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03/30/2020

APPROVED
Limited building only review
Permit holder responsible for
full compliance with the code

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

Harnett COUNTY NORTH CAROLINA

PLANS DESIGNED TO THE 2012 NORTH CAROLINA STATE RESIDENTIAL BUILDING CODE

CLIMATE ZONE	ZONE 3	ZONE 4	ZONE 5
FENESTRATION U-FACTOR	0.35	0.35	0.35
SKYLIGHT U-FACTOR	0.65	0.60	0.60
GLAZED FENESTRATION SHGC	0.30	0.30	0.30
CEILING R-VALUE	30	38	38
WALL R-VALUE	13	15	19
FLOOR R-VALUE	19	19	30
* BASEMENT WALL R-VALUE	10/13	10/13	10/13
** SLAB R-VALUE	0	10	10
* CRAWL SPACE WALL R-VALUE	5/13	10/13	10/13

* "10/13" MEANS R-10 SHEATHING INSULATION OR R-13 CAVITY INSULATION
** INSULATION DEPTH WITH MONOLITHIC SLAB 18" 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 100 MPH, 3 SECOND GUST (85 FASTEST MILE) EXPOSURE "B"

DESIGN PRESSURES FOR DOORS AND WINDOWS POSITIVE AND NEGATIVE IN PSF			
	MEAN ROOF HEIGHT (FT)		
VELOCITY (MPH)	15	25	35
90	15	17	19
100	20	23	25

ASSUMED MEAN ROOF HEIGHT 25'-0"

ROOF VENTILATION

SECTION R806

R806.1 Ventilation required. Enclosed *attics* and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters shall have cross ventilation for each separate space by ventilating openings protected against the entrance of rain or snow. Ventilation openings shall have a least dimension of 1/16 inch (1.6 mm) minimum and 1/4 inch (6.4 mm) maximum. Ventilation openings having a least dimension larger than 1/4 inch (6.4 mm) shall be provided with corrosion-resistant wire cloth screening, hardware cloth, or similar material with openings having a least dimension of 1/16 inch (1.6 mm) minimum and 1/4 inch (6.4 mm) maximum. Openings in roof framing members shall conform to the requirements of Section R802.7.

R806.2 Minimum area. The total net free ventilating area shall not be less than 1/150 of the area of the space ventilated except that reduction of the total area to 1/300 is permitted provided that at least 50 percent and not more than 80 percent of the required ventilating area is provided by ventilators located in the upper portion of the space to be ventilated at least 3 feet (914 mm) above the eave or cornice vents with the balance of the required ventilation provided by eave or cornice vents. As an alternative, the net free cross-ventilation area may be reduced to 1/300 when a Class I or II vapor retarder is installed on the warm-in-winter side of the ceiling.

Exceptions:

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

SQUARE FOOTAGE OF ROOF TO BE VENTED = 1,321 SQ.FT.

NET FREE CROSS VENTILATION NEEDED:

WITHOUT 50% TO 80% OF VENTING 3'-0" ABOVE EAVE = 8.81 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 = 4.40 SQ.FT.

FRONT ELEVATION - B

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.

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.

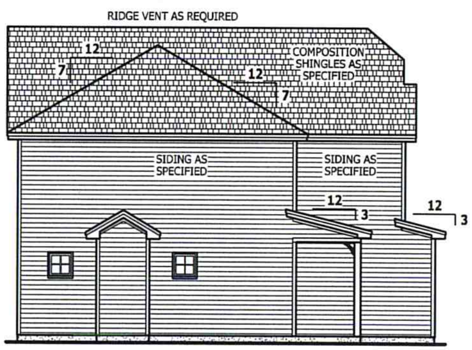
R312.3 Opening limitations. Required *guards* shall not have openings from the walking surface to the required *guard* height which allow passage of a sphere 4 inches (102 mm)in diameter.

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.

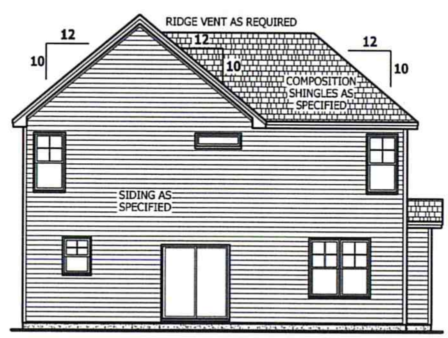
SQUARE FOOTAGE

HEATED	
FIRST FLOOR	775 SQ.FT.
SECOND FLOOR	1110 SQ.FT.
TOTAL	1885 SQ.FT.
UNHEATED	
GARAGE	449 SQ.FT.
FRONT PORCH	86 SQ.FT.
TOTAL	535 SQ.FT.



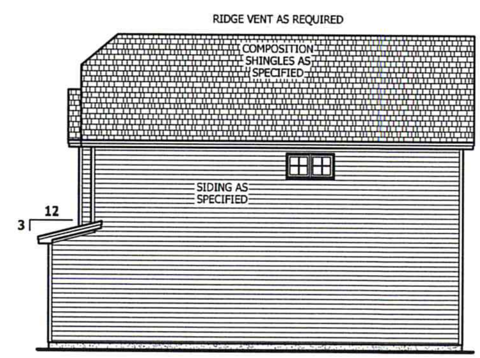
LEFT SIDE ELEVATION

SCALE 1/8" = 1'-0"



REAR ELEVATION

SCALE 1/8" = 1'-0"



RIGHT SIDE ELEVATION

SCALE 1/8" = 1'-0"

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.

FRONT ELEVATION - B

Northbrook 1885-212

Lot 22 Lakedale

BEN STOUT Construction — COMMERCIAL & RESIDENTIAL

HAYNES HOME PLANS, INC.
P.O. Box 702, Wake Forest, NC 27588 919-435-6180 Fax 1-866-491-0396

SQUARE FOOTAGE	
HEATED	
FIRST FLOOR	775 SQ.FT.
SECOND FLOOR	1110 SQ.FT.
TOTAL	1885 SQ.FT.
UNHEATED	
GARAGE	449 SQ.FT.
FRONT PORCH	86 SQ.FT.
TOTAL	535 SQ.FT.

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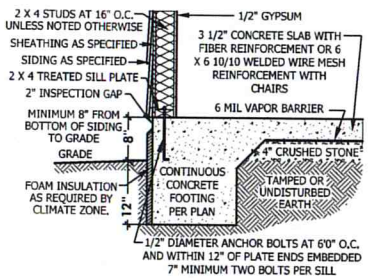
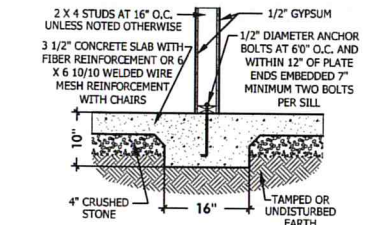


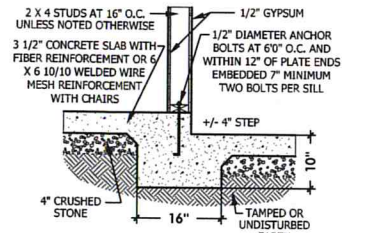
A MONOLITHIC SLAB FOOTING

SCALE 3/4" = 1'-0"



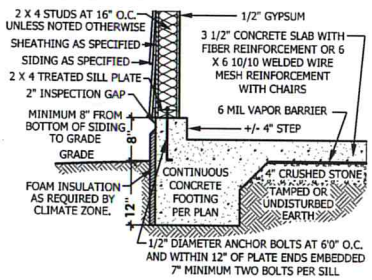
B LUG FOOTING

SCALE 3/4" = 1'-0"



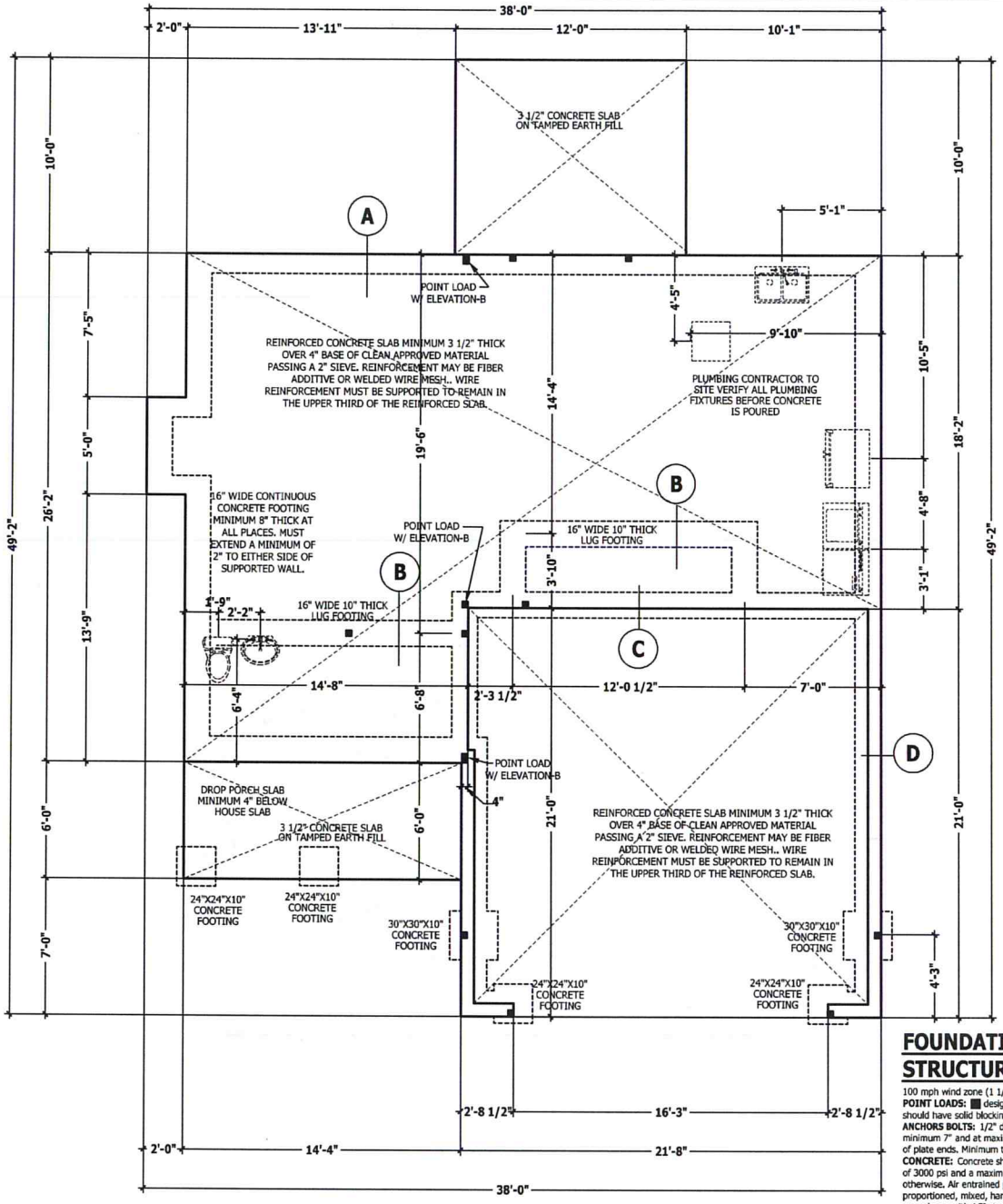
C THICKEND SLAB AT STEP

SCALE 3/4" = 1'-0"



