Mass Timber Construction

ARCHITECTURAL DETAILS

NORDIC LAM+

NORDIC X-LAM

NS-DA2

VERSION
2022-02-01

NORDIC STRUCTURES
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.
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<td>vii</td>
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</table>

1. EXTERIOR WALL

2. PARTITION

3. FLOOR

4. ROOF
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 Certain commercial products are identified in this document in order to properly represent the test procedure. In no case does such identification imply recommendations or endorsement by Nordic Structures, nor does it imply that the product or material identified is the best available for the purpose.

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

2.0 Fire Safety

2.1 The fire resistance rating (FRR) is determined using the design methodology specified in the National Design Specification (NDS) for Wood Construction 2015. The fire resistance rating may also be determined on the basis of the results of tests conducted in conformance with ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials.

2.2 To determine the fire resistance of an element or assembly according to other assumptions than those specified in this document, consult the Nordic X-Lam technical guide or use Nordic Sizer software.

2.3 The fire performance criteria for evaluating the separating function of building elements shall be considered when required by the applicable building code.

2.4 For this purpose, among other requirements, many firestop systems suitable for mass timber are available. For more details, consult the product suppliers.

2.5 Additional references: Fire-Resistance-Tested Mass Timber Assemblies and Penetrations.
3.0 Envelope

3.1 Good thermal insulation is never arbitrary and must always be chosen according to location, area and climate.

3.2 The total thermal resistance of an assembly is calculated according to the values of thermal conductivity, \( \lambda \), and thermal resistance, \( R \), indicated in the following table.

3.3 To convert the thermal resistance of the International System (RSI) \([\text{m}^2\text{K}/\text{W}]\) to the R-value \([\text{ft}^2\text{Fh}/\text{BTU}]\), divide the RSI value by 0.1761.

3.4 As stated in technical note NS-NT602-US, Nordic X-Lam cross-laminated timber acts as a vapor barrier.

3.5 The use of closed cell spray polyurethane is not recommended for exterior wall assemblies made of cross-laminated timber because of its low permeability.

3.6 The study of the building envelope, including the control of condensation, the transfers of heat, air, moisture and sound, as well as the details of joining and fixing of the coverings, shall be carried out in accordance with the applicable building code.

### Thermal Resistance of Materials

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<th>( \lambda ) (BTU/ftFh)</th>
<th>( R ) (ft²Fh/BTU)</th>
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4.0 Acoustics

4.1 The Sound Transmission Class (STC) rating describes the performance of the separating wall or floor/ceiling assembly, whereas the Field Sound Transmission Class (FSTC) takes into consideration the performance of the separating element as well as the flanking transmission paths. Also, building professionals should ensure that floors are designed to minimize impact transmission. For more details, see the IBC 2018, Section 1206.

4.2 The following pages present separating assemblies that may comply with the applicable building code. However, selecting an appropriate separating assembly is only one part of the solution for reducing airborne sound transmission between adjoining spaces: to fully address the sound performance of the whole system, flanking assemblies must be connected to the separating assembly. For more details, see the Nordic X-Lam Technical Guide.

4.3 Unless otherwise noted, concrete topping and prefabricated concrete topping used in assemblies have a density of 2,710 kg/m$^3$.

4.4 The use of prefabricated concrete topping in floor assemblies is only required by the acoustical testing procedure.

4.5 The use of an acoustic membrane under a floor covering is recommended, especially when it is a hard surface coating (e.g. ceramic).

4.6 Unless otherwise noted, the acoustic performance values are derived from test results from a certified laboratory. Test reports are available upon request.

4.7 Additional references:
   - WoodWorks – Acoustics and Mass Timber: Room-to-Room Noise Control
   - WoodWorks – Acoustically-Tested Mass Timber Assemblies
   - University of Oregon – Acoustic Lab Testing of Typical Multi-Family Residential Wall and Floor Assemblies
## LIST OF DETAILS

### Exterior Wall

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<tr>
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<td>&gt;50</td>
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<tr>
<td>F27</td>
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<td>&gt;50</td>
<td>n.a.</td>
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<tr>
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<td>n.a.</td>
<td>&gt;45</td>
<td>n.a.</td>
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<tr>
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<td>1.5 h</td>
<td>n.a.</td>
<td>n.a.</td>
<td>64</td>
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<td>F30</td>
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<td>n.a.</td>
<td>66</td>
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<tr>
<td>F31</td>
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<td>n.a.</td>
<td>59</td>
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<td>n.a.</td>
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<td>65</td>
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<td>n.a.</td>
<td>65</td>
<td>n.a.</td>
<td>NS-DA2240</td>
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**LIST OF DETAILS (CONTINUED)**
<table>
<thead>
<tr>
<th>Detail</th>
<th>Product</th>
<th>Fire-resistance rating</th>
<th>Thermal resistance</th>
<th>Acoustic ratings</th>
<th>Drawing</th>
<th>Date</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
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<td>1.0 h</td>
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<td>R3</td>
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<td>n.a.</td>
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<td>R4</td>
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<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
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<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
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<tr>
<td>R7</td>
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<td>7.7</td>
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<td>R8</td>
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<td>7.5</td>
<td>43</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
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<tr>
<td>R9</td>
<td>Nordic X-Lam 175-5s</td>
<td>2.0 h</td>
<td>7.7</td>
<td>44</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
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<td>44</td>
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<td>n.a.</td>
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</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, 245-7s, 245-7l, 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 X-LAM LAYUP COMBINATIONS

<table>
<thead>
<tr>
<th>3 LAYERS</th>
<th>7 LAYERS</th>
<th>9 LAYERS</th>
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<tbody>
<tr>
<td>89-3s</td>
<td>197-7s</td>
<td>267-9l</td>
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<tr>
<td>105-3s</td>
<td>213-7l</td>
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<tr>
<td>143-5s</td>
<td>245-7s</td>
<td></td>
</tr>
<tr>
<td>175-5s</td>
<td>245-7l</td>
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<tr>
<td></td>
<td></td>
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</tbody>
</table>

---

### 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.**
NORDIC LAM+
GLUED-LAMINATED TIMBER

Nordic Lam+ glued-laminated timber of architectural appearance classification 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

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
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire-resistance rating</td>
<td>FRR (a) 1 h</td>
</tr>
<tr>
<td>Thermal resistance</td>
<td>RSI / R 6.7 / 38</td>
</tr>
<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC n.a. / n.a.</td>
</tr>
<tr>
<td></td>
<td>IIC / FIIC n.a. / n.a.</td>
</tr>
</tbody>
</table>

(a) The fire-resistance rating is based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.

- CLADDING (UP TO THE DESIGNER)
- AIR GAP 3/4 in.
- WOOD STUDS 2 in. X 4 in. @ 24 in. O.C.
- WOOD FURRING 2 in. X 4 in. @ 24 in. O.C.
- 2 ROWS OF STONE WOOL INSULATION 3-1/2 in. EA.
- AIR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
- WOOD STUDS 2 in. X 4 in. @ 24 in. O.C.
- 1 ROW OF STONE WOOL INSULATION 3-1/2 in.
- 1 TYPE X GYPSUM BOARD 5/8 in.
Fire-resistance rating FRR \(^{(a)}\) 30 min

<table>
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<tr>
<th>Thermal resistance</th>
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<table>
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<th>Acoustic ratings</th>
<th>STC / FSTC</th>
<th>IIC / FIIC</th>
<th>n.a. / n.a.</th>
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</thead>
</table>

\(a)\) The fire-resistance rating is based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.

- CLADDING (UP TO THE DESIGNER)
- AIR GAP 3/4 in.
- WOOD STUDS 2 in. X 4 in. @ 24 in. O.C.
- WOOD FURRING 2 in. X 4 in. @ 24 in. O.C.
- 2 ROWS OF STONE WOOL INSULATION 3-1/2 in. EA.
- AIR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR (a)</th>
<th>1 h</th>
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</thead>
<tbody>
<tr>
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<td>5.0 / 28</td>
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<tr>
<td>Acoustic ratings</td>
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<td>n.a. / n.a.</td>
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<td>IIC / FIIC</td>
<td>n.a. / n.a.</td>
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</table>

a) The fire-resistance rating is based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.

- CLADDING (UP TO THE DESIGNER)
- AIR GAP 3/4 in.
- WOOD STUDS 2 in. X 4 in. @ 24 in. O.C.
- WOOD FURRING 2 in. X 4 in. @ 24 in. O.C.
- 2 ROWS OF STONE WOOL INSULATION 3-1/2 in. EA.
- AIR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
- WOOD FURRING 3/4 in. @ 24 in. O.C.
- 1 TYPE X GYPSUM BOARD 5/8 in.
<table>
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<tr>
<th>Fire-resistance rating</th>
<th>FRR (a)</th>
<th>30 min</th>
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</thead>
<tbody>
<tr>
<td>Thermal resistance</td>
<td>RSI / R</td>
<td>3.7 / 21</td>
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<tr>
<td>Acoustic ratings</td>
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<td>n.a. / n.a.</td>
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<tr>
<td></td>
<td>IIC / FIIC</td>
<td>n.a. / n.a.</td>
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</tbody>
</table>

a) The fire-resistance rating is based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.

