAYROOM	400 SQ.FT.
BEDROOM 4	374 SQ.FT.
TOTAL	3054 SQ.FT.
UNHEATED	
DECK	72 SQ.FT.
GARAGE	597 SQ.FT.
STORAGE	498 SQ.FT.
SCREENED PORCH	180 SQ.FT.
THIRD GARAGE	336 SQ.FT.
TOTAL	1683 SQ.FT.

4/17/2025

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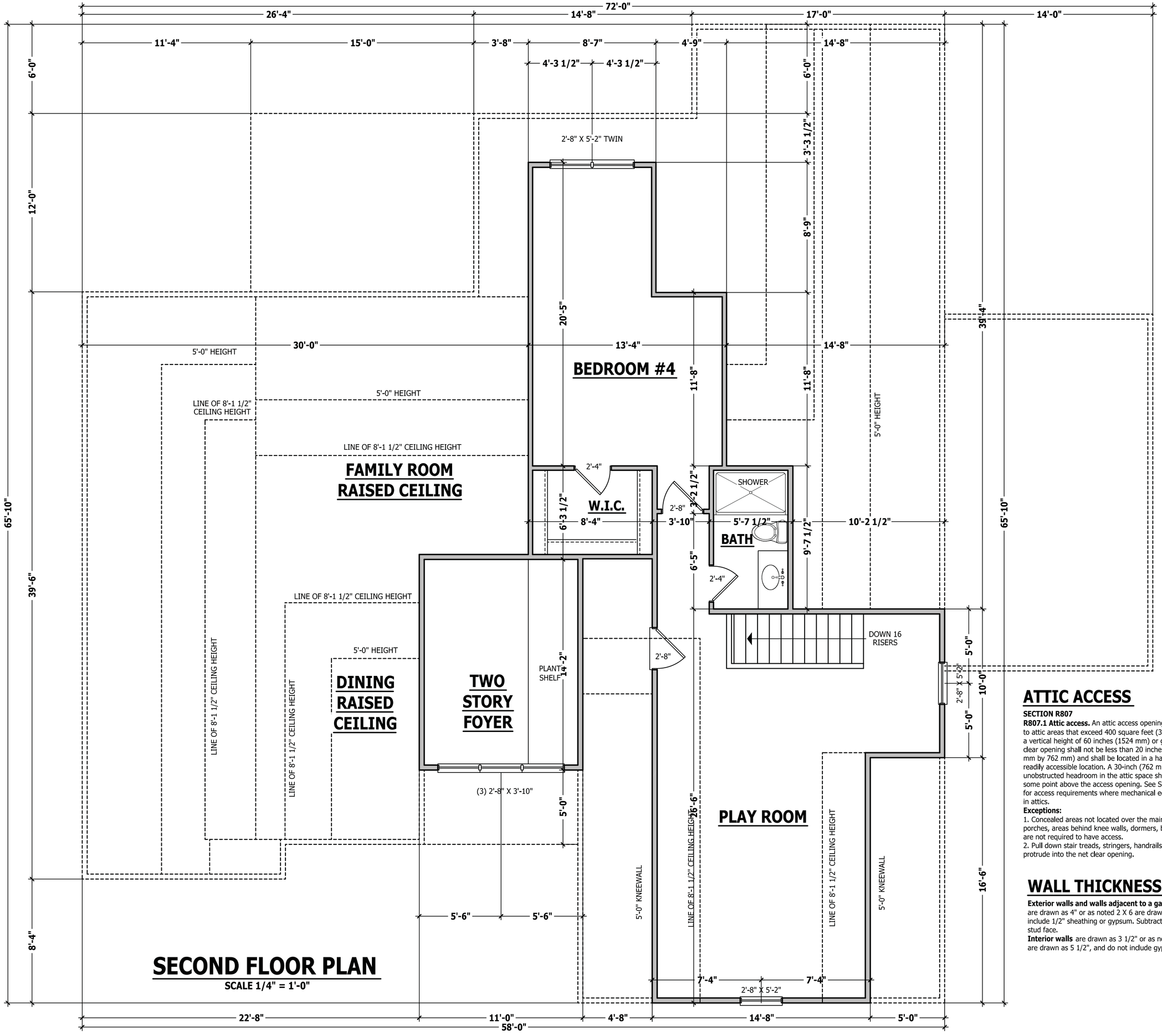

SECOND FLOOR PLAN

SCALE 1/4" = 1'-0"

ATTIC ACCESS

SECTION R807

R807.1 Attic access. An attic access opening shall be provided to attic areas that exceed 400 square feet (37.16 m2) and have a vertical height of 60 inches (1524 mm) or greater. The net clear opening shall not be less than 20 inches by 30 inches (508 mm by 762 mm) and shall be located in a hallway or other readily accessible location. A 30-inch (762 mm) minimum unobstructed headroom in the attic space shall be provided at some point above the access opening. See Section M1305.1.3 for access requirements where mechanical equipment is located in attics.

Exceptions:

1. Concealed areas not located over the main structure including porches, areas behind knee walls, dormers, bay windows, etc. are not required to have access.
2. Pull down stair treads, stringers, handrails, and hardware may protrude into the net clear opening.

WALL THICKNESSES

Exterior walls and walls adjacent to a garage area are drawn as 4" or as noted 2 X 6 are drawn as 6" to include 1/2" sheathing or gypsum. Subtract 1/2" for stud face.

Interior walls are drawn as 3 1/2" or as noted 2 X 6 are drawn as 5 1/2", and do not include gypsum.

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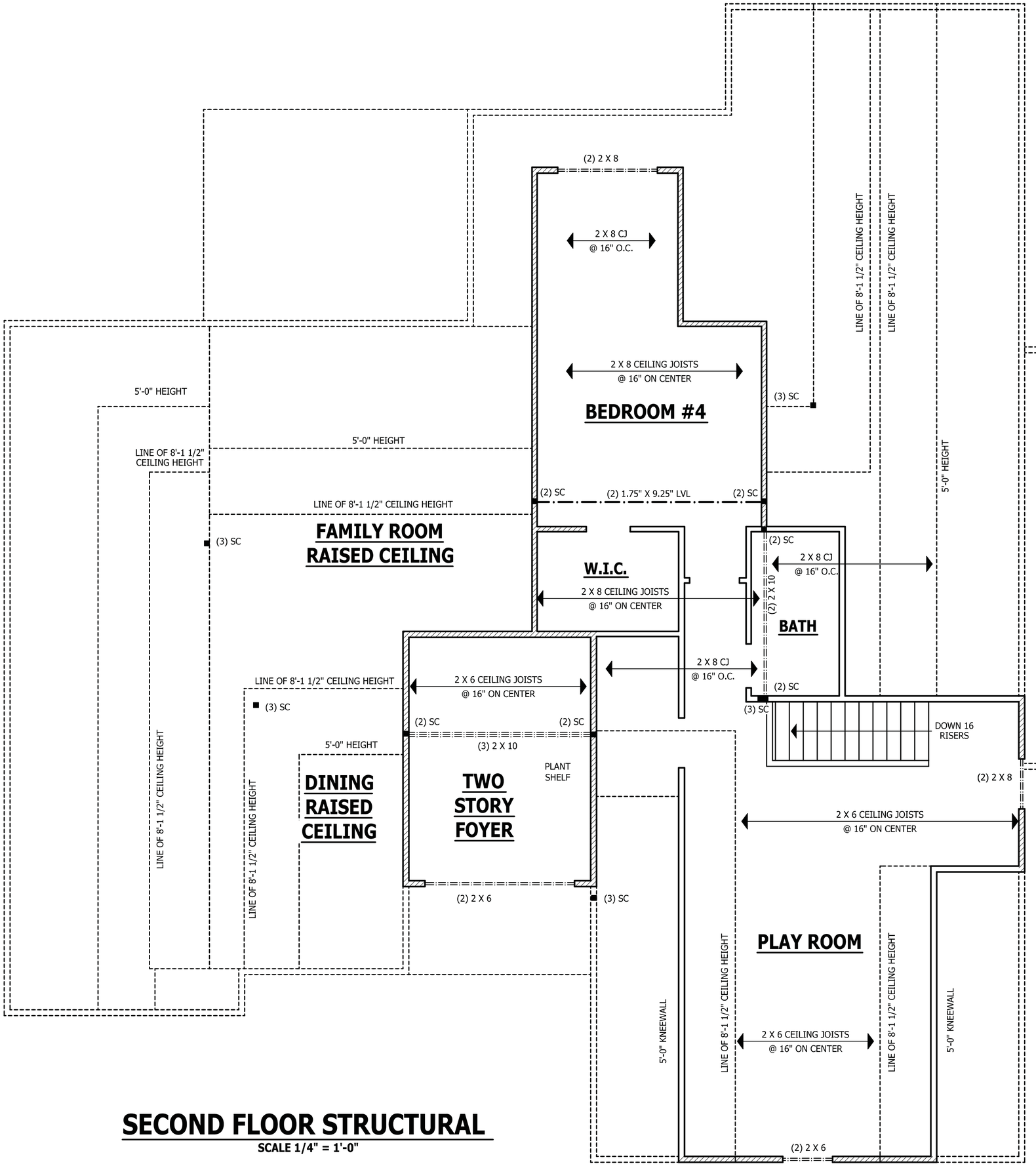

SECOND FLOOR STRUCTURAL

SCALE 1/4" = 1'-0"

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

EXTERIOR HEADERS

- (2) 2 X 6 WITH 1 JACK STUD EACH END UNLESS NOTED OTHERWISE
- KING STUDS EACH END PER TABLE BELOW

HEADER SPAN	< 3'	3'-4'	4'-8'	8'-12'	12'-16'
KING STUD(S)	1	2	3	5	6

INTERIOR HEADERS

- LOAD BEARING HEADERS (2) 2 X 6 WITH 1 JACK STUD AND 1 KING STUD EACH END UNLESS NOTED OTHERWISE
- NON LOAD BEARING HEADERS TO BE LADDER FRAMED

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.

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DESIGN LOADS

USE	LIVE LOAD (PSF)	DEAD LOAD (PSF)	DEFLECTION (LL)
Attics without storage	10	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.

FLOOR SHEATHING: OSB or CDX floor sheathing minimum 1/2" thick for 16" on center joist spacing, minimum 5/8" thick for 19.2" on center joist spacing, and minimum 3/4" thick for 24" on center joist spacing.

ROOF SHEATHING: OSB or CDX roof sheathing minimum 3/8" thick for 16" on center rafters and 7/16" for 24" on center rafters.

CONCRETE AND SOILS: See foundation notes.

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SECOND FLOOR STRUCTURAL

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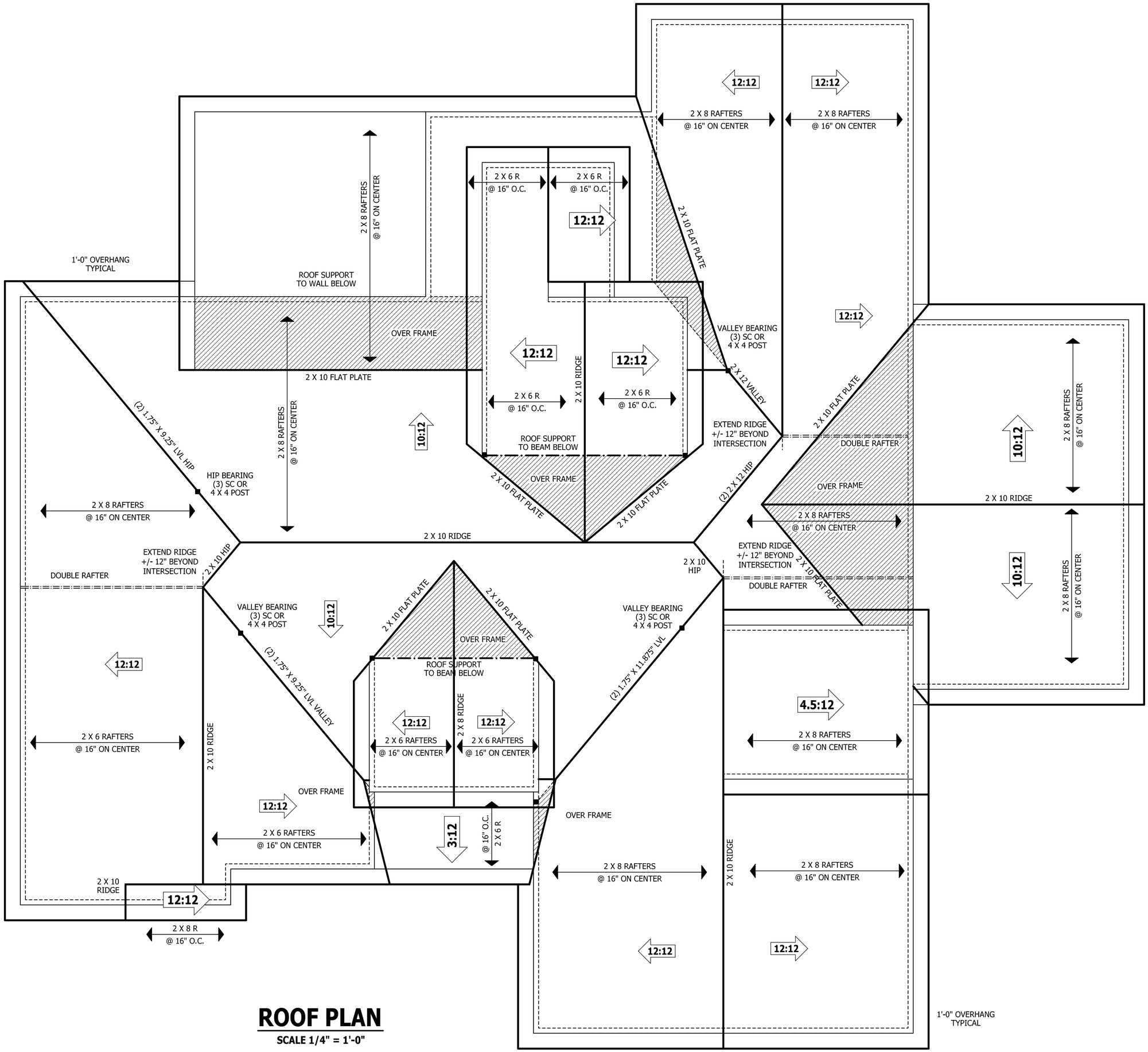
4/17/2025

250304B



ROOF PLAN

SCALE 1/4" = 1'-0"

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M. HAYNES DESIGNS ASSUMES NO LIABILITY FOR CONTRACTORS PRACTICES AND PROCEDURES.

