

FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD - WEST GORMLEY

MODEL: 4502

ELEVATION: A, B, C

LOT:

CITY: RICHMOND HILL

SALESMAN: MARIO DI CIANO

DESIGNER: L.D.

REVISION: lbv

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 ALOI BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURE 7 TABLES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIEL CUT OPENINGS** SEE FIGURE 7 TABLES 1 & 8 OF THE INSTALLATION GUIDE. **CERAMIC T** APPLICATION AS PER O.B.C. 9.30.6

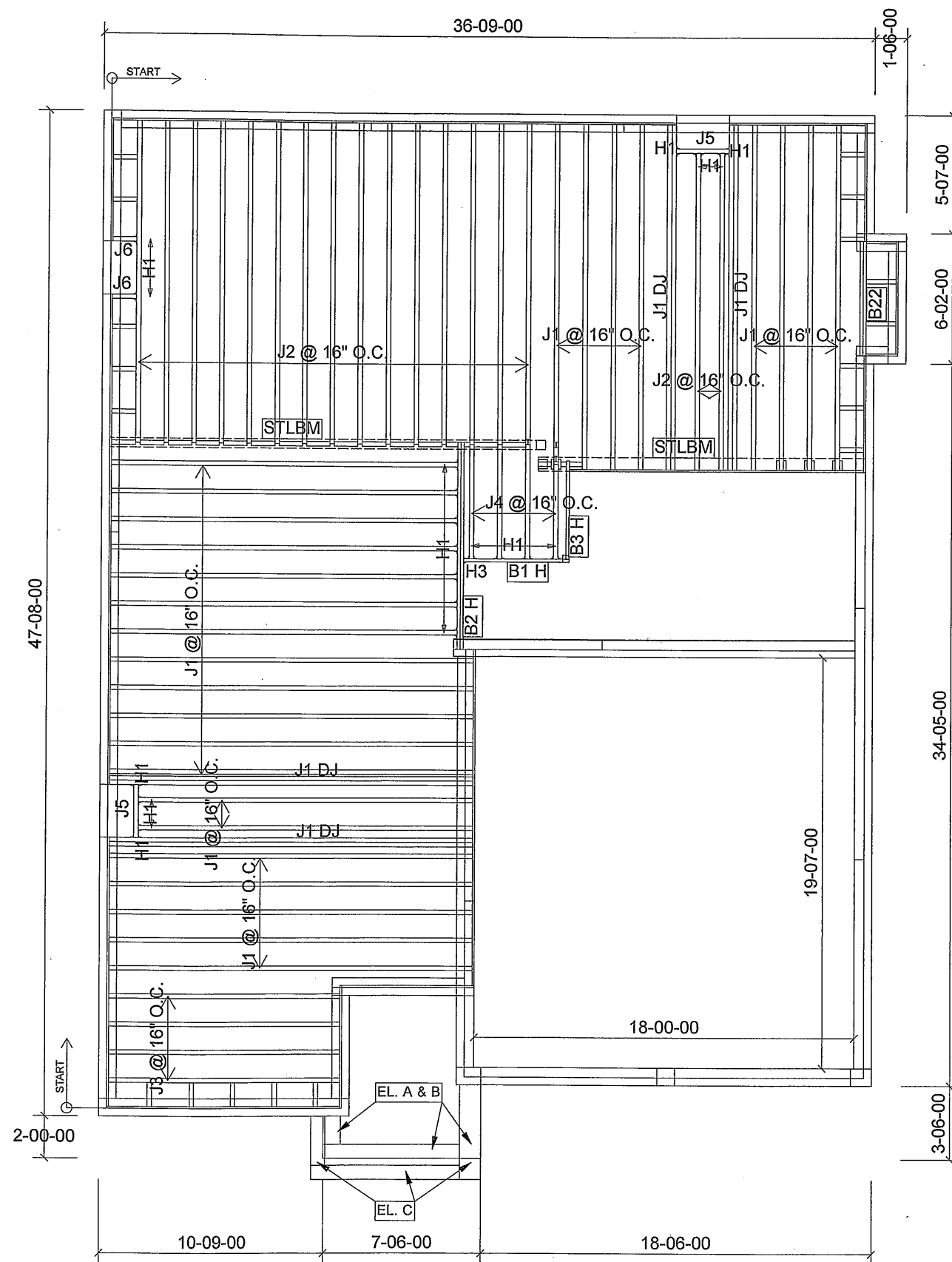
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2021-05-19

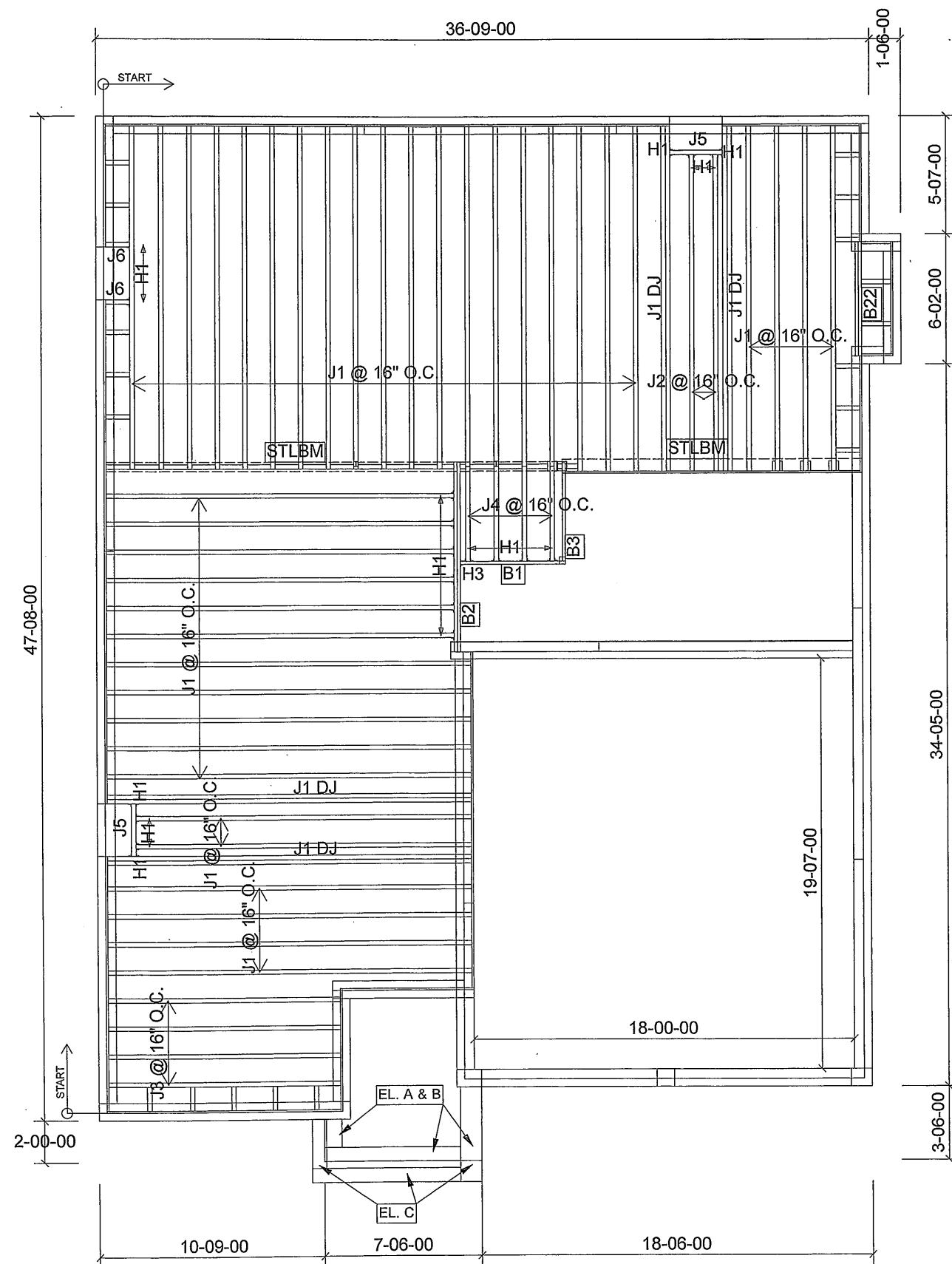
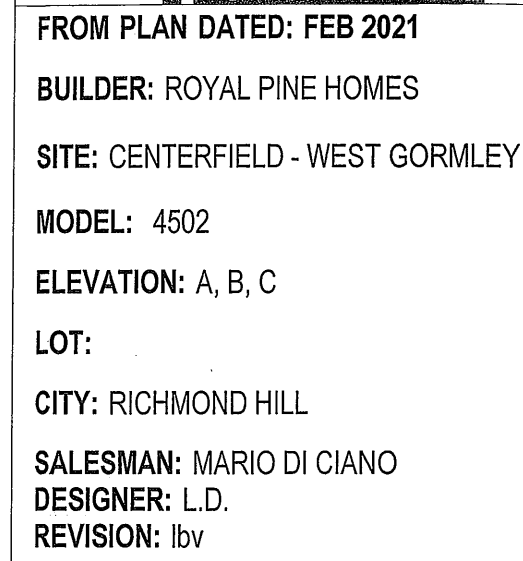
1ST FLOOR

STANDARD



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	27
J1 DJ	18-00-00	11 7/8" NI-40x	2	8
J2	16-00-00	11 7/8" NI-40x	1	17
J3	12-00-00	11 7/8" NI-40x	1	4
J4	6-00-00	11 7/8" NI-40x	1	4
J5	4-00-00	11 7/8" NI-40x	1	2
J6	2-00-00	11 7/8" NI-40x	1	2
B2 H	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B1 H	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B3 H	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B22	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
4	H1	IUS2.56/11.88
7	H1	IUS2.56/11.88
4	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
1	H3	HUS1.81/10



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	40
J1 DJ	18-00-00	11 7/8" NI-40x	2	8
J2	16-00-00	11 7/8" NI-40x	1	2
J3	12-00-00	11 7/8" NI-40x	1	4
J4	6-00-00	11 7/8" NI-40x	1	4
J5	4-00-00	11 7/8" NI-40x	1	2
J6	2-00-00	11 7/8" NI-40x	1	2
B2	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B1	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B3	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B22	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
4	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
4	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
1	H3	HUS1.81/10

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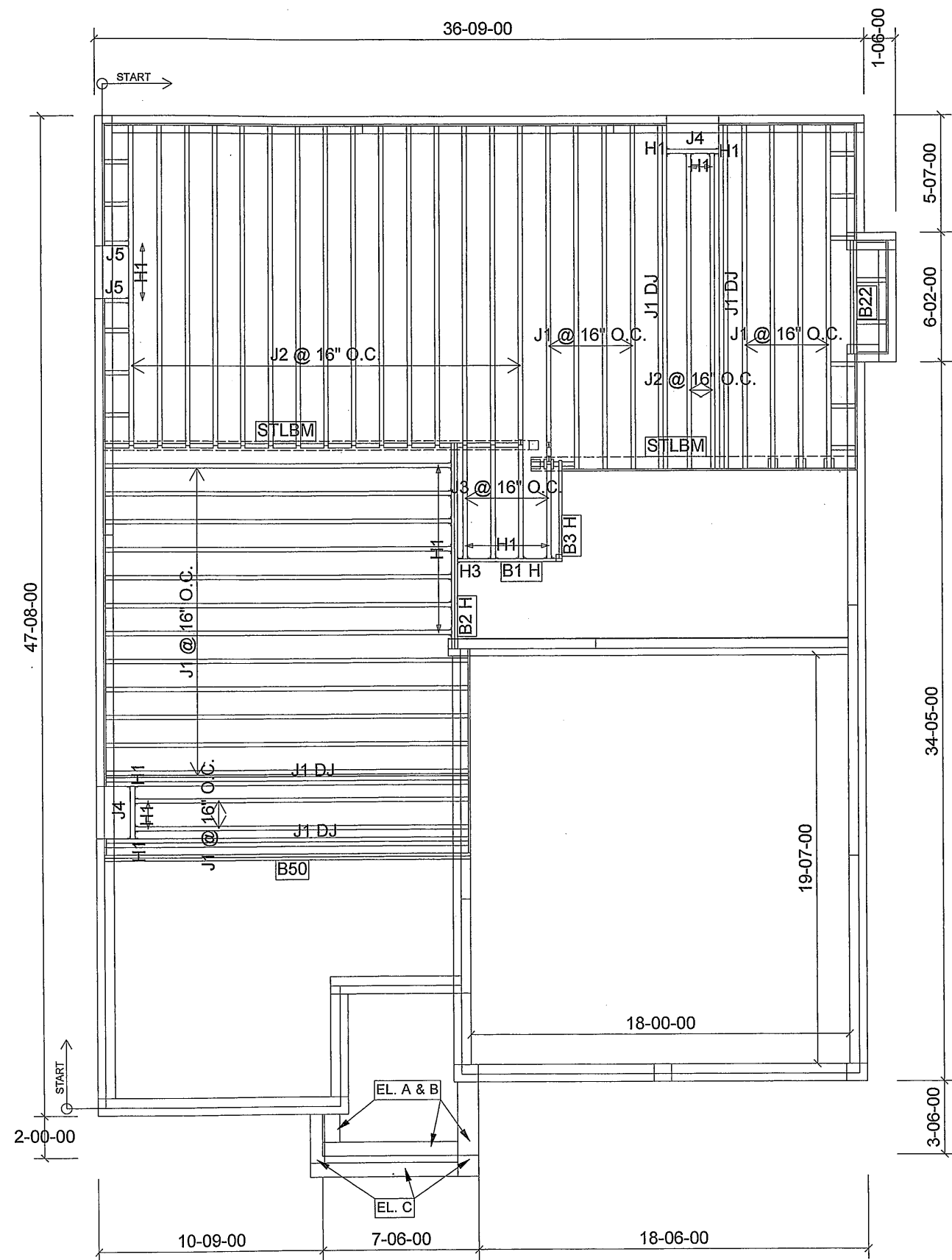
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2021-05-19

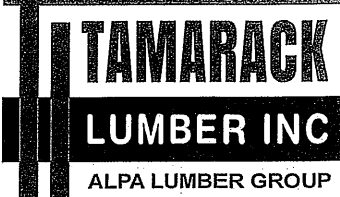
1ST FLOOR

OPTIONS



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	22
J1 DJ	18-00-00	11 7/8" NI-40x	2	8
J2	16-00-00	11 7/8" NI-40x	1	17
J3	6-00-00	11 7/8" NI-40x	1	4
J4	4-00-00	11 7/8" NI-40x	1	2
J5	2-00-00	11 7/8" NI-40x	1	2
B50	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2 H	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B1 H	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B3 H	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B22	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
4	H1	IUS2.56/11.88
7	H1	IUS2.56/11.88
4	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
1	H3	HUS1.81/10



FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD - WEST GORMLEY

MODEL: 4502

ELEVATION: A, B, C

LOT:

CITY: RICHMOND HILL

SALESMAN: MARIO DI CIANO

DESIGNER: L.D.

REVISION: lbv

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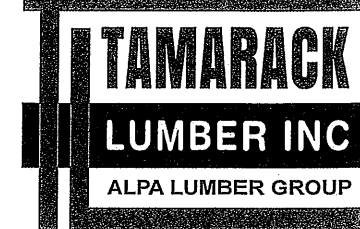
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2021-05-19

1ST FLOOR

STANDARD
SUNKEN FOYER



FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD - WEST GORMLEY

MODEL: 4502

ELEVATION: A, B, C

LOT:

CITY: RICHMOND HILL

SALESMAN: MARIO DI CIANO

DESIGNER: L.D.

REVISION: lbv

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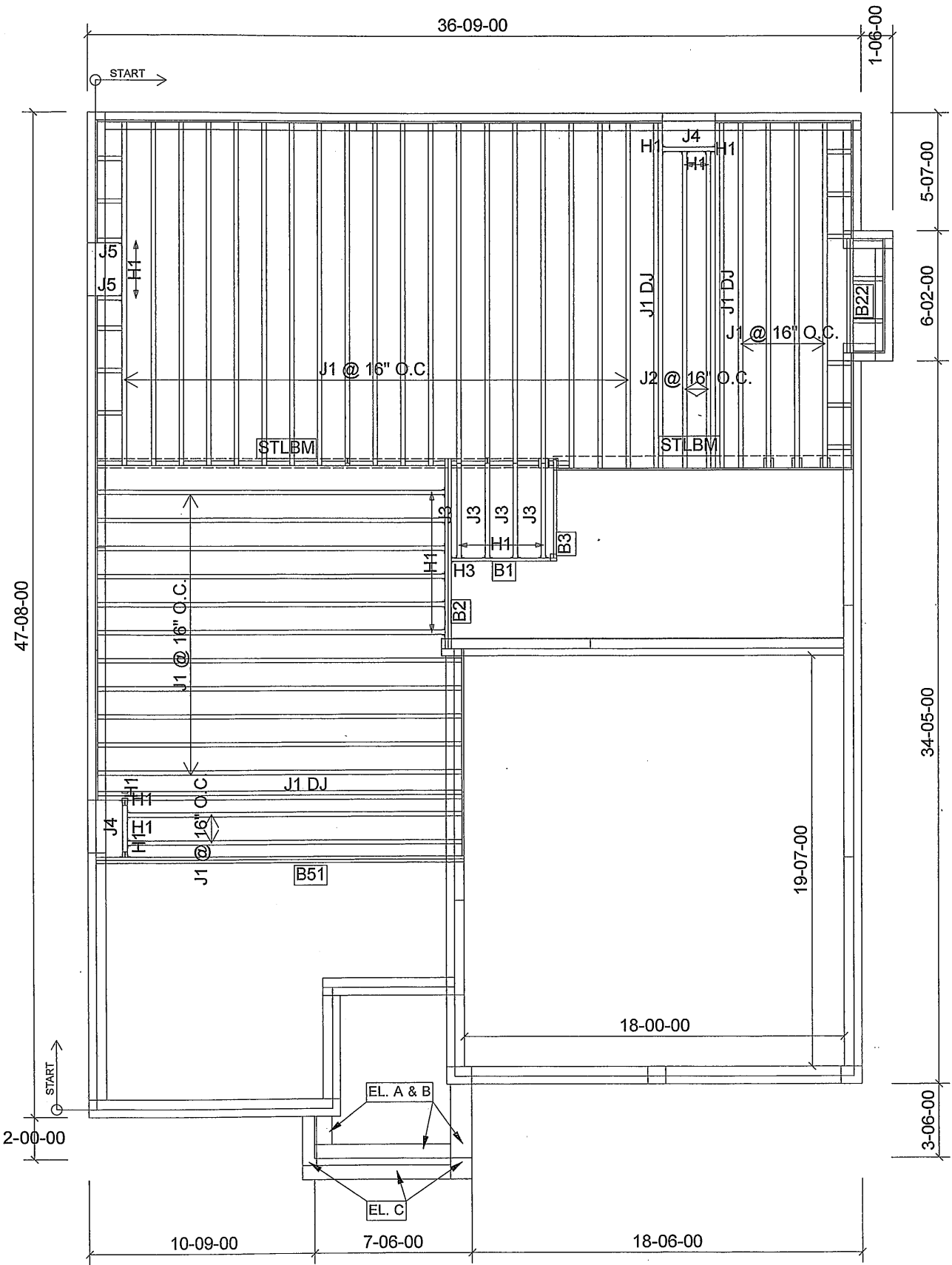
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2021-05-19

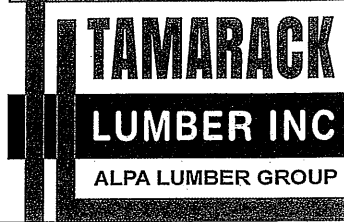
1ST FLOOR

OPTIONS
SUNKEN FOYER



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	36
J1 DJ	18-00-00	11 7/8" NI-40x	2	6
J2	16-00-00	11 7/8" NI-40x	1	2
J3	6-00-00	11 7/8" NI-40x	1	4
J4	4-00-00	11 7/8" NI-40x	1	2
J5	2-00-00	11 7/8" NI-40x	1	2
B51	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B1	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B3	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B22	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
4	H1	IUS2.56/11.88
7	H1	IUS2.56/11.88
3	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
1	H3	HUS1.81/10



FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD - WEST GORMLEY

MODEL: 4502

ELEVATION: A

LOT:

CITY: RICHMOND HILL

SALESMAN: MARIO DI CIANO

DESIGNER: L.D.

REVISION: lbv

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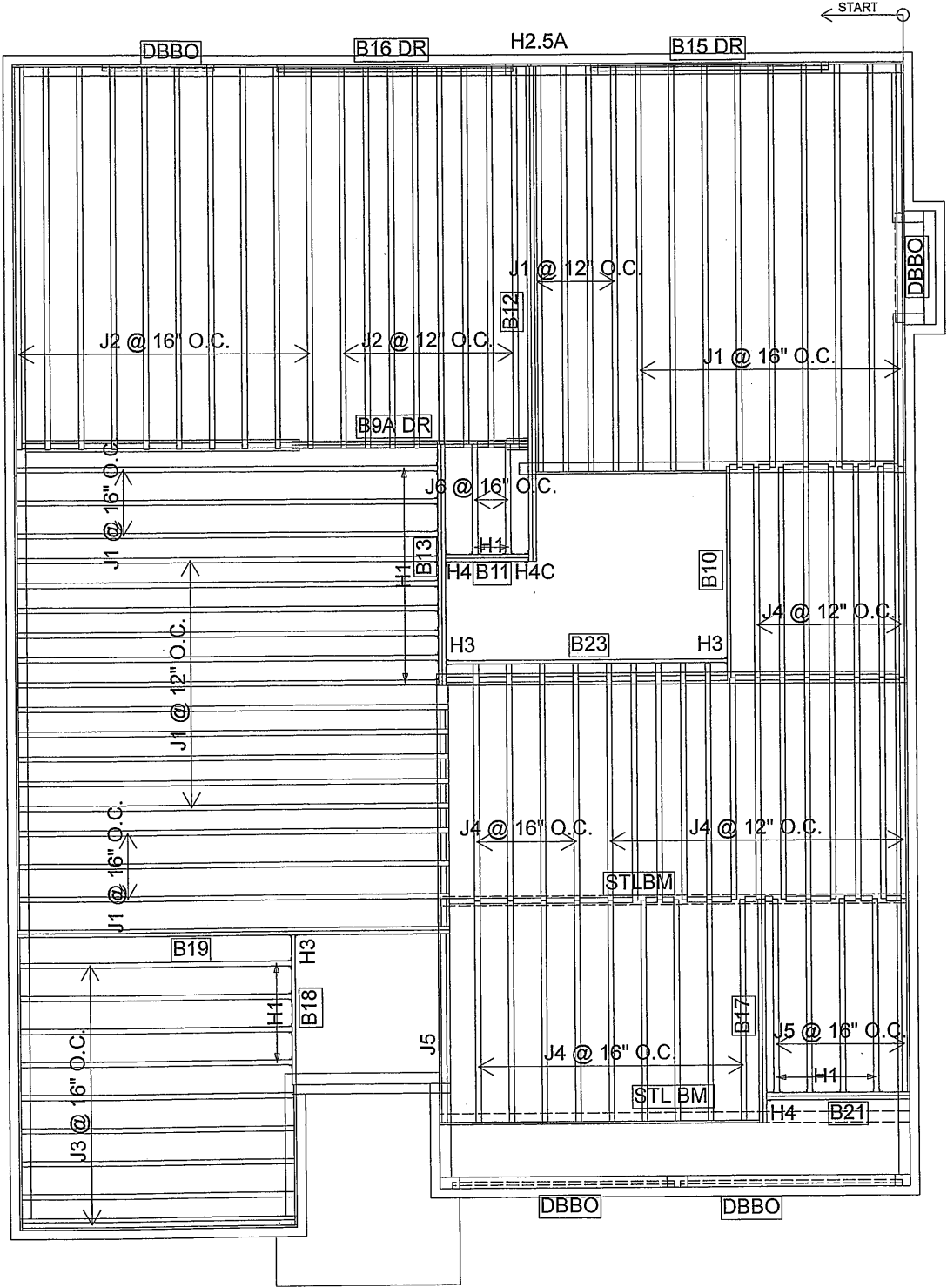
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2021-05-19

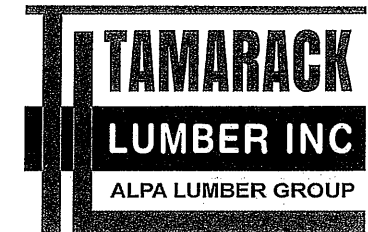
2nd FLOOR

STANDARD
4 BEDROOM



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	30
J2	16-00-00	11 7/8" NI-40x	1	18
J3	12-00-00	11 7/8" NI-40x	1	9
J4	10-00-00	11 7/8" NI-40x	1	33
J5	8-00-00	11 7/8" NI-40x	1	6
J6	6-00-00	11 7/8" NI-40x	1	2
B15 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9A DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	20-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B19	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B23	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B10	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B13	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B17	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B18	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B21	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B11	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
4	H1	IUS2.56/11.88
15	H1	IUS2.56/11.88
1	N/A	H2.5A
1	H3	HUS1.81/10
2	H3	HUS1.81/10
1	H4C	HUC410
2	H4	HGUS410



FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD - WEST GORMLEY

MODEL: 4502

ELEVATION: A

LOT:

CITY: RICHMOND HILL

SALESMAN: MARIO DI CIANO

DESIGNER: L.D.