D MONOLITHIC SLAB FOOTING STEM WALL AT GARAGE

SCALE 3/4" = 1'-0"



MONOLITHIC SLAB PLAN

SCALE 1/4" = 1'-0"

FOUNDATION STRUCTURAL

100 mph wind zone (1 1/2 to 2 1/2" story)

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

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

CONCRETE: Concrete shall have a minimum 28 day strength of 3000 psi and a maximum slump of 5 inches unless noted otherwise. Air entrained per table 402.2. All concrete shall be proportioned, mixed, handled,sampled, tested, and placed 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

Northbrook 1885-212
Lot 22 Lakedale

BEN STOUT Construction — COMMERCIAL & RESIDENTIAL

HAYNES HOME PLANS, INC
P.O. Box 702, Wake Forest, NC 27588 919-435-6100 Fax 1-866-481-0596

SQUARE FOOTAGE	
HEATED	
FIRST FLOOR	775 SQ.FT.
SECOND FLOOR	1110 SQ.FT.
TOTAL	1885 SQ.FT.
UNHEATED	
GARAGE	440 SQ.FT.
FRONT PORCH	86 SQ.FT.
TOTAL	526 SQ.FT.

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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.
KNEE WALL AND CEILING HEIGHTS. If for any reason the truss manufacturer fails to meet or exceed designated heel heights, finished knee wall heights, or finished ceiling height shown on these drawings the finished square footage may vary. Any discrepancy must be brought to Haynes Home Plans, Inc. attention, so a suitable solution can be reached before construction begins. Any variation due to these conditions not being meet is the reasonability of the truss manufacturer.
ANCHORAGE. All required anchors for trusses due to uplift or bearing shall meet the requirements as specified on the truss schematics.
BEARING. All trusses shall be designed for bearing on SPF #2 plates or ledgers unless noted otherwise.

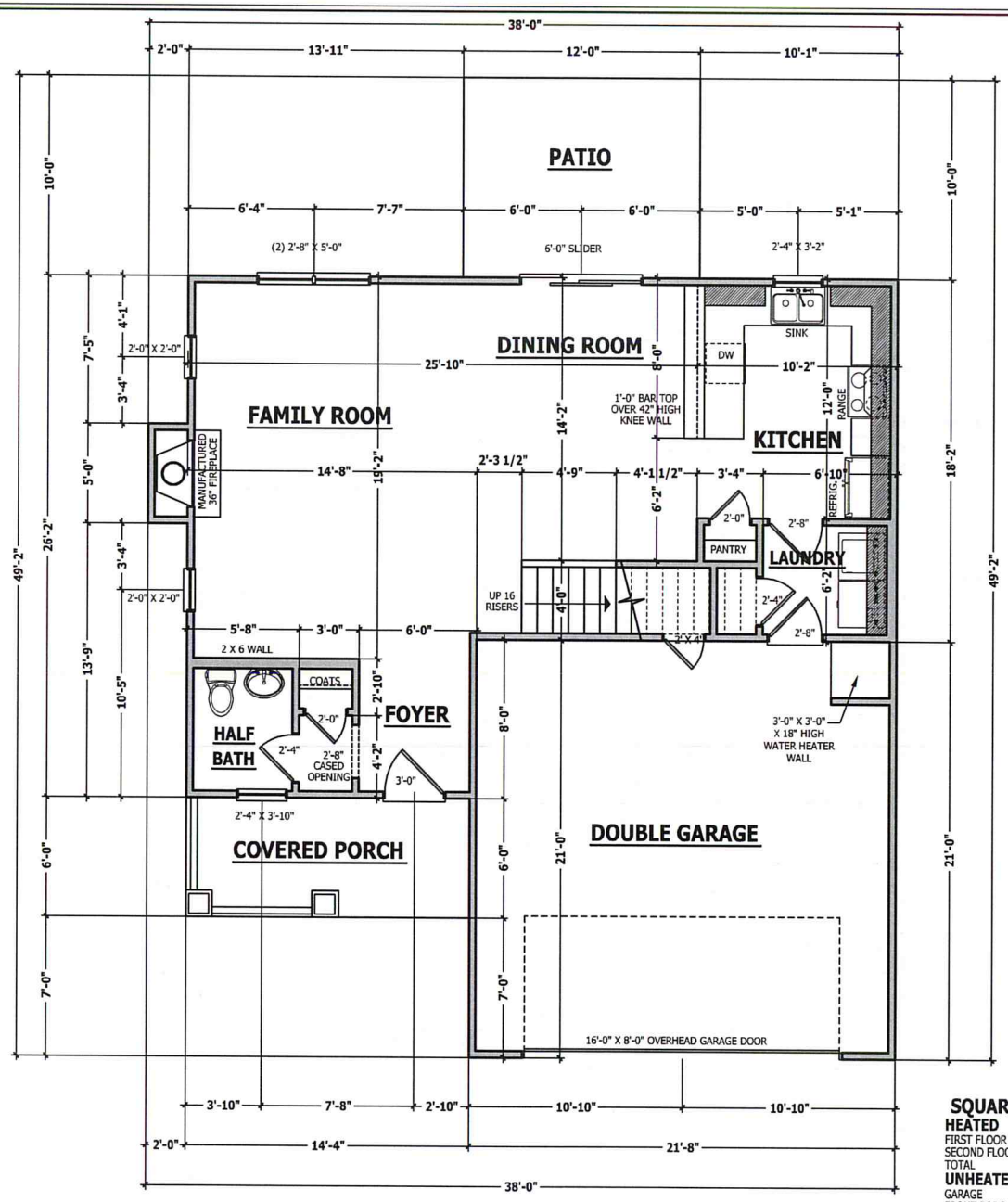
EXTERIOR WINDOWS AND DOORS

SECTION R612
R612.1 General. This section prescribes performance and construction requirements for exterior windows and doors installed in walls. Windows and doors shall be installed and flashed in accordance with the fenestration manufacturer's written installation instructions. Window and door openings shall be flashed in accordance with Section R703.8. Written installation instructions shall be provided by the fenestration manufacturer for each window or door.
R612.2 Window sills. In *dwelling* units, where the opening of an operable window is located more than 72 inches (1829 mm) above the finished *grade* or surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches (610 mm) above the finished floor of the room in which the window is located. Operable sections of windows shall not permit openings that allow passage of a 4 inch (102 mm) diameter sphere where such openings are located within 24 inches (610 mm) of the finished floor.
Exceptions:
1. Windows whose openings will not allow a 4-inch diameter (102 mm) sphere to pass through the opening when the opening is in its largest opened position.
2. Openings that are provided with window fall prevention devices that comply with Section R612.3.
3. Openings that are provided with fall prevention devices that comply with ASTM F 2090.
4. Windows that are provided with opening limiting devices that comply with Section R612.4.

R612.3 Window fall prevention devices. Window fall prevention devices and window guards, where provided, shall comply with the requirements of ASTM F 2090.

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.



FIRST FLOOR PLAN

SCALE 1/4" = 1'-0"

SQUARE FOOTAGE

HEATED	
FIRST FLOOR	775 SQ.FT.
SECOND FLOOR	1110 SQ.FT.
TOTAL	1885 SQ.FT.
UNHEATED	
GARAGE	449 SQ.FT.
FRONT PORCH	86 SQ.FT.
TOTAL	535 SQ.FT.

FIRST FLOOR PLAN
Northbrook 1885-212
Lot 22 Lakedale

BEN STOUT Construction — COMMERCIAL & RESIDENTIAL

HAYNES HOME PLANS, INC.
P.O. Box 702, Wake Forest, NC 27588 919-435-0190 Fax 1-866-491-0596

SQUARE FOOTAGE
HEATED
FIRST FLOOR 775 SQ.FT.
SECOND FLOOR 1110 SQ.FT.
TOTAL 1885 SQ.FT.
UNHEATED
GARAGE 449 SQ.FT.
FRONT PORCH 86 SQ.FT.
TOTAL 535 SQ.FT.

9/4/2014

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STRUCTURAL NOTES

All construction shall conform to the latest requirements of the 2012 North Carolina Residential Building Code, plus all local codes and regulations. This document in no way shall be construed to supersede the code.

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

DESIGN LOADS

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

FRAMING LUMBER: All non treated framing lumber shall be SPF #2 (Fb = 875 PSI) and all treated lumber shall be SYP #2 (Fb = 975 PSI) unless noted other wise.

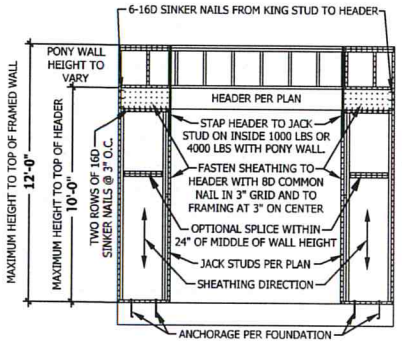
ENGINEERED WOOD BEAMS:
Laminated veneer lumber (LVL) = Fb=2600 PSI, Fv=285 PSI, E=1.9x106 PSI
Parallel strand lumber (PSL) = Fb=2900 PSI, Fv=290 PSI, E=2.0x106 PSI
Laminated strand lumber (LSL) Fb=2250 PSI, Fv=400 PSI, E=1.55x106 PSI
Install all connections per manufacturers instructions.

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

LINTELS: Brick lintels shall be 3 1/2" x 3 1/2" x 1/4" steel angle for up to 6'-0" span and 6" x 4" x 5/16" steel angle with 6" leg vertical for spans up to 9'-0" unless noted otherwise.

CONCRETE: Concrete shall have a minimum 28 day strength of 3000 psi and a maximum slump of 5 inches unless noted otherwise. Air entrained per table 402.2. All concrete shall be proportioned, mixed, handled,sampled, tested, and placed 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.



