



Yard:

Home Lumber

Contact:

Derek Frankfort

Date: June 29, 2020

ALPHA ROOF

TRUSSES INC.

Gold Park

4009 (Fireberry)

Pine Valley

LOCATION:

Vaughan

DESIGNER: FC

REVISIONS:

#1

#2

#3

#4

LEGEND:

BBO Beam By Owner

APP As Per Plan

FLG Point Load from Gable

FLW Point Load from Wind

S.S. Solid Bracing

DESIGN INFO:

JT/P:

45147/106927

Layout ID:

321525

FLOORING

Unit: 4009 (Fireberry)

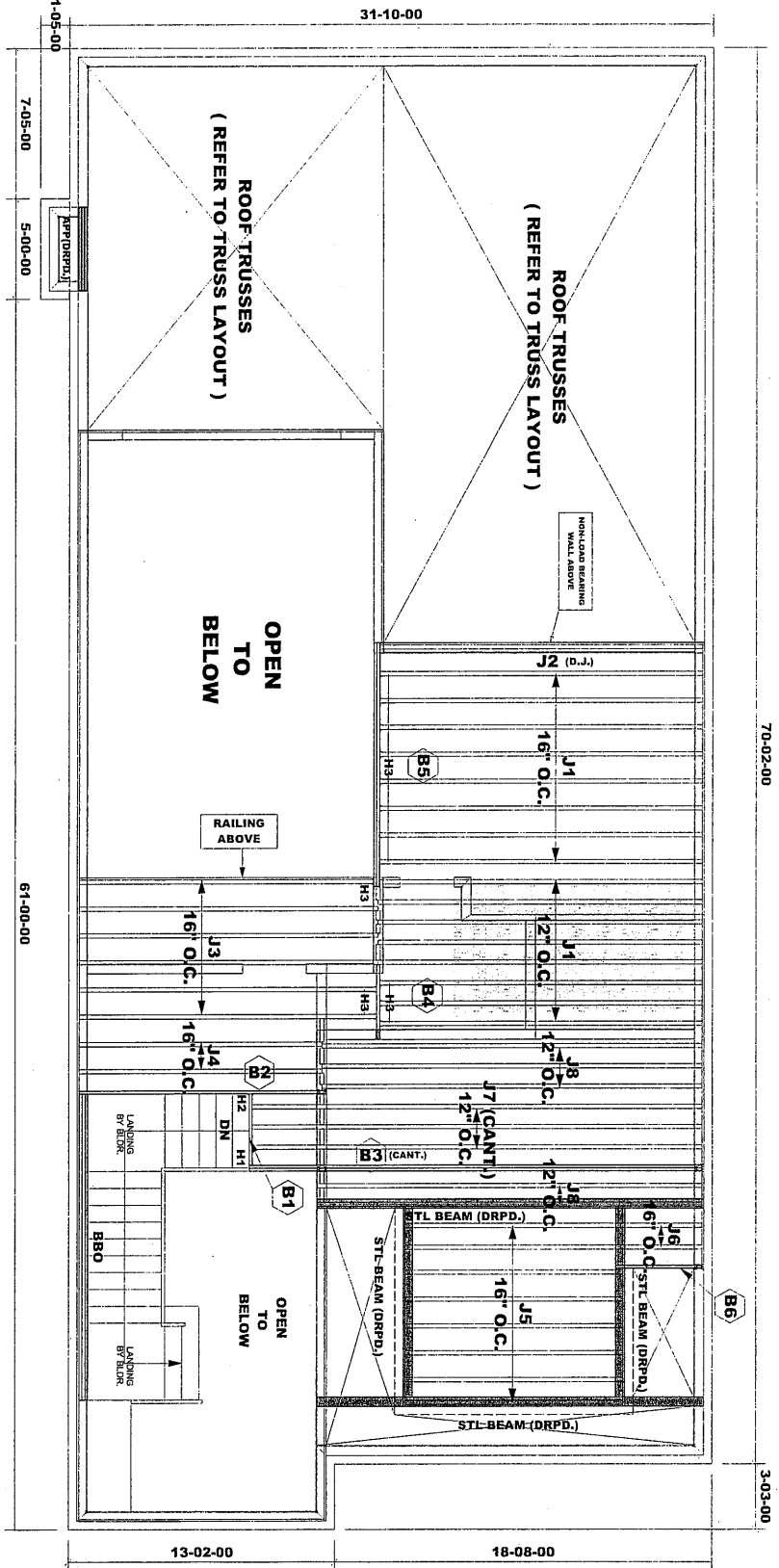
Deck: 200 (Fire)

DEFINITION

Unit: 360,000

Tail: 240,000

1 OF 6



ProdID	Length	Product	Units	Qty
B1	4.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B2	13.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B3	2.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B4	2.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B5	13.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B6	5.00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
J1	16.00-00	11-7/8" N-20	1	16
J2	16.00-00	11-7/8" N-20	1	2
J3	13.00-00	11-7/8" N-20	1	6
J4	13.00-00	11-7/8" N-20	1	2
J5	13.00-00	11-7/8" N-20	1	2
J6	5.00-00	11-7/8" N-20	1	2
J7	23.00-00	11-7/8" N-40x	1	3
J8	19.00-00	11-7/8" N-40x	1	5
J9	12.00-00	11-7/8" N-20	1	1
J10	12.00-00	11-7/8" N-20	1	1
J11	12.00-00	11-7/8" N-20	1	1
J12	12.00-00	11-7/8" N-20	1	1
J13	12.00-00	11-7/8" N-20	1	1
J14	12.00-00	11-7/8" N-20	1	1
J15	12.00-00	11-7/8" N-20	1	1
J16	12.00-00	11-7/8" N-20	1	1
J17	12.00-00	11-7/8" N-20	1	1
J18	12.00-00	11-7/8" N-20	1	1
J19	12.00-00	11-7/8" N-20	1	1
J20	12.00-00	11-7/8" N-20	1	1
J21	12.00-00	11-7/8" N-20	1	1
J22	12.00-00	11-7/8" N-20	1	1
J23	12.00-00	11-7/8" N-20	1	1
J24	12.00-00	11-7/8" N-20	1	1
J25	12.00-00	11-7/8" N-20	1	1
J26	12.00-00	11-7/8" N-20	1	1
J27	12.00-00	11-7/8" N-20	1	1
J28	12.00-00	11-7/8" N-20	1	1
J29	12.00-00	11-7/8" N-20	1	1
J30	12.00-00	11-7/8" N-20	1	1
J31	12.00-00	11-7/8" N-20	1	1
J32	12.00-00	11-7/8" N-20	1	1
J33	12.00-00	11-7/8" N-20	1	1
J34	12.00-00	11-7/8" N-20	1	1
J35	12.00-00	11-7/8" N-20	1	1
J36	12.00-00	11-7/8" N-20	1	1
J37	12.00-00	11-7/8" N-20	1	1
J38	12.00-00	11-7/8" N-20	1	1
J39	12.00-00	11-7/8" N-20	1	1
J40	12.00-00	11-7/8" N-20	1	1
J41	12.00-00	11-7/8" N-20	1	1
J42	12.00-00	11-7/8" N-20	1	1
J43	12.00-00	11-7/8" N-20	1	1
J44	12.00-00	11-7/8" N-20	1	1
J45	12.00-00	11-7/8" N-20	1	1
J46	12.00-00	11-7/8" N-20	1	1
J47	12.00-00	11-7/8" N-20	1	1
J48	12.00-00	11-7/8" N-20	1	1
J49	12.00-00	11-7/8" N-20	1	1
J50	12.00-00	11-7/8" N-20	1	1
J51	12.00-00	11-7/8" N-20	1	1
J52	12.00-00	11-7/8" N-20	1	1
J53	12.00-00	11-7/8" N-20	1	1
J54	12.00-00	11-7/8" N-20	1	1
J55	12.00-00	11-7/8" N-20	1	1
J56	12.00-00	11-7/8" N-20	1	1
J57	12.00-00	11-7/8" N-20	1	1
J58	12.00-00	11-7/8" N-20	1	1
J59	12.00-00	11-7/8" N-20	1	1
J60	12.00-00	11-7/8" N-20	1	1
J61	12.00-00	11-7/8" N-20	1	1
J62	12.00-00	11-7/8" N-20	1	1
J63	12.00-00	11-7/8" N-20	1	1
J64	12.00-00	11-7/8" N-20	1	1
J65	12.00-00	11-7/8" N-20	1	1
J66	12.00-00	11-7/8" N-20	1	1
J67	12.00-00	11-7/8" N-20	1	1
J68	12.00-00	11-7/8" N-20	1	1
J69	12.00-00	11-7/8" N-20	1	1
J70	12.00-00	11-7/8" N-20	1	1
J71	12.00-00	11-7/8" N-20	1	1
J72	12.00-00	11-7/8" N-20	1	1
J73	12.00-00	11-7/8" N-20	1	1
J74	12.00-00	11-7/8" N-20	1	1
J75	12.00-00	11-7/8" N-20	1	1
J76	12.00-00	11-7/8" N-20	1	1
J77	12.00-00	11-7/8" N-20	1	1
J78	12.00-00	11-7/8" N-20	1	1
J79	12.00-00	11-7/8" N-20	1	1
J80	12.00-00	11-7/8" N-20	1	1
J81	12.00-00	11-7/8" N-20	1	1
J82	12.00-00	11-7/8" N-20	1	1
J83	12.00-00	11-7/8" N-20	1	1
J84	12.00-00	11-7/8" N-20	1	1
J85	12.00-00	11-7/8" N-20	1	1
J86	12.00-00	11-7/8" N-20	1	1
J87	12.00-00	11-7/8" N-20	1	1
J88	12.00-00	11-7/8" N-20	1	1
J89	12.00-00	11-7/8" N-20	1	1
J90	12.00-00	11-7/8" N-20	1	1
J91	12.00-00	11-7/8" N-20	1	1
J92	12.00-00	11-7/8" N-20	1	1
J93	12.00-00	11-7/8" N-20	1	1
J94	12.00-00	11-7/8" N-20	1	1
J95	12.00-00	11-7/8" N-20	1	1
J96	12.00-00	11-7/8" N-20	1	1
J97	12.00-00	11-7/8" N-20	1	1
J98	12.00-00	11-7/8" N-20	1	1
J99	12.00-00	11-7/8" N-20	1	1
J100	12.00-00	11-7/8" N-20	1	1

ProdID	Qty	Material	Product
H1	1	11-7/8" N-40x	H18X (One flange concealed)
H2	1	11-7/8" N-40x	H18X (One flange concealed)
H3	14	11-7/8" N-20	L75X118

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

Squash blocks are required under concentrated load.

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

SUBFLOOR - 3/4" NAILED & GLED *

RIMBOARD - 1-1/8" x 11-7/8" O.S.B.

8502051-85020573



Yard:

Home Lumber

Contact:

Derek Franklin

Date: June 29, 2020

ALPA ROOF TRUSSES INC.

Gold Park

4009 (Fireberry)

Pine Valley

LOCATION:

Vaughan

DESIGNER: FC

REVISIONS:

#1

#2

#3

#4

LEGEND:

BBO Beam By Other

APR As Per Plan

PKG Peak Load from Other

PKG Peak Load from Field

S.S. Solid Section

DESIGN INFO:

JT/PL:

45147/106927

Layout ID:

321525

FLOOR LOADS

Like 40.0 LBF

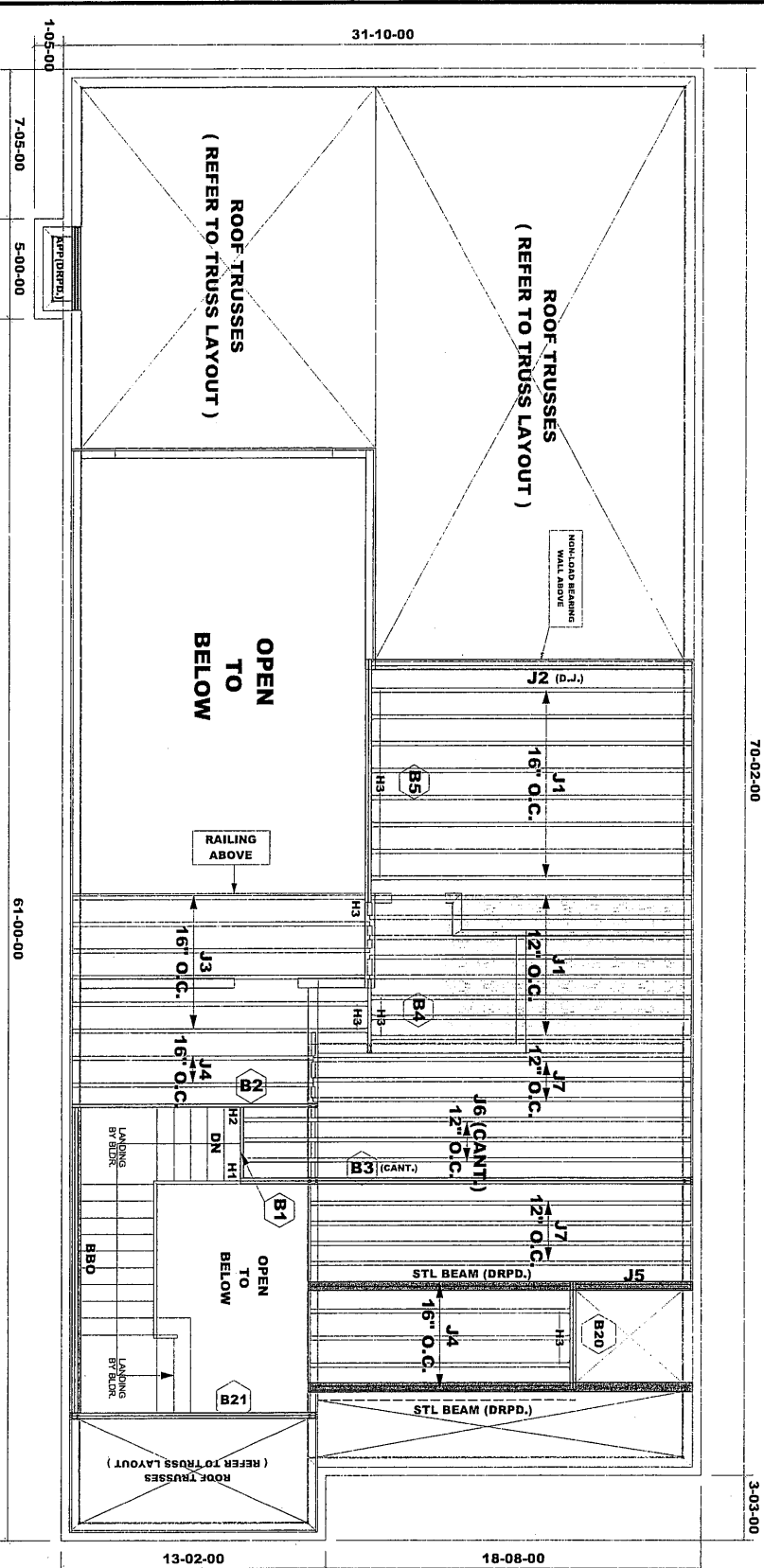
Deck 20.0 LBF

DEFECTION CRITERIA

Like 360.000

Total 260.000

3 OF 6





Yard:

Home Lumber

Contact:

Derek Frankfort

Date: June 29, 2020

ALPA ROOF
TRUSSES INC.

