Engineering Note Page (ENP-2)

REVISION 2021-10-04

Please read all notes prior to installation of the component

DESIGN INFORMATION

This building component is certified as an individual component for the loads and conditions shown on the calculation and drawing page.

The responsibility of the undersigned engineer is only limited to the calculation of this building component for the loads and conditions shown on this drawing.

The responsibility of the undersigned is limited to the verification of the structural capacity of the floor joists and LVL beams based on placement as shown on the layout. The loads applied are limited to the gravity effects of the specified loads. The structural integrity of the building and the effect of wind, uplift, seismic, lateral or other forces, calculation of adequate support and anchorage of components, as well as the dimensions and design loads used to calculate components are the responsibility of the overall building designer.

Floor joists and OSB rim board are designed to carry uniformly distributed loads only. Point loads should be transferred through the floor cavity with transfer blocks. Structural elements such as walls, posts, connectors, and transfer blocks are the responsibility of the overall building designer.

The undersigned engineer disclaims any responsibility for damages as a result of being furnished faulty or incorrect information, specifications and/or designs.

Installation of floor joists is to be carried out in accordance with the current edition of the manufacturer's literature available at http://www.kottgroup.com.

CODE

This building component is designed in accordance with the National Building Code of Canada, the Ontario Building Code, CCMC and Canadian Standards Association guidelines.

COMPONENT

1. The building component used in construction must be the same as indicated on the drawings.
2. The building component must be installed and assembled as per specification shown on the drawing and in accordance with the manufacturer's assembly and installation.
3. Members consisting of multiple plies must be connected as per the document "Multi-ply Connection Details".
4. Pass-thru transfer block framing is required at all point loads over bearings.
5. It is assumed that each LVL beam where not seated in a hanger is attached using (4) four 3-1/4" common spiral nails for up to 5.5" long bearings and using (6) six 3-1/4" common spiral nails for bearings equal to or longer than 5.5", unless indicated otherwise.

HANDLING AND INSTALLATION

Do not drill any hole, cut or notch a certified building component without a written pre-authorization.

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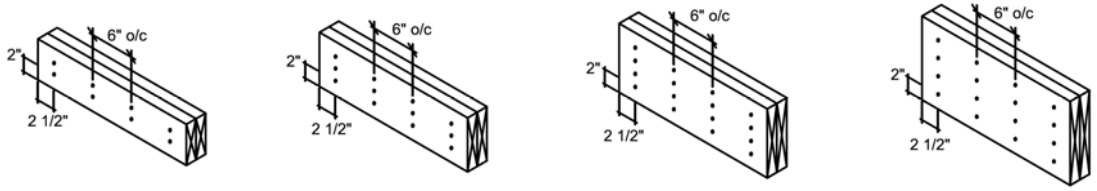
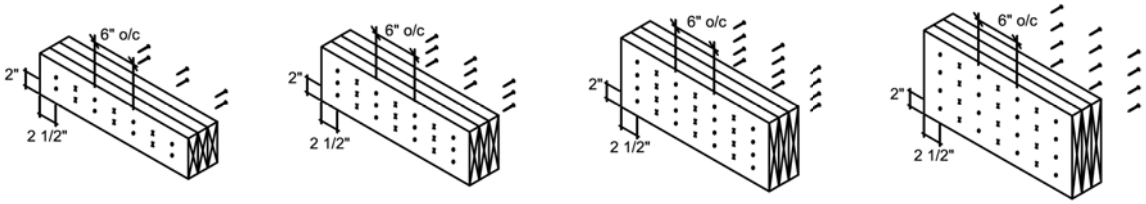
Conventional Connections

2x6 2x8 2x10 2x12

2-ply



3-ply



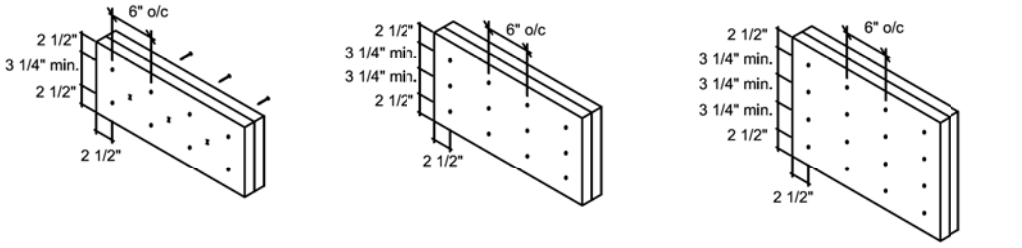
Conventional Connection Notes:

-Nails to be 3" long wire nails.
-Nails to be located 2" min. from the top and bottom of the member. Start all nails 2 1/2" min. from ends.
-Number of rows and spacing as per details shown, unless noted otherwise.
- "X" represents nail driven from the opposite side.

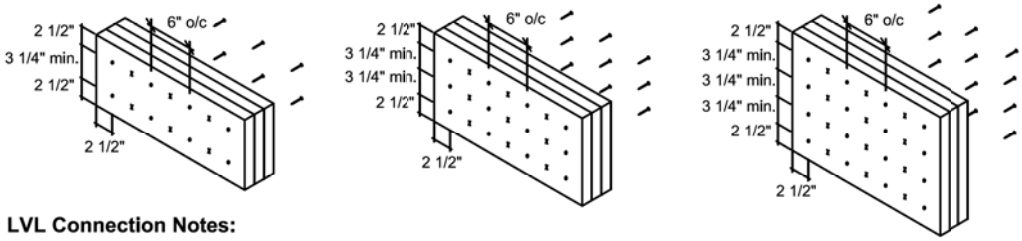
LVL Connections

9 1/2" LVL 11 7/8" - 14" LVL 16"-18" LVL

2-ply



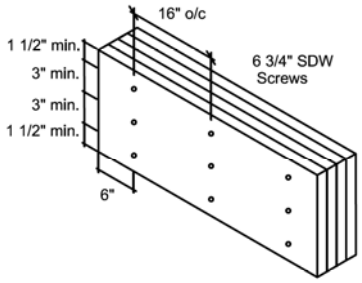
3-ply



LVL Connection Notes:

-LVL ply width is 1-3/4"
-Nails to be 3 1/2" common wire nails.
-Nails to be located 2 1/2" min. from the top and bottom of the member. Start all nails 2 1/2" min. from ends.
-Minimum 3 1/4" spacing between rows.
-Number of rows and spacing as per details shown, unless noted otherwise.
- "X" represents nail driven from the opposite side.
- Head of all specified screws must be on the loaded side.

4-ply 9 1/2"-18"



FOR 4 PLY BEAMS*, ATTACH PLIES TOGETHER USING 6-3/4" SDW SCREWS (HEAD ON LOADED SIDE) IN 3 ROWS @ 16" C/C.

USE AN ADDITIONAL THREE (3) 6-3/4" SDW SCREWS ON EACH SIDE (OF EACH FACE) AT POINT LOAD LOCATIONS @ 1/2 SPACING, WHERE APPLICABLE.

**UNLESS NOTED OTHERWISE ON LAYOUT OR CALCULATION SHEET OF BEAM IN THE FLOOR PACKAGE*

Multiple Member Connections

All connections are for uniformly distributed loads.

For multi-ply connections of I-joists, refer to Manufacturer's Installation Guide

Last revised: February 19, 2021

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3228 Moodie Drive
Ottawa, ON
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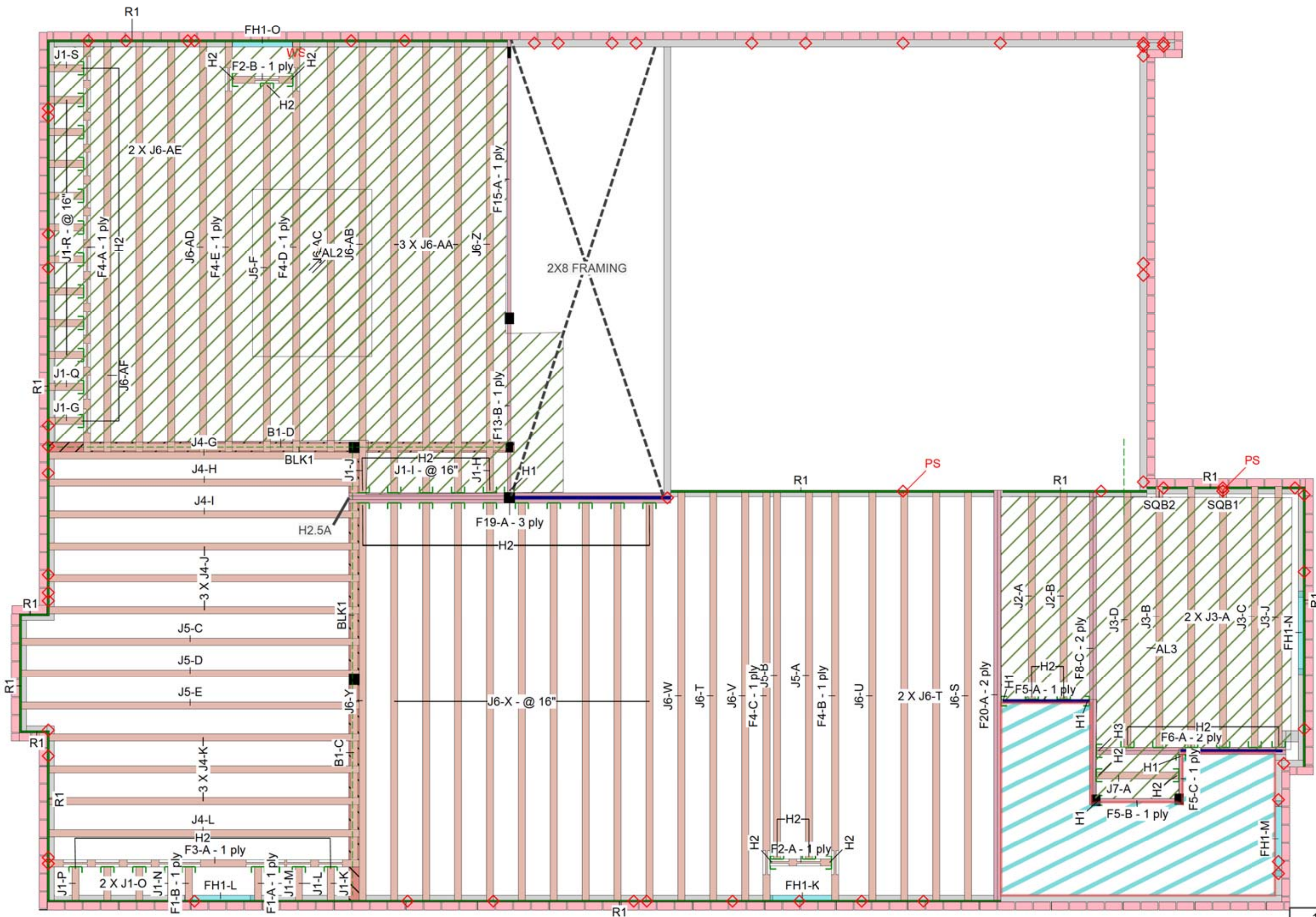
Ground Floor



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.

Ground Floor
LVL/LSL

Label	Description	Width	Depth	Qty	Plies	Pcs	Length
F20	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	18-0-0
F19	Forex 2.0E-3000Fb LVL	1.75	11.875	1	3	3	14-0-0
F8	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	14-0-0
F15	Forex 2.0E-3000Fb LVL	1.75	11.875			1	12-0-0
F6	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	8-0-0
F13	Forex 2.0E-3000Fb LVL	1.75	11.875			1	8-0-0
F5	Forex 2.0E-3000Fb LVL	1.75	11.875			3	4-0-0

I Joist

Label	Description	Width	Depth	Qty	Plies	Pcs	Length
F4	AJS 24	3.5	11.875			5	18-0-0
F3	AJS 24	3.5	11.875			1	14-0-0
F2	AJS 24	3.5	11.875			2	4-0-0
F1	AJS 24	3.5	11.875			2	2-0-0
J6	AJS 24	3.5	11.875			27	18-0-0
J5	AJS 24	3.5	11.875			6	16-0-0
J4	AJS 24	3.5	11.875			10	14-0-0
J3	AJS 24	3.5	11.875			6	12-0-0
J2	AJS 24	3.5	11.875			2	10-0-0
J7	AJS 24	3.5	11.875			1	4-0-0
J1	AJS 24	3.5	11.875			24	2-0-0

Rim Board

Label	Description	Width	Depth	Qty	Plies	Pcs	Length
R1	Norbord Rimboard Plus 1.125 X 11.875	1.125	11.875			12	12-0-0

Blocking

Label	Description	Width	Depth	Qty	Plies	Pcs	Length
BLK1	AJS 24	3.5	11.875	LinFt		Varies	27-0-0

Hanger

Label	Pcs	Description	Skew	Slope	Beam/Girder fasteners	Supported Member fasteners
H1	5	HUS1.81/10			30 16d	10 16d
H2	53	LF3511			12 10d	2 #8x1 1/4WS
H3	1	HHUS410			30 16d	10 16d

Custom

Label	Description	Width	Depth	Qty	Plies	Pcs	Length
	H2.5A					1	

JOB INFORMATION

Builder
GREENPARK

Project
ROUNDEL HOMES INC

Shipping
TERRACOTA 45 1-3
RICHMOND HILL, ON

Sales Rep
RALPH MIRIGELLO

Designer
W C

Plotted
October 15, 2021

Layout Name
TC451-3 STANDARD

Job Path

DESIGN CRITERIA

Ground 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

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

KOTT

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.

