SIGNAROAD®

MEDIUM-DUTY COMPOSITE MATS

FIELD MANUAL

INSTRUCTIONS FOR USE AND MAINTENANCE OF YOUR SIGNAROAD® MATTING SYSTEM

SIGNATURE SYSTEMS GROUP

SIGNAROAD®

FIELD MANUAL

THE SIGNAROAD SYSTEM

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THE SIGNAROAD® SYSTEM

OVERVIEW

SignaRoad is designed to provide access over soft ground for vehicles, equipment, and personnel. The principle behind SignaRoad is distribution of heavy weights over a larger surface area, thus allowing heavy equipment to traverse varying soft ground conditions.

SignaRoad can be used to create a temporary roadway, a work compound, and a support surface for all types of applications. From shoring and general construction applications to event and stadium operations, SignaRoad is designed to provide stable access and superior ground protection.

SignaRoad matting can be used in all weather conditions, from the coldest regions to the warmest, and is manufactured using the highest quality plastics. Each mat incorporates extensive engineering, testing, and a unique material formulation that provides UV resistance, anti-static properties, and tremendous strength and loading capabilities over a multitude of ground surfaces.

Each mat's molded dual-traction surface and environmentally friendly, non-porous design allows mats to be used in marshlands and other sensitive environments where traction, access, and reusability is important. SignaRoad mats outlive traditional wooden mats and will never rot or degrade.

Mats are fully modular and can be interconnected in multiple directions to form large work areas, passing lanes, turns, and a variety of other configurations.

Mats incorporate a heavy-duty overlapping flange system that allows adjacent mats' flanges to nest for additional strength and rigidity. Each flange incorporates a unique proprietary connection system that enables mats to be locked to one another when overlapped, preventing mats from slipping or detaching from each other during use and reducing seepage of mud through flanged edges from the surface below.

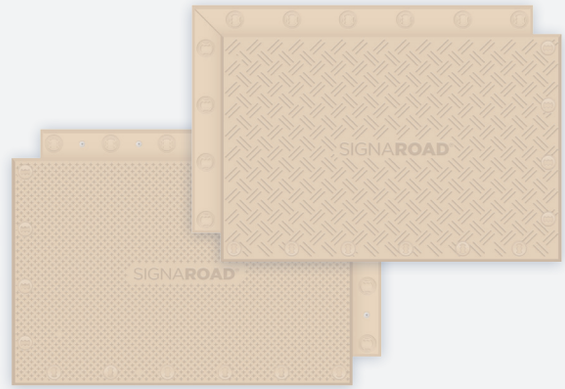
SPECIFICATIONS

Module Size
10' x 6'10" (3.04 x 2.10m)
2.5" height (6.4cm)

Material
High Density Polyethylene Copolymer

Shipping Info
90 mats per standard 40' shipping container or 53' truck

Surface
9'4" x 6'2" usable platform
10' x 6'2" roadway



SIGNAROAD'S LOCKING PIN

SignaRoad incorporates the latest in connection technology to prevent mats from shifting or drifting under heavy weight or torque. By connecting mats in multiple locations, the unique connection system enables mats to handle heavy static and dynamic loads.

Each 10ft long x 7ft wide mat has 10 integral, cam-hole locations, ready to receive Locking Pins. These integrally molded receivers, are designed to help guide and assist in the alignment of mats on-site.

Each connection cam receives a high-strength, polymer locking pin that is inserted through two mats and rotated 90 degrees to the locked position using a waist-high T-handle wrench with a standard 7/8" hex head.

To remove Locking Pins, use the T-handle wrench to unlock the pin. Then remove the pin by using the waist high extractor tool.

SignaRoad's integrated locking system is designed for the rigors of heavy duty use. Components are manufactured using non-corroding, engineered polymers that are capable of long-term use in outdoor environments. In the event of damage or loss, Locking Pins are easily replaced with minimal effort.

TRANSPORT, STORAGE, AND HANDLING OF SIGNAROAD®

LOADING/UNLOADING MATS

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

SignaRoad mats are designed to stack neatly both while in storage and during transport. It is important to stack mats carefully and to align the edges consistently when transporting mats.

