



## MAARS LIVING WALLS

Newtonweg 1  
3846 BJ Harderwijk  
Netherlands

Phone: (908) 456-0037

<http://www.maarslivingwalls.com>

## STRING<sup>2</sup>, METALINE, HORIZON, AND PANORAMA PARTITIONS

### CSI Section:

10 61 50 Demountable Partitions

### 1.0 RECOGNITION

Maars Living Walls String<sup>2</sup>, Metaline, Horizon, and Panorama partition walls recognized in this report have been evaluated for use as interior walls. The structural performance and interior finish classification properties of the String<sup>2</sup>, Metaline, Horizon, and Panorama partition walls comply with the intent of the provisions of the following codes and regulations:

- 2021, 2018, 2015, and 2012 International Building Code® (IBC)
- 2021, 2018, 2015, and 2012 International Residential Code® (IRC)
- 2022 California Building Code® (CBC) – Supplement attached
- 2023 Los Angeles Building Code® (LABC) – Supplement attached
- 2023 and 2020 Florida Building Code, Building (FBC, Building) – Supplement attached

### 2.0 LIMITATIONS

Use of the partition walls recognized in this report is subject to the following limitations:

**2.1** The Maars Living Walls systems shall be manufactured, identified, and installed in accordance with this report, the applicable code, and the manufacturer's published installation instructions. In the event of a conflict, the more restrictive shall govern.

**2.2.** The maximum partition height shall be as indicated in Section 4.6 of this report.

**2.3** Panel installation shall be limited to interior, non-load-bearing applications.

**2.4** Lateral bracing of the Maars Living Walls System ceiling track shall be independent of the building's suspended ceiling panels and their supporting grid, where applicable, and shall conform to the requirements of this report, unless

additional design is provided by a registered design professional and approved by the building official.

**2.5** String<sup>2</sup> and Metaline glazed panels shall be captured within the glazing pocket(s) of the extruded aluminum tracks and posts at all four sides of the panel.

**2.6** All glazing shall be safety glazing complying with IBC Section 2406 and IRC Section R308.

**2.7** Maars partition wall systems are limited to a maximum design story drift of 0.020  $h_{sx}$  in accordance with Section 12.12 of ASCE/SEI 7.

**2.8** The Maars Living Walls String<sup>2</sup>, Metaline, Horizon, and Panorama partition walls recognized in this report are produced by Maars Living Walls in Harderwijk, The Netherlands.

### 3.0 PRODUCT USE

#### 3.1 Installation

**3.1.1 Top Track.** Top tracks shall be anchored to the structural soffit above using fasteners (Figures 3 and 4 of this report) or the building floor or roof structure above, braced independently of any suspended ceilings. Metal bracing shall be fastened to the existing structure above at a maximum spacing of 4 feet (1.2 m) at a 1:1 slope (Figures 5 to 8 and Table 5 of this report). The capacity of the existing structure to support the partition loads is beyond the scope of this report and shall be determined by the design professional and approved by the building official.

**3.1.2 Bottom Track.** The bottom track shall be fastened to the floor with 1/4-inch (6.4 mm) diameter Simpson Strong-Tie Titen HD screw anchors, recognized in ICC ES ESR-2713. The Titen HD screw anchors shall be installed in accordance with ICC ES ESR-2713 and the manufacturer's published instructions, with a minimum drilled hole depth of 2<sup>5</sup>/<sub>8</sub> inches (67 mm) and a minimum embedment depth of 1<sup>15</sup>/<sub>16</sub> inches (49 mm) into normalweight or lightweight concrete. The anchors shall be installed with a maximum spacing of four feet (1.2 m), with a minimum of two anchors per panel.

**3.1.3 Panels.** The Panorama and Horizon glazed panels are inserted into and supported by the top and bottom tracks. The String<sup>2</sup> and Metaline solid and double-glazed panels are inserted into the top and bottom tracks and non-load-bearing clamping studs are installed between each panel.

**3.1.4 Fasteners for Aluminum Members:** Fasteners connecting aluminum members shall be 300 series stainless, hot-dipped galvanized, or electro-galvanized steel in accordance with Section M7 of the Aluminum Design Manual.



**3.2 Design.** The system may be used in Risk Categories I to IV of IBC Section 1604.5, including Essential Facilities, and in Seismic Design Categories A through F for the allowable  $S_{DS}$  values given in [Tables 1](#) through [4](#) of this report.

Anchorage of the Maars Living Walls System floor track shall conform to the requirements of this report, unless additional analyses are provided by a registered design professional and approved by the building official.

In Seismic Design Categories A and B, the minimum panel width shall be 6 inches (152 mm) and each panel shall have a minimum of two floor anchors.

In Seismic Design Categories C to F, the maximum  $S_{DS}$ , mapped short-period design spectral response acceleration, shall not exceed that tabulated in [Tables 1](#), [2](#), [3](#), or [4](#) of this report for each wall type or configuration.

When the wall systems are installed in accordance with this report and the manufacturer's published instructions, the allowable wall systems strength exceeds the greater of the 5 psf (240 N/m<sup>2</sup>) transverse design load specified in 2021 IBC Section 1607.16, 2018 IBC Section 1607.15, or 2015 and 2012 IBC Section 1607.14, or the seismic design forces for nonstructural components in Seismic Design Categories A and B, where  $I_p = 1.0$ . For forces in Seismic Design Categories A and B where  $I_p > 1.0$  and in Seismic Design Categories C through F, the limitations provided in [Tables 1](#) through [4](#) of this report shall apply.

**3.3 Interior Finish:** The panels comply with IBC Section 803.1.2 and may be used in locations specified in IBC Section 803.13 and Table 803.13 based on the permitted interior finish classification. Interior finish classifications for panel finish materials are as shown in Table 6 of this report. The panels comply with IRC Section 302.9 and may also be used in any location under the IRC

## 4.0 PRODUCT DESCRIPTION

**4.1 General:** The Maars partition wall systems are demountable, floor-to-ceiling, non-load-bearing, interior wall partition systems consisting of solid and glazed panels on aluminum or steel tracks and posts that are designed to interface and connect with one another or with existing building walls.

**4.2 String<sup>2</sup> Wall System:** The String<sup>2</sup> wall system consists of galvanized steel panels with plasterboard backing, melamine-finished particle board panels or veneer-finished gypsum board panels on galvanized floor and ceiling tracks, and upright stud sections. Double-glazed panels are also available and are installed on steel or extruded aluminum tracks and posts. Wall panels may be arranged with <sup>3</sup>/<sub>16</sub>-inch (5 mm) joints or installed tight with a horizontal or vertical orientation. Aluminum or steel door frames may be installed and accommodate different door materials and thicknesses.

**4.3 Metaline Wall System:** The Metaline wall system consists of galvanized steel panels with plasterboard backing and steel panels on galvanized steel floor and ceiling tracks and steel or aluminum upright stud sections. Double-glazed panels are also available and are installed on aluminum or steel tracks and posts. Wall panels are placed tight in a horizontal and/or vertical orientation. Aluminum or steel door frames may be installed and accommodate different door materials and thicknesses.

**4.4 Panorama Wall System:** The Panorama wall system consists of single-glazed and double-glazed panels on extruded aluminum tracks without vertical frames between glass panes. Glass panels are connected by transparent silicon tape, polyethylene terephthalate or polycarbonate sections. Glass panels are also available with convex/concave worked edges. Panorama is fully compatible with String<sup>2</sup>. The wall panels are arranged tight for glazed panels and with <sup>3</sup>/<sub>16</sub>-inch (5 mm) joints for String<sup>2</sup> solid panels. Aluminum or steel door frames may be installed and accommodate different door materials and thicknesses.

**4.5 Horizon Wall System:** The Horizon wall system consists of single-glazed panels on aluminum tracks without vertical frames between glass panes. Glass panels are connected by transparent silicon tape, polyethylene terephthalate or polycarbonate sections. Glass panels are also available with convex/concave worked edges. Horizon is fully compatible with Metaline and String<sup>2</sup>. Aluminum or steel doorframes may be installed and accommodate different door materials and thicknesses.

## 4.6 Components and Materials

### 4.6.1 Solid Panels

**4.6.1.1 String<sup>2</sup> Solid Panels:** String<sup>2</sup> solid panels are 3<sup>15</sup>/<sub>16</sub> inches (100 mm) thick. Configurations include <sup>1</sup>/<sub>32</sub>-inch (0.8 mm) galvanized steel panels with <sup>1</sup>/<sub>2</sub>-inch (12.5 mm) plasterboard backing, <sup>11</sup>/<sub>16</sub>-inch (18 mm) melamine-finished particle board panels, and vinyl-covered gypsum panels. The interior cavity is filled with fiberglass or mineral wool insulation. Standard panel widths are 47<sup>1</sup>/<sub>4</sub> inches (1200 mm) or 35<sup>7</sup>/<sub>16</sub> inches (900 mm) and maximum panel height is 10 feet-2 inches (3100 mm). All visible metal parts may receive a surface treatment of epoxy powder coating approximately 0.0031 inch (80 μm) thick.

**4.6.1.2 Metaline Solid Panels:** Metaline solid panels are 3<sup>1</sup>/<sub>4</sub> inches (82 mm) thick. Configurations include <sup>1</sup>/<sub>32</sub>-inch (0.8 mm) galvanized steel with <sup>1</sup>/<sub>2</sub> inch (12.5 mm) plasterboard backing and metal panels. The interior is filled with fiberglass or mineral wool insulation. Standard panel widths are 47<sup>1</sup>/<sub>4</sub> inches (1200 mm) or 35<sup>7</sup>/<sub>16</sub> inches (900 mm) and maximum panel height is 10 feet-2 inches (3100 mm). All visible metal parts may receive a surface treatment of epoxy powder coating approximately 0.0031 inch (80 μm) thick.



### 4.6.2 Glazed Panels

**4.6.2.1 String<sup>2</sup> Glazed Panels:** String<sup>2</sup> glazed panels are 3<sup>15</sup>/<sub>16</sub> inches (100 mm) thick. The glass is available in <sup>5</sup>/<sub>32</sub>, <sup>1</sup>/<sub>4</sub>, or <sup>5</sup>/<sub>16</sub>-inch (4, 6, or 8 mm) thicknesses with beading or flush glass. A variety of glazing finishes are available such as sandblasting, film, and painted glass. Standard panel widths are 47<sup>1</sup>/<sub>4</sub> inches (1200 mm) or 35<sup>7</sup>/<sub>16</sub> inches (900 mm) and maximum panel height is 10 feet-2 inches (3100 mm). The glass shall comply with IBC Section 2406.2 and IRC Section R308.3.1 as safety glazing and shall conform with the Class A test criteria in ANSI Z97.1.

**4.6.2.2 Metaline Glazed Panels:** Metaline glazed panels are 3<sup>1</sup>/<sub>4</sub> inches (82 mm) thick. The glass is available in <sup>5</sup>/<sub>32</sub>, <sup>1</sup>/<sub>4</sub>, or <sup>5</sup>/<sub>16</sub>-inch (4, 6, or 8 mm) thicknesses. A variety of glazing finishes are available such as sandblasting, film, painted glass, etc. Standard panel widths are 47<sup>1</sup>/<sub>4</sub> inches (1200 mm) or 35<sup>7</sup>/<sub>16</sub> inches (900 mm) and maximum panel height is 10 feet-2 inches (3100 mm). The glass shall comply with IBC Section 2406.2 and IRC Section R308.3.1 as safety glazing and shall conform with the Class A test criteria in ANSI Z97.1.