Gold Park

4009 (Fireberry)

Pine Valley

LOCATION:

Vaughan

DESIGNER: FC

REVISIONS:

#1

#2

#3

#4

LEGEND:

BB0 Beam By Others

APP As Per Plan

FLG0 Point Load from Other

FLG0 Point Load from Other

SS0 Solid Beam

DESIGN INFO:

JT/PL:

45147106927

Layout ID:

321525

FLOOR LOADS

Live: 40.0 lb/ft²

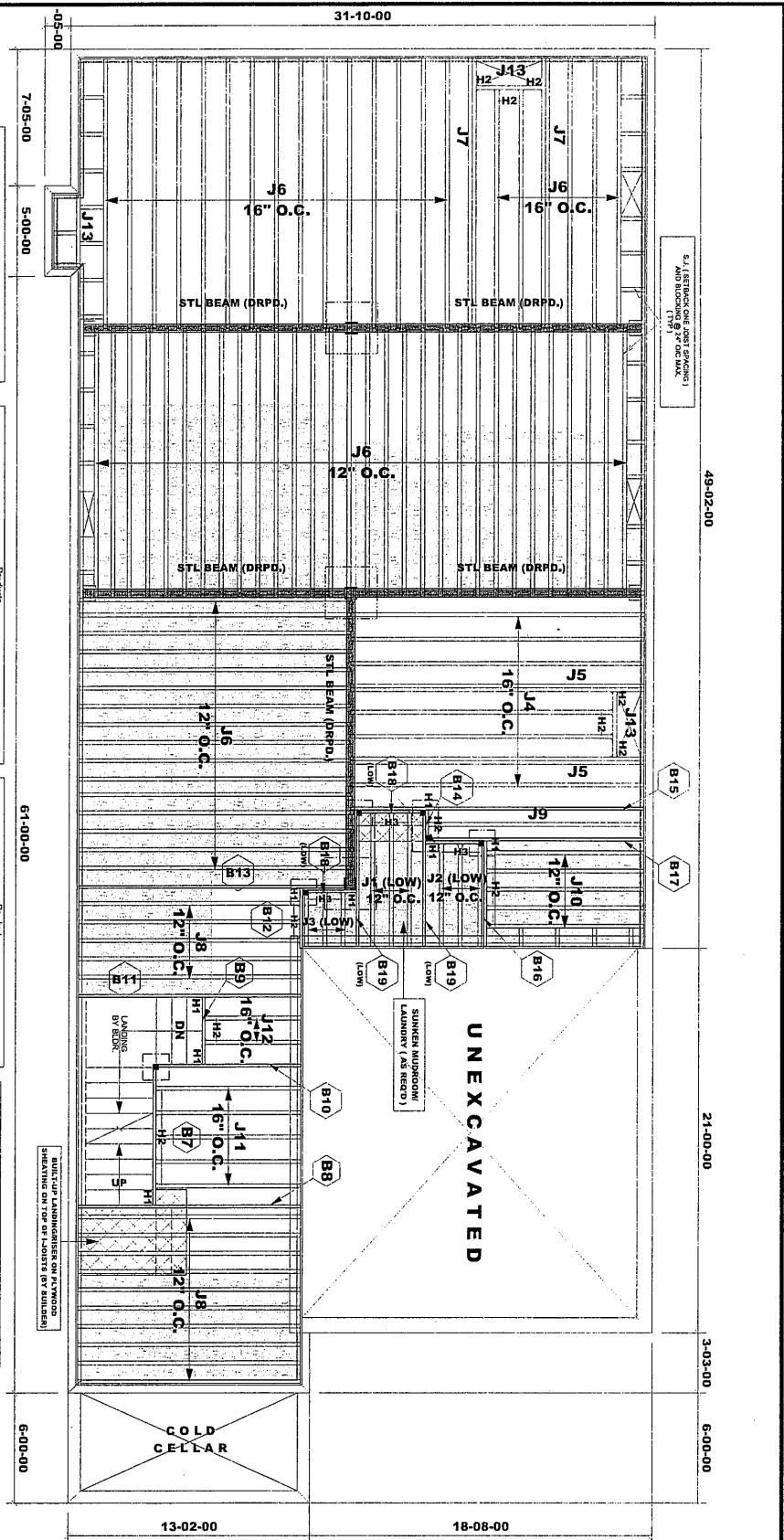
Dead: 20.0 lb/ft²

DEH/CONTRIBA

Live: 360.000

Total: 260.000

4 OF 6



GROUND FLOOR FRAMING

UNIT: 4009 (FIREBERRY)
ELEV. "B" STD. &
OPT. 9' BASEMENT

Do not scale. All dimensions
are in feet and inches.

MATCH LEGEND



Field	Length	Product	Files	Qty
B7	13'-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B8	13'-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B9	4'-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B10	5'-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B11	4'-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B12	4'-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B13	16'-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B14	2'-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B15	16'-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B16	5'-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B17	5'-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B18	4'-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B19	8'-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
J1	6'-00-00	9 1/2" N-20	1	3
J2	6'-00-00	9 1/2" N-20	1	3
J3	16'-00-00	11 7/8" N-20	1	3
J4	16'-00-00	11 7/8" N-20	1	3

Field	Length	Product	Files	Qty
J5	16'-00-00	11 7/8" N-20	2	4
J6	15'-00-00	11 7/8" N-20	2	4
J7	13'-00-00	11 7/8" N-20	2	4
J8	13'-00-00	11 7/8" N-20	2	4
J9	13'-00-00	11 7/8" N-20	2	4
J10	5'-00-00	11 7/8" N-20	1	15
J11	8'-00-00	11 7/8" N-20	1	5
J12	8'-00-00	11 7/8" N-20	1	5
J13	4'-00-00	11 7/8" N-20	1	2
J14	4'-00-00	11 7/8" N-20	1	2
J15	4'-00-00	11 7/8" N-20	1	2
J16	4'-00-00	11 7/8" N-20	1	2
J17	12'-00-00	1 1/8" x 11 7/8" Rim Board	1	17

Blocking panels are required over all interior supports under point bearing walls or when floor joists are not continuous over support. Squared blocks are required under concentrated load. Ceramic tile application as per O.B.C. 9.30.6. SUNKEN MUDROOM LAUNDRY (AS REQD.)

BUILT-UP LANDING/STAIRS ON PLYWOOD. SUNKEN ON 1/2\"/>



Home Lumber

Contact:

Derek Frankfort

Date: June 29, 2020

ALPA ROOF

TRUSSES INC.

Gold Park

4000 (°C)

100 (100%)

Pine Valley

LOCATION:

Vaughan

DESIGNER : FC

REVISIONS:

#1

#2	
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#3	3
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77

BBO	Beam By Others
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APP	As Per Plan
PI (G)	Point Load from Girder

PL(W)	Point Load from Lin
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DESIGN INFO:

$$.IT/P|:$$

45147/10692

Layout ID:

321575

FLOOR LAYOUTS

Live:	40.0 lbm³
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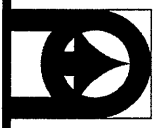
Dead:	20.0 lb/ft ²
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DEFLECTION CRITERIA

Live:	360,000
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Author and Year	Site	Age (yr)
...	...	...

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Yard:

Home Lumber

Contact:
Derek Frankfort

Date: June 29, 2020

ALPHA ROOF
TRUSSES INC.

Gold Park

4009 (Fireberry)

Pine Valley

LOCATION:
Vaughan

DESIGNER : FC

REVISIONS:

#1

#2

#3

#4

LEGEND:

Beam by Column

Beam by Beam

Beam by Floor

Beam by Foundation

Beam by Wall

Beam by Roof

Beam by Siding

Beam by Deck

Beam by Stairs

Beam by Porch

Beam by Garage

Beam by Driveway

Beam by Fence

Beam by Gate

Beam by Wall

Beam by Roof

Beam by Siding

Beam by Deck

Beam by Stairs

Beam by Porch

Beam by Garage

Beam by Driveway

UNEXCAVATED

SINKER WOODWORK
LANEWAY (AS REQ'D)

COLD
CELLAR

BUILD-UP LANDING/STAIRS ON PLYWOOD
FLOORING ON TOP OF JOISTS (BY BUILDERS)

GROUND FLOOR FRAMING

UNIT : 4009 (FIREBERRY)
ELEV. " C " STD. &
OPT. 9' BASEMENT

Do not make any structural
changes without approval
of the engineer.

NOTES:
1. ALL DIMENSIONS ARE IN FEET AND INCHES.
2. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.

FIELD	Length	Product	Notes	Qty
88	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
89	4'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
90	9'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
91	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
92	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
93	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
94	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
95	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
96	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
97	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
98	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
99	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
100	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
101	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
102	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
103	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
104	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
105	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
106	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
107	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
108	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
109	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
110	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
111	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
112	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
113	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
114	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
115	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
116	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
117	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
118	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
119	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
120	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
121	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
122	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
123	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
124	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
125	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
126	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
127	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
128	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
129	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
130	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
131	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
132	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
133	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
134	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
135	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
136	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
137	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
138	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
139	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
140	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
141	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
142	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
143	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
144	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
145	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
146	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
147	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
148	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
149	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
150	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
151	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
152	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
153	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
154	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
155	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
156	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
157	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
158	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
159	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
160	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
161	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
162	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
163	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
164	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
165	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
166	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
167	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
168	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
169	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
170	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
171	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
172	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
173	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
174	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
175	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
176	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
177	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
178	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
179	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
180	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
181	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
182	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
183	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
184	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
185	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
186	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
187	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
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191	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
192	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
193	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
194	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
195	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
196	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
197	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
198	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
199	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1
200	13'-0" 00	1-3/4" x 11-7/8" VERSAL-LAM 2.0 3100 SP		1

Products				
FIELD	Length	Product	Piles	Net Qty
45	15'-0" 00	11/16" N-20	2	4
46	15'-0" 00	11/16" N-20	1	85
47	15'-0" 00	11/16" N-20	1	85
48	13'-0" 00	11/16" N-20	1	16
49	13'-0" 00	11/16" N-20	1	5
50	13'-0" 00	11/16" N-20	1	5
51	13'-0" 00	11/16" N-20	1	5
52	13'-0" 00	11/16" N-20	1	2
53	13'-0" 00	11/16" N-20	1	3
54	13'-0" 00	11/16" N-20	1	3
55	13'-0" 00	11/16" N-20	1	3
56	13'-0" 00	11/16" N-20	1	3
57	13'-0" 00	11/16" N-20	1	3
58	13'-0" 00	11/16" N-20	1	3
59	13'-0" 00	11/16" N-20	1	3
60	13'-0" 00	11/16" N-20	1	3
61	13'-0" 00	11/16" N-20	1	3
62	13'-0" 00	11/16" N-20	1	3
63	13'-0" 00	11/16" N-20	1	3
64	13'-0" 00	11/16" N-20	1	3
65	13'-0" 00	11/16" N-20	1	3
66	13'-0" 00	11/16" N-20	1	3
67	13'-0" 00	11/16" N-20	1	3
68	13'-0" 00	11/16" N-20	1	3
69	13'-0" 00	11/16" N-20	1	3
70	13'-0" 00	11/16" N-20	1	3
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73	13'-0" 00	11/16" N-20	1	3
74	13'-0" 00	11/16" N-20	1	3
75	13'-0" 00	11/16" N-20	1	3
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77	13'-0" 00	11/16" N-20	1	3
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79	13'-0" 00	11/16" N-20	1	3
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84	13'-0" 00	11/16" N-20	1	3
85	13'-0" 00	11/16" N-20	1	3
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277	13'-0" 00	11/16" N-20	1	3
278	13'-0" 00	11/16" N-20	1	3
279	13'-0" 00	11/16" N-20	1	3
280	13'-0" 00	11/16" N-20	1	3
281	13'-0" 00	11/16" N-20	1	3
282	13'-0" 00	11/16" N-20	1	3
283				

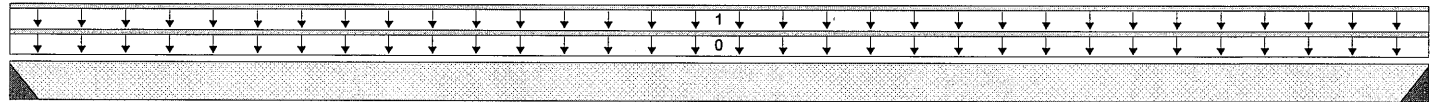
BC CALC® Member Report
 Build 7493
 Job name:
 Address:
 City, Province, Postal Code:
 Customer:
 Code reports:

Dry | 1 span | No cant.

June 29, 2020 15:25:02

File name: 4009 EL. A.mmdl
 Description: 2nd Floor - Supply/BOM/Flush Beams\B1(i58901)
 Specifier:
 Designer:
 Company:

CCMC 12472-R



B1 B2
 Total Horizontal Product Length = 03-06-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	567 / 0	223 / 0		
B2, 2"	567 / 0	223 / 0		

Load Summary

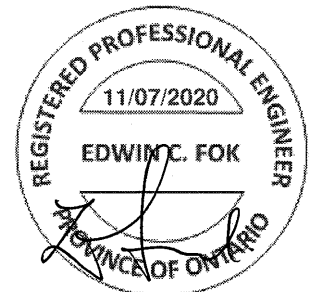
Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-06-08	Top		6			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-06-08	Top	320	120			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	885 ft-lbs	17696 ft-lbs	5.0%	1	01-09-04
End Shear	392 lbs	7232 lbs	5.4%	1	01-01-14
Total Load Deflection	L/999 (0.003")	n/a	n/a	4	01-09-04
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	01-09-04
Max Defl.	0.003"	n/a	n/a	4	01-09-04
Span / Depth	3.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Hanger	2" x 1-3/4"	1129 lbs	n/a	26.4%	HUS1.81/10
B2 Hanger	2" x 1-3/4"	1129 lbs	n/a	26.4%	HU9X (One flange concealed)



Cautions

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 11-7/8" LVL Beam.
 Hanger model HUS1 81/10 and seat length were input by the user.

Header for the hanger HU9X (One flange concealed) is a Double 1-3/4" x 11-7/8" LVL Beam.
 Hanger model HU9X (One flange concealed) and seat length were input by the user.

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: Unassisted
 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®,

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

2nd Floor - Supply/BOM\Flush Beams\B2(i58700) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

June 29, 2020 15:25:02

Job name:

File name: 4009 EL. A.mmdl

Address:

Description: 2nd Floor - Supply/BOM\Flush Beams\B2(i58700)

City, Province, Postal Code:

Specifier:

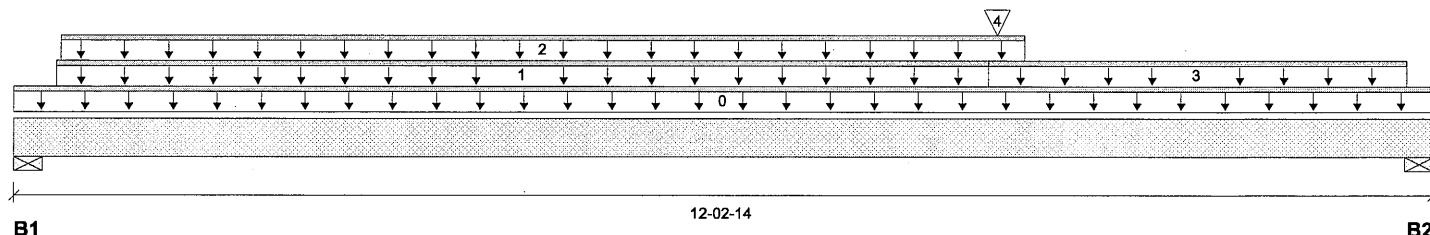
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 12-02-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	299 / 0	306 / 0		
B2, 5-1/2"	573 / 0	361 / 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	12-02-14	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-04-06	08-04-14	Top	22	11			n/a
2	W2(i54271)	Unf. Lin. (lb/ft)	L	00-04-14	08-08-10	Top		26			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	08-04-14	12-00-02	Top	35	18			n/a
4	B1(i58901)	Conc. Pt. (lbs)	L	08-05-12	08-05-12	Top	567	223			n/a

Controls Summary

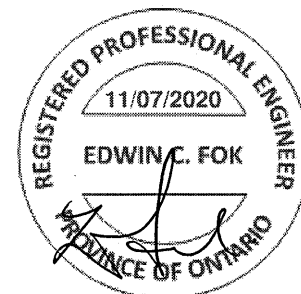
	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3894 ft-lbs	17696 ft-lbs	22.0%	1	08-05-12
End Shear	1209 lbs	7232 lbs	16.7%	1	10-09-08
Total Load Deflection	L/999 (0.123")	n/a	n/a	4	06-05-01
Live Load Deflection	L/999 (0.071")	n/a	n/a	5	06-06-06
Max Defl.	0.123"	n/a	n/a	4	06-05-01
Span / Depth	11.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 1-3/4"	831 lbs	17.6%	8.9%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 1-3/4"	1310 lbs	22.1%	11.2%	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



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.
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®,

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 2nd Floor - Supply/BOM\Flush Beams\B3(i58870) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

Dry | 2 spans | L cant.