Legend

WS	Web Stiffener
-ws	In Hanger Label Denotes Web Stiffener
PS	Point Load Support
◇	Load from Above
	Wall
	Wall Opening
	Norbord Rimboard Plus 1.125 X 11.875
	AJS 24 11.875
	Forex 2.0E-3000Fb LVL 1.75 X 11.875

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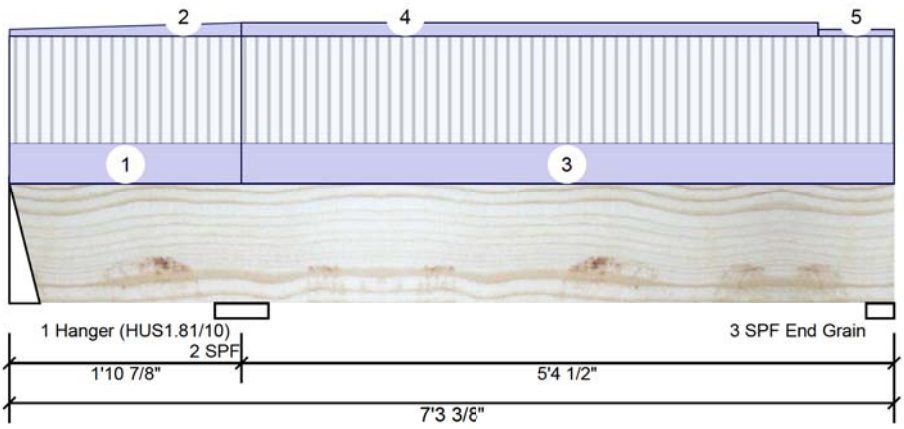
This placement plan is to be used as an installation guide only. It is meant to be used in conjunction with the manufacturers installation guide, the architectural and structural drawings, and not to replace them.

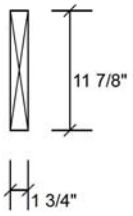
iStructDesign

Client:	GREENPARK	Date:	10/14/2021
Project:		Input by:	W C
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F13-B Forex 2.0E-3000Fb LVL 1.750" X 11.875" - PASSED

Level: Ground Floor





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	1	0	0	0
2	Vertical	78	61	0	0
3	Vertical	40	31	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%	-6 / 24	18 (-40)	L_	0.9D+1.5L (1.25D+1.5L)
2 - SPF	5.250"	Vert	4%	88 / 134	222	LL	1.25D+1.5L
3 - SPF End Grain	2.750"	Vert	3%	36 / 56	91	_L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-107 ft-lb	1'10 7/8"	17130 ft-lb	0.006 (1%)	1.25D+1.5L	LL
Unbraced	-107 ft-lb	1'10 7/8"	8629 ft-lb	0.012 (1%)	1.25D+1.5L	LL
Pos Moment	90 ft-lb	5' 1/16"	17130 ft-lb	0.005 (1%)	1.25D+1.5L	_L
Unbraced	90 ft-lb	5' 1/16"	17130 ft-lb	0.005 (1%)	1.25D+1.5L	_L
Shear	83 lb	3'1 3/8"	5798 lb	0.014 (1%)	1.25D+1.5L	LL
Perm Defl in.	0.001 (L/114857)	4'7 1/4"	0.174 (L/360)	0.003 (0%)	D	Uniform
LL Defl inch	0.001 (L/90069)	4'7 3/16"	0.130 (L/480)	0.005 (1%)	L	_L
TL Defl inch	0.001 (L/50482)	4'7 1/4"	0.261 (L/240)	0.005 (0%)	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 Negligible uplift at end of short span.
5 Top must be continuously laterally braced.
6 Bottom must be laterally braced at bearings.

October 18, 2021

READ ALL NOTES ON THIS PAGE AND ON THE ENGINEERING NOTE PAGE ENP-2. THE NOTE PAGE IS AN INTEGRAL PART OF THIS DRAWING AS IT CONTAINS SPECIFICATIONS AND CRITERIA USED IN THE DESIGN OF THIS COMPONENT.

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 roation
6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 5/24/2024

Manufacturer Info

Forex
APA: PR-L318

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

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BUILDING DIVISION
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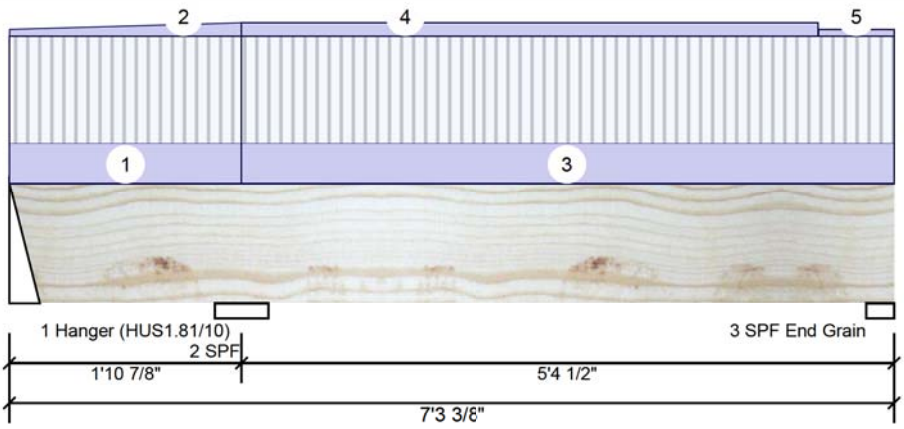
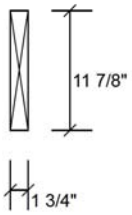
Client:	GREENPARK	Date:	10/14/2021
Project:		Input by:	W C
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F13-B Forex 2.0E-3000Fb LVL 1.750" X 11.875" - PASSED

Level: Ground Floor





ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 1-10-14	0-4-14	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tapered Start	0-0-0		Top	1 PLF	0 PLF	0 PLF	0 PLF	
	End	1-10-14			2 PLF	0 PLF	0 PLF	0 PLF	
3	Tie-In	1-10-14 to 7-3-6	0-4-14	Top	15 PSF	40 PSF	0 PSF	0 PSF	
4	Part. Uniform	1-10-14 to 6-7-14		Top	2 PLF	0 PLF	0 PLF	0 PLF	
5	Part. Uniform	6-7-15 to 7-3-6		Top	1 PLF	0 PLF	0 PLF	0 PLF	
	Self Weight				5 PLF				

October 18, 2021

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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 roation
6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 5/24/2024

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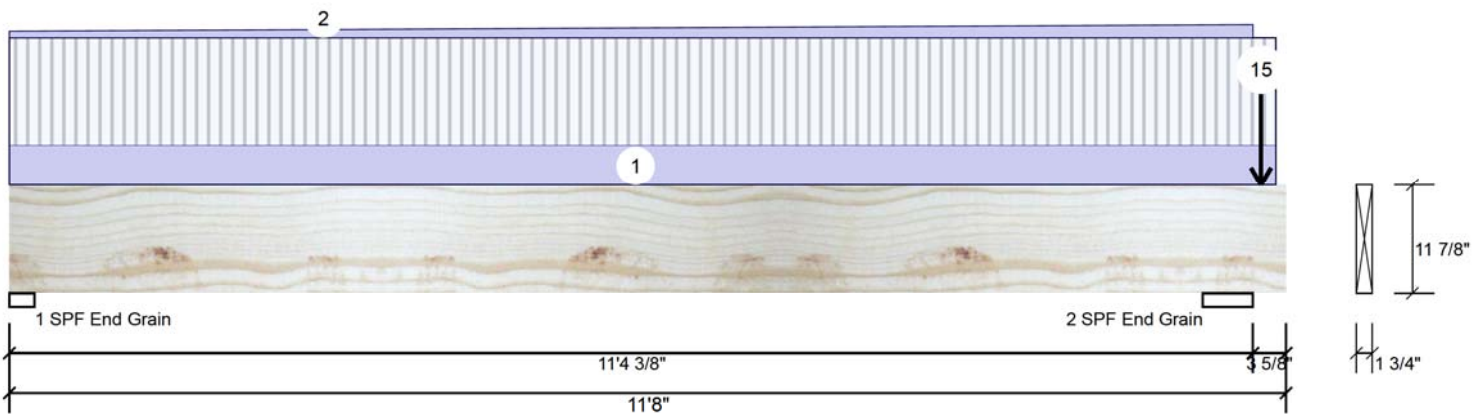
F15-A Forex 2.0E-3000Fb LVL 1.750" X 11.875" - PASSED

Level: Ground Floor



Member Information

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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	91	67	0 (-2)	0
2	Vertical	147	208	157	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	2.750"	Vert	7%	84 / 138	221	L_	1.25D+1.5L
2 - SPF End Grain	5.500"	Vert	10%	260 / 382	642	LL	1.25D+1.5S +L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-61 ft-lb	11'4 3/8"	15589 ft-lb	0.004 (0%)	1.25D+1.5S +L	_L
Unbraced	-61 ft-lb	11'4 3/8"	4100 ft-lb	0.015 (2%)	1.25D+1.5S +L	_L
Pos Moment	587 ft-lb	5'7 5/16"	15589 ft-lb	0.038 (4%)	1.25D+1.5L	L_
Unbraced	587 ft-lb	5'7 5/16"	15589 ft-lb	0.038 (4%)	1.25D+1.5L	L_
Shear	180 lb	1'2 5/8"	5624 lb	0.032 (3%)	1.25D+1.5L	L_
Perm Defl in.	0.009 (L/15006)	5'7 7/16"	0.366 (L/360)	0.024 (2%)	D	Uniform
LL Defl inch	0.012 (L/10817)	5'7 13/16"	0.274 (L/480)	0.044 (4%)	L	L_
TL Defl inch	0.021 (L/6286)	5'7 11/16"	0.548 (L/240)	0.038 (4%)	D+L	L_
LL Cant	-0.001 (2L/7606)	Rt Cant	0.200 (2L/480)	0.005 (0%)	L	L_
TL Cant	-0.002 (2L/4821)	Rt Cant	0.300 (2L/240)	0.005 (1%)	D+L	L_

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. Top must be continuously laterally braced.
5. Bottom must be laterally braced at bearings.

October 18, 2021

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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

This design is valid until 5/24/2024

Manufacturer Info

Forex
APA: PR-L318

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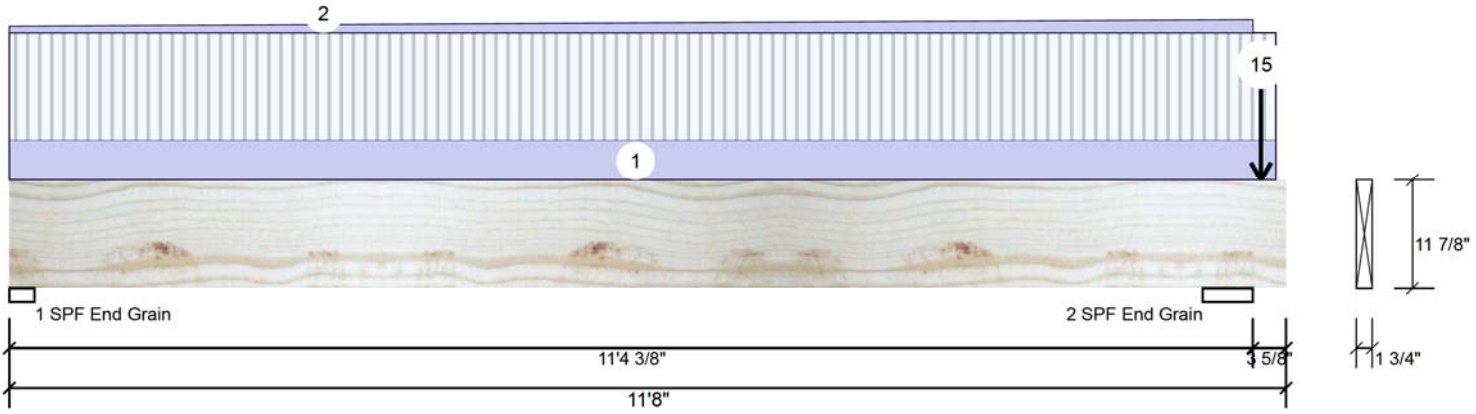

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1	Tie-In	0-0-0 to 11-6-14	0-4-14	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tapered Start	0-0-0		Top	1 PLF	0 PLF	0 PLF	0 PLF	
	End	11-4-6			2 PLF	0 PLF	0 PLF	0 PLF	
3	Point	11-5-4		Top	33 lb	0 lb	83 lb	0 lb	
	Bearing Length	0-5-8							
4	Point	11-5-4		Top	19 lb	50 lb	0 lb	0 lb	J9
	Bearing Length	0-5-8							
6	Point	11-5-4		Top	13 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
7	Point	11-5-4		Top	13 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
8	Point	11-5-4		Top	15 lb	0 lb	36 lb	0 lb	
	Bearing Length	0-5-8							
10	Point	11-5-4		Top	6 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
11	Point	11-5-4		Top	6 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
12	Point	11-5-4		Top	15 lb	0 lb	36 lb	0 lb	
	Bearing Length	0-5-8							
14	Point	11-5-4		Top	6 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
15	Point	11-5-4		Top	6 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
	Self Weight				5 PLF				

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LICENSED PROFESSIONAL ENGINEER
I.MATIJEVIC
100528832
PROVINCE OF ONTARIO
October 18, 2021

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 roation
6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 5/24/2024

