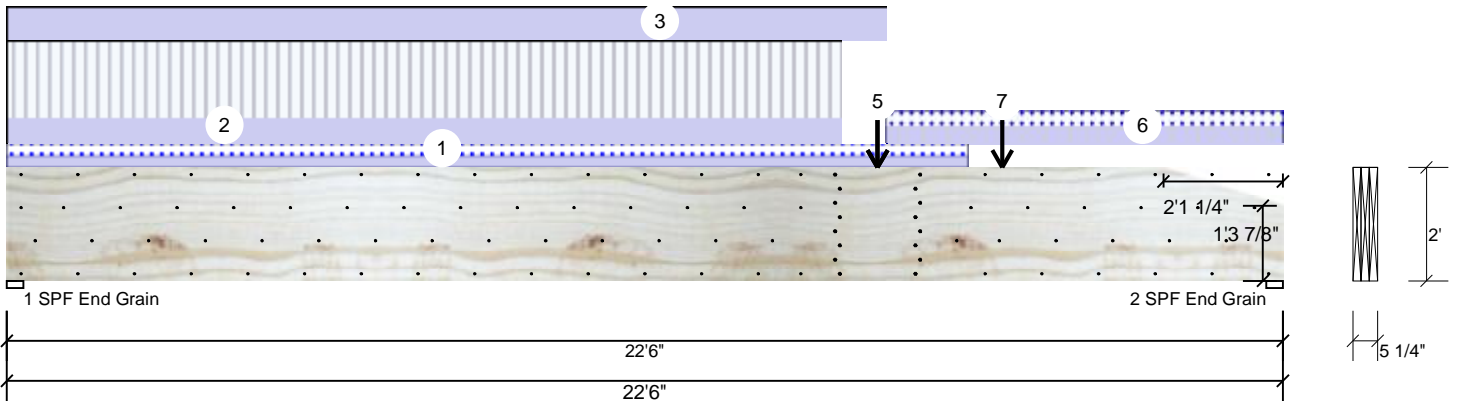


**BM1 Kerto-S LVL 1.750" X 24.000" 3-Ply - PASSED**

Level: Level



**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/IRC 2015
Load Sharing:	Yes
Deck:	Not Checked

**Reactions UNPATTERNED Ib (Uplift)**

Brg	Live	Dead	Snow	Wind	Const
1	4803	3879	683	0	0
2	5416	3803	1019	0	0

**Bearings**

Bearing	Length	Cap. React D/L Ib	Total Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	54% 3879 / 4803	8681 L	D+L
2 - SPF End Grain	3.500"	58% 3803 / 5416	9219 L	D+L

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	61237 ft-lb	14'6 1/2"	114169 ft-lb	0.536 (54%)	D+L	L
Unbraced	61237 ft-lb	14'6 1/2"	61526 ft-lb	0.995 (100%)	D+L	L
Shear	9907 lb	20'3 3/8"	26880 lb	0.369 (37%)	D+L	L
Rt. Scarf	155 psi, 9199 lb		320 psi	0.483 (48%)	D+L	L
LL Defl inch	0.282 (L/939)	11'11 7/16"	0.552 (L/480)	0.510 (51%)	L	L
TL Defl inch	0.478 (L/554)	11'9 11/16"	0.735 (L/360)	0.650 (65%)	D+L	L

**Design Notes**

- 1 Fasten all plies using 4 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 Notches in LVL are in accordance with APA Form No. EWS G535, Figure 1.
- 6 Girders are designed to be supported on the bottom edge only.
- 7 Top loads must be supported equally by all plies.
- 8 Top must be laterally braced at a maximum of 4'2 5/8" o.c.
- 9 Bottom braced at bearings.
- 10 Lateral slenderness ratio based on single ply width.

