

Products				
PlotID	Length	Product	Plies	Net Qty
B1	18'-00"-00"	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2	14'-00"-00"	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B12	4'-00"-00"	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B23	14'-00"-00"	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B33	12'-00"-00"	11 7/8" NI-20	1	1
B34	11'-00"-00"	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B35	11'-00"-00"	11 7/8" NI-20	1	1
B49	18'-00"-00"	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B50	13'-00"-00"	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B51	4'-00"-00"	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
J1	13'-00"-00"	11 7/8" NI-20	1	4
J2	12'-00"-00"	11 7/8" NI-20	1	12
J2	12'-00"-00"	11 7/8" NI-20	1	20
J3	12'-00"-00"	11 7/8" NI-20	2	4
J4	11'-00"-00"	11 7/8" NI-20	1	11
J5	9'-00"-00"	11 7/8" NI-20	1	27
J6	8'-00"-00"	11 7/8" NI-20	1	7
J7	5'-00"-00"	11 7/8" NI-20	1	4
J8	4'-00"-00"	11 7/8" NI-20	1	1
J9	3'-00"-00"	11 7/8" NI-20	1	2
xBk1	38'-00"-00"	11 7/8" NI-20	1	1
xCa1	94'-00"-00"	1 1/8" x 11 7/8" Rim Board	1	1

Connector Summary			
PlotID	Qty	Manuf	Product
H1	2		HU11
H2	1		HUCQ1.81/9-SDS
H3	93		LT251188

FLOOR 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.

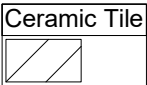
Provide I-Joist Blocking between cantilevered joists
(along bearing) and rimboard closure at ends.

Refer to manufacturer's specifications:
(Nordic Engineered Wood Products - Construction
Details Nordic Joist) NS-DC3 latest edition.

MODEL: UNIT 4000 - EL.B
- LOT 22

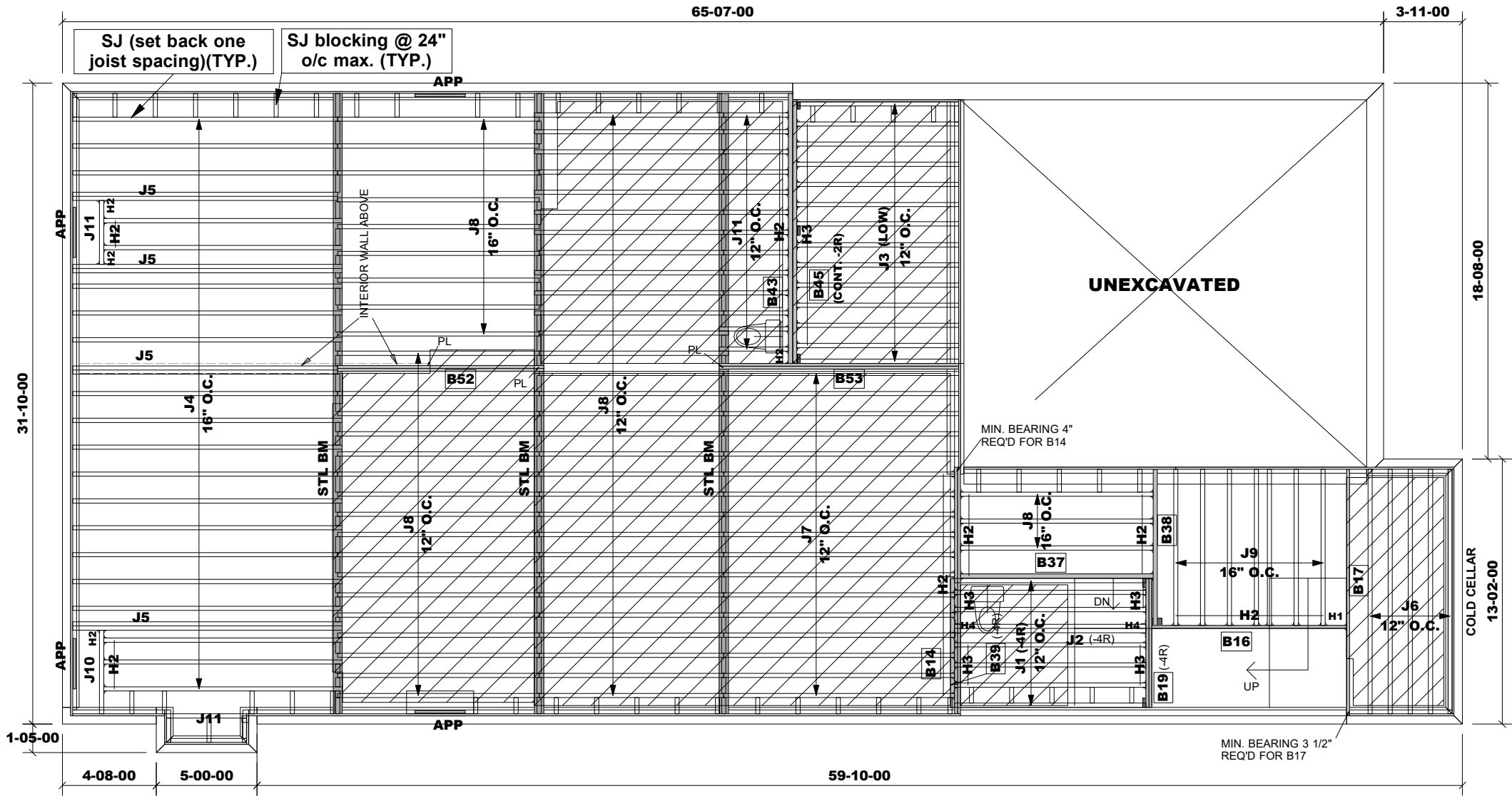
SECOND FLOOR FRAMING

SE007385 - SE007410
SE039626 - SE039641
SE046973 - SE046975
SE059810 - SE059814



Job Track: 45147	Builder: Gold Park	Location: Vaughan	Sheet: 1 of 2
Layout ID: 290674-353668	Project: Pine Valley PH2	SalesPerson: Derek	Date: 2023/03/10
Plan Log: 121013	Model: 4000-B-LOT 22	Yard: Home Lumber	Designer: JC/NL

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Products				
PlotID	Length	Product	Plies	Net Qty
B14	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B16	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B17	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B19	7-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B37	10-00-00	11 7/8" NI-20	1	1
B38	8-00-00	11 7/8" NI-20	1	1
B39	7-00-00	9 1/2" NI-20	1	1
B43	14-00-00	11 7/8" NI-20	1	1
B45	14-00-00	9 1/2" NI-20	1	1
B52	11-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B53	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
J1	10-00-00	9 1/2" NI-20	1	7
J2	10-00-00	9 1/2" NI-20	2	2
J3	9-00-00	9 1/2" NI-20	1	14
J4	14-00-00	11 7/8" NI-20	1	20
J5	14-00-00	11 7/8" NI-20	2	8
J6	13-00-00	11 7/8" NI-20	1	5
J7	12-00-00	11 7/8" NI-20	1	17
J8	10-00-00	11 7/8" NI-20	1	59
J9	8-00-00	11 7/8" NI-20	1	7
J10	5-00-00	11 7/8" NI-20	1	1
J11	4-00-00	11 7/8" NI-20	1	15
xBk1	8-00-00	9 1/2" NI-20	1	1
xBk2	110-00-00	11 7/8" NI-20	1	1
xCa1	22-00-00	1 1/8" x 9 1/2" Rim Board	1	1
xCa2	161-00-00	1 1/8" x 11 7/8" Rim Board	1	1

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HUS1.81/10
H2	49		LT251188
H3	22		LT259
H4	2		MIT39.5-2

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

FLOOR 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.

Refer to manufacturer's specifications:
(Nordic Engineered Wood Products - Construction
Details Nordic Joist) NS-DC3 latest edition.

B01 (Floor Beam)

Dry | 1 span | No cant.

March 18, 2020 08:50:32

BC CALC® Member Report

Build 7555

Job name: 45147 (4000)

File name: 318264

Address: Pine Valley

Description: Second Floor Framing

City, Province, Postal Code: Vaughan, ON

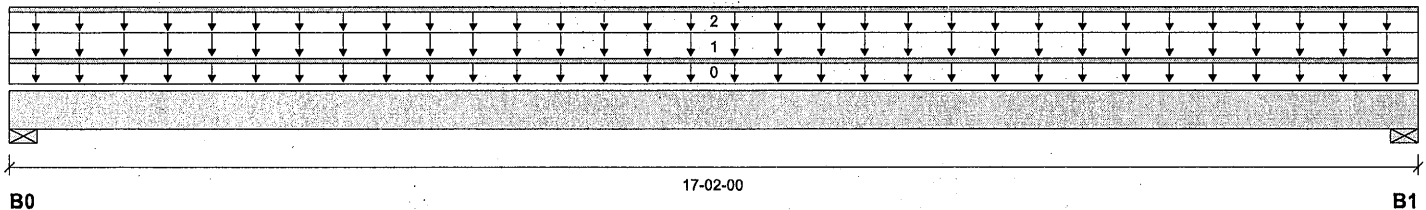
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1635 / 0	1233 / 0		
B1, 3"	1627 / 0	1227 / 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	17-02-00	Top		12			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	17-02-00	Top	40	15			04-09-00
2		Unf. Lin. (lb/ft)	L	00-00-00	17-02-00	Top		60			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	16276 ft-lbs	35392 ft-lbs	46.0%	1	08-07-04
End Shear	3399 lbs	14464 lbs	23.5%	1	01-03-06
Total Load Deflection	L/333 (0.604")	n/a	72.2%	4	08-07-04
Live Load Deflection	L/583 (0.344")	n/a	61.7%	5	08-07-04
Max Defl.	0.604"	n/a	60.4%	4	08-07-04
Span / Depth	16.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 3-1/2"	3993 lbs	53.0%	26.7%	Spruce-Pine-Fir
B1	Wall/Plate 3" x 3-1/2"	3974 lbs	61.5%	31.0%	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

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



B02 (Floor Beam)

Dry | 1 span | No cant.

March 18, 2020 08:50:32

BC CALC® Member Report

Build 7555

Job name: 45147 (4000)

File name: 318264

Address: Pine Valley

Description: Second Floor Framing

City, Province, Postal Code: Vaughan, ON

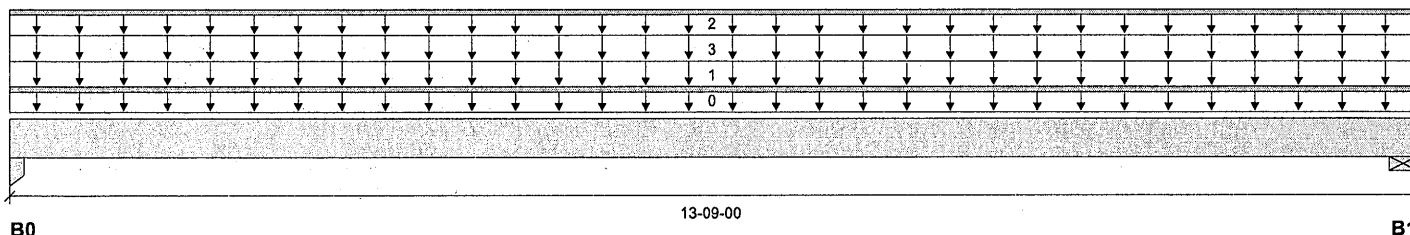
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 13-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3"	1302 / 0	2182 / 0	1799 / 0	
B1, 3-1/2"	1310 / 0	2195 / 0	1810 / 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	13-09-00	Top		12			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	13-09-00	Top	40	15			04-09-00
2		Unf. Lin. (lb/ft)	L	00-00-00	13-09-00	Top		60			n/a
3		Unf. Area (lb/ft²)	L	00-00-00	13-09-00	Top		14	21		12-06-00

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	21813 ft-lbs	35392 ft-lbs	61.6%	5	06-10-04
End Shear	5511 lbs	14464 lbs	38.1%	5	01-02-14
Total Load Deflection	L/295 (0.542")	n/a	81.3%	11	06-10-04
Live Load Deflection	L/516 (0.31")	n/a	69.8%	15	06-10-04
Max Defl.	0.542"	n/a	54.2%	11	06-10-04
Span / Depth	13.5				


Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Column 3" x 3-1/2"	6728 lbs	36.9%	52.5%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 3-1/2"	6769 lbs	89.8%	45.3%	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

B12 (Floor Beam)

Dry | 1 span | No cant.

