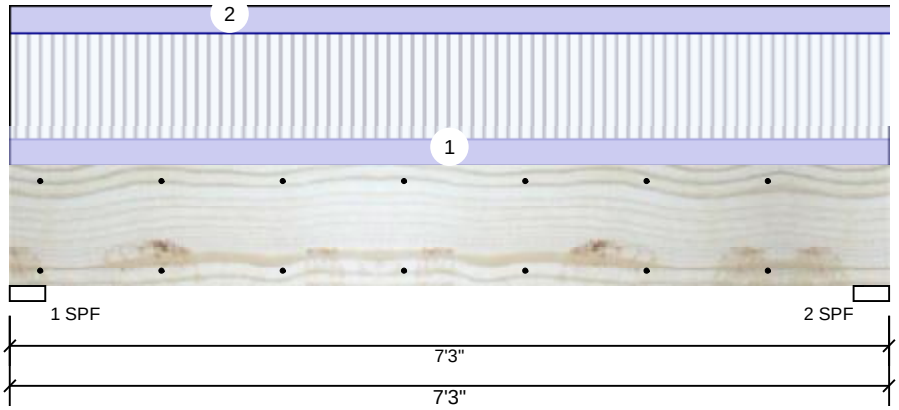
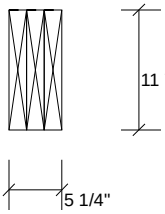
H-1 Kerto-S LVL 1.750" X 11.875" 3-Ply - PASSED

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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	1715	917	0	0	0
2	1715	917	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	34%	917 / 1715	2631	L	D+L
2 - SPF	3.500"	34%	917 / 1715	2631	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4185 ft-lb	3'7 1/2"	31060 ft-lb	0.135 (13%)	D+L	L
Unbraced	4185 ft-lb	3'7 1/2"	18621 ft-lb	0.225 (22%)	D+L	L
Shear	1747 lb	1'2 5/8"	13300 lb	0.131 (13%)	D+L	L
LL Defl inch	0.020 (L/3977)	3'7 9/16"	0.170 (L/480)	0.120 (12%)	L	L
TL Defl inch	0.031 (L/2592)	3'7 9/16"	0.340 (L/240)	0.090 (9%)	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	119 PLF	473 PLF	0 PLF	0 PLF	0 PLF	
2	Uniform			Top	120 PLF	0 PLF	0 PLF	0 PLF	0 PLF	
	Self Weight				14 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 10/18/2021

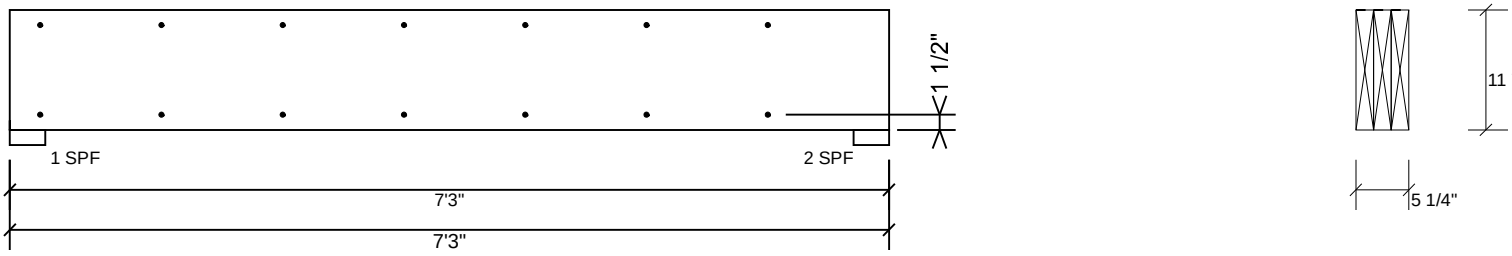
Manufacturer Info

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
USA
28314
910-864-TRUS

H-1 Kerto-S LVL 1.750" X 11.875" 3-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Nail from both sides. 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

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 10/18/2021

Manufacturer Info

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(800) 622-5850
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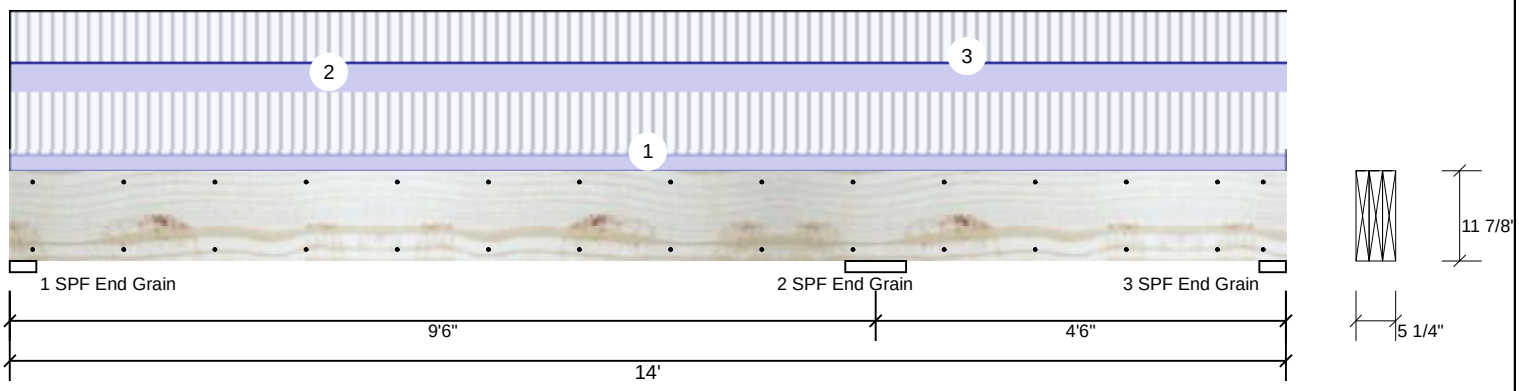
ICC-ES: ESR-3633

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

H-2 Kerto-S LVL 1.750" X 11.875" 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	3588	1450	0	0	0
2	8112	3279	0	0	0
3	592	239	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	31%	1417 / 3575	4992	L_	D+L
2 - SPF End Grain	8.000"	32%	3383 / 8369	11752	LL	D+L
3 - SPF End Grain	3.500"	13%	168 / 1928	2096 (-1143)	_L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-9954 ft-lb	9'6"	31060 ft-lb	0.320 (32%)	D+L	LL
Unbraced	-9954 ft-lb	9'6"	26993 ft-lb	0.369 (37%)	D+L	LL
Pos Moment	8994 ft-lb	4' 9/16"	31060 ft-lb	0.290 (29%)	D+L	L_
Unbraced	8994 ft-lb	4' 9/16"	17108 ft-lb	0.526 (53%)	D+L	L_
Shear	5569 lb	8'6 1/8"	13300 lb	0.419 (42%)	D+L	LL
LL Defl inch	0.081 (L/1376)	4'7 1/16"	0.232 (L/480)	0.350 (35%)	L	L_
TL Defl inch	0.112 (L/993)	4'6 15/16"	0.464 (L/240)	0.240 (24%)	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 Tie-down connection required at bearing 3 for uplift 1143 lb (Combination D+L, Load Case L_).
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			Top	122 PLF	485 PLF	0 PLF	0 PLF	0 PLF	
2	Uniform			Top	120 PLF	0 PLF	0 PLF	0 PLF	0 PLF	
3	Uniform			Top	99 PLF	393 PLF	0 PLF	0 PLF	0 PLF	
	Self Weight				14 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 10/18/2021

Manufacturer Info

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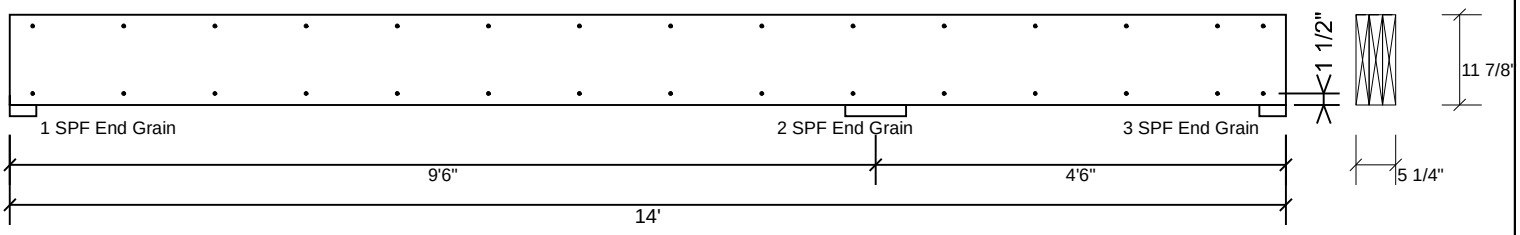
Fayetteville, NC
USA
28314
910-864-TRUS

H-2 Kerto-S LVL 1.750" X 11.875" 3-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Nail from both sides. 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

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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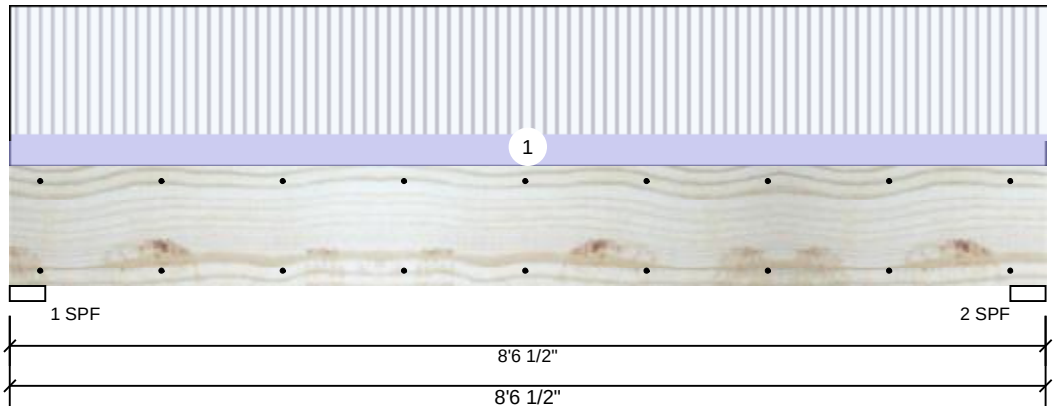
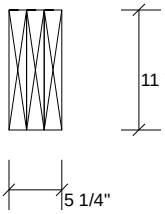
H-3 Kerto-S LVL 1.750" X 11.875" 3-Ply - PASSED

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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	2084	580	0	0	0
2	2084	580	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	34%	580 / 2084	2664	L	D+L
2 - SPF	3.500"	34%	580 / 2084	2664	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	5095 ft-lb	4'3 1/4"	31060 ft-lb	0.164 (16%)	D+L	L
Unbraced	5095 ft-lb	4'3 1/4"	16424 ft-lb	0.310 (31%)	D+L	L
Shear	1904 lb	1'2 5/8"	13300 lb	0.143 (14%)	D+L	L
LL Defl inch	0.039 (L/2465)	4'3 5/16"	0.202 (L/480)	0.190 (19%)	L	L
TL Defl inch	0.050 (L/1928)	4'3 5/16"	0.404 (L/240)	0.120 (12%)	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	122 PLF	488 PLF	0 PLF	0 PLF	0 PLF	
	Self Weight				14 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 10/18/2021

