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 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

DESIGNED FOR WIND SPEED OF 130 MPH, 3 SECOND GUST (101 FASTEST MILE) EXPOSURE "B"

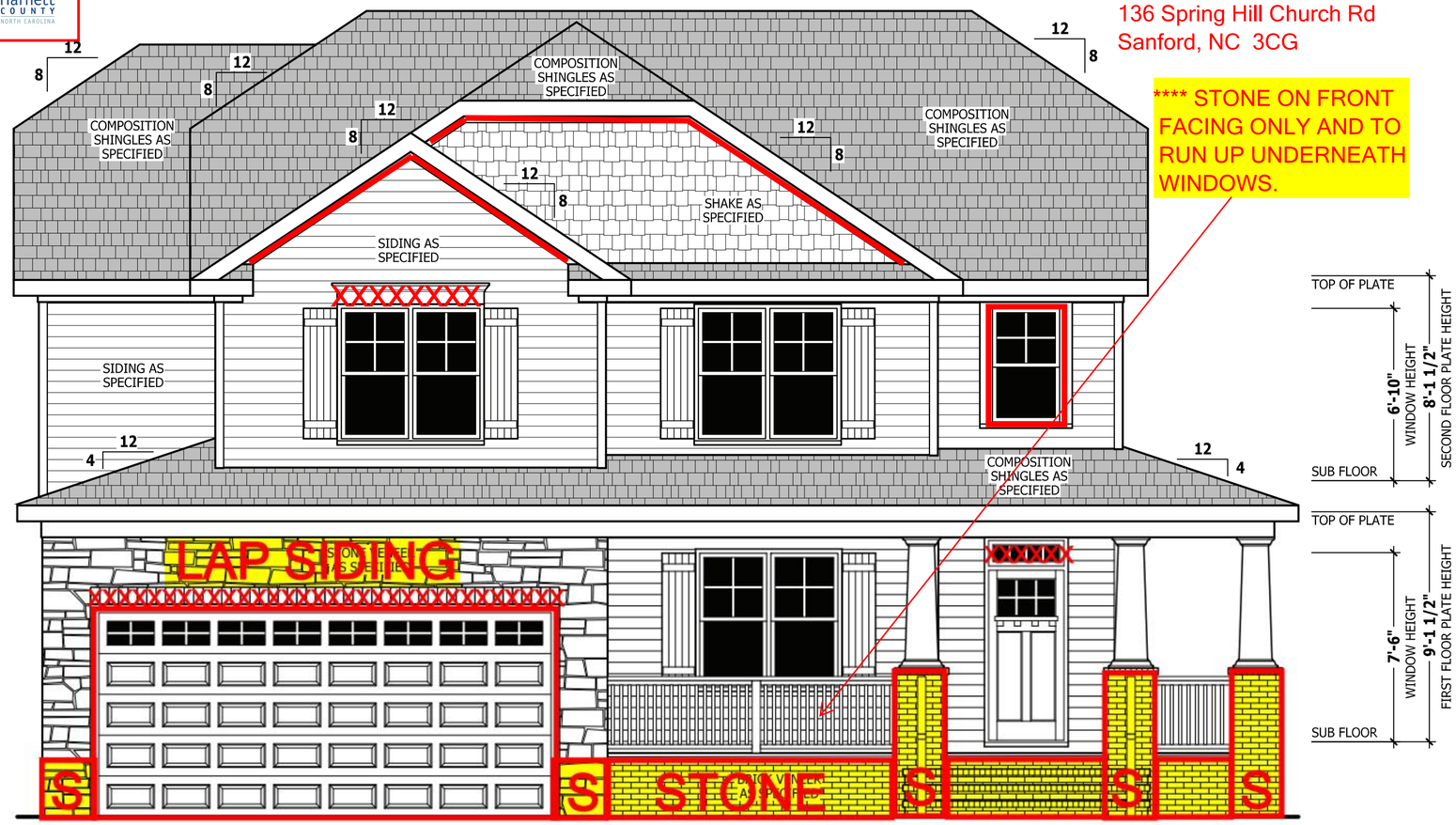
COMPONENT & CLADDING DESIGNED FOR THE FOLLOWING LOADS								
MEAN ROOF	UP TO 30'		30'-1" TO 35'		35'-1" TO 40'		40'-1" TO 45'	
ZONE 1	16.7	-18.0	17.5	-18.9	18.2	-19.6	18.7	-20.2
ZONE 2	16.7	-21.0	17.5	-22.1	18.2	-22.9	18.7	-23.5
ZONE 3	16.7	-21.0	17.5	-22.1	18.2	-22.9	18.7	-23.5
ZONE 4	18.2	-19.0	19.1	-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

SIDE LOAD ELEVATION - A

SCALE 1/8" = 1'-0"

Lot 5R Atkins Farm Estates
136 Spring Hill Church Rd
Sanford, NC 3CG

**** STONE ON FRONT FACING ONLY AND TO RUN UP UNDERNEATH WINDOWS.



FRONT ELEVATION - A

SCALE 1/4" = 1'-0"

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.

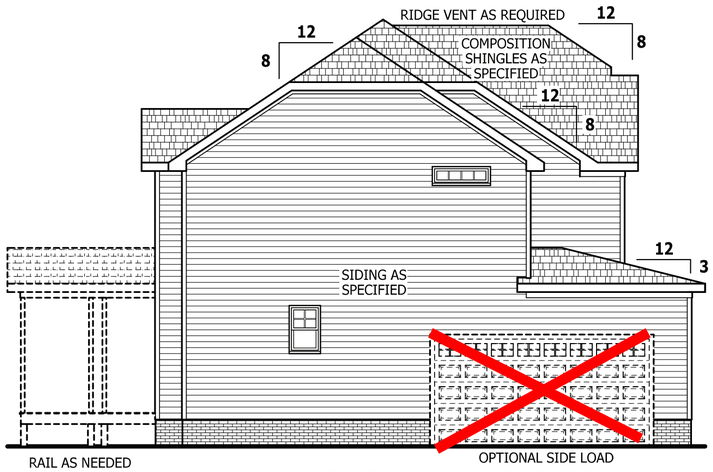
NET FREE CROSS VENTILATION NEEDED:

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.

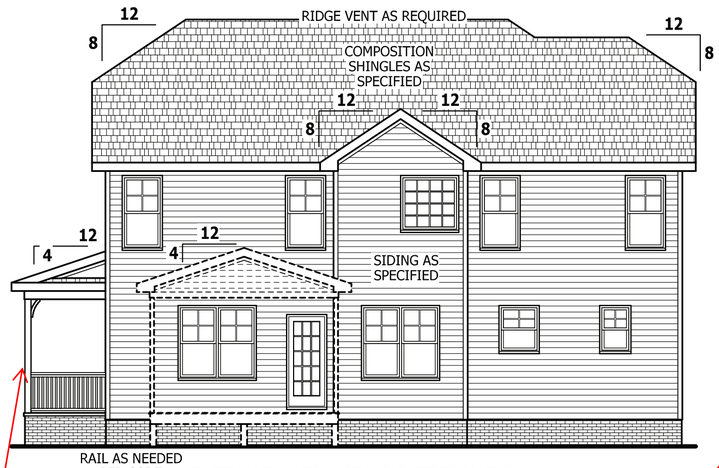
SQUARE FOOTAGE

HEATED	
FIRST FLOOR	964 SQ.FT.
SECOND FLOOR	1154 SQ.FT.
TOTAL	2118 SQ.FT.
OPTIONAL UNHEATED	
DECK/PATIO/PORCH	167 SQ.FT.
THIRD GARAGE	270 SQ.FT.
TOTAL	437 SQ.FT.
UNHEATED	
FRONT PORCH	223 SQ.FT.
GARAGE	472 SQ.FT.
TOTAL	695 SQ.FT.



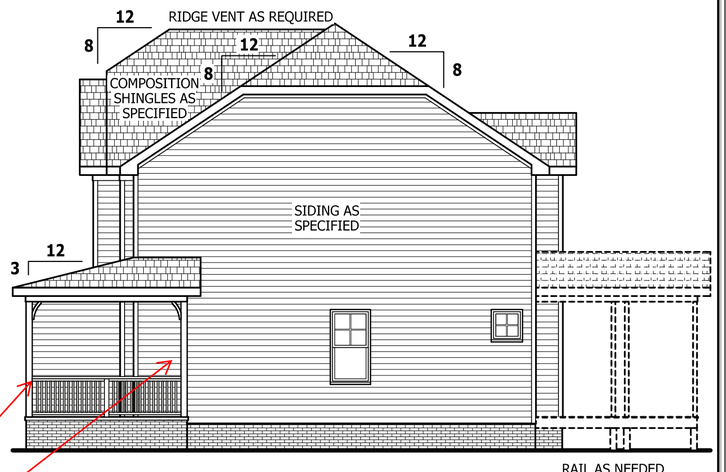
LEFT SIDE ELEVATION

SCALE 1/8" = 1'-0"



REAR ELEVATION

SCALE 1/8" = 1'-0"



RIGHT SIDE ELEVATION

SCALE 1/8" = 1'-0"

ELEVATION - A

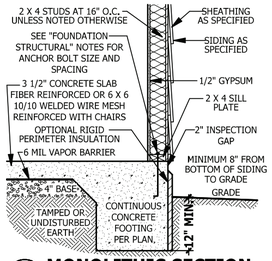
Barstow II

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.
THIRD GARAGE 270 SQ.FT.
TOTAL 437 SQ.FT.
UNHEATED
FRONT PORCH 223 SQ.FT.
GARAGE 472 SQ.FT.
TOTAL 695 SQ.FT.

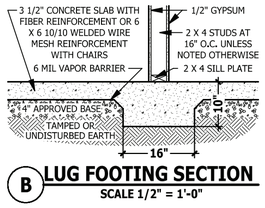
5/28/2020

200319B

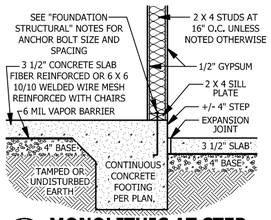
Z:\Builder\Weaver Development Company, Inc\200510B Barstow II\200510B Barstow II.aec



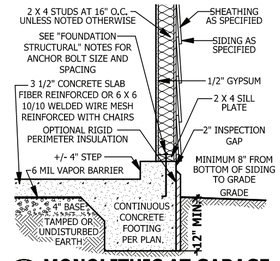
A MONOLITHIC SECTION
SCALE 1/2" = 1'-0"



B LUG FOOTING SECTION
SCALE 1/2" = 1'-0"



C MONOLITHIC AT STEP
SCALE 1/2" = 1'-0"



D MONOLITHIC AT GARAGE
SCALE 1/2" = 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.

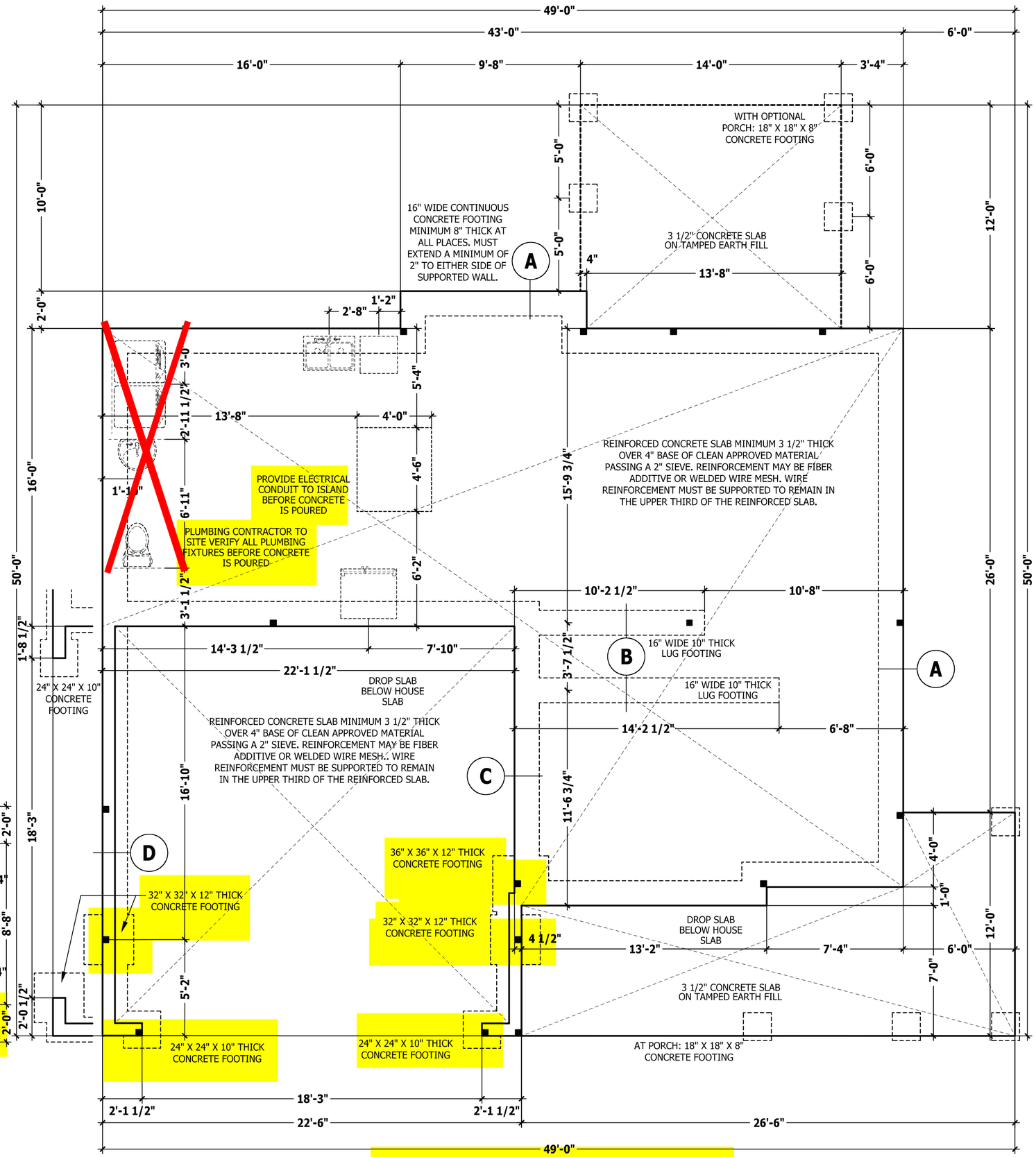
POINT LOADS: ■ designates significant point load and should have solid blocking to pier, girder or foundation wall.

