

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

MEAN ROOF HEIGHT: 26'-6" HEIGHT TO RIDGE: 31'-8"

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 30cd	38 or 30cd	38 or 30cd
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

** 10/17 MEANS R-10 SHEATHING INSULATION OR R-13 CAVITY INSULATION
* INSULATION DEPTH WITH NOMINALLY 2" x 8" OR FROM INSPECTION GAP TO BOTTOM OF FOOTING; INSULATION DEPTH WITH STEEL WALL SLAB 2" OR TO BOTTOM OF FOUNDATION WALL
DESIGNED FOR WIND SPEED OF 120 MPH, 3 SECOND GUST (WIND FASTEST WIND 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

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	16.7 -18.0	17.5 -18.9	18.2 -19.6	18.7 -20.2
ZONE 2	16.7 -21.0	17.5 -22.1	18.2 -22.9	18.7 -23.5
ZONE 3	16.7 -21.0	17.5 -22.1	18.2 -22.9	18.7 -23.5
ZONE 4	18.2 -19.0	19.1 -20.0	19.8 -20.7	20.4 -21.3
ZONE 5	18.2 -24.0	19.1 -25.2	19.8 -26.2	20.4 -26.9

GUARD RAIL NOTES

SECTION R312

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

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

Exceptions:

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

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

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

Exceptions:

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

2. Guards on the open sides of stairs shall not have openings which allow passage of a sphere 43/8 inches (111 mm) in diameter.

AIR LEAKAGE

Section N1102.4

N1102.4.1 Building thermal envelope. The building thermal envelope shall be durably sealed with an air barrier system to limit infiltration. The sealing methods between dissimilar materials shall allow for differential expansion and contraction. For all homes, where present, the following shall be caulked, gasketed, weather stripped or otherwise sealed with an air barrier material or solid material consistent with Appendix E-2.4 of this code:
1. Blocking and sealing floor/ceiling systems and under knee walls open to unconditioned or exterior space.
2. Capping and sealing shafts or chases, including flue shafts.
3. Capping and sealing soffit or dropped ceiling areas.

ROOF VENTILATION

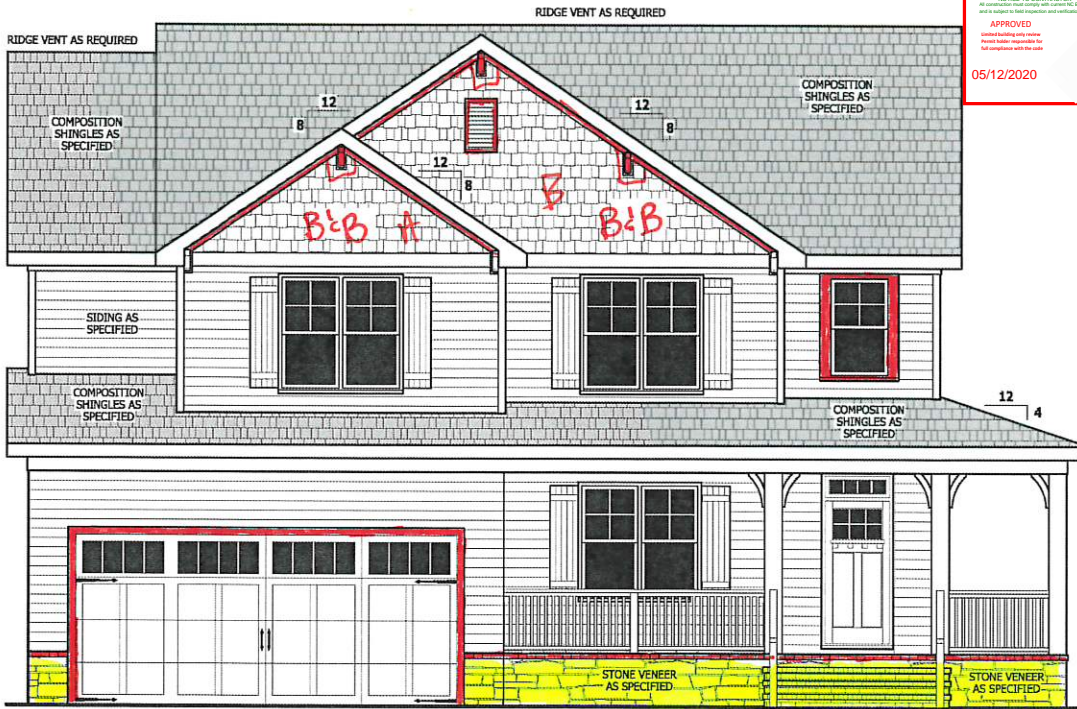
SECTION R806

SQUARE FOOTAGE OF ROOF TO BE VENTED = 1,726 SQ.FT.

NET FREE CROSS VENTILATION NEEDED:

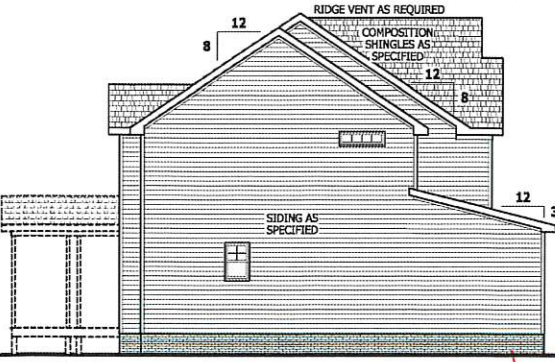
WITHOUT 50% TO 80% OF VENTING 3'-0" ABOVE EAVE = 11.51 SQ.FT.

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 = 5.75 SQ.FT.



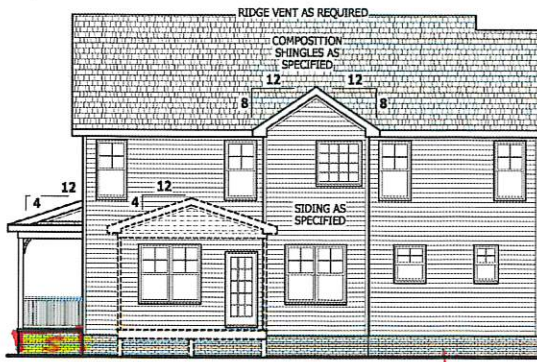
FRONT ELEVATION - B

SCALE 1/4" = 1'-0"



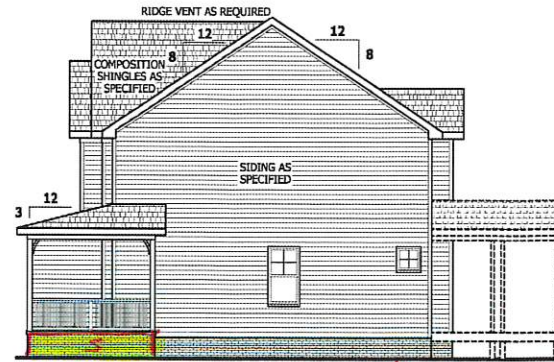
LEFT SIDE ELEVATION

SCALE 1/8" = 1'-0"



REAR ELEVATION

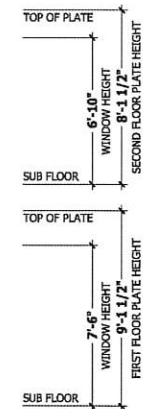
SCALE 1/8" = 1'-0"



RIGHT SIDE ELEVATION

SCALE 1/8" = 1'-0"

NOTICE TO CONTRACTOR
As a condition of bid, the contractor shall accept the Building Code and all applicable codes and standards.
APPROVED
05/12/2020
Harnett COUNTY
NORTH CAROLINA



SQUARE FOOTAGE

HEATED	HEATED
FIRST FLOOR	964 SQ.FT.
SECOND FLOOR	1154 SQ.FT.
TOTAL	2118 SQ.FT.
OPTIONAL UNHEATED	
DECK/PATIO/PORCH	167 SQ.FT.
TOTAL	167 SQ.FT.
UNHEATED	
FRONT PORCH	223 SQ.FT.
GARAGE	472 SQ.FT.
TOTAL	695 SQ.FT.

PURCHASER MUST VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE CONSTRUCTION BEGINS.
HAYNES HOME PLANS, INC. ASSUMES NO LIABILITY FOR CONTRACTOR PRACTICES AND MODIFICATIONS.
CODES AND CONDITIONS MAY VARY WITH LOCATION. A LOCAL DESIGNER, ARCHITECT OR ENGINEER SHOULD BE CONSULTED BEFORE CONSTRUCTION.
THESE DRAWINGS ARE INSTRUMENTS OF SERVICE AND AS SUCH SHALL REMAIN PROPERTY OF THE DESIGNER.

ELEVATION - B
Barstow II

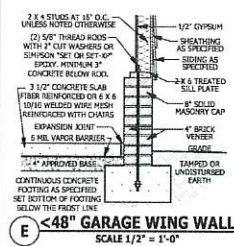
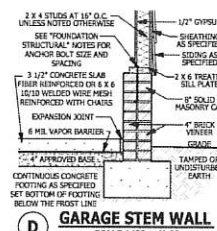
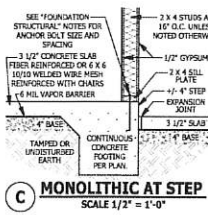
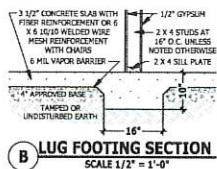
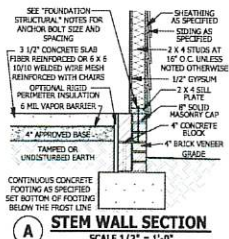
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P.O. Box 202, WINE RIDGE, NC 27588 • 919.455.1100 • FAX: 919.455.1100

SQUARE FOOTAGE

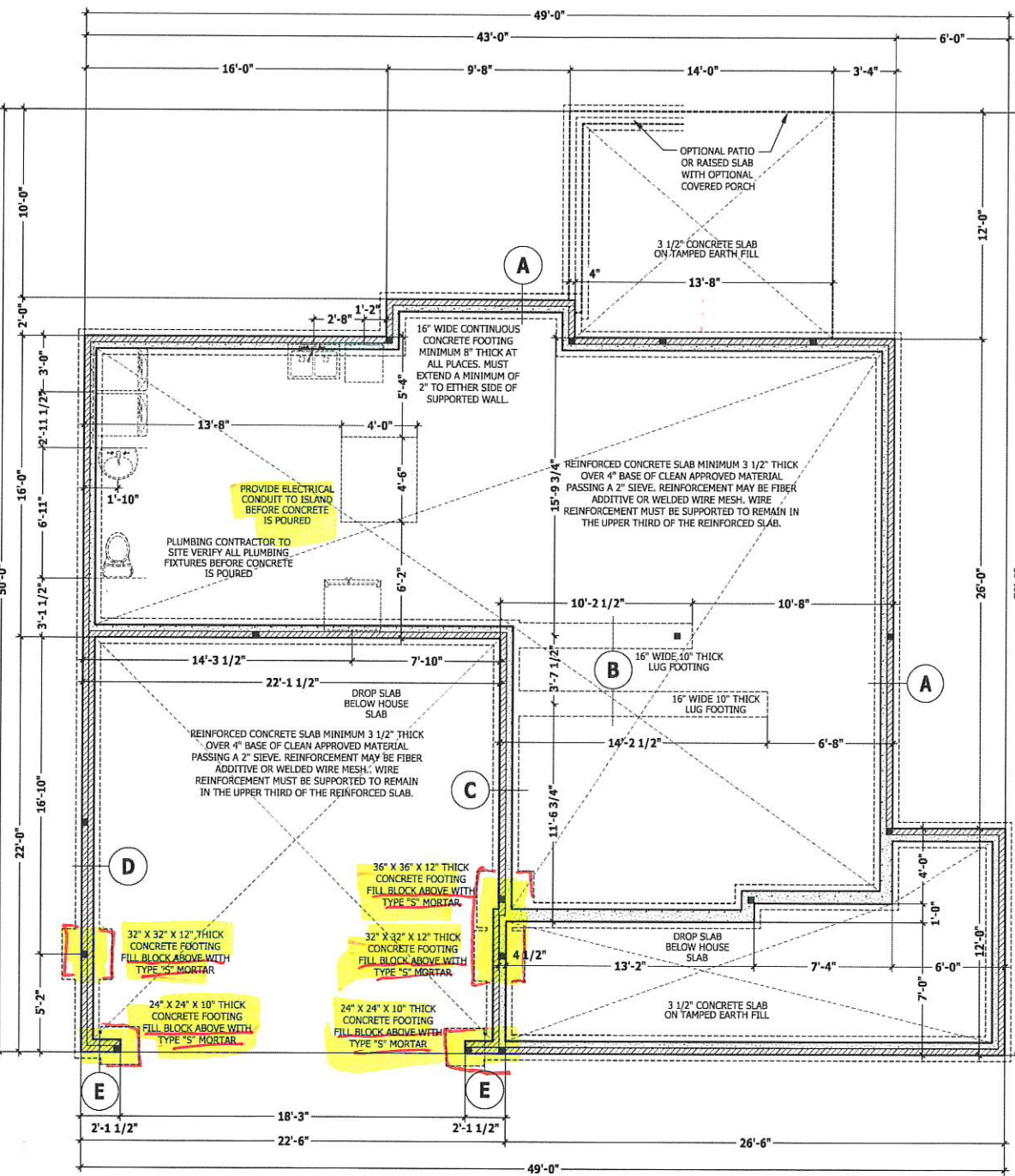
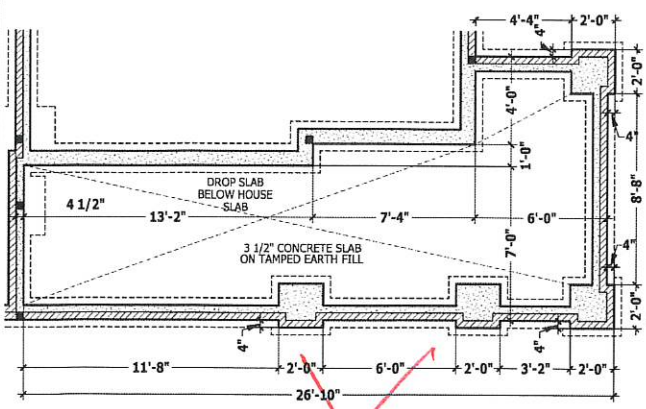
HEATED	HEATED
FIRST FLOOR	964 SQ.FT.
SECOND FLOOR	1154 SQ.FT.
TOTAL	2118 SQ.FT.
OPTIONAL UNHEATED	
DECK/PATIO/PORCH	167 SQ.FT.
TOTAL	167 SQ.FT.
UNHEATED	
FRONT PORCH	223 SQ.FT.
GARAGE	472 SQ.FT.
TOTAL	695 SQ.FT.