June 29, 2020 15:25:02

Job name:

File name: 4009 EL. A.mmdl

Address:

Description: 2nd Floor - Supply/BOM\Flush Beams\B3(i58870)

City, Province, Postal Code:

Specifier:

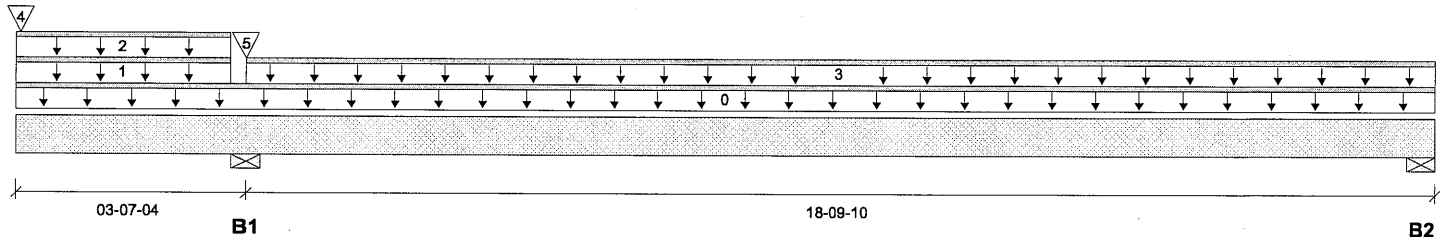
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 22-04-14

Reaction Summary (Down / Uplift) (lbs)

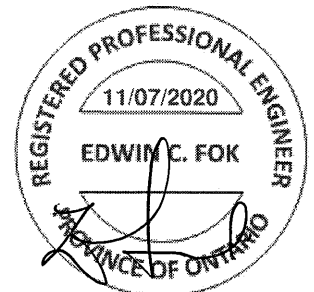
Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1118 / 0	894 / 0		
B2, 4-3/8"	364 / 117	215 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	22-04-14	Top		12			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-04-08	Top	24	12			n/a
2	W3(i54273)	Unf. Lin. (lb/ft)	L	00-00-00	03-04-08	Top		26			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	03-07-04	22-04-14	Top	38	19			n/a
4	-	Conc. Pt. (lbs)	L	00-00-13	00-00-13	Top	567	335			n/a
5	13(i54274)	Conc. Pt. (lbs)	L	03-07-04	03-07-04	Top		17			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3218 ft-lbs	35392 ft-lbs	9.1%	3	13-11-07
Neg. Moment	-5127 ft-lbs	-35392 ft-lbs	14.5%	1	03-07-04
End Shear	685 lbs	14464 lbs	4.7%	3	21-00-10
Cont. Shear	1504 lbs	14464 lbs	10.4%	1	02-04-10
Total Load Deflection	L/1707 (0.13")	n/a	14.1%	10	13-05-05
Live Load Deflection	L/999 (0.103")	n/a	n/a	13	12-11-04
Total Neg. Defl.	L/999 (-0.064")	n/a	n/a	9	09-07-11
Max Defl.	0.13"	n/a	n/a	10	13-05-05
Span / Depth	18.7				



Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	2794 lbs	23.6%	11.9%	Spruce-Pine-Fir
B2	Wall/Plate 4-3/8" x 3-1/2"	815 lbs	8.7%	4.4%	Spruce-Pine-Fir

Nail one ply to another with
3 1/2" spiral nails @ 12"
o.c., staggered in 2 rows

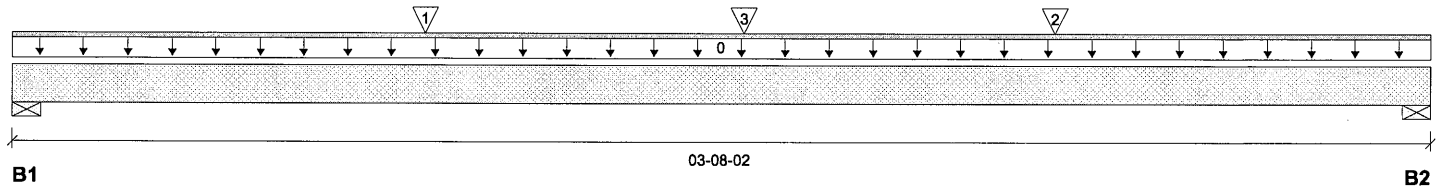
BC CALC® Member Report
 Build 7493
 Job name:
 Address:
 City, Province, Postal Code:
 Customer:
 Code reports:

Dry | 1 span | No cant.

June 29, 2020 15:25:02

File name: 4009 EL. A.mmdl
 Description: 2nd Floor - Supply/BOM\Flush Beams\B4(i58309)
 Specifier:
 Designer:
 Company:

CCMC 12472-R



Total Horizontal Product Length = 03-08-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/8"	832 / 0	427 / 0		
B2, 5-1/2"	920 / 0	471 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-08-02	Top		6			00-00-00
1	-	Conc. Pt. (lbs)	L	01-00-13	01-00-13	Top	708	354			n/a
2	-	Conc. Pt. (lbs)	L	02-08-07	02-08-07	Top	728	364			n/a
3	J1(i58775)	Conc. Pt. (lbs)	L	01-10-12	01-10-12	Top	316	158			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1468 ft-lbs	17696 ft-lbs	8.3%	1	01-10-12
End Shear	1239 lbs	7232 lbs	17.1%	1	01-05-00
Total Load Deflection	L/999 (0.003")	n/a	n/a	4	01-10-00
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	01-10-00
Max Defl.	0.003"	n/a	n/a	4	01-10-00
Span / Depth	2.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 5-1/8" x 1-3/4"	1781 lbs	32.3%	16.3%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 1-3/4"	1970 lbs	33.3%	16.8%	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

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

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

2nd Floor - Supply/BOM\Flush Beams\B5(i58645) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

June 29, 2020 15:25:02

Build 7493

Job name:

File name: 4009 EL. A.mmdl

Address:

Description: 2nd Floor - Supply/BOM\Flush Beams\B5(i58645)

City, Province, Postal Code:

Specifier:

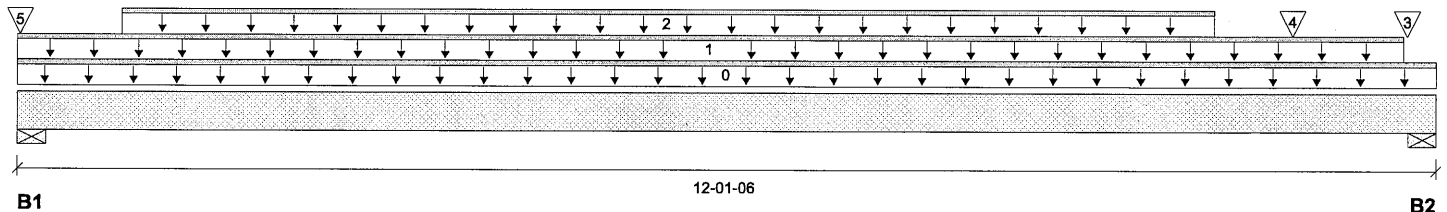
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 12-01-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 6"	1857 / 0	2635 / 0		
B2, 5-3/8"	1976 / 0	1826 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-01-06	Top		12			00-00-00
1	2(i54265)	Unf. Lin. (lb/ft)	L	00-00-00	11-10-00	Top		101			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-10-10	10-02-10	Top	322	162			n/a
3	J3(i58777)	Conc. Pt. (lbs)	L	11-10-06	11-10-06	Top	251	311			n/a
4	J1(i58738)	Conc. Pt. (lbs)	L	10-10-10	10-10-10	Top	376	188			n/a
5	-	Conc. Pt. (lbs)	L	00-00-04	00-00-04	Top	186	1113			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	13175 ft-lbs	35392 ft-lbs	37.2%	1	05-06-10
End Shear	4199 lbs	14464 lbs	29.0%	1	01-05-14
Total Load Deflection	L/606 (0.224")	n/a	39.6%	4	06-00-10
Live Load Deflection	L/999 (0.121")	n/a	n/a	5	06-00-10
Max Defl.	0.224"	n/a	n/a	4	06-00-10
Span / Depth	11.4				



Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 6" x 3-1/2"	6079 lbs	47.1%	23.7%	Spruce-Pine-Fir
B2	Wall/Plate 5-3/8" x 3-1/2"	5247 lbs	45.3%	22.9%	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

Nail one ply to another with
3 1/2" spiral nails @ 10"
o.c. staggered in 2 rows

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

2nd Floor - Supply/BOM\Flush Beams\B6(i58915) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

June 29, 2020 15:25:02

Build 7493

Job name:

File name: 4009 EL. A.mmdl

Address:

Description: 2nd Floor - Supply/BOM\Flush Beams\B6(i58915)

City, Province, Postal Code:

Specifier:

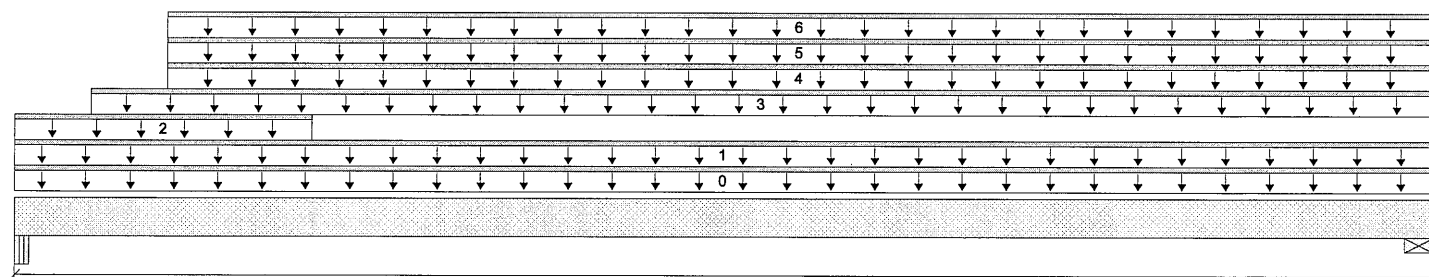
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



B1

04-03-06

B2

Total Horizontal Product Length = 04-03-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	43 / 0	474 / 0	327 / 0	
B2, 4-3/8"	47 / 0	501 / 0	396 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-03-06	Top		6			00-00-00
1	5(i54260)	Unf. Lin. (lb/ft)	L	00-00-00	04-03-06	Top		101			n/a
2	5(i54260)	Unf. Lin. (lb/ft)	L	00-00-00	00-10-12	Top		11			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-02-12	04-03-06	Top	20	10			n/a
4	User Load	Unf. Lin. (lb/ft)	L	00-05-08	04-03-06	Top		67	105		n/a
5	5(i54260)	Unf. Lin. (lb/ft)	L	00-05-08	04-03-06	Top		54	84		n/a
6	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-05-08	04-03-06	Top	3				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	971 ft-lbs	17696 ft-lbs	5.5%	13	02-02-04
End Shear	453 lbs	7232 lbs	6.3%	13	01-05-06
Total Load Deflection	L/999 (0.003")	n/a	n/a	35	02-02-04
Live Load Deflection	L/999 (0.002")	n/a	n/a	51	02-02-04
Max Defl.	0.003"	n/a	n/a	35	02-02-04
Span / Depth	3.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Beam	5-1/2" x 1-3/4"	1127 lbs	19.0%	9.6%	Unspecified
B2 Wall/Plate	4-3/8" x 1-3/4"	1267 lbs	26.9%	13.6%	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.

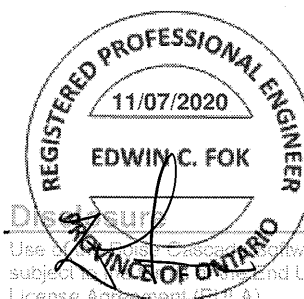
Resistance Factor phi has been applied to all presented results per CSA O86.

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

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



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

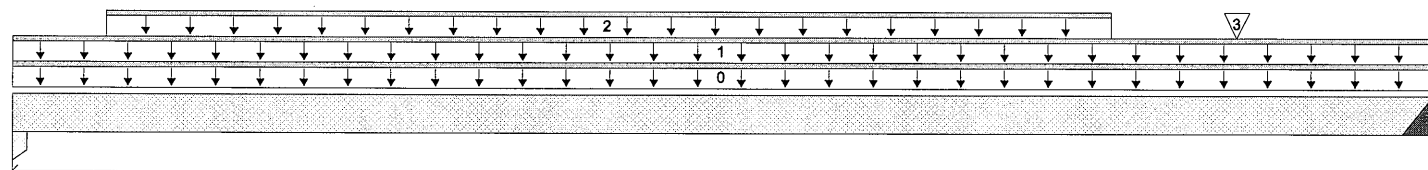
BC CALC® Member Report
 Build 7493
 Job name:
 Address:
 City, Province, Postal Code:
 Customer:
 Code reports:

Dry | 1 span | No cant.

June 29, 2020 15:29:34

File name: 4009 EL. A.mmdl
 Description: Ground Floor - Supply/BOM/Flush Beams\B7(i59201)
 Specifier:
 Designer:
 Company:

CCMC 12472-R



B1

07-06-04

B2

Total Horizontal Product Length = 07-06-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	523 / 0	382 / 0		
B2, 2"	533 / 0	389 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-06-04	Top		6			00-00-00
1	W9(i54286)	Unf. Lin. (lb/ft)	L	00-00-00	07-06-04	Top		26			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-14	05-09-14	Top	162	80			n/a
3	J11(i59305)	Conc. Pt. (lbs)	L	06-05-14	06-05-14	Top	197	99			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2615 ft-lbs	17696 ft-lbs	14.8%	1	03-09-14
End Shear	1215 lbs	7232 lbs	16.8%	1	01-01-10
Total Load Deflection	L/999 (0.036")	n/a	n/a	4	03-08-14
Live Load Deflection	L/999 (0.021")	n/a	n/a	5	03-08-14
Max Defl.	0.036"	n/a	n/a	4	03-08-14
Span / Depth	7.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	1261 lbs	39.4%	33.8%	Unspecified
B2	Hanger 2" x 1-3/4"	1286 lbs	n/a	30.1%	HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 11-7/8" LVL Beam.
 Hanger model HUS1.81/10 and seat length were input by the user.

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



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

BC CALC® Member Report
 Build 7493

Dry | 1 span | No cant.

