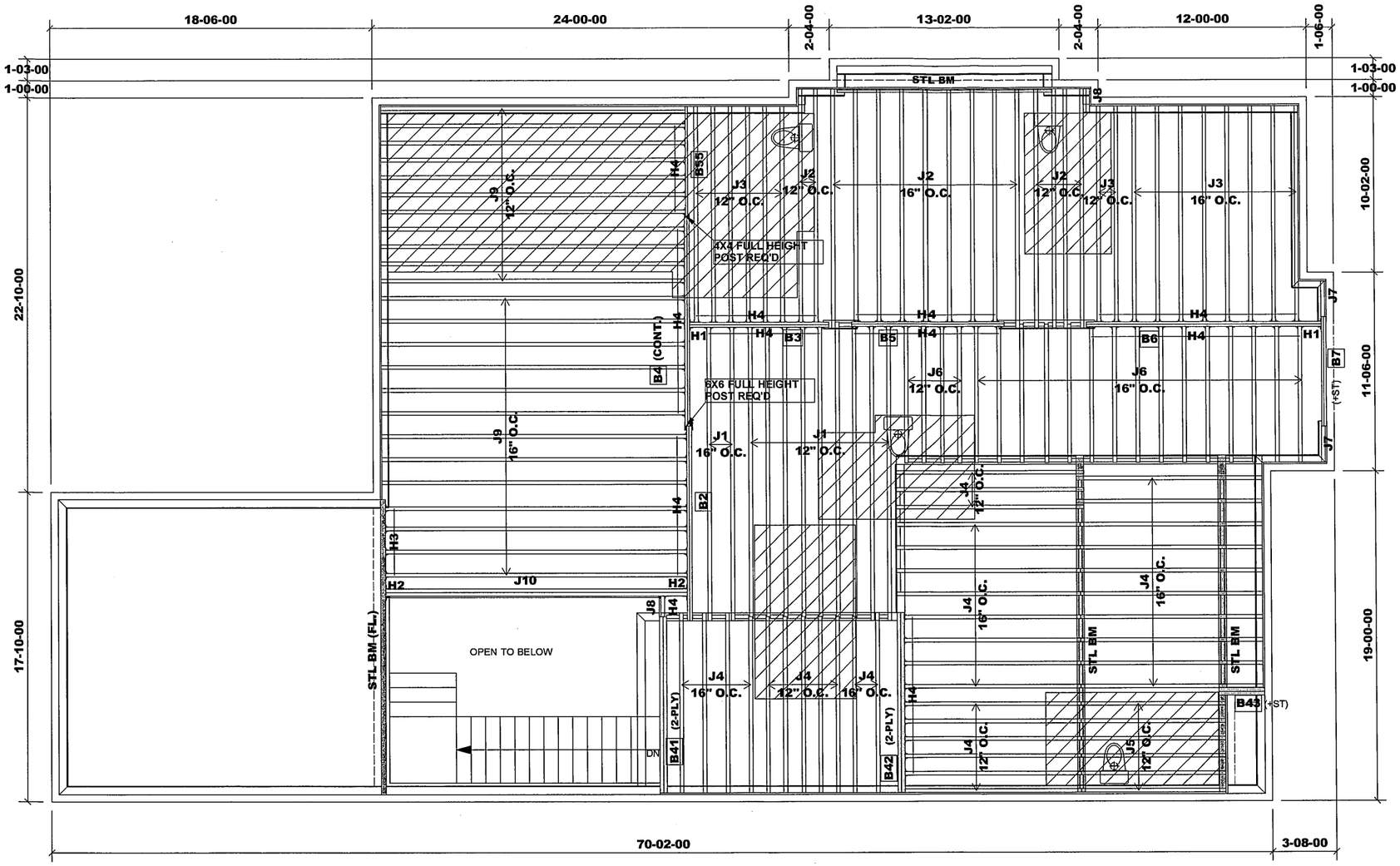


Products				
PlotID	Length	Product	Plies	Net Qty
B2	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B3	9-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B4	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B5	9-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B6	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B7	7-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B41	11-00-00	11 7/8" NI-20	2	2
B42	11-00-00	11 7/8" NI-20	2	2
B43	3-00-00	11 7/8" NI-20	2	2
B55	7-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
J1	17-00-00	11 7/8" NI-20	1	11
J2	14-00-00	11 7/8" NI-20	1	15
J3	13-00-00	11 7/8" NI-20	1	16
J4	11-00-00	11 7/8" NI-20	1	38
J5	9-00-00	11 7/8" NI-20	1	6
J6	8-00-00	11 7/8" NI-20	1	19
J7	3-00-00	11 7/8" NI-20	1	2
J8	2-00-00	11 7/8" NI-20	1	2
J9	18-00-00	11 7/8" NI-40x	1	24
J10	18-00-00	11 7/8" NI-40x	2	2
xBk1	60-00-00	11 7/8" NI-20	1	1
xCa1	21-00-00	1 1/8" x 11 7/8" Rim Board	1	1
xCa1	146-00-00	1 1/8" x 11 7/8" Rim Board	1	1

Connector Summary			
PlotID	Qty	Manuf	Product
H1	2		HGUS410
H2	2		HU310-2
H3	4		LF2511
H4	84		LT251188

APP - AS PER PLAN
BBO - BEAM BY OTHERS
PL(W) - POINT LOAD FROM WINDOW LINTEL

RIMBOARD

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

SUBFLOOR

3/4" NAILED & GLUED*

FLOOR LOADING :

LIVE LOAD : 40 PSF
DEAD LOAD : 15 PSF
DEAD LOAD (TILE) : 20 PSF

Blocking panels are required over all interior supports.

Squash blocks are required under concentrated loads.

Ceramic Tile Application as per O.B.C. 9.30.6

Do not scale - refer to architectural plans for dimensions.

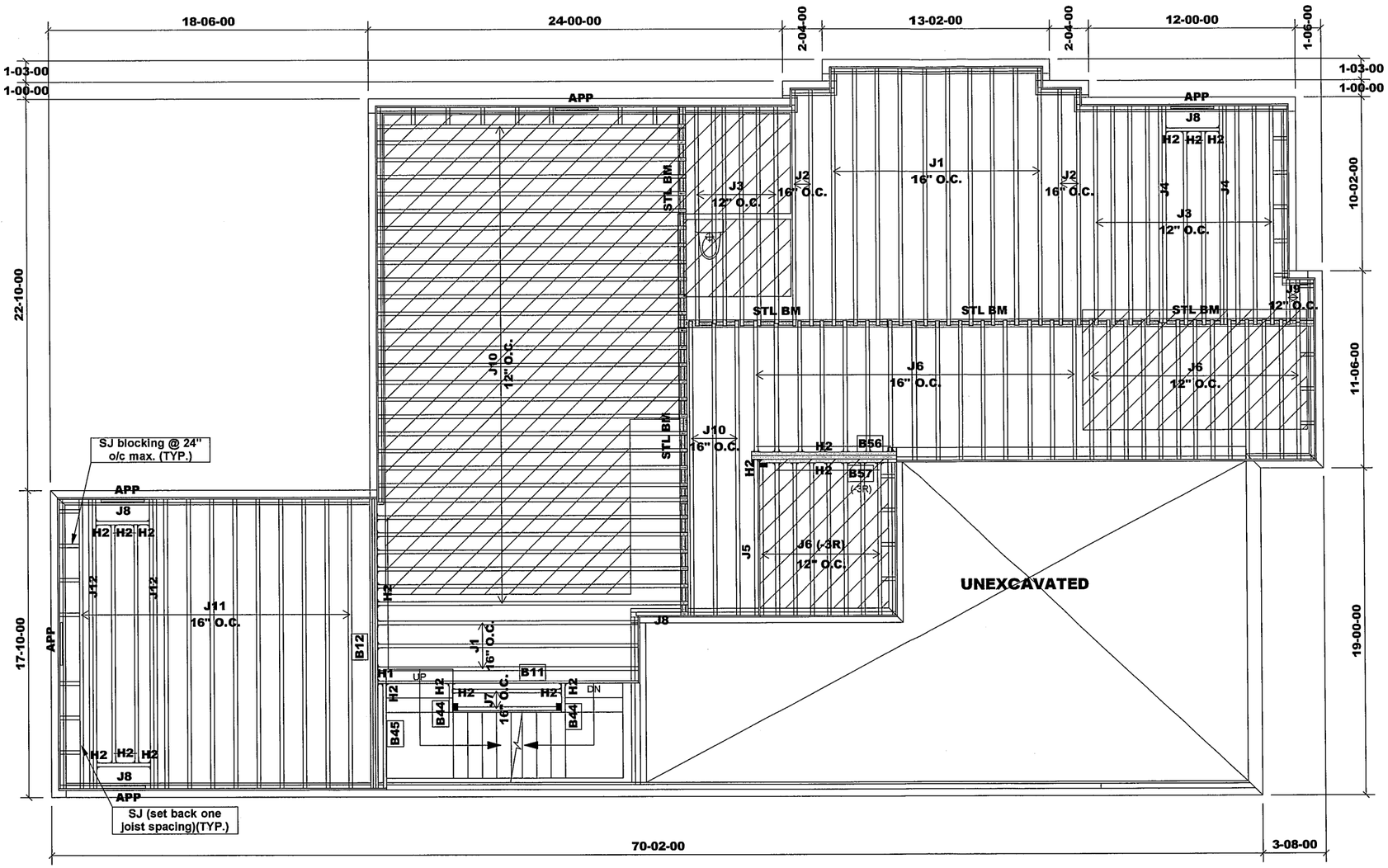
MODEL: 5004 - EL.A - LOT 23 + OPT. LOGGIA

SECOND FLOOR FRAMING

SE007821 - SE007861
SE049760 - SE049767

Ceramic Tile

Job Track:	45147	Builder:	Gold Park	Location:	Vaughan	Sheet:	1 of 2
Layout ID:	290673-346630*	Project:	Pine Valley	SalesPerson:	Derek	Date:	7/21/2022
Plan Log:	117907	Model:	5004A - LOT 23	Yard:	Home Lumber	Designer:	NL



Products				
PlotID	Length	Product	Plies	Net Qty
B11	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B12	17-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B44	2-00-00	11 7/8" NI-20	1	2
B45	7-00-00	11 7/8" NI-20	1	1
B56	9-00-00	11 7/8" NI-20	2	2
B57	8-00-00	11 7/8" NI-20	1	1
J1	16-00-00	11 7/8" NI-20	1	13
J2	14-00-00	11 7/8" NI-20	1	4
J3	13-00-00	11 7/8" NI-20	1	15
J4	13-00-00	11 7/8" NI-20	2	4
J5	10-00-00	11 7/8" NI-20	1	1
J6	9-00-00	11 7/8" NI-20	1	36
J7	7-00-00	11 7/8" NI-20	1	2
J8	4-00-00	11 7/8" NI-20	1	4
J9	3-00-00	11 7/8" NI-20	1	2
J10	18-00-00	11 7/8" NI-40x	1	32
J11	17-00-00	11 7/8" NI-40x	1	12
J12	17-00-00	11 7/8" NI-40x	2	4
xBk1	78-00-00	11 7/8" NI-20	1	1
xCa1	39-00-00	1 1/8" x 11 7/8" Rim Board	1	1
xCa1	187-00-00	1 1/8" x 11 7/8" Rim Board	1	1

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HUS1.81/10
H2	43		LT251188

FLOOR LOADING :

LIVE LOAD : 40 PSF
DEAD LOAD : 15 PSF
DEAD LOAD (TILE) : 20 PSF

APP - AS PER PLAN
BBO - BEAM BY OTHERS

RIMBOARD

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

SUBFLOOR

3/4" NAILED & GLUED*

Blocking panels are required over all interior supports.

Squash blocks are required under concentrated loads.

Ceramic Tile Application as per O.B.C. 9.30.6

Do not scale - refer to architectural plans for dimensions.

MODEL: 5004 - EL.A - LOT 23 + OPT. LOGGIA

FIRST FLOOR FRAMING

Ceramic Tile

Job Track:	45147	Builder:	Gold Park	Location:	Vaughan	Sheet:	2 of 2
Layout ID:	290673-346630*	Project:	Pine Valley	SalesPerson:	Derek	Date:	7/21/2022
Plan Log:	117907	Model:	5004A - LOT 23	Yard:	Home Lumber	Designer:	NL

Mitek V. 8.5.3.233

Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

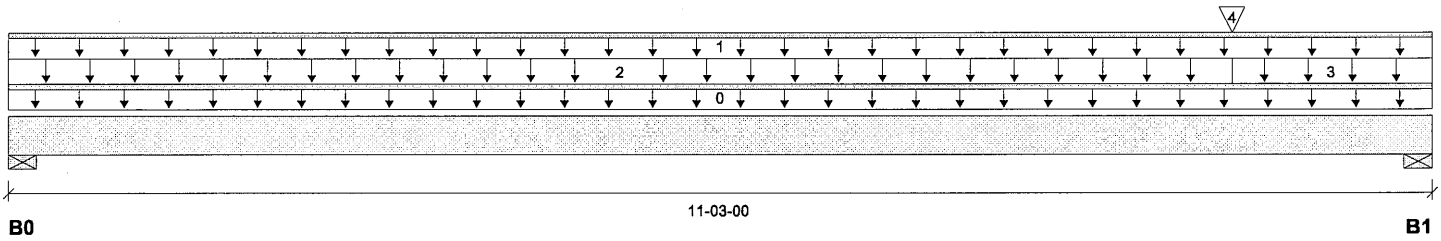
PASSED

B02 (Floor Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 20, 2020 13:19:03

Build 7555

Job name:	45147 (5004)	File name:	318278
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 = 11-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3"	2143 / 0	1297 / 0		
B1, 3-1/2"	1735 / 0	1552 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-03-00	Top		12			00-00-00
1		Unf. Lin. (lb/ft)	L	00-00-00	11-03-00	Top	27	74			n\a
2		Unf. Area (lb/ft²)	L	00-00-00	09-08-00	Top	40	15			09-00-00
3		Unf. Area (lb/ft²)	L	09-08-00	11-03-00	Top	40	15			01-06-00
4		Conc. Pt. (lbs)	L	09-08-00	09-08-00	Top		540			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	12755 ft-lbs	35392 ft-lbs	36.0%	1	05-07-00
End Shear	4201 lbs	14464 lbs	29.0%	1	09-11-10
Total Load Deflection	L/659 (0.197")	n\a	36.4%	4	05-07-00
Live Load Deflection	L/999 (0.119")	n\a	n\a	5	05-07-00
Max Defl.	0.197"	n\a	19.7%	4	05-07-00
Span / Depth	10.9				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate	3" x 3-1/2"	4836 lbs	74.9%	37.8%	Spruce-Pine-Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	4542 lbs	60.3%	30.4%	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 @ 9" O/C,
STAGGERED IN 2 ROWS

SE007822

Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

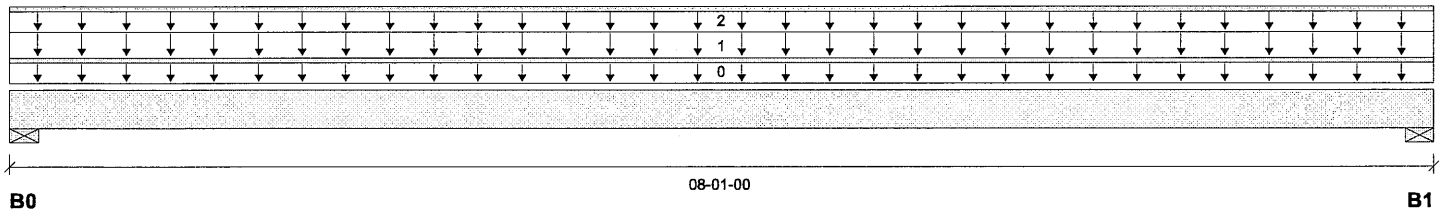
PASSED

B03 (Floor Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 20, 2020 13:19:03

Build 7555

Job name:	45147 (5004)	File name:	318278
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 = 08-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2506 / 0	1544 / 0		
B1, 3-1/2"	2506 / 0	1544 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-01-00	Top		12			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	08-01-00	Top	40	20			15-06-00
2		Unf. Lin. (lb/ft)	L	00-00-00	08-01-00	Top		60			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	10229 ft-lbs	35392 ft-lbs	28.9%	1	04-00-08
End Shear	3885 lbs	14464 lbs	26.9%	1	01-03-06
Total Load Deflection	L/999 (0.078")	n\a	n\a	4	04-00-08
Live Load Deflection	L/999 (0.048")	n\a	n\a	5	04-00-08
Max Defl.	0.078"	n\a	n\a	4	04-00-08
Span / Depth	7.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate	3-1/2" x 3-1/2"	5689 lbs	75.5%	38.1%	Spruce-Pine-Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	5689 lbs	75.5%	38.1%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
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 @ 9" O/C,
STAGGERED IN 2 ROWS

SE007823

Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

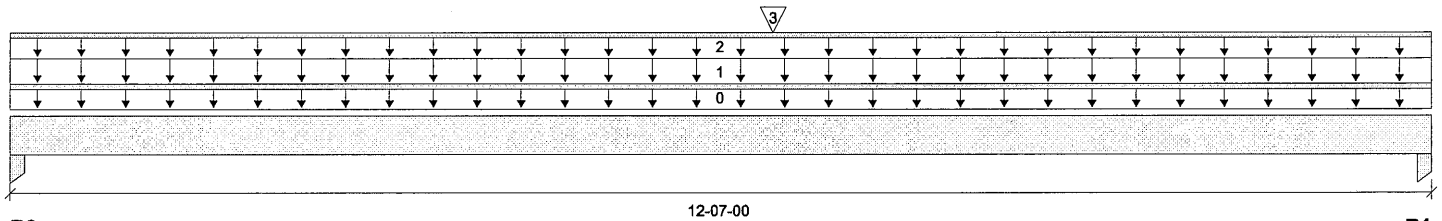
PASSED

B04 (Floor Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 20, 2020 13:19:03

Build 7555

Job name:	45147 (5004)	File name:	318278
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 = 12-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	3561 / 0	2370 / 0		
B1, 3"	3726 / 0	2471 / 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	12-07-00	Top		12			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	12-07-00	Top	40	20			09-06-00
2		Unf. Lin. (lb/ft)	L	00-00-00	12-07-00	Top		60			n\a
3		Conc. Pt. (lbs)	L	06-09-00	06-09-00	Top	2506	1544			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	33735 ft-lbs	35392 ft-lbs	95.3%	1	06-09-00
End Shear	7566 lbs	14464 lbs	52.3%	1	11-04-02
Total Load Deflection	L/247 (0.591")	n\a	97.1%	4	06-04-14
Live Load Deflection	L/409 (0.357")	n\a	88.0%	5	06-04-14
Max Defl.	0.591"	n\a	59.1%	4	06-04-14
Span / Depth	12.3				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Column	3-1/2" x 3-1/2"	8305 lbs	39.1%	55.6%	Spruce-Pine-Fir
B1	Column	3" x 3-1/2"	8678 lbs	47.6%	67.7%	Spruce-Pine-Fir

Notes

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

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

SE007824

Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

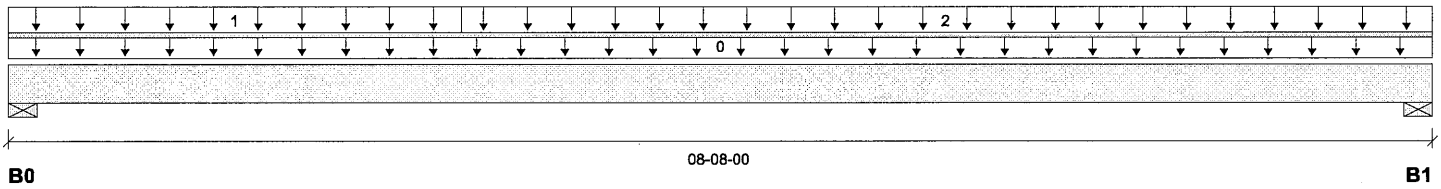
PASSED

B05 (Floor Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 20, 2020 13:19:03

Build 7555

Job name:	45147 (5004)	File name:	318278
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 = 08-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2679 / 0	1391 / 0		
B1, 3-1/2"	2323 / 0	1214 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-08-00	Top		12			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	02-09-00	Top	40	20			17-06-00
2		Unf. Area (lb/ft²)	L	02-09-00	08-08-00	Top	40	20			13-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	10050 ft-lbs	35392 ft-lbs	28.4%	1	04-02-06
End Shear	3832 lbs	14464 lbs	26.5%	1	01-03-06
Total Load Deflection	L/999 (0.089")	n\a	n\a	4	04-03-04
Live Load Deflection	L/999 (0.058")	n\a	n\a	5	04-03-04
Max Defl.	0.089"	n\a	n\a	4	04-03-04
Span / Depth	8.3				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate	3-1/2" x 3-1/2"	5757 lbs	76.4%	38.5%	Spruce-Pine-Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	5001 lbs	66.4%	33.5%	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 @ 9" O/C,
STAGGERED IN 2 ROWS

SE007825

Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

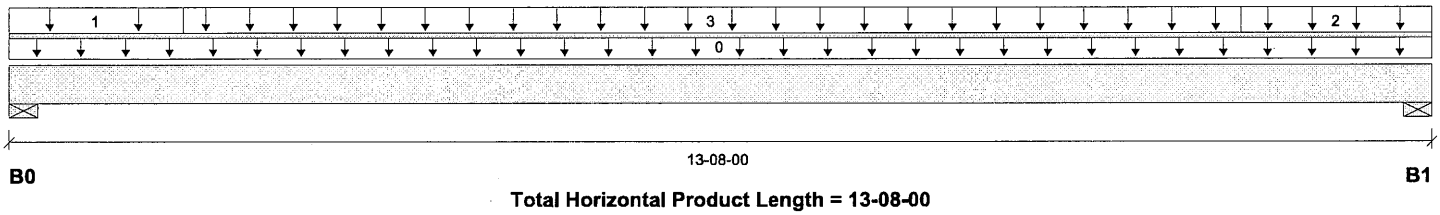
PASSED

B06 (Floor Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 20, 2020 13:19:03

Build 7555

Job name:	45147 (5004)	File name:	318278
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 = 13-08-00

Reaction Summary (Down / Uplift) (lbs)

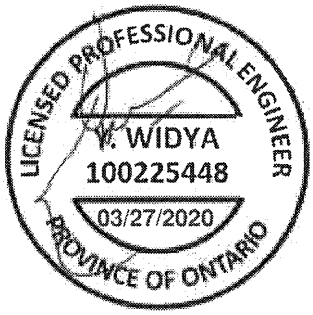
Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	3049 / 0	1604 / 0		
B1, 3-1/2"	2628 / 0	1348 / 0		

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	13-08-00	Top		12			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	01-08-00	Top	40	20			12-00-00
2		Unf. Area (lb/ft²)	L	11-10-00	13-08-00	Top	40	15			05-06-00
3		Unf. Area (lb/ft²)	L	01-08-00	11-10-00	Top	40	20			11-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	20441 ft-lbs	35392 ft-lbs	57.8%	1	06-09-00
End Shear	5252 lbs	14464 lbs	36.3%	1	01-03-06
Total Load Deflection	L/342 (0.463")	n\a	70.2%	4	06-09-00
Live Load Deflection	L/522 (0.304")	n\a	69.0%	5	06-09-00
Max Defl.	0.463"	n\a	46.3%	4	06-09-00
Span / Depth	13.3				



Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate	3-1/2" x 3-1/2"	6578 lbs	87.3%	44.0%	Spruce-Pine-Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	5627 lbs	74.7%	37.7%	Spruce-Pine-Fir

Notes

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

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

SE007826

Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

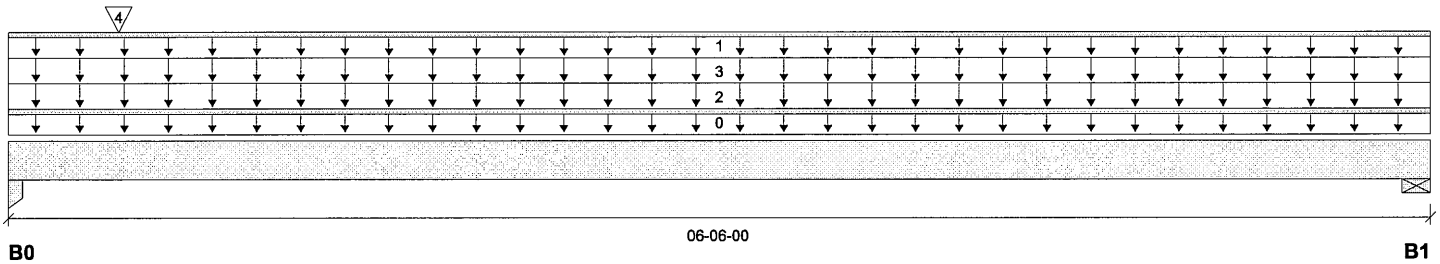
PASSED

B07 (Floor Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 20, 2020 13:19:03

Build 7555

Job name:	45147 (5004)	File name:	318278
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 = 06-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2597 / 0	1950 / 0	770 / 0	
B1, 3-1/2"	206 / 0	724 / 0	770 / 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	06-06-00	Top		12			00-00-00
1		Unf. Lin. (lb/ft)	L	00-00-00	06-06-00	Top	27	114			n\a
2		Unf. Area (lb/ft²)	L	00-00-00	06-06-00	Top		20	78		02-06-00
3		Unf. Area (lb/ft²)	L	00-00-00	06-06-00	Top		14	21		02-00-00
4		Conc. Pt. (lbs)	L	00-06-00	00-06-00	Top	2628	1348			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3526 ft-lbs	35392 ft-lbs	10.0%	5	02-11-05
End Shear	1979 lbs	14464 lbs	13.7%	1	01-03-06
Total Load Deflection	L/999 (0.018")	n\a	n\a	11	03-01-08
Live Load Deflection	L/999 (0.01")	n\a	n\a	15	03-01-08
Max Defl.	0.018"	n\a	n\a	11	03-01-08
Span / Depth	6.1				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Column	3-1/2" x 3-1/2"	7104 lbs	33.4%	47.5%	Spruce-Pine-Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	2266 lbs	30.1%	15.2%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum Total load deflection criteria.
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

SE007827

Boise Cascade

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

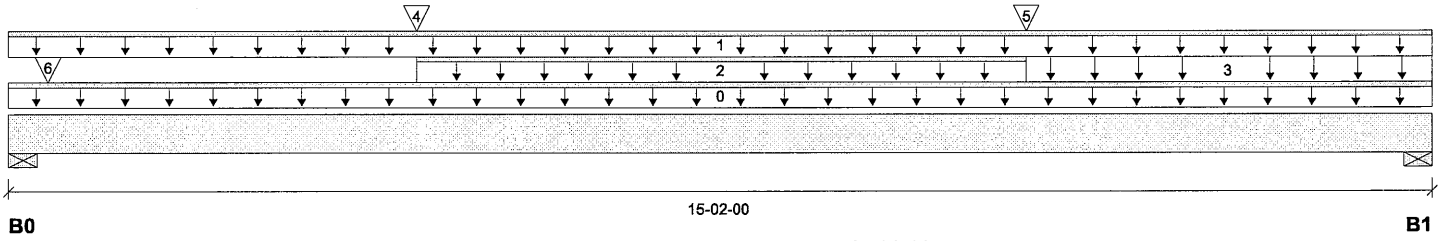
PASSED

B11 (Floor Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 20, 2020 13:19:03

Build 7555

Job name:	45147 (5004)	File name:	318278
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 = 15-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	782 / 0	596 / 0		
B1, 3-1/2"	587 / 0	317 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-02-00	Top		6			00-00-00
1		Unf. Lin. (lb/ft)	L	00-00-00	15-02-00	Top	27	14			n\a
2		Unf. Lin. (lb/ft)	L	04-04-00	10-10-00	Top	27	14			n\a
3		Unf. Area (lb/ft²)	L	10-10-00	15-02-00	Top	40	15			01-00-00
4		Conc. Pt. (lbs)	L	04-04-00	04-04-00	Top	140	59			n\a
5		Conc. Pt. (lbs)	L	10-10-00	10-10-00	Top	140	59			n\a
6		Conc. Pt. (lbs)	L	00-05-00	00-05-00	Top	331	335			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4438 ft-lbs	17696 ft-lbs	25.1%	1	07-09-07
End Shear	1092 lbs	7232 lbs	15.1%	1	13-10-10
Total Load Deflection	L/691 (0.255")	n\a	34.7%	4	07-07-00
Live Load Deflection	L/1081 (0.163")	n\a	33.3%	5	07-07-00
Max Defl.	0.255"	n\a	25.5%	4	07-07-00
Span / Depth	14.9				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate	3-1/2" x 1-3/4"	1918 lbs	50.9%	25.7%	Spruce-Pine-Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	1277 lbs	33.9%	17.1%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
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

SE007832

Boise Cascade

Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

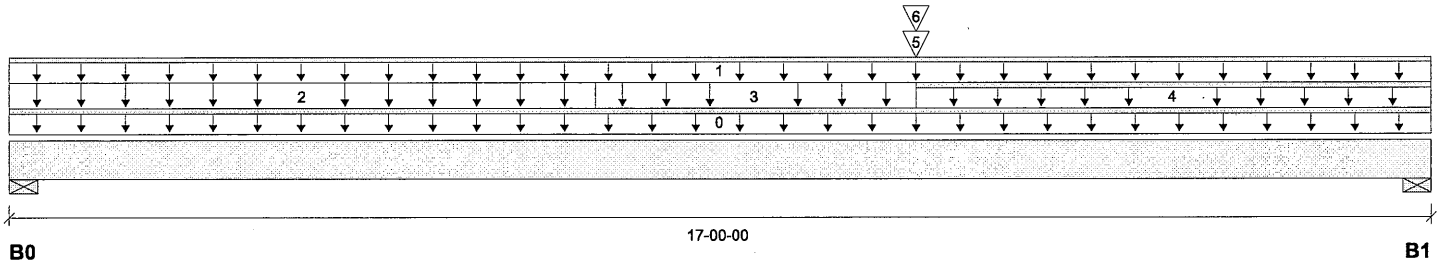
PASSED

B12 (Floor Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | March 20, 2020 13:19:03

Build 7555

Job name:	45147 (5004)	File name:	318278
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 = 17-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	3263 / 0	1552 / 0		
B1, 3-1/2"	2229 / 0	1278 / 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	17-00-00	Top		18			00-00-00
1		Unf. Lin. (lb/ft)	L	00-00-00	17-00-00	Top	27	14			n\a
2		Unf. Area (lb/ft²)	L	00-00-00	07-00-00	Top	40	15			09-00-00
3		Unf. Area (lb/ft²)	L	07-00-00	10-10-00	Top	40	15			07-06-00
4		Unf. Lin. (lb/ft)	L	10-10-00	17-00-00	Top	20	8			n\a
5		Conc. Pt. (lbs)	L	10-10-00	10-10-00	Top	782	596			n\a
6		Conc. Pt. (lbs)	L	10-10-00	10-10-00	Top	457	264			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	28235 ft-lbs	55212 ft-lbs	51.1%	1	08-11-00
End Shear	5823 lbs	21696 lbs	26.8%	1	01-03-06
Total Load Deflection	L/301 (0.659")	n\a	79.7%	4	08-05-04
Live Load Deflection	L/459 (0.433")	n\a	78.4%	5	08-05-04
Max Defl.	0.659"	n\a	65.9%	4	08-05-04
Span / Depth	16.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate	3-1/2" x 5-1/4"	6835 lbs	60.5%	30.5%	Spruce-Pine-Fir
B1	Wall/Plate	3-1/2" x 5-1/4"	4940 lbs	43.7%	22.0%	Spruce-Pine-Fir

Notes

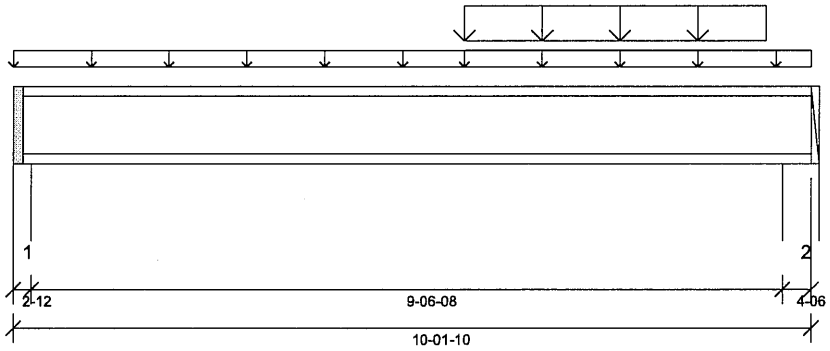
Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum Total load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented 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 @ 6" O/C,
STAGGERED IN 2 ROWS

SE007833

MiTek	Customer: **Gold Park** Job Address: **Pine Valley** City: **Vaughan** Job Track: **45147-UNIT 5004 (290673) 3375...**	Job Name: **346630-A-LOT 23** Level: **2nd Floor** Label: **B41 - i42547** Type: **Beam**	**2 Ply Member** **11 7/8" NI-20**	Status: **Design Passed**

Illustration Not to Scale. Pitch: 0/12 | Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15 | Report Version: 2021.03.26 07/21/2022 15:39



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 9'- 6 1/2"

Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 1 3/4"
- 615 psi Wall @ 9'- 10 1/4"

REGISTERED PROFESSIONAL ENGINEER
08/05/2022
EDWIN C. FOK
PROVINCE OF ONTARIO

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	6'- 5 5/8"	1.25D + 1.5L	1.00	3842 lb ft	11160 lb ft	Passed - 34%
Factored Shear:	9'- 9 3/16"	1.25D + 1.5L	1.00	2102 lb	4480 lb	Passed - 47%
Live Load (LL) Pos. Defl.:	5'- 4 7/8"	L		0.072"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	5'- 4 3/4"	D + L		0.102"	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	2-12	1.25D + 1.5L	1.00	821 lb		4180 lb	8459 lb	Passed - 20%
2	4-06	1.25D + 1.5L	1.00	2132 lb		4480 lb	13457 lb	Passed - 48%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	10'- 1 5/8"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	5'- 8 3/4"	FC1 Floor Decking (Plan View Fill)	Top	9 lb/ft	25 lb/ft	-	-
Uniform	5'- 8 3/4"	10'- 1 5/8"	FC1 Floor Decking (Plan View Fill)	Top	11 lb/ft	29 lb/ft	-	-
Uniform	5'- 8 3/4"	9'- 6 3/4"	User Load	Top	116 lb/ft	310 lb/ft	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 2 3/4"	2(i38036)	171 lb	381 lb	-	-
2	9'- 9 1/4"	10'- 1 5/8"	E14(i38026)	435 lb	1082 lb	-	-