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.

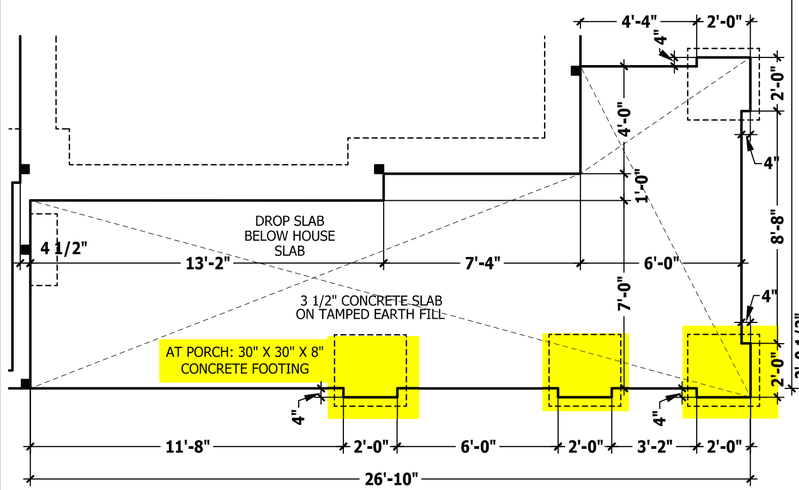
130 MPH ANCHORS BOLTS: 1/2" diameter anchor bolts embedded minimum 15", maximum 4'-0" on center, within 12" of plate ends, and minimum two anchor bolts per plate.

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.



MONOLITHIC SLAB PLAN
SCALE 1/4" = 1'-0"



PORCH WITH ELEVATION B

PURCHASER MUST VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE CONSTRUCTION BEGINS.

HAYNES HOME PLANS, INC. 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.

MONOLITHIC SLAB PLAN

Barstow II

WEAVER HOMES
910.630.2100 ▪ 919.606.4696
350 Wagoner Drive, Fayetteville, NC 28303

HAYNES HOME PLANS, INC.
P.O. Box 702, Wake Forest, NC 27588 919-435-6160 Fax 1-866-491-0396

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.
THIRD GARAGE	270 SQ.FT.
TOTAL	437 SQ.FT.
UNHEATED	
FRONT PORCH	223 SQ.FT.
GARAGE	472 SQ.FT.
TOTAL	695 SQ.FT.

5/28/2020

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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.

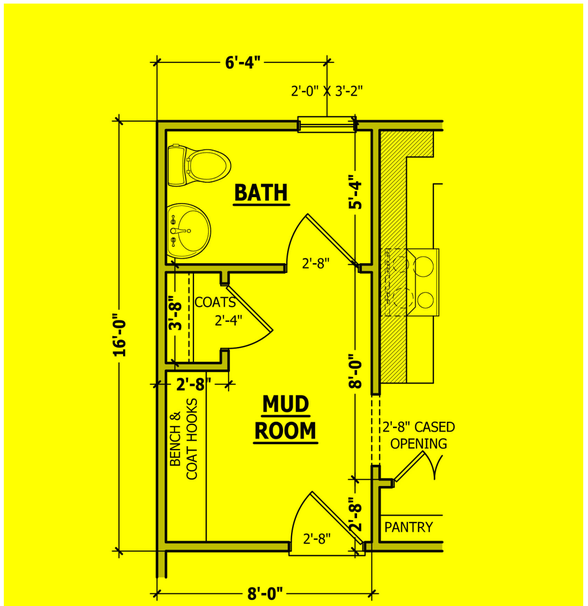
STAIRS. A minimum of 1/2" gypsum board must be installed on the underside and exposed sides of all stairways.

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.

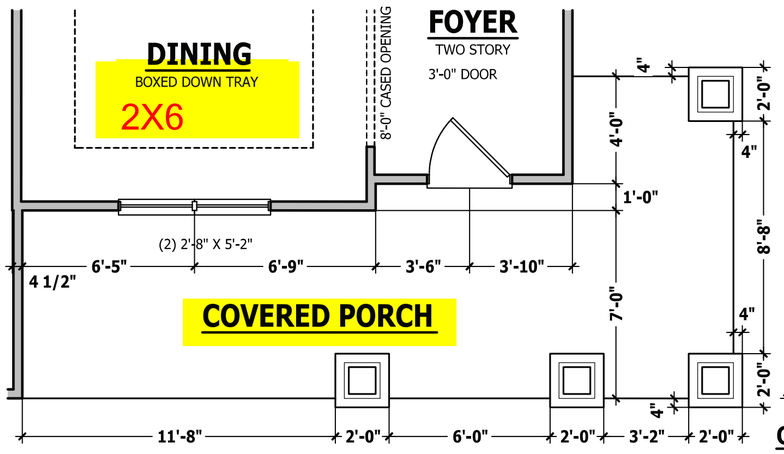
OPENING PENETRATIONS. Openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) in thickness, solid or honeycomb core steel doors not less than 1 3/8 inches (35 mm) thick, or 20-minute fire-rated doors.

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.

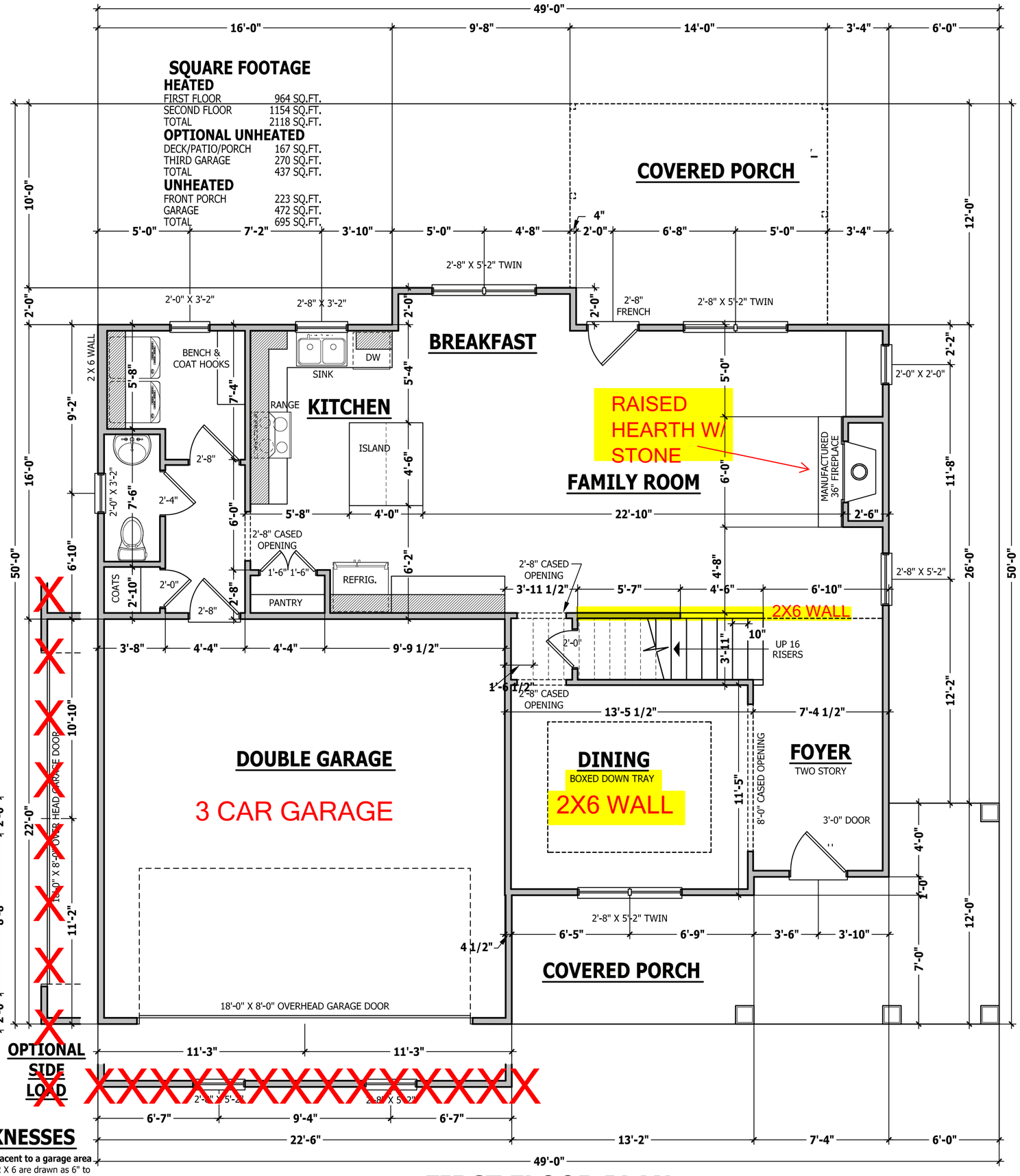
OTHER PENETRATIONS. Penetrations through the separation required in Section R302.6 shall be protected as required by Section R302.11, Item 4.



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.

FIRST FLOOR PLAN

SCALE 1/4" = 1'-0"

FIRST FLOOR PLAN — **Barstow II**

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910.630.2100 ▪ 919.606.4696
350 Wagoner Drive, Fayetteville, NC 28303

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5/28/2020

200319B

STRUCTURAL NOTES

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

DESIGN LOADS

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 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.

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.

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

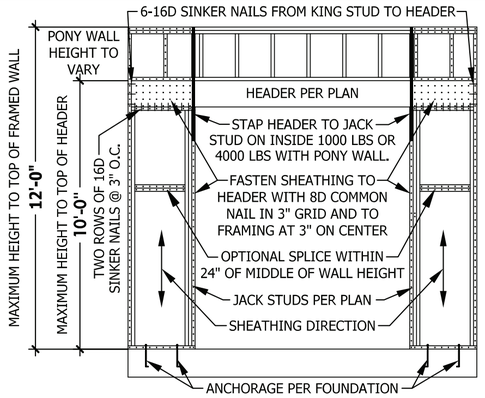
EXTERIOR HEADERS

- (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

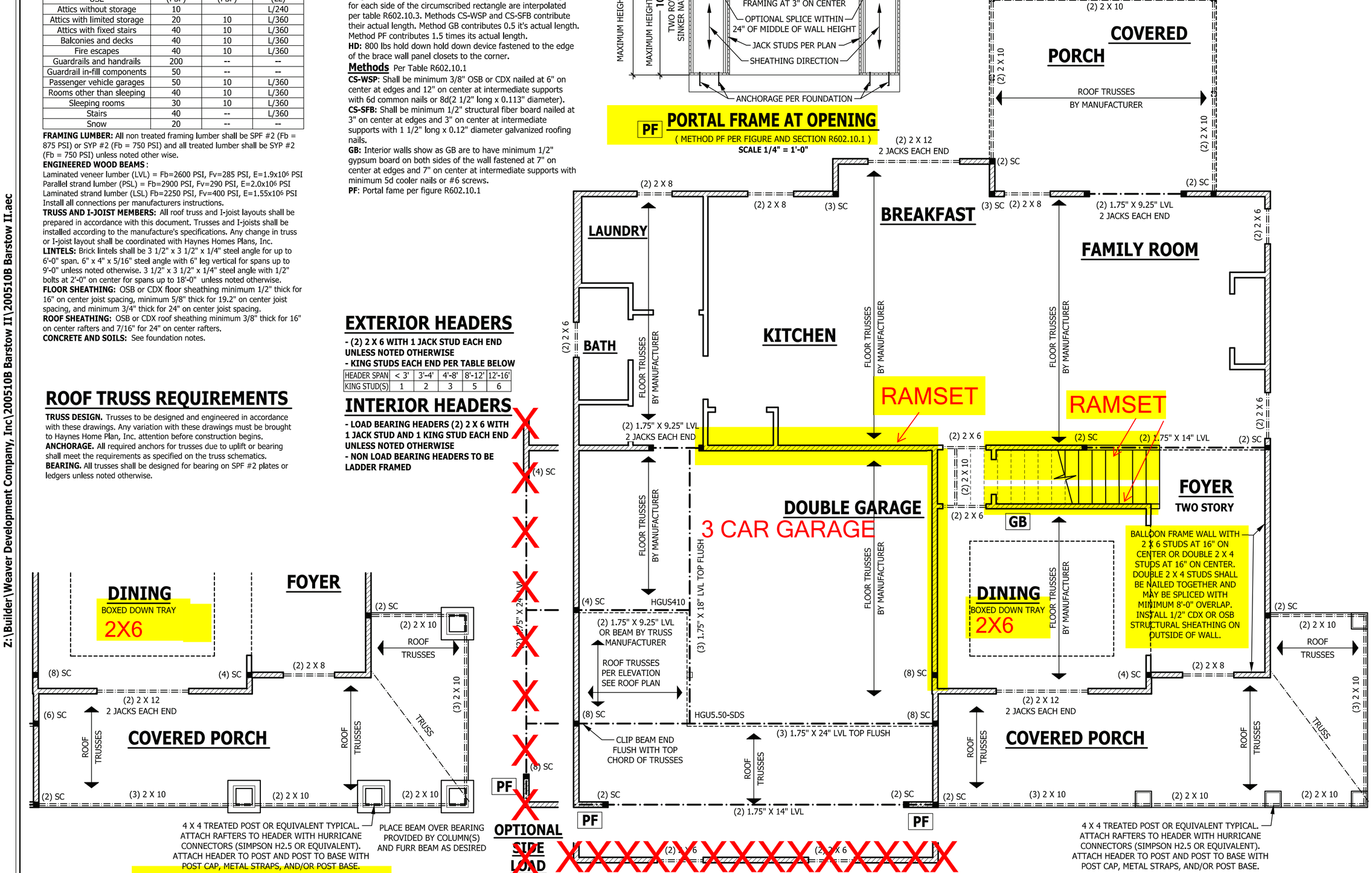
- LOAD BEARING HEADERS (2) 2 X 6 WITH 1 JACK STUD AND 1 KING STUD EACH END UNLESS NOTED OTHERWISE
- NON LOAD BEARING HEADERS TO BE LADDER FRAMED



PF PORTAL FRAME AT OPENING

(METHOD PF PER FIGURE AND SECTION R602.10.1)

SCALE 1/4" = 1'-0"



PORCH WITH ELEVATION B

OPTIONAL SIDE LOAD

FIRST FLOOR STRUCTURAL

SCALE 1/4" = 1'-0"

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FIRST FLOOR STRUCTURAL

Barstow II

WEAVER HOMES
910.630.2100 ▪ 919.606.4696
350 Wagoner Drive, Fayetteville, NC 28303

HAYNES HOME PLANS, INC.
P.O. BOX 702, WAKE FOREST, NC 27588 919-435-6100 FAX 1-866-491-0396

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200319B

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DESIGN LOADS	LIVE LOAD (PSF)	DEAD LOAD (PSF)	DEFLECTION (LL)
USE			
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.

