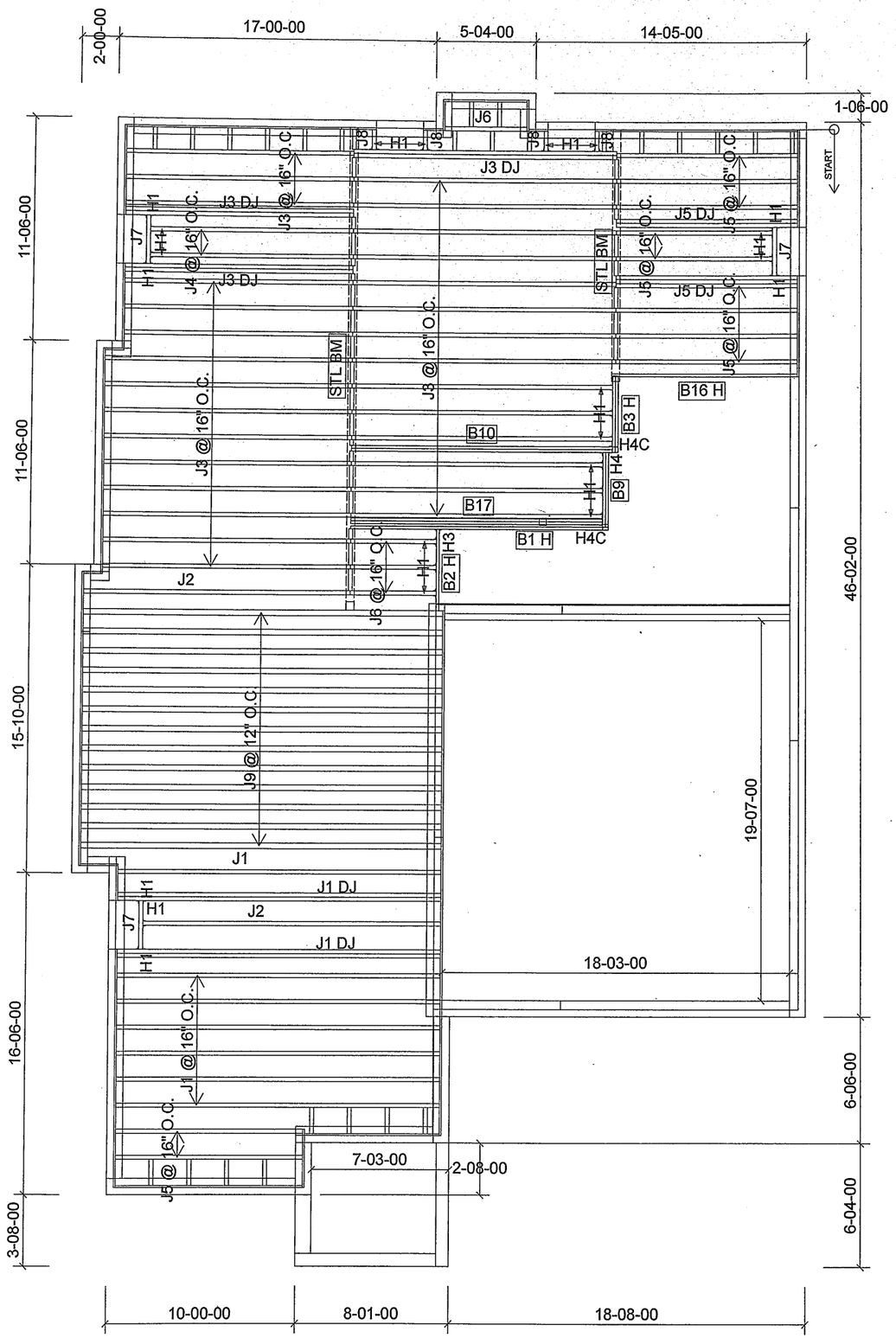


Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	7
J1 DJ	18-00-00	11 7/8" NI-40x	2	4
J2	16-00-00	11 7/8" NI-40x	1	2
J3	14-00-00	11 7/8" NI-40x	1	29
J3 DJ	14-00-00	11 7/8" NI-40x	2	6
J4	12-00-00	11 7/8" NI-40x	1	2
J5	10-00-00	11 7/8" NI-40x	1	11
J5 DJ	10-00-00	11 7/8" NI-40x	2	4
J6	6-00-00	11 7/8" NI-40x	1	4
J7	4-00-00	11 7/8" NI-40x	1	3
J8	2-00-00	11 7/8" NI-40x	1	4
J9	20-00-00	11 7/8" NI-80	1	13
B1 H	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B10	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B17	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B16 H	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B2 H	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B3 H	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B9	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	IUS2.56/11.88
6	H1	IUS2.56/11.88
10	H1	IUS2.56/11.88
5	H1	IUS2.56/11.88
1	H3	HUS1.81/10
1	H4C	HUC410
1	H4C	HUC412
1	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD-WEST GORMLEY

MODEL: 4504 COR

ELEVATION: A, B

LOT:

CITY: RICHMOND HILL

SALESMAN: WILL GARCIA
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 FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

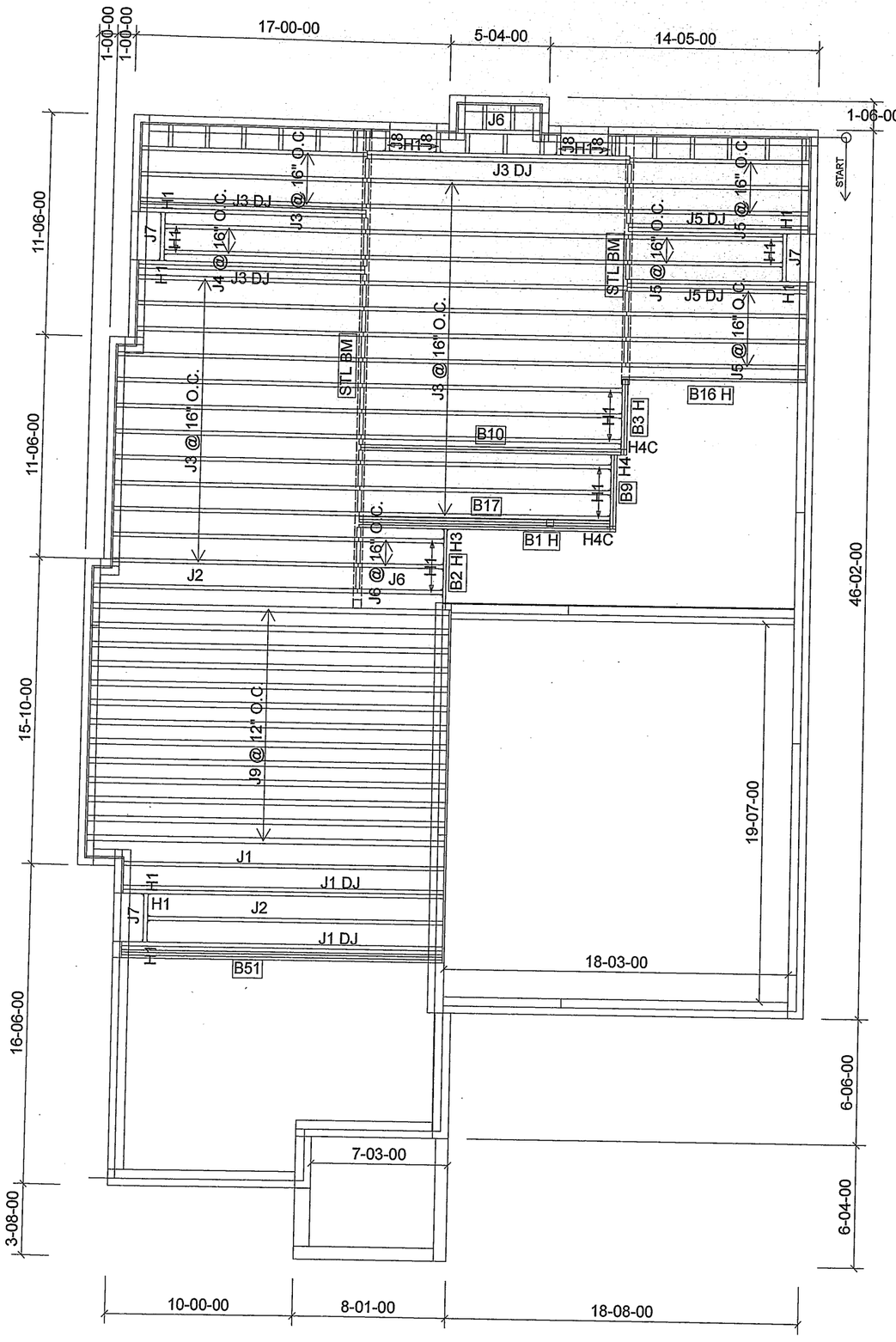
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2021-05-31

1st FLOOR

STANDARD



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	1
J1 DJ	18-00-00	11 7/8" NI-40x	2	4
J2	16-00-00	11 7/8" NI-40x	1	2
J3	14-00-00	11 7/8" NI-40x	1	29
J3 DJ	14-00-00	11 7/8" NI-40x	2	6
J4	12-00-00	11 7/8" NI-40x	1	2
J5	10-00-00	11 7/8" NI-40x	1	9
J5 DJ	10-00-00	11 7/8" NI-40x	2	4
J6	6-00-00	11 7/8" NI-40x	1	4
J7	4-00-00	11 7/8" NI-40x	1	3
J8	2-00-00	11 7/8" NI-40x	1	4
J9	20-00-00	11 7/8" NI-80	1	13
B51	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B1 H	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B10	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B17	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B16 H	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B2 H	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B3 H	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B9	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	IUS2.56/11.88
6	H1	IUS2.56/11.88
10	H1	IUS2.56/11.88
5	H1	IUS2.56/11.88
1	H3	HUS1.81/10
1	H4C	HUC410
1	H4C	HUC412
1	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD-WEST GORMLEY

MODEL: 4504 COR

ELEVATION: A,B

LOT:

CITY: RICHMOND HILL

SALESMAN: WILL GARCIA
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 FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

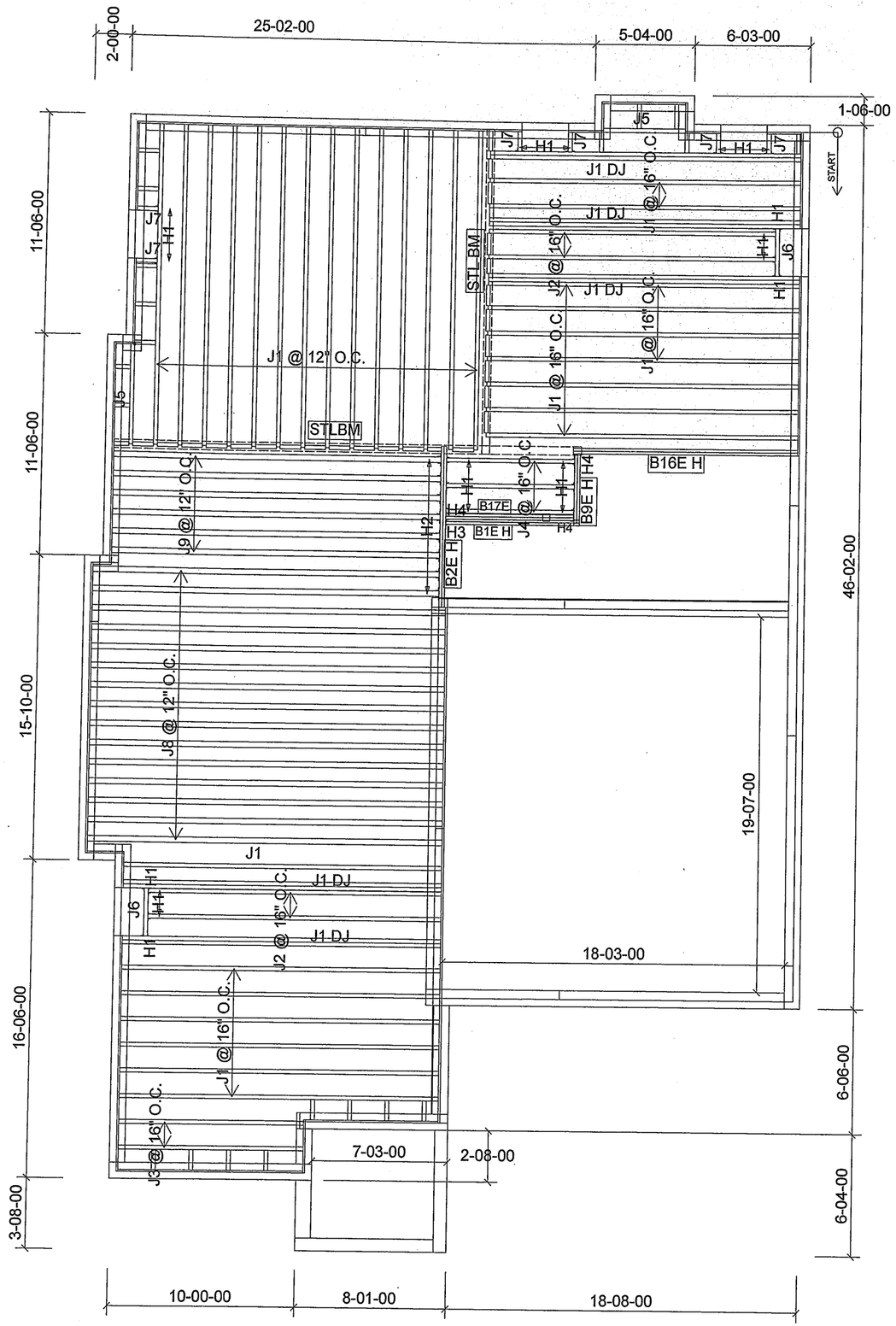
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2021-05-31

1st FLOOR

STANDARD
SUNKEN LIVING RM



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	30
J1 DJ	18-00-00	11 7/8" NI-40x	2	10
J2	16-00-00	11 7/8" NI-40x	1	4
J3	10-00-00	11 7/8" NI-40x	1	2
J4	8-00-00	11 7/8" NI-40x	1	3
J5	6-00-00	11 7/8" NI-40x	1	2
J6	4-00-00	11 7/8" NI-40x	1	2
J7	2-00-00	11 7/8" NI-40x	1	6
J8	20-00-00	11 7/8" NI-80	1	15
J9	18-00-00	11 7/8" NI-80	1	6
B16E H	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2E H	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B1E H	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B17E	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B9E H	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
6	H1	IUS2.56/11.88
8	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
8	H2	IUS3.56/11.88
1	H3	HUS1.81/10
3	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD-WEST GORMLEY

MODEL: 4504 COR

ELEVATION: A,B

LOT:

CITY: RICHMOND HILL

SALESMAN: WILL GARCIA
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 FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

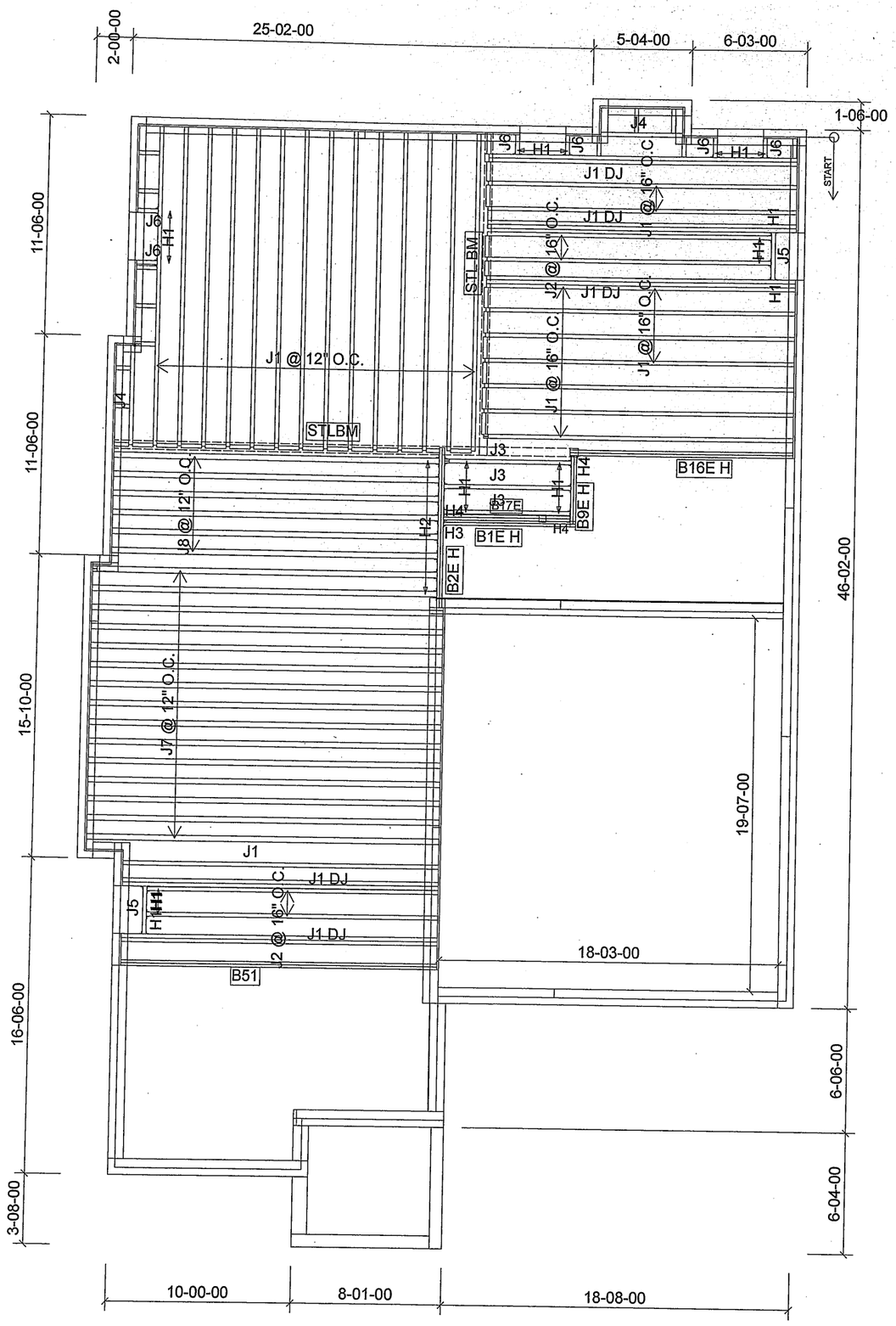
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2021-05-31

1st FLOOR

OPTION



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	24
J1 DJ	18-00-00	11 7/8" NI-40x	2	10
J2	16-00-00	11 7/8" NI-40x	1	4
J3	8-00-00	11 7/8" NI-40x	1	3
J4	6-00-00	11 7/8" NI-40x	1	2
J5	4-00-00	11 7/8" NI-40x	1	2
J6	2-00-00	11 7/8" NI-40x	1	6
J7	20-00-00	11 7/8" NI-80	1	15
J8	18-00-00	11 7/8" NI-80	1	6
B51	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B16E H	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2E H	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B1E H	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B17E	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B9E H	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
6	H1	IUS2.56/11.88
8	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
8	H2	IUS3.56/11.88
1	H3	HUS1.81/10
3	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD-WEST GORMLEY

MODEL: 4504 COR

ELEVATION: A, B

LOT:

CITY: RICHMOND HILL

SALESMAN: WILL GARCIA
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 FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

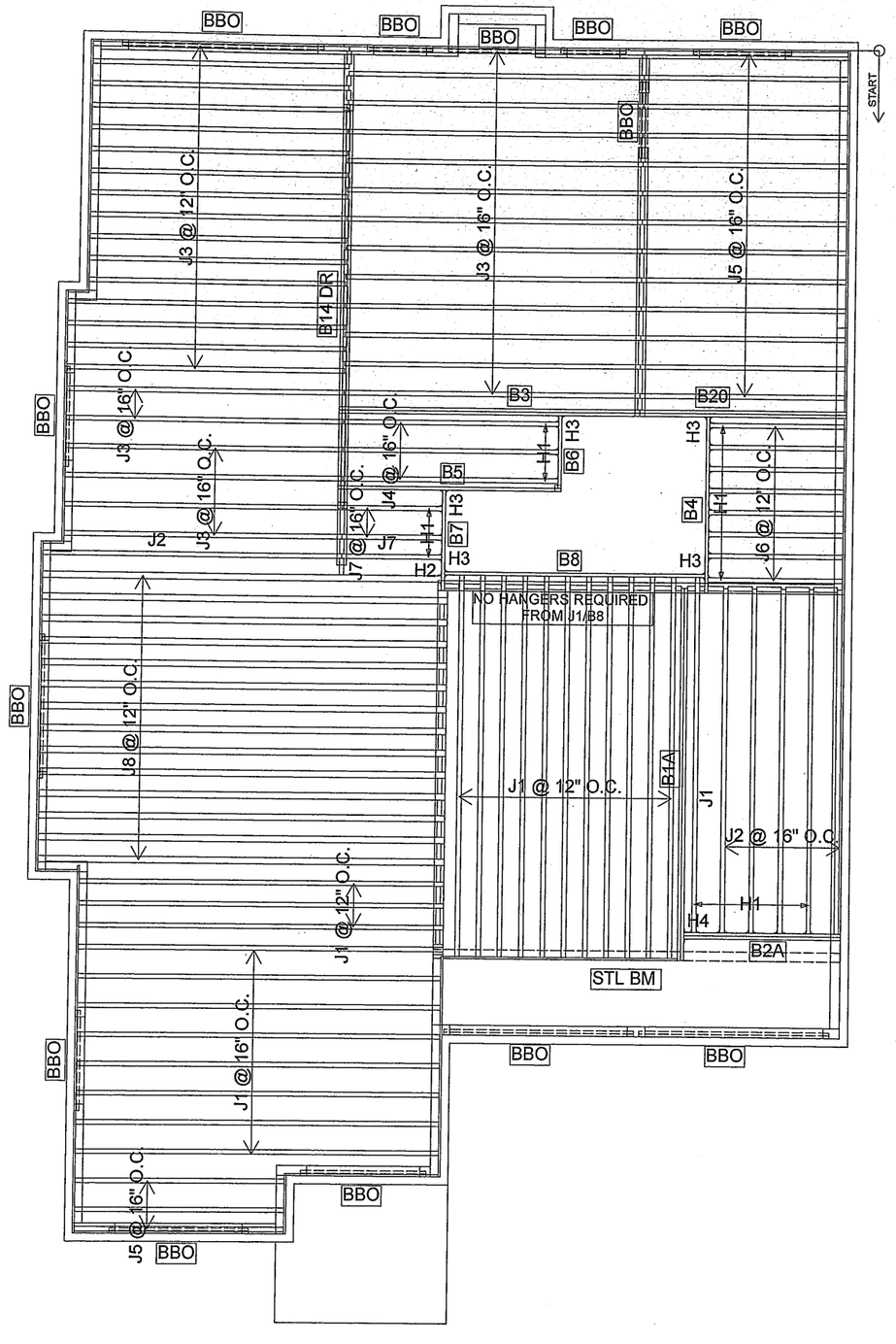
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2021-05-31