DESIGN NOTES

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

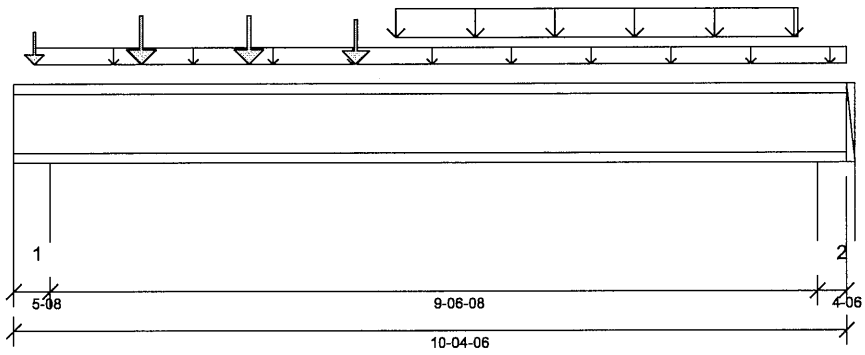
PLY TO PLY CONNECTION

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

SE049760

MiTek	Customer: **Gold Park** Job Address: **Pine Valley** City: **Vaughan** Job Track: **45147-UNIT 5004 (290673) 3375...**	Job Name: **346630-A-LOT 23** Level: **2nd Floor** Label: **B42 - i46776** Type: **Beam**	**2 Ply Member** **11 7/8" NI-20**	Status: **Design Passed**

Illustration Not to Scale. Pitch: 0/12 | Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15 | Report Version: 2021.03.26 07/21/2022 15:39



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 4 1/2"
- 615 psi Wall @ 10'- 1"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 3 1/8"	1.25D + 1.5L	1.00	5546 lb ft	11160 lb ft	Passed - 50%
Factored Shear:	9'- 11 15/16"	1.25D + 1.5L	1.00	2141 lb	4480 lb	Passed - 48%
Live Load (LL) Pos. Defl.:	5'- 2 13/16"	L		0.114"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	5'- 2 13/16"	D + L		0.159"	L/240	Passed - L/719

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-08	1.25D + 1.5L	1.00	2349 lb		4480 lb	16918 lb	Passed - 52%
2	4-06	1.25D + 1.5L	1.00	2168 lb		4480 lb	13458 lb	Passed - 48%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	10'- 4 3/8"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'- 3 1/8"	10'- 4 3/8"	FC1 Floor Decking (Plan View Fill)	Top	10 lb/ft	27 lb/ft	-	-
Uniform	4'- 9 1/8"	9'- 9 1/8"	Smoothed Load	Back	79 lb/ft	208 lb/ft	-	-
Point	0'- 3 1/8"	0'- 3 1/8"	J4(i42589)	Back	54 lb	145 lb	-	-
Point	1'- 7 1/8"	1'- 7 1/8"	J4(i42577)	Back	104 lb	277 lb	-	-
Point	2'- 11 1/8"	2'- 11 1/8"	J4(i42577)	Back	104 lb	277 lb	-	-
Point	4'- 3 1/8"	4'- 3 1/8"	J4(i42556)	Back	91 lb	243 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	2(i38036)	473 lb	1177 lb	-	-
2	10'	10'- 4 3/8"	E14(i38026)	437 lb	1077 lb	-	-

DESIGN NOTES

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

PLY TO PLY CONNECTION

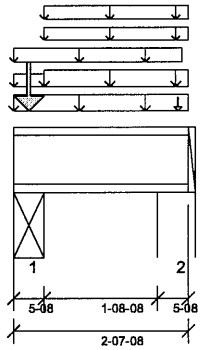
- Member design assumed proper ply to ply connection by others. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.

REGISTERED PROFESSIONAL ENGINEER
08/05/2022
EDWIN C. FOK
PROVINCE OF ONTARIO

SG049761

MiTek	Customer: **Gold Park** Job Address: **Pine Valley** City: **Vaughan** Job Track: **45147-UNIT 5004 (290673) 3375...**	Job Name: **346630-A-LOT 23** Level: **2nd Floor** Label: **B43 - i46691** Type: **Beam**	**2 Ply Member** **11 7/8" NI-20**	Status: **Design Passed**

Illustration Not to Scale. Pitch: 0/12 | Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15 | Report Version: 2021.03.26 07/21/2022 15:39



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)

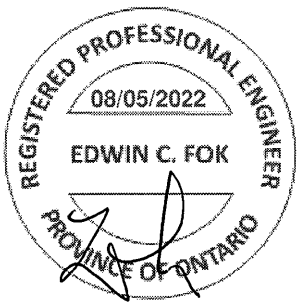
Lateral Restraint Requirements:

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'- 8 1/2"

Factored Resistance of Support Material:

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



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 6 3/4"	1.25D + 1.5L	0.65	30 lb ft	7254 lb ft	Passed - 0%
Factored Neg. Moment:	0'- 4 1/2"	1.25D + 1.5S + L	1.00	445 lb ft	11160 lb ft	Passed - 4%
Factored Shear:	0'- 5 9/16"	1.25D + 1.5S + L	1.00	541 lb	4480 lb	Passed - 12%

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-08	1.25D + 1.5S + L	1.00	3589 lb		4480 lb	21147 lb	Passed - 80%
2	5-08	1.25D + 1.5L	0.65	372 lb		2912 lb	10997 lb	Passed - 13%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	2'- 7 1/2"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	-0'	2'- 7 1/2"	E9(i38005)	Top	101 lb/ft	-	-	-
Uniform	0'	2'- 6 3/8"	User Load	Top	10 lb/ft	27 lb/ft	-	-
Uniform	0'	0'- 5 1/2"	FC1 Floor Decking (Plan View Fill)	Top	-	7 lb/ft	-	-
Uniform	0'- 5 1/2"	2'- 7 1/2"	E9(i38005)	Top	42 lb/ft	-	63 lb/ft	-
Uniform	0'- 5 1/2"	2'- 7 1/2"	User Load	Top	14 lb/ft	-	21 lb/ft	-
Uniform	0'- 5 1/2"	2'- 7 1/2"	FC1 Floor Decking (Plan View Fill)	Top	-	11 lb/ft	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E9(i38005)	Top	823 lb	-	1289 lb	-
Point	2'- 5 5/8"	2'- 5 5/8"	-	Top	65 lb	-	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	STL BM ()	1189 lb	48 lb	1619 lb	-
2	2'- 2"	2'- 7 1/2"	E15(i38016)	136 lb	46 lb	-148 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.
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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.

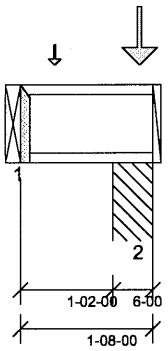
PLY TO PLY CONNECTION

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

SE049762

MiTek	Customer: **Gold Park** Job Address: **Pine Valley** City: **Vaughan** Job Track: **45147-UNIT 5004 (290673) 3375...**	Job Name: **346630-A-LOT 23** Level: **1st Floor** Label: **B44 - i47868** Type: **Beam**	**1 Ply Member** **11 7/8" NI-20**	Status: **Design Passed**

Illustration Not to Scale. Pitch: 0/12 | Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15 | Report Version: 2021.03.26 07/21/2022 15:20



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 0'- 9 7/8"

Factored Resistance of Support Material:

- 1305 psi Column @ 1'- 3"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Neg. Moment:	1'- 3"	1.25D + 1.5L	1.00	437 lb ft	5580 lb ft	Passed - 8%
Factored Moment:	1'- 3"	1.25D + 1.5L	1.00	437 lb ft	5580 lb ft	Passed - 8%
Factored Moment:				0 lb ft	0 lb ft	
Factored Moment:				0 lb ft	0 lb ft	
Factored Shear:	1'- 1 15/16"	1.25D + 1.5L	1.00	432 lb	2240 lb	Passed - 19%
Live Load (LL) Deflection:	0'- 9"	L		0.000"	L/360	Passed - L/999
Total Load (TL) Deflection:	0'- 9 1/16"	D + L		0.000"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-12	1.25D + 1.5L	1.00		-199 lb	-	-	
2	6-00	1.25D + 1.5L	1.00	2166 lb		2240 lb	19575 lb	Passed - 97%

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'	1'- 8"	Self Weight	Top	3 lb/ft	-	-	-
Point	0'- 5 1/4"	0'- 5 1/4"	J7(i47759)	Back	62 lb	101 lb	-	-
Point	1'- 6"	1'- 6"	User Load	Top	330 lb	880 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B11(i47857)	43 lb	67 lb	-	-
2	1'- 2"	1'- 8"	PBO2(i42238)	354 lb	914 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.

REGISTERED PROFESSIONAL ENGINEER
08/05/2022
EDWIN C. FOK
PROVINCE OF ONTARIO

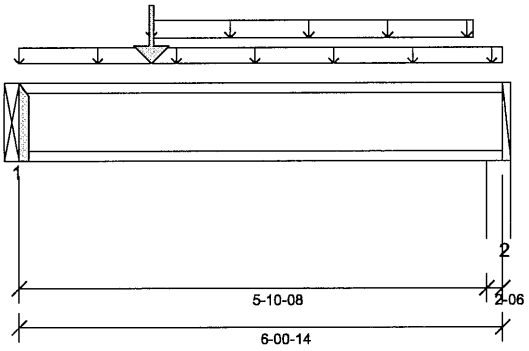
SE049763

MiTek	Customer: **Gold Park** Job Address: **Pine Valley** City: **Vaughan** Job Track: **45147-UNIT 5004 (290673) 3375...**	Job Name: **346630-A-LOT 23** Level: **1st Floor** Label: **B45 - i47896** Type: **Beam**	**1 Ply Member** **11 7/8" NI-20**	Status: **Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 07/21/2022 15:21



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: 5'- 10 1/2"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 615 psi Wall @ 5'- 11 1/2"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 8"	1.25D + 1.5L	1.00	1181 lb ft	5580 lb ft	Passed - 21%
Factored Shear:	0'- 1/16"	1.25D + 1.5L	1.00	741 lb	2240 lb	Passed - 33%
Live Load (LL) Pos. Defl.:	2'- 8 9/16"	L		0.018"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	2'- 9 13/16"	D + L		0.033"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-12	1.25D + 1.5L	1.00	743 lb		1970 lb	-	Passed - 38%
2	2-06	1.25D + 1.5L	1.00	508 lb		2045 lb	3653 lb	Passed - 25%

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'	6'- 7/8"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	6'- 7/8"	FC2 Floor Decking (Plan View Fill)	Top	8 lb/ft	17 lb/ft	-	-
Uniform	1'- 8"	5'- 8 1/2"	User Load	Top	60 lb/ft	-	-	-
Point	1'- 8"	1'- 8"	User Load	Top	135 lb	360 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B11(i47857)	218 lb	310 lb	-	-
2	5'- 10 1/2"	6'- 7/8"	W4(i42275)	228 lb	153 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.
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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.

