

MEGADECK® HD

INSTALLATION MANUAL



**SIGNATURE
SYSTEMS GROUP**

www.signaturecorp.com

TABLE OF CONTENTS



4 QUICK START GUIDE

- 4 Horizontal Layout
- 6 Vertical Layout

8 THE MEGADECK® HD SYSTEM

- 9 Specifications

10 LOCKING PIN

- 11 Mud Caps
- 11 Basic Removal

13 INSTALLATION TOOLS

- 13 Alignment Bar
- 14 Locking Tool
- 14 Pin Extractor

15 SAFETY WHEN HANDLING MATS

- 15 Storing & Stacking Mats
- 16 Loading & Transporting Mats

17 INSTALLATION & REMOVAL

- 17 Personnel Requirements
- 17 Equipment
- 18 Site Survey & Project Objectives
- 19 Installation

20 USES & APPLICATIONS

- 21 Roadway Installation
- 21 Single Width Transverse Road
- 22 Double Width Longitudinal Road
- 24 Bypasses, Passing Lanes & Turnouts
- 25 Site Installation
- 26 Other Site-Building Techniques
- 27 Road Entrances & Transitions
- 28 Equipment & Storage Pads
- 28 Mat Deflection – Precaution about Bridging
- 29 Soft Soil Installation

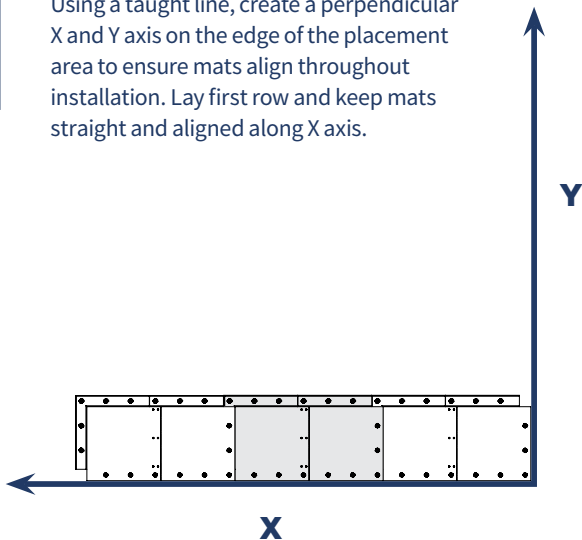
30 MAINTENANCE

- 30 Surface Precautions
- 31 Cleaning & Decontaminating Mats after a Project
- 32 Mat Repair

QUICK START INSTALLATION

HORIZONTAL LAYOUT

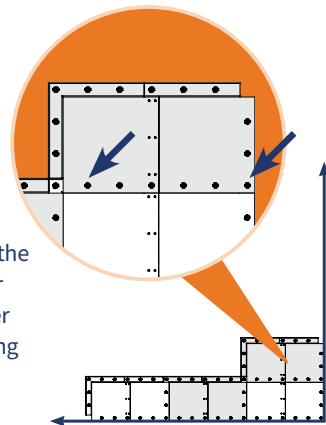
- 1** Using a taught line, create a perpendicular X and Y axis on the edge of the placement area to ensure mats align throughout installation. Lay first row and keep mats straight and aligned along X axis.



2

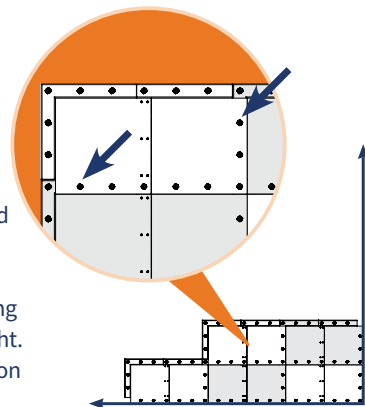
When beginning second row, place mat, keeping edge perfectly along the Y axis, and align with alignment bar inserted through the bottom corner connection points. Drop pins starting with horizontal edge, left to right.

DO NOT LOCK UNTIL 3RD ROW.