June 29, 2020 15:29:33

Job name:

File name: 4009 EL. A.mmdl

Address:

Description: Ground Floor - Supply/BOM/Flush Beams\B8(i59578)

City, Province, Postal Code:

Specifier:

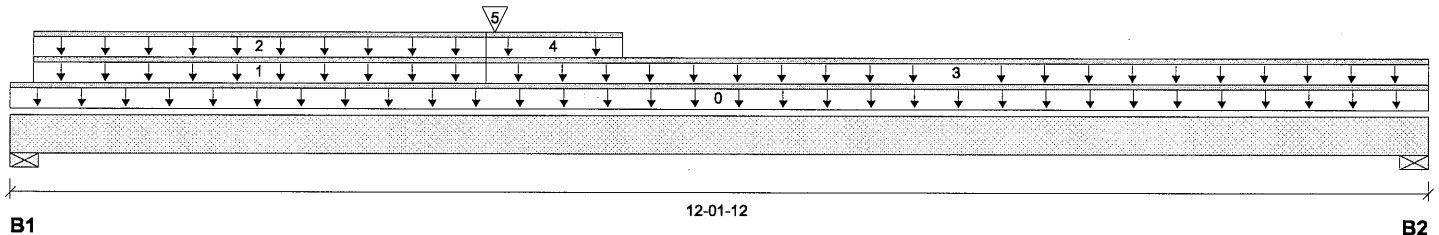
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 12-01-12

Reaction Summary (Down / Uplift) (lbs)

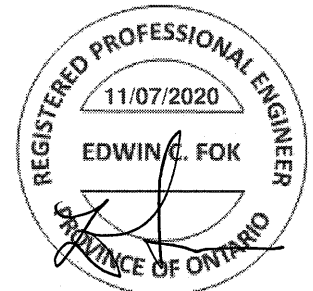
Bearing	Live	Dead	Snow	Wind
B1, 2-3/8"	1127 / 0	660 / 0		
B2, 2-3/8"	499 / 0	341 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-01-12	Top		6			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-02-06	04-00-14	Top	200	80			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-02-06	04-00-14	Top	13	6			n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	04-00-14	12-01-12	Top	33	17			n/a
4	W10(i54287)	Unf. Lin. (lb/ft)	L	04-00-14	05-02-14	Top		61			n/a
5	B7(i59201)	Conc. Pt. (lbs)	L	04-01-12	04-01-12	Top	532	387			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	6687 ft-lbs	17696 ft-lbs	37.8%	1	04-01-12
End Shear	2082 lbs	7232 lbs	28.8%	1	01-02-04
Total Load Deflection	L/666 (0.214")	n/a	36.0%	4	05-07-03
Live Load Deflection	L/1113 (0.128")	n/a	32.3%	5	05-07-03
Max Defl.	0.214"	n/a	n/a	4	05-07-03
Span / Depth	12.0				



Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 2-3/8" x 1-3/4"	2515 lbs	98.4%	49.6%	Spruce-Pine-Fir
B2	Wall/Plate 2-3/8" x 1-3/4"	1175 lbs	45.9%	23.2%	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

Disclosure

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

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP **Ground Floor - Supply/BOM\Flush Beams\B9(i59561) (Flush Beam)**

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

June 29, 2020 15:29:33

Build 7493

Job name:

File name: 4009 EL. A.mmdl

Address:

Description: Ground Floor - Supply/BOM\Flush Beams\B9(i59561)

City, Province, Postal Code:

Specifier:

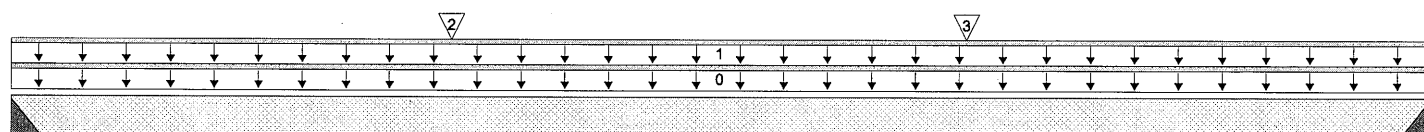
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



B1

03-08-00

B2

Total Horizontal Product Length = 03-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	508 / 0	229 / 0		
B2, 2"	505 / 0	227 / 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	03-08-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-08-00	Top	200	80			n/a
2	J12(i59241)	Conc. Pt. (lbs)	L	01-01-10	01-01-10	Top	138	69			n/a
3	J12(i59368)	Conc. Pt. (lbs)	L	02-05-10	02-05-10	Top	142	71			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	925 ft-lbs	17696 ft-lbs	5.2%	1	01-10-04
End Shear	571 lbs	7232 lbs	7.9%	1	01-01-14
Total Load Deflection	L/999 (0.003")	n/a	n/a	4	01-10-04
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	01-10-04
Max Defl.	0.003"	n/a	n/a	4	01-10-04
Span / Depth	3.5				

Bearing Supports

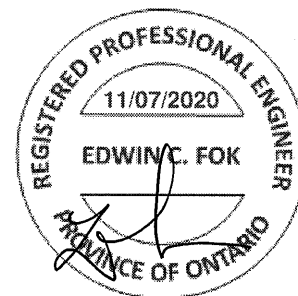
	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	1048 lbs	n/a	24.6%	HUS1.81/10
B2	Hanger 2" x 1-3/4"	1041 lbs	n/a	24.4%	HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 11-7/8" LVL Beam.
Hanger model HUS1.81/10 and seat length were input by the user.

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

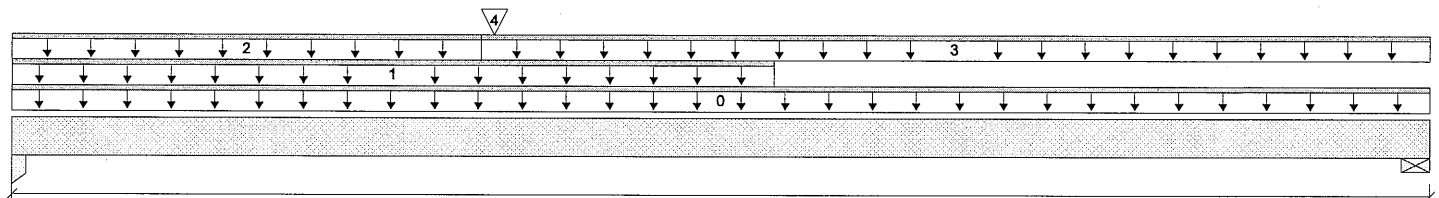


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SG 020559



B1

08-00-14

B2

Total Horizontal Product Length = 08-00-14

Reaction Summary (Down / Uplift) (lbs)

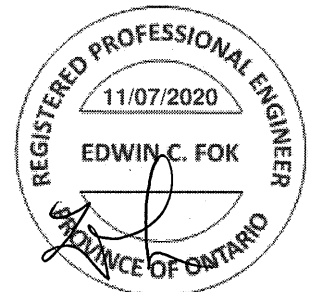
Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	490 / 0	341 / 0		
B2, 2-3/8"	355 / 0	222 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-00-14	Top		6			00-00-00
1	W8(i54288)	Unf. Lin. (lb/ft)	L	00-00-00	04-04-00	Top		26			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	02-08-00	Top	26	13			n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	02-08-00	08-00-14	Top	50	25			n/a
4	B9(i59561)	Conc. Pt. (lbs)	L	02-08-14	02-08-14	Top	505	227			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2547 ft-lbs	17696 ft-lbs	14.4%	1	02-08-14
End Shear	1034 lbs	7232 lbs	14.3%	1	01-03-06
Total Load Deflection	L/999 (0.035")	n/a	n/a	4	03-10-00
Live Load Deflection	L/999 (0.022")	n/a	n/a	5	03-10-00
Max Defl.	0.035"	n/a	n/a	4	03-10-00
Span / Depth	7.8				



Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Column	3-1/2" x 1-3/4"	1162 lbs	18.2%	15.5%	Unspecified
B2 Wall/Plate	2-3/8" x 1-3/4"	809 lbs	31.6%	16.0%	Spruce-Pine-Fir

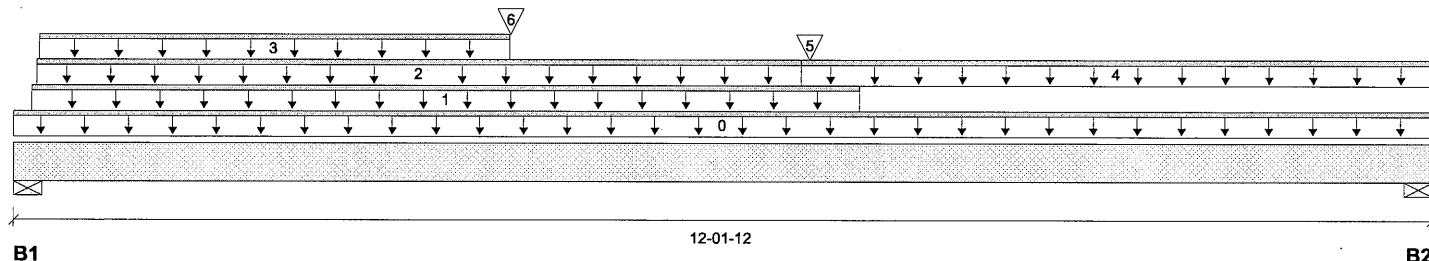
Notes

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

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Total Horizontal Product Length = 12-01-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-3/8"	784 / 0	690 / 0		
B2, 2-3/8"	668 / 0	470 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-01-12	Top		6			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-01-14	07-02-14	Top		60			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-02-06	06-08-14	Top	22	11			n/a
3	User Load	Unf. Lin. (lb/ft)	L	00-02-10	04-02-14	Top	60	30			n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	06-08-14	12-01-12	Top	45	22			n/a
5	B9(i59561)	Conc. Pt. (lbs)	L	06-09-12	06-09-12	Top	508	229			n/a
6	User Load	Conc. Pt. (lbs)	L	04-03-00	04-03-00	Top	315	119			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	6796 ft-lbs	17696 ft-lbs	38.4%	1	06-09-12
End Shear	1904 lbs	7232 lbs	26.3%	1	01-02-04
Total Load Deflection	L/589 (0.242")	n/a	40.8%	4	05-11-08
Live Load Deflection	L/1029 (0.139")	n/a	35.0%	5	05-11-08
Max Defl.	0.242"	n/a	n/a	4	05-11-08
Span / Depth	12.0				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 2-3/8" x 1-3/4"	2038 lbs	79.7%	40.2%	Spruce-Pine-Fir
B2	Wall/Plate 2-3/8" x 1-3/4"	1589 lbs	62.2%	31.3%	Spruce-Pine-Fir

Notes

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

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

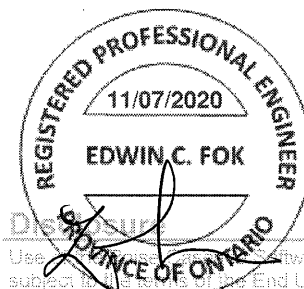
Calculations assume member is fully braced.

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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Ground Floor - Supply/BOM\Flush Beams\B12(i59208) (Flush Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

June 29, 2020 15:29:33

Build 7493

Job name:

File name: 4009 EL. A.mmdl

Address:

Description: Ground Floor - Supply/BOM\Flush Beams\B12(i59208)

City, Province, Postal Code:

Specifier:

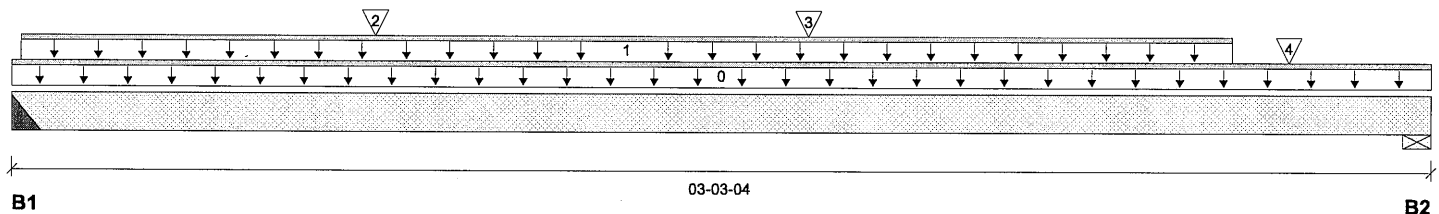
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 03-03-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	246 / 0	225 / 0		
B2, 8"	728 / 0	503 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-03-04	Top		6			00-00-00
1	34(i54762)	Unf. Lin. (lb/ft)	L	00-00-04	02-09-12	Top		68			n/a
2	J8(i59025)	Conc. Pt. (lbs)	L	00-10-00	00-10-00	Top	233	117			n/a
3	J8(i59213)	Conc. Pt. (lbs)	L	01-10-00	01-10-00	Top	245	122			n/a
4	-	Conc. Pt. (lbs)	L	02-11-05	02-11-05	Top	496	279			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	478 ft-lbs	17696 ft-lbs	2.7%	1	01-08-06
End Shear	398 lbs	7232 lbs	5.5%	1	01-07-06
Total Load Deflection	L/999 (0.001")	n/a	n/a	4	01-04-10
Live Load Deflection	L/999 (0")	n/a	n/a	5	01-04-10
Max Defl.	0.001"	n/a	n/a	4	01-04-10
Span / Depth	2.6				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Hanger	2" x 1-3/4"	651 lbs	n/a	15.2%	HUS1.81/10
B2 Wall/Plate	8" x 1-3/4"	1720 lbs	20.0%	10.1%	Spruce-Pine-Fir

Cautions

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 11-7/8" LVL Beam.

Hanger model HUS1.81/10 and seat length were input by the user.

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


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BC CALC® Member Report
 Build 7493

Dry | 1 span | No cant.

June 29, 2020 15:29:33

Job name:

File name: 4009 EL. A.mmdl

Address:

Description: Ground Floor - Supply/BOM\Flush Beams\B13(i59207)

City, Province, Postal Code:

Specifier:

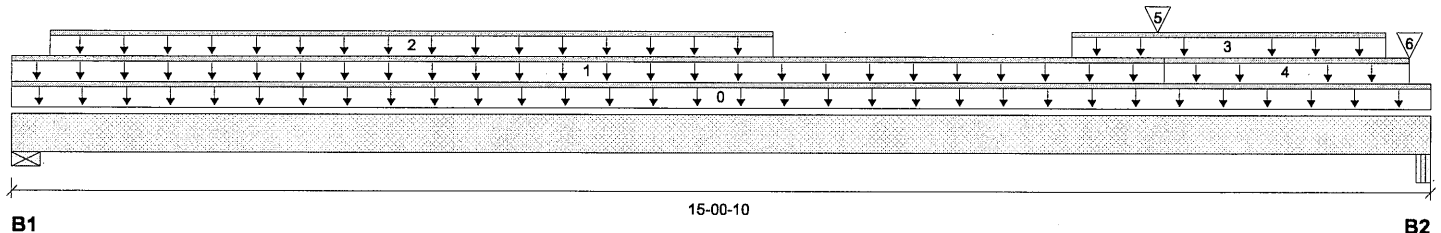
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 15'-00-10"

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-3/8"	315 / 0	620 / 0		
B2, 5-1/2"	655 / 0	810 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-00-10	Top		6			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	12-02-10	Top	39	19			n/a
2	23(i54303)	Unf. Lin. (lb/ft)	L	00-04-14	08-00-14	Top		68			n/a
3	25(i54304)	Unf. Lin. (lb/ft)	L	11-02-14	14-06-14	Top		68			n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	12-02-10	14-09-14	Top	22	11			n/a
5	B12(i59208)	Conc. Pt. (lbs)	L	12-01-12	12-01-12	Top	184	185			n/a
6	26(i54305)	Conc. Pt. (lbs)	L	14-09-14	14-09-14	Top	255	140			n/a