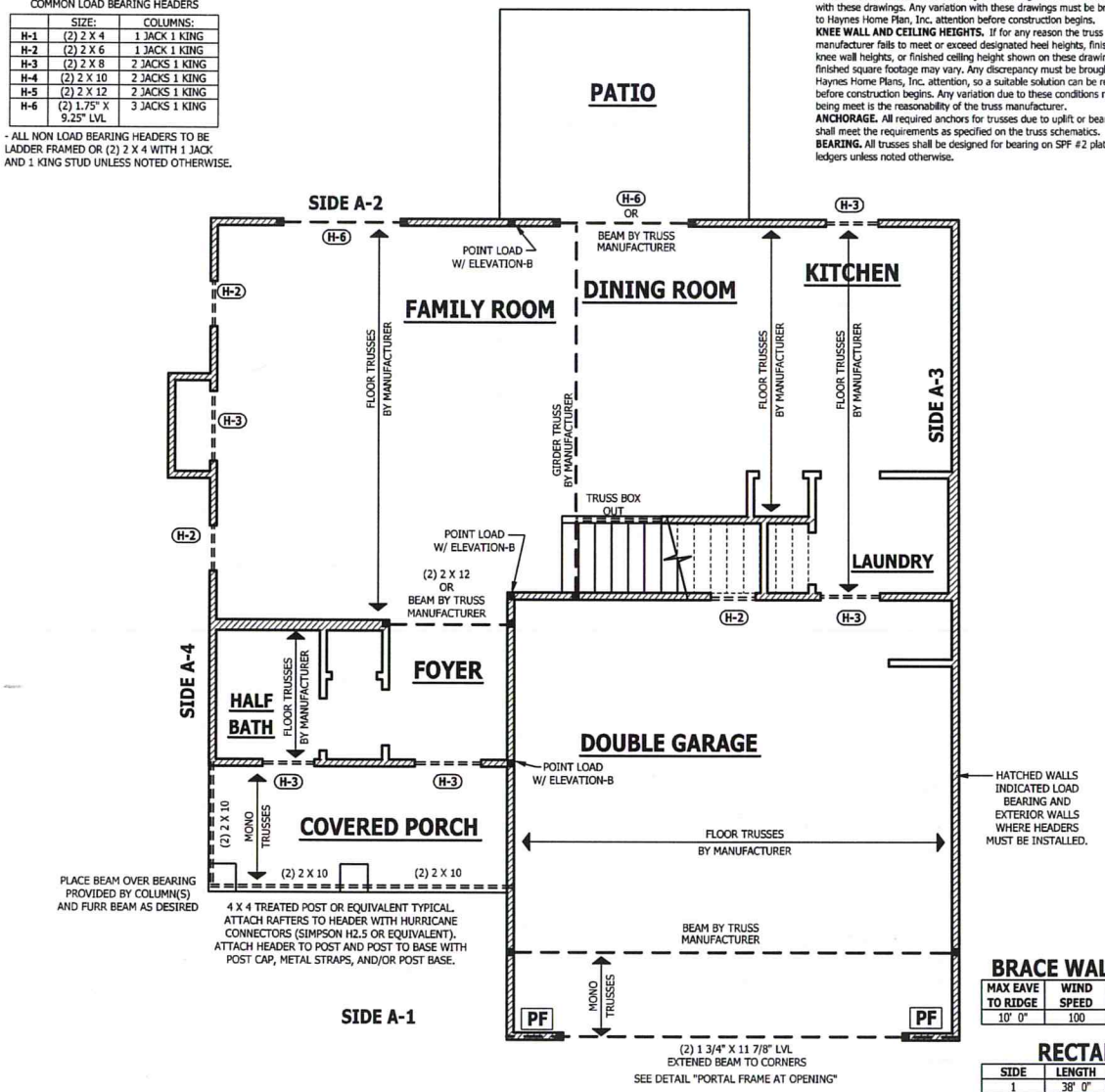
PF PORTAL FRAME AT OPENING
(METHOD PF PER FIGURE AND SECTION R602.10.1)
SCALE 1/4" = 1'-0"

HEADER SCHEDULE

COMMON LOAD BEARING HEADERS

	SIZE:	COLUMNS:
H-1	(2) 2 X 4	1 JACK 1 KING
H-2	(2) 2 X 6	1 JACK 1 KING
H-3	(2) 2 X 8	2 JACKS 1 KING
H-4	(2) 2 X 10	2 JACKS 1 KING
H-5	(2) 2 X 12	2 JACKS 1 KING
H-6	(2) 1.75" X 9.25" LVL	3 JACKS 1 KING

- ALL NON LOAD BEARING HEADERS TO BE LADDER FRAMED OR (2) 2 X 4 WITH 1 JACK AND 1 KING STUD UNLESS NOTED OTHERWISE.



SIDE A-1

ROOF TRUSS REQUIREMENTS

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

KNEE WALL AND CEILING HEIGHTS. If for any reason the truss manufacturer fails to meet or exceed designated heel heights, finished knee wall heights, or finished ceiling height shown on these drawings the finished square footage may vary. Any discrepancy must be brought to Haynes Home Plans, Inc. attention, so a suitable solution can be reached before construction begins. Any variation due to these conditions not being meet is the reasonability of the truss manufacturer.

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

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

BRACE WALL FACTORS

MAX EAVE TO RIDGE	WIND SPEED	EXPOSURE	SEISMIC CATEGORY
10' 0"	100	B	A OR B

RECTANGLE A

SIDE	LENGTH	REQUIRED	PROVIDED
1	38' 0"	13' 1"	15' 5"
2	"	"	21' 0"
3	39' 2"	13' 6"	21' 8"
4	"	"	34' 6"
WALL HEIGHT: 9' ROOF + 1 EAVE: 10' 0"			

BRACE WALL PANEL NOTES

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

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

REQUIRED LENGTH OF BRACING: Required brace wall length for each side of the circumscribed rectangle are interpolated per table R602.10.3. Methods CS-WSP and CS-SFB contribute their actual length. Method GB contributes 0.5 it's actual length. Method PF contributes 1.5 times its actual length.

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

FIRST FLOOR STRUCTURAL

SCALE 1/4" = 1'-0"

FIRST FLOOR STRUCTURAL
Northbrook 1885-212
Lot 22 Lakedale

BEN STOUT Construction — COMMERCIAL & RESIDENTIAL
HAYNES HOME PLANS, INC.
P.O. Box 700, Wake Forest, NC 27588 919-435-6160 Fax 1-866-481-0396

SQUARE FOOTAGE

HEATED	
FIRST FLOOR	775 SQ.FT.
SECOND FLOOR	1110 SQ.FT.
TOTAL	1885 SQ.FT.
UNHEATED	
GARAGE	446 SQ.FT.
FRONT PORCH	89 SQ.FT.
TOTAL	535 SQ.FT.

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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.

ROOF TRUSS REQUIREMENTS

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

KNEE WALL AND CEILING HEIGHTS. If for any reason the truss manufacturer fails to meet or exceed designated heel heights, finished knee wall heights, or finished ceiling height shown on these drawings the finished square footage may vary. Any discrepancy must be brought to Haynes Home Plans, Inc. attention, so a suitable solution can be reached before construction begins. Any variation due to these conditions not being meet is the reasonability of the truss manufacturer.

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

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

EXTERIOR WINDOWS AND DOORS

SECTION R612

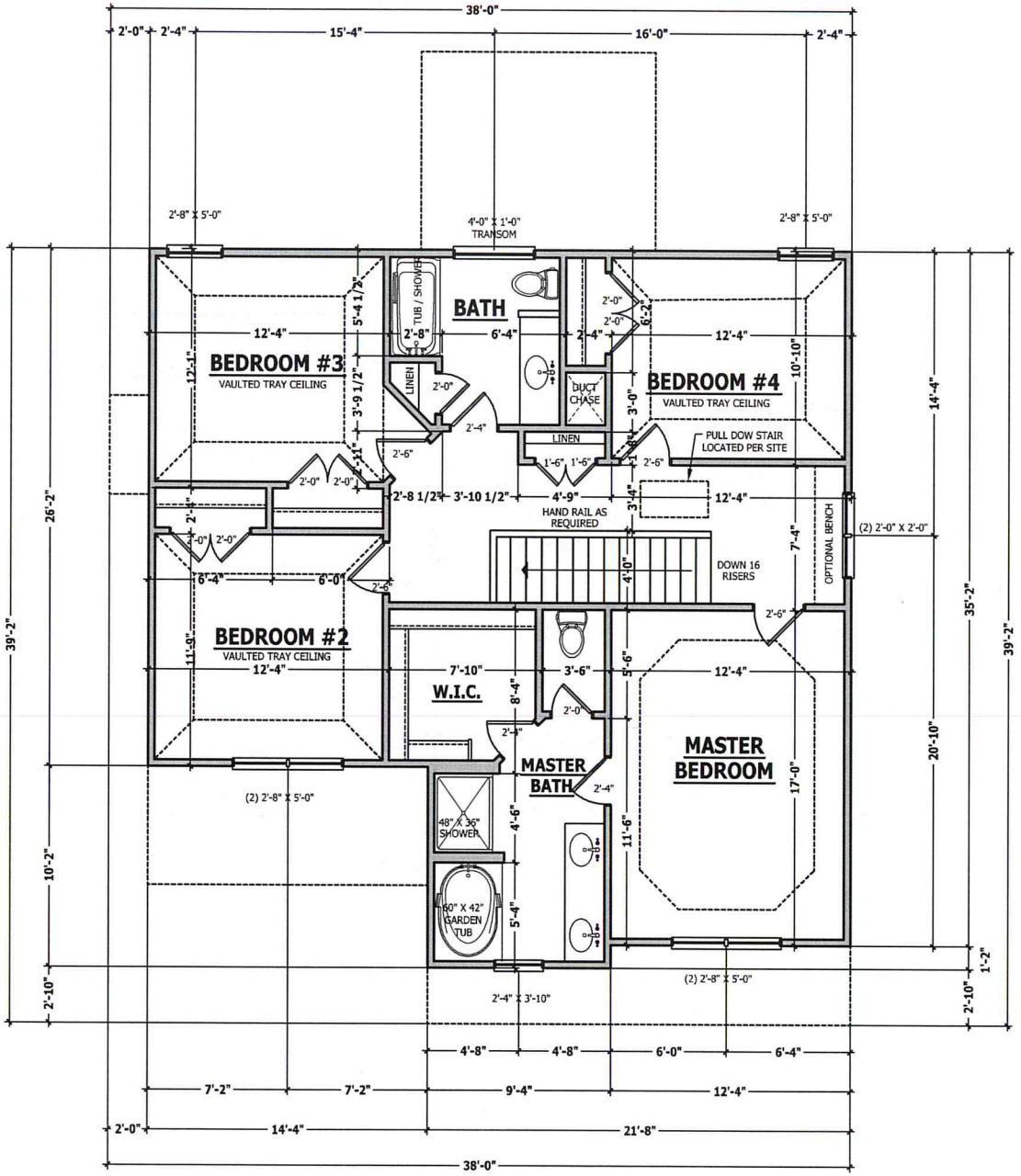
R612.1 General. This section prescribes performance and construction requirements for exterior windows and doors installed in walls. Windows and doors shall be installed and flashed in accordance with the fenestration manufacturer's written installation instructions. Window and door openings shall be flashed in accordance with Section R703.8. Written installation instructions shall be provided by the fenestration manufacturer for each window or door.

