THE METALITH™ PERIMETER SECURITY SYSTEM INSTALLATION INSTRUCTIONS

Thank you purchasing the Metalith Perimeter Security System. The following document provides the manufacturer's recommendations for successful construction, installation and maintenance. Please read this document in its entirety before beginning the installation process, and use it as a reference during installation. For questions, contact Infrastructure Defense Technologies at (800) 379-1822. For overseas, call (202) 661-4720.

Safety

We recommend that every worker involved in assembling Metalith barrier components use all of the following safety clothing and equipment:

- Long gauntlet gloves
- Safety Toed shoes
- Hard Hats
- Safety Glasses
- Ear Protection
- Long Sleeved Shirt

Metalith panels contain sharp edges and caution should be taken to avoid injury.

Construction Needs

- Front end loader with height and load capacity to fill wall (for walls over 12', a crane and bucket may be required to fill higher courses
- Strap cutters to break packaging bands
- Forklift or other appropriate equipment for unloading
- Ball peen hammers to strike flaring tools which widen notched fittings
- Appropriate safety equipment and procedures

Site Preparation

Footprint must be graded, ground stabilized to handle weight, and designed good drainage to prevent ponding under or in the wall.

The Metalith wall footprint should be marked out with stakes, cones, and spray paint to match location. **DO NOT PLACE METALITH WALL KITS WITHIN THE FOOTPRINT.**

In order to maximize drainage and stability of the Metalith, manufacturer recommends a 6” layer of crushed gravel at the base of the unit, beneath the first course and 12” beyond the outside of both sides of the wall.

Delivery, Unloading, Packaging and Staging

Metalith corrugated panels are shipped on either skids or domestic flat bed transportation pallets and can also be shipped on 463L rapid deployment military transport pallets.

For domestic (flatbed) shipments, unless otherwise specified, Metalith panels will be packaged on pallets suitable for side unloading by a forklift. Be sure that unloading equipment has capacities exceeding the weight of the Metalith bundles.

For ocean container shipments, Metalith panels will be packaged on skids for unloading from the end of the container. A forklift may be used with other appropriate means to unload ocean containers. Be sure that unloading equipment has capacities which exceed the weight of the Metalith bundles.

Once the product is unloaded, it should be noted that each bundle of Metalith panels contains a tag for identification purposes. The tag will contain the following important information:

- Panel Type (End “A”, Side, Cross, End “B”)
- Bundle Weight
- Part Dimensions
- Piece Count
- Side Up/Side Out indicator

An illustration of the sample tag is shown on the next page.

METALITH PACKAGING DETAIL

PANEL TYPE:	**SIDE**
BUNDLE WEIGHT:	**5000#**
PART DIMENSION:	**97.5” X 36.59”**
PIECE COUNT:	**75 PCS.**

NOTE:
SIDE NOTCH FACES UP FOR INSTALLATION.
WIDE FACE FACES OUT FOR INSTALLATION

Staging:

Position the bundle marked “End ‘A’” at the first position at the end of the wall, OUTSIDE the footprint of the wall. This bundle will form the wall commencement.

Position the bundle marked “End ‘B” at the last position at the far end of the wall, OUTSIDE the footprint of the wall. This bundle will form the wall termination.

Position bundles marked “Side Panels” or “Cross Panels” at various points along the wall footprint, and on both sides of the wall footprint (the same will apply to bundles marked “accessories”). **DO NOT POSITION BUNDLES WITHIN THE WALL FOOTPRINT.**

IT IS IMPORTANT TO SPACE THE BUNDLES AT APPROPRIATE DISTANCES TO OPTIMIZE INSTALLATION EFFICIENCY.

YOU ARE NOW READY TO INSTALL THE METALITH PERIMETER SECURITY SYSTEM.

