

DESIGN LOADING:

LIVE LOAD = 40 PSF
DEAD LOAD = 15 PSF
DEAD LOAD @TILE = 20 PSF

Connector Summary			
PlotID	Qty	Manuf	Product
H1	2		HGUS410
H2	1		HGUS5.50/10
H3	2		HU310
H4	15		LT251188
H5	22		LT259

RIMBOARD

1- 1/8" X 9 1/2" O.S.B.
1- 1/8" X 11 7/8" O.S.B.

SUBFLOOR - 3/4" NAILED & GLUED*

APP - AS PER PLAN
BBO - BEAM BY OTHERS

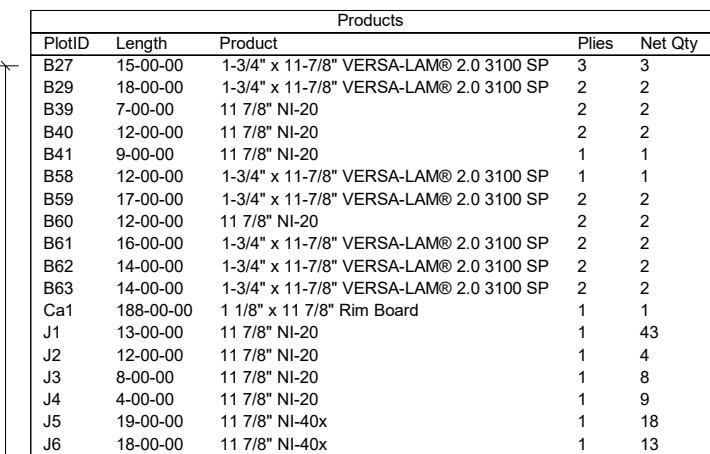
Ceramic tile application as per O.B.C. 9.30.6

Blocking panels are required over all interior supports
Squash blocks are required under concentrated loads.

First Floor Framing

Do not scale - refer to architectural plans for dimensions

REVISION: Sept. 30, 2021
REVISION: April 28, 2022



Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	3		HU310-2
H3	1		HUC410
H4	1		HUCQ1.81/9-SDS
H5	1		HUCQ410-SDS
H6	67		LT251188

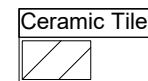
DESIGN LOADING:

LIVE LOAD = 40 PSF
DEAD LOAD = 15 PSF
DEAD LOAD @TILE = 20 PSF

RIMBOARD
1- 1/8" X 11 7/8" O.S.B.
SUBFLOOR - 3/4" NAILED & GLUED*
APP - AS PER PLAN
BBO - BEAM BY OTHERS

Ceramic tile application as per O.B.C. 9.30.6

Blocking panels are required over all interior supports
Squash blocks are required under concentrated loads.



Second Floor Framing

Do not scale - refer to architectural plans for dimensions

REVISION: Sept. 29, 2021
REVISION: Dec. 22, 2021
REVISION: April 28, 2022



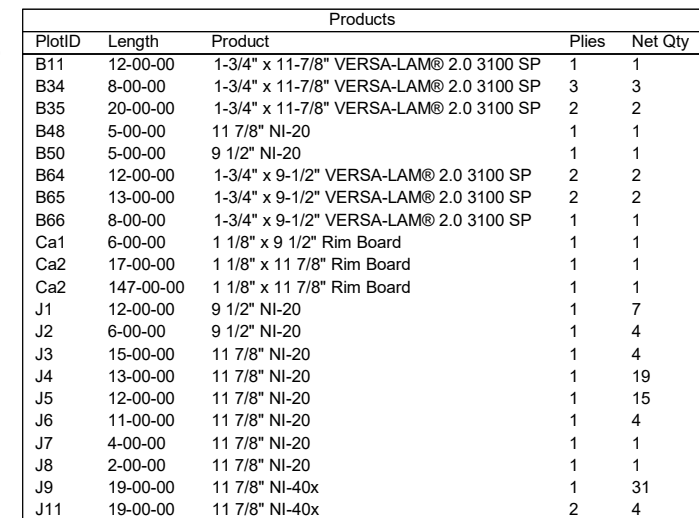
11-06-00

Ceramic tile application as per O.B.C. 9.30.6

Blocking panels are required over all interior supports
Squash blocks are required under concentrated loads.

Second Floor Framing

Do not scale - refer to architectural plans for dimensions



Connector Summary			
PlotID	Qty	Manuf	Product
H1	2		HGUS410
H2	1		HGUS5.50/10
H3	2		HU310
H4	15		LT251188
H5	22		LT259

DESIGN LOADING:

LIVE LOAD = 40 PSF
DEAD LOAD = 15 PSF
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RIMBOARD

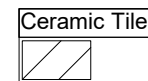
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SUBFLOOR - 3/4" NAILED & GLUED*

APP - AS PER PLAN
BBO - BEAM BY OTHERS

Ceramic tile application as per O.B.C. 9.30.6

Blocking panels are required over all interior supports
Squash blocks are required under concentrated loads.



**MODEL: 4003 - EL.A+B+C
W/OPT. LOGGIA
+ W.O.D. CONDITION**

First Floor Framing

Do not scale - refer to architectural plans for dimensions

REVISION: Sept. 30, 2021
REVISION: April 28, 2022



DESIGN LOADING:

LIVE LOAD = 40 PSF
DEAD LOAD = 15 PSF
DEAD LOAD @TILE = 20 PSF

Connector Summary			
PlotID	Qty	Manuf	Product
H1	2		HGUS410
H2	1		HGUS5.50/10
H3	2		HU310
H4	15		LT251188
H5	25		LT259

RIMBOARD
1- 1/8" X 9 1/2" O.S.B.
1- 1/8" X 11 7/8" O.S.B.
SUBFLOOR - 3/4" NAILED & GLUED*
APP - AS PER PLAN
BBO - BEAM BY OTHERS

Ceramic tile application as per O.B.C. 9.30.6

Blocking panels are required over all interior supports
Squash blocks are required under concentrated loads.

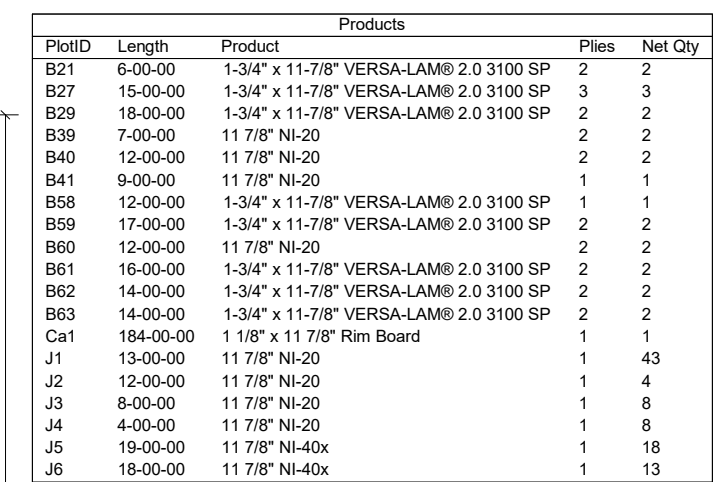
**MODEL: 4003 - EL.A+B+C
W/SIDE ENTRANCE
+ W.O.D. CONDITION**

First Floor Framing

Do not scale - refer to architectural plans for dimensions

REVISION: Sept. 30, 2021 REVISION: April 28, 2022
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Home Lumber



Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	3		HU310-2
H3	1		HUC410
H4	1		HUCQ1.81/9-SDS
H5	1		HUCQ410-SDS
H6	1		HUS1.81/10
H7	67		LT251188

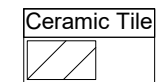
RIMBOARD
1- 1/8" X 11 7/8" O.S.B.
SUBFLOOR - 3/4" NAILED & GLUED*
APP - AS PER PLAN
BBO - BEAM BY OTHERS

DESIGN LOADING:

LIVE LOAD = 40 PSF
DEAD LOAD = 15 PSF
DEAD LOAD @TILE = 20 PSF

Ceramic tile application as per O.B.C. 9.30.6

Blocking panels are required over all interior supports
Squash blocks are required under concentrated loads.

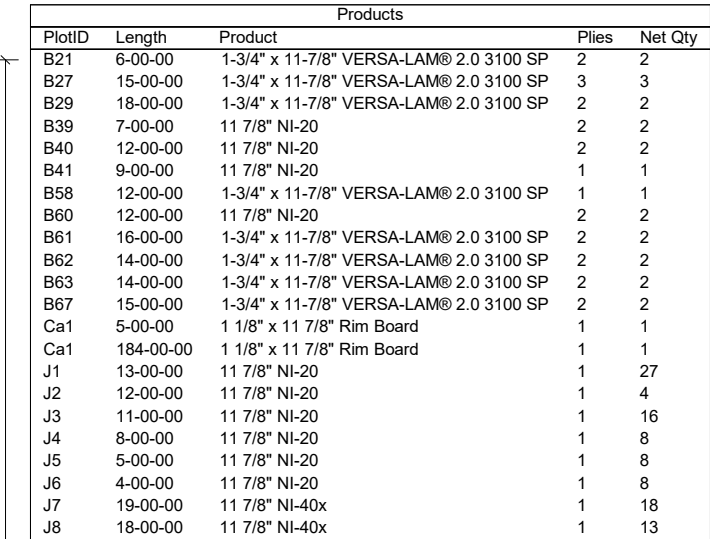


**MODEL: 4003 - EL.B
W/SIDE ENTRANCE
+ OPT. LOGGIA**

Second Floor Framing

Do not scale - refer to architectural plans for dimensions

REVISION: Sept. 29, 2021
REVISION: Dec. 22, 2021
REVISION: April 28, 2022



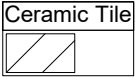
Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	3		HU310-2
H3	1		HUC410
H4	1		HUCQ1.81/9-SDS
H5	1		HUCQ410-SDS
H6	1		HUS1.81/10
H7	69		LT251188

DESIGN LOADING:
LIVE LOAD = 40 PSF
DEAD LOAD = 15 PSF
DEAD LOAD @TILE = 20 PSF

RIMBOARD
1- 1/8" X 11 7/8" O.S.B.
UBFLOOR - 3/4" NAILED & GLUED*
APP - AS PER PLAN
BBO - BEAM BY OTHERS

Ceramic tile application as per O.B.C. 9.30.6

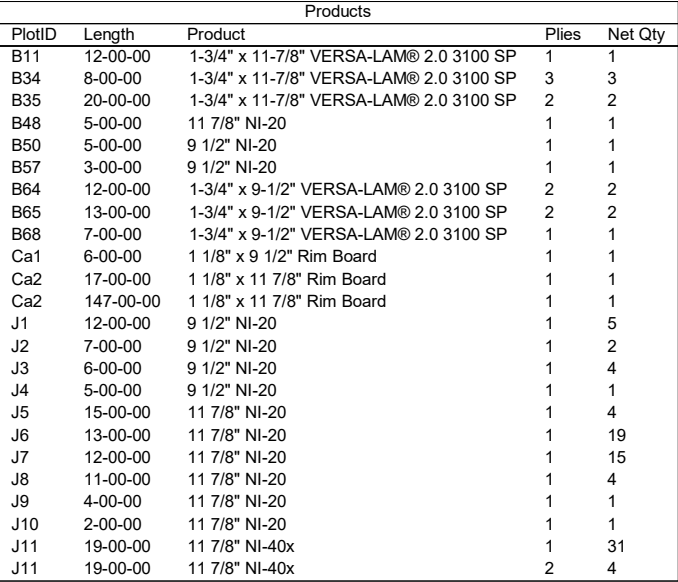
Blocking panels are required over all interior supports
Squash blocks are required under concentrated loads.



**MODEL: 4003 - EL.C
W/SIDE ENTRANCE
+ OPT. LOGGIA**

Second Floor Framing

Do not scale - refer to architectural plans for dimensions



Connector Summary			
PlotID	Qty	Manuf	Product
H1	2		HGUS410
H2	1		HGUS5.50/10
H3	2		HU310
H4	15		LT251188
H5	25		LT259

DESIGN LOADING:

LIVE LOAD = 40 PSF
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1- 1/8" X 9 1/2" O.S.B.
1- 1/8" X 11 7/8" O.S.B.

SUBFLOOR - 3/4" NAILED & GLUED*

APP - AS PER PLAN
BBO - BEAM BY OTHERS

Ceramic tile application as per O.B.C. 9.30.6

Blocking panels are required over all interior supports
Squash blocks are required under concentrated loads.

**MODEL: 4003 - EL.A+B+C
W/SIDE ENTRY(L.O.D. & W.O.B.)
+ W.O.D. CONDITION**

First Floor Framing

Do not scale - refer to architectural plans for dimensions

REVISION: Sept. 30, 2021
REVISION: April 28, 2022

B11 (Floor Beam)

Dry | 1 span | No cant.

April 17, 2020 10:48:07

BC CALC® Member Report

Build 7555

Job name: 45147 (4003)

File name: 318267

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

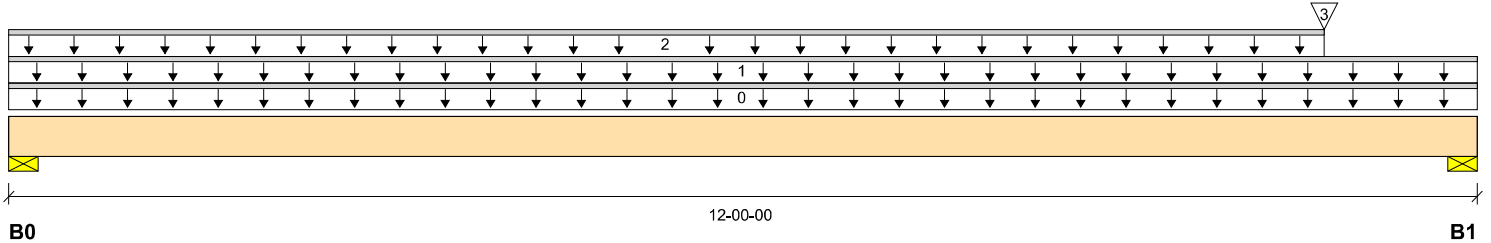
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 12-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	411 / 0	243 / 0		
B1, 3-1/2"	1200 / 0	594 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-00-00	Top		6			00-00-00
1		Unf. Lin. (lb/ft)	L	00-00-00	12-00-00	Top	27	14			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	10-09-00	Top	27	14			n/a
3		Conc. Pt. (lbs)	L	10-09-00	10-09-00	Top	997	446			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3218 ft-lbs	17696 ft-lbs	18.2%	1	07-05-11
End Shear	2394 lbs	7232 lbs	33.1%	1	10-08-10
Total Load Deflection	L/999 (0.115")	n/a	n/a	4	06-03-09
Live Load Deflection	L/999 (0.074")	n/a	n/a	5	06-03-09
Max Defl.	0.115"	n/a	n/a	4	06-03-09
Span / Depth	11.7				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 1-3/4"	920 lbs	24.4%	12.3%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 1-3/4"	2543 lbs	67.5%	34.0%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum Total load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4

Disclosure

Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA). Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,
SE008899

B27 (Floor Beam)

Dry | 1 span | No cant.

April 17, 2020 10:48:07

BC CALC® Member Report

Build 7555

Job name: 45147 (4003)

File name: 318267

Address: Pine Valley

Description: Second Floor Framing

City, Province, Postal Code: Vaughan, ON

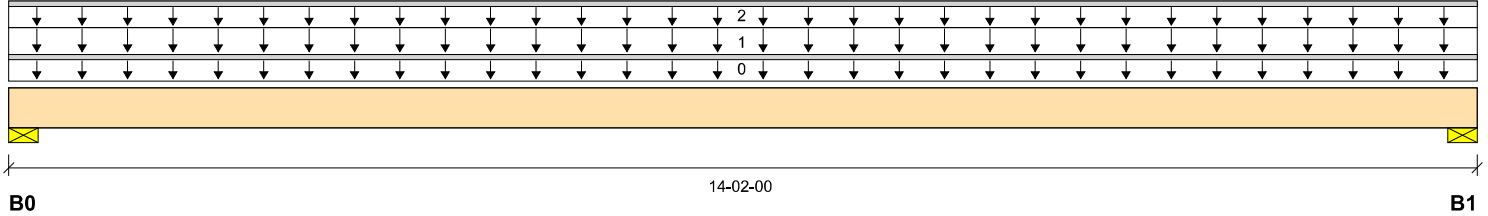
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 14-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	4392 / 0	2749 / 0		
B1, 3-1/2"	4392 / 0	2749 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	14-02-00	Top		18			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	14-02-00	Top	40	20			15-06-00
2		Unf. Lin. (lb/ft)	L	00-00-00	14-02-00	Top		60			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	33240 ft-lbs	55212 ft-lbs	60.2%	1	07-01-00
End Shear	8210 lbs	21696 lbs	37.8%	1	01-03-06
Total Load Deflection	L/301 (0.547")	n/a	79.8%	4	07-01-00
Live Load Deflection	L/489 (0.336")	n/a	73.6%	5	07-01-00
Max Defl.	0.547"	n/a	54.7%	4	07-01-00
Span / Depth	13.9				


Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 5-1/4"	10023 lbs	88.7%	44.7%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 5-1/4"	10023 lbs	88.7%	44.7%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum Total load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 6" O/C,
STAGGERED IN 2 ROWS

B29 (Floor Beam)

Dry | 1 span | No cant.

