



PANEL KIT INSTALLATION MANUAL

OWN | EARN | EXPAND



BUILT TO **LAST**. DESIGNED TO **EARN**.

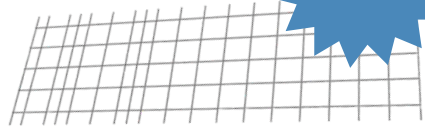
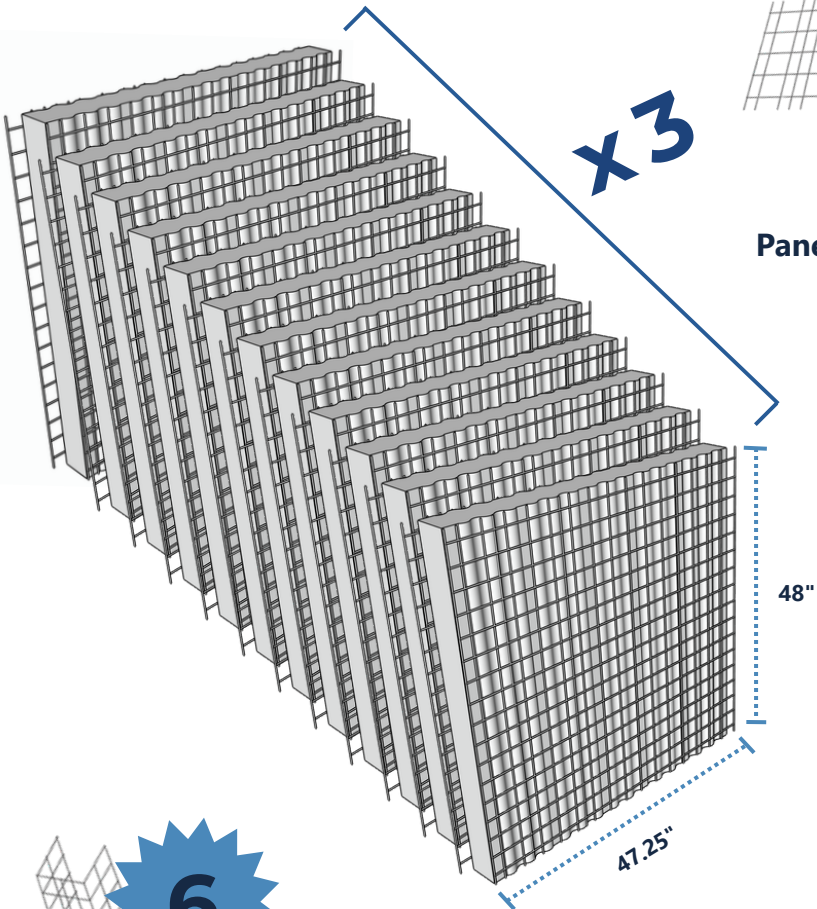


WHAT'S INCLUDED:

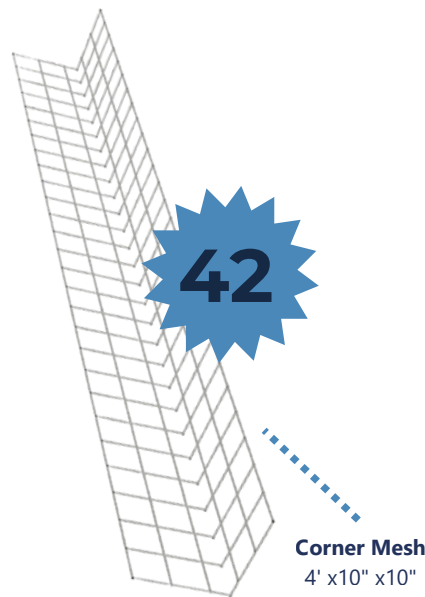
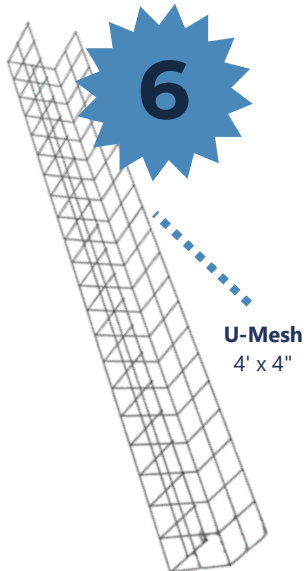
(36) 4' PANELS + 62 PANEL CONNECTORS




62



Panel Connectors
4' x 20"

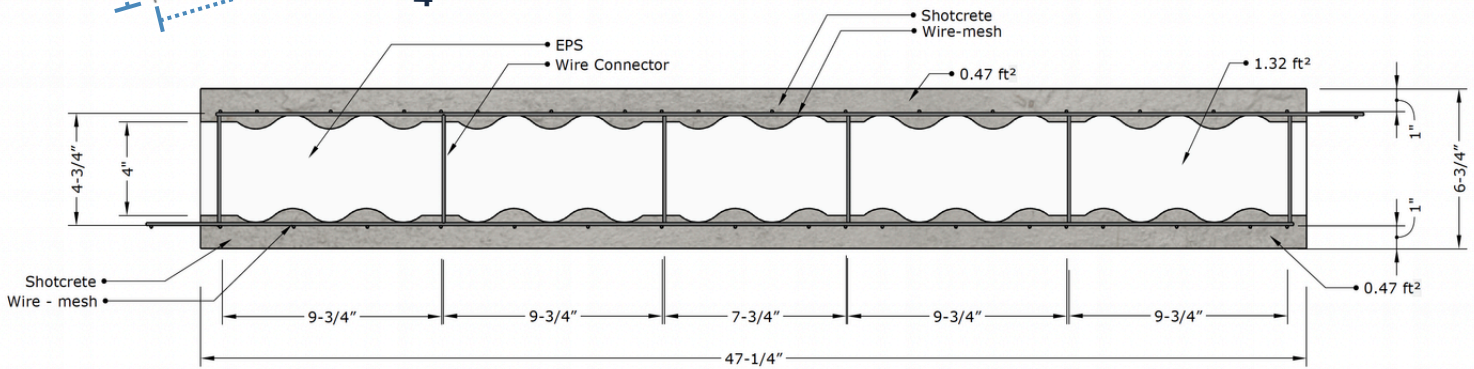
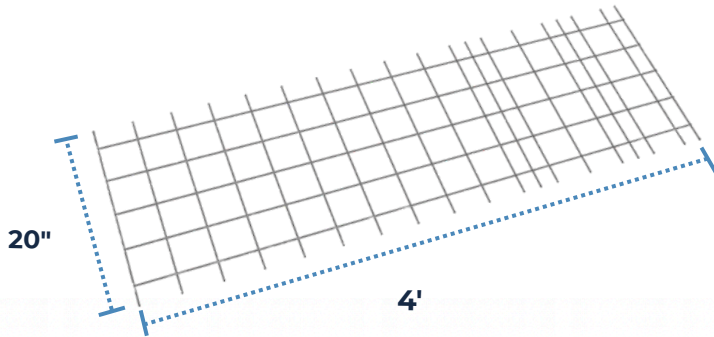
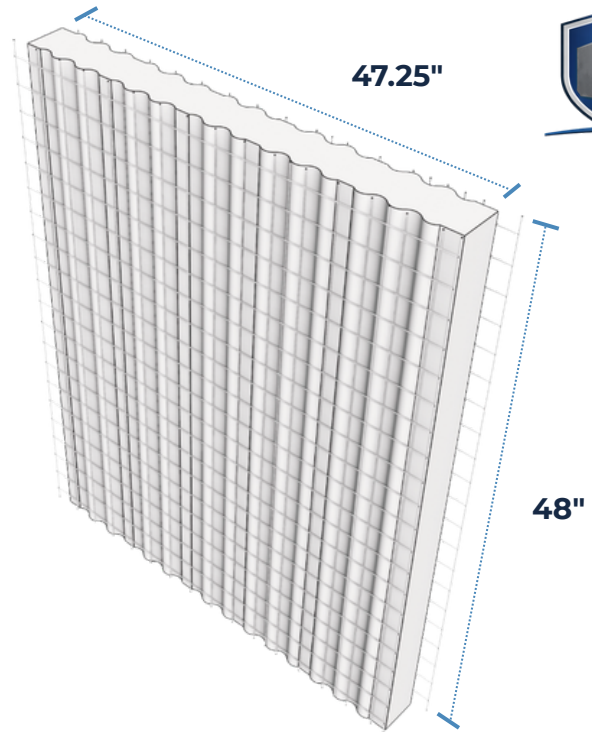


-  **ENGINEERED DRAWINGS AND BUILD SPECIFICATIONS**
-  **ELIGIBILITY FOR FORTIUNIT CERTIFICATION AND BRANDING**
-  **MARKETING STARTER KIT**

-  **WHAT'S NOT INCLUDED:**
- CONCRETE SLAB OR FOUNDATION
 - DOOR HARDWARE AND LOCKS
 - LAND, PERMITS, OR SITE PREPARATION

FORTIUNIT PRODUCT SPECIFICATIONS

Manufactured by  **FORTIFIED**
STRUCTURAL SOLUTIONS
USA



MATERIALS CHARACTERISTICS

Expanded Polystyrene (EPS) Foam

Type I modified EPS Board - ASTM C578
Density 1 pound per cubic foot
Flame-spread index <=25
Smoke-developed index <= 450

Concrete/Mortar (applied in-situ)

Compressive Strength >2,500 PSI
Thickness > 1"
Aggregate size < 5/8"
Slump > 2"

Weight

Panel sheet (lb/ft²): 1.01
Finished wall (lb/ft²): 21.50

Wire Connector

11 gauge galvanized wire - ASTM A1064
Yield Strength: 115 ksi

Thermal coefficient (R Value)

(F.hr.ft²/Btu)(°F)

@ 25° | 17.4
@ 40° | 16.7
@ 70° | 15.4

Acoustic coefficient (Cw)

42 dB

Wire-mesh Reinforcement

L 3.15" x T 2.95" 11 gauge galvanized wire - ASTM A1064
Yield Strength: 115 ksi

TOOLS & MATERIALS

Find links to recommended products at store.fortiunit.com/tools



Measurement Tool
Chalk Line or Tape



Concrete Drill
Hammer Drill, 6.5-Amp



Epoxy Glue
Anchoring Adhesive



Heat Tool
Temperature Gun or Torch



Rebar Dowels
#3 - 3/8-inch x 2 feet



Tie Wire
16.5-Gauge



Pliers
Slip Joint & Diagonal



Trowel
12 in. x 4 in.



Sponges
7.5 in. All Purpose



Mallet
Rubber or Dead Blow



Mortar Materials
Portland, Sand, Water



Concrete Sprayer
with Air Compressor



Bonding Agent
Adhesive Additive



Cement Fibers
Anti-Cracking Additive



Mixing Container
3.5 Cu.Ft Usable Volume



Concrete Forms
Wood/Plastic/Metal
~2x4" Plank



Level
I-Beam Level



Screed Edge
> 4' Length



Heat Knife
> 4" Blade Length



Shoring and bracing systems may be either rented or temporarily constructed using structural wood, plastic, or metal materials.

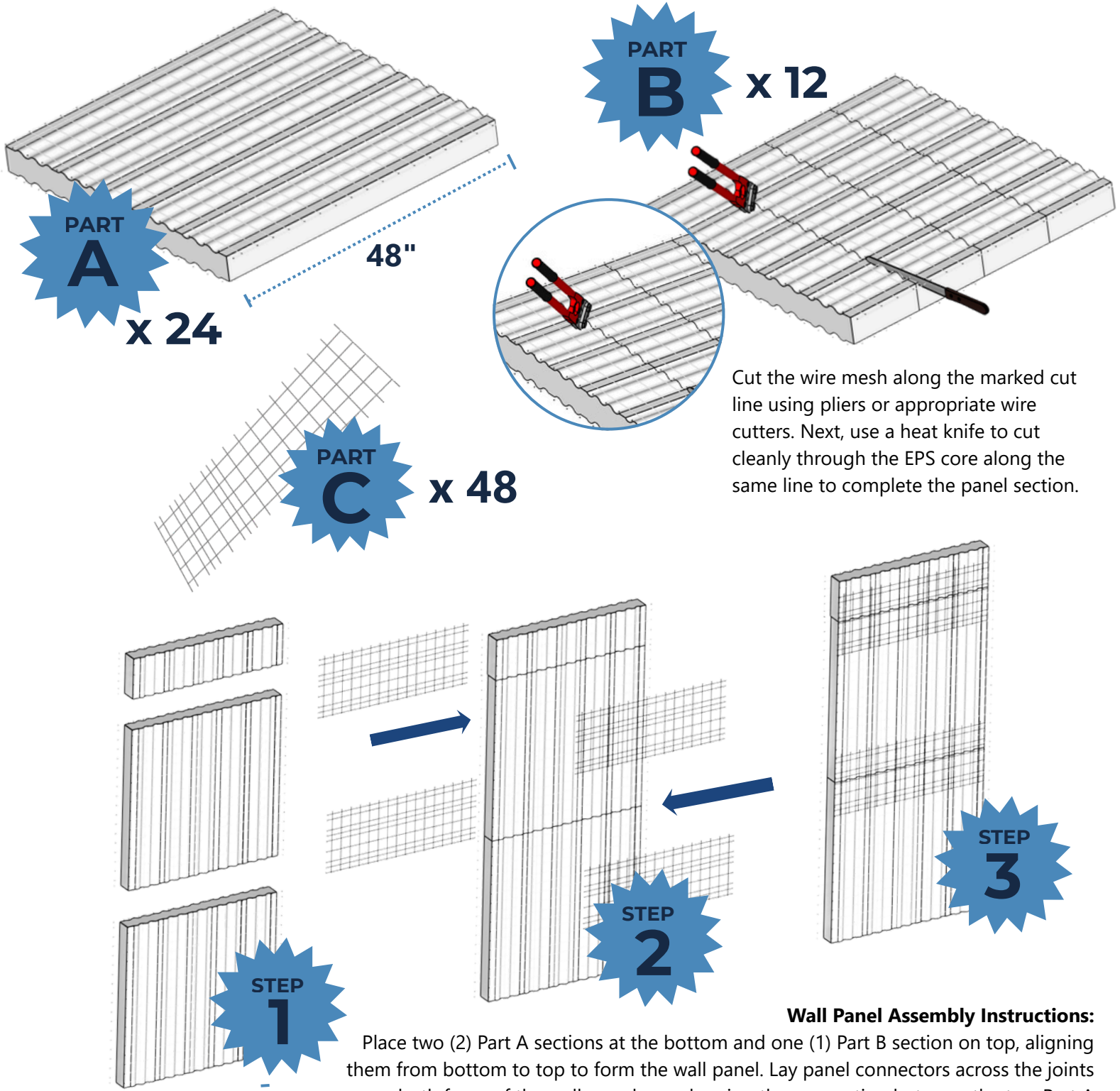
**SCAN TO SHOP
RECOMMENDED
TOOLS &
MATERIALS:**



ASSEMBLE (12) WALL PANELS



Cut **three (3) 4-foot panel sections** into **four (4) pieces of 1-foot length**, then divide each piece as required to produce a total of **twelve (12) Part B sections**. Ensure cuts are clean and edges are prepared as needed for proper placement and connection.