CODES AND CONDITIONS MAY VARY WITH LOCATION. A LOCAL DESIGNER, ARCHITECT OR ENGINEER SHOULD BE CONSULTED BEFORE CONSTRUCTION.

THESE DRAWING ARE INSTRUMENTS OF SERVICE AND AS SUCH SHALL REMAIN PROPERTY OF THE DESIGNER.

ROOF PLAN

Fletcher

Asset Development, Inc.
3900 Dunn Road
Roseboro, NC 28382
910-62469424

M. HAYNES DESIGNS
2821 ALDERSHOT DRIVE, WAKE FOREST, NC
919-740-0997 mhaynes1@nc.rr.com

SQUARE FOOTAGE

HEATED	
FIRST FLOOR	2280 SQ.FT.
PLAYROOM	400 SQ.FT.
BEDROOM 4	374 SQ.FT.
TOTAL	3054 SQ.FT.
UNHEATED	
DECK	72 SQ.FT.
GARAGE	597 SQ.FT.
STORAGE	498 SQ.FT.
SCREENED PORCH	180 SQ.FT.
THIRD GARAGE	336 SQ.FT.
TOTAL	1683 SQ.FT.

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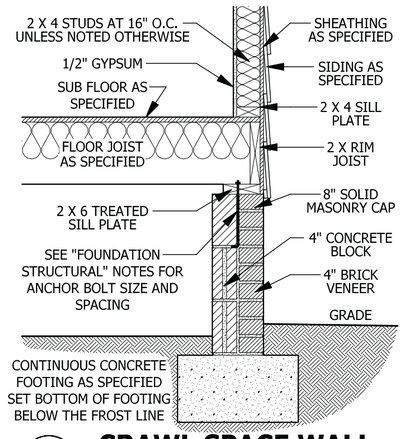
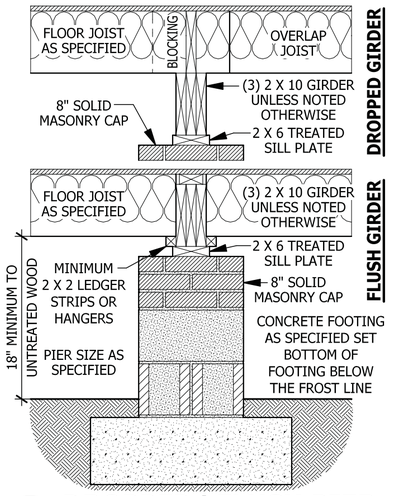
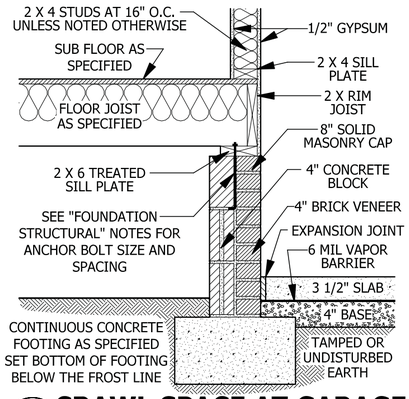


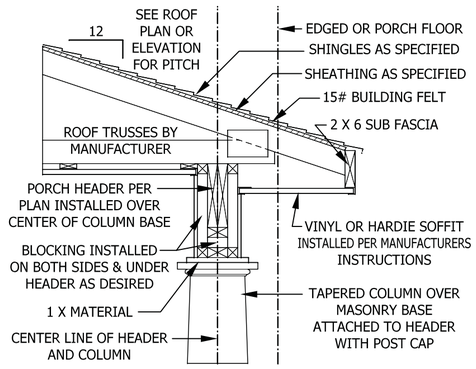
A **CRAWL SPACE WALL**
SCALE 3/4" = 1'-0"



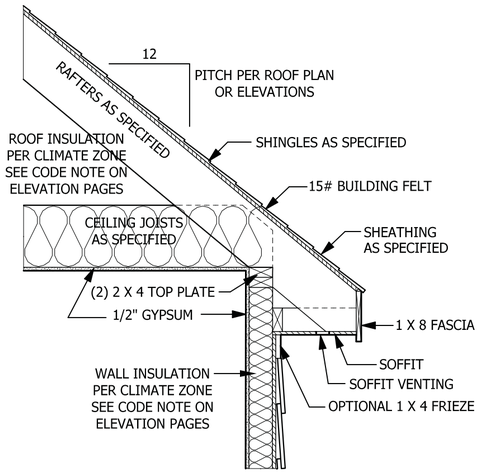
B **DROPPED/ FLUSH PIER**
SCALE 3/4" = 1'-0"

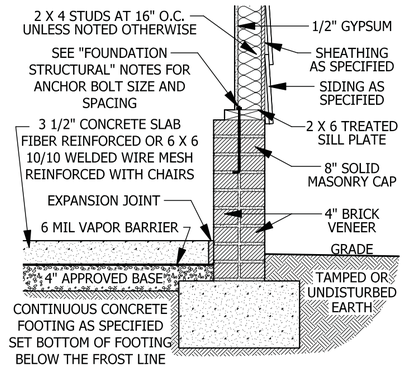


C **CRAWL SPACE AT GARAGE**
SCALE 3/4" = 1'-0"

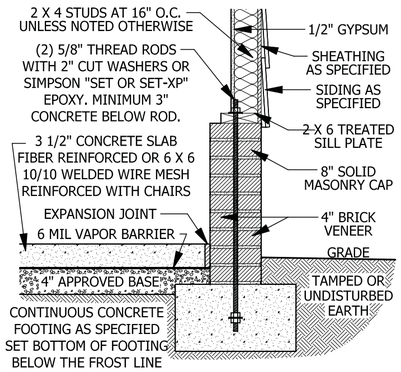


PORCH HEADER WITH TAPERED COLUMN
SCALE 3/4" = 1'-0"

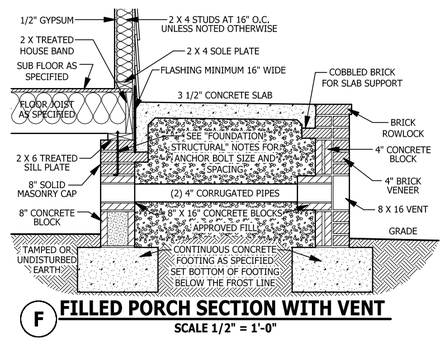




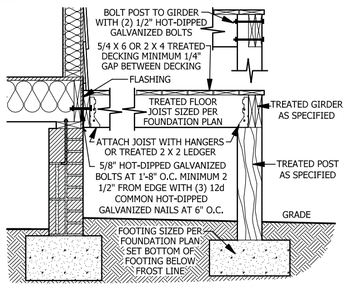
D **GARAGE STEM WALL**
SCALE 3/4" = 1'-0"



E **<48" GARAGE WING WALL**
SCALE 3/4" = 1'-0"



F **FILLED PORCH SECTION WITH VENT**
SCALE 1/2" = 1'-0"



G **DECK ATTACHMENT**
SCALE 1/2" = 1'-0"

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.

STAIRWAY NOTES

R311.7

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.

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 treads.

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).

Exceptions:

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

Exceptions:

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 into the wall.

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.

DECK BRACING

SECTION AM109

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:

POST SIZE	MAX TRIBUTARY AREA	MAX. POST HEIGHT	EMBEDMENT DEPTH	CONCRETE DIAMETER
4 X 4	48 SF	4'-0"	2'-6"	1'-0"
6 X 6	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.

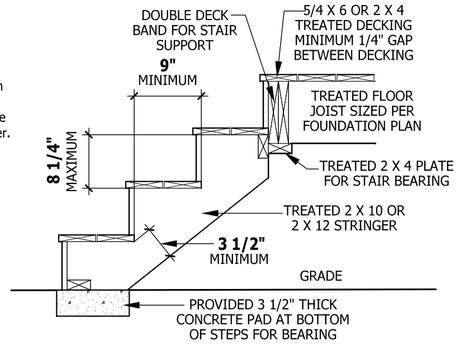
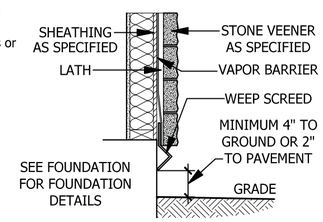


FIGURE AM110
TYPICAL DECK STAIR DETAIL
SCALE 3/4" = 1'-0"



WEEP SCREED
SCALE 3/4" = 1'-0"

WEEP SCREEDS

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

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.

SMOKE ALARMS

SECTION R314

R314.1 Smoke detection and notification. 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.

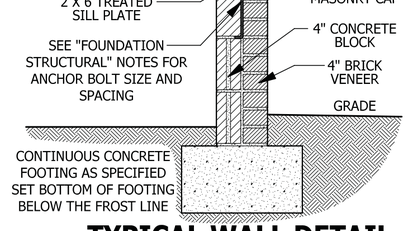
Exception: Where smoke alarms are provided meeting the requirements of Section R314.4.

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

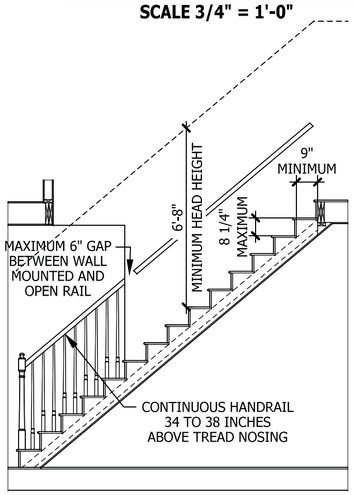
1. In each sleeping room.
2. Outside each separate sleeping area in the immediate vicinity of the bedrooms.
3. On each additional *story* of the *dwelling,* including *basements* and habitable attics (finished) but not including crawl spaces, uninhabitable (unfinished) attics and uninhabitable (unfinished) 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.



TYPICAL WALL DETAIL
SCALE 3/4" = 1'-0"



TYPICAL STAIR DETAIL
SCALE 1/4" = 1'-0"

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TYPICAL DETAILS

Fletcher

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910-6246942 4

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SQUARE FOOTAGE

HEATED	
FIRST FLOOR	2280 SQ.FT.
PLAYROOM	400 SQ.FT.
BEDROOM 4	374 SQ.FT.
TOTAL	3054 SQ.FT.
UNHEATED	
DECK	72 SQ.FT.
GARAGE	597 SQ.FT.
STORAGE	498 SQ.FT.
SCREENED PORCH	180 SQ.FT.
THIRD GARAGE	336 SQ.FT.
TOTAL	1683 SQ.FT.

4/17/2025

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FIRST FLOOR STRUCTURAL

SCALE 1/4" = 1'-0"

WALL VENTED CRAWL SPACES

UNDER-FLOOR SPACE (SECTION R408)

SQUARE FOOTAGE OF FOUNDATION TO BE VENTED = 2,133 SQ.FT.

WITHOUT CROSS VENTILATION AREA OF VENTING NEEDED = 14.22 SQ.FT.

WITH CROSS VENTILATION AREA OF VENTING NEEDED = 1.42 SQ.FT.

NOTE: NUMBER OF VENTS NEED WILL VARY DEPENDING ON VENTS USED AND CROSS VENTILATION.

