Mass Timber Construction

STRUCTURAL DETAILS

NORDIC LAM+

NORDIC X-LAM

NS-DS2
Nordic Structures is the leading innovator in mass timber construction. 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.
<table>
<thead>
<tr>
<th></th>
<th>General Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>iii</td>
<td>List of Details</td>
</tr>
<tr>
<td>v</td>
<td>Nordic X-Lam (CLT)</td>
</tr>
<tr>
<td>vi</td>
<td>Nordic Lam+ (glulam)</td>
</tr>
</tbody>
</table>

**TABLE OF CONTENTS**

**STRUCTURE**

**MECHANICAL, ELECTRICAL, AND PLUMBING**
1.0 General

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

1.2 The information contained in this document is provided for information purposes only. This information should not be used for any application without examination and verification of its accuracy, suitability and applicability by a licensed engineer, architect or other professional. Nordic Structures does not guarantee that the information is suitable for any general or particular use, and assumes no responsibility for the use, application of and / or reference to the information.

1.3 All dimensions are in millimetres (mm), unless otherwise noted.

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

2.0 Design of connections

2.1 The design of connections, including fire resistance if required, shall be in accordance with CSA O86-14, Engineering design in wood.

2.2 The design of connections should include considerations for structural and service performance, such as resistance, minimum distances, dimensional changes, durability, erection and fire safety, among others, as well as taking into account architectural requirements.

2.3 The connections shown in this document are provided for information purposes only, and conceptually. Note that many possibilities and variants are possible.
## LIST OF DETAILS

### Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Title</th>
<th>Drawing</th>
<th>Date</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure, GL-CLT</td>
<td>Continuous Floor Slab on Beam</td>
<td>NS-DS2001</td>
<td>2020-02-01</td>
<td>1.1</td>
</tr>
<tr>
<td>Structure, GL-CLT</td>
<td>Single Floor Slab on Beam</td>
<td>NS-DS2002</td>
<td>2020-02-01</td>
<td>1.2</td>
</tr>
<tr>
<td>Structure, GL-CLT</td>
<td>Face-mount Hanger</td>
<td>NS-DS2003</td>
<td>2020-02-01</td>
<td>1.3</td>
</tr>
<tr>
<td>Structure, GL-CLT</td>
<td>Face-mount Hanger with Concealed Flanges</td>
<td>NS-DS2067</td>
<td>2020-02-01</td>
<td>1.4</td>
</tr>
<tr>
<td>Structure, GL-CLT</td>
<td>Knife Plate</td>
<td>NS-DS2004</td>
<td>2020-02-01</td>
<td>1.5</td>
</tr>
<tr>
<td>Structure, GL-CLT</td>
<td>Knife Plate with Cap</td>
<td>NS-DS2005</td>
<td>2020-02-01</td>
<td>1.6</td>
</tr>
<tr>
<td>Structure, GL-CLT</td>
<td>Beam to Column with Knife Plate</td>
<td>NS-DS2007</td>
<td>2020-02-01</td>
<td>1.8</td>
</tr>
<tr>
<td>Structure, GL-CLT</td>
<td>Pocket for Beam</td>
<td>NS-DS2008</td>
<td>2020-02-01</td>
<td>1.9</td>
</tr>
<tr>
<td>Structure, GL-CLT</td>
<td>Through Pocket for Beam</td>
<td>NS-DS2009</td>
<td>2020-02-01</td>
<td>1.10</td>
</tr>
<tr>
<td>Structure, Wall-Foundation</td>
<td>Wall to Sill Plate, Screws</td>
<td>NS-DS2010</td>
<td>2020-02-01</td>
<td>1.11</td>
</tr>
<tr>
<td>Structure, Wall-Foundation</td>
<td>Wall to Sill Plate, Nailed Steel Plate</td>
<td>NS-DS2011</td>
<td>2020-02-01</td>
<td>1.12</td>
</tr>
<tr>
<td>Structure, Wall-Foundation</td>
<td>Wall to Sill Plate, Holdown</td>
<td>NS-DS2012</td>
<td>2020-02-01</td>
<td>1.13</td>
</tr>
<tr>
<td>Structure, Wall-Foundation</td>
<td>Wall to Sill Plate, Steel Angle</td>
<td>NS-DS2013</td>
<td>2020-02-01</td>
<td>1.14</td>
</tr>
<tr>
<td>Structure, Wall-Foundation</td>
<td>Wall to Foundation, Holdown</td>
<td>NS-DS2014</td>
<td>2020-02-01</td>
<td>1.15</td>
</tr>
<tr>
<td>Structure, Wall-Foundation</td>
<td>Wall to Foundation, Nailed Steel Angle</td>
<td>NS-DS2015</td>
<td>2020-02-01</td>
<td>1.16</td>
</tr>
<tr>
<td>Structure, Wall-Foundation</td>
<td>Wall to Foundation, Screwed Steel Angle</td>
<td>NS-DS2016</td>
<td>2020-02-01</td>
<td>1.17</td>
</tr>
<tr>
<td>Structure, Wall-Foundation</td>
<td>Wall to Foundation, Nailed Steel Angle and Steel C Shape</td>
<td>NS-DS2068</td>
<td>2020-02-01</td>
<td>1.18</td>
</tr>
<tr>
<td>Structure, Wall-Foundation</td>
<td>Wall to Foundation, Nailed C Shape</td>
<td>NS-DS2017</td>
<td>2020-02-01</td>
<td>1.19</td>
</tr>
<tr>
<td>Structure, Floor/Roof-Wall</td>
<td>Ledger</td>
<td>NS-DS2018</td>
<td>2020-02-01</td>
<td>1.20</td>
</tr>
<tr>
<td>Structure, Floor/Roof-Wall</td>
<td>Steel Angle</td>
<td>NS-DS2019</td>
<td>2020-02-01</td>
<td>1.21</td>
</tr>
<tr>
<td>Structure, Floor/Roof-Wall</td>
<td>Screwed Floor/Roof Slab to Wall</td>
<td>NS-DS2020</td>
<td>2020-02-01</td>
<td>1.22</td>
</tr>
<tr>
<td>Structure, Floor/Roof-Wall</td>
<td>Screwed Wall to Continuous Floor Slab to Wall</td>
<td>NS-DS2021</td>
<td>2020-02-01</td>
<td>1.23</td>
</tr>
<tr>
<td>Structure, Floor/Roof-Wall</td>
<td>Screwed Wall to Single Floor Slab to Wall</td>
<td>NS-DS2022</td>
<td>2020-02-01</td>
<td>1.24</td>
</tr>
<tr>
<td>Structure, Floor/Roof-Wall</td>
<td>Wall to Floor Slab with Steel Square to Wall</td>
<td>NS-DS2023</td>
<td>2020-02-01</td>
<td>1.25</td>
</tr>
<tr>
<td>Structure, Floor/Roof-Wall</td>
<td>Wall to Floor Slab with Steel Square to Notched Wall</td>
<td>NS-DS2024</td>
<td>2020-02-01</td>
<td>1.26</td>
</tr>
<tr>
<td>Structure, Floor/Roof-Wall</td>
<td>Sloped Roof Slab to Wall</td>
<td>NS-DS2025</td>
<td>2020-02-01</td>
<td>1.27</td>
</tr>
<tr>
<td>Structure, Lintel</td>
<td>CLT Lintel</td>
<td>NS-DS2026</td>
<td>2020-02-01</td>
<td>1.28</td>
</tr>
<tr>
<td>Structure, Lintel</td>
<td>Glulam Lintel</td>
<td>NS-DS2027</td>
<td>2020-02-01</td>
<td>1.29</td>
</tr>
<tr>
<td>Structure, Panel-Panel</td>
<td>Butt Joint, One row of Nails</td>
<td>NS-DS2029</td>
<td>2020-02-01</td>
<td>1.30</td>
</tr>
<tr>
<td>Structure, Panel-Panel</td>
<td>Butt Joint, Two Rows of Nails</td>
<td>NS-DS2030</td>
<td>2020-02-01</td>
<td>1.31</td>
</tr>
<tr>
<td>Structure, Panel-Panel</td>
<td>Butt Joint, 45° Screws</td>
<td>NS-DS2069</td>
<td>2020-02-01</td>
<td>1.32</td>
</tr>
<tr>
<td>Structure, Panel-Panel</td>
<td>Half-Lap Joint</td>
<td>NS-DS2031</td>
<td>2020-02-01</td>
<td>1.33</td>
</tr>
<tr>
<td>Structure, Wall-Wall</td>
<td>Corner Joint with 90° Screws</td>
<td>NS-DS2032</td>
<td>2020-02-01</td>
<td>1.34</td>
</tr>
<tr>
<td>Structure, Wall-Wall</td>
<td>Notched Corner Joint with 90° Screws</td>
<td>NS-DS2033</td>
<td>2020-02-01</td>
<td>1.35</td>
</tr>
<tr>
<td>Structure, Wall-Wall</td>
<td>Corner Joint with 45° Screws</td>
<td>NS-DS2034</td>
<td>2020-02-01</td>
<td>1.36</td>
</tr>
<tr>
<td>Structure, Wall-Wall</td>
<td>T-Joint with 90° Screws</td>
<td>NS-DS2035</td>
<td>2020-02-01</td>
<td>1.37</td>
</tr>
<tr>
<td>Structure, Wall-Wall</td>
<td>T-Joint with 45° Screws</td>
<td>NS-DS2036</td>
<td>2020-02-01</td>
<td>1.38</td>
</tr>
<tr>
<td>Structure, Base Plate</td>
<td>Base Plate with Steel Square</td>
<td>NS-DS2037</td>
<td>2020-02-01</td>
<td>1.39</td>
</tr>
<tr>
<td>Structure, Base Plate</td>
<td>Base Plate with Knife Plate and Four Mechanical Anchors</td>
<td>NS-DS2038</td>
<td>2020-02-01</td>
<td>1.40</td>
</tr>
</tbody>
</table>
## Structure (continued)