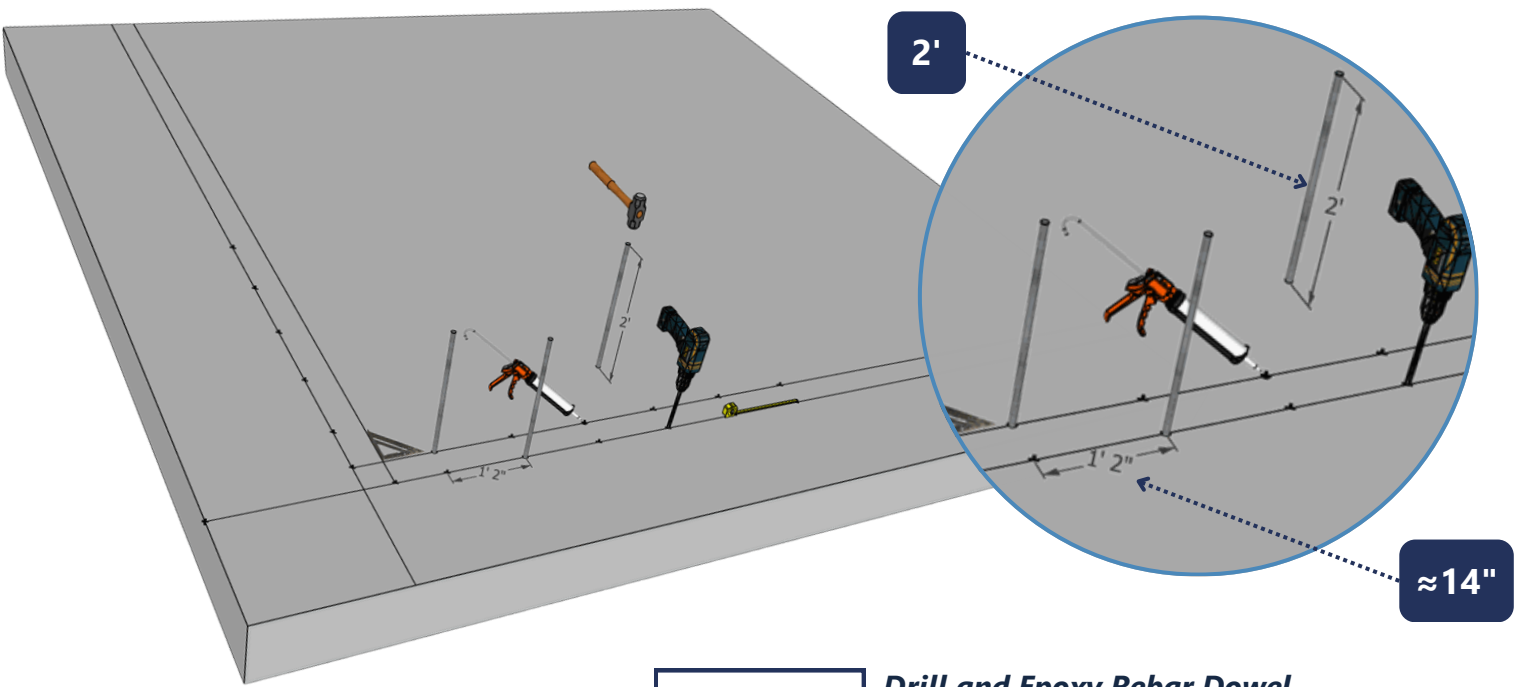
Cut the wire mesh along the marked cut line using pliers or appropriate wire cutters. Next, use a heat knife to cut cleanly through the EPS core along the same line to complete the panel section.

Wall Panel Assembly Instructions:

Place two (2) Part A sections at the bottom and one (1) Part B section on top, aligning them from bottom to top to form the wall panel. Lay panel connectors across the joints on both faces of the wall, evenly overlapping the connection between the two Part A sections and the Part B section. Secure the connectors to the panel wire mesh using wire ties at multiple points on both sides of the wall assembly to ensure the sections are firmly connected.

1 Foundation Preparation and Layout Marking

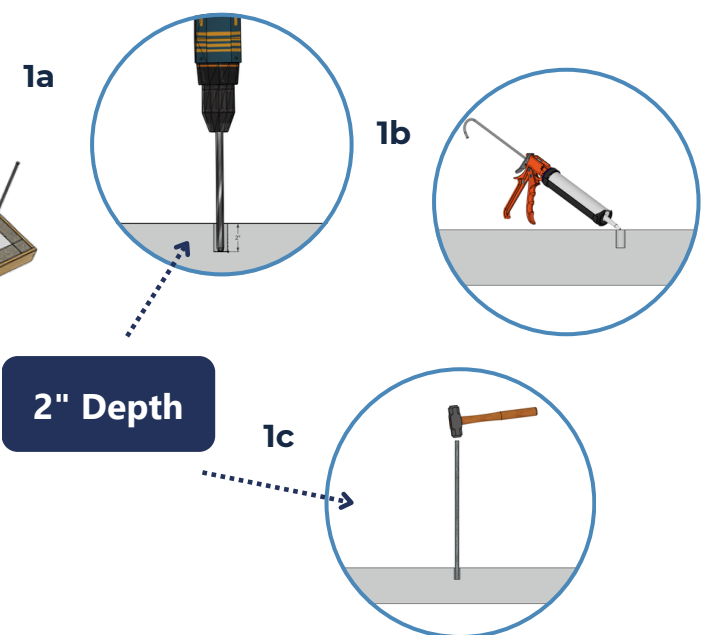
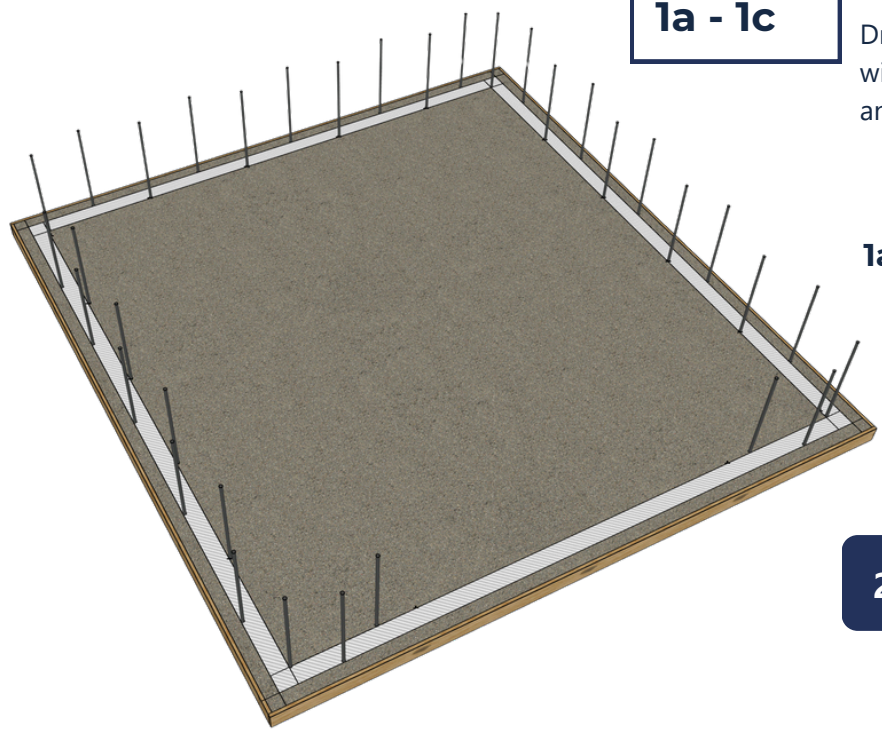
Snap chalk lines or stretch string to mark the perimeter of each wall on the slab or footer. Use measuring tape and squares to define corners and door/window locations. Mark dowel hole positions approximately every 14 inches, alternating sides along the panel for a staggered anchor pattern.



1a - 1c

Drill and Epoxy Rebar Dowel

Drill holes approximately 2 inches deep, fill each with epoxy, insert dowels by hammering them in, and allow to cure fully before panel placement.

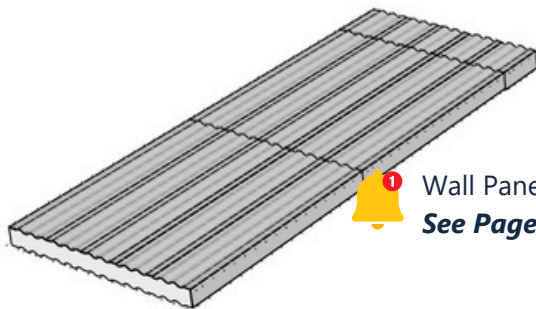
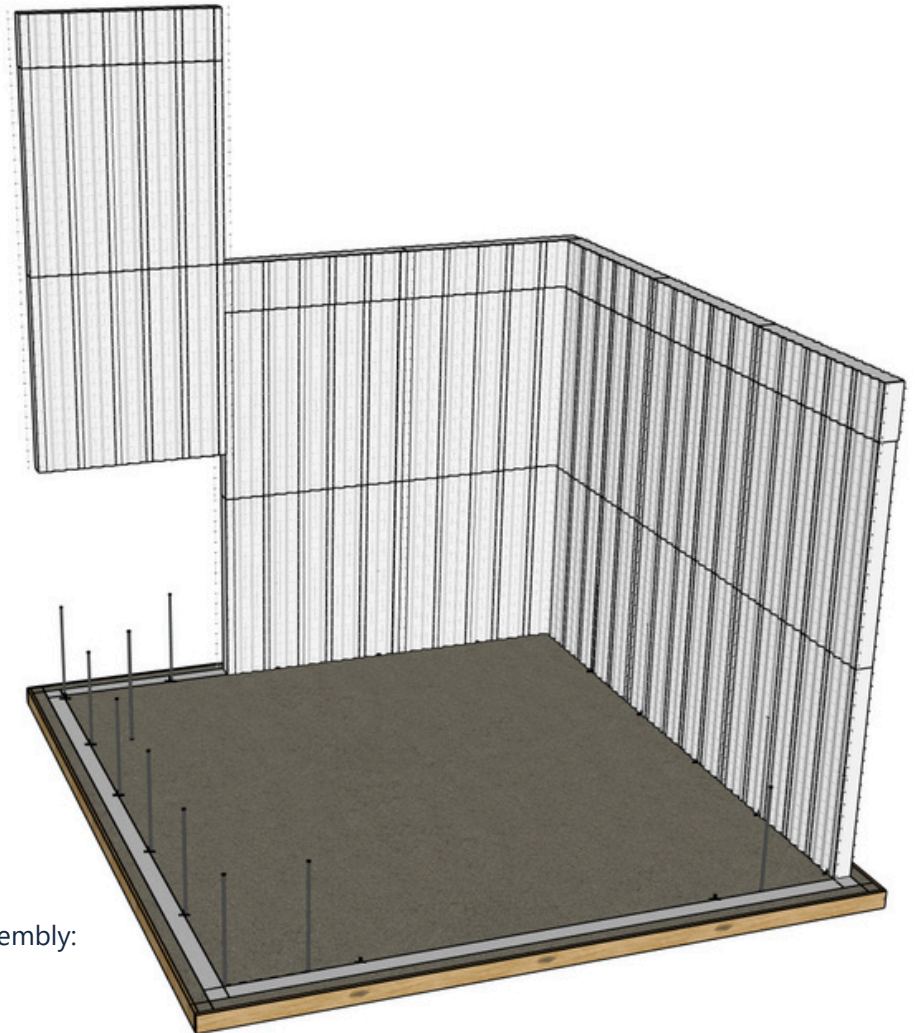
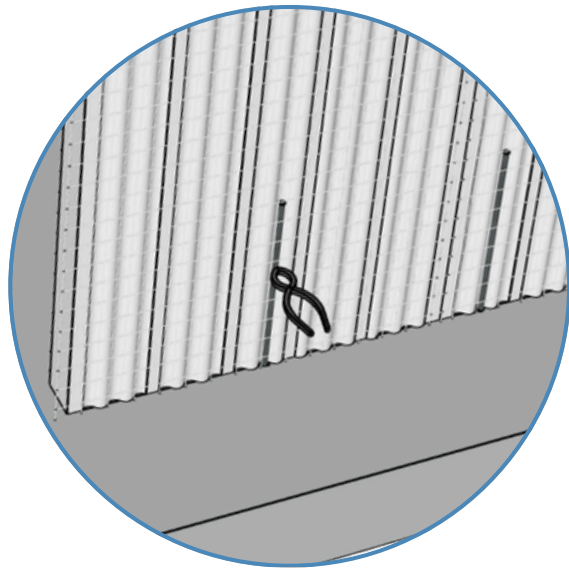


A **minimum slab dimension of 14' x 14'** is recommended to provide adequate working space for panel installation, bracing, and material handling during construction. Larger slab dimensions may be required depending on the building layout and site conditions.