- CLADDING (UP TO THE DESIGNER)
- AIR GAP 3/4 in.
- WOOD STUDS 2 in. X 3 in. @ 24 in. O.C.
- WOOD FURRING 2 in. X 3 in. @ 24 in. O.C.
- 2 ROWS OF STONE WOOL INSULATION 2-1/2 in. EA.
- AIR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
<table>
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<th>Property</th>
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<tr>
<td>Fire-resistance rating FRR</td>
<td>1 h</td>
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<tr>
<td>Thermal resistance RSI / R</td>
<td>4.0   / 22</td>
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<tr>
<td>Acoustic ratings STC / FSTC</td>
<td>n.a.  / n.a.</td>
</tr>
<tr>
<td></td>
<td>IIC / FIIC n.a. / n.a.</td>
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</table>

- CLADDING (UP TO THE DESIGNER)
- AIR GAP 3/4 in.
- WOOD STUDS 2 in. X 3 in. @ 24 in. O.C.
- WOOD FURRING 2 in. X 3 in. @ 24 in. O.C.
- 2 ROWS OF STONE WOOL INSULATION 2-1/2 in. EA.
- AIR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
- WOOD FURRING 3/4 in. @ 24 in. O.C.
- 1 TYPE X GYPSUM BOARD 5/8 in.

*The fire-resistance rating is based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.*
### Exterior Wall

**Fire-resistance rating**  
<table>
<thead>
<tr>
<th>FRR (a)</th>
<th>30 min</th>
</tr>
</thead>
</table>

**Thermal resistance**  
| RSI / R | 2.9 / 16 |

**Acoustic ratings**  
| STC / FSTC | IIC / FIIC | n.a. / n.a. |

---

- **CLADDING (UP TO THE DESIGNER)**
- **AIR GAP 3/4 in.**
- **WOOD STUDS 2 in. X 4 in. @ 24 in. O.C.**
- **1 ROW OF STONE WOOL INSULATION 3-1/2 in.**
- **AIR BARRIER MEMBRANE**
- **NORDIC X-LAM 4-1/8 in.**

---

(a) The fire-resistance rating is based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.
### Exterior Wall

<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR (a)</th>
<th>1 h</th>
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<tbody>
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<td>Acoustic ratings</td>
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<td>IIC / FIIC</td>
<td>n.a. / n.a.</td>
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</tbody>
</table>

(a) The fire-resistance rating is based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.

- CLADDING (UP TO THE DESIGNER)
- AIR GAP 3/4 in.
- WOOD STUDS 2 in. X 4 in. @ 24 in. O.C.
- 1 ROW OF STONE WOOL INSULATION 3-1/2 in.
- AIR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
- WOOD FURRING 3/4 in. @ 24 in. O.C.
- 1 TYPE X GYPSUM BOARD 5/8 in.
Fire-resistance rating | FRR \(^{(a)}\) | 30 min
--- | --- | ---
Thermal resistance | RSI / R | 3.4 / 20
Acoustic ratings | STC / FSTC | n.a. / n.a.
| IIC / FIIC | n.a. / n.a.

\(^{(a)}\) The fire-resistance rating is based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.

- CLADDING (UP TO THE DESIGNER)
- AIR GAP 3/4 in.
- WOOD STUDS 2 in. X 4 in. @ 24 in. O.C.
- SPRAYED POLYURETHANE FOAM 3-1/2 in.
- AIR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
Architecture, Assembly

Exterior Wall

9 3/4 in.

Fire-resistance rating

<table>
<thead>
<tr>
<th>FRR (a)</th>
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Thermal resistance

<table>
<thead>
<tr>
<th>RSI / R</th>
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</table>

Acoustic ratings

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<th>STC / FSTC</th>
<th>n.a. / n.a.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>IIIC / FIIC</th>
<th>n.a. / n.a.</th>
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</thead>
</table>

--- CLADDING (UP TO THE DESIGNER)
- AIR GAP 3/4 in.
- WOOD STUDS 2 in. X 4 in. @ 24 in. O.C.
- SPRAYED POLYURETHANE FOAM 3-1/2 in.
- AIR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
- WOOD FURRING 3/4 in. @ 24 in. O.C.
- 1 TYPE X GYPSUM BOARD 5/8 in.

---

n.a. / n.a.

---

a) The fire-resistance rating is based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.
Fire-resistance rating  
FRR (a)  30 min

Thermal resistance  
RSI / R  5.8 / 33

Acoustic ratings  
STC / FSTC  n.a. / n.a.
IIC / FIIC  n.a. / n.a.

a) The fire-resistance rating is based on an effective length of 10 feet and on a concentric uniform load of 12,450 psf.

- CLADDING (UP TO THE DESIGNER)
- AIR GAP 3/4 in.
- WOOD STUDS 2 in. X 4 in. @ 24 in. O.C.
- WOOD FURRING 2 in. X 6 in. @ 24 in. O.C.
- 1 ROW OF STONE WOOL INSULATION 3-1/2 in.
- 1 ROW OF STONE WOOL INSULATION 5-1/2 in.
- AIR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
**Title:** Exterior Wall

**Category:** Architecture, Assembly

**Drawing:** NS-DA2010-US

<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR&lt;sup&gt;(a)&lt;/sup&gt;</th>
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</thead>
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<td>Acoustic ratings</td>
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<td>n.a. / n.a.</td>
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<tr>
<td></td>
<td>IIC / FIIC</td>
<td>n.a. / n.a.</td>
</tr>
</tbody>
</table>

* a) The fire-resistance rating is based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.

- CLADDING (UP TO THE DESIGNER)
- AIR GAP 3/4 in.
- WOOD STUDS 2 in. X 4 in. @ 24 in. O.C.
- WOOD FURRING 2 in. X 6 in. @ 24 in. O.C.
- 1 ROW OF STONE WOOL INSULATION 3-1/2 in.
- 1 ROW OF STONE WOOL INSULATION 5-1/2 in.
- AIR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
- WOOD FURRING 3/4 in. @ 24 in. O.C.
- 1 TYPE X GYPSUM BOARD 5/8 in.
PARTITION 2
Fire-resistance rating  |  FRR \(^{(a)}\)  |  30 min  /  30 min  
Thermal resistance   |  RSI / R          |  n.a.   /  n.a.  
Acoustic ratings     |  STC \(^{(b)}\) / FSTC |  33 / n.a.  
                      |  IIC / FIIC       |  n.a. / n.a.  

- **NS-DA2100-US**

\(^{(a)}\) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.


- **NORDIC X-LAM** 4-1/8 in.
Fire-resistance rating | FRR \(^{(a)}\) | 1 h / 1 h
---|---|---
Thermal resistance | RSI / R | n.a. / n.a.
Acoustic ratings | STC \(^{(b)}\) / FSTC | 58 / n.a.
IIC / FIIC | n.a. / n.a.

---

\(^{(a)}\) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 12,450 psf.


- 1 TYPE X GYPSUM BOARD 5/8 in.
- 1 ROW OF MINERAL WOOL INSULATION 2-1/2 in.
- WOOD STUDS 2 in. X 3 in. @ 24 in. O.C.
- NORDIC X-LAM 4-1/8 in.
- WOOD STUDS 2 in. X 3 in. @ 24 in. O.C. OFF-CENTERED FROM THE OTHER ROW OF WOOD STUDS
- 1 ROW OF MINERAL WOOL INSULATION 2-1/2 in.
- 1 TYPE X GYPSUM BOARD 5/8 in.
<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR (a)</th>
<th>1 h / 1 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal resistance</td>
<td>RSI / R</td>
<td>n.a. / n.a.</td>
</tr>
<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC</td>
<td>53 / n.a.</td>
</tr>
<tr>
<td></td>
<td>IIC / FIIC</td>
<td>n.a. / n.a.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>a) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 TYPE X GYPSUM BOARD 5/8 in.</td>
</tr>
<tr>
<td>RESILIENT CHANNELS 1/2 in. @ 16 in. O.C. INSTALLED HORIZONTALLY</td>
</tr>
<tr>
<td>NORDIC X-LAM 4-1/8 in.</td>
</tr>
<tr>
<td>WOOD STUDS 2 in. X 3 in. @ 24 in. O.C.</td>
</tr>
<tr>
<td>1 ROW OF MINERAL WOOL INSULATION 2-1/2 in.</td>
</tr>
<tr>
<td>1 TYPE X GYPSUM BOARD 5/8 in.</td>
</tr>
<tr>
<td>Property</td>
</tr>
<tr>
<td>------------------------</td>
</tr>
<tr>
<td>Fire-resistance rating</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Thermal resistance</td>
</tr>
<tr>
<td></td>
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<tr>
<td>Acoustic ratings</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

(a) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.


- 1 TYPE X GYPSUM BOARD 5/8 in.
- RESILIENT CHANNELS 1/2 in. @ 16 in. O.C. INSTALLED HORIZONTALLY
- NORDIC X-LAM 4-1/8 in.
- RESILIENT CHANNELS 1/2 in. @ 16 in. O.C. INSTALLED HORIZONTALLY
- 1 TYPE X GYPSUM BOARD 5/8 in.
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire-resistance rating</td>
<td>FRR&lt;sup&gt;(a)&lt;/sup&gt; 30 min / 1 h</td>
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<tr>
<td>Thermal resistance</td>
<td>RSI / R n.a. / n.a.</td>
</tr>
<tr>
<td>Acoustic ratings</td>
<td>STC&lt;sup&gt;(b)&lt;/sup&gt; / FSTC 37 / n.a.</td>
</tr>
<tr>
<td></td>
<td>IIC / FIIC n.a. / n.a.</td>
</tr>
</tbody>
</table>

<sup>(a)</sup> The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.