**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

**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 1/8/2023

**Manufacturer Info**

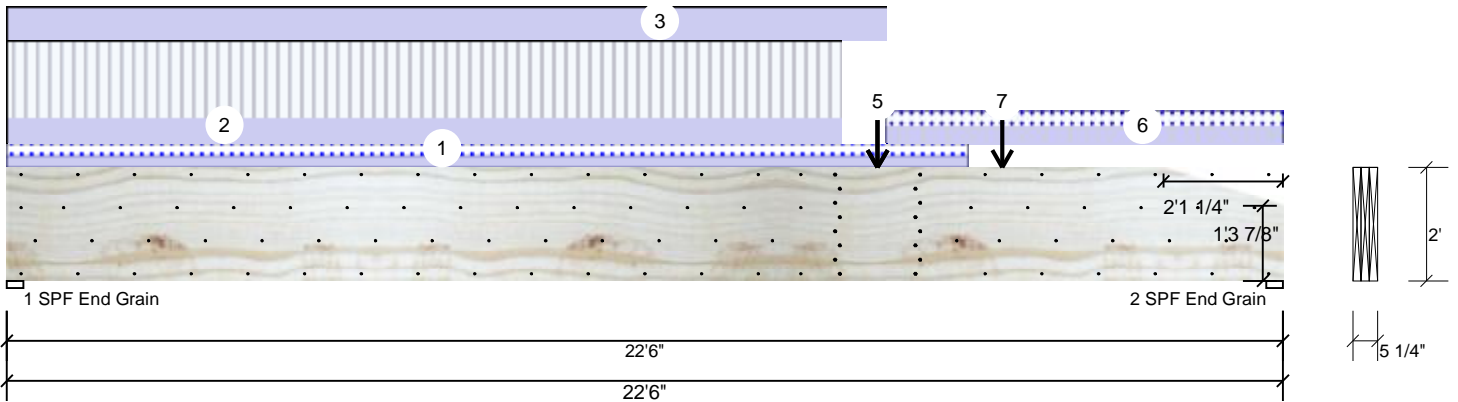
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**BM1 Kerto-S LVL 1.750" X 24.000" 3-Ply - PASSED**

Level: Level



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	0-0-0 to 16-11-4		Near Face	45 PLF	0 PLF	45 PLF	0 PLF	0 PLF	M7
2	Part. Uniform	0-0-0 to 14-8-8		Far Face	100 PLF	299 PLF	0 PLF	0 PLF	0 PLF	F1A
3	Part. Uniform	0-0-0 to 15-6-0		Top	125 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Wall Load
4	Point	15-4-4		Far Face	1941 lb	5821 lb	0 lb	0 lb	0 lb	BM2
5	Point	15-4-4		Top	331 lb	0 lb	331 lb	0 lb	0 lb	D1GE
6	Part. Uniform	15-6-0 to 22-6-0		Far Face	62 PLF	0 PLF	62 PLF	0 PLF	0 PLF	M6
7	Point	17-6-10		Near Face	175 lb	0 lb	175 lb	0 lb	0 lb	M7GR
	Self Weight				28 PLF					

**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

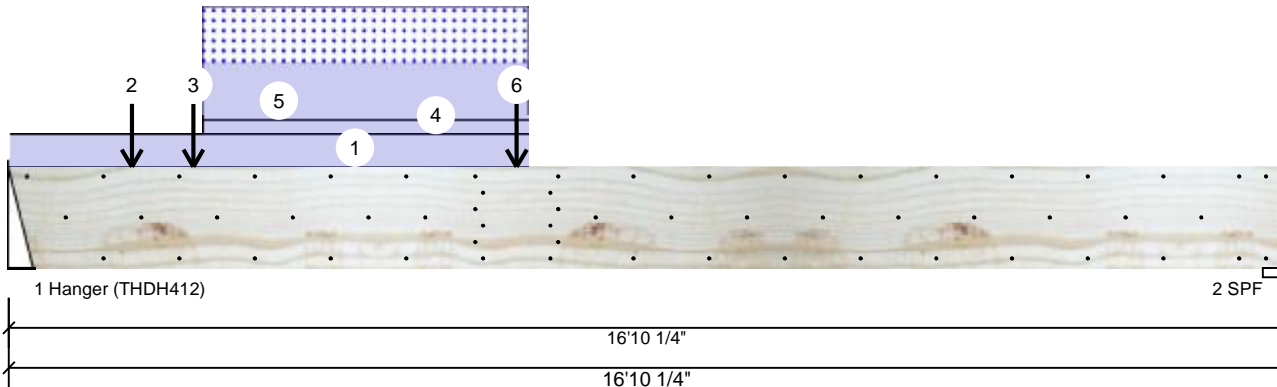
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**BM2 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED**

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 Ib (Uplift)**

Brg	Live	Dead	Snow	Wind	Const
1	877	4512	3249	0	0
2	569	1144	619	0	0

**Bearings**

Bearing	Length	Cap. React	D/L Ib	Total	Ld. Case	Ld. Comb.
1 - Hanger	4.000"	64%	4512 / 3249	7761	L	D+S
2 - SPF	3.500"	39%	1144 / 891	2035	L	D+0.75(L+S)

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	19615 ft-lb	6'3 1/16"	39750 ft-lb	0.493 (49%)	D+0.75(L+S)	L
Unbraced	19615 ft-lb	6'3 1/16"	19705 ft-lb	0.995 (100%)	D+0.75(L+S)	L
Shear	7542 lb	1'7 1/8"	13739 lb	0.549 (55%)	D+S	L
LL Defl inch	0.172 (L/1142)	7'4 3/16"	0.409 (L/480)	0.420 (42%)	0.75(L+S)	L
TL Defl inch	0.389 (L/505)	7'3 13/16"	0.546 (L/360)	0.710 (71%)	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 Concentrated load fastener specification is in addition to hanger fasteners if a hanger is present.
- 4 Fill all hanger nailing holes.
- 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 5'10 7/8" o.c.
- 8 Bottom braced at bearings.
- 9 Lateral slenderness ratio based on single ply width.

