

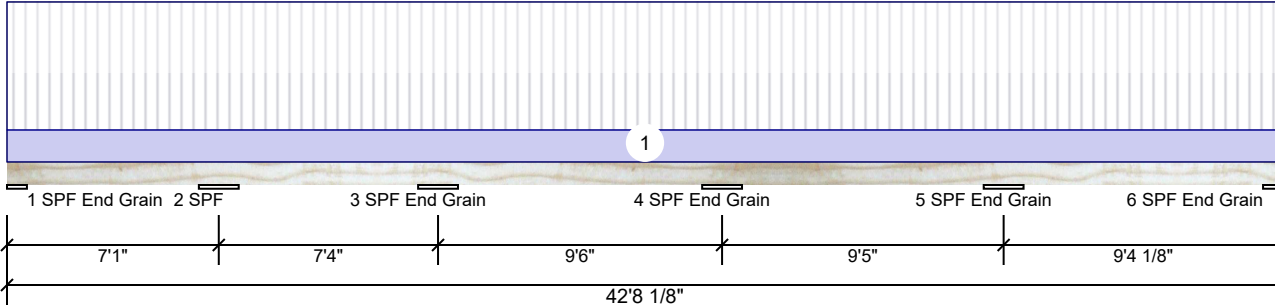


Client: Great South Bldr.
 Project: 1 Story
 Address:

Date: 5/9/2023
 Input by:
 Job Name: J0423-1840 Beams
 Project #: J0423-1840

DB1 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 - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	2891	756	0	0	0
2	Vertical	6645	1738	0	0	0
3	Vertical	7756	2029	0	0	0
4	Vertical	8665	2267	0	0	0
5	Vertical	9171	2399	0	0	0
6	Vertical	3666	959	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	8.000"	Vert	12%	753 / 3341	4094	L_L_L	D+L
2 - SPF End Grain	16.000"	Vert	27%	1744 / 7786	9529	LL_L_	D+L
3 - SPF End Grain	16.000"	Vert	16%	2028 / 9043	11071	_LL_L	D+L
4 - SPF End Grain	16.000"	Vert	17%	2261 / 9794	12055	L_LL_	D+L
5 - SPF End Grain	16.000"	Vert	17%	2409 / 9917	12326	_L_LL	D+L
6 - SPF End Grain	8.000"	Vert	14%	954 / 4136	5091	L_L_L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment Unbraced	-10749 ft-lb	33'4"	19565 ft-lb	0.549 (55%)	D+L	_L_LL
Pos Moment Unbraced	8433 ft-lb	38'2 7/8"	19565 ft-lb	0.431 (43%)	D+L	L_L_L
Shear	4601 lb	34'9 1/4"	10360 lb	0.444 (44%)	D+L	_L_LL
LL Defl inch	0.154 (L/681)	37'10 1/4"	0.218 (L/480)	0.705 (70%)	L	L_L_L
TL Defl inch	0.181 (L/578)	37'10 7/8"	0.437 (L/240)	0.415 (42%)	D+L	L_L_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 Girders are designed to be supported on the bottom edge only.
- 3 Multiple plies must be fastened together as per manufacturer's details.
- 4 Top loads must be supported equally by all plies.
- 5 Top must be laterally braced at a maximum of 13'6 5/16" o.c.
- 6 Bottom must be laterally braced at a maximum of 10'3 3/4" o.c.
- 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	227 PLF	909 PLF	0 PLF	0 PLF	0 PLF	FJ1
	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