3

For the rest of the row, place mats with alignment bar placed in the furthest top right and bottom left connection points for alignment. Drop pins starting with horizontal edge, left to right. Repeat steps 2 and 3 for duration of the installation.

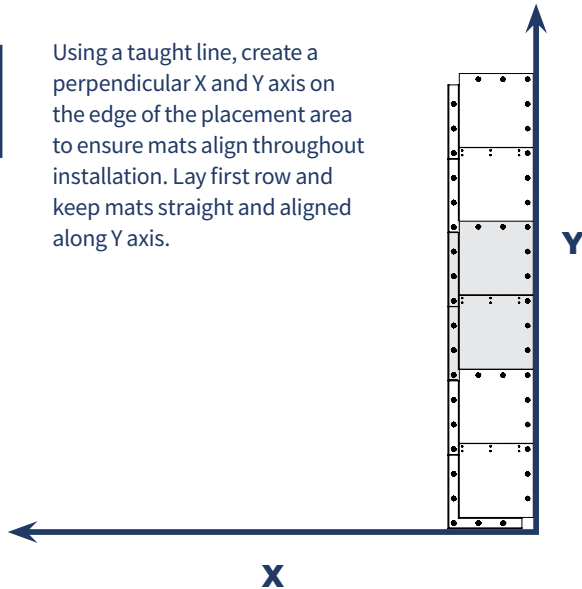


QUICK START INSTALLATION

VERTICAL LAYOUT

1

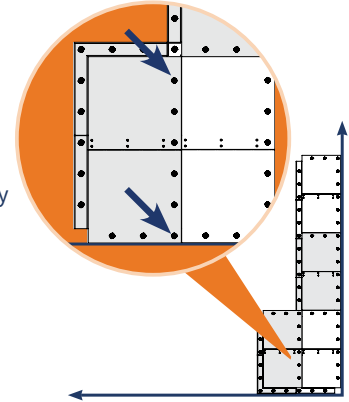
Using a taught line, create a perpendicular X and Y axis on the edge of the placement area to ensure mats align throughout installation. Lay first row and keep mats straight and aligned along Y axis.



2

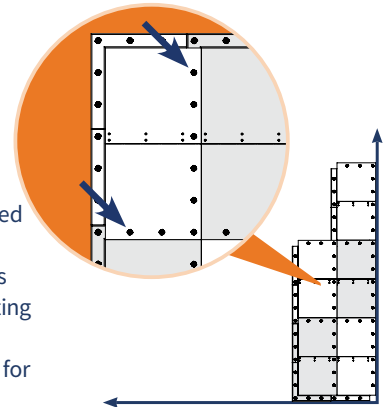
When beginning second row, place mat, keeping edge perfectly along the X axis, and align with alignment bar inserted through the bottom corner connection points. Drop pins starting with vertical edge, top to bottom.

DO NOT LOCK UNTIL 3RD ROW.



3

For the rest of the row, place mats with alignment bar placed in the furthest top right and bottom left connection points for alignment. Drop pins starting with vertical edge, top to bottom. Repeat steps 2 and 3 for duration of the installation.

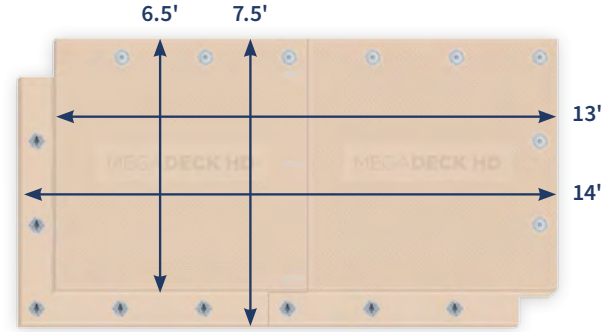


THE MEGADECK® HD SYSTEM

The MegaDeck® HD Advanced Composite Mat System provides a safe, cost-effective surface for year-round, all-weather performance. The mats are made of high performance HDPE for a strong, durable, uniform surface that can be used for any industry that requires access in special environments, the stabilization for heavy equipment or simple ground protection.