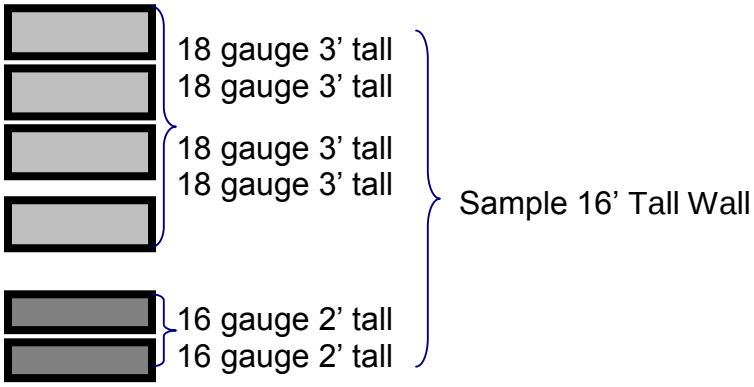
Metalith Kit Contents

Each Metalith Perimeter Security System kit contains the following contents:

Side panels:

- 2’ high panels – made out of 16-gauge steel and used for the lower 2 wall courses
- 3’ high panels – made out of 18-gauge steel that are used for the upper wall courses.

Metalith walls come in many standard wall heights and widths and are constructed without exterior support. The following example shows how the components of a standard 16’ wall would be configured.



It should be noted that in many of the production sizes for the Metalith, only one size of side panel may apply.

Cross Panels: These panels represent the cross structural members of the unit, and are positioned at every four feet within the wall.

Brace Panels: These panels are installed at the wall terminations for added support.

End Panels: These are the terminating walls of the unit.

Connecting Pins: Stainless steel pins used to connect corrugated sheets within the walls.

Flaring Tools: Hammer-like tools used to open the end notched sheets for perpendicular fit-up to other sheets.

End Caps: Sheeting used to prevent sand spillage at the four corners of the wall.

Wire Mesh: Mesh for use atop the unit to prevent wind erosion of the fill.

General Kit Information

The Metalith is a prefabricated steel wall unit constructed from corrugated metal panels that are connected with stainless steel pins, formed into multiple course assemblies of varying heights, thickness, and shapes. The table below shows the standard barrier wall sizes (custom sizes are available upon request).

Width In Feet	6' Tall	Gauge	8' Tall	Gauge	10' Tall	Gauge	12' Tall	Gauge	16' Tall	Gauge
3	Yes	18	No	-	No	-	No	-	No	-
4	Yes	18	Yes	18	No	-	No	-	No	-
5	Yes	18	Yes	18	No	-	No	-	No	-
6	Yes	18	Yes	18	Yes	18	Yes	18	No	-
7	Yes	18	Yes	18	Yes	18	Yes	18	Yes	16/18
8	Yes	18	Yes	18	Yes	16/18	Yes	18	Yes	16/18

You will note that there are five types of bundles in the Metalith installation kit. Among these are “End ‘A’”, “End ‘B’”, “Side”, “Cross” and “Accessories”.

End “A” and End “B” represent the two terminations of the wall. End “A” should always be installed first. The difference between the end bundles and other bundles is that they contain Brace Panels, which provide added support. The diagram below provides an illustration of an end configuration.

Note: End configuration contains Brace Panel. Intermediate configurations do not.

Intermediate bin configurations are attached to the end configuration, and are installed progressively in a course-by-course assembly. The pictures below provide additional detail.

After installation of each individual course, the unit is filled with sand (above). Courses are stacked one atop the other until the specified height is achieved.

Installation

Break the bands on the bundles to free the secured panels.

Assign ~25% of the available work crew to “flaring” activities. Flaring is the process of opening or widening the ends of the cross and brace panels accomplished by using the flaring tool provided in each installation kit. Individuals assigned to "flaring” must place the flaring tool into the notched end of the sheet.

Strike the flaring tool with a ball peen hammer until the flaring tool fits flush with the surrounding metal. See illustration that follows.

