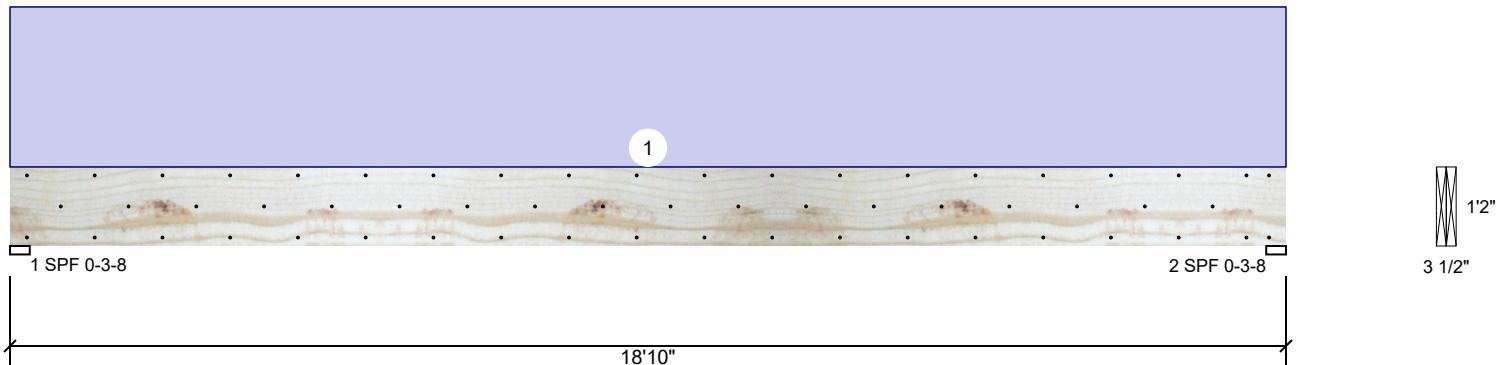


**GDH Kerto-S LVL 1.750" X 14.000" 2-Ply - PASSED**

Level: Level


**Member Information**
**Reactions UNPATTERED lb (Uplift)**

Type: Girder	Application: Floor	Brg	Direction	Live	Dead	Snow	Wind	Const
Plies: 2	Design Method: ASD	1	Vertical	0	2457	0	0	0
Moisture Condition: Dry	Building Code: IBC/IRC 2015	2	Vertical	0	2457	0	0	0
Deflection LL: 480	Load Sharing: No							
Deflection TL: 360	Deck: Not Checked							
Importance: Normal - II								
Temperature: Temp <= 100°F								

**Bearings**

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	Vert	47%	2457 / 0	2457	Uniform	D
2 - SPF	3.500"	Vert	47%	2457 / 0	2457	Uniform	D

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	11011 ft-lb	9'5"	24299 ft-lb	45%	D	Uniform
Unbraced	11011 ft-lb	9'5"	11036 ft-lb	100%	D	Uniform
Shear	2076 lb	1'5 1/2"	9408 lb	22%	D	Uniform
LL Defl inch	0.000 (L/999)	0	999.000 (L/0)	0%		
TL Defl inch	0.444 (L/497)	9'5 1/16"	0.612 (L/360)	72%	D	Uniform

**Design Notes**

- Provide support to prevent lateral movement and rotation at the end bearings.
- Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- Refer to last page of calculations for fasteners required for specified loads.
- Girders are designed to be supported on bottom edge only and across their full width.
- Top loads must be supported equally by all plies.
- Top must be laterally braced at a maximum of 9'7 7/16" o.c.
- Bottom must be laterally braced at end bearings.
- Lateral slenderness ratio based on single ply width.

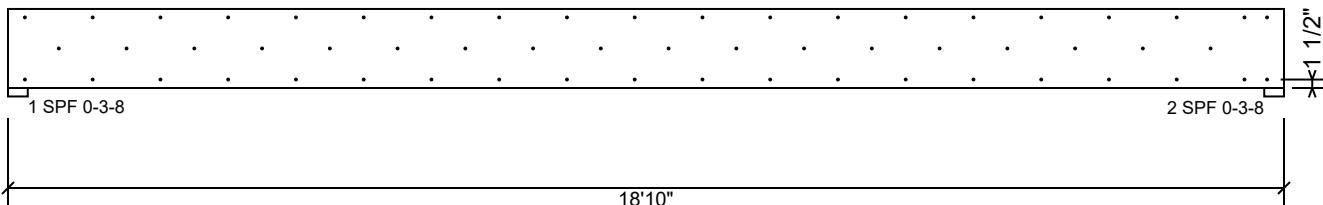
ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	250 PLF	0 PLF	0 PLF	0 PLF	0 PLF	