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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 extend 2" to either side of supported wall.
GUIDERS: (3) 2 X 10 glider 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 130 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.



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STEM WALL SLAB PLAN
Barstow II

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610 606 4606

SQUARE FOOTAGE	
HEATED	
FIRST FLOOR	564 SQ FT
SECOND FLOOR	1334 SQ FT
TOTAL	1898 SQ FT
OPTIONAL UNHEATED	
REAR PORCH	157 SQ FT
TOTAL	1857 SQ FT
UNHEATED	
FRONT PORCH	233 SQ FT
GAZON	472 SQ FT
TOTAL	695 SQ FT

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 rooms above the garage. If there are habitable rooms above the garage a minimum of 5/8" type X gypsum board must be installed on the garage ceiling.

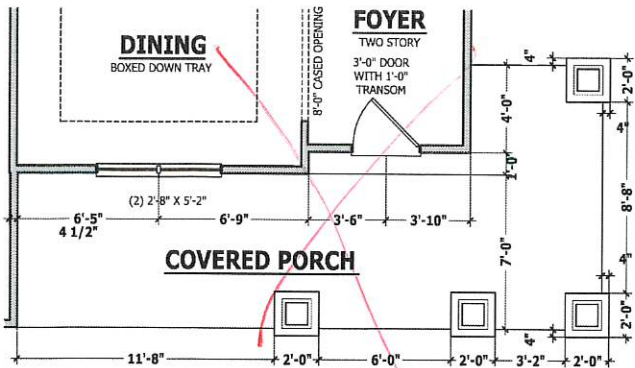
OPENING PENETRATIONS. Openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) in thickness, solid or honeycomb core steel doors not less than 1 3/8 inches (35 mm) thick, or 20-minute fire-rated doors.

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.



MUD ROOM WITH UPSTAIRS LAUNDRY



PORCH WITH ELEVATION B

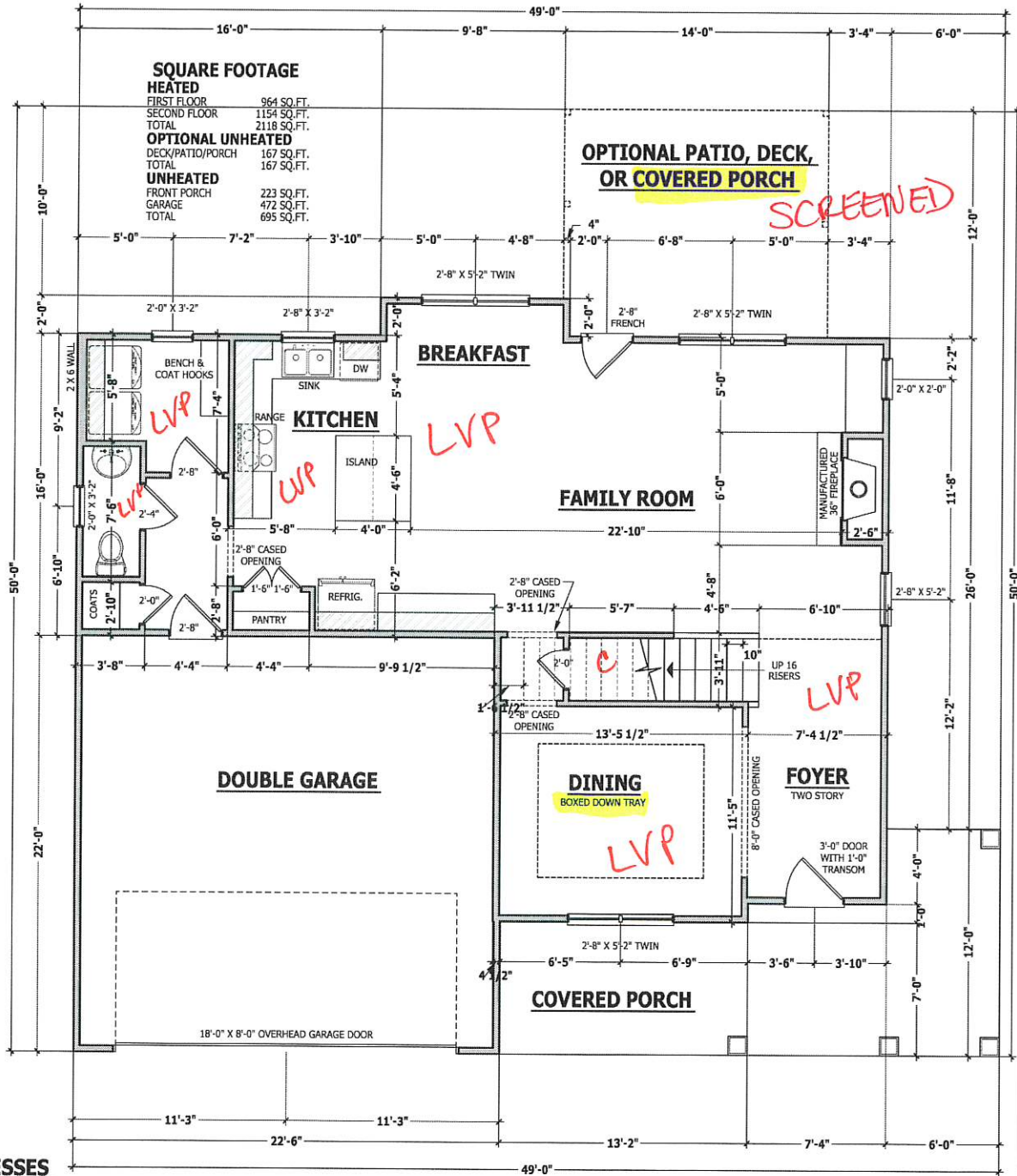
WALL THICKNESSES

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.

SQUARE FOOTAGE

HEATED	
FIRST FLOOR	964 SQ.FT.
SECOND FLOOR	1154 SQ.FT.
TOTAL	2118 SQ.FT.
OPTIONAL UNHEATED	
DECK/PATIO/PORCH	167 SQ.FT.
TOTAL	167 SQ.FT.
UNHEATED	
FRONT PORCH	223 SQ.FT.
GARAGE	472 SQ.FT.
TOTAL	695 SQ.FT.



FIRST FLOOR PLAN

SCALE 1/4" = 1'-0"

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FIRST FLOOR PLAN
Barstow II

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SQUARE FOOTAGE	
HEATED	
FIRST FLOOR	964 SQ.FT.
SECOND FLOOR	1154 SQ.FT.
TOTAL	2118 SQ.FT.
OPTIONAL UNHEATED	
DECK/PATIO/PORCH	167 SQ.FT.
TOTAL	167 SQ.FT.
UNHEATED	
FRONT PORCH	223 SQ.FT.
GARAGE	472 SQ.FT.
TOTAL	695 SQ.FT.

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3/24/2020

2003198

PAGE 3 OF 7

STRUCTURAL NOTES

All construction shall conform to the latest requirements of the 2018 North Carolina Residential Building Code, plus all local codes and regulations. This document in no way shall be construed to supersede the code.

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

DESIGN LOADS	LIVE LOAD (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 otherwise.

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 manufacturer's instructions.

TRUSS AND I-JOIST MEMBERS: All roof truss and I-joint layouts shall be prepared in accordance with this document. Trusses and I-joists shall be installed according to the manufacturer's specifications. Any change in truss or I-joint layout shall be coordinated with Haynes Home 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.

ROOF TRUSS REQUIREMENTS

TRUSS DESIGN: Trusses to be designed and engineered in accordance with these drawings. Any variation with these drawings must be brought to Haynes Home Plan, Inc. attention before construction begins.

ANCHORAGE: All required anchors for trusses due to uplift or bearing shall meet the requirements as specified on the truss schematics.

BEARING: All trusses shall be designed for bearing on SPF #2 plates or ledgers unless noted otherwise.

ATTIC ACCESS

SECTION RB07

RB07.1 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.

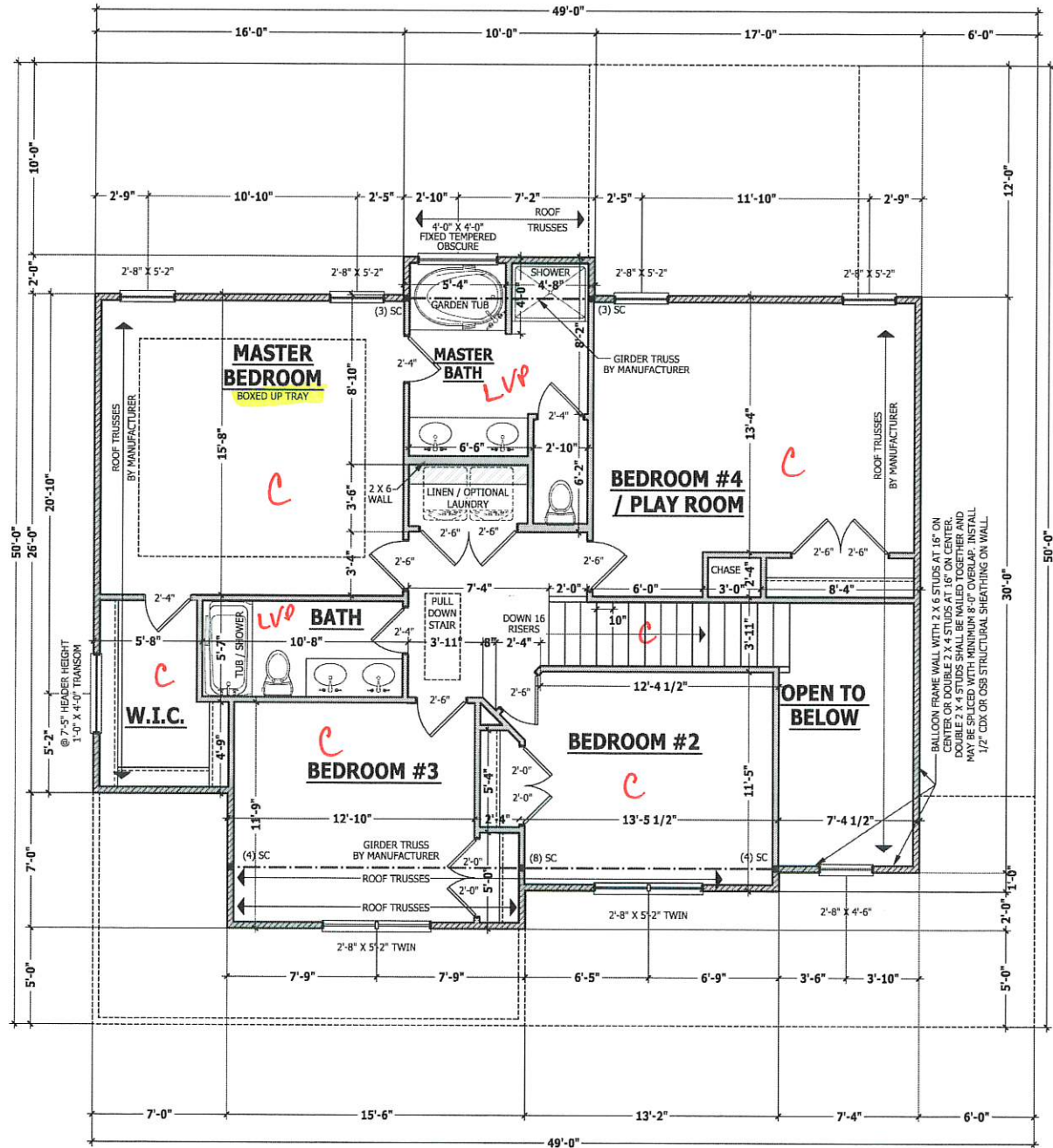
EXTERIOR HEADERS

- (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



SECOND FLOOR PLAN

SCALE 1/4" = 1'-0"

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

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SECOND FLOOR PLAN
Barstow II