4 X 4 TREATED POST OR EQUIVALENT TYPICAL. ATTACH RAFTERS TO HEADER WITH HURRICANE CONNECTORS (SIMPSON H2.5 OR EQUIVALENT). ATTACH HEADER TO POST AND POST TO BASE WITH 24" X 24" X 10" CONCRETE FOOTING 6 X 6 POST ON METAL STRAPS, AND/OR POST BASE.

SCREENED PORCH

DECK

BREAKFAST

MASTER BEDROOM

MASTER BATH

BEDROOM #2

FAMILY ROOM
11'-0" CEILING HEIGHT

KITCHEN

LAUNDRY

W.I.C.

THIRD GARAGE

BATH

DINING ROOM
11'-0" CEILING HEIGHT

FOYER
TWO STORY CEILING

BEDROOM #3

PORCH

DOUBLE GARAGE

VENT

(2) 2 X 6

(2) 2 X 10 TREATED

(2) 2 X 10

2 X 8 TREATED FLOOR JOISTS @ 16" ON CENTER

2 X 8 CEILING JOISTS @ 16" ON CENTER

(2) 2 X 10 2 JACKS EACH END

(2) SC

(3) SC

(5) SC

2 X 10 CEILING JOISTS @ 16" ON CENTER

2 X 10 FLOOR JOISTS @ 16" ON CENTER

(3) 2 X 10 GIRDER

(2) 1.75" X 9.25" LVL

(2) 1.75" X 16" LVL BOTTOM FLUSH WITH CEILING HEIGHT

(2) 1.75" X 11.875" LVL

(2) 1.75" X 24" LVL

2 X 10 FJ @ 16" O.C.

2 X 10 CJ @ 16" O.C.

DOUBLE JOIST

TRIPLE JOIST

OFFSET LOAD ABOVE

SIMPSON HHUS410

16" X 16" PIER WITH 8" SOLID MASONRY CAP ON 30"X30"X10" CONCRETE FOOTING

40" X 16" PIER WITH 8" SOLID MASONRY CAP ON 54"X30"X10" CONCRETE FOOTING

30" X 30" X 10" CONCRETE FOOTING

24" X 24" X 10" CONCRETE FOOTING

16" WIDE CONTINUOUS CONCRETE FOOTING MINIMUM 8" THICK AT ALL PLACES. MUST EXTEND A MINIMUM OF 2" TO EITHER SIDE OF SUPPORTED WALL.

MINIMUM CRAWL ACCESS TO BE 18" X 24" UNLESS LARGER OPENING IS REQUIRED FOR MECHANICAL ACCESS.

3 1/2" CONCRETE SLAB ON COMPACTED EARTH FILL PROVIDE ISOLATED BAND AND FLASHING AT PORCH

REINFORCED CONCRETE SLAB MINIMUM 3 1/2" THICK OVER 4" BASE OF CLEAN APPROVED MATERIAL PASSING A 2" SIEVE. REINFORCEMENT MAY BE FIBER ADDITIVE OR WELDED WIRE MESH. WIRE REINFORCEMENT SHALL BE SUPPORTED TO REMAIN IN PLACE FORM THE CENTER TO UPPER THIRD OF THE SLAB.

REINFORCED CONCRETE SLAB MINIMUM 3 1/2" THICK OVER 4" BASE OF CLEAN APPROVED MATERIAL PASSING A 2" SIEVE. REINFORCEMENT MAY BE FIBER ADDITIVE OR WELDED WIRE MESH. WIRE REINFORCEMENT SHALL BE SUPPORTED TO REMAIN IN PLACE FORM THE CENTER TO UPPER THIRD OF THE SLAB.

PF PORTAL FRAME AT OPENING

(METHOD PF PER FIGURE AND SECTION R602.10.1)

SCALE 1/4" = 1'-0"

6-16D SINKER NAILS FROM KING STUD TO HEADER

PONY WALL HEIGHT TO VARY

MAXIMUM HEIGHT TO TOP OF FRAMED WALL 9'-0"

MAXIMUM HEIGHT TO TOP OF HEADER 7'-6"

TWO ROWS OF 16D SINKER NAILS @ 3" O.C.

HEADER PER PLAN

STAP HEADER TO JACK STUD ON INSIDE 1000 LBS OR 4000 LBS WITH PONY WALL.

FASTEN SHEATHING TO HEADER WITH 8D COMMON NAIL IN 3" GRID AND TO FRAMING AT 3" ON CENTER

OPTIONAL SPLICE WITHIN 24" OF MIDDLE OF WALL HEIGHT

JACK STUDS PER PLAN

SHEATHING DIRECTION

ANCHORAGE PER FOUNDATION

STRUCTURAL NOTES

All construction shall conform to the latest requirements of the 2024 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: M. Haynes Designs assumes no liability for contractors practices and procedures or safety program.M. Haynes Designs 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 (PSF)	DEAD LOAD (PSF)	DEFLECTION (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 M. Haynes Designs.

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.

FLOOR SHEATHING: OSB or CDX floor sheathing minimum 1/2" thick for 16" on center joist spacing, minimum 5/8" thick for 19.2" on center joist spacing, and minimum 3/4" thick for 24" on center joist spacing.

ROOF SHEATHING: 7/16" OSB or CDX roof sheathing minimum 7/16" thick.

CONCRETE AND SOILS: See foundation notes.

SQUARE FOOTAGE

HEATED	
FIRST FLOOR	2280 SQ.FT.
PLAYROOM	308 SQ.FT.
BEDROOM 4	771 SQ.FT.
TOTAL	3054 SQ.FT.
UNHEATED	
DECK	73 SQ.FT.
GARAGE	397 SQ.FT.
GARAGE	397 SQ.FT.
STORAGE	308 SQ.FT.
SCREENED PORCH	180 SQ.FT.
THIRD GARAGE	336 SQ.FT.
TOTAL	1693 SQ.FT.

BRACE WALL PANEL NOTES

EXTERIOR WALLS: All exterior walls to be sheathed with 7/16" OSB WALLS. SEE plan legend with section R602.10.3 unless noted otherwise.

GYPSUM: All interior sides of exterior walls and both sides of interior walls shall be finished with 1/2" gypsum board. When not using method GB 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 PF contributes 1.5 times its actual length.

HD: 800 lbs hold down hold down device fastened to the edge of the braced wall panel and to the foundation.

Methods Per Table R602.10.4

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 8d common nails or 8d(2 1/2" long 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

FOUNDATION STRUCTURAL

Use the 30 mph wind zone (1 story to 3 1/2 story)

FOOTINGS CONTINUOUS: Footings shall be minimum 8" thick and minimum 16" wide unless noted otherwise.

GIRDERS: (3) 2 X 10 girder unless noted otherwise.

PIERS: 16" X 16" piers with 8" solid masonry cap on 30" X 30" X 10" concrete footing with maximum pier height of 64" with unbalanced fill and 76" with solid masonry.

POINT LOADS: ■ designates significant point load and should have solid blocking to pier, piers or foundation wall.

115 and 120 MPH ANCHORS BOLTS: 1/2" diameter anchor bolts spaced at 6'-0" on center, within 12" of plate end and minimum 2 bolts per plate, maximum 4'-0" on center, within 12" of plate end and minimum 2 bolts per plate.

CONCRETE: Concrete shall have a minimum compressive strength of 2,500 psi at 28 days with maximum slump 5" slump. Air entrained per table 402.2. All concrete shall be in accordance with ACI standards. All samples for pumping shall be taken from the discharge end of the pump.

SOILS: Allowable soil bearing pressure assumed to be 2000 PSF. The contractor must contact a geotechnical engineer and a structural engineer if soil conditions are encountered. The surface area adjacent to the foundation shall be sloped to provide adequate drainage, and shall be graded so as to drain surface water away from foundation walls.

- LOAD BEARING HEADERS (2) 2 X 6 WITH 1 JACK STUD AND 1 KING STUD EACH END UNLESS NOTED OTHERWISE
- NON LOAD BEARING HEADERS TO BE LADDER FRAMED

EXTERIOR HEADERS

(2) 2 X 6 WITH 1 JACK STUD EACH END UNLESS NOTED OTHERWISE

HEADER SPAN	2'-6"	4'-8"	8'-12"	12'-16"
# OF JACK STUDS	1	2	3	4

INTERIOR HEADERS

(2) 2 X 4 WITH 1 JACK STUD EACH END UNLESS NOTED OTHERWISE

HEADER SPAN	2'-4"	4'-6"	6'-8"	8'-10"
# OF JACK STUDS	1	2	3	4

SEE "TYPICAL DETAILS" PAGE FOR FOUNDATION DETAIL

CRAWL SPACE PLAN

SCALE 1/4" = 1'-0"

Fletcher

FIRST FLOOR STRUCTURAL

Asset Development, Inc.
3900 Dunn Road
Rosebro, NC 28382
910-6246424

M. HAYNES DESIGNS
2821 ALDERSHOT DRIVE, WAKE FOREST, NC
919-740-0997 mhaynes1@nc.rr.com

4/17/2025

250304B

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M. Haynes Designs

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Location: ROOF- Hip st Bedroom 2
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 20.75 FT (4.1 + 16.7) (Actual 25.2 FT)
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 99.9%
Controlling Factor: Moment

Location: ROOF- Valley over Dining
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 16.91 FT (4.1 + 12.8)
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 40.4%
Controlling Factor: Moment

Location: ROOF- Hip over Family
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
1.5 IN x 9.25 IN x 3.83 FT
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 111.6%
Controlling Factor: Shear

Location: ROOF-Valley at Master Bath
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 11.25 IN x 13.17 FT (5.7 + 7.5) (Actual 15.7 FT)
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 37.1%
Controlling Factor: Moment

Location: ROOF- Hip at laundry
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 11.25 IN x 9.0 FT (Actual 10.6 FT)
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 14.3%
Controlling Factor: Moment

Location: ROOF-Valley at Playroom
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 11.875 IN x 19.08 FT (4.3 + 14.8) (Actual 22.7 FT)
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 5.5%
Controlling Factor: Moment

Location: FL2- Roof beam at Foyer
Combination Roof And Floor Beam
[2015 International Building Code(2015 NDS)]
(3) 1.5 IN x 9.25 IN x 11.0 FT
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 17.1%
Controlling Factor: Moment

Location: FL1-Beam at Rear of garage
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 12.0 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 44.7%
Controlling Factor: Deflection

Location: FL1-Beam between Dining and Family
Uniformly Loaded Floor Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 10.0 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 19.6%
Controlling Factor: Shear

Location: FL1- Beam at Dining
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
1.75 IN x 16.0 IN x 10.33 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 6.1%
Controlling Factor: Shear

Location: FL1-Front porch header
Combination Roof And Floor Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 11.0 FT
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 28.0%
Controlling Factor: Moment

Location: FL1-Garage beam
Uniformly Loaded Floor Beam
[2015 International Building Code(2015 NDS)]
(3) 1.75 IN x 24.0 IN x 24.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 116.7%
Controlling Factor: Moment

Location: FL1- header at side load garage
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 24.0 IN x 18.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 19.2%
Controlling Factor: Moment

Location: FL1- Ceiling joists at breakfast room
Floor Joist
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 15.0 FT @ 16 O.C.
#2 - Southern Pine - Dry Use
Section Adequate By: 22.9%
Controlling Factor: Moment

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Location: FL2- Roof beam at Bedroom 4
Roof Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 13.33 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 120.5%
Controlling Factor: Deflection

Location: Fl1- Ceiling joists above Family room
Floor Joist
[2015 International Building Code(2015 NDS)]
1.5 IN x 9.25 IN x 17.83 FT @ 12 O.C.
#2 - Spruce-Pine-Fir - Dry Use
Section Adequate By: 29.7%
Controlling Factor: Moment

Location: Fl1- Beam at family room ceiling
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 16.0 IN x 18.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 25.8%
Controlling Factor: Deflection

Location: FL1- Beam at breakfast room
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(3) 1.75 IN x 9.25 IN x 15.0 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 38.7%
Controlling Factor: Deflection

Location: FL1- Header at bedroom hallway
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 4.25 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 97.9%
Controlling Factor: Shear

Location: FL1-Beam between Kitchen and Family
Uniformly Loaded Floor Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 16.0 IN x 17.83 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 11.5%
Controlling Factor: Shear

Location: FL2- Beam at fl2 bath
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 9.67 FT
#2 - Spruce-Pine-Fir - Dry Use
Section Adequate By: 3.3%
Controlling Factor: Moment

Location: FL1- beam at master entry
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(3) 1.5 IN x 9.25 IN x 5.0 FT
#2 - Spruce-Pine-Fir - Dry Use
Section Adequate By: 35.8%
Controlling Factor: Shear

Location: FL1- Header at Breakfast rooom door
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 6.0 FT
#2 - Southern Pine - Dry Use
Section Adequate By: 23.4%
Controlling Factor: Moment

Location: FL1- Beam at stairs in garage
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 11.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 68.1%
Controlling Factor: Deflection

Location: Fl1- Beam between garages
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 3.67 FT
#2 - Southern Pine - Dry Use
Section Adequate By: 36.1%
Controlling Factor: Shear

