Instructions for Computer Coding Aggregate Test Data

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MAC Aggregate Training

This document provides instructions on entering and submitting aggregate test results data into the Department’s Materials Acceptance and Certification (MAC) System database.

MAC Aggregate Terminology Include Company

Chapter 1 Navigating in MAC

A MAC user must have approved security access. Instructions for obtaining an Internet Subscriber Account are found at http://www.fdot.gov/materials/mac/access/macisa.pdf

A. Logging in to MAC
   1. Sign In.
      A user goes to MAC at https://mac.fdot.gov/ and clicks Log In. Click this Icon when it appears.

      ![Email - Internet Subscriber](image)

      2. Email and Password
         Enter your email and password when prompted.

      ![Login for Email - Internet Subscriber](image)
B. Sample Data Entry and Submittal

1. The Sample Life Cycle
   The Sample Life Cycle begins in MAC with Logging in a new sample. Click on “Manage Samples” in the upper right of the screen. Operations in MAC will involve a dynamic series of new screens that open after certain fields are entered.

   ![Diagram of Manage Samples button]

2. Log in a New Sample
   Click on “Create Sample Login” screen appears. This is the first step to enter your specific sample data.

   ![Diagram of Create Sample Login]

3. Sample Category
   When the next screen opens, the Sample Category box will be on “Project”, to the left of the drop-down arrow. Click the arrow (Step 1) and when the dropdown box opens, select “Program” (Step 2). For ease of illustration, both steps are shown in the diagram. Also, for convenience, the open dropdown box is re-drawn for this instruction document, and shown in the middle of the screen. It will actually appear in the same location as the Sample Category box.
C. Entry Fields on Login Screen

1. “Material/Specification”.

After selecting “Program” a new selection box appears for “Material/Specification”. The options match the material Sections in the Standard Specifications for Road and Bridge Construction (Specifications) The options available will be:

- 901 – Coarse Aggregate
- 902 – Fine aggregate
- 911 – Base
- 530 – Riprap (Revetment Systems)
- 204 – Graded Aggregate Base

Type in the number the specification. The full MAC name appears below and you must click it to enter the field in the box. The following examples shows the choice for 901, Coarse aggregate
2. Select “Sample Level”
Click inside the next screen to get the dropdown box and select the “Sample Level”

The options available in alphabetical order are:

- IA – Independent Assurance created by FDOT; also used in referee process
- IV – Independent Verification
- PC – Process Control
- QC – Quality Control
- QCA – Quality Control for approval to get Production Facility or Product approved
- QR – Quality Control for Producer’s portion of split Sample
- RT – not used
- VT – FDOT Verification
- VR – Verification for FDOT’s portion of split Sample
- VTA – Verification for FDOT to approve Production Facility or Product

3. Product Categories
A new dropdown box appears to select the “Category”. The star to the right indicates that this is a mandatory field. Categories are the product codes. The product codes will match those available in the “Material/Specification” previously selected. Click to select a Category.
Click to select F01
4. Select Mine or Terminal
The screen expands with new fields to be selected. The green highlight has been added to this document and only the text appears on the screen. This will be explained further.

<table>
<thead>
<tr>
<th>Create Sample Login</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC Spec</td>
</tr>
<tr>
<td>902 - Fine Aggregate, Program [Aggregate Control Program], v1.6</td>
</tr>
<tr>
<td>Return to Material Selection Screen</td>
</tr>
</tbody>
</table>

---

5. Aggregate Production Facility
Type in the Production Facility’s code number here. MAC has a feature that is called the “Type Ahead Option”. Once you have typed three characters, a list of all codes that start with these characters appear. You can click on the list to select a Facility as a short cut. This action populates the field. You can type the full six-digit code and the facility will appear below the box. Another option is to type in the company name. You must either click on the text below the box, or press the Enter key or the field will not get filled in. For example, if the text appears below the box and you click in another field the Production Facility field remains empty.

6. Product
A “Product” is the unique identifier that includes the Category, Production Facility and Process. If the Product is at a Redistribution Terminal, both the Mine and Terminal name are included in the unique Product identifier.

If a Production Facility has only one Process, then when the “Aggregate Production Facility” is selected MAC automatically fills in the “Product” field. If there are more than one Process, the Product field turns blue and a drop-down bar appears.

<table>
<thead>
<tr>
<th>Method of Acceptance</th>
<th>Sample Level</th>
<th>Category</th>
<th>Aggregate Production Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampling And Testing</td>
<td>QC</td>
<td>C10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

---
Click on the arrow to reveal the different Processes, place the pointer over the choice, and click to enter that Product.

7. Sampled by Tech
Enter the “Technician Identification Number (TIN)”. You can also use the type ahead feature with the TIN, or the technician’s first or last name to select from the drop-down list.

8. Date Sample Taken
This is the date the sample was collected, placed in a container and labeled. It is not a future date if the sample is not delivered to the lab on the same day. When the date sampled is the day that a sample is being logged in, press the Enter key to select “today’s” date as a shortcut.

9. FDOT Sample Number
The “FDOT Sample number” is a six-digit numerical identifier in the format YYWW##.

- YY represents the last two digits of the year, for example 19 for 2019.
- WW represents the week number for the year. Weeks 1 to 9 are entered with a zero (0) in front so that the week number always has two digits.
  - Week one starts when January 1 falls on a Wednesday or earlier.
  - In a week when January 1 falls on a Thursday or later, that week becomes week 53.
- ## represents the number of samples taken on a unique product each week in the order they were taken. Samples 1 to 9 are entered with a zero (0) in front so that the sample number always has two digits. For example, two samples taken on a Monday for a Code 10, Process 1, will be 01 and 02.
  - Sample numbers are not unique. The first samples at a Production Facility for C10, F21 and B01 will all be “01” (following the year and week)
  - Do not skip a sample number. The first samples for C10 and F21 should not be “01” and “02”. In this case, sample number “01” was skipped for F21
  - Sample numbers should not be repeated in the same week. For example, Sample “11” comes after “10”

10. Point of Sampling

---

This is a drop-down box with the choices:
11. Sample Type
This field allows the user to further identify the purpose or location of the sample. A Production Facility can take a QC sample at the Point-of-Use Plant. However, the results are not part of the compliance package.

12. Testing Lab
This is the official lab number assigned to your Lab upon FDOT approval

13. Location
This an optional field. You may type anything you want. For example, “Sampled from west end of Stockpile #3”.

14. Comment
This an optional field. You may type anything you want. For example, “FDOT Inspector was on site at time of sampling”

15. Document
This is an optional feature used to upload any document you want. For example, scanned written notes, electronic file or pictures.

16. Save, Save and Submit
These are two separate options. “Save” allows the user to complete the sample log-in, and then log in another sample if desired. Once all samples have been logged and Saved, it also allows the user to return to make changes to the mandatory Sample Information, