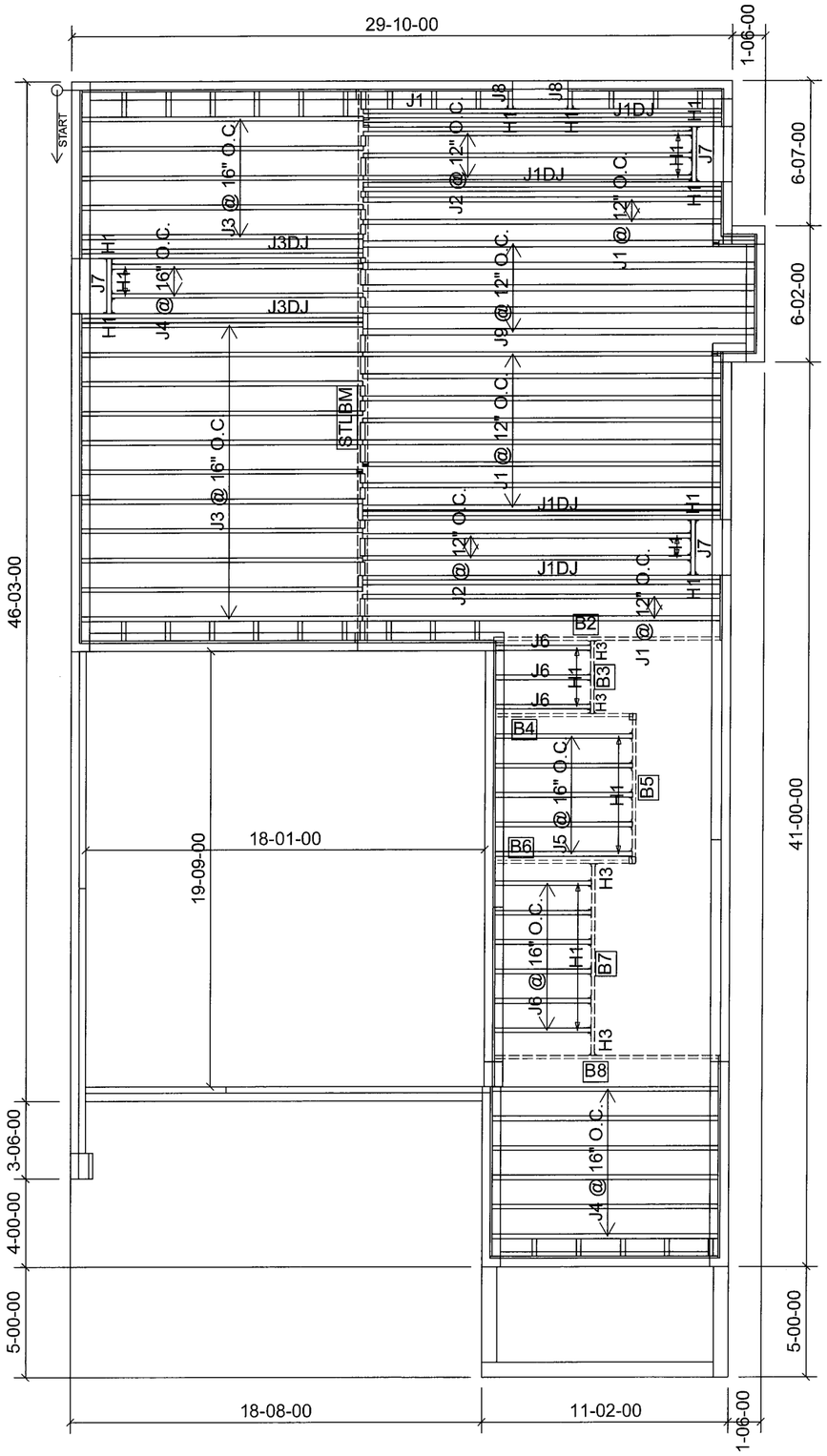


Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	13
J1DJ	18-00-00	9 1/2" NI-40x	2	8
J2	16-00-00	9 1/2" NI-40x	1	5
J3	14-00-00	9 1/2" NI-40x	1	16
J3DJ	14-00-00	9 1/2" NI-40x	2	4
J4	12-00-00	9 1/2" NI-40x	1	8
J5	8-00-00	9 1/2" NI-40x	1	5
J6	6-00-00	9 1/2" NI-40x	1	9
J7	4-00-00	9 1/2" NI-40x	1	3
J8	2-00-00	9 1/2" NI-40x	1	2
J9	18-00-00	9 1/2" NI-80	1	5
B2	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B8	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B7	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B6	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B3	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
14	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
9	H1	IUS2.56/9.5
4	H3	HUS1.81/10

CITY OF RICHMOND HILL
BUILDING DIVISION
10/20/2021
RECEIVED
Per: KER

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 28 MAY 2021
BUILDER: ROYAL PINE HOMES
SITE: CENTREFIELD PH. 2
MODEL: 38-13
ELEVATION: A, B, C
LOT:
CITY: RICHMOND HILL
SALESMAN: WILLIAM GARCIA
DESIGNER: EEO
REVISION:

NOTES:
REFER TO THE **NORDIC INSTALLATION** GUIDE FOR PROPER STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

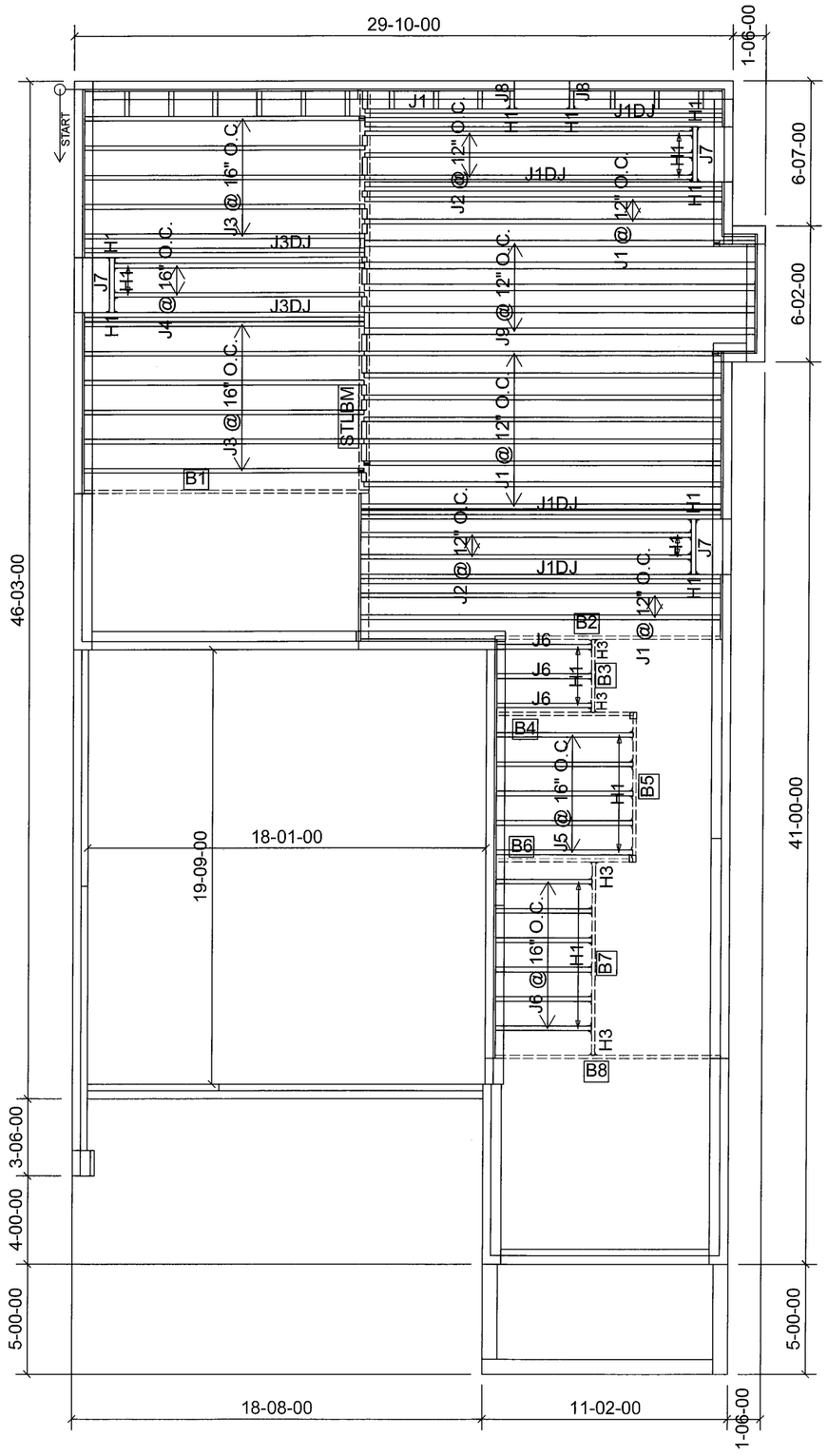
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

DATE: 2021-07-07

1st FLOOR

STANDARD

SUBFLOOR: 3/4" GLUED AND NAILED



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	13
J1DJ	18-00-00	9 1/2" NI-40x	2	8
J2	16-00-00	9 1/2" NI-40x	1	5
J3	14-00-00	9 1/2" NI-40x	1	11
J3DJ	14-00-00	9 1/2" NI-40x	2	4
J4	12-00-00	9 1/2" NI-40x	1	2
J5	8-00-00	9 1/2" NI-40x	1	5
J6	6-00-00	9 1/2" NI-40x	1	9
J7	4-00-00	9 1/2" NI-40x	1	3
J8	2-00-00	9 1/2" NI-40x	1	2
J9	18-00-00	9 1/2" NI-80	1	5
B1	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B2	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B8	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B7	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B6	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B3	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
14	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
9	H1	IUS2.56/9.5
4	H3	HUS1.81/10

CITY OF RICHMOND HILL
BUILDING DIVISION
10/20/2021
RECEIVED
Per: KER

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 28 MAY 2021
BUILDER: ROYAL PINE HOMES
SITE: CENTREFIELD PH. 2
MODEL: 38-13
ELEVATION: A, B, C
LOT:
CITY: RICHMOND HILL

SALESMAN: WILLIAM GARCIA
DESIGNER: EEO
REVISION:

NOTES:
REFER TO THE **NORDIC INSTALLATION** GUIDE FOR PROPER STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

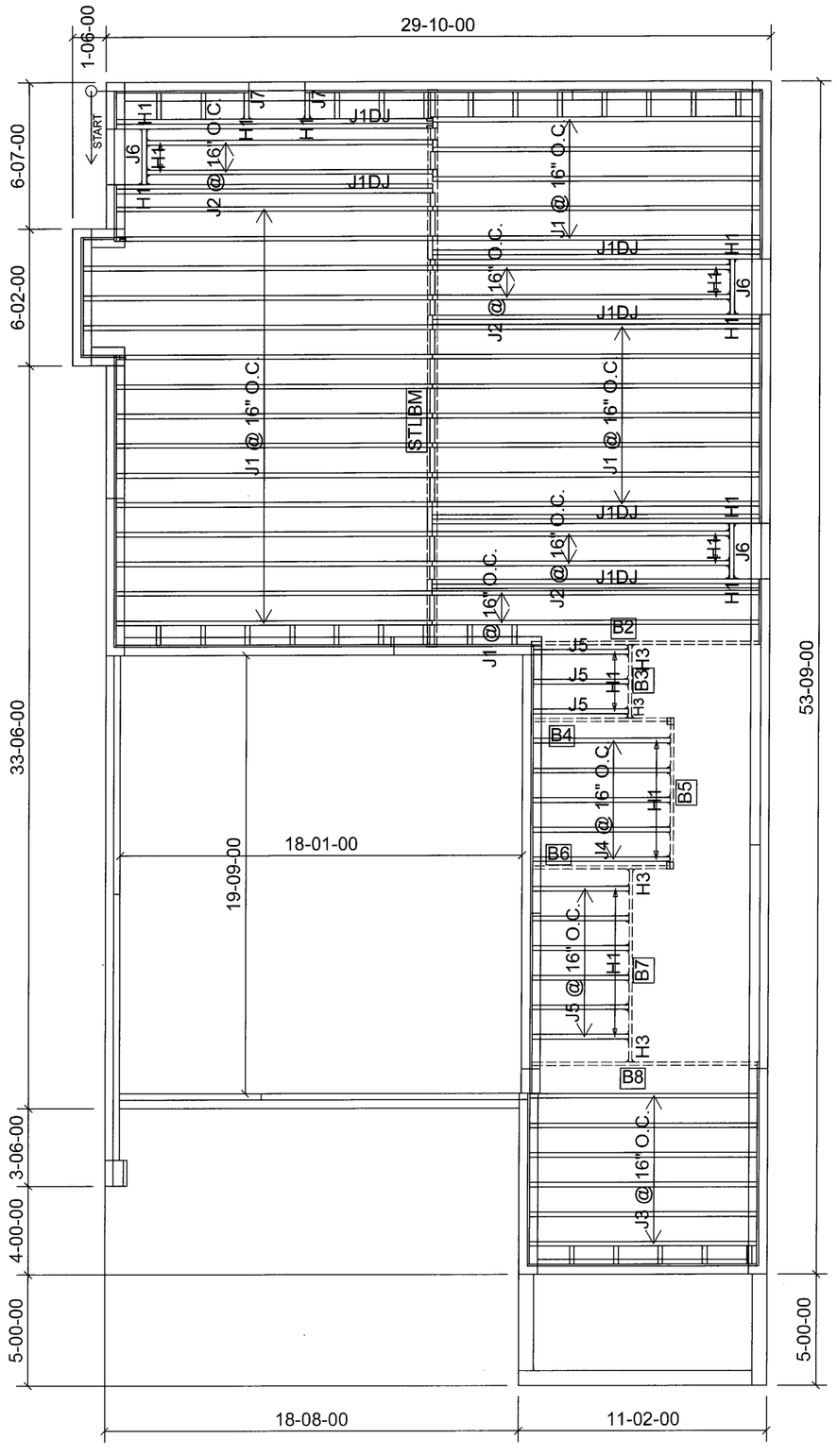
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

DATE: 2021-07-07

1st FLOOR

OPT. SUNKEN

SUBFLOOR: 3/4" GLUED AND NAILED



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	29
J1DJ	16-00-00	9 1/2" NI-40x	2	12
J2	14-00-00	9 1/2" NI-40x	1	6
J3	12-00-00	9 1/2" NI-40x	1	6
J4	8-00-00	9 1/2" NI-40x	1	5
J5	6-00-00	9 1/2" NI-40x	1	9
J6	4-00-00	9 1/2" NI-40x	1	3
J7	2-00-00	9 1/2" NI-40x	1	2
B2	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B8	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B7	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B6	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B3	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
14	H1	IUS2.56/9.5
8	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
4	H3	HUS1.81/10

CITY OF RICHMOND HILL
BUILDING DIVISION
10/20/2021
RECEIVED
Per: KER

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 28 MAY 2021
BUILDER: ROYAL PINE HOMES
SITE: CENTREFIELD PH. 2
MODEL: 38-13
ELEVATION: A, B, C
LOT:
CITY: RICHMOND HILL
SALESMAN: WILLIAM GARCIA
DESIGNER: EEO
REVISION:

NOTES:
REFER TO THE **NORDIC INSTALLATION** GUIDE FOR PROPER STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

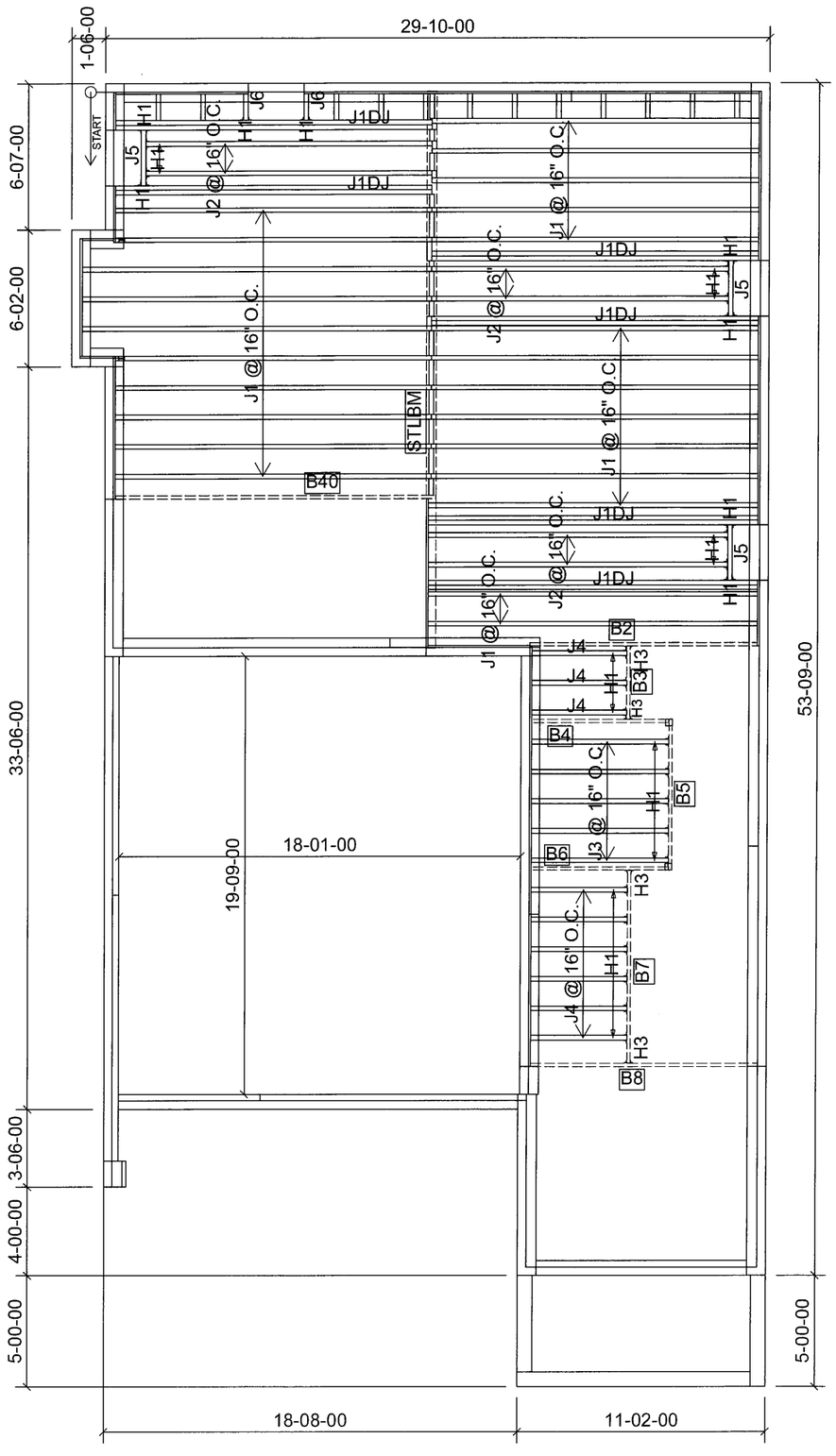
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2021-07-07

1st FLOOR

STD W/ OPT.
GROUND FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	24
J1DJ	16-00-00	9 1/2" NI-40x	2	12
J2	14-00-00	9 1/2" NI-40x	1	6
J3	8-00-00	9 1/2" NI-40x	1	5
J4	6-00-00	9 1/2" NI-40x	1	9
J5	4-00-00	9 1/2" NI-40x	1	3
J6	2-00-00	9 1/2" NI-40x	1	2
B40	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B2	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B8	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B7	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B6	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B3	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
14	H1	IUS2.56/9.5
8	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
4	H3	HUS1.81/10

CITY OF RICHMOND HILL
BUILDING DIVISION
10/20/2021
RECEIVED
Per:_____KER_____

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 28 MAY 2021
BUILDER: ROYAL PINE HOMES
SITE: CENTREFIELD PH. 2
MODEL: 38-13
ELEVATION: A, B, C
LOT:
CITY: RICHMOND HILL
SALESMAN: WILLIAM GARCIA
DESIGNER: EEO
REVISION:

NOTES:
REFER TO THE **NORDIC INSTALLATION** GUIDE FOR PROPER STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

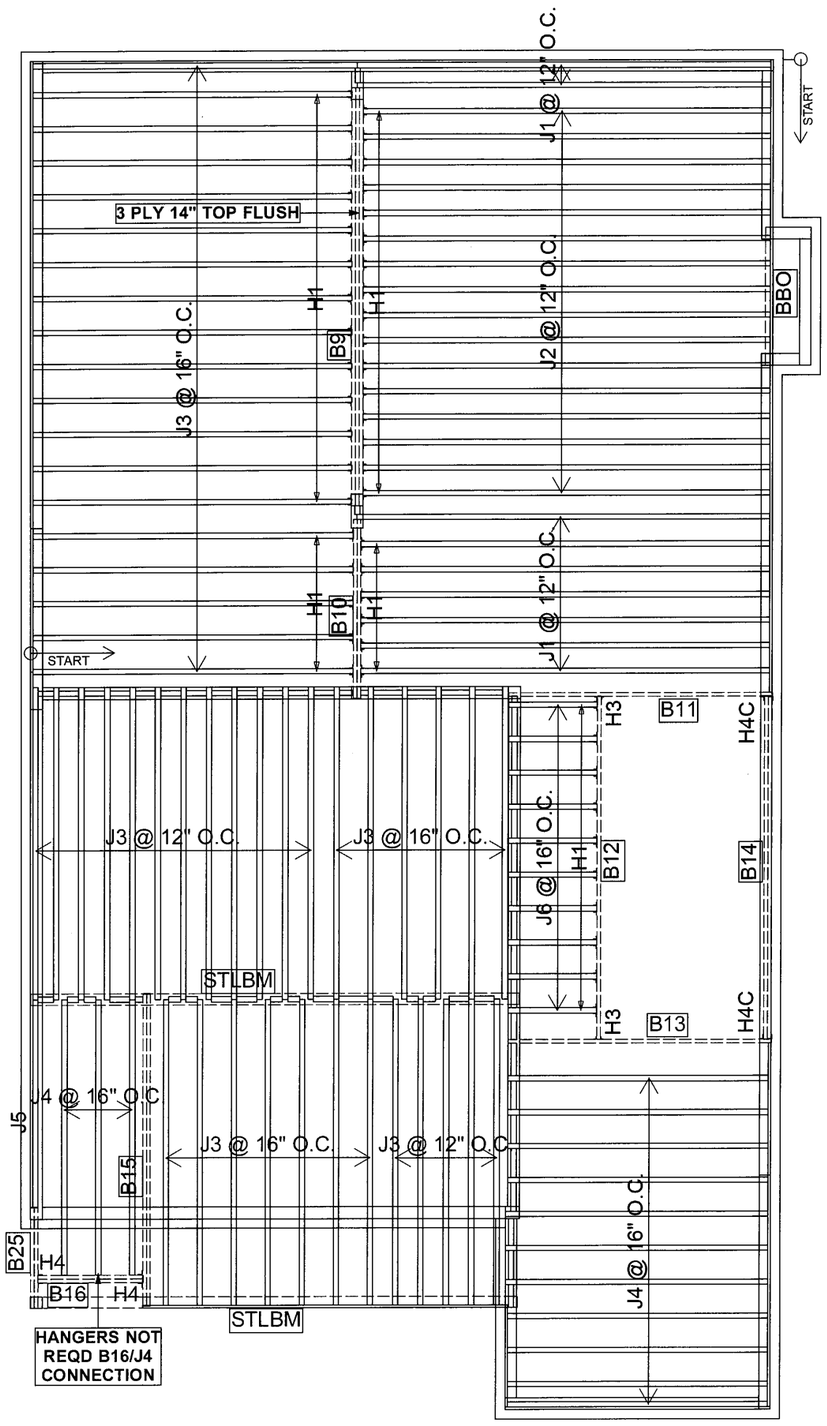
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2021-07-07

1st FLOOR

SUNKEN W/ OPT. GROUND FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	9
J2	16-00-00	9 1/2" NI-40x	1	16
J3	14-00-00	9 1/2" NI-40x	1	49
J4	12-00-00	9 1/2" NI-40x	1	14
J5	10-00-00	9 1/2" NI-40x	1	1
J6	4-00-00	9 1/2" NI-40x	1	10
B12	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B14	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B15	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B13	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B10	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B25	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	18-00-00	1-3/4" x 14" VERSA-LAM® 2.0 3100 SP	3	3

