



Modulus Engineering Ltd.

Document: 23020

CORPORATION OF THE CITY OF OSHAWA

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Dec 06 2023

*C. Morris*

CHIEF BUILDING OFFICIAL



Document Outlines the Objectives,  
Restrictions and Limitations  
of EWP Component Seals

## **Sealed Engineered Wood Product (EWP) Components:**

*(Includes, but not limited to: I-Joists, LVL, LSL, Dimensional Lumber)*

Modulus Engineering Ltd. (MEL) provides EWP component review among a variety of other engineering services to our clients. The scope of the work provided by EWP component review is governed by the arrangement between MEL and our client and not intended to extend or imply to extend beyond this scope. If further review or other engineering work beyond this scope is required, MEL may be retained by the client at the discretion of MEL.


It is becoming more common that component review is requested by project engineers or building designers as a means of additional verification of proprietary EWP components they have specified on their drawings or by building departments for verification of components not covered explicitly in the building code. The intent of this document is to clarify the objectives of the review of the EWP components to ensure the project engineer or building designer and the building official understand the limitations of the component seals. Of particular importance, it should not be implied that the EWP component review and subsequent component seals provided are to be considered as review of the overall structure. This remains the responsibility of the project engineer of record (EOR) or building designer (Architect or other).

MEL reviews components produced by various proprietary design software programs, including: Mitek Sapphire (or Sapphire Supply), CSD iStruct, Simpson Strong-Tie Component Solutions, EZCad Wood-I and WoodWorks Sizer. Each program produces design notes that similarly attempt to clarify the limitations of the individual component design, with slight differences in language. The General Notes provided here are intended to supplement the notes on the sealed components and replace them where contradictions exist. If the intent is unclear, please contact MEL directly to ensure there are no unanswered questions.

### **General Notes:**









- Although MEL reviews components submitted together with layouts provided by our clients (in order to review how the components frame to one another to check member to member loading in the structural model and to review the suitability of hangers noted as well as to determine lamination details provided on the component drawing), the individual component seal stands alone as a unique individual member design/review and the loading noted should also be verified by the building designer or EOR.
- Reactions shown are for gravity loads (vertical) or out of plane wind loads (horizontal, when reviewing wall components) on the member as noted only and does not include any additional loads that may be imposed by other factors such as overturning of shearwalls due to wind or seismic loads.
- Minimum bearing length noted is based on the EWP material itself unless the bearing capacity for the support is specifically noted (most often the case), for the full width of the member supported. If the capacity of the bearing material is less than the capacity of the member itself, a larger bearing length may be required, to be determined by building designer or EOR.
- Adequate bearing surface for large point loads from above must be provided, to be determined by building designer or EOR unless noted on the component design.
- Where bracing or lateral support assumptions are not noted on the component design, continuous bracing for any compression edge, point load location and bearing or support location is assumed.
- Design is based on Dry service condition, defined as an EMC average over the year of 15% or less and never over 19%.
- Dimensions and location of supports as provided and as noted on component design, to be verified by others.
- Lamination details provided on the component drawing have been designed as per CSA-086.
- Any hangers specified have been reviewed in accordance with manufacturers published capacity for gravity and uplift loads only.
- Any flat roof applications must have adequate drainage to avoid ponding and potential overloading of the structure as designed
- Building designer or EOR must ensure the structure is adequate to support the reactions shown (may include uplift at a bearing)
- Building designer or EOR is responsible for the overall structural design including the lateral stability of the structure.
- Products to be installed as per manufacturers instructions and/or as per details provided by the building designer or EOR
- Products should be stored on site and handled as per manufacturers recommendations.
- Damaged products or those modified outside the scope of the manufacturers recommendations should not be installed unless approved by an engineer or building official


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 Hatch Area represents where additional load has been applied.  
(e.g. 5 psf for ceramic tile)

Ground Floor							
LVL/LSL (Flush)							
Label	Description	Width	Depth	Qty	Plies	Pcs	Length
F12	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	16-0-0
F13	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	14-0-0
F10	Forex 2.0E-3000Fb LVL	1.75	11.875	2	2	4	12-0-0
F9	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	10-0-0
F7	Forex 2.0E-3000Fb LVL	1.75	11.875			1	6-0-0
F8	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	4-0-0
I Joist (Flush)							
Label	Description	Width	Depth	Qty	Plies	Pcs	Length
J7	AJS 140	2.5	11.875			21	18-0-0
J6	AJS 140	2.5	11.875			7	16-0-0
J5	AJS 140	2.5	11.875			22	14-0-0
J8	AJS 140	2.5	11.875	1	2	2	14-0-0
J4	AJS 140	2.5	11.875			6	12-0-0
J3	AJS 140	2.5	11.875			5	10-0-0
J2	AJS 140	2.5	11.875			2	6-0-0
J1	AJS 140	2.5	11.875			19	2-0-0
F6	AJS 140	2.5	11.875	3	2	6	18-0-0
F4	AJS 140	2.5	11.875			1	18-0-0
F5	AJS 140	2.5	11.875	3	2	6	14-0-0
F3	AJS 140	2.5	11.875			1	14-0-0
F2	AJS 140	2.5	11.875			1	12-0-0
F1	AJS 140	2.5	11.875			3	4-0-0
Rim Board							
Label	Description	Width	Depth	Qty	Plies	Pcs	Length
R1	Norbord Rimboard Plus 1.125 X 11.875	1.125	11.875			15	12-0-0
Blocking							
Label	Description	Width	Depth	Qty	Plies	Pcs	Length
BLK1	AJS 140	2.5	11.875	LinFt		Varies	38-0-0
Hanger							
				Beam/Girder	Supported Member		
Label	Pcs	Description	Skew	Slope	fasteners	fasteners	
H1	2	Hanger by Others					
H2	3	LF3511			12 10d	2 #8x1 1/4WS	
H3	2	HUS1.81/10			30 16d	10 16d	
H4	42	LF2511			12 10d	1 #8x1 1/4WS	

**Legend**

<span style="color: red;">PS</span>	Point Load Support
	Load from Above
	Wall
	Wall Opening
	Norbord Rimboard Plus 1.125 X 11.875
	AJS 140 11.875
	Forex 2.0E-3000Fb LVL 1.75 X 11.875
	1.75 X 9.5 (Dropped)
	5.25 X 8 (Dropped)

JOB INFORMATION	
<b>Builder</b> GREENPARK	
<b>Project</b> ZADORRA ESTATES	
<b>Shipping</b> PENROSE 3 EL 2 OSHAWA, ON	
<b>Sales Rep</b>	
<b>Designer</b> W C	
<b>Plotted</b> June 30, 2022	
<b>Layout Name</b> PENROSE 3-EL 2	
<b>Job Path</b> C:\Users\wcadavid\Desktop\GREENPARK-ZADORRA	
DESIGN CRITERIA	
<b>Ground Floor</b>	
Design Method	LSD (Canada)
Building Code	NBCC 2015 / OBC 2012
<b>Floor</b>	
<b>Loads</b>	
Live	40
Dead	15
<b>Deflection Joist</b>	
LL Span /	480
TL Span /	240
<b>Deflection Flush Girder</b>	
LL Span /	480
TL Span /	240
<b>Deflection Dropped Girder</b>	
LL Span /	480
TL Span /	240
<b>Deflection Header</b>	
LL Span /	480
TL Span /	240
<b>Decking</b>	
Decking	OSB
Thickness	3/4"
<b>CCMC References</b>	
Boise - 12472-R , 12787-R	
LP - 12412-R	
Forex - 14056-R	
<b>Kott Inc.</b> 3228 Moodie Dr, Ottawa 14 Anderson Blvd, Uxbridge Ontario  613-838-2775 / 905-642-4400	

1. All blocking to be cut from 12" joists
2. 2' & 4' Lengths to be cut from 8' Length, 6' lengths to be cut from 12' Length
3. Ends of joists to be laterally supported
4. Packing of Steel beams and attachment by others
5. Shower and water closet flange locations are approximate only, consult architectural drawing for exact locations
6. Beams identified as "B" are dropped and supplied by others
7. Install 2x4 blocking @ 24" o/c under parallel non-loadbearing walls
8. Load transfer blocks to be installed under all point loads
9. Refer to Multiple Member Connection Detail for ply to ply nailing or bolting requirements
10. Hangers and Fasteners to be installed as per manufacturer
11. Framing shown on this layout may deviate from architectural drawings. Arch / Eng to review and approve the deviation prior to construction.
12. Multi ply beams with side loading to have all fasteners installed with the head on the side of the applied load



**F10-B Forex 2.0E-3000Fb LVL**

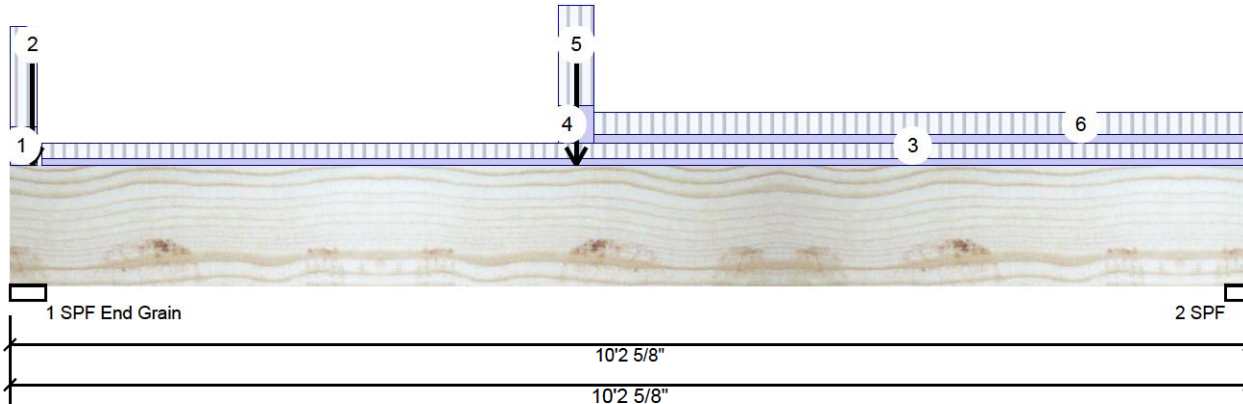
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2-Ply

MIIP 23020

Level: Ground Floor

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**Member Information**

Type: Girder	Application: Floor (Residential)
Plies: 2	Design Method: LSD
Moisture Condition: Dry	Building Code: NBCC 2015 / OBC 2012
Deflection LL: 480	Load Sharing: No
Deflection TL: 240	Deck: Not Checked
Importance: Normal - II	Vibration: Not Checked
General Load	
Floor Live: 40 PSF	
Dead: 15 PSF	

**Unfactored Reactions UNPATTERNED lb (Uplift)**

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	822	380	0	0
2	Vertical	259	153	0	0

**Bearings and Factored Reactions**

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	Vert	19%	475 / 1232	1707	L	1.25D+1.5L
2 - SPF	2.375"	Vert	11%	191 / 388	579	L	1.25D+1.5L

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2141 ft-lb	4'8 1/16"	34261 ft-lb	0.063 (6%)	1.25D+1.5L	L
Unbraced	2141 ft-lb	4'8 1/16"	34261 ft-lb	0.063 (6%)	1.25D+1.5L	L
Shear	533 lb	1'3 3/8"	11596 lb	0.046 (5%)	1.25D+1.5L	L
Perm Defl in. (L/12147)	0.010	4'11 5/16"	0.329 (L/360)	0.030 (3%)	D	Uniform
LL Defl inch	0.018 (L/6663)	4'10 11/16"	0.246 (L/480)	0.072 (7%)	L	L
TL Defl inch	0.027 (L/4303)	4'10 15/16"	0.493 (L/240)	0.056 (6%)	D+L	L

**LAMINATE WITH:**  
2 ROWS OF 3.25" AIR NAILS  
FACE SPACING AT 12 IN O/C.  
NAIL FROM LOADED FACE  
MIN HANGER NAILS: (JOIST/BREAM) 3 IN

**Design Notes**

- 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.
- Girders are designed to be supported on the bottom edge only.
- Multiple plies must be fastened together as per manufacturer's details.
- Top loads must be supported equally by all plies.
- Top must be continuously laterally braced.
- Bottom must be laterally braced at a maximum of 5'6 5/8" o.c.
- Lateral slenderness ratio based on full section width.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 0-2-11	1-9-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Point	0-2-4		Near Face	223 lb	559 lb	0 lb	0 lb	F7
3	Tie-In	0-3-2 to 10-2-10	0-3-5	Top	15 PSF	40 PSF	0 PSF	0 PSF	
4	Tie-In	4-6-5 to 4-9-13	1-9-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
5	Point	4-8-1		Far Face	126 lb	291 lb	0 lb	0 lb	F8

Continued on page 2...

**Notes**

Calculated Structural Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**

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

**Handling & Installation**

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

6. For flat roofs provide proper drainage to prevent ponding

**Manufacturer Info**

Forex  
APA: PR-L318

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



ME22-0647-2

F10-B Forex 2.0E-3000Fb LVL

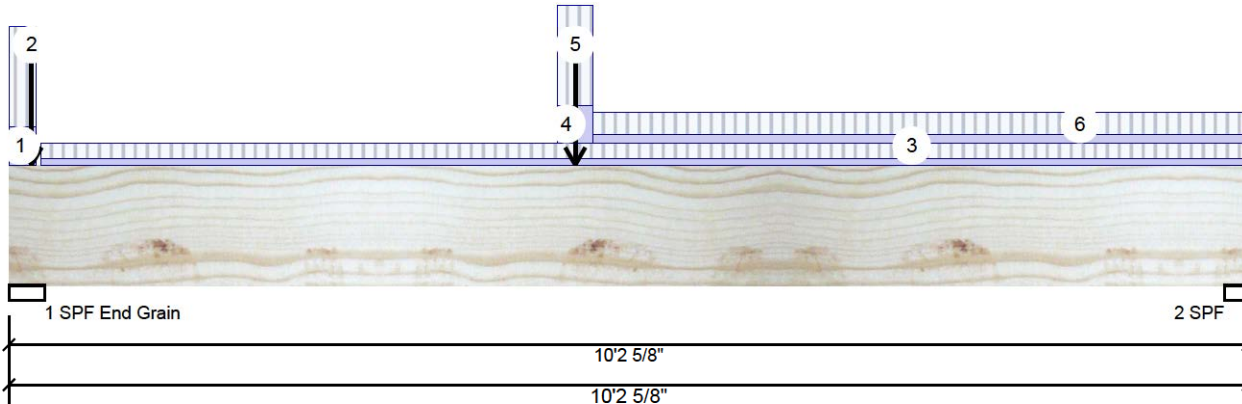
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ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
6	Tie-In	4-9-13 to 10-2-10	0-4-11	Top	15 PSF	40 PSF	0 PSF	0 PSF	
	Self Weight				10 PLF				

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DOC: ME-TC02 V 03-2017  
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#### 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
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6. For flat roofs provide proper drainage to prevent ponding

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613-838-2775 / 905-642-4400



This design is valid until 5/24/2024



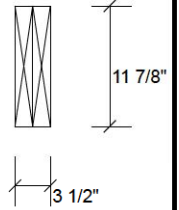
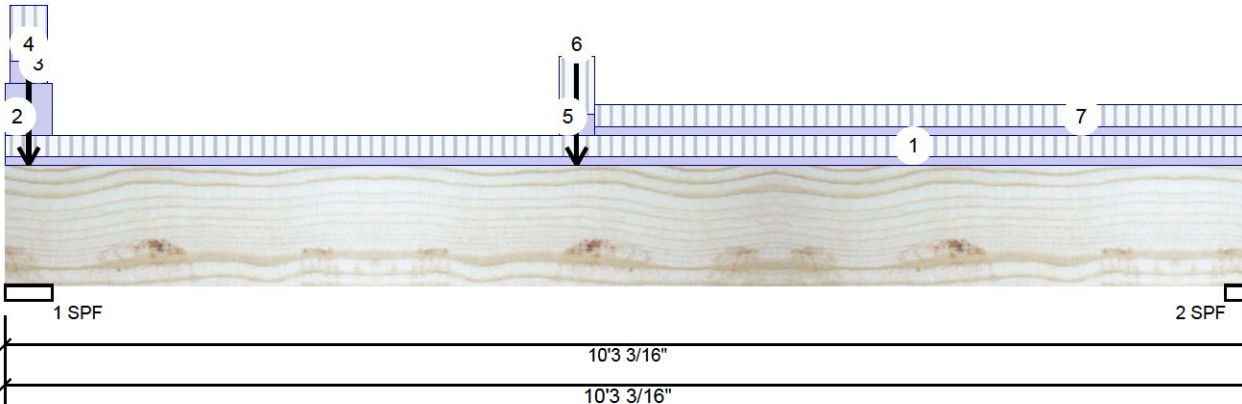
F10-C Forex 2.0E-3000Fb LVL

