**AWP DESIGN GUIDE**

**HOW TO USE THIS GUIDE**

This is a quick reference document intended to provide a wide overview of essential Nichiha Architectural Wall Panels design information. For greater detail and specifics, please also refer to the full installation guides, videos, architectural details, and technical bulletins available at nichiha.com/resources.

Always install products in accordance with the latest installation guidelines and all applicable building codes and other laws, rules, regulations and ordinances. Review all installation instructions and other applicable product documents before installation. This design guide does not include StackedStone and LedgeStone products.

**THE FUNDAMENTALS**

Before you jump into the design process, we recommend taking a minute to familiarize yourself with the dimensions of Nichiha’s family of Architectural Wall Panels.

**AWP1818**

- **Horizontal Installation Only**
- **Stacked or Staggered Layout**
- **Dimensions:** 17-7/8” [H] x 71-9/16” [L]
  - 455mm [H] x 1818mm [L]
- **Thickness:** (unless noted) 5/8” (16mm)

<table>
<thead>
<tr>
<th>Illumination+</th>
<th>Architectural Block+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuff Block+</td>
<td>PlymouthBrick</td>
</tr>
<tr>
<td>Canyon Brick</td>
<td>Mirai</td>
</tr>
<tr>
<td>VintageWood (new)</td>
<td>SandStone</td>
</tr>
<tr>
<td>VintageBrick</td>
<td>CinderBlock 7/8” (21mm) Thickness</td>
</tr>
</tbody>
</table>

**AWP3030**

- **Horizontal or Vertical Installation Allowed**
- **Stacked Layout Only**
- **Dimensions:** 17-7/8” [H] x 119-5/16” [L]
  - 455mm [H] x 3030mm [L]
- **Thickness:** 5/8” (16mm)

<table>
<thead>
<tr>
<th>Illumination+</th>
<th>Ribbed</th>
</tr>
</thead>
<tbody>
<tr>
<td>VintageWood</td>
<td>RoughSawn</td>
</tr>
<tr>
<td>EmpireBlock</td>
<td>IndustrialBlock</td>
</tr>
</tbody>
</table>

* Individual, dimensioned panel profiles can be found on Nichiha’s Detail Finder at nichiha.com/resources/cad

**Individual, dimensioned panel profiles can be found on Nichiha’s Detail Finder at nichiha.com/resources/cad**

- Factory Joint profiles of Illumination 1818 and ArchitecturalBlock differ from TuffBlock’s, which has a wide perimeter reveal.
- Illumination 3030 panels have a wider, soft-U factory joint profile.
- Only panels of the same dimension and thickness may be used directly together without separation via control and/or compression joints.
- Custom color finish of Illumination, TuffBlock panels requires a lead-time.
- Contact a Sales Representative for more information.
**CONTROL JOINTS**

**HORIZONTAL COMPRESSION JOINTS**

On walls wider than 30 feet, when using AWP1818 panels and metal trim outside corners, Vertical Control/Expansion Joints (Double Flange Sealant Backers) are required within 2 to 12 feet of outside corners (on both sides of corner) and then approximately every 30 feet thereafter.

When using AWP1818 panels and Nichiha factory Corners, control joints are required at the factory Corner and then approximately every 30 feet thereafter.

When using AWP3030 panels installed horizontally, vertical control joints or H-molds are required at each vertical joint. Panels may not be butted together and these vertical joints may not be split up or staggered.

Control/Expansion Joints are 10mm (3/8") wide.

**HORIZONTAL/COMPRESSION JOINT REQUIREMENTS**

- Metal Framed projects taller than three stories/45 feet: Place compression joints approximately every 25 feet.
- Wood Framed projects three stories or taller: Compression Joints required at each floor.

Compression Joint requirements:
- Essential Compression Joint Flashing - heavy gauge z-shaped metal flashing or similar, 1/2" (min.) gap between panels at floor lines/plate, and Starter Track.

The Nichiha system works most efficiently when full panels are used. Designing panel layouts symmetrically from the inside-out will help to create less product waste. It is important to keep in mind the actual metric dimensions when considering the modular panel layout, including placement of control and compression joints, and also with respect to sizing window and door openings.