April 17, 2020 10:48:07

BC CALC® Member Report

Build 7555

Job name: 45147 (4003)

File name: 318267

Address: Pine Valley

Description: Second Floor Framing

City, Province, Postal Code: Vaughan, ON

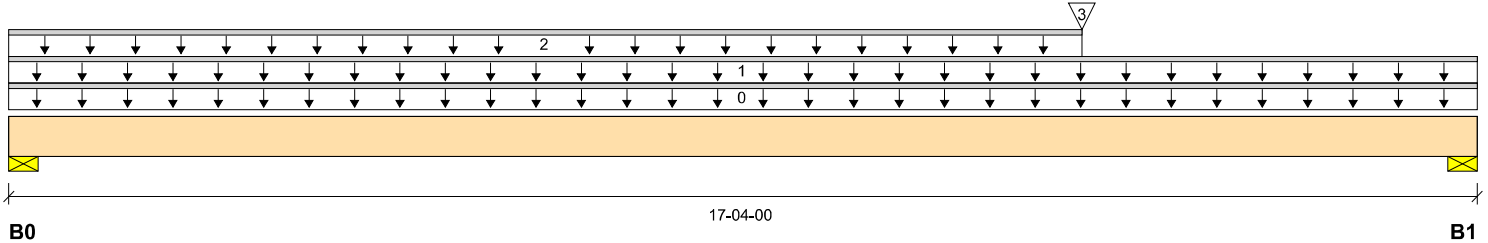
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 17'-0"

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3'-1/2"	716 / 0	376 / 0		
B1, 3'-1/2"	1097 / 0	529 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	17-04-00	Top		12			00-00-00
1		Unf. Lin. (lb/ft)	L	00-00-00	17-04-00	Top	27	10			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	12-08-00	Top	27	10			n/a
3		Conc. Pt. (lbs)	L	12-08-00	12-08-00	Top	1003	397			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	9499 ft-lbs	35392 ft-lbs	26.8%	1	12-08-00
End Shear	2220 lbs	14464 lbs	15.3%	1	16-00-10
Total Load Deflection	L/616 (0.329")	n/a	38.9%	4	09-01-05
Live Load Deflection	L/916 (0.221")	n/a	39.3%	5	09-01-05
Max Defl.	0.329"	n/a	32.9%	4	09-01-05
Span / Depth	17.1				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3'-1/2" x 3'-1/2"	1544 lbs	20.5%	10.3%	Spruce-Pine-Fir
B1	Wall/Plate 3'-1/2" x 3'-1/2"	2307 lbs	30.6%	15.4%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum Total load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 12" O/C,
STAGGERED IN 2 ROWS

BC CALC® Member Report

Build 7555

Job name: 45147 (4003)

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Builder: Gold Park

Code reports: CCMC 12472-R

B34 (Floor Beam)

Dry | 1 span | No cant.

April 17, 2020 10:48:07

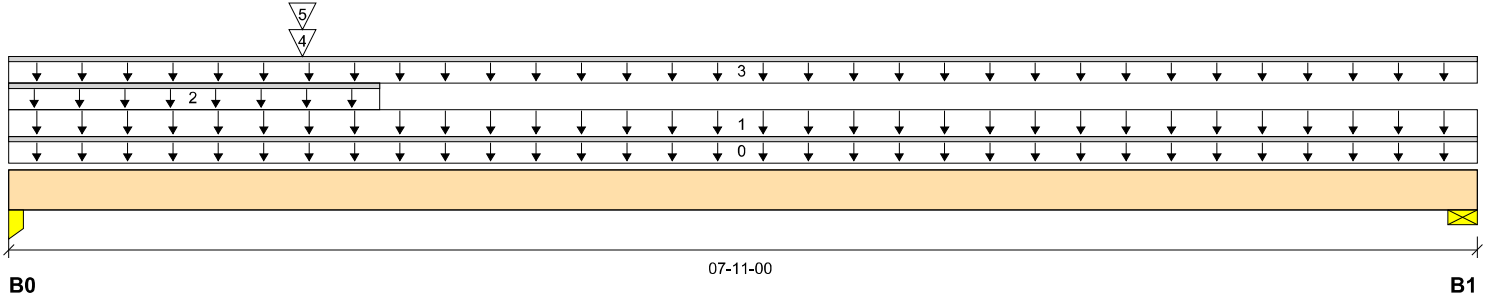
File name: 318267

Description: First Floor Framing

Specifier:

Designer: NL

Company: Alpa Roof Trusses



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	8198 / 0	4958 / 0		
B1, 3-1/2"	3073 / 0	1773 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-11-00	Top		18			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	07-11-00	Top	40	20			09-06-00
2		Unf. Lin. (lb/ft)	L	00-00-00	02-00-00	Top		60			n/a
3		Unf. Lin. (lb/ft)	L	00-00-00	07-11-00	Top	27	14			n/a
4		Conc. Pt. (lbs)	L	01-07-00	01-07-00	Top	1470	767			n/a
5		Conc. Pt. (lbs)	L	01-07-00	01-07-00	Top	6579	4086			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	23876 ft-lbs	55212 ft-lbs	43.2%	1	01-07-00
End Shear	17260 lbs	21696 lbs	79.6%	1	01-03-06
Total Load Deflection	L/999 (0.1")	n/a	n/a	4	03-07-02
Live Load Deflection	L/999 (0.063")	n/a	n/a	5	03-07-02
Max Defl.	0.1"	n/a	n/a	4	03-07-02
Span / Depth	7.5				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Column 3-1/2" x 5-1/4"	18494 lbs	58.0%	82.5%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 5-1/4"	6827 lbs	60.4%	30.5%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum Total load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 12" O/C,
STAGGERED IN 2 ROWS

SE008912

B35 (Floor Beam)

Dry | 1 span | No cant.

April 17, 2020 10:48:07

BC CALC® Member Report

Build 7555

Job name: 45147 (4003)

File name: 318267

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

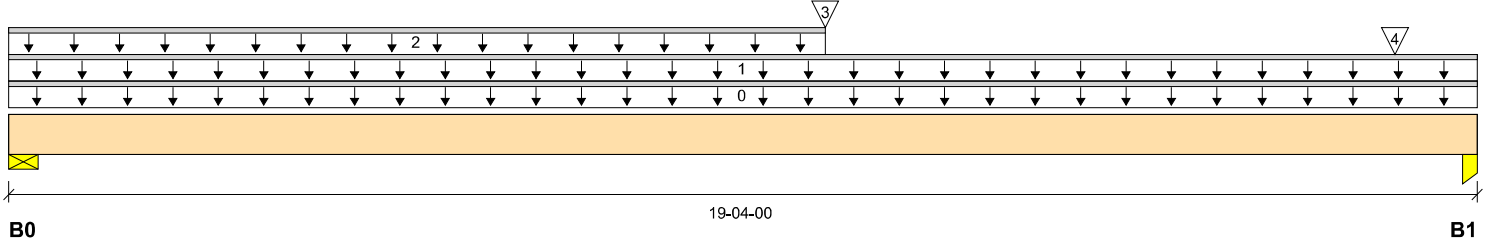
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 19-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1052 / 0	639 / 0		
B1, 3-1/2"	3830 / 0	2234 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	19-04-00	Top		12			00-00-00
1		Unf. Lin. (lb/ft)	L	00-00-00	19-04-00	Top	27	14			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	10-09-00	Top	27	14			n/a
3		Conc. Pt. (lbs)	L	10-09-00	10-09-00	Top	997	446			n/a
4		Conc. Pt. (lbs)	L	18-03-00	18-03-00	Top	3073	1773			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	17437 ft-lbs	35392 ft-lbs	49.3%	1	10-09-00
End Shear	7079 lbs	14464 lbs	48.9%	1	18-00-10
Total Load Deflection	L/306 (0.741")	n/a	78.5%	4	10-00-02
Live Load Deflection	L/480 (0.472")	n/a	75.0%	5	10-00-02
Max Defl.	0.741"	n/a	74.1%	4	10-00-02
Span / Depth	19,1				



Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 3-1/2" x 3-1/2"	2377 lbs	31.5%	15.9%	Spruce-Pine-Fir
B1	Column 3-1/2" x 3-1/2"	8538 lbs	40.2%	57.1%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
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Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 12" O/C,
STAGGERED IN 2 ROWS



Customer: **Gold Park**
 Job Address: **Pine Valley**
 City: **Vaughan**
 Job Track: **45147(4003)**

Job Name: **337554-A**
 Level: **2nd Floor - Supply/BOM**
 Label: **B39 - i33805**
 Type: **Beam**

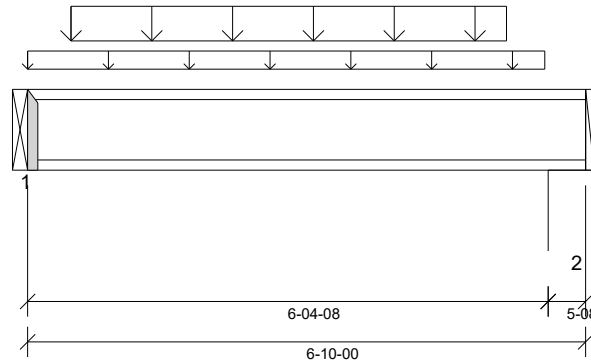
2 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version
 8.4.2.2861 dated 9.13

Report Version: 2020.06.20 09/29/2021 16:54



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)
 Design Methodology: LSD
 Service Condition: Dry
 LL Deflection Limit: L/360, 0.75" (absolute)
 TL Deflection Limit: L/240, 1.00" (absolute)

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 1'- 1 1/2"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 615 psi Wall @ 6'- 5 1/2"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 4 3/4"	1.25D + 1.5L	1.00	3196 lb ft	11160 lb ft	Passed - 29%
Factored Shear:	0'- 1/16"	1.25D + 1.5L	1.00	1739 lb	4480 lb	Passed - 39%
Live Load (LL) Pos. Defl.:	3'- 2 3/4"	L		0.030"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 2 3/4"	D + L		0.052"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-12	1.25D + 1.5L	1.00	1739 lb		3940 lb	-	Passed - 44%
2	5-08	1.25D + 1.5L	1.00	1704 lb		4480 lb	16918 lb	Passed - 38%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories		
			Top	Face	Member			
1	HU310-2		-	-	-	Connector manually specified by the user.		

* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	6'- 10"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	6'- 4"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'- 6 3/8"	5'- 10 3/8"	Smoothed Load	Front	129 lb/ft	257 lb/ft	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B29(i33803)	559 lb	693 lb	-	-
2	6'- 4 1/2"	6'- 10"	4(i30991)	548 lb	680 lb	-	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

PLY TO PLY CONNECTION

Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.

SE039657



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(4003)**

Job Name: **337554-A**
Level: **2nd Floor - Supply/BOM**
Label: **B40 - i33981**
Type: **Beam**

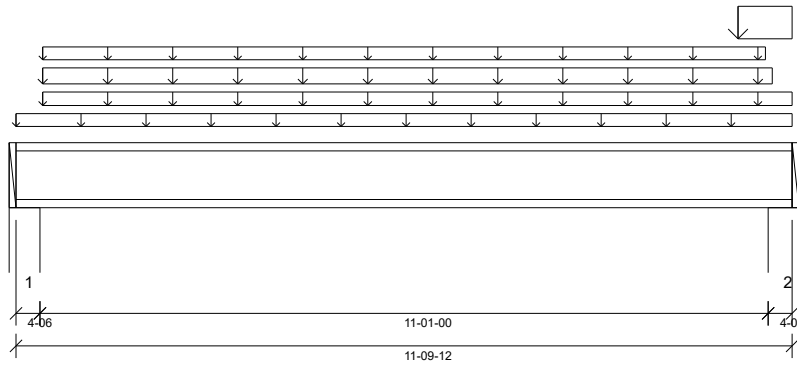
2 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure version
8.4.2.286 Updated 9.13

Report Version: 2020.06.20 09/29/2021 16:54



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)
Design Methodology: LSD
Service Condition: Dry
LL Deflection Limit: L/360, 0.75" (absolute)
TL Deflection Limit: L/240, 1.00" (absolute)

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 11'-1"

Factored Resistance of Support Material:

- 615 psi Wall @ 0'-3 3/8"
- 615 psi Wall @ 11'-6 3/8"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'-11 1/4"	1.25D + 1.5S + L	0.98	6266 lb ft	10890 lb ft	Passed - 58%
Factored Neg. Moment:	11'-6 3/8"	1.25D + 1.5S	0.95	56 lb ft	10574 lb ft	Passed - 1%
Factored Shear:	11'-5 5/16"	1.25D + 1.5S + L	0.98	2747 lb	4372 lb	Passed - 63%
Live Load (LL) Pos. Defl.:	5'-11 1/16"	S + 0.5L		0.106"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	5'-11"	D + S + 0.5L		0.237"	L/240	Passed - L/560

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	4-06	1.25D + 1.5L + S	0.89	2009 lb		4001 lb	12019 lb	Passed - 50%
2	4-06	1.25D + 1.5S + L	0.98	3290 lb		4372 lb	13132 lb	Passed - 75%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	11'-9 3/4"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	11'-9 3/4"	FC1 Floor Decking (Plan View Fill)	Top	10 lb/ft	19 lb/ft	-	-
Uniform	0'-4 7/8"	11'-9 3/4"	10(i31044)	Top	61 lb/ft	-	-	-
Uniform	0'-4 7/8"	11'-6 1/8"	10(i31044)	Top	70 lb/ft	-	105 lb/ft	-
Uniform	0'-4 7/8"	11'-4 7/8"	User Load	Top	10 lb/ft	20 lb/ft	-	-
Uniform	10'-11 7/8"	11'-9 3/4"	10(i31044)	Top	372 lb/ft	-	557 lb/ft	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'-4 3/8"	E29(i31363)	877 lb	227 lb	589 lb	-
2	11'-5 3/8"	11'-9 3/4"	2(i30989)	1192 lb	225 lb	1036 lb	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

PLY TO PLY CONNECTION

Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.

SE039658



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(4003)**

Job Name: **337554-A**
Level: **2nd Floor - Supply/BOM**
Label: **B41 - i33158**
Type: **Beam**

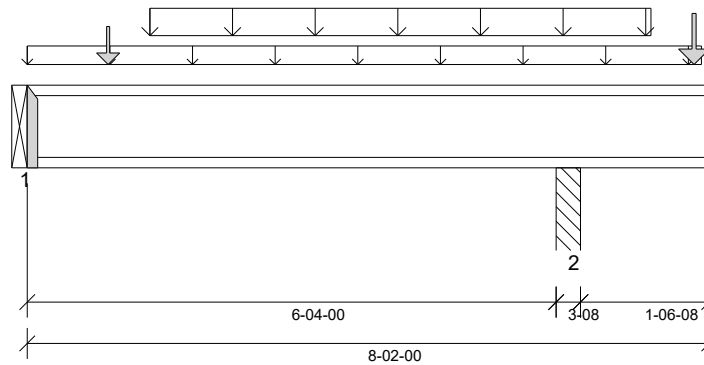
1 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version
8.4.2.2861 Undated 9.13

Report Version: 2020.06.20 09/29/2021 16:54



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)
Design Methodology: LSD
Service Condition: Dry
LL Deflection Limit: L/360, 0.75" (absolute)
TL Deflection Limit: L/240, 1.00" (absolute)

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 0'- 10 3/8"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 1334 psi Column @ 6'- 5 3/4"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 11 5/8"	1.25D + 1.5L	0.92	1833 lb ft	5146 lb ft	Passed - 36%
Factored Neg. Moment:	6'- 5 3/4"	1.25D + 1.5L	0.65	1021 lb ft	3627 lb ft	Passed - 28%
Factored Shear:	6'- 3 15/16"	1.25D + 1.5L	0.92	1395 lb	2066 lb	Passed - 68%
Live Load (LL) Pos. Defl.:	3'- 2 7/8"	L		0.037"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 1 9/16"	D + L		0.057"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-12	1.25D + 1.5L	0.92	1076 lb		1970 lb	-	Passed - 55%
2	3-08	1.25D + 1.5L	0.65	1679 lb		3081 lb	7589 lb	Passed - 54%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	LT251188		-	-	-	Connector manually specified by the user.

* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 2"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	8'- 7/8"	User Load	Top	60 lb/ft	-	-	-
Uniform	1'- 5 5/8"	7'- 5 5/8"	Smoothed Load	Back	77 lb/ft	153 lb/ft	-	-
Point	0'- 11 5/8"	0'- 11 5/8"	J5(i33258)	Back	81 lb	162 lb	-	-
Point	7'- 11 13/16"	7'- 11 13/16"	-	Back	276 lb	107 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B33(i33947)	331 lb	434/-39 lb	-	-
2	6'- 4"	6'- 7 1/2"	Pt1(i33589)	996 lb	792 lb	-	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- The deflection at the cantilever for either live and/or total loads is less than 3/8" and therefore has been excluded from the deflection ratio considerations.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

SE039659



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(4003)**

Job Name: **337554-A**
Level: **2nd Floor - Supply/BOM**
Label: **B47 - i33838**
Type: **Beam**

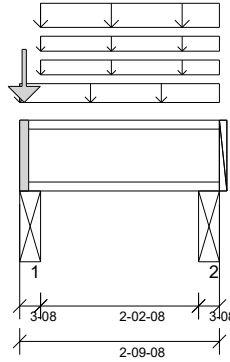
2 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version
8.4.2.2861 dated 9.13

Report Version: 2020.06.20 09/29/2021 16:54



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)
Design Methodology: LSD
Service Condition: Dry
LL Deflection Limit: L/360, 0.75" (absolute)
TL Deflection Limit: L/240, 1.00" (absolute)

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 2'- 2 1/2"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'- 2 1/2"
- 769 psi Beam @ 2'- 7"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 6 5/16"	1.25D + 1.5L + S	0.87	283 lb ft	9701 lb ft	Passed - 3%
Factored Neg. Moment:	0'- 2 1/2"	1.25D + 1.5S	0.99	223 lb ft	11069 lb ft	Passed - 2%
Factored Shear:	0'- 3 9/16"	1.25D + 1.5L + S	0.87	650 lb	3894 lb	Passed - 17%

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3'-08"	1.25D + 1.5S + L	1.00	2307 lb		4356 lb	13447 lb	Passed - 53%
2	3'-08"	1.25D + 1.5L + S	0.87	667 lb		3790 lb	11698 lb	Passed - 18%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	2'- 9 1/2"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	2'- 9 1/2"	E18(i31033)	Top	126 lb/ft	-	-	-
Uniform	0'- 3 1/2"	2'- 9 1/2"	E18(i31033)	Top	98 lb/ft	-	147 lb/ft	-
Uniform	0'- 3 1/2"	2'- 9 1/2"	FC2 Floor Decking (Plan View Fill)	Top	11 lb/ft	28 lb/ft	-	-
Uniform	0'- 3 1/2"	2'- 9 1/2"	User Load	Top	14 lb/ft	-	21 lb/ft	-
Point	0'- 3/4"	0'- 3/4"	-	Top	430 lb	3 lb	645 lb	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	STL BM(-7R)(i30894)	792 lb	35 lb	892 lb	-
2	2'- 6"	2'- 9 1/2"	STL BM(-7R)(i30875)	313 lb	38 lb	173 lb	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

PLY TO PLY CONNECTION

Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.

SE039665



Customer: **Gold Park**
 Job Address: **Pine Valley**
 City: **Vaughan**
 Job Track: **45147(4003)**

Job Name: **337554-A**
 Level: **1st Floor - Supply/BOM**
 Label: **B48 - i34811**
 Type: **Beam**

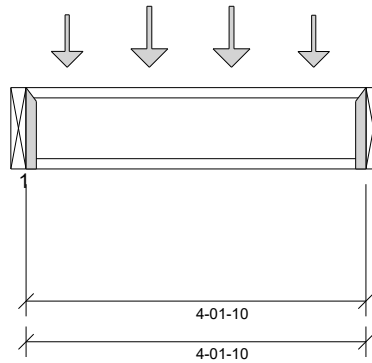
1 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version
 8.4.2.2861 Undated 9.13

Report Version: 2020.06.20 09/30/2021 09:20



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)
 Design Methodology: LSD
 Service Condition: Dry
 LL Deflection Limit: L/360, 0.75" (absolute)
 TL Deflection Limit: L/240, 1.00" (absolute)

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 9' 1/2"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 769 psi Beam @ 4'-1 5/8"

Reinforcement Accessories Required

- Critical Reaction Web Stiffener @ 0'



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 6"	1.25D + 1.5L	1.00	1878 lb ft	5580 lb ft	Passed - 34%
Factored Shear:	0'- 1/16"	1.25D + 1.5L	1.00	1714 lb	2240 lb	Passed - 77%
Live Load (LL) Pos. Defl.:	2'- 13/16"	L		0.025"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	2'- 13/16"	D + L		0.037"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-12	1.25D + 1.5L	1.00	1714 lb		1970 lb	-	Passed - 87%
2	1-12	1.25D + 1.5L	1.00	1599 lb		1970 lb	-	Passed - 81%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories		
			Top	Face	Member			
1	HU310		-	-	-	Connector manually specified by the user.		
2	HU310		-	-	-	Connector manually specified by the user.		

* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	4'- 1 5/8"	Self Weight	Top	3 lb/ft	-	-	-
Point	0'- 6"	0'- 6"	J7(i34801)	Front	158 lb	363 lb	-	-
Point	1'- 6"	1'- 6"	J7(i34802)	Front	194 lb	446 lb	-	-
Point	2'- 6"	2'- 6"	J7(i34827)	Front	194 lb	446 lb	-	-
Point	3'- 6"	3'- 6"	J7(i34825)	Front	157 lb	358 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B35(i34779)	369 lb	835 lb	-	-
2	4'- 1 5/8"	4'- 1 5/8"	B11(i34844)	346 lb	778 lb	-	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

SE039666



Customer: **Gold Park**
 Job Address: **Pine Valley**
 City: **Vaughan**
 Job Track: **45147(4003)**

Job Name: **337554-A**
 Level: **1st Floor - Supply/BOM**
 Label: **B50 - i34749**
 Type: **Beam**

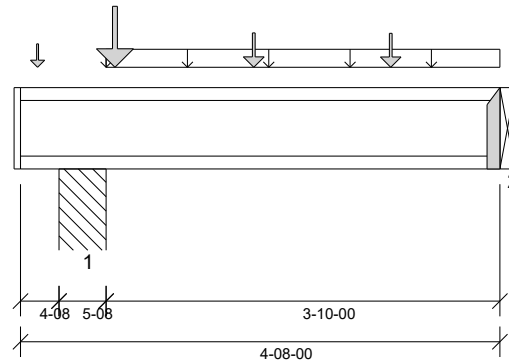
1 Ply Member
9 1/2" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version
 8.4.2.2861 Undated 9.13

Report Version: 2020.06.20 09/30/2021 09:13



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)
 Design Methodology: LSD
 Service Condition: Dry
 LL Deflection Limit: L/360, 0.75" (absolute)
 TL Deflection Limit: L/240, 1.00" (absolute)

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 1'- 1 1/2"

Factored Resistance of Support Material:

- 1334 psi Column @ 0'- 7 1/4"
- 769 psi Beam @ 4'- 8"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 3 1/4"	1.25D + 1.5L	1.00	751 lb ft	4310 lb ft	Passed - 17%
Factored Neg. Moment:	0'- 7 1/4"	1.25D + 1.5L	1.00	64 lb ft	4310 lb ft	Passed - 1%
Factored Shear:	0'- 10 1/16"	1.25D + 1.5L	1.00	1138 lb	1770 lb	Passed - 64%
Live Load (LL) Pos. Defl.:	2'- 7 1/4"	L		0.014"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	2'- 7 5/16"	D + L		0.021"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-08	1.25D + 1.5L	1.00	1343 lb		1770 lb	18348 lb	Passed - 76%
2	1-12	1.25D + 1.5L	1.00	595 lb		1630 lb	-	Passed - 37%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
2	LT259		-	-	-	Connector manually specified by the user.

* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	4'- 8"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'- 10"	4'- 8"	User Load	Top	15 lb/ft	40 lb/ft	-	-
Point	0'- 2"	0'- 2"	-	Back	34 lb	68 lb	-	-
Point	0'- 11 1/16"	0'- 11 1/16"	-	Back	173 lb	395 lb	-	-
Point	2'- 3 1/4"	2'- 3 1/4"	J2(i34755)	Back	79 lb	159 lb	-	-
Point	3'- 7 1/4"	3'- 7 1/4"	J2(i34746)	Back	78 lb	155 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'- 4 1/2"	0'- 10"	Pt3(i34760)	300 lb	649 lb	-	-
2	4'- 8"	4'- 8"	B51(i34750)	133 lb	282 lb	-	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- The deflection at the cantilever for either live and/or total loads is less than 3/8" and therefore has been excluded from the deflection ratio considerations.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

SE039667



Customer: **Gold Park**
 Job Address: **Pine Valley**
 City: **Vaughan**
 Job Track: **45147(4003)**

Job Name: **337554-A-SIDE entry**
 Level: **1st Floor - Supply/BOM**
 Label: **B57 - i35364**
 Type: **Beam**

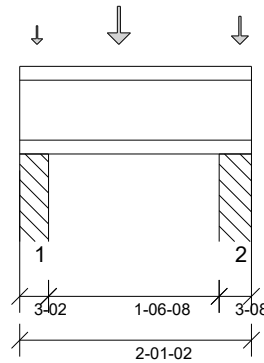
1 Ply Member
9 1/2" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure version
 8.4.2.2861 Indate 9.13

Report Version: 2020.06.20 09/30/2021 11:01



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 0'- 10 5/8"

Factored Resistance of Support Material:

- 1334 psi Column @ 0'- 2 1/8"
- 1334 psi Column @ 1'- 10 5/8"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	0'- 10 3/4"	1.25D + 1.5L	1.00	124 lb ft	4310 lb ft	Passed - 3%
Factored Shear:	0'- 3 3/16"	1.25D + 1.5L	1.00	174 lb	1770 lb	Passed - 10%

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-02	1.25D + 1.5L	1.00	209 lb		1716 lb	10425 lb	Passed - 12%
2	3-08	1.25D + 1.5L	1.00	315 lb		1739 lb	11676 lb	Passed - 18%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	2'- 1 1/8"	Self Weight	Top	3 lb/ft	-	-	-
Point	0'- 1 7/8"	0'- 1 7/8"	J4(i35370)	Front	8 lb	16 lb	-	-
Point	0'- 10 3/4"	0'- 10 3/4"	J2(i35350)	Back	74 lb	147 lb	-	-
Point	1'- 11 7/8"	1'- 11 7/8"	J2(i35349)	Back	40 lb	80 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/8"	Pt1(i35371)	54 lb	103 lb	-	-
2	1'- 9 5/8"	2'- 1 1/8"	Pt1(i35374)	73 lb	140 lb	-	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

SE039674



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(4003)**

Job Name: **343712-A**
Level: **2nd Floor - Supply/BOM**
Label: **B39 - i35603**
Type: **Beam**

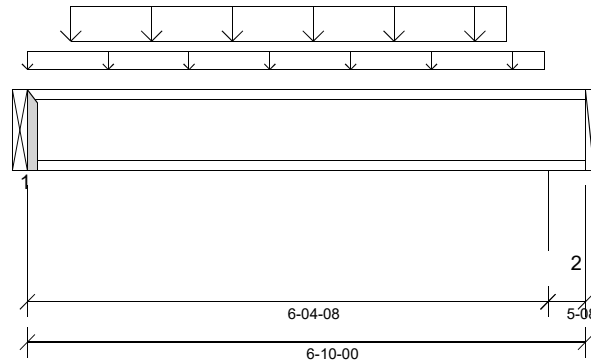
2 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26 04/28/2022 15:34



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)
Design Methodology: LSD
Service Condition: Dry
LL Deflection Limit: L/360, 0.75" (absolute)
TL Deflection Limit: L/240, 1.00" (absolute)

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 1'- 1 1/2"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 615 psi Wall @ 6'- 5 1/2"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 4 3/4"	1.25D + 1.5L	1.00	3196 lb ft	11160 lb ft	Passed - 29%
Factored Shear:	0'- 1/16"	1.25D + 1.5L	1.00	1739 lb	4480 lb	Passed - 39%
Live Load (LL) Pos. Defl.:	3'- 2 3/4"	L		0.030"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 2 3/4"	D + L		0.052"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1'-12"	1.25D + 1.5L	1.00	1739 lb		3940 lb	-	Passed - 44%
2	5'-08"	1.25D + 1.5L	1.00	1704 lb		4480 lb	16918 lb	Passed - 38%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	HU310-2	-	-	-	-	Connector manually specified by the user.

* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	6'- 10"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	6'- 4"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'- 6 3/8"	5'- 10 3/8"	Smoothed Load	Front	129 lb/ft	257 lb/ft	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B29(i35507)	559 lb	693 lb	-	-
2	6'- 4 1/2"	6'- 10"	4(i30991)	548 lb	680 lb	-	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.

SE046983



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(4003)**

Job Name: **343712-A**
Level: **2nd Floor - Supply/BOM**
Label: **B40 - i35673**
Type: **Beam**

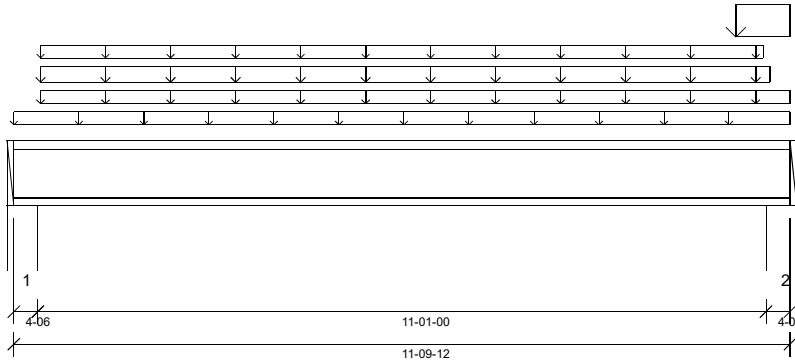
2 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26 04/28/2022 15:35



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)
Design Methodology: LSD
Service Condition: Dry
LL Deflection Limit: L/360, 0.75" (absolute)
TL Deflection Limit: L/240, 1.00" (absolute)

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 11'- 1"

Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 3 3/8"
- 615 psi Wall @ 11'- 6 3/8"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 11 1/4"	1.25D + 1.5S + L	0.98	6266 lb ft	10890 lb ft	Passed - 58%
Factored Neg. Moment:	11'- 6 3/8"	1.25D + 1.5S	0.95	56 lb ft	10574 lb ft	Passed - 1%
Factored Shear:	11'- 5 5/16"	1.25D + 1.5S + L	0.98	2747 lb	4372 lb	Passed - 63%
Live Load (LL) Pos. Defl.:	5'- 11 1/16"	S + 0.5L		0.106"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	5'- 11"	D + S + 0.5L		0.237"	L/240	Passed - L/560

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	4-06	1.25D + 1.5L + S	0.89	2009 lb		4001 lb	12019 lb	Passed - 50%
2	4-06	1.25D + 1.5S + L	0.98	3290 lb		4372 lb	13132 lb	Passed - 75%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	11'- 9 3/4"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	11'- 9 3/4"	FC1 Floor Decking (Plan View Fill)	Top	10 lb/ft	19 lb/ft	-	-
Uniform	0'- 4 7/8"	11'- 9 3/4"	10(i31044)	Top	61 lb/ft	-	-	-
Uniform	0'- 4 7/8"	11'- 6 1/8"	10(i31044)	Top	70 lb/ft	-	105 lb/ft	-
Uniform	0'- 4 7/8"	11'- 4 7/8"	User Load	Top	10 lb/ft	20 lb/ft	-	-
Uniform	10'- 11 7/8"	11'- 9 3/4"	10(i31044)	Top	372 lb/ft	-	557 lb/ft	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 4 3/8"	E29(i31363)	877 lb	227 lb	589 lb	-
2	11'- 5 3/8"	11'- 9 3/4"	2(i30989)	1192 lb	225 lb	1036 lb	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.

SE046984



Customer: **Gold Park**
 Job Address: **Pine Valley**
 City: **Vaughan**
 Job Track: **45147(4003)**

Job Name: **343712-A**
 Level: **2nd Floor - Supply/BOM**
 Label: **B41 - i36019**
 Type: **Beam**

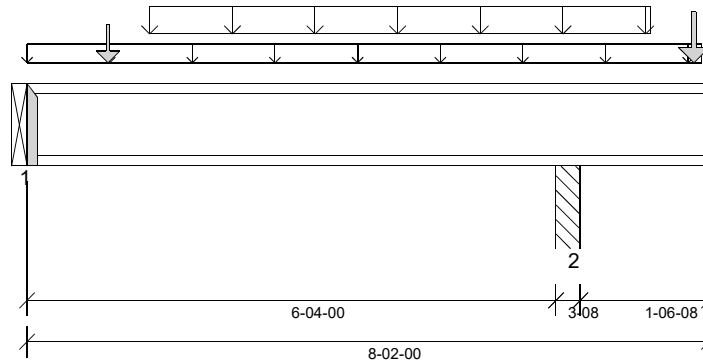
1 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26 04/28/2022 15:36



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)
 Design Methodology: LSD
 Service Condition: Dry
 LL Deflection Limit: L/360, 0.75" (absolute)
 TL Deflection Limit: L/240, 1.00" (absolute)

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 0'- 10 3/8"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 1334 psi Column @ 6'- 5 3/4"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 11 5/8"	1.25D + 1.5L	0.92	1833 lb ft	5146 lb ft	Passed - 36%
Factored Neg. Moment:	6'- 5 3/4"	1.25D + 1.5L	0.65	1021 lb ft	3627 lb ft	Passed - 28%
Factored Shear:	6'- 3 15/16"	1.25D + 1.5L	0.92	1395 lb	2066 lb	Passed - 68%
Live Load (LL) Pos. Defl.:	3'- 2 7/8"	L		0.037"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 1 9/16"	D + L		0.057"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-12	1.25D + 1.5L	0.92	1076 lb		1970 lb	-	Passed - 55%
2	3-08	1.25D + 1.5L	0.65	1679 lb		3081 lb	7589 lb	Passed - 54%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories		
			Top	Face	Member			
1	LT251188		-	-	-	Connector manually specified by the user.		

* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 2"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	8'- 7/8"	User Load	Top	60 lb/ft	-	-	-
Uniform	1'- 5 5/8"	7'- 5 5/8"	Smoothed Load	Back	77 lb/ft	153 lb/ft	-	-
Point	0'- 11 5/8"	0'- 11 5/8"	J4(i35996)	Back	81 lb	162 lb	-	-
Point	7'- 11 13/16"	7'- 11 13/16"	-	Back	276 lb	107 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B62(i35944)	331 lb	434/-39 lb	-	-
2	6'- 4"	6'- 7 1/2"	PT3(i36002)	996 lb	792 lb	-	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- The deflection at the cantilever for either live and/or total loads is less than 3/8" and therefore has been excluded from the deflection ratio considerations.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

SE046985



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(4003)**

Job Name: **343712-A**
Level: **2nd Floor - Supply/BOM**
Label: **B47 - i35654**
Type: **Beam**

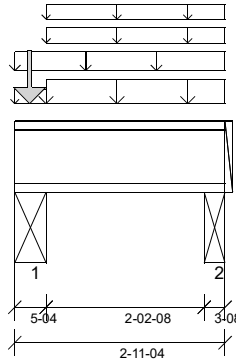
2 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26 04/28/2022 15:36



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360, 0.75" (absolute)

TL Deflection Limit: L/240, 1.00" (absolute)

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 2'- 2 1/2"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'- 4 1/4"
- 769 psi Beam @ 2'- 8 3/4"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 8 1/4"	1.25D + 1.5L + S	0.86	272 lb ft	9646 lb ft	Passed - 3%
Factored Neg. Moment:	0'- 4 1/4"	1.25D + 1.5S	0.99	232 lb ft	11024 lb ft	Passed - 2%
Factored Shear:	0'- 5 5/16"	1.25D + 1.5S + L	0.99	744 lb	4457 lb	Passed - 17%

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5'-04	1.25D + 1.5S + L	0.99	2344 lb		4457 lb	20083 lb	Passed - 53%
2	3'-08	1.25D + 1.5L + S	0.86	651 lb		3769 lb	11632 lb	Passed - 17%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	2'- 11 1/4"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	2'- 11 1/4"	E18(i31033)	Top	126 lb/ft	-	-	-
Uniform	0'	0'- 5 1/4"	FC2 Floor Decking (Plan View Fill)	Top	-	26 lb/ft	-	-
Uniform	0'- 5 1/4"	2'- 11 1/4"	E18(i31033)	Top	98 lb/ft	-	147 lb/ft	-
Uniform	0'- 5 1/4"	2'- 11 1/4"	User Load	Top	14 lb/ft	-	21 lb/ft	-
Uniform	0'- 5 1/4"	2'- 11 1/4"	FC2 Floor Decking (Plan View Fill)	Top	9 lb/ft	24 lb/ft	-	-
Point	0'- 2 1/2"	0'- 2 1/2"	E18(i31033)	Top	430 lb	-	645 lb	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/4"	STL BM(-7R)(i30894)	845 lb	40 lb	932 lb	-
2	2'- 7 3/4"	2'- 11 1/4"	STL BM(-7R)(i30875)	282 lb	31 lb	133 lb	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.

SE046986



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(4003)**

Job Name: **343712-A**
Level: **1st Floor - Supply/BOM**
Label: **B48 - i36413**
Type: **Beam**

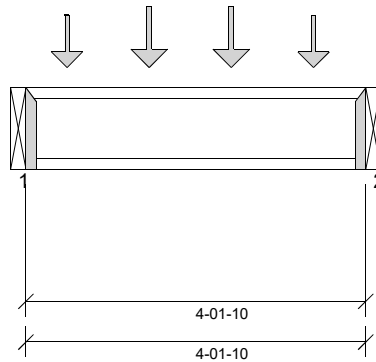
1 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26 04/28/2022 15:37



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360, 0.75" (absolute)

TL Deflection Limit: L/240, 1.00" (absolute)

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 0'- 9 1/2"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 769 psi Beam @ 4'- 1 5/8"

Reinforcement Accessories Required

- Critical Reaction Web Stiffener @ 0'



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 6"	1.25D + 1.5L	1.00	1874 lb ft	5580 lb ft	Passed - 34%
Factored Shear:	0'- 1/16"	1.25D + 1.5L	1.00	1711 lb	2240 lb	Passed - 76%
Live Load (LL) Pos. Defl.:	2'- 13/16"	L		0.025"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	2'- 13/16"	D + L		0.037"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1'-12	1.25D + 1.5L	1.00	1711 lb		1970 lb	-	Passed - 87%
2	1'-12	1.25D + 1.5L	1.00	1596 lb		1970 lb	-	Passed - 81%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	HU310		-	-	-	Connector manually specified by the user.
2	HU310		-	-	-	Connector manually specified by the user.

* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	4'- 1 5/8"	Self Weight	Top	3 lb/ft	-	-	-
Point	0'- 6"	0'- 6"	J6(i36376)	Front	158 lb	362 lb	-	-
Point	1'- 6"	1'- 6"	J6(i36487)	Front	194 lb	445 lb	-	-
Point	2'- 6"	2'- 6"	J6(i36391)	Front	194 lb	445 lb	-	-
Point	3'- 6"	3'- 6"	J6(i36404)	Front	157 lb	357 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B35(i36428)	369 lb	833 lb	-	-
2	4'- 1 5/8"	4'- 1 5/8"	B11(i36398)	346 lb	776 lb	-	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

SE046987

2nd Floor - Supply/BOM\Flush Beams\B58(i35393) (Flush Beam)

BC Design Engine Member Report

Dry | 2 spans | No cant.

April 28, 2022 09:04:01

Build 8183

Job name: 45147(4003)

File name: 343712-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B58(i35393)

City, Province, Postal Code: Vaughan, ON

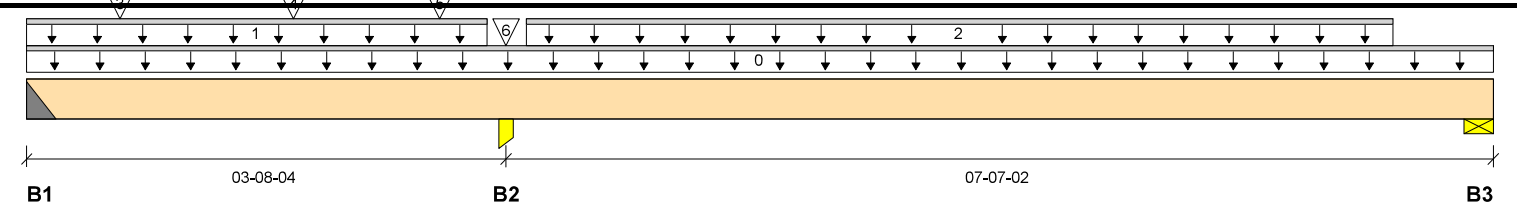
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	268 / 104	65 / 0		
B2, 3-1/2"	1568 / 0	1336 / 0		
B3, 4-3/8"	212 / 12	95 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-03-06	Top		6			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-06-08	Top	80	30			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	03-10-02	10-06-02	Front	83	31			n/a
3	J5(i35385)	Conc. Pt. (lbs)	L	00-08-10	00-08-10	Front	96	36			n/a
4	J5(i35378)	Conc. Pt. (lbs)	L	02-00-10	02-00-10	Front	103	39			n/a
5	J5(i35378)	Conc. Pt. (lbs)	L	03-02-02	03-02-02	Front	103	39			n/a
6	Pt2(i35345)	Conc. Pt. (lbs)	L	03-08-04	03-08-04	Top	792	999			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	764 ft-lbs	17696 ft-lbs	4.3%	3	08-06-02
Neg. Moment	-947 ft-lbs	-17272 ft-lbs	5.5%	1	03-08-04
End Shear	427 lbs	7232 lbs	5.9%	3	09-11-02
Cont. Shear	651 lbs	7232 lbs	9.0%	1	04-09-14
Total Load Deflection	L/999 (0.009")	n/a	n/a	10	07-08-02
Live Load Deflection	L/999 (0.007")	n/a	n/a	13	07-07-02
Total Neg. Defl.	L/999 (-0.001")	n/a	n/a	10	02-03-10
Max Defl.	0.009"	n/a	n/a	10	07-08-02
Span / Depth	7.4				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	483 lbs	n/a	11.3%	HUCQ1.81/9-SDS
B1	Uplift	98 lbs			
B2	Column 3-1/2" x 1-3/4"	4021 lbs	37.8%	53.8%	Spruce-Pine-Fir
B3	Wall/Plate 4-3/8" x 1-3/4"	437 lbs	9.3%	4.7%	Spruce-Pine-Fir

Cautions

Uplift of 98 lbs found at bearing B1.

Hanger model HUCQ1.81/9-SDS and seat length were input by the user.

Header for the hanger HUCQ1.81/9-SDS is a Double 1-3/4" x 11-7/8" LVL beam.

2nd Floor - Supply/BOM\Flush Beams\B59(i35394) (Flush Beam)

BC Design Engine Member Report

Dry | 2 spans | L cant.

April 28, 2022 09:04:01

Build 8183

Job name: 45147(4003)

File name: 343712-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B59(i35394)

City, Province, Postal Code: Vaughan, ON

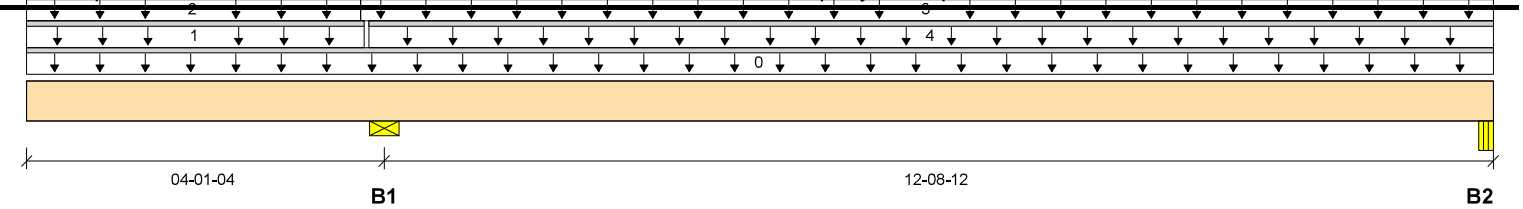
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpha Roof Trusses



Total Horizontal Product Length = 16'-10'-00"

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5'-1/2"	1832 / 134	772 / 0		
B2, 5'-1/4"	412 / 255	128 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	16-10-00	Top		12			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-10-08	Top	220	83			n/a
2	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	03-10-00	Top	20	8			n/a
3	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	03-10-00	16-10-00	Top	9	3			n/a
4	User Load	Unf. Lin. (lb/ft)	L	03-11-02	16-10-00	Top	27	10			n/a
5	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	04-00-08	16-10-00	Top	22	8			n/a
6	-	Conc. Pt. (lbs)	L	00-00-12	00-00-12	Back	281	71			n/a
7	-	Conc. Pt. (lbs)	L	00-00-12	00-00-12	Back	-101				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2064 ft-lbs	35392 ft-lbs	5.8%	4	10-10-01
Neg. Moment	-6160 ft-lbs	-16500 ft-lbs	37.3%	1	04-01-04
End Shear	594 lbs	14464 lbs	4.1%	4	15-04-14
Cont. Shear	1957 lbs	14464 lbs	13.5%	1	02-10-10
Total Load Deflection	2xL/680 (0.145")	n/a	35.3%	12	00-00-00
Live Load Deflection	2xL/1998 (0.121")	n/a	n/a	16	00-00-00
Total Neg. Defl.	L/999 (-0.057")	n/a	n/a	12	08-11-06
Max Defl.	-0.057"	n/a	n/a	12	08-11-06
Cant. Max Defl.	0.145"	n/a	14.5%	12	00-00-00
Span / Depth	12.5				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5'-1/2" x 3'-1/2"	3714 lbs	31.4%	15.8%	Spruce-Pine-Fir
B2	Beam 5'-1/4" x 3'-1/2"	777 lbs	5.5%	3.5%	Unspecified
B2	Uplift	268 lbs			

Cautions

Uplift of 268 lbs found at bearing B2.

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 12" O/C,
STAGGERED IN 2 ROWS



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(4003)**

Job Name: **343712-A**
Level: **2nd Floor - Supply/BOM**
Label: **B60 - i35428**
Type: **Beam**

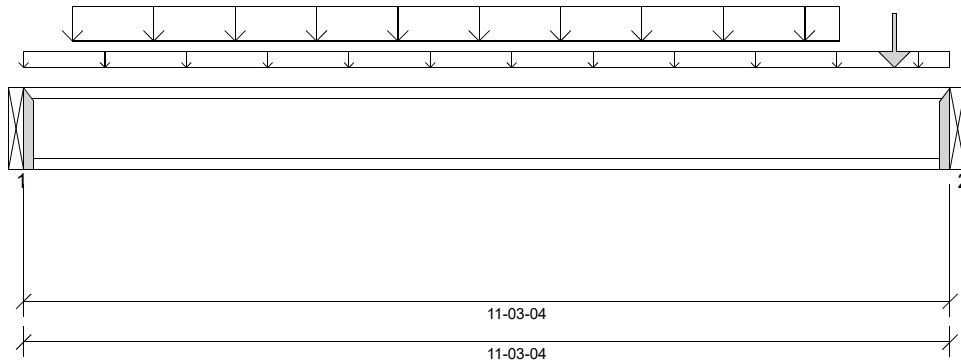
2 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26 04/28/2022 09:30



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360, 0.75" (absolute)

TL Deflection Limit: L/240, 1.00" (absolute)

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 1'- 1 7/8"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 769 psi Beam @ 11'- 3 1/4"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 3 1/8"	1.25D + 1.5L	1.00	9097 lb ft	11160 lb ft	Passed - 82%
Factored Shear:	11'- 3 3/16"	1.25D + 1.5L	1.00	3109 lb	4480 lb	Passed - 69%
Live Load (LL) Pos. Defl.:	5'- 7 5/8"	L		0.223"	L/360	Passed - L/607
Total Load (TL) Pos. Defl.:	5'- 7 5/8"	D + L		0.339"	L/240	Passed - L/398

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1'-12	1.25D + 1.5L	1.00	2933 lb		3940 lb	-	Passed - 74%
2	1'-12	1.25D + 1.5L	1.00	3119 lb		3940 lb	-	Passed - 79%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	HU310-2		-	-	-	Connector manually specified by the user.
2	HU310-2		-	-	-	Connector manually specified by the user.

* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	11'- 3 1/4"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	11'- 3 1/4"	FC1 Floor Decking (Plan View Fill)	Top	7 lb/ft	15 lb/ft	-	-
Uniform	0'- 7 1/8"	9'- 11 1/8"	Smoothed Load	Back	126 lb/ft	252 lb/ft	-	-
Point	10'- 7 1/8"	10'- 7 1/8"	J2(i35612)	Back	141 lb	283 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B63(i35478)	713 lb	1361 lb	-	-
2	11'- 3 1/4"	11'- 3 1/4"	B62(i35483)	757 lb	1448 lb	-	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.

SE046991

2nd Floor - Supply/BOM\Flush Beams\B61(i35914) (Flush Beam)

BC Design Engine Member Report

Dry | 2 spans | R cant.

April 28, 2022 09:36:48

Build 8183

Job name: 45147(4003)

File name: 343712-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B61(i35914)

City, Province, Postal Code: Vaughan, ON

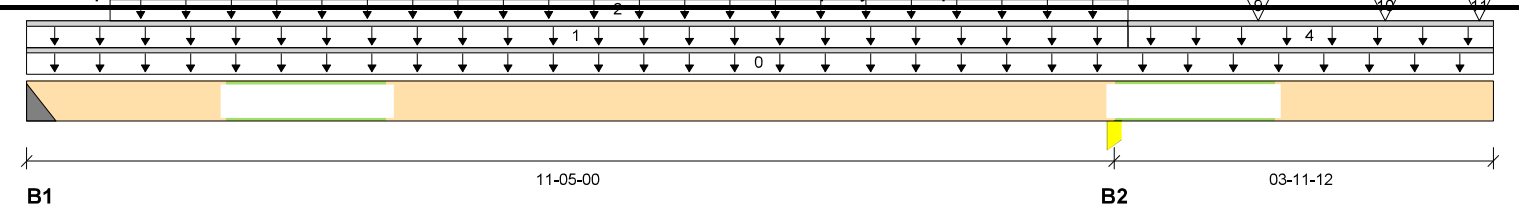
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpha Roof Trusses



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	1988 / 480	1026 / 0		
B2, 3-1/2"	4681 / 0	3133 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-04-12	Top		12			00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	11-06-12	Top	15	7			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-10-08	11-06-12	Top		60			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	04-01-02	11-01-02	Front	346	173			n/a
4	User Load	Unf. Lin. (lb/ft)	L	11-06-12	15-04-12	Top	40	15			n/a
5	J7(i35629)	Conc. Pt. (lbs)	L	00-11-02	00-11-02	Front	452	226			n/a
6	J7(i35560)	Conc. Pt. (lbs)	L	02-03-02	02-03-02	Front	461	230			n/a
7	J7(i35690)	Conc. Pt. (lbs)	L	03-07-02	03-07-02	Front	403	202			n/a
8	J7(i35887)	Conc. Pt. (lbs)	L	11-07-02	11-07-02	Front	407	204			n/a
9	J7(i35602)	Conc. Pt. (lbs)	L	12-11-02	12-11-02	Front	469	234			n/a
10	J7(i35669)	Conc. Pt. (lbs)	L	14-03-02	14-03-02	Front	421	210			n/a
11	B29(i35507)	Conc. Pt. (lbs)	L	15-03-00	15-03-00	Front	817	666			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	11498 ft-lbs	35392 ft-lbs	32.5%	2	05-07-02
Neg. Moment	-12829 ft-lbs	-35392 ft-lbs	36.2%	1	11-05-00
End Shear	3983 lbs	14464 lbs	27.5%	2	01-01-14
Cont. Shear	5376 lbs	14464 lbs	37.2%	1	10-03-06
Total Load Deflection	2xL/453 (0.211")	n/a	53.0%	10	15-04-12
Live Load Deflection	2xL/510 (0.187")	n/a	70.6%	13	15-04-12
Total Neg. Defl.	2xL/736 (-0.13")	n/a	32.6%	9	15-04-12
Max Defl.	0.179"	n/a	17.9%	9	05-07-02
Cant. Max Defl.	0.211"	n/a	21.1%	10	15-04-12
Span / Depth	11.4				



Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	2" x 3-1/2"	4264 lbs	n/a	49.9%	Hanger
B2 Column	3-1/2" x 3-1/2"	10937 lbs	68.4%	73.2%	Unspecified

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 9" O/C,
STAGGERED IN 2 ROWS

2nd Floor - Supply/BOM\Flush Beams\B62(i35944) (Flush Beam)

BC Design Engine Member Report

Dry | 2 spans | L cant.

