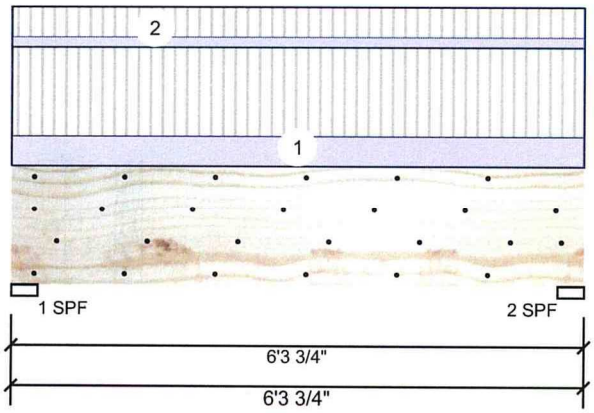
iStruct Design

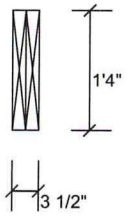
Client: Ben Stout
Project:
Address:

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

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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

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
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910-864-TRUS

CSD DRAW DESIGN BUILD

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

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

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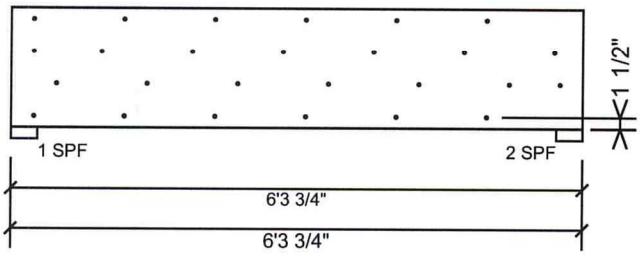

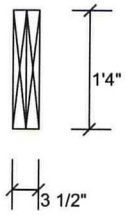

Multi-Ply Analysis

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

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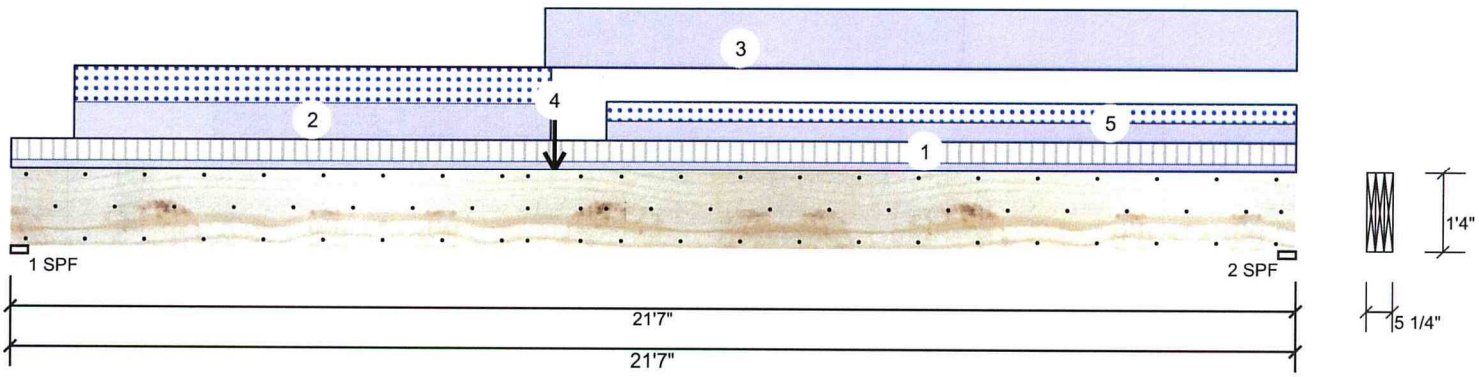
		Project #:	J0330-1192