REGISTERED PROFESSIONAL ENGINEER
08/05/2022
EDWIN C. FOK
PROVINCE OF ONTARIO

S6049764

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

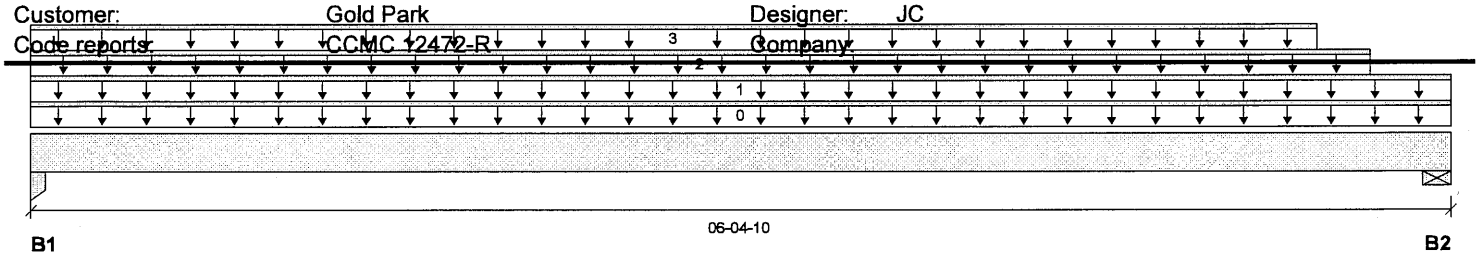
PASSED

2nd Floor\Flush Beams\B55(i48243) (Flush Beam)

BC Design Engine Member Report — Dry | 1 span | No cant. — July 21, 2022 15:34:42

Build 8183

Job name:	45147-UNIT 5004 (290673) 337559	File name:	346630-A-LOT 23.mmdl
Address:	Pine Valley	Description:	2nd Floor\Flush Beams\B55(i48243)
City, Province, Postal Code:	Vaughan, ON	Specifier:	
Customer:	Gold Park	Designer:	JC
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 06-04-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	1240 / 0	637 / 0		
B2, 4-3/8"	1030 / 0	531 / 0		

Load Summary

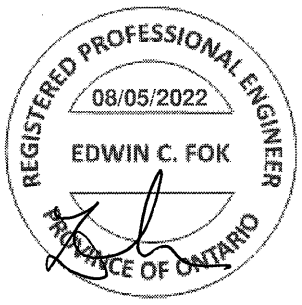
Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-04-10	Top		6			00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	06-04-10	Top	11	4			n\a
2	User Load	Unf. Lin. (lb/ft)	L	00-00-00	06-00-04	Top	20	10			n\a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	05-09-06	Back	360	179			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3683 ft-lbs	17696 ft-lbs	20.8%	1	03-03-06
End Shear	1943 lbs	7232 lbs	26.9%	1	05-00-06
Total Load Deflection	L/999 (0.034")	n\a	n\a	4	03-01-02
Live Load Deflection	L/999 (0.023")	n\a	n\a	5	03-01-02
Max Defl.	0.034"	n\a	n\a	4	03-01-02
Span / Depth	6.1				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	1-3/4" x 1-3/4"	2656 lbs	50.0%	71.1%	Spruce-Pine-Fir
B2	Wall/Plate	4-3/8" x 1-3/4"	2209 lbs	46.9%	23.7%	Spruce-Pine-Fir



Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
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: 00-09-08.

Disclosure

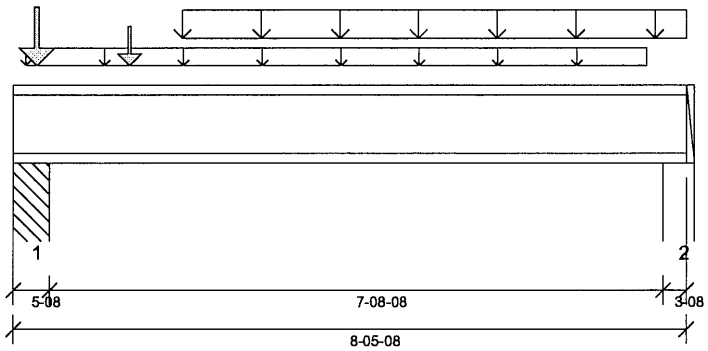
SG049765

MiTek	Customer: **Gold Park** Job Address: **Pine Valley** City: **Vaughan** Job Track: **45147-UNIT 5004 (290673) 3375...**	Job Name: **346630-A-LOT 23** Level: **1st Floor** Label: **B56 - i47047** Type: **Beam**	**2 Ply Member** **11 7/8" NI-20**	Status: **Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 07/21/2022 15:08



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: 1'- 1 1/2"

Factored Resistance of Support Material:

- 1334 psi Column @ 0'- 4 1/2"
- 615 psi Wall @ 8'- 3"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 1 1/2"	1.25D + 1.5L	1.00	3408 lb ft	11160 lb ft	Passed - 31%
Factored Neg. Moment:	0'- 4 1/2"	1.4D	0.65	62 lb ft	7254 lb ft	Passed - 1%
Factored Shear:	8'- 1 15/16"	1.25D + 1.5L	1.00	1881 lb	4480 lb	Passed - 42%
Live Load (LL) Pos. Defl.:	4'- 3 5/8"	L		0.039"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 3 11/16"	D + L		0.073"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-08	1.25D + 1.5L	1.00	2672 lb		4480 lb	36696 lb	Passed - 60%
2	3-08	1.25D + 1.5L	1.00	2007 lb		4360 lb	10766 lb	Passed - 46%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 5 1/2"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'- 1 7/8"	7'- 11 1/2"	User Load	Top	60 lb/ft	-	-	-
Uniform	2'- 1 1/2"	8'- 5 1/2"	Smoothed Load	Top	96 lb/ft	180 lb/ft	-	-
Point	0'- 3 1/2"	0'- 3 1/2"	-	Back	418 lb	303 lb	-	-
Point	1'- 5 1/2"	1'- 5 1/2"	J6(i47233)	Back	134 lb	268 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	Pt1(i47269)	1023 lb	943 lb	-	-
2	8'- 2"	8'- 5 1/2"	W24(i45454)	658 lb	775 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.
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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.

PLY TO PLY CONNECTION

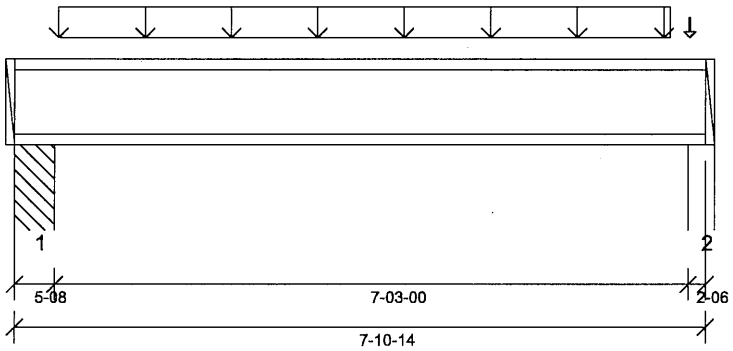
- Member design assumed proper ply to ply connection by others. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.

REGISTERED PROFESSIONAL ENGINEER
08/05/2022
EDWIN C. FOK
PROVINCE OF ONTARIO

S6049766

MiTek	Customer: **Gold Park** Job Address: **Pine Valley** City: **Vaughan** Job Track: **45147-UNIT 5004 (290673) 3375...**	Job Name: **346630-A-LOT 23** Level: **1st Floor** Label: **B57 - i47221** Type: **Beam**	**1 Ply Member** **11 7/8" NI-20**	Status: **Design Passed**

Illustration Not to Scale. Pitch: 0/12 | Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15 | Report Version: 2021.03.26 07/21/2022 15:09



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,

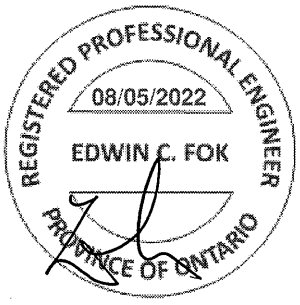
Lateral Restraint Requirements:

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 1/2"

Factored Resistance of Support Material:

- 1334 psi Column @ 0'- 4 1/2"
- 615 psi Wall @ 7'- 9 1/2"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'	1.25D + 1.5L	1.00	2742 lb ft	5580 lb ft	Passed - 49%
Factored Shear:	0'- 5 9/16"	1.25D + 1.5L	1.00	1407 lb	2240 lb	Passed - 63%
Live Load (LL) Pos. Defl.:	4'- 1"	L		0.069"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 1"	D + L		0.105"	L/240	Passed - L/827

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-08	1.25D + 1.5L	1.00	1409 lb		2240 lb	18348 lb	Passed - 63%
2	2-06	1.25D + 1.5L	1.00	1406 lb		2045 lb	3653 lb	Passed - 69%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	7'- 10 7/8"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'- 6"	7'- 6"	Smoothed Load	Front	92 lb/ft	183 lb/ft	-	-
Point	7'- 8 11/16"	7'- 8 11/16"	4(i38035)	Top	21 lb	23 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	Pt1(i47169)	341 lb	655 lb	-	-
2	7'- 8 1/2"	7'- 10 7/8"	-	346 lb	649 lb	-	-
++>	7'- 9 15/16"	7'- 9 15/16"	W24(i45454)	277 lb	519 lb	-	-
++>	7'- 10 5/8"	7'- 10 5/8"	W13(i42446)	69 lb	130 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.

SEO49767

NORDIC
STRUCTURES

Maximum Floor Spans – M4.1, 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:	3/4 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'-11"	15'-0"	14'-6"	13'-5"	16'-5"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-10"	17'-5"	16'-5"	15'-10"	14'-11"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-7"	16'-7"	16'-0"	15'-4"
	NI-80	18'-3"	17'-1"	16'-5"	15'-9"	18'-8"	17'-5"	16'-9"	16'-1"
11-7/8"	NI-20	17'-11"	16'-11"	16'-3"	15'-8"	18'-7"	17'-5"	16'-10"	16'-1"
	NI-40x	19'-4"	17'-11"	17'-3"	16'-7"	19'-11"	18'-6"	17'-9"	17'-0"
	NI-60	19'-7"	18'-2"	17'-6"	16'-9"	20'-2"	18'-9"	17'-11"	17'-2"
	NI-80	21'-1"	19'-6"	18'-8"	17'-7"	21'-7"	20'-0"	19'-0"	18'-0"
	NI-90	21'-6"	19'-10"	18'-11"	17'-11"	22'-0"	20'-4"	19'-5"	18'-4"
14"	NI-40x	21'-5"	19'-11"	18'-11"	18'-0"	22'-1"	20'-7"	19'-7"	18'-7"
	NI-60	21'-10"	20'-2"	19'-3"	18'-3"	22'-6"	20'-10"	19'-11"	18'-10"
	NI-80	23'-5"	21'-7"	20'-7"	19'-5"	24'-0"	22'-3"	21'-2"	20'-0"
	NI-90	23'-10"	22'-1"	21'-0"	19'-10"	24'-5"	22'-7"	21'-6"	20'-4"
16"	NI-60	23'-9"	22'-0"	21'-0"	19'-10"	24'-6"	22'-9"	21'-8"	20'-7"
	NI-80	25'-6"	23'-7"	22'-5"	21'-2"	26'-2"	24'-3"	23'-1"	21'-10"
	NI-90	26'-0"	24'-0"	22'-10"	21'-6"	26'-7"	24'-8"	23'-5"	22'-2"