Engineered for performance and strength, the interlocking mats distribute weight across a large surface area, while remaining stable and strong through all weather conditions. The tread pattern improves safety and traction for load-bearing vehicles, while the interlocking system reduces the chance for drift and slippage. The mats provide years of reusable performance and an endless shelf-life with proper use and maintenance.

The MegaDeck® HD mat is available in 14' x 7.5' x 4" (4.27m x 2.13m x 10.16cm). The mat weighs approximately 1,100 lbs. The mat is equipped with a lip on two sides that creates an overlapping joint with an adjoining mat into which the locking pins are inserted and engaged in order to fasten multiple mats.



SPECIFICATIONS

Dimensions

Actual

7.5' (L) x 14' (W) x 4" (D)
2.286m x 4.267m x 10.16cm

Useable (due to flange)

6.5' (L) x 13' (W) x 4" (D)
1.981m x 3.96m x 10.16cm

Weight

1,092 lbs (495.3 kg)

Flange Thickness:

2" (5.08cm)

Material Composition

Base Material

HDPE

Additives

Anti-Static, Additive UV-Inhibitors

UV Package

5 year

Locking Pin & Receiver Material

Metal

Fire Rating

UL94HB

Sizes are nominal and may vary slightly within standard production tolerances. Such minor variation will not affect mat performance or compatibility.



LOCKING PIN

The locking pin feature of the MegaDeck® HD is the key element to providing a safe and secure matted surface. Proper use, including turning the pin to its locked position, is essential for proper function of the entire system.

The pins join multiple mats together to distribute weight over a large surface area so that even the heaviest loads are supported by a network of mats rather than having a single point of contact to

distribute the pressure. Only when the pins are turned 90° and locked into position can the mats be fully secured, thus ensuring they won't slip or drift under load. Mud caps are available to protect the wrench connection slots from filling with mud.

MUD CAPS

Once mats have been properly secured with locking pins, install these mud caps to reduce mud flowback onto the mat surface. The optional mud caps keep the wrench connection clear of dirt and debris that can make removal difficult. The mud caps are inserted into the top of the pin once it is in the locked position; they can only be secured when the pin is locked and can be removed simply with a flat-head screwdriver inserted under either end of the cap.

BASIC REMOVAL

To disassemble the mats, all mud caps must be removed, then all pins must be unlocked and removed. Do not attempt to disassemble the mat system without removing pins. The result could damage pins, damage mats, harm equipment and possibly injure personnel. Have a bin ready to store the loose pins for future use. Pick up the last mat first so that the sequence in which the mats were first laid is reversed.

Note: If the pins become difficult to secure or remove the mats might not be laying properly due to uneven ground or there might be soil

build-up or foreign objects on the overlapping lips between the two mats. Use the forklift to press the two mats together while locking the pin. The weight of the equipment will assist you to unlock or lock the mats together.

Once the pins are removed, the forklift or loader operator will be able to slide the forks beneath the mat that was laid last. As the operator squares up to the board edge of the mats, the forks should be spaced evenly under the mats in order to maintain a balanced load. Many of the removal techniques depend on the type of equipment used and the skill or experience of the operator. The manufacturer recommends that you strictly adhere to safety standards as you lift and move any number of mats.

INSTALLATION TOOLS

To ensure proper safety procedures, material handling equipment, and Personal Protective Equipment should always be utilized when handling MegaDeck® HD or any other heavy load. Check to ensure forks, straps, and buckles are in proper working order.

ALIGNMENT BAR

The alignment bar can be used to align and adjust the mats once they are set in place. The narrow end is used to roughly align the mats.



LOCKING TOOL

The waist-high locking tool is equipped with a 1 ¼" hex-head designed to fit into the hex-receiver in the top of the pin. A 90° turn will engage the locking mechanism, while the indicator line on the pin should be perpendicular to the length of the slot to insure a complete fit.



PIN EXTRACTOR

Once pins have been unlocked with the locking tool, the extractor is then used to remove the pins. The steel alloy tongs of the extractor's end points can be inserted between the pin and the slots to grab the pin body and remove it from the mats.



