

# Policy & Procedure Document

Last Modified: 06/17/2005

Reviewed for Version:

**SECTION:** 1100 - Materials Management

**ITEM NUMBER:** 1107.9

**ITEM:** AGGREGATE (SOIL) MIX DESIGN

**REVISED:** 06/17/2005

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## **SCOPE:**

To establish the policy and procedure for maintaining the SiteManager Aggregate Mix Design information.

## **GENERAL:**

The Aggregate Mix Design Window allows for the addition, modification and approval of Aggregate Mix Designs. OkDOT will use this window for what is more commonly referred to as Soil (stabilization/modification) Mix Designs. OkDOT conducts a soil mix design analysis and reports out recommendations on the basis of weight. Many of the field labels refer to volume. Based on available resources, changes to the aggregate mix design windows may be made to more accurately reflect OkDOT practice.

OkDOT either conducts the soil mix design, or a private laboratory does the soil mix design. The Materials Division reviews mix designs for compliance with specified design criteria. SiteManager's approval functionality will be used to indicate a mix design meets design criteria specifications, and is acceptable for use. Soil mix designs are typically unique to a project on a contract, so that association of the mix design to a contract in Contract Mixes should be considered an integral part of the review and approval procedure. When a mix design is approved, the mix design ID becomes available for pick list selection and listing on Contracts in the Contract Mixes area, and in the Sample Information area when the Aggregate Design type is selected on the additional sample folder tab.

It is not possible to change a mix design once it is approved. Data will be entered in this window by the Central Geotechnical Lab Manager. Only the Geotechnical Engineer or his/her designated representative may approve a mix design. The Geotechnical Engineer or his/her designated representative should be notified by the Central Geotechnical Lab Manager when data entry is complete and the mix design is ready for approval.

To approve a mix design in this window, go to the Description folder tab, click Services from the top bar menu and then select the Approve option.

SiteManager Access Assignments				
<b>Central Office</b>				
Group Code	Group Name	Update	Inquiry	None
CENADMIN	Administration			X
FHWA	Federal Highway Administration		X	
CENINQRY	Inquiry			X
REGSERV	Regulatory Services			X
SYSADMIN	System Administration	X		
<b>Construction Division</b>				
Group Code	Group Name	Update	Inquiry	None
CONSADMN	Administration		X	
CONEST	Records Administration A			X
CONSLOAD	Records Administration B			X
<b>Field Division</b>				
Group Code	Group Name	Update	Inquiry	None
DIVADMIN	Administration		X	
DIVAUDIT	Auditors		X	
DIVINQRY	Inquiry		X	
<b>Materials Division</b>				
Group Code	Group Name	Update	Inquiry	None
MATADMIN	Administration	X		
MATAUTH	Branch Managers	X		
MATIAS	Independent Assurance		X	
MATINQRY	Inquiry		X	
MATSTA	Lab Supervisors	X		
MATTEST	Recording Samples / Tests		X	
MATTRAIN	Training Updates			X
<b>Residency</b>				
Group Code	Group Name	Update	Inquiry	None
RESADMIN	Administration		X	
RESAUDIT	Auditors		X	
COUNTPRT	C.O. Approvals for Contractors			X
RESINQRY	Inquiry			X
RESLABMN	Lab Managers		X	
RESLABTC	Lab Technicians		X	
RESINSP	Project Inspectors		X	
RESPRMAN	Project Managers		X	
RESSCTRY	Secretaries / Clerks		X	

## **Description Folder Tab**

The Description folder tab of the Aggregate Mix Design window is used to capture some of the basic mix design information. It contains the following fields:

### **Mix ID**

Mix ID is a data entry field that allows for the entry of up to 15 characters. In OkDOT, the format for all Aggregate Mix Design Mix ID's will be as follows:

**TTCCCCYYMMDDXX** where

TT is a 2-digit alphabetic code for the primary material used as the cementitious soil modifier (see table below)

CCCC is the 4-digit numeric SiteManager Inspector (Sampled By) I.D. of the person who sampled the soil for design work.

YYMMDD is the year-month-day the mix was initially designed

XX is a sequence number for designs of TT type for CCCC Inspector on YYMMDD, beginning with 01

<b>Cementitious Soil Modifier Codes (TT)</b>	
FA	Fly Ash
LM	Lime
CK	Cement Kiln Dust (CKD)
HC	Hydraulic Cement

Example: FA232904100701 would be an ID for a Fly Ash mix design, soil having been sampled by Inspector No. 2329, initially designed on 10/07/2004, being the 1st soil mix design of that type, relative this inspector and design date, entered into the system.

### Material Code

Material Code is a look up field that lists all materials available in Material Detail. Users should select the appropriate material code for the general class of base or subgrade. In OkDOT, all base and subgrade material codes begin with a **base** prefix. The material codes and full names designate the general class of base or subgrade. The typical data to enter in this area will be:

Material Code: **base010** Material Full Name: **Stabilized Subgrade**

Selecting the material code automatically displays the material full name in an adjacent field.

### Producer Supplier Code

In this field, always select the generic Producer / Supplier:

Producer Supplier Code: **Contractor** Producer Supplier Name: **Contractor / Project Site**

### Designer Name

This is a data entry field that allows for the entry of up to 50 characters. Enter information in this field that identifies both the design lab name and designer's personal name. Example: ODOT Central Geotechnical Lab, Chez Murray

### Effective Date

Effective Date is a data entry (date) field and will be used to document the date the SiteManager mix design data record became effective.

### Termination Date

Termination Date is a data entry (date) field and will be used to document the date the SiteManager mix design data record is terminated. Mix designs are to be terminated when mixtures using the design are consistently not meeting the design standards. Users making mix design to Contract associations and mix design to Sample Information Record associations are to review this data to assure new associations are not made to terminated designs.