<b>Notes</b> 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.	chemicals <b>Handling &amp; Installation</b> 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	<b>Manufacturer Info</b> Metsä Wood 301 Merritt 7 Building, 2nd Floor Norwalk, CT 06851 (800) 622-5850 www.metsawood.com/us
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This design is valid until 2/28/2028

**GDH Kerto-S LVL 1.750" X 14.000" 2-Ply - PASSED**

Level: Level



 1 1/2"  
 3 1/2"

### 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	0.0 %
Load	0.0 PLF
Yield Limit per Foot	245.6 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

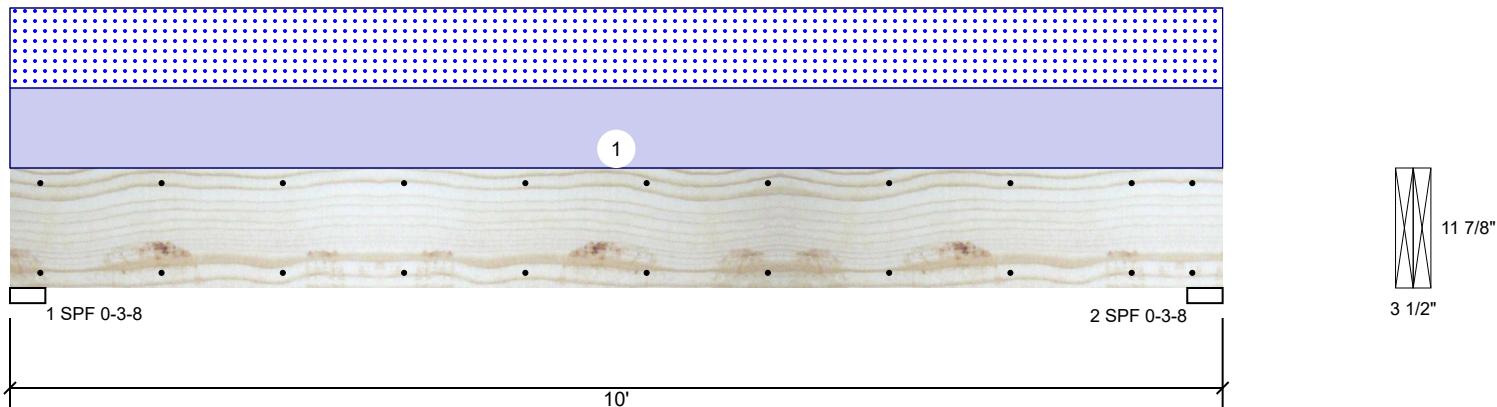
<b>Notes</b>	Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.	chemicals	6. For flat roofs provide proper drainage to prevent ponding	<b>Handling &amp; Installation</b>	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
<b>Lumber</b>	1. Dry service conditions, unless noted otherwise 2. LVL not to be treated with fire retardant or corrosive				This design is valid until 2/28/2028

### Manufacturer Info

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

**GDH-1 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED**

Level: Level

**Member Information****Reactions UNPATTERED lb (Uplift)**

Type: Girder	Application: Floor	Brg	Direction	Live	Dead	Snow	Wind	Const
Plies: 2	Design Method: ASD	1	Vertical	0	1106	1060	0	0
Moisture Condition: Dry	Building Code: IBC/IRC 2015	2	Vertical	0	1106	1060	0	0
Deflection LL: 480	Load Sharing: No							
Deflection TL: 360	Deck: Not Checked							
Importance: Normal - II								
Temperature: Temp <= 100°F								

**Bearings**

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	Vert	42%	1106 / 1060	2166	L	D+S
2 - SPF	3.500"	Vert	42%	1106 / 1060	2166	L	D+S