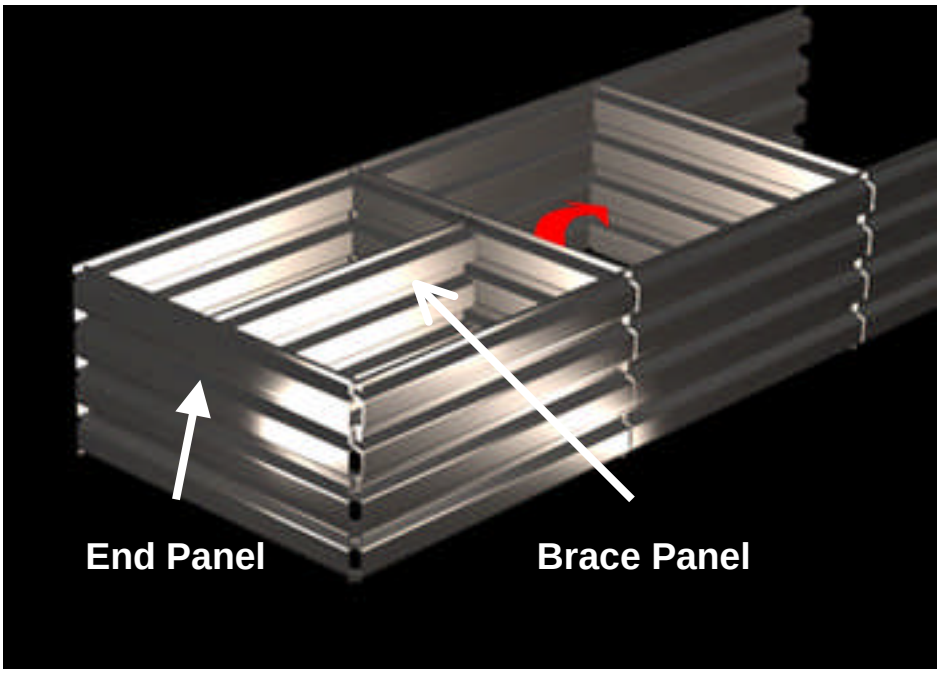
Flaring Tool Supplied In Kit

Proper Use of Flaring Tool On Cross Panels or Brace Panels

Assign the rest of the assembly crew to panel assembly to optimize the available labor to erect the Metalith barrier wall.

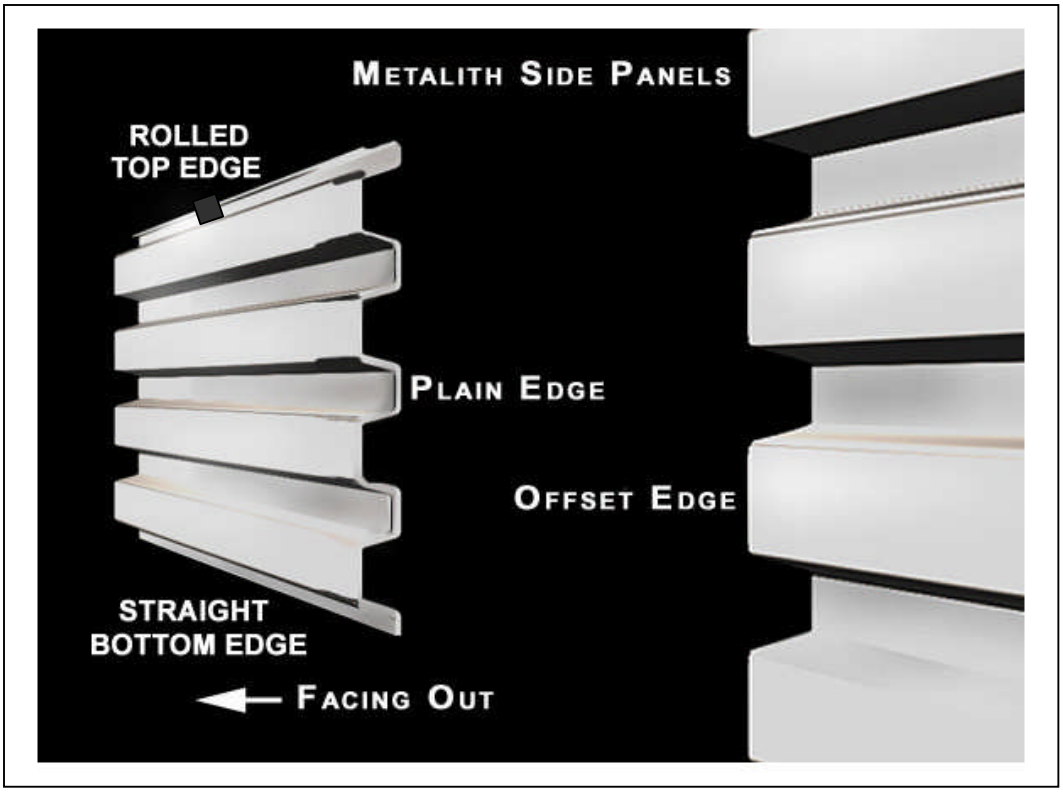
Remove panels from the bundle marked “End ‘A’” and assemble per the diagram shown below (this assembly should take place at the termination of the wall footprint). Connect the corrugated sheets using the stainless steel pins from the accessory kit.

