NORDIC

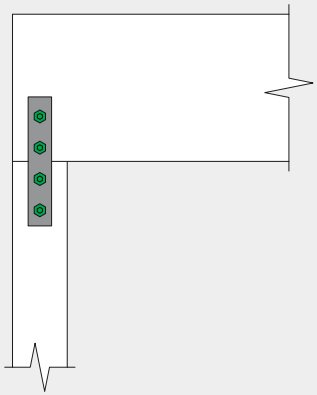
DETAILS
NORDIC LAM
NS-DC4

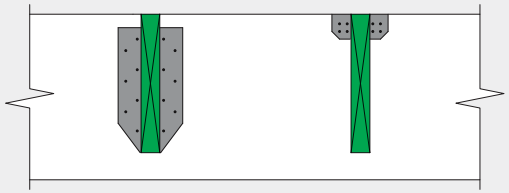
VERSION
2022-05-01

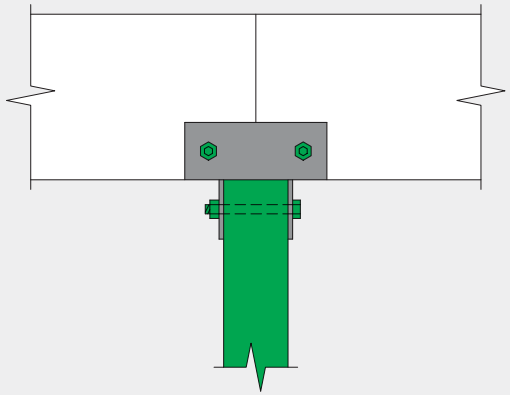
Engineered Wood Products

# CONSTRUCTION DETAILS
# NORDIC LAM

NORDIC
LAM







NORDIC
STRUCTURES

ABOUT NORDIC

# NORDIC STRUCTURES

Nordic Structures is the leading innovator in engineered wood products. Its resource comes from responsibly managed lands within the regional boreal forest. Vertical integration, from forest to structure, bolstered by Nordic's experienced design and development team, ensures consistent quality and unparalleled level of service.


**514-871-8526**
1 866 817-3418

HEAD OFFICE

**Nordic Structures**
100-1100 Canadiens-de-Montréal Avenue
Montréal, Québec H3B 2S2
**www.nordic.ca**

GENERAL INFORMATION

info@nordic.ca

TECHNICAL SUPPORT

tech@nordic.ca

TABLE OF CONTENTS

# GENERAL NOTES

## 1.0 General

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

1.2 While this guide emphasizes residential construction, much of the basic design information can be used for other construction applications. Review by a design professional is required for applications beyond the scope of this document.

1.3 Refer to the Nordic Lam Technical Guide (NS-GT4) for selection and sizing tables, or to the floor or roof layout provided by your distributor.

1.4 For more information, consult nordic.ca or contact Nordic Structures.

## 2.0 Fire Resistance

2.1 Nordic Lam beams with fire-resistance ratings are special orders. Contact Nordic Structures for more information.

3.2 In some designs, sprinkler systems are used with Nordic Lam beams. There are a variety of sprinkler attachments that incorporate fasteners permitted by the National Fire Protection Association (NFPA), design load assumptions published by the NFPA, and published design fastener capacities. These sprinkler attachments are illustrated in details 6.

# LIST OF DETAILS

## 1
## Floor Framing Details



## 2
## Header, Wall and Column Framing Details

## LIST OF DETAILS (CONTINUED)

## 3
## Holes in Beams and Studs



## 4
## Sprinkler Pipe and Mechanical Unit Installation



## 5
## Roof Framing Details

NORDIC LAM

## NORDIC LAM GLUED-LAMINATED TIMBER

Nordic Lam glued-laminated timber of industrial appearance classification consists of small wood laminations bonded together in parallel using structural adhesives.

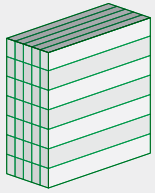
### BEAMS AND HEADERS

**Widths**
1-3/4, 3-1/2, 5-1/2 and 7 in.

**Depths**
9-1/2, 11-7/8, 14, 16, 18, 20, 22 and 24 in.

**Lengths***
Up to 48 ft

**Stress grade**
24F-1.9E



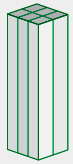
### COLUMNS

**Widths**
3-1/2, 5-1/2 and 7 in.

**Depths**
3-1/2, 5-1/2 and 7 in.

**Lengths***
Up to 48 ft

**Stress grade**
ES12



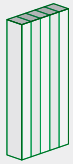
### STUDS

**Widths**
1-1/2 and 1-3/4 in.

**Depths**
5-1/2 and 7-1/4 in.

**Lengths***
Up to 48 ft

**Stress grade**
ES11



* Larger sizes available upon request

Check availability of products with your local distributor.

NORDIC

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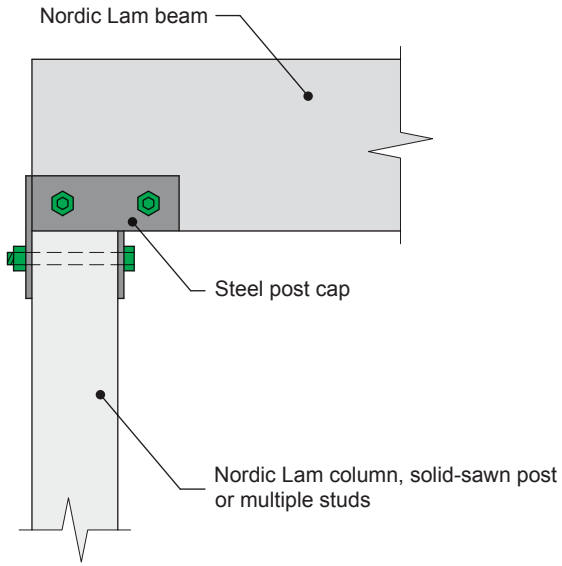
# FLOOR FRAMING DETAILS 1

NORDIC
STRUCTURES

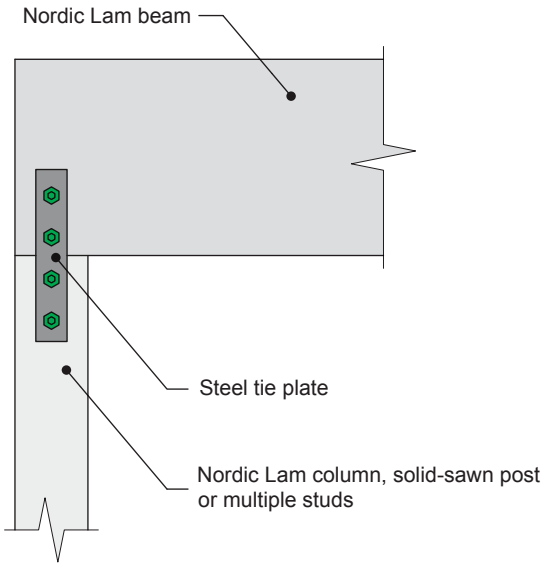
1a




**Notes:**

1. Provide adequate bearing length and bearing across the full width to support Nordic Lam beam. Refer to the Nordic Lam Technical Guide (NS-GT4) for bearing length requirements, and consult local building code for specific requirements.
2. Heavy concentrated loads such as heating/cooling units, crane rails or main framing members suspended from the bottom of beams induce tension perpendicular to grain and may cause splitting. Except for light loads such as hung ceilings (including 2x-framing), sprinkler systems, lighting appliances, etc., always suspend concentrated loads from the beam top, unless designed otherwise by a qualified engineer.

1b

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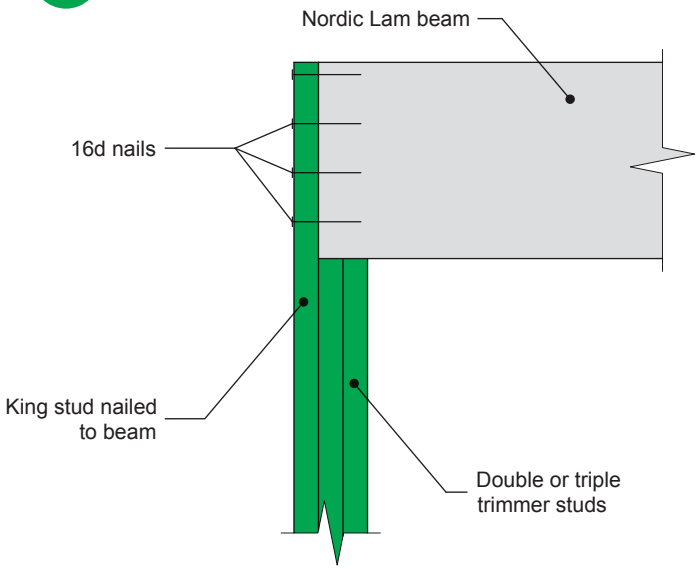
1c




**Notes:**

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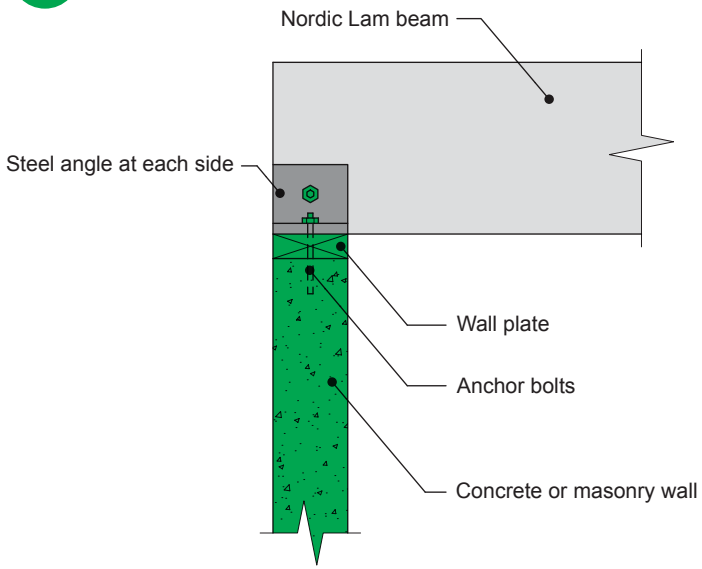
1d




