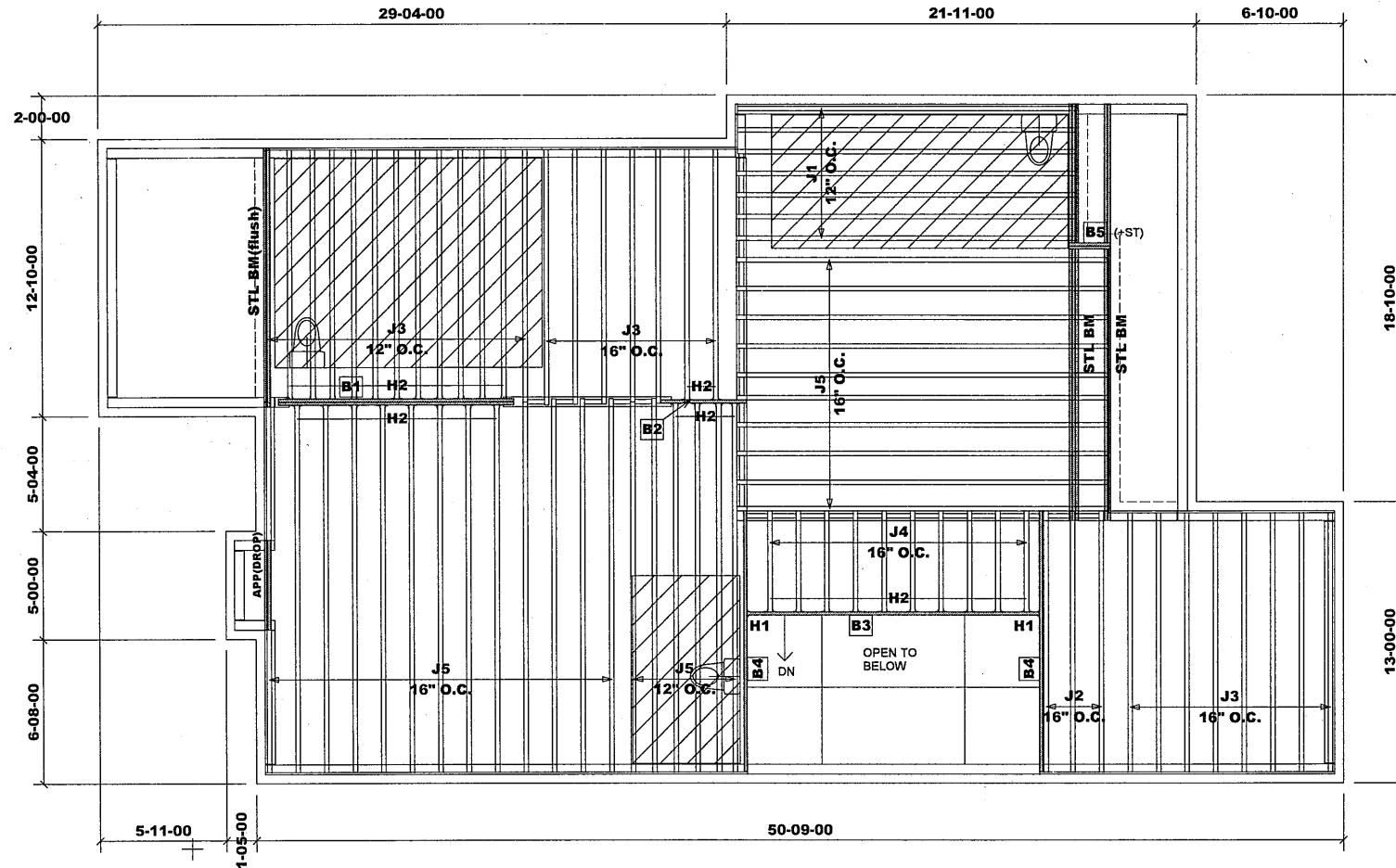




MODEL: 4007( SUNCREST)- EL.A

### Second Floor Framing

Do not scale - refer to architectural plans for dimensions

| Products |           |                                         |       |         |          |
|----------|-----------|-----------------------------------------|-------|---------|----------|
| PlotID   | Length    | Product                                 | Piles | Net Qty | Fab Type |
| J1       | 16-00-00  | 11 7/8" NI-20                           | 1     | 7       | MFD      |
| J2       | 13-00-00  | 11 7/8" NI-20                           | 1     | 3       | MFD      |
| J3       | 12-00-00  | 11 7/8" NI-20                           | 1     | 28      | MFD      |
| J4       | 5-00-00   | 11 7/8" NI-20                           | 1     | 10      | MFD      |
| J5       | 18-00-00  | 11 7/8" NI-40x                          | 1     | 29      | MFD      |
| B3       | 14-00-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 1     | 1       | MFD      |
| B4       | 13-00-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 1     | 2       | MFD      |
| B1       | 11-00-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2     | 2       | MFD      |
| B2       | 4-00-00   | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 1     | 1       | MFD      |
| B5       | 2-00-00   | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2     | 2       | MFD      |
| Ca1      | 146-00-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       | FF       |
| Bk1      | 32-00-00  | 11 7/8" NI-20                           | 1     | 1       | FF       |

| Connector Summary |     |       |            |
|-------------------|-----|-------|------------|
| PlotID            | Qty | Manuf | Product    |
| H1                | 2   |       | HUS1.81/10 |
| H2                | 35  |       | LT251188   |

#### RIMBOARD

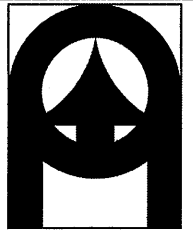
1- 1/8" X 11 7/8" O.S.B.

SUBFLOOR - 3/4" GLUE & NAILED

APP - AS PER PLAN  
BBO - BEAM BY OTHERS

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

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



LUMBER DEALER:  
**HOME LUMBER**  
SALES REPRESENTATIVE:  
**Derek**  
DATE:  
February 3, 2020

4007(SUNCREST)

Gold Park

Pine Valley

LOCATION:  
DRAWN BY:  
NL  
Vaughan

#### REVISIONS:

|   |  |
|---|--|
| 1 |  |
| 2 |  |
| 3 |  |

#### LEGEND:

|      |            |
|------|------------|
| J#   | Joist Mark |
| B#   | Beam Mark  |
| Ca # | Rimboard   |
| Bk # | Blocking   |

JT / PL 45147/105350

LI 316864

#### LOADING

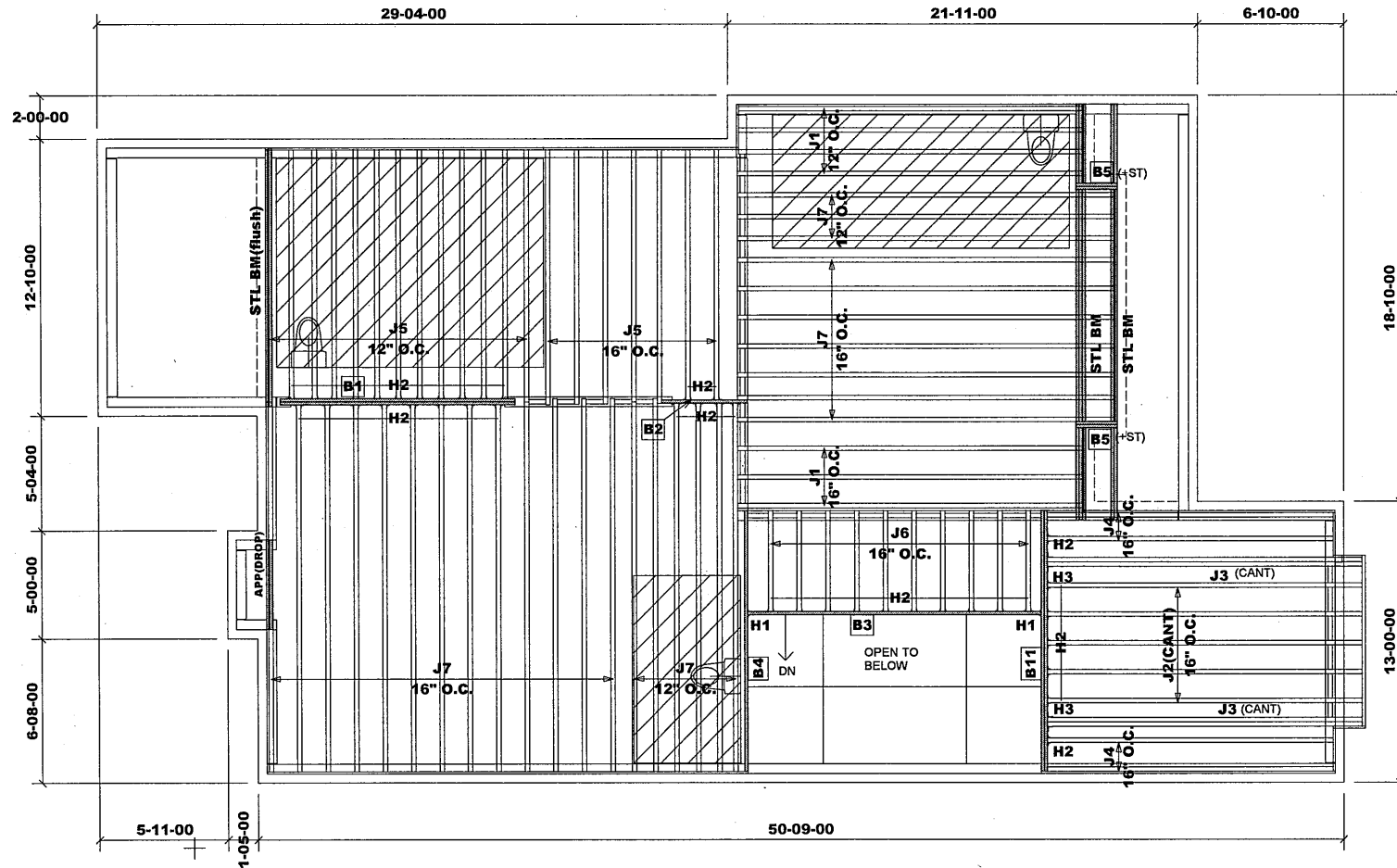
Live 40 psf dead 15 psf

#### DEFLECTION CRITERIA

Live: L/360 Total L/240

1 OF 6

SE007525 - SE007536



MODEL: 4007( SUNCREST)- EL.B

## Second Floor Framing

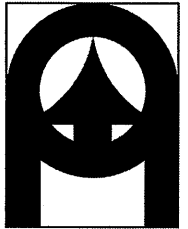
Do not scale - refer to architectural plans for dimensions

| Products |             |                                         |       |         |          |
|----------|-------------|-----------------------------------------|-------|---------|----------|
| PlotID   | Length      | Product                                 | Plies | Net Qty | Fab Type |
| J1       | 17'-00"-00  | 11 7/8" NI-20                           | 1     | 7       | MFD      |
| J2       | 15'-00"-00  | 11 7/8" NI-20                           | 1     | 5       | MFD      |
| J3       | 15'-00"-00  | 11 7/8" NI-20                           | 2     | 4       | MFD      |
| J4       | 14'-00"-00  | 11 7/8" NI-20                           | 1     | 4       | MFD      |
| J5       | 12'-00"-00  | 11 7/8" NI-20                           | 1     | 20      | MFD      |
| J6       | 5'-00"-00   | 11 7/8" NI-20                           | 1     | 10      | MFD      |
| J7       | 18'-00"-00  | 11 7/8" NI-40x                          | 1     | 29      | MFD      |
| B3       | 14'-00"-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 1     | 1       | MFD      |
| B4       | 13'-00"-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 1     | 1       | MFD      |
| B11      | 13'-00"-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2     | 2       | MFD      |
| B1       | 11'-00"-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2     | 2       | MFD      |
| B2       | 4'-00"-00   | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 1     | 1       | MFD      |
| B5       | 2'-00"-00   | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2     | 4       | MFD      |
| Ca1      | 8'-00"-00   | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 1     | 1       | FF       |
| Ca2      | 144'-00"-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       | FF       |
| Bk1      | 36'-00"-00  | 11 7/8" NI-20                           | 1     | 1       | FF       |

| Connector Summary |     |       |             |
|-------------------|-----|-------|-------------|
| PlotID            | Qty | Manuf | Product     |
| H1                | 2   |       | HUS1.81/10  |
| H2                | 42  |       | LT251188    |
| H3                | 2   |       | MIT311.88-2 |

RIMBOARD  
1- 1/8" X 11 7/8" O.S.B.  
SUBFLOOR - 3/4" GLUE & NAILED  
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.



