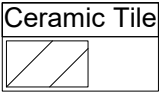


| Products | | | | |
|----------|----------|---|-------|---------|
| PlotID | Length | Product | Plies | Net Qty |
| B2 | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2 | 2 |
| B6 | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 3 | 3 |
| B12 | 4-00-00 | 11 7/8" NI-20 | 1 | 1 |
| B13 | 5-00-00 | 11 7/8" NI-20 | 2 | 2 |
| B14 | 5-00-00 | 11 7/8" NI-20 | 2 | 4 |
| Ca1 | 89-00-00 | 1 1/8" x 11 7/8" Rim Board | 1 | 1 |
| J1 | 13-00-00 | 11 7/8" NI-20 | 1 | 7 |
| J2 | 12-00-00 | 11 7/8" NI-20 | 1 | 10 |
| J3 | 11-00-00 | 11 7/8" NI-20 | 1 | 1 |
| J4 | 9-00-00 | 11 7/8" NI-20 | 1 | 4 |
| J5 | 2-00-00 | 11 7/8" NI-20 | 1 | 2 |
| J6 | 20-00-00 | 11 7/8" NI-40x | 1 | 16 |

| Connector Summary | | | |
|-------------------|-----|-------|----------|
| PlotID | Qty | Manuf | Product |
| H1 | 3 | | HU310-2 |
| H2 | 17 | | LT251188 |

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

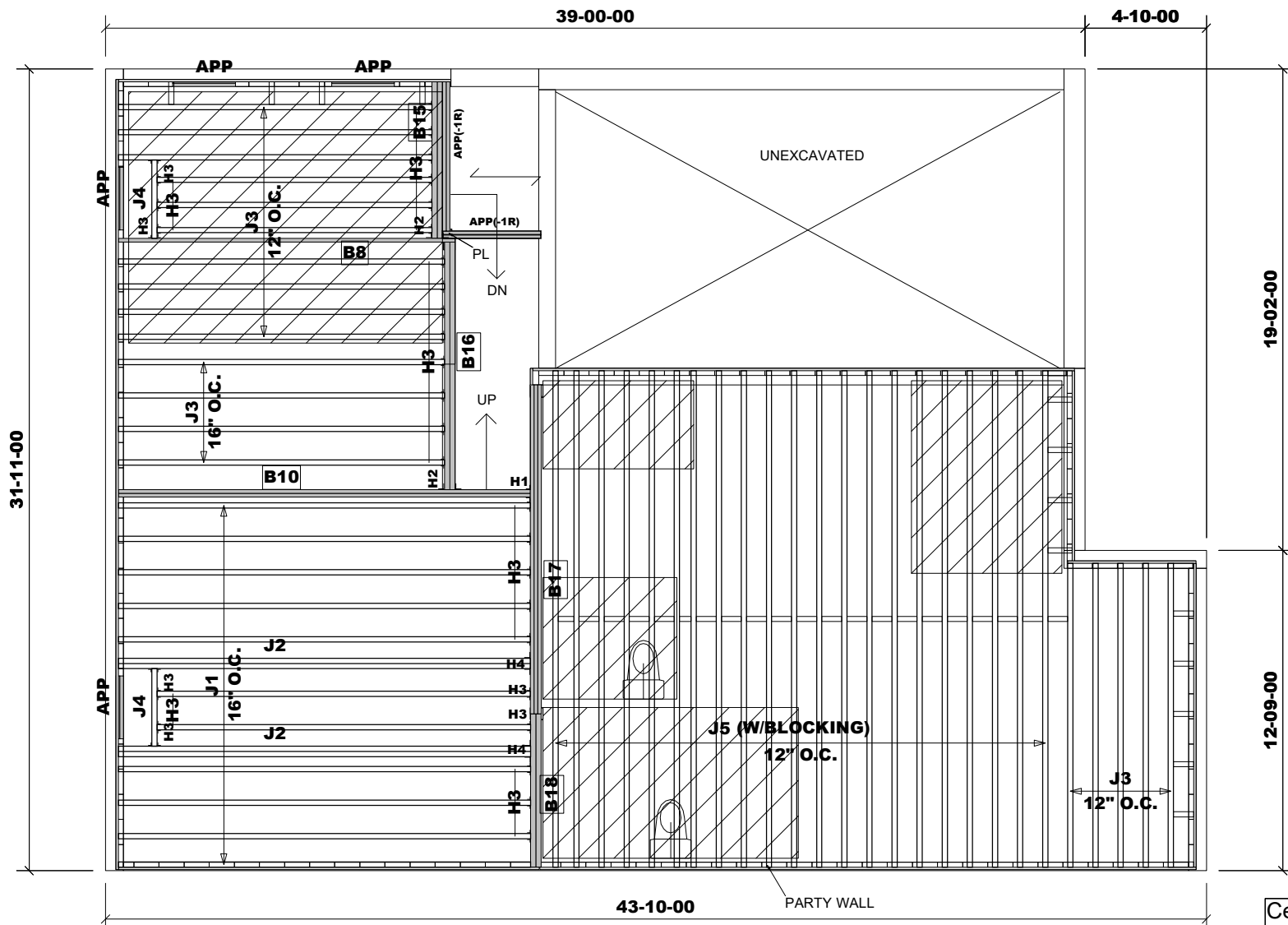
DESIGN LOADING:
LIVE LOAD = 40 PSF
DEAD LOAD = 15 PSF
DEAD LOAD @TILE = 20 PSF



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

MODEL: 3105 - EL.A
+ OPT. LOGGIA
REVISION: November 6, 2021

Second Floor Framing
Do not scale - refer to architectural plans for dimensions
SE033192 - SE033201



| Products | | | | |
|----------|-----------|---|-------|---------|
| PlotID | Length | Product | Plies | Net Qty |
| B8 | 14-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1 | 1 |
| B10 | 17-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2 | 2 |
| B15 | 7-00-00 | 11 7/8" NI-20 | 2 | 2 |
| B16 | 10-00-00 | 11 7/8" NI-20 | 2 | 2 |
| B17 | 14-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 3 | 3 |
| B18 | 7-00-00 | 11 7/8" NI-20 | 2 | 2 |
| Ca1 | 135-00-00 | 1 1/8" x 11 7/8" Rim Board | 1 | 1 |
| J1 | 17-00-00 | 11 7/8" NI-20 | 1 | 11 |
| J2 | 17-00-00 | 11 7/8" NI-20 | 2 | 4 |
| J3 | 13-00-00 | 11 7/8" NI-20 | 1 | 19 |
| J4 | 4-00-00 | 11 7/8" NI-20 | 1 | 2 |
| J5 | 20-00-00 | 11 7/8" NI-40x | 1 | 21 |

| Connector Summary | | | |
|-------------------|-----|-------|-------------|
| PlotID | Qty | Manuf | Product |
| H1 | 1 | | HGUS410 |
| H2 | 2 | | HU310-2 |
| H3 | 34 | | LT251188 |
| H4 | 2 | | MIT311.88-2 |

RIMBOARD

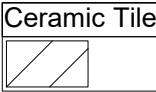
1- 1/8" X 11 7/8" O.S.B.

SUBFLOOR - 3/4" NAILED & GLUED*

APP - AS PER PLAN
BBO - BEAM BY OTHERS

DESIGN LOADING:

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



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

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

MODEL: 3105 - EL.A

REVISION: November 6, 2021
REVISION: Sept. 19, 2022

First Floor Framing

Do not scale - refer to architectural plans for dimensions

JT/PL: 45147/111207
114267/114626
LI: (333184)339002

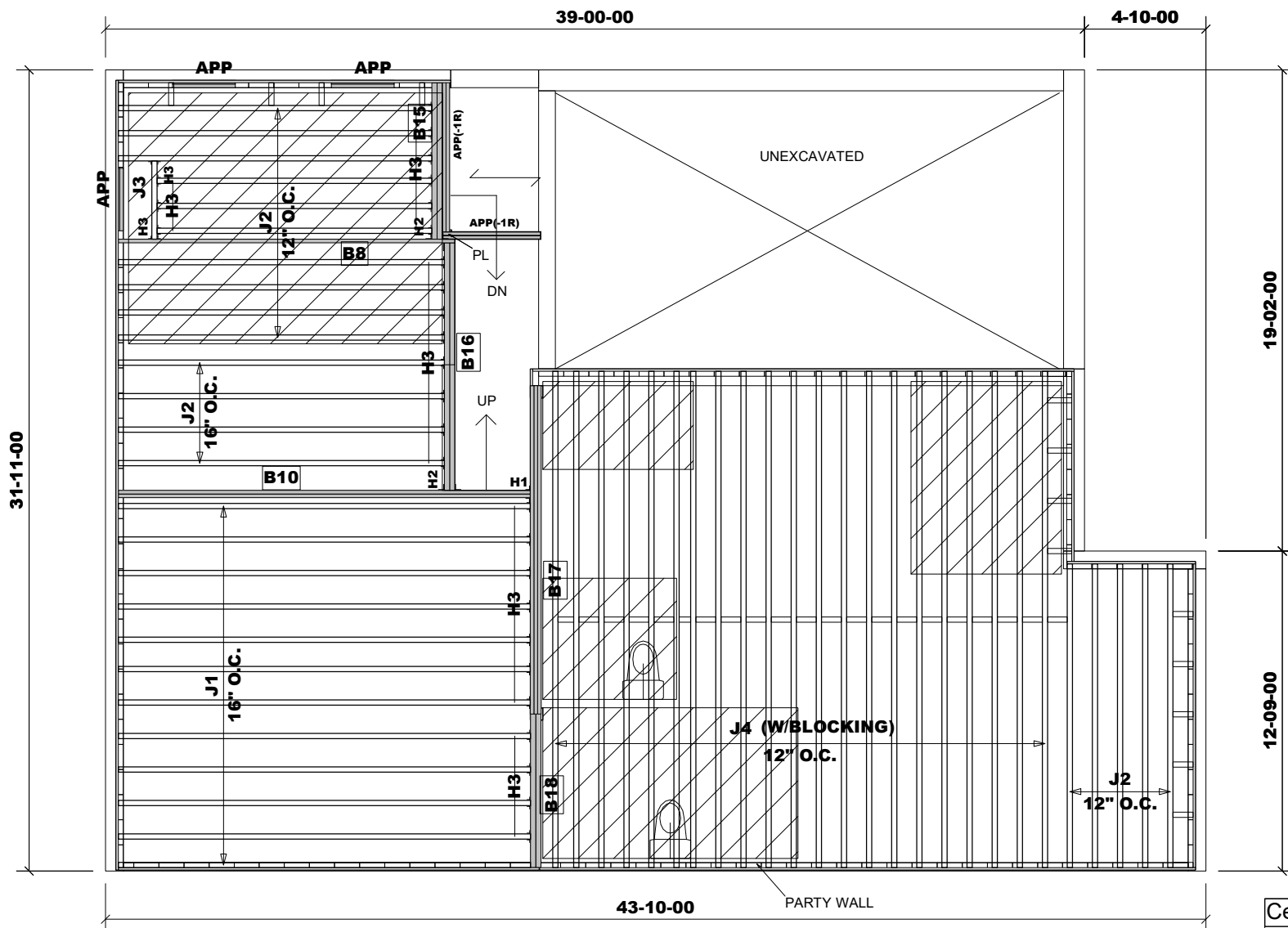
Builder: Gold Park
Project: Pine Valley

Location: Vaughan
Date: May 25, 2021

Designer: NL
Sheet: 2 of 6

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Derek
Home Lumber



| Products | | | | |
|----------|-------------|---|-------|---------|
| PlotID | Length | Product | Plies | Net Qty |
| B8 | 14'-00"-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1 | 1 |
| B10 | 17'-00"-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2 | 2 |
| B15 | 7'-00"-00 | 11 7/8" NI-20 | 2 | 2 |
| B16 | 10'-00"-00 | 11 7/8" NI-20 | 2 | 2 |
| B17 | 14'-00"-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 3 | 3 |
| B18 | 7'-00"-00 | 11 7/8" NI-20 | 2 | 2 |
| Ca1 | 135'-00"-00 | 1 1/8" x 11 7/8" Rim Board | 1 | 1 |
| J1 | 17'-00"-00 | 11 7/8" NI-20 | 1 | 12 |
| J2 | 13'-00"-00 | 11 7/8" NI-20 | 1 | 19 |
| J3 | 4'-00"-00 | 11 7/8" NI-20 | 1 | 1 |
| J4 | 20'-00"-00 | 11 7/8" NI-40x | 1 | 21 |

| Connector Summary | | | |
|-------------------|-----|-------|----------|
| PlotID | Qty | Manuf | Product |
| H1 | 1 | | HGUS410 |
| H2 | 2 | | HU310-2 |
| H3 | 31 | | LT251188 |

RIMBOARD

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

SUBFLOOR - 3/4" NAILED & GLUED*

APP - AS PER PLAN
BBO - BEAM BY OTHERS

DESIGN LOADING:

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

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

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

MODEL: 3105 - EL.A
W/OPT. LOGGIA

REVISION: November 6, 2021
REVISION: Sept. 19, 2021

First Floor Framing

Do not scale - refer to architectural plans for dimensions

JT/PL: 45147/111207
114267/114626
LI: (333184)339002

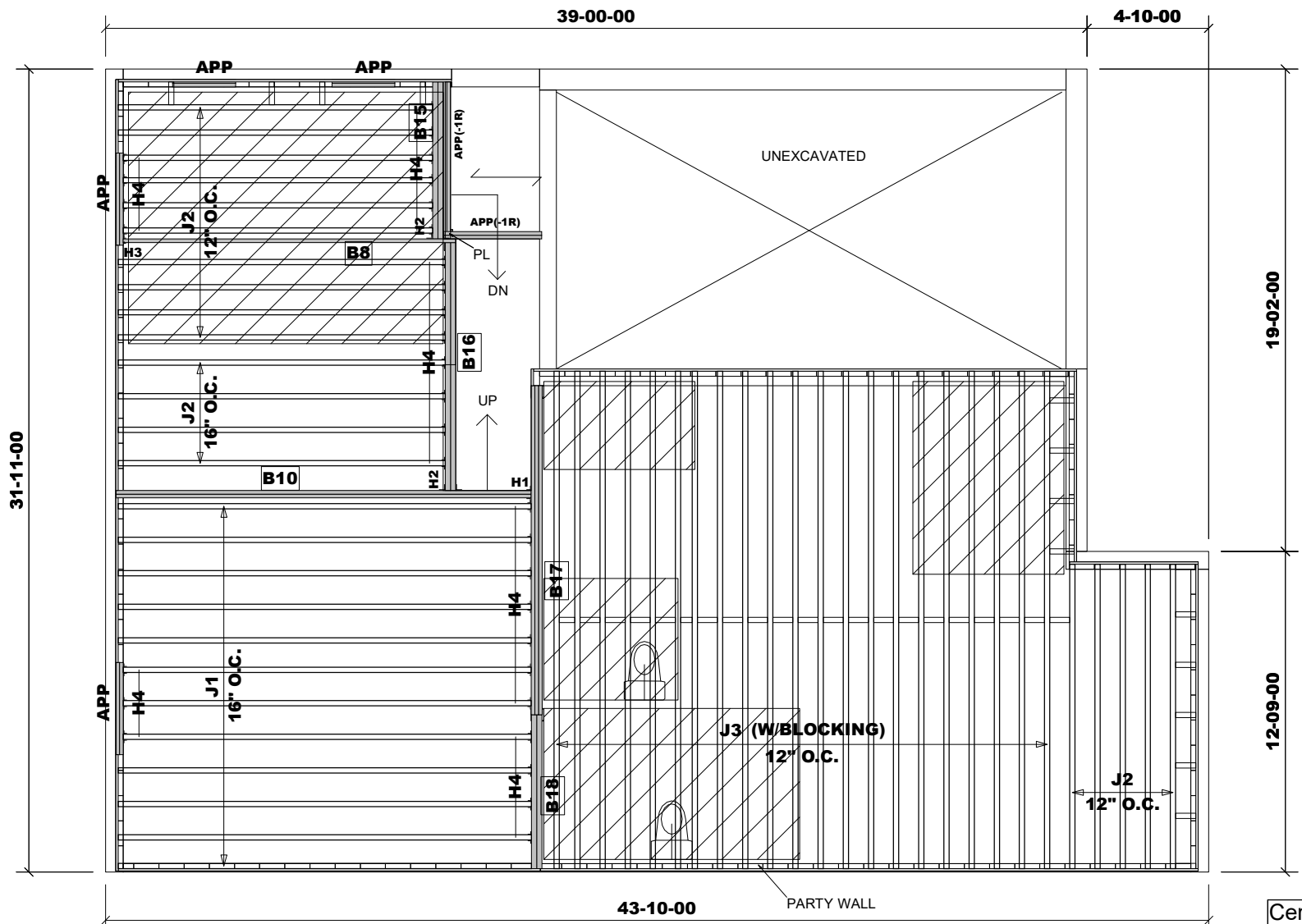
Builder: Gold Park
Project: Pine Valley

Location: Vaughan
Date: May 25, 2021

Designer: NL
Sheet: 3 of 6

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Derek
Home Lumber



| Products | | | | |
|----------|-------------|---|-------|---------|
| PlotID | Length | Product | Plies | Net Qty |
| B8 | 14'-00"-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1 | 1 |
| B10 | 17'-00"-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2 | 2 |
| B15 | 7'-00"-00 | 11 7/8" NI-20 | 2 | 2 |
| B16 | 10'-00"-00 | 11 7/8" NI-20 | 2 | 2 |
| B17 | 14'-00"-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 3 | 3 |
| B18 | 7'-00"-00 | 11 7/8" NI-20 | 2 | 2 |
| Ca1 | 127'-00"-00 | 1 1/8" x 11 7/8" Rim Board | 1 | 1 |
| J1 | 17'-00"-00 | 11 7/8" NI-20 | 1 | 12 |
| J2 | 13'-00"-00 | 11 7/8" NI-20 | 1 | 19 |
| J3 | 20'-00"-00 | 11 7/8" NI-40x | 1 | 21 |

| Connector Summary | | | |
|-------------------|-----|-------|----------|
| PlotID | Qty | Manuf | Product |
| H1 | 1 | | HGUS410 |
| H2 | 2 | | HU310-2 |
| H3 | 1 | | HU9X |
| H4 | 33 | | LT251188 |

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

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

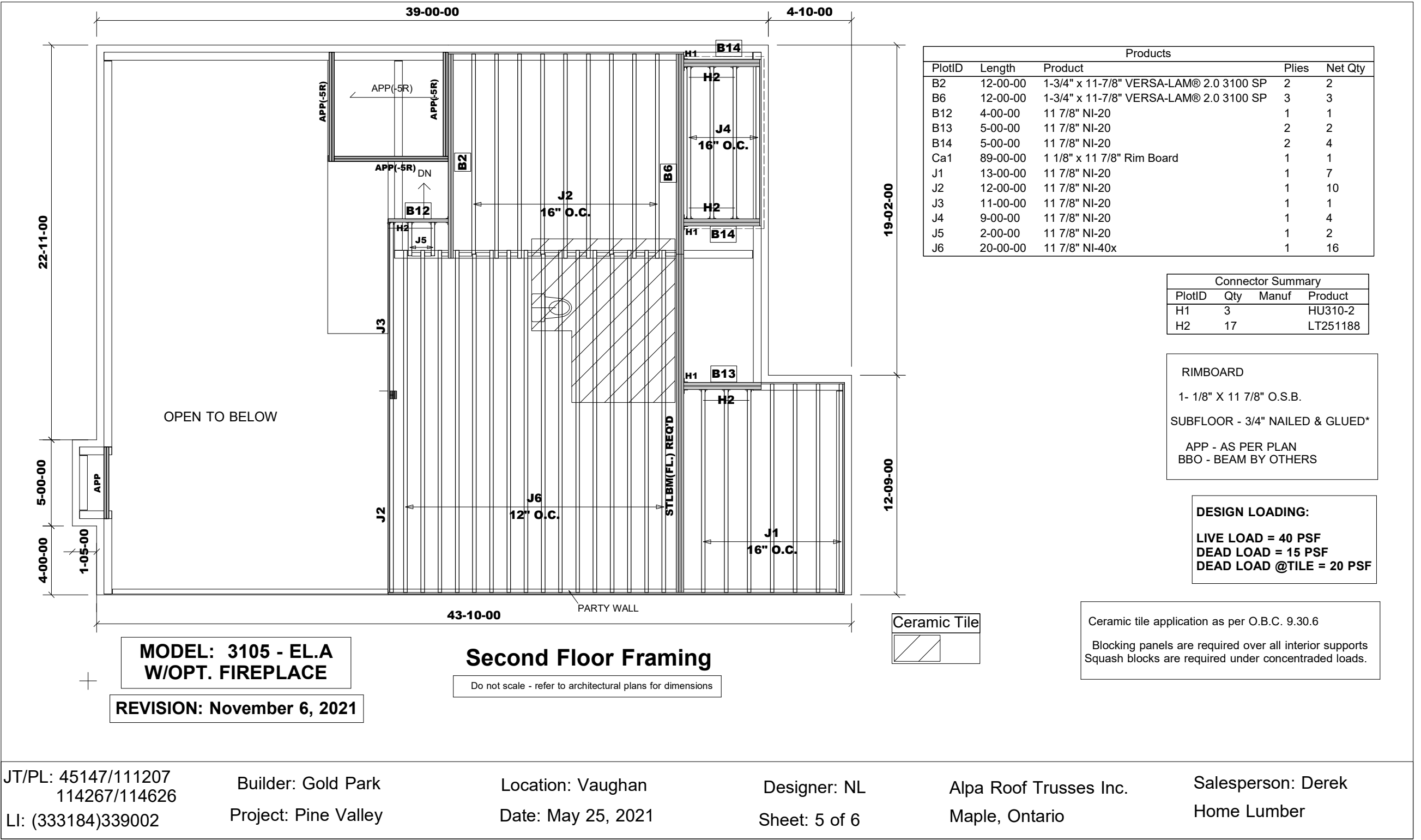
Ceramic tile application as per O.B.C. 9.30.6
 Blocking panels are required over all interior supports
 Squash blocks are required under concentrated loads.

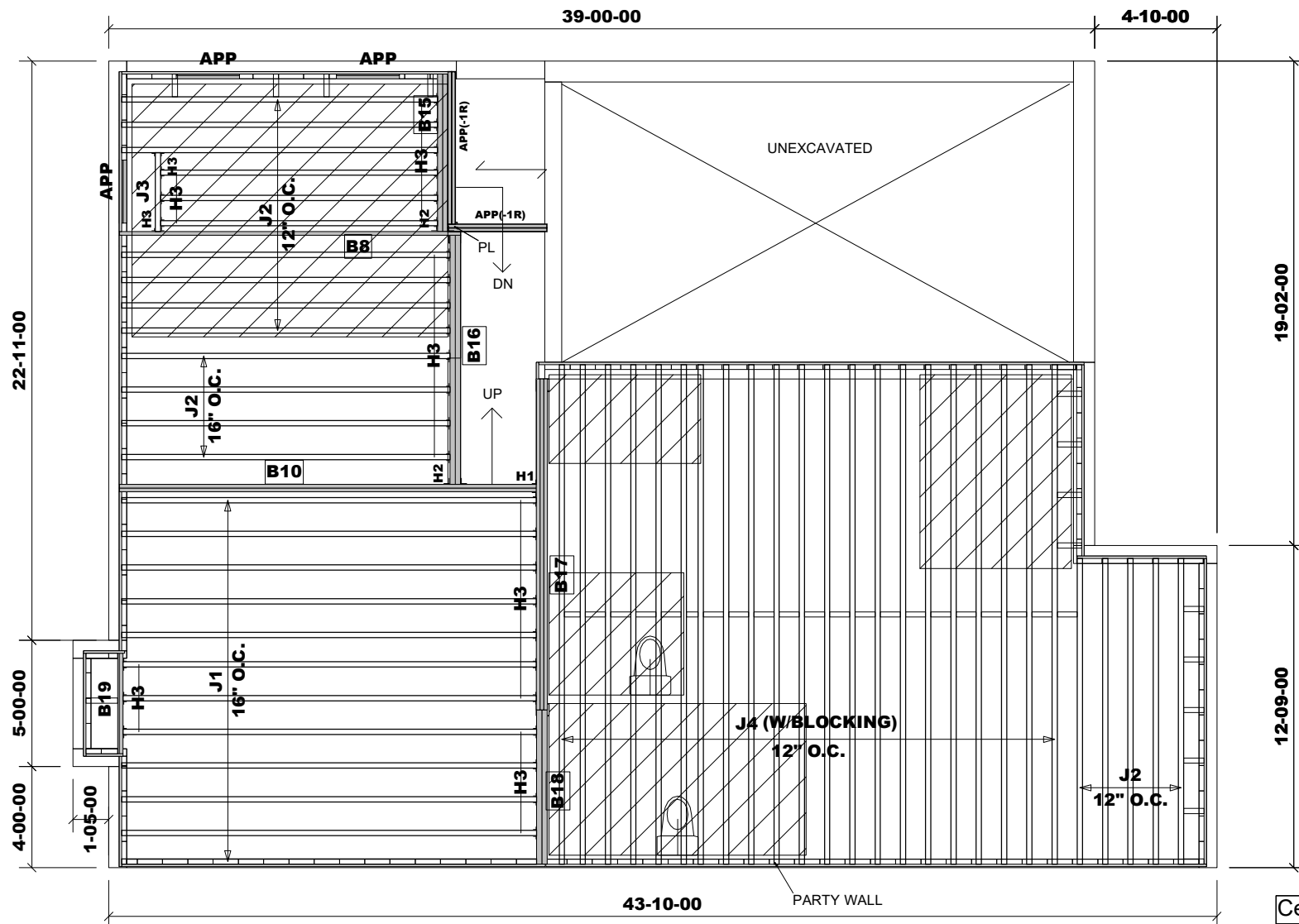
MODEL: 3105 - EL.A
 W/W.O.D. CONDITION

REVISION: November 6, 2021
 REVISION: Sept. 19, 2022

First Floor Framing

Do not scale - refer to architectural plans for dimensions





| Products | | | | |
|----------|-----------|---|-------|---------|
| PlotID | Length | Product | Plies | Net Qty |
| B8 | 14-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1 | 1 |
| B10 | 17-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2 | 2 |
| B15 | 7-00-00 | 11 7/8" NI-20 | 2 | 2 |
| B16 | 10-00-00 | 11 7/8" NI-20 | 2 | 2 |
| B17 | 14-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 3 | 3 |
| B18 | 7-00-00 | 11 7/8" NI-20 | 2 | 2 |
| B19 | 4-00-00 | 11 7/8" NI-20 | 1 | 1 |
| Ca1 | 137-00-00 | 1 1/8" x 11 7/8" Rim Board | 1 | 1 |
| J1 | 17-00-00 | 11 7/8" NI-20 | 1 | 12 |
| J2 | 13-00-00 | 11 7/8" NI-20 | 1 | 19 |
| J3 | 4-00-00 | 11 7/8" NI-20 | 1 | 1 |
| J4 | 20-00-00 | 11 7/8" NI-40x | 1 | 21 |

| Connector Summary | | | |
|-------------------|-----|-------|----------|
| PlotID | Qty | Manuf | Product |
| H1 | 1 | | HGUS410 |
| H2 | 2 | | HU310-2 |
| H3 | 34 | | LT251188 |

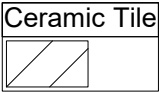
RIMBOARD
1- 1/8" X 11 7/8" O.S.B.
SUBFLOOR - 3/4" NAILED & GLUED*
APP - AS PER PLAN
BBO - BEAM BY OTHERS

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.

