

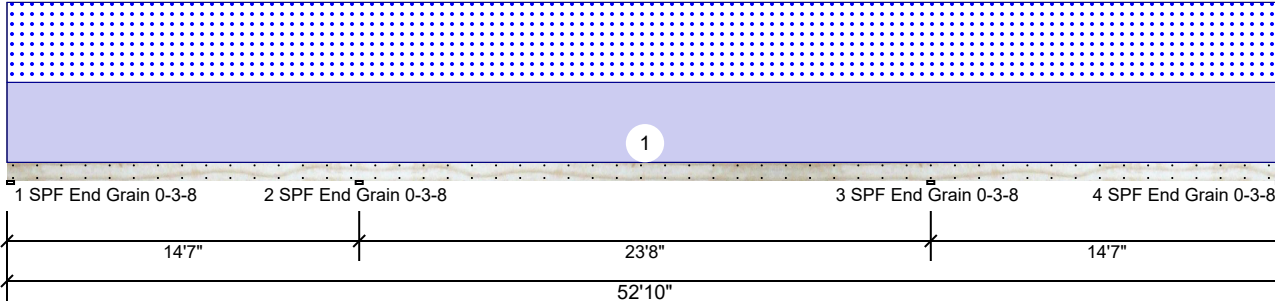


Client: Ashley Cummings
 Project: Boisvert
 Address: 7481 Old U.S. Highway 421
 Lillington, NC 27546

Date: 2/5/2024
 Input by: Jonathan Landry
 Job Name: 7481 Old U.S. Hwy 421
 Project #: J1223-6914

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

Level: Level



Member Information

Type:	Girder
Plies:	2
Moisture Condition:	Dry
Deflection LL:	480
Deflection TL:	360
Importance:	Normal - II
Temperature:	Temp <= 100°F

Application:	Floor
Design Method:	ASD
Building Code:	IBC/IRC 2015
Load Sharing:	No
Deck:	Not Checked
Ceiling:	Gypsum 1/2"

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	0	285	252	0	0
2	Vertical	0	1358	1201	0	0
3	Vertical	0	1358	1201	0	0
4	Vertical	0	285	252	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	Vert	6%	284 / 315	600	L_L	D+S
2 - SPF End Grain	3.500"	Vert	23%	1358 / 1224	2583	LL_	D+S
3 - SPF End Grain	3.500"	Vert	23%	1358 / 1224	2583	_LL	D+S
4 - SPF End Grain	3.500"	Vert	6%	284 / 315	600	L_L	D+S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-4856 ft-lb	14'7"	14423 ft-lb	0.337 (34%)	D+S	LL_
Pos Moment	3645 ft-lb	26'5"	14423 ft-lb	0.253 (25%)	D+S	_L_
Unbraced	3645 ft-lb	26'5"	3648 ft-lb	0.999 (100%)	D+S	_L_
Shear	1301 lb	15'6"	7943 lb	0.164 (16%)	D+S	LL_
LL Defl inch	0.324 (L/876)	26'5 1/16"	0.592 (L/480)	0.548 (55%)	S	_L_
TL Defl inch	0.631 (L/450)	26'5 1/16"	0.789 (L/360)	0.800 (80%)	D+S	_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 21'3 5/8" o.c.
- 7 Bottom must be laterally braced at a maximum of 15'10 3/8" o.c.
- 8 Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Part. Uniform Self Weight	0-0-0 to 52-10-0		Top	55 PLF 7 PLF	0 PLF	55 PLF	0 PLF	0 PLF	A2

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 6/28/2026

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

Comtech, Inc.
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 Cumberland
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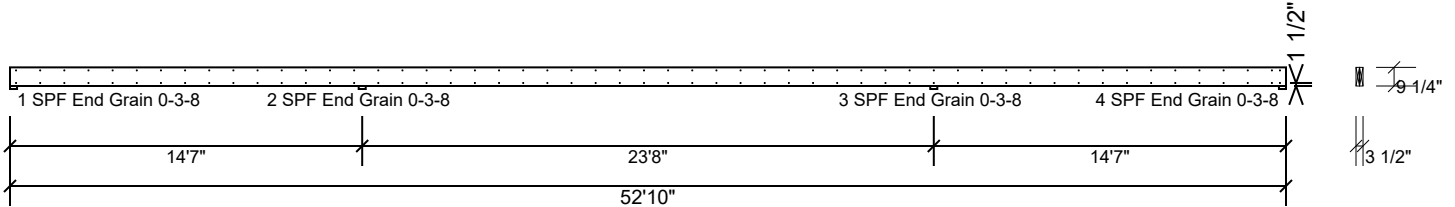


