

**INSTALLATION
MAINTENANCE
& REPAIR**

of

FLOATING LAGOON BAFFLES

by



SLICKBAR
PRODUCTS CORPORATION

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INTRODUCTION

The purpose of floating lagoon baffle is to improve the operating efficiency of a wastewater treatment system. A lagoon baffle contributes to efficiency by preventing short-circuiting, improving utilization of pond volume, and thereby increasing retention time. The baffle consists of flotation components which support a fabric skirt with ballast along the bottom edge. Some lagoon baffles also have anchor points, tension members and section connectors. Baffles are available in a variety of sizes and designs which are easily installed in existing lagoons, without draining, by using the baffle's built in flotation as an aid to installation. Slickbar's standard models are designated by its flotation as Mk E, Mk 7 & Mk 10. A, -1 or -2, can be added to designate the number of tension members, for example a Mk 7-2 would have two tension members. See Figure #1 for a typical baffle type.

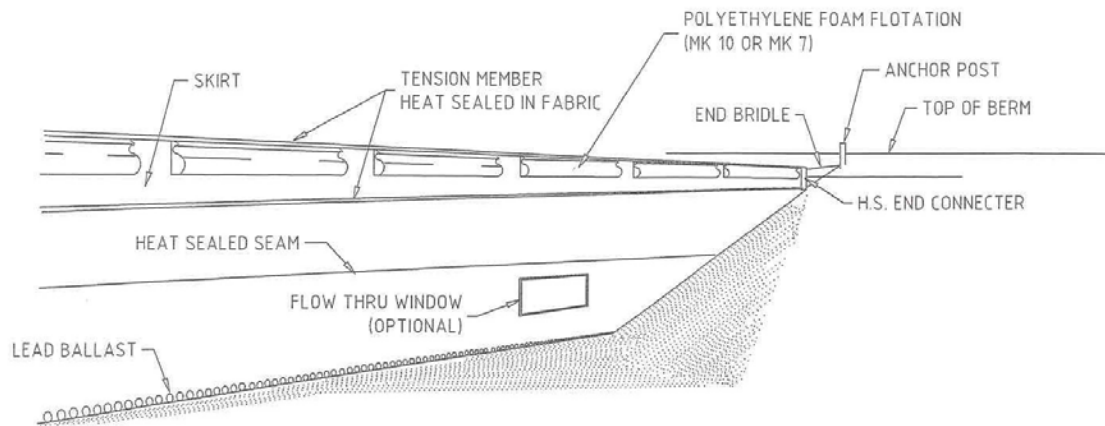


Figure #1

Slickbar Lagoon Baffles are delivered pre-assembled and packed in heavy-duty tri-wall cardboard shipping boxes on oak pallet skids. The skirt is gathered and tied to the baffle's floats, and packed in a flaked configuration in the shipping box for easy unloading. It is only necessary that section connectors of very long baffles (requiring more than one box) be joined before the baffle is deployed. Assembly can be accomplished as the baffle is unloaded from the shipping box.

SELECTING AN ASSEMBLY SITE

In selecting an area for assembling and deploying a baffle, a site should be chosen that is adjacent to the lagoon's shore line, close to one of the shore anchor posts, and also has easy access to material handling equipment, such as a forklift truck or small crane truck. The site should be level, relatively smooth, and free of gravel, riprap or other sharp objects that may possibly snag and tear the baffle skirt. The baffle can be floated into its final position.

ON-SITE ASSEMBLY

If the baffle length is 100 feet or less, it will be constructed in one section and will have only a two-point shore connector on each end. If the baffle is much longer than 100 feet, it will be constructed in multiple sections, and will have Type HS connectors for assembly of the sections and tension ropes where required.

Tools: the baffle joints can be assembled using standard hand tools to join the connectors and the skirt. An impact wrench will speed up the assembly time, but is not absolutely necessary for the baffle installation.

