1. **SCOPE**

1.1. **Description of Test**

This method describes the procedure for determining the relationship between the particle size distribution of fine and coarse aggregates and fine grained soils for all construction except concrete construction.

2. **APPARATUS**

2.1. **Equipment Required**

Balance - sensitive to 0.1 g.

Sieves - Canadian Metric Standard square mesh sieves of size as required for the type of gradation for the material being tested.

Mechanical sieve shaker.

Containers - pans suitable for washing the sample.

Drying apparatus - suitable pans and stove for drying the sample.

3. **PROCEDURE**

3.1. **Sample Preparation**

Obtain a sample from plant or other source as described in STP 105 or as otherwise directed.

Mix sample well and break up any clay lumps; especially in fine grained materials.

Use a quartering method or sample splitter to reduce sample to appropriate test size as shown in the table. Do not adjust sample to the exact value.
3.2. **Test Procedure**

Dry sample to constant weight at a temperature not exceeding 110° C and weight to the nearest 0.1 gram.

Place sample in a container and sufficient water to cover it.

Agitate the contents of the container sufficiently to separate all particles finer than the 71 µm sieve, from the coarse particles. Break clay lumps with the fingers.

Bring all fine material into suspension and pour the wash water over the 71 µm sieve to remove suspended clay and silt.

Slowly pour the wash water over the 71 µm sieve taking care to avoid spilling coarse particles on the wash sieve.

Repeat washings until the wash water is clean.

Return material retained on the 71 µm sieve to the washed sample.

Dry washed sample to constant weight at temperature not exceeding 110° C and weigh to nearest 0.1 g.

Nest the sieves with the finest sieve above the bottom pan and the coarsest sieve at the top.
Place the dried sample on the top sieve, place the sieves in the mechanical sieve shaker and shake for five minutes.

Weigh the material in the pan below the 71 µm sieve and record as the weight passing this sieve. Add the material resting on the 71 µm sieve to the material on the balance pan and record the total as the weight passing the next larger sieve. Repeat the procedure until all the material from each larger sieve has been weighed.

4. RESULTS AND CALCULATIONS

4.1. Collection of Test Results

Record test data directly on Form MR-70 which is arranged for detailed calculations.

4.2. Calculations

Calculate the sieve analysis as shown in the following example:

4.2.1. Wash Sieving

<table>
<thead>
<tr>
<th>Dry Weight of Sample</th>
<th>1000 g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Weight After Washing</td>
<td>950 g</td>
</tr>
<tr>
<td>Weight of Material Washed Through 71 µm Sieve</td>
<td>50 g</td>
</tr>
</tbody>
</table>

4.2.2. Dry Sieving

<table>
<thead>
<tr>
<th>Weight Passing</th>
<th>18.0 mm</th>
<th>950 g</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12.5 mm</td>
<td>800 g</td>
</tr>
<tr>
<td></td>
<td>5.0 mm</td>
<td>550 g</td>
</tr>
<tr>
<td></td>
<td>2.0 mm</td>
<td>350 g</td>
</tr>
<tr>
<td></td>
<td>900 µm</td>
<td>200 g</td>
</tr>
<tr>
<td></td>
<td>400 µm</td>
<td>150 g</td>
</tr>
<tr>
<td></td>
<td>160 µm</td>
<td>50 g</td>
</tr>
<tr>
<td></td>
<td>71 µm</td>
<td>5 g</td>
</tr>
</tbody>
</table>
4.2.3. Adjusted Weight & Percent Passing

Add weight of material washed through the 71 µm sieve to the weight passing each sieve before calculating percentages.

<table>
<thead>
<tr>
<th>Sieve</th>
<th>Weight Passing</th>
<th>Weight Washed</th>
<th>Total Weight</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.0 mm</td>
<td>950 + 50 = 1000 g</td>
<td>= 100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.5 mm</td>
<td>800 + 50 = 850 g</td>
<td>= 85%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.0 mm</td>
<td>550 + 50 = 600 g</td>
<td>= 60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0 mm</td>
<td>350 + 50 = 400 g</td>
<td>= 40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>900 µm</td>
<td>200 + 50 = 250 g</td>
<td>= 25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>400 µm</td>
<td>150 + 50 = 200 g</td>
<td>= 20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>160 µm</td>
<td>50 + 50 = 100 g</td>
<td>= 10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>71 µm</td>
<td>5 + 50 = 55 g</td>
<td>= 5.5%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.3. Report of Results

Report the percent passing each sieve on form MR-70.
New __ Revision _X_ Date of Previous Document 82-04-01

Effective Date: ___-__-

Description of Revision (Reason for Revision):

_Format of test procedure updated._

Review/Implementation Process:

_Reviewed by the Materials Section of the Technical Standards and Policies Branch._

Other Manuals/Policies Affected:

_Nil_

Follow Up/Training Required:

_Nil_

Comments/Concerns/Implications (Budget/Environment/Stakeholders):

Prepared and Recommended by D. MacLeod __________ 93-03-09
Materials Standards Engineer Date

Approval Recommended by R.A. Widger __________
Senior Materials Engineer Date

Approval Recommended by A.R. Gerbrandt __________
Dir., Technical Standards & Policies Br. Date

Approved by D.G. Metz __________
Assistant Deputy Minister, Infrastructure Date

Electronic File Updated __-__-

Update Mailed __-__-