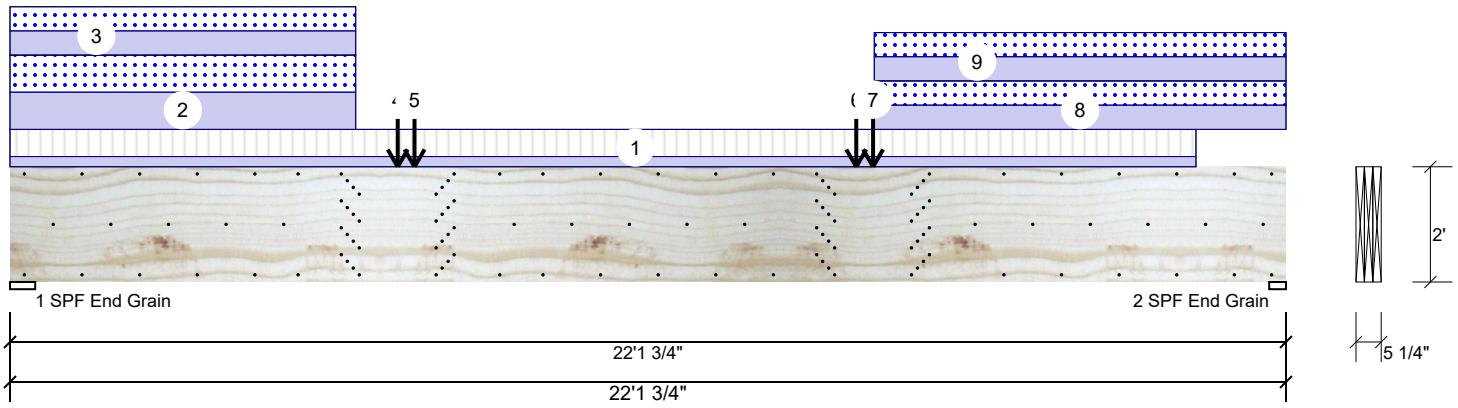
Client:	Signature Home Builders	Date:	5/10/2021
Project:		Input by:	Anthony Williams
Address:		Job Name:	Sherrod Residence
		Project #:	J0421-2748

BM1 Kerto-S LVL 1.750" X 24.000" 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:	360	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	1915	7318	6288	0	0
2	1635	6689	5768	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	5.250"	57%	7318 / 6288	13606	L	D+S
2 - SPF End Grain	3.500"	78%	6689 / 5768	12457	L	D+S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	69806 ft-lb	13'2 11/16"	131295 ft-lb	0.532 (53%)	D+S	L
Unbraced	69806 ft-lb	13'2 11/16"	69899 ft-lb	0.999 (100%)	D+S	L
Shear	12201 lb	2'4 3/8"	30912 lb	0.395 (39%)	D+S	L
LL Defl inch	0.265 (L/976)	11'1 13/16"	0.539 (L/480)	0.490 (49%)	S	L
TL Defl inch	0.572 (L/452)	11'1 13/16"	0.719 (L/360)	0.800 (80%)	D+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 3'8 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	Tie-In	0-0-0 to 20-7-0	4-3-12	Far Face	15 PSF	40 PSF	0 PSF	0 PSF	0 PSF	Floor
2	Part. Uniform	0-0-0 to 6-0-0		Top	236 PLF	0 PLF	236 PLF	0 PLF	0 PLF	A8
3	Part. Uniform	0-0-0 to 6-0-0		Near Face	153 PLF	0 PLF	153 PLF	0 PLF	0 PLF	C2
4	Point	6-8-12		Near Face	2648 lb	0 lb	2648 lb	0 lb	0 lb	C3

Continued on page 2...