MODEL: 3105 - EL.A
W/OPT. FIREPLACE
REVISION: November 6, 2021
REVISION: Sept. 19, 2022

First Floor Framing
Do not scale - refer to architectural plans for dimensions





Customer: **Gold Park**
 Job Address: **Pine Valley**
 City: **Vaughan**
 Job Track: **45147(3105)**

Job Name: **339002-A**
 Level: **2nd Floor - Supply/BOM**
 Label: **B14 - i21188**
 Type: **Beam**

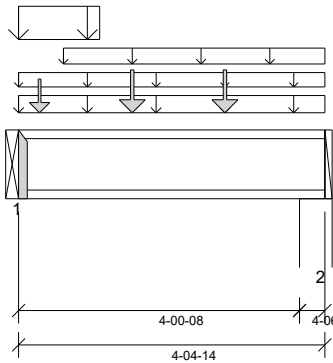
2 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2020.06.20 11/06/2021 11:35



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: 1'- 1 1/2"

Factored Resistance of Support Material:

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

ANALYSIS RESULTS

| Design Criteria | Location | Load Combination | LDF | Design | Limit | Result |
|-----------------------------|------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment: | 1'- 7 5/8" | 1.25D + 1.5L + S | 0.96 | 1569 lb ft | 10670 lb ft | Passed - 15% |
| Factored Shear: | 0'- 1/16" | 1.25D + 1.5S + L | 0.94 | 1817 lb | 4225 lb | Passed - 43% |
| Total Load (TL) Pos. Defl.: | 2'- 3/8" | D + L + 0.5S | | 0.015" | 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 + 1.5S + L | 0.94 | 1821 lb | | 3940 lb | - | Passed - 46% |
| 1 | 1-12 | 1.25D + 1.5S + L | 0.94 | 1821 lb | | 3940 lb | - | Passed - 46% |
| 2 | 4-06 | 1.25D + 1.5L + S | 0.96 | 1308 lb | | 4283 lb | 12866 lb | Passed - 31% |

CONNECTOR INFORMATION

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

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

SPECIFIED LOADS

| Type | Start Loc | End Loc | Source | Face | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|-------------|-------------|-------------|-------------|------|-----------|----------|-----------|----------|
| Self Weight | 0' | 4'- 4 7/8" | Self Weight | Top | 6 lb/ft | - | - | - |
| Uniform | -0' | 4'- 4 7/8" | E55(i19320) | Top | 101 lb/ft | - | - | - |
| Uniform | 0' | 4'- 4 7/8" | User Load | Top | 14 lb/ft | - | 21 lb/ft | - |
| Uniform | -0' | 1'- 2" | E55(i19320) | Top | 189 lb/ft | - | 284 lb/ft | - |
| Uniform | 0'- 7 3/4" | 4'- 4 7/8" | E55(i19320) | Top | 28 lb/ft | - | 42 lb/ft | - |
| Point | 0'- 3 5/8" | 0'- 3 5/8" | J4(i21204) | Back | 90 lb | 179 lb | - | - |
| Point | 1'- 7 5/8" | 1'- 7 5/8" | J4(i21154) | Back | 129 lb | 258 lb | - | - |
| Point | 2'- 11 5/8" | 2'- 11 5/8" | J4(i21128) | Back | 129 lb | 258 lb | - | - |

UNFACTORED REACTIONS

| ID | Start Loc | End Loc | Source | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-----------|------------|-------------|----------|----------|----------|----------|
| 1 | 0' | 0' | B6(i21135) | 676 lb | 394 lb | 388 lb | - |
| 2 | 4'- 1/2" | 4'- 4 7/8" | E48(i19310) | 531 lb | 301 lb | 193 lb | - |

DESIGN NOTES

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

PLY TO PLY CONNECTION

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

SE-039866





Customer: **Gold Park**
 Job Address: **Pine Valley**
 City: **Vaughan**
 Job Track: **45147(3105)**

Job Name: **339002-A**
 Level: **2nd Floor - Supply/BOM**
 Label: **B13 - i21165**
 Type: **Beam**

2 Ply Member
11 7/8" NI-20

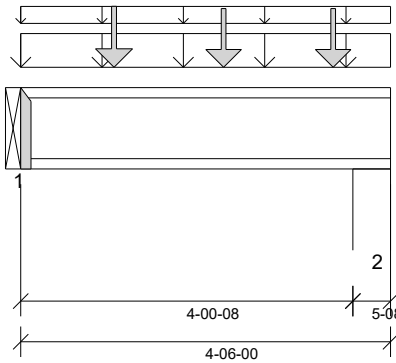
Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2020.06.20

11/06/2021 11:35



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: 1'- 1 1/2"

Factored Resistance of Support Material:

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



ANALYSIS RESULTS

| Design Criteria | Location | Load Combination | LDF | Design | Limit | Result |
|-----------------------------|-------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment: | 2'- 4 9/16" | 1.25D + 1.5L + S | 0.95 | 2258 lb ft | 10599 lb ft | Passed - 21% |
| Factored Shear: | 4'- 7/16" | 1.25D + 1.5L + S | 0.95 | 2368 lb | 4255 lb | Passed - 56% |
| Live Load (LL) Pos. Defl.: | 2'- 13/16" | L + 0.5S | | 0.010" | L/360 | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 2'- 3/4" | D + L + 0.5S | | 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 | 1-12 | 1.25D + 1.5S + L | 0.93 | 1917 lb | | 3940 lb | - | Passed - 49% |
| 2 | 5-08 | 1.25D + 1.5L + S | 0.95 | 2582 lb | | 4255 lb | 16067 lb | Passed - 61% |

CONNECTOR INFORMATION

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

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

SPECIFIED LOADS

| Type | Start Loc | End Loc | Source | Face | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|-------------|------------|------------|-------------|-------|-----------|----------|-----------|----------|
| Self Weight | 0' | 4'- 6" | Self Weight | Top | 6 lb/ft | - | - | - |
| Uniform | -0' | 4'- 6" | E57(i19321) | Top | 206 lb/ft | - | 158 lb/ft | - |
| Uniform | 0' | 4'- 6" | User Load | Top | 14 lb/ft | - | 21 lb/ft | - |
| Point | 1'- 1 5/8" | 1'- 1 5/8" | J1(i21212) | Front | 269 lb | 336 lb | - | - |
| Point | 2'- 5 5/8" | 2'- 5 5/8" | J1(i21221) | Front | 242 lb | 333 lb | - | - |
| Point | 3'- 9 5/8" | 3'- 9 5/8" | J1(i21218) | Front | 242 lb | 333 lb | - | - |

UNFACTORED REACTIONS

| ID | Start Loc | End Loc | Source | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-----------|---------|--------------------------|----------|----------|----------|----------|
| 1 | 0' | 0' | STLBM(FL.) REQ'D(i20201) | 773 lb | 403 lb | 365 lb | - |
| 2 | 4'- 1/2" | 4'- 6" | E49(i19312) | 996 lb | 599 lb | 438 lb | - |

DESIGN NOTES

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

PLY TO PLY CONNECTION

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

SE-039867



Customer: **Gold Park**
 Job Address: **Pine Valley**
 City: **Vaughan**
 Job Track: **45147(3105)**

Job Name: **339002-A**
 Level: **2nd Floor - Supply/BOM**
 Label: **B12 - i21171**
 Type: **Beam**

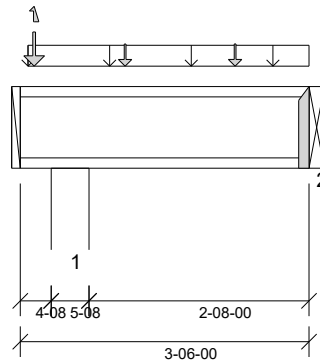
1 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2020.06.20 11/06/2021 11:35



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: 1'- 1 1/2"

Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 7 1/4"
- 769 psi Beam @ 3'- 6"

ANALYSIS RESULTS

| Design Criteria | Location | Load Combination | LDF | Design | Limit | Result |
|-----------------------|--------------|------------------|------|-----------|------------|--------------|
| Factored Pos. Moment: | 2'- 5 1/8" | 1.25D + 1.5L | 1.00 | 190 lb ft | 5580 lb ft | Passed - 3% |
| Factored Neg. Moment: | 0'- 7 1/4" | 1.25D + 1.5L | 1.00 | 148 lb ft | 5580 lb ft | Passed - 3% |
| Factored Shear: | 0'- 10 1/16" | 1.25D + 1.5L | 1.00 | 362 lb | 2240 lb | Passed - 16% |

SUPPORT AND REACTION INFORMATION

| ID | Input Bearing Length | Controlling Load Combination | LDF | Factored Downward Reaction | Factored Uplift Reaction | Factored Resistance of Member | Factored Resistance of Support | Result |
|----|----------------------|------------------------------|------|----------------------------|--------------------------|-------------------------------|--------------------------------|--------------|
| 1 | 5-08 | 1.25D + 1.5L | 1.00 | 772 lb | | 2240 lb | 8459 lb | Passed - 34% |
| 2 | 1-12 | 1.25D + 1.5L | 1.00 | 281 lb | | 1970 lb | - | Passed - 14% |

CONNECTOR INFORMATION

| ID | Part No. | Manufacturer | Nailing Requirements | | | Other Information or Requirement for Reinforcement Accessories |
|----|----------|--------------|----------------------|------|--------|--|
| | | | Top | Face | Member | |
| 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' | 3'- 6" | Self Weight | Top | 3 lb/ft | - | - | - |
| Uniform | 0'- 1 1/8" | 3'- 6" | User Load | Top | 30 lb/ft | 80 lb/ft | - | - |
| Point | 0'- 2" | 0'- 2" | - | Front | 75 lb | 131/-3 lb | - | - |
| Point | 1'- 3 1/4" | 1'- 3 1/4" | J5(i21115) | Front | 25 lb | 50 lb | - | - |
| Point | 2'- 7 1/4" | 2'- 7 1/4" | J5(i21172) | Front | 25 lb | 51 lb | - | - |

UNFACTORED REACTIONS

| ID | Start Loc | End Loc | Source | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|------------|---------|------------|----------|-----------|----------|----------|
| 1 | 0'- 4 1/2" | 0'- 10" | 2(i19329) | 184 lb | 374/-4 lb | - | - |
| 2 | 3'- 6" | 3'- 6" | B2(i21163) | 53 lb | 132 lb | - | - |

DESIGN NOTES

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



SE-039868



Customer: **Gold Park**
 Job Address: **Pine Valley**
 City: **Vaughan**
 Job Track: **45147(3105)**

Job Name: **339002-A**
 Level: **1st Floor - Supply/BOM**
 Label: **B16 - i21673**
 Type: **Beam**

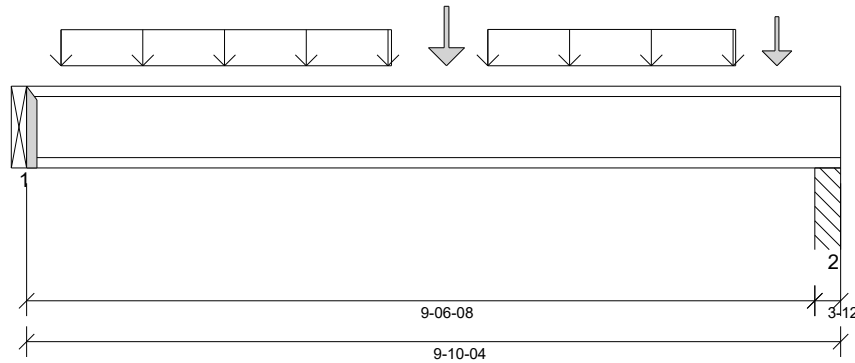
2 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2020.06.20 11/06/2021 12:41



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:

- 769 psi Beam @ 0'
- 1334 psi Column @ 9'- 7 1/2"

ANALYSIS RESULTS

| Design Criteria | Location | Load Combination | LDF | Design | Limit | Result |
|-----------------------------|--------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment: | 5'- 1" | 1.25D + 1.5L | 1.00 | 6849 lb ft | 11160 lb ft | Passed - 61% |
| Factored Shear: | 9'- 6 7/16" | 1.25D + 1.5L | 1.00 | 2769 lb | 4480 lb | Passed - 62% |
| Live Load (LL) Pos. Defl.: | 4'- 9 13/16" | L | | 0.129" | L/360 | Passed - L/888 |
| Total Load (TL) Pos. Defl.: | 4'- 9 13/16" | D + L | | 0.196" | L/240 | Passed - L/584 |