March 18, 2020 08:50:32

BC CALC® Member Report

Build 7555

Job name: 45147 (4000)

File name: 318264

Address: Pine Valley

Description: Second Floor Framing

City, Province, Postal Code: Vaughan, ON

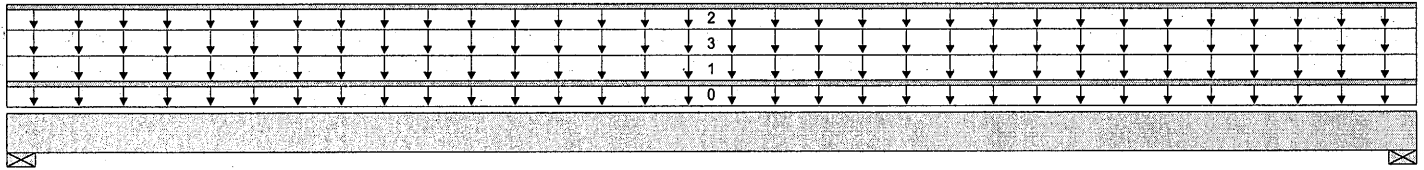
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



B0

03-03-00

B1

Total Horizontal Product Length = 03-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	141 / 0	353 / 0	290 / 0	
B1, 3-1/2"	141 / 0	353 / 0	290 / 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	03-03-00	Top		6			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	03-03-00	Top	40	15			02-02-00
2		Unf. Lin. (lb/ft)	L	00-00-00	03-03-00	Top		60			n/a
3		Unf. Area (lb/ft²)	L	00-00-00	03-03-00	Top		14	21		08-06-00

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	610 ft-lbs	17696 ft-lbs	3.4%	5	01-07-08
End Shear	215 lbs	7232 lbs	3.0%	5	01-03-06
Total Load Deflection	L/999 (0.001")	n/a	n/a	11	01-07-08
Live Load Deflection	L/999 (0.001")	n/a	n/a	15	01-07-08
Max Defl.	0.001"	n/a	n/a	11	01-07-08
Span / Depth	2.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 1-3/4"	1018 lbs	27.0%	13.6%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 1-3/4"	1018 lbs	27.0%	13.6%	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.
 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

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SE007396

B14 (Floor Beam)

Dry | 1 span | No cant.

March 18, 2020 08:50:32

BC CALC® Member Report

Build 7555

Job name: 45147 (4000)

File name: 318264

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

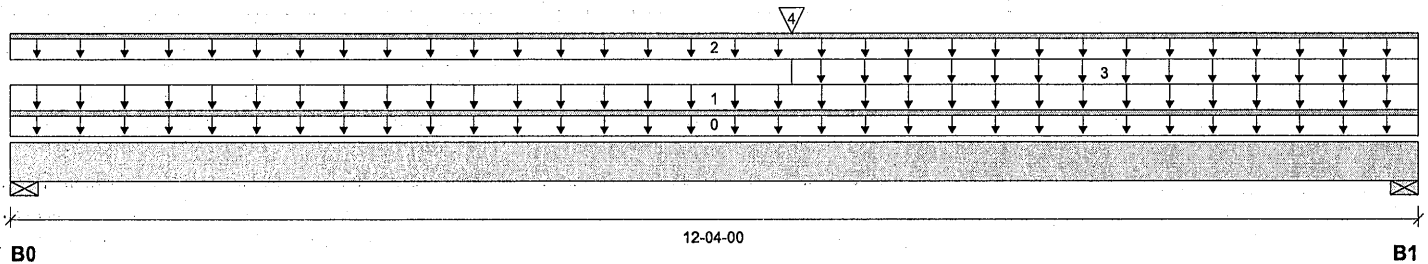
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 12-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1793 / 0	1268 / 0		
B1, 3-1/2"	2445 / 0	1550 / 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	12-04-00	Top		12			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	12-04-00	Top	40	15			06-00-00
2		Unf. Lin. (lb/ft)	L	00-00-00	12-04-00	Top		60			n/a
3		Unf. Area (lb/ft²)	L	06-10-00	12-04-00	Top	40	15			05-00-00
4		Conc. Pt. (lbs)	L	06-10-00	06-10-00	Top	178	407			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	15106 ft-lbs	35392 ft-lbs	42.7%	1	06-10-00
End Shear	4380 lbs	14464 lbs	30.3%	1	11-00-10
Total Load Deflection	L/525 (0.272")	n/a	45.7%	4	06-03-12
Live Load Deflection	L/899 (0.158")	n/a	40.0%	5	06-03-12
Max Defl.	0.272"	n/a	27.2%	4	06-03-12
Span / Depth	12.0				



Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 3-1/2"	4274 lbs	56.7%	28.6%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 3-1/2"	5605 lbs	74.4%	37.5%	Spruce-Pine-Fir

Notes

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

B16 (Floor Beam)

Dry | 1 span | No cant.

March 18, 2020 08:50:32

BC CALC® Member Report

Build 7555

Job name: 45147 (4000)

File name: 318264

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

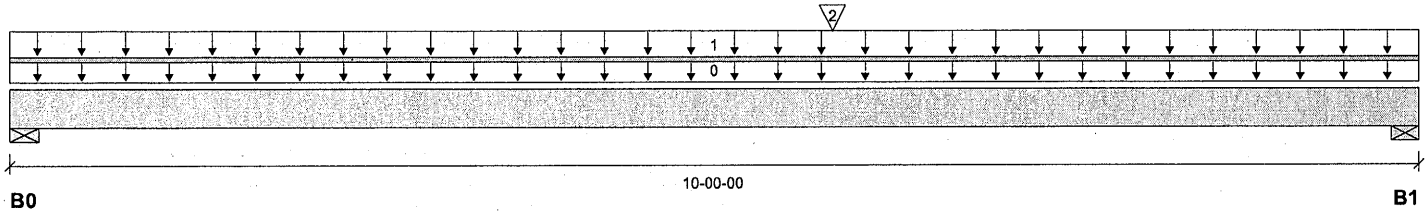
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1089 / 0	439 / 0		
B1, 3-1/2"	1211 / 0	485 / 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	10-00-00	Top		6			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	10-00-00	Top	40	15			04-00-00
2		Conc. Pt. (lbs)	L	05-10-00	05-10-00	Top	700	263			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	6747 ft-lbs	17696 ft-lbs	38.1%	1	05-10-00
End Shear	2009 lbs	7232 lbs	27.8%	1	08-08-10
Total Load Deflection	L/787 (0.145")	n/a	30.5%	4	05-01-07
Live Load Deflection	L/999 (0.104")	n/a	n/a	5	05-01-07
Max Defl.	0.145"	n/a	14.5%	4	05-01-07
Span / Depth	9.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 1-3/4"	2182 lbs	57.9%	29.2%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 1-3/4"	2422 lbs	64.3%	32.4%	Spruce-Pine-Fir

Notes

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

SE007400

B17 (Floor Beam)

Dry | 1 span | No cant.

March 18, 2020 08:50:32

BC CALC® Member Report

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Job name: 45147 (4000)

File name: 318264

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

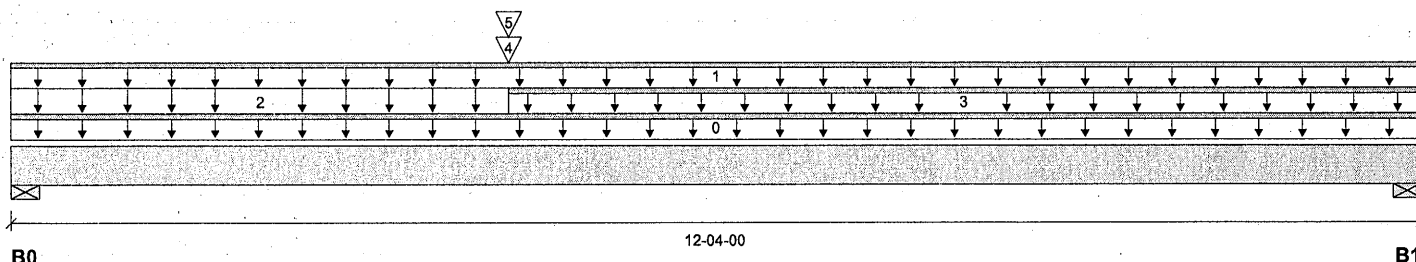
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 12-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1473 / 0	1013 / 0		
B1, 3-1/2"	863 / 0	786 / 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	12-04-00	Top		6			00-00-00
1		Unf. Lin. (lb/ft)	L	00-00-00	12-04-00	Top	27	74			n/a
2		Unf. Area (lb/ft²)	L	00-00-00	04-04-00	Top	40	15			02-02-00
3		Unf. Lin. (lb/ft)	L	04-04-00	12-04-00	Top	27	14			n/a
4		Conc. Pt. (lbs)	L	04-04-00	04-04-00	Top	200	75			n/a
5		Conc. Pt. (lbs)	L	04-04-00	04-04-00	Top	1211	485			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	11351 ft-lbs	17696 ft-lbs	64.1%	1	04-04-00
End Shear	3077 lbs	7232 lbs	42.5%	1	01-03-06
Total Load Deflection	L/387 (0.368")	n/a	62.0%	4	05-09-10
Live Load Deflection	L/657 (0.217")	n/a	54.8%	5	05-09-10
Max Defl.	0.368"	n/a	36.8%	4	05-09-10
Span / Depth	12.0				



Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 1-3/4"	3475 lbs	92.2%	46.5%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 1-3/4"	2278 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

B19 (Floor Beam)

Dry | 1 span | No cant.

