

Client: Weaver Homes

Project: Address: Date: 5/16/2025

Input by: Curtis Quick Job Name: Graves Residence Beams Page 1 of 9

0

0

Ld. Comb.

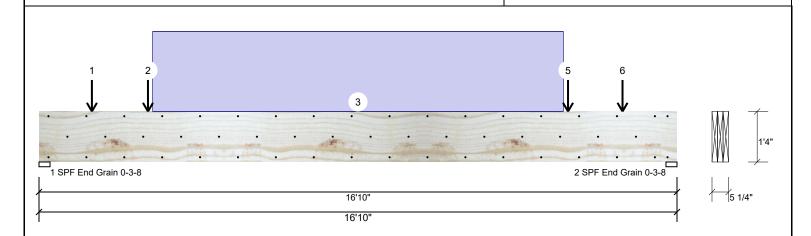
D+S

D+S

Project #:

Kerto-S LVL 3-Ply - PASSED 1.750" X 16.000" **GDH**

Level: Level



Member Information Reactions UNPATTERNED Ib (Uplift) Application: Direction Live Wind Type: Floor Brg Dead Snow Const Plies: 3 Design Method: ASD 0 5100 4293 0 Vertical 1 Moisture Condition: Dry **Building Code:** IRC 2018 2 Vertical 0 5096 4289 0 Deflection LL: 480 Load Sharing: Yes Deflection TL: 360 Deck: Not Checked Importance: Normal - II Temperature: Temp <= 100°F

Bearings Bearing Length

End Grain

End Grain

1 - SPF 3.500"

2 - SPF 3.500"

Dir.

Vert

Vert

Cap. React D/L lb

61%

5100 / 4293

5096 / 4289

Total Ld. Case

9393 L

9385 L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	24679 ft-lb	8'5 3/8"	62010 ft-lb	0.398 (40%)	D+S	L
Unbraced	24679 ft-lb	8'5 3/8"	24766 ft-lb	0.996 (100%)	D+S	L
Shear	9157 lb	15'2 1/2"	20608 lb	0.444 (44%)	D+S	L
LL Defl inch	0.175 (L/1127)	8'5 1/16"	0.410 (L/480)	0.426 (43%)	S	L
TL Defl inch	0.410 (L/479)	8'5 1/16"	0.547 (L/360)	0.751 (75%)	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 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6". Nail from both sides.
- 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 7'2 1/16" o.c.
- 7 Bottom must be laterally braced at end bearings.

8 Lateral sle	enderness ratio based on si	ngle 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	Point	1-4-12		Тор	793 lb	0 lb	793 lb	0 lb	0 lb	B1	
	Bearing Length	0-3-8									
2	Point	2-10-8		Тор	3498 lb	0 lb	3498 lb	0 lb	0 lb	B2	
	Bearing Length	0-3-8									

Continued on page 2...

Notes	Cilettiicais
Calculated Structured Designs is responsible only of the	Handling & Installation

Calculated Structure 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.

- Dry service conditions, unless noted otherwise
 LVL not to be treated with fire retardant or corrosive
- LVL beams must not be cut or drilled Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code Damaged Beams must not be used
- Design assumes top edge is laterally restrained
 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

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

Client:

Project: Address: Weaver Homes

Date: 5/16/2025

Input by: Curtis Quick

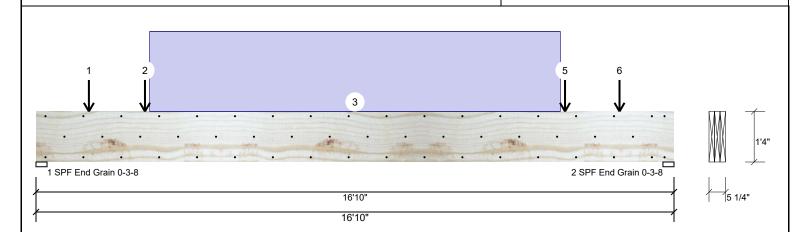
Job Name: Graves Residence Beams

Page 2 of 9

Project #:

