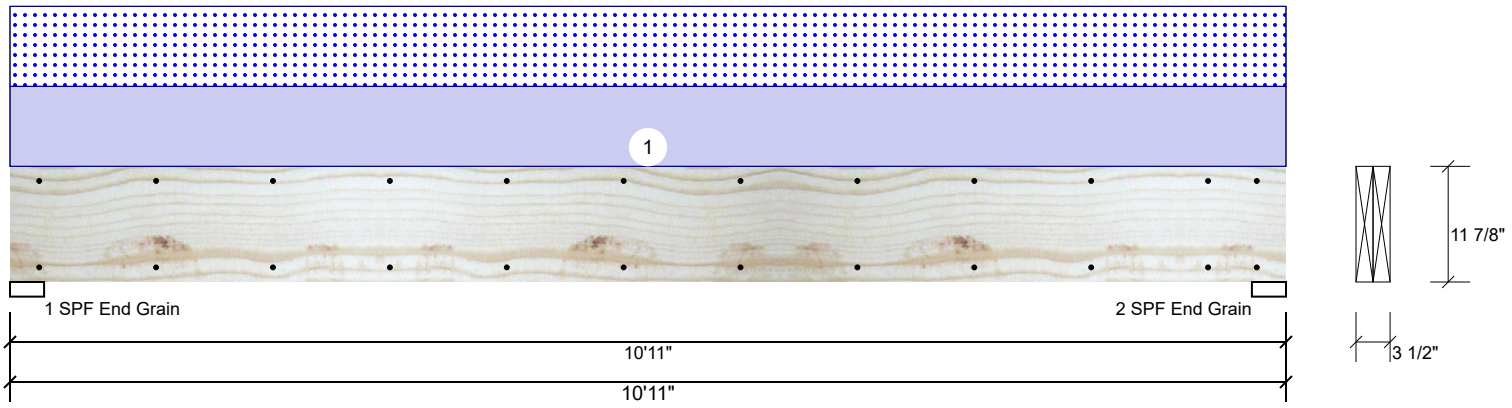
Client:	Watermark Homes	Date:	7/8/2021
Project:		Input by:	Anthony Williams
Address:	Lot 119 Ballard Woods, Lillington NC	Job Name:	Lot 119 Ballard Woods
		Project #:	J0721-4155

BM1 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	0	1808	1758	0	0
2	Vertical	0	1808	1758	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	Vert	33%	1808 / 1758	3566	L	D+S
2 - SPF End Grain	3.500"	Vert	33%	1808 / 1758	3566	L	D+S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	8931 ft-lb	5'5 1/2"	22897 ft-lb	0.390 (39%)	D+S	L
Unbraced	8931 ft-lb	5'5 1/2"	9033 ft-lb	0.989 (99%)	D+S	L
Shear	2738 lb	9'7 5/8"	10197 lb	0.268 (27%)	D+S	L
LL Defl inch	0.101 (L/1243)	5'5 1/2"	0.261 (L/480)	0.386 (39%)	S	L
TL Defl inch	0.205 (L/613)	5'5 1/2"	0.349 (L/360)	0.587 (59%)	D+S	L

Design Notes

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

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	322 PLF	0 PLF	322 PLF	0 PLF	0 PLF	A5
	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 3/30/2024