March 18, 2020 08:50:32

BC CALC® Member Report

Build 7555

Job name: 45147 (4000)

File name: 318264

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

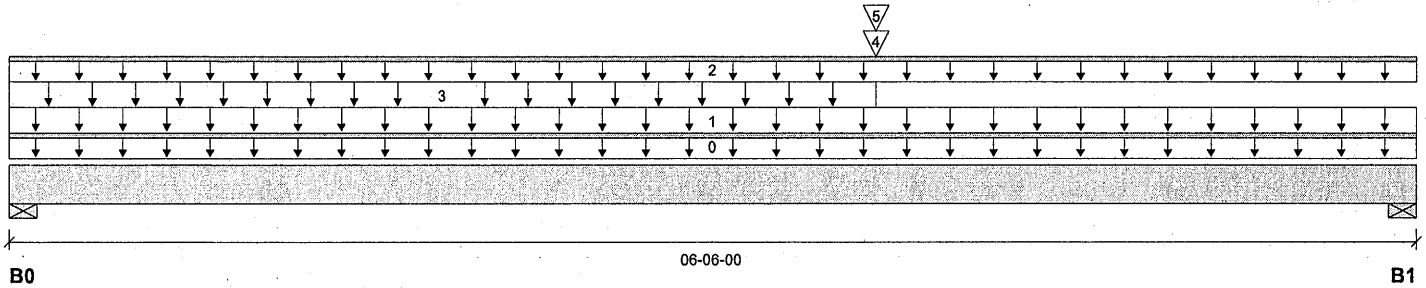
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1844 / 0	1016 / 0		
B1, 3-1/2"	1790 / 0	1007 / 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	06-06-00	Top	1.00	0.65	1.00	1.15	00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	06-06-00	Top	40	20			05-00-00
2		Unf. Lin. (lb/ft)	L	00-00-00	06-06-00	Top		60			n/a
3		Unf. Area (lb/ft²)	L	00-00-00	04-00-00	Top	40	15			06-00-00
4		Conc. Pt. (lbs)	L	04-00-00	04-00-00	Top	900	338			n/a
5		Conc. Pt. (lbs)	L	04-00-00	04-00-00	Top	474	222			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7368 ft-lbs	23220 ft-lbs	31.7%	1	04-00-00
End Shear	3388 lbs	11571 lbs	29.3%	1	05-05-00
Total Load Deflection	L/999 (0.064")	n/a	n/a	4	03-03-04
Live Load Deflection	L/999 (0.042")	n/a	n/a	5	03-04-05
Max Defl.	0.064"	n/a	n/a	4	03-03-04
Span / Depth	7.6				



Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 3-1/2"	4036 lbs	53.6%	27.0%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 3-1/2"	3943 lbs	52.3%	26.4%	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

SE007403

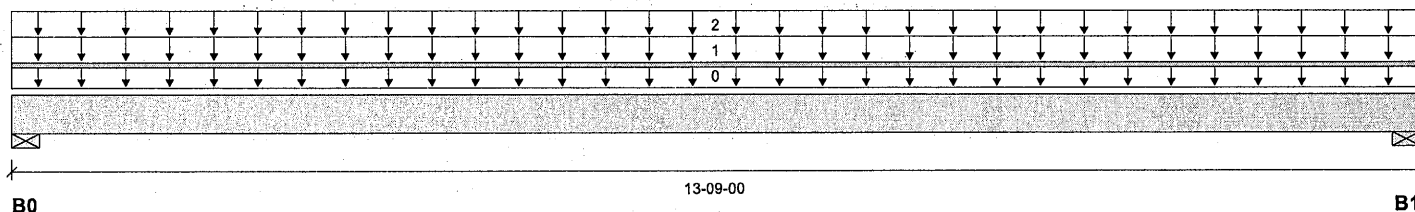
B23 (Floor Beam)

Dry | 1 span | No cant.

March 18, 2020 08:50:32

 BC CALC® Member Report
 Build 7555

 Job name: 45147 (4000)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Builder: Gold Park
 Code reports: CCMC 12472-R

 File name: 318264
 Description: Second Floor Framing
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3"	2947 / 0	1393 / 0		
B1, 3-1/2"	2965 / 0	1402 / 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	13-09-00	Top	1.00	0.65	1.00	1.15	
1		Unf. Area (lb/ft²)	L	00-00-00	13-09-00	Top	40	15			04-09-00
2		Unf. Area (lb/ft²)	L	00-00-00	13-09-00	Top	40	20			06-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	19980 ft-lbs	35392 ft-lbs	56.5%	1	06-10-04
End Shear	5048 lbs	14464 lbs	34.9%	1	01-02-14
Total Load Deflection	L/347 (0.461")	n/a	69.2%	4	06-10-04
Live Load Deflection	L/511 (0.313")	n/a	70.4%	5	06-10-04
Max Defl.	0.461"	n/a	46.1%	4	06-10-04
Span / Depth	13.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3" x 3-1/2"	6163 lbs	95.4%	48.1%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 3-1/2"	6200 lbs	82.3%	41.5%	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





Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147-UNIT 4000 (290674) 3375...**

Job Name: **337551-A**
Level: **2nd Floor**
Label: **B33 - i6067**
Type: **Beam**

1 Ply Member

11 7/8" NI-20

Status:

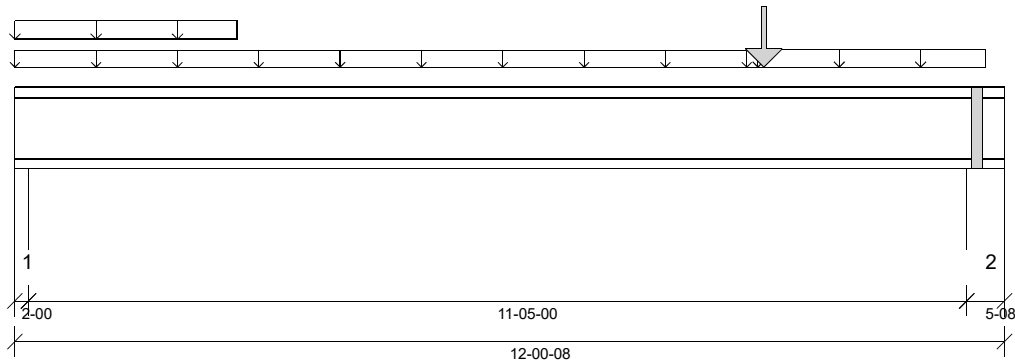
**Design
Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2020.06.20

10/01/2021 10:58



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: 8'- 10 1/8"

Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 1"
- 615 psi Wall @ 11'- 8"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	9'- 1 3/8"	1.25D + 1.5L	1.00	2221 lb ft	5580 lb ft	Passed - 40%
Factored Shear:	11'- 6 15/16"	1.25D + 1.5L	1.00	964 lb	2240 lb	Passed - 43%
Live Load (LL) Pos. Defl.:	6'- 4 9/16"	L		0.108"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	6'- 3 1/4"	D + L		0.160"	L/240	Passed - L/855

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	2-00	1.25D + 1.5L	1.00	592 lb		2000 lb	3076 lb	Passed - 30%
2	5-08	1.25D + 1.5L	1.00	983 lb		2240 lb	8459 lb	Passed - 44%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	12'- 1/2"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	9'- 1/2"	FC2 Floor Decking (Plan View Fill)	Top	4 lb/ft	18 lb/ft	-	-
Uniform	0'	2'- 8 1/2"	User Load	Top	60 lb/ft	-	-	-
Uniform	9'- 1/2"	11'- 9 3/4"	FC2 Floor Decking (Plan View Fill)	Top	10 lb/ft	41 lb/ft	-	-
Point	9'- 1 3/8"	9'- 1 3/8"	B32(i6843)	Front	154 lb	422 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 2"	E23(i5136)	224 lb	210 lb	-	-
2	11'- 7"	12'- 1/2"	1(i2102)	196 lb	490 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.

SE039629

2nd Floor\Flush Beams\B34(i8989) (Flush Beam)

BC CALC® Member Report

Dry | 2 spans | L cant.

October 1, 2021 10:58:50

Build 7773

Job name: 45147-UNIT 4000 (290674) 337551

File name: 337551-A.mmdl

Address: Pine Valley

Description: 2nd Floor\Flush Beams\B34(i8989)

City, Province, Postal Code: Vaughan, ON

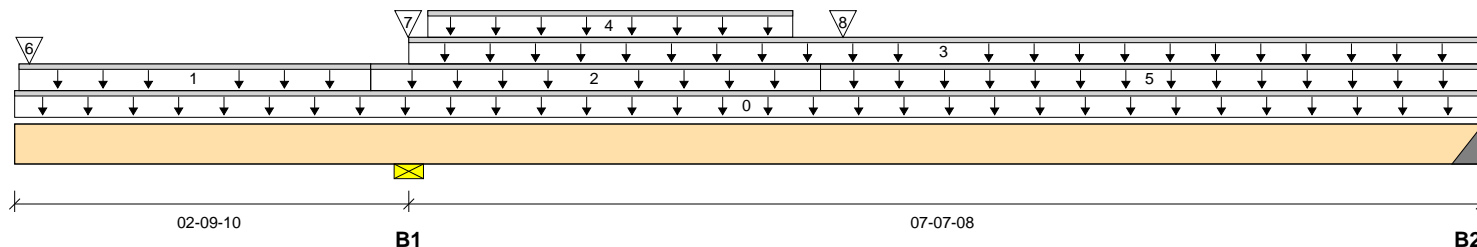
Specifier:

Customer: Gold Park

Designer: JC

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 10-05-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	772 / 0	1810 / 0		
B2, 2"	123 / 164	132 / 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	10-05-02	Top		6			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-06	02-06-06	Top	28				n/a
2	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	02-06-06	05-08-12	Top	4				n/a
3	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	02-09-10	10-05-02	Top	27	7			n/a
4	E17(i3847)	Unf. Lin. (lb/ft)	L	02-11-04	05-06-06	Top		101			n/a
5	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	05-08-12	10-05-02	Top	5				n/a
6	B32(i6843)	Conc. Pt. (lbs)	L	00-01-04	00-01-04	Top	419	154			n/a
7	-	Conc. Pt. (lbs)	L	02-09-09	02-09-09	Top		1165			n/a
8	-	Conc. Pt. (lbs)	L	05-10-11	05-10-11	Top		207			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	615 ft-lbs	11502 ft-lbs	5.3%	0	05-11-02
Neg. Moment	-2438 ft-lbs	-6728 ft-lbs	36.2%	1	02-09-10
End Shear	283 lbs	7232 lbs	3.9%	3	09-03-04
Cont. Shear	961 lbs	7232 lbs	13.3%	2	01-07-00
Total Load Deflection	2xL/1998 (0.041")	n/a	n/a	9	00-00-00
Live Load Deflection	2xL/1998 (0.042")	n/a	n/a	12	00-00-00
Total Neg. Defl.	L/999 (-0.009")	n/a	n/a	9	05-04-02
Max Defl.	0.012"	n/a	n/a	10	06-05-15
Cant. Max Defl.	0.041"	n/a	n/a	9	00-00-00
Span / Depth	7.6				


Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	2534 lbs	65.8%	33.2%	Spruce-Pine-Fir
B2	Hanger 2" x 1-3/4"	349 lbs	n/a	8.2%	HUS1.81/10
B2	Uplift	128 lbs			



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147-UNIT 4000 (290674) 3375...**

Job Name: **337551-A**
Level: **2nd Floor**
Label: **B35 - i8957**
Type: **Beam**

