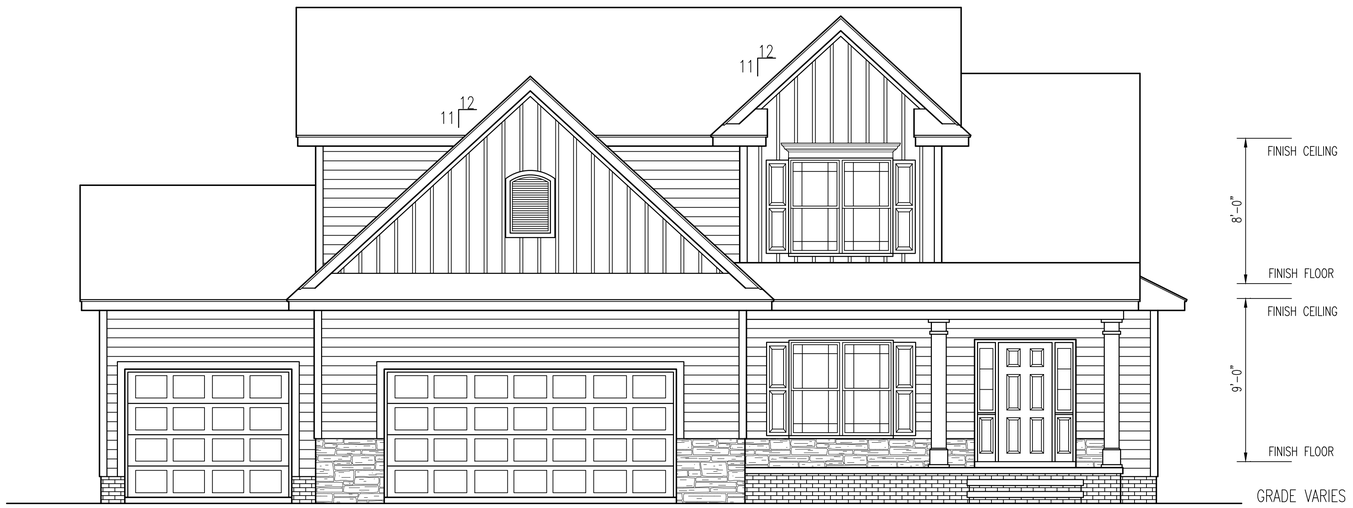


FRONT ELEVATION
SCALE:1/4"=1'-0"

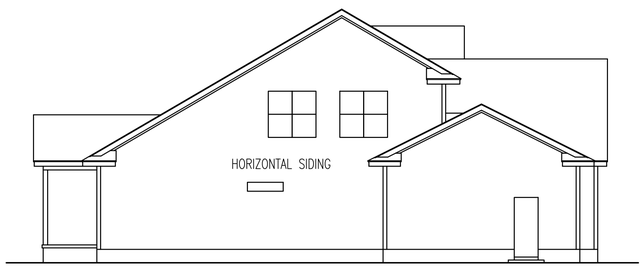
NOTICE TO CONTRACTOR
All construction must comply with current NC Building Codes and is subject to field inspection and verification.

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

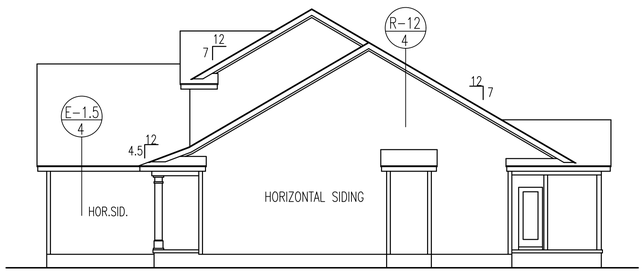
01/06/2022

Harnett COUNTY NORTH CAROLINA

REVISED

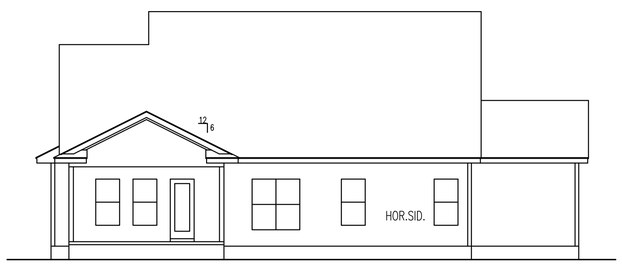


LEFT ELEVATION



RIGHT ELEVATION

HERO PACKAGE



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

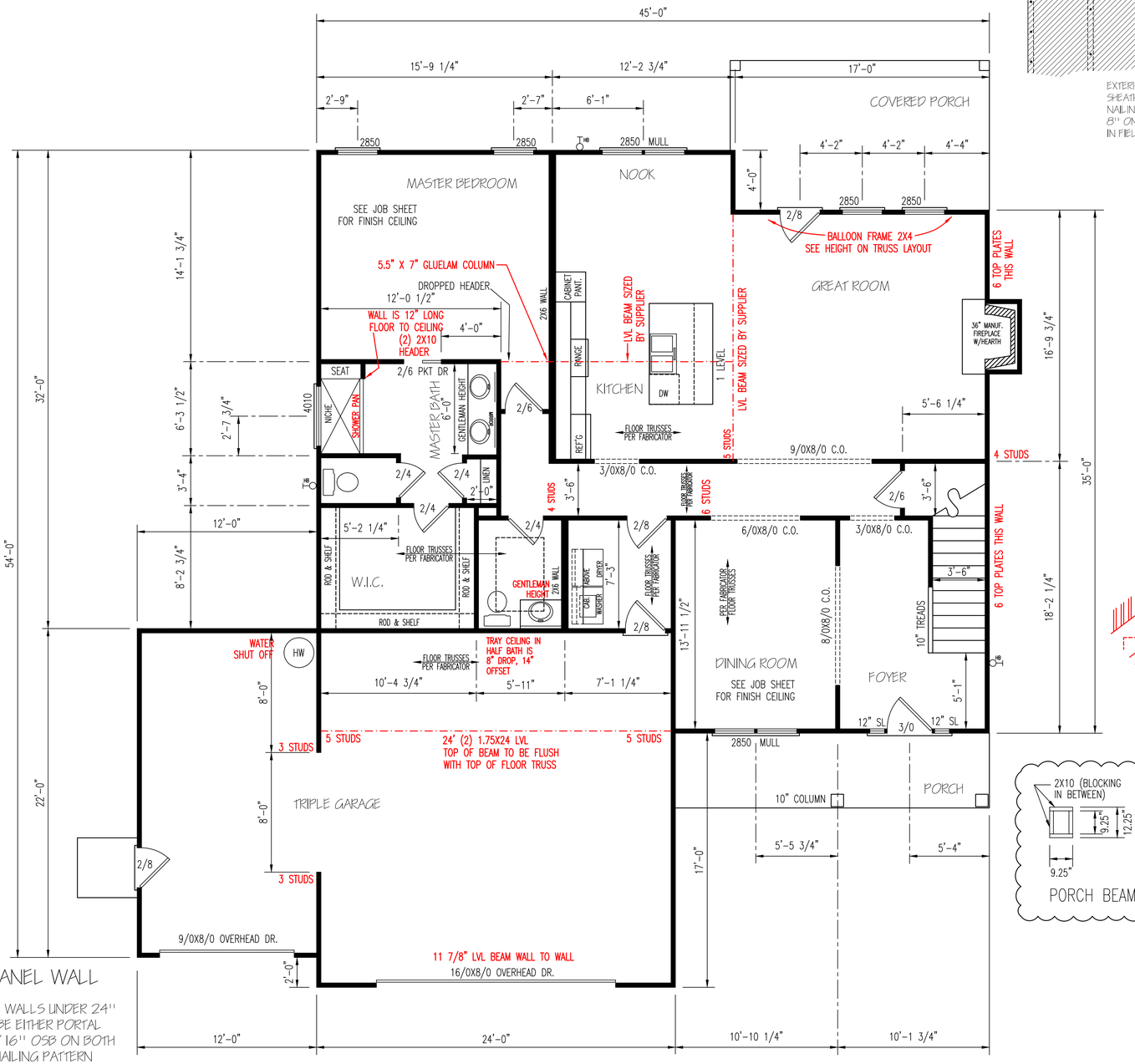
TM DESIGNS
RESIDENTIAL PLANS BY TINA MCFADDEN
(910) 354-4736 TMDESIGNS2016@GMAIL.COM

EXCLUSIVE RESIDENCE DESIGN FOR:
WATERMARK HOMES
NAME: SILVER BELL III 3BR
LOT: 116 BALLARD WOODS

PLAN NUMBER
BG22-A04

OPTION #1

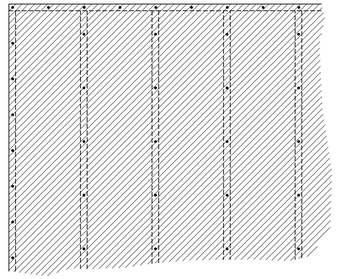
1 | GARAGE L F | DATE: 6/22/21



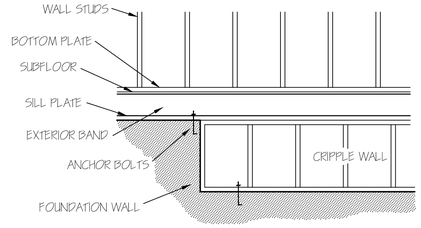
GARAGE PANEL WALL

GARAGE PANEL WALLS UNDER 24" WIDE SHOULD BE EITHER PORTAL FRAMED OR 7/16" OSB ON BOTH SIDES WITH A NAILING PATTERN OF 3" ON ALL PANEL EDGES AND 6" IN THE FIELD.

BRACING METHOD



EXTERIOR WALL TO BE FULLY SHEATHED WITH 7/16" OSB. NAILING PATTERN TO BE 8" ON ALL EDGES AND 12" IN FIELD, WITH 8d NAILS.



FOUNDATION CRIPPLE WALLS SHALL BE FRAMED OF STUDS NOT SMALLER THAN THE STUDDING ABOVE. WHEN EXCEEDING 4 FT. IN HEIGHT, SUCH WALLS SHALL BE FRAMED OF STUDS HAVING THE SIZE REQUIRED FOR AN ADDITIONAL STORY.
CRIPPLE WALLS WITH A STUD HEIGHT LESS THAN 14 INCHES SHALL BE CONTINUOUSLY SHEATHED ON ONE SIDE WITH WOOD STRUCTURAL PANELS FASTENED TO BOTH THE TOP AND BOTTOM PLATES IN ACCORDANCE WITH TABLE R602.3(1), OR CRIPPLE WALLS SHALL BE CONSTRUCTED OF SOLID BLOCKING.

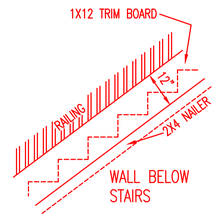
ENERGY TABLE

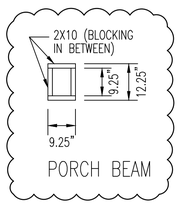
U FACTOR OF WINDOWS .30
CLIMATE ZONE 3
INSULATION: WALLS 15
CEILING 38
FLOORS 19

6 TOP PLATES FOR WIND TIE

HERO PACKAGE

EXERIOR WALLS (2) 2X10 HEADERS		
CLEAR SPAN FOR HEADER	NUMBER OF STUDS JACKS	KINGS
ALL DOOR & C.O. BELOW 4'	1	1
ALL DOOR & C.O. 4' TO 7'-11"	2	2
ALL DOOR & C.O. 8' AND ABOVE	SIZED BY ENGINEER	
UNLESS NOTED OTHER WISE		





FIRST FLOOR PLAN

SCALE: 1/4"=1'-0"

HEATED AREA
1ST FL 1528 SQ FT
2ND FL 853 SQ FT
TOTAL 2381 SQ FT

OTHER AREAS
GARAGE 831 SQ FT
F.PORCH 60 SQ FT
R.PORCH 206 SQ FT
TOTAL 1097 SQ FT

NOTE:
CEILINGS ARE 9'-0" UNLESS NOTED.
SET WINDOWS @ 7'-4" UNLESS NOTED.