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 2/26/2023

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
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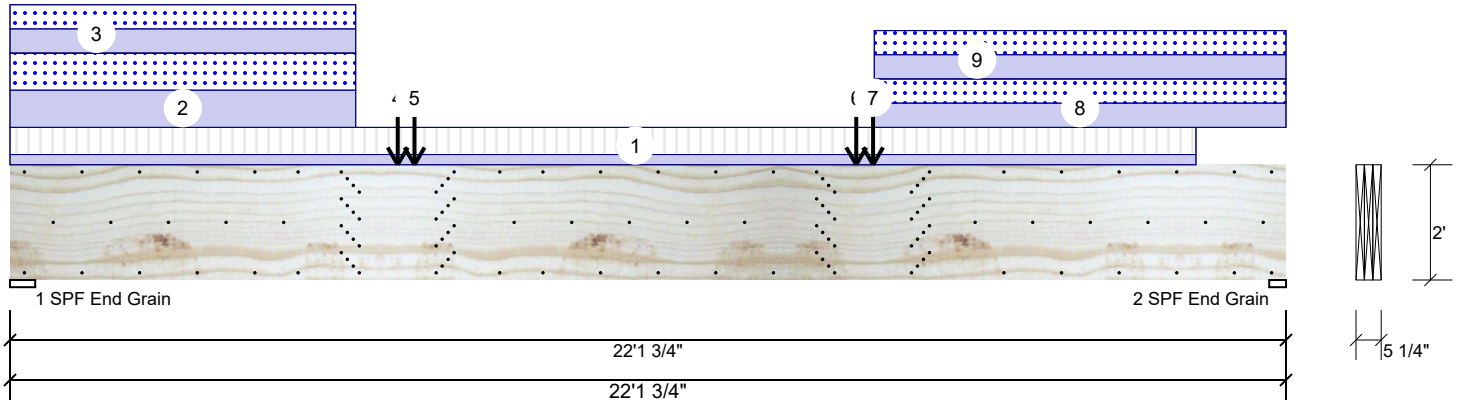
28314
910-864-TRUS

Client:	Signature Home Builders	Date:	5/10/2021
Project:		Input by:	Anthony Williams
Address:		Job Name:	Sherrod Residence
		Project #:	J0421-2748

BM1 Kerto-S LVL 1.750" X 24.000" 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	Point	7-0-4		Top	1208 lb	0 lb	1208 lb	0 lb	0 lb	A7
6	Point	14-8-4		Top	1024 lb	0 lb	1024 lb	0 lb	0 lb	A6
7	Point	14-11-12		Near Face	2648 lb	0 lb	2648 lb	0 lb	0 lb	C3
8	Part. Uniform	15-0-0 to 22-1-12		Top	154 PLF	0 PLF	154 PLF	0 PLF	0 PLF	A5
9	Part. Uniform	15-0-0 to 22-1-12		Near Face	153 PLF	0 PLF	153 PLF	0 PLF	0 PLF	C2
	Self Weight				28 PLF					

Notes

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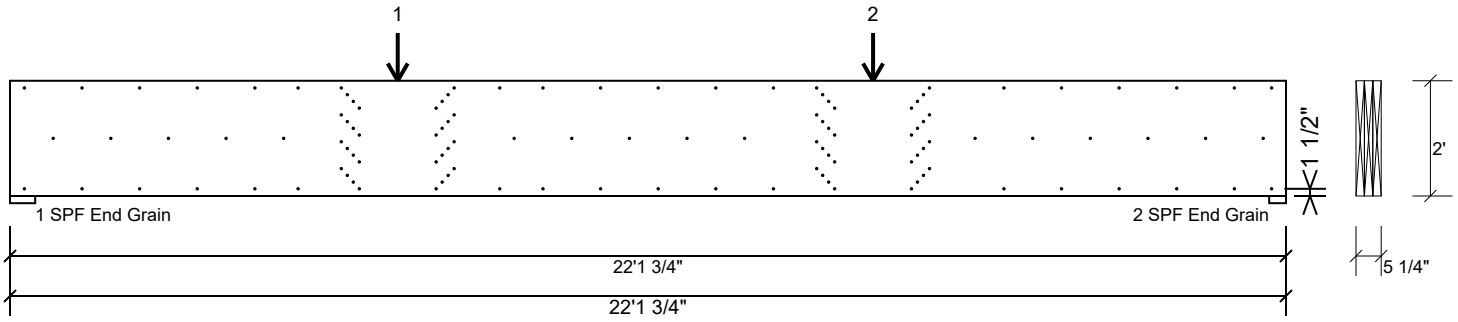
Level: Level



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	72.2 %
Load	204.0 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 6-8-12 with a minimum of (32) – 12d Common nails (.148x3.25") in the pattern shown. Repeat fasteners on both sides.

