Read these installation guidelines completely and thoroughly before beginning installation.

Framing Members & Sheathing Requirements

All Applications

Dependent upon method of construction, minimum requirements must be met before Nichiha panels can be installed.

Wood Studs
- Framing member should be wood 2x4 studs, set at 16"-24" o.c.

Metal Studs
- Framing members should be a minimum of 18-gauge, and set at 16"-24" o.c.

Concrete Masonry Unit (CMU)
- Must be installed in accordance with local building codes.
- Do not install the product directly onto CMU substrate.
- Nichiha requires the use of furring strips or hat channel as specified in fastener Table in section 9.4.

Structural Insulating Panel (SIP)
- SIPs should be installed in accordance with manufacturer’s instructions, and local building codes.
- Two [2] fasteners per clip at 16” o.c. are required as there are no studs to secure clip into.

Weather Resistive Barriers & Flashing Requirements

All Applications

A weather resistive barrier (WRB) is required when installing Nichiha panels. Use an approved WRB as defined by the 2006 IRC. Refer to local building codes.

A breathable WRB is highly recommended when installing Nichiha panels for residential applications.

Breathable WRB is required for all commercial applications.

All openings must have appropriate flashing to prevent moisture penetration. Follow manufacturer’s guidelines and all local building codes.

Fasteners

All Applications

Fasteners must be corrosion resistant. Stainless steel or corrosion resistant coated screws such as hot-dipped, zinc or ceramic are recommended. Comply with all local building codes for fastener requirements.

Refer to Sections 8.4 & 8.5 (following) for detailed fastener requirements and recommendations.

Wood Studs
- Fasteners must penetrate stud or sill plate a minimum of 1”.

Metal Studs
- Screws must penetrate stud or sill plate a minimum of 1/2”.

Concrete Masonry Unit (CMU)
- Use corrosion resistant masonry screws or pneumatic masonry pins and penetrate furring strip and/or CMU appropriate distance in accordance with building codes.

Structural Insulating Panel (SIP)
- SIPs should be installed in accordance with manufacturer’s instructions, and local building codes.

Panel Products & Furring Requirements

Panel Products & Furring Table

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Wood Furring</th>
<th>Furring System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood</td>
<td>Wood S2</td>
<td>S1 S2 S2 S2 S2</td>
</tr>
<tr>
<td>Metal</td>
<td>S1 S4 S1</td>
<td>- - - - -</td>
</tr>
<tr>
<td>CMU</td>
<td>S3 S3 S3</td>
<td>Wood S3 S2 S2 S2</td>
</tr>
<tr>
<td>SIP</td>
<td>S2 S2 S2</td>
<td>- - - - -</td>
</tr>
<tr>
<td>PEMB</td>
<td>S1 S4 S1</td>
<td>- - - - -</td>
</tr>
</tbody>
</table>

Wood Furring
Pressure Treated Lumber, 2x4 spaced at 16” o.c.

Hat Channel / “Z” Furring
50 ksi; range width: 1”, 1.5” or 2”; depth: 2” max. spaced at 16” o.c.
Installing The Starter Track

All Applications

• The Nichiha Starter Track (FA100) must be level and attached at a minimum of 6" above "finished" soil grade or per local building codes (use a laser level to verify). When installing over a hard surface such as driveways or sidewalks, a 2" clearance is acceptable.
• The starter track must be installed using corrosion resistant fasteners.
• Locate and mark studs.

Wood & Metal Studs

• Starter track must be secured at every stud line.

Concrete Masonry Unit (CMU)

• When installing over concrete construction, wall must be furred out with pressure treated lumber, or metal hat channel. Starter track must be secured through furring.

Pre-Engineered Metal Construction

• Starter track must be secured to R-Panel ridge, furring or panel surface not to exceed 12" o.c.

Installing The First Panel Course

All trim must be installed before panels.

• The use of the single or double flange sealant backer is recommended with all trim or corner pieces, respectively.