REVISION: lbv

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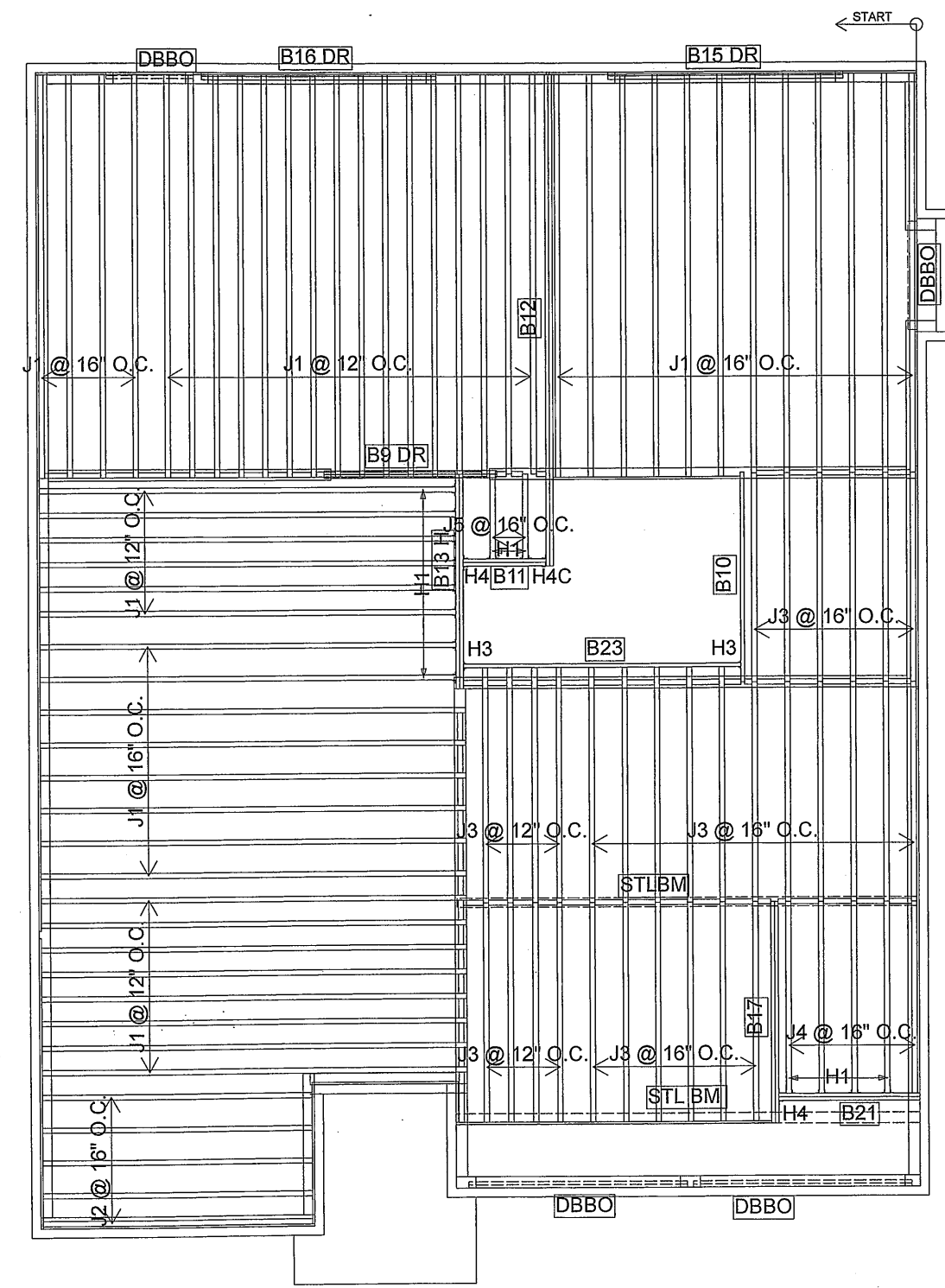
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2021-05-19

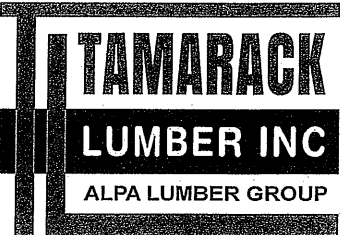
2ND FLOOR

OPTIONS
5 BEDROOM



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	54
J2	12-00-00	11 7/8" NI-40x	1	5
J3	10-00-00	11 7/8" NI-40x	1	31
J4	8-00-00	11 7/8" NI-40x	1	5
J5	4-00-00	11 7/8" NI-40x	1	2
B15 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9 DR	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	20-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B23	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B10	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B13 H	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B17	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B21	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B11	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
14	H1	IUS2.56/11.88
1	N/A	H2.5A
1	H3	HUS1.81/10
1	H3	HUS1.81/10
1	H4C	HUC410
2	H4	HGUS410



FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD - WEST GORMLEY

MODEL: 4502

ELEVATION: B

LOT:

CITY: RICHMOND HILL

SALESMAN: MARIO DI CIANO

DESIGNER: L.D.

REVISION: lbv

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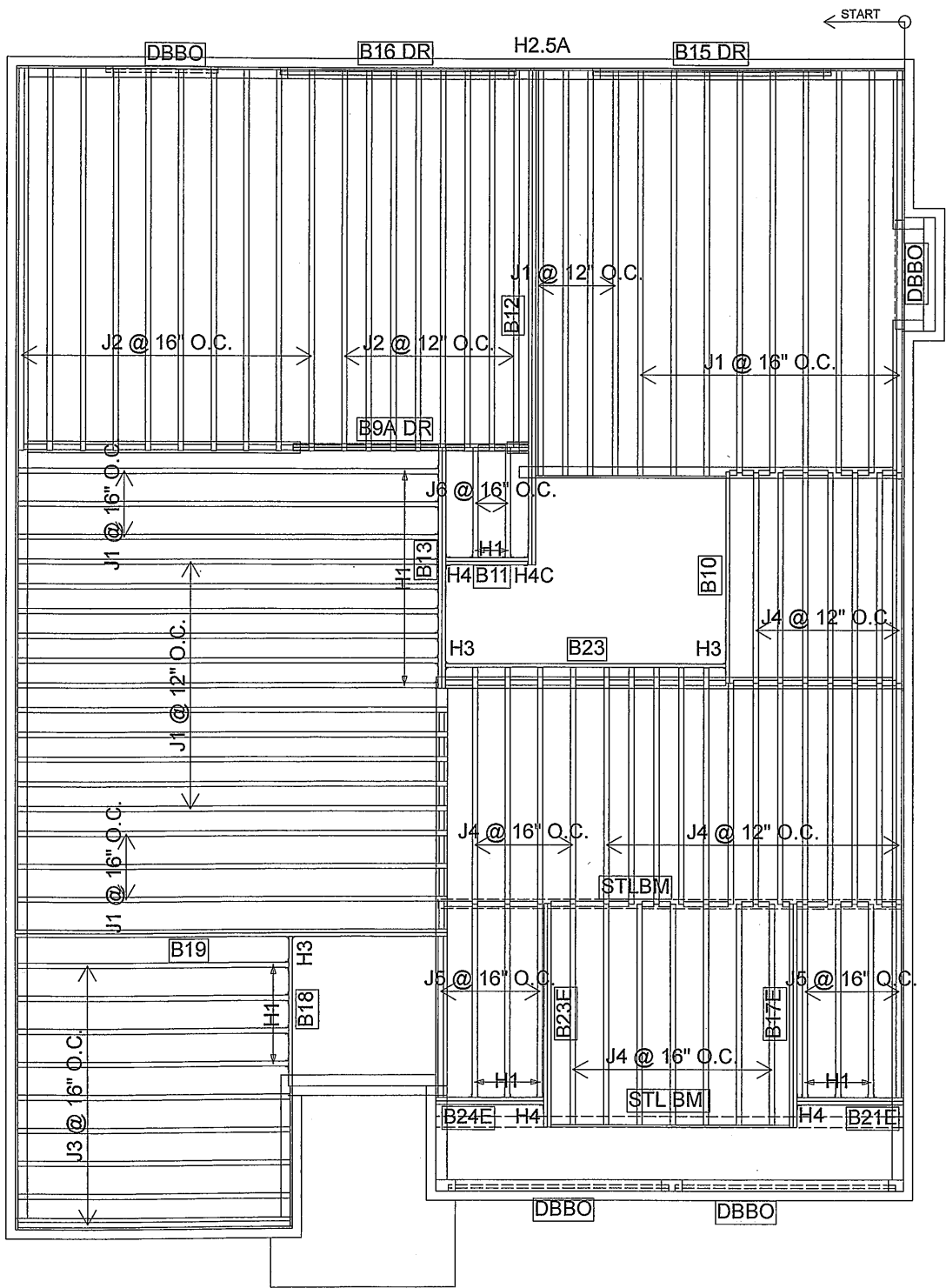
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2021-05-19

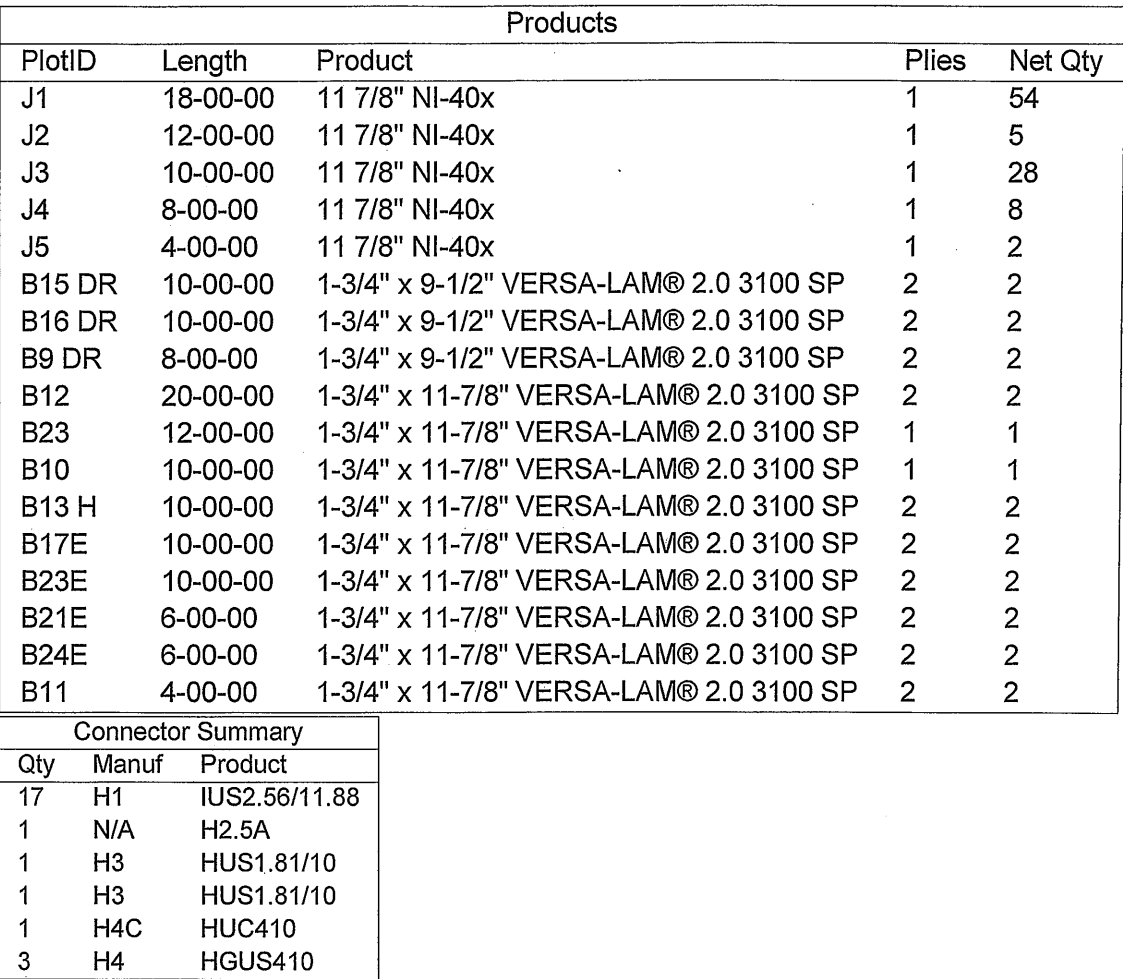
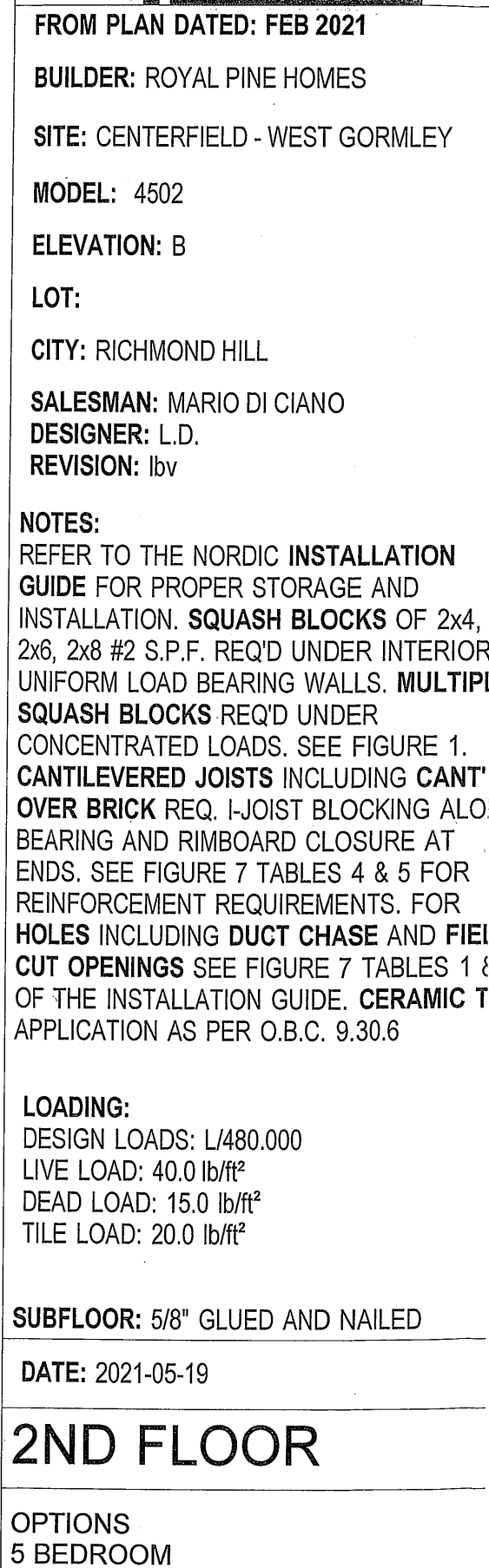
2nd FLOOR

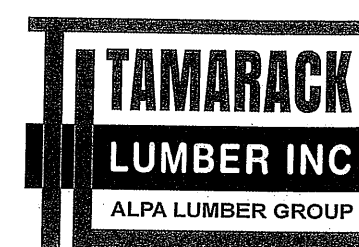
STANDARD
4 BEDROOM



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	30
J2	16-00-00	11 7/8" NI-40x	1	18
J3	12-00-00	11 7/8" NI-40x	1	9
J4	10-00-00	11 7/8" NI-40x	1	31
J5	8-00-00	11 7/8" NI-40x	1	8
J6	6-00-00	11 7/8" NI-40x	1	2
B15 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9A DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	20-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B19	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B23	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B10	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B13	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B17E	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B23E	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B18	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B21E	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B24E	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B11	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
4	H1	IUS2.56/11.88
17	H1	IUS2.56/11.88
1	N/A	H2.5A
1	H3	HUS1.81/10
2	H3	HUS1.81/10
1	H4C	HUC410
3	H4	HGUS410





FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD - WEST GORMLEY

MODEL: 4502

ELEVATION: C

LOT:

CITY: RICHMOND HILL

SALESMAN: MARIO DI CIANO

DESIGNER: L.D.

REVISION: lbv

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. **MULTIPL SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALOI BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURE 7 TABLES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIEL CUT OPENINGS** SEE FIGURE 7 TABLES 1 & 8 OF THE INSTALLATION GUIDE. **CERAMIC TI** APPLICATION AS PER O.B.C. 9.30.6

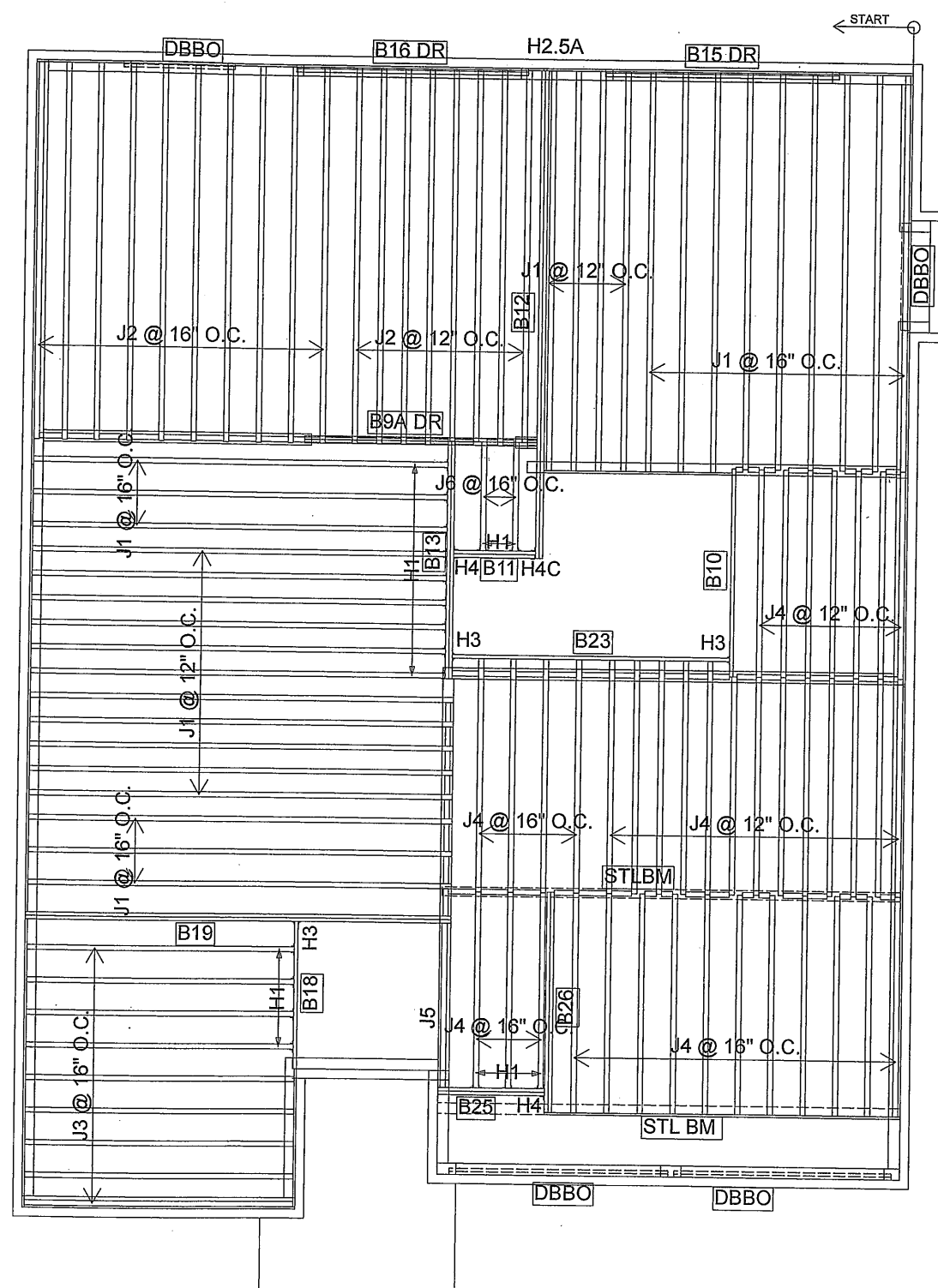
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2021-05-19

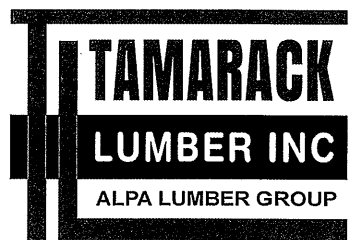
2nd FLOOR

STANDARD
4 BEDROOM



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	30
J2	16-00-00	11 7/8" NI-40x	1	18
J3	12-00-00	11 7/8" NI-40x	1	9
J4	10-00-00	11 7/8" NI-40x	1	38
J5	8-00-00	11 7/8" NI-40x	1	1
J6	6-00-00	11 7/8" NI-40x	1	2
B15 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9A DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	20-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B19	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B23	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B10	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B13	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B26	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B18	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B25	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B11	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
3	H1	IUS2.56/1.88
4	H1	IUS2.56/11.88
11	H1	IUS2.56/11.88
1	N/A	H2.5A
1	H3	HUS1.81/10
2	H3	HUS1.81/10
1	H4C	HUC410
2	H4	HGUS410



FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD - WEST GORMLEY

MODEL: 4502

ELEVATION: C

LOT:

CITY: RICHMOND HILL

SALESMAN: MARIO DI CIANO

DESIGNER: L.D.

REVISION: lbv

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 FIGURE 7 TABLES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7 TABLES 1 & 2 OF THE INSTALLATION GUIDE. **CERAMIC TILE** APPLICATION AS PER O.B.C. 9.30.6

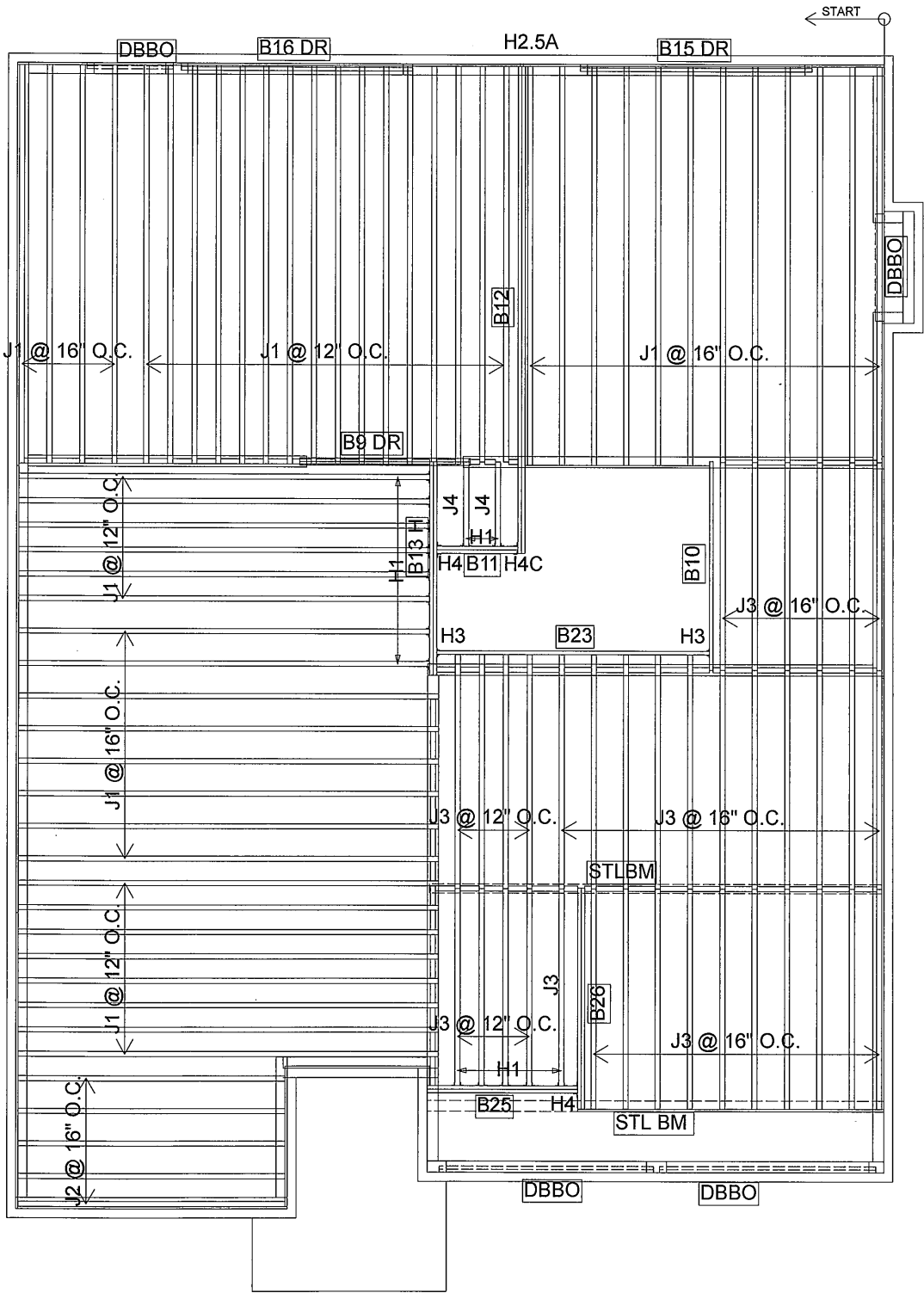
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2021-05-19

2ND FLOOR

OPTIONS
5 BEDROOM

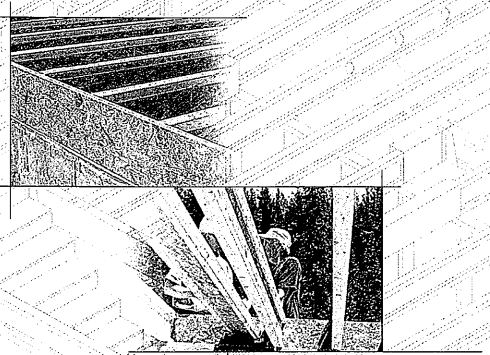


Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	54
J2	12-00-00	11 7/8" NI-40x	1	5
J3	10-00-00	11 7/8" NI-40x	1	36
J4	4-00-00	11 7/8" NI-40x	1	2
B15 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9 DR	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	20-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B23	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B10	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B13 H	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B26	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B25	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B11	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
15	H1	IUS2.56/11.88
1	N/A	H2.5A
1	H3	HUS1.81/10
1	H3	HUS1.81/10
1	H4C	HUC410
2	H4	HGUS410



INSTALLATION GUIDE FOR RESIDENTIAL FLOORS

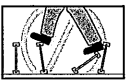


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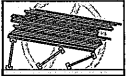


N 2301 / November 2014

SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

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.