TM DESIGNS
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(910) 354-4736 TMDESIGNS2016@GMAIL.COM

EXCLUSIVE RESIDENCE DESIGN FOR:
WATERMARK HOMES
LOT: 116 BALLARD WOODS
NAME: SILVER BELL III 3BR

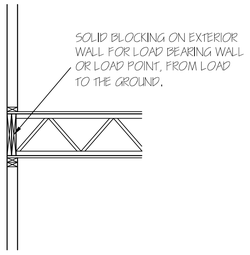
I HEREBY CERTIFY THAT THIS DRAWING MEETS LOCAL CODES, 2018 INTERNATIONAL BUILDING CODES

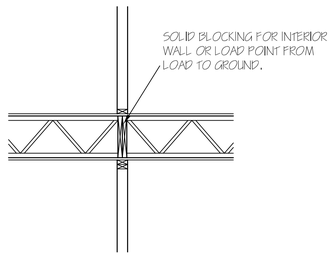
THIS IS FOR THE CONSTRUCTION OF ONE HOUSE ON A SINGLE LOT, NOT TO BE REUSED

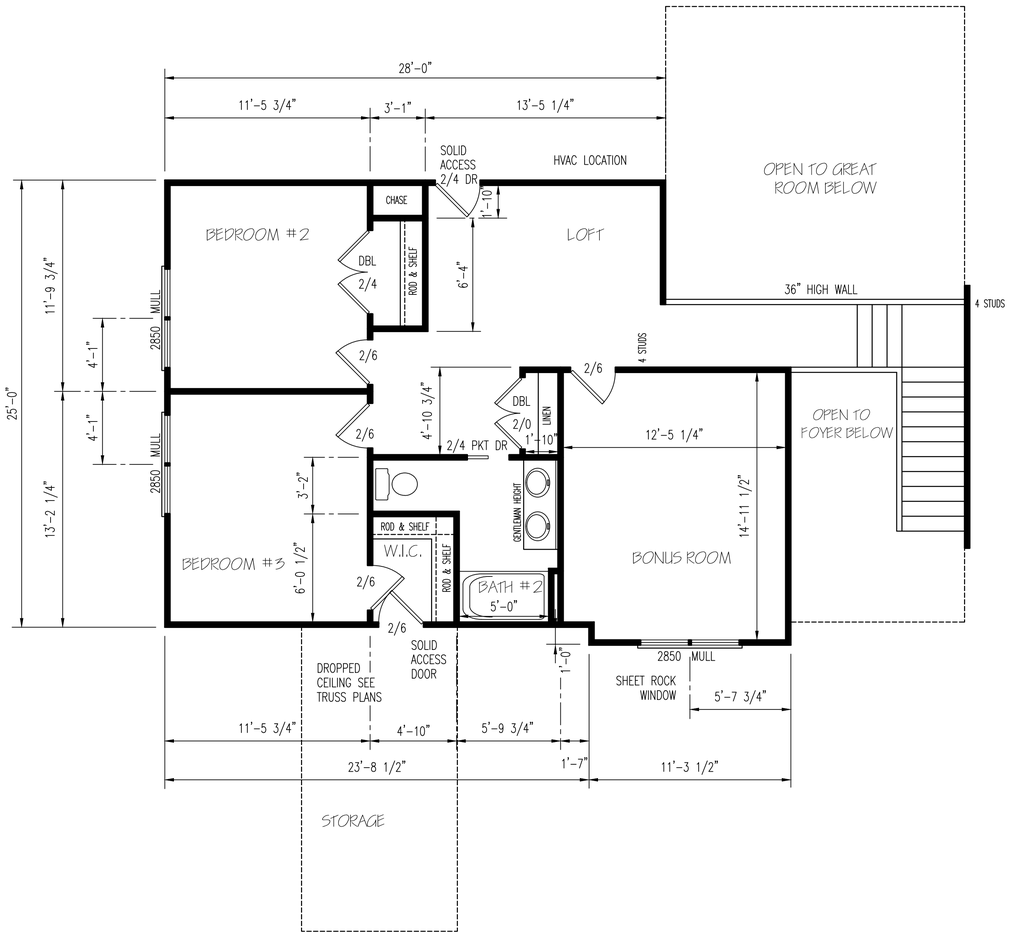
PLAN NUMBER
BG22-A04

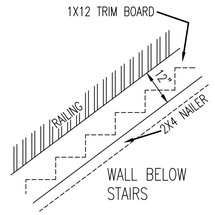
OPTION #1

2 A | GARAGE L F | DATE: 5/15/19









EXERIOR WALLS (2) 2X10 HEADERS		
CLEAR SPAN FOR HEADER	NUMBER OF STUDS	
	JACKS	KINGS
ALL DOOR & C.O. BELOW 4'	1	1
ALL DOOR & C.O. 4' TO 7'-11"	2	2
ALL DOOR & C.O. 8' AND ABOVE	SIZED BY ENGINEER	
UNLESS NOTED OTHER WISE		

SECOND FLOOR PLAN

SCALE:1/ 4"=1'-0"

TM DESIGNS

RESIDENTIAL PLANS BY TINA MCFADDEN
(910) 354-4736 TMDESIGNS2016@GMAIL.COM

EXCLUSIVE RESIDENCE DESIGN FOR:

WATERMARK HOMES

NAME: SILVER BELL III | 3BR | LOT: 116 BALLARD WOODS

PLAN NUMBER
BG22-A04

OPTION #1

2 B | GARAGE L F | DATE: 5/15/19

NOTES:

USE 2X4 TREATED MUD SILL WITH 2X8 SGL. BAND
USE DOUBLE OR TRIPLE 2X10 GIRDERS
JOISTS ARE 2X8 SPACED AS NOTED, WITH EXTRA JOISTS UNDER ALL PARALLEL INTERIOR WALLS
PROVIDE CONTINUOUS BEARING FROM FOUNDATION WALL OR PIER SUPPORTS TO BEAMS OR GIRDER TRUSSES
GIRDERS AND BEARING JOIST MUST REST ON 4" MIN.
PROVIDE FOUNDATION VENTS & ACCESS AS REQUIRED
TREAT SOIL AS PER LOCAL AND STATE BUILDING CODES
SEE APPROPRIATE SHEET FOR CONSTRUCTION DETAILS

NOTE:

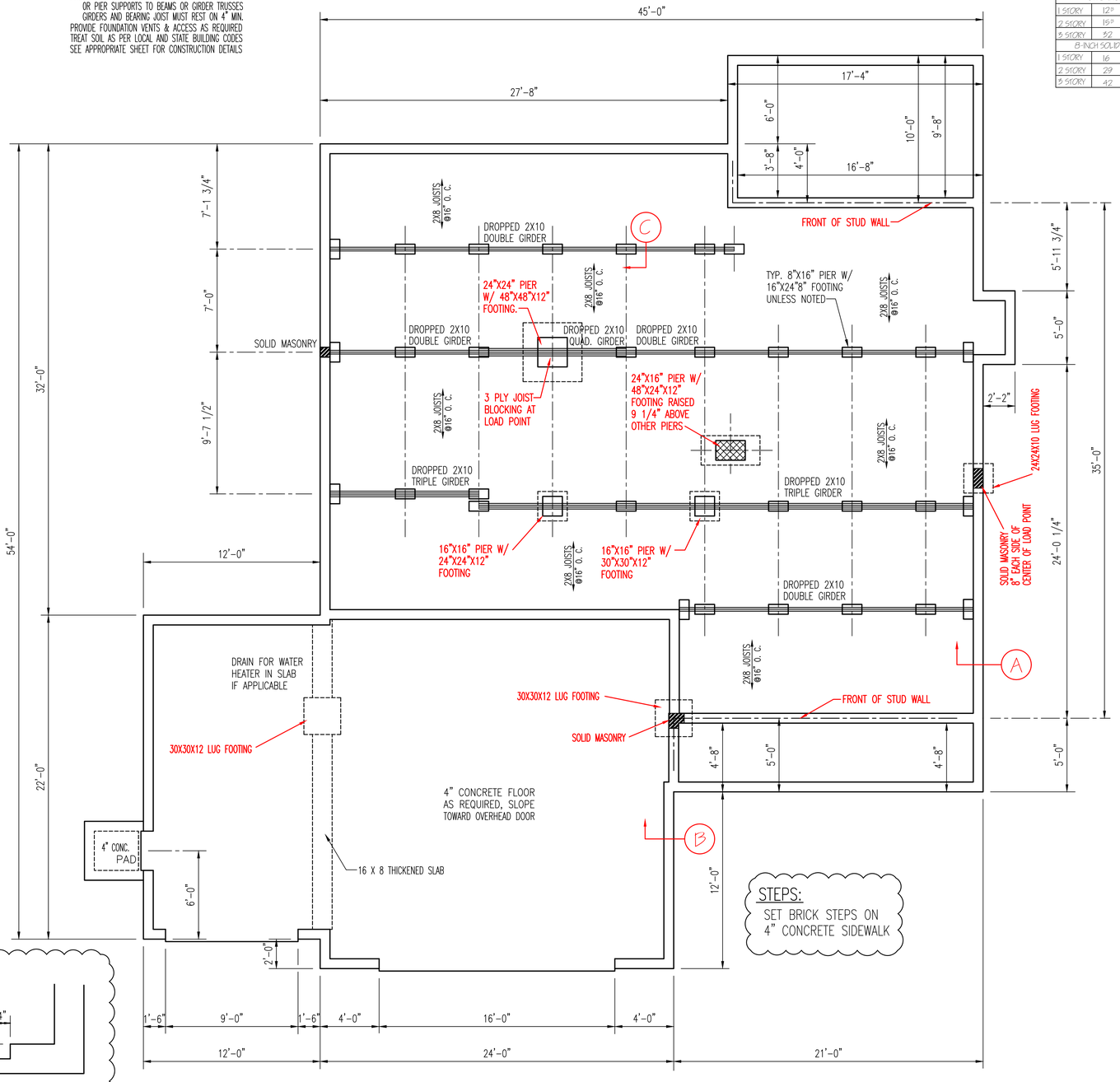
FOUNDATION DETAILS SHOWN ARE BASED ON ASSUMED SOIL BEARING CAPACITY OF 2500 PSF. LOCAL SITE CONDITIONS MUST BE INVESTIGATED. ALL FOOTING TO BE LOCATED BELOW FROST DEPTH.

WALL ANCHOR OPTIONS

USE EITHER ANCHOR BOLTS OR ANCHOR STRAPS
-ANCHOR BOLTS: 1/ 2'' DIA. BOLTS AT 6'-0'' O.C. AND NOT MORE THAT 12'' FROM CORNERS, EMBEDDED MIN. 7'' INTO FOUNDATION

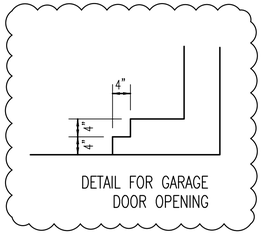
TABLE 403.1(1)
MINIMUM WIDTH OF CONCRETE, PRECAST OR MASONRY FOOTINGS (INCHES)

	LOAD BEARING VALUE OF SOIL (psf)			
	1,500	2,000	3,000	>4,000
CONVENTIONAL LIGHT-FRAME CONSTRUCTION				
1 STORY	12	12	12	12
2 STORY	15	12	12	12
3 STORY	23	17	12	12
4-INCH BRICK VENEER OVER LIGHT FRAME OR 8-INCH HOLLOW CONCRETE MASONRY				
1 STORY	12	12	12	12
2 STORY	15	15	12	12
3 STORY	32	24	16	12
8-INCH SOLID OR FULLY GROUTED MASONRY				
1 STORY	16	12	12	12
2 STORY	29	21	14	12
3 STORY	42	32	21	16



STEPS:

SET BRICK STEPS ON 4" CONCRETE SIDEWALK

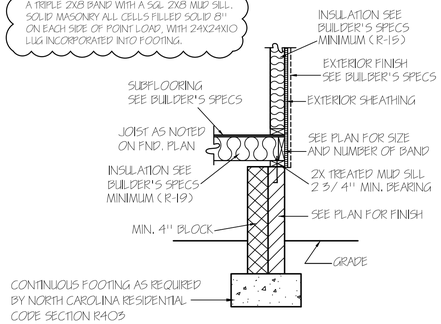


DETAIL FOR GARAGE DOOR OPENING

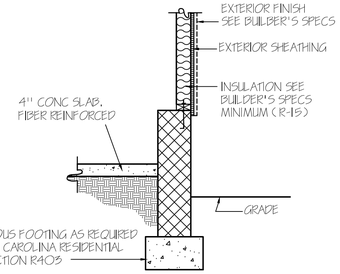
FOUNDATION PLAN

SCALE:1/4"=1'-0"

POINT LOADS WITH 3000-5000 NEED A DOUBLE 2X8 BAND WITH A 2X4 MUD SILL. HOLLOW MASONRY WITH MIN. 2 BRICK CAP AND 16X8 FOOTING.
POINT LOADS WITH 5001 - 10000 NEED A TRIPLE 2X8 BAND WITH A SGL 2X8 MUD SILL. SOLID MASONRY ALL CELLS FILLED SOLID 8'' ON EACH SIDE OF POINT LOAD, WITH 24X24X10 LUG INCORPORATED INTO FOOTING.



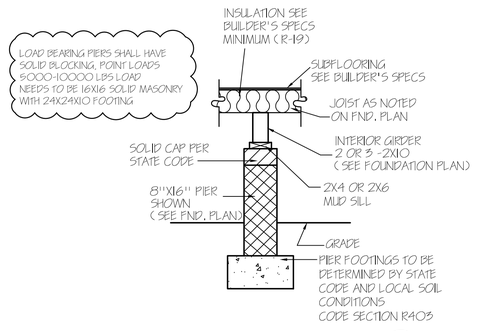
HOUSE WALL — A



NOTE:
PERIMETER INSUL. MAY EXTEND HORIZ. UNDER SLAB 24'' OR VERTICAL 24'' BELOW SLAB FLOOR

GARAGE WALL — B

LOAD BEARING PIERS SHALL HAVE SOLID BLOCKING. POINT LOADS 5000-10000 LBS LOAD NEEDS TO BE 16X16 SOLID MASONRY WITH 24X24X10 FOOTING



DROPPED PIER DETAIL — C

TM DESIGNS

RESIDENTIAL PLANS BY TINA MCFADDEN
(910) 354-4736 TMDESIGNS2016@GMAIL.COM

EXCLUSIVE RESIDENCE DESIGN FOR:

WATERMARK HOMES

NAME: SILVER BELL III 3BR
LOT: 116 BALLARD WOODS

TM DESIGNS WILL NOT BE LIABLE FOR ANY ERRORS NOT BROUGHT TO THEIR ATTENTION PRIOR TO THE START OF CONSTRUCTION. WHILE EVERY EFFORT WAS MADE IN THE PREPARATION OF THESE DRAWINGS AND DIMENSIONS TO AVOID ERRORS THE OWNER AND / OR BUILDER SHALL VERIFY ALL DIMENSIONS, DETAILS, LOCAL AND STATE CODES.