LUMBER DEALER:  
**HOME LUMBER**  
SALES REPRESENTATIVE:  
**Derek**  
DATE:  
February 3, 2020

4007(SUNCREST)  
**Gold Park**  
Pine Valley  
DRAWN BY:  
NL  
LOCATION:  
**Vaughan**

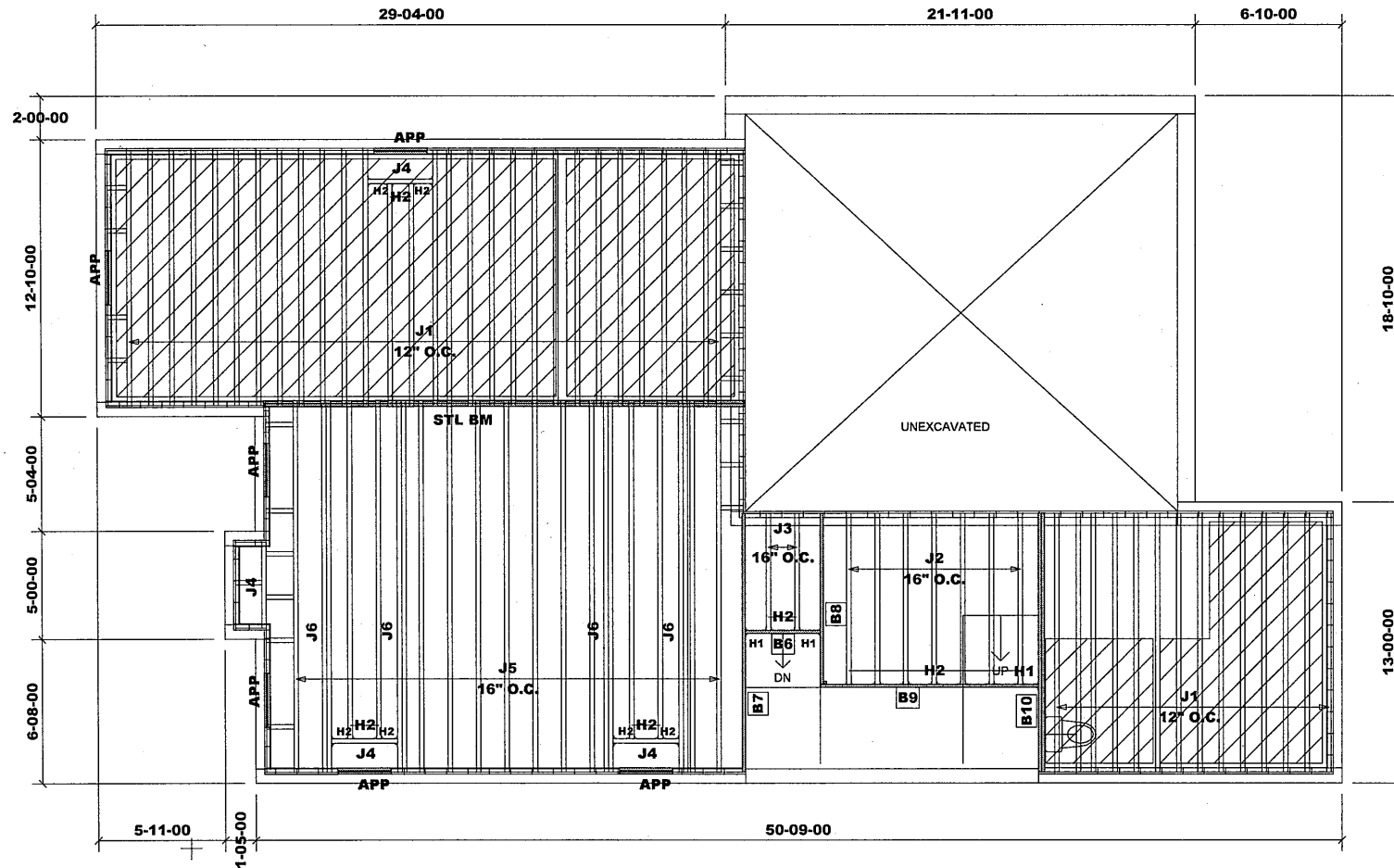
| REVISONS: |            |
|-----------|------------|
| 1         |            |
| 2         |            |
| 3         |            |
| LEGEND:   |            |
| J#        | Joist Mark |
| B#        | Beam Mark  |
| Ca #      | Rimboard   |
| Bk #      | Blocking   |

JT / PL 45147/105350  
LI 316864

LOADING  
Live 40 psf dead 15 psf

DEFLECTION CRITERIA  
Live: L/360 Total L/240

2 OF 6



MODEL: 4007( SUNCREST)- EL.A+B  
+ OPT. 9' CEILING BSMT

### First Floor Framing

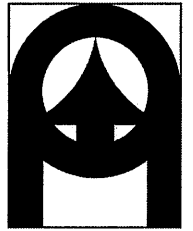
Do not scale - refer to architectural plans for dimensions

| Products |           |                                         |       |         |          |
|----------|-----------|-----------------------------------------|-------|---------|----------|
| PlotID   | Length    | Product                                 | Piles | Net Qty | Fab Type |
| J1       | 12-00-00  | 11 7/8" NI-20                           | 1     | 43      | MFD      |
| J2       | 8-00-00   | 11 7/8" NI-20                           | 1     | 7       | MFD      |
| J3       | 6-00-00   | 11 7/8" NI-20                           | 1     | 2       | MFD      |
| J4       | 4-00-00   | 11 7/8" NI-20                           | 1     | 4       | MFD      |
| J5       | 18-00-00  | 11 7/8" NI-40x                          | 1     | 14      | MFD      |
| J6       | 18-00-00  | 11 7/8" NI-40x                          | 2     | 8       | MFD      |
| B7       | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B10      | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       | MFD      |
| B9       | 11-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B8       | 8-00-00   | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B6       | 4-00-00   | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| Ca1      | 162-00-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       | FF       |
| Bk1      | 42-00-00  | 11 7/8" NI-20                           | 1     | 1       | FF       |

| Connector Summary |     |       |            |
|-------------------|-----|-------|------------|
| PlotID            | Qty | Manuf | Product    |
| H1                | 3   |       | HUS1.81/10 |
| H2                | 21  |       | LT251188   |

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

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



LUMBER DEALER:  
**HOME LUMBER**  
SALES REPRESENTATIVE:  
**Derek**  
DATE:  
February 3, 2020

4007(SUNCREST)  
**Gold Park**  
Pine Valley  
DRAWN BY:  
NL  
LOCATION:  
**Vaughan**

#### REVISIONS:

|   |  |
|---|--|
| 1 |  |
| 2 |  |
| 3 |  |

#### LEGEND:

|      |            |
|------|------------|
| J#   | Joist Mark |
| B#   | Beam Mark  |
| Ca # | Rimboard   |
| Bk # | Blocking   |

JT / PL 45147/105350

LI 316864

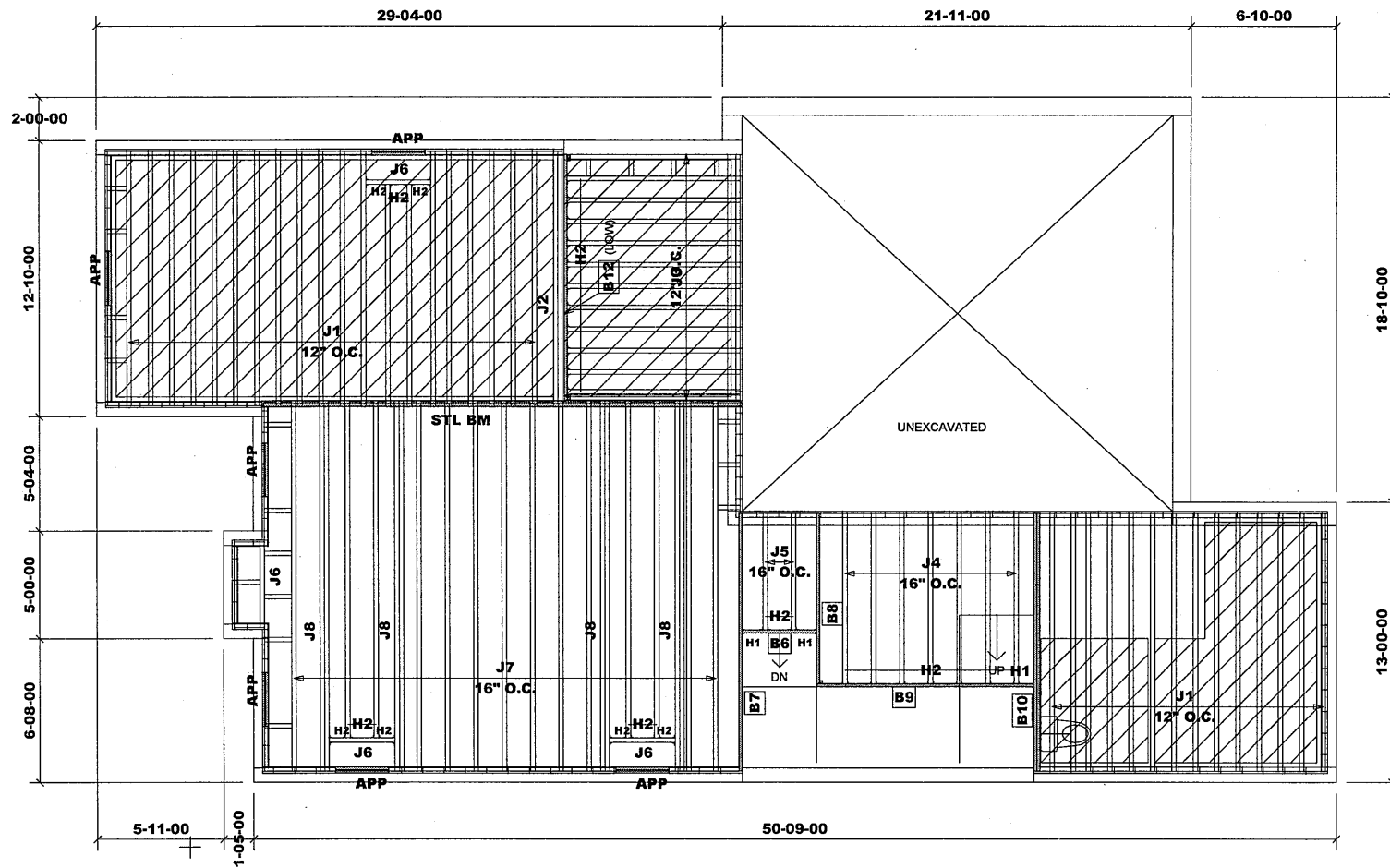
#### LOADING

Live 40 psf dead 15 psf

#### DEFLECTION CRITERIA

Live: L/360 Total L/240

3 OF 6



MODEL: 4007( SUNCREST)- EL.A+B  
+ OPT. 9' CEILING BSMT  
W/SUNKEN LAUNDRY

First Floor Framing

Do not scale - refer to architectural plans for dimensions

| Products |           |                                         |       |         |          |
|----------|-----------|-----------------------------------------|-------|---------|----------|
| PlotID   | Length    | Product                                 | Piles | Net Qty | Fab Type |
| J1       | 12-00-00  | 11 7/8" NI-20                           | 1     | 34      | MFD      |
| J2       | 12-00-00  | 11 7/8" NI-20                           | 2     | 2       | MFD      |
| J3       | 9-00-00   | 11 7/8" NI-20                           | 1     | 13      | MFD      |
| J4       | 8-00-00   | 11 7/8" NI-20                           | 1     | 7       | MFD      |
| J5       | 6-00-00   | 11 7/8" NI-20                           | 1     | 2       | MFD      |
| J6       | 4-00-00   | 11 7/8" NI-20                           | 1     | 4       | MFD      |
| J7       | 18-00-00  | 11 7/8" NI-40x                          | 1     | 14      | MFD      |
| J8       | 18-00-00  | 11 7/8" NI-40x                          | 2     | 8       | MFD      |
| B12      | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B7       | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B10      | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       | MFD      |
| B9       | 11-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B8       | 8-00-00   | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B6       | 4-00-00   | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| Ca1      | 166-00-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       | FF       |
| Bk1      | 40-00-00  | 11 7/8" NI-20                           | 1     | 1       | FF       |

| Connector Summary |     |       |            |
|-------------------|-----|-------|------------|
| PlotID            | Qty | Manuf | Product    |
| H1                | 3   |       | HUS1.81/10 |
| H2                | 32  |       | LT251188   |