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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 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.

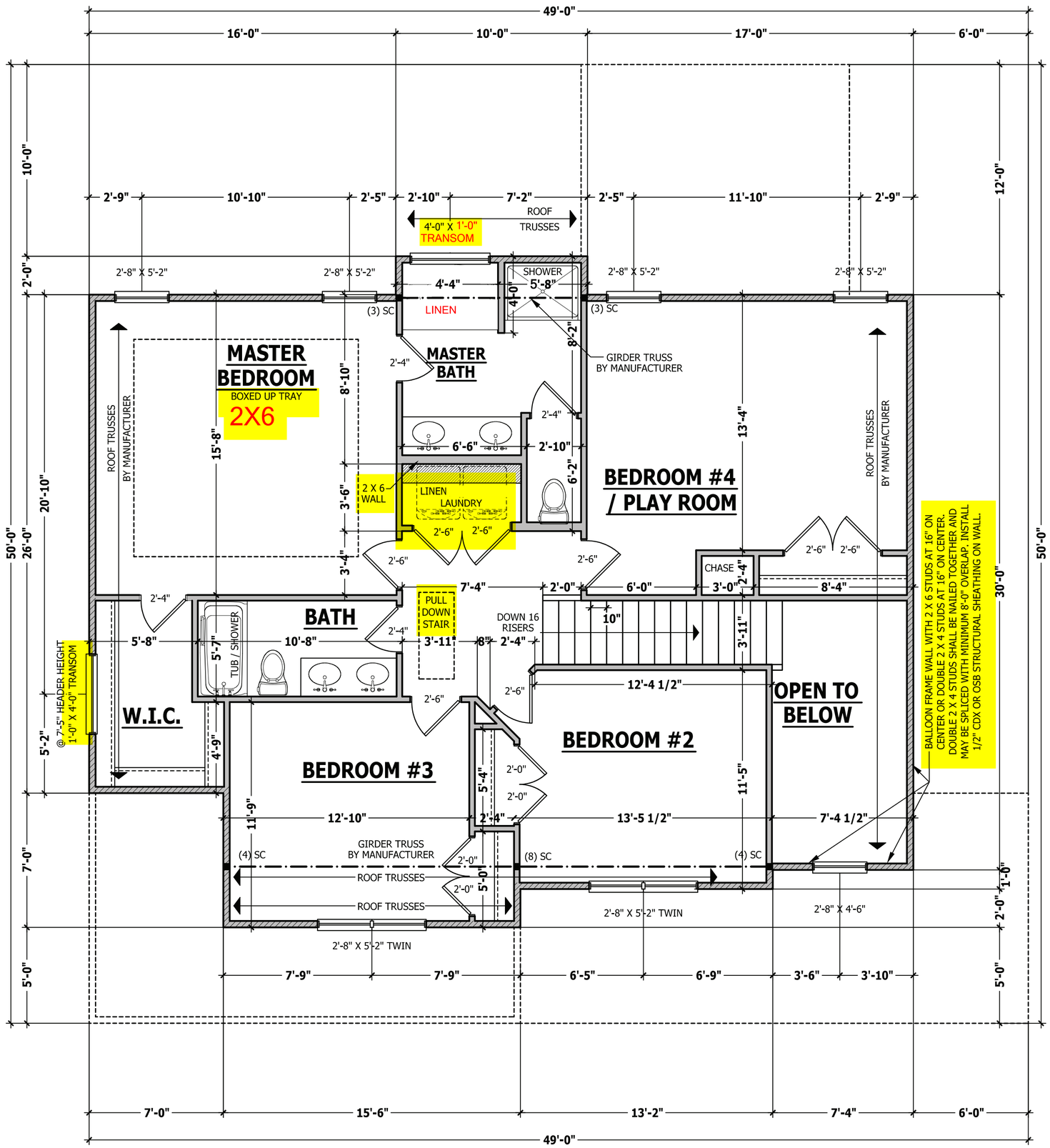
EXTERIOR HEADERS

- (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)

PURCHASER MUST VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE CONSTRUCTION BEGINS.

HAYNES HOME PLANS, INC. 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.

SECOND FLOOR PLAN

Barstow II

WEAVER HOMES
910.630.2100 ▪ 919.606.4696
350 Wagoner Drive, Fayetteville, NC 28303

HAYNES HOME PLANS, INC.
P.O. BOX 702, WAKE FOREST, NC 27588 919-435-6160 FAX 1-866-491-0396

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.
THIRD GARAGE	270 SQ.FT.
TOTAL	437 SQ.FT.
UNHEATED	
FRONT PORCH	223 SQ.FT.
GARAGE	472 SQ.FT.
TOTAL	695 SQ.FT.

5/28/2020

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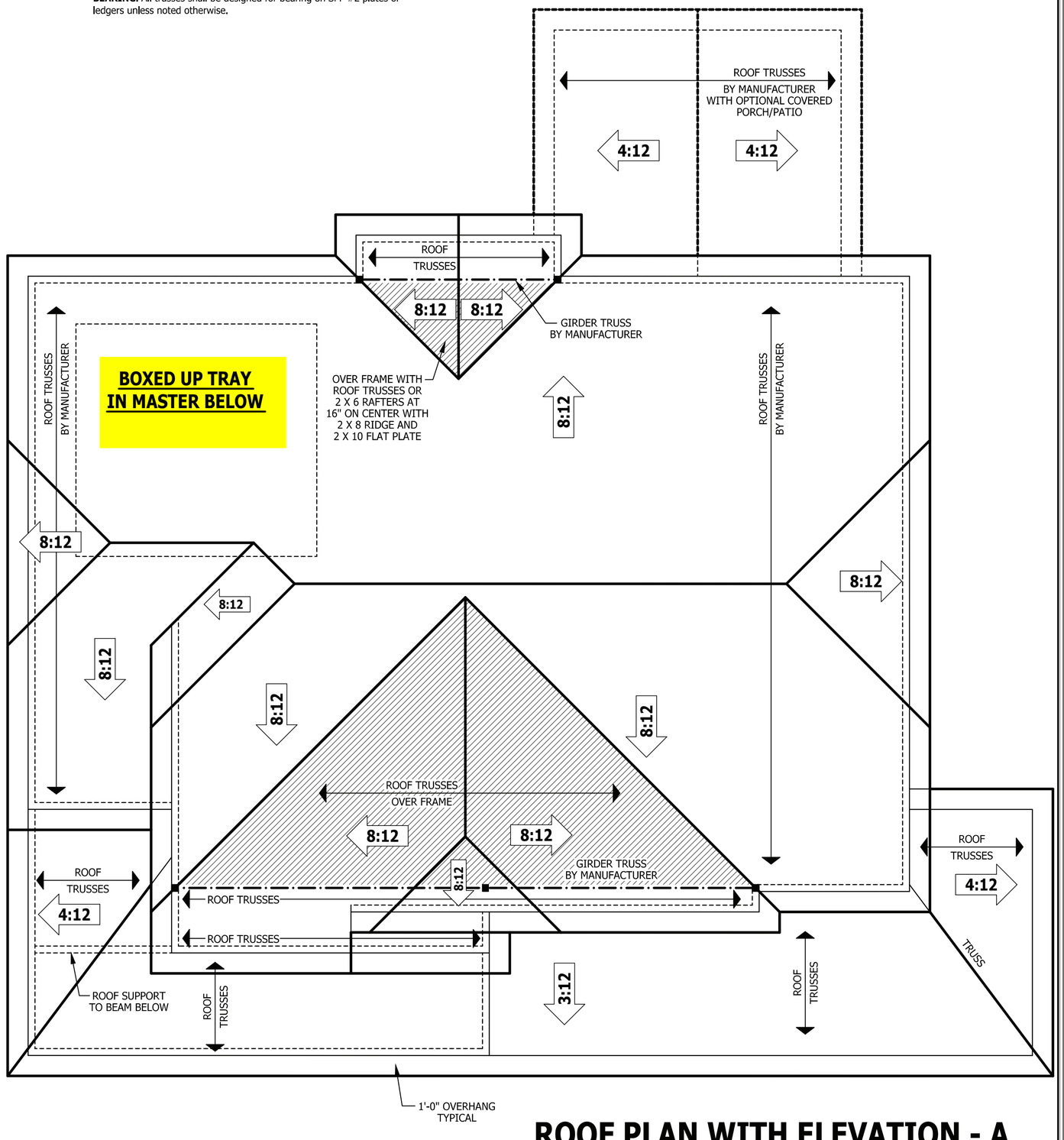
ROOF TRUSS REQUIREMENTS

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.



ROOF PLAN WITH ELEVATION - A

SCALE 1/4" = 1'-0"

ROOF PLAN - A

Barstow II

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SQUARE FOOTAGE

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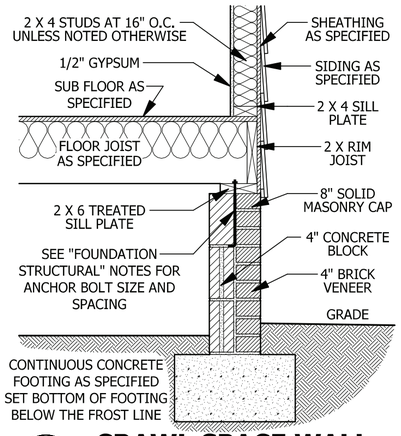
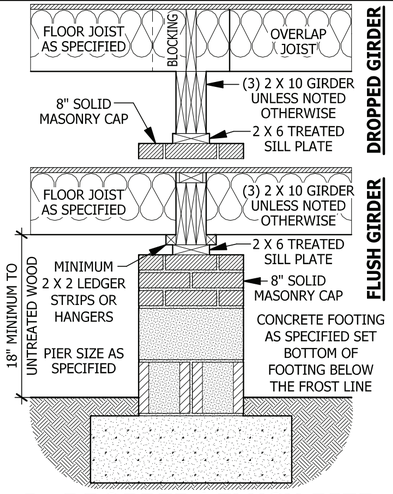
5/28/2020

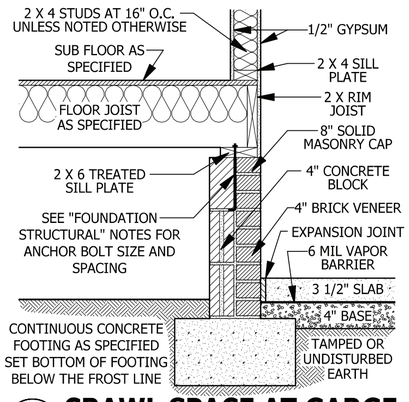
200319B



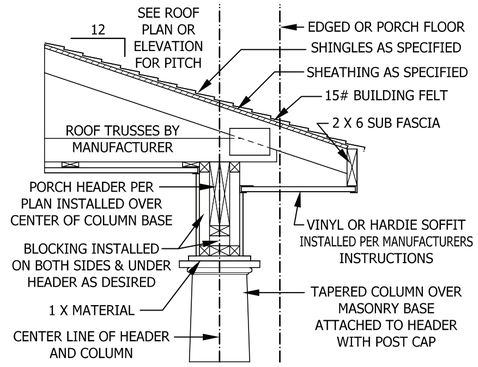
A CRAWL SPACE WALL
SCALE 3/4" = 1'-0"



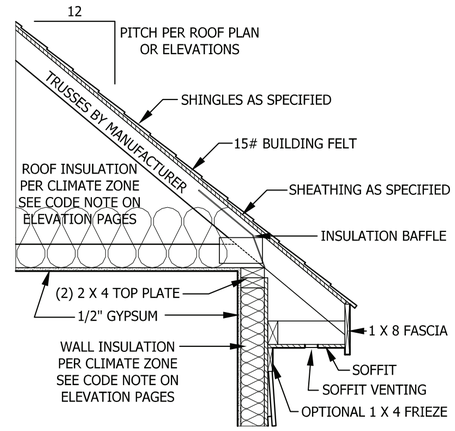
B DROPPED/ FLUSH PIER
SCALE 3/4" = 1'-0"