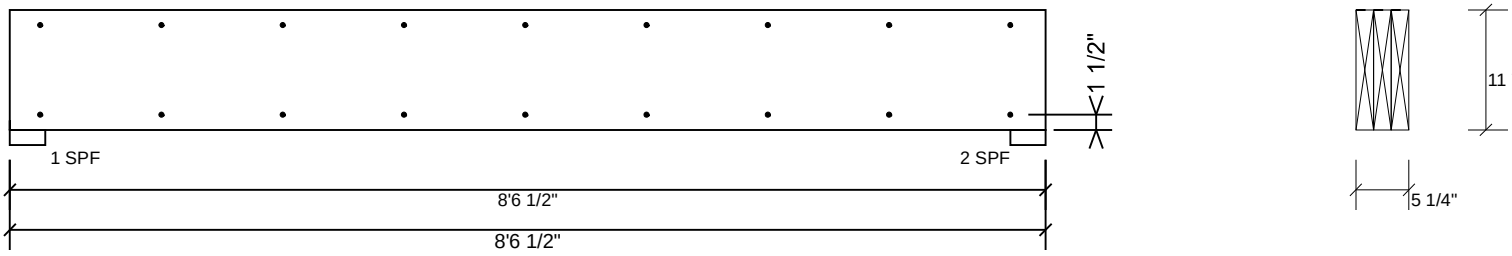
Manufacturer Info

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
USA
28314
910-864-TRUS

H-3 Kerto-S LVL 1.750" X 11.875" 3-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Nail from both sides. 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

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 10/18/2021

Manufacturer Info

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ICC-ES: ESR-3633

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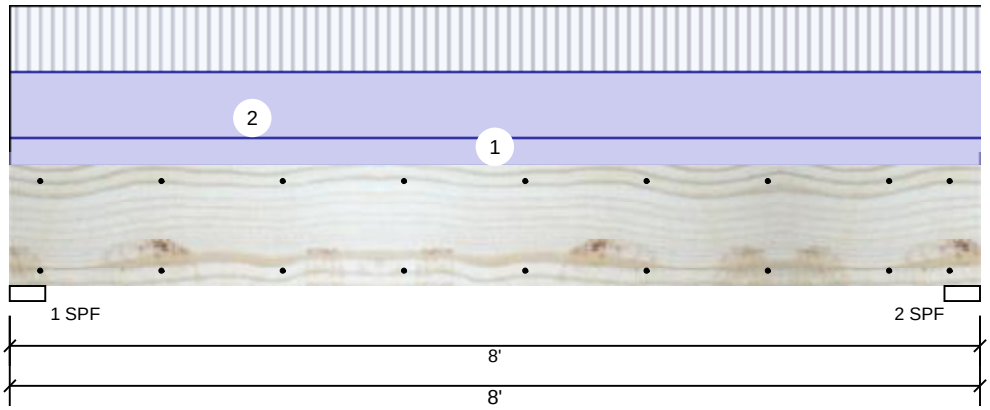
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

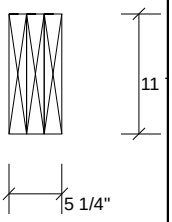
isDesign™

Client:	SEGC	Date:	12/4/2018
Project:	LEWIS RESIDENCE	Designer:	Bob Lewis
Address:		Job Name:	j1118-5039 BEAMS
		Project #:	J0118-5309

H-4 Kerto-S LVL 1.750" X 11.875" 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	1100	1635	0	0	0
2	1100	1635	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	35%	1635 / 1100	2735	L	D+L
2 - SPF	3.500"	35%	1635 / 1100	2735	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4862 ft-lb	4'	31060 ft-lb	0.157 (16%)	D+L	L
Unbraced	4862 ft-lb	4'	17268 ft-lb	0.282 (28%)	D+L	L
Shear	1902 lb	1'2 5/8"	13300 lb	0.143 (14%)	D+L	L
LL Defl inch	0.017 (L/5239)	4' 1/16"	0.189 (L/480)	0.090 (9%)	L	L
TL Defl inch	0.043 (L/2107)	4' 1/16"	0.377 (L/240)	0.110 (11%)	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	120 PLF	0 PLF	0 PLF	0 PLF	0 PLF	
2	Uniform			Top	275 PLF	275 PLF	0 PLF	0 PLF	0 PLF	
	Self Weight				14 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 10/18/2021

Manufacturer Info

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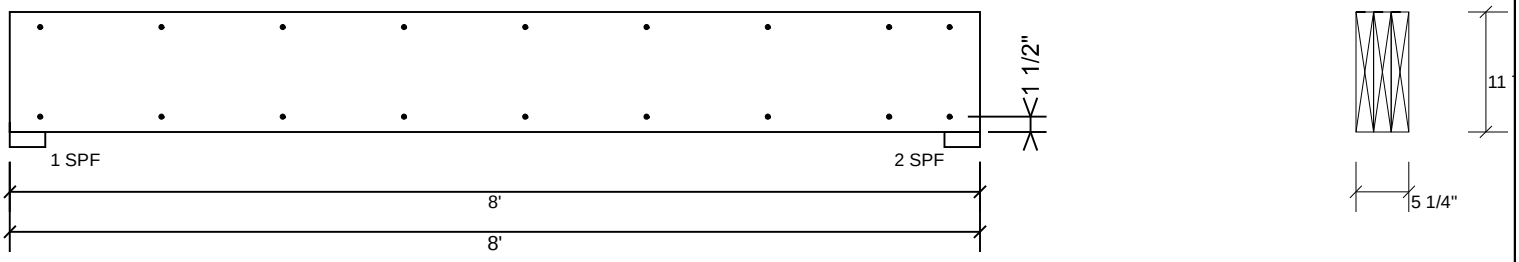
H-4 Kerto-S LVL 1.750" X 11.875" 3-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Nail from both sides. 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

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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ICC-ES: ESR-3633

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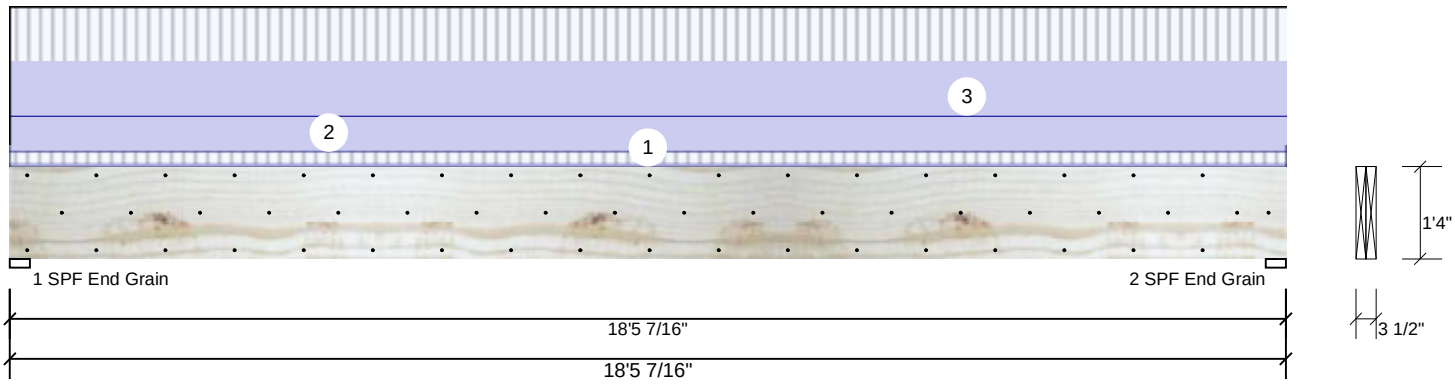
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

isDesign™

Client:	SEGC	Date:	12/4/2018
Project:	LEWIS RESIDENCE	Designer:	Bob Lewis
Address:		Job Name:	j1118-5039 BEAMS
		Project #:	J0118-5309

FB-1 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	2048	2994	0	0	0
2	2048	2994	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	47%	2994 / 2048	5042	L	D+L
2 - SPF End Grain	3.500"	47%	2994 / 2048	5042	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	22169 ft-lb	9'2 3/4"	34565 ft-lb	0.641 (64%)	D+L	L
Unbraced	22169 ft-lb	9'2 3/4"	22257 ft-lb	0.996 (100%)	D+L	L
Shear	4194 lb	1'6 5/8"	11947 lb	0.351 (35%)	D+L	L
LL Defl inch	0.239 (L/906)	9'2 3/4"	0.450 (L/480)	0.530 (53%)	L	L
TL Defl inch	0.588 (L/368)	9'2 3/4"	0.901 (L/240)	0.650 (65%)	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 must be laterally braced at a maximum of 5' 3/8" 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		1-0-0	Top	10 PSF	40 PSF	0 PSF	0 PSF	0 PSF	
2	Uniform			Top	120 PLF	0 PLF	0 PLF	0 PLF	0 PLF	WALL
3	Uniform			Top	182 PLF	182 PLF	0 PLF	0 PLF	0 PLF	ROOF
	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 10/18/2021

Manufacturer Info

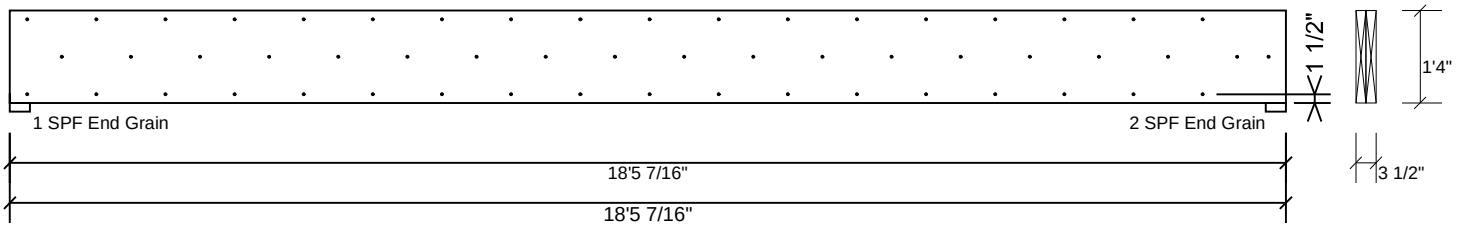
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

Version 18.80.219 Powered by iStruct™

FB-1 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



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

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 10/18/2021

Manufacturer Info

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

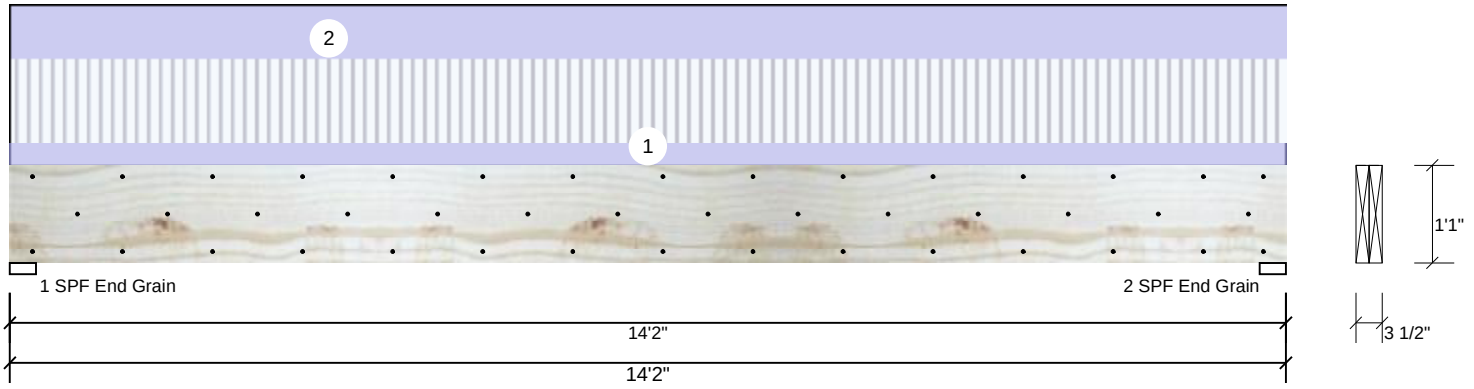
isDesign™

Client: SEGC
Project: LEWIS RESIDENCE
Address:

Date: 12/4/2018
Designer: Bob Lewis
Job Name: j1118-5039 BEAMS
Project #: J0118-5309