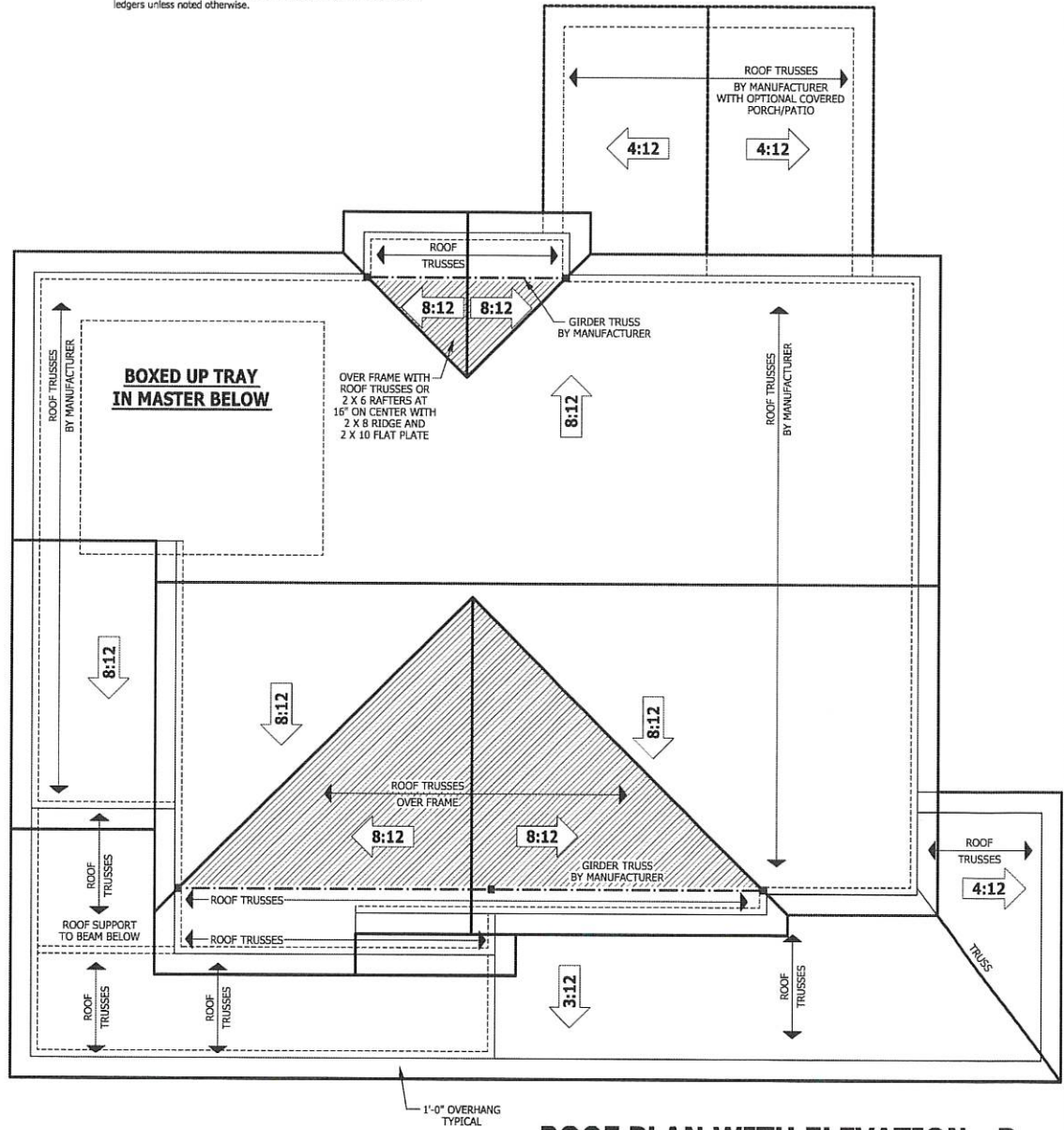
HAYNES WEAVER
HOMES
HOME PLANS, INC.
610 630 9100 • 610 630 4106

SQUARE FOOTAGE	
HEATED	964 SQ. FT.
SECOND FLOOR	1154 SQ. FT.
TOTAL	1154 SQ. FT.
OPTIONAL UNHEATED	
DECK/PATIO/PORCH	167 SQ. FT.
TOTAL	1321 SQ. FT.
UNHEATED	
RIGHT PORCH	333 SQ. FT.
GARAGE	472 SQ. FT.
TOTAL	805 SQ. FT.

ROOF TRUSS REQUIREMENTS

TRUSS DESIGN. Trusses to be designed and engineered in accordance with these drawings. Any variation with these drawings must be brought to Haynes Home Plan, Inc. attention before construction begins.
ANCHORAGE. All required anchors for trusses due to uplift or bearing shall meet the requirements as specified on the truss schematics.
BEARING. All trusses shall be designed for bearing on SPF #2 plates or ledgers unless noted otherwise.

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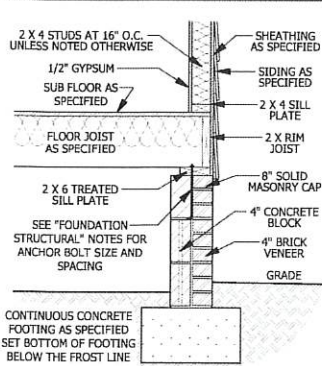
ROOF PLAN WITH ELEVATION - B

SCALE 1/4" = 1'-0"

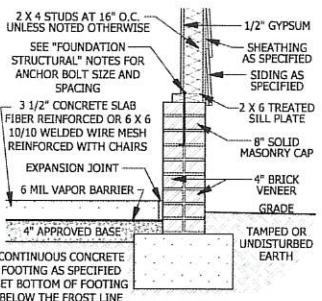
ROOF PLAN - B
Barstow II

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SQUARE FOOTAGE	
HEATED	
FIRST FLOOR	164 SQ. FT.
SECOND FLOOR	114 SQ. FT.
TOTAL	278 SQ. FT.
OPTIONAL UNHEATED	
DECK/PATIO/PORCH	10 SQ. FT.
TOTAL	10 SQ. FT.
UNHEATED	
FRONT PORCH	23 SQ. FT.
SCREENED	47 SQ. FT.
TOTAL	89 SQ. FT.



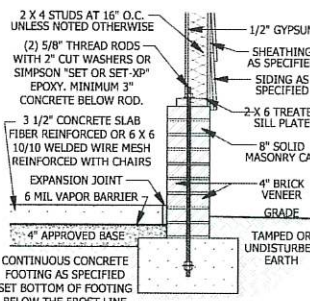
A CRAWL SPACE WALL
SCALE 3/4" = 1'-0"



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



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



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

DECK STAIR NOTES

SECTION AM110
AM110.1 Stairs shall be constructed per Figures AM110.1 and AM110.2. 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 be attached with 3/8 inch galvanized bolts with nuts and washers to security 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 beam 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. TREATMENT	MAX. POST HEIGHT	MIN. 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.

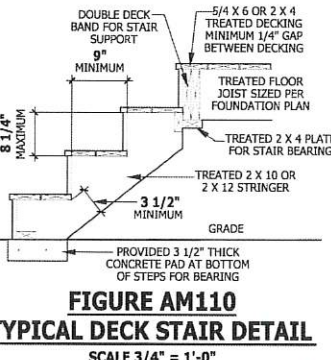
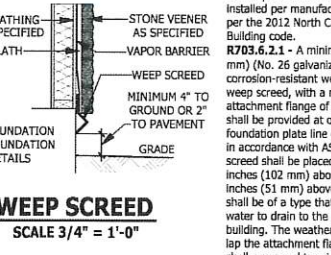
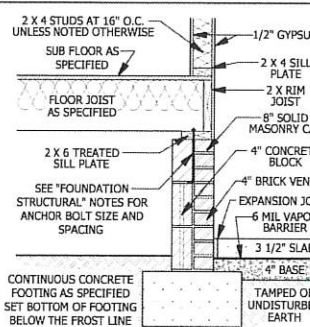


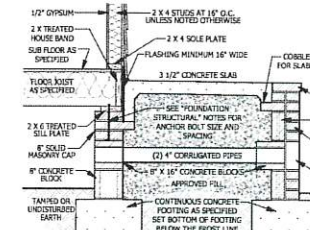
FIGURE AM110
TYPICAL DECK STAIR DETAIL
SCALE 3/4" = 1'-0"



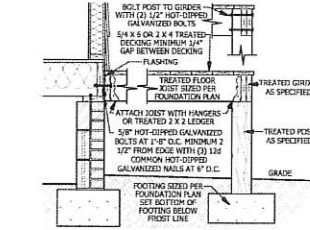
WEEP SCREEN
SCALE 3/4" = 1'-0"



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



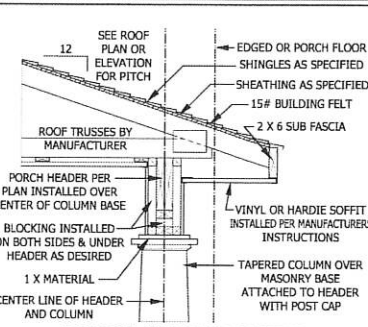
F FILLED PORCH SECTION WITH VENT
SCALE 1/2" = 1'-0"



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

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) attics spaces. (Unfinished 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.



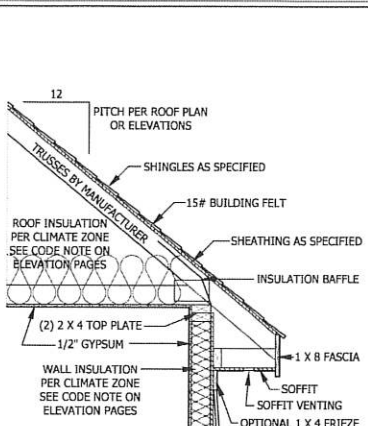
PORCH HEADER WITH TAPERED COLUMN
SCALE 3/4" = 1'-0"

CARBON MONOXIDE ALARMS

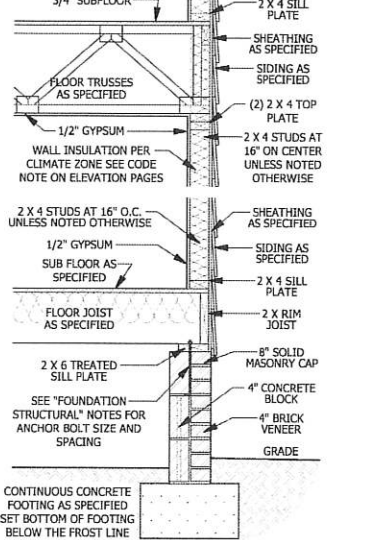
SECTION R315
R315.1 Carbon monoxide alarms. In new construction, dwelling units shall be provided with an approved carbon monoxide alarm installed outside of each separate sleeping area in the immediate vicinity of the bedroom(s) as directed by the alarm manufacturer.
R315.2 Where required in existing 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
R311.7.1 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.
R311.7.2 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.
R311.7.3.1 Rise height. The maximum rise height shall be 8 1/4 inches (210 mm). The rise shall be measured vertically between leading edges of the adjacent treads.
R311.7.4 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.
R311.7.5 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 1 1/2 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 to the wall.



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



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

PURCHASER MUST VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE CONSTRUCTION BEGIN. HAYNES HOME PLANS, INC. ASSUMES NO LIABILITY FOR CONTRACTORS PRACTICES OR PROCEDURES.
CODES AND CONTRACTS MAY VARY WITH LOCATION. A LOCAL DESIGNER, ARCHITECT OR ENGINEER SHOULD BE CONSULTED BEFORE CONSTRUCTION. THESE DRAWINGS ARE INSTRUMENTS OF SERVICE AND AS SUCH SHALL REMAIN PROPERTY OF THE DESIGNER.

TYPICAL DETAILS
Barstow II

HAYNES WEAVER HOMES
ONE MAIN STREET • D10 FROM ROAD

HAYNES WEAVER HOME PLANS, INC.

SQUARE FOOTAGE	HEATED FLOOR	FINISHED FLOOR	OPTIONAL UNHEATED	TOTAL UNHEATED
	964 SQ. FT.	1354 SQ. FT.	118 SQ. FT.	130 SQ. FT.
	1082 SQ. FT.	1472 SQ. FT.	187 SQ. FT.	187 SQ. FT.
	2266 SQ. FT.	1561 SQ. FT.	0 SQ. FT.	0 SQ. FT.
	2266 SQ. FT.	1561 SQ. FT.	0 SQ. FT.	0 SQ. FT.



ROOF & FLOOR TRUSSES & BEAMS

Reilly Road Industrial Park
Fayetteville, N.C. 28309
Phone: (910) 864-8787
Fax: (910) 864-4444

Bearing reactions less than or equal to 3000# are deemed to comply with the prescriptive Code requirements. The contractor shall refer to the attached Tables (derived from the prescriptive Code requirements) to determine the minimum foundation size and number of wood studs required to support reactions greater than 3000# but not greater than 15000#. A registered design professional shall be retained to design the support system for any reaction that exceeds those specified in the attached Tables. A registered design professional shall be retained to design the support system for all reactions that exceed 15000#.