Manufacturer Info

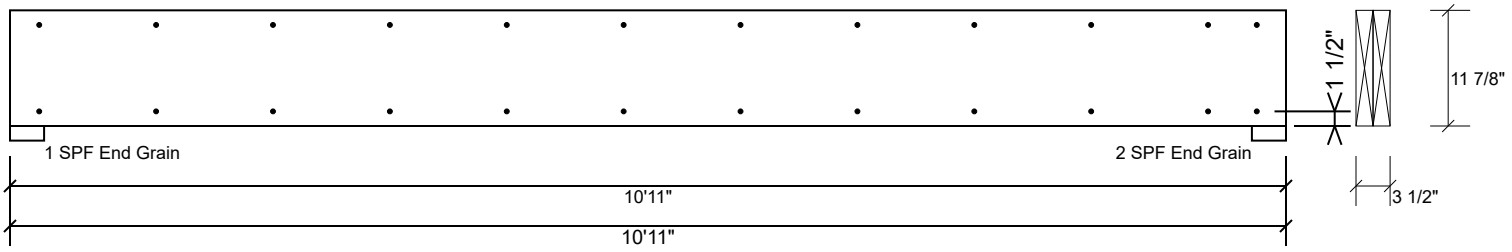
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

Client:	Watermark Homes	Date:	7/8/2021
Project:		Input by:	Anthony Williams
Address:	Lot 119 Ballard Woods, Lillington NC	Job Name:	Lot 119 Ballard Woods
		Project #:	J0721-4155

BM1 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

This design is valid until 3/30/2024

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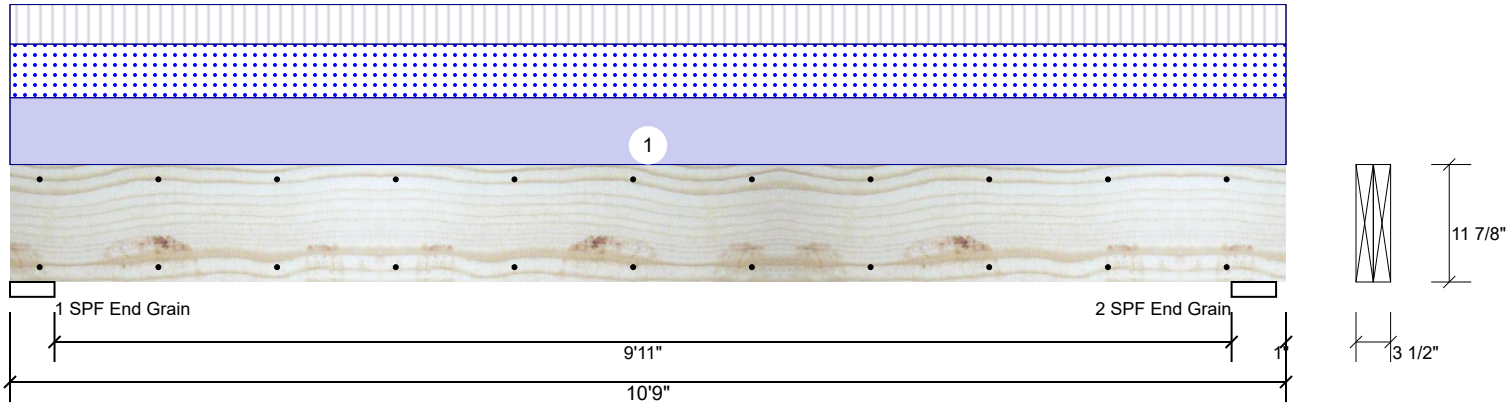
Client:	Watermark Homes	Date:	7/8/2021
Project:		Input by:	Anthony Williams
Address:	Lot 119 Ballard Woods, Lillington NC	Job Name:	Lot 119 Ballard Woods
		Project #:	J0721-4155

BM2 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	1036	1798	1403	0	0
2	Vertical	1028	1784	1392	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	4.500"	Vert	26%	1798 / 1829	3627	L_	D+0.75(L+S)
2 - SPF End Grain	4.500"	Vert	26%	1784 / 1815	3599	LL	D+0.75(L+S)