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

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

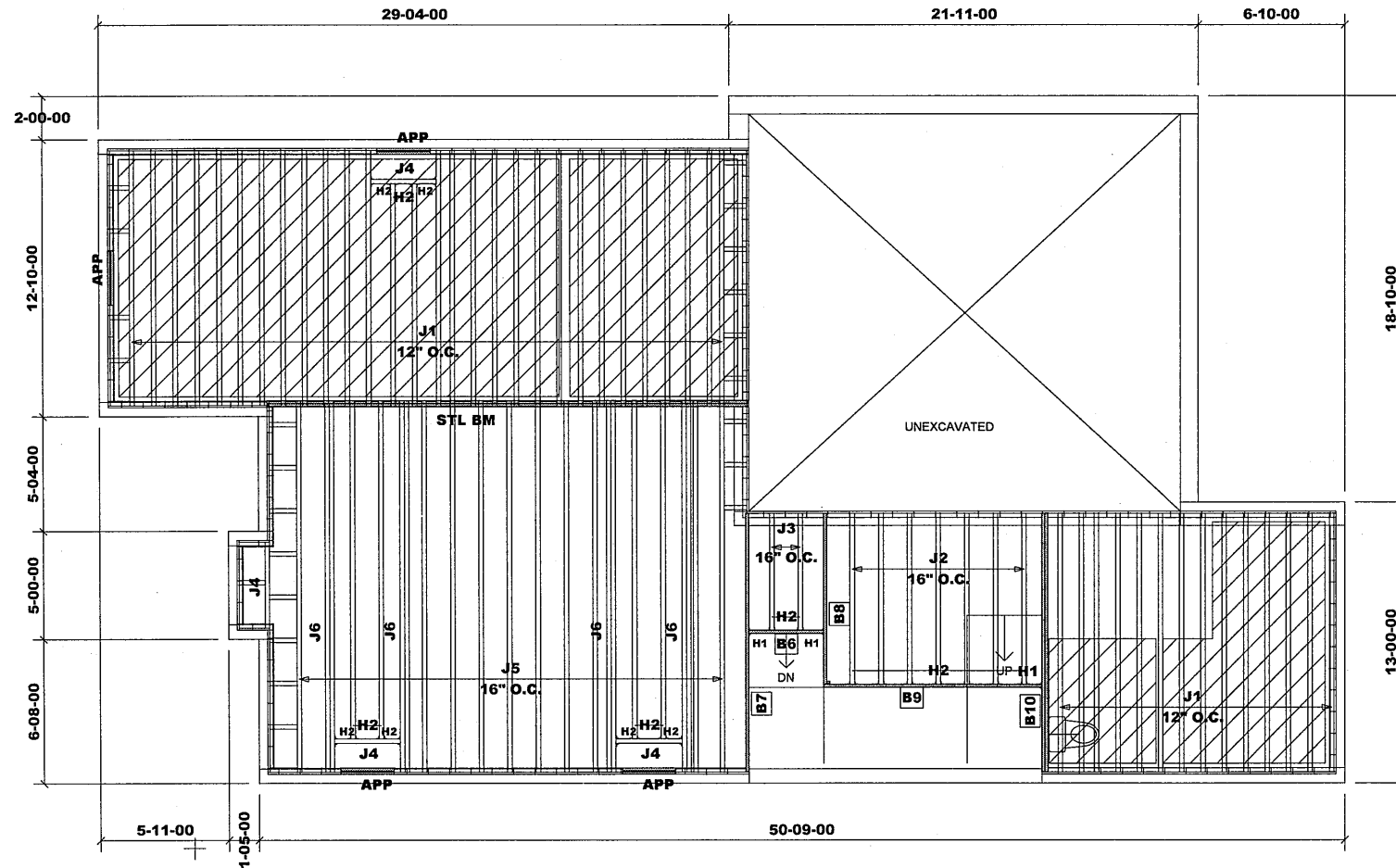


|                       |                  |
|-----------------------|------------------|
| LUMBER DEALER:        | HOME LUMBER      |
| SALES REPRESENTATIVE: | Derek            |
| DATE:                 | February 3, 2020 |

|                |           |             |           |         |
|----------------|-----------|-------------|-----------|---------|
| 4007(SUNCREST) | Gold Park | Pine Valley | LOCATION: | Vaughan |
|                |           |             | DRAWN BY: | NL      |

| REVISIONS: |            |
|------------|------------|
| 1          |            |
| 2          |            |
| 3          |            |
| LEGEND:    |            |
| J#         | Joist Mark |
| B#         | Beam Mark  |
| Ca #       | Rimboard   |
| Bk #       | Blocking   |

|                     |        |              |        |
|---------------------|--------|--------------|--------|
| JT / PL             |        | 45147/105350 |        |
| LI                  |        | 316864       |        |
| LOADING             |        |              |        |
| Live                | 40 psf | dead         | 15 psf |
| DEFLECTION CRITERIA |        |              |        |
| Live:               | L/360  | Total        | L/240  |
| 4                   | OF     | 6            |        |



MODEL: 4007( SUNCREST)- EL.A+B  
W/W.O.D. CONDITION  
+ OPT. 9' CEILING BSMT

## First Floor Framing

Do not scale - refer to architectural plans for dimensions

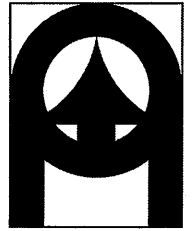
| Products |           |                                         |       |         |          |
|----------|-----------|-----------------------------------------|-------|---------|----------|
| PlotID   | Length    | Product                                 | Plies | Net Qty | Fab Type |
| J1       | 12-00-00  | 11 7/8" NI-20                           | 1     | 43      | MFD      |
| J2       | 8-00-00   | 11 7/8" NI-20                           | 1     | 7       | MFD      |
| J3       | 6-00-00   | 11 7/8" NI-20                           | 1     | 2       | MFD      |
| J4       | 4-00-00   | 11 7/8" NI-20                           | 1     | 4       | MFD      |
| J5       | 18-00-00  | 11 7/8" NI-40x                          | 1     | 14      | MFD      |
| J6       | 18-00-00  | 11 7/8" NI-40x                          | 2     | 8       | MFD      |
| B7       | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B10      | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       | MFD      |
| B9       | 11-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B8       | 8-00-00   | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B6       | 4-00-00   | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| Ca1      | 162-00-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       | FF       |
| Bk1      | 32-00-00  | 11 7/8" NI-20                           | 1     | 1       | FF       |
| Bk2      | 12-00-00  | 11 7/8" NI-20                           | 1     | 1       | FF       |

| Connector Summary |     |       |            |
|-------------------|-----|-------|------------|
| PlotID            | Qty | Manuf | Product    |
| H1                | 3   |       | HUS1.81/10 |
| H2                | 21  |       | LT251188   |

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

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

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



LUMBER DEALER:  
**HOME LUMBER**  
SALES REPRESENTATIVE:  
**Derek**  
DATE:  
February 3, 2020

4007(SUNCREST)  
**Gold Park**  
Pine Valley  
DRAWN BY:  
NL  
LOCATION:  
**Vaughan**

### REVISIONS:

|   |  |
|---|--|
| 1 |  |
| 2 |  |
| 3 |  |

### LEGEND:

|      |            |
|------|------------|
| J#   | Joist Mark |
| B#   | Beam Mark  |
| Ca # | Rimboard   |
| Bk # | Blocking   |

JT / PL 45147/105350

LI 316864

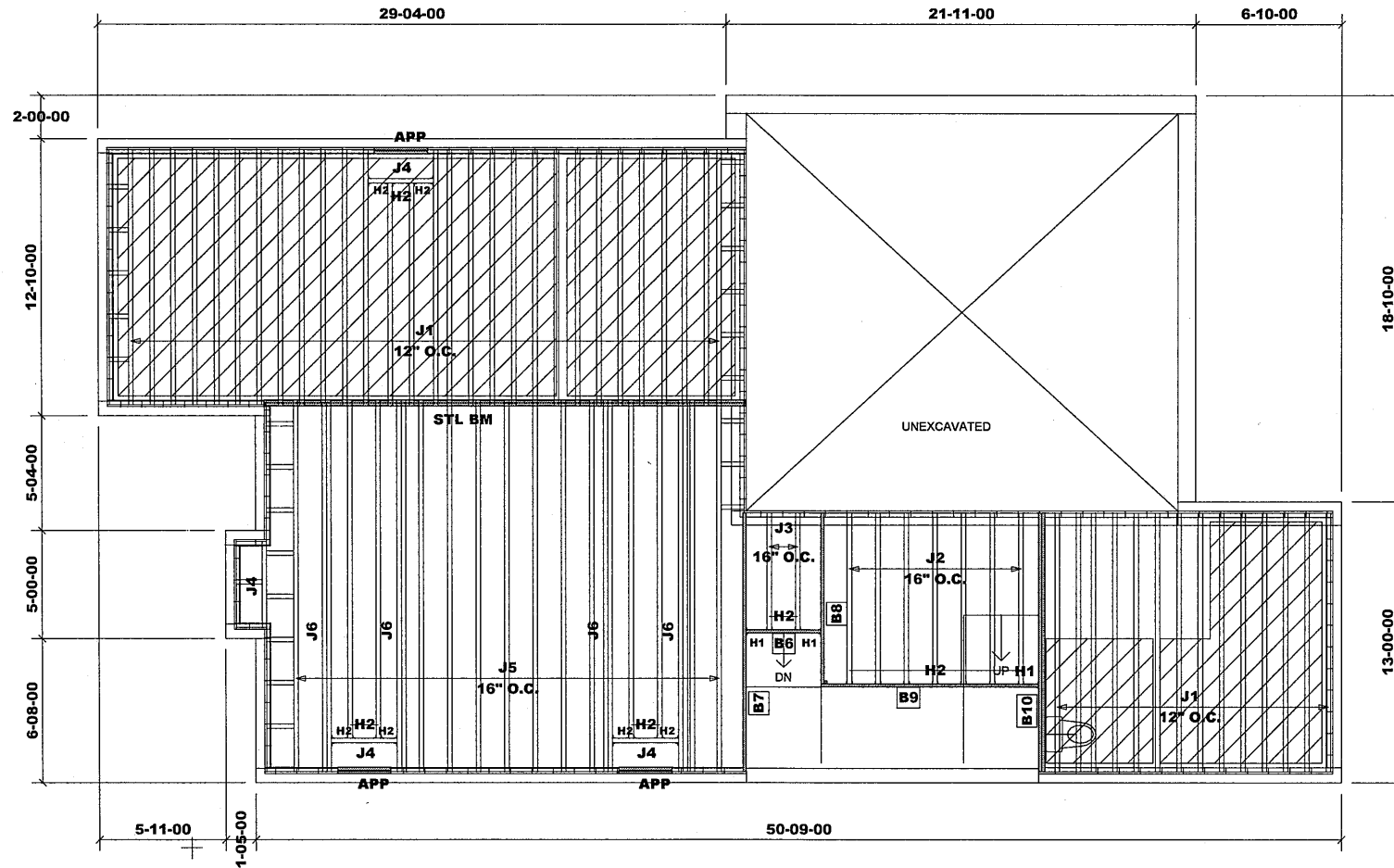
### LOADING

Live 40 psf dead 15 psf

### DEFLECTION CRITERIA

Live: L/360 Total L/240

5 OF 6



MODEL: 4007( SUNCREST)- EL.A+B  
W/L.O.D. & W.O.B. COND.  
+ OPT. 9' CEILING BSMT

First Floor Framing

Do not scale - refer to architectural plans for dimensions

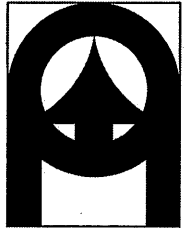
| Products |           |                                         |       |         |          |
|----------|-----------|-----------------------------------------|-------|---------|----------|
| PlotID   | Length    | Product                                 | Plies | Net Qty | Fab Type |
| J1       | 12-00-00  | 11 7/8" NI-20                           | 1     | 43      | MFD      |
| J2       | 8-00-00   | 11 7/8" NI-20                           | 1     | 7       | MFD      |
| J3       | 6-00-00   | 11 7/8" NI-20                           | 1     | 2       | MFD      |
| J4       | 4-00-00   | 11 7/8" NI-20                           | 1     | 4       | MFD      |
| J5       | 18-00-00  | 11 7/8" NI-40x                          | 1     | 14      | MFD      |
| J6       | 18-00-00  | 11 7/8" NI-40x                          | 2     | 8       | MFD      |
| B7       | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 1     | 1       | MFD      |
| B10      | 12-00-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2     | 2       | MFD      |
| B9       | 11-00-00  | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 1     | 1       | MFD      |
| B8       | 8-00-00   | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 1     | 1       | MFD      |
| B6       | 4-00-00   | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 1     | 1       | MFD      |
| Ca1      | 162-00-00 | 1 1/8" x 11 7/8" Rim Board              | 1     | 1       | FF       |
| Bk1      | 44-00-00  | 11 7/8" NI-20                           | 1     | 1       | FF       |

| Connector Summary |     |       |            |
|-------------------|-----|-------|------------|
| PlotID            | Qty | Manuf | Product    |
| H1                | 3   |       | HUS1.81/10 |
| H2                | 21  |       | LT251188   |

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

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

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



LUMBER DEALER:  
**HOME LUMBER**  
SALES REPRESENTATIVE:  
**Derek**  
DATE:  
February 3, 2020

4007(SUNCREST)  
**Gold Park**  
Pine Valley  
LOCATION:  
**Vaughan**  
DRAWN BY:  
NL

REVISIONS:

| 1       |            |
|---------|------------|
| 2       |            |
| 3       |            |
| LEGEND: |            |
| J#      | Joist Mark |
| B#      | Beam Mark  |
| Ca #    | Rimboard   |
| Bk #    | Blocking   |

JT / PL 45147/105350  
LI 316864

LOADING

Live 40 psf dead 15 psf

DEFLECTION CRITERIA

Live: L/360 Total L/240

6 OF 6



**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**2nd Floor - Supply/BOM\Flush Beams\B1(i16486) (Flush Beam)**

**PASSED**

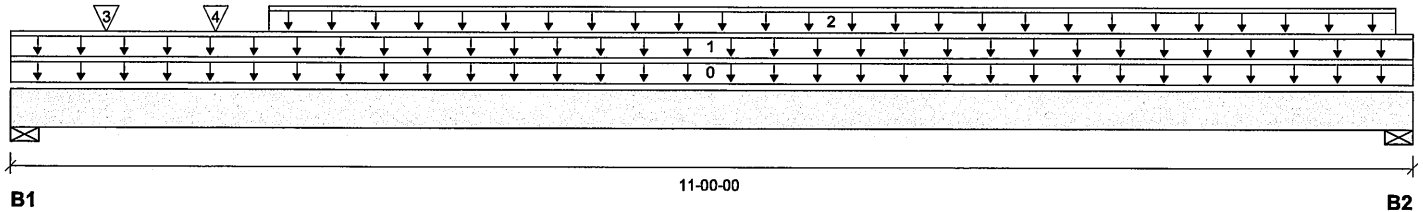
BC CALC® Member Report  
 Build 7239

Dry | 1 span | No cant.