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 | 2564 lb | | 3940 lb | - | Passed - 65% |
| 2 | 3-12 | 1.25D + 1.5L | 1.00 | 2791 lb | | 4420 lb | 25020 lb | Passed - 63% |

CONNECTOR INFORMATION

| ID | Part No. | Manufacturer | Nailing Requirements | | | Other Information or Requirement for Reinforcement Accessories |
|--|----------|--------------|----------------------|------|--------|--|
| | | | Top | Face | Member | |
| 1 | HU310-2 | | - | - | - | Connector manually specified by the user. |
| * Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails. | | | | | | |

SPECIFIED LOADS

| Type | Start Loc | End Loc | Source | Face | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|-------------|-----------|-------------|---------------|------|-----------|-----------|----------|----------|
| Self Weight | 0' | 9'- 10 1/4" | Self Weight | Top | 6 lb/ft | - | - | - |
| Uniform | 0'- 5" | 4'- 5" | Smoothed Load | Back | 136 lb/ft | 270 lb/ft | - | - |
| Uniform | 5'- 7" | 8'- 7" | Smoothed Load | Back | 137 lb/ft | 274 lb/ft | - | - |
| Point | 5'- 1" | 5'- 1" | J3(i21758) | Back | 160 lb | 320 lb | - | - |
| Point | 9'- 1" | 9'- 1" | J3(i21686) | Back | 122 lb | 245 lb | - | - |

UNFACTORED REACTIONS

| ID | Start Loc | End Loc | Source | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|------------|-------------|-------------|----------|----------|----------|----------|
| 1 | 0' | 0' | B10(i21667) | 623 lb | 1190 lb | - | - |
| 2 | 9'- 6 1/2" | 9'- 10 1/4" | Pt1(i21718) | 677 lb | 1297 lb | - | - |

DESIGN NOTES

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

PLY TO PLY CONNECTION

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



SE-039869



Customer: **Gold Park**
 Job Address: **Pine Valley**
 City: **Vaughan**
 Job Track: **45147(3105)**

Job Name: **339002-A**
 Level: **1st Floor - Supply/BOM**
 Label: **B15 - i21722**
 Type: **Beam**

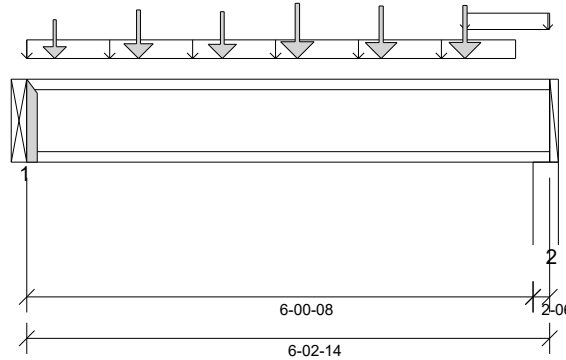
2 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2020.06.20 11/06/2021 12:41



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 @ 6'- 1 1/2"

ANALYSIS RESULTS

| Design Criteria | Location | Load Combination | LDF | Design | Limit | Result |
|-----------------------------|------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment: | 3'- 2 3/4" | 1.25D + 1.5L | 1.00 | 3033 lb ft | 11160 lb ft | Passed - 27% |
| Factored Shear: | 0'- 1/16" | 1.25D + 1.5L | 1.00 | 1814 lb | 4480 lb | Passed - 40% |
| Live Load (LL) Pos. Defl.: | 3'- 1" | L | | 0.026" | L/360 | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 3'- 15/16" | D + L | | 0.045" | 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 | 1814 lb | | 3940 lb | - | Passed - 46% |
| 2 | 2-06 | 1.25D + 1.5L | 1.00 | 1767 lb | | 4090 lb | 7306 lb | Passed - 43% |

CONNECTOR INFORMATION

| ID | Part No. | Manufacturer | Nailing Requirements | | | Other Information or Requirement for Reinforcement Accessories |
|--|----------|--------------|----------------------|------|--------|--|
| | | | Top | Face | Member | |
| 1 | HU310-2 | | - | - | - | Connector manually specified by the user. |
| * Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails. | | | | | | |

SPECIFIED LOADS

| Type | Start Loc | End Loc | Source | Face | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|-------------|------------|------------|------------------------------------|------|----------|----------|----------|----------|
| Self Weight | 0' | 6'- 2 7/8" | Self Weight | Top | 6 lb/ft | - | - | - |
| Uniform | 0' | 5'- 10" | User Load | Top | 60 lb/ft | - | - | - |
| Uniform | 5'- 2 3/4" | 6'- 2 7/8" | FC2 Floor Decking (Plan View Fill) | Top | - | 16 lb/ft | - | - |
| Point | 0'- 4" | 0'- 4" | J3(i21692) | Back | 83 lb | 166 lb | - | - |
| Point | 1'- 4" | 1'- 4" | J3(i21695) | Back | 118 lb | 236 lb | - | - |
| Point | 2'- 4" | 2'- 4" | J3(i21735) | Back | 112 lb | 223 lb | - | - |
| Point | 3'- 2 3/4" | 3'- 2 3/4" | J3(i21750) | Back | 142 lb | 283 lb | - | - |
| Point | 4'- 2 3/4" | 4'- 2 3/4" | J3(i21661) | Back | 132 lb | 264 lb | - | - |
| Point | 5'- 2 3/4" | 5'- 2 3/4" | J3(i21740) | Back | 134 lb | 268 lb | - | - |

UNFACTORED REACTIONS

| ID | Start Loc | End Loc | Source | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-----------|------------|------------|----------|----------|----------|----------|
| 1 | 0' | 0' | B8(i21688) | 568 lb | 735 lb | - | - |
| 2 | 6'- 1/2" | 6'- 2 7/8" | W4(i15187) | 547 lb | 722 lb | - | - |

DESIGN NOTES

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

PLY TO PLY CONNECTION

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

SE-039870



BC CALC® Member Report

Dry | 1 span | No cant.

November 6, 2021 12:42:05

Build 7773

Job name: 45147(3105)

File name: 339002-A.mmdl

Address: Pine Valley

Description: 1st Floor - Supply/BOM\Flush Beams\B17(i21763)

City, Province, Postal Code: Vaughan, ON

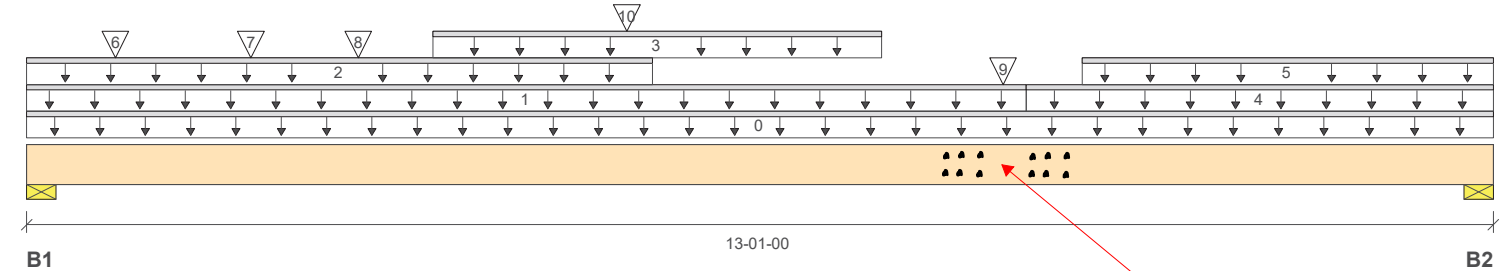
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|------------|----------|----------|------|------|
| B1, 2-3/4" | 2789 / 0 | 1874 / 0 | | |
| B2, 5-1/2" | 2630 / 0 | 1765 / 0 | | |

Load Summary

| Tag | Description | Load Type | Ref. | Start | End | Loc. | Live 1.00 | Dead 0.65 | Snow 1.00 | Wind 1.15 | Tributary |
|-----|------------------------------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0 | Self-Weight | Unf. Lin. (lb/ft) | L | 00-00-00 | 13-01-00 | Top | | 18 | | | 00-00-00 |
| 1 | FC2 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L | 00-00-00 | 08-11-00 | Top | 16 | 8 | | | n/a |
| 2 | User Load | Unf. Lin. (lb/ft) | L | 00-00-00 | 05-07-00 | Top | | 60 | | | n/a |
| 3 | Smoothed Load | Unf. Lin. (lb/ft) | L | 03-07-08 | 07-07-08 | Top | 335 | 167 | | | n/a |
| 4 | FC2 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L | 08-11-00 | 13-01-00 | Top | 20 | 10 | | | n/a |
| 5 | User Load | Unf. Lin. (lb/ft) | L | 09-05-00 | 13-01-00 | Top | | 60 | | | n/a |
| 6 | J1(i21711) | Conc. Pt. (lbs) | L | 00-09-08 | 00-09-08 | Top | 389 | 194 | | | n/a |
| 7 | J2(i21726) | Conc. Pt. (lbs) | L | 02-00-00 | 02-00-00 | Top | 393 | 197 | | | n/a |
| 8 | J1(i21717) | Conc. Pt. (lbs) | L | 02-11-08 | 02-11-08 | Top | 383 | 192 | | | n/a |
| 9 | - | Conc. Pt. (lbs) | L | 08-08-08 | 08-08-08 | Top | 2415 | 1235 | | | n/a |
| 10 | Pt1(i21520) | Conc. Pt. (lbs) | L | 05-04-04 | 05-04-04 | Top | 272 | 246 | | | n/a |

Controls Summary

| | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment | 23793 ft-lbs | 55211 ft-lbs | 43.1% | 1 | 06-11-08 |
| End Shear | 6010 lbs | 21696 lbs | 27.7% | 1 | 01-02-10 |
| Total Load Deflection | L/466 (0.322") | n/a | 51.5% | 4 | 06-05-08 |
| Live Load Deflection | L/759 (0.198") | n/a | 47.4% | 5 | 06-07-08 |
| Max Defl. | 0.322" | n/a | n/a | 4 | 06-05-08 |
| Span / Depth | 12.7 | | | | |

Bearing Supports

| | Dim. (LxW) | Demand | Demand/Resistance Support | Demand/Resistance Member | Material |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 2-3/4" x 5-1/4" | 6527 lbs | 73.5% | 37.1% | Spruce-Pine-Fir |
| B2 | Wall/Plate 5-1/2" x 5-1/4" | 6151 lbs | 34.6% | 17.5% | Spruce-Pine-Fir |

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





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

1st Floor - Supply/BOM\Flush Beams\B17(i21763) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

November 6, 2021 12:42:05

Build 7773

Job name: 45147(3105)

File name: 339002-A.mmdl

Address: Pine Valley

Description: 1st Floor - Supply/BOM\Flush Beams\B17(i21763)

City, Province, Postal Code: Vaughan, ON

Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses

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: 03-08-08.



Disclosure

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

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

SE-039872



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(3105)**

Job Name: **339002-A**
Level: **1st Floor - Supply/BOM**
Label: **B18 - i21731**
Type: **Beam**

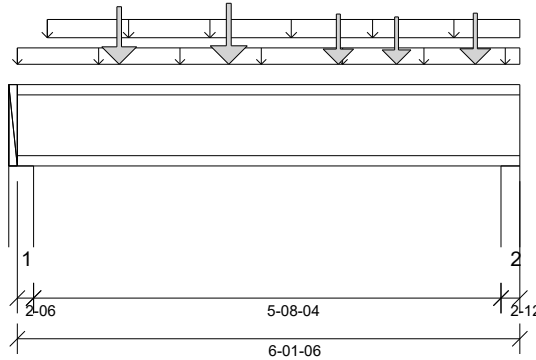
2 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2020.06.20 11/06/2021 12:43



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'- 1 3/8"
- 615 psi Wall @ 5'- 11 5/8"



ANALYSIS RESULTS

| Design Criteria | Location | Load Combination | LDF | Design | Limit | Result |
|-----------------------------|--------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment: | 2'- 6 7/8" | 1.25D + 1.5L | 1.00 | 3534 lb ft | 11160 lb ft | Passed - 32% |
| Factored Shear: | 5'- 10 9/16" | 1.25D + 1.5L | 1.00 | 2569 lb | 4480 lb | Passed - 57% |
| Live Load (LL) Pos. Defl.: | 3'- 11/16" | L | | 0.030" | L/360 | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 3'- 11/16" | D + L | | 0.051" | L/240 | Passed - L/999 |

SUPPORT AND REACTION INFORMATION

| ID | Input Bearing Length | Controlling Load Combination | LDF | Factored Downward Reaction | Factored Uplift Reaction | Factored Resistance of Member | Factored Resistance of Support | Result |
|----|----------------------|------------------------------|------|----------------------------|--------------------------|-------------------------------|--------------------------------|--------------|
| 1 | 2-06 | 1.25D + 1.5L | 1.00 | 2046 lb | | 4090 lb | 7305 lb | Passed - 50% |
| 2 | 2-12 | 1.25D + 1.5L | 1.00 | 2596 lb | | 4180 lb | 8459 lb | Passed - 62% |