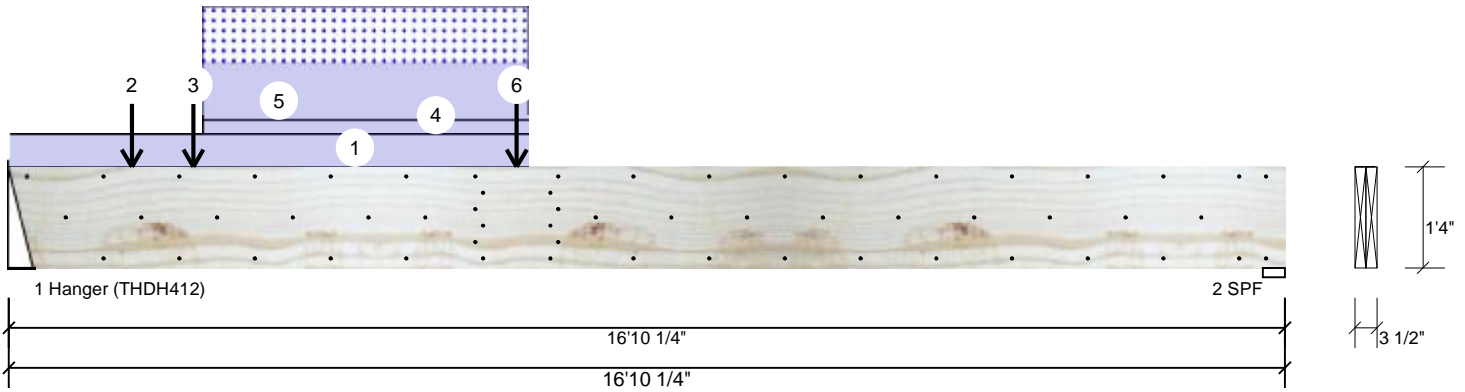
ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Part. Uniform	0-0-0 to 6-10-4		Top	125 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Wall
2	Point	1-7-8		Top	500 lb	0 lb	500 lb	0 lb	0 lb	B1GE
3	Point	2-5-4		Top	2436 lb	0 lb	2436 lb	0 lb	0 lb	B1GR

Continued on page 2...

<p><b>Notes</b></p> <p>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.</p> <p><b>Lumber</b></p> <ol style="list-style-type: none"> <li>1. Dry service conditions, unless noted otherwise</li> <li>2. LVL not to be treated with fire retardant or corrosive chemicals</li> </ol>	<p><b>Handling &amp; Installation</b></p> <ol style="list-style-type: none"> <li>1. LVL beams must not be cut or drilled</li> <li>2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals</li> <li>3. Damaged Beams must not be used</li> <li>4. Design assumes top edge is laterally restrained</li> <li>5. Provide lateral support at bearing points to avoid lateral displacement and rotation</li> </ol>	<p>6. For flat roofs provide proper drainage to prevent ponding</p>	<p><b>Manufacturer Info</b></p> <p>Metsä Wood          301 Merritt 7 Building, 2nd Floor          Norwalk, CT 06851          (800) 622-5850  <a href="http://www.metsawood.com/us">www.metsawood.com/us</a>          ICC-ES: ESR-3633</p>	<p>Comtech, Inc.          1001 S. Reilly Road, Suite #639          Fayetteville, NC          USA          28314          910-864-TRUS</p>
			<p>This design is valid until 1/8/2023</p>	

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

Level: Level



...Continued from page 1

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
4	Part. Uniform	2-6-12 to 6-10-4		Top	56 PLF	0 PLF	0 PLF	0 PLF	0 PLF	A7GE
5	Part. Uniform	2-6-12 to 6-10-4		Top	217 PLF	0 PLF	217 PLF	0 PLF	0 PLF	A7GE
6	Point	6-8-8		Near Face	482 lb	1446 lb	0 lb	0 lb	0 lb	BM4
	Self Weight				12 PLF					