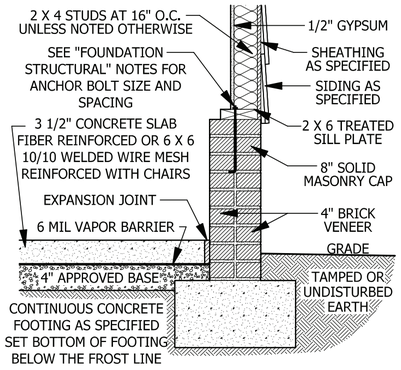


C CRAWL SPACE AT GARGE
SCALE 3/4" = 1'-0"

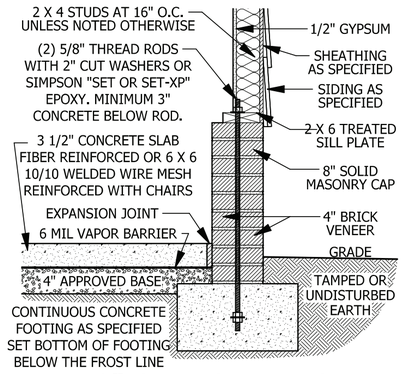


PORCH HEADER WITH TAPERED COLUMN
SCALE 3/4" = 1'-0"

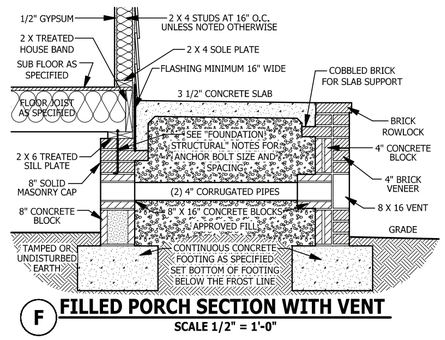




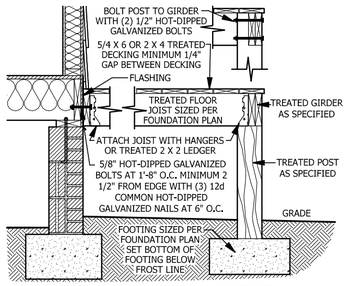
D GARAGE STEM WALL
SCALE 3/4" = 1'-0"



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 315.1.1.

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

DECK 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.

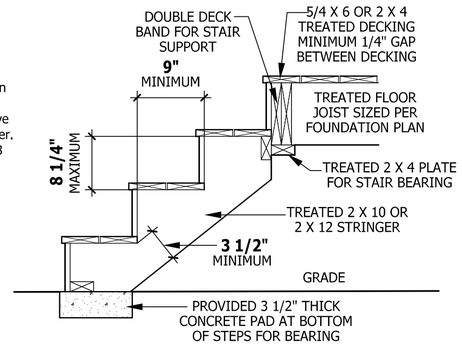
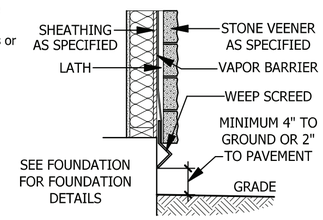


FIGURE AM110
TYPICAL DECK STAIR DETAIL
SCALE 3/4" = 1'-0"



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.

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).

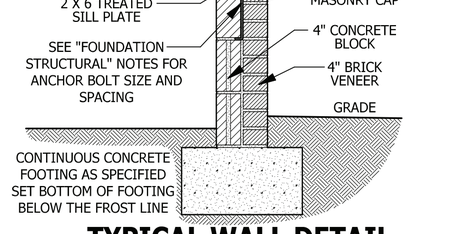
Exceptions:

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.

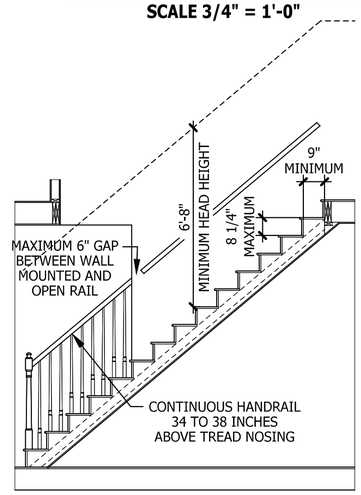
R311.7.7.2 Continuity. Handrails for stairways shall be continuous for the full length of the flight, from a point directly above the top riser of the flight to a point directly above the lowest riser of the flight. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. 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.



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



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

TYPICAL DETAILS

Barstow II

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SQUARE FOOTAGE

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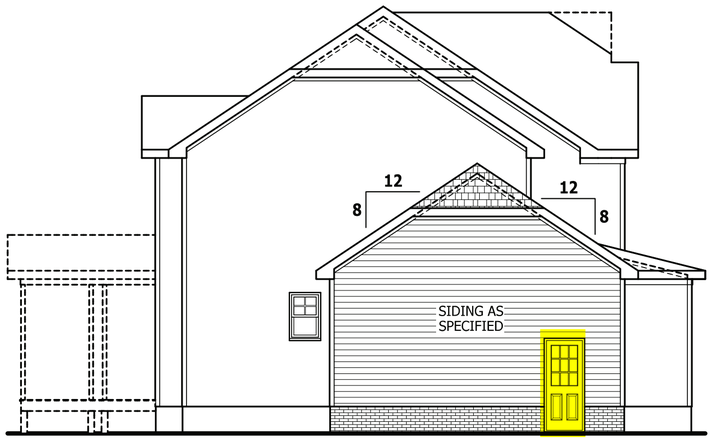
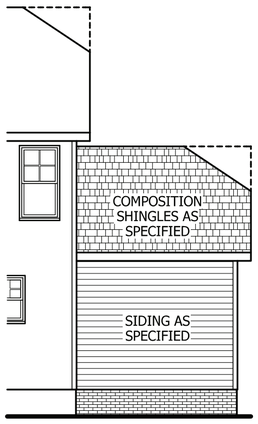
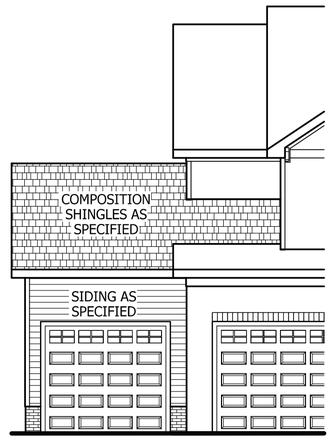


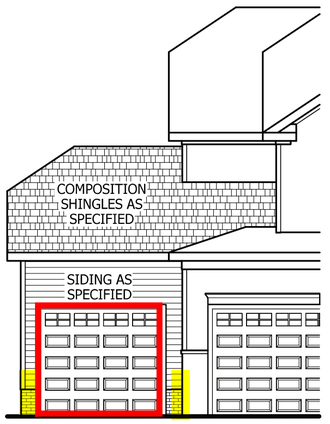
SIDE ELEVATION
SCALE 1/8" = 1'-0"



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



ELEVATION - B
SCALE 1/8" = 1'-0"



ELEVATION - A
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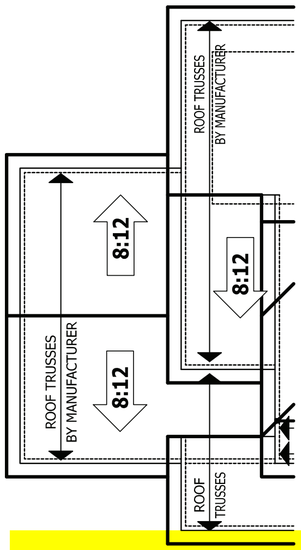
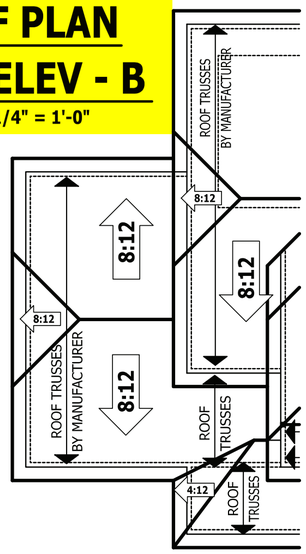


ROOF PLAN WITH ELEV - B
SCALE 1/4" = 1'-0"



ROOF PLAN WITH ELEV - A
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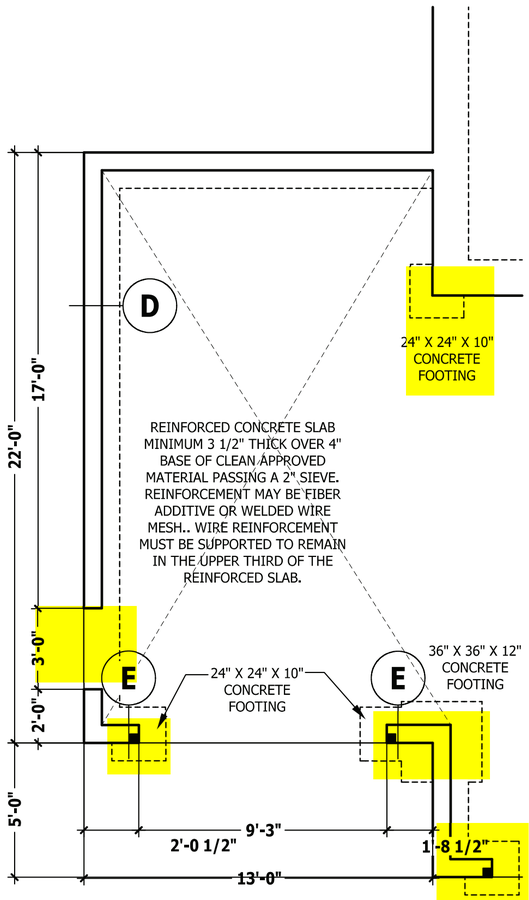
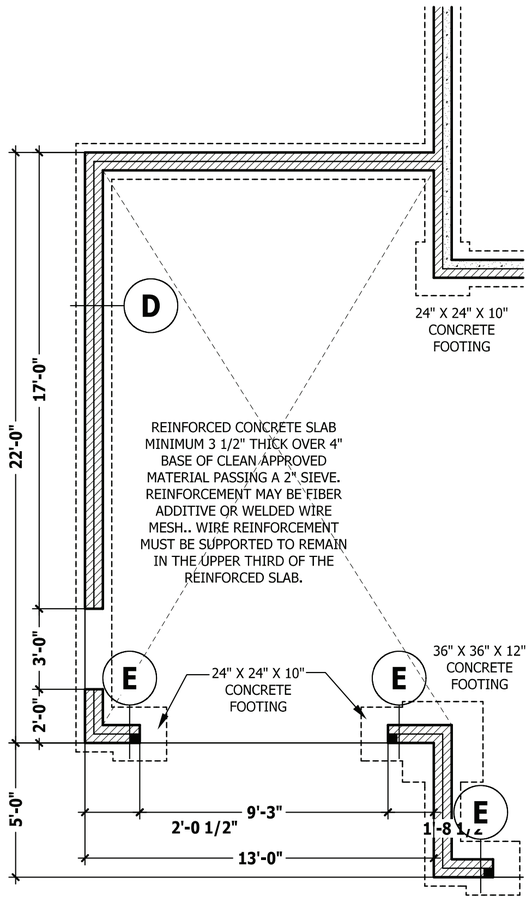
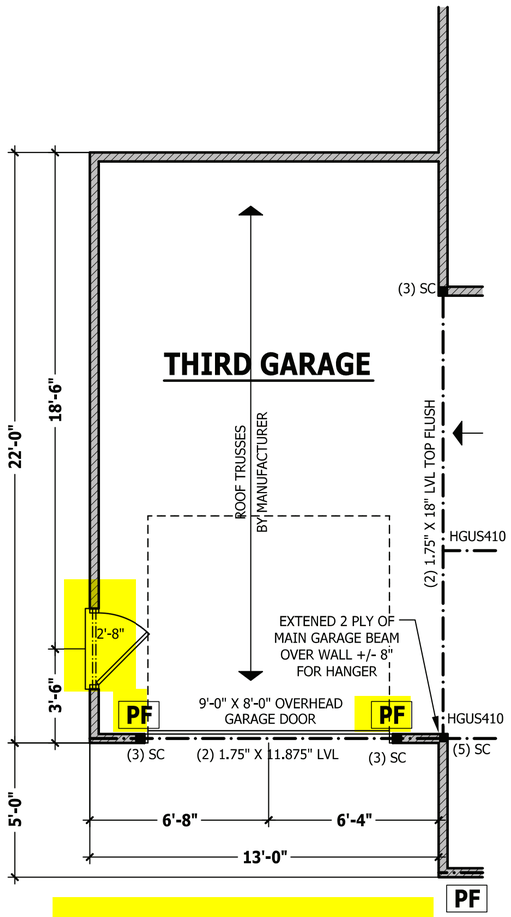


MONOLITHIC SLAB PLAN
SCALE 1/4" = 1'-0"



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



FIRST FLOOR PLAN
SCALE 1/4" = 1'-0"