SPECIFIED LOADS

| Type | Start Loc | End Loc | Source | Face | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|-------------|-------------|-------------|------------------------------------|------|----------|----------|----------|----------|
| Self Weight | 0' | 6'- 1 3/8" | Self Weight | Top | 6 lb/ft | - | - | - |
| Uniform | 0' | 6'- 1 3/8" | FC2 Floor Decking (Plan View Fill) | Top | 8 lb/ft | 16 lb/ft | - | - |
| Uniform | 0'- 4 3/8" | 6'- 1 3/8" | User Load | Top | 60 lb/ft | - | - | - |
| Point | 1'- 2 7/8" | 1'- 2 7/8" | J1(i21766) | Back | 206 lb | 413 lb | - | - |
| Point | 2'- 6 7/8" | 2'- 6 7/8" | J1(i21759) | Back | 223 lb | 446 lb | - | - |
| Point | 3'- 10 7/8" | 3'- 10 7/8" | J1(i21736) | Back | 171 lb | 341 lb | - | - |
| Point | 4'- 7 3/8" | 4'- 7 3/8" | J2(i21700) | Back | 157 lb | 313 lb | - | - |
| Point | 5'- 6 7/8" | 5'- 6 7/8" | J1(i21674) | Back | 175 lb | 350 lb | - | - |

UNFACTORED REACTIONS

| ID | Start Loc | End Loc | Source | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-------------|------------|-------------|----------|----------|----------|----------|
| 1 | 0' | 0'- 2 3/8" | W12(i15452) | 608 lb | 858 lb | - | - |
| 2 | 5'- 10 5/8" | 6'- 1 3/8" | W23(i21385) | 753 lb | 1103 lb | - | - |

DESIGN NOTES

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

PLY TO PLY CONNECTION

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

SE-039873



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(3105)**

Job Name: **339002-A-FP**
Level: **1st Floor - Supply/BOM**
Label: **B19 - i21954**
Type: **Beam**

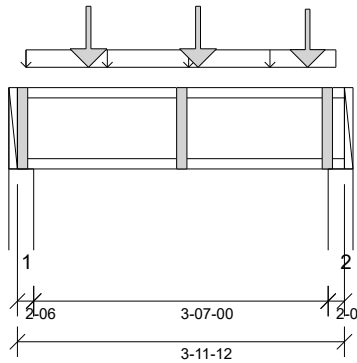
1 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version
8.4.2.2861 Updated 13

Report Version: 2020.06.20 11/06/2021 13:21



DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)
Design Methodology: LSD
Service Condition: Dry
LL Deflection Limit: L/360,
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'- 1 3/8"
- 615 psi Wall @ 3'- 10 3/8"

ANALYSIS RESULTS

| Design Criteria | Location | Load Combination | LDF | Design | Limit | Result |
|-----------------------------|-------------|------------------|------|------------|------------|----------------|
| Factored Pos. Moment: | 2'- 2 3/8" | 1.25D + 1.5L | 1.00 | 1459 lb ft | 5580 lb ft | Passed - 26% |
| Factored Shear: | 3'- 9 5/16" | 1.25D + 1.5L | 1.00 | 1628 lb | 2240 lb | Passed - 73% |
| Live Load (LL) Pos. Defl.: | 1'- 11 7/8" | L | | 0.017" | L/360 | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 1'- 11 7/8" | D + L | | 0.026" | L/240 | Passed - L/999 |

SUPPORT AND REACTION INFORMATION

| ID | Input Bearing Length | Controlling Load Combination | LDF | Factored Downward Reaction | Factored Uplift Reaction | Factored Resistance of Member | Factored Resistance of Support | Result |
|----|----------------------|------------------------------|------|----------------------------|--------------------------|-------------------------------|--------------------------------|--------------|
| 1 | 2-06 | 1.25D + 1.5L | 1.00 | 1371 lb | | 2045 lb | 3653 lb | Passed - 67% |
| 2 | 2-06 | 1.25D + 1.5L | 1.00 | 1635 lb | | 2045 lb | 3653 lb | Passed - 80% |

SPECIFIED LOADS

| Type | Start Loc | End Loc | Source | Face | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|-------------|-------------|-------------|------------------------------------|-------|----------|----------|----------|----------|
| Self Weight | 0' | 3'- 11 3/4" | Self Weight | Top | 3 lb/ft | - | - | - |
| Uniform | 0'- 1 1/4" | 3'- 10 1/2" | FC2 Floor Decking (Plan View Fill) | Top | 15 lb/ft | 29 lb/ft | - | - |
| Point | 0'- 10 3/8" | 0'- 10 3/8" | J1(i21956) | Front | 221 lb | 442 lb | - | - |
| Point | 2'- 2 3/8" | 2'- 2 3/8" | J1(i21955) | Front | 221 lb | 442 lb | - | - |
| Point | 3'- 6 3/8" | 3'- 6 3/8" | J1(i21957) | Front | 207 lb | 414 lb | - | - |

UNFACTORED REACTIONS

| ID | Start Loc | End Loc | Source | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|------------|-------------|-------------|----------|----------|----------|----------|
| 1 | 0' | 0'- 2 3/8" | W25(i21814) | 332 lb | 653 lb | - | - |
| 2 | 3'- 9 3/8" | 3'- 11 3/4" | W27(i21812) | 383 lb | 755 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.



SE-039874



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

2nd Floor - Supply/BOM/Flush Beams\B2(i20479) (Flush Beam)

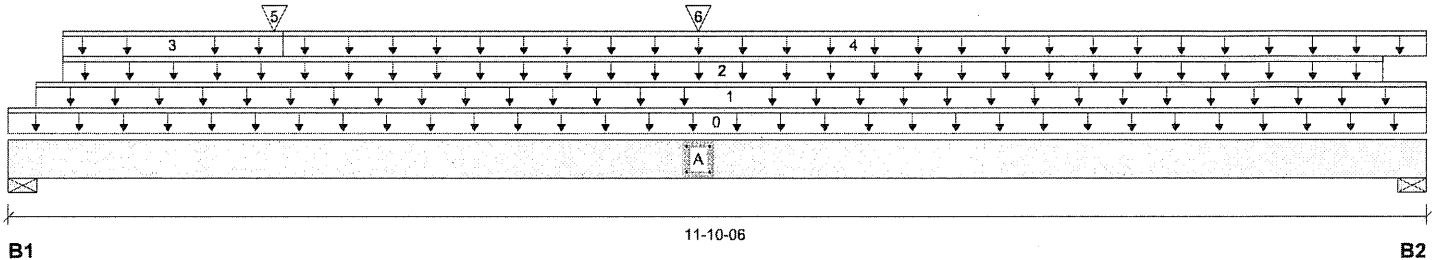
PASSED

 BC CALC® Member Report
 Build 7773

Dry | 1 span | No cant.

May 25, 2021 12:04:29

 Job name: 45147(3105)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

 File name: 333184-A.mmdl
 Description: 2nd Floor - Supply/BOM/Flush Beams\B2(i20479)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses


Total Horizontal Product Length = 11-10-06

Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|------------|---------|---------|------|------|
| B1, 5-1/2" | 758 / 0 | 726 / 0 | | |
| B2, 4-3/8" | 598 / 0 | 652 / 0 | | |

Load Summary

| Tag | Description | Load Type | Ref. | Start | End | Loc. | Live 1.00 | Dead 0.65 | Snow 1.00 | Wind 1.15 | Tributary |
|-----|------------------------------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0 | Self-Weight | Unf. Lin. (lb/ft) | L | 00-00-00 | 11-10-06 | Top | | 12 | | | 00-00-00 |
| 1 | FC1 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L | 00-02-12 | 11-10-06 | Top | 25 | 12 | | | n/a |
| 2 | User Load | Unf. Lin. (lb/ft) | L | 00-05-08 | 11-06-00 | Top | | 60 | | | n/a |
| 3 | FC1 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L | 00-05-08 | 02-03-08 | Top | 16 | 8 | | | n/a |
| 4 | FC1 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L | 02-03-08 | 11-10-06 | Top | 6 | 3 | | | n/a |
| 5 | B1(i20468) | Conc. Pt. (lbs) | L | 02-02-10 | 02-02-10 | Top | 176 | 83 | | | n/a |
| 6 | APP(-5R)(i19333) | Conc. Pt. (lbs) | L | 05-09-04 | 05-09-04 | Top | 805 | 302 | | | n/a |

Controls Summary

| | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment | 7200 ft-lbs | 35392 ft-lbs | 20.3% | 1 | 05-09-04 |
| End Shear | 1847 lbs | 14464 lbs | 12.8% | 1 | 01-05-06 |
| Total Load Deflection | L/999 (0.106") | n/a | n/a | 4 | 05-11-01 |
| Live Load Deflection | L/999 (0.057") | n/a | n/a | 5 | 05-11-01 |
| Max Defl. | 0.106" | n/a | n/a | 4 | 05-11-01 |
| Span / Depth | 11.3 | | | | |

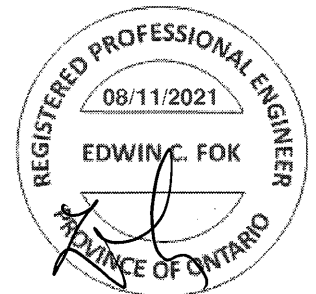
Bearing Supports

| | Dim. (LxW) | Demand | Demand/Resistance Support | Demand/Resistance Member | Material |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 5-1/2" x 3-1/2" | 2044 lbs | 17.3% | 8.7% | Spruce-Pine-Fir |
| B2 | Wall/Plate 4-3/8" x 3-1/2" | 1712 lbs | 18.2% | 9.2% | Spruce-Pine-Fir |

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 05-07-00.

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



SB033193



Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2nd Floor - Supply/BOM/Flush Beams/B6(i20357) (Flush Beam)

PASSED

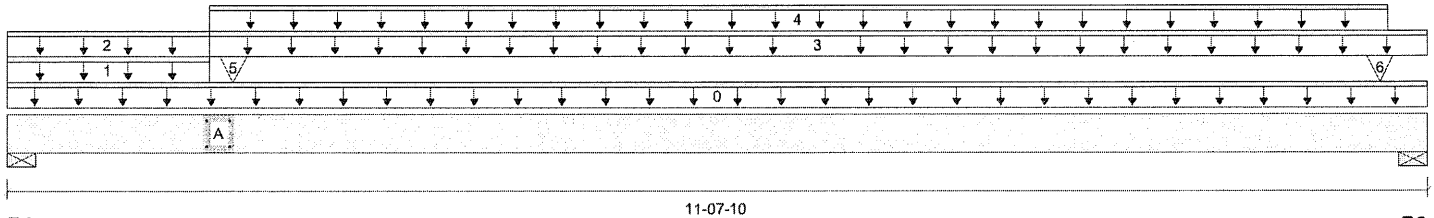
BC CALC® Member Report
 Build 7773

Dry | 1 span | No cant.

May 25, 2021 12:04:29

Job name: 45147(3105)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File name: 333184-A.mmdl
 Description: 2nd Floor - Supply/BOM/Flush Beams/B6(i20357)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses



B1 11-07-10 B2
 Total Horizontal Product Length = 11-07-10

Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|------------|---------|----------|----------|------|
| B1, 2-3/4" | 512 / 0 | 2406 / 0 | 2493 / 0 | |
| B2, 4-3/8" | 634 / 0 | 1076 / 0 | 508 / 0 | |

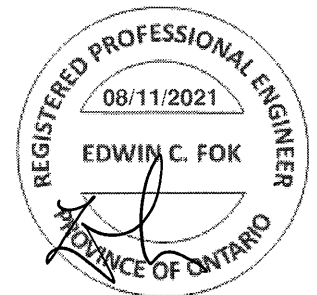
Load Summary

| Tag | Description | Load Type | Ref. | Start | End | Loc. | Live 1.00 | Dead 0.65 | Snow 1.00 | Wind 1.15 | Tributary |
|-----|------------------------------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0 | Self-Weight | Unf. Lin. (lb/ft) | L | 00-00-00 | 11-07-10 | Top | | 18 | | | 00-00-00 |
| 1 | E56(i19318) | Unf. Lin. (lb/ft) | L | 00-00-00 | 01-07-12 | Top | | 374 | 410 | | n/a |
| 2 | FC1 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L | 00-00-00 | 01-07-12 | Top | 26 | | | | n/a |
| 3 | FC1 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L | 01-07-12 | 11-07-10 | Top | 21 | 11 | | | n/a |
| 4 | FC1 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L | 01-07-12 | 11-03-12 | Top | 10 | 5 | | | n/a |
| 5 | - | Conc. Pt. (lbs) | L | 01-10-01 | 01-10-01 | Top | 394 | 1923 | 2193 | (Top LOADED) | n/a |
| 6 | - | Conc. Pt. (lbs) | L | 11-02-15 | 11-02-15 | Top | 394 | 538 | 129 | | n/a |

Controls Summary

| | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment | 10245 ft-lbs | 55211 ft-lbs | 18.6% | 13 | 01-10-08 |
| End Shear | 5862 lbs | 21696 lbs | 27.0% | 13 | 01-02-10 |
| Total Load Deflection | L/999 (0.092") | n/a | n/a | 35 | 05-01-15 |
| Live Load Deflection | L/999 (0.051") | n/a | n/a | 51 | 05-00-05 |
| Max Defl. | 0.092" | n/a | n/a | 35 | 05-01-15 |
| Span / Depth | 11.3 | | | | |

| Bearing Supports | Dim. (LxW) | Demand | Demand/Resistance Support | Demand/Resistance Member | Material |
|------------------|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 2-3/4" x 5-1/4" | 7259 lbs | 81.7% | 41.2% | Spruce-Pine-Fir |
| B2 | Wall/Plate 4-3/8" x 5-1/4" | 2804 lbs | 19.8% | 10.0% | Spruce-Pine-Fir |



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

82033196



Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor - Supply/BOM\Flush Beams\B8(i20452) (Flush Beam)

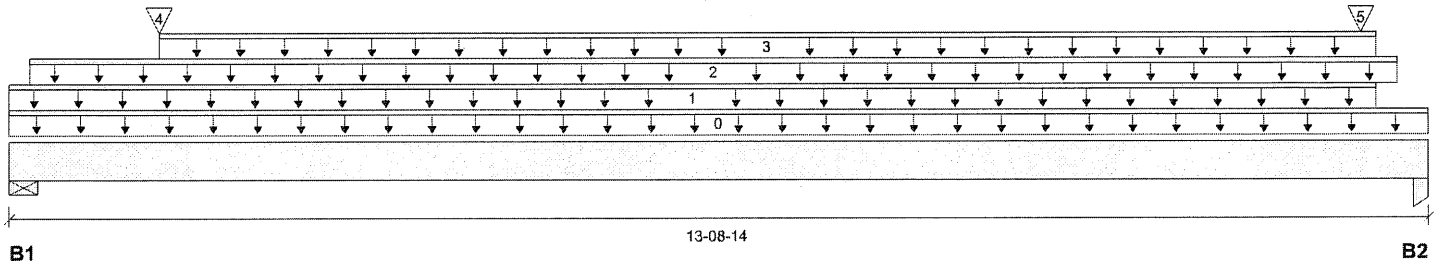
PASSED

 BC CALC® Member Report
 Build 7773

Dry | 1 span | No cant.