<table>
<thead>
<tr>
<th>Category</th>
<th>Title</th>
<th>Drawing</th>
<th>Date</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure, Base Plate</td>
<td>Base Plate with Knife Plate and Four Hidden Mechanical Anchors</td>
<td>NS-DS2039</td>
<td>2020-02-01</td>
<td>1.41</td>
</tr>
<tr>
<td>Structure, Base Plate</td>
<td>Two-storey Base Plate with Knife Plate</td>
<td>NS-DS2040</td>
<td>2020-02-01</td>
<td>1.42</td>
</tr>
<tr>
<td>Structure, Base Plate</td>
<td>Two-storey Base Plate with Glued-in Rod</td>
<td>NS-DS2041</td>
<td>2020-02-01</td>
<td>1.43</td>
</tr>
<tr>
<td>Structure, Base Plate</td>
<td>Two-storey Base Plate with Glued-in Rod and Pocket</td>
<td>NS-DS2042</td>
<td>2020-02-01</td>
<td>1.44</td>
</tr>
<tr>
<td>Structure, Beam-Column</td>
<td>Double Member Beam with Spacing</td>
<td>NS-DS2043</td>
<td>2020-02-01</td>
<td>1.46</td>
</tr>
<tr>
<td>Structure, Beam-Column</td>
<td>Double Member Beam Without Spacing</td>
<td>NS-DS2044</td>
<td>2020-02-01</td>
<td>1.47</td>
</tr>
<tr>
<td>Structure, Beam-Column</td>
<td>Knife Plate with Shear Key</td>
<td>NS-DS2045</td>
<td>2020-02-01</td>
<td>1.48</td>
</tr>
<tr>
<td>Structure, Beam-Column</td>
<td>Knife Plate with Shear Key and Bearing Plate</td>
<td>NS-DS2046</td>
<td>2020-02-01</td>
<td>1.49</td>
</tr>
<tr>
<td>Structure, Beam-Column</td>
<td>Single Beam, Bridle Joint</td>
<td>NS-DS2047</td>
<td>2020-02-01</td>
<td>1.50</td>
</tr>
<tr>
<td>Structure, Beam-Column</td>
<td>Continuous Beam, Bridle Joint</td>
<td>NS-DS2048</td>
<td>2020-02-01</td>
<td>1.51</td>
</tr>
<tr>
<td>Structure, Beam-Column</td>
<td>Half-Lap Joint</td>
<td>NS-DS2049</td>
<td>2020-02-01</td>
<td>1.52</td>
</tr>
<tr>
<td>Structure, Beam-Column</td>
<td>Face-mount Hanger</td>
<td>NS-DS2050</td>
<td>2020-02-01</td>
<td>1.53</td>
</tr>
<tr>
<td>Structure, Beam-Column</td>
<td>Face-mount Hanger with Concealed Flanges</td>
<td>NS-DS2051</td>
<td>2020-02-01</td>
<td>1.54</td>
</tr>
<tr>
<td>Structure, Beam-Column</td>
<td>Beam on Cleat</td>
<td>NS-DS2053</td>
<td>2020-02-01</td>
<td>1.55</td>
</tr>
<tr>
<td>Structure, Beam-Column</td>
<td>Knife Plate</td>
<td>NS-DS2055</td>
<td>2020-02-01</td>
<td>1.56</td>
</tr>
<tr>
<td>Structure, Beam-Column</td>
<td>Steel Plates</td>
<td>NS-DS2056</td>
<td>2020-02-01</td>
<td>1.57</td>
</tr>
<tr>
<td>Structure, Beam-Column</td>
<td>45° Screws</td>
<td>NS-DS2057</td>
<td>2020-02-01</td>
<td>1.58</td>
</tr>
<tr>
<td>Structure, Joist-Beam</td>
<td>Nailed Face-mount Hanger</td>
<td>NS-DS2058</td>
<td>2020-02-01</td>
<td>1.59</td>
</tr>
<tr>
<td>Structure, Joist-Beam</td>
<td>Nailed Face-mount Hanger with Concealed Flanges</td>
<td>NS-DS2059</td>
<td>2020-02-01</td>
<td>1.60</td>
</tr>
<tr>
<td>Structure, Joist-Beam</td>
<td>Bolted Face-mount Hanger</td>
<td>NS-DS2060</td>
<td>2020-02-01</td>
<td>1.61</td>
</tr>
<tr>
<td>Structure, Joist-Beam</td>
<td>Knife Plate with Saddle</td>
<td>NS-DS2061</td>
<td>2020-02-01</td>
<td>1.62</td>
</tr>
<tr>
<td>Structure, Joist-Beam</td>
<td>Knife Plate</td>
<td>NS-DS2062</td>
<td>2020-02-01</td>
<td>1.63</td>
</tr>
<tr>
<td>Structure, Joist-Beam</td>
<td>45° Screws - Option 1</td>
<td>NS-DS2063</td>
<td>2020-02-01</td>
<td>1.64</td>
</tr>
<tr>
<td>Structure, Joist-Beam</td>
<td>45° Screws - Option 2</td>
<td>NS-DS2064</td>
<td>2020-02-01</td>
<td>1.65</td>
</tr>
<tr>
<td>Structure, Joist-Beam</td>
<td>Joist on Beam with 45° Screws and Glued-In Rod</td>
<td>NS-DS2065</td>
<td>2020-02-01</td>
<td>1.66</td>
</tr>
<tr>
<td>Structure, Hybrid</td>
<td>Decking to Steel Beam</td>
<td>NS-DS2066</td>
<td>2020-02-01</td>
<td>1.67</td>
</tr>
</tbody>
</table>