FRONT LOAD THIRD CAR

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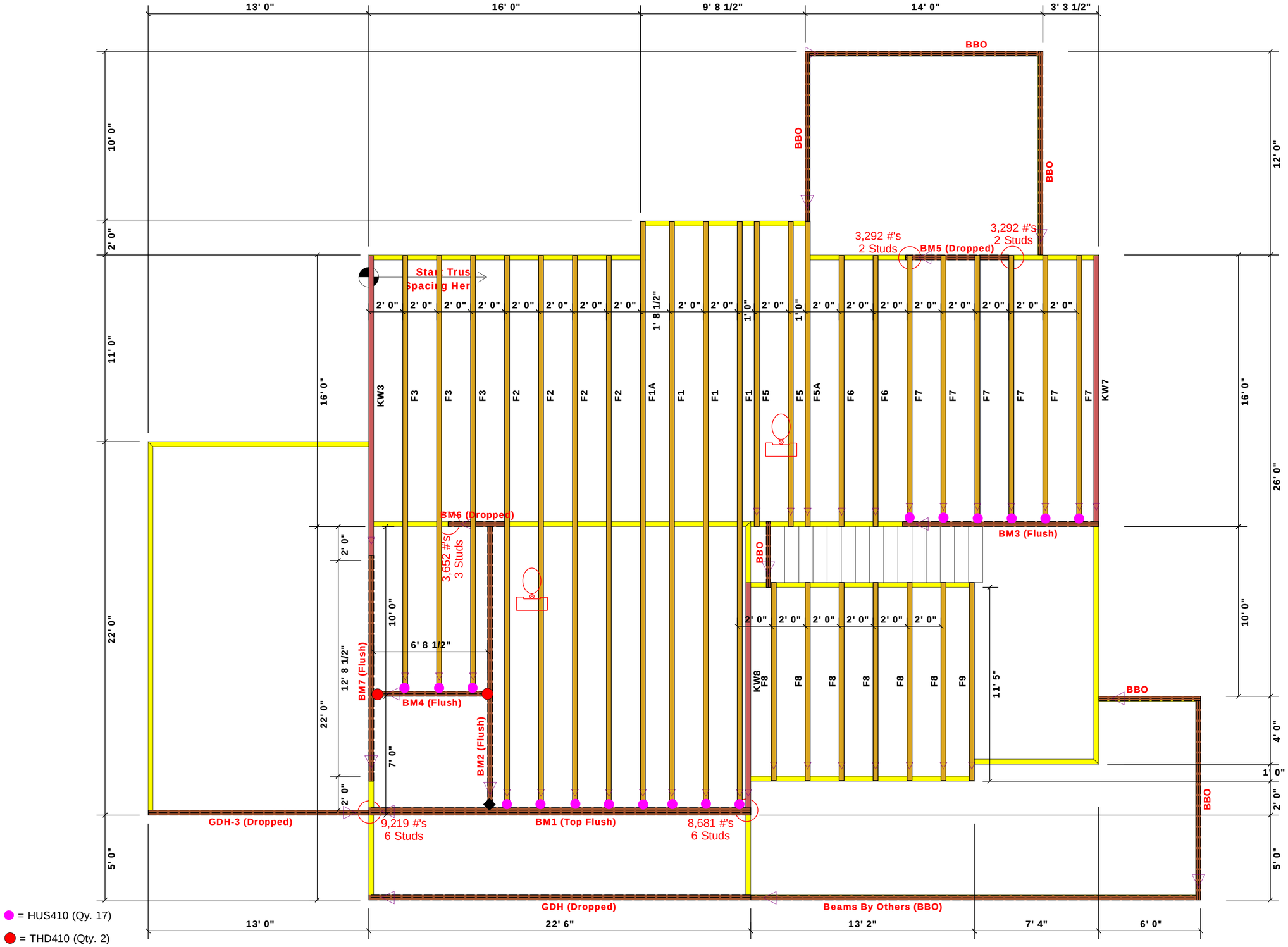
ADDENDUM



● = HUS410 (Qty. 17)

● = THD410 (Qty. 2)

◆ = THDH412 (Qty. 1)

Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
BM5 (Dropped)	7' 0"	1-3/4"x 9-1/4" LVL Kerto-S	2	2	FF
BM6 (Dropped)	4' 0"	1-3/4"x 9-1/4" LVL Kerto-S	2	2	FF
GDH-3 (Dropped)	13' 0"	1-3/4"x 11-7/8" LVL Kerto-S	2	2	FF
GDH (Dropped)	23' 0"	1-3/4"x 14" LVL Kerto-S	2	2	FF
BM2 (Flush)	17' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM7 (Flush)	14' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM3 (Flush)	12' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM4 (Flush)	7' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM1 (Top Flush)	23' 0"	1-3/4"x 23-7/8" LVL Kerto-S	3	3	FF

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

COMTECH
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

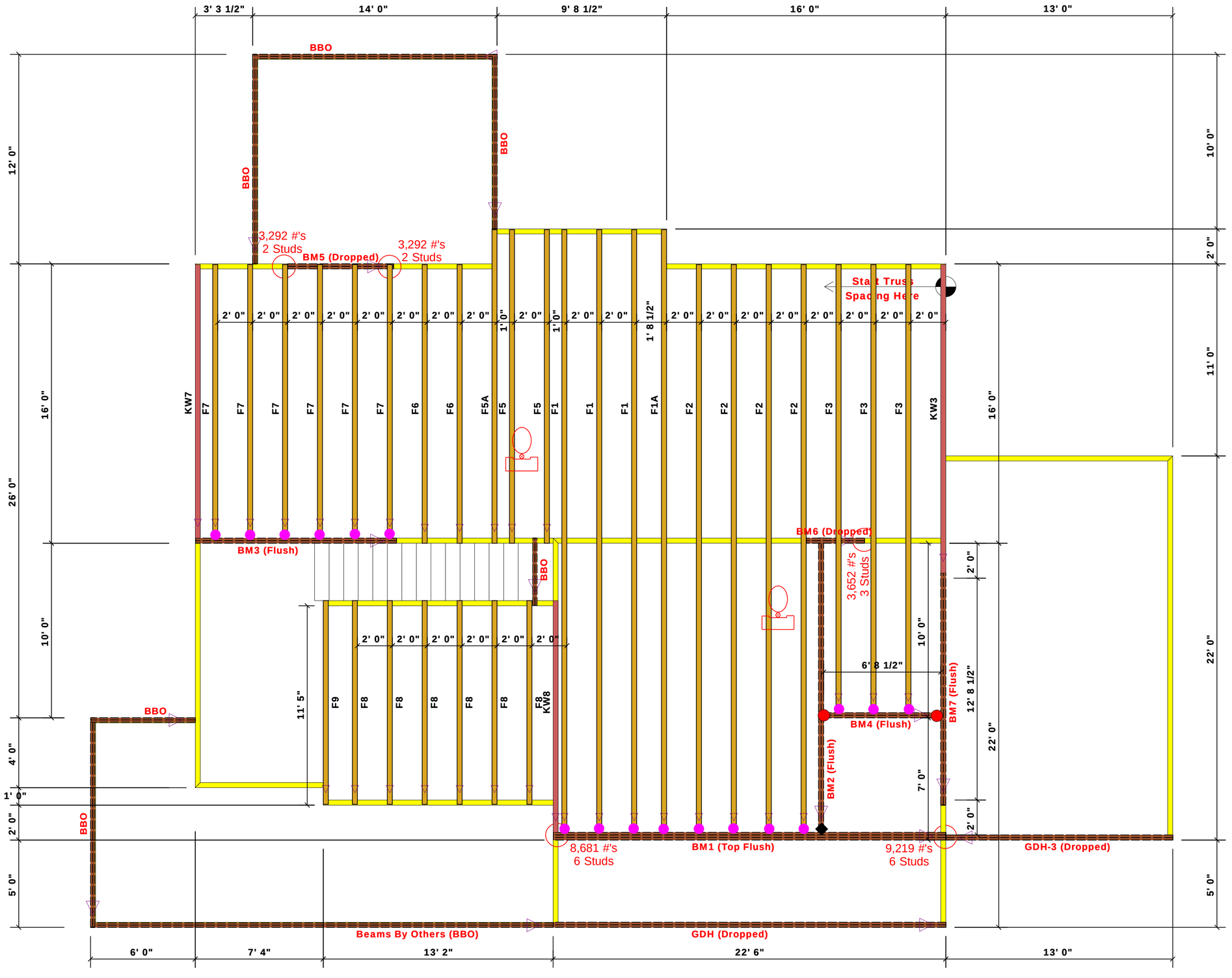
LOAD CHART FOR JACK STUDS

BASED ON TABLES R502.5(1) & (3)

NUMBER OF JACK STUDS REQUIRED @ EA END OF HEADER/GIRDER

END REACTION (LBS)	REQ'D STUDS FOR (2) PLY HEADER	END REACTION (LBS)	REQ'D STUDS FOR (3) PLY HEADER	END REACTION (LBS)	REQ'D STUDS FOR (4) PLY HEADER
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				

BUILDER	Weaver Development
JOB NAME	Lot 5-R Atkins Farm Estates
PLAN	Barstow I I "A" 3 Car
SEAL DATE	Seal Date
QUOTE #	Quote #
JOB #	J0721-4305
CITY / CO.	Sanford / Harnett
ADDRESS	136 Spring Hill Church Rd.
MODEL	Floor
DATE REV.	/ /
DRAWN BY	Christine Shivy
SALES REP.	Lenny Norris



● = HUS410 (Qty. 17)

● = THD410 (Qty. 2)

◆ = THDH412 (Qty. 1)

Products					
PlotID	Length	Product	Plies	Net Qty	Fab Type
BM5 (Dropped)	7' 0"	1-3/4"x 9-1/4" LVL Kerto-S	2	2	FF
BM6 (Dropped)	4' 0"	1-3/4"x 9-1/4" LVL Kerto-S	2	2	FF
GDH-3 (Dropped)	13' 0"	1-3/4"x 11-7/8" LVL Kerto-S	2	2	FF
GDH (Dropped)	23' 0"	1-3/4"x 14" LVL Kerto-S	2	2	FF
BM2 (Flush)	17' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM7 (Flush)	14' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM3 (Flush)	12' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM4 (Flush)	7' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM1 (Top Flush)	23' 0"	1-3/4"x 23-7/8" LVL Kerto-S	3	3	FF

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

COMTECH
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

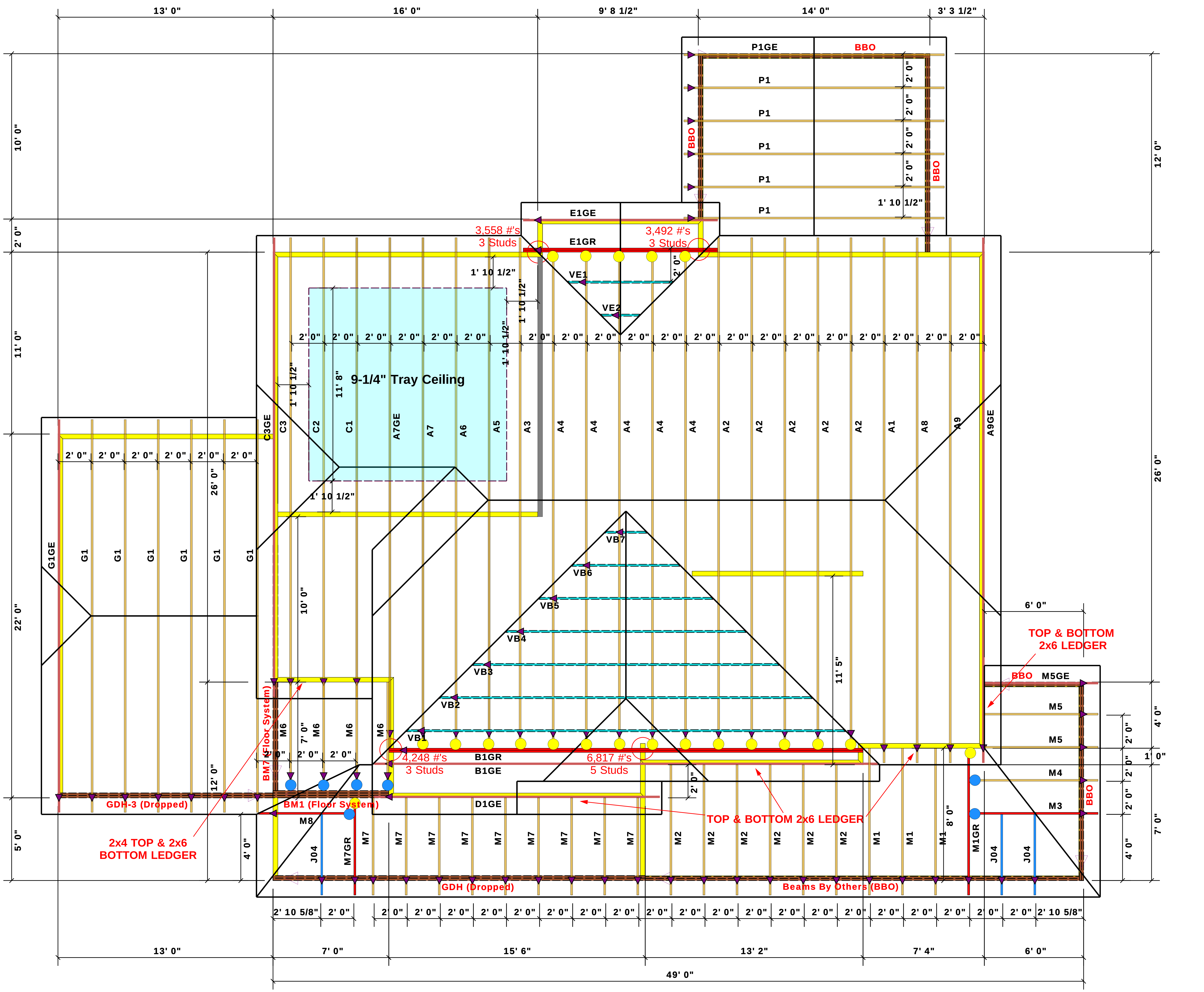
(BASED ON TABLES R502.5(1) & (3))

NUMBER OF JACK STUDS REQUIRED @ EA END OF HEADER/GIRDER

END REACTION (LBS)	REQ'D STUDS FOR (2) PLY HEADER	END REACTION (LBS)	REQ'D STUDS FOR (3) PLY HEADER	END REACTION (LBS)	REQ'D STUDS FOR (4) PLY HEADER
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				