WARNING

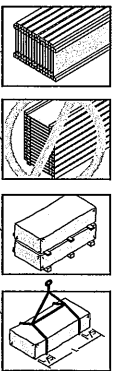
I-joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.

Avoid Accidents by Following these Important Guidelines:

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

STORAGE AND HANDLING GUIDELINES

- Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
- Store, stack, and handle I-joists vertically and level only.
- Always stack and handle I-joists in the upright position only.
- Do not store I-joists in direct contact with the ground and/or flatwise.
- Protect I-joists from weather, and use spacers to separate bundles.
- Bundled units should be kept intact until time of installation.
- When handling I-joists with a crane on the job site, take a few simple precautions to prevent damage to the I-joists and injury to your work crew.
 - Pick I-joists in bundles as shipped by the supplier.
 - Orient the bundles so that the webs of the I-joists are vertical.
 - Pick the bundles at the 5th points, using a spreader bar if necessary.
- Do not handle I-joists in a horizontal orientation.
- NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.



MAXIMUM FLOOR SPANS

- Maximum clear spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25SD. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGS-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Limit States Design per CAN/CSA C88-09 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

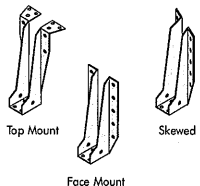
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS SIMPLE AND MULTIPLE SPANS

Joist Depth	Joist Series	Simple spans				Multiple spans			
		On centre spacing				On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	Ni-20	15'1"	14'2"	13'9"	13'5"	16'3"	15'4"	14'10"	14'7"
	Ni-40x	16'1"	15'2"	14'8"	14'9"	17'3"	16'5"	15'10"	15'5"
	Ni-60	16'3"	15'4"	14'10"	14'11"	17'7"	16'7"	16'0"	16'1"
	Ni-70	17'1"	16'1"	15'6"	15'7"	18'7"	17'4"	16'9"	16'10"
11-7/8"	Ni-20	16'11"	16'0"	15'5"	15'6"	18'4"	17'3"	16'8"	16'7"
	Ni-40x	18'1"	17'0"	16'5"	16'6"	20'0"	18'6"	17'9"	17'7"
	Ni-60	18'4"	17'3"	16'7"	16'9"	20'3"	18'9"	18'0"	18'1"
	Ni-70	19'6"	18'0"	17'4"	17'5"	21'4"	19'11"	19'0"	19'1"
14"	Ni-20	19'9"	18'3"	17'6"	17'7"	21'9"	20'2"	19'3"	19'4"
	Ni-40x	20'2"	18'7"	17'10"	17'11"	22'3"	20'7"	19'8"	19'9"
	Ni-60	20'4"	18'9"	17'11"	18'0"	22'5"	20'9"	19'10"	19'11"
	Ni-70	21'3"	19'7"	17'10"	17'11"	23'2"	21'6"	20'7"	20'8"
16"	Ni-20	20'5"	18'11"	18'1"	18'2"	22'7"	20'11"	20'0"	20'1"
	Ni-40x	21'7"	20'0"	19'1"	19'2"	23'10"	22'1"	21'1"	21'2"
	Ni-60	21'11"	20'3"	19'4"	19'5"	24'3"	22'5"	21'5"	21'6"
	Ni-70	22'8"	20'8"	19'9"	19'10"	24'9"	22'10"	21'10"	21'11"
18"	Ni-20	22'7"	20'11"	19'11"	20'0"	25'0"	23'1"	22'0"	22'2"
	Ni-40x	23'9"	21'9"	20'9"	21'0"	26'2"	24'0"	23'0"	23'1"
	Ni-60	23'11"	22'1"	21'1"	21'2"	26'5"	24'3"	23'3"	23'4"
	Ni-70	24'5"	22'6"	21'5"	21'6"	26'11"	24'10"	23'9"	23'9"
20"	Ni-20	24'8"	22'9"	21'9"	21'10"	27'3"	25'2"	24'0"	24'1"
	Ni-40x	25'10"	23'10"	22'10"	22'11"	28'6"	26'5"	25'5"	25'6"
	Ni-60	26'2"	24'2"	23'2"	23'3"	28'9"	26'8"	25'8"	25'9"
	Ni-70	26'11"	25'1"	24'1"	24'2"	29'2"	27'1"	26'1"	26'2"

CCMC EVALUATION REPORT 13032-R

I-JOIST HANGERS

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



WEB STIFFENERS

RECOMMENDATIONS:

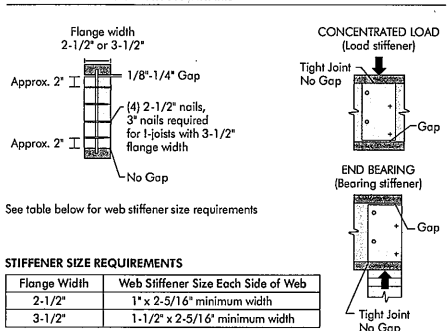
■ A **bearing stiffener** is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.

■ A **bearing stiffener** is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.

■ A **load stiffener** is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

SI units conversion: 1 inch = 25.4 mm

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



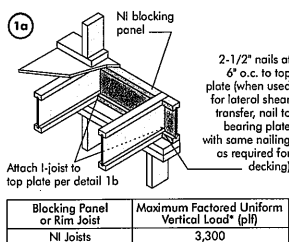
See table below for web stiffener size requirements

STIFFENER SIZE REQUIREMENTS

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

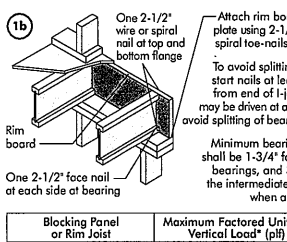
INSTALLING NORDIC I-JOISTS

- Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, consult the supplier.
- Except for cutting to length, I-joist flanges should **never** be cut, drilled, or notched.
- Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
- I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple-span systems must be level.
- Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
- When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
- Leave a 1/16-inch gap between the I-joist end and a header.
- Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unusual or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
- Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
- Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
- For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squash blocks (cripple members) to transfer gravity loads through the floor system to the wall or foundation below.
- Due to shrinkage, common framing lumber set on edge may **never** be used as blocking or rim boards. I-joist blocking panels or other engineered wood products – such as rim board – must be cut to fit between the I-joists, and on I-joist-compatible depth selected.
- Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
- If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
- Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.



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

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

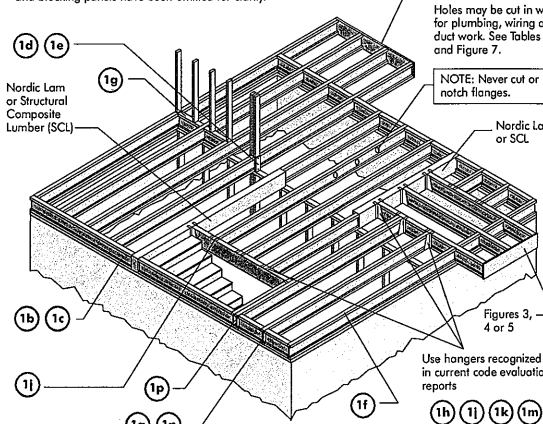


Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

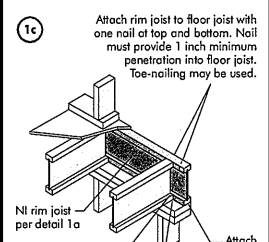
*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

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

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

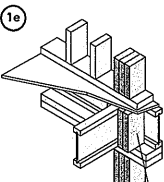


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.

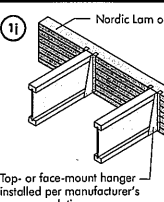


Pair of Squash Blocks	Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300
	6,600

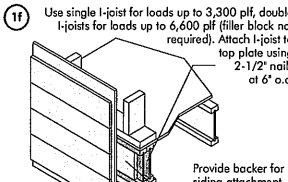
Provide lateral bracing per detail 1a, 1b, or 1c



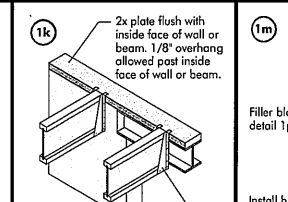
Transfer load from above to bearing below. Install squash blocks per detail 1d. Match bearing area of blocks below to post above.



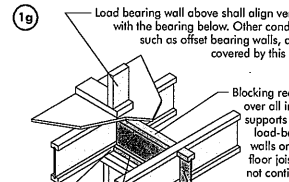
Wall sheathing, as required. Rim board may be used in lieu of I-joists. Backer is not required when rim board is used. Bracing per code shall be carried to the foundation.



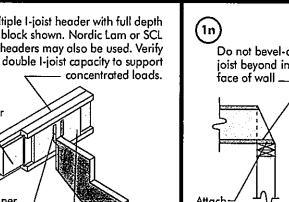
Use single I-joist for loads up to 3,300 plf, double I-joists for loads up to 6,600 plf (filler block not required). Attach I-joist to top plate using 2-1/2 inch nails at 6 inch o.c.



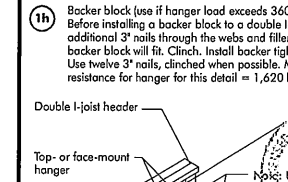
Provide backer for side attachment unless nailable sheathing is used.



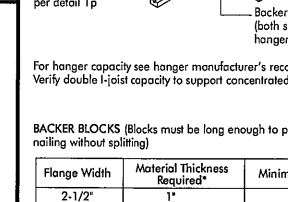
Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail.



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



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



Double I-joist header. Top- or face-mount hanger. Filler block per detail 1p. Backer block required (both sides for face-mount hangers).

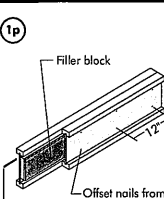
For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

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

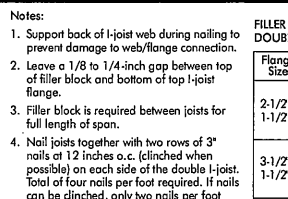
Flange Width	Material Thickness Required*	Minimum Depth**
2-1/2"	1"	5-1/2"
3-1/2"	1-1/2"	7-1/4"

* Minimum grade for backer block material shall be S-PF No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-Q325 or CAN/CSA-Q437 Standard.

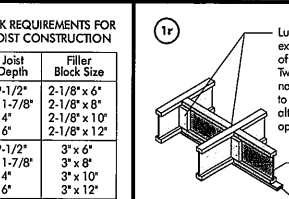
** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".



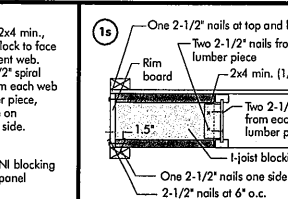
Multiple I-joist header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Vary double I-joist capacity to support concentrated loads.



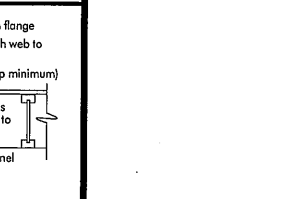
Do not bavel-cut joist beyond inside face of wall.



Attach I-joist per detail 1b. Note: Blocking required at bearing wall for lateral support, not shown for clarity.



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



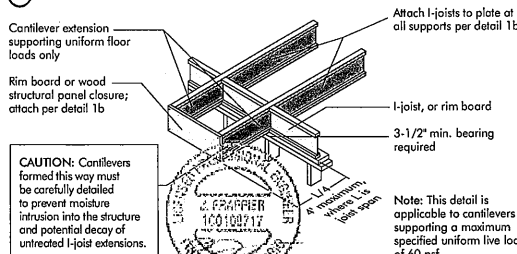
One 2-1/2 inch nails at top and bottom flange. Two 2-1/2 inch nails from each web to lumber piece. Two 2-1/2 inch nails from each web to lumber piece. One 2-1/2 inch nails one side only. 2-1/2 inch nails at 6 inch o.c.

Notes:

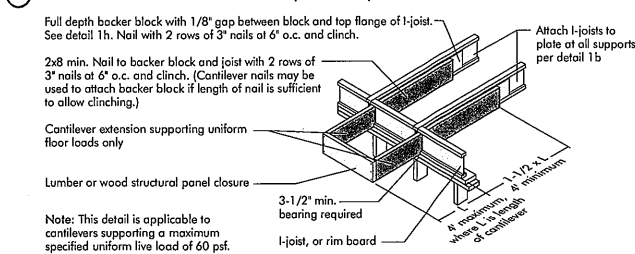
- In some local codes, blocking is prescriptively required in the first joist space (or first and second joist space) next to the starter joist. Where required, see local code requirements for spacing of the blocking.
- All nails are common spiral in this detail.

CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

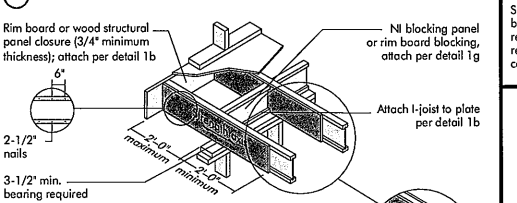


3b LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)

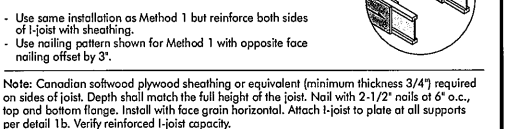


CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE



Method 2 — SHEATHING REINFORCEMENT TWO SIDES



4b Alternate Method 2 — DOUBLE I-JOIST

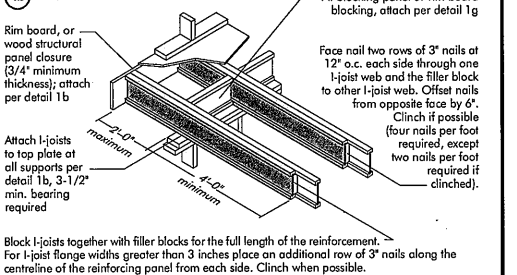
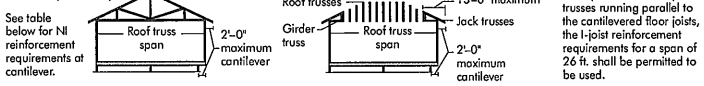


FIGURE 4 (continued)



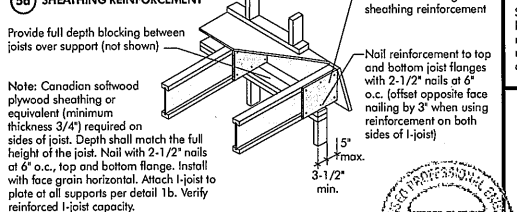
CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft.)	ROOF LOADING (UNFACTORED)											
		LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf				LL = 50 psf, DL = 15 psf			
		JOIST SPACING (in.)				JOIST SPACING (in.)				JOIST SPACING (in.)			
9-1/2"	26	N	N	1	2	N	N	1	2	N	N	1	2
	28	N	N	1	2	N	N	1	2	N	N	1	2
	30	N	N	1	2	N	N	1	2	N	N	1	2
	32	N	N	1	2	N	N	1	2	N	N	1	2
	34	N	N	1	2	N	N	1	2	N	N	1	2
11-7/8"	26	N	N	1	2	N	N	1	2	N	N	1	2
	28	N	N	1	2	N	N	1	2	N	N	1	2
	30	N	N	1	2	N	N	1	2	N	N	1	2
	32	N	N	1	2	N	N	1	2	N	N	1	2
	34	N	N	1	2	N	N	1	2	N	N	1	2
14"	26	N	N	1	2	N	N	1	2	N	N	1	2
	28	N	N	1	2	N	N	1	2	N	N	1	2
	30	N	N	1	2	N	N	1	2	N	N	1	2
	32	N	N	1	2	N	N	1	2	N	N	1	2
	34	N	N	1	2	N	N	1	2	N	N	1	2
16"	26	N	N	1	2	N	N	1	2	N	N	1	2
	28	N	N	1	2	N	N	1	2	N	N	1	2
	30	N	N	1	2	N	N	1	2	N	N	1	2
	32	N	N	1	2	N	N	1	2	N	N	1	2
	34	N	N	1	2	N	N	1	2	N	N	1	2

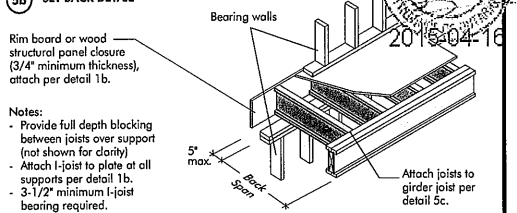
1. N = No reinforcement required.
2. N = NI reinforced with 3/4" wood structural panel on one side only.
3. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

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

5a SHEATHING REINFORCEMENT



5b SET-BACK DETAIL



5c SET-BACK CONNECTION

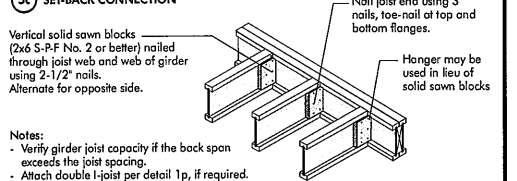
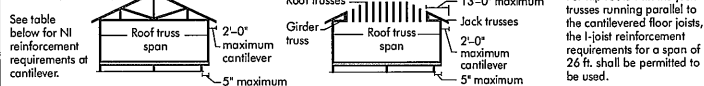


FIGURE 5 (continued)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft.)	ROOF LOADING (UNFACTORED)											
		LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf				LL = 50 psf, DL = 15 psf			
		JOIST SPACING (in.)				JOIST SPACING (in.)				JOIST SPACING (in.)			
9-1/2"	26	1	X	X	X	2	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X	2	X	X	X
	32	2	X	X	X	2	X	X	X	2	X	X	X
	34	2	X	X	X	2	X	X	X	2	X	X	X
11-7/8"	26	N	2	X	X	1	X	X	X	1	X	X	X
	28	N	2	X	X	1	X	X	X	1	X	X	X
	30	1	2	X	X	1	X	X	X	1	X	X	X
	32	1	2	X	X	1	X	X	X	1	X	X	X
	34	1	2	X	X	1	X	X	X	1	X	X	X
14"	26	N	2	X	X	1	X	X	X	1	X	X	X
	28	N	2	X	X	1	X	X	X	1	X	X	X
	30	N	2	X	X	1	X	X	X	1	X	X	X
	32	N	2	X	X	1	X	X	X	1	X	X	X
	34	N	2	X	X	1	X	X	X	1	X	X	X
16"	26	N	2	X	X	1	X	X	X	1	X	X	X
	28	N	2	X	X	1	X	X	X	1	X	X	X
	30	N	2	X	X	1	X	X	X	1	X	X	X
	32	N	2	X	X	1	X	X	X	1	X	X	X
	34	N	2	X	X	1	X	X	X	1	X	X	X

1. N = No reinforcement required.
2. N = NI reinforced with 3/4" wood structural panel on one side only.
3. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (ft.-in.)																Span adjustment Factor
		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	1.5	2.0	2.4	2.8	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	6.8	7.2	13.9
	NI-24x	0.7	1.5	3.0	4.4	4.4	6.0	6.4	...	...	...	...	...	...	...	...	...	14.9
	NI-30	0.7	1.5	3.0	4.4	4.4	7.2	8.0	...	...	...	...	...	...	...	...	...	15.9
	NI-36	0.7	1.5	3.0	4.4	4.4	8.0	8.4	...	...	...	...	...	...	...	...	...	16.9
	NI-40x	0.7	1.5	3.0	4.4	4.4	8.4	8.4	...	...	...	...	...	...	...	...	...	17.9
11-7/8"	NI-20	0.7	1.5	2.0	2.4	2.8	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	6.8	7.2	15.9
	NI-24x	0.7	0.8	1.3	2.6	2.6	4.0	4.4	5.5	7.0	7.4	...	...	...	...	...	...	16.9
	NI-30	0.7	0.8	1.3	2.6	2.6	4.4	5.5	6.0	7.0	7.4	...	...	...	...	...	...	17.9
	NI-36	1.3	2.6	4.0	5.4	5.4	6.9	7.2	8.4	10.0	11.2	...	...	...	...	...	...	17.9
	NI-40	0.7	0.8	1.3	2.6	2.6	6.0	7.0	7.5	8.6	10.3	11.4	...	...	...	...	...	17.9
14"	NI-20	0.7	0.8	1.0	2.2	2.2	4.0	4.0	5.0	6.4	8.0	10.2	...	...	...	...	...	17.1
	NI-24x	0.7	0.8	0.8	1.9	2.5	4.4	4.9	6.0	6.3	...	...	...	...	...	...	...	18.0
	NI-30	0.7	0.8	0.8	1.9	2.4	2.9	3.9	5.2	6.0	6.8	8.5	10.2	...	...	...	...	17.1
	NI-36	0.7	0.8	0.8	1.9	2.4	3.0	4.0	5.2	6.0	6.8	8.5	10.2	...	...	...	...	18.0
	NI-40	0.7	0.8	0.8	1.9	2.4	2.9	3.9	5.2	6.0	6.8	8.5	10.2	...	...	...	...	17.1
16"	NI-20	0.7	0.8	1.0	2.2	2.2	4.0	4.0	5.0	6.4	8.0	10.2	11.9	...	...	...	...	19.2
	NI-24x	0.7	0.8	1.0	3.4	4.5	6.0	6.2	7.3	8.9	9.9	10.4	12.0	13.5	...	...	...	19.2
	NI-30	0.7	0.8	1.0	3.4	4.5	6.2	6.2	7.3	8.9	9.9	10.4	12.0	13.5	...	...	...	19.2
	NI-36	0.7	0.8	1.0	3.4	4.5	6.2	6.2	7.3	8.9	9.9	10.4	12.0	13.5	...	...	...	19.2
	NI-40	0.7	0.8	1.0	3.4	4.5	6.2	6.2	7.3	8.9	9.9	10.4	12.0	13.5	...	...	...	19.2
16'	NI-20	0.7	0.8	0.8	2.0	2.0	4.2	4.2	5.5	7.3	8.5	9.2	...	...	...	...	...	20.0
	NI-24x	0.7	0.8	0.8	1.6	2.0	3.2	4.2	5.5	7.0	8.5	9.2	10.2	12.0	12.0	13.9	...	20.0
	NI-30	0.7	0.8	0.8	1.6	2.0	3.2	4.2	5.5	7.0	8.5	9.2	10.2	12.0	12.0	13.9	...	20.0
	NI-36	0.7	0.8	0.8	1.6	2.0	3.2	4.2	5.5	7.0	8.5	9.2	10.2	12.0	12.0	13.9	...	20.0
	NI-40	0.7	0.8	0.8	1.6	2.0	3.2	4.2	5.5	7.0	8.5	9.2	10.2	12.0	12.0	13.9	...	20.0

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

OPTIONAL:

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

Reduced = $\frac{\text{actual span}}{\text{max span}} \times D$

Where:

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

If the actual span is greater than 1, use 1 in the above calculation for actual span.

FIGURE 7
FIELD-CUT HOLE LOCATOR



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

WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

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

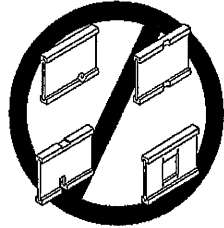
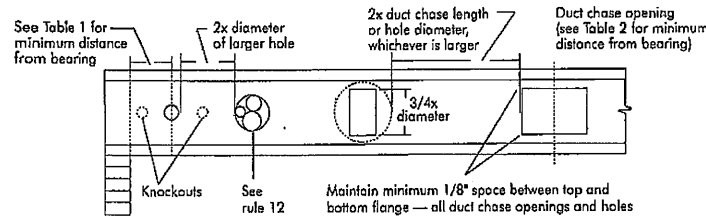
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum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

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

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

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

FIGURE 7
FIELD-CUT HOLE LOCATOR



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

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

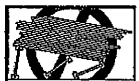
Holes in webs should be cut with a sharp saw.

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

SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

- Brace and nail each I-joint 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.
- 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-joint rollover or buckling.
 - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joint. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.
 - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
- For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bridging.
- Install and fully nail permanent sheathing to each I-joint before placing loads on the floor system. Then, stack building materials over beams or walls only.
- Never install a damaged I-joint.