Connector Summary		
Qty	Manuf	Product
10	H1	IUS2.56/9.5
11	H1	IUS2.56/9.5
29	H1	IUS2.56/9.5
2	H3	HUS1.81/10
2	H4C	HUC410
2	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 28 MAY 2021
BUILDER: ROYAL PINE HOMES
SITE: CENTREFIELD PH. 2
MODEL: 38-13
ELEVATION: A
LOT:
CITY: RICHMOND HILL

SALESMAN: WILLIAM GARCIA
DESIGNER: EEO
REVISION:

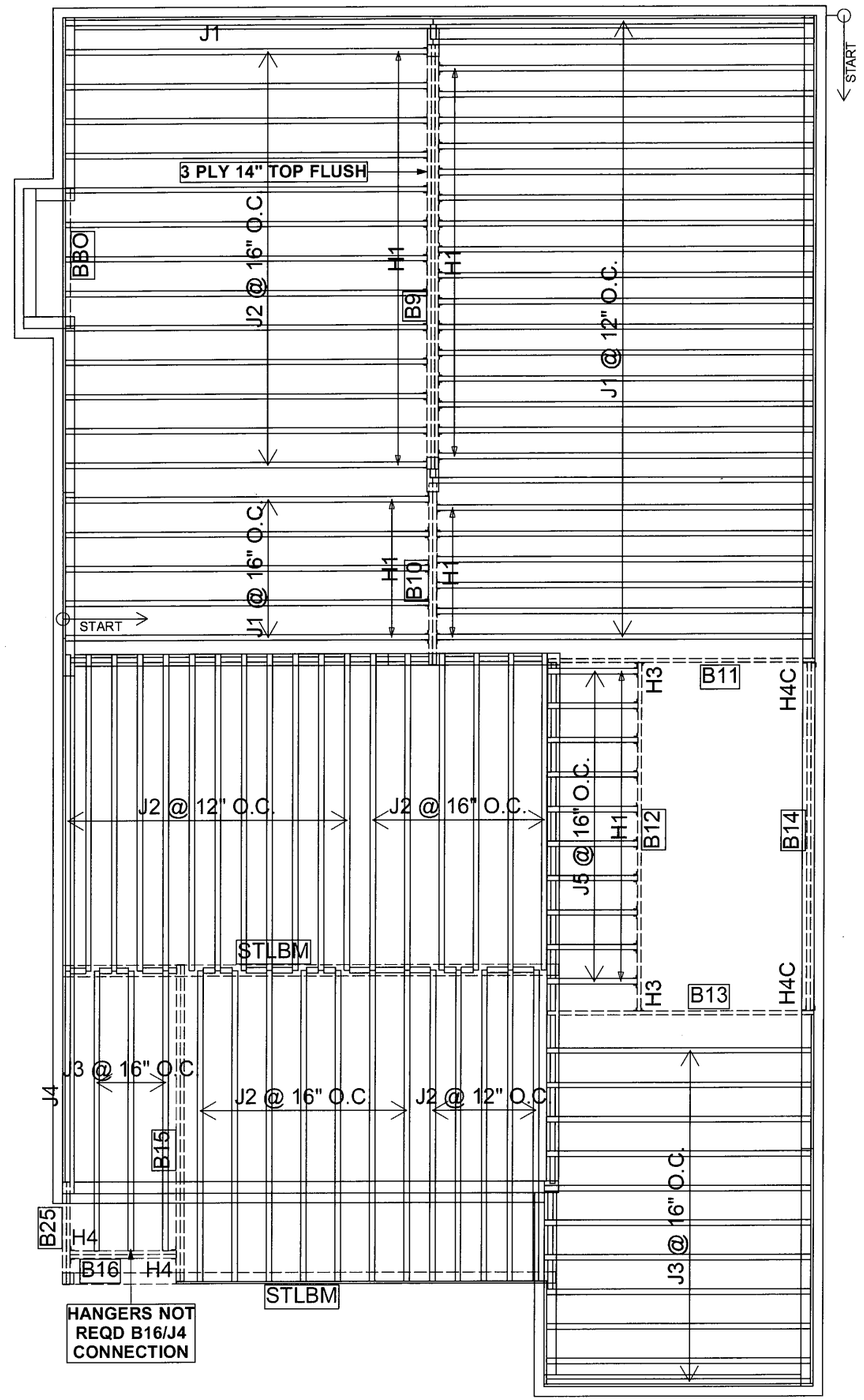
NOTES:
REFER TO THE **NORDIC INSTALLATION** GUIDE FOR PROPER STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2021-07-16

2ND FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	31
J2	14-00-00	9 1/2" NI-40x	1	43
J3	12-00-00	9 1/2" NI-40x	1	14
J4	10-00-00	9 1/2" NI-40x	1	1
J5	4-00-00	9 1/2" NI-40x	1	10
B12	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B14	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B15	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B13	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B10	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B25	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	18-00-00	1-3/4" x 14" VERSA-LAM® 2.0 3100 SP	3	3

Connector Summary		
Qty	Manuf	Product
10	H1	IUS2.56/9.5
11	H1	IUS2.56/9.5
29	H1	IUS2.56/9.5
2	H3	HUS1.81/10
2	H4C	HUC410
2	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 28 MAY 2021
BUILDER: ROYAL PINE HOMES
SITE: CENTREFIELD PH. 2
MODEL: 38-13
ELEVATION: A
LOT:
CITY: RICHMOND HILL
SALESMAN: WILLIAM GARCIA
DESIGNER: EEO
REVISION:

NOTES:
REFER TO THE **NORDIC INSTALLATION** GUIDE FOR PROPER STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

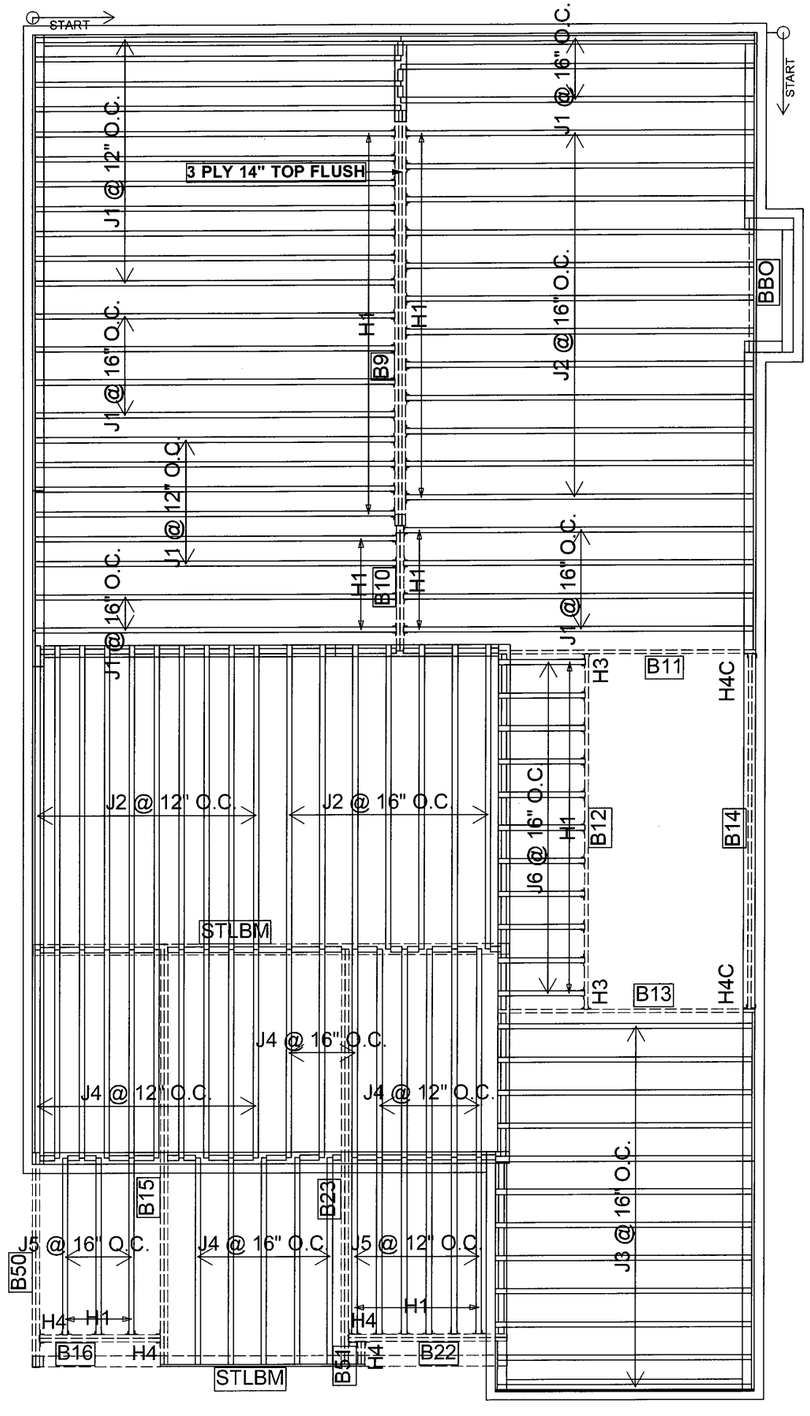
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2021-07-16

2ND FLOOR

STD W/ OPT. GROUND FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	30
J2	14-00-00	9 1/2" NI-40x	1	29
J3	12-00-00	9 1/2" NI-40x	1	12
J4	10-00-00	9 1/2" NI-40x	1	23
J5	8-00-00	9 1/2" NI-40x	1	9
J6	4-00-00	9 1/2" NI-40x	1	11
B15	18-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B23	18-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B14	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B13	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B50	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B22	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B10	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B51	2-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	18-00-00	1-3/4" x 14" VERSA-LAM® 2.0 3100 SP	3	3

Connector Summary		
Qty	Manuf	Product
11	H1	IUS2.56/9.5
17	H1	IUS2.56/9.5
27	H1	IUS2.56/9.5
2	H3	HUS1.81/10
2	H4C	HUC410
4	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 28 MAY 2021
BUILDER: ROYAL PINE HOMES
SITE: CENTREFIELD PH. 2
MODEL: 38-14
ELEVATION: A
LOT:
CITY: RICHMOND HILL
SALESMAN: WILLIAM GARCIA
DESIGNER: EEO
REVISION:

NOTES:
REFER TO THE **NORDIC INSTALLATION** GUIDE FOR PROPER STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

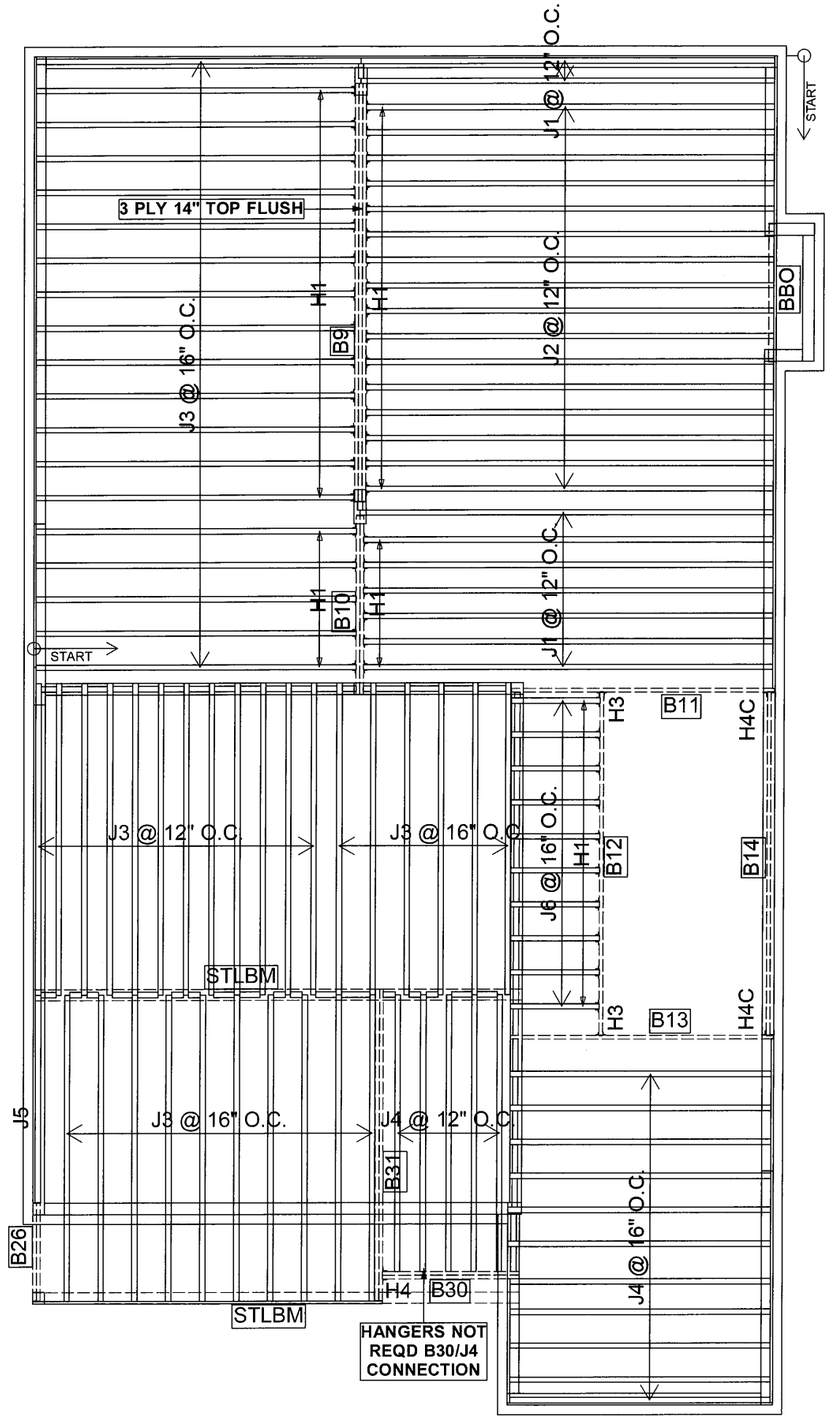
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2021-07-16

2ND FLOOR

OPT. SECOND FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	9
J2	16-00-00	9 1/2" NI-40x	1	16
J3	14-00-00	9 1/2" NI-40x	1	47
J4	12-00-00	9 1/2" NI-40x	1	16
J5	10-00-00	9 1/2" NI-40x	1	1
J6	4-00-00	9 1/2" NI-40x	1	10
B12	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B14	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B31	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B13	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B10	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B30	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B26	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	18-00-00	1-3/4" x 14" VERSA-LAM® 2.0 3100 SP	3	3

Connector Summary		
Qty	Manuf	Product
10	H1	IUS2.56/9.5
11	H1	IUS2.56/9.5
29	H1	IUS2.56/9.5
2	H3	HUS1.81/10
2	H4C	HUC410
1	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 28 MAY 2021
BUILDER: ROYAL PINE HOMES
SITE: CENTREFIELD PH. 2
MODEL: 38-13
ELEVATION: B
LOT:
CITY: RICHMOND HILL
SALESMAN: WILLIAM GARCIA
DESIGNER: EEO
REVISION:

NOTES:
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SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

LOADING:
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SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2021-07-16

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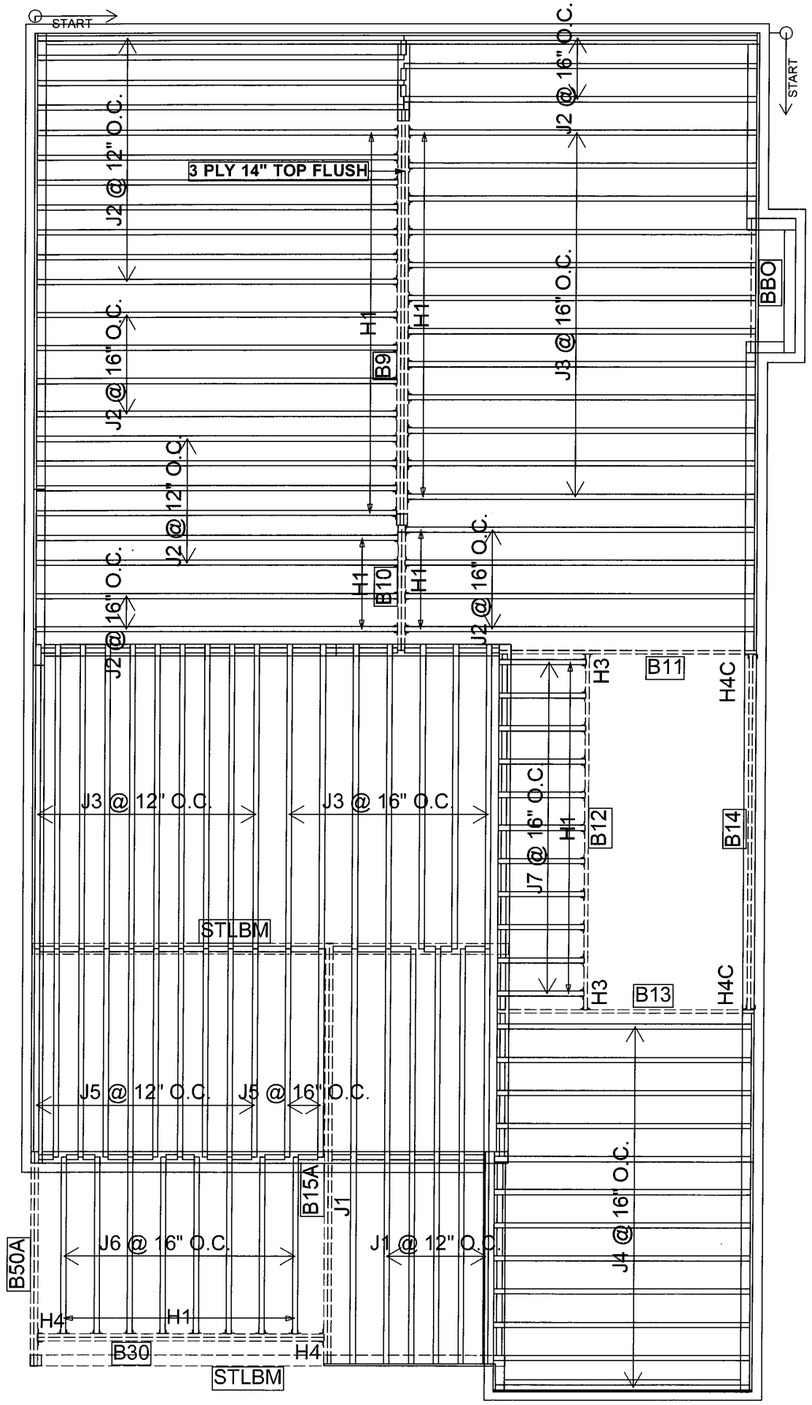

Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	6
J2	16-00-00	9 1/2" NI-40x	1	30
J3	14-00-00	9 1/2" NI-40x	1	29
J4	12-00-00	9 1/2" NI-40x	1	12
J5	10-00-00	9 1/2" NI-40x	1	12
J6	8-00-00	9 1/2" NI-40x	1	8
J7	4-00-00	9 1/2" NI-40x	1	11
B15A	18-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B14	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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B13	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B30	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B50A	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B10	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	18-00-00	1-3/4" x 14" VERSA-LAM® 2.0 3100 SP	3	3

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16	H1	IUS2.56/9.5
27	H1	IUS2.56/9.5
2	H3	HUS1.81/10
2	H4C	HUC410
2	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 28 MAY 2021
BUILDER: ROYAL PINE HOMES
SITE: CENTREFIELD PH. 2
MODEL: 38-14
ELEVATION: B
LOT:
CITY: RICHMOND HILL
SALESMAN: WILLIAM GARCIA
DESIGNER: EEO
REVISION:

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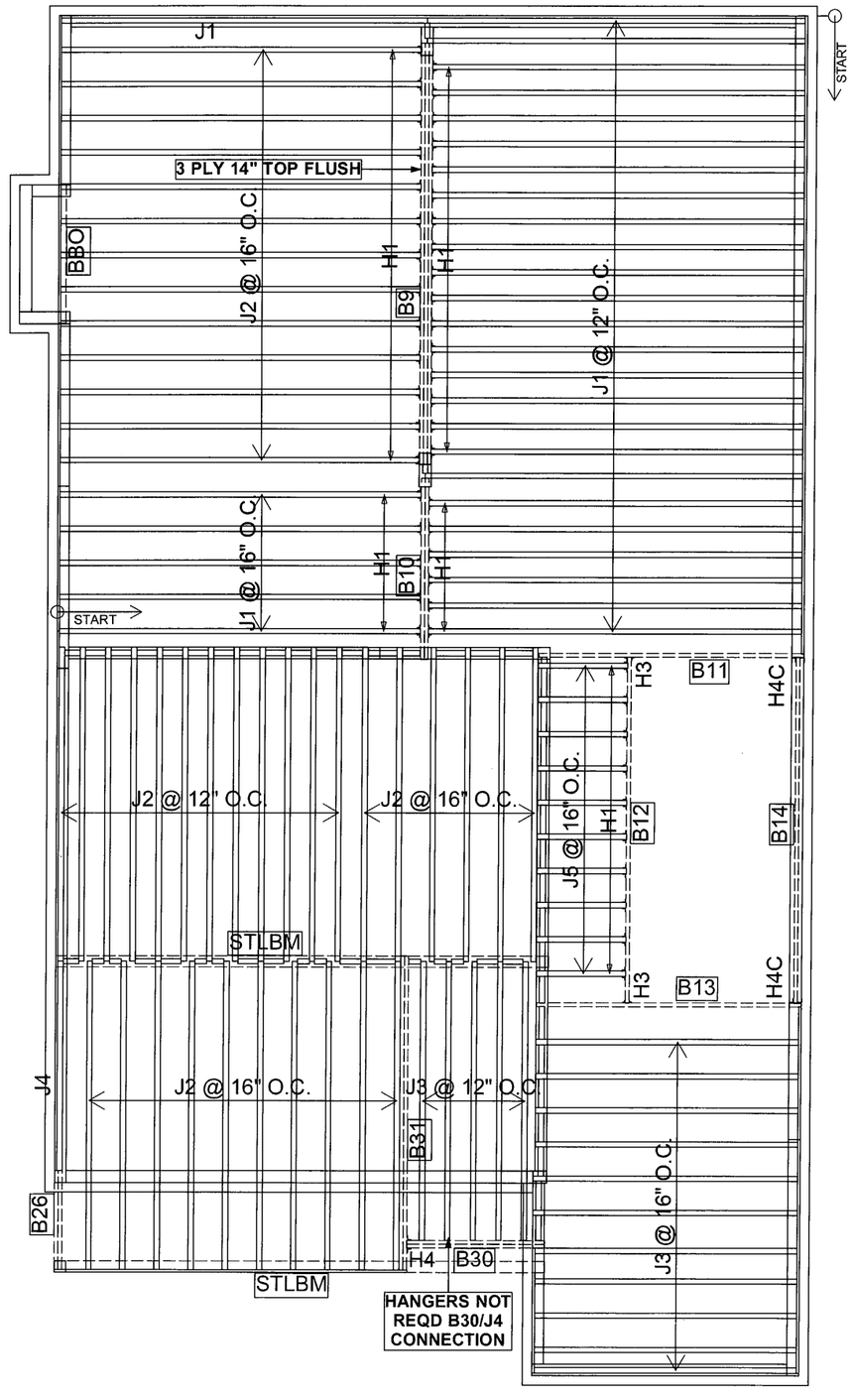
2ND FLOOR

OPT. SECOND FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	31
J2	14-00-00	9 1/2" NI-40x	1	41
J3	12-00-00	9 1/2" NI-40x	1	16
J4	10-00-00	9 1/2" NI-40x	1	1
J5	4-00-00	9 1/2" NI-40x	1	10
B12	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B14	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B31	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 28 MAY 2021
BUILDER: ROYAL PINE HOMES
SITE: CENTREFIELD PH. 2
MODEL: 38-13
ELEVATION: B
LOT:
CITY: RICHMOND HILL

SALESMAN: WILLIAM GARCIA
DESIGNER: EEO
REVISION:

NOTES:
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SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

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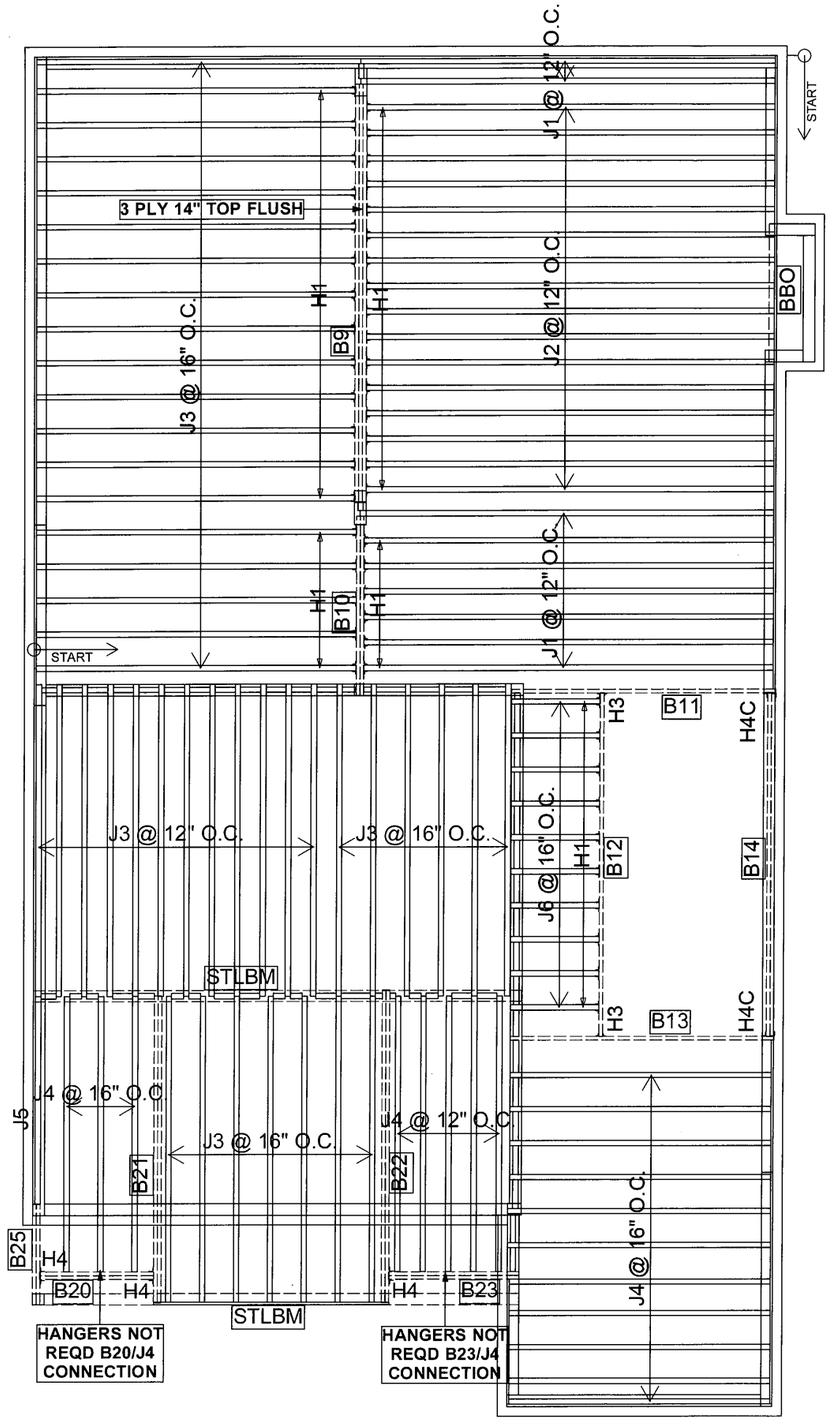
STD W/ OPT. GROUND FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	9
J2	16-00-00	9 1/2" NI-40x	1	16
J3	14-00-00	9 1/2" NI-40x	1	44
J4	12-00-00	9 1/2" NI-40x	1	19
J5	10-00-00	9 1/2" NI-40x	1	1
J6	4-00-00	9 1/2" NI-40x	1	10
B12	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B14	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B21	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B22	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B13	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B10	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B20	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B23	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B25	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	18-00-00	1-3/4" x 14" VERSA-LAM® 2.0 3100 SP	3	3

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2	H3	HUS1.81/10
2	H4C	HUC410
3	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 28 MAY 2021
BUILDER: ROYAL PINE HOMES
SITE: CENTREFIELD PH. 2
MODEL: 38-13
ELEVATION: C
LOT:
CITY: RICHMOND HILL
SALESMAN: WILLIAM GARCIA
DESIGNER: EEO
REVISION:

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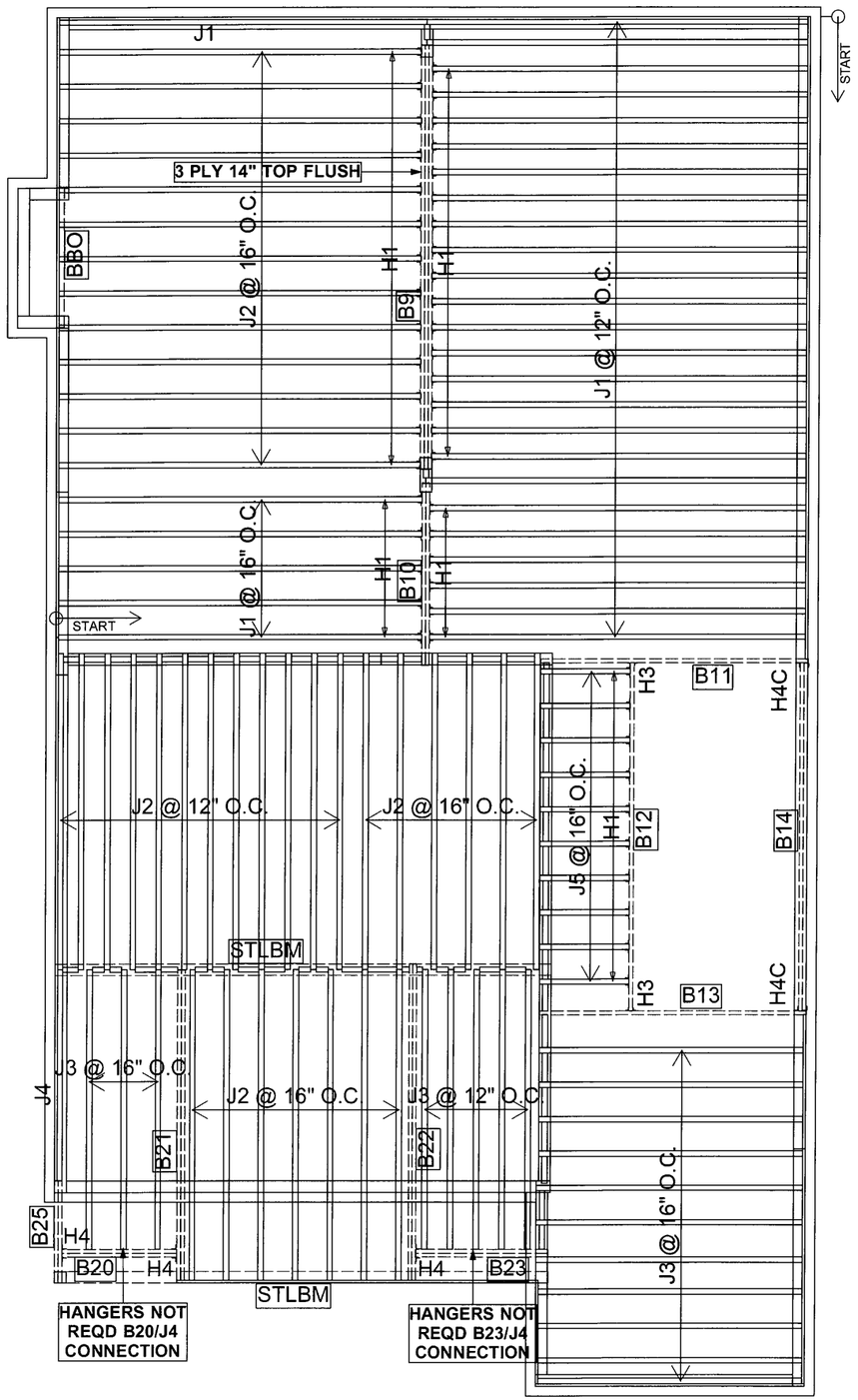

Products				
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J2	14-00-00	9 1/2" NI-40x	1	38
J3	12-00-00	9 1/2" NI-40x	1	19
J4	10-00-00	9 1/2" NI-40x	1	1
J5	4-00-00	9 1/2" NI-40x	1	10
B12	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B14	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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B11	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
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B10	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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ALPA LUMBER GROUP

FROM PLAN DATED: 28 MAY 2021
BUILDER: ROYAL PINE HOMES
SITE: CENTREFIELD PH. 2
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LOT:
CITY: RICHMOND HILL

SALESMAN: WILLIAM GARCIA
DESIGNER: EEO
REVISION:

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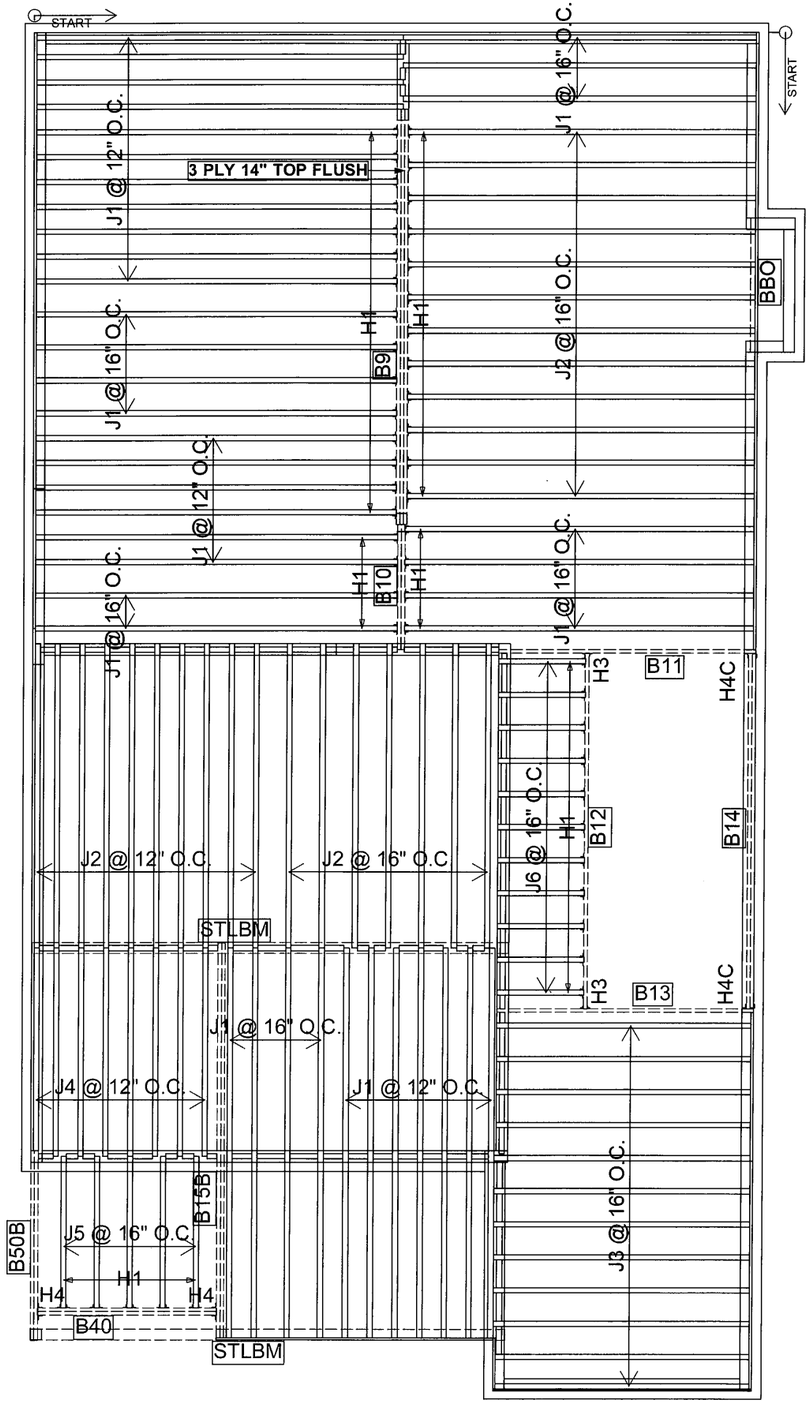

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J3	12-00-00	9 1/2" NI-40x	1	12
J4	10-00-00	9 1/2" NI-40x	1	8
J5	8-00-00	9 1/2" NI-40x	1	5
J6	4-00-00	9 1/2" NI-40x	1	11
B12	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B14	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B15B	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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B13	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B40	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B50B	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B10	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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ALPA LUMBER GROUP

FROM PLAN DATED: 28 MAY 2021
BUILDER: ROYAL PINE HOMES
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CITY: RICHMOND HILL

SALESMAN: WILLIAM GARCIA
DESIGNER: EEO
REVISION:

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SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2021-07-16

2ND FLOOR

OPT. SECOND FLOOR

NORDIC

INSTALLATION GUIDE
NORDIC JOIST

NS-GI33

ENGLISH

VERSION
2020-10-01

Engineered Wood Products

BASIC INSTALLATION GUIDE FOR RESIDENTIAL FLOORS

NORDIC JOIST

NORDIC STRUCTURES

nordic.ca

INSTALLING NORDIC I-JOISTS

1. Installation of Nordic I-joists shall be as shown in details 1.
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. Concentrated loads should only be applied to the top surface of the top flange. Concentrated loads should not be suspended from the bottom flange with the exception of light loads, such as ceiling fans or light fixtures.
5. I-joists must be protected from the weather prior to installation.
6. I-joists must not be used in applications where they will be permanently exposed to weather, or will reach a moisture content of 15 percent or greater, such as in swimming pool or hot tub areas. They must not be installed where they will remain in direct contact with concrete or masonry.
7. End bearing length must be at least 1-3/4 inch. For multiple-span joists, intermediate bearing length must be at least 3-1/2 inches.
8. Ends of floor joists shall be restrained to prevent rollover. Use rim board or I-joist blocking panels.
9. I-joists installed beneath bearing walls perpendicular to the joists shall have full-depth blocking panels, rim board, or squash blocks (cripple blocks) to transfer gravity loads from above the floor system to the wall or foundation below.
10. For I-joists installed directly beneath bearing walls parallel to the joists or used as rim board or blocking panels, the maximum vertical load using a single I-joist is 3,300 plf, and 6,600 plf if double I-joists are used.
11. Continuous lateral support of the I-joist's compression flange is required to prevent rotation and buckling. In simple span uses, lateral support of the top flange is normally supplied by the floor sheathing. In multiple-span or cantilever applications, bracing of the I-joist's bottom flange is also required at interior supports of multiple-span joists, and at the end support next to the cantilever extension. The ends of all cantilever extensions must be laterally braced as shown in details 3, 4, or 5.
12. Nails installed in flange face or edge shall be spaced in accordance with the applicable building code requirements or approved building plans, but should not be closer than those specified on page 3.3 of the Nordic Joist Technical Guide (NS-GT3).
13. Details 1 show only I-joist-specific fastener requirements. For other fastener requirements, see the applicable building code.
14. For proper temporary bracing of wood I-joists and placement of temporary construction loads, see APA Technical Note: Temporary Construction Loads over I-Joist Roofs and Floors, Form J735.

All nails shown in the details are assumed to be common nails unless otherwise noted. Nails shall have a diameter not less than 0.128 inch for 2-1/2-inch nails, or 0.144 inch for 3-inch nails. Individual components not shown to scale for clarity.

SAFETY AND CONSTRUCTION PRECAUTIONS

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

Avoid Accidents by Following these Important Guidelines:

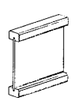
1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bridging at joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
2. When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

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

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

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

NORDIC I-JOIST SERIES — RESIDENTIAL SERIES



NI-20
2x3 S-P-F No. 2
3/8 in. web
Depths
9-1/2 and 11-7/8 in.
33 pieces per unit

NI-40x
2x3 1950f MSR
3/8 in. web
Depths
9-1/2, 11-7/8 and 14 in.
33 pieces per unit

NI-60
2x3 2100f MSR
3/8 in. web
Depths
9-1/2, 11-7/8, 14 and 16 in.
33 pieces per unit

NI-80
2x4 2100f MSR
3/8 in. web
Depths
9-1/2, 11-7/8, 14 and 16 in.
23 pieces per unit

NI-90
2x4 2400f MSR
7/16 in. web
Depths
11-7/8, 14 and 16 in.
23 pieces per unit

RIM BOARDS

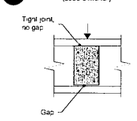
Width	Length
1-1/8 in.	16 ft

Depths
9-1/2 to 16 in.

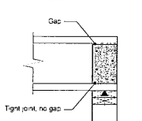
APA Rim Board Plus

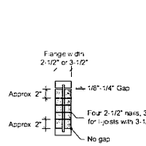
WEB STIFFENERS

2 **Concentrated Load** (Load Stiffener)



End Bearing (Bearing Stiffener)

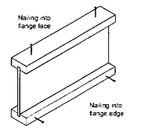




Stiffener Size Requirements

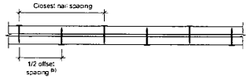
Flange width (in.)	Web stiffener size each side of web (in.)
2-1/2	1 x 2-5/16 Minimum width
3-1/2	1-1/2 x 2-5/16 Minimum width

NAIL SPACING



Nailed to Only One Flange Edge (Top View)

Nailed to Both Flange Edges (Top View)

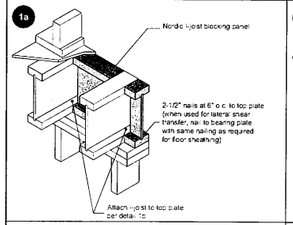


Recommended Closest Nail Spacing for Fastening Sheathing to I-joist Flanges to Minimize Splitting

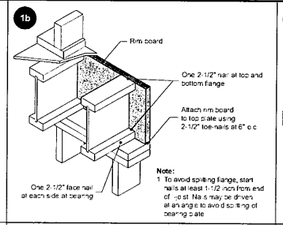
Fastener size (diameter x length)	Flange face nailing [a]		Flange edge nailing [b]		
	End distance (in.)	Nail spacing (in.)	End distance (in.)	Nail spacing (in.) Nailed to only one flange edge	Nail spacing (in.) Nailed to both flange edges
0.128" or smaller in diameter, and 3-1/4" or shorter in length	2	2	2	2	4
Greater than 0.128" up to 0.148" in diameter, and 3-1/4" or shorter in length	2	3	2	3	6

[a] If more than one row is required, offset rows a minimum of 1/2 inch and stagger.
[b] Closest nail spacing measured from one flange edge. Nails on opposite flange edge must be offset one half the minimum spacing.

1a

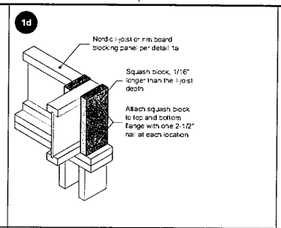


1b

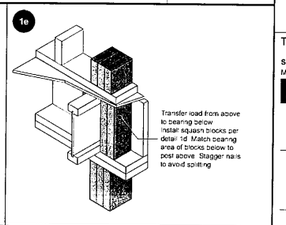


Note:
1. To avoid splitting flange, start nails at least 1-1/2 inch from end of I-joist. Nails may be driven at an angle to avoid splitting of bearing plate.

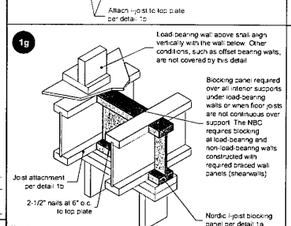
1d



1e

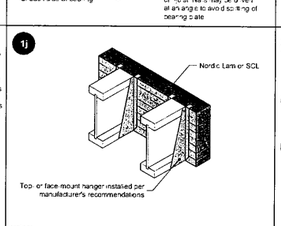


1g



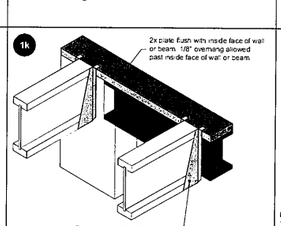
Notes:
1. An occasional blocking panel (one per line of blocking) may be left out for the passage of plumbing or ventilation ducts. For other applications, contact Nordic Structures.
2. For other options, see details 1g-1 to 1g-5.

1j



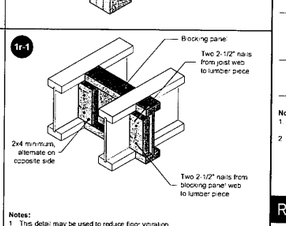
Notes:
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.
2. For nailing schedules for multiple Nordic Lam or SCL beams, see the manufacturer's recommendations.

1k



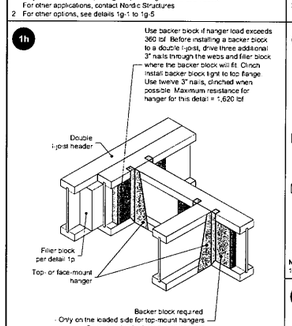
Note:
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

1r-1



Notes:
1. This detail may be used to reduce floor vibration.
2. Blocking panels may be of any I-joist series. Nails attaching lumber piece to I-joist web should be driven from the web side and clinched on the lumber side.
3. One occasional blocking panel may be left out for the passage of plumbing or ventilation ducts. Otherwise, a hole of not more than 2/3 of the lesser dimension of the blocking depth or length may be drilled in the blocking panel.

1h

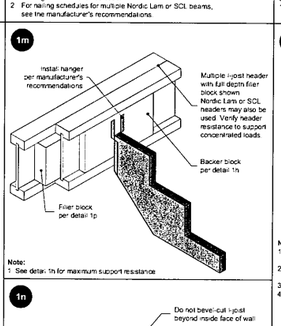


Flange width (in.)	Material thickness required (in.) [a]	Minimum depth (in.) [b]
2-1/2	1	5-1/2
3-1/2	1-1/2	7-1/4

[a] Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 Standard.
[b] For face-mount hangers use net joist depth minus 3-1/4 inches for joists with 1-1/2-inch thick flanges.

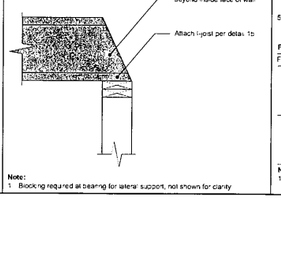
Notes:
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.
2. For hanger resistance, see manufacturer's recommendations.
3. Verify double I-joist resistance to support concentrated loads.
4. Backer blocks must be long enough to permit required nailing without splitting.

1m



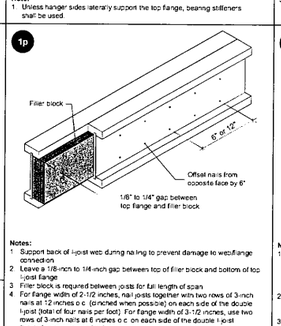
Note:
1. See detail 1h for maximum support resistance.

1n



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

1p



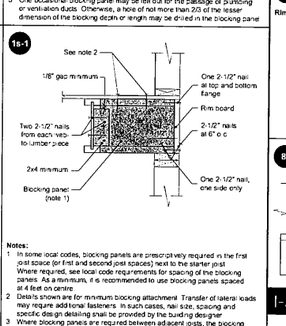
Notes:
1. Support back of I-joist web during nailing to prevent damage to web/flange connection.
2. Leave a 1/8-inch to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
3. Filler block is required between joists for full length of span.
4. For flange widths of 2-1/2 inches, nail joists together with two rows of 3-inch nails at 12 inches o.c. (clinched when possible) on each side of the double I-joist (total of four nails per foot). For flange width of 3-1/2 inches, use two rows of 3-inch nails at 6 inches o.c. on each side of the double I-joist (total of eight nails per foot).
5. The maximum factored load that may be applied to one side of the double I-joist using this detail is 860 lbs/ft.