Signature **Christine Shivy**
Christine Shivy

LOAD CHART FOR JACK STUDS

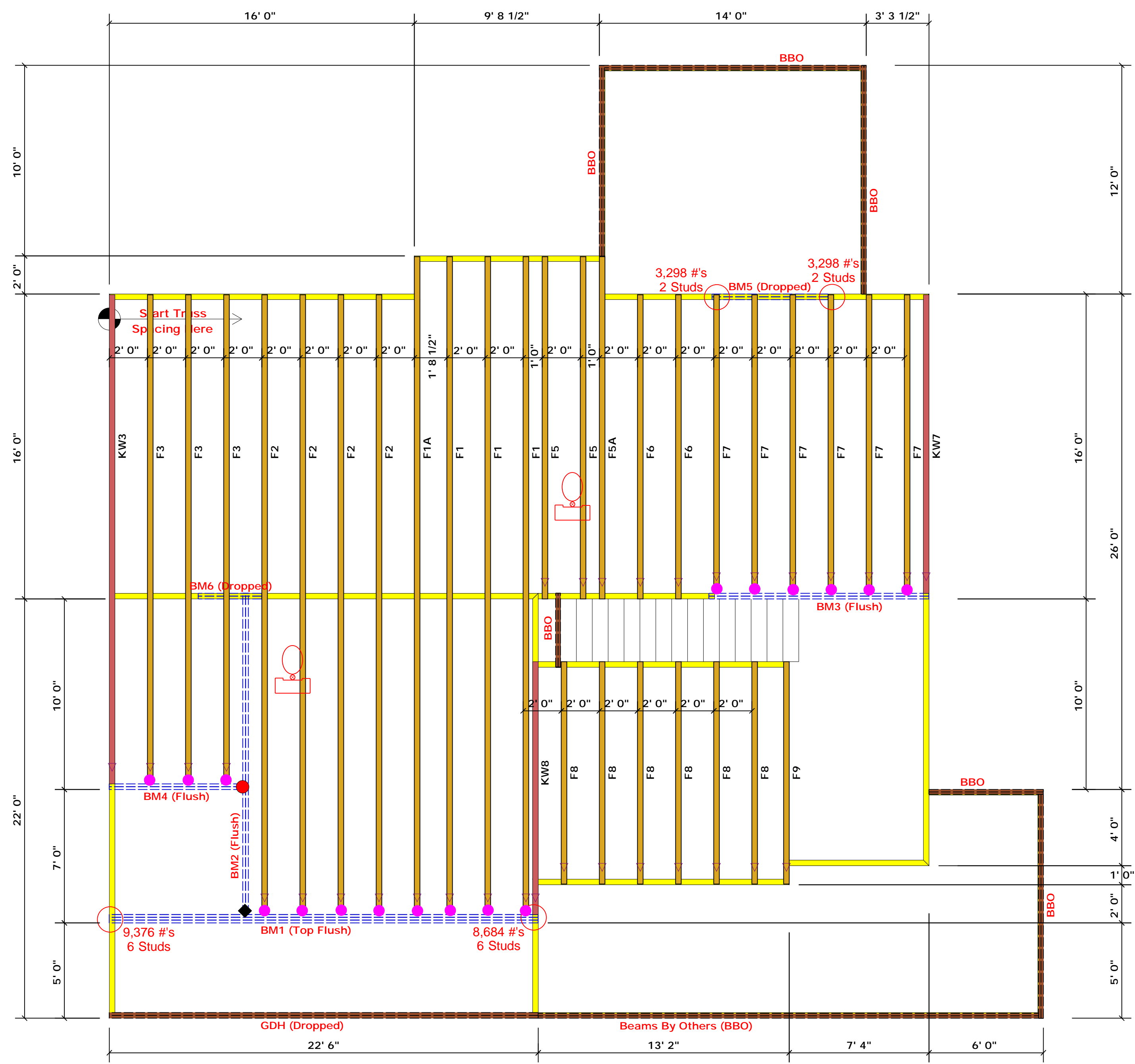
(BASED ON TABLES ROU11C1 & 11C2)
NUMBER OF JACK STUDS REQUIRED @ EA END OF HEADERS/STRIPS

END REACTION (IP TO)	REQ'D STUDS FOR 1" PLATE	END REACTION (IP TO)	REQ'D STUDS FOR 1" PLATE	END REACTION (IP TO)	REQ'D STUDS FOR 1" PLATE
1700	1	2550	1	3400	1
3400	2	5100	2	6800	2
5100	3	7650	3	10200	3
6800	4	10200	4	13600	4
8500	5	12750	5	17000	5
10200	6	15300	6		
11900	7				
13600	8				
15300	9				

WEAVER DEVELOPMENT	LILLINGTON / HARNETT
Sonnenburg Residence	5210 Spring Hill Church Rd.
Barstow I I	Floor
Seal Date	/ /
Quote #	Christine Shivy
Job #	Lenny Norris

WEAVER DEVELOPMENT	SONNENBURG RESIDENCE
BARSTOW I I	SEAL DATE
SEAL DATE	QUOTE #
QUOTE #	JOB #
JOB #	JO420-1863

THIS IS A TRUSS PLACEMENT DIAGRAM ONLY. These trusses are designed as individual building components to be incorporated into the building design at the specification of the building designer. See individual design sheets for each truss design identified on the placement drawing. The building designer is responsible for temporary and permanent bracing of the roof and floor system and for the overall structure. The design of the truss support structure including headers, beams, walls, and columns is the responsibility of the building designer. For general guidance regarding bracing, consult BCSI-B1 and BCSI-B3 provided with the truss delivery package or online @ sbcindustry.com.



- = HUS410 (Qty. 17)
- = THD410 (Qty. 1)
- ◆ = THDH412 (Qty. 1)

PlotID	Length	Product	Plies	Net Qty
BM5 (Dropped)	7' 0"	1-3/4"x 9-1/4" LVL Kerto-S	2	2
BM6 (Dropped)	4' 0"	1-3/4"x 9-1/4" LVL Kerto-S	2	2
GDH (Dropped)	23' 0"	1-3/4"x 14" LVL Kerto-S	2	2
BM2 (Flush)	17' 0"	1-3/4"x 16" LVL Kerto-S	2	2
BM3 (Flush)	12' 0"	1-3/4"x 16" LVL Kerto-S	2	2
BM4 (Flush)	7' 0"	1-3/4"x 16" LVL Kerto-S	2	2
BM1 (Top Flush)	23' 0"	1-3/4"x 23-7/8" LVL Kerto-S	3	3

Truss Placement Plan
SCALE: 1/4" = 1'-0"

▲ = Denotes Left End of Truss
(Reference Engineered Truss Drawing)

All Truss Reactions are Less than 3,000 lbs. Unless Noted Otherwise.
○ -- Denotes Reaction Greater than 3,000 lbs. Reaction / # of Studs



ROOF & FLOOR TRUSSES & BEAMS

Reilly Road Industrial Park
 Fayetteville, N.C. 28309
 Phone: (910) 864-8787
 Fax: (910) 864-4444

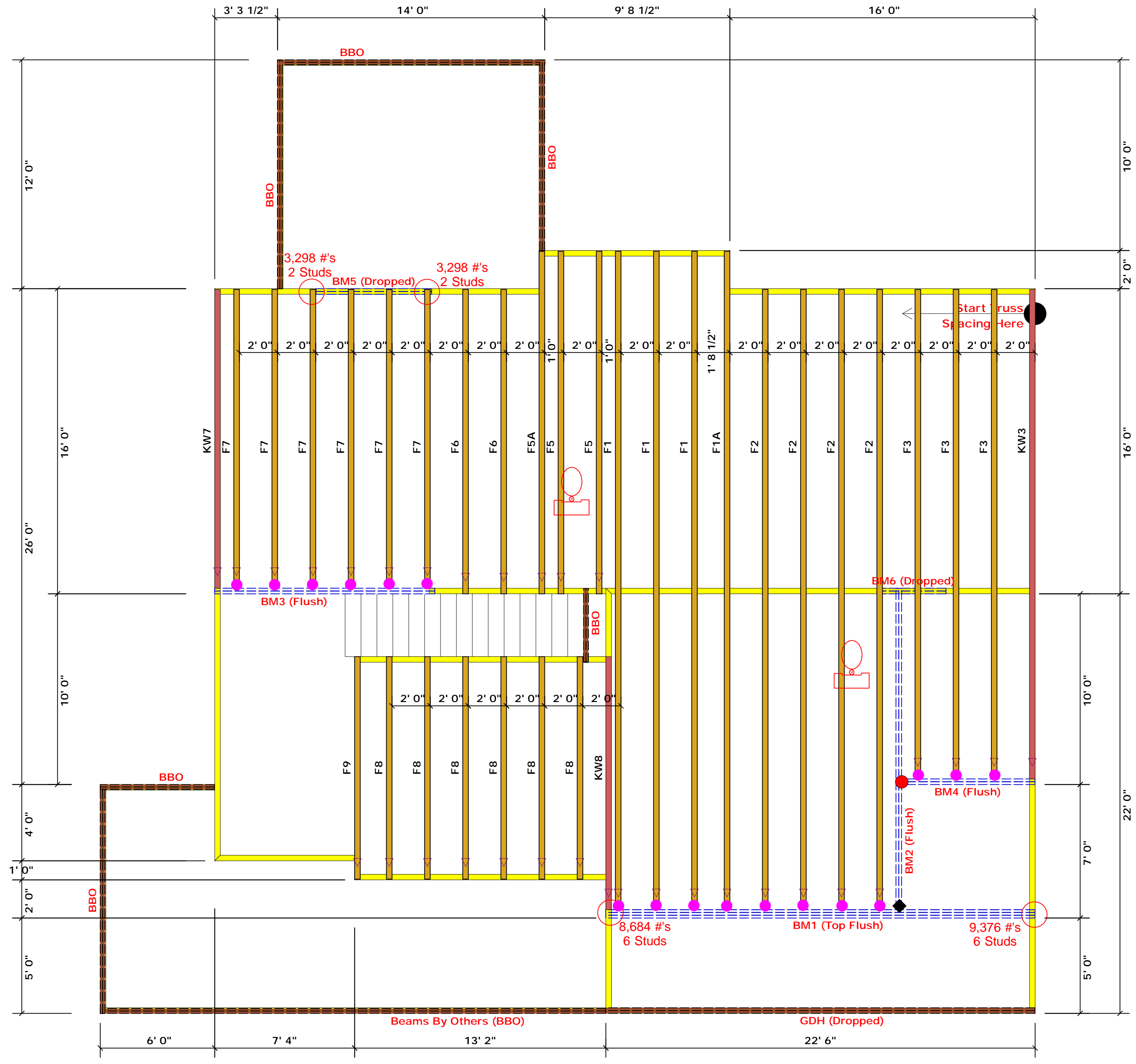
Bearing reactions less than or equal to 3000# are deemed to comply with the prescriptive Code requirements. The contractor shall refer to the attached Tables (derived from the prescriptive Code requirements) to determine the minimum foundation size and number of wood studs required to support reactions greater than 3000# but not greater than 15000#. A registered design professional shall be retained to design the support system for any reaction that exceeds those specified in the attached Tables. A registered design professional shall be retained to design the support system for all reactions that exceed 15000#.

Signature Christine Shivy
 Christine Shivy

LOAD CHART FOR JACK STUDS

(BASED ON TABLES ROEHLIC 6 (B))
 NUMBER OF JACK STUDS REQUIRED @ EA END OF HEADERS/ROOFER

END REACTION (IP TO)	REQ'D STUDS FOR JOIST/FLOOR	END REACTION (IP TO)	REQ'D STUDS FOR JOIST/BEAM	END REACTION (IP TO)	REQ'D STUDS FOR JOIST/BEAM
1700	1	2550	1	3400	1
3400	2	5100	2	6800	2
5100	3	7650	3	10200	3
6800	4	10200	4	13600	4
8500	5	12750	5	17000	5
10200	6	15300	6		
11900	7				
13600	8				
15300	9				



- = HUS410 (Qty. 17)
- = THD410 (Qty. 1)
- ◆ = THDH412 (Qty. 1)

PlotID	Length	Product	Plies	Net Qty
BM5 (Dropped)	7' 0"	1-3/4"x 9-1/4" LVL Kerto-S	2	2
BM6 (Dropped)	4' 0"	1-3/4"x 9-1/4" LVL Kerto-S	2	2
GDH (Dropped)	23' 0"	1-3/4"x 14" LVL Kerto-S	2	2
BM2 (Flush)	17' 0"	1-3/4"x 16" LVL Kerto-S	2	2
BM3 (Flush)	12' 0"	1-3/4"x 16" LVL Kerto-S	2	2
BM4 (Flush)	7' 0"	1-3/4"x 16" LVL Kerto-S	2	2
BM1 (Top Flush)	23' 0"	1-3/4"x 23-7/8" LVL Kerto-S	3	3

Truss Placement Plan
SCALE: 1/4" = 1'-0"

▲ = Denotes Left End of Truss
 (Reference Engineered Truss Drawing)

All Truss Reactions are Less than 3,000 lbs. Unless Noted Otherwise.
 ○ -- Denotes Reaction Greater than 3,000 lbs. Reaction / # of Studs

WEAVER DEVELOPMENT	LILLINGTON / HARNETT				
Sonnenburg Residence	5210 Spring Hill Church Rd.	Floor	/	Christine Shivy	Lenny Norris
Barstow I I					
Seal Date					
QUOTE #					
JOB #					J0420-1863

THIS IS A TRUSS PLACEMENT DIAGRAM ONLY. These trusses are designed as individual building components to be incorporated into the building design at the specification of the building designer. See individual design sheets for each truss design identified on the placement drawing. The building designer is responsible for temporary and permanent bracing of the roof and floor system and for the overall structure. The design of the truss support structure including headers, beams, walls, and columns is the responsibility of the building designer. For general guidance regarding bracing, consult BCSI-B1 and BCSI-B3 provided with the truss delivery package or online @ sbcindustry.com.