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2-Ply

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Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	693	413	0	0
2	Vertical	363	191	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	4.703"	Vert	15%	517 / 1039	1556	L	1.25D+1.5L
2 - SPF	2.375"	Vert	15%	239 / 544	783	L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2440 ft-lb	4'8 9/16"	34261 ft-lb	0.071 (7%)	1.25D+1.5L	L
Unbraced	2440 ft-lb	4'8 9/16"	34261 ft-lb	0.071 (7%)	1.25D+1.5L	L
Shear	656 lb	9' 15/16"	11596 lb	0.057 (6%)	1.25D+1.5L	L
Perm Defl in.	0.011 (L/10723)	5' 1 1/8"	0.327 (L/360)	0.034 (3%)	D	Uniform
LL Defl inch	0.021 (L/5547)	5' 15/16"	0.245 (L/480)	0.087 (9%)	L	L
TL Defl inch	0.032 (L/3656)	5' 1"	0.490 (L/240)	0.066 (7%)	D+L	L

**LAMINATE WITH:**  
2 ROWS OF 3.25" AIR NAILS  
FACE SPACING AT 12 IN O/C.  
NAIL FROM LOADED FACE  
MIN HANGER NAILS: (JOIST/BREAM) 3 IN

Design Notes

- 1 Performed Secondary Bearing Check (CSA 086-14 6.5.7.3). Assumed point load size: beam width X 4.5.
- 2 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.
- 3 Girders are designed to be supported on the bottom edge only.
- 4 Multiple plies must be fastened together as per manufacturer's details.
- 5 Top loads must be supported equally by all plies.
- 6 Top must be continuously laterally braced.
- 7 Bottom must be laterally braced at a maximum of 5'6 5/8" o.c.
- 8 Lateral slenderness ratio based on full section width.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 10-3-3	0-7-12	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Part. Uniform	0-0-0 to 0-4-11		Top	64 PLF	0 PLF	0 PLF	0 PLF	Wall Self Weight
3	Tie-In	0-0-9 to 0-4-3	1-9-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	

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DOC: ME-TC02 V 03-2017  
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Notes

Calculated Structural Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive chemicals

Handling & Installation

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

6. For flat roofs provide proper drainage to prevent ponding

Manufacturer Info

Forex  
APA: PR-L318

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



This design is valid until 5/24/2024

F10-C Forex 2.0E-3000Fb LVL

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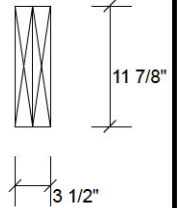
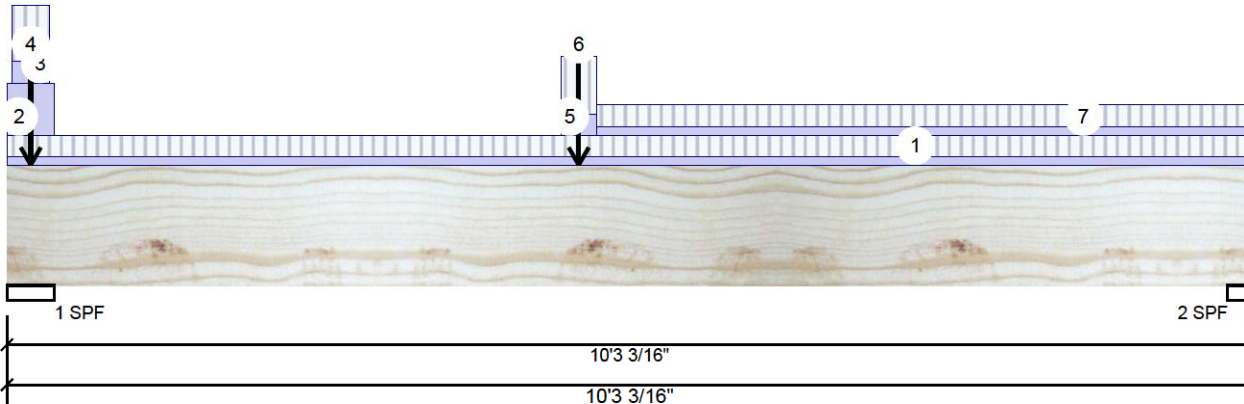
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ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
4	Point	0-2-6		Top	199 lb	346 lb	0 lb	0 lb	F10 F10
	Bearing Length	0-3-8							
5	Tie-In	4-6-13 to 4-10-5	1-9-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
6	Point	4-8-9		Near Face	112 lb	254 lb	0 lb	0 lb	F8
7	Tie-In	4-10-5 to 10-3-3	0-8-4	Top	15 PSF	40 PSF	0 PSF	0 PSF	
	Self Weight				10 PLF				

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Notes

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Lumber

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# F12-A Forex 2.0E-3000Fb LVL

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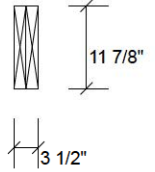
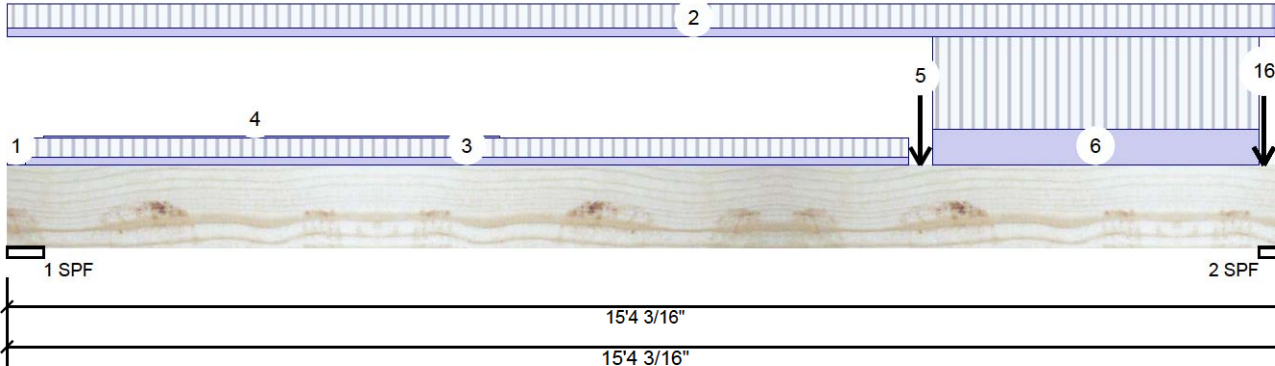
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## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	481	272	0	0
2	Vertical	1048	533	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	5.250"	Vert	9%	339 / 722	1062	L	1.25D+1.5L
2 - SPF	3.500"	Vert	30%	666 / 1572	2238	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	7739 ft-lb	10'11 13/16"	34261 ft-lb	0.226 (23%)	1.25D+1.5L	L
Unbraced	7739 ft-lb	10'11 13/16"	34261 ft-lb	0.226 (23%)	1.25D+1.5L	L
Shear	2022 lb	14' 13/16"	11596 lb	0.174 (17%)	1.25D+1.5L	L
Perm Defl in.	0.065 (L/2728)	8'4 13/16"	0.491 (L/360)	0.132 (13%)	D	Uniform
LL Defl inch	0.131 (L/1350)	8'6 1/2"	0.369 (L/480)	0.355 (36%)	L	
TL Defl inch	0.196 (L/903)	8'5 15/16"	0.737 (L/240)	0.266 (27%)	D+L	L

**LAMINATE WITH:**  
2 ROWS OF 3.25" AIR NAILS  
FACE SPACING AT 12 IN O/C.  
NAIL FROM LOADED FACE  
MIN HANGER NAILS: (JOIST/BREAM) 3 IN

## Design Notes

- 1 Performed Secondary Bearing Check (CSA 086-14 6.5.7.3). Assumed point load size: beam width X 3.5.
- 2 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.
- 3 Girders are designed to be supported on the bottom edge only.
- 4 Multiple plies must be fastened together as per manufacturer's details.
- 5 Top loads must be supported equally by all plies.
- 6 Top must be continuously laterally braced.
- 7 Bottom must be laterally braced at a maximum of 10'11 13/16" o.c.
- 8 Lateral slenderness ratio based on full section width.

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SEE GENERAL NOTES  
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ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 0-2-10	0-2-2	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	0-0-0 to 15-3-1	0-3-14	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Tie-In	0-2-10 to 10-10-1	0-3-2	Top	15 PSF	40 PSF	0 PSF	0 PSF	
4	Part. Uniform	0-5-5 to 5-11-3		Top	1 PLF	0 PLF	0 PLF	0 PLF	

Continued on page 2...

## Notes

Calculated Structural 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

## Manufacturer Info

Forex  
APA: PR-L318

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



This design is valid until 5/24/2024

F12-A Forex 2.0E-3000Fb LVL

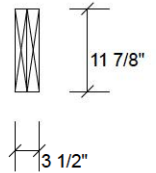
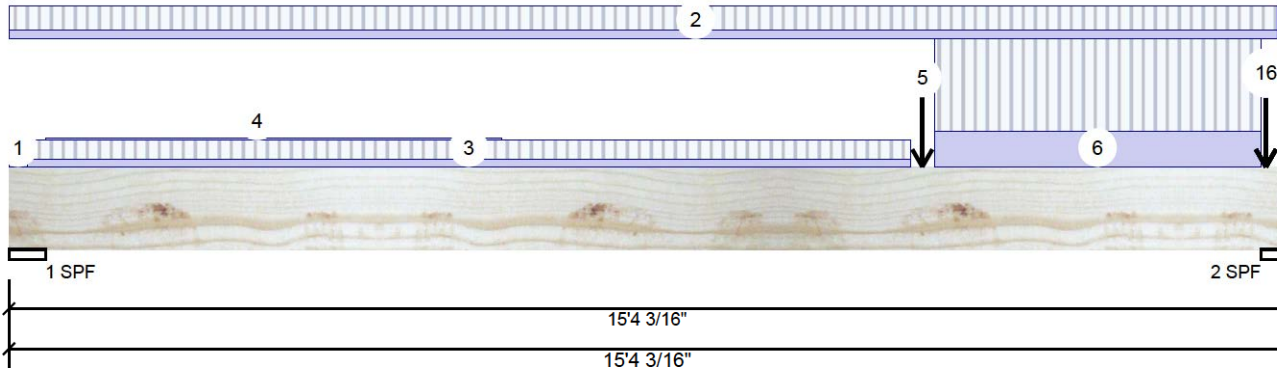
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2-Ply

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MLP 23020

PER: CHIEF BUILDING OFFICIAL



...Continued from page 1

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
5	Point	10-11-13		Far Face	421 lb	1002 lb	0 lb	0 lb	F9
6	Part. Uniform	11-1-9 to 15-0-11		Top	19 PLF	50 PLF	0 PLF	0 PLF	
7	Point	15-1-7		Top	1 lb	1 lb	0 lb	0 lb	
	Bearing Length	0-5-8							
8	Point	15-1-7		Top	7 lb	17 lb	0 lb	0 lb	J6
	Bearing Length	0-5-8							
10	Point	15-1-7		Top	7 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
11	Point	15-1-7		Top	1 lb	2 lb	0 lb	0 lb	
	Bearing Length	0-5-8							
13	Point	15-1-7		Top	12 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
14	Point	15-1-7		Top	1 lb	2 lb	0 lb	0 lb	
	Bearing Length	0-5-8							
16	Point	15-1-7		Top	12 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
	Self Weight				10 PLF				

MODULUS ENGINEERING LTD.



SEE GENERAL NOTES  
DOC: ME-TC02 V 03-2017  
NOTE: ALTERING THIS DOCUMENT  
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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

Manufacturer Info

Forex  
APA: PR-L318

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



This design is valid until 5/24/2024



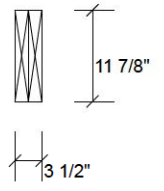
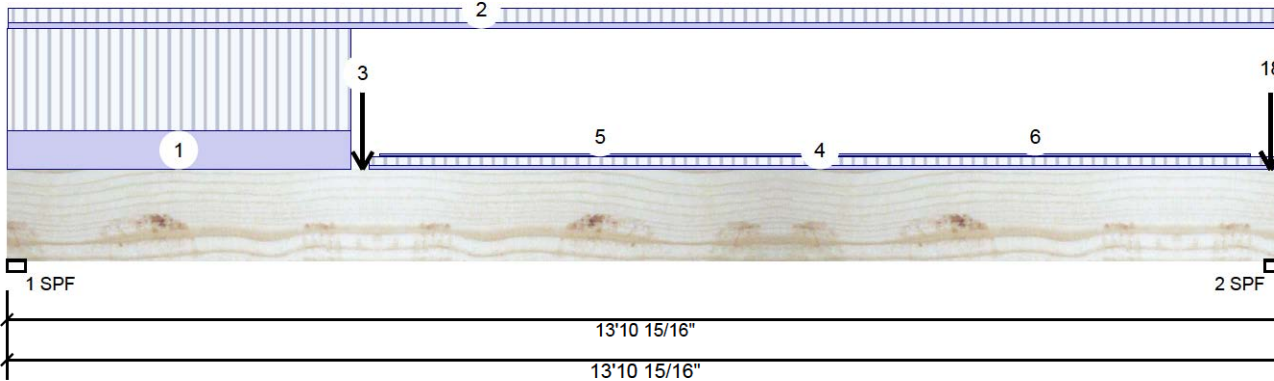
F13-A Forex 2.0E-3000Fb LVL

1.75

2-Ply

PASSED

MLP 23020



Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	942	450	0	0
2	Vertical	394	407	316	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	2.375"	Vert	39%	562 / 1413	1975	L	1.25D+1.5L
2 - SPF	2.375"	Vert	28%	508 / 907	1415	L	1.25D+1.5L +S

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	5329 ft-lb	3'10 9/16"	34261 ft-lb	0.156 (16%)	1.25D+1.5L	L
Unbraced	5329 ft-lb	3'10 9/16"	34261 ft-lb	0.156 (16%)	1.25D+1.5L	L
Shear	1661 lb	1'2 1/4"	11596 lb	0.143 (14%)	1.25D+1.5L	L
Perm Defl in.	0.042 (L/3854)	6'5 1/4"	0.455 (L/360)	0.093 (9%)	D	Uniform
LL Defl inch	0.081 (L/2032)	6'3 1/8"	0.341 (L/480)	0.236 (24%)	L+0.5S	L
TL Defl inch	0.123 (L/1331)	6'3 7/8"	0.682 (L/240)	0.180 (18%)	D+L+0.5S	L

**LAMINATE WITH:**  
2 ROWS OF 3.25" AIR NAILS  
FACE SPACING AT 12 IN O/C.  
NAIL FROM LOADED FACE  
MIN HANGER NAILS: (JOIST/BREAM) 3 IN

Design Notes

- 1 Performed Secondary Bearing Check (CSA 086-14 6.5.7.3). Assumed point load size: beam width X 2.375.
- 2 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.
- 3 Girders are designed to be supported on the bottom edge only.
- 4 Multiple plies must be fastened together as per manufacturer's details.
- 5 Top loads must be supported equally by all plies.
- 6 Top must be continuously laterally braced.
- 7 Bottom must be laterally braced at a maximum of 10' 3/8" o.c.
- 8 Lateral slenderness ratio based on full section width.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Part. Uniform	0-0-0 to 3-8-15		Top	44 PLF	117 PLF	0 PLF	0 PLF	
2	Tie-In	0-0-3 to 13-10-15	0-5-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Point	3-10-8		Far Face	237 lb	560 lb	0 lb	0 lb	F7
4	Tie-In	3-11-6 to 13-10-15	0-3-3	Top	15 PSF	40 PSF	0 PSF	0 PSF	

Continued on page 2...