SAFETY WHEN HANDLING MATS

All personnel should meet the safety requirements of the particular department and job description prior to handling the mats on or off your work site. Proper use of Personal Protective Equipment is highly recommended.

STORING & STACKING MATS

When storing your MegaDeck® HD mats, care should be taken to ensure that the ground is level and stable beneath the stack. The surface and size of your storage site as well as equipment capabilities will determine the optimal height of the stack. Clear any major obstructions from the surface before stacking the mats. The mats are designed with a shape memory and will return to their flat position even if there are surface irregularities or obstructions. Over time, a mat may conform to a depression in the surface. To restore it to its original shape, either turn the mat over and allow its own weight to return it to its flat condition or lay the mat down on a hard, flat surface and it will flatten out.





LOADING & TRANSPORTING MATS

When loading the mats onto a trailer, care should be taken to make neat, even stacks that meet weight and height requirements for local transportation. Also make sure all mats are turned in the same direction and same side up. Remove any major debris or obstruction that would hinder the mats from resting evenly on top of each other or on top of the trailer bed surface. To assist the loader, blocks of 4" x 4" timbers can be placed at even intervals on the bed of the trailer. The gap created between the mats and the trailer bed will allow the forks of the loader to slide under the stack. The mats should be secured with straps before transporting them just as you would any other load. Refer to the safety manager or an experienced driver for specific details about how to properly secure the load.

INSTALLATION & REMOVAL

See Quick Start Installation at the front of this manual for step-by-step instructions.

PERSONNEL REQUIREMENTS

A crew size of three is recommended for simple installation. One crew member will operate the loader and bring mats to the area and the other two crew members will be on the ground guiding the mats into place, inserting, then locking the pins. For increased efficiency and speed, a fourth crew member can assist the installer by supplying pins at each mat assembly and handling the pin extraction tool while the first installer is unlocking the pins during take-up or de-installation.

EQUIPMENT

Stacking, moving and placement of the mats should be accomplished by heavy equipment. A loader or forklift (with 6 ft. minimum fork length) typically serves the purpose.

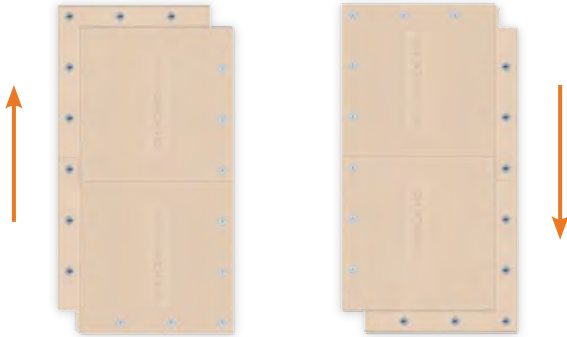
However, any lifting device (crane, bobcat, etc.) may also be used to maneuver mats. In addition, Signature has a sling lift available to help facilitate mat movement. Always be certain that proper rigging is use with the sling unit.



SITE SURVEY & PROJECT OBJECTIVES

Questions about the soil condition of your site, the bearing capacity of the sub-grade, the load and traffic requirements and duration of the project will all impact the number of mats and the configuration of your road or work site. These issues are best addressed by geo-engineers or project managers prior to installation. Our experienced staff is ready to assist with any technical challenges you might face as you install or remove the mats.

Mats can be laid in one of two directions:



INSTALLATION

MegaDeck® HD mats are designed to connect to each other in a way that forms a tight and secure load-distributing surface. Once the basic technique for connecting the mats with locking pins is mastered, countless road and site configurations are possible. First, lay one mat down with the lap joint exposed. Make sure all the holes and lips are free of any debris prior to laying the next mat, as this will prevent a smooth and secure fit. The next mat should be placed alongside the first mat with the overhang of the lap joint resting on the first mat's exposed lap joint. Two installers should be present during this process to guide the second mat into place and, with the alignment bar, line up the mats so that the two mats have their sides matched to each other. As the second mat is lowered into place, the installers insert the alignment bar into the top mat and “threads” the tool into the matching pin slot of the first mat.

