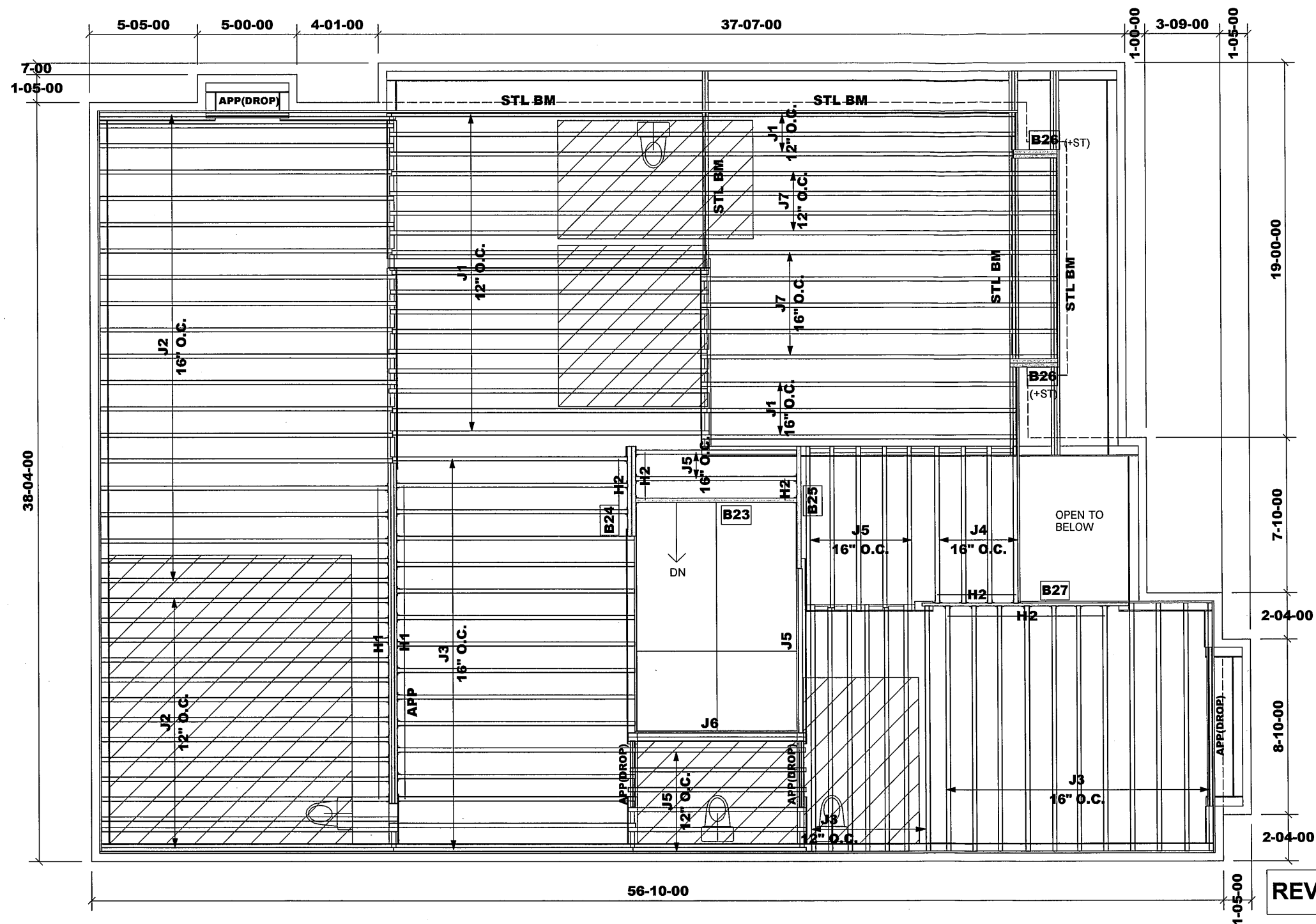




Products				
PlotID	Length	Product	Plies	Net Qty
B23	9-00-00	11 7/8" NI-20	1	1
B24	5-00-00	11 7/8" NI-20	2	2
B25	7-00-00	11 7/8" NI-20	1	1
B26	3-00-00	11 7/8" NI-20	2	4
B27	11-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
Bk1	53-00-00	11 7/8" NI-20	1	1
Ca1	208-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	16-00-00	11 7/8" NI-20	1	23
J2	15-00-00	11 7/8" NI-20	1	34
J3	13-00-00	11 7/8" NI-20	1	34
J4	10-00-00	11 7/8" NI-20	1	4
J5	9-00-00	11 7/8" NI-20	1	14
J6	9-00-00	11 7/8" NI-20	2	2
J7	18-00-00	11 7/8" NI-40x	1	9

Connector Summary			
PlotID	Qty	Manuf	Product
H1	29		LF2511
H2	22		LT251188

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

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

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

Do not scale - refer to architectural plans for dimensions

- LOT 49



Layout ID: 321531-346633*

Plan Log: **117907**

Builder: **Gold Park**

Project: **Pine Valley**

Model: **5009A - LOT 49**

Location: **Vaughan**

SalesPerson: **Derek**Yard: **Home Lumber**

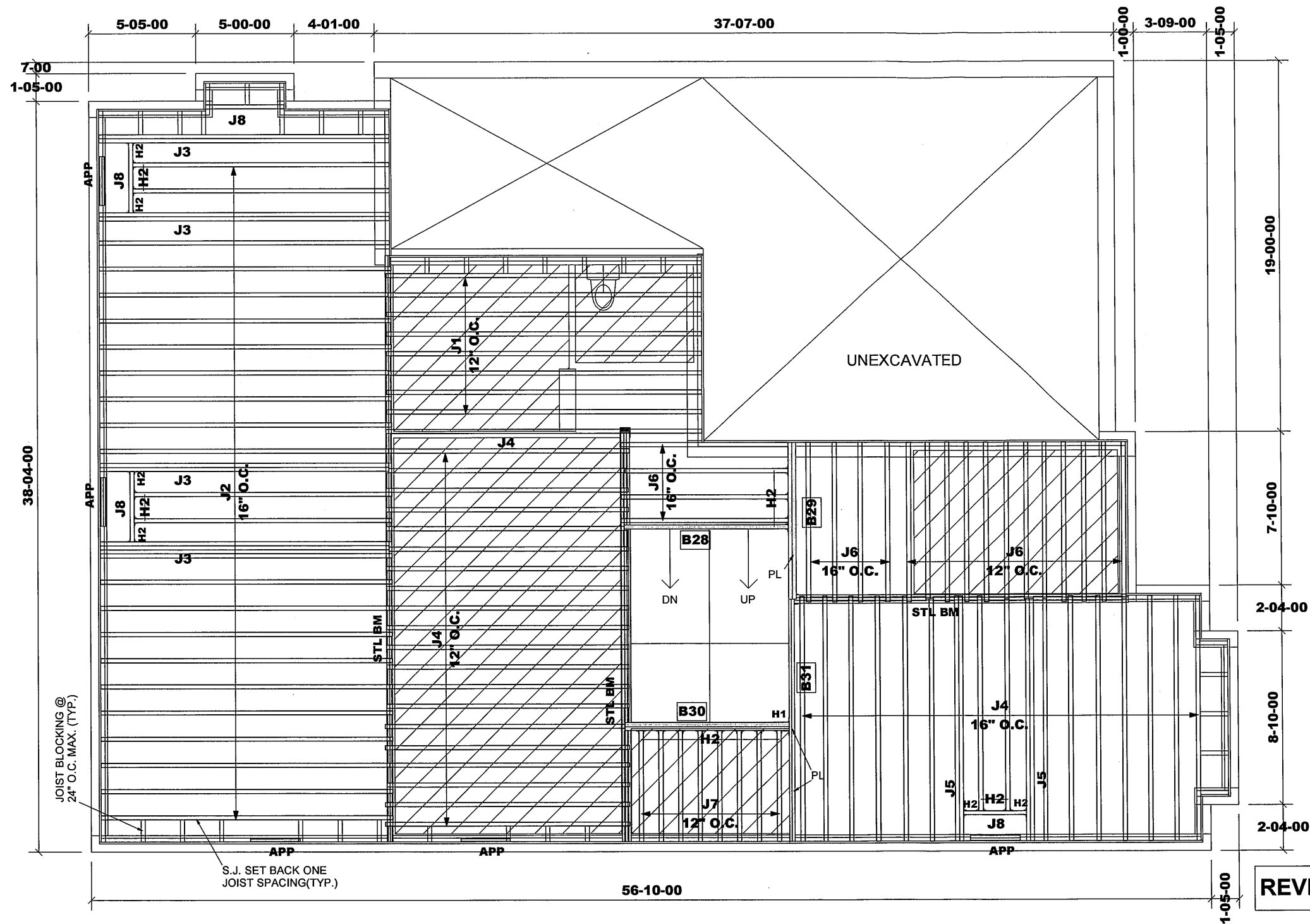
Sheet: 1 of 3

Date: **2022/07/23**

Designer: **NL**

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Mitek V. 8.5.3.233



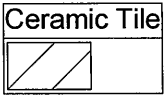
Products				
PlotID	Length	Product	Plies	Net Qty
B28	9-00-00	11 7/8" NI-20	1	1
B29	8-00-00	11 7/8" NI-20	2	2
B30	9-00-00	11 7/8" NI-20	2	2
B31	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
Bk1	76-00-00	11 7/8" NI-20	1	1
Ca1	203-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	16-00-00	11 7/8" NI-20	1	8
J2	15-00-00	11 7/8" NI-20	1	24
J3	15-00-00	11 7/8" NI-20	2	8
J4	13-00-00	11 7/8" NI-20	1	36
J5	13-00-00	11 7/8" NI-20	2	4
J6	9-00-00	11 7/8" NI-20	1	20
J7	6-00-00	11 7/8" NI-20	1	8
J8	4-00-00	11 7/8" NI-20	1	4

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HU310-2
H2	24		LT251188

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

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

Ceramic tile application as per O.B.C. 9.30.6
 Blocking panels are required over all interior supports
 Squash blocks are required under concentrated loads.



First Floor Framing

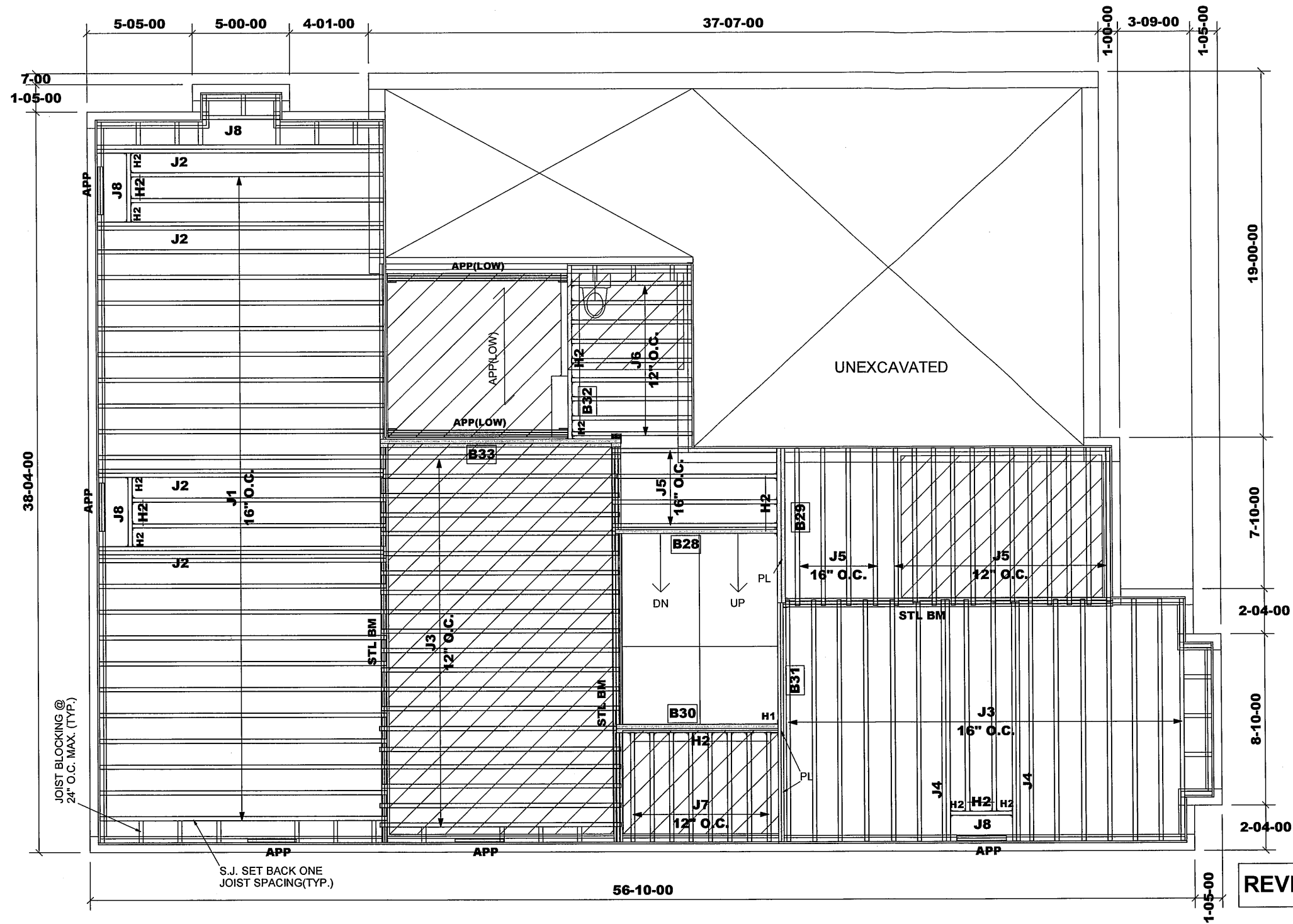
Do not scale - refer to architectural plans for dimensions

MODEL: 5009MOD - EL.A
 - LOT 49

REVISION: Aug. 5, 2022



Job Track: 45147	Builder: Gold Park	Location: Vaughan	Sheet: 2 of 3	THESE DRAWINGS CONSTITUTE THE PROPERTY OF ALPA ROOF TRUSSES INC., SHALL NOT BE REPRODUCED, PUBLISHED, OR REDISTRIBUTED IN ANY MANNER OR UTILIZED BY ANY OTHER WITHOUT PERMISSION OF ALPA ROOF TRUSSES INC., AND WILL BE RETRACTED BY ALPA ROOF TRUSSES INC IF UTILIZED FOR ANY OTHER PURPOSE. Mitek V. 8.5.3.233
Layout ID: 321531-346633*	Project: Pine Valley	SalesPerson: Derek	Date: 2022/07/23	
Plan Log: 117907	Model: 5009A - LOT 49	Yard: Home Lumber	Designer: NL	



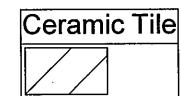
Products				
PlotID	Length	Product	Plies	Net Qty
B28	9-00-00	11 7/8" NI-20	1	1
B29	8-00-00	11 7/8" NI-20	2	2
B30	9-00-00	11 7/8" NI-20	2	2
B31	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B32	9-00-00	11 7/8" NI-20	1	1
B33	13-00-00	11 7/8" NI-20	2	2
Bk1	67-00-00	11 7/8" NI-20	1	1
Ca1	202-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	15-00-00	11 7/8" NI-20	1	24
J2	15-00-00	11 7/8" NI-20	2	8
J3	13-00-00	11 7/8" NI-20	1	35
J4	13-00-00	11 7/8" NI-20	2	4
J5	9-00-00	11 7/8" NI-20	1	20
J6	7-00-00	11 7/8" NI-20	1	9
J7	6-00-00	11 7/8" NI-20	1	8
J8	4-00-00	11 7/8" NI-20	1	4

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HU310-2
H2	34		LT251188

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

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

Ceramic tile application as per O.B.C. 9.30.6
Blocking panels are required over all interior supports
Squash blocks are required under concentrated loads.



First Floor Framing

Do not scale - refer to architectural plans for dimensions

MODEL: 5009MOD - EL.A
- LOT 49(W/SUNKEN MUD)

REVISION: Aug. 5, 2022



Job Track: **45147**
Layout ID: **321531-346633***
Plan Log: **117907**

Builder: **Gold Park**
Project: **Pine Valley**
Model: **5009A - LOT 49**

Location: **Vaughan**
SalesPerson: **Derek**
Yard: **Home Lumber**

Sheet: **3 of 3**
Date: **2022/07/23**
Designer: **NL**

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Mitek V. 8.5.3.233



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(5009)**

Job Name: **346632-A-LOT 26**
Level: **2nd Level**
Label: **B12 - i28895**
Type: **Beam**

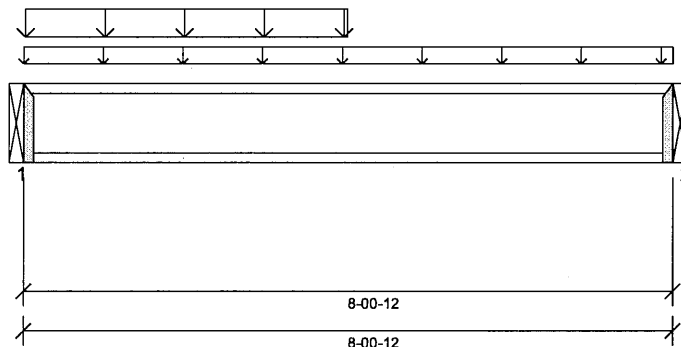
1 Ply Member
11 7/8" NI-20

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 07/23/2022 13:25



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: 8'- 3/4"

Factored Resistance of Support Material:

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

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 1 11/16"	1.25D + 1.5L	1.00	2211 lb ft	5580 lb ft	Passed - 40%
Factored Shear:	0'- 1/16"	1.25D + 1.5L	1.00	1400 lb	2240 lb	Passed - 62%
Live Load (LL) Pos. Defl.:	3'- 9 3/16"	L		0.064"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 9 5/16"	D + L		0.090"	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	1400 lb		1970 lb	-	Passed - 71%
2	1-12	1.25D + 1.5L	1.00	620 lb		1970 lb	-	Passed - 31%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	LF2511		-	-	-	Connector manually specified by the user.
2	LF2511		-	-	-	Connector manually specified by the user.

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

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 3/4"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	8'- 3/4"	FC4 Floor Decking (Plan View Fill)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	0'- 1/4"	4'- 1/4"	User Load	Top	75 lb/ft	200 lb/ft	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B24(i28877)	285 lb	697 lb	-	-
2	8'- 3/4"	8'- 3/4"	B23(i28898)	136 lb	299 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.



56049779



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(5009)**

Job Name: **346632-A-LOT 26**
Level: **2nd Level**
Label: **B16 - i25459**
Type: **Beam**

2 Ply Member

11 7/8" NI-20

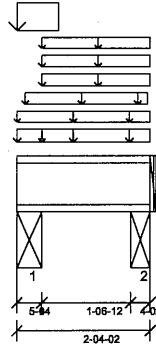
Status:

**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 07/23/2022 10:09



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: 1'- 6 3/4"

Factored Resistance of Support Material:

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

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 2 5/8"	1.25D + 1.5L	0.65	92 lb ft	7254 lb ft	Passed - 1%
Factored Neg. Moment:	0'- 4 1/4"	1.25D + 1.5S	0.94	77 lb ft	10437 lb ft	Passed - 1%
Factored Shear:	0'- 5 1/6"	1.25D + 1.5S + L	0.96	542 lb	4296 lb	Passed - 13%

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-04	1.25D + 1.5S + L	0.96	1081 lb		4296 lb	19356 lb	Passed - 25%
2	4-02	1.25D + 1.5L	0.65	304 lb		2912 lb	10309 lb	Passed - 10%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	2'- 4 1/8"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	2'- 4 1/8"	E69(i22441)	Top	101 lb/ft	-	-	-
Uniform	0'	2'- 4 1/8"	FC4 Floor Decking (Plan View Fill)	Top	3 lb/ft	6 lb/ft	-	-
Uniform	0'	0'- 8 3/4"	E69(i22441)	Top	276 lb/ft	-	413 lb/ft	-
Uniform	0'- 1 3/4"	2'- 3 1/2"	User Load	Top	10 lb/ft	27 lb/ft	-	-
Uniform	0'- 5 1/4"	2'- 4 1/8"	E69(i22441)	Top	28 lb/ft	-	42 lb/ft	-
Uniform	0'- 5 1/4"	2'- 4 1/8"	User Load	Top	14 lb/ft	-	21 lb/ft	-
Uniform	0'- 5 1/4"	2'- 4 1/8"	FC4 Floor Decking (Plan View Fill)	Top	4 lb/ft	8 lb/ft	-	-
Point	0'- 5 1/4"	0'- 5 1/4"	FC4 Floor Decking (Plan View Fill)	Top	-	9 lb	-	-

UNFACTORED REACTIONS

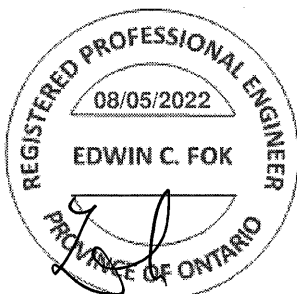
ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/4"	STL BM(i22449)	394 lb	53 lb	359 lb	-
2	2'	2'- 4 1/8"	STL BM(i22450)	186 lb	47 lb	72 lb	-

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.



SG049780



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(5009)**

Job Name: **346632-A-LOT 26**
Level: **1st Level**
Label: **B19 - i28708**
Type: **Beam**

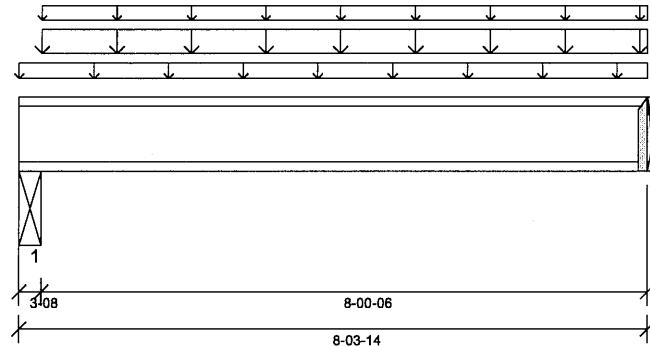
1 Ply Member
11 7/8" NI-20

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 07/23/2022 13:23



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: 8'- 1/4"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'- 2 1/2"
- 769 psi Beam @ 8'- 3 7/8"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 3 3/16"	1.25D + 1.5L	1.00	3206 lb ft	5580 lb ft	Passed - 57%
Factored Shear:	8'- 3 13/16"	1.25D + 1.5L	1.00	1579 lb	2240 lb	Passed - 70%
Live Load (LL) Pos. Defl.:	4'- 3 3/16"	L		0.100"	L/360	Passed - L/960
Total Load (TL) Pos. Defl.:	4'- 3 3/16"	D + L		0.140"	L/240	Passed - L/688

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	1.00	1565 lb		2180 lb	6729 lb	Passed - 72%
2	1-12	1.25D + 1.5L	1.00	1581 lb		1970 lb	-	Passed - 80%

CONNECTOR INFORMATION

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

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

SPECIFIED LOADS

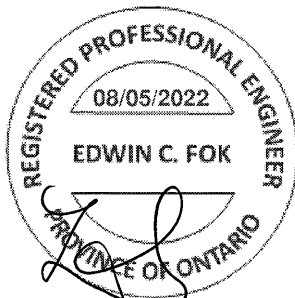
Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 3 7/8"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	8'- 3 7/8"	User Load	Top	10 lb/ft	27 lb/ft	-	-
Uniform	0'- 3 5/8"	8'- 3 7/8"	User Load	Top	60 lb/ft	160 lb/ft	-	-
Uniform	0'- 3 5/8"	8'- 3 7/8"	FCS Floor Decking (Plan View Fill)	Top	4 lb/ft	8 lb/ft	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	STL BM(23251)	313 lb	793 lb	-	-
2	8'- 3 7/8"	8'- 3 7/8"	B28(28701)	310 lb	785 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.



SG049781



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(5009)**

Job Name: **346632-A-LOT 26-sunken**
Level: **1st Level**
Label: **B21 - i27582**
Type: **Beam**

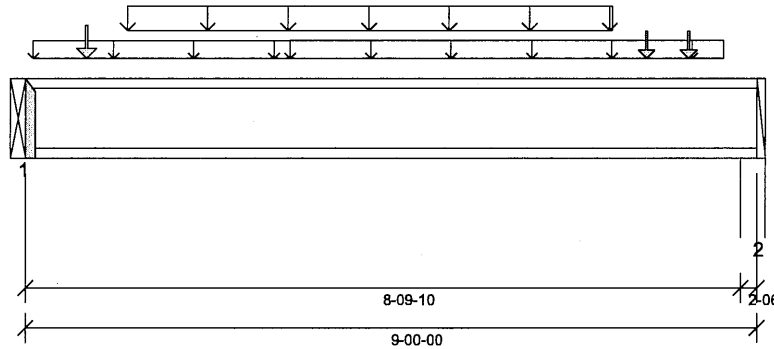
1 Ply Member
11 7/8" NI-20

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 07/23/2022 10:35



DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 615 psi Wall @ 8'- 10 5/8"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 8 3/4"	1.25D + 1.5L	1.00	3522 lb ft	5580 lb ft	Passed - 63%
Factored Shear:	0'- 1/16"	1.25D + 1.5L	1.00	1521 lb	2240 lb	Passed - 68%
Live Load (LL) Pos. Defl.:	4'- 4 13/16"	L		0.100"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 5 5/16"	D + L		0.182"	L/240	Passed - L/581

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	1521 lb		1970 lb	-	Passed - 77%
2	2-06	1.25D + 1.5L	1.00	1488 lb		2045 lb	3653 lb	Passed - 73%

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'	9'	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'- 1 1/8"	3'- 3 1/8"	User Load	Top	15 lb/ft	40 lb/ft	-	-
Uniform	1'- 3 1/16"	7'- 2 11/16"	Smoothed Load	Front	64 lb/ft	130 lb/ft	-	-
Uniform	3'- 3 1/8"	8'- 7 1/8"	User Load	Top	60 lb/ft	-	-	-
Point	0'- 9"	0'- 9"	J9(i27567)	Front	68 lb	136 lb	-	-
Point	7'- 7 3/4"	7'- 7 3/4"	J9(i27573)	Front	47 lb	93 lb	-	-
Point	8'- 2"	8'- 2"	J9(i27574)	Front	47 lb	94 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B22(i27581)	432 lb	654 lb	-	-
2	8'- 9 5/8"	9'	W28(i23243)	508 lb	569 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.



SG049782



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(5009)**

Job Name: **346632-A-LOT 26-sunken**
Level: **1st Level**
Label: **B22 - i27581**
Type: **Beam**

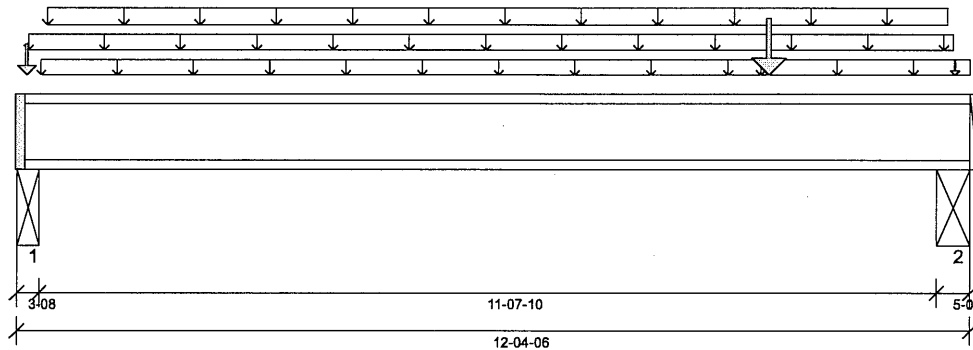
2 Ply Member
11 7/8" NI-20

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 07/23/2022 10:35



DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

Lateral Restraint Requirements:

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

Top: 0' Bottom: 9'- 4"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'- 2 1/2"
- 769 psi Beam @ 12'- 1/8"

Reinforcement Accessories Required

- Critical Load Web Stiffener @ 9'- 9"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	8'- 13/16"	1.25D + 1.5L	0.97	4647 lb ft	10790 lb ft	Passed - 43%
Factored Shear:	11'- 11 1/16"	1.25D + 1.5L	0.97	2141 lb	4331 lb	Passed - 49%
Live Load (LL) Pos. Defl.:	6'- 7"	L		0.083"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	6'- 5 3/16"	D + L		0.195"	L/240	Passed - L/714

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	0.97	1783 lb		4215 lb	13011 lb	Passed - 42%
2	5-04	1.25D + 1.5L	0.97	2245 lb		4331 lb	19517 lb	Passed - 52%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	12'- 4 3/8"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'- 1 3/4"	12'- 1 3/4"	FC5 Floor Decking (Plan View Fill)	Top	10 lb/ft	21 lb/ft	-	-
Uniform	0'- 3 3/4"	9'- 7 3/4"	FC5 Floor Decking (Plan View Fill)	Top	6 lb/ft	12 lb/ft	-	-
Uniform	0'- 4 3/4"	12'- 7/8"	User Load	Top	60 lb/ft	-	-	-
Uniform	9'- 7 3/4"	12'- 4 3/8"	FC5 Floor Decking (Plan View Fill)	Top	10 lb/ft	19 lb/ft	-	-
Point	9'- 9"	9'- 9"	B21(i27582)	Back	432 lb	654 lb	-	-
Point	0'- 1 1/2"	0'- 1 1/2"	9(i22455)	Top	161 lb	266 lb	-	-
Point	12'- 2"	12'- 2"	15(i22465)	Top	-	26 lb	-	-

UNFACTORED REACTIONS

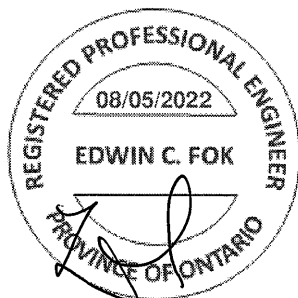
ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	STL BM(i20089)	731 lb	598 lb	-	-
2	11'- 11 1/8"	12'- 4 3/8"	STL BM(i23251)	857 lb	765 lb	-	-

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.