The brace panels are 49.25”. Install the first course only (the wall unit will be 2-3 feet high, depending on overall wall height.



Remove side panels from the marked side panel bundle and place panels for positioning with the notched side facing up. The bottom of the panel always has a flat edge.

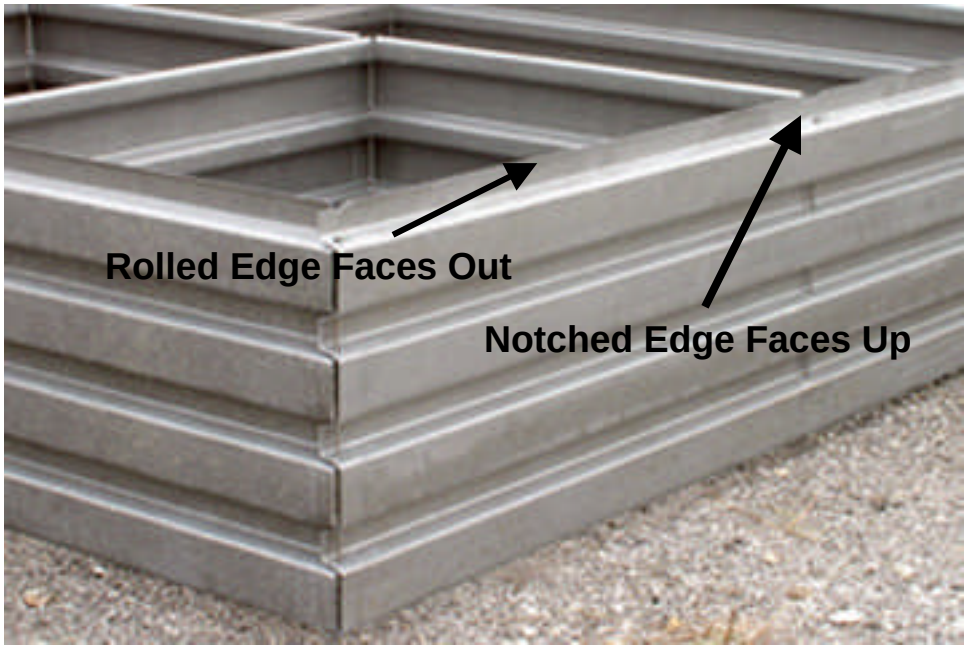
Ensure the side of the panel that will make up the outside of the wall has the larger corrugated portions facing out. See the illustrations below.



Position side panels on the wall.

Attach a cross panel at each pre-drilled location positioning each panel with the notched side up. When connecting bins the side panels are designed to overlap in a certain way. One end has a plain edge and the other end has an offset edge. The plain edge always goes on the inside. The offset edge always goes on the outside.

