



## SOIL (STOCK PILE) STABILIZATION

### PROCESS DESIGN OVERVIEW

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#### 1 SCOPE

With ever growing government requirements around runoff contamination in our storm water systems as well as requirements to control fugitive dust particulate in the air, it is becoming increasingly more important to encapsulate stockpiles on construction, landscape or at long term storage sites.

#### 1.1 DEFINITIONS

Soil (Stock Pile) stabilization is the process of encapsulating or adding a liquid “tarp” to a stockpile of material. This technique is part of most stock pile management systems and is tailored to the specific product, industry and sensitivity of the surrounding environment.

#### 2 MATERIALS

##### 2.1 Asphalt Emulsions:

Stabilizing emulsions are economical, environmentally friendly and can be modified with a combination of special wetting agents to aid in penetrating the soil to create a crust. Fugitive dust is controlled and water is shed minimizing erosion.

##### Organic Polymers:

Organic polymers or lignin’s derived from plants can be used as a natural stabilization measure. It very effectively binds the granular surfaces together. This material is used in a wide range of products including food additives suitable for human consumption and therefore is beneficial for stabilizing stockpiles of material used in the food industry such as fertilizer. It is a viscous product that is typically diluted with water.

#### 3 DESIGN CRITERIA

Aggregate, minerals, fertilizer, soil and other commodities stockpiled degrade due to weather creating airborne particulates. Rain and snow will wash and erode stockpiles. In order to eliminate or cut back on inventory loss, oxidization, fugitive dust, leaching and slope decay a spray applied emulsion is necessary. The material to be encapsulated should be analyzed for gradation, porosity, density, end use and weathering characteristics so the proper product can be used in the appropriate quantity.



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### 4 RECOMMENDED PERFORMANCE GUIDELINES

In order to achieve optimal product performance, the following guidelines should be followed:

- Evaluate the material to be sprayed.
- Determine which product is to be used.
- Apply a light application of water to the surface to reduce surface tension
- Inspect and calibrate the equipment.
- Follow proper construction techniques.
- Control the proper application rate.
- Work only in weather conditions suitable for spraying.

### 5 RESOURCES

1. "Dust Control for Unpaved Roads", Series 10, National Guide to Sustainable Municipal Infrastructure, 2005
2. "Basic Asphalt Emulsion Manual", Fourth Edition, Asphalt Institute and Asphalt Emulsion Manufacturers Association, 2008
3. "Recommended Performance Guidelines", Second Edition, Asphalt Emulsion Manufacturers Association, Annapolis Maryland, 2006
4. "The Asphalt Handbook", 7<sup>th</sup> Edition, Asphalt Institute, Lexington, Kentucky, 2007
5. "Asphalt in Pavement Maintenance" MS-16, 3<sup>rd</sup> Edition, Asphalt Institute, Lexington, Kentucky, 1997



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