Project: 250304B Fletcher

Location: ROOF- Hip st Bedroom 2
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 20.75 FT (4.1 + 16.7) (Actual 25.2 FT)
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 99.9%
Controlling Factor: Moment

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Left		Center	
Live Load	-0.02	IN L/3637	0.25	IN L/964
Dead Load	-0.01	in	0.26	in
Total Load	-0.03	IN L/1986	0.51	IN L/476

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS	A	B	C
Live Load	389 lb	2196 lb	334 lb
Dead Load	-291 lb	2221 lb	379 lb
Total Load	98 lb	4417 lb	713 lb
Uplift (1.5 F.S)	**-936 lb**	0 **lb**	0 **lb**
Bearing Length	0.04 in	1.68 in	0.27 in

BEAM DATA	Left	Center
Span Length	4.08 ft	16.67 ft
Unbraced Length-Top	0 ft	0 ft
Unbraced Length-Bottom	4.08 ft	16.67 ft
Beam End Elevation Difference	14.25 ft	
Live Load Duration Factor	1.15	
Notch Depth	0.00	

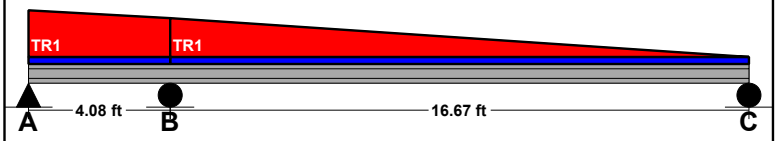
MATERIAL PROPERTIES
1.9E Microllam - iLevel Trus Joist

	Base Values		Adjusted	
Bending Stress:	Fb = 2600 psi		Fb' = 2651 psi	
	Cd=1.15 Cl=0.86 CF=1.04			
Shear Stress:	Fv = 285 psi		Fv' = 328 psi	
	Cd=1.15			
Modulus of Elasticity:	E = 1900 ksi		E' = 1900 ksi	
Comp. ⊥ to Grain:	Fc - ⊥ = 750 psi		Fc - ⊥' = 750 psi	

Controlling Moment: -5516 ft-lb
Over left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 1, 2
Controlling Shear: 1901 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 1, 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	24.97 in3	49.91 in3
Area (Shear):	8.7 in2	32.38 in2
Moment of Inertia (deflection):	87.22 in4	230.84 in4
Moment:	-5516 ft-lb	11026 ft-lb
Shear:	1901 lb	7074 lb

LOADING DIAGRAM



UNIFORM LOADS	Left	Center
Uniform Live Load	0 plf	0 plf
Uniform Dead Load	0 plf	0 plf
Beam Self Weight	10 plf	10 plf
Total Uniform Load	10 plf	10 plf

TRAPEZOIDAL LOADS - LEFT SPAN

Load Number	One
Left Live Load	212 plf
Left Dead Load	159 plf
Right Live Load	177 plf
Right Dead Load	132 plf
Load Start	0 ft
Load End	4.08 ft
Load Length	4.08 ft

CENTER SPAN

Load Number	One
Left Live Load	177 plf
Left Dead Load	132 plf
Right Live Load	0 plf
Right Dead Load	0 plf
Load Start	0 ft
Load End	16.67 ft
Load Length	16.67 ft

Project: 250304B Fletcher

Location: ROOF- Valley over Dining
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 16.91 FT (4.1 + 12.8)
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 40.4%
Controlling Factor: Moment

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M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS		Left		Center
Live Load	-0.02	IN L/2408	0.26	IN L/593
Dead Load	-0.02	in	0.20	in
Total Load	-0.04	IN L/1374	0.46	IN L/334

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS	A	B	C
Live Load	69 lb	3345 lb	2151 lb
Dead Load	-855 lb	2646 lb	1663 lb
Total Load	-786 lb	5991 lb	3814 lb
Uplift (1.5 F.S)	**-2039 lb**	**0 lb**	**0 lb**
Bearing Length	0.00 in	2.28 in	1.45 in

BEAM DATA	Left	Center
Span Length	4.08 ft	12.83 ft
Unbraced Length-Top	0 ft	0 ft
Unbraced Length-Bottom	4.08 ft	12.83 ft
Live Load Duration Factor	1.15	
Notch Depth	0.00	

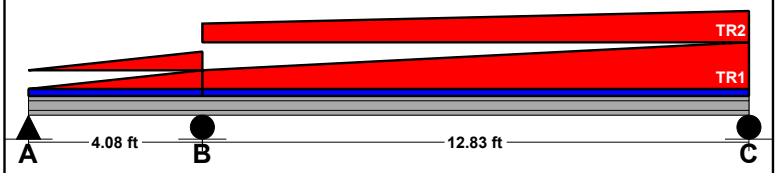
MATERIAL PROPERTIES
1.9E Microllam - iLevel Trus Joist

	Base Values		Adjusted	
Bending Stress:	Fb = 2600	psi	Fb' = 2926	psi
	Cd=1.15 Cl=0.94 CF=1.04			
Shear Stress:	Fv = 285	psi	Fv' = 328	psi
	Cd=1.15			
Modulus of Elasticity:	E = 1900	ksi	E' = 1900	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750	psi	Fc - ⊥' = 750	psi

Controlling Moment: -8667 ft-lb
Over left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 1, 2
Controlling Shear: -3814 lb
13.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	35.54 in3	49.91 in3
Area (Shear):	17.45 in2	32.38 in2
Moment of Inertia (deflection):	124.49 in4	230.84 in4
Moment:	-8667 ft-lb	12170 ft-lb
Shear:	-3814 lb	7074 lb

LOADING DIAGRAM



UNIFORM LOADS	Left	Center
Uniform Live Load	0 plf	0 plf
Uniform Dead Load	0 plf	0 plf
Beam Self Weight	10 plf	10 plf
Total Uniform Load	10 plf	10 plf

TRAPEZOIDAL LOADS - LEFT SPAN

Load Number	One	Two
Left Live Load	0 plf	0 plf
Left Dead Load	0 plf	0 plf
Right Live Load	60 plf	52 plf
Right Dead Load	45 plf	39 plf
Load Start	0 ft	0 ft
Load End	4.08 ft	4.08 ft
Load Length	4.08 ft	4.08 ft

CENTER SPAN

Load Number	One	Two
Left Live Load	60 plf	52 plf
Left Dead Load	45 plf	39 plf
Right Live Load	320 plf	215 plf
Right Dead Load	240 plf	161 plf
Load Start	0 ft	0 ft
Load End	12.83 ft	12.83 ft
Load Length	12.83 ft	12.83 ft

Project: 250304B Fletcher

Location: ROOF- Hip over Family
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
1.5 IN x 9.25 IN x 3.83 FT
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 111.6%
Controlling Factor: Shear

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DEFLECTIONS Center

Live Load	0.01	IN L/6418
Dead Load	0.01	in
Total Load	0.01	IN L/3642

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS

	A	B
Live Load	335 lb	282 lb
Dead Load	255 lb	215 lb
Total Load	590 lb	497 lb
Bearing Length	1.17 in	0.99 in

BEAM DATA Center

Span Length	3.83	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	3.83	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

MATERIAL PROPERTIES

#2 - Spruce-Pine-Fir (South)

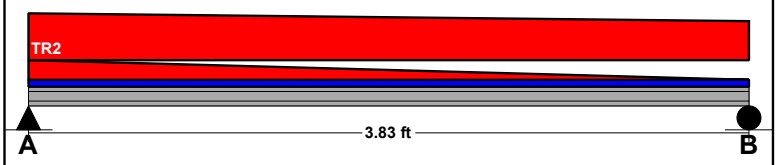
	Base Values		Adjusted	
Bending Stress:	Fb = 775	psi	Fb' = 853	psi
	Cd=1.00 CF=1.10			
Shear Stress:	Fv = 135	psi	Fv' = 135	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1100	ksi	E' = 1100	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 335	psi	Fc - ⊥' = 335	psi

Controlling Moment: 521 ft-lb
1.84 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Controlling Shear: 590 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	7.34 in3	21.39 in3
Area (Shear):	6.56 in2	13.88 in2
Moment of Inertia (deflection):	6.52 in4	98.93 in4
Moment:	521 ft-lb	1520 ft-lb
Shear:	590 lb	1249 lb

LOADING DIAGRAM



UNIFORM LOADS Center

Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	2	plf
Total Uniform Load	2	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One	Two
Left Live Load	60 plf	143 plf
Left Dead Load	45 plf	107 plf
Right Live Load	0 plf	119 plf
Right Dead Load	0 plf	89 plf
Load Start	0 ft	0 ft
Load End	3.83 ft	3.83 ft
Load Length	3.83 ft	3.83 ft

Project: 250304B Fletcher

Location: ROOF-Valley at Master Bath
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 11.25 IN x 13.17 FT (5.7 + 7.5) (Actual 15.7 FT)
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 37.1%
Controlling Factor: Moment

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M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS		Left		Center	
Live Load	-0.02	IN L/4842	0.06	IN L/1831	
Dead Load	-0.01	in	0.05	in	
Total Load	-0.03	IN L/2959	0.11	IN L/985	

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS	A		B		C	
Live Load	126	lb	1792	lb	1303	lb
Dead Load	-80	lb	1652	lb	1163	lb
Total Load	46	lb	3444	lb	2466	lb
Uplift (1.5 F.S)	**-309**	**lb**	0	**lb**	0	**lb**
Bearing Length	0.05	in	3.43	in	2.45	in

BEAM DATA	Left		Center	
Span Length	5.67	ft	7.5	ft
Unbraced Length-Top	0	ft	0	ft
Unbraced Length-Bottom	5.67	ft	7.5	ft
Beam End Elevation Difference	8.5	ft		
Live Load Duration Factor	1.15			
Notch Depth	0.00			

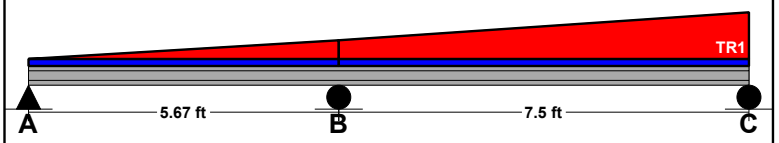
MATERIAL PROPERTIES
#2 - Spruce-Pine-Fir (South)

	Base Values		Adjusted	
Bending Stress:	Fb = 775 psi		Fb' = 891	psi
	Cd=1.15 CF=1.00			
Shear Stress:	Fv = 135 psi		Fv' = 155	psi
	Cd=1.15			
Modulus of Elasticity:	E = 1100 ksi		E' = 1100	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 335 psi		Fc - ⊥' = 335	psi

Controlling Moment: 3429 ft-lb
4.579 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: -2073 lb
7.562 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	46.16 in3	63.28 in3
Area (Shear):	20.02 in2	33.75 in2
Moment of Inertia (deflection):	65.03 in4	355.96 in4
Moment:	3429 ft-lb	4700 ft-lb
Shear:	-2073 lb	3493 lb

LOADING DIAGRAM



UNIFORM LOADS	Left		Center	
Uniform Live Load	0	plf	0	plf
Uniform Dead Load	0	plf	0	plf
Beam Self Weight	5	plf	5	plf
Total Uniform Load	5	plf	5	plf

TRAPEZOIDAL LOADS - LEFT SPAN

Load Number	One
Left Live Load	0 plf
Left Dead Load	0 plf
Right Live Load	161 plf
Right Dead Load	121 plf
Load Start	0 ft
Load End	5.67 ft
Load Length	5.67 ft

CENTER SPAN

Load Number	One
Left Live Load	161 plf
Left Dead Load	121 plf
Right Live Load	510 plf
Right Dead Load	382 plf
Load Start	0 ft
Load End	7.5 ft
Load Length	7.5 ft

Project: 250304B Fletcher

Location: ROOF- Hip at laundry
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 11.25 IN x 9.0 FT (Actual 10.6 FT)
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 14.3%
Controlling Factor: Moment

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M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.10	IN L/1328
Dead Load	0.09	in
Total Load	0.18	IN L/691

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	968	lb	675	lb
Dead Load	886	lb	627	lb
Total Load	1854	lb	1302	lb
Bearing Length	1.84	in	1.30	in

BEAM DATA	Center	
Span Length	9	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	9	ft
Beam End Elevation Difference	5.67	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

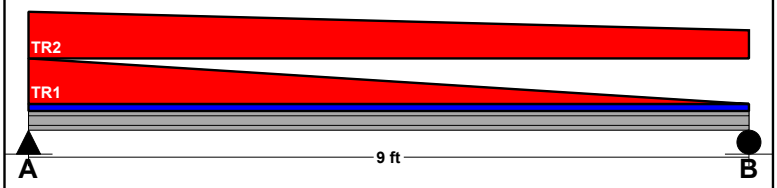
MATERIAL PROPERTIES
#2 - Spruce-Pine-Fir (South)

	Base Values		Adjusted	
Bending Stress:	Fb = 775	psi	Fb' = 775	psi
	Cd=1.00 CF=1.00			
Shear Stress:	Fv = 135	psi	Fv' = 135	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1100	ksi	E' = 1100	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 335	psi	Fc - ⊥' = 335	psi