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



PRODUCT WARRANTY

Chantiers Chibougamau guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defects in material and workmanship.

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

1a

NI blocking panel

Attach I-joint to top plate per detail 1b

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

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

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

1b

Rim board

One 2-1/2" wire nail at each side at bearing

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

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

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

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

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

1d

NI or rim board blocking panel per detail 1a

Squash block

2x Lumber

1-1/8" Rim Board Plus

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

Provide lateral bracing per detail 1a or 1b

1e

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

1g

Joist attachment per detail 1b

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

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

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

NI blocking panel per detail 1a

1h

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

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

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

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-C325 or CAN/CSA-C437 Standard.

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

1k

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

1m

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

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

Filler block per detail 1p

Install hanger per manufacturer's recommendations

Top-mount hanger installed per manufacturer's recommendations

Maximum support capacity = 1,620 lbs.

1i

Nordic Lam or Structural Composite Lumber (SCL)

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

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

1j

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

NI blocking panel

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

1p

Filler block

Offset nails from opposite face by 6"

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

NOTES:

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

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

1s

Rim board

2-1/2" nails at 6" o.c.

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

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

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

One 2-1/2" nail one side only

NOTES:

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

All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.

WEB STIFFENERS

RECOMMENDATIONS:

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

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS

CONCENTRATED LOAD (Load stiffener)

END BEARING (Bearing stiffener)

STIFFENER SIZE REQUIREMENTS

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

See the adjacent table for web stiffener size requirements

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

4a

Method 1 — SHEATHING REINFORCEMENT ONE SIDE

Rim board or wood structural panel closure (3/4" minimum thickness); attach per detail 1b

NI blocking panel or rim board blocking, attach per detail 1g

Attach I-joint to plate per detail 1b

2-1/2" nails

3-1/2" min. bearing required

Method 2 — SHEATHING REINFORCEMENT TWO SIDES

Use same installation as Method 1 but reinforce both sides of I-joint with sheathing.

Use nailing pattern shown for Method 1 with opposite face nailing offset by 3".

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

RIM BOARD INSTALLATION DETAILS

8a

ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim Board Joint Between Floor Joists

(1) 2-1/2" nail top and bottom (typical)

Rim board joint

Rim board joint at Corner

Rim board joint

2-1/2" nails at 6" o.c. (typical)

2-1/2" toe-nails at 6" o.c. (typical)

1-1/2"

8b

TOE-NAIL CONNECTION AT RIM BOARD

Rim board

Top or sole plate

30°

2-1/2" nails at 6" o.c.



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

PASSED

1ST FLR FRAMING\Flush Beams\B50(i37048) (Flush Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

May 19, 2021 08:41:54

Build 7773

Job name:

File name: 4502 SUNKEN FOYER .mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B50(i37048)

City, Province, Postal Code: RICHMOND HILL

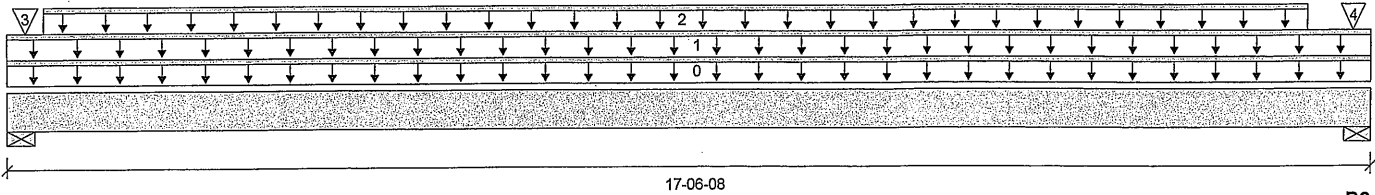
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



B1

Total Horizontal Product Length = 17-06-08

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	372 / 0	861 / 0		
B2, 5-1/2"	391 / 0	841 / 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	17-06-08	Top		12			00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	17-06-08	Top	17	9			n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-05-08	16-08-08	Top		60			n/a
3	E103(i36959)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	220	181			n/a
4	6(i699)	Conc. Pt. (lbs)	L	17-03-12	17-03-12	Top	239	183			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3959 ft-lbs	23005 ft-lbs	17.2%	0	08-09-04
End Shear	880 lbs	9401 lbs	9.4%	0	16-01-02
Total Load Deflection	L/1131 (0.178")	n/a	21.2%	4	08-09-04
Live Load Deflection	L/999 (0.031")	n/a	n/a	5	08-09-04
Max Defl.	0.178"	n/a	n/a	4	08-09-04
Span / Depth	16.9				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	1206 lbs	15.7%	7.9%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	1178 lbs	15.3%	7.7%	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: 16-07-08.

CONFORMS TO OBC 2012

AMENDED 2020


 OWC NO. TAM/0663-21
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
1ST FLR FRAMING\Flush Beams\B50(i37048) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

May 19, 2021 08:41:54

Build 7773

Job name:

File name: 4502 SUNKEN FOYER .mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B50(i37048)

City, Province, Postal Code: RICHMOND HILL

Specifier:

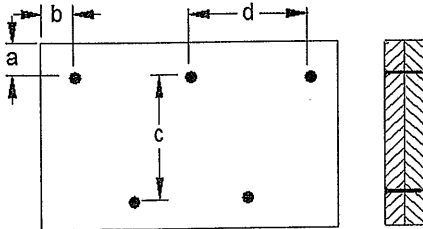
Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 6"

Connectors are: Nails

3 1/2" ARDOX SPIRAL



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®, AJST™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

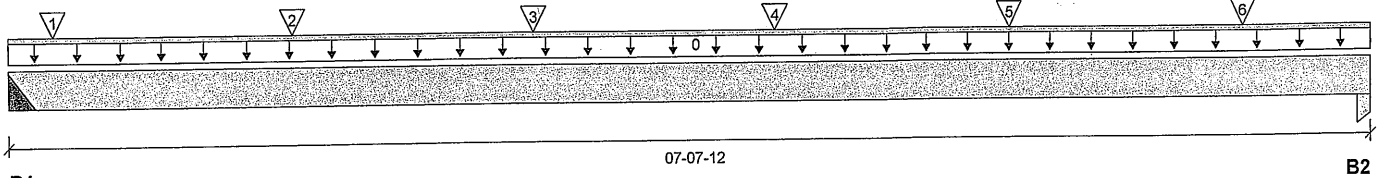
File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B1 H(i33766)

Specifier:

Designer: L.D.

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	430 / 0	239 / 0		
B2, 1-3/4"	346 / 0	197 / 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	07-07-12	Top		6			00-00-00
1	J4(i33770)	Conc. Pt. (lbs)	L	00-03-00	00-03-00	Top	105	53			n/a
2	J4(i33719)	Conc. Pt. (lbs)	L	01-07-00	01-07-00	Top	162	81			n/a
3	J4(i33840)	Conc. Pt. (lbs)	L	02-11-00	02-11-00	Top	162	81			n/a
4	J4(i33365)	Conc. Pt. (lbs)	L	04-03-00	04-03-00	Top	123	62			n/a
5	J4(i33689)	Conc. Pt. (lbs)	L	05-07-00	05-07-00	Top	123	62			n/a
6	J4(i33800)	Conc. Pt. (lbs)	L	06-11-00	06-11-00	Top	101	51			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1570 ft-lbs	17696 ft-lbs	8.9%	1	04-01-15
End Shear	729 lbs	7232 lbs	10.1%	1	01-01-14
Total Load Deflection	L/999 (0.023")	n/a	n/a	4	03-09-15
Live Load Deflection	L/999 (0.015")	n/a	n/a	5	03-09-15
Max Defl.	0.023"	n/a	n/a	4	03-09-15
Span / Depth	7.5				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	2" x 1-3/4"	943 lbs	n/a	22.1%	HUS1.81/10
B2 Column	1-3/4" x 1-3/4"	766 lbs	30.8%	20.5%	Unspecified

Cautions

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



OWB NO. YAM B733-21
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®,

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

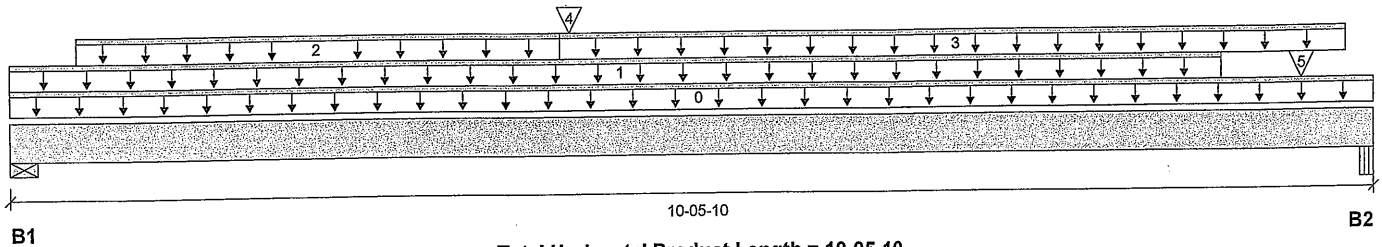
File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B2 H(i33236)

Specifier:

Designer: L.D.

Company:



Total Horizontal Product Length = 10-05-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	2786 / 0	1470 / 0		
B2, 5-1/4"	2013 / 0	1079 / 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	10-05-10	Top		12			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	09-03-06	Top	340	170			n/a
2	STAIRS	Unf. Lin. (lb/ft)	L	00-06-00	04-02-01	Top	240	120			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	04-02-01	10-03-00	Top	8	4			n/a
4	B1 H(i33766)	Conc. Pt. (lbs)	L	04-02-15	04-02-15	Top	426	237			n/a
5	J1(i33460)	Conc. Pt. (lbs)	L	09-10-14	09-10-14	Top	276	138			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	12611 ft-lbs	35392 ft-lbs	35.6%	1	04-07-06
End Shear	5022 lbs	14464 lbs	34.7%	1	01-05-06
Total Load Deflection	L/778 (0.15")	n/a	30.9%	4	05-01-06
Live Load Deflection	L/999 (0.098")	n/a	n/a	5	05-01-06
Max Defl.	0.15"	n/a	n/a	4	05-01-06
Span / Depth	9.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	6017 lbs	50.8%	25.6%	Spruce-Pine-Fir
B2	Beam 5-1/4" x 3-1/2"	4368 lbs	44.5%	19.5%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



UWG NO. YAM8734 -21
STRUCTURAL
COMPONENT ONLY



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

PASSED

1ST FLR FRAMING\Flush Beams\B2 H(i33236) (Flush Beam)

Dry | 1 span | No cant.

September 3, 2020 08:33:58

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

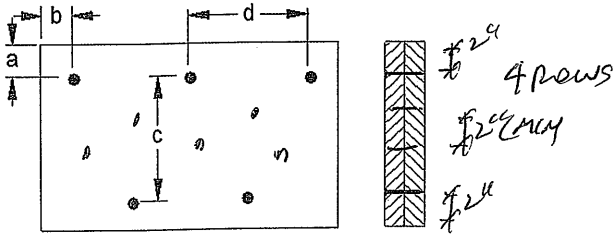
Description: 1ST FLR FRAMING\Flush Beams\B2 H(i33236)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 8"

Calculated Side Load = 969.0 lb/ft

Connectors are: Nails

3 1/2" ARDUX SPIRAL



OWG NO. YAW B734-21
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®,

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B22(i33730)

City, Province, Postal Code: RICHMOND HILL

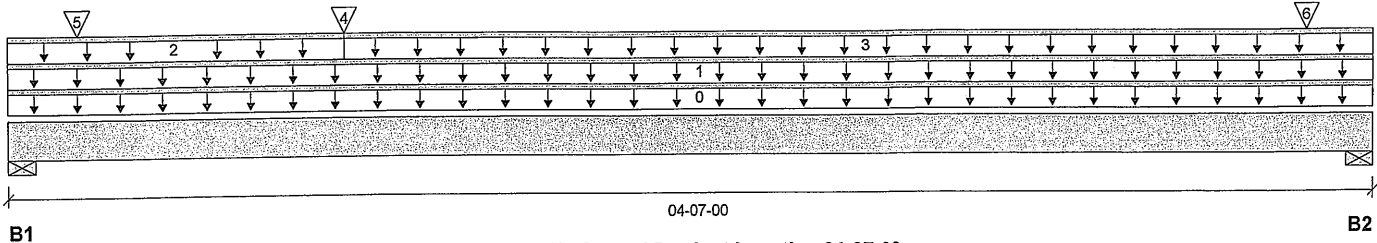
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	145 / 0	400 / 0		
B2, 3-1/2"	159 / 0	407 / 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	04-07-00	Top		12			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-07-00	Top	15	7			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-01-05	Top	6				n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	01-01-05	04-07-00	Top	28	14			n/a
4	Bk3(i33755)	Conc. Pt. (lbs)	L	01-01-05	01-01-05	Top	12				n/a
5	E87(i23423)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	60	330			n/a
6	E6(i687)	Conc. Pt. (lbs)	L	04-04-04	04-04-04	Top	60	330			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	228 ft-lbs	35392 ft-lbs	0.6%	1	02-03-11
End Shear	148 lbs	14464 lbs	1.0%	1	01-03-06
Total Load Deflection	L/999 (0.001")	n/a	n/a	4	02-03-11
Live Load Deflection	L/999 (0")	n/a	n/a	5	02-03-11
Max Defl.	0.001"	n/a	n/a	4	02-03-11
Span / Depth	4.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	560 lbs	11.4%	5.8%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 3-1/2"	570 lbs	11.6%	5.9%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

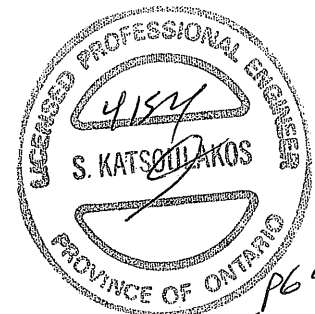
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



OWB NO. 74M8735 -21

STRUCTURAL
COMPONENT ONLY



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

PASSED

1ST FLR FRAMING\Flush Beams\B22(i33730) (Flush Beam)

Dry | 1 span | No cant.

September 3, 2020 08:33:58

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

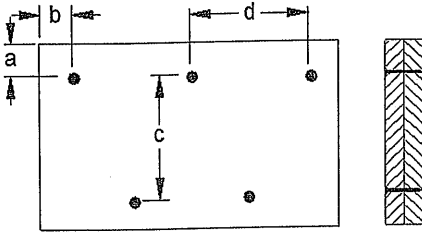
Description: 1ST FLR FRAMING\Flush Beams\B22(i33730)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

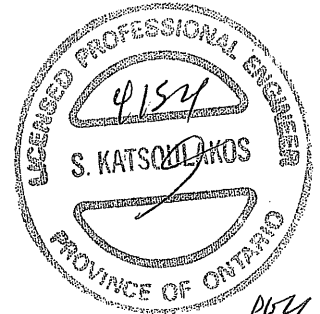
c = 7-7/8"

d = 8"

Calculated Side Load = 12.8 lb/ft

Connectors are: 1 Nails

3 1/2" ARDUX SPIRAL



WWW.BC.CALC.COM 8735-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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BC CALC® Member Report

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B3 H(i33726)

City, Province, Postal Code: RICHMOND HILL

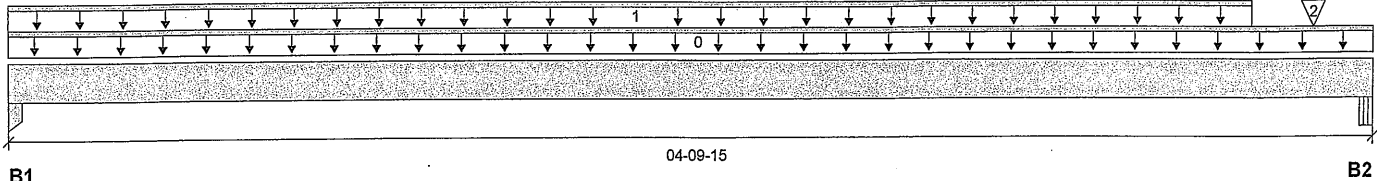
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	41 / 0	35 / 0		
B2, 5-1/4"	93 / 0	73 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-09-15	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-04-11	Top	17	9			n/a
2	24(i9709)	Conc. Pt. (lbs)	L	04-07-05	04-07-05	Top	56	40			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	100 ft-lbs	17696 ft-lbs	0.6%	1	02-04-01
End Shear	47 lbs	7232 lbs	0.7%	1	01-03-06
Total Load Deflection	L/999 (0")	n/a	n/a	4	02-04-01
Live Load Deflection	L/999 (0")	n/a	n/a	5	02-04-01
Max Defl.	0"	n/a	n/a	4	02-04-01
Span / Depth	4.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	105 lbs	2.1%	1.4%	Unspecified
B2	Beam 5-1/4" x 1-3/4"	231 lbs	4.7%	2.1%	Unspecified



OWN NO. TAW B736-21
STRUCTURAL
COMPONENT ONLY

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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®,

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

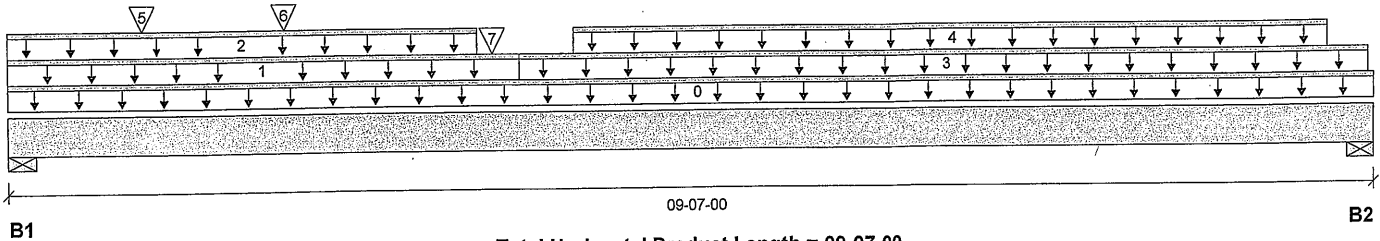
File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Description: 2ND FLR FRAMING/Dropped Beams\B15 DR(i33326)

Specifier:

Designer: L.D.

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1431 / 0	1401 / 0	645 / 0	
B2, 3-1/2"	1451 / 0	1112 / 0	220 / 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	09-07-00	Top		10			00-00-00
1	R1(i33525)	Unf. Lin. (lb/ft)	L	00-00-00	03-06-08	Top		81			n/a
2	R1(i33525)	Unf. Lin. (lb/ft)	L	00-00-00	03-03-00	Top		60	132		n/a
3	R1(i33525)	Unf. Lin. (lb/ft)	L	03-06-08	09-06-08	Top		41			n/a
4	Smoothed Load	Unf. Lin. (lb/ft)	L	03-11-00	09-03-00	Top	326	163			n/a
5	J1(i33760)	Conc. Pt. (lbs)	L	00-11-00	00-11-00	Top	326	163			n/a
6	J1(i33597)	Conc. Pt. (lbs)	L	01-11-00	01-11-00	Top	381	190			n/a
7	-	Conc. Pt. (lbs)	L	03-04-04	03-04-04	Top	435	465	436		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	9867 ft-lbs	23220 ft-lbs	42.5%	1	04-07-00
End Shear	4050 lbs	11571 lbs	35.0%	1	01-01-00
Total Load Deflection	L/497 (0.22")	n/a	48.3%	35	04-08-00
Live Load Deflection	L/822 (0.133")	n/a	43.8%	51	04-08-00
Max Defl.	0.22"	n/a	n/a	35	04-08-00
Span / Depth	11.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	4542 lbs	27.8%	30.4%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 3-1/2"	3786 lbs	23.2%	25.3%	Spruce-Pine-Fir

Notes

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

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

Calculations assume unbraced length of Top: 01-02-05, Bottom: 01-02-05.

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

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. TAM B737 -21
STRUCTURAL
COMPONENT ONLY



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

PASSED

2ND FLR FRAMING\Dropped Beams\B15 DR(i33326) (Dropped Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B15 DR(i33326)

City, Province, Postal Code: RICHMOND HILL

Specifier:

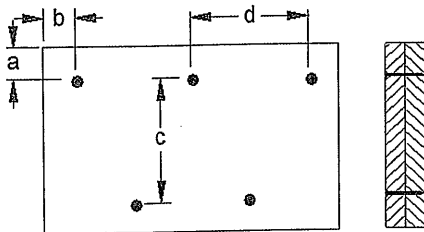
Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 5-1/2"

b minimum = 3"

d = 3"

Connectors are: 1... Nails

3 1/2" ARDUX SPIRAL



DWG NO. TAM B137-21

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®,

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Dropped Beams\B16 DR(i33810) (Dropped Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B16 DR(i33810)

City, Province, Postal Code: RICHMOND HILL

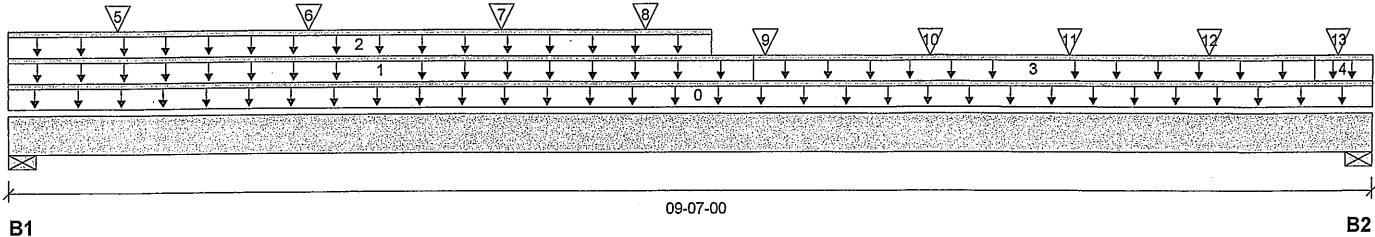
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1394 / 0	1396 / 0	630 / 0	
B2, 3-1/2"	1557 / 0	1432 / 0	635 / 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	09-07-00	Top		10			00-00-00
1	R1(i33767)	Unf. Lin. (lb/ft)	L	00-00-00	05-02-00	Top		81			n/a
2	R1(i33767)	Unf. Lin. (lb/ft)	L	00-00-00	04-10-08	Top		60	132		n/a
3	R1(i33767)	Unf. Lin. (lb/ft)	L	05-02-00	09-02-00	Top		41			n/a
4	R1(i33767)	Unf. Lin. (lb/ft)	L	09-02-00	09-07-00	Top		81			n/a
5	J2(i33782)	Conc. Pt. (lbs)	L	00-09-00	00-09-00	Top	399	200			n/a
6	J2(i33592)	Conc. Pt. (lbs)	L	02-01-00	02-01-00	Top	399	200			n/a
7	J2(i33593)	Conc. Pt. (lbs)	L	03-05-00	03-05-00	Top	350	175			n/a
8	J2(i33642)	Conc. Pt. (lbs)	L	04-05-00	04-05-00	Top	300	150			n/a
9	-	Conc. Pt. (lbs)	L	05-02-15	05-02-15	Top	300	323	304		n/a
10	J2(i33849)	Conc. Pt. (lbs)	L	06-05-00	06-05-00	Top	300	150			n/a
11	J2(i33775)	Conc. Pt. (lbs)	L	07-05-00	07-05-00	Top	200	100			n/a
12	J2(i33750)	Conc. Pt. (lbs)	L	08-05-00	08-05-00	Top	403	201			n/a
13	-	Conc. Pt. (lbs)	L	09-04-00	09-04-00	Top	300	321	317		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	9750 ft-lbs	23220 ft-lbs	42.0%	1	04-05-00
End Shear	3761 lbs	11571 lbs	32.5%	1	01-01-00
Total Load Deflection	L/502 (0.218")	n/a	47.8%	35	04-09-02
Live Load Deflection	L/843 (0.13")	n/a	42.7%	51	04-09-02
Max Defl.	0.218"	n/a	n/a	35	04-09-02
Span / Depth	11.5				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	4465 lbs	27.3%	29.9%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 3-1/2"	4761 lbs	29.1%	31.9%	Spruce-Pine-Fir



UWB NO. FAM 8738-21
**STRUCTURAL
 COMPONENT ONLY**



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

PASSED

2ND FLR FRAMING\Dropped Beams\B16 DR(i33810) (Dropped Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B16 DR(i33810)

City, Province, Postal Code: RICHMOND HILL

Specifier:

Customer:

Designer: L.D.

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.

CONFORMS TO OBC 2012

Calculations assume unbraced length of Top: 01-02-05, Bottom: 01-02-05.