1st FLOOR

OPTION
SUNKEN DEN



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	23
J2	16-00-00	11 7/8" NI-40x	1	6
J3	14-00-00	11 7/8" NI-40x	1	35
J4	12-00-00	11 7/8" NI-40x	1	3
J5	10-00-00	11 7/8" NI-40x	1	16
J6	8-00-00	11 7/8" NI-40x	1	8
J7	6-00-00	11 7/8" NI-40x	1	3
J8	20-00-00	11 7/8" NI-80	1	14
B1A	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B3	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B8	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B5	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B4	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B20	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2A	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B7	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B6	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B14 DR	20-00-00	1-3/4" x 14" VERSA-LAM® 2.0 3100 SP	3	3

Connector Summary		
Qty	Manuf	Product
14	H1	IUS2.56/11.88
5	H1	IUS2.56/11.88
1	H2	IUS3.56/11.88
3	H3	HUS1.81/10
2	H3	HUS1.81/10
1	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD-WEST GORMLEY

MODEL: 4504 COR

ELEVATION: A

LOT:

CITY: RICHMOND HILL

SALESMAN: WILL GARCIA
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

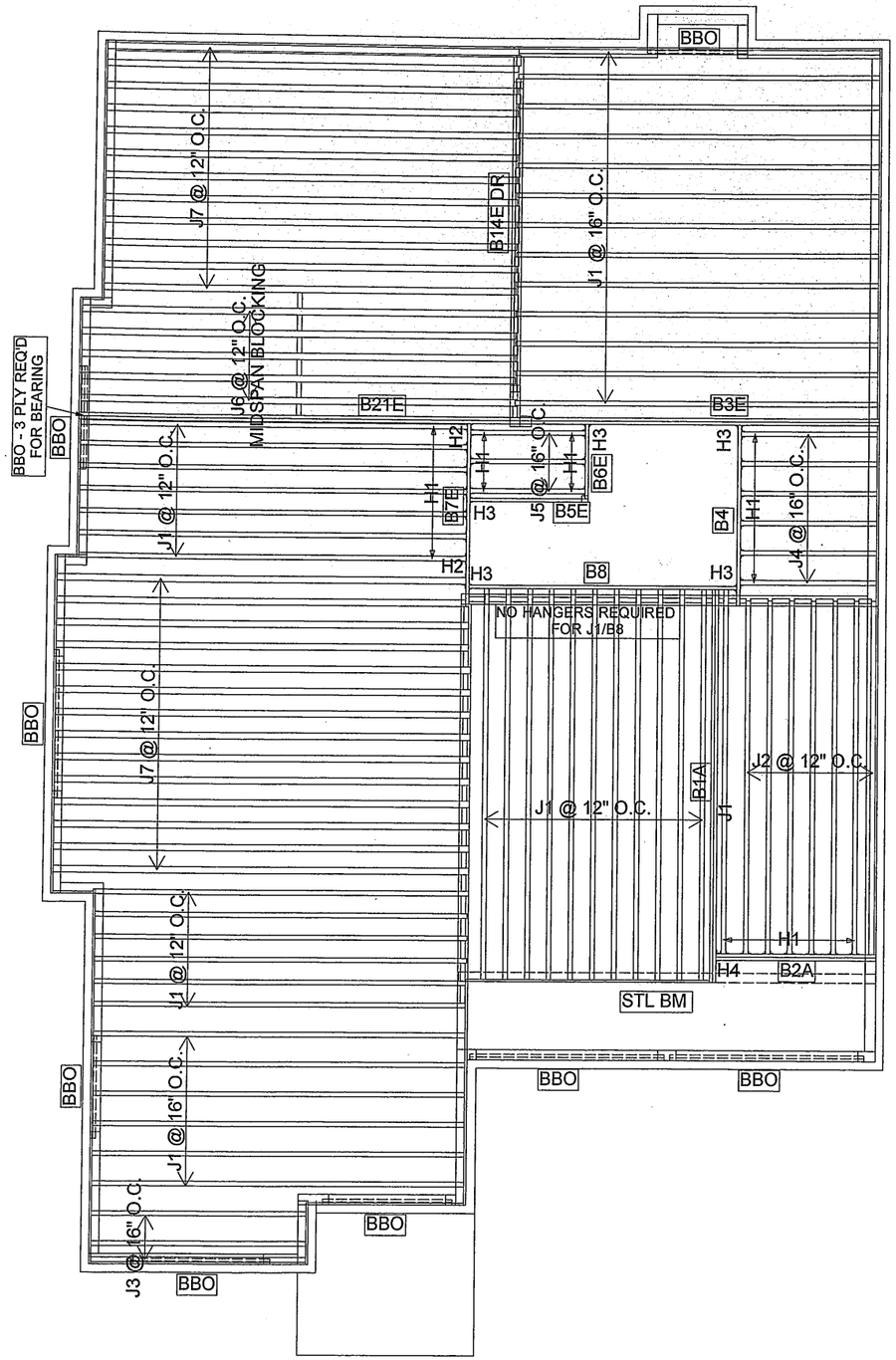
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2021-05-31

2nd FLOOR

STANDARD
4 BEDROOM



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	44
J2	16-00-00	11 7/8" NI-40x	1	7
J3	10-00-00	11 7/8" NI-40x	1	3
J4	8-00-00	11 7/8" NI-40x	1	6
J5	6-00-00	11 7/8" NI-40x	1	3
J6	22-00-00	11 7/8" NI-80	1	5
J7	20-00-00	11 7/8" NI-80	1	26
B21E	22-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B1A	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B3E	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B8	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B14E DR	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B4	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B7E	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B2A	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B5E	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B6E	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
19	H1	IUS2.56/11.88
7	H1	IUS2.56/11.88
1	H2	HUS1.81/10
1	H2	IUS3.56/11.88
3	H3	HUS1.81/10
2	H3	HUS1.81/10
1	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD-WEST GORMLEY

MODEL: 4504 COR

ELEVATION: A

LOT:

CITY: RICHMOND HILL

SALESMAN: WILL GARCIA
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

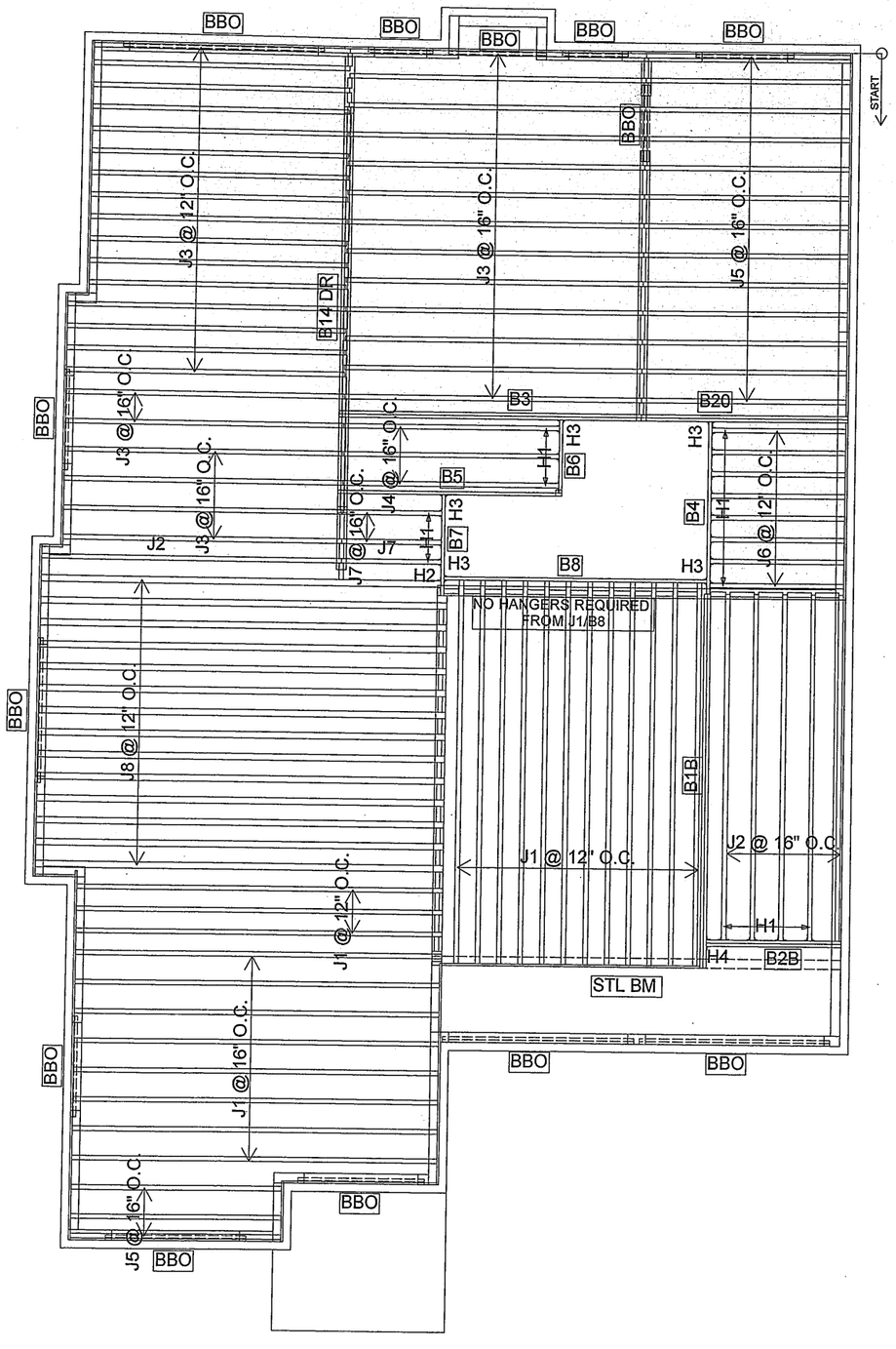
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2021-05-31

2nd FLOOR

OPTION
5 BEDROOM



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	23
J2	16-00-00	11 7/8" NI-40x	1	6
J3	14-00-00	11 7/8" NI-40x	1	35
J4	12-00-00	11 7/8" NI-40x	1	3
J5	10-00-00	11 7/8" NI-40x	1	16
J6	8-00-00	11 7/8" NI-40x	1	8
J7	6-00-00	11 7/8" NI-40x	1	3
J8	20-00-00	11 7/8" NI-80	1	14
B1B	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B3	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B8	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B5	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B20	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B4	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B2B	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B7	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B6	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B14 DR	20-00-00	1-3/4" x 14" VERSA-LAM® 2.0 3100 SP	3	3

Connector Summary		
Qty	Manuf	Product
14	H1	IUS2.56/11.88
4	H1	IUS2.56/11.88
1	H2	IUS3.56/11.88
3	H3	HUS1.81/10
2	H3	HUS1.81/10
1	H4	HGUS410

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTERFIELD-WEST GORMLEY

MODEL: 4504 COR

ELEVATION: B

LOT:

CITY: RICHMOND HILL

SALESMAN: WILL GARCIA
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

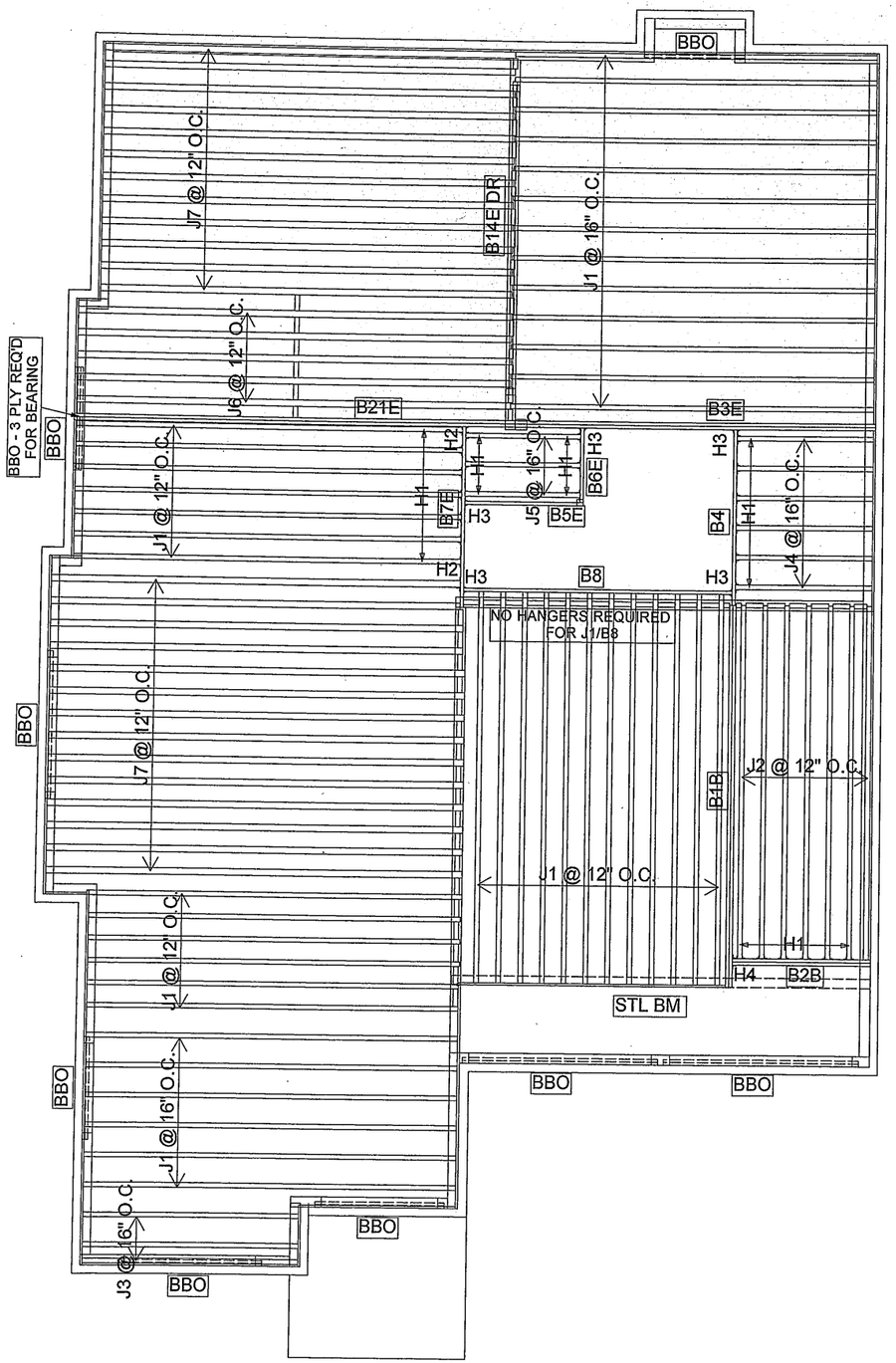
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: 20.0 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2021-05-31

2nd FLOOR

STANDARD
4 BEDROOM



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	44
J2	16-00-00	11 7/8" NI-40x	1	7
J3	10-00-00	11 7/8" NI-40x	1	3
J4	8-00-00	11 7/8" NI-40x	1	6
J5	6-00-00	11 7/8" NI-40x	1	3
J6	22-00-00	11 7/8" NI-80	1	5
J7	20-00-00	11 7/8" NI-80	1	26
B21E	22-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B1B	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B3E	18-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B8	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B14E DR	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B7E	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B4	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B2B	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B5E	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B6E	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
19	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
1	H2	HUS1.81/10
1	H2	IUS3.56/11.88
3	H3	HUS1.81/10
2	H3	HUS1.81/10
1	H4	HGUS410

TAMARACK LUMBER INC
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FROM PLAN DATED: FEB 2021

BUILDER: ROYAL PINE HOMES

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MODEL: 4504 COR

ELEVATION: B

LOT:

CITY: RICHMOND HILL

SALESMAN: WILL GARCIA
DESIGNER: L.D.
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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: 2021-05-31

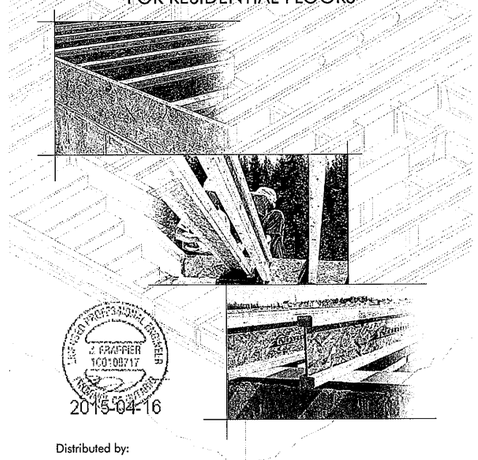
2nd FLOOR

OPTION
5 BEDROOM

NORDIC ENGINEERED WOOD

INSTALLATION GUIDE

FOR RESIDENTIAL FLOORS

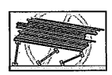


Distributed by:

N-C2301 / November 2014

SAFETY AND CONSTRUCTION PRECAUTIONS

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



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

WARNING

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

Avoid Accidents by Following these Important Guidelines:

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

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

MAXIMUM FLOOR SPANS

1. 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 + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
2. 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 CGBS-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the used of gypsum and/or a row of blocking at mid-span.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. 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.
6. Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and NBC 2010.
7. SI units conversion: 1 inch = 25.4 mm
   1 foot = 0.305 m

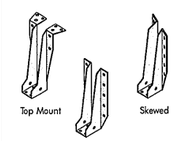
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS
SIMPLE AND MULTIPLE SPANS

Joist Depth	Joist Series	Simple spans On centre spacing 12"	16"	19.2"	24"	Multiple spans On centre spacing 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'-5"	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"
	NI-80	17'-3"	16'-3"	15'-8"	15'-9"	18'-10"	17'-6"	16'-11"	17'-0"
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'-6"	19'-11"	19'-0"	19'-1"
	NI-80	19'-9"	18'-3"	17'-6"	17'-7"	21'-9"	20'-2"	19'-3"	19'-4"
	NI-90	20'-2"	18'-7"	17'-10"	17'-11"	22'-3"	20'-7"	19'-8"	19'-9"
	NI-90x	20'-4"	18'-9"	17'-11"	18'-0"	22'-5"	20'-9"	19'-10"	19'-11"
14"	NI-40x	20'-1"	18'-7"	17'-10"	17'-11"	22'-2"	20'-6"	19'-8"	19'-4"
	NI-60	20'-5"	18'-11"	18'-1"	18'-2"	22'-7"	20'-11"	20'-0"	20'-1"
	NI-70	21'-7"	20'-0"	19'-1"	19'-2"	23'-10"	22'-1"	21'-1"	21'-2"
	NI-80	21'-11"	20'-3"	19'-4"	19'-5"	24'-3"	22'-5"	21'-5"	21'-6"
	NI-90	22'-5"	20'-8"	19'-9"	19'-10"	24'-9"	22'-10"	21'-10"	21'-10"
	NI-90x	22'-7"	20'-11"	19'-11"	20'-0"	25'-0"	23'-1"	22'-0"	22'-2"
16"	NI-60	22'-3"	20'-8"	19'-9"	19'-10"	24'-7"	22'-9"	21'-9"	21'-10"
	NI-70	23'-6"	21'-9"	20'-9"	20'-10"	26'-0"	24'-0"	22'-11"	23'-0"
	NI-80	23'-11"	22'-1"	21'-1"	21'-2"	26'-5"	24'-5"	23'-3"	23'-4"
	NI-90	24'-5"	22'-6"	21'-5"	21'-6"	26'-11"	24'-10"	23'-9"	23'-9"
	NI-90x	24'-8"	22'-9"	21'-9"	21'-10"	27'-3"	25'-2"	24'-0"	24'-1"

CCMC EVALUATION REPORT 13032-R

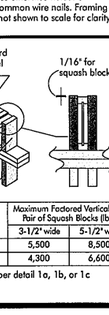
I-JOIST HANGERS

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



STORAGE AND HANDLING GUIDELINES

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



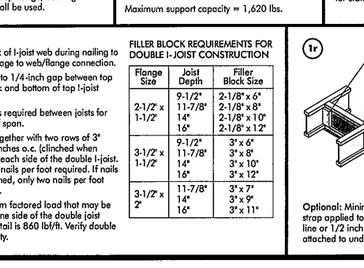
WEB STIFFENERS

RECOMMENDATIONS:

- A ***bearing stiffener*** is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found of 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

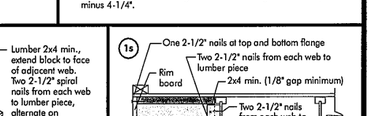


See table below for web stiffener size requirements

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

NORDIC I-JOIST SERIES



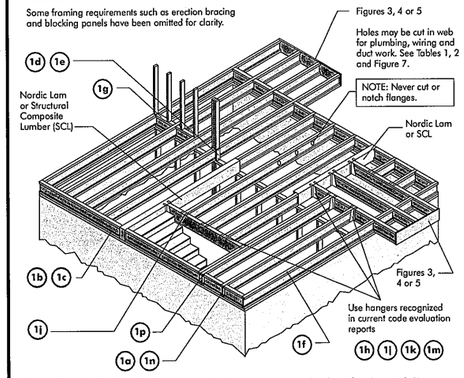
Chantiers Chibougamau Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from forest to the finished product, reflects our commitment to quality.

Nordic Engineered Wood I-joists use only finger-jointed stock for all lumber in their flanges, ensuring consistent quality, superior strength and longer span carrying capacity.

INSTALLING NORDIC I-JOISTS

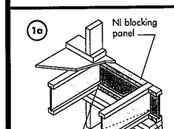
1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should **never** be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of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

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



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.

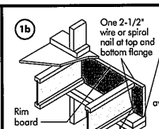
1a



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.