SG049783



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(5009)**

Job Name: **346632-A-LOT 26**
Level: **2nd Level**
Label: **B23 - i28898**
Type: **Beam**

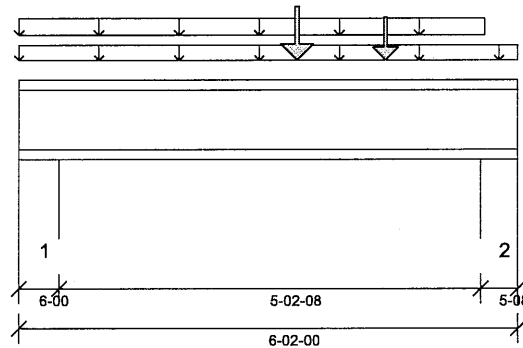
1 Ply Member
11 7/8" NI-20

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 07/23/2022 13:25



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: 3'- 4"

Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 5"
- 615 psi Wall @ 5'- 9 1/2"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 5 1/4"	1.25D + 1.5L	1.00	1349 lb ft	5580 lb ft	Passed - 24%
Factored Shear:	5'- 8 7/16"	1.25D + 1.5L	1.00	847 lb	2240 lb	Passed - 38%
Live Load (LL) Pos. Defl.:	3'- 2 15/16"	L		0.022"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 2 15/16"	D + L		0.032"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	6-00	1.25D + 1.5L	1.00	566 lb		2240 lb	9228 lb	Passed - 25%
2	5-08	1.25D + 1.5L	1.00	853 lb		2240 lb	8459 lb	Passed - 38%

SPECIFIED LOADS

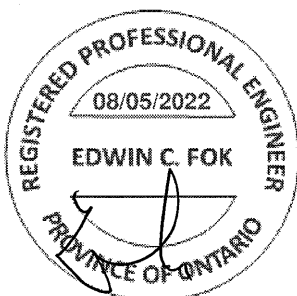
Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	6'- 2"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	6'- 2"	FC4 Floor Decking (Plan View Fill)	Top	1 lb/ft	2 lb/ft	-	-
Uniform	0'	5'- 9 1/8"	User Load	Top	10 lb/ft	27 lb/ft	-	-
Point	3'- 5 1/4"	3'- 5 1/4"	B12(i28895)	Back	136 lb	299 lb	-	-
Point	4'- 6 3/8"	4'- 6 3/8"	J5(i27237)	Back	105 lb	209 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 6"	16(i22469)	128 lb	271 lb	-	-
2	5'- 8 1/2"	6'- 2"	4(i22443)	195 lb	406 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.



SG049784



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(5009)**

Job Name: **346632-A-LOT 26**
Level: **2nd Level**
Label: **B24 - i28877**
Type: **Beam**

2 Ply Member

11 7/8" NI-20

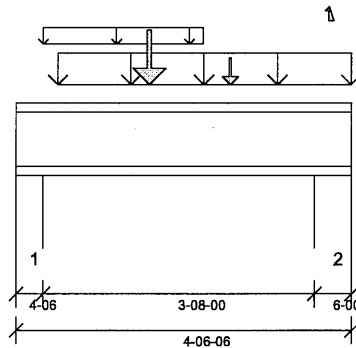
Status:

**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 07/23/2022 13:25



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:

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

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 9 5/8"	1.25D + 1.5L	1.00	2497 lb ft	11160 lb ft	Passed - 22%
Factored Shear:	4'- 5/16"	1.25D + 1.5L	1.00	2160 lb	4480 lb	Passed - 48%
Live Load (LL) Pos. Defl.:	2'- 1 15/16"	L		0.015"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	2'- 1 15/16"	D + L		0.022"	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	4-06	1.25D + 1.5L	1.00	1963 lb		4480 lb	13457 lb	Passed - 44%
2	6-00	1.25D + 1.5L	1.00	2325 lb		4480 lb	18456 lb	Passed - 52%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	4'- 6 3/8"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'- 4 3/8"	2'- 6 3/8"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'- 6 3/4"	4'- 6 3/8"	Smoothed Load	Top	130 lb/ft	264 lb/ft	-	-
Point	1'- 9 5/8"	1'- 9 5/8"	B12(i28895)	Front	285 lb	697 lb	-	-
Point	2'- 10 3/4"	2'- 10 3/4"	J5(i27237)	Front	105 lb	210 lb	-	-
Point	4'- 2 3/4"	4'- 2 3/4"	J5(i27580)	Front	-	-17 lb	-	-

UNFACTORED REACTIONS

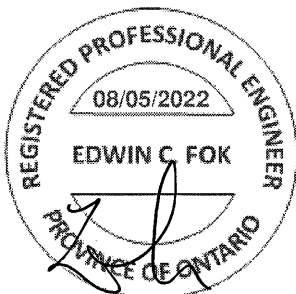
ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 4 3/8"	12(i22467)	508 lb	889 lb	-	-
2	4'- 3/8"	4'- 6 3/8"	15(i22465)	560 lb	1080/-17 lb	-	-

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.



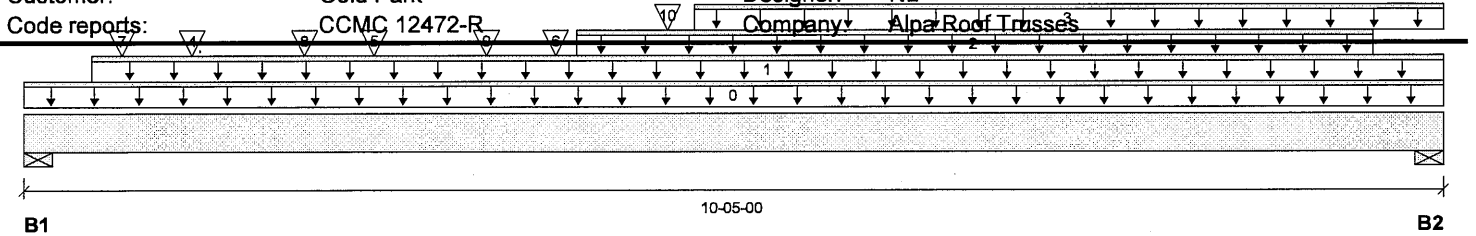
SE049785

BC Design Engine Member Report
 Build 8183

Dry | 1 span | No cant.

July 23, 2022 13:26:17

 Job name: 45147(5009)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

 File name: 346632-A-LOT 26.mmdl
 Description: 2nd Level\Flush Beams\B25(i27682)
 Specifier:
 Designer: NL
 Company: Alpha Roof Trusses


Total Horizontal Product Length = 10-05-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 6"	1697 / 0	1162 / 0		
B2, 6"	1333 / 0	1012 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-05-00	Top		6			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-06-00	10-05-00	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	04-00-10	09-10-12	Front	223	112			n/a
3	FC4 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	04-11-00	10-05-00	Top	6				n/a
4	J3(i27666)	Conc. Pt. (lbs)	L	01-02-12	01-02-12	Front	285	142			n/a
5	J3(i27285)	Conc. Pt. (lbs)	L	02-06-12	02-06-12	Front	325	163			n/a
6	J3(i27284)	Conc. Pt. (lbs)	L	03-10-12	03-10-12	Front	325	163			n/a
7	J4(i27704)	Conc. Pt. (lbs)	L	00-08-10	00-08-10	Back	205	102			n/a
8	J4(i27711)	Conc. Pt. (lbs)	L	02-00-10	02-00-10	Back	209	104			n/a
9	J4(i27702)	Conc. Pt. (lbs)	L	03-04-10	03-04-10	Back	209	104			n/a
10	J4(i27712)	Conc. Pt. (lbs)	L	04-08-10	04-08-10	Back	138	69			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8695 ft-lbs	17696 ft-lbs	49.1%	1	05-02-12
End Shear	3415 lbs	7232 lbs	47.2%	1	01-05-14
Total Load Deflection	L/551 (0.208")	n/a	43.6%	4	05-00-14
Live Load Deflection	L/999 (0.122")	n/a	n/a	5	05-00-14
Max Defl.	0.208"	n/a	n/a	4	05-00-14
Span / Depth	9.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 6" x 1-3/4"	3998 lbs	61.9%	31.2%	Spruce-Pine-Fir
B2	Wall/Plate 6" x 1-3/4"	3264 lbs	50.5%	25.5%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-08.