FB-2 Kerto-S LVL 1.750" X 13.000" 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	2805	2473	0	0	0
2	2805	2473	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	50%	2473 / 2805	5278	L	D+L
2 - SPF End Grain	3.500"	50%	2473 / 2805	5278	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	17503 ft-lb	7'1"	23540 ft-lb	0.744 (74%)	D+L	L
Unbraced	17503 ft-lb	7'1"	17534 ft-lb	0.998 (100%)	D+L	L
Shear	4300 lb	1'3 3/4"	9707 lb	0.443 (44%)	D+L	L
LL Defl inch	0.269 (L/611)	7'1 1/16"	0.343 (L/480)	0.790 (79%)	L	L
TL Defl inch	0.506 (L/325)	7'1 1/16"	0.685 (L/240)	0.740 (74%)	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 must be laterally braced at a maximum of 4'11 1/4" 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	99 PLF	396 PLF	0 PLF	0 PLF	0 PLF	16F01
2	Uniform			Top	240 PLF	0 PLF	0 PLF	0 PLF	0 PLF	WALL & GE
	Self Weight				10 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 10/18/2021

Manufacturer Info

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ICC-ES: ESR-3633

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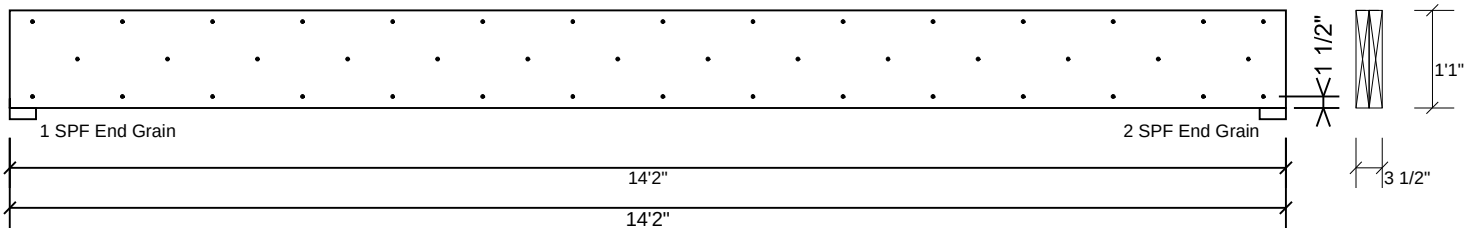
910-864-TRUS

Version 18.80.219 Powered by iStruct™

FB-2 Kerto-S LVL 1.750" X 13.000" 2-Ply - PASSED

Level: Level



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

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 10/18/2021

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910-864-TRUS

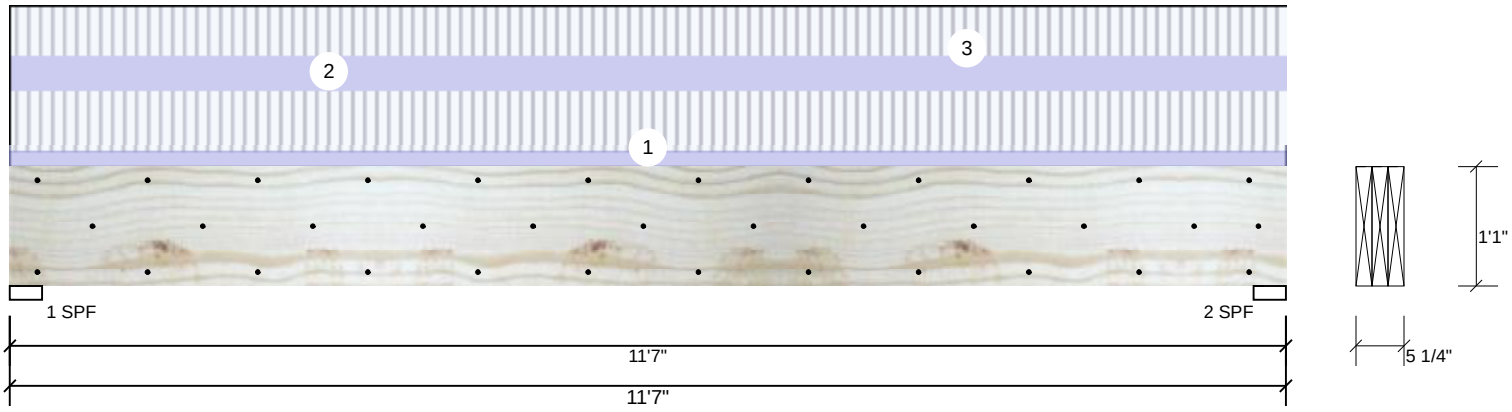
isDesign™

Client: SEGC
Project: LEWIS RESIDENCE
Address:

Date: 12/4/2018
Designer: Bob Lewis
Job Name: j1118-5039 BEAMS
Project #: J0118-5309

FB-3 Kerto-S LVL 1.750" X 13.000" 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	3284	1605	0	0	0
2	3284	1605	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	63%	1605 / 3284	4889	L	D+L
2 - SPF	3.500"	63%	1605 / 3284	4889	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	13060 ft-lb	5'9 1/2"	36723 ft-lb	0.356 (36%)	D+L	L
Unbraced	13060 ft-lb	5'9 1/2"	13912 ft-lb	0.939 (94%)	D+L	L
Shear	3781 lb	1'3 3/4"	14560 lb	0.260 (26%)	D+L	L
LL Defl inch	0.116 (L/1146)	5'9 1/2"	0.278 (L/480)	0.420 (42%)	L	L
TL Defl inch	0.173 (L/770)	5'9 1/2"	0.556 (L/240)	0.310 (31%)	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	79 PLF	315 PLF	0 PLF	0 PLF	0 PLF	FLOOR
2	Uniform			Top	120 PLF	0 PLF	0 PLF	0 PLF	0 PLF	WALL
3	Uniform			Top	63 PLF	252 PLF	0 PLF	0 PLF	0 PLF	2FLOOR
	Self Weight				15 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 10/18/2021

Manufacturer Info

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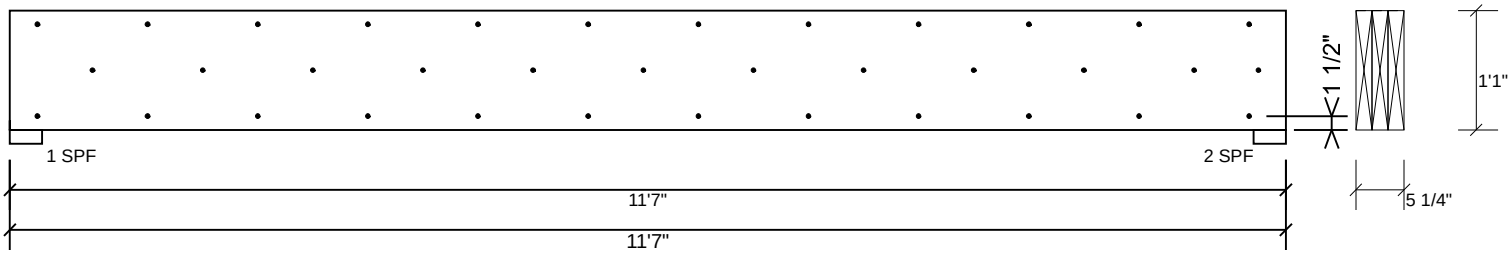
28314
910-864-TRUS

FB-3 Kerto-S LVL 1.750" X 13.000" 3-Ply - PASSED

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 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

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 10/18/2021

Manufacturer Info

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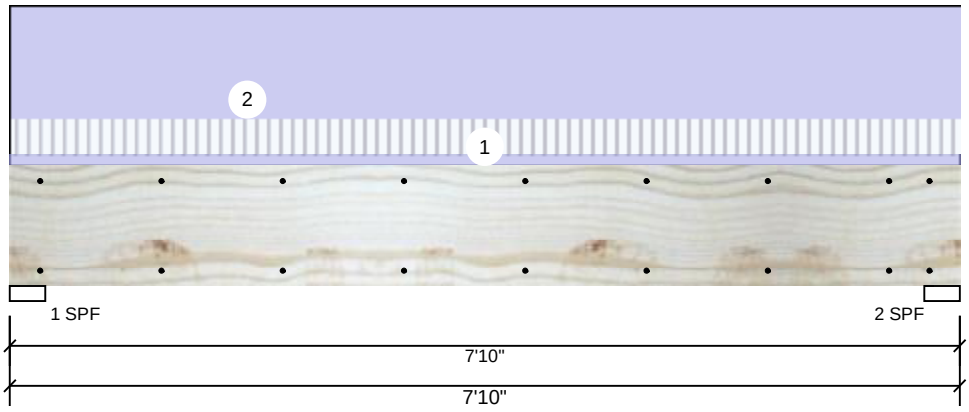
Comtech, Inc.
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

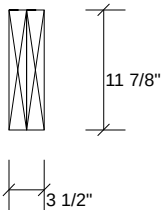
isDesign™

Client:	SEGC	Date:	12/4/2018
Project:	LEWIS RESIDENCE	Designer:	Bob Lewis
Address:		Job Name:	j1118-5039 BEAMS
		Project #:	J0118-5309

FB-5 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	157	545	0	0	0
2	157	545	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	13%	545 / 157	702	L	D+L
2 - SPF	3.500"	13%	545 / 157	702	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	1219 ft-lb	3'11"	19911 ft-lb	0.061 (6%)	D+L	L
Unbraced	1219 ft-lb	3'11"	11636 ft-lb	0.105 (10%)	D+L	L
Shear	484 lb	6'7 3/8"	8867 lb	0.055 (5%)	D+L	L
LL Defl inch	0.003 (L/25435)	3'11 1/16"	0.184 (L/480)	0.020 (2%)	L	L
TL Defl inch	0.016 (L/5676)	3'11 1/16"	0.369 (L/240)	0.040 (4%)	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		1-0-0	Top	10 PSF	40 PSF	0 PSF	0 PSF	0 PSF	
2	Uniform			Top	120 PLF	0 PLF	0 PLF	0 PLF	0 PLF	
	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
6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 10/18/2021

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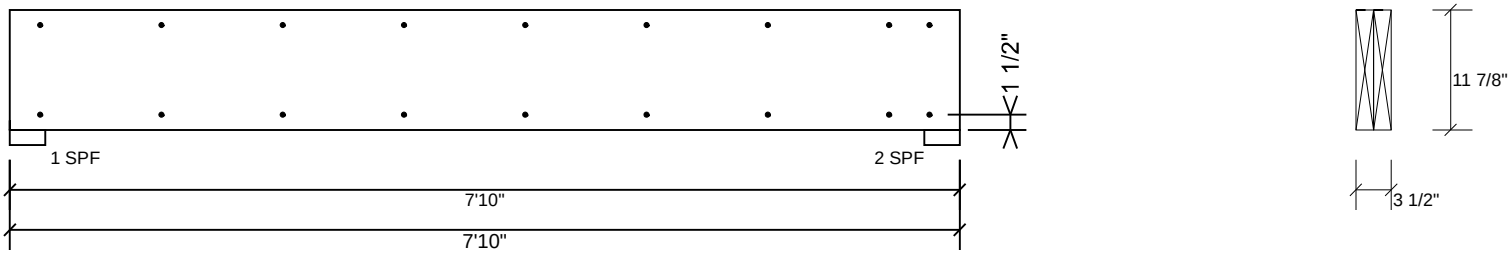
910-864-TRUS

FB-5 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.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

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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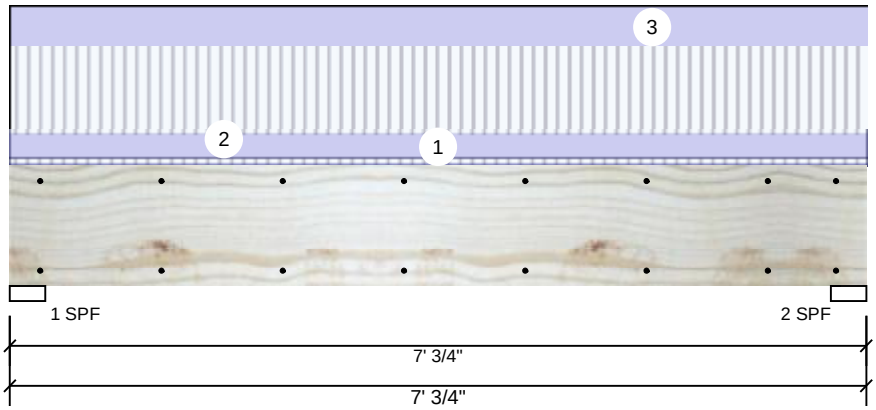
910-864-TRUS