BUILDER	Weaver Development
JOB NAME	Lot 5-R Atkins Farm Estates
PLAN	Barstow II "A" 3 Car
SEAL DATE	Seal Date
QUOTE #	Quote #
JOB #	J0721-4305
CITY / CO.	Sanford / Harnett
ADDRESS	136 Spring Hill Church Rd.
MODEL	Floor
DATE REV.	/ /
DRAWN BY	Christine Shivy
SALES REP.	Lenny Norris

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



● = HUS26 (Qty. 21)

● = JUS24 (Qty. 7)

▲= 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

comtech
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

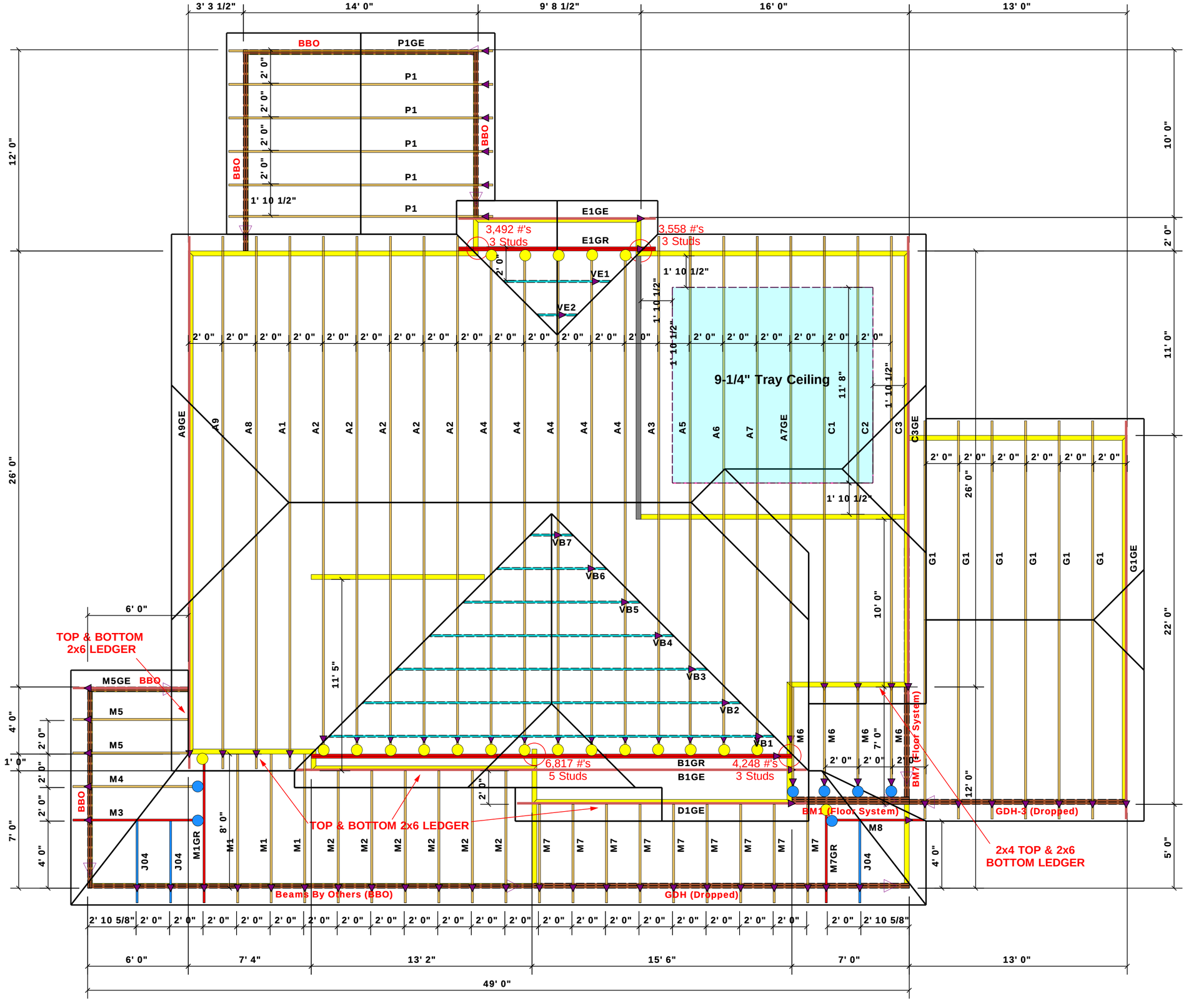
Christine Shivy

LOAD CHART FOR JACK STUDS
(BASED ON TABLES R502.5(1) & (b))
NUMBER OF JACK STUDS REQUIRED @ EA END OF HEADER/GIRDER

END REACTION (UP TO)	REQ'D STUDS FOR (2) PLY HEADER	END REACTION (UP TO)	REQ'D STUDS FOR (3) PLY HEADER	END REACTION (UP TO)	REQ'D STUDS FOR (4) PLY HEADER
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				

BUILDER	Weaver Development
JOB NAME	Lot 5-R Atkins Farm Estates
PLAN	Barstow I I "A" 3 Car
SEAL DATE	Seal Date
QUOTE #	Quote #
JOB #	J0721-4304
CITY / CO.	Sanford / Johnston
ADDRESS	136 Spring Hill Church Rd.
MODEL	Roof
DATE REV.	/ /
DRAWN BY	Christine Shivy
SALES REP.	Lenny Norris

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



● = HUS26 (Qty. 21)

● = JUS24 (Qty. 7)

▲ = 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

COMTECH
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 R502.5(1) & (2))

NUMBER OF JACK STUDS REQUIRED @ EA END OF HEADER/GIRDER

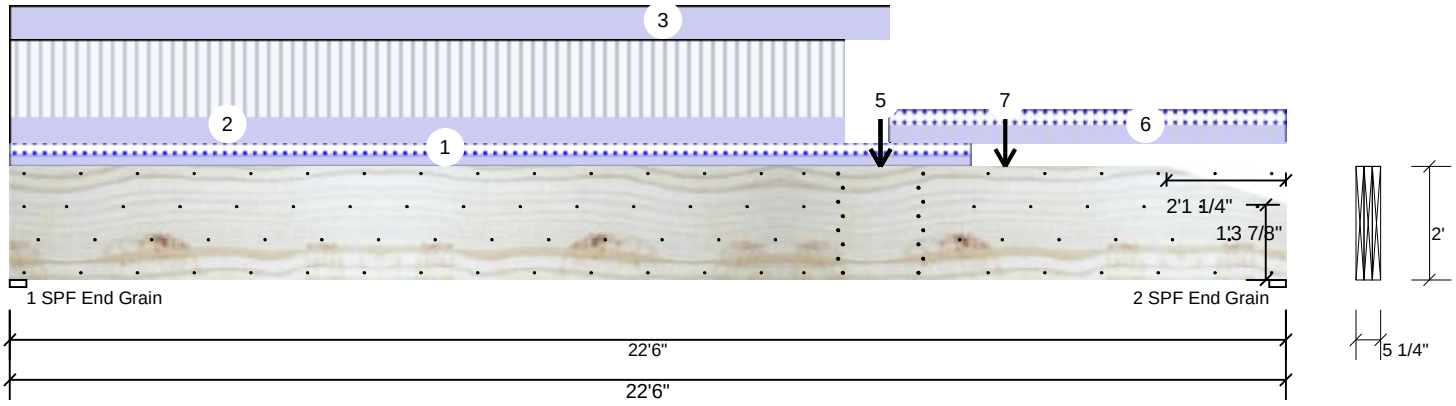
END REACTION (LBS)	REQ'D STUDS FOR (2) 1-1/2" HEADER	END REACTION (LBS)	REQ'D STUDS FOR (3) 1-1/2" HEADER	END REACTION (LBS)	REQ'D STUDS FOR (4) 1-1/2" HEADER
1700	1	2550	1	3400	1
3400	2	5100	2	6800	2
5100	3	7650	3	10200	3
6800	4	10200	4	13600	4
8500	5	12750	5	17000	5
10200	6	15300	6		
11900	7				
13600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

BUILDER	Weaver Development
JOB NAME	Lot 5-R Atkins Farm Estates
PLAN	Barstow I I "A" 3 Car
SEAL DATE	Seal Date
QUOTE #	Quote #
JOB #	J0721-4304
CITY / CO.	Sanford / Johnston
ADDRESS	136 Spring Hill Church Rd.
MODEL	Roof
DATE REV.	/ /
DRAWN BY	Christine Shivy
SALES REP.	Lenny Norris

Client:	Weaver Development	Date:	7/27/2021
Project:	Barstow II Elev. A w/ 3rd Car	Input by:	Christine Shivy
Address:	Barstow II Elev. A w/ 3rd Car	Job Name:	Barstow II Elev. A w/ 3rd Car
		Project #:	

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	4803	3879	683	0	0
2	5416	3803	1019	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	54%	3879 / 4803	8681	L	D+L
2 - SPF End Grain	3.500"	58%	3803 / 5416	9219	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	61237 ft-lb	14'6 1/2"	114169 ft-lb	0.536 (54%)	D+L	L
Unbraced	61237 ft-lb	14'6 1/2"	61526 ft-lb	0.995 (100%)	D+L	L
Shear	9907 lb	20'3 3/8"	26880 lb	0.369 (37%)	D+L	L
Rt. Scarf	155 psi, 9199 lb		320 psi	0.483 (48%)	D+L	L
LL Defl inch	0.282 (L/939)	11'11 7/16"	0.552 (L/480)	0.510 (51%)	L	L
TL Defl inch	0.478 (L/554)	11'9 11/16"	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 Notches in LVL are in accordance with APA Form No. EWS G535, Figure 1.
6 Girders are designed to be supported on the bottom edge only.
7 Top loads must be supported equally by all plies.
8 Top must be laterally braced at a maximum of 4'2 5/8" o.c.
9 Bottom braced at bearings.
10 Lateral slenderness ratio based on single ply width.

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

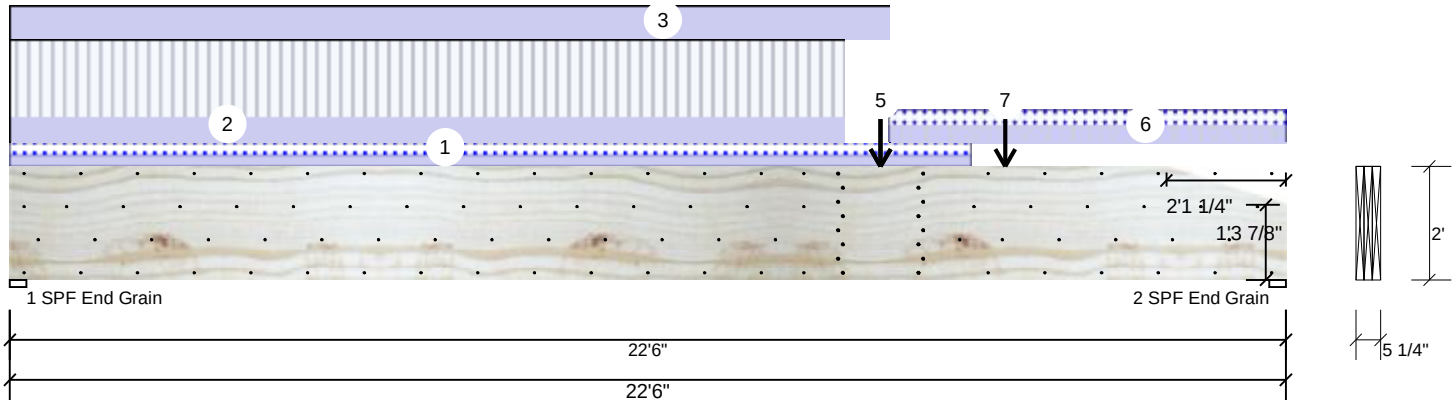
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

Client:	Weaver Development	Date:	7/27/2021
Project:	Barstow II Elev. A w/ 3rd Car	Input by:	Christine Shivy
Address:	Barstow II Elev. A w/ 3rd Car	Job Name:	Barstow II Elev. A w/ 3rd Car
		Project #:	

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

Level: Level



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 16-11-4		Near Face	45 PLF	0 PLF	45 PLF	0 PLF	0 PLF	M7
2	Part. Uniform	0-0-0 to 14-8-8		Far Face	100 PLF	299 PLF	0 PLF	0 PLF	0 PLF	F1A
3	Part. Uniform	0-0-0 to 15-6-0		Top	125 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Wall Load
4	Point	15-4-4		Far Face	1941 lb	5821 lb	0 lb	0 lb	0 lb	BM2
5	Point	15-4-4		Top	331 lb	0 lb	331 lb	0 lb	0 lb	D1GE
6	Part. Uniform	15-6-0 to 22-6-0		Far Face	62 PLF	0 PLF	62 PLF	0 PLF	0 PLF	M6
7	Point	17-6-10		Near Face	175 lb	0 lb	175 lb	0 lb	0 lb	M7GR
	Self Weight				28 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