AMENDED 2020

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

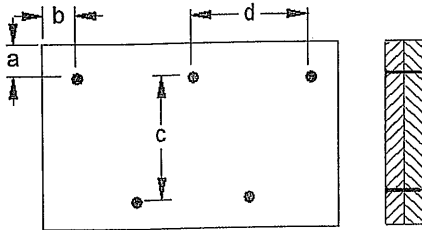
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

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

Connection Diagram: Full Length of Member



a minimum = 2"

c = 5-1/2"

b minimum = 3"

d = 2 1/4"

Connectors are: 1 Nails

3 1/2" ARDUX SPIRAL



OWN NO. TAM 8738-21
STRUCTURAL
COMPONENT ONLY

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BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

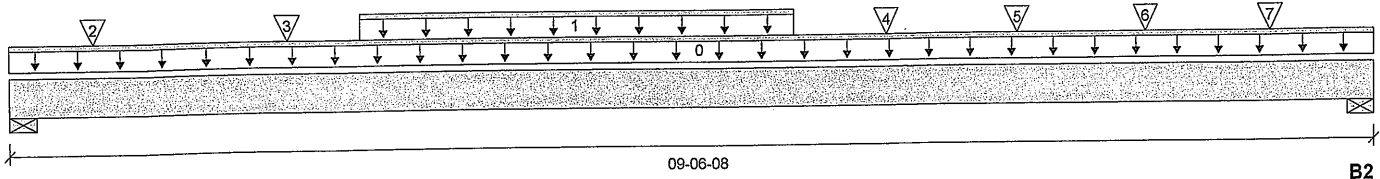
File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Description: 2ND FLR FRAMING\Dropped Beams\B9 DR(i33311)

Specifier:

Designer: L.D.

Company:



B1 Total Horizontal Product Length = 09-06-08 B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	2112 / 0	1131 / 0		
B2, 5-1/2"	2784 / 0	1490 / 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	09-06-08	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	02-05-00	05-05-00	Top	297	150			n/a
2	J2(i33592)	Conc. Pt. (lbs)	L	00-07-00	00-07-00	Top	388	194			n/a
3	J2(i33593)	Conc. Pt. (lbs)	L	01-11-00	01-11-00	Top	340	170			n/a
4	-	Conc. Pt. (lbs)	L	06-00-11	06-00-11	Top	1868	1006			n/a
5	-	Conc. Pt. (lbs)	L	07-00-01	07-00-01	Top	527	264			n/a
6	J2(i33822)	Conc. Pt. (lbs)	L	07-11-00	07-11-00	Top	291	146			n/a
7	-	Conc. Pt. (lbs)	L	08-09-11	08-09-11	Top	435	218			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	13778 ft-lbs	23220 ft-lbs	59.3%	1	06-00-14
End Shear	5424 lbs	11571 lbs	46.9%	1	08-03-08
Total Load Deflection	L/413 (0.259")	n/a	58.1%	4	04-11-00
Live Load Deflection	L/635 (0.168")	n/a	56.7%	5	04-11-00
Max Defl.	0.259"	n/a	n/a	4	04-11-00
Span / Depth	11.3				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	4581 lbs	28.0%	30.7%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	6039 lbs	23.5%	25.7%	Spruce-Pine-Fir

Notes

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

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

Calculations assume unbraced length of Top: 01-01-08, Bottom: 01-01-08.

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

CONFORMS TO OBC 2012

AMENDED 2020



OWN NO. FAM 8739-21
**STRUCTURAL
 COMPONENT ONLY**



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

PASSED

2ND FLR FRAMING\Dropped Beams\B9 DR(i33311) (Dropped Beam)

Dry | 1 span | No cant.

September 3, 2020 08:33:58

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

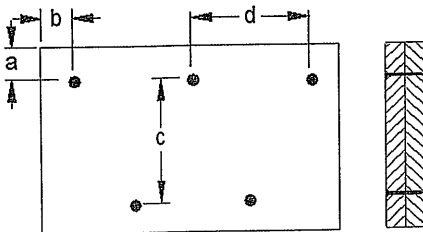
Description: 2ND FLR FRAMING\Dropped Beams\B9 DR(i33311)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

c = 5-1/2"

d = 20"

Connectors are: 1 Nails

3/2" ARDOX SPIRAL



UWB NO. TAM 8739 -21
STRUCTURAL
COMPONENT ONLY

Disclosure

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BC CALC® Member Report

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B10(i33830)

City, Province, Postal Code: RICHMOND HILL

Specifier:

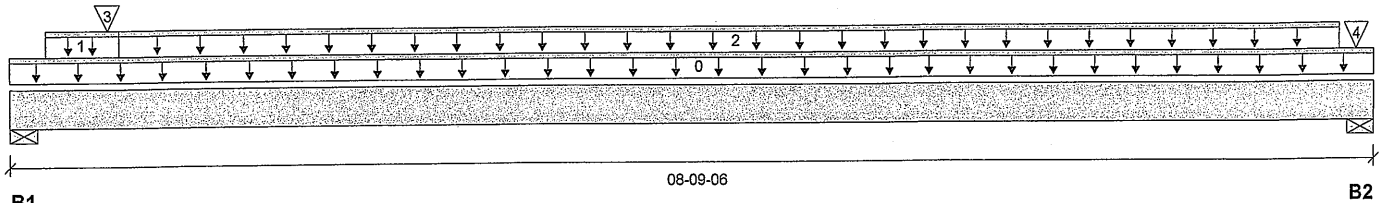
Customer:

Designer: L.D.

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 08-09-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	91 / 0	107 / 0		
B2, 2-3/4"	40 / 0	47 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-09-06	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-02-12	00-08-06	Top	10	5			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-08-06	08-06-10	Top	9	4			n/a
3	B23(i33778)	Conc. Pt. (lbs)	L	00-07-08	00-07-08	Top	54	62			n/a
4	FC3 Floor Material	Conc. Pt. (lbs)	L	08-08-00	08-08-00	Top	2	1			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	243 ft-lbs	17696 ft-lbs	1.4%	1	04-03-12
End Shear	123 lbs	7232 lbs	1.7%	1	01-05-06
Total Load Deflection	L/999 (0.004")	n/a	n/a	4	04-04-15
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	04-04-15
Max Defl.	0.004"	n/a	n/a	4	04-04-15
Span / Depth	8.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	271 lbs	4.6%	2.3%	Spruce-Pine-Fir
B2	Wall/Plate 2-3/4" x 1-3/4"	119 lbs	4.0%	2.0%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



UWG NO. 7AM 8740-21

STRUCTURAL

COMPONENT ONLY

Disclosure

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

BC CALC® Member Report

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B11(i33266)

City, Province, Postal Code: RICHMOND HILL

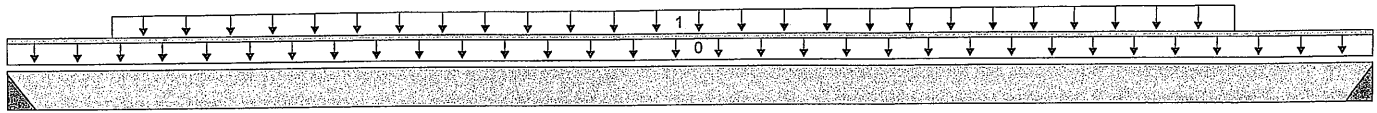
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



B1 04-10-06 B2
Total Horizontal Product Length = 04-10-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	245 / 0	153 / 0		
B2, 2"	225 / 0	141 / 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	04-10-06	Top		12			00-00-00
1	Smoothed Load	Trapezoidal (lb/ft)	L	00-04-06	04-04-06	Top	107	54			n/a
							128	64			

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	710 ft-lbs	35392 ft-lbs	2.0%	1	02-04-06
End Shear	495 lbs	14464 lbs	3.4%	1	03-08-08
Total Load Deflection	L/999 (0.002")	n/a	n/a	4	02-06-06
Live Load Deflection	L/999 (0.001")	n/a	n/a	5	02-06-06
Max Defl.	0.002"	n/a	n/a	4	02-06-06
Span / Depth	4.5				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Hanger	4" x 3-1/2"	559 lbs	n/a	3.3%	HGUS410
B2 Hanger	2" x 3-1/2"	513 lbs	n/a	6.0%	HUC412

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 11-7/8" LVL Beam.
Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.
Header for the hanger HUC412 is a Double 1-3/4" x 11-7/8" LVL Beam.
Hanger model HUC412 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

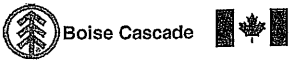
Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume member is fully braced.
Hanger Manufacturer: Unassigned
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis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

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. FAM B741 -21
STRUCTURAL
COMPONENT ONLY



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

PASSED

2ND FLR FRAMING\Flush Beams\B11(i33266) (Flush Beam)

Dry | 1 span | No cant.

September 3, 2020 08:33:58

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

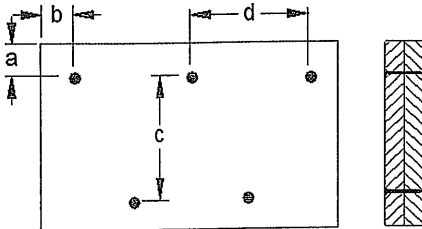
Description: 2ND FLR FRAMING\Flush Beams\B11(i33266)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

b minimum = 3"

c = 7-7/8"

d = 8"

Calculated Side Load = 176.4 lb/ft

Connectors are: 1 Nails

3 1/2" ARDOX SPIRAL



OWN NO. TAM B741-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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BC CALC® Member Report

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B12(i33774)

City, Province, Postal Code: RICHMOND HILL

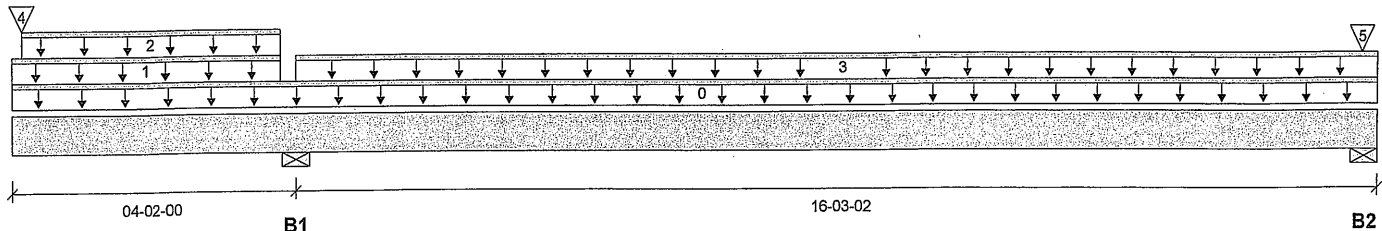
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1513 / 0	946 / 0		
B2, 5-1/2"	167 / 185	118 / 0	39 / 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	20-05-02	Top		12			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-11-04	Top	29	15			n/a
2	STAIRS	Unf. Lin. (lb/ft)	L	00-01-12	03-11-04	Top	216	108			n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	04-02-00	20-05-02	Top	20	10			n/a
4	B11(i33266)	Conc. Pt. (lbs)	L	00-01-12	00-01-12	Top	233	146			n/a
5	E55(i3200)	Conc. Pt. (lbs)	L	20-02-06	20-02-06	Top		41	39		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	908 ft-lbs	35392 ft-lbs	2.6%	3	14-06-04
Neg. Moment	-6510 ft-lbs	-35392 ft-lbs	18.4%	1	04-02-00
End Shear	263 lbs	14464 lbs	1.8%	3	18-11-12
Cont. Shear	2367 lbs	14464 lbs	16.4%	1	02-11-06
Total Load Deflection	2xL/521 (0.192")	n/a	46.0%	79	00-00-00
Live Load Deflection	2xL/721 (0.139")	n/a	50.0%	117	00-00-00
Total Neg. Defl.	L/999 (-0.101")	n/a	n/a	79	10-05-13
Max Defl.	-0.101"	n/a	n/a	79	10-05-13
Span / Depth	16.0				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	3451 lbs	29.1%	14.7%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	436 lbs	3.7%	1.9%	Spruce-Pine-Fir
B2	Uplift	171 lbs			

Cautions

Uplift of 171 lbs found at bearing B2. *CSIMPSON 2-H2-SA @ RS B1 + B2).*



DWG NO. TAM B742-21
STRUCTURAL
COMPONENT ONLY



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

2ND FLR FRAMING\Flush Beams\B12(i33774) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

Dry | 2 spans | L cant.

September 3, 2020 08:33:58

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

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B12(i33774)
Specifier:
Designer: L.D.
Company:

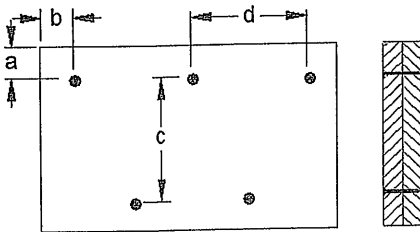
Notes

Design meets User specified (2xL/240) Total load deflection criteria.
Design meets User specified (2xL/360) Live load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 7-7/8"
d = 8"

Calculated Side Load = 266.0 lb/ft

Connectors are: 1 Nails

3 1/2" ARDOX SPIRAL



ENG NO. TAM 8742-21

**STRUCTURAL
COMPONENT ONLY**

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BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B13(i33325)

City, Province, Postal Code: RICHMOND HILL

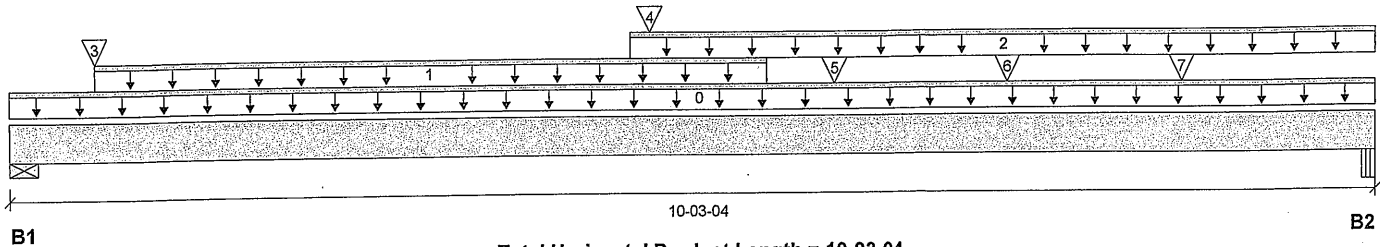
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1857 / 0	1042 / 0		
B2, 1-3/4"	1669 / 0	908 / 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	10-03-04	Top		12			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-07-08	05-07-08	Top	348	174			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	04-07-06	10-03-04	Top	24	12			n/a
3	B23(i33778)	Conc. Pt. (lbs)	L	00-07-08	00-07-08	Top	54	62			n/a
4	B11(i33266)	Conc. Pt. (lbs)	L	04-09-02	04-09-02	Top	237	148			n/a
5	J1(i33617)	Conc. Pt. (lbs)	L	06-01-08	06-01-08	Top	403	201			n/a
6	J1(i33737)	Conc. Pt. (lbs)	L	07-05-08	07-05-08	Top	460	230			n/a
7	J1(i33826)	Conc. Pt. (lbs)	L	08-09-08	08-09-08	Top	481	240			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	10674 ft-lbs	35392 ft-lbs	30.2%	1	05-01-08
End Shear	3676 lbs	14464 lbs	25.4%	1	01-05-06
Total Load Deflection	L/901 (0.13")	n/a	26.6%	4	05-03-00
Live Load Deflection	L/999 (0.085")	n/a	n/a	5	05-03-00
Max Defl.	0.13"	n/a	n/a	4	05-03-00
Span / Depth	9.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	4088 lbs	34.5%	17.4%	Spruce-Pine-Fir
B2	Beam 1-3/4" x 3-1/2"	3638 lbs	48.7%	48.7%	VL 2.0 3100 SP

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



046 NO. 7AM 8713 -21
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B13(i33325) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B13(i33325)

City, Province, Postal Code: RICHMOND HILL

Specifier:

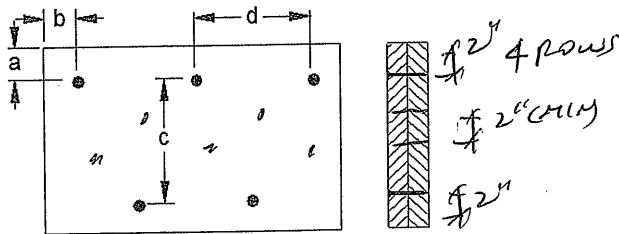
Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 7-7/8"

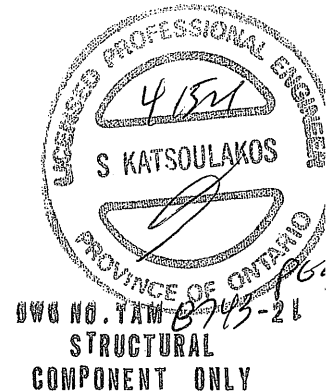
b minimum = 3"

d = 8"

Calculated Side Load = 916.6 lb/ft

Connectors are: 1 Nails

3/4" ARDOX SPIRAL



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

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B17(i33695)

City, Province, Postal Code: RICHMOND HILL

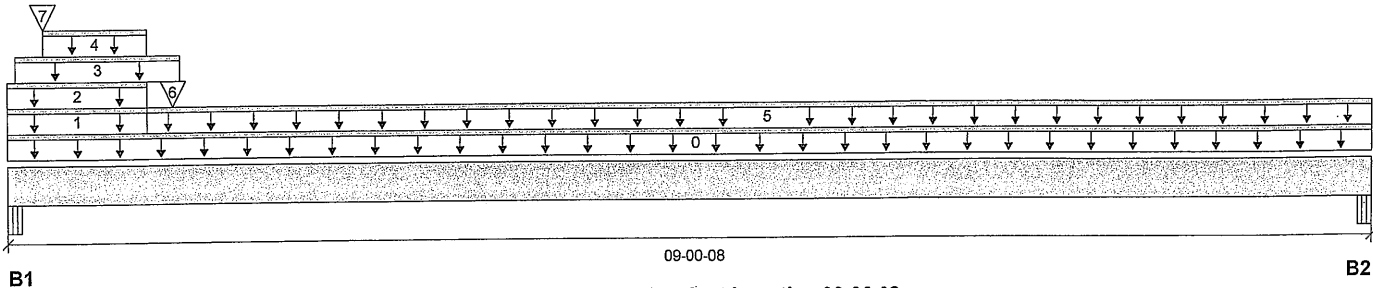
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 09-00-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	537 / 0	1034 / 0	879 / 0	
B2, 2-1/4"	153 / 0	185 / 0	70 / 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	09-00-08	Top		12			00-00-00
1	E43(i937)	Unf. Lin. (lb/ft)	L	00-00-00	00-11-00	Top		81			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-11-00	Top	18				n/a
3	ROOF	Unf. Lin. (lb/ft)	L	00-00-10	01-01-10	Top	33	30	78		n/a
4	E43(i937)	Unf. Lin. (lb/ft)	L	00-02-12	00-11-00	Top		45	99		n/a
5	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-11-00	09-00-08	Top	27	13			n/a
6	-	Conc. Pt. (lbs)	L	01-01-01	01-01-01	Top	420	841	767		n/a
7	E43(i937)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		14	30		n/a

Controls Summary

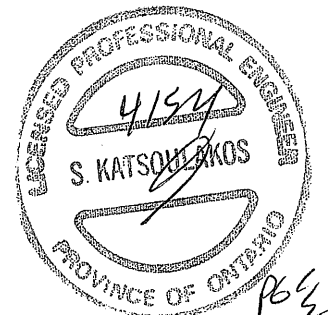
	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1971 ft-lbs	35392 ft-lbs	5.6%	13	01-01-12
End Shear	2005 lbs	14464 lbs	13.9%	13	01-05-02
Total Load Deflection	L/999 (0.019")	n/a	n/a	35	04-02-15
Live Load Deflection	L/999 (0.011")	n/a	n/a	51	04-02-15
Max Defl.	0.019"	n/a	n/a	35	04-02-15
Span / Depth	8.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	3149 lbs	32.1%	14.0%	Unspecified
B2 Beam	2-1/4" x 3-1/2"	530 lbs	12.6%	5.5%	Unspecified

Cautions

Concentrated side load(s) 19 are closer than 18" from end of member. Please consult a technical representative or Professional of Record.



OWN NO. YAM B744 -21
STRUCTURAL
COMPONENT ONLY

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B17(i33695)

City, Province, Postal Code: RICHMOND HILL

Specifier:

Customer:

Designer: L.D.

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.

Calculations assume member is fully braced.

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

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

Unbalanced snow loads determined from building geometry were used in selected product's verification.

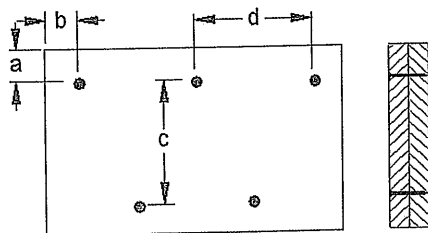
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 8"

Calculated Side Load = 261.0 lb/ft

Connectors are:

3 1/2" ARDOX SPIRAL



OWN NO. YAW B744-21

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®,

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B18(i33713) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B18(i33713)

City, Province, Postal Code: RICHMOND HILL

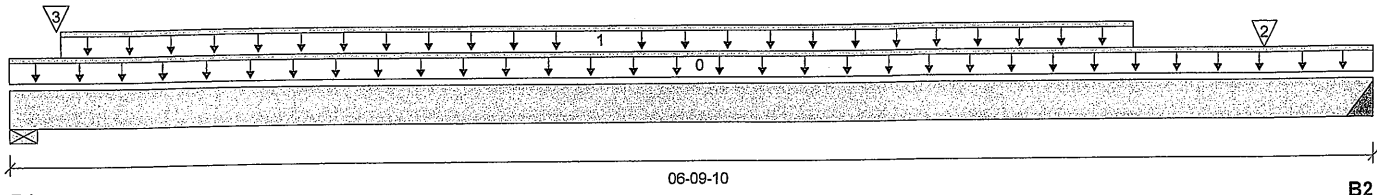
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 06-09-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	700 / 0	409 / 0		
B2, 3"	676 / 0	359 / 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	06-09-10	Top		6			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-03-00	05-07-00	Top	217	109			n/a
2	J3(i33613)	Conc. Pt. (lbs)	L	06-03-00	06-03-00	Top	220	110			n/a
3	E82(i18743)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		37			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2326 ft-lbs	17696 ft-lbs	13.1%	1	03-07-00
End Shear	1175 lbs	7232 lbs	16.2%	1	01-05-06
Total Load Deflection	L/999 (0.023")	n/a	n/a	4	03-06-00
Live Load Deflection	L/999 (0.015")	n/a	n/a	5	03-06-00
Max Defl.	0.023"	n/a	n/a	4	03-06-00
Span / Depth	6.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	1562 lbs	26.4%	13.3%	Spruce-Pine-Fir
B2	Hanger 3" x 1-3/4"	1462 lbs	n/a	22.8%	HUS1.81/10

Cautions

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



DWO NO. TAM B745-21

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®,

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B19(i33687)

City, Province, Postal Code: RICHMOND HILL

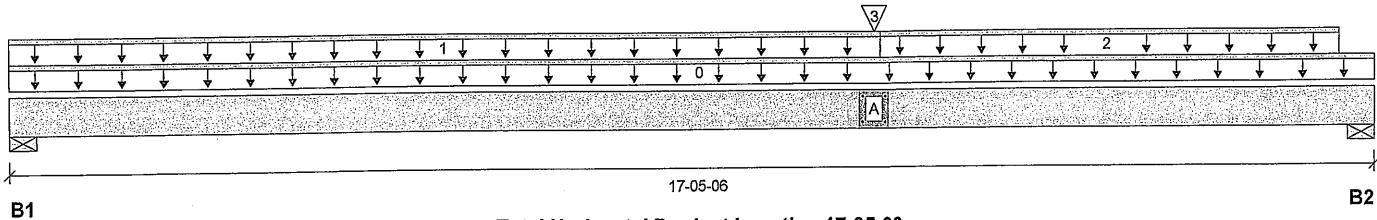
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 17-05-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	460 / 0	341 / 0		
B2, 5-1/2"	590 / 0	412 / 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	17-05-06	Top		12			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-11-14	Top	27	13			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	10-11-14	16-11-14	Top	16	8			n/a
3	B18(i33713)	Conc. Pt. (lbs)	L	10-11-00	10-11-00	Top	658	347			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7586 ft-lbs	35392 ft-lbs	21.4%	1	10-11-00
End Shear	1334 lbs	14464 lbs	9.2%	1	16-00-00
Total Load Deflection	L/826 (0.243")	n/a	29.1%	4	09-01-08
Live Load Deflection	L/1378 (0.146")	n/a	26.1%	5	09-01-08
Max Defl.	0.243"	n/a	n/a	4	09-01-08
Span / Depth	16.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 3-1/2"	1117 lbs	11.9%	6.0%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	1401 lbs	11.8%	6.0%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

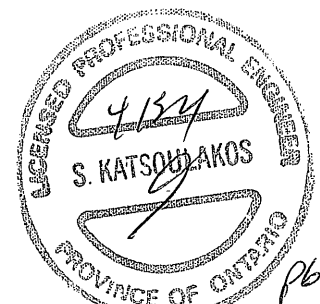
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. 14MB746-21
**STRUCTURAL
 COMPONENT ONLY**



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B19(i33687) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

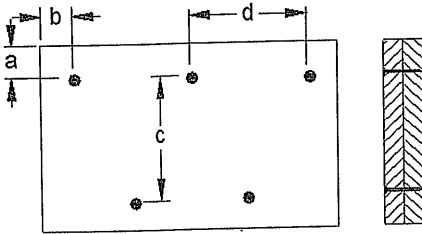
Description: 2ND FLR FRAMING\Flush Beams\B19(i33687)

Specifier:

Designer: L.D.