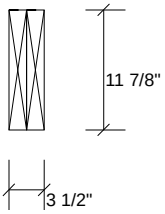
isDesign™

Client:	SEGC	Date:	12/4/2018
Project:	LEWIS RESIDENCE	Designer:	Bob Lewis
Address:		Job Name:	j1118-5039 BEAMS
		Project #:	J0118-5309

FB-6 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	2204	1512	0	0	0
2	2204	1512	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	71%	1512 / 2204	3716	L	D+L
2 - SPF	3.500"	71%	1512 / 2204	3716	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	5737 ft-lb	3'6 3/8"	19911 ft-lb	0.288 (29%)	D+L	L
Unbraced	5737 ft-lb	3'6 3/8"	12628 ft-lb	0.454 (45%)	D+L	L
Shear	2433 lb	5'10 1/8"	8867 lb	0.274 (27%)	D+L	L
LL Defl inch	0.037 (L/2155)	3'6 3/8"	0.165 (L/480)	0.220 (22%)	L	L
TL Defl inch	0.062 (L/1278)	3'6 3/8"	0.330 (L/240)	0.190 (19%)	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		1-0-0	Top	10 PSF	40 PSF	0 PSF	0 PSF	0 PSF	
2	Uniform			Top	146 PLF	584 PLF	0 PLF	0 PLF	0 PLF	18F02
3	Uniform			Top	263 PLF	0 PLF	0 PLF	0 PLF	0 PLF	18F08
	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
6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 10/18/2021

Manufacturer Info

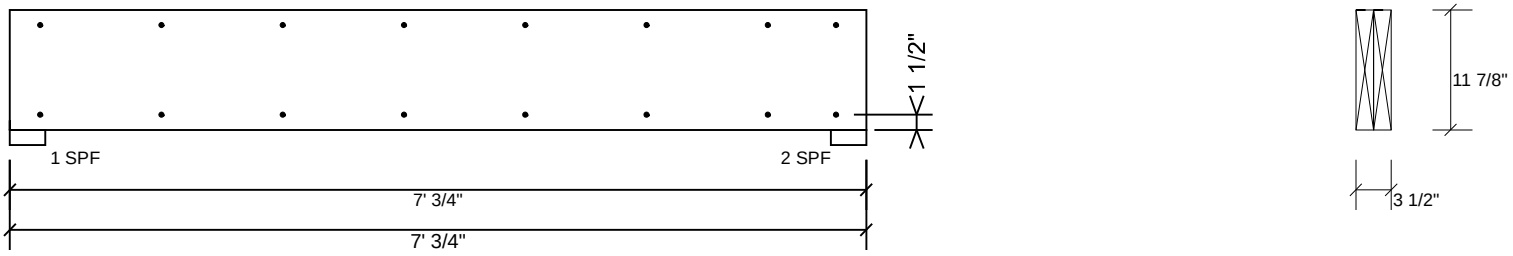
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

Version 18.80.219 Powered by iStruct™

FB-6 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.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

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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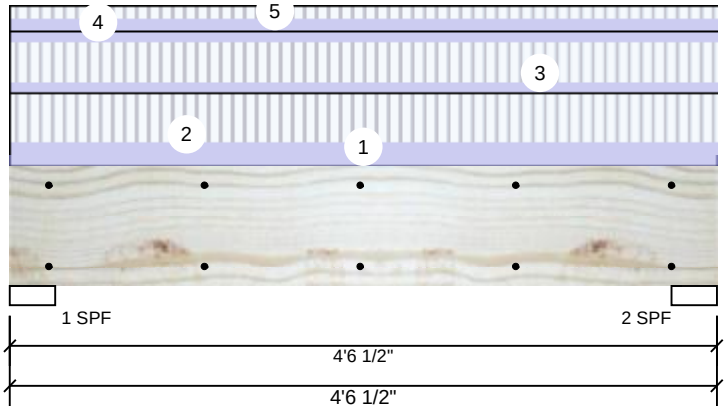
910-864-TRUS

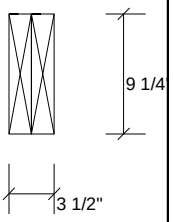
isDesign™

Client:	SEGC	Date:	12/4/2018
Project:	LEWIS RESIDENCE	Designer:	Bob Lewis
Address:		Job Name:	j1118-5039 BEAMS
		Project #:	J0118-5309

FB-7 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	2228	1304	0	0	0
2	2228	1304	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	68%	1304 / 2228	3532	L	D+L
2 - SPF	3.500"	68%	1304 / 2228	3532	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	3241 ft-lb	2'3 1/4"	12542 ft-lb	0.258 (26%)	D+L	L
Unbraced	3241 ft-lb	2'3 1/4"	11428 ft-lb	0.284 (28%)	D+L	L
Shear	1976 lb	1'	6907 lb	0.286 (29%)	D+L	L
LL Defl inch	0.021 (L/2383)	2'3 5/16"	0.102 (L/480)	0.200 (20%)	L	L
TL Defl inch	0.033 (L/1503)	2'3 5/16"	0.204 (L/240)	0.160 (16%)	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	120 PLF	0 PLF	0 PLF	0 PLF	0 PLF	WALL
2	Uniform			Top	119 PLF	475 PLF	0 PLF	0 PLF	0 PLF	1FLOOR
3	Uniform			Top	102 PLF	388 PLF	0 PLF	0 PLF	0 PLF	2FLOOR
4	Uniform			Top	108 PLF	0 PLF	0 PLF	0 PLF	0 PLF	WALL
5	Uniform			Top	118 PLF	118 PLF	0 PLF	0 PLF	0 PLF	ROOF
	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

This design is valid until 10/18/2021

Manufacturer Info

Metsä Wood
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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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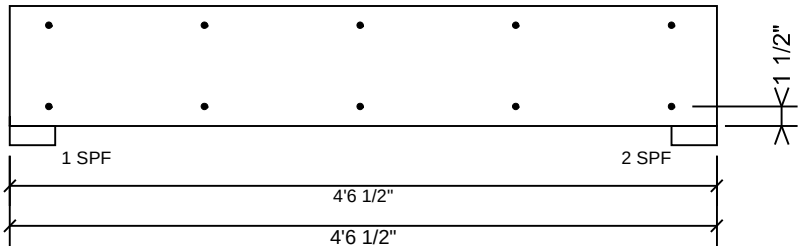
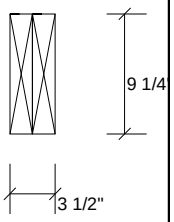
28314
910-864-TRUS

FB-7 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

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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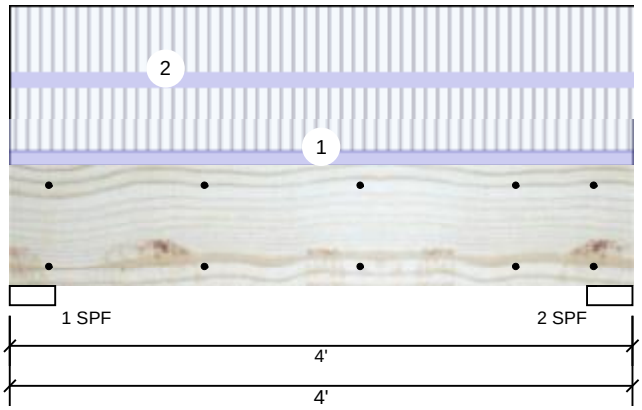
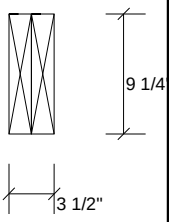
FB-8 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	2048	492	0	0	0
2	2048	492	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	49%	492 / 2048	2540	L	D+L
2 - SPF	3.500"	49%	492 / 2048	2540	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	1992 ft-lb	2'	12542 ft-lb	0.159 (16%)	D+L	L
Unbraced	1992 ft-lb	2'	11708 ft-lb	0.170 (17%)	D+L	L
Shear	1270 lb	1'	6907 lb	0.184 (18%)	D+L	L
LL Defl inch	0.014 (L/3133)	2' 1/16"	0.089 (L/480)	0.150 (15%)	L	L
TL Defl inch	0.017 (L/2526)	2' 1/16"	0.177 (L/240)	0.100 (10%)	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	118 PLF	499 PLF	0 PLF	0 PLF	0 PLF	18F08
2	Uniform			Top	121 PLF	525 PLF	0 PLF	0 PLF	0 PLF	18F12
	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 10/18/2021

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(800) 622-5850
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ICC-ES: ESR-3633

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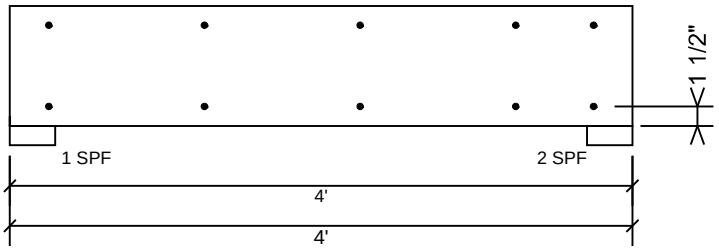
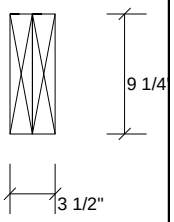
28314
910-864-TRUS

FB-8 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

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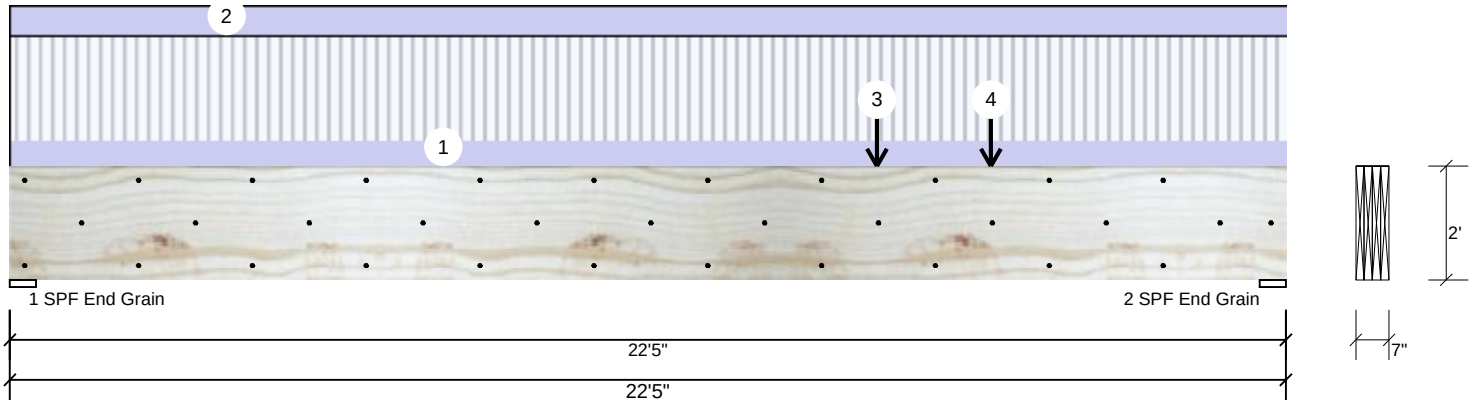
Comtech, Inc.
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

2MDB-1 Kerto-S LVL 1.750" X 24.000" 4-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	4	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	Yes
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	8393	6760	0	0	0
2	14605	12972	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	5.500"	45%	6760 / 8393	15153	L	D+L
2 - SPF End Grain	5.500"	82%	12972 / 14605	27577	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	151674 ft-lb	15'2 13/16"	152226 ft-lb	0.996 (100%)	D+L	L
Unbraced	151674 ft-lb	15'2 13/16"	151701 ft-lb	1.000 (100%)	D+L	L
Shear	26069 lb	20' 3/8"	35840 lb	0.727 (73%)	D+L	L
LL Defl inch	0.412 (L/630)	12'3 5/8"	0.541 (L/480)	0.760 (76%)	L	L
TL Defl inch	0.774 (L/335)	12'4 9/16"	1.082 (L/240)	0.720 (72%)	D+L	L