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

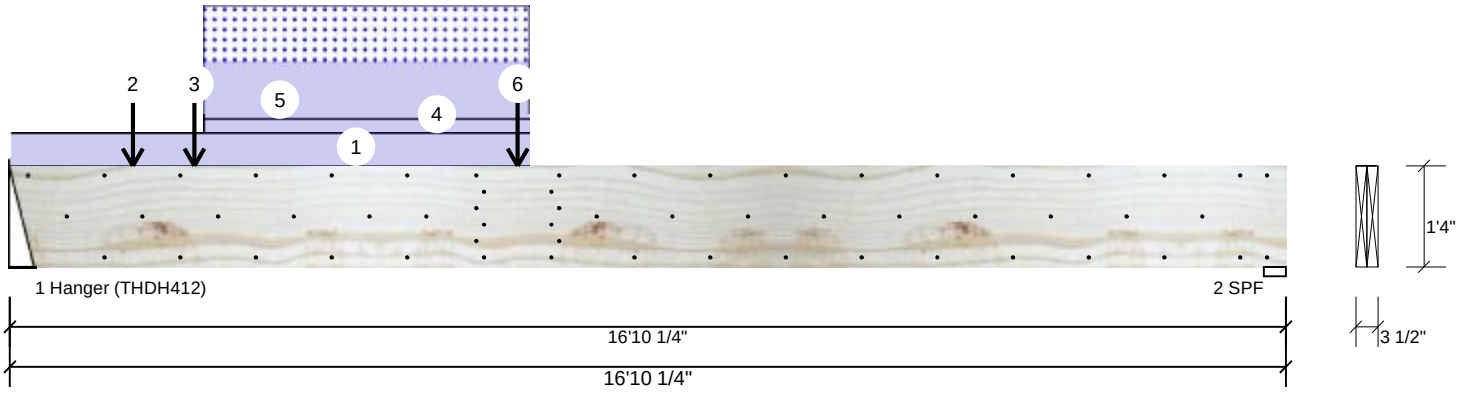
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

Client:	Weaver Development	Date:	7/27/2021
Project:	Barstow II Elev. A w/ 3rd Car	Input by:	Christine Shivy
Address:	Barstow II Elev. A w/ 3rd Car	Job Name:	Barstow II Elev. A w/ 3rd Car
		Project #:	

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	877	4512	3249	0	0
2	569	1144	619	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	4.000"	64%	4512 / 3249	7761	L	D+S
2 - SPF	3.500"	39%	1144 / 891	2035	L	D+0.75(L+S)

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	19615 ft-lb	6'3 1/16"	39750 ft-lb	0.493 (49%)	D+0.75(L+S)	L
Unbraced	19615 ft-lb	6'3 1/16"	19705 ft-lb	0.995 (100%)	D+0.75(L+S)	L
Shear	7542 lb	1'7 1/8"	13739 lb	0.549 (55%)	D+S	L
LL Defl inch	0.172 (L/1142)	7'4 3/16"	0.409 (L/480)	0.420 (42%)	0.75(L+S)	L
TL Defl inch	0.389 (L/505)	7'3 13/16"	0.546 (L/360)	0.710 (71%)	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 5'10 7/8" 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 6-10-4		Top	125 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Wall
2	Point	1-7-8		Top	500 lb	0 lb	500 lb	0 lb	0 lb	B1GE
3	Point	2-5-4		Top	2436 lb	0 lb	2436 lb	0 lb	0 lb	B1GR

Continued on page 2...

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

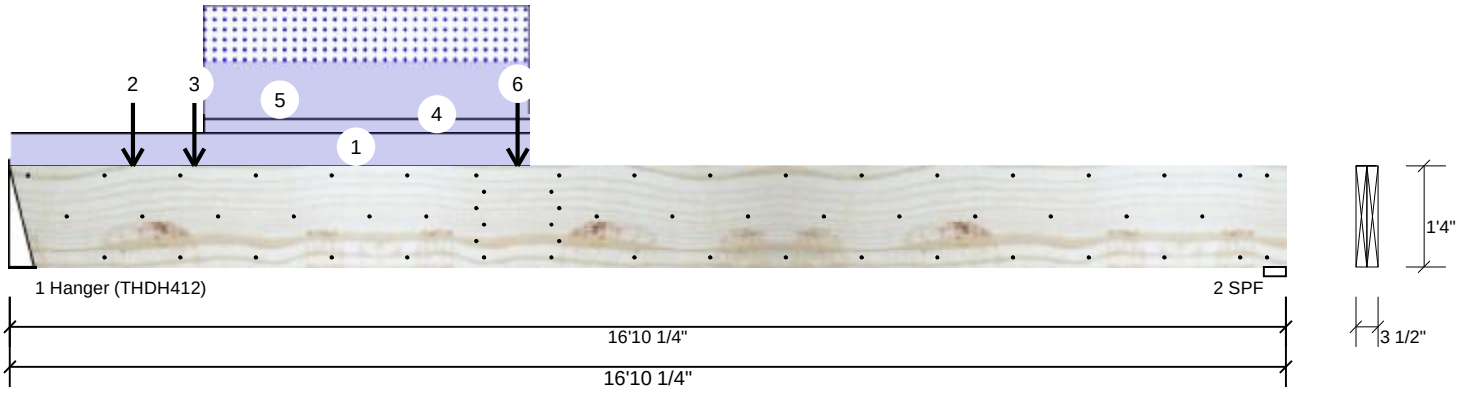
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

Client:	Weaver Development	Date:	7/27/2021
Project:	Barstow II Elev. A w/ 3rd Car	Input by:	Christine Shivy
Address:	Barstow II Elev. A w/ 3rd Car	Job Name:	Barstow II Elev. A w/ 3rd Car
		Project #:	

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	56 PLF	0 PLF	0 PLF	0 PLF	0 PLF	A7GE
5	Part. Uniform	2-6-12 to 6-10-4		Top	217 PLF	0 PLF	217 PLF	0 PLF	0 PLF	A7GE
6	Point	6-8-8		Near Face	482 lb	1446 lb	0 lb	0 lb	0 lb	BM4
	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

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

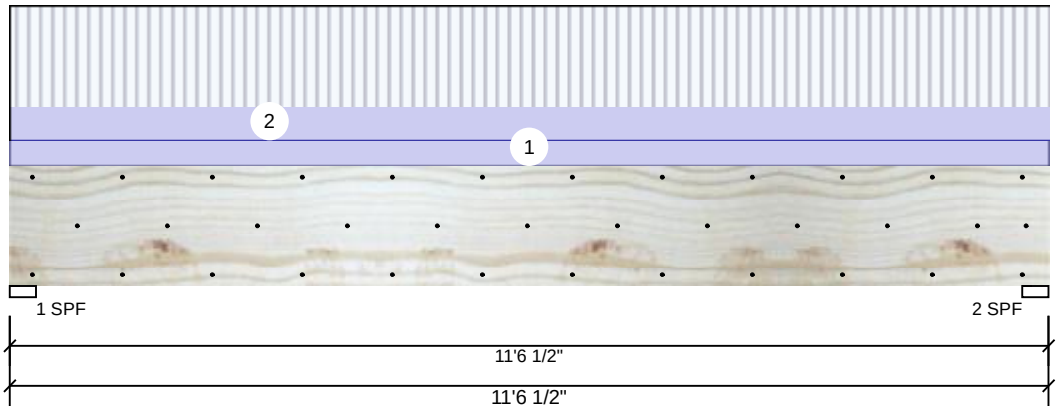
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

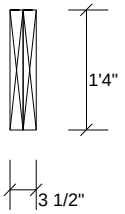
Comtech, Inc.
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

Client:	Weaver Development	Date:	7/27/2021
Project:	Barstow II Elev. A w/ 3rd Car	Input by:	Christine Shivy
Address:	Barstow II Elev. A w/ 3rd Car	Job Name:	Barstow II Elev. A w/ 3rd Car
		Project #:	

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:	360	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"	0.370 (L/360)	0.240 (24%)	D+L	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 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	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

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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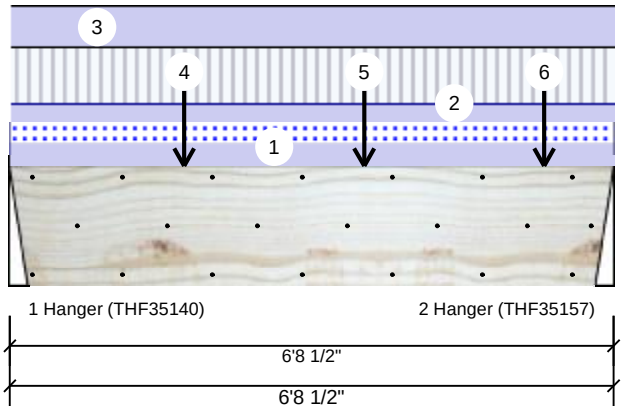
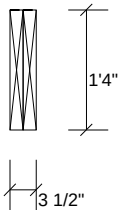
28314
910-864-TRUS

Client:	Weaver Development	Date:	7/27/2021
Project:	Barstow II Elev. A w/ 3rd Car	Input by:	Christine Shivy
Address:	Barstow II Elev. A w/ 3rd Car	Job Name:	Barstow II Elev. A w/ 3rd Car
		Project #:	

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	594	1130	471	0	0
2	594	1267	608	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	2.500"	25%	1130 / 798	1928	L	D+0.75(L+S)
2 - Hanger	2.500"	28%	1267 / 901	2168	L	D+0.75(L+S)

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	3349 ft-lb	3'8 5/8"	39750 ft-lb	0.084 (8%)	D+0.75(L+S)	L
Unbraced	3349 ft-lb	3'8 5/8"	18199 ft-lb	0.184 (18%)	D+0.75(L+S)	L
Shear	1750 lb	5'2 7/8"	13739 lb	0.127 (13%)	D+0.75(L+S)	L
LL Defl inch	0.007 (L/10813)	3'5 3/4"	0.161 (L/480)	0.040 (4%)	0.75(L+S)	L
TL Defl inch	0.017 (L/4494)	3'5 11/16"	0.215 (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	67 PLF	0 PLF	67 PLF	0 PLF	0 PLF	M6
2	Uniform			Far Face	59 PLF	177 PLF	0 PLF	0 PLF	0 PLF	F3
3	Uniform			Top	125 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Wall
4	Point	1-11-4		Top	153 lb	0 lb	153 lb	0 lb	0 lb	C1
5	Point	3-11-4		Top	286 lb	0 lb	286 lb	0 lb	0 lb	C2

Continued on page 2...

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

This design is valid until 1/8/2023

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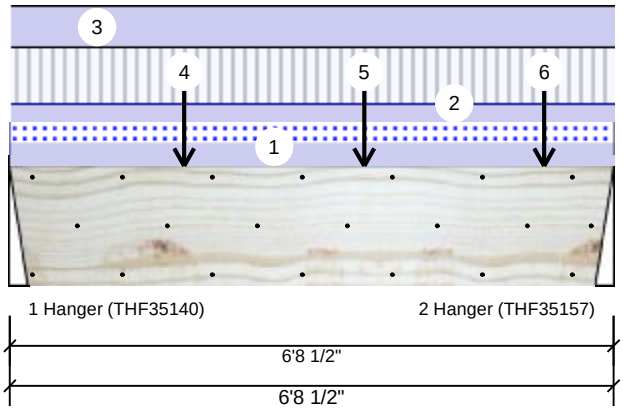
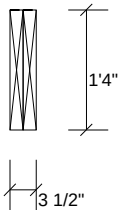
910-864-TRUS

Client:	Weaver Development	Date:	7/27/2021
Project:	Barstow II Elev. A w/ 3rd Car	Input by:	Christine Shivy
Address:	Barstow II Elev. A w/ 3rd Car	Job Name:	Barstow II Elev. A w/ 3rd Car
		Project #:	

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

Level: Level





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ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
6	Point	5-11-4		Top	190 lb	0 lb	190 lb	0 lb	0 lb	C3
	Self Weight				12 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

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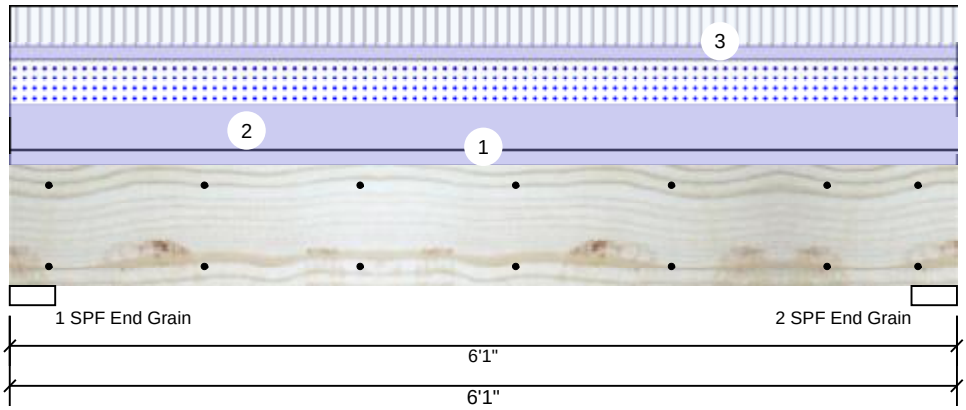
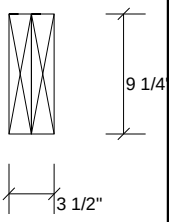
Client:	Weaver Development	Date:	7/27/2021
Project:	Barstow II Elev. A w/ 3rd Car	Input by:	Christine Shivy
Address:	Barstow II Elev. A w/ 3rd Car	Job Name:	Barstow II Elev. A w/ 3rd Car
		Project #:	

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	1780	1055	0	0
2	961	1780	1055	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	31%	1780 / 1512	3292	L	D+0.75(L+S)
2 - SPF End Grain	3.500"	31%	1780 / 1512	3292	L	D+0.75(L+S)

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4281 ft-lb	3' 1/2"	14423 ft-lb	0.297 (30%)	D+0.75(L+S)	L
Unbraced	4281 ft-lb	3' 1/2"	10944 ft-lb	0.391 (39%)	D+0.75(L+S)	L
Shear	2210 lb	1'	7943 lb	0.278 (28%)	D+0.75(L+S)	L
LL Defl inch	0.031 (L/2159)	3' 1/2"	0.141 (L/480)	0.220 (22%)	0.75(L+S)	L
TL Defl inch	0.068 (L/992)	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	347 PLF	0 PLF	347 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