Controlling Moment: 3577 ft-lb
4.137 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 1568 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	55.38	in3	63.28	in3
Area (Shear):	17.43	in2	33.75	in2
Moment of Inertia (deflection):	123.64	in4	355.96	in4
Moment:	3577	ft-lb	4087	ft-lb
Shear:	1568	lb	3038	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	5	plf
Total Uniform Load	5	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two	
Left Live Load	138	plf	142	plf
Left Dead Load	104	plf	106	plf
Right Live Load	0	plf	85	plf
Right Dead Load	0	plf	64	plf
Load Start	0	ft	0	ft
Load End	9	ft	9	ft
Load Length	9	ft	9	ft

Project: 250304B Fletcher

Location: ROOF-Valley at Playroom
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 11.875 IN x 19.08 FT (4.3 + 14.8) (Actual 22.7 FT)
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 5.5%
Controlling Factor: Moment

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M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Left		Center	
Live Load	-0.02	IN L/2559	0.35	IN L/609
Dead Load	-0.02	in	0.32	in
Total Load	-0.05	IN L/1345	0.66	IN L/317

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS	A	B	C
Live Load	90 lb	4791 lb	2767 lb
Dead Load	-1532 lb	4509 lb	2553 lb
Total Load	-1442 lb	9300 lb	5320 lb
Uplift (1.5 F.S)	**-3293 lb**	**0 lb**	**0 lb**
Bearing Length	0.00 in	3.54 in	2.03 in

BEAM DATA	Left	Center
Span Length	4.33 ft	14.75 ft
Unbraced Length-Top	0 ft	0 ft
Unbraced Length-Bottom	4.33 ft	14.75 ft
Beam End Elevation Difference	12.25 ft	
Live Load Duration Factor	1.00	
Notch Depth	0.00	

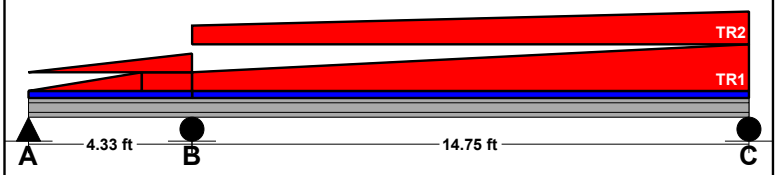
MATERIAL PROPERTIES
1.9E Microllam - iLevel Trus Joist

	Base Values		Adjusted	
Bending Stress:	Fb = 2600 psi		Fb' = 2281 psi	
	Cd=1.00 Cl=0.88 CF=1.00			
Shear Stress:	Fv = 285 psi		Fv' = 285 psi	
	Cd=1.00			
Modulus of Elasticity:	E = 1900 ksi		E' = 1900 ksi	
Comp. ⊥ to Grain:	Fc - ⊥ = 750 psi		Fc - ⊥' = 750 psi	

Controlling Moment: -14825 ft-lb
Over left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 1, 2
Controlling Shear: 4550 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 1, 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	77.98 in3	82.26 in3
Area (Shear):	23.95 in2	41.56 in2
Moment of Inertia (deflection):	277.7 in4	488.41 in4
Moment:	-14825 ft-lb	15639 ft-lb
Shear:	4550 lb	7897 lb

LOADING DIAGRAM



UNIFORM LOADS	Left	Center
Uniform Live Load	0 plf	0 plf
Uniform Dead Load	0 plf	0 plf
Beam Self Weight	13 plf	13 plf
Total Uniform Load	13 plf	13 plf

TRAPEZOIDAL LOADS - LEFT SPAN

Load Number	One	Two	Three
Left Live Load	0 plf	93 plf	0 plf
Left Dead Load	0 plf	70 plf	0 plf
Right Live Load	47 plf	113 plf	57 plf
Right Dead Load	35 plf	85 plf	42 plf
Load Start	0 ft	3 ft	0 ft
Load End	3 ft	4.33 ft	4.33 ft
Load Length	3 ft	1.33 ft	4.33 ft

CENTER SPAN

Load Number	One	Two
Left Live Load	113 plf	57 plf
Left Dead Load	85 plf	42 plf
Right Live Load	343 plf	240 plf
Right Dead Load	257 plf	180 plf
Load Start	0 ft	0 ft
Load End	14.75 ft	14.75 ft
Load Length	14.75 ft	14.75 ft

Project: 250304B Fletcher

Location: FL2- Roof beam at Foyer
Combination Roof And Floor Beam
[2015 International Building Code(2015 NDS)]
(3) 1.5 IN x 9.25 IN x 11.0 FT
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 17.1%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.19	IN L/698
Dead Load	0.15	in
Total Load	0.34	IN L/384

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	1031	lb	1031	lb
Dead Load	841	lb	841	lb
Total Load	1872	lb	1872	lb
Bearing Length	1.24	in	1.24	in

BEAM DATA	Center	
Span Length	11	ft
Unbraced Length-Top	0	ft
Roof Pitch	10	:12
Floor Duration Factor	1.00	
Roof Duration Factor	1.15	
Notch Depth	0.00	

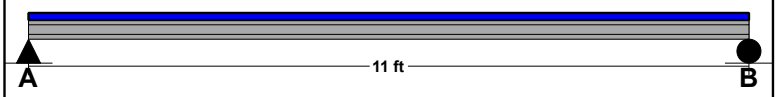
MATERIAL PROPERTIES
#2 - Spruce-Pine-Fir (South)

	Base Values		Adjusted	
Bending Stress:	Fb = 775	psi	Fb' = 1127	psi
	Cd=1.15 CF=1.10 Cr=1.15			
Shear Stress:	Fv = 135	psi	Fv' = 155	psi
	Cd=1.15			
Modulus of Elasticity:	E = 1100	ksi	E' = 1100	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 335	psi	Fc - ⊥' = 335	psi

Controlling Moment: 5149 ft-lb
5.5 ft from left support
Created by combining all dead and live loads.
Controlling Shear: 1872 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	54.81	in3	64.17	in3
Area (Shear):	18.09	in2	41.63	in2
Moment of Inertia (deflection):	185.34	in4	296.79	in4
Moment:	5149	ft-lb	6029	ft-lb
Shear:	1872	lb	4308	lb

LOADING DIAGRAM



ROOF LOADING

		Side 1		Side 2	
Roof Live Load	RLL =	25	psf	0	psf
Roof Dead Load	RDL =	15	psf	0	psf
Roof Tributary Width	RTW =	7.5	ft	0	ft

FLOOR LOADING

		Side 1		Side 2	
Floor Live Load	FLL =	0	psf	0	psf
Floor Dead Load	FDL =	0	psf	0	psf
Floor Tributary Width	FTW =	0	ft	0	ft
Wall Load	WALL =	0	plf		

BEAM LOADING

Roof Uniform Live Load:	wL-roof =	188	plf
Roof Uniform Dead Load:	wD-roof =	146	plf
Floor Uniform Live Load:	wL-floor =	0	plf
Floor Uniform Dead Load:	wD-floor =	0	plf
Beam Self Weight:	BSW =	6	plf
Combined Uniform Live Load:	wL =	188	plf
Combined Uniform Dead Load:	wD =	153	plf
Combined Uniform Total Load:	wT =	340	plf

Project: 250304B Fletcher

Location: FL1-Beam at Rear of garage
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 12.0 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 44.7%
Controlling Factor: Deflection

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M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.28	IN L/521
Dead Load	0.08	in
Total Load	0.36	IN L/404

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	1694	lb	1457	lb
Dead Load	486	lb	426	lb
Total Load	2180	lb	1883	lb
Bearing Length	0.83	in	0.72	in

BEAM DATA	Center	
Span Length	12	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	12	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

MATERIAL PROPERTIES
1.9E Microllam - iLevel Trus Joist

	Base Values		Adjusted	
Bending Stress:	Fb = 2600	psi	Fb' = 2694	psi
	Cd=1.00 CF=1.04			
Shear Stress:	Fv = 285	psi	Fv' = 285	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1900	ksi	E' = 1900	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750	psi	Fc - ⊥' = 750	psi

Controlling Moment: 6028 ft-lb
5.64 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 2179 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	26.85 in3	49.91 in3
Area (Shear):	11.47 in2	32.38 in2
Moment of Inertia (deflection):	159.54 in4	230.84 in4
Moment:	6028 ft-lb	11204 ft-lb
Shear:	2179 lb	6151 lb

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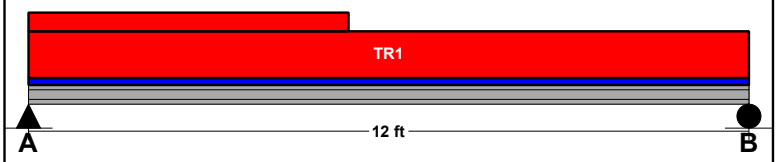

UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	10	plf
Total Uniform Load	10	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two	
Left Live Load	227	plf	80	plf
Left Dead Load	57	plf	20	plf
Right Live Load	227	plf	80	plf
Right Dead Load	57	plf	20	plf
Load Start	0	ft	0	ft
Load End	12	ft	5.33	ft
Load Length	12	ft	5.33	ft

Project: 250304B Fletcher

Location: FL1-Beam between Dining and Family
Uniformly Loaded Floor Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 10.0 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 19.6%
Controlling Factor: Shear

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M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.12	IN L/979
Dead Load	0.10	in
Total Load	0.22	IN L/534

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	502	lb	2843	lb
Dead Load	447	lb	2300	lb
Total Load	949	lb	5143	lb
Bearing Length	0.36	in	1.96	in

BEAM DATA	Center	
Span Length	10	ft
Unbraced Length-Top	0	ft
Floor Duration Factor	1.00	
Notch Depth	0.00	

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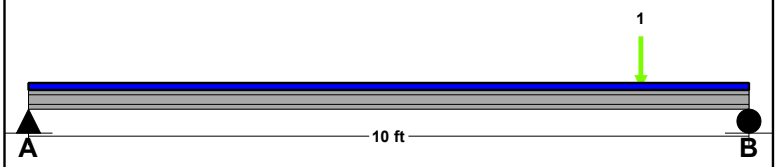

MATERIAL PROPERTIES
1.9E Microllam - iLevel Trus Joist

	Base Values		Adjusted	
Bending Stress:	Fb = 2600	psi	Fb' = 2694	psi
	Cd=1.00 CF=1.04			
Shear Stress:	Fv = 285	psi	Fv' = 285	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1900	ksi	E' = 1900	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750	psi	Fc - ⊥' = 750	psi

Controlling Moment: 7703 ft-lb
5.0 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -5143 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	34.32	in3	49.91	in3
Area (Shear):	27.07	in2	32.38	in2
Moment of Inertia (deflection):	103.67	in4	230.84	in4
Moment:	7703	ft-lb	11204	ft-lb
Shear:	-5143	lb	6151	lb

FLOOR LOADING

		Side 1		Side 2	
Floor Live Load	FLL =	0	psf	0	psf
Floor Dead Load	FDL =	0	psf	0	psf
Floor Tributary Width	FTW =	0	ft	0	ft
Wall Load	WALL =	0	plf		

BEAM LOADING

Beam Total Live Load:	wL =	0	plf
Beam Total Dead Load:	wD =	0	plf
Beam Self Weight:	BSW =	10	plf
Total Maximum Load:	wT =	10	plf

POINT LOADS - CENTER SPAN

Load Number	One *
Live Load	3345 lb
Dead Load	2646 lb
Location	8.5 ft

* Load obtained from Load Tracker. See Summary Report for details.

Project: 250304B Fletcher

Location: FL1- Beam at Dining
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
1.75 IN x 16.0 IN x 10.33 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 6.1%
Controlling Factor: Shear

Mike Haynes
M. Haynes Designs

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DEFLECTIONS	Center	
Live Load	0.12	IN L/1066
Dead Load	0.07	in
Total Load	0.19	IN L/656

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	3037	lb	2469	lb
Dead Load	1977	lb	1504	lb
Total Load	5014	lb	3973	lb
Bearing Length	3.82	in	3.03	in

BEAM DATA	Center	
Span Length	10.33	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	10.33	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

MATERIAL PROPERTIES

1.9E Microllam - iLevel Trus Joist

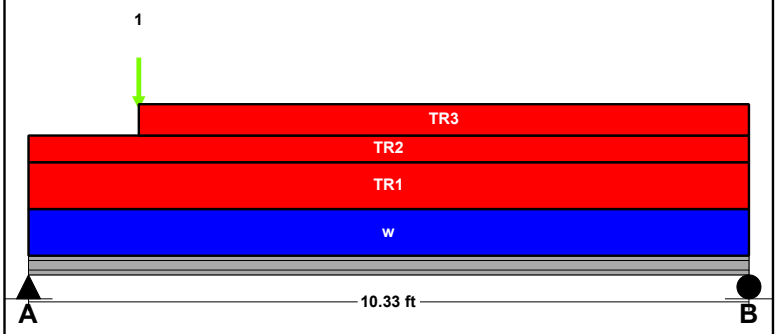
	Base Values		Adjusted	
Bending Stress:	Fb = 2600	psi	Fb' = 2500	psi
	Cd=1.00 CF=0.96			
Shear Stress:	Fv = 285	psi	Fv' = 285	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1900	ksi	E' = 1900	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750	psi	Fc - ⊥' = 750	psi

Controlling Moment: 10987 ft-lb
4.75 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Controlling Shear: 5015 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	52.73	in3	74.67	in3
Area (Shear):	26.39	in2	28	in2
Moment of Inertia (deflection):	218.44	in4	597.33	in4
Moment:	10987	ft-lb	15557	ft-lb
Shear:	5015	lb	5320	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	64	plf
Beam Self Weight	9	plf
Total Uniform Load	73	plf

POINT LOADS - CENTER SPAN

Load Number	One *	
Live Load	1031	lb
Dead Load	841	lb
Location	1.58	ft

* Load obtained from Load Tracker. See Summary Report for details.