April 28, 2022 09:39:20

Build 8183

Job name: 45147(4003)

File name: 343712-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B62(i35944)

City, Province, Postal Code: Vaughan, ON

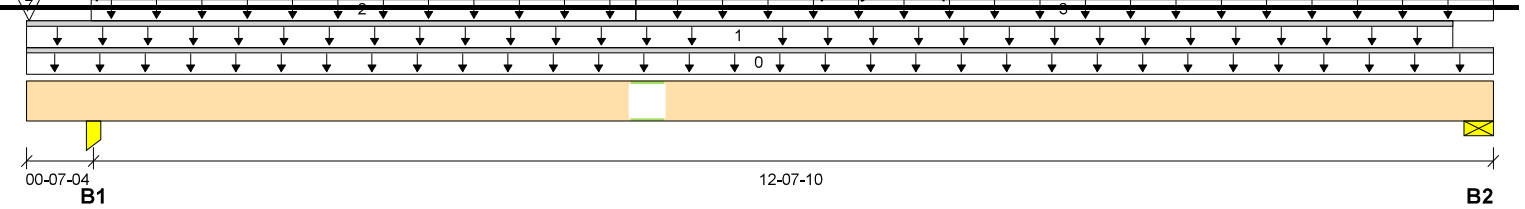
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 13-02-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	6788 / 23	4819 / 0		
B2, 4-3/8"	408 / 238	544 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-02-14	Top		12			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	12-10-08	Top		60			n/a
2	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-07-00	05-06-00	Top	19				n/a
3	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	05-06-00	13-02-14	Top	39	19			n/a
4	B41(i36019)	Conc. Pt. (lbs)	L	05-07-04	05-07-04	Front	434	331			n/a
5	B41(i36019)	Conc. Pt. (lbs)	L	05-07-04	05-07-04	Front	-39				n/a
6	B60(i35966)	Conc. Pt. (lbs)	L	00-07-00	00-07-00	Back	1448	757			n/a
7	B61(i35940)	Conc. Pt. (lbs)	L	00-00-04	00-00-04	Top	4696	3146			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4656 ft-lbs	35392 ft-lbs	13.2%	4	05-07-04
Neg. Moment	-6432 ft-lbs	-26789 ft-lbs	24.0%	1	00-07-04
End Shear	1086 lbs	14464 lbs	7.5%	4	11-10-10
Cont. Shear	11010 lbs	14464 lbs	76.1%	1	00-04-08
Total Load Deflection	L/999 (0.083")	n/a	n/a	13	06-11-12
Live Load Deflection	L/999 (-0.05")	n/a	n/a	16	05-09-10
Total Neg. Defl.	L/999 (-0.02")	n/a	n/a	12	03-06-09
Max Defl.	0.083"	n/a	n/a	13	06-11-12
Cant. Max Defl.	0.011"	n/a	n/a	12	00-00-00
Span / Depth	12.5				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 5-1/2" x 3-1/2"	16206 lbs	48.5%	69.0%	Spruce-Pine-Fir
B2	Wall/Plate 4-3/8" x 3-1/2"	1292 lbs	13.7%	6.9%	Spruce-Pine-Fir

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 12" O/C,
STAGGERED IN 2 ROWS

2nd Floor - Supply/BOM\Flush Beams\B63(i35934) (Flush Beam)

BC Design Engine Member Report

Dry | 2 spans | L cant.

April 28, 2022 09:41:43

Build 8183

Job name: 45147(4003)

File name: 343712-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B63(i35934)

City, Province, Postal Code: Vaughan, ON

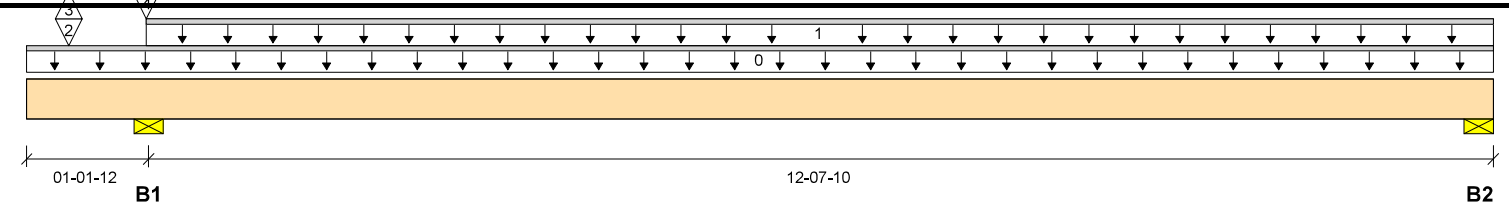
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 13-09-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	3793 / 508	2046 / 0		
B2, 4-3/8"	374 / 120	188 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-09-06	Top		12			00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	01-01-08	13-09-06	Top	53	27			n/a
2	B61(i35940)	Conc. Pt. (lbs)	L	00-04-12	00-04-12	Front	1976	1015			n/a
3	B61(i35940)	Conc. Pt. (lbs)	L	00-04-12	00-04-12	Front	-479				n/a
4	B60(i35966)	Conc. Pt. (lbs)	L	01-01-08	01-01-08	Front	1361	713			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2234 ft-lbs	35392 ft-lbs	6.3%	4	07-06-10
Neg. Moment	-3187 ft-lbs	-16529 ft-lbs	19.3%	1	01-01-12
End Shear	622 lbs	14464 lbs	4.3%	4	12-05-02
Cont. Shear	4256 lbs	14464 lbs	29.4%	1	00-11-00
Total Load Deflection	L/999 (0.042")	n/a	n/a	13	07-04-12
Live Load Deflection	L/999 (0.034")	n/a	n/a	17	07-01-00
Total Neg. Defl.	L/999 (-0.019")	n/a	n/a	12	05-04-04
Max Defl.	0.042"	n/a	n/a	13	07-04-12
Cant. Max Defl.	0.014"	n/a	n/a	12	00-00-00
Span / Depth	12.5				



Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	8247 lbs	69.6%	35.1%	Spruce-Pine-Fir
B2	Wall/Plate 4-3/8" x 3-1/2"	796 lbs	8.5%	4.3%	Spruce-Pine-Fir

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 12" O/C,
STAGGERED IN 2 ROWS

1st Floor - Supply/BOM\Flush Beams\B64(i36462) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

April 28, 2022 10:35:14

Job name: 45147(4003)

File name: 343712-A.mmdl

Address: Pine Valley

Description: 1st Floor - Supply/BOM\Flush Beams\B64(i36462)

City, Province, Postal Code: Vaughan, ON

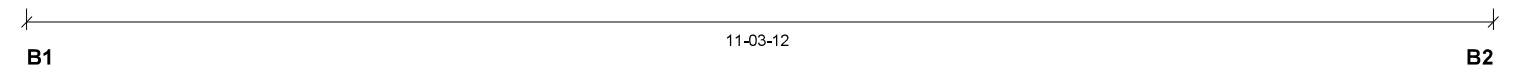
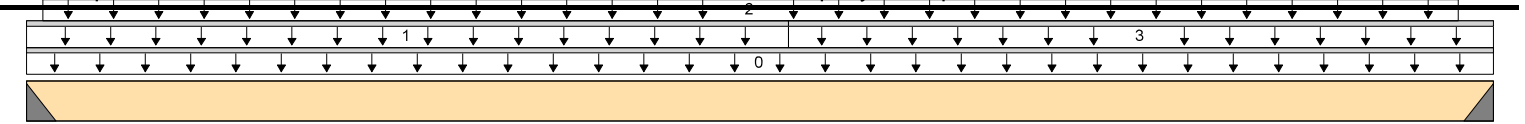
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 11-03-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	1066 / 0	1076 / 0		
B2, 2"	1551 / 0	1525 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-03-12	Top		10			00-00-00
1	FC4 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	05-10-08	Top	49	25			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-01-08	11-00-08	Top		60			n/a
3	FC4 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	05-10-08	11-03-12	Top	28	14			n/a
4	B50(i36353)	Conc. Pt. (lbs)	L	05-09-04	05-09-04	Front	283	133			n/a
5	User Load	Conc. Pt. (lbs)	L	05-00-08	05-00-08	Top	320	120			n/a
6	Pt2(i36163)	Conc. Pt. (lbs)	L	07-08-04	07-08-04	Top	1575	1364			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	14017 ft-lbs	23219 ft-lbs	60.4%	1	07-08-04
End Shear	4164 lbs	11571 lbs	36.0%	1	10-04-04
Total Load Deflection	L/324 (0.411")	n/a	74.0%	4	05-10-08
Live Load Deflection	L/623 (0.214")	n/a	57.8%	5	05-10-08
Max Defl.	0.411"	n/a	41.1%	4	05-10-08
Span / Depth	14.0				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 3-1/2"	2943 lbs	n/a	34.5%	HGUS410
B2	Hanger 2" x 3-1/2"	4232 lbs	n/a	49.6%	HGUS410

Cautions

Hanger model HGUS410 and seat length were input by the user.

Header for the hanger HGUS410 is a Double 1-3/4" x 9-1/2" LVL beam.

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 12" O/C,
STAGGERED IN 2 ROWS

1st Floor - Supply/BOM\Flush Beams\B65(i36368) (Flush Beam)

BC Design Engine Member Report

Dry | 2 spans | L cant.

April 28, 2022 10:35:14

Build 8183

Job name: 45147(4003)

File name: 343712-A.mmdl

Address: Pine Valley

Description: 1st Floor - Supply/BOM\Flush Beams\B65(i36368)

City, Province, Postal Code: Vaughan, ON

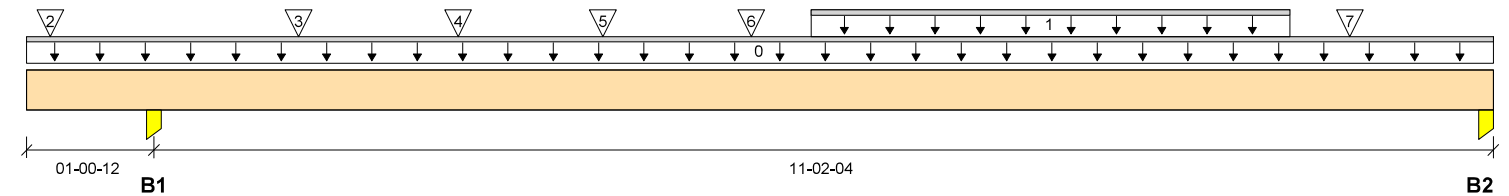
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 12-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1509 / 0	1171 / 0		
B2, 5-1/2"	1459 / 6	971 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-03-00	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	06-06-10	10-06-10	Front	238	119			n/a
2	J2(i36180)	Conc. Pt. (lbs)	L	00-02-06	00-02-06	Front	59	29			n/a
3	J2(i36178)	Conc. Pt. (lbs)	L	02-03-04	02-03-04	Front	167	83			n/a
4	J2(i36156)	Conc. Pt. (lbs)	L	03-07-04	03-07-04	Front	159	79			n/a
5	B64(i36462)	Conc. Pt. (lbs)	L	04-09-12	04-09-12	Front	1082	1085			n/a
6	J1(i36159)	Conc. Pt. (lbs)	L	06-00-10	06-00-10	Front	270	135			n/a
7	J1(i36174)	Conc. Pt. (lbs)	L	11-00-10	11-00-10	Front	261	131			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	11890 ft-lbs	23219 ft-lbs	51.2%	3	04-09-12
Neg. Moment	-142 ft-lbs	-23219 ft-lbs	0.6%	1	01-00-12
End Shear	3351 lbs	11571 lbs	29.0%	3	11-00-00
Cont. Shear	3551 lbs	11571 lbs	30.7%	1	02-01-00
Total Load Deflection	L/380 (0.341")	n/a	63.2%	10	06-03-10
Live Load Deflection	L/663 (0.195")	n/a	54.3%	13	06-03-10
Total Neg. Defl.	2xL/1998 (-0.108")	n/a	n/a	10	00-00-00
Max Defl.	0.341"	n/a	34.1%	10	06-03-10
Cant. Max Defl.	-0.108"	n/a	n/a	10	00-00-00
Span / Depth	13.6				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 5-1/2" x 3-1/2"	3727 lbs	11.2%	15.9%	Spruce-Pine-Fir
B2	Column 5-1/2" x 3-1/2"	3403 lbs	10.2%	14.5%	Spruce-Pine-Fir

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 12" O/C,
STAGGERED IN 2 ROWS

1st Floor - Supply/BOM\Flush Beams\B66(i36478) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

April 28, 2022 10:35:14

Build 8183

Job name: 45147(4003)

File name: 343712-A.mmdl

Address: Pine Valley

Description: 1st Floor - Supply/BOM\Flush Beams\B66(i36478)

City, Province, Postal Code: Vaughan, ON

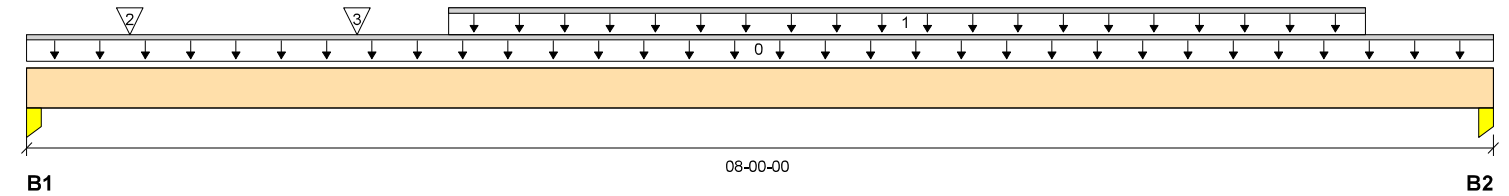
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 08-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5"	2221 / 0	1878 / 0		
B2, 5-1/2"	798 / 0	418 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-00-00	Top		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	02-03-10	07-03-10	Back	233	117			n/a
2	B64(i36462)	Conc. Pt. (lbs)	L	00-06-12	00-06-12	Back	1553	1525			n/a
3	J1(i36159)	Conc. Pt. (lbs)	L	01-09-10	01-09-10	Back	272	136			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3282 ft-lbs	11610 ft-lbs	28.3%	1	03-09-10
End Shear	1656 lbs	5785 lbs	28.6%	1	06-09-00
Total Load Deflection	L/999 (0.087")	n/a	n/a	4	03-11-02
Live Load Deflection	L/999 (0.057")	n/a	n/a	5	03-11-02
Max Defl.	0.087"	n/a	n/a	4	03-11-02
Span / Depth	9.2				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 5" x 1-3/4"	5679 lbs	37.4%	53.2%	Spruce-Pine-Fir
B2	Column 5-1/2" x 1-3/4"	1719 lbs	10.3%	14.6%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Design meets User specified (0.75") Maximum live load deflection criteria.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Calculations assume unbraced length of Top: 00-05-00, Bottom: 00-11-14.

Disclosure

Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA). Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

SE046997

2nd Floor - Supply/BOM\Flush Beams\B67(i36728) (Flush Beam)

BC Design Engine Member Report

Dry | 2 spans | L cant.