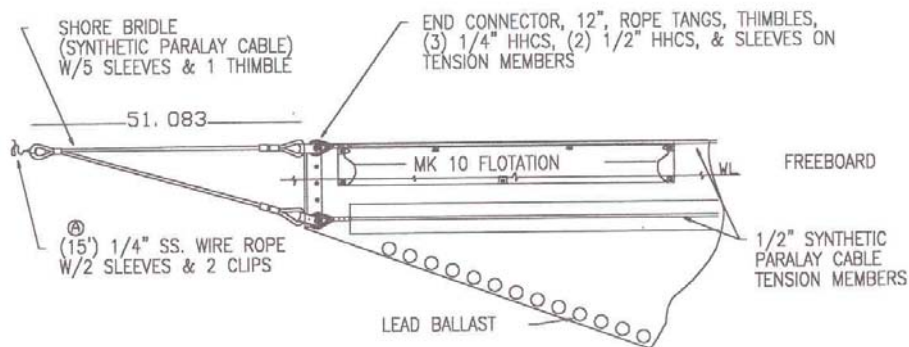
Tool List

7/16" Socket and Ratchet
7/16" Combination Box\Open End Wrench
3/4" Socket with 1/2" Drive Ratchet
3/4" Combination Box\Open End Wrench
Pliers, Hammer and Awl

END CONNECTORS

At the shore end of each baffle section there is either a single point or a two-point stainless steel connector formed from stainless steel plates. Single

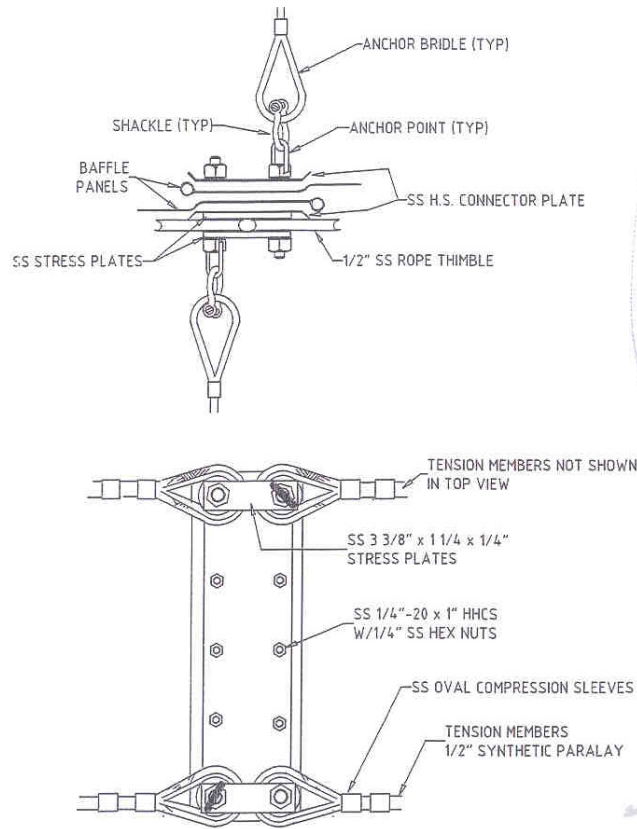
point end connectors are used with baffles with no tension members or single tension members. Two-point end connectors are fitted with 3' bridles to equalize the loads in each of the tension members. See Figure #2.



Mk 10-2 Style End Connector
Figure #2

INTERMEDIATE CONNECTORS

The Type HS Connectors Assembly consists of two stainless steel connector plates, 12" long x 4' wide, between which the two lagoon baffle section ends are placed. The two-connector plates are bolted together using 1/4"-20x1" stainless steel bolts. The ends of the tension members (if required) are placed between two 1/4" thick stainless steel stress plates, and bolted to one side of the connectors using 1/2"-13 x 2-1/2" anchor eye bolts and nylock nuts. See Figure #3.



High Strength Intermediate Connector
Figure #3

For two-tension member baffles requiring side anchors, an anchor bridle extends 5' each side of the HS joint. It is shackled to the connectors for attachment to the side anchor tether lines.