## Mechanical, electrical, and plumbing

<table>
<thead>
<tr>
<th>Category</th>
<th>Title</th>
<th>Drawing</th>
<th>Date</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical, Electrical, and Plumbing</td>
<td>Vertical, Double-Member Beam</td>
<td>NS-DS2501</td>
<td>2020-02-01</td>
<td>2.1</td>
</tr>
<tr>
<td>Mechanical, Electrical, and Plumbing</td>
<td>Horizontal, Pre-Machined Opening</td>
<td>NS-DS2502</td>
<td>2020-02-01</td>
<td>2.2</td>
</tr>
<tr>
<td>Mechanical, Electrical, and Plumbing</td>
<td>Horizontal, Electrical Box with 38 mm x 64 mm Wood Studs</td>
<td>NS-DS2503</td>
<td>2020-02-01</td>
<td>2.3</td>
</tr>
<tr>
<td>Mechanical, Electrical, and Plumbing</td>
<td>Horizontal, Raised Floor</td>
<td>NS-DS2504</td>
<td>2020-02-01</td>
<td>2.4</td>
</tr>
<tr>
<td>Mechanical, Electrical, and Plumbing</td>
<td>Horizontal, Suspended Ceiling</td>
<td>NS-DS2505</td>
<td>2020-02-01</td>
<td>2.5</td>
</tr>
<tr>
<td>Mechanical, Electrical, and Plumbing</td>
<td>Horizontal, Joist on Beam</td>
<td>NS-DS2506</td>
<td>2020-02-01</td>
<td>2.6</td>
</tr>
<tr>
<td>Mechanical, Electrical, and Plumbing</td>
<td>Horizontal, Bevelled Beam</td>
<td>NS-DS2507</td>
<td>2020-02-01</td>
<td>2.7</td>
</tr>
<tr>
<td>Mechanical, Electrical, and Plumbing</td>
<td>Multi-Residential Unit Diagram, Option 1</td>
<td>NS-DS2508</td>
<td>2020-02-01</td>
<td>2.8</td>
</tr>
<tr>
<td>Mechanical, Electrical, and Plumbing</td>
<td>Multi-Residential Unit Diagram, Option 2</td>
<td>NS-DS2509</td>
<td>2020-02-01</td>
<td>2.9</td>
</tr>
</tbody>
</table>
NORDIC X-LAM
CROSS-LAMINATED TIMBER

Nordic X-Lam cross-laminated timber is made of at least three orthogonal layers of graded sawn lumber that are laminated by gluing with structural adhesives.