<sup>(b)</sup> Composition and acoustic performance taken from the CLT Handbook – Canadian Edition (FPInnovations, 2011). Acoustic performance based on a CLT thickness of 95-115 mm (3-3/4 in. to 4-1/2 in.).

- NORDIC X-LAM 4-1/8 in.
- RESILIENT CHANNELS 1/2 in. @ 16 in. O.C. INSTALLED HORIZONTALLY
- 1 TYPE X GYPSUM BOARD 5/8 in.
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire-resistance rating</td>
<td>FRR (a) 30 min / 1 h</td>
</tr>
<tr>
<td>Thermal resistance</td>
<td>RSI / R n.a. / n.a.</td>
</tr>
<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC IIC / FIIC n.a. / n.a.</td>
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</tbody>
</table>

(a) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.

- NORDIC X-LAM 4-1/8 in.
- AIR GAP 1/2 in.
- WOOD STUDS 2 in. X 3 in. @ 16 in. O.C.
- 1 ROW OF MINERAL WOOL INSULATION 2-1/2 in.
- 1 TYPE X GYPSUM BOARD 5/8 in.
### Partition NS-DA2106-US

11-3/8 in.

**Architecture, Assembly**

#### Fire-resistance rating

| FRR (a) | 1 h / 1 h |

#### Thermal resistance

| RSI / R | n.a. / n.a. |

#### Acoustic ratings

| STC / FSTC | n.a. / 50 |
| IIC / FIIC | n.a. / n.a. |

*a) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.*

- 1 TYPE X GYPSUM BOARD 5/8 in.
- 1 ROW OF MINERAL WOOL INSULATION 2-1/2 in.
- WOOD STUDS 2 in. X 3 in. @ 16 in. O.C.
- AIR GAP 1/2 in.
- NORDIC X-LAM 4-1/8 in.
- AIR GAP 1/2 in.
- WOOD STUDS 2 in. X 3 in. @ 16 in. O.C.
- 1 TYPE X GYPSUM BOARD 5/8 in.
Partition NS-DA2107-US

11-3/8 in.

<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR (a)</th>
<th>1 h / 1 h</th>
</tr>
</thead>
<tbody>
<tr>
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<td>RSI / R</td>
<td>n.a. / n.a.</td>
</tr>
<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC</td>
<td>n.a. / 54</td>
</tr>
<tr>
<td></td>
<td>IIC / FIIIC</td>
<td>n.a. / n.a.</td>
</tr>
</tbody>
</table>

a) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 12,450 plf.

- 1 TYPE X GYPSUM BOARD 5/8 in.
- 1 ROW OF MINERAL WOOL INSULATION 2-1/2 in.
- WOOD STUDS 2 in. X 3 in. @ 16 in. O.C.
- AIR GAP 1/2 in.
- NORDIC X-LAM 4-1/8 in.
- AIR GAP 1/2 in.
- WOOD STUDS 2 in. X 3 in. @ 16 in. O.C.
- 1 ROW OF MINERAL WOOL INSULATION 2-1/2 in.
- 1 TYPE X GYPSUM BOARD 5/8 in.
**Fire-resistance rating**

| FRR (a) | 1.5 h / 1.5 h |

**Thermal resistance**

| RSI / R | n.a. / n.a. |

**Acoustic ratings**

| STC / FSTC | 37 / n.a. |
| IIC / FIIC | n.a. / n.a. |

(a) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 32,150 plf.

- NORDIC X-LAM 6-7/8 in.
Fire-resistance rating | FRR \(^{(a)}\) | 1.5 h / 2.5 h
Thermal resistance | RSI / R | n.a. / n.a.
Acoustic ratings | STC / FSTC | 53 / n.a.
IIC / FIIC | n.a. / n.a.

\(a\) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 32,150 plf.

- NORDIC X-LAM 6-7/8 in.
- Z-CHANNELS (26 GAUGE) 1-3/8 in. @ 16 in. O.C. INSTALLED VERTICALLY
- 1 ROW OF FIBERGLASS INSULATION OF TYPE "ROSE FIBERGLAS ECOTOUCH" 1-1/2 in.
- 2 TYPE X GYPSUM BOARDS 5/8 in. EA.
<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR (^{(a)})</th>
<th>2.5 h / 2.5 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal resistance</td>
<td>RSI / R</td>
<td>n.a. / n.a.</td>
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<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC</td>
<td>71 / n.a.</td>
</tr>
<tr>
<td></td>
<td>IIC / FIIC</td>
<td>n.a. / n.a.</td>
</tr>
</tbody>
</table>

\(^{(a)}\) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 32,150 plf.

- 2 TYPE X GYPSUM BOARDS 5/8 in. EA.
- METAL STUDS (26 GAUGE) 1-1/4 in. X 3-5/8 in. @ 16 in. O.C.
- 1 ROW OF FIBERGLASS INSULATION OF TYPE "ROSE FIBERGLAS ECOTOUCH" 3-5/8 in.
- AIR GAP 3/4 in.
- NORDIC X-LAM 6-7/8 in.
- Z-CHANNELS (26 GAUGE) 1-3/8 in. @ 16 in. O.C.
  INSTALLED VERTICALLY
- 1 ROW OF FIBERGLASS INSULATION OF TYPE "ROSE FIBERGLAS ECOTOUCH" 1-1/2 in.
- 2 TYPE X GYPSUM BOARDS 5/8 in. EA.
**Partition Details**

**Architecture, Assembly**

<table>
<thead>
<tr>
<th>Title</th>
<th>Drawing</th>
</tr>
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<tbody>
<tr>
<td>Partition</td>
<td>NS-DA2111-US</td>
</tr>
</tbody>
</table>

**Scale:** 1:10

**Date:** 2022-02-01

**Page:** 2.12

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**Fire-resistance rating**

| FRR (a) | 2.5 h / 2.5 h |

**Thermal resistance**

| RSI / R | n.a. / n.a. |

**Acoustic ratings**

| STC / FSTC | 53 / n.a. |
| IIC / FIIC | n.a. / n.a. |

*a) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 32,150 psf.*

- 2 TYPE X GYPSUM BOARDS 5/8 in. EA.
- RESILIENT CHANNELS 1/2 in. @ 16 in. O.C.
  INSTALLED HORIZONTALLY
- PLYWOOD STRIPS 1/2 in. @ 16 in. O.C.
- NORDIC X-LAM 6-7/8 in.
- Z-CHANNELS (26 GAUGE) 1-3/8 in. @ 16 in. O.C.
  INSTALLED VERTICALLY
- 1 ROW OF FIBERGLASS INSULATION OF TYPE “ROSE FIBERGLAS ECOTOUCH” 1-1/2 in.
- 2 TYPE X GYPSUM BOARDS 5/8 in. EA.
### Partition NS-DA2112-US

- **10-3/4 in.**

### Fire-resistance rating

| FRR (a) | 2.5 h / 2.5 h |

### Thermal resistance

| RSI / R | n.a. / n.a. |

### Acoustic ratings

| STC / FSTC | 53 / n.a. |
| IIC / FIIC | n.a. / n.a. |

(a) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 32,150 plf.

- 2 TYPE X GYPSUM BOARDS 5/8 in. EA.
- NORDIC X-LAM 6-7/8 in.
- Z-CHANNELS (26 GAUGE) 1-3/8 in. @ 16 in. O.C.
  INSTALLED VERTICALLY
- 1 ROW OF FIBERGLASS INSULATION OF TYPE "ROSE FIBERGLAS ECOTOUCH" 1-1/2 in.
- 2 TYPE X GYPSUM BOARDS 5/8 in. EA.
Architecture, Assembly 1:10

Partition NS-DA2113-US

14-5/8 in.

P14

Fire-resistance rating (a) FRR 2.5 h / 2.5 h

Thermal resistance

Acoustic ratings STC / FSTC 65 / n.a.

---

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<thead>
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<th>Category</th>
<th>Drawings</th>
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</thead>
<tbody>
<tr>
<td>Architecture, Assembly</td>
<td>NS-DA2113-US</td>
</tr>
</tbody>
</table>

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- 1 TYPE C GYPSUM BOARD 1/2 in.
- METAL STUDS (26 GAUGE) 1-1/4 in. X 2-1/2 in. @ 16 in. O.C.
- 1 ROW OF STONE WOOL INSULATION OF TYPE “ROXUL AFB” 2-1/2 in.
- AIR GAP 3/4 in.
- 2 TYPE X GYPSUM BOARDS 5/8 in. EA.
- NORDIC X-LAM 6-7/8 in.
- Z-CHANNELS (26 GAUGE) 1-3/8 in. @ 16 in. O.C. INSTALLED VERTICALLY
- 1 ROW OF FIBERGLASS INSULATION OF TYPE “ROSE FIBERGLAS ECOTOUCH” 1-1/2 in.
- 2 TYPE X GYPSUM BOARDS 5/8 in. EA.

---

a) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 32,150 plf.
Fire-resistance rating | FRR (a) | 2.5 h / 1.5 h
Thermal resistance | RSI / R | n.a. / n.a.
Acoustic ratings | STC / FSTC | 62 / n.a.
IIC / FIIC | n.a. / n.a.

a) The fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 32,150 plf.