Mats can be lifted with a forklift, crane, or any other lifting apparatus with appropriate load-lifting capacity. As each large SignaRoad mat weighs 485 lbs, you should verify the load rating of your material handling equipment before you begin.

Depending on the capability of your forklift or crane, the size of SignaRoad stacks will vary. Tapered forks (minimum 5-ft forks) are highly recommended for the safe transport of mats; it is recommended that sections be picked up from the long side when loading onto flatbeds or transporting on-site.

It is recommended on a flatbed truck to use heavy duty ratchet straps to secure mat stacks on a trailer. Be sure that all straps are fastened tightly so that loads do not shift in transit. 3-4 heavy duty ratchet straps/bands are recommended per mat stack, or 9 to 12 straps per trailer.

LOADING IN ISO CONTAINERS OR CLOSED VANS

SignaRoad mats can be transported in closed vans and ISO containers. Extended forks are recommended for placement of the mats into the container. As fork lift extensions affect truck capacity, please refer to the lift truck manufacturer to the de-rated capacity when using extended forks.

Great care should be taken when loading mats into an enclosed van to avoid potentially damaging contact with the sidewall or roof of the container. Never stand inside the container and/or in front of SignaRoad when loading. Use only appropriately rated equipment when positioning and loading mats. The mat load should be secured inside the container or trailer with straps to prevent the load from shifting during transit.

TRANSPORT OF SIGNAROAD MATS

- **20ft ISO Containers –** 45 large mats and associated accessories
- **40ft ISO Containers –** 90 large mats and associate accessories
- **48ft Truck – Flat Bed –** 90 large mats and associated accessories

BASIC INSTALLATION

SITE ANALYSIS AND GROUND PREPARATION

SignaRoad is designed to be used over a variety of ground surfaces and types and is able to handle reasonable ground variations and undulations.

Before installing SignaRoad it is always a good idea to review the site in advance of delivery to ensure suitability of the ground surface. Our team is ready to assist your engineering team in reviewing the suitability of a particular jobsite and in assessing the overall weight loading capacity of SignaRoad specific to the sub-grade and expected traffic/load.

The ideal method of analysis is testing California Bearing Ratio, but this is often unrealistic in remote locations. As such an estimate of CBR may be used to calculate estimated loading capabilities (for more information on estimating CBR contact our SignaRoad experts). Of course, it is always advisable to use a safety margin when considering loading requirements.

As testing shows, SignaRoad is capable of handling superior loads over a variety of ground surfaces, but SignaRoad is not designed as a bridging device. While small ground variations will not seriously impact the performance of SignaRoad, it is always preferable to grade and/or smooth the ground surface prior to installation. This will create a more uniform work surface, facilitate easier installation, and enable mats to handle heavier loads. This process also eliminates pockets under SignaRoad into which water can seep.

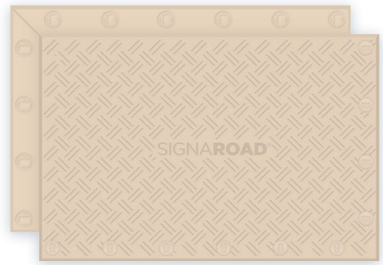
SignaRoad mats have a natural built-in flexibility which allows some contouring to the ground surface and enables the system to handle ground undulations and variances.

It is important to remove large boulders or rocks from the site as these can interfere with connection and alignment of mats, and could cause damage.

CONNECTING SIGNAROAD MATS

SignaRoad is a two-sided mat. One side has an aggressive tread that is intended for vehicle traffic. The opposite side of the mat is a lighter, pedestrian surface.

SIDE 1: Vehicle



SIDE 2: Pedestrian

Based on the application, determine the appropriate side to be used.

SignaRoad mats incorporate a nesting flange system, which allows mats to overlap one another for a secure connection and additional strength. This system is designed to provide the greatest strength at the intersection, while easing installation and positioning and allowing the assembly of the mats to act as one large mat.

Connection of the mats occurs when the flanges are overlapped (i.e. mats are positioned adjacent to each other) and the cam locks are aligned. The Locking Pin is then inserted and rotated 90 degrees, locking the mats to each other.