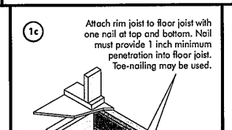
1b



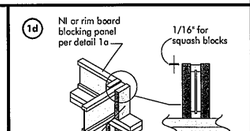
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

*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.

1c



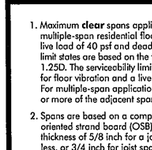
1d



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

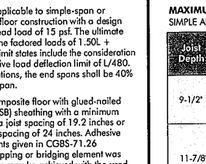
Provide lateral bracing per detail 1a, 1b, or 1c

1e



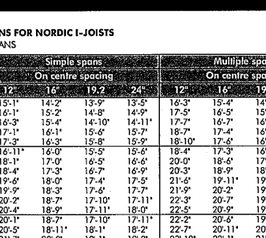
Transfer load from above to bearing below. Install squash blocks per detail 1d. Match bearing area of blocks below to post above.

1f

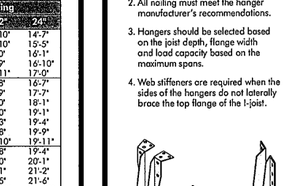


Rim board may be used in lieu of I-joists. Backer is not required when rim board is used. Bracing per code shall be carried to the foundation.

1g



1h



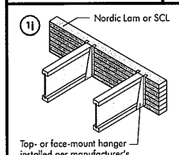
For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

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-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 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".

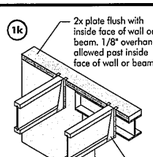
1j



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

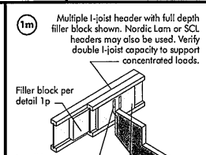
Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

1k



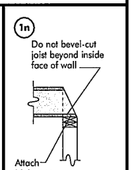
Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

1m



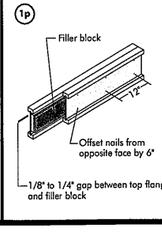
Maximum support capacity = 1,620 lbs.

1n



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

1p

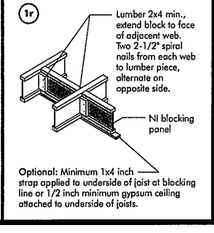


Notes:
1. Support back of I-joist web during nailing to prevent damage to web/flange connection.
2. Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
3. Filler block is required between joists for full length of span.
4. Nail joists together with two rows of 3"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

FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

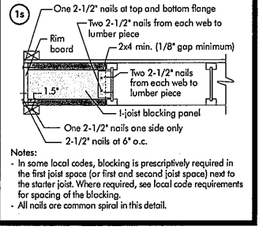
Flange Size	Joist Depth	Filler Block Size
2-1/2" x 1-1/2"	9-1/2"	2-1/8" x 6"
	11-7/8"	2-1/8" x 8"
	14"	2-1/8" x 10"
	16"	2-1/8" x 12"
3-1/2" x 1-1/2"	9-1/2"	3" x 6"
	11-7/8"	3" x 8"
	14"	3" x 10"
	16"	3" x 12"
3-1/2" x 2"	11-7/8"	3" x 7"
	14"	3" x 9"
	16"	3" x 11"

1r



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.

1s



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.

CONSTRUCTION DETAILS FOR RESIDENTIAL FLOORS

N-C303 / April 2014

NORDIC ENGINEERED WOOD

www.nordicewp.com

FSC www.fsc.org ID# C011617 The mark of responsible forestry

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

NI-20 NI-40x NI-60 NI-70 NI-80 NI-90 NI-90x

S-P-F No.2	1950f MSR	2100f MSR	1950f MSR	2100f MSR	2400f MSR	NPG Lumber
33 pieces per unit	33 pieces per unit	33 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit

WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

1. The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
2. I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
3. Whenever possible, field-cut holes should be centred on the middle of the web.
4. The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.
5. The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
6. Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole *(or twice the length of the longest side of the longest rectangular hole 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 are permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
9. A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
10. All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
11. Limit three maximum size holes per span, of which one may be a duct chase opening.
12. A group of round holes 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.) — Round Hole Diameter (in.)													
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	12-3/4
9-1/2"	NI-20	0'-7"	1'-6"	2'-10"	4'-3"	5'-8"	6'-0"	---	---	---	---	---	---	---	---	---
	NI-40x	0'-7"	1'-6"	3'-0"	4'-4"	6'-0"	6'-4"	---	---	---	---	---	---	---	---	---
	NI-60	1'-3"	2'-6"	4'-0"	5'-4"	7'-0"	7'-5"	---	---	---	---	---	---	---	---	---
	NI-70	2'-0"	3'-4"	4'-9"	6'-3"	8'-0"	8'-4"	---	---	---	---	---	---	---	---	---
	NI-80	2'-8"	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'-6"	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"	---	---	---	---	---	---
	NI-90	0'-7"	0'-8"	1'-5"	3'-2"	4'-10"	5'-4"	6'-9"	8'-9"	10'-2"	---	---	---	---	---	---
	NI-90x	0'-7"	0'-8"	0'-9"	2'-5"	4'-4"	4'-9"	6'-3"	---	---	---	---	---	---	---	---
14"	NI-40x	0'-7"	0'-8"	0'-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	---	---	---
	NI-60	0'-7"	0'-8"	1'-8"	3'-0"	4'-3"	4'-8"	5'-8"	7'-2"	8'-0"	8'-8"	10'-4"	11'-9"	---	---	---
	NI-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"	---	---	---
	NI-90	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-90x	0'-7"	0'-8"	0'-8"	2'-0"	3'-9"	4'-2"	5'-5"	7'-3"	8'-5"	9'-2"	---	---	---	---	---
16"	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"	12'-2"	13'-9"
	NI-70	0'-7"	1'-0"	2'-3"	3'-6"	4'-10"	5'-3"	6'-3"	7'-8"	8'-6"	9'-2"	10'-8"	12'-0"	12'-4"	14'-0"	15'-6"
	NI-80	0'-7"	1'-3"	2'-6"	3'-10"	5'-3"	5'-6"	6'-6"	8'-0"	9'-0"	9'-5"	11'-0"	12'-5"	12'-9"	14'-5"	16'-0"
	NI-90	0'-7"	0'-8"	0'-8"	1'-9"	3'-3"	3'-8"	4'-9"	6'-5"	7'-5"	8'-0"	9'-10"	11'-3"	11'-9"	13'-9"	15'-4"
	NI-90x	0'-7"	0'-8"	0'-9"	2'-0"	3'-6"	4'-0"	5'-0"	6'-9"	7'-9"	8'-4"	10'-2"	11'-6"	12'-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.
4. The above table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

TABLE 2

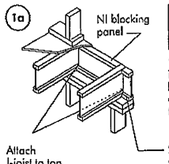
DUCT CHASE OPENING SIZES AND LOCATIONS

Simple Span Only

Joist Depth	Joist Series	Minimum distance from inside face of supports to centre of opening (ft - in.) — Duct Chase Length (in.)								
		8	10	12	14	16	18	20	22	24
9-1/2"	NI-20	4'-1"	4'-5"	4'-10"	5'-4"	5'-8"	6'-1"	6'-6"	7'-1"	7'-5"
	NI-40x	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	8'-2"	8'-6"
	NI-60	5'-4"	5'-9"	6'-2"	6'-7"	7'-1"	7'-5"	8'-0"	8'-3"	8'-9"
	NI-70	5'-1"	5'-5"	5'-10"	6'-3"	6'-7"	7'-1"	7'-6"	8'-1"	8'-4"
	NI-80	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	8'-2"	8'-6"
11-7/8"	NI-20	5'-9"	6'-2"	6'-6"	7'-1"	7'-5"	7'-9"	8'-3"	8'-9"	9'-4"
	NI-40x	6'-8"	7'-2"	7'-6"	8'-1"	8'-6"	9'-1"	9'-6"	10'-1"	10'-9"
	NI-60	7'-3"	7'-8"	8'-0"	8'-6"	9'-0"	9'-3"	9'-9"	10'-3"	11'-0"
	NI-70	7'-1"	7'-4"	7'-9"	8'-3"	8'-7"	9'-1"	9'-6"	10'-1"	10'-4"
	NI-80	7'-2"	7'-7"	8'-0"	8'-5"	8'-10"	9'-3"	9'-8"	10'-2"	10'-8"
	NI-90	7'-6"	7'-11"	8'-4"	8'-8"	9'-2"	9'-7"	10'-1"	10'-7"	10'-11"
	NI-90x	7'-2"	7'-6"	8'-1"	8'-5"	8'-10"	9'-4"	9'-8"	10'-2"	10'-8"
14"	NI-40x	8'-1"	8'-7"	9'-0"	9'-6"	10'-1"	10'-7"	11'-2"	12'-0"	12'-8"
	NI-60	8'-9"	9'-3"	9'-8"	10'-1"	10'-6"	11'-1"	11'-6"	13'-3"	13'-0"
	NI-70	8'-7"	9'-1"	9'-5"	9'-10"	10'-4"	10'-8"	11'-2"	11'-7"	12'-3"
	NI-80	9'-0"	9'-3"	9'-9"	10'-1"	10'-7"	11'-1"	11'-6"	12'-1"	12'-6"
	NI-90	9'-2"	9'-8"	10'-0"	10'-6"	10'-11"	11'-5"	11'-9"	12'-4"	12'-11"
	NI-90x	9'-4"	9'-9"	10'-3"	10'-7"	11'-1"	11'-7"	12'-1"	12'-7"	13'-2"
16"	NI-60	10'-3"	10'-8"	11'-2"	11'-6"	12'-1"	12'-6"	13'-2"	14'-1"	14'-10"
	NI-70	10'-1"	10'-5"	11'-0"	11'-4"	11'-10"	12'-3"	12'-8"	13'-2"	14'-0"
	NI-80	10'-4"	10'-9"	11'-3"	11'-9"	12'-1"	12'-7"	13'-1"	13'-8"	14'-4"
	NI-90	10'-9"	11'-2"	11'-8"	12'-0"	12'-6"	13'-0"	13'-6"	14'-2"	14'-10"
	NI-90x	11'-1"	11'-5"	11'-10"	12'-4"	12'-10"	13'-2"	13'-9"	14'-4"	15'-2"

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

1a

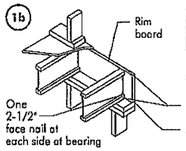


Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300

*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.

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)

1b



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.

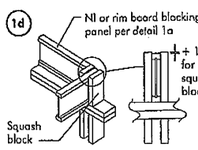
One 2-1/2" wire or spiral nail at top and bottom flange

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-joist. 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.

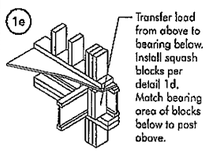
1d



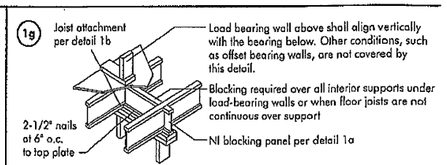
Pair of Squash Blocks	Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)	
	3-1/2" wide	5-1/2" wide
2x Lumber	5,500	8,500
1-1/8" Rim Board Plus	4,300	6,600

Provide lateral bracing per detail 1a or 1b

1e



1g



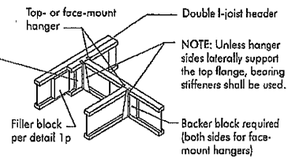
1h

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

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

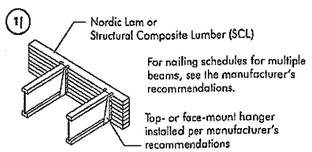
Flange Width	Material Thickness Required*	Minimum Depth**
2-1/2"	1"	5-1/2"
3-1/2"	1-1/2"	7-1/4"

* 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-O325 or CAN/CSA-O437 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".



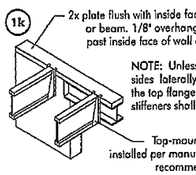
For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

1f

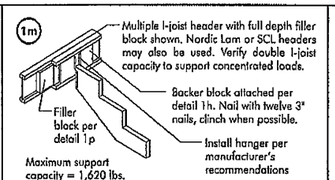


NOTE: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

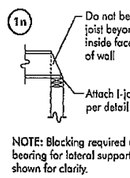
1k



1m

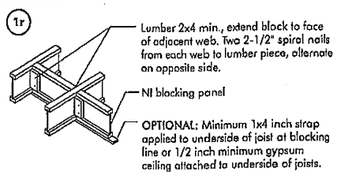


1n

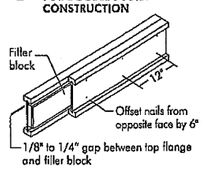


NOTE: Blocking required at bearing for lateral support, not shown for clarity.

1r



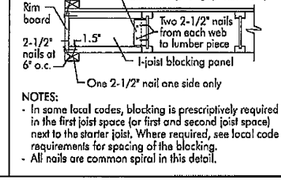
1p **FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION**



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

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

1s

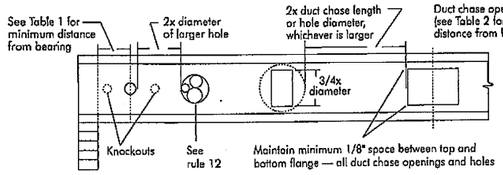


NOTES:
- In some local codes, blocking is prescriptively required in the first joist space (or first and second joist space) next to the starter joist. Where required, see local code requirements for spacing of the blocking.
- All nails are common spiral in this detail.

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.

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-joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

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

Holes in webs should be cut with a sharp saw.

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

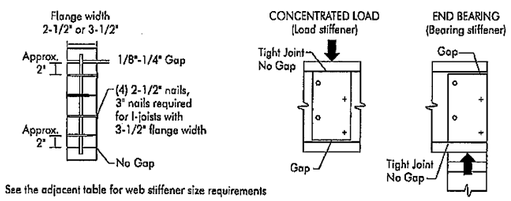
WEB STIFFENERS

RECOMMENDATIONS:

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

FIGURE 2

WEB STIFFENER INSTALLATION DETAILS

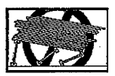


See the adjacent table for web stiffener size requirements

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

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:

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

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

CHANTIERS CHIBOUGAMAU

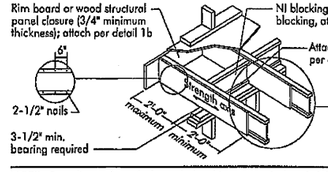
PRODUCT WARRANTY

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.

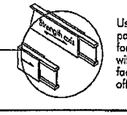
CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE



Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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



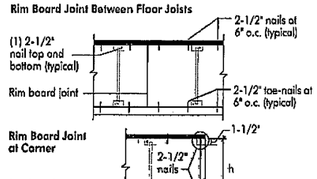
Use nailing pattern shown for Method 1 with opposite face nailing offset by 3".

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-joist to plate at all supports per detail 1b. Verify reinforced I-joist capacity.

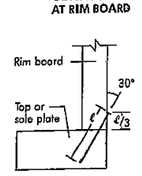
RIM BOARD INSTALLATION DETAILS

8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim Board Joint Between Floor Joists



8b TOE-NAIL CONNECTION AT RIM BOARD



NORDIC STRUCTURES

COMPANY	PROJECT
Sep. 5, 2020 09:47	J9 1ST FLOOR

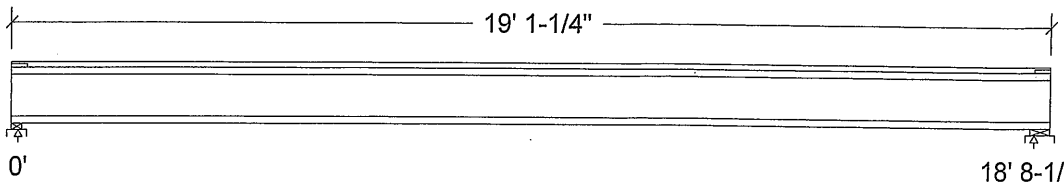
Design Check Calculation Sheet

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	187		187
Live	374		374
Factored:			
Total	794		794
Bearing:			
Capacity			
Joist	2188		2336
Support	5573		10841
Des ratio			
Joist	0.36		0.34
Support	0.14		0.07
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-80 Floor joist @ 12" o.c.

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

Total length: 19' 1-1/4"; Clear span: 18' 6-1/2"; 3/4" nailed and glued OSB sheathing

This section PASSES the design code check.

LICENSED PROFESSIONAL ENGINEER
4154
S. KATSOULAKOS
PROVINCE OF ONTARIO

p6 of 6

DWG NO. TRW8608-21
STRUCTURAL
COMPONENT ONLY

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 794	Vr = 2336	lbs	Vf/Vr = 0.34
Moment(+)	Mf = 3710	Mr = 11609	lbs-ft	Mf/Mr = 0.32
Perm. Defl'n	0.10 = < L/999	0.62 = L/360	in	0.16
Live Defl'n	0.20 = < L/999	0.47 = L/480	in	0.43
Total Defl'n	0.30 = L/737	0.93 = L/240	in	0.33
Bare Defl'n	0.23 = L/984	0.62 = L/360	in	0.37
Vibration	Lmax = 18'-8.3	Lv = 21'-2.7	ft	0.88
Defl'n	= 0.025	= 0.034	in	0.73

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	11609	1.00	1.00	-	1.000	-	-	-	#2
EI	547.1 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:

```
EIeff = 625.37 lb-in^2  K=  6.18e06 lbs
"Live" deflection is due to all non-dead loads (live, wind, snow…)
```

CONFORMS TO OBC 2012

Design Notes:

AMENDED 2020

1. WoodWorks analysis and design are in accordance with the 2015 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-14 Engineering Design in Wood standard, Update No. 2 (June 2017).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM8608-21
STRUCTURAL
COMPONENT ONLY

NORDIC STRUCTURES

COMPANY
Sep. 5, 2020 09:50

PROJECT
J8 2ND FLOOR

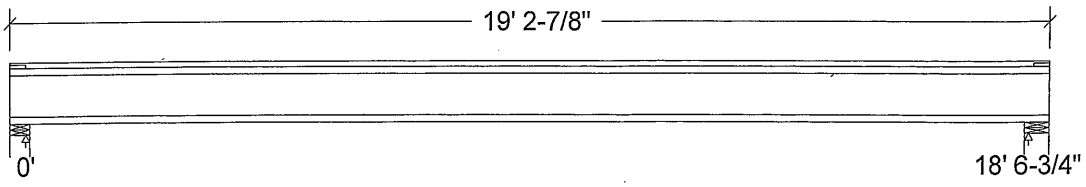
Design Check Calculation Sheet

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	186		186
Live	371		371
Factored:			
Total	789		789
Bearing:			
Capacity			
Joist	2336		2336
Support	10841		13614
Des ratio			
Joist	0.34		0.34
Support	0.07		0.06
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-80 Floor joist @ 12" o.c.

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

Total length: 19' 2-7/8"; Clear span: 18' 5"; 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 = 789	Vr = 2336	lbs	Vf/Vr = 0.34
Moment(+)	Mf = 3661	Mr = 11609	lbs-ft	Mf/Mr = 0.32
Perm. Defl'n	0.10 = < L/999	0.62 = L/360	in	0.16
Live Defl'n	0.20 = < L/999	0.46 = L/480	in	0.43
Total Defl'n	0.30 = L/738	0.93 = L/240	in	0.32
Bare Defl'n	0.22 = < L/999	0.62 = L/360	in	0.36
Vibration	Lmax = 18'-6.8	Lv = 20'-5.8	ft	0.91
Defl'n	= 0.027	= 0.034	in	0.79

P6 4

DWG NO. TAM0609-21
STRUCTURAL
COMPONENT ONLY

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	11609	1.00	1.00	-	1.000	-	-	-	#2
EI	547.1 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:

```
 EIeff = 613.27 lb-in^2  K=  6.18e06 lbs
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
```

CONFORMS TO OBC 2012

Design Notes:

AMENDED 2020

1. WoodWorks analysis and design are in accordance with the 2015 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-14 Engineering Design in Wood standard, Update No. 2 (June 2017).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM B609-2L
STRUCTURAL
COMPONENT ONLY

NORDIC STRUCTURES	COMPANY Aug. 24, 2020 13:51	PROJECT J1 - 2ND FLOOR CANT

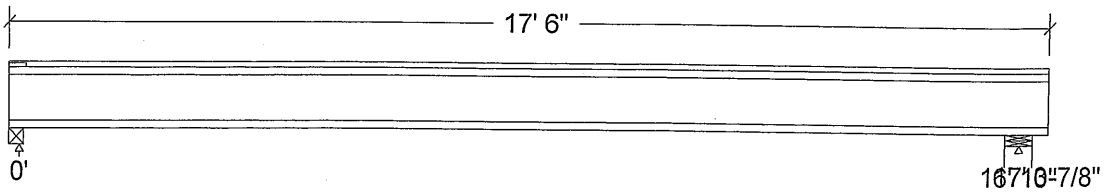
Design Check Calculation Sheet

Nordic Sizer – Canada 7.2

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full Area	No			20.00		psf
Load2	Live	Full Area	Yes			40.00		psf

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



Unfactored:				
Dead	168		178	
Live	337		357	
Factored:				
Total	715		758	
Bearing:				
Capacity				
Joist	2191		2336	
Support	-		9724	
Des ratio				
Joist	0.33		0.32	
Support	-		0.08	
Load case	#4		#2	
Length	3		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	
Kzcp sup	-		-	

*Minimum bearing length for joists is 3" for intermediate supports

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 @ 12" o.c.

Supports: 1 - Steel Beam, W; 2 - Lumber Wall, No.1/No.2;

Total length: 17' 6"; Clear span: 16' 6-3/8", 0' 3-1/8"; 3/4" nailed and glued OSB sheathing

This section PASSES the design code check.