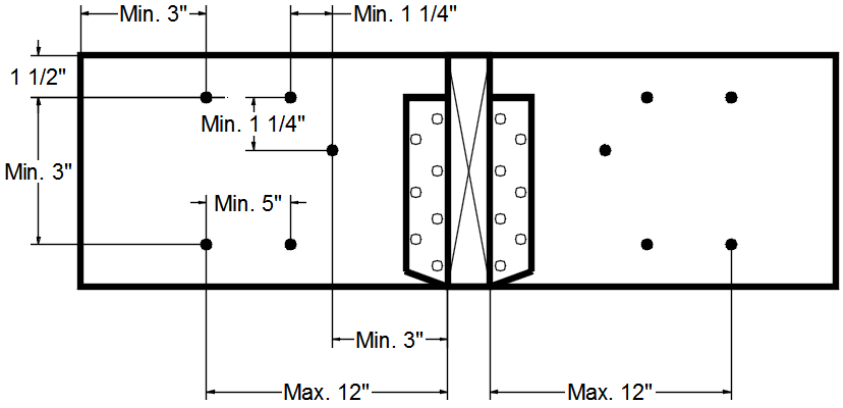
Capacity	90.3 %
Load	3530.7lb.
Total Yield Limit	3909.2 lb.
Cg	0.9993
Yield Limit per Fastener	122.3 lb.
Yield Mode	IV
Load Combination	D+S
Duration Factor	1.15

Concentrated Load

Fasten at concentrated side load at 14-11-12 with a minimum of (32) – 12d Common nails (.148x3.25") in the pattern shown. Repeat fasteners on both sides.

Capacity	90.3 %
Load	3530.7lb.
Total Yield Limit	3909.2 lb.
Cg	0.9993
Yield Limit per Fastener	122.3 lb.
Yield Mode	IV
Load Combination	D+S
Duration Factor	1.15

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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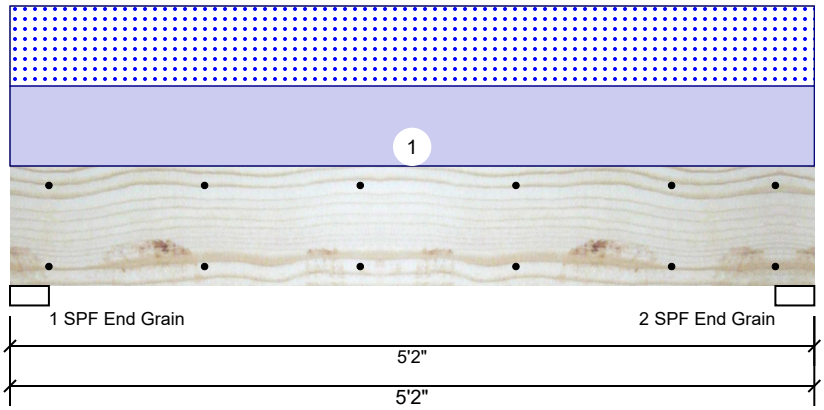
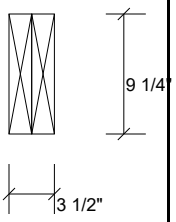
Client:	Signature Home Builders	Date:	5/10/2021
Project:		Input by:	Anthony Williams
Address:		Job Name:	Sherrod Residence
		Project #:	J0421-2748

BM2 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		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	0	1693	1674	0	0
2	0	1693	1674	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.000"	37%	1693 / 1674	3367	L	D+S
2 - SPF End Grain	3.000"	37%	1693 / 1674	3367	L	D+S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	3740 ft-lb	2'7"	14423 ft-lb	0.259 (26%)	D+S	L
Unbraced	3740 ft-lb	2'7"	11910 ft-lb	0.314 (31%)	D+S	L
Shear	2118 lb	4'2 1/2"	7943 lb	0.267 (27%)	D+S	L
LL Defl inch	0.023 (L/2471)	2'7"	0.120 (L/480)	0.190 (19%)	S	L
TL Defl inch	0.047 (L/1229)	2'7"	0.160 (L/360)	0.290 (29%)	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	648 PLF	0 PLF	648 PLF	0 PLF	0 PLF	A4
	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 2/26/2023