ROOF & FLOOR TRUSSES & BEAMS

Reilly Road Industrial Park
Fayetteville, N.C. 28309
Phone: (910) 864-8787
Fax: (910) 864-4444

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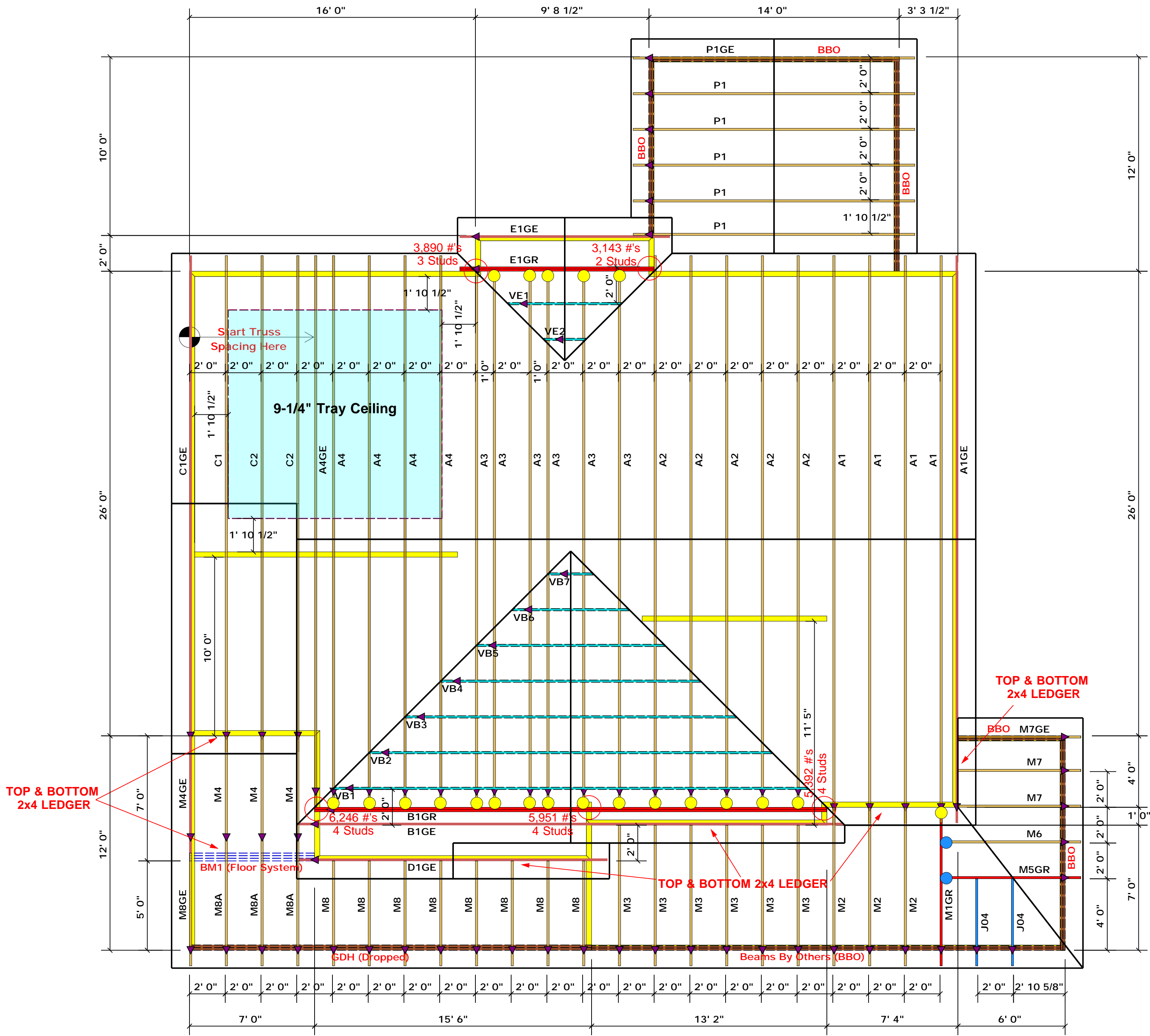
Signature **Christine Shivy**
Christine Shivy

LOAD CHART FOR JACK STUDS

(BASED ON TABLES ROEHLIC & D'S)

NUMBER OF JACK STUDS REQUIRED @ EA END OF HEADERS/STROPS

END REACTION (UP TO)	REQ'D STUDS FOR 1" TRAY	END REACTION (UP TO)	REQ'D STUDS FOR 1" TRAY	END REACTION (UP TO)	REQ'D STUDS FOR 1" TRAY
1700	1	2550	1	3400	1
3400	2	5100	2	6800	2
5100	3	7650	3	10200	3
6800	4	10200	4	13600	4
8500	5	12750	5	17000	5
10200	6	15300	6		
11900	7				
13600	8				
15300	9				



- = HUS26 (Qty. 21)
- = JUS24 (Qty. 2)

▲ = Denotes Left End of Truss
(Reference Engineered Truss Drawing)

Truss Placement Plan SCALE: 1/4" = 1'-0"

All Truss Reactions are Less than 3,000 lbs. Unless Noted Otherwise.

○ -- Denotes Reaction Greater than 3,000 lbs. Reaction / # of Studs

WEAVER DEVELOPMENT	LILLINGTON / HARNETT				
JOB NAME	5210 Spring Hill Church Rd.	MODEL	Roof	DATE REV.	/ /
PLAN	Barstow I I	DRAWN BY	Christine Shivy	SALES REP.	Lenny Norris
SEAL DATE		QUOTE #			
JOB #					J0420-1862

THIS IS A TRUSS PLACEMENT DIAGRAM ONLY. These trusses are designed as individual building components to be incorporated into the building design at the specification of the building designer. See individual design sheets for each truss design identified on the placement drawing. The building designer is responsible for temporary and permanent bracing of the roof and floor system and for the overall structure. The design of the truss support structure including headers, beams, walls, and columns is the responsibility of the building designer. For general guidance regarding bracing, consult BCSI-B1 and BCSI-B3 provided with the truss delivery package or online @ sbcindustry.com.

PROCESSES, CODES AND CONDITIONS MAY VARY WITH LOCATION. A LOCAL DESIGNER, ARCHITECT OR ENGINEER SHOULD BE CONSULTED BEFORE CONSTRUCTION. THESE DRAWINGS ARE INSTRUMENTS OF SERVICE AND AS SUCH SHALL REMAIN PROPERTY OF THE DESIGNER.

CONCORTECH
ROOF TRUSSES & BEAMS
 Reilly Road, Industrial Park
 Fayetteville, N.C. 28305
 Phone: (910) 864-8780
 Fax: (910) 864-4444

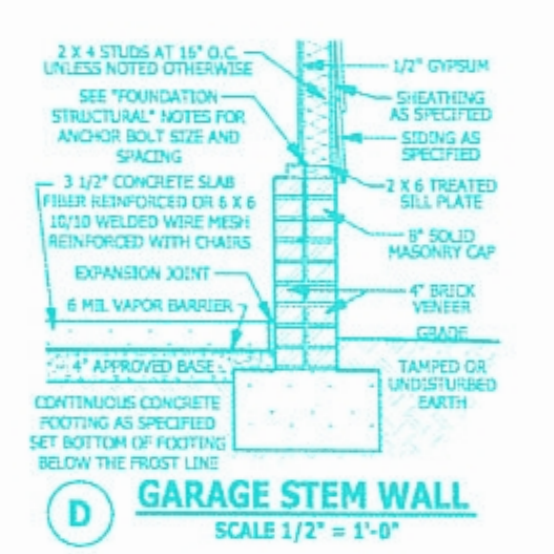
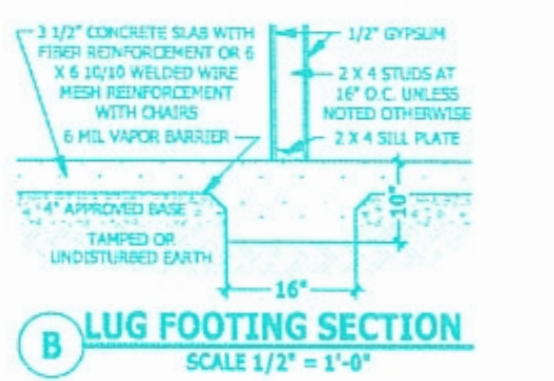
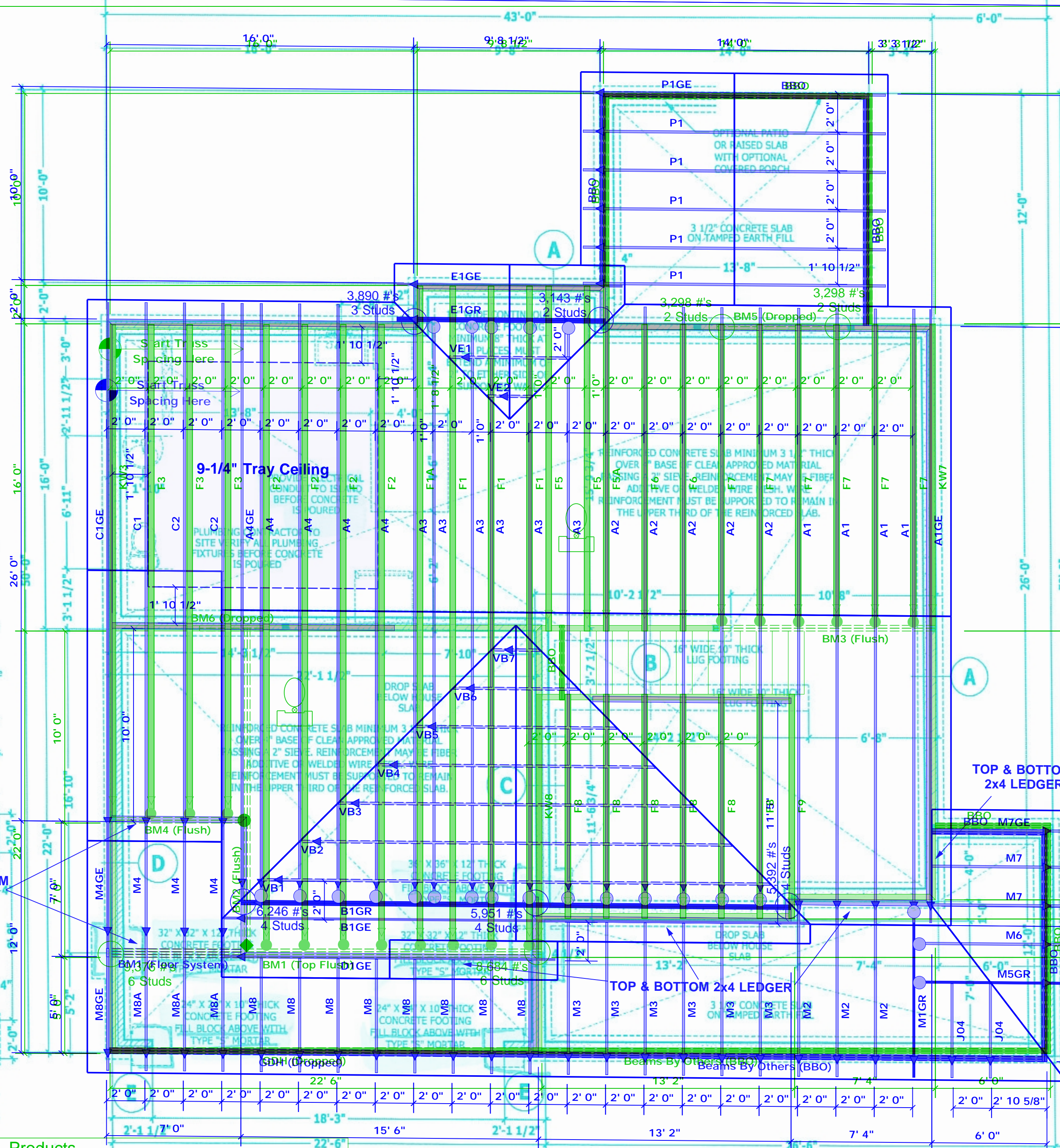
Bearing reactions shall be less than or equal to 3000 lbs. unless noted otherwise. The contractor shall refer to the attached Table for the minimum load requirements. The contractor shall refer to the attached Table for the minimum load requirements. The contractor shall refer to the attached Table for the minimum load requirements. The contractor shall refer to the attached Table for the minimum load requirements.

Signature: Christine Shivy
 Signature: Christine Shivy
 Signature: Christine Shivy

NO. OF REACTION	NO. OF STUDS	LOAD CHART FOR PACK		NO. OF STUDS	NO. OF REACTION
		NO. OF STUDS	NO. OF REACTION		
1700	1	1700	1	1700	1
3400	2	3400	2	3400	2
5100	3	5100	3	5100	3
6800	4	6800	4	6800	4
8500	5	8500	5	8500	5
10200	6	10200	6	10200	6
11900	7	11900	7	11900	7
13600	8	13600	8	13600	8
15300	9	15300	9	15300	9

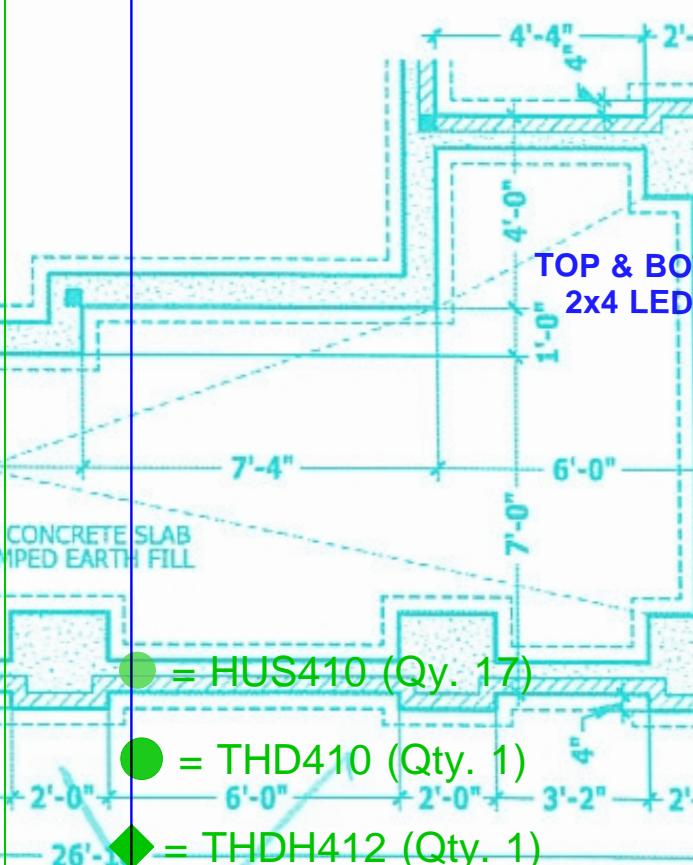
BUILDER	JOB NAME	CITY / CO.	ADDRESS
Weaver Development	Sonnenburg Residence	Lillington / Harnett	5210 Spring Hill Church Rd.
PLANNER	DATE	BY	FOR
Weaver Development	3/24/2020	Lillington / Harnett	Lillington / Harnett
DATE	BY	FOR	DATE
3/24/2020	Christine Shivy	5210 Spring Hill Church Rd.	3/24/2020
DATE	BY	FOR	DATE
3/24/2020	Lenny Norris	5210 Spring Hill Church Rd.	3/24/2020
DATE	BY	FOR	DATE
3/24/2020	Christine Shivy	5210 Spring Hill Church Rd.	3/24/2020

WHEELER HOMES HOME PLANS, INC.
 610 N.W. 21st St. - Ft. Lauderdale, FL 33309
 954.574.1100



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 extend 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 180" 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.