May 25, 2021 12:04:29

 Job name: 45147(3105)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

 File name: 333184-A.mmdl
 Description: 1st Floor - Supply/BOM\Flush Beams\B8(i20452)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses


Total Horizontal Product Length = 13-08-14

Reaction Summary (Down / Uplift) (lbs)

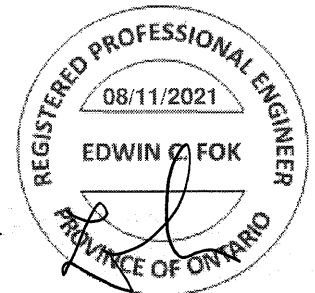
| Bearing | Live | Dead | Snow | Wind |
|------------|----------|----------|------|------|
| B1, 2-3/8" | 664 / 0 | 379 / 0 | | |
| B2, 3-1/2" | 2152 / 0 | 1275 / 0 | | |

Load Summary

| Tag | Description | Load Type | Ref. | Start | End | Loc. | Live 1.00 | Dead 0.65 | Snow 1.00 | Wind 1.15 | Tributary |
|-----|------------------------------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0 | Self-Weight | Unf. Lin. (lb/ft) | L | 00-00-00 | 13-08-14 | Top | | 6 | | | 00-00-00 |
| 1 | FC2 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L | 00-00-00 | 13-02-14 | Top | 12 | 6 | | | n/a |
| 2 | User Load | Unf. Lin. (lb/ft) | L | 00-02-06 | 13-05-06 | Top | 20 | 10 | | | n/a |
| 3 | FC2 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L | 01-05-04 | 13-02-14 | Top | 8 | 4 | | | n/a |
| 4 | J5(i20084) | Conc. Pt. (lbs) | L | 01-05-04 | 01-05-04 | Top | 384 | 193 | | | n/a |
| 5 | B7(i20457) | Conc. Pt. (lbs) | L | 13-01-02 | 13-01-02 | Top | 1914 | 1119 | | | n/a |

Controls Summary

| | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment | 3496 ft-lbs | 17696 ft-lbs | 19.8% | 1 | 07-04-09 |
| End Shear | 2029 lbs | 7232 lbs | 28.1% | 1 | 12-05-08 |
| Total Load Deflection | L/911 (0.176") | n/a | 26.3% | 4 | 06-11-06 |
| Live Load Deflection | L/999 (0.11") | n/a | n/a | 5 | 06-11-06 |
| Max Defl. | 0.176" | n/a | n/a | 4 | 06-11-06 |
| Span / Depth | 13.5 | | | | |



Bearing Supports

| | Dim. (LxW) | Demand | Demand/Resistance Support | Demand/Resistance Member | Material |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 2-3/8" x 1-3/4" | 1469 lbs | 57.5% | 29.0% | Spruce-Pine-Fir |
| B2 | Column 3-1/2" x 1-3/4" | 4822 lbs | 45.4% | 64.5% | 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: 11-04-14.

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®,

45033198



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor - Supply/BOM\Flush Beams\B10(i20325) (Flush Beam)

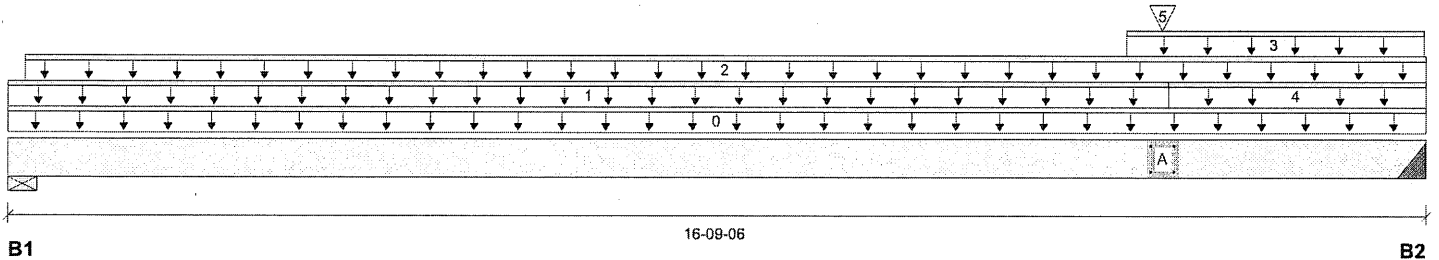
PASSED

 BC CALC® Member Report
 Build 7773

Dry | 1 span | No cant.

May 25, 2021 12:04:29

 Job name: 45147(3105)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

 File name: 333184-A.mmdl
 Description: 1st Floor - Supply/BOM\Flush Beams\B10(i20325)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses


B1 Total Horizontal Product Length = 16-09-06 B2

Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|------------|----------|----------|------|------|
| B1, 2-3/8" | 649 / 0 | 421 / 0 | | |
| B2, 2" | 2145 / 0 | 1104 / 0 | | |

Load Summary

| Tag | Description | Load Type | Ref. | Start | End | Loc. | Live 1.00 | Dead 0.65 | Snow 1.00 | Wind 1.15 | Tributary |
|-----|------------------------------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0 | Self-Weight | Unf. Lin. (lb/ft) | L | 00-00-00 | 16-09-06 | Top | | 12 | | | 00-00-00 |
| 1 | FC2 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L | 00-00-00 | 13-08-14 | Top | 19 | 10 | | | n/a |
| 2 | User Load | Unf. Lin. (lb/ft) | L | 00-02-06 | 16-09-06 | Top | 20 | 10 | | | n/a |
| 3 | User Load | Unf. Lin. (lb/ft) | L | 13-02-14 | 16-09-02 | Top | 240 | 90 | | | n/a |
| 4 | FC2 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L | 13-08-14 | 16-09-06 | Top | 13 | 6 | | | n/a |
| 5 | B9(i20324) | Conc. Pt. (lbs) | L | 13-08-00 | 13-08-00 | Top | 1316 | 689 | | | n/a |

Controls Summary

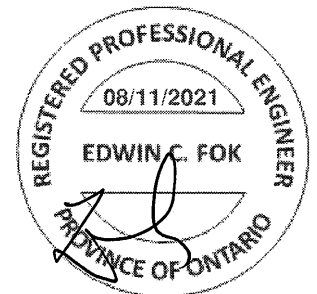
| | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment | 11177 ft-lbs | 35392 ft-lbs | 31.6% | 1 | 13-08-00 |
| End Shear | 3964 lbs | 14464 lbs | 27.4% | 1 | 15-07-08 |
| Total Load Deflection | L/558 (0.356") | n/a | 43.0% | 4 | 09-01-02 |
| Live Load Deflection | L/881 (0.225") | n/a | 40.8% | 5 | 09-01-02 |
| Max Defl. | 0.356" | n/a | n/a | 4 | 09-01-02 |
| Span / Depth | 16.7 | | | | |

Bearing Supports

| | Dim. (LxW) | Demand | Demand/Resistance Support | Demand/Resistance Member | Material |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 2-3/8" x 3-1/2" | 1499 lbs | 29.3% | 14.8% | Spruce-Pine-Fir |
| B2 | Hanger 2" x 3-1/2" | 4598 lbs | n/a | 53.8% | HGUS410 |

Cautions

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

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


Maximum Floor Spans – M7.1, 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 Canadian softwood plywood |



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

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

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

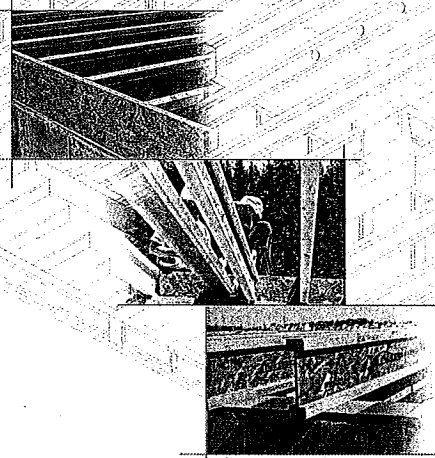
Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

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.

(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 sheathed, do not over-stress I-joist with concentrated loads from building materials.

WARNING

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

Avoid Accidents by Following these Important Guidelines:

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

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

STORAGE AND HANDLING GUIDELINES

1. Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
2. Store, stack, and handle I-joists vertically and level only.
3. Always stack and handle I-joists in the upright position only.
4. Do not store I-joists in direct contact with the ground and/or flanges.
5. Protect I-joists from weather, and use spacers to separate bundles.
6. Bundled units should be kept intact until time of installation.
 - Pick I-joists in bundles as shipped by the supplier.
 - Orient the bundles so that the webs of the I-joists are vertical.
 - Pick the bundles at the 5th points, using a spreader bar if necessary.
8. Do not handle I-joists in a horizontal orientation.
9. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.

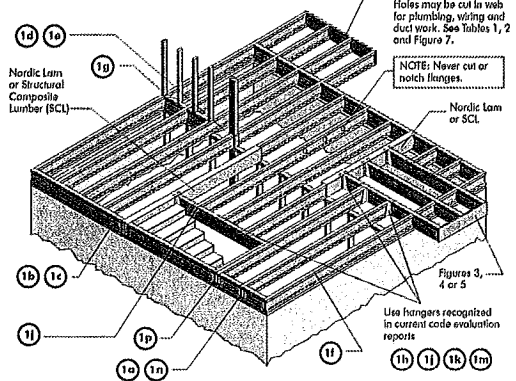


INSTALLING NORDIC I-JOISTS

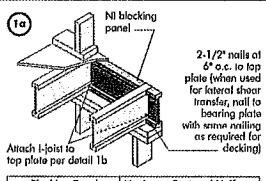
1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple-span joists must be level.
5. Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
7. Leave a 1/16-inch gap between the I-joist end and a header.
8. Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend 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 rollover. Use rim board, rim joists or I-joist blocking panels.
11. For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squash blocks (cripple members) to transfer gravity loads through the floor system to the wall or foundation below.
12. Due to shrinkage, common framing lumber set on edge may never be used as blocking or rim boards. I-joist blocking panels or other engineered wood products – such as rim board – must be cut to fit between the I-joists, and an 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 applied, temporary bracing or struts must be used.
14. If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
15. Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

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

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

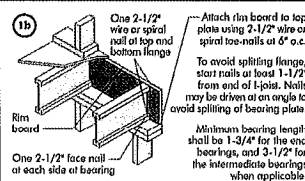


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.125" dia.) common spiral nails may be substituted for 2-1/2" (0.120" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.



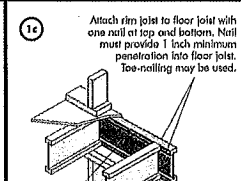
| Blocking Panel or Rim Joist | Maximum Factored Uniform Vertical Load* (plf) |
|-----------------------------|---|
| NI Joists | 3,300 |

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



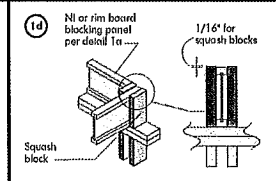
| Blocking Panel or Rim Joist | Maximum Factored Uniform Vertical Load* (plf) |
|-----------------------------|---|
| 1-1/8" Rim Board Plus | 8,090 |

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



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

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



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

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

The construction details for residential designs are prone to changes.