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Level: Level



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.
C _m	1
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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chemicals

Handling & Installation

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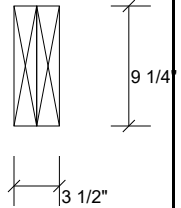
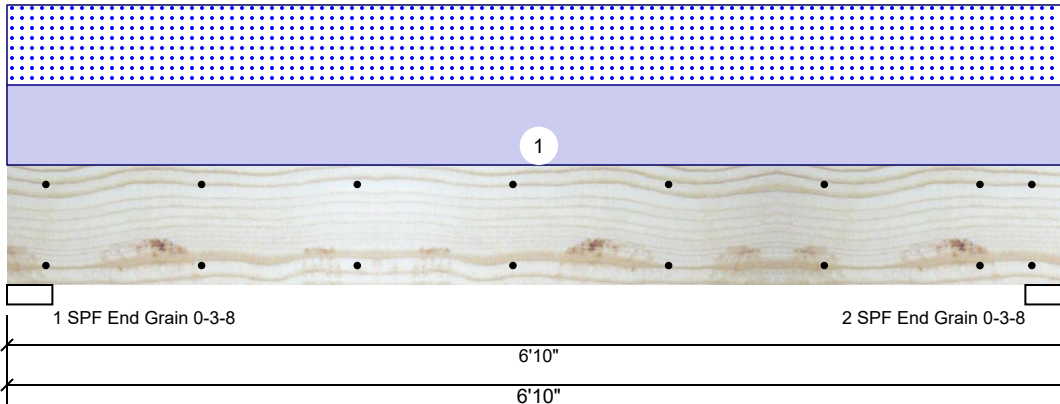
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BM2 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder
Plies:	2
Moisture Condition:	Dry
Deflection LL:	480
Deflection TL:	360
Importance:	Normal - II
Temperature:	Temp <= 100°F

Application:	Floor
Design Method:	ASD
Building Code:	IBC/IRC 2015
Load Sharing:	No
Deck:	Not Checked
Ceiling:	Gypsum 1/2"

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	0	1463	1438	0	0
2	Vertical	0	1463	1438	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	Vert	28%	1463 / 1438	2901	L	D+S
2 - SPF End Grain	3.500"	Vert	28%	1463 / 1438	2901	L	D+S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4314 ft-lb	3'5"	14423 ft-lb	0.299 (30%)	D+S	L
Unbraced	4314 ft-lb	3'5"	10210 ft-lb	0.423 (42%)	D+S	L
Shear	2005 lb	5'9 1/4"	7943 lb	0.252 (25%)	D+S	L
LL Defl inch	0.041 (L/1843)	3'5"	0.159 (L/480)	0.260 (26%)	S	L
TL Defl inch	0.084 (L/914)	3'5"	0.212 (L/360)	0.394 (39%)	D+S	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 Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Const.	Comments
1	Uniform			Top	421 PLF	0 PLF	421 PLF	0 PLF	0 PLF	A4
	Self Weight				7 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
 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

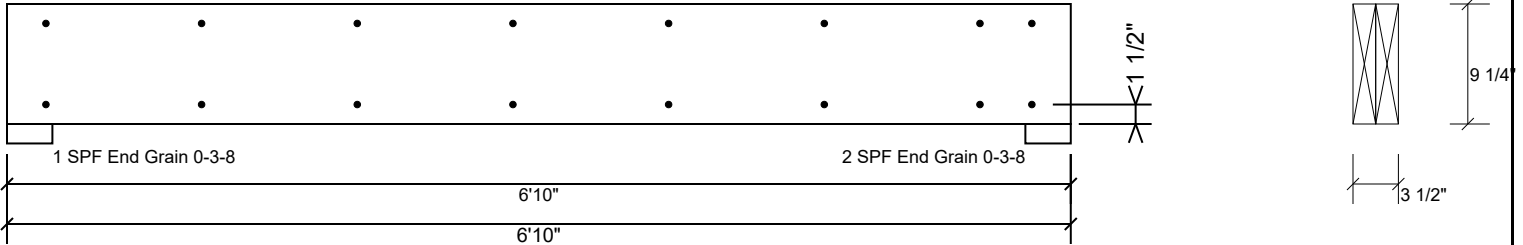
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BM2 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