Below the HS Connectors, the skirt section ends are overlapped and fastened together using 1/4"-20 x 3/4" stainless steel bolts and nylock nuts through the grommets in the skirt. See Figure #4.

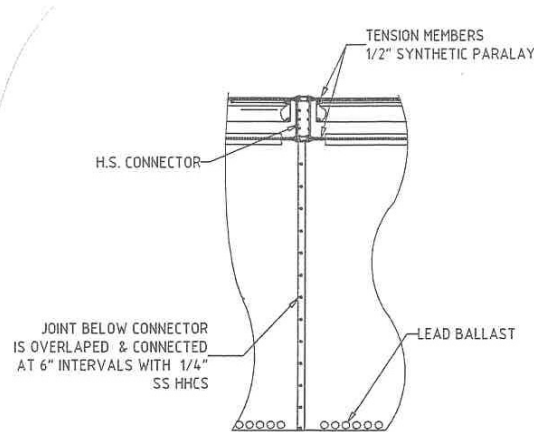


Figure 4

SELECTING AN ANCHOR

The type of anchor required depends upon the lagoon construction. Self-digging style anchors can be used; however, they tend to have limited holding power in soft bottoms. Large concrete blocks are a good choice for soft bottom lagoons because they will settle into the sediment. Large or small concrete filled rubber tire carcasses should be considered for lined lagoons. The size of the blocks depends upon the operating conditions. These conditions include the shape of the lagoon, the force of the wind, and the quantity of water flowing through the lagoon and against the baffle. For example, if a wind in excess of 20 knots during storm conditions is anticipated, an anchor block weighting not less than 500 lbs. will be required for each anchor location.

If it is not possible to handle an anchor block of this size, smaller blocks can be used. However, it may be necessary to reposition the baffle after storms that have high winds or develop strong wind-driven currents in the lagoon. Ideally, anchors are placed (imbedded where possible) in new lagoons prior to filling.

INTERMEDIATE ANCHORING

Intermediate side anchors are installed depending upon the baffle length and environmental conditions (i.e. wind, current, and wave action). Side anchors relieve the strain on the baffle caused by combinations of these forces between shore anchor posts. If required, intermediate anchors must be installed on both sides of the baffle to keep the baffle centered. An intermediate anchor system consists of ½" t ether line attached from the connector to a buoy. For baffles with two tension members, a wire bridle is placed between the HS connector and the tether line. An anchor line approximately four times the water's depth is attached to the buoy from the chain and anchor. After the anchor is set on the lagoon bottom, it may be necessary to adjust the length of the anchor line so the baffle remains in a relatively straight line with equal tension on the tether lines on both sides of the baffle. See Figure 5.

