

# **BALLAST GUARD™**

*Ballast Preservation System*



**INSTALLATION GUIDE**



# BallastGuard™ Installation

## > SURFACE AND SITE PREPARATION

The installation site should be cleared of all debris, stumps, plant growth, and other deleterious materials. It is mandatory to remove all materials potentially puncturing or damaging the geotextile on BallastGuard™.

In some instances, where very low CBR subgrades (CBR < 0.5) are present, it may be beneficial to leave some vegetation, topsoils, and fine root mats in place. If possible, a light proof roll may help locate unsuitable areas. Depending on the subgrade design strength, areas deemed unsuitable should be excavated and backfilled with suitable material before proper installation can take place.

The proper equipment should be used to smooth and compact the subgrade to the specified site requirements. Check with engineer of record for subgrade compaction requirements.

## > LAYOUT, OVERLAP, AND PLACEMENT

The layout of BallastGuard™ rolls should be determined prior to placement of the rolls. BallastGuard™ rolls are commonly installed with the railway system. However, where conditions present very soft subgrades (CBR < 0.5), and/or where lateral spreading and separation of overlaps is a concern, consider installing BallastGuard™ rolls perpendicular to the rail. Consult with your engineer and BallastGuard™ representative to determine the best BallastGuard™ layout for your project.

BallastGuard™ should extend at least 1 foot beyond the toe of the sub-ballast on all sides. For proper installation, the rolls should be overlapped side to side and end to end. The overlapping should be in the same direction as the sub-ballast placement. The recommended overlap varies from 1.5 feet to 3 feet based on subgrade strength. Recommendations for general overlaps can be found in the table below. However, your engineer should be consulted to determine the proper overlap to be used.

To accommodate curved sections in your layout plan, BallastGuard™ should be cut and overlapped. Cutting of BallastGuard™ may be done with sharp shears and other handheld power shear type cutting devices. It is mandatory that the proper safety equipment be used while cutting and installing BallastGuard™. BallastGuard™ may also be cut to accommodate other immovable protrusions such as manhole covers or similar.

## > BALLASTGUARD™ DEPLOYMENT

Once layout and overlap requirements have been determined, you can prepare to deploy BallastGuard™. BallastGuard™ deployment should commence in an area accessible to construction equipment while complying with the layout plan.

Choose a stable area to begin the installation process. BallastGuard™ can then be deployed onto softer sections. Frequently check to make sure your alignment and proper overlaps are maintained throughout the BallastGuard™ deployment process.

At the time of deployment, BallastGuard™ shall be rejected if defects, rips, holes, flaws, deterioration or damage should occur during manufacturing, transportation, or storage. BallastGuard™ should be protected at all times before and during construction to ensure its original chemical and physical properties are unchanged.

## > TENSIONING AND ANCHORING

While deploying BallastGuard™, maintain alignment and pull taut to remove slack and wrinkles. Anchor the beginning of each roll at the center and corners before fully unrolling. Options for the anchoring mechanisms include: sub-ballast, sandbags, anchor pins, stakes, or staples. These anchors will secure BallastGuard™ edges and overlaps in place.

## > SUB-BALLAST PLACEMENT

Sub-ballast should be placed and spread over BallastGuard™ using normal construction methods and equipment. Sub-ballast is normally back-dumped. After sub-ballast is back-dumped, it is then spread out over BallastGuard™. A light-tracked dozer is commonly used for spreading of sub-ballast; however, BallastGuard™ should never be directly trafficked by tracked equipment. For soft subgrade conditions (CBR < 1.5), low ground pressure models are recommended.

Unless relatively competent subgrades (CBR > 4) exist, trucks and other construction vehicles should not be driven directly over BallastGuard™. Where competent subgrades (CBR > 4) do exist, standard rubber-tired vehicles may be driven over BallastGuard™ at very slow speeds of less than 5 mph. A test section should be evaluated to determine the possible damage from direct vehicle contact. Starts, stops, and turns should be avoided when operating equipment directly over BallastGuard™. The turning or pivoting of tracked equipment over installed sub-ballast should be kept to a minimum to prevent tracks from displacing sub-ballast and damaging BallastGuard™.

## > SOFT SUBGRADES

For softer subgrades (CBR < 4), sub-ballast should be dumped from the edge of previously placed material. For very soft subgrades (CBR < 0.5), consult with engineer and BallastGuard™ representative to determine the best method of sub-ballast placement.

Lift thicknesses are generally not less than 6 inches; however, the initial lift may be as thick as necessary to prevent rutting or failure of the subgrade soils. During spreading, the dozer blade should raise gradually as each lift is spread over BallastGuard™. Take caution not to catch the dozer blade or any other equipment on BallastGuard™.

Spreading sub-ballast with light-tracked dozers and other equipment may cause “waves” in the exposed BallastGuard™. The anchors used ahead may prevent these “waves” from dissipating and force BallastGuard™ upwards where it could be damaged by spreading equipment. If significant waving occurs during spreading, it may be necessary to remove the anchors at the end of the roll and re-tension to eliminate the “waves”.

## > COMPACTION

Compaction requirements should be obtained from the project specifications. Unless very soft soils are present, standard compaction methods can be used. Rutting or pumping of the subgrade experienced during compaction should be immediately addressed. Consult with engineer to determine corrective actions required.

## > REPAIRS

If BallastGuard™ is damaged during or after deployment, it can be easily repaired by patching the area. To repair damaged BallastGuard™ section, first excavate the fill from damaged area extending 3 feet in all directions of the compromised area. Place a BallastGuard™ patch over the damage area, extending at least 3 feet in all directions, then replace the excavated material and re-compact to specifications.

### OVERLAP RECOMMENDATION VS. CALIFORNIA BEARING RATIO

<p><b>The California Bearing Ratio (CBR) test is a penetration test used to evaluate the sub-grade strength of roads and pavements. The results of these tests are used with the curves to determine the thickness of pavement and its component layers. This is the most widely used method for the design of flexible pavement.</b></p>	Subgrade CBR Value	Recommended Minimum Overlap
	< 1	3 ft.
	> 1 to 2	2.5 ft.
	> 2	1.5 ft.



## Technical Support



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Customer should verify with the product manufacturer that customer has the most current **BASELOK® BallastGuard™** specifications for the product ordered or purchased. The **BASELOK® BallastGuard™** system can be used in the application described in our literature and on our website, provided proper installation and engineering principles are followed. Professional engineering should be consulted before installation of **BASELOK® BallastGuard™** units to assure appropriate design and use. ALL EXPRESSED OR IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. **BASELOK®** is a trademark of Industrial Fabrics, Inc.