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'-8"	17'-6"	16'-7"	14'-11"	19'-2"	17'-8"	16'-7"	14'-11"
	NI-60	18'-11"	17'-8"	16'-10"	15'-7"	19'-5"	18'-0"	16'-10"	15'-7"
	NI-80	20'-3"	18'-10"	17'-11"	17'-2"	20'-8"	19'-3"	18'-4"	17'-5"
11-7/8"	NI-20	20'-3"	18'-8"	17'-6"	16'-1"	20'-7"	18'-8"	17'-6"	16'-1"
	NI-40x	21'-10"	20'-4"	19'-0"	17'-0"	22'-5"	20'-10"	19'-0"	17'-0"
	NI-60	22'-1"	20'-7"	19'-8"	18'-7"	22'-8"	21'-2"	20'-3"	18'-8"
	NI-80	23'-8"	22'-0"	20'-11"	19'-10"	24'-1"	22'-6"	21'-6"	20'-4"
	NI-90	24'-1"	22'-5"	21'-4"	20'-2"	24'-7"	22'-11"	21'-10"	20'-8"
14"	NI-40x	24'-5"	22'-9"	20'-11"	18'-8"	25'-1"	22'-11"	20'-11"	18'-8"
	NI-60	24'-10"	23'-2"	22'-1"	20'-10"	25'-6"	23'-10"	22'-9"	21'-4"
	NI-80	26'-6"	24'-8"	23'-6"	22'-2"	27'-1"	25'-3"	24'-1"	22'-9"
	NI-90	27'-0"	25'-1"	23'-11"	22'-7"	27'-6"	25'-8"	24'-8"	23'-2"
16"	NI-60	27'-3"	25'-5"	24'-3"	22'-11"	28'-0"	26'-2"	25'-0"	23'-1"
	NI-80	29'-1"	27'-1"	25'-9"	24'-4"	29'-8"	27'-9"	26'-5"	25'-0"
	NI-90	29'-7"	27'-6"	26'-2"	24'-9"	30'-2"	28'-2"	26'-10"	25'-5"

Notes:

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

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

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

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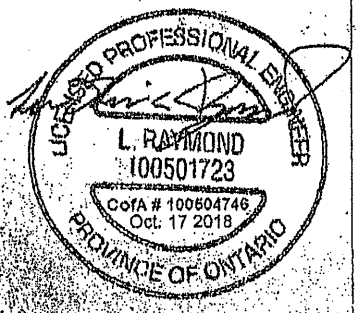
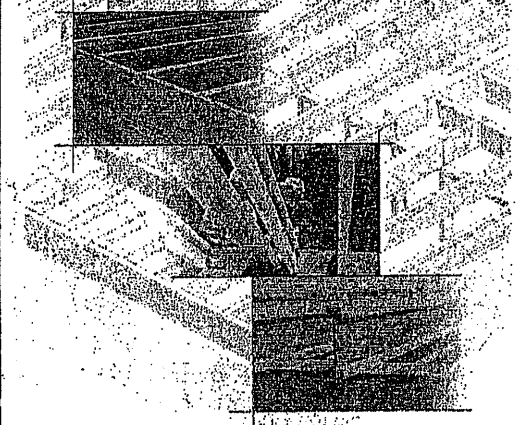
Document prepared for the use of Stephanie Gon from Alpa, Ontario. (Nordic Request 1810-095)



N-C301/April 2014

NORDIC ENGINEERED WOOD

INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:

SAFETY AND CONSTRUCTION PRECAUTIONS

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

Never stack building materials over unsheathed I-joists. Once sheathed, do not over-stress I-joist 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.

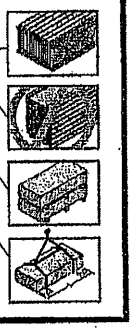
Avoid Accidents by Following these Important Guidelines!

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bridging 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 the sheathing is applied, temporary bracing, often called strolls, 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 braced 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-bridging.
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

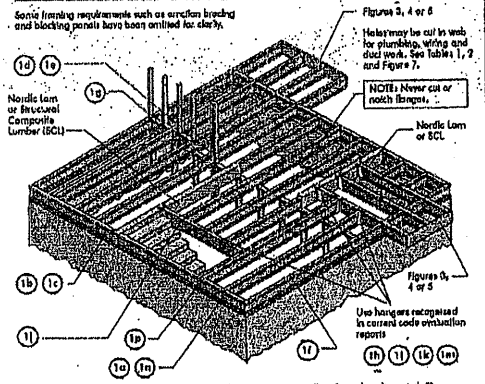
1. Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
2. Store, stack, and handle I-joists vertically and level only.
3. Always stack and handle I-joists in the upright position only.
4. Do not store I-joists in direct contact with the ground and/or flatwise.
5. Protect I-joists 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 3rd points, using a spreader bar if necessary.
8. Do not handle I-joists in a horizontal orientation.
9. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.



INSTALLING NORDIC I-JOISTS

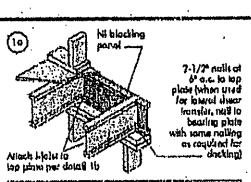
1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple-span joists must be level.
5. Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
7. Leave a 1/16-inch gap between the I-joist end and a header.
8. Concentrated loads greater than those that can normally be supported in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, studio 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 web.
9. Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
10. Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
11. 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.
12. Due to shrinkage, common framing lumber set on edge may 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 are I-joist-compatible depth selected.
13. Provide permanent lateral support at 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.
14. 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.
15. Nail spacing: Space nails installed in 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



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.

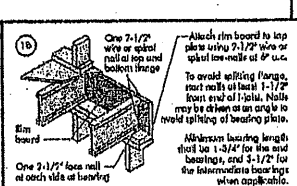
1a



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

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

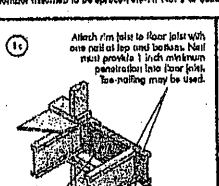
1b



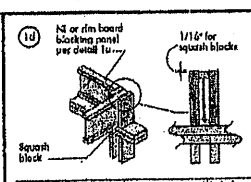
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	5,090

*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 bearing member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

1c



1d



Pair of Squash Blocks	Maximum Factored Vertical per Pair of Squash Blocks (lbs)	
	3-1/2" wide	5-1/2" wide
2x Lumber	5,800	8,500
1-1/8" Rim Board Plus	4,200	6,600

Provide lateral bracing per detail 1a, 1b, or 1c

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

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

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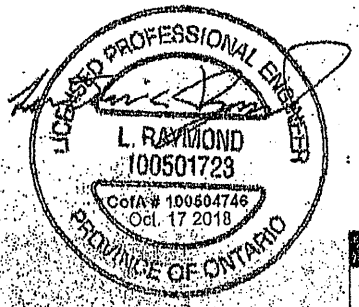
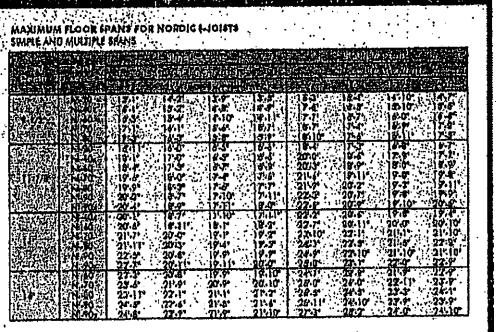
Document prepared for the use of Stephanie Gon from Alpa, Ontario. (Nordic Request 1810-095)



MAXIMUM FLOOR SPANS

1. 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 considerations 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.
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 6/8 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 CSA-O 86-01 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.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
4. Bearing stiffeners are not required when I-Joists are used with the sizes and spacings given in this table, except as required for hangers.
5. 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.
6. Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and NBC 2010.
7. SI units conversions: 1 inch = 25.4 mm; 1 foot = 0.305 m

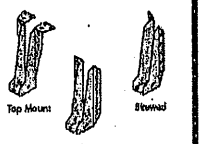
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS
SIMPLE AND MULTIPLE SPANS



CCMC EVALUATION REPORT 13032-R

I-JOIST HANGERS

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



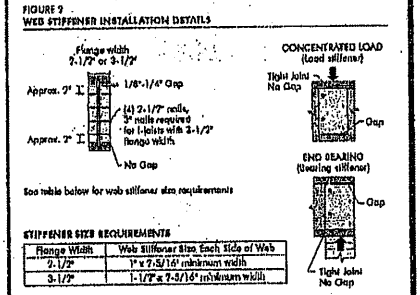
WEB STIFFENERS

RECOMMENDATIONS:

- A *bearing stiffener* is required in all engineered applications with factored reactions greater than shown in the I-Joist properties table found of 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 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 2,270 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 9
WEB STIFFENER INSTALLATION DETAILS

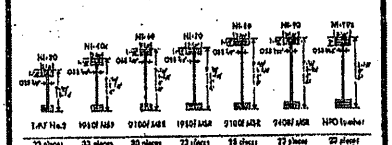


See table below for web stiffener size requirements

STIFFENER SIZE REQUIREMENTS

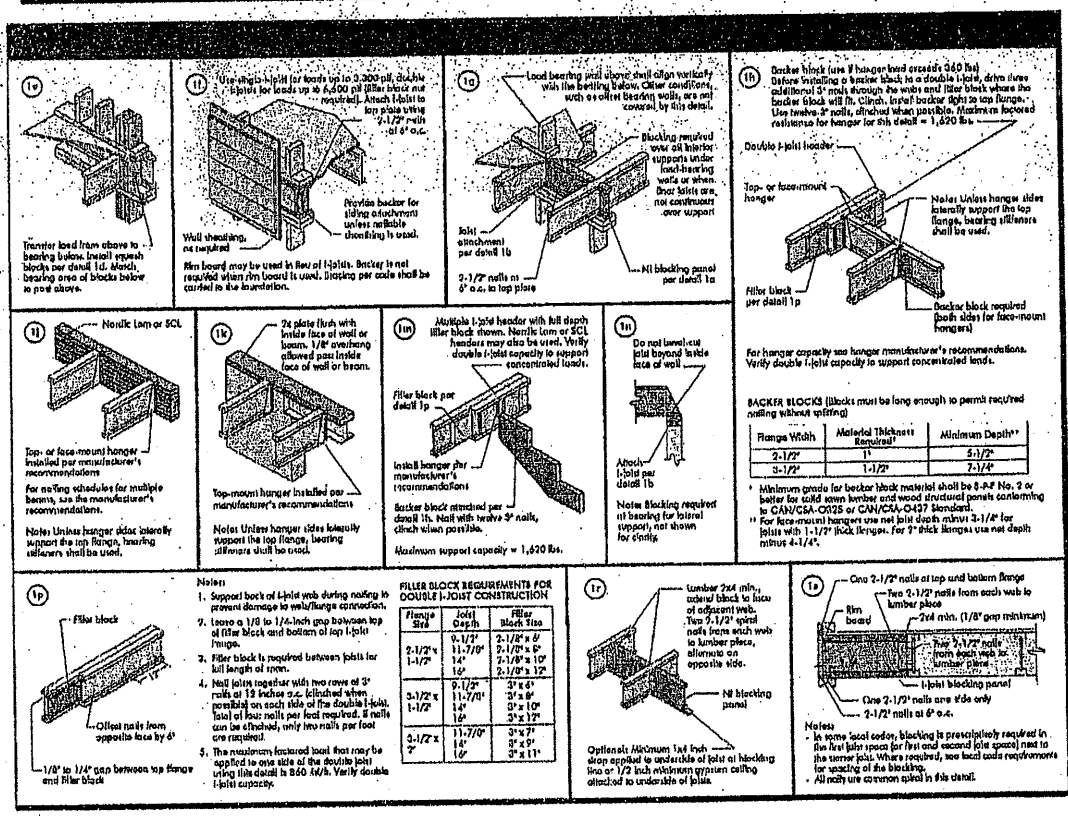
Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

NORDIC I-JOIST SERIES



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 the I flanges, ensuring consistent quality, superior strength, and longer span carrying capacity.