Design Notes

1 Fasten all plies using 3 rows of 1/2" Hex Bolts at 24" o.c. Maximum end distance not to exceed 12".
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 1 7/8" 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	98 PLF	389 PLF	0 PLF	0 PLF	0 PLF	floor
2	Uniform			Top	108 PLF	0 PLF	0 PLF	0 PLF	0 PLF	wall
3	Point	15-2-13		Top	9404 lb	9404 lb	0 lb	0 lb	0 lb	agr02
4	Point	17-2-13		Top	4874 lb	4874 lb	0 lb	0 lb	0 lb	agr01
	Self Weight				37 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

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910-864-TRUS

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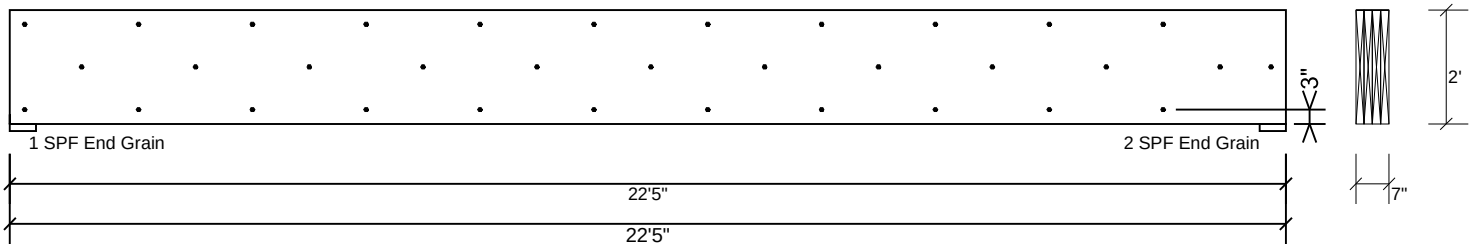
Client:	SEGC	Date:	12/4/2018
Project:	LEWIS RESIDENCE	Designer:	Bob Lewis
Address:		Job Name:	j1118-5039 BEAMS
		Project #:	J0118-5309

2MDB-1 Kerto-S LVL 1.750" X 24.000" 4-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 3 rows of 1/2" Hex Bolts at 24" o.c.. Maximum end distance not to exceed 12"

Capacity	0.0 %
Load	0.0 PLF
Yield Limit per Foot	326.2 PLF
Yield Limit per Fastener	217.5 lb.
Yield Mode	II
Edge Distance	3"
Min. End Distance	3 1/8"
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
3. Damaged Beams must not be used
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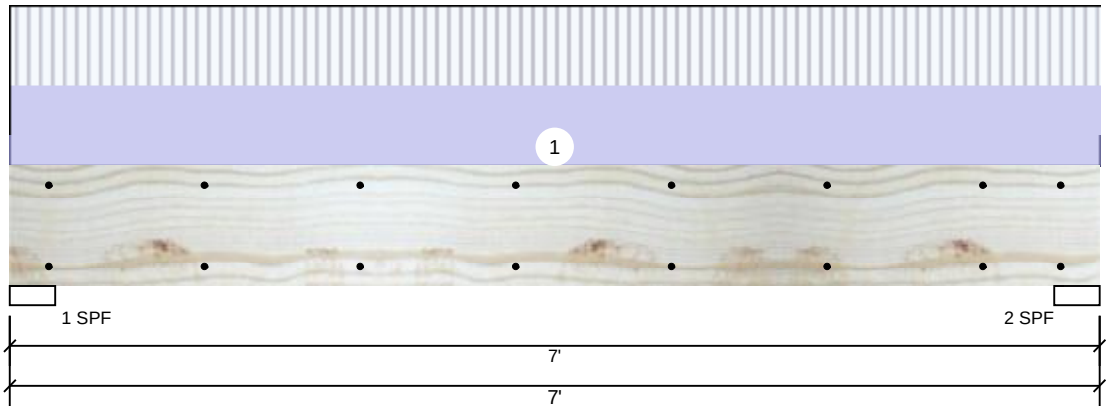
910-864-TRUS

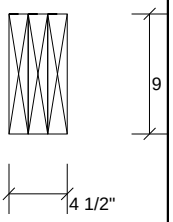
isDesign™

Client:	SEGC	Date:	12/4/2018
Project:	LEWIS RESIDENCE	Designer:	Bob Lewis
Address:		Job Name:	j1118-5039 BEAMS
		Project #:	J0118-5309

(3) 2X10 SP #2 2.000" X 10.000" 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	1075	1075	0	0	0
2	1075	1075	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	32%	1075 / 1075	2149	L	D+L
2 - SPF	3.500"	32%	1075 / 1075	2149	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	3284 ft-lb	3'6"	4920 ft-lb	0.668 (67%)	D+L	L
Unbraced	3284 ft-lb	3'6"	4527 ft-lb	0.726 (73%)	D+L	L
Shear	1535 lb	1'	4856 lb	0.316 (32%)	D+L	L
LL Defl inch	0.030 (L/2579)	3'6"	0.164 (L/480)	0.190 (19%)	L	L
TL Defl inch	0.061 (L/1289)	3'6"	0.327 (L/240)	0.190 (19%)	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	307 PLF	307 PLF	0 PLF	0 PLF	0 PLF	WORSE CASE SCENERIO

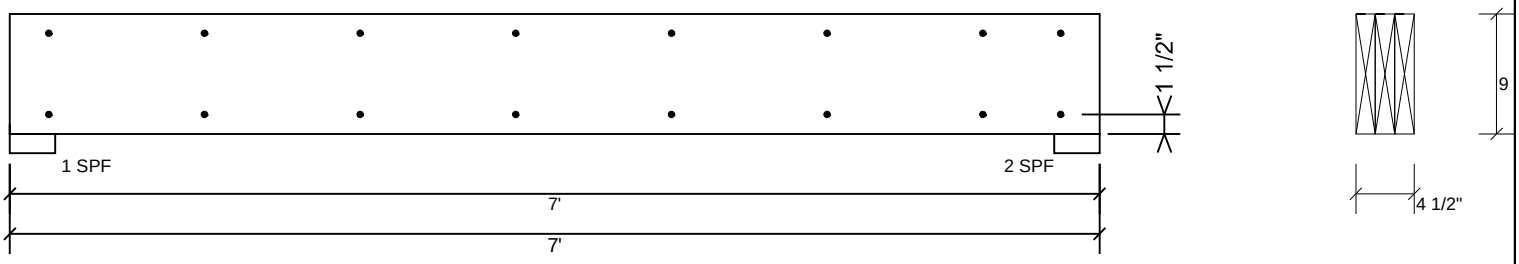
This design is valid until 10/18/2021

Manufacturer Info

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

(3) 2X10 SP #2 2.000" X 10.000" 3-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Nail from both sides. Maximum end distance not to exceed 6"

Capacity	0.0 %
Load	0.0 PLF
Yield Limit per Foot	202.6 PLF
Yield Limit per Fastener	101.3 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

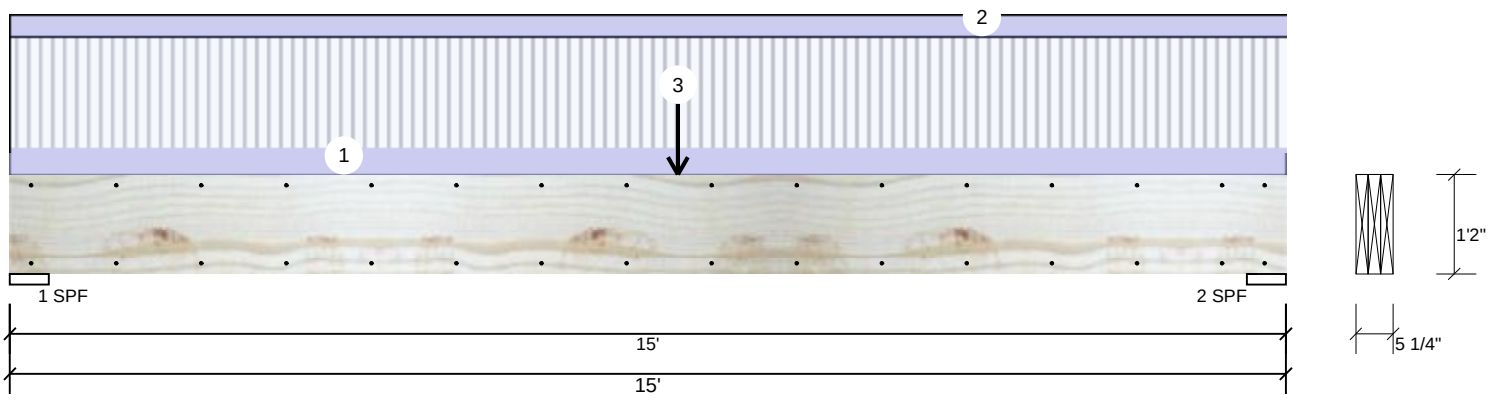
Manufacturer Info

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

This design is valid until 10/18/2021

2DB-1 Kerto-S LVL 1.750" X 14.000" 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	4110	2299	0	0	0
2	4110	2335	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	5.500"	52%	2299 / 4110	6409	L	D+L
2 - SPF	5.500"	53%	2335 / 4110	6445	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	22902 ft-lb	7'10 1/4"	42119 ft-lb	0.544 (54%)	D+L	L
Unbraced	22902 ft-lb	7'10 1/4"	22934 ft-lb	0.999 (100%)	D+L	L
Shear	5180 lb	13'5 1/4"	15680 lb	0.330 (33%)	D+L	L
LL Defl inch	0.231 (L/738)	7'6 1/16"	0.355 (L/480)	0.650 (65%)	L	L
TL Defl inch	0.375 (L/454)	7'6 1/2"	0.710 (L/240)	0.530 (53%)	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 must be laterally braced at a maximum of 6'7 1/8" 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	137 PLF	548 PLF	0 PLF	0 PLF	0 PLF	2FLOOR
2	Uniform			Top	108 PLF	0 PLF	0 PLF	0 PLF	0 PLF	2WALL
3	Point	7-10-4		Top	714 lb	0 lb	0 lb	0 lb	0 lb	2F16
	Self Weight				16 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 10/18/2021

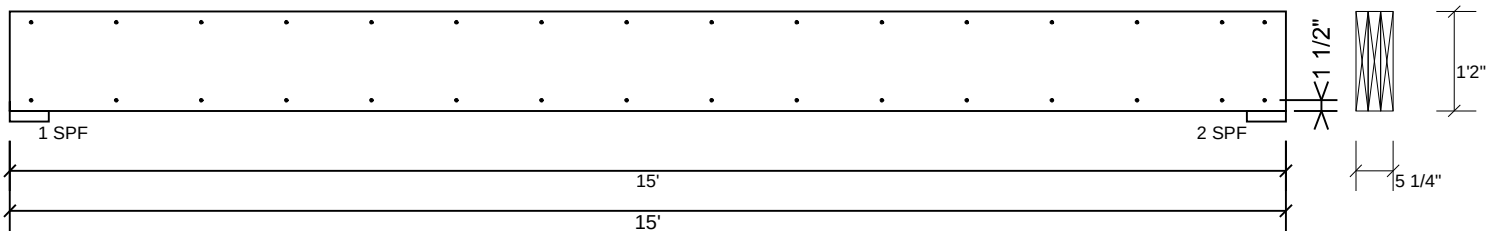
Manufacturer Info

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
USA
28314
910-864-TRUS

2DB-1 Kerto-S LVL 1.750" X 14.000" 3-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Nail from both sides. 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