SLABS AND PANELS

Layup combinations
89-3s, 105-3s, 143-5s, 175-5s, 197-7s, 213-7l, 244-7s, 244-7l
and 267-9l

Maximum sizes
2.70 × 19.5 m (106-1/4 in. × 64 ft)

Stress grade
E1 (L 1950Fb and T No. 3/Stud)
NORDIC LAM+
GLUED-LAMINATED TIMBER

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

**BEAMS AND COLUMNS**

- **Widths**
  - 38, 86, 137, 184, 215, 241, 292, 346, 395, 448, 502, 552 and 603 mm

- **Depths**
  - From 67 to 2435 mm
  - (2-5/8 to 95-7/8 in.)

- **Lengths**
  - Up to 24.4 m (80 ft)

- **Stress grade**
  - 24F-ES/NPG

- *Larger sizes available upon request

**DECKING**

- **Thicknesses**
  - 38, 44, 54 and 89 mm
  - (1-1/2, 1-3/4, 2-1/8 and 3-1/2 in.)

- **Widths**
  - 203, 305 and 406 mm
  - (8, 12 and 16 in.)

- **Lengths**
  - Up to 18.9 m (62 ft)

- **Stress grades**
  - ES11, except 89 mm thickness in 20F-ES/CPG

- *Larger sizes available upon request
Continuous Floor Slab on Beam

NORDIC LAM BEAM

PARTIALLY THREADED SCREW @ 300 O.C. U.N.O.

NORDIC X-LAM SLAB
PARTIALLY THREADED SCREWS @ 300 O.C. U.N.O., STAGGERED

NORDIC X-LAM SLAB

NORDIC LAM BEAM

NORDIC LAM+

NORDIC X-LAM
a) The 1-2 mm gap may not be required depending on the detail on the other side of the beam.
a) The 1-2 mm gap may not be required depending on the detail on the other side of the beam.
a) The 1-2 mm gap may not be required depending on the detail on the other side of the beam.
a) The 1-2 mm gap may not be required depending on the detail on the other side of the beam.
a) The 1-2 mm gap may not be required depending on the detail on the other side of the beam.
a) The 1-2 mm gap may not be required depending on the detail on the other side of the beam.
PARTIALLY THREADED SCREWS, STAGGERED

1-2 mm EACH SIDE (GAP)

1-2 mm (GAP)
TITLE
Through Pocket for Beam

CATEGORY
Structure, GL-CLT

SCALE
-

DATE
2020-02-01

PAGE
1.10

DRAWING
NS-DS2009-CA-en
TITLE
Wall to Sill Plate, Nailed Steel Plate

CATEGORY
Structure, Wall-Foundation

DRAWING
NS-DS2011-CA-en

SCALE
-

DATE
2020-02-01

PAGE
1.12
RING SHANK NAIL
NORDIC X-LAM WALL
HOLDOWN
SILL PLATE
IMPERMEABLE MEMBRANE
NON-SHRINK GROUT 25 mm
MECHANICAL ANCHORS
CONCRETE
Wall to Foundation, Nailed Steel Angle

NORDIC X-LAM WALL
RING SHANK NAIL
STEEL ANGLE
NON-SHRINK GROUT 25 mm
CONCRETE

POCKET AT ANCHOR LOCATION
MECHANICAL ANCHOR

NORDIC X-LAM WALL
RING SHANK NAIL
STEEL ANGLE
NON-SHRINK GROUT 25 mm
CONCRETE

MECHANICAL ANCHOR
Note:
1. This assembly detail offers a resistance to forces acting perpendicular to the foundation wall.
Wall to Foundation, Nailed Steel Angle and Steel C Shape

Nordic Structures

NS-DS2

NS-DS2068-CA-en

Category: Structure, Wall-Foundation

Title: Wall to Foundation, Nailed Steel Angle and Steel C Shape

Date: 2020-02-01

Page: 1.18
Note:
1. For an exterior wall on foundation, careful consideration should be given to waterproofing and drainage at the junction between wall and steel C shape.
Steel Angle