Manufacturer Info

Forex
APA: PR-L318

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

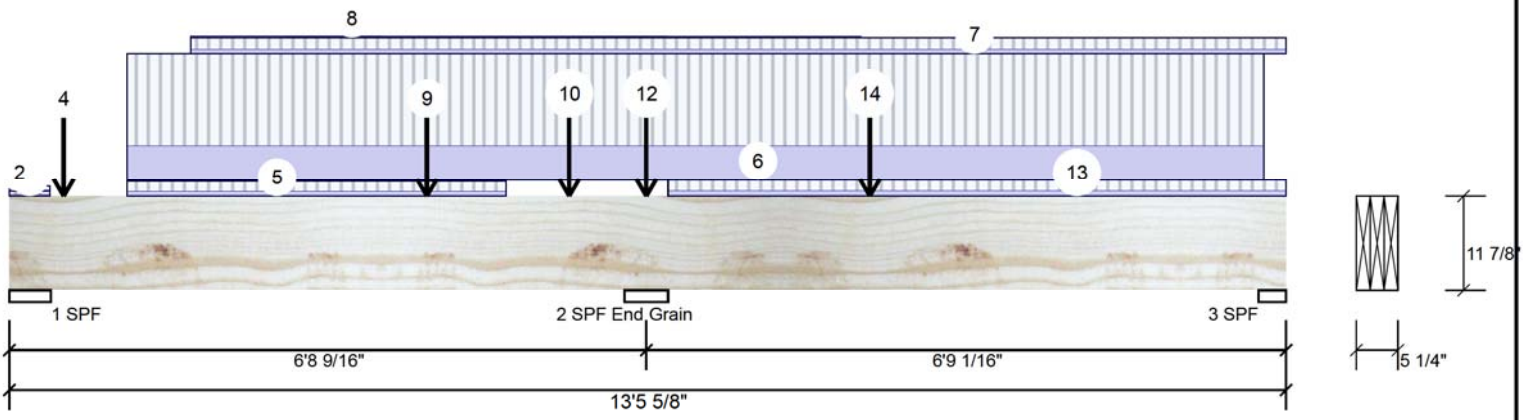
CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
RECEIVED
Per: joshua.nabua

iStructDesign

Client:	GREENPARK	Date:	9/30/2021
Project:		Input by:	W C
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F19-A Forex 2.0E-3000Fb LVL 1.750" X 11.875" 3-Ply - PASSED

Level: Ground Floor



Member Information

Type:	Girder	Application:	Floor (Residential)
Plies:	3	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	Yes
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	1305	569	0	0
2	Vertical	7937	3328	0 (-1)	0
3	Vertical	1828	757	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	5.250"	Vert	19%	664 / 2595	3258 (-282)	L_	1.25D+1.5L (0.9D+1.5L)
2 - SPF End Grain	5.500"	Vert	77%	4254 / 12176	16431	LL	1.25D+1.5L
3 - SPF	3.500"	Vert	36%	900 / 3163	4063	_L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-11489 ft-lb	6'8 9/16"	53447 ft-lb	0.215 (21%)	1.25D+1.5L	LL
Pos Moment	9489 ft-lb	9' 13/16"	53447 ft-lb	0.178 (18%)	1.25D+1.5L	_L
Unbraced	9489 ft-lb	9' 13/16"	53447 ft-lb	0.178 (18%)	1.25D+1.5L	_L
Shear	8562 lb	7'11 3/16"	17394 lb	0.492 (49%)	1.25D+1.5L	LL
Perm Defl in.	0.012 (L/6755)	9'7 1/2"	0.218 (L/360)	0.053 (5%)	D	Uniform
LL Defl inch	0.035 (L/2211)	9'7"	0.163 (L/480)	0.217 (22%)	L+0.5S	_L
TL Defl inch	0.047 (L/1666)	9'7 1/8"	0.326 (L/240)	0.144 (14%)	D+L+0.5S	_L

Design Notes

1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2 Girders are designed to be supported on the bottom edge only.
3 Multiple plies must be fastened together as per manufacturer's details.
4 Top loads must be supported equally by all plies.
5 Tie-down connection required at bearing 1 for uplift 282 lb (Combination 0.9D+1.5L, Load Case _L).
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.

LICENSED PROFESSIONAL ENGINEER
I.MATIJEVIC
100528832
PROVINCE OF ONTARIO

October 12, 2021

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ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 0-5-2	0-3-14	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	0-0-0 to 0-5-2	0-4-2	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Point	0-6-14		Far Face	13 lb	29 lb	0 lb	0 lb	J1

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

Handling & Installation

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

This design is valid until 5/24/2024

Manufacturer Info

Forex
APA: PR-L318

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CITY OF RICHMOND HILL
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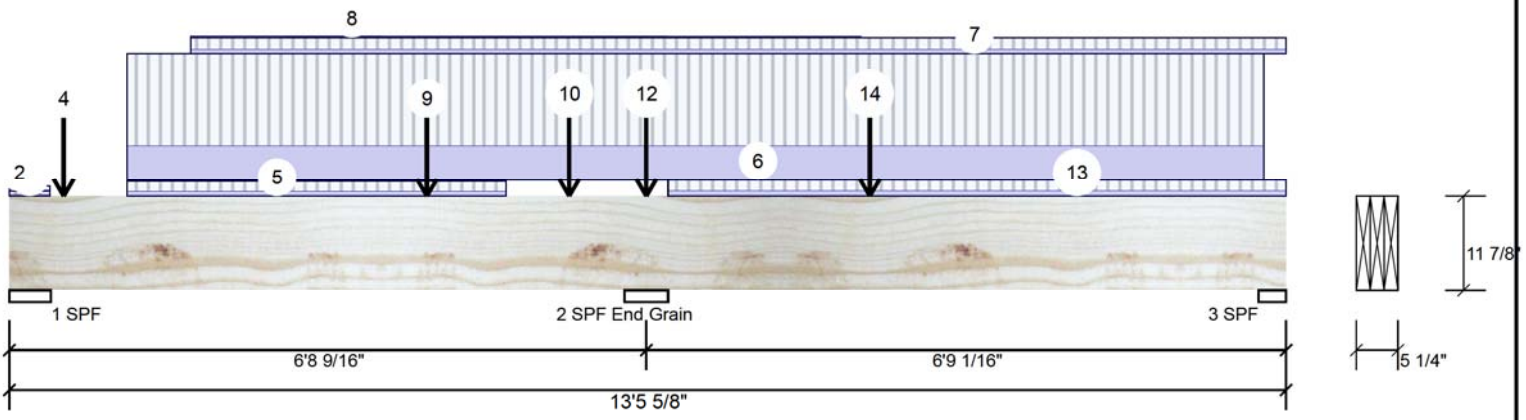
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F19-A Forex 2.0E-3000Fb LVL 1.750" X 11.875" 3-Ply - PASSED

Level: Ground Floor



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ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
4	Point	0-6-14		Near Face	93 lb	247 lb	0 lb	0 lb	J6
5	Part. Uniform	1-2-14 to 5-2-14		Far Face	18 PLF	37 PLF	0 PLF	0 PLF	
6	Part. Uniform	1-2-14 to 13-2-14		Near Face	124 PLF	331 PLF	0 PLF	0 PLF	
7	Tie-In	1-10-14 to 13-5-10	1-0-12	Top	15 PSF	40 PSF	0 PSF	0 PSF	
8	Tapered Start	1-10-14		Top	5 PLF	0 PLF	0 PLF	0 PLF	
	End	8-11-11			4 PLF	0 PLF	0 PLF	0 PLF	
9	Point	4-4-10		Top	1019 lb	2405 lb	0 lb	0 lb	C1
	Bearing Length	0-3-8							
10	Point	5-10-14		Far Face	20 lb	40 lb	0 lb	0 lb	J1
11	Point	6-8-9		Far Face	11 lb	16 lb	0 lb	0 lb	F9
12	Point	6-8-9		Far Face	0 lb	0 lb	-1 lb	0 lb	F9
13	Part. Uniform	6-11-5 to 13-5-10		Top	20 PLF	40 PLF	0 PLF	0 PLF	
14	Point	9-0-13		Top	1395 lb	3450 lb	0 lb	0 lb	C1
	Bearing Length	0-3-8							
	Self Weight				14 PLF				

October 12, 2021

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Lumber

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

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
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6. For flat roofs provide proper drainage to prevent ponding

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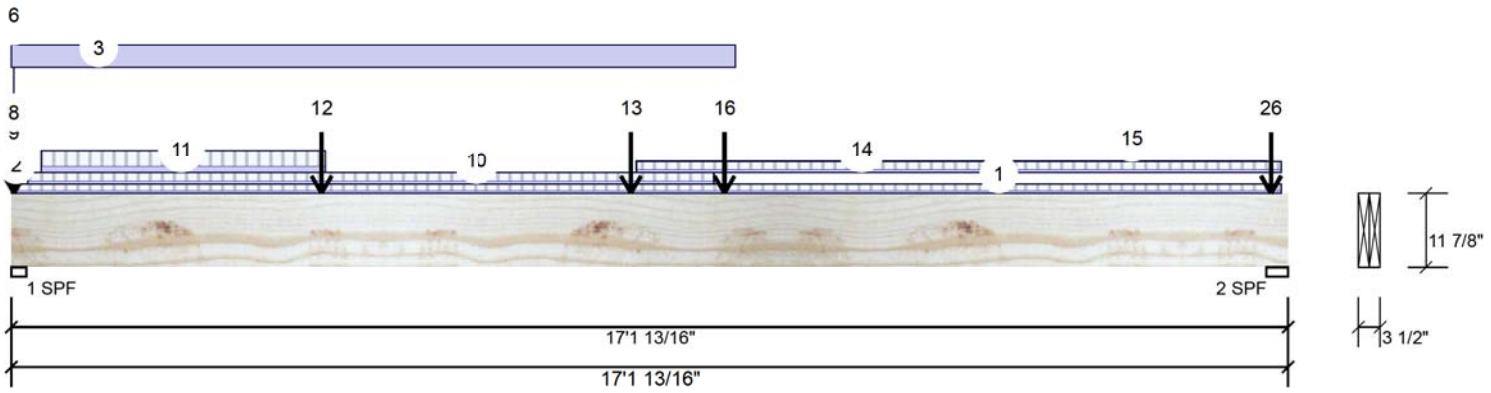
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F20-A Forex 2.0E-3000Fb LVL 1.750" X 11.875" 2-Ply - 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	1240	1570	848	0
2	Vertical	1190	860	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	2.375"	Vert	91%	1962 / 2708	4671	L	1.25D+1.5L +S
2 - SPF	3.500"	Vert	38%	1075 / 1785	2861	L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	15387 ft-lb	8'3 13/16"	34261 ft-lb	0.449 (45%)	1.25D+1.5L	L
Unbraced	15387 ft-lb	8'3 13/16"	34261 ft-lb	0.449 (45%)	1.25D+1.5L	L
Shear	2951 lb	1'2 1/4"	11596 lb	0.255 (25%)	1.25D+1.5L	L
Perm Defl in.	0.246 (L/818)	8'3 7/8"	0.560 (L/360)	0.440 (44%)	D	Uniform
LL Defl inch	0.320 (L/629)	8'6 5/16"	0.420 (L/480)	0.763 (76%)	L+0.5S	L
TL Defl inch	0.566 (L/356)	8'5 3/16"	0.839 (L/240)	0.675 (67%)	D+L+0.5S	L

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 8'10" o.c.
8 Lateral slenderness ratio based on full section width.

October 12, 2021

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ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 17-0-11	0-7-6	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Part. Uniform	0-0-0 to 0-1-2		Top	80 PLF	0 PLF	0 PLF	0 PLF	Wall Self Weight
3	Part. Uniform	0-0-0 to 9-8-10		Top	80 PLF	0 PLF	0 PLF	0 PLF	Wall Self Weight
4	Part. Uniform	0-0-7 to 0-0-7		Top	100 PLF	0 PLF	248 PLF	0 PLF	

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

Handling & Installation

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

This design is valid until 5/24/2024

Manufacturer Info

Forex
APA: PR-L318

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

CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
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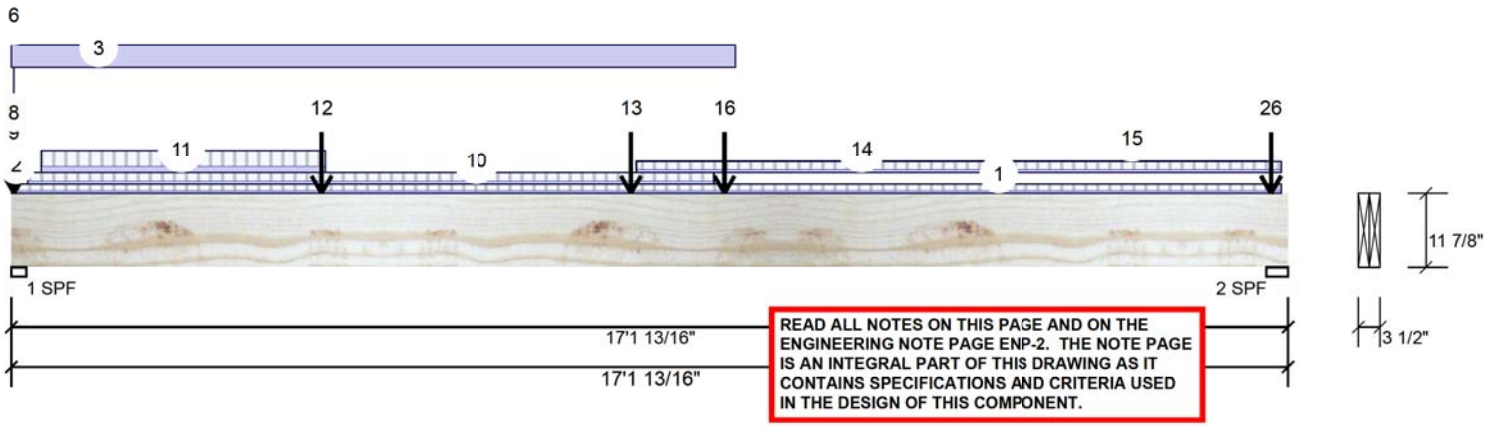
Per: joshua.nabua

iStructDesign

Client:	GREENPARK	Date:	9/30/2021
Project:		Input by:	W C
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F20-A Forex 2.0E-3000Fb LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Ground Floor