Kerto-S LVL 1.750" X 16.000" 3-Ply - PASSED **GDH**

Level: Level



Continued from p	page 1									
ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
3	Part. Uniform	3-0-0 to 13-10-0		Тор	120 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Wall
5	Point	13-11-8		Тор	3498 lb	0 lb	3498 lb	0 lb	0 lb	B2
	Bearing Length	0-3-8								
6	Point	15-4-12		Тор	793 lb	0 lb	793 lb	0 lb	0 lb	B1
	Bearing Length	0-3-8								
	Self Weight				19 PLF					

Notes

NOtes
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Handling & Installation

Handling & Installation

1. IVI 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

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This design is valid until 6/28/2026

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Manufacturer Info

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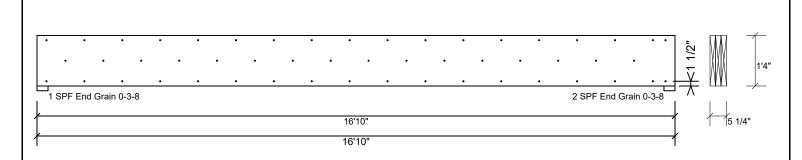
Job Name: Graves Residence Beams

Page 3 of 9

Project #:

1.750" X 16.000" 3-Ply - PASSED **Kerto-S LVL GDH**

Level: Level



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

Capacity	0.0 %
Load	0.0 PLF
Yield Limit per Foot	245.6 PLF
Yield Limit per Fastener	81.9 lb.
См	1
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1 00

Notes

NOtes

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Manufacturer Info



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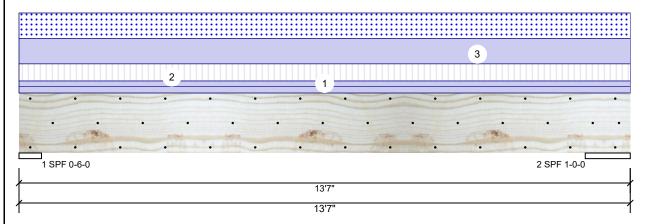
Project: Address: Date: 5/16/2025 Input by: Curtis Quick

Job Name: Graves Residence Beams Page 4 of 9

Project #:

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

Level: Level



Member Information Reactions UNPATTERNED Ib (Uplift)

Type: Plies: Moisture Condition: Dry Deflection LL: 480 Deflection TL: 360 Importance:

Normal - II Temperature: Temp <= 100°F

Application: Floor Design Method: ASD **Building Code:** IRC 2018 Load Sharing: No Deck: Not Checked

Direction Live Wind Const Brg Dead Snow 2133 4739 3160 0 Vertical 0 1 2 Vertical 2296 5101 3401 0 0

Bearings

Bearing Length Dir. Cap. React D/L lb Total Ld. Case Ld. Comb. 1-SPF 6.000" D+0.75(L+S) Vert 4739 / 3969 8708 L 12.000" D+0.75(L+S) 2 - SPF Vert 53% 5101 / 4273 9374 L

Analysis Results

•						
Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	24885 ft-lb	6'6 1/2"	39750 ft-lb	0.626 (63%)	D+0.75(L+S)	L
Unbraced	24885 ft-lb	6'6 1/2"	24898 ft-lb	0.999 (100%)	D+0.75(L+S)	L
Shear	6756 lb	11'3"	13739 lb	0.492 (49%)	D+0.75(L+S)	L
LL Defl inch	0.151 (L/971)	6'6 1/2"	0.306 (L/480)	0.494 (49%)	0.75(L+S)	L
TL Defl inch	0.332 (L/443)	6'6 1/2"	0.408 (L/360)	0.813 (81%)	D+0.75(L+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 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 4'6 3/4" 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			Тор	120 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Wall
2	Uniform			Near Face	109 PLF	326 PLF	0 PLF	0 PLF	0 PLF	F02
3	Uniform			Тор	483 PLF	0 PLF	483 PLF	0 PLF	0 PLF	A2
	Self Weight				12 PLF					

Notes

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 LVL not to be treated with fire retardant or corrosive
- Handling & Installation
- LVL beams must not be cut or drilled Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code
- Damaged Beams must not be used
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 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: Weaver Homes

Project: Address:

5/16/2025

Input by: Curtis Quick

Level: Level

Job Name: Graves Residence Beams

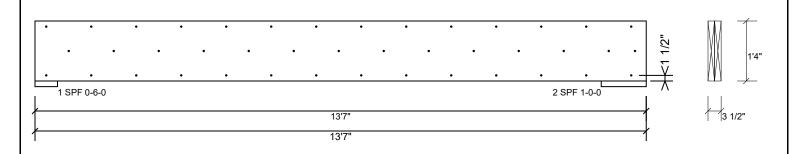
Page 5 of 9

Project #:

Kerto-S LVL BM₁

1.750" X 16.000"

2-Ply - PASSED



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	88.6 %
Load	217.5 PLF
Yield Limit per Foot	245.6 PLF
Yield Limit per Fastener	81.9 lb.
См	1
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	D+L
Duration Factor	1.00

Notes

NOtes
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- Dry service conditions, unless noted otherwise
 LVL not to be treated with fire retardant or corrosive

Handling & Installation

- Handling & Installation

 1. UVI 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
- 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



Client: Weaver Homes

Project: Address: Date: 5/16/2025

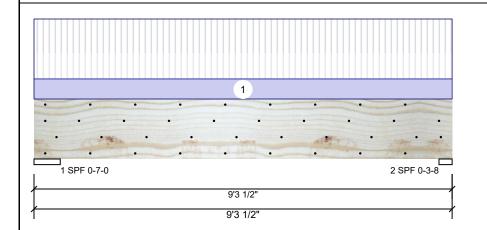
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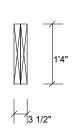
Job Name: Graves Residence Beams

Project #:

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

Level: Level





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Member Information

Type: 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:** IRC 2018 Load Sharing: No Deck: Not Checked Reactions UNPATTERNED Ib (Uplift) Snow Wind Brg Direction Live Dead Const 702 Vertical 1917 n 0 0 1 2 Vertical 1800 659 0 0 0

Bearings

Bearing Length Dir. Cap. React D/L lb Total Ld. Case Ld. Comb. 1-SPF 7.000" D+L Vert 25% 702 / 1917 2618 L 2 - SPF 3.500" Vert 47% 659 / 1800 2459 L D+I

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	5008 ft-lb	4'9 1/2"	34565 ft-lb	0.145 (14%)	D+L	L
Unbraced	5008 ft-lb	4'9 1/2"	13831 ft-lb	0.362 (36%)	D+L	L
Shear	2300 lb	7'8"	11947 lb	0.192 (19%)	D+L	L
LL Defl inch	0.028 (L/3698)	4'9 1/2"	0.214 (L/480)	0.130 (13%)	L	L
TL Defl inch	0.038 (L/2707)	4'9 1/2"	0.285 (L/360)	0.133 (13%)	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 4 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 must be laterally braced at end bearings.
- 6 Bottom must be laterally braced at end 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			Far Face	134 PLF	400 PLF	0 PLF	0 PLF	0 PLF	F05
	Self Weight				12 PLF					

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- Dry service conditions, unless noted otherwise LVL not to be treated with fire retardant or corrosive
- Handling & Installation
- LVL beams must not be cut or drilled Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code Damaged Beams must not be used
- Design assumes top edge is laterally restrained
 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

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Client: Weaver Homes

Project: Address: Date: 5/16/2025

Input by: Curtis Quick

Job Name: Graves Residence Beams

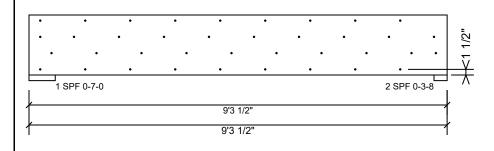
Project #:

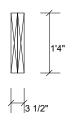
Kerto-S LVL BM2

1.750" X 16.000"

2-Ply - PASSED

Level: Level





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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	81.5 %
Load	267.0 PLF
Yield Limit per Foot	327.4 PLF
Yield Limit per Fastener	81.9 lb.
CM	1
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	D+L
Duration Factor	1.00

Notes

NOtes

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- Dry service conditions, unless noted otherwise
 LVL not to be treated with fire retardant or corrosive