1-2 mm (GAP)
PARTIALLY THREADED SCREW @ 250 O.C. U.N.O.
RING SHANK NAIL
STEEL ANGLE

NORDIC X-LAM WALL
NORDIC X-LAM SLAB

Structure, Floor/Roof-Wall
Screwed Floor/Roof Slab to Wall

NORDIC X-LAM SLAB

NORDIC X-LAM WALL

PARTIALLY THREADED SCREW @ 300 O.C. U.N.O.
Screwed Wall to Continuous Floor Slab to Wall

**TITLE:**
Screwed Wall to Continuous Floor Slab to Wall

**CATEGORY:**
Structure, Floor/Roof-Wall

**DRAWING:**
NS-DS2021-CA-en

**SCALE:**
-

**DATE:**
2020-02-01

**PAGE:**
1.23
Screwed Wall to Single Floor Slab to Wall

NORDIC X-LAM WALL

PARTIALLY THREADED SCREW
@ 300 O.C. U.N.O.

NORDIC X-LAM WALL

PARTIALLY THREADED SCREW
@ 300 O.C. U.N.O.

NORDIC X-LAM WALL

NORDIC X-LAM WALL
Wall to Floor Slab with Steel Square to Notched Wall

**Category:** Structure, Floor/Roof-Wall

**Drawing:** NS-DS2024-CA-en

**Title:**
Wall to Floor Slab with Steel Square to Notched Wall

**Details:**
- FULLY THREADED SCREW @ 300 O.C.
- 1-2 mm (GAP)
**Title:** Butt Joint, One row of Nails

**Category:** Structure, Panel-Panel

**Drawing:** NS-DS2029-CA-en

**Details:**
- GALVANIZED SPIRAL NAIL @ 150 O.C. U.N.O.
- Plywood 12.7 mm (Typ.)
- 1-2 mm (GAP)

Dimensions:
- 120
- 130
- 14
- 30
- 30
Butt Joint, Two Rows of Nails

Structure, Panel-Panel

2 ROWS OF GALVANIZED SPIRAL NAILS @ 150 O.C. U.N.O., STAGGERED

150 (S.I.C.)

1-2 mm (GAP)

130

120

14

12.7 mm (TYP.)

PLYWOOD

1.31

2020-02-01
FULLY THREADED SCREW
@ 300 O.C. U.N.O.,
STAGGERED

1-2 mm (GAP)
Title: Half-Lap Joint

Category: Structure, Panel-Panel

Drawing Number: NS-DS2031-CA-en

Date: 2020-02-01

Scale: 1-2 mm (GAP)

Nordic LAM+ Nordic X-LAM
Corner Joint with 90° Screws

PARTIALLY THREADED SCREW @ 300 O.C. U.N.O.

NORDIC X-LAM WALLS
Notched Corner Joint with 90° Screws

NORDIC X-LAM WALLS

PARTIALLY THREADED SCREW @ 300 O.C. U.N.O.

1-2 mm (GAP)

NORDIC X-LAM WALLS

15

NS-DS2033-CA-en

Structure, Wall-Wall

2020-02-01

1-2 mm (GAP)
Corner Joint with 45° Screws

- Wall-Wall, erutcurtS

NORDIC X-LAM WALLS

PARTIALLY THREADED SCREW @ 300 O.C. U.N.O.
T-Joint with 90° Screws

PARTIALLY THREADED SCREW @ 300 O.C. U.N.O.

NORDIC X-LAM WALLS
PARTIALLY THREADED SCREWS @ 300 O.C. U.N.O., STAGGERED

NORDIC X-LAM WALLS

T-Joint with 45° Screws
Structure, Wall-Wall

NS-DS2 036-CA-en

2020-02-01

1.38
Title: Base Plate with Steel Square

Category: Structure, Base Plate

Drawing: NS-DS2037-CA-en

- Threaded Rod
- Steel Square
- Provide Chamfer in Wood to Clear Steel Welds
- Non-Shrink GROUT 25 mm
- Concrete
- Mechanical Anchor

NORDIC LAM COLUMN
Base Plate with Knife Plate and Four Mechanical Anchors

Category: Structure, Base Plate
**Title:** Base Plate with Knife Plate and Four Hidden Mechanical Anchors

**Category:** Structure, Base Plate

**Drawing:** NS-DS2039-CA-en

**Details:**
- **PROVIDE CHAMFER IN WOOD TO CLEAR STEEL WELDS**
- **1-2 mm (GAP)**
- **10 mm (GAP)**
- **STEEL KNIFE PLATE**
- **STEEL DOWEL**
- **NON-SHRINK GROUT 25 mm**
- **CONCRETE**
- **MECHANICAL ANCHOR**
- **NORDIC LAM COLUMN**
- **NORDIC LAM COLUMN**
Title: Two-storey Base Plate with Knife Plate