REGISTERED PROFESSIONAL ENGINEER
 08/05/2022
EDWIN C. FOK
 ENGINEER OF ONTARIO
 Use of this software is subject to the terms of the User License Agreement. The completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

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



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(5009)**

Job Name: **346632-A-LOT 26**
Level: **1st Level**
Label: **B26 - i28700**
Type: **Beam**

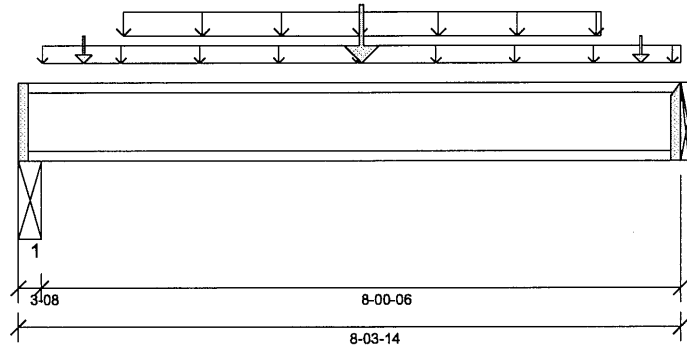
2 Ply Member
11 7/8" NI-20

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 07/23/2022 13:19



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:

- 769 psi Beam @ 0'- 2 1/2"
- 769 psi Beam @ 8'- 3 7/8"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 3 3/4"	1.25D + 1.5L	1.00	4465 lb ft	11160 lb ft	Passed - 40%
Factored Shear:	8'- 3 13/16"	1.25D + 1.5L	1.00	1775 lb	4480 lb	Passed - 40%
Live Load (LL) Pos. Defl.:	4'- 3 1/4"	L		0.054"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 3 1/4"	D + L		0.095"	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	3-08	1.25D + 1.5L	1.00	1748 lb		4360 lb	13458 lb	Passed - 40%
2	1-12	1.25D + 1.5L	1.00	1776 lb		3940 lb	-	Passed - 45%

CONNECTOR INFORMATION

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

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

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 3 7/8"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'- 3 5/8"	8'- 3 7/8"	User Load	Top	60 lb/ft	-	-	-
Uniform	1'- 3 7/8"	7'- 3 7/8"	Smoothed Load	Front	63 lb/ft	127 lb/ft	-	-
Point	0'- 9 7/8"	0'- 9 7/8"	J7(i28757)	Front	54 lb	108 lb	-	-
Point	7'- 9 7/8"	7'- 9 7/8"	J7(i28763)	Front	52 lb	104 lb	-	-
Point	4'- 3 3/4"	4'- 3 3/4"	User Load	Top	150 lb	400 lb	-	-

UNFACTORED REACTIONS

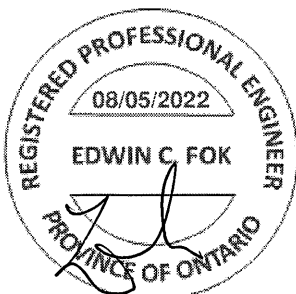
ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	STL BM(i23251)	578 lb	684 lb	-	-
2	8'- 3 7/8"	8'- 3 7/8"	B27(i28712)	587 lb	695 lb	-	-

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.



33049787



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

PASSED

1st Level Flush Beams B27(i28712) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

July 23, 2022 13:20:50

Build 8183

Job name: 45147(5009)

File name: 346632-A-LOT 26.mmdl

Address: Pine Valley

City, Province, Postal Code: Vaughan, ON

Customer: Cold Park

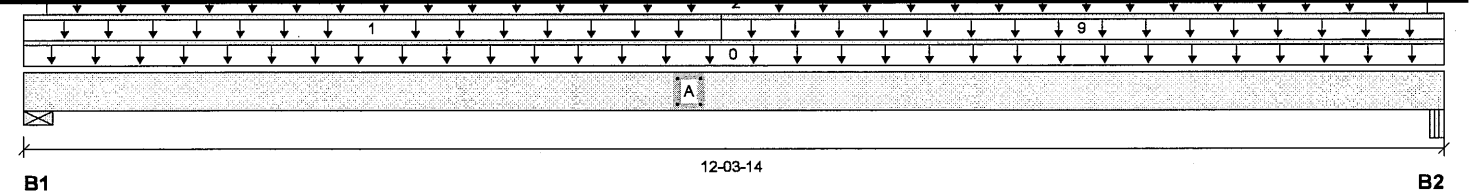
Code reports: CCMC 12472-R

Description: 1st Level Flush Beams B27(i28712)

Specifier:

Designer: NL

Company: Alpha Roof Trusses



Total Horizontal Product Length = 12-03-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-3/8"	1497 / 0	1328 / 0		
B2, 2-5/8"	1312 / 0	1268 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-03-14	Top		12			00-00-00
1	FC5 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	06-00-10	Top	21	10			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-02-06	12-02-02	Top	27	10			n/a
3	5(i22447)	Unf. Lin. (lb/ft)	L	00-04-14	02-08-14	Top		68			n/a
4	5(i22447)	Unf. Lin. (lb/ft)	L	00-05-04	01-09-04	Top	130	65			n/a
5	5(i22447)	Unf. Lin. (lb/ft)	L	01-05-04	02-08-14	Top	133	67			n/a
6	16(i22469)	Unf. Lin. (lb/ft)	L	05-04-14	12-03-14	Top		68			n/a
7	16(i22469)	Unf. Lin. (lb/ft)	L	05-04-14	06-05-00	Top	78	276			n/a
8	16(i22469)	Unf. Lin. (lb/ft)	L	05-11-08	12-03-14	Top	5	5			n/a
9	FC5 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	06-00-10	12-03-14	Top	11	5			n/a
10	16(i22469)	Unf. Lin. (lb/ft)	L	06-00-10	12-03-14	Top	8	4			n/a
11	-	Conc. Pt. (lbs)	L	05-09-03	05-09-03	Back	923	708			n/a
12	5(i22447)	Conc. Pt. (lbs)	L	02-07-14	02-07-14	Top	320	170			n/a
13	User Load	Conc. Pt. (lbs)	L	10-00-13	10-00-13	Top	480	180			n/a

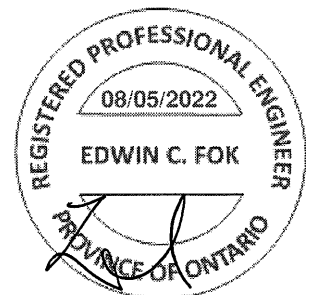
Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	13854 ft-lbs	35392 ft-lbs	39.1%	1	05-10-02
End Shear	3783 lbs	14464 lbs	26.2%	1	01-02-04
Total Load Deflection	L/588 (0.246")	n/a	40.8%	4	06-00-10
Live Load Deflection	L/1151 (0.125")	n/a	31.3%	5	06-00-10
Max Defl.	0.246"	n/a	n/a	4	06-00-10
Span / Depth	12.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 2-3/8" x 3-1/2"	3906 lbs	76.4%	38.5%	Spruce-Pine-Fir
B2	Beam 2-5/8" x 3-1/2"	3553 lbs	62.9%	31.7%	Unspecified

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



53049788



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(5009)**

Job Name: **346632-A-LOT 26**
Level: **1st Level**
Label: **B28 - i28701**
Type: **Beam**

2 Ply Member

11 7/8" NI-20

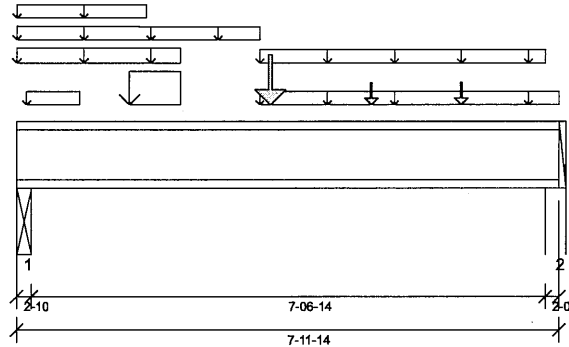
Status:

**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 07/23/2022 13:22



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: 3'- 4 3/8"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'- 1 5/8"
- 615 psi Wall @ 7'- 10 1/2"

Reinforcement Accessories Required

- Critical Load Web Stiffener @ 3'- 8 1/4"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 8 1/4"	1.25D + 1.5L	1.00	5657 lb ft	11160 lb ft	Passed - 51%
Factored Shear:	0'- 2 11/16"	1.25D + 1.5L	1.00	2183 lb	4480 lb	Passed - 49%
Live Load (LL) Pos. Defl.:	3'- 11 11/16"	L		0.073"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 11 9/16"	D + L		0.108"	L/240	Passed - L/838

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	2-10	1.25D + 1.5L	1.00	2235 lb		4150 lb	10093 lb	Passed - 54%
2	2-06	1.25D + 1.5L	1.00	2050 lb		4090 lb	7305 lb	Passed - 50%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	7'- 11 7/8"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	2'- 5"	16(i22469)	Top	68 lb/ft	-	-	-
Uniform	0'	1'- 11"	16(i22469)	Top	10 lb/ft	14 lb/ft	-	-
Uniform	0'- 1 3/4"	0'- 11 1/8"	FC5 Floor Decking (Plan View Fill)	Top	-	27 lb/ft	-	-
Uniform	1'- 8"	2'- 5"	16(i22469)	Top	193 lb/ft	408 lb/ft	-	-
Uniform	3'- 7"	7'- 11 7/8"	FC5 Floor Decking (Plan View Fill)	Top	8 lb/ft	17 lb/ft	-	-
Uniform	3'- 7"	7'- 9 1/2"	FC5 Floor Decking (Plan View Fill)	Top	7 lb/ft	20 lb/ft	-	-
Tapered	0'	3'- 7"	FC5 Floor Decking (Plan View Fill)	Top	11 To 4 lb/ft	21 To 8 lb/ft	-	-
Point	3'- 8 13/16"	3'- 8 13/16"	-	Back	375 lb	917 lb	-	-
Point	5'- 2 5/8"	5'- 2 5/8"	J6(i28752)	Back	110 lb	220 lb	-	-
Point	6'- 6 5/8"	6'- 6 5/8"	J6(i28774)	Back	114 lb	227 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 2 5/8"	STL BM(i20087)	609 lb	996 lb	-	-
2	7'- 9 1/2"	7'- 11 7/8"	W30(i23246)	477 lb	955 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.