As a general rule, it is best to position mats so that the projecting flange (under-lapping) on the first mat is open to receiving an overlapping mat flange. A visual site layout should be explored to determine the orientation of the first mat. This combined with some preliminary sketches and/or measurements will maximize the mat layout for the specific site. The surface of the flanges should be free of debris that could interfere with proper connection. Consideration should be given upfront to laying the first mat in such a way that the under-lapping flanges (2 sides) are always open in the direction(s) required for installation.

Installation teams should assign two team members to the task of aligning and positioning mats, using the alignment bar as needed. As the second mat is positioned and aligned, a Locking Pin can be dropped through the receiver hole in the overlapping mat and into the receiver hole in the under-lapping mat. Each connection point can be locked with a 90 degree turn using the T-handle wrench. Depending on the subsurface conditions, not every hole necessarily requires

a locking pin during assembly. Though for optimal performance on softer sub-surfaces, it is recommended that all connector holes/locks be utilized.

When connecting mats, it can sometimes become difficult to lock the pin into place. This is likely due to ground variation or debris such as in muddy environments. It is often helpful to put pressure on the overlapping mat flange to press the two mats together. This can be accomplished with the loader/forklift.

Once the first series of mats are laid, mats may be continuously laid in the direction of the projecting under-lapping flanges. Should positioning of a mat underneath a projecting flange be required, a mat can generally be nudged with a forklift underneath the overhanging flange.

INSTALLING SIGNAROAD UTILIZING A SKID STEER LOADER, CRANE, LULL, OR OTHER SIMILAR EQUIPMENT

SignaRoad may be installed utilizing a skid steer, loader, crane or similar equipment with a cable, hoisting hook, and properly sized lifting straps.

The mechanical lifting device can be obtained from Signature Systems Group. You will require a minimum of two. These will connect to the cam receiver creating a safe lifting situation. All components have been properly tested and rated for lifting. Your SignaRoad specialist can discuss the application of this in detail.

A wheel loader or skid steer with forks is the preferred method for installing SignaRoad mats. It is the fastest option thus offering the quickest rate of installation. It is also the safest option, and these types of equipment are available worldwide.

By utilizing lifting straps it is possible to lift mats in a perfectly horizontal position, while maintaining balance. This eases the positioning of the mats to be installed and allows the overlapping flange of mats to be positioned by the crane directly over the under-lapping flange. Alignment of Cam/ connector holes can be done before placement of the mat, easing final connection Installing the lifting straps; it is important to run the lifting straps through opposing holes of the mat. This provides additional stability and keeps mats horizontal during positioning. Ideally, loop straps through the cam holes and connect the other side to the main crane hook or to the strap itself using a carabineer or hook with safety latch.

Positioning the mat for connection: Once lifting straps are in place, use the controls of the crane or other equipment to position the mat such that the mats overlapping flange is positioned over under-lapping flange of the already positioned mat. Confirm that cam holes of the overlapping and under-lapping mats are aligned before lowering.

Ensure a safe installation: Be sure to check lifting strap stability and connection prior to lifting mats. Always use hooks with safety latches. For added safety, never lift mats higher than 1ft, unless necessary to overcome obstacles. Two people should be on hand to maneuver mats.

REMOVING SIGNAROAD MATS

SignaRoad mats are removed in the opposite direction in which they were laid. In other words, mats with flanges overlapping adjacent mats should be removed first, thus freeing the next mat for removal.

CREATING A SIGNAROAD ROADWAY

SignaRoad is designed to connect lengthwise and widthwise, thus allowing flexibility in roadway design.

For typical roadways, it is recommended that mats be connected long-side to long-side, which creates a 10 ft wide roadway, suitable for typical vehicles and equipment.

Alternatively, mats may be connected two mats wide, short-side to short-side. Mats may be laid side by side or staggered, depending on the need for additional strength. It is generally recommended that when connecting roadways using the short-side to short-side method that mats be staggered for greater strength.

(Using the staggered methodology there are no 4-way intersecting seams, only 3-way intersecting seams and this assists in distributing weight. Remember to only stagger mats such that a 3 way seam intersection is created vs. another 4-way seam).