**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 1/8/2023

**Manufacturer Info**

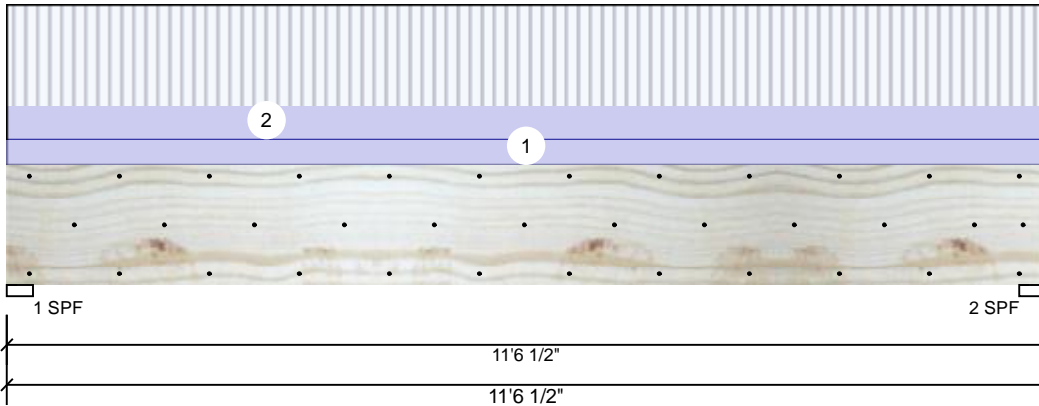
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**BM3 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED**

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 Ib (Uplift)**

Brg	Live	Dead	Snow	Wind	Const
1	1824	1145	0	0	0
2	1824	1145	0	0	0

**Bearings**

Bearing	Length	Cap. React	D/L Ib	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	57%	1145 / 1824	2969	L	D+L
2 - SPF	3.500"	57%	1145 / 1824	2969	L	D+L

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	7929 ft-lb	5'9 1/4"	34565 ft-lb	0.229 (23%)	D+L	L
Unbraced	7929 ft-lb	5'9 1/4"	11118 ft-lb	0.713 (71%)	D+L	L
Shear	2733 lb	9'11 7/8"	11947 lb	0.229 (23%)	D+L	L
LL Defl inch	0.055 (L/2411)	5'9 1/4"	0.278 (L/480)	0.200 (20%)	L	L
TL Defl inch	0.090 (L/1481)	5'9 1/4"	0.370 (L/360)	0.240 (24%)	D+L	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 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	80 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Interior Wall
2	Uniform			Far Face	106 PLF	316 PLF	0 PLF	0 PLF	0 PLF	F7
	Self Weight				12 PLF					

**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 1/8/2023

**Manufacturer Info**

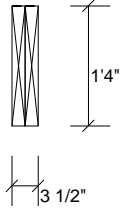
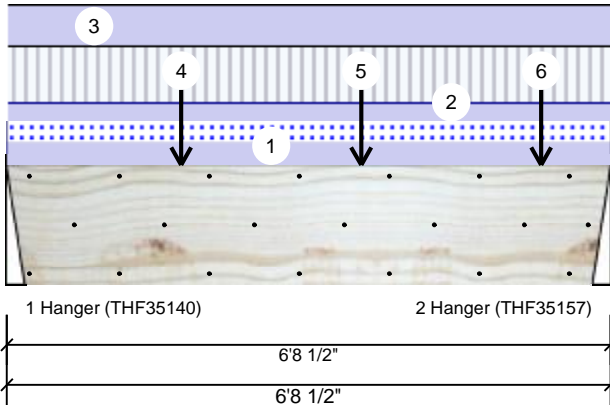
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**BM4 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED**

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	594	1130	471	0	0
2	594	1267	608	0	0

**Bearings**

Bearing	Length	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	2.500"	25%	1130 / 798	1928	L	D+0.75(L+S)
2 - Hanger	2.500"	28%	1267 / 901	2168	L	D+0.75(L+S)

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	3349 ft-lb	3'8 5/8"	39750 ft-lb	0.084 (8%)	D+0.75(L+S)	L
Unbraced	3349 ft-lb	3'8 5/8"	18199 ft-lb	0.184 (18%)	D+0.75(L+S)	L
Shear	1750 lb	5'2 7/8"	13739 lb	0.127 (13%)	D+0.75(L+S)	L
LL Defl inch (L/10813)	0.007	3'5 3/4"	0.161 (L/480)	0.040 (4%)	0.75(L+S)	L
TL Defl inch (L/4494)	0.017	3'5 11/16"	0.215 (L/360)	0.080 (8%)	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 Fill all hanger nailing holes.
- 4 Girders are designed to be supported on the bottom edge only.
- 5 Top loads must be supported equally by all plies.
- 6 Top braced at bearings.
- 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	Uniform			Near Face	67 PLF	0 PLF	67 PLF	0 PLF	0 PLF	M6
2	Uniform			Far Face	59 PLF	177 PLF	0 PLF	0 PLF	0 PLF	F3
3	Uniform			Top	125 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Wall
4	Point	1-11-4		Top	153 lb	0 lb	153 lb	0 lb	0 lb	C1
5	Point	3-11-4		Top	286 lb	0 lb	286 lb	0 lb	0 lb	C2