Products

PlotID	Length	Product	Plies	Net Qty
BM5 (Dropped)	7'-0"	1-3/4" x 9-1/4" LVL Kerto-S	2	2
BM6 (Dropped)	4'-0"	1-3/4" x 9-1/4" LVL Kerto-S	2	2
GDH (Dropped)	23'-0"	1-3/4" x 14" LVL Kerto-S	2	2
BM2 (Flush)	17'-0"	1-3/4" x 16" LVL Kerto-S	2	2
BM3 (Flush)	7'-0"	1-3/4" x 16" LVL Kerto-S	2	2
BM4 (Flush)	7'-0"	1-3/4" x 16" LVL Kerto-S	2	2
BM1 (Top Flush)	23'-0"	1-3/4" x 23-7/8" LVL Kerto-S	3	3

Truss Placement Plan
 SCALE: 1/4" = 1'-0"

Truss Placement Plan
 SCALE: 1/4" = 1'-0"

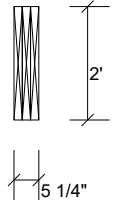
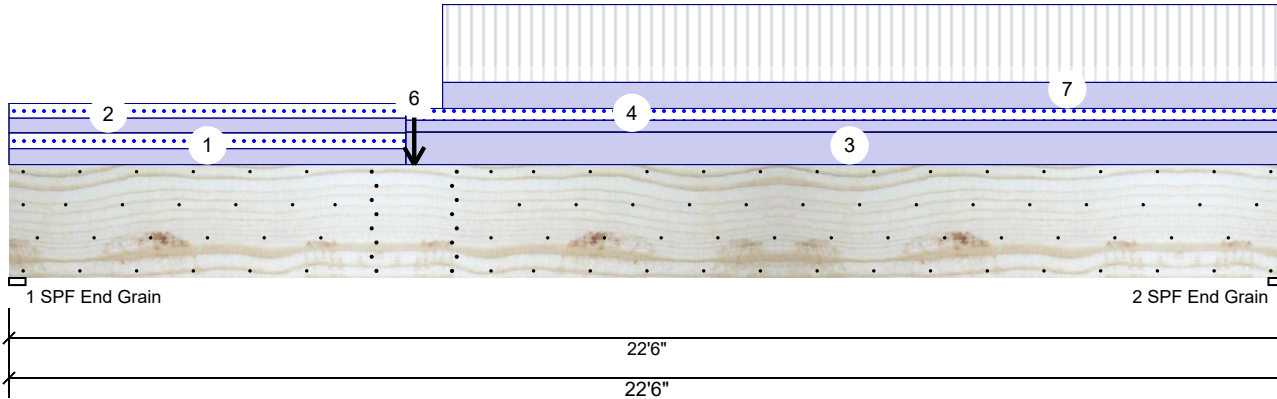
▲ = Denotes Left End of Truss (Reference Engineered Truss Drawing)

All Truss Reactions are Less than 3,000 lbs. unless noted otherwise. Reaction of Stud Stubs

○ = Denotes Reaction Greater than 3,000 lbs.

BM1 Kerto-S LVL 1.750" X 24.000" 3-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	3	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	Yes
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	5426	3950	1162	0	0
2	4801	3883	685	0	0

Bearings

Bearing	Length	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	59%	3950 / 5426	9376	L	D+L
2 - SPF End Grain	3.500"	54%	3883 / 4801	8684	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	61381 ft-lb	7'11 3/16"	114169 ft-lb	0.538 (54%)	D+L	L
Unbraced	61381 ft-lb	7'11 3/16"	61526 ft-lb	0.998 (100%)	D+L	L
Shear	9940 lb	2'2 5/8"	26880 lb	0.370 (37%)	D+L	L
LL Defl inch	0.282 (L/937)	10'6 9/16"	0.552 (L/480)	0.510 (51%)	L	L
TL Defl inch	0.479 (L/553)	10'8 1/4"	0.735 (L/360)	0.650 (65%)	D+L	L

Design Notes

- 1 Fasten all plies using 4 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- 2 Refer to last page of calculations for fasteners required for specified loads.
- 3 Concentrated load fastener specification is in addition to hanger fasteners if a hanger is present.
- 4 Simpson fasteners applied from a single side of the member use tip values where published.
- 5 Girders are designed to be supported on the bottom edge only.
- 6 Top loads must be supported equally by all plies.
- 7 Top must be laterally braced at a maximum of 4'2 5/8" o.c.
- 8 Bottom braced at bearings.
- 9 Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Part. Uniform	0-0-0 to 7-0-0		Far Face	61 PLF	0 PLF	61 PLF	0 PLF	0 PLF	M4
2	Part. Uniform	0-0-0 to 7-0-0		Near Face	56 PLF	0 PLF	56 PLF	0 PLF	0 PLF	M8A
3	Part. Uniform	7-0-0 to 22-6-0		Top	125 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Wall

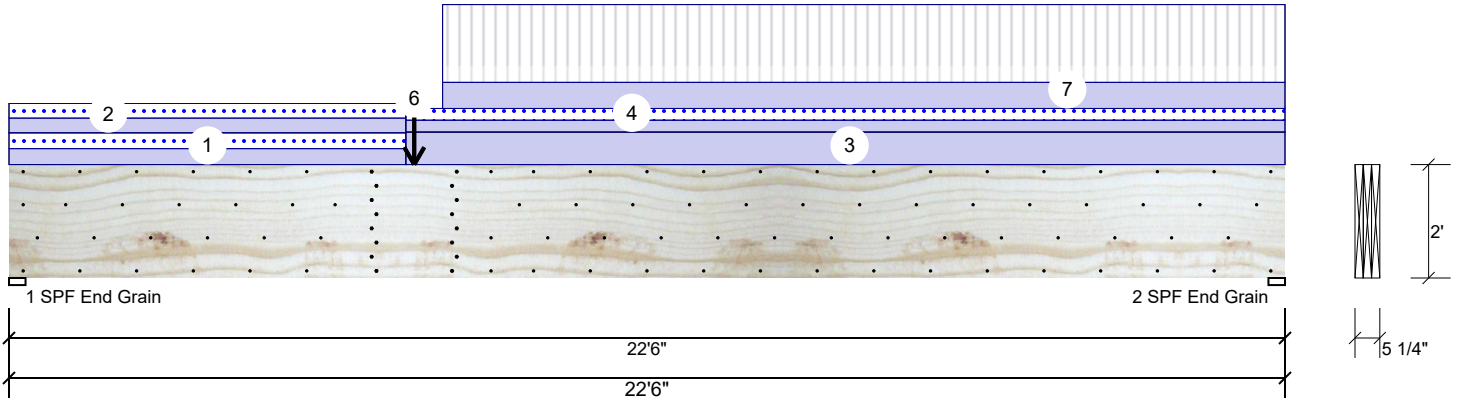
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<p>Notes</p> <p>Calculated Structural Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.</p> <p>Lumber</p> <p>1. Dry service conditions, unless noted otherwise 2. LVL not to be treated with fire retardant or corrosive chemicals</p> <p>Handling & Installation</p> <p>1. LVL beams must not be cut or drilled 2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals 3. Damaged Beams must not be used 4. Design assumes top edge is laterally restrained</p> <p>6. For flat roofs provide proper drainage to prevent ponding</p>	<p>Manufacturer Info</p> <p>Metsä Wood 301 Merritt 7 Building, 2nd Floor Norwalk, CT 06851 (800) 622-5850 www.metsawood.com/us ICC-ES: ESR-3633</p>	<p>Comtech, Inc. 1001 S. Reilly Road, Suite #639 Fayetteville, NC USA 28314 910-864-TRUS</p>

This design is valid until 1/8/2023

BM1 Kerto-S LVL 1.750" X 24.000" 3-Ply - PASSED

Level: Level



...Continued from page 1

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
4	Part. Uniform	7-0-0 to 22-6-0		Near Face	45 PLF	0 PLF	45 PLF	0 PLF	0 PLF	M8
5	Point	7-1-12		Far Face	1933 lb	5800 lb	0 lb	0 lb	0 lb	BM2
6	Point	7-1-12		Top	331 lb	0 lb	331 lb	0 lb	0 lb	D1GE
7	Part. Uniform	7-7-12 to 22-6-0		Far Face	100 PLF	298 PLF	0 PLF	0 PLF	0 PLF	F1
	Self Weight				28 PLF					

Notes

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Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

Manufacturer Info

Metsä Wood
 301 Merritt 7 Building, 2nd Floor
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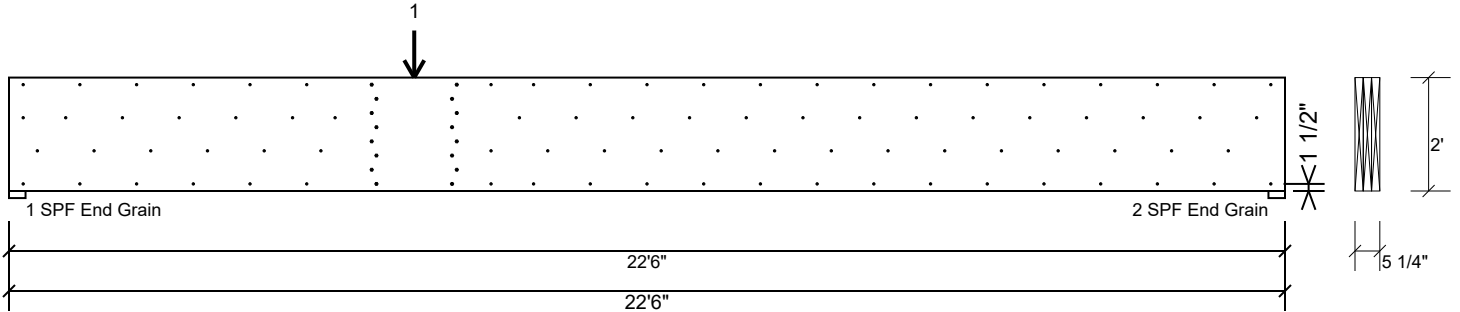
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 910-864-TRUS



This design is valid until 1/8/2023

BM1 Kerto-S LVL 1.750" X 24.000" 3-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 4 rows of 10d Box nails (.128x3") at 12" o.c.. except for regions covered by concentrated load fastening. Nail from both sides. Maximum end distance not to exceed 6"

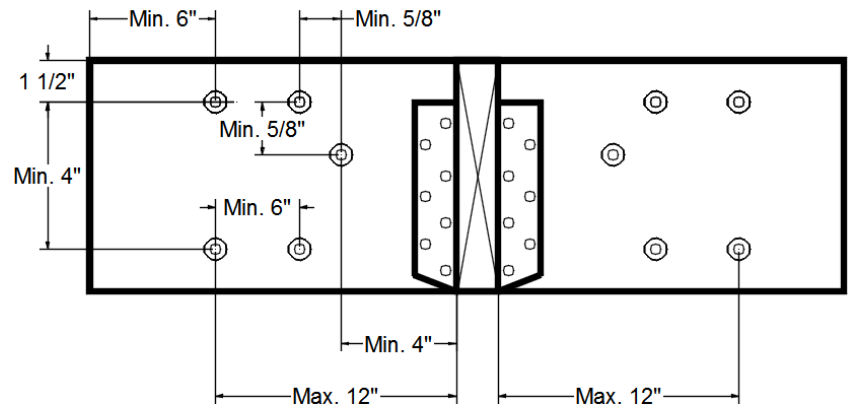
Capacity	81.0 %
Load	265.3 PLF
Yield Limit per Foot	327.4 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	D+L
Duration Factor	1.00

Concentrated Load

Fasten at concentrated side load at 7-1-12 with a minimum of (16) – SDW22500 in the pattern shown. All fasteners shall be installed with the head on the side of the applied load.