**4.6.2.3 Panorama Glazed Panels:** Panorama glazed panels are 3<sup>15</sup>/<sub>16</sub> inches (100 mm) thick. The glass is available in <sup>25</sup>/<sub>64</sub> or <sup>15</sup>/<sub>32</sub>-inch (10 or 12 mm) thicknesses. Glass panels are available with convex/concave worked edges. A variety of glazing finishes are available such as sandblasting, film, painted glass, etc. Standard panel widths are 47<sup>1</sup>/<sub>4</sub> inches (1200 mm) or 35<sup>7</sup>/<sub>16</sub> inches (900 mm). The maximum panel height is 8 feet-6 inches (2590 mm) for 10 mm tempered or laminated glazing and 10 feet-4 inches (3150 mm) for 12 mm tempered or laminated. The glass shall comply with IBC Section 2406.2 and IRC Section R308.3.1 as safety glazing and shall conform with the Class A test criteria in ANSI Z97.1.

**4.6.2.4 Horizon Glazed Panels:** Horizon glazed panels are 1<sup>3</sup>/<sub>8</sub> inches (35 mm) thick. The glass is available in <sup>3</sup>/<sub>8</sub>, <sup>1</sup>/<sub>2</sub>, or <sup>5</sup>/<sub>8</sub>-inch (10, 12, or 16 mm) thicknesses. Glass panels are available with convex/concave worked edges. A variety of glazing finishes are available such as sandblasting, film, painted glass, etc. The maximum panel height is 8 feet (2438 mm) for 10 mm tempered glazing, 8 feet-7 inches (2616 mm) for 10 mm laminated glazing, 9 feet-11 inches (3023 mm) for 12 mm tempered glazing, 9 feet-11 inches (2997 mm) for 12 mm laminated glazing, and 12 feet (3658 mm) for 16 mm laminated glazing. The glass shall comply with IBC Section 2406.2 and IRC Section R308.3.1 as safety glazing and shall conform with the Class A test criteria in ANSI Z97.1.

### 4.6.3 Tracks, Posts, and Horizontal Members:

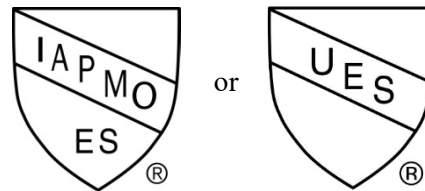
**4.6.3.1 Steel:** The members are produced from cold-formed steel ASTM A1008 SS Grade 30 with a minimum yield strength of 30,000 psi (206 MPa).

**4.6.3.2 Aluminum:** The members are extruded from 6060-T66 aluminum alloy with a minimum yield strength of 21,000 psi (150 MPa)

**4.6.4 Bracing Members:** Bracing members comply with Table 5 of this report and AISI S240 Sections A3, A4, and A5.

## 5.0 IDENTIFICATION

Packaging is identified with the manufacturer's name (Maars), manufacturing address, product name, approved inspection agency, and evaluation report number (ER-441). The glazed panels described in Section 4.6.2 of this report contain safety glazing, which shall bear the identification required by IBC Section 2406.3 and IRC Section R308.1. Either IAPMO UES Mark of Conformity may also be used as shown below:



IAPMO UES ER-441

## 6.0 SUBSTANTIATING DATA

**6.1** Reports of Surface Burning Characteristics in accordance with ASTM E84.

**6.2** Structural calculations.

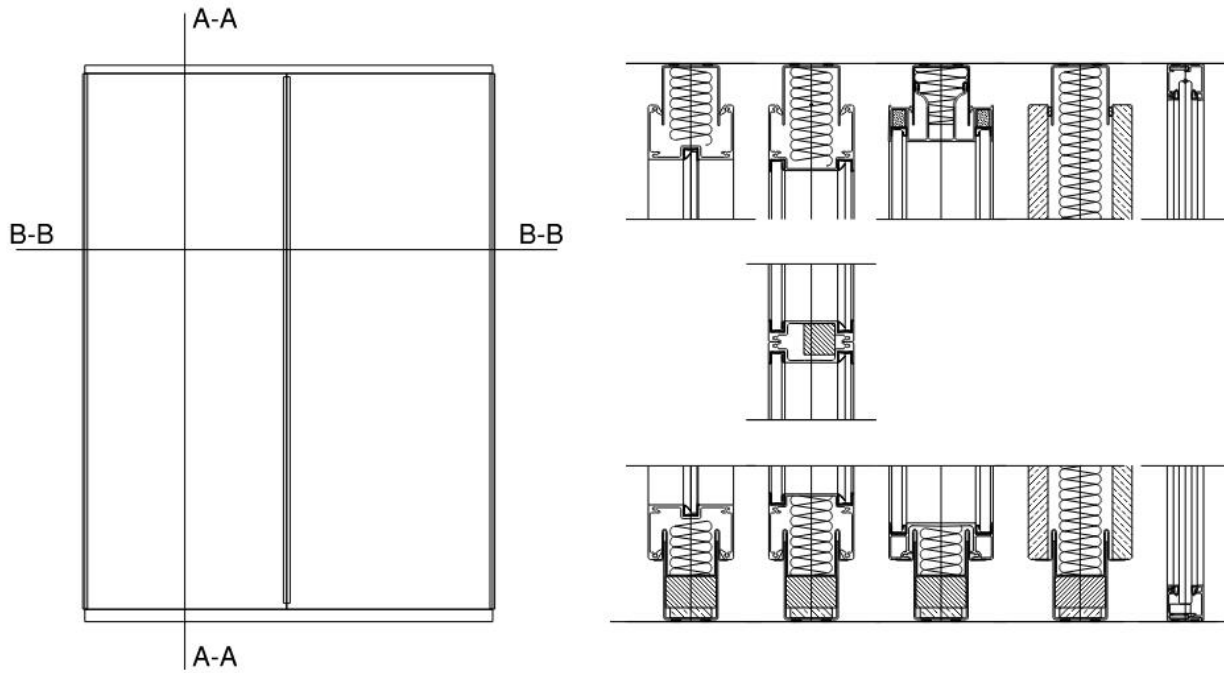
**6.3** Manufacturer's quality documentation, descriptive literature, and installation instructions.