The installers can then drop in one locking pin at a time into the slots and, with the locking tool, lock each one in place with a 90° turn. The number of pins used is determined by the bearing ratio (CBR – softness of the ground, the type of loads, frequency of use and the duration of the project.) Refer to engineering or management personnel to obtain specific requirements for your project. For example, soft conditions or loamy soil may require the maximum number of pins.



USES & APPLICATIONS

The MegaDeck® HD mats were originally developed in the oilfield service industry in response to the demand for all-weather performance, consistent strength and durability from matting products. Primary uses of MegaDeck® HD include jobsite access roads, work pads, helipads, bypasses, heavy haul and sub-grade protection – virtually anywhere you need a temporary road or platform.

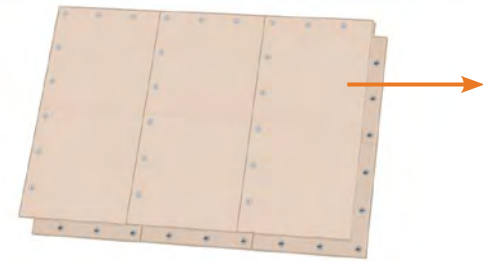
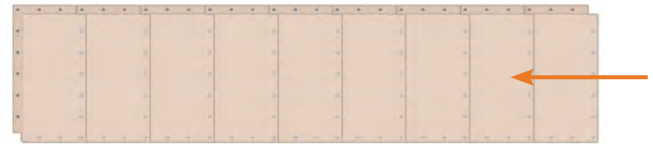
ROADWAY INSTALLATION

MegaDeck® HD mats are designed to accommodate two basic roadway configurations: Transversal and Longitudinal. Of the two designs, the transversal method installs more rapidly.

SINGLE WIDTH TRANSVERSE ROAD

The single width transversal method requires the mats to be installed long side to long side in the direction of the road. Mats

Single Width Transverse Road



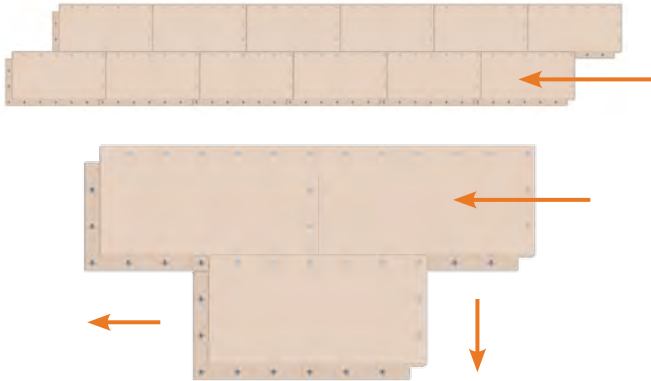
Arrow indicates direction of installation

installed in this manner have 5 out of 6 slots for locking pins, adding strength to the joints between mats, as well as a road width of 14'.

DOUBLE WIDTH LONGITUDINAL ROAD

The longitudinal method requires that the mats lay end to end in a straight line, with the edges of the two adjoining mats lined up evenly so that both will accept the two locking pins. Many roadway projects would benefit from using the double-width configuration

Double Width Longitudinal Road



Arrow indicates direction of installation

as opposed to a single string of mats simply because of the added strength that staggering the mats provides.

By staggering the mats, road strength and stability is increased because weight is directed away from the joints and distributed throughout the body of the mats.

A two-mat wide longitudinal road can be installed by laying mats end to end in two parallel but staggered lines so that the mats resemble brick work. The mats should be laid in place so that the lips of the laid mats are always exposed to receive the over-hanging lip of the next mat.

To do this, you must begin with two mats joined end to end.