Filler Block Requirements for Double I-joist Construction

Flange width (in.)	Net depth (in.)	Filler block size (in.)	Example
2-1/2	9-1/2	2-1/8 to 2-1/4 x 6	2x6 + 5/8" or 3/4" sheathing
	11-7/8	2-1/8 to 2-1/4 x 8	2x8 + 5/8" or 3/4" sheathing
	14	2-1/8 to 2-1/4 x 10	2x10 + 5/8" or 3/4" sheathing
	16	2-1/8 to 2-1/4 x 12	2x12 + 5/8" or 3/4" sheathing
3-1/2	9-1/2	3 x 6	2 x 2x6
	11-7/8	3 x 8	2 x 2x8
	14	3 x 10	2 x 2x10
	16	3 x 12	2 x 2x12

Note:
1. The height of the filler block may be different from that specified in the table, as long as it allows nailing and respects the required gap.

1s-1



Notes:
1. In some local codes, blocking panels are prescriptively required in the first joist space (or first and second joist spaces) next to the starter joist. Where required, see local code requirements for spacing of the blocking panels. As a minimum, it is recommended to use blocking panels spaced at 4 feet on centre.
2. Details shown are for minimum blocking attachment. Transfer of lateral loads may require additional fasteners. In such cases, nail size, spacing and specific design detailing shall be provided by the building designer.
3. Where blocking panels are required between adjacent joists, the blocking panels can be staggered by approximately 3 inches, and end-nailed as shown.
4. Nails attaching lumber piece to I-joist web should be driven from the web side and clinched on the lumber side.

This document supersedes all previous versions. For the latest version, consult nordic.ca or contact Nordic Structures.

FOR ALL construction details →DC3

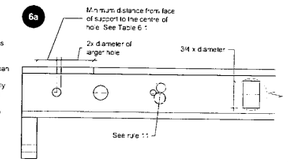
WEB HOLES AND OPENINGS

WEB HOLES IN I-JOISTS

Rules for Cutting Holes In I-Joists

1. The distance between the inside edge of the support and the centreline of any hole shall be in compliance with the requirements of Table 6.1
2. I-joist top and bottom flanges must never be cut, notched or otherwise modified.
3. Whenever possible, field-cut holes should be centred on the middle of the web.
4. The maximum size hole 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 and the adjacent I-joist flange.
5. The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
6. Where more than one hole is necessary, the distance between adjacent hole edges shall exceed two times the diameter of the largest round hole or twice the length of the longest side of the largest rectangular hole, and each hole must be sized and located in compliance with the requirements of Table 6.1
7. Holes measuring 1-1/2 inch or smaller shall be permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
8. 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.
9. All holes shall be cut in accordance with the restrictions listed above and as illustrated in detail 6a.
10. Limit three maximum-size holes per span.
11. A group of round holes at approximately the same location shall be permitted if it meets the requirements for a single round hole circumscribed around them.

6a



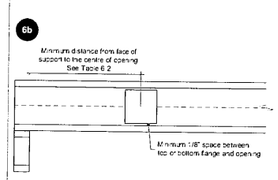
Notes:
1. Never drill, cut or notch the flange, or over-cut the web.
2. Holes in web should be cut with a sharp saw.
3. For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joist.

DUCT CHASE OPENINGS

Rules for Cutting Duct Chase Openings In I-joists

1. The distance between the inside edge of the support and the centreline of a duct chase opening shall be in compliance with the requirements of Table 6.2
2. I-joist top and bottom flanges must never be cut, notched or otherwise modified.
3. Whenever possible, field-cut duct chase openings 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 opening and the adjacent I-joist flange.
4. All openings shall be cut in accordance with the restrictions listed above and as illustrated in detail 6b.
5. Limit one maximum size duct chase opening per span.

6b



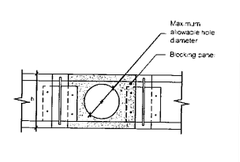
Notes:
1. Never drill, cut or notch the flange, or over-cut the web.
2. Holes in web should be cut with a sharp saw.
3. Avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joist.

HOLES IN BLOCKING PANELS

Maximum Allowable Hole Size In Lateral-restraint-only Blocking Panels

1. The maximum allowable hole size for a lateral-restraint only blocking panel is 2/3 of the lesser dimension of the blocking's depth or length. As long as the blocking panel is longer than its height (or depth), the table as de applies. For other applications, contact Nordic Structures.
2. Holes cut into the blocking panels are subject to the following limitations:
   - The top and bottom flanges of an I-joist blocking panel must never be cut, notched or otherwise modified.
   - Field-cut holes must be centred in the blocking horizontally.
   - While round holes are preferred, rectangle holes may be used provided the corners are not over-cut. Slightly rounding corners or pre-drilling corners with a 1-inch diameter bit is recommended.
   - All holes must be cut in a workmanlike manner in accordance with the limitations listed above.

6c



I-joist or rim board blocking depth (in.)	Maximum allowable hole diameter (in.) [a]
9-1/2	6-1/4
11-7/8	7-3/4
14	9-1/4
16	10-1/2

[a] Maximum allowable hole diameter in blocking panel, where the blocking panel is longer than its height.

TABLE 6.1 – LOCATION OF WEB HOLES

Simple or multiple span

Minimum distance from inside face of any support to centre of hole (ft-in.)

Joist depth	Joist series	Round hole diameter (in.) 2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	12-3/4
9-1/2"	NI-20	0'-7"	1'-6"	2'-10"	4'-3"	5'-8"	6'-0"	-	-	-	-	-	-	-	-	-
	NI-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-80	2'-3"	3'-6"	5'-0"	6'-6"	8'-2"	8'-6"	-	-	-	-	-	-	-	-	-
11-7/8"	NI-20	0'-7"	0'-8"	1'-0"	2'-4"	3'-8"	4'-0"	5'-0"	6'-6"	7'-9"	-	-	-	-	-	-
	NI-40x	0'-7"	0'-8"	1'-3"	2'-8"	4'-0"	4'-4"	5'-5"	7'-0"	8'-4"	-	-	-	-	-	-
	NI-60	0'-7"	1'-8"	3'-0"	4'-3"	5'-9"	6'-0"	7'-3"	8'-10"	10'-0"	-	-	-	-	-	-
	NI-80	1'-6"	2'-10"	4'-2"	5'-6"	7'-0"	7'-5"	8'-6"	10'-3"	11'-4"	-	-	-	-	-	-
	NI-90	0'-7"	0'-8"	1'-5"	3'-2"	4'-10"	5'-4"	6'-9"	8'-9"	10'-2"	-	-	-	-	-	-
14"	NI-40x	0'-7"	0'-8"	0'-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	-	-	-
	NI-60	0'-7"	0'-8"	1'-8"	3'-0"	4'-3"	4'-8"	5'-8"	7'-2"	8'-0"	8'-8"	10'-4"	11'-9"	-	-	-
	NI-80	0'-10"	2'-0"	3'-4"	4'-9"	6'-2"	6'-5"	7'-6"	9'-0"	10'-0"	10'-8"	12'-4"	13'-9"	-	-	-
	NI-90	0'-7"	0'-8"	0'-10"	2'-5"	4'-0"	4'-3"	5'-3"	7'-5"	8'-8"	9'-4"	11'-4"	12'-11"	-	-	-
16"	NI-60	0'-7"	0'-8"	0'-8"	1'-9"	2'-10"	3'-2"	4'-2"	5'-8"	6'-4"	7'-0"	8'-5"	9'-8"	10'-2"	12'-2"	13'-9"
	NI-80	0'-7"	1'-3"	2'-6"	3'-10"	5'-3"	5'-6"	6'-6"	8'-0"	9'-0"	9'-5"	11'-0"	12'-3"	12'-9"	14'-5"	16'-0"
	NI-90	0'-7"	0'-8"	0'-8"	1'-9"	3'-3"	3'-8"	4'-9"	6'-5"	7'-5"	8'-0"	9'-10"	11'-3"	11'-9"	13'-9"	15'-4"

Notes:
1. Tabulated values are applicable to residential floor construction meeting the above design criteria.
2. The above table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

Design Criteria

Joist spacing	Up to 24 inches
Loads	Live load = 40 psf and dead load = 15 psf
Deflection limits	L/480 under live load and L/240 under total load

TABLE 6.2 – LOCATION OF DUCT CHASE OPENINGS

Simple span

Minimum distance from inside face of any support to centre of opening (ft-in.)

Joist depth	Joist series	Duct chase length (in.) 8	10	12	14	16	18	20	22	24
9-1/2"	NI-20	4'-1"	4'-5"	4'-10"	-	-	-	-	-	-
	NI-40x	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	-	-
	NI-60	5'-4"	5'-9"	6'-2"	6'-7"	7'-1"	7'-5"	8'-0"	-	-
	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'-6"	-	-	-	-	-	-
	NI-40x	6'-8"	7'-2"	7'-6"	8'-1"	8'-6"	9'-1"	9'-6"	-	-
	NI-60	7'-3"	7'-8"	8'-0"	8'-6"	9'-0"	9'-3"	9'-9"	-	-
	NI-80	7'-2"	7'-7"	8'-0"	8'-5"	8'-10"	9'-3"	9'-8"	10'-2"	10'-8"
	NI-90	7'-6"	7'-11"	8'-4"	8'-9"	9'-2"	9'-7"	10'-1"	10'-7"	10'-11"
14"	NI-40x	8'-1"	8'-7"	9'-0"	9'-6"	10'-1"	10'-7"	11'-2"	-	-
	NI-60	8'-9"	9'-3"	9'-8"	10'-1"	10'-6"	11'-1"	11'-6"	-	-
	NI-80	9'-0"	9'-3"	9'-9"	10'-1"	10'-7"	11'-1"	11'-6"	12'-1"	12'-6"
	NI-90	9'-2"	9'-8"	10'-0"	10'-6"	10'-11"	11'-5"	11'-9"	12'-4"	12'-11"
16"	NI-60	10'-3"	10'-8"	11'-2"	11'-6"	12'-1"	12'-6"	13'-2"	-	-
	NI-80	10'-4"	10'-9"	11'-3"	11'-9"	12'-1"	12'-7"	13'-1"	13'-8"	14'-4"
	NI-90	10'-9"	11'-2"	11'-8"	12'-0"	12'-6"	13'-0"	13'-6"	14'-2"	14'-10"

Design Criteria

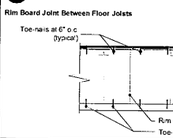
Joist spacing	Up to 24 inches
Loads	Live load = 40 psf and dead load = 15 psf
Deflection limits	L/480 under live load and L/240 under total load

Note:
1. Tabulated values are applicable to residential floor construction meeting the above design criteria.

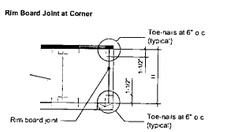
RIM BOARDS

8a

Rim Board Joint Between Floor Joists

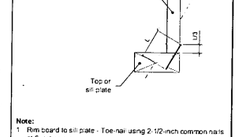


Rim Board Joint at Corner



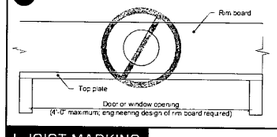
Notes:
1. Floor sheathing to rim board - Use 2-1/2-inch common nails at 6 inches o.c. Caution: The horizontal load resistance is not necessarily increased with a decreased nail spacing. Under no circumstances should the nail spacing be less than 3 inches. The 3-1/2-inch common nails used to connect the bottom plate of a wall to the rim board through the sheathing do not reduce the horizontal load resistance of the rim board provided that the 2-1/2-inch nail spacing (sheathing rim board) is 6 inches o.c. and the 3-1/2-inch nail spacing (bottom plate-sheathing-rim board) is in accordance with the prescriptive requirements of the applicable code. APA recommends a minimum 3/8-inch panel edge distance be maintained when nailing. Calculations show that the tongue does not need to be removed for floor sheathing 7/8-inch thick or less when used in conjunction with rim boards of 1-1/8 inch. Some local code jurisdictions, however, may require removal of the tongue at the edge of floor framing when nailing it to rim board.
2. Rim board to I-joist - Use two 2-1/2-inch common nails, one each into the top and bottom flange.

8b



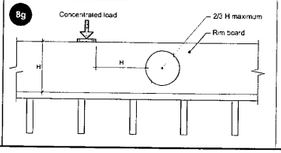
Note:
1. Rim board to sill plate - Toe-nail using 2-1/2-inch common nails at 6 inches o.c.

6f

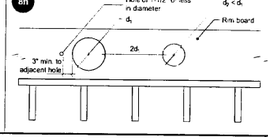


Note:
1. Do not cut holes in rim board installed over openings, such as doors or windows, where the rim board is not fully supported, except that holes of 1-1/2 inch or less in size are permitted provided they are positioned at the mid-depth and in the middle one-third of the span.

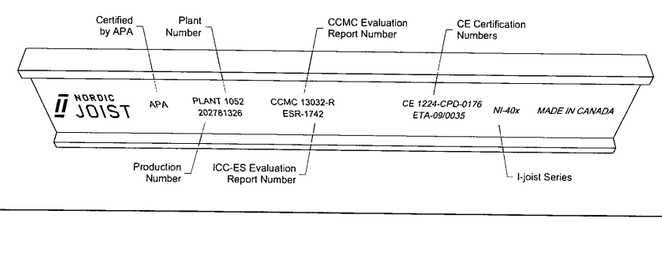
8g



8h



I-JOIST MARKING



NORDIC STRUCTURES	COMPANY June 28, 2021 11:16	PROJECT J1 GROUND FLOOR

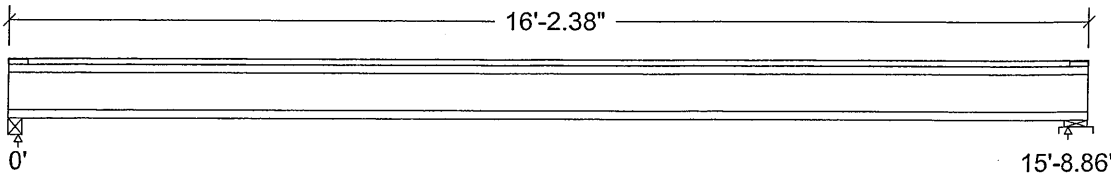
Design Check Calculation Sheet

Nordic Sizer – Canada 8.0

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full Area				15.00		psf
Load2	Live	Full Area				40.00		psf

Maximum Reactions (lbs) and Support Bearing (in):



Unfactored:			
Dead	118		118
Live	315		315
Factored:			
Total	620		620
Bearing:			
Capacity			
Joist	1869		1893
Support	-		7744
Des ratio			
Joist	0.33		0.33
Support	-		0.08
Load case	#2		#2
Length	2-5/8		4-3/8
Min req'd	1-1/2		1-1/2
Stiffener	No		No
KD	1.00		1.00
KB support	-		1.00
fcp sup	-		769
Kzcp sup	-		1.15

*Minimum bearing length for joists is 1-13/16" for exterior supports

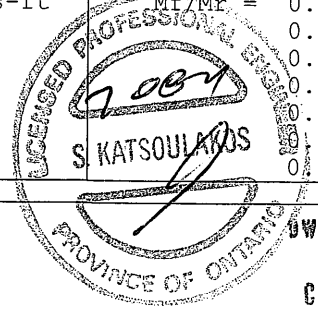
Nordic 9-1/2" NI-40x Floor joist @ 12" o.c.

Supports: 1 - Steel Beam, W; 2 - Lumber Sill plate, No.1/No.2;
Total length: 16'-2.38"; Clear span: 15'-7.38"; 3/4" nailed and glued OSB sheathing

This section PASSES the design code check.

Limit States Design using CSA O86-14 and Vibration Criterion:

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 620	Vr = 1895	lbs	Vf/Vr = 0.33
Moment(+)	Mf = 2438	Mr = 4824	lbs-ft	Mf/Mr = 0.51
Perm. Defl'n	0.09 = < L/999	0.52 = L/360	in	0.17
Live Defl'n	0.23 = L/813	0.39 = L/480	in	0.59
Total Defl'n	0.32 = L/591	0.79 = L/240	in	0.41
Bare Defl'n	0.28 = L/668	0.52 = L/360	in	0.54
Vibration	Lmax = 15'-8.9	Lv = 17'-1.8	ft	0.92
Defl'n	= 0.031	= 0.041	in	0.76



pg 12

DWG NO. TAM 14837-21
STRUCTURAL
COMPONENT ONLY

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	1895	1.00	1.00	-	-	-	-	-	#2
Mr+	4824	1.00	1.00	-	1.000	-	-	-	#2
EI	218.1 million		-	-	-	-	-	-	#2

CRITICAL LOAD COMBINATIONS:

```
Shear      : LC #2  = 1.25D + 1.5L
Moment(+)  : LC #2  = 1.25D + 1.5L
Deflection: LC #1  = 1.0D  (permanent)
            LC #2  = 1.0D + 1.0L  (live)
            LC #2  = 1.0D + 1.0L  (total)
            LC #2  = 1.0D + 1.0L  (bare joist)
Bearing    : Support 1 - LC #2 = 1.25D + 1.5L
             Support 2 - LC #2 = 1.25D + 1.5L
Load Types:  D=dead  L=live(use,occupancy)
Load Patterns: s=S/2  L=L+Ls  _=no pattern load in this span
All Load Combinations (LCs) are listed in the Analysis output
```

CALCULATIONS:

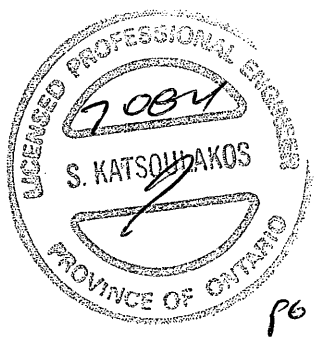
```
EIeff = 265.29 lb-in^2  K =  4.94e06 lbs  GA = 0.62e06 lb
"Live" deflection is due to all non-dead loads (live, wind, snow…)
```

CONFORMS TO OBC 2012

Design Notes:

AMENDED 2020

1. WoodWorks analysis and design are in accordance with the 2015 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-14 Engineering Design in Wood standard, Update No. 2 (June 2017).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. Allowable vibration-controlled span as per the Concluding Report, Development of Design Procedures for Vibration Controlled Spans using Engineered Wood Members, CWC et al for CCMC, 1997.
7. Floor vibration design from the CCMC Concluding Report (1997) on vibration controlled spans for engineered wood products.
8. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis 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 this component based on the design criteria and loadings shown.



P6 2

DWG NO. TAM 14837-21
STRUCTURAL
COMPONENT ONLY

NORDIC STRUCTURES	COMPANY June 28, 2021 11:16	PROJECT J1 SECOND FLOOR

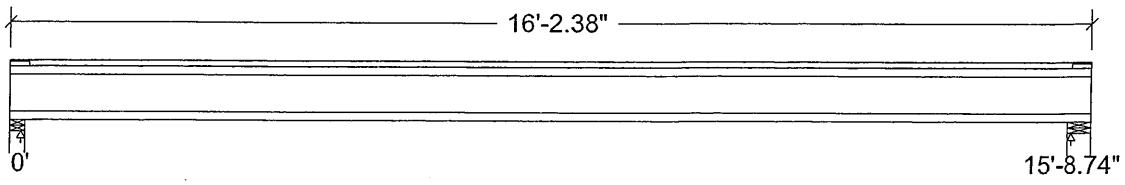
Design Check Calculation Sheet

Nordic Sizer – Canada 8.0

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full Area				15.00		psf
Load2	Live	Full Area				40.00		psf

Maximum Reactions (lbs) and Support Bearing (in):



Unfactored:			
Dead	118		118
Live	315		315
Factored:			
Total	619		619
Bearing:			
Capacity			
Joist	1872		1893
Support	4756		7744
Des ratio			
Joist	0.33		0.33
Support	0.13		0.08
Load case	#2		#2
Length	2-3/4		4-3/8
Min req'd	1-1/2		1-1/2
Stiffener	No		No
KD	1.00		1.00
KB support	-		-
fcp sup	769		769
Kzcp sup	-		-

*Minimum bearing length for joists is 1-13/16" for exterior supports
Bearing for wall supports is perpendicular-to-grain bearing on top plate. No stud design included.

Nordic 9-1/2" NI-40x Floor joist @ 12" o.c.

Supports: All - Lumber Wall, No.1/No.2

Total length: 16'-2.38"; Clear span: 15'-7.25"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section PASSES the design code check.

P6 of 6

DWG NO. TAM 14838-21
STRUCTURAL
COMPONENT ONLY

Limit States Design using CSA O86-14 and Vibration Criterion:

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 619	Vr = 1895	lbs	Vf/Vr = 0.33
Moment(+)	Mf = 2435	Mr = 4824	lbs-ft	Mf/Mr = 0.50
Perm. Defl'n	0.09 = < L/999	0.52 = L/360	in	0.17
Live Defl'n	0.24 = L/795	0.39 = L/480	in	0.60
Total Defl'n	0.33 = L/578	0.79 = L/240	in	0.41
Bare Defl'n	0.28 = L/671	0.52 = L/360	in	0.54
Vibration	Lmax = 15'-8.7	Lv = 16'-8.5	ft	0.94
Defl'n	= 0.034	= 0.041	in	0.83

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	1895	1.00	1.00	-	-	-	-	-	#2
Mr+	4824	1.00	1.00	-	1.000	-	-	-	#2
EI	218.1 million		-	-	-	-	-	-	#2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L
Moment(+) : LC #2 = 1.25D + 1.5L
Deflection: LC #1 = 1.0D (permanent)
LC #2 = 1.0D + 1.0L (live)
LC #2 = 1.0D + 1.0L (total)
LC #2 = 1.0D + 1.0L (bare joist)
Bearing : Support 1 - LC #2 = 1.25D + 1.5L
Support 2 - LC #2 = 1.25D + 1.5L
Load Types: D=dead L=live(use,occupancy)
Load Patterns: s=S/2 L=L+Ls _=no pattern load in this span
All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:

EIeff = 258.29 lb-in^2 K = 4.94e06 lbs GA = 0.62e06 lb
"Live" deflection is due to all non-dead loads (live, wind, snow...)

CONFORMS TO OBC 2012

Design Notes:

AMENDED 2020

1. WoodWorks analysis and design are in accordance with the 2015 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-14 Engineering Design in Wood standard, Update No. 2 (June 2017).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. Allowable vibration-controlled span as per the Concluding Report, Development of Design Procedures for Vibration Controlled Spans using Engineered Wood Members, CWC et al for CCMC, 1997.
7. Floor vibration design from the CCMC Concluding Report (1997) on vibration controlled spans for engineered wood products.
8. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis 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 this component based on the design criteria and loadings shown.

LICENSED PROFESSIONAL ENGINEER
100124
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 14038-21
STRUCTURAL
COMPONENT ONLY

NORDIC STRUCTURES

COMPANY
June 28, 2021 11:17

PROJECT
J9 GROUND FLOOR

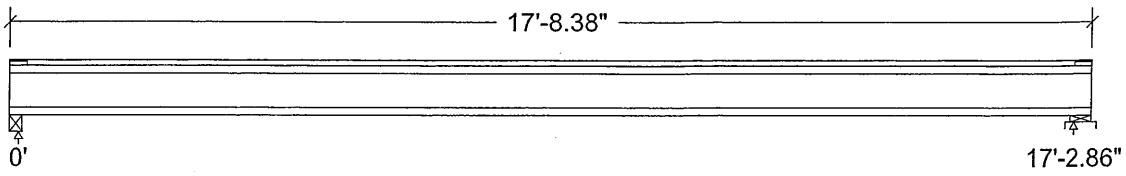
Design Check Calculation Sheet

Nordic Sizer – Canada 8.0

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full Area				15.00		psf
Load2	Live	Full Area				40.00		psf

Maximum Reactions (lbs) and Support Bearing (in):



Unfactored:			
Dead	129		129
Live	345		345
Factored:			
Total	679		679
Bearing:			
Capacity			
Joist	1893		1893
Support	-		10841
Des ratio			
Joist	0.36		0.36
Support	-		0.06
Load case	#2		#2
Length	2-5/8		4-3/8
Min req'd	1-1/2		1-1/2
Stiffener	No		No
KD	1.00		1.00
KB support	-		1.00
fcp sup	-		769
Kzcp sup	-		1.15

*Minimum bearing length for joists is 1-13/16" for exterior supports

Nordic 9-1/2" NI-80 Floor joist @ 12" o.c.