1 Ply Member

11 7/8" NI-20

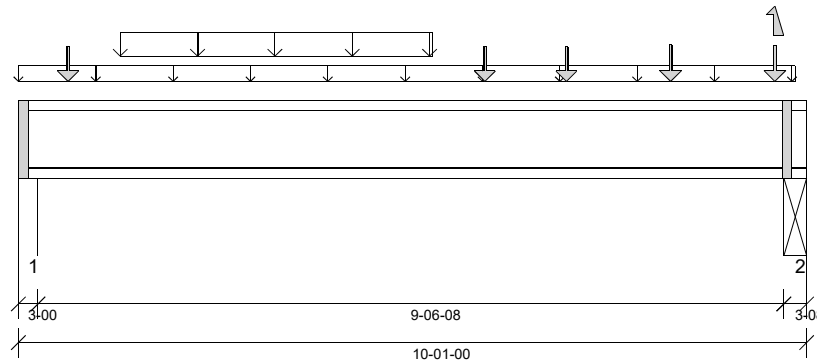
Status:

**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 10/01/2021 10:59



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:

- 615 psi Wall @ 0'- 2"
- 769 psi Beam @ 9'- 10 1/2"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 7 5/8"	1.25D + 1.5L	1.00	3801 lb ft	5580 lb ft	Passed - 68%
Factored Shear:	9'- 9 7/16"	1.25D + 1.5L	1.00	1653 lb	2240 lb	Passed - 74%
Live Load (LL) Pos. Defl.:	5'- 3/16"	L		0.170"	L/360	Passed - L/673
Total Load (TL) Pos. Defl.:	5'- 3/16"	D + L		0.216"	L/240	Passed - L/529

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	3-00	1.25D + 1.5L	1.00	1598 lb		2120 lb	4614 lb	Passed - 75%
2	3-08	1.25D + 1.5L	1.00	1659 lb		2180 lb	6729 lb	Passed - 76%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	10'- 1"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	9'- 11 1/4"	FC2 Floor Decking (Plan View Fill)	Top	5 lb/ft	19 lb/ft	-	-
Uniform	1'- 3 5/8"	5'- 3 5/8"	Smoothed Load	Front	39 lb/ft	157 lb/ft	-	-
Point	0'- 7 5/8"	0'- 7 5/8"	J5(i8944)	Front	49 lb	194 lb	-	-
Point	5'- 11 5/8"	5'- 11 5/8"	J5(i8946)	Front	47 lb	186 lb	-	-
Point	7'- 1/8"	7'- 1/8"	J5(i8959)	Front	46 lb	183 lb	-	-
Point	8'- 4 1/8"	8'- 4 1/8"	J5(i8935)	Front	51 lb	205 lb	-	-
Point	9'- 8 1/8"	9'- 8 1/8"	B34(i8989)	Front	126 lb	124/-167 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3"	2(i2491)	231 lb	868 lb	-	-
2	9'- 9 1/2"	10'- 1"	STEEL BEAM()	320 lb	844/-167 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.

SE039631



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147-UNIT 4000 (290674) 3375...**

Job Name: **337551-A**
Level: **1st Floor**
Label: **B38 - i8948**
Type: **Beam**

1 Ply Member

11 7/8" NI-20

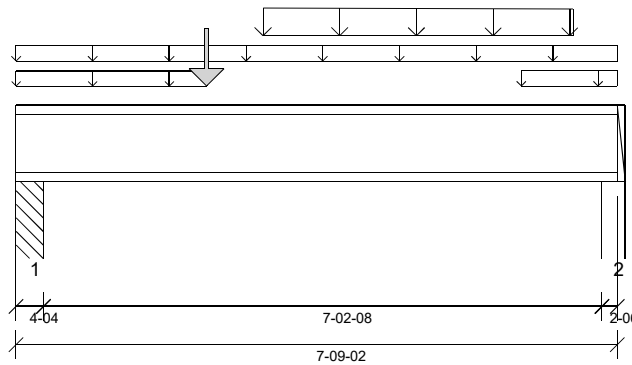
Status:

**Design
Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version
8.4.2.2861 Indate 9-13

Report Version: 2020.06.20 10/01/2021 11:02



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'- 4 1/4"

Factored Resistance of Support Material:

- 1305 psi Column @ 0'- 3 1/4"
- 615 psi Wall @ 7'- 7 3/4"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 10 1/4"	1.25D + 1.5L	1.00	3046 lb ft	5580 lb ft	Passed - 55%
Factored Shear:	7'- 6 11/16"	1.25D + 1.5L	1.00	1436 lb	2240 lb	Passed - 64%
Live Load (LL) Pos. Defl.:	3'- 11 1/2"	L		0.081"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 11 1/2"	D + L		0.113"	L/240	Passed - L/762

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	4-04	1.25D + 1.5L	1.00	1276 lb		2240 lb	13866 lb	Passed - 57%
2	2-06	1.25D + 1.5L	1.00	1458 lb		2045 lb	3653 lb	Passed - 71%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	7'- 9 1/8"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	7'- 9 1/8"	FC1 Floor Decking (Plan View Fill)	Top	8 lb/ft	21 lb/ft	-	-
Uniform	0'	2'- 5 1/2"	FC1 Floor Decking (Plan View Fill)	Top	2 lb/ft	7 lb/ft	-	-
Uniform	6'- 6 1/4"	7'- 9 1/8"	FC1 Floor Decking (Plan View Fill)	Top	6 lb/ft	15 lb/ft	-	-
Tapered	3'- 2 1/4"	7'- 2 1/4"	Smoothed Load	Back	73 lb/ft	204 To 185 lb/ft	-	-
Point	2'- 5 1/2"	2'- 5 1/2"	B37(i8900)	Back	156 lb	387 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 4 1/4"	PBO4(i134)	258 lb	636 lb	-	-
2	7'- 6 3/4"	7'- 9 1/8"	W8(i43)	289 lb	731 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.

SE039634



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147-UNIT 4000 (290674) 3375...**

Job Name: **337551-A**
Level: **1st Floor**
Label: **B39 - i9057**
Type: **Beam**

1 Ply Member

9 1/2" NI-20

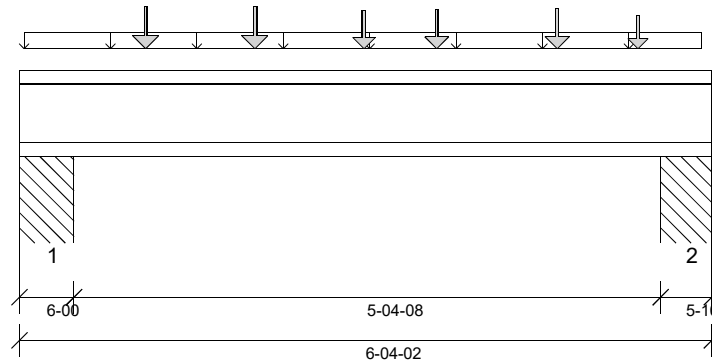
Status:

**Design
Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version
8.4.2.2861 Updated 9.13

Report Version: 2020.06.20 10/01/2021 11:03



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:

- 1305 psi Column @ 0'- 5"
- 1305 psi Column @ 5'- 11 1/2"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 1 7/8"	1.25D + 1.5L	1.00	1554 lb ft	4310 lb ft	Passed - 36%
Factored Shear:	5'- 10 7/16"	1.25D + 1.5L	1.00	1105 lb	1770 lb	Passed - 62%
Live Load (LL) Pos. Defl.:	3'- 2 1/4"	L		0.042"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 2 1/4"	D + L		0.062"	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	6-00	1.25D + 1.5L	1.00	1012 lb		1770 lb	19575 lb	Passed - 57%
2	5-10	1.25D + 1.5L	1.00	1110 lb		1770 lb	18352 lb	Passed - 63%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	6'- 4 1/8"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'- 1/2"	6'- 3"	FC1 Floor Decking (Plan View Fill)	Top	2 lb/ft	4 lb/ft	-	-
Point	1'- 1 7/8"	1'- 1 7/8"	J1(i9052)	Front	88 lb	184 lb	-	-
Point	2'- 1 7/8"	2'- 1 7/8"	J1(i9050)	Front	88 lb	184 lb	-	-
Point	3'- 1 7/8"	3'- 1 7/8"	J1(i9058)	Front	73 lb	153 lb	-	-
Point	3'- 9 7/8"	3'- 9 7/8"	J2(i9054)	Front	78 lb	163 lb	-	-
Point	4'- 11 1/8"	4'- 11 1/8"	J1(i9055)	Front	81 lb	170 lb	-	-
Point	5'- 8"	5'- 8"	J1(i9051)	Front	57 lb	122 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 6"	PBO1(i25)	234 lb	471 lb	-	-
2	5'- 10 1/2"	6'- 4 1/8"	PBO2(i52)	261 lb	532 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.

SE039635



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147-UNIT 4000 (290674) 3375...**

Job Name: **337551-A-OPT. 1 ST - SUNKEN...**
Level: **1st Floor**
Label: **B43 - i11342**
Type: **Beam**

1 Ply Member
11 7/8" NI-20

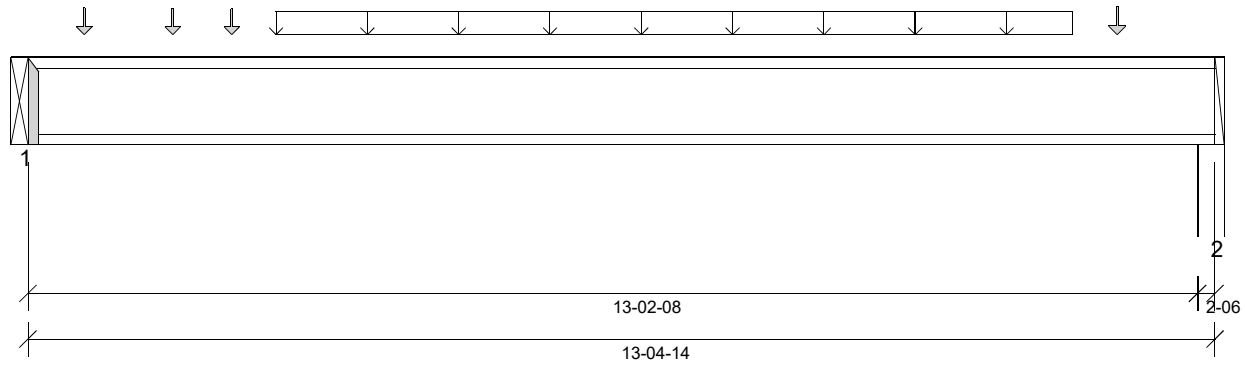
Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2020.06.20

10/01/2021 14:34



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,
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'- 9 5/8"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 615 psi Wall @ 13'- 3 1/2"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	6'- 3 5/8"	1.25D + 1.5L	1.00	3278 lb ft	5580 lb ft	Passed - 59%
Factored Shear:	0'- 1/16"	1.25D + 1.5L	1.00	955 lb	2240 lb	Passed - 43%
Live Load (LL) Pos. Defl.:	6'- 7 3/4"	L		0.215"	L/360	Passed - L/735
Total Load (TL) Pos. Defl.:	6'- 7 3/4"	D + L		0.327"	L/240	Passed - L/484

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	955 lb		1970 lb	-	Passed - 48%
2	2-06	1.25D + 1.5L	1.00	928 lb		2045 lb	3653 lb	Passed - 45%

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'	13'- 4 7/8"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	2'- 9 5/8"	11'- 9 5/8"	Smoothed Load	Back	33 lb/ft	69 lb/ft	-	-
Point	0'- 7 5/8"	0'- 7 5/8"	J10(i11326)	Back	30 lb	64 lb	-	-
Point	1'- 7 5/8"	1'- 7 5/8"	J10(i11327)	Back	27 lb	58 lb	-	-
Point	2'- 3 5/8"	2'- 3 5/8"	J10(i11311)	Back	27 lb	58 lb	-	-
Point	12'- 3 5/8"	12'- 3 5/8"	J10(i11307)	Back	35 lb	76 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B44(i11242)	230 lb	445 lb	-	-
2	13'- 2 1/2"	13'- 4 7/8"	W2(i207)	224 lb	432 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.
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- 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.

