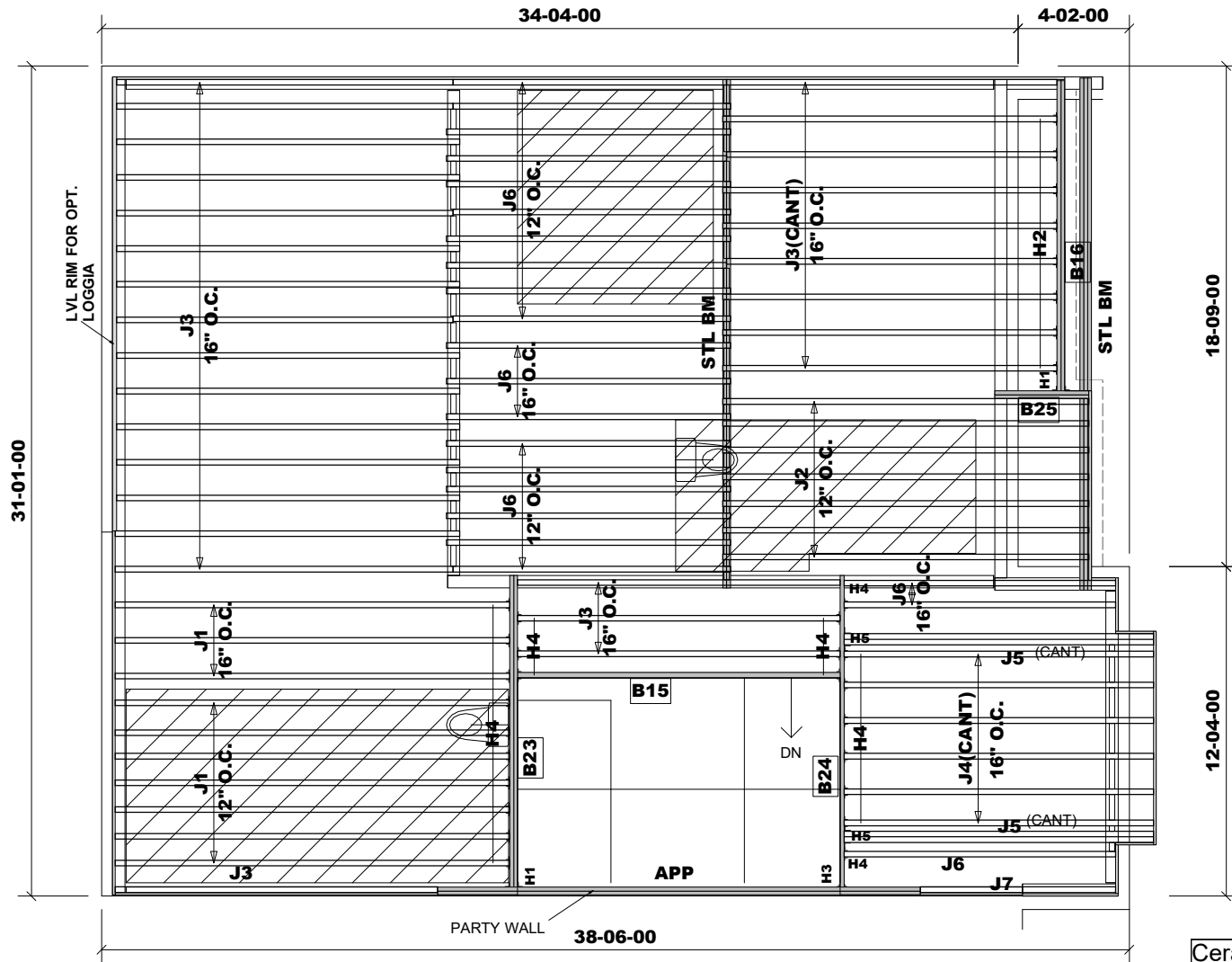




MODEL: TYPE B - 3101- END2  
- EL.A  
+ OPT. LOGGIA

REVISION: November 20, 2021

## Second Floor Framing

Do not scale - refer to architectural plans for dimensions

SE033147 - SE033160  
SE039915 - SE039923

| Products |          |                                         |       |         |
|----------|----------|-----------------------------------------|-------|---------|
| PlotID   | Length   | Product                                 | Plies | Net Qty |
| B15      | 13-00-00 | 11 7/8" NI-20                           | 1     | 1       |
| B16      | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2     | 2       |
| B23      | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2     | 2       |
| B24      | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 1     | 1       |
| B25      | 4-00-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2     | 2       |
| Ca1      | 17-00-00 | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 1     | 1       |
| Ca2      | 92-00-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       |
| J1       | 15-00-00 | 11 7/8" NI-20                           | 1     | 10      |
| J2       | 14-00-00 | 11 7/8" NI-20                           | 1     | 7       |
| J3       | 13-00-00 | 11 7/8" NI-20                           | 1     | 28      |
| J4       | 12-00-00 | 11 7/8" NI-20                           | 1     | 6       |
| J5       | 12-00-00 | 11 7/8" NI-20                           | 2     | 4       |
| J6       | 11-00-00 | 11 7/8" NI-20                           | 1     | 22      |
| J7       | 8-00-00  | 11 7/8" NI-20                           | 1     | 1       |

| Connector Summary |     |       |             |
|-------------------|-----|-------|-------------|
| PlotID            | Qty | Manuf | Product     |
| H1                | 2   |       | HGUS410     |
| H2                | 8   |       | HU310       |
| H3                | 1   |       | HUS1.81/10  |
| H4                | 24  |       | LT251188    |
| H5                | 2   |       | MIT311.88-2 |

### DESIGN LOADING:

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

### RIMBOARD

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

SUBFLOOR - 3/4" NAILED & GLUED\*

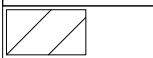
APP - AS PER PLAN  
BBO - BEAM BY OTHERS

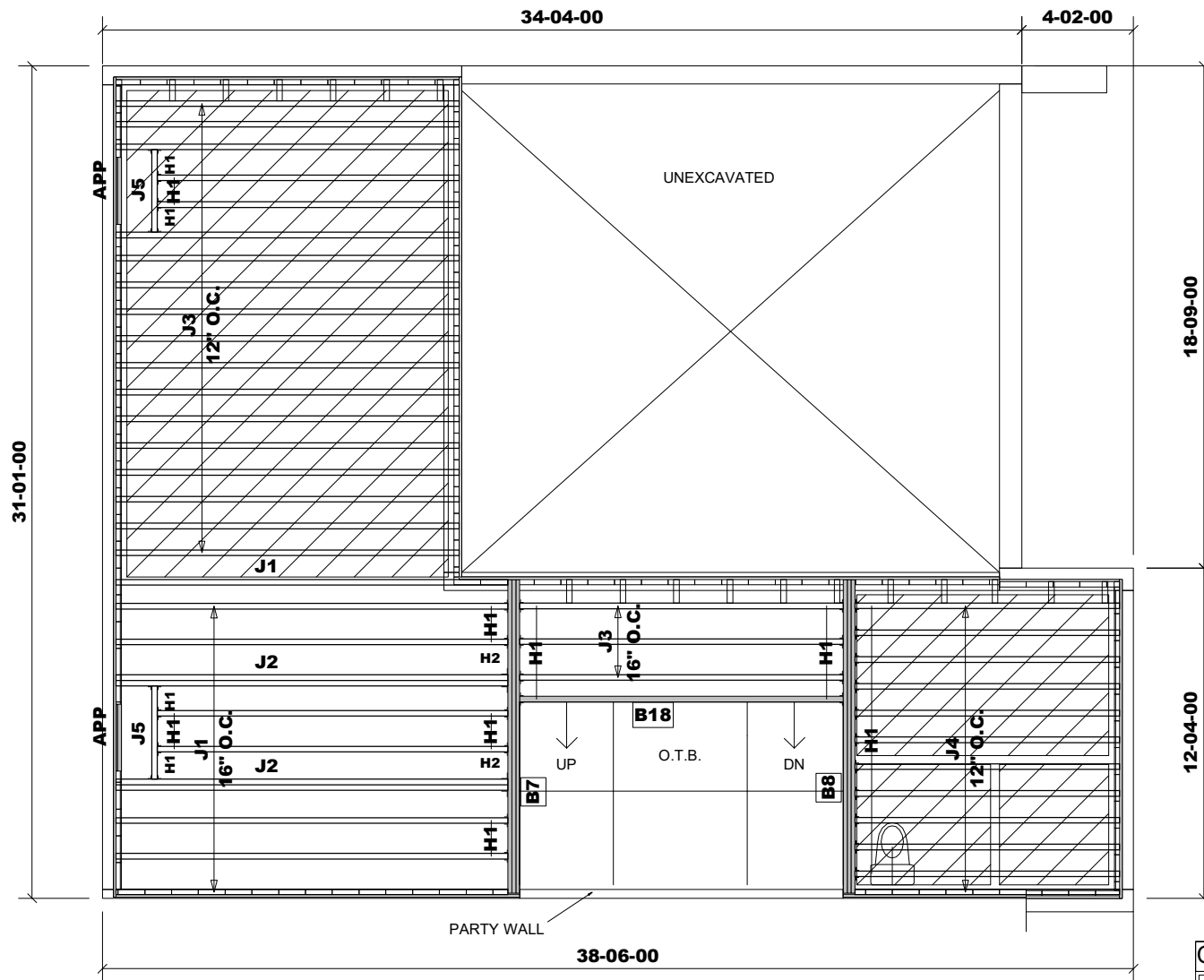
Ceramic tile application as per O.B.C. 9.30.6

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

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

Ceramic Tile



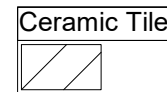


| Products |           |                                         |       |         |
|----------|-----------|-----------------------------------------|-------|---------|
| PlotID   | Length    | Product                                 | Plies | Net Qty |
| B7       | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 3     | 3       |
| B8       | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 3     | 3       |
| B18      | 13-00-00  | 11 7/8" NI-20                           | 1     | 1       |
| Ca1      | 125-00-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       |
| J1       | 15-00-00  | 11 7/8" NI-20                           | 1     | 8       |
| J2       | 15-00-00  | 11 7/8" NI-20                           | 2     | 4       |
| J3       | 13-00-00  | 11 7/8" NI-20                           | 1     | 21      |
| J4       | 10-00-00  | 11 7/8" NI-20                           | 1     | 12      |
| J5       | 4-00-00   | 11 7/8" NI-20                           | 1     | 2       |

| Connector Summary |     |       |             |
|-------------------|-----|-------|-------------|
| PlotID            | Qty | Manuf | Product     |
| H1                | 33  |       | LT251188    |
| H2                | 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**



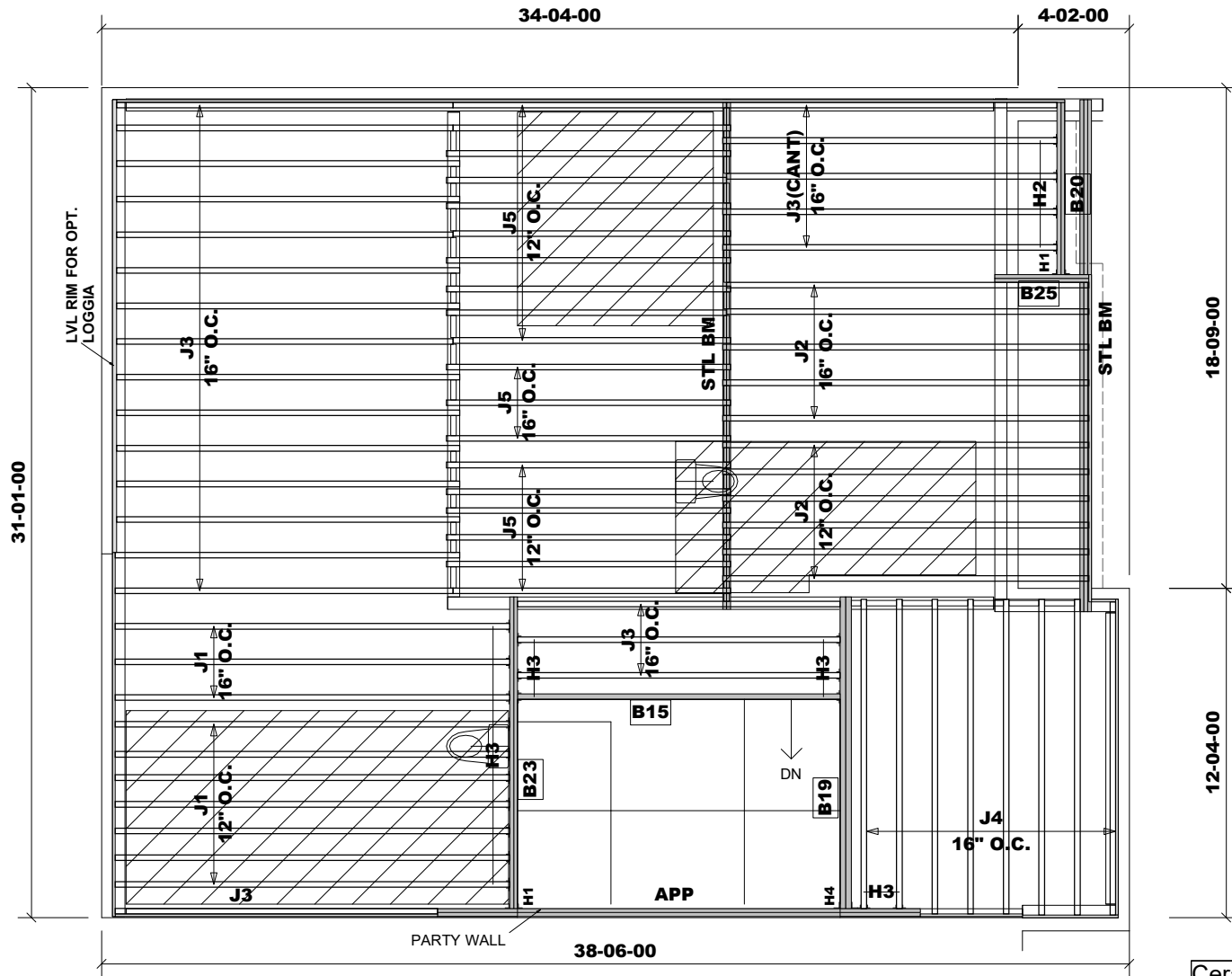
Ceramic tile application as per O.B.C. 9.30.6  
Blocking panels are required over all interior supports  
Squash blocks are required under concentrated loads.