Supports: 1 - Steel Beam, W; 2 - Lumber Sill plate, No.1/No.2;
Total length: 17'-8.38"; Clear span: 17'-1.38"; 3/4" nailed and glued OSB sheathing

This section PASSES the design code check.

Limit States Design using CSA O86-14 and Vibration Criterion:

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 679	Vr = 1895	lbs	Vf/Vr = 0.36
Moment(+)	Mf = 2925	Mr = 8958	lbs-ft	Mf/Mr = 0.33
Perm. Defl'n	0.09 = < L/999	0.57 = L/360	in	0.16
Live Defl'n	0.24 = L/859	0.43 = L/480	in	0.56
Total Defl'n	0.33 = L/625	0.86 = L/240	in	0.38
Bare Defl'n	0.28 = L/742	0.57 = L/360	in	0.49
Vibration	Lmax = 17'-2.9	Lv = 18'-4.9	ft	0.94
Defl'n	= 0.030	= 0.036	in	0.82

LICENCED PROFESSIONAL ENGINEER
2087
S. KATSOULAKOS
PROVINCE OF ONTARIO

P6 of 6

DWG NO. TAM14839-21
STRUCTURAL
COMPONENT ONLY

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	1895	1.00	1.00	-	-	-	-	-	#2
Mr+	8958	1.00	1.00	-	1.000	-	-	-	#2
EI	324.1 million		-	-	-	-	-	-	#2

CRITICAL LOAD COMBINATIONS:

```
Shear      : LC #2  = 1.25D + 1.5L
Moment(+)  : LC #2  = 1.25D + 1.5L
Deflection: LC #1  = 1.0D  (permanent)
            LC #2  = 1.0D + 1.0L  (live)
            LC #2  = 1.0D + 1.0L  (total)
            LC #2  = 1.0D + 1.0L  (bare joist)
Bearing    : Support 1 - LC #2 = 1.25D + 1.5L
             Support 2 - LC #2 = 1.25D + 1.5L
Load Types:  D=dead  L=live(use,occupancy)
Load Patterns: s=S/2  L=L+Ls  _=no pattern load in this span
All Load Combinations (LCs) are listed in the Analysis output
```

CALCULATIONS:

```
EIeff = 375.38 lb-in^2  K =  4.94e06 lbs  GA = 0.62e06 lb
"Live" deflection is due to all non-dead loads (live, wind, snow...)
```

CONFORMS TO OBC 2012

Design Notes:

AMENDED 2020

1. WoodWorks analysis and design are in accordance with the 2015 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-14 Engineering Design in Wood standard, Update No. 2 (June 2017).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. Allowable vibration-controlled span as per the Concluding Report, Development of Design Procedures for Vibration Controlled Spans using Engineered Wood Members, CWC et al for CCMC, 1997.
7. Floor vibration design from the CCMC Concluding Report (1997) on vibration controlled spans for engineered wood products.
8. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis 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 this component based on the design criteria and loadings shown.

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. YAM 14039-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

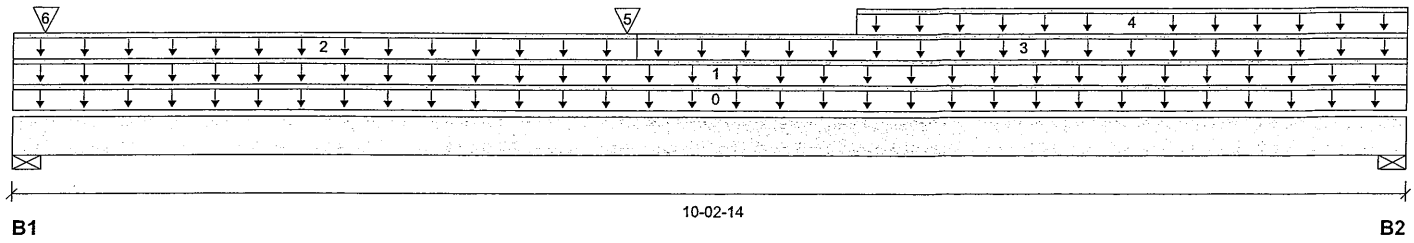
1ST FLR FRAMING\Flush Beams\B2(i4782) (Flush Beam)

Dry | 1 span | No cant.

BC CALC® Member Report
Build 7773

July 6, 2021 16:46:56

Job name:		File name:	38-13 EL A STD.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B2(i4782)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 10-02-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	623 / 0	452 / 0		
B2, 4-3/8"	248 / 0	353 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-02-14	Top		5			00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	10-02-14	Top	19	9			n\a
2	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	04-06-06	Top	8	4			n\a
3	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	04-06-06	10-02-14	Top	3	2			n\a
4	WALL	Unf. Lin. (lb/ft)	L	06-01-08	10-02-14	Top		60			n\a
5	B3(i4894)	Conc. Pt. (lbs)	L	04-05-08	04-05-08	Top	315	165			n\a
6	10(i1459)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	312	222			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2444 ft-lbs	11610 ft-lbs	21.1%	1	04-05-08
End Shear	676 lbs	5785 lbs	11.7%	1	01-03-00
Total Load Deflection	L/999 (0.103")	n\a	n\a	4	05-01-09
Live Load Deflection	L/999 (0.056")	n\a	n\a	5	05-00-06
Max Defl.	0.103"	n\a	n\a	4	05-01-09
Span / Depth	12.1				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	5-1/2" x 1-3/4"	1499 lbs	25.3%	12.8%	Spruce-Pine-Fir
B2	Wall/Plate	4-3/8" x 1-3/4"	812 lbs	17.2%	8.7%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 05-04-02.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEERS
S. KATSOULAKOS
PROVINCE OF ONTARIO
DWG NO. TAM1484021
STRUCTURAL
COMPONENT ONLY

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 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

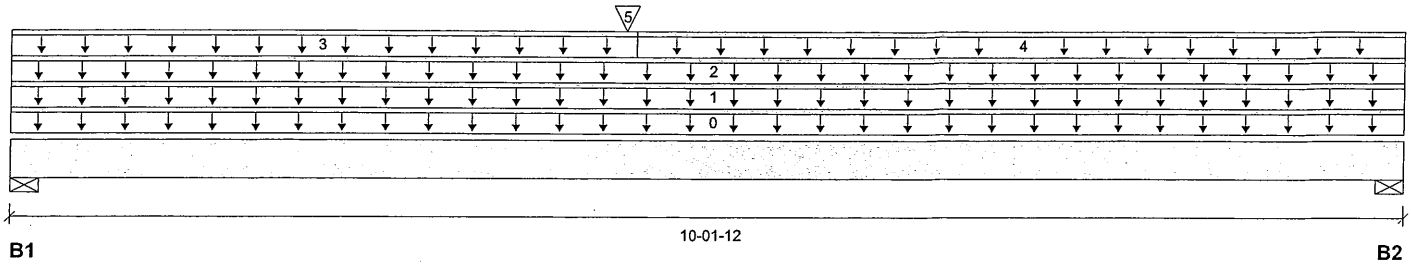
1ST FLR FRAMING\Flush Beams\B8(i4833) (Flush Beam)

Dry | 1 span | No cant.

July 6, 2021 16:46:56

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL A STD.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B8(i4833)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 10-01-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	469 / 0	701 / 0		
B2, 4-3/8"	358 / 0	613 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-01-12	Top		5			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	10-01-12	Top		60			n\a
2	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	10-01-12	Top	29	15			n\a
3	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	04-06-02	Top	24	12			n\a
4	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	04-06-02	10-01-12	Top	3				n\a
5	B7(i4772)	Conc. Pt. (lbs)	L	04-05-04	04-05-04	Top	407	446			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4628 ft-lbs	11610 ft-lbs	39.9%	1	04-05-04
End Shear	1355 lbs	5785 lbs	23.4%	1	01-01-14
Total Load Deflection	L/579 (0.198")	n\a	41.5%	4	04-11-03
Live Load Deflection	L/999 (0.08")	n\a	n\a	5	04-11-03
Max Defl.	0.198"	n\a	n\a	4	04-11-03
Span / Depth	12.1				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	4-3/8" x 1-3/4"	1580 lbs	33.5%	16.9%	Spruce-Pine-Fir
B2	Wall/Plate	4-3/8" x 1-3/4"	858 lbs	28.0%	14.1%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 05-03-04.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM14841-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

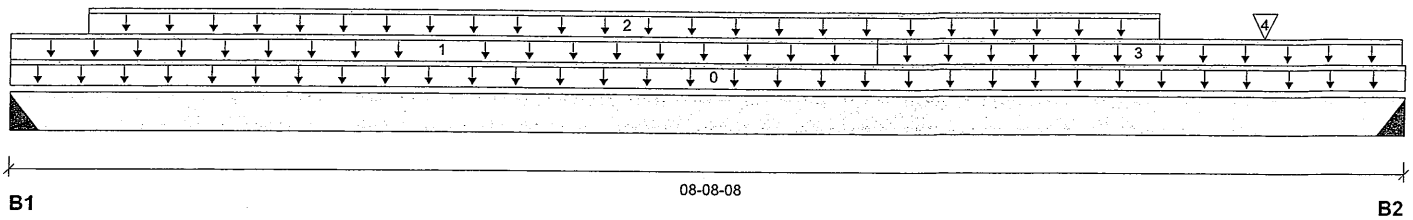
1ST FLR FRAMING\Flush Beams\B7(i4772) (Flush Beam)

Dry | 1 span | No cant.

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

July 6, 2021 16:46:56

File name: 38-13 EL A STD.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B7(i4772)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 08-08-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	404 / 0	448 / 0		
B2, 3"	671 / 0	453 / 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	08-08-08	Top		5			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	05-04-04	Top		60			n\a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-12	07-01-12	Top	86	43			n\a
3	STAIR	Unf. Lin. (lb/ft)	L	05-04-04	08-08-04	Top	120	60			n\a
4	J6(i4836)	Conc. Pt. (lbs)	L	07-09-12	07-09-12	Top	100	50			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2781 ft-lbs	11610 ft-lbs	24.0%	1	05-01-12
End Shear	1266 lbs	5785 lbs	21.9%	1	07-08-00
Total Load Deflection	L/999 (0.101")	n\a	n\a	4	04-05-12
Live Load Deflection	L/999 (0.054")	n\a	n\a	5	04-05-12
Max Defl.	0.101"	n\a	n\a	4	04-05-12
Span / Depth	10.5				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	3" x 1-3/4"	1165 lbs	n\a	18.2%	HUS1.81/10
B2	Hanger	3" x 1-3/4"	1572 lbs	n\a	24.5%	HUS1.81/10

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. Hanger has not been analyzed for adequate capacity.

Notes

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

LICENSED PROFESSIONAL ENGINEERS
S. KATSOULAKOS
PROVINCE OF ONTARIO

CONFORMS TO OBC 2012
AMENDED 2020

DWG NO. TAM 14842-21
STRUCTURAL COMPONENT ONLY

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® ,

Boise Cascade® ENGINEERED WOOD PRODUCTS

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLR FRAMING\Flush Beams\B4(i4578) (Flush Beam)

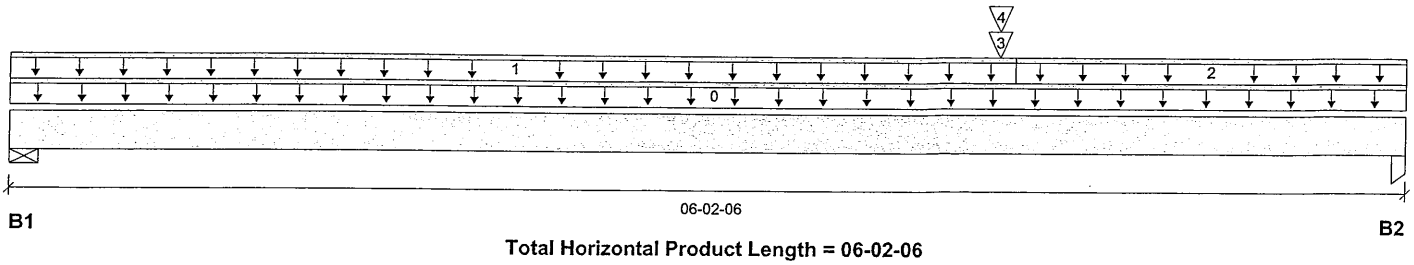
Dry | 1 span | No cant.

BC CALC® Member Report
Build 7773

July 5, 2021 13:40:52

Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL A STD.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B4(i4578)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 06-02-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	188 / 0	112 / 0		
B2, 1-3/4"	312 / 0	177 / 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	06-02-06	Top		5			00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	04-05-04	Top	27	13			n\a
2	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	04-05-04	06-02-06	Top	20	10			n\a
3	B3(i4566)	Conc. Pt. (lbs)	L	04-04-06	04-04-06	Top	329	173			n\a
4	STAIR	Conc. Pt. (lbs)	L	04-04-06	04-04-06	Top	18	9			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1124 ft-lbs	11610 ft-lbs	9.7%	1	04-04-06
End Shear	643 lbs	5785 lbs	11.1%	1	05-03-02
Total Load Deflection	L/999 (0.016")	n\a	n\a	4	03-04-15
Live Load Deflection	L/999 (0.01")	n\a	n\a	5	03-04-15
Max Defl.	0.016"	n\a	n\a	4	03-04-15
Span / Depth	7.3				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	4-3/8" x 1-3/4"	423 lbs	9.0%	4.5%	Spruce-Pine-Fir
B2	Column	1-3/4" x 1-3/4"	689 lbs	27.7%	18.4%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA 086.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 03-11-02.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEERS
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM14843-21
STRUCTURAL
COMPONENT ONLY

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

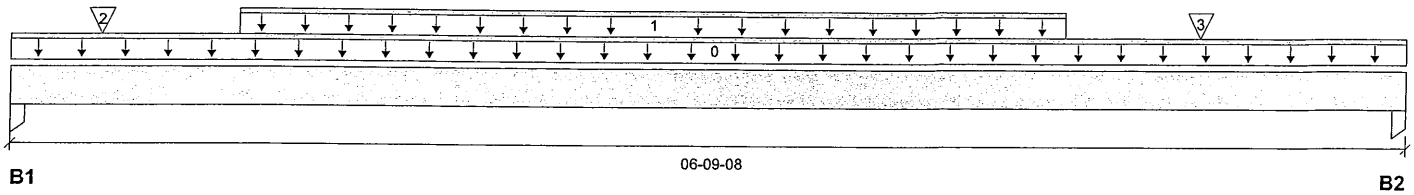
1ST FLR FRAMING\Flush Beams\B5(i4634) (Flush Beam)

Dry | 1 span | No cant.

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

July 5, 2021 13:40:52

File name: 38-13 EL A STD.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B5(i4634)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 06-09-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	392 / 0	212 / 0		
B2, 3-1/2"	354 / 0	193 / 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	06-09-08	Top		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-01-04	05-01-04	Top	124	62			n\a
2	J5(i4586)	Conc. Pt. (lbs)	L	00-05-04	00-05-04	Top	107	54			n\a
3	J5(i4572)	Conc. Pt. (lbs)	L	05-09-04	05-09-04	Top	144	72			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1347 ft-lbs	11610 ft-lbs	11.6%	1	03-01-04
End Shear	742 lbs	5785 lbs	12.8%	1	05-08-08
Total Load Deflection	L/999 (0.027")	n\a	n\a	4	03-04-04
Live Load Deflection	L/999 (0.017")	n\a	n\a	5	03-04-04
Max Defl.	0.027"	n\a	n\a	4	03-04-04
Span / Depth	8.0				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	3-1/2" x 1-3/4"	853 lbs	17.1%	11.4%	Unspecified
B2	Column	3-1/2" x 1-3/4"	772 lbs	15.5%	10.3%	Unspecified

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 14044-2L
STRUCTURAL
COMPONENT ONLY

Notes

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

CONFORMS TO OBC 2012
AMENDED 2020

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 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

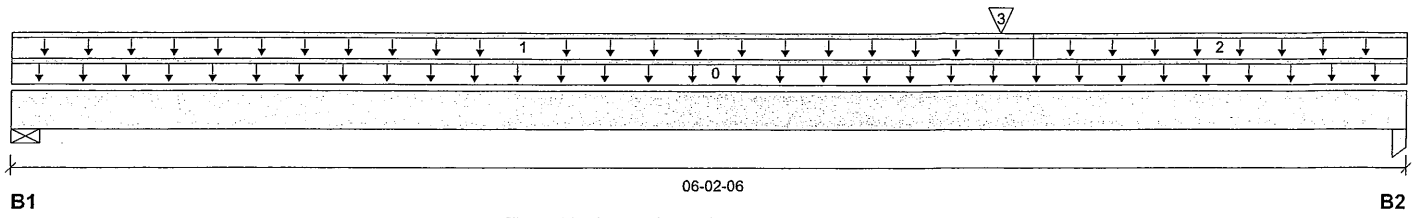
1ST FLR FRAMING\Flush Beams\B6(i4621) (Flush Beam)

Dry | 1 span | No cant.

July 5, 2021 13:40:52

BC CALC® Member Report
Build 7773

Job name:		File name:	38-13 EL A STD.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B6(i4621)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 06-02-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	286 / 0	201 / 0		
B2, 1-3/4"	529 / 0	377 / 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	06-02-06	Top		5			00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	04-06-02	Top	27	13			n\a
2	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	04-06-02	06-02-06	Top	9	4			n\a
3	B7(i4639)	Conc. Pt. (lbs)	L	04-04-06	04-04-06	Top	680	481			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2172 ft-lbs	11610 ft-lbs	18.7%	1	04-04-06
End Shear	1241 lbs	5785 lbs	21.5%	1	05-03-02
Total Load Deflection	L/999 (0.03")	n\a	n\a	4	03-05-09
Live Load Deflection	L/999 (0.018")	n\a	n\a	5	03-05-09
Max Defl.	0.03"	n\a	n\a	4	03-05-09
Span / Depth	7.3				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	4-3/8" x 1-3/4"	681 lbs	14.5%	7.3%	Spruce-Pine-Fir
B2	Column	1-3/4" x 1-3/4"	1265 lbs	50.8%	33.8%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 03-10-04.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO
DWG NO. TAM 14645 21
STRUCTURAL
COMPONENT ONLY

Disclosure

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Boise Cascade® ENGINEERED WOOD PRODUCTS

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLR FRAMING\Flush Beams\B3(i4566) (Flush Beam)

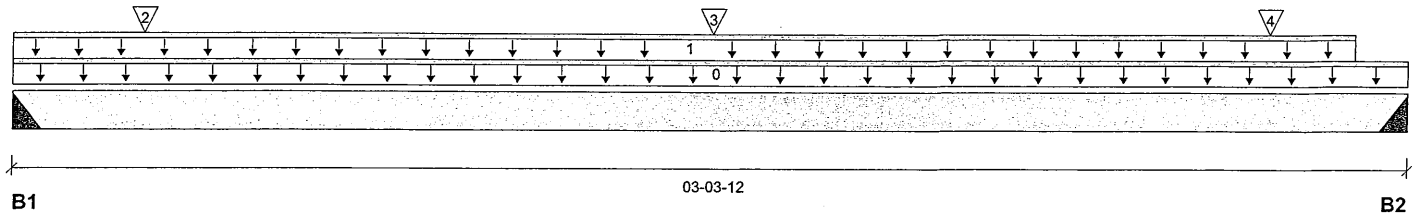
Dry | 1 span | No cant.

BC CALC® Member Report
Build 7773

July 5, 2021 13:40:52

Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL A STD.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B3(i4566)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 03-03-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	333 / 0	175 / 0		
B2, 3"	313 / 0	165 / 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	03-03-12	Top		5			00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	03-02-04	Top	120	60			n\a
2	J6(i4667)	Conc. Pt. (lbs)	L	00-03-12	00-03-12	Top	73	37			n\a
3	J6(i4595)	Conc. Pt. (lbs)	L	01-07-12	01-07-12	Top	114	57			n\a
4	J6(i4671)	Conc. Pt. (lbs)	L	02-11-12	02-11-12	Top	77	39			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	471 ft-lbs	11610 ft-lbs	4.1%	1	01-07-12
End Shear	291 lbs	5785 lbs	5.0%	1	01-00-08
Total Load Deflection	L/999 (0.002")	n\a	n\a	4	01-07-12
Live Load Deflection	L/999 (0.001")	n\a	n\a	5	01-07-12
Max Defl.	0.002"	n\a	n\a	4	01-07-12
Span / Depth	3.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	3" x 1-3/4"	718 lbs	n\a	11.2%	HUS1.81/10
B2	Hanger	3" x 1-3/4"	677 lbs	n\a	10.6%	HUS1.81/10

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. Hanger has not been analyzed for adequate capacity.

Notes

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

CONFORMS TO OBC 2012
AMENDED 2020

DWG NO. TAM 14046 21
STRUCTURAL
COMPONENT ONLY

Disclosure

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Boise Cascade® ENGINEERED WOOD PRODUCTS

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

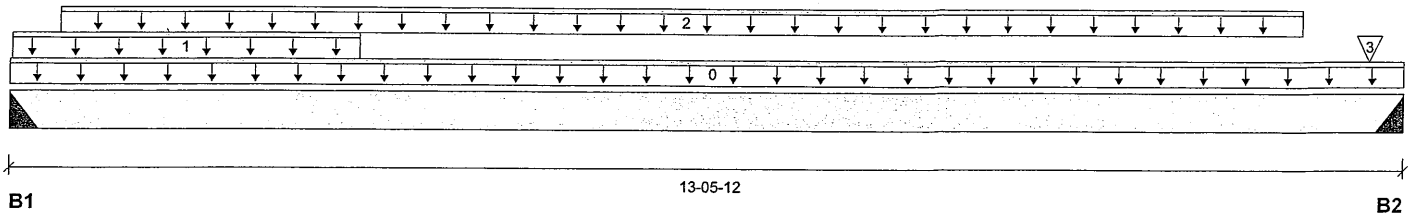
2ND FLR FRAMING\Flush Beams\B12(i4876) (Flush Beam)

Dry | 1 span | No cant.

July 6, 2021 16:36:00

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL A STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B12(i4876)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 13-05-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	791 / 0	428 / 0		
B2, 3"	513 / 0	289 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-05-12	Top		5			00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-04	03-04-04	Top	120	60			n\a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-12	12-05-12	Top	70	35			n\a
3	J5(i4902)	Conc. Pt. (lbs)	L	13-01-12	13-01-12	Top	62	31			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4015 ft-lbs	11610 ft-lbs	34.6%	1	06-05-12
End Shear	1455 lbs	5785 lbs	25.1%	1	01-00-08
Total Load Deflection	L/441 (0.357")	n\a	54.4%	4	06-05-12
Live Load Deflection	L/686 (0.229")	n\a	52.5%	5	06-05-12
Max Defl.	0.357"	n\a	n\a	4	06-05-12
Span / Depth	16.6				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	3" x 1-3/4"	1721 lbs	n\a	26.9%	HUS1.81/10
B2	Hanger	3" x 1-3/4"	1131 lbs	n\a	17.7%	HUS1.81/10

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM/4847-21
STRUCTURAL
COMPONENT ONLY

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. Hanger has not been analyzed for adequate capacity.

Notes

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

CONFORMS TO OBC 2012
AMENDED 2020

Disclosure

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

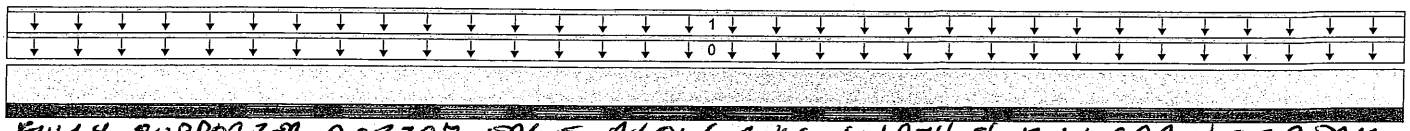
2ND FLR FRAMING\Flush Beams\B14(i4646) (Flush Beam)

Dry | 1 span | No cant.

BC CALC® Member Report
Build 0
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

July 5, 2021 13:40:53

File name: 38-13 EL A STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B14(i4646)
Specifier:
Designer: EEO
Company:



FULLY SUPPORTED BOTTOM EDGE ALONG FULL WIDTH & FULLSPAN OF BEAM.