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-2 ft-lb	10'8"	22897 ft-lb	0.000 (0%)	D+0.75(L+S)	LL
Unbraced	-2 ft-lb	10'8"	9241 ft-lb	0.000 (0%)	D+0.75(L+S)	LL
Pos Moment	8685 ft-lb	5'4 3/4"	22897 ft-lb	0.379 (38%)	D+0.75(L+S)	L_
Unbraced	8685 ft-lb	5'4 3/4"	9241 ft-lb	0.940 (94%)	D+0.75(L+S)	L_
Shear	2719 lb	1'4 3/8"	10197 lb	0.267 (27%)	D+0.75(L+S)	L_
LL Defl inch	0.096 (L/1277)	5'4 3/4"	0.254 (L/480)	0.376 (38%)	0.75(L+S)	L_
TL Defl inch	0.189 (L/644)	5'4 3/4"	0.339 (L/360)	0.559 (56%)	D+0.75(L+S)	L_
LL Cant	-0.002 (2L/914)	Rt Cant	0.200 (2L/480)	0.011 (1%)	0.75(L+S)	L_
TL Cant	-0.004 (2L/461)	Rt Cant	0.300 (2L/360)	0.014 (1%)	D+0.75(L+S)	L_

Design Notes

1. Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2. Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
3. Refer to last page of calculations for fasteners required for specified loads.
4. Girders are designed to be supported on the bottom edge only.
5. Top loads must be supported equally by all plies.
6. Top must be laterally braced at end bearings.
7. Bottom must be laterally braced at end 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
6. For flat roofs provide proper drainage to prevent ponding

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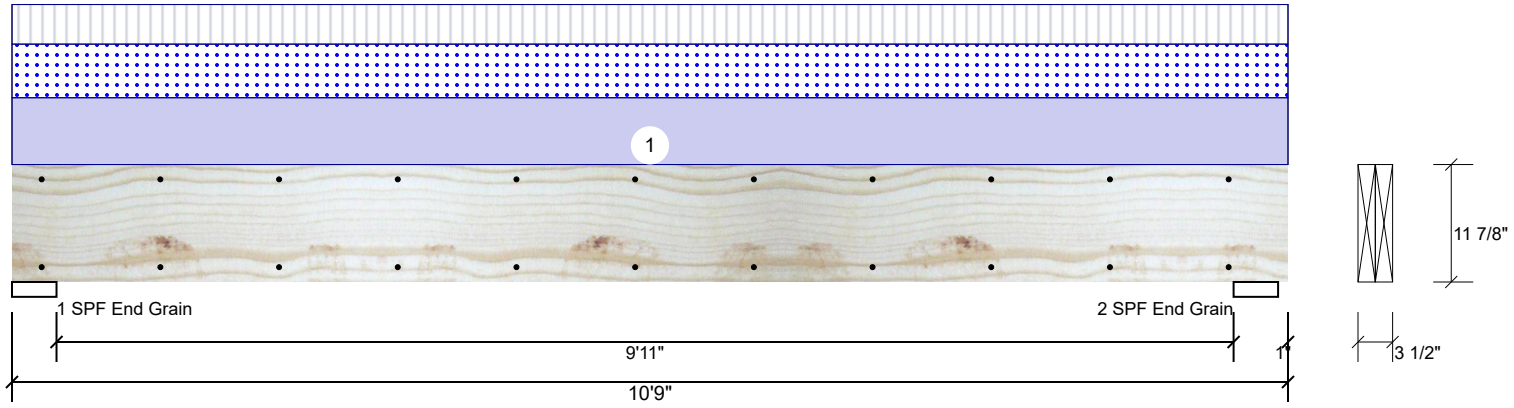
Client:	Watermark Homes	Date:	7/8/2021
Project:		Input by:	Anthony Williams
Address:	Lot 119 Ballard Woods, Lillington NC	Job Name:	Lot 119 Ballard Woods
		Project #:	J0721-4155

BM2 Kerto-S LVL 1.750" X 11.875" 2-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	324 PLF	192 PLF	260 PLF	0 PLF	0 PLF	D3
	Self Weight				9 PLF					