Note: *The use of right and left is for illustration purposes. The mat orientation can be reversed.*

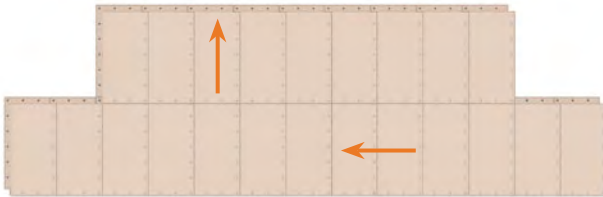
BYPASSES, PASSING LANES & TURNOUTS

For safety around curves and convenience over a long straight road, passing lanes are recommended. A passing lane or turn-out can be configured by attaching one or more mats alongside and parallel to the linear road. To do this, lay one mat lengthwise, lip facing down beside the road on the side of the mats that has the exposed lip, in such a way that the mat straddles the seam of two mats. The

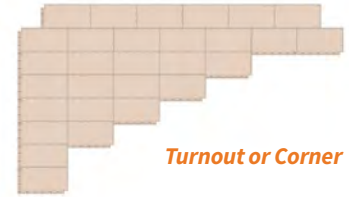
Longitudinal Bypass



Transversal Bypass



staggered configuration is essential to maintaining the highest strength of the road. Once the pin holes are lined up, the locking pins can be placed in the appropriate slots and locked into place. To lengthen the bypass lane, another mat should be placed with the lip overhang side on top of the exposed lip of the secured mat and secured with the pins. Note that the seams of the parallel roadways are staggered like brickwork.



Turnout or Corner

To round out a 90° degree turn into a turnout, lay additional mats outward from the exposed lip of the two mats that form the “L”. By starting the perpendicular row of mats in the middle of the approaching mat you gain strength with the use of the staggered configuration.

SITE INSTALLATION

MegaDeck® HD mats can be fastened together to cover large surface areas to be used as work sites or drilling pads. Installation will begin with the basic staggered method used in the double width longitudinal road configuration. In this case, begin by laying one mat at the outside corner of the proposed site, nearest to the access



road. The mat should be aligned with the edge of the site so that the pad, when constructed, covers the appropriate square area and won't have to be moved or reassembled. In other words, lay out and mark the site beforehand so that you can maintain proper alignment of the mats.

Begin matting your site by laying a large mat length wise along the x-axis. Follow the number sequence shown above to maintain the staggered pattern. As you lay the mats outward from the corner you've just created, begin at the x-axis and work up 90- x axis and back toward the start point y-axis, as seen in the sequence 3, 4, 5 & 7, 8, 9, 10. Keep the x and y axis perpendicular with a string or landmark to ensure that the mats will align properly for an easy, secure fit with the locking pins. By laying the mats from the corner outward, you will be able to work on the matted surface and have more room to maneuver.

OTHER SITE-BUILDING TECHNIQUES

For basically level ground that requires matting, consider “crowning” or “turtle-backing” the site with fill dirt or other sub-

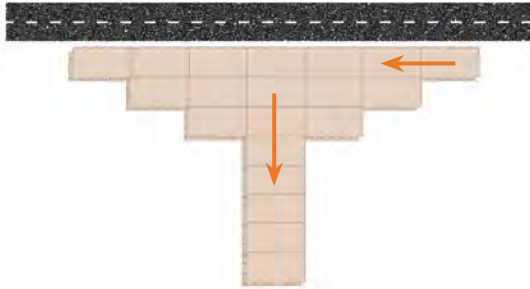
grade preparation in order to allow the water to drain to the outside of the matted location. Conversely, if your project requires the maintenance of a strict separation of liquid or debris generated during operations from the underlying surface, the mats may serve as a collection point for liquids to be isolated and easily removed. The mats can then be cleaned or decontaminated for immediate re-use. The use of geo-grid or geo-fabric should be determined before installing the mats but will not affect the techniques described above in any significant way. Simply install the fabric over the site and then commence with the mat installation. You may find that installing and removing mats with the use of geo-fabric is much cleaner and more efficient.

ROAD ENTRANCES & TRANSITIONS

Simply by mounding earth, gravel or lumber against the edge of the mat, you can facilitate a smooth transition from an existing surface to a mat surface.

When your MegaDeck® HD road meets an existing road where traffic enters and exits at hard angles, wings should be constructed to accommodate the turning radius of vehicles.