April 28, 2022 13:37:13

Build 8183

Job name: 45147(4003)

File name: 343712-C.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B67(i36728)

City, Province, Postal Code: Vaughan, ON

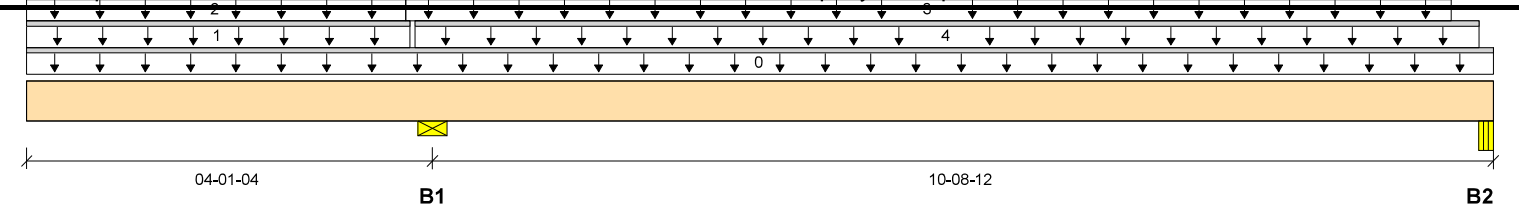
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpha Roof Trusses



Total Horizontal Product Length = 14'-10'-00"

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5'-1/2"	1846 / 140	765 / 0		
B2, 5'-1/4"	371 / 305	80 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	14-10-00	Top		12			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-10-08	Top	220	83			n/a
2	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	03-10-00	Top	20	8			n/a
3	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	03-10-00	14-04-14	Top	11	4			n/a
4	User Load	Unf. Lin. (lb/ft)	L	03-11-02	14-08-04	Top	27	10			n/a
5	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	04-00-08	14-07-06	Top	24	9			n/a
6	-	Conc. Pt. (lbs)	L	00-00-12	00-00-12	Back	281	71			n/a
7	-	Conc. Pt. (lbs)	L	00-00-12	00-00-12	Back	-101				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1468 ft-lbs	35392 ft-lbs	4.1%	8	09-07-06
Neg. Moment	-6160 ft-lbs	-19780 ft-lbs	31.1%	1	04-01-04
End Shear	486 lbs	14464 lbs	3.4%	4	13-04-14
Cont. Shear	1957 lbs	14464 lbs	13.5%	1	02-10-10
Total Load Deflection	2xL/750 (0.131")	n/a	32.0%	12	00-00-00
Live Load Deflection	2xL/1998 (0.105")	n/a	n/a	16	00-00-00
Total Neg. Defl.	L/999 (-0.043")	n/a	n/a	12	08-04-04
Max Defl.	-0.043"	n/a	n/a	12	08-04-04
Cant. Max Defl.	0.131"	n/a	13.1%	12	00-00-00
Span / Depth	10.5				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5'-1/2" x 3'-1/2"	3725 lbs	31.5%	15.9%	Spruce-Pine-Fir
B2	Beam 5'-1/4" x 3'-1/2"	657 lbs	4.6%	2.9%	Unspecified
B2	Uplift	385 lbs			

Cautions

Uplift of 385 lbs found at bearing B2.

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 12" O/C, STAGGERED IN 2 ROWS

1st Floor - Supply/BOM\Flush Beams\B68(i36855) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

April 28, 2022 14:24:10

Build 8183

Job name: 45147(4003)

File name: 343712-SIDE entry-A.mmdl

Address: Pine Valley

Description: 1st Floor - Supply/BOM\Flush Beams\B68(i36855)

City, Province, Postal Code: Vaughan, ON

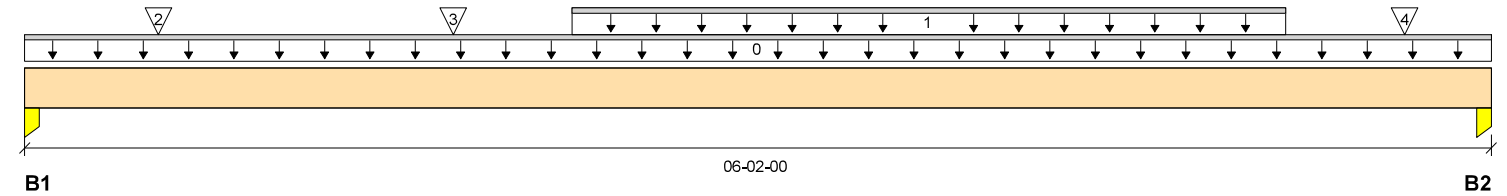
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5"	2016 / 0	1771 / 0		
B2, 4-11/16"	711 / 0	371 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-02-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	02-03-10	05-03-10	Back	232	116			n/a
2	B64(i36557)	Conc. Pt. (lbs)	L	00-06-12	00-06-12	Back	1558	1527			n/a
3	J1(i36815)	Conc. Pt. (lbs)	L	01-09-10	01-09-10	Back	272	136			n/a
4	J1(i36858)	Conc. Pt. (lbs)	L	05-09-10	05-09-10	Back	183	92			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1828 ft-lbs	11610 ft-lbs	15.7%	1	02-09-10
End Shear	1094 lbs	5785 lbs	18.9%	1	04-11-13
Total Load Deflection	L/999 (0.027")	n/a	n/a	4	03-01-06
Live Load Deflection	L/999 (0.018")	n/a	n/a	5	03-01-06
Max Defl.	0.027"	n/a	n/a	4	03-01-06
Span / Depth	6.9				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 5" x 1-3/4"	5239 lbs	34.5%	49.1%	Spruce-Pine-Fir
B2	Column 4-11/16" x 1-3/4"	1529 lbs	10.7%	15.2%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum Total load deflection criteria.
 Design meets User specified (0.75") Maximum live load deflection criteria.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Calculations assume unbraced length of Top: 00-05-00, Bottom: 00-11-14.

Disclosure

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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

SE046999

Maximum Floor Spans – M3.1, L/360

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 20 psf
Deflection limits:	L/360 under live load and L/240 under total load
Sheathing:	23/32 in. nailed-glued oriented strand board (OSB) sheathing



Maximum Floor Spans

Joist depth	Joist series	Bare On centre spacing				1/2 in. gypsum ceiling On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-9"	14'-10"	14'-4"	13'-5"	16'-2"	15'-4"	14'-6"	13'-5"
	NI-40x	16'-10"	15'-10"	15'-3"	14'-8"	17'-2"	16'-3"	15'-8"	14'-11"
	NI-60	16'-11"	16'-0"	15'-5"	14'-9"	17'-4"	16'-4"	15'-9"	15'-2"
	NI-80	18'-0"	16'-11"	16'-3"	15'-7"	18'-5"	17'-3"	16'-7"	15'-11"
11-7/8"	NI-20	17'-8"	16'-8"	16'-1"	15'-6"	18'-3"	17'-3"	16'-7"	16'-0"
	NI-40x	19'-1"	17'-9"	17'-1"	16'-5"	19'-8"	18'-3"	17'-6"	16'-10"
	NI-60	19'-4"	17'-11"	17'-3"	16'-7"	19'-11"	18'-6"	17'-8"	17'-0"
	NI-80	20'-9"	19'-2"	18'-3"	17'-5"	21'-3"	19'-8"	18'-9"	17'-10"
	NI-90	21'-2"	19'-7"	18'-8"	17'-9"	21'-8"	20'-1"	19'-1"	18'-1"
14"	NI-40x	21'-2"	19'-7"	18'-8"	17'-9"	21'-10"	20'-3"	19'-4"	18'-4"
	NI-60	21'-6"	19'-11"	19'-0"	18'-0"	22'-2"	20'-7"	19'-8"	18'-8"
	NI-80	23'-1"	21'-4"	20'-3"	19'-3"	23'-8"	21'-11"	20'-10"	19'-9"
	NI-90	23'-6"	21'-9"	20'-8"	19'-7"	24'-1"	22'-4"	21'-3"	20'-1"
16"	NI-60	23'-5"	21'-8"	20'-8"	19'-7"	24'-2"	22'-5"	21'-5"	20'-4"
	NI-80	25'-1"	23'-2"	22'-1"	20'-11"	25'-9"	23'-10"	22'-9"	21'-6"
	NI-90	25'-7"	23'-7"	22'-6"	21'-3"	26'-3"	24'-3"	23'-1"	21'-11"

Joist depth	Joist series	Mid-span blocking with 1x4 inch strap On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	17'-1"	15'-5"	14'-6"	13'-5"	17'-1"	15'-5"	14'-6"	13'-5"
	NI-40x	18'-6"	17'-5"	16'-7"	14'-11"	19'-0"	17'-8"	16'-7"	14'-11"
	NI-60	18'-9"	17'-7"	16'-10"	15'-7"	19'-2"	17'-11"	16'-10"	15'-7"
	NI-80	20'-0"	18'-7"	17'-10"	17'-1"	20'-6"	19'-1"	18'-2"	17'-5"
11-7/8"	NI-20	20'-1"	18'-8"	17'-6"	16'-1"	20'-7"	18'-8"	17'-6"	16'-1"
	NI-40x	21'-8"	20'-2"	19'-0"	17'-0"	22'-3"	20'-9"	19'-0"	17'-0"
	NI-60	21'-11"	20'-5"	19'-6"	18'-6"	22'-6"	21'-0"	20'-1"	18'-8"
	NI-80	23'-5"	21'-9"	20'-9"	19'-8"	23'-11"	22'-3"	21'-3"	20'-2"
	NI-90	23'-11"	22'-2"	21'-1"	20'-0"	24'-4"	22'-8"	21'-8"	20'-6"
14"	NI-40x	24'-3"	22'-7"	20'-11"	18'-8"	24'-11"	22'-11"	20'-11"	18'-8"
	NI-60	24'-8"	22'-11"	21'-10"	20'-8"	25'-3"	23'-7"	22'-7"	21'-4"
	NI-80	26'-3"	24'-5"	23'-3"	22'-0"	26'-10"	25'-0"	23'-10"	22'-7"
	NI-90	26'-9"	24'-10"	23'-8"	22'-5"	27'-4"	25'-5"	24'-3"	22'-11"
16"	NI-60	27'-1"	25'-2"	24'-0"	22'-9"	27'-9"	26'-0"	24'-10"	23'-1"
	NI-80	28'-10"	26'-10"	25'-6"	24'-2"	29'-6"	27'-6"	26'-3"	24'-10"
	NI-90	29'-5"	27'-3"	26'-0"	24'-6"	30'-0"	27'-11"	26'-8"	25'-2"

Notes:

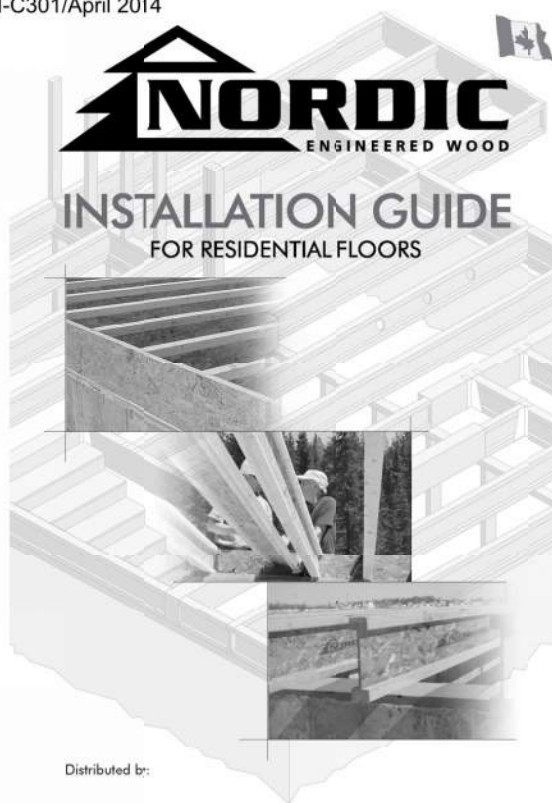
1. The tabulated clear spans are based on CSA O86-14 and NBC 2015, and are applicable to residential floor construction meeting the above design criteria.
2. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
3. Minimum bearing length shall be 1-3/4 inch for end bearings, and 3-1/2 inches for intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used in accordance with this table, except as required for hangers.
5. Nordic I-joists are listed in CCMC Evaluation Report 13032-R and APA Product Report PR-L274C.

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

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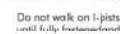


SAFETY AND CONSTRUCTION PRECAUTIONS

WARNING

I-joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.

Avoid Accidents by Following these Important Guidelines:



Do not walk on I-joists until fully braced and sheathed, or serious injuries can result.



Never stack building materials over unbraced I-joists. Once sheathed, do not move across I-joists with concentrated loads from building materials.

2. When the building is completed, the floor sheathing will provide lateral support for the top flange of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.

■ Temporary bracing or struts must be 1x4 inch minimum, at least 1 foot long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.

■ Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.

3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-briding.

4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.

5. Never install a damaged I-joist.

Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines carefully.

STORAGE AND HANDLING GUIDELINES

1. Bundle wrap on the shipping end. Avoid cutting unbraced bundles.

2. Store, stack, and handle I-joists vertically and level only.

3. Always stack and handle I-joists in the upright position only.

4. Do not store I-joists in direct contact with the ground and/or flatwise.

5. Protect I-joists from weather, and use spacers to separate bundles.

6. Bundled units should be kept intact until time of installation.

7. When handling I-joists with a crane on the job site, take a few simple precautions to prevent damage to the I-joists and injury to your work crew:

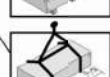
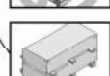
■ Pick I-joists in bundles as shipped by the supplier.

■ Orient the bundles so that the webs of the I-joists are vertical.

■ Pick the bundles at the 5th points, using a spreader bar if necessary.

8. Do not handle I-joists in a horizontal orientation.

9. NEVER USE CRITY TO REPAIR A DAMAGED I-JOIST.

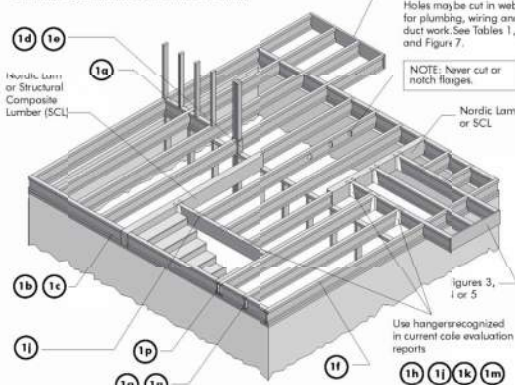


INSTALLING NORDIC I-JOISTS

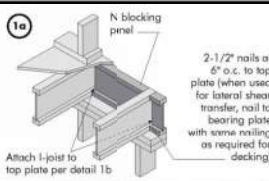
- Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not contact your supplier.
- Except for cutting to length, I-joist flanges should **never** be cut, drilled, or notched.
- Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
- I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple-span joists must be level.
- Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
- When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
- Leave a 1/16-inch gap between the I-joist end and a header.
- Concentrated load greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unusual or heavy loads from the I-joist's bottom flange. Whenever possible suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
- Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
- Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
- For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squash blocks (cripple members) to transfer gravity loads through the floor system to the wall or foundation below.
- Due to shrinkage, common framing lumber set on edge **must never** be used as blocking or rim boards. I-joist blocking panels or other engineered wood products – such as rim board – must be cut to fit between the I-joists, and an I-joist-compatible depth selected.
- Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support next to the cantilever extension in the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
- If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring or if a separate underlayment layer is installed.
- Nail spacing: Spacing nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

FIGURE 1
TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS

Some framing requirements such as erection bracing and blocking panels have been omitted for clarity.

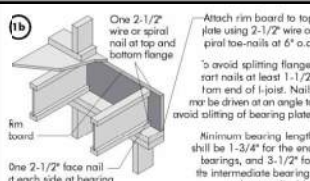


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted or 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.



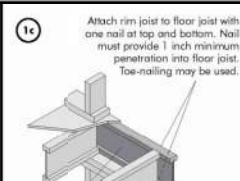
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
Ni Joists	3,300

*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



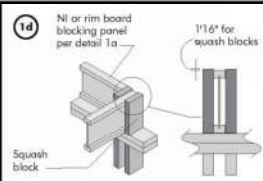
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



Pair of Squash Blocks	Maximum Factored Uniform Vertical Load* (plf)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

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MAXIMUM FLOOR SPANS

- Maximum **clear** spans applicable to simple span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGS-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Limit States Design per CAN/CSA C86-09 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

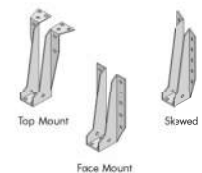
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS SIMPLE AND MULTIPLE SPANS

Joist Depth	Joist Series	Simple spans						Multiple spans					
		On centre spacing						On centre spacing					
		12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	Ni-20	15-1"	14-2"	13-5"	13-5"	16-3"	15-4"	14-10"	14-7"	15-6"	14-6"	13-10"	13-5"
	Ni-40	16-3"	15-4"	14-10"	14-11"	17-7"	16-7"	16-0"	16-6"	18-7"	17-4"	16-9"	17-2"
	Ni-70	17-1"	16-1"	15-6"	15-7"	18-10"	17-6"	16-11"	17-5"				
	Ni-80	17-3"	16-3"	15-8"	15-9"	18-10"	17-6"	16-11"	17-5"				
11-7/8"	Ni-20	16-11"	15-0"	15-5"	15-6"	18-4"	17-3"	16-8"	16-7"	19-0"	18-0"	17-9"	17-7"
	Ni-40x	18-11"	17-0"	16-5"	16-6"	20-0"	18-6"	17-9"	17-7"	20-3"	18-9"	18-0"	18-9"
	Ni-70	19-4"	18-0"	17-4"	17-5"	21-6"	19-11"	19-0"	19-8"				
	Ni-80	19-9"	18-3"	17-6"	17-7"	21-9"	20-2"	19-3"	19-11"				
14"	Ni-20	20-2"	18-7"	17-10"	17-11"	22-3"	20-7"	19-8"	19-9"	22-8"	20-8"	19-10"	20-8"
	Ni-40x	20-1"	18-7"	17-10"	17-11"	22-2"	20-6"	19-8"	19-9"	22-7"	20-7"	19-10"	20-8"
	Ni-70	20-5"	19-11"	18-1"	18-2"	22-7"	20-11"	20-0"	20-10"				
	Ni-80	21-7"	20-0"	19-1"	19-2"	23-10"	22-1"	21-1"	21-10"				
16"	Ni-20	21-11"	20-3"	19-4"	19-5"	24-3"	22-5"	21-5"	22-2"	24-9"	22-9"	21-10"	22-10"
	Ni-40x	22-5"	20-8"	19-9"	19-9"	24-9"	23-1"	22-10"	22-9"				
	Ni-70	22-7"	21-11"	19-11"	20-0"	25-0"	23-1"	22-0"	22-9"				
	Ni-80	23-5"	21-8"	20-9"	20-10"	26-0"	24-0"	22-11"	23-9"				
18"	Ni-20	23-11"	22-1"	21-1"	21-2"	26-5"	24-5"	23-3"	24-1"	26-11"	24-10"	23-9"	23-9"
	Ni-40x	24-5"	22-6"	21-5"	21-6"	26-11"	24-10"	23-9"	23-9"				
	Ni-70	24-8"	22-9"	21-9"	21-10"	27-3"	25-2"	24-0"	24-10"				
	Ni-80	25-1"	23-1"	22-1"	22-2"	27-3"	25-2"	24-0"	24-10"				

CCAC EVALUATION REPORT 13032-R

I-JOIST HANGERS

- Hangers shown illustrate the three most commonly used metal hangers to support I-joists.
- All nailing must meet the hanger manufacturer's recommendations.
- Hangers should be selected based on the joist depth, flange width, and load capacity based on the maximum spans.
- Web stiffeners are required when the sides of the hangers do not laterally brace the top flange of the I-joist.