SG049789

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'-6"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-10"	17'-6"	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'-8"	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'-6"	17'-7"	21'-7"	20'-0"	19'-0"	18'-0"
14"	NI-90	21'-6"	19'-10"	18'-11"	17'-11"	22'-0"	20'-4"	19'-5"	18'-4"
	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"
16"	NI-90	23'-10"	22'-1"	21'-0"	19'-10"	24'-5"	22'-7"	21'-6"	20'-4"
	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'-6"	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"
14"	NI-90	24'-1"	22'-5"	21'-4"	20'-2"	24'-7"	22'-11"	21'-10"	20'-8"
	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"
16"	NI-90	27'-0"	25'-1"	23'-11"	22'-7"	27'-6"	25'-8"	24'-6"	23'-2"
	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:

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

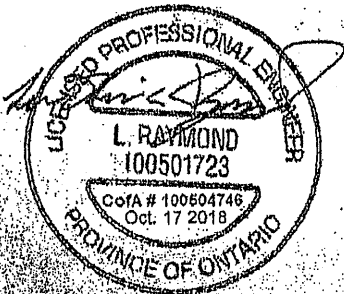
The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

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

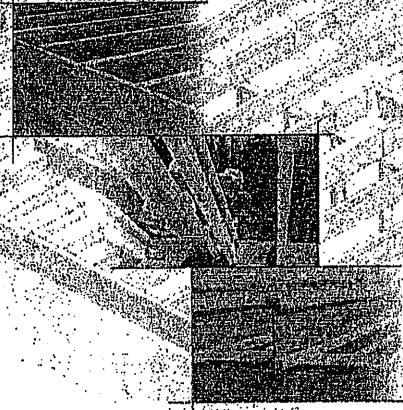
This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.

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



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 unfastened I-joists. Once installed, do not over-stress I-joist with concentrated loads from building materials.

WARNING

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

Avoid Accidents by Following these Important Guidelines:

1. Store and nail each joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing of joist ends. When I-joists are applied continuously over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior supports.
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 collapse or buckling.
 - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on center, and must be secured with a minimum of two 2x12" nails driven to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Top ends of bracing braced 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-bracing.
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 joists 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 loads and locations, or failure to use web stiffeners when required can result in serious accidents. Follow local jurisdiction 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 moisture.
5. Protect I-joists from weather, and use spacers to separate bundles.
6. Bundled units should be kept level 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.

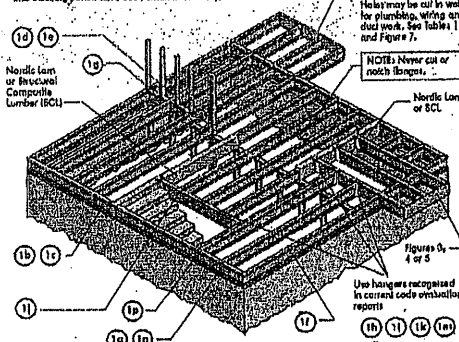


INSTALLING NORDIC I-JOISTS

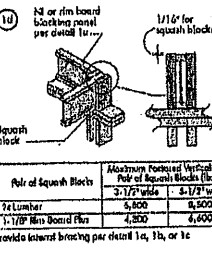
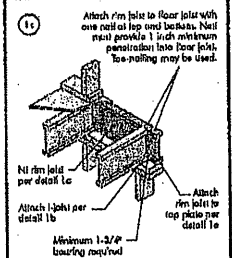
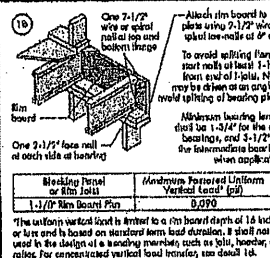
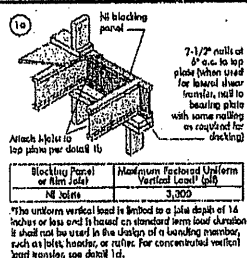
1. Before laying out floor system components, verify that I-joist spans within a 4-inch tolerance. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. I-joists may be anchored securely to supports before floor sheathing is attached, and supports for multiple-span joists must be level.
5. Minimum bearing length for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, nail I-joists firmly to hanger beams to maintain uniformity.
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 book lighting fixtures, studio equipment and similar contents. Never suspend unbraced or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
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 rotation. Use rim board, rim joist 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 (triple 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 on I-joist-compatible depth selected.
13. Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is installed, 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 to the flange's top face in accordance with the applicable building code requirements or approved building plans.

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

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



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



Blocking Panel or Rim Joist	Maximum Permitted Uniform Vertical Load (psf)
N4 Joists	3,300

*The uniform vertical load is limited to a joist depth of 14 inches or less and is based on standard term load duration. It shall not be used in the design of a blocking member, such as joist, header, or rafter. For concentrated vertical load reactions, see detail 1d.

Blocking Panel or Rim Joist	Maximum Permitted Uniform Vertical Load (psf)
1-1/2" Rim Board Plan	8,000

*The uniform vertical load is limited to a rim board depth of 14 inches or less and is based on standard term load duration. It shall not be used in the design of a blocking member, such as joist, header, or rafter. For concentrated vertical load reactions, see detail 1d.

Blocking Panel or Rim Joist	Maximum Permitted Uniform Vertical Load (psf)
N4 Joists	3,300

*The uniform vertical load is limited to a joist depth of 14 inches or less and is based on standard term load duration. It shall not be used in the design of a blocking member, such as joist, header, or rafter. For concentrated vertical load reactions, see detail 1d.

Blocking Panel or Rim Joist	Maximum Permitted Uniform Vertical Load (psf)
N4 Joists	3,300

*The uniform vertical load is limited to a joist depth of 14 inches or less and is based on standard term load duration. It shall not be used in the design of a blocking member, such as joist, header, or rafter. For concentrated vertical load reactions, see detail 1d.

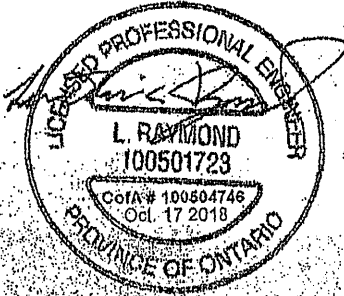
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Details released after April 2014 supersedes N-C301

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 Gon from Alpa, Ontario. (Nordic Request 1810-095)



N-C301/April 2014

MAXIMUM FLOOR SPANS

- Maximum clear spans applicable to single-span or multiple-span residential floor systems with a design live load of 40 psf and dead load of 15 psf. The ultimate live load is based on the factored loads of 1.50L + 1.75D. The serviceability limit state includes the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent spans.
- Spans are based on a composite floor with glued-in steel deck (GSD) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGSB-71.2.6 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of approach similar to one of blocking at mid-spans.
- Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Unit Stress Design per CAN/CSA C308-09 Standard, and NRC 7010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

Joist Depth	24" Spacing	19.2" Spacing	16" Spacing	14.4" Spacing	12" Spacing	10" Spacing	8" Spacing	6" Spacing	4" Spacing	3" Spacing	2" Spacing	1.5" Spacing	1" Spacing	0.75" Spacing	0.5" Spacing	0.375" Spacing	0.25" Spacing	0.1875" Spacing	0.125" Spacing	0.09375" Spacing	0.0625" Spacing	0.046875" Spacing	0.03125" Spacing	0.0234375" Spacing	0.015625" Spacing	0.01171875" Spacing	0.0078125" Spacing	0.005859375" Spacing	0.004375" Spacing	0.00328125" Spacing	0.0024609375" Spacing	0.00184375" Spacing	0.0013828125" Spacing	0.0010371875" Spacing	0.000778125" Spacing	0.0005859375" Spacing	0.0004375" Spacing	0.000328125" Spacing	0.00024609375" Spacing	0.000184375" Spacing	0.00013828125" Spacing	0.00010371875" Spacing	0.0000778125" Spacing	0.00005859375" Spacing	0.00004375" Spacing	0.0000328125" Spacing	0.000024609375" Spacing	0.0000184375" Spacing	0.000013828125" Spacing	0.000010371875" Spacing	0.00000778125" Spacing	0.000005859375" Spacing	0.000004375" Spacing	0.00000328125" 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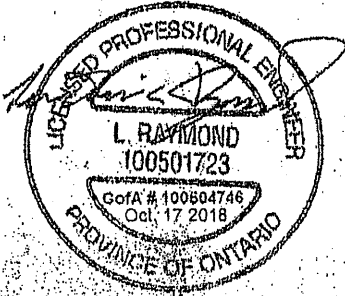
The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

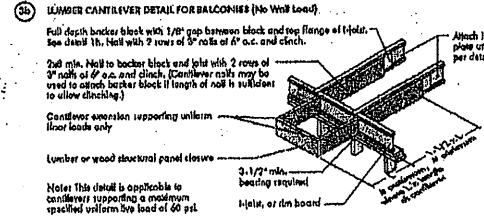
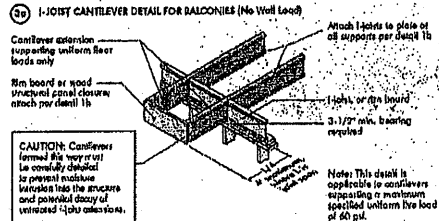
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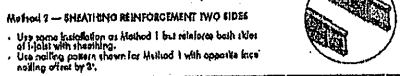
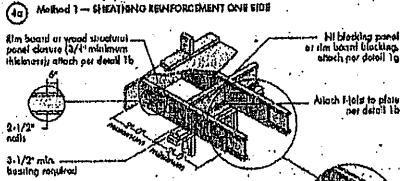
Document prepared for the use of Stephanie Gon from Alpa, Ontario. (Nordic Request 1810-095)