Notes

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Lumber

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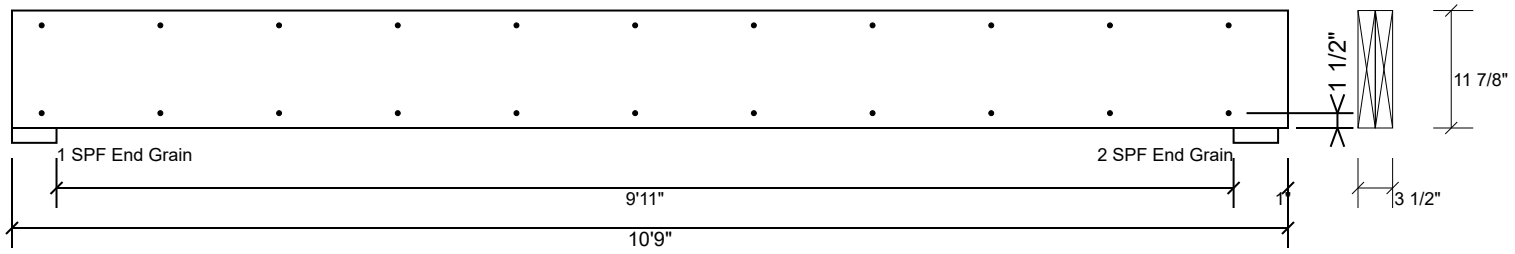
		Project #:	J0721-4155

BM2 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

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2. LVL not to be treated with fire retardant or corrosive chemicals

Handling & Installation

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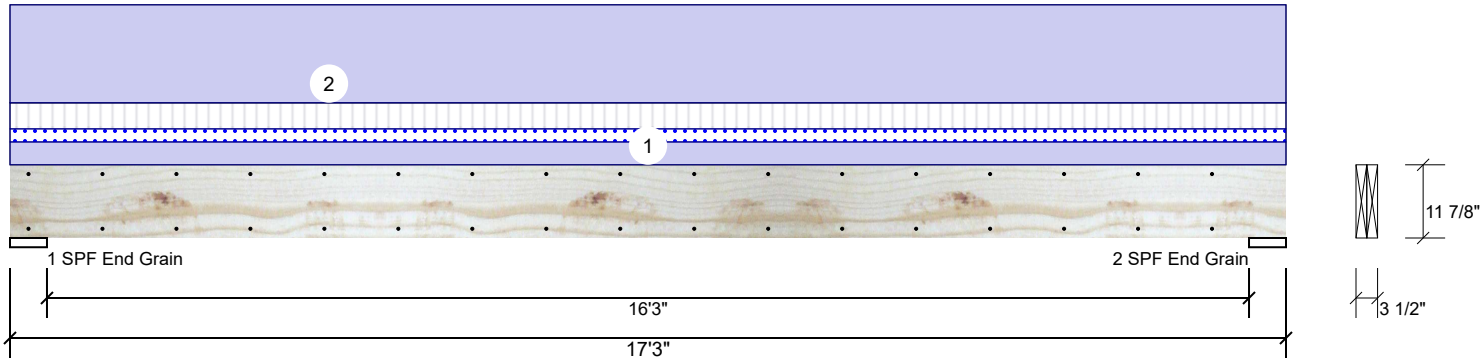
Project:		Input by:	Anthony Williams
Address:	Lot 119 Ballard Woods, Lillington NC	Job Name:	Lot 119 Ballard Woods
		Project #:	J0721-4155

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

Level: Level



Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	345	1675	173	0	0
2	Vertical	345	1675	173	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	6.000"	Vert	11%	1675 / 388	2063	L	D+0.75(L+S)
2 - SPF End Grain	6.000"	Vert	11%	1675 / 388	2063	L	D+0.75(L+S)