Detailing around openings involves a number of variables such as the depth of the opening and the overall thickness of the wall assembly. For example, a continuous insulation and furring condition with recessed windows will necessitate a jamb, head, and sill return material/finish.

Depending on the dimensions, Nichiha factory Corners or cut panels may be used at jamb, or an alternate material such as metal may be necessary. Nichiha Corners and panel segments may not be used for head and sill return conditions. Please reach out to Nichiha Technical for detailing recommendations.
**HORIZONTAL DESIGN REQUIREMENTS**

**AWP1818 - HORIZONTAL**

- Ultimate Horizontal Starter Track - always level
- Ultimate Clip II - JEL778 for most panels (JEL788 for SandStone, VintageBrick, and CinderBlock only) - 2-1/2 clips per panel edge | 10mm (~3/8") rain screen
- Joint Tab Attachments required between panels at vertical factory joints
- Vertical Control/Expansion Joints (Double Flange Sealant Backer) on 30’+ walls with metal trim outside corners: 2’-12’ from edges + every ~30’ thereafter
- Vertical Control/Expansion Joints with Nichiha Corners plus every ~30’ thereafter
- Vertical Control/Expansion Joints every ~30’ on walls with no outside corners.
- Horizontal/Compression Joints: **Wood Framing** three stories or more = joint at every floor
- Horizontal/Compression Joints: **Metal Framing** over three stories/45’ = joint about every 25’
- Sealant Joints (Single Flange Sealant Backer) or Inside Corner trim at inside corners
- Horizontally cut edges require face fastening with Spacer
- MIN. Clearances: 6” above soil grade, 2” above landscpade and decking, 1” above roof
- Panel Thickness – 16-21mm | 5/8” -7/8”
- Total Wall System Depth – 26-31mm | 1-1/32” -1-7/32”

See table for Framing & Sheathing Requirements
Reference page 3 for panel thickness

**AWP3030 - HORIZONTAL**

- Ultimate Horizontal Starter Track - always level
- Ultimate Clip II - JEL778 for all 3030mm panels - 4 clips per panel edge | 10mm (~3/8") rain screen
- Vertical Control/Expansion Joints (Double Flange Sealant Backer) or H-Mold trim at each vertical joint
- Stacked layout only - no staggering of vertical joints
- Horizontal/Compression Joints: **Wood Framing** three stories or more = joint at every floor
- Horizontal/Compression Joints: **Metal Framing** over three stories/45’ = joint about every 25’
- Sealant Joints (Single Flange Sealant Backer) or Inside Corner trim at inside corners
- Horizontally cut edges require face fastening with Spacer
- MIN. Clearances: 6” above soil grade, 2” above landscpade and decking, 1” above roof
- Panel Thickness – 16mm | 5/8”
- Total Wall System Depth – 26mm l 1-1/32”

See table for Framing & Sheathing Requirements

**HORIZONTAL AWP FRAMING & SHEATHING REQUIREMENTS**

Continuous Insulation – refer to Technical Bulletin - AWP and Continuous Insulation and the installation guides

<table>
<thead>
<tr>
<th>WALL TYPES</th>
<th>STUD SPACING</th>
<th>GAUGE</th>
<th>SHEATHING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal Studs</td>
<td>16” o.c. max</td>
<td>18 min.</td>
<td>Min. 7/16” OSB/Plywood 1/2” or 5/8” Gypsum</td>
</tr>
<tr>
<td>Wood - 2”x4” studs, min.</td>
<td>16” o.c. max</td>
<td>---</td>
<td>Min. 7/16” OSB/Plywood 1/2” or 5/8” Gypsum</td>
</tr>
<tr>
<td>Concrete - Furring is required*</td>
<td>16” o.c. max</td>
<td>see below</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Concrete w/ wood furring: pressure treated (2”x4”) aligned vertically
Concrete w/ metal furring: Hat channel, C-stud, Z-furring (18 ga. min.) aligned vertically