Panel Installation

1. Set first panel into the starter track and attach using a panel clip at top of panel at each stud, working from left to right.
2. Place a joint clip at the top of all vertical panel joints.
3. Verify first course of panels is level. Large commercial buildings require checking level around entire building. A rubber mallet or block of wood may be used to seat the panels firmly in place and tighten to the left. Do not hammer directly anywhere on the panels as direct contact may cause cracks, gouges or chipping.
4. Fit panels tightly together on both horizontal and vertical joints ensuring that panel edges are properly butted together. Set the panels by tapping the edge with a block of wood until panel fits tightly.

Panel Clips

Must be installed at every stud line.

Continue using appropriate clips (see next section for correct clip usage) on top edge of panel as the work proceeds from the bottom of the wall to the top, moving left to right along the row.

Notes: Non-corrosive coatings include: zinc, hot-dipped galvanized, cadmium, stainless/cadmium, zinc/chromate/organic (ceramic), & nickel/zinc/chromate.

Design wind pressures are based on worst-case pressure coefficients for given wind speed and based on a mean roof height of 45 ft.

These recommendations apply only to 1/2" sheathing. For exterior insulation cases, contact Nichiha Technical Department.

Structural Insulating Panel (SIP)

• Secure starter track not to exceed 16" o.c.

Fastener Requirements

<table>
<thead>
<tr>
<th>Basic Wind Speed (mph)</th>
<th>Controlling Design Pressure (psf)</th>
<th>S1²</th>
<th>S2⁴</th>
<th>S3⁵</th>
<th>S4</th>
<th>Wood</th>
<th>Hat/&quot;Z&quot;</th>
<th>Fastener Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>26.5</td>
<td>#10 Self-Drilling Screw</td>
<td>#8 Wood Screw</td>
<td>3/16&quot; Masonry Screw</td>
<td>#8-10 Self-Drilling Screw</td>
<td>5/4&quot; x 4&quot;</td>
<td>18 gauge</td>
<td>16&quot;-24&quot; o.c.</td>
</tr>
<tr>
<td>100</td>
<td>32.6</td>
<td>#10 Self-Drilling Screw</td>
<td>#8 Wood Screw</td>
<td>3/16&quot; Masonry Screw</td>
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<tr>
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<td>39.5</td>
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</tr>
<tr>
<td>120</td>
<td>46.9</td>
<td>#10 Self-Drilling Screw</td>
<td>#10 Wood Screw</td>
<td>1/4&quot; Masonry Screw</td>
<td>#8-10 Self-Drilling Screw</td>
<td>2&quot; x 4&quot;</td>
<td>18 gauge</td>
<td>12&quot; o.c.</td>
</tr>
<tr>
<td>130</td>
<td>55.0</td>
<td>#10 Self-Drilling Screw</td>
<td>#10 Wood Screw</td>
<td>1/4&quot; Masonry Screw</td>
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<td>2&quot; x 4&quot;</td>
<td>16 gauge</td>
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</tr>
</tbody>
</table>

1. For attachment of furring to substrate all screw size requirements are based on maximum 12" screw spacing.
2. All furring shall be continuous.
3. Metal screw size requirements are based on maximum 18-gauge metal stud back-up and using a carbon steel screw with corrosion resistant coating.
4. Wood screws shall penetrate a minimum of 1" into the existing 2x4 wood stud and meet the requirements of ANSI/ASME B18.6.1 & using carbon steel screw with corrosion resistant coating.
5. Masonry screws shall penetrate CMU a distance equal to the thickness of the furring strip and using a carbon steel screw or pin with corrosion resistant coating.
6. Fastener/stud spacing depends on product used. Please refer to ESR-1694 for more detailed information.

Notes: Non-corrosive coatings include: zinc, hot-dipped galvanized, cadmium, stainless/cadmium, zinc/chromate/organic (ceramic), & nickel/zinc/chromate.

Design wind pressures are based on worst-case pressure coefficients for given wind speed and based on a mean roof height of 45 ft.