**Notes:**

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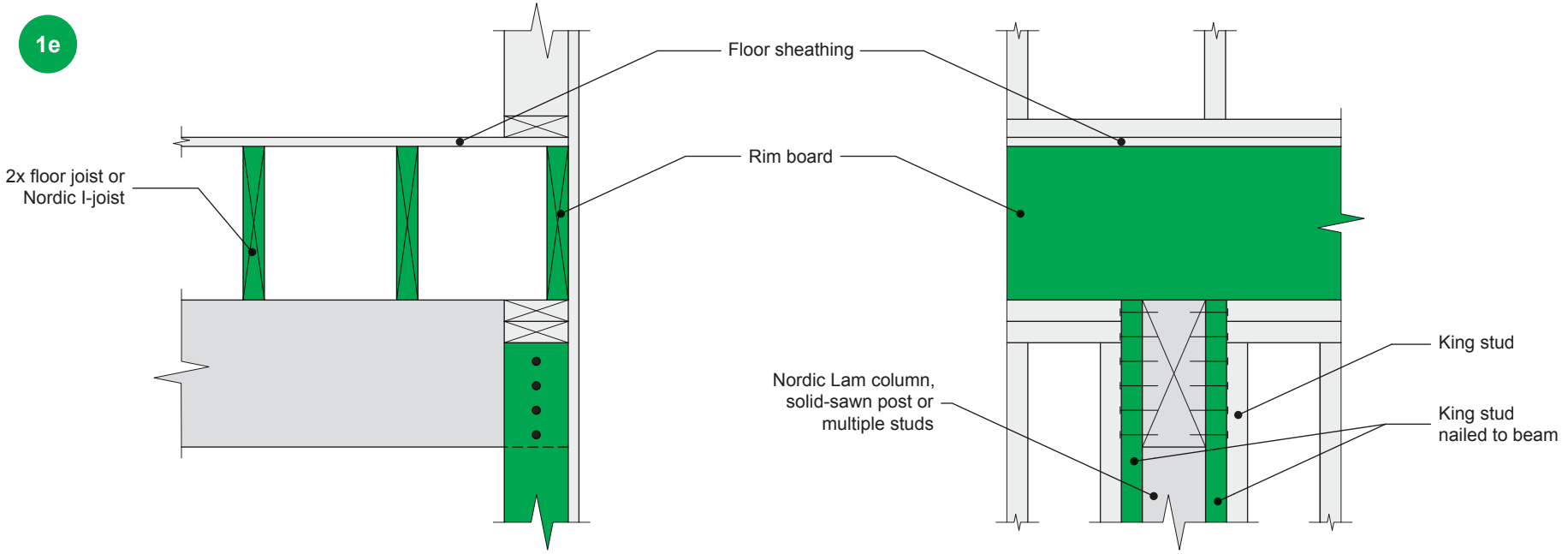
1e




**Section Through Floor Joists**

**Section Through Nordic Lam Beam**

**Notes:**

1. Provide adequate bearing length and bearing across the full width to support Nordic Lam beam. Refer to the Nordic Lam Technical Guide (NS-GT4) for bearing length requirements, and consult local building code for specific requirements.
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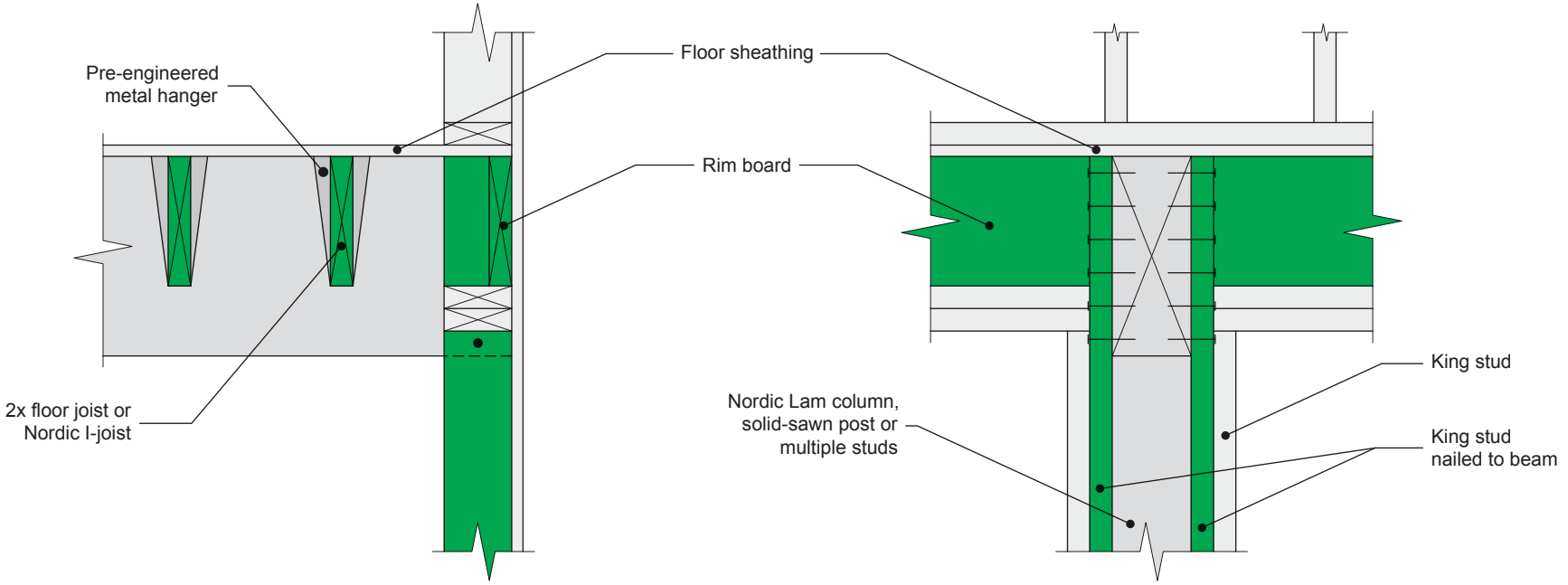
1f




**Section Through Floor Joists**

**Section Through Nordic Lam Beam**

**Notes:**

1. Provide adequate bearing length and bearing across the full width to support Nordic Lam beam. Refer to the Nordic Lam Technical Guide (NS-GT4) for bearing length requirements, and consult local building code for specific requirements.
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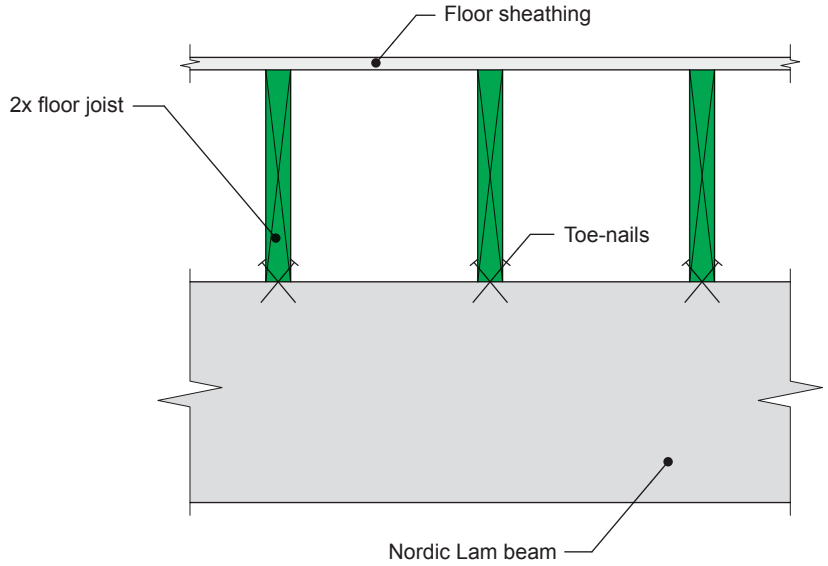
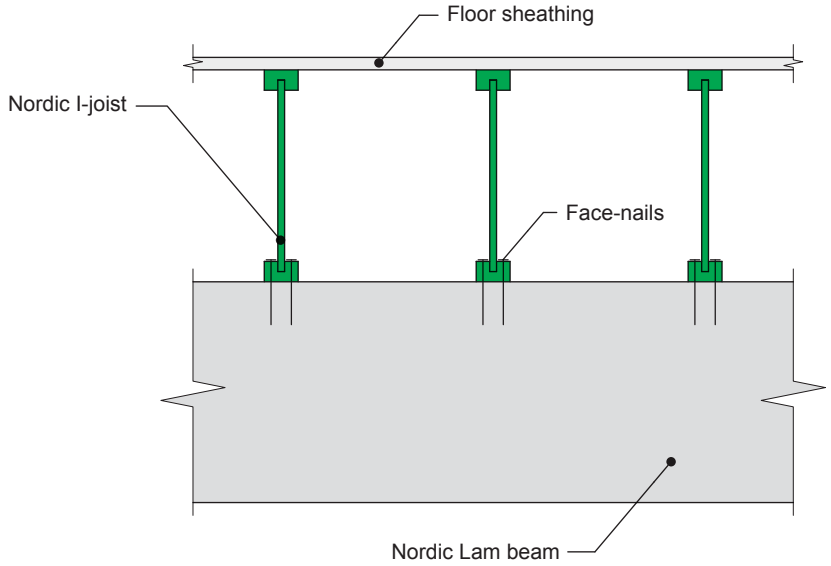
1g




**Notes:**

1. Blocking required between joists at bearing for lateral support, not shown for clarity.
2. Provide adequate bearing length and bearing across the full width to support Nordic Lam beam. Refer to the Nordic Lam Technical Guide (NS-GT4) for bearing length requirements, and consult local building code for specific requirements.
3. Heavy concentrated loads such as heating/cooling units, crane rails or main framing members suspended from the bottom of beams induce tension perpendicular to grain and may cause splitting. Except for light loads such as hung ceilings (including 2x-framing), sprinkler systems, lighting appliances, etc., always suspend concentrated loads from the beam top, unless designed otherwise by a qualified engineer.

1h




**Notes:**

1. Blocking required between joists at bearing for lateral support, not shown for clarity.
2. Provide adequate bearing length and bearing across the full width to support Nordic Lam beam. Refer to the Nordic Lam Technical Guide (NS-GT4) for bearing length requirements, and consult local building code for specific requirements.
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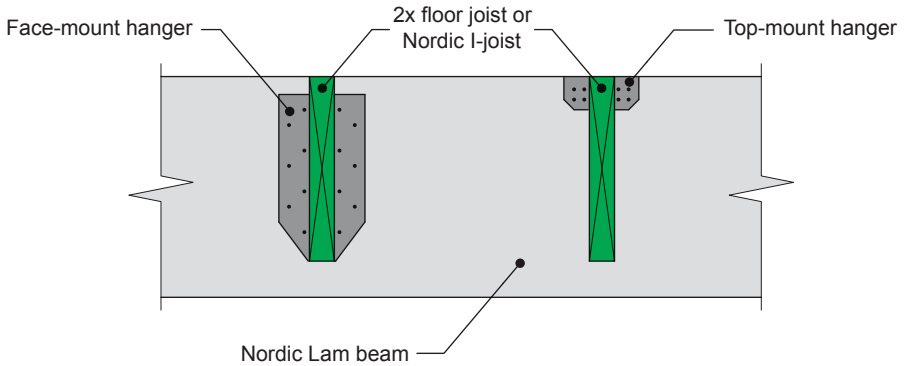
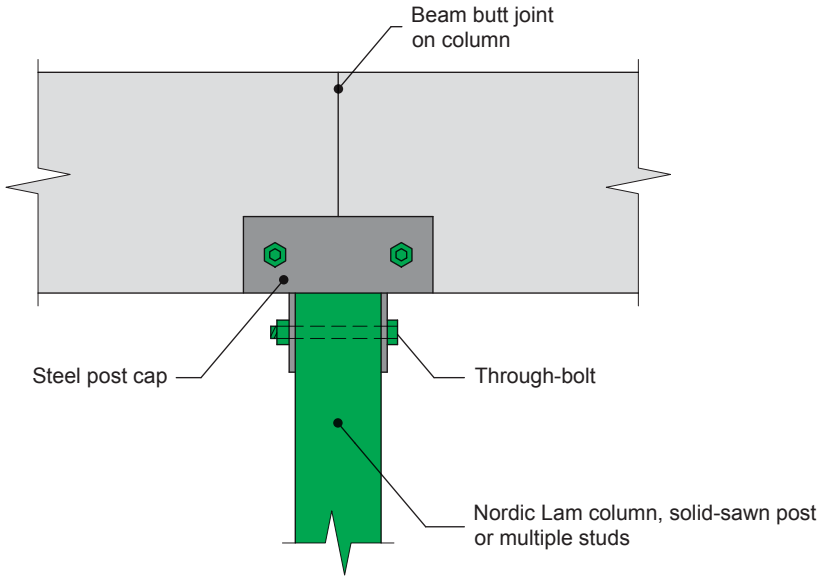
1j