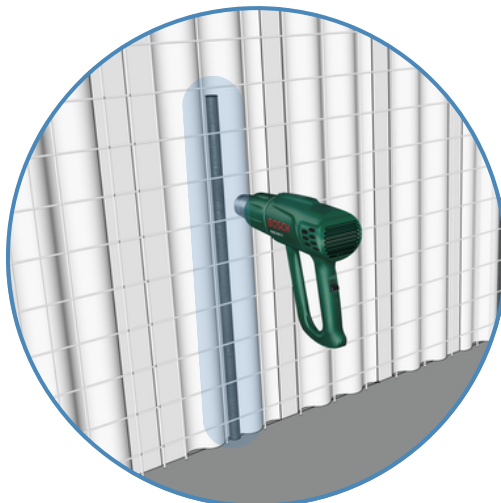
2 Panel Placement with Rebars and Anchoring

Position wall panel assemblies vertically along marked wall lines, sliding them over pre-installed rebars, then secure using tie wire for structural stability.



 Wall Panel Assembly:
See Page 5

2a



2a

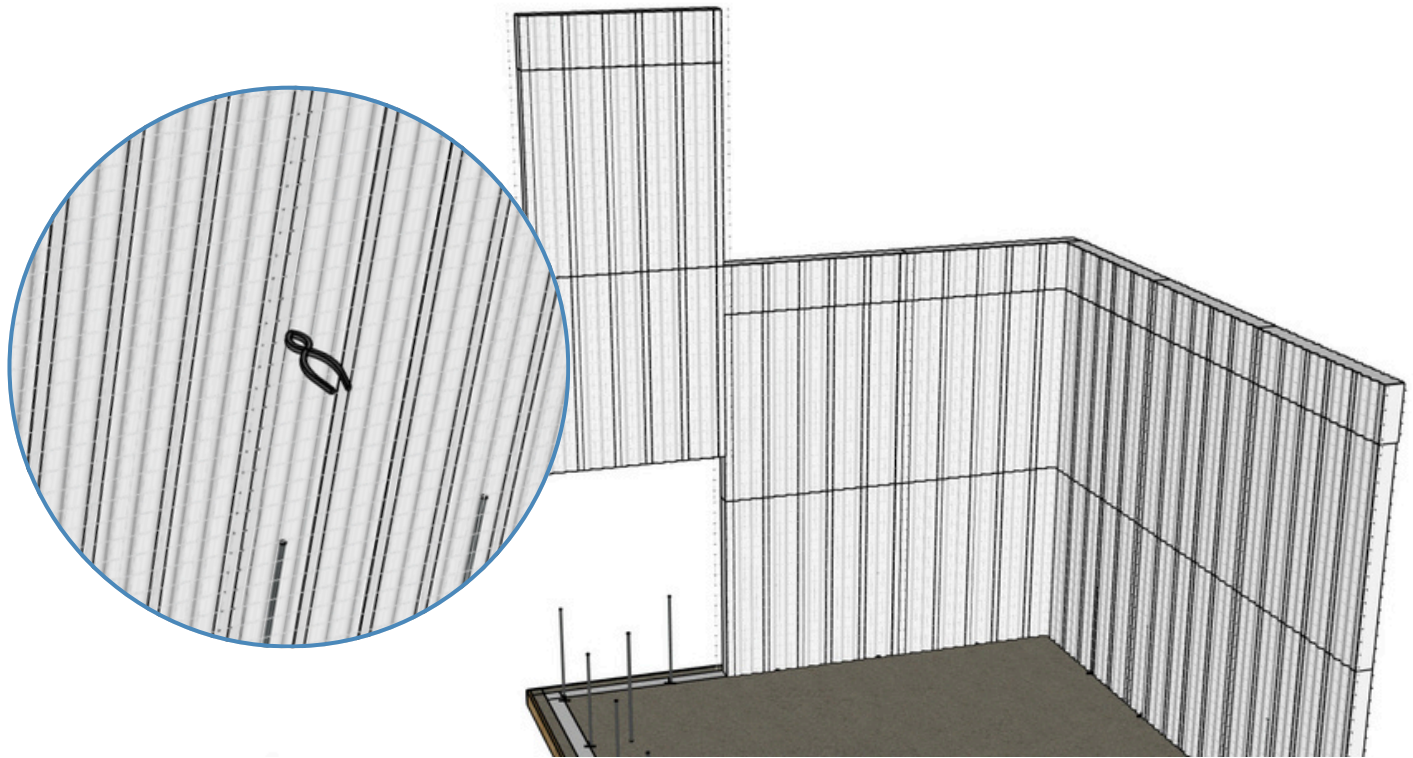
Prepare Panel Base and Slide Over Dowels

Use a heat tool to melt a groove at the panel base, then lower the panel over rebars, guiding them between the foam core and exterior mesh.



3 Panel Placement with Rebars and Anchoring

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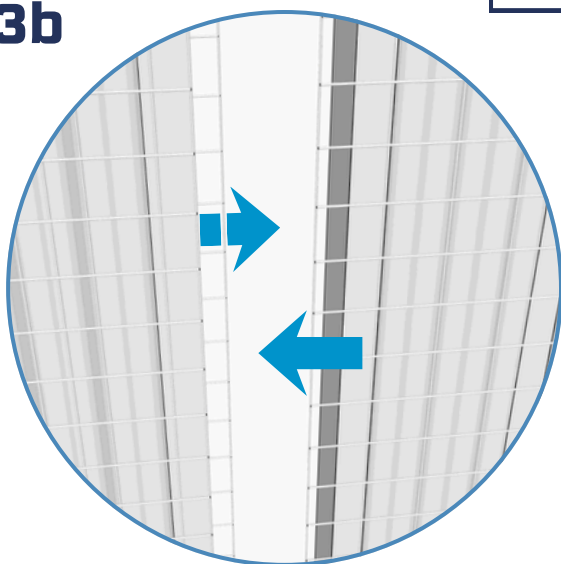


3b - 3c

Overlap and Tie Mesh Between Panels

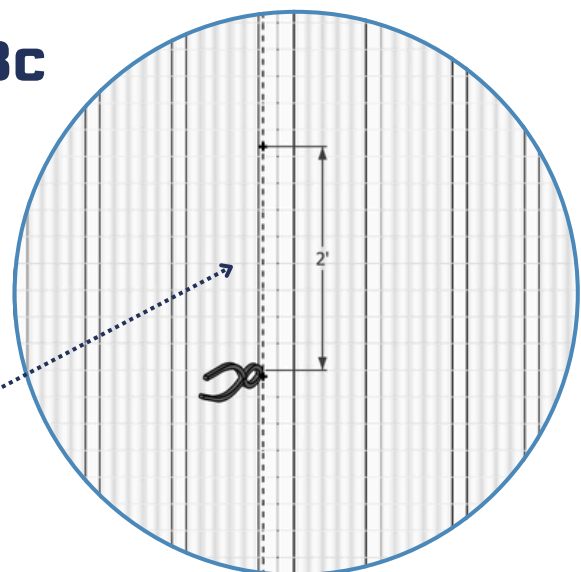
Align panels so edge meshes overlap on both sides, then wire-tie seams securely every 2 feet using pliers.

3b



3c

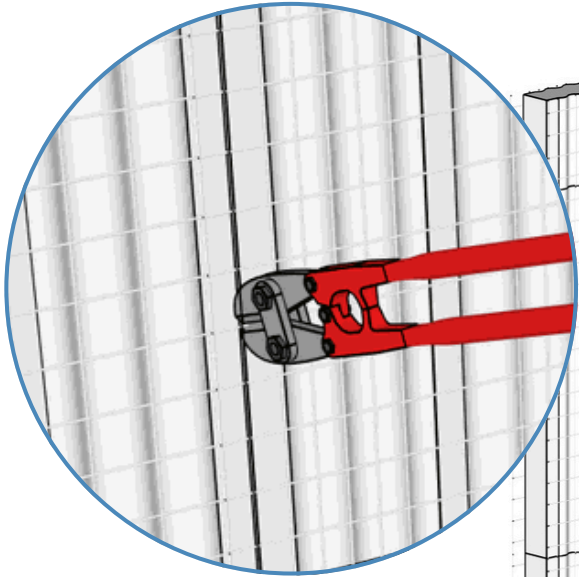
2'



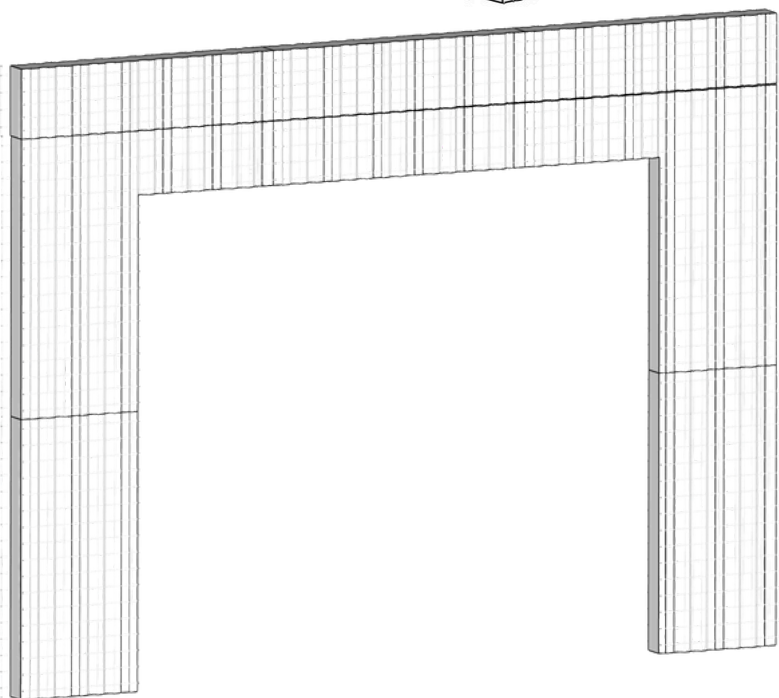
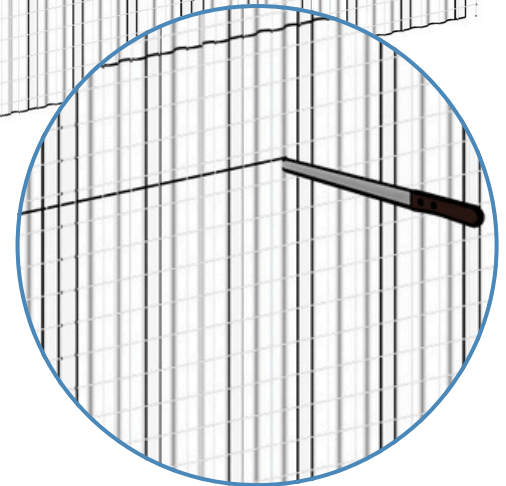
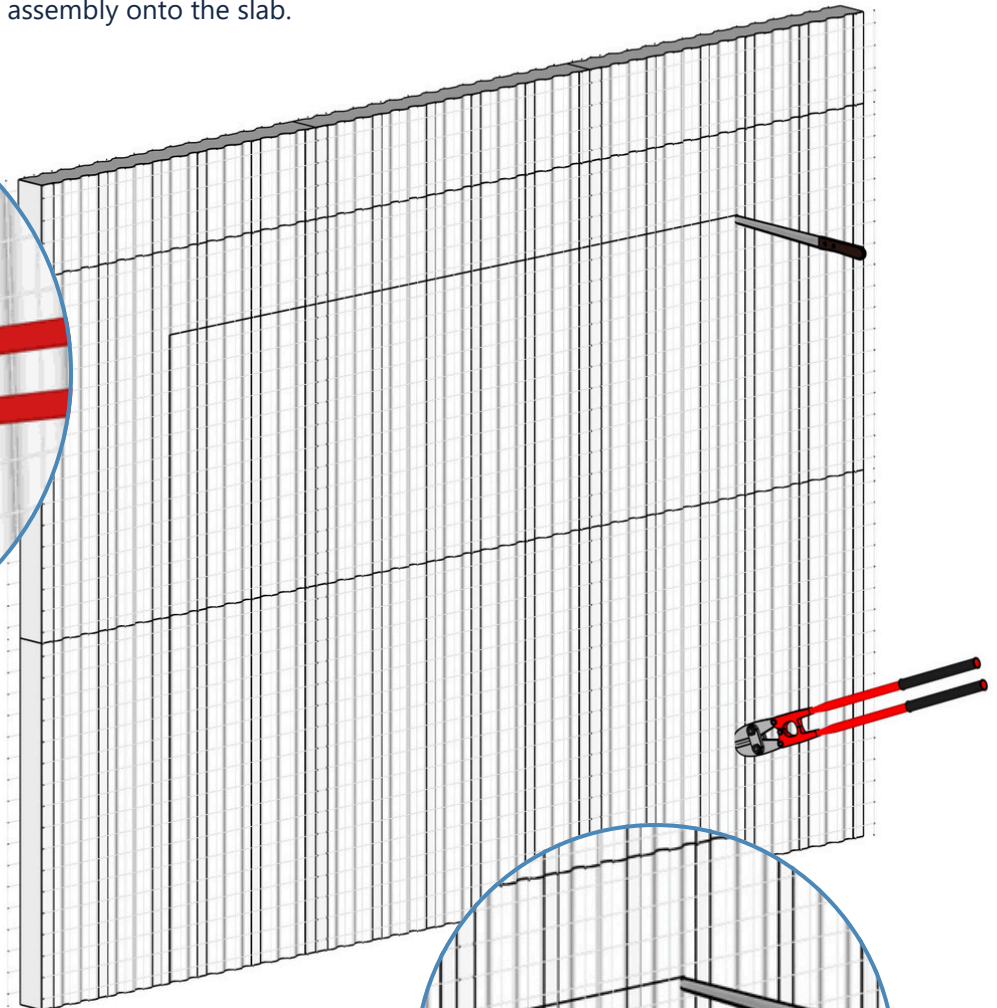
4