SE039639



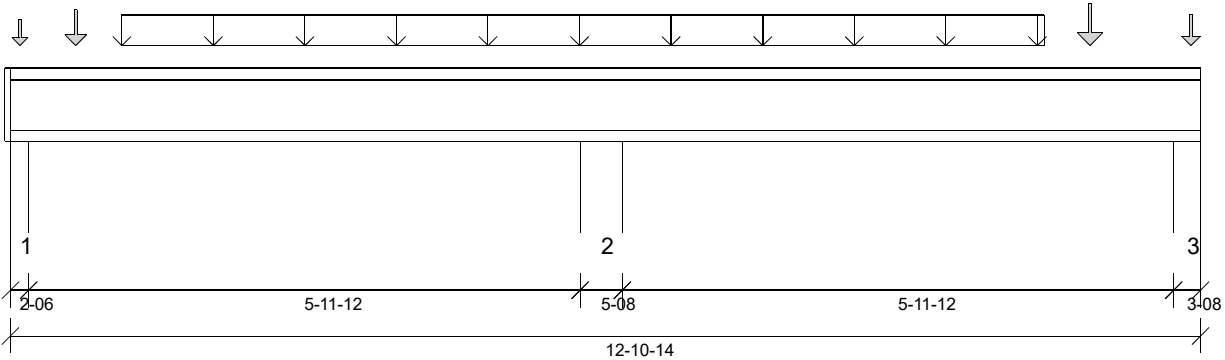
Customer: Gold Park	Job Name: 337551-A-OPT. 1 ST - SUNKEN...	1 Ply Member	Status:
Job Address: Pine Valley	Level: 1st Floor		
City: Vaughan	Label: B45 - i11704	9 1/2" NI-20	Design Passed
Job Track: 45147-UNIT 4000 (290674) 3375...	Type: Beam		

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

10/01/2021 14:35

**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,

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'- 9 5/8"

Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 1 3/8"
- 615 psi Wall @ 6'- 4 7/8"
- 615 psi Wall @ 12'- 8 3/8"

**ANALYSIS RESULTS**

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 8 1/2"	1.25D + 1.5L	1.00	1182 lb ft	4310 lb ft	Passed - 27%
Factored Neg. Moment:	6'- 4 7/8"	1.25D + 1.5L	1.00	1634 lb ft	4310 lb ft	Passed - 38%
Factored Shear:	6'- 7 11/16"	1.25D + 1.5L	1.00	1362 lb	1770 lb	Passed - 77%
Live Load (LL) Pos. Defl.:	9'- 8 5/8"	L		0.041"	L/360	Passed - L/999
Live Load (LL) Neg. Defl.:	3'- 8 15/16"	L		0.025"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	9'- 9 7/16"	D + L		0.051"	L/240	Passed - L/999
Total Load (TL) Neg. Defl.:	4'- 7"	D + L		0.024"	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	2-06	1.25D + 1.5L	1.00	956 lb		1669 lb	3653 lb	Passed - 57%
2	5-08	1.25D + 1.5L	1.00	2594 lb		4060 lb	8459 lb	Passed - 64%
3	3-08	1.25D + 1.5L	1.00	955 lb		1739 lb	5383 lb	Passed - 55%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	12'- 10 7/8"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	1'- 2 1/2"	11'- 2 1/2"	Smoothed Load	Front	62 lb/ft	167 lb/ft	-	-
Point	0'- 1 1/4"	0'- 1 1/4"	J1(i11735)	Front	25 lb	67 lb	-	-
Point	0'- 8 1/2"	0'- 8 1/2"	J1(i11734)	Front	50 lb	134 lb	-	-
Point	11'- 8 1/2"	11'- 8 1/2"	J1(i11727)	Front	67 lb	179 lb	-	-
Point	12'- 9 5/8"	12'- 9 5/8"	J1(i11731)	Front	37 lb	97 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 2 3/8"	7(i11464)	168 lb	499/-66 lb	-	-
2	6'- 2 1/8"	6'- 7 5/8"	8(i11492)	506 lb	1308 lb	-	-
3	12'- 7 3/8"	12'- 10 7/8"	6(i11463)	167 lb	494/-65 lb	-	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
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- 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.

SE039641

2nd Floor\Flush Beams\B49(i12641) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

March 10, 2023 15:29:39

Build 8183

Job name: 45147-UNIT 4000 (290674) 337551

File name: 353668-B-LOT 22.mmdl

Address: Pine Valley

Description: 2nd Floor\Flush Beams\B49(i12641)

City, Province, Postal Code: Vaughan, ON

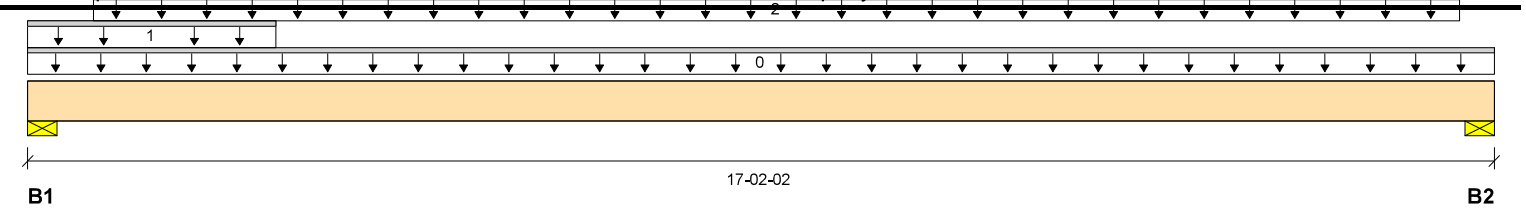
Specifier:

Customer: Gold Park

Designer: JC

Code reports: GCMC 12472-R

Company:



Total Horizontal Product Length = 17'-02"

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	3315 / 0	1147 / 0		
B2, 2-3/4"	3417 / 0	1019 / 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	17-02-02	Top		18			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	02-10-14	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-09-04	16-09-04	Front	233	58			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	00-09-04	16-09-04	Back	187	47			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	27487 ft-lbs	55211 ft-lbs	49.8%	1	08-01-04
End Shear	6273 lbs	21696 lbs	28.9%	1	01-04-04
Total Load Deflection	L/307 (0.654")	n/a	78.3%	4	08-09-04
Live Load Deflection	L/399 (0.503")	n/a	90.3%	5	08-09-04
Max Defl.	0.654"	n/a	65.4%	4	08-09-04
Span / Depth	16.9				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 5-1/4"	6406 lbs	45.3%	22.9%	Spruce-Pine-Fir
B2	Wall/Plate 2-3/4" x 5-1/4"	6398 lbs	72.0%	36.3%	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: 00-00-00, Bottom: 01-01-08.

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 10" O/C,
 STAGGERED IN 2 ROWS

2nd Floor\Flush Beams\B50(i12841) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

March 10, 2023 15:29:39

Build 8183

Job name: 45147-UNIT 4000 (290674) 337551

File name: 353668-B-LOT 22.mmdl

Address: Pine Valley

Description: 2nd Floor\Flush Beams\B50(i12841)

City, Province, Postal Code: Vaughan, ON

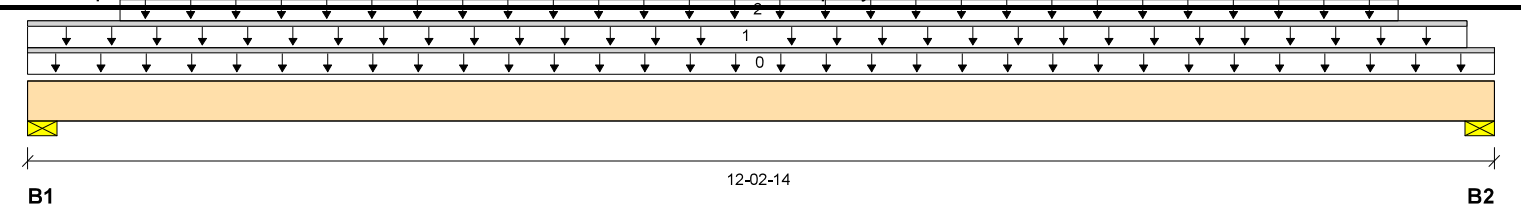
Specifier:

Customer: Gold Park

Designer: JC

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 12-02-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	1318 / 0	367 / 0		
B2, 5-1/2"	1329 / 0	370 / 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	12-02-14	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	12-00-02	Top	19	5			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-09-04	11-05-04	Back	227	57			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7509 ft-lbs	17696 ft-lbs	42.4%	1	05-09-04
End Shear	2404 lbs	7232 lbs	33.2%	1	10-09-08
Total Load Deflection	L/541 (0.256")	n/a	44.3%	4	06-01-04
Live Load Deflection	L/690 (0.201")	n/a	52.1%	5	06-01-04
Max Defl.	0.256"	n/a	25.6%	4	06-01-04
Span / Depth	11.7				


Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 1-3/4"	2436 lbs	51.7%	26.1%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 1-3/4"	2456 lbs	41.5%	20.9%	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: 00-00-00, Bottom: 01-01-08.

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®,

SE059811

2nd Floor\Flush Beams\B51(i12828) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

March 10, 2023 15:29:39

Build 8183

Job name: 45147-UNIT 4000 (290674) 337551

File name: 353668-B-LOT 22.mmdl

Address: Pine Valley

Description: 2nd Floor\Flush Beams\B51(i12828)

City, Province, Postal Code: Vaughan, ON

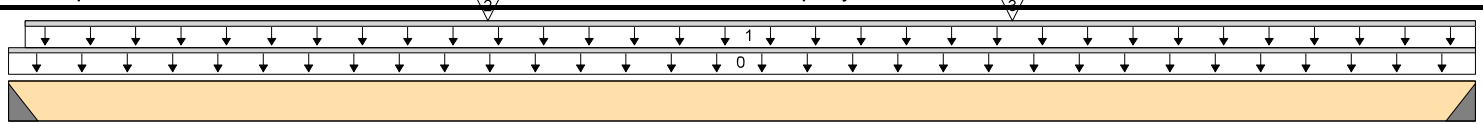
Specifier:

Customer: Gold Park

Designer: JC

Code reports: CCMC 12472-R

Company:



B1

03-08-12

B2

Total Horizontal Product Length = 03-08-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	412 / 0	156 / 0		
B2, 2"	421 / 0	159 / 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	03-08-12	Top		6			00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-08	03-08-12	Top	185	70			n/a
2	J9(i12666)	Conc. Pt. (lbs)	L	01-02-10	01-02-10	Back	77	19			n/a
3	J9(i12655)	Conc. Pt. (lbs)	L	02-06-10	02-06-10	Back	74	18			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	726 ft-lbs	17696 ft-lbs	4.1%	1	01-10-02
End Shear	400 lbs	7232 lbs	5.5%	1	02-06-14
Total Load Deflection	L/999 (0.002")	n/a	n/a	4	01-10-02
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	01-10-02
Max Defl.	0.002"	n/a	n/a	4	01-10-02
Span / Depth	3.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	814 lbs	n/a	19.1%	HU11
B2	Hanger 2" x 1-3/4"	830 lbs	n/a	19.4%	HUCQ1.81/9-SDS

Cautions

Hanger model HU11 and seat length were input by the user.