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

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isDesign

Client: Ben Stout
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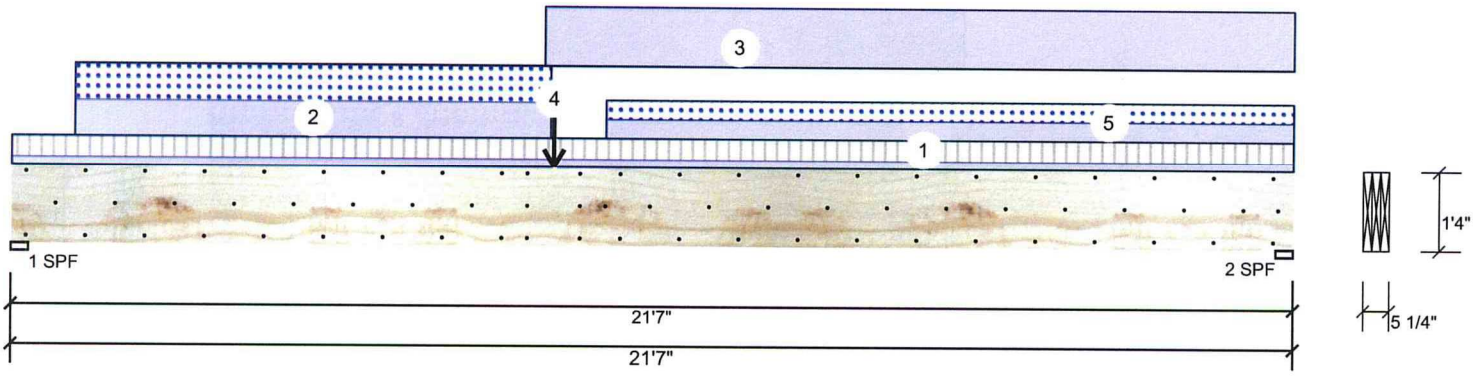
Address:

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

BM2 Kerto-S LVL 1.750" X 16.000" 3-Ply - PASSED

Level: Level



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ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
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					

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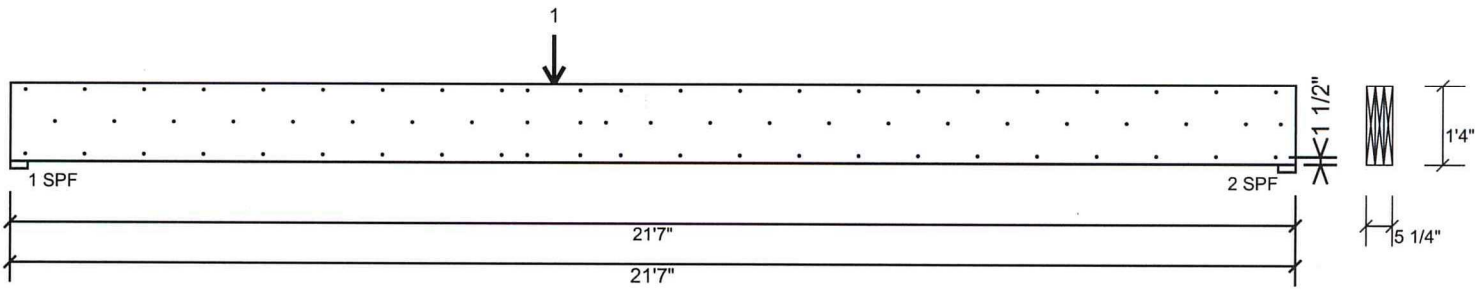
Level: Level



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"