**6.4** Test reports are from laboratories in compliance with ISO/IEC 17025.

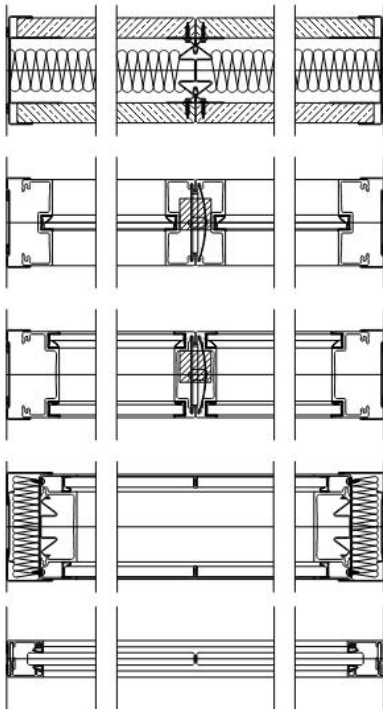
## 7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by IAPMO Uniform Evaluation Service on Maar's Living Walls to assess its conformance to the codes and standards shown in Section 1.0 of this report and documents the product's certification. The Products are manufactured at locations noted in Section 2.8 of this report under a quality control program with periodic inspection under the supervision of IAPMO UES.

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email us at [info@uniform-es.org](mailto:info@uniform-es.org)

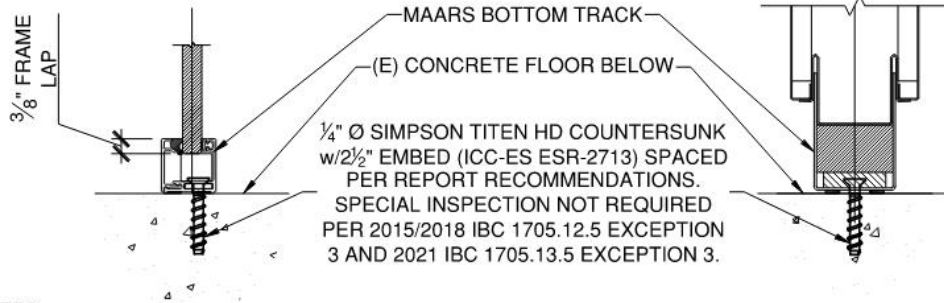


TYPICAL SECTION A-A



TYPICAL SECTION B-B

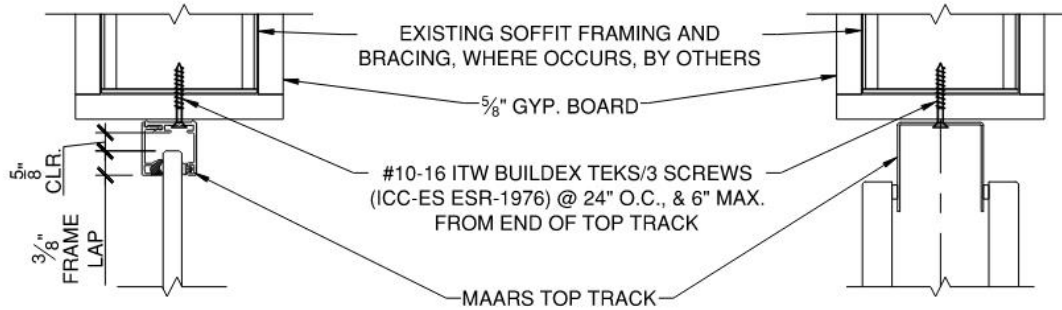
FIGURE 1  
TYPICAL MAARS WALL



NOTES:

1. HOLES THRU BASE TRACK MAX. 1/16" OVERSIZED, TYP.
2. MINIMUM CONCRETE STRENGTH OF  $f'_c = 2,500$  PSI.
3. MINIMUM (2) ANCHORS AT GIVEN MAX. O.C. SPACING PER BOTTOM TRACK SECTION.

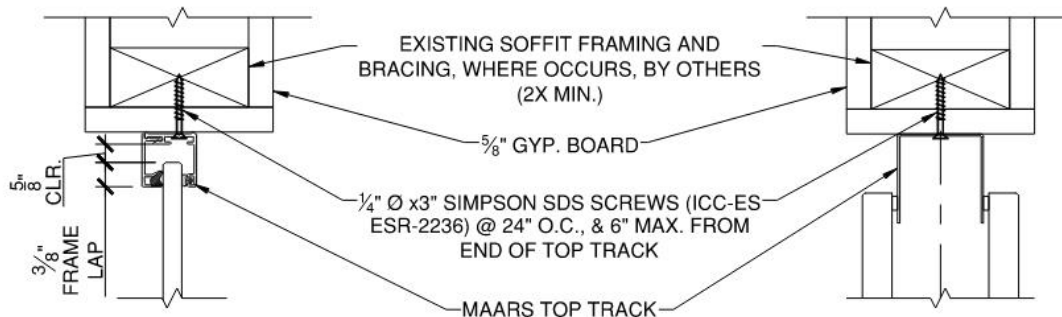
**FIGURE 2  
BOTTOM TRACK ANCHORAGE**



NOTES:

1. MINIMUM EDGE DISTANCE OF SCREWS = 1.5 x ANCHOR DIAMETER
2. PENETRATION OF SCREWS THROUGH JOINED MATERIAL SHOULD NOT BE LESS THAN 3 EXPOSED THREADS.
3. MINIMUM (2) ANCHORS AT GIVEN MAX. O.C. SPACING PER TOP TRACK SECTION.