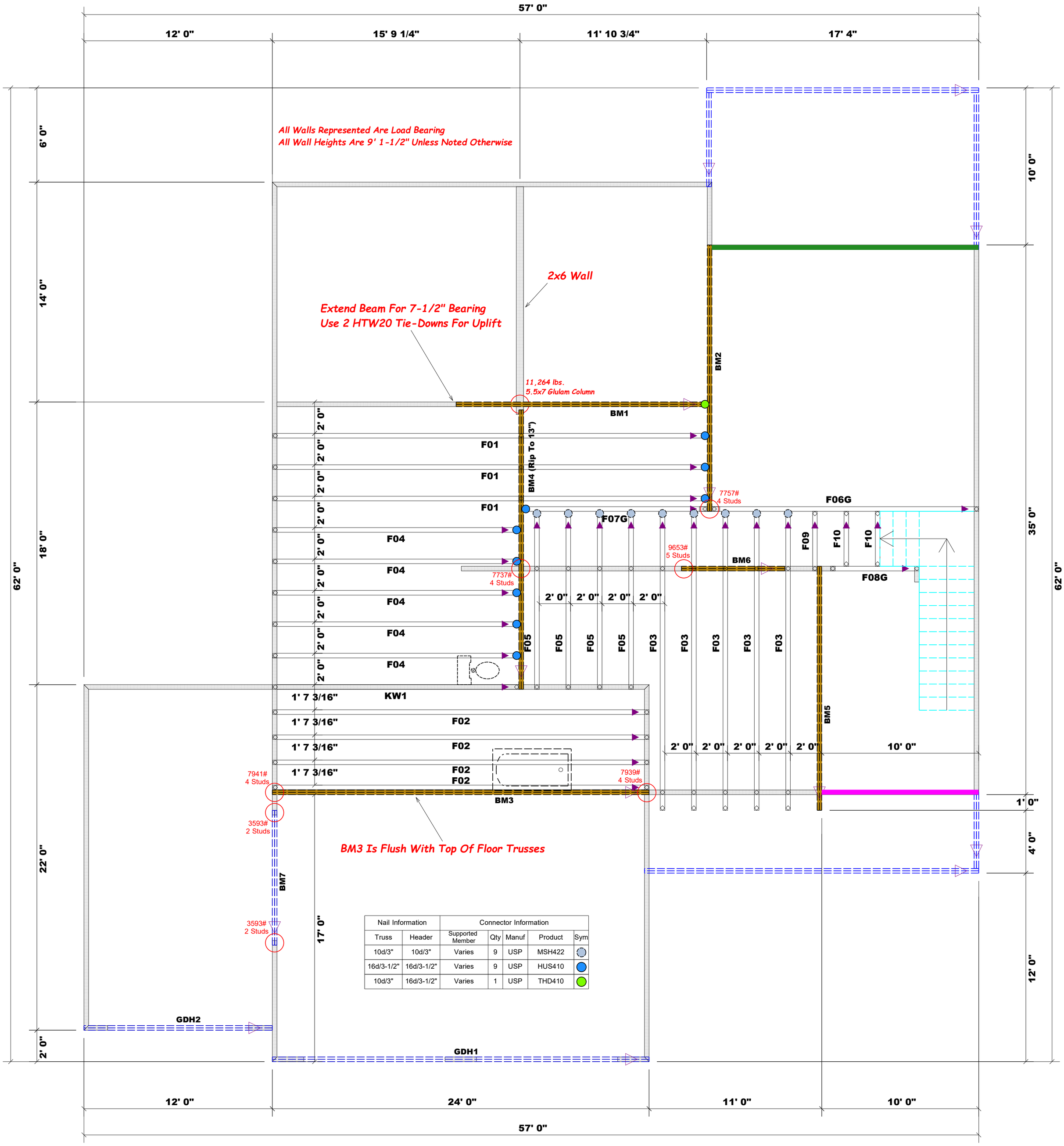
I HEREBY CERTIFY THAT THIS DRAWING MEETS LOCAL CODES, 2018 INTERNATIONAL BUILDING CODES

THIS IS FOR THE CONSTRUCTION OF ONE HOUSE ON A SINGLE LOT, NOT TO BE RELISED

PLAN NUMBER
BG22-A04

OPTION #1

3 | GARAGE L F | DATE: 5/15/19



Nail Information		Connector Information				
Truss	Header	Supported Member	Qty	Manuf	Product	Sym
10d/3"	10d/3"	Varies	9	USP	MSH422	
16d/3-1/2"	16d/3-1/2"	Varies	9	USP	HUS410	
10d/3"	16d/3-1/2"	Varies	1	USP	THD410	

Beam Legend					
PlotID	Length	Product	Plies	Net Qty	Fab Type
BM1	16' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM2	17' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM3	24' 0"	1-3/4"x 23-7/8" LVL Kerto-S	2	2	FF
BM4 (Rip To 13")	18' 0"	1-3/4"x 14" LVL Kerto-S	2	2	FF
BM5	16' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM6	7' 0"	1-3/4"x 9-1/4" LVL Kerto-S	2	2	FF
BM7	9' 0"	1-3/4"x 9-1/4" LVL Kerto-S	2	2	FF
GDH1	24' 0"	1-3/4"x 11-7/8" LVL Kerto-S	2	2	FF
GDH2	12' 0"	1-3/4"x 11-7/8" LVL Kerto-S	2	2	FF

Hatch Legend
Bearing Wall Height @ 10'
Bearing Wall Height @ 10' 7"

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

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

-- Denotes Reaction Greater than 3,000 lbs.

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

LOAD CHART FOR JACK STUDS

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

END REACTION (LB TO)	REQ'D STUDS FOR (2) PLY HEADER	END REACTION (LB TO)	REQ'D STUDS FOR (3) PLY HEADER	END REACTION (LB 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	Watermark Homes	**CITY / CO.**	Harnett
JOB NAME	Lot 116 Ballard Woods	**ADDRESS**	Lot 116 Ballard Woods
PLAN	Silver Bell III / GL, 3BR	**MODEL**	Floor
SEAL DATE	9/5/18	**DATE REV.**	08/11/21
QUOTE #	N/A	**DRAWN BY**	Curtis Quick
JOB #	J0821-5072	**SALES REP.**	Anthony Williams

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

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 Curtis Quick
Curtis Quick

COMTECH
ROOF & FLOOR TRUSSES & BEAMS
Reilly Road Industrial Park
Fayetteville, N.C. 28309
Phone: (910) 864-8787
Fax: (910) 864-4444

All Walls Represented Are Load Bearing
All Wall Heights Are 9' 1-1/2" Unless Noted Otherwise

Ladder Frame Between Trusses

HVAC / Storage
20 lbs. Live Load

Lite Attic Storage
30 lbs. Live Load

5926#
4 Studs

5744#
4 Studs

Scab 2x6 On Inside Of Truss To Fill Hanger

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

Hatch Legend
1st Floor Bearing Wall @ 10'
1st Floor Bearing Wall @ 10' 7"
2nd Floor Bearing Wall @ 6' 6-1/2"
2nd Floor Bearing Walls @ 8' 1-1/2"

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

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

◯ -- Denotes Reaction Greater than 3,000 lbs.

Connector Information					Nail Information	
Sym	Product	Manuf	Qty	Supported Member	Header	Truss
■	HUS26	USP	31	Varies	16d/3-1/2"	16d/3-1/2"
IF	MSH422IF	USP	2	Varies	10d/3"	10d/3"
8	THD28-2	USP	1	Varies	16d/3-1/2"	10d/3"
●	THD410	USP	1	Varies	16d/3-1/2"	10d/3"

Beam Legend					
PlotID	Length	Product	Plies	Net Qty	Fab Type
BM1	19' 0"	1-3/4"x 18" LVL Kerto-S	2	2	FF

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	Watermark Homes	CITY / CO.	Harnett
JOB NAME	Lot 116 Ballard Woods	ADDRESS	Lot 116 Ballard Woods
PLAN	Silver Bell III / GL, 3BR	MODEL	Roof
SEAL DATE	9/5/18	DATE REV.	8/24/21
QUOTE #	N/A	DRAWN BY	Curtis Quick
JOB #	J0821-5071	SALES REP.	Anthony Williams

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

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#.

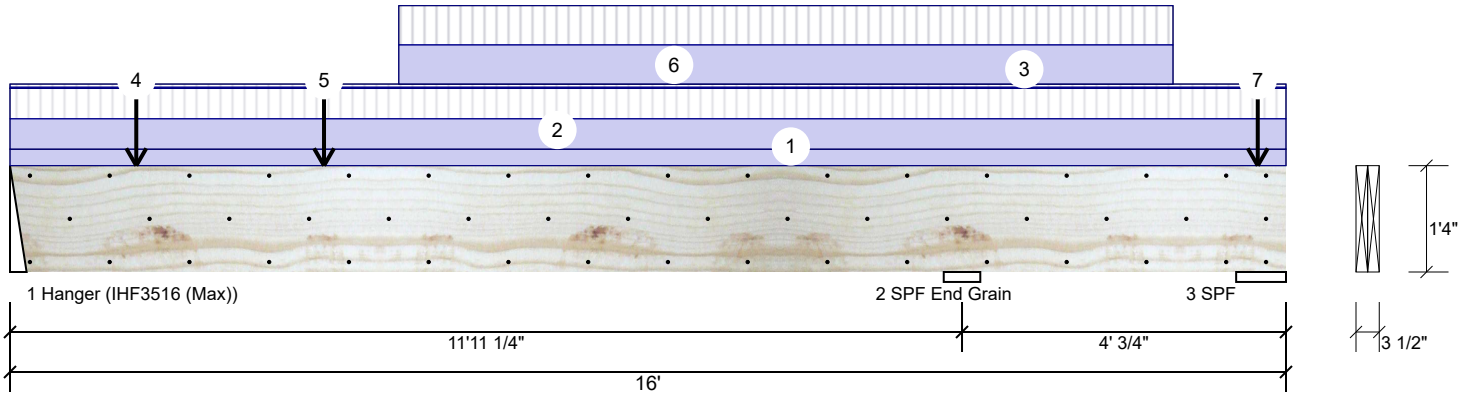
Signature Curtis Quick
Curtis Quick

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

Client:	Watermark Homes	Date:	8/24/2021
Project:	Lot 116 Ballard Woods	Input by:	Curtis Quick
Address:		Job Name:	The Silver Bell III
		Project #:	J0821-5072

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 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	1583	2115	0	0	0
2	Vertical	5028	6275	0	0	0
3	Vertical	0 (-440)	(-539)	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	2.500"	Vert	46%	2014 / 1515	3529	L_	D+L
2 - SPF End Grain	5.500"	Vert	68%	6717 / 5380	12097	LL	D+L
3 - SPF	7.500"	Vert	0%	-880 / -1290	-2170 (-2170)	L_	D+L(D+L)

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-12576 ft-lb	11'11 1/4"	34565 ft-lb	0.364 (36%)	D+L	LL
Unbraced	-12576 ft-lb	11'11 1/4"	12581 ft-lb	1.000 (100%)	D+L	LL
Pos Moment	9705 ft-lb	5'4 9/16"	34565 ft-lb	0.281 (28%)	D+L	L_
Unbraced	9705 ft-lb	5'4 9/16"	9705 ft-lb	1.000 (100%)	D+L	L_
Shear	5685 lb	10'4 1/2"	11947 lb	0.476 (48%)	D+L	LL
LL Defl inch	0.058 (L/2443)	5'10 9/16"	0.295 (L/480)	0.197 (20%)	L	L_
TL Defl inch	0.131 (L/1084)	5'10 3/16"	0.393 (L/360)	0.332 (33%)	D+L	L_

Design Notes

1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2 Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
3 Refer to last page of calculations for fasteners required for specified loads.
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 Tie-down connection required at bearing 3 for uplift 2170 lb (Combination D+L, Load Case L_).
8 Top must be laterally braced at a maximum of 13'1 15/16" o.c.
9 Bottom must be laterally braced at a maximum of 9'5 7/8" o.c.
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 3/30/2024