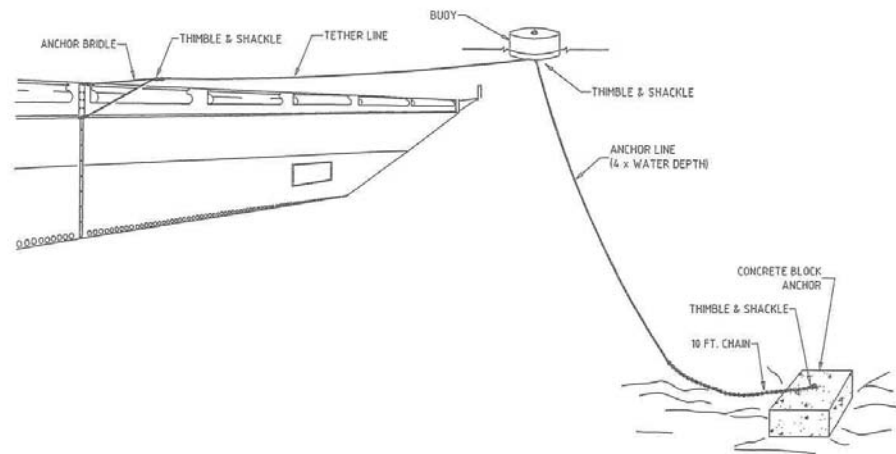


Figure 5

DEPLOYING THE BAFFLE

The assembly plan should be studied and the section designations noted. Box markings should be checked for start and finish sections. The section that will be furthest from the assembly area should be selected, and the container moved to the deployment location. The box top should be removed, and the end carefully cut off so as not to damage the contents. The baffle should be flaked out into the water. When removing the last HS connector from the box, the skirt ties should be released for about 10 – 15 feet. The ties from the correct end of the baffle in the next box should be released (they should be packed in proper order so as to have the next end on top) and the section connection made as previously described. The skirt should be re-tied to the floats, and the process continued until the complete baffle is in the water. When a Type HS connector is reached, about 10-15' of the baffle should be untied and a connection made to the next section. After the section connection is completed, the skirt should be gathered and retied to the floats and the baffle deployed into the water. As the baffle is being deployed, it is floated across the lagoon to its destination on the opposite shore. This can be accomplished with the aid of a small boat and a line, or, a line can be run from the baffle's far end connection across the lagoon to the opposite shore to pull the baffle across. Temporary anchors are useful during deployment to hold the baffle in position while end connections are being made and tensioned. Baffle skirt ties should not be

cut until the baffle has been floated into position in the lagoon and final tensioned.

MAINTENANCE

Lagoon baffles do not require any routine maintenance, except periodic inspection of the anchor systems for signs of wear and tear on the rope and tightness of the fittings. After adverse weather conditions, repositioning of the intermediate anchors may be necessary depending upon the anchor type, weight, and bottom conditions. When baffles are installed in saltwater lagoons, marine growth may develop on the upper portions of the baffle skirt and portions of the floats. Periodically it may be necessary to remove this growth to maintain desired freeboard height. If the baffle exhibits any sign of sinking, it is an indication that sediment or growth is building up on the lower baffle skirt. If this occurs, the skirt should be cleaned or removed from the sediment.

REPAIR INSTRUCTIONS

Flotation: Flotation units used on Slickbar lagoon baffles are molded polyethylene foam. If the flotation becomes lost or damaged, replacement float units can be supplied by the manufacturer for replacement in the field.

Ballast: Ballast consists of molded lead disks attached through the skirt's lower edge. The ballast weights require no field repairs. It is possible to attach additional weights using simple hand tools. The male ballast weight should be placed on a hard surface, and the stem extended through the skirt's hole. The female weight should be placed over the stem. The protruding stem should be crushed with a large slip joint pliers or machinists clamp to "rivet" the weights together. See Figure 6.

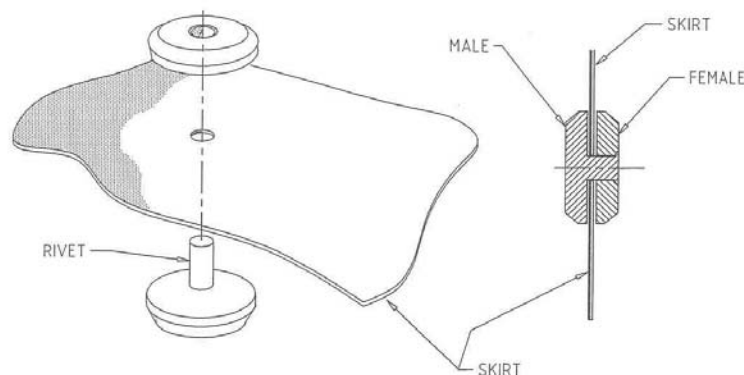


Figure 6

Skirt: Several skirt materials are available for Slickbar Lagoon Baffles. Field repairs generally consist of patching tears, punctures, and rips with additional fabric of the same type as the parent skirt material. The patch should be placed on each side of the skirt, if possible. The patch material should have rounded corners, and should extend a minimum of 4” in each direction from the damaged area.