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 10/18/2021

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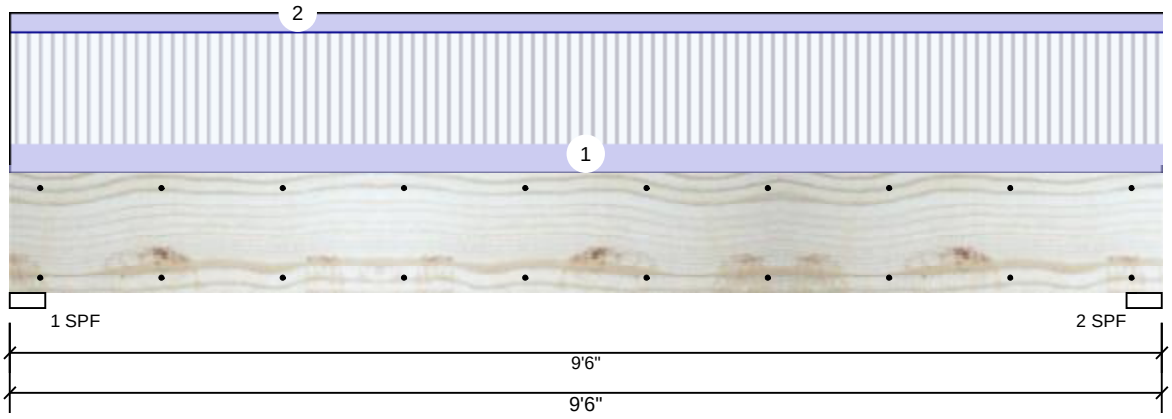
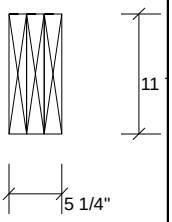
910-864-TRUS

2DB-2 Kerto-S LVL 1.750" X 11.875" 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	3050	1339	0	0	0
2	3050	1339	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	56%	1339 / 3050	4388	L	D+L
2 - SPF	3.500"	56%	1339 / 3050	4388	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	9441 ft-lb	4'9"	31060 ft-lb	0.304 (30%)	D+L	L
Unbraced	9441 ft-lb	4'9"	15100 ft-lb	0.625 (63%)	D+L	L
Shear	3262 lb	1'2 5/8"	13300 lb	0.245 (25%)	D+L	L
LL Defl inch	0.078 (L/1391)	4'9"	0.226 (L/480)	0.350 (35%)	L	L
TL Defl inch	0.112 (L/967)	4'9"	0.452 (L/240)	0.250 (25%)	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	160 PLF	642 PLF	0 PLF	0 PLF	0 PLF	2F
2	Uniform			Top	108 PLF	0 PLF	0 PLF	0 PLF	0 PLF	2WALL
	Self Weight				14 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 10/18/2021

Manufacturer Info

Metsä Wood
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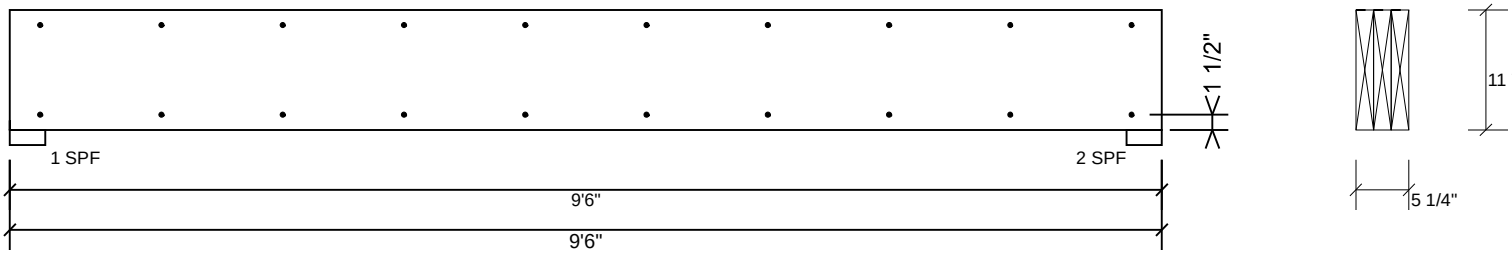
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

2DB-2 Kerto-S LVL 1.750" X 11.875" 3-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Nail from both sides. 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

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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ICC-ES: ESR-3633

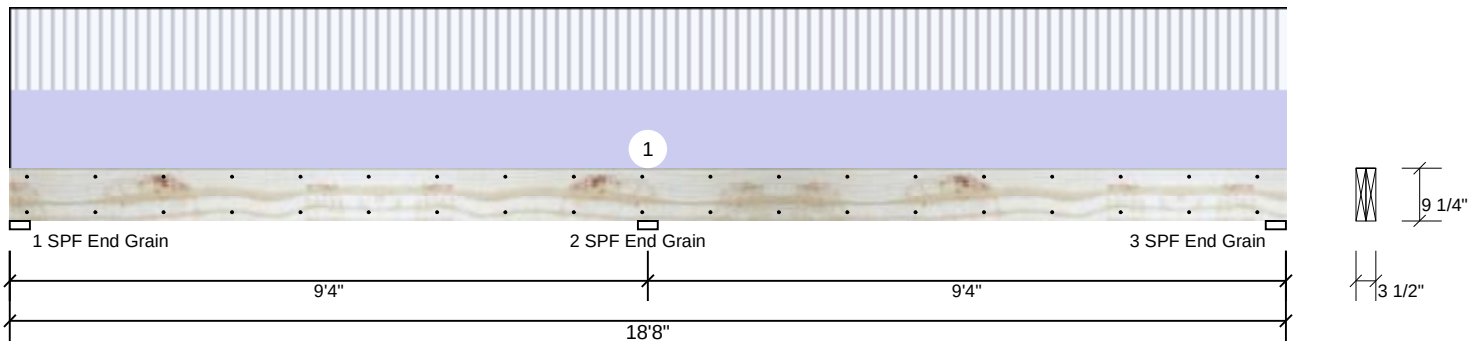
Comtech, Inc.
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

isDesign™

Client:	SEGC	Date:	12/4/2018
Project:	LEWIS RESIDENCE	Designer:	Bob Lewis
Address:		Job Name:	j1118-5039 BEAMS
		Project #:	J0118-5309

2DB-3 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	1373	1400	0	0	0
2	4217	4298	0	0	0
3	1373	1400	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	28%	1385 / 1571	2956	L_	D+L
2 - SPF End Grain	3.500"	80%	4327 / 4245	8572	LL	D+L
3 - SPF End Grain	3.500"	28%	1385 / 1571	2956	_L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-7804 ft-lb	9'4"	12542 ft-lb	0.622 (62%)	D+L	LL
Unbraced	-7804 ft-lb	9'4"	12150 ft-lb	0.642 (64%)	D+L	LL
Pos Moment	5144 ft-lb	3'11 1/8"	12542 ft-lb	0.410 (41%)	D+L	L_
Unbraced	5144 ft-lb	3'11 1/8"	8989 ft-lb	0.572 (57%)	D+L	L_
Shear	3705 lb	8'6 3/4"	6907 lb	0.536 (54%)	D+L	LL
LL Defl inch	0.103 (L/1064)	4'6 13/16"	0.228 (L/480)	0.450 (45%)	L	L_
TL Defl inch	0.171 (L/637)	4'4 15/16"	0.455 (L/240)	0.380 (38%)	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	373 PLF	373 PLF	0 PLF	0 PLF	0 PLF	roof
	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

This design is valid until 10/18/2021

Manufacturer Info

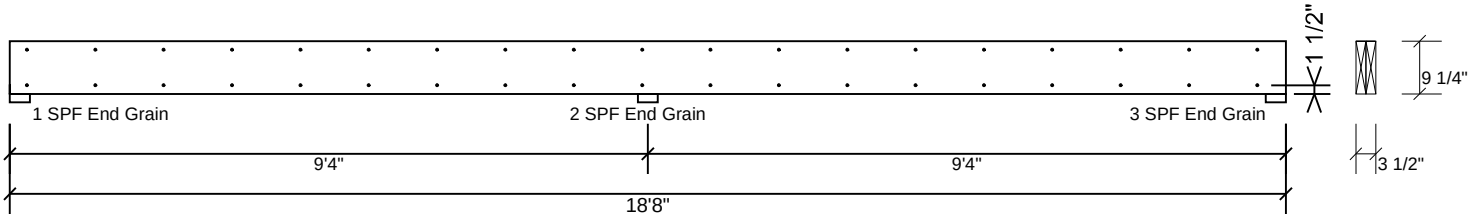
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

Version 18.80.219 Powered by iStruct™

2DB-3 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

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 10/18/2021

Manufacturer Info

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1001 S. Reilly Road, Suite #639
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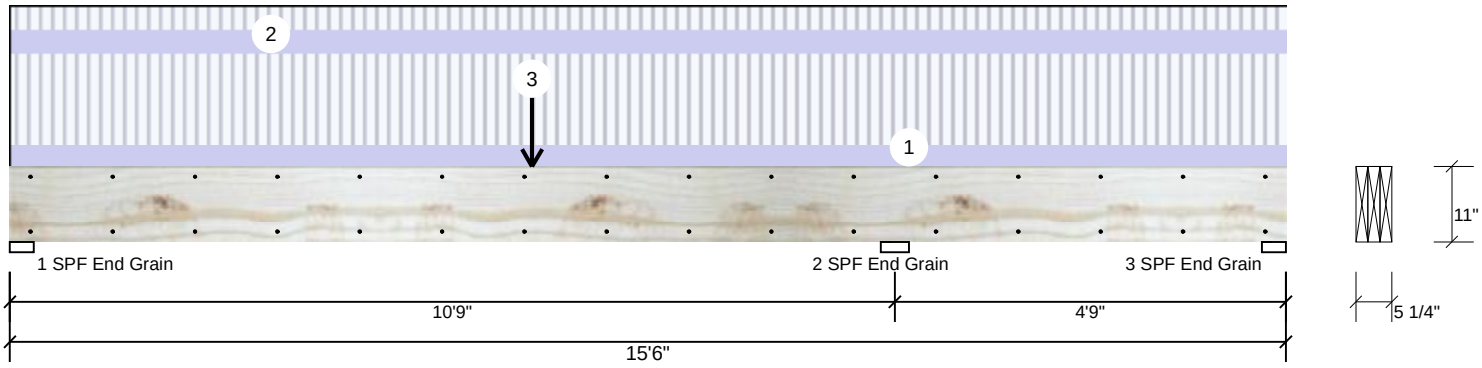
28314
910-864-TRUS

2FB-1 Kerto-S LVL 1.750" X 11.000" 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	4799	2372	0	0	0
2	11084	5875	0	0	0
3	377	(-209)	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	45%	2324 / 4794	7118	L_	D+L
2 - SPF End Grain	4.125"	92%	6032 / 11355	17387	LL	D+L
3 - SPF End Grain	3.500"	13%	-319 / 2433	2115 (-2324)	_L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-17314 ft-lb	10'9"	26959 ft-lb	0.642 (64%)	D+L	LL
Unbraced	-17314 ft-lb	10'9"	22382 ft-lb	0.774 (77%)	D+L	LL
Pos Moment	15458 ft-lb	4'9 1/2"	26959 ft-lb	0.573 (57%)	D+L	L_
Unbraced	15458 ft-lb	4'9 1/2"	15489 ft-lb	0.998 (100%)	D+L	L_
Shear	8836 lb	9'10"	12320 lb	0.717 (72%)	D+L	LL
LL Defl inch	0.182 (L/693)	5'1 9/16"	0.263 (L/480)	0.690 (69%)	L	L_
TL Defl inch	0.287 (L/440)	5'2 3/8"	0.526 (L/240)	0.550 (55%)	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 Tie-down connection required at bearing 3 for uplift 2324 lb (Combination D+L, Load Case L_).
6 Top must be laterally braced at a maximum of 7'11 1/4" o.c.
7 Bottom braced at bearings.
8 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 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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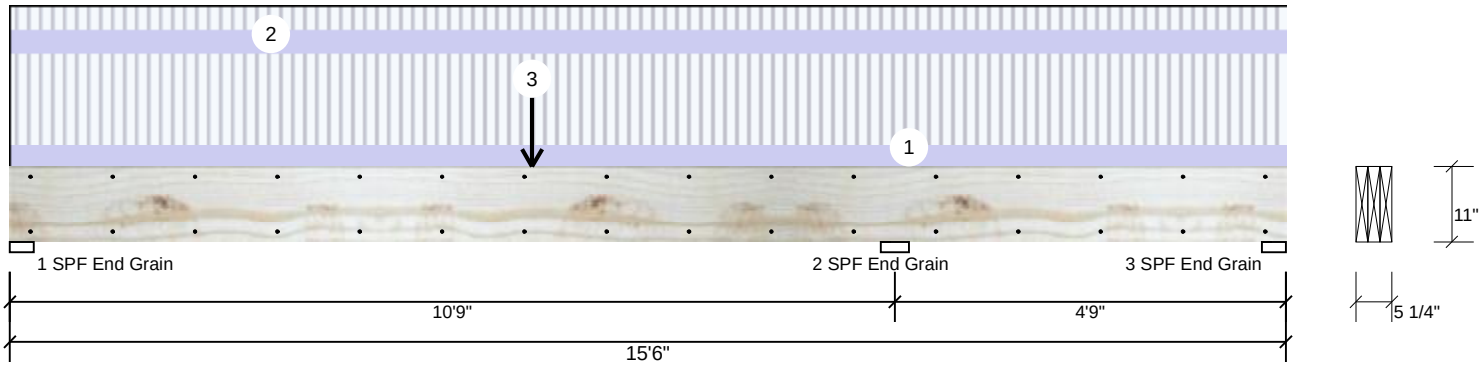
2FB-1 Kerto-S LVL 1.750" X 11.000" 3-Ply - PASSED