Manufacturer Info

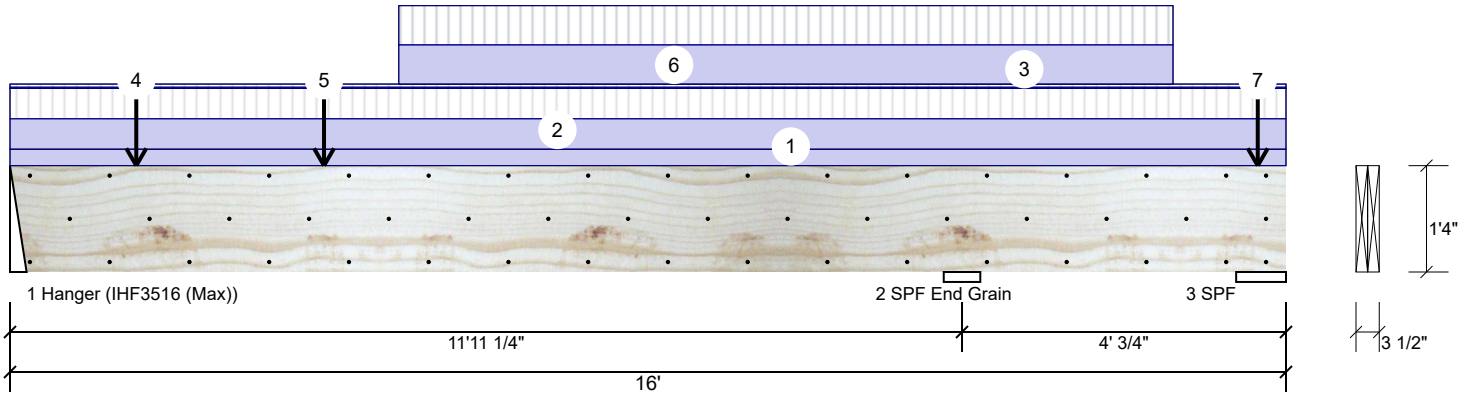
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

Client:	Watermark Homes	Date:	8/24/2021
Project:	Lot 116 Ballard Woods	Input by:	Curtis Quick
Address:		Job Name:	The Silver Bell III
		Project #:	J0821-5072

BM1 Kerto-S LVL 1.750" X 16.000" 2-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	Uniform			Top	105 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Wall
2	Uniform			Far Face	193 PLF	193 PLF	0 PLF	0 PLF	0 PLF	D2
3	Tie-In	0-0-0 to 16-0-0	0-6-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	0 PSF	Floor
4	Point	1-7-0		Top	96 lb	96 lb	0 lb	0 lb	0 lb	B3A
	Bearing Length	0-3-8								
5	Point	3-11-4		Top	115 lb	115 lb	0 lb	0 lb	0 lb	B3
	Bearing Length	0-3-8								
6	Part. Uniform	4-10-8 to 14-7-0		Top	249 PLF	249 PLF	0 PLF	0 PLF	0 PLF	"B" Trusses
7	Point	15-7-12		Top	135 lb	135 lb	0 lb	0 lb	0 lb	B1A
	Bearing Length	0-3-8								
	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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		Project #:	J0821-5072

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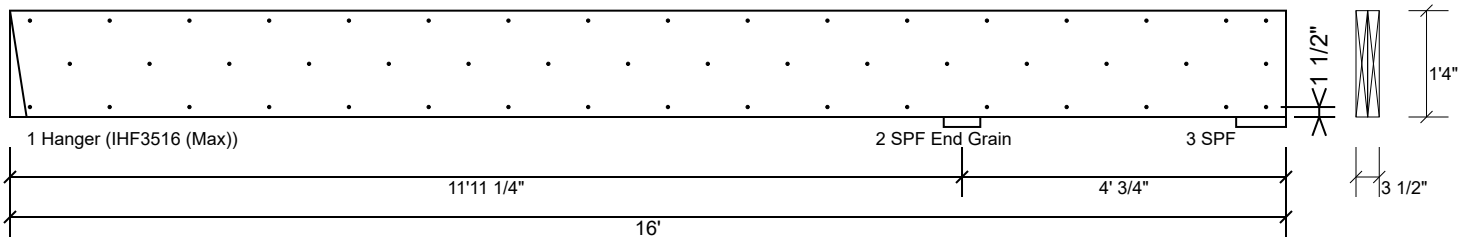
Level: Level



Multi-Ply Analysis

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

Capacity	78.6 %
Load	193.0 PLF
Yield Limit per Foot	245.6 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	D+L
Duration Factor	1.00

Notes

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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
3. Damaged Beams must not be used
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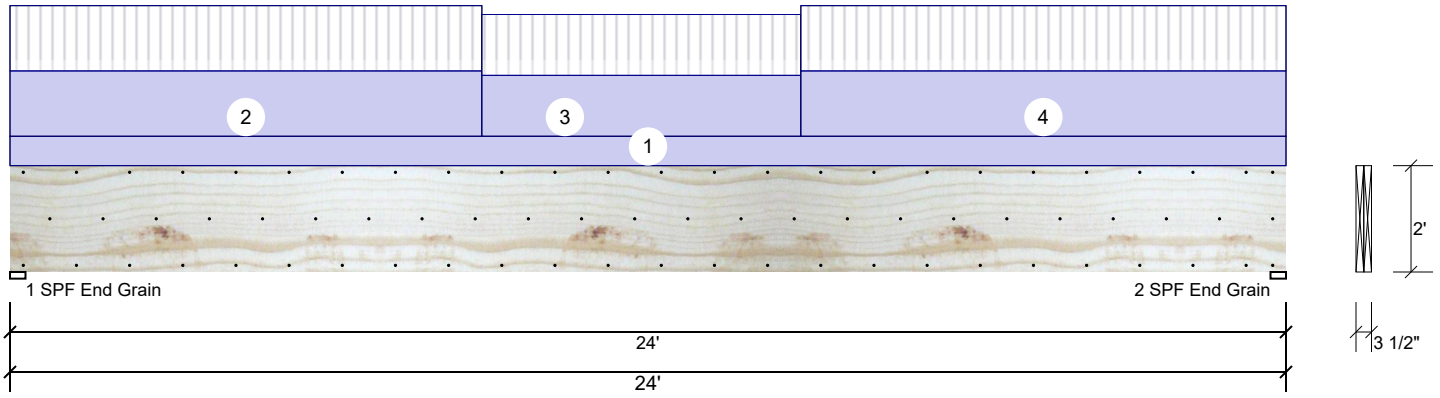
		Project #:	J0821-5072

BM3 Kerto-S LVL 1.750" X 24.000" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	3137	4801	0	0	0
2	Vertical	3139	4803	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	Vert	74%	4801 / 3137	7939	L	D+L
2 - SPF End Grain	3.500"	Vert	75%	4803 / 3139	7941	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	45433 ft-lb	12' 1/16"	73185 ft-lb	0.621 (62%)	D+L	L
Unbraced	45433 ft-lb	12' 1/16"	45612 ft-lb	0.996 (100%)	D+L	L
Shear	6442 lb	21'8 1/2"	17920 lb	0.359 (36%)	D+L	L
LL Defl inch	0.247 (L/1144)	12' 1/16"	0.589 (L/480)	0.420 (42%)	L	L
TL Defl inch	0.627 (L/451)	12' 1/16"	0.785 (L/360)	0.798 (80%)	D+L	L

Design Notes

1. Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2. Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
3. Refer to last page of calculations for fasteners required for specified loads.
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 3'9 5/16" o.c.
7. Bottom must be laterally braced at end 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	120 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Wall
2	Part. Uniform	0-0-0 to 8-10-8		Top	266 PLF	266 PLF	0 PLF	0 PLF	0 PLF	B1
3	Part. Uniform	8-10-8 to 14-10-8		Top	248 PLF	248 PLF	0 PLF	0 PLF	0 PLF	B1A
4	Part. Uniform	14-10-8 to 24-0-0		Top	266 PLF	266 PLF	0 PLF	0 PLF	0 PLF	B1
	Self Weight				19 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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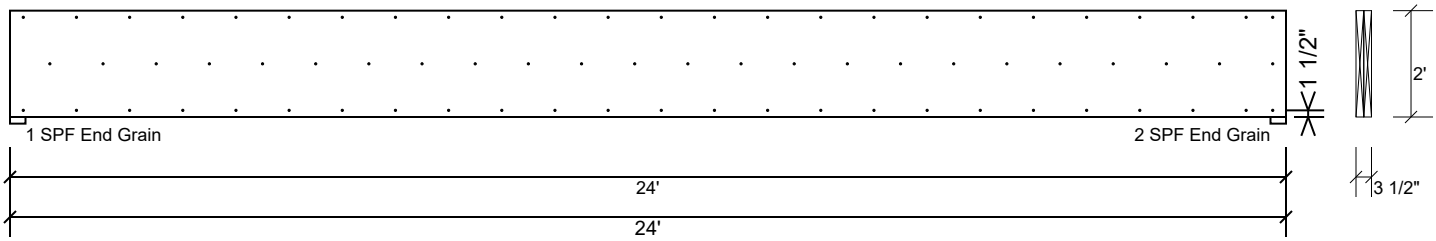
		Project #:	J0821-5072

BM3 Kerto-S LVL 1.750" X 24.000" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

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

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

Notes

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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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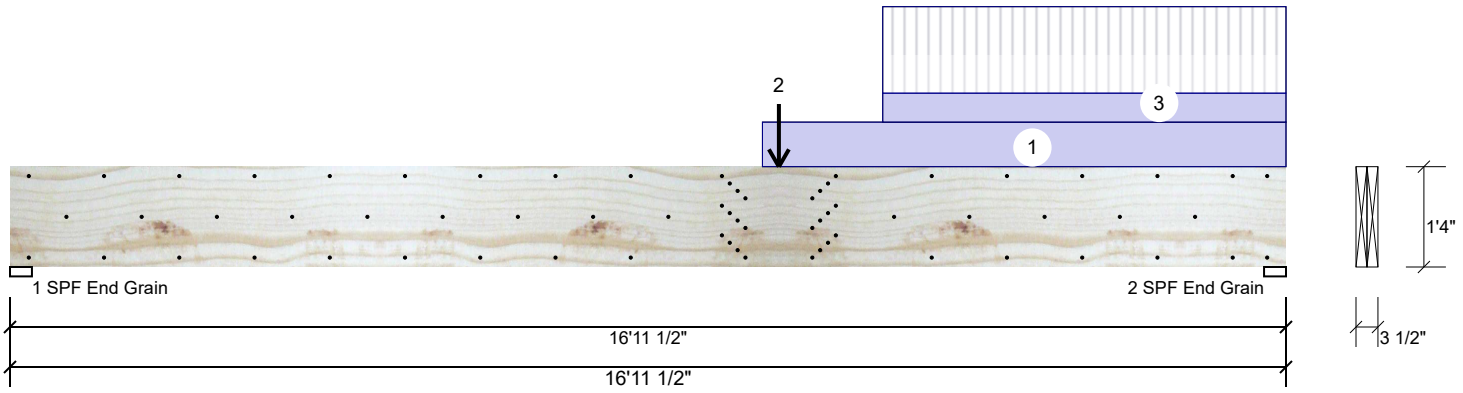
Address:		Job Name:	The Silver Bell III
		Project #:	J0821-5072

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 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	1350	1497	0	0	0
2	Vertical	2847	2916	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	Vert	27%	1497 / 1350	2847	L	D+L
2 - SPF End Grain	3.500"	Vert	54%	2916 / 2847	5764	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	27818 ft-lb	10'2 5/8"	34565 ft-lb	0.805 (80%)	D+L	L
Unbraced	27818 ft-lb	10'2 5/8"	27884 ft-lb	0.998 (100%)	D+L	L
Shear	5060 lb	15'4"	11947 lb	0.424 (42%)	D+L	L
LL Defl inch	0.250 (L/793)	9'4 1/2"	0.413 (L/480)	0.605 (61%)	L	L
TL Defl inch	0.516 (L/384)	9'4 1/4"	0.551 (L/360)	0.938 (94%)	D+L	L

Design Notes

1. Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2. Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
3. Refer to last page of calculations for fasteners required for specified loads.
4. Concentrated load fastener specification is in addition to hanger fasteners if a hanger is present.
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 3'8 15/16" o.c.
8. Bottom must be laterally braced at end 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	10-0-0 to 16-11-8		Top	120 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Wall
2	Point	10-2-10		Far Face	2949 lb	2949 lb	0 lb	0 lb	0 lb	BM1
3	Part. Uniform	11-7-3 to 16-11-8		Far Face	78 PLF	233 PLF	0 PLF	0 PLF	0 PLF	F01
	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

This design is valid until 3/30/2024

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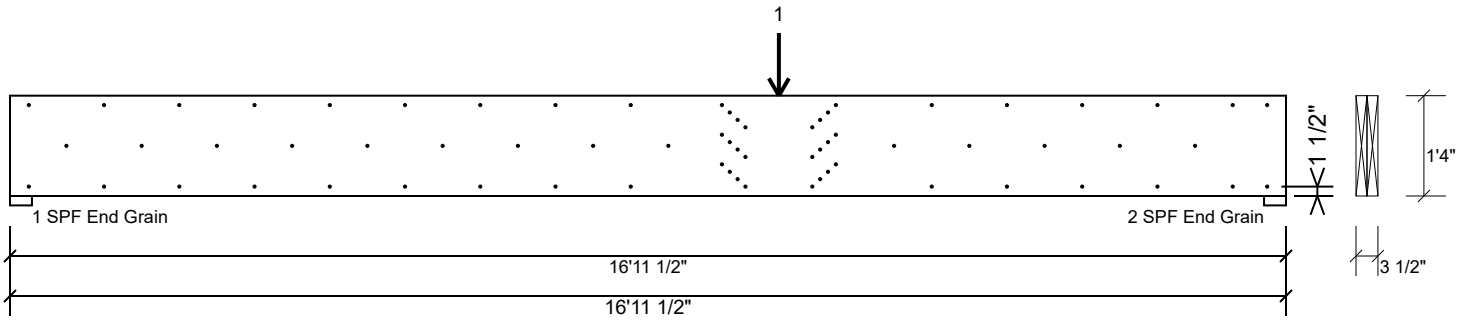
		Project #:	J0821-5072

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

Level: Level



Multi-Ply Analysis

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

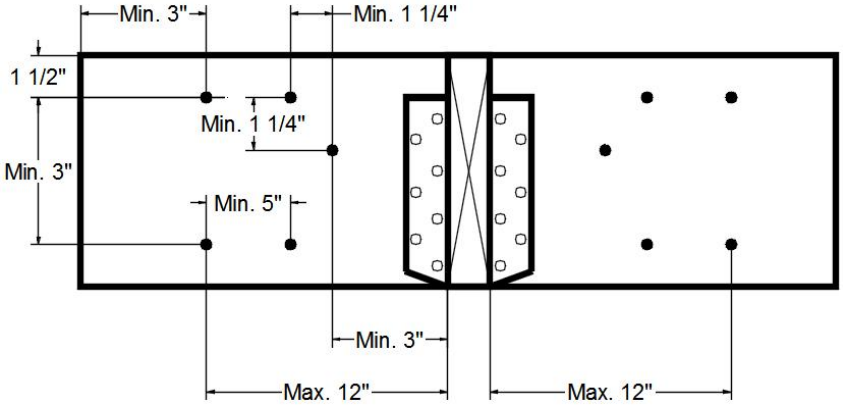
Capacity	63.3 %
Load	155.5 PLF
Yield Limit per Foot	245.6 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	D+L
Duration Factor	1.00

Concentrated Load

Fasten at concentrated side load at 10-2-10 with a minimum of (24) – 16d Common nails (.162x3.5") in the pattern shown.

