Minnesota Department of Transportation BMP Guidance for 3884 Hydraulic Soil Stabilizer
Type 8 Bonded Fiber matrix
Type 9 Mechanically Bonded Fiber matrix
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2575 INSTALLATION
Seeding must be done as a separate operation. Strictly comply with equipment manufacturer's installation instructions and recommendations. Use approved hydro-spraying machines with fan-type nozzle (50-degree tip). To achieve optimum soil surface coverage, apply BFM from opposing 90 to 180 degree directions to soil surface. Rough surfaces (rocky terrain, cat tracks and ripped soils) may require higher application rates to achieve 100% cover. Slope interruption devices or water diversion techniques are recommended when slope lengths exceed the slope length limits of Table 1. Type 8 and 9 HSS are not to be installed in channels or areas with concentrated water flow unless supplemented with additional BMPs including but not limited to nets/meshes, root reinforcement mats and grids. No chemical additives with the exception of fertilizer, liming and biostimulant materials should be added to this product.

Application Rates: These application rates are for standard conditions. Application rates may need to be increased on rough soil surfaces.

Table 1 Application Rate

Slope Gradient /Condition	**English**	**SI**	**SL ft**
≤ 4:1	2500 lb/ac	2800 kg/ha	100
> 4:1and ≤ 3:1	3000 lb/ac	3400 kg/ha	70
≥3:1 and ≤ 2:1	3500 lb/ac	3900 kg/ha	60
> 2:1 and ≤ 1:1	4000 lb/ac	4500 kg/ha	35
> 1:1	4500 lb/ac	5100 kg/ha	20
Below RECB or TRM	1500 lb/ac	1700 kg/ha	-
As infill for TRM	4000 lb/ac	4500 kg/ha	-

3884.3 Sampling and testing

QUALITY ASSURANCE
Before installation of BFM, provide the following information from the manufacturer:
Written quality control program conforming to the requirements of 1601 Source of Supply and Quality, and 1717 Quality Control. Ensure the BFM is listed on the most recent edition of *MnDOT Approved Products List* prior to being accepted for use.
Ensure that each package of BFM bears complete identification including, but not limited to, the following:
Manufacturer's name and location,
Manufacturer's telephone number and fax number,
Manufacturer's e-mail address and web address,
BFM name, model, and/or serial number, and
BFM physical composition.

The field slump test is water and material mixing ratio free water liquid test. In order to pass this test, the liquid must travel less than one (1) inch of slump or free water movement in one (1) minute. This must be demonstrated to the MnDOT inspector prior to placement. Cold water will require greater mixing times than warm water. Note slump board has concentric rings spaced one (1) inch apart. During the test, the board must not rest on vibrating equipment.

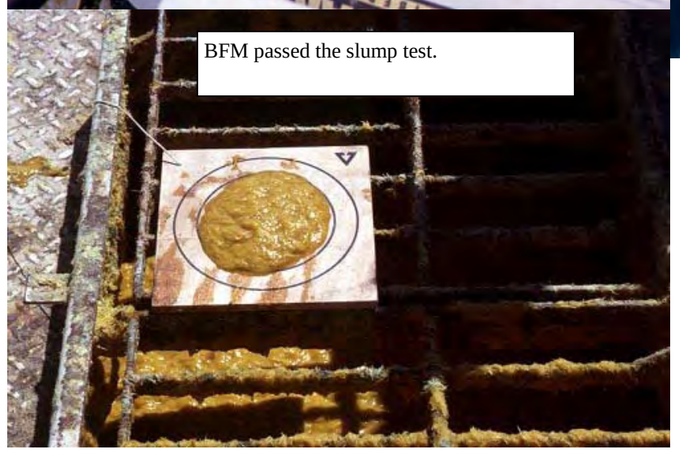
CLEANING AND PROTECTION
Wash all overspray material from items not intended and remove any slurry spills. Once dry, material will be very difficult to remove. Clean spills promptly. Advise contractors of methods for protection of treated areas. Do not allow treated areas to be driven or subjected to foot traffic.

Slump board and 8 oz cup placed in bullseye, with 1 inch spacing on 'target' rings


Proper steep slope preparation with 'cat tracking' prior to BFM application from two direactions.


Free water slump moved more than 1 inch in 1 minute. More mixing time is required


BFM after application should have no exposed soils from any view direction, and zero material slumping off soil face.


BFM passed the slump test.

3884.4 Certification and Training

Contractors applying Bonded Fiber Matrix Products (Mn/DOT Standard Specification 3884 Type 8 hydromulch) on Mn/DOT construction projects must be certified by either a vendor or manufacturer. The certification/training program should consist of the following:
1. A minimum of 4 hours combined classroom and field experience
2. How to read plan sheets and project specifications as it applies to Type 8 BFM
3. Mix ratios (bales to water)
4. Field measurements- i.e. adequately measuring areas before spraying
5. Verification processes- i.e. slump test measurements including standard cup and standard test board
6. Installation details- i.e. Seeding before applying Type 8, applying on dry soils, application rate, applying in two different directions (preferably 90 degrees apart), applying in two stages for proper dewatering, cure time, etc.
7. Problem solving
8. Machine inspection and maintenance

The certification is considered valid for Mn/DOT purposes for two years after passing the class. Written documentation from the vendor or manufacturer who held the certification class with the information listed below must be provided to the MnDOT address listed below on a yearly basis and as new people are certified or re-certified.
1. The individuals in your company who have passed the certification class
2. The material product name the individuals are certified to apply- i.e. Conwed 2500, Ecoaegis, Soil Guard, Terra Mulch BFM
3. The hydroseeder equipment or brands the individuals are certified to use- i.e. Finn, Bowie, etc.

Documentation can be sent to:
Minnesota Department of Transportation
Office of Environmental Services – MS 620
395 John Ireland Blvd
St. Paul, MN 55155
Attn: Lori Belz

S-xxx (2575) Controlling Erosion and Establishing Vegetation

Hydraulic Soil Stabilizer Type 8 Bonded Fiber Matrix (BFM) operations shall be performed in accordance with the provisions of Mn/DOT 2575.3H8 and the following:

Bonded Fiber Matrix
The Contractor shall maintain the Bonded Fiber Matix installation for 30 days when specified in the Contract or when the Engineer allows BFM and seed to be substituted for sod or blanket and seed. Maintenance consists of repairing any erosion damage and routine watering of the cured BFM to equal a minimum of 1.3 cm (**0.5 inches**) of rainwater per week (135 m^3/ha (**14,520 gal/ac**). Until acceptance, the Contractor shall be responsible for controlling erosion and establishing a permanent vegetative cover to the satisfaction of the Engineer. In the event of seeding failure or erosion during the maintenance period, the Contractor shall restore such areas at no additional cost to the Department.

BFM first lift placement on properly prepared seed bed. Blanket installed at top of slope in rural section to prevent rill formation. Ditch section is low gradient between driveway access. Otherwise, appropriate blanket should d be installed to wetted perimeter. BFM does a fantastic job anchoring blanket and provides a smooth transition between product materials.

MBFM injection into permanent root reinforment mat for creek bank stabilization.