Capacity	99.1 %
Load	5155.3lb.
Total Yield Limit	5200.0 lb.
Cg	1.0000
Yield Limit per Fastener	325.0 lb.
Yield Mode	Lookup
Load Combination	D+L
Duration Factor	1.00

Min/Max fastener distances for Concentrated Side Loads



Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

Manufacturer Info

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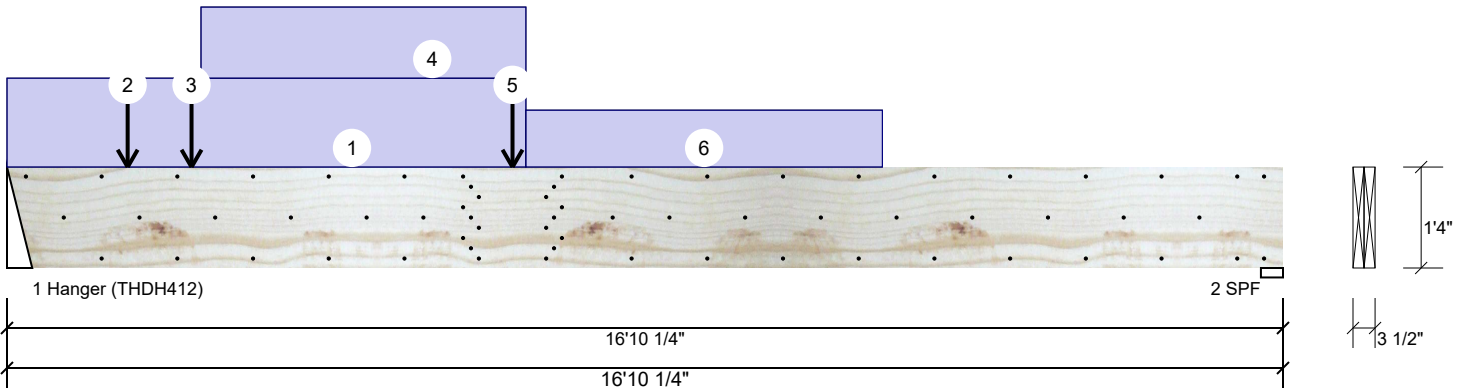
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This design is valid until 1/8/2023

BM2 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	975	4669	3064	0	0
2	628	1249	447	0	0

Bearings

Bearing	Length	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	4.000"	63%	4669 / 3064	7733	L	D+S
2 - SPF	3.500"	39%	1249 / 806	2056	L	D+0.75(L+S)

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	17095 ft-lb	6'8 1/8"	34565 ft-lb	0.495 (49%)	D+L	L
Unbraced	18869 ft-lb	6'8 1/8"	18880 ft-lb	0.999 (100%)	D+0.75(L+S)	L
Shear	7514 lb	1'7 1/8"	13739 lb	0.547 (55%)	D+S	L
LL Defl inch	0.156 (L/1258)	7'4 1/16"	0.409 (L/480)	0.380 (38%)	0.75(L+S)	L
TL Defl inch	0.381 (L/516)	7'4 7/8"	0.546 (L/360)	0.700 (70%)	D+0.75(L+S)	L

Design Notes

- 1 Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- 2 Refer to last page of calculations for fasteners required for specified loads.
- 3 Concentrated load fastener specification is in addition to hanger fasteners if a hanger is present.
- 4 Fill all hanger nailing holes.
- 5 Girders are designed to be supported on the bottom edge only.
- 6 Top loads must be supported equally by all plies.
- 7 Top must be laterally braced at a maximum of 6'2 1/4" o.c.
- 8 Bottom braced at bearings.
- 9 Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Part. Uniform	0-0-0 to 6-10-4		Top	125 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Wall
2	Point	1-7-2		Top	388 lb	0 lb	388 lb	0 lb	0 lb	B1GE
3	Point	2-5-4		Top	3123 lb	0 lb	3123 lb	0 lb	0 lb	B1GR

Continued on page 2...

Notes

Calculated Structural Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
 2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
 3. Damaged Beams must not be used
 4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

Manufacturer Info

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 301 Merritt 7 Building, 2nd Floor
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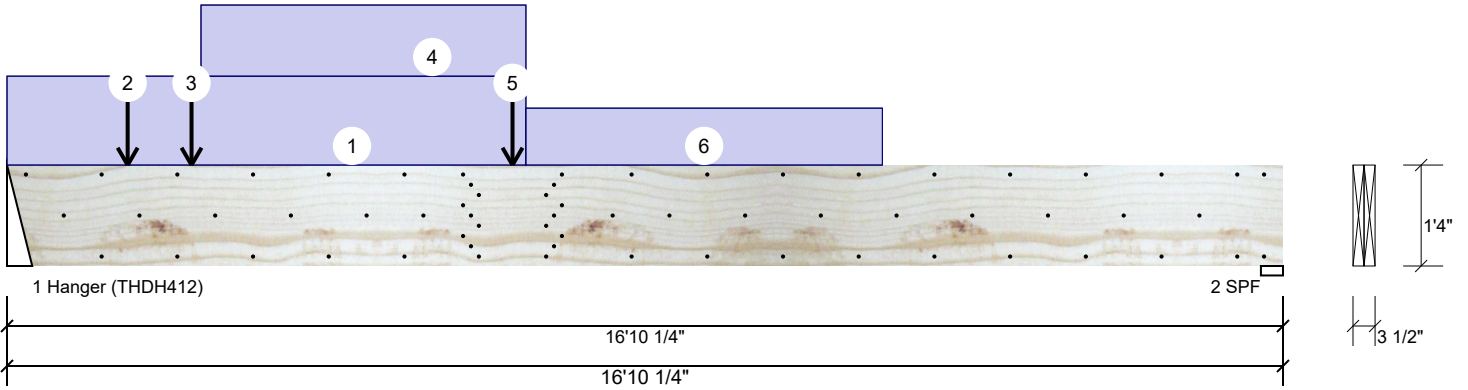
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This design is valid until 1/8/2023

BM2 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



...Continued from page 1

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
4	Part. Uniform	2-6-12 to 6-10-4		Top	100 PLF	0 PLF	0 PLF	0 PLF	0 PLF	A4GE
5	Point	6-8-2		Near Face	535 lb	1603 lb	0 lb	0 lb	0 lb	BM4
6	Part. Uniform Self Weight	6-10-4 to 11-6-12		Top	80 PLF 12 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Interior Wall

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 1/8/2023

Manufacturer Info

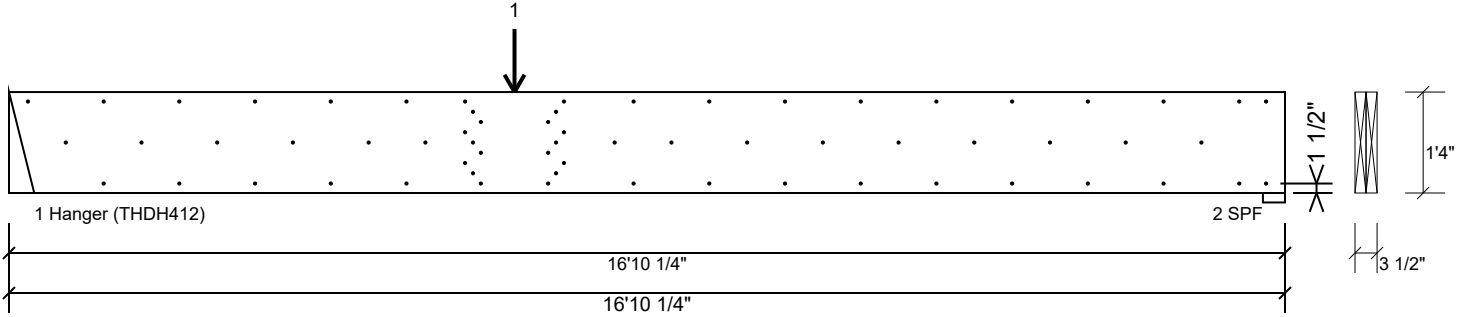
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BM2 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c.. except for regions covered by concentrated load fastening.
 Maximum end distance not to exceed 6"

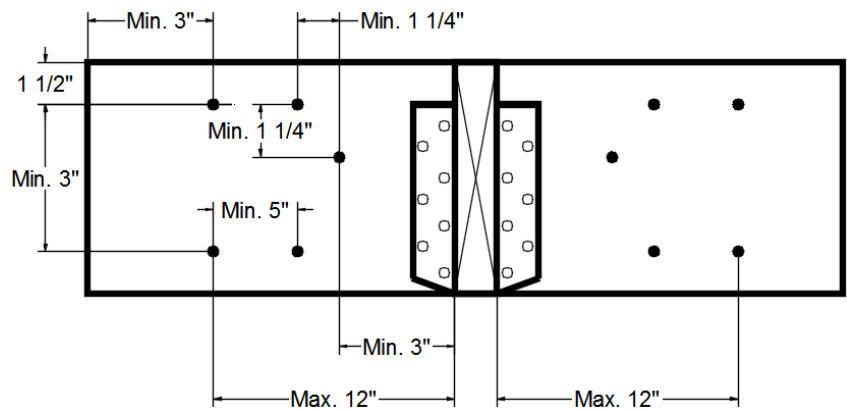
Capacity	0.0 %
Load	0.0 PLF
Yield Limit per Foot	245.6 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

Concentrated Load

Fasten at concentrated side load at 6-8-2 with a minimum of (18) – 10d Box nails (.128x3") in the pattern shown.

Capacity	72.6 %
Load	1069.0lb.
Total Yield Limit	1473.0 lb.
Cg	0.9998
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Load Combination	D+L
Duration Factor	1.00

Min/Max fastener distances for Concentrated Side Loads



Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 1/8/2023

Manufacturer Info

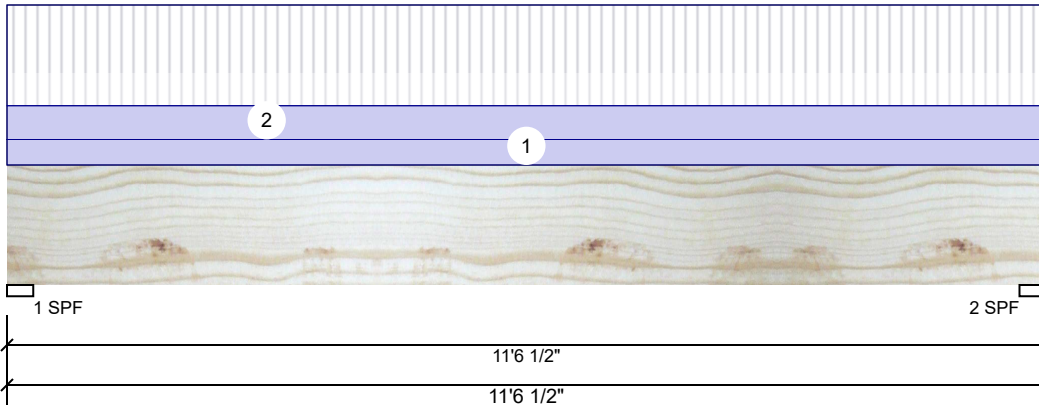
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BM3 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	1824	1145	0	0	0
2	1824	1145	0	0	0

Bearings

Bearing	Length	Cap. React D/L lb	Total Ld. Case	Ld. Comb.
1 - SPF	3.500"	57% 1145 / 1824	2969 L	D+L
2 - SPF	3.500"	57% 1145 / 1824	2969 L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	7929 ft-lb	5'9 1/4"	34565 ft-lb	0.229 (23%)	D+L	L
Unbraced	7929 ft-lb	5'9 1/4"	11118 ft-lb	0.713 (71%)	D+L	L
Shear	2733 lb	9'11 7/8"	11947 lb	0.229 (23%)	D+L	L
LL Defl inch	0.055 (L/2411)	5'9 1/4"	0.278 (L/480)	0.200 (20%)	L	L
TL Defl inch	0.090 (L/1481)	5'9 1/4"	0.555 (L/240)	0.160 (16%)	D+L	L

Design Notes

- Girders are designed to be supported on the bottom edge only.
- Multiple plies must be fastened together as per manufacturer's details.
- Top loads must be supported equally by all plies.
- Top braced at bearings.
- Bottom braced at bearings.
- Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	80 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Interior Wall
2	Uniform			Far Face	106 PLF	316 PLF	0 PLF	0 PLF	0 PLF	F7
	Self Weight				12 PLF					

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

- Dry service conditions, unless noted otherwise
- LVL not to be treated with fire retardant or corrosive chemicals

Handling & Installation

- LVL beams must not be cut or drilled
- Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
- Damaged Beams must not be used
- Design assumes top edge is laterally restrained
- Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 1/8/2023

Manufacturer Info

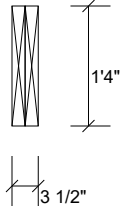
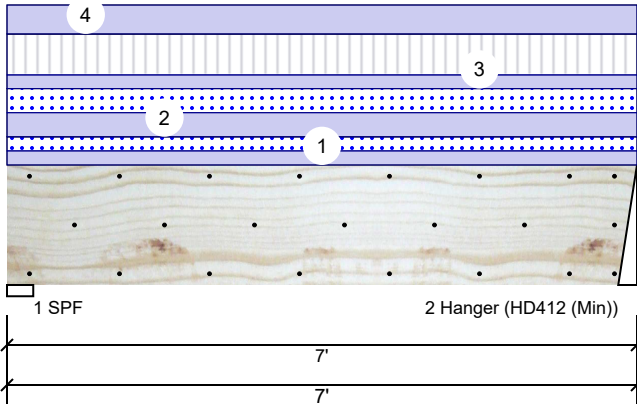
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BM4 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	627	1280	584	0	0
2	612	1250	571	0	0

Bearings

Bearing	Length	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	42%	1280 / 908	2189	L	D+0.75(L+S)
2 - Hanger	2.500"	28%	1250 / 887	2137	L	D+0.75(L+S)

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2973 ft-lb	3'6 1/2"	34565 ft-lb	0.086 (9%)	D+L	L
Unbraced	3412 ft-lb	3'6 1/2"	17666 ft-lb	0.193 (19%)	D+0.75(L+S)	L
Shear	1467 lb	5'6 3/8"	11947 lb	0.123 (12%)	D+L	L
LL Defl inch	0.008 (L/10459)	3'6 1/2"	0.166 (L/480)	0.050 (5%)	0.75(L+S)	L
TL Defl inch	0.018 (L/4341)	3'6 1/2"	0.222 (L/360)	0.080 (8%)	D+0.75(L+S)	L

Design Notes

- 1 Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- 2 Refer to last page of calculations for fasteners required for specified loads.
- 3 Fill all hanger nailing holes.
- 4 Girders are designed to be supported on the bottom edge only.
- 5 Top loads must be supported equally by all plies.
- 6 Top braced at bearings.
- 7 Bottom braced at bearings.
- 8 Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Near Face	61 PLF	0 PLF	61 PLF	0 PLF	0 PLF	M4
2	Uniform			Top	104 PLF	0 PLF	104 PLF	0 PLF	0 PLF	C1
3	Uniform			Far Face	59 PLF	177 PLF	0 PLF	0 PLF	0 PLF	F3
4	Uniform			Top	125 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Wall
	Self Weight				12 PLF					