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	Uniform			Top	209 PLF	834 PLF	0 PLF	0 PLF	0 PLF	2FLOOR
2	Uniform			Top	215 PLF	215 PLF	0 PLF	0 PLF	0 PLF	ROOF
3	Point	6-4-2		Top	1267 lb	0 lb	0 lb	0 lb	0 lb	2F16
	Self Weight				13 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
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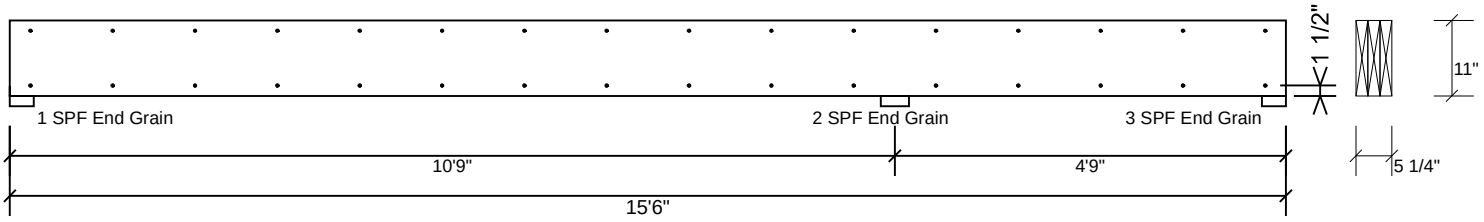
28314
910-864-TRUS

2FB-1 Kerto-S LVL 1.750" X 11.000" 3-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Nail from both sides. 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

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 10/18/2021

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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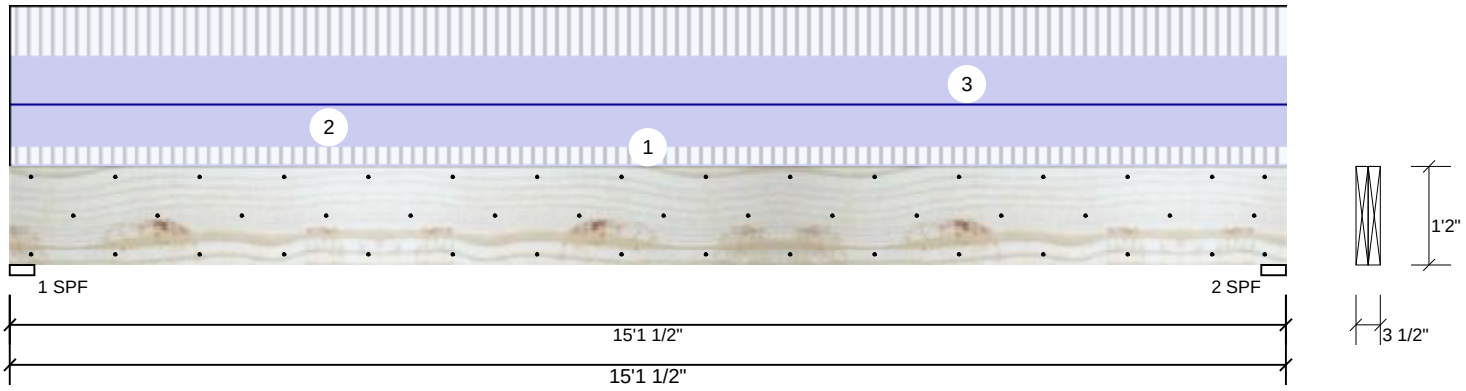
28314
910-864-TRUS

isDesign™

Client:	SEGC	Date:	12/4/2018
Project:	LEWIS RESIDENCE	Designer:	Bob Lewis
Address:		Job Name:	j1118-5039 BEAMS
		Project #:	J0118-5309

2FB-3 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	1218	1890	0	0	0
2	1218	1890	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	60%	1890 / 1218	3107	L	D+L
2 - SPF	3.500"	60%	1890 / 1218	3107	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	11048 ft-lb	7'6 3/4"	26999 ft-lb	0.409 (41%)	D+L	L
Unbraced	11048 ft-lb	7'6 3/4"	11056 ft-lb	0.999 (100%)	D+L	L
Shear	2534 lb	1'4 3/4"	10453 lb	0.242 (24%)	D+L	L
LL Defl inch	0.115 (L/1532)	7'6 13/16"	0.367 (L/480)	0.310 (31%)	L	L
TL Defl inch	0.293 (L/600)	7'6 13/16"	0.733 (L/240)	0.400 (40%)	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 must be laterally braced at a maximum of 9'7 7/8" 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		1-0-0	Top	10 PSF	40 PSF	0 PSF	0 PSF	0 PSF	
2	Uniform			Top	108 PLF	0 PLF	0 PLF	0 PLF	0 PLF	WALL
3	Uniform			Top	121 PLF	121 PLF	0 PLF	0 PLF	0 PLF	ROOF
	Self Weight				11 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 10/18/2021

Manufacturer Info

Metsä Wood
301 Merritt 7 Building, 2nd Floor
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www.metsawood.com/us
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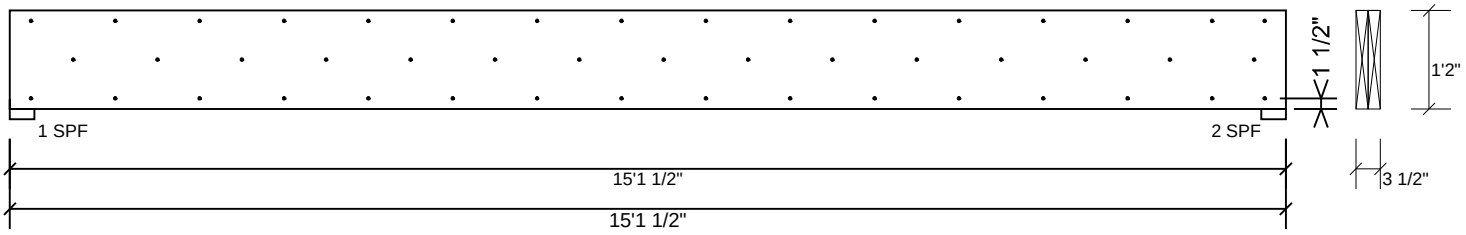
910-864-TRUS

Version 18.80.219 Powered by iStruct™

2FB-3 Kerto-S LVL 1.750" X 14.000" 2-Ply - PASSED

Level: Level



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

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 10/18/2021

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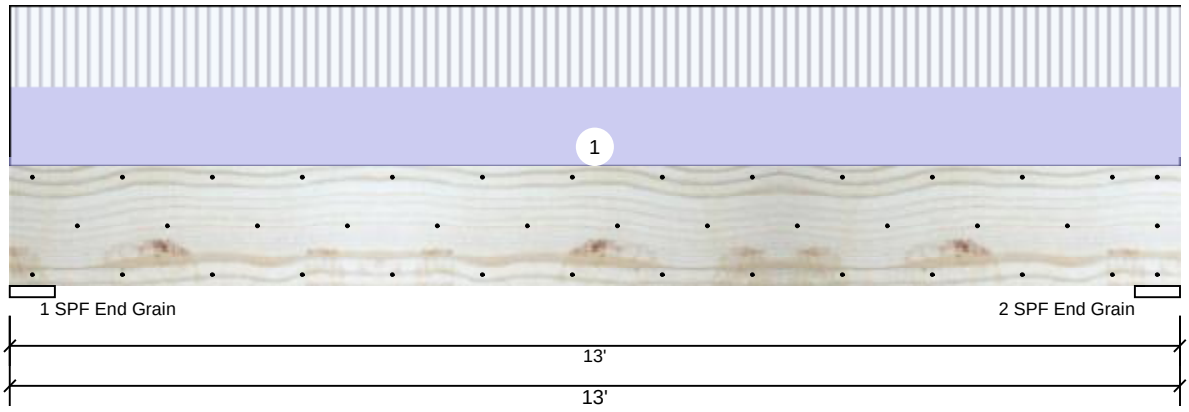
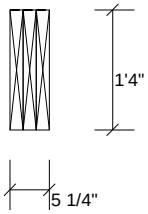
910-864-TRUS

2H-1 Kerto-S LVL 1.750" X 16.000" 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:	360	Load Sharing:	Yes
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	2587	2708	0	0	0
2	2587	2708	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	6.000"	19%	2708 / 2587	5295	L	D+L
2 - SPF End Grain	6.000"	19%	2708 / 2587	5295	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	15023 ft-lb	6'6"	53922 ft-lb	0.279 (28%)	D+L	L
Unbraced	15023 ft-lb	6'6"	15540 ft-lb	0.967 (97%)	D+L	L
Shear	3861 lb	1'9 1/8"	17920 lb	0.215 (22%)	D+L	L
LL Defl inch	0.064 (L/2262)	6'6"	0.405 (L/360)	0.160 (16%)	L	L
TL Defl inch	0.132 (L/1105)	6'6"	0.607 (L/240)	0.220 (22%)	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	398 PLF	398 PLF	0 PLF	0 PLF	0 PLF	ROOF
	Self Weight				19 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 10/18/2021

Manufacturer Info

Metsä Wood
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ICC-ES: ESR-3633

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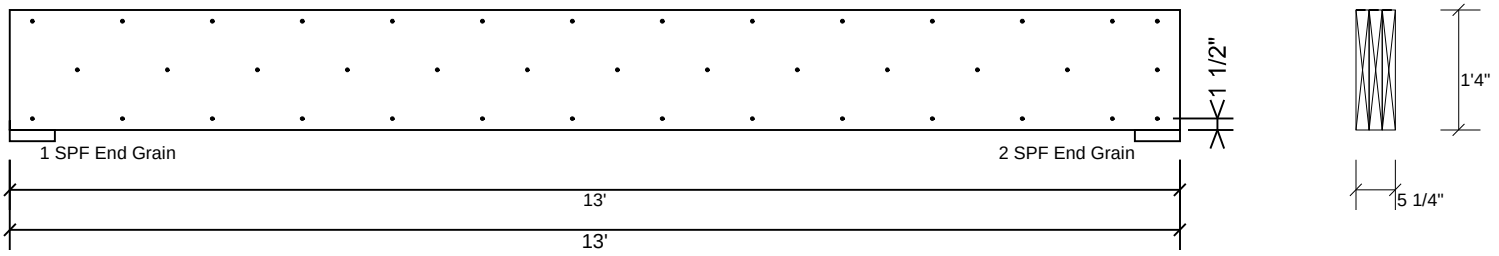
28314
910-864-TRUS

2H-1 Kerto-S LVL 1.750" X 16.000" 3-Ply - PASSED

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 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

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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Manufacturer Info