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Structural Insulating Panel (SIP)

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<th>Furring Requirements²</th>
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<tr>
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<td>Controlling Design</td>
</tr>
<tr>
<td>Speed (mph)</td>
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Correct Clip Usage & Placement

Panel Clips (JEK65/JE720CA - Canada Short Panel Clips)
- Use Panel Clips on top edge of panel as the work proceeds from the bottom of the wall to the top. Moving left to right along the row.
- A Panel Clip must also be inserted at the bottom of every vertical joint (panel bottom). This is a stabilizer clip. Do this by setting clip on the top edge of the panel beneath and tapping clip to the left until in place.

Joint Clips (Short - JET651/JE652) (Long - JEL651/JE652/JEL652/JEL652)
- A Joint Clip must be used at the top of all vertical slip-lapped joints. For proper clip identification see Clip Usage Chart on next page.
- Short Joint Clips may be used on OSB or plywood sheathing (at the top of the joint).
- Long Joint Clips must be used at the top of the joint on any non-structural sheathing (such as Dens-Glass® by Georgia Pacific).

Wood Stud
- Follow general instructions.

Metal Stud
- Follow general instructions.

Concrete Masonry Unit (CMU)
- Install clips at each furring location.

Structural Insulating Panel (SIPS)
- Follow general instructions.

Clip Usage Charts

Correct Clip Usage & Placement

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Clip Usage Charts

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<thead>
<tr>
<th>Sheathing Type</th>
<th>Joint Clip</th>
<th>Panel Clip</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8” (16mm) Panels</td>
<td>JEF 550/short</td>
<td>JE 550</td>
</tr>
<tr>
<td>ArchitecturalBlock™, CanyonBrick™, FieldStone™ &amp; QuarryStone™</td>
<td>JEF 551/long</td>
<td>JE 550</td>
</tr>
<tr>
<td>7/16” or greater OSB or Plywood</td>
<td>JEL 607/short</td>
<td>JE 650</td>
</tr>
<tr>
<td>Foam Board, Black Board or no sheathing &amp; all others</td>
<td>JEL 651/long</td>
<td>JEE650</td>
</tr>
</tbody>
</table>

Inside Corners, Doors & Windows

**Butt-Jointed panels using Single Flange Sealant Backer**
3. Install side wall panel right up against the sealant backer and secure with panel clip. Fill space with sealant to about 75-80% in depth.

**Single Flange Sealant Backer Doors & Windows**
- Install the Single Flange Sealant Backer first butting to the door/window jamb or trim pieces, prior to installing the panels. The Single Flange Sealant Backer must be fastened a minimum of 1/2” to 1” o.c.
- Install panels and fill gap with recommended sealant.

Single Flange Sealant Backer Inside Corners
1. Decide location of line of sight to minimize visual of the sealant gap (this would be equivalent to the front of the building).
2. Install the panel (ship-lap edges at the joint) will need to be cut off) on the front wall first. Ensure panel is butted up tight to the inside corner wall. Fasten the Single Flange Sealant Backer onto the side wall right up against the front wall panel’s edge at 12-14” o.c.
Fiber Cement & PVC Trim Boards
- When panels are to be butted to fiber cement or PVC trim, a minimum gap of 1/4” width is required.

Vinyl & Plastic Trim Channel
- Install trim channel in accordance with manufacturer’s installation instructions. Fit panel into trim snugly so that panel edges are not exposed and face fasten panel.
- Apply polyurethane scalant into the gap.

Face Fastening Panels - All Options
- Fasten panels at least 1” from all panel edges. This will avoid cracking or breaking panel. Best practice is to pre-drill panel before fastening.
- When face fastening panels, use Nichiha Spacer (FS1005 or FS1010*) behind the panels to ensure panel stability.

Safety Reminder
Everyone cutting Nichiha product must wear a properly fitted respirator when cutting panels (NIOSH/OSHA approved respirator with a rating of N100, O100 or P100 in accordance with applicable government regulations and manufacturer instructions).

Refer to the Nichiha Safety Guidelines for additional important safety information to protect you and others.

Outside Corners
- There are several outside corner installation options.
- Mitering Panel Corners
- Pre-Manufactured Mitered Corners
- Fiber Cement and PVC Trim Boards
- Metal and Vinyl Trim
- Appropriate flashing must be used as required to prevent moisture penetration on outside corners.