Company:

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"

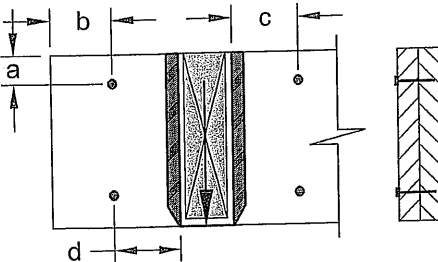
c = 7-7/8"
d = 8"

Connectors are: 16d Nails

Connection Diagrams: Concentrated Side Loads

Connection Tag: A

Applies to load tag(s): 2



a minimum = 2"
b minimum = 4"
c minimum = 4"
d maximum = 12"

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL



VERA NO. TAM 8746-21
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®,

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Flush Beams\B21(i33488) (Flush Beam)**

Dry | 1 span | No cant.

September 3, 2020 08:33:58

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

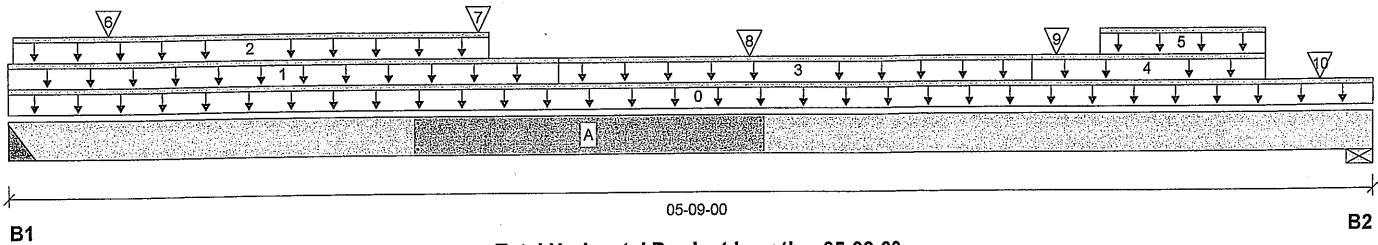
File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B21(i33488)

Specifier:

Designer: L.D.

Company:

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

Bearing	Live	Dead	Snow	Wind
B1, 4"	452 / 0	639 / 0	370 / 0	
B2, 5-1/2"	355 / 0	561 / 0	325 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-09-00	Top		12			00-00-00
1	E91(i26170)	Unf. Lin. (lb/ft)	L	00-00-00	02-03-08	Top		81			n/a
2	E91(i26170)	Unf. Lin. (lb/ft)	L	00-00-04	02-00-00	Top		60	132		n/a
3	E90(i26169)	Unf. Lin. (lb/ft)	L	02-03-08	04-03-08	Top		41			n/a
4	E75(i3228)	Unf. Lin. (lb/ft)	L	04-03-08	05-03-08	Top		81			n/a
5	E75(i3228)	Unf. Lin. (lb/ft)	L	04-07-00	05-03-08	Top		60	132		n/a
6	J5(i33805)	Conc. Pt. (lbs)	L	00-05-00	00-05-00	Top	158	79			n/a
7	-	Conc. Pt. (lbs)	L	01-11-08	01-11-08	Top	222	210	174		n/a
8	J5(i33786)	Conc. Pt. (lbs)	L	03-01-00	03-01-00	Top	222	111			n/a
9	-	Conc. Pt. (lbs)	L	04-04-12	04-04-12	Top	205	198	167		n/a
10	E41(i933)	Conc. Pt. (lbs)	L	05-06-04	05-06-04	Top		24			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1987 ft-lbs	35392 ft-lbs	5.6%	1	03-01-00
End Shear	1335 lbs	14464 lbs	9.2%	1	04-03-10
Total Load Deflection	L/999 (0.008")	n/a	n/a	35	02-09-07
Live Load Deflection	L/999 (0.004")	n/a	n/a	51	02-09-07
Max Defl.	0.008"	n/a	n/a	35	02-09-07
Span / Depth	5.1				

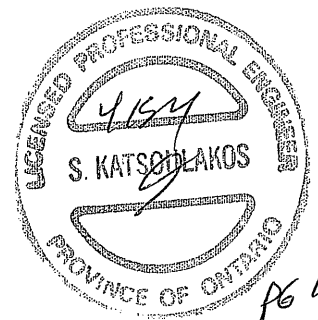
Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 4" x 3-1/2"	1848 lbs	n/a	10.8%	HGUS410
B2	Wall/Plate 5-1/2" x 3-1/2"	1559 lbs	13.2%	6.6%	Spruce-Pine-Fir

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 11-7/8" LVL Beam.

Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



DWG NO. TAM B747-21
STRUCTURAL
COMPONENT ONLY



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

2ND FLR FRAMING\Flush Beams\B21(i33488) (Flush Beam)

Dry | 1 span | No cant.

PASSED

September 3, 2020 08:33:58

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B21(i33488)

Specifier:

Designer: L.D.

Company:

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Unbalanced snow loads determined from building geometry were used in selected product's verification.

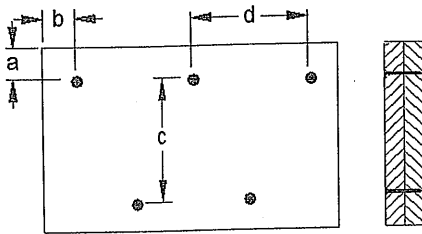
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"

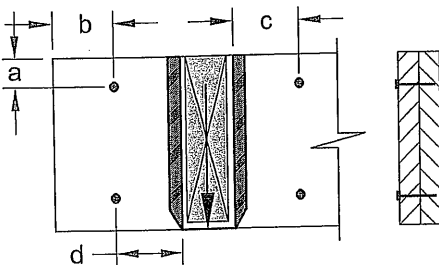
c = 7-7/8"
d = 8"

Calculated Side Load = 218.1 lb/ft

Connectors are: 3 1/2" ARDOX SPIRAL Nails

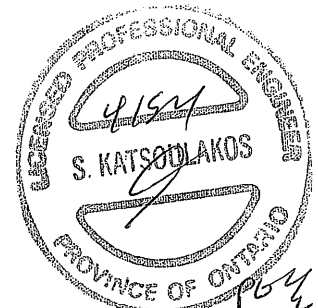
Connection Diagrams: Concentrated Side Loads

Connection Tag: A Applies to load tag(s): 8+15



a minimum = 2"
b minimum = 4"
c minimum = 4"
d maximum = 12"
Connectors are:
Nails

3 1/2" ARDOX SPIRAL



OWO NO. 1 AM 8147-21
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®,

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:33:58

Build 7493

Job name:

File name: 4502 - EL A - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B23(i33778)

City, Province, Postal Code: RICHMOND HILL

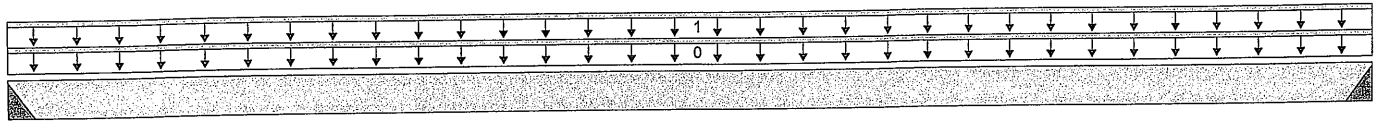
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



B1 11-07-00 B2
 Total Horizontal Product Length = 11-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	54 / 0	62 / 0		
B2, 2"	54 / 0	62 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-07-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-07-00	Top	9	5			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	445 ft-lbs	17696 ft-lbs	2.5%	1	05-09-06
End Shear	147 lbs	7232 lbs	2.0%	1	01-01-14
Total Load Deflection	L/999 (0.016")	n/a	n/a	4	05-09-06
Live Load Deflection	L/999 (0.007")	n/a	n/a	5	05-09-06
Max Defl.	0.016"	n/a	n/a	4	05-09-06
Span / Depth	11.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	2" x 1-3/4"	159 lbs	n/a	3.7%	HUS1.81/10
B2 Hanger	2" x 1-3/4"	159 lbs	n/a	3.7%	HUS1.81/10

Cautions

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

Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

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

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. YAM874B-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®,



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

PASSED

2ND FLR FRAMING\Dropped Beams\B16A DR(i32616) (Dropped Beam)

Dry | 1 span | No cant.

September 3, 2020 08:42:07

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: RICHMOND HILL

Customer:

Code reports: CCMC 12472-R

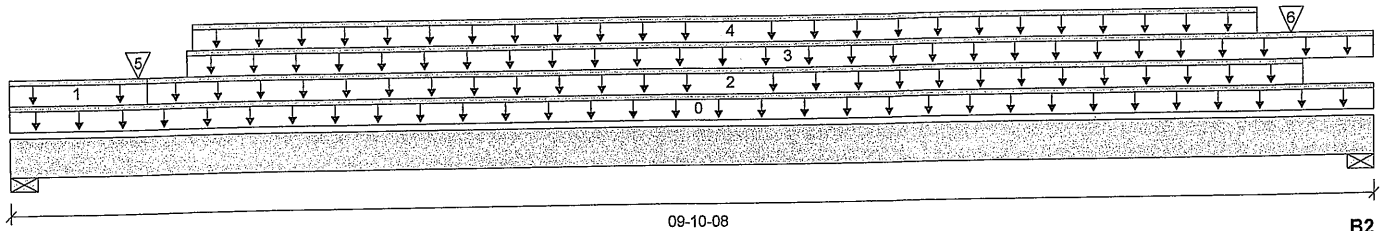
File name: 4502 - EL A - 5 BEDROOM OPTION.mmdl

Description: 2ND FLR FRAMING\Dropp...Beams\B16A DR(i32616)

Specifier:

Designer: L.D.

Company:



B1

Total Horizontal Product Length = 09-10-08

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-3/4"	1540 / 0	1569 / 0	780 / 0	
B2, 4-3/4"	1735 / 0	1723 / 0	853 / 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	09-10-08	Top		10			00-00-00
1	R1(i32656)	Unf. Lin. (lb/ft)	L	00-00-00	00-11-12	Top		41			n/a
2	R1(i32656)	Unf. Lin. (lb/ft)	L	00-11-12	09-04-04	Top		81			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	01-03-04	09-10-08	Top	342	172			n/a
4	R1(i32656)	Unf. Lin. (lb/ft)	L	01-03-12	09-00-04	Top		60	132		n/a
5	-	Conc. Pt. (lbs)	L	00-11-00	00-11-00	Top	327	337	305		n/a
6	R1(i32656)	Conc. Pt. (lbs)	L	09-03-04	09-03-04	Top		176	311		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	10803 ft-lbs	23220 ft-lbs	46.5%	1	04-09-04
End Shear	4436 lbs	11571 lbs	38.3%	1	01-03-04
Total Load Deflection	L/442 (0.247")	n/a	54.2%	35	05-00-04
Live Load Deflection	L/744 (0.147")	n/a	48.4%	51	05-00-04
Max Defl.	0.247"	n/a	n/a	35	05-00-04
Span / Depth	11.5				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-3/4" x 3-1/2"	5051 lbs	18.8%	20.6%	Spruce-Pine-Fir
B2	Wall/Plate 4-3/4" x 3-1/2"	5610 lbs	25.3%	27.7%	Spruce-Pine-Fir

Notes

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

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

Calculations assume unbraced length of Top: 00-10-11, Bottom: 00-10-11.

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

CONFORMS TO OBC 2012

AMENDED 2020



OWG NO. 1AM B749-21
STRUCTURAL
COMPONENT ONLY



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

PASSED

2ND FLR FRAMING\Dropped Beams\B16A DR(i32616) (Dropped Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:42:07

Build 7493

Job name:

File name: 4502 - EL A - 5 BEDROOM OPTION.mmdl

Address:

Description: 2ND FLR FRAMING\Dropp...Beams\B16A DR(i32616)

City, Province, Postal Code: RICHMOND HILL

Specifier:

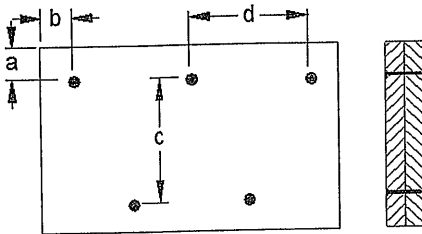
Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 5-1/2"

b minimum = 3"

d = 8"

Connectors are: 1 Nails

3 1/2" ARDOX SPIRAL



OWN NO. YAM B149-21
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®,



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

PASSED

2ND FLR FRAMING\Dropped Beams\B9A DR(i32637) (Dropped Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:42:07

Build 7493

Job name:

File name: 4502 - EL A - 5 BEDROOM OPTION.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B9A DR(i32637)

City, Province, Postal Code: RICHMOND HILL

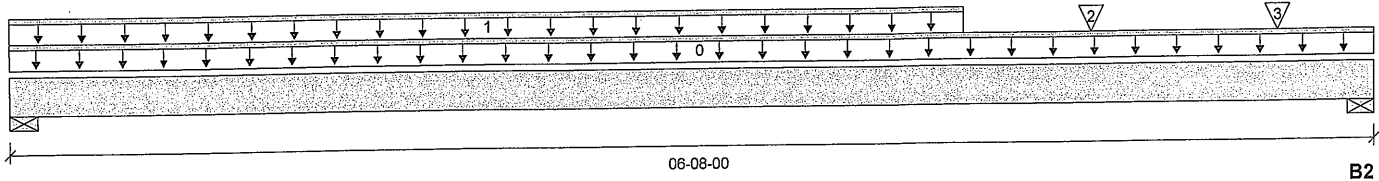
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



B1

B2

Total Horizontal Product Length = 06-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	1496 / 0	794 / 0		
B2, 4"	2450 / 0	1312 / 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	06-08-00	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	04-07-08	Top	350	176			n/a
2	-	Conc. Pt. (lbs)	L	05-03-02	05-03-02	Top	1746	940			n/a
3	-	Conc. Pt. (lbs)	L	06-02-04	06-02-04	Top	528	263			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5405 ft-lbs	23220 ft-lbs	23.3%	1	04-01-08
End Shear	4421 lbs	11571 lbs	38.2%	1	05-06-08
Total Load Deflection	L/999 (0.052")	n/a	n/a	4	03-06-05
Live Load Deflection	L/999 (0.034")	n/a	n/a	5	03-06-05
Max Defl.	0.052"	n/a	n/a	4	03-06-05
Span / Depth	7.7				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	3236 lbs	17.3%	18.9%	Spruce-Pine-Fir
B2	Wall/Plate 4" x 3-1/2"	5315 lbs	28.5%	31.1%	Spruce-Pine-Fir

Notes

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

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

Calculations assume unbraced length of Top: 00-10-12, Bottom: 00-10-12.

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

CONFORMS TO OBC 2012

AMENDED 2020



OWN NO. FAM8750 -21
STRUCTURAL
COMPONENT ONLY



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

PASSED

2ND FLR FRAMING\Dropped Beams\B9A DR(i32637) (Dropped Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 08:42:07

Build 7493

Job name:

File name: 4502 - EL A - 5 BEDROOM OPTION.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B9A DR(i32637)

City, Province, Postal Code: RICHMOND HILL

Specifier:

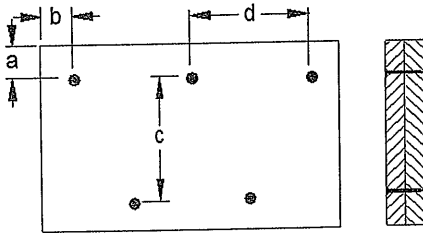
Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

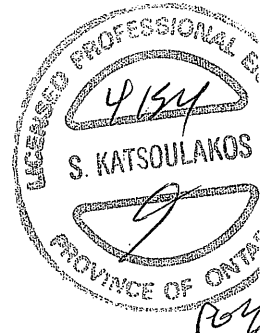
b minimum = 3"

c = 5-1/2"

d = 8"

Connectors are: 3-1

3 1/2" ARDUX SPIRAL Nails



OWN NO. YAM 8750-2 L
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.

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BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 12:15:41

Build 7493

Job name:

File name: 4502 - EL B - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B17E(i33214)

City, Province, Postal Code: RICHMOND HILL

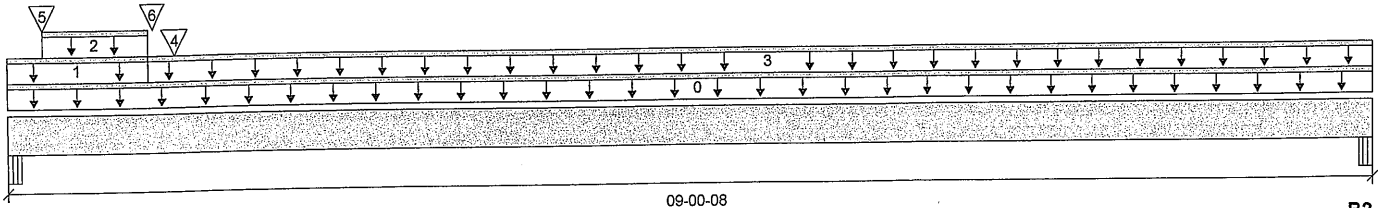
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



B1

Total Horizontal Product Length = 09-00-08

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	432 / 0	880 / 0	763 / 0	
B2, 2-1/4"	145 / 0	173 / 0	64 / 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	09-00-08	Top		12			00-00-00
1	E99(i33030)	Unf. Lin. (lb/ft)	L	00-00-00	00-11-00	Top		81			n/a
2	E99(i33030)	Unf. Lin. (lb/ft)	L	00-02-12	00-11-00	Top		45	99		n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-11-00	09-00-08	Top	27	13			n/a
4	-	Conc. Pt. (lbs)	L	01-01-02	01-01-02	Top	338	696	675		n/a
5	E99(i33030)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		14	30		n/a
6	ROOF	Conc. Pt. (lbs)	L	00-11-06	00-11-06	Top	23	14	54		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1736 ft-lbs	35392 ft-lbs	4.9%	13	01-02-10
End Shear	1721 lbs	14464 lbs	11.9%	13	01-05-02
Total Load Deflection	L/999 (0.017")	n/a	n/a	35	04-02-15
Live Load Deflection	L/999 (0.01")	n/a	n/a	51	04-02-15
Max Defl.	0.017"	n/a	n/a	35	04-02-15
Span / Depth	8.6				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	2676 lbs	27.3%	11.9%	Unspecified
B2 Beam	2-1/4" x 3-1/2"	498 lbs	11.9%	5.2%	Unspecified

Cautions

Concentrated side load(s) 24 are closer than 18" from end of member. Please consult a technical representative or Professional of Record.

0169





Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B17E(i33214) (Flush Beam)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 12:15:41

Build 7493

Job name:

File name: 4502 - EL B - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B17E(i33214)

City, Province, Postal Code: RICHMOND HILL

Specifier:

Customer:

Designer: L.D.

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.

Calculations assume member is fully braced.

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

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

Unbalanced snow loads determined from building geometry were used in selected product's verification.

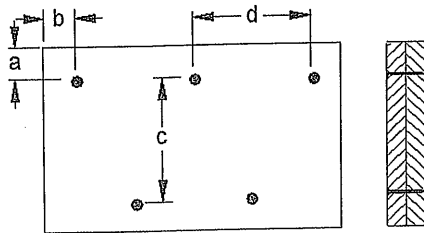
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"

c = 7-7/8"
d = 3"

Calculated Side Load = 192.0 lb/ft

Connectors are: 3 1/2" ARDUX SPIRAL Nails



4502 NO. 2ND FLR B17E - 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®,

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 12:15:41

Build 7493

Job name:

File name: 4502 - EL B - STD GRD ...ROOM - 2ND FLOOR.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B21 E(i33374)

City, Province, Postal Code: RICHMOND HILL

Specifier:

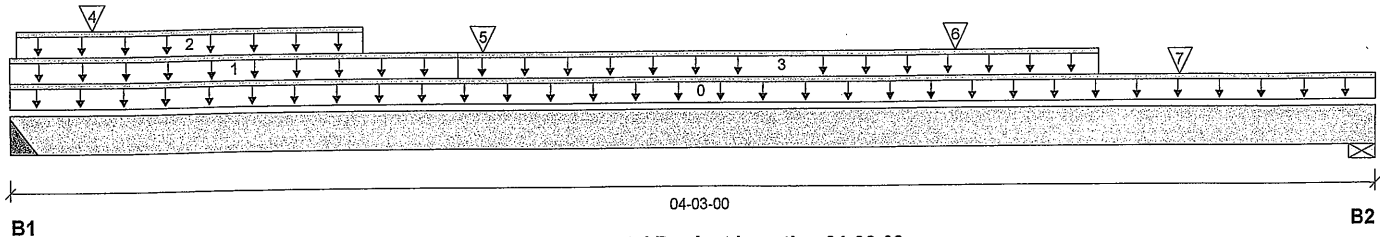
Customer:

Designer: L.D.

Code reports:

CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	338 / 0	466 / 0	269 / 0	
B2, 5-1/2"	233 / 0	429 / 0	267 / 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	04-03-00	Top		12			00-00-00
1	E98(i33032)	Unf. Lin. (lb/ft)	L	00-00-00	01-04-08	Top		81			n/a
2	E98(i33032)	Unf. Lin. (lb/ft)	L	00-00-04	01-01-00	Top		60	132		n/a
3	E97(i33040)	Unf. Lin. (lb/ft)	L	01-04-08	03-04-08	Top		41			n/a
4	J5(i33276)	Conc. Pt. (lbs)	L	00-03-00	00-03-00	Top	144	72			n/a
5	-	Conc. Pt. (lbs)	L	01-05-07	01-05-07	Top	222	210	174		n/a
6	J5(i33273)	Conc. Pt. (lbs)	L	02-11-00	02-11-00	Top	205	103			n/a
7	-	Conc. Pt. (lbs)	L	03-07-10	03-07-10	Top		202	222		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	935 ft-lbs	35392 ft-lbs	2.6%	1	01-07-00
End Shear	840 lbs	14464 lbs	5.8%	13	01-03-14
Total Load Deflection	L/999 (0.002")	n/a	n/a	35	02-00-08
Live Load Deflection	L/999 (0.001")	n/a	n/a	51	02-00-08
Max Defl.	0.002"	n/a	n/a	35	02-00-08
Span / Depth	3.6				

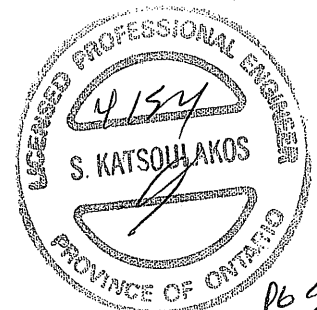
Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 4" x 3-1/2"	1360 lbs	n/a	8.0%	HGUS410
B2	Wall/Plate 5-1/2" x 3-1/2"	1169 lbs	9.9%	5.0%	Spruce-Pine-Fir

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 11-7/8" LVL Beam.

Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



OWB NO. TAM8752-21
**STRUCTURAL
 COMPONENT ONLY**



Boise Cascade



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

2ND FLR FRAMING\Flush Beams\B21 E(i33374) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

September 3, 2020 12:15:41

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

File name: 4502 - EL B - STD GRD ...ROOM - 2ND FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B21 E(i33374)
Specifier:
Designer: L.D.
Company:

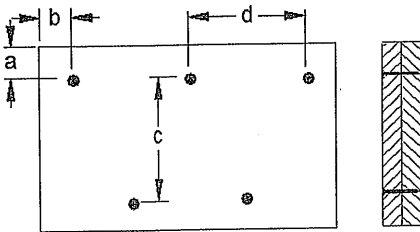
Notes

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

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 7-7/8"
d = 8"

Calculated Side Load = 235.9 lb/ft

Connectors are: 1 - Nails

3/8" ARDOX SPIRAL

OWN NO. TAM 8752-21

**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



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

2ND FLR FRAMING\Flush Beams\B23 E(i33293) (Flush Beam)

PASSED

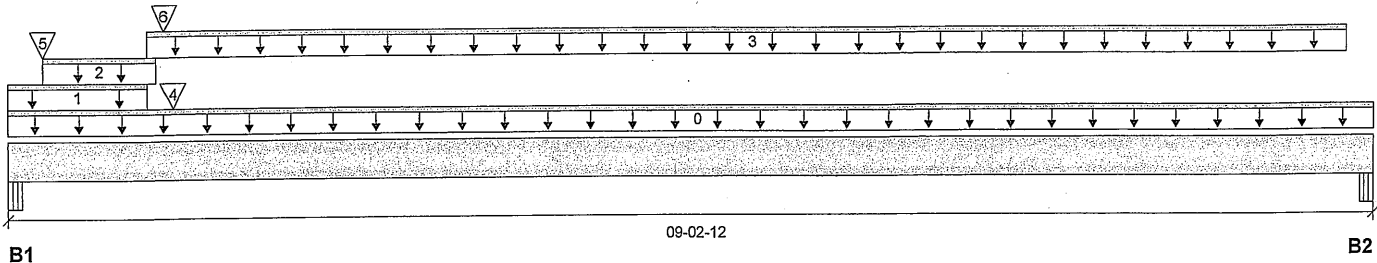
BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

September 3, 2020 12:15:41

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

File name: 4502 - EL B - STD GRD ...ROOM - 2ND FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B23 E(i33293)
Specifier:
Designer: L.D.
Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	421 / 0	833 / 0	728 / 0	
B2, 4-1/2"	146 / 0	172 / 0	61 / 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	09-02-12	Top		12			00-00-00
1	E101(i33036)	Unf. Lin. (lb/ft)	L	00-00-00	00-11-00	Top		81			n/a
2	E101(i33036)	Unf. Lin. (lb/ft)	L	00-02-12	00-11-12	Top		45	99		n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-11-00	09-00-08	Top	27	14			n/a
4	-	Conc. Pt. (lbs)	L	01-01-02	01-01-02	Top	340	655	667		n/a
5	E101(i33036)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		14	30		n/a
6	ROOF	Conc. Pt. (lbs)	L	01-00-07	01-00-07	Top	8		18		n/a

Controls Summary

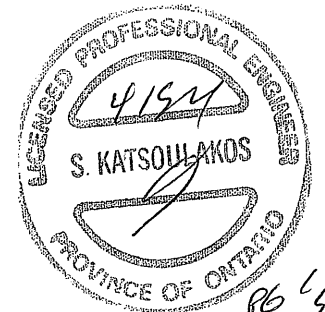
	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1661 ft-lbs	35392 ft-lbs	4.7%	13	01-05-02
End Shear	1661 lbs	14464 lbs	11.5%	13	01-05-02
Total Load Deflection	L/999 (0.017")	n/a	n/a	35	04-02-15
Live Load Deflection	L/999 (0.009")	n/a	n/a	51	04-02-15
Max Defl.	0.017"	n/a	n/a	35	04-02-15
Span / Depth	8.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Beam	5-1/4" x 3-1/2"	2554 lbs	26.0%	11.4%	Unspecified
B2 Beam	4-1/2" x 3-1/2"	496 lbs	5.9%	2.6%	Unspecified

Cautions

Concentrated side load(s) 18 are closer than 18" from end of member. Please consult a technical representative or Professional of Record.