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

Header for the hanger HU11 is a Single 11-7/8" I-joist.

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.

Hanger Manufacturer: Unassigned

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: 00-00-00, Bottom: 01-01-08.

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

SE059812


1st Floor\Flush Beams\B52(i14534) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

March 10, 2023 16:07:08

Build 8183

Job name: 45147-UNIT 4000 (290674) 337551

File name: 353668-B-LOT 22.mmdl

Address: Pine Valley

Description: 1st Floor\Flush Beams\B52(i14534)

City, Province, Postal Code: Vaughan, ON

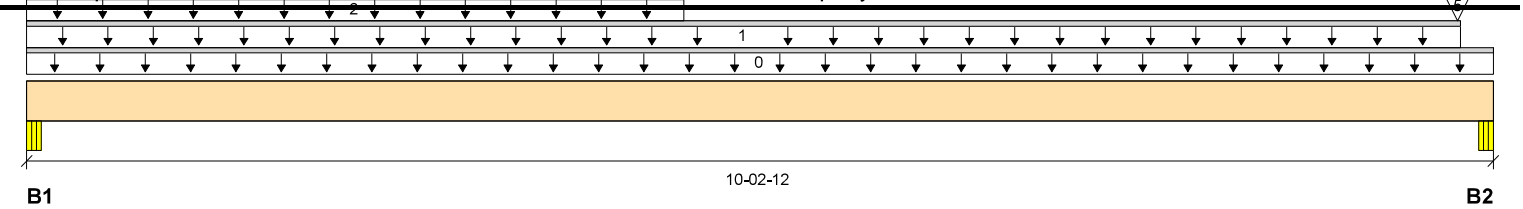
Specifier:

Customer: Gold Park

Designer: JC

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 10-02-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-5/8"	399 / 0	1593 / 0	480 / 0	
B2, 5-1/2"	2820 / 0	3448 / 0	1810 / 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	10-02-12	Top		12			00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	10-00-00	Top	40	20			n/a
2	7(i10688)	Unf. Lin. (lb/ft)	L	00-00-00	04-07-00	Top		69			n/a
3	7(i10688)	Unf. Lin. (lb/ft)	L	00-00-00	04-03-00	Top	40	15			n/a
4	7(i10688)	Conc. Pt. (lbs)	L	04-06-00	04-06-00	Top	115	2063	871		n/a
5	Pt1(i12928)	Conc. Pt. (lbs)	L	09-11-12	09-11-12	Top	2534	2276	1419		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8050 ft-lbs	23005 ft-lbs	35.0%	0	04-06-00
End Shear	2034 lbs	9401 lbs	21.6%	0	01-02-08
Total Load Deflection	L/927 (0.125")	n/a	25.9%	35	04-10-03
Live Load Deflection	L/999 (0.044")	n/a	n/a	51	04-10-03
Max Defl.	0.125"	n/a	n/a	35	04-10-03
Span / Depth	9.8				


Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 2-5/8" x 3-1/2"	2230 lbs	48.6%	30.6%	Unspecified
B2	Beam 5-1/2" x 3-1/2"	10350 lbs	69.9%	44.1%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) 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.
 Unbalanced snow loads determined from building geometry were used in selected product's verification.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 09-06-10.

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

1st Floor\Flush Beams\B53(i14354) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

March 10, 2023 16:07:08

Build 8183

Job name: 45147-UNIT 4000 (290674) 337551

File name: 353668-B-LOT 22.mmdl

Address: Pine Valley

Description: 1st Floor\Flush Beams\B53(i14354)

City, Province, Postal Code: Vaughan, ON

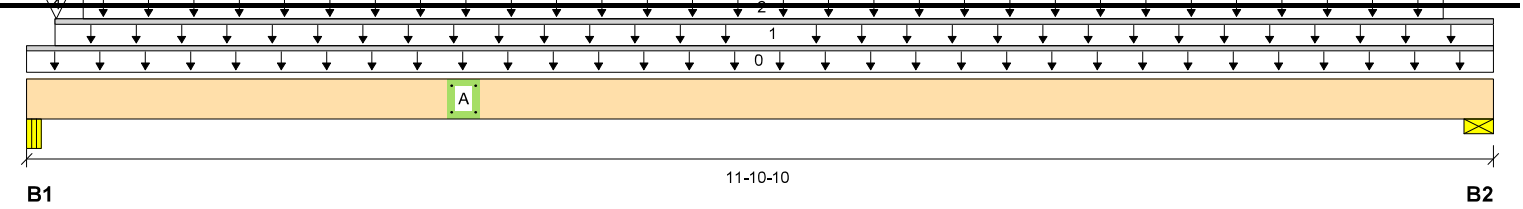
Specifier:

Customer: Gold Park

Designer: JC

Code reports: CCMC 12472-R

Company:


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5'-1/2"	6939 / 0	2876 / 0		
B2, 2'-3/8"	312 / 0	667 / 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	11-10-10	Top		12			00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-02-12	11-10-10	Top	7	4			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-05-08	11-05-12	Top	20	70			n/a
3	B43(i14346)	Conc. Pt. (lbs)	L	03-06-08	03-06-08	Back	445	642			n/a
4	5(i10215)	Conc. Pt. (lbs)	L	00-02-14	00-02-14	Top	6396	1892			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3688 ft-lbs	23005 ft-lbs	16.0%	0	03-11-12
End Shear	1236 lbs	9401 lbs	13.1%	0	01-05-06
Total Load Deflection	L/999 (0.092")	n/a	n/a	4	05-08-14
Live Load Deflection	L/999 (0.031")	n/a	n/a	5	05-08-14
Max Defl.	0.092"	n/a	n/a	4	05-08-14
Span / Depth	11.5				


Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam 5'-1/2" x 3'-1/2"	14003 lbs	94.6%	59.6%	Unspecified
B2	Wall/Plate 2'-3/8" x 3'-1/2"	933 lbs	28.1%	14.2%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 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: 00-00-00, Bottom: 08-00-08.

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

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:

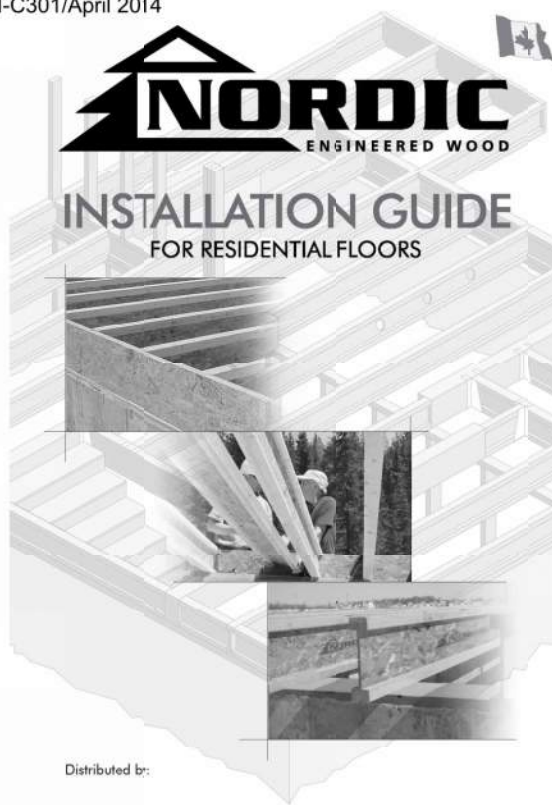
- The tabulated clear spans are based on CSA O86-14 and NBC 2015, and are applicable to residential floor construction meeting the above design criteria.
- For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Minimum bearing length shall be 1-3/4 inch for end bearings,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

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.



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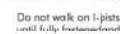


SAFETY AND CONSTRUCTION PRECAUTIONS

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 side and 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:

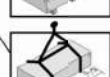
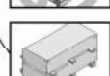
■ Pick I-joists in bundles as shipped by the supplier.

■ 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 CRUTY TO REPAIR A DAMAGED I-JOIST.

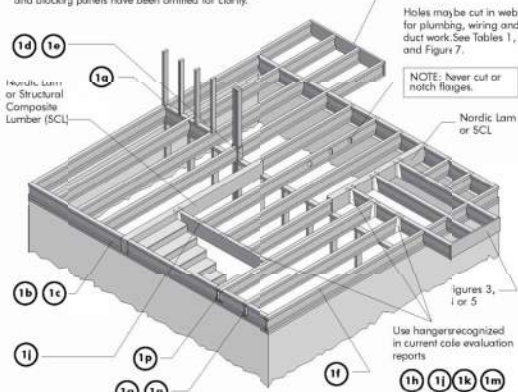


INSTALLING NORDIC I-JOISTS

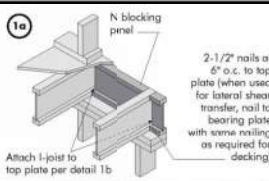
- Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not contact your supplier.
- Except for cutting to length, I-joist flanges should **never** be cut, drilled, or notched.
- Install I-joists so that top and bottom flanges are within 1/2 inch of true 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

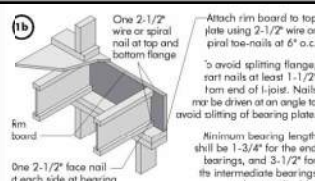
Some framing requirements such as erection bracing and blocking panels have been omitted for clarity.



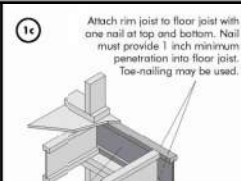
All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for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



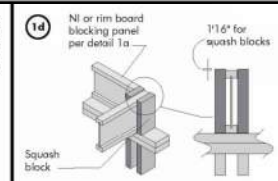
*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



*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 uniform vertical load is limited to a rim 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.



*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.

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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.