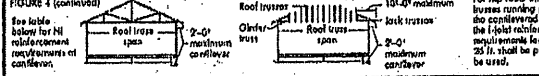
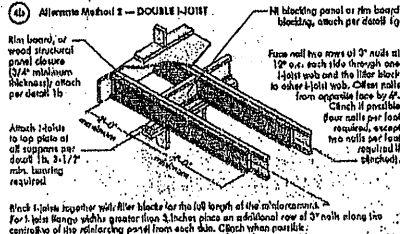
CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)



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

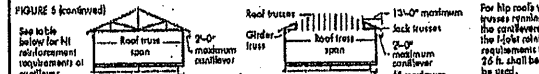
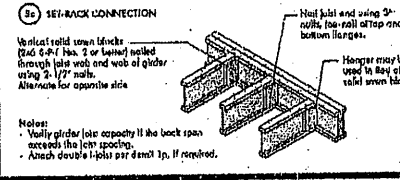
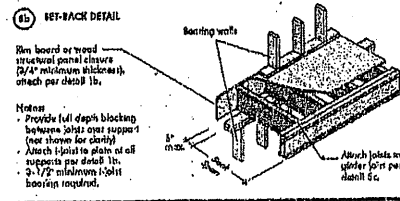
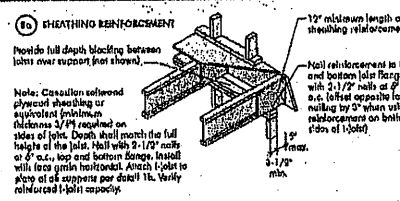


CANTILEVER REINFORCEMENT METHODS ALLOWED

Cantilever Span (ft)	Method 1a				Method 1b				Method 2a				Method 2b				Alternate Method 2c			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2		
10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
16	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
22	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
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	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
24	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
26	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	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	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	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	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		

1. X = No reinforcement required.
2. X = Reinforced with 3/4 inch wood structural panel on one side only.
3. X = Reinforced with 3/4 inch wood structural panel on both sides, or double I-joist.
4. X = Two deeper joist or closer spacing.
5. Maximum design load shall be 15 psf roof dead load, 85 psf floor live load, and 60 psf wind load. Wind load is based on 2-0 inch maximum width of door opening.
6. For larger openings, or multiple 2-0 inch openings spaced less than 6-0 inch, additional plan reinforcement is required.
7. Table applies to joists 12 to 24 inch deep. For joists deeper than 24 inch, use the load of 45 psf and dead load of 15 psf, and a 2-0 inch maximum width of door opening. Use 12 inch o.c. requirements for better spacing.
8. For conventional roof construction using a ridge beam, the roof live load column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge board, the roof live load is equivalent to the distance between the supporting walls as if a rafter is used.
9. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcement.

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



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

CANTILEVER SPAN (ft)		METHOD 1a																METHOD 1b																METHOD 2a																METHOD 2b																ALTERNATE METHOD 2c																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
Span (ft)	No. of Panels	1				2				3				4				5				6				7				8				9				10				11				12				13				14				15				16				17				18				19				20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3

1. X = No reinforcement required.
2. X = Reinforced with 3/4 inch wood structural panel on one side only.
3. X = Reinforced with 3/4 inch wood structural panel on both sides, or double I-joist.
4. X = Two deeper joist or closer spacing.
5. Maximum design load shall be 15 psf roof dead load, 85 psf floor live load, and 60 psf wind load. Wind load is based on 2-0 inch maximum width of door opening.
6. For larger openings, or multiple 2-0 inch openings spaced less than 6-0 inch, additional plan reinforcement is required.
7. Table applies to joists 12 to 24 inch deep. For joists deeper than 24 inch, use the load of 45 psf and dead load of 15 psf, and a 2-0 inch maximum width of door opening. Use 12 inch o.c. requirements for better spacing.
8. For conventional roof construction using a ridge beam, the roof live load column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge board, the roof live load is equivalent to the distance between the supporting walls as if a rafter is used.
9. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcement.

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)



N-C301/April 2014

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS

- The distance between the inside edge of the support and the position of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- 1-joint top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centered on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into a 1-joint web shall equal the clear distance between the flanges (i.e. the I-joist web 1/2 inch. A minimum of 1/8 inch shall always be maintained between the top or bottom of the hole or opening and the adjacent 1-joint flange.
- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a configured section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 4 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the guidelines listed above and as illustrated in Figure 7.
- Limit three maximum #20 holes per span, of which one may be a duct chase opening.
- A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole dimensioned around them.

TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS
Simple or Multiple Span for Dead Loads up to 18 psf and Live Loads up to 40 psf

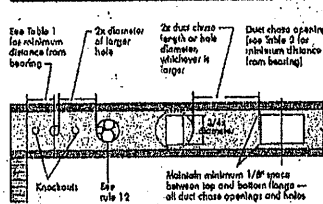
Span Length (ft)	Minimum Distance from End of Span (in)	Minimum Distance from Support (in)	Minimum Distance from Next Support (in)	Minimum Distance from End of Span (in)
8	12	12	12	12
10	12	12	12	12
12	12	12	12	12
14	12	12	12	12
16	12	12	12	12
18	12	12	12	12
20	12	12	12	12
22	12	12	12	12
24	12	12	12	12
26	12	12	12	12
28	12	12	12	12
30	12	12	12	12
32	12	12	12	12
34	12	12	12	12
36	12	12	12	12
38	12	12	12	12
40	12	12	12	12

- Always label may be used for light spotting of 24 inches on center or less.
- 1-joint location distance is measured from middle line of support to center of hole.
- Distance in this chart are based on uniformly loaded joists.

OPTIONAL:

- The above table is based on the location of any support or hole, reduced by the distance from support to support (S), the reduced distance shall not be less than 6 inches from the edge of the joist.
- Legend:
S = Span
D = Distance from support to support (S)
- Distance from support to support (S) shall be reduced by the distance from support to support (S) if the distance from support to support (S) is greater than 1, use 1 in the above calculation for S.

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 preformed 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 16 inches on center along the length of the joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

Never drill, cut, or notch the flange, or overcut the web.

Holes in webs should be cut with a chisel saw.

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

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

Span Length (ft)	Minimum Distance from End of Span (in)	Minimum Distance from Support (in)	Minimum Distance from Next Support (in)	Minimum Distance from End of Span (in)
8	12	12	12	12
10	12	12	12	12
12	12	12	12	12
14	12	12	12	12
16	12	12	12	12
18	12	12	12	12
20	12	12	12	12
22	12	12	12	12
24	12	12	12	12
26	12	12	12	12
28	12	12	12	12
30	12	12	12	12
32	12	12	12	12
34	12	12	12	12
36	12	12	12	12
38	12	12	12	12
40	12	12	12	12

- Always label may be used for light spotting of 24 inches on center or less.
- 1-joint location distance is measured from middle line of support to center of opening.
- The above table is based on simple span joists only. For other applications, consult your local distributor.
- Distances are based on uniformly loaded joists but must be more conservative for a design live load of 40 psf and dead load of 15 psf and a live load deflection limit of L/180. For other applications, consult your local distributor.

INSTALLING THE GLUED FLOOR SYSTEM

- Wipe any mud, dirt, water or old finish from joist flanges before gluing.
- Step a chalk line across the joist bay from the wall (or panel edge alignment) and as a boundary for spreading glue.
- Spread or brush glue to lay glue on two panels at a time, or follow specific recommendations from the glue manufacturer.
- Lay the first panel with tongue side to the wall, and nail in place. This protects the tongue of the next panel from damage when tapped into place with a block and sledgehammer.
- Apply a continuous line of glue (about 1/4 inch diameter) to the top flange of a single joist. Apply glue in a window, corner or wide area, with a brush or double 1-joint.
- Apply two lines of glue on 1-joints a bare panel and glue to ensure proper gluing of each end.
- 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. This line may be continuous or spaced, but avoid squeaking out by applying a thinner line (1/8 inch) than used on 1-joint flanges.
- Tap the second row of panels into place, using a block to protect groove edges.
- Stagger and joints in each successive row of panels. A 1/8-inch space between all joints and 1/8-inch at all edges, including T&G edges, is recommended. Use a spacer tool or a 1-1/2" common nail to assure consistent and consistent spacing.
- Complete all nailing of each panel before glue sets. Check the manufacturer's recommendations for nail line, (when weather conditions are wet) Use 2" ring or screw-down nails for panels 2x6-inch thick or less, and 2-1/2" ring or screw-down nails for thicker panels. Space nails per the table below. Closer nail spacing may be required by some codes, or for displacement 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)

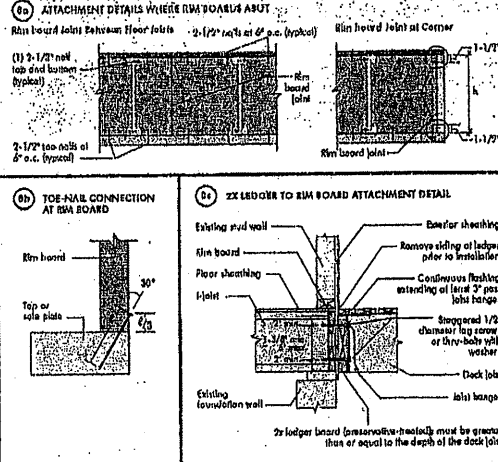
Joist Spacing (in)	Subfloor Thickness (in)	Joist Spacing (in)	Subfloor Thickness (in)	Joist Spacing (in)	Subfloor Thickness (in)
16	5/8	24	1-3/4	24	1-3/4
20	5/8	24	1-3/4	24	1-3/4
24	5/8	24	1-3/4	24	1-3/4

- Fasteners of sheathing and subflooring shall conform to the above table.
- Stakes shall not be less than 1/4-inch in diameter or thickness, shall not less than a 3/8-inch crown driven with the crown parallel to framing.
- Flooring screws shall not be less than 1/8-inch in diameter.
- Special conditions may impose heavy trulls and concentrated loads that require construction in excess of the minimum shown.
- Use only adhesives conforming to CAN/CSA-A126 Standard, Adhesives for Field-Gluing Plywood to Lumber Framing for Floor System, applied in accordance with the manufacturer's recommendations. If CSB panels with treated surfaces need adhesive to be used, use only solvent-based glues; check with panel manufacturer.