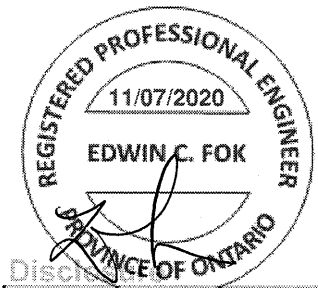
Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3017 ft-lbs	11502 ft-lbs	26.2%	0	06-11-15
End Shear	908 lbs	4701 lbs	19.3%	0	13-07-04
Total Load Deflection	L/652 (0.267")	n/a	36.8%	4	07-05-02
Live Load Deflection	L/999 (0.098")	n/a	n/a	5	07-07-11
Max Defl.	0.267"	n/a	n/a	4	07-05-02
Span / Depth	14.7				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 2-3/8" x 1-3/4"	869 lbs	52.3%	26.4%	Spruce-Pine-Fir
B2	Beam 5-1/2" x 1-3/4"	1996 lbs	33.7%	17.0%	Unspecified

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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Build 7493

Job name:

File name: 4009 EL. A.mmdl

Address:

Description: Ground Floor - Supply/BOM\Flush Beams\B14(i59470)

City, Province, Postal Code:

Specifier:

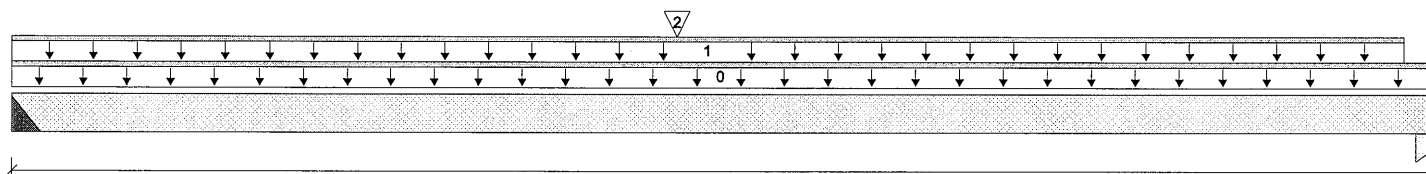
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



B1

Total Horizontal Product Length = 01-08-00

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	99 / 0	107 / 0		
B2, 3-1/2"	102 / 0	116 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	01-08-00	Top		6			00-00-00
1	28(i54309)	Unf. Lin. (lb/ft)	L	00-00-00	01-07-10	Top		68			n/a
2	J9(i59479)	Conc. Pt. (lbs)	L	00-09-06	00-09-06	Top	201	101			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	163 ft-lbs	17696 ft-lbs	0.9%	1	00-09-06
End Shear	25 lbs	4701 lbs	0.5%	0	00-04-10
Total Load Deflection	L/999 (0")	n/a	n/a	4	00-09-04
Max Defl.	0"	n/a	n/a	4	00-09-04
Span / Depth	1.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger 2" x 1-3/4"	282 lbs	n/a	6.6%	HUS1.81/10
B2	Column 3-1/2" x 1-3/4"	297 lbs	4.6%	4.0%	Unspecified

Cautions

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 11-7/8" LVL Beam.

Hanger model HUS1.81/10 and seat length were input by the user. †

Notes

Design meets Code minimum (L/240) Total 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

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

BC CALC® Member Report
 Build 7493

Dry | 1 span | No cant.

June 29, 2020 15:29:33

Job name:

File name: 4009 EL. A.mmdl

Address:

Description: Ground Floor - Supply/BOM\Flush Beams\B15(i59230)

City, Province, Postal Code:

Specifier:

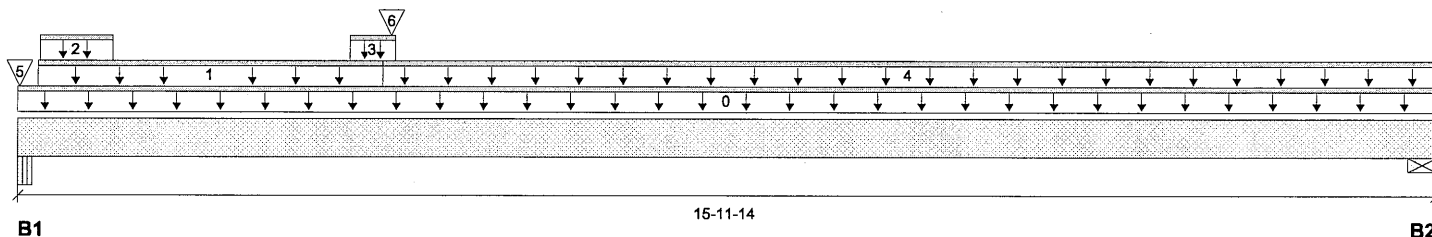
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 15'-11-1/4"

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-3/4"	409 / 0	405 / 0		
B2, 1-7/8"	360 / 0	260 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-11-14	Top		6			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-02-12	04-01-04	Top	27	14			n/a
2	27(i54308)	Unf. Lin. (lb/ft)	L	00-03-00	01-00-14	Top		68			n/a
3	31(i54311)	Unf. Lin. (lb/ft)	L	03-08-14	04-03-00	Top		68			n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	04-01-04	15-11-14	Top	43	22			n/a
5	26(i54305)	Conc. Pt. (lbs)	L	00-00-04	00-00-04	Top	53	36			n/a
6	-	Conc. Pt. (lbs)	L	04-02-07	04-02-07	Top	96	131			n/a

Controls Summary

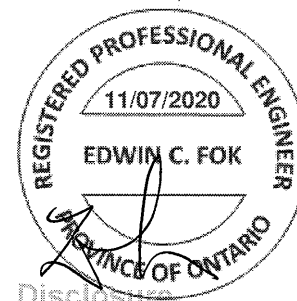
	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3689 ft-lbs	17696 ft-lbs	20.8%	1	07-04-02
End Shear	926 lbs	7232 lbs	12.8%	1	01-02-10
Total Load Deflection	L/774 (0.244")	n/a	31.0%	4	07-10-00
Live Load Deflection	L/1403 (0.134")	n/a	25.7%	5	07-11-15
Max Defl.	0.244"	n/a	n/a	4	07-10-00
Span / Depth	15.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam 2-3/4" x 1-3/4"	1120 lbs	37.8%	19.1%	Unspecified
B2	Wall/Plate 1-7/8" x 1-3/4"	865 lbs	42.8%	21.6%	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



Disclosure

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

BC CALC® Member Report
 Build 7493

Dry | 1 span | No cant.

June 29, 2020 15:29:33

Job name:

File name: 4009 EL. A.mmdl

Address:

Description: Ground Floor - Supply/BOM\Flush Beams\B16(i59371)

City, Province, Postal Code:

Specifier:

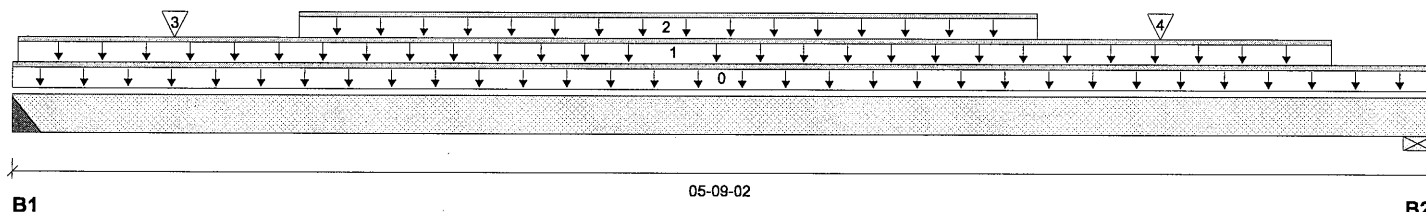
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 05-09-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	454 / 0	438 / 0		
B2, 2-3/8"	418 / 0	396 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-09-02	Top		6			00-00-00
1	30(i54310)	Unf. Lin. (lb/ft)	L	00-00-04	05-04-04	Top		68			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-01-14	04-01-14	Top	176	88			n/a
3	J10(i59161)	Conc. Pt. (lbs)	L	00-07-14	00-07-14	Top	152	76			n/a
4	J10(i59298)	Conc. Pt. (lbs)	L	04-07-14	04-07-14	Top	192	96			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1794 ft-lbs	17696 ft-lbs	10.1%	1	02-07-14
End Shear	1079 lbs	7232 lbs	14.9%	1	04-06-14
Total Load Deflection	L/999 (0.014")	n/a	n/a	4	02-10-02
Live Load Deflection	L/999 (0.008")	n/a	n/a	5	02-10-02
Max Defl.	0.014"	n/a	n/a	4	02-10-02
Span / Depth	5.6				

Bearing Supports

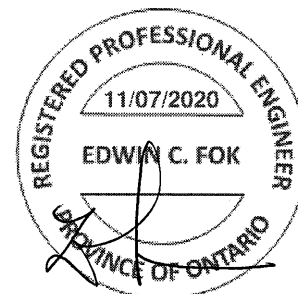
	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger 2" x 1-3/4"	1229 lbs	n/a	28.8%	HUS1.81/10
B2	Wall/Plate 2-3/8" x 1-3/4"	1122 lbs	43.9%	22.1%	Spruce-Pine-Fir

Cautions

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 11-7/8" LVL Beam.
 Hanger model HUS1.81/10 and seat length were input by the user.

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


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

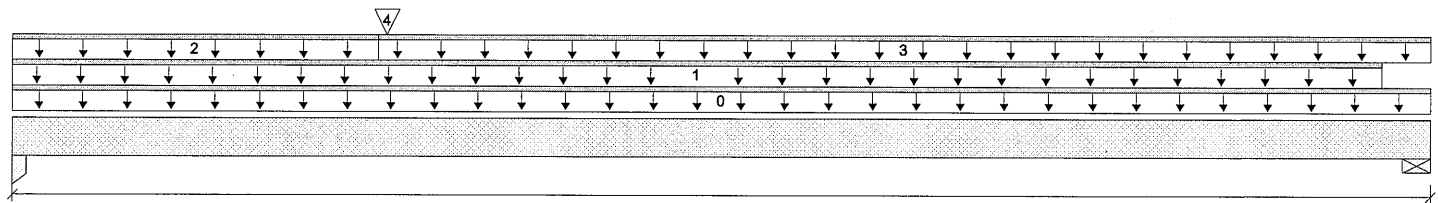
BC CALC® Member Report
 Build 7493
 Job name:
 Address:
 City, Province, Postal Code:
 Customer:
 Code reports:

Dry | 1 span | No cant.

June 29, 2020 15:29:33

File name: 4009 EL. A.mmdl
 Description: Ground Floor - Supply/BOM\Flush Beams\B17(i59325)
 Specifier:
 Designer:
 Company:

CCMC 12472-R



B1

11-08-14

B2

Total Horizontal Product Length = 11-08-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	476 / 0	825 / 0		
B2, 1-7/8"	293 / 0	609 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-08-14	Top		6			00-00-00
1	29(i54307)	Unf. Lin. (lb/ft)	L	00-00-00	11-04-00	Top		68			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-00-04	Top	17	9			n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	03-00-04	11-08-14	Top	31	15			n/a
4	B16(i59371)	Conc. Pt. (lbs)	L	03-01-02	03-01-02	Top	448	430			n/a

Controls Summary

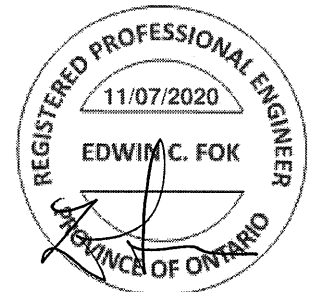
	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3075 ft-lbs	11502 ft-lbs	26.7%	0	04-07-07
End Shear	1599 lbs	7232 lbs	22.1%	1	01-01-10
Total Load Deflection	L/825 (0.168")	n/a	29.1%	4	05-06-11
Live Load Deflection	L/999 (0.06")	n/a	n/a	5	05-05-04
Max Defl.	0.168"	n/a	n/a	4	05-06-11
Span / Depth	11.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	1155 lbs	55.6%	47.6%	Unspecified
B2	Wall/Plate 1-7/8" x 1-3/4"	852 lbs	64.9%	32.7%	Spruce-Pine-Fir

Notes

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

Build 7493

Job name:

File name: 4009 EL. A.mmdl

Address:

Description: Ground Floor - Supply/BOM\Flush Beams\B18(i59343)

City, Province, Postal Code:

Specifier:

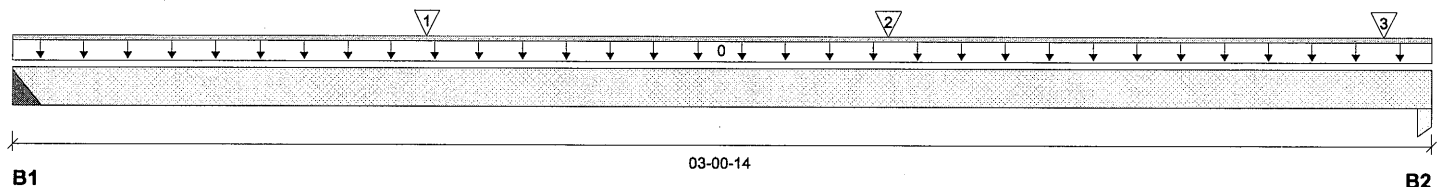
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 03-00-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	127 / 0	71 / 0		
B2, 2-1/4"	180 / 0	98 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-00-14	Top		5			00-00-00
1	J2(i59567)	Conc. Pt. (lbs)	L	00-10-12	00-10-12	Top	114	57			n/a
2	J2(i59566)	Conc. Pt. (lbs)	L	01-10-12	01-10-12	Top	120	60			n/a
3	J2(i59581)	Conc. Pt. (lbs)	L	02-11-10	02-11-10	Top	73	37			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	245 ft-lbs	11610 ft-lbs	2.1%	1	01-10-12
End Shear	253 lbs	5785 lbs	4.4%	1	00-11-08
Total Load Deflection	L/999 (0.001")	n/a	n/a	4	01-06-03
Live Load Deflection	L/999 (0.001")	n/a	n/a	5	01-06-03
Max Defl.	0.001"	n/a	n/a	4	01-06-03
Span / Depth	3.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Hanger	2" x 1-3/4"	278 lbs	n/a	6.5%	HUS1.81/10
B2 Column	2-1/4" x 1-3/4"	393 lbs	9.5%	8.1%	Unspecified

Cautions

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 9-1/2" LVL Beam.
Hanger model HUS1.81/10 and seat length were input by the user.