**Notes:**

1. Hangers installed per manufacturer's recommendations.
2. Provide adequate bearing length and bearing across the full width to support Nordic Lam beam. Refer to the Nordic Lam Technical Guide (NS-GT4) for bearing length requirements, and consult local building code for specific requirements.
3. Heavy concentrated loads such as heating/cooling units, crane rails or main framing members suspended from the bottom of beams induce tension perpendicular to grain and may cause splitting. Except for light loads such as hung ceilings (including 2x-framing), sprinkler systems, lighting appliances, etc., always suspend concentrated loads from the beam top, unless designed otherwise by a qualified engineer.

1k




**Notes:**

1. See detail 1m for similar details with continuous floor beam over intermediate wood supports.
2. Provide adequate bearing length and bearing across the full width to support Nordic Lam beam. Refer to the Nordic Lam Technical Guide (NS-GT4) for bearing length requirements, and consult local building code for specific requirements.
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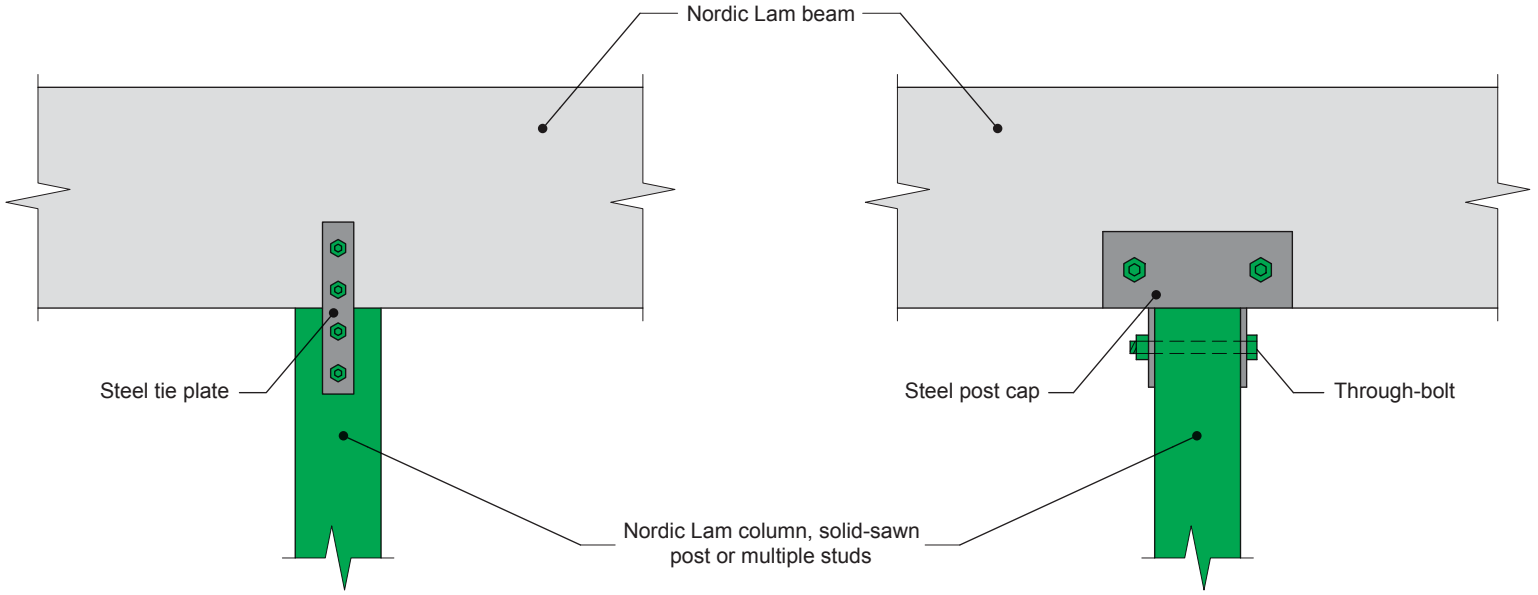
1m

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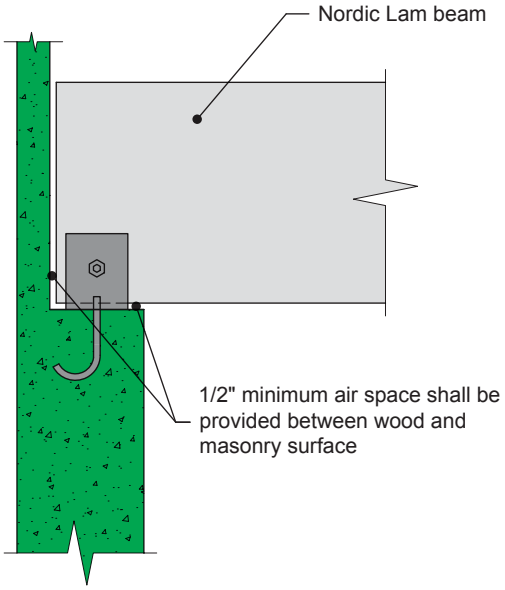
1n




**Notes:**

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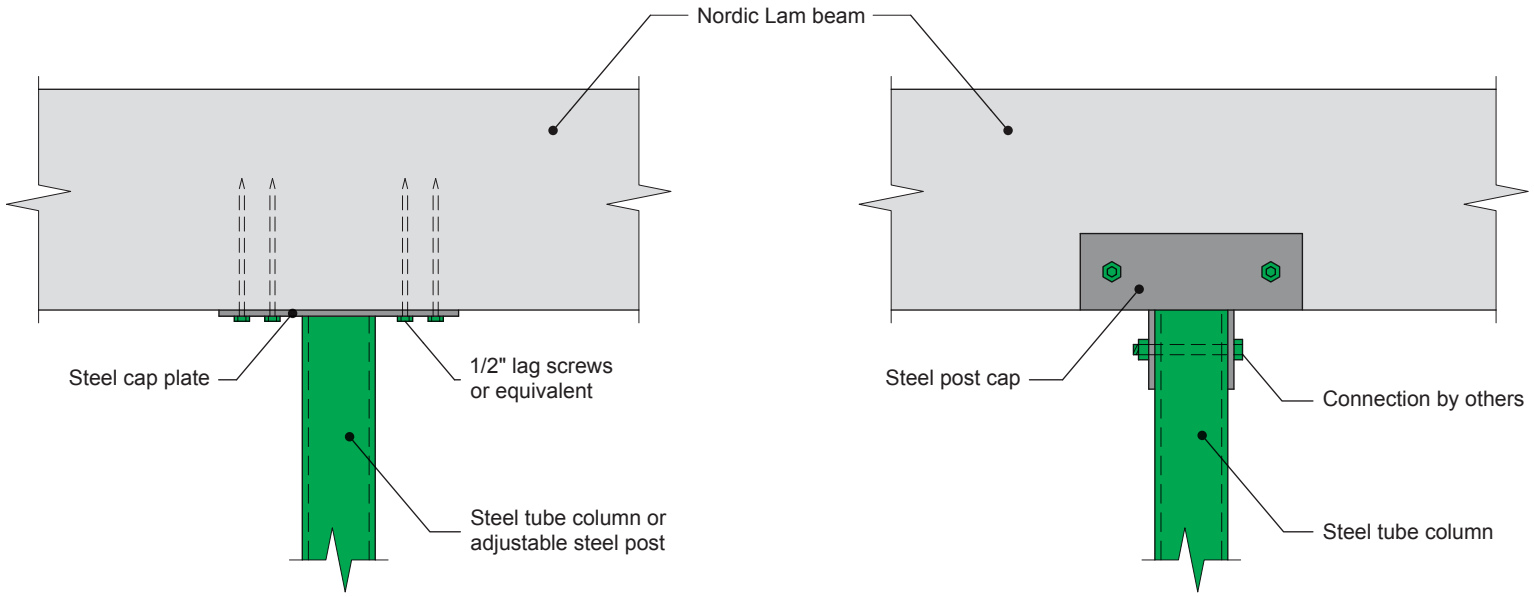
1p

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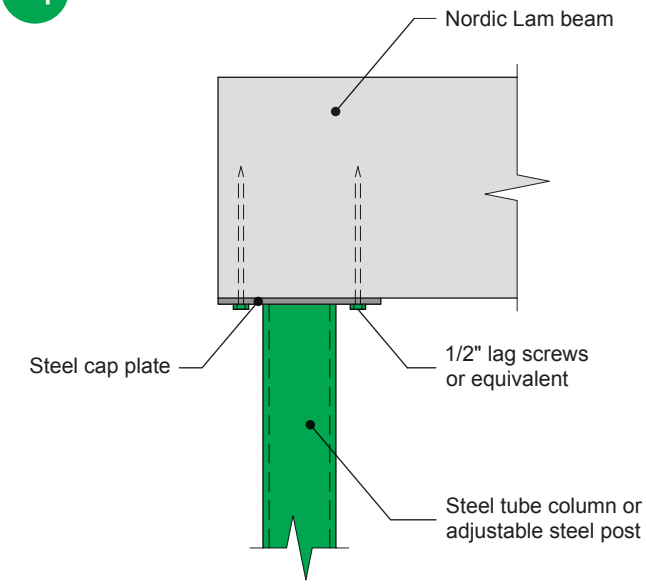
1q

