isDesign

Client:	Signature Homes	Date:	9/18/2020
Project:		Input by:	David Landry
Address:		Job Name:	465 Bryant Road
		Project #:	J0920-4336

GDH-SL   Kerto-S LVL   1.750" X 18.000"   3-Ply - **PASSED**

Level: Level

1 SPF End Grain   2 SPF End Grain

16'3"
17'3"
1'6"
5 1/4"

Member Information

Type:	Girder
Plies:	3
Moisture Condition:	Dry
Deflection LL:	480
Deflection TL:	360
Importance:	Normal
Temperature:	Temp <= 100°F

Application:	Floor
Design Method:	ASD
Building Code:	IBC 2012
Load Sharing:	Yes
Deck:	Not Checked

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	1604	3692	2717	0	0
2	1604	3692	2717	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	6.000"	25%	3692 / 3241	6932	L	D+0.75(L+S)
2 - SPF End Grain	6.000"	25%	3692 / 3241	6932	L	D+0.75(L+S)

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	27008 ft-lb	8'7 1/2"	77108 ft-lb	0.350 (35%)	D+0.75(L+S)	L
Unbraced	27008 ft-lb	8'7 1/2"	27088 ft-lb	0.997 (100%)	D+0.75(L+S)	L
Shear	5383 lb	1'11 1/8"	23184 lb	0.232 (23%)	D+0.75(L+S)	L
LL Defl inch	0.135 (L/1456)	8'7 9/16"	0.410 (L/480)	0.330 (33%)	0.75(L+S)	L
TL Defl inch	0.289 (L/681)	8'7 9/16"	0.547 (L/360)	0.530 (53%)	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 Girders are designed to be supported on the bottom edge only.

4 Top loads must be supported equally by all plies.

5 Top must be laterally braced at a maximum of 7'4 7/8" o.c.

6 Bottom braced at bearings.

7 Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	315 PLF	0 PLF	315 PLF	0 PLF	0 PLF	Roof
2	Uniform			Top	62 PLF	186 PLF	0 PLF	0 PLF	0 PLF	Floor
3	Uniform			Top	30 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Wall
	Self Weight				21 PLF					

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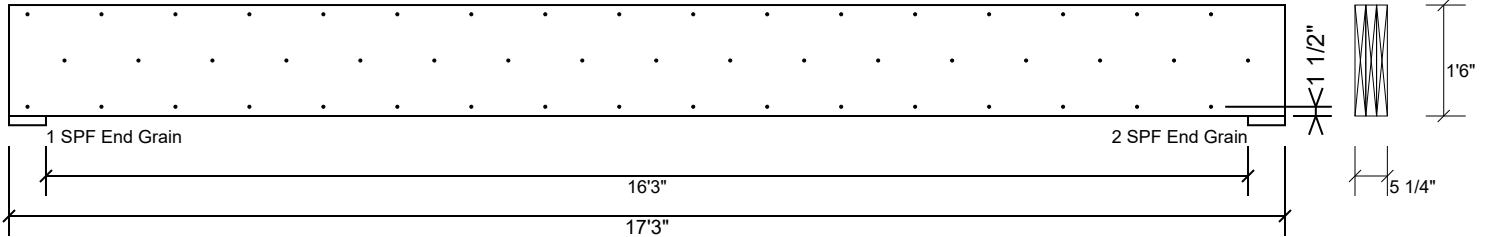
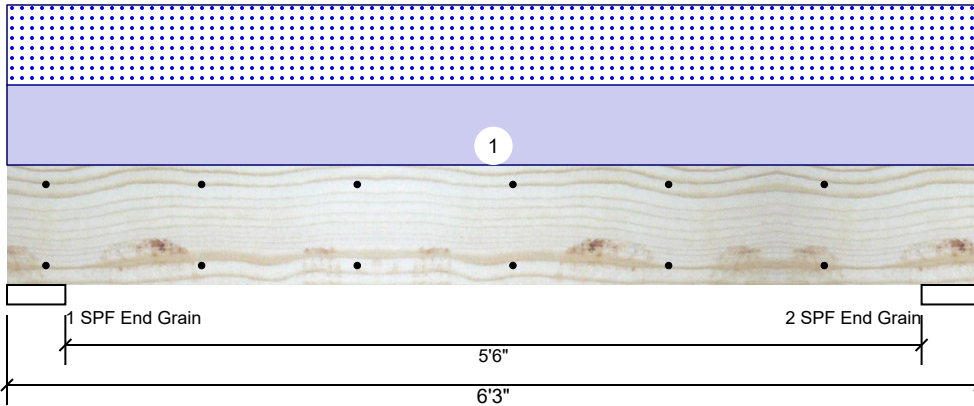Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

This design is valid until 2/26/2023

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

comTech

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GDH-SL   Kerto-S LVL   1.750" X 18.000"   3-Ply - PASSED

Level: Level

1 SPF End Grain

2 SPF End Grain

1 1/2"

1'6"

5 1/4"

16'3"

17'3"

Multi-Ply Analysis

Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c.. Nail from both sides. 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
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: Signature Homes
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BM1   Kerto-S LVL   1.750" X 9.250"   2-Ply - PASSED

Level: Level

1 SPF End Grain   2 SPF End Grain

5'6"

6'3"

9 1/4"

3 1/2"

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		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	0	1297	1275	0	0
2	0	1297	1275	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	4.500"	19%	1297 / 1275	2572	L	D+S
2 - SPF End Grain	4.500"	19%	1297 / 1275	2572	L	D+S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	3256 ft-lb	3'1 1/2"	14423 ft-lb	0.226 (23%)	D+S	L
Unbraced	3256 ft-lb	3'1 1/2"	10944 ft-lb	0.297 (30%)	D+S	L
Shear	1681 lb	1'1"	7943 lb	0.212 (21%)	D+S	L
LL Defl inch	0.026 (L/2632)	3'1 1/2"	0.141 (L/480)	0.180 (18%)	S	L
TL Defl inch	0.052 (L/1304)	3'1 1/2"	0.188 (L/360)	0.280 (28%)	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.

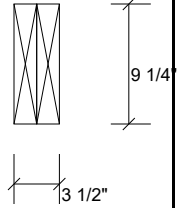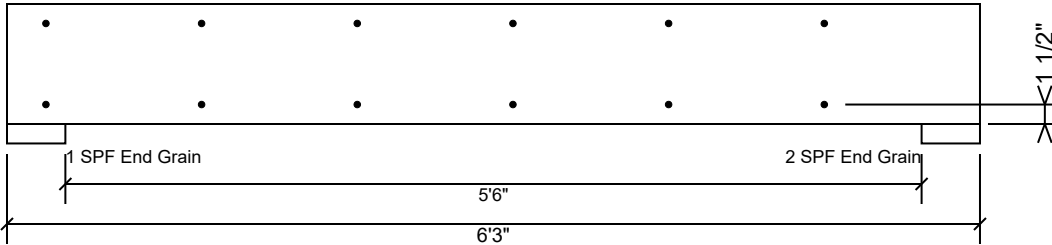| ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	408 PLF	0 PLF	408 PLF	0 PLF	0 PLF	
	Self Weight				7 PLF					

Manufacturer Info

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BM1 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level

1 SPF End Grain

2 SPF End Grain

5'6"

6'3"

1 1/2"

9 1/4"

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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

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