Category: Structure, Base Plate

Drawing: NS-DS2040-CA-en

Details:
- NORDIC LAM+
- NORDIC X-LAM

Date: 2020-02-01

Materials:
- NORDIC LAM COLUMN
- STEEL DOWEL
- PROVIDE CHAMFER IN WOOD TO CLEAR STEEL WELDS
- 2 STOREY BASE PLATE WITH KNIFE PLATE
- NON-SHRINK GROUT 25 mm
- CONCRETE
- MECHANICAL ANCHOR

Gaps:
- 10 mm (GAP)
- 1-2 mm (GAP)
Two-storey Base Plate with Glued-in Rod

Category: Structure, Base Plate

NORDIC LAM COLUMN
GLUED-IN ROD
2 STOREY BASE PLATE
NON-SHRINK GROUT 25 mm
CONCRETE
MECHANICAL ANCHOR

1-2 mm EACH SIDE (GAP)
40 mm (GAP)
Two-storey Base Plate with Glued-in Rod and Pocket

Category: Base Plate

- Mechanically anchored
- Glued-in rod
- Non-shrink grout 25 mm
- 1-2 mm each side (gap)
- Filled in concrete
- 2-storey base plate
- Nordic LAM column
- Nordic X-LAM

Drawing details:
- Date: 2020-02-01
- Page: 1.44
- Scale: -
Two-storey Base Plate with Glued-in Rod and Half-height Pocket

- NORDIC LAM COLUMN
- GLUED-IN ROD
- 2 STOREY BASE PLATE
- FILL IN CONCRETE
- CONCRETE
- MECHANICAL ANCHOR
- NON-SHRINK GROUT 25 mm

- 40 mm (GAP)
- 1-2 mm EACH SIDE (GAP)

- 1-2 mm EACH SIDE (GAP)
- 40 mm (GAP)

- TITLE
  Two-storey Base Plate with Glued-in Rod and Half-height Pocket

- CATEGORY
  Structure, Base Plate

- DRAWING
  NS-DS2070-CA-en

- SCALE
  -

- DATE
  2020-02-01

- PAGE
  1.45
Double Member Beam with Spacing

Provide necessary spacing for plumbing

NORDIC LAM BEAM

FULLY THREADED SCREW

45°

NORDIC LAM COLUMN
Double Member Beam Without Spacing

NORDIC LAM+
NORDIC X-LAM

PARTIALLY THREADED SCREWS @ 300 O.C.
U.N.O., STAGGERED

0.5-1.0 mm (GAP)

0.5-1.0 mm (GAP)

THREADED ROD

NORDIC LAM BEAM

NORDIC LAM COLUMN

DRAWING
NS-DS2044-CA-en

SCALE
-  

DATE  
2020-02-01

PAGE  
1.47
a) The 1-2 mm gap may not be required depending on the detail on the other side of the beam.
Knife Plate with Shear Key and Bearing Plate

- PROVIDE SPACING FOR SCREW HEAD
- PROVIDE CHAMFER IN WOOD TO CLEAR STEEL WELDS
- SHEAR KEY
- NORDIC LAM COLUMN
- STEEL DOWEL
- STEEL KNIFE PLATE WITH BEARING PLATE
- PARTIALLY THREADED SCREWS

1-2 mm (GAP)(a)
2-4 mm (GAP)

(a) The 1-2 mm gap may not be required depending on the detail on the other side of the beam.
PARTIALLY THREADED SCREW
NORDIC LAM BEAM
NORDIC LAM COLUMN

0.5-1.0 mm (GAP)
0.5-1.0 mm (GAP)
Continuous Beam, Bridle Joint

NORDIC LAM BEAM

NORDIC LAM COLUMN

PARTIALLY THREADED SCREW

0.5-1.0 mm (GAP)

0.5-1.0 mm (GAP)
Half-Lap Joint

Title: Half-Lap Joint
Category: Structure, Beam-Column
Drawing: NS-DS2049-CA-en
Date: 2020-02-01
Page: 1.52
a) The 1-2 mm gap may not be required depending on the detail on the other side of the beam.
a) The 1-2 mm gap may not be required depending on the detail on the other side of the beam.
a) The 1-2 mm gap may not be required depending on the detail on the other side of the beam.
NORDIC LAM COLUMN