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	7851 ft-lb	8'7 1/2"	19911 ft-lb	0.394 (39%)	D+L	L
Unbraced	8019 ft-lb	8'7 1/2"	8035 ft-lb	0.998 (100%)	D+0.75(L+S)	L
Shear	1681 lb	15'9 1/8"	8867 lb	0.190 (19%)	D+L	L
LL Defl inch	0.079 (L/2497)	8'7 9/16"	0.409 (L/480)	0.192 (19%)	0.75(L+S)	L
TL Defl inch	0.418 (L/470)	8'7 9/16"	0.546 (L/360)	0.767 (77%)	D+0.75(L+S)	L

Design Notes

1. Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2. Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
3. Refer to last page of calculations for fasteners required for specified loads.
4. Girders are designed to be supported on the bottom edge only.
5. Top loads must be supported equally by all plies.
6. Top must be laterally braced at a maximum of 12' 11/16" o.c.
7. Bottom must be laterally braced at end bearings.
8. Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	35 PLF	40 PLF	20 PLF	0 PLF	0 PLF	ROOF+FLOOR
2	Uniform			Top	150 PLF	0 PLF	0 PLF	0 PLF	0 PLF	WALL
	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 3/30/2024

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Client:	Watermark Homes	Date:	7/8/2021
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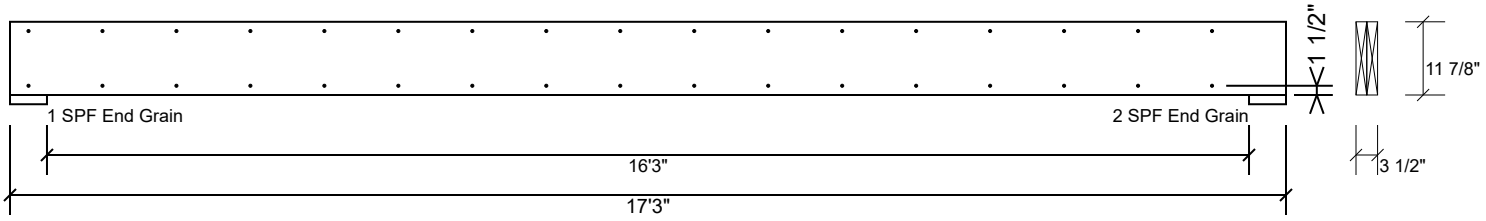
Address:	Lot 119 Ballard Woods, Lillington NC	Job Name:	Lot 119 Ballard Woods
		Project #:	J0721-4155

GDH 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
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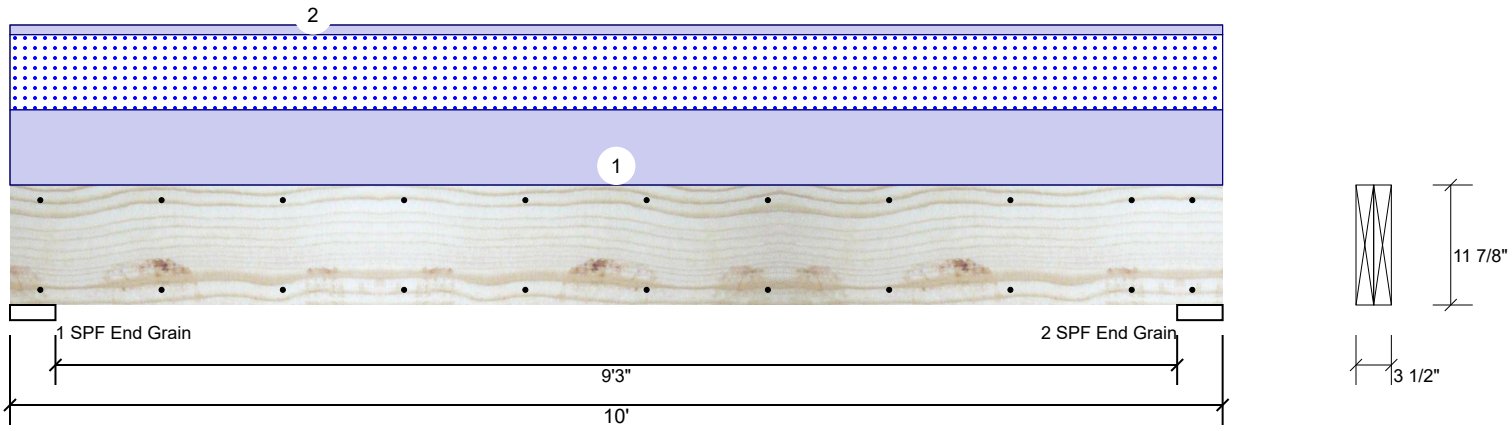
Project:		Input by:	Anthony Williams
Address:	Lot 119 Ballard Woods, Lillington NC	Job Name:	Lot 119 Ballard Woods
		Project #:	J0721-4155