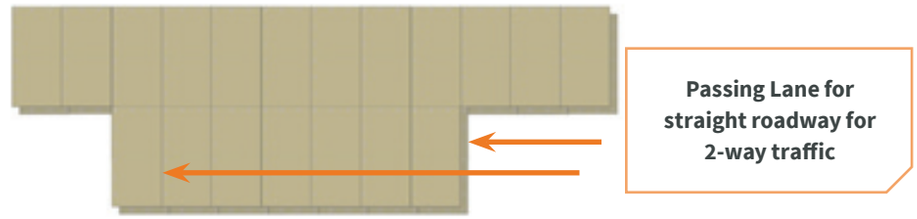
Remember to always connect SignaRoad in the direction of the under-lapping flange, so that they are always ready to receive the next overlapping mat.

PASSING LANES AND TURNING AREAS

While straight roadways are ideal, there will always be situations where the length of the roadway would dictate the need for a passing area. For these situations, it is possible to add additional mats to the roadway for both the short-side and long-side connection methodologies.

Passing lane mats should be added to the side where the under-lapping flange is exposed, thus facilitating the connection and positioning of the passing lane mats. Depending on the length of the passing area required, additional SignaRoad sections can be added to the passing area, once again on the side where the under-lapping flanges are exposed.

To create a large turning area or turn-out, the same methodology would apply, in that mats are easily installed with the overlapping flange placed over the exposed under-lapping flange. Matting can be built out in both directions of the exposed flanges.



WORK PLATFORMS, BONE YARDS, AND CONTIGUOUS AREAS

SignaRoad is designed to connect in all directions, allowing for the construction of a work compound, equipment pad, bone yard, or other contiguous surface.

To begin installation, always begin in one corner of the site (preferably closest to access road) and be sure to lay the first row of mats in as straight a manner as possible, ensuring that the first row of mats is parallel to the site so that further mats don't drift off course. This first row is the most important, as subsequent rows of mats simply follow the same line.

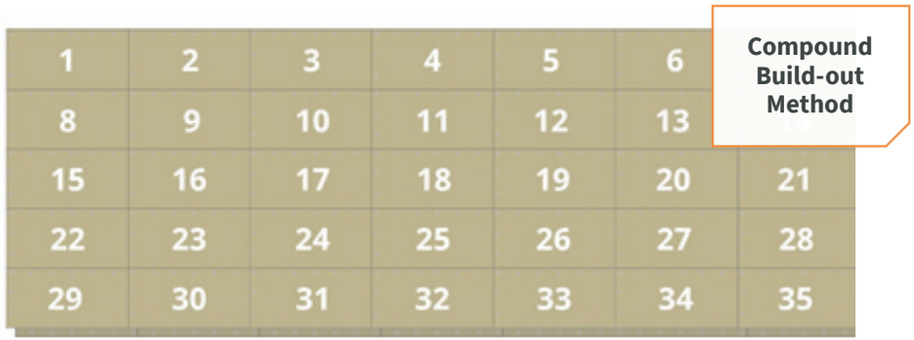
To verify alignment it is suggested that a string line be run for the first row installed.

Remember to always position the first mat such that the under-lapping flanges are open and ready to receive the next SignaRoad.

BRIDGING SITUATIONS

It is important to remember that SignaRoad is not designed as a bridging solution and should not be considered for crossing large holes or gaps greater than 1ft. In such situations, it is recommended that you consult with SignaRoad experts to determine what options can be placed under SignaRoad.

SignaRoad is designed with some inherent flex, both within each mat and between mats. This allows SignaRoad to handle varying ground contours and to conform somewhat to the ground surface. This prevents see-sawing and a fulcrum point that could build stress and potentially damage mats.



WATER RUNOFF CONSIDERATIONS

Consideration of water run-off is particularly important when dealing with large compound areas. In this regard, it is important to consider building up the subsurface of an area to prevent low spots within the SignaRoad matrix, where water may gather. Fill dirt or gravel may be brought in or other site preparation work can be done in advance of SignaRoad installation to channel runoff away from the site.