LICENSED PROFESSIONAL ENGINEER
4154
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PROVINCE OF ONTARIO

P6/6

DWG NO. TAM 8610-21
STRUCTURAL
COMPONENT ONLY

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 716	Vr = 2336	lbs	Vf/Vr = 0.31
Moment(+)	Mf = 3009	Mr = 6255	lbs-ft	Mf/Mr = 0.48
Moment(-)	Mf = 10	Mr = 6255	lbs-ft	Mf/Mr = 0.00
Deflection:				
Interior Perm	0.09 = < L/999	0.56 = L/360	in	0.16
Live	0.18 = < L/999	0.42 = L/480	in	0.44
Total	0.28 = L/728	0.84 = L/240	in	0.33
Cantil. Perm	-0.01 = L/777	0.03 = L/180	in	0.23
Live	-0.02 = L/387	0.02 = L/240	in	0.62
Total	-0.02 = L/258	0.05 = L/120	in	0.46
Bare Defl'n	-0.02 = L/324	0.03 = L/180	in	0.56
Vibration	Lmax = 16'-10	Lv = 19'-6.3	ft	0.86
Defl'n	= 0.025	= 0.038	in	0.66

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	-	-	-	#4
Mr-	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 million		-	-	-	-	-	-	#4

CRITICAL LOAD COMBINATIONS:

```
Shear      : LC #2  = 1.25D + 1.5L
Moment(+)  : LC #4  = 1.25D + 1.5L (pattern: L_)
Moment(-)  : LC #2  = 1.25D + 1.5L
Deflection: LC #1  = 1.0D  (permanent)
            LC #4  = 1.0D + 1.0L (pattern: L_)  (live)
            LC #4  = 1.0D + 1.0L (pattern: L_)  (total)
            LC #4  = 1.0D + 1.0L (pattern: L_)  (bare joist)
Bearing    : Support 1 - LC #4 = 1.25D + 1.5L (pattern: L_)
             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:

```
EIeff = 443.45 lb-in^2  K=  6.18e06 lbs
"Live" deflection is due to all non-dead loads (live, wind, snow...)
```

CONFORMS TO OBC 2012

Design Notes:

AMENDED 2020

1. WoodWorks analysis and design are in accordance with the 2015 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-14 Engineering Design in Wood standard, Update No. 2 (June 2017).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.

LICENSED PROFESSIONAL ENGINEER S. KATSOULAKOS PROVINCE OF ONTARIO

P6 2/2

BLDG NO. TAM 0610-21 STRUCTURAL COMPONENT ONLY

NORDIC STRUCTURES

COMPANY	PROJECT
Aug. 24, 2020 09:51	J6 - 2ND FLOOR

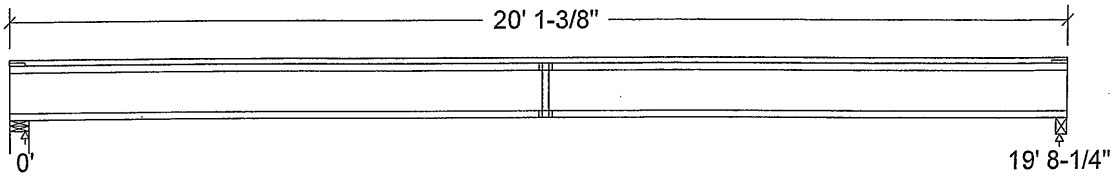
Design Check Calculation Sheet

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	197		197
Live	394		394
Factored:			
Total	837		837
Bearing:			
Capacity			
Joist	2336		2199
Support	10841		5381
Des ratio			
Joist	0.36		0.38
Support	0.08		0.16
Load case	#2		#2
Length	4-3/8		2-1/2
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	-		1.00
fcp sup	769		769
Kzcp sup	-		1.00

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

Nordic Joist 11-7/8" NI-80 Floor joist @ 12" o.c.

Supports: 1 - Lumber Wall, No.1/No.2; 2 - Lumber Beam, No.1/No.2;

Total length: 20' 1-3/8"; Clear span: 19' 6-1/2"; 5/8" nailed and glued OSB sheathing with 1 row of blocking and 5/8" 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 = 837	Vr = 2336	lbs	Vf/Vr = 0.36
Moment(+)	Mf = 4118	Mr = 11609	lbs-ft	Mf/Mr = 0.35
Perm. Defl'n	0.13 = < L/999	0.66 = L/360	in	0.19
Live Defl'n	0.25 = L/942	0.49 = L/480	in	0.51
Total Defl'n	0.38 = L/628	0.98 = L/240	in	0.39
Bare Defl'n	0.28 = L/852	0.66 = L/360	in	0.42
Vibration	Lmax = 19'-8.3	Lv = 23'-9.5	ft	0.85
Defl'n	= 0.021	= 0.033	in	0.66

LICENSED PROFESSIONAL ENGINEER S. KATSOULAKOS PROVINCE OF ONTARIO

DWG NO. TAM 8611-2L

STRUCTURAL COMPONENT ONLY

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	11609	1.00	1.00	-	1.000	-	-	-	#2
EI	547.1 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:

```
EIeff = 613.27 lb-in^2  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.

LICENSED PROFESSIONAL ENGINEER
4154
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM0641-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

2ND FLR FRAMING\Flush Beams\B3(i12390) (Flush Beam)

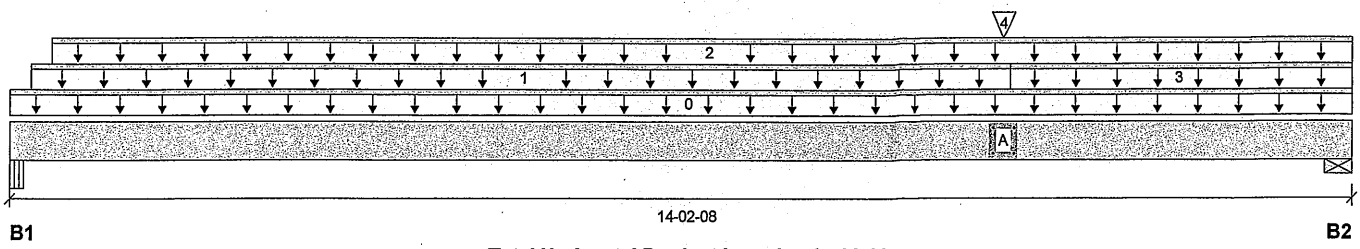
BC CALC® Member Report
Build 7773

Dry | 1 span | No cant.

May 31, 2021 12:20:03

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

File name: 4504 COR - STANDARD 4 BEDROOM.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B3(i12390)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 14-02-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	371 / 0	681 / 0		
B2, 2-3/4"	692 / 0	858 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	14-02-08	Top		12			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-02-10	10-06-08	Top	27	13			n\a
2	WALL	Unf. Lin. (lb/ft)	L	00-05-04	14-02-08	Top		60			n\a
3	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	10-06-08	14-02-08	Top	19	9			n\a
4	B6(i12439)	Conc. Pt. (lbs)	L	10-05-10	10-05-10	Top	718	369			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	6654 ft-lbs	35392 ft-lbs	18.8%	1	09-10-14
End Shear	1951 lbs	14464 lbs	13.5%	1	12-11-14
Total Load Deflection	L/1012 (0.162")	n\a	23.7%	4	07-06-00
Live Load Deflection	L/999 (0.069")	n\a	n\a	5	07-09-07
Max Defl.	0.162"	n\a	n\a	4	07-06-00
Span / Depth	13.8				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	5-1/4" x 3-1/2"	953 lbs	6.5%	6.5%	VL 2.0 3100 SP
B2	Wall/Plate	2-3/4" x 3-1/2"	2110 lbs	35.6%	18.0%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
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: 09-11-08.

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
6224
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 11589-21
STRUCTURAL
COMPONENT ONLY

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

PASSED

2ND FLR FRAMING\Flush Beams\B3(i12390) (Flush Beam)

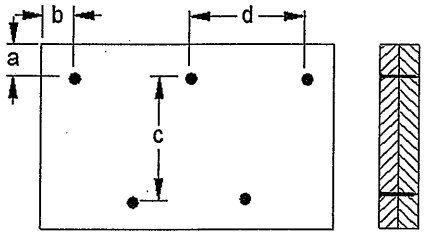
Dry | 1 span | No cant.

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

May 31, 2021 12:20:03

File name: 4504 COR - STANDARD 4 BEDROOM.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B3(i12390)
Specifier:
Designer: L.D.
Company:

Connection Diagram: Full Length of Member

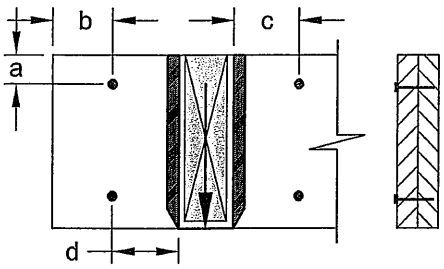


a minimum = 2"
b minimum = 3"
c = 7-7/8"
d = [redacted]

Connectors are: [redacted] Nails
3½" ARDOX SPIRAL

Connection Diagrams: Concentrated Side Loads

Connection Tag: A Applies to load tag(s): 3



a minimum = 2"
b minimum = 4"
c minimum = 4"
d maximum = 12"
Connectors are: 16d [redacted] Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 11589-2L
STRUCTURAL
COMPONENT ONLY

Disclosure

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

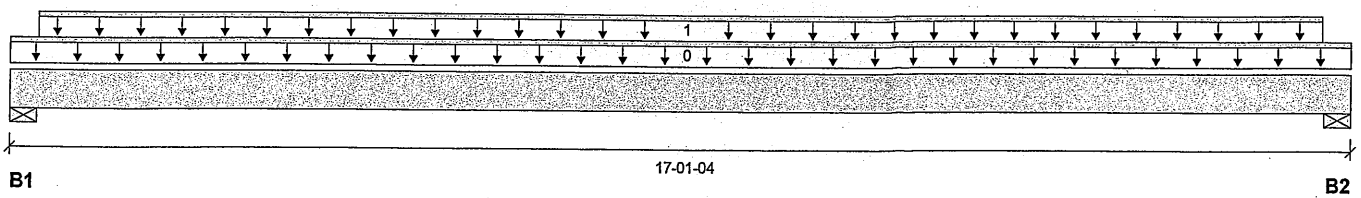
1ST FLR FRAMING\Dropped Beams\B51(i12588) (Dropped Beam)

Dry | 1 span | No cant.

May 31, 2021 12:06:55

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

File name: 4504 COR SUNKEN OPTION.mmdl
Description: 1ST FLR FRAMING\Dropped Beams\B51(i12588)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 17-01-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"		581 / 0		
B2, 8-7/8"		608 / 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	17-01-04	Top		12			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-04-06	16-08-14	Top		60			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3279 ft-lbs	12438 ft-lbs	26.4%	0	08-04-06
End Shear	707 lbs	9401 lbs	7.5%	0	01-04-04
Total Load Deflection	L/999 (0.112")	n\a	n\a	1	08-04-06
Max Defl.	0.112"	n\a	n\a	1	08-04-06
Span / Depth	16.3				

Bearing Supports

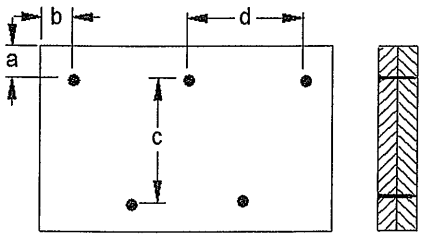
		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	4-3/8" x 3-1/2"	813 lbs	5.8%	6.7%	Unspecified
B2	Wall/Plate	8-7/8" x 3-1/2"	851 lbs	3.0%	3.5%	Unspecified

Notes

Design meets Code minimum (L/240) Total 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: 16-00-00, Bottom: 16-00-00.

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



P6/4

DWG NO. TAM 11590-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

1ST FLR FRAMING\Dropped Beams\B51(i12588) (Dropped Beam)

Dry | 1 span | No cant.

BC CALC® Member Report
Build 7773

May 31, 2021 12:06:55

Job name:		File name:	4504 COR SUNKEN OPTION.mmdl
Address:		Description:	1ST FLR FRAMING\Dropped Beams\B51(i12588)
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 = 7-7/8"
d = [illegible] B51

Connectors are: [illegible] Nails

3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM W590-21
STRUCTURAL
COMPONENT ONLY

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

2ND FLR FRAMING\Flush Beams\B1A(i20819) (Flush Beam)

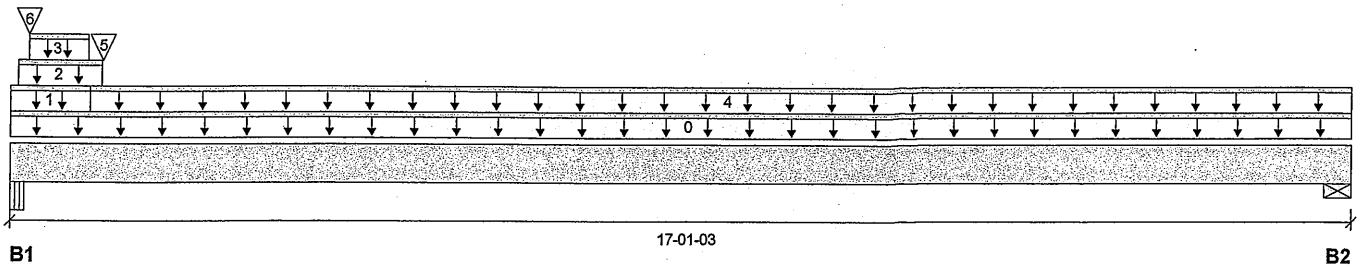
Dry | 1 span | No cant.

May 31, 2021 11:59:35

BC CALC® Member Report
Build 7773

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

File name: 4504 COR - EL A.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B1A(i20819)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 17-01-03

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5"	1306 / 0	1655 / 0	1236 / 0	
B2, 2-11/16"	224 / 0	255 / 0	55 / 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	17-01-03	Top		12			00-00-00
1	E47(i283)	Unf. Lin. (lb/ft)	L	00-00-00	01-00-00	Top		81			n\a
2	ROOF	Unf. Lin. (lb/ft)	L	00-01-02	01-01-12	Top	33	30	78		n\a
3	E47(i283)	Unf. Lin. (lb/ft)	L	00-02-12	00-11-12	Top	57	63	196		n\a
4	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	01-00-00	17-01-03	Top	20	10			n\a
5	-	Conc. Pt. (lbs)	L	01-01-15	01-01-15	Top	1117	1358	1022		n\a
6	E47(i283)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top			30		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4253 ft-lbs	35392 ft-lbs	12.0%	1	04-09-10
End Shear	3920 lbs	14464 lbs	27.1%	1	01-04-14
Total Load Deflection	L/1214 (0.164")	n\a	19.8%	35	07-11-10
Live Load Deflection	L/999 (0.091")	n\a	n\a	51	07-11-10
Max Defl.	0.164"	n\a	n\a	35	07-11-10
Span / Depth	16.8				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	5" x 3-1/2"	5263 lbs	56.3%	24.7%	Unspecified
B2	Wall/Plate	2-11/16" x 3-1/2"	709 lbs	12.3%	6.2%	Spruce-Pine-Fir

Cautions

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

LICENSED PROFESSIONAL ENGINEER
6 22
S. KATSOULAKOS
PROVINCE OF ONTARIO

P6 4/4

DWG NO. TAM 11591 -21
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

2ND FLR FRAMING\Flush Beams\B1A(i20819) (Flush Beam)

Dry | 1 span | No cant.

May 31, 2021 11:59:35

BC CALC® Member Report
Build 7773

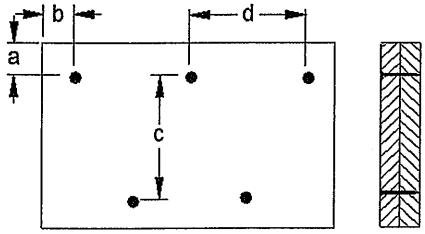
Job name:		File name:	4504 COR - EL A.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B1A(i20819)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	L.D.
Code reports:	CCMC 12472-R	Company:	

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 15-07-00.

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 7-7/8"
d = [redacted] 8 41

Connectors are: 1 Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 11591-2L
STRUCTURAL
COMPONENT ONLY

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

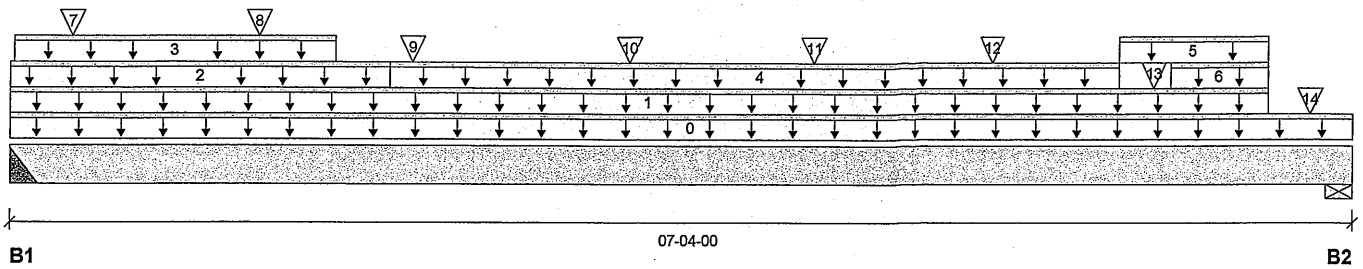
2ND FLR FRAMING\Flush Beams\B2A(i20853) (Flush Beam)

Dry | 1 span | No cant.

May 31, 2021 11:59:35

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

File name: 4504 COR - EL A.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B2A(i20853)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 07-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	1147 / 0	1162 / 0	644 / 0	
B2, 5-1/2"	1023 / 0	1073 / 0	632 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-04-00	Top		12			00-00-00
1	J03	Unf. Lin. (lb/ft)	L	00-00-00	06-10-08	Top		36	69		n\a
2	E46(i487)	Unf. Lin. (lb/ft)	L	00-00-00	02-00-08	Top		81			n\a
3	E46(i487)	Unf. Lin. (lb/ft)	L	00-00-04	01-09-00	Top		46	110		n\a
4	E45(i240)	Unf. Lin. (lb/ft)	L	02-00-08	06-00-08	Top		41			n\a
5	E44(i107)	Unf. Lin. (lb/ft)	L	06-00-08	06-10-08	Top		81			n\a
6	E44(i107)	Unf. Lin. (lb/ft)	L	06-04-00	06-10-08	Top		46	110		n\a
7	J1(i20816)	Conc. Pt. (lbs)	L	00-04-00	00-04-00	Top	242	121			n\a
8	J2(i20739)	Conc. Pt. (lbs)	L	01-04-00	01-04-00	Top	325	162			n\a
9	-	Conc. Pt. (lbs)	L	02-02-00	02-02-00	Top	325	302	254		n\a
10	J2(i20578)	Conc. Pt. (lbs)	L	03-04-00	03-04-00	Top	325	162			n\a
11	J2(i20578)	Conc. Pt. (lbs)	L	04-04-00	04-04-00	Top	325	162			n\a
12	J2(i20578)	Conc. Pt. (lbs)	L	05-04-00	05-04-00	Top	325	162			n\a
13	-	Conc. Pt. (lbs)	L	06-02-13	06-02-13	Top	293	285	250		n\a
14	E43(i149)	Conc. Pt. (lbs)	L	07-01-04	07-01-04	Top		43	48		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	5523 ft-lbs	35392 ft-lbs	15.6%	1	03-04-00
End Shear	2872 lbs	14464 lbs	19.9%	1	05-10-10
Total Load Deflection	L/999 (0.035")	n\a	n\a	35	03-07-00
Live Load Deflection	L/999 (0.021")	n\a	n\a	51	03-07-00
Max Defl.	0.035"	n\a	n\a	35	03-07-00
Span / Depth	6.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	4" x 3-1/2"	3817 lbs	n\a	22.4%	HGUS410
B2	Wall/Plate	5-1/2" x 3-1/2"	3508 lbs	29.6%	14.9%	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.

LICENSED PROFESSIONAL ENGINEER
6 22
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 11592-2L
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

2ND FLR FRAMING\Flush Beams\B2A(i20853) (Flush Beam)

Dry | 1 span | No cant.

May 31, 2021 11:59:35

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

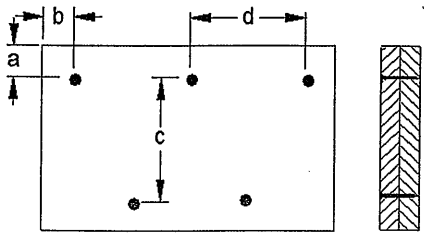
File name: 4504 COR - EL A.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B2A(i20853)
Specifier:
Designer: L.D.
Company:

Notes

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

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



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

Calculated Side Load = 690.0 lb/ft
Connectors are: 16d 4 Nails
3½" ARDOX SPIRAL

DWG NO. YAM 1159-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

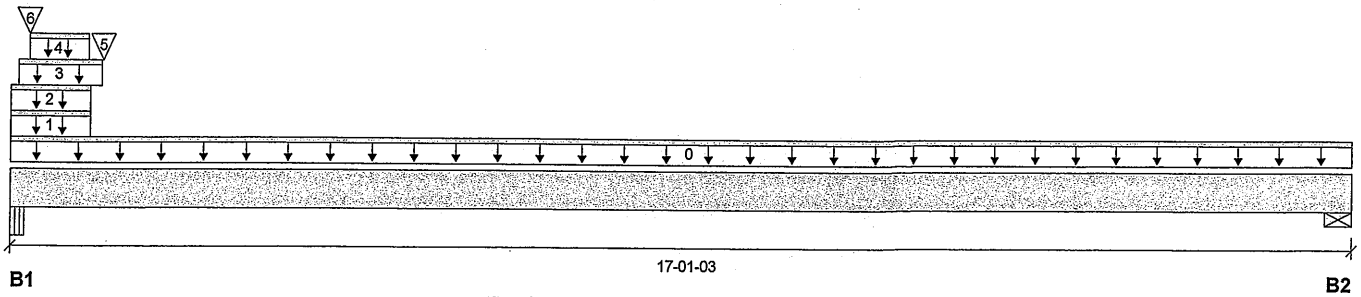
2ND FLR FRAMING\Flush Beams\B1B(i20627) (Flush Beam)

Dry | 1 span | No cant.

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

May 31, 2021 12:01:19

File name: 4504 COR - EL B.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B1B(i20627)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 17-01-03

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5"	1079 / 0	1451 / 0	1154 / 0	
B2, 2-11/16"	51 / 0	164 / 0	51 / 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	17-01-03	Top		12			00-00-00
1	E47(i283)	Unf. Lin. (lb/ft)	L	00-00-00	01-00-00	Top		81			n\a
2	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	01-00-00	Top	13				n\a
3	ROOF	Unf. Lin. (lb/ft)	L	00-01-02	01-01-12	Top	33	30	78		n\a
4	E47(i283)	Unf. Lin. (lb/ft)	L	00-02-12	00-11-12	Top	62	68	208		n\a
5	-	Conc. Pt. (lbs)	L	01-01-15	01-01-15	Top	1035	1226	937		n\a
6	E47(i283)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top			30		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3319 ft-lbs	35392 ft-lbs	9.4%	1	01-02-12
End Shear	3375 lbs	14464 lbs	23.3%	13	01-04-14
Total Load Deflection	L/999 (0.105")	n\a	n\a	35	07-08-14
Live Load Deflection	L/999 (0.052")	n\a	n\a	51	07-03-07
Max Defl.	0.105"	n\a	n\a	35	07-08-14
Span / Depth	16.8				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	5" x 3-1/2"	4623 lbs	61.8%	21.7%	Unspecified
B2	Wall/Plate	2-11/16" x 3-1/2"	229 lbs	6.1%	3.1%	Spruce-Pine-Fir

Cautions

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

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 11593-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

2ND FLR FRAMING\Flush Beams\B1B(i20627) (Flush Beam)

Dry | 1 span | No cant.