Cutting Your FortiUnit Door Opening

IMPORTANT: Before erecting the wall designated for the FortiUnit doorway, connect **three (3) wall panel assemblies** and lay them flat to mark the doorway opening cut lines. Clip the wire mesh along the marked lines on both the interior and exterior faces, then cut the foam core along the same lines before erecting the wall assembly onto the slab.



Cut the wire mesh along the marked cut line using pliers or appropriate wire cutters. Next, use a heat knife to cut cleanly through the EPS core along the same line to complete the panel section.



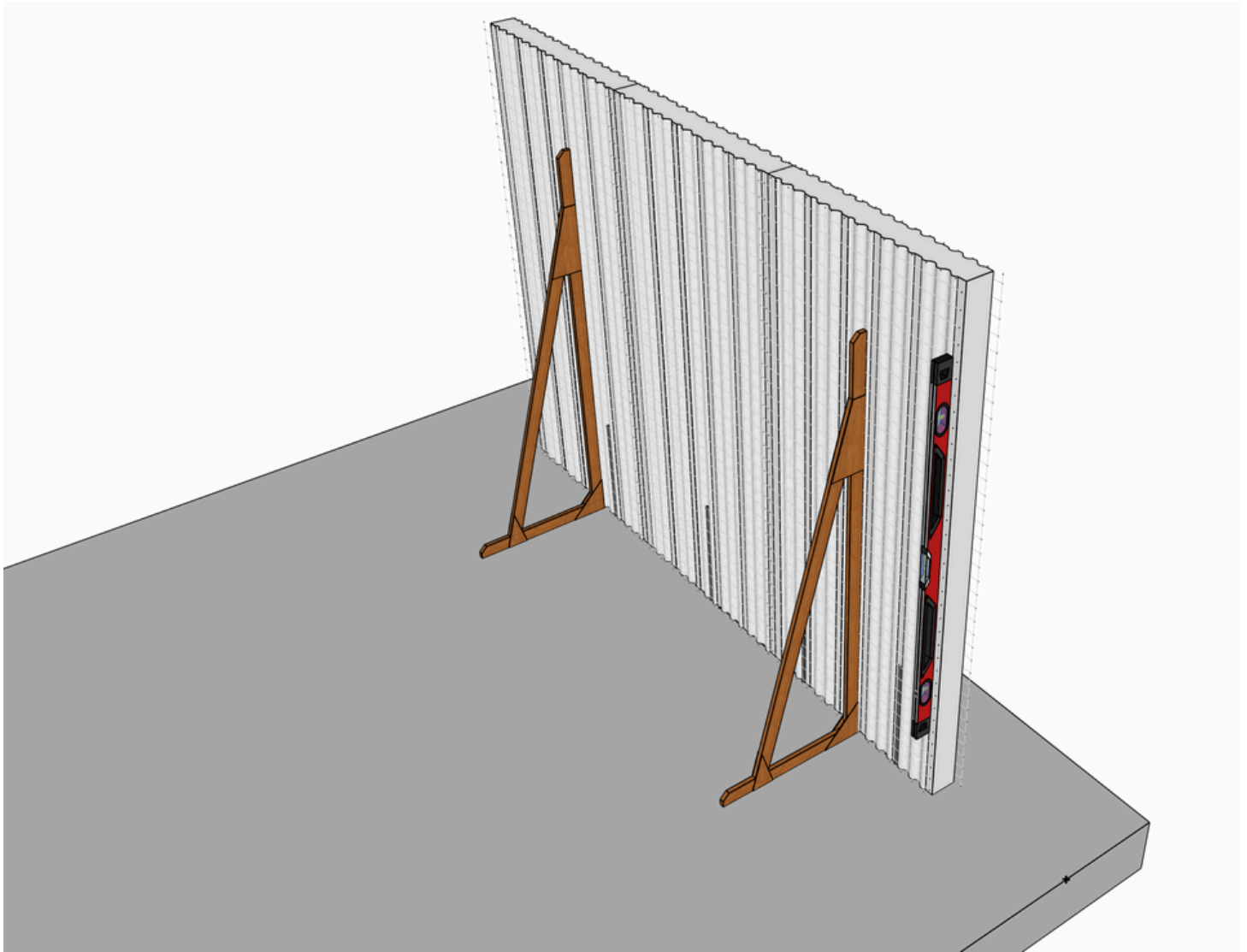
Door Opening Dimension Note:

When marking and cutting the FortiUnit doorway, verify the product specifications of the door being installed and size the foam cut opening accordingly. Allow for 2 inches of concrete on all sides of the foam cut line, as this concrete thickness will be added during shotcrete application and will define the final finished opening dimension for door installation.

5

Panel Alignment and Bracing

Use a level and plumb line to ensure each panel is vertically aligned. Secure panels with braces fixed at an angle and anchored to the slab or formwork to hold position during installation.



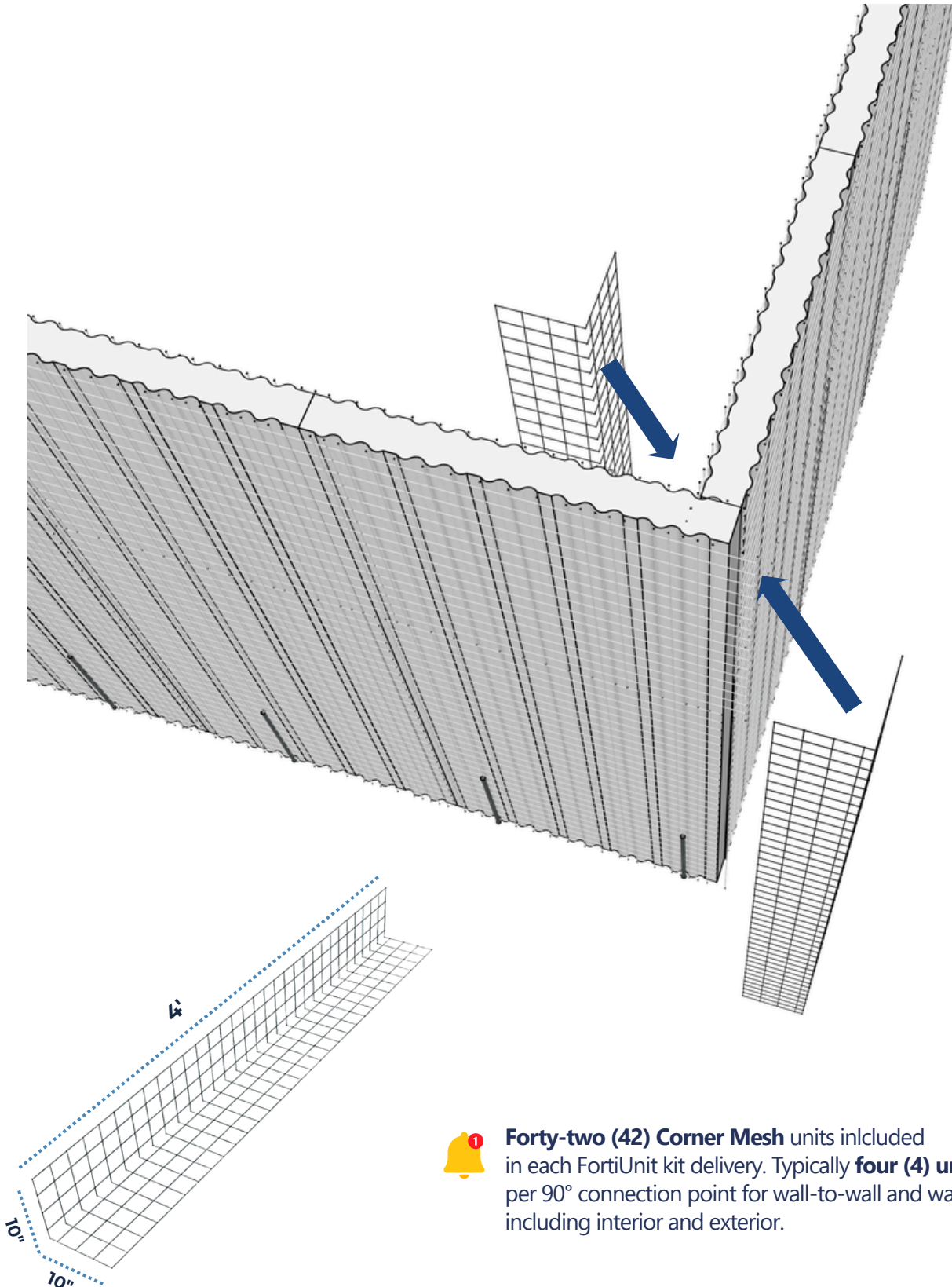
Bracing Options:

- Wood 2x4s: Easy to cut and nail into angled supports.
- Adjustable metal poles: Also called "jack posts" or "telescoping braces," these can be tightened by hand.
- Metal braces with clamps: Pre-made supports that can be locked in place with simple clamps.
- L-brackets with threaded rods: Useful for tight areas; rods can be turned to adjust pressure.

6

Installing Corner Mesh for 90° Panel Connections

Attach L-shaped mesh to the inside and outside corners where wall panels meet at 90°. Tie the mesh securely to the panel wire on both sides to reinforce the joint and lock the walls together.



Forty-two (42) Corner Mesh units included in each FortiUnit kit delivery. Typically **four (4) units** needed per 90° connection point for wall-to-wall and wall-to-roof, including interior and exterior.