MODULUS ENGINEERING LTD.

07/15/2022

P. R. HEAL

LICENSED PROFESSIONAL ENGINEER

PROVINCE OF ONTARIO

SEE GENERAL NOTES  
DOC: ME-TC02 V 03-2017  
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Notes

Calculated Structural Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive chemicals

Handling & Installation

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

6. For flat roofs provide proper drainage to prevent ponding

Manufacturer Info

Forex  
APA: PR-L318

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



This design is valid until 5/24/2024

F13-A Forex 2.0E-3000Fb LVL

1.75

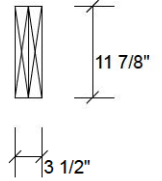
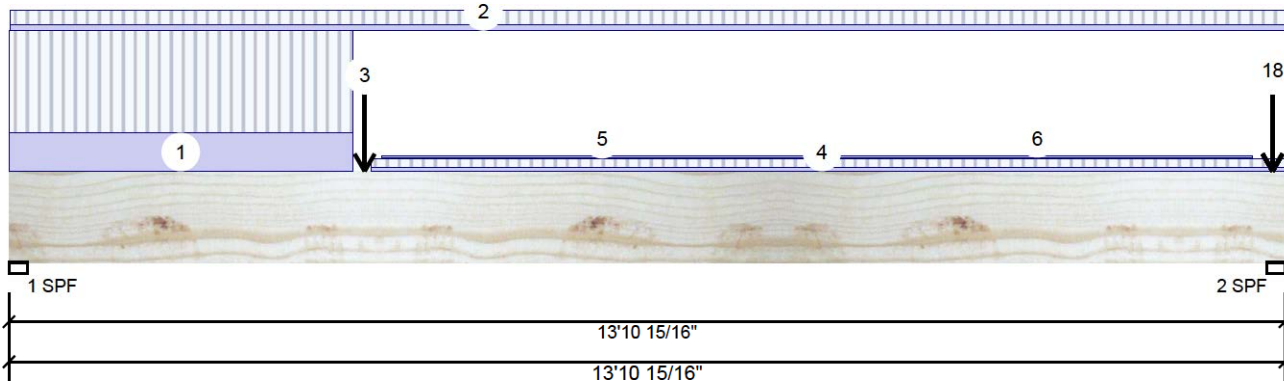
2-Ply

2-Ply

PASSED

MLP 23020

PER: CHIEF BUILDING OFFICIAL



...Continued from page 1

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
5	Part. Uniform	4-0-13 to 13-6-11		Top	1 PLF	0 PLF	0 PLF	0 PLF	
6	Part. Uniform	4-0-13 to 13-6-11		Top	2 PLF	0 PLF	0 PLF	0 PLF	
7	Point	13-9-5		Top	1 lb	0 lb	2 lb	0 lb	
	Bearing Length	0-5-8							
10	Point	13-9-5		Top	1 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
11	Point	13-9-5		Top	92 lb	0 lb	177 lb	0 lb	B9 B9
	Bearing Length	0-5-8							
12	Point	13-9-5		Top	0 lb	0 lb	1 lb	0 lb	
	Bearing Length	0-5-8							
15	Point	13-9-5		Top	40 lb	0 lb	136 lb	0 lb	
	Bearing Length	0-5-8							
16	Point	13-9-5		Top	16 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
18	Point	13-9-5		Top	17 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
	Self Weight				10 PLF				

MODULUS ENGINEERING LTD.



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DOC: ME-TC02 V 03-2017  
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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

Manufacturer Info

Forex  
APA: PR-L318

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400

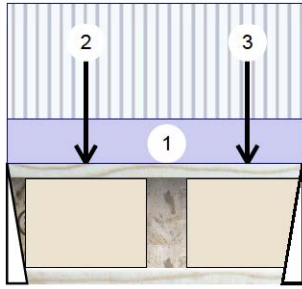


This design is valid until 5/24/2024

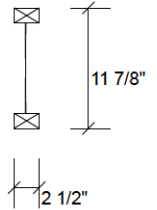


F1-A AJS 140 11.875" - PAS

MHP 23020



1 Hanger (LF2511)  
2 Hanger (LF2511)  
2'5 1/4"  
2'5 1/4"



## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	1	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	323	121	0	0
2	Vertical	359	134	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	2.000"	Vert	40%	151 / 485	636	L	1.25D+1.5L
2 - Hanger	2.000"	Vert	44%	168 / 539	707	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	334 ft-lb	7 13/16"	5305 ft-lb	0.063 (6%)	1.25D+1.5L	L
Unbraced	334 ft-lb	7 13/16"	5305 ft-lb	0.063 (6%)	1.25D+1.5L	L
Shear	700 lb	2'4"	2350 lb	0.298 (30%)	1.25D+1.5L	L
Perm Defl in. (L/24915)	0.001	10 3/8"	0.074 (L/360)	0.014 (1%)	D	Uniform
LL Defl inch	0.003 (L/9325)	10 3/8"	0.056 (L/480)	0.051 (5%)	L	L
TL Defl inch	0.004 (L/6785)	10 3/8"	0.112 (L/240)	0.035 (4%)	D+L	L

## Design Notes

- 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.
- Fill all hanger nailing holes.
- Girders are designed to be supported on the bottom edge only.
- If sheathing is not attached to the top flange, top flange must be laterally braced at maximum 2' o.c.
- If sheathing is not attached to the bottom flange, bottom flange must be laterally braced at maximum 2' o.c.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 2-5-4	0-9-15	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Point	0-7-13		Near Face	118 lb	315 lb	0 lb	0 lb	J6
3	Point	1-11-13		Near Face	107 lb	287 lb	0 lb	0 lb	J6

MODULUS ENGINEERING LTD.



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## Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

## Lumber

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

## chemicals

## Handling & Installation

- Joist flanges must not be cut or drilled
- Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
- Damaged Joists must not be used
- Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

- Provide lateral support at bearing points to avoid lateral displacement and rotation
- Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
- For flat roofs provide proper drainage to prevent ponding

## Manufacturer Info

Boise Cascade Wood Products  
1111 W. Jefferson St.  
Boise, ID 83702  
(800) 232-0788  
www.bc.com  
CCMC: 12787

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



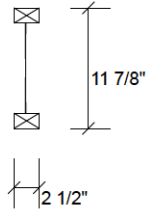
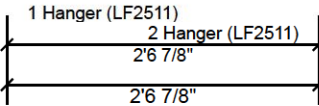
This design is valid until 5/24/2024

F1-B AJS 140 11.875" - PAS

Dec 06 2023

MHP 23020

PER: CHIEF BUILDING OFFICIAL



## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	1	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	33	16	0	0
2	Vertical	33	16	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	2.000"	Vert	4%	20 / 49	69	L	1.25D+1.5L
2 - Hanger	2.000"	Vert	4%	20 / 49	69	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	37 ft-lb	1'3 3/8"	5305 ft-lb	0.007 (1%)	1.25D+1.5L	L
Unbraced	37 ft-lb	1'3 3/8"	5305 ft-lb	0.007 (1%)	1.25D+1.5L	L
Shear	64 lb	1 1/4"	2350 lb	0.027 (3%)	1.25D+1.5L	L
Perm Defl in. (L/183158)	0.000	1'3 7/16"	0.079 (L/360)	0.002 (0%)	D	Uniform
LL Defl inch (L/90435)	0.000	1'3 7/16"	0.059 (L/480)	0.005 (1%)	L	L
TL Defl inch (L/60542)	0.000	1'3 7/16"	0.118 (L/240)	0.004 (0%)	D+L	L

## Design Notes

- 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.
- Fill all hanger nailing holes.
- Girders are designed to be supported on the bottom edge only.
- If sheathing is not attached to the top flange, top flange must be laterally braced at maximum 2' o.c.
- Bottom flange must be laterally braced at bearings.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 0-11-0	0-7-12	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Part. Uniform	0-0-0 to 0-11-0		Top	3 PLF	0 PLF	0 PLF	0 PLF	
3	Tie-In	0-11-0 to 1-11-0	0-7-8	Top	15 PSF	40 PSF	0 PSF	0 PSF	
4	Part. Uniform	0-11-0 to 1-11-0		Top	3 PLF	0 PLF	0 PLF	0 PLF	

Continued on page 2...

MODULUS ENGINEERING LTD.


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DOC: ME-TC02 V 03-2017  
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## Notes

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## Lumber

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

## Handling & Installation

- Joist flanges must not be cut or drilled
- Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
- Damaged Joists must not be used
- Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

- Provide lateral support at bearing points to avoid lateral displacement and rotation
- Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
- For flat roofs provide proper drainage to prevent ponding

## Manufacturer Info

Boise Cascade Wood Products  
1111 W. Jefferson St.  
Boise, ID 83702  
(800) 232-0788  
www.bc.com  
CCMC: 12787

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



This design is valid until 5/24/2024



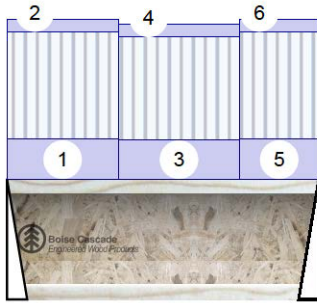
F1-B AJS 140 11.875" - PAS

TRUE COPY  
OF PERMIT PLANS  
Dec 06 2023

PER: *C. Morris*  
CHIEF BUILDING OFFICIAL

MHP 23020

Level: Ground Floor



1 Hanger (LF2511)  
2 Hanger (LF2511)  
2'6 7/8"  
2'6 7/8"

11 7/8"  
2 1/2"

...Continued from page 1

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
5	Tie-In	1-11-0 to 2-6-14	0-7-12	Top	15 PSF	40 PSF	0 PSF	0 PSF	
6	Part. Uniform	1-11-0 to 2-6-14		Top	3 PLF	0 PLF	0 PLF	0 PLF	

MODULUS ENGINEERING LTD.



SEE GENERAL NOTES  
DOC: ME-TC02 V 03-2017  
NOTE: ALTERING THIS DOCUMENT  
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#### Notes

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#### Lumber

1. Dry service conditions, unless noted otherwise
2. Lumber must not be treated with fire retardant or corrosive chemicals

#### chemicals

#### Handling & Installation

1. Joist flanges must not be cut or drilled
2. Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
3. Damaged Joists must not be used
4. Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

5. Provide lateral support at bearing points to avoid lateral displacement and rotation
6. Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
7. For flat roofs provide proper drainage to prevent ponding

This design is valid until 5/24/2024

#### Manufacturer Info

Boise Cascade Wood Products  
1111 W. Jefferson St.  
Boise, ID 83702  
(800) 232-0788  
www.bc.com  
CCMC: 12787

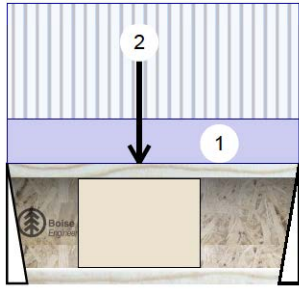
#### Kott Inc.

3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



F1-C AJS 140 11.875" - PAS

MHP 23020



1 Hanger (LF2511)  
2 Hanger (LF2511)  
2'4 15/16"  
2'4 15/16"

11 7/8"  
2 1/2"

### Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	1	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

### Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	228	85	0	0
2	Vertical	191	72	0	0

### Bearings and Factored Reactions

Bearing	Length	Dir.	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	2.000"	Vert	28%	107 / 341	448	L	1.25D+1.5L
2 - Hanger	2.000"	Vert	23%	89 / 286	376	L	1.25D+1.5L

### Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	410 ft-lb	1'1 1/8"	5305 ft-lb	0.077 (8%)	1.25D+1.5L	L
Unbraced	410 ft-lb	1'1 1/8"	5305 ft-lb	0.077 (8%)	1.25D+1.5L	L
Shear	442 lb	1 1/4"	2350 lb	0.188 (19%)	1.25D+1.5L	L
Perm Defl in. (L/20139)	0.001	1'1 1/16"	0.073 (L/360)	0.018 (2%)	D	Uniform
LL Defl inch	0.004 (L/7552)	1'1 1/16"	0.055 (L/480)	0.064 (6%)	L	L
TL Defl inch	0.005 (L/5492)	1'1 1/16"	0.110 (L/240)	0.044 (4%)	D+L	L

### Design Notes

- 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.
- Fill all hanger nailing holes.
- Girders are designed to be supported on the bottom edge only.
- If sheathing is not attached to the top flange, top flange must be laterally braced at maximum 2' o.c.
- If sheathing is not attached to the bottom flange, bottom flange must be laterally braced at maximum 2' o.c.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 2-4-15	0-8-4	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Point	1-1-1		Far Face	132 lb	352 lb	0 lb	0 lb	J5

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### Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

### Lumber

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

### chemicals

### Handling & Installation

- Joist flanges must not be cut or drilled
- Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
- Damaged Joists must not be used
- Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

- Provide lateral support at bearing points to avoid lateral displacement and rotation
- Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
- For flat roofs provide proper drainage to prevent ponding

This design is valid until 5/24/2024

### Manufacturer Info

Boise Cascade Wood Products  
1111 W. Jefferson St.  
Boise, ID 83702  
(800) 232-0788  
www.bc.com  
CCMC: 12787

### Kott Inc.

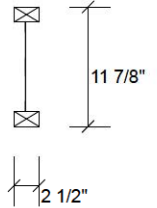
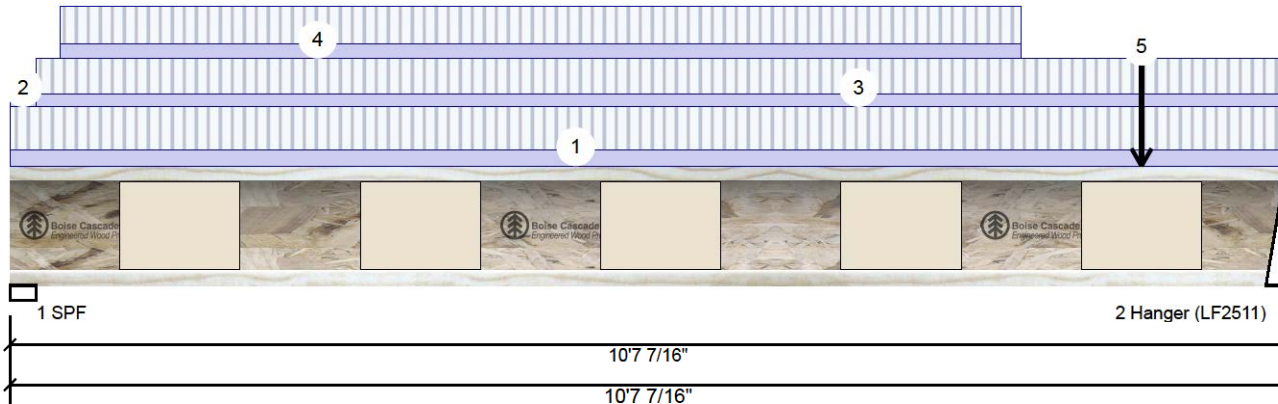
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613-838-2775 / 905-642-4400





F2-A AJS 140 11.875" - PAS

MHP 23020



## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	1	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	419	157	0	0
2	Vertical	416	156	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	2.625"	Vert	48%	196 / 629	825	L	1.25D+1.5L
2 - Hanger	2.000"	Vert	51%	195 / 623	818	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2137 ft-lb	5'3 15/16"	5305 ft-lb	0.403 (40%)	1.25D+1.5L	L
Unbraced	2137 ft-lb	5'3 15/16"	5305 ft-lb	0.403 (40%)	1.25D+1.5L	L
Shear	812 lb	1 7/8"	2350 lb	0.346 (35%)	1.25D+1.5L	L
Perm Defl in.	0.031 (L/3995)	5'4"	0.345 (L/360)	0.090 (9%)	D	Uniform
LL Defl inch	0.083 (L/1494)	5'4"	0.259 (L/480)	0.321 (32%)	L	
TL Defl inch	0.114 (L/1087)	5'4"	0.518 (L/240)	0.221 (22%)	D+L	L