R612.2 Window sills. In *dwelling* units, where the opening of an operable window is located more than 72 inches (1829 mm) above the finished *grade* or surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches (610 mm) above the finished floor of the room in which the window is located. Operable sections of windows shall not permit openings that allow passage of a 4 inch (102 mm) diameter sphere where such openings are located within 24 inches (610 mm) of the finished floor.

Exceptions:

1. Windows whose openings will not allow a 4-inch diameter (102 mm) sphere to pass through the opening when the opening is in its largest opened position.
2. Openings that are provided with window fall prevention devices that comply with Section R612.3.
3. Openings that are provided with fall prevention devices that comply with ASTM F 2090.
4. Windows that are provided with opening limiting devices that comply with Section R612.4.

R612.3 Window fall prevention devices. Window fall prevention devices and window guards, where provided, shall comply with the requirements of ASTM F 2090.



SECOND FLOOR PLAN

SCALE 1/4" = 1'-0"

SECOND FLOOR PLAN
Northbrook 1885-212
Lot 22 Lakedale

BEN STOUT Construction — COMMERCIAL & RESIDENTIAL
HAYNES HOME PLANS, INC.
P.O. Box 7702, Wake Forest, NC 27588 919-435-5180 Fax 1-866-491-0598

SQUARE FOOTAGE

HEATED	
FIRST FLOOR	775 SQ.FT.
SECOND FLOOR	1110 SQ.FT.
TOTAL	1885 SQ.FT.
UNHEATED	
GARAGE	449 SQ.FT.
FRONT PORCH	86 SQ.FT.
TOTAL	535 SQ.FT.

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HEADER SCHEDULE

COMMON LOAD BEARING HEADERS

	SIZE:	COLUMNS:
H-1	(2) 2 X 4	1 JACK 1 KING
H-2	(2) 2 X 6	1 JACK 1 KING
H-3	(2) 2 X 8	2 JACKS 1 KING
H-4	(2) 2 X 10	2 JACKS 1 KING
H-5	(2) 2 X 12	2 JACKS 1 KING
H-6	(2) 1.75" X 9.25" LVL	3 JACKS 1 KING

- ALL NON LOAD BEARING HEADERS TO BE LADDER FRAMED OR (2) 2 X 4 WITH 1 JACK AND 1 KING STUD UNLESS NOTED OTHERWISE.

STRUCTURAL NOTES

All construction shall conform to the latest requirements of the 2012 North Carolina Residential Building Code, plus all local codes and regulations. This document in no way shall be construed to supersede the code.

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

DESIGN LOADS

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

FRAMING LUMBER: All non treated framing lumber shall be SPF #2 (Fb = 875 PSI) and all treated lumber shall be SYP #2 (Fb = 975 PSI) unless noted other wise.

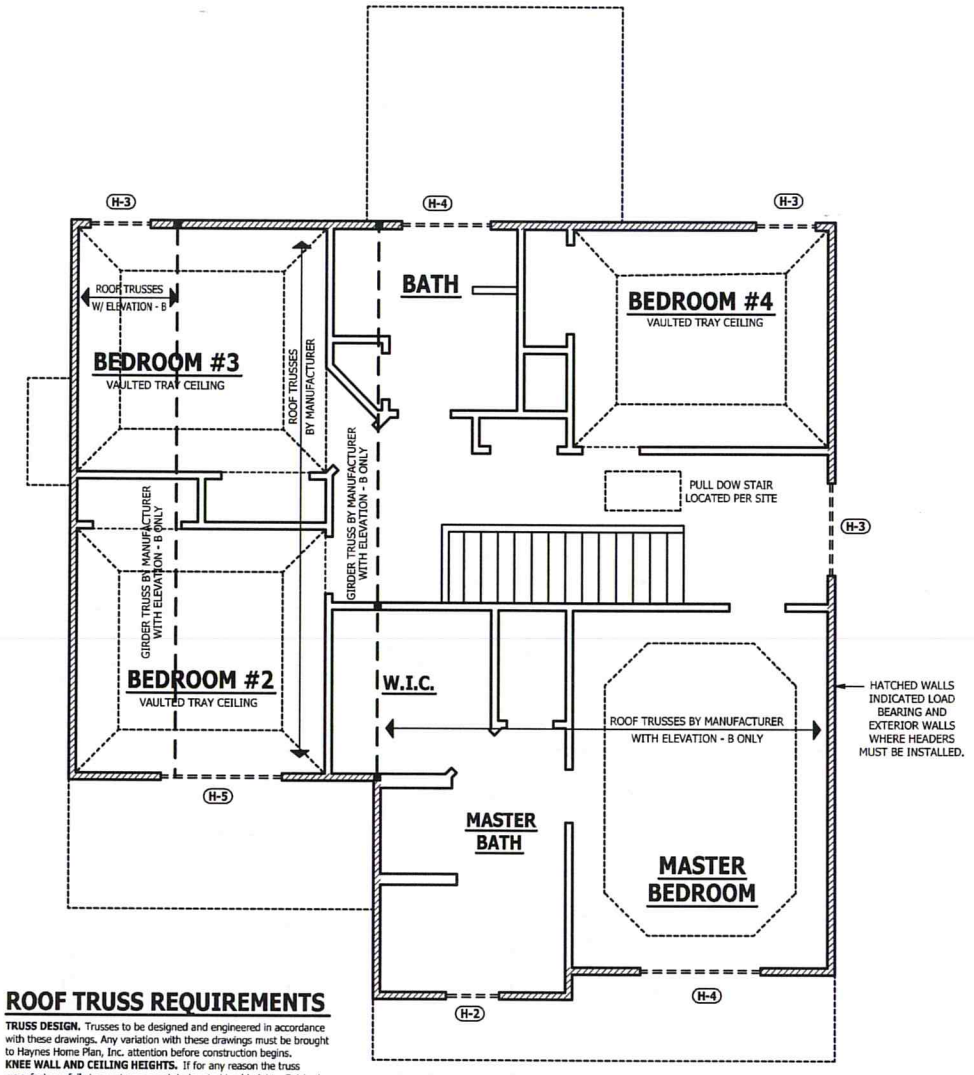
ENGINEERED WOOD BEAMS:
Laminated veneer lumber (LVL) = Fb=2600 PSI, Fv=285 PSI, E=1.9x106 PSI
Parallel strand lumber (PSL) = Fb=2900 PSI, Fv=290 PSI, E=2.0x106 PSI
Laminated strand lumber (LSL) Fb=2250 PSI, Fv=400 PSI, E=1.55x106 PSI
Install all connections per manufacturers instructions.

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

LINTELS: Brick lintels shall be 3 1/2" x 3 1/2" x 1/4" steel angle for up to 6'-0" span and 6" x 4" x 5/16" steel angle with 6" leg vertical for spans up to 9'-0" unless noted otherwise.

CONCRETE: Concrete shall have a minimum 28 day strength of 3000 psi and a maximum slump of 5 inches unless noted otherwise. Air entrained per table 402.2. All concrete shall be proportioned, mixed, handled,sampled, tested, and placed 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.



ROOF TRUSS REQUIREMENTS

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

KNEE WALL AND CEILING HEIGHTS. If for any reason the truss manufacturer fails to meet or exceed designated heel heights, finished knee wall heights, or finished ceiling height shown on these drawings the finished square footage may vary. Any discrepancy must be brought to Haynes Home Plans, Inc. attention, so a suitable solution can be reached before construction begins. Any variation due to these conditions not being meet is the reasonability of the truss manufacturer.

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

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

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

SECOND FLOOR STRUCTURAL

SCALE 1/4" = 1'-0"

SECOND FLOOR STRUCTURAL
Northbrook 1885-212
Lot 22 Lakedale

BEN STOUT Construction — COMMERCIAL & RESIDENTIAL
HAYNES HOME PLANS, INC.
P.O. Box 702, Wake Forest, NC 27588 919-435-6180 Fax 1-866-491-0598

SQUARE FOOTAGE

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SECOND FLOOR	1110 SQ.FT.
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UNHEATED	
GARAGE	449 SQ.FT.
FRONT PORCH	86 SQ.FT.
TOTAL	535 SQ.FT.

9/4/2014

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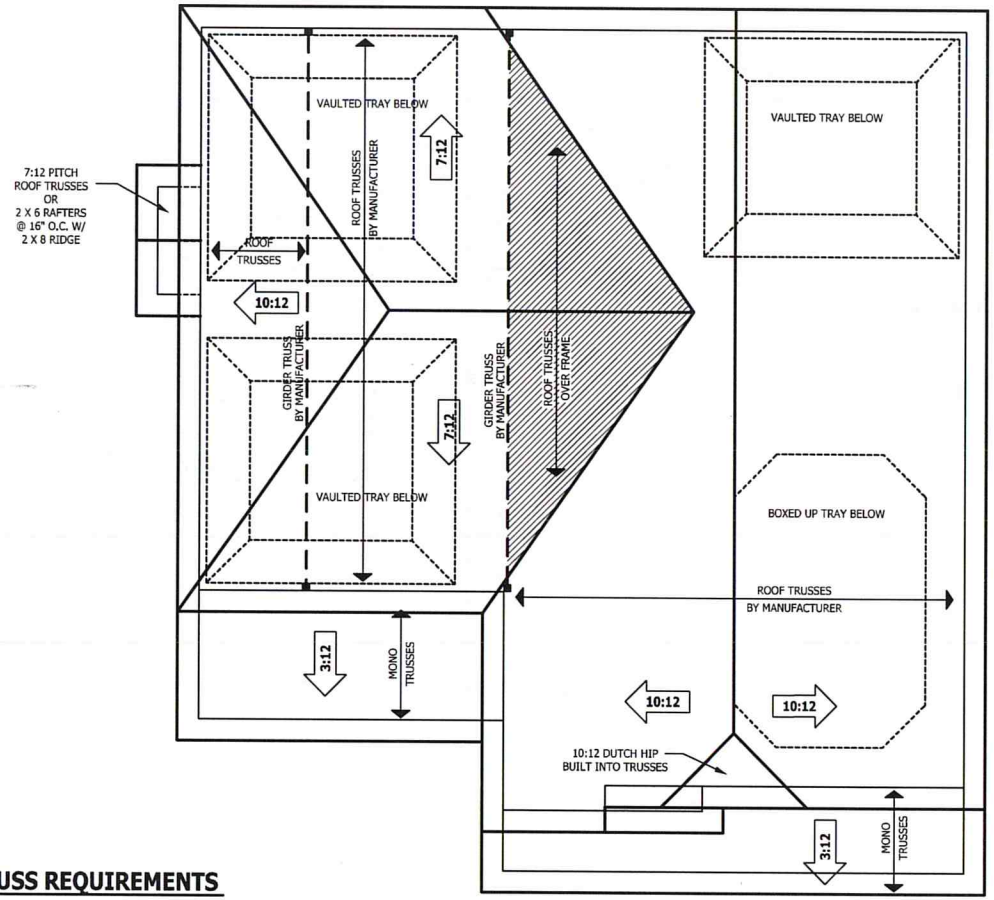