### Approved Date

### Approved By User ID

Approved Date and Approved By User ID are automatically populated by the system when a mix design is approved. To approved a mix design, select the Services, then Approve option. An Aggregate Mix Design may not be changed once it is approved.

### Maximum Density (Raw Soil)

This is a data entry (numeric) field and will be used to document that value. To the right of this field is a drop down list to document the unit for the listed value. Typically, **LBS/CU FT** should be used here.

### Optimum Moisture % (Raw Soil)

This is a data entry (numeric) field and will be used to document that value.

### Raw Soil + \_\_\_\_ % Cement by Vol

This is a data entry (numeric) field. Although the field label says "Cement by Vol", this field will be used to document that value for any type of cementitious soil modifier by weight.

### Maximum Density (Raw Soil + ---- % Cement by Vol)

This is a data entry (numeric) field and will be used to document that value. To the right of this field is a drop down list to document the unit for the listed value. Typically, **LBS/CU FT** should be used here. Although the field label says "Cement by Vol", this field will be used to document that value for any type of cementitious soil modifier by weight.

### Optimum Moisture % (Raw Soil + ---- % Cement by Vol)

This is a data entry (numeric) field and will be used to document that value.

### Recommended Cement Content (% by Volume)

This field will not be used.

### Recommended Cement Content (% by Weight)

This is a data entry (numeric) field and will be used to document that value. Although the field label says Cement, this field will be used to document that value for any type of cementitious soil modifier.

### Maximum Volume Change %

This field will not be used.

## **Compressive Strength Folder Tab**

The Compressive Strength folder tab of the Aggregate Mix Design window will be used to capture certain of the mix design properties. The Compressive Strength folder tab contains the following fields:

## Age

This is a data entry (numeric) field and will be used to document that value. To the right of this field is a drop down list named Age Type to document the unit for the listed value. Typically, **DAYS** or **DAYS SAT.** (to indicate samples that have cured while immersed in water) will be selected here.

## Cement Percent

This is a data entry (numeric) field and will be used to document that value. Although the field label says Cement, this field will be used to document that value for any type of cementitious soil modifier.

## Compressive Strength

This is a data entry (numeric) field and will be used to document that value. To the right of this field is a drop down list named Compressive Strength Units to document the unit for the listed value. Typically, **PSI** will be selected here.

## **MATERIALS FOLDER TAB**

The Materials folder tab of the Portland Cement Concrete Mix Design window is used to capture material data specific to the component materials used in the mix. Multiple materials will be listed by clicking the new icon and adding. It contains the following fields:

### Material Code

Material Code is a look up field that lists all materials available in Material Detail. Users should add each material code which reflects a specific component part of the mix, then add the additional data relative to that selected material. Selecting the material code automatically displays the material description. Some common materials to be selected will be as follows:

<b>Typical Material Code Prefix</b>	<b>Common Material Code</b>	<b>Common Material Full Name</b>	<b>Common Material Category</b>
base	base015	Stabilized Subgrade Components	326 Stabilized Subgrade
flya	flya001	Fly Ash, Class C	702 RecycledModifiers
ckd	ckds001	Cement Kiln Dust (CKD)	702 Recycled Modifiers
lime	lime002	Lime, Quick	706 Lime
h2o0	h2o001	Water	701 PC Concrete

\*\* Material Code: **base015** Material Full Name: **Stabilized Subgrade Components** is to be selected for every soil mix design.

Additional component materials will be required and should be available in Material Detail for selection. The above list is shown to relay certain common materials and assist in searching through the pick list for other component materials that would be appropriate to select. Similar materials will have the same Material Code Prefix, follow the same Material Full Name convention, and be listed in the same Common Material Category. Clicking on any column heading in the pick list sorts than column alphabetically.

## Producer Supplier Code

Producer Supplier Code is a look up field that lists all Producer / Suppliers in SiteManager's Producer / Supplier list. Users should select the appropriate Producer / Supplier for the selected Material Code. Selecting the Producer Supplier Code automatically displays the Producer Supplier Name in an adjacent field.

In this field, for the **base015** and **h2o001** material codes, always select the generic Producer / Supplier:  
Producer Supplier Code: **Contractor**    Producer Supplier Name: **Contractor / Project Site**

As part of the mix design documentation process, for materials such as hydraulic cement and fly ash, the data entry and approval process shall include verification that submitted sources are approved listed to supply the materials.

This field is not a filtered list and Users approving SiteManager mix designs should be aware of the potential gravity of their approving Producer / Suppliers that are not approved listed to supply the materials.

## Blend Percent

This is a data entry (numeric) field and will be used to document that value for the cementitious soil modifier and water.

## Sample ID

Sample ID is a look up field, filtered by the selected Material Code. It lists all SiteManager Sample Information records that have been created for the selected Material Code. The Sample Information record process is described in 1109.1 Sample Information. Users should select and display the Sample Information record for the **base015** material code submitted for design analysis. A sample of the soil, the cementitious soil modifier and the water for use in the mixture are to be submitted with and tracked by that record. Laboratory testing of components will typically be limited to the soil submitted with that sample record, however, that sample information record must include submitted source information for the cementitious soil modifier as well.

## Gradations Folder Tab

The Gradations folder tab of the Portland Cement Concrete Mix Design window is available to capture combined gradation data relative to the mix. It lists gradations specific to the Material Code listed on the Description tab. That Material Code is one for the combined soil mixture.

OkDOT, at this time, has no specified combined gradations relative to, or listed under, the combined soil mixture Material Codes.

The Gradations Folder Tab will not be used at this time.