- 1 TYPE C GYPSUM BOARD 1/2 in.
- METAL STUDS (26 GAUGE) 1-1/4 in. X 2-1/2 in. @ 16 in. O.C.
- 1 ROW OF STONE WOOL INSULATION OF TYPE “ROXUL AFB” 2-1/2 in.
- AIR GAP 3/4 in.
- 2 TYPE X GYPSUM BOARDS 5/8 in. EA.
- NORDIC X-LAM 6-7/8 in.
<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR&lt;sup&gt;(a)&lt;/sup&gt;</th>
<th>2.5 h / 2.5 h</th>
</tr>
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<tbody>
<tr>
<td>Thermal resistance</td>
<td>RSI / R</td>
<td>n.a. / n.a.</td>
</tr>
<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC</td>
<td>61 / n.a.</td>
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<tr>
<td></td>
<td>IIC / FIIC</td>
<td>n.a. / n.a.</td>
</tr>
</tbody>
</table>

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*Fire-resistance ratings on each side of the partition are based on an effective length of 10 feet and on a concentric uniform load of 32,150 plf.*

- 1 TYPE C GYPSUM BOARD 1/2 in.
- METAL STUDS (26 GAUGE) 1-1/4 in. X 2-1/2 in. @ 16 in. O.C.
- 1 ROW OF STONE WOOL INSULATION OF TYPE "ROXUL AFB" 2-1/2 in.
- AIR GAP 3/4 in.
- 2 TYPE X GYPSUM BOARDS 5/8 in. EA.
- NORDIC X-LAM 6-7/8 in.
- 2 TYPE X GYPSUM BOARDS 5/8 in. EA.
FLOOR 3
-- NORDIC X-LAM 6-7/8 in.

Fire-resistance rating

<table>
<thead>
<tr>
<th>FRR (a)</th>
<th>1.5 h</th>
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Thermal resistance

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Acoustic ratings

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(a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.
Fire-resistance rating

<table>
<thead>
<tr>
<th></th>
<th>FRR (a)</th>
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Thermal resistance

<table>
<thead>
<tr>
<th></th>
<th>RSI / R</th>
<th>n.a. / n.a.</th>
</tr>
</thead>
</table>

Acoustic ratings

<table>
<thead>
<tr>
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<th>64 / n.a.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIC (b) / FIIC</td>
<td>59 / n.a.</td>
</tr>
</tbody>
</table>

---

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.


- NORDIC X-LAM 6-7/8 in.
- SUSPENDED CEILING:
  - RESILIENT METALLIC HANGERS 4 in.
  - METAL TRACKS @ 16 in. O.C. MIN
  - SOUNDPROOFING MATERIAL 4 in.
  - 2 TYPE X GYPSUM BOARDS 1/2 in. EA.
The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- UNDERLAY OF TYPE “FERMACELL 2E32” 1-1/4 in. OR “PERMABASE” WITH “SONOPAN”
- NORDIC X-LAM 6-7/8 in.
- NORDIC JOIST 7-7/8 in. @ 24 in. O.C.
- SOUNDBOOFING MATERIAL 3-1/2 in.
- 1 TYPE X GYPSUM BOARD 5/8 in.
Fire-resistance rating  
FRR \(^{(a)}\)  
1.5 h

Thermal resistance  
RSI / R  
n.a. / n.a.

Acoustic ratings  
STC / FSTC  
n.a. / 47  
IIC / FIIC  
n.a. / 46

--- FLOATING FLOOR 3/8 in.  
--- UNDERLAY OF TYPE “INSONOBOIS” 1/8 in.  
--- 2 UNDERLAYS OF TYPE “FIBEROCK” 5/8 in. EA.  
--- UNDERLAY OF TYPE “INSONOMAT” 5/8 in.  
--- NORDIC X-LAM 6-7/8 in.

\(a\) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.
### Fire-resistance rating

<table>
<thead>
<tr>
<th>FRR&lt;sup&gt;(a)&lt;/sup&gt;</th>
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### Thermal resistance

<table>
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### Acoustic ratings

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<th>n.a. / 59</th>
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</thead>
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<td>IIC / FIIC</td>
<td>n.a. / 61</td>
</tr>
</tbody>
</table>

#### a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- FLOATING FLOOR 3/8 in.
- UNDERLAY OF TYPE "INSONOBOIS" 1/8 in.
- 2 FLOOR BACKERBOARDS OF TYPE "FIBEROCK" 5/8 in. EA.
- UNDERLAY OF TYPE "INSONOMAT" 5/8 in.
- NORDIC X-LAM 6-7/8 in.
- SUSPENDED CEILING:
  - RESILIENT METALLIC HANGERS 7-7/8 in. @ 48 in. O.C.
  - METAL TRACKS @ 24 in. O.C.
  - 2 ROWS OF STONE WOOL INSULATION OF TYPE "ROXUL" (2.5 pcf) 3-1/2 in. EA.
  - 1 TYPE X GYPSUM BOARD 5/8 in.
<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR (a)</th>
<th>2 h</th>
</tr>
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<tbody>
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<tr>
<td>Acoustic ratings</td>
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<td>n.a. / 58</td>
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<td>IIC / FIIC</td>
<td>n.a. / 60</td>
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</tbody>
</table>

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- FLOATING FLOOR 3/8 in.
- UNDERLAY OF TYPE “INSONOBOIS” 1/8 in.
- 2 FLOOR BACKERBOARDS OF TYPE “FIBEROCK” 5/8 in. EA.
- UNDERLAY OF TYPE “INSONOMAT” 5/8 in.
- NORDIC X-LAM 6-7/8 in.
- SUSPENDED CEILING:
  - RESILIENT METALLIC HANGERS 7-7/8 in. @ 48 in. O.C.
  - METAL TRACKS @ 24 in. O.C.
  - 2 ROWS OF STONE WOOL INSULATION OF TYPE “ROXUL” (2.5 pcf) 3-1/2 in. EA.
  - 1 TYPE X GYPSUM BOARD 5/8 in.
  - 1 REGULAR GYPSUM BOARD 1/2 in.
<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR (^{(a)})</th>
<th>2 h</th>
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<tbody>
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<td>RSI / R</td>
<td>n.a. / n.a.</td>
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<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC</td>
<td>n.a. / 54</td>
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<td>IIC / FIIC</td>
<td>n.a. / 56</td>
</tr>
</tbody>
</table>

(a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- FLOATING FLOOR 3/8 in.
- UNDERLAY OF TYPE "INSONOBOIS" 1/8 in.
- NORDIC X-LAM 6-7/8 in.
- SUSPENDED CEILING:
  - RESILIENT METALLIC HANGERS 7-7/8 in. @ 48 in. O.C.
  - METAL TRACKS @ 24 in. O.C.
  - 2 ROWS OF STONE WOOL INSULATION OF TYPE "ROXUL" (2.5 pcf) 3-1/2 in. EA.
  - 1 TYPE X GYPSUM BOARD 5/8 in.
  - 1 REGULAR GYPSUM BOARD 1/2 in.
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a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- FLOATING FLOOR 3/8 in.
- UNDERLAY OF TYPE "INSONOBOIS" 1/8 in.
- NORDIC X-LAM 6-7/8 in.
- SUSPENDED CEILING:
  - RESILIENT METALLIC HANGERS 4 in. @ 48 in. O.C.
  - METAL TRACKS @ 24 in. O.C.
  - 1 ROW OF STONE WOOL INSULATION OF TYPE "ROXUL"
    (2.5 pcf) 3-1/2 in. EA.
- 1 TYPE X GYPSUM BOARD 5/8 in.
Fire-resistance rating (FRR) | 1.5 h
---|---
Thermal resistance (RSI) | n.a. / n.a.
Acoustic ratings (STC / FSTC) | 62 / n.a.
IIIC / FIIC | 59 / n.a.

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- GYPSUM FIBERBOARD OF TYPE "FERMACELL" 1 in.
- UNDERLAY OF TYPE "ISOVER EP3" 3/4 in.
- 2 LAYERS OF PELLETS AND HONEYCOMB CORE OF TYPE "FERMACELL" 1-1/4 in. EA.
- KRAFT PAPER UNDERLAY
- NORDIC X-LAM 6-7/8 in.
Fire-resistance rating

<table>
<thead>
<tr>
<th></th>
<th>FRR (a)</th>
<th>2 h</th>
</tr>
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</table>

Thermal resistance

<table>
<thead>
<tr>
<th></th>
<th>RSI / R</th>
<th>n.a. / n.a.</th>
</tr>
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</table>

Acoustic ratings

<table>
<thead>
<tr>
<th></th>
<th>STC / FSTC</th>
<th>IIC / FIIC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n.a. / 61</td>
<td>n.a. / 50</td>
</tr>
</tbody>
</table>

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- CONCRETE TOPPING (125 pcf) 1-1/2 in.
- WOOD FIBER ACOUSTIC PANEL OF TYPE “BP ECO-LOGICAL” 1/2 in.
- NORDIC X-LAM 6-7/8 in.
- SUSPENDED CEILING:
  - RESILIENT METALLIC HANGERS 4 in. @ 48 in. O.C.
  - METAL TRACKS @ 24 in. O.C.
  - 1 ROW OF STONE WOOL INSULATION OF TYPE “ROXUL” (2.5 pcf) 3-1/2 in.
  - 1 TYPE X GYPSUM BOARD 5/8 in.
  - 1 REGULAR GYPSUM BOARD 1/2 in.
Fire-resistance rating  

<table>
<thead>
<tr>
<th>FRR (a)</th>
<th>1.5 h</th>
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</table>

Thermal resistance  

<table>
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<tr>
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<th>n.a. / n.a.</th>
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Acoustic ratings  

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<th>55 / n.a.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIC / FIIC</td>
<td>51 / n.a.</td>
</tr>
</tbody>
</table>

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- ENGINEERED WOOD FLOOR 3/8 in.
- UNDERLAY OF TYPE “ROBERTS SOFT STRIDE” 1/8 in.
- CONCRETE TOPPING 1-1/2 in.
- UNDERLAY OF TYPE “INSONOMAT” 5/8 in.
- NORDIC X-LAM 6-7/8 in.
Fire-resistance rating | FRR (A) | 2 h
---|---|---
Thermal resistance | RSI / R | n.a. / n.a.
Acoustic ratings | STC / FSTC | 70 / n.a.
IIC / FIIC | 56 / n.a.