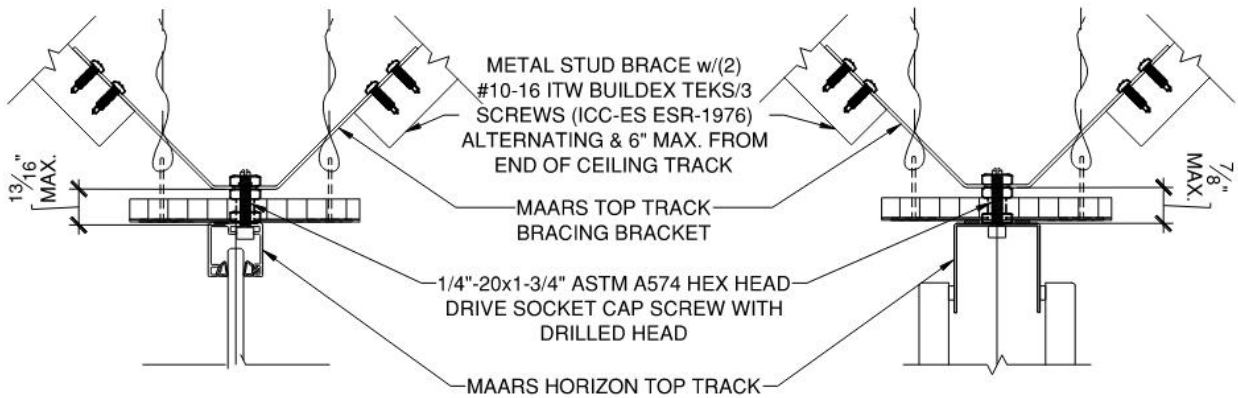
**FIGURE 3  
TOP TRACK ANCHORAGE TO CFS SOFFIT BY OTHERS**



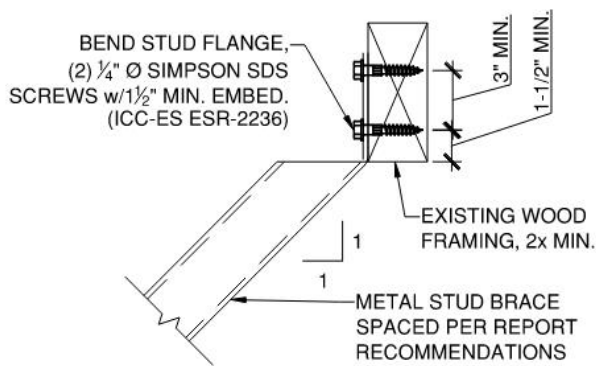
NOTES:

1. MINIMUM EDGE DISTANCE OF SCREWS = 1.5 x ANCHOR DIAMETER
2. MINIMUM EMBEDMENT OF SCREW = 1-1/2"
3. MINIMUM (2) ANCHORS AT GIVEN MAX. O.C. SPACING PER TOP TRACK SECTION.

**FIGURE 4  
TOP TRACK ANCHORAGE TO WOOD FRAMED SOFFIT BY OTHERS**

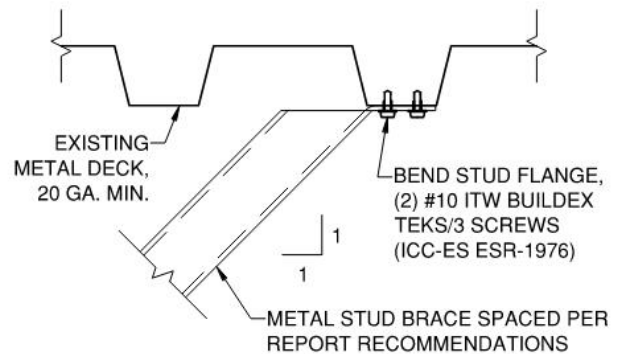


**FIGURE 5  
TOP TRACK BRACING**



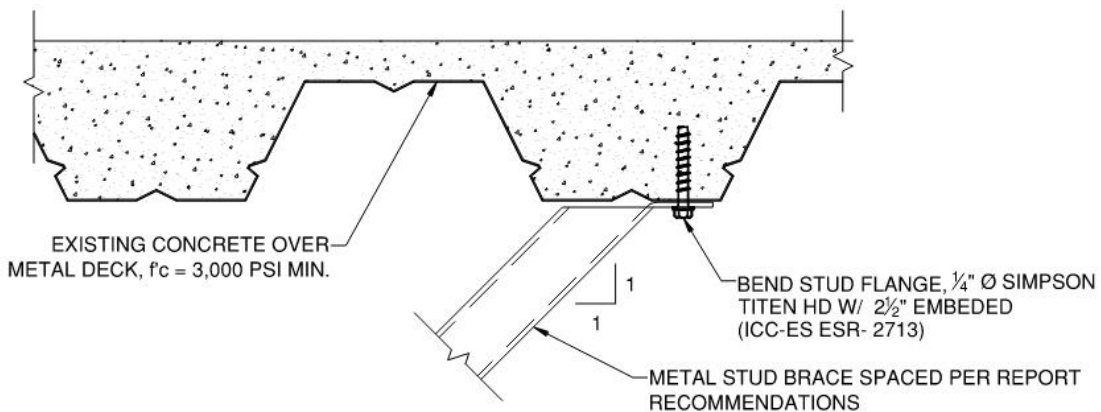
- NOTES:  
1. MINIMUM STEEL EDGE DISTANCE OF SCREWS = 1.5 x ANCHOR DIAMETER