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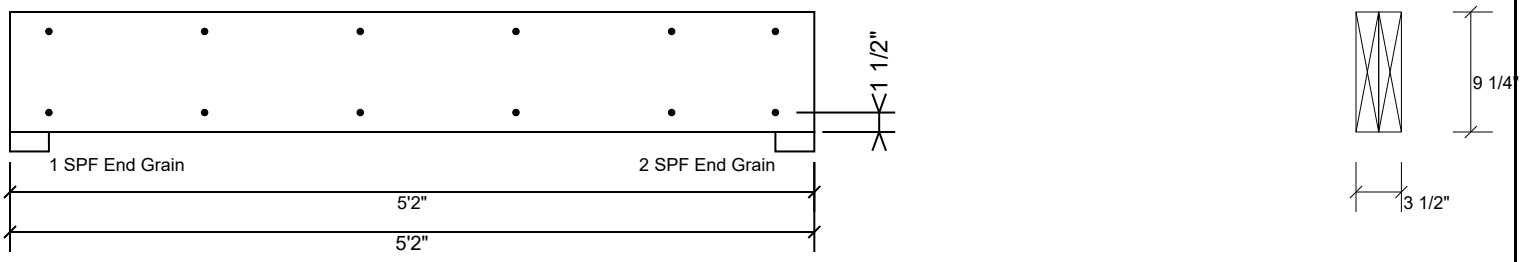
Project:		Input by:	Anthony Williams
Address:		Job Name:	Sherrod Residence
		Project #:	J0421-2748

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.
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
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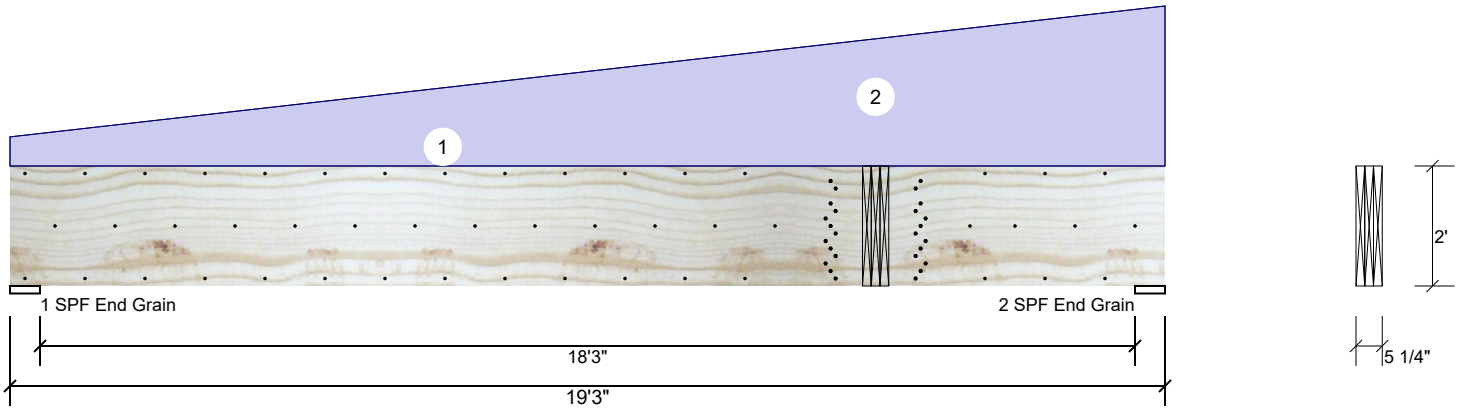
Address:		Job Name:	Sherrod Residence
		Project #:	J0421-2748