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...Continued from page 1

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
5	Part. Uniform	0-0-7 to 0-0-7		Top	40 PLF	0 PLF	0 PLF	0 PLF	Wall Self Weight
6	Tapered Start	0-0-7		Top	1 PLF	2 PLF	0 PLF	0 PLF	
	End	0-0-7			1 PLF	2 PLF	0 PLF	0 PLF	
7	Part. Uniform	0-0-7 to 0-0-7		Top	40 PLF	0 PLF	0 PLF	0 PLF	Wall Self Weight
8	Point	0-0-7		Top	425 lb	0 lb	848 lb	0 lb	F10 F10
	Bearing Length	0-5-8							
9	Part. Uniform	0-0-7 to 0-0-7		Top	52 PLF	0 PLF	128 PLF	0 PLF	
10	Tapered Start	0-2-10		Top	11 PLF	31 PLF	0 PLF	0 PLF	
	End	9-5-3			11 PLF	31 PLF	0 PLF	0 PLF	
11	Part. Uniform	0-4-13 to 4-2-6		Top	23 PLF	60 PLF	0 PLF	0 PLF	
12	Point	4-1-13		Top	56 lb	150 lb	0 lb	0 lb	PL1
	Bearing Length	0-5-8							
13	Point	8-3-13		Near Face	178 lb	376 lb	0 lb	0 lb	F5
14	Tie-In	8-4-11 to 17-0-11	0-8-10	Top	15 PSF	40 PSF	0 PSF	0 PSF	
15	Part. Uniform	8-4-11 to 16-10-6		Top	3 PLF	0 PLF	0 PLF	0 PLF	
16	Point	9-6-14		Top	242 lb	586 lb	0 lb	0 lb	F16 F16
	Bearing Length	0-5-8							
17	Point	16-11-1		Top	2 lb	4 lb	0 lb	0 lb	
	Bearing Length	0-5-8							
18	Point	16-11-1		Top	3 lb	9 lb	0 lb	0 lb	J6
	Bearing Length	0-5-8							
19	Point	16-11-1		Top	12 lb	32 lb	0 lb	0 lb	J8
	Bearing Length	0-5-8							
20	Point	16-11-1		Top	22 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
21	Point	16-11-1		Top	2 lb	4 lb	0 lb	0 lb	
	Bearing Length	0-5-8							
22	Point	16-11-1		Top	17 lb	45 lb	0 lb	0 lb	J8
	Bearing Length	0-5-8							
23	Point	16-11-1		Top	23 lb	0 lb	0 lb	0 lb	Wall Self Weight

LICENSED PROFESSIONAL ENGINEER
I.MATIJEVIC
100528832
PROVINCE OF ONTARIO
October 12, 2021

Notes

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Lumber

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Handling & Installation

1. LVL beams must not be cut or drilled
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This design is valid until 5/24/2024

Manufacturer Info

Forex
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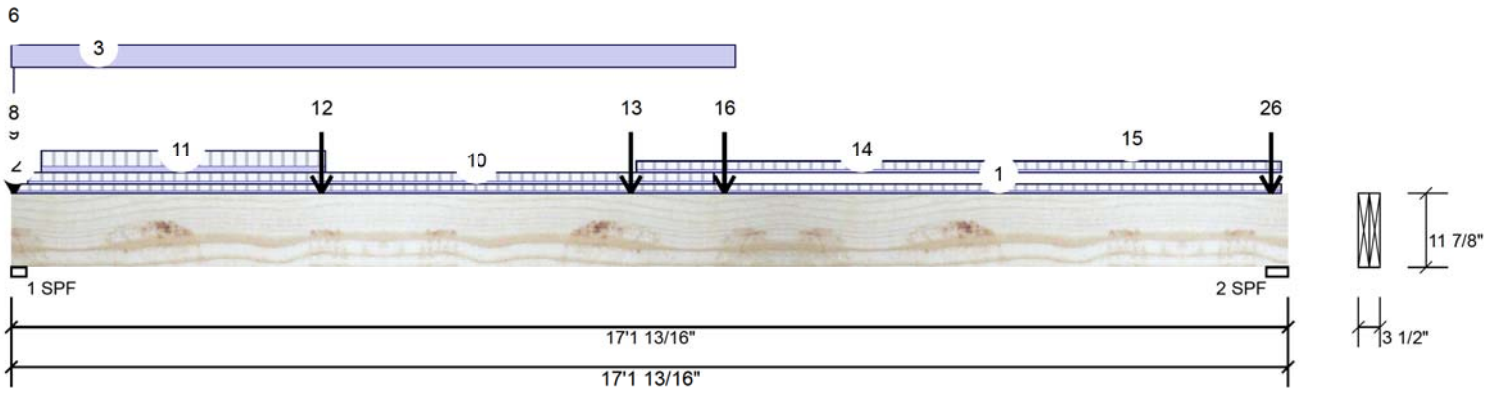

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ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
	Bearing Length	0-5-8							
24	Point	16-11-1		Top	1 lb	4 lb	0 lb	0 lb	
	Bearing Length	0-5-8							
25	Point	16-11-1		Top	14 lb	38 lb	0 lb	0 lb	J8
	Bearing Length	0-5-8							
26	Point	16-11-1		Top	20 lb	0 lb	0 lb	0 lb	Wall Self Weight
	Bearing Length	0-5-8							
	Self Weight				10 PLF				

October 12, 2021

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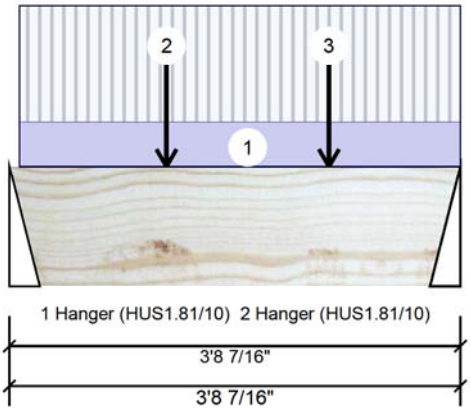
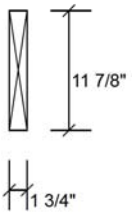
Level: Ground Floor





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	376	178	0	0
2	Vertical	406	191	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	3.000"	Vert	20%	223 / 565	788	L	1.25D+1.5L
2 - Hanger	3.000"	Vert	22%	239 / 608	848	L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	746 ft-lb	1'7 3/8"	17130 ft-lb	0.044 (4%)	1.25D+1.5L	L
Unbraced	746 ft-lb	1'7 3/8"	17130 ft-lb	0.044 (4%)	1.25D+1.5L	L
Shear	628 lb	2'5 9/16"	5798 lb	0.108 (11%)	1.25D+1.5L	L
Perm Defl in.	0.002 (L/24257)	1'9 5/16"	0.111 (L/360)	0.015 (1%)	D	Uniform
LL Defl inch	0.003 (L/11567)	1'9 7/16"	0.083 (L/480)	0.041 (4%)	L	L
TL Defl inch	0.005 (L/7832)	1'9 7/16"	0.166 (L/240)	0.031 (3%)	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.

October 12, 2021

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Part. Uniform	0-1-0 to 3-8-7		Top	34 PLF	89 PLF	0 PLF	0 PLF	
2	Point	1-3-8		Far Face	120 lb	239 lb	0 lb	0 lb	J2
3	Point	2-7-8		Far Face	109 lb	221 lb	0 lb	0 lb	J2
	Self Weight				5 PLF				

READ ALL NOTES ON THIS PAGE AND ON THE ENGINEERING NOTE PAGE ENP-2. THE NOTE PAGE IS AN INTEGRAL PART OF THIS DRAWING AS IT CONTAINS SPECIFICATIONS AND CRITERIA USED IN THE DESIGN OF THIS COMPONENT.

Notes

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

Lumber

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

Handling & Installation

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

This design is valid until 5/24/2024

Manufacturer Info

Forex
APA: PR-L318

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

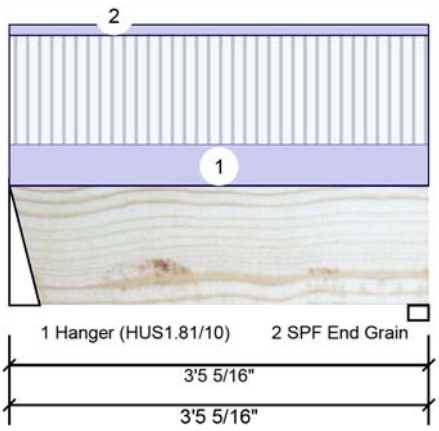
CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
RECEIVED
Per: joshua.nabua

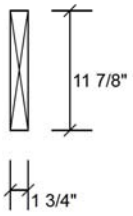
iStructDesign

Client:	GREENPARK	Date:	9/30/2021
Project:		Input by:	W C
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F5-B Forex 2.0E-3000Fb LVL 1.750" X 11.875" - PASSED

Level: Ground Floor





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	37	26	0	0
2	Vertical	35	25	0	0

Bearings and Factored Reactions

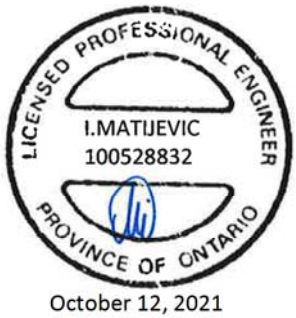
Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	3.000"	Vert	2%	32 / 56	88	L	1.25D+1.5L
2 - SPF End Grain	2.004"	Vert	3%	31 / 53	84	L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	62 ft-lb	1'9 1/8"	17130 ft-lb	0.004 (0%)	1.25D+1.5L	L
Unbraced	62 ft-lb	1'9 1/8"	17130 ft-lb	0.004 (0%)	1.25D+1.5L	L
Shear	32 lb	2'3 7/16"	5798 lb	0.006 (1%)	1.25D+1.5L	L
Perm Defl in.	0.000 (L/226271)	1'9 3/16"	0.105 (L/360)	0.002 (0%)	D	Uniform
LL Defl inch	0.000 (L/157647)	1'9 3/16"	0.079 (L/480)	0.003 (0%)	L	L
TL Defl inch	0.000 (L/92913)	1'9 3/16"	0.157 (L/240)	0.003 (0%)	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 be laterally braced at bearings.



October 12, 2021

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

Handling & Installation

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

This design is valid until 5/24/2024

Manufacturer Info

Forex
APA: PR-L318

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

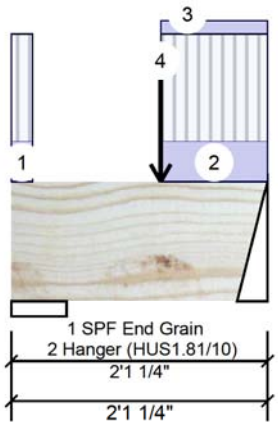
CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
RECEIVED
Per: joshua.nabua

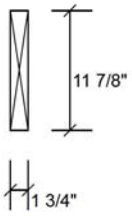
iStructDesign

Client:	GREENPARK	Date:	9/30/2021
Project:		Input by:	W C
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F5-C Forex 2.0E-3000Fb LVL 1.750" X 11.875" - PASSED

Level: Ground Floor





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		

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Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	56	33	0	0
2	Vertical	92	51	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	5.438"	Vert	2%	41 / 85	125	L	1.25D+1.5L
2 - Hanger	3.000"	Vert	5%	64 / 138	202	L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	80 ft-lb	1'2 11/16"	17130 ft-lb	0.005 (0%)	1.25D+1.5L	L
Unbraced	80 ft-lb	1'2 11/16"	17130 ft-lb	0.005 (0%)	1.25D+1.5L	L
Shear	64 lb	1'5 5/16"	5798 lb	0.011 (1%)	1.25D+1.5L	L
Perm Defl in.	0.000 (L/145319)	1'2 3/4"	0.051 (L/360)	0.002 (0%)	D	Uniform
LL Defl inch	0.000 (L/80416)	1'2 3/4"	0.038 (L/480)	0.006 (1%)	L	L
TL Defl inch	0.000 (L/51769)	1'2 3/4"	0.076 (L/240)	0.005 (0%)	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.

October 12, 2021

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 0-2-1	1-10-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	1-2-11 to 2-1-4	1-10-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Part. Uniform	1-2-11 to 2-1-4		Top	9 PLF	0 PLF	0 PLF	0 PLF	
4	Point	1-2-11		Far Face	37 lb	71 lb	0 lb	0 lb	J7
	Self Weight				5 PLF				

Notes

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

Lumber

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

Handling & Installation

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

This design is valid until 5/24/2024

Manufacturer Info

Forex
APA: PR-L318

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

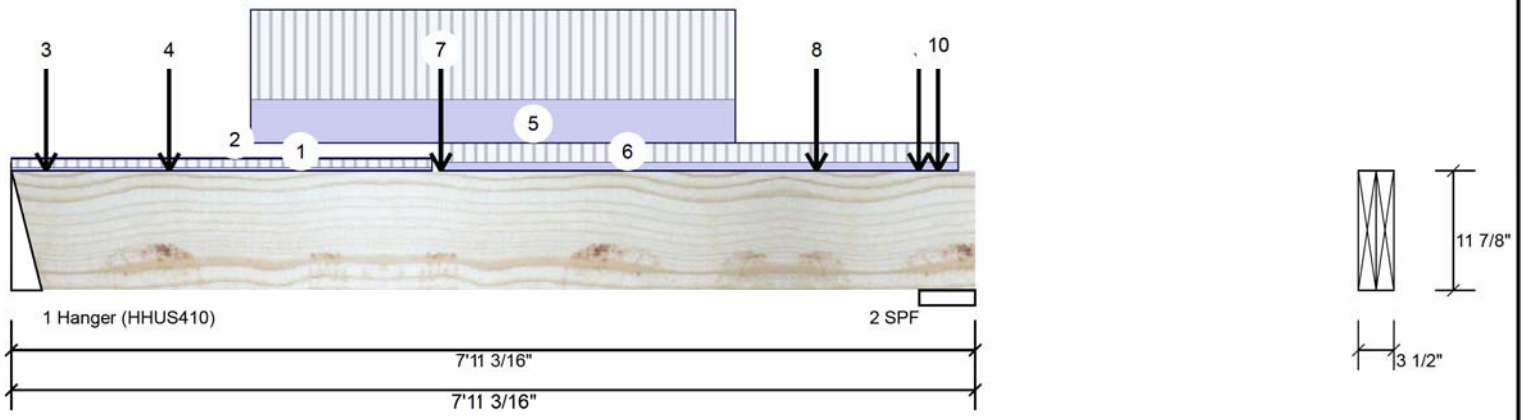
CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
RECEIVED
Per: joshua.nabua

iStructDesign

Client:	GREENPARK	Date:	9/30/2021
Project:		Input by:	W C
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F6-A Forex 2.0E-3000Fb LVL 1.750" X 11.875" 2-Ply - 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	1952	943	0	0
2	Vertical	2877	1297	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - Hanger	3.000"	Vert	53%	1178 / 2928	4106	L	1.25D+1.5L
2 - SPF	5.500"	Vert	50%	1621 / 4316	5937	L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	4180 ft-lb	3'9 3/16"	34261 ft-lb	0.122 (12%)	1.25D+1.5L	L
Unbraced	4180 ft-lb	3'9 3/16"	34261 ft-lb	0.122 (12%)	1.25D+1.5L	L
Shear	1894 lb	1'2 7/8"	11596 lb	0.163 (16%)	1.25D+1.5L	L
Perm Defl in.	0.013 (L/6895)	3'10 1/16"	0.245 (L/360)	0.052 (5%)	D	Uniform
LL Defl inch	0.025 (L/3560)	3'10 1/4"	0.184 (L/480)	0.135 (13%)	L	L
TL Defl inch	0.038 (L/2348)	3'10 3/16"	0.367 (L/240)	0.102 (10%)	D+L	L

Design Notes

1 Performed Secondary Bearing Check (CSA 086-14 6.5.7.3). Assumed point load size: beam width X 3.
2 Performed Secondary Bearing Check (CSA 086-14 6.5.7.3). Assumed point load size: beam width X 4.5.
3 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.
4 Fill all hanger nailing holes.
5 Girders are designed to be supported on the bottom edge only.
6 Multiple plies must be fastened together as per manufacturer's details.
7 Top loads must be supported equally by all plies.
8 Top must be continuously laterally braced.
9 Bottom must have sheathing attached or be continuously braced.
10 Lateral slenderness ratio based on full section width.