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ROOF PLAN WITH ELEVATION - B

SCALE 1/4" = 1'-0"

ROOF PLAN WITH ELEVATION - B
Northbrook 1885-212
Lot 22 Lakedale

BEN STOUT Construction — COMMERCIAL & RESIDENTIAL

HAYNES HOME PLANS, INC.
P.O. Box 702, Wake Forest, NC 27588 919-435-8180 Fax 1-866-491-0596

SQUARE FOOTAGE

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UNHEATED	
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FRONT PORCH	86 SQ.FT.
TOTAL	535 SQ.FT.

9/4/2014
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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.

ELECTRICAL SCHEDULE

SWITCH	C	CABLE TV	SMOKE DETECTOR	FLOOD LIGHT
DIMMER SWITCH	S	SPEAKER	EXHAUST FAN	EXHAUST FAN WITH LIGHT
THREE WAY SWITCH	T	TELEPHONE		2'-0" FLORESCENT
FOUR WAY SWITCH	C	CHIMES		(2) BULB 4'-0" FLORESCENT
110 OUTLET	I	INTERCOM		(4) BULB 4'-0" FLORESCENT
220 OUTLET		LIGHT		CEILING FAN
SWITCHED 110 OUTLET	S	SCONCE		
GAS JET		RECESSED LIGHT		

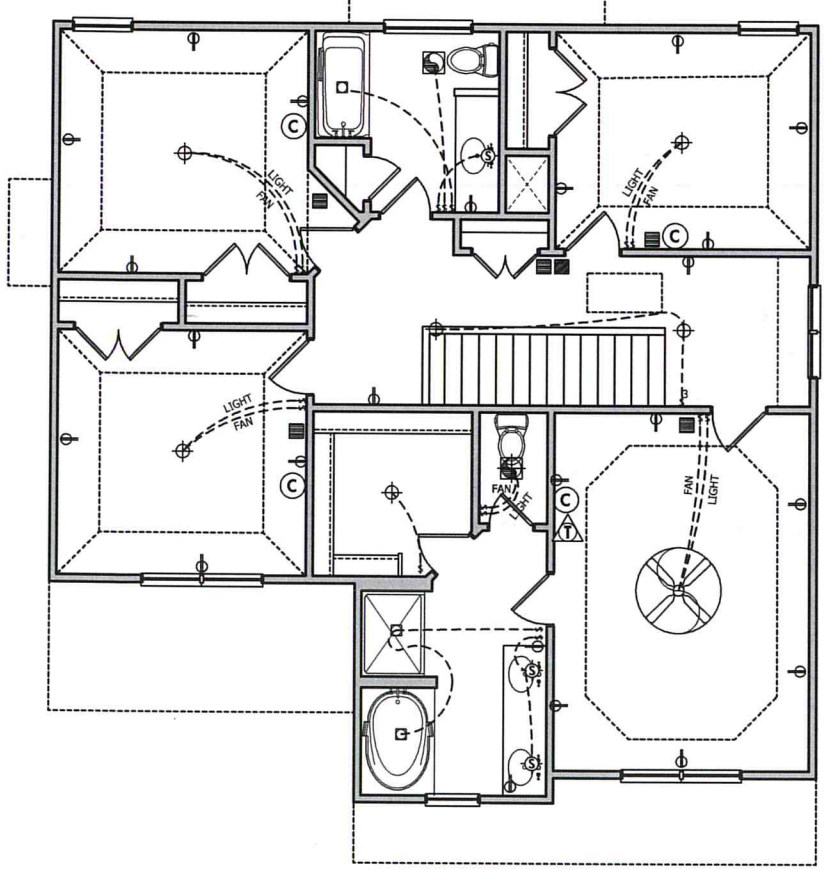
CARBON MONOXIDE ALARMS

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.

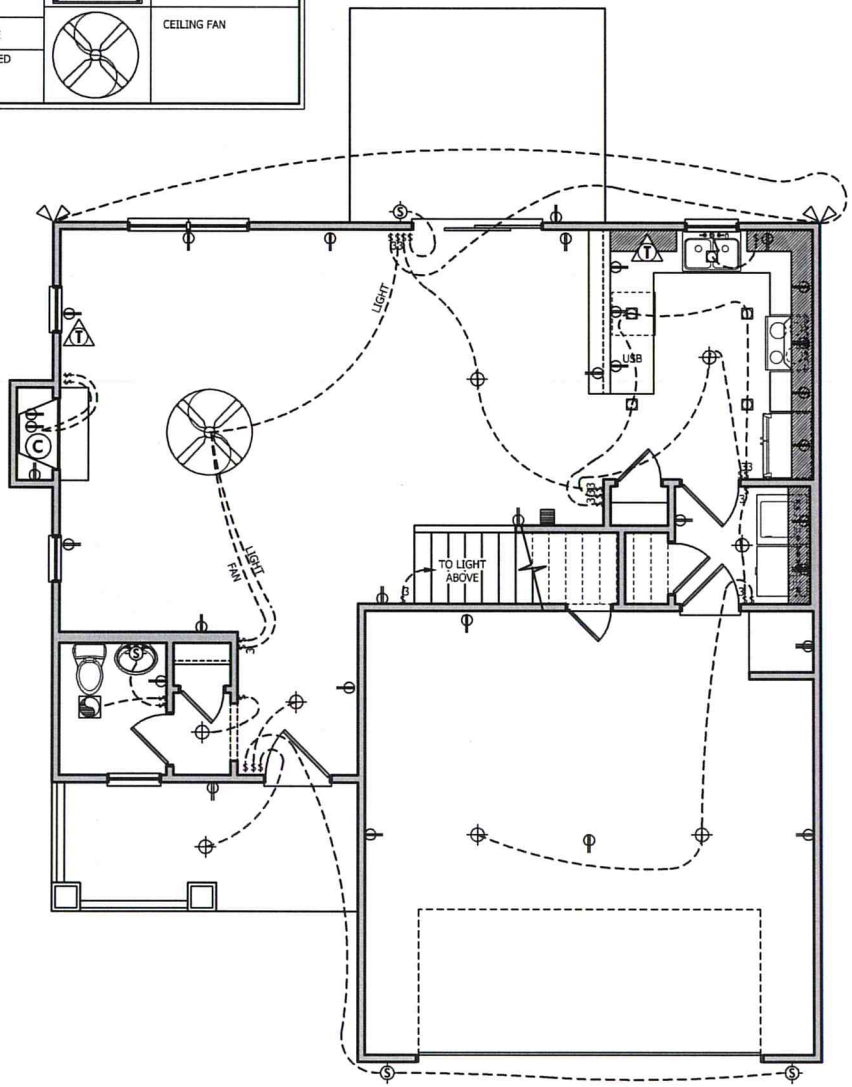
R315.2 Where required in existing dwellings. In existing dwellings, where interior alterations, repairs, fuel-fired appliance replacements, or additions requiring a permit occurs, or where one or more sleeping rooms are added or created, carbon monoxide alarms shall be provided in accordance with Section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



SECOND FLOOR PLAN

SCALE 1/4" = 1'-0"



FIRST FLOOR PLAN

SCALE 1/4" = 1'-0"

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.

ELECTRICAL

Northbrook 1885-212

Lot 22 Lakedale

BEN STOUT Construction — COMMERCIAL & RESIDENTIAL

HAYNES HOME PLANS, INC

P.O. Box 7124, Wake Forest, NC 27588 919-435-6160 Fax 1-866-481-0894

SQUARE FOOTAGE

HEATED	
FIRST FLOOR	775 SQ.FT.
SECOND FLOOR	1110 SQ.FT.
TOTAL	1885 SQ.FT.
UNHEATED	
GARAGE	449 SQ.FT.
FRONT PORCH	86 SQ.FT.
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9/4/2014

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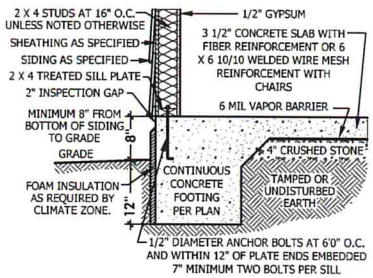
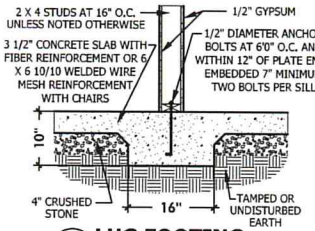


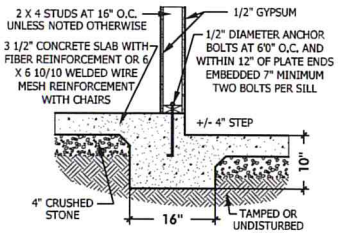
A MONOLITHIC SLAB FOOTING

SCALE 3/4" = 1'-0"



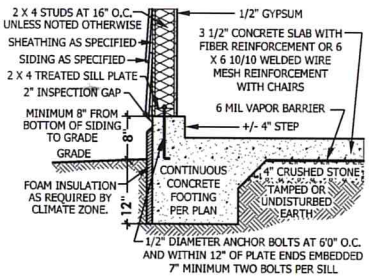
B LUG FOOTING

SCALE 3/4" = 1'-0"



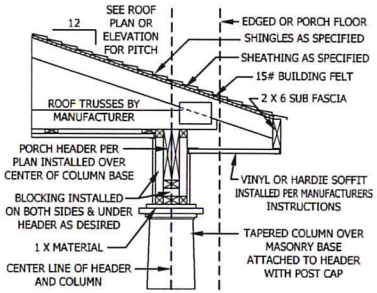
C THICKEND SLAB AT STEP

SCALE 3/4" = 1'-0"



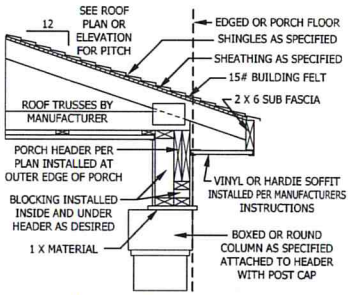
D MONOLITHIC SLAB FOOTING STEM WALL AT GARAGE

SCALE 3/4" = 1'-0"



PORCH HEADER WITH TAPERED COLUMN

SCALE 3/4" = 1'-0"



PORCH HEADER WITH BOXED OR ROUND COLUMN

SCALE 3/4" = 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.