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 1/8/2023

**Manufacturer Info**

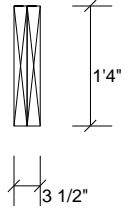
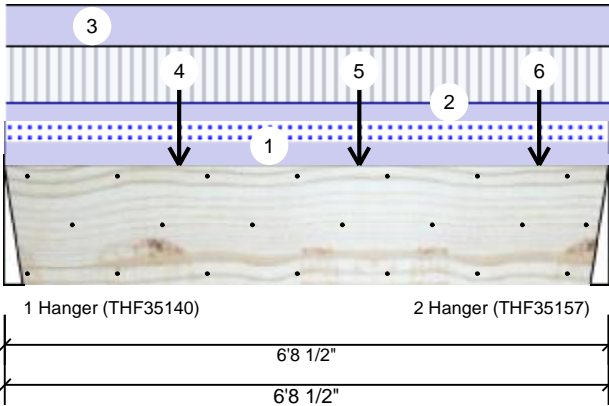
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**BM4 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED**

Level: Level



...Continued from page 1

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
6	Point	5-11-4		Top	190 lb	0 lb	190 lb	0 lb	0 lb	C3
	Self Weight				12 PLF					

**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

**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

**Manufacturer Info**

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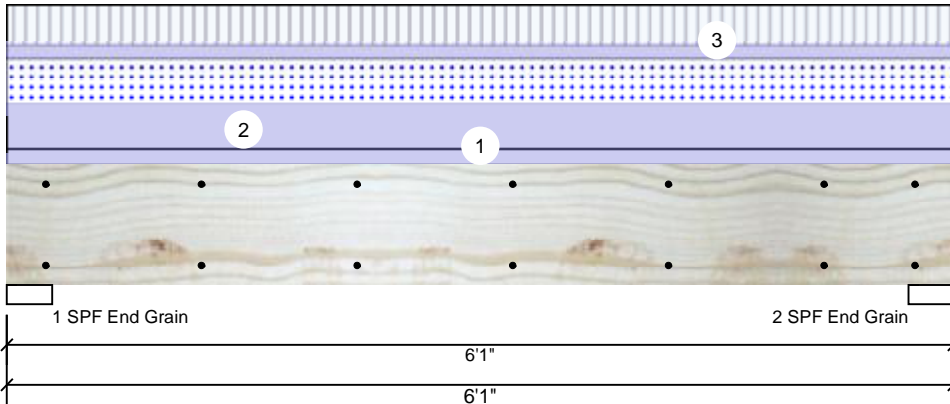


This design is valid until 1/8/2023



**BM5 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	961	1780	1055	0	0
2	961	1780	1055	0	0

**Bearings**

Bearing	Length	Cap.	React D/L	Ib	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	31%	1780 / 1512	3292	L	D+0.75(L+S)	
2 - SPF End Grain	3.500"	31%	1780 / 1512	3292	L	D+0.75(L+S)	

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4281 ft-lb	3' 1/2"	14423 ft-lb	0.297 (30%)	D+0.75(L+S)	L
Unbraced	4281 ft-lb	3' 1/2"	10944 ft-lb	0.391 (39%)	D+0.75(L+S)	L
Shear	2210 lb	1'	7943 lb	0.278 (28%)	D+0.75(L+S)	L
LL Defl inch	0.031 (L/2159)	3' 1/2"	0.141 (L/480)	0.220 (22%)	0.75(L+S)	L
TL Defl inch	0.068 (L/992)	3' 1/2"	0.188 (L/360)	0.360 (36%)	D+0.75(L+S)	L

**Design Notes**

- 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 the bottom edge only.
- Top loads must be supported equally by all plies.
- Top braced at bearings.
- Bottom braced at 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	125 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Wall
2	Uniform			Top	347 PLF	0 PLF	347 PLF	0 PLF	0 PLF	A1
3	Uniform			Top	106 PLF	316 PLF	0 PLF	0 PLF	0 PLF	F7
	Self Weight				7 PLF					

**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**

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

chemicals

**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
- 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

**Manufacturer Info**

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

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

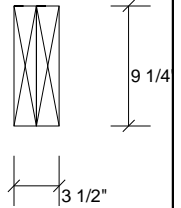
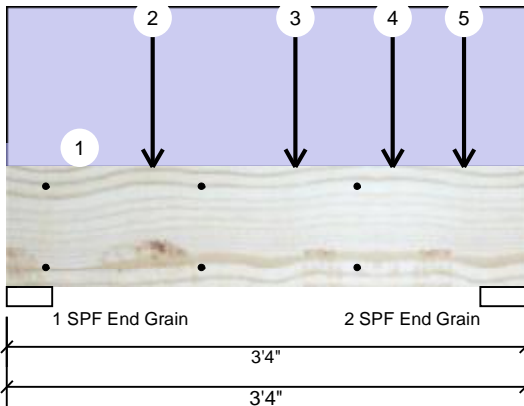