NORDIC LAM GIRT

STEEL DOWEL

STEEL KNIFE PLATE

PARTIALLY THREADED SCREW

PROVIDE SPACING FOR SCREW HEAD

Knife Plate

NS-DS2055-CA-en

Structure, Girt-Column

2020-02-01

NORDIC LAM COLUMN

NORDIC LAM GIRT

STEEL DOWEL

STEEL KNIFE PLATE

PARTIALLY THREADED SCREW

PROVIDE SPACING FOR SCREW HEAD
a) The 1-2 mm gap may not be required depending on the detail on the other side of the beam.
<table>
<thead>
<tr>
<th>TITLE</th>
<th>DRAWING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolted Face-mount Hanger</td>
<td>NS-DS2060-CA-en</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>SCALE</th>
<th>DATE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure, Joist-Beam</td>
<td>-</td>
<td>2020-02-01</td>
<td>1.61</td>
</tr>
</tbody>
</table>
Knife Plate with Saddle

- Provide spacing for screw head
- Partially threaded screws
- Steel Saddle
- Steel Dowel
- Steel Knife Plate
- Nordic Lam Joist

Nordic Structures

Title: Knife Plate with Saddle
Category: Joist-Beam
Drawing: NS-DS2061-CA-en

- Scale: -
- Date: 2020-02-01
- Page: 1.62
NORDIC LAM JOIST

1-2 mm (GAP)

PROVIDE SPACING FOR SCREW HEAD

PARTIALLY THREADED SCREWS

STEEL DOWEL

STEEL KNIFE PLATE

NORDIC LAM BEAM

T I T L E
Knife Plate

C A T E G O R Y
Structure, Joist-Beam

S C A L E
- 

D A T E
2020-02-01

P A G E
1.63
NORDIC LAM BEAM

FULLY THREADED SCREWS

NORDIC LAM JOIST

45°

NS-DS2 063-CA-en

Structure, Joist-Beam

45° Screws - Option 1

NS-DS2

2020-02-01

1.64
45° Screws - Option 2
NORDIC LAM BEAM
NORDIC LAM JOIST
FULLY THREADED SCREW

45°
0.7 x h (MIN.)
h
Joist on Beam with 45° Screws and Glued-In Rod

NORDIC LAM BEAM

NORDIC LAM JOIST

THREAD ROD

PARTIALLY THREADED SCREW

45°
Note:
1. For assembly details refer to technical note D-R00.
MECHANICAL, ELECTRICAL, AND PLUMBING
PROVIDE NECESSARY SPACING FOR PLUMBING

OPENING, CUT ON SITE (BY OTHERS)

METAL STUDS AND INSULATION

GYPSUM BOARD

NORDIC X-LAM SLAB

NORDIC LAM COLUMN

PIPE

NORDIC LAM BEAM

NORDIC X-LAM
Horizontal, Pre-Machined Opening

Category: Mechanical, Electrical, and Plumbing

DRAWING: NS-DS2502-CA-en

Date: 2020-02-01
Page: 2.2
Horizonal, Electrical Box with 38 mm x 64 mm Wood Studs

NORDIC LAM+
NORDIC X-LAM

38 mm x 64 mm WOOD STUDS AND INSULATION
ELECTRICAL BOX
NORDIC X-LAM WALL
GYPSUM BOARD
SILL PLATE
NORDIC X-LAM SLAB

NS-DS2

 category: Mechanical, Electrical, and Plumbing

drawing: NS-DS2503-CA-en

scale: 1:50

2020-02-01
2.3
Title: Horizontal, Joist on Beam

Category: Mechanical, Electrical, and Plumbing

Drawing: NS-DS2506-CA-en

Date: 2020-02-01

Pages: 2.6
Legend
SA Supply Air
H Hood
OAI Outdoor Air Intake
RA Return Air
UAO Used Air Outlet
SEC Dryer
HRV Heat Recovery Ventilator
**Legend**

- **SA**: Supply Air
- **H**: Hood
- **OAI**: Outdoor Air Intake
- **RA**: Return Air
- **UAO**: Used Air Outlet
- **SEC**: Dryer
- **HRV**: Heat Recovery Ventilator

**Title**

Multi-Residential Unit Diagram, Option 2

**Category**

Mechanical, Electrical, and Plumbing

**Drawing Number**

NS-DS2509-CA-en

**Scale**

- 

**Date**

2020-02-01

**Page**

2.9