Notes

Calculated Structural Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive chemicals

chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

Manufacturer Info

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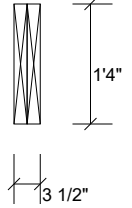
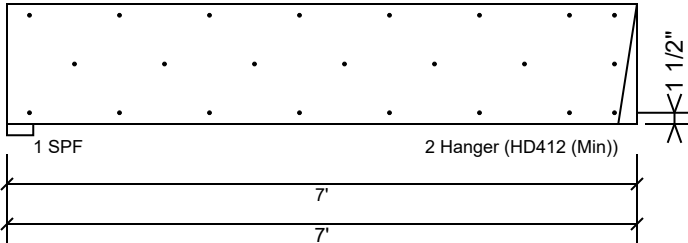
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This design is valid until 1/8/2023

BM4 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6"

Capacity	48.1 %
Load	118.0 PLF
Yield Limit per Foot	245.6 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	D+L
Duration Factor	1.00

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 1/8/2023

Manufacturer Info

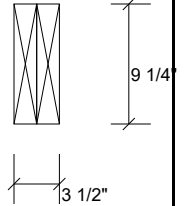
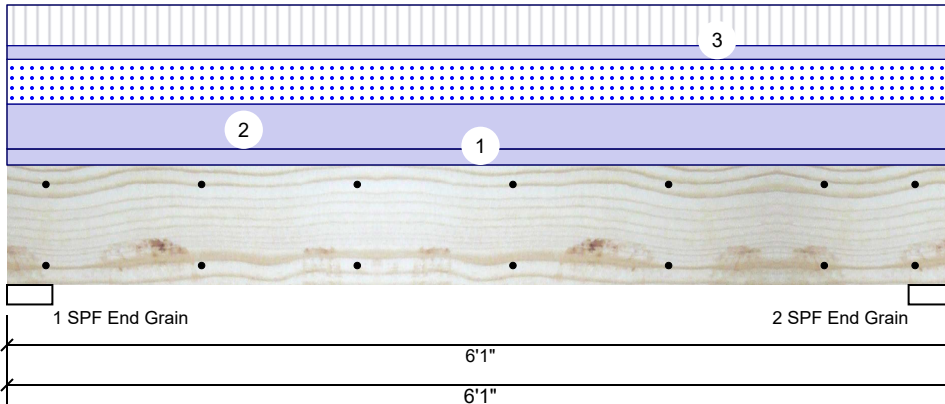
Metsä Wood
 301 Merritt 7 Building, 2nd Floor
 Norwalk, CT 06851
 (800) 622-5850
 www.metsawood.com/us
 ICC-ES: ESR-3633

Comtech, Inc.
 1001 S. Reilly Road, Suite #639
 Fayetteville, NC
 USA
 28314
 910-864-TRUS



BM5 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	961	1783	1059	0	0
2	961	1783	1059	0	0

Bearings

Bearing	Length	Cap.	React D/L	Ib	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	31%	1783 / 1515	3298	L	D+0.75(L+S)	
2 - SPF End Grain	3.500"	31%	1783 / 1515	3298	L	D+0.75(L+S)	

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4288 ft-lb	3' 1/2"	14423 ft-lb	0.297 (30%)	D+0.75(L+S)	L
Unbraced	4288 ft-lb	3' 1/2"	10944 ft-lb	0.392 (39%)	D+0.75(L+S)	L
Shear	2214 lb	5'1"	7943 lb	0.279 (28%)	D+0.75(L+S)	L
LL Defl inch	0.031 (L/2156)	3' 1/2"	0.141 (L/480)	0.220 (22%)	0.75(L+S)	L
TL Defl inch	0.068 (L/990)	3' 1/2"	0.188 (L/360)	0.360 (36%)	D+0.75(L+S)	L

Design Notes

- 1 Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- 2 Refer to last page of calculations for fasteners required for specified loads.
- 3 Girders are designed to be supported on the bottom edge only.
- 4 Top loads must be supported equally by all plies.
- 5 Top braced at bearings.
- 6 Bottom braced at bearings.
- 7 Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	125 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Wall
2	Uniform			Top	348 PLF	0 PLF	348 PLF	0 PLF	0 PLF	A1
3	Uniform			Top	106 PLF	316 PLF	0 PLF	0 PLF	0 PLF	F7
	Self Weight				7 PLF					

Notes

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Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

Manufacturer Info

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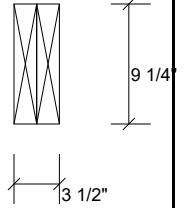
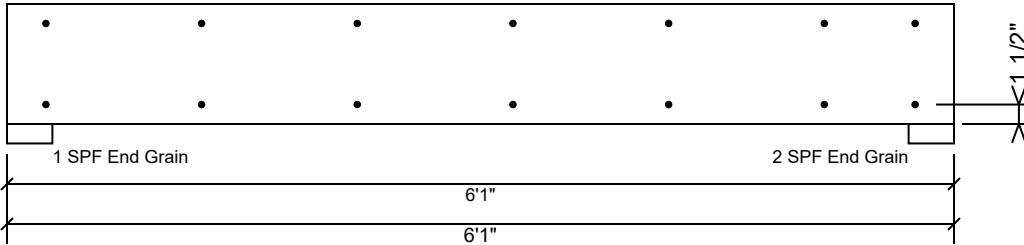
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This design is valid until 1/8/2023

BM5 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6"

Capacity	0.0 %
Load	0.0 PLF
Yield Limit per Foot	163.7 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 1/8/2023

Manufacturer Info

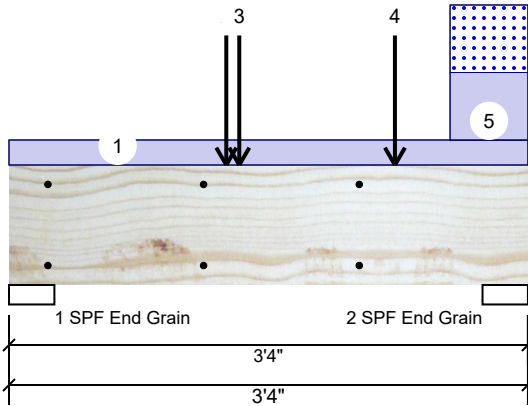
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BM6 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	1026	914	426	0	0
2	1738	1120	395	0	0

Bearings

Bearing	Length	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	19%	914 / 1089	2003	L	D+0.75(L+S)
2 - SPF End Grain	3.500"	27%	1120 / 1738	2858	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2272 ft-lb	1'5 3/4"	12542 ft-lb	0.181 (18%)	D+L	L
Unbraced	2272 ft-lb	1'5 3/4"	11972 ft-lb	0.190 (19%)	D+L	L
Shear	2273 lb	2'4"	6907 lb	0.329 (33%)	D+L	L
LL Defl inch	0.009 (L/4053)	1'5 3/4"	0.072 (L/480)	0.120 (12%)	0.75(L+S)	L
TL Defl inch	0.015 (L/2321)	1'5 3/4"	0.096 (L/360)	0.160 (16%)	D+0.75(L+S)	L

Design Notes

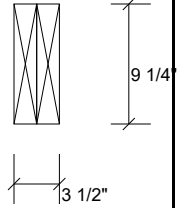
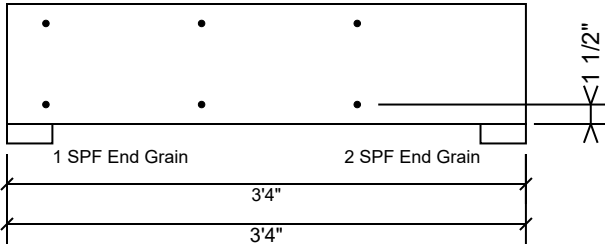
- 1 Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- 2 Refer to last page of calculations for fasteners required for specified loads.
- 3 Girders are designed to be supported on the bottom edge only.
- 4 Top loads must be supported equally by all plies.
- 5 Top braced at bearings.
- 6 Bottom braced at bearings.
- 7 Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	80 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Interior Wall
2	Point	1-4-12		Top	713 lb	0 lb	713 lb	0 lb	0 lb	C2
3	Point	1-5-12		Top	408 lb	1222 lb	0 lb	0 lb	0 lb	F3
4	Point	2-5-12		Top	514 lb	1542 lb	0 lb	0 lb	0 lb	BM2
5	Part. Uniform	2-10-0 to 3-4-0		Top	216 PLF	0 PLF	216 PLF	0 PLF	0 PLF	A4GE
	Self Weight				7 PLF					

<p>Notes</p> <p>Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.</p> <p>Lumber</p> <p>1. Dry service conditions, unless noted otherwise 2. LVL not to be treated with fire retardant or corrosive chemicals</p> <p>Handling & Installation</p> <p>1. LVL beams must not be cut or drilled 2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals 3. Damaged Beams must not be used 4. Design assumes top edge is laterally restrained 5. Provide lateral support at bearing points to avoid lateral displacement and rotation</p>	<p>6. For flat roofs provide proper drainage to prevent ponding</p>	<p>Manufacturer Info</p> <p>Metsä Wood 301 Merritt 7 Building, 2nd Floor Norwalk, CT 06851 (800) 622-5850 www.metsawood.com/us ICC-ES: ESR-3633</p>	<p>Comtech, Inc. 1001 S. Reilly Road, Suite #639 Fayetteville, NC USA 28314 910-864-TRUS</p>
		<p>This design is valid until 1/8/2023</p>	

BM6 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6"

Capacity	0.0 %
Load	0.0 PLF
Yield Limit per Foot	163.7 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 1/8/2023

Manufacturer Info

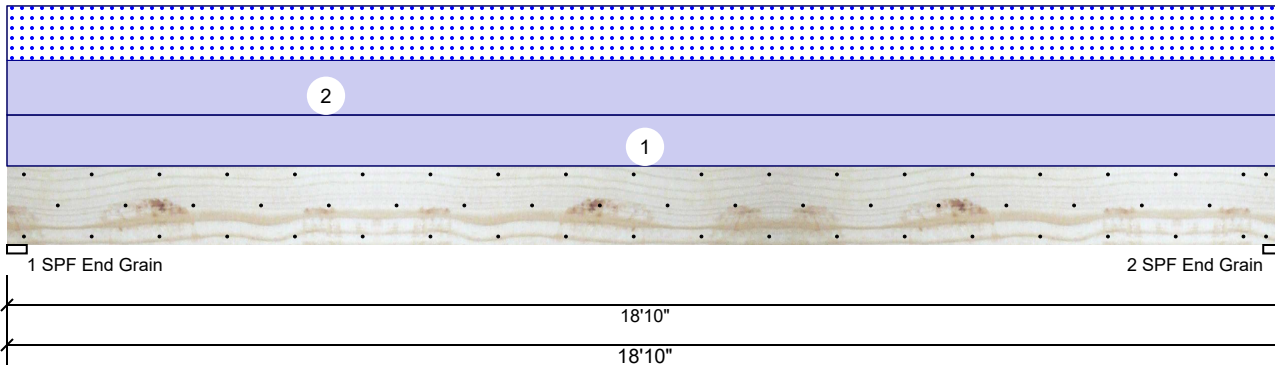
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GDH Kerto-S LVL 1.750" X 14.000" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	0	1270	603	0	0
2	0	1270	603	0	0

Bearings

Bearing	Length	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	18%	1270 / 603	1873	L	D+S
2 - SPF End Grain	3.500"	18%	1270 / 603	1873	L	D+S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	8394 ft-lb	9'5"	31049 ft-lb	0.270 (27%)	D+S	L
Unbraced	8394 ft-lb	9'5"	8405 ft-lb	0.999 (100%)	D+S	L
Shear	1595 lb	1'4 3/4"	12021 lb	0.133 (13%)	D+S	L
LL Defl inch	0.109 (L/2025)	9'5 1/16"	0.459 (L/480)	0.240 (24%)	S	L
TL Defl inch	0.338 (L/652)	9'5 1/16"	0.612 (L/360)	0.550 (55%)	D+S	L

Design Notes

- 1 Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- 2 Refer to last page of calculations for fasteners required for specified loads.
- 3 Girders are designed to be supported on the bottom edge only.
- 4 Top loads must be supported equally by all plies.
- 5 Top must be laterally braced at a maximum of 13'7 1/2" o.c.
- 6 Bottom braced at bearings.
- 7 Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	60 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Load
2	Uniform			Top	64 PLF	0 PLF	64 PLF	0 PLF	0 PLF	M8
	Self Weight				11 PLF					

Notes

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Lumber

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2. LVL not to be treated with fire retardant or corrosive chemicals

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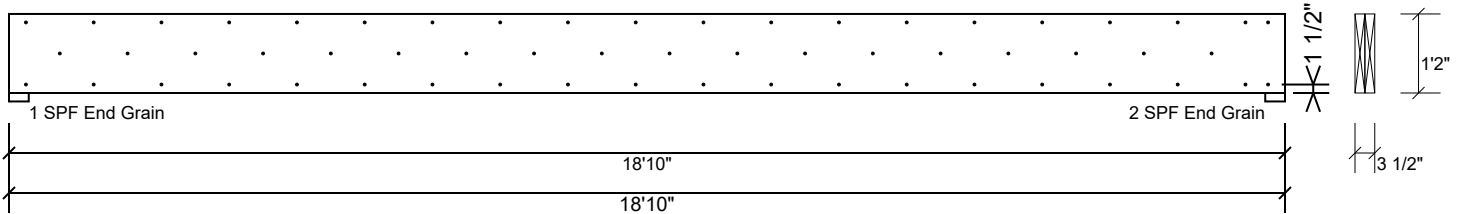
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This design is valid until 1/8/2023

GDH Kerto-S LVL 1.750" X 14.000" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6"

Capacity	0.0 %
Load	0.0 PLF
Yield Limit per Foot	245.6 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

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