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- CONCRETE TOPPING 1-1/2 in.
- UNDERLAY OF TYPE “OWENS CORNING QUIÉTUDE” 3/8 in.
- NORDIC X-LAM 6-7/8 in.
- Z-CHANNELS (26 GAUGE) 3-1/2 in. @ 24 in. O.C.
- 1 ROW OF FIBERGLASS INSULATION OF TYPE “ROSE FIBERGLAS ECOTOUCH” 3-5/8 in.
- FURRING CHANNELS 5/8 in. @ 16 in. O.C.
- 1 TYPE X GYPSUM BOARD 5/8 in.
Fire-resistance rating | FRR\(^{(a)}\) | 2 h
---|---|---
Thermal resistance | RSI / R | n.a. / n.a.
Acoustic ratings | STC / FSTC | 69 / n.a.
| IIC / FIIC | 54 / n.a.

(a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- CONCRETE TOPPING 1-1/2 in.
- TAR FIBERBOARD 3/8 in.
- NORDIC X-LAM 6-7/8 in.
- Z-CHANNELS (26 GAUGE) 3-1/2 in. @ 24 in. O.C.
- 1 ROW OF FIBERGLASS INSULATION OF TYPE "ROSE FIBERGLASS ECOTOUCH" 3-5/8 in.
- FURRING CHANNELS 5/8 in. @ 16 in. O.C.
- 1 TYPE X GYPSUM BOARD 5/8 in.
Fire-resistance rating | FRR (a) | 2 h
Thermal resistance | RSI / R | n.a. / n.a.
Acoustic ratings | STC / FSTC | 69 / n.a.
IIC / FIIC | 58 / n.a.
a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- ENGINEERED WOOD FLOOR 3/8 in.
- UNDERLAY OF TYPE “ROBERTS SOFT STRIDE” 1/8 in.
- CONCRETE TOPPING 1-1/2 in.
- TAR FIBERBOARD 3/8 in.
- NORDIC X-LAM 6-7/8 in.
- Z-CHANNELS (26 GAUGE) 3-1/2 in. @ 24 in. O.C.
- 1 ROW OF FIBERGLASS INSULATION OF TYPE “ROSE FIBERGLAS ECOTOUCH” 3-5/8 in.
- FURRING CHANNELS 5/8 in. @ 16 in. O.C.
- 1 TYPE X GYPSUM BOARD 5/8 in.
<table>
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<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td>Fire-resistance rating</td>
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<tr>
<td>Thermal resistance</td>
<td>RSI / R</td>
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<td></td>
<td>n.a. / n.a.</td>
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<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC</td>
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<td>72 / n.a.</td>
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<td></td>
<td>IIC / FIIC</td>
</tr>
<tr>
<td></td>
<td>65 / n.a.</td>
</tr>
</tbody>
</table>

Fire-resistance rating based on a span of 18 feet and a uniform load of 90 psf.

- CONCRETE TOPPING 1-1/2 in.
- UNDERLAY OF TYPE “OWENS CORNING QUIÉTUDE” 3/8 in.
- NORDIC X-LAM 6-7/8 in.
- SUSPENDED CEILING:
  - METALLIC HANGERS 2-1/2 in.
  - CHANNEL IRONS 1-1/2 in. @ 48 in. O.C.
  - FURRING CHANNELS 7/8 in. @ 16 in. O.C.
  - 1 ROW OF FIBERGLASS INSULATION OF TYPE “ROSE FIBERGLAS ECOTOUCH” 3-5/8 in.
  - 2 TYPE C GYPSUM BOARDS 1/2 in. EA.
Fire-resistance rating | FRR (a) | 1.5 h
Thermal resistance | RSI / R | n.a. / n.a.

Acoustic ratings | STC / FSTC | 73 / n.a.
| IIC / FIIC | 66 / n.a.

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- CONCRETE TOPPING 1-1/2 in.
- UNDERLAY OF TYPE “OWENS CORNING QUIÉTUDE” 3/8 in.
- NORDIC X-LAM 6-7/8 in.
- SUSPENDED CEILING:
  - METALLIC HANGERS 2 in.
  - CHANNEL IRONS 1-1/2 in. @ 48 in. O.C.
  - FURRING CHANNELS 7/8 in. @ 16 in. O.C.
  - 1 ROW OF FIBERGLASS INSULATION OF TYPE “ROSE FIBERGLAS ECOTOUCH” 3-5/8 in.
  - RESILIENT CHANNELS 1/2 in. @ 24 in. O.C.
  - 2 TYPE C GYPSUM BOARDS 1/2 in. EA.
Fire-resistance rating: FRR (a) 1.5 h

Thermal resistance: RSI / R n.a. / n.a.

Acoustic ratings: STC / FSTC IIC / FIIC 72 / n.a. 62 / n.a.

(a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- CONCRETE TOPPING 1-1/2 in.
- UNDERLAY OF TYPE “OWENS CORNING QUIÉTUDE” 3/8 in.
- NORDIC X-LAM 6-7/8 in.
- SUSPENDED CEILING:
  - METALLIC HANGERS 2 in.
  - CHANNEL IRONS 1-1/2 in. @ 48 in. O.C.
  - FURRING CHANNELS 7/8 in. @ 16 in. O.C.
  - 1 ROW OF FIBERGLASS INSULATION OF TYPE “ROSE FIBERGLAS ECOTOUCH” 3-5/8 in.
  - RESILIENT CHANNELS 1/2 in. @ 24 in. O.C.
  - 1 TYPE C GYPSUM BOARD 1/2 in.
Fire-resistance rating  
FRR \(^{(a)}\) 1.5 h

Thermal resistance  
RSI / R  
n.a. / n.a.

Acoustic ratings  
STC \(^{(b)}\) / FSTC 75 / n.a.  
IIC \(^{(b)}\) / FIIC 66 / n.a.

---

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

b) Acoustic performance based on a CLT thickness of 131 mm (5-1/8 in.).

---

- FLOATING FLOOR 3/8 in.
- UNDERLAY OF TYPE “ACOUSTITECH PREMIUM” 1/8 in.
- PREFABRICATED CONCRETE TOPPING 1-1/2 in.
- TAR FIBERBOARD 3/8 in.
- NORDIC X-LAM 6-7/8 in.
- SUSPENDED CEILING:
  - METALLIC HANGERS 5-3/4 in.
  - CHANNEL IRONS 1-1/2 in. @ 48 in. O.C.
  - FURRING CHANNELS 7/8 in. @ 16 in. O.C.
  - 1 ROW OF FIBERGLASS INSULATION OF TYPE “ROSE FIBERGLAS ECOTOUCH” 3-5/8 in.
  - 2 TYPE C GYPSUM BOARDS 1/2 in. EA.
---

**Fire-resistance rating**

<table>
<thead>
<tr>
<th>FRR (a)</th>
<th>1 h</th>
</tr>
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</table>

**Thermal resistance**

<table>
<thead>
<tr>
<th>RSI / R</th>
<th>n.a. / n.a.</th>
</tr>
</thead>
</table>

**Acoustic ratings**

<table>
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<tr>
<th>STC / FSTC</th>
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<table>
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<tr>
<th>IIC / FIIC</th>
<th>51 / n.a.</th>
</tr>
</thead>
</table>

(a) The fire-resistance rating is based on a span of 12 feet and on a uniform load of 90 psf.

- CARPET TILES 1/4 in.
- PREFABRICATED CONCRETE TOPPING (144 pcf) 2-3/4 in.
- UNDERLAY OF TYPE "INSONOMAT" 5/8 in.
- NORDIC LAM DECKING 3-1/2 in.

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<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR (a)</th>
<th>2 h</th>
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</thead>
<tbody>
<tr>
<td>Thermal resistance</td>
<td>RSI / R</td>
<td>n.a. / n.a.</td>
</tr>
<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC</td>
<td>61 / n.a.</td>
</tr>
<tr>
<td></td>
<td>IIC / FIIC</td>
<td>55 / n.a.</td>
</tr>
</tbody>
</table>

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- 2 ROWS OF PANELS OF TYPE “HUBER ENGINEERED WOOD ADVANTECH” 1-3/8 in. EA.
- UNDERLAY OF TYPE “GENIEMAT FF” 1 in.
- NORDIC X-LAM 6-7/8 in.
- SUSPENDED CEILING:
  - BRACKETS OF TYPE “GENIECLIP LB” 4-3/8 in.
  - CHANNEL IRONS 1-1/2 in. @ 48 in. O.C. FIXED AT THE BOTTOM OF THE BRACKETS
  - FURRING CHANNELS 7/8 in. @ 24 in. O.C.
  - 1 ROW OF FIBERGLASS INSULATION OF TYPE “JOHNS MANVILLE UNFACED BATTS R13” 3-1/2 in.
  - 1 TYPE X GYPSUM BOARD 5/8 in.
Fire-resistance rating FRR (a) 2 h

Thermal resistance RSI / R n.a. / n.a.