October 12, 2021

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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

This design is valid until 5/24/2024

Manufacturer Info

Forex
APA: PR-L318

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

CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
RECEIVED
Per: joshua.nabua

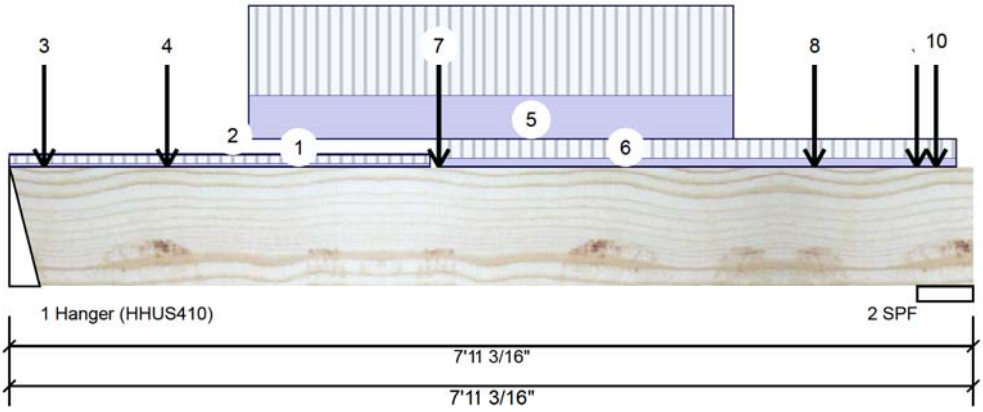
iDesign

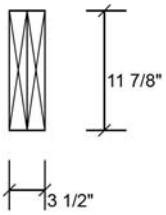
Client: GREENPARK
Project:
Address: TERRACOTA 45 1-3
RICHMOND HILL, ON

Date: 9/30/2021
Input by: W C
Job Name: TC451-3 STANDARD
Project #: ROUNDEL HOMES INC

F6-A Forex 2.0E-3000Fb LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Ground Floor





ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 3-5-7	0-6-2	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Part. Uniform	0-0-0 to 3-5-6		Top	3 PLF	0 PLF	0 PLF	0 PLF	
3	Point	0-3-7		Top	481 lb	1089 lb	0 lb	0 lb	C1
	Bearing Length	0-3-8							
4	Point	1-3-9		Far Face	148 lb	295 lb	0 lb	0 lb	J3
5	Part. Uniform	1-11-9 to 5-11-9		Far Face	105 PLF	216 PLF	0 PLF	0 PLF	
6	Part. Uniform	3-6-5 to 7-9-8		Top	20 PLF	47 PLF	0 PLF	0 PLF	
7	Point	3-6-5		Near Face	51 lb	92 lb	0 lb	0 lb	F5
8	Point	6-7-9		Far Face	121 lb	252 lb	0 lb	0 lb	J3
9	Point	7-5-10		Top	801 lb	1922 lb	0 lb	0 lb	C1
	Bearing Length	0-3-8							
10	Point	7-7-9		Far Face	20 lb	44 lb	0 lb	0 lb	J3
	Self Weight				10 PLF				

October 12, 2021

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Handling & Installation

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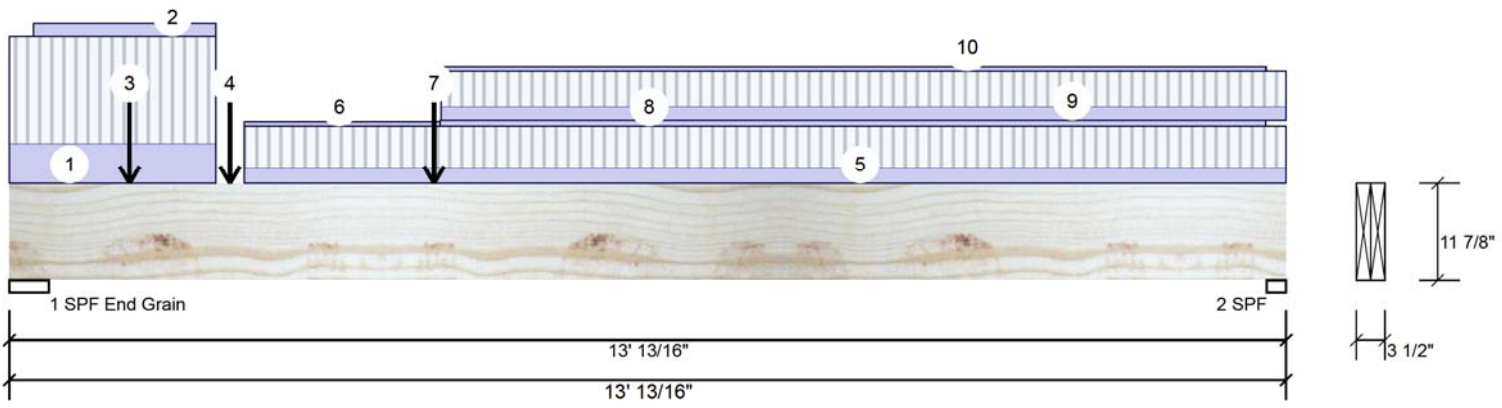
Level: Ground Floor



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		

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Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	2344	1197	0	0
2	Vertical	760	433	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	4.843"	Vert	40%	1497 / 3516	5013	L	1.25D+1.5L
2 - SPF	2.375"	Vert	33%	541 / 1141	1682	L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	9690 ft-lb	4'3 15/16"	34261 ft-lb	0.283 (28%)	1.25D+1.5L	L
Unbraced	9690 ft-lb	4'3 15/16"	34261 ft-lb	0.283 (28%)	1.25D+1.5L	L
Shear	4794 lb	1'4 11/16"	11596 lb	0.413 (41%)	1.25D+1.5L	L
Perm Defl in.	0.069 (L/2194)	5'11 11/16"	0.420 (L/360)	0.164 (16%)	D	Uniform
LL Defl inch	0.130 (L/1166)	5'10 3/4"	0.315 (L/480)	0.412 (41%)	L	L
TL Defl inch	0.199 (L/761)	5'11 1/16"	0.630 (L/240)	0.315 (32%)	D+L	L

Design Notes

1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2 Girders are designed to be supported on the bottom edge only.
3 Multiple plies must be fastened together as per manufacturer's details.
4 Top loads must be supported equally by all plies.
5 Top must be continuously laterally braced.
6 Bottom must be laterally braced at a maximum of 8'8 7/8" o.c.
7 Lateral slenderness ratio based on full section width.

LICENSED PROFESSIONAL ENGINEER
I.MATIJEVIC
100528832
PROVINCE OF ONTARIO

October 12, 2021

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 2-1-4	1-10-0	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Part. Uniform	0-2-15 to 2-1-4		Top	9 PLF	0 PLF	0 PLF	0 PLF	
3	Point	1-2-11		Near Face	37 lb	72 lb	0 lb	0 lb	J7
4	Point	2-3-0		Near Face	943 lb	1952 lb	0 lb	0 lb	F6
5	Tie-In	2-4-12 to 13-0-13	0-8-10	Top	15 PSF	40 PSF	0 PSF	0 PSF	

Continued on page 2...

Notes

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Lumber

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Handling & Installation

1. LVL beams must not be cut or drilled
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3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation
6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 5/24/2024

Manufacturer Info

Forex
APA: PR-L318

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

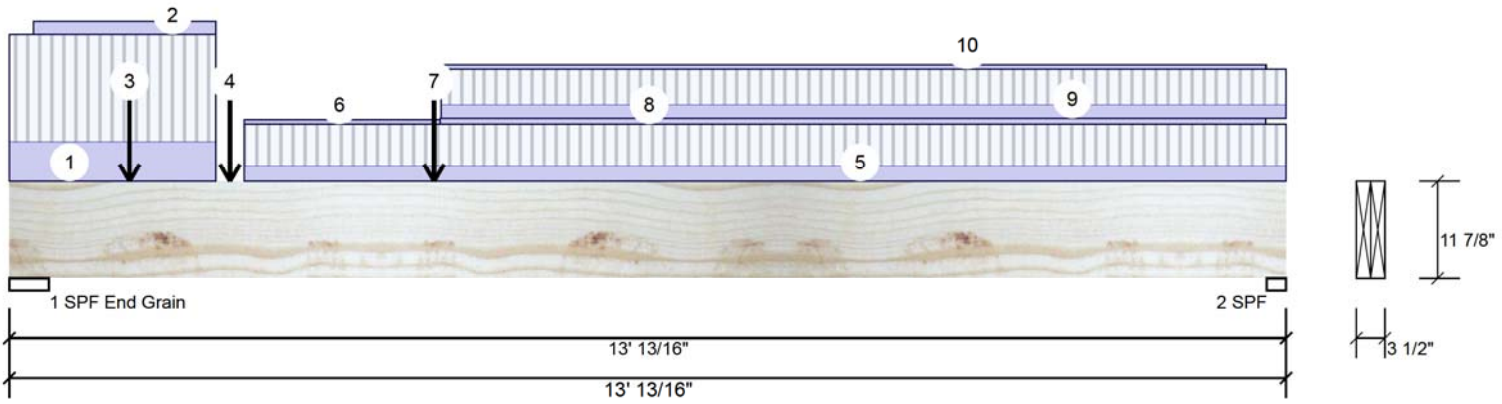
CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
RECEIVED
Per: joshua.nabua

iStructDesign

Client:	GREENPARK	Date:	9/30/2021
Project:		Input by:	W C
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F8-C Forex 2.0E-3000Fb LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Ground Floor



...Continued from page 1

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
6	Part. Uniform	2-4-12 to 4-4-11		Top	3 PLF	0 PLF	0 PLF	0 PLF	
7	Point	4-3-15		Far Face	191 lb	406 lb	0 lb	0 lb	F5
8	Part. Uniform	4-4-11 to 12-10-5		Top	4 PLF	0 PLF	0 PLF	0 PLF	
9	Tie-In	4-4-13 to 13-0-13	0-7-6	Top	15 PSF	40 PSF	0 PSF	0 PSF	
10	Part. Uniform	4-4-13 to 12-10-6		Top	3 PLF	0 PLF	0 PLF	0 PLF	
	Self Weight				10 PLF				

LICENSED PROFESSIONAL ENGINEER
I.MATIJEVIC
100528832
PROVINCE OF ONTARIO

October 12, 2021

READ ALL NOTES ON THIS PAGE AND ON THE ENGINEERING NOTE PAGE ENP-2. THE NOTE PAGE IS AN INTEGRAL PART OF THIS DRAWING AS IT CONTAINS SPECIFICATIONS AND CRITERIA USED IN THE DESIGN OF THIS COMPONENT.