GDH-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:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	0	1371	1175	0	0
2	Vertical	0	1371	1175	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	4.500"	Vert	19%	1371 / 1175	2546	L	D+S
2 - SPF End Grain	4.500"	Vert	19%	1371 / 1175	2546	L	D+S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	5595 ft-lb	5'	22897 ft-lb	0.244 (24%)	D+S	L
Unbraced	5595 ft-lb	5'	9857 ft-lb	0.568 (57%)	D+S	L
Shear	1860 lb	1'4 3/8"	10197 lb	0.182 (18%)	D+S	L
LL Defl inch	0.049 (L/2297)	5'	0.234 (L/480)	0.209 (21%)	S	L
TL Defl inch	0.106 (L/1060)	5'	0.312 (L/360)	0.340 (34%)	D+S	L

Design Notes

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

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	235 PLF	0 PLF	235 PLF	0 PLF	0 PLF	G2
2	Uniform			Top	30 PLF	0 PLF	0 PLF	0 PLF	0 PLF	WALL
	Self Weight				9 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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6. For flat roofs provide proper drainage to prevent ponding

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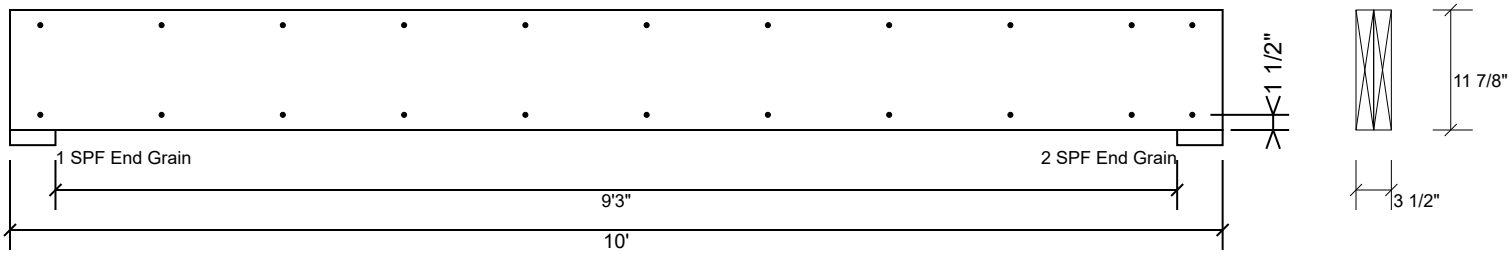
Address:	Lot 119 Ballard Woods, Lillington NC	Job Name:	Lot 119 Ballard Woods
		Project #:	J0721-4155

GDH-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

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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 3/30/2024