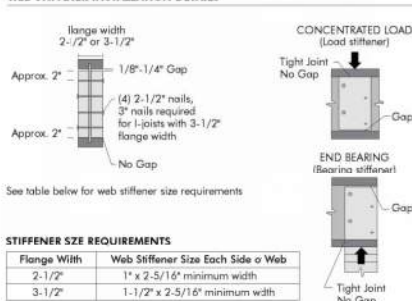
WEB STIFFENER

RECOMMENDATIONS:

- A **bearing stiffener** is required in all engineered applications with factored reactions greater than those in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A **bearing stiffener** is required when the I-joist is supported in hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and the flange is at the top.
- A **load stiffener** is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

SI units conversion: 1 inch = 25.4 mm

FIGURE 4 WEB STIFFENER INSTALLATION DETAILS



STIFFENER SIZE REQUIREMENTS

Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

NORDIC I-JOIST SERIES

Ni-20	Ni-40x	Ni-60	Ni-70	Ni-80	Ni-90	Ni-90x
33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	2 pieces per unit

Chantiers Chibougamau Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from forest to the finished product, reflects our commitment to quality.

Nordic Engineered Wood I-joists use only finger-jointed black spruce lumber in their flanges, ensuring consistent quality, superior strength, and longer span carrying capacity.

10 Transfer load from above to bearing below. Install squash blocks per detail 1d. Match bearing area of blocks below to post above.

11 Use single I-joist for load up to 3,300 plf, double I-joists for loads up to 1,600 plf (filler block not required). Attach I-joist to top plate using 2-1/2" nails at 6" o.c.

Provide backer for siding attachment unless nailable sheathing is used.

Wall sheathing, as required.

Rim board may be used in lieu of I-joists. Backer is not required when rim board is used. Tracing per code shall be carried to the foundation.

12 Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered in this detail.

Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support.

Joist attachment per detail 1b

2-1/2" nails at 6" o.c. top plate

NI blocking panel per detail 1a

13 Backer block (use if hanger load exceeds 360 lbs) Before installing backer block to a double I-joist, drive three additional 3" nails through the webs and filler block when the backer block will fit. Clinch. Install backer right to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail = 1,620 lbs.

Double I-joist header

Top- or face-mount hanger

Filler block per detail 1p

Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

Backer block required (both sides for face-mount hangers)

For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

BACKER BLOCKS (Blocks must be long enough to permit required nailing without splitting)

Flange Width	Material Thickness Required*	Minimum Depth*
2-1/2"	1"	5-1/2"
3-1/2"	1-1/2"	7-1/4"

* Minimum grade for backer block material shall be S-PF No. 2 or better for solid saw lumber and wood structural panels conforming to CAN/CSA-C337 or CAN/CSA-C337 Standard

** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

14 Top- or face-mount hanger installed per manufacturer's recommendations. For nailing schedules for multiple beams, see the manufacturer's recommendations.

Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

15 2x plate flush with inside face of wall or beam. 1/8" overhang allowed past inside face of wall or beam.

Top-mount hanger installed per manufacturer's recommendations.

Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

16 Multiple I-joist reader with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joist capacity to support concentrated loads.

Filler block per detail 1p

Install hanger per manufacturer's recommendations.

Backer block attached per detail 1h. Nail with twelve 3" nails, clinched when possible.

Maximum support capacity = 1,620 lbs.

17 Do not level-cut joist beyond inside face of wall.

Attach I-joist per detail 1b

Note: Blocking required at bearing for lateral resistance to wall frame for clarity.

18 Lumber 2x4 min., extend block to face of adjacent webs. Two 2-1/2" spiral nails from each web to lumber piece, alternate on opposite side.

NI blocking panel

Optional: Minimum x4 inch strap applied to underside of joist at blocking line or 1/2 inch minimum gypsum ceiling attached to underside of joists.

19 One 2-1/2" nails at top and bottom flange. Two 2-1/2" nails from each web to lumber piece. 2x4 min. (1/8" gap minimum).

Two 2-1/2" nails from each web to lumber piece.

I-joist blocking panel

One 2-1/2" nails one side only

2-1/2" nails at 6" o.c.

Notes:

- In some local codes, blocking is prescriptively required in the first joist space (or first and second joist space) next to the stark joist. Where required, see local code requirements for spacing of the blocking.
- All nails are common spiral in this detail.

Notes:

- Support back of I-joist web during nailing to prevent damage to web/flange connection.
- Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
- Filler block is required between joists for full length of span.
- Nail joists together with two rows of 3" nails at 12 inches o.c. (clinched when possible) on each side of the double I-joist. Total of four nails per foot required. If nails can be clinched, only two nails per foot are required.
- The maximum factored load that may be applied to one side of the double joist using this detail is 860 lbf/ft. Verify double I-joist capacity.

The construction details for residential designs are prone to changes.

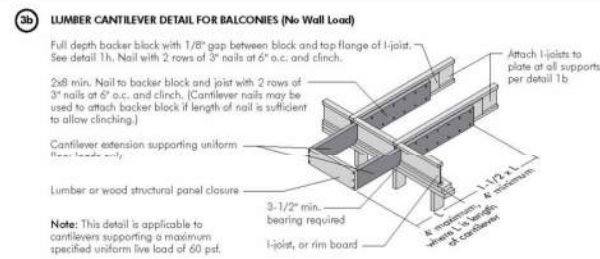
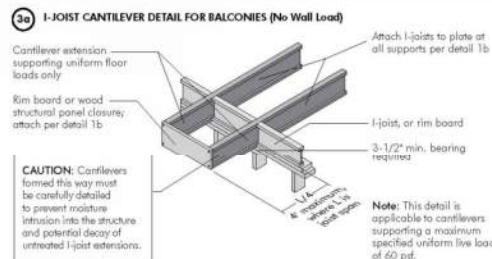
Details released after April 2014 supersedes N-C301

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CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

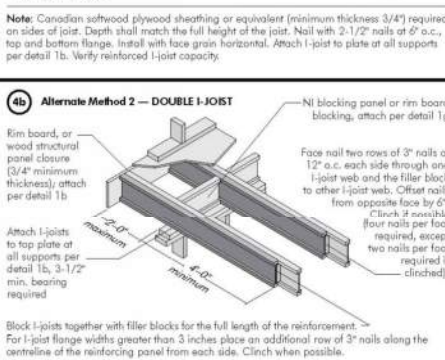
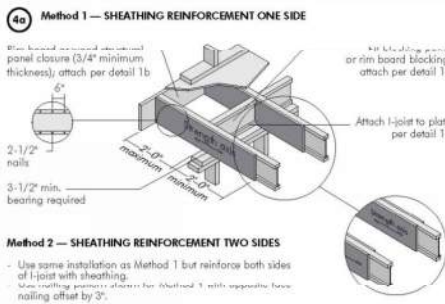
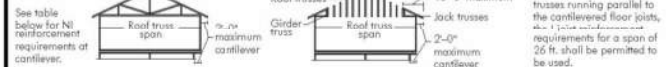


FIGURE 4 (continued)



CANTILEVER REINFORCEMENT METHODS ALLOWED

Joist Depth (in.)	Roof Truss Span (ft)	ROOF LOADING (UNFACTORED)																							
		LL = 30 psf, DL = 15 psf								LL = 40 psf, DL = 15 psf								LL = 50 psf, DL = 15 psf							
		Joist Spacing (in.)								Joist Spacing (in.)								Joist Spacing (in.)							
		12	16	19.2	24			12	16	19.2	24			12	16	19.2	24			12	16	19.2	24		
9-1/2	26	N	N	N	1	2	N	1	2	X	N	2	X	N	2	X	X		N	2	X	X			
	28	N	N	N	1	X	N	1	2	X	N	2	X	N	2	X	X		N	2	X	X			
	30	N	1	1	X	N	1	2	X	N	1	2	X	N	1	2	X	X	1	2	X	X			
	32	N	1	2	X	N	2	X	N	2	X	X	N	1	X	X	X	X	1	X	X	X			
	34	N	1	2	X	N	2	X	N	2	X	X	N	1	X	X	X	X	1	X	X	X			
11-7/8	26	N	1	N	N	1	1	N	1	2	2	N	1	2	2	N	1	2	2	N	1	2	2		
	28	1	N	N	1	1	2	N	1	2	X	1	2	X	1	2	X	X	1	2	X	X			
	30	1	N	1	1	1	2	N	1	2	X	1	2	X	1	2	X	X	1	2	X	X			
	32	1	N	1	1	1	2	N	1	2	X	1	2	X	1	2	X	X	1	2	X	X			
	34	2	N	1	1	2	X	1	2	X	X	1	2	X	X	1	2	X	X	1	2	X			
14	26	N	N	N	N	N	N	N	N	N	1	N	N	N	N	N	N	N	1	N	N	N	1		
	28	N	N	N	N	N	N	N	N	N	1	N	N	N	N	N	N	N	1	N	N	N	1		
	30	N	N	N	N	N	N	N	N	N	1	N	N	N	N	N	N	N	1	N	N	N	1		
	32	N	N	N	N	1	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	2		
	34	N	N	N	N	1	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	2		
16	26	N	N	N	N	1	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	2		
	28	N	N	N	N	1	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	2		
	30	N	N	N	N	N	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	2		
	32	N	N	N	N	N	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	2		
	34	N	N	N	N	N	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	2		

1. N = No reinforcement required.
2. 1 = NI reinforced with 3/4" wood structural panel on one side only.
3. 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls or if a truss is used.
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

BRICK CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

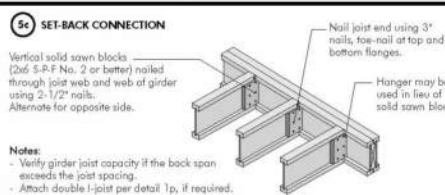
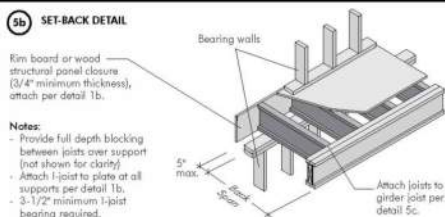
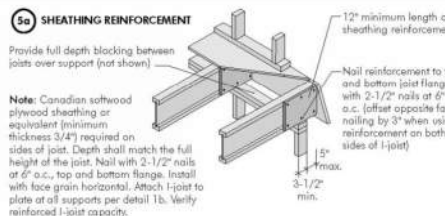
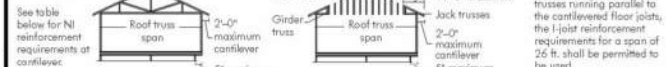


FIGURE 5 (continued)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

Joist Depth (in.)	Roof Truss Span (ft)	LL = 30 psf, DL = 15 psf								LL = 40 psf, DL = 15 psf								LL = 50 psf, DL = 15 psf							
		Joist Spacing (in.)								Joist Spacing (in.)								Joist Spacing (in.)							
		12	16	19.2	24	24	24	24	24	12	16	19.2	24	24	24	24	24	12	16	19.2	24	24	24	24	24
9-1/2	26	1	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
	28	1	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
	30	1	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
	32	2	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
	34	2	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
11-7/8	26	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	28	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	30	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	32	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	34	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	26	N	2	X	X	X	1	X	X	X	1	X	X	X	1	X	X	2	X	X	X	2	X	X	X
	28	N	2	X	X	X	1	X	X	X	1	X	X	X	2	X	X	2	X	X	X	2	X	X	X
	30	2	X	X	X	X	1	X	X	X	2	X	X	X	2	X	X	2	X	X	X	2	X	X	X
	32	1	X	X	X	X	2	X	X	X	2	X	X	X	2	X	X	2	X	X	X	2	X	X	X
	34	1	X	X	X	X	2	X	X	X	2	X	X	X	2	X	X	2	X	X	X	2	X	X	X
16	26	1	2	X	X	X	1	X	X	X	2	X	X	X	2	X	X	2	X	X	X	2	X	X	X
	28	1	2	X	X	X	1	X	X	X	2	X	X	X	2	X	X	2	X	X	X	2	X	X	X
	30	1	2	X	X	X	2	X	X	X	2	X	X	X	2	X	X	2	X	X	X	2	X	X	X
	32	1	X	X	X	X	2	X	X	X	2	X	X	X	2	X	X	2	X	X	X	2	X	X	X
	34	1	X	X	X	X	2	X	X	X	2	X	X	X	2	X	X	2	X	X	X	2	X	X	X

1. N = No reinforcement required.
2. 1 = NI reinforced with 3/4" wood structural panel on one side only.
3. 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls or if a truss is used.
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centred on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the edges of the hole or duct chase opening and the adjacent I-joist flange.
- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is **not** considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a continuous section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS
Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (ft.-in.)														Span adjustment Factor
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	
9-1/2"	N120	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N140	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N160	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N180	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
11-7/8"	N120	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N140	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N160	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N180	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
14"	N120	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N140	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N160	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N180	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
16"	N120	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N140	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N160	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N180	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"

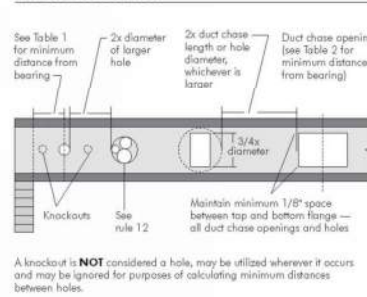
- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.

OPTIONAL:

The above table is based on the I-joists used at their maximum span. If the I-joists are placed at less than their full maximum span (see Maximum Floor Spans), the minimum distance from the centreline of the hole to the face of any support (D) as given above may be reduced as follows:

- Where:
- $D_{reduced} = D \times \frac{S_{actual}}{S_{max}}$ = Distance from the inside face of any support to centre of hole, reduced for less than maximum span applications [8]. The reduced distance shall not be less than 6 inches from the face of the support to edge of the hole.
 - S_{actual} = The actual measured span distance between the inside faces of supports [8].
 - S_{max} = Span Adjustment Factor given in this table.
 - D = The minimum distance from the inside face of any support to centre of hole from this table.
- If $\frac{S_{actual}}{S_{max}}$ is greater than 1, use 1 in the above calculation for $\frac{S_{actual}}{S_{max}}$.

FIGURE 7
FIELD-CUT HOLE LOCATOR



Knockouts are pre-cored holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

Never drill, cut or notch the flange, or over-cut the web. Holes in webs should be cut with a sharp saw.

For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joist.

TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS — Simple Span Only

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft.-in.)													
		8	10	12	14	16	18	20	22	24	26	28	30	32	34
9-1/2"	N120	4-1"	4-5"	4-10"	4-5"	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"
	N140	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"
	N160	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"
	N180	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"	12-5"
11-7/8"	N120	4-1"	4-5"	4-10"	4-5"	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"
	N140	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"
	N160	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"
	N180	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"	12-5"
14"	N120	4-1"	4-5"	4-10"	4-5"	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"
	N140	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"
	N160	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"
	N180	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"	12-5"
16"	N120	4-1"	4-5"	4-10"	4-5"	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"
	N140	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"
	N160	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"
	N180	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"	12-5"

- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Duct chase opening location distance is measured from inside face of supports to centre of opening.
- The above table is based on simple-span joist only. For other applications, contact your local distributor.
- Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. For other applications, contact your local distributor.

INSTALLING THE GLUED FLOOR SYSTEM

- Wipe any mud, dirt, water, or ice from I-joist flanges before gluing.
- Snap a chalk line across the I-joists four feet in from the wall for panel edge alignment and as a boundary for spreading glue.
- Spread only enough glue to lay one or two panels at a time, or follow specific recommendations from the glue manufacturer.
- Lay the first panel with tongue side to the wall, and nail in place. This protects the tongue of the next panel from damage when tapped into place with a block and sledgehammer.
- Apply a continuous line of glue (about 1/4-inch diameter) to the top flange of a single I-joist. Apply glue in a winding pattern on wide areas, such as with double I-joists.
- Apply two lines of glue on I-joists where panel ends butt to assure proper gluing of each end.
- After the first row of panels is in place, spread glue in the groove on one or two panels at a time before laying the next row. Glue line may be continuous or spaced, but avoid squeeze-out by applying a thinner line (1/8 inch) than used on I-joist flanges.
- Tap the second row of panels into place, using a block to protect groove edges.
- Stagger and joints in each succeeding row of panels. A 1/8-inch space between all end joints and 1/8-inch at all edges, including T&G edges, is recommended. (Use a spacer tool or an 2-1/2" common nail to assure accurate and consistent spacing.)
- Complete all nailing of each panel before glue sets.** Check the manufacturer's recommendations for cure time. (Warm weather accelerates glue setting.) Use 2" ring- or screw-shank nails for panels 3/4-inch thick or less, and 2-1/2" ring- or screw-shank nails for thicker panels. Space nails per the table below. Closer nail spacing may be required by some codes, or for diaphragm construction. The finished deck can be walked on right away and will carry construction loads without damage to the glue bond.