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 roation
6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 5/24/2024

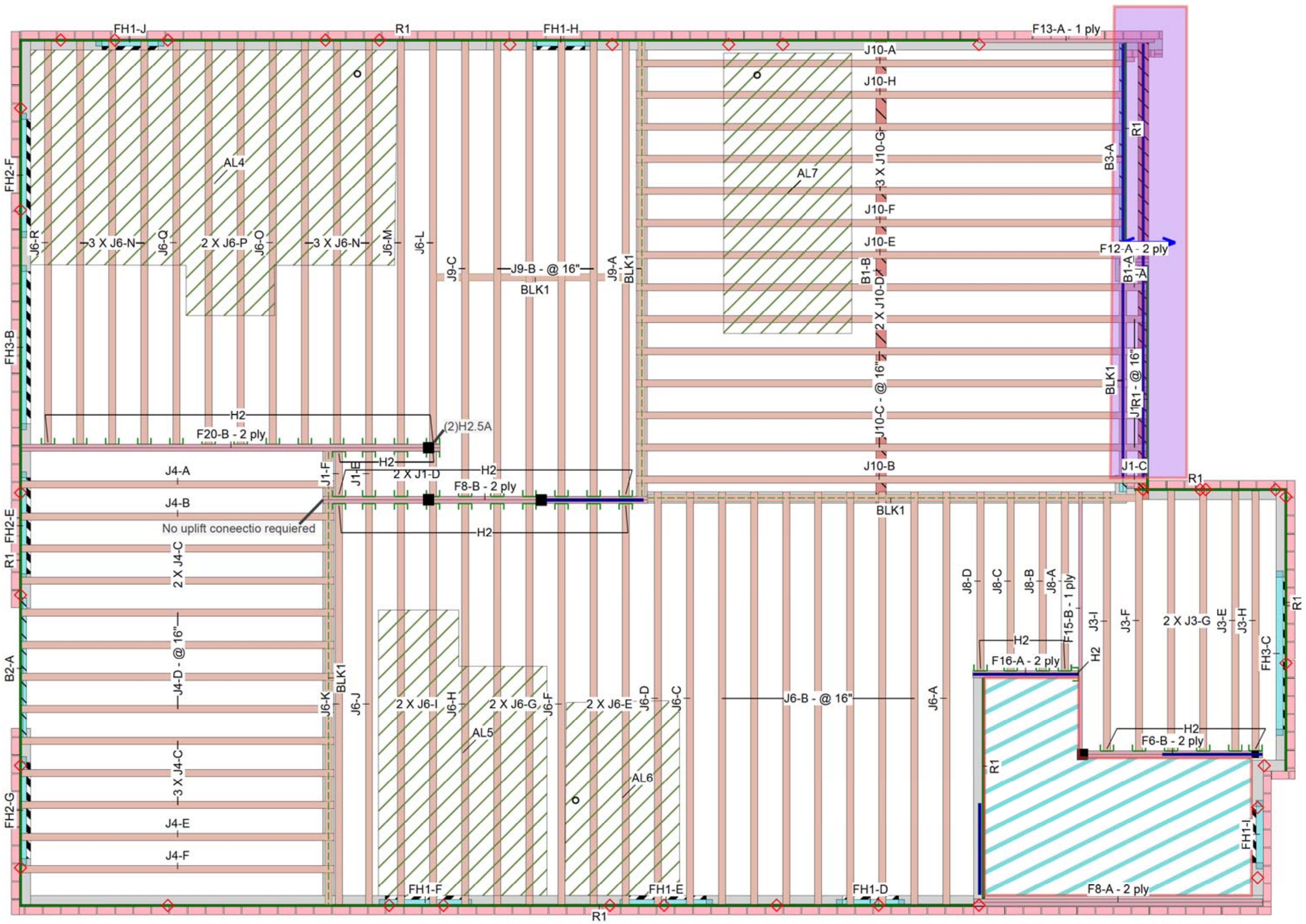
Manufacturer Info

Forex
APA: PR-L318

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

CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
RECEIVED
Per: joshua.nabua

Second Floor



Second Floor

LVL/LSL

Label	Description	Width	Depth	Qty	Plies	Pcs	Length
F20	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	18-0-0
F8	Forex 2.0E-3000Fb LVL	1.75	11.875	2	2	4	14-0-0
F15	Forex 2.0E-3000Fb LVL	1.75	11.875			1	12-0-0
F6	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	8-0-0
F13	Forex 2.0E-3000Fb LVL	1.75	11.875			1	8-0-0
F16	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	6-0-0
F12	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	2-0-0

I Joist

Label	Description	Width	Depth	Qty	Plies	Pcs	Length
J10	AJS 24	3.5	11.875			14	22-0-0
J9	AJS 24	3.5	11.875			6	20-0-0
J6	AJS 24	3.5	11.875			33	18-0-0
J4	AJS 24	3.5	11.875			13	14-0-0
J3	AJS 24	3.5	11.875			6	12-0-0
J8	AJS 24	3.5	11.875			4	8-0-0
J1	AJS 24	3.5	11.875			11	2-0-0

Rim Board

Label	Description	Width	Depth	Qty	Plies	Pcs	Length
R1	Norbord Rimboard Plus 1.125 X 11.875	1.125	11.875			14	12-0-0

Blocking

Label	Description	Width	Depth	Qty	Plies	Pcs	Length
BLK1	AJS 24	3.5	11.875	LinFt		Varies	59-0-0

Hanger

Label	Pcs	Description	Skew	Slope	Beam/Girder fasteners	Supported Member fasteners
H2	48	LF3511			12 10dx1 1/2	2 #8x1 1/4WS

Custom

Label	Description	Width	Depth	Qty	Plies	Pcs	Length
	H2.5A					2	

JOB INFORMATION

Builder
GREENPARK

Project
ROUNDEL HOMES INC

Shipping
TERRACOTA 45 1-3
RICHMOND HILL, ON

Sales Rep
RALPH MIRIGELLO

Designer
W C

Plotted
October 15, 2021

Layout Name
TC451-3 STANDARD

Job Path

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	
Decking	OSB

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

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.

Legend

Symbol	Meaning
WS	Web Stiffener
-ws	In Hanger Label Denotes Web Stiffener
PS	Point Load Support
◇	Load from Above
	Wall
	Wall Opening
	Norbord Rimboard Plus 1.125 X 11.875
	AJS 24 11.875
	Forex 2.0E-3000Fb LVL 1.75 X 11.875

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.

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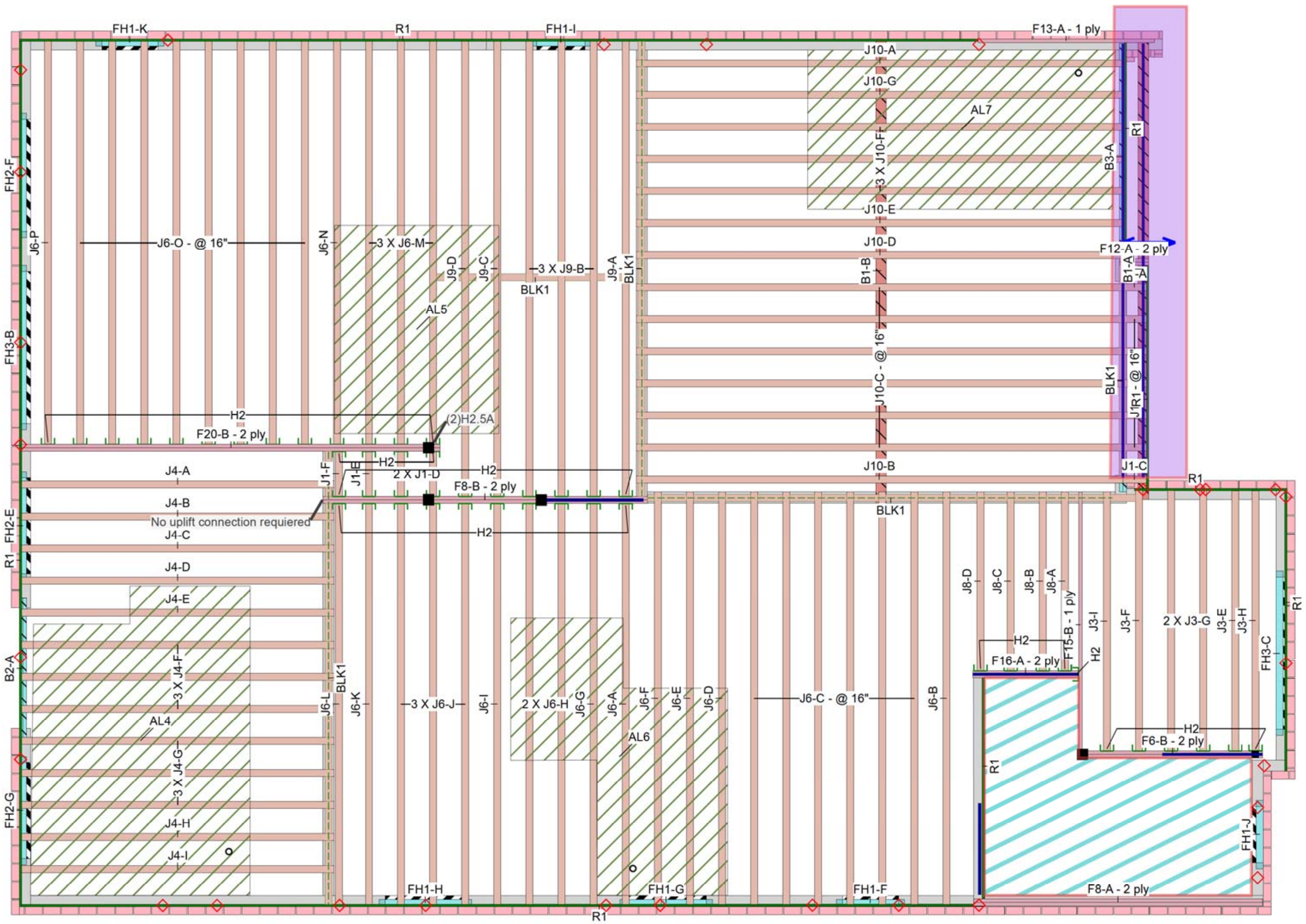
CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
RECEIVED
Per: joshua.nabua

Second Floor



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F6	Forex 2.0E-3000Fb LVL	1.75	11.875	1	2	2	8-0-0
F13	Forex 2.0E-3000Fb LVL	1.75	11.875			1	8-0-0
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Label	Description	Width	Depth	Qty	Plies	Pcs	Length
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GREENPARK

Project
ROUNDEL HOMES INC

Shipping
TERRACOTA 45 1-3
RICHMOND HILL, ON

Sales Rep
RALPH MIRIGELLO

Designer
W C

Plotted
October 15, 2021

Layout Name
TC451-3 (5-BDRM OPT.)

Job Path

DESIGN CRITERIA

Second Floor

Design Method	LSD (Canada)
Building Code	NBCC 2015 / OBC 2012

Floor Loads

Live	40
Dead	15

Deflection Joist

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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

Decking	OSB

CCMC References
Boise - 12472-R , 12787-R
LP - 12412-R
Forex - 14056-R

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	Wall
	Wall Opening
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	AJS 24 11.875
	Forex 2.0E-3000Fb LVL 1.75 X 11.875

CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
RECEIVED
Per: joshua.nanna

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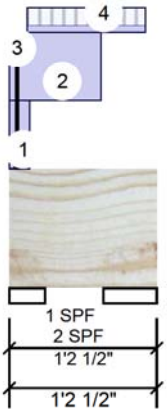
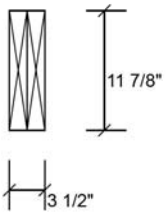
iStructDesign

Client:	GREENPARK	Date:	9/30/2021
Project:		Input by:	W C
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F12-A Forex 2.0E-3000Fb LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Second 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	8	264	379	0
2	Vertical	12	29	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	3.500"	Vert	12%	329 / 577	906	L	1.25D+1.5S +L
2 - SPF	5.250"	Vert	10%	36 / 18	55	L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	7 ft-lb	6 5/16"	22269 ft-lb	0.000 (0%)	1.25D+1.5L	L
Unbraced	7 ft-lb	6 5/16"	22269 ft-lb	0.000 (0%)	1.25D+1.5L	L
Shear	39 lb	-(2 5/8")	7537 lb	0.005 (1%)	1.25D+1.5L	L
Perm Defl in.	0.000 (L/591393)	6 3/8"	0.020 (L/360)	0.001 (0%)	D	Uniform
LL Defl inch	0.000 (L/2681567)	6 3/8"	0.015 (L/480)	0.000 (0%)	L+0.5S	L
TL Defl inch	0.000 (L/484534)	6 3/8"	0.030 (L/240)	0.000 (0%)	D+L+0.5S	L

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 have sheathing attached or be continuously braced.
8 Lateral slenderness ratio based on full section width.

October 12, 2021

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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

This design is valid until 5/24/2024

Manufacturer Info

Forex
APA: PR-L318

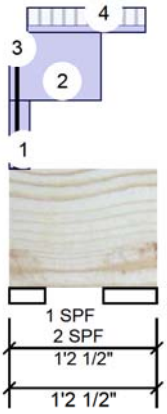
Kott Inc.
3228 Moodie Dr, Ottawa, Ontario
613-838-2775 905-642-4400

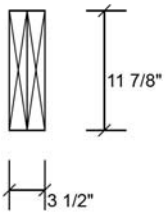
CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
RECEIVED
Per: joshua.nabua

Client:	GREENPARK	Date:	9/30/2021
Project:		Input by:	W C
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F12-A Forex 2.0E-3000Fb LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Second Floor





ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Part. Uniform	0-0-0 to 0-2-0		Top	80 PLF	0 PLF	0 PLF	0 PLF	Wall Self Weight
2	Part. Uniform	0-0-0 to 0-9-1		Top	80 PLF	0 PLF	0 PLF	0 PLF	Wall Self Weight
3	Point	0-0-12		Top	200 lb	0 lb	379 lb	0 lb	F11 F11
	Bearing Length	0-5-8							
4	Tie-In	0-1-12 to 1-1-6	0-6-4	Top	15 PSF	40 PSF	0 PSF	0 PSF	
	Self Weight				10 PLF				

LICENSED PROFESSIONAL ENGINEER
I.MATIJEVIC
100528832
PROVINCE OF ONTARIO

October 12, 2021

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Lumber

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

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
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Manufacturer Info

Forex
APA: PR-L318

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613-838-2775 905-642-4400

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BUILDING DIVISION
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Client:	GREENPARK	Date:	9/30/2021
Project:		Input by:	W C
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
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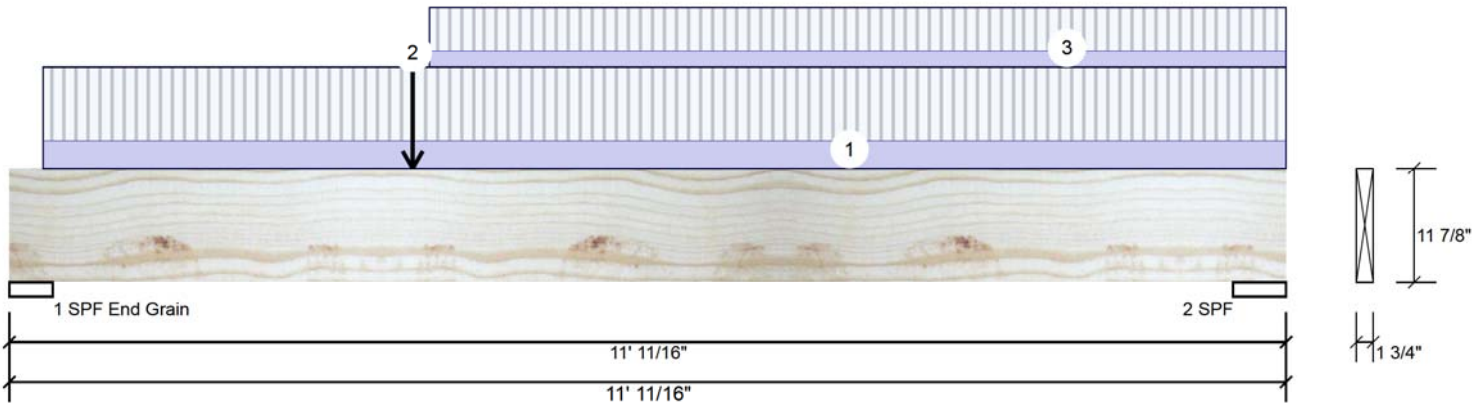
F15-A Forex 2.0E-3000Fb LVL 1.750" X 11.875" - PASSED