Acoustic ratings STC / FSTC 58 / n.a.
IIC / FIIC 58 / n.a.

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- VINYL TILES FLOORING 1/8 in.
- UNDERLAY OF TYPE “GENIEMAT RST05” 1/4 in.
- NORDIC X-LAM 6-78 in.
- SUSPENDED CEILING:
  - BRACKETS OF TYPE “GENIECLIP LB” 4-3/8 in.
  - CHANNEL IRONS 1-1/2 in. @ 48 in. O.C. FIXED AT THE BOTTOM OF THE BRACKETS
  - FURRING CHANNELS 7/8 in. @ 24 in. O.C.
  - 1 ROW OF FIBERGLASS INSULATION OF TYPE “JOHNS MANVILLE UNFACED BATTS R13” 3-1/2 in.
  - 1 TYPE X GYPSUM BOARD 5/8 in.
Fire-resistance rating | FRR (a) | 2 h
--- | --- | ---
Thermal resistance | RSI / R | n.a. / n.a.
Acoustic ratings | STC / FSTC | 57 / n.a.
| IIC / FIIC | 54 / n.a.

(a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- VINYL TILES FLOORING 1/8 in.
- NORDIC X-LAM 6-7/8 in.
- SUSPENDED CEILING:
  - BRACKETS OF TYPE “GENIECLIP LB” 4-3/8 in.
  - CHANNEL IRONS 1-1/2 in. @ 48 in. O.C. FIXED AT THE BOTTOM OF THE BRACKETS
  - FURRING CHANNELS 7/8 in. @ 24 in. O.C.
  - 1 ROW OF FIBERGLASS INSULATION OF TYPE “JOHNS MANVILLE UNFACED BATTS R13” 3-1/2 in.
  - 1 TYPE X GYPSUM BOARD 5/8 in.
Fire-resistance rating

<table>
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<tr>
<th></th>
<th>FRR (a)</th>
<th>2.5 h</th>
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</table>

Thermal resistance

<table>
<thead>
<tr>
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<th>RSI / R</th>
<th>n.a. / n.a.</th>
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</thead>
</table>

Acoustic ratings

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<thead>
<tr>
<th></th>
<th>STC / FSTC</th>
<th>IIC / FIIC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n.a. / 54</td>
<td>n.a. / 53</td>
</tr>
</tbody>
</table>

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- FLOATING FLOOR 3/8 in.
- UNDERLAY OF TYPE “INSONOBOIS” 1/8 in.
- TOPPING OF TYPE “MAXXON GYP-CRETE” (128 pcf) 3/4 in.
- ENTANGLED FILAMENT MAT OF TYPE “MAXXON ACOUSTI-MAT 1” 1/4 in.
- NORDIC X-LAM 6-7/8 in.
- RESILIENT CHANNELS 1/2 in. @ 24 in. O.C.
- 1 TYPE X GYPSUM BOARD OF TYPE “QUIETROCK” 5/8 in.
- SUSPENDED DRYWALL GRID SYSTEM OF TYPE “ARMSTRONG”:
  - METALLIC HANGERS 15 in.
  - T-CHANNELS 1-5/8 in. @ 48 in. O.C.
  - 1 ROW OF STONE WOOL INSULATION OF TYPE “ROXUL” (2.5 pcf) 3 in.
  - 1 TYPE X GYPSUM BOARD 5/8 in.
Fire-resistance rating | FRR \(^{(a)}\) | 2 h
---|---|---
Thermal resistance | RSI / R | n.a. / n.a.

Acoustic ratings | STC \(^{(b)}\) / FSTC | 62 / n.a.
IIC \(^{(b)}\) / FIIC | 59 / n.a.

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- GYPSUM FIBERBOARD OF TYPE “FERMACELL” 1 in.
- 2 LAYERS OF PELLETS AND HONEYCOMB CORE OF TYPE “FERMACELL” 1-1/4 in. EA.
- KRAFT PAPER UNDERLAY
- NORDIC X-LAM 6-7/8 in.
- 1 TYPE X GYPSUM BOARD 5/8 in.
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire-resistance rating</td>
<td>FRR (^{(a)}) 1.5 h</td>
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<tr>
<td>Thermal resistance</td>
<td>RSI / R n.a. / n.a.</td>
</tr>
<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC (^{(b)}) n.a. / &gt; 50</td>
</tr>
<tr>
<td>IIC / FIIC (^{(b)})</td>
<td>n.a. / &gt; 50</td>
</tr>
</tbody>
</table>

*a* The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.


- CARPET OR FLOATING FLOOR 3/8 in.
- RESILIENT UNDERLAY (RUBBER OR FELT) 1/8 in.
- TOPPING, AT LEAST 15.6 psf (I.E. CONCRETE OR OF TYPE “MAXXON GYP-CRETE”)
- RESILIENT UNDERLAY (RUBBER 3/8 in., FELT 3/4 in., OR WOOD FIBERBOARD 1/2 in.)
- NORDIC X-LAM 6-7/8 in.
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td>Fire-resistance rating (FRR)</td>
<td>2 h</td>
</tr>
<tr>
<td>Thermal resistance</td>
<td>n.a. / n.a.</td>
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<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC</td>
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<tr>
<td></td>
<td>IIC / FIIC</td>
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</table>

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.


- CARPET OR FLOATING FLOOR 3/8 in.
- RESILIENT UNDERLAY (RUBBER OR FELT) 1/8 in.
- TOPPING, AT LEAST 15.6 psf (I.E. CONCRETE OR OF TYPE "MAXXON GYP-CRETE")
- RESILIENT UNDERLAY (RUBBER 3/8 in., FELT 3/4 in., OR WOOD FIBERBOARD 1/2 in.)
- NORDIC X-LAM 6-7/8 in.
- 1 TYPE X GYPSUM BOARD 5/8 in.
<table>
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<tr>
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<td>1.5 h</td>
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<td>Thermal resistance (RSI/R)</td>
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<td>Acoustic ratings (STC/FSTC)</td>
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<td>n.a. / &gt; 45</td>
</tr>
</tbody>
</table>

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.


- CARPET OR FLOATING FLOOR 3/8 in.
- RESILIENT UNDERLAY (RUBBER OR FELT) 1/8 in.
- PREFABRICATED TOPPING, AT LEAST 5.1 psf (3/4 in. OF TYPE "FERMACELL" OR OF TYPE "FIBREROCK")
- RESILIENT UNDERLAY (RUBBER 3/8 in., FELT 3/4 in., OR WOOD FIBERBOARD 1/2 in.)
- NORDIC X-LAM 6-7/8 in.
9-1/8 in. TO 9-1/2 in.

**Fire-resistance rating**

<table>
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<tr>
<th>FRR (a)</th>
<th>2 h</th>
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**Thermal resistance**

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**Acoustic ratings**

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<tr>
<th>STC / FSTC (b)</th>
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<tbody>
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<td>IIC / FIIC (b)</td>
<td>n.a. / &gt; 45</td>
</tr>
</tbody>
</table>

(a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.


- CARPET OR FLOATING FLOOR 3/8 in.
- RESILIENT UNDERLAY (RUBBER OR FELT) 1/8 in.
- PREFabricated topping, at least 5.1 psf (3/4 in. OF TYPE "Fermacell" OR OF TYPE "FibroRocK")
- RESILIENT UNDERLAY (rubber 3/8 in., felt 3/4 in., or wood fiberboard 1/2 in.)
- NORDIC X-LAM 6-7/8 in.
- 1 TYPE X GYPSUM BOARD 5/8 in.

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**TITLE**

Floor

**CATEGORY**

Architecture, Assembly

**DRAWING**

NS-DA2227-US

**SCALE**

1:10

**DATE**

2022-02-01

**PAGE**

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<tr>
<td>Acoustic ratings</td>
<td>STC (b) / FSTC</td>
<td>64 / n.a.</td>
</tr>
<tr>
<td></td>
<td>IIC (b) / FIIC</td>
<td>53 / n.a.</td>
</tr>
</tbody>
</table>

- a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.
- b) Acoustic performance based on a CLT thickness of 131 mm (5-1/8 in.).

- PREFABRICATED CONCRETE TOPPING 1-1/2 in.
- TONGUE AND GROOVE OSB SHEATHING 3/4 in.
- WOOD RAFTERS 2 in. X 3 in. @ 24 in. O.C.
- SILICA SAND (#71) 2 in.
- RUBBER MEMBRANE BANDS 3/8 in. UNDER RAFTERS
- POLYETHYLENE SHEETING 6 mil
- NORDIC X-LAM 6-7/8 in.
Fire-resistance rating | FRR \(^{(a)}\) | 1.5 h
---|---|---
Thermal resistance | RSI / R | n.a. / n.a.
Acoustic ratings | STC \(^{(b)}\) / FSTC | 66 / n.a.
  | IIC \(^{(b)}\) / FIIC | 60 / n.a.

\(\text{a)}\) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

\(\text{b)}\) Acoustic performance based on a CLT thickness of 131 mm (5-1/8 in.).