February 3, 2020 10:15:15

Job name: 45147(4007)  
 Address: Pine Valley  
 City, Province, Postal Code: Vaughan, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File name: 316864-A1.mmdl  
 Description: 2nd Floor - Supply/BOM\Flush Beams\B1(i16486)  
 Specifier:  
 Designer: NL  
 Company: Alpa Roof Trusses



Total Horizontal Product Length = 11-00-00

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

| Bearing | Live     | Dead     | Snow | Wind |
|---------|----------|----------|------|------|
| B1, 6"  | 3064 / 0 | 1929 / 0 |      |      |
| B2, 6"  | 3100 / 0 | 1946 / 0 |      |      |

**Load Summary**

| Tag | Description   | Load Type         | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|---------------|-------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight   | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-00-00 | Top  | 1.00 | 0.65 | 1.00 | 1.15 | 00-00-00  |
| 1   | User Load     | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-00-00 | Top  |      | 60   |      |      | n/a       |
| 2   | Smoothed Load | Unf. Lin. (lb/ft) | L    | 02-00-06 | 10-10-06 | Top  | 594  | 296  |      |      | n/a       |
| 3   | -             | Conc. Pt. (lbs)   | L    | 00-09-00 | 00-09-00 | Top  | 693  | 347  |      |      | n/a       |
| 4   | J3(i16546)    | Conc. Pt. (lbs)   | L    | 01-07-06 | 01-07-06 | Top  | 231  | 115  |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 16649 ft-lbs    | 35392 ft-lbs        | 47.0%             | 1    | 05-06-06 |
| End Shear             | 5778 lbs        | 14464 lbs           | 39.9%             | 1    | 09-06-02 |
| Total Load Deflection | L/542 (0.224")  | n/a                 | 44.3%             | 4    | 05-06-06 |
| Live Load Deflection  | L/882 (0.138")  | n/a                 | 40.8%             | 5    | 05-06-06 |
| Max Defl.             | 0.224"          | n/a                 | n/a               | 4    | 05-06-06 |
| Span / Depth          | 10.2            |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)             | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 6" x 3-1/2" | 7007 lbs | 54.2%                     | 27.3%                    | Spruce-Pine-Fir |
| B2 | Wall/Plate 6" x 3-1/2" | 7082 lbs | 54.8%                     | 27.6%                    | Spruce-Pine-Fir |

**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-00-00.  
 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

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



**Disclosure**

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

SE007525

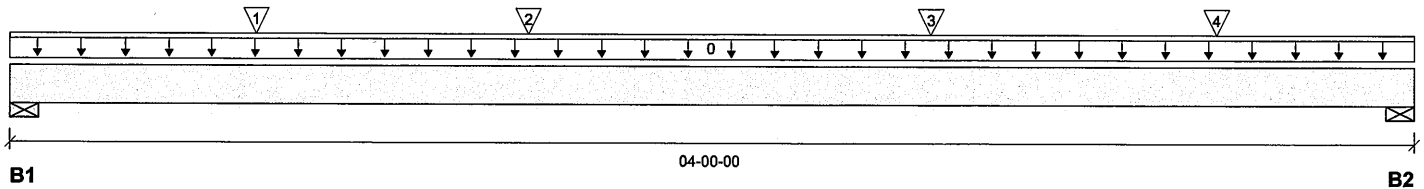
BC CALC® Member Report  
 Build 7239

Dry | 1 span | No cant.

February 3, 2020 10:15:15

Job name: 45147(4007)  
 Address: Pine Valley  
 City, Province, Postal Code: Vaughan, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File name: 316864-A1.mmdl  
 Description: 2nd Floor - Supply/BOM\Flush Beams\B2(i16493)  
 Specifier:  
 Designer: NL  
 Company: Alpa Roof Trusses



Total Horizontal Product Length = 04-00-00

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

| Bearing    | Live    | Dead    | Snow | Wind |
|------------|---------|---------|------|------|
| B1, 6"     | 950 / 0 | 487 / 0 |      |      |
| B2, 5-1/2" | 891 / 0 | 457 / 0 |      |      |

**Load Summary**

| Tag | Description | Load Type         | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|-------------|-------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight | Unf. Lin. (lb/ft) | L    | 00-00-00 | 04-00-00 | Top  | 1.00 | 0.65 | 1.00 | 1.15 | 00-00-00  |
| 1   | J5(i15748)  | Conc. Pt. (lbs)   | L    | 00-08-06 | 00-08-06 | Top  | 340  | 170  |      |      | n/a       |
| 2   | -           | Conc. Pt. (lbs)   | L    | 01-05-11 | 01-05-11 | Top  | 644  | 322  |      |      | n/a       |
| 3   | -           | Conc. Pt. (lbs)   | L    | 02-07-08 | 02-07-08 | Top  | 662  | 331  |      |      | n/a       |
| 4   | J5(i16523)  | Conc. Pt. (lbs)   | L    | 03-05-04 | 03-05-04 | Top  | 195  | 97   |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 1525 ft-lbs     | 17696 ft-lbs        | 8.6%              | 1    | 01-08-06 |
| End Shear             | 1382 lbs        | 7232 lbs            | 19.1%             | 1    | 02-06-10 |
| Total Load Deflection | L/999 (0.004")  | n/a                 | n/a               | 4    | 02-00-04 |
| Live Load Deflection  | L/999 (0.003")  | n/a                 | n/a               | 5    | 02-00-04 |
| Max Defl.             | 0.004"          | n/a                 | n/a               | 4    | 02-00-04 |
| Span / Depth          | 3.2             |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)                 | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 6" x 1-3/4"     | 2035 lbs | 31.5%                     | 15.9%                    | Spruce-Pine-Fir |
| B2 | Wall/Plate 5-1/2" x 1-3/4" | 1907 lbs | 32.2%                     | 16.2%                    | Spruce-Pine-Fir |

**Notes**

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



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

**SE007526**

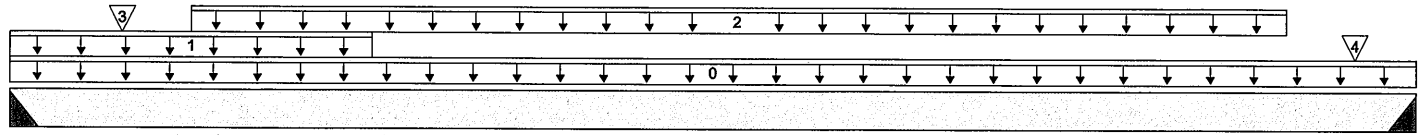
BC CALC® Member Report  
 Build 7239

Dry | 1 span | No cant.

February 3, 2020 10:15:15

Job name: 45147(4007)  
 Address: Pine Valley  
 City, Province, Postal Code: Vaughan, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File name: 316864-A1.mmdl  
 Description: 2nd Floor - Supply/BOM\Flush Beams\B3(i16712)  
 Specifier:  
 Designer: NL  
 Company: Alpa Roof Trusses



B1 13-08-00 B2  
 Total Horizontal Product Length = 13-08-00

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

| Bearing | Live    | Dead    | Snow | Wind |
|---------|---------|---------|------|------|
| B1, 2"  | 849 / 0 | 433 / 0 |      |      |
| B2, 2"  | 660 / 0 | 364 / 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 | 13-08-00 | Top  |              | 6            |              |              | 00-00-00  |
| 1   | User Load     | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-06-00 | Top  | 80           | 30           |              |              | n/a       |
| 2   | Smoothed Load | Unf. Lin. (lb/ft) | L    | 01-08-14 | 12-04-14 | Top  | 95           | 47           |              |              | n/a       |
| 3   | J4(i16750)    | Conc. Pt. (lbs)   | L    | 01-00-14 | 01-00-14 | Top  | 118          | 59           |              |              | n/a       |
| 4   | J4(i16739)    | Conc. Pt. (lbs)   | L    | 13-00-14 | 13-00-14 | Top  | 95           | 47           |              |              | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/<br>Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-----------------------|------|----------|
| Pos. Moment           | 5219 ft-lbs     | 17696 ft-lbs        | 29.5%                 | 1    | 06-04-14 |
| End Shear             | 1602 lbs        | 7232 lbs            | 22.2%                 | 1    | 01-01-14 |
| Total Load Deflection | L/652 (0.248")  | n/a                 | 36.8%                 | 4    | 06-08-14 |
| Live Load Deflection  | L/1003 (0.161") | n/a                 | 35.9%                 | 5    | 06-08-14 |
| Max Defl.             | 0.248"          | n/a                 | n/a                   | 4    | 06-08-14 |
| Span / Depth          | 13.6            |                     |                       |      |          |

**Bearing Supports**

|    | Dim. (LxW)         | Demand   | Demand/<br>Resistance<br>Support | Demand/<br>Resistance<br>Member | Material   |
|----|--------------------|----------|----------------------------------|---------------------------------|------------|
| B1 | Hanger 2" x 1-3/4" | 1814 lbs | n/a                              | 42.5%                           | HUS1.81/10 |
| B2 | Hanger 2" x 1-3/4" | 1446 lbs | n/a                              | 33.9%                           | HUS1.81/10 |



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**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-00-00.  
 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

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

**SE007527**



Boise Cascade



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

## 2nd Floor - Supply/BOM\Flush Beams\B4(i16759) (Flush Beam)

**PASSED**

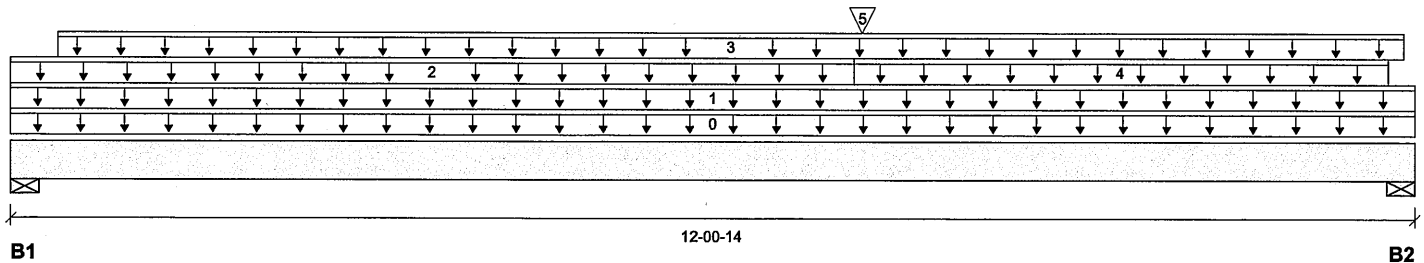
BC CALC® Member Report  
Build 7239

Dry | 1 span | No cant.

February 3, 2020 10:15:15

Job name: 45147(4007)  
Address: Pine Valley  
City, Province, Postal Code: Vaughan, ON  
Customer: Gold Park  
Code reports: CCMC 12472-R

File name: 316864-A1.mmdl  
Description: 2nd Floor - Supply/BOM\Flush Beams\B4(i16759)  
Specifier:  
Designer: NL  
Company: Alpa Roof Trusses



Total Horizontal Product Length = 12-00-14

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

| Bearing    | Live    | Dead    | Snow | Wind |
|------------|---------|---------|------|------|
| B1, 4-3/8" | 530 / 0 | 639 / 0 |      |      |
| B2, 5-1/2" | 793 / 0 | 798 / 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 | 12-00-14 | Top  |              | 6            |              |              | 00-00-00  |
| 1   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 12-00-14 | Top  | 10           | 5            |              |              | n/a       |
| 2   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 07-02-14 | Top  | 3            |              |              |              | n/a       |
| 3   | User Load          | Unf. Lin. (lb/ft) | L    | 00-04-14 | 11-11-12 | Top  | 20           | 70           |              |              | n/a       |
| 4   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 07-02-14 | 11-10-02 | Top  | 23           | 11           |              |              | n/a       |
| 5   | B3(i16712)         | Conc. Pt. (lbs)   | L    | 07-03-12 | 07-03-12 | Top  | 846          | 432          |              |              | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/<br>Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-----------------------|------|----------|
| Pos. Moment           | 7449 ft-lbs     | 17696 ft-lbs        | 42.1%                 | 1    | 07-03-12 |
| End Shear             | 1927 lbs        | 7232 lbs            | 26.6%                 | 1    | 10-07-08 |
| Total Load Deflection | L/607 (0.225")  | n/a                 | 39.6%                 | 4    | 06-03-13 |
| Live Load Deflection  | L/999 (0.116")  | n/a                 | n/a                   | 5    | 06-03-13 |
| Max Defl.             | 0.225"          | n/a                 | n/a                   | 4    | 06-03-13 |
| Span / Depth          | 11.5            |                     |                       |      |          |

**Bearing Supports**

|    | Dim. (LxW)                 | Demand   | Demand/<br>Resistance<br>Support | Demand/<br>Resistance<br>Member | Material        |
|----|----------------------------|----------|----------------------------------|---------------------------------|-----------------|
| B1 | Wall/Plate 4-3/8" x 1-3/4" | 1594 lbs | 33.8%                            | 17.1%                           | Spruce-Pine-Fir |
| B2 | Wall/Plate 5-1/2" x 1-3/4" | 2186 lbs | 36.9%                            | 18.6%                           | Spruce-Pine-Fir |

**Notes**

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



SE007528

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

## 2nd Floor - Supply/BOM\Flush Beams\B5(i16749) (Flush Beam)

**PASSED**

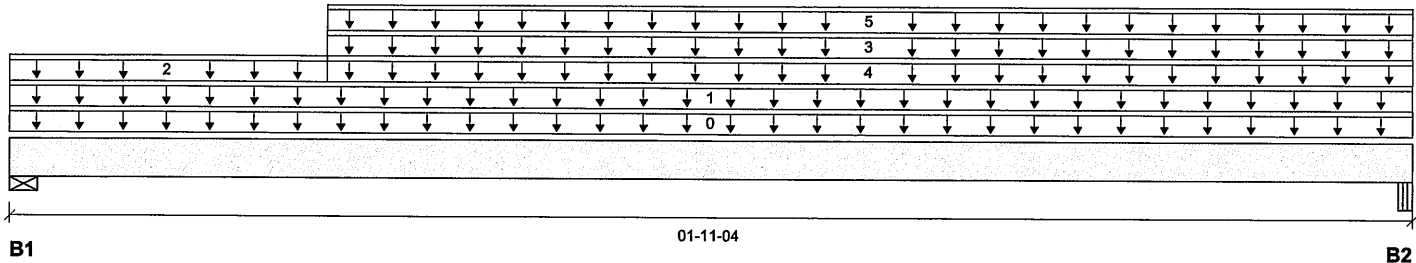
BC CALC® Member Report  
Build 7239

Dry | 1 span | No cant.

February 3, 2020 10:15:15

Job name: 45147(4007)  
Address: Pine Valley  
City, Province, Postal Code: Vaughan, ON  
Customer: Gold Park  
Code reports: CCMC 12472-R

File name: 316864-A1.mmdl  
Description: 2nd Floor - Supply/BOM\Flush Beams\B5(i16749)  
Specifier:  
Designer: NL  
Company: Alpa Roof Trusses



Total Horizontal Product Length = 01-11-04

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

| Bearing    | Live   | Dead    | Snow    | Wind |
|------------|--------|---------|---------|------|
| B1, 5-1/4" | 18 / 0 | 254 / 0 | 191 / 0 |      |
| B2, 3-1/2" | 14 / 0 | 296 / 0 | 282 / 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 | 01-11-04 | Top  |              | 12           |              |              | 00-00-00  |
| 1   | E20(i15592)        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 01-11-04 | Top  |              | 101          |              |              | n/a       |
| 2   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 00-05-04 | Top  | 20           |              |              |              | n/a       |
| 3   | E20(i15592)        | Unf. Lin. (lb/ft) | L    | 00-05-04 | 01-11-04 | Top  |              | 196          | 294          |              | n/a       |
| 4   | User Load          | Unf. Lin. (lb/ft) | L    | 00-05-04 | 01-11-04 | Top  |              | 14           | 21           |              | n/a       |
| 5   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 00-05-04 | 01-11-04 | Top  | 16           | 8            |              |              | n/a       |

### Controls Summary

|                       | Factored Demand | Factored Resistance | Demand/<br>Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-----------------------|------|----------|
| Pos. Moment           | 200 ft-lbs      | 35392 ft-lbs        | 0.6%                  | 13   | 01-00-08 |
| End Shear             | 349 lbs         | 14464 lbs           | 2.4%                  | 13   | 00-07-14 |
| Total Load Deflection | L/999 (0")      | n/a                 | n/a                   | 35   | 01-00-08 |
| Max Defl.             | 0"              | n/a                 | n/a                   | 35   | 01-00-08 |
| Span / Depth          | 1.3             |                     |                       |      |          |

### Bearing Supports

|    | Dim. (LxW)                 | Demand  | Demand/<br>Resistance<br>Support | Demand/<br>Resistance<br>Member | Material        |
|----|----------------------------|---------|----------------------------------|---------------------------------|-----------------|
| B1 | Wall/Plate 5-1/4" x 3-1/2" | 622 lbs | 5.5%                             | 2.8%                            | Spruce-Pine-Fir |
| B2 | Beam 3-1/2" x 3-1/2"       | 807 lbs | 10.7%                            | 5.4%                            | Unspecified     |

### Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
Calculations assume member is fully braced.  
Resistance Factor phi has been applied to all presented results per CSA O86.  
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
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

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



SE007529

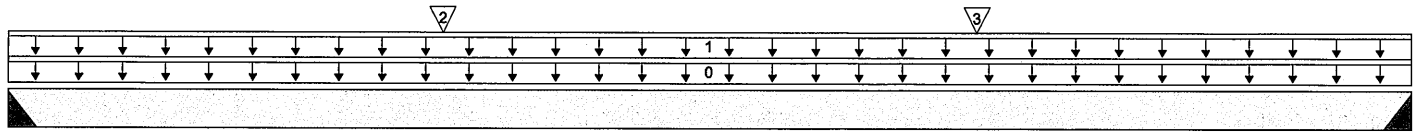
BC CALC® Member Report  
 Build 7239

Dry | 1 span | No cant.

February 3, 2020 10:15:15

Job name: 45147(4007)  
 Address: Pine Valley  
 City, Province, Postal Code: Vaughan, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File name: 316864-A1.mmdl  
 Description: 1st Floor - Supply/BOM Flush Beams\B6(i16833)  
 Specifier:  
 Designer: NL  
 Company: Alpa Roof Trusses



Total Horizontal Product Length = 03-06-00

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

| Bearing | Live    | Dead    | Snow | Wind |
|---------|---------|---------|------|------|
| B1, 2"  | 279 / 0 | 133 / 0 |      |      |
| B2, 2"  | 279 / 0 | 133 / 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 | 03-06-00 | Top  |              | 6            |              |              | 00-00-00  |
| 1   | User Load   | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-06-00 | Top  | 80           | 30           |              |              | n/a       |
| 2   | J3(i16858)  | Conc. Pt. (lbs)   | L    | 01-01-00 | 01-01-00 | Top  | 139          | 70           |              |              | n/a       |
| 3   | J3(i16845)  | Conc. Pt. (lbs)   | L    | 02-05-00 | 02-05-00 | Top  | 139          | 70           |              |              | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 513 ft-lbs      | 17696 ft-lbs        | 2.9%              | 1    | 01-09-00 |
| End Shear             | 372 lbs         | 7232 lbs            | 5.1%              | 1    | 01-01-14 |
| Total Load Deflection | L/999 (0.001")  | n/a                 | n/a               | 4    | 01-09-00 |
| Live Load Deflection  | L/999 (0.001")  | n/a                 | n/a               | 5    | 01-09-00 |
| Max Defl.             | 0.001"          | n/a                 | n/a               | 4    | 01-09-00 |
| Span / Depth          | 3.3             |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)         | Demand  | Demand/Resistance Support | Demand/Resistance Member | Material   |
|----|--------------------|---------|---------------------------|--------------------------|------------|
| B1 | Hanger 2" x 1-3/4" | 585 lbs | n/a                       | 13.7%                    | HUS1.81/10 |
| B2 | Hanger 2" x 1-3/4" | 585 lbs | n/a                       | 13.7%                    | HUS1.81/10 |



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**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Calculations assume member is fully braced.  
 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

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

**SE007530**

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

## 1st Floor - Supply/BOM/Flush Beams\B7(i16838) (Flush Beam)

**PASSED**

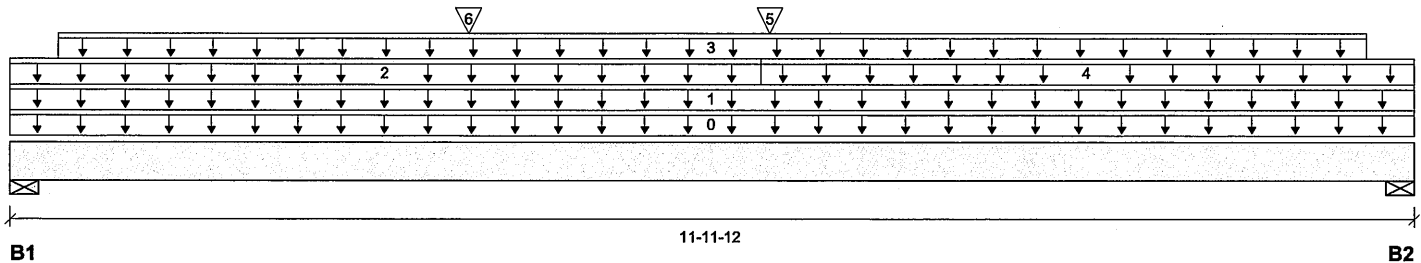
BC CALC® Member Report  
Build 7239

Dry | 1 span | No cant.

February 3, 2020 10:15:15

Job name: 45147(4007)  
Address: Pine Valley  
City, Province, Postal Code: Vaughan, ON  
Customer: Gold Park  
Code reports: CCMC 12472-R

File name: 316864-A1.mmdl  
Description: 1st Floor - Supply/BOM/Flush Beams\B7(i16838)  
Specifier:  
Designer: NL  
Company: Alpa Roof Trusses



Total Horizontal Product Length = 11'-11-12"

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

| Bearing    | Live    | Dead    | Snow | Wind |
|------------|---------|---------|------|------|
| B1, 1-7/8" | 637 / 0 | 658 / 0 |      |      |
| B2, 2-3/8" | 612 / 0 | 662 / 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 | 11-11-12 | Top  |              | 6            |              |              | 00-00-00  |
| 1   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-11-12 | Top  | 23           | 12           |              |              | n/a       |
| 2   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 06-04-14 | Top  | 3            |              |              |              | n/a       |
| 3   | User Load          | Unf. Lin. (lb/ft) | L    | 00-04-14 | 11-06-14 | Top  | 20           | 70           |              |              | n/a       |
| 4   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 06-04-14 | 11-11-12 | Top  | 23           | 12           |              |              | n/a       |
| 5   | B6(i16833)         | Conc. Pt. (lbs)   | L    | 06-05-12 | 06-05-12 | Top  | 279          | 133          |              |              | n/a       |
| 6   | User Load          | Conc. Pt. (lbs)   | L    | 03-10-14 | 03-10-14 | Top  | 320          | 120          |              |              | n/a       |

### Controls Summary

|                       | Factored Demand | Factored Resistance | Demand/<br>Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-----------------------|------|----------|
| Pos. Moment           | 6238 ft-lbs     | 17696 ft-lbs        | 35.3%                 | 1    | 06-05-12 |
| End Shear             | 1706 lbs        | 7232 lbs            | 23.6%                 | 1    | 01-01-12 |
| Total Load Deflection | L/632 (0.223")  | n/a                 | 38.0%                 | 4    | 05-11-04 |
| Live Load Deflection  | L/999 (0.113")  | n/a                 | n/a                   | 5    | 05-11-04 |
| Max Defl.             | 0.223"          | n/a                 | n/a                   | 4    | 05-11-04 |
| Span / Depth          | 11.9            |                     |                       |      |          |

### Bearing Supports

|    | Dim. (LxW)                 | Demand   | Demand/<br>Resistance<br>Support | Demand/<br>Resistance<br>Member | Material        |
|----|----------------------------|----------|----------------------------------|---------------------------------|-----------------|
| B1 | Wall/Plate 1-7/8" x 1-3/4" | 1778 lbs | 88.1%                            | 44.4%                           | Spruce-Pine-Fir |
| B2 | Wall/Plate 2-3/8" x 1-3/4" | 1746 lbs | 68.3%                            | 34.4%                           | Spruce-Pine-Fir |

### Notes

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



SE007531

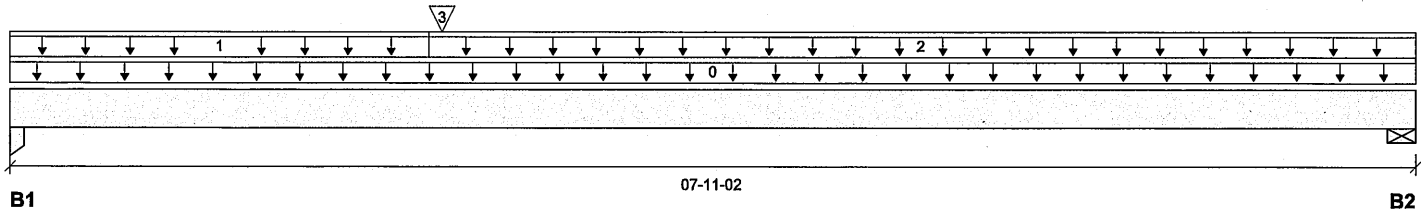
BC CALC® Member Report  
 Build 7239

Dry | 1 span | No cant.

February 3, 2020 10:15:15

Job name: 45147(4007)  
 Address: Pine Valley  
 City, Province, Postal Code: Vaughan, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File name: 316864-A1.mmdl  
 Description: 1st Floor - Supply/BOM\Flush Beams\B8(i16837)  
 Specifier:  
 Designer: NL  
 Company: Alpa Roof Trusses



Total Horizontal Product Length = 07-11-02

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

| Bearing    | Live    | Dead    | Snow | Wind |
|------------|---------|---------|------|------|
| B1, 1-3/4" | 341 / 0 | 190 / 0 |      |      |
| B2, 2-3/8" | 270 / 0 | 157 / 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 | 07-11-02 | Top  |              | 6            |              |              | 00-00-00  |
| 1   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 02-04-04 | Top  | 27           | 13           |              |              | n/a       |
| 2   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 02-04-04 | 07-11-02 | Top  | 48           | 24           |              |              | n/a       |
| 3   | B6(i16833)         | Conc. Pt. (lbs)   | L    | 02-05-02 | 02-05-02 | Top  | 279          | 133          |              |              | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/<br>Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-----------------------|------|----------|
| Pos. Moment           | 1564 ft-lbs     | 17696 ft-lbs        | 8.8%                  | 1    | 02-05-02 |
| End Shear             | 675 lbs         | 7232 lbs            | 9.3%                  | 1    | 01-01-10 |
| Total Load Deflection | L/999 (0.023")  | n/a                 | n/a                   | 4    | 03-09-05 |
| Live Load Deflection  | L/999 (0.015")  | n/a                 | n/a                   | 5    | 03-09-05 |
| Max Defl.             | 0.023"          | n/a                 | n/a                   | 4    | 03-09-05 |
| Span / Depth          | 7.8             |                     |                       |      |          |

**Bearing Supports**

|    | Dim. (LxW)                 | Demand  | Demand/<br>Resistance<br>Support | Demand/<br>Resistance<br>Member | Material        |
|----|----------------------------|---------|----------------------------------|---------------------------------|-----------------|
| B1 | Column 1-3/4" x 1-3/4"     | 748 lbs | 14.1%                            | 20.0%                           | Spruce-Pine-Fir |
| B2 | Wall/Plate 2-3/8" x 1-3/4" | 602 lbs | 23.5%                            | 11.9%                           | Spruce-Pine-Fir |

**Notes**

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



**Disclosure**

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

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

**SE007532**



Boise Cascade

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1st Floor - Supply/BOM Flush Beams\B9(i16846) (Flush Beam)**

BC CALC® Member Report

Dry | 1 span | No cant.

February 3, 2020 10:15:15

Build 7239

Job name: 45147(4007)

File name: 316864-A1.mmdl

Address: Pine Valley

Description: 1st Floor - Supply/BOM Flush Beams\B9(i16846)

City, Province, Postal Code: Vaughan, ON

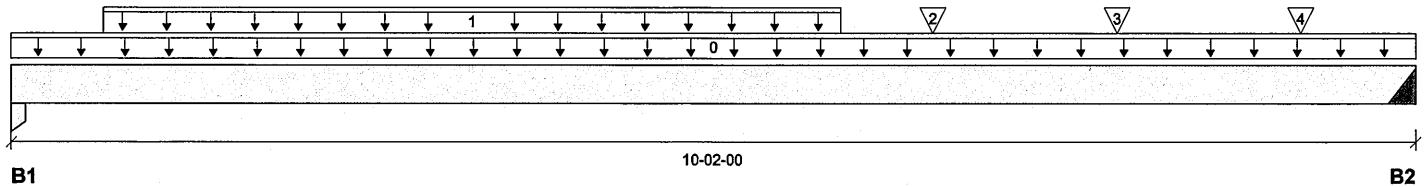
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 10-02-00

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

| Bearing    | Live     | Dead    | Snow | Wind |
|------------|----------|---------|------|------|
| B1, 3-1/2" | 972 / 0  | 486 / 0 |      |      |
| B2, 2"     | 1298 / 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 | 10-02-00 | Top  |              | 6            |              |              | 00-00-00  |
| 1   | Smoothed Load | Unf. Lin. (lb/ft) | L    | 00-08-00 | 06-00-00 | Top  | 162          | 80           |              |              | n/a       |
| 2   | -             | Conc. Pt. (lbs)   | L    | 06-08-00 | 06-08-00 | Top  | 888          | 360          |              |              | n/a       |
| 3   | J2(i16859)    | Conc. Pt. (lbs)   | L    | 08-00-00 | 08-00-00 | Top  | 279          | 132          |              |              | n/a       |
| 4   | J2(i16839)    | Conc. Pt. (lbs)   | L    | 09-04-00 | 09-04-00 | Top  | 242          | 114          |              |              | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 7039 ft-lbs     | 17696 ft-lbs        | 39.8%             | 1    | 06-08-00 |
| End Shear             | 2539 lbs        | 7232 lbs            | 35.1%             | 1    | 09-00-02 |
| Total Load Deflection | L/702 (0.168")  | n/a                 | 34.2%             | 4    | 05-04-00 |
| Live Load Deflection  | L/999 (0.114")  | n/a                 | n/a               | 5    | 05-04-00 |
| Max Defl.             | 0.168"          | n/a                 | n/a               | 4    | 05-04-00 |
| Span / Depth          | 9.9             |                     |                   |      |          |

**Bearing Supports**

| Bearing Supports |        |                 | Demand/Resistance Support | Demand/Resistance Member | Material |                 |
|------------------|--------|-----------------|---------------------------|--------------------------|----------|-----------------|
| B1               | Column | 3-1/2" x 1-3/4" | 2065 lbs                  | 19.4%                    | 27.6%    | Spruce-Pine-Fir |
| B2               | Hanger | 2" x 1-3/4"     | 2713 lbs                  | n/a                      | 63.5%    | HUS1.81/10      |

**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.

**Notes**

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

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

Calculations assume member is fully braced.

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

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

**SE007533**

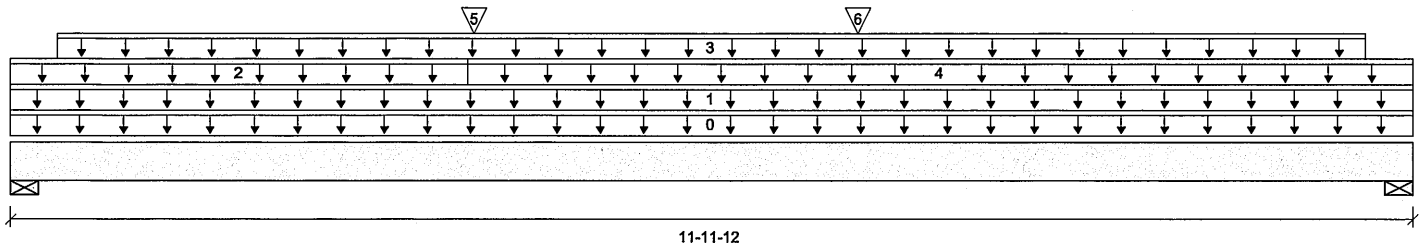
BC CALC® Member Report  
Build 7239

Dry | 1 span | No cant.

February 3, 2020 10:15:15

Job name: 45147(4007)  
Address: Pine Valley  
City, Province, Postal Code: Vaughan, ON  
Customer: Gold Park  
Code reports: CCMC 12472-R

File name: 316864-A1.mmdl  
Description: 1st Floor - Supply/BOM\Flush Beams\B10(i16861)  
Specifier:  
Designer: NL  
Company: Alpa Roof Trusses



Total Horizontal Product Length = 11'-11-12"

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

| Bearing    | Live     | Dead     | Snow | Wind |
|------------|----------|----------|------|------|
| B1, 2-3/8" | 1325 / 0 | 1017 / 0 |      |      |
| B2, 2-3/8" | 811 / 0  | 786 / 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 | 11-11-12 | Top  |              | 12           |              |              | 00-00-00  |
| 1   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-11-12 | Top  | 8            | 4            |              |              | n/a       |
| 2   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-10-14 | Top  | 6            |              |              |              | n/a       |
| 3   | User Load          | Unf. Lin. (lb/ft) | L    | 00-04-14 | 11-06-14 | Top  | 20           | 70           |              |              | n/a       |
| 4   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 03-10-14 | 11-11-12 | Top  | 20           | 10           |              |              | n/a       |
| 5   | -                  | Conc. Pt. (lbs)   | L    | 03-11-08 | 03-11-08 | Top  | 1607         | 727          |              |              | n/a       |
| 6   | FC2 Floor Material | Conc. Pt. (lbs)   | L    | 07-02-14 | 07-02-14 | Top  | 28           |              |              |              | n/a       |

### Controls Summary

|                       | Factored Demand | Factored Resistance | Demand/<br>Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-----------------------|------|----------|
| Pos. Moment           | 11360 ft-lbs    | 35392 ft-lbs        | 32.1%                 | 1    | 03-11-12 |
| End Shear             | 3206 lbs        | 14464 lbs           | 22.2%                 | 1    | 01-02-04 |
| Total Load Deflection | L/785 (0.179")  | n/a                 | 30.6%                 | 4    | 05-07-05 |
| Live Load Deflection  | L/999 (0.101")  | n/a                 | n/a                   | 5    | 05-07-05 |
| Max Defl.             | 0.179"          | n/a                 | n/a                   | 4    | 05-07-05 |
| Span / Depth          | 11.8            |                     |                       |      |          |

### Bearing Supports

|    | Dim. (LxW)                 | Demand   | Demand/<br>Resistance<br>Support | Demand/<br>Resistance<br>Member | Material        |
|----|----------------------------|----------|----------------------------------|---------------------------------|-----------------|
| B1 | Wall/Plate 2-3/8" x 3-1/2" | 3259 lbs | 63.7%                            | 32.1%                           | Spruce-Pine-Fir |
| B2 | Wall/Plate 2-3/8" x 3-1/2" | 2199 lbs | 43.0%                            | 21.7%                           | Spruce-Pine-Fir |

### Notes

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

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

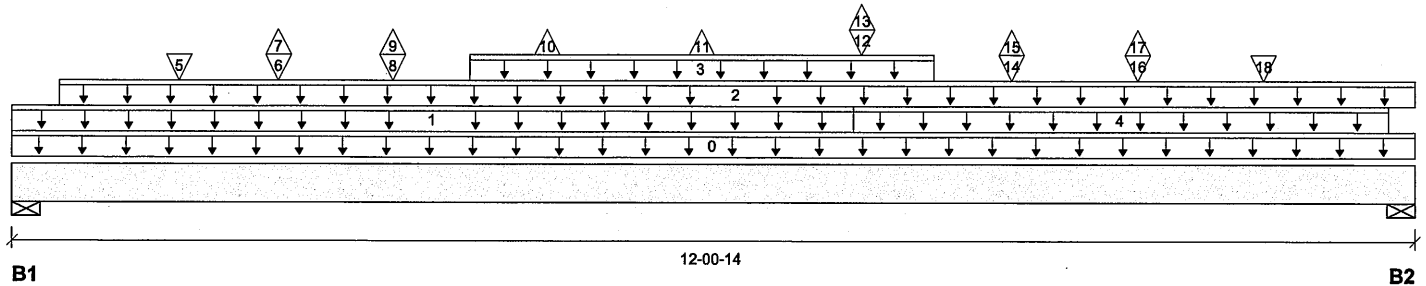


BC CALC® Member Report  
 Build 7239

Dry | 1 span | No cant.

February 3, 2020 11:10:48

 Job name: 45147(4007)  
 Address: Pine Valley  
 City, Province, Postal Code: Vaughan, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

 File name: 316864-B.mmdl  
 Description: 2nd Floor - Supply/BOM\Flush Beams\B11(i17031)  
 Specifier:  
 Designer: NL  
 Company: Alpa Roof Trusses


Total Horizontal Product Length = 12-00-14

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

| Bearing    | Live      | Dead     | Snow | Wind |
|------------|-----------|----------|------|------|
| B1, 4-3/8" | 1818 / 16 | 1269 / 0 |      |      |
| B2, 5-1/2" | 2039 / 15 | 1419 / 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 | 12-00-14 | Top  |              | 12           |              |              | 00-00-00  |
| 1   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 07-02-14 | Top  | 6            |              |              |              | n/a       |
| 2   | User Load          | Unf. Lin. (lb/ft) | L    | 00-04-14 | 12-00-14 | Top  | 20           | 70           |              |              | n/a       |
| 3   | Smoothed Load      | Unf. Lin. (lb/ft) | L    | 03-11-04 | 07-11-04 | Top  | 271          | 122          |              |              | n/a       |
| 4   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 07-02-14 | 11-10-02 | Top  | 15           | 7            |              |              | n/a       |
| 5   | J4(i17153)         | Conc. Pt. (lbs)   | L    | 01-05-04 | 01-05-04 | Top  | 292          | 146          |              |              | n/a       |
| 6   | J3(i17154)         | Conc. Pt. (lbs)   | L    | 02-03-08 | 02-03-08 | Top  | 248          | 108          |              |              | n/a       |
| 7   | J3(i17154)         | Conc. Pt. (lbs)   | L    | 02-03-08 | 02-03-08 | Top  | -3           |              |              |              | n/a       |
| 8   | J2(i17161)         | Conc. Pt. (lbs)   | L    | 03-03-04 | 03-03-04 | Top  | 313          | 141          |              |              | n/a       |
| 9   | J2(i17161)         | Conc. Pt. (lbs)   | L    | 03-03-04 | 03-03-04 | Top  | -5           |              |              |              | n/a       |
| 10  | J2(i17157)         | Conc. Pt. (lbs)   | L    | 04-07-04 | 04-07-04 | Top  | -5           |              |              |              | n/a       |
| 11  | J2(i17158)         | Conc. Pt. (lbs)   | L    | 05-11-04 | 05-11-04 | Top  | -5           |              |              |              | n/a       |
| 12  | -                  | Conc. Pt. (lbs)   | L    | 07-03-12 | 07-03-12 | Top  | 665          | 367          |              |              | n/a       |
| 13  | -                  | Conc. Pt. (lbs)   | L    | 07-03-12 | 07-03-12 | Top  | -5           |              |              |              | n/a       |
| 14  | J2(i17160)         | Conc. Pt. (lbs)   | L    | 08-07-04 | 08-07-04 | Top  | 327          | 147          |              |              | n/a       |
| 15  | J2(i17160)         | Conc. Pt. (lbs)   | L    | 08-07-04 | 08-07-04 | Top  | -5           |              |              |              | n/a       |
| 16  | J3(i17162)         | Conc. Pt. (lbs)   | L    | 09-08-04 | 09-08-04 | Top  | 293          | 130          |              |              | n/a       |
| 17  | J3(i17162)         | Conc. Pt. (lbs)   | L    | 09-08-04 | 09-08-04 | Top  | -3           |              |              |              | n/a       |
| 18  | J4(i17155)         | Conc. Pt. (lbs)   | L    | 10-09-04 | 10-09-04 | Top  | 292          | 146          |              |              | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 14859 ft-lbs    | 35392 ft-lbs        | 42.0%             | 1    | 07-03-04 |
| End Shear             | 4511 lbs        | 14464 lbs           | 31.2%             | 1    | 10-07-08 |
| Total Load Deflection | L/552 (0.247")  | n/a                 | 43.5%             | 6    | 06-01-03 |
| Live Load Deflection  | L/919 (0.149")  | n/a                 | 39.2%             | 8    | 06-01-03 |
| Max Defl.             | 0.247"          | n/a                 | n/a               | 6    | 06-01-03 |
| Span / Depth          | 11.5            |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)                 | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 4-3/8" x 3-1/2" | 4313 lbs | 45.8%                     | 23.1%                    | Spruce-Pine-Fir |
| B2 | Wall/Plate 5-1/2" x 3-1/2" | 4832 lbs | 40.8%                     | 20.6%                    | Spruce-Pine-Fir |

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


SE007535

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**1st Floor - Supply/BOM\Flush Beams\B12(i17310) (Flush Beam)**

**PASSED**

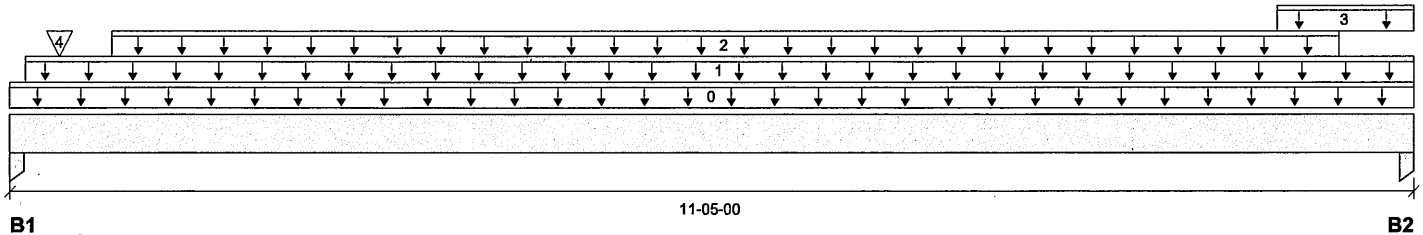
BC CALC® Member Report  
 Build 7239

Dry | 1 span | No cant.

February 3, 2020 11:10:48

Job name: 45147(4007)  
 Address: Pine Valley  
 City, Province, Postal Code: Vaughan, ON  
 Customer: Gold Park  
 Code reports: CCMC 12472-R

File name: 316864-B.mmdl  
 Description: 1st Floor - Supply/BOM\Flush Beams\B12(i17310)  
 Specifier:  
 Designer: NL  
 Company: Alpa Roof Trusses



Total Horizontal Product Length = 11-05-00

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

| Bearing    | Live    | Dead    | Snow | Wind |
|------------|---------|---------|------|------|
| B1, 3-1/2" | 898 / 0 | 483 / 0 |      |      |
| B2, 3-1/2" | 859 / 0 | 464 / 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 | 11-05-00 | Top  |              | 6            |              |              | 00-00-00  |
| 1   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 00-01-08 | 11-05-00 | Top  | 2            | 1            |              |              | n/a       |
| 2   | Smoothed Load      | Unf. Lin. (lb/ft) | L    | 00-09-12 | 10-09-12 | Top  | 161          | 80           |              |              | n/a       |
| 3   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 10-03-12 | 11-05-00 | Top  | 21           | 11           |              |              | n/a       |
| 4   | J3(i17323)         | Conc. Pt. (lbs)   | L    | 00-04-12 | 00-04-12 | Top  | 96           | 48           |              |              | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/<br>Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-----------------------|------|----------|
| Pos. Moment           | 5345 ft-lbs     | 17696 ft-lbs        | 30.2%                 | 1    | 05-03-12 |
| End Shear             | 1779 lbs        | 7232 lbs            | 24.6%                 | 1    | 10-01-10 |
| Total Load Deflection | L/786 (0.167")  | n/a                 | 30.5%                 | 4    | 05-09-12 |
| Live Load Deflection  | L/999 (0.109")  | n/a                 | n/a                   | 5    | 05-09-12 |
| Max Defl.             | 0.167"          | n/a                 | n/a                   | 4    | 05-09-12 |
| Span / Depth          | 11.1            |                     |                       |      |          |

**Bearing Supports**

|    | Dim. (LxW)             | Demand   | Demand/<br>Resistance Support | Demand/<br>Resistance Member | Material        |
|----|------------------------|----------|-------------------------------|------------------------------|-----------------|
| B1 | Column 3-1/2" x 1-3/4" | 1950 lbs | 18.4%                         | 26.1%                        | Spruce-Pine-Fir |
| B2 | Column 3-1/2" x 1-3/4" | 1869 lbs | 17.6%                         | 25.0%                        | Spruce-Pine-Fir |

**Notes**

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



**Disclosure**

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

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

**SE007536**

## Maximum Floor Spans – M4.1, L/360

### Design Criteria

|                    |                                                            |
|--------------------|------------------------------------------------------------|
| Spans:             | Simple span                                                |
| Loads:             | Live load = 40 psf and dead load = 20 psf                  |
| Deflection limits: | L/360 under live load and L/240 under total load           |
| Sheathing:         | 3/4 in. nailed-glued oriented strand board (OSB) sheathing |



### Maximum Floor Spans

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

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

### Notes:

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

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

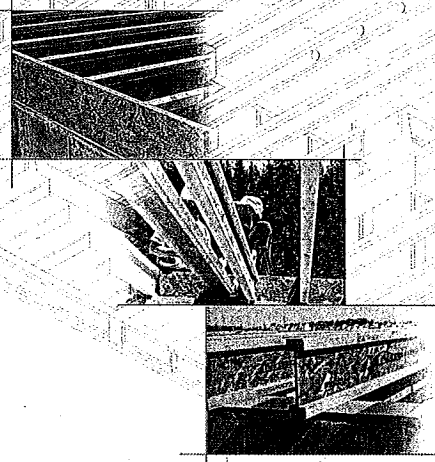
Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

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

(Nordic Request 1810-095)

# NORDIC ENGINEERED WOOD

## INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:



### SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

#### WARNING

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

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

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

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

### STORAGE AND HANDLING GUIDELINES

1. Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
2. Store, stack, and handle I-joists vertically and level only.
3. Always stack and handle I-joists in the upright position only.
4. Do not store I-joists in direct contact with the ground and/or 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.

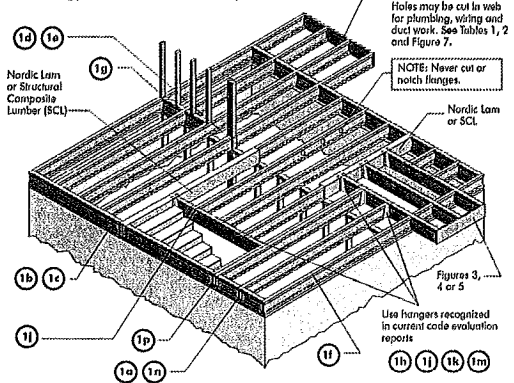


### INSTALLING NORDIC I-JOISTS

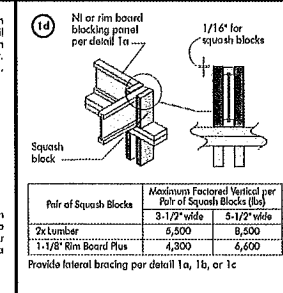
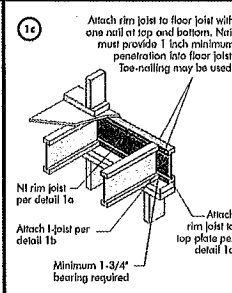
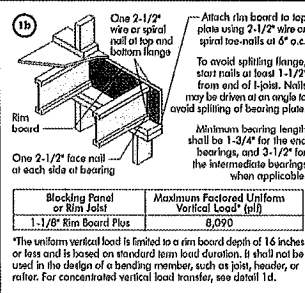
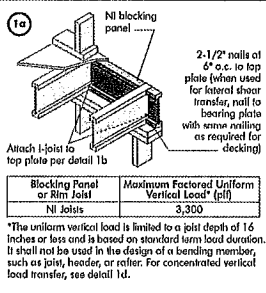
1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true 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" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.126" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.



The 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.