Level: Second Floor



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	461	213	0	0
2	Vertical	327	156	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	4.500"	Vert	16%	267 / 691	958	L	1.25D+1.5L
2 - SPF	5.500"	Vert	12%	194 / 491	685	L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	2776 ft-lb	3'5 3/4"	17130 ft-lb	0.162 (16%)	1.25D+1.5L	L
Unbraced	2776 ft-lb	3'5 3/4"	17130 ft-lb	0.162 (16%)	1.25D+1.5L	L
Shear	909 lb	1'4 3/8"	5798 lb	0.157 (16%)	1.25D+1.5L	L
Perm Defl in.	0.025 (L/5064)	5' 13/16"	0.345 (L/360)	0.071 (7%)	D	Uniform
LL Defl inch	0.054 (L/2317)	5' 3/8"	0.259 (L/480)	0.207 (21%)	L	L
TL Defl inch	0.078 (L/1590)	5' 7/16"	0.518 (L/240)	0.151 (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 Top must be continuously laterally braced.
4 Bottom must be laterally braced at a maximum of 7'7" o.c.

LICENSED PROFESSIONAL ENGINEER
I.MATIJEVIC
100528832
PROVINCE OF ONTARIO
October 12, 2021

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-3-8 to 11-0-11	0-6-10	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Point	3-5-12		Far Face	191 lb	454 lb	0 lb	0 lb	F16
3	Tie-In	3-7-8 to 11-0-11	0-3-14	Top	15 PSF	40 PSF	0 PSF	0 PSF	
	Self Weight				5 PLF				

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

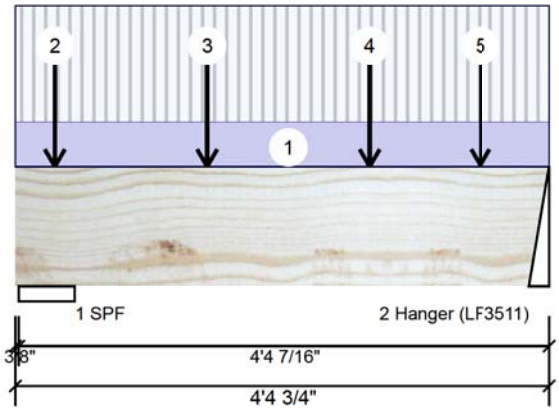
CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
RECEIVED
Per: joshua.nabua

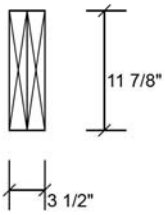
iDesign

Client:	GREENPARK	Date:	9/30/2021
Project:		Input by:	W C
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F16-A Forex 2.0E-3000Fb LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Second 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	586	242	0	0
2	Vertical	454	191	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	5.500"	Vert	10%	303 / 878	1181	LL	1.25D+1.5L
2 - Hanger	2.000"	Vert	18%	239 / 681	920	_L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	894 ft-lb	2'4 5/16"	34261 ft-lb	0.026 (3%)	1.25D+1.5L	_L
Unbraced	894 ft-lb	2'4 5/16"	34261 ft-lb	0.026 (3%)	1.25D+1.5L	_L
Shear	714 lb	3'2 7/8"	11596 lb	0.062 (6%)	1.25D+1.5L	_L
Perm Defl in.	0.001 (L/44783)	2'3 5/8"	0.135 (L/360)	0.008 (1%)	D	Uniform
LL Defl inch	0.003 (L/18817)	2'3 5/8"	0.101 (L/480)	0.026 (3%)	L	_L
TL Defl inch	0.004 (L/13249)	2'3 5/8"	0.202 (L/240)	0.018 (2%)	D+L	_L
LL Cant	-0.000 (2L/22776)	Lt Cant	0.200 (2L/480)	0.000 (0%)	L	_L
TL Cant	-0.000 (2L/16053)	Lt Cant	0.300 (2L/240)	0.000 (0%)	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 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.

LICENSED PROFESSIONAL ENGINEER
I.MATIJEVIC
100528832
PROVINCE OF ONTARIO
October 12, 2021

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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

This design is valid until 5/24/2024

Manufacturer Info

Forex
APA: PR-L318

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

CITY OF RICHMOND HILL
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Per: joshua.nabua

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		Project #:	ROUNDEL HOMES INC

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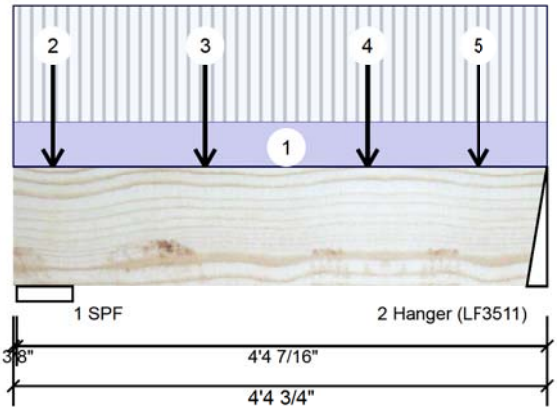
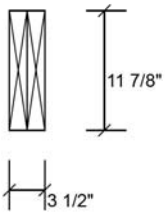
Level: Second Floor





ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Part. Uniform	0-0-0 to 4-4-12		Top	34 PLF	89 PLF	0 PLF	0 PLF	
2	Point	0-3-14		Far Face	71 lb	190 lb	0 lb	0 lb	J8
3	Point	1-6-14		Far Face	69 lb	185 lb	0 lb	0 lb	J8
4	Point	2-10-14		Far Face	60 lb	161 lb	0 lb	0 lb	J8
5	Point	3-9-14		Far Face	42 lb	112 lb	0 lb	0 lb	J8
	Self Weight				10 PLF				

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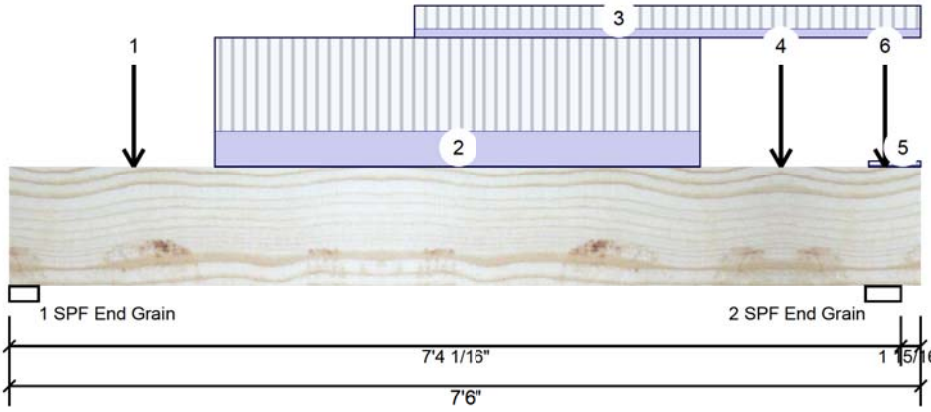
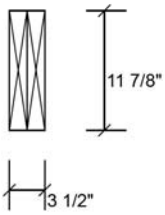
Address:	TERRACOTA 45 1-3 RICHMOND HILL, ON	Job Name:	TC451-3 STANDARD
		Project #:	ROUNDEL HOMES INC

F6-B Forex 2.0E-3000Fb LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Second 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	731	311	0	0
2	Vertical	1050	432	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	2.875"	Vert	20%	389 / 1097	1486	L_	1.25D+1.5L
2 - SPF End Grain	3.500"	Vert	23%	540 / 1575	2115	LL	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-2 ft-lb	7'4 1/16"	26038 ft-lb	0.000 (0%)	1.25D+1.5L	_L
Pos Moment	2957 ft-lb	3'9 3/4"	34261 ft-lb	0.086 (9%)	1.25D+1.5L	L_
Unbraced	2957 ft-lb	3'9 3/4"	34261 ft-lb	0.086 (9%)	1.25D+1.5L	L_
Shear	1511 lb	6' 11/16"	11596 lb	0.130 (13%)	1.25D+1.5L	LL
Perm Defl in.	0.007 (L/11693)	3'8 13/16"	0.234 (L/360)	0.031 (3%)	D	Uniform
LL Defl inch	0.017 (L/4890)	3'8 7/8"	0.175 (L/480)	0.098 (10%)	L	L_
TL Defl inch	0.024 (L/3448)	3'8 13/16"	0.351 (L/240)	0.070 (7%)	D+L	L_
LL Cant	-0.001 (2L/3956)	Rt Cant	0.200 (2L/480)	0.005 (0%)	L	L_
TL Cant	-0.001 (2L/2793)	Rt Cant	0.300 (2L/240)	0.005 (0%)	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.
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Lumber

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Handling & Installation

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Manufacturer Info

Forex
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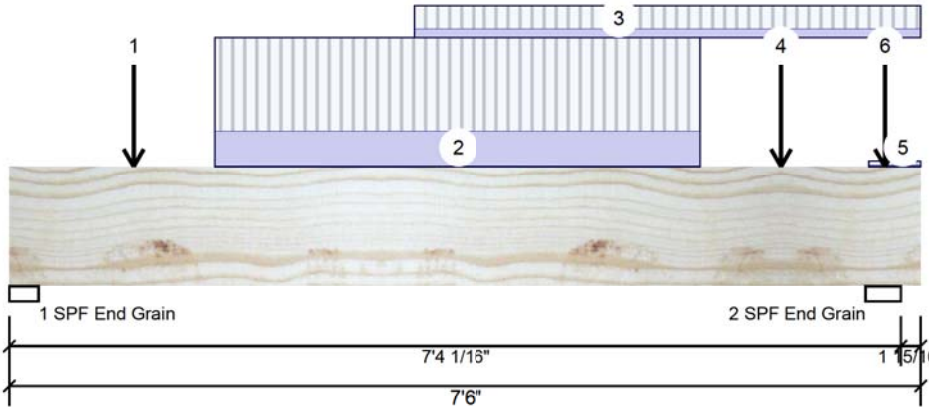

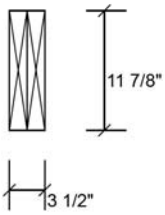

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Point	1-0-4		Far Face	96 lb	255 lb	0 lb	0 lb	J3
2	Part. Uniform	1-8-4 to 5-8-4		Far Face	80 PLF	212 PLF	0 PLF	0 PLF	
3	Part. Uniform	3-3-14 to 7-6-0		Top	20 PLF	52 PLF	0 PLF	0 PLF	
4	Point	6-4-4		Far Face	87 lb	232 lb	0 lb	0 lb	J3
5	Tie-In	7-0-14 to 7-6-0	0-2-13	Top	15 PSF	40 PSF	0 PSF	0 PSF	
6	Point	7-2-8		Far Face	84 lb	225 lb	0 lb	0 lb	J3
	Self Weight				10 PLF				

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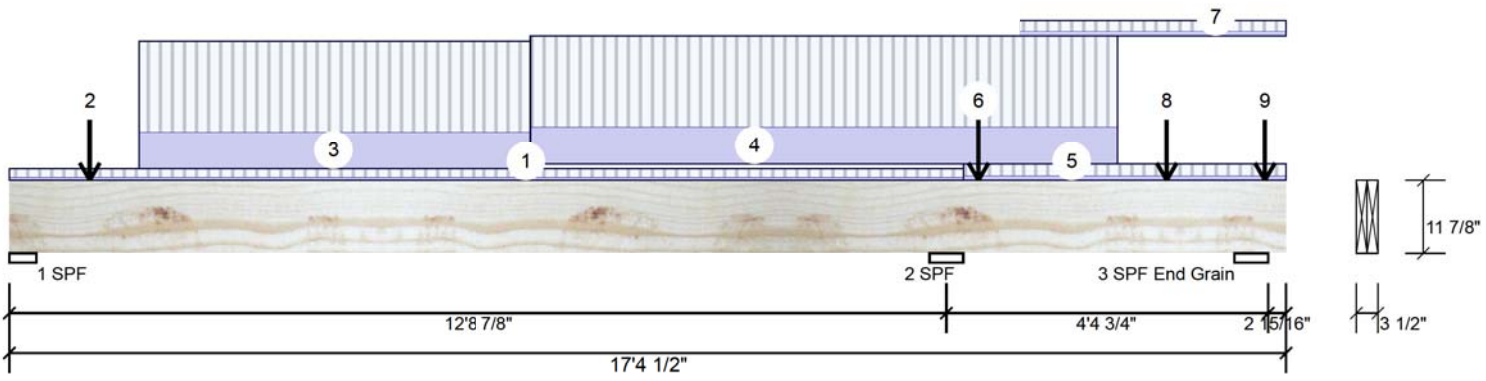
Level: Second Floor



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	1785	781	0	0
2	Vertical	4679	2039	0	0
3	Vertical	0 (-2)	(-37)	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	4.400"	Vert	38%	956 / 2650	3606	L_L	1.25D+1.5L
2 - SPF	5.500"	Vert	83%	2628 / 7237	9864	LL_	1.25D+1.5L
3 - SPF End Grain	5.500"	Vert	12%	-76 / 1713	1636 (-1292)	_LL	0.9D+1.5L (1.25D+1.5L)

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-11129 ft-lb	12'8 7/8"	34261 ft-lb	0.325 (32%)	1.25D+1.5L	LL_
Pos Moment	9359 ft-lb	5'4 1/4"	34261 ft-lb	0.273 (27%)	1.25D+1.5L	L_L
Unbraced	9359 ft-lb	5'4 1/4"	34261 ft-lb	0.273 (27%)	1.25D+1.5L	L_L
Shear	4600 lb	11'6 1/4"	11596 lb	0.397 (40%)	1.25D+1.5L	LL_
Perm Defl in.	0.058 (L/2556)	6' 5/16"	0.414 (L/360)	0.141 (14%)	D	Uniform
LL Defl inch	0.137 (L/1089)	6' 9/16"	0.311 (L/480)	0.441 (44%)	L	L_L
TL Defl inch	0.195 (L/764)	6' 1/2"	0.622 (L/240)	0.314 (31%)	D+L	L_L
LL Cant	0.001 (2L/8775)	Rt Cant	0.200 (2L/480)	0.003 (0%)	L	L_L
TL Cant	0.001 (2L/7813)	Rt Cant	0.300 (2L/240)	0.002 (0%)	D+L	L_L

Design Notes

1. Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2. Girders are designed to be supported on the bottom edge only.
3. Multiple plies must be fastened together as per manufacturer's details.
4. Top loads must be supported equally by all plies.
5. Tie-down connection required at bearing 3 for uplift 1292 lb (Combination 1.25D+1.5L, Load Case L__).
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.