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two		Three	
Left Live Load	230	plf	110	plf	110	plf
Left Dead Load	58	plf	55	plf	82.5	plf
Right Live Load	230	plf	110	plf	110	plf
Right Dead Load	58	plf	55	plf	82.5	plf
Load Start	0	ft	0	ft	1.58	ft
Load End	10.33	ft	10.33	ft	10.33	ft
Load Length	10.33	ft	10.33	ft	8.75	ft

Project: 250304B Fletcher

Location: FL1-Front porch header
Combination Roof And Floor Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 11.0 FT
#2 - Spruce-Pine-Fir (South) - Dry Use
Section Adequate By: 28.0%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center		
Live Load	0.17	IN	L/775
Dead Load	0.10	in	
Total Load	0.27	IN	L/483

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	619	lb	619	lb
Dead Load	374	lb	374	lb
Total Load	993	lb	993	lb
Bearing Length	0.99	in	0.99	in

BEAM DATA	Center	
Span Length	11	ft
Unbraced Length-Top	0	ft
Roof Pitch	3	:12
Floor Duration Factor	1.00	
Roof Duration Factor	1.15	
Notch Depth	0.00	

MATERIAL PROPERTIES
#2 - Spruce-Pine-Fir (South)

	Base Values		Adjusted	
Bending Stress:	Fb = 775	psi	Fb' = 980	psi
	Cd=1.15 CF=1.10			
Shear Stress:	Fv = 135	psi	Fv' = 155	psi
	Cd=1.15			
Modulus of Elasticity:	E = 1100	ksi	E' = 1100	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 335	psi	Fc - ⊥' = 335	psi

Controlling Moment: 2730 ft-lb
5.5 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -993 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	33.41	in3	42.78	in3
Area (Shear):	9.59	in2	27.75	in2
Moment of Inertia (deflection):	98.26	in4	197.86	in4
Moment:	2730	ft-lb	3495	ft-lb
Shear:	-993	lb	2872	lb

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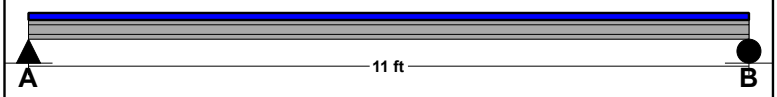

ROOF LOADING

		Side 1		Side 2	
Roof Live Load	RLL =	25	psf	0	psf
Roof Dead Load	RDL =	15	psf	0	psf
Roof Tributary Width	RTW =	2.5	ft	0	ft

FLOOR LOADING

		Side 1		Side 2	
Floor Live Load	FLL =	20	psf	0	psf
Floor Dead Load	FDL =	10	psf	0	psf
Floor Tributary Width	FTW =	2.5	ft	0	ft

Wall Load WALL = 0 plf

BEAM LOADING

Roof Uniform Live Load:	wL-roof =	63	plf
Roof Uniform Dead Load:	wD-roof =	39	plf
Floor Uniform Live Load:	wL-floor =	50	plf
Floor Uniform Dead Load:	wD-floor =	25	plf
Beam Self Weight:	BSW =	4	plf
Combined Uniform Live Load:	wL =	113	plf
Combined Uniform Dead Load:	wD =	68	plf
Combined Uniform Total Load:	wT =	180	plf

Project: 250304B Fletcher

Location: FL1-Garage beam
Uniformly Loaded Floor Beam
[2015 International Building Code(2015 NDS)]
(3) 1.75 IN x 24.0 IN x 24.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 116.7%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS Center

Live Load	0.31	IN L/947
Dead Load	0.14	in
Total Load	0.45	IN L/651

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS

	A		B	
Live Load	5595	lb	5595	lb
Dead Load	2551	lb	2551	lb
Total Load	8146	lb	8146	lb
Bearing Length	2.07	in	2.07	in

BEAM DATA Center

Span Length	24.67	ft
Unbraced Length-Top	0	ft
Floor Duration Factor	1.00	
Notch Depth	0.00	

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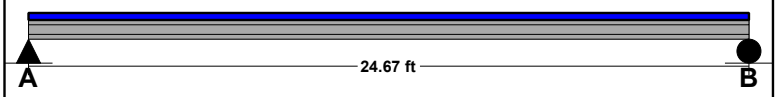

MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

		Base Values			Adjusted	
Bending Stress:	Fb =	2800	psi	Fb' =	2592	psi
	Cd=1.00 CF=0.93					
Shear Stress:	Fv =	285	psi	Fv' =	285	psi
	Cd=1.00					
Modulus of Elasticity:	E =	2000	ksi	E' =	2000	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	750	psi	Fc - ⊥' =	750	psi

Controlling Moment: 50244 ft-lb
12.335 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -8147 lb
At support.
Created by combining all dead and live loads.

FLOOR LOADING

		Side 1		Side 2	
Floor Live Load	FLL =	40	psf	40	psf
Floor Dead Load	FDL =	15	psf	15	psf
Floor Tributary Width	FTW =	5.7	ft	5.7	ft
Wall Load	WALL =	0	plf		

BEAM LOADING

Beam Total Live Load:	wL =	454	plf
Beam Total Dead Load:	wD =	170	plf
Beam Self Weight:	BSW =	37	plf
Total Maximum Load:	wT =	660	plf

Comparisons with required sections:

	Req'd		Provided	
Section Modulus:	232.57	in3	504	in3
Area (Shear):	42.88	in2	126	in2
Moment of Inertia (deflection):	2298.18	in4	6048	in4
Moment:	50244	ft-lb	108883	ft-lb
Shear:	-8147	lb	23940	lb

Project: 250304B Fletcher

Location: FL1- header at side load garage
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 24.0 IN x 18.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 19.2%
Controlling Factor: Moment

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.28	IN L/811
Dead Load	0.14	in
Total Load	0.42	IN L/539

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	6143	lb	5871	lb
Dead Load	3180	lb	3045	lb
Total Load	9323	lb	8916	lb
Bearing Length	3.55	in	3.40	in

BEAM DATA	Center	
Span Length	18.67	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	18.67	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

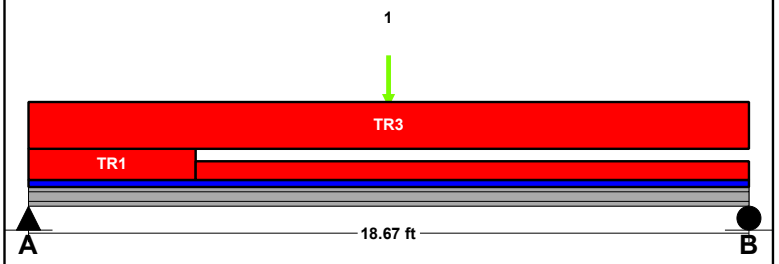
MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

	Base Values		Adjusted	
Bending Stress:	Fb = 2800	psi	Fb' = 2592	psi
	Cd=1.00 CF=0.93			
Shear Stress:	Fv = 285	psi	Fv' = 285	psi
	Cd=1.00			
Modulus of Elasticity:	E = 2000	ksi	E' = 2000	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750	psi	Fc - ⊥' = 750	psi

Controlling Moment: 60896 ft-lb
9.34 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 9323 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	281.88	in3	336	in3
Area (Shear):	49.07	in2	84	in2
Moment of Inertia (deflection):	1794.34	in4	4032	in4
Moment:	60896	ft-lb	72589	ft-lb
Shear:	9323	lb	15960	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	25	plf
Total Uniform Load	25	plf

POINT LOADS - CENTER SPAN

Load Number	One *	
Live Load	5595	lb
Dead Load	2551	lb
Location	9.33	ft

* Load obtained from Load Tracker. See Summary Report for details.

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two		Three	
Left Live Load	163	plf	82	plf	243	plf
Left Dead Load	81	plf	41	plf	122	plf
Right Live Load	163	plf	82	plf	243	plf
Right Dead Load	81	plf	41	plf	122	plf
Load Start	0	ft	4.33	ft	0	ft
Load End	4.33	ft	18.67	ft	18.67	ft
Load Length	4.33	ft	14.34	ft	18.67	ft

Project: 250304B Fletcher

Location: FL1- Ceiling joists at breakfast room
Floor Joist
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 15.0 FT @ 16 O.C.
#2 - Southern Pine - Dry Use
Section Adequate By: 22.9%
Controlling Factor: Moment

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CAUTIONS
* Properly connect sheathing to double joists/rafters or fully laminate to transfer diaphragm forces.

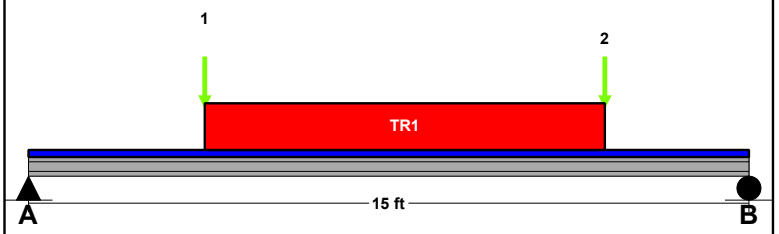
DEFLECTIONS	Center	
Live Load	0.29	IN L/629
Dead Load	0.12	in
Total Load	0.40	IN L/447

Live Load Deflection Criteria: L/480 Total Load Deflection Criteria: L/360

REACTIONS	A		B	
Live Load	468	lb	493	lb
Dead Load	208	lb	218	lb
Total Load	676	lb	711	lb
Bearing Length	0.40	in	0.42	in

SUPPORT LOADS	A		B	
Live Load	351	plf	370	plf
Dead Load	156	plf	164	plf
Total Load	507	plf	533	plf

LOADING DIAGRAM



MATERIAL PROPERTIES
#2 - Southern Pine

	Base Values			Adjusted		
Bending Stress:	Fb =	800	psi	Fb' =	920	psi
	Cd=1.00 CF=1.00 Cr=1.15					
Shear Stress:	Fv =	175	psi	Fv' =	175	psi
	Cd=1.00					
Modulus of Elasticity:	E =	1400	ksi	E' =	1400	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	565	psi	Fc - ⊥' =	565	psi

Controlling Moment: 2668 ft-lb
7.35 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: -711 lb
At right support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	34.81 in3	42.78 in3
Area (Shear):	6.1 in2	27.75 in2
Moment of Inertia (deflection):	159.42 in4	197.86 in4
Moment:	2668 ft-lb	3280 ft-lb
Shear:	-711 lb	3238 lb

JOIST DATA	Center	
Span Length	15	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	0	ft

Floor sheathing applied to top of joists-top of joists fully braced.
Floor Duration Factor 1.00

JOIST LOADING

Uniform Floor Loading		Center	
Live Load	LL =	20	psf
Dead Load	DL =	10	psf
Total Load	TL =	30	psf
TL Adj. For Joist Spacing	wT =	40	plf
Wall Loading			
Wall One			
Live Load (⊥ to Joists):	L1 =	127	plf
Dead Load (⊥ to Joists):	D1 =	85	plf
Load Location	X1 =	3.67	ft
Wall Two			
Live Load (⊥ to Joists):	L2 =	127	plf
Dead Load (⊥ to Joists):	D2 =	85	plf
Load Location	X2 =	12	ft
Partially Distributed Loading			
Live Load	LL =	20	psf
Dead Load	DL =	0	psf
Load Start	A =	3.67	ft
Load End	B =	12	ft
Load Length	C =	8.33	ft

Project: 250304B Fletcher

Location: FL2- Roof beam at Bedroom 4
Roof Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 13.33 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 120.5%
Controlling Factor: Deflection

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS Center

Live Load	0.22	IN L/733
Dead Load	0.18	in
Total Load	0.40	IN L/397

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS

	A		B	
Live Load	945	lb	945	lb
Dead Load	801	lb	801	lb
Total Load	1746	lb	1746	lb
Bearing Length	0.66	in	0.66	in

BEAM DATA

Span Length	13.3	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	0	ft
Roof Pitch	10	:12
Roof Duration Factor	1.15	