## Design Notes

- 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.
- Fill all hanger nailing holes.
- Girders are designed to be supported on the bottom edge only.
- If sheathing is not attached to the top flange, top flange must be laterally braced at maximum 2' o.c.
- Bottom flange must be laterally braced at a maximum of 2' o.c.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 10-7-7	0-9-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	0-0-0 to 0-2-10	0-3-6	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Tie-In	0-2-10 to 10-7-7	0-7-5	Top	15 PSF	40 PSF	0 PSF	0 PSF	
4	Part. Uniform	0-4-15 to 8-5-0		Far Face	10 PLF	27 PLF	0 PLF	0 PLF	
5	Point	9-5-0		Far Face	17 lb	44 lb	0 lb	0 lb	J1

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## Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

## Lumber

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

## chemicals

## Handling & Installation

- Joist flanges must not be cut or drilled
- Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
- Damaged Joists must not be used
- Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

- Provide lateral support at bearing points to avoid lateral displacement and rotation
- Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
- For flat roofs provide proper drainage to prevent ponding

## Manufacturer Info

Boise Cascade Wood Products  
1111 W. Jefferson St.  
Boise, ID 83702  
(800) 232-0788  
www.bc.com  
CCMC: 12787

## Kott Inc.

3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400

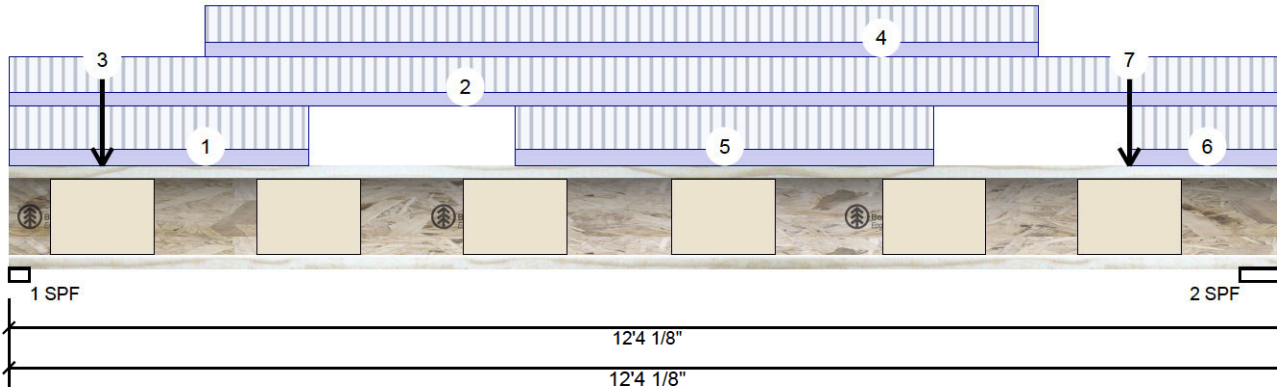


This design is valid until 5/24/2024

F3-A AJS 140 11.875" - PAS

Dec 06 2023

MHP 23020

PER:   
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### Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	1	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

### Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	428	162	0	0
2	Vertical	435	164	0	0

### Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	2.375"	Vert	50%	202 / 642	844	L	1.25D+1.5L
2 - SPF	5.250"	Vert	45%	205 / 652	857	L	1.25D+1.5L

### Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2445 ft-lb	6'2 1/4"	5305 ft-lb	0.461 (46%)	1.25D+1.5L	L
Unbraced	2445 ft-lb	6'2 1/4"	5305 ft-lb	0.461 (46%)	1.25D+1.5L	L
Shear	830 lb	1 5/8"	2350 lb	0.353 (35%)	1.25D+1.5L	L
Perm Defl in.	0.044 (L/3193)	6'1 1/16"	0.394 (L/360)	0.113 (11%)	D	Uniform
LL Defl inch	0.117 (L/1208)	6'1 1/16"	0.296 (L/480)	0.397 (40%)	L	
TL Defl inch	0.162 (L/877)	6'1 1/16"	0.592 (L/240)	0.274 (27%)	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 If sheathing is not attached to the top flange, top flange must be laterally braced at maximum 2' o.c.
- 4 Bottom flange must be laterally braced at a maximum of 2' 1/2" o.c.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 2-10-13	0-9-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	0-0-0 to 12-4-2	0-7-6	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Point	0-10-13		Far Face	15 lb	39 lb	0 lb	0 lb	J1
4	Part. Uniform	1-10-12 to 9-11-7		Far Face	10 PLF	26 PLF	0 PLF	0 PLF	
5	Tie-In	4-10-12 to 8-11-6	0-9-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
6	Tie-In	10-10-1 to 12-4-2	0-9-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
7	Point	10-10-1		Far Face	22 lb	58 lb	0 lb	0 lb	J1

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### Notes

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**Lumber**

1. Dry service conditions, unless noted otherwise
2. Lumber must not be treated with fire retardant or corrosive chemicals

### Handling & Installation

1. Joist flanges must not be cut or drilled
2. Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
3. Damaged Joists must not be used
4. Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

5. Provide lateral support at bearing points to avoid lateral displacement and rotation
6. Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
7. For flat roofs provide proper drainage to prevent ponding

### Manufacturer Info

Boise Cascade Wood Products  
1111 W. Jefferson St.  
Boise, ID 83702  
(800) 232-0788  
www.bc.com  
CCMC: 12787

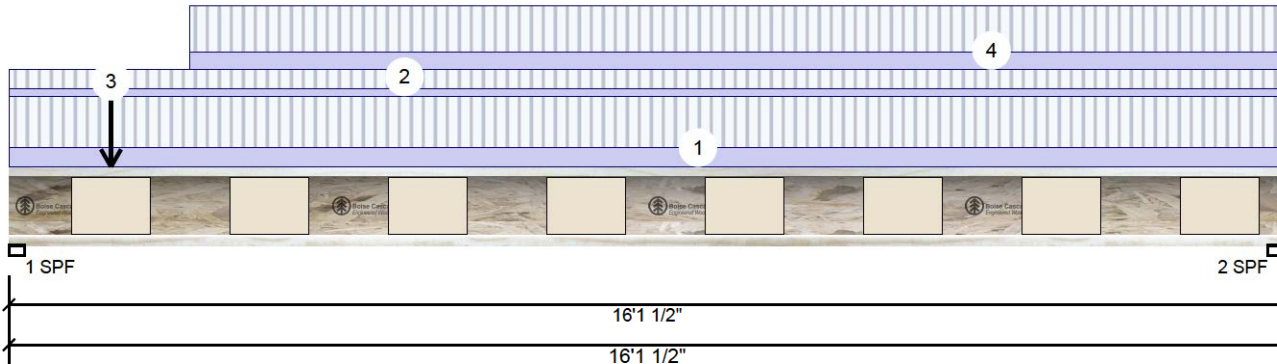
Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



This design is valid until 5/24/2024

F4-A AJS 140 11.875" - PAS

MHP 23020



### Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	1	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

### Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	532	198	0	0
2	Vertical	549	205	0	0

### Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	2.375"	Vert	62%	248 / 797	1045	L	1.25D+1.5L
2 - SPF	2.625"	Vert	62%	256 / 824	1080	L	1.25D+1.5L

### Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4186 ft-lb	8' 3/4"	5305 ft-lb	0.789 (79%)	1.25D+1.5L	L
Unbraced	4186 ft-lb	8' 3/4"	5305 ft-lb	0.789 (79%)	1.25D+1.5L	L
Shear	1059 lb	15'11 5/8"	2350 lb	0.451 (45%)	1.25D+1.5L	L
Perm Defl in.	0.127 (L/1499)	8' 11/16"	0.528 (L/360)	0.240 (24%)	D	Uniform
LL Defl inch	0.340 (L/559)	8' 11/16"	0.396 (L/480)	0.858 (86%)	L	
TL Defl inch	0.466 (L/407)	8' 11/16"	0.792 (L/240)	0.589 (59%)	D+L	L

### Design Notes

- 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.
- Girders are designed to be supported on the bottom edge only.
- If sheathing is not attached to the top flange, top flange must be laterally braced at maximum 2' o.c.
- Bottom flange must be laterally braced at a maximum of 2' o.c.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 16-1-8	0-9-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	0-0-0 to 16-1-8	0-3-6	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Point	1-3-8		Far Face	16 lb	44 lb	0 lb	0 lb	J1
4	Part. Uniform	2-3-8 to 16-1-8		Far Face	10 PLF	27 PLF	0 PLF	0 PLF	

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### Notes

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### Lumber

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

### chemicals

### Handling & Installation

- Joist flanges must not be cut or drilled
- Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
- Damaged Joists must not be used
- Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

- Provide lateral support at bearing points to avoid lateral displacement and rotation
- Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
- For flat roofs provide proper drainage to prevent ponding

### Manufacturer Info

Boise Cascade Wood Products  
1111 W. Jefferson St.  
Boise, ID 83702  
(800) 232-0788  
www.bc.com  
CCMC: 12787

Kott Inc.  
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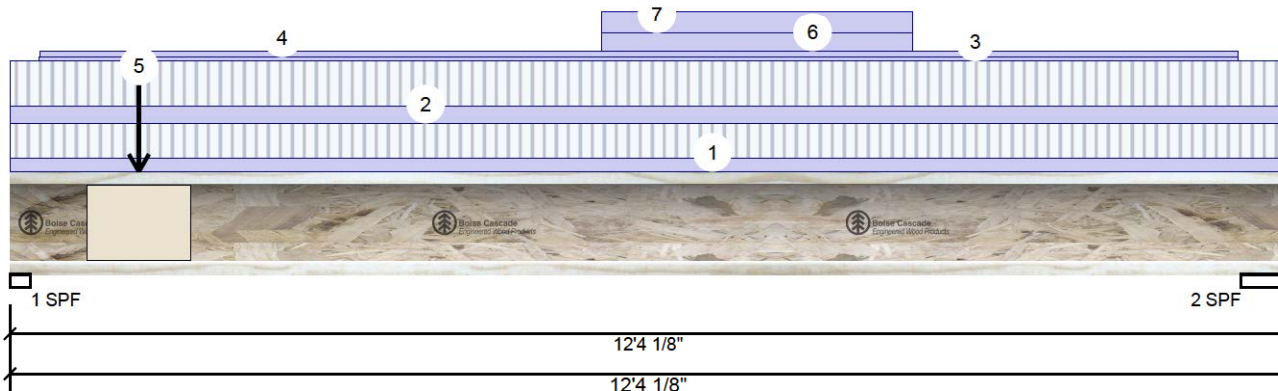
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F5-A AJS 140 11.875"

2-P  
PER:   
CHIEF BUILDING OFFICIAL

MHP 23020



## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	272	158	0	0
2	Vertical	255	161	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	2.375"	Vert	18%	198 / 408	606	L	1.25D+1.5L
2 - SPF	5.250"	Vert	15%	201 / 382	583	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	1704 ft-lb	6'2 5/16"	10610 ft-lb	0.161 (16%)	1.25D+1.5L	L
Unbraced	1704 ft-lb	6'2 5/16"	10610 ft-lb	0.161 (16%)	1.25D+1.5L	L
Shear	595 lb	1 5/8"	4700 lb	0.127 (13%)	1.25D+1.5L	L
Perm Defl in.	0.024 (L/6027)	6'2 1/16"	0.394 (L/360)	0.060 (6%)	D	Uniform
LL Defl inch	0.034 (L/4121)	6' 1/4"	0.296 (L/480)	0.116 (12%)	L	
TL Defl inch	0.058 (L/2448)	6'1"	0.592 (L/240)	0.098 (10%)	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 If sheathing is not attached to the top flange, top flange must be laterally braced at maximum 2' o.c.
- 6 Bottom flange must be laterally braced at a maximum of 11'1 1/8" o.c.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 12-4-2	0-5-4	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	0-0-0 to 12-4-2	0-6-12	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Part. Uniform	0-3-6 to 11-10-8		Top	2 PLF	0 PLF	0 PLF	0 PLF	
4	Part. Uniform	0-3-7 to 11-10-8		Top	3 PLF	0 PLF	0 PLF	0 PLF	
5	Point	1-2-15		Near Face	16 lb	33 lb	0 lb	0 lb	F1

Continued on page 2...

## Notes

Calculated Structural 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. Lumber must be treated with fire retardant or corrosive

## chemicals

## Handling & Installation

1. Joist flanges must not be cut or drilled
2. Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
3. Damaged Joists must not be used
4. Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

5. Provide lateral support at bearing points to avoid lateral displacement and rotation
6. Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
7. For flat roofs provide proper drainage to prevent ponding

This design is valid until 5/24/2024

## Manufacturer Info

Boise Cascade Wood Products  
1111 W. Jefferson St.  
Boise, ID 83702  
(800) 232-0788  
www.bc.com  
CCMC: 12787

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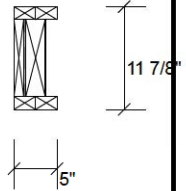
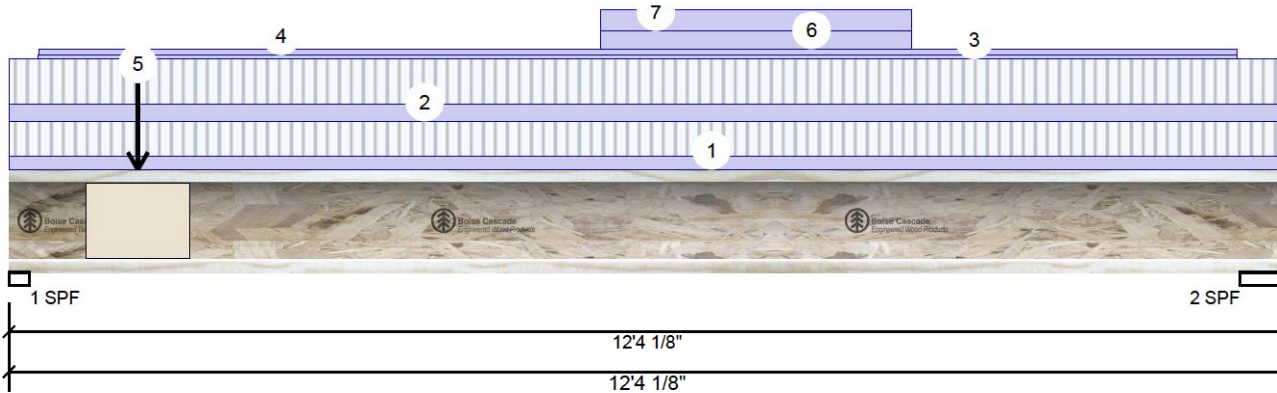


F5-A AJS 140 11.875"

2-P

PER:   
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MHP 23020



...Continued from page 1

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
6	Part. Uniform	5-8-10 to 8-8-13		Top	9 PLF	0 PLF	0 PLF	0 PLF	
7	Part. Uniform	5-8-10 to 8-8-13		Top	11 PLF	0 PLF	0 PLF	0 PLF	

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#### Notes

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#### Lumber

1. Dry service conditions, unless noted otherwise
2. Lumber not to be treated with fire retardant or corrosive chemicals

#### chemicals

#### Handling & Installation

1. Joist flanges must not be cut or drilled
2. Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
3. Damaged Joists must not be used
4. Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

5. Provide lateral support at bearing points to avoid lateral displacement and rotation
6. Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
7. For flat roofs provide proper drainage to prevent ponding