LICENSED PROFESSIONAL ENGINEER
I.MATIJEVIC
100528832
PROVINCE OF ONTARIO

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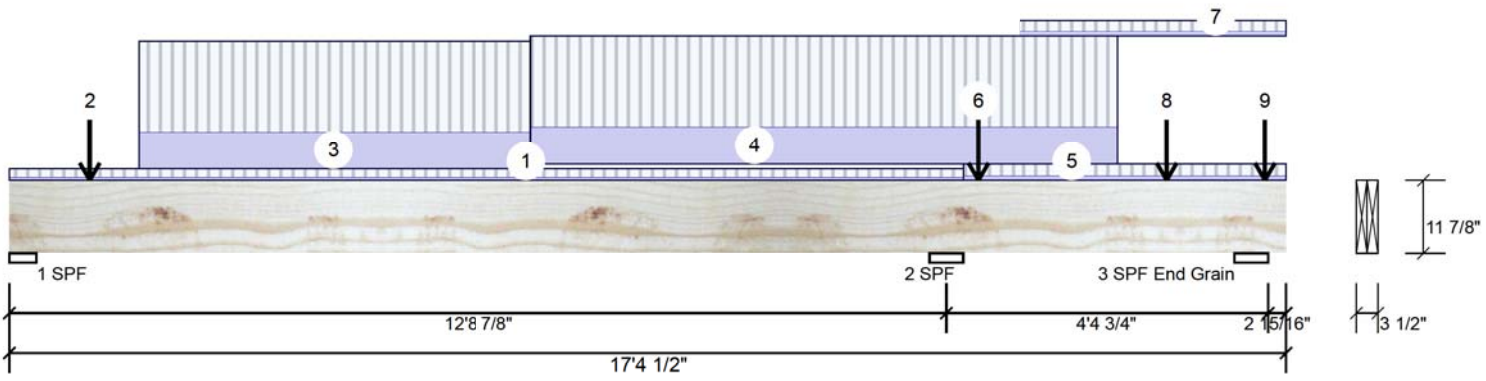

ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 12-11-10	0-9-2	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Point	1-1-1		Far Face	168 lb	409 lb	0 lb	0 lb	J6
3	Part. Uniform	1-9-1 to 7-1-1		Far Face	136 PLF	331 PLF	0 PLF	0 PLF	
4	Part. Uniform	7-1-1 to 15-1-1		Far Face	138 PLF	331 PLF	0 PLF	0 PLF	
5	Tie-In	12-11-10 to 17-4-8	1-0-15	Top	15 PSF	40 PSF	0 PSF	0 PSF	
6	Point	13-2-1		Near Face	9 lb	23 lb	0 lb	0 lb	J1
7	Part. Uniform	13-9-1 to 17-4-8		Near Face	15 PLF	41 PLF	0 PLF	0 PLF	
8	Point	15-9-1		Far Face	171 lb	442 lb	0 lb	0 lb	J6
9	Point	17-1-1		Far Face	166 lb	442 lb	0 lb	0 lb	J6
	Self Weight				10 PLF				

LICENSED PROFESSIONAL ENGINEER
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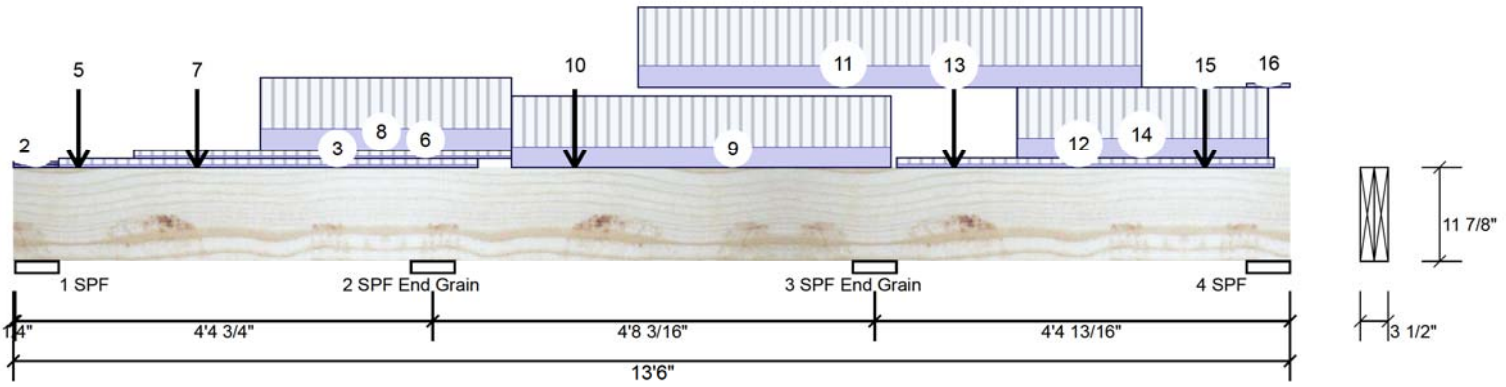

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Type:	Girder	Application:	Floor (Residential)
Plies:	2	Design Method:	LSD
Moisture Condition:	Dry	Building Code:	NBCC 2015 / OBC 2012
Deflection LL:	480	Load Sharing:	No
Deflection TL:	240	Deck:	Not Checked
Importance:	Normal - II	Vibration:	Not Checked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

Unfactored Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind
1	Vertical	526	221	0	0
2	Vertical	2405	1019	0	0
3	Vertical	3450	1395	0	0
4	Vertical	1174	482	0	0

Bearings and Factored Reactions

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF	5.500"	Vert	12%	270 / 979	1249 (-71)	LL__	1.25D+1.5L (0.9D+1.5L)
2 - SPF End Grain	5.500"	Vert	36%	1265 / 3943	5208	_LL_	1.25D+1.5L
3 - SPF End Grain	5.500"	Vert	51%	1782 / 5511	7292	L_LL	1.25D+1.5L
4 - SPF	5.500"	Vert	22%	580 / 1992	2572	_L_L	1.25D+1.5L

Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-3023 ft-lb	9'1 3/16"	34261 ft-lb	0.088 (9%)	1.25D+1.5L	L_LL
Pos Moment	2135 ft-lb	11'4 3/16"	34261 ft-lb	0.062 (6%)	1.25D+1.5L	_L_L
Unbraced	2135 ft-lb	11'4 3/16"	34261 ft-lb	0.062 (6%)	1.25D+1.5L	_L_L
Shear	3420 lb	5'7 5/8"	11596 lb	0.295 (29%)	1.25D+1.5L	_LL_
Perm Defl in.	0.003 (L/18604)	6'9 1/16"	0.156 (L/360)	0.019 (2%)	D	Uniform
LL Defl inch	0.009 (L/6055)	6'9 3/8"	0.117 (L/480)	0.079 (8%)	L	L_L_
TL Defl inch	0.012 (L/4568)	6'9 1/4"	0.234 (L/240)	0.053 (5%)	D+L	L_L_
LL Cant	-0.000 (2L/12470)	Lt Cant	0.200 (2L/480)	0.000 (0%)	L	_L_L
TL Cant	-0.000 (2L/9333)	Lt Cant	0.300 (2L/240)	0.000 (0%)	D+L	_L_L

Design Notes

1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
2 Girders are designed to be supported on the bottom edge only.
3 Multiple plies must be fastened together as per manufacturer's details.
4 Top loads must be supported equally by all plies.
5 Tie-down connection required at bearing 1 for uplift 71 lb (Combination 0.9D+1.5L, Load Case __L_).
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.

LICENSED PROFESSIONAL ENGINEER
I.MATIJEVIC
100528832
PROVINCE OF ONTARIO

October 12, 2021

READ ALL NOTES ON THIS PAGE AND ON THE ENGINEERING NOTE PAGE ENP-2. THE NOTE PAGE IS AN INTEGRAL PART OF THIS DRAWING AS IT CONTAINS SPECIFICATIONS AND CRITERIA USED IN THE DESIGN OF THIS COMPONENT.

Notes

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

Lumber

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

Handling & Installation

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

This design is valid until 5/24/2024

Manufacturer Info

Forex
APA: PR-L318

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

CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
RECEIVED
Per: joshua.nabua

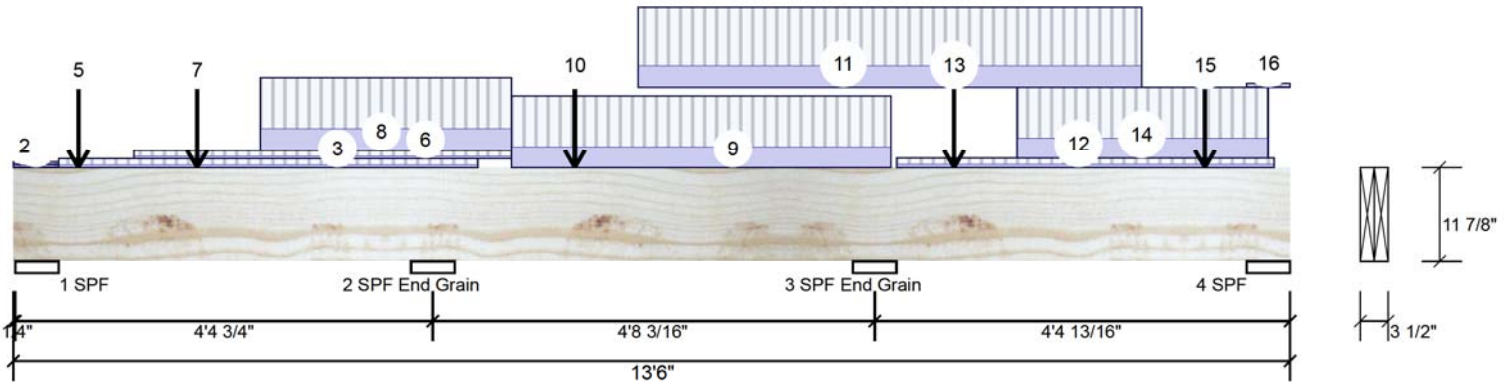
iStructDesign

Client: GREENPARK
Project:
Address: TERRACOTA 45 1-3
RICHMOND HILL, ON

Date: 9/30/2021
Input by: W C
Job Name: TC451-3 STANDARD
Project #: ROUNDEL HOMES INC

F8-B Forex 2.0E-3000Fb LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Second Floor



ID	Load Type	Location	Trib Width	Side	Dead	Live	Snow	Wind	Comments
1	Tie-In	0-0-0 to 0-5-12	0-3-14	Top	15 PSF	40 PSF	0 PSF	0 PSF	
2	Tie-In	0-0-0 to 0-5-12	0-4-2	Top	15 PSF	40 PSF	0 PSF	0 PSF	
3	Tie-In	0-5-12 to 4-10-11	1-0-15	Top	15 PSF	40 PSF	0 PSF	0 PSF	
4	Point	0-8-3		Far Face	9 lb	23 lb	0 lb	0 lb	J1
5	Point	0-8-3		Near Face	90 lb	240 lb	0 lb	0 lb	J6
6	Part. Uniform	1-3-3 to 5-3-3		Far Face	14 PLF	37 PLF	0 PLF	0 PLF	
7	Point	1-11-3		Near Face	164 lb	426 lb	0 lb	0 lb	J6
8	Part. Uniform	2-7-3 to 5-3-3		Near Face	143 PLF	330 PLF	0 PLF	0 PLF	
9	Part. Uniform	5-3-3 to 9-3-3		Near Face	137 PLF	330 PLF	0 PLF	0 PLF	
10	Point	5-11-3		Far Face	185 lb	492 lb	0 lb	0 lb	J9
11	Part. Uniform	6-7-3 to 11-11-3		Far Face	140 PLF	375 PLF	0 PLF	0 PLF	
12	Part. Uniform	9-3-15 to 13-4-0		Top	20 PLF	40 PLF	0 PLF	0 PLF	
13	Point	9-11-3		Near Face	169 lb	439 lb	0 lb	0 lb	J6
14	Part. Uniform	10-7-3 to 13-3-3		Near Face	133 PLF	330 PLF	0 PLF	0 PLF	
15	Point	12-7-3		Far Face	126 lb	336 lb	0 lb	0 lb	J9
16	Tie-In	13-0-8 to 13-6-0	0-5-1	Top	15 PSF	40 PSF	0 PSF	0 PSF	
	Self Weight				10 PLF				

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