This design is valid until 1/8/2023



**BM6 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	863	978	545	0	0
2	1886	1611	836	0	0

**Bearings**

Bearing	Length	Cap.	React D/L	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	19%	978 / 1056	2034	L	D+0.75(L+S)
2 - SPF End Grain	3.500"	34%	1611 / 2041	3652	L	D+0.75(L+S)

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2232 ft-lb	1'10 1/4"	12542 ft-lb	0.178 (18%)	D+L	L
Unbraced	2232 ft-lb	1'10 1/4"	11972 ft-lb	0.186 (19%)	D+L	L
Shear	2465 lb	2'4"	6907 lb	0.357 (36%)	D+L	L
LL Defl inch	0.009 (L/3860)	1'10 1/4"	0.072 (L/480)	0.120 (12%)	L	L
TL Defl inch	0.015 (L/2376)	1'10 1/4"	0.096 (L/360)	0.150 (15%)	D+L	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	80 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Interior Wall
2	Point	0-11-4		Top	668 lb	0 lb	668 lb	0 lb	0 lb	A7GE
3	Point	1-10-4		Top	408 lb	1222 lb	0 lb	0 lb	0 lb	F3
4	Point	2-5-12		Top	509 lb	1527 lb	0 lb	0 lb	0 lb	BM2
5	Point	2-11-4		Top	713 lb	0 lb	713 lb	0 lb	0 lb	C1
	Self Weight				7 PLF					

**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

**Manufacturer Info**

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 301 Merritt 7 Building, 2nd Floor  
 Norwalk, CT 06851  
 (800) 622-5850  
[www.metsawood.com/us](http://www.metsawood.com/us)  
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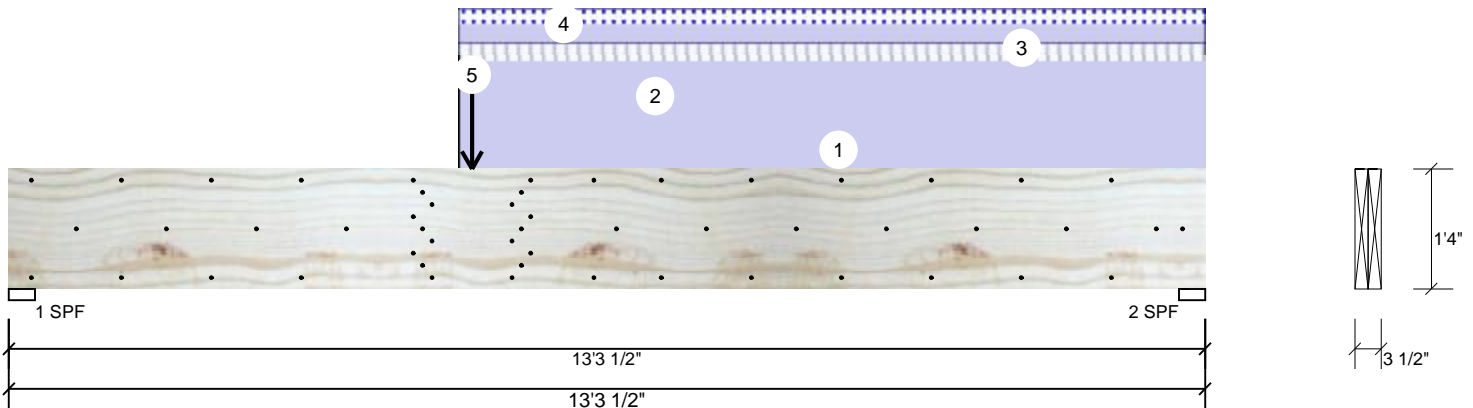
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 Fayetteville, NC  
 USA  
 28314  
 910-864-TRUS



This design is valid until 1/8/2023

**BM7 Kerto-S LVL 1.750" X 16.000" 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 Ib (Uplift)**

Brg	Live	Dead	Snow	Wind	Const
1	1104	1157	101	0	0
2	854	1971	230	0	0

**Bearings**

Bearing	Length	Cap. React	D/L Ib	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	43%	1157 / 1104	2261	L	D+L
2 - SPF	3.500"	54%	1971 / 854	2825	L	D+L

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	10974 ft-lb	5'1 3/4"	34565 ft-lb	0.317 (32%)	D+L	L
Unbraced	10974 ft-lb	5'1 3/4"	10979 ft-lb	0.999 (100%)	D+L	L
Shear	2315 lb	1'6 5/8"	11947 lb	0.194 (19%)	D+L	L
LL Defl inch	0.066 (L/2353)	5'11 3/4"	0.321 (L/480)	0.200 (20%)	L	L
TL Defl inch	0.149 (L/1036)	6'5 1/4"	0.428 (L/360)	0.350 (35%)	D+L	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 11'3 3/8" o.c.
- 7 Bottom braced at bearings.
- 8 Lateral slenderness ratio based on single ply width.