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 sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.
** For face-mount hangers use net joist depth minus 2-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

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"	2-1/8" x 6"
	11-7/8"	2-1/8" x 9"
	14"	2-1/8" x 10"
	16"	2-1/8" x 12"
3-1/2" 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"

Notes:
1. Support back of I-Joist web during nailing to prevent damage to web/flange connection.
2. Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-Joist flange.
3. Filler block is required between joists for full length of span.
4. 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.
5. The maximum factored load that may be applied to one side of the double joist using this detail is 860 lb/ft. Verify double I-Joist capacity.

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

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

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

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Document prepared for the use of Stephanie Gon from Alpa, Ontario. (Nordic Request 1810-095)

LICENSED PROFESSIONAL ENGINEER
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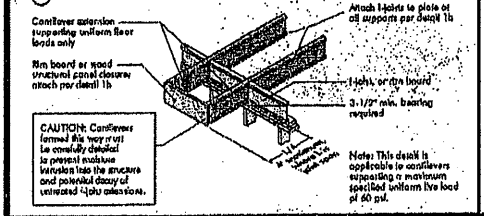
100501723
GofA # 100604746
Oct. 17 2018
PROVINCE OF ONTARIO

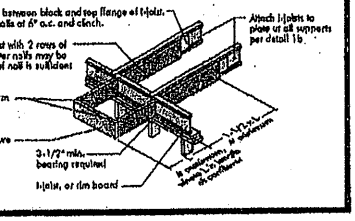
N-C301/April 2014

CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

3a I-JOIST CANTILEVER DETAIL FOR BALCONIES (No Wall Load)

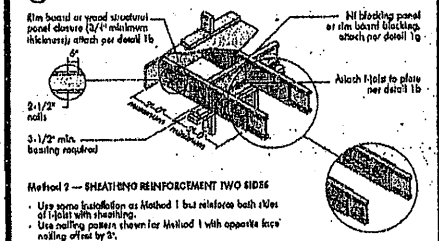


3b LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE

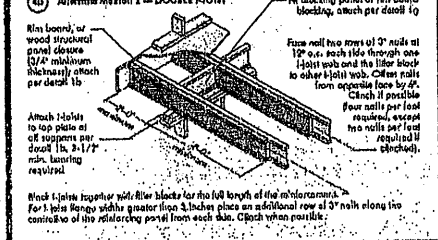


Method 2 — SHEATHING REINFORCEMENT TWO SIDES

- Use same installation as Method 1 but reinforce both sides of I-joist with sheathing.
- Use nailing pattern shown for Method 1 with opposite face nailing offset by 3".

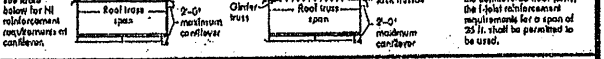
Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/8") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c. top and bottom flange. Install with face grain horizontal. Attach I-joist to plate or sill supports per detail 1b. Verify reinforced I-joist capacity.

4b Alternate Method 2 — DOUBLE I-JOIST



Block I-joists together with filler blocks for the full length of the reinforcement. For I-joist flange widths greater than 3 inches place an additional row of 3" nails along the centreline of the reinforcing panel from each side. Clinch when possible.

FIGURE 4 (continued)



See table below for NI reinforcement requirements at cantilever.

For hip roofs with the jack trusses running parallel to the cantilevered floor joists, the I-joist reinforcement requirements for a span of 25 ft. shall be permitted to be used.

CANTILEVER REINFORCEMENT METHODS ALLOWED

		12"				16"				19.2"			
9-1/2	24	N	N	1	2	N	1	2	X	N	2	X	X
	26	N	N	1	X	N	1	2	X	N	2	X	X
	28	N	1	2	X	N	2	X	X	1	X	X	X
	30	N	1	2	X	N	2	X	X	1	X	X	X
	32	N	1	2	X	N	2	X	X	1	X	X	X
	34	N	1	2	X	N	2	X	X	1	X	X	X
	36	N	1	2	X	1	2	X	X	1	X	X	X
11-7/8	26	1	N	N	1	1	N	1	2	1	2	X	X
	28	1	N	N	1	1	N	1	2	1	2	X	X
	30	1	N	N	1	2	N	1	2	2	X	1	2
	32	1	N	1	2	2	N	1	2	2	X	1	2
	34	1	N	1	2	2	N	1	2	X	X	1	2
	36	1	N	1	2	X	1	2	X	X	X	2	X
	38	2	N	1	2	X	1	2	X	X	X	2	X
14	26	N	N	N	N	N	N	N	1	N	N	N	1
	28	N	N	N	N	N	N	N	1	N	N	N	1
	30	N	N	N	N	N	N	N	1	N	N	1	1
	32	N	N	N	N	N	N	N	1	N	N	1	1
	34	N	N	N	N	N	N	N	1	N	N	1	1
	36	N	N	N	N	N	N	N	1	N	N	1	1
	38	N	N	N	N	N	N	N	1	N	N	1	1
16	26	N	N	N	N	N	N	N	N	N	N	N	1
	28	N	N	N	N	N	N	N	N	N	N	N	1
	30	N	N	N	N	N	N	N	1	N	N	N	1
	32	N	N	N	N	N	N	N	1	N	N	N	1
	34	N	N	N	N	N	N	N	1	N	N	1	1
	36	N	N	N	N	N	N	N	1	N	N	1	1
	38	N	N	N	N	N	N	N	1	N	N	1	1

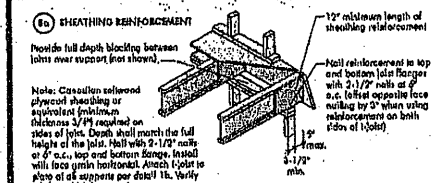
1. N = No reinforcement required.
   1 = NI reinforced with 3/4" wood structural panel on one side only.
   2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
   X = Try a deeper joist or closer spacing.
2. Maximum design load shall be 15 psf roof dead load, 65 psf floor total load, and 90 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.

For large openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.

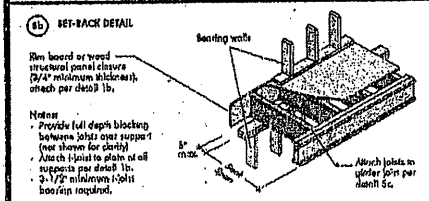
3. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 10 psf, and a 360 load deflection limit of L/480. Use 12" o.c. requirements for heavier spacing.
4. For conventional roof construction using a ridge board, the Roof Truss Span column above is equivalent to the distance between the supporting walls or the ridge beam. When the roof is framed using a ridge board, 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)

5a SHEATHING REINFORCEMENT



5b SET-BACK DETAIL



5c SET-BACK CONNECTION

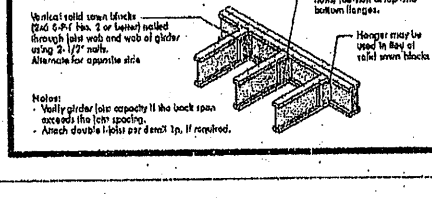


FIGURE 5 (continued)

See table below for NI reinforcement requirements at cantilever.

For hip roofs with the jack trusses running parallel to the cantilevered floor joists, the I-joist reinforcement requirements for a span of 25 ft. shall be permitted to be used.

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

		12"				16"				19.2"			
9-1/2	24	1	X	X	X	2	X	X	X	2	X	X	X
	26	1	X	X	X	2	X	X	X	2	X	X	X
	28	2	X	X	X	2	X	X	X	X	X	X	X
	30	2	X	X	X	2	X	X	X	X	X	X	X
	32	2	X	X	X	X	X	X	X	X	X	X	X
	34	X	X	X	X	X	X	X	X	X	X	X	X
	36	X	X	X	X	X	X	X	X	X	X	X	X
11-7/8	26	X	X	X	X	X	X	X	X	X	X	X	X
	28	X	X	X	X	X	X	X	X	X	X	X	X
	30	X	X	X	X	X	X	X	X	X	X	X	X
	32	X	X	X	X	X	X	X	X	X	X	X	X
	34	X	X	X	X	X	X	X	X	X	X	X	X
	36	X	X	X	X	X	X	X	X	X	X	X	X
	38	X	X	X	X	X	X	X	X	X	X	X	X
14	26	N	2	X	X	1	X	X	X	2	X	X	X
	28	N	2	X	X	1	X	X	X	2	X	X	X
	30	1	X	X	X	1	X	X	X	2	X	X	X
	32	1	X	X	X	1	X	X	X	2	X	X	X
	34	1	X	X	X	1	X	X	X	2	X	X	X
	36	1	X	X	X	1	X	X	X	2	X	X	X
	38	1	X	X	X	1	X	X	X	2	X	X	X
16	26	1	X	X	X	1	X	X	X	2	X	X	X
	28	1	X	X	X	1	X	X	X	2	X	X	X
	30	1	X	X	X	1	X	X	X	2	X	X	X
	32	1	X	X	X	1	X	X	X	2	X	X	X
	34	1	X	X	X	1	X	X	X	2	X	X	X
	36	1	X	X	X	1	X	X	X	2	X	X	X
	38	2	X	X	X	2	X	X	X	X	X	X	X

1. N = No reinforcement required.
   1 = NI reinforced with 3/4" wood structural panel on one side only.
   2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
   X = Try a deeper joist or closer spacing.
2. Maximum design load shall be 15 psf roof dead load, 65 psf floor total load, and 90 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.

For large openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.

3. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 10 psf, and a 360 load deflection limit of L/480. Use 12" o.c. requirements for heavier spacing.
4. For conventional roof construction using a ridge board, the Roof Truss Span column above is equivalent to the distance between the supporting walls or the ridge beam. When the roof is framed using a ridge board, the Roof Truss Span is equivalent to the distance between the supporting walls or if a truss is used.
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

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

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

Document prepared for the use of Stephanie Gori from Alpa, Ontario. (Nordic Request 1810-095)

LICENSED PROFESSIONAL ENGINEER
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Oct. 17 2018
PROVINCE OF ONTARIO

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-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 or 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 shall be permitted anywhere in a cantilevered 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 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

[illegible]	[illegible]	[illegible]

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.

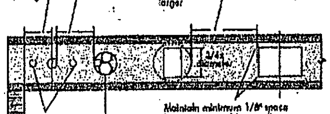
OPTIONAL:
The above table is based on the I-joists used at their maximum span. If the I-joists are placed at less than their full maximum span (see Maximum Floor Spans), the minimum distance from the centreline of the hole to the face of any support (D) as given above may be reduced as follows:

$$D_{reduced} = \frac{L_{actual}}{SAF} \times D$$

Where
- $D_{reduced}$ = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications (ft). The reduced distance shall not be less than 6 inches from the face of the support to edge of the hole.
- L_{actual} = The actual measured span distance between the inside faces of supports (ft).
- SAF = Span Adjustment Factor given in the table.
- D = The minimum distance from the inside face of any support to centre of hole from this table.

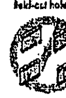
If $\frac{L_{actual}}{SAF}$ is greater than 1, use 1 in the above calculation for $\frac{L_{actual}}{SAF}$.

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 field-cut holes.



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

Holes in webs should be cut with a sharp saw.

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

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

[illegible]	[illegible]	[illegible]

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. For other applications, contact your local distributor.