Capacity	96.5 %
Load	2949.0lb.
Total Yield Limit	3056.0 lb.
Cg	0.9997
Yield Limit per Fastener	127.4 lb.
Yield Mode	IV
Load Combination	D+L
Duration Factor	1.00

Min/Max fastener distances for Concentrated Side Loads



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
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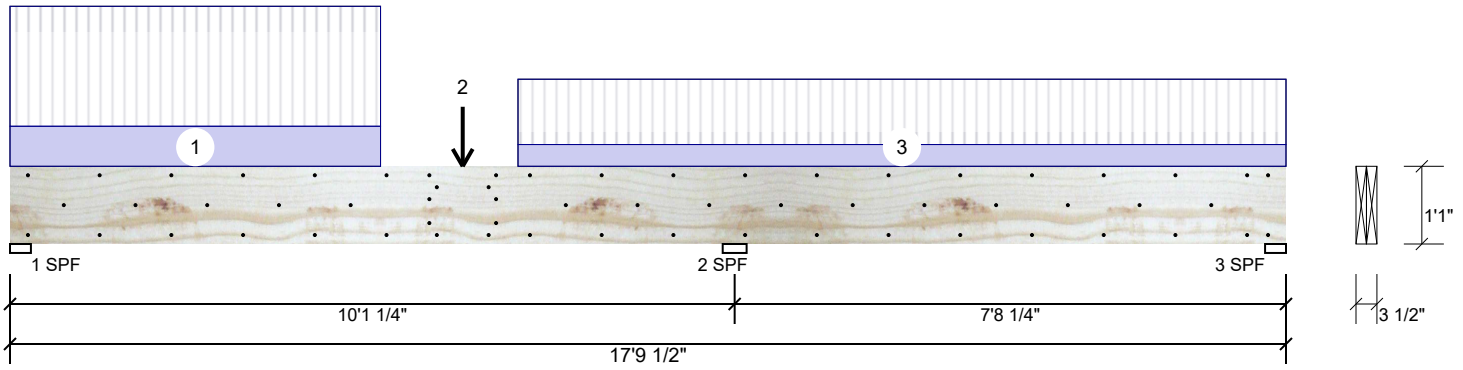
BM4 Kerto-S LVL 1.750" X 13.000" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	2365	832	0	0	0
2	Vertical	4148	1493	0	0	0
3	Vertical	735	272	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	Vert	62%	821 / 2431	3252	L_	D+L
2 - SPF	4.000"	Vert	96%	1518 / 4219	5737	LL	D+L
3 - SPF	3.500"	Vert	27%	258 / 1131	1389 (-105)	_L	D+L(D+L)

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-5709 ft-lb	10'1 1/4"	23540 ft-lb	0.243 (24%)	D+L	LL
Unbraced	-5709 ft-lb	10'1 1/4"	6295 ft-lb	0.907 (91%)	D+L	LL
Pos Moment	5976 ft-lb	4'1 7/16"	23540 ft-lb	0.254 (25%)	D+L	L_
Unbraced	5976 ft-lb	4'1 7/16"	6295 ft-lb	0.949 (95%)	D+L	L_
Shear	2821 lb	8'10 1/4"	9707 lb	0.291 (29%)	D+L	LL
LL Defl inch	0.071 (L/1666)	4'9 5/16"	0.247 (L/480)	0.288 (29%)	L	L_
TL Defl inch	0.094 (L/1264)	4'9"	0.329 (L/360)	0.285 (28%)	D+L	L_

Design Notes

1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2 Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
3 Refer to last page of calculations for fasteners required for specified loads.
4 Concentrated load fastener specification is in addition to hanger fasteners if a hanger is present.
5 Girders are designed to be supported on the bottom edge only.
6 Top loads must be supported equally by all plies.
7 Tie-down connection required at bearing 3 for uplift 105 lb (Combination D+L, Load Case L_).
8 Top must be laterally braced at end bearings.
9 Bottom must be laterally braced at end bearings.
10 Lateral slenderness ratio based on single ply width.

Notes

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Handling & Installation

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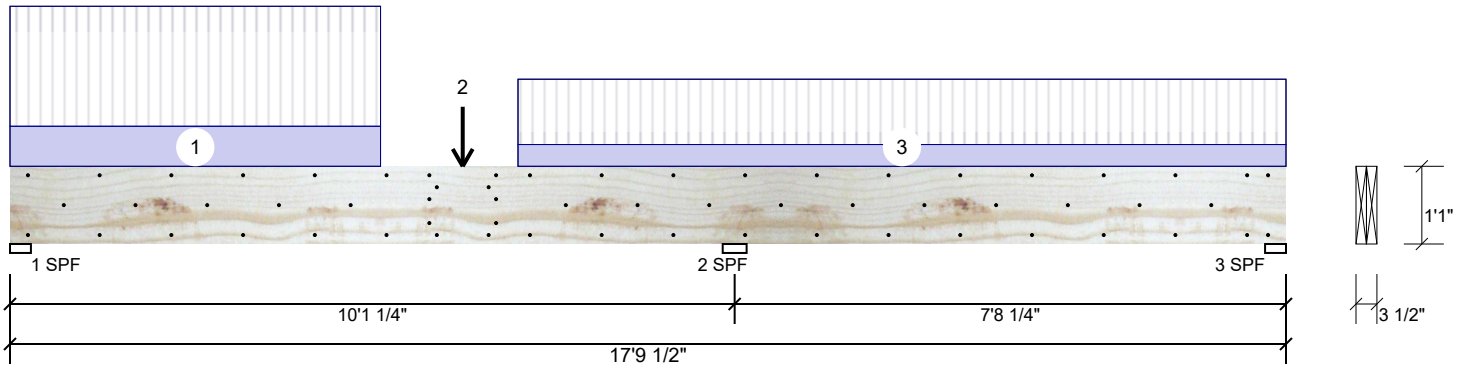


ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Part. Uniform	0-0-0 to 5-2-0		Top	195 PLF	584 PLF	0 PLF	0 PLF	0 PLF	F01
2	Point	6-3-12		Near Face	275 lb	825 lb	0 lb	0 lb	0 lb	F07G
3	Part. Uniform	7-1-0 to 17-9-8		Far Face	106 PLF	318 PLF	0 PLF	0 PLF	0 PLF	F04
	Self Weight				10 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 3/30/2024

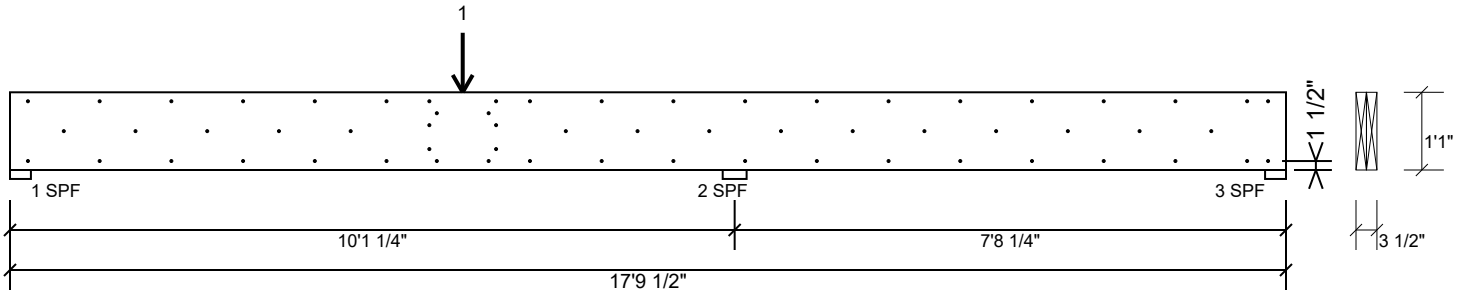
Manufacturer Info

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

BM4 Kerto-S LVL 1.750" X 13.000" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

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

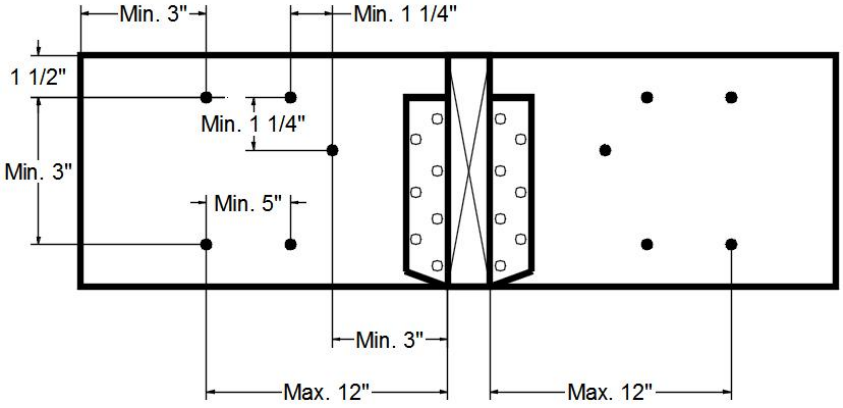
Capacity	86.3 %
Load	212.0 PLF
Yield Limit per Foot	245.6 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	D+L
Duration Factor	1.00

Concentrated Load

Fasten at concentrated side load at 6-3-12 with a minimum of (10) – 10d Box nails (.128x3") in the pattern shown.

Capacity	67.2 %
Load	550.0lb.
Total Yield Limit	818.4 lb.
Cg	0.9998
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Load Combination	D+L
Duration Factor	1.00

Min/Max fastener distances for Concentrated Side Loads



Notes

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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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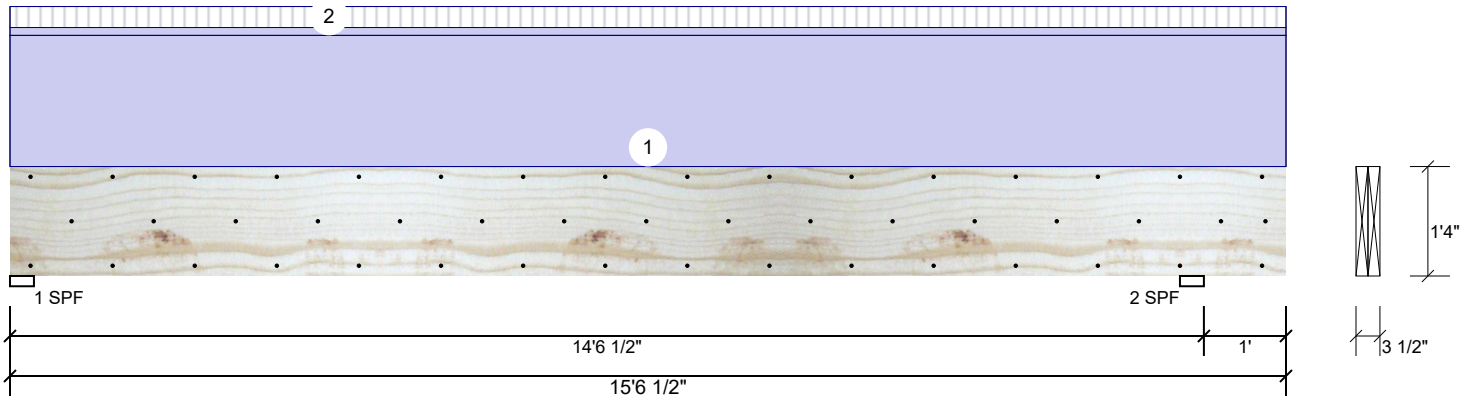
910-864-TRUS

Client:	Watermark Homes	Date:	8/24/2021
Project:	Lot 116 Ballard Woods	Input by:	Curtis Quick
Address:		Job Name:	The Silver Bell III
		Project #:	J0821-5072