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

Maximum Joist Spacing (in.)	Minimum Panel Thickness (in.)	Nail Size and Type			Maximum Spacing of Fasteners	
		Common Wire or Spiral Nails	Ring Thread Nails or Screws	Staples	Edges	Interiors
16	5/8	2"	1-3/4"	2"	6"	12"
20	5/8	2"	1-3/4"	2"	6"	12"
24	3/4	2"	1-3/4"	2"	6"	12"

- Fasteners of sheathing and subflooring shall conform to the above table.
- Staples shall not be less than 1/16-inch in diameter or thickness, with not less than a 3/8-inch crown driven with the crown parallel to framing.
- Flooring screws shall not be less than 1/8-inch in diameter.
- Special conditions may impose heavy traffic and concentrated loads that require construction in excess of above minimums.
- Use only adhesives conforming to CAN/CSB-71.26 Standard, Adhesives for Field-Gluing Plywood to Lumber Framing for Floor System, applied in accordance with the manufacturer's recommendations. If OSB panels with sealed surfaces and edges are to be used, use only solvent-based glues; check with panel manufacturer.

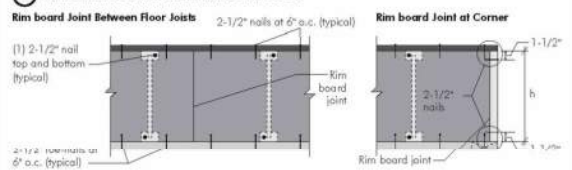
Ref.: NRC-CNRC, National Building Code of Canada 2010, Table 9.23.3.5.

IMPORTANT NOTE:

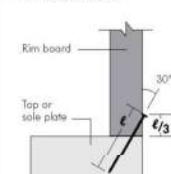
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

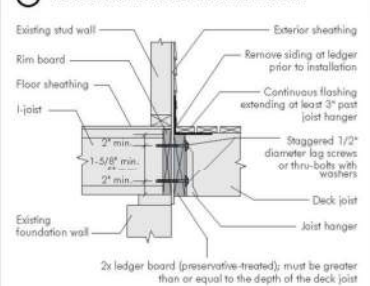
80 ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



80 TOE-NAIL CONNECTION AT RIM BOARD



80 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



PRODUCT WARRANTY

Chertex Chivignoux guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defects in material and workmanship.

Furthermore, Chertex Chivignoux warrants that our products, when utilized in accordance with our handling and installation instructions, will meet or exceed our specifications for the lifetime of the structure.



Refer to the Installation Guide for Residential Floors for additional information.
CCMC EVALUATION REPORT 13032-R

WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

1. The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
2. I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
3. Whenever possible, field-cut holes should be centred on the middle of the web.
4. The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top/bottom of the hole or opening and the adjacent I-joist flange.

5. The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
6. Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
7. A knockout is **not** considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
8. Holes measuring 1-1/2 inches or smaller are permitted anywhere in a canilevered section of a joist. Holes of greater size may be permitted subject to verification.

9. A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
10. All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
11. Limit three maximum size holes per span, of which one may be a duct chase opening.
12. A group of round holes at approximately the same location shall be permitted if they meet the requirements for single round hole circumscribed around them.

TABLE 1

LOCATION OF CIRCULAR HOLES IN JOIST WEBS

Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf

Joist Depth	Joist Series	Minimum Distance from Inside Face of Any Support to Centre of Hole (ft - in.)													
		Round Hole Diameter (in.)													
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12 12-3/4
9-1/2"	NI-20	0-7"	1-6"	2-10"	4-3"	5-3"	6-0"	---	---	---	---	---	---	---	---
	NI-40x	0-7"	1-6"	3-0"	4-4"	6-0"	6-4"	---	---	---	---	---	---	---	---
	NI-60	1-3"	2-6"	4-0"	5-4"	7-3"	7-5"	---	---	---	---	---	---	---	---
	NI-80	2-0"	3-4"	4-8"	6-2"	8-1"	8-4"	---	---	---	---	---	---	---	---
11-7/8"	NI-20	0-7"	0-8"	1-0"	2-4"	3-3"	4-0"	5-0"	6-6"	7-9"	---	---	---	---	---
	NI-40x	0-7"	0-8"	1-3"	2-8"	4-3"	4-4"	5-5"	7-0"	8-4"	---	---	---	---	---
	NI-60	0-7"	1-8"	3-0"	4-3"	5-2"	6-0"	7-3"	8-10"	10-0"	---	---	---	---	---
	NI-70	1-3"	2-6"	4-0"	5-4"	6-2"	7-2"	8-4"	10-0"	11-2"	---	---	---	---	---
14"	NI-80	1-6"	2-10"	4-2"	5-6"	7-3"	7-5"	8-6"	10-3"	11-4"	---	---	---	---	---
	NI-90	0-7"	0-8"	0-9"	2-5"	4-4"	4-9"	6-3"	---	---	---	---	---	---	---
	NI-40x	0-7"	0-8"	0-8"	1-0"	2-4"	2-9"	3-9"	5-2"	6-0"	6-6"	8-3"	10-2"	---	---
	NI-60	0-7"	0-8"	1-8"	3-0"	4-3"	4-8"	5-8"	7-2"	8-0"	8-8"	10-4"	11-9"	---	---
16"	NI-70	0-8"	1-10"	3-0"	4-5"	5-10"	6-2"	7-3"	8-9"	9-9"	10-4"	12-0"	13-5"	---	---
	NI-80	0-10"	2-0"	3-4"	4-9"	6-2"	6-5"	7-6"	9-0"	10-0"	10-8"	12-4"	13-9"	---	---
	NI-90	0-7"	0-8"	0-8"	2-0"	3-2"	4-2"	5-5"	7-3"	8-5"	9-2"	---	---	---	---
	NI-60	0-7"	0-8"	0-8"	1-6"	2-10"	3-2"	4-2"	5-6"	6-4"	7-0"	8-5"	9-8"	10-2"	12-2"
16"	NI-70	0-7"	1-0"	2-3	3-6	4-10	3-3	6-3	7-8	8-6	9-2	10-8	12-0	12-4	14-0
	NI-80	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-6"	8-0"	9-0"	9-5"	11-0"	12-3"	12-9"	14-5"
	NI-90	0-7"	0-8"	0-9"	2-0"	3-5"	4-0"	5-0"	6-9"	7-9"	8-4"	10-2"	11-6"	12-0"	---
	NI-60	0-7"	0-8"	0-8"	1-6"	2-10"	3-2"	4-2"	5-6"	6-4"	7-0"	8-5"	9-8"	10-2"	12-2"

1. Above table may be used for I-joist spacing of 24 inches on centre or less.
2. Hole location distance is measured from inside face of supports to centre of hole.
3. Distances in this chart are based on uniformly loaded joists.
4. The above table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

TABLE 2

DUCT CHASE OPENING SIZES AND LOCATIONS

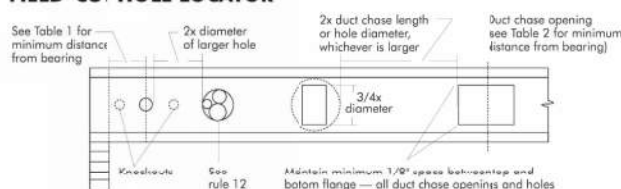
Simple Span Only

Joist Depth	Joist Series	Minimum Distance from Inside Face of Supports to Centre of Opening (ft - in.)													
		Duct Chase Length (in.)													
		8	10	12	14	16	18	20	22	24	26	28	30	32	34
9-1/2"	NI-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"	---	---	---	---	---
	NI-40x	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---	---	---
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-3"	8-9"	---	---	---	---	---
	NI-80	6-1"	6-6"	6-10"	7-3"	7-8"	8-2"	8-6"	9-0"	9-4"	---	---	---	---	---
11-7/8"	NI-20	5-9"	6-2"	6-6"	7-1"	7-5"	7-9"	8-3"	8-9"	9-4"	---	---	---	---	---
	NI-40x	6-8"	7-2"	7-6"	8-1"	8-6"	9-1"	9-6"	10-1"	10-9"	---	---	---	---	---
	NI-60	7-3"	7-8"	8-0"	8-6"	9-0"	9-3"	9-9"	10-3"	11-0"	---	---	---	---	---
	NI-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-4"	---	---	---	---	---
14"	NI-80	7-2"	7-7"	8-0"	8-5"	8-10"	9-4"	9-8"	10-2"	10-8"	---	---	---	---	---
	NI-90	7-7"	8-1"	8-5"	8-10"	9-4"	9-8"	10-2"	10-8"	11-2"	---	---	---	---	---
	NI-40x	8-1"	8-7"	9-0"	9-6"	10-1"	10-7"	11-2"	12-0"	12-8"	---	---	---	---	---
	NI-60	8-9"	9-3"	9-8"	10-1"	10-6"	11-1"	11-6"	12-3"	13-0"	---	---	---	---	---
16"	NI-70	8-7"	9-1"	9-5"	9-10"	10-4"	10-8"	11-2"	11-7"	12-3"	---	---	---	---	---
	NI-80	9-0"	9-3"	9-9"	10-1"	10-7"	11-1"	11-6"	12-1"	12-6"	---	---	---	---	---
	NI-90	9-4"	9-9"	10-3"	10-7"	11-1"	11-7"	12-1"	12-7"	13-2"	---	---	---	---	---
	NI-60	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-2"	14-1"	14-10"	---	---	---	---	---
16"	NI-70	10-1"	10-5"	11-0"	11-4"	11-10"	12-3"	12-8"	13-2"	14-0"	---	---	---	---	---
	NI-80	10-4"	10-9"	11-3"	11-9"	12-1"	12-7"	13-1"	13-6"	14-4"	---	---	---	---	---
	NI-90	11-1"	11-5"	11-10"	12-4"	12-10"	13-2"	13-9"	14-4"	15-2"	---	---	---	---	---
	NI-60	11-1"	11-5"	11-10"	12-4"	12-10"	13-2"	13-9"	14-4"	15-2"	---	---	---	---	---

1. Above table may be used for I-joist spacing of 24 inches on centre or less.
2. Duct chase opening location distance is measured from inside face of supports to centre of opening.
3. The above table is based on simple-span joists only. For other applications, contact your local distributor.
4. Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480.
5. The above table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

FIGURE 7

FIELD-CUT HOLE LOCATOR



Knockouts are prescored holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

Never drill, cut or notch the flange, or over-cut the web.

Holes in webs should be cut with a sharp saw.

For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joist.

SAFETY AND CONSTRUCTION PRECAUTIONS



Do not walk on I-joists until fully fastened and braced, or serious injuries can result.



Never stack building materials over unbraced I-joists. Once sheathed, do not over-stress I-joists with concentrated loads from building materials.

WARNING: I-joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-briding at joist ends. When I-joists are installed continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, when called for, or temporary sheathing must be applied to prevent I-joist rafter or buckling.
 - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.
 - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-briding.
4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
5. Never install a damaged I-joist.

Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines carefully.

The construction details for residential designs are prone to changes.

Details released after September 2013 supersedes N-303

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.



1a NI blocking panel

Attach I-joist to top plate per detail 1b

2-1/2" nail at 6" o.c. to top plate (when used for lateral shear transfer, nail to bearing plate with same nailing as required for decking)

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
N Joists	3,300

*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

1b Rim board

One 2-1/2" face nail at each side at bearing

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer see detail 1d.

One 2-1/2" wire or spiral nail at top and bottom flange

Attach rim board to top plate using 2-1/2" wire or spiral toe-nails at 6" o.c.

To avoid splitting/flange, start nails at least 1-1/2" from end of I-joist. Nails may be driven at an angle to avoid splitting of bearing plate.

Minimum bearing length shall be 1-3/4" for the end bearings, and 3-1/2" for the intermediate bearings when applicable.

1d NI or rim board blocking panel per detail 1a

Squash block

+ 1/16" for squash blocks

Pair of Squash Blocks	Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)
2x Lumber	5,500
1-1/8" Kim Board Plus	4,300

Provide lateral bracing per detail 1a or 1b

1e Transfer load from above to bearing below. Install squash blocks per detail 1d. Match bearing area of blocks below to post above.

1g Joist attachment per detail 1b

2-1/2" nails at 6" o.c. to top plate

Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail.

Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support

NI blocking panel per detail 1a

1h Backer block (use if hanger load exceeds 360 lbs). Before installing a backer block to a double I-joist, drive three additional 3" nails through the webs and filler block where the backer block will fit. Clinch. Install backer tight to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail = 1,620 lbs.

Backer block required (both sides for face-mount hangers)

For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

Flange Width	Material Thickness Required*	Minimum Depth**
2-1/2"	1"	5-1/2"
3-1/2"	1-1/2"	7-1/4"

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid wood lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.

** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

1i Nordic Lam or Structural Composite Lumber (SCL)

For nailing schedules for multiple beams, see the manufacturer's recommendations.

Top or face-mount hanger installed per manufacturer's recommendations

NOTE: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

1k 2x plate flush with inside face of wall or beam. 1/8" overhang allowed past inside face of wall or beam.

NOTE: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

Top-mount hanger installed per manufacturer's recommendations

1m Multiple I-joist header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joist capacity to support concentrated loads.

Backer block attached per detail 1h. Nail with twelve 3" nails, clinch when possible.

Install hanger per manufacturer's recommendations

Maximum support capacity = 1,620 lbs.

1n Do not bevel-cut joist beyond inside face of wall

Attach I-joist per detail 1b

NOTE: Blocking required at bearing for lateral support, not shown for clarity.

1r Lumber 2x4 min., extend blocks to face of adjacent web. Two 2-1/2" spiral nails from each web to lumber piece, alternate on opposite side

NI blocking panel

OPTIONAL: Minimum 1x4 incl strap applied to underside of joist at blocking line or 1/2 inch minimum gypsum ceiling attached to underside of joists.

1p FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

Offset nails from opposite face by 6"

1/8" to 1/4" gap between top flange and filler block

NOTES:

- Support back of I-joist web during nailing to prevent damage to web/flange connection
- Leave a 1/8 to 1/4-inch gap between top and bottom of top I-joist flange.
- Filler block is required between joists for full length of span.
- Nail joists together with two rows of 3" nails at 12 inches o.c. (clinched when possible) on each side of the double I-joist. Total of four nails per foot required. If nails can be clinched, only two nails per foot are required.
- The maximum factored load that may be applied to one side of the double joist using this detail is 860 lb/ft. Verify double I-joist capacity.

1s One 2-1/2" nail at top and bottom flange

2x4 min. (1/8" gap minimum)

Two 2-1/2" nails from each web to lumber piece

I-joist blocking panel

One 2-1/2" nail one side only

NOTES:

- In some local codes, blocking is prescriptively required in the first joist space (or first and second joist space) next to the starter joist. Where required, see local code requirements for spacing of the blocking
- All nails are common spiral in this detail

All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.125" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.

WEB STIFFENERS

RECOMMENDATIONS:

- A **bearing stiffener** is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A **load stiffener** is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.
- A **load stiffener** is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the area of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

FIGURE 2

WEB STIFFENER INSTALLATION DETAILS

Flange width 2-1/2" or 3-1/2"

Approx. 2"

1/8"-1/4" Gap

(4) 2-1/2" nails, 3" nails required for I-joists with 3-1/2" flange width

No Gap

CONCENTRATED LOAD (Load stiffener)

Tight Joint No Gap

Gap

END BEARING (Bearing stiffener)

Gap

Tight Joint No Gap

Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/8" 6" minimum width
3-1/2"	1-1/2" x 2-1/8" 6" minimum width

See the adjacent table for web stiffener size requirements

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

Method 1 — SHEATHING REINFORCEMENT ONE SIDE

Rim board or wood structural panel closure (3/4" minimum thickness); attach per detail 1b

NI blocking panel or rim board blocking, attach per detail 1g

Attach I-joist to plate per detail 1b

2-1/2" nails

3-1/2" min. bearing required

Method 2 — SHEATHING REINFORCEMENT TWO SIDES

Use same installation as Method 1 but reinforce both sides of I-joist with sheathing.

Use nailing pattern shown in Method 1 with opposite face nailing offset by 3".

NOTE: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per detail 1b. Verify reinforced I-joist capacity.

RIM BOARD INSTALLATION DETAILS

8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim Board Joint Between Floor Joists

(1) 2-1/2" nail top and bottom (typical)

2-1/2" nails at 6" o.c. (typical)

Rim board joint

Rim Board Joint at Corner

2-1/2" toe-nails at 6" o.c. (typical)

1-1/2"

2-1/2" nails

h

1-1/2"

8b TOE-NAIL CONNECTION AT RIMBOARD

Rim board

Top or sole plate

30°

1/3

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