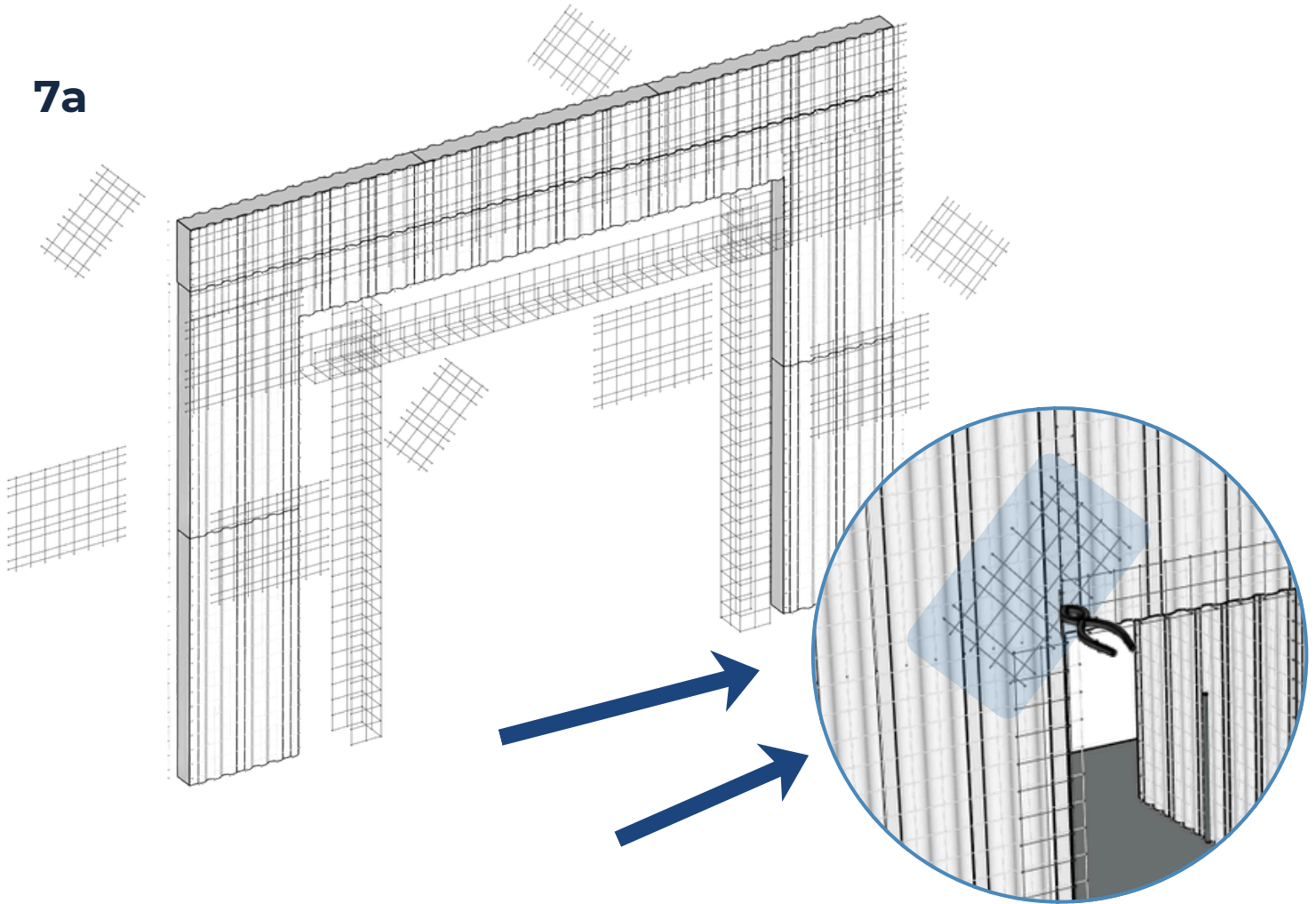


7

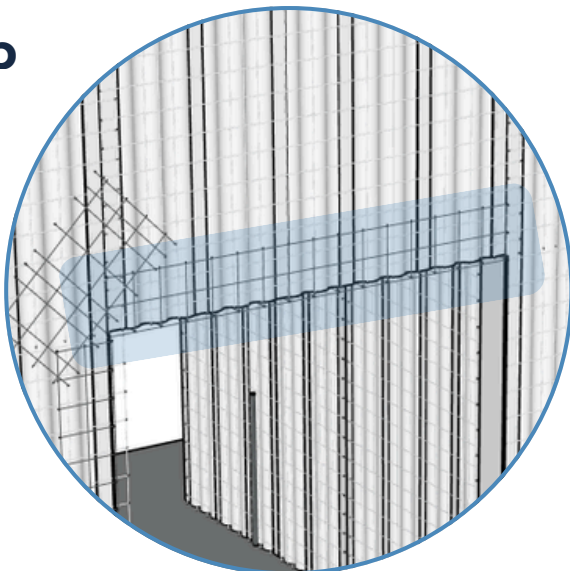
Accessory Mesh Installation for Structural Reinforcement

Install additional mesh reinforcements at key stress points to strengthen the panel assembly before concrete application. This includes U-mesh along panel edges and around openings, and flat mesh placed diagonally at corners of windows and doors to prevent cracking.

7a



7b



7a - 7b

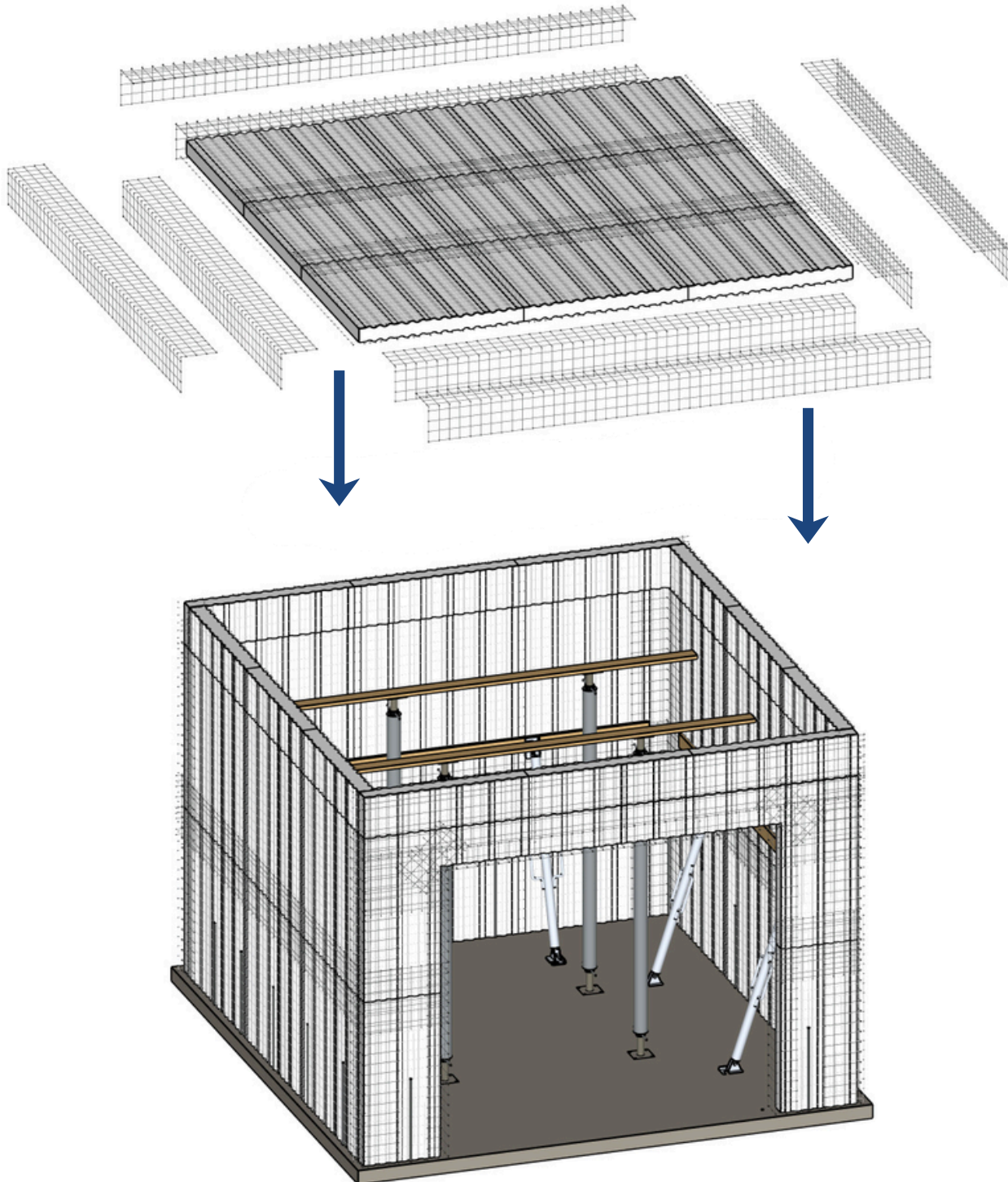
Reinforcing Openings with U-Mesh and Flat Mesh

Wrap U-mesh around the full perimeter of your FortiUnit door opening, then place flat mesh diagonally at all corners to strengthen against cracking and movement.

8

Roof Panel Installation

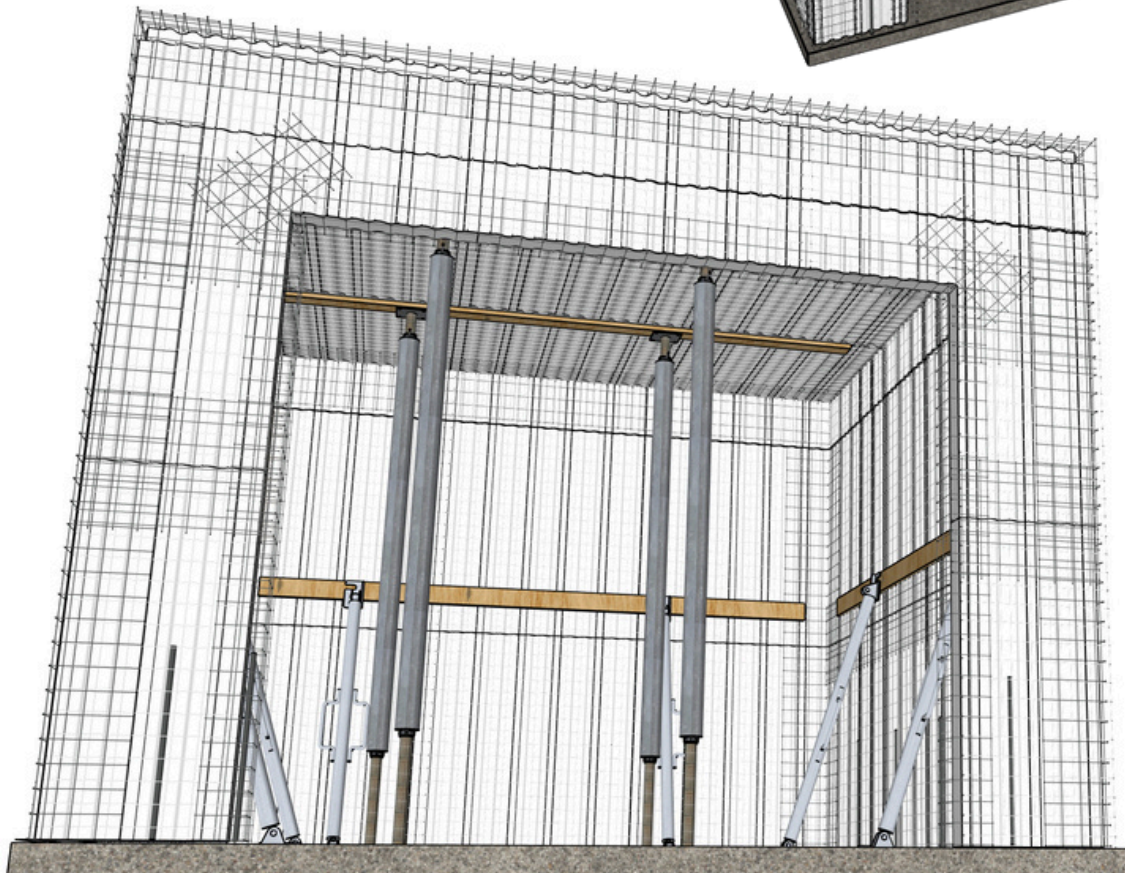
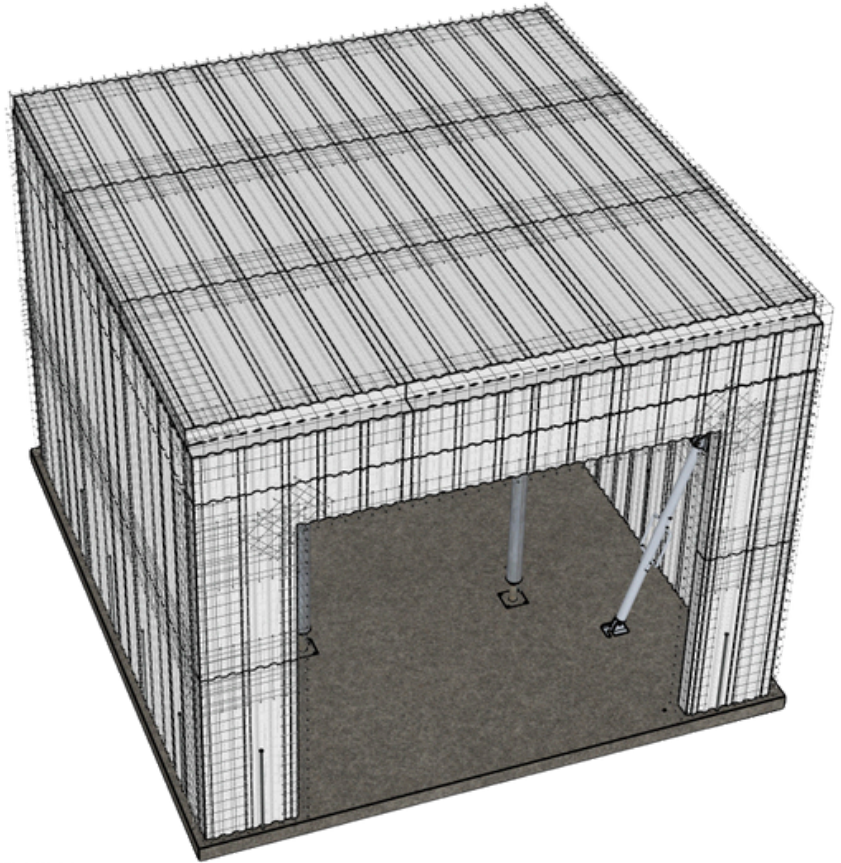
Place roof panels onto the aligned wall perimeter, ensuring they rest securely across supported edges. Tie overlapping mesh seams together, then reinforce interior and exterior connections with corner mesh. Use temporary wood or metal shoring from below to support the roof panels until concrete is applied and cured.



9

Completed Structure Assembly before Concrete


The fully assembled panel structure should be square, plumb, and fully braced, with all mesh connections tied and reinforcement installed at corners, edges, and openings. Verify that all panels are securely anchored, shored, and ready for concrete application.