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.
C _m	1
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
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
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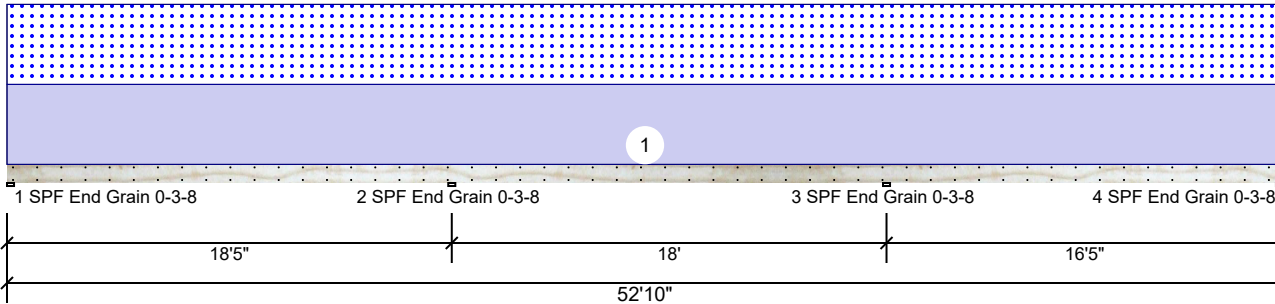


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BM3 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II	Ceiling:	Gypsum 1/2"
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	0	688	634	0	0
2	Vertical	0	1871	1725	0	0
3	Vertical	0	1703	1571	0	0
4	Vertical	0	609	561	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	Vert	13%	687 / 671	1358	L_L	D+S
2 - SPF End Grain	3.500"	Vert	32%	1872 / 1784	3656	LL_	D+S
3 - SPF End Grain	3.500"	Vert	29%	1703 / 1652	3356	_LL	D+S
4 - SPF End Grain	3.500"	Vert	12%	609 / 606	1215	L_L	D+S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-6198 ft-lb	18'5"	14423 ft-lb	0.430 (43%)	D+S	LL_
Pos Moment	4897 ft-lb	7'7 15/16"	14423 ft-lb	0.339 (34%)	D+S	L_L
Unbraced	4897 ft-lb	7'7 15/16"	4899 ft-lb	1.000 (100%)	D+S	L_L
Shear	1795 lb	17'6"	7943 lb	0.226 (23%)	D+S	LL_
LL Defl inch	0.297 (L/734)	8'8"	0.455 (L/480)	0.654 (65%)	S	L_L
TL Defl inch	0.565 (L/386)	8'6 1/8"	0.606 (L/360)	0.932 (93%)	D+S	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 3/4" o.c.
- 7 Bottom must be laterally braced at a maximum of 12'3 3/8" o.c.
- 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	85 PLF	0 PLF	85 PLF	0 PLF	0 PLF	A2
	Self Weight				7 PLF					

Notes

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Lumber

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Handling & Installation

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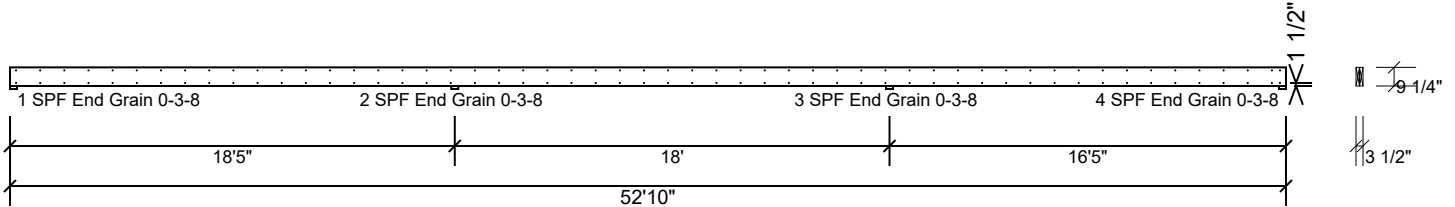


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Level: Level



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.
C _m	1
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

Notes

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