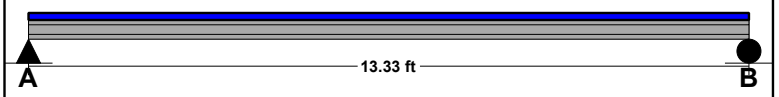
MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

	Base Values		Adjusted	
Bending Stress:	Fb = 2800	psi	Fb' = 3314	psi
	Cd=1.15 CF=1.03			
Shear Stress:	Fv = 285	psi	Fv' = 328	psi
	Cd=1.15			
Modulus of Elasticity:	E = 2000	ksi	E' = 2000	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750	psi	Fc - ⊥' = 750	psi

Controlling Moment: 5817 ft-lb
6.665 ft from left support
Created by combining all dead and live loads.
Controlling Shear: 1746 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	21.06	in3	49.91	in3
Area (Shear):	7.99	in2	32.38	in2
Moment of Inertia (deflection):	104.67	in4	230.84	in4
Moment:	5817	ft-lb	13786	ft-lb
Shear:	1746	lb	7074	lb

LOADING DIAGRAM



ROOF LOADING
Side One:

Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	5.7	ft

Side Two:

Roof Live Load:	LL =	0	psf
Roof Dead Load:	DL =	0	psf
Tributary Width:	TW =	0	ft
Wall Load:	WALL =	0	plf

SLOPE/PITCH ADJUSTED LENGTHS AND LOADS

Adjusted Beam Length:	Ladj =	13.33	ft
Beam Self Weight:	BSW =	9	plf
Beam Uniform Live Load:	wL =	142	plf
Beam Uniform Dead Load:	wD_adj =	120	plf
Total Uniform Load:	wT =	262	plf

Project: 250304B Fletcher

Location: Fl1- Ceiling joists above Family room
Floor Joist
[2015 International Building Code(2015 NDS)]
1.5 IN x 9.25 IN x 17.83 FT @ 12 O.C.
#2 - Spruce-Pine-Fir - Dry Use
Section Adequate By: 29.7%
Controlling Factor: Moment

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M. Haynes Designs

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DEFLECTIONS Center

Live Load	0.55	IN L/390
Dead Load	0.16	in
Total Load	0.71	IN L/300

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS

	A		B	
Live Load	244	lb	329	lb
Dead Load	89	lb	89	lb
Total Load	333	lb	418	lb
Bearing Length	0.52	in	0.66	in

SUPPORT LOADS

	A		B	
Live Load	244	plf	329	plf
Dead Load	89	plf	89	plf
Total Load	333	plf	418	plf

MATERIAL PROPERTIES

#2 - Spruce-Pine-Fir

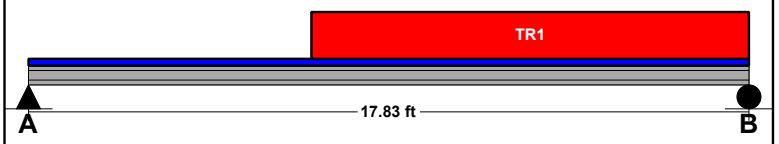
	Base Values		Adjusted	
Bending Stress:	Fb = 875	psi	Fb' = 1273	psi
	Cd=1.15 CF=1.10 Cr=1.15			
Shear Stress:	Fv = 135	psi	Fv' = 155	psi
	Cd=1.15			
Modulus of Elasticity:	E = 1400	ksi	E' = 1400	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 425	psi	Fc - ⊥' = 425	psi

Controlling Moment: 1749 ft-lb
9.45 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Controlling Shear: -418 lb
18.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	16.49	in3	21.39	in3
Area (Shear):	4.04	in2	13.88	in2
Moment of Inertia (deflection):	60.81	in4	98.93	in4
Moment:	1749	ft-lb	2269	ft-lb
Shear:	-418	lb	1436	lb

LOADING DIAGRAM



JOIST DATA Center

Span Length	17.83	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	0	ft

Floor sheathing applied to top of joists-top of joists fully braced.
Floor Duration Factor 1.15

JOIST LOADING

Uniform Floor Loading Center

Live Load	LL =	20	psf
Dead Load	DL =	10	psf
Total Load	TL =	30	psf
TL Adj. For Joist Spacing	wT =	30	plf

Partially Distributed Loading

Live Load	LL =	20	psf
Dead Load	DL =	0	psf
Load Start	A =	7	ft
Load End	B =	17.83	ft
Load Length	C =	10.83	ft

Project: 250304B Fletcher

Location: Fl1- Beam at family room ceiling
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 16.0 IN x 18.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 25.8%
Controlling Factor: Deflection

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center		
Live Load	0.49	IN	L/453
Dead Load	0.16	in	
Total Load	0.65	IN	L/344

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	3919	lb	4231	lb
Dead Load	1220	lb	1376	lb
Total Load	5139	lb	5607	lb
Bearing Length	1.96	in	2.14	in

BEAM DATA	Center	
Span Length	18.67	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	18.67	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

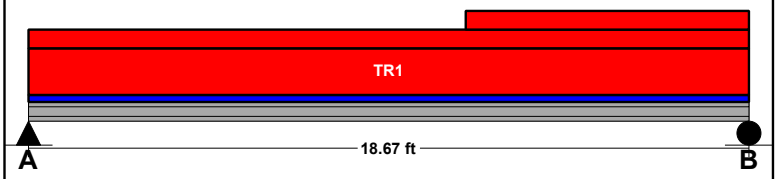
MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

	Base Values			Adjusted	
Bending Stress:	Fb =	2800	psi	Fb' =	2712 psi
	Cd=1.00 CF=0.97				
Shear Stress:	Fv =	285	psi	Fv' =	285 psi
	Cd=1.00				
Modulus of Elasticity:	E =	2000	ksi	E' =	2000 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	750	psi	Fc - ⊥' =	750 psi

Controlling Moment: 24715 ft-lb
9.71 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: -5607 lb
19.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	109.36	in3	149.33	in3
Area (Shear):	29.51	in2	56	in2
Moment of Inertia (deflection):	949.32	in4	1194.67	in4
Moment:	24715	ft-lb	33748	ft-lb
Shear:	-5607	lb	10640	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	16	plf
Total Uniform Load	16	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One *		Two *		Three *	
Left Live Load	329	plf	80	plf	70	plf
Left Dead Load	89	plf	20	plf	35	plf
Right Live Load	329	plf	80	plf	70	plf
Right Dead Load	89	plf	20	plf	35	plf
Load Start	0	ft	0	ft	11.33	ft
Load End	18.67	ft	18.67	ft	18.67	ft
Load Length	18.67	ft	18.67	ft	7.34	ft

* Load obtained from Load Tracker. See Summary Report for details.

Project: 250304B Fletcher

Location: FL1- Beam at breakfast room
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(3) 1.75 IN x 9.25 IN x 15.0 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 38.7%
Controlling Factor: Deflection

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.36	IN L/499
Dead Load	0.13	in
Total Load	0.49	IN L/366

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	2759	lb	730	lb
Dead Load	920	lb	327	lb
Total Load	3679	lb	1057	lb
Bearing Length	0.93	in	0.27	in

BEAM DATA	Center	
Span Length	15	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	15	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

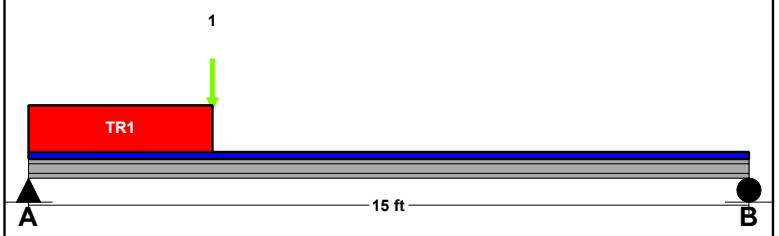
MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

	Base Values			Adjusted	
Bending Stress:	Fb =	2800	psi	Fb' =	2882 psi
	Cd=1.00 CF=1.03				
Shear Stress:	Fv =	285	psi	Fv' =	285 psi
	Cd=1.00				
Modulus of Elasticity:	E =	2000	ksi	E' =	2000 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	750	psi	Fc - ⊥' =	750 psi

Controlling Moment: 10858 ft-lb
3.9 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 3679 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	45.21 in3	74.87 in3
Area (Shear):	19.37 in2	48.56 in2
Moment of Inertia (deflection):	249.6 in4	346.26 in4
Moment:	10858 ft-lb	17982 ft-lb
Shear:	3679 lb	9227 lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	14	plf
Total Uniform Load	14	plf

POINT LOADS - CENTER SPAN

Load Number	One *	
Live Load	2229	lb
Dead Load	694	lb
Location	3.83	ft

* Load obtained from Load Tracker. See Summary Report for details.

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One *	
Left Live Load	329	plf
Left Dead Load	89	plf
Right Live Load	329	plf
Right Dead Load	89	plf
Load Start	0	ft
Load End	3.83	ft
Load Length	3.83	ft

* Load obtained from Load Tracker. See Summary Report for details.

Project: 250304B Fletcher

Location: FL1- Header at bedroom hallway
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 4.25 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 97.9%
Controlling Factor: Shear

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.03	IN L/2026
Dead Load	0.01	in
Total Load	0.03	IN L/1522

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	2319	lb	2089	lb
Dead Load	789	lb	717	lb
Total Load	3108	lb	2806	lb
Bearing Length	1.18	in	1.07	in

BEAM DATA	Center	
Span Length	4.25	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	4.25	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

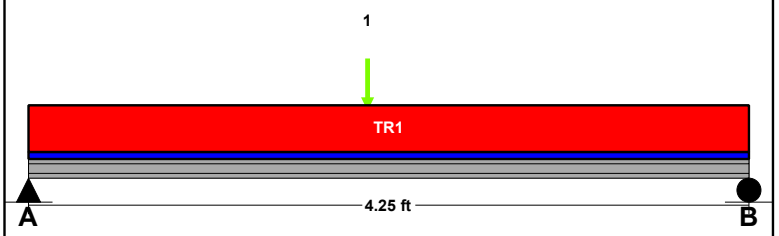
MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

	Base Values			Adjusted	
Bending Stress:	Fb =	2800	psi	Fb' =	2882 psi
	Cd=1.00 CF=1.03				
Shear Stress:	Fv =	285	psi	Fv' =	285 psi
	Cd=1.00				
Modulus of Elasticity:	E =	2000	ksi	E' =	2000 ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	750	psi	Fc - ⊥' =	750 psi

Controlling Moment: 5845 ft-lb
2.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 3108 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	24.34	in3	49.91	in3
Area (Shear):	16.36	in2	32.38	in2
Moment of Inertia (deflection):	41.02	in4	230.84	in4
Moment:	5845	ft-lb	11988	ft-lb
Shear:	3108	lb	6151	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	9	plf
Total Uniform Load	9	plf

POINT LOADS - CENTER SPAN

Load Number	One *	
Live Load	3919	lb
Dead Load	1220	lb
Location	2	ft

* Load obtained from Load Tracker. See Summary Report for details.

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One	
Left Live Load	115	plf
Left Dead Load	58	plf
Right Live Load	115	plf
Right Dead Load	58	plf
Load Start	0	ft
Load End	4.25	ft
Load Length	4.25	ft

Project: 250304B Fletcher

Location: FL1-Beam between Kitchen and Family
Uniformly Loaded Floor Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 16.0 IN x 17.83 FT
1.9E Microllam - iLevel Trus Joist
Section Adequate By: 11.5%
Controlling Factor: Shear

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS Center

Live Load	0.33	IN L/642
Dead Load	0.15	in
Total Load	0.48	IN L/443

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

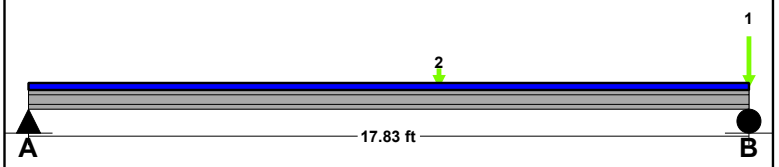
REACTIONS

	A		B	
Live Load	2635	lb	6998	lb
Dead Load	1058	lb	2546	lb
Total Load	3693	lb	9544	lb
Bearing Length	1.41	in	3.64	in

BEAM DATA Center

Span Length	17.83	ft
Unbraced Length-Top	0	ft
Floor Duration Factor	1.00	
Notch Depth	0.00	

LOADING DIAGRAM



MATERIAL PROPERTIES
1.9E Microllam - iLevel Trus Joist

		Base Values			Adjusted	
Bending Stress:	Fb =	2600	psi	Fb' =	2500	psi
	Cd=1.00 CF=0.96					
Shear Stress:	Fv =	285	psi	Fv' =	285	psi
	Cd=1.00					
Modulus of Elasticity:	E =	1900	ksi	E' =	1900	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	750	psi	Fc - ⊥' =	750	psi

Controlling Moment: 20485 ft-lb
8.915 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -9544 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	98.32	in3	149.33	in3
Area (Shear):	50.23	in2	56	in2
Moment of Inertia (deflection):	669.39	in4	1194.67	in4
Moment:	20485	ft-lb	31114	ft-lb
Shear:	-9544	lb	10640	lb

FLOOR LOADING

		Side 1		Side 2	
Floor Live Load	FLL =	0	psf	40	psf
Floor Dead Load	FDL =	0	psf	10	psf
Floor Tributary Width	FTW =	0	ft	6.3	ft
Wall Load	WALL =	0	plf		

BEAM LOADING

Beam Total Live Load:	wL =	250	plf
Beam Total Dead Load:	wD =	63	plf
Beam Self Weight:	BSW =	18	plf
Total Maximum Load:	wT =	330	plf

POINT LOADS - CENTER SPAN

Load Number	One *		Two *	
Live Load	4231	lb	945	lb
Dead Load	1376	lb	801	lb
Location	17.83	ft	10.16	ft

* Load obtained from Load Tracker. See Summary Report for details.