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

Disclosure

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Build 7493

Job name:

File name: 4009 EL. A.mmdl

Address:

Description: Ground Floor - Supply/BOM\Flush Beams\B19(i59273)

City, Province, Postal Code:

Specifier:

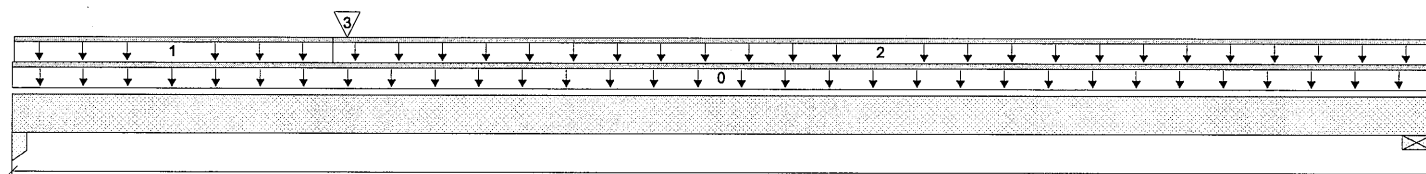
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



B1

Total Horizontal Product Length = 07-04-14

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	201 / 0	125 / 0		
B2, 2-3/8"	152 / 0	95 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-04-14	Top		5			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-02	01-08-00	Top	17	9			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	01-08-00	07-04-14	Top	35	18			n/a
3	B18(i59343)	Conc. Pt. (lbs)	L	01-08-14	01-08-14	Top	123	69			n/a

Controls Summary

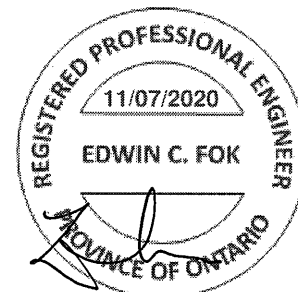
	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	703 ft-lbs	11610 ft-lbs	6.1%	1	03-01-09
End Shear	412 lbs	5785 lbs	7.1%	1	01-01-00
Total Load Deflection	L/999 (0.018")	n/a	n/a	4	03-07-11
Live Load Deflection	L/999 (0.011")	n/a	n/a	5	03-07-11
Max Defl.	0.018"	n/a	n/a	4	03-07-11
Span / Depth	8.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	458 lbs	7.2%	6.1%	Unspecified
B2	Wall/Plate 2-3/8" x 1-3/4"	348 lbs	13.6%	6.9%	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



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

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

2nd Floor - Supply/BOM\Flush Beams\B20(i61099) (Flush Beam)

PASSED

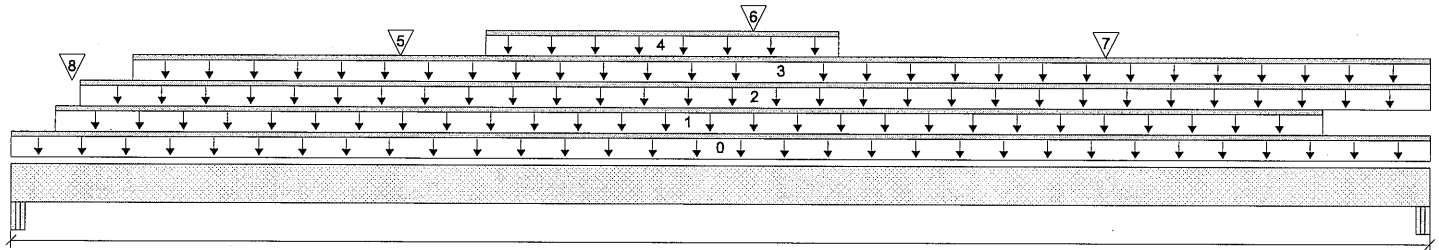
BC CALC® Member Report
 Build 7493
 Job name:
 Address:
 City, Province, Postal Code:
 Customer:
 Code reports:

Dry | 1 span | No cant.

June 29, 2020 16:11:29

File name: 4009 EL. B.mmdl
 Description: 2nd Floor - Supply/BOM\Flush Beams\B20(i61099)
 Specifier:
 Designer:
 Company:

CCMC 12472-R



05-04-06

B1

B2

Total Horizontal Product Length = 05-04-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	509 / 0	1084 / 0	771 / 0	
B2, 4-3/8"	526 / 0	1071 / 0	848 / 0	

Load Summary

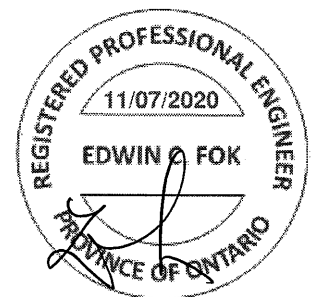
Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-04-06	Top		12			00-00-00
1	6(i54264)	Unf. Lin. (lb/ft)	L	00-02-00	04-11-08	Top		101			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-03-02	05-04-06	Top	6				n/a
3	6(i54264)	Unf. Lin. (lb/ft)	L	00-05-08	05-04-06	Top		181	284		n/a
4	6(i54264)	Unf. Lin. (lb/ft)	L	01-09-08	03-01-08	Top		124	171		n/a
5	J4(i61101)	Conc. Pt. (lbs)	L	01-05-10	01-05-10	Top	344	172			n/a
6	J4(i61079)	Conc. Pt. (lbs)	L	02-09-10	02-09-10	Top	344	172			n/a
7	J4(i61050)	Conc. Pt. (lbs)	L	04-01-10	04-01-10	Top	317	159			n/a
8	5(i54260)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		33			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3897 ft-lbs	35392 ft-lbs	11.0%	13	02-09-10
End Shear	2163 lbs	14464 lbs	15.0%	1	04-00-02
Total Load Deflection	L/999 (0.012")	n/a	n/a	35	02-08-14
Live Load Deflection	L/999 (0.007")	n/a	n/a	51	02-08-14
Max Defl.	0.012"	n/a	n/a	35	02-08-14
Span / Depth	4.7				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/2" x 3-1/2"	3021 lbs	25.5%	12.9%	Unspecified
B2 Beam	4-3/8" x 3-1/2"	3136 lbs	33.3%	16.8%	Unspecified

Nail one ply to another with
 3 1/2" spiral nails @ 6"
 o.c, staggered in 2 rows



86 020570

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

2nd Floor - Supply/BOM\Flush Beams\B21(i61093) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

June 29, 2020 16:11:29

Build 7493

Job name:

File name: 4009 EL. B.mmdl

Address:

Description: 2nd Floor - Supply/BOM\Flush Beams\B21(i61093)

City, Province, Postal Code:

Specifier:

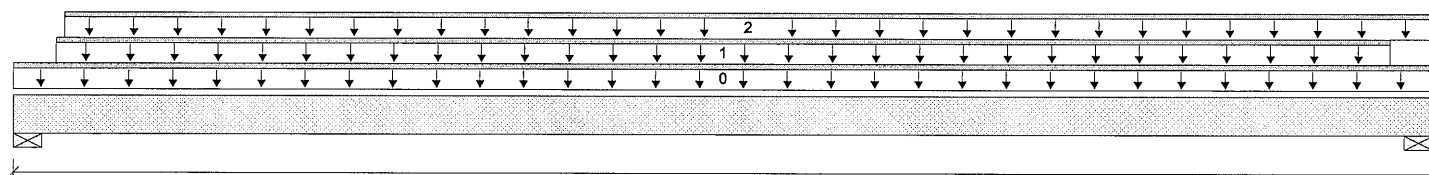
Customer:

Designer:

Code reports:

CCMC 12472-R

Company:



B1

12-01-12

B2

Total Horizontal Product Length = 12-01-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	685 / 0	1249 / 0	769 / 0	
B2, 4-3/8"	685 / 0	1313 / 0	829 / 0	

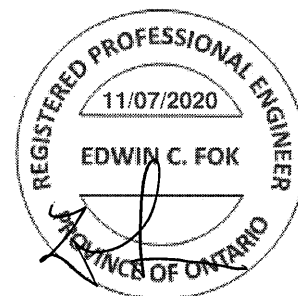
Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-01-12	Top		12			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-04-06	11-09-06	Top	120	60			n/a
2	37(i59590)	Unf. Lin. (lb/ft)	L	00-05-04	12-01-12	Top		148	136		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	9970 ft-lbs	35392 ft-lbs	28.2%	13	06-00-14
End Shear	3183 lbs	14464 lbs	22.0%	13	01-04-04
Total Load Deflection	L/712 (0.194")	n/a	33.7%	35	06-00-14
Live Load Deflection	L/999 (0.105")	n/a	n/a	51	06-00-14
Max Defl.	0.194"	n/a	n/a	35	06-00-14
Span / Depth	11.7				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 4-3/8" x 3-1/2"	3400 lbs	36.1%	18.2%	Spruce-Pine-Fir
B2	Wall/Plate 4-3/8" x 3-1/2"	3569 lbs	37.9%	19.1%	Spruce-Pine-Fir



Notes

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

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

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 @ 12"
o.c, staggered in 2 rows

SG 020571

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2nd Floor - Supply/BOM\Flush Beams\B22(i60836) (Flush Beam)

PASSED

BC CALC® Member Report
 Build 7493

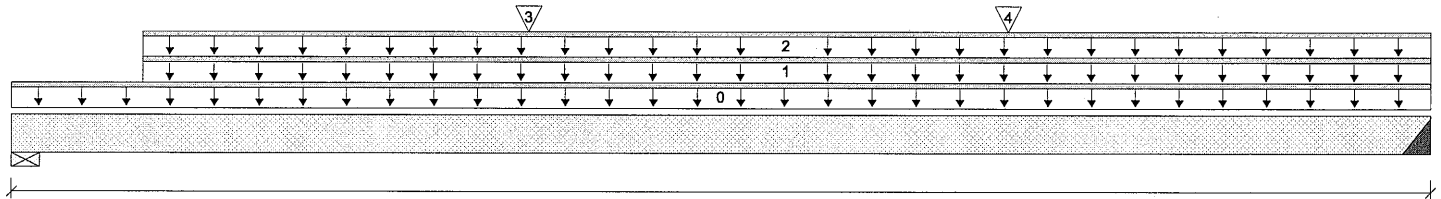
Dry | 1 span | No cant.

June 29, 2020 16:59:22

Job name:
 Address:
 City, Province, Postal Code:
 Customer:
 Code reports:

CCMC 12472-R

File name: 4009 EL. C.mmdl
 Description: 2nd Floor - Supply/BOM\Flush Beams\B22(i60836)
 Specifier:
 Designer:
 Company:



B1

03-11-06

B2

Total Horizontal Product Length = 03-11-06

Reaction Summary (Down / Uplift) (lbs)

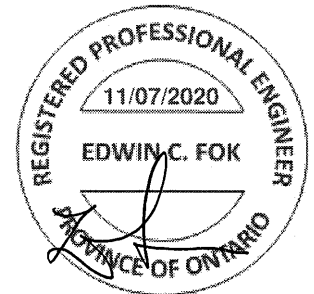
Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	253 / 0	404 / 0	144 / 0	
B2, 2"	259 / 0	431 / 0	157 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-11-06	Top		6			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-04-06	03-11-06	Top		54	84		n/a
2	9(i54266)	Unf. Lin. (lb/ft)	L	00-04-06	03-11-06	Top		101			n/a
3	J6(i61019)	Conc. Pt. (lbs)	L	01-05-04	01-05-04	Top	253	127			n/a
4	J6(i61058)	Conc. Pt. (lbs)	L	02-09-04	02-09-04	Top	254	127			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1044 ft-lbs	17696 ft-lbs	5.9%	1	02-00-04
End Shear	754 lbs	7232 lbs	10.4%	1	02-09-08
Total Load Deflection	L/999 (0.004")	n/a	n/a	35	02-00-12
Live Load Deflection	L/999 (0.002")	n/a	n/a	51	02-00-12
Max Defl.	0.004"	n/a	n/a	35	02-00-12
Span / Depth	3.6				



Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 4-3/8" x 1-3/4"	1027 lbs	21.8%	11.0%	Spruce-Pine-Fir
B2	Hanger 2" x 1-3/4"	1084 lbs	n/a	25.4%	HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 is a Double 1-3/4" x 11-7/8" LVL Beam.
 Hanger model HUS1.81/10 and seat length were input by the user.

SG020572

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

2nd Floor - Supply/BOM\Flush Beams\B23(i60685) (Flush Beam)

PASSED

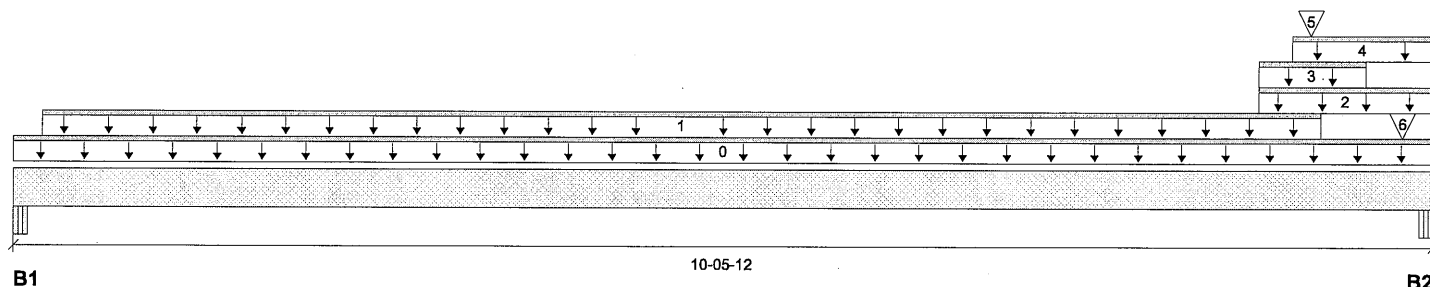
BC CALC® Member Report
 Build 7493
 Job name:
 Address:
 City, Province, Postal Code:
 Customer:
 Code reports:

Dry | 1 span | No cant.

June 29, 2020 16:59:22

File name: 4009 EL. C.mmdl
 Description: 2nd Floor - Supply/BOM\Flush Beams\B23(i60685)
 Specifier:
 Designer:
 Company:

CCMC 12472-R



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	262 / 0	233 / 0	37 / 0	
B2, 5-1/2"	459 / 0	1121 / 0	736 / 0	

Load Summary

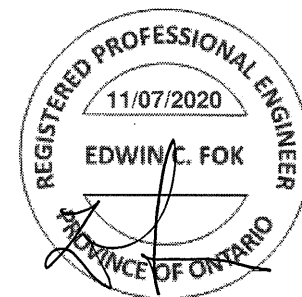
Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-05-12	Top	1.00	0.65	1.00	1.15	
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-02-09	09-07-12	Top	50	25			n/a
2	8(i54268)	Unf. Lin. (lb/ft)	L	09-02-04	10-05-12	Top		101			n/a
3	8(i54268)	Unf. Lin. (lb/ft)	L	09-02-04	09-11-12	Top		455	674		n/a
4	8(i54268)	Unf. Lin. (lb/ft)	L	09-05-04	10-05-12	Top		54	84		n/a
5	B22(i60836)	Conc. Pt. (lbs)	L	09-06-14	09-06-14	Top	253	419	153		n/a
6	7(i54269)	Conc. Pt. (lbs)	L	10-03-00	10-03-00	Top		30			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2018 ft-lbs	35392 ft-lbs	5.7%	1	06-02-04
End Shear	2209 lbs	14464 lbs	15.3%	13	09-00-06
Total Load Deflection	L/999 (0.027")	n/a	n/a	35	05-05-11
Live Load Deflection	L/999 (0.015")	n/a	n/a	51	05-05-11
Max Defl.	0.027"	n/a	n/a	35	05-05-11
Span / Depth	9.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	5-1/2" x 3-1/2"	722 lbs	6.1%	3.1%	Unspecified
B2 Beam	5-1/2" x 3-1/2"	2965 lbs	25.0%	12.6%	Unspecified



Nail one ply to another with
 3 1/2" spiral nails @ 12"
 o.c, staggered in 2 rows

46020573

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				1/2 in. gypsum ceiling			
		On centre spacing				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				Mid-span blocking and 1/2 in. gypsum ceiling			
		On centre spacing				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:

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

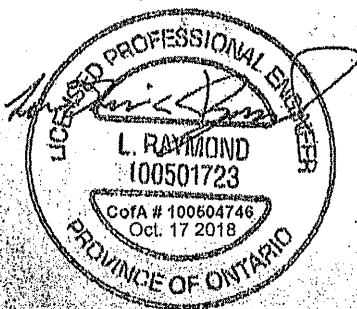
The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

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

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

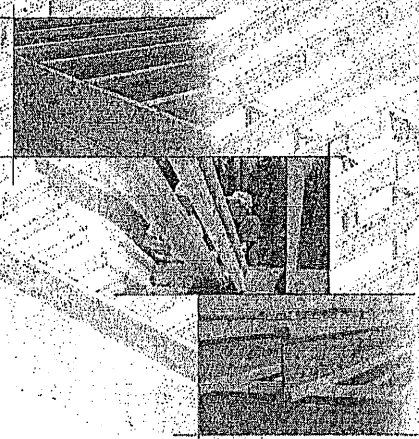
Document prepared for the use of Stephanie Gon from Alpa, Ontario. (Nordic Request 1810-095)



N-C301/April 2014

NORDIC ENGINEERED WOOD

INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:



SAFETY AND CONSTRUCTION PRECAUTIONS



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. Run and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing at joist ends. When I-joists are applied continuously over interior supports and a load-bearing wall is skinned 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 truss, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
 - Temporary bracing or struts must be 1-1/2 inch minimum, at least 8 feet long and spaced no more than 8 feet on center, and must be secured with a minimum of two 1-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.
 - Or, sheathing temporary or permanent can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bracing.
4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or 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 size and locations, or failure to use web stiffeners when required can result in serious accidents. Follow State Installation guidelines carefully.