**MODEL: TYPE B - 3101- END2**  
**- EL.A + B**

**REVISION: November 8, 2021**

## First Floor Framing

Do not scale - refer to architectural plans for dimensions

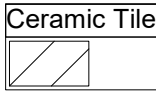


MODEL: TYPE B - 3101- END2  
- EL.B  
+ OPT. LOGGIA

REVISION: November 20, 2021

Second Floor Framing

Do not scale - refer to architectural plans for dimensions



| Products |          |                                         |       |         |
|----------|----------|-----------------------------------------|-------|---------|
| PlotID   | Length   | Product                                 | Plies | Net Qty |
| B15      | 13-00-00 | 11 7/8" NI-20                           | 1     | 1       |
| B19      | 12-00-00 | 11 7/8" NI-20                           | 2     | 2       |
| B20      | 7-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       |
| B23      | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       |
| B25      | 4-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       |
| Ca1      | 17-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       |
| Ca2      | 94-00-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       |
| J1       | 15-00-00 | 11 7/8" NI-20                           | 1     | 10      |
| J2       | 14-00-00 | 11 7/8" NI-20                           | 1     | 11      |
| J3       | 13-00-00 | 11 7/8" NI-20                           | 1     | 24      |
| J4       | 12-00-00 | 11 7/8" NI-20                           | 1     | 8       |
| J5       | 11-00-00 | 11 7/8" NI-20                           | 1     | 19      |

| Connector Summary |     |       |             |
|-------------------|-----|-------|-------------|
| PlotID            | Qty | Manuf | Product     |
| H1                | 2   |       | HGUS410     |
| H2                | 4   |       | HU310       |
| H3                | 18  |       | LT251188    |
| H4                | 1   |       | MIT311.88-2 |

DESIGN LOADING:

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

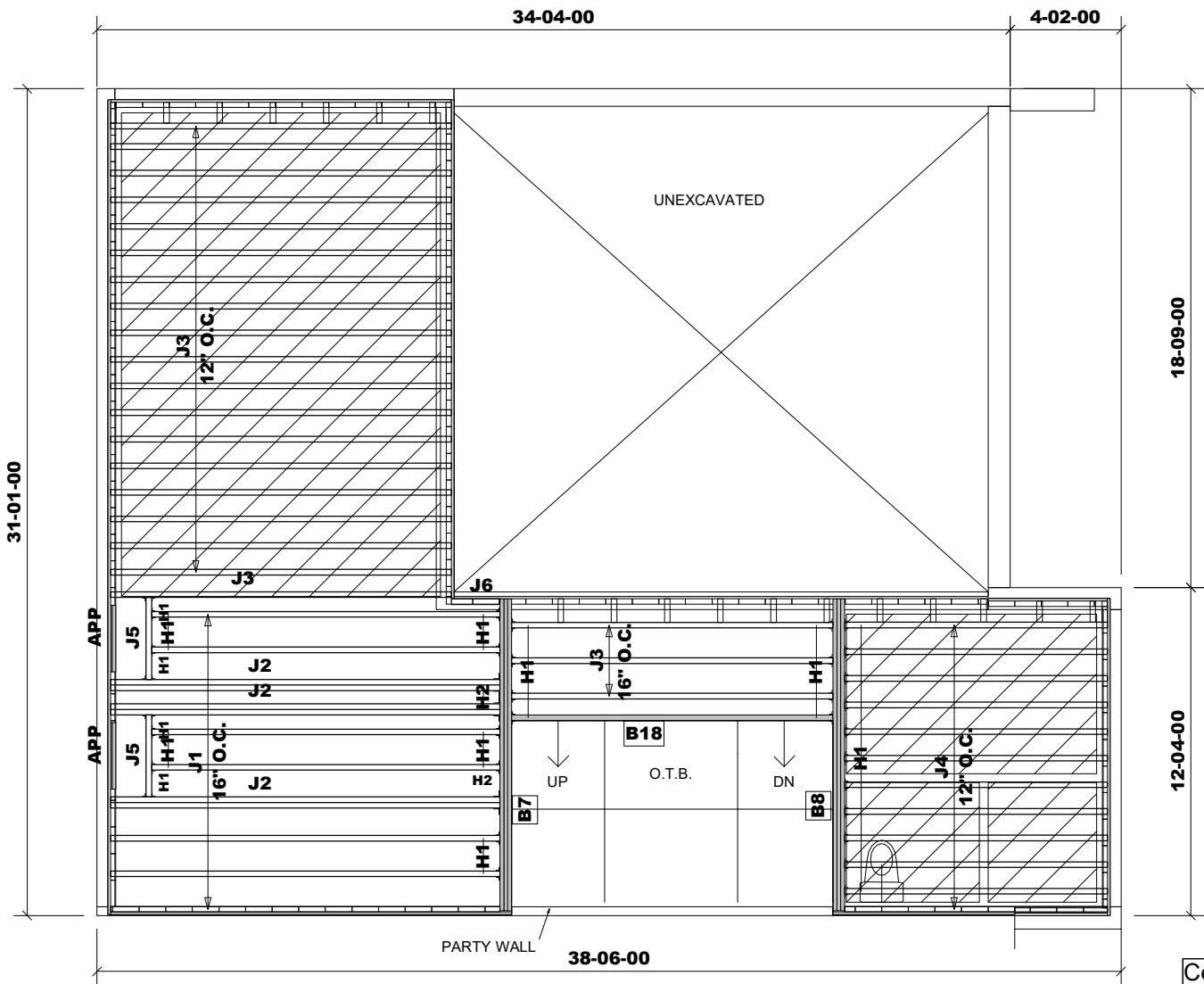
RIMBOARD

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

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

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

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

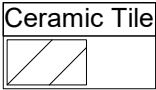


| Products |           |                                         |       |         |
|----------|-----------|-----------------------------------------|-------|---------|
| PlotID   | Length    | Product                                 | Plies | Net Qty |
| B7       | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 3     | 3       |
| B8       | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 3     | 3       |
| B18      | 13-00-00  | 11 7/8" NI-20                           | 1     | 1       |
| Ca1      | 125-00-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       |
| J1       | 15-00-00  | 11 7/8" NI-20                           | 1     | 7       |
| J2       | 15-00-00  | 11 7/8" NI-20                           | 2     | 6       |
| J3       | 13-00-00  | 11 7/8" NI-20                           | 1     | 22      |
| J4       | 10-00-00  | 11 7/8" NI-20                           | 1     | 12      |
| J5       | 4-00-00   | 11 7/8" NI-20                           | 1     | 2       |
| J6       | 2-00-00   | 11 7/8" NI-20                           | 1     | 1       |

| Connector Summary |     |       |             |
|-------------------|-----|-------|-------------|
| PlotID            | Qty | Manuf | Product     |
| H1                | 33  |       | LT251188    |
| H2                | 3   |       | 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



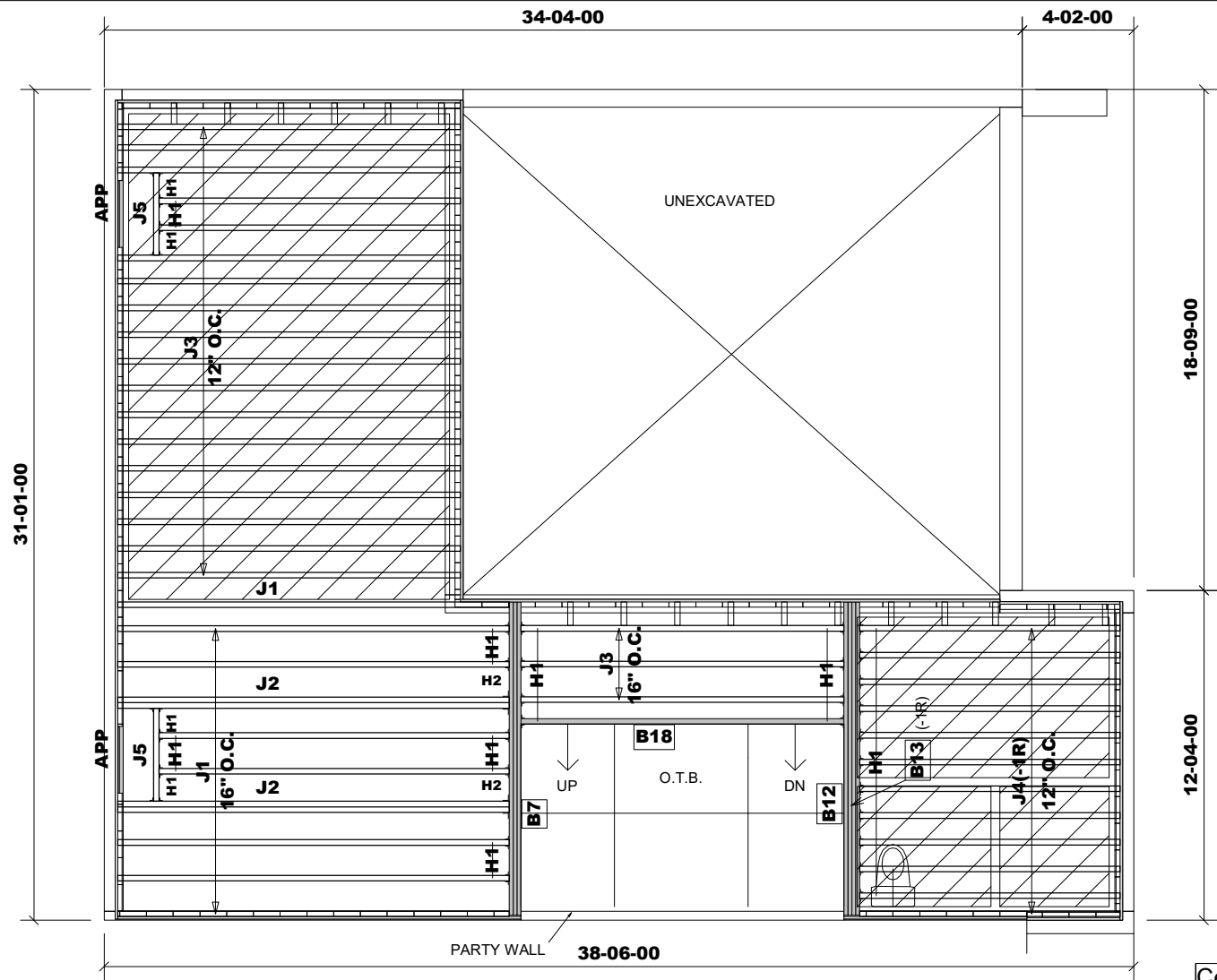
Ceramic tile application as per O.B.C. 9.30.6  
Blocking panels are required over all interior supports  
Squash blocks are required under concentrated loads.

MODEL: TYPE B - 3101- END2  
- EL.A + B  
W/OPT. LOGGIA

REVISION: November 8, 2021

First Floor Framing

Do not scale - refer to architectural plans for dimensions



| Products |           |                                         |       |         |
|----------|-----------|-----------------------------------------|-------|---------|
| PlotID   | Length    | Product                                 | Plies | Net Qty |
| B7       | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 3     | 3       |
| B12      | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2     | 2       |
| B13      | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2     | 2       |
| B18      | 13-00-00  | 11 7/8" NI-20                           | 1     | 1       |
| Ca1      | 125-00-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       |
| J1       | 15-00-00  | 11 7/8" NI-20                           | 1     | 8       |
| J2       | 15-00-00  | 11 7/8" NI-20                           | 2     | 4       |
| J3       | 13-00-00  | 11 7/8" NI-20                           | 1     | 21      |
| J4       | 10-00-00  | 11 7/8" NI-20                           | 1     | 12      |
| J5       | 4-00-00   | 11 7/8" NI-20                           | 1     | 2       |

| Connector Summary |     |       |             |
|-------------------|-----|-------|-------------|
| PlotID            | Qty | Manuf | Product     |
| H1                | 33  |       | LT251188    |
| H2                | 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



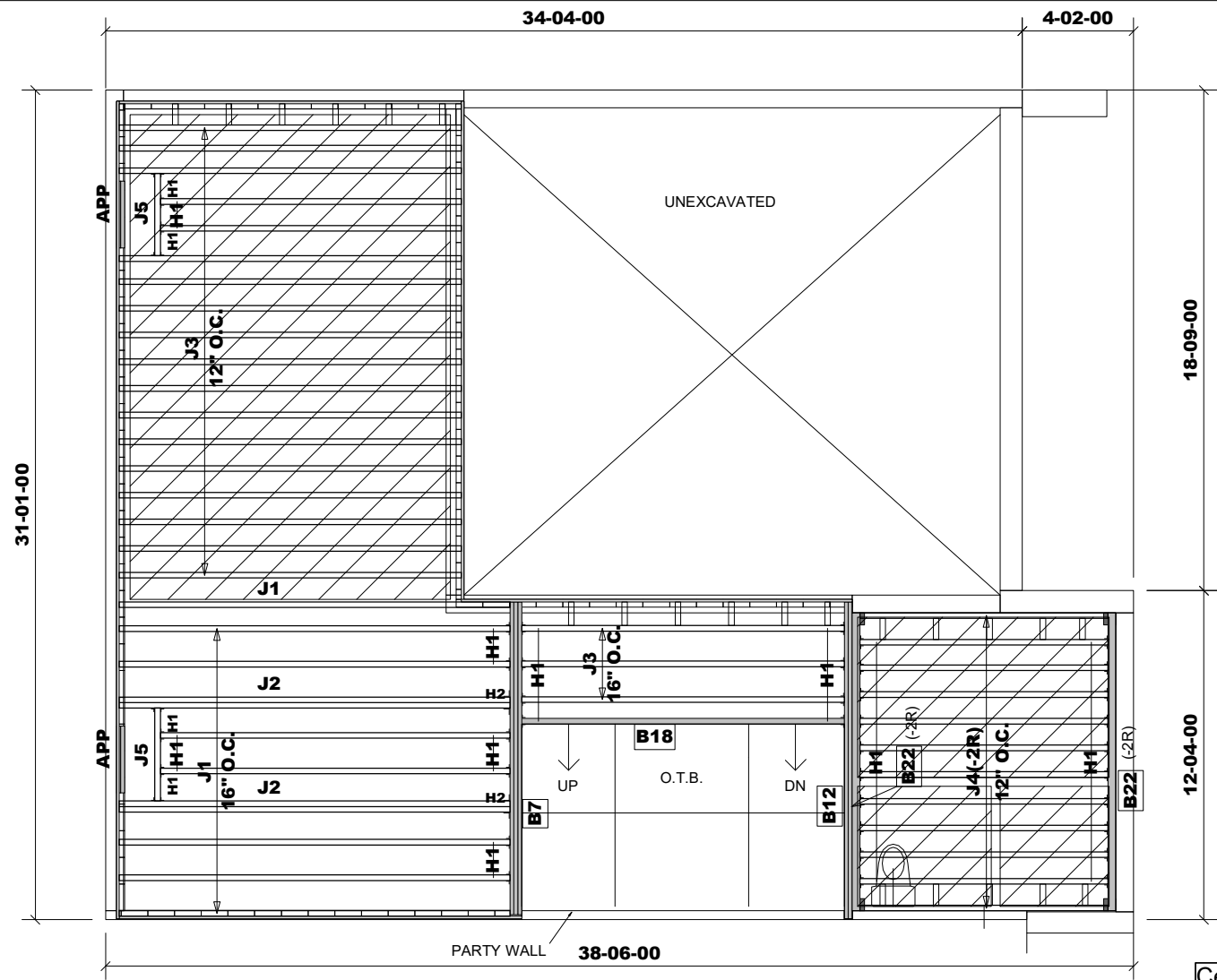
Ceramic tile application as per O.B.C. 9.30.6  
Blocking panels are required over all interior supports  
Squash blocks are required under concentrated loads.

MODEL: TYPE B - 3101- END2  
- EL.A + B  
W/SUNKEN FOYER(-1R)

REVISION: November 8, 2021

### First Floor Framing

Do not scale - refer to architectural plans for dimensions

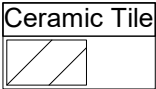


| Products |          |                                         |       |         |
|----------|----------|-----------------------------------------|-------|---------|
| PlotID   | Length   | Product                                 | Plies | Net Qty |
| B7       | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 3     | 3       |
| B12      | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       |
| B18      | 13-00-00 | 11 7/8" NI-20                           | 1     | 1       |
| B22      | 12-00-00 | 11 7/8" NI-80                           | 1     | 2       |
| Ca1      | 92-00-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       |
| J1       | 15-00-00 | 11 7/8" NI-20                           | 1     | 8       |
| J2       | 15-00-00 | 11 7/8" NI-20                           | 2     | 4       |
| J3       | 13-00-00 | 11 7/8" NI-20                           | 1     | 21      |
| J4       | 10-00-00 | 11 7/8" NI-20                           | 1     | 12      |
| J5       | 4-00-00  | 11 7/8" NI-20                           | 1     | 2       |

| Connector Summary |     |       |             |
|-------------------|-----|-------|-------------|
| PlotID            | Qty | Manuf | Product     |
| H1                | 42  |       | LT251188    |
| H2                | 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**



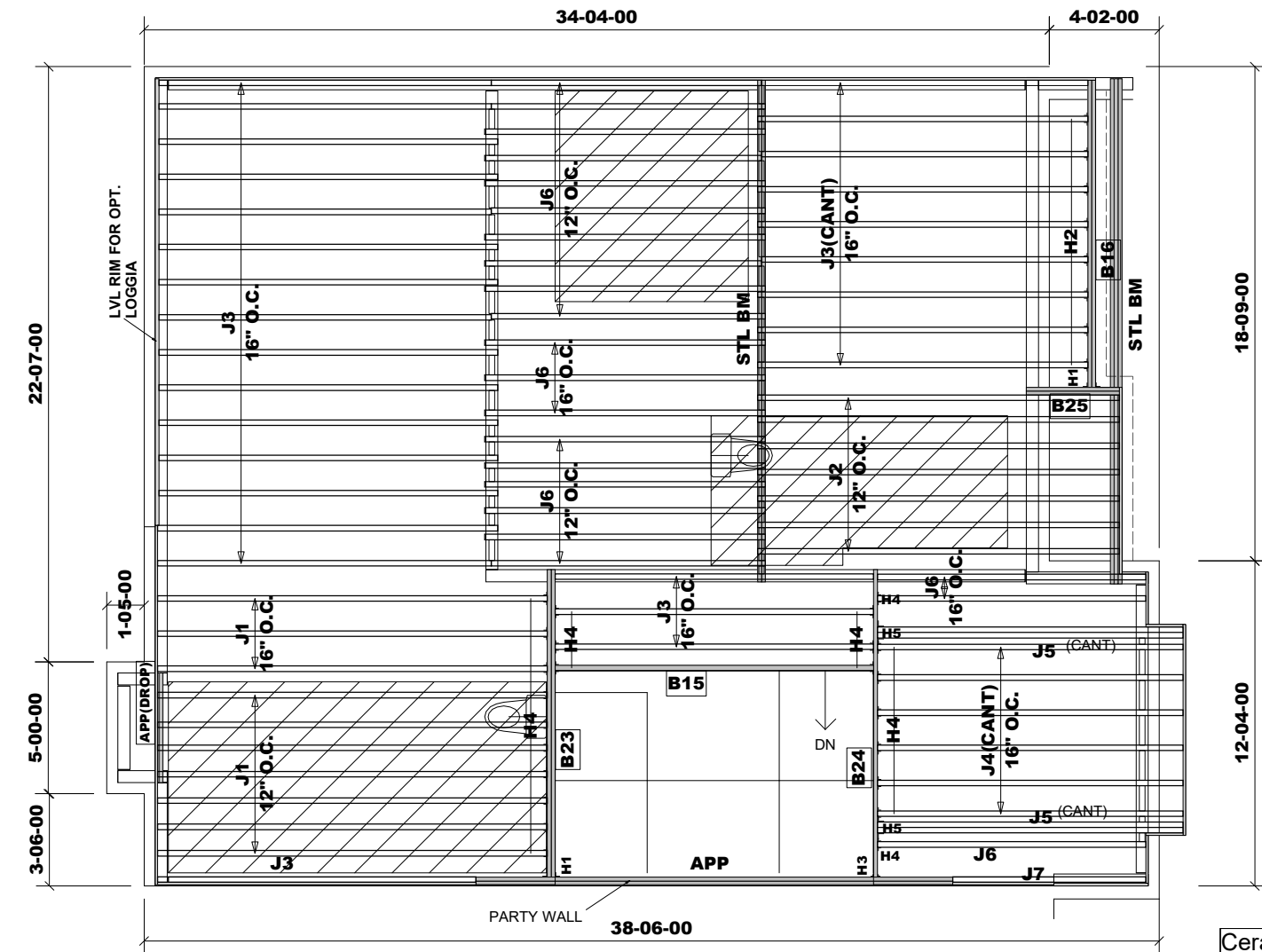
Ceramic tile application as per O.B.C. 9.30.6  
Blocking panels are required over all interior supports  
Squash blocks are required under concentrated loads.