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"
9-1/2"	Ni-20	15-1"	14-2"	13-5"	13-5"	16-3"	15-4"	14-10"	14-7"
	Ni-40	14-1"	13-2"	12-5"	12-5"	15-0"	14-0"	13-10"	13-0"
	Ni-60	16-3"	15-4"	14-10"	14-11"	17-7"	16-7"	16-0"	16-6"
	Ni-70	17-1"	16-1"	15-6"	15-7"	18-7"	17-4"	16-9"	17-2"
11-7/8"	Ni-20	17-3"	16-3"	15-8"	15-9"	18-10"	17-6"	16-11"	17-5"
	Ni-40x	16-11"	15-0"	13-5"	13-6"	18-4"	17-3"	16-8"	16-7"
	Ni-60	18-11"	17-0"	16-5"	16-6"	20-0"	18-6"	17-9"	17-7"
	Ni-70	19-4"	18-0"	17-4"	17-5"	21-6"	19-11"	19-0"	19-8"
14"	Ni-20	19-9"	18-3"	17-6"	17-7"	21-9"	20-2"	19-3"	19-11"
	Ni-40	20-2"	18-7"	17-10"	17-11"	22-3"	20-7"	19-8"	19-9"
	Ni-60	20-4"	18-9"	17-11"	18-0"	22-5"	20-8"	19-10"	20-4"
	Ni-70	20-5"	19-11"	18-1"	18-2"	22-7"	20-11"	20-0"	20-10"
16"	Ni-20	21-7"	20-0"	19-1"	19-2"	23-10"	22-1"	21-1"	21-10"
	Ni-40	21-11"	20-3"	19-4"	19-5"	24-3"	22-5"	21-5"	22-2"
	Ni-60	22-5"	20-8"	19-9"	19-9"	24-9"	22-10"	21-10"	21-10"
	Ni-70	22-7"	21-11"	19-11"	20-0"	25-0"	23-1"	22-0"	22-9"
18"	Ni-20	22-7"	21-0"	20-2"	20-3"	25-0"	23-1"	22-0"	22-9"
	Ni-40	23-6"	21-9"	20-9"	20-10"	26-0"	24-0"	22-11"	23-9"
	Ni-60	23-11"	22-1"	21-1"	21-2"	26-5"	24-5"	23-3"	24-1"
	Ni-70	24-5"	22-6"	21-5"	21-6"	26-11"	24-10"	23-9"	23-9"
20"	Ni-20	24-8"	22-9"	21-9"	21-10"	27-3"	25-2"	24-0"	24-10"
	Ni-40	24-8"	22-9"	21-9"	21-10"	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.



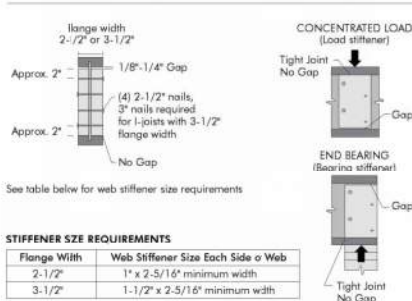
WEB STIFFENER

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	23 pieces per unit	23 pieces per unit	23 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-O337 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".

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 rot forces 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.

Note: 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.

FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

Flange Size	Joist Depth	Filler Block Size
2-1/2" x 1-1/2"	9-1/2"	21/8" x 6"
	11-7/8"	21/8" x 8"
	14"	21/8" x 10"
	16"	21/8" x 12"
2-1/2" x 1-1/2"	9-1/2"	3" x 6"
	11-7/8"	3" x 8"
	14"	3" x 10"
	16"	3" x 12"
3-1/2" x 2"	11-7/8"	3" x 7"
	14"	3" x 9"
	16"	3" x 11"

The construction details for residential designs are prone to changes.

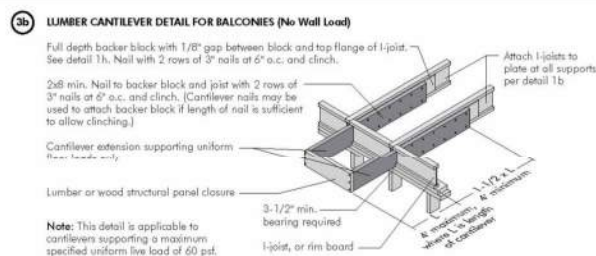
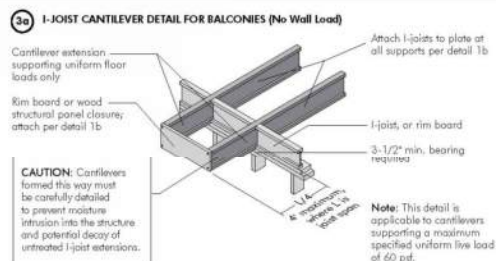
Details released after April 2014 supersedes N-C301

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

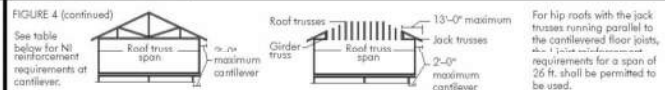
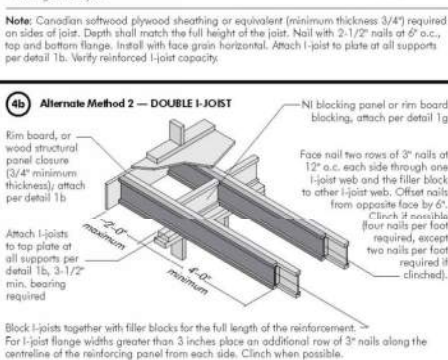
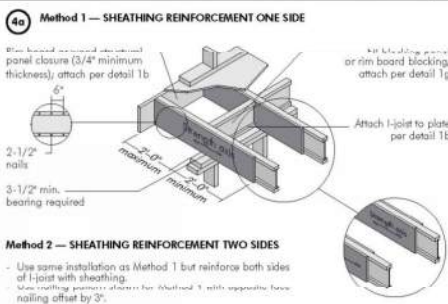
This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.



CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

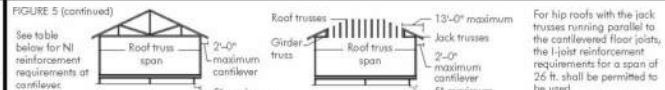
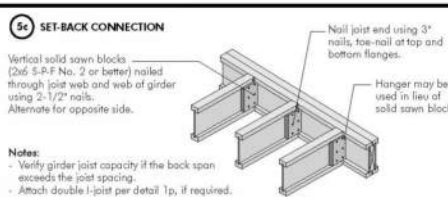
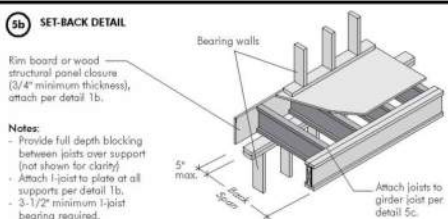
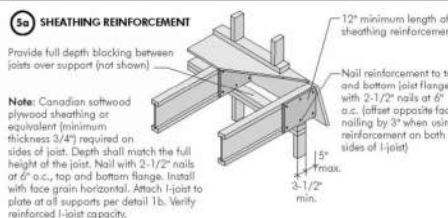


CANTILEVER REINFORCEMENT METHODS ALLOWED

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

1. N = No reinforcement required.
2. N = NI reinforced with 3/4" wood structural panel on one side only.
3. 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)



BRICK 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			
		Joist Spacing (in.)				Joist Spacing (in.)			
		12	16	19.2	24	12	16	19.2	24
9-1/2	26	1	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X
	32	2	X	X	X	2	X	X	X
	34	2	X	X	X	2	X	X	X
11-7/8	26	X	2	X	X	X	X	X	X
	28	X	2	X	X	X	X	X	X
	30	X	2	X	X	X	X	X	X
	32	X	2	X	X	X	X	X	X
	34	X	2	X	X	X	X	X	X
14	26	N	2	X	X	1	X	X	X
	28	N	2	X	X	1	X	X	X
	30	N	2	X	X	1	X	X	X
	32	1	X	X	X	2	X	X	X
	34	1	X	X	X	2	X	X	X
16	26	1	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X
	32	1	X	X	X	2	X	X	X
	34	1	X	X	X	2	X	X	X

1. N = No reinforcement required.
2. N = NI reinforced with 3/4" wood structural panel on one side only.
3. 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.

WEB HOLES

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:

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-joint top and bottom flanges must NEVER be cut, notched, or otherwise modified.
3. Whenever possible, field-or 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 is cut into an I-joint web shall equal the clear distance between the flanges of the I-joint minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the edges of the hole or opening and the adjacent I-beam flange.
5. The sides of square holes or longer sides of rectangular holes should not exceed 3/4 inch. The maximum minimum 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 Table 1 or 2, respectively.
7. A knockout is **not** considered a hole, may be located anywhere if 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 shall be permitted anywhere in a confined 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. Duct holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and shall be 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 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

Minimum distance from outside face of dry support to centre of hole (ft-in.)																
Joint Depth	Joint Series	Round hole diameter (in.)												Span adjustment Factor		
		2	3	4	5	6	6-1/4	7	8	8-5/8	10	10-3/4	11		12	12-3/4
9-1/2"	N6-22	9-7/8	7-3/8	4-1/8	4-3/8	5-3/8	6-0	—	—	—	—	—	—	—	—	12-6
	N6-20	9-7/8	7-3/8	4-1/8	4-3/8	5-3/8	6-0	—	—	—	—	—	—	—	—	12-6
	N6-60	7-2	2-5/8	4-0	5-4	7-0	7-0	—	—	—	—	—	—	—	—	14-11
	N6-30	7-2	2-4	4-3	6-3	8-0	8-4	—	—	—	—	—	—	—	—	15-6
	N6-80	7-2	2-4	4-3	6-3	8-0	8-4	—	—	—	—	—	—	—	—	15-6
	N6-20	5-3	1-10	2-4	3-8	4-0	5-0	6-4	7-9	—	—	—	—	—	—	15-6
11-7/8"	N6-20	7-1	1-8	3-0	4-3	5-3	6-3	8-10	10-0	—	—	—	—	—	—	15-6
	N6-30	7-1	1-8	3-0	4-3	5-3	6-3	8-10	10-0	—	—	—	—	—	—	15-6
	N6-70	7-1	1-8	3-0	4-3	5-3	6-3	8-10	10-0	—	—	—	—	—	—	15-6
	N6-80	1-4	2-10	4-2	5-6	7-0	7-5	8-6	10-2	—	—	—	—	—	—	17-2
	N6-60	7-1	1-8	3-0	4-3	5-3	6-3	8-10	10-0	—	—	—	—	—	—	17-2
	N6-20	5-3	1-10	2-4	3-8	4-0	5-0	6-4	7-9	—	—	—	—	—	—	15-6
14"	N6-20	7-1	1-8	3-0	4-3	5-3	6-3	8-10	10-0	—	—	—	—	—	—	17-2
	N6-30	7-1	1-8	3-0	4-3	5-3	6-3	8-10	10-0	—	—	—	—	—	—	17-2
	N6-70	7-1	1-8	3-0	4-3	5-3	6-3	8-10	10-0	—	—	—	—	—	—	17-2
	N6-80	1-4	2-10	4-2	5-6	7-0	7-5	8-6	10-2	—	—	—	—	—	—	17-2
	N6-60	7-1	1-8	3-0	4-3	5-3	6-3	8-10	10-0	—	—	—	—	—	—	17-2
	N6-20	5-3	1-10	2-4	3-8	4-0	5-0	6-4	7-9	—	—	—	—	—	—	15-6
16"	N6-20	7-1	1-8	3-0	4-3	5-3	6-3	8-10	10-0	—	—	—	—	—	—	17-2
	N6-30	7-1	1-8	3-0	4-3	5-3	6-3	8-10	10-0	—	—	—	—	—	—	17-2
	N6-70	7-1	1-8	3-0	4-3	5-3	6-3	8-10	10-0	—	—	—	—	—	—	17-2
	N6-80	1-4	2-10	4-2	5-6	7-0	7-5	8-6	10-2	—	—	—	—	—	—	17-2
	N6-60	7-1	1-8	3-0	4-3	5-3	6-3	8-10	10-0	—	—	—	—	—	—	17-2
	N6-20	5-3	1-10	2-4	3-8	4-0	5-0	6-4	7-9	—	—	—	—	—	—	15-6

1. Above table may be used for I-joint 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.

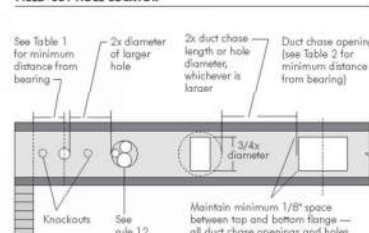
OPTIONAL:

The above table is based on the I-joists used at their maximum spans. 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:

- Reduced = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications [9]. The reduced distance shall not be less than 6 inches from the face of the support to edge of the hole.
- Actual = The actual measured span distance between the inside faces of supports [4].
- SAF = 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 $\frac{\text{Actual}}{\text{SAF}}$ is greater than 1, use 1 in the above calculation for $\frac{\text{Actual}}{\text{SAF}}$.