OWN NO. TAM B753 -21
STRUCTURAL
COMPONENT ONLY



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

2ND FLR FRAMING\Flush Beams\B23 E(i33293) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

September 3, 2020 12:15:41

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

File name: 4502 - EL B - STD GRD ...ROOM - 2ND FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B23 E(i33293)
Specifier:
Designer: L.D.
Company:

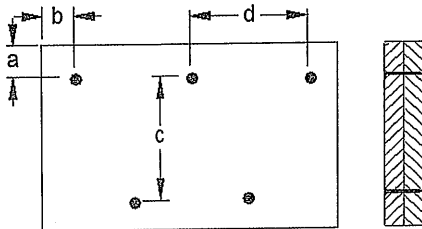
Notes

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

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



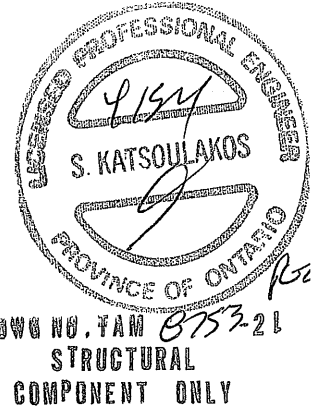
a minimum = 2"
b minimum = 3"

c = 7-7/8"
d = 7-7/8"

Calculated Side Load = 190.5 lb/ft

Connectors are: 1 Nails

3 1/2" ARDOX SPIRAL



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®, AJST™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

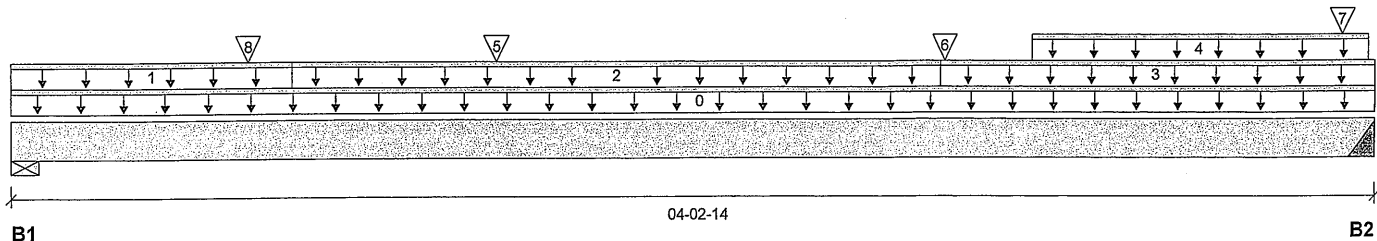
BC CALCO® Member Report
 Build 7493

Dry | 1 span | No cant.

September 3, 2020 12:15:41

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

File name: 4502 - EL B - STD GRD ...ROOM - 2ND FLOOR.mmdl
 Description: 2ND FLR FRAMING\Flush Beams\B24 E(i33279)
 Specifier:
 Designer: L.D.
 Company:



Total Horizontal Product Length = 04-02-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	222 / 0	397 / 0	245 / 0	
B2, 4"	354 / 0	479 / 0	273 / 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	04-02-14	Top		12			00-00-00
1	E105(i33037)	Unf. Lin. (lb/ft)	L	00-00-00	00-10-06	Top		81			n/a
2	E103(i33039)	Unf. Lin. (lb/ft)	L	00-10-06	02-10-06	Top		41			n/a
3	E102(i33038)	Unf. Lin. (lb/ft)	L	02-10-06	04-02-14	Top		81			n/a
4	E102(i33038)	Unf. Lin. (lb/ft)	L	03-01-14	04-02-10	Top		60	132		n/a
5	J5(i33260)	Conc. Pt. (lbs)	L	01-05-14	01-05-14	Top	226	113			n/a
6	-	Conc. Pt. (lbs)	L	02-10-09	02-10-09	Top	220	205	167		n/a
7	J5(i33188)	Conc. Pt. (lbs)	L	04-01-10	04-01-10	Top	130	65			n/a
8	-	Conc. Pt. (lbs)	L	00-08-12	00-08-12	Top		111	211		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	960 ft-lbs	35392 ft-lbs	2.7%	1	02-09-14
End Shear	900 lbs	14464 lbs	6.2%	1	02-11-00
Total Load Deflection	L/999 (0.002")	n/a	n/a	35	02-01-14
Live Load Deflection	L/999 (0.001")	n/a	n/a	51	02-01-14
Max Defl.	0.002"	n/a	n/a	35	02-01-14
Span / Depth	3.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 3-1/2"	1086 lbs	11.5%	5.8%	Spruce-Pine-Fir
B2	Hanger 4" x 3-1/2"	1403 lbs	n/a	8.2%	HGUS410

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 11-7/8" LVL Beam.
 Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



WDG NO. FAME 754-21
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B24 E(i33279) (Flush Beam)

PASSED

BC CALC® Member Report
 Build 7493

Dry | 1 span | No cant.

September 3, 2020 12:15:41

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

File name: 4502 - EL B - STD GRD ...ROOM - 2ND FLOOR.mmdl
 Description: 2ND FLR FRAMING\Flush Beams\B24 E(i33279)
 Specifier:
 Designer: L.D.
 Company:

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

CONFORMS TO OBC 2012

AMENDED 2020

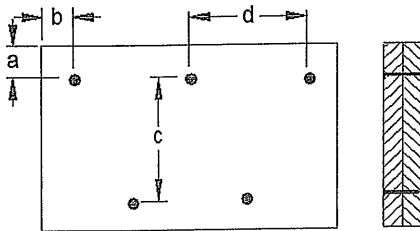
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

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

Connection Diagram: Full Length of Member



a minimum = 2"
 b minimum = 3"

c = 7-7/8"
 d = 8"

Calculated Side Load = 240.1 lb/ft

Connectors are: 1 3/4" Nails

3 1/2" ARDOX SPIRAL



OWN NO. YAW 8754-21
**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®,

BC CALC® Member Report

Dry | 1 span | No cant.

September 3, 2020 15:25:15

Build 7493

Job name:

File name: 4502 - EL C.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B25(i32997)

City, Province, Postal Code: RICHMOND HILL

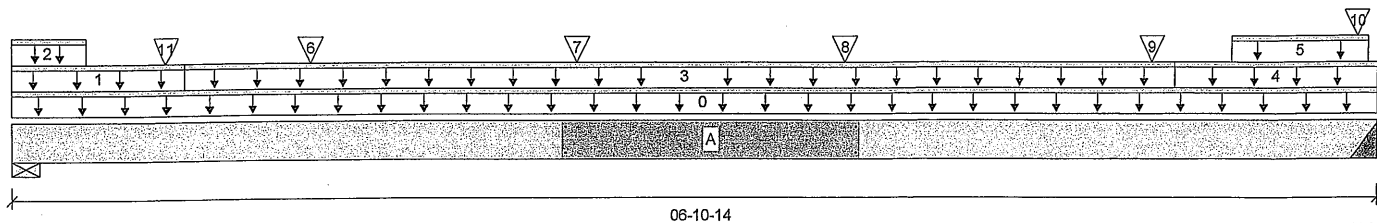
Specifier:

Customer:

Designer: L.D.

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 06-10-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	629 / 0	620 / 0	237 / 0	
B2, 4"	705 / 0	661 / 0	244 / 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	06-10-14	Top		12			00-00-00
1	E99(i32994)	Unf. Lin. (lb/ft)	L	00-00-00	00-10-06	Top		81			n/a
2	E99(i32994)	Unf. Lin. (lb/ft)	L	00-00-00	00-04-06	Top			36		n/a
3	E98(i32995)	Unf. Lin. (lb/ft)	L	00-10-06	05-10-06	Top		41			n/a
4	E97(i32993)	Unf. Lin. (lb/ft)	L	05-10-06	06-10-14	Top		81			n/a
5	E97(i32993)	Unf. Lin. (lb/ft)	L	06-01-14	06-10-05	Top	33	30	72		n/a
6	J5(i32923)	Conc. Pt. (lbs)	L	01-05-14	01-05-14	Top	319	159			n/a
7	J5(i32943)	Conc. Pt. (lbs)	L	02-09-14	02-09-14	Top	222	111			n/a
8	J5(i32940)	Conc. Pt. (lbs)	L	04-01-14	04-01-14	Top	222	111			n/a
9	-	Conc. Pt. (lbs)	L	05-08-15	05-08-15	Top	312	235	200		n/a
10	J5(i32988)	Conc. Pt. (lbs)	L	06-09-10	06-09-10	Top	130	65			n/a
11	-	Conc. Pt. (lbs)	L	00-09-04	00-09-04	Top	93	126	217		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2499 ft-lbs	35392 ft-lbs	7.1%	1	03-00-14
End Shear	1580 lbs	14464 lbs	10.9%	1	01-04-04
Total Load Deflection	L/999 (0.014")	n/a	n/a	35	03-05-14
Live Load Deflection	L/999 (0.008")	n/a	n/a	51	03-05-14
Max Defl.	0.014"	n/a	n/a	35	03-05-14
Span / Depth	6.4				

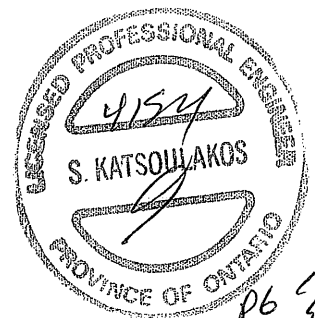
Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 3-1/2"	1956 lbs	20.8%	10.5%	Spruce-Pine-Fir
B2	Hanger 4" x 3-1/2"	2128 lbs	n/a	12.5%	HGUS410

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 11-7/8" LVL Beam.

Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



OWN NO. YAM 8755-21
STRUCTURAL
COMPONENT ONLY



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

2ND FLR FRAMING\Flush Beams\B25(i32997) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

September 3, 2020 15:25:15

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

File name: 4502 - EL C.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B25(i32997)
Specifier:
Designer: L.D.
Company:

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Unbalanced snow loads determined from building geometry were used in selected product's verification.

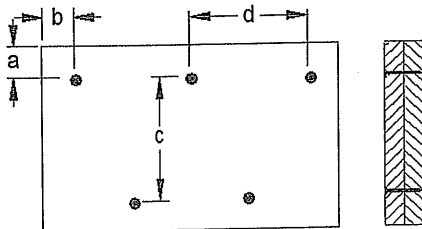
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"

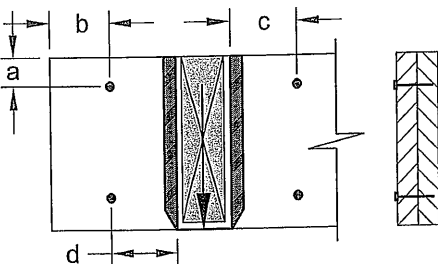
c = 7-7/8"
d = 8"

Calculated Side Load = 338.6 lb/ft

Connectors are: 16d Nails
3 1/2" ARDOX SPIRAL

Connection Diagrams: Concentrated Side Loads

Connection Tag: A Applies to load tag(s): 19+20



a minimum = 2"
b minimum = 4"
c minimum = 4"
d maximum = 12"
Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL



ENG NO. TAM 8755-21
STRUCTURAL
COMPONENT ONLY

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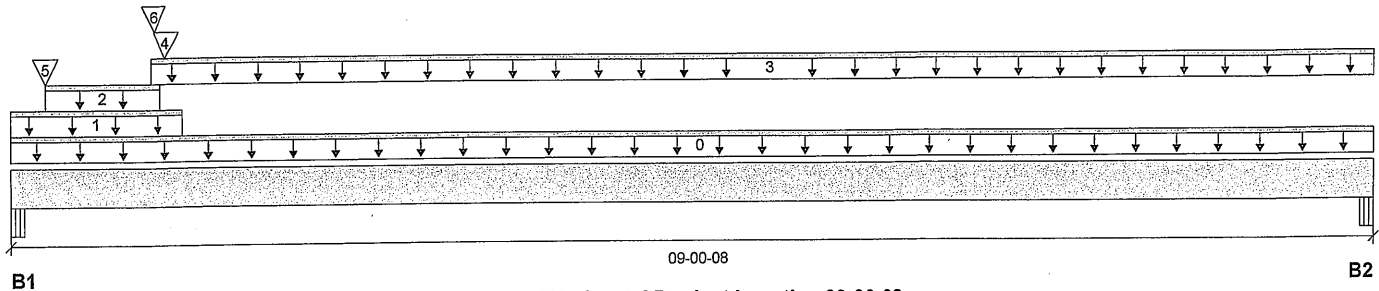
BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

September 3, 2020 15:25:15

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

File name: 4502 - EL C.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B26(i32996)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 09-00-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	755 / 0	1046 / 0	762 / 0	
B2, 2-1/4"	175 / 0	182 / 0	50 / 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	09-00-08	Top		12			00-00-00
1	E96(i32990)	Unf. Lin. (lb/ft)	L	00-00-00	01-01-08	Top		81			n/a
2	E96(i32990)	Unf. Lin. (lb/ft)	L	00-02-12	00-11-12	Top		45	99		n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-11-00	09-00-08	Top	27	14			n/a
4	-	Conc. Pt. (lbs)	L	01-00-03	01-00-03	Top	688	850	656		n/a
5	E96(i32990)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		14	30		n/a
6	ROOF	Conc. Pt. (lbs)	L	00-11-04	00-11-04	Top	15	14	53		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1943 ft-lbs	35392 ft-lbs	5.5%	1	01-07-09
End Shear	1892 lbs	14464 lbs	13.1%	1	01-05-02
Total Load Deflection	L/999 (0.019")	n/a	n/a	35	04-02-15
Live Load Deflection	L/999 (0.011")	n/a	n/a	51	04-02-15
Max Defl.	0.019"	n/a	n/a	35	04-02-15
Span / Depth	8.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 5-1/4" x 3-1/2"	3206 lbs	32.7%	14.3%	Unspecified
B2	Beam 2-1/4" x 3-1/2"	540 lbs	12.8%	5.6%	Unspecified

Cautions

Concentrated side load(s) 28 are closer than 18" from end of member. Please consult a technical representative or Professional of Record.



0408 NO. 7408 756-21
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B26(i32996) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

September 3, 2020 15:25:15

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

File name: 4502 - EL C.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B26(i32996)
Specifier:
Designer: L.D.
Company:

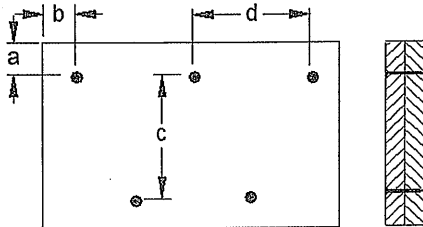
Notes

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

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



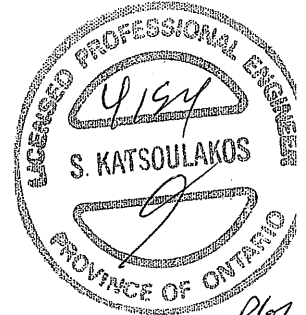
a minimum = 2"
b minimum = 3"

c = 7-7/8"
d = 8"

Calculated Side Load = 182.3 lb/ft

Connectors are: 1/2" Nails

3 1/2" ARDOX SPIRAL



OWG NO. YAM B756-21
STRUCTURAL
COMPONENT ONLY

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NORDIC STRUCTURES

COMPANY
Sep. 8, 2020 10:31

PROJECT
J1 1ST FLOOR

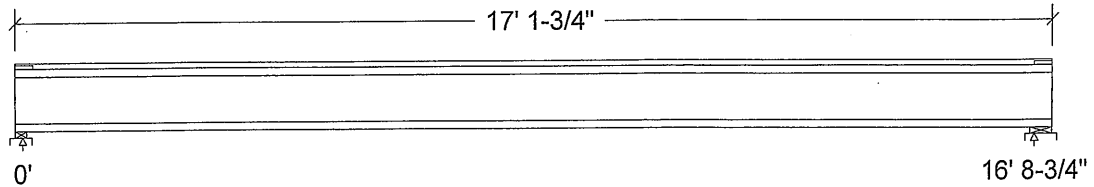
Design Check Calculation Sheet

Nordic Sizer – Canada 7.2

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area			20.00	psf
Load2	Live	Full Area			40.00	psf

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



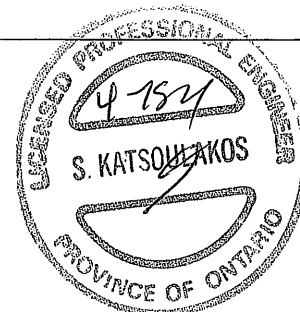
Unfactored:			
Dead	223		223
Live	446		446
Factored:			
Total	948		948
Bearing:			
Capacity			
Joist	2102		2336
Support	3981		7744
Des ratio			
Joist	0.45		0.41
Support	0.24		0.12
Load case	#2		#2
Length	2-3/8		4-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.09		1.15

Nordic Joist 11-7/8" NI-40x Floor joist @ 16" o.c.

Supports: All - Lumber Sill plate, No.1/No.2

Total length: 17' 1-3/4"; Clear span: 16' 7"; 3/4" nailed and glued OSB sheathing

This section PASSES the design code check.



OWN NO. FAW 8731 -21
STRUCTURAL
COMPONENT ONLY

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$V_f = 948$	$V_r = 2336$	lbs	$V_f/V_r = 0.41$
Moment(+)	$M_f = 3964$	$M_r = 6255$	lbs-ft	$M_f/M_r = 0.63$
Perm. Defl'n	$0.12 = < L/999$	$0.56 = L/360$	in	0.21
Live Defl'n	$0.23 = L/860$	$0.42 = L/480$	in	0.56
Total Defl'n	$0.35 = L/573$	$0.84 = L/240$	in	0.42
Bare Defl'n	$0.28 = L/711$	$0.56 = L/360$	in	0.51
Vibration	$L_{max} = 16'-8.8$	$L_v = 18'-1.3$	ft	0.92
Defl'n	$= 0.030$	$= 0.038$	in	0.78

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
V_r	2336	1.00	1.00	-	-	-	-	-	#2
M_r	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 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 W=wind S=snow H=earth,groundwater E=earthquake
 L=live(use,occupancy) Ls=live(storage,equipment) f=fire

Load Patterns: s=S/2 L=L+Ls _=no pattern load in this span
 All Load Combinations (LCs) are listed in the Analysis output

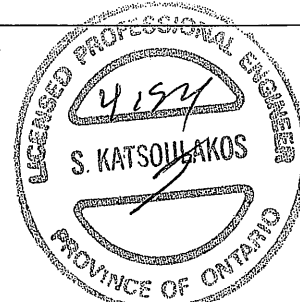
CALCULATIONS:

$EI_{eff} = 459.76 \text{ lb-in}^2$ $K = 6.18e06 \text{ lbs}$

"Live" deflection is due to all non-dead loads (live, wind, snow...) **CONFORMS TO OBC 2012**

AMENDED 2020**Design Notes:**

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. 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.



OWN NO. 74M 0731 -21
**STRUCTURAL
 COMPONENT ONLY**

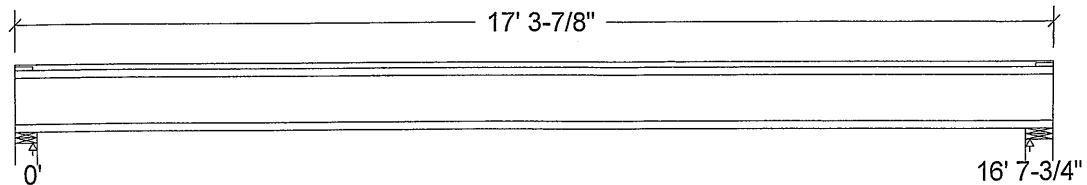
Design Check Calculation Sheet

Nordic Sizer – Canada 7.2

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area			20.00	psf
Load2	Live	Full Area			40.00	psf

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



Unfactored:			
Dead	222		222
Live	444		444
Factored:			
Total	943		943
Bearing:			
Capacity			
Joist	2336		2336
Support	7744		9724
Des ratio			
Joist	0.40		0.40
Support	0.12		0.10
Load case	#2		#2
Length	4-3/8		5-1/2
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	-		-
fcp sup	769		769
Kzcp sup	-		-

Bearing for wall supports is perpendicular-to-grain bearing on top plate. No stud design included.

Nordic Joist 11-7/8" NI-40x Floor joist @ 16" o.c.

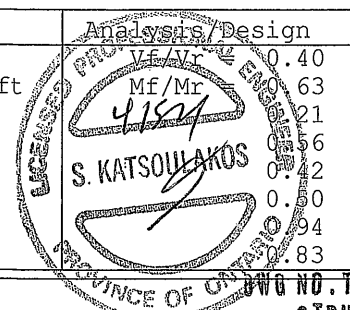
Supports: All - Lumber Wall, No.1/No.2

Total length: 17' 3-7/8"; Clear span: 16' 6"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

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 = 943	Vr = 2336	lbs	0.40
Moment(+)	Mf = 3925	Mr = 6255	lbs-ft	0.63
Perm. Defl'n	0.12 = < L/999	0.55 = L/360	in	0.21
Live Defl'n	0.23 = L/851	0.42 = L/480	in	0.56
Total Defl'n	0.35 = L/567	0.83 = L/240	in	0.42
Bare Defl'n	0.28 = L/721	0.55 = L/360	in	0.00
Vibration	Lmax = 16'-7.8	Lv = 17'-8.1	ft	0.94
Defl'n	= 0.032	= 0.038	in	0.83



Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 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 W=wind S=snow H=earth,groundwater E=earthquake
 L=live(use,occupancy) Ls=live(storage,equipment) f=fire

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:

EI_{eff} = 447.63 lb-in² K= 6.18e06 lbs

"Live" deflection is due to all non-dead loads (live, wind, snow...)

CONFORMS TO OBC 2012

AMENDED 2020

Design Notes:

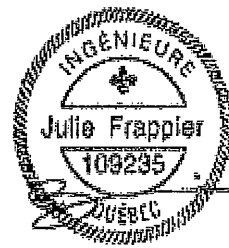
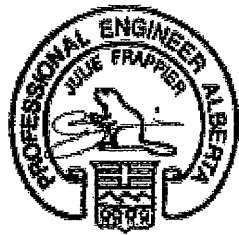
1. WoodWorks analysis and design are in accordance with the 2015 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-14 Engineering Design in Wood standard, Update No. 2 (June 2017).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer 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. 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.