BC CALC® Member Report
Build 7773

May 31, 2021 12:01:19

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

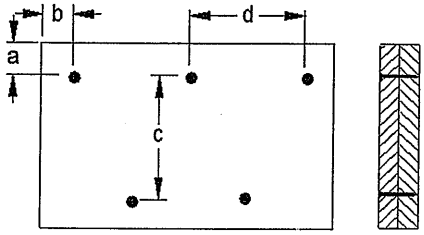
File name: 4504 COR - EL B.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B1B(i20627)
Specifier:
Designer: L.D.
Company:

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Calculations assume unbraced length of Top: 00-00-00, Bottom: 15-07-00.

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 7-7/8"
d = 2' 8 1/4"

Connectors are: 1 Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 11593-2L
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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Boise Cascade® ENGINEERED WOOD PRODUCTS

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

PASSED

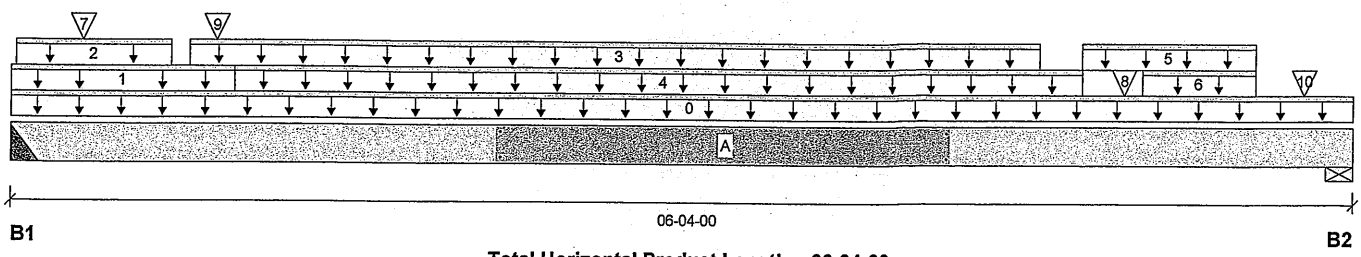
2ND FLR FRAMING\Flush Beams\B2B(i20672) (Flush Beam)

Dry | 1 span | No cant.

May 31, 2021 12:03:32

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

File name: 4504 COR - EL B.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B2B(i20672)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 06-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	1068 / 0	1030 / 0	558 / 0	
B2, 5-1/2"	860 / 0	904 / 0	529 / 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	06-04-00	Top		12			00-00-00
1	E46(i487)	Unf. Lin. (lb/ft)	L	00-00-00	01-00-08	Top		81			n\a
2	E46(i487)	Unf. Lin. (lb/ft)	L	00-00-04	00-09-00	Top		46	110		n\a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	00-10-00	04-10-00	Top	325	198	69		n\a
4	E45(i240)	Unf. Lin. (lb/ft)	L	01-00-08	05-00-08	Top		41			n\a
5	E44(i107)	Unf. Lin. (lb/ft)	L	05-00-08	05-10-08	Top		81			n\a
6	E44(i107)	Unf. Lin. (lb/ft)	L	05-04-00	05-10-08	Top		46	110		n\a
7	J2(i20552)	Conc. Pt. (lbs)	L	00-04-00	00-04-00	Top	325	194	60		n\a
8	-	Conc. Pt. (lbs)	L	05-02-15	05-02-15	Top	293	316	309		n\a
9	E46(i487)	Conc. Pt. (lbs)	L	00-11-08	00-11-08	Top		140	254		n\a
10	E43(i149)	Conc. Pt. (lbs)	L	06-01-04	06-01-04	Top		43	48		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3847 ft-lbs	35392 ft-lbs	10.9%	1	03-04-00
End Shear	2394 lbs	14464 lbs	16.6%	1	01-03-14
Total Load Deflection	L/999 (0.017")	n\a	n\a	35	03-01-00
Live Load Deflection	L/999 (0.011")	n\a	n\a	51	03-01-00
Max Defl.	0.017"	n\a	n\a	35	03-01-00
Span / Depth	5.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	4" x 3-1/2"	3449 lbs	n\a	20.2%	HGUS410
B2	Wall/Plate	5-1/2" x 3-1/2"	2949 lbs	24.9%	12.6%	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.

LICENSED PROFESSIONAL ENGINEER
6221
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. YAM 11594-2L
STRUCTURAL
COMPONENT ONLY

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

PASSED

2ND FLR FRAMING\Flush Beams\B2B(i20672) (Flush Beam)

Dry | 1 span | No cant.

May 31, 2021 12:03:32

BC CALC® Member Report
Build 7773

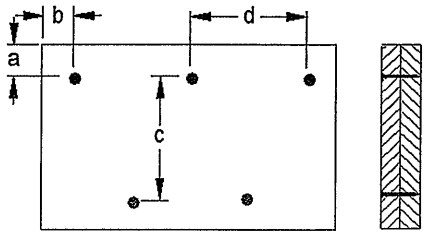
Job name:		File name:	4504 COR - EL B.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B2B(i20672)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	L.D.
Code reports:	CCMC 12472-R	Company:	

Notes

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

CONFORMS TO OBC 2012
AMENDED 2020

Connection Diagram: Full Length of Member



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

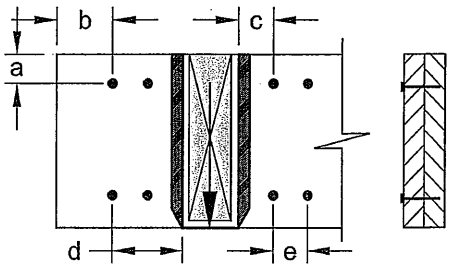
Calculated Side Load = 402.0 lb/ft
Connectors are: 16d 1 Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 11594-21
STRUCTURAL
COMPONENT ONLY

Connection Diagrams: Concentrated Side Loads

Connection Tag: ~~A~~ ~~Applies to load~~ tag(s): 23+28+33



a minimum = 2"
b minimum = 4"
c minimum = 4"
d maximum = 12"
e minimum = 4"
Connectors are: 16d 1: Nails
3½" 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® , 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

PASSED

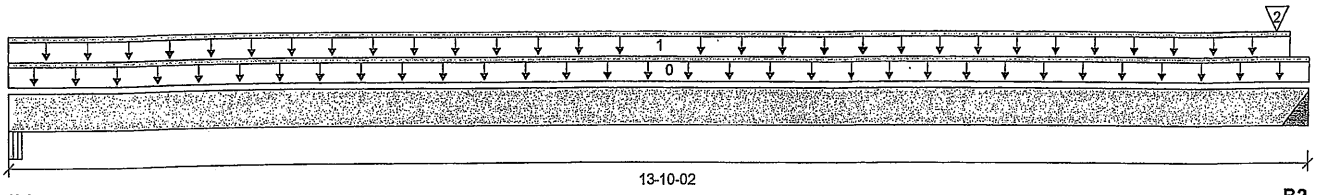
1ST FLR FRAMING\Flush Beams\B10(i11902) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | September 8, 2020 07:35:19

Build 7493

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

File name: 4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B10(i11902)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 13-10-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-1/2"	193 / 0	181 / 0		
B2, 2"	625 / 0	419 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-10-02	Top		12			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	13-07-10	Top	27	13			n\a
2	B9(i11890)	Conc. Pt. (lbs)	L	13-05-14	13-05-14	Top	455	251			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1783 ft-lbs	35392 ft-lbs	5.0%	1	07-01-08
End Shear	636 lbs	14464 lbs	4.4%	1	12-08-04
Total Load Deflection	L/999 (0.045")	n\a	n\a	4	07-00-06
Live Load Deflection	L/999 (0.023")	n\a	n\a	5	07-00-06
Max Defl.	0.045"	n\a	n\a	4	07-00-06
Span / Depth	13.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	2-1/2" x 3-1/2"	516 lbs	11.0%	4.8%	Unspecified
B2	Hanger	2" x 3-1/2"	1461 lbs	n\a	17.1%	HUC412

Cautions

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.

OKP

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

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

P6 1/2

DWG NO. TAM B613-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade

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

PASSED

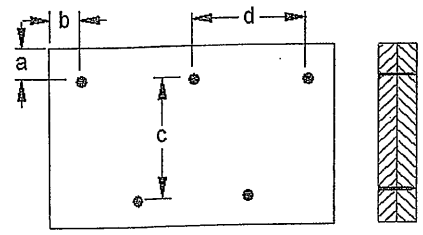
1ST FLR FRAMING\Flush Beams\B10(i11902) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:35:19

Build 7493

Job name:		File name:	4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B10(i11902)
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 = 7-7/8"
d = 10' 8"

Calculated Side Load = 498.1 lb/ft
Connectors are: 1 Nails

3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
4154
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM0613-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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Boise Cascade

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

PASSED

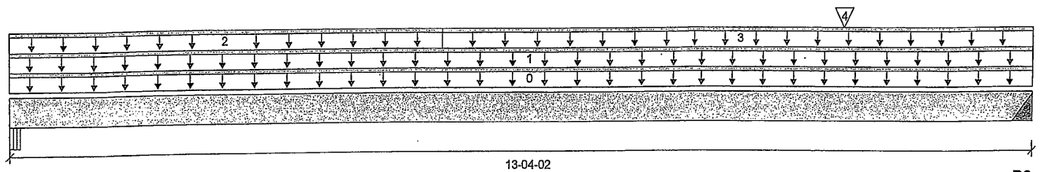
1ST FLR FRAMING\Flush Beams\B17(i11852) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:35:19

Build 7493

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

File name: 4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B17(i11852)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 13-04-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-1/2"	235 / 0	222 / 0		
B2, 4"	800 / 0	601 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-04-02	Top		12			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	13-04-02	Top	6	3			n\a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	05-06-11	Top	7	3			n\a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	05-06-11	13-04-02	Top	8	4			n\a
4	PBO3(i462)	Conc. Pt. (lbs)	L	10-09-14	10-09-14	Top	857	573			n\a

Controls Summary	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4249 ft-lbs	35392 ft-lbs	12.0%	1	10-09-14
End Shear	1892 lbs	14464 lbs	13.1%	1	12-00-04
Total Load Deflection	L/999 (0.079")	n\a	n\a	4	07-02-07
Live Load Deflection	L/999 (0.043")	n\a	n\a	5	07-04-07
Max Defl.	0.079"	n\a	n\a	4	07-02-07
Span / Depth	13.1				

Bearing Supports		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	2-1/2" x 3-1/2"	630 lbs	13.5%	5.9%	Unspecified
B2	Hanger	4" x 3-1/2"	1951 lbs	n\a	11.4%	HUC410

Cautions

Header for the hanger HUC410 is a Double 1-3/4" x 11-7/8" LVL Beam.
Hanger model HUC410 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

LICENSED PROFESSIONAL ENGINEER
4504
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM B615-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade

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

PASSED

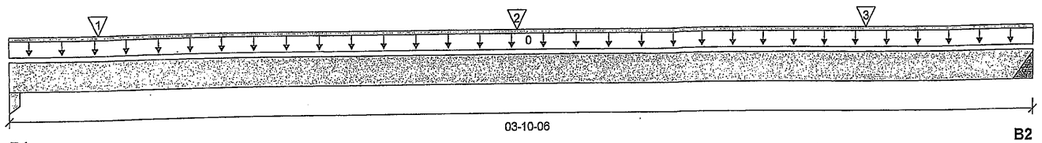
1ST FLR FRAMING\Flush Beams\B9(i11890) (Flush Beam)

Dry | 1 span | No cant.

September 8, 2020 07:35:19

BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B9(i11890)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 03-10-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	1150 / 0	784 / 0		
B2, 4"	522 / 0	297 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-10-06	Top		12			00-00-00
1	-	Conc. Pt. (lbs)	L	00-03-14	00-03-14	Top	1011	703			n\a
2	J3(i11928)	Conc. Pt. (lbs)	L	01-10-10	01-10-10	Top	368	184			n\a
3	J3(i11962)	Conc. Pt. (lbs)	L	03-02-10	03-02-10	Top	293	147			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1112 ft-lbs	35392 ft-lbs	3.1%	1	01-10-10
End Shear	727 lbs	14464 lbs	5.0%	1	01-01-10
Total Load Deflection	L/999 (0.002")	n\a	n\a	4	01-09-08
Live Load Deflection	L/999 (0.001")	n\a	n\a	5	01-09-08
Max Defl.	0.002"	n\a	n\a	4	01-09-08
Span / Depth	3.5				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	1-3/4" x 3-1/2"	2704 lbs	54.4%	36.2%	Unspecified
B2	Hanger	4" x 3-1/2"	1154 lbs	n\a	6.8%	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.
Concentrated side load(s) 1 are closer than 18" from end of member.Please consult a technical representative or Professional of Record.

Notes

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

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. YAW 0618-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade

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

PASSED

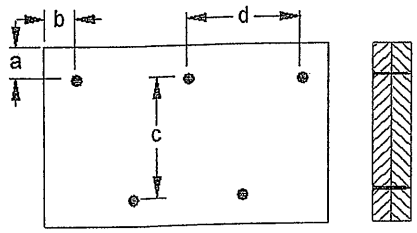
1ST FLR FRAMING\Flush Beams\B9(i11890) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:35:19

Build 7493

Job name:		File name:	4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B9(i11890)
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 = 7-7/8"
d = 8 4

Calculated Side Load = 391.0 lb/ft
Connectors are: 16d 1 or Nails
3½" ARDOX SPIRAL

DWG NO. TAMB618-2L
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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

Boise Cascade

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

PASSED

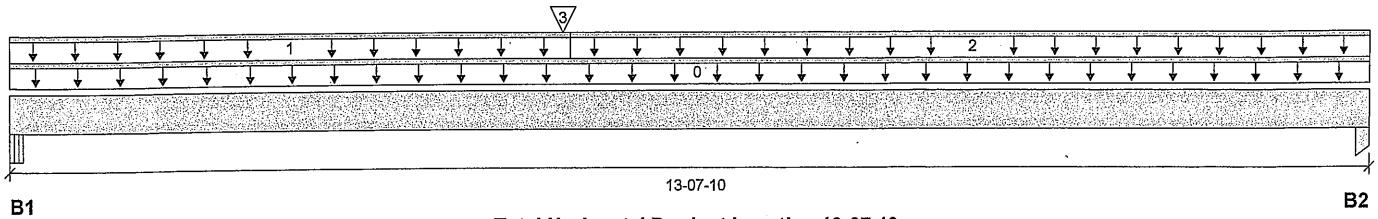
1ST FLR FRAMING\Flush Beams\B1 H(i11837) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | September 8, 2020 07:35:19

Build 7493

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

File name: 4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B1 H(i11837)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 13-07-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-1/2"	526 / 0	306 / 0		
B2, 3-1/2"	331 / 0	208 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-07-10	Top		6			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	05-06-11	Top	31	15			n\a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	05-06-11	13-07-10	Top	8	4			n\a
3	B2 H(i11799)	Conc. Pt. (lbs)	L	05-05-13	05-05-13	Top	620	314			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	5164 ft-lbs	17696 ft-lbs	29.2%	1	05-05-13
End Shear	1085 lbs	7232 lbs	15.0%	1	01-02-06
Total Load Deflection	L/812 (0.196")	n\a	29.6%	4	06-04-14
Live Load Deflection	L/999 (0.125")	n\a	n\a	5	06-04-14
Max Defl.	0.196"	n\a	n\a	4	06-04-14
Span / Depth	13.4				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	2-1/2" x 1-3/4"	1172 lbs	50.2%	22.0%	Unspecified
B2	Column	3-1/2" x 1-3/4"	757 lbs	15.2%	10.1%	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

LICENSED PROFESSIONAL ENGINEERS
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 8612-21
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.

Boise Cascade

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

PASSED

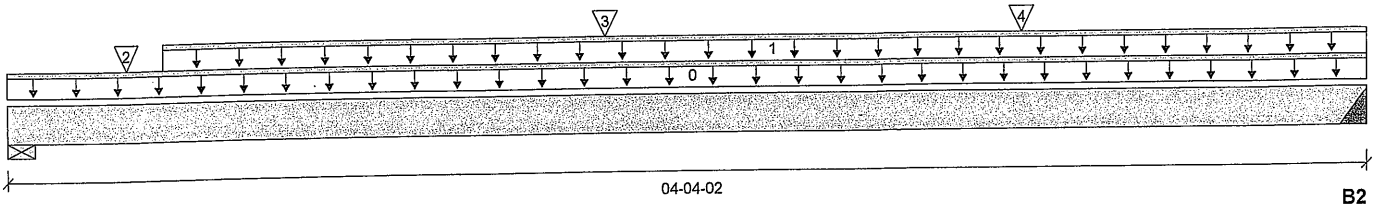
1ST FLR FRAMING\Flush Beams\B2 H(i11799) (Flush Beam)

Dry | 1 span | No cant.

September 8, 2020 07:35:19

BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B2 H(i11799)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 04-04-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	788 / 0	483 / 0		
B2, 2"	648 / 0	336 / 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	04-04-02	Top		6			00-00-00
1	STAIRS	Unf. Lin. (lb/ft)	L	00-06-00	04-04-02	Top	240	120			n\a
2	-	Conc. Pt. (lbs)	L	00-04-09	00-04-09	Top	211	181			n\a
3	J6(i11825)	Conc. Pt. (lbs)	L	01-10-12	01-10-12	Top	149	74			n\a
4	J6(i11817)	Conc. Pt. (lbs)	L	03-02-12	03-02-12	Top	141	70			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1344 ft-lbs	17696 ft-lbs	7.6%	1	02-02-10
End Shear	1210 lbs	7232 lbs	16.7%	1	01-05-06
Total Load Deflection	L/999 (0.005")	n\a	n\a	4	02-04-01
Live Load Deflection	L/999 (0.003")	n\a	n\a	5	02-04-01
Max Defl.	0.005"	n\a	n\a	4	02-04-01
Span / Depth	3.9				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	5-1/2" x 1-3/4"	1785 lbs	30.1%	15.2%	Spruce-Pine-Fir
B2	Hanger	2" x 1-3/4"	1391 lbs	n\a	32.6%	HUS1.81/10

LICENSED PROFESSIONAL ENGINEER
4134
S KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. YAM 0616-21
STRUCTURAL
COMPONENT ONLY

Cautions

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

Disclosure

Boise Cascade

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

PASSED

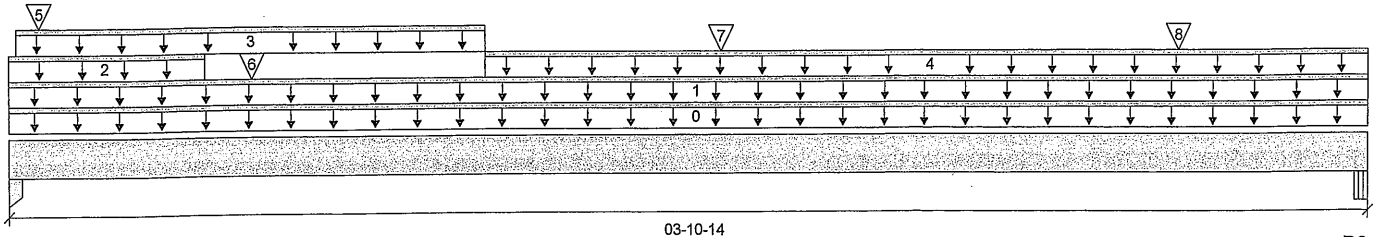
1ST FLR FRAMING\Flush Beams\B3 H(i11849) (Flush Beam)

BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

September 8, 2020 07:35:19

File name: 4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B3 H(i11849)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 03-10-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	3057 / 0	2851 / 0		
B2, 2-7/8"	1483 / 0	939 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-10-14	Top		12			00-00-00
1	4(i335)	Unf. Lin. (lb/ft)	L	00-00-00	03-10-14	Top		81			n\a
2	4(i335)	Unf. Lin. (lb/ft)	L	00-00-00	00-06-11	Top	1439	1992			n\a
3	4(i335)	Unf. Lin. (lb/ft)	L	00-00-04	01-04-04	Top	387	194			n\a
4	4(i335)	Unf. Lin. (lb/ft)	L	01-04-04	03-10-14	Top	470	235			n\a
5	-	Conc. Pt. (lbs)	L	00-01-01	00-01-01	Top	989	947			n\a
6	J3(i11910)	Conc. Pt. (lbs)	L	00-08-04	00-08-04	Top	264	132			n\a
7	J3(i11846)	Conc. Pt. (lbs)	L	02-00-04	02-00-04	Top	381	191			n\a
8	J3(i11805)	Conc. Pt. (lbs)	L	03-04-04	03-04-04	Top	373	186			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2759 ft-lbs	35392 ft-lbs	7.8%	1	02-00-04
End Shear	2592 lbs	14464 lbs	17.9%	1	01-03-06
Total Load Deflection	L/999 (0.004")	n\a	n\a	4	01-11-12
Live Load Deflection	L/999 (0.003")	n\a	n\a	5	01-11-12
Max Defl.	0.004"	n\a	n\a	4	01-11-12
Span / Depth	3.5				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	3-1/2" x 3-1/2"	8149 lbs	81.9%	54.5%	Unspecified
B2	Beam	2-7/8" x 3-1/2"	3398 lbs	63.2%	27.7%	Unspecified

Cautions

Concentrated side load(s) 6 are closer than 18" from end of member.Please consult a technical representative or Professional of Record.

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

UWO NO. YAM 8617-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade

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

PASSED

1ST FLR FRAMING\Flush Beams\B3 H(i11849) (Flush Beam)

Dry | 1 span | No cant.

BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

September 8, 2020 07:35:19

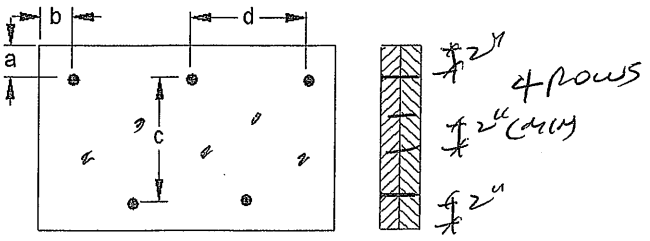
File name: 4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B3 H(i11849)
Specifier:
Designer: L.D.
Company:

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.
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 = 405.1 lb/ft
Connectors are: 16d Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
4154
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 0617-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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

Boise Cascade

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

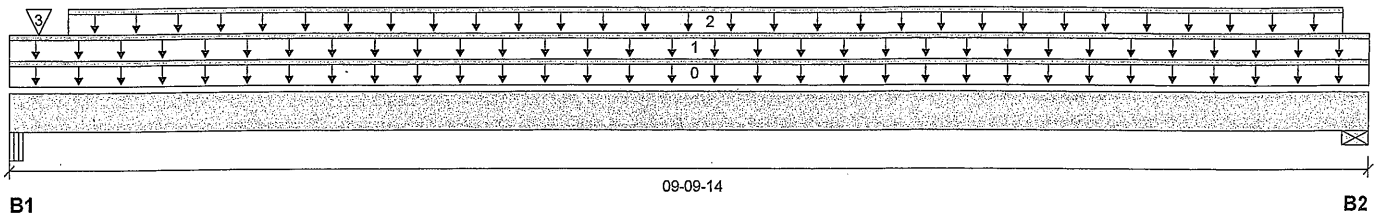
PASSED

1ST FLR FRAMING\Flush Beams\B16 H(i11815) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | September 8, 2020 07:35:19

Build 7493

Job name:		File name:	4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B16 H(i11815)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	L.D.
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 09-09-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5"	279 / 0	479 / 0		
B2, 2-3/8"	82 / 0	346 / 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	09-09-14	Top		6			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-09-14	Top	17	8			n\a
2	WALL	Unf. Lin. (lb/ft)	L	00-05-00	09-07-08	Top		60			n\a
3	4(i335)	Conc. Pt. (lbs)	L	00-02-08	00-02-08	Top	193	130			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1136 ft-lbs	11502 ft-lbs	9.9%	0	05-00-04
End Shear	377 lbs	4701 lbs	8.0%	0	01-04-14
Total Load Deflection	L/999 (0.032")	n\a	n\a	4	05-00-04
Live Load Deflection	L/999 (0.006")	n\a	n\a	5	05-00-04
Max Defl.	0.032"	n\a	n\a	4	05-00-04
Span / Depth	9.4				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	5" x 1-3/4"	671 lbs	22.1%	9.7%	Unspecified
B2	Wall/Plate	2-3/8" x 1-3/4"	485 lbs	29.2%	14.7%	Spruce-Pine-Fir

Notes

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

CONFORMS TO OBC 2012

AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. YAM 8614-2 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.

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

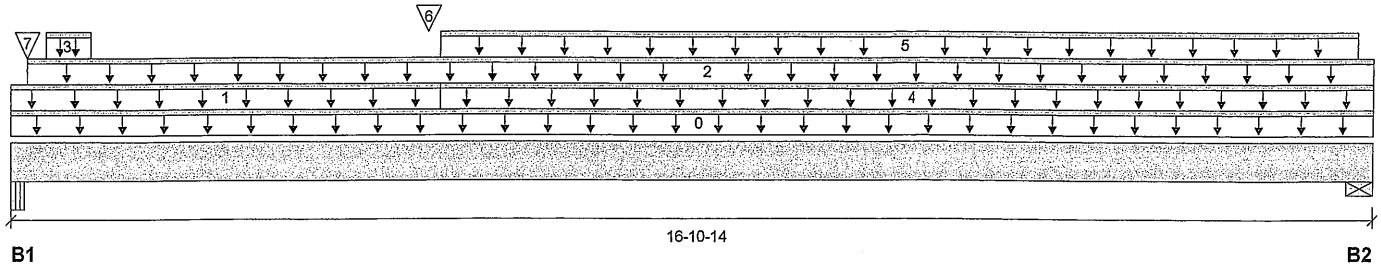
PASSED

1ST FLR FRAMING\Flush Beams\B16E H(i19082) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:55:46

Build 7493

Job name:		File name:	4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B16E H(i19082)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	L.D.
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 16-10-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5"	2964 / 0	2749 / 0		
B2, 2-3/8"	265 / 0	699 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	16-10-14	Top		12			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	05-03-04	Top	14	7			n\a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-02-08	16-10-14	Top	16	8			n\a
3	13(i13796)	Unf. Lin. (lb/ft)	L	00-05-04	00-11-12	Top	1558	2073			n\a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	05-03-04	16-10-14	Top	6	3			n\a
5	WALL	Unf. Lin. (lb/ft)	L	05-03-04	16-08-08	Top		60			n\a
6	B9E H(i19084)	Conc. Pt. (lbs)	L	05-01-08	05-01-08	Top	208	125			n\a
7	7(i343)	Conc. Pt. (lbs)	L	00-02-08	00-02-08	Top	1767	1101			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4134 ft-lbs	23005 ft-lbs	18.0%	0	08-04-08
End Shear	3750 lbs	14464 lbs	25.9%	1	01-04-14
Total Load Deflection	L/889 (0.222")	n\a	27.0%	4	08-04-08
Live Load Deflection	L/999 (0.074")	n\a	n\a	5	08-00-09
Max Defl.	0.222"	n\a	n\a	4	08-04-08
Span / Depth	16.6				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	5" x 3-1/2"	7882 lbs	84.3%	36.9%	Unspecified
B2	Wall/Plate	2-3/8" x 3-1/2"	979 lbs	29.4%	14.8%	Spruce-Pine-Fir

Notes

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

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
4154
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM0629-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade

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

PASSED

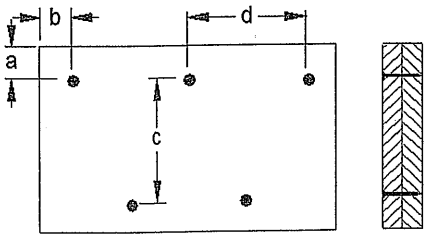
1ST FLR FRAMING\Flush Beams\B16E H(i19082) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:55:46

Build 7493

Job name:		File name:	4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B16E H(i19082)
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 = 7-7/8"
d = [illegible] 6

Calculated Side Load = 234.1 lb/ft
Connectors are: [illegible] Nails
3½" ARDOX SPIRAL

SEALED PROFESSIONAL ENGINEERS
S. KATSOUDAKOS
PROVINCE OF ONTARIO

DWG NO. TAM8629-21
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

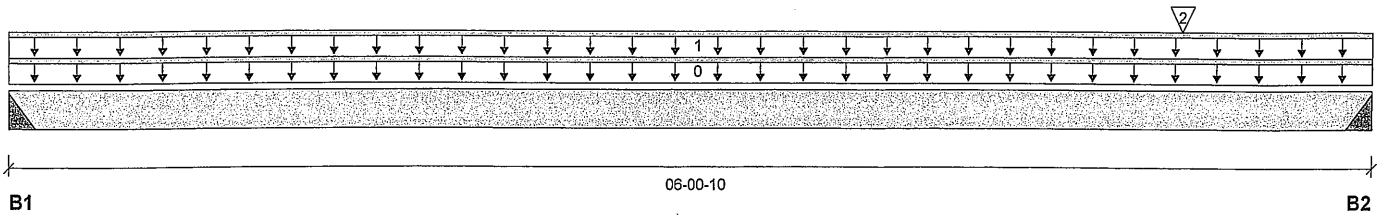
PASSED

1ST FLR FRAMING\Flush Beams\B17E(i19081) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:55:46

Build 7493

Job name:		File name:	4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B17E(i19081)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	L.D.
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 06-00-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	137 / 0	116 / 0		
B2, 4"	605 / 0	437 / 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	06-00-10	Top		12			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-00-10	Top	24	12			n\a
2	PBO3(i462)	Conc. Pt. (lbs)	L	05-02-06	05-02-06	Top	594	407			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	827 ft-lbs	35392 ft-lbs	2.3%	1	05-02-06
End Shear	702 lbs	14464 lbs	4.9%	1	04-08-12
Total Load Deflection	L/999 (0.003")	n\a	n\a	4	03-03-08
Live Load Deflection	L/999 (0.002")	n\a	n\a	5	03-03-08
Max Defl.	0.003"	n\a	n\a	4	03-03-08
Span / Depth	5.6				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	4" x 3-1/2"	351 lbs	n\a	2.1%	HGUS410
B2	Hanger	4" x 3-1/2"	1454 lbs	n\a	8.5%	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.

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

LICENSED PROFESSIONAL ENGINEERS
4154
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 0630-21
STRUCTURAL COMPONENT ONLY

Boise Cascade

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

PASSED

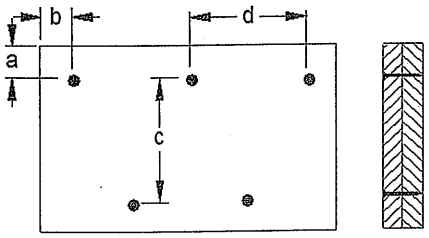
1ST FLR FRAMING\Flush Beams\B17E(i19081) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:55:46

Build 7493

Job name:		File name:	4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B17E(i19081)
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 = 7-7/8"
d = 8 4

Connectors are: 1 Nails
3½" ARDOX SPIRAL

SIGNED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. YAMB630-2L
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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

Boise Cascade

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

PASSED

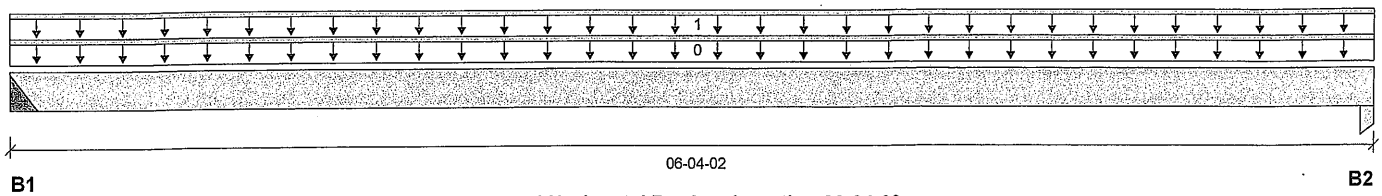
1ST FLR FRAMING\Flush Beams\B1E H(i19187) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:55:46

Build 7493

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

File name: 4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B1E H(i19187)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 06-04-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	26 / 0	32 / 0		
B2, 3-1/2"	26 / 0	32 / 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	06-04-02	Top		6			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-04-02	Top	8	4			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	110 ft-lbs	17696 ft-lbs	0.6%	1	03-01-13
End Shear	48 lbs	7232 lbs	0.7%	1	01-02-14
Total Load Deflection	L/999 (0.001")	n\a	n\a	4	03-01-13
Live Load Deflection	L/999 (0")	n\a	n\a	5	03-01-13
Max Defl.	0.001"	n\a	n\a	4	03-01-13
Span / Depth	6.0				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	3" x 1-3/4"	79 lbs	n\a	1.2%	HUS1.81/10
B2	Column	3-1/2" x 1-3/4"	80 lbs	1.6%	1.1%	Unspecified

LICENSED PROFESSIONAL ENGINEER
4184
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 0631-21
STRUCTURAL
COMPONENT ONLY

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

Disclosure

Boise Cascade

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

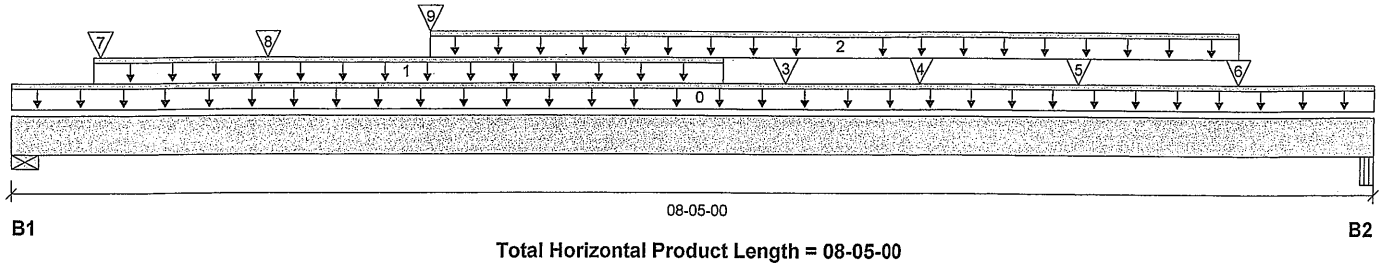
PASSED

1ST FLR FRAMING\Flush Beams\B2E H(i19083) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:55:46

Build 7493

Job name:		File name:	4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Address:		Description:	1ST FLR FRAMING\Flush Beams\B2E H(i19083)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	L.D.
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 08-05-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	2437 / 0	1325 / 0		
B2, 4-5/8"	2120 / 0	1151 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-05-00	Top		12			00-00-00
1	STAIRS	Unf. Lin. (lb/ft)	L	00-06-00	04-04-02	Top	240	120			n\a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	02-06-12	07-06-12	Top	300	150			n\a
3	-	Conc. Pt. (lbs)	L	04-08-11	04-08-11	Top	160	163			n\a
4	J4(i19087)	Conc. Pt. (lbs)	L	05-06-12	05-06-12	Top	114	57			n\a
5	J4(i19086)	Conc. Pt. (lbs)	L	06-06-12	06-06-12	Top	127	63			n\a
6	-	Conc. Pt. (lbs)	L	07-06-12	07-06-12	Top	488	244			n\a
7	-	Conc. Pt. (lbs)	L	00-06-08	00-06-08	Top	391	234			n\a
8	J9(i19198)	Conc. Pt. (lbs)	L	01-06-12	01-06-12	Top	408	205			n\a
9	J9(i19091)	Conc. Pt. (lbs)	L	02-06-12	02-06-12	Top	380	190			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	9901 ft-lbs	35392 ft-lbs	28.0%	1	04-00-09
End Shear	4589 lbs	14464 lbs	31.7%	1	01-03-06
Total Load Deflection	L/999 (0.08")	n\a	n\a	4	04-01-12
Live Load Deflection	L/999 (0.052")	n\a	n\a	5	04-01-12
Max Defl.	0.08"	n\a	n\a	4	04-01-12
Span / Depth	7.9				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	3-1/2" x 3-1/2"	5312 lbs	70.5%	35.5%	Spruce-Pine-Fir
B2	Beam	4-5/8" x 3-1/2"	4618 lbs	53.4%	23.4%	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

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM B632-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade

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

PASSED

1ST FLR FRAMING\Flush Beams\B2E H(i19083) (Flush Beam)

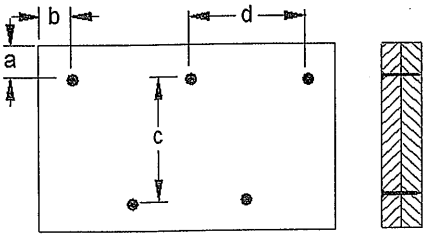
BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

September 8, 2020 07:55:46

File name: 4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B2E H(i19083)
Specifier:
Designer: L.D.
Company:

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 7-7/8"
d = 10 6 4

Calculated Side Load = 837.9 lb/ft
Connectors are: 16d [illegible] Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
4154
S KATSOUDAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 8637-21
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

PASSED

1ST FLR FRAMING\Flush Beams\B9E H(i19084) (Flush Beam)

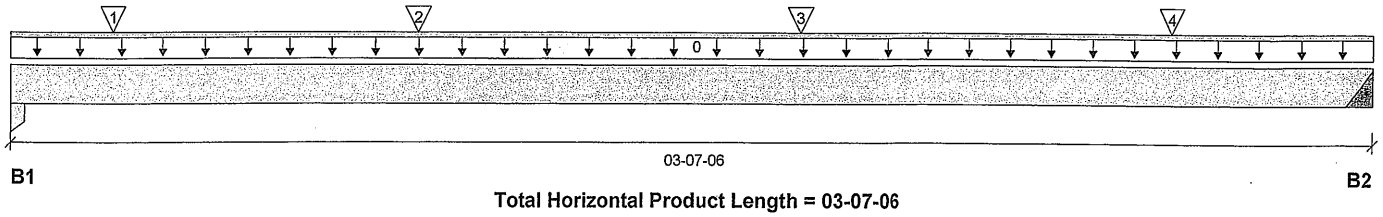
BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

September 8, 2020 07:55:46

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

File name: 4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B9E H(i19084)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 03-07-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	702 / 0	494 / 0		
B2, 4"	255 / 0	157 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-07-06	Top		12			00-00-00
1	B17E(i19081)	Conc. Pt. (lbs)	L	00-03-04	00-03-04	Top	591	426			n\a
2	J4(i19087)	Conc. Pt. (lbs)	L	01-00-14	01-00-14	Top	120	60			n\a
3	J4(i19086)	Conc. Pt. (lbs)	L	02-00-14	02-00-14	Top	133	66			n\a
4	J4(i19088)	Conc. Pt. (lbs)	L	03-00-14	03-00-14	Top	113	56			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	506 ft-lbs	35392 ft-lbs	1.4%	1	01-00-14
End Shear	395 lbs	14464 lbs	2.7%	1	01-01-10
Total Load Deflection	L/999 (0.001")	n\a	n\a	4	01-07-15
Live Load Deflection	L/999 (0")	n\a	n\a	5	01-07-15
Max Defl.	0.001"	n\a	n\a	4	01-07-15
Span / Depth	3.3				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	1-3/4" x 3-1/2"	1671 lbs	33.6%	22.4%	Unspecified
B2	Hanger	4" x 3-1/2"	579 lbs	n\a	3.4%	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.
Concentrated side load(s) 1 are closer than 18" from end of member.Please consult a technical representative or Professional of Record.

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

LICENSED PROFESSIONAL ENGINEER
4154
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 8633-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade

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

PASSED

1ST FLR FRAMING\Flush Beams\B9E H(i19084) (Flush Beam)

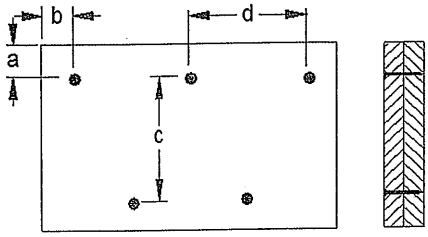
BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:55:46

Build 7493

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

File name: 4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B9E H(i19084)
Specifier:
Designer: L.D.
Company:

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"
c = 7-7/8"
d = ~~2~~ 8 4

Calculated Side Load = 141.0 lb/ft
Connectors are: A... Nails
3½" ARDUX SPIRAL

LICENSED PROFESSIONAL ENGINEER
4154
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM8633-21
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

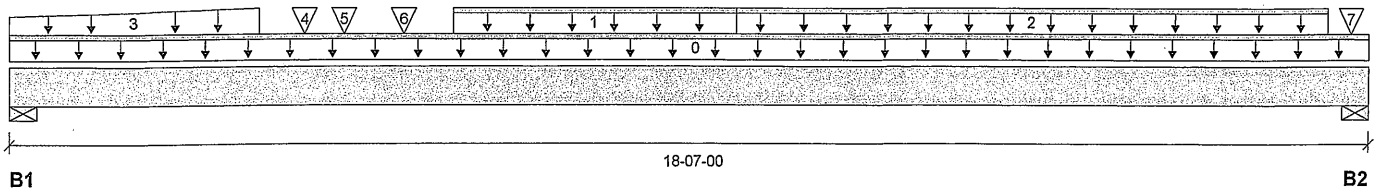
Triple 1-3/4" x 14" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Dropped Beams\B14 DR(i11839) (Dropped Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | September 8, 2020 07:35:19
Build 7493

Job name:		File name:	4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Address:		Description:	2ND FLR FRAMING\Dropped Beams\B14 DR(i11839)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	L.D.
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 18-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	5094 / 0	3180 / 0		
B2, 3-1/2"	4799 / 0	2719 / 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	18-07-00	Top		21			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	06-00-00	09-10-00	Top	576	292			n\a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	09-10-00	18-00-00	Top	524	266			n\a
3	Smoothed Load	Trapezoidal (lb/ft)	L	00-00-00		Top	410	208			n\a
					03-04-09		581	294			
4	-	Conc. Pt. (lbs)	L	04-00-00	04-00-00	Top	546	274			n\a
5	B3(i11227)	Conc. Pt. (lbs)	L	04-06-07	04-06-07	Top	337	666			n\a
6	-	Conc. Pt. (lbs)	L	05-04-00	05-04-00	Top	609	304			n\a
7	J3(i11503)	Conc. Pt. (lbs)	L	18-04-00	18-04-00	Top	241	121			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	49175 ft-lbs	75349 ft-lbs	65.3%	1	09-04-00
End Shear	10324 lbs	25578 lbs	40.4%	1	01-05-08
Total Load Deflection	L/253 (0.861")	n\a	95.0%	4	09-04-00
Live Load Deflection	L/403 (0.54")	n\a	89.4%	5	09-04-00
Max Defl.	0.861"	n\a	n\a	4	09-04-00
Span / Depth	15.5				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	3-1/2" x 5-1/4"	11616 lbs	47.4%	51.8%	Spruce-Pine-Fir
B2	Wall/Plate	3-1/2" x 5-1/4"	10597 lbs	43.2%	47.3%	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: 01-02-12, Bottom: 01-02-12.
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

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM B619-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade

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

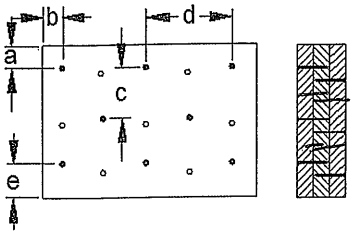
PASSED

2ND FLR FRAMING\Dropped Beams\B14 DR(i11839) (Dropped Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:35:19
Build 7493

Job name:		File name:	4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Address:		Description:	2ND FLR FRAMING\Dropped Beams\B14 DR(i11839)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	L.D.
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member



5 ROWS

a minimum = 2"
b minimum = 3"
c = 5"
d = 8"
e minimum = 3"

Nailing applies to both sides of the member
Connectors are: 1 Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 0619-21
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.