This design is valid until 5/24/2024

#### Manufacturer Info

Boise Cascade Wood Products  
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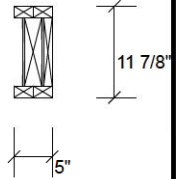
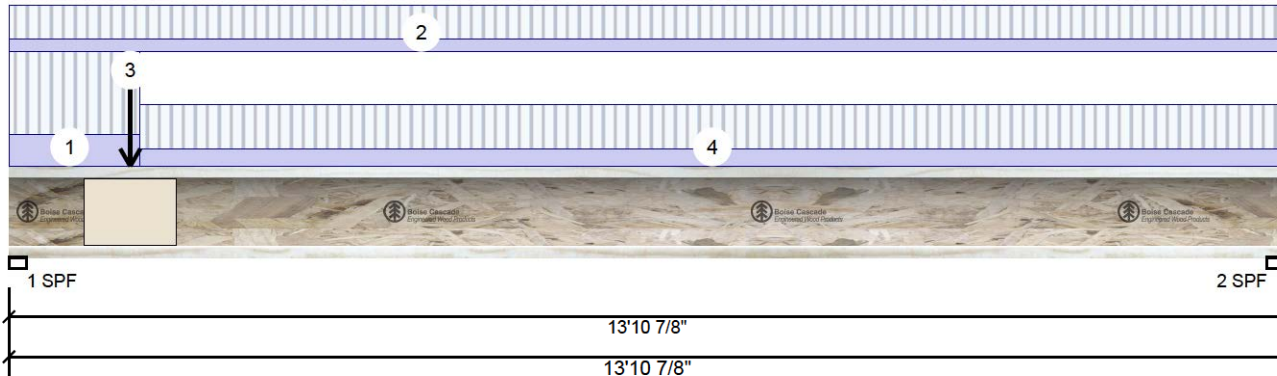
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F5-B AJS 140 11.875"

2-P  
PER:   
CHIEF BUILDING OFFICIAL

MHP 23020



## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	580	218	0	0
2	Vertical	389	146	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	2.313"	Vert	34%	272 / 871	1143	L	1.25D+1.5L
2 - SPF	2.375"	Vert	23%	182 / 584	766	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2693 ft-lb	6'7 1/4"	10610 ft-lb	0.254 (25%)	1.25D+1.5L	L
Unbraced	2693 ft-lb	6'7 1/4"	10610 ft-lb	0.254 (25%)	1.25D+1.5L	L
Shear	1123 lb	1 9/16"	4700 lb	0.239 (24%)	1.25D+1.5L	L
Perm Defl in.	0.032 (L/5151)	6'9 7/8"	0.455 (L/360)	0.070 (7%)	D	Uniform
LL Defl inch	0.085 (L/1933)	6'9 15/16"	0.341 (L/480)	0.248 (25%)	L	
TL Defl inch	0.116 (L/1405)	6'9 15/16"	0.682 (L/240)	0.171 (17%)	D+L	L

## Design Notes

- 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.
- Girders are designed to be supported on the bottom edge only.
- Multiple plies must be fastened together as per manufacturer's details.
- Top loads must be supported equally by all plies.
- If sheathing is not attached to the top flange, top flange must be laterally braced at maximum 2' o.c.
- Bottom flange must be laterally braced at a maximum of 12'7" o.c.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 1-5-2	1-5-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	0-0-0 to 13-10-14	0-6-13	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Point	1-3-14		Far Face	72 lb	191 lb	0 lb	0 lb	F1
4	Tie-In	1-5-2 to 13-10-14	0-9-3	Top	15 PSF	40 PSF	0 PSF	0 PSF	

MODULUS ENGINEERING LTD.


SEE GENERAL NOTES  
DOC: ME-TC02 V 03-2017  
NOTE: ALTERING THIS DOCUMENT  
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## Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

## Lumber

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

## Handling & Installation

- Joist flanges must not be cut or drilled
- Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
- Damaged Joists must not be used
- Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

- Provide lateral support at bearing points to avoid lateral displacement and rotation
- Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
- For flat roofs provide proper drainage to prevent ponding

## Manufacturer Info

Boise Cascade Wood Products  
1111 W. Jefferson St.  
Boise, ID 83702  
(800) 232-0788  
www.bc.com  
CCMC: 12787

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



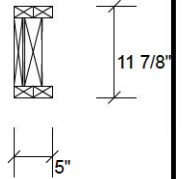
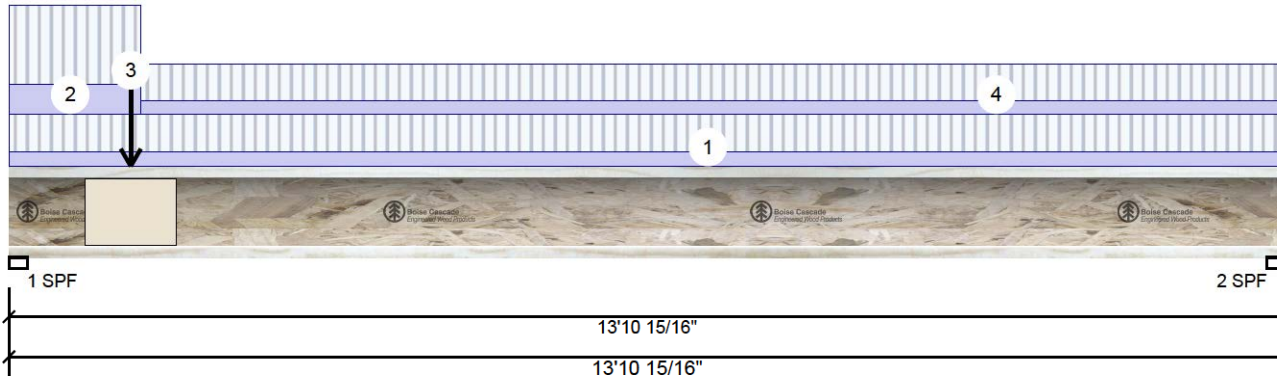
This design is valid until 5/24/2024



F5-C AJS 140 11.875"

2-P  
PER:   
CHIEF BUILDING OFFICIAL

MHP 2020



## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	621	232	0	0
2	Vertical	393	147	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	2.375"	Vert	36%	290 / 931	1221	L	1.25D+1.5L
2 - SPF	2.375"	Vert	23%	184 / 589	773	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2743 ft-lb	6'6 9/16"	10610 ft-lb	0.259 (26%)	1.25D+1.5L	L
Unbraced	2743 ft-lb	6'6 9/16"	10610 ft-lb	0.259 (26%)	1.25D+1.5L	L
Shear	1199 lb	1 5/8"	4700 lb	0.255 (26%)	1.25D+1.5L	L
Perm Defl in.	0.032 (L/5053)	6'9 3/4"	0.455 (L/360)	0.071 (7%)	D	Uniform
LL Defl inch	0.086 (L/1894)	6'9 3/4"	0.341 (L/480)	0.253 (25%)	L	
TL Defl inch	0.119 (L/1377)	6'9 3/4"	0.682 (L/240)	0.174 (17%)	D+L	L

## Design Notes

- 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.
- Girders are designed to be supported on the bottom edge only.
- Multiple plies must be fastened together as per manufacturer's details.
- Top loads must be supported equally by all plies.
- If sheathing is not attached to the top flange, top flange must be laterally braced at maximum 2' o.c.
- Bottom flange must be laterally braced at a maximum of 12'7" o.c.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 13-10-15	0-8-3	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	0-0-1 to 1-5-3	1-5-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Point	1-3-15		Near Face	85 lb	228 lb	0 lb	0 lb	F1
4	Tie-In	1-5-3 to 13-10-15	0-7-13	Top	15 PSF	40 PSF	0 PSF	0 PSF	

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## Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

## Lumber

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

## Handling & Installation

- Joist flanges must not be cut or drilled
- Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
- Damaged Joists must not be used
- Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

- Provide lateral support at bearing points to avoid lateral displacement and rotation
- Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
- For flat roofs provide proper drainage to prevent ponding

## Manufacturer Info

Boise Cascade Wood Products  
1111 W. Jefferson St.  
Boise, ID 83702  
(800) 232-0788  
www.bc.com  
CCMC: 12787

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
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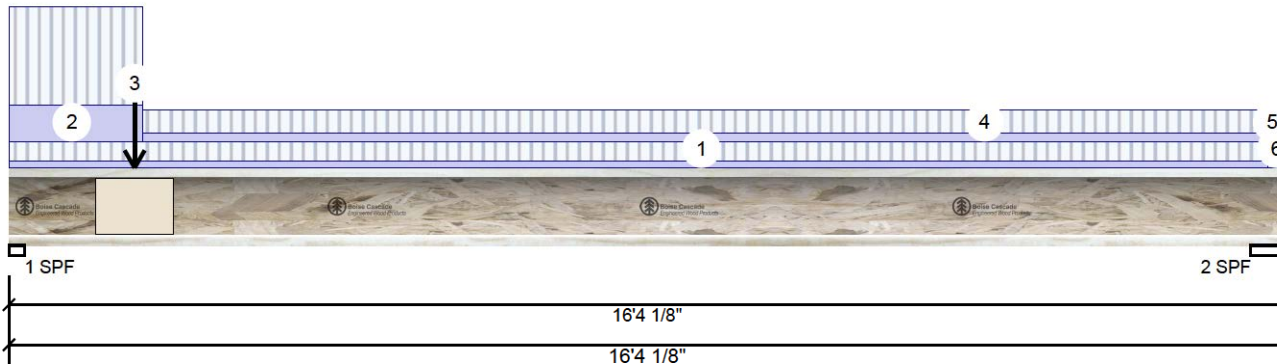


This design is valid until 5/24/2024

F6-A AJS 140 11.875"

2-P

MHP 23020



### Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

### Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	594	222	0	0
2	Vertical	240	90	0	0

### Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	2.375"	Vert	35%	278 / 891	1169	L	1.25D+1.5L
2 - SPF	5.250"	Vert	12%	112 / 360	472	L	1.25D+1.5L

### Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2138 ft-lb	6'6 9/16"	10610 ft-lb	0.201 (20%)	1.25D+1.5L	L
Unbraced	2138 ft-lb	6'6 9/16"	10610 ft-lb	0.201 (20%)	1.25D+1.5L	L
Shear	1151 lb	1 5/8"	4700 lb	0.245 (24%)	1.25D+1.5L	L
Perm Defl in.	0.033 (L/5719)	7'7 11/16"	0.528 (L/360)	0.063 (6%)	D	Uniform
LL Defl inch	0.089 (L/2142)	7'7 11/16"	0.396 (L/480)	0.224 (22%)	L	
TL Defl inch	0.122 (L/1558)	7'7 11/16"	0.792 (L/240)	0.154 (15%)	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 If sheathing is not attached to the top flange, top flange must be laterally braced at maximum 2' o.c.
- 6 Bottom flange must be laterally braced at a maximum of 14'8 13/16" o.c.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 16-1-8	0-3-6	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	0-0-0 to 1-8-9	1-5-2	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Point	1-7-5		Near Face	134 lb	359 lb	0 lb	0 lb	F1
4	Tie-In	1-8-9 to 16-1-8	0-4-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
5	Tie-In	16-1-8 to 16-4-2	0-4-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
6	Tie-In	16-1-8 to 16-4-2	0-3-6	Top	15 PSF	40 PSF	0 PSF	0 PSF	

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### Notes

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### Lumber

1. Dry service conditions, unless noted otherwise
2. Joist not to be treated with fire retardant or corrosive

### chemicals

### Handling & Installation

1. Joist flanges must not be cut or drilled
2. Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
3. Damaged Joists must not be used
4. Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

5. Provide lateral support at bearing points to avoid lateral displacement and rotation
6. Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
7. For flat roofs provide proper drainage to prevent ponding

### Manufacturer Info

Boise Cascade Wood Products  
 1111 W. Jefferson St.  
 Boise, ID 83702  
 (800) 232-0788  
 www.bc.com  
 CCMC: 12787

### Kott Inc.

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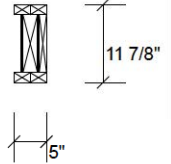
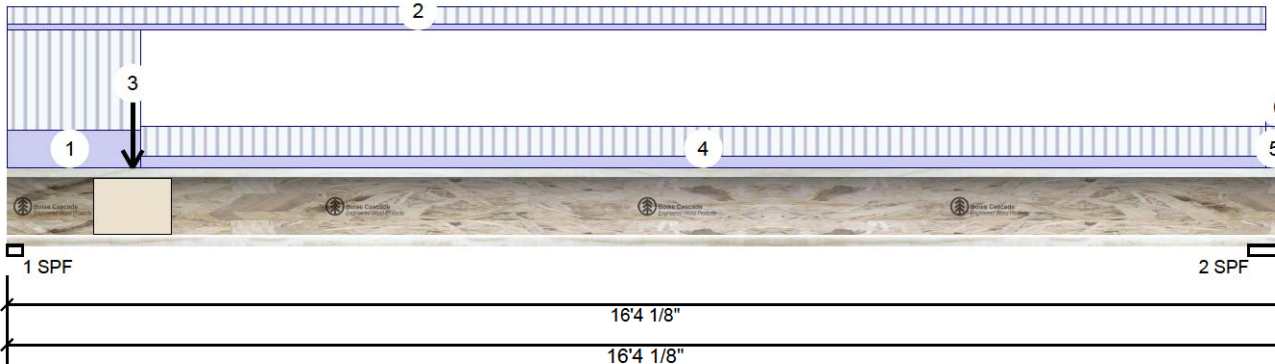


This design is valid until 5/24/2024

F6-B AJS 140 11.875"

2-P

MHP 23020



## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	573	215	0	0
2	Vertical	254	95	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	2.375"	Vert	33%	268 / 859	1128	L	1.25D+1.5L
2 - SPF	5.250"	Vert	13%	119 / 381	501	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2203 ft-lb	6'9 11/16"	10610 ft-lb	0.208 (21%)	1.25D+1.5L	L
Unbraced	2203 ft-lb	6'9 11/16"	10610 ft-lb	0.208 (21%)	1.25D+1.5L	L
Shear	1110 lb	1 5/8"	4700 lb	0.236 (24%)	1.25D+1.5L	L
Perm Defl in.	0.034 (L/5541)	7'8 3/8"	0.528 (L/360)	0.065 (6%)	D	Uniform
LL Defl inch	0.091 (L/2077)	7'8 5/16"	0.396 (L/480)	0.231 (23%)	L	
TL Defl inch	0.126 (L/1511)	7'8 5/16"	0.792 (L/240)	0.159 (16%)	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 If sheathing is not attached to the top flange, top flange must be laterally braced at maximum 2' o.c.
- 6 Bottom flange must be laterally braced at a maximum of 14'8 13/16" o.c.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 1-8-9	1-5-2	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	0-0-0 to 16-1-8	0-2-14	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Point	1-7-5		Far Face	121 lb	323 lb	0 lb	0 lb	F1
4	Tie-In	1-8-9 to 16-1-8	0-5-2	Top	15 PSF	40 PSF	0 PSF	0 PSF	
5	Tie-In	16-1-8 to 16-4-2	0-5-2	Top	15 PSF	40 PSF	0 PSF	0 PSF	
6	Tie-In	16-1-8 to 16-4-2	0-2-14	Top	15 PSF	40 PSF	0 PSF	0 PSF	

MODULUS ENGINEERING LTD.