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NORDIC

DETAILS
NORDIC LAM

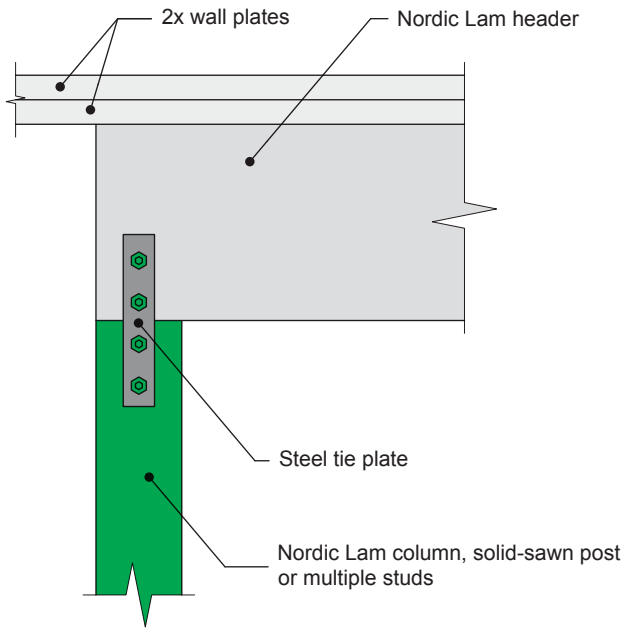
NS-DC4

VERSION
2022-05-01

# HEADER, WALL AND COLUMN FRAMING DETAILS 2

NORDIC
STRUCTURES

2a




**Notes:**

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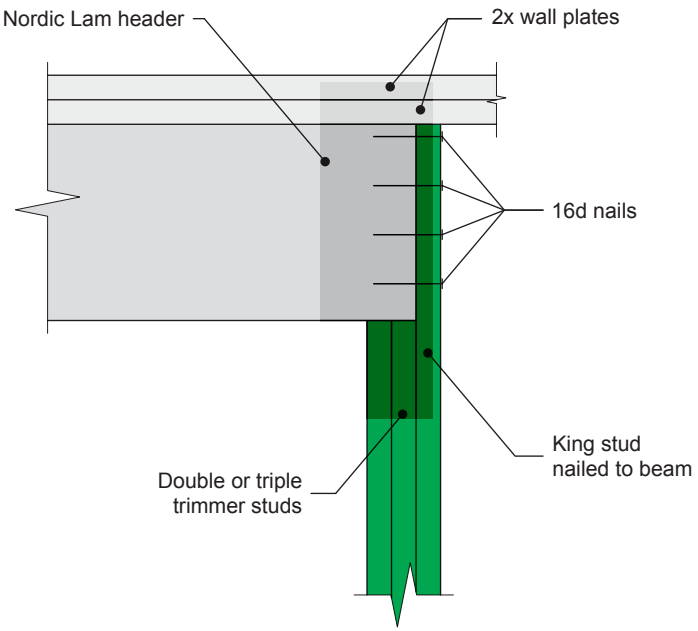
2b

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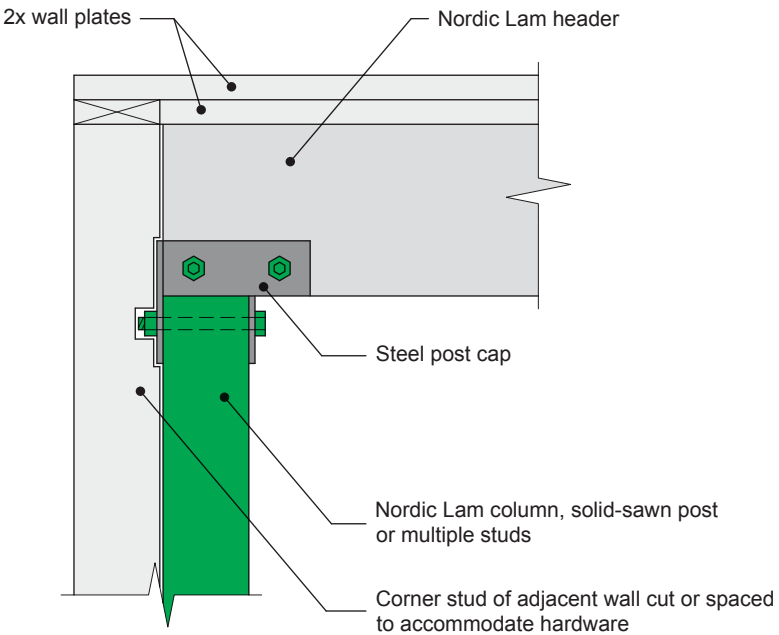
2c

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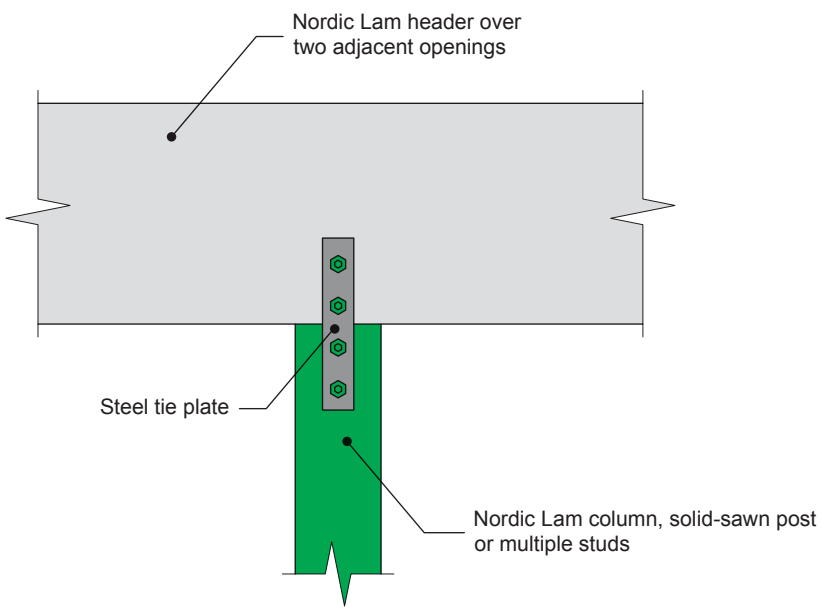
2d

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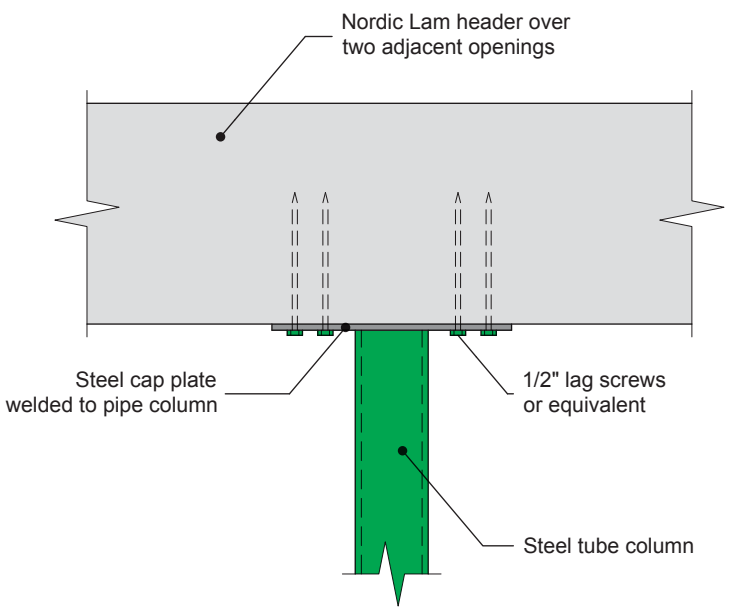
2e

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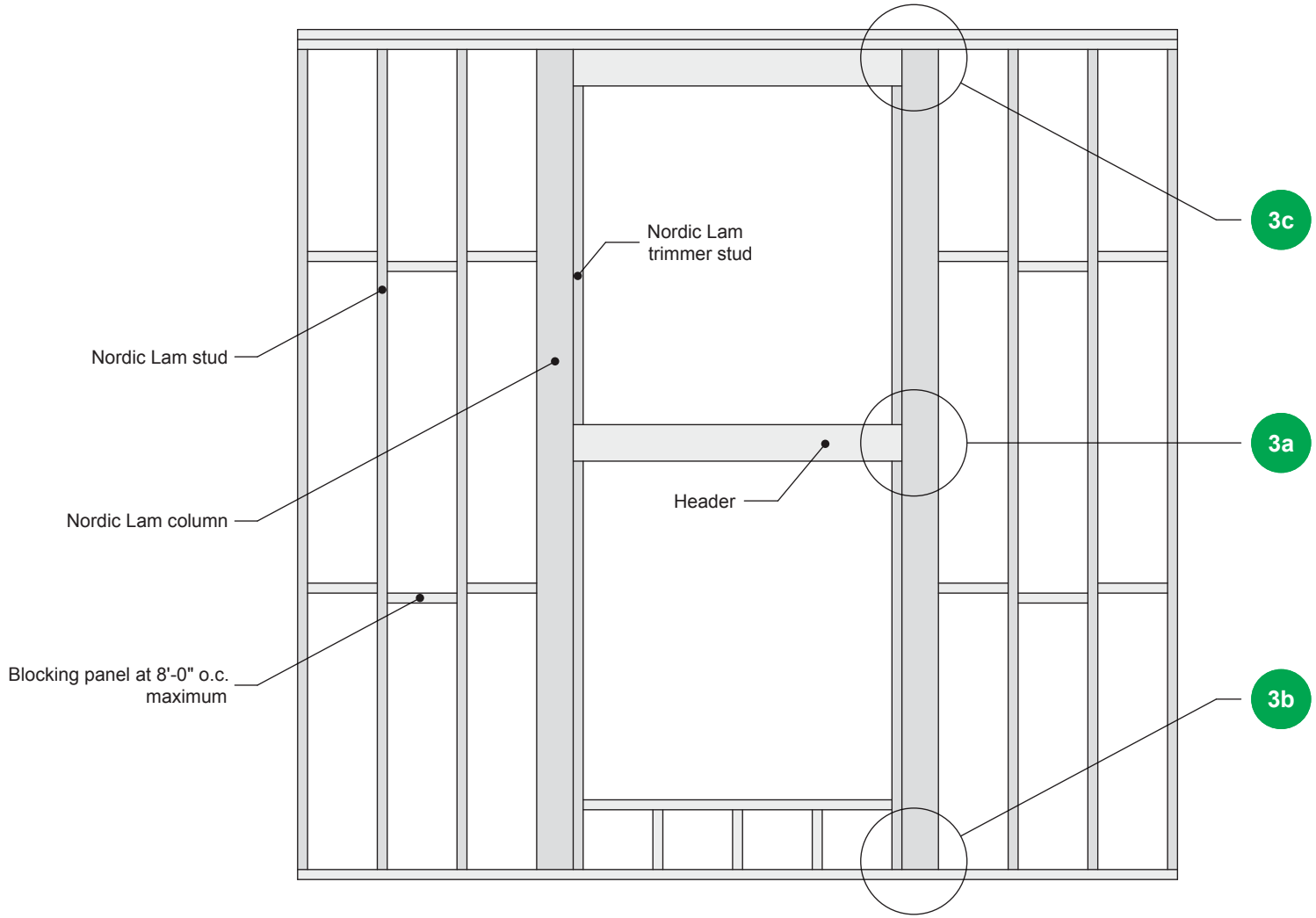
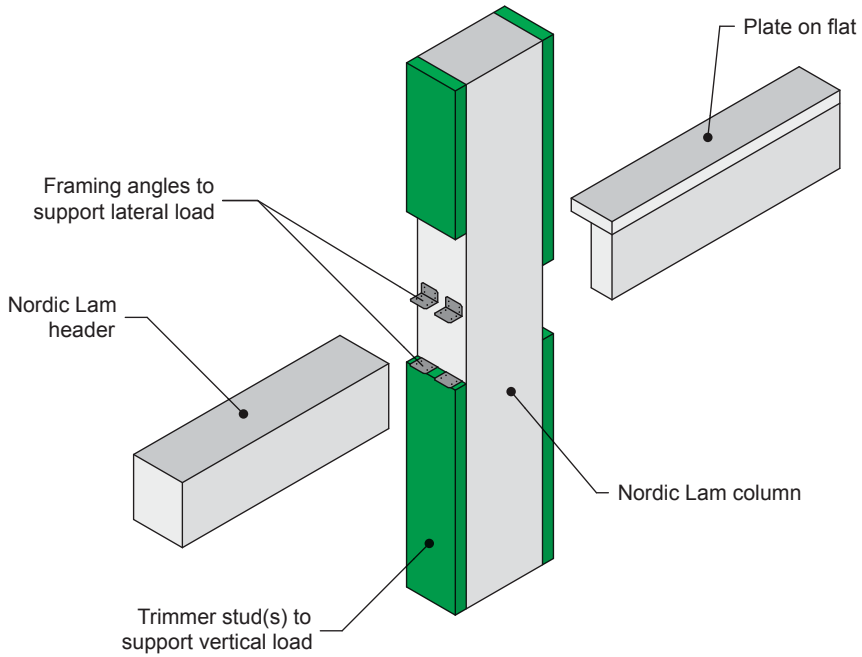