Manufacturer Info

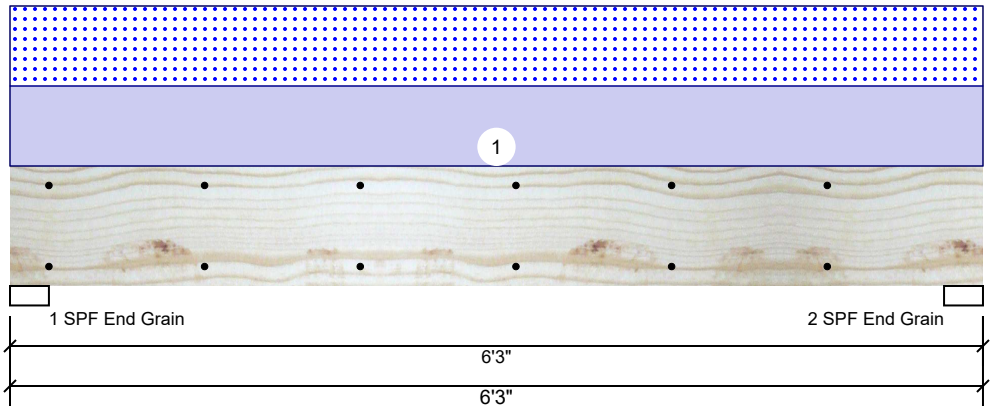
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

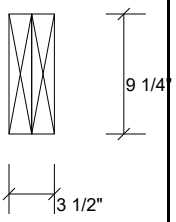
Comtech, Inc.
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

Client:	Watermark Homes	Date:	7/8/2021
Project:		Input by:	Anthony Williams
Address:	Lot 119 Ballard Woods, Lillington NC	Job Name:	Lot 119 Ballard Woods
		Project #:	J0721-4155

DBL-28 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level





Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	0	1432	1409	0	0
2	Vertical	0	1432	1409	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.000"	Vert	31%	1432 / 1409	2841	L	D+S
2 - SPF End Grain	3.000"	Vert	31%	1432 / 1409	2841	L	D+S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	3923 ft-lb	3'1 1/2"	14423 ft-lb	0.272 (27%)	D+S	L
Unbraced	3923 ft-lb	3'1 1/2"	10696 ft-lb	0.367 (37%)	D+S	L
Shear	1919 lb	5'2 3/4"	7943 lb	0.242 (24%)	D+S	L
LL Defl inch	0.033 (L/2129)	3'1 1/2"	0.147 (L/480)	0.225 (23%)	S	L
TL Defl inch	0.067 (L/1056)	3'1 1/2"	0.196 (L/360)	0.341 (34%)	D+S	L

Design Notes

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

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	451 PLF	0 PLF	451 PLF	0 PLF	0 PLF	A5
	Self Weight				7 PLF					

Notes

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DBL-28 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

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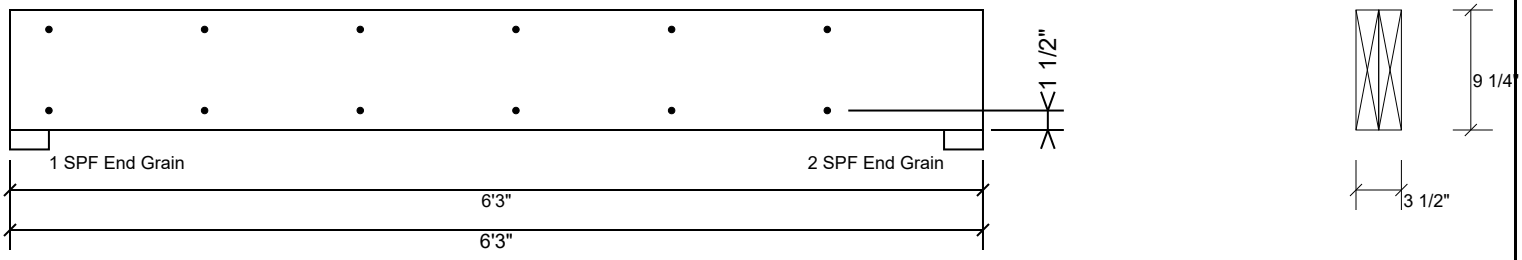

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