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4930 ft-lb	5'	22897 ft-lb	22%	D+S	L
Unbraced	4930 ft-lb	5'	9721 ft-lb	51%	D+S	L
Shear	1611 lb	8'8 5/8"	10197 lb	16%	D+S	L
LL Defl inch	0.047 (L/2428)	5'	0.239 (L/480)	20%	S	L
TL Defl inch	0.096 (L/1188)	5'	0.318 (L/360)	30%	D+S	L

**Design Notes**

- Provide support to prevent lateral movement and rotation at the end bearings.
- Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- Refer to last page of calculations for fasteners required for specified loads.
- Girders are designed to be supported on bottom edge only and across their full width.
- Top loads must be supported equally by all plies.
- Top must be laterally braced at end bearings.
- Bottom must be laterally braced at end bearings.
- Lateral slenderness ratio based on single ply width.

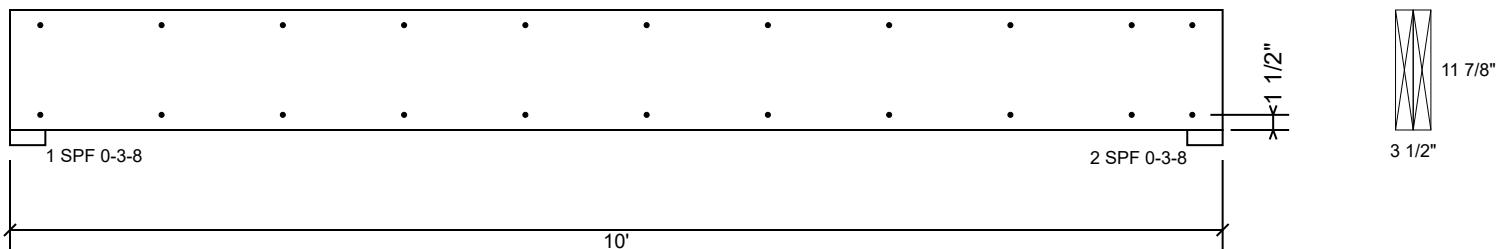
ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	212 PLF	0 PLF	212 PLF	0 PLF	0 PLF	G1

<b>Notes</b>	chemicals	6. For flat roofs provide proper drainage to prevent ponding	<b>Manufacturer Info</b>	
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.	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	Metsä Wood 301 Merritt 7 Building, 2nd Floor Norwalk, CT 06851 (800) 622-5850 www.metsawood.com/us	

This design is valid until 2/28/2028

**GDH-1 Kerto-S LVL 1.750" X 11.875" 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.
CM	1
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

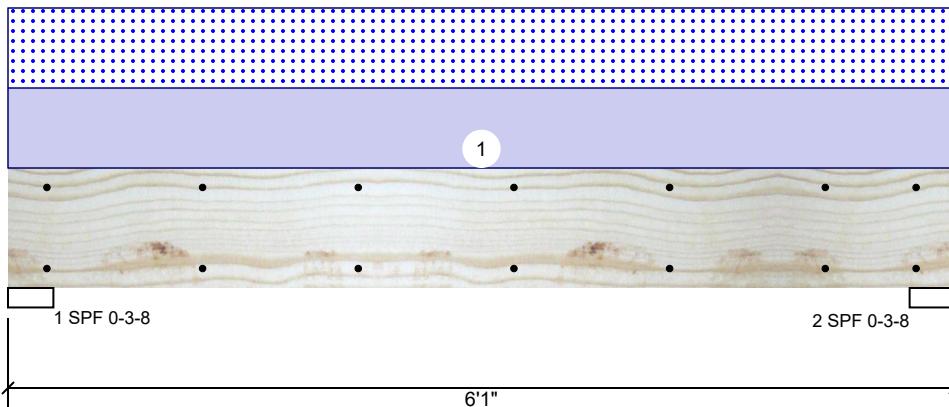
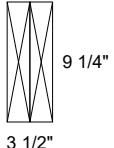
<b>Notes</b>	Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.	chemicals	6. For flat roofs provide proper drainage to prevent ponding	<b>Handling &amp; Installation</b>	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
<b>Lumber</b>	1. Dry service conditions, unless noted otherwise 2. LVL not to be treated with fire retardant or corrosive				This design is valid until 2/28/2028