**MODEL: TYPE B - 3101- END2**  
**- EL.A + B**  
**W/SUNKEN FOYER(-2R)**

**REVISION: November 8, 2021**

**First Floor Framing**

Do not scale - refer to architectural plans for dimensions



**MODEL: TYPE B - 3101- END2**  
**- EL.A(W/OPT. FIREPLACE)**  
**+ OPT. LOGGIA**

**REVISION: November 20, 2021**

## Second Floor Framing

Do not scale - refer to architectural plans for dimensions

| Products |          |                                         |       |         |
|----------|----------|-----------------------------------------|-------|---------|
| PlotID   | Length   | Product                                 | Plies | Net Qty |
| B15      | 13-00-00 | 11 7/8" NI-20                           | 1     | 1       |
| B16      | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       |
| B23      | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       |
| B24      | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       |
| B25      | 4-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       |
| Ca1      | 17-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       |
| Ca2      | 92-00-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       |
| J1       | 15-00-00 | 11 7/8" NI-20                           | 1     | 10      |
| J2       | 14-00-00 | 11 7/8" NI-20                           | 1     | 7       |
| J3       | 13-00-00 | 11 7/8" NI-20                           | 1     | 28      |
| J4       | 12-00-00 | 11 7/8" NI-20                           | 1     | 6       |
| J5       | 12-00-00 | 11 7/8" NI-20                           | 2     | 4       |
| J6       | 11-00-00 | 11 7/8" NI-20                           | 1     | 22      |
| J7       | 8-00-00  | 11 7/8" NI-20                           | 1     | 1       |

| Connector Summary |     |       |             |
|-------------------|-----|-------|-------------|
| PlotID            | Qty | Manuf | Product     |
| H1                | 2   |       | HGUS410     |
| H2                | 8   |       | HU310       |
| H3                | 1   |       | HUS1.81/10  |
| H4                | 24  |       | LT251188    |
| H5                | 2   |       | MIT311.88-2 |

### DESIGN LOADING:

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

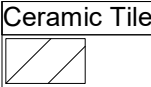
### RIMBOARD

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

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

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

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





**REVISION: November 8, 2021**

Do not scale - refer to architectural plans for dimensions

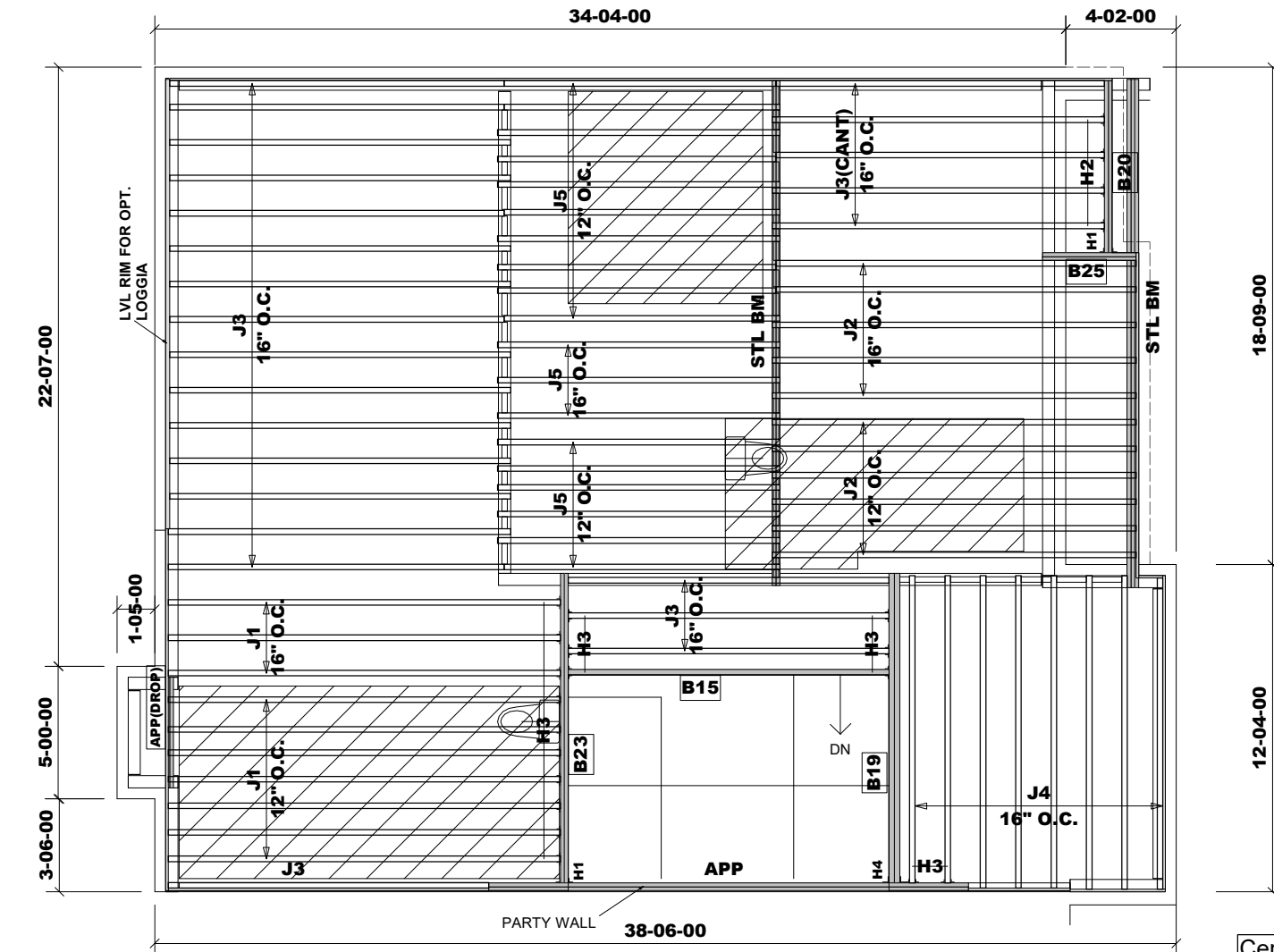
| Connector Summary |     |       |             |
|-------------------|-----|-------|-------------|
| PlotID            | Qty | Manuf | Product     |
| H1                | 34  |       | LT251188    |
| H2                | 2   |       | MIT311.88-2 |

**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.

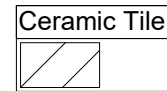


**MODEL: TYPE B - 3101- END2  
- EL.B(W/OPT. FIREPLACE)  
+ OPT. LOGGIA**

**REVISION: November 20, 2021**

## Second Floor Framing

Do not scale - refer to architectural plans for dimensions



| Products |          |                                         |       |         |
|----------|----------|-----------------------------------------|-------|---------|
| PlotID   | Length   | Product                                 | Plies | Net Qty |
| B15      | 13-00-00 | 11 7/8" NI-20                           | 1     | 1       |
| B19      | 12-00-00 | 11 7/8" NI-20                           | 2     | 2       |
| B20      | 7-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       |
| B23      | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       |
| B25      | 4-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       |
| Ca1      | 17-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       |
| Ca2      | 94-00-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       |
| J1       | 15-00-00 | 11 7/8" NI-20                           | 1     | 10      |
| J2       | 14-00-00 | 11 7/8" NI-20                           | 1     | 11      |
| J3       | 13-00-00 | 11 7/8" NI-20                           | 1     | 24      |
| J4       | 12-00-00 | 11 7/8" NI-20                           | 1     | 8       |
| J5       | 11-00-00 | 11 7/8" NI-20                           | 1     | 19      |

| Connector Summary |     |       |             |
|-------------------|-----|-------|-------------|
| PlotID            | Qty | Manuf | Product     |
| H1                | 2   |       | HGUS410     |
| H2                | 4   |       | HU310       |
| H3                | 18  |       | LT251188    |
| H4                | 1   |       | MIT311.88-2 |

### DESIGN LOADING:

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

### RIMBOARD

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

SUBFLOOR - 3/4" NAILED & GLUED\*

APP - AS PER PLAN  
BBO - BEAM BY OTHERS

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

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

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



Customer: **Gold Park**  
Job Address: **Pine Valley**  
City: **Vaughan**  
Job Track: **45147(3101)**

Job Name: **338989-A**  
Level: **2nd Floor - Supply/BOM**  
Label: **B15 - i16474**  
Type: **Beam**

**1 Ply Member**  
**11 7/8" NI-20**

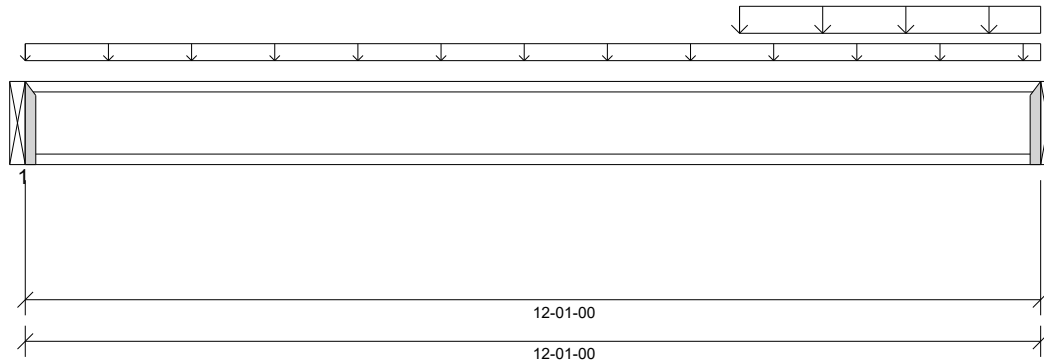
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2020.06.20

11/06/2021 15:44



#### 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: 12'- 1"

#### Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 769 psi Beam @ 12'- 1"

#### ANALYSIS RESULTS

| Design Criteria             | Location    | Load Combination | LDF  | Design     | Limit      | Result         |
|-----------------------------|-------------|------------------|------|------------|------------|----------------|
| Factored Pos. Moment:       | 8'- 8 1/8"  | 1.25D + 1.5L     | 1.00 | 2069 lb ft | 5580 lb ft | Passed - 37%   |
| Factored Shear:             | 12'- 15/16" | 1.25D + 1.5L     | 1.00 | 1214 lb    | 2240 lb    | Passed - 54%   |
| Live Load (LL) Pos. Defl.:  | 6'- 6 7/16" | L                |      | 0.111"     | L/360      | Passed - L/999 |
| Live Load (LL) Neg. Defl.:  | 12'- 1"     | L                |      | 0.016"     | L/360      | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 6'- 6"      | D + L            |      | 0.163"     | L/240      | Passed - L/887 |
| Total Load (TL) Neg. Defl.: | 12'- 1"     | D + L            |      | 0.023"     | 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 | 422 lb                     |                          | 1970 lb                       | -                              | Passed - 21% |
| 2  | 1-12                 | 1.25D + 1.5L                 | 1.00 | 1216 lb                    |                          | 1970 lb                       | -                              | Passed - 62% |

#### CONNECTOR INFORMATION

| ID | Part No. | Manufacturer | Nailing Requirements |      |        | Other Information or Requirement for Reinforcement Accessories |
|----|----------|--------------|----------------------|------|--------|----------------------------------------------------------------|
|    |          |              | Top                  | Face | Member |                                                                |
| 1  | LT251188 | -            | -                    | -    | -      | Connector manually specified by the user.                      |
| 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'        | 12'- 1" | Self Weight                        | Top  | 3 lb/ft  | -         | -        | -        |
| Uniform     | 0'        | 12'- 1" | FC1 Floor Decking (Plan View Fill) | Top  | 9 lb/ft  | 18 lb/ft  | -        | -        |
| Uniform     | 8'- 6"    | 12'- 1" | User Load                          | Top  | 60 lb/ft | 160 lb/ft | -        | -        |

#### UNFACTORED REACTIONS

| ID | Start Loc | End Loc | Source     | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-----------|---------|------------|----------|----------|----------|----------|
| 1  | 0'        | 0'      | B2(i16484) | 104 lb   | 194 lb   | -        | -        |
| 2  | 12'- 1"   | 12'- 1" | B3(i16483) | 255 lb   | 598 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-039915

BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 11:25:09

Build 7773

Job name: 45147(3101)

File name: 338989-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B16(i17779)

City, Province, Postal Code: Vaughan, ON

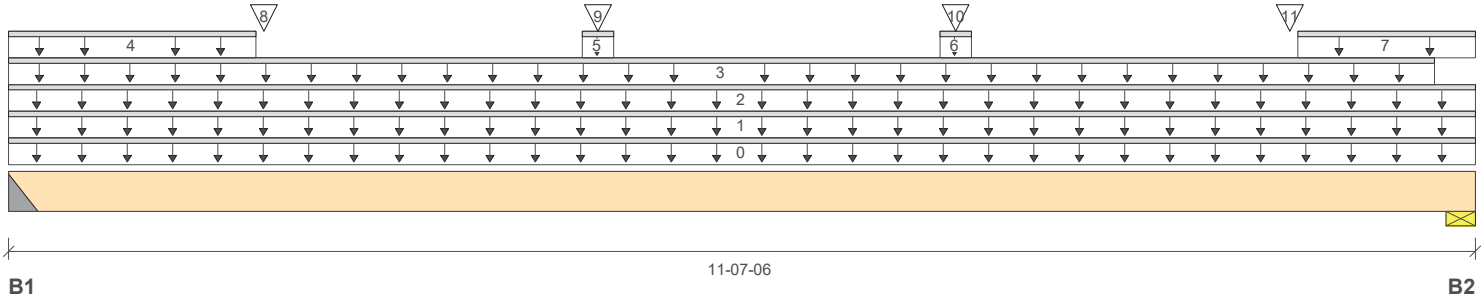
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 11-07-06

### Reaction Summary (Down / Uplift) (lbs)

| Bearing    | Live    | Dead     | Snow    | Wind |
|------------|---------|----------|---------|------|
| B1, 2"     | 347 / 0 | 1208 / 0 | 609 / 0 |      |
| B2, 2-3/8" | 330 / 0 | 1208 / 0 | 612 / 0 |      |

### Load Summary

| Tag | Description | Load Type         | Ref. | Start    | End      | Loc. | Live<br>1.00 | Dead<br>0.65 | Snow<br>1.00 | Wind<br>1.15 | Tributary |
|-----|-------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0   | Self-Weight | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-07-06 | Top  |              | 12           |              |              | 00-00-00  |
| 1   | E14(i15201) | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-07-06 | Top  |              | 101          |              |              | n/a       |
| 2   | User Load   | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-07-06 | Top  |              | 14           | 21           |              | n/a       |
| 3   | User Load   | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-03-08 | Top  | 60           | 23           |              |              | n/a       |
| 4   | E14(i15201) | Unf. Lin. (lb/ft) | L    | 00-00-00 | 01-11-08 | Top  |              | 56           | 84           |              | n/a       |
| 5   | E14(i15201) | Unf. Lin. (lb/ft) | L    | 04-06-08 | 04-09-08 | Top  |              |              | 84           |              | n/a       |
| 6   | E14(i15201) | Unf. Lin. (lb/ft) | L    | 07-04-08 | 07-07-08 | Top  |              |              | 84           |              | n/a       |
| 7   | E14(i15201) | Unf. Lin. (lb/ft) | L    | 10-02-08 | 11-07-06 | Top  |              | 56           | 84           |              | n/a       |
| 8   | E14(i15201) | Conc. Pt. (lbs)   | L    | 02-00-04 | 02-00-04 | Top  |              | 77           | 109          |              | n/a       |
| 9   | -           | Conc. Pt. (lbs)   | L    | 04-08-00 | 04-08-00 | Top  |              | 154          | 217          |              | n/a       |
| 10  | -           | Conc. Pt. (lbs)   | L    | 07-06-00 | 07-06-00 | Top  |              | 154          | 218          |              | n/a       |
| 11  | E14(i15201) | Conc. Pt. (lbs)   | L    | 10-01-12 | 10-01-12 | Top  |              | 77           | 109          |              | n/a       |

### Controls Summary

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 7616 ft-lbs     | 35392 ft-lbs        | 21.5%             | 13   | 05-07-08 |
| End Shear             | 2300 lbs        | 14464 lbs           | 15.9%             | 13   | 10-05-02 |
| Total Load Deflection | L/957 (0.143")  | n/a                 | 25.1%             | 35   | 05-09-05 |
| Live Load Deflection  | L/999 (0.063")  | n/a                 | n/a               | 51   | 05-09-05 |
| Max Defl.             | 0.143"          | n/a                 | n/a               | 35   | 05-09-05 |
| Span / Depth          | 11.5            |                     |                   |      |          |

### Bearing Supports

|    | Dim. (LxW)                 | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Hanger 2" x 3-1/2"         | 2770 lbs | n/a                       | 32.4%                    | HGUS410         |
| B2 | Wall/Plate 2-3/8" x 3-1/2" | 2759 lbs | 54.0%                     | 27.2%                    | Spruce-Pine-Fir |



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

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**2nd Floor - Supply/BOM\Flush Beams\B16(i17779) (Flush Beam)****PASSED**BC CALC® Member Report  
Build 7773

Dry | 1 span | No cant.

November 20, 2021 11:25:09

Job name: 45147(3101)  
Address: Pine Valley  
City, Province, Postal Code: Vaughan, ON  
Customer: Gold Park  
Code reports: CCMC 12472-RFile name: 338989-A.mmdl  
Description: 2nd Floor - Supply/BOM\Flush Beams\B16(i17779)  
Specifier:  
Designer: NL  
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.  
Hanger Manufacturer: Unassigned  
Resistance Factor phi has been applied to all presented results per CSA O86.  
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
Unbalanced snow loads determined from building geometry were used in selected product's verification.  
Design based on Dry Service Condition.  
Importance Factor : Normal Part code : Part 9  
Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-08.

**Disclosure**

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

SE-039916(2)

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



Customer: **Gold Park**  
 Job Address: **Pine Valley**  
 City: **Vaughan**  
 Job Track: **45147(3101)**

Job Name: **338989-A**  
 Level: **1st Floor - Supply/BOM**  
 Label: **B18 - i16468**  
 Type: **Beam**

**1 Ply Member**  
**11 7/8" NI-20**

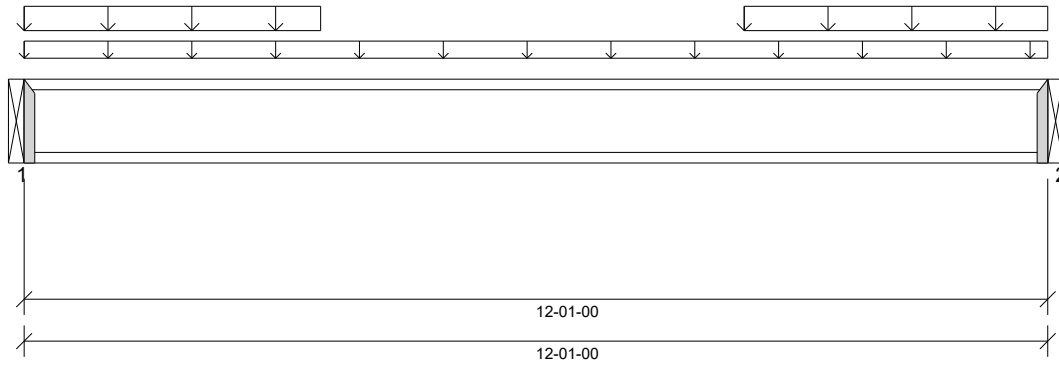
Status:  
**Design Passed**

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

11/08/2021 08:36



#### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)  
 Design Methodology: LSD  
 Service Condition: Dry  
 LL Deflection Limit: L/360,  
 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: 12'- 1"

#### Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 769 psi Beam @ 12'- 1"

#### ANALYSIS RESULTS

| Design Criteria             | Location    | Load Combination | LDF  | Design     | Limit      | Result         |
|-----------------------------|-------------|------------------|------|------------|------------|----------------|
| Factored Pos. Moment:       | 6'- 2 1/8"  | 1.25D + 1.5L     | 1.00 | 2258 lb ft | 5580 lb ft | Passed - 40%   |
| Factored Shear:             | 12'- 15/16" | 1.25D + 1.5L     | 1.00 | 1096 lb    | 2240 lb    | Passed - 49%   |
| Live Load (LL) Pos. Defl.:  | 6'- 5/8"    | L                |      | 0.140"     | L/360      | Passed - L/999 |
| Live Load (LL) Neg. Defl.:  | 12'- 1"     | L                |      | 0.017"     | L/360      | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 6'- 5/8"    | D + L            |      | 0.204"     | L/240      | Passed - L/711 |
| Total Load (TL) Neg. Defl.: | 12'- 1"     | D + L            |      | 0.025"     | 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 | 1090 lb                    |                          | 1970 lb                       | -                              | Passed - 55% |
| 2  | 1-12                 | 1.25D + 1.5L                 | 1.00 | 1098 lb                    |                          | 1970 lb                       | -                              | Passed - 56% |

#### CONNECTOR INFORMATION

| ID | Part No. | Manufacturer | Nailing Requirements |      |        | Other Information or Requirement for Reinforcement Accessories |
|----|----------|--------------|----------------------|------|--------|----------------------------------------------------------------|
|    |          |              | Top                  | Face | Member |                                                                |
| 1  | LT251188 | -            | -                    | -    | -      | Connector manually specified by the user.                      |
| 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'        | 12'- 1" | Self Weight                        | Top  | 3 lb/ft  | -         | -        | -        |
| Uniform     | -0'       | 12'- 1" | FC2 Floor Decking (Plan View Fill) | Top  | 9 lb/ft  | 18 lb/ft  | -        | -        |
| Uniform     | 0'        | 3'- 6"  | User Load                          | Top  | 45 lb/ft | 120 lb/ft | -        | -        |
| Uniform     | 8'- 6"    | 12'- 1" | User Load                          | Top  | 45 lb/ft | 120 lb/ft | -        | -        |

#### UNFACTORED REACTIONS

| ID | Start Loc | End Loc | Source     | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-----------|---------|------------|----------|----------|----------|----------|
| 1  | 0'        | 0'      | B7(i17052) | 231 lb   | 534 lb   | -        | -        |
| 2  | 12'- 1"   | 12'- 1" | B8(i17064) | 233 lb   | 538 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-039917



Customer: **Gold Park**  
 Job Address: **Pine Valley**  
 City: **Vaughan**  
 Job Track: **45147(3101)**

Job Name: **338989-B**  
 Level: **2nd Floor - Supply/BOM**  
 Label: **B19 - i17676**  
 Type: **Beam**

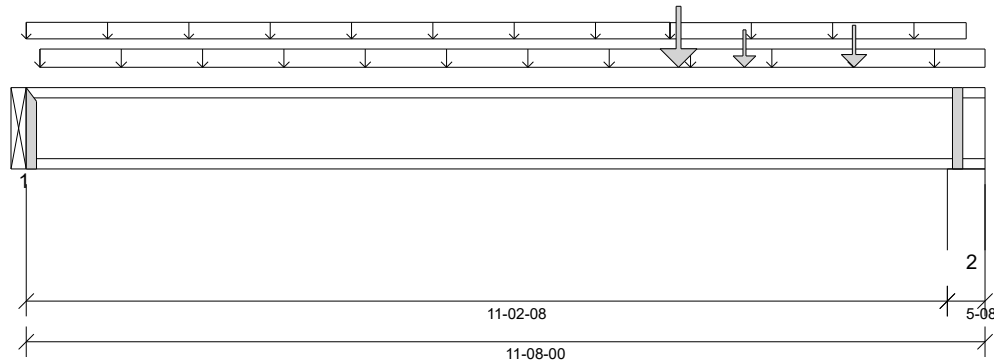
**2 Ply Member**  
**11 7/8" NI-20**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2020.06.20 11/20/2021 08:47



#### 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: 7'- 10"

#### Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 615 psi Wall @ 11'- 3 1/2"

#### ANALYSIS RESULTS

| Design Criteria             | Location     | Load Combination | LDF  | Design     | Limit       | Result         |
|-----------------------------|--------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment:       | 7'- 11 1/4"  | 1.25D + 1.5L     | 1.00 | 6112 lb ft | 11144 lb ft | Passed - 55%   |
| Factored Shear:             | 11'- 2 7/16" | 1.25D + 1.5L     | 1.00 | 2593 lb    | 4474 lb     | Passed - 58%   |
| Live Load (LL) Pos. Defl.:  | 6'- 2 3/8"   | L                |      | 0.109"     | L/360       | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 6'- 9/16"    | D + L            |      | 0.214"     | L/240       | Passed - L/629 |

#### 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 | 1244 lb                    |                          | 3940 lb                       | -                              | Passed - 32% |
| 2  | 5-08                 | 1.25D + 1.5L                 | 1.00 | 2638 lb                    |                          | 4474 lb                       | 16894 lb                       | Passed - 59% |

#### CONNECTOR INFORMATION

| ID                                                                                                                                                                                                                                 | Part No.    | Manufacturer | Nailing Requirements |      |        | Other Information or Requirement for Reinforcement Accessories |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|----------------------|------|--------|----------------------------------------------------------------|
|                                                                                                                                                                                                                                    |             |              | Top                  | Face | Member |                                                                |
| 1                                                                                                                                                                                                                                  | MIT311.88-2 |              | -                    | -    | -      | Connector manually specified by the user.                      |
| * Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails. |             |              |                      |      |        |                                                                |

#### SPECIFIED LOADS

| Type        | Start Loc   | End Loc     | Source                             | Face | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|-------------|-------------|-------------|------------------------------------|------|----------|----------|----------|----------|
| Self Weight | 0'          | 11'- 8"     | Self Weight                        | Top  | 6 lb/ft  | -        | -        | -        |
| Uniform     | 0'          | 7'- 10"     | FC1 Floor Decking (Plan View Fill) | Top  | 9 lb/ft  | 18 lb/ft | -        | -        |
| Uniform     | 0'- 2"      | 11'- 8"     | User Load                          | Top  | 60 lb/ft | -        | -        | -        |
| Uniform     | 7'- 10"     | 11'- 5 1/4" | FC1 Floor Decking (Plan View Fill) | Top  | 7 lb/ft  | 14 lb/ft | -        | -        |
| Point       | 7'- 11 1/4" | 7'- 11 1/4" | B15(i17776)                        | Back | 255 lb   | 598 lb   | -        | -        |
| Point       | 8'- 8 7/8"  | 8'- 8 7/8"  | J3(i17778)                         | Back | 138 lb   | 276 lb   | -        | -        |
| Point       | 10'- 7/8"   | 10'- 7/8"   | J3(i17775)                         | Back | 167 lb   | 333 lb   | -        | -        |

#### UNFACTORED REACTIONS

| ID | Start Loc   | End Loc | Source      | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-------------|---------|-------------|----------|----------|----------|----------|
| 1  | 0'          | 0'      | APP(i17765) | 544 lb   | 387 lb   | -        | -        |
| 2  | 11'- 2 1/2" | 11'- 8" | 4(i15211)   | 873 lb   | 1021 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-039918

BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 11:24:22

Build 7773

Job name: 45147(3101)

File name: 338989-B.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B20(i17903)

City, Province, Postal Code: Vaughan, ON

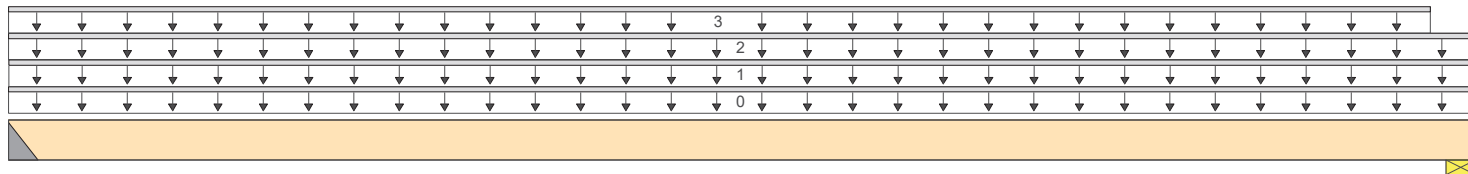
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



06-05-06

B1

B2

Total Horizontal Product Length = 06-05-06

### Reaction Summary (Down / Uplift) (lbs)

| Bearing    | Live    | Dead    | Snow    | Wind |
|------------|---------|---------|---------|------|
| B1, 2"     | 192 / 0 | 662 / 0 | 337 / 0 |      |
| B2, 2-3/8" | 182 / 0 | 664 / 0 | 340 / 0 |      |

### Load Summary

| Tag | Description | Load Type         | Ref. | Start    | End      | Loc. | Live<br>1.00 | Dead<br>0.65 | Snow<br>1.00 | Wind<br>1.15 | Tributary |
|-----|-------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0   | Self-Weight | Unf. Lin. (lb/ft) | L    | 00-00-00 | 06-05-06 | Top  |              | 12           |              |              | 00-00-00  |
| 1   | E14(i15201) | Unf. Lin. (lb/ft) | L    | 00-00-00 | 06-05-06 | Top  |              | 157          | 84           |              | n/a       |
| 2   | User Load   | Unf. Lin. (lb/ft) | L    | 00-00-00 | 06-05-06 | Top  |              | 14           | 21           |              | n/a       |
| 3   | User Load   | Unf. Lin. (lb/ft) | L    | 00-00-00 | 06-03-00 | Top  | 60           | 23           |              |              | n/a       |

### Controls Summary

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 2290 ft-lbs     | 35392 ft-lbs        | 6.5%              | 13   | 03-02-08 |
| End Shear             | 975 lbs         | 14464 lbs           | 6.7%              | 13   | 01-01-14 |
| Total Load Deflection | L/999 (0.013")  | n/a                 | n/a               | 35   | 03-02-08 |
| Live Load Deflection  | L/999 (0.006")  | n/a                 | n/a               | 51   | 03-02-08 |
| Max Defl.             | 0.013"          | n/a                 | n/a               | 35   | 03-02-08 |
| Span / Depth          | 6.3             |                     |                   |      |          |

### Bearing Supports

|    | Dim. (LxW)                 | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Hanger 2" x 3-1/2"         | 1525 lbs | n/a                       | 17.9%                    | HGUS410         |
| B2 | Wall/Plate 2-3/8" x 3-1/2" | 1522 lbs | 29.8%                     | 15.0%                    | Spruce-Pine-Fir |

### Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Hanger Manufacturer: Unassigned  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
 Unbalanced snow loads determined from building geometry were used in selected product's verification.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 9  
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-08.



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



Customer: **Gold Park**  
Job Address: **Pine Valley**  
City: **Vaughan**  
Job Track: **45147(3101)**

Job Name: **338989-FOYER(-2R)**  
Level: **1st Floor - Supply/BOM**  
Label: **B22 - i17125**  
Type: **Beam**

**1 Ply Member**  
**11 7/8" NI-80**

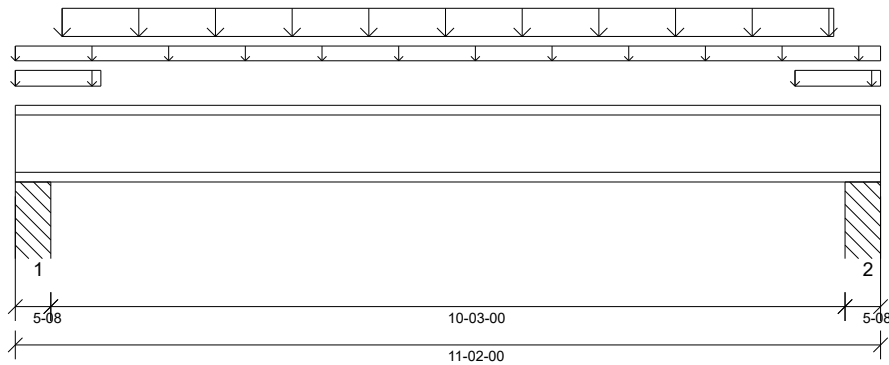
Status:  
**Design Passed**

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

11/08/2021 09:55



#### DESIGN INFORMATION

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

#### Lateral Restraint Requirements:

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

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

#### Factored Resistance of Support Material:

- 1334 psi Column @ 0'- 4 1/2"
- 1334 psi Column @ 10'- 9 1/2"

#### ANALYSIS RESULTS

| Design Criteria             | Location     | Load Combination | LDF  | Design     | Limit       | Result         |
|-----------------------------|--------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment:       | 5'- 1 1/4"   | 1.25D + 1.5L     | 1.00 | 5756 lb ft | 11610 lb ft | Passed - 50%   |
| Factored Shear:             | 10'- 8 7/16" | 1.25D + 1.5L     | 1.00 | 2140 lb    | 2340 lb     | Passed - 91%   |
| Live Load (LL) Pos. Defl.:  | 5'- 7"       | L                |      | 0.138"     | L/360       | Passed - L/893 |
| Total Load (TL) Pos. Defl.: | 5'- 7"       | D + L            |      | 0.209"     | L/240       | Passed - L/588 |

#### 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 | 2167 lb                    |                          | 2340 lb                       | 25687 lb                       | Passed - 93% |
| 2  | 5-08                 | 1.25D + 1.5L                 | 1.00 | 2167 lb                    |                          | 2340 lb                       | 25688 lb                       | Passed - 93% |

#### SPECIFIED LOADS

| Type        | Start Loc  | End Loc     | Source                             | Face  | Dead (D) | Live (L)  | Snow (S) | Wind (W) |
|-------------|------------|-------------|------------------------------------|-------|----------|-----------|----------|----------|
| Self Weight | 0'         | 11'- 2"     | Self Weight                        | Top   | 3 lb/ft  | -         | -        | -        |
| Uniform     | -0'        | 11'- 2"     | FC2 Floor Decking (Plan View Fill) | Top   | 3 lb/ft  | 6 lb/ft   | -        | -        |
| Uniform     | -0'        | 1'- 1 1/4"  | FC2 Floor Decking (Plan View Fill) | Top   | 10 lb/ft | 20 lb/ft  | -        | -        |
| Uniform     | 0'- 7 1/4" | 10'- 6 3/4" | Smoothed Load                      | Front | 96 lb/ft | 192 lb/ft | -        | -        |
| Uniform     | 10'- 3/4"  | 11'- 2"     | FC2 Floor Decking (Plan View Fill) | Top   | 10 lb/ft | 20 lb/ft  | -        | -        |

#### UNFACTORED REACTIONS

| ID | Start Loc   | End Loc    | Source      | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-------------|------------|-------------|----------|----------|----------|----------|
| 1  | 0'          | 0'- 5 1/2" | Pt1(i17114) | 524 lb   | 1009 lb  | -        | -        |
| 2  | 10'- 8 1/2" | 11'- 2"    | Pt1(i17135) | 524 lb   | 1009 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-039920

BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 11:18:32

Build 7773

Job name: 45147(3101)

File name: 338989-B.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B23(i18052)

City, Province, Postal Code: Vaughan, ON

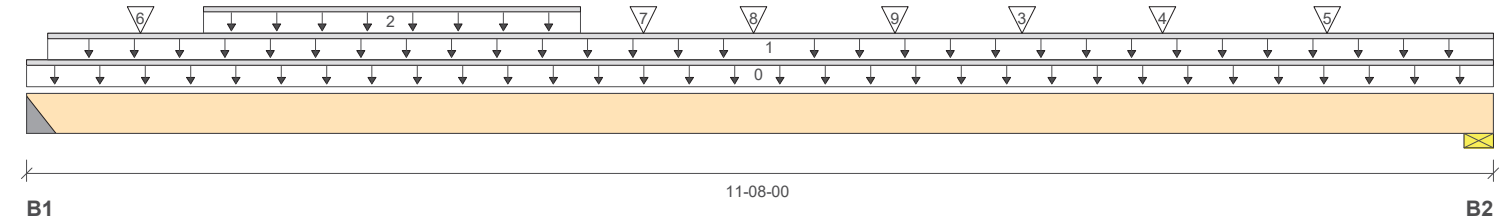
Specifier:

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"     | 1820 / 0 | 1313 / 0 |      |      |
| B2, 5-1/2" | 2304 / 0 | 1588 / 0 |      |      |

### Load Summary

| Tag | Description   | Load Type         | Ref. | Start    | End      | Loc. | Live<br>1.00 | Dead<br>0.65 | Snow<br>1.00 | Wind<br>1.15 | Tributary |
|-----|---------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0   | Self-Weight   | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-08-00 | Top  |              | 12           |              |              | 00-00-00  |
| 1   | User Load     | Unf. Lin. (lb/ft) | L    | 00-02-00 | 11-08-00 | Top  |              | 60           |              |              | n/a       |
| 2   | Smoothed Load | Unf. Lin. (lb/ft) | L    | 01-04-14 | 04-04-14 | Top  | 301          | 151          |              |              | n/a       |
| 3   | -             | Conc. Pt. (lbs)   | L    | 07-11-00 | 07-11-00 | Top  | 539          | 276          |              |              | n/a       |
| 4   | -             | Conc. Pt. (lbs)   | L    | 09-00-07 | 09-00-07 | Top  | 668          | 334          |              |              | n/a       |
| 5   | -             | Conc. Pt. (lbs)   | L    | 10-04-02 | 10-04-02 | Top  | 724          | 362          |              |              | n/a       |
| 6   | J1(i18041)    | Conc. Pt. (lbs)   | L    | 00-10-14 | 00-10-14 | Top  | 378          | 189          |              |              | n/a       |
| 7   | J1(i18043)    | Conc. Pt. (lbs)   | L    | 04-10-14 | 04-10-14 | Top  | 283          | 141          |              |              | n/a       |
| 8   | J1(i18045)    | Conc. Pt. (lbs)   | L    | 05-09-06 | 05-09-06 | Top  | 301          | 151          |              |              | n/a       |
| 9   | J1(i18038)    | Conc. Pt. (lbs)   | L    | 06-10-14 | 06-10-14 | Top  | 317          | 159          |              |              | n/a       |

### Controls Summary

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 13412 ft-lbs    | 35392 ft-lbs        | 37.9%             | 1    | 05-09-06 |
| End Shear             | 5011 lbs        | 14464 lbs           | 34.6%             | 1    | 10-02-10 |
| Total Load Deflection | L/601 (0.223")  | n/a                 | 39.9%             | 4    | 05-09-06 |
| Live Load Deflection  | L/1022 (0.131") | n/a                 | 35.2%             | 5    | 05-09-06 |
| Max Defl.             | 0.223"          | n/a                 | n/a               | 4    | 05-09-06 |
| Span / Depth          | 11.3            |                     |                   |      |          |

### Bearing Supports

|    | Dim. (LxW)                 | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Hanger 2" x 3-1/2"         | 4370 lbs | n/a                       | 51.2%                    | HGUS410         |
| B2 | Wall/Plate 5-1/2" x 3-1/2" | 5441 lbs | 45.9%                     | 23.2%                    | Spruce-Pine-Fir |



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

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**2nd Floor - Supply/BOM\Flush Beams\B23(i18052) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 11:18:32

Build 7773

Job name: 45147(3101)

File name: 338989-B.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B23(i18052)

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.

Hanger Manufacturer: Unassigned

Resistance Factor phi has been applied to all presented results per CSA O86.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-11-00.

**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.

SE-039921(2)

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

BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 11:26:42

Build 7773

Job name: 45147(3101)

File name: 338989-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B24(i17609)

City, Province, Postal Code: Vaughan, ON

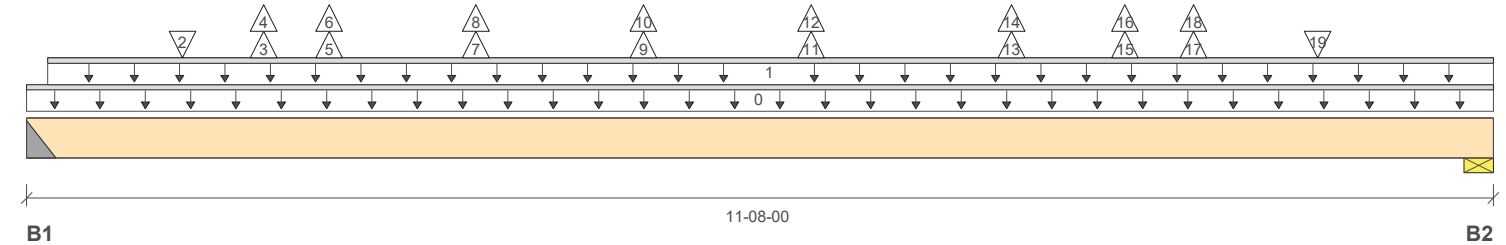
Specifier:

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"     | 1407 / 22 | 927 / 0  | 0 / 69 |      |
| B2, 5-1/2" | 2017 / 21 | 1248 / 0 | 0 / 67 |      |

### Load Summary

| Tag | Description | Load Type         | Ref. | Start    | End      | Loc. | Live<br>1.00 | Dead<br>0.65 | Snow<br>1.00 | Wind<br>1.15 | Tributary |
|-----|-------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0   | Self-Weight | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-08-00 | Top  |              | 6            |              |              | 00-00-00  |
| 1   | User Load   | Unf. Lin. (lb/ft) | L    | 00-02-00 | 11-08-00 | Top  |              | 60           |              |              | n/a       |
| 2   | J6(i17455)  | Conc. Pt. (lbs)   | L    | 01-02-14 | 01-02-14 | Top  | 291          | 146          |              |              | n/a       |
| 3   | J5(i17488)  | Conc. Pt. (lbs)   | L    | 01-10-10 | 01-10-10 | Top  | 120          | 30           | -18          |              | n/a       |
| 4   | J5(i17488)  | Conc. Pt. (lbs)   | L    | 01-10-10 | 01-10-10 | Top  | -3           |              |              |              | n/a       |
| 5   | J4(i17469)  | Conc. Pt. (lbs)   | L    | 02-04-14 | 02-04-14 | Top  | 174          | 51           | -29          |              | n/a       |
| 6   | J4(i17469)  | Conc. Pt. (lbs)   | L    | 02-04-14 | 02-04-14 | Top  | -4           |              |              |              | n/a       |
| 7   | J4(i17446)  | Conc. Pt. (lbs)   | L    | 03-06-14 | 03-06-14 | Top  | 258          | 100          | -10          |              | n/a       |
| 8   | J4(i17446)  | Conc. Pt. (lbs)   | L    | 03-06-14 | 03-06-14 | Top  | -7           |              |              |              | n/a       |
| 9   | J4(i17494)  | Conc. Pt. (lbs)   | L    | 04-10-14 | 04-10-14 | Top  | 276          | 106          | -11          |              | n/a       |
| 10  | J4(i17494)  | Conc. Pt. (lbs)   | L    | 04-10-14 | 04-10-14 | Top  | -7           |              |              |              | n/a       |
| 11  | J4(i17494)  | Conc. Pt. (lbs)   | L    | 06-02-14 | 06-02-14 | Top  | 276          | 106          | -11          |              | n/a       |
| 12  | J4(i17494)  | Conc. Pt. (lbs)   | L    | 06-02-14 | 06-02-14 | Top  | -7           |              |              |              | n/a       |
| 13  | -           | Conc. Pt. (lbs)   | L    | 07-10-00 | 07-10-00 | Top  | 854          | 353          | -10          |              | n/a       |
| 14  | -           | Conc. Pt. (lbs)   | L    | 07-10-00 | 07-10-00 | Top  | -7           |              |              |              | n/a       |
| 15  | -           | Conc. Pt. (lbs)   | L    | 08-08-13 | 08-08-13 | Top  | 447          | 187          | -29          |              | n/a       |
| 16  | -           | Conc. Pt. (lbs)   | L    | 08-08-13 | 08-08-13 | Top  | -5           |              |              |              | n/a       |
| 17  | J5(i17448)  | Conc. Pt. (lbs)   | L    | 09-03-06 | 09-03-06 | Top  | 188          | 65           | -18          |              | n/a       |
| 18  | J5(i17448)  | Conc. Pt. (lbs)   | L    | 09-03-06 | 09-03-06 | Top  | -3           |              |              |              | n/a       |
| 19  | -           | Conc. Pt. (lbs)   | L    | 10-03-04 | 10-03-04 | Top  | 537          | 269          |              |              | n/a       |

### Controls Summary

|                       | Factored Demand | Factored Resistance | Demand/<br>Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-----------------------|------|----------|
| Pos. Moment           | 11148 ft-lbs    | 17696 ft-lbs        | 63.0%                 | 21   | 06-02-14 |
| End Shear             | 4306 lbs        | 7232 lbs            | 59.5%                 | 21   | 10-02-10 |
| Total Load Deflection | L/367 (0.365")  | n/a                 | 65.4%                 | 56   | 05-10-14 |
| Live Load Deflection  | L/590 (0.227")  | n/a                 | 61.0%                 | 83   | 05-10-14 |
| Max Defl.             | 0.365"          | n/a                 | n/a                   | 56   | 05-10-14 |
| Span / Depth          | 11.3            |                     |                       |      |          |

| Bearing Supports | Dim. (LxW)      | Demand   | Demand/<br>Resistance<br>Support | Demand/<br>Resistance<br>Member | Material        |
|------------------|-----------------|----------|----------------------------------|---------------------------------|-----------------|
| B1 Hanger        | 2" x 1-3/4"     | 3269 lbs | n/a                              | 76.6%                           | HUS1.81/10      |
| B2 Wall/Plate    | 5-1/2" x 1-3/4" | 4586 lbs | 77.4%                            | 39.1%                           | Spruce-Pine-Fir |



BC CALC® Member Report  
 Build 7773

Dry | 1 span | No cant.

November 20, 2021 11:26:42

Job name: 45147(3101)  
 Address: Pine Valley  
 City, Province, Postal Code: Vaughan, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File name: 338989-A.mmdl  
 Description: 2nd Floor - Supply/BOM\Flush Beams\B24(i17609)  
 Specifier:  
 Designer: NL  
 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.  
 Hanger Manufacturer: Unassigned  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
 Unbalanced snow loads determined from building geometry were used in selected product's verification.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 9  
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-10.



## Disclosure

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 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.

SE-039922(2)

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

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

## 2nd Floor - Supply/BOM\Flush Beams\B25(i17772) (Flush Beam)

**PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 09:19:21

Build 7773

Job name: 45147(3101)

File name: 338989-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B25(i17772)

City, Province, Postal Code: Vaughan, ON

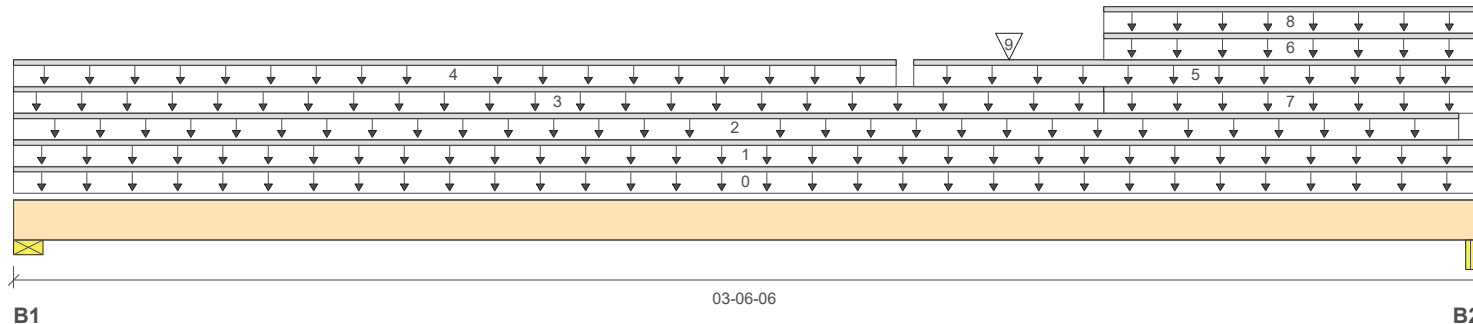
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



### Reaction Summary (Down / Uplift) (lbs)

| Bearing    | Live    | Dead     | Snow     | Wind |
|------------|---------|----------|----------|------|
| B1, 5-1/2" | 187 / 0 | 683 / 0  | 434 / 0  |      |
| B2, 4-1/8" | 327 / 0 | 1530 / 0 | 1121 / 0 |      |

### Load Summary

| Tag | Description                        | Load Type         | Ref. | Start    | End      | Loc. | Live<br>1.00 | Dead<br>0.65 | Snow<br>1.00 | Wind<br>1.15 | Tributary |
|-----|------------------------------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0   | Self-Weight                        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-06-06 | Top  |              | 12           |              |              | 00-00-00  |
| 1   | FC1 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-06-06 | Top  | 5            |              |              |              | n/a       |
| 2   | User Load                          | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-05-12 | Top  | 27           | 10           |              |              | n/a       |
| 3   | FC1 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L    | 00-00-00 | 02-07-08 | Top  | 20           | 10           |              |              | n/a       |
| 4   | User Load                          | Unf. Lin. (lb/ft) | L    | 00-00-00 | 02-01-08 | Top  |              | 60           |              |              | n/a       |
| 5   | E15(i15200)                        | Unf. Lin. (lb/ft) | L    | 02-02-00 | 03-06-06 | Top  |              | 101          |              |              | n/a       |
| 6   | E15(i15200)                        | Unf. Lin. (lb/ft) | L    | 02-07-08 | 03-06-06 | Top  |              | 154          | 231          |              | n/a       |
| 7   | User Load                          | Unf. Lin. (lb/ft) | L    | 02-07-08 | 03-06-06 | Top  |              |              | 21           |              | n/a       |
| 8   | FC1 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L    | 02-07-08 | 03-06-06 | Top  | 6            |              |              |              | n/a       |
| 9   | -                                  | Conc. Pt. (lbs)   | L    | 02-04-12 | 02-04-12 | Top  | 344          | 1680         | 1326         |              | n/a       |

### Controls Summary

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 2718 ft-lbs     | 35392 ft-lbs        | 7.7%              | 13   | 02-03-00 |
| End Shear             | 2596 lbs        | 14464 lbs           | 17.9%             | 13   | 02-02-06 |
| Total Load Deflection | L/999 (0.003")  | n/a                 | n/a               | 35   | 01-11-07 |
| Live Load Deflection  | L/999 (0.001")  | n/a                 | n/a               | 51   | 01-11-07 |
| Max Defl.             | 0.003"          | n/a                 | n/a               | 35   | 01-11-07 |
| Span / Depth          | 2.9             |                     |                   |      |          |

### Bearing Supports

|    | Dim. (LxW)                 | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 5-1/2" x 3-1/2" | 1691 lbs | 14.3%                     | 7.2%                     | Spruce-Pine-Fir |
| B2 | Beam 4-1/8" x 3-1/2"       | 3920 lbs | 44.1%                     | 22.3%                    | Unspecified     |

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


**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**2nd Floor - Supply/BOM\Flush Beams\B25(i17772) (Flush Beam)****PASSED**BC CALC® Member Report  
Build 7773

Dry | 1 span | No cant.

November 20, 2021 09:19:21

Job name: 45147(3101)  
Address: Pine Valley  
City, Province, Postal Code: Vaughan, ON  
Customer: Gold Park  
Code reports: CCMC 12472-RFile name: 338989-A.mmdl  
Description: 2nd Floor - Supply/BOM\Flush Beams\B25(i17772)  
Specifier:  
Designer: NL  
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.  
Unbalanced snow loads determined from building geometry were used in selected product's verification.  
Design based on Dry Service Condition.  
Importance Factor : Normal Part code : Part 9  
Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-10-08.

**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.

SE-039923(2)

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

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

## 1st Floor - Supply/BOM\Flush Beams\B7(i16360) (Flush Beam)

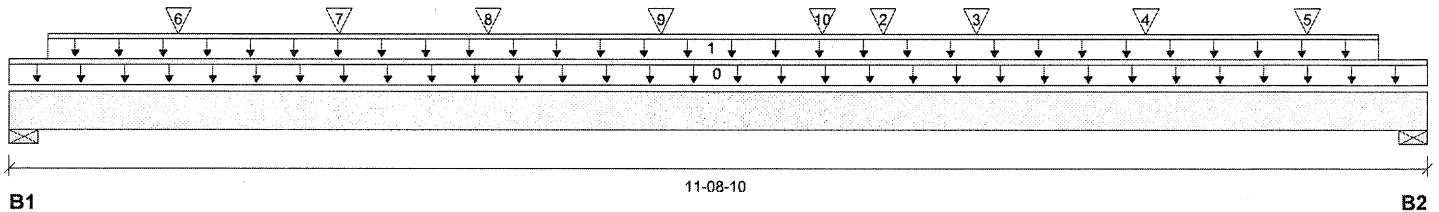
**PASSED**

 BC CALC® Member Report  
 Build 7773

Dry | 1 span | No cant.

May 18, 2021 13:10:59

 Job name: 45147(3101)  
 Address: Pine Valley  
 City, Province, Postal Code: Vaughan, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

 File name: 333169-A.mmdl  
 Description: 1st Floor - Supply/BOM\Flush Beams\B7(i16360)  
 Specifier:  
 Designer: NL  
 Company: Alpa Roof Trusses


Total Horizontal Product Length = 11-08-10

### Reaction Summary (Down / Uplift) (lbs)

| Bearing    | Live     | Dead     | Snow | Wind |
|------------|----------|----------|------|------|
| B1, 1-3/4" | 2193 / 0 | 1495 / 0 |      |      |
| B2, 2-3/8" | 2815 / 0 | 1816 / 0 |      |      |

### Load Summary

| Tag | Description | Load Type         | Ref. | Start    | End      | Loc. | Live<br>1.00 | Dead<br>0.65 | Snow<br>1.00 | Wind<br>1.15 | Tributary |
|-----|-------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0   | Self-Weight | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-08-10 | Top  |              | 18           |              |              | 00-00-00  |
| 1   | User Load   | Unf. Lin. (lb/ft) | L    | 00-03-12 | 11-03-12 | Top  |              | 60           |              |              | n/a       |
| 2   | B6(i16409)  | Conc. Pt. (lbs)   | L    | 07-02-10 | 07-02-10 | Top  | 534          | 250          |              |              | n/a       |
| 3   | -           | Conc. Pt. (lbs)   | L    | 07-11-15 | 07-11-15 | Top  | 719          | 359          |              |              | n/a       |
| 4   | -           | Conc. Pt. (lbs)   | L    | 09-04-11 | 09-04-11 | Top  | 747          | 373          |              |              | n/a       |
| 5   | -           | Conc. Pt. (lbs)   | L    | 10-08-11 | 10-08-11 | Top  | 636          | 318          |              |              | n/a       |
| 6   | J1(i16388)  | Conc. Pt. (lbs)   | L    | 01-04-10 | 01-04-10 | Top  | 412          | 206          |              |              | n/a       |
| 7   | J1(i16410)  | Conc. Pt. (lbs)   | L    | 02-08-10 | 02-08-10 | Top  | 412          | 206          |              |              | n/a       |
| 8   | -           | Conc. Pt. (lbs)   | L    | 03-11-07 | 03-11-07 | Top  | 811          | 360          |              |              | n/a       |
| 9   | J1(i16361)  | Conc. Pt. (lbs)   | L    | 05-04-10 | 05-04-10 | Top  | 373          | 186          |              |              | n/a       |
| 10  | J1(i16359)  | Conc. Pt. (lbs)   | L    | 06-08-10 | 06-08-10 | Top  | 353          | 176          |              |              | n/a       |

### Controls Summary

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 18345 ft-lbs    | 55211 ft-lbs        | 33.2%             | 1    | 06-08-10 |
| End Shear             | 6204 lbs        | 21696 lbs           | 28.6%             | 1    | 10-06-06 |
| Total Load Deflection | L/651 (0.212")  | n/a                 | 36.8%             | 4    | 05-10-10 |
| Live Load Deflection  | L/1073 (0.129") | n/a                 | 33.6%             | 5    | 05-10-10 |
| Max Defl.             | 0.212"          | n/a                 | n/a               | 4    | 05-10-10 |
| Span / Depth          | 11.6            |                     |                   |      |          |

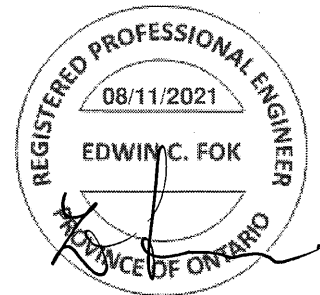
### Bearing Supports

|    | Dim. (LxW)                 | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 1-3/4" x 5-1/4" | 5159 lbs | 91.3%                     | 46.0%                    | Spruce-Pine-Fir |
| B2 | Wall/Plate 2-3/8" x 5-1/4" | 6493 lbs | 84.6%                     | 42.7%                    | Spruce-Pine-Fir |

### Notes

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

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





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

## 1st Floor - Supply/BOM\Flush Beams\B8(i16411) (Flush Beam)

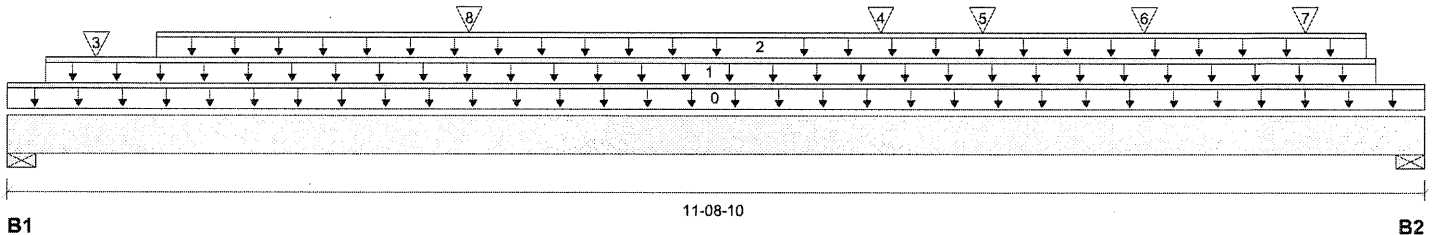
**PASSED**

 BC CALC® Member Report  
 Build 7773

Dry | 1 span | No cant.

May 18, 2021 13:10:59

 Job name: 45147(3101)  
 Address: Pine Valley  
 City, Province, Postal Code: Vaughan, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

 File name: 333169-A.mmdl  
 Description: 1st Floor - Supply/BOM\Flush Beams\B8(i16411)  
 Specifier:  
 Designer: NL  
 Company: Alpa Roof Trusses


Total Horizontal Product Length = 11-08-10

### Reaction Summary (Down / Uplift) (lbs)

| Bearing    | Live     | Dead     | Snow | Wind |
|------------|----------|----------|------|------|
| B1, 1-3/4" | 2023 / 0 | 1381 / 0 |      |      |
| B2, 2-3/8" | 2453 / 0 | 1621 / 0 |      |      |

### Load Summary

| Tag | Description   | Load Type         | Ref. | Start    | End      | Loc. | Live<br>1.00 | Dead<br>0.65 | Snow<br>1.00 | Wind<br>1.15 | Tributary |
|-----|---------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0   | Self-Weight   | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-08-10 | Top  |              | 18           |              |              | 00-00-00  |
| 1   | User Load     | Unf. Lin. (lb/ft) | L    | 00-03-12 | 11-03-12 | Top  |              | 60           |              |              | n/a       |
| 2   | Smoothed Load | Unf. Lin. (lb/ft) | L    | 01-02-12 | 11-02-13 | Top  | 210          | 105          |              |              | n/a       |
| 3   | J4(i16389)    | Conc. Pt. (lbs)   | L    | 00-08-12 | 00-08-12 | Top  | 179          | 90           |              |              | n/a       |
| 4   | B6(i16409)    | Conc. Pt. (lbs)   | L    | 07-02-10 | 07-02-10 | Top  | 538          | 252          |              |              | n/a       |
| 5   | J3(i16378)    | Conc. Pt. (lbs)   | L    | 08-00-12 | 08-00-12 | Top  | 278          | 139          |              |              | n/a       |
| 6   | J3(i16422)    | Conc. Pt. (lbs)   | L    | 09-04-12 | 09-04-12 | Top  | 325          | 162          |              |              | n/a       |
| 7   | J3(i16370)    | Conc. Pt. (lbs)   | L    | 10-08-12 | 10-08-12 | Top  | 286          | 143          |              |              | n/a       |
| 8   | User Load     | Conc. Pt. (lbs)   | L    | 03-09-12 | 03-09-12 | Top  | 720          | 270          |              |              | n/a       |

### Controls Summary

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 16342 ft-lbs    | 55211 ft-lbs        | 29.6%             | 1    | 06-08-12 |
| End Shear             | 5461 lbs        | 21696 lbs           | 25.2%             | 1    | 10-06-06 |
| Total Load Deflection | L/724 (0.191")  | n/a                 | 33.2%             | 4    | 05-11-12 |
| Live Load Deflection  | L/999 (0.115")  | n/a                 | n/a               | 5    | 05-11-12 |
| Max Defl.             | 0.191"          | n/a                 | n/a               | 4    | 05-11-12 |
| Span / Depth          | 11.6            |                     |                   |      |          |

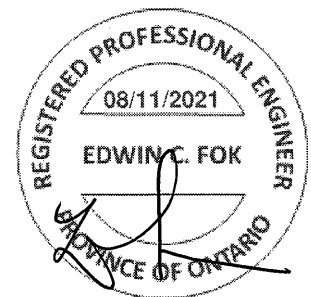
### Bearing Supports

|    | Dim. (LxW)                 | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 1-3/4" x 5-1/4" | 4760 lbs | 84.2%                     | 42.5%                    | Spruce-Pine-Fir |
| B2 | Wall/Plate 2-3/8" x 5-1/4" | 5705 lbs | 74.4%                     | 37.5%                    | 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: 00-09-08.

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



SG033154



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

## 1st Floor - Supply/BOM\Flush Beams\B12(i16550) (Flush Beam)

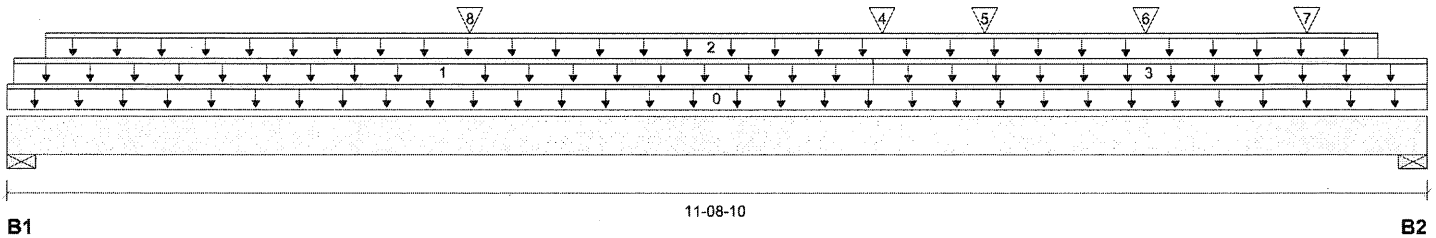
**PASSED**

 BC CALC® Member Report  
 Build 7773

Dry | 1 span | No cant.

May 18, 2021 14:16:03

 Job name: 45147(3101)  
 Address: Pine Valley  
 City, Province, Postal Code: Vaughan, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

 File name: 333169-FOYER(-1R).mmdl  
 Description: 1st Floor - Supply/BOM\Flush Beams\B12(i16550)  
 Specifier:  
 Designer: NL  
 Company: Alpa Roof Trusses


Total Horizontal Product Length = 11-08-10

### Reaction Summary (Down / Uplift) (lbs)

| Bearing    | Live     | Dead     | Snow | Wind |
|------------|----------|----------|------|------|
| B1, 1-3/4" | 910 / 0  | 789 / 0  |      |      |
| B2, 2-3/8" | 1350 / 0 | 1036 / 0 |      |      |

### Load Summary

| Tag | Description                        | Load Type         | Ref. | Start    | End      | Loc. | Live<br>1.00 | Dead<br>0.65 | Snow<br>1.00 | Wind<br>1.15 | Tributary |
|-----|------------------------------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0   | Self-Weight                        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-08-10 | Top  |              | 12           |              |              | 00-00-00  |
| 1   | FC2 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L    | 00-00-10 | 07-01-12 | Top  | 9            | 4            |              |              | n/a       |
| 2   | User Load                          | Unf. Lin. (lb/ft) | L    | 00-03-12 | 11-03-12 | Top  |              | 60           |              |              | n/a       |
| 3   | FC2 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L    | 07-01-12 | 11-08-10 | Top  | 6            |              |              |              | n/a       |
| 4   | B6(i16409)                         | Conc. Pt. (lbs)   | L    | 07-02-10 | 07-02-10 | Top  | 538          | 252          |              |              | n/a       |
| 5   | J3(i16559)                         | Conc. Pt. (lbs)   | L    | 08-00-12 | 08-00-12 | Top  | 276          | 138          |              |              | n/a       |
| 6   | J3(i16558)                         | Conc. Pt. (lbs)   | L    | 09-04-12 | 09-04-12 | Top  | 330          | 165          |              |              | n/a       |
| 7   | J3(i16562)                         | Conc. Pt. (lbs)   | L    | 10-08-12 | 10-08-12 | Top  | 295          | 148          |              |              | n/a       |
| 8   | User Load                          | Conc. Pt. (lbs)   | L    | 03-09-12 | 03-09-12 | Top  | 720          | 270          |              |              | n/a       |

### Controls Summary

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 9294 ft-lbs     | 35392 ft-lbs        | 26.3%             | 1    | 07-02-10 |
| End Shear             | 3159 lbs        | 14464 lbs           | 21.8%             | 1    | 10-06-06 |
| Total Load Deflection | L/859 (0.161")  | n/a                 | 27.9%             | 4    | 05-10-12 |
| Live Load Deflection  | L/999 (0.091")  | n/a                 | n/a               | 5    | 05-10-12 |
| Max Defl.             | 0.161"          | n/a                 | n/a               | 4    | 05-10-12 |
| Span / Depth          | 11.6            |                     |                   |      |          |

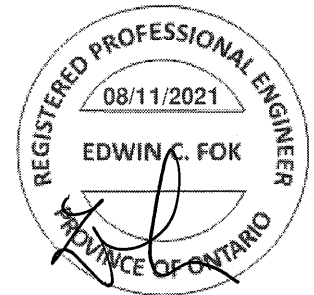
### Bearing Supports

|    | Dim. (LxW)                 | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 1-3/4" x 3-1/2" | 2351 lbs | 62.4%                     | 31.5%                    | Spruce-Pine-Fir |
| B2 | Wall/Plate 2-3/8" x 3-1/2" | 3320 lbs | 64.9%                     | 32.7%                    | Spruce-Pine-Fir |

### Notes

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

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



SG033158



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor - Supply/BOM\Flush Beams\B13(i16552) (Flush Beam)

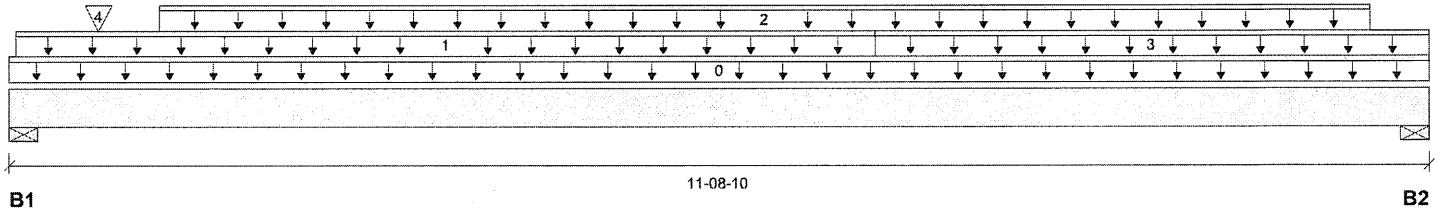
**PASSED**

 BC CALC® Member Report  
 Build 7773

Dry | 1 span | No cant.

May 18, 2021 14:16:03

 Job name: 45147(3101)  
 Address: Pine Valley  
 City, Province, Postal Code: Vaughan, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

 File name: 333169-FOYER(-1R).mmdl  
 Description: 1st Floor - Supply/BOM\Flush Beams\B13(i16552)  
 Specifier:  
 Designer: NL  
 Company: Alpa Roof Trusses


Total Horizontal Product Length = 11-08-10

## Reaction Summary (Down / Uplift) (lbs)

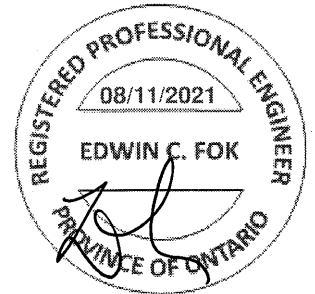
| Bearing    | Live     | Dead    | Snow | Wind |
|------------|----------|---------|------|------|
| B1, 1-3/4" | 1133 / 0 | 639 / 0 |      |      |
| B2, 2-3/8" | 1119 / 0 | 632 / 0 |      |      |

## Load Summary

| Tag | Description                        | Load Type         | Ref. | Start    | End      | Loc. | Live<br>1.00 | Dead<br>0.65 | Snow<br>1.00 | Wind<br>1.15 | Tributary |
|-----|------------------------------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0   | Self-Weight                        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-08-10 | Top  |              | 12           |              |              | 00-00-00  |
| 1   | FC2 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L    | 00-00-10 | 07-01-12 | Top  | 9            | 4            |              |              | n/a       |
| 2   | Smoothed Load                      | Unf. Lin. (lb/ft) | L    | 01-02-12 | 11-02-13 | Top  | 200          | 100          |              |              | n/a       |
| 3   | FC2 Floor Decking (Plan View Fill) | Unf. Lin. (lb/ft) | L    | 07-01-12 | 11-08-10 | Top  | 6            | 3            |              |              | n/a       |
| 4   | J4(i16539)                         | Conc. Pt. (lbs)   | L    | 00-08-12 | 00-08-12 | Top  | 167          | 84           |              |              | n/a       |

## Controls Summary

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 7545 ft-lbs     | 35392 ft-lbs        | 21.3%             | 1    | 05-08-12 |
| End Shear             | 2347 lbs        | 14464 lbs           | 16.2%             | 1    | 10-06-06 |
| Total Load Deflection | L/1064 (0.13")  | n/a                 | 22.6%             | 4    | 05-08-12 |
| Live Load Deflection  | L/999 (0.083")  | n/a                 | n/a               | 5    | 05-08-12 |
| Max Defl.             | 0.13"           | n/a                 | n/a               | 4    | 05-08-12 |
| Span / Depth          | 11.6            |                     |                   |      |          |



| Bearing Supports | Dim. (LxW)                 | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|------------------|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1               | Wall/Plate 1-3/4" x 3-1/2" | 2498 lbs | 66.3%                     | 33.4%                    | Spruce-Pine-Fir |
| B2               | Wall/Plate 2-3/8" x 3-1/2" | 2469 lbs | 48.3%                     | 24.3%                    | Spruce-Pine-Fir |

## Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 9  
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-09-09.

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

SG033159

## 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<br>On centre spacing |         |         |         | 1/2 in. gypsum ceiling<br>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<br>On centre spacing |         |         |         | Mid-span blocking and 1/2 in. gypsum ceiling<br>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:

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

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

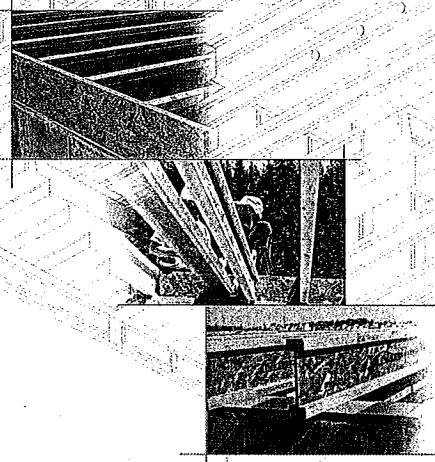
Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

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 unheated 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.

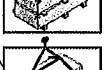
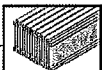
#### Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-briding 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-briding.
4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
5. Never install a damaged I-joist.

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

### STORAGE AND HANDLING GUIDELINES

1. Bundle wrap 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 flammable.
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.

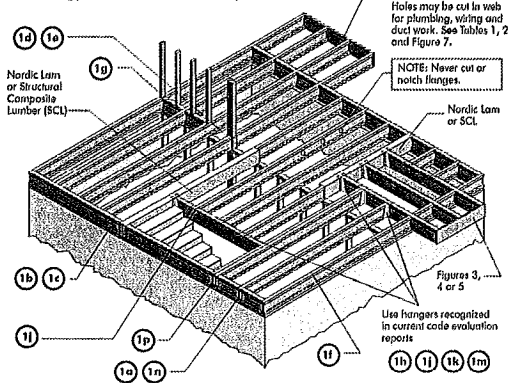


### INSTALLING NORDIC I-JOISTS

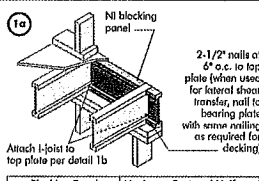
1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true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

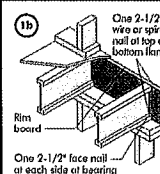


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.125" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for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



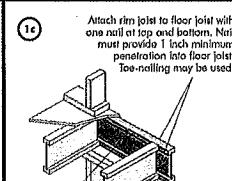
| Blocking Panel or Rim Joist | Maximum Factored Uniform Vertical Load* (plf) |
|-----------------------------|-----------------------------------------------|
| Ni Joists                   | 3,300                                         |

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



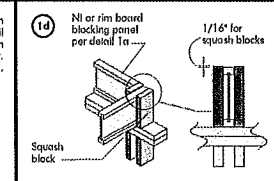
| Blocking Panel or Rim Joist | Maximum Factored Uniform Vertical Load* (plf) |
|-----------------------------|-----------------------------------------------|
| 1-1/8" Rim Board Plus       | 8,090                                         |

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



| Blocking Panel or Rim Joist | Maximum Factored Uniform Vertical Load* (plf) |
|-----------------------------|-----------------------------------------------|
| Ni rim joist per detail 1a  | 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.

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

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## MAXIMUM FLOOR SPANS

- Maximum clear spans applicable to 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 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in 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

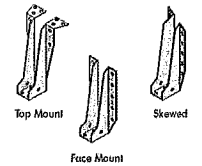
### SINGLE AND MULTIPLE SPANS

| 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.



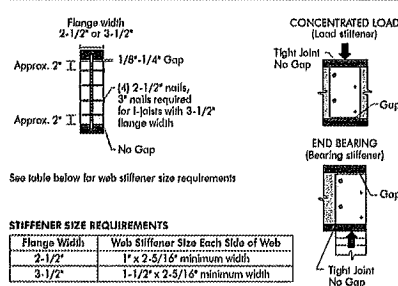
## WEB STIFFENERS

### 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

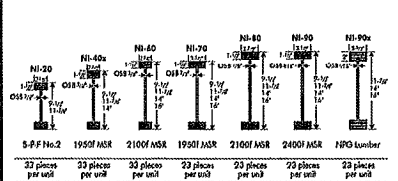
FIGURE 2  
WEB STIFFENER INSTALLATION DETAILS



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

**1e** 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 tight to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail = 1,620 lbs.

**1f** Double I-joist header

**1g** Top- or face-mount hanger

**1h** Filler block per detail 1p

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

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

**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** Attach I-joist per detail 1b

**1q** Note: Blocking required at bearing for lateral support, not shown for clarity.

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

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

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

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

**1v** One 2-1/2" nails one side only

**1w** One 2-1/2" nails at 6" o.c.

**1a** Wall sheathing, as required

**1b** Rim board may be used in lieu of I-joists. Backer is not required when rim board is used. Bracing per code shall be carried to the foundation.

**1c** Joist attachment per detail 1b

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

**1e** NI blocking panel per detail 1a

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

**1g** Filler block per detail 1p

**1h** Install hanger per manufacturer's recommendations

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

**1j** Maximum support capacity = 1,620 lbs.

**1k** Filler block

**1l** Offset nails from opposite face by 6"

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

**1n** Notes:

- Support back of I-joist web during nailing to prevent damage to web/flange connection.
- Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
- Filler block is required between joists for full length of spans.
- Not 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 I-joist using this detail is 860 lb/ft. Verify double I-joist capacity.

**1o** Filler block requirements for double I-joist construction

| Flange Size | Joist Depth | Filler Block Size |
|-------------|-------------|-------------------|
| 9-1/2"      | 11-7/8"     | 2-1/8" x 6"       |
| 11-7/8"     | 14"         | 2-1/8" x 8"       |
| 14"         | 16"         | 2-1/8" x 10"      |
| 16"         | 18"         | 2-1/8" x 12"      |
| 9-1/2"      | 11-7/8"     | 3" x 6"           |
| 11-7/8"     | 14"         | 3" x 8"           |
| 14"         | 16"         | 3" x 10"          |
| 16"         | 18"         | 3" x 12"          |
| 9-1/2"      | 11-7/8"     | 3" x 7"           |
| 11-7/8"     | 14"         | 3" x 9"           |
| 14"         | 16"         | 3" x 11"          |

**1p** NI blocking panel

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

**1r** 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

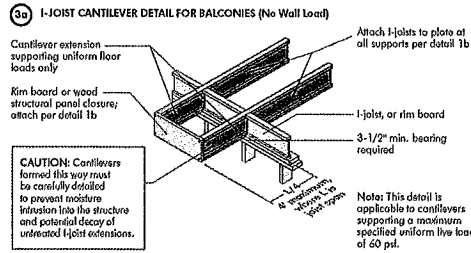
Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

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.

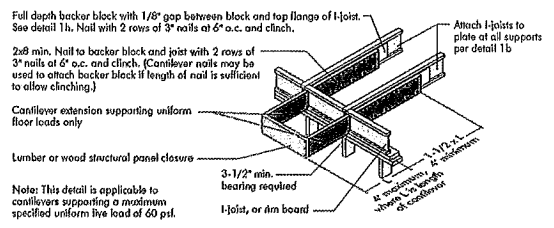
(Nordic Request 1810-095)



### CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)



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



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

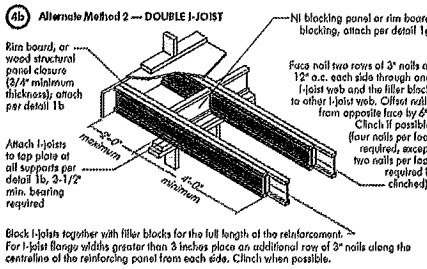
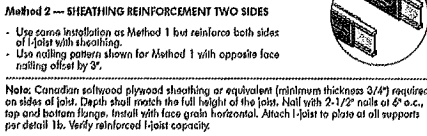
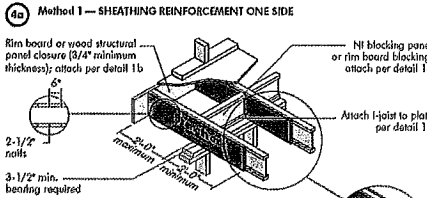


FIGURE 4 (continued)



### 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  | 1    | 2  | N                        | 1  | 2    | X  | N                        | 2  | X    | X  |
|                   | 28                   | N                         | N  | 1    | X  | N                        | 1  | 2    | X  | N                        | 2  | X    | X  |
|                   | 30                   | N                         | 1  | 1    | X  | N                        | 1  | 2    | X  | N                        | 2  | X    | X  |
|                   | 32                   | N                         | 1  | 2    | X  | N                        | 2  | X    | X  | N                        | 2  | X    | X  |
|                   | 34                   | N                         | 1  | 2    | X  | N                        | 2  | X    | X  | N                        | 2  | X    | X  |
|                   | 36                   | N                         | 1  | 2    | X  | N                        | 2  | X    | X  | N                        | 2  | X    | X  |
|                   | 26                   | 1                         | N  | N    | 1  | 1                        | N  | 1    | 2  | 2                        | N  | 1    | 2  |
|                   | 28                   | N                         | N  | N    | 1  | 2                        | N  | 1    | 2  | X                        | 1  | 2    | X  |
|                   | 30                   | N                         | N  | N    | 1  | 2                        | N  | 1    | 2  | X                        | 1  | 2    | X  |
|                   | 32                   | 2                         | N  | 1    | 2  | 2                        | N  | 1    | 2  | X                        | 2  | 2    | X  |
| 11-7/8            | 34                   | 1                         | N  | 1    | 2  | X                        | 1  | 2    | X  | X                        | 1  | 2    | X  |
|                   | 36                   | 2                         | N  | 1    | 2  | X                        | 1  | 2    | X  | X                        | 2  | X    | X  |
|                   | 26                   | N                         | N  | N    | N  | N                        | N  | 1    | 1  | N                        | N  | N    | 1  |
|                   | 28                   | N                         | N  | N    | N  | N                        | N  | 1    | 1  | N                        | N  | N    | 1  |
|                   | 30                   | N                         | N  | N    | N  | N                        | N  | 1    | 1  | N                        | N  | N    | 1  |
| 14                | 32                   | N                         | N  | N    | 1  | 1                        | N  | N    | 1  | N                        | N  | 1    | 2  |
|                   | 34                   | N                         | N  | N    | 1  | 1                        | N  | N    | 1  | N                        | N  | 1    | 2  |
|                   | 36                   | N                         | N  | N    | 1  | 1                        | N  | N    | 1  | 2                        | N  | 1    | 2  |
|                   | 38                   | N                         | N  | N    | 1  | 1                        | N  | N    | 1  | 2                        | N  | 1    | 2  |
|                   | 40                   | N                         | N  | N    | 1  | 1                        | N  | N    | 1  | 2                        | N  | 1    | 2  |
|                   | 26                   | N                         | N  | N    | N  | N                        | N  | 1    | 1  | N                        | N  | N    | 1  |
|                   | 28                   | N                         | N  | N    | N  | N                        | N  | 1    | 1  | N                        | N  | N    | 1  |
|                   | 30                   | N                         | N  | N    | N  | N                        | N  | 1    | 1  | N                        | N  | N    | 1  |
|                   | 32                   | N                         | N  | N    | N  | N                        | N  | 1    | 1  | N                        | N  | N    | 1  |
|                   | 34                   | N                         | N  | N    | N  | N                        | N  | 1    | 1  | N                        | N  | N    | 1  |
| 16                | 36                   | N                         | N  | N    | 1  | 1                        | N  | N    | 1  | N                        | N  | 1    | 2  |
|                   | 38                   | N                         | N  | N    | 1  | 1                        | N  | N    | 1  | N                        | N  | 1    | 2  |
|                   | 40                   | N                         | N  | N    | 1  | 1                        | N  | N    | 1  | N                        | N  | 1    | 2  |
|                   | 42                   | N                         | N  | N    | 1  | 1                        | N  | N    | 1  | N                        | N  | 1    | 2  |
|                   | 44                   | N                         | N  | N    | 1  | 1                        | N  | N    | 1  | 2                        | N  | N    | 1  |

- N = No reinforcement required.
- 1 = NI reinforced with 3/4" wood structural panel on one side only.
- 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
- X = Try a deeper joist or closer spacing.
- Maximum design load shall be 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
- For larger openings, or multiple 3'-0" wide openings spaced less than 6'-0" o.c., additional joints beneath the opening's cripple studs may be required.
- Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
- For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
- Cantilevered joints supporting glider trusses or roof beams may require additional reinforcing.

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

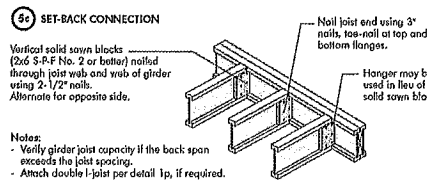
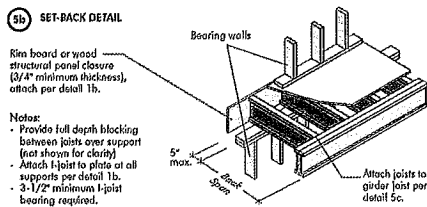
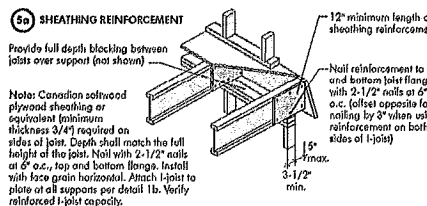
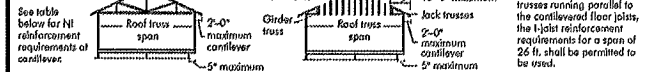


FIGURE 5 (continued)



### BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

| Joint Depth (in.) | Roof Truss Span (ft) | ROOF LOADING (UNFACTORED) |    |      |    |    |    |      |    |                          |    |      |    |    |    |      |    |
|-------------------|----------------------|---------------------------|----|------|----|----|----|------|----|--------------------------|----|------|----|----|----|------|----|
|                   |                      | LL = 30 psf, DL = 15 psf  |    |      |    |    |    |      |    | LL = 50 psf, DL = 15 psf |    |      |    |    |    |      |    |
|                   |                      | Joint Spacing (in.)       |    |      |    |    |    |      |    | Joint Spacing (in.)      |    |      |    |    |    |      |    |
|                   |                      | 12                        | 16 | 19.2 | 24 | 12 | 16 | 19.2 | 24 | 12                       | 16 | 19.2 | 24 | 12 | 16 | 19.2 | 24 |
| 9-1/2             | 26                   | 1                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 28                   | 1                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 30                   | 1                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 32                   | 2                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 34                   | 2                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 36                   | 2                         | X  | X    | X  | X  | X  | X    | X  | X                        | X  | X    | X  | X  | X  | X    | X  |
|                   | 26                   | X                         | 2  | X    | X  | X  | X  | X    | X  | X                        | X  | X    | X  | X  | X  | X    | X  |
|                   | 28                   | X                         | 2  | X    | X  | X  | X  | X    | X  | X                        | X  | X    | X  | X  | X  | X    | X  |
|                   | 30                   | X                         | 2  | X    | X  | X  | X  | X    | X  | X                        | X  | X    | X  | X  | X  | X    | X  |
|                   | 32                   | X                         | 2  | X    | X  | X  | X  | X    | X  | X                        | X  | X    | X  | X  | X  | X    | X  |
| 11-7/8            | 34                   | X                         | X  | X    | X  | 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  | X  | X  | X    | X  |
|                   | 38                   | X                         | X  | X    | X  | X  | X  | X    | X  | X                        | X  | X    | X  | X  | X  | X    | X  |
|                   | 40                   | X                         | X  | X    | X  | X  | X  | X    | X  | X                        | X  | X    | X  | X  | X  | X    | X  |
|                   | 42                   | X                         | X  | X    | X  | 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  | 1  | X  | X    | X  |
|                   | 28                   | H                         | 2  | X    | X  | 1  | X  | X    | X  | 1                        | X  | X    | X  | 1  | X  | X    | X  |
|                   | 30                   | 1                         | 2  | X    | X  | 1  | 1  | X    | X  | 1                        | 1  | X    | X  | 2  | X  | X    | X  |
|                   | 32                   | 1                         | X  | X    | X  | 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  | 2  | X  | X    | X  |
|                   | 36                   | 1                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 38                   | 1                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 40                   | 1                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 42                   | 2                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 44                   | 2                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
| 16                | 26                   | 2                         | 2  | X    | X  | 1  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 28                   | 1                         | 2  | X    | X  | 1  | 1  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 30                   | 1                         | X  | X    | X  | 1  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 32                   | 1                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 34                   | 1                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 36                   | 1                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 38                   | 1                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 40                   | 2                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 42                   | 2                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |
|                   | 44                   | 2                         | X  | X    | X  | 2  | X  | X    | X  | 2                        | X  | X    | X  | 2  | X  | X    | X  |

- N = No reinforcement required.
- 1 = NI reinforced with 3/4" wood structural panel on one side only.
- 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
- X = Try a deeper joist or closer spacing.
- Maximum design load shall be 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
- For larger openings, or multiple 3'-0" wide openings spaced less than 6'-0" o.c., additional joints beneath the opening's cripple studs may be required.
- Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
- For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
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## WEB HOLES

### RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

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

| 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:

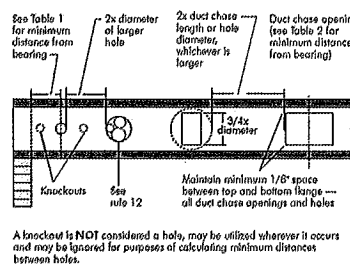
$$\text{Reduced } D = \frac{\text{Actual Span}}{\text{Maximum Span}} \times D$$

Where:

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

If 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.

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

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

| Joist Depth | Joist Series | Minimum distance from inside face of any support to centre of opening (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, consult your local distributor.  
4. Distances are based on uniform loaded joist joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/400. For other applications, consult your local distributor.

## INSTALLING THE GLUED FLOOR SYSTEM

1. Wipe any mud, dirt, water, or ice from I-Joist flanges before gluing.
2. Snap a chalk line across the I-joists four feet from the wall for panel edge alignment and as a boundary for spreading glue.
3. Spread only enough glue to lay one or two panels at a time, or follow specific recommendations from the glue manufacturer.
4. Lay the first panel with tongue side to the wall, and nail in place. This protects the tongue of the next panel from damage when tapped into place with a block and sledgehammer.
5. Apply a continuous line of glue (about 1/4-inch diameter) to the top flange of a single I-joist. Apply glue in a wavy pattern on wide areas, such as with double I-joists.
6. Apply two lines of glue on I-joists where panel ends butt to assure proper gluing of each end.
7. After the first row of panels is in place, spread glue in the groove of one or two panels at a time before laying the next row. Glue line may be continuous or spaced, but avoid squeeze-out by applying a thinner line (1/8 inch) than used on I-joist flanges.
8. Tap the second row of panels into place, using a block to protect groove edges.
9. Stagger 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 1/2" common nail to assure accurate and consistent spacing.)
10. Complete all nailing of each panel before glue sets. Check the manufacturer's recommendations for cure time. (Warm weather accelerates glue setting.) Use 2" ring- or screw-shank nails for panels 3/4-inch thick or less, and 2-1/2" ring- or screw-shank nails for thicker panels. Space nails per the table below. Closer nail spacing may be required by some codes, or for diaphragm construction. The finished deck can be walked on right away and will carry construction loads without damage to the glue bond.

### FASTENERS FOR SHEATHING AND SUBFLOORING<sup>(1)</sup>

| 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"               |

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

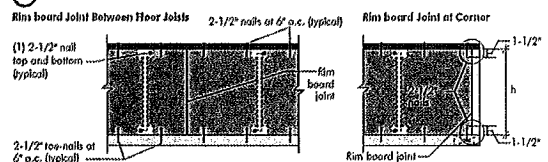
Ref.: NBC-CNBC, National Building Code of Canada 2010, Table 9.23.3.5.

### IMPORTANT NOTE:

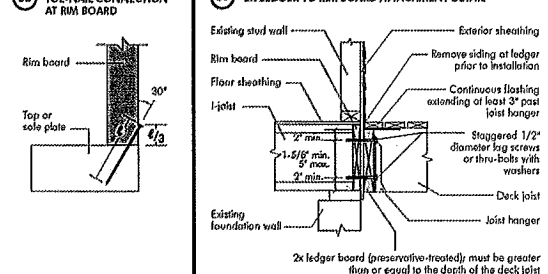
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

## RIM BOARD INSTALLATION DETAILS

### (a) ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



### (b) TOE-NAIL CONNECTION AT RIM BOARD



**DIAMANTIER**

**PRODUCT WARRANTY**

Chantier Diamantier warrants that, in accordance with our specifications, Nordic products are free from manufacturing defect in material and workmanship.

Furthermore, Chantier Diamantier warrants that our products, when installed 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.

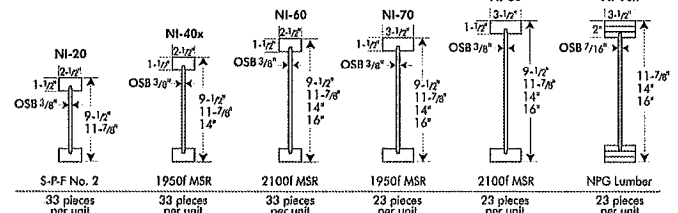
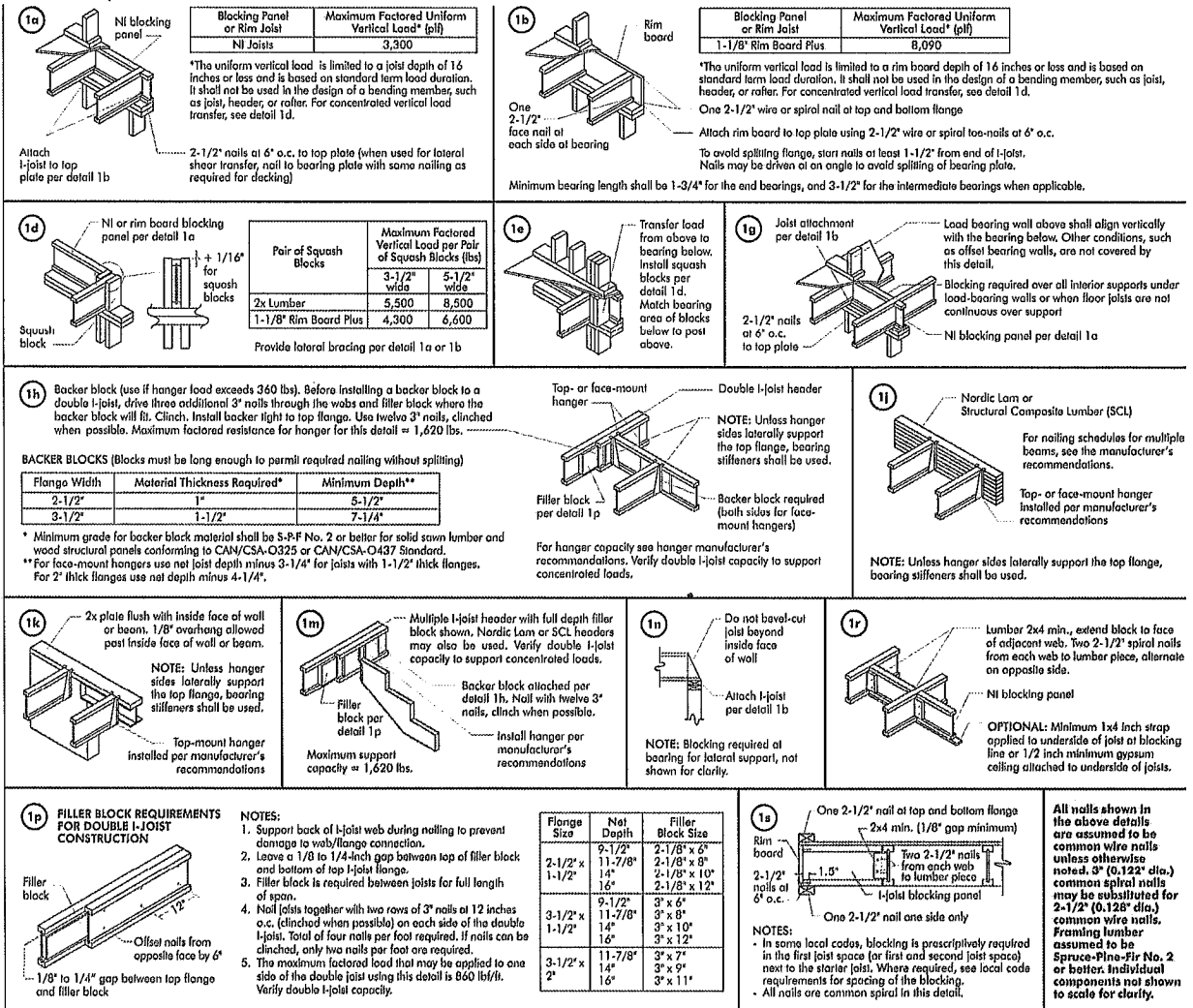


TABLE 1

## 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" | 11-4" | ---   | ---    | ---   | ---   | ---    |
|             | 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"  | 6-0"  | 6-6"  | 8-3"  | 10-2"  | ---   | ---   | ---    |
|             | NI-60        | 0-7"                                                                          | 0-8"  | 1-0"  | 2-4"  | 3-8"  | 4-0"  | 5-0" | 6-6"  | 7-9"  | 10-4" | 11-9" | 13-4"  | ---   | ---   | ---    |
|             | 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" | 6-5"  | 8-4"  | 9-0"  | 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"  | 6-6"  | 6-6" | 8-0"  | 9-0"  | 9-5"  | 11-0" | 12-3"  | 12-9" | 14-5" | 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" | ---   | ---    |



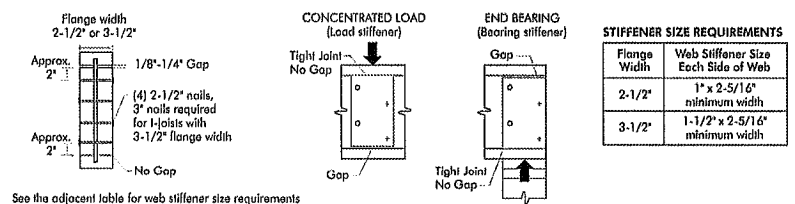
## WEB STIFFENERS

## 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.

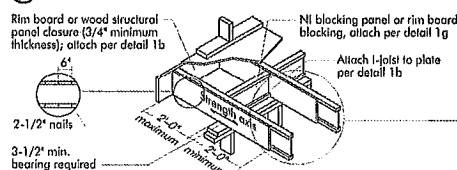
FIGURE 2

## WEB STIFFENER INSTALLATION DETAILS



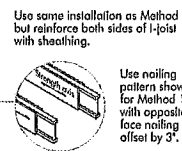
## CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

## Method 1 — SHEATHING REINFORCEMENT ONE SIDE



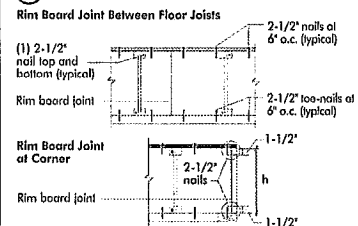
NOTE: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per detail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

## Method 2 — SHEATHING REINFORCEMENT TWO SIDES

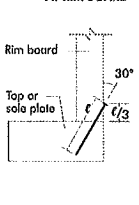


## RIM BOARD INSTALLATION DETAILS

## 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.