**FIGURE 6  
KICKER BRACE ANCHORAGE TO WOOD**



- NOTES:  
1. MINIMUM EDGE DISTANCE OF  
2. SCREWS = 1.5 x ANCHOR DIAMETER

**FIGURE 7  
KICKER BRACE ANCHORAGE TO STEEL**



**FIGURE 8  
KICKER BRACE ANCHORAGE TO CONCRETE**



**TABLE 1**  
**STRING<sup>2</sup> S<sub>ds</sub> LIMITATIONS**  
**(SEISMIC DESIGN CATEGORIES C to F)**

| Wall Type | Wall Type Description  | Occupancy Category | Maximum S <sub>ds</sub> |                 | Maximum Brace Spacing (feet) |
|-----------|--|--------------------|-------------------------|-----------------|------------------------------|
|           |  |                    | 4 ft Wide Panel         | 3 ft Wide Panel |                              |
| 1a        | Steel Panels with Steel Vertical Components, No Horizontal Components, 2 anchors per panel                 | I, II, III         | 2.360                   | 2.487           | 4                            |
|           |  | IV                 | 1.569                   | 2.274           | 4                            |
| 1b        | Steel Panels with Steel Vertical Components, No Horizontal Components, 2 anchors per panel                 | I, II, III         | 2.487                   | 2.487           | 4                            |
|           |  | IV                 | 2.425                   | 2.478           | 4                            |
| 2a        | Wood Panels with Steel Vertical Components, No Horizontal Components, 2 anchors per panel                  | I, II, III         | 2.487                   | 2.487           | 4                            |
|           |  | IV                 | 1.735                   | 2.274           | 4                            |
| 2b        | Wood Panels with Steel Vertical Components, No Horizontal Components, 3 anchors per panel                  | I, II, III         | 2.487                   | 2.487           | 4                            |
|           |  | IV                 | 2.425                   | 2.478           | 4                            |
| 3a        | Double Glazed Panels with Steel Vertical Components, No Horizontal Components, 2 anchors per panel         | I, II, III         | 1.568                   | 2.173           | 4                            |
|           |  | IV                 | 1.045                   | 1.449           | 2                            |
| 3b        | Double Glazed Panels with Steel Vertical Components, No Horizontal Components, 3 anchors per panel         | I, II, III         | 1.568                   | 2.173           | 4                            |
|           |  | IV                 | 1.045                   | 1.449           | 2                            |
| 4a        | Double Glazed Panels with Aluminum 35mm Vertical Components, No Horizontal Components, 2 anchors per panel | I, II, III         | 1.120                   | 1.568           | 4                            |
|           |  | IV                 | 0.747                   | 1.045           | 2                            |
| 4b        | Double Glazed Panels with Aluminum 35mm Vertical Components, No Horizontal Components, 3 anchors per panel | I, II, III         | 1.120                   | 1.568           | 4                            |
|           |  | IV                 | 0.747                   | 1.045           | 2                            |
| 5a        | Double Glazed Panels with Aluminum 44mm Vertical Components, No Horizontal Components, 2 anchors per panel | I, II, III         | 1.759                   | 2.442           | 4                            |
|           |  | IV                 | 1.172                   | 1.628           | 2                            |
| 5b        | Double Glazed Panels with Aluminum 44mm Vertical Components, No Horizontal Components, 3 anchors per panel | I, II, III         | 1.759                   | 2.442           | 4                            |
|           |  | IV                 | 1.172                   | 1.628           | 2                            |
| 6a        | Double Glazed Panels with Steel Vertical & Horizontal Components, 2 anchors per panel                      | I, II, III         | 2.487                   | 2.487           | 4                            |
|           |  | IV                 | 1.897                   | 1.706           | 2                            |
| 6b        | Double Glazed Panels with Steel Vertical & Horizontal Components, 3 anchors per panel                      | I, II, III         | 2.487                   | 2.352           | 4                            |
|           |  | IV                 | 1.897                   | 1.856           | 2                            |
| 7a        | Double Glazed Panels with Aluminum 35mm Vertical & Horizontal Components, 2 anchors per panel              | I, II, III         | 2.487                   | 2.487           | 4                            |
|           |  | IV                 | 2.167                   | 1.706           | 2                            |
| 7b        | Double Glazed Panels with Aluminum 35mm Vertical & Horizontal Components, 3 anchors per panel              | I, II, III         | 2.487                   | 2.487           | 4                            |
|           |  | IV                 | 2.424                   | 1.856           | 2                            |
| 8a        | Double Glazed Panels with Aluminum 44mm Vertical & Horizontal Components, 2 anchors per panel              | I, II, III         | 2.487                   | 2.487           | 4                            |
|           |  | IV                 | 2.167                   | 1.706           | 2                            |
| 8b        | Double Glazed Panels with Aluminum 44mm Vertical & Horizontal Components, 3 anchors per panel              | I, II, III         | 2.487                   | 2.487           | 4                            |
|           |  | IV                 | 2.424                   | 1.856           | 2                            |