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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.

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.

EXTERIOR WINDOWS AND DOORS

SECTION R612

R612.1 General. This section prescribes performance and construction requirements for exterior windows and doors installed in walls. Windows and doors shall be installed and flashed in accordance with the fenestration manufacturer's written installation instructions. Window and door openings shall be flashed in accordance with Section R703.8. Written installation instructions shall be provided by the fenestration manufacturer for each window or door.

R612.2 Window sills. In *dwelling* units, where the opening of an operable window is located more than 72 inches (1829 mm) above the finished *grade* or surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches (610 mm) above the finished floor of the room in which the window is located. Operable sections of windows shall not permit openings that allow passage of a 4 inch (102 mm) diameter sphere where such openings are located within 24 inches (610 mm) of the finished floor.

Exceptions:

1. Windows whose openings will not allow a 4-inch diameter (102 mm) sphere to pass through the opening when the opening is in its largest opened position.
2. Openings that are provided with window fall prevention devices that comply with Section R612.3.
3. Openings that are provided with fall prevention devices that comply with ASTM F 2090.
4. Windows that are provided with opening limiting devices that comply with Section R612.4.

R612.3 Window fall prevention devices. Window fall prevention devices and window guards, where provided, shall comply with the requirements of ASTM F 2090.

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.

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).

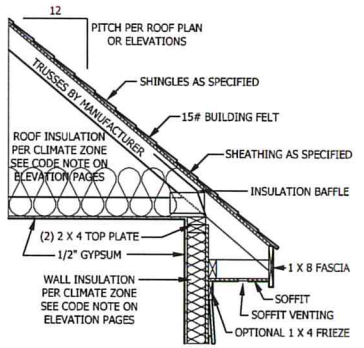
Exceptions:

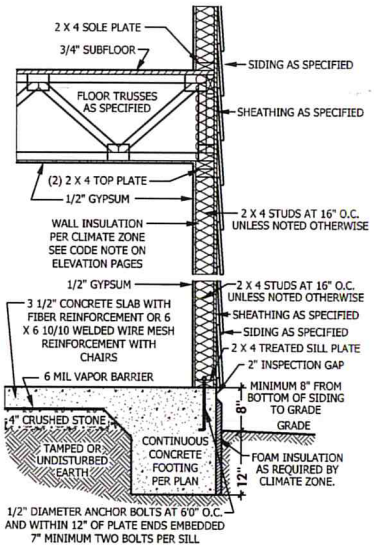
1. The use of a volute, turnout or starting easing shall be allowed over the lowest tread.
2. When handrail fittings or bendings are used to provide continuous transition between flights, the transition from handrail to guardrail, or used at the start of a flight, the handrail height at the fittings 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:

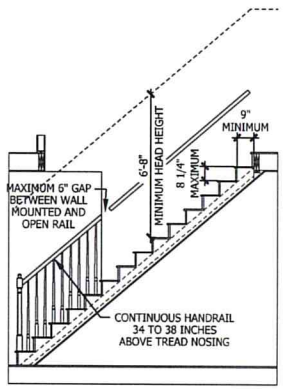
1. Handrails shall be permitted to be interrupted by a newel post.
2. The use of a volute, turnout, starting easing or starting newel shall be allowed over the lowest tread.
3. Two or more separate rails shall be considered continuous if the termination of the rails occurs within 6 inches (152 mm) of each other. If transitioning between a wall-mounted handrail and a guardrail/handrail, the wall-mounted rail must return into the wall.





TYPICAL WALL SECTION

SCALE 3/4" = 1'-0"



TYPICAL STAIR DETAIL

SCALE 1/4" = 1'-0"

TYPICAL DETAILS

Northbrook 1885-212

Lot 22 Lakedale

BEN STOUT Construction — COMMERCIAL & RESIDENTIAL

HAYNES HOME PLANS, INC.
P.O. Box 702, Wake Forest, NC 27588 919-435-0100 Fax 1-866-491-0598

SQUARE FOOTAGE

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UNHEATED	
GARAGE	445 SQ.FT.
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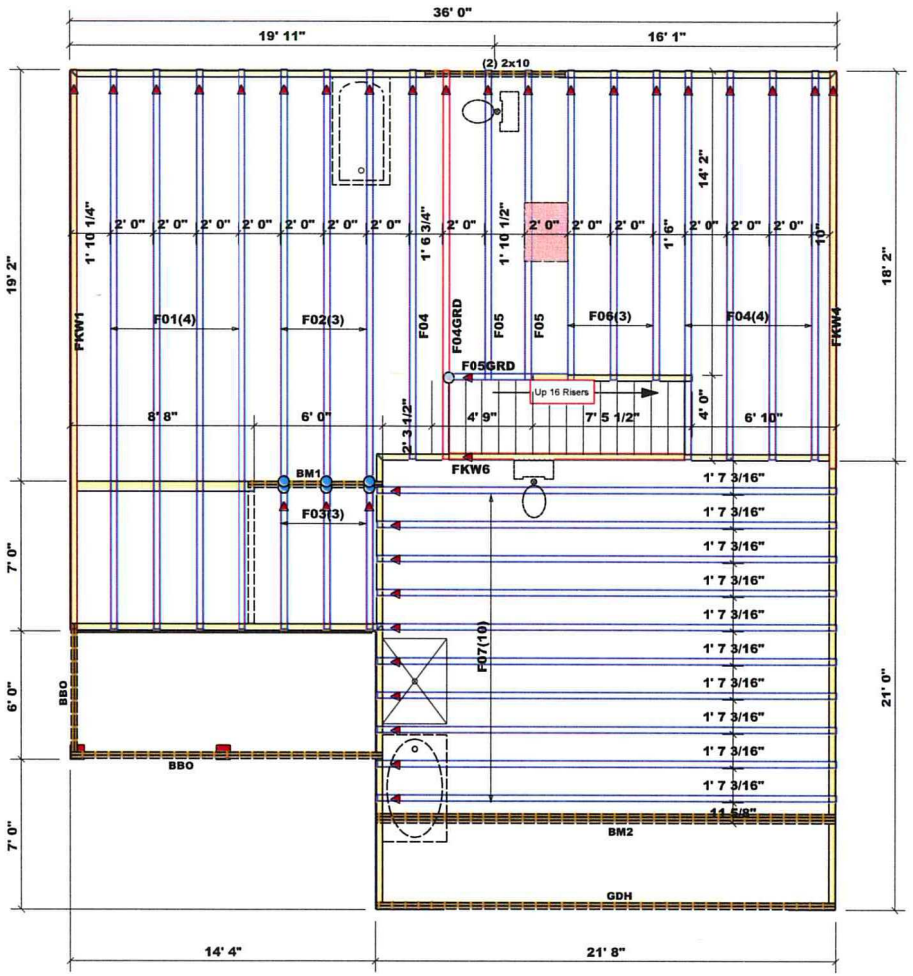


Truss Placement Plan
SCALE: 1/4" = 1'

Hatch Legend
Tray Ceiling
Padded HVAC
Second Floor Walls
Chase

Products				
PlotID	Length	Product	Plies	Net Qty
GDH	22' 0"	1-3/4"x 11-7/8" LVL Kerto-S	2	2
BM2	22' 0"	1-3/4"x 16" LVL Kerto-S	3	3
BM1	7' 0"	1-3/4"x 16" LVL Kerto-S	2	2

Connector Information					Nail Information	
Sym	Product	Manuf	Qty	Supported Member	Header	Truss
	HUS410	USP	6	Varies	16d/3-1/2"	16d/3-1/2"
	MSH422	USP	1	Varies	10d/3"	10d/3"

▲ = Indicates Left End of Truss
(Reference Engineered Truss Drawing)
Do Not Erect Trusses Backwards

Dimension Notes
1. All exterior wall to wall dimensions are to face of sheathing unless noted otherwise
2. All interior wall dimensions are to face of frame wall unless noted otherwise
3. All exterior wall to truss dimensions are to face of frame wall unless noted otherwise

All Walls Shown Are Considered Load Bearing

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 these specified in the attached Tables. A registered design professional shall be retained to design the support system for all reactions that exceed 15000#.

Signature _____
Anthony Williams

LOAD CHART FOR JACK STUDS
(BASED ON TABLES R502.5(1) & (2))
NUMBER OF JACK STUDS REQUIRED @ EA END OF HEADER/GIRDER

END REACTION (UP TO)	REQ'D STUDS FOR (2) 2"x 4" HEADER	END REACTION (UP TO)	REQ'D STUDS FOR (3) 2"x 4" HEADER	END REACTION (UP TO)	REQ'D STUDS FOR (4) 2"x 4" 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	Ben Stout Real Estate
JOB NAME	Lot 13 Blackberry Manor
PLAN	Northbrook
SEAL DATE	Seal Date
QUOTE #	Quote #
JOB #	J0320-1192
COUNTY	Harnett
ADDRESS	Lot 13 Blackberry Manor
MODEL	Floor
DATE REV.	03/16/2020
DRAWN BY	Hampton Horrocks
SALESMAN	Marshall Naylor

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

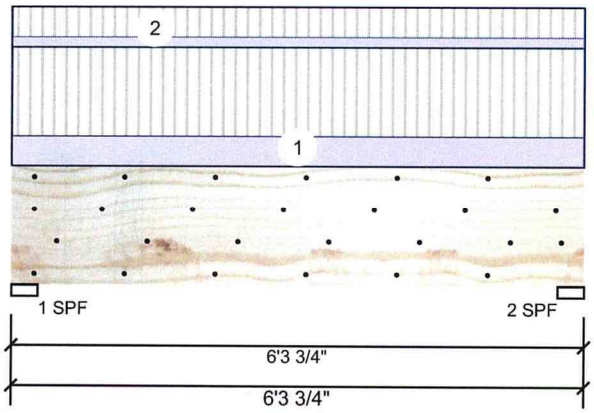
iStruct Design

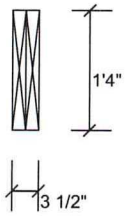
Client: Ben Stout
Project:
Address:

Date: 3/16/2020
Input by: Hampton Horrocks
Job Name: Lot 13 Blackberry Manor
Project #: J0330-1192

BM1 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	1644	588	0	0	0
2	1644	588	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	43%	588 / 1644	2233	L	D+L
2 - SPF	3.500"	43%	588 / 1644	2233	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	3052 ft-lb	3'1 7/8"	34565 ft-lb	0.088 (9%)	D+L	L
Unbraced	3052 ft-lb	3'1 7/8"	19518 ft-lb	0.156 (16%)	D+L	L
Shear	2062 lb	1'6 5/8"	11947 lb	0.173 (17%)	D+L	L
LL Defl inch	0.010 (L/6734)	3'1 7/8"	0.147 (L/480)	0.070 (7%)	L	L
TL Defl inch	0.014 (L/4959)	3'1 7/8"	0.196 (L/360)	0.070 (7%)	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 Girders are designed to be supported on the bottom edge only.
4 Top braced at bearings.
5 Bottom braced at bearings.
6 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			Far Face	130 PLF	389 PLF	0 PLF	0 PLF	0 PLF	F02
2	Uniform			Near Face	44 PLF	132 PLF	0 PLF	0 PLF	0 PLF	F03
	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 11/13/2022

Manufacturer Info

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

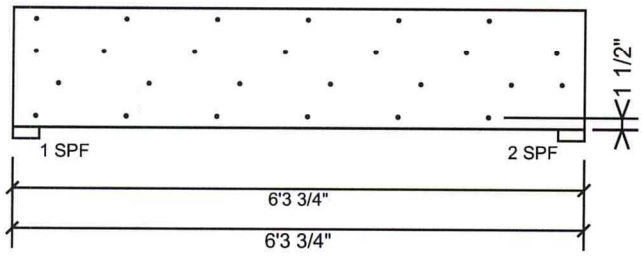
Comtech, Inc.
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

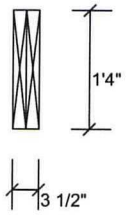
CSD DRAW DESIGN BUILD

Client:	Ben Stout	Date:	3/16/2020
Project:		Input by:	Hampton Horrocks
Address:		Job Name:	Lot 13 Blackberry Manor
		Project #:	J0330-1192

BM1 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level





Multi-Ply Analysis

Fasten all plies using 4 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6"

Capacity	79.3 %
Load	259.5 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

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
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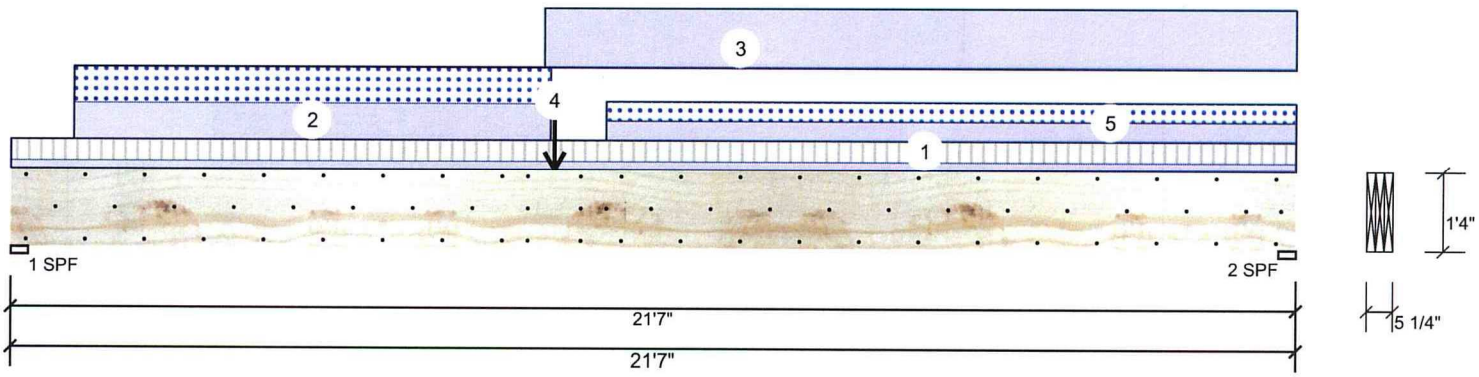
910-864-TRUS

Client:	Ben Stout	Date:	3/16/2020
Project:		Input by:	Hampton Horrocks
Address:		Job Name:	Lot 13 Blackberry Manor
		Project #:	J0330-1192

BM2 Kerto-S LVL 1.750" X 16.000" 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:	600	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	432	1471	700	0	0
2	432	1926	556	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	30%	1471 / 849	2320	L	D+0.75(L+S)
2 - SPF	3.500"	34%	1926 / 741	2666	L	D+0.75(L+S)

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	14316 ft-lb	10'4 15/16"	62010 ft-lb	0.231 (23%)	D+0.75(L+S)	L
Unbraced	14316 ft-lb	10'4 15/16"	14322 ft-lb	1.000 (100%)	D+0.75(L+S)	L
Shear	2354 lb	20' 3/8"	20608 lb	0.114 (11%)	D+0.75(L+S)	L
LL Defl inch	0.107 (L/2379)	10'6 1/16"	0.529 (L/480)	0.200 (20%)	0.75(L+S)	L
TL Defl inch	0.335 (L/757)	10'9 7/16"	0.423 (L/600)	0.790 (79%)	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 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 13'5 5/8" 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	Uniform			Top	15 PLF	40 PLF	0 PLF	0 PLF	0 PLF	floor
2	Part. Uniform	1-0-12 to 9-0-12		Near Face	68 PLF	0 PLF	68 PLF	0 PLF	0 PLF	C1
3	Part. Uniform	8-11-8 to 21-7-0		Top	112 PLF	0 PLF	0 PLF	0 PLF	0 PLF	wall
4	Point	9-1-8		Near Face	295 lb	0 lb	295 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 11/13/2022

Manufacturer Info

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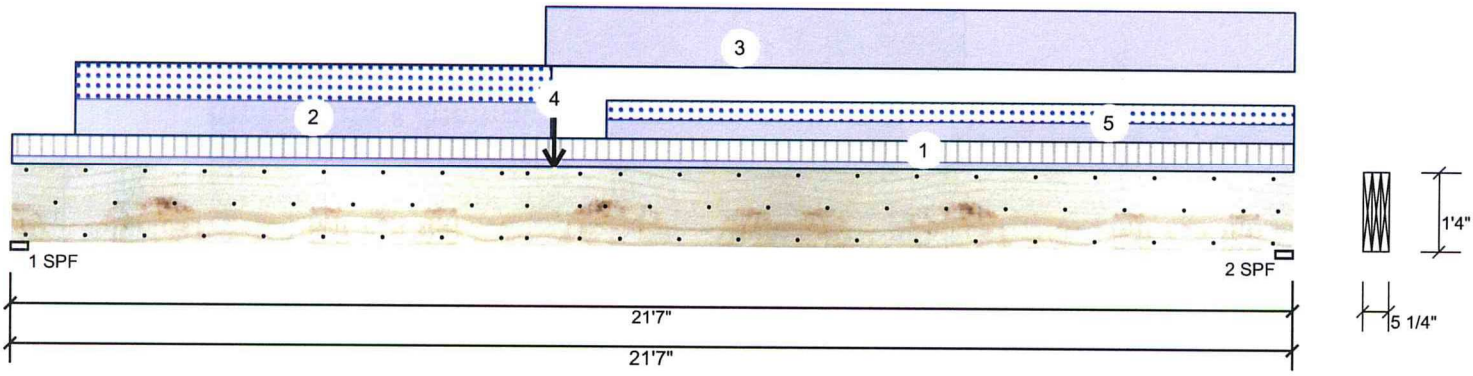
www.metsawood.com/us
ICC-ES: ESR-3633

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

Client:	Ben Stout	Date:	3/16/2020
Project:		Input by:	Hampton Horrocks
Address:		Job Name:	Lot 13 Blackberry Manor
		Project #:	J0330-1192

BM2 Kerto-S LVL 1.750" X 16.000" 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
5	Part. Uniform	10-0-0 to 21-7-0		Near Face	36 PLF	0 PLF	36 PLF	0 PLF	0 PLF	D1
	Self Weight				19 PLF					

Notes

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Lumber

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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
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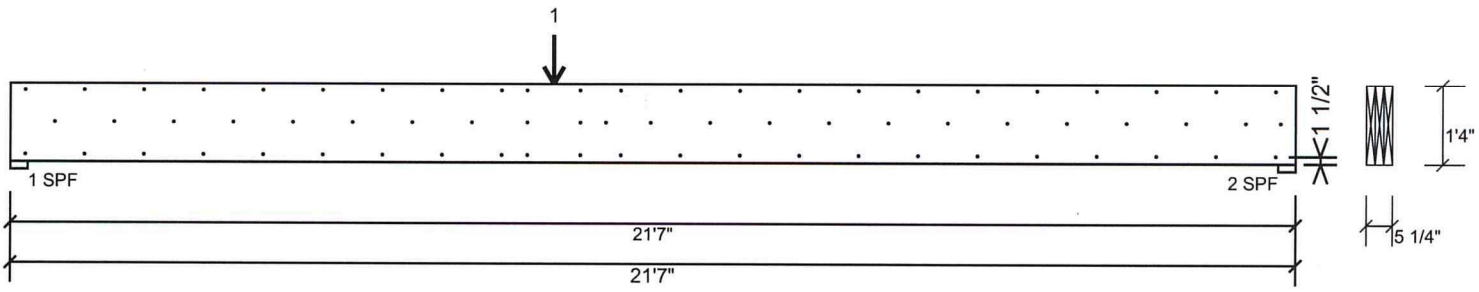
		Project #:	J0330-1192

BM2 Kerto-S LVL 1.750" X 16.000" 3-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. Nail from both sides. Maximum end distance not to exceed 6"

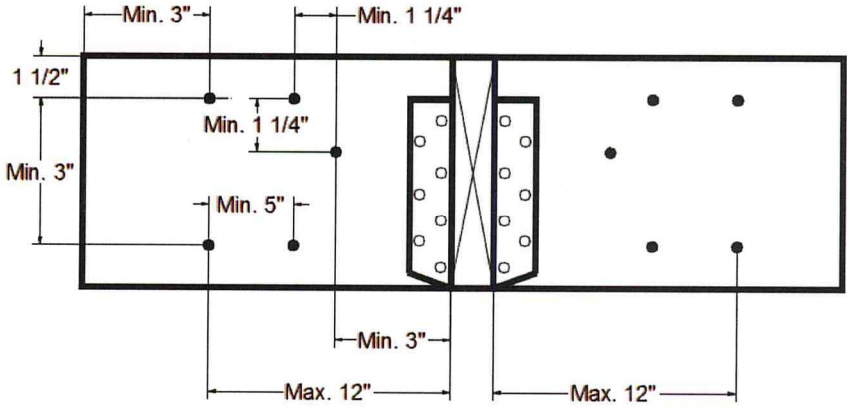
Capacity	32.1 %
Load	90.7 PLF
Yield Limit per Foot	282.4 PLF
Yield Limit per Fastener	94.1 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	D+S
Duration Factor	1.15

Concentrated Load

Fasten at concentrated side load at 9-1-8 with a minimum of (6) – 10d Box nails (.128x3") in the pattern shown. Repeat fasteners on both sides.