# 3

**Note:**

1. All additional blocking, trimmers, plates, etc. not specified should be the same as the typical stud material.

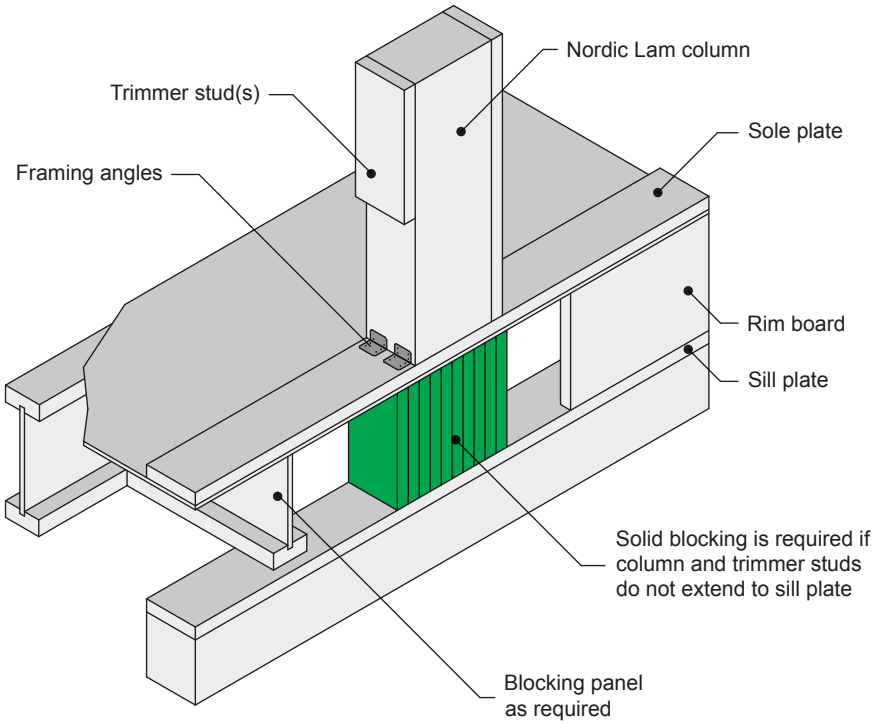
3a



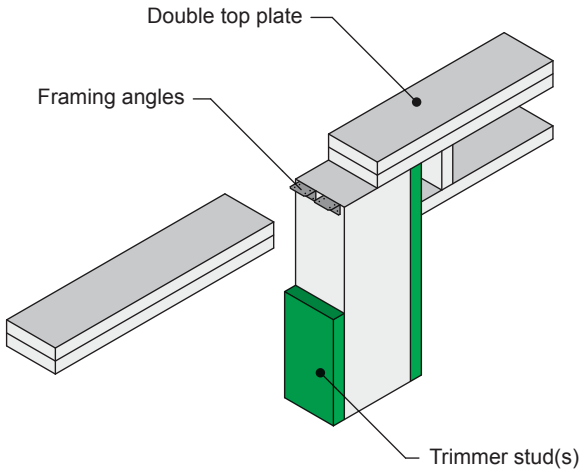

**Note:**

1. Plate width must equal wall thickness to provide lateral bracing. (Plate not required if header width equals the wall thickness.)

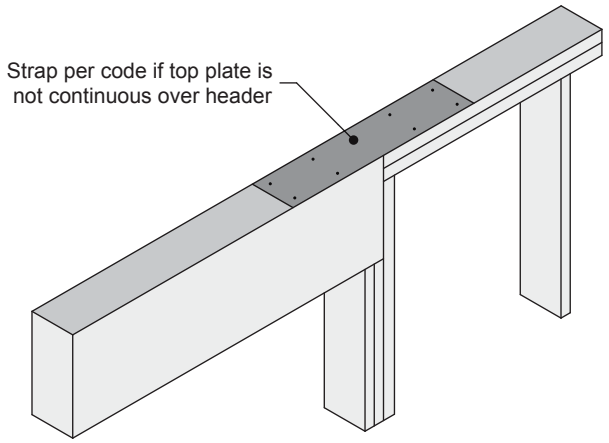
3b


Nordic Lam column
Trimmer stud(s)
Sole plate
Framing angles
Rim board
Sill plate
Solid blocking is required if column and trimmer studs do not extend to sill plate
Blocking panel as required

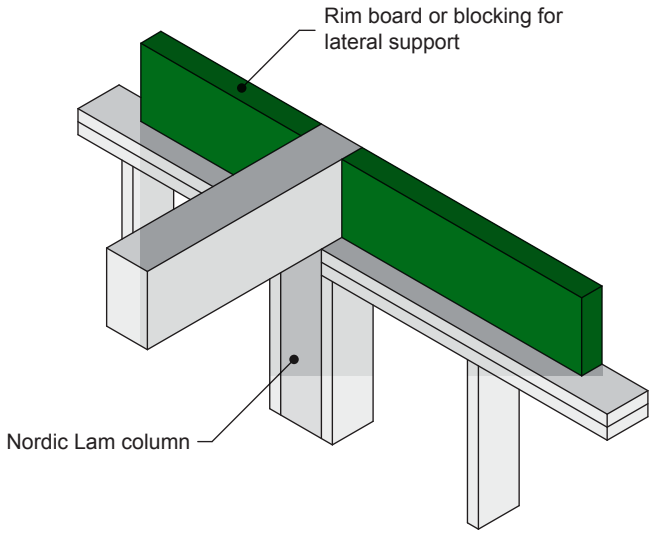
3c



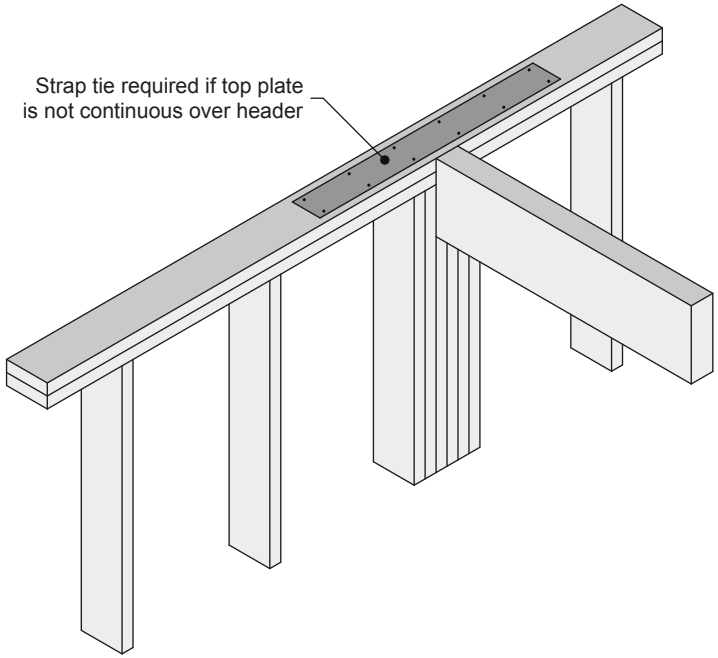
3d



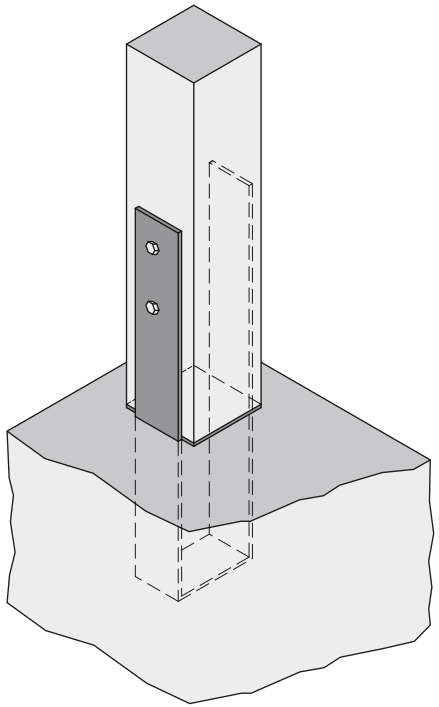
3e


Rim board or blocking for lateral support
Nordic Lam column

3f


Strap tie required if top plate
is not continuous over header

3g



NORDIC STRUCTURES

nordic.ca

NS-DC4 DETAILS NORDIC LAM

TITLE
Column Base

DRAWING
3g

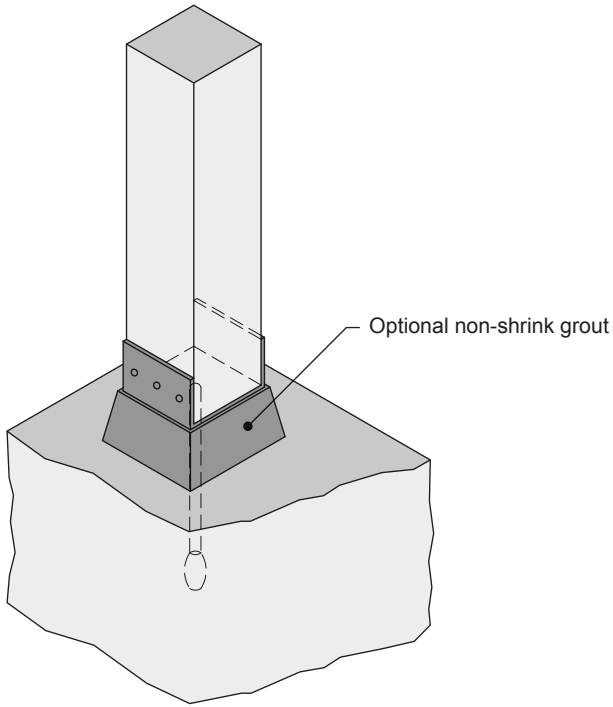
CATEGORY
Typical Wall and Column Framing Details