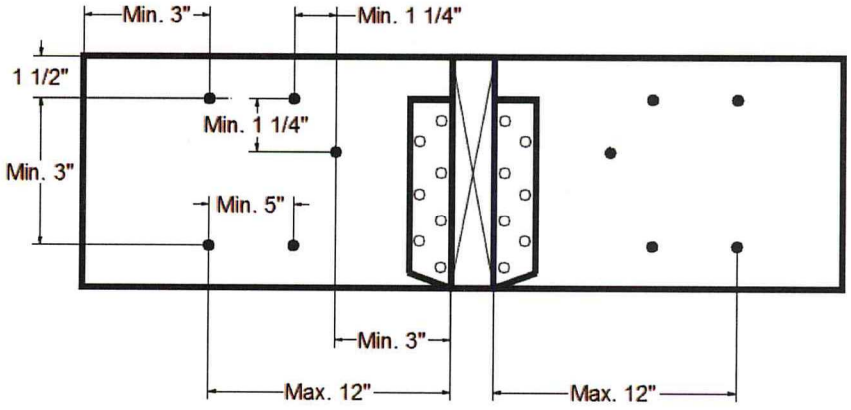
Capacity	32.1 %
Load	90.7 PLF
Yield Limit per Foot	282.4 PLF
Yield Limit per Fastener	94.1 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	D+S
Duration Factor	1.15

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



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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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3. Damaged Beams must not be used
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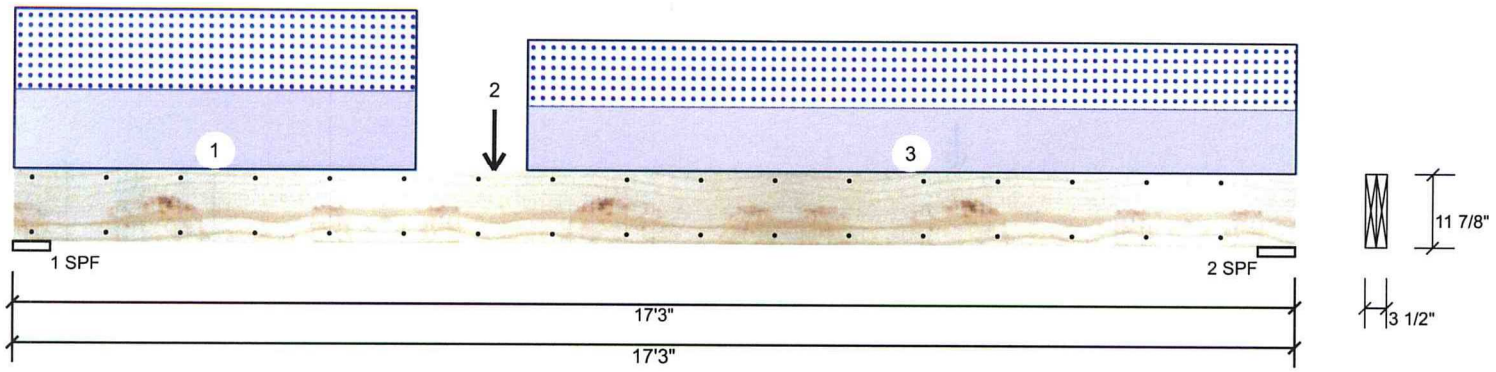
		Project #:	J0330-1192

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					

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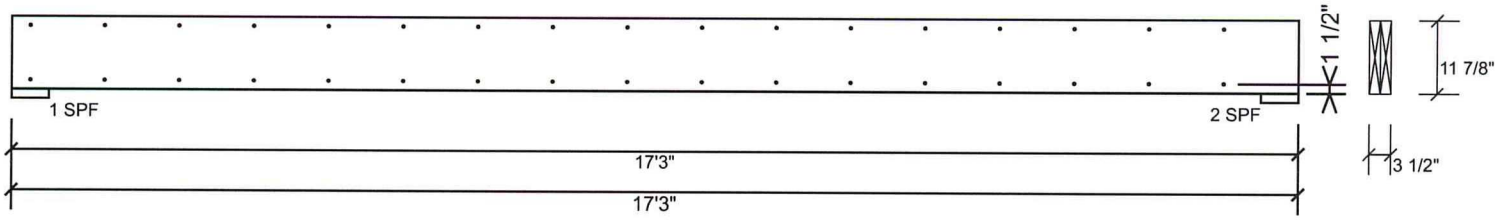

Multi-Ply Analysis

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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