Boise Cascade

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

PASSED

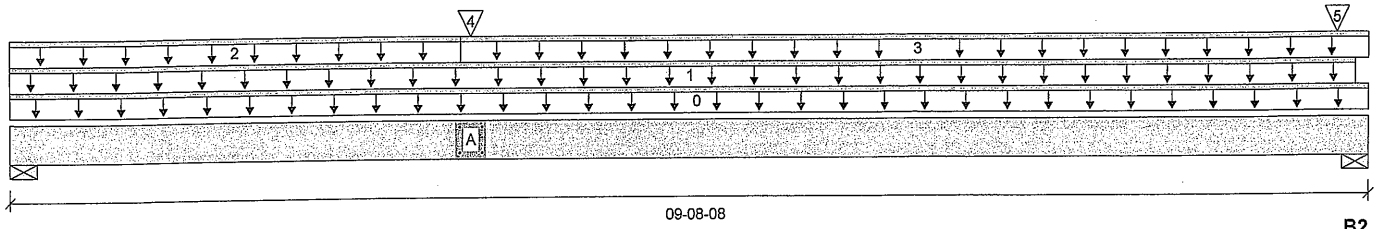
2ND FLR FRAMING\Flush Beams\B20(i11905) (Flush Beam)

BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

September 8, 2020 07:35:19

File name: 4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B20(i11905)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 09-08-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-3/4"	416 / 0	730 / 0		
B2, 5-1/2"	287 / 0	612 / 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	09-08-08	Top		12			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	09-07-06	Top		60			n\a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-02-03	Top	19	9			n\a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	03-02-03	09-08-08	Top	27	13			n\a
4	B4(i11808)	Conc. Pt. (lbs)	L	03-03-01	03-03-01	Top	468	507			n\a
5	E43(i149)	Conc. Pt. (lbs)	L	09-05-12	09-05-12	Top		24			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4054 ft-lbs	35392 ft-lbs	11.5%	1	03-03-01
End Shear	1377 lbs	14464 lbs	9.5%	1	01-02-10
Total Load Deflection	L/999 (0.041")	n\a	n\a	4	04-06-01
Live Load Deflection	L/999 (0.015")	n\a	n\a	5	04-05-02
Max Defl.	0.041"	n\a	n\a	4	04-06-01
Span / Depth	9.2				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	2-3/4" x 3-1/2"	1022 lbs	26.6%	13.4%	Spruce-Pine-Fir
B2	Wall/Plate	5-1/2" x 3-1/2"	856 lbs	11.1%	5.6%	Spruce-Pine-Fir

Notes

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

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. YAM 0622-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade

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

PASSED

2ND FLR FRAMING\Flush Beams\B20(i11905) (Flush Beam)

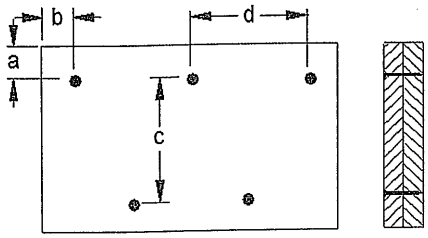
BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:35:19

Build 7493

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

File name: 4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B20(i11905)
Specifier:
Designer: L.D.
Company:

Connection Diagram: Full Length of Member

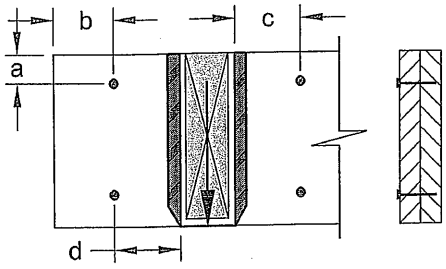


a minimum = 2"
b minimum = 3"
c = 7-7/8"
d = 6"

Connectors are: 3½" ARDOX SPIRAL Nails

Connection Diagrams: Concentrated Side Loads

Connection Tag: A Applies to load tag(s): 4



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

3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
4154
S KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. YAM 0622-21
STRUCTURAL
COMPONENT ONLY

Disclosure

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Boise Cascade

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

PASSED

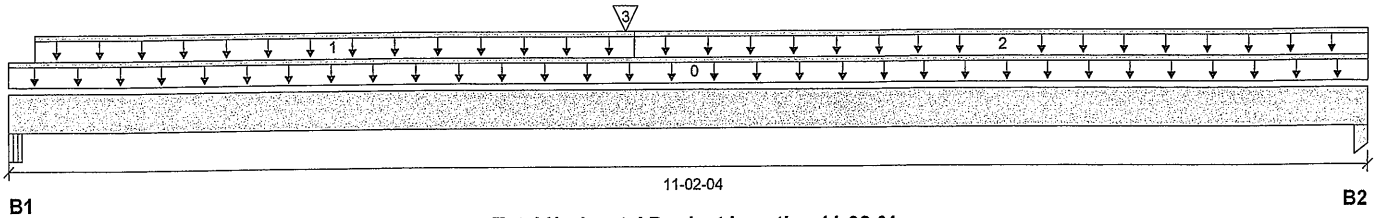
2ND FLR FRAMING\Flush Beams\B5(i11861) (Flush Beam)

BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

September 8, 2020 07:35:19

File name: 4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B5(i11861)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 11-02-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	209 / 0	164 / 0		
B2, 3-1/2"	143 / 0	124 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-02-04	Top		6			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-02-10	05-01-03	Top	27	13			n\a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	05-01-03	11-02-04	Top	10	5			n\a
3	B7(i11867)	Conc. Pt. (lbs)	L	05-00-05	05-00-05	Top	164	126			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1663 ft-lbs	17696 ft-lbs	9.4%	1	05-00-05
End Shear	439 lbs	7232 lbs	6.1%	1	01-05-02
Total Load Deflection	L/999 (0.043")	n\a	n\a	4	05-06-09
Live Load Deflection	L/999 (0.024")	n\a	n\a	5	05-04-13
Max Defl.	0.043"	n\a	n\a	4	05-06-09
Span / Depth	10.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	5-1/4" x 1-3/4"	519 lbs	4.6%	4.6%	VL 2.0 3100 SP
B2	Column	3-1/2" x 1-3/4"	369 lbs	7.4%	4.9%	Unspecified

Notes

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

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM B625 21
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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

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

PASSED

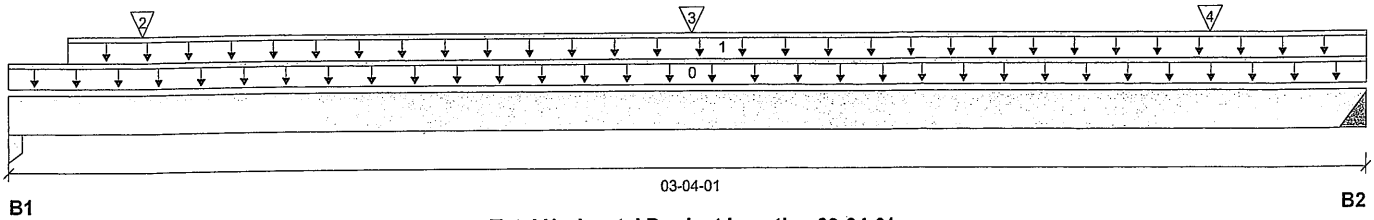
2ND FLR FRAMING\Flush Beams\B6(i11729) (Flush Beam)

BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

September 8, 2020 07:35:19

File name: 4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B6(i11729)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 03-04-01

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	706 / 0	364 / 0		
B2, 2"	745 / 0	383 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-04-01	Top		6			00-00-00
1	STAIRS	Unf. Lin. (lb/ft)	L	00-01-12	03-04-01	Top	240	120			n\a
2	J4(i11517)	Conc. Pt. (lbs)	L	00-04-00	00-04-00	Top	197	99			n\a
3	J4(i11329)	Conc. Pt. (lbs)	L	01-08-00	01-08-00	Top	287	144			n\a
4	J4(i11771)	Conc. Pt. (lbs)	L	02-11-06	02-11-06	Top	200	100			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1235 ft-lbs	17696 ft-lbs	7.0%	1	01-08-00
End Shear	667 lbs	7232 lbs	9.2%	1	02-02-03
Total Load Deflection	L/999 (0.003")	n\a	n\a	4	01-08-00
Live Load Deflection	L/999 (0.002")	n\a	n\a	5	01-08-00
Max Defl.	0.003"	n\a	n\a	4	01-08-00
Span / Depth	3.2				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	1-3/4" x 1-3/4"	1513 lbs	60.8%	40.5%	Unspecified
B2	Hanger	2" x 1-3/4"	1595 lbs	n\a	37.4%	HUS1.81/10

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM 8626 21
STRUCTURAL
COMPONENT ONLY

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. OK

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

Disclosure

Boise Cascade

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

PASSED

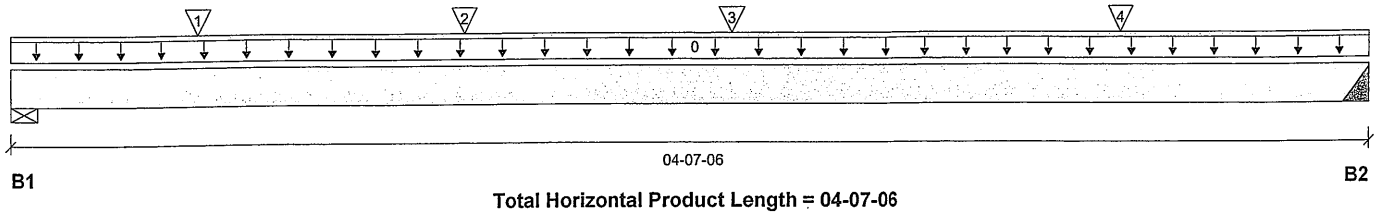
2ND FLR FRAMING\Flush Beams\B7(i11867) (Flush Beam)

Dry | 1 span | No cant.

September 8, 2020 07:35:19

BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B7(i11867)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 04-07-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	520 / 0	642 / 0		
B2, 2"	171 / 0	137 / 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	04-07-06	Top		6			00-00-00
1	-	Conc. Pt. (lbs)	L	00-07-11	00-07-11	Top	375	594			n\a
2	J7(i11722)	Conc. Pt. (lbs)	L	01-06-05	01-06-05	Top	91	45			n\a
3	J7(i11732)	Conc. Pt. (lbs)	L	02-05-01	02-05-01	Top	109	54			n\a
4	J7(i11356)	Conc. Pt. (lbs)	L	03-09-01	03-09-01	Top	112	56			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	557 ft-lbs	17696 ft-lbs	3.1%	1	02-05-01
End Shear	436 lbs	7232 lbs	6.0%	1	01-05-06
Total Load Deflection	L/999 (0.002")	n\a	n\a	4	02-04-07
Live Load Deflection	L/999 (0.001")	n\a	n\a	5	02-05-01
Max Defl.	0.002"	n\a	n\a	4	02-04-07
Span / Depth	4.2				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	5-1/2" x 1-3/4"	1582 lbs	26.7%	13.5%	Spruce-Pine-Fir
B2	Hanger	2" x 1-3/4"	428 lbs	n\a	10.0%	HUS1.81/10

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM B6272 1
STRUCTURAL
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Cautions

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

Disclosure

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

Boise Cascade

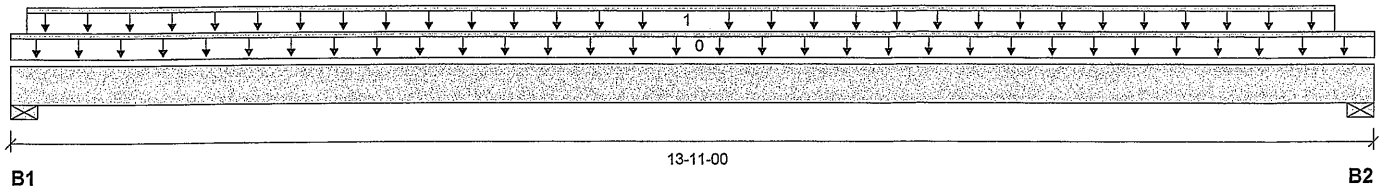
Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Dropped Beams\B14E DR(i19273) (Dropped Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | September 8, 2020 07:55:46
Build 7493

Job name:		File name:	4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Address:		Description:	2ND FLR FRAMING\Dropp...Beams\B14E DR(i19273)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	L.D.
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 13-11-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	4949 / 0	2606 / 0		
B2, 3-1/2"	4843 / 0	2553 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-11-00	Top		18			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-02-00	13-06-00	Top	734	368			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	34797 ft-lbs	55212 ft-lbs	63.0%	1	07-06-00
End Shear	9555 lbs	21696 lbs	44.0%	1	01-03-06
Total Load Deflection	L/294 (0.549")	n\a	81.6%	4	07-00-00
Live Load Deflection	L/449 (0.36")	n\a	80.2%	5	07-00-00
Max Defl.	0.549"	n\a	n\a	4	07-00-00
Span / Depth	13.6				

Bearing Supports

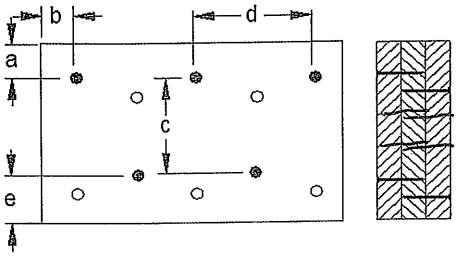
		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	3-1/2" x 5-1/4"	10682 lbs	43.6%	47.6%	Spruce-Pine-Fir
B2	Wall/Plate	3-1/2" x 5-1/4"	10455 lbs	42.6%	46.6%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume unbraced length of Top: 00-10-04, Bottom: 00-10-04.
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

Connection Diagram: Full Length of Member



4 ROWS

DWG NO. TAM8634-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade

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

PASSED

2ND FLR FRAMING\Dropped Beams\B14E DR(i19273) (Dropped Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:55:46

Build 7493

Job name:		File name:	4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Address:		Description:	2ND FLR FRAMING\Dropp...Beams\B14E DR(i19273)
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 = 8-7/8"
d = 8
e minimum = 3"

Nailing applies to both sides of the member
Connectors are: ... n Nails
3½" ARDOX SPIRAL

S. KATSOULAKOS
PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

DWG NO. TAM0639-21
STRUCTURAL
COMPONENT ONLY

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Boise Cascade

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

PASSED

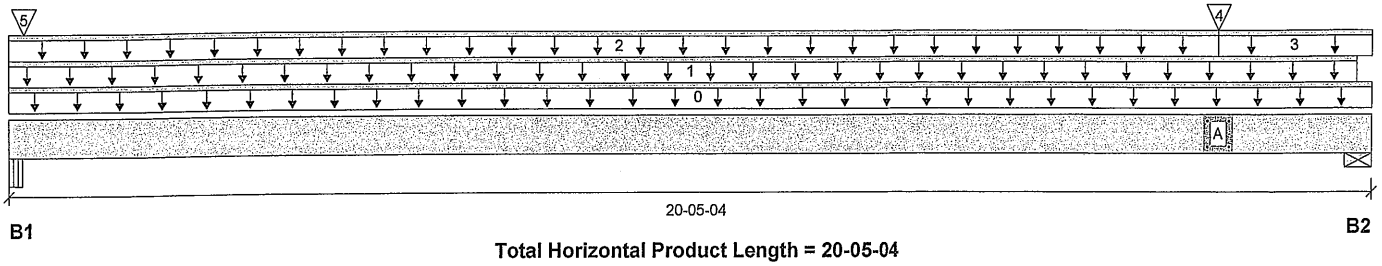
2ND FLR FRAMING\Flush Beams\B21E(i19265) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:55:46

Build 7493

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

File name: 4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B21E(i19265)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 20-05-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-1/2"	388 / 0	347 / 0		
B2, 5-1/2"	1767 / 0	1069 / 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	20-05-04	Top		12			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	20-02-08	Top	16	8			n\a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	18-01-04	Top	6	3			n\a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	18-01-04	20-05-04	Top	11				n\a
4	B7E(i19508)	Conc. Pt. (lbs)	L	18-01-04	18-01-04	Top	1705	921			n\a
5	E80(i966)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		24			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	7666 ft-lbs	35392 ft-lbs	21.7%	1	16-01-11
End Shear	3891 lbs	14464 lbs	26.9%	1	18-11-14
Total Load Deflection	L/631 (0.375")	n\a	38.0%	4	10-11-15
Live Load Deflection	L/1084 (0.218")	n\a	33.2%	5	11-02-14
Max Defl.	0.375"	n\a	n\a	4	10-11-15
Span / Depth	19.9				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam	4-1/2" x 3-1/2"	1017 lbs	12.1%	5.3%	Unspecified
B2	Wall/Plate	5-1/2" x 3-1/2"	3987 lbs	33.7%	17.0%	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. TAM8636-2L
STRUCTURAL
COMPONENT ONLY

Boise Cascade

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

PASSED

2ND FLR FRAMING\Flush Beams\B21E(i19265) (Flush Beam)

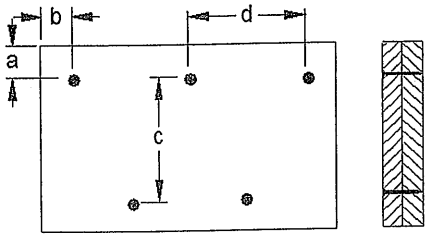
Dry | 1 span | No cant.

September 8, 2020 07:55:46

BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B21E(i19265)
Specifier:
Designer: L.D.
Company:

Connection Diagram: Full Length of Member

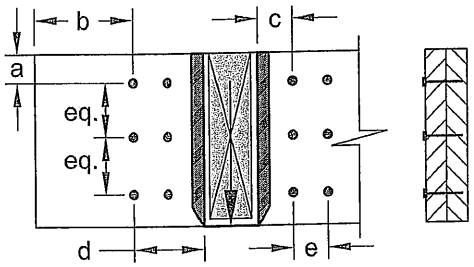


a minimum = 2"
b minimum = 3"
c = 7-7/8"
d = 8 4

Connectors are. 1 Nails
3½" ARDOX SPIRAL

Connection Diagrams: Concentrated Side Loads

Connection Tag: A ~~Applies to load~~ tag(s): 5



a minimum = 2"
b minimum = 4"
c minimum = 4"
d maximum = 12"
e minimum = 4"
Connectors are: 16d 1 Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. YAM B636-2 L
STRUCTURAL
COMPONENT ONLY

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Boise Cascade

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

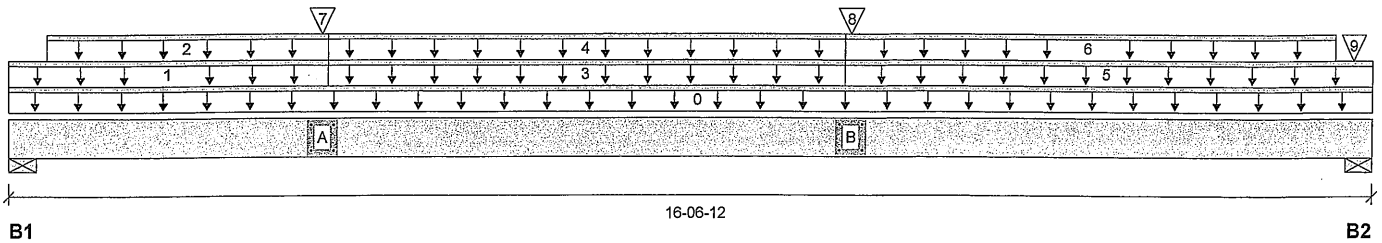
PASSED

2ND FLR FRAMING\Flush Beams\B3E(i19253) (Flush Beam)

BC CALC® Member Report — Dry | 1 span | No cant. — September 8, 2020 07:55:46

Build 7493

Job name:		File name:	4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B3E(i19253)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	L.D.
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 16-06-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 6-1/2"	845 / 0	1079 / 0		
B2, 5-1/2"	616 / 0	1052 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	16-06-12	Top		12			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-10-00	Top	27	13			n\a
2	WALL	Unf. Lin. (lb/ft)	L	00-05-08	03-10-00	Top		59			n\a
3	WALL	Unf. Lin. (lb/ft)	L	03-10-00	10-00-07	Top		51			n\a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	03-10-00	10-00-07	Top	19	9			n\a
5	FC2 Floor Material	Unf. Lin. (lb/ft)	L	10-00-07	16-06-12	Top	27	13			n\a
6	WALL	Unf. Lin. (lb/ft)	L	10-00-07	16-01-04	Top		59			n\a
7	B6E(i19285)	Conc. Pt. (lbs)	L	03-09-02	03-09-02	Top	591	307			n\a
8	B4(i19519)	Conc. Pt. (lbs)	L	10-01-05	10-01-05	Top	477	531			n\a
9	E43(i149)	Conc. Pt. (lbs)	L	16-04-00	16-04-00	Top		24			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	10568 ft-lbs	35392 ft-lbs	29.9%	1	10-01-05
End Shear	2428 lbs	14464 lbs	16.8%	1	01-06-06
Total Load Deflection	L/541 (0.348")	n\a	44.3%	4	08-03-08
Live Load Deflection	L/1309 (0.144")	n\a	27.5%	5	08-03-08
Max Defl.	0.348"	n\a	n\a	4	08-03-08
Span / Depth	15.9				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	6-1/2" x 3-1/2"	2617 lbs	18.7%	9.4%	Spruce-Pine-Fir
B2	Wall/Plate	5-1/2" x 3-1/2"	1473 lbs	19.1%	9.6%	Spruce-Pine-Fir

Notes

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

CONFORMS TO OBC 2012
AMENDED 2020

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM8638-21
STRUCTURAL
COMPONENT ONLY

Boise Cascade

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

PASSED

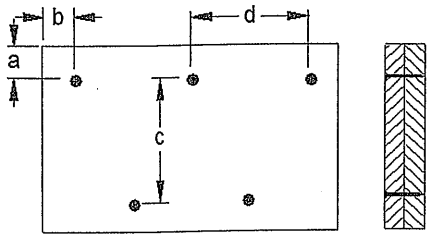
2ND FLR FRAMING\Flush Beams\B3E(i19253) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | September 8, 2020 07:55:46

Build 7493

Job name:		File name:	4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B3E(i19253)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	L.D.
Code reports:	CCMC 12472-R	Company:	