SCALE
-

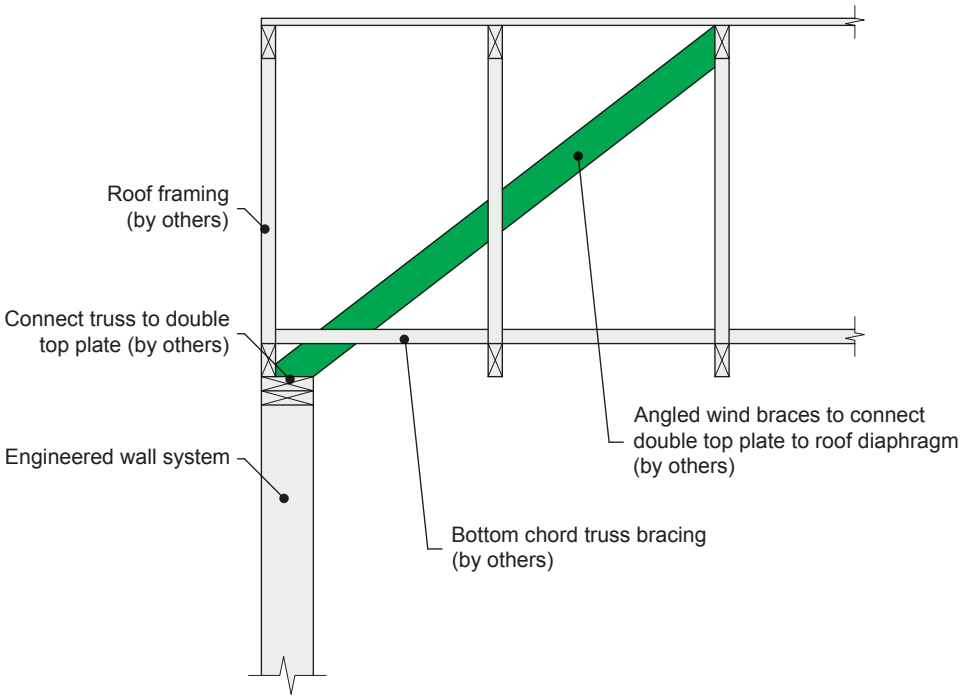
DATE
2021-08-01

PAGE
2.13

3h

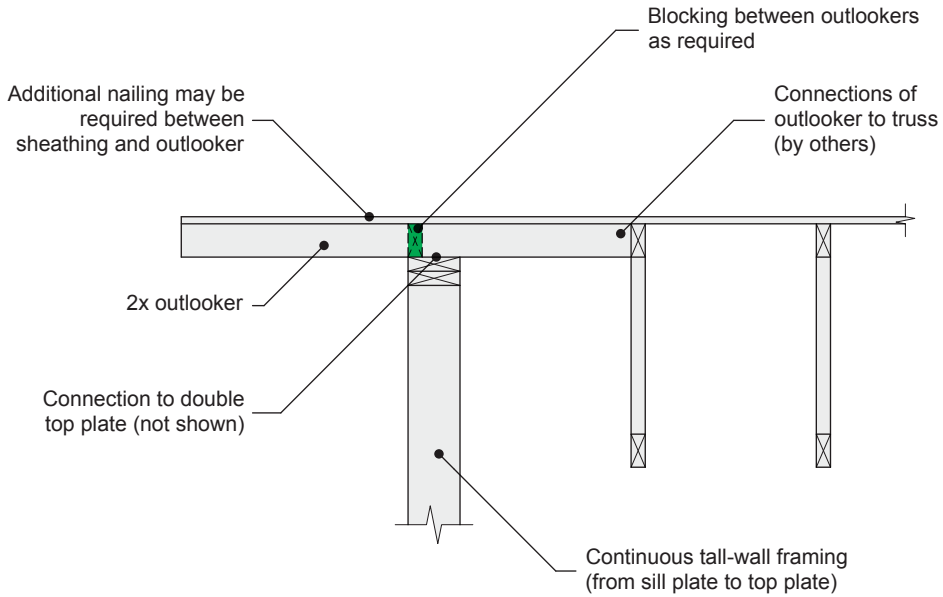


3j



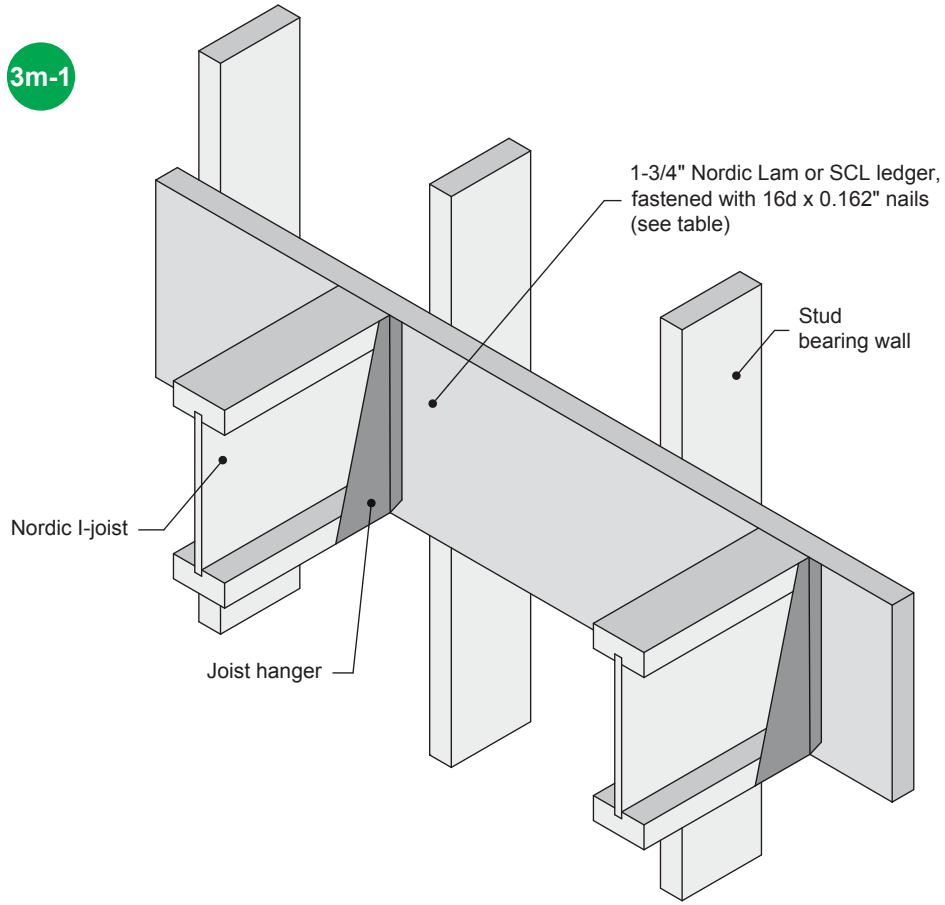

**Note:**
1. Wall bracing is necessary if double top plate is not attached directly to the roof/floor diaphragm.

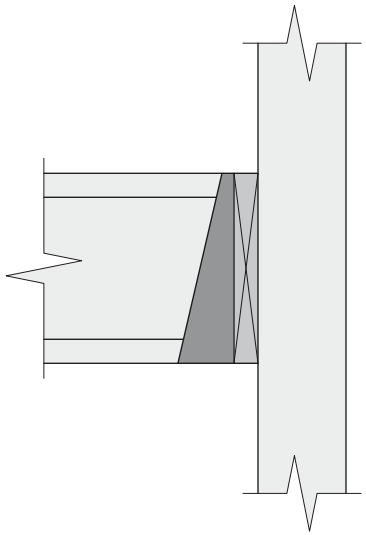
3k




**Note:**
1. Connection of double top plate to outlooker must be designed to transfer lateral load to roof.

3m-1



**Ledger Capacity**

| Depth (in.) | Number of 16d nails per stud | Stud spacing (in.) | Capacity (plf) |
|---|---|---|---|
| 9-1/2 | 3 | 12 | 360 |
| | 3 | 16 | 480 |
| | 3 | 24 | 720 |
| 11-7/8 | 4 | 12 | 480 |
| | 4 | 16 | 640 |
| | 4 | 24 | 960 |
| 14 | 5 | 12 | 600 |
| | 5 | 16 | 800 |
| | 5 | 24 | 1,200 |
| 16 | 6 | 12 | 720 |
| | 6 | 16 | 960 |
| | 6 | 24 | 1,440 |

**Notes:**
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.
2. Ledger depth shall match the height of the joists.

**Notes:**
1. The ledger capacity represents the ledger-to-stud connection capacity in pounds per linear foot (plf). To convert the joist reaction to a uniform load (in plf), divide the joist reaction (in lbf) by the joist spacing (in ft).
2. Studs shall be grade S-P-F No. 3/Stud or better.
3. Minimum distances for nails: spacing of 3/4 inch; and edge distance of 3/4 inch.

NORDIC

DETAILS
NORDIC LAM

NS-DC4

VERSION
2022-05-01

# HOLES IN BEAMS AND STUDS 3

NORDIC
STRUCTURES

# Beam Hole Specifications

**Horizontal Holes**

Horizontal holes in glued laminated timbers are limited in size and location to maintain the structural integrity of the beam. Detail 4 shows the zones of a uniformly loaded, simply supported beam where the field drilling of holes may be considered. These non-critical zones are located in portions of the beam stressed to less than 50 percent of specified bending strength and less than 50 percent of specified shear strength. For beams, of more complex loading or other than simple spans, similar diagrams may be developed.

Field-drilled horizontal holes should be used for access only and should not be used as attachment points for brackets or other load bearing hardware unless specifically designed as such by the engineer or designer of record.

These field drilled horizontal holes should meet the following guidelines:

1. **Hole size:** The hole diameter should not exceed 1-1/2 inch or 1/10 the beam depth, whichever is smaller.

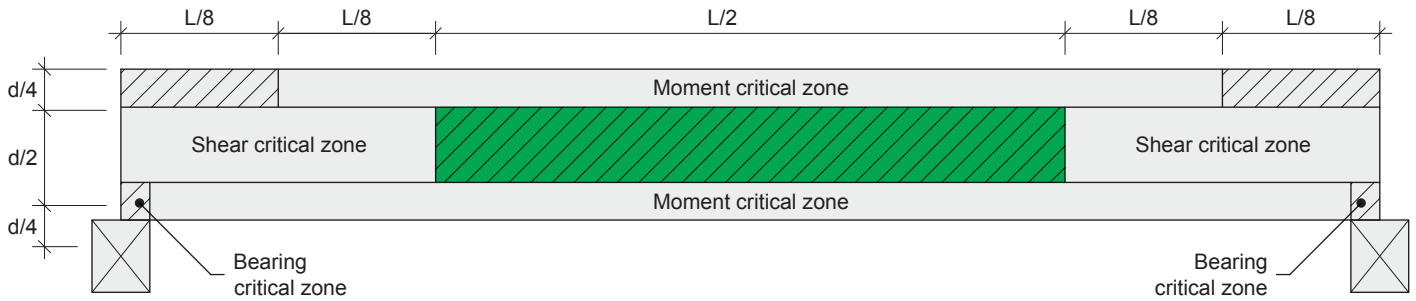
2. **Hole location:** The hole should have a minimum clear distance, as measured from the edge of the hole to the nearest edge of the beam, of four hole diameters to the top or bottom face of the beam and eight hole diameters from the end of the beam. Note that the horizontal hole should not be drilled in the moment-critical zone, as defined in detail 4, unless approved by an engineer or architect qualified in engineered timber design.