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## Notes

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## Lumber

1. Dry service conditions, unless noted otherwise
2. Joist not to be treated with fire retardant or corrosive

## chemicals

## Handling & Installation

1. Joist flanges must not be cut or drilled
2. Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
3. Damaged Joists must not be used
4. Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

5. Provide lateral support at bearing points to avoid lateral displacement and rotation
6. Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
7. For flat roofs provide proper drainage to prevent ponding

## Manufacturer Info

Boise Cascade Wood Products  
1111 W. Jefferson St.  
Boise, ID 83702  
(800) 232-0788  
www.bc.com  
CCMC: 12787

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
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This design is valid until 5/24/2024

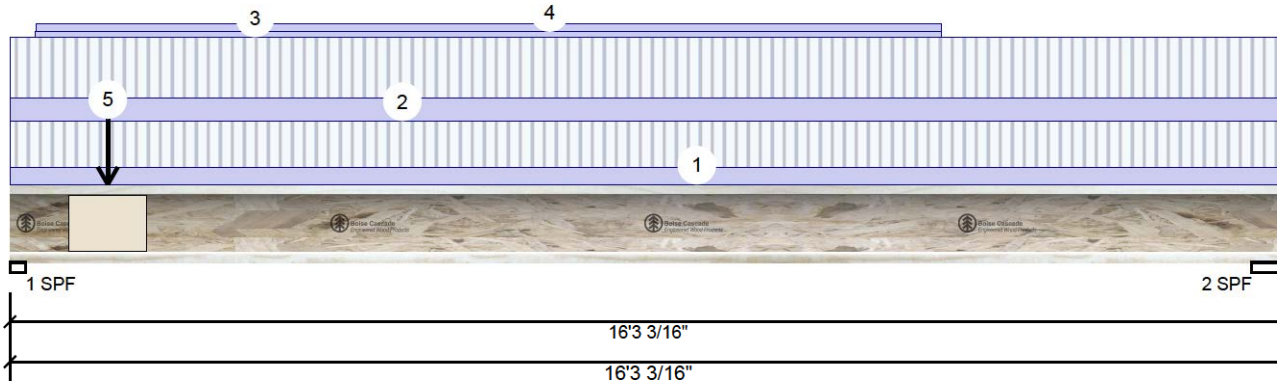


ME22-0647-22

F6-C AJS 140 11.875"

2-P

MHP 23020



## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	351	171	0	0
2	Vertical	332	147	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	2.375"	Vert	22%	214 / 527	740	L	1.25D+1.5L
2 - SPF	5.250"	Vert	18%	183 / 499	682	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2651 ft-lb	7'11"	10610 ft-lb	0.250 (25%)	1.25D+1.5L	L
Unbraced	2651 ft-lb	7'11"	10610 ft-lb	0.250 (25%)	1.25D+1.5L	L
Shear	730 lb	1 5/8"	4700 lb	0.155 (16%)	1.25D+1.5L	L
Perm Defl in.	0.048 (L/3931)	7'11 3/8"	0.525 (L/360)	0.092 (9%)	D	Uniform
LL Defl inch	0.100 (L/1893)	7'11 7/8"	0.394 (L/480)	0.254 (25%)	L	
TL Defl inch	0.148 (L/1278)	7'11 3/4"	0.788 (L/240)	0.188 (19%)	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 If sheathing is not attached to the top flange, top flange must be laterally braced at maximum 2' o.c.
- 6 Bottom flange must be laterally braced at a maximum of 15' 3/16" o.c.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 16-3-3	0-5-3	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	0-0-0 to 16-3-3	0-6-13	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Part. Uniform	0-3-14 to 11-10-8		Top	2 PLF	0 PLF	0 PLF	0 PLF	
4	Part. Uniform	0-4-0 to 11-10-8		Top	3 PLF	0 PLF	0 PLF	0 PLF	
5	Point	1-2-15		Far Face	16 lb	33 lb	0 lb	0 lb	F1

MODULUS ENGINEERING LTD.



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DOC: ME-TC02 V 03-2017  
NOTE: ALTERING THIS DOCUMENT  
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## Notes

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## Lumber

1. Dry service conditions, unless noted otherwise
2. Lumber must not be treated with fire retardant or corrosive chemicals

## chemicals

## Handling &amp; Installation

1. Joist flanges must not be cut or drilled
2. Refer to latest copy of the Joist product information details for framing details, stiffener tables, web hole chart, bridging details, multi-ply fastening details and handling/erection details
3. Damaged Joists must not be used
4. Design assumes top flange to be laterally restrained by attached sheathing or as specified in engineering notes.

5. Provide lateral support at bearing points to avoid lateral displacement and rotation
6. Web stiffeners for point load as shown Minimum point load bearing length= 3.5 inches
7. For flat roofs provide proper drainage to prevent ponding

## Manufacturer Info

Boise Cascade Wood Products  
1111 W. Jefferson St.  
Boise, ID 83702  
(800) 232-0788  
www.bc.com  
CCMC: 12787

This design is valid until 5/24/2024

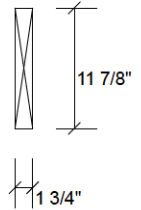
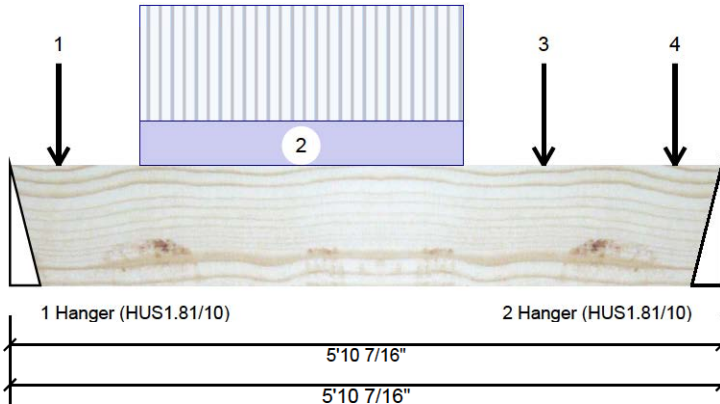
Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



F7-A Forex 2.0E-3000Fb LVL

1  
PER: *C. Morris*  
CHIEF BUILDING OFFICIAL

MLIP 23020  
- PASSED



Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	1	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	559	223	0	0
2	Vertical	560	237	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	3.000"	Vert	29%	279 / 838	1116	L	1.25D+1.5L
2 - Hanger	3.000"	Vert	29%	297 / 840	1137	L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	1428 ft-lb	2'11 1/4"	17130 ft-lb	0.083 (8%)	1.25D+1.5L	L
Unbraced	1428 ft-lb	2'11 1/4"	17130 ft-lb	0.083 (8%)	1.25D+1.5L	L
Shear	1178 lb	4'7 9/16"	5798 lb	0.203 (20%)	1.25D+1.5L	L
Perm Defl in. (L/13851)	0.005	2'11 3/8"	0.183 (L/360)	0.026 (3%)	D	Uniform
LL Defl inch	0.012 (L/5545)	2'11 5/16"	0.137 (L/480)	0.087 (9%)	L	L
TL Defl inch	0.017 (L/3960)	2'11 5/16"	0.275 (L/240)	0.061 (6%)	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 Fill all hanger nailing holes.
- 3 Girders are designed to be supported on the bottom edge only.
- 4 Top must be continuously laterally braced.
- 5 Bottom must have sheathing attached or be continuously braced.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Point	0-4-13		Far Face	70 lb	187 lb	0 lb	0 lb	J3
2	Part. Uniform	1-0-13 to 3-8-13		Far Face	74 PLF	199 PLF	0 PLF	0 PLF	
3	Point	4-4-13		Far Face	90 lb	240 lb	0 lb	0 lb	J3
4	Point	5-5-13		Far Face	75 lb	161 lb	0 lb	0 lb	J3
	Self Weight				5 PLF				

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SEE GENERAL NOTES  
DOC: ME-TC02 V 03-2017  
NOTE: ALTERING THIS DOCUMENT  
VOIDS THE ENGINEER'S SEAL

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive chemicals

Handling & Installation

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

6. For flat roofs provide proper drainage to prevent ponding

Manufacturer Info

Forex  
APA: PR-L318

This design is valid until 5/24/2024

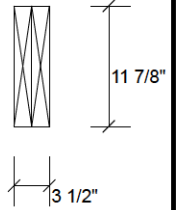
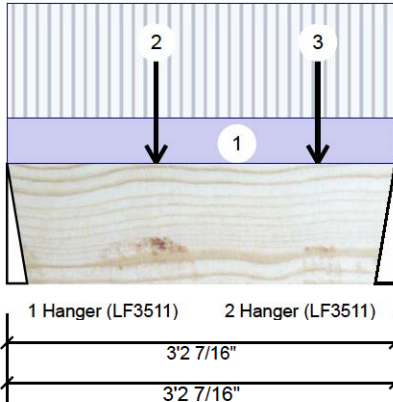
Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



F8-B Forex 2.0E-3000Fb LVL 1.75

- Ply - PASSED

Level: Ground Floor

PER:   
CHIEF BUILDING OFFICIAL


### Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

### Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	254	112	0	0
2	Vertical	291	126	0	0

### Bearings and Factored Reactions

Bearing	Length	Dir.	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	2.000"	Vert	10%	140 / 381	521	L	1.25D+1.5L
2 - Hanger	2.000"	Vert	11%	157 / 437	594	L	1.25D+1.5L

### Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	445 ft-lb	1'2 7/8"	34261 ft-lb	0.013 (1%)	1.25D+1.5L	L
Unbraced	445 ft-lb	1'2 7/8"	34261 ft-lb	0.013 (1%)	1.25D+1.5L	L
Shear	388 lb	2' 9/16"	11596 lb	0.033 (3%)	1.25D+1.5L	L
Perm Defl in. (L/88091)	0.000	1'5 5/8"	0.100 (L/360)	0.004 (0%)	D	Uniform
LL Defl inch (L/37733)	0.001	1'5 5/16"	0.075 (L/480)	0.013 (1%)	L	L
TL Defl inch (L/26419)	0.001	1'5 7/16"	0.150 (L/240)	0.009 (1%)	D+L	L

**LAMINATE WITH:**  
2 ROWS OF 3.25" AIR NAILS  
FACE SPACING AT 12 IN O/C.  
NAIL FROM LOADED FACE  
MIN HANGER NAILS: (JOIST/BAM) 3 IN

### Design Notes

- 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.
- Fill all hanger nailing holes.
- Girders are designed to be supported on the bottom edge only.
- Multiple plies must be fastened together as per manufacturer's details.
- Top loads must be supported equally by all plies.
- Top must be continuously laterally braced.
- Bottom must have sheathing attached or be continuously braced.
- Lateral slenderness ratio based on full section width.

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ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Part. Uniform	0-0-0 to 3-2-7		Top	34 PLF	89 PLF	0 PLF	0 PLF	
2	Point	1-2-12		Far Face	55 lb	146 lb	0 lb	0 lb	J2
3	Point	2-6-12		Far Face	43 lb	114 lb	0 lb	0 lb	J2
	Self Weight				10 PLF				

SEE GENERAL NOTES  
DOC: ME-TC02 V 03-2017  
NOTE: ALTERING THIS DOCUMENT  
VOIDS THE ENGINEER'S SEAL

### Notes

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### Lumber

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

### chemicals

### Handling & Installation

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

- For flat roofs provide proper drainage to prevent ponding

### Manufacturer Info

Forex  
APA: PR-L318

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



This design is valid until 5/24/2024

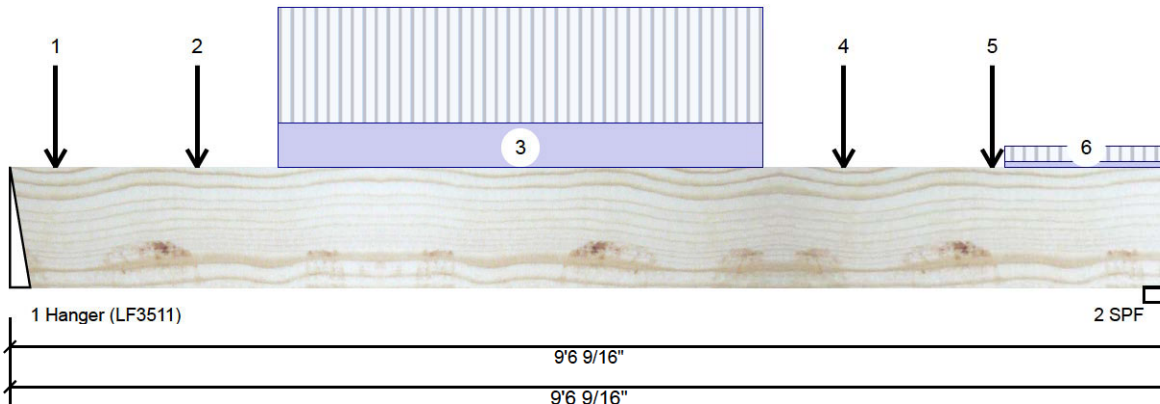


F9-C Forex 2.0E-3000Fb LVL 1.75C

-Ply

PER: 

CHIEF BUILDING OFFICIAL

MLIP 23020  
PASSED  
Level: Ground Floor

## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	1002	421	0	0
2	Vertical	1006	423	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	2.000"	Vert	39%	526 / 1503	2030	L	1.25D+1.5L
2 - SPF	2.375"	Vert	40%	528 / 1509	2037	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4756 ft-lb	4'10 5/16"	34261 ft-lb	0.139 (14%)	1.25D+1.5L	L
Unbraced	4756 ft-lb	4'10 5/16"	34261 ft-lb	0.139 (14%)	1.25D+1.5L	L
Shear	2028 lb	1'1 7/8"	11596 lb	0.175 (17%)	1.25D+1.5L	L
Perm Defl in.	0.019 (L/6028)	4'9 9/16"	0.310 (L/360)	0.060 (6%)	D	Uniform
LL Defl inch	0.044 (L/2521)	4'9 5/8"	0.233 (L/480)	0.190 (19%)	L	L
TL Defl inch	0.063 (L/1777)	4'9 5/8"	0.465 (L/240)	0.135 (14%)	D+L	L

## LAMINATE WITH:

2 ROWS OF 3.25" AIR NAILS  
FACE SPACING AT 12 IN O/C.  
NAIL FROM LOADED FACE  
MIN HANGER NAILS: (JOIST/BREAM) 3 IN

## 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 Fill all hanger nailing holes.
- 3 Girders are designed to be supported on the bottom edge only.
- 4 Multiple plies must be fastened together as per manufacturer's details.
- 5 Top loads must be supported equally by all plies.
- 6 Top must be continuously laterally braced.
- 7 Bottom must have sheathing attached or be continuously braced.
- 8 Lateral slenderness ratio based on full section width.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Point	0-4-8		Far Face	67 lb	178 lb	0 lb	0 lb	J4
2	Point	1-6-8		Far Face	99 lb	264 lb	0 lb	0 lb	J4
3	Part. Uniform	2-2-8 to 6-2-8		Far Face	79 PLF	211 PLF	0 PLF	0 PLF	
4	Point	6-10-8		Far Face	101 lb	270 lb	0 lb	0 lb	J4

Continued on page 2...