Total Horizontal Product Length = 13-05-12

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-05-12	Top		10			00-00-00
1	E25(i98)	Unf. Lin. (lb/ft)	L	00-00-00	13-05-12	Top		284	406		n\a

Controls Summary

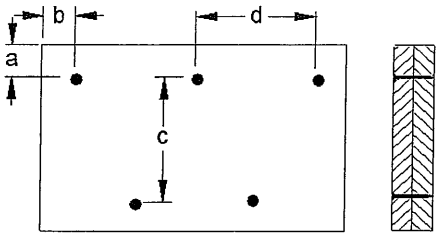
	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Dist. Load	963.88 lb/ft	57645.1 lb/ft	1.7%		
Conc. Load	0 lbs	16813 lbs	n\a		

CONFORMS TO OBC 2012
AMENDED 2020

Notes

Calculations assume member is fully braced.

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 12"

Connectors are: 1 Nails

3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 14646 1
STRUCTURAL
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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.

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Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

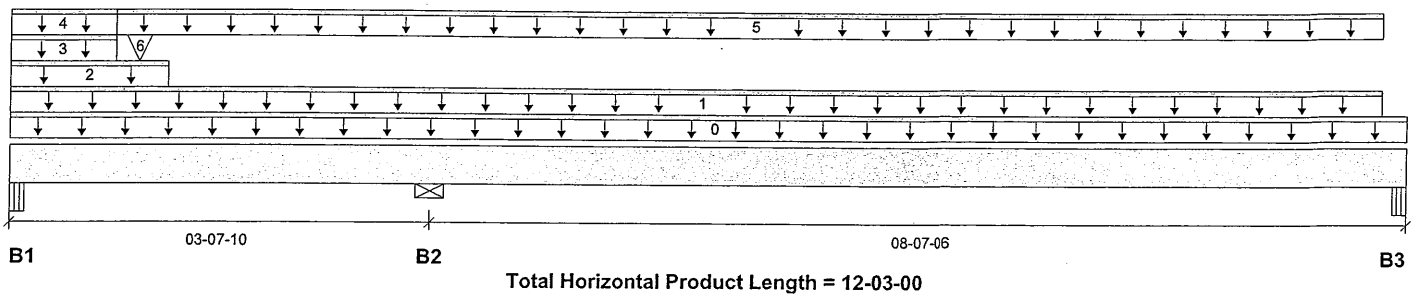
2ND FLR FRAMING\Flush Beams\B15(i4196) (Flush Beam)

Dry | 2 spans | No cant.

July 5, 2021 13:40:53

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL A STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B15(i4196)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 12-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-1/8"	44 / 48	604 / 0	884 / 0	
B2, 5-1/2"	226 / 0	411 / 0	345 / 0	
B3, 5-1/4"	95 / 1	72 / 0	0 / 16	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-03-00	Top		10			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	12-00-06	Top	15	8			n\a
2	E29(i97)	Unf. Lin. (lb/ft)	L	00-00-00	01-04-06	Top		24	72		n\a
3	E29(i97)	Unf. Lin. (lb/ft)	L	00-00-00	00-10-14	Top		81			n\a
4	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	00-10-14	Top	6				n\a
5	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-10-14	12-00-06	Top	11	6			n\a
6	-	Conc. Pt. (lbs)	L	01-01-05	01-01-05	Top		705	1115		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1580 ft-lbs	23219 ft-lbs	6.8%	38	01-01-10
Neg. Moment	-677 ft-lbs	-18777 ft-lbs	3.6%	1	03-07-10
End Shear	1809 lbs	11571 lbs	15.6%	38	01-01-10
Cont. Shear	893 lbs	11571 lbs	7.7%	37	02-07-06
Total Load Deflection	L/999 (0.005")	n\a	n\a	80	08-04-00
Live Load Deflection	L/999 (0.003")	n\a	n\a	118	08-01-10
Total Neg. Defl.	L/999 (-0.001")	n\a	n\a	82	05-06-10
Max Defl.	0.005"	n\a	n\a	80	08-04-00
Span / Depth	10.4				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	4-1/8" x 3-1/2"	2126 lbs	27.6%	12.1%	Unspecified
B2	Wall/Plate	5-1/2" x 3-1/2"	1257 lbs	10.6%	5.4%	Spruce-Pine-Fir
B3	Beam	5-1/4" x 3-1/2"	232 lbs	2.4%	1.0%	Unspecified

LICENSED PROFESSIONAL ENGINEERS
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 14849-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B15(i4196) (Flush Beam)

Dry | 2 spans | No cant.

BC CALC® Member Report
Build 7773

July 5, 2021 13:40:53

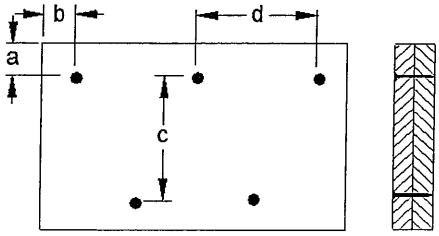
Job name:		File name:	38-13 EL A STD.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B15(i4196)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 07-11-06.

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 8"

Calculated Side Load = 382.4 lb/ft
Connectors are: 16d 3½" ARDOX SPIRAL Nails

DWG NO. TAM/148421
STRUCTURAL
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Disclosure

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Boise Cascade® ENGINEERED WOOD PRODUCTS

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

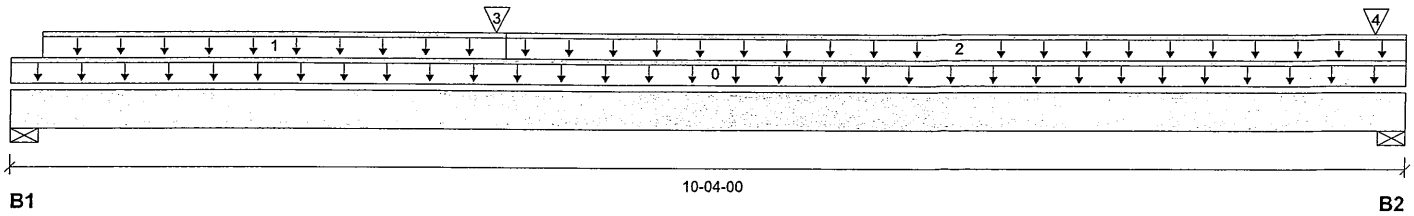
2ND FLR FRAMING\Flush Beams\B11(i4870) (Flush Beam)

Dry | 1 span | No cant.

July 6, 2021 16:36:00

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL A STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B11(i4870)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 10-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	382 / 0	238 / 0		
B2, 5-1/2"	192 / 0	173 / 0	59 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-04-00	Top		5			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-02-12	03-07-08	Top	8	4			n\a
2	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	03-07-08	10-04-00	Top	3	2			n\a
3	-	Conc. Pt. (lbs)	L	03-06-10	03-06-10	Top	527	296			n\a
4	E25(i98)	Conc. Pt. (lbs)	L	10-01-04	10-01-04	Top		41	59		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2613 ft-lbs	11610 ft-lbs	22.5%	1	03-06-10
End Shear	845 lbs	5785 lbs	14.6%	1	01-03-00
Total Load Deflection	L/999 (0.096")	n\a	n\a	35	04-08-13
Live Load Deflection	L/999 (0.06")	n\a	n\a	51	04-08-13
Max Defl.	0.096"	n\a	n\a	35	04-08-13
Span / Depth	12.1				

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S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 1648501
STRUCTURAL
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Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	5-1/2" x 1-3/4"	870 lbs	14.7%	7.4%	Spruce-Pine-Fir
B2	Wall/Plate	5-1/2" x 1-3/4"	564 lbs	9.5%	4.8%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 06-03-00.

CONFORMS TO OBC 2012
AMENDED 2020

Disclosure

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Boise Cascade® ENGINEERED WOOD PRODUCTS

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

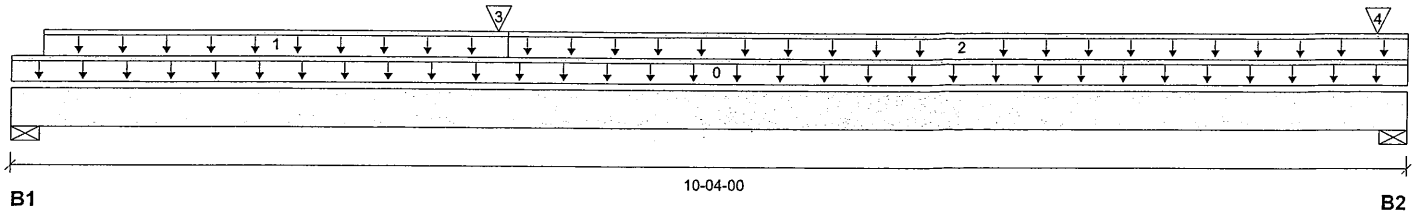
2ND FLR FRAMING\Flush Beams\B13(i4802) (Flush Beam)

Dry | 1 span | No cant.

July 6, 2021 16:36:00

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL A STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B13(i4802)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 10-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	742 / 0	418 / 0		
B2, 5-1/2"	430 / 0	292 / 0	59 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-04-00	Top		5			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-02-12	03-07-08	Top	53	27			n\a
2	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	03-07-08	10-04-00	Top	30	15			n\a
3	B12(i4876)	Conc. Pt. (lbs)	L	03-06-10	03-06-10	Top	787	426			n\a
4	E25(i98)	Conc. Pt. (lbs)	L	10-01-04	10-01-04	Top		41	59		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4500 ft-lbs	11610 ft-lbs	38.8%	1	03-06-10
End Shear	1512 lbs	5785 lbs	26.1%	1	01-03-00
Total Load Deflection	L/659 (0.174")	n\a	36.4%	35	04-09-13
Live Load Deflection	L/999 (0.111")	n\a	n\a	51	04-09-13
Max Defl.	0.174"	n\a	n\a	35	04-09-13
Span / Depth	12.1				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	5-1/2" x 1-3/4"	1635 lbs	27.6%	13.9%	Spruce-Pine-Fir
B2	Wall/Plate	5-1/2" x 1-3/4"	1069 lbs	18.0%	9.1%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 06-03-00.

CONFORMS TO OBC 2012
AMENDED 2020

LICENCED PROFESSIONAL ENGINEER
S. KATSOULAROS
PROVINCE OF ONTARIO

DWG NO. TAM 14851-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

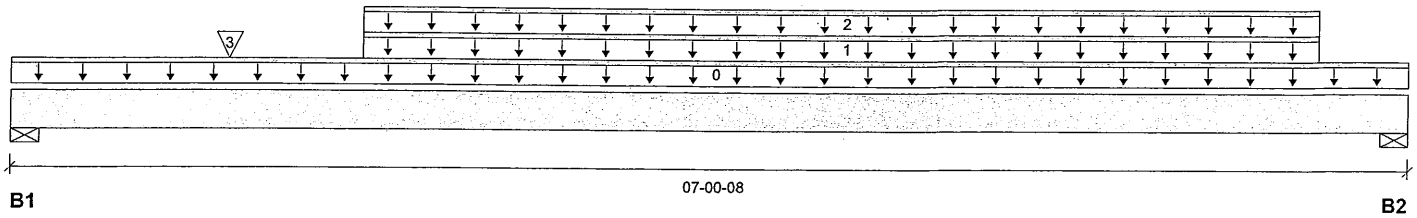
2ND FLR FRAMING\Flush Beams\B10(i4647) (Flush Beam)

Dry | 1 span | No cant.

July 5, 2021 13:40:52

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL A STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B10(i4647)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 07-00-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1779 / 0	924 / 0		
B2, 4"	1855 / 0	961 / 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	07-00-08	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-09-00	06-07-00	Top	334	168			n\a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-09-00	06-07-00	Top	277	138			n\a
3	-	Conc. Pt. (lbs)	L	01-01-00	01-01-00	Top	660	330			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	6340 ft-lbs	23219 ft-lbs	27.3%	1	03-09-00
End Shear	3503 lbs	11571 lbs	30.3%	1	01-03-00
Total Load Deflection	L/999 (0.065")	n\a	n\a	4	03-07-00
Live Load Deflection	L/999 (0.043")	n\a	n\a	5	03-07-00
Max Defl.	0.065"	n\a	n\a	4	03-07-00
Span / Depth	8.1				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	5-1/2" x 3-1/2"	3824 lbs	32.3%	16.3%	Spruce-Pine-Fir
B2	Wall/Plate	4" x 3-1/2"	3983 lbs	46.2%	23.3%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-09-08.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 14852-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B10(i4647) (Flush Beam)

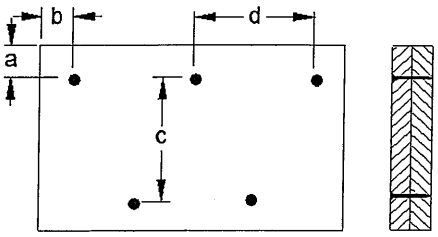
Dry | 1 span | No cant.

BC CALC® Member Report
Build 7773

July 5, 2021 13:40:52

Job name:		File name:	38-13 EL A STD.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B10(i4647)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 6 4

Calculated Side Load = 711.3 lb/ft
Connectors are: 16d 1 Nails

3½" ARDOX SPIRAL

DWG NO. TAM/14852-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

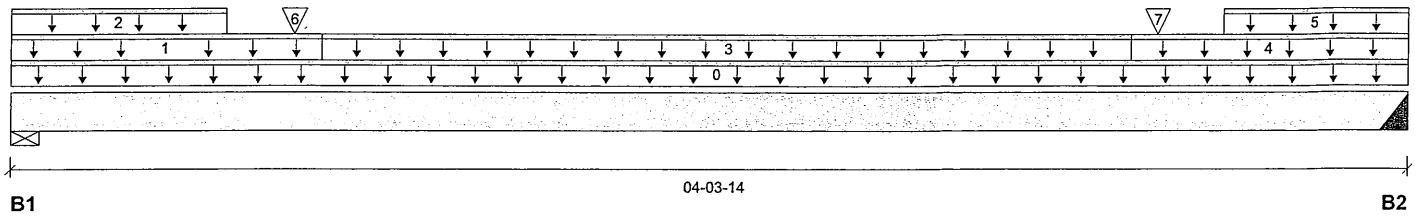
2ND FLR FRAMING\Flush Beams\B16(i4402) (Flush Beam)

Dry | 1 span | No cant.

BC CALC® Member Report
Build 7773

July 5, 2021 13:40:53

Job name:		File name:	38-13 EL A STD.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B16(i4402)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 04-03-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"		294 / 0	283 / 0	
B2, 4"		286 / 0	275 / 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	04-03-14	Top		10			00-00-00
1	E40(i3962)	Unf. Lin. (lb/ft)	L	00-00-00	00-11-06	Top		81			n\a
2	E40(i3962)	Unf. Lin. (lb/ft)	L	00-00-00	00-07-14	Top		56	129		n\a
3	E41(i4005)	Unf. Lin. (lb/ft)	L	00-11-06	03-05-06	Top		41			n\a
4	E30(i96)	Unf. Lin. (lb/ft)	L	03-05-06	04-03-14	Top		81			n\a
5	E30(i96)	Unf. Lin. (lb/ft)	L	03-08-14	04-03-14	Top		56	129		n\a
6	E40(i3962)	Conc. Pt. (lbs)	L	00-10-06	00-10-06	Top		111	202		n\a
7	E30(i96)	Conc. Pt. (lbs)	L	03-06-06	03-06-06	Top		108	196		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	372 ft-lbs	23219 ft-lbs	1.6%	1	02-00-10
End Shear	482 lbs	11571 lbs	4.2%	1	01-01-14
Total Load Deflection	L/999 (0.002")	n\a	n\a	12	02-02-02
Live Load Deflection	L/999 (0.001")	n\a	n\a	17	02-02-02
Max Defl.	0.002"	n\a	n\a	12	02-02-02
Span / Depth	4.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	4-3/8" x 3-1/2"	792 lbs	8.4%	4.2%	Spruce-Pine-Fir
B2	Hanger	4" x 3-1/2"	770 lbs	n\a	4.5%	HGUS410

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 9-1/2" LVL Beam.
Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

)0169

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

PG 4

DWG NO. TAM 14053-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B16(i4402) (Flush Beam)

Dry | 1 span | No cant.

BC CALC® Member Report
Build 7773

July 5, 2021 13:40:53

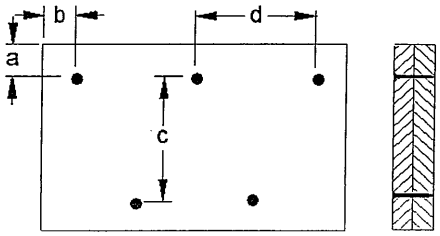
Job name:		File name:	38-13 EL A STD.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B16(i4402)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Notes

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

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 96"

Connectors are: 1 Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAROS
PROVINCE OF ONTARIO

DWG NO. TAM 14053-21
STRUCTURAL
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Boise Cascade® ENGINEERED WOOD PRODUCTS

Triple 1-3/4" x 14" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B9(i4652) (Flush Beam)

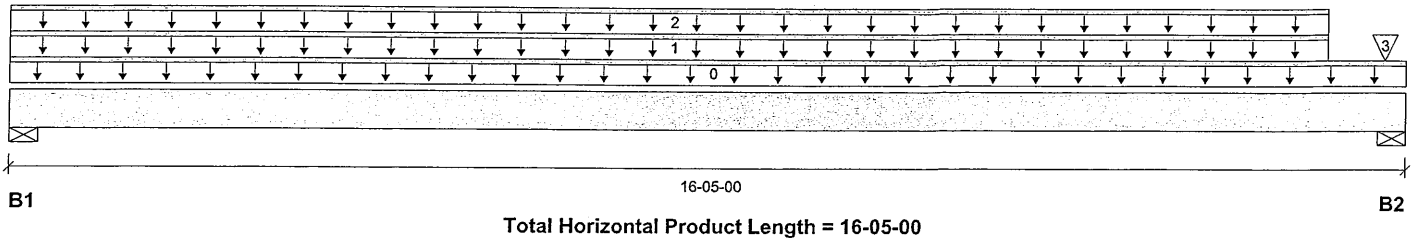
Dry | 1 span | No cant.

BC CALC® Member Report
Build 7773

July 5, 2021 13:40:52

Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL A STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B9(i4652)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 16-05-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	4853 / 0	2595 / 0		
B2, 5-1/2"	4679 / 0	2510 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	16-05-00	Top		21			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	15-06-00	Top	334	167			n\a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	15-06-00	Top	261	130			n\a
3	J3(i4434)	Conc. Pt. (lbs)	L	16-02-00	16-02-00	Top	312	156			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	38235 ft-lbs	75348 ft-lbs	50.7%	1	08-02-00
End Shear	9004 lbs	25578 lbs	35.2%	1	14-09-08
Total Load Deflection	L/379 (0.494")	n\a	63.3%	4	08-02-00
Live Load Deflection	L/583 (0.322")	n\a	61.8%	5	08-02-00
Max Defl.	0.494"	n\a	n\a	4	08-02-00
Span / Depth	13.4				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	5-1/2" x 5-1/4"	10523 lbs	27.3%	29.9%	Spruce-Pine-Fir
B2	Wall/Plate	5-1/2" x 5-1/4"	10156 lbs	26.4%	28.8%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-09-08.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEERS
7089
S. KATSOULAKOS
PROVINCE OF ONTARIO

P64

DWG NO. TAM 14654-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

Triple 1-3/4" x 14" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B9(i4652) (Flush Beam)

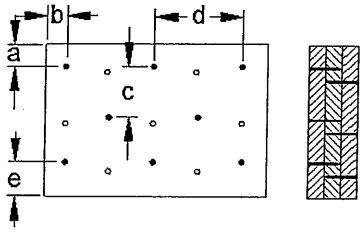
Dry | 1 span | No cant.

July 5, 2021 13:40:52

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL A STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B9(i4652)
Specifier:
Designer: EEO
Company:

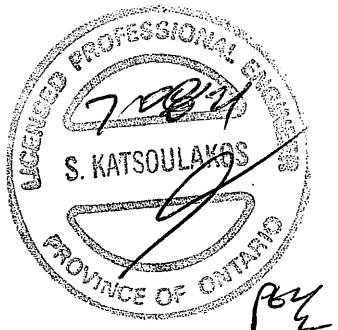
Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5"
d = 18"
e minimum = 3"

Calculated Side Load = 715.5 lb/ft
Nailing applies to both sides of the member
Connectors are: 16d 1 : Nails

3½" ARDOX SPIRAL



DWG NO. TAM 14854-21
STRUCTURAL
COMPONENT ONLY

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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 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

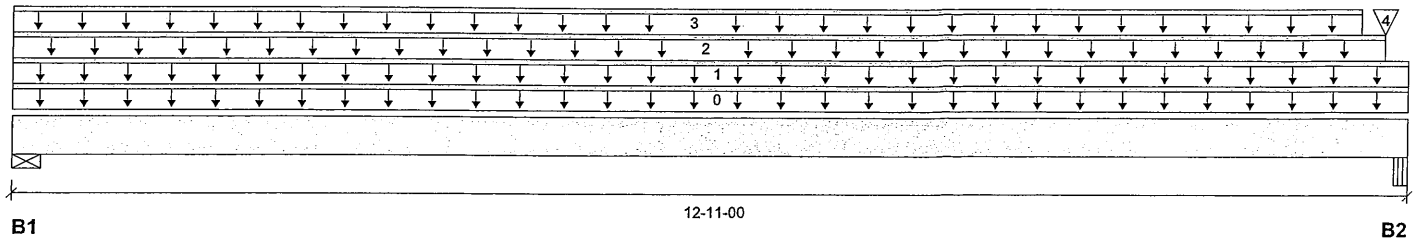
1ST FLR FRAMING\Flush Beams\B1(i4943) (Flush Beam)

Dry | 1 span | No cant.

July 6, 2021 17:02:31

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL A SUNKEN.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B1(i4943)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 12-11-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	140 / 0	486 / 0		
B2, 5-1/4"	2056 / 0	1500 / 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	12-11-00	Top		5			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	12-11-00	Top		60			n\a
2	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	12-08-06	Top	19	10			n\a
3	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	12-05-12	Top	3				n\a
4	7(i82)	Conc. Pt. (lbs)	L	12-08-06	12-08-06	Top	1918	1010			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1986 ft-lbs	7546 ft-lbs	26.3%	0	06-05-01
End Shear	558 lbs	3761 lbs	14.8%	0	01-01-14
Total Load Deflection	L/745 (0.197")	n\a	32.2%	4	06-05-01
Live Load Deflection	L/999 (0.044")	n\a	n\a	5	06-05-01
Max Defl.	0.197"	n\a	n\a	4	06-05-01
Span / Depth	15.5				

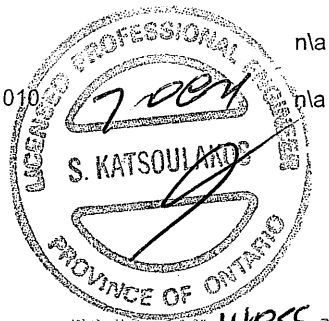
Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	4-3/8" x 1-3/4"	681 lbs	22.2%	11.2%	Spruce-Pine-Fir
B2	Beam	5-1/4" x 1-3/4"	4959 lbs	87.8%	44.2%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 12-01-06.