BM5 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 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	291	2018	0	0	0
2	Vertical	331	2294	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	Vert	44%	2018 / 292	2310	L_	D+L
2 - SPF	3.500"	Vert	50%	2294 / 331	2625	LL	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-159 ft-lb	14'6 1/2"	34565 ft-lb	0.005 (0%)	D+L	LL
Unbraced	-159 ft-lb	14'6 1/2"	9124 ft-lb	0.017 (2%)	D+L	LL
Pos Moment	7906 ft-lb	7'3 5/16"	34565 ft-lb	0.229 (23%)	D+L	L_
Unbraced	7906 ft-lb	7'3 5/16"	9124 ft-lb	0.866 (87%)	D+L	L_
Shear	1811 lb	1'7 1/2"	11947 lb	0.152 (15%)	D+L	L_
LL Defl inch	0.017 (L/9843)	7'3 3/4"	0.354 (L/480)	0.049 (5%)	L	L_
TL Defl inch	0.136 (L/1252)	7'3 9/16"	0.473 (L/360)	0.288 (29%)	D+L	L_
LL Cant	-0.003 (2L/6988)	Rt Cant	0.200 (2L/480)	0.017 (2%)	L	L_
TL Cant	-0.026 (2L/907)	Rt Cant	0.300 (2L/360)	0.088 (9%)	D+L	L_

Design Notes

1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2 Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
3 Refer to last page of calculations for fasteners required for specified loads.
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 end bearings.
7 Bottom must be laterally braced at end bearings.
8 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

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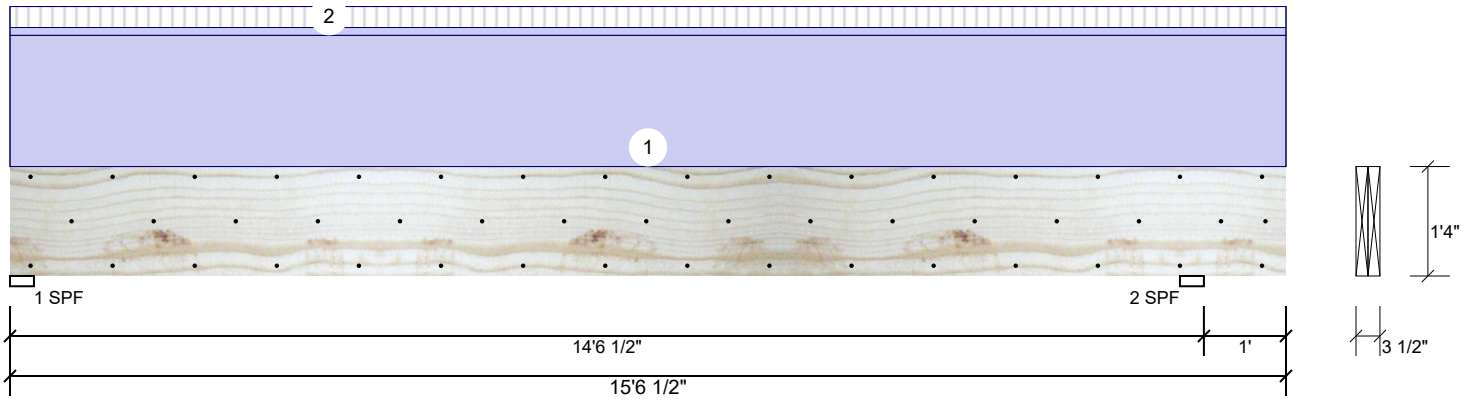
Client:	Watermark Homes	Date:	8/24/2021
Project:	Lot 116 Ballard Woods	Input by:	Curtis Quick
Address:		Job Name:	The Silver Bell III
		Project #:	J0821-5072

BM5 Kerto-S LVL 1.750" X 16.000" 2-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	Uniform			Top	250 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Wall
2	Uniform			Top	15 PLF	40 PLF	0 PLF	0 PLF	0 PLF	Floor
	Self Weight				12 PLF					

Notes

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Lumber

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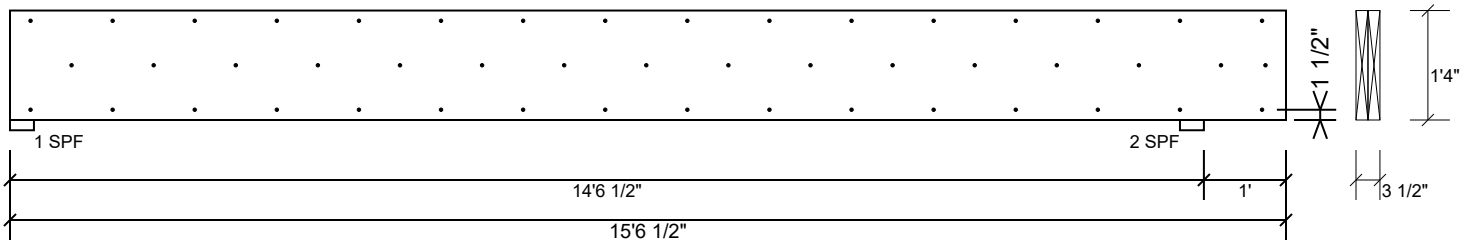
BM5 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

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

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

Notes

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

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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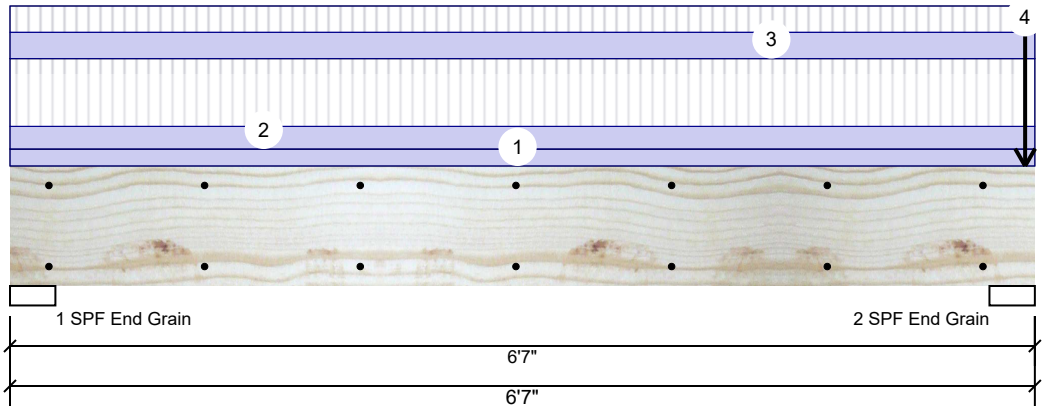
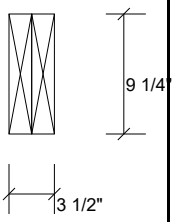
Project:	Lot 116 Ballard Woods	Input by:	Curtis Quick
Address:		Job Name:	The Silver Bell III
		Project #:	J0821-5072

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

Level: Level





Member Information

Type:	Header	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Header Supports Glass:	No
Importance:	Normal - II	Deck:	Not Checked
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	2189	1558	0	0	0
2	Vertical	5142	4511	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	Vert	35%	1558 / 2189	3747	L	D+L
2 - SPF End Grain	3.500"	Vert	91%	4511 / 5142	9653	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	5338 ft-lb	3'3 1/2"	12542 ft-lb	0.426 (43%)	D+L	L
Unbraced	5338 ft-lb	3'3 1/2"	9934 ft-lb	0.537 (54%)	D+L	L
Shear	2543 lb	1' 3/4"	6907 lb	0.368 (37%)	D+L	L
LL Defl inch	0.057 (L/1296)	3'3 1/2"	0.153 (L/480)	0.370 (37%)	L	L
TL Defl inch	0.097 (L/757)	3'3 1/2"	0.204 (L/360)	0.475 (48%)	D+L	L

Design Notes

1. Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2. Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
3. Refer to last page of calculations for fasteners required for specified loads.
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 end bearings.
7. Bottom must be laterally braced at end 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	120 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Wall
2	Uniform			Top	160 PLF	479 PLF	0 PLF	0 PLF	0 PLF	F03
3	Uniform			Top	186 PLF	186 PLF	0 PLF	0 PLF	0 PLF	B4
4	Point	6-6-4		Top	2953 lb	2953 lb	0 lb	0 lb	0 lb	B3A
	Bearing Length	0-3-8								
	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 3/30/2024

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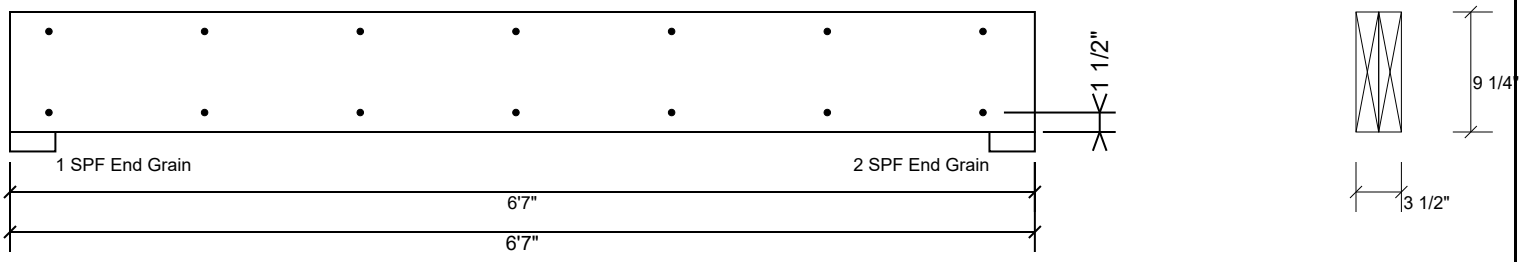
Client:	Watermark Homes	Date:	8/24/2021
Project:	Lot 116 Ballard Woods	Input by:	Curtis Quick
Address:		Job Name:	The Silver Bell III
		Project #:	J0821-5072

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

Level: Level



Multi-Ply Analysis

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

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

Notes

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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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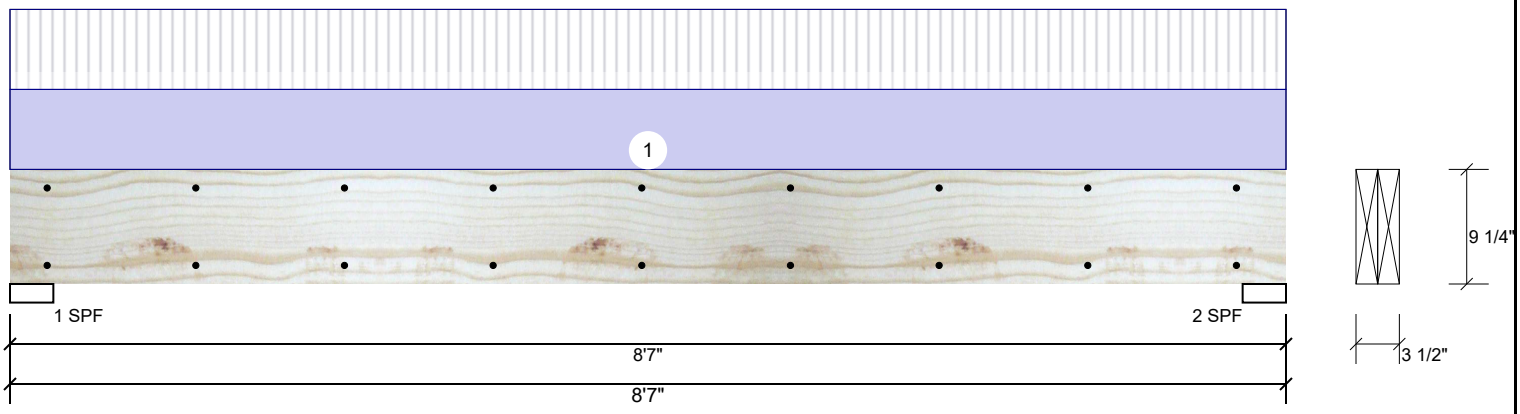
Address:		Job Name:	The Silver Bell III
		Project #:	J0821-5072

BM7 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level



Member Information

Type:	Header	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Header Supports Glass:	No
Importance:	Normal - II	Deck:	Not Checked
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	1781	1812	0	0	0
2	Vertical	1781	1812	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	Vert	69%	1812 / 1781	3593	L	D+L
2 - SPF	3.500"	Vert	69%	1812 / 1781	3593	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	6908 ft-lb	4'3 1/2"	12542 ft-lb	0.551 (55%)	D+L	L
Unbraced	6908 ft-lb	4'3 1/2"	8468 ft-lb	0.816 (82%)	D+L	L
Shear	2709 lb	7'6 1/4"	6907 lb	0.392 (39%)	D+L	L
LL Defl inch	0.100 (L/972)	4'3 9/16"	0.203 (L/480)	0.494 (49%)	L	L
TL Defl inch	0.202 (L/482)	4'3 9/16"	0.271 (L/360)	0.747 (75%)	D+L	L