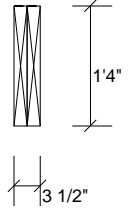
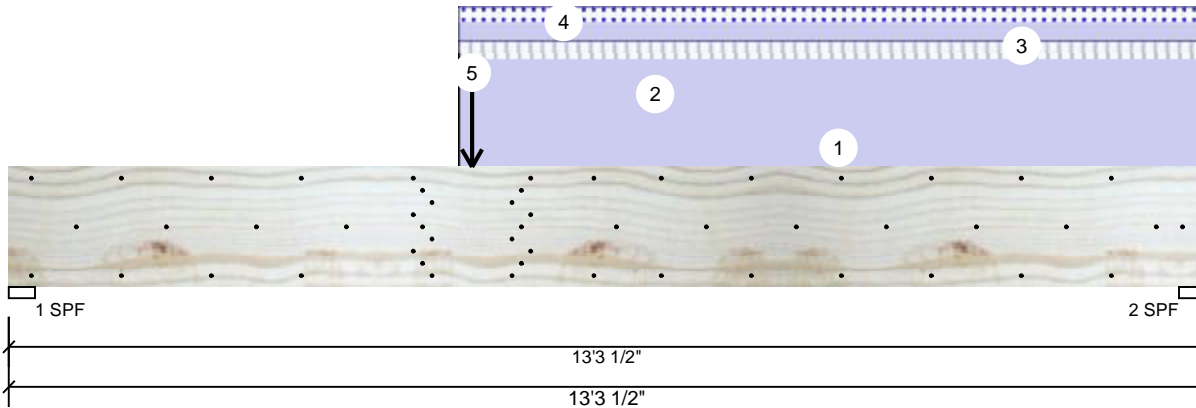
ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Part. Uniform	5-0-0 to 13-3-8		Top	125 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Wall Load
2	Part. Uniform	5-0-0 to 13-3-8		Top	112 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Gable Dead Load
3	Part. Uniform	5-0-0 to 13-3-8		Far Face	15 PLF	40 PLF	0 PLF	0 PLF	0 PLF	1'-0" Floor Load
4	Part. Uniform	5-0-0 to 13-3-8		Top	40 PLF	0 PLF	40 PLF	0 PLF	0 PLF	Gable Live Load

Continued on page 2...

<p><b>Notes</b></p> <p>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.</p> <p><b>Lumber</b></p> <ol style="list-style-type: none"> <li>1. Dry service conditions, unless noted otherwise</li> <li>2. LVL not to be treated with fire retardant or corrosive chemicals</li> </ol> <p><b>Handling &amp; Installation</b></p> <ol style="list-style-type: none"> <li>1. LVL beams must not be cut or drilled</li> <li>2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals</li> <li>3. Damaged Beams must not be used</li> <li>4. Design assumes top edge is laterally restrained</li> <li>5. Provide lateral support at bearing points to avoid lateral displacement and rotation</li> </ol>	<p>6. For flat roofs provide proper drainage to prevent ponding</p>	<p><b>Manufacturer Info</b></p> <p>Metsä Wood          301 Merritt 7 Building, 2nd Floor          Norwalk, CT 06851          (800) 622-5850  <a href="http://www.metsawood.com/us">www.metsawood.com/us</a>          ICC-ES: ESR-3633</p>	<p>Comtech, Inc.          1001 S. Reilly Road, Suite #639          Fayetteville, NC          USA          28314          910-864-TRUS</p>
		<p>This design is valid until 1/8/2023</p>	

**BM7 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED**

Level: Level



...Continued from page 1

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
5	Point	5-1-12		Far Face	542 lb	1626 lb	0 lb	0 lb	0 lb	BM4
	Self Weight				12 PLF					

**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

**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

**Manufacturer Info**

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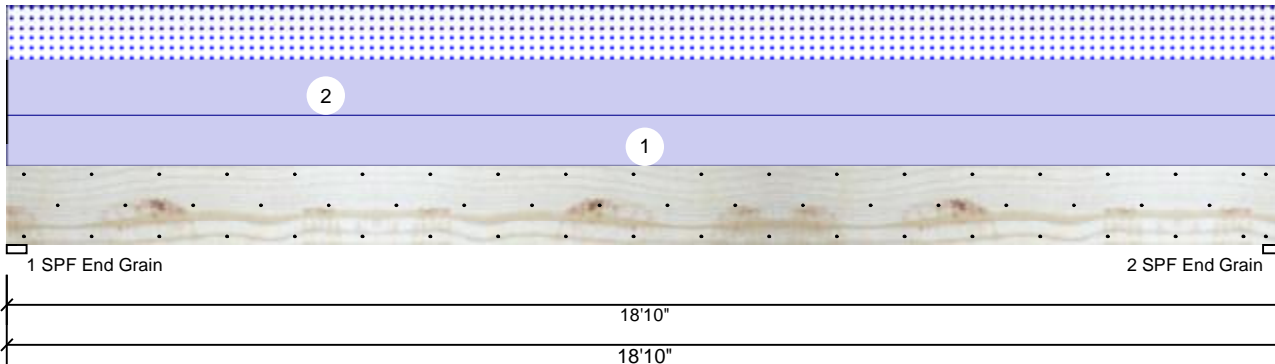
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 USA  
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 910-864-TRUS