WET MIX MORTAR RECIPE

Find links to recommended materials at store.fortifiedstructuralsolutions.com/tools

INGREDIENT	PER BATCH (3.5 CU FT)	TOTAL for 315 SQ FT (12 BATCHES)
Portland Cement (Type I/II)	85 lb = 1 full bag + ~10 lb	3,442.5 lb (~40.5 bags)
Clean Sand (ASTM C33)	~275 lb = 3.5 full 5-gal buckets	11,137.5 lb = ~142.8 buckets = ~4.13 cubic yards
Water	~34 lb = 4.1 gallons	1,377 lb (~165.1 gallons)
Synthetic Fibers (PP)	~0.25–0.3 lb = 1 heaping handful	12.15 lb total = 40.5 handfuls
Acrylic Bonding Agent	~0.4 gal = ~50 oz per batch	16.2 gallons total
Plasticizer (optional)	~5 oz = about 2/3 cup	202.5 oz (~6.3 quarts)

 **Notes:** The specified mix should achieve a compressive strength range of **approximately 3,000 to 4,500 psi**, depending on curing conditions and exact water content. This exceeds the minimum target of 2,500 psi and is suitable for structural wall coatings applied via sprayer.

The above table is based on estimated concrete coverage for one standard panel kit (315 sq ft at 1 3/8" thickness) and a mixing container with 3.5 cu ft usable capacity (4.2 cu ft total volume). Quantities are approximate and intended for field guidance only.

Disclaimer: Fortified Structural Solutions provides these mix proportions as general recommendations and assumes no responsibility or liability for faulty batching, mixing, or application. For best practices, users should consult ACI 506R (Guide to Shotcrete) and ACI 506.2 (Specification for Shotcrete). For permitted projects, always follow local building codes and project-specific engineering requirements.

Concrete/Mortar (applied in-situ)

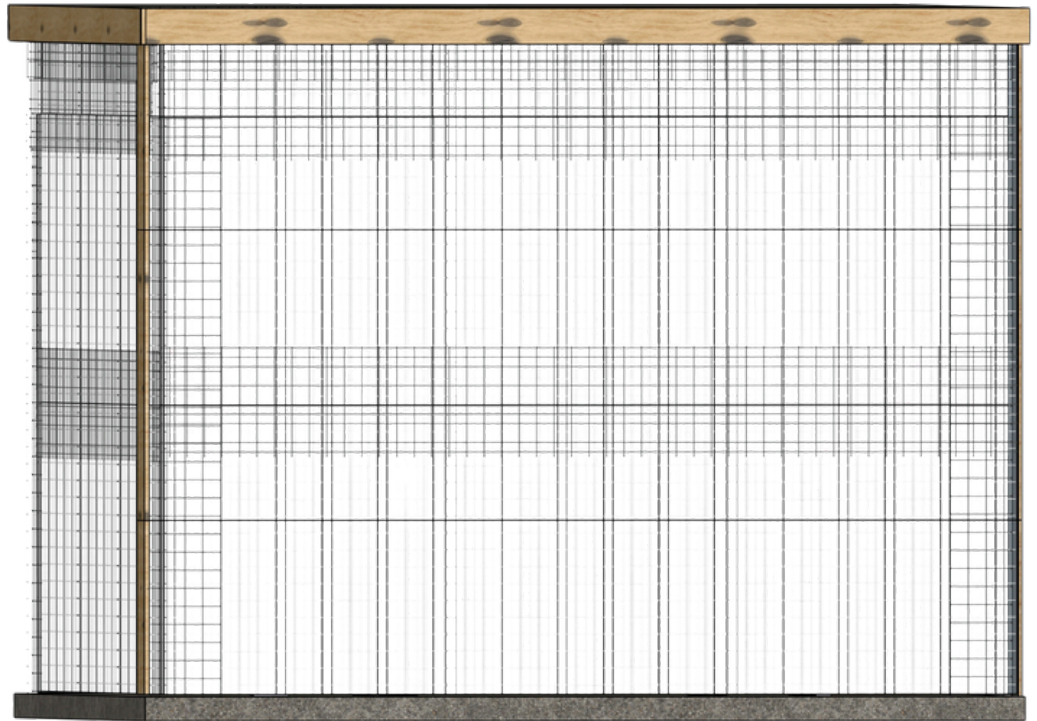
- Compressive Strength > 2,500 PSI
- Thickness > 1" from Mesh
- Aggregate size < 5/8"
- Slump > 2"

**SCAN TO SHOP
RECOMMENDED
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10 *Apply Scratch Coat*

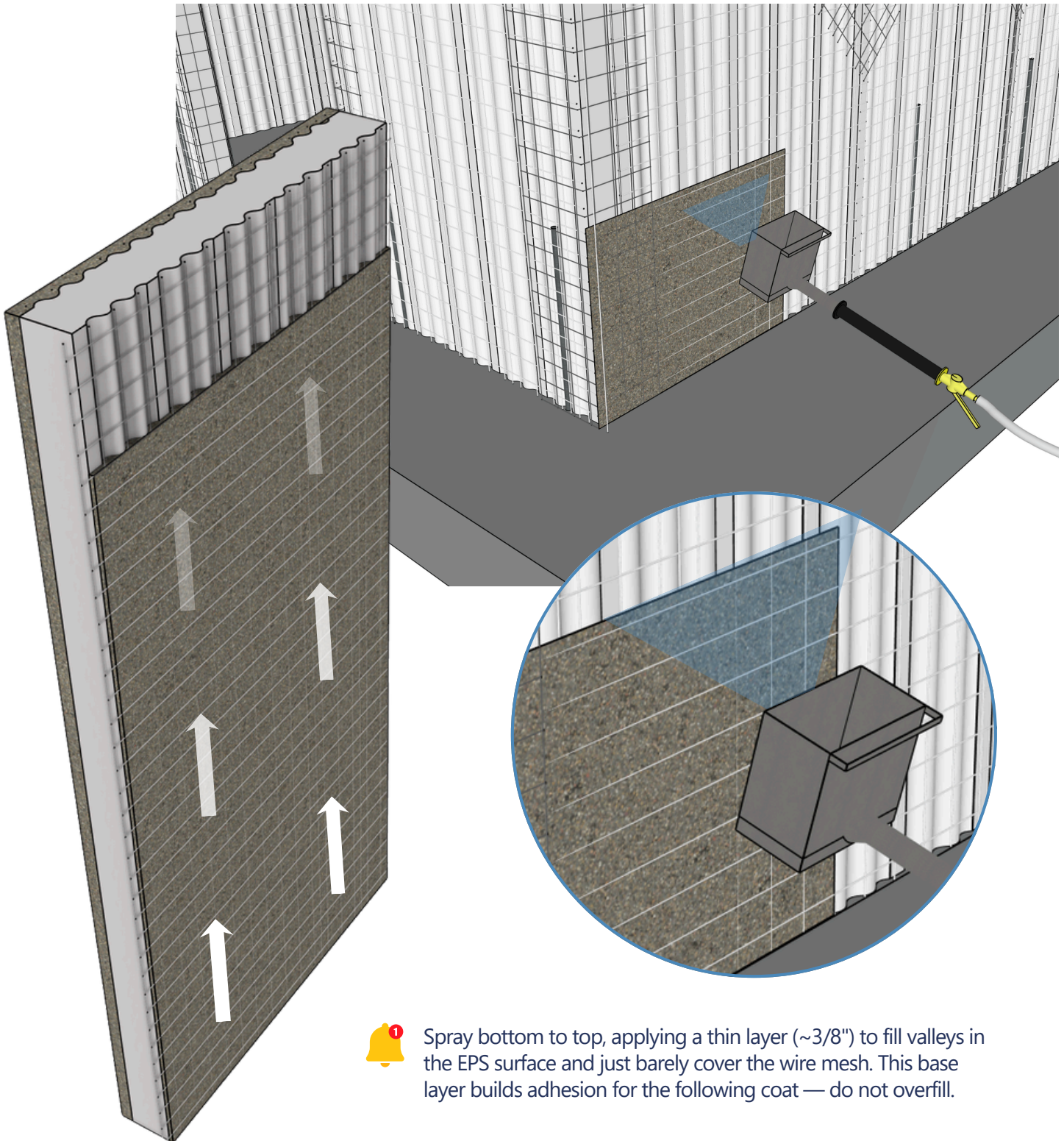
Spray a thin, even base layer of mortar (scratch coat) over all panels, just enough to fully cover the mesh and create adhesion for the next coat.



Spray bottom to top, applying a thin layer (~3/8") to fill valleys in the EPS surface and just barely cover the wire mesh. This base layer builds adhesion for the following coat — do not overfill.

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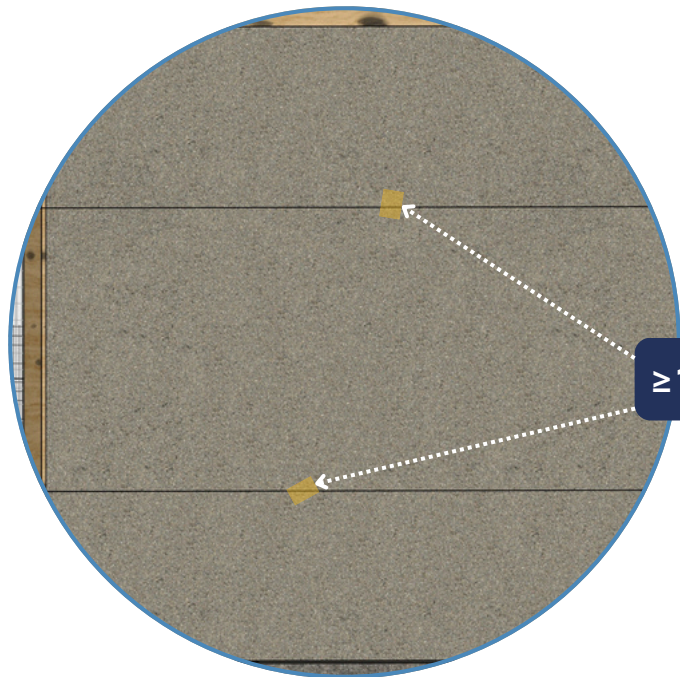
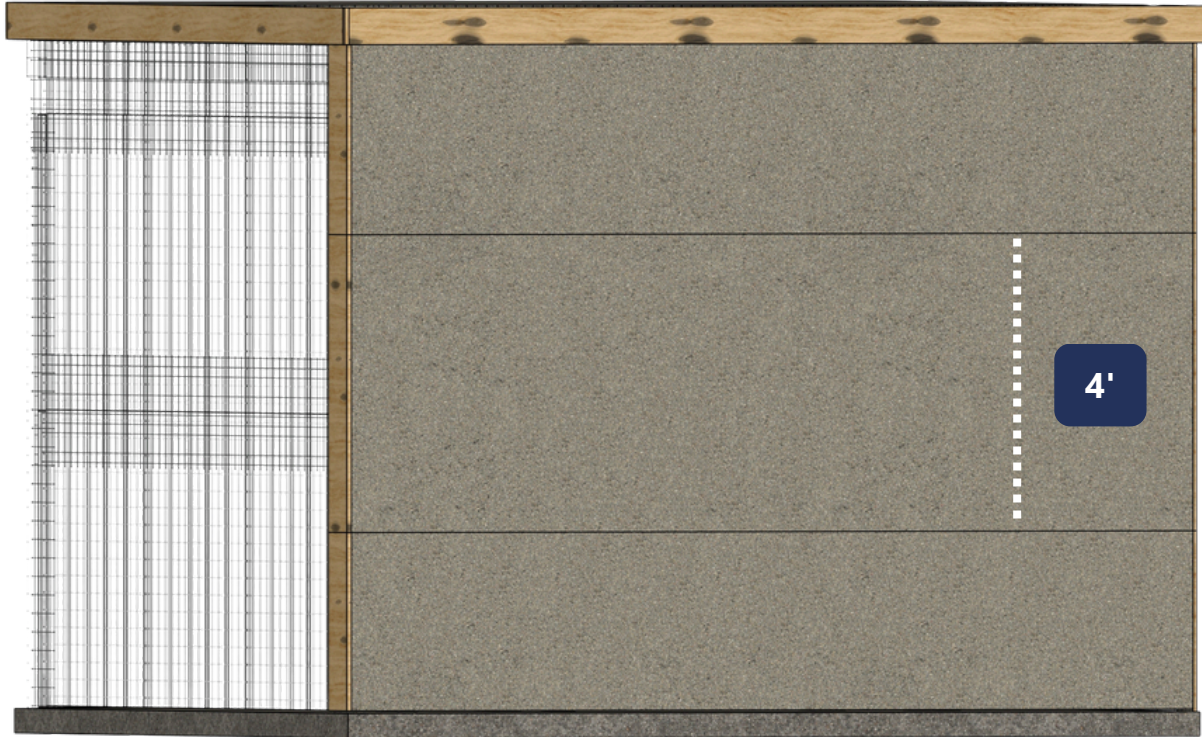


Spray bottom to top, applying a thin layer (~3/8") to fill valleys in the EPS surface and just barely cover the wire mesh. This base layer builds adhesion for the following coat — do not overfill.



12 *Insert Piano Wire*

While the scratch coat is still damp, embed straight screed guides (wood, metal, or pvc strips) vertically at regular intervals to define brown coat thickness - minimum 1" thick from the mesh. Temporarily secure screed guides using tie wire or alternate method.