Design Notes

1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2 Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
3 Refer to last page of calculations for fasteners required for specified loads.
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 end bearings.
7 Bottom must be laterally braced at end 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	415 PLF	415 PLF	0 PLF	0 PLF	0 PLF	A1
	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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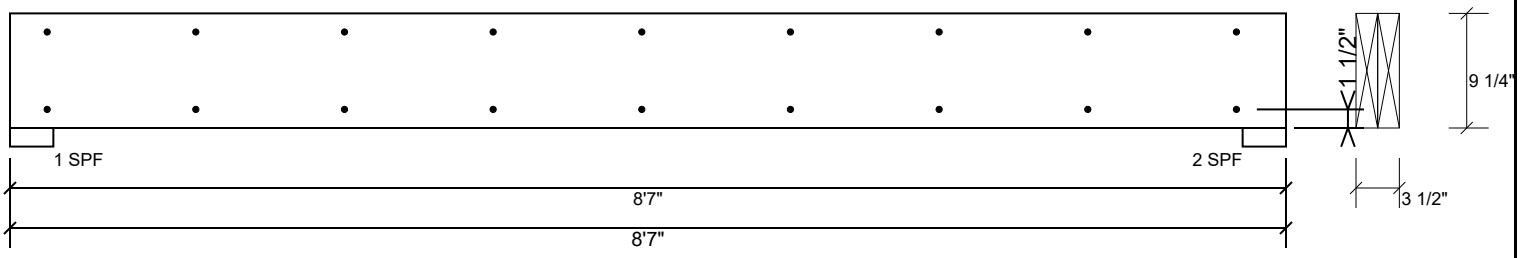
BM7 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

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

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

Notes

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Lumber

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

Handling & Installation

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6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 3/30/2024

Manufacturer Info

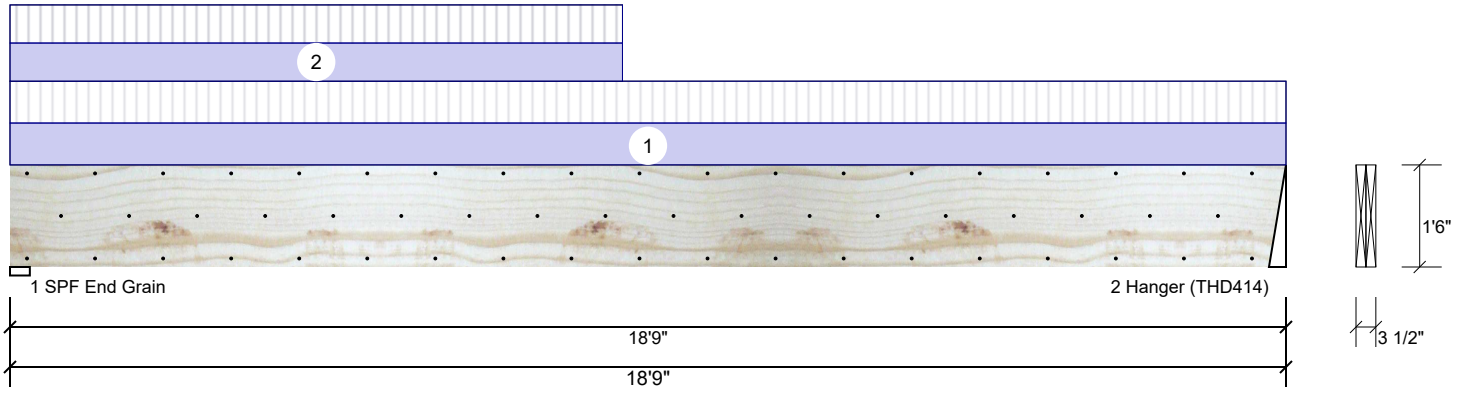
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

Client:	Watermark Homes	Date:	8/24/2021
Project:	Lot 116 Ballard Woods	Input by:	Curtis Quick
Address:		Job Name:	The Silver Bell III
		Project #:	J0821-5072

BM1 (Roof) Kerto-S LVL 1.750" X 18.000" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	2806	2938	0	0	0
2	Vertical	2017	2148	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	Vert	54%	2938 / 2806	5744	L	D+L
2 - Hanger	3.000"	Vert	46%	2148 / 2017	4165	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	22398 ft-lb	8'2 3/4"	42981 ft-lb	0.521 (52%)	D+L	L
Unbraced	22398 ft-lb	8'2 3/4"	22427 ft-lb	0.999 (100%)	D+L	L
Shear	4515 lb	1'9 1/2"	13440 lb	0.336 (34%)	D+L	L
LL Defl inch	0.211 (L/1043)	9' 3/4"	0.459 (L/480)	0.460 (46%)	L	L
TL Defl inch	0.434 (L/508)	9' 13/16"	0.612 (L/360)	0.709 (71%)	D+L	L

Design Notes

1. Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2. Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
3. Refer to last page of calculations for fasteners required for specified loads.
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 1/8" o.c.
8. Bottom must be laterally braced at end 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	Uniform			Top	179 PLF	179 PLF	0 PLF	0 PLF	0 PLF	H2
2	Part. Uniform	0-0-0 to 9-0-0		Top	163 PLF	163 PLF	0 PLF	0 PLF	0 PLF	H3
	Self Weight				14 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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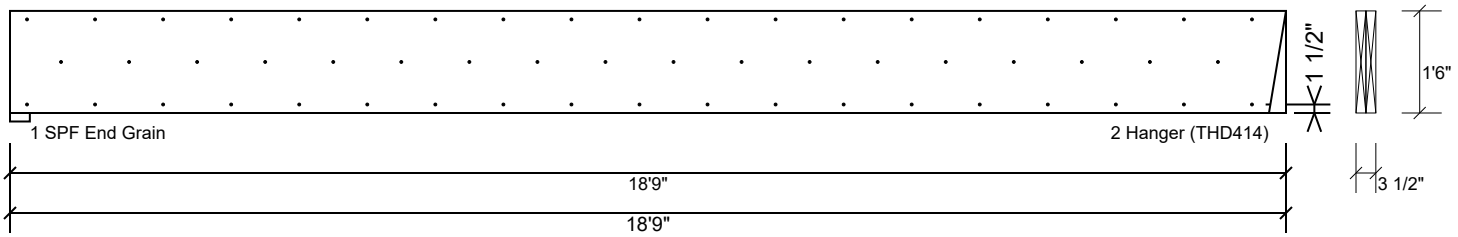
Level: Level



Multi-Ply Analysis

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

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

Notes

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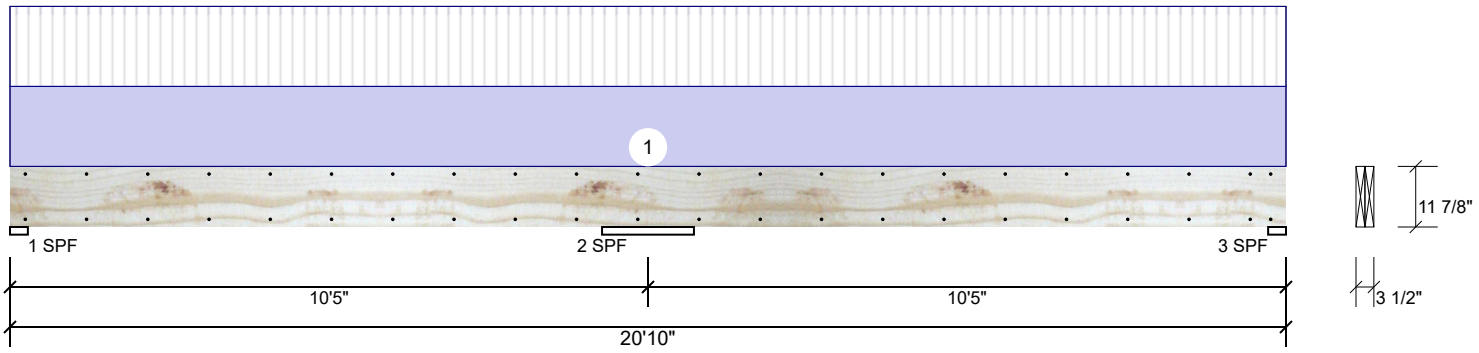
GDH1 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	1498	1536	0	0	0
2	Vertical	4608	4724	0	0	0
3	Vertical	1498	1536	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	Vert	62%	1515 / 1710	3226	L_	D+L
2 - SPF	18.000"	Vert	35%	4766 / 4648	9414	LL	D+L
3 - SPF	3.500"	Vert	62%	1515 / 1710	3226	_L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-9590 ft-lb	10'5"	19911 ft-lb	0.482 (48%)	D+L	LL
Unbraced	-9590 ft-lb	10'5"	9594 ft-lb	1.000 (100%)	D+L	LL
Pos Moment	6319 ft-lb	16'5 5/8"	19911 ft-lb	0.317 (32%)	D+L	_L
Unbraced	6319 ft-lb	16'5 5/8"	6324 ft-lb	0.999 (100%)	D+L	_L
Shear	3430 lb	8'8 1/8"	8867 lb	0.387 (39%)	D+L	LL
LL Defl inch	0.078 (L/1570)	5'1 1/8"	0.255 (L/480)	0.306 (31%)	L	L_
TL Defl inch	0.132 (L/928)	15'10 7/8"	0.340 (L/360)	0.388 (39%)	D+L	_L

Design Notes

1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2 Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
3 Refer to last page of calculations for fasteners required for specified loads.
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 15'8 1/8" o.c.
7 Bottom must be laterally braced at a maximum of 9'7" o.c.
8 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

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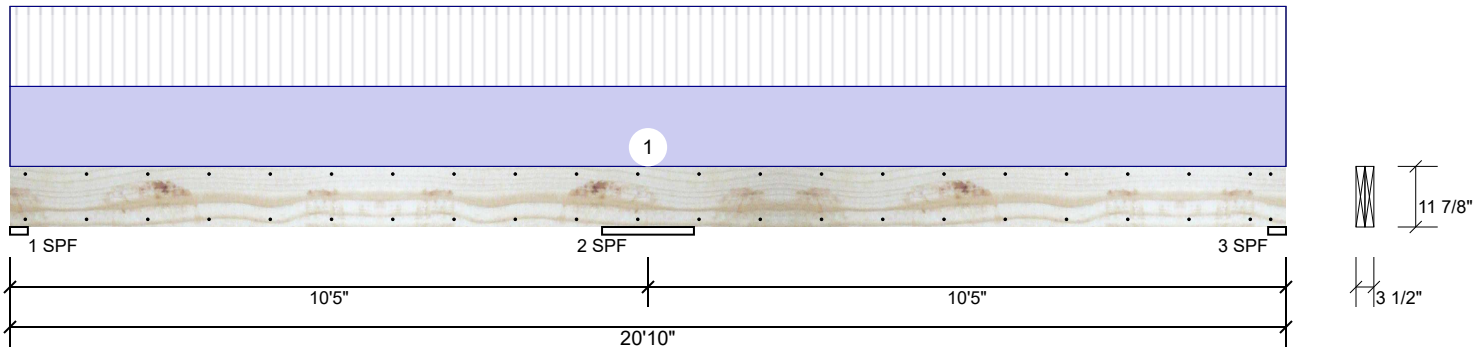
GDH1 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED

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	Uniform			Top	365 PLF	365 PLF	0 PLF	0 PLF	0 PLF	A1GE
	Self Weight				9 PLF					

Notes

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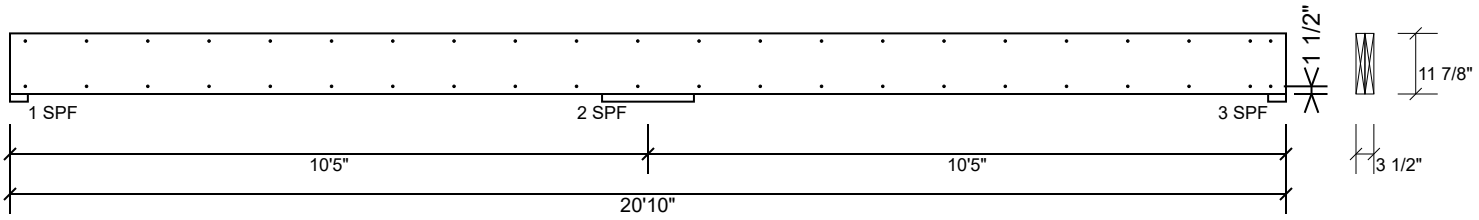

Multi-Ply Analysis

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

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Lumber

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Handling & Installation

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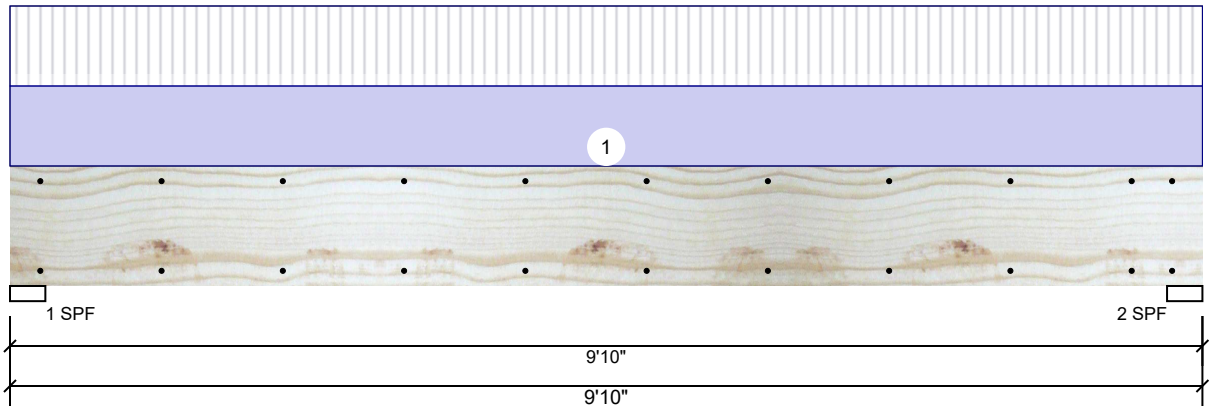
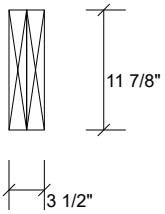
		Project #:	J0821-5072

