Brentwood Trickling Filter Media Installation Guidelines

This Installation Handbook was written by Brentwood Industries, Inc. with the express purpose of providing helpful hints and examples for contractors and others of the many varied methods of installing trickling filter media. This Handbook is not to be construed as the only Brentwood approved methods for media installation or the final installation authority. The text and pictures are for illustrative purposes only, check with the trickling filter owner/ project engineer for their contract/specification requirements.

Media Support Structures:

Brentwood recommends the pre-engineered AccuPier® support system for media installations or alternatively 8" (minimum) to 10" wide pre-cast (or poured) concrete beams. The 10" beam will require a 2 inch (50.80mm) wide "drainage channel" in the middle of the 10" support to allow the wastewater to flow out of the media. All concrete beams are placed at 2 ft. (610mm) ctr.-to-ctr. distance.

A support ledge at least 4" (10 cm) inches wide must be provided around the center column and the tank perimeter wall. The top of each of the media support beams and the top of the support ledge should be at the same elevation and within a max. tolerance of ± 1/8th inch (3.2 mm) in their elevation.

Pictured below is the AccuPier®: with base; stanchion; cap and grating as well as concrete/other type support beams that have been used in other trickling filters and are typical for many tanks.

AccuPier® Support System

10" Support Beam w/2" Drain Channel

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8” Support Beam

12” Support Grating

4” Edge/Center
Column Support Ledge

Media Rigging Methods:

Our media modules will arrive palletized on site in closed 48’ or 53’ trailers. The media will be delivered in order of the installation process, bottom layer first and so on, at the normal rate of 4 to 6 truckloads per day or as per a mutually acceptable schedule. Typically there are 8 modules on a pallet, resulting in a full pallet that has a 4 ft. width, 4 or 6 ft. length and an 8 ft. height. The pallets must be moved in some fashion to the back of the truck, a pallet jack or a skid puller and chain have been the most successful methods. From the back of the truck the pallets must be lifted by some sort of forklift and lowered to the ground level. The media must then be conveyed to the top of the filter wall by mechanical conveyor or crane. Cranes shall be used or conveyors shall be constructed as necessary to transport the media to the working level inside the trickling filter. There is no correct method or only “one way” to rig media into a wastewater tower. Pictured below is a small sample of methods employed in the past to move media into a tank.

Media unloading platform

Multi-pallet media carrier

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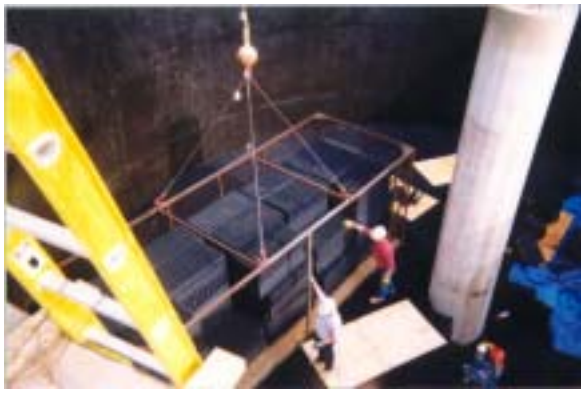
Rigging using 2 x 4's and slings

Pipes w/D-rings & quick-release cables

Wooden platform with wire cables



Metal platform loaded w/loose modules

Highlighting media to tank opening

Wooden slide to tank floor for installation

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Media Placement and Manpower:

The final placement of the media must be placed/installed by hand normally, starting at the center column and working out toward the tank walls. Stretching a line from one side of the tank to the other (perpendicular to the supports for the 1st layer) will allow the media to be installed in straight rows. The media modules shall be placed in the trickling filter to provide the closest possible fit with adjacent modules without damaging the modules. The module packing arrangement shall be as recommended by the media manufacturer and shown on the engineer approved installation drawings. Media modules within each layer shall be installed such that the sheets of all modules are parallel to each other. Modules in respective layers shall be installed at right angles to the layer immediately below and above. With that said, it is important to understand that the media can be installed as quickly as it can be supplied to the workers inside the filter. For estimating purposes a crew consisting of one crane operator, one forklift operator, one or two other workers to unload trucks and rig media pallets plus three to five inside tank workers should be able to install from 600 to 900 modules per day. The following installation pictures illustrate proper media placement and module orientation.

Starting media placement at center column

2nd layer media placement

Media Cutting, Protection and Debris Containment:

All site module cutting is done with a chain saw, a 28” bar is preferable because it is long enough to make most of the cuts with one pass, yet manageable enough so as not to create any additional safety concerns. The media modules should be carefully measured and cut or trimmed to fit within 2 inches (or less, especially if specified by the project engineer) of the center column and the tank perimeter wall. The shaping, cutting and trimming of the media modules may be done in the trickling filter provided that precaution is taken by the Contractor to prevent any chips, broken pieces, or debris from falling into the media by using a plywood floor with canvas tarpaulins or similar working materials to cover the plywood cutting area/media modules. All media modules shall be cleared of any such fallen material before a new layer of media is added. The top layer of media should also be completely protected from damage and such falling material due to any subsequent work until the “start up" of the system. The media module edges should be protected from damage due to workmen walking on them. To prevent such damage of

modules the Contractor should use plywood or other suitable temporary planking. Following are pictorial examples of cutting shacks and tarped cutting areas contractors have used on previous media installations.

Large open top cutting box

Screened cutting shack w/tarped apron

Typical 3-sided cutting box

Tarped cutting area with plywood under the tarp

All of the information, observations and recommendations provided in this handbook are being furnished only as a matter of general information and are not in any way intended as a guarantee on the part of Brentwood Ind., Inc., Reading, PA.