STORAGE AND HANDLING GUIDELINES

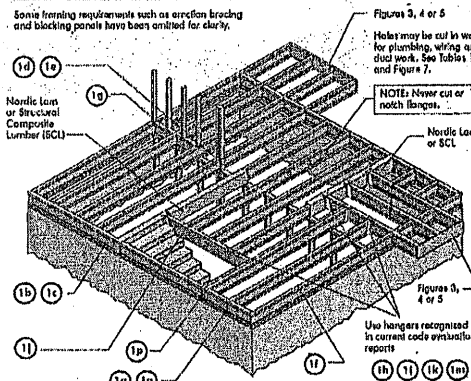
1. Bundle wraps can be slippery when wet. Avoid walking on wrapped bundles.
2. Store, stack, and handle I-joists vertically and level only.
3. Always stack and handle I-joists in the upright position only.
4. Do not store I-joists in direct contact with the ground and/or flatwise.
5. Protect I-joists from weather, and use spacers to separate bundles.
6. Bundled units should be kept intact until time of installation.
 - 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 spreading bar if necessary.
7. When handling I-joists with a crane on the job site, take a few simple precautions to prevent damage to the I-joists and injury to your work crew.
 - Do not handle I-joists in a horizontal orientation.
8. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.



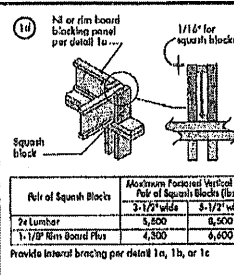
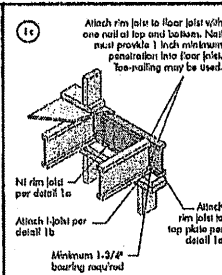
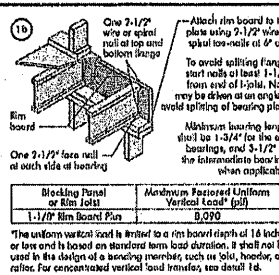
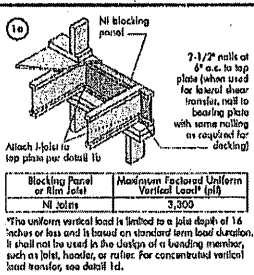
INSTALLING NORDIC I-JOISTS

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 and end 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 unusual or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist 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. Realign ends of floor joists to prevent rollovers. 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 squish blocks (ripple members) to transfer gravity loads through the floor system to the wall or foundation below.
12. Due to shrinkage, common framing lumber set on edge may never be used as blocking or rim boards. I-joist blocking panels or other engineered wood products - such as rim board - must be cut to fit between the I-joists, and on I-joist-compatible depth released.
13. Provide permanent lateral support 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 apparent 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



All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.125" dia.) common spiral nails may be substituted for 2-1/2" (0.125" dia.) common wire nails. Framing lumber assumed to be 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.

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



N-C301/April 2014

MAXIMUM FLOOR SPANS

- Maximum clear spans applicable to single-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate floor joists are based on the factored loads of 1.5S_D + 1.25D. The serviceability limit states include the consideration for floor vibration and a five load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent spans.
- Spans are based on a composite floor with glued-nail or nailed steel deck (CSD) 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 C885-71.26 Standard. No concrete topping or bracing element was assumed. Increased spans may be achieved with the use of gypsum end/crow or blocking at mid-spans.
- Minimum bearing length shall be 1 3/4 inches for the end bearings, and 3 1/2 inches for the intermediate bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Limit States Design per CAN/CSA C885-09 Standard, and NBC 2010.
- SI units conversions: 1 inch = 25.4 mm, 1 foot = 0.305 m

MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

SINGLE AND MULTIPLE SPANS

Span	19.2" o.c.				24" o.c.				30" o.c.				36" o.c.				42" o.c.				48" o.c.			
	1-1/2"	2-1/2"	3-1/2"	4-1/2"	1-1/2"	2-1/2"	3-1/2"	4-1/2"	1-1/2"	2-1/2"	3-1/2"	4-1/2"	1-1/2"	2-1/2"	3-1/2"	4-1/2"	1-1/2"	2-1/2"	3-1/2"	4-1/2"	1-1/2"	2-1/2"	3-1/2"	4-1/2"
1/2"	N-30	12.1'	14.2'	13.9'	13.2'	14.3'	13.4'	14.0'	13.1'	14.7'	13.7'	14.0'	12.6'	14.6'	13.6'	14.0'	12.5'	14.5'	13.5'	14.0'	12.4'	14.4'	13.4'	14.0'
	N-40	11.1'	13.2'	12.9'	12.2'	13.3'	12.4'	13.0'	11.1'	13.7'	12.7'	13.0'	11.6'	13.6'	12.6'	13.0'	11.5'	13.5'	12.5'	13.0'	11.4'	13.4'	12.4'	13.0'
	N-50	10.3'	12.4'	12.1'	11.4'	12.5'	11.6'	12.2'	10.3'	12.9'	11.9'	12.2'	10.8'	12.8'	11.8'	12.2'	10.7'	12.7'	11.7'	12.2'	10.6'	12.6'	11.6'	12.2'
	N-60	9.7'	11.8'	11.5'	10.8'	11.9'	11.0'	11.6'	9.7'	12.3'	11.3'	11.6'	10.2'	12.2'	11.2'	11.6'	10.1'	12.1'	11.1'	11.6'	10.0'	12.0'	11.0'	11.6'
	N-70	9.1'	11.2'	10.9'	10.2'	11.3'	10.4'	11.0'	9.1'	11.7'	10.7'	11.0'	9.6'	11.6'	10.6'	11.0'	9.5'	11.5'	10.5'	11.0'	9.4'	11.4'	10.4'	11.0'
1 1/2"	N-30	11.1'	13.2'	12.9'	12.2'	13.3'	12.4'	13.0'	11.1'	13.7'	12.7'	13.0'	11.6'	13.6'	12.6'	13.0'	11.5'	13.5'	12.5'	13.0'	11.4'	13.4'	12.4'	13.0'
	N-40	10.3'	12.4'	12.1'	11.4'	12.5'	11.6'	12.2'	10.3'	12.9'	11.9'	12.2'	10.8'	12.8'	11.8'	12.2'	10.7'	12.7'	11.7'	12.2'	10.6'	12.6'	11.6'	12.2'
	N-50	9.7'	11.8'	11.5'	10.8'	11.9'	11.0'	11.6'	9.7'	12.3'	11.3'	11.6'	10.2'	12.2'	11.2'	11.6'	10.1'	12.1'	11.1'	11.6'	10.0'	12.0'	11.0'	11.6'
	N-60	9.1'	11.2'	10.9'	10.2'	11.3'	10.4'	11.0'	9.1'	11.7'	10.7'	11.0'	9.6'	11.6'	10.6'	11.0'	9.5'	11.5'	10.5'	11.0'	9.4'	11.4'	10.4'	11.0'
	N-70	8.5'	10.6'	10.3'	9.6'	10.7'	9.8'	10.4'	8.5'	11.1'	10.1'	10.4'	9.0'	11.0'	10.0'	10.4'	8.9'	10.9'	9.9'	10.4'	8.8'	10.8'	9.8'	10.4'
1"	N-30	10.9'	13.0'	12.7'	12.0'	13.1'	12.2'	12.8'	10.9'	13.5'	12.5'	12.8'	11.4'	13.4'	12.4'	12.8'	11.3'	13.3'	12.3'	12.8'	11.2'	13.2'	12.2'	12.8'
	N-40	10.1'	12.2'	11.9'	11.2'	12.3'	11.4'	12.0'	10.1'	12.7'	11.7'	12.0'	10.6'	12.6'	11.6'	12.0'	10.5'	12.5'	11.5'	12.0'	10.4'	12.4'	11.4'	12.0'
	N-50	9.5'	11.6'	11.3'	10.6'	11.7'	10.8'	11.4'	9.5'	12.1'	11.1'	11.4'	10.0'	12.0'	11.0'	11.4'	9.9'	11.9'	10.9'	11.4'	9.8'	11.8'	10.8'	11.4'
	N-60	8.9'	11.0'	10.7'	10.0'	11.1'	10.2'	10.8'	8.9'	11.5'	10.5'	10.8'	9.4'	11.4'	10.4'	10.8'	9.3'	11.3'	10.3'	10.8'	9.2'	11.2'	10.2'	10.8'
	N-70	8.3'	10.4'	10.1'	9.4'	10.5'	9.6'	10.2'	8.3'	10.9'	9.9'	10.2'	8.8'	10.8'	9.8'	10.2'	8.7'	10.7'	9.7'	10.2'	8.6'	10.6'	9.6'	10.2'
8"	N-30	12.1'	14.2'	13.9'	13.2'	14.3'	13.4'	14.0'	12.1'	14.7'	13.7'	14.0'	12.6'	14.6'	13.6'	14.0'	12.5'	14.5'	13.5'	14.0'	12.4'	14.4'	13.4'	14.0'
	N-40	11.1'	13.2'	12.9'	12.2'	13.3'	12.4'	13.0'	11.1'	13.7'	12.7'	13.0'	11.6'	13.6'	12.6'	13.0'	11.5'	13.5'	12.5'	13.0'	11.4'	13.4'	12.4'	13.0'
	N-50	10.3'	12.4'	12.1'	11.4'	12.5'	11.6'	12.2'	10.3'	12.9'	11.9'	12.2'	10.8'	12.8'	11.8'	12.2'	10.7'	12.7'	11.7'	12.2'	10.6'	12.6'	11.6'	12.2'
	N-60	9.7'	11.8'	11.5'	10.8'	11.9'	11.0'	11.6'	9.7'	12.3'	11.3'	11.6'	10.2'	12.2'	11.2'	11.6'	10.1'	12.1'	11.1'	11.6'	10.0'	12.0'	11.0'	11.6'
	N-70	9.1'	11.2'	10.9'	10.2'	11.3'	10.4'	11.0'	9.1'	11.7'	10.7'	11.0'	9.6'	11.6'	10.6'	11.0'	9.5'	11.5'	10.5'	11.0'	9.4'	11.4'	10.4'	11.0'

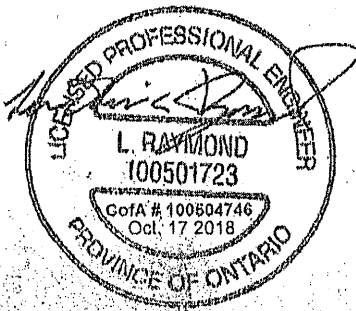
The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

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

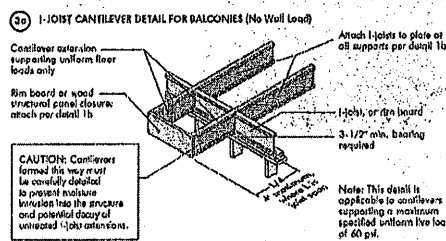
This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.

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

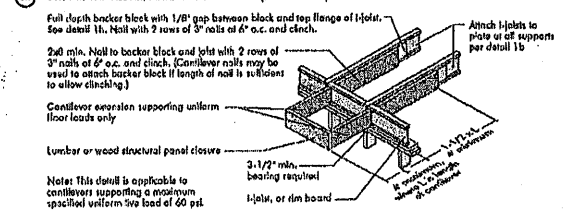


N-C301/April 2014

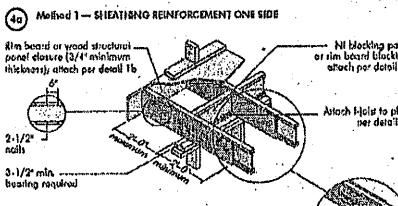
CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)



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



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)



Method 2 - SHEATHING REINFORCEMENT TWO SIDES

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

Note: Canadian approved 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 on all supports per detail 1b. Verify reinforced I-joist capacity.

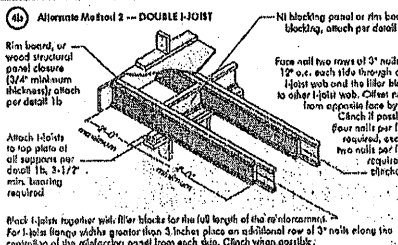


FIGURE 4 (continued)



See table below for NI reinforcement requirements of cantilever.

CANTILEVER REINFORCEMENT METHODS ALLOWED

Span (ft)	Method 1a				Method 1b				Method 2a				Method 2b			
	N	H	L	X	N	H	L	X	N	H	L	X	N	H	L	X
7-1/2																
11-7/8																
14																
16																
18																
20																
22																
24																
26																
28																
30																
32																
34																
36																
38																
40																

- N = No reinforcement required.
 - H = Reinforced with 3/4\" wood structural panel on one side only.
 - L = Reinforced with 3/4\" wood structural panel on both sides, or double I-joist, or a deeper joist or closer spacing.
 - X = Reinforced with 3/4\" wood structural panel on both sides, or double I-joist, or a deeper joist or closer spacing.
1. Maximum design load shall be 15 psf roof dead load, 85 psf floor live load, and 60 psf wall load. Wall load is based on 3-0\" maximum width window or door openings.
2. For larger openings, or multiple 3-0\" width openings spaced less than 6-0\" o.c., additional joist beneath the opening's cripple studs may be required.

3. Joist applies to joist 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 1/2\" o.c. requirements for lesser spacing.

4. For cantilevered 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 board, the roof truss span is equivalent to the distance between the supporting walls as it is used.

5. Cantilevered joist supporting glider buses or roof beams may require additional reinforcing.

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

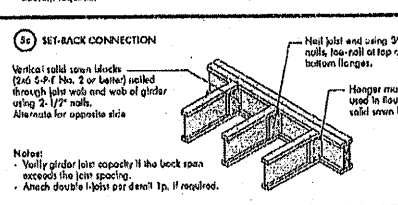
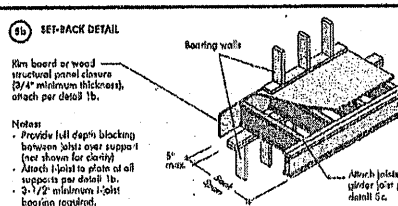
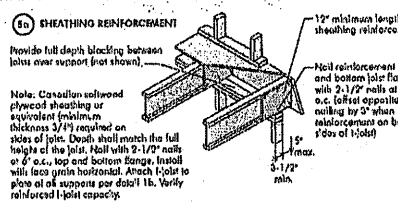


FIGURE 5 (continued)



See table below for NI reinforcement requirements of cantilever.

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

Span (ft)	Method 1a				Method 1b				Method 2a				Method 2b			
	N	H	L	X	N	H	L	X	N	H	L	X	N	H	L	X
7-1/2																
11-7/8																
14																
16																
18																
20																
22																
24																
26																
28																
30																
32																
34																
36																
38																
40																

- N = No reinforcement required.
 - H = Reinforced with 3/4\" wood structural panel on one side only.
 - L = Reinforced with 3/4\" wood structural panel on both sides, or double I-joist, or a deeper joist or closer spacing.
 - X = Reinforced with 3/4\" wood structural panel on both sides, or double I-joist, or a deeper joist or closer spacing.
1. Maximum design load shall be 15 psf roof dead load, 85 psf floor live load, and 60 psf wall load. Wall load is based on 3-0\" maximum width window or door openings.
2. For larger openings, or multiple 3-0\" width openings spaced less than 6-0\" o.c., additional joist beneath the opening's cripple studs may be required.