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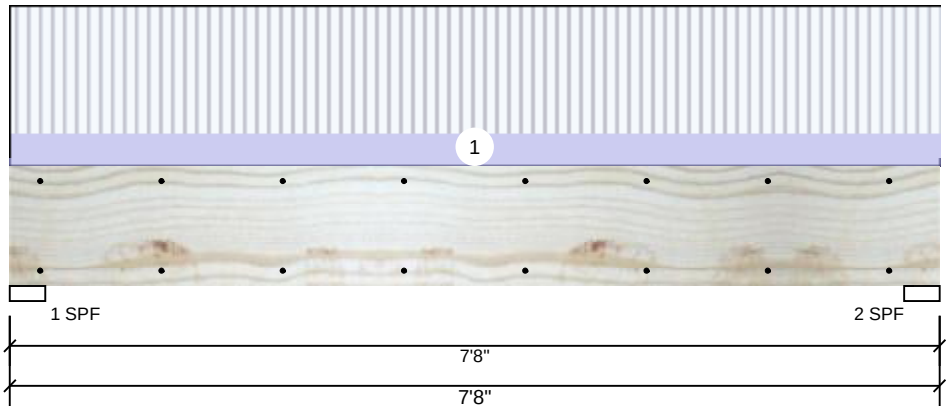
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

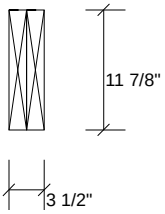
isDesign™

Client:	SEGC	Date:	12/4/2018
Project:	LEWIS RESIDENCE	Designer:	Bob Lewis
Address:		Job Name:	j1118-5039 BEAMS
		Project #:	J0118-5309

2H-2 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	1602	438	0	0	0
2	1602	438	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	39%	438 / 1602	2040	L	D+L
2 - SPF	3.500"	39%	438 / 1602	2040	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	3457 ft-lb	3'10"	19911 ft-lb	0.174 (17%)	D+L	L
Unbraced	3457 ft-lb	3'10"	11820 ft-lb	0.292 (29%)	D+L	L
Shear	1392 lb	1'2 5/8"	8867 lb	0.157 (16%)	D+L	L
LL Defl inch	0.034 (L/2581)	3'10 1/16"	0.180 (L/480)	0.190 (19%)	L	L
TL Defl inch	0.043 (L/2027)	3'10 1/16"	0.360 (L/240)	0.120 (12%)	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	105 PLF	418 PLF	0 PLF	0 PLF	0 PLF	
	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
6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 10/18/2021

Manufacturer Info

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ICC-ES: ESR-3633

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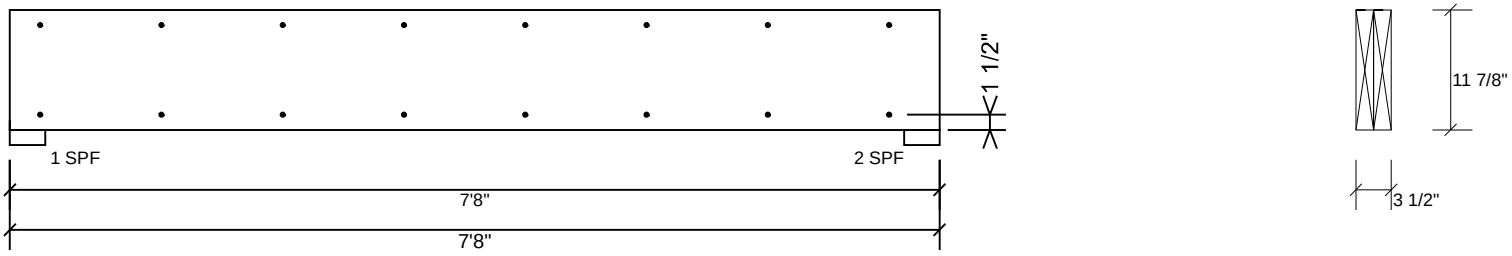
910-864-TRUS

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

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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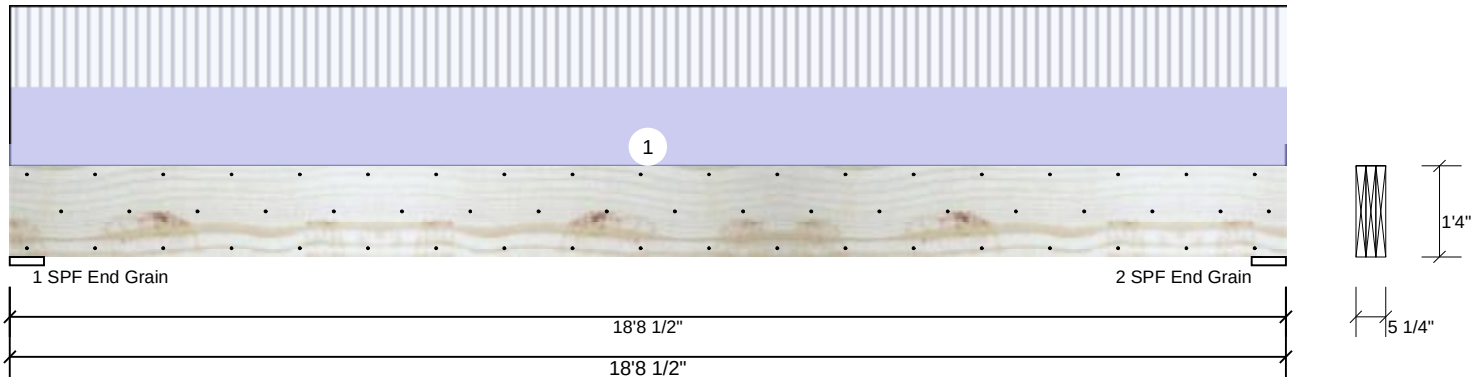
GDH1 Kerto-S LVL 1.750" X 16.000" 3-Ply - PASSED

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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	3985	4159	0	0	0
2	3985	4159	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	6.000"	30%	4159 / 3985	8144	L	D+L
2 - SPF End Grain	6.000"	30%	4159 / 3985	8144	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	34693 ft-lb	9'4 1/4"	53922 ft-lb	0.643 (64%)	D+L	L
Unbraced	34693 ft-lb	9'4 1/4"	34868 ft-lb	0.995 (99%)	D+L	L
Shear	6612 lb	1'9 1/8"	17920 lb	0.369 (37%)	D+L	L
LL Defl inch	0.295 (L/726)	9'4 5/16"	0.446 (L/480)	0.660 (66%)	L	L
TL Defl inch	0.603 (L/355)	9'4 5/16"	0.893 (L/240)	0.680 (68%)	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 must be laterally braced at a maximum of 4'9 3/4" 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	426 PLF	426 PLF	0 PLF	0 PLF	0 PLF	A01-A03
	Self Weight				19 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
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3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
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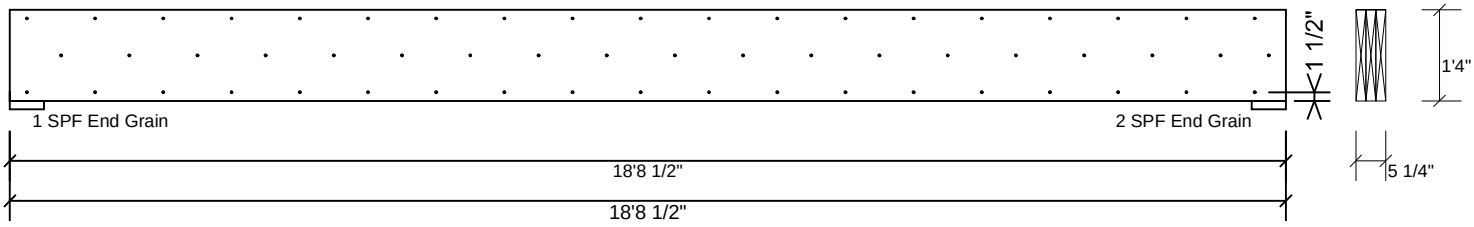
GDH1 Kerto-S LVL 1.750" X 16.000" 3-Ply - PASSED

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 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

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

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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
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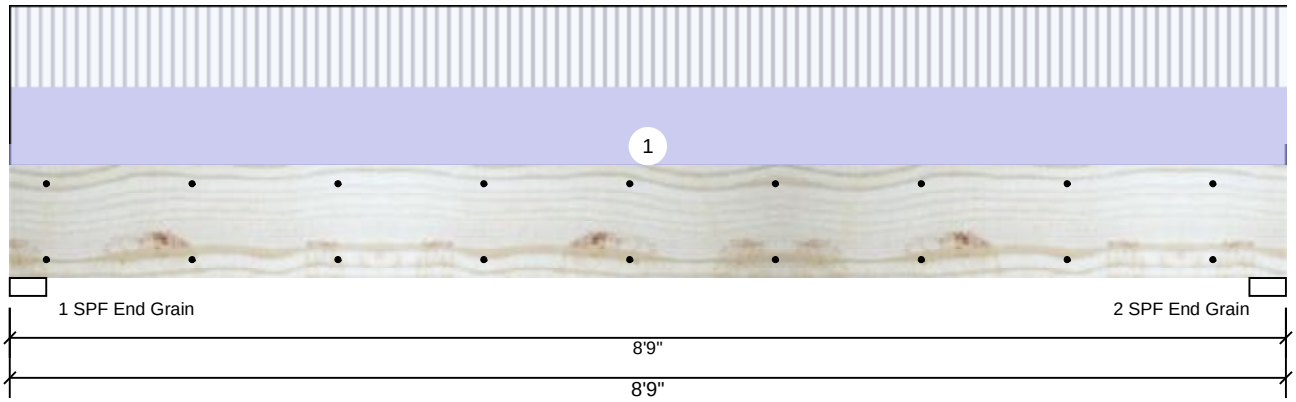
isDesign™

Client: SEGC
Project: LEWIS RESIDENCE
Address:

Date: 12/4/2018
Designer: Bob Lewis
Job Name: j1118-5039 BEAMS
Project #: J0118-5309

GDH2 Kerto-S LVL 1.750" X 9.250" 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:	240	Deck:	Not Checked
Importance:	Normal		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Live	Dead	Snow	Wind	Const
1	1387	1434	0	0	0
2	1387	1434	0	0	0

Bearings

Bearing	Length	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.000"	21%	1434 / 1387	2821	L	D+L
2 - SPF End Grain	3.000"	21%	1434 / 1387	2821	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	5653 ft-lb	4'4 1/2"	19565 ft-lb	0.289 (29%)	D+L	L
Unbraced	5653 ft-lb	4'4 1/2"	12544 ft-lb	0.451 (45%)	D+L	L
Shear	2203 lb	7'9 1/2"	10360 lb	0.213 (21%)	D+L	L
LL Defl inch	0.057 (L/1755)	4'4 9/16"	0.209 (L/480)	0.270 (27%)	L	L
TL Defl inch	0.116 (L/863)	4'4 9/16"	0.419 (L/240)	0.280 (28%)	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	317 PLF	317 PLF	0 PLF	0 PLF	0 PLF	ROOF
	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 10/18/2021

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
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Version 18.80.219 Powered by iStruct™

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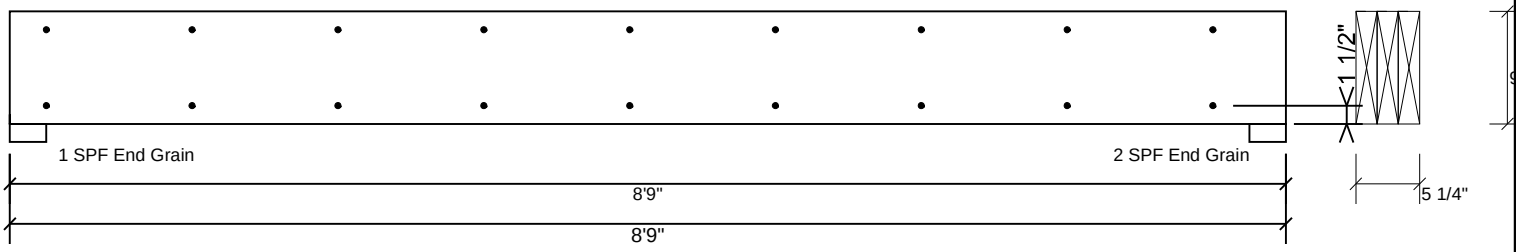

Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Nail from both sides. 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

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Handling & Installation

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