GDH-SE Kerto-S LVL 1.750" X 24.000" 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:	360	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	458	2731	1502	0	0
2	1458	7003	4785	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	6.000"	15%	2731 / 1502	4233	L	D+S
2 - SPF End Grain	6.000"	43%	7003 / 4785	11788	L	D+S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	49724 ft-lb	14'5 1/8"	131295 ft-lb	0.379 (38%)	D+S	L
Unbraced	49724 ft-lb	14'5 1/8"	49884 ft-lb	0.997 (100%)	D+S	L
Shear	11341 lb	16'9 7/8"	30912 lb	0.367 (37%)	D+S	L
LL Defl inch	0.093 (L/2372)	11'4 1/8"	0.460 (L/480)	0.200 (20%)	S	L
TL Defl inch	0.232 (L/951)	11'1 1/2"	0.613 (L/360)	0.380 (38%)	D+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. Simpson fasteners applied from a single side of the member use tip values where published.
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 5'4 1/8" o.c.
8. Bottom braced at 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	Tapered Start	0-0-0		Top	30 PLF	0 PLF	0 PLF	0 PLF	0 PLF	
	End	19-3-0			165 PLF	0 PLF	0 PLF	0 PLF	0 PLF	
2	Point	14-5-2		Near Face	7318 lb	1915 lb	6288 lb	0 lb	0 lb	BM1 Brg 1
	Self Weight				28 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
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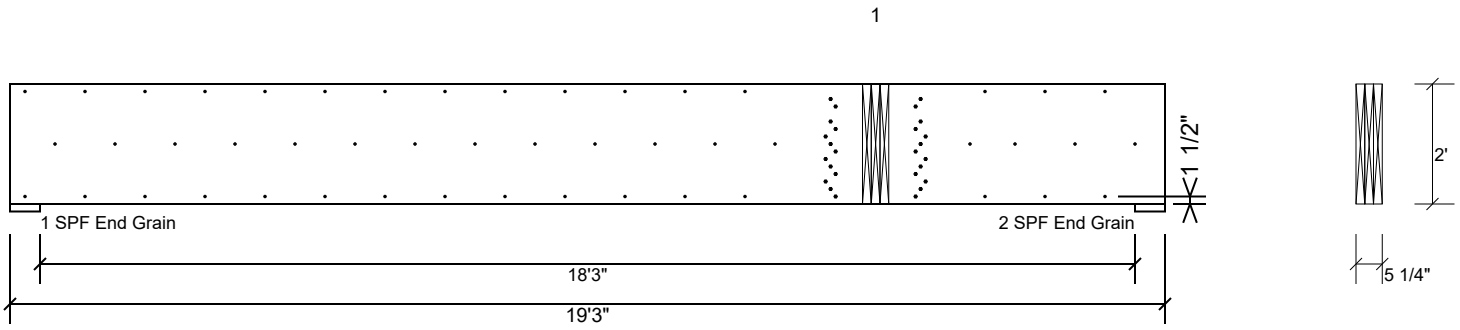


Multi-Ply Analysis

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"

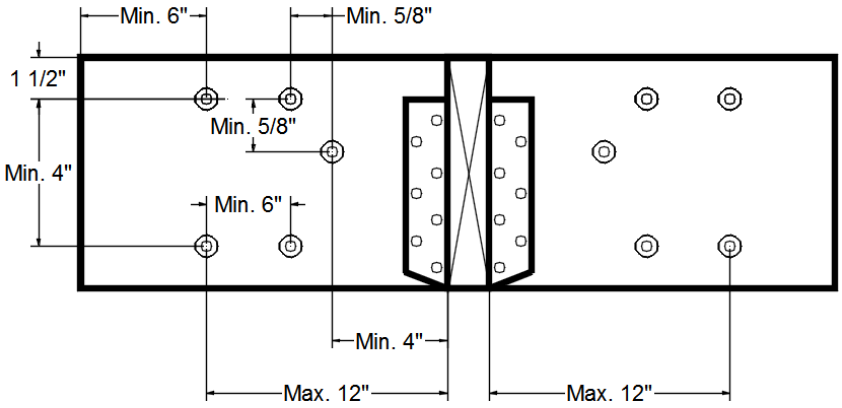
Capacity	0.0 %
Load	0.0 PLF
Yield Limit per Foot	245.6 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

Concentrated Load

Fasten at concentrated side load at 14-5-2 with a minimum of (26) – SDW22500 in the pattern shown. All fasteners shall be installed with the head on the side of the applied load.

Capacity	93.3 %
Load	9070.5lb.
Total Yield Limit	9717.5 lb.
Cg	1.0000
Yield Limit per Fastener	373.8 lb.
Yield Mode	Lookup
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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Handling & Installation

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