- PREFABRICATED CONCRETE TOPPING 1-1/2 in.
- UNDERLAY OF TYPE “REGUPOL SONUS WAVE” 5/8 in.
- TONGUE AND GROOVE OSB SHEATHING 3/4 in.
- WOOD RAFTERS 2 in. X 3 in. @ 24 in. O.C.
- SILICA SAND (#71) 2 in.
- RUBBER MEMBRANE BANDS 3/8 in. UNDER RAFTERS
- POLYETHYLENE SHEETING 6 mil
- NORDIC X-LAM 6-7/8 in.
### Design Details

**Fire-resistance rating**
- FRR \(^{(a)}\) 1.5 h

**Thermal resistance**
- RSI / R n.a. / n.a.

**Acoustic ratings**
- STC \(^{(b)}\) / FSTC 59 / n.a.
- IIC \(^{(b)}\) / FIIC 53 / n.a.

---

\(\text{a)}\) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

\(\text{b)}\) Acoustic performance based on a CLT thickness of 131 mm (5-1/8 in.).

- UNDERLAY OF TYPE “FERMACELL 2E31” 1-1/4 in.
- TONGUE AND GROOVE OSB SHEATHING 3/4 in.
- WOOD RAFTERS 2 in. X 3 in. @ 24 in. O.C.
- SILICA SAND (#71) 2 in.
- RUBBER MEMBRANE BANDS 3/8 in. UNDER RAFTERS
- POLYETHYLENE SHEETING 6 mil
- NORDIC X-LAM 6-7/8 in.
Fire-resistance rating  
FRR \(^{(a)}\)  
1.5 h  

Thermal resistance  
RSI / R  
n.a. / n.a.  

Acoustic ratings  
STC \(^{(b)}\) / FSTC  
56 / n.a.  

\(\text{IIC} \(^{(b)}\) / \text{FIIC}\)  
50 / n.a.

---

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.
b) Acoustic performance based on a CLT thickness of 131 mm (5-1/8 in.).

- UNDERLAY OF TYPE “SONODECK INSULFLOOR” 1 in.
- TONGUE AND GROOVE OSB SHEATHING 3/4 in.
- WOOD RAFTERS 2 in. X 3 in. @ 24 in. O.C.
- SILICA SAND (#71) 2 in.
- RUBBER MEMBRANE BANDS 3/8 in. UNDER RAFTERS
- POLYETHYLENE SHEETING 6 mil
- NORDIC X-LAM 6-7/8 in.
Fire-resistance rating  
FRR \(^{(a)}\) 1.5 h

Thermal resistance  
RSI / R n.a. / n.a.

Acoustic ratings  
STC \(^{(b)}\) / FSTC 59 / n.a.
IIC \(^{(b)}\) / FIIC 54 / n.a.

---

\(a\) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

\(b\) Acoustic performance based on a CLT thickness of 131 mm (5-1/8 in.).

- PREFABRICATED CONCRETE TOPPING 1-1/2 in.
- UNDERLAY OF TYPE “REGUPOL SONUS WAVE” 5/8 in.
- TONGUE AND GROOVE OSB SHEATHING 3/4 in.
- WOOD RAFTERS 2 in. X 3 in. @ 24 in. O.C.
- RUBBER MEMBRANE BANDS 3/8 in. UNDER RAFTERS
- NORDIC X-LAM 6-7/8 in.
<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR (^{(a)})</th>
<th>1.5 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal resistance</td>
<td>RSI / R</td>
<td>n.a. / n.a.</td>
</tr>
<tr>
<td>Acoustic ratings</td>
<td>STC (^{(b)}) / FSTC</td>
<td>60 / n.a.</td>
</tr>
<tr>
<td></td>
<td>IIC (^{(b)}) / FIIC</td>
<td>54 / n.a.</td>
</tr>
</tbody>
</table>

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

b) Acoustic performance based on a CLT thickness of 131 mm (5-1/8 in.).

- PREFABRICATED CONCRETE TOPPING 1-1/2 in.
- UNDERLAY OF TYPE “REGUPOL SONUS WAVE” 5/8 in.
- TONGUE AND GROOVE OSB SHEATHING 3/4 in.
- WOOD RAFTERS 2 in. X 3 in. @ 24 in. O.C.
- 1 ROW OF FIBERGLASS INSULATION 2-1/2 in.
- RUBBER MEMBRANE BANDS 3/8 in. UNDER RAFTERS
- NORDIC X-LAM 6-7/8 in.
<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR (a)</th>
<th>1 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal resistance</td>
<td>RSI / R</td>
<td>n.a. / n.a.</td>
</tr>
<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC</td>
<td>65 / n.a.</td>
</tr>
<tr>
<td></td>
<td>IIC / FIIC</td>
<td>59 / n.a.</td>
</tr>
</tbody>
</table>

(a) The fire-resistance rating is based on a span of 12 feet and on a uniform load of 90 psf.

- Prefabricated concrete topping 1-1/2 in.
- Underlay of type “Regupol Sonus Wave” 5/8 in.
- Tongue and groove OSB sheathing 3/4 in.
- Wood rafters 2 in. X 3 in. @ 24 in. O.C.
- Silica sand (#71) 2 in.
- Rubber membrane bands 3/8 in. Under rafters
- Polyethylene sheeting 6 mil
- Nordic Lam decking 3-1/2 in.
### Fire-resistance Rating

<table>
<thead>
<tr>
<th>FRR&lt;sup&gt;(a)&lt;/sup&gt;</th>
<th>1.5 h</th>
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</thead>
</table>

### Thermal Resistance

<table>
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<tr>
<th>RSI / R</th>
<th>n.a. / n.a.</th>
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</table>

### Acoustic Ratings

<table>
<thead>
<tr>
<th>STC&lt;sup&gt;(b)&lt;/sup&gt; / FSTC</th>
<th>56 / n.a.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIC&lt;sup&gt;(b)&lt;/sup&gt; / FIIC</td>
<td>52 / n.a.</td>
</tr>
</tbody>
</table>

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- The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.
- Acoustic performance based on a CLT thickness of 131 mm (5-1/8 in.).

- UNDERLAY OF TYPE “FERMACELL 2E31” 1-1/4 in.
- PREFABRICATED CONCRETE TOPPING (147 pcf) 2-3/4 in.
- UNDERLAY OF TYPE “REGUPOL SONUS WAVE” 1 in.
- NORDIC X-LAM 6-7/8 in.
Fire-resistance rating  
FRR (a)  
1.5 h

Thermal resistance  
RSI / R  
n.a. / n.a.

Acoustic ratings  
STC (b) / FSTC  
57 / n.a.  
IIC (b) / FIIC  
51 / n.a.

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

b) Acoustic performance based on a CLT thickness of 131 mm (5-1/8 in.).

- LAMINATED FLOORING 3/8 in.
- UNDERLAY OF TYPE “ACOUSTITECH PREMIUM” 1/8 in.
- PREFABRICATED CONCRETE TOPPING (147 pcf) 2-3/4 in.
- RIGID SHEATHING BOARD OF TYPE “ROXUL COMFORTBOARD IS” 1-1/4 in.
- NORDIC X-LAM 6-7/8 in.
Fire-resistance rating | FRR (a) | 1.5 h
---|---|---
Thermal resistance | RSI / R | n.a. / n.a.
Acoustic ratings | STC (b) / FSTC | 57 / n.a.
| IIC (b) / FIIC | 51 / n.a.

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.
b) Acoustic performance based on a CLT thickness of 131 mm (5-1/8 in.).

- LAMINATED FLOORING 3/8 in.
- UNDERLAY OF TYPE “ROBERTS SOFT STRIDE” 1/8 in.
- PREFABRICATED CONCRETE TOPPING (147pcf) 2-3/4 in.
- RIGID SHEATHING BOARD OF TYPE "ROXUL COMFORTBOARD IS" 1-1/4 in.
- NORDIC X-LAM 6-7/8 in.
**Fire-resistance rating**

| FRR (a) | 1.5 h |

**Thermal resistance**

| RSI / R | n.a. / n.a. |

**Acoustic ratings**

| STC (b) / FSTC | 57 / n.a. |
| IIC (b) / FIIC | 51 / n.a. |

(a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

(b) Acoustic performance based on a CLT thickness of 131 mm (5-1/8 in.).

- HARDWOOD FLOORING OF TYPE "TORLYS EVEREST PREMIER" 3/8 in.
- UNDERLAY OF TYPE "ROBERTS SOFT STRIDE" 1/8 in.
- PREFABRICATED CONCRETE TOPPING (147 pcf) 2-3/4 in.
- RIGID SHEATHING BOARD OF TYPE "ROXUL COMFORTBOARD IS" 1-1/4 in.
- NORDIC X-LAM 6-7/8 in.
Fire-resistance rating

<table>
<thead>
<tr>
<th>FRR (a)</th>
<th>1.5 h</th>
</tr>
</thead>
</table>

Thermal resistance

<table>
<thead>
<tr>
<th>RSI / R</th>
<th>n.a. / n.a.</th>
</tr>
</thead>
</table>

Acoustic ratings

<table>
<thead>
<tr>
<th>STC (b) / FSTC</th>
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</tr>
</thead>
<tbody>
<tr>
<td>IIC (b) / FIIC</td>
<td>58 / n.a.</td>
</tr>
</tbody>
</table>

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.
b) Acoustic performance based on a CLT thickness of 131 mm (5-1/8 in.).