CONFORMS TO OBC 2012
AMENDED 2020



DWG NO. TAM/4955-21
STRUCTURAL
COMPONENT ONLY

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Boise Cascade® ENGINEERED WOOD PRODUCTS

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

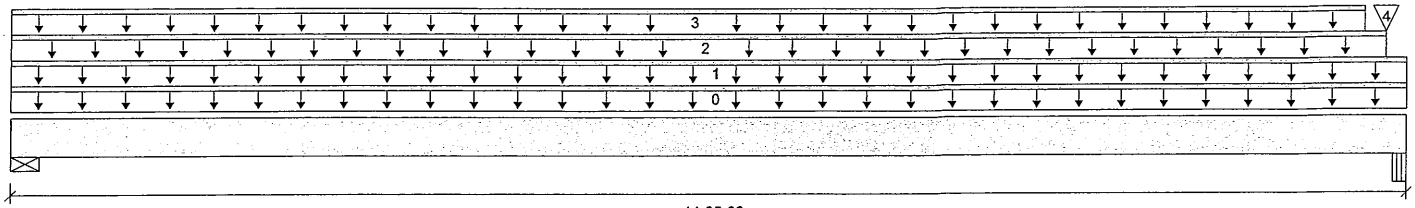
PASSED

1ST FLR FRAMING\Flush Beams\B40(i7509) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — July 6, 2021 17:12:07

Build 7773

Job name:		File name:	38-13 EL A SUNKEN WI...T. GROUND FLOOR.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B40(i7509)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 14-05-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	157 / 0	543 / 0		
B2, 5-1/4"	2061 / 0	1545 / 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	14-05-00	Top		5			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	14-05-00	Top		60			n\a
2	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	14-02-06	Top	19	10			n\a
3	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	13-11-12	Top	3	2			n\a
4	7(i82)	Conc. Pt. (lbs)	L	14-02-06	14-02-06	Top	1908	999			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2503 ft-lbs	7546 ft-lbs	33.2%	0	07-02-01
End Shear	638 lbs	3761 lbs	17.0%	0	01-01-14
Total Load Deflection	L/527 (0.313")	n\a	45.6%	4	07-02-01
Live Load Deflection	L/999 (0.07")	n\a	n\a	5	07-02-01
Max Defl.	0.313"	n\a	n\a	4	07-02-01
Span / Depth	17.4				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	4-3/8" x 1-3/4"	761 lbs	24.8%	12.5%	Spruce-Pine-Fir
B2	Beam	5-1/4" x 1-3/4"	5023 lbs	88.9%	44.8%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 13-07-06.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM14856-21
STRUCTURAL
COMPONENT ONLY

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® ,

Boise Cascade® ENGINEERED WOOD PRODUCTS

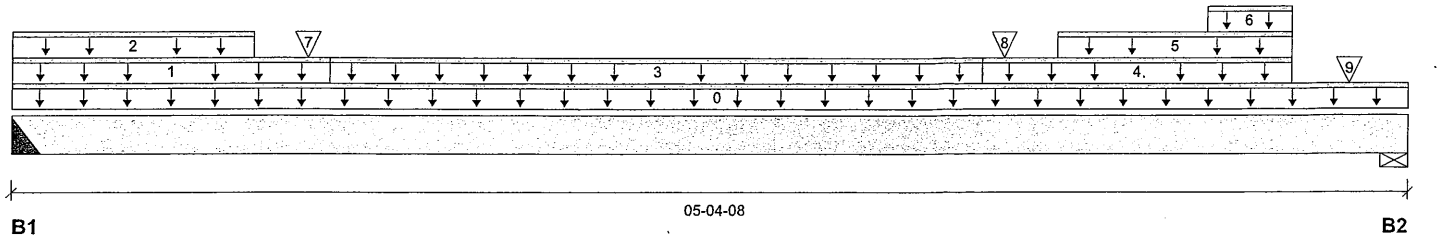
Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B30(i5205) (Flush Beam)

BC CALC® Member Report
Build 7773
Dry | 1 span | No cant.
July 5, 2021 14:25:50

Job name:		File name:	38-13 EL B STD.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B30(i5205)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 05-04-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	0 / 0	357 / 0	340 / 0	
B2, 5-1/2"	4 / 0	640 / 0	916 / 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	05-04-08	Top		10			00-00-00
1	E45(i4620)	Unf. Lin. (lb/ft)	L	00-00-00	01-02-08	Top		81			n\a
2	E45(i4620)	Unf. Lin. (lb/ft)	L	00-00-00	00-11-00	Top		56	129		n\a
3	E47(i4678)	Unf. Lin. (lb/ft)	L	01-02-08	03-08-08	Top		41			n\a
4	E38(i3767)	Unf. Lin. (lb/ft)	L	03-08-08	04-11-00	Top		81			n\a
5	E38(i3767)	Unf. Lin. (lb/ft)	L	04-00-00	04-11-00	Top		56	129		n\a
6	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	04-07-00	04-11-00	Top	6				n\a
7	E45(i4620)	Conc. Pt. (lbs)	L	01-01-08	01-01-08	Top		111	202		n\a
8	E38(i3767)	Conc. Pt. (lbs)	L	03-09-08	03-09-08	Top		108	196		n\a
9	-	Conc. Pt. (lbs)	L	05-01-12	05-01-12	Top	2	324	622		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	758 ft-lbs	23219 ft-lbs	3.3%	13	03-04-12
End Shear	741 lbs	11571 lbs	6.4%	13	01-01-08
Total Load Deflection	L/999 (0.005")	n\a	n\a	35	02-08-05
Live Load Deflection	L/999 (0.002")	n\a	n\a	51	02-08-05
Max Defl.	0.005"	n\a	n\a	35	02-08-05
Span / Depth	5.9				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	4" x 3-1/2"	957 lbs	n\a	5.6%	HGUS410
B2	Wall/Plate	5-1/2" x 3-1/2"	2179 lbs	18.4%	9.3%	Spruce-Pine-Fir

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 9-1/2" LVL Beam.
Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

) OK

P64

OWG NO. TAM14057-21
STRUCTURAL
COMPONENT ONLY

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B30(i5205) (Flush Beam)

Dry | 1 span | No cant.

July 5, 2021 14:25:50

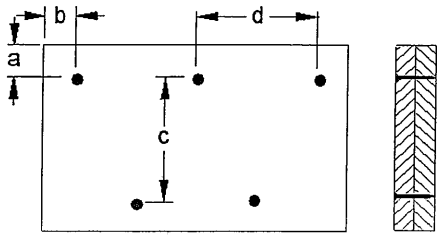
BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL B STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B30(i5205)
Specifier:
Designer: EEO
Company:

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Hanger Manufacturer: Unassigned
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86. CONFORMS TO OBC 2012
Unbalanced snow loads determined from building geometry were used in selected product's verification. AMENDED 2020
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-09-08.

Connection Diagram: Full Length of Member



a minimum = 2" c = 5-1/2"
b minimum = 3" d = 8"

Connectors are: 1 . Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEERS
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM/4857-2L
STRUCTURAL
COMPONENT ONLY

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.

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B31(i5060) (Flush Beam)

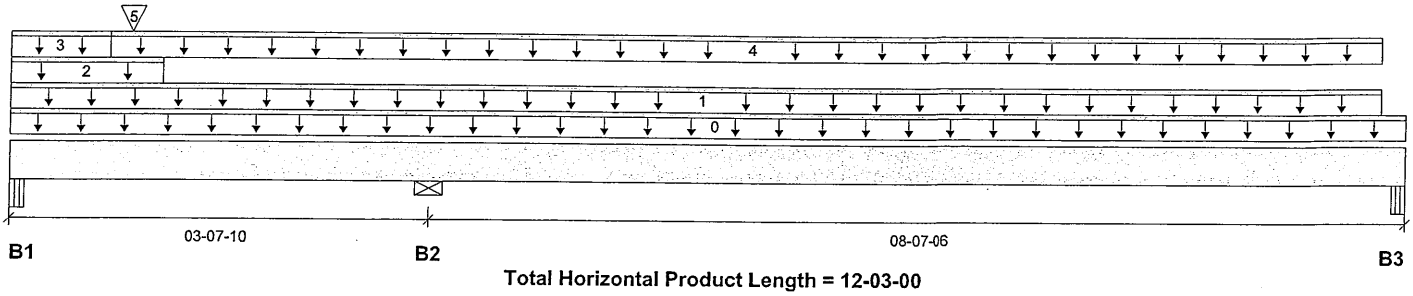
Dry | 2 spans | No cant.

BC CALC® Member Report
Build 7773

July 5, 2021 14:25:50

Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL B STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B31(i5060)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 12-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-1/8"	30 / 36	528 / 0	735 / 0	
B2, 5-1/2"	169 / 0	337 / 0	258 / 0	
B3, 5-1/4"	71 / 1	63 / 0	0 / 12	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-03-00	Top		10			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	12-00-06	Top	5	3			n\a
2	E42(i3892)	Unf. Lin. (lb/ft)	L	00-00-00	01-03-14	Top		108	84		n\a
3	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	00-10-06	Top	6				n\a
4	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-10-06	12-00-06	Top	15	7			n\a
5	-	Conc. Pt. (lbs)	L	01-00-11	01-00-11	Top		550	870		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1219 ft-lbs	23219 ft-lbs	5.3%	38	01-01-02
Neg. Moment	-532 ft-lbs	-18777 ft-lbs	2.8%	1	03-07-10
End Shear	1272 lbs	11571 lbs	11.0%	38	01-01-10
Cont. Shear	686 lbs	11571 lbs	5.9%	37	02-07-06
Total Load Deflection	L/999 (0.004")	n\a	n\a	80	08-04-00
Live Load Deflection	L/999 (0.002")	n\a	n\a	118	08-01-10
Total Neg. Defl.	L/999 (-0.001")	n\a	n\a	82	05-05-07
Max Defl.	0.004"	n\a	n\a	80	08-04-00
Span / Depth	10.4				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	4-1/8" x 3-1/2"	1791 lbs	23.2%	10.2%	Unspecified
B2	Wall/Plate	5-1/2" x 3-1/2"	978 lbs	8.3%	4.2%	Spruce-Pine-Fir
B3	Beam	5-1/4" x 3-1/2"	185 lbs	1.9%	0.8%	Unspecified

LICENSED PROFESSIONAL ENGINEER
7 0824
S. KATSOULAKOS
PROVINCE OF ONTARIO

P6 6

DWG NO. TAM/14058 2 1
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B31(i5060) (Flush Beam)

Dry | 2 spans | No cant.

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

July 5, 2021 14:25:50

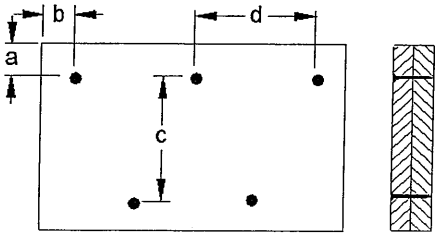
File name: 38-13 EL B STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B31(i5060)
Specifier:
Designer: EEO
Company:

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 07-11-06.

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 8"

Calculated Side Load = 434.1 lb/ft
Connectors are: 16d Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM/14058-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

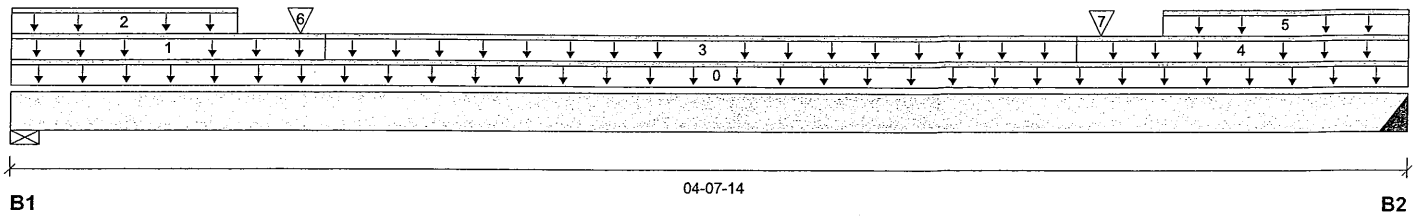
2ND FLR FRAMING\Flush Beams\B20(i5167) (Flush Beam)

Dry | 1 span | No cant.

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

July 5, 2021 14:45:22

File name: 38-13 EL C STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B20(i5167)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 04-07-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"		317 / 0	304 / 0	
B2, 4"		312 / 0	297 / 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	04-07-14	Top		10			00-00-00
1	E40(i3956)	Unf. Lin. (lb/ft)	L	00-00-00	01-00-06	Top		81			n\a
2	E40(i3956)	Unf. Lin. (lb/ft)	L	00-00-00	00-08-14	Top		56	129		n\a
3	E41(i3957)	Unf. Lin. (lb/ft)	L	01-00-06	03-06-06	Top		41			n\a
4	E30(i96)	Unf. Lin. (lb/ft)	L	03-06-06	04-07-14	Top		81			n\a
5	E30(i96)	Unf. Lin. (lb/ft)	L	03-09-14	04-07-14	Top		56	129		n\a
6	E40(i3956)	Conc. Pt. (lbs)	L	00-11-06	00-11-06	Top		111	202		n\a
7	E30(i96)	Conc. Pt. (lbs)	L	03-07-06	03-07-06	Top		108	196		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	491 ft-lbs	23219 ft-lbs	2.1%	1	02-07-04
End Shear	589 lbs	11571 lbs	5.1%	1	01-01-14
Total Load Deflection	L/999 (0.002")	n\a	n\a	12	02-04-02
Live Load Deflection	L/999 (0.001")	n\a	n\a	17	02-04-02
Max Defl.	0.002"	n\a	n\a	12	02-04-02
Span / Depth	5.2				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	4-3/8" x 3-1/2"	852 lbs	9.0%	4.6%	Spruce-Pine-Fir
B2	Hanger	4" x 3-1/2"	835 lbs	n\a	4.9%	HGUS410

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 9-1/2" LVL Beam.
Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

) OK 9

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

P6 of 12

DWG NO. TAM/14854-21
STRUCTURAL
COMPONENT ONLY

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B20(i5167) (Flush Beam)

Dry | 1 span | No cant.

July 5, 2021 14:45:22

BC CALC® Member Report
Build 7773

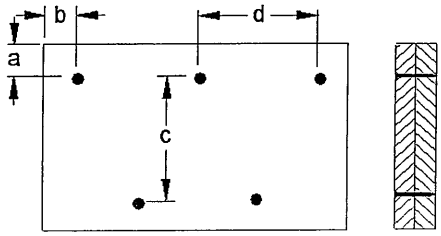
Job name:		File name:	38-13 EL C STD.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B20(i5167)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	EEO
Code reports:	CCMC 12472-R	Company:	

Notes

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

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 8"

Connectors are: Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. YAM 1405421
STRUCTURAL
COMPONENT ONLY

Disclosure

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

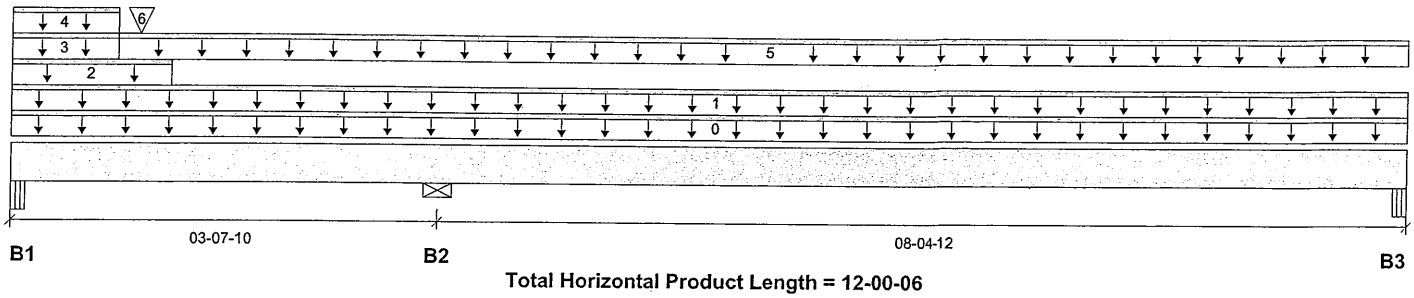
2ND FLR FRAMING\Flush Beams\B21(i5018) (Flush Beam)

Dry | 2 spans | No cant.

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

July 5, 2021 14:45:22

File name: 38-13 EL C STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B21(i5018)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 12-00-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-1/8"	39 / 48	483 / 0	637 / 0	
B2, 5-1/2"	226 / 0	359 / 0	239 / 0	
B3, 2-5/8"	95 / 1	73 / 0	0 / 11	

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	12-00-06	Top		10			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	12-00-06	Top	9	4			n\a
2	E29(i97)	Unf. Lin. (lb/ft)	L	00-00-00	01-04-06	Top		24	72		n\a
3	E29(i97)	Unf. Lin. (lb/ft)	L	00-00-00	00-10-14	Top		81			n\a
4	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	00-10-14	Top	6				n\a
5	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-10-14	12-00-06	Top	18	9			n\a
6	-	Conc. Pt. (lbs)	L	01-01-03	01-01-03	Top		538	766		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1131 ft-lbs	23219 ft-lbs	4.9%	38	01-01-10
Neg. Moment	-612 ft-lbs	-18777 ft-lbs	3.3%	1	03-07-10
End Shear	1286 lbs	11571 lbs	11.1%	38	01-01-10
Cont. Shear	679 lbs	11571 lbs	5.9%	37	02-07-06
Total Load Deflection	L/999 (0.005")	n\a	n\a	80	08-03-07
Live Load Deflection	L/999 (0.003")	n\a	n\a	118	08-01-10
Total Neg. Defl.	L/999 (-0.001")	n\a	n\a	82	05-00-11
Max Defl.	0.005"	n\a	n\a	80	08-03-07
Span / Depth	10.4				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	4-1/8" x 3-1/2"	1597 lbs	20.7%	9.1%	Unspecified
B2	Wall/Plate	5-1/2" x 3-1/2"	1033 lbs	8.7%	4.4%	Spruce-Pine-Fir
B3	Beam	2-5/8" x 3-1/2"	233 lbs	4.7%	2.1%	Unspecified

pg 1 of 2

DWG NO. TAM14860-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B21(i5018) (Flush Beam)

Dry | 2 spans | No cant.

July 5, 2021 14:45:22

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

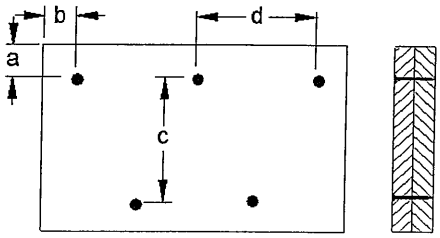
File name: 38-13 EL C STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B21(i5018)
Specifier:
Designer: EEO
Company:

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 07-11-06.

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 8"

Calculated Side Load = 413.0 lb/ft
Connectors are: 16d 1 Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAROS
PROVINCE OF ONTARIO

DWG NO. TAM14860-21
STRUCTURAL
COMPONENT ONLY

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® ,

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

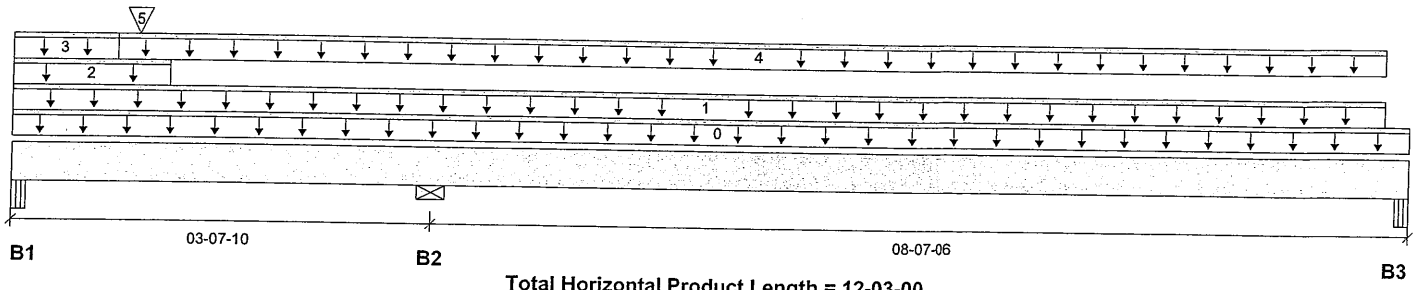
2ND FLR FRAMING\Flush Beams\B22(i5016) (Flush Beam)

Dry | 2 spans | No cant.

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

July 5, 2021 14:45:22

File name: 38-13 EL C STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B22(i5016)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 12-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-1/8"	34 / 36	531 / 0	657 / 0	
B2, 5-1/2"	170 / 0	349 / 0	246 / 0	
B3, 5-1/4"	71 / 1	62 / 0	0 / 11	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-03-00	Top		10			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	12-00-06	Top	10	5			n\a
2	E39(i3890)	Unf. Lin. (lb/ft)	L	00-00-00	01-04-06	Top		105	72		n\a
3	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	00-10-14	Top	6				n\a
4	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-10-14	12-00-06	Top	10	5			n\a
5	-	Conc. Pt. (lbs)	L	01-01-02	01-01-02	Top		563	794		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1194 ft-lbs	23219 ft-lbs	5.1%	38	01-01-10
Neg. Moment	-533 ft-lbs	-18777 ft-lbs	2.8%	1	03-07-10
End Shear	1281 lbs	11571 lbs	11.1%	38	01-01-10
Cont. Shear	684 lbs	11571 lbs	5.9%	37	02-07-06
Total Load Deflection	L/999 (0.004")	n\a	n\a	80	08-04-00
Live Load Deflection	L/999 (0.002")	n\a	n\a	118	08-01-10
Total Neg. Defl.	L/999 (-0.001")	n\a	n\a	82	05-04-04
Max Defl.	0.004"	n\a	n\a	80	08-04-00
Span / Depth	10.4				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	4-1/8" x 3-1/2"	1684 lbs	21.8%	9.6%	Unspecified
B2	Wall/Plate	5-1/2" x 3-1/2"	976 lbs	8.2%	4.2%	Spruce-Pine-Fir
B3	Beam	5-1/4" x 3-1/2"	184 lbs	1.9%	0.8%	Unspecified

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM14861-2L
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B22(i5016) (Flush Beam)

Dry | 2 spans | No cant.

BC CALC® Member Report
Build 7773

July 5, 2021 14:45:22

Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

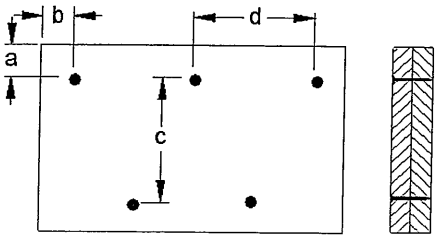
File name: 38-13 EL C STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B22(i5016)
Specifier:
Designer: EEO
Company:

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 07-11-06.

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 8 1/2"

Calculated Side Load = 449.6 lb/ft
Connectors are: 1 : Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAROS
PROVINCE OF ONTARIO

DWG NO. TAM 14861-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

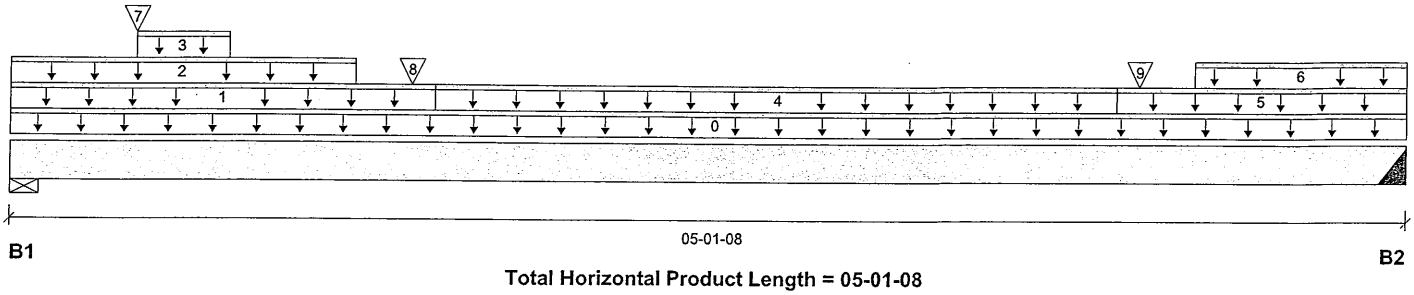
2ND FLR FRAMING\Flush Beams\B23(i4991) (Flush Beam)

Dry | 1 span | No cant.