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 11/3/2024

Manufacturer Info

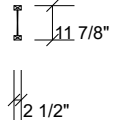
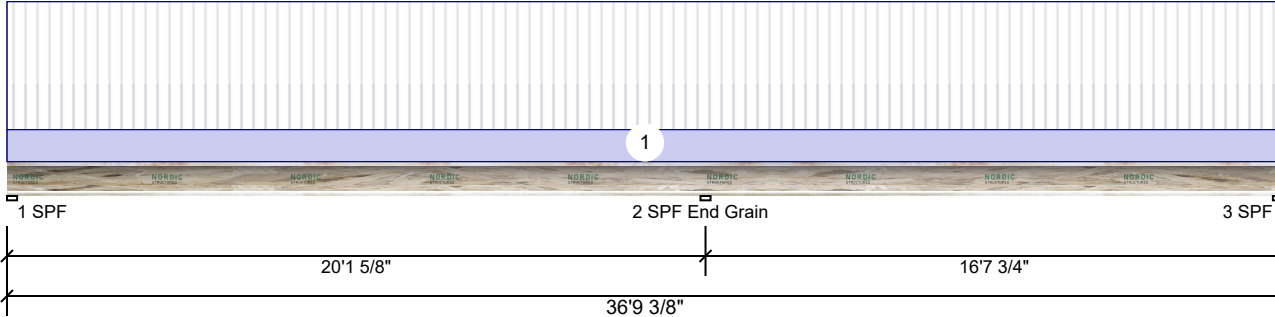
Metsä Wood
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 28309
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FJ1 NI-40x 11.875" - PASSED

Level: Level



Member Information

Type:	Joist
Spacing:	19.2" o.c.
Moisture Condition:	Dry
Deflection LL:	480
Deflection TL:	240
Importance:	Normal - II
Temperature:	Temp <= 100°F

Application:	Floor
Design Method:	ASD
Building Code:	IBC/IRC 2015
Load Sharing:	No
Deck:	Not Checked

Reactions UNPATTERNED Ib (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	519	130	0	0	0
2	Vertical	1455	364	0	0	0
3	Vertical	380	95	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	Vert	49%	130 / 567	697	L_	D+L
2 - SPF	3.500"	Vert	61%	364 / 1455	1818	LL	D+L
End Grain							
3 - SPF	3.500"	Vert	40%	95 / 482	577	_L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-3289 ft-lb	20' 5/8"	3760 ft-lb	0.875 (87%)	D+L	LL
Unbraced	-3289 ft-lb	20' 5/8"	3295 ft-lb	0.998 (100%)	D+L	LL
Pos Moment	2877 ft-lb	8'8 1/2"	3760 ft-lb	0.765 (77%)	D+L	L_
Unbraced	2877 ft-lb	8'8 1/2"	2891 ft-lb	0.995 (100%)	D+L	L_
Shear	961 lb	20' 5/8"	1480 lb	0.650 (65%)	D+L	LL
LL Defl inch	0.466 (L/513)	9'7 5/8"	0.498 (L/480)	0.936 (94%)	L	L_
TL Defl inch	0.556 (L/430)	9'6 11/16"	0.995 (L/240)	0.559 (56%)	D+L	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 Top flange must be laterally braced at a maximum of 3'8" o.c.
- 3 Bottom flange must be laterally braced at a maximum of 2'10" o.c.

ID	Load Type	Location	Trib Width	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform		1-7-3	10 PSF	40 PSF	0 PSF	0 PSF	0 PSF	

Notes
 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.

Engineered Wood Products

1. Dry service conditions, unless noted otherwise
2. No treatment with fire-retardant or other strength-reducing chemicals.

Handling & Installation

1. Engineered wood products must not be cut or drilled. Damaged products shall not be used.
2. Refer to the latest version of the installation guide for construction details, hole specifications, multiple-member connections, and handling guidelines.
3. Provide lateral support at bearing points to prevent lateral displacement and rotation.
4. For flat roof, provide proper drainage to prevent ponding.
5. Design assumes top flange to be laterally restrained

by attached sheathing or as specified in engineering notes.