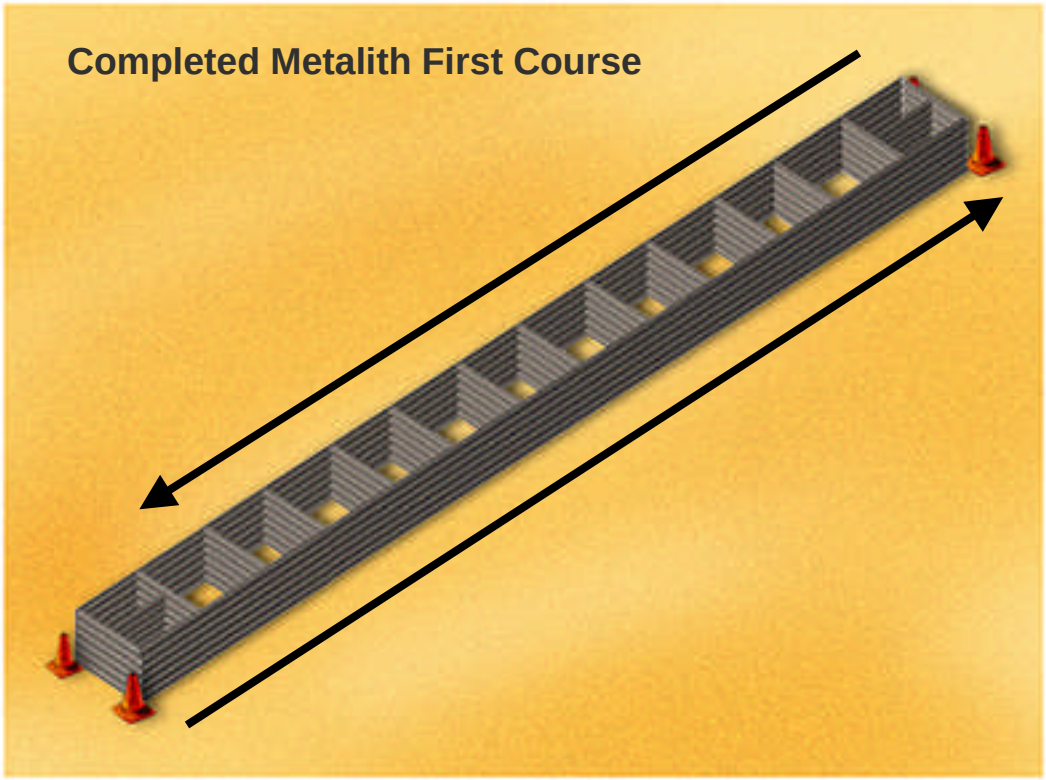
Insert a pin by aligning the predrilled holes and dropping or pushing the pin into place. Adjust the holes so they line up and position the pin. Align next hole down, bend cross panel to fit. Simply hold top of cross panel and use knee, foot, forearm to push panel into alignment. DO NOT USE A HAMMER AS THIS WILL PERMANENTLY DAMAGE THE PANEL!



Repeat the process of attaching a side panel and inserting and attaching a cross panel along the entire length of the wall, working left to right as workers face the wall, for the first course until it is complete. Additional bins are added and constructed until the desired length of wall is obtained. The last bins should be an end bin (marked bundle “End ‘B’”).

Once the first course is completely assembled, check for wall alignment. Nudge any units that are out of alignment.

Never attempt to construct a Metalith barrier wall by starting at both ends and building toward the center.



Once a course is complete, fill the completed barrier bins with ballast material using a front loader. Before the end bins are filled, a barrier material should be placed inside each end corner to help seal the corners. Polyethylene film is provided with the Metalith kit (End Cap).

Suitable ballast material includes sand, dirt, and soil matching grout. Large aggregate, rubble, and clay balls are not recommended for fill. Aggregate and rubble can become projectiles themselves. Large rock intensifies the force of an explosion and can cause severe damage to the inside of the revetment wall.

Leave 6" of space below the top of the completed course to facilitate assembly of the next course. Care should be taken to dump the ballast material into the center of the bins not near the edges.

Once the first course is complete, begin installation of the additional courses until the desired height is achieved. When the wall is complete, apply the wire mesh to the top of the unit, which will serve as a cap.

Post Erection Inspection Guidelines

Once the Metalith barrier is built it must be inspected periodically. Here's a list of things to look for during inspection:

1. Fill materials leaking - Look for material leaking from the bins. In bad cases the roof option or cap may have to be removed, fill added, and then the Metalith barrier system will have to be capped again or roof option installed again. If the leak is from the corner, the polyethylene film may have torn. This can be repaired from the inside or outside.
2. Erosion - Once the Metalith barrier is constructed it may disrupt the existing drainage patterns. Existing drainage may need to be changed to prevent eroding of any surface or base barrier materials.
3. Metalith Barrier Leaning - If the barrier wall system begins to lean dangerously, it must be torn down, the surface material re-stabilized and the barrier wall system rebuilt. This should not occur if the unit is properly installed, on level ground, properly drained, and properly maintained.

4. Metal Corroding - Pin areas are especially susceptible to corrosion. Apply corrosion preventatives to these areas.
5. Cap - Manufacturer's roof option is strongly recommended in areas where rainfall is an issue.

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