Mitering Panel Corners
Outside corners can be fabricated in the field by mitering the panels at 45 degrees for a continuous clean look.
- Always cut panels from back.

1. Cut panels at a 45° angle and dry fit panels together to ensure best appearance.
2. Clean the cut edges of all panels with a damp cloth.
3. Apply polyurethane adhesive (such as PL Premium) on mitered edges to secure panel. Use a polyurethane adhesive for exterior applications. Follow manufacturer’s instructions.
4. Attach panels to substrate. Leave edges untouched until the polyurethane adhesive has completely dried.

All panels should be marked and cut from the back side.
5. Bevel the edges utilizing a sander, putty knife, file or utility knife, until edges have a clean finished appearance.

6. Fill any gap or crevices with exterior-grade cementitious filler such as MH Ready-Patch® by Zinsser. DO NOT USE POLYURETHANE SEALANT AS A REPLACEMENT FOR EXTERIOR FILLER.

Pre-Manufactured Mitered Corners

• Always install Nichiha Pre-Manufactured Corners before panels.

Nichiha Recommended Method

1. Set corner piece on the starter track and secure with one Nichiha corner clip (JE 550C & JE 650C). Clips are to be placed at the bottom and top of the ship-lapped edges. *For 10mm rainscreen applications, corner clip may require FS1005 Shim on both sides.

2. Place the Double Flange Sealant Backer (FH 1010, FH 1020*) behind the corner piece (at both walls) all the way down into the starter track. Fasten at 12” - 14” o.c. only on the side butting up to the panel course. *For 10mm rainscreen applications, use FH1020.

3. After all panels have been installed, apply sealant at 75% - 80% depth. Sealant must be compliant with ASTM C-920.

Fiber Cement & PVC Trim Boards

• Nichiha manufactures a full line of fiber cement trim boards - NichiTrim™. NichiTrim is available in 3 thicknesses, 6 widths and in 10 and 12 foot lengths.

• When panels are to be butted to fiber cement, wood or other trim piece, a gap of 1/4” width is required.

• Use Nichiha Single Flange Sealant Backer as directed.

• Apply polyurethane sealant to joint width. Sealant must be compliant with ASTM C-920.

Metal & Vinyl Trim

• Install trim channel in accordance with manufacturer’s installation instructions. Fit panel into channel trim snuggly, so that panel edges are not exposed.

• Install the Single–Flange Sealant Backer first butting to the door/window jamb or trim piece, prior to installing the panels. The Single-Flange Sealant Backer must be fastened about 12”-14” o.c.

• Apply polyurethane sealant to joint width. Sealant must be compliant with ASTM C-920.

Installation Around Garage Doors & Other Large Openings

All Applications

• Install starter track 1” above garage door casing.

• Establish a level line from the bottom of the starter track out to the side on both ends with a laser level.

• Use this line to measure down the wall (each side of garage) to attach the starter track so that the panels will meet at the proper height.

• Use Spacer (FS 1005, FS 1010*) behind the panel at the bottom course, which will be scribed to the contour of the surface. *For 10mm rainscreen applications, use FS1010.

• Panels at the bottom course of the garage door opening must be face fastened to the studs.

• Note: When face fastening, always fasten at least 1” from all panel edges to avoid panel cracking or breakage.
Installing The Last Course / Gable & Overhang Installation

**Vertical Expansion Joints / Horizontal Compression Joints**

**Installing The Last Course**

**All Applications**

1. Install vertical expansion joint (Nichiha Double Flange Sealant Backer FH 1010, FH1020) to butt up against panel and secure joint to substrate on one side. Panels ship-lapped edges must be cut off to achieve a tight fit against the sealant backer.

2. Install next panel to joint and secure with appropriate clips. This provides the 1/4" wide sealant joint.

3. Apply low-adhesive tape along length of panel and trim edges, to protect panels from sealant, and for a smoother look. Apply sealant into the expansion joint, starting at the bottom and pushing sealant into the gap.