3. **Hole spacing:** The minimum clear spacing between adjacent holes, as measured between the nearest edge of the holes, should be eight hole diameters based on the largest diameter of any adjacent hole in the beam.

4. **Number of holes:** The maximum number of holes should not exceed one hole per five feet of beam length. The hole spacing limitation, as given above, should be satisfied separately.

For glulam members that have been oversized or for glulam joists, the guidelines given above may be relaxed based on an engineering analysis. Regardless of the hole location, holes drilled horizontally through a member should be positioned and sized with the understanding that the beam will deflect over a period of time under in-service loading conditions. This deflection could cause distress to supported equipment or piping unless properly considered.

4

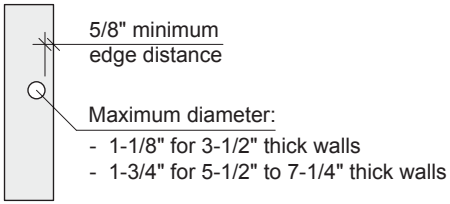


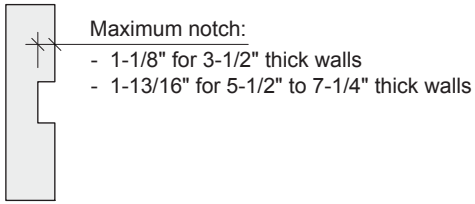

Zones where horizontal holes are permitted for passage of wires, conduit, etc.

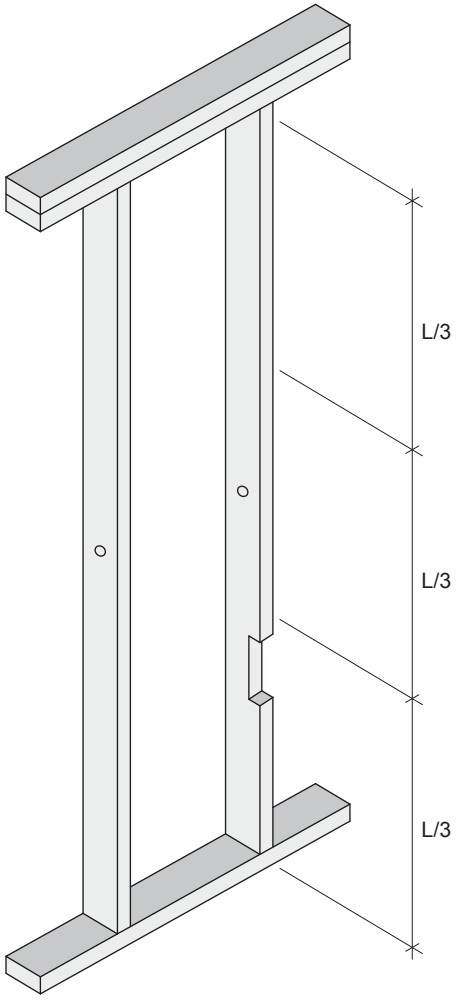
**Note:**

1. This detail represents the zones where small horizontal holes are permitted holes in a uniformly loaded, simply supported beam.

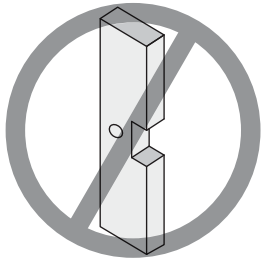
5




**Notes:**
1. One hole may be cut anywhere along the length of the stud or column but must be no closer than 5/8 inch from the edge.
2. One notch may be cut anywhere except the middle 1/3 of the length of the stud or column.
3. Bored holes shall not be located in the same section as a cut or notch in stud.



NORDIC STRUCTURES
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NS-DC4 DETAILS NORDIC LAM

TITLE
Maximum Holes in Studs

DRAWING
5

CATEGORY
Holes in Beams and Studs

SCALE
-

DATE
2021-08-01

PAGE
3.3

NORDIC

DETAILS
NORDIC LAM

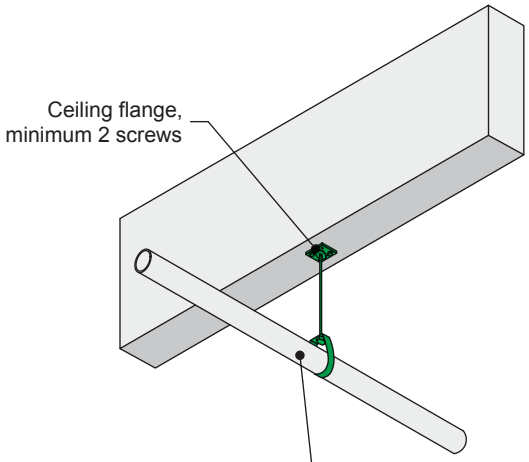
NS-DC4

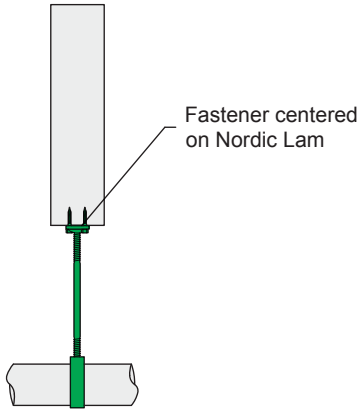
VERSION
2022-05-01

# SPRINKLER PIPE AND MECHANICAL UNIT INSTALLATION 4

NORDIC
STRUCTURES

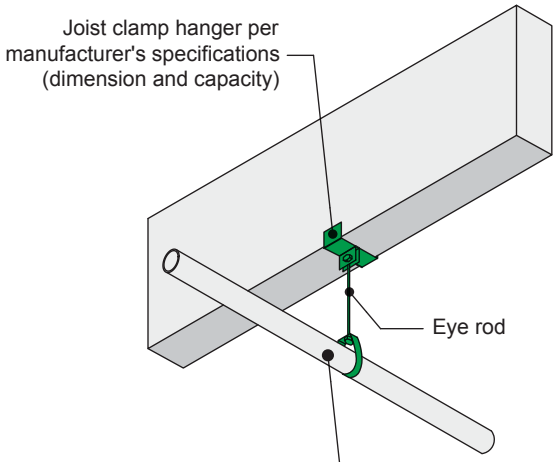
6a

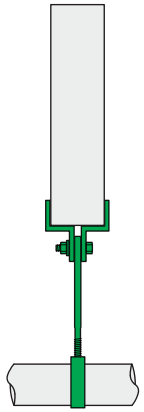


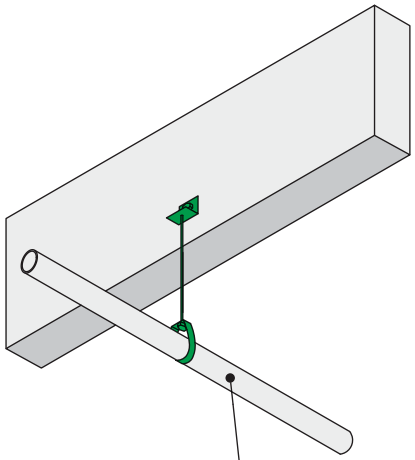

Install per NFPA 13 and manufacturer's instructions.
Steel sprinkler system pipe 4" maximum diameter or
500 lb maximum point load.

6b

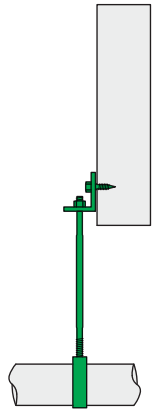

Joist clamp hanger per
manufacturer's specifications
(dimension and capacity)
Eye rod
Install per NFPA 13 and manufacturer's instructions.
Steel sprinkler system pipe 4" maximum diameter or
500 lb maximum point load.



6c

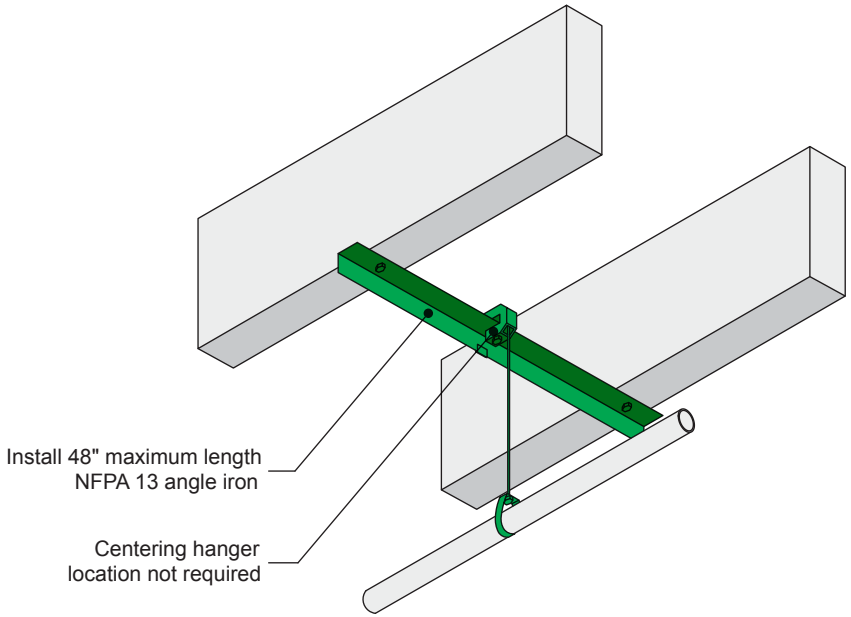


Install per NFPA 13 and manufacturer's instructions.
Steel sprinkler system pipe 4" maximum diameter or
500 lb maximum point load.



Two sheet metal screws #10 x 1-1/2"
Option: Two clinched 8d nails (0.113" x 2-1/2")

6d

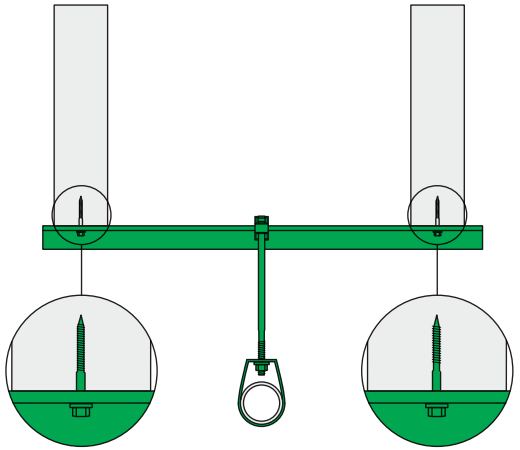



Option 1

Install per NFPA 13. CPVC sprinkler system pipe 2-1/2" maximum diameter = 290 lb maximum point load (145 lb per beam)

Option 2

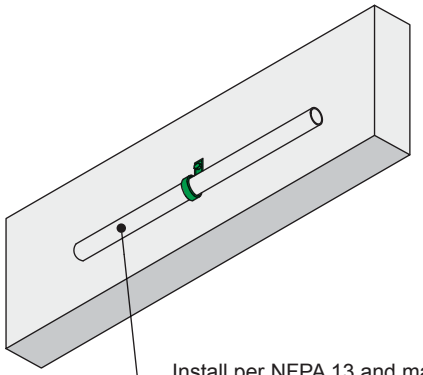
Install per NFPA 13. Steel sprinkler system pipe 4", maximum diameter = 500 lb maximum point load (250 lb per beam)



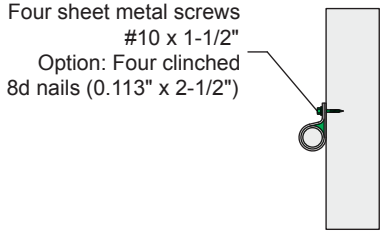
One 1/4" x 3" lag screw

One #14 x 3" sheet metal screw

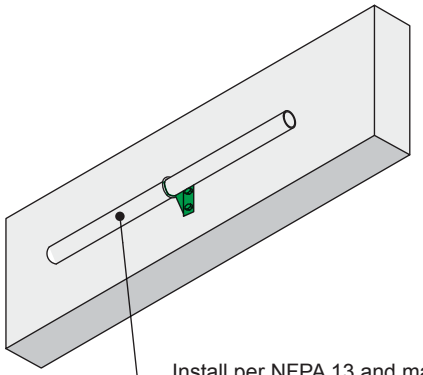
6e



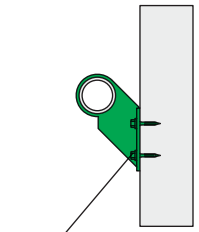
Install per NFPA 13 and manufacturer's instructions.
CPVC sprinkler system pipe 3" maximum diameter or
310 lb maximum point load.



6f



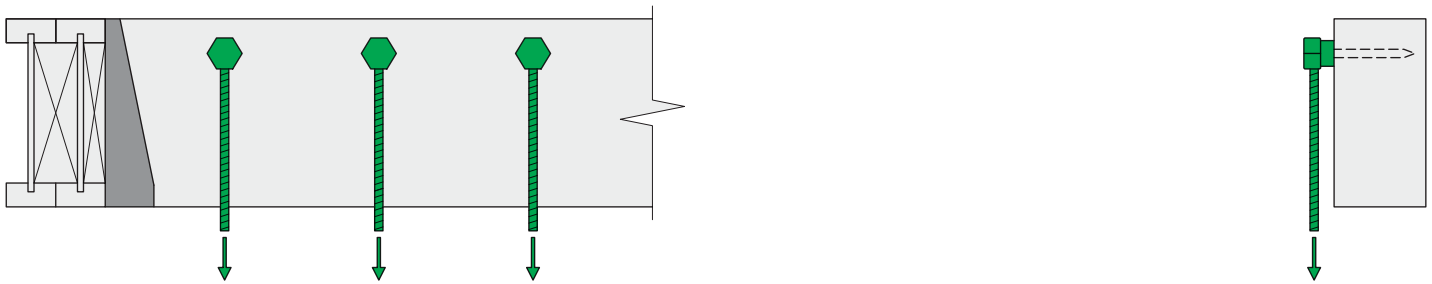
Install per NFPA 13 and manufacturer's instructions.
CPVC sprinkler system pipe 3" maximum diameter
or 310 lb maximum point load.



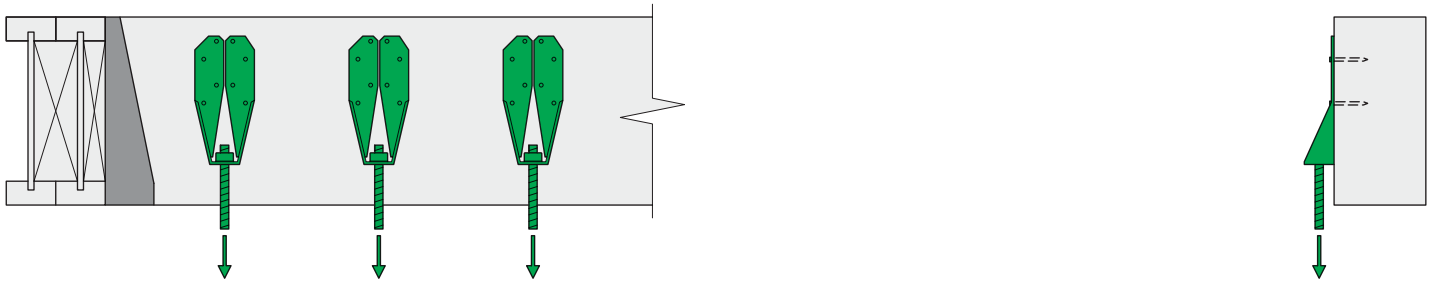
Four sheet metal screws
#10 x 1-1/2"
Option: Four clinched
8d nails (0.113" x 2-1/2")

7a

**Option 1 - Connector type DTT2Z**



**Option 2 - Connector type RWH**



NORDIC

DETAILS
NORDIC LAM

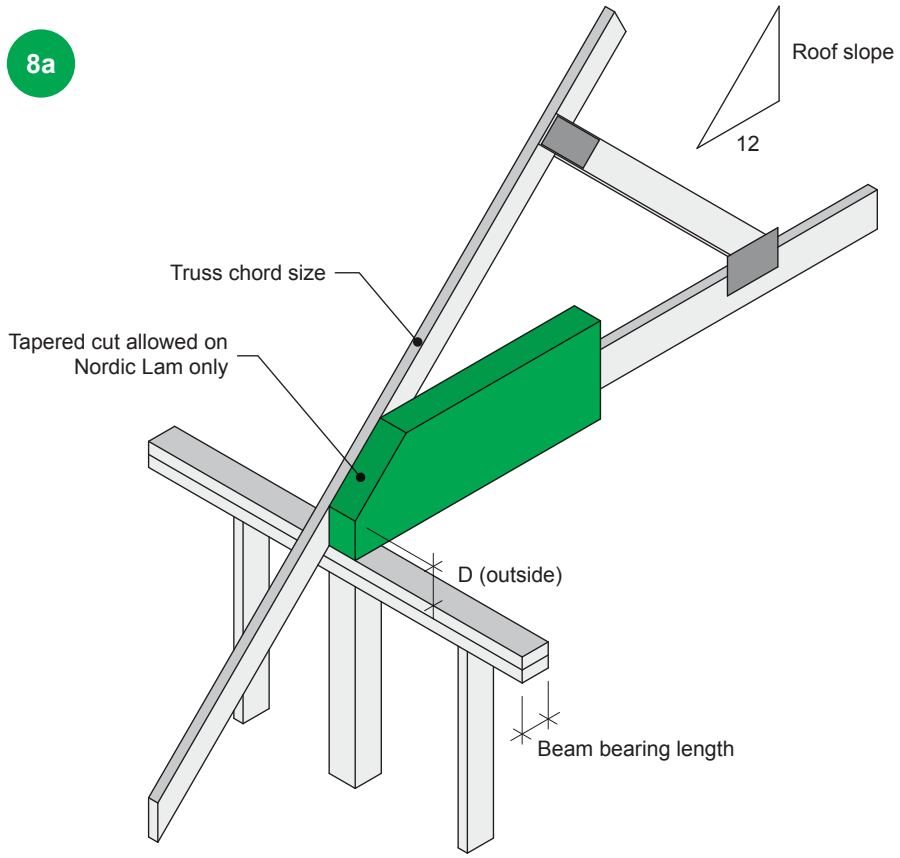
NS-DC4

VERSION
2022-05-01

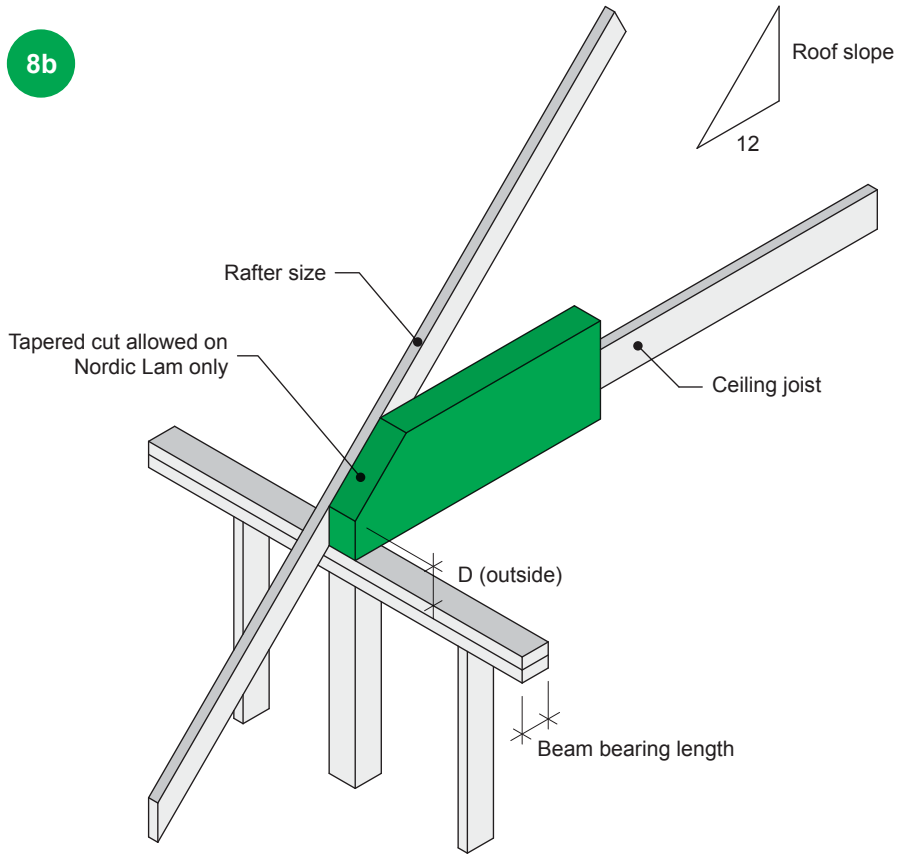
# ROOF FRAMING DETAILS 5

NORDIC
STRUCTURES

8a


Roof slope
12
Truss chord size
Tapered cut allowed on
Nordic Lam only
D (outside)
Beam bearing length

8b




NORDIC STRUCTURES

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NS-DC4 DETAILS NORDIC LAM

TITLE
Conventional (Stick) Roof

DRAWING
8b

CATEGORY
Roof Framing Details

SCALE
-

DATE
2021-08-01

PAGE
5.2