See table for Framing & Sheathing Requirements
AWP3030 - VERTICAL

- Ultimate Vertical Starter Track - always level and continuous, bearing the dead loads of vertical AWP3030 - no staggering
- Ultimate Clip II – JEL778 for all 3030mm panels - 4 clips per panel edge I 10mm (~3/8”) rain screen
- Vertical Control/Expansion Joints not required
- Horizontal/Compression Joints after each course
- Don’t span floors
- Sealant Joints (Single Flange Sealant Backer) or Inside Corner trim at inside corners
- Vertically cut edges require face fastening with Spacer

MIN. Clearances:
- 6” above soil grade
- 2” over hardscape and decking
- 1” over roof
- 1/4” clearance between the panel edge and flashings
- Panel Thickness – 16mm | 5/8”
- Total Wall System Depth – 26mm | 1-1/32”
- Structural Sheathing Method or Custom Stud/ Furring Spacing Method required for installation

See table for Framing & Sheathing requirements

VERTICAL AWP FRAMING & SHEATHING REQUIREMENTS

Continuous Insulation – refer to Technical Bulletin - AWP and Continuous Insulation and the installation guides

<table>
<thead>
<tr>
<th>WALL TYPES</th>
<th>STUD SPACING</th>
<th>GAUGE</th>
<th>SHEATHING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Sheathing</td>
<td>16&quot; o.c. max</td>
<td>18 min.</td>
<td>Min. 7/16” APA Rated OSB or Plywood</td>
</tr>
<tr>
<td>Method - Metal Studs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural Sheathing</td>
<td>16&quot; o.c. max</td>
<td>--</td>
<td>Min. 7/16” APA Rated OSB or Plywood</td>
</tr>
<tr>
<td>Method - Wood - 2” x 4”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Studs, Min.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Custom Stud Spacing</td>
<td>17.7/8&quot; o.c.*</td>
<td>18 min.</td>
<td>APA rated Min. 7/16” OSB or Plywood, 1/2” or 5/8” Gypsum, (none - concrete only)</td>
</tr>
<tr>
<td>Method - Concrete, Metal,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

^Concrete w/ wood furring: pressure treated (2” x 4”) aligned vertically
Concrete w/ metal furring: Hat channel, C-stud, Z-furring (18 ga.) aligned vertically
*Additional furring segments, blocking may be necessary for Vertical Starter Track fastening (max. 9” o.c.)
COMPLETING THE DESIGN

STANDARD REQUIREMENTS

Let’s start with the basics. Each of the following criteria must be met in order for Nichiha Architectural Wall Panels to perform as intended.

- **Continuous Insulation** — refer to Technical Bulletin - AWP and Continuous Insulation and the installation guides
- **Vapor Permeable Weather Resistant Barriers** — required over stud walls and SIPs. CMU/concrete - defer to local code. Sheathings and C.I with integrated code compliant WRB are acceptable
- **Flashing/Furring/Corners/Trim** — See install guide for various options
- **Minimum Clearances** — a minimum of 6” above soil grade, 2” above hard surfaces, 1” above roofing, or pier local building codes
- **Single Flange Sealant Backers** — at inside corners, along window & door jambs and transition points with other cladding
- **Double Flange Sealant Backers** — Vertical Control/Expansion joints, Non-90-Degree Corners and at Nichiha Corners
- **Sealants** — refer to Technical Bulletin - Sealants
- **10mm Spacer** — required at all face fastening locations
- **Face fastening** — every 12-16” o.c. to framing/furring spaced min. 1” distance from the panel edge
- **Fasteners must penetrate** — Wood Studs a min. 1”, Metal Studs a min. 1/2” with three threads needed for grab
- **Fasteners** — must be stainless steel or corrosion resistant: such as, hot dipped zinc or ceramic coated - pan, wafer, or hex head required for clip and track fastening
- **Equipment/Mechanical Screens** - must be fully enclosed wall system
- **Metal Studs** a min. 1/2”, with three threads needed for grab
- **Fasteners** — must penetrate: every 12-16” o.c. to framing/furring spaced min. 1” distance from the panel edge
- **Face fastening** — every 12-16” o.c. to framing/furring spaced min. 1” distance from the panel edge
- **Fasteners must penetrate** — Wood Studs a min. 1”, Metal Studs a min. 1/2” with three threads needed for grab
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- **Equipment/Mechanical Screens** - must be fully enclosed wall system

RECOMMENDATIONS (Contact Nichiha Technical Team for recommendations not listed)

Nichiha has collaborated on literally thousands of installations. Along the way we’ve found a few practices that can make the process go a little smoother. Although not required, we suggest that you give the following recommendations some consideration.