This design is valid until 11/3/2024

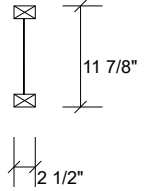
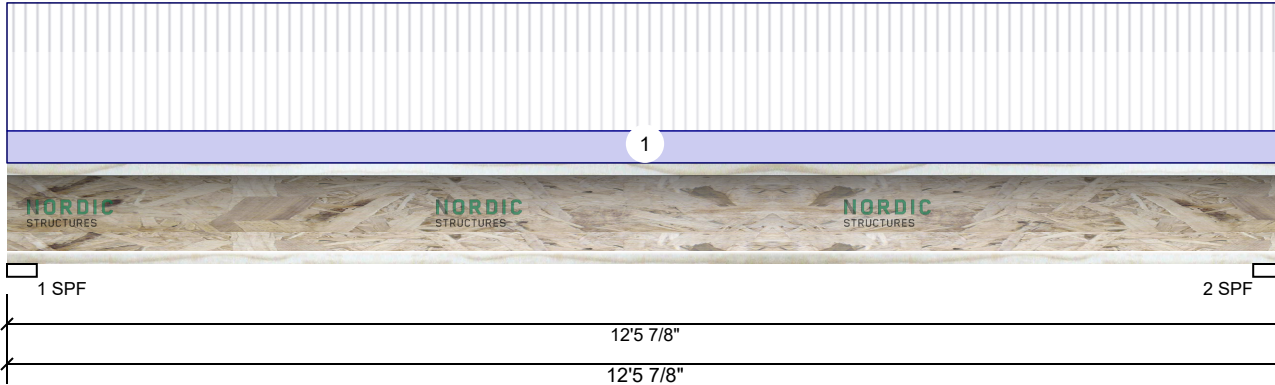
Manufacturer Info

Nordic Structures
 1100 Avenue des Canadiens-de-Montréal, Suite 100
 Montreal, Québec, Canada H3B 2S2
 (866) 871-3418
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 APA PR-L274C

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FJ5 NI-40x 11.875" - PASSED

Level: Level



Member Information

Type:	Joist
Spacing:	16" o.c.
Moisture Condition:	Dry
Deflection LL:	480
Deflection TL:	240
Importance:	Normal - II
Temperature:	Temp <= 100°F

Application:	Floor
Design Method:	ASD
Building Code:	IBC/IRC 2015
Load Sharing:	No
Deck:	Not Checked

Reactions UNPATTERNED Ib (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	333	83	0	0	0
2	Vertical	333	83	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	Vert	29%	83 / 333	416	L	D+L
2 - SPF	3.500"	Vert	29%	83 / 333	416	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	1206 ft-lb	6'2 15/16"	3760 ft-lb	0.321 (32%)	D+L	L
Unbraced	1206 ft-lb	6'2 15/16"	1217 ft-lb	0.991 (99%)	D+L	L
Shear	401 lb	2 3/4"	1480 lb	0.271 (27%)	D+L	L
LL Defl inch	0.083 (L/1744)	6'2 15/16"	0.301 (L/480)	0.275 (28%)	L	L
TL Defl inch	0.103 (L/1396)	6'2 15/16"	0.602 (L/240)	0.172 (17%)	D+L	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 Top flange must be laterally braced at a maximum of 6'11" o.c.
- 3 Bottom flange must be laterally braced at bearings.

ID	Load Type	Location	Trib Width	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform		1-4-0	10 PSF	40 PSF	0 PSF	0 PSF	0 PSF	

Notes

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.

Engineered Wood Products

1. Dry service conditions, unless noted otherwise
2. No treatment with fire-retardant or other strength-reducing chemicals.

Handling & Installation

1. Engineered wood products must not be cut or drilled. Damaged products shall not be used.
2. Refer to the latest version of the installation guide for construction details, hole specifications, multiple-member connections, and handling guidelines.
3. Provide lateral support at bearing points to prevent lateral displacement and rotation.
4. For flat roof, provide proper drainage to prevent ponding.
5. Design assumes top flange to be laterally restrained

by attached sheathing or as specified in engineering notes.