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

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

MAXIMUM FLOOR SPANS

- Maximum clear spans applicable to single-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.35L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in C085-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Unit States Design per CAN/CSA C085-07 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

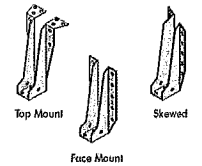
SINGLE AND MULTIPLE SPANS

| Joist Depth | Joist Series | Simple spans | | | | Multiple spans | | | |
|-------------|--------------|-------------------|---------|---------|---------|-------------------|---------|---------|---------|
| | | On centre spacing | | | | On centre spacing | | | |
| | | 12" | 16" | 19.2" | 24" | 12" | 16" | 19.2" | 24" |
| 9-1/2" | Ni-20 | 15'-1" | 14'-2" | 13'-9" | 12'-5" | 16'-3" | 15'-4" | 14'-10" | 14'-7" |
| | Ni-40x | 16'-1" | 15'-2" | 14'-8" | 14'-9" | 17'-5" | 16'-5" | 15'-10" | 15'-5" |
| | Ni-60 | 16'-3" | 15'-4" | 14'-10" | 14'-11" | 17'-7" | 16'-7" | 16'-0" | 16'-4" |
| | Ni-80 | 17'-1" | 16'-1" | 15'-4" | 15'-7" | 18'-7" | 17'-4" | 16'-9" | 17'-2" |
| 11-7/8" | Ni-20 | 16'-11" | 16'-0" | 15'-5" | 15'-4" | 18'-4" | 17'-3" | 16'-8" | 16'-7" |
| | Ni-40x | 18'-1" | 17'-0" | 16'-5" | 16'-4" | 20'-0" | 18'-9" | 17'-9" | 17'-7" |
| | Ni-60 | 18'-4" | 17'-3" | 16'-7" | 16'-9" | 20'-3" | 19'-0" | 18'-0" | 18'-9" |
| | Ni-80 | 19'-6" | 18'-0" | 17'-4" | 17'-5" | 21'-6" | 19'-11" | 19'-0" | 19'-8" |
| 14" | Ni-20 | 19'-9" | 18'-3" | 17'-4" | 17'-7" | 21'-9" | 20'-2" | 19'-3" | 19'-11" |
| | Ni-40x | 20'-2" | 18'-7" | 17'-10" | 17'-11" | 22'-3" | 20'-7" | 19'-8" | 19'-9" |
| | Ni-60 | 20'-4" | 18'-9" | 17'-11" | 18'-0" | 22'-5" | 20'-9" | 19'-10" | 20'-5" |
| | Ni-80 | 21'-1" | 19'-1" | 18'-1" | 18'-2" | 22'-7" | 20'-11" | 20'-10" | 20'-10" |
| 16" | Ni-20 | 20'-5" | 18'-11" | 18'-1" | 18'-2" | 22'-7" | 20'-11" | 20'-10" | 20'-10" |
| | Ni-40x | 21'-7" | 20'-0" | 19'-1" | 19'-2" | 23'-10" | 22'-1" | 21'-1" | 21'-10" |
| | Ni-60 | 21'-11" | 20'-3" | 19'-4" | 19'-5" | 24'-3" | 22'-5" | 21'-5" | 22'-2" |
| | Ni-80 | 22'-3" | 20'-8" | 19'-9" | 19'-9" | 24'-9" | 22'-10" | 21'-10" | 21'-10" |

CCMC EVALUATION REPORT 13032-R

I-JOIST HANGERS

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



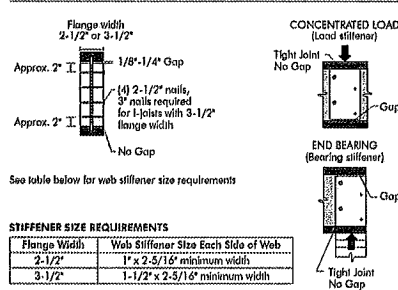
WEB STIFFENERS

RECOMMENDATIONS:

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

SI units conversion: 1 inch = 25.4 mm

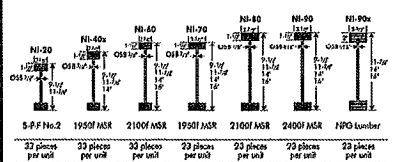
FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



STIFFENER SIZE REQUIREMENTS

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

NORDIC I-JOIST SERIES



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

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

(Nordic Request 1810-095)



1a Transfer load from above to bearing below. Install squish blocks per detail 1d. Match bearing area of blocks below to peak above.

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

1c Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail.

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

1e Double I-joist header

1f Top- or face-mount hanger

1g Filler block per detail 1p

1h Backer block required (both sides for face-mount hangers)

1i For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

1j BACKER BLOCKS (Blocks must be long enough to permit required nailing without spilling)

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

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-C0325 or CAN/CSA-C0437 Standard.

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

1k Nordic Lumber or SCL

1l Top- or face-mount hanger installed per manufacturer's recommendations

1m Top-mount hanger installed per manufacturer's recommendations

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

1o Do not bowl-cut joist beyond inside face of wall

1p Filler block

1q Filler block requirements for double I-joist construction

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

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

1s One 2-1/2" nails at top and bottom flange. Two 2-1/2" nails from each web to lumber piece. 2x4 min. (1/8" gap minimum). Two 2-1/2" nails from each web to lumber piece. One 2-1/2" nails one side only. 2-1/2" nails at 6" o.c.

1t Notes: In some local codes, blocking is prescriptively required in the first joist space (or first and second joist space) next to the starter joist. Where required, see local code requirements for spacing of the blocking. All nails are common spiral in this detail.

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

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

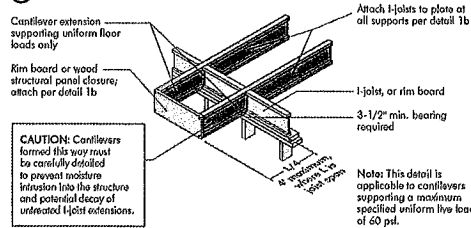
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(Nordic Request 1810-095)

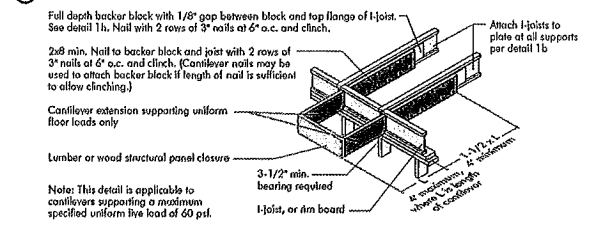


CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

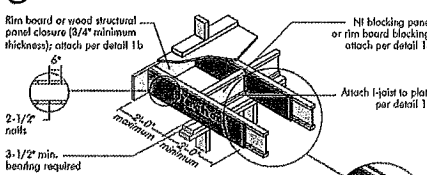


3b LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE

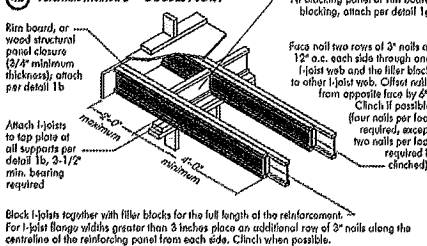


Method 2 — SHEATHING REINFORCEMENT TWO SIDES

- Use same installation as Method 1 but reinforce both sides of I-joist with sheathing.
- Use nailing pattern shown for Method 1 with opposite face nailing offset by 9\"/>

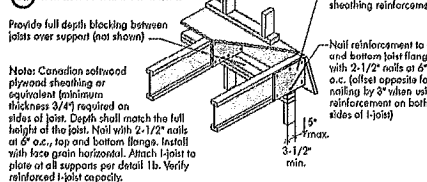
Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4\"/>

4b Alternate Method 2 — DOUBLE I-JOIST

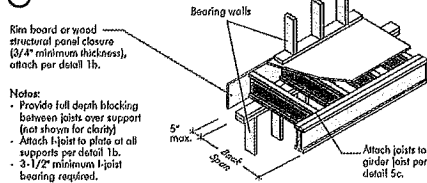


BRICK CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

5a SHEATHING REINFORCEMENT



5b SET-BACK DETAIL



5c SET-BACK CONNECTION

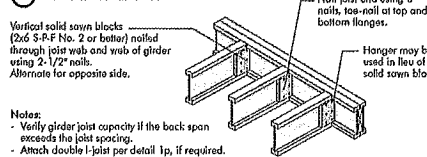


FIGURE 4 (continued)



CANTILEVER REINFORCEMENT METHODS ALLOWED

| Joint Depth (in.) | Roof Truss Span (ft) | ROOF LOADING (UNFACTORED) | | | | | | | | | | | | | |
|-------------------|----------------------|---------------------------|----|------|----|--------------------------|----|------|----|--------------------------|----|------|----|---|---|
| | | LL = 30 psf, DL = 15 psf | | | | LL = 40 psf, DL = 15 psf | | | | LL = 50 psf, DL = 15 psf | | | | | |
| | | Joint Spacing (in.) | | | | Joint Spacing (in.) | | | | Joint Spacing (in.) | | | | | |
| | | 12 | 16 | 19.2 | 24 | 12 | 16 | 19.2 | 24 | 12 | 16 | 19.2 | 24 | | |
| 9-1/2 | 26 | N | N | N | 1 | 2 | N | N | 1 | 2 | X | X | X | X | |
| | 28 | N | N | N | 1 | X | N | N | 1 | 2 | X | X | X | X | |
| | 30 | N | N | 1 | 1 | X | N | N | 1 | 2 | X | X | X | X | |
| | 32 | N | N | 1 | 2 | X | N | N | 2 | X | X | X | X | X | |
| | 34 | N | N | 1 | 2 | X | N | N | 2 | X | X | X | X | X | |
| | 36 | N | N | 1 | 2 | X | 1 | 2 | X | X | 1 | X | X | X | |
| 11-7/8 | 26 | N | 1 | N | N | 1 | 1 | N | 1 | 2 | 2 | N | 1 | 2 | X |
| | 28 | N | 1 | N | N | 1 | 2 | N | 1 | 2 | 2 | 1 | 2 | 1 | 2 |
| | 30 | 1 | N | N | 1 | 1 | 2 | N | 1 | 2 | X | 1 | 2 | X | X |
| | 32 | 1 | N | 1 | 1 | 2 | 2 | N | 1 | 2 | X | 1 | 2 | X | X |
| | 34 | 1 | N | 1 | 2 | 2 | X | 1 | 2 | X | X | 1 | 2 | 1 | 2 |
| | 36 | 2 | N | 1 | 2 | X | 1 | 2 | X | X | 2 | X | 1 | 2 | X |
| | 38 | 2 | N | 1 | 2 | X | 1 | 2 | X | X | 2 | X | 1 | 2 | X |
| 14 | 26 | N | N | N | N | N | N | N | 1 | N | N | N | N | 1 | 2 |
| | 28 | N | N | N | N | N | N | N | 1 | N | N | N | N | 1 | 2 |
| | 30 | N | N | N | N | N | N | N | 1 | N | N | N | N | 1 | 2 |
| | 32 | N | N | N | N | 1 | 1 | N | N | 1 | N | N | N | 1 | 2 |
| | 34 | N | N | N | N | 1 | 1 | N | N | 1 | N | N | N | 1 | 2 |
| | 36 | N | N | N | 1 | 1 | N | N | 1 | 2 | N | 1 | 1 | 2 | X |
| | 38 | N | N | N | 1 | 1 | N | N | 1 | 2 | N | 1 | 1 | 2 | X |
| | 40 | N | N | N | 1 | 1 | N | N | 1 | 2 | N | 1 | 1 | 2 | X |
| 16 | 26 | N | N | N | N | N | N | N | 1 | N | N | N | N | 1 | 1 |
| | 28 | N | N | N | N | N | N | N | 1 | N | N | N | N | 1 | 1 |
| | 30 | N | N | N | N | N | N | N | 1 | N | N | N | N | 1 | 1 |
| | 32 | N | N | N | N | N | N | N | 1 | N | N | N | N | 1 | 1 |
| | 34 | N | N | N | N | N | N | N | 1 | N | N | N | N | 1 | 2 |
| | 36 | N | N | N | N | N | N | N | 1 | N | N | N | N | 1 | 2 |
| | 38 | N | N | N | N | 1 | N | N | 1 | N | N | N | N | 1 | 1 |
| | 40 | N | N | N | 1 | N | N | 1 | 2 | N | N | N | N | 1 | 2 |

1. N = No reinforcement required.
2. N = Reinforced with 3/4\"/>

FIGURE 5 (continued)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

| Joint Depth (in.) | Roof Truss Span (ft) | ROOF LOADING (UNFACTORED) | | | | | | | | | | | | |
|-------------------|----------------------|---------------------------|----|------|----|--------------------------|----|------|----|--------------------------|----|------|----|---|
| | | LL = 30 psf, DL = 15 psf | | | | LL = 40 psf, DL = 15 psf | | | | LL = 50 psf, DL = 15 psf | | | | |
| | | Joint Spacing (in.) | | | | Joint Spacing (in.) | | | | Joint Spacing (in.) | | | | |
| | | 12 | 16 | 19.2 | 24 | 12 | 16 | 19.2 | 24 | 12 | 16 | 19.2 | 24 | |
| 9-1/2 | 26 | 1 | X | X | X | 2 | X | X | X | 2 | X | X | X | |
| | 28 | 1 | X | X | X | 2 | X | X | X | X | X | X | X | |
| | 30 | 1 | X | X | X | 2 | X | X | X | X | X | X | X | |
| | 32 | 2 | X | X | X | 2 | X | X | X | X | X | X | X | |
| | 34 | 2 | X | X | X | X | X | X | X | X | X | X | X | |
| | 36 | 2 | X | X | X | X | X | X | X | X | X | X | X | |
| | 11-7/8 | 26 | X | 2 | X | X | X | X | X | X | X | X | X | X |
| | | 28 | X | 2 | X | X | X | X | X | X | X | X | X | X |
| | | 30 | X | 2 | X | X | X | X | X | X | X | X | X | X |
| | | 32 | X | 2 | X | X | X | X | X | X | X | X | X | X |
| 34 | | X | X | X | X | X | X | X | X | X | X | X | X | |
| | 36 | X | X | X | X | X | X | X | X | X | X | X | X | |
| | 38 | X | X | X | X | X | X | X | X | X | X | X | X | |
| | 14 | 26 | H | 2 | X | X | 1 | X | X | X | 1 | X | X | X |
| | | 28 | H | 2 | X | X | 1 | X | X | X | 2 | X | X | X |
| | | 30 | 1 | 2 | X | X | 1 | X | X | X | 2 | X | X | X |
| 32 | | 1 | 2 | X | X | 1 | X | X | X | 2 | X | X | X | |
| 34 | | 1 | X | X | X | 2 | X | X | X | 2 | X | X | X | |
| | 36 | 1 | X | X | X | 2 | X | X | X | 2 | X | X | X | |
| | 38 | 1 | X | X | X | 2 | X | X | X | X | X | X | X | |
| | 40 | 1 | X | X | X | 2 | X | X | X | X | X | X | X | |
| | 16 | 26 | 1 | 2 | X | X | 1 | X | X | X | 2 | X | X | X |
| | | 28 | 1 | 2 | X | X | 1 | X | X | X | 2 | X | X | X |
| 30 | | 1 | X | X | X | 1 | X | X | X | 2 | X | X | X | |
| 32 | | 1 | X | X | X | 2 | X | X | X | 2 | X | X | X | |
| 34 | | 1 | X | X | X | 2 | X | X | X | 2 | X | X | X | |
| | 36 | 1 | X | X | X | 2 | X | X | X | X | X | X | X | |
| | 38 | 1 | X | X | X | 2 | X | X | X | X | X | X | X | |
| | 40 | 2 | X | X | X | 2 | X | X | X | X | X | X | X | |

1. N = No reinforcement required.
2. N = Reinforced with 3/4\"/>

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

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

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

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-Joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centred on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-Joist web shall equal the clear distance between the flanges of the I-Joist minus 1/4 inch. A minimum of 1/8 inch shall 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 (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 confined section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

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

| Joist Depth | Joist Series | Minimum distance from inside face of any support to centre of hole (8 in.) | | | | | | | | | | | | Span adjustment factor |
|-------------|--------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
| 9-1/2" | N100 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N140 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N170 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N200 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| 11-7/8" | N100 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N140 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N170 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N200 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| 14" | N100 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N140 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N170 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N200 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| 16" | N100 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N140 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N170 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N200 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |

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

OPTIONAL:

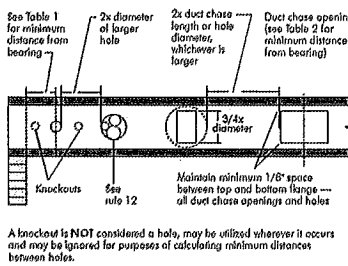
The above table is based on the I-Joist used at their maximum span. If the I-Joists are placed at less than their full maximum span (see Maximum Floor Span), the minimum distance from the centreline of the hole to the face of any support (D) as given above may be reduced as follows:

$$\text{Reduced } D = \frac{\text{Actual Span}}{\text{Maximum Span}} \times D$$

Where:

- Reduced = Distance from the inside face of any support to centre of hole, reduced for less than maximum span applications (D).
- Actual = The actual measured span distance between the inside faces of supports (S).
- Maximum = The maximum span distance between the inside faces of supports (M).
- Span Adjustment Factor given in this table.
- If Actual is greater than 1, use 1 in the above calculation for Actual.

FIGURE 7
FIELD-CUT HOLE LOCATOR



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

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

Holes in webs should be cut with a sharp saw.

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

| Joist Depth | Joist Series | Minimum distance from inside face of any support to centre of opening (8 in.) | | | | | | | | | | | | Span adjustment factor |
|-------------|--------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
| 9-1/2" | N100 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N140 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N170 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N200 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| 11-7/8" | N100 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N140 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N170 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N200 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| 14" | N100 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N140 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N170 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N200 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| 16" | N100 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N140 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N170 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |
| | N200 | 0.7 | 1.2 | 1.7 | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 1.0 |

1. Above table may be used for I-Joist spacing of 24 inches on centre or less.
2. Duct chase opening location distance is measured from inside face of support to centre of opening.
3. The above table is based on simple span joists only. For other applications, contact your local distributor.
4. Distances are based on uniform loaded joist joists but must meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/400. For other applications, contact your local distributor.

INSTALLING THE GLUED FLOOR SYSTEM

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

FASTENERS FOR SHEATHING AND SUBFLOORING⁽¹⁾

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

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

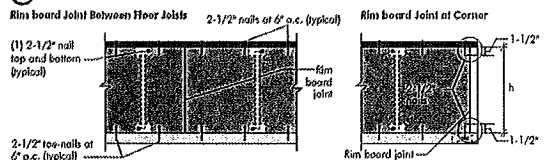
Ref.: NBC-CNBC, National Building Code of Canada 2010, Table 9.23.3.5.

IMPORTANT NOTE:

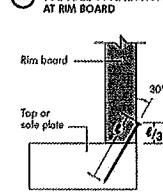
Floor sheathing must be field glued to the I-Joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-Joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

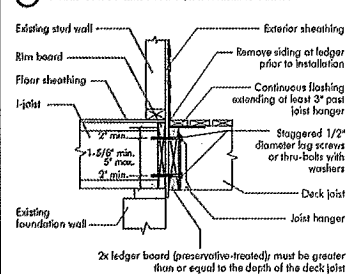
(a) ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



(b) TOE-NAIL CONNECTION AT RIM BOARD



(c) 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



PRODUCT WARRANTY

Chattler Chibvengwa guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defect in material and workmanship.

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



CONSTRUCTION DETAILS FOR RESIDENTIAL FLOORS

N-C303 / September 2013



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

WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

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

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

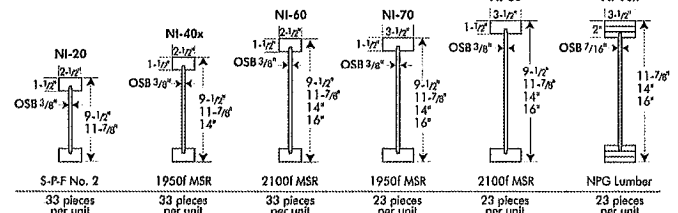


TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

| Joist Depth | Joist Series | Minimum Distance from Inside Face of Any Support to Centre of Hole (ft - in.) | | | | | | | | | | | | | | |
|-------------|--------------|---|--------|--------|--------|--------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | Round Hole Diameter (in.) | | | | | | | | | | | | | | |
| | | 2 | 3 | 4 | 5 | 6 | 6-1/4 | 7 | 8 | 8-5/8 | 9 | 10 | 10-3/4 | 11 | 12 | 12-3/4 |
| 9-1/2" | NI-20 | 0'-7" | 1'-6" | 2'-10" | 4'-3" | 5'-8" | 6'-0" | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | NI-40 | 0'-7" | 1'-6" | 3'-0" | 4'-4" | 6'-0" | 6'-4" | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | NI-60 | 1'-3" | 2'-6" | 4'-0" | 5'-4" | 7'-0" | 7'-5" | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | NI-70 | 2'-0" | 3'-4" | 4'-9" | 6'-3" | 8'-0" | 8'-4" | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | NI-80 | 2'-3" | 3'-6" | 5'-0" | 6'-6" | 8'-2" | 8'-8" | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11-7/8" | NI-20 | 0'-7" | 0'-8" | 1'-0" | 2'-4" | 3'-8" | 4'-0" | 5'-0" | 6'-6" | 7'-9" | --- | --- | --- | --- | --- | --- |
| | NI-40x | 0'-7" | 0'-8" | 1'-3" | 2'-8" | 4'-0" | 4'-4" | 5'-5" | 7'-0" | 8'-4" | --- | --- | --- | --- | --- | --- |
| | NI-60 | 0'-7" | 1'-8" | 3'-0" | 4'-3" | 5'-9" | 6'-0" | 7'-3" | 8'-10" | 10'-0" | 11'-2" | --- | --- | --- | --- | --- |
| | NI-70 | 1'-3" | 2'-6" | 4'-0" | 5'-4" | 6'-9" | 7'-2" | 8'-4" | 10'-0" | 11'-2" | --- | --- | --- | --- | --- | --- |
| | NI-80 | 1'-6" | 2'-10" | 4'-2" | 5'-6" | 7'-0" | 7'-5" | 8'-6" | 10'-3" | 11'-4" | --- | --- | --- | --- | --- | --- |
| 14" | NI-90x | 0'-7" | 0'-8" | 0'-9" | 2'-5" | 4'-4" | 4'-9" | 6'-3" | --- | --- | --- | --- | --- | --- | --- | --- |
| | NI-40x | 0'-7" | 0'-8" | 0'-8" | 1'-0" | 2'-4" | 2'-9" | 3'-9" | 5'-2" | 6'-6" | 6'-6" | 8'-3" | 10'-2" | --- | --- | --- |
| | NI-60 | 0'-7" | 0'-8" | 1'-10" | 3'-0" | 4'-3" | 4'-8" | 5'-8" | 7'-2" | 8'-0" | 8'-8" | 10'-4" | 11'-9" | --- | --- | --- |
| | NI-70 | 0'-8" | 1'-10" | 3'-0" | 4'-5" | 5'-10" | 6'-2" | 7'-3" | 8'-9" | 9'-9" | 10'-4" | 12'-0" | 13'-5" | --- | --- | --- |
| | NI-80 | 0'-10" | 2'-0" | 3'-4" | 4'-9" | 6'-2" | 6'-5" | 7'-6" | 9'-0" | 10'-0" | 10'-8" | 12'-4" | 13'-9" | --- | --- | --- |
| 16" | NI-90x | 0'-7" | 0'-8" | 0'-8" | 2'-0" | 3'-9" | 4'-2" | 5'-5" | 7'-3" | 8'-5" | 9'-2" | --- | --- | --- | --- | --- |
| | NI-60 | 0'-7" | 0'-8" | 0'-8" | 1'-6" | 2'-10" | 3'-2" | 4'-2" | 6'-4" | 6'-4" | 7'-0" | 8'-5" | 9'-8" | 10'-2" | 12'-2" | 13'-9" |
| | NI-70 | 0'-7" | 1'-0" | 2'-3" | 3'-6" | 4'-10" | 5'-3" | 6'-3" | 7'-8" | 8'-6" | 9'-2" | 10'-8" | 12'-0" | 12'-4" | 14'-0" | 15'-6" |
| | NI-80 | 0'-7" | 1'-3" | 2'-6" | 3'-10" | 5'-3" | 5'-6" | 6'-6" | 8'-0" | 9'-0" | 9'-5" | 11'-0" | 12'-3" | 12'-9" | 14'-8" | 16'-0" |
| | NI-90x | 0'-7" | 0'-8" | 0'-9" | 2'-0" | 3'-9" | 4'-2" | 5'-0" | 6'-9" | 7'-2" | 8'-4" | 10'-2" | 11'-6" | 12'-0" | --- | --- |

1a NI blocking panel

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

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

Attach I-joist to top plate per detail 1b

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

1b Rim board

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

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

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

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

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

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

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

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

Provide lateral bracing per detail 1a or 1b

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

1f Joist attachment per detail 1b

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

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

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

NI blocking panel per detail 1a

1h Backer block (use if hanger load exceeds 340 lbs). Before installing a backer block to a double I-joist, drive three additional 3" nails through the web and filler block where the backer block will fit. Clinch. Install backer tight to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail = 1,620 lbs.

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

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

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

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

1i Nordic Lam or Structural Composite Lumber (SCL)

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

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

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

1j NOTE: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

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

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

Top-mount hanger installed per manufacturer's recommendations

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

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

Filler block per detail 1p

Install hanger per manufacturer's recommendations

Maximum support capacity = 1,620 lbs.

1m Do not bawl-cut joist beyond inside face of wall

Attach I-joist per detail 1b

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

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

NI blocking panel

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

1p FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

Filler block

Offset nails from opposite face by 6"

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

NOTES:

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

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

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

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

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

1-joist blocking panel

One 2-1/2" nail one side only

NOTES:

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

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

WEB STIFFENERS

RECOMMENDATIONS:

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

FIGURE 2

WEB STIFFENER INSTALLATION DETAILS

CONCENTRATED LOAD (Load stiffener)

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

Approx. 2"

1/8"-1/4" Gap

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

Approx. 2"

No Gap

END BEARING (Bearing stiffener)

Gap

Tight Joint No Gap

Tight Joint No Gap

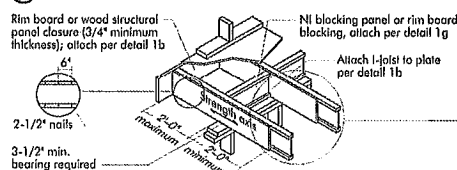
STIFFENER SIZE REQUIREMENTS

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

See the adjacent table for web stiffener size requirements

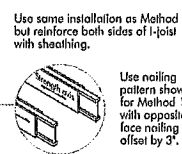
CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

Method 1 — SHEATHING REINFORCEMENT ONE SIDE



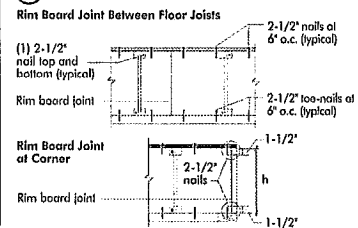
NOTE: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per detail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

Method 2 — SHEATHING REINFORCEMENT TWO SIDES

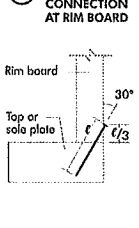


RIM BOARD INSTALLATION DETAILS

8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



8b TOE-NAIL CONNECTION AT RIM BOARD



The construction details for residential designs are prone to changes.

Details released after September 2013 supersedes N-303

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

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