## MAXIMUM FLOOR SPANS

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

## MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

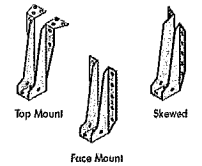
### SINGLE AND MULTIPLE SPANS

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

CCMC EVALUATION REPORT 13032-R

## I-JOIST HANGERS

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



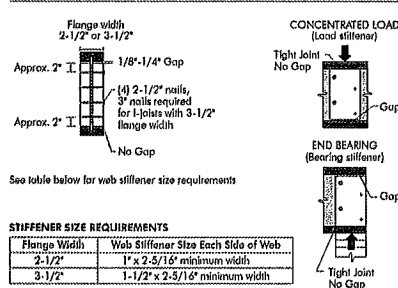
## WEB STIFFENERS

### RECOMMENDATIONS:

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

SI units conversion: 1 inch = 25.4 mm

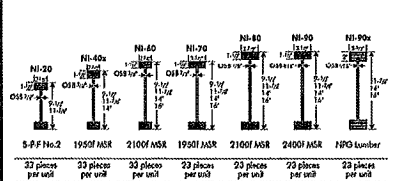
FIGURE 2  
WEB STIFFENER INSTALLATION DETAILS



### STIFFENER SIZE REQUIREMENTS

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

## NORDIC I-JOIST SERIES



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

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

(Nordic Request 1810-095)



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

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

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

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

**1e** Double I-joist header

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

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

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

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

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

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

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

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

**1k** Nordic Lumber or SCL

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

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

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

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

**1p** Filler block

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

| Flange Size | Joist Depth | Filler Block Size |
|-------------|-------------|-------------------|
| 9-1/2"      | 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"          |

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

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

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

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

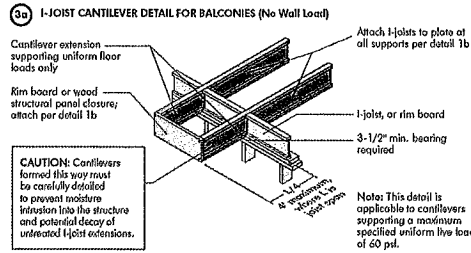
Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

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.

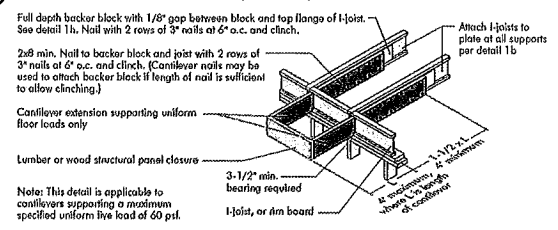
(Nordic Request 1810-095)



### 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)

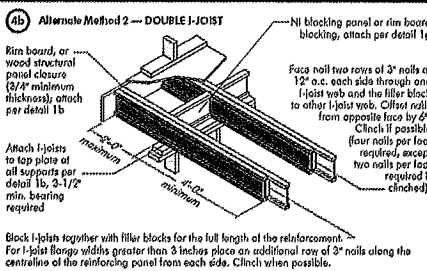
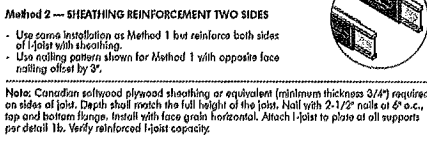
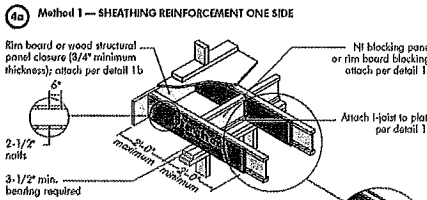


FIGURE 4 (continued)



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

- N = No reinforcement required.
- N1 = NI reinforced with 3/4" wood structural panel on one side only.
- N2 = 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" width 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)

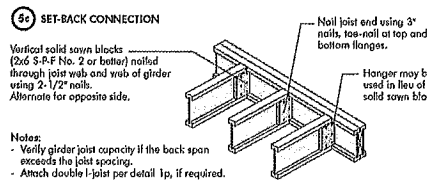
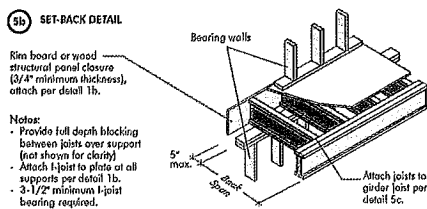
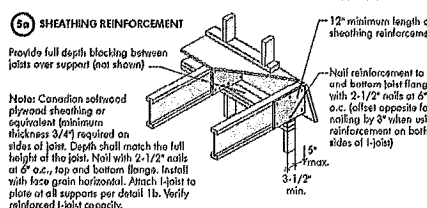


FIGURE 5 (continued)



### BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

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

- N = No reinforcement required.
- N1 = NI reinforced with 3/4" wood structural panel on one side only.
- N2 = 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" width 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.

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## WEB HOLES

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

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

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

| Joist Depth | Joist Series | Minimum distance from inside face of any support to centre of hole (8 in.) |     |     |     |     |     |     |     |     |     |     |     | Span adjustment factor |
|-------------|--------------|----------------------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------------|
|             |              | 2                                                                          | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 12  | 14  | 16  |                        |
| 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:

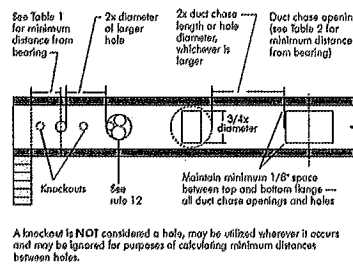
The above table is based on the I-Joist used at its maximum span. If the I-Joist is placed at less than its full maximum span (see Maximum Floor Span), the minimum distance from the centreline of the hole to the face of any support (D) as given above may be reduced as follows:

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

Where:

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

FIGURE 7  
FIELD-CUT HOLE LOCATOR



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

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

Holes in webs should be cut with a sharp saw.

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  | 12  | 14  | 16  |                        |
| 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

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

### FASTENERS FOR SHEATHING AND SUBFLOORING<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"               |

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

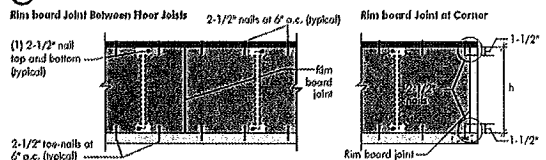
Ref.: NBC-CNBC, National Building Code of Canada 2010, Table 9.23.3.5.

### IMPORTANT NOTE:

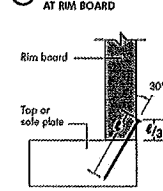
Floor sheathing must be field glued to the I-Joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-Joist spans must be verified with your local distributor.

## RIM BOARD INSTALLATION DETAILS

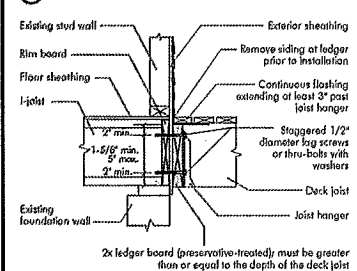
### (a) ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



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



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



## PRODUCT WARRANTY

### DIAMANTIER

### PRODUCT WARRANTY

Chantier Diamantier warrants that, in accordance with our specifications, Nordic products are free from manufacturing defects 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.



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

### WEB HOLE SPECIFICATIONS

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

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

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

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

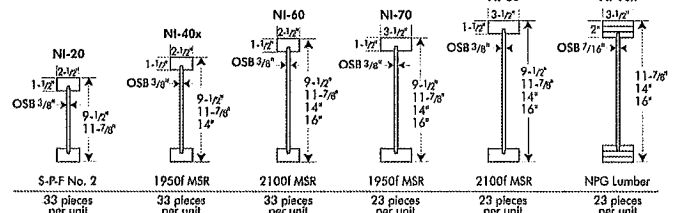
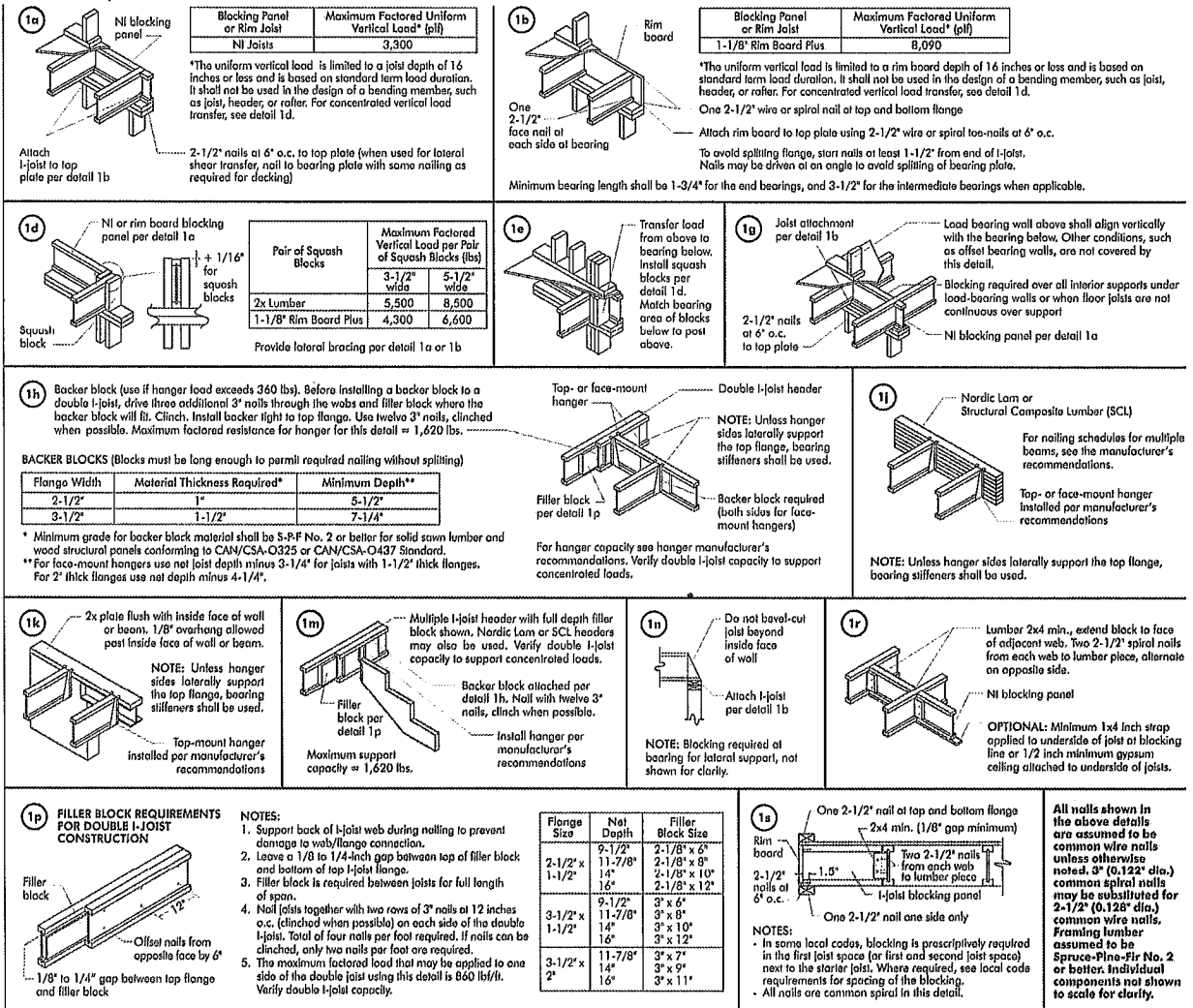


TABLE 1

### LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

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



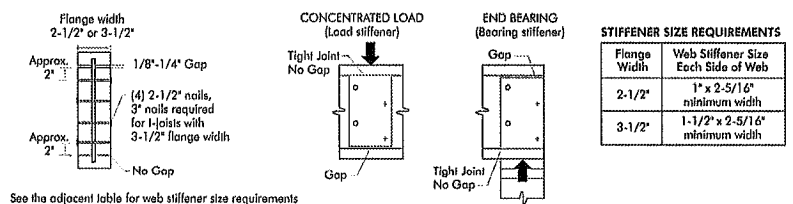
## WEB STIFFENERS

## 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.

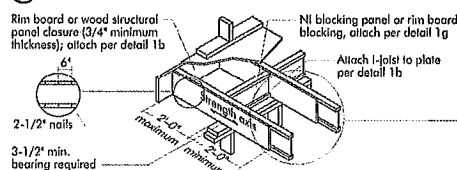
FIGURE 2

## WEB STIFFENER INSTALLATION DETAILS



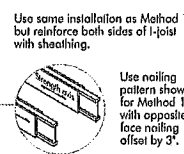
## CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

## Method 1 — SHEATHING REINFORCEMENT ONE SIDE



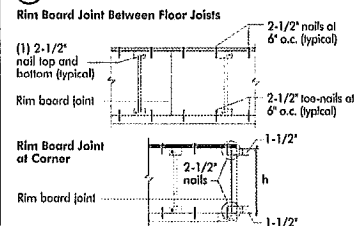
NOTE: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per detail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

## Method 2 — SHEATHING REINFORCEMENT TWO SIDES

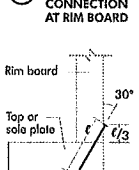


## RIM BOARD INSTALLATION DETAILS

## 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.