Capacity	69.7 %
Load	393.3lb.
Total Yield Limit	564.7 lb.
Cg	0.9998
Yield Limit per Fastener	94.1 lb.
Yield Mode	IV
Load Combination	D+S
Duration Factor	1.15

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

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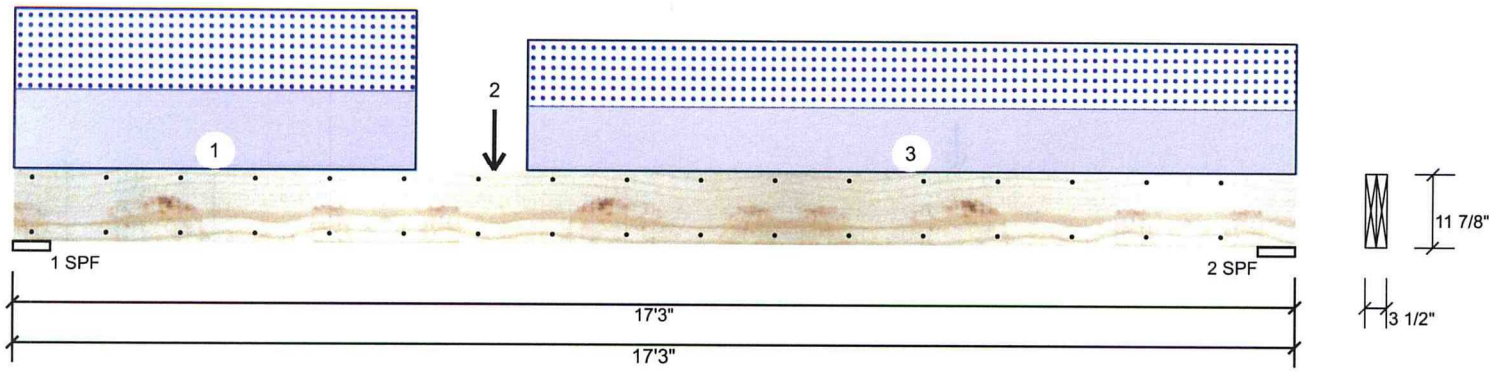
Client:	Ben Stout	Date:	3/16/2020
Project:		Input by:	Hampton Horrocks
Address:		Job Name:	Lot 13 Blackberry Manor
		Project #:	J0330-1192

GDH 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	661	581	0	0
2	0	592	512	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	6.000"	14%	661 / 581	1242	L	D+S
2 - SPF	6.000"	12%	592 / 512	1104	L	D+S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4723 ft-lb	7'10 1/16"	22897 ft-lb	0.206 (21%)	D+S	L
Unbraced	4723 ft-lb	7'10 1/16"	6086 ft-lb	0.776 (78%)	D+S	L
Shear	1041 lb	1'5 1/8"	10197 lb	0.102 (10%)	D+S	L
LL Defl inch	0.114 (L/1720)	8'5 3/4"	0.409 (L/480)	0.280 (28%)	S	L
TL Defl inch	0.245 (L/803)	8'5 7/8"	0.546 (L/360)	0.450 (45%)	D+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	Part. Uniform	0-0-0 to 5-4-12		Top	66 PLF	0 PLF	66 PLF	0 PLF	0 PLF	C1
2	Point	6-5-8		Top	178 lb	0 lb	178 lb	0 lb	0 lb	C3
3	Part. Uniform	6-10-12 to 17-3-0		Top	54 PLF	0 PLF	54 PLF	0 PLF	0 PLF	D1
	Self Weight				9 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
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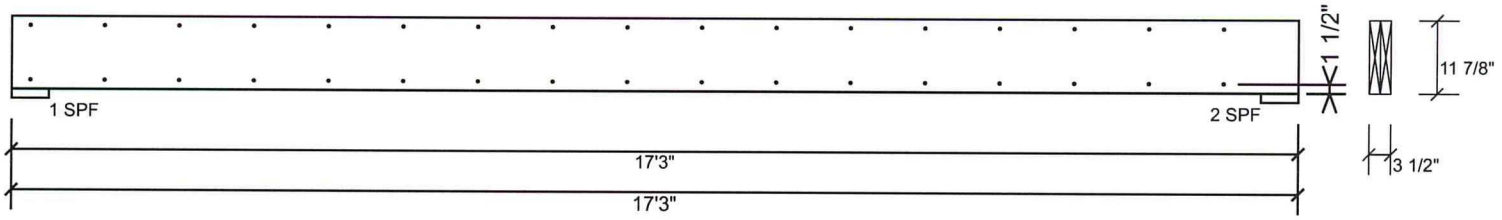
Address:		Job Name:	Lot 13 Blackberry Manor
		Project #:	J0330-1192

GDH Kerto-S LVL 1.750" X 11.875" 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

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Handling & Installation

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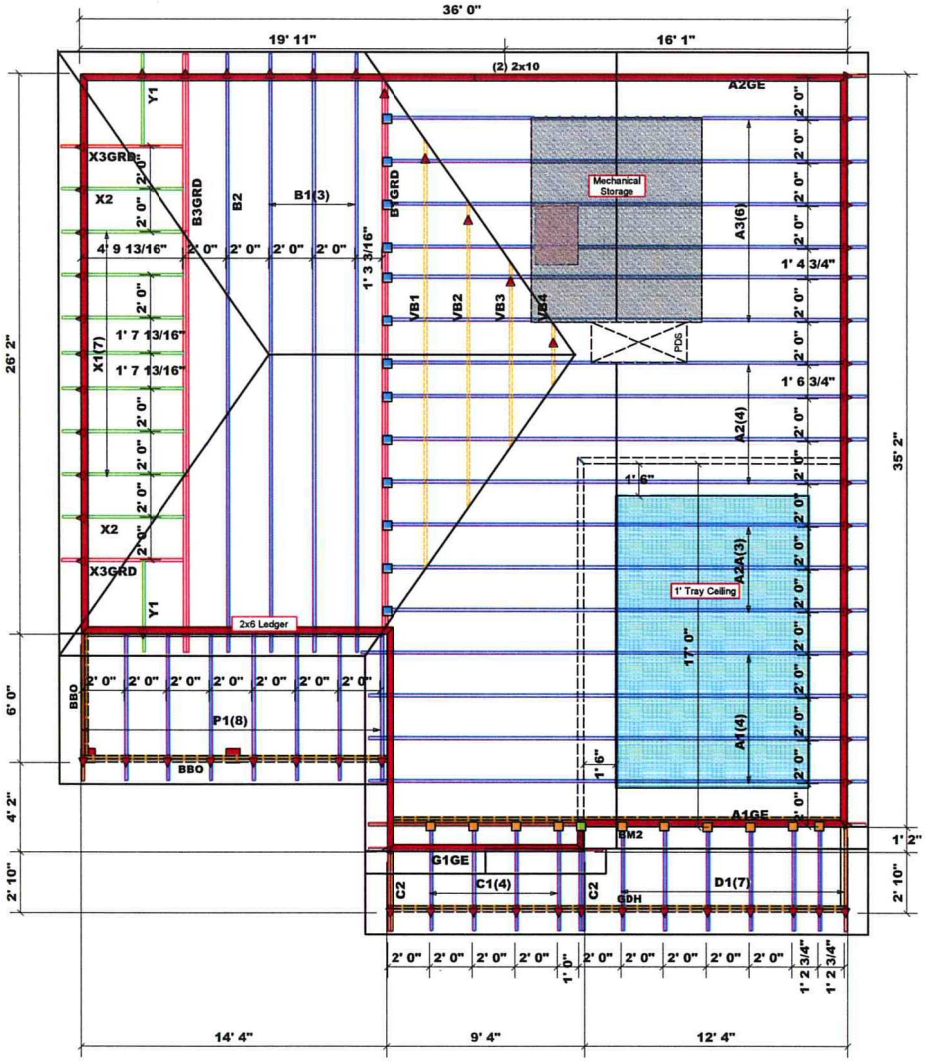

Truss Placement Plan
SCALE: 1/4" = 1'

Hatch Legend
Tray Ceiling
Padded HVAC
Second Floor Walls
Chase

Connector Information					Nail Information	
Sym	Product	Manuf	Qty	Supported Member	Header	Truss
	HUS26	USP	13	Varies	16d/3-1/2"	16d/3-1/2"
	JUS26	USP	10	Varies	10d/3"	10d/3"
	THD26-2	USP	1	Varies	16d/3-1/2"	10d/3"

▲ = Indicates Left End of Truss
(Reference Engineered Truss Drawing)
Do Not Erect Trusses Backwards

Dimension Notes

1. All exterior wall to wall dimensions are to face of sheathing unless noted otherwise
2. All interior wall dimensions are to face of frame wall unless noted otherwise
3. All exterior wall to truss dimensions are to face of frame wall unless noted otherwise

All Walls Shown Are Considered Load Bearing

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 1900# 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 _____
Anthony Williams

LOAD CHART FOR JACK STUDS
(BASED ON TABLES R502.5(1) & (2))
NUMBER OF JACK STUDS REQUIRED @ EA END OF HEADER/GIRDER

END REACTION (LB TOT)	REQ'D STUDS FOR (1) PLY HEADER	END REACTION (LB TOT)	REQ'D STUDS FOR (2) PLY HEADER	END REACTION (LB TOT)	REQ'D STUDS FOR (3) 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				

COUNTY	Harnett County
ADDRESS	Lot 13 Blackberry Manor
MODEL	Roof
DATE REV.	03/16/2020
DRAWN BY	Hampton Horrocks
SALESMAN	Marshall Naylor

BUILDER	Ben Stout Real Estate
JOB NAME	Lot 13 Blackberry Manor
PLAN	Northbrook
SEAL DATE	Seal Date
QUOTE #	Quote #
JOB #	J0320-1191

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 trusses delivery package or online @ sbcindustry.com