- LAMINATED FLOORING 3/8 in.
- UNDERLAY OF TYPE “ROBERTS SOFT STRIDE” 1/8 in.
- PREFABRICATED CONCRETE TOPPING 1-1/2 in.
- UNDERLAY OF TYPE “REGUPOL SONUS WAVE” 5/8 in.
- TONGUE AND GROOVE OSB SHEATHING 3/4 in.
- WOOD RAFTERS 2 in. X 3 in. @ 24 in. O.C.
- 1 ROW OF FIBERGLASS INSULATION 2-1/2 in.
- RUBBER MEMBRANE BANDS 3/8 in. UNDER RAFTERS
- NORDIC X-LAM 6-7/8 in.
Fire-resistance rating  
FRR\(^{(a)}\)  1 h

Thermal resistance  
RSI / R  n.a. / n.a.

Acoustic ratings  
STC / FSTC  65 / n.a.
IIC / FIIC  62 / n.a.

---

a) The fire-resistance rating is based on a span of 12 feet and on a uniform load of 90 psf.

- LAMINATED FLOORING 3/8 in.
- UNDERLAY OF TYPE “ROBERTS SOFT STRIDE” 1/8 in.
- PREFabricATED CONCRETE TOPPING 1-1/2 in.
- UNDERLAY OF TYPE “REGUPOL SONUS WAVE” 5/8 in.
- TONGUE AND GROOVE OSB SHEATHING 3/4 in.
- WOOD RAFTERS 2 in. X 3 in. @ 24 in. O.C.
- SILICA SAND (#71) 2 in.
- RUBBER MEMBRANE BANDS 3/8 in. UNDER RAFTERS
- POLYETHYLENE SHEETING 6 mil
- NORDIC LAM DECKING 3-1/2 in.
NORDIC LAM+
NORDIC X-LAM
NS-DA2

ROOF

4
**R1**

- **Roof NS-DA2300-US**

**Fire-resistance rating**

<table>
<thead>
<tr>
<th>FRR&lt;sup&gt;(a)&lt;/sup&gt;</th>
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**Thermal resistance**

<table>
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</table>

**Acoustic ratings**

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>IIC / FIIC</td>
<td>n.a. / n.a.</td>
</tr>
</tbody>
</table>

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**a)** The fire-resistance rating is based on a span of 12 feet and on a uniform load of 80 psf.

- TWO-LAYER ELASTOMERIC MEMBRANE ROOFING
- ROOFING UNDERLAY (UP TO THE DESIGNER)
- 2 ROWS OF POLYISOCYANURATE INSULATION 3-1/2 in. EA.
- VAPOR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR (^{(a)})</th>
<th>1.5 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal resistance</td>
<td>RSI / R</td>
<td>8.2 / 47</td>
</tr>
<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC</td>
<td>n.a. / n.a.</td>
</tr>
<tr>
<td></td>
<td>IIC / FIIC</td>
<td>n.a. / n.a.</td>
</tr>
</tbody>
</table>

\(^{(a)}\) The fire-resistance rating is based on a span of 12 feet and on a uniform load of 80 psf.

- TWO-LAYER ELASTOMERIC MEMBRANE ROOFING
- ROOFING UNDERLAY (UP TO THE DESIGNER)
- 2 ROWS OF POLYISOCYANurate INSULATION 3-1/2 in. EA.
- VAPOR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
- Furring CHANNELS 5/8 in. @ 16 in. O.C.
- 1 TYPE X GYPSUM BOARD 5/8 in.
Fire-resistance rating  
FRR (a) 1 h 

Thermal resistance  
RSI / R 7.9 / 45 

Acoustic ratings  
STC / FSTC STC / FSTC n.a. / n.a. 
IIC / FIIC IIC / FIIC n.a. / n.a. 

(a) The fire-resistance rating is based on a span of 12 feet and on a uniform load of 80 psf.

- THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE ROOFING
- ROOFING UNDERLAY (UP TO THE DESIGNER)
- 2 ROWS OF POLYISOCYANURATE INSULATION 3-1/2 in. EA.
- VAPOR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
<table>
<thead>
<tr>
<th>Fire-resistance rating</th>
<th>FRR (a)</th>
<th>1.5 h</th>
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</thead>
<tbody>
<tr>
<td>Thermal resistance</td>
<td>RSI / R</td>
<td>8.2 / 47</td>
</tr>
<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC</td>
<td>n.a. / n.a.</td>
</tr>
<tr>
<td></td>
<td>IIC / FIIC</td>
<td>n.a. / n.a.</td>
</tr>
</tbody>
</table>

(a) The fire-resistance rating is based on a span of 12 feet and on a uniform load of 80 psf.

- THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE ROOFING
- ROOFING UNDERLAY (UP TO THE DESIGNER)
- 2 ROWS OF POLYISOCYANurate INSULATION 3-1/2 in. EA.
- VAPOR BARRIER MEMBRANE
- NORDIC X-LAM 4-1/8 in.
- FURRING CHANNELS 5/8 in. @ 16 in. O.C.
- 1 TYPE X GYPSUM BOARD 5/8 in.
Fire-resistance rating
FRR (a) 1.5 h

Thermal resistance
RSI / R 7.5 / 43

Acoustic ratings
STC / FSTC n.a. / n.a.
IIC / FIIC n.a. / n.a.

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- TWO-LAYER ELASTOMERIC MEMBRANE ROOFING
- ROOFING UNDERLAY (UP TO THE DESIGNER)
- 2 ROWS OF POLYISOCYANURATE INSULATION 3 in. EA.
- VAPOR BARRIER MEMBRANE
- NORDIC X-LAM 6-7/8 in.
Fire-resistance rating | FRR (a) | 2 h
---|---|---
Thermal resistance | RSI / R | 7.7 / 44
Acoustic ratings | STC / FSTC | n.a. / n.a.
IIC / FIIC | n.a. / n.a.

(a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- TWO-LAYER ELASTOMERIC MEMBRANE ROOFING
- ROOFING UNDERLAY (UP TO THE DESIGNER)
- 2 ROWS OF POLYISOCYANURATE INSULATION 3 in. EA.
- VAPOR BARRIER MEMBRANE
- NORDIC X-LAM 6-7/8 in.
- FURRING CHANNELS 5/8 in. @ 16 in. O.C.
- 1 TYPE X GYPSUM BOARD 5/8 in.
Fire-resistance rating | FRR (a) | 2 h
---|---|---
Thermal resistance | RSI / R | 7.7 / 44
Acoustic ratings | STC / FSTC | n.a. / n.a.
IIC / FIIC | n.a. / n.a.

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- TWO-LAYER ELASTOMERIC MEMBRANE ROOFING
- ROOFING UNDERLAY (UP TO THE DESIGNER)
- 2 ROWS OF POLYISOCYANURATE INSULATION 3 in. EA.
- VAPOR BARRIER MEMBRANE
- NORDIC X-LAM 6-7/8 in.
- SUSPENDED CEILING:
  - METALLIC HANGERS 5-3/4 in.
  - CHANNEL IRONS 1-1/2 in. @ 48 in. O.C.
  - FURRING CHANNELS 7/8 in. @ 16 in. O.C.
  - SOUNDPROOFING MATERIAL 3-5/8 in.
- 1 TYPE X GYPSUM BOARD 5/8 in.
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire-resistance rating</td>
<td>FRR $^{(a)}$ 1.5 h</td>
</tr>
<tr>
<td>Thermal resistance</td>
<td>RSI / R 7.5 / 43</td>
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<tr>
<td>Acoustic ratings</td>
<td>STC / FSTC n.a. / n.a.</td>
</tr>
<tr>
<td>IIC / FIIC</td>
<td>n.a. / n.a.</td>
</tr>
</tbody>
</table>

*Fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.*

- THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE ROOFING
- ROOFING UNDERLAY (UP TO THE DESIGNER)
- 2 ROWS OF POLYSIYCYANURATE INSULATION 3 in. EA.
- VAPOR BARRIER MEMBRANE
- NORDIC X-LAM 6-7/8 in.
<table>
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<tr>
<th>Category</th>
<th>Scale</th>
<th>Date</th>
<th>Page</th>
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</thead>
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| Architecture, Assembly | 1:10  | 2022-02-01 | 4.9 

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<td>Roof</td>
<td>NS-DA2308-US</td>
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</tbody>
</table>

- **Fire-resistance rating**: FRR (a) 2 h
- **Thermal resistance**: RSI / R 7.7 / 44
- **Acoustic ratings**: STC / FSTC n.a. / n.a.; IIC / FIIC n.a. / n.a.

a) The fire-resistance rating is based on a span of 18 feet and on a uniform load of 90 psf.

- THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE ROOFING
- ROOFING UNDERLAY (UP TO THE DESIGNER)
- 2 ROWS OF POLYISOCYANurate INSULATION 3 in. EA.
- VAPOR BARRIER MEMBRANE
- NORDIC X-LAM 6-7/8 in.
- FURRING CHANNELS 5/8 in. @ 16 in. O.C.
- 1 TYPE X GYPSUM BOARD 5/8 in.
- TWO-LAYER ELASTOMERIC MEMBRANE ROOFING
- ROOFING UNDERLAY (UP TO THE DESIGNER)
- 2 ROWS OF POLYISOCYANurate INSULATION 3-1/2 in. EA.
- VAPOR BARRIER MEMBRANE
- PLYWOOD 1/2 in.
- NORDIC LAM DECKING 3-1/2 in.

a) The fire-resistance rating is based on a span of 12 feet and on a uniform load of 90 psf.