3. Joist applies to joist 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 1/2\" o.c. requirements for lesser spacing.

4. For cantilevered 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 board, the roof truss span is equivalent to the distance between the supporting walls as it is used.

5. Cantilevered joist supporting glider buses or roof beams may require additional reinforcing.

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

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

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

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



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 centered on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into 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 largest 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 largest side of the largest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Rules 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 continuous section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be picked 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 2-in 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 16 psf and Live Loads up to 40 psf

Table 1.1: Design Parameters for Bridge Structures												
Span Type	Span Length (ft)	Hole Diameter (in)				Hole Diameter (in)				Hole Diameter (in)		
		12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"
Simple Span	10	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"
	12	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"
	14	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"
	16	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"
Multiple Span	10	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"
	12	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"
	14	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"
	16	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"

- Above table may be used for I-Joist spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of support to centre of hole.
- Distance in field shall be based on uniformly loaded joist.

OPTIONAL:

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

$$\text{Reduced } S = \text{Actual } S \times \frac{L}{L_{\text{max}}}$$

Where:

Reduced =

Actual =

S =

L =

L_{max} =

S_{max} =

S_{min} =

S_{avg} =

S_{max} =

S_{min} =

S_{avg} =

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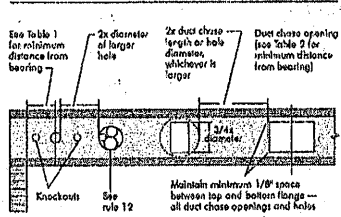
S_{avg} =

S_{max} =

S_{min} =

S_{avg} =

FIGURE 7
FIELD-CUT HOLE LOCATOR



A knockout is NOT considered a hole, may be utilized wherever it occurs and may be ignored for purposes of calculating minimum distances between holes.

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

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

Holes in webs should be cut with a sharp saw.

For rectangular holes, avoid overcutting 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 joist.

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

Span Type	Span Length (ft)	Hole Diameter (in)				Hole Diameter (in)				Hole Diameter (in)			
		12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	
Simple Span	10	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	
	12	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	
	14	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	
	16	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	
Multiple Span	10	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	
	12	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	
	14	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	
	16	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	

- Above table may be used for I-Joist spacing of 24 inches on centre or less.
- Duct chase opening location distance is measured from inside face of support to centre of opening.
- The above table is based on uniformly loaded floor joists. For other applications, consult your local distributor.
- Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/100. 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 joists four feet in from the wall for panel edge alignment and as a boundary for spreading glue.
- Spread only enough glue to lay one or two panels or a line, 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 topped 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 winding pattern on wide areas, such as with double flanges.
- Apply two lines of glue or lightly where panel ends butt to ensure proper gluing of each end.
- Align the first row of panels in place, spread glue in the groove of one or two panels as a guide before laying the next row. Once the glue is in place, use a spacer tool or an 8" x 2" common nail to ensure accurate and consistent spacing.
- Top the second row of panels into place, using a block to protect groove edges.
- Stagger and joint in each succeeding row of panels. A 1/8-inch space between all end joints and 1/8-inch at all edges, including T&O edges, is recommended. Use a spacer tool or an 8" x 2" common nail to ensure accurate and consistent spacing.
- Complete all nailing of each panel before glue sets. Check the manufacturer's recommendations for cure time. (When weather conditions are wet) Use 2" ring- or screw-shank nails for panels 3/4-inch thick or less, and 2-1/2" ring- or screw-shank nails for thicker panels. Space nails per the table below. Closer nail spacing may be required by some codes, or for diaphragm construction. The finished deck can be walked on right away and will carry construction loads without damage to the glue bond.

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

Joist Spacing (in)	Sheathing Thickness (in)	Subfloor Thickness (in)	Nail Size (in)	Nail Spacing (in)	Nail Spacing (in)	Nail Spacing (in)	Nail Spacing (in)
16"	3/8"	2"	1-3/4"	2"	6"	12"	12"
20"	3/8"	2"	1-3/4"	2"	6"	12"	12"
24"	3/8"	2"	1-3/4"	2"	6"	12"	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 3/16-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 minimum shown.
- Use only adhesives conforming to CAN/CSA-B-71.26 standard. Authorizes for Field-Gluing Plywood to Lumber Framing for Floor Systems, applied in accordance with the manufacturer's recommendations. If OSB panels with solid surfaces and edges are to be used, use only solvent-based glue; check with panel manufacturer.

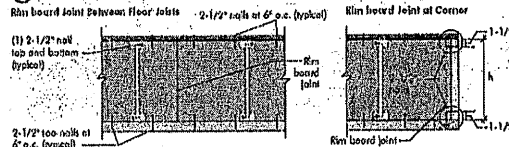
Ref: NBC-CNBC, National Building Code of Canada 2010, Table 9.23.3.5.

IMPORTANT NOTE:

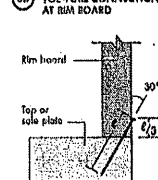
Floor sheathing must be field glued to the I-Joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-Joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

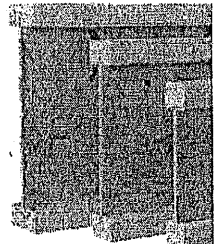
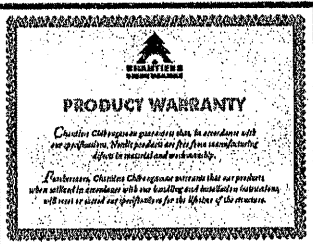
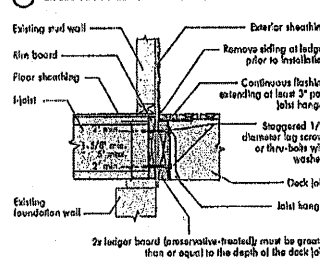
(06) ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



(07) TOE-NAIL CONNECTION AT RIM BOARD



(08) 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL

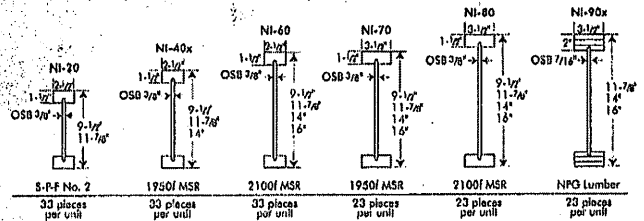


CONSTRUCTION DETAILS FOR RESIDENTIAL FLOORS

N-C303 / September 2013



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



WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- 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 should always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.

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

- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a 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 (ft. - in.)											
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4
9-1/2"	NI-20	0-7"	1-6"	2-10"	4-3"	5-8"	6-0"	...	...	...	...	...	...
	NI-40x	0-7"	1-6"	3-0"	4-4"	6-0"	6-4"	...	...	...	...	...	...
	NI-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	...	...	...	...	...	...
	NI-70	2-0"	3-4"	4-8"	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"	1-0"	2-0"	4-2"	6-2"	6-6"	7-9"	9-10"	10-0"	...	...	...
	NI-70	1-3"	2-6"	4-0"	5-4"	6-9"	7-2"	8-4"	10-0"	11-2"	...	...	...
	NI-80	1-6"	2-10"	4-2"	5-6"	7-0"	7-5"	8-6"	10-3"	11-4"	...	...	...
14"	NI-20	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"	6-8"	8-2"	10-2"
	NI-60	0-7"	0-8"	1-0"	2-0"	4-2"	4-6"	5-9"	7-2"	8-0"	8-8"	10-4"	11-9"
	NI-70	0-8"	1-10"	2-0"	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"	4-0"	6-2"	6-6"	7-6"	9-0"	10-0"	10-8"	12-4"	13-9"
16"	NI-20	0-7"	0-8"	0-8"	2-0"	3-9"	4-2"	5-5"	7-3"	8-5"	9-2"	...	...
	NI-40x	0-7"	0-8"	0-8"	1-6"	2-10"	3-2"	4-2"	5-6"	6-4"	7-0"	8-5"	9-8"
	NI-60	0-7"	1-0"	2-0"	3-6"	4-10"	5-2"	6-3"	7-9"	8-4"	9-2"	10-8"	12-4"
	NI-70	0-7"	1-3"	2-6"	3-10"	5-2"	5-6"	6-6"	8-0"	9-0"	9-8"	11-0"	12-3"
	NI-80	0-7"	1-3"	2-6"	3-10"	5-2"	5-6"	6-6"	8-0"	9-0"	9-8"	11-0"	12-3"

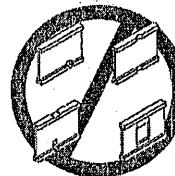
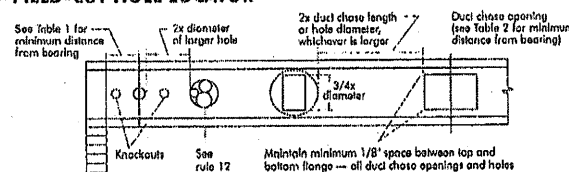
- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.
- The above table is based on the I-joist being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS

Simple Span Only

Joist Depth	Joist Series	Minimum Distance from Inside Face of Supports to Centre of Opening (ft. - in.)											
		8	10	12	14	16	18	20	22	24	26	28	30
9-1/2"	NI-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"	...	...	...
	NI-40x	5-3"	5-8"	6-0"	6-7"	7-1"	7-6"	8-0"	8-3"	8-9"	...	...	...
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-6"	8-0"	8-3"	8-9"	...	...	...
	NI-70	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-6"	8-1"	8-4"	...	...	...
	NI-80	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	...	...	...
11-7/8"	NI-20	5-9"	6-2"	6-4"	7-1"	7-5"	7-9"	8-3"	8-9"	9-4"	...	...	...
	NI-40x	6-8"	7-2"	7-4"	8-1"	8-5"	9-1"	9-6"	10-1"	10-6"	...	...	...
	NI-60	7-2"	7-6"	8-0"	8-6"	9-0"	9-3"	9-9"	10-3"	11-0"	...	...	...
	NI-70	7-1"	7-4"	8-0"	8-3"	8-7"	9-1"	9-6"	10-1"	10-4"	...	...	...
	NI-80	7-2"	7-7"	8-0"	8-5"	8-10"	9-2"	9-8"	10-2"	10-8"	...	...	...
14"	NI-20	8-1"	8-7"	9-0"	9-6"	10-1"	10-7"	11-2"	12-0"	12-8"	...	...	...
	NI-40x	8-9"	9-5"	9-8"	10-1"	10-6"	11-1"	11-6"	12-3"	13-0"	...	...	...
	NI-60	8-7"	9-1"	9-5"	10-1"	10-4"	10-8"	11-2"	11-7"	12-3"	...	...	...
	NI-70	9-0"	9-2"	9-9"	10-1"	10-7"	11-1"	11-6"	12-1"	12-6"	...	...	...
	NI-80	9-4"	9-9"	10-3"	10-7"	11-1"	11-6"	12-1"	12-6"	13-1"	...	...	...
16"	NI-20	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-2"	14-1"	14-10"	...	...	...
	NI-40x	10-1"	10-5"	11-0"	11-4"	11-10"	12-3"	12-8"	13-3"	14-0"	...	...	...
	NI-60	10-4"	10-9"	11-3"	11-9"	12-4"	12-7"	13-1"	13-6"	14-4"	...	...	...
	NI-70	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-2"	14-1"	14-10"	...	...	...
	NI-80	10-4"	10-9"	11-3"	11-9"	12-4"	12-7"	13-1"	13-6"	14-4"	...	...	...

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

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 corner-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 cut between the holes is another good method to minimize damage to the I-joist.

SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

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

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



PRODUCT WARRANTY

Chamber's Chibergman guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defects in material and workmanship.

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

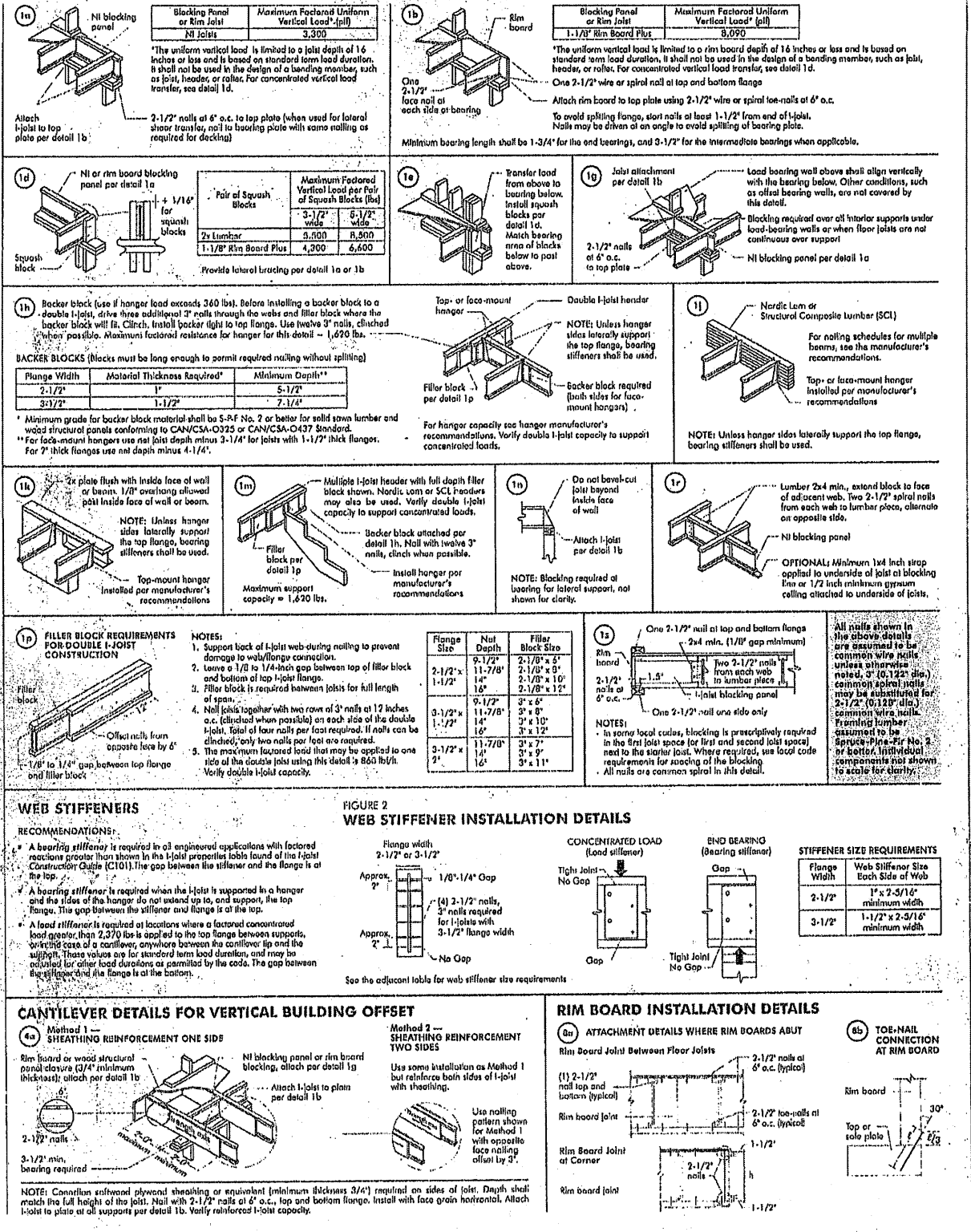
The construction details for residential designs are prone to changes.

Details released after September 2013 supersede N-303

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

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

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



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