This design is valid until 1/8/2023

Manufacturer Info

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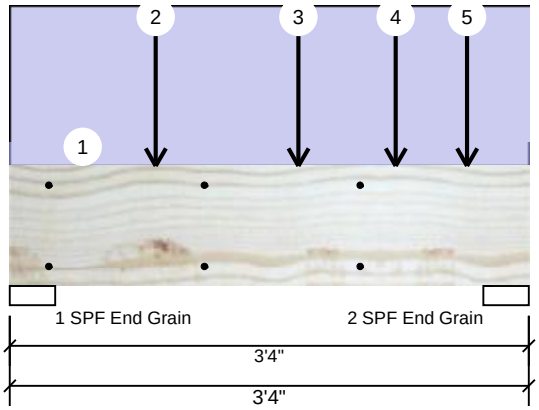
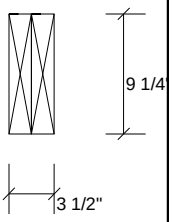
Client:	Weaver Development	Date:	7/27/2021
Project:	Barstow II Elev. A w/ 3rd Car	Input by:	Christine Shivy
Address:	Barstow II Elev. A w/ 3rd Car	Job Name:	Barstow II Elev. A w/ 3rd Car
		Project #:	

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	863	978	545	0	0
2	1886	1611	836	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	19%	978 / 1056	2034	L	D+0.75(L+S)
2 - SPF End Grain	3.500"	34%	1611 / 2041	3652	L	D+0.75(L+S)

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2232 ft-lb	1'10 1/4"	12542 ft-lb	0.178 (18%)	D+L	L
Unbraced	2232 ft-lb	1'10 1/4"	11972 ft-lb	0.186 (19%)	D+L	L
Shear	2465 lb	2'4"	6907 lb	0.357 (36%)	D+L	L
LL Defl inch	0.009 (L/3860)	1'10 1/4"	0.072 (L/480)	0.120 (12%)	L	L
TL Defl inch	0.015 (L/2376)	1'10 1/4"	0.096 (L/360)	0.150 (15%)	D+L	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	0-11-4		Top	668 lb	0 lb	668 lb	0 lb	0 lb	A7GE
3	Point	1-10-4		Top	408 lb	1222 lb	0 lb	0 lb	0 lb	F3
4	Point	2-5-12		Top	509 lb	1527 lb	0 lb	0 lb	0 lb	BM2
5	Point	2-11-4		Top	713 lb	0 lb	713 lb	0 lb	0 lb	C1
	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
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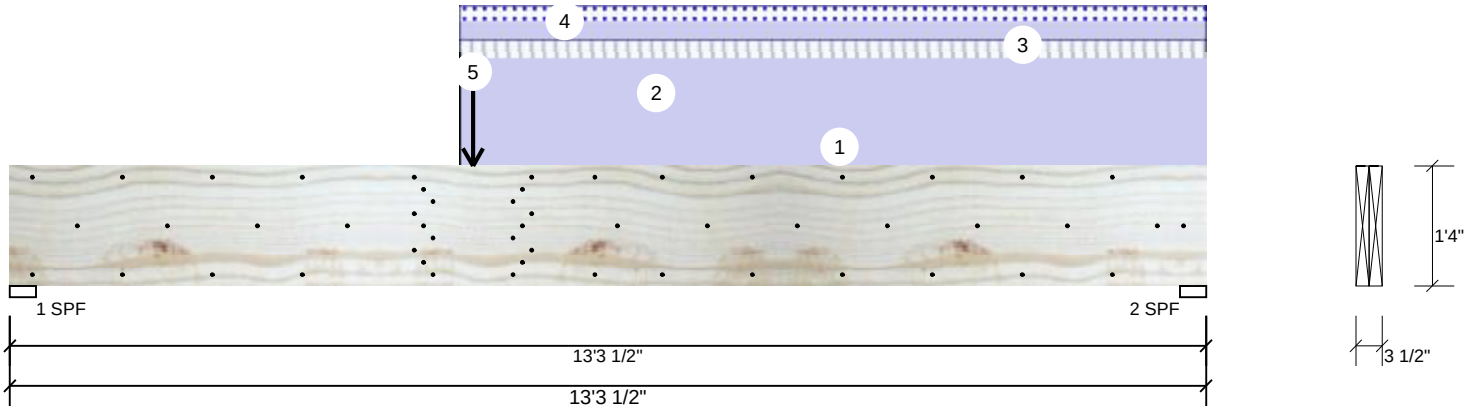
Address:	Barstow II Elev. A w/ 3rd Car	Job Name:	Barstow II Elev. A w/ 3rd Car
		Project #:	

BM7 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	1104	1157	101	0	0
2	854	1971	230	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	43%	1157 / 1104	2261	L	D+L
2 - SPF	3.500"	54%	1971 / 854	2825	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	10974 ft-lb	5'1 3/4"	34565 ft-lb	0.317 (32%)	D+L	L
Unbraced	10974 ft-lb	5'1 3/4"	10979 ft-lb	0.999 (100%)	D+L	L
Shear	2315 lb	1'6 5/8"	11947 lb	0.194 (19%)	D+L	L
LL Defl inch	0.066 (L/2353)	5'11 3/4"	0.321 (L/480)	0.200 (20%)	L	L
TL Defl inch	0.149 (L/1036)	6'5 1/4"	0.428 (L/360)	0.350 (35%)	D+L	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 Girders are designed to be supported on the bottom edge only.
5 Top loads must be supported equally by all plies.
6 Top must be laterally braced at a maximum of 11'3 3/8" o.c.
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	Part. Uniform	5-0-0 to 13-3-8		Top	125 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Wall Load
2	Part. Uniform	5-0-0 to 13-3-8		Top	112 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Gable Dead Load
3	Part. Uniform	5-0-0 to 13-3-8		Far Face	15 PLF	40 PLF	0 PLF	0 PLF	0 PLF	1'-0" Floor Load
4	Part. Uniform	5-0-0 to 13-3-8		Top	40 PLF	0 PLF	40 PLF	0 PLF	0 PLF	Gable Live Load

Continued on page 2...

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

This design is valid until 1/8/2023

Manufacturer Info

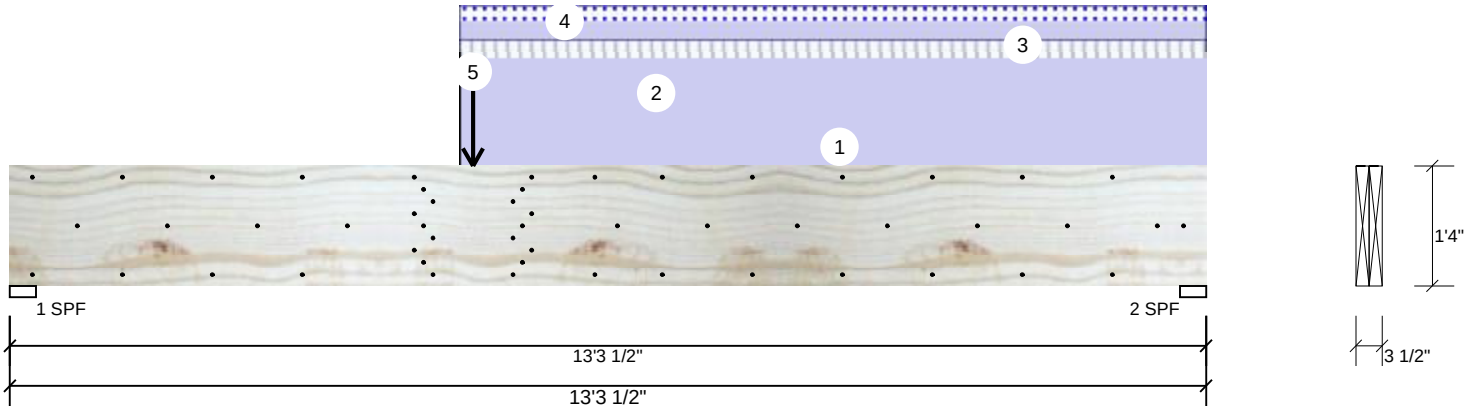
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

Client:	Weaver Development	Date:	7/27/2021
Project:	Barstow II Elev. A w/ 3rd Car	Input by:	Christine Shivy
Address:	Barstow II Elev. A w/ 3rd Car	Job Name:	Barstow II Elev. A w/ 3rd Car
		Project #:	

BM7 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
5	Point	5-1-12		Far Face	542 lb	1626 lb	0 lb	0 lb	0 lb	BM4
	Self Weight				12 PLF					

Notes

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Lumber

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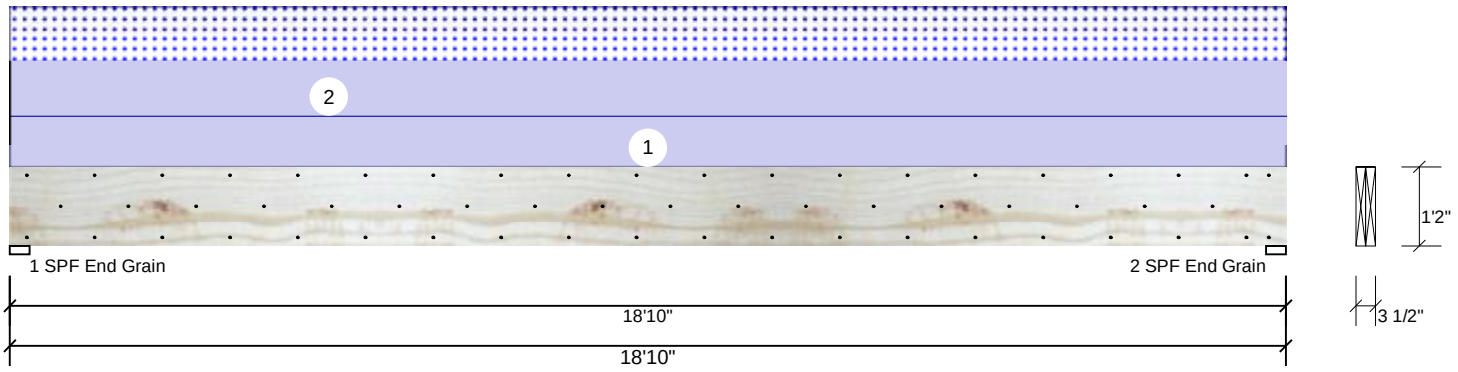
Client:	Weaver Development	Date:	7/27/2021
Project:	Barstow II Elev. A w/ 3rd Car	Input by:	Christine Shivy
Address:	Barstow II Elev. A w/ 3rd Car	Job Name:	Barstow II Elev. A w/ 3rd Car
		Project #:	

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	M7
	Self Weight				11 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

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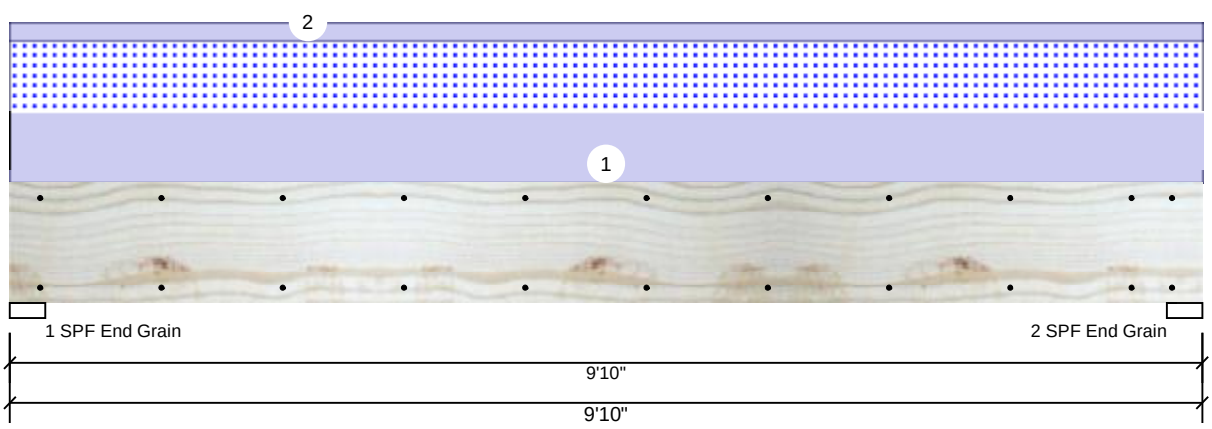
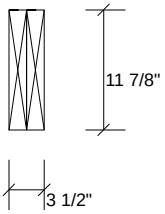
Project:	Barstow II Elev. A w/ 3rd Car	Input by:	Christine Shivy
Address:	Barstow II Elev. A w/ 3rd Car	Job Name:	Barstow II Elev. A w/ 3rd Car
		Project #:	

GDH-3 Kerto-S LVL 1.750" X 11.875" 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	1476	1136	0	0
2	0	1476	1136	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	25%	1476 / 1136	2612	L	D+S
2 - SPF End Grain	3.500"	25%	1476 / 1136	2612	L	D+S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	5836 ft-lb	4'11"	22897 ft-lb	0.255 (25%)	D+S	L
Unbraced	5836 ft-lb	4'11"	9857 ft-lb	0.592 (59%)	D+S	L
Shear	1964 lb	1'2 5/8"	10197 lb	0.193 (19%)	D+S	L
LL Defl inch	0.048 (L/2337)	4'11"	0.234 (L/480)	0.210 (21%)	S	L
TL Defl inch	0.111 (L/1016)	4'11"	0.312 (L/360)	0.350 (35%)	D+S	L

Design Notes

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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	231 PLF	0 PLF	231 PLF	0 PLF	0 PLF	G1
2	Uniform			Top	60 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Loads
	Self Weight				9 PLF					

Notes

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