For SI: 1 foot = 0.305 m



**TABLE 2  
METALINE S<sub>DS</sub> LIMITATIONS  
(SEISMIC DESIGN CATEGORIES C to F)**

| Wall Type | Wall Type Description   | Occupancy Category | Maximum S <sub>DS</sub> |                | Required Brace Spacing (feet) |
|-----------|---|--------------------|-------------------------|----------------|-------------------------------|
|           |   |                    | 4 ft Wide Panel         | 3ft Wide Panel |                               |
| 1a        | Steel Panels with Steel Vertical Components, No Horizontal Components, 2 anchors per panel            | I, II, III         | 2.487                   | 2.487          | 4                             |
|           |   | IV                 | 2.177                   | 2.427          | 4                             |
| 1b        | Steel Panels with Steel Vertical Components, No Horizontal Components, 3 anchors per panel            | I, II, III         | 2.487                   | 2.487          | 4                             |
|           |   | IV                 | 2.274                   | 2.478          | 4                             |
| 2a        | Steel Panels with Aluminum Vertical Components, No Horizontal Components, 2 anchors per panel         | I, II, III         | 2.487                   | 2.487          | 4                             |
|           |   | IV                 | 2.177                   | 2.427          | 4                             |
| 2b        | Steel Panels with Aluminum Vertical Components, No Horizontal Components, 3 anchors per panel         | I, II, III         | 2.487                   | 2.487          | 4                             |
|           |   | IV                 | 2.274                   | 2.478          | 4                             |
| 3a        | Wood Panels with Steel Vertical and Horizontal Components, 2 anchors per panel                        | I, II, III         | 2.487                   | 2.487          | 4                             |
|           |   | IV                 | 2.177                   | 2.427          | 4                             |
| 3b        | Wood Panels with Steel Vertical and Horizontal Components, 3 anchors per panel                        | I, II, III         | 2.487                   | 2.487          | 4                             |
|           |   | IV                 | 2.274                   | 2.478          | 4                             |
| 4a        | Double Glazed Panels with Steel Vertical Components, No Horizontal Components, 2 anchors per panel    | I, II, III         | 1.523                   | 1.523          | 4                             |
|           |   | IV                 | 1.016                   | 1.016          | 2                             |
| 4b        | Double Glazed Panels with Steel Vertical Components, No Horizontal Components, 3 anchors per panel    | I, II, III         | 2.151                   | 2.151          | 4                             |
|           |   | IV                 | 1.434                   | 1.434          | 2                             |
| 5a        | Double Glazed Panels with Aluminum Vertical Components, No Horizontal Components, 2 anchors per panel | I, II, III         | 1.411                   | 1.411          | 4                             |
|           |   | IV                 | 0.941                   | 0.941          | 2                             |
| 5b        | Double Glazed Panels with Aluminum Vertical Components, No Horizontal Components, 3 anchors per panel | I, II, III         | 2.016                   | 2.016          | 4                             |
|           |   | IV                 | 1.344                   | 1.344          | 2                             |
| 6a        | Double Glazed Panels with Steel Vertical and Horizontal Components, 2 anchors per panel               | I, II, III         | 2.439                   | 2.487          | 4                             |
|           |   | IV                 | 1.621                   | 1.806          | 2                             |
| 6b        | Double Glazed Panels with Steel Vertical and Horizontal Components, 3 anchors per panel               | I, II, III         | 2.487                   | 2.487          | 4                             |
|           |   | IV                 | 1.687                   | 1.836          | 2                             |
| 7a        | Double Glazed Panels with Aluminum Vertical and Horizontal Components, 2 anchors per panel            | I, II, III         | 1.747                   | 1.747          | 4                             |
|           |   | IV                 | 1.165                   | 1.165          | 2                             |
| 7b        | Double Glazed Panels with Aluminum Vertical and Horizontal Components, 3 anchors per panel            | I, II, III         | 2.240                   | 2.240          | 4                             |
|           |   | IV                 | 1.493                   | 1.493          | 2                             |

For SI: 1 ft. = 0.305 m





**TABLE 3  
PANORAMA S<sub>ds</sub> LIMITATIONS  
(SEISMIC DESIGN CATEGORIES C to F)**

| Wall Type | Wall Type Description                                 | Occupancy Category | Max Wall Height (feet) | Maximum S <sub>ds</sub> | Required Brace Spacing (feet) |
|-----------|---|--------------------|------------------------|-------------------------|-------------------------------|
| 1         | Double Glazed Wall, 10mm Glazing, 2 Anchors per Panel | I, II, III         | 8.500                  | 0.914                   | 4                             |
|           |   | IV                 | 8.500                  | 0.609                   | 4                             |
| 2         | Double Glazed Wall, 12mm Glazing, 2 Anchors per Panel | I, II, III         | 10.333                 | 0.772                   | 4                             |
|           |   | IV                 | 10.333                 | 0.514                   | 4                             |
| 3         | Single Glazed Wall, 10mm Glazing, 2 Anchors per Panel | I, II, III         | 8.500                  | 1.680                   | 4                             |
|           |   | IV                 | 8.500                  | 1.120                   | 4                             |
| 4         | Single Glazed Wall, 12mm Glazing, 2 Anchors per Panel | I, II, III         | 10.333                 | 1.447                   | 4                             |
|           |   | IV                 | 10.333                 | 0.965                   | 4                             |

For SI: 1 ft. = 0.305 m

**TABLE 4  
HORIZON S<sub>ds</sub> LIMITATIONS  
(SEISMIC DESIGN CATEGORIES C to F)**

| Wall Type | Wall Type Description   | Occupancy Category | Max Wall Height (feet) | Maximum S <sub>ds</sub> | Required Brace Spacing (feet) |
|-----------|---|--------------------|------------------------|-------------------------|-------------------------------|
| 1         | 10mm Tempered Single Glazed Walls, 4ft Panels, 2 Anchors per Panel  | I, II, III         | 8.00                   | 1.680                   | 4                             |
|           |   | IV                 | 8.00                   | 1.120                   | 4                             |
| 2         | 10mm Laminated Single Glazed Walls, 4ft Panels, 2 Anchors per Panel | I, II, III         | 8.58                   | 1.680                   | 4                             |
|           |   | IV                 | 8.58                   | 1.120                   | 4                             |
| 3         | 12mm Tempered Single Glazed Walls, 4ft Panels, 2 Anchors per Panel  | I, II, III         | 9.92                   | 1.447                   | 4                             |
|           |   | IV                 | 9.92                   | 0.965                   | 4                             |
| 4         | 12mm Laminated Single Glazed Walls, 4ft Panels, 2 Anchors per Panel | I, II, III         | 9.83                   | 1.447                   | 4                             |
|           |   | IV                 | 9.83                   | 0.965                   | 4                             |
| 5         | 16mm Laminated Single Glazed Walls, 4ft Panels, 2 Anchors per Panel | I, II, III         | 12.00                  | 1.120                   | 4                             |
|           |   | IV                 | 12.00                  | 0.747                   | 4                             |

For SI: 1 ft. = 0.305 m

**TABLE 5  
BRACING OPTIONS**

| Maximum Bracing Length (Feet) | Member Grade (Ksi) | Member Size (Inches)  | Member Designation |
|-------------------------------|--------------------|---|--------------------|
| 7                             | 33                 | 1 <sup>1</sup> / <sub>4</sub> x 2 <sup>1</sup> / <sub>2</sub> x No. 20 ga | 250S125-33         |
| 10                            | 33                 | 1 <sup>3</sup> / <sub>8</sub> x 2 <sup>1</sup> / <sub>2</sub> x No. 20 ga | 250S162-33         |

For SI: 1 ft. = 0.305 m, 1 inch = 25.4 mm; No. 20 ga (minimum base steel thickness) = 0.0375 in. = 0.95 mm; 1 ksi = 6.895 MPa



**TABLE 6<sup>1,2,3</sup>**  
**INTERIOR FINISH CLASSIFICATION**

| <b>MATERIAL</b>                  | <b>CLASS</b> |
|----------------------------------|--------------|
| MELAMINE BOARD                   | B            |
| GYPSUM/VINYL PANEL               | A            |
| GLASS PANEL                      | A            |
| METAL PANEL                      | A            |
| STEEL-COVERED PLASTERBOARD PANEL | A            |

<sup>1</sup> Interior finish classifications are based on tests for flame spread index and smoke-developed index in accordance with ASTM E84.