Using the transversal method, build the apron out in the direction of the road with the lips exposed. Increase the number of mats per row as you approach the perpendicular road. Anticipate the length that will be required to make the gradual left and right hand turn onto the connecting roadway. A staggered road transition can also



be built using the longitudinal method. The small mats may prove useful in several areas of your transition and can be used to fill out more difficult road sections or tighter turns.

For questions concerning this or any other mat-laying technique, please contact Signature Systems Group at 972-684-5736.

EQUIPMENT & STORAGE PADS

Single mats or two and three mats joined as one unit can be used throughout a work site to accomplish special tasks or to support equipment as needed.

MAT DEFLECTION: PRECAUTION ABOUT BRIDGING

The mats are not designed for bridging or spanning gaps. The mats are intended to be used with a sub-grade or underlying surface of some sort, no matter how soft. A particular feature of MegaDeck® HD is its ability to conform to inconsistencies of any surface.



This means that the mats are slightly flexible by themselves and increasingly more flexible with additional conjoined mats to match the undulation and irregularities of the ground.

SOFT SOIL INSTALLATION

When the location you are matting permits only working from the mats themselves, you must place the mats sequentially in front of the loader while the loader rests on the previously placed mats. In this case, the installer must stand in front of the loader on a previously laid mat and thread the positioning bar through the mats to align them. The installer must remain in view of the equipment operator at all times, particularly during this type of installation. Observe strict safety standards when performing this procedure.

MAINTENANCE

MegaDeck® HD mats are relatively maintenance-free, however, keeping the mats clean can keep work site morale high and contribute to a safe and successful project.

If a pin is damaged in such a way that it no longer can hold part of the mats together, it should be replaced as soon as possible so that the mat grid does not shift. Shifting mats may prevent proper re-alignment and make pin insertion more difficult. If a mat is punctured or torn by debris or equipment, the mat will continue to function in the network of mats, provided the damage is limited to the inside area of the mats and not the edges. If the damage appears irreparable, remove the damaged mat and replace it with another mat.

SURFACE PRECAUTIONS

Personnel should take the same safety precautions when working on MegaDeck® HD mats as they would any other work site. If the mats become slick with mud during heavy rainfall or if ice forms during cold weather, sand can be spread on the mat surface to aid traction in special situations. After snow has accumulated on the mat surface, a snow plow or shovel can be used to clear the mats. Make sure that the direction the plow travels minimizes the impact against any protruding edges. Examine the road or work site to see the pattern of bumps that naturally occurs as the mats are overlapped and joined. Ensure that the plow blade does not scrape the surface of the mat.

CLEANING & DECONTAMINATING MATS AFTER A PROJECT

MegaDeck® HD mats are constructed from high performance HDPE material which prevents absorption of any contaminants into its structure and provides a barrier between the ground and mat surface. The mats can be steam washed or pressure washed to restore optimal traction, aid the removal process or to maintain a clean work site. Oil, fuel or other contaminants should be contained and isolated on the mats for specialized remediation. The mats can then be washed in preparation for the next project.



MAT REPAIR

MegaDeck® HD mats can be repaired. If damage occurs to a mat, set it aside to be repaired. Continued use of a damaged mat can compromise its load carrying capability. Mats can be repaired using a portable handheld extruder along with other simple hand tools. Please contact Signature for a copy of the MegaDeck® HD Repair Manual which contains instructions on how to reform common repairs as well as a list of tools needed. Signature also offers Mat Repair Tool kits which contain all tools needed to perform mat repairs. Please contact Signature for more information.

QUESTIONS & COMMENTS

For further details or specific answers to mat application questions, please contact:

Signature Systems Group
Toll Free: 866-471-9371
Direct: +1 972-684-5736
www.megadeckmats.com



NOTES



1201 Lakeside Parkway | Suite 150 | Flower Mound, TX 75028

Worldwide +1 972 684 5736 | U.S. Toll Free 866 471 9371

www.signaturecorp.com

©2017 SIGNATURE SYSTEMS GROUP, LLC