Handling & Installation

- Infoculing & Installation

 I. VIL beams must not be cut or drilled

 Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals

 Damaged Beams must not be used

 Design assumes top edge is laterally restrained

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For flat roofs provide proper drainage to prevent ponding

This design is valid until 6/28/2026

(800) 622-5850

Manufacturer Info

Metsä Wood 301 Merritt 7 Building, 2nd Floor Norwalk, CT 06851 www.metsawood.com/us



Client:

Project: Address: Weaver Homes

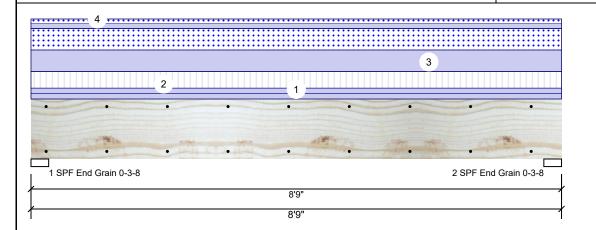
5/16/2025

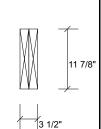
Input by: Curtis Quick Job Name: Graves Residence Beams

evel: Level

Project #:

1.750" X 11.875" 2-Ply - PASSED Kerto-S LVL BM₃





Page 8 of 9

Member Information

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

Application: Design Method: ASD **Building Code:** IRC 2018 Load Sharing: No Deck: Not Checked

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	1641	3702	2590	0	0
2	Vertical	1641	3702	2590	0	0

Analysis Results

. ,						
Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	13505 ft-lb	4'4 1/2"	22897 ft-lb	0.590 (59%)	D+0.75(L+S)	L
Unbraced	13505 ft-lb	4'4 1/2"	13522 ft-lb	0.999 (100%)	D+0.75(L+S)	L
Shear	4871 lb	1'3 3/8"	10197 lb	0.478 (48%)	D+0.75(L+S)	L
LL Defl inch	0.096 (L/1034)	4'4 9/16"	0.207 (L/480)	0.464 (46%)	0.75(L+S)	L
TL Defl inch	0.209 (L/477)	4'4 9/16"	0.276 (L/360)	0.754 (75%)	D+0.75(L+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 6'3" o.c.
- 7 Bottom must be laterally braced at end bearings.

Reactions	UNPATT	ERNED	lb ((Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	1641	3702	2590	0	0
2	Vertical	1641	3702	2590	0	0

Bearings

End Grain

Bearing Length	Dir.	Сар.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF 3.500"	Vert	67%	3702 / 3173	6875	L	D+0.75(L+S)
End Grain						
2 - SPF 3.500"	Vert	67%	3702 / 3173	6875	L	D+0.75(L+S)

8 Lateral slenderness ratio based on single ply width. Tuils 14/: 446

טו	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments	
1	Uniform			Тор	120 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Wall	
2	Uniform			Тор	125 PLF	375 PLF	0 PLF	0 PLF	0 PLF	F04	
3	Uniform			Тор	485 PLF	0 PLF	485 PLF	0 PLF	0 PLF	A3	
4	Uniform			Тор	107 PLF	0 PLF	107 PLF	0 PLF	0 PLF	P1	
	Self Weight				9 PLF						

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Dry service conditions, unless noted otherwise
 LVL not to be treated with fire retardant or corrosive

Handling & Installation

LVL beams must not be cut or drilled
Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals

2 Damaged Beams must not be used

Design assumes top edge is laterally restrained
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

CSD DESIGN

Client: Weaver Homes

Project: Address:

Date: 5/16/2025

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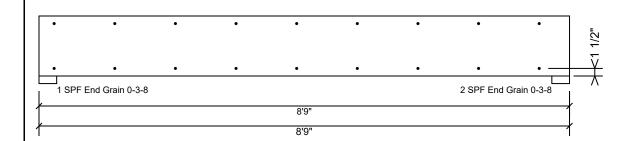
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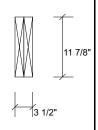
Kerto-S LVL BM3

1.750" X 11.875"

2-Ply - PASSED

Level: Level





Page 9 of 9

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

Notes

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Handling & Installation

- Handling & Installation

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