### Manufacturer Info

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

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

Level: Level



**Member Information****Reactions UNPATTERED lb (Uplift)**

Type: Girder	Application: Floor	Brg	Direction	Live	Dead	Snow	Wind	Const
Plies: 2	Design Method: ASD	1	Vertical	0	1762	1740	0	0
Moisture Condition: Dry	Building Code: IBC/IRC 2015	2	Vertical	0	1762	1740	0	0
Deflection LL: 480	Load Sharing: No							
Deflection TL: 360	Deck: Not Checked							

**Bearings**

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	Vert	67%	1762 / 1740	3502	L	D+S
2 - SPF	3.500"	Vert	67%	1762 / 1740	3502	L	D+S

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4553 ft-lb	3' 1/2"	14423 ft-lb	32%	D+S	L
Unbraced	4553 ft-lb	3' 1/2"	10944 ft-lb	42%	D+S	L
Shear	2278 lb	1' 3/4"	7943 lb	29%	D+S	L
LL Defl inch	0.036 (L/1877)	3' 1/2"	0.141 (L/480)	26%	S	L
TL Defl inch	0.072 (L/933)	3' 1/2"	0.188 (L/360)	39%	D+S	L

**Design Notes**

- Provide support to prevent lateral movement and rotation at the end bearings.
- Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- Refer to last page of calculations for fasteners required for specified loads.
- Girders are designed to be supported on bottom edge only and across their full width.
- Top loads must be supported equally by all plies.
- Top must be laterally braced at end bearings.
- Bottom must be laterally braced at end bearings.
- Lateral slenderness ratio based on single ply width.

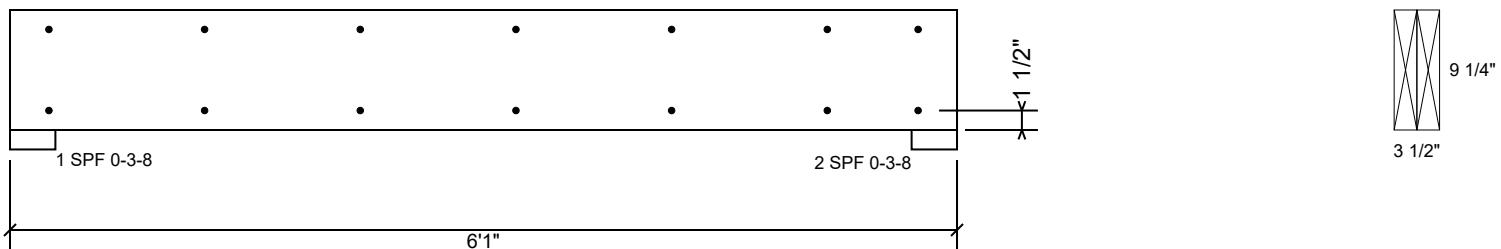
ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	572 PLF	0 PLF	572 PLF	0 PLF	0 PLF	A2

Notes	Handling & Installation	6. For flat roofs provide proper drainage to prevent ponding	Manufacturer Info
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.	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	Metsä Wood 301 Merritt 7 Building, 2nd Floor Norwalk, CT 06851 (800) 622-5850 www.metsawood.com/us

This design is valid until 2/28/2028

**BM1 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.
CM	1
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

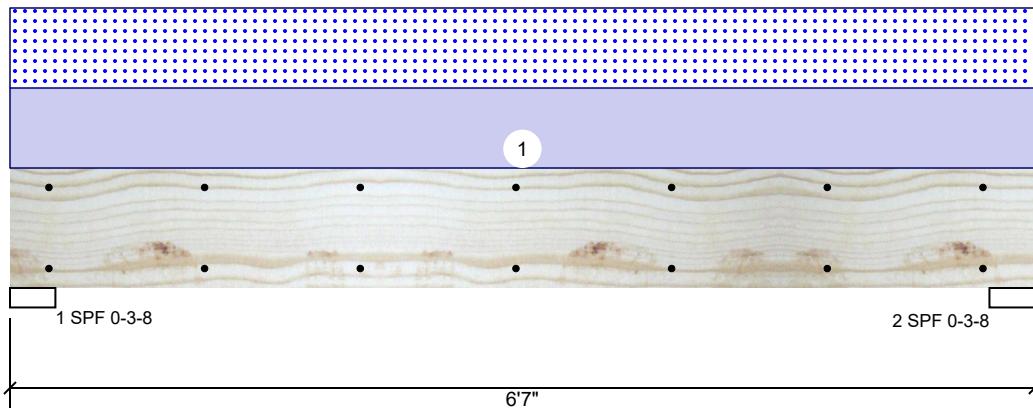
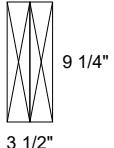
<b>Notes</b>	Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.	chemicals	6. For flat roofs provide proper drainage to prevent ponding	<b>Handling &amp; Installation</b>	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
<b>Lumber</b>	1. Dry service conditions, unless noted otherwise 2. LVL not to be treated with fire retardant or corrosive				This design is valid until 2/28/2028

### Manufacturer Info

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

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

Level: Level



**Member Information****Reactions UNPATTERED lb (Uplift)**

Type: Girder	Application: Floor	Brg	Direction	Live	Dead	Snow	Wind	Const
Plies: 2	Design Method: ASD	1	Vertical	0	1475	1452	0	0
Moisture Condition: Dry	Building Code: IBC/IRC 2015	2	Vertical	0	1475	1452	0	0
Deflection LL: 480	Load Sharing: No							
Deflection TL: 360	Deck: Not Checked							
Importance: Normal - II								
Temperature: Temp <= 100°F								

**Bearings**

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	Vert	56%	1475 / 1452	2927	L	D+S
2 - SPF	3.500"	Vert	56%	1475 / 1452	2927	L	D+S

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4170 ft-lb	3'3 1/2"	14423 ft-lb	29%	D+S	L
Unbraced	4170 ft-lb	3'3 1/2"	10451 ft-lb	40%	D+S	L
Shear	1982 lb	1' 3/4"	7943 lb	25%	D+S	L
LL Defl inch	0.038 (L/1954)	3'3 1/2"	0.153 (L/480)	25%	S	L
TL Defl inch	0.076 (L/969)	3'3 1/2"	0.204 (L/360)	37%	D+S	L

**Design Notes**

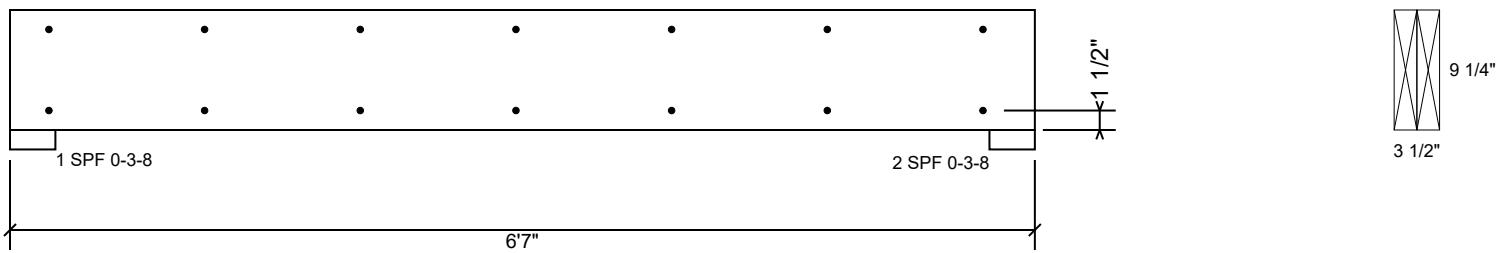
- Provide support to prevent lateral movement and rotation at the end bearings.
- Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- Refer to last page of calculations for fasteners required for specified loads.
- Girders are designed to be supported on bottom edge only and across their full width.
- Top loads must be supported equally by all plies.
- Top must be laterally braced at end bearings.
- Bottom must be laterally braced at end bearings.
- 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	441 PLF	0 PLF	441 PLF	0 PLF	0 PLF	A1

Notes	Handling & Installation	6. For flat roofs provide proper drainage to prevent ponding	Manufacturer Info
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.	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	This design is valid until 2/28/2028	Metsä Wood 301 Merritt 7 Building, 2nd Floor Norwalk, CT 06851 (800) 622-5850 www.metsawood.com/us

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

<b>Notes</b>	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.	chemicals	6. For flat roofs provide proper drainage to prevent ponding	<b>Handling &amp; Installation</b>	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
<b>Lumber</b>	1. Dry service conditions, unless noted otherwise 2. LVL not to be treated with fire retardant or corrosive				This design is valid until 2/28/2028

### Manufacturer Info

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