FIGURE 7
FIELD-CUT HOLE LOCATOR

A knockout is **NOT** considered a hole, may be utilized wherever it occurs and may be ignored for purposes of calculating minimum distances between holes.

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



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-joint.

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

DUCT CHASE OPENING SIZES AND LOCATIONS – Simple span Only											
Total Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft.-in.)									
		Duct chase length (ft.)									
		8	10	12	14	16	18	20	22	24	
9'-0"	N-50	4'-1"	4'-5"	4'-10"	5'-0"	5'-5"	5'-10"	6'-0"	6'-5"	6'-10"	7'-0"
	N-40a	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-0"	7'-5"	7'-8"	8'-0"	
	N-60	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-0"	7'-5"	7'-8"	8'-0"	
	N-70	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-0"	7'-5"	7'-8"	8'-0"	
	N-80	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-0"	7'-5"	7'-8"	8'-0"	
11'-0"	N-50	5'-9"	6'-3"	6'-8"	7'-1"	7'-5"	7'-9"	8'-3"	8'-9"	9'-0"	
	N-40a	6'-11"	7'-5"	7'-9"	8'-4"	8'-9"	9'-3"	9'-9"	10'-3"	10'-9"	
	N-60	7'-1"	7'-5"	7'-9"	8'-4"	8'-9"	9'-3"	9'-9"	10'-3"	10'-9"	
	N-70	7'-1"	7'-5"	7'-9"	8'-4"	8'-9"	9'-3"	9'-9"	10'-3"	10'-9"	
	N-80	7'-1"	7'-5"	7'-9"	8'-4"	8'-9"	9'-3"	9'-9"	10'-3"	10'-9"	
11'-6"	N-50	6'-1"	6'-5"	7'-1"	7'-5"	7'-9"	8'-3"	8'-7"	9'-1"	9'-5"	
	N-40a	7'-3"	7'-7"	8'-1"	8'-5"	8'-9"	9'-3"	9'-7"	10'-1"	10'-5"	
	N-60	7'-3"	7'-7"	8'-1"	8'-5"	8'-9"	9'-3"	9'-7"	10'-1"	10'-5"	
	N-70	7'-3"	7'-7"	8'-1"	8'-5"	8'-9"	9'-3"	9'-7"	10'-1"	10'-5"	
	N-80	7'-3"	7'-7"	8'-1"	8'-5"	8'-9"	9'-3"	9'-7"	10'-1"	10'-5"	
14'	N-50	8'-1"	8'-5"	9'-0"	9'-4"	9'-8"	10'-1"	10'-5"	10'-9"	11'-2"	
	N-40a	9'-3"	9'-7"	10'-1"	10'-5"	10'-9"	11'-3"	11'-7"	12'-1"	12'-5"	
	N-60	9'-3"	9'-7"	10'-1"	10'-5"	10'-9"	11'-3"	11'-7"	12'-1"	12'-5"	
	N-70	9'-3"	9'-7"	10'-1"	10'-5"	10'-9"	11'-3"	11'-7"	12'-1"	12'-5"	
	N-80	9'-3"	9'-7"	10'-1"	10'-5"	10'-9"	11'-3"	11'-7"	12'-1"	12'-5"	
16'	N-50	9'-5"	9'-9"	10'-3"	10'-7"	11'-1"	11'-5"	11'-9"	12'-3"	12'-7"	
	N-40a	10'-7"	11'-1"	11'-5"	11'-9"	12'-3"	12'-7"	13'-1"	13'-5"	13'-9"	
	N-60	10'-7"	11'-1"	11'-5"	11'-9"	12'-3"	12'-7"	13'-1"	13'-5"	13'-9"	
	N-70	10'-7"	11'-1"	11'-5"	11'-9"	12'-3"	12'-7"	13'-1"	13'-5"	13'-9"	
	N-80	10'-7"	11'-1"	11'-5"	11'-9"	12'-3"	12'-7"	13'-1"	13'-5"	13'-9"	

1. Above table may be used for i-joint 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

INSTALLING THE GLUED FLOOR SYSTEM

1. Wipe any mud, dirt, water, or ice from I-joint flanges before gluing.
2. Snap a chalk line across the I-joints four feet in from the wall for panel edge alignment and as a boundary for spreading glue.
3. Spread only enough glue to lay one or two panels at a time, or follow specific recommendations from the glue manufacturer.
4. 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.
5. Apply a continuous line of glue (about 1/4-inch diameter) to the top flange of a single I-joint. Apply glue in a winding pattern on wide areas, such as with double I-joints.
6. Apply two lines of glue on I-joints where panel ends but to assure proper gluing of each end.
7. After the first row or panels is in place, spread glue in the groove at one or two panels at a time before tapping 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-joint flanges.
8. Tap the second row of panels into place, using a block to protect groove edges.
9. Stagger joints 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.)
10. **Complete all nailing of each panel before glue sets.** Check the manufacturer's recommendations for nailing (Welding Wire, Inc. recommends 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.

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

Maximum Joint Spacing (in.)	Minimum Panel Thickness (in.)	Nail Size and Type			Maximum Spacing of Fasteners	
		Common Wire or Spiral Nails	Ring Thread Nails or Screws	Skupes	Edges	Interm. Supports
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 the minimum above.
- Use only adhesives conforming to CAN/CGSB-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

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

IMPORTANT NOTE:

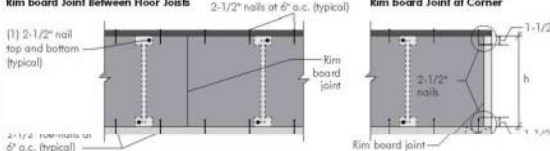
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

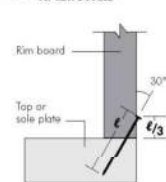
8g ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Blue-faced Booby, Brown Booby, Frigatebird, Masked Booby, Red-footed Booby, Sooty Tern, White-faced Booby, Yellow-crowned Night Heron, Yellow-rumped Warbler.

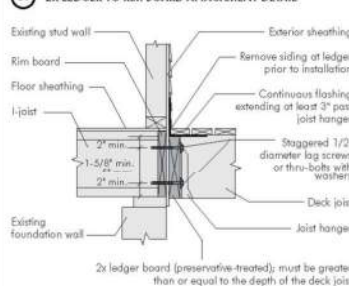
Blue board joint at corner



**8b TOE-NAIL CONNECTION
AT RIM BOARD**



8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



PRODUCT WARRANTY

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

Furthermore, Chemtron Chibangonets asserts that our products, when utilized in accordance with our handling and installation instructions, will meet or exceed our specification 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-40	0-7"	1'-6"	3'-0"	4'-4"	6'-3"	6'-4"	---	---	---	---	---	---	---	---	---
	NI-60	1-3"	2'-6"	4'-0"	5'-4"	7'-3"	7'-5"	---	---	---	---	---	---	---	---	---
	NI-70	2'-0"	2'-4"	4'-0"	4'-8"	8'-1"	8'-4"	---	---	---	---	---	---	---	---	---
NI-80	2-3"	3'-6"	5'-0"	6'-6"	8'-2"	8'-8"	---	---	---	---	---	---	---	---	---	---
11-7/8"	NI-20	0-7"	0-8"	1'-0"	2'-4"	3'-3"	4'-0"	5'-0"	6'-6"	7'-9"	---	---	---	---	---	---
	NI-40	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"	---	---	---	---	---	---
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"	---	---	---	---	---	---	---	---	---
14"	NI-40	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"	---	---	---
	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"	---	---	---	---	---	---
16"	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"	13-9"
	NI-70	0-7"	1-0"	2-3"	3-6"	4-10"	3-3"	6-3"	7-6"	8-6"	9-2"	10-8"	12-0"	12-4"	14-0"	15-6"
	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"	16-0"
	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"	---	---

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

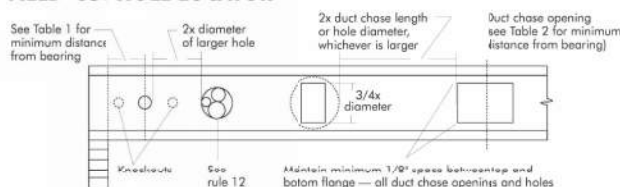
Simple Span Only

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
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-70	6-1"	6-6"	6-10"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---	---
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	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"	---	---	---	---
	NI-70	8-7"	9-1"	9-5"	9-10"	10-4"	10-8"	11-2"	11-7"	12-3"	---	---	---	---
16"	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"	---	---	---	---
	NI-70	10-1"	10-5"	11-0"	11-4"	11-10"	12-3"	12-8"	13-2"	14-0"	---	---	---	---
16"	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"	---	---	---	---

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 predrilled 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.

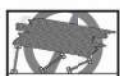
Holes in webs should be cut with a sharp saw.

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 braced and/or sheathed, 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 applied 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 out, or temporary sheathing must be applied to prevent I-joist rollover 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-joint 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-joint. 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

Pair of 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

3-1/2" wide
5-1/2" wide

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.

1f 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-joint, 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 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-P-F No. 2 or better for solid own 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".

Top- or face-mount hanger

Double I-joint header

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

Filler block - per detail 1p

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

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

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-joint header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joint 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-joint 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

Filler block

Offset nails from opposite face by 6"

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

NOTES:

- Support back of I-joint 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-joint 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-joint. 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-joint capacity.

Flange Size	Net Depth	Filler Block Size
2-1/2" x 1-1/2"	5-1/2" x 11-7/8"	2-1/8" x 8"
	4" x 16"	2-1/8" x 10"
		2-1/8" x 12"
3-1/2" x 1-1/2"	5-1/2" x 11-7/8"	3" x 6"
	4" x 16"	3" x 8"
		3" x 10"
		3" x 12"
3-1/2" x 2"	5-1/2" x 11-7/8"	3" x 7"
	4" x 16"	3" x 9"
		3" x 11"

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-joint blocking panel

One 2-1/2" nail one side only

NOTE:

- 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-joint properties table found in the I-Joint Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A **bearing stiffener** is required when the I-joint 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 stiffener, anywhere between the stiffener top 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-joints with 3-1/2" flange width

No Gap

See the adjacent table for web stiffener size requirements

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

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

6"

2-1/2" nails

3-1/2" min. bearing required

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

Attach I-joint to plate per detail 1b

Strength axis

2-0" minimum

2-0" minimum

Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

Use nailing pattern shown for 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-joint to plate at all supports per detail 1b. Verify reinforced I-joint 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

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

Rim Board Joint at Corner

2-1/2" nails

h

1-1/2"

1-1/2"

8b TOE-NAIL CONNECTION AT RIMBOARD

Rim board

Top or sole plate

30°

1/3

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.