<sup>2</sup> Interior finish classifications are as set forth in IBC Section 803.1.2

<sup>3</sup> Interior finish classifications comply with requirements in IRC Section 302.9.



## CALIFORNIA SUPPLEMENT

### MAARS HOLDING B.V.

Newtonweg 1

3846 BJ Harderwijk

Netherlands

Phone: (908) 456-0037

<http://www.maarslivingwalls.com>

### STRING<sup>2</sup>, METALINE, HORIZON, AND PANORAMA PARTITIONS

#### CSI Section:

10 61 50 Demountable Partitions

#### 1.0 RECOGNITION

Maars Living Walls String<sup>2</sup>, Metaline, Horizon, and Panorama partition walls as evaluated and represented in UES Evaluation Report ER-441 and with changes as noted in this supplement are satisfactory alternatives for use in buildings built under the following code:

- 2022 California Building Code® (CBC)

#### 2.0 LIMITATIONS

Use of the Maars Living Walls String<sup>2</sup>, Metaline, Horizon, and Panorama partition walls recognized in this report supplement is subject to the following limitations:

**2.1** Maars Living Walls String<sup>2</sup>, Metaline, Horizon, and Panorama partition walls shall comply with the provisions applicable to the 2021, as applicable, in ER-441.

**2.2** Design and Installation shall be in accordance with ER-441 and Chapters 16 and 24 of the CBC.

**2.3** For DSA and HCAI (formerly known as OSHPD) projects, compliance with CBC Section 2403.2.1 is required. Detailed construction documents and detailed shop drawings and analysis assuring safe performance for the specific installation shall be prepared by a Structural Engineer registered in the State of California and submitted to the enforcement agency for approval.

**2.4** This supplement expires concurrently with ER-441.

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email us at [info@uniform-es.org](mailto:info@uniform-es.org)



## CITY OF LOS ANGELES SUPPLEMENT

### MAARS HOLDING B.V.

Newtonweg 1

3846 BJ Harderwijk

Netherlands

Phone: (908) 456-0037

<http://www.maarslivingwalls.com>

## STRING<sup>2</sup>, METALINE, HORIZON, AND PANORAMA PARTITIONS

### CSI Section:

10 61 50 Demountable Partitions

### 1.0 RECOGNITION

Maars Living Walls String<sup>2</sup>, Metaline, Horizon, and Panorama partition walls as evaluated and represented in UES Evaluation Report ER-441 and with changes as noted in the California Supplement and this supplement are satisfactory alternatives for use in buildings built under the following code:

- 2023 City of Los Angeles Building Code (LABC)

### 2.0 LIMITATIONS

Use of the Maars Living Walls String<sup>2</sup>, Metaline, Horizon, and Panorama partition walls recognized in this report supplement is subject to the following limitations:

2.1 The design, installation, conditions of use, and identification of the Maars Living Walls String<sup>2</sup>, Metaline, Horizon, and Panorama partition walls shall be in accordance with the 2022 CBC, as applicable, in the California Supplement.

2.2 Prior to installation, calculations and details demonstrating compliance with this approval report and the 2023 LABC shall be submitted to the structural plan check section for review and approval.

2.3 Plans and calculations shall be prepared, stamped, and signed by a California registered design professional.

2.4 The design, installation, and inspection of the Maars Living Walls String<sup>2</sup>, Metaline, Horizon, and Panorama partition walls shall be in accordance with LABC Chapters 16 and 24, as applicable, due to local amendments to these chapters.

2.5 This supplement expires concurrently with ER-441.

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email us at [info@uniform-es.org](mailto:info@uniform-es.org)



## FLORIDA SUPPLEMENT

### MAARS HOLDING B.V.

Newtonweg 1

3846 BJ Harderwijk

Netherlands

Phone: (908) 456-0037

<http://www.maarslivingwalls.com>

### STRING<sup>2</sup>, METALINE, HORIZON, AND PANORAMA PARTITIONS

#### CSI Section:

10 61 50 Demountable Partitions

#### 1.0 RECOGNITION

Maars Living Walls String<sup>2</sup>, Metaline, Horizon, and Panorama partition walls as evaluated and represented in UES Evaluation Report ER-441 and with changes as noted in this supplement are satisfactory alternatives for use in buildings built under the following code:

- 2023 and 2020 Florida Building Code<sup>®</sup>, Building (FBC, Building)

#### 2.0 LIMITATIONS

Maars Living Walls String<sup>2</sup>, Metaline, Horizon, and Panorama partition walls, as recognized in UES ER-441 and this supplement, are subject to the following limitations:

**2.1** Design requirements shall be determined in accordance with the Florida Building Code<sup>®</sup>, Building.

**2.2** Use and installation of the Maars Living Walls String<sup>2</sup>, Metaline, Horizon, and Panorama partition walls shall be in accordance with the 2021 and 2018 International Building Code<sup>®</sup>, as applicable, provisions of UES ER-441, unless otherwise noted in this supplement.

**2.3** Installation shall be in accordance with Chapters 16 and 24 of the Florida Building Code, Building, as applicable.

**2.4** Compliance with the High-Velocity Hurricane Zone provisions of the Florida Building Code<sup>®</sup>, Building is outside of the scope of this evaluation report.

**2.5** Verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission (or the building official when the report holder does not possess an approval by the Commission), to provide oversight and determine that the products are being manufactured as described in this evaluation report to establish continual product performance shall be provided for products falling under Section (5)(d) of Florida Rule 61G20-3.008.

**2.6** This supplement expires concurrently with ER-441.

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email us at [info@uniform-es.org](mailto:info@uniform-es.org)