**All Installation Methods**

- Follow guidelines above.

**Horizontal Compression Joints**

**All Applications**

- For any buildings greater than 45 feet in height, compression joints may be required. Please contact the Nichiha Technical Department for assistance.

**Installing a Horizontal Compression Joint**

1. Install z-shaped metal flashing or drip cap over the top edge of the bottom panels. Top ship-lapped edge of the bottom panel is cut and face fastened with the appropriate shim behind it. Check for level.

2. Continue to install panels according to these guidelines with compression joints at the appropriate elevation.

**All Installation Methods**

- Follow guidelines above.

**Benefits Of Using Nichiha Double Flange Sealant Backer**

- Is an exact spacer for expansion joints.
- Provides a 2-point contact between the sealant and the panels.
- Provides the recommended depth of sealant (75-80%).
- Provides faster installation relative to a foam backer rod.
- Uses less sealant than a foam sealant than a foam backer rod.
Interior Wall Installation

Please follow the installation instructions for exterior applications with the following exceptions:

• Building paper or wrap is not needed for interior applications. Panel can be installed directly to wood and metal studs. Wallboard or substrate is also not required for interior installations, providing stud spacing is appropriate.

• In applications such as a kitchen backsplash, use approved construction adhesive to secure panels to the substrate. Apply 1/2 oz. of adhesive to the panel or substrate every six inches vertically and every 16 inches horizontally. If possible, secure panels to substrate with fasteners until adhesive dries.

Replacing Damaged Panels

1. Set the depth of the circular saw blade slightly deeper than the panel so the saw blade does not cut into the building wrap or sheathing.

2. Make additional cuts into the damaged panel and break into pieces for easier removal of the damaged panel.

3. Remove damaged panel.

4. Cut 3/16” off ship-lapped edge at bottom of panel.

5. Cut the right side of ship-lapped edge off the panel.

6. Use a 1/4” vented plastic shim and place behind the new panel at top and bottom.

7. Prepare to set new panel in place.
8. Lift panel into place by prying from the bottom upward. Pre-drill and face fasten panel with a screw into framing member.


Completed Replacement

Cleaning Panels
After completion of installation, it may be necessary to clean panels.

- When cleaning panels, use no more than 400 psi of water pressure at 10” to 12” away.
- To clean heavily soiled areas a mild detergent and/or soft bristle brush may be required.

Removal of Exterior Acrylic Latex Paint From Nichiha Panels

- Wet Paint Removal - While the paint is still wet, flush the area with clean water, using mild abrasion with a clean cloth or soft brush.
- Semi-Dry Paint Removal - If paint has set, but not dried, flush and clean as above, followed with light scrubbing with alcohol removing any remaining paint residue. Rinse with water and clean cloth.
- Dry Paint Removal - Please refer to paint-removal guide in the next section.

Test Results of Paint Removal On Panels

Paints and Graffiti Removal

- The following products have been tested on Nichiha panels to aid in the removal of graffiti type markings. The panels were sprayed with an indoor/outdoor aerosol spray paint, left to dry overnight then applied following the manufactures guidelines.
- All products tested achieved good results however the outcome may vary depending on the amount of paint needed to be removed. Be sure to follow all manufacture’s guidelines and test in an inconspicuous area before working in a larger area. *Nichiha is not liable for any damages to the panels caused by the use of these cleaners.

Citristrip
www.citristrip.com
Products tested:
- Citristrip Striping Gel - One Quart container.
- Citristrip Stripping Aerosol - 18 oz. spray can.
- Available at do-it-your self stores.

Tagaway
www.tagaway.com
Products tested:
- Tagaway - 32 oz. trigger spray bottle
- Available online and local stocking distributors

Zinsser
www.zinsser.com
Products tested:
- Zinsser Graffiti Remover and Stripper - 16 oz. trigger spray bottle
- Available at retail do it yourself stores

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, stripping or abrading the product, users observe the Safety Instructions above. For further information or questions, please consult the MSDS, 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, MSDS, AND OTHER INSTRUCTION MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.