This design is valid until 11/3/2024

Manufacturer Info

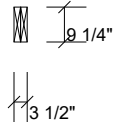
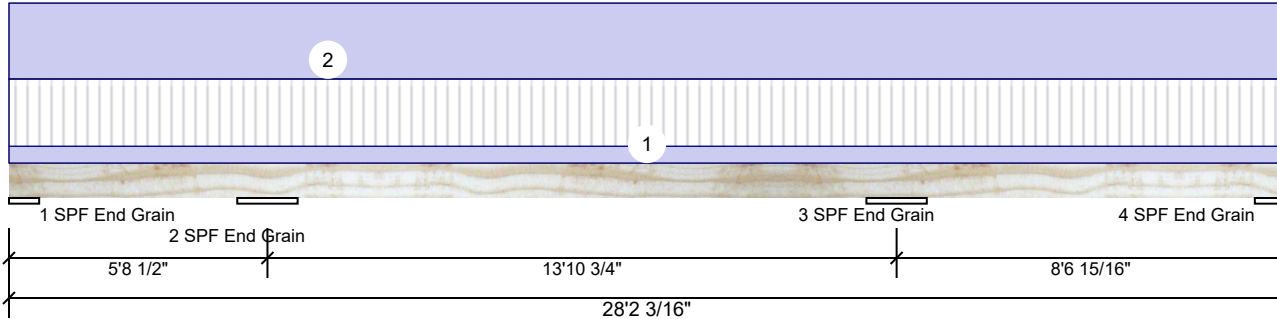
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DB2 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

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 - II		
Temperature:	Temp <= 100°F		

Reactions UNPATTERNED Ib (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	123	174	0	0	0
2	Vertical	2498	3521	0	0	0
3	Vertical	2647	3731	0	0	0
4	Vertical	594	837	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	8.000"	Vert	3%	155 / 665	820 (-275)	L_L	D+(D+L)
2 - SPF End Grain	16.000"	Vert	13%	3544 / 2630	6175	LL_	D+L
3 - SPF End Grain	16.000"	Vert	14%	3731 / 2675	6406	_LL	D+L
4 - SPF End Grain	8.000"	Vert	7%	832 / 878	1710	L_L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-7068 ft-lb	19'7 1/4"	12542 ft-lb	0.564 (56%)	D+L	_LL
Unbraced	-7068 ft-lb	19'7 1/4"	7072 ft-lb	0.999 (100%)	D+L	_LL
Pos Moment	5521 ft-lb	12'8 9/16"	12542 ft-lb	0.440 (44%)	D+L	_L_
Unbraced	5521 ft-lb	12'8 9/16"	5530 ft-lb	0.998 (100%)	D+L	_L_
Shear	2814 lb	7'1 3/4"	6907 lb	0.407 (41%)	D+L	LL_
LL Defl inch	0.168 (L/990)	12'9 1/16"	0.347 (L/480)	0.485 (49%)	L	_L_
TL Defl inch	0.370 (L/451)	12'8 3/16"	0.695 (L/240)	0.532 (53%)	D+L	_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 Girders are designed to be supported on the bottom edge only.
- 3 Multiple plies must be fastened together as per manufacturer's details.
- 4 Top loads must be supported equally by all plies.
- 5 Tie-down connection required at bearing 1 for uplift 275 lb (Combination D+L, Load Case _L_).
- 6 Top must be laterally braced at a maximum of 13'9" o.c.
- 7 Bottom must be laterally braced at a maximum of 10'5 1/8" o.c.
- 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.

chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

Manufacturer Info

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

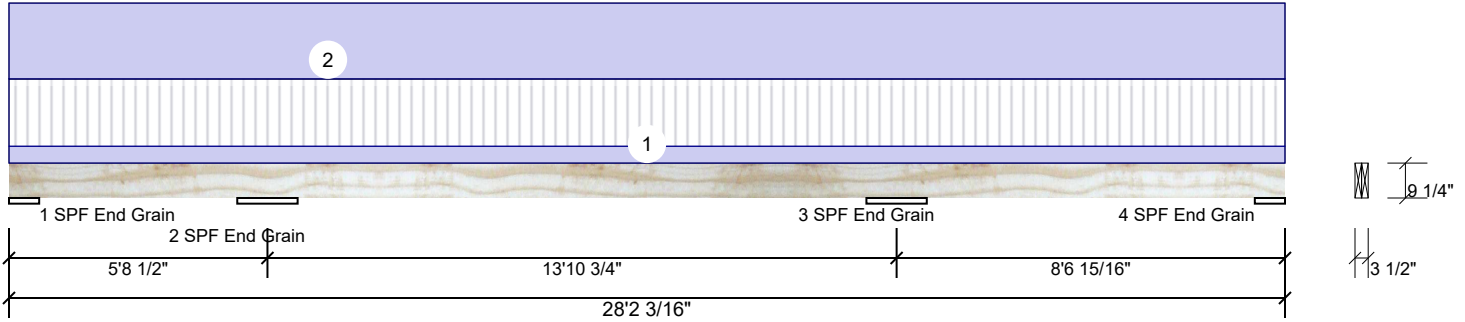
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This design is valid until 11/3/2024

DB2 Kerto-S LVL 1.750" X 9.250" 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	52 PLF	208 PLF	0 PLF	0 PLF	0 PLF	FJ5
2	Uniform			Top	234 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Wall
	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 11/3/2024

Manufacturer Info

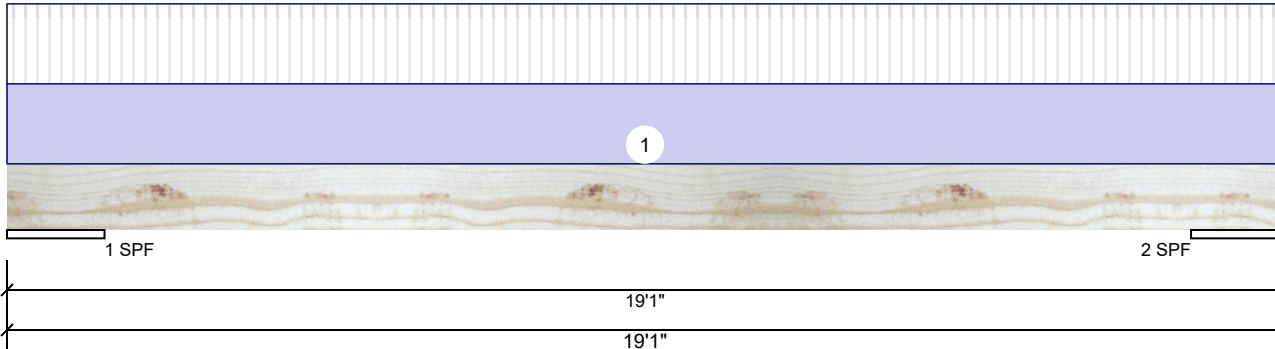
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GDH Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED

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

Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	2060	2149	0	0	0
2	Vertical	2043	2130	0	0	0

Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	17.500"	Vert	16%	2149 / 2060	4209	L	D+L
2 - SPF	16.500"	Vert	17%	2130 / 2043	4173	L	D+L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	14722 ft-lb	9'7"	19911 ft-lb	0.739 (74%)	D+L	L
Unbraced	14722 ft-lb	9'7"	14755 ft-lb	0.998 (100%)	D+L	L
Shear	3143 lb	2'5 3/8"	8867 lb	0.355 (35%)	D+L	L
LL Defl inch	0.376 (L/523)	9'7 1/16"	0.409 (L/480)	0.919 (92%)	L	L
TL Defl inch	0.768 (L/256)	9'7 1/16"	0.819 (L/240)	0.938 (94%)	D+L	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 Girders are designed to be supported on the bottom edge only.
- 3 Multiple plies must be fastened together as per manufacturer's details.
- 4 Top loads must be supported equally by all plies.
- 5 Top must be laterally braced at a maximum of 5'4 1/2" o.c.
- 6 Bottom must be laterally braced at end 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	215 PLF	215 PLF	0 PLF	0 PLF	0 PLF	
	Self Weight				9 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

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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