GDH2 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 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	1170	1216	0	0	0
2	Vertical	1170	1216	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	Vert	46%	1216 / 1170	2386	L	D+L
2 - SPF	3.500"	Vert	46%	1216 / 1170	2386	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	5331 ft-lb	4'11"	19911 ft-lb	0.268 (27%)	D+L	L
Unbraced	5331 ft-lb	4'11"	9760 ft-lb	0.546 (55%)	D+L	L
Shear	1773 lb	1'3 3/8"	8867 lb	0.200 (20%)	D+L	L
LL Defl inch	0.050 (L/2268)	4'11"	0.234 (L/480)	0.212 (21%)	L	L
TL Defl inch	0.101 (L/1113)	4'11"	0.312 (L/360)	0.324 (32%)	D+L	L

Design Notes

1. Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2. Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
3. Refer to last page of calculations for fasteners required for specified loads.
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 end bearings.
7. Bottom must be laterally braced at end 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	238 PLF	238 PLF	0 PLF	0 PLF	0 PLF	G1
	Self Weight				9 PLF					

Notes

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Lumber

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Handling & Installation

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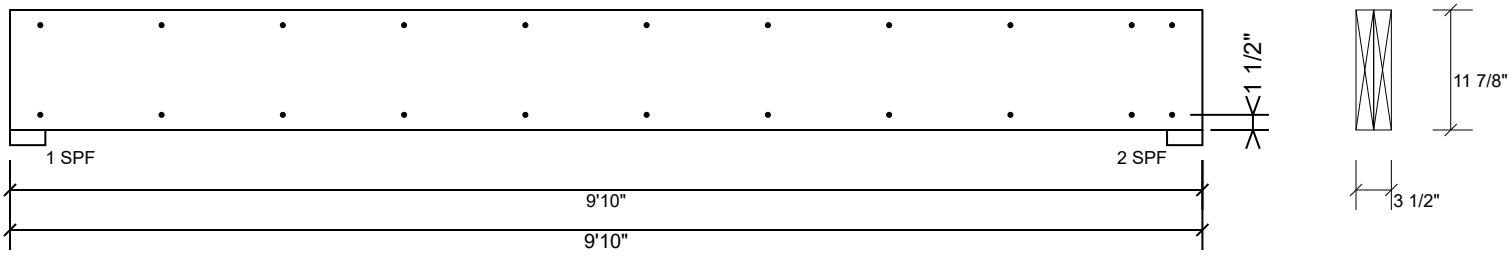

Multi-Ply Analysis

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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

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NOTES:

USE 2X4 TREATED MUD SILL WITH 2X8 SOL. BAND
USE DOUBLE OR TRIPLE 2X10 GIRDERS
JOISTS ARE 2X8 SPACED AS NOTED, WITH EXTRA JOISTS UNDER ALL PARALLEL INTERIOR WALLS
PROVIDE CONTINUOUS BEARING FROM FOUNDATION WALL OR PIER SUPPORTS TO BEAMS OR GIRDER
GIRDERS AND BEARING JOIST MUST REST ON 4" MIN.
PROVIDE FOUNDATION VENTS & ACCESS AS REQUIRED
TREAT SOIL AS PER LOCAL AND STATE BUILDING CODES
SEE APPROPRIATE SHEET FOR CONSTRUCTION DETAILS

NOTE:

FOUNDATION DETAILS SHOWN ARE BASED ON ASSUMED SOIL BEARING CAPACITY OF 2500 PSF. LOCAL SITE CONDITIONS MUST BE INVESTIGATED. ALL FOOTING TO BE LOCATED BELOW FROST DEPTH.

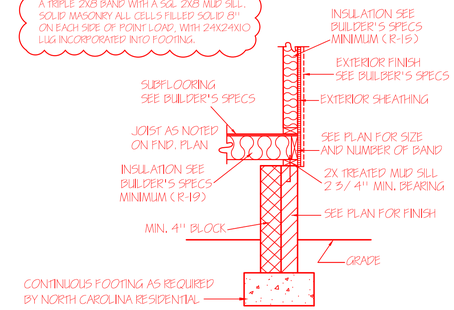
WALL ANCHOR OPTIONS

USE EITHER ANCHOR BOLTS OR ANCHOR STRAPS
-ANCHOR BOLTS: 1/ 2" DIA. BOLTS AT 6'-0" O.C. AND NOT MORE THAT 12" FROM CORNERS, EMBEDDED MIN. 7" INTO FOUNDATION

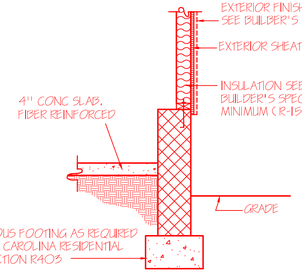
TABLE 4031(1)
MINIMUM WIDTH OF CONCRETE, PRECAST OR MASONRY FOOTINGS (INCHES)

	LOAD BEARING VALUE OF SOIL (psf)			
	1,500	2,000	3,000	>4,000
CONVENTIONAL LIGHT-FRAME CONSTRUCTION				
1 STORY	12	12"	12	12
2 STORY	15"	12"	12	12
3 STORY	25	17	12	12
4-INCH BRICK VENEER OVER LIGHT FRAME OR 8-INCH HOLLOW CONCRETE MASONRY				
1 STORY	12"	12"	12	12
2 STORY	15"	15"	12	12
3 STORY	52	24	16	12
8-INCH SOLID OR FULLY GROUTED MASONRY				
1 STORY	16	12"	12	12
2 STORY	29	21	14	12
3 STORY	42	32	21	16

POINT LOADS WITH 3000-5000 NEED A DOUBLE 2X8 BAND WITH A 2X4 MUD SILL. HOLLOW MASONRY WITH MIN. 2 BRICK CAP AND 16X8 FOOTING.
POINT LOADS WITH 5001 - 10000 NEED A TRIPLE 2X8 BAND WITH A 5QL 2X8 MUD SILL. SOLID MASONRY ALL CELLS FILLED SOLID 8" ON EACH SIDE OF POINT LOAD, WITH 24X24X10 LUG INCORPORATED INTO FOOTING.

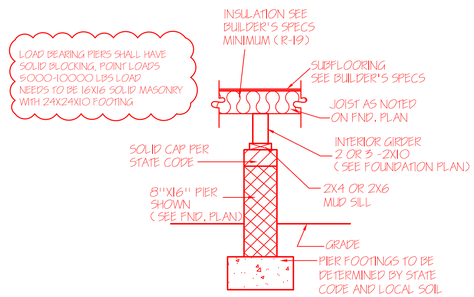


HOUSE WALL — A

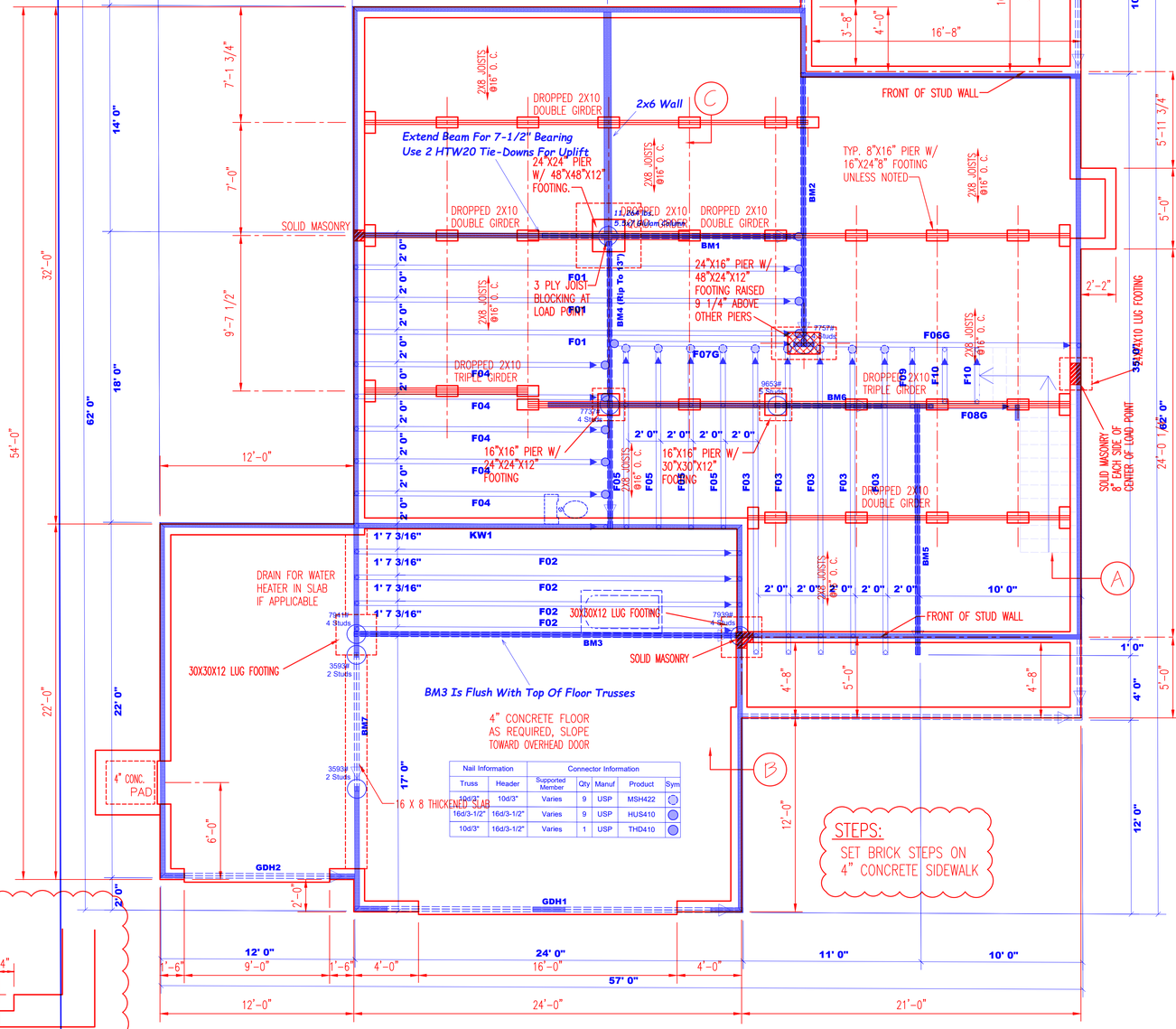


NOTE:
PERIMETER INSUL. MAY EXTEND HORIZ. UNDER SLAB 24" OR VERTICAL 24" BELOW SLAB FLOOR

GARAGE WALL — B



DROPPED PIER DETAIL — C



Nail Information		Connector Information				
Truss	Header	Supported Member	Qty	Manuf	Product	Sym
10d/3"	10d/3"	Varies	9	USP	MSH422	
16d/3-1/2"	16d/3-1/2"	Varies	9	USP	HUS410	
10d/3"	16d/3-1/2"	Varies	1	USP	THD410	

STEPS:
SET BRICK STEPS ON 4" CONCRETE SIDEWALK

DETAIL FOR GARAGE DOOR OPENING

Hatch Legend
Bearing Wall Height @ 10'
Bearing Wall Height @ 10' 7"

▲ = Denotes Left End of Truss

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

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

Beam Legend					
PlotID	Length	Product	Plies	Net Qty	Fab Type
BM1	16' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM2	17' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM3	24' 0"	1-3/4"x 23-7/8" LVL Kerto-S	2	2	FF
BM4 (Rip To 13")	18' 0"	1-3/4"x 14" LVL Kerto-S	2	2	FF
BM5	16' 0"	1-3/4"x 16" LVL Kerto-S	2	2	FF
BM6	7' 0"	1-3/4"x 9-1/4" LVL Kerto-S	2	2	FF
BM7	9' 0"	1-3/4"x 9-1/4" LVL Kerto-S	2	2	FF

FOUNDATION PLAN

SCALE:1/4"=1'-0"

TM DESIGNS
RESIDENTIAL PLANS BY TINA MCFADDEN
(910) 354-4736 TMDESIGNS2016@GMAIL.COM

EXCLUSIVE RESIDENCE DESIGN FOR:
WATERMARK HOMES
NAME: SILVER BELL III 3BR LOT: 116 BALLARD WOODS

I HEREBY CERTIFY THAT THIS DRAWING MEETS LOCAL CODES, 2018 INTERNATIONAL BUILDING CODES

THIS IS FOR THE CONSTRUCTION OF ONE HOUSE ON A SINGLE LOT, NOT TO BE REUSED

PLAN NUMBER
BG22-A04

OPTION #1

3 | GARAGE | L | F

DATE: 5/15/19