July 5, 2021 14:45:22

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 38-13 EL C STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B23(i4991)
Specifier:
Designer: EEO
Company:



Total Horizontal Product Length = 05-01-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	4 / 0	372 / 0	348 / 0	
B2, 2"	0 / 0	327 / 0	314 / 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	05-01-08	Top		10			00-00-00
1	E28(i94)	Unf. Lin. (lb/ft)	L	00-00-00	01-06-08	Top		81			n\a
2	E28(i94)	Unf. Lin. (lb/ft)	L	00-00-00	01-03-00	Top		56	129		n\a
3	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-05-08	00-09-08	Top	6				n\a
4	E43(i3959)	Unf. Lin. (lb/ft)	L	01-06-08	04-00-08	Top		41			n\a
5	E42(i3958)	Unf. Lin. (lb/ft)	L	04-00-08	05-01-08	Top		81			n\a
6	E42(i3958)	Unf. Lin. (lb/ft)	L	04-04-00	05-01-08	Top		56	129		n\a
7	FC2 Floor Decking (Plan View Fill)	Conc. Pt. (lbs)	L	00-05-08	00-05-08	Top	2				n\a
8	E28(i94)	Conc. Pt. (lbs)	L	01-05-08	01-05-08	Top		108	196		n\a
9	E42(i3958)	Conc. Pt. (lbs)	L	04-01-08	04-01-08	Top		111	202		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	706 ft-lbs	23219 ft-lbs	3.0%	13	02-03-14
End Shear	727 lbs	11571 lbs	6.3%	13	04-02-00
Total Load Deflection	L/999 (0.004")	n\a	n\a	35	02-08-09
Live Load Deflection	L/999 (0.002")	n\a	n\a	51	02-08-09
Max Defl.	0.004"	n\a	n\a	35	02-08-09
Span / Depth	5.8				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	5-1/2" x 3-1/2"	991 lbs	8.4%	4.2%	Spruce-Pine-Fir
B2	Hanger	2" x 3-1/2"	880 lbs	n\a	10.3%	HGUS410

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 9-1/2" LVL Beam.
Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

0169

P64

DWG NO. TAM 14062-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B23(i4991) (Flush Beam)

Dry | 1 span | No cant.

July 5, 2021 14:45:22

BC CALC® Member Report
Build 7773
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

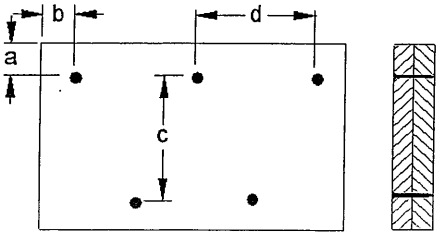
File name: 38-13 EL C STD.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B23(i4991)
Specifier:
Designer: EEO
Company:

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Hanger Manufacturer: Unassigned
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-09-08.

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 8"

Connectors are: [illegible] Nails
3½" ARDOX SPIRAL

DWG NO. TAM/4962-2L
STRUCTURAL
COMPONENT ONLY

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NORDIC
STRUCTURES

Maximum Floor Spans – S2.1

Design Criteria	
Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 15 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	5/8 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'-1"	14'-3"	13'-10"	-	15'-7"	14'-9"	14'-3"	-
	NI-40x	16'-2"	15'-3"	14'-8"	-	16'-7"	15'-8"	15'-1"	-
	NI-60	16'-4"	15'-4"	14'-10"	-	16'-9"	15'-9"	15'-3"	-
	NI-80	17'-3"	16'-3"	15'-8"	-	17'-8"	16'-7"	16'-0"	-
11-7/8"	NI-20	17'-0"	16'-0"	15'-6"	-	17'-6"	16'-7"	16'-0"	-
	NI-40x	18'-2"	17'-1"	16'-6"	-	18'-9"	17'-6"	16'-11"	-
	NI-60	18'-5"	17'-3"	16'-8"	-	19'-0"	17'-8"	17'-1"	-
	NI-80	19'-9"	18'-3"	17'-7"	-	20'-4"	18'-10"	18'-0"	-
	NI-90	20'-2"	18'-8"	17'-10"	-	20'-9"	19'-2"	18'-4"	-
14"	NI-40x	20'-1"	18'-8"	17'-10"	-	20'-10"	19'-4"	18'-6"	-
	NI-60	20'-6"	18'-11"	18'-2"	-	21'-2"	19'-8"	18'-9"	-
	NI-80	21'-11"	20'-3"	19'-4"	-	22'-7"	20'-11"	20'-0"	-
	NI-90	22'-5"	20'-8"	19'-9"	-	23'-0"	21'-4"	20'-4"	-
16"	NI-60	22'-4"	20'-8"	19'-9"	-	23'-1"	21'-5"	20'-6"	-
	NI-80	23'-11"	22'-1"	21'-1"	-	24'-8"	22'-10"	21'-9"	-
	NI-90	24'-5"	22'-6"	21'-6"	-	25'-1"	23'-2"	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	16'-8"	15'-3"	14'-5"	-	16'-8"	15'-3"	14'-5"	-
	NI-40x	17'-11"	17'-0"	16'-1"	-	18'-5"	17'-1"	16'-1"	-
	NI-60	18'-2"	17'-1"	16'-4"	-	18'-8"	17'-4"	16'-4"	-
	NI-80	19'-5"	18'-0"	17'-5"	-	19'-10"	18'-5"	17'-8"	-
11-7/8"	NI-20	19'-7"	18'-2"	17'-3"	-	19'-11"	18'-3"	17'-3"	-
	NI-40x	21'-1"	19'-7"	18'-8"	-	21'-8"	20'-2"	19'-2"	-
	NI-60	21'-4"	19'-9"	18'-11"	-	21'-11"	20'-5"	19'-6"	-
	NI-80	22'-9"	21'-1"	20'-2"	-	23'-3"	21'-8"	20'-8"	-
	NI-90	23'-3"	21'-6"	20'-6"	-	23'-9"	22'-0"	21'-0"	-
14"	NI-40x	23'-8"	21'-11"	20'-11"	-	24'-4"	22'-8"	21'-8"	-
	NI-60	24'-0"	22'-3"	21'-3"	-	24'-8"	22'-11"	21'-11"	-
	NI-80	25'-7"	23'-9"	22'-7"	-	26'-2"	24'-4"	23'-3"	-
	NI-90	26'-1"	24'-2"	23'-0"	-	26'-8"	24'-9"	23'-7"	-
16"	NI-60	26'-5"	24'-6"	23'-5"	-	27'-2"	25'-3"	24'-2"	-
	NI-80	28'-2"	26'-1"	24'-10"	-	28'-10"	26'-9"	25'-6"	-
	NI-90	28'-8"	26'-6"	25'-3"	-	29'-3"	27'-2"	25'-11"	-

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.

NORDIC
STRUCTURES

Maximum Floor Spans – S4.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 15 psf
Deflection limits:	L/480 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"	15'-2"
	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'-2"
	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	16'-10"	15'-5"	14'-6"	13'-5"	16'-10"	15'-5"	14'-6"	13'-5"
	NI-40x	18'-8"	17'-2"	16'-3"	15'-2"	18'-10"	17'-2"	16'-3"	15'-2"
	NI-60	18'-11"	17'-6"	16'-6"	15'-5"	19'-2"	17'-6"	16'-6"	15'-5"
	NI-80	20'-3"	18'-10"	17'-11"	16'-10"	20'-8"	19'-3"	18'-2"	16'-10"
11-7/8"	NI-20	20'-1"	18'-5"	17'-5"	16'-2"	20'-1"	18'-5"	17'-5"	16'-2"
	NI-40x	21'-10"	20'-4"	19'-4"	17'-8"	22'-5"	20'-6"	19'-4"	17'-8"
	NI-60	22'-1"	20'-7"	19'-8"	18'-4"	22'-8"	20'-10"	19'-8"	18'-4"
	NI-80	23'-8"	22'-0"	20'-11"	19'-10"	24'-1"	22'-6"	21'-6"	20'-0"
	NI-90	24'-1"	22'-5"	21'-4"	20'-2"	24'-7"	22'-11"	21'-10"	20'-7"
14"	NI-40x	24'-5"	22'-9"	21'-9"	19'-5"	25'-1"	23'-2"	21'-9"	19'-5"
	NI-60	24'-10"	23'-2"	22'-1"	20'-10"	25'-6"	23'-8"	22'-4"	20'-10"
	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"	24'-9"	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.

NORDIC
STRUCTURES

Maximum Floor Spans – S6.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 15 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	5/8 in. nailed-glued Canadian softwood plywood

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

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	16'-6"	15'-1"	14'-3"	-	16'-6"	15'-1"	14'-3"	-
	NI-40x	17'-9"	16'-10"	15'-11"	-	18'-2"	16'-11"	15'-11"	-
	NI-60	17'-11"	16'-11"	16'-2"	-	18'-5"	17'-2"	16'-2"	-
	NI-80	19'-3"	17'-10"	17'-3"	-	19'-8"	18'-3"	17'-7"	-
11-7/8"	NI-20	19'-4"	18'-0"	17'-1"	-	19'-9"	18'-1"	17'-1"	-
	NI-40x	20'-10"	19'-4"	18'-6"	-	21'-5"	19'-11"	19'-0"	-
	NI-60	21'-1"	19'-7"	18'-8"	-	21'-8"	20'-2"	19'-3"	-
	NI-80	22'-6"	20'-10"	19'-11"	-	23'-1"	21'-5"	20'-5"	-
	NI-90	23'-0"	21'-3"	20'-4"	-	23'-6"	21'-10"	20'-10"	-
14"	NI-40x	23'-5"	21'-8"	20'-9"	-	24'-0"	22'-5"	21'-5"	-
	NI-60	23'-9"	22'-0"	21'-0"	-	24'-5"	22'-8"	21'-8"	-
	NI-80	25'-4"	23'-6"	22'-5"	-	25'-11"	24'-1"	23'-0"	-
	NI-90	25'-10"	23'-11"	22'-9"	-	26'-5"	24'-6"	23'-4"	-
16"	NI-60	26'-2"	24'-3"	23'-2"	-	26'-11"	25'-0"	23'-11"	-
	NI-80	27'-11"	25'-10"	24'-7"	-	28'-7"	26'-6"	25'-3"	-
	NI-90	28'-5"	26'-3"	25'-0"	-	29'-0"	26'-11"	25'-8"	-

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.

NORDIC
STRUCTURES

Maximum Floor Spans – S7.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 15 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	3/4 in. nailed-glued Canadian softwood plywood

Maximum Floor Spans

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

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

Notes:

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

NORDIC
STRUCTURES

Maximum Floor Spans – M2.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 20 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	5/8 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'-1"	14'-3"	13'-10"	-	15'-7"	14'-9"	14'-3"	-
	NI-40x	16'-2"	15'-3"	14'-8"	-	16'-7"	15'-8"	15'-1"	-
	NI-60	16'-4"	15'-4"	14'-10"	-	16'-9"	15'-9"	15'-3"	-
	NI-80	17'-3"	16'-3"	15'-8"	-	17'-8"	16'-7"	16'-0"	-
11-7/8"	NI-20	17'-0"	16'-0"	15'-6"	-	17'-6"	16'-7"	16'-0"	-
	NI-40x	18'-2"	17'-1"	16'-6"	-	18'-9"	17'-6"	16'-11"	-
	NI-60	18'-5"	17'-3"	16'-8"	-	19'-0"	17'-8"	17'-1"	-
	NI-80	19'-9"	18'-3"	17'-7"	-	20'-4"	18'-10"	18'-0"	-
	NI-90	20'-2"	18'-8"	17'-10"	-	20'-9"	19'-2"	18'-4"	-
14"	NI-40x	20'-1"	18'-8"	17'-10"	-	20'-10"	19'-4"	18'-6"	-
	NI-60	20'-6"	18'-11"	18'-2"	-	21'-2"	19'-8"	18'-9"	-
	NI-80	21'-11"	20'-3"	19'-4"	-	22'-7"	20'-11"	20'-0"	-
	NI-90	22'-5"	20'-8"	19'-9"	-	23'-0"	21'-4"	20'-4"	-
16"	NI-60	22'-4"	20'-8"	19'-9"	-	23'-1"	21'-5"	20'-6"	-
	NI-80	23'-11"	22'-1"	21'-1"	-	24'-8"	22'-10"	21'-9"	-
	NI-90	24'-5"	22'-6"	21'-6"	-	25'-1"	23'-2"	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	16'-8"	15'-3"	14'-5"	-	16'-8"	15'-3"	14'-5"	-
	NI-40x	17'-11"	17'-0"	16'-1"	-	18'-5"	17'-1"	16'-1"	-
	NI-60	18'-2"	17'-1"	16'-4"	-	18'-8"	17'-4"	16'-4"	-
	NI-80	19'-5"	18'-0"	17'-5"	-	19'-10"	18'-5"	17'-8"	-
11-7/8"	NI-20	19'-7"	18'-2"	17'-3"	-	19'-11"	18'-3"	17'-3"	-
	NI-40x	21'-1"	19'-7"	18'-8"	-	21'-8"	20'-2"	19'-0"	-
	NI-60	21'-4"	19'-9"	18'-11"	-	21'-11"	20'-5"	19'-6"	-
	NI-80	22'-9"	21'-1"	20'-2"	-	23'-3"	21'-8"	20'-8"	-
	NI-90	23'-3"	21'-6"	20'-6"	-	23'-9"	22'-0"	21'-0"	-
14"	NI-40x	23'-8"	21'-11"	20'-11"	-	24'-4"	22'-8"	20'-11"	-
	NI-60	24'-0"	22'-3"	21'-3"	-	24'-8"	22'-11"	21'-11"	-
	NI-80	25'-7"	23'-9"	22'-7"	-	26'-2"	24'-4"	23'-3"	-
	NI-90	26'-1"	24'-2"	23'-0"	-	26'-8"	24'-9"	23'-7"	-
16"	NI-60	26'-5"	24'-6"	23'-5"	-	27'-2"	25'-3"	24'-2"	-
	NI-80	28'-2"	26'-1"	24'-10"	-	28'-10"	26'-9"	25'-6"	-
	NI-90	28'-8"	26'-6"	25'-3"	-	29'-3"	27'-2"	25'-11"	-

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.

NORDIC
STRUCTURES

Maximum Floor Spans – M4.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 20 psf
Deflection limits:	L/480 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	16'-10"	15'-5"	14'-6"	13'-5"	16'-10"	15'-5"	14'-6"	13'-5"
	NI-40x	18'-8"	17'-2"	16'-3"	14'-11"	18'-10"	17'-2"	16'-3"	14'-11"
	NI-60	18'-11"	17'-6"	16'-6"	15'-5"	19'-2"	17'-6"	16'-6"	15'-5"
	NI-80	20'-3"	18'-10"	17'-11"	16'-10"	20'-8"	19'-3"	18'-2"	16'-10"
11-7/8"	NI-20	20'-1"	18'-5"	17'-5"	16'-1"	20'-1"	18'-5"	17'-5"	16'-1"
	NI-40x	21'-10"	20'-4"	19'-0"	17'-0"	22'-5"	20'-6"	19'-0"	17'-0"
	NI-60	22'-1"	20'-7"	19'-8"	18'-4"	22'-8"	20'-10"	19'-8"	18'-4"
	NI-80	23'-8"	22'-0"	20'-11"	19'-10"	24'-1"	22'-6"	21'-6"	20'-0"
	NI-90	24'-1"	22'-5"	21'-4"	20'-2"	24'-7"	22'-11"	21'-10"	20'-7"
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'-8"	22'-4"	20'-10"
	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"	24'-9"	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.

NORDIC
STRUCTURES

Maximum Floor Spans – M6.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 20 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	5/8 in. nailed-glued Canadian softwood plywood

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

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	16'-6"	15'-1"	14'-3"	-	16'-6"	15'-1"	14'-3"	-
	NI-40x	17'-9"	16'-10"	15'-11"	-	18'-2"	16'-11"	15'-11"	-
	NI-60	17'-11"	16'-11"	16'-2"	-	18'-5"	17'-2"	16'-2"	-
	NI-80	19'-3"	17'-10"	17'-3"	-	19'-8"	18'-3"	17'-7"	-
11-7/8"	NI-20	19'-4"	18'-0"	17'-1"	-	19'-9"	18'-1"	17'-1"	-
	NI-40x	20'-10"	19'-4"	18'-6"	-	21'-5"	19'-11"	19'-0"	-
	NI-60	21'-1"	19'-7"	18'-8"	-	21'-8"	20'-2"	19'-3"	-
	NI-80	22'-6"	20'-10"	19'-11"	-	23'-1"	21'-5"	20'-5"	-
	NI-90	23'-0"	21'-3"	20'-4"	-	23'-6"	21'-10"	20'-10"	-
14"	NI-40x	23'-5"	21'-8"	20'-9"	-	24'-0"	22'-5"	20'-11"	-
	NI-60	23'-9"	22'-0"	21'-0"	-	24'-5"	22'-8"	21'-8"	-
	NI-80	25'-4"	23'-6"	22'-5"	-	25'-11"	24'-1"	23'-0"	-
	NI-90	25'-10"	23'-11"	22'-9"	-	26'-5"	24'-6"	23'-4"	-
16"	NI-60	26'-2"	24'-3"	23'-2"	-	26'-11"	25'-0"	23'-11"	-
	NI-80	27'-11"	25'-10"	24'-7"	-	28'-7"	26'-6"	25'-3"	-
	NI-90	28'-5"	26'-3"	25'-0"	-	29'-0"	26'-11"	25'-8"	-

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.

NORDIC
STRUCTURES

Maximum Floor Spans – M7.1

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 20 psf
Deflection limits:	L/480 under live load and L/240 under total load
Sheathing:	3/4 in. nailed-glued Canadian softwood plywood

Maximum Floor Spans

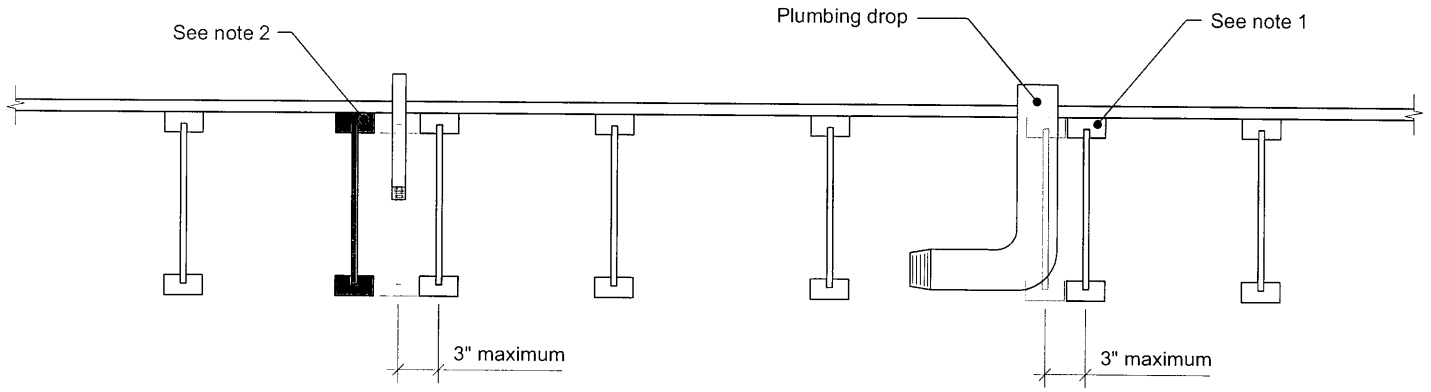
Joist depth	Joist series	Bare				1/2 in. gypsum ceiling			
		On centre spacing				On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	16'-11"	15'-11"	15'-4"	14'-9"	17'-4"	16'-4"	15'-9"	14'-11"
	NI-60	17'-1"	16'-1"	15'-6"	14'-10"	17'-6"	16'-6"	15'-11"	15'-3"
	NI-80	18'-1"	17'-0"	16'-4"	15'-8"	18'-7"	17'-4"	16'-8"	16'-0"
11-7/8"	NI-20	17'-10"	16'-10"	16'-2"	15'-7"	18'-5"	17'-4"	16'-9"	16'-1"
	NI-40x	19'-3"	17'-10"	17'-2"	16'-6"	19'-10"	18'-5"	17'-8"	16'-11"
	NI-60	19'-6"	18'-1"	17'-4"	16'-8"	20'-1"	18'-8"	17'-10"	17'-1"
	NI-80	20'-11"	19'-4"	18'-5"	17'-7"	21'-5"	19'-10"	18'-11"	17'-11"
	NI-90	21'-4"	19'-9"	18'-9"	17'-10"	21'-10"	20'-3"	19'-3"	18'-3"
14"	NI-40x	21'-4"	19'-9"	18'-10"	17'-11"	22'-0"	20'-5"	19'-6"	18'-6"
	NI-60	21'-8"	20'-1"	19'-2"	18'-2"	22'-4"	20'-9"	19'-9"	18'-9"
	NI-80	23'-3"	21'-6"	20'-5"	19'-4"	23'-10"	22'-1"	21'-0"	19'-11"
	NI-90	23'-9"	21'-11"	20'-10"	19'-8"	24'-3"	22'-6"	21'-5"	20'-3"
16"	NI-60	23'-7"	21'-10"	20'-10"	19'-9"	24'-4"	22'-7"	21'-7"	20'-5"
	NI-80	25'-4"	23'-5"	22'-3"	21'-1"	26'-0"	24'-1"	22'-11"	21'-8"
	NI-90	25'-10"	23'-10"	22'-8"	21'-5"	26'-5"	24'-6"	23'-4"	22'-0"

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

Notes:

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

7c

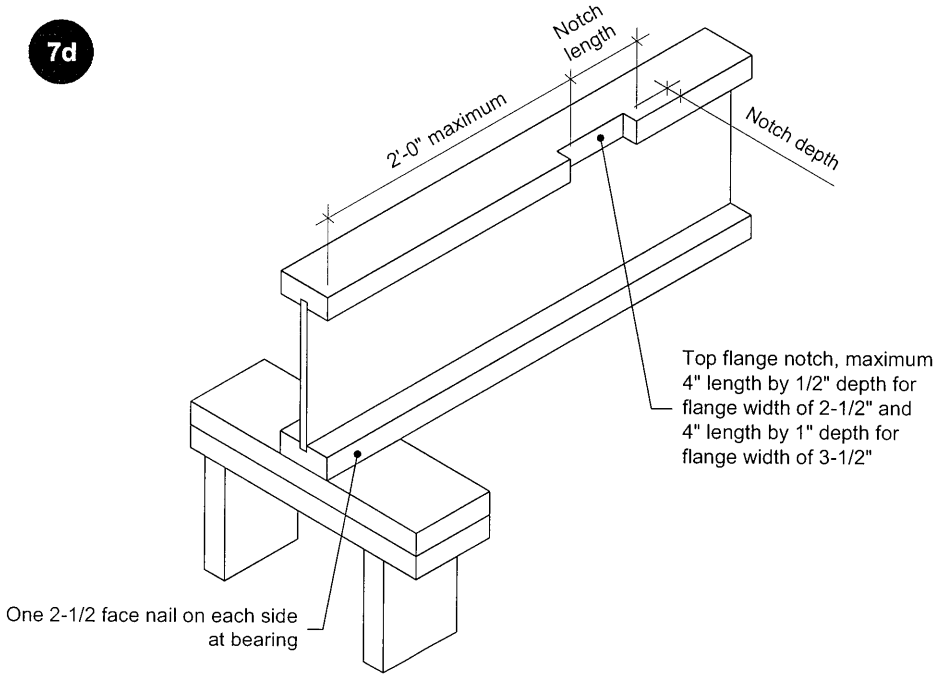


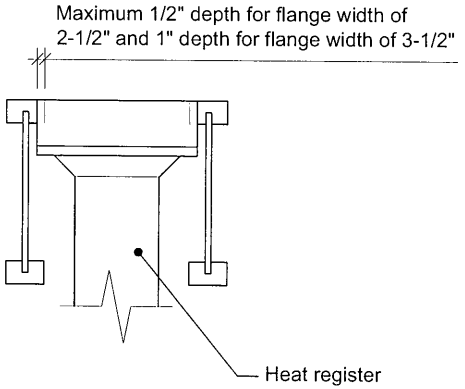
Notes:

1. To prevent interference with plumbing, a joist may be shifted up to 3 inches if the edge of the floor panel is supported and the span rating is not exceeded.
2. In all other cases, an additional joist is required.

All nails shown in the details are assumed to be common nails unless otherwise noted. Nails shall have a diameter not less than 0.128 inch for 2-1/2-inch nails, or 0.144 inch for 3-inch nails. Individual components not shown to scale for clarity.

7d





Notes:

1. Blocking required at bearing for lateral support, not shown for clarity.
2. The maximum dimensions for a notch on the side of the top flange are 4-inch length by 1/2-inch depth for flange width of 2-1/2 inches, and 4-inch length by 1-inch depth for flange width of 3-1/2 inches.
3. This detail applies to simple-span joists and multiple-span joists where the notch is located at the end half-span.
4. For other applications, contact Nordic Structures.