Ref: NCC/NRC, National Building Code of Canada 2010, Table 9.33.3.5.

IMPORTANT NOTE:
Floor sheathing must be fastened to the 1-joint flange in order to achieve the maximum spans shown in this document. If sheathing is nailed only, 1-joint spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS



PRODUCT WARRANTY

Our products are warranted to be free from defects in material and workmanship for a period of 10 years from the date of installation.

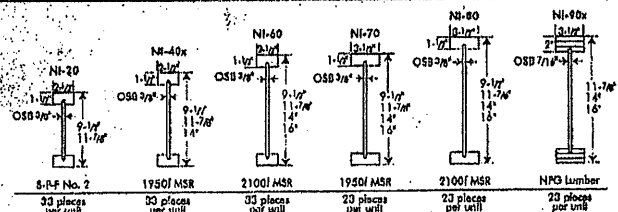
For more information, please contact your local distributor or visit our website at nordic.ca.

CONSTRUCTION DETAILS FOR RESIDENTIAL FLOORS

N-C303 / September 2013



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



WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole for 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.
- A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller are permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.

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

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

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

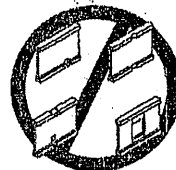
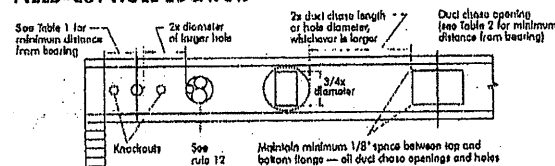
- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of support to centre of hole.
- Distances in this table are based on uniformly loaded joists.
- The above table is based on the I-joist being used at their maximum spans. 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 Support to Centre of Opening (ft. - in.)												
		Duct Chase Length (in.)												
9-1/2"	NI-20	4-1"	4-5"	4-10"	4-4"	5-8"	6-1"	6-6"	7-1"	7-5"	7-9"	8-3"	8-7"	9-1"
	NI-40x	5-3"	5-8"	6-0"	6-5"	7-0"	7-5"	7-9"	8-3"	8-7"	9-1"	9-5"	9-9"	10-3"
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	7-9"	8-3"	8-7"	9-1"	9-5"	9-9"	10-3"
	NI-70	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	7-9"	8-3"	8-7"	9-1"	9-5"	9-9"	10-3"
11-7/8"	NI-20	5-9"	6-2"	6-6"	7-1"	7-5"	7-9"	8-3"	8-7"	9-1"	9-5"	9-9"	10-3"	10-7"
	NI-40x	6-9"	7-2"	7-6"	8-1"	8-5"	8-9"	9-3"	9-7"	10-1"	10-5"	10-9"	11-3"	11-7"
	NI-60	7-2"	7-6"	8-0"	8-4"	8-8"	9-2"	9-6"	10-0"	10-4"	10-8"	11-2"	11-6"	12-0"
	NI-70	7-2"	7-6"	8-0"	8-4"	8-8"	9-2"	9-6"	10-0"	10-4"	10-8"	11-2"	11-6"	12-0"
14"	NI-20	6-1"	6-7"	7-0"	7-6"	8-0"	8-6"	9-0"	9-6"	10-0"	10-6"	11-0"	11-6"	12-0"
	NI-40x	6-1"	6-7"	7-0"	7-6"	8-0"	8-6"	9-0"	9-6"	10-0"	10-6"	11-0"	11-6"	12-0"
	NI-60	6-9"	7-3"	7-7"	8-1"	8-5"	8-9"	9-3"	9-7"	10-1"	10-5"	10-9"	11-3"	11-7"
	NI-70	6-9"	7-3"	7-7"	8-1"	8-5"	8-9"	9-3"	9-7"	10-1"	10-5"	10-9"	11-3"	11-7"
16"	NI-20	10-3"	10-8"	11-2"	11-6"	12-0"	12-4"	12-8"	13-2"	13-6"	14-0"	14-4"	14-8"	15-2"
	NI-40x	10-3"	10-8"	11-2"	11-6"	12-0"	12-4"	12-8"	13-2"	13-6"	14-0"	14-4"	14-8"	15-2"
	NI-60	10-4"	10-9"	11-3"	11-7"	12-1"	12-5"	12-9"	13-3"	13-7"	14-1"	14-5"	14-9"	15-3"
	NI-70	11-1"	11-5"	11-9"	12-3"	12-7"	13-1"	13-5"	13-9"	14-3"	14-7"	15-1"	15-5"	15-9"

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

FIGURE 7
FIELD-CUT HOLE LOCATOR



Knockouts are predrilled holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-joist. Where possible, it is preferable to use a knockout 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 miter-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joist.

SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

- Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing 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.
- 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 1x4 minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2x12 posts (secured 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 I-joist at the end of the bay.
- For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bracing.
- 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.
- 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.



PRODUCT WARRANTY

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

Furthermore, Chambers Construction warrants that our products, when installed in accordance with our handling and installation instructions, will meet or exceed our specifications for the lifetime of the product.

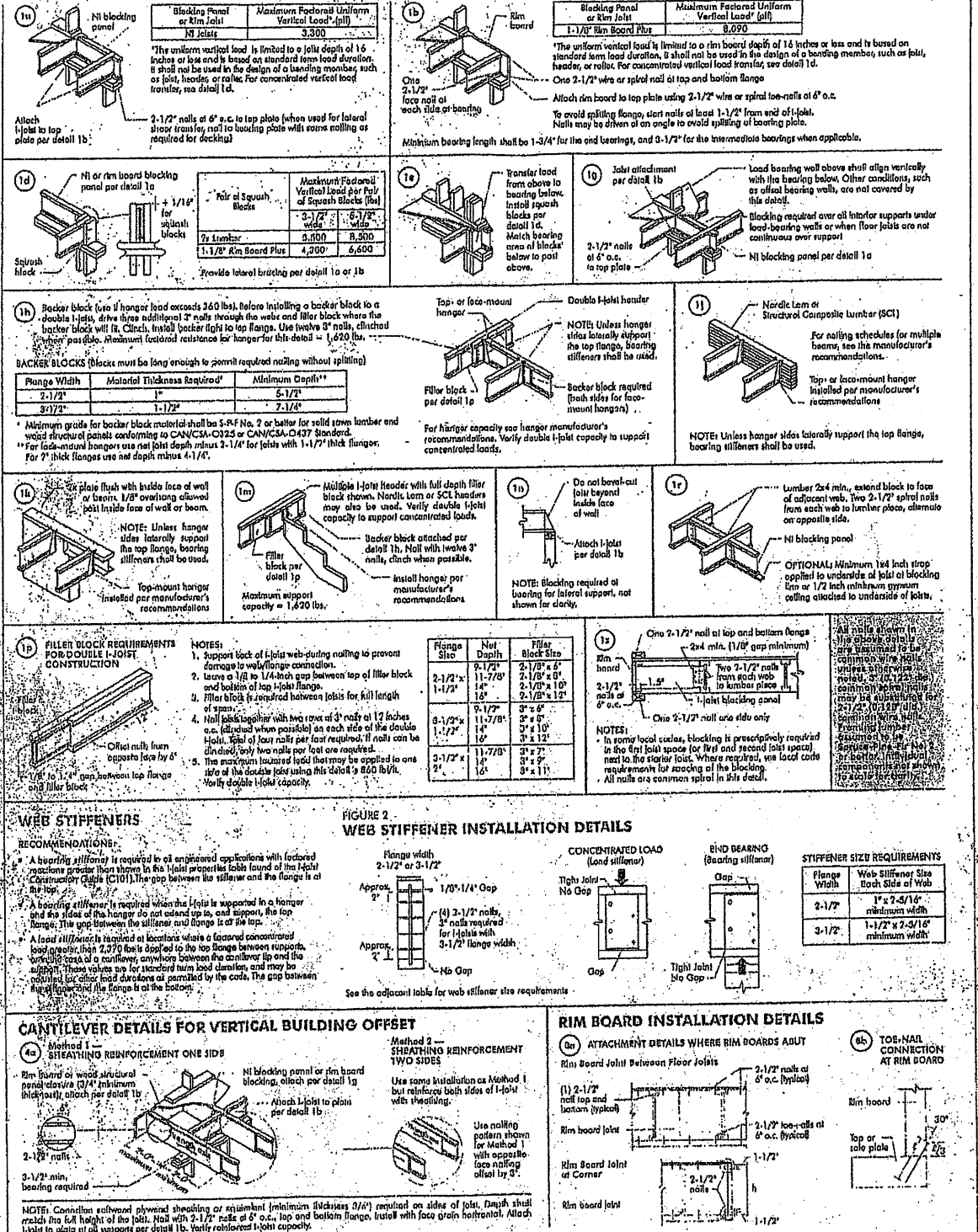
The construction details for residential designs are prone to changes.

Details released after September 2013 supersede 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)



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