Re-usable Screed Guide Examples

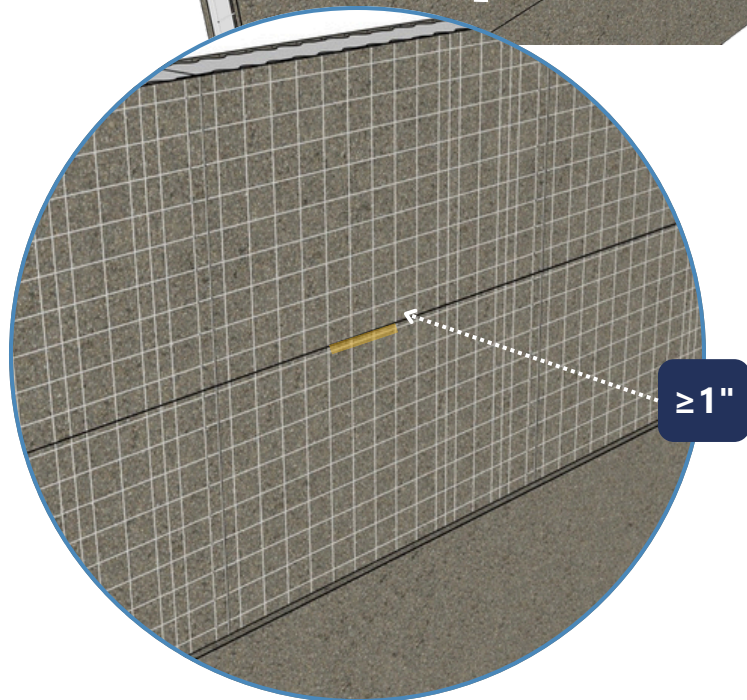
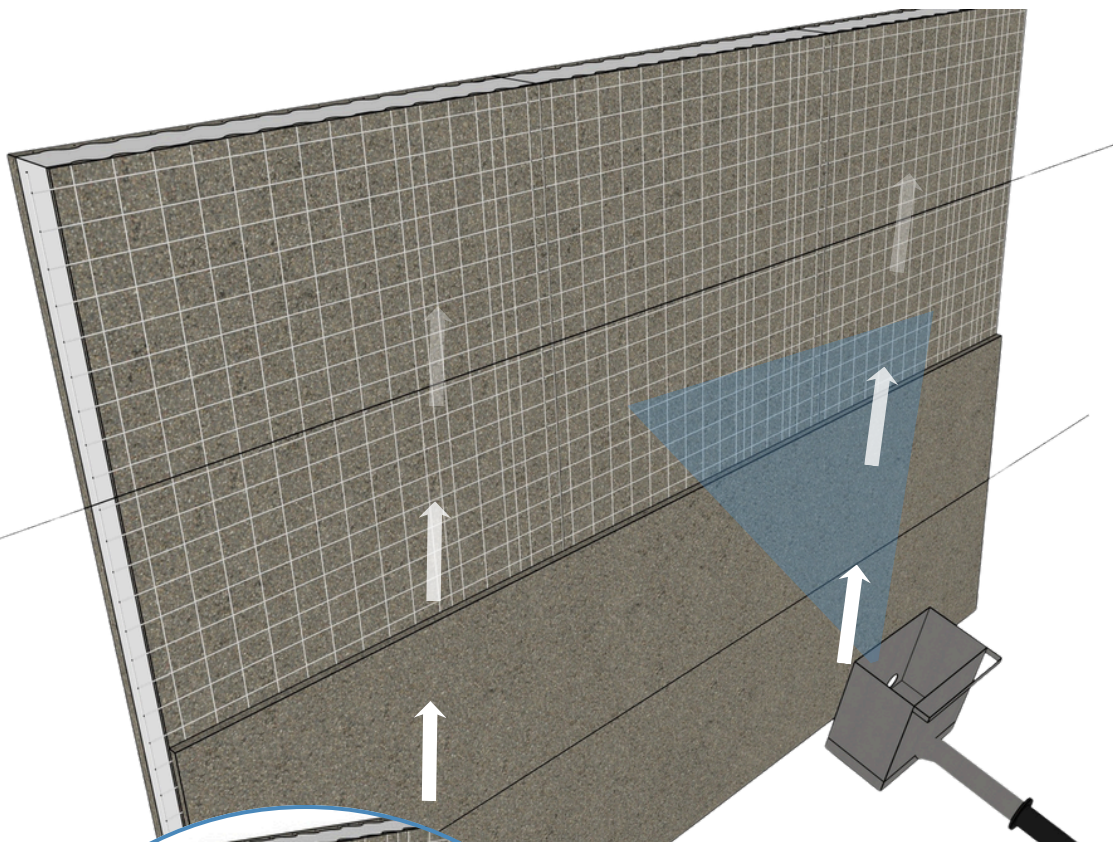
Wood, Plastic, Metal $\geq 1''$ Thickness or Diameter



13

Apply Brown Coat

Spray the second mortar layer (brown coat) to build up total thickness ($\geq 1"$), embedding over and between screed guides.



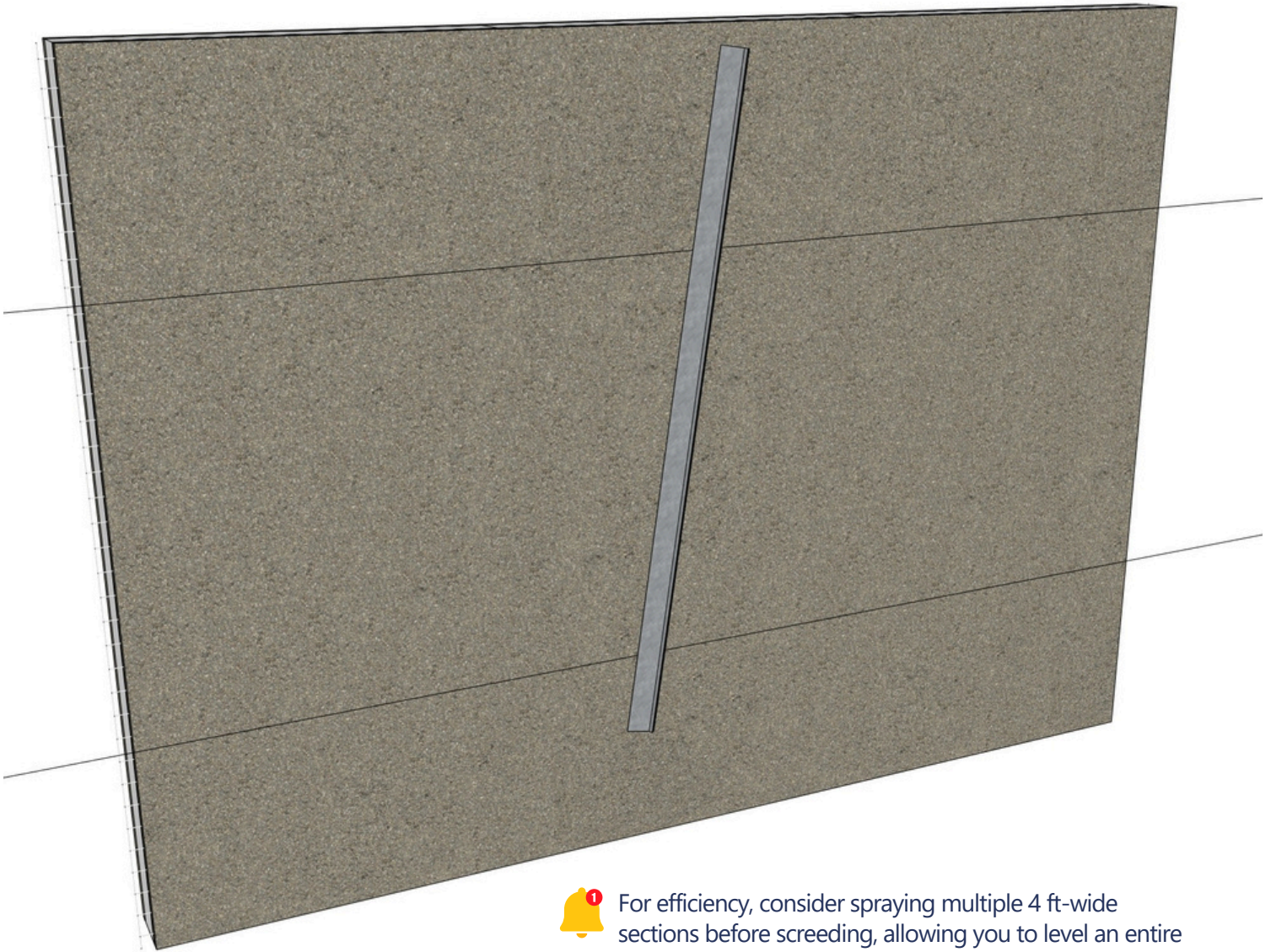
The brown coat is the main structural layer. Apply it over and between screed guides to build up the full thickness, using the rails as a reference. This layer will be leveled in **Step 11**.

Per ACI guidelines, wait 4 to 24 hours after the scratch coat—until it's firm enough to support new material without shifting.

14

Screed the Wall Surface

Use a straight screed board or metal level to drag along screed guides, flattening and leveling the brown coat surface.



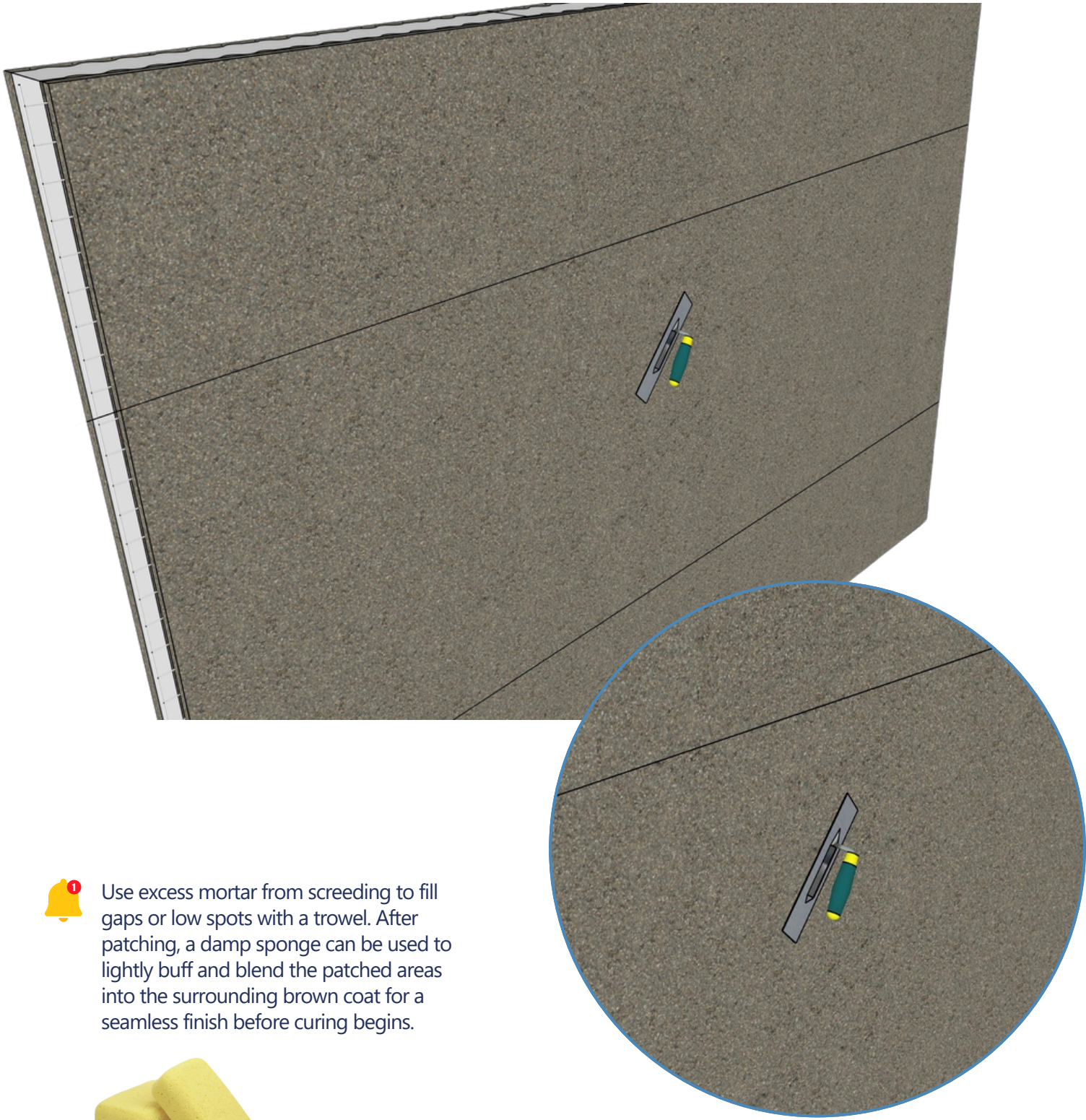
For efficiency, consider spraying multiple 4 ft-wide sections before screeding, allowing you to level an entire wall or multiple walls in sequence—based on crew size and timing. Monitor weather and surface temperature closely; ideal conditions are cool and shaded to prevent premature drying.

Per ACI guidelines, screeding should begin as soon as the brown coat holds its shape but is still workable—typically within 30 to 60 minutes after application, depending on conditions.

15

Patch Brown Coat Where Needed

Fill guide grooves and any low spots with fresh mortar, smoothing it flush with the wall surface.



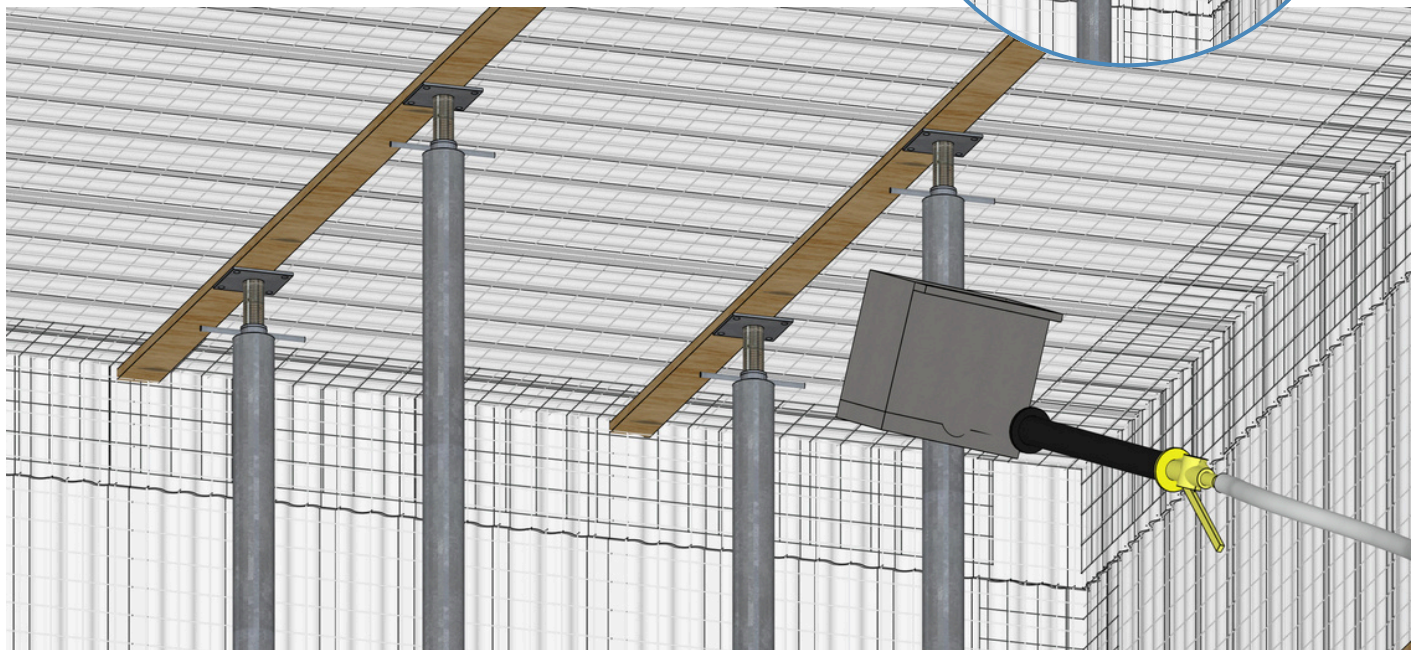
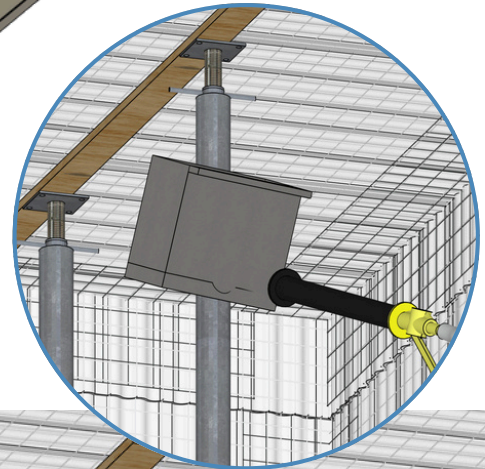
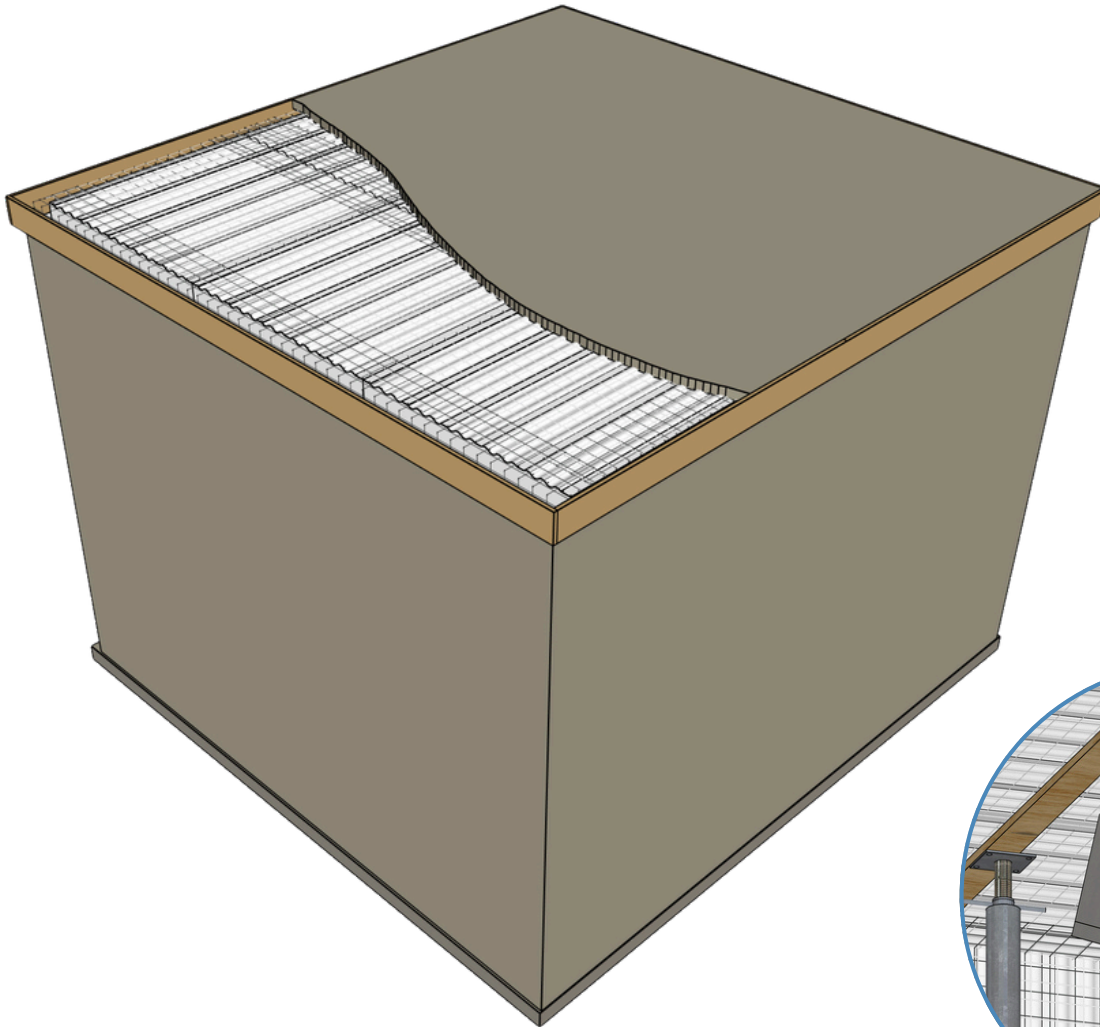
Use excess mortar from screeding to fill gaps or low spots with a trowel. After patching, a damp sponge can be used to lightly buff and blend the patched areas into the surrounding brown coat for a seamless finish before curing begins.



16

Patch Brown Coat Where Needed

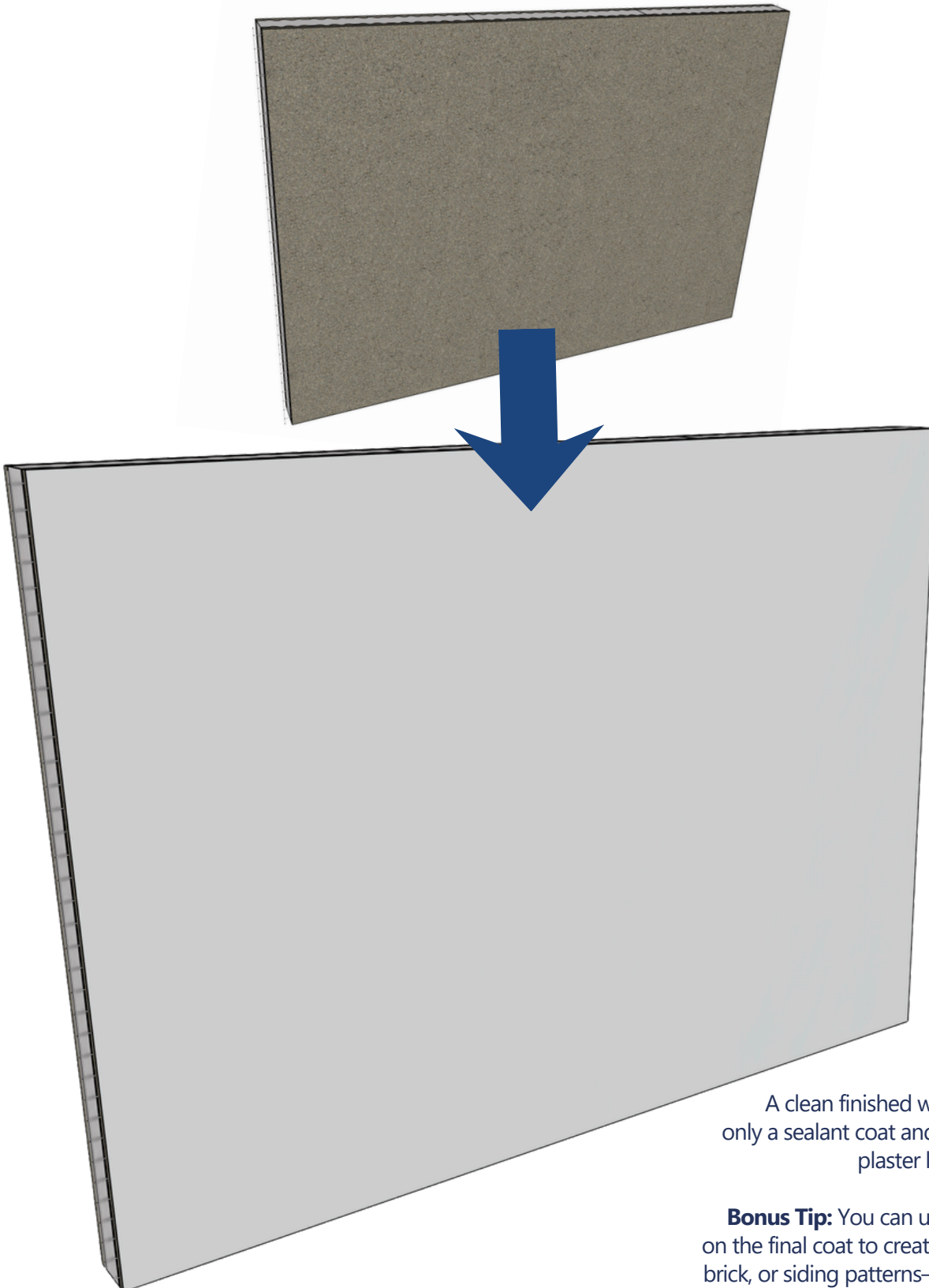
Fill guide grooves and any low spots with fresh mortar, smoothing it flush with the wall surface.




17

Final Finish Layer

After mortar cures, apply your selected surface finish — plaster, stucco, paint, or waterproof sealant — to protect and complete the wall.



A clean finished wall may require only a sealant coat and paint, or a thin plaster layer for texture. 


Bonus Tip: You can use roller stamps on the final coat to create realistic stone, brick, or siding patterns—a great way to add character without extra materials!

18

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LEGAL DISCLAIMERS AND IMPORTANT NOTICES



Building Code Compliance

It is the purchaser's responsibility to ensure that the use and installation of this product comply with all applicable building codes and regulations, including but not limited to the Florida Building Code (FBC), International Building Code (IBC), or local municipal codes. The manufacturer does not guarantee code compliance in any specific jurisdiction. Verify with your local building department before beginning installation on a permitted or habitable project.

Installation Responsibility

This product must be installed in accordance with the manufacturer's installation instructions and all applicable building codes. While installation by a qualified, licensed professional is strongly recommended—especially for structural or permitted projects—experienced DIY users may perform installation at their own risk. Improper installation may result in structural failure, property damage, or personal injury, and will void any applicable warranty. All handling, installation, and jobsite safety are the sole responsibility of the purchaser or installer.

Limited Warranty and Liability

Unless stated otherwise in a written warranty document, this product is provided "as is" with no express or implied warranties, including merchantability or fitness for a particular purpose. The manufacturer's liability is strictly limited to replacement of defective product, if applicable, and excludes any incidental or consequential damages.

Disclaimer of Responsibility

FortiUnit is not responsible for:

- Misuse, unauthorized modifications, or off-label applications
- Engineering or architectural decisions
- Installation errors or field conditions
- Permitting or inspection issues

Refer to **ACI 506R** and **ACI 506.2** for best practices on shotcrete and structural panel system application.



BY ACCEPTING DELIVERY OF THIS KIT, THE CUSTOMER ACKNOWLEDGES AND AGREES TO THESE TERMS.

FortiUnit