Project: 250304B Fletcher

Location: FL2- Beam at fl2 bath
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 9.67 FT
#2 - Spruce-Pine-Fir - Dry Use
Section Adequate By: 3.3%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.13	IN L/881
Dead Load	0.07	in
Total Load	0.20	IN L/578

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	927	lb	848	lb
Dead Load	485	lb	446	lb
Total Load	1412	lb	1294	lb
Bearing Length	1.11	in	1.01	in

BEAM DATA	Center	
Span Length	9.67	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	9.67	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

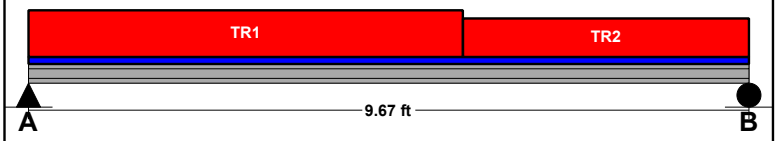
MATERIAL PROPERTIES
#2 - Spruce-Pine-Fir

	Base Values		Adjusted	
Bending Stress:	Fb = 875	psi	Fb' = 963	psi
	Cd=1.00 CF=1.10			
Shear Stress:	Fv = 135	psi	Fv' = 135	psi
	Cd=1.00			
Modulus of Elasticity:	E = 1400	ksi	E' = 1400	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 425	psi	Fc - ⊥' = 425	psi

Controlling Moment: 3322 ft-lb
4.74 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 1412 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	41.41 in3	42.78 in3
Area (Shear):	15.69 in2	27.75 in2
Moment of Inertia (deflection):	82.17 in4	197.86 in4
Moment:	3322 ft-lb	3431 ft-lb
Shear:	1412 lb	2498 lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	5	plf
Total Uniform Load	5	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two	
Left Live Load	197	plf	163	plf
Left Dead Load	98	plf	81	plf
Right Live Load	197	plf	163	plf
Right Dead Load	98	plf	81	plf
Load Start	0	ft	5.83	ft
Load End	5.83	ft	9.67	ft
Load Length	5.83	ft	3.84	ft

Project: 250304B Fletcher

Location: FL1- beam at master entry
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(3) 1.5 IN x 9.25 IN x 5.0 FT
#2 - Spruce-Pine-Fir - Dry Use
Section Adequate By: 35.8%
Controlling Factor: Shear

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center		
Live Load	0.03	IN	L/2152
Dead Load	0.01	in	
Total Load	0.04	IN	L/1607

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	2060	lb	2060	lb
Dead Load	699	lb	699	lb
Total Load	2759	lb	2759	lb
Bearing Length	1.44	in	1.44	in

BEAM DATA	Center	
Span Length	5	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	5	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

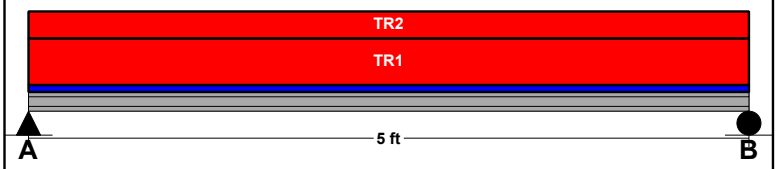
MATERIAL PROPERTIES
#2 - Spruce-Pine-Fir

	Base Values			Adjusted		
Bending Stress:	Fb =	875	psi	Fb' =	1107	psi
	Cd=1.00 CF=1.10 Cr=1.15					
Shear Stress:	Fv =	135	psi	Fv' =	135	psi
	Cd=1.00					
Modulus of Elasticity:	E =	1400	ksi	E' =	1400	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	425	psi	Fc - ⊥' =	425	psi

Controlling Moment: 3449 ft-lb
2.5 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 2759 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	37.39	in3	64.17	in3
Area (Shear):	30.65	in2	41.63	in2
Moment of Inertia (deflection):	49.65	in4	296.79	in4
Moment:	3449	ft-lb	5919	ft-lb
Shear:	2759	lb	3746	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	8	plf
Total Uniform Load	8	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two	
Left Live Load	557	plf	267	plf
Left Dead Load	139	plf	133	plf
Right Live Load	557	plf	267	plf
Right Dead Load	139	plf	133	plf
Load Start	0	ft	0	ft
Load End	5	ft	5	ft
Load Length	5	ft	5	ft

Project: 250304B Fletcher

Location: FL1- Header at Breakfast rooom door
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 6.0 FT
#2 - Southern Pine - Dry Use
Section Adequate By: 23.4%
Controlling Factor: Moment

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center		
Live Load	0.04	IN	L/1949
Dead Load	0.02	in	
Total Load	0.05	IN	L/1332

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	1053	lb	1053	lb
Dead Load	488	lb	488	lb
Total Load	1541	lb	1541	lb
Bearing Length	0.91	in	0.91	in

BEAM DATA	Center	
Span Length	6	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	6	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

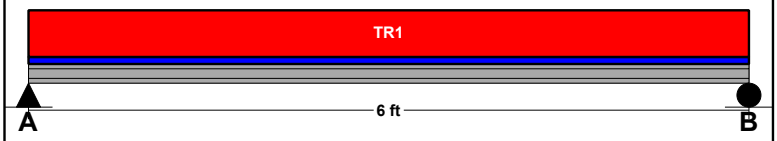
MATERIAL PROPERTIES
#2 - Southern Pine

	Base Values			Adjusted		
Bending Stress:	Fb =	800	psi	Fb' =	800	psi
	Cd=1.00 CF=1.00					
Shear Stress:	Fv =	175	psi	Fv' =	175	psi
	Cd=1.00					
Modulus of Elasticity:	E =	1400	ksi	E' =	1400	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	565	psi	Fc - ⊥' =	565	psi

Controlling Moment: 2311 ft-lb
3.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: 1541 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	34.67	in3	42.78	in3
Area (Shear):	13.21	in2	27.75	in2
Moment of Inertia (deflection):	36.55	in4	197.86	in4
Moment:	2311	ft-lb	2852	ft-lb
Shear:	1541	lb	3238	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	7	plf
Total Uniform Load	7	plf

TRAPEZOIDAL LOADS - CENTER SPAN	
Load Number	One *
Left Live Load	351 plf
Left Dead Load	156 plf
Right Live Load	351 plf
Right Dead Load	156 plf
Load Start	0 ft
Load End	6 ft
Load Length	6 ft

* Load obtained from Load Tracker. See Summary Report for details.

Project: 250304B Fletcher

Location: FL1- Beam at stairs in garage
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.75 IN x 9.25 IN x 11.67 FT
Versa-Lam 2800 Fb DF - Boise Cascade
Section Adequate By: 68.1%
Controlling Factor: Deflection

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.23	IN L/605
Dead Load	0.07	in
Total Load	0.30	IN L/469

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	1406	lb	1615	lb
Dead Load	409	lb	463	lb
Total Load	1815	lb	2078	lb
Bearing Length	0.69	in	0.79	in

BEAM DATA	Center	
Span Length	11.67	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	11.67	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

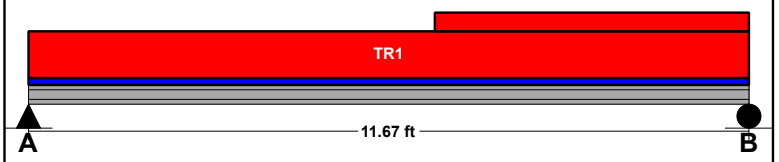
MATERIAL PROPERTIES
Versa-Lam 2800 Fb DF - Boise Cascade

	Base Values		Adjusted	
Bending Stress:	Fb = 2800	psi	Fb' = 2882	psi
	Cd=1.00 CF=1.03			
Shear Stress:	Fv = 285	psi	Fv' = 285	psi
	Cd=1.00			
Modulus of Elasticity:	E = 2000	ksi	E' = 2000	ksi
Comp. ⊥ to Grain:	Fc - ⊥ = 750	psi	Fc - ⊥' = 750	psi

Controlling Moment: 5609 ft-lb
6.19 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: -2078 lb
12.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	23.35	in3	49.91	in3
Area (Shear):	10.94	in2	32.38	in2
Moment of Inertia (deflection):	137.36	in4	230.84	in4
Moment:	5609	ft-lb	11988	ft-lb
Shear:	-2078	lb	6151	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	9	plf
Total Uniform Load	9	plf

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One		Two	
Left Live Load	227	plf	73	plf
Left Dead Load	57	plf	19	plf
Right Live Load	227	plf	73	plf
Right Dead Load	57	plf	19	plf
Load Start	0	ft	6.58	ft
Load End	11.67	ft	11.67	ft
Load Length	11.67	ft	5.09	ft

Project: 250304B Fletcher

Location: Fl1- Beam between garages
Multi-Loaded Multi-Span Beam
[2015 International Building Code(2015 NDS)]
(2) 1.5 IN x 9.25 IN x 3.67 FT
#2 - Southern Pine - Dry Use
Section Adequate By: 36.1%
Controlling Factor: Shear

Mike Haynes
M. Haynes Designs

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CAUTIONS
* Laminations are to be fully connected to provide uniform transfer of loads to all members

DEFLECTIONS	Center	
Live Load	0.00	IN L/MAX
Dead Load	0.00	in
Total Load	0.01	IN L/8709

Live Load Deflection Criteria: L/360 Total Load Deflection Criteria: L/240

REACTIONS	A		B	
Live Load	332	lb	1797	lb
Dead Load	162	lb	582	lb
Total Load	494	lb	2379	lb
Bearing Length	0.29	in	1.40	in

BEAM DATA	Center	
Span Length	3.67	ft
Unbraced Length-Top	0	ft
Unbraced Length-Bottom	3.67	ft
Live Load Duration Factor	1.00	
Notch Depth	0.00	

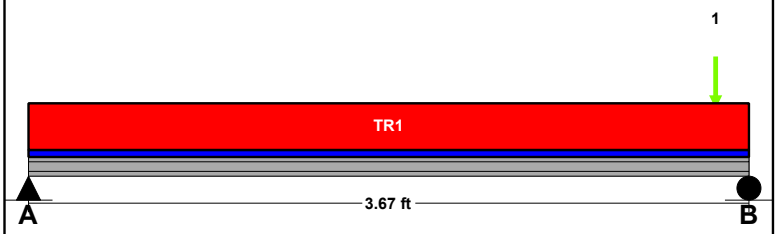
MATERIAL PROPERTIES
#2 - Southern Pine

	Base Values			Adjusted		
Bending Stress:	Fb =	800	psi	Fb' =	800	psi
	Cd=1.00 CF=1.00					
Shear Stress:	Fv =	175	psi	Fv' =	175	psi
	Cd=1.00					
Modulus of Elasticity:	E =	1400	ksi	E' =	1400	ksi
Comp. ⊥ to Grain:	Fc - ⊥ =	565	psi	Fc - ⊥' =	565	psi

Controlling Moment: 563 ft-lb
2.28 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2
Controlling Shear: -2379 lb
4.0 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	Req'd		Provided	
Section Modulus:	8.44	in3	42.78	in3
Area (Shear):	20.39	in2	27.75	in2
Moment of Inertia (deflection):	5.68	in4	197.86	in4
Moment:	563	ft-lb	2852	ft-lb
Shear:	-2379	lb	3238	lb

LOADING DIAGRAM



UNIFORM LOADS	Center	
Uniform Live Load	0	plf
Uniform Dead Load	0	plf
Beam Self Weight	7	plf
Total Uniform Load	7	plf

POINT LOADS - CENTER SPAN

Load Number	One *	
Live Load	1615	lb
Dead Load	463	lb
Location	3.5	ft

* Load obtained from Load Tracker. See Summary Report for details.

TRAPEZOIDAL LOADS - CENTER SPAN

Load Number	One	
Left Live Load	140	plf
Left Dead Load	70	plf
Right Live Load	140	plf
Right Dead Load	70	plf
Load Start	0	ft
Load End	3.67	ft
Load Length	3.67	ft