Step 1. Cleaning the Membrane: Initially, soap and water are used to clean the skirt. Solvents, such as MEK, acetone, or mineral spirits can be used if further cleaning is required. Because all solvents are highly flammable, proper precautions must be taken to insure there are no open flames, sparks, or other ignition sources near the work area. If solvents are used, the work area must be well ventilated to avoid the accumulation of fumes. In some instances where excessive deposition of foreign matter has occurred, it may be necessary to slightly abrade the fabric’s surface with a wire brush to loosen or remove excess materials.

Step 2 Preparing the Fabric for Patching: The fabric must be clean and dry to achieve effective adhesion of the patch. Prior to patching, the fabric should be placed on a rigid surface where the patch material may be rolled onto the skirt to assist in the adhesion process.

Step 3 Patching the Skirt: There are generally two methods of adhering the patch to the skirt material—a hot air gun is used to weld the two pieces of fabric together, or, an adhesive is used. The hot air method is advantageous because it does not require extended curing time after patching, and the baffle is immediately serviceable. When adhering the patch with adhesive, it is necessary to allow curing for a minimum of 24 hours before the baffle can be returned to the water.

Hot Air Method: When the patch material is adhered to the skirt using the hot air method, the area to be repaired should be placed on a hard surface. The tip of the heat gun should be held approximately 1” from the overlap contact of the patch to the skirt. The heat gun should heat the coating on the fabric to a temperature of approximately 235°F. Pressure must be applied with a roller to the full width of the patch while the fabric

coating remains in a melt condition. The heat should be properly applied in the adhering process so that an approximate 1/8" minimum of coating will be extruded from both edges being adhered. This same procedure should be repeated when applying a patch on the baffle skirt's opposite side. An adhesion test should be conducted on two scrap fabric pieces to insure that the hot air method produces a weld that peels the coating from the base fabric, rather than just peels coating from coating.

Adhesion Method: After the skirt material is cleaned and prepared, it should be placed on a hard surface. Both the patch and skirt material should be cleaned with a solvent covering an area at least 2" larger than the patch size. A coat of HH-66 adhesive should be applied to the patch and skirt material. The adhesive should be allowed to dry for approximately 10 minutes before a second coat is applied. A second coat should dry for approximately 5 minutes before the patch is applied to the baffle fabric. The patch should be positioned over the tear so that the adhesive sides are facing. A roller should be used to apply pressure to assure good contact of the patch to the skirt material. A second patch should be applied to the baffle skirt's opposite side. If near the edge of the baffle, the patch should be clamped between two pieces of plywood. If not reachable by clamps, a second piece of plywood should be placed over the patch and weighted (approximately 50 lbs./sq. ft.). The adhesive should be allowed to dry for at least 24 hours before placing the baffle back in service. The full strength of the patch will not be achieved for several days, depending upon the ambient temperature in the vicinity of the patch.

Note: If the baffle is fabricated of Seaman XR-5 fabric, CPVC adhesive should be used vs. the HH-66 used for all other fabrics. CPVC adhesive can be obtained at a local plumbing supply house.



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MANUFACTURER'S WARRANTY

Slickbar's Floating Lagoon Baffles are under warranty for one year after date of shipment to be free of defects in materials and workmanship at time of shipment. Slickbar further warrants that the products shall conform to the specifications and descriptions as established by Slickbar. Because a manufacturer cannot anticipate or control the many different conditions under which our products may be used, we do not guarantee the suitability of our products for any given situation. The products are sold without warranty, either expressed or implied, except as to defects in materials and workmanship as stated above. The buyer assumes all responsibilities for loss or damage arising from the handling and use of our products. Slickbar's obligation under this warranty is limited to, at Slickbar's option, allowance for credit, repair, or replacement of any material that may prove defective with respect to material or workmanship. Except for the above expressed warranty, there are no other warranties including any implied warranties of merchantability or fitness for any particular purpose to the lagoon baffles covered hereby. Correction of defect in material and workmanship for a period of twelve months following shipment shall constitute fulfillment of all liabilities of Slickbar Products Corporation to the customer. No warranties or representation at any time made by any sales representative, dealer, agent, or any persons shall be effective to change or expand the above expressed warranty or any other terms thereof.



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