INSTALLING THE GLUED FLOOR SYSTEM

1. Wipe any mud, dirt, water, or ice from I-joist flanges before gluing.
2. Snap a chalk line across the I-joists four feet in from the wall for panel edge alignment and as a boundary for spreading glue.
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-joist. Apply glue in a winding pattern on wide areas, such as with double I-joists.
6. Apply two lines of glue on I-joists where panel ends butt to assure proper gluing of each end.
7. After the first row of panels is in place, spread glue in the groove of one or two panels at a time before laying the next row. Glue line may be continuous or spaced, but avoid squeeze-out by applying a thinner line (1/8 inch) than used on I-joist flanges.
8. Tap the second row of panels into place, using a block to protect groove edges.
9. Stagger end 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 cure time. (Warm weather accelerates glue setting.) Use 2" ring- or screw-shank nails for panels 3/4-inch thick or less, and 2-1/2" ring- or screw-shank nails for thicker panels. Space nails per the table below. Closer nail spacing may be required by some codes, or for diaphragm construction. The finished deck can be walked on right away and will carry construction loads without damage to the glue bond.

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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"

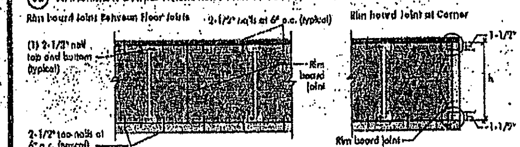
1. Fasteners of sheathing and subflooring shall conform to the above table.
2. Staples shall not be less than 1/16-inch in diameter or thickness, with not less than a 3/8-inch crown driven with the crown parallel to framing.
3. Flooring screws shall not be less than 1/8-inch in diameter.
4. Special conditions may impose heavy traffic and concentrated loads that require construction in excess of the minimums shown.
5. 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 panel manufacturer.

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

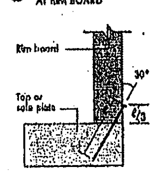
IMPORTANT NOTE:
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

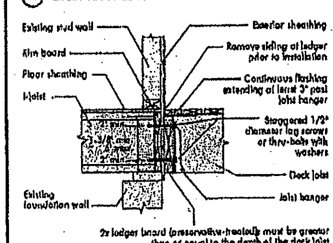
(8a) ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

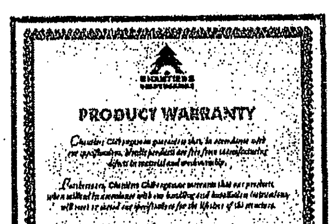


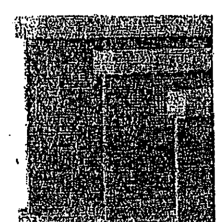
(8b) TOE-NAIL CONNECTION AT RIM BOARD



(8c) 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL





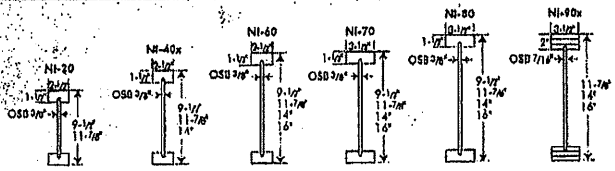


CONSTRUCTION DETAILS FOR RESIDENTIAL FLOORS

NORDIC ENGINEERED WOOD

www.nordicewp.com

FSC



S-P-F No. 2	1950f MSR	2100f MSR	1950f MSR	2100f MSR	NPG Lumber
33 pieces per unit	33 pieces per unit	33 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit

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 or 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 largest 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 cantilevered 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 workmanlike 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 a single round hole circumscribed around them.

TABLE 1

LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

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

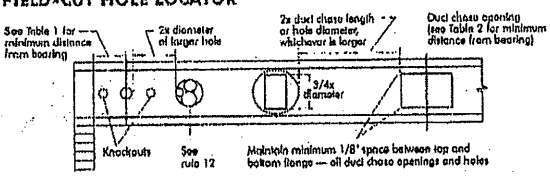
Simple Span Only

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	
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'-6"	8'-0"	8'-5"	8'-9"	
	NI-70	5'-11"	6'-5"	6'-10"	7'-4"	7'-9"	8'-3"	8'-7"	9'-1"	9'-6"	
	NI-80	6'-3"	6'-8"	7'-2"	7'-7"	8'-0"	8'-5"	8'-10"	9'-3"	9'-8"	
11-7/8"	NI-20	5'-9"	6'-2"	6'-8"	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"	
	NI-80	7'-2"	7'-7"	8'-0"	8'-5"	8'-10"	9'-3"	9'-8"	10'-2"	10'-8"	
	NI-90x	7'-7"	8'-1"	8'-5"	8'-10"	9'-4"	9'-8"	10'-2"	10'-8"	11'-2"	
14"	NI-40x	8'-1"	8'-7"	9'-0"	9'-6"	10'-1"	10'-7"	11'-2"	12'-0"	12'-10"	
	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'-6"	10'-8"	11'-2"	11'-7"	12'-3"	
	NI-80	9'-0"	9'-3"	9'-9"	10'-1"	10'-7"	11'-1"	11'-6"	12'-1"	12'-6"	
	NI-90x	9'-4"	9'-9"	10'-3"	10'-7"	11'-1"	11'-7"	12'-1"	12'-7"	13'-2"	
16"	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'-3"	14'-0"	
	NI-80	10'-4"	10'-9"	11'-3"	11'-9"	12'-1"	12'-7"	13'-1"	13'-8"	14'-4"	
	NI-90x	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 shown table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

FIGURE 7

FIELD-CUT HOLE LOCATOR



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

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

Holes in webs should be cut with a sharp saw.

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

SAFETY AND CONSTRUCTION PRECAUTIONS

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

Never stack building materials over unsheathed 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-bridging 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, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
   - Temporary bracing or struts must be 1x6 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-bridging.
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.

GRANITERRE CHÂTEAUGUAY

PRODUCT WARRANTY

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

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

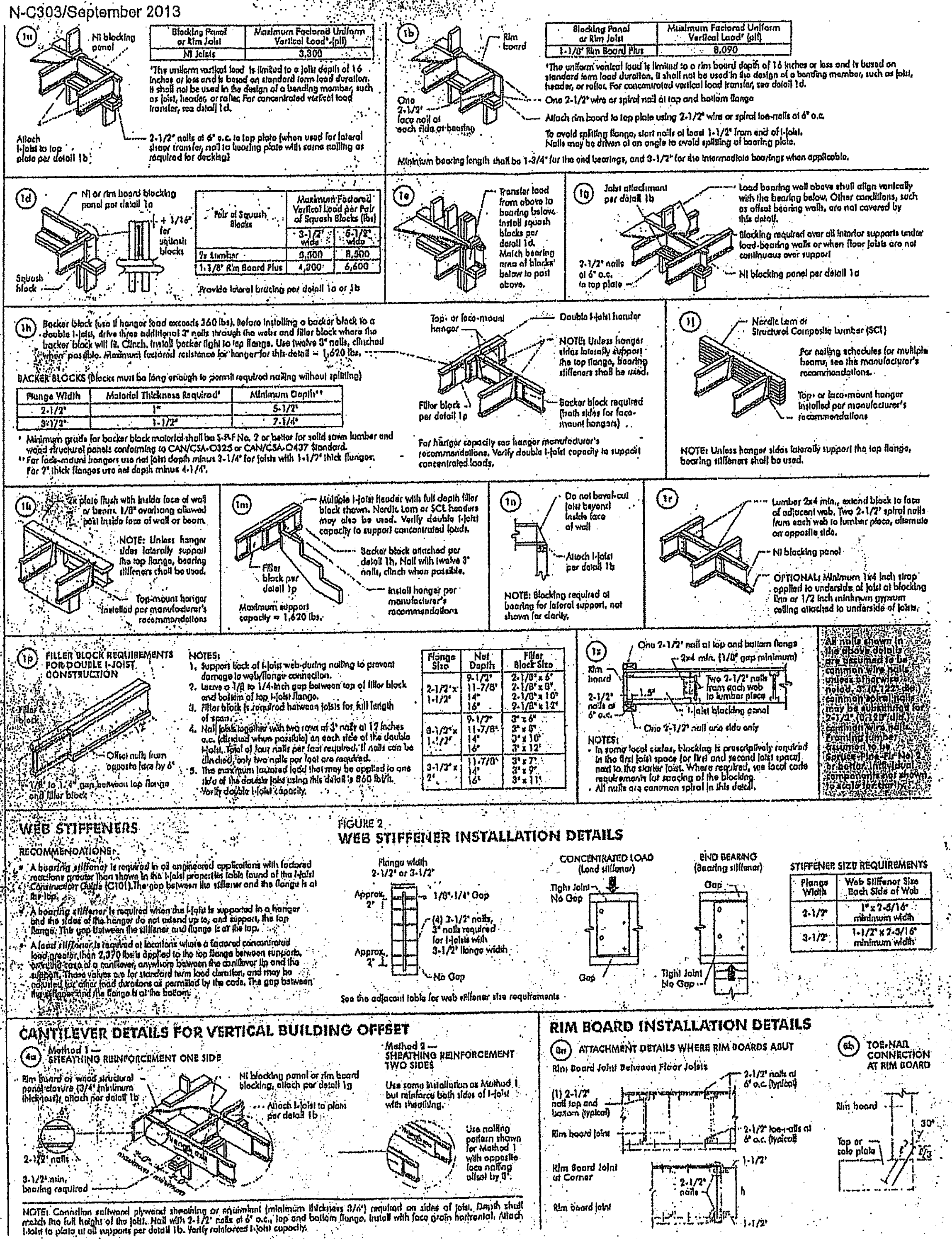
The construction details for residential designs are prone to changes.

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.

Document prepared for the use of Stephanie Gon from Alpa, Ontario. (Nordic Request 1810-095)



N-C303/September 2013

(1a) NI blocking panel

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

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

Attach I-joist to top plate per detail 1b

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

(1b) Rim board

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

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

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

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

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

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

+ 1/16" for squash blocks

Squash block

Pair of Squash Blocks	Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)	
	3-1/2" wide	5-1/2" wide
2x Lumber	5,500	8,500
1-1/8" Rim Board Plus	4,300	6,600

Provide lateral bracing per detail 1a or 1b

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

(1g) Joist attachment per detail 1b

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

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

NI blocking panel per detail 1a

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

BACKER 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 sawn 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-joist 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-joist capacity to support concentrated loads.

(1j) Nordic Lam or Structural Composite Lumber (SCL)

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

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

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

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

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

Top-mount hanger installed per manufacturer's recommendations

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

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

Filler block per detail 1p

Install hanger per manufacturer's recommendations

Maximum support capacity = 1,620 lbs.

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

Attach I-joist per detail 1b

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

(1r) Lumber 2x4 min., extend block 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 inch 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:
1. Support back of I-joist web during nailing to prevent damage to web/flange connection.
2. Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
3. Filler block is required between joists for full length of span.
4. 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.
5. 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.

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

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

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

Rim board

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

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

1.5"

I-joist blocking panel

One 2-1/2" nail one side only

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

All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" 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.

WEB STIFFENERS

RECOMMENDATIONS:

- A *bearing stiffener* is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found of 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 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 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.

FIGURE 2

WEB STIFFENER INSTALLATION DETAILS

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

Approx. 2"

1/8"-1/4" Gap

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

No Gap

CONCENTRATED LOAD (Load stiffener)

Tight Joint No Gap

Gap

END BEARING (Bearing stiffener)

See the adjacent table for web stiffener size requirements

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

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

(4a) Method 1 — SHEATHING REINFORCEMENT ONE SIDE

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

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

Attach I-joist to plate per detail 1b

2-1/2" nails

3-1/2" min. bearing required

Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

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

RIM BOARD INSTALLATION DETAILS

(8a) ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim Board Joint Between Floor Joists

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

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

Rim board joint

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

Rim Board Joint at Corner

2-1/2" nails

1-1/2"

Rim board joint

(8b) TOE-NAIL CONNECTION AT RIM BOARD

Rim board

30°

Top or sole plate

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Oct. 17 2018
PROVINCE OF ONTARIO

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