## 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 &amp; 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

Forex  
APA: PR-L318

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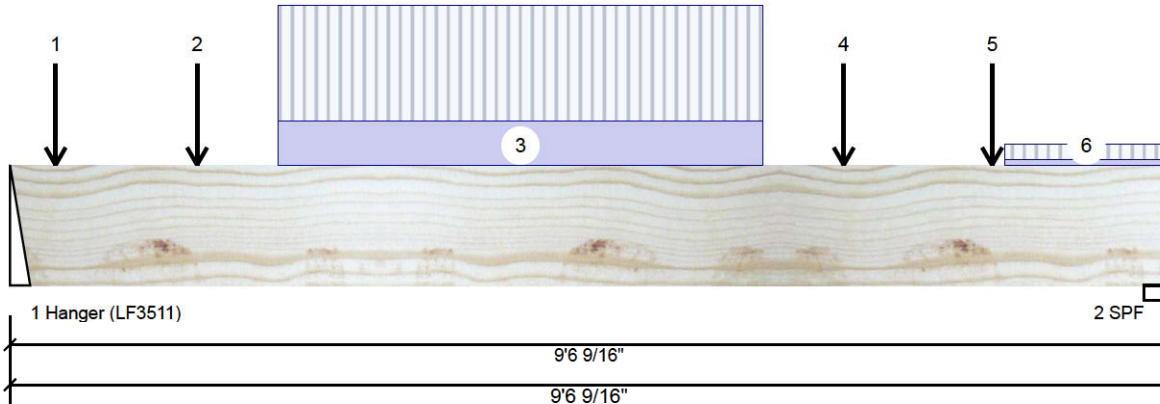
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F9-C Forex 2.0E-3000Fb LVL 1.75C

-P y PASSED

PER: CHIEF BUILDING OFFICIAL



...Continued from page 1

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
5	Point	8-1-3		Far Face	156 lb	416 lb	0 lb	0 lb	F2
6	Tie-In	8-2-7 to 9-6-9	0-8-1	Top	15 PSF	40 PSF	0 PSF	0 PSF	
	Self Weight				10 PLF				

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SEE GENERAL NOTES  
DOC: ME-TC02 V 03-2017  
NOTE: ALTERING THIS DOCUMENT  
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#### 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

#### Manufacturer Info

Forex  
APA: PR-L318

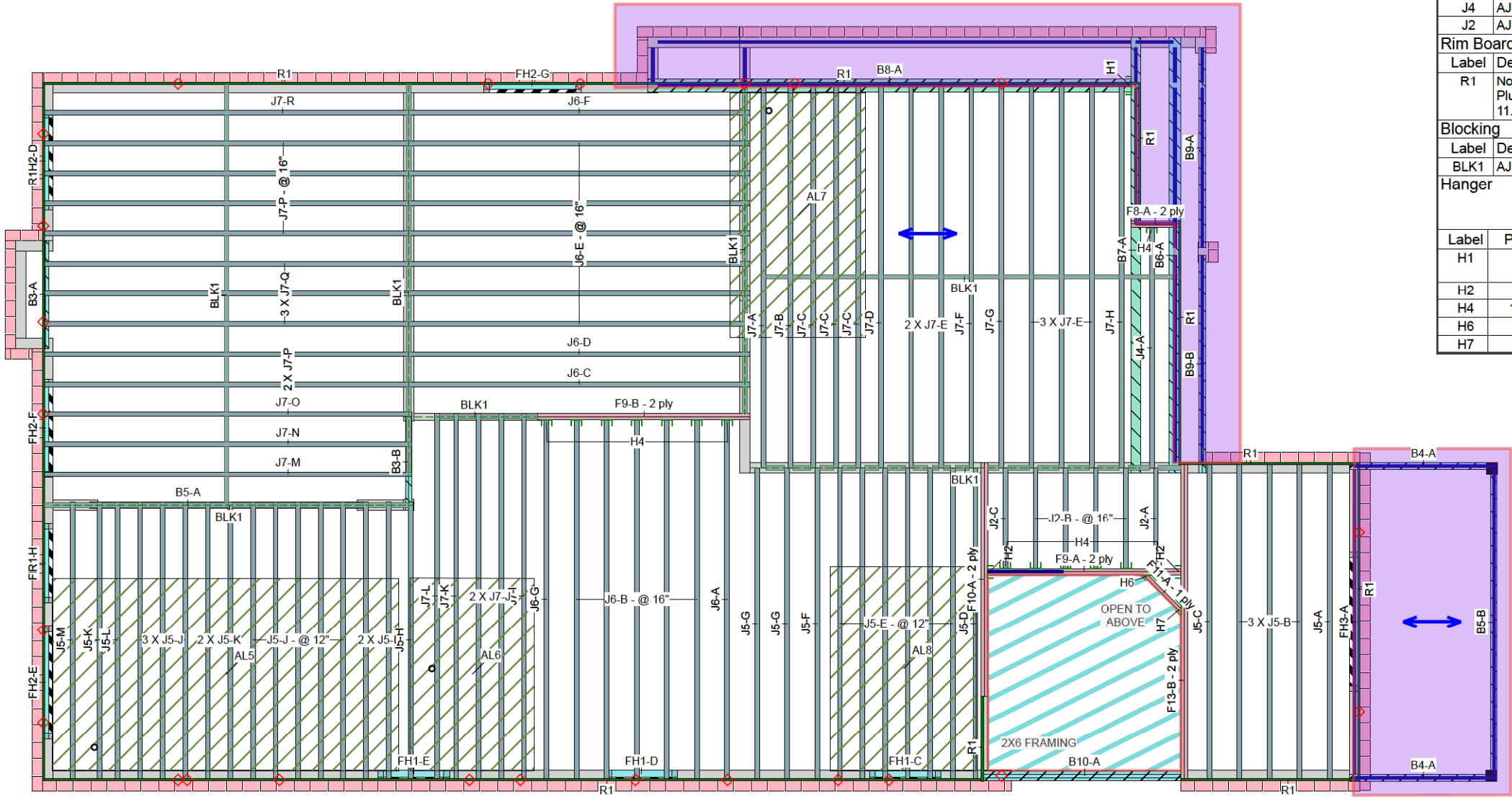
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3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400











This design is valid until 5/24/2024




MHP 23020



Second Floor LVL/LSL (Flush)							
Label	Description	Width	Depth	Qty	Plies	Pcs	Length
F13	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	14-0-0
F10	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	12-0-0
F9	Forex 2.0E-3000Fb LVL	1.75	11.875	2	2	4	10-0-0
F8	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	4-0-0
F11	Forex 2.0E-3000Fb LVL	1.75	11.875			1	4-0-0
I Joist (Flush)							
Label	Description	Width	Depth	Qty	Plies	Pcs	Length
J7	AJS 140	2.5	11.875			32	18-0-0
J6	AJS 140	2.5	11.875			17	16-0-0
J5	AJS 140	2.5	11.875			31	14-0-0
J4	AJS 140	2.5	11.875			1	12-0-0
J2	AJS 140	2.5	11.875			6	6-0-0
Rim Board							
Label	Description	Width	Depth	Qty	Plies	Pcs	Length
R1	Norbord Rimboard Plus 1.125 X 11.875	1.125	11.875			15	12-0-0
Blocking							
Label	Description	Width	Depth	Qty	Plies	Pcs	Length
BLK1	AJS 140	2.5	11.875	LinFt		Varies	88-0-0
Hanger							
Label	Pcs	Description	Skew	Slope	fasteners	Supported Member	
H1	1	Hanger by Others					
H2	2	LF3511			12 10d	2 #8x1 1/4WS	
H4	14	LF2511			12 10d	1 #8x1 1/4WS	
H6	1	SUR1.81/9 (Min)	Right		12 16d	2 10dx1 1/2	
H7	1	SUL1.81/9 (Min)	Left		12 16d	2 10dx1 1/2	

Legend	
PS	Point Load Support
	Load from Above
	Wall
	Wall Opening
	Norbord Rimboard Plus 1.125 X 11.875
	AJS 140 11.875
	Forex 2.0E-3000Fb LVL 1.75 X 11.875
	1.75 X 9.5 (Dropped)
	5 X 13.875 (Dropped)

JOB INFORMATION	
Builder	GREENPARK
Project	ZADORRA ESTATES
Shipping	PENROSE 3 EL 2 OSHAWA, ON
Sales Rep	
Designer	W C
Plotted	June 30, 2022
Layout Name	PENROSE 3-EL 2
Job Path	C:\Users\wcadavid\Desktop\GREENPARK-ZADORR
DESIGN CRITERIA	
Second Floor	
Design Method	LSD (Canada)
Building Code	NBCC 2015 / OBC 2012
Floor Loads	
Live	40
Dead	15
Deflection Joist	
LL Span L/	480
TL Span L/	240
Deflection Flush Girder	
LL Span L/	480
TL Span L/	240
Deflection Dropped Girder	
LL Span L/	480
TL Span L/	240
Deflection Header	
LL Span L/	480
TL Span L/	240
Decking	OSB
Thickness	5/8"
CCMC References	
Boise - 12472-R , 12787-R	
LP - 12412-R	
Forex - 14056-R	
Kott Inc.	
3228 Moodie Dr, Ottawa	
14 Anderson Blvd, Uxbridge	
Ontario	
613-838-2775 / 905-642-4400	
	

Hatch Area represents where additional load has been applied. (e.g. 5 psf for ceramic tile)

AJS140 I-Joists can be substituted with LP20 I-Joists for 9.5" and 11.875" depths shown on this layout.

1. All blocking to be cut from 12' joists
2. 2' & 4' Lengths to be cut from 8' Length, 6' lengths to be cut from 12' Length
3. Ends of joists to be laterally supported
4. Packing of Steel beams and attachment by others
5. Shower and water closet flange locations are approximate only, consult architectural drawing for exact locations
6. Beams identified as "B" are dropped and supplied by others
7. Install 2x4 blocking @ 24" o/c under parallel non-loadbearing walls
8. Load transfer blocks to be installed under all point loads
9. Refer to Multiple Member Connection Detail for ply to ply nailing or bolting requirements
10. Hangers and Fasteners to be installed as per manufacturer
11. Framing shown on this layout may deviate from architectural drawings. Arch / Eng to review and approve the deviation prior to construction.
12. Multi ply beams with side loading to have all fasteners installed with the head on the side of the applied load



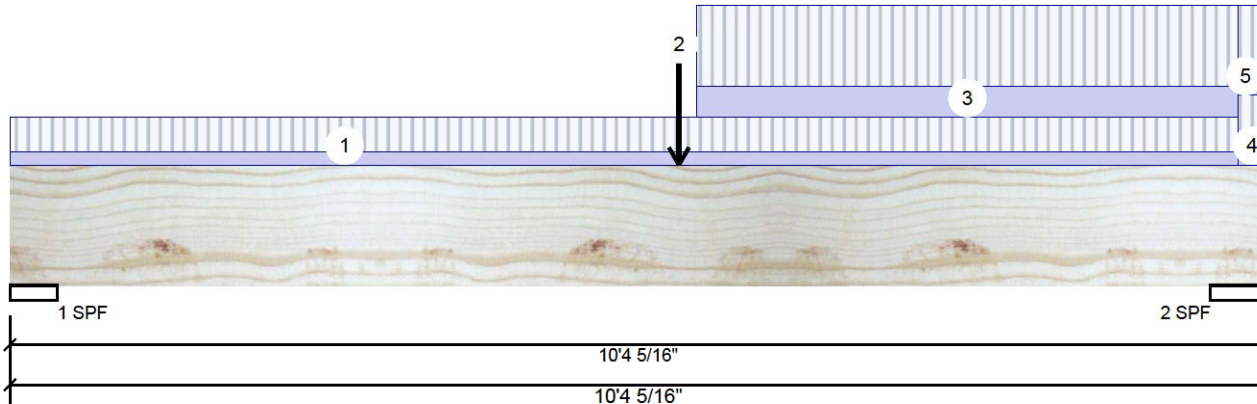
# F10-A Forex 2.0E-3000Fb LVL

1.75

2-Ply

PASSED

PER: CHIEF BUILDING OFFICIAL



## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	346	199	0	0
2	Vertical	447	241	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	4.703"	Vert	8%	249 / 519	768	L	1.25D+1.5L
2 - SPF	5.500"	Vert	8%	301 / 670	971	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	3567 ft-lb	5'6 3/16"	34261 ft-lb	0.104 (10%)	1.25D+1.5L	L
Unbraced	3567 ft-lb	5'6 3/16"	34261 ft-lb	0.104 (10%)	1.25D+1.5L	L
Shear	889 lb	8'10 15/16"	11596 lb	0.077 (8%)	1.25D+1.5L	L
Perm Defl in.	0.014 (L/8029)	5'6 1/16"	0.321 (L/360)	0.045 (4%)	D	Uniform
LL Defl inch	0.028 (L/4122)	5'6 3/16"	0.241 (L/480)	0.116 (12%)	L	
TL Defl inch	0.042 (L/2724)	5'6 3/16"	0.482 (L/240)	0.088 (9%)	D+L	L

**LAMINATE WITH:**  
 2 ROWS OF 3.25" AIR NAILS  
 FACE SPACING AT 12 IN O/C.  
 NAIL FROM LOADED FACE  
 MIN HANGER NAILS: (JOIST/BAM) 3 IN

## 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 continuously laterally braced.
- 6 Bottom must be laterally braced at a maximum of 5'6 3/16" o.c.
- 7 Lateral slenderness ratio based on full section width.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 10-1-9	0-2-6	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Point	5-6-3		Near Face	277 lb	623 lb	0 lb	0 lb	F9
3	Tie-In	5-7-15 to 10-1-9	0-5-10	Top	15 PSF	40 PSF	0 PSF	0 PSF	
4	Tie-In	10-1-9 to 10-4-5	0-3-7	Top	15 PSF	40 PSF	0 PSF	0 PSF	
5	Tie-In	10-1-9 to 10-4-5	0-4-9	Top	15 PSF	40 PSF	0 PSF	0 PSF	
	Self Weight				10 PLF				

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 DOC: ME-TC02 V 03-2017  
 NOTE: ALTERING THIS DOCUMENT  
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## 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

## Manufacturer Info

Forex  
 APA: PR-L318

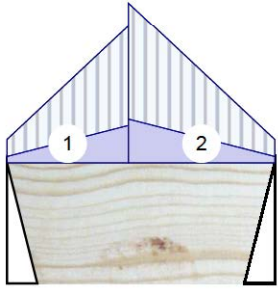
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 3228 Moodie Dr, Ottawa, Ontario  
 613-838-2775 / 905-642-4400



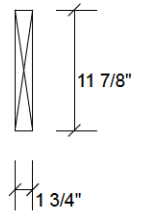
# F11-A Forex 2.0E-3000Fb LVL

TRUE COPY  
OF PERMIT PLANS  
Dec 06 2023  
PER: *C. Morris*  
CHIEF BUILDING OFFICIAL

5' - PASSED  
MHP 23020  
Level: Second Floor



1 Hanger (SUR/L1.81/9 (Min))  
2 Hanger (SUR/L1.81/9 (Min))  
2' 1/2"  
2' 1/2"



## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	1	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	17	12	0	0
2	Vertical	17	12	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	3.000"	Vert	1%	14 / 25	40	L	1.25D+1.5L
2 - Hanger	3.000"	Vert	1%	14 / 25	40	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	19 ft-lb	1'1 3/16"	17130 ft-lb	0.001 (0%)	1.25D+1.5L	L
Unbraced	19 ft-lb	1'1 3/16"	17130 ft-lb	0.001 (0%)	1.25D+1.5L	L
Shear	4 lb	1'2 7/8"	3769 lb	0.001 (0%)	1.4D	Uniform
Perm Defl in. (L/625715)	0.000	1'1 3/16"	0.061 (L/360)	0.001 (0%)	D	Uniform
LL Defl inch (L/382055)	0.000	1'1 3/16"	0.046 (L/480)	0.001 (0%)	L	L
TL Defl inch (L/237214)	0.000	1'1 3/16"	0.092 (L/240)	0.001 (0%)	D+L	L

## Design Notes

- 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.
- Fill all hanger nailing holes.
- Girders are designed to be supported on the bottom edge only.
- Top must be continuously laterally braced.
- Bottom must be laterally braced at bearings.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 1-0-0	0-1-4 to 0-7-4	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	1-0-0 to 2-2-8	0-8-8 to 0-1-4	Top	15 PSF	40 PSF	0 PSF	0 PSF	
	Self Weight				5 PLF				

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SEE GENERAL NOTES  
DOC: ME-TC02 V 03-2017  
NOTE: ALTERING THIS DOCUMENT  
VOIDS THE ENGINEER'S SEAL

## Notes

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## Lumber

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

## chemicals

## Handling & Installation

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

- For flat roofs provide proper drainage to prevent ponding

## Manufacturer Info

Forex  
APA: PR-L318

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



This design is valid until 5/24/2024

# F13-B Forex 2.0E-3000Fb LVL

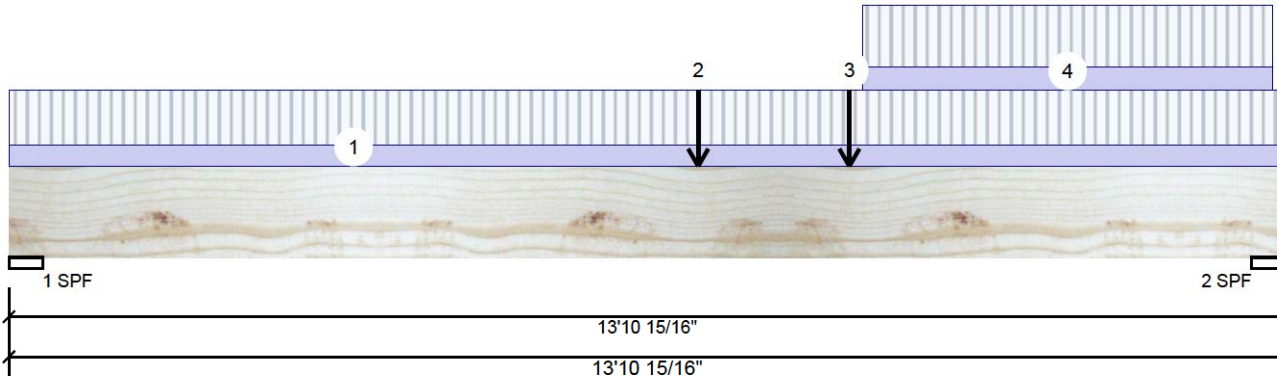
1.75

2-Ply

MILP 23020

PASSED

Level: Second Floor

PER:   
CHIEF BUILDING OFFICIAL


## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	318	203	0	0
2	Vertical	533	299	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	4.375"	Vert	8%	254 / 477	731	L	1.25D+1.5L
2 - SPF	4.375"	Vert	12%	374 / 799	1173	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4070 ft-lb	9'1 15/16"	34261 ft-lb	0.119 (12%)	1.25D+1.5L	L
Unbraced	4070 ft-lb	9'1 15/16"	34261 ft-lb	0.119 (12%)	1.25D+1.5L	L
Shear	1050 lb	12'6 11/16"	11596 lb	0.091 (9%)	1.25D+1.5L	L
Perm Defl in.	0.033 (L/4828)	7'4 15/16"	0.444 (L/360)	0.075 (7%)	D	Uniform
LL Defl inch	0.057 (L/2795)	7'6 3/16"	0.333 (L/480)	0.172 (17%)	L	
TL Defl inch	0.090 (L/1770)	7'5 3/4"	0.665 (L/240)	0.136 (14%)	D+L	L

**LAMINATE WITH:**  
2 ROWS OF 3.25" AIR NAILS  
FACE SPACING AT 12 IN O/C.  
NAIL FROM LOADED FACE  
MIN HANGER NAILS: [JOIST/BEAM] 3 IN

## 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 continuously laterally braced.
- 6 Bottom must be laterally braced at a maximum of 7'3 11/16" o.c.
- 7 Lateral slenderness ratio based on full section width.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 13-10-15	0-6-11	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Point	7-6-3		Far Face	12 lb	17 lb	0 lb	0 lb	F11
3	Point	9-1-15		Far Face	200 lb	412 lb	0 lb	0 lb	F9
4	Tie-In	9-3-11 to 13-9-5	0-7-8	Top	15 PSF	40 PSF	0 PSF	0 PSF	
	Self Weight				10 PLF				

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## 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

## Manufacturer Info

Forex  
APA: PR-L318

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



This design is valid until 5/24/2024



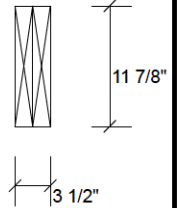
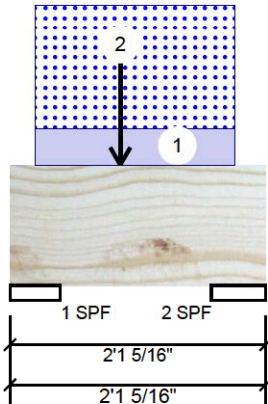
F8-A Forex 2.0E-3000Fb LVL 1.75C

-Ply

Level: Second Floor

PER: CHIEF BUILDING OFFICIAL

MLP 23020



## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	143	202	307	0
2	Vertical	98	144	218	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	5.000"	Vert	8%	253 / 604	857	L	1.25D+1.5S +L
2 - SPF	5.375"	Vert	5%	180 / 425	605	L	1.25D+1.5S +L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	456 ft-lb	10 15/16"	34261 ft-lb	0.013 (1%)	1.25D+1.5S +L	L
Unbraced	456 ft-lb	10 15/16"	34261 ft-lb	0.013 (1%)	1.25D+1.5S +L	L
Shear	774 lb	1'4 7/8"	11596 lb	0.067 (7%)	1.25D+1.5S +L	L
Perm Defl in.	0.000 (L/50760)	10 15/16"	0.046 (L/360)	0.007 (1%)	D	Uniform
LL Defl inch	0.001 (L/26802)	10 15/16"	0.034 (L/480)	0.018 (2%)	S+0.5L	L
TL Defl inch	0.001 (L/17541)	10 15/16"	0.068 (L/240)	0.014 (1%)	D+S+0.5L	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 continuously laterally braced.
- 6 Bottom must have sheathing attached or be continuously braced.
- 7 Lateral slenderness ratio based on full section width.

**LAMINATE WITH:**  
2 ROWS OF 3.25" AIR NAILS  
FACE SPACING AT 12 IN O/C.  
NAIL FROM LOADED FACE  
MIN HANGER NAILS: (JOIST/BAM) 3 IN

MODULUS ENGINEERING LTD.



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## Notes

Calculated Structural Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

## Lumber

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

## chemicals

## Handling & Installation

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

6. For flat roofs provide proper drainage to prevent ponding

## Manufacturer Info

Forex  
APA: PR-L318

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



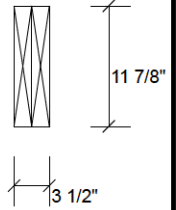
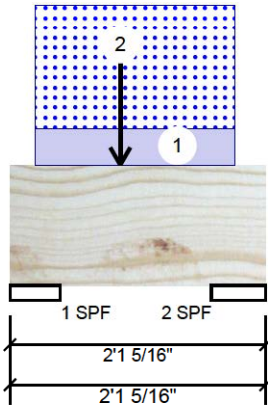
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F8-A Forex 2.0E-3000Fb LVL 1.75C

-Ply PASSED

Level: Second Floor

PER:   
CHIEF BUILDING OFFICIAL



ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Part. Uniform	0-2-8 to 1-10-3		Top	10 PLF	0 PLF	35 PLF	0 PLF	
2	Point	0-10-15		Near Face	310 lb	241 lb	468 lb	0 lb	J4
	Self Weight				10 PLF				

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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

#### Manufacturer Info

Forex  
APA: PR-L318

Kott Inc.  
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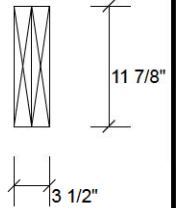
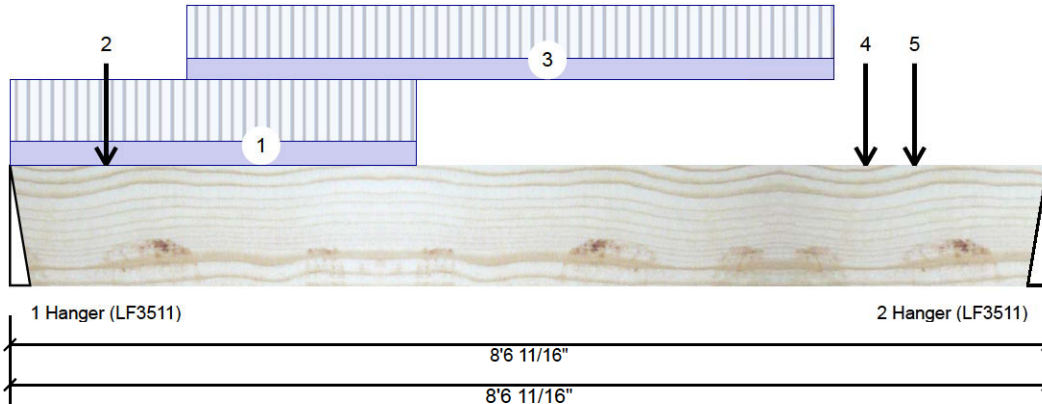


This design is valid until 5/24/2024

F9-A Forex 2.0E-3000Fb LVL 1.75C

-PLY - PASSED

Level: Second Floor

PER:   
CHIEF BUILDING OFFICIAL


## Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

## Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	623	277	0	0
2	Vertical	412	200	0	0

## Bearings and Factored Reactions

Bearing	Length	Dir.	Cap. React	D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	2.000"	Vert	25%	347 / 935	1282	L	1.25D+1.5L
2 - Hanger	2.000"	Vert	17%	251 / 618	868	L	1.25D+1.5L

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2180 ft-lb	3'7 13/16"	34261 ft-lb	0.064 (6%)	1.25D+1.5L	L
Unbraced	2180 ft-lb	3'7 13/16"	34261 ft-lb	0.064 (6%)	1.25D+1.5L	L
Shear	1051 lb	1'1 7/8"	11596 lb	0.091 (9%)	1.25D+1.5L	L
Perm Defl in. (L/13261)	0.008	4'1 11/16"	0.278 (L/360)	0.027 (3%)	D	Uniform
LL Defl inch	0.016 (L/6094)	4'1 3/16"	0.209 (L/480)	0.079 (8%)	L	L
TL Defl inch	0.024 (L/4176)	4'1 3/8"	0.418 (L/240)	0.057 (6%)	D+L	L

## Design Notes

- 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.
- Fill all hanger nailing holes.
- Girders are designed to be supported on the bottom edge only.
- Multiple plies must be fastened together as per manufacturer's details.
- Top loads must be supported equally by all plies.
- Top must be continuously laterally braced.
- Bottom must have sheathing attached or be continuously braced.
- Lateral slenderness ratio based on full section width.

**LAMINATE WITH:**  
2 ROWS OF 3.25" AIR NAILS  
FACE SPACING AT 12 IN O/C.  
NAIL FROM LOADED FACE  
MIN HANGER NAILS: (JOIST/BEAM) 3 IN

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ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Part. Uniform	0-0-0 to 3-4-3		Top	38 PLF	100 PLF	0 PLF	0 PLF	
2	Point	0-9-8		Far Face	38 lb	100 lb	0 lb	0 lb	J2
3	Part. Uniform	1-5-8 to 6-9-8		Far Face	33 PLF	88 PLF	0 PLF	0 PLF	
4	Point	7-0-11		Near Face	12 lb	17 lb	0 lb	0 lb	F11

Continued on page 2...

## Notes

Calculated Structural Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

## Lumber

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

## Handling & Installation

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

- For flat roofs provide proper drainage to prevent ponding

## Manufacturer Info

Forex  
APA: PR-L318

Kott Inc.  
3228 Moodie Dr, Ottawa, Ontario  
613-838-2775 / 905-642-4400



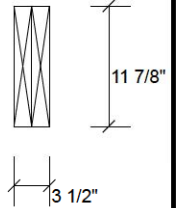
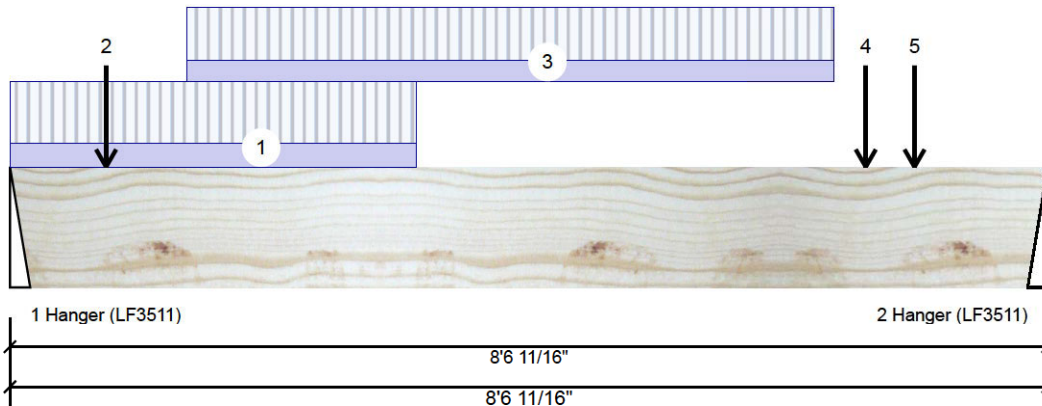
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F9-A Forex 2.0E-3000Fb LVL 1.75C

-Ply - PASSED

Level: Second Floor

PER:   
CHIEF BUILDING OFFICIAL


...Continued from page 1

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
5	Point	7-5-8		Far Face	43 lb	114 lb	0 lb	0 lb	J2
	Self Weight				10 PLF				

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#### 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

#### Manufacturer Info

Forex  
APA: PR-L318

This design is valid until 5/24/2024

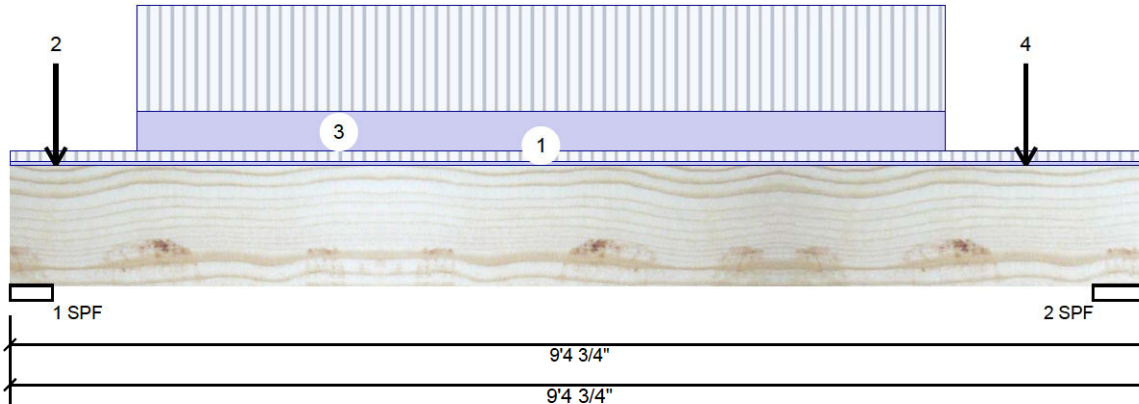
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613-838-2775 / 905-642-4400


F9-B Forex 2.0E-3000Fb LVL 1.75C

- Ply - PASSED

MLP 23020

PER: CHIEF BUILDING OFFICIAL



### Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked
General Load			
Floor Live:	40 PSF		
Dead:	15 PSF		

### Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	1637	659	0	0
2	Vertical	1524	617	0	0

### Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	4.188"	Vert	36%	823 / 2455	3279	L	1.25D+1.5L
2 - SPF	5.500"	Vert	26%	772 / 2286	3057	L	1.25D+1.5L

### Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	6470 ft-lb	4'7 15/16"	34261 ft-lb	0.189 (19%)	1.25D+1.5L	L
Unbraced	6470 ft-lb	4'7 15/16"	34261 ft-lb	0.189 (19%)	1.25D+1.5L	L
Shear	3112 lb	7'11 3/8"	11596 lb	0.268 (27%)	1.25D+1.5L	L
Perm Defl in.	0.022 (L/4793)	4'7 13/16"	0.290 (L/360)	0.075 (8%)	D	Uniform
LL Defl inch	0.054 (L/1935)	4'7 7/8"	0.218 (L/480)	0.248 (25%)	L	
TL Defl inch	0.076 (L/1378)	4'7 13/16"	0.436 (L/240)	0.174 (17%)	D+L	L

**LAMINATE WITH:**  
 2 ROWS OF 3.25" AIR NAILS  
 FACE SPACING AT 12 IN O/C.  
 NAIL FROM LOADED FACE  
 MIN HANGER NAILS: (JOIST/BEAM) 3 IN

### 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 continuously laterally braced.
- 6 Bottom must have sheathing attached or be continuously braced.
- 7 Lateral slenderness ratio based on full section width.

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 9-4-12	0-8-11	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Point	0-4-9		Near Face	137 lb	366 lb	0 lb	0 lb	J6
3	Part. Uniform	1-0-9 to 7-8-9		Near Face	118 PLF	314 PLF	0 PLF	0 PLF	
4	Point	8-4-9		Near Face	161 lb	430 lb	0 lb	0 lb	J6
	Self Weight				10 PLF				

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### 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

### Manufacturer Info

Forex  
 APA: PR-L318

Kott Inc.  
 3228 Moodie Dr, Ottawa, Ontario  
 613-838-2775 / 905-642-4400



This design is valid until 5/24/2024