Connection Diagram: Full Length of Member

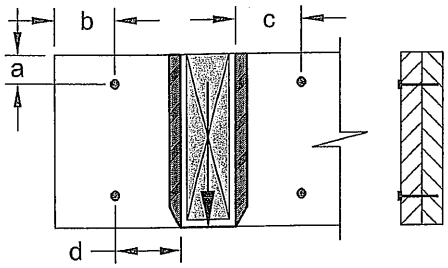


a minimum = 2"
b minimum = 3"
c = 7-7/8"
d = 8 4

Connectors are: 3½" ARDOX SPIRAL Nails

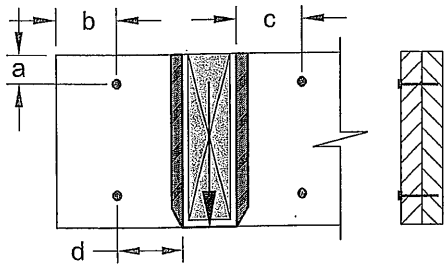
Connection Diagrams: Concentrated Side Loads

Connection Tag: A Applies to load tag(s): 3



a minimum = 2"
b minimum = 4"
c minimum = 4"
d maximum = 12"
Connectors are: 16d 1 Nails
3½" ARDOX SPIRAL

Connection Tag: B Applies to load tag(s): 9



a minimum = 2"
b minimum = 4"
c minimum = 4"
d maximum = 12"
Connectors are: 16d 1 Nails
3½" ARDOX SPIRAL

LICENSED PROFESSIONAL ENGINEER
4184
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. YAM8638-21
STRUCTURAL COMPONENT ONLY

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

Boise Cascade

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

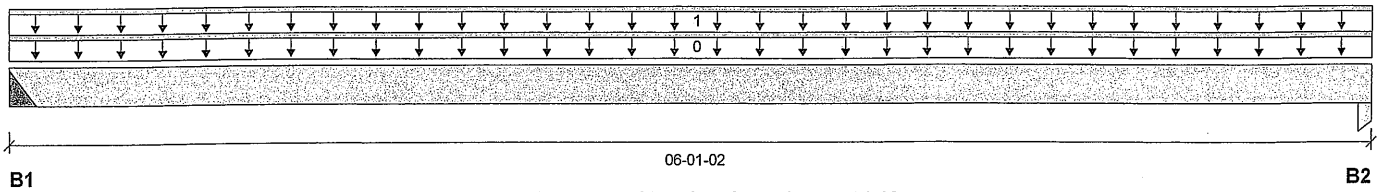
PASSED

2ND FLR FRAMING\Flush Beams\B5E(i19310) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | September 8, 2020 07:55:46

Build 7493

Job name:		File name:	4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B5E(i19310)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	L.D.
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 06-01-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	28 / 0	32 / 0		
B2, 3-1/2"	30 / 0	34 / 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	06-01-02	Top		6			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-01-02	Top	10	5			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	115 ft-lbs	17696 ft-lbs	0.7%	1	02-11-13
End Shear	51 lbs	7232 lbs	0.7%	1	01-01-14
Total Load Deflection	L/999 (0.001")	n\a	n\a	4	02-11-13
Live Load Deflection	L/999 (0")	n\a	n\a	5	02-11-13
Max Defl.	0.001"	n\a	n\a	4	02-11-13
Span / Depth	5.8				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	2" x 1-3/4"	83 lbs	n\a	1.9%	HUS1.81/10
B2	Column	3-1/2" x 1-3/4"	86 lbs	1.7%	1.2%	Unspecified

LICENSED PROFESSIONAL ENGINEER
4154
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM-2037-21
STRUCTURAL
COMPONENT ONLY

Cautions

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

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

Disclosure

Boise Cascade

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

PASSED

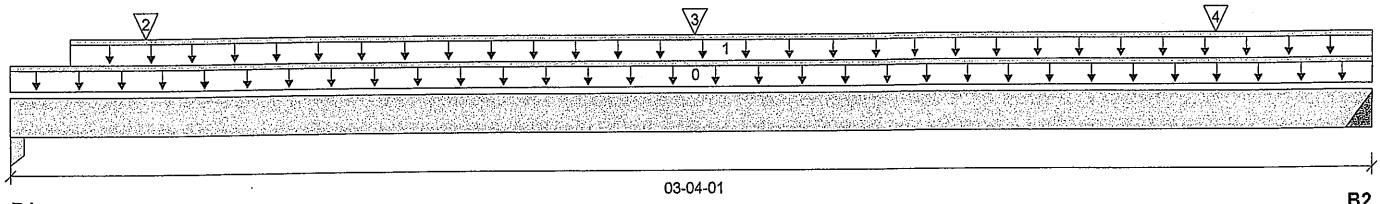
2ND FLR FRAMING\Flush Beams\B6E(i19285) (Flush Beam)

Dry | 1 span | No cant.

September 8, 2020 07:55:46

BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B6E(i19285)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 03-04-01

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	559 / 0	289 / 0		
B2, 2"	597 / 0	310 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-04-01	Top		6			00-00-00
1	STAIRS	Unf. Lin. (lb/ft)	L	00-01-12	03-04-01	Top	240	120			n\a
2	J5(i19324)	Conc. Pt. (lbs)	L	00-04-00	00-04-00	Top	113	56			n\a
3	J5(i19323)	Conc. Pt. (lbs)	L	01-08-00	01-08-00	Top	163	82			n\a
4	J5(i19322)	Conc. Pt. (lbs)	L	02-11-06	02-11-06	Top	113	58			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	979 ft-lbs	17696 ft-lbs	5.5%	1	01-08-00
End Shear	496 lbs	7232 lbs	6.9%	1	02-02-03
Total Load Deflection	L/999 (0.002")	n\a	n\a	4	01-08-00
Live Load Deflection	L/999 (0.002")	n\a	n\a	5	01-08-00
Max Defl.	0.002"	n\a	n\a	4	01-08-00
Span / Depth	3.2				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	1-3/4" x 1-3/4"	1200 lbs	48.2%	32.1%	Unspecified
B2	Hanger	2" x 1-3/4"	1282 lbs	n\a	30.0%	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

DWG NO. TAM B690-21
STRUCTURAL
COMPONENT ONLY

CONFORMS TO OBC 2012
AMENDED 2020

Disclosure

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

Boise Cascade

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

PASSED

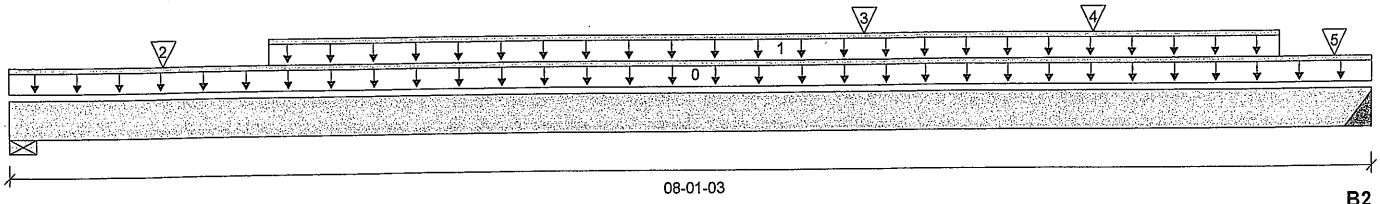
2ND FLR FRAMING\Flush Beams\B7E(i19508) (Flush Beam)

Dry | 1 span | No cant.

September 8, 2020 07:55:46

BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 4504 COR - EL A,B - OP...LOOR - 1ST FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B7E(i19508)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 08-01-03

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1487 / 0	1161 / 0		
B2, 2"	1728 / 0	919 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-01-03	Top		6			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-06-08	07-06-08	Top	356	178			n\a
2	-	Conc. Pt. (lbs)	L	00-11-01	00-11-01	Top	454	633			n\a
3	-	Conc. Pt. (lbs)	L	05-00-05	05-00-05	Top	110	87			n\a
4	J5(i19323)	Conc. Pt. (lbs)	L	06-05-01	06-05-01	Top	159	80			n\a
5	-	Conc. Pt. (lbs)	L	07-10-08	07-10-08	Top	326	163			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	6473 ft-lbs	17696 ft-lbs	36.6%	1	04-00-08
End Shear	3017 lbs	7232 lbs	41.7%	1	06-11-05
Total Load Deflection	L/999 (0.098")	n\a	n\a	4	04-02-03
Live Load Deflection	L/999 (0.063")	n\a	n\a	5	04-02-03
Max Defl.	0.098"	n\a	n\a	4	04-02-03
Span / Depth	7.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	5-1/2" x 1-3/4"	3681 lbs	62.2%	31.4%	Spruce-Pine-Fir
B2	Hanger	2" x 1-3/4"	3740 lbs	n\a	87.6%	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

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. YAM8641-21
STRUCTURAL
COMPONENT ONLY

CONFORMS TO OBC 2012
AMENDED 2020

Disclosure

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

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

Boise Cascade

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

PASSED

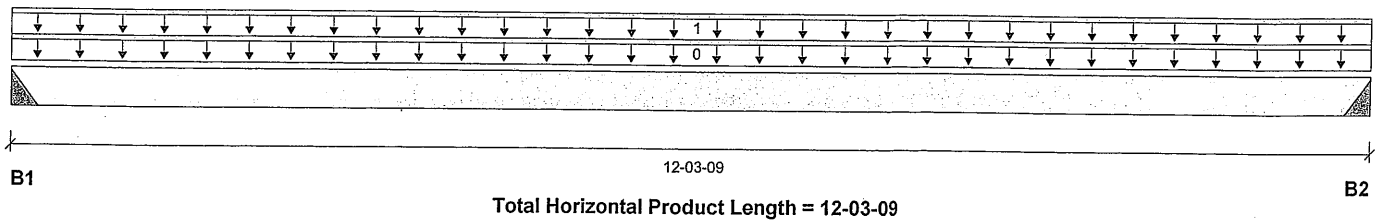
2ND FLR FRAMING\Flush Beams\B8(i11261) (Flush Beam)

Dry | 1 span | No cant.

September 8, 2020 07:35:19

BC CALC® Member Report
Build 7493
Job name:
Address:
City, Province, Postal Code: RICHMOND HILL
Customer:
Code reports: CCMC 12472-R

File name: 4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B8(i11261)
Specifier:
Designer: L.D.
Company:



Total Horizontal Product Length = 12-03-09

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"		406 / 0		
B2, 2"		406 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-03-09	Top		6			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	12-03-09	Top		60			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	1688 ft-lbs	11502 ft-lbs	14.7%	0	06-01-12
End Shear	461 lbs	4701 lbs	9.8%	0	01-01-14
Total Load Deflection	L/999 (0.065")	n\a	n\a	1	06-01-12
Max Defl.	0.065"	n\a	n\a	1	06-01-12
Span / Depth	12.2				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger	2" x 1-3/4"	568 lbs	n\a	20.5%	HUS1.81/10
B2	Hanger	2" x 1-3/4"	568 lbs	n\a	20.5%	HUS1.81/10

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. YAM0628-21
STRUCTURAL COMPONENT ONLY

Cautions

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 11-7/8" LVL Beam.
Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

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

CONFORMS TO OBC 2012 AMENDED 2020

Disclosure

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

Boise Cascade

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

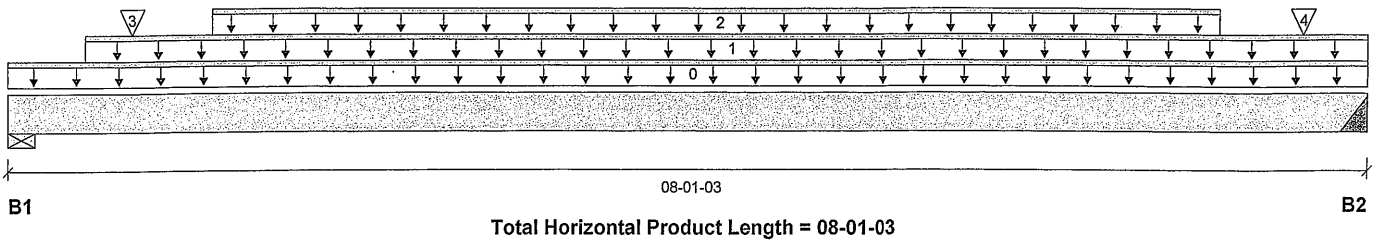
PASSED

2ND FLR FRAMING\Flush Beams\B4(i11808) (Flush Beam)

BC CALC® Member Report | Dry | 1 span | No cant. | September 8, 2020 07:35:19

Build 7493

Job name:		File name:	4504 COR - EL A,B - ST...LOOR - 1ST FLOOR.mmdl
Address:		Description:	2ND FLR FRAMING\Flush Beams\B4(i11808)
City, Province, Postal Code:	RICHMOND HILL	Specifier:	
Customer:		Designer:	L.D.
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 08-01-03

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	504 / 0	885 / 0		
B2, 2"	473 / 0	515 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-01-03	Top		6			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-05-08	08-01-03	Top		60			n\a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-02-08	07-02-08	Top	127	64			n\a
3	-	Conc. Pt. (lbs)	L	00-08-13	00-08-13	Top	113	462			n\a
4	J6(i11906)	Conc. Pt. (lbs)	L	07-08-08	07-08-08	Top	96	48			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2585 ft-lbs	17696 ft-lbs	14.6%	1	03-11-08
End Shear	1197 lbs	7232 lbs	16.6%	1	01-05-06
Total Load Deflection	L/999 (0.041")	n\a	n\a	4	04-02-08
Live Load Deflection	L/999 (0.019")	n\a	n\a	5	04-02-08
Max Defl.	0.041"	n\a	n\a	4	04-02-08
Span / Depth	7.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate	5-1/2" x 1-3/4"	1239 lbs	32.2%	16.2%	Spruce-Pine-Fir
B2	Hanger	2" x 1-3/4"	1354 lbs	n\a	31.7%	HUS1.81/10

LICENSED PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO

DWG NO. TAM0664-21
STRUCTURAL
COMPONENT ONLY

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.

CONFORMS TO OBC 2012
AMENDED 2020

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

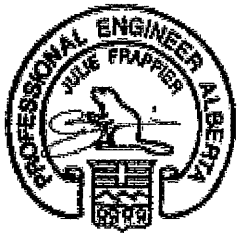
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

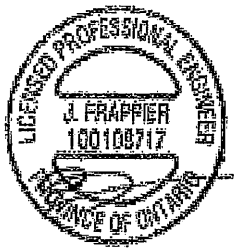
Design based on Dry Service Condition.

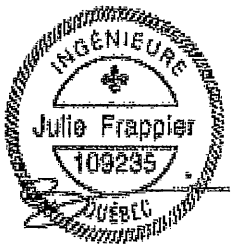
Importance Factor : Normal Part code : Part 9

Disclosure

NORDIC ENGINEERED WOOD







Maximum Floor Spans

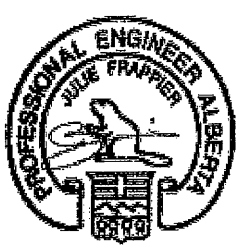
Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing

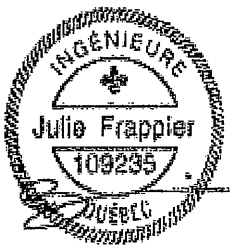
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-2"	13'-9"	N/A	15'-7"	14'-8"	14'-2"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"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

1. 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.
2. 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.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. 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.
6. 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.

NORDIC ENGINEERED WOOD





Maximum Floor Spans

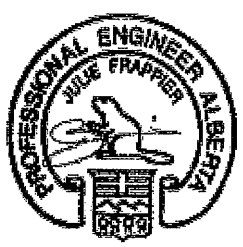
Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing

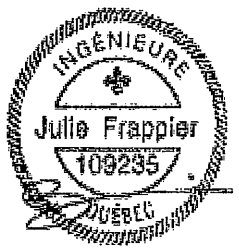
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-9"	17'-5"	16'-5"	15'-10"	15'-2"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-6"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

1. 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.
2. 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.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. 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.
6. 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.

NORDIC ENGINEERED WOOD





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
	NI-90x	20'-4"	18'-9"	17'-11"	N/A	20'-10"	19'-3"	18'-5"	N/A
14"	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
	NI-90x	22'-7"	20'-11"	19'-11"	N/A	23'-3"	21'-6"	20'-6"	N/A
16"	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
	NI-90x	23'-4"	21'-8"	20'-8"	N/A	23'-10"	22'-2"	21'-2"	N/A
14"	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
	NI-90x	26'-4"	24'-4"	23'-3"	N/A	26'-10"	24'-11"	23'-9"	N/A
16"	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

1. 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.
2. 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.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. 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.
6. 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

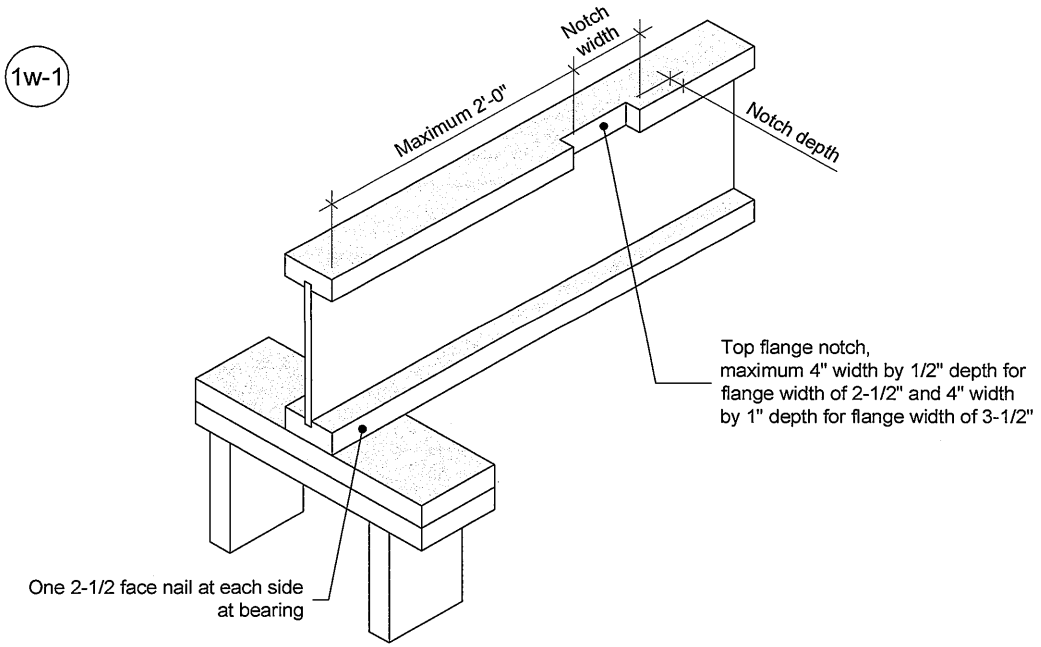
Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing

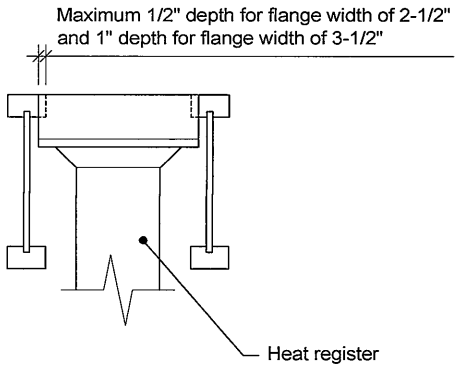
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-0"	16'-0"	15'-1"	13'-11"	17'-5"	16'-1"	15'-1"	13'-11"
	NI-60	17'-2"	16'-2"	15'-5"	14'-3"	17'-6"	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"	17'-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"
	NI-90x	21'-8"	20'-0"	19'-1"	18'-0"	22'-2"	20'-6"	19'-6"	18'-6"
14"	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"
	NI-90x	24'-1"	22'-3"	21'-2"	20'-0"	24'-8"	22'-10"	21'-9"	20'-7"
16"	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"
	NI-90x	24'-3"	22'-6"	21'-3"	19'-7"	24'-8"	22'-7"	21'-3"	19'-7"
14"	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"
	NI-90x	27'-3"	25'-4"	24'-1"	22'-4"	27'-9"	25'-10"	24'-3"	22'-4"
16"	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"

1. 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.
2. 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.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. 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.
6. 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.

1w-1





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.

NORDIC STRUCTURES

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TITLE	DOCUMENT	
Notch in I-joist for Heat Register	-	
CATEGORY	DATE	NUMBER
I-joist - Typical Floor Framing and Construction Details	2018-04-10	1w-1

Construction Detail
Limit States Design

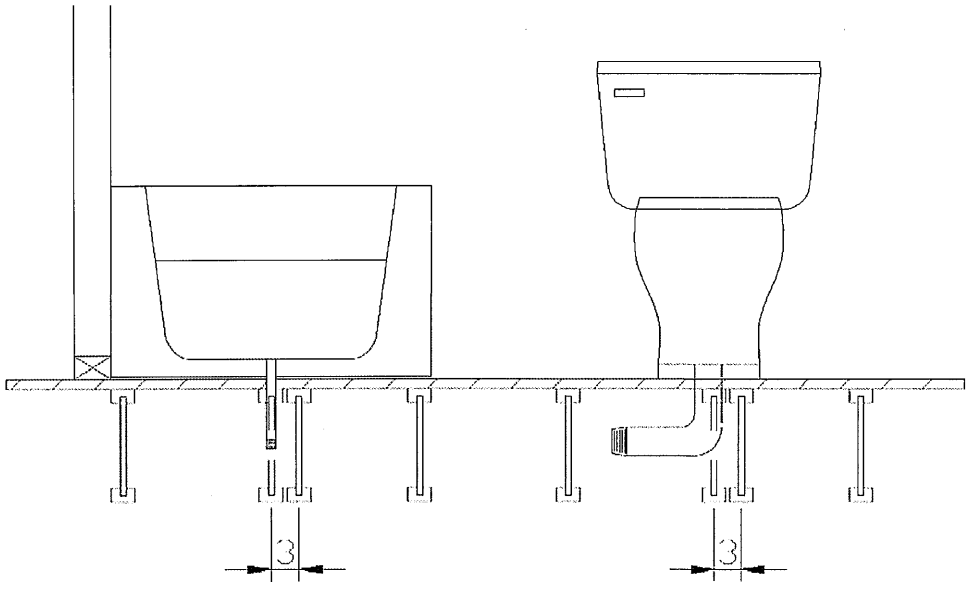
Allowance for Piping (Installation Notes)

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.

ALLOWANCE FOR PIPING



Every third joist may be shifted up to 3 inches to avoid heating/plumbing interference.

Revised April 12, 2012