- **#10-16 Pan-head screws (HD 365”) used during testing, minimum size requirement, #8**
- **Compression Joint Flashing** — heavy gauge z-shaped metal flashing or drip cap over top edge of course
- **It is best to avoid cutting AWP to short or narrow strips and segments of less than 9”**
- **Essential Starter Flashing** — may be installed prior to the Starter Track to conceal the clearance gap above hardscape
- **Essential Overhang Flashing** - transition between overhangs and AWP
- **Non-90-degree corners** — use Double Flange Sealant Backer or custom corner trim

TECHNICAL DESIGN REVIEWS

If your project meets any of the criteria listed below, or you simply wish to take advantage of the service, your Nichiha Sales Representative can connect you to Technical Department staff for a Technical Design Review. It’s our way of assuring that your project will be implemented without the slightest hitch.

- Any project of more than three stories or 45 feet
- Those located in high wind coastal areas (Exposure Categories C and D with Basic Wind Speed in excess of 130 mph (Vult))
- Those with any wall assembly not described in the Framing & Sheathing Requirements
- Continuous Insulation projects (thicker than 1”)

NOs

Even the power of possibilities has limitations. If your project includes any of the following attributes, contact Nichiha Technical Services for clarification and advice. Refer also to nichihacom/resources/technical-bulletins.

- No Radius/Curved Walls, Sloped/Tilted Walls
- No existing or new masonry w/o furring
- Soffit applications limited to install guide parameters and are not covered by warranty
- No remodels over hard coat & synthetic stucco/EIFS
- No Pre Engineered Metal Building retrofits. New construction only with horizontal installation, no vertical installation allowed
- Do not cut panels to less than 4” in width or length
- Do not use AWP on open screen walls
- Insulated Concrete Forms (ICFs) require additional measures
- Do not use AWP on modular structures that are factory-constructed and then transported to a final site (Installation on site is allowed)
- For Vertical Panels: do not span floors with panels. Place compression joints at each floor line. No staggering of joints

DETAILS

For complete offerings of AutoCAD and Revit details visit nichihacom/resources/cad
For Installation hardware, accessories and full installation requirements/details visit: nichihacom/resources

PLEASE CONTACT NICHIHA TECHNICAL DEPARTMENT FOR ASSISTANCE WITH:

- Structural Insulating Panels (SIPs)
- Nail-base insulation sheathings
- Continuous Insulation (C.I.) greater than one inch in thickness

All require a technical review by Nichiha to evaluate feasibility via our Technical Design Review (TDR) process. Submission of a TDR does not imply or guarantee project approval.

TechnicalServices@nichiha.com  |  Phone: 866-424-4421

DESIGN REVIEW GUIDE
BUILDING IS A COLLABORATIVE PROCESS.

The way we see it, we’re in this together. Our mutual success is the only real success. If you have questions or concerns let your Nichiha Sales Representative know and they’ll do everything they can to keep your project moving in the right direction… up.

If you’re not sure who your local sales representative is, visit nichiha.com/rep and we’ll direct you to the representative closest to you.

Silica Dust Warning: NICHIHA products may contain some amounts of crystalline silica [a.k.a. sand, silicon dioxide], which is a naturally occurring mineral. The amount will vary from product to product. Inhalation of crystalline silica into the lungs and repeated exposure to silica can cause health disorders, such as silicosis, lung cancer, or death depending upon various factors. To be conservative, Nichiha recommends that whenever cutting, sawing, sanding, sniping or abrading the product, users observe Safety Instructions. For further information or questions, please consult the SDS, your employer, or visit www.osha.gov/SLTC/silicacrystalline/index.html and www.cdc.gov/niosh/topics/silica. The MSDS for Nichiha products are available at www.nichiha.com, at your local Nichiha dealer or through Nichiha directly at 1.866.424.4421. FAILURE TO ADHERE TO OUR WARNINGS, SDS, AND OTHER INSTRUCTION MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

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