DWG NO. TAM 0732-21
 STRUCTURAL
 COMPONENT ONLY

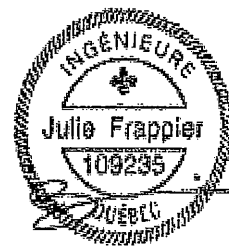
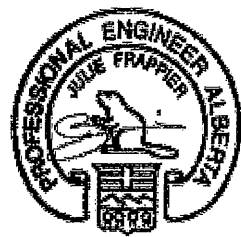
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing



Depth	Series	Bare				1/2" 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'-2"	13'-9"	N/A	15'-7"	14'-8"	14'-2"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"	N/A
	NI-70	17'-1"	16'-1"	15'-6"	N/A	17'-5"	16'-5"	15'-10"	N/A
	NI-80	17'-3"	16'-3"	15'-8"	N/A	17'-8"	16'-7"	16'-0"	N/A
11-7/8"	NI-20	16'-11"	16'-0"	15'-5"	N/A	17'-6"	16'-6"	16'-0"	N/A
	NI-40x	18'-1"	17'-0"	16'-5"	N/A	18'-9"	17'-6"	16'-11"	N/A
	NI-60	18'-4"	17'-3"	16'-7"	N/A	19'-0"	17'-8"	17'-1"	N/A
	NI-70	19'-6"	18'-0"	17'-4"	N/A	20'-1"	18'-7"	17'-9"	N/A
	NI-80	19'-9"	18'-3"	17'-6"	N/A	20'-4"	18'-10"	17'-11"	N/A
14"	NI-90x	20'-4"	18'-9"	17'-11"	N/A	20'-10"	19'-3"	18'-5"	N/A
	NI-40x	20'-1"	18'-7"	17'-10"	N/A	20'-10"	19'-4"	18'-6"	N/A
	NI-60	20'-5"	18'-11"	18'-1"	N/A	21'-2"	19'-7"	18'-9"	N/A
	NI-70	21'-7"	20'-0"	19'-1"	N/A	22'-3"	20'-7"	19'-8"	N/A
	NI-80	21'-11"	20'-3"	19'-4"	N/A	22'-7"	20'-11"	20'-0"	N/A
16"	NI-90x	22'-7"	20'-11"	19'-11"	N/A	23'-3"	21'-6"	20'-6"	N/A
	NI-60	22'-3"	20'-8"	19'-9"	N/A	23'-1"	21'-5"	20'-6"	N/A
	NI-70	23'-6"	21'-9"	20'-9"	N/A	24'-3"	22'-5"	21'-5"	N/A
	NI-80	23'-11"	22'-1"	21'-1"	N/A	24'-8"	22'-10"	21'-9"	N/A
	NI-90x	24'-8"	22'-9"	21'-9"	N/A	25'-4"	23'-5"	22'-4"	N/A
Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" 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"	N/A	16'-8"	15'-3"	14'-5"	N/A
	NI-40x	17'-11"	16'-11"	16'-1"	N/A	18'-5"	17'-1"	16'-1"	N/A
	NI-60	18'-2"	17'-1"	16'-4"	N/A	18'-7"	17'-4"	16'-4"	N/A
	NI-70	19'-2"	17'-10"	17'-2"	N/A	19'-7"	18'-3"	17'-7"	N/A
	NI-80	19'-5"	18'-0"	17'-4"	N/A	19'-10"	18'-5"	17'-8"	N/A
11-7/8"	NI-20	19'-6"	18'-1"	17'-3"	N/A	19'-11"	18'-3"	17'-3"	N/A
	NI-40x	21'-0"	19'-6"	18'-8"	N/A	21'-7"	20'-2"	19'-2"	N/A
	NI-60	21'-4"	19'-9"	18'-11"	N/A	21'-11"	20'-4"	19'-6"	N/A
	NI-70	22'-6"	20'-10"	19'-11"	N/A	23'-0"	21'-5"	20'-5"	N/A
	NI-80	22'-9"	21'-1"	20'-1"	N/A	23'-3"	21'-7"	20'-8"	N/A
14"	NI-90x	23'-4"	21'-8"	20'-8"	N/A	23'-10"	22'-2"	21'-2"	N/A
	NI-40x	23'-7"	21'-11"	20'-11"	N/A	24'-3"	22'-7"	21'-7"	N/A
	NI-60	24'-0"	22'-3"	21'-3"	N/A	24'-8"	22'-11"	21'-11"	N/A
	NI-70	25'-3"	23'-4"	22'-3"	N/A	25'-10"	24'-0"	22'-11"	N/A
	NI-80	25'-7"	23'-8"	22'-7"	N/A	26'-2"	24'-4"	23'-2"	N/A
16"	NI-90x	26'-4"	24'-4"	23'-3"	N/A	26'-10"	24'-11"	23'-9"	N/A
	NI-60	26'-5"	24'-6"	23'-4"	N/A	27'-2"	25'-3"	24'-2"	N/A
	NI-70	27'-9"	25'-8"	24'-6"	N/A	28'-5"	26'-5"	25'-2"	N/A
	NI-80	28'-2"	26'-1"	24'-10"	N/A	28'-10"	26'-9"	25'-6"	N/A
	NI-90x	29'-0"	26'-10"	25'-7"	N/A	29'-7"	27'-5"	26'-2"	N/A

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



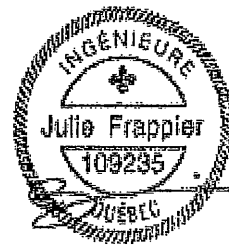
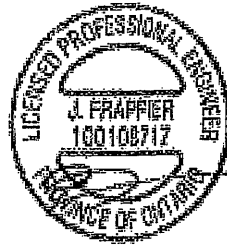
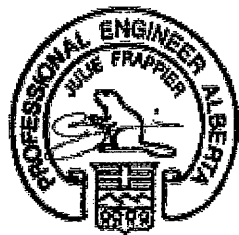
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing

Depth	Series	Bare				1/2" 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	17'-0"	16'-0"	15'-5"	14'-9"	17'-5"	16'-5"	15'-10"	15'-2"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-6"	16'-7"	15'-11"	15'-3"
	NI-70	18'-0"	16'-11"	16'-3"	15'-7"	18'-5"	17'-3"	16'-7"	15'-11"
	NI-80	18'-3"	17'-1"	16'-5"	15'-9"	18'-8"	17'-5"	16'-9"	16'-1"
11-7/8"	NI-20	17'-10"	16'-10"	16'-2"	15'-6"	18'-6"	17'-4"	16'-9"	16'-1"
	NI-40x	19'-4"	17'-11"	17'-3"	16'-6"	19'-11"	18'-6"	17'-9"	17'-0"
	NI-60	19'-7"	18'-2"	17'-5"	16'-9"	20'-2"	18'-9"	17'-11"	17'-2"
	NI-70	20'-9"	19'-2"	18'-3"	17'-5"	21'-4"	19'-9"	18'-10"	17'-10"
	NI-80	21'-1"	19'-5"	18'-6"	17'-7"	21'-7"	20'-0"	19'-0"	18'-0"
14"	NI-90x	21'-8"	20'-0"	19'-1"	18'-0"	22'-2"	20'-6"	19'-6"	18'-6"
	NI-40x	21'-5"	19'-10"	18'-11"	17'-11"	22'-1"	20'-6"	19'-7"	18'-7"
	NI-60	21'-10"	20'-2"	19'-3"	18'-2"	22'-5"	20'-10"	19'-11"	18'-10"
	NI-70	23'-0"	21'-3"	20'-3"	19'-2"	23'-8"	21'-11"	20'-10"	19'-9"
	NI-80	23'-5"	21'-7"	20'-7"	19'-5"	24'-0"	22'-3"	21'-2"	20'-0"
16"	NI-90x	24'-1"	22'-3"	21'-2"	20'-0"	24'-8"	22'-10"	21'-9"	20'-7"
	NI-60	23'-9"	22'-0"	20'-11"	19'-10"	24'-6"	22'-9"	21'-8"	20'-6"
	NI-70	25'-1"	23'-2"	22'-0"	20'-10"	25'-9"	23'-10"	22'-9"	21'-6"
	NI-80	25'-6"	23'-6"	22'-4"	21'-2"	26'-1"	24'-2"	23'-1"	21'-10"
	NI-90x	26'-4"	24'-3"	23'-1"	21'-10"	26'-11"	24'-11"	23'-8"	22'-5"

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" 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-70	20'-0"	18'-7"	17'-9"	16'-7"	20'-5"	18'-11"	17'-10"	16'-7"
	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'-7"	18'-4"	22'-8"	20'-10"	19'-8"	18'-4"
	NI-70	23'-4"	21'-8"	20'-8"	19'-7"	23'-10"	22'-3"	21'-2"	19'-9"
	NI-80	23'-7"	21'-11"	20'-11"	19'-9"	24'-1"	22'-6"	21'-5"	20'-0"
14"	NI-90x	24'-3"	22'-6"	21'-6"	20'-4"	24'-8"	23'-0"	22'-0"	20'-9"
	NI-40x	24'-5"	22'-9"	21'-8"	19'-5"	25'-1"	23'-2"	21'-9"	19'-5"
	NI-60	24'-10"	23'-1"	22'-0"	20'-10"	25'-6"	23'-8"	22'-4"	20'-10"
	NI-70	26'-1"	24'-3"	23'-2"	21'-10"	26'-8"	24'-11"	23'-9"	22'-4"
	NI-80	26'-6"	24'-7"	23'-5"	22'-2"	27'-1"	25'-3"	24'-1"	22'-9"
16"	NI-90x	27'-3"	25'-4"	24'-1"	22'-9"	27'-9"	25'-11"	24'-8"	23'-4"
	NI-60	27'-3"	25'-5"	24'-2"	22'-10"	28'-0"	26'-2"	24'-9"	23'-1"
	NI-70	28'-8"	26'-8"	25'-4"	23'-11"	29'-3"	27'-4"	26'-1"	24'-8"
	NI-80	29'-1"	27'-0"	25'-9"	24'-4"	29'-8"	27'-9"	26'-5"	25'-0"
	NI-90x	29'-11"	27'-10"	26'-6"	25'-0"	30'-6"	28'-5"	27'-2"	25'-8"

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



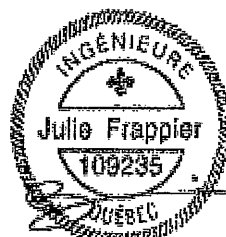
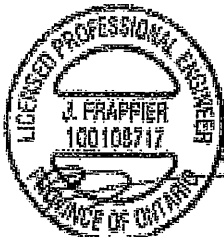
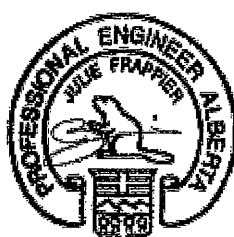
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing

Depth	Series	Bare				1/2" 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'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"	N/A
	NI-70	17'-1"	16'-1"	15'-6"	N/A	17'-5"	16'-5"	15'-10"	N/A
	NI-80	17'-3"	16'-3"	15'-8"	N/A	17'-8"	16'-7"	16'-0"	N/A
11-7/8"	NI-20	16'-11"	16'-0"	15'-5"	N/A	17'-6"	16'-6"	16'-0"	N/A
	NI-40x	18'-1"	17'-0"	16'-5"	N/A	18'-9"	17'-6"	16'-11"	N/A
	NI-60	18'-4"	17'-3"	16'-7"	N/A	19'-0"	17'-8"	17'-1"	N/A
	NI-70	19'-6"	18'-0"	17'-4"	N/A	20'-1"	18'-7"	17'-9"	N/A
	NI-80	19'-9"	18'-3"	17'-6"	N/A	20'-4"	18'-10"	17'-11"	N/A
14"	NI-90x	20'-4"	18'-9"	17'-11"	N/A	20'-10"	19'-3"	18'-5"	N/A
	NI-40x	20'-1"	18'-7"	17'-10"	N/A	20'-10"	19'-4"	18'-6"	N/A
	NI-60	20'-5"	18'-11"	18'-1"	N/A	21'-2"	19'-7"	18'-9"	N/A
	NI-70	21'-7"	20'-0"	19'-1"	N/A	22'-3"	20'-7"	19'-8"	N/A
	NI-80	21'-11"	20'-3"	19'-4"	N/A	22'-7"	20'-11"	20'-0"	N/A
16"	NI-90x	22'-7"	20'-11"	19'-11"	N/A	23'-3"	21'-6"	20'-6"	N/A
	NI-60	22'-3"	20'-8"	19'-9"	N/A	23'-1"	21'-5"	20'-6"	N/A
	NI-70	23'-6"	21'-9"	20'-9"	N/A	24'-3"	22'-5"	21'-5"	N/A
	NI-80	23'-11"	22'-1"	21'-1"	N/A	24'-8"	22'-10"	21'-9"	N/A
	NI-90x	24'-8"	22'-9"	21'-9"	N/A	25'-4"	23'-5"	22'-4"	N/A

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	17'-9"	16'-1"	15'-1"	N/A	17'-9"	16'-1"	15'-1"	N/A
	NI-60	18'-1"	16'-4"	15'-4"	N/A	18'-1"	16'-4"	15'-4"	N/A
	NI-70	19'-2"	17'-10"	16'-9"	N/A	19'-7"	17'-10"	16'-9"	N/A
	NI-80	19'-5"	18'-0"	17'-1"	N/A	19'-10"	18'-3"	17'-1"	N/A
11-7/8"	NI-20	18'-9"	17'-0"	16'-0"	N/A	18'-9"	17'-0"	16'-0"	N/A
	NI-40x	21'-0"	19'-3"	17'-9"	N/A	21'-3"	19'-3"	17'-9"	N/A
	NI-60	21'-4"	19'-8"	18'-5"	N/A	21'-8"	19'-8"	18'-5"	N/A
	NI-70	22'-6"	20'-10"	19'-11"	N/A	23'-0"	21'-4"	20'-0"	N/A
	NI-80	22'-9"	21'-1"	20'-1"	N/A	23'-3"	21'-7"	20'-5"	N/A
14"	NI-90x	23'-4"	21'-8"	20'-8"	N/A	23'-10"	22'-2"	21'-2"	N/A
	NI-40x	23'-7"	21'-5"	19'-6"	N/A	24'-1"	21'-5"	19'-6"	N/A
	NI-60	24'-0"	22'-3"	21'-0"	N/A	24'-8"	22'-5"	21'-0"	N/A
	NI-70	25'-3"	23'-4"	22'-3"	N/A	25'-10"	24'-0"	22'-9"	N/A
	NI-80	25'-7"	23'-8"	22'-7"	N/A	26'-2"	24'-4"	23'-2"	N/A
16"	NI-90x	26'-4"	24'-4"	23'-3"	N/A	26'-10"	24'-11"	23'-9"	N/A
	NI-60	26'-5"	24'-6"	23'-4"	N/A	27'-2"	24'-10"	23'-4"	N/A
	NI-70	27'-9"	25'-8"	24'-6"	N/A	28'-5"	26'-5"	25'-2"	N/A
	NI-80	28'-2"	26'-1"	24'-10"	N/A	28'-10"	26'-9"	25'-6"	N/A
	NI-90x	29'-0"	26'-10"	25'-7"	N/A	29'-7"	27'-5"	26'-2"	N/A

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



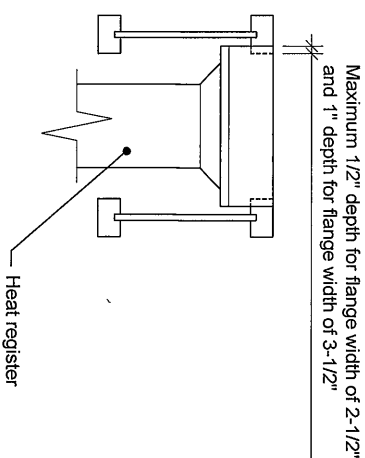
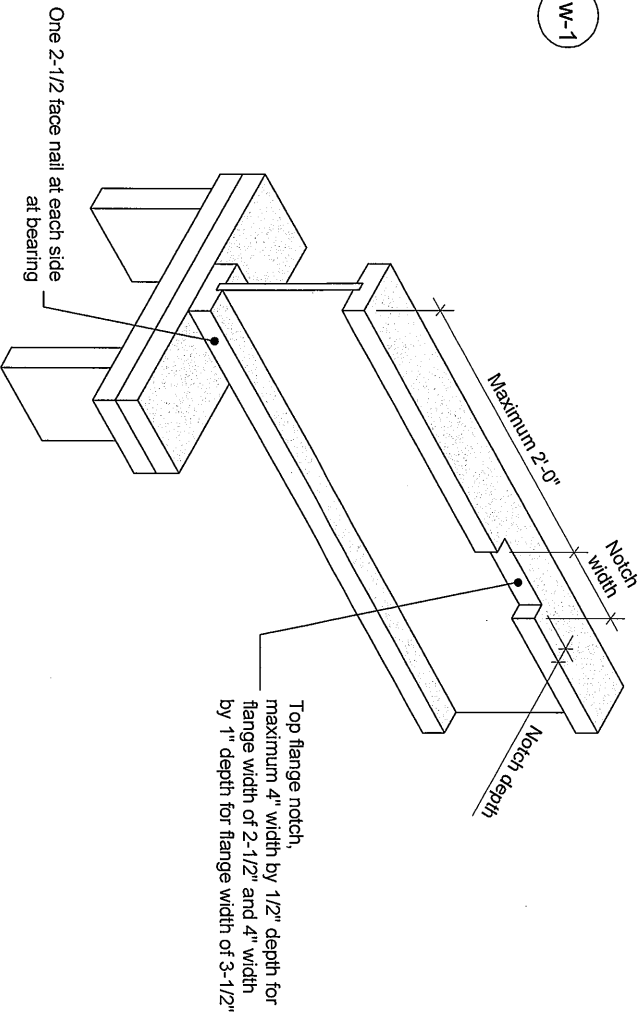
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing

Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-0"	16'-0"	15'-1"	13'-11"	17'-5"	16'-1"	15'-1"	13'-11"
	NI-60	17'-2"	16'-2"	15'-5"	14'-3"	17'-6"	16'-5"	15'-5"	14'-3"
	NI-70	18'-0"	16'-11"	16'-3"	15'-6"	18'-5"	17'-3"	16'-7"	15'-6"
	NI-80	18'-3"	17'-1"	16'-5"	15'-9"	18'-8"	17'-5"	16'-9"	15'-10"
11-7/8"	NI-20	17'-10"	16'-10"	16'-0"	14'-10"	18'-6"	17'-1"	16'-0"	14'-10"
	NI-40x	19'-4"	17'-11"	17'-3"	15'-10"	19'-11"	18'-6"	17'-9"	15'-10"
	NI-60	19'-7"	18'-2"	17'-5"	16'-9"	20'-2"	18'-9"	17'-11"	15'-1"
	NI-70	20'-9"	19'-2"	18'-3"	17'-5"	21'-4"	19'-9"	18'-10"	17'-10"
	NI-80	21'-1"	19'-5"	18'-6"	17'-7"	21'-7"	20'-0"	19'-0"	18'-0"
14"	NI-90x	21'-8"	20'-0"	19'-1"	18'-0"	22'-2"	20'-6"	19'-6"	18'-6"
	NI-40x	21'-5"	19'-10"	18'-11"	17'-5"	22'-1"	20'-6"	19'-6"	17'-5"
	NI-60	21'-10"	20'-2"	19'-3"	18'-2"	22'-5"	20'-10"	19'-11"	18'-10"
	NI-70	23'-0"	21'-3"	20'-3"	19'-2"	23'-8"	21'-11"	20'-10"	19'-9"
	NI-80	23'-5"	21'-7"	20'-7"	19'-5"	24'-0"	22'-3"	21'-2"	20'-0"
16"	NI-90x	24'-1"	22'-3"	21'-2"	20'-0"	24'-8"	22'-10"	21'-9"	20'-7"
	NI-60	23'-9"	22'-0"	20'-11"	19'-10"	24'-6"	22'-9"	21'-8"	20'-6"
	NI-70	25'-1"	23'-2"	22'-0"	20'-10"	25'-9"	23'-10"	22'-9"	21'-6"
	NI-80	25'-6"	23'-6"	22'-4"	21'-2"	26'-1"	24'-2"	23'-1"	21'-10"
	NI-90x	26'-4"	24'-3"	23'-1"	21'-10"	26'-11"	24'-11"	23'-8"	22'-5"

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-9"	16'-1"	15'-1"	13'-11"	17'-9"	16'-1"	15'-1"	13'-11"
	NI-60	18'-1"	16'-5"	15'-5"	14'-3"	18'-1"	16'-5"	15'-5"	14'-3"
	NI-70	19'-10"	17'-11"	16'-9"	15'-6"	19'-10"	17'-11"	16'-9"	15'-6"
	NI-80	20'-2"	18'-3"	17'-1"	15'-10"	20'-2"	18'-3"	17'-1"	15'-10"
11-7/8"	NI-20	18'-10"	17'-1"	16'-0"	14'-10"	18'-10"	17'-1"	16'-0"	14'-10"
	NI-40x	21'-3"	19'-3"	17'-9"	15'-10"	21'-3"	19'-3"	17'-9"	15'-10"
	NI-60	21'-9"	19'-8"	18'-5"	17'-1"	21'-9"	19'-8"	18'-5"	17'-1"
	NI-70	23'-4"	21'-5"	20'-1"	18'-6"	23'-8"	21'-5"	20'-1"	18'-6"
	NI-80	23'-7"	21'-10"	20'-5"	18'-11"	24'-1"	21'-10"	20'-5"	18'-11"
14"	NI-90x	24'-3"	22'-6"	21'-3"	19'-7"	24'-8"	22'-7"	21'-3"	19'-7"
	NI-40x	24'-2"	21'-5"	19'-6"	17'-5"	24'-2"	21'-5"	19'-6"	17'-5"
	NI-60	24'-9"	22'-5"	21'-0"	19'-6"	24'-9"	22'-5"	21'-0"	19'-6"
	NI-70	26'-1"	24'-3"	22'-9"	21'-0"	26'-8"	24'-3"	22'-9"	21'-0"
	NI-80	26'-6"	24'-7"	23'-3"	21'-6"	27'-1"	24'-10"	23'-3"	21'-6"
16"	NI-90x	27'-3"	25'-4"	24'-1"	22'-4"	27'-9"	25'-10"	24'-3"	22'-4"
	NI-60	27'-3"	24'-11"	23'-5"	21'-7"	27'-6"	24'-11"	23'-5"	21'-7"
	NI-70	28'-8"	26'-8"	25'-3"	23'-4"	29'-3"	26'-11"	25'-3"	23'-4"
	NI-80	29'-1"	27'-0"	25'-9"	23'-10"	29'-8"	27'-6"	25'-10"	23'-10"
	NI-90x	29'-11"	27'-10"	26'-6"	24'-10"	30'-6"	28'-5"	26'-11"	24'-10"

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



- 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 width by 1/2-inch depth for flange width of 2'-1/2 inches, and 4-inch width 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.

This document supersedes all previous versions. If the document has been in effect for more than one year, consult nordic.ca or contact Nordic Structures.
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.

NORDIC
STRUCTURES

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TITLE
Notch in I-joist for Heat Register
CATEGORY
I-joist - Typical Floor Framing and Construction Details

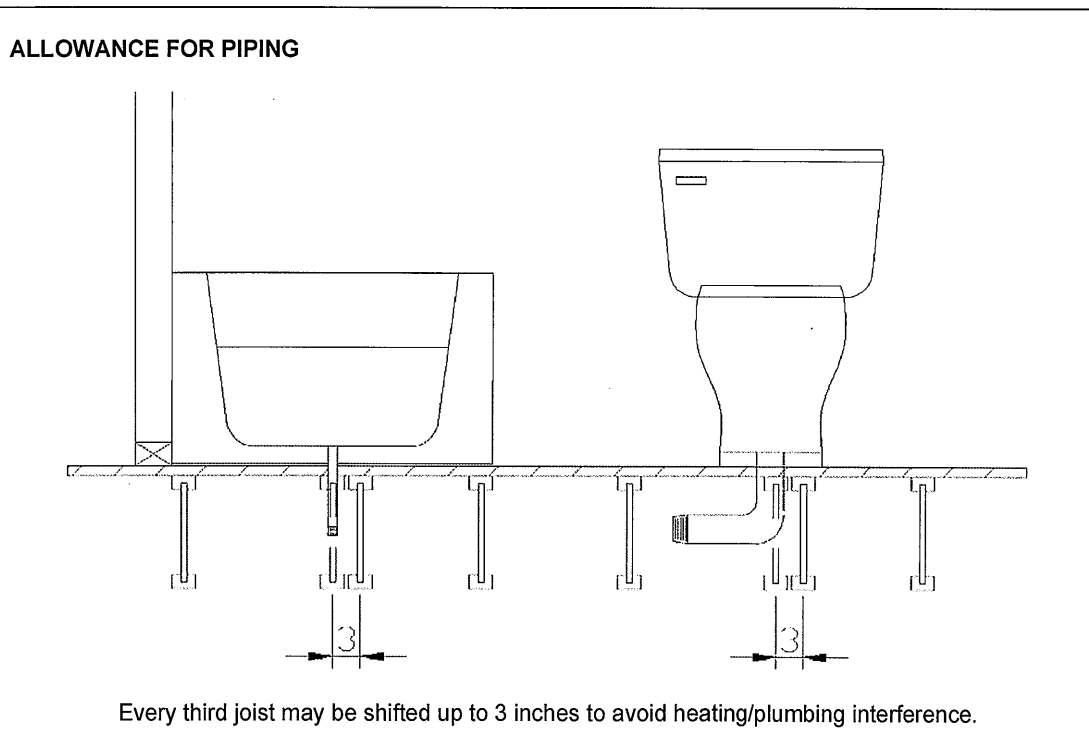
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Allowance for Piping (Installation Notes)

The floor layouts have usually not been checked for heating and/or plumbing interference. On-site adjustment of joists of up to 3 inches is permitted to avoid interferences. When moving a joist, the subfloor thickness shall be checked with code requirements when the joist spacing exceeds 19.2 inches. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.

Installation of Nordic I-joists shall be as per *Nordic Joist Installation Guide for Residential Floors*. Refer to Tables 1 and 2 for maximum web hole and duct chase openings, respectively. These tables are based on the I-joists being used at their maximum spans. The minimum distance given may be reduced for shorter spans; contact your distributor for additional information.

The detail below shows the 3-inch allowance for piping. Every third joist may be shifted up to 3 inches to avoid heating/plumbing interference. For other applications, please contact your distributor.



Revised April 12, 2012