Like a sports field, a slightly crowned SignaRoad installation will be unnoticeable to the naked eye; however, it will allow water to flow and runoff along the perimeter of the SignaRoad pad and away from the work area.

Some thought should be given to the amount of water runoff expected from a large area and the ability of the surrounding area to handle the water that runs off of the work pad.

GEO-TEXTILES AND SIGNAROAD

While not necessary, Geo-textiles are an inexpensive way to improve mat performance on soft sub-grades, as the presence of a geo-textile provides a clean and uniform installation surface and prevents debris or mud from interfering with the SignaRoad connection system. Geo-textiles can be used to provide a barrier between dirt, mud and the mats above, while minimizing the cleaning required upon removal of SignaRoad.

Depending on the type of geo-textile utilized and how porous it is, it will help keep mud and subsurface water from migrating up to the surface. SignaRoad can be used in conjunction with a liner to prevent contaminants from seeping from the jobsite into the ground.

To use a geo-textile in combination with SignaRoad, simply unroll the geo-textile on the ground surface and install SignaRoad using the standard installation procedures detailed above.

TRANSITIONS AND ON/OFF RAMPS

As SignaRoad mats are over 2.5” thick, it is advisable to build a transition between the access road and the matting material. Use of our two-way connecter is advised, but it is always possible to simply build up the ground surface (using dirt, gravel, or lumber) to provide a transition onto the SignaRoad surface.

DOUBLE STACKING SIGNAROAD

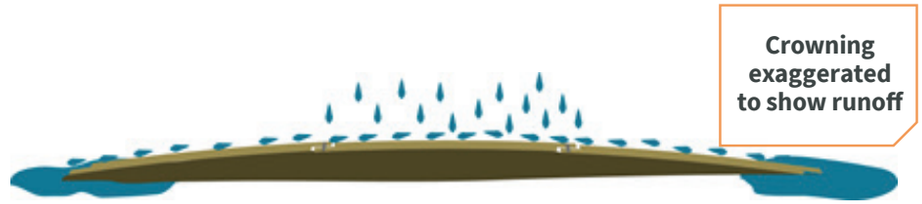
Double stacking is suitable for deep mud applications or for areas where greater clearance from a soft ground surface is required.

CLEANING AND MAINTENANCE

GENERAL CLEANING

SignaRoad can be cleaned using a high powered pressure washer. Most commercial cleaning agents will not damage the surface, but consideration should be given to environmental concerns when cleaning mats on a jobsite.

In this regard, contaminants such as grease, oil, and lubricants should be removed directly from the mat surface, in advance of mat removal and only ecologically sound cleaning solutions should be used. Back blading or brush is the preferred method.



SNOW AND ICE REMOVAL

SignaRoad may be shoveled, plowed, or brushed with standard snow removal equipment; however, care should be given to avoiding damaging mats with a vehicle-based plow blade. The area most susceptible to damage is the seam line between mats, especially if mats are not fully connected or are unevenly positioned. Care should be made to avoid catching the seam lip or damaging the surface traction pattern of the SignaRoad.

Salt, sand, and other traction aids are appropriate for use on SignaRoad and should be kept on hand to ensure that surfaces do no become slippery with snow, ice, grease, or other lubricants.

REPAIRING DAMAGE TO SIGNAROAD

SignaRoad is designed to facilitate repair to mats and their components, thus extending a mat's useable life. The components of SignaRoad that may be repaired or replaced are the locking pins, the flange, and even the main body.

REPAIRING CRACKS AND SURFACE PUNCTURES

SSurface punctures as a result of a heavy impact can generally be patched using a hand held plastic extruder (plastic extrusion welder) that is available for purchase directly from Signature or from a third party supplier. These extruders will extrude thermo plastics through a nozzle and the HDPE will bind to the surrounding material to create a seal. This method of repair is ideal for punctures, scrapes, cracks, or other structural damage.

If a puncture exists on the main body of the mat, this may be repaired using the extruder patching method above. Should this method prove inadequate, an entire main body part is available for purchase and existing lids and hardware can be used, thus minimizing the cost to get the such a mat back into service.

For warranty information please contact us.