This design is valid until 1/8/2023

**GDH Kerto-S LVL 1.750" X 14.000" 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 Ib (Uplift)**

Brg	Live	Dead	Snow	Wind	Const
1	0	1270	603	0	0
2	0	1270	603	0	0

**Bearings**

Bearing	Length	Cap. React	D/L Ib	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	18%	1270 / 603	1873	L	D+S
2 - SPF End Grain	3.500"	18%	1270 / 603	1873	L	D+S

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	8394 ft-lb	9'5"	31049 ft-lb	0.270 (27%)	D+S	L
Unbraced	8394 ft-lb	9'5"	8405 ft-lb	0.999 (100%)	D+S	L
Shear	1595 lb	1'4 3/4"	12021 lb	0.133 (13%)	D+S	L
LL Defl inch	0.109 (L/2025)	9'5 1/16"	0.459 (L/480)	0.240 (24%)	S	L
TL Defl inch	0.338 (L/652)	9'5 1/16"	0.612 (L/360)	0.550 (55%)	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 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 13'7 1/2" 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	60 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Load
2	Uniform			Top	64 PLF	0 PLF	64 PLF	0 PLF	0 PLF	M7
	Self Weight				11 PLF					

**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 1/8/2023

**Manufacturer Info**

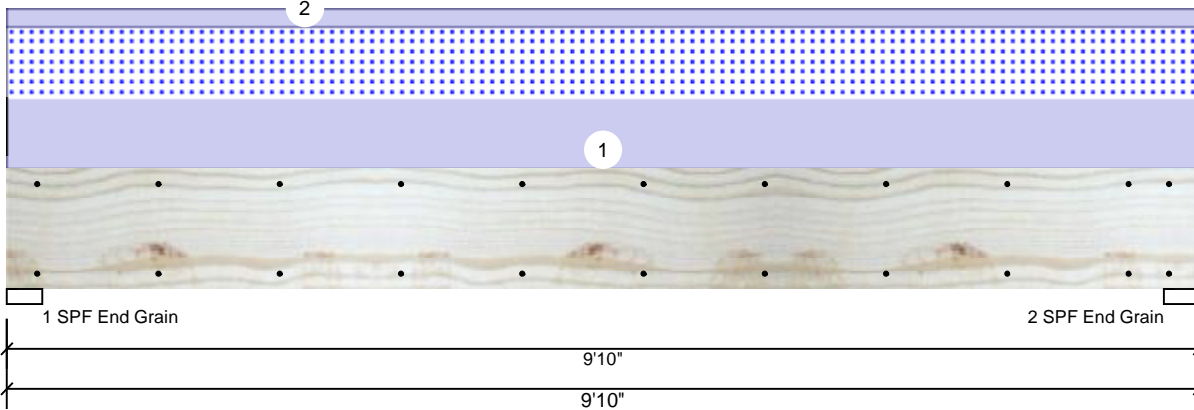
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 910-864-TRUS



**GDH-3 Kerto-S LVL 1.750" X 11.875" 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 Ib (Uplift)**

Brg	Live	Dead	Snow	Wind	Const
1	0	1476	1136	0	0
2	0	1476	1136	0	0

**Bearings**

Bearing	Length	Cap. React	D/L Ib	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	25%	1476 / 1136	2612	L	D+S
2 - SPF End Grain	3.500"	25%	1476 / 1136	2612	L	D+S

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	5836 ft-lb	4'11"	22897 ft-lb	0.255 (25%)	D+S	L
Unbraced	5836 ft-lb	4'11"	9857 ft-lb	0.592 (59%)	D+S	L
Shear	1964 lb	1'2 5/8"	10197 lb	0.193 (19%)	D+S	L
LL Defl inch	0.048 (L/2337)	4'11"	0.234 (L/480)	0.210 (21%)	S	L
TL Defl inch	0.111 (L/1016)	4'11"	0.312 (L/360)	0.350 (35%)	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	231 PLF	0 PLF	231 PLF	0 PLF	0 PLF	G1
2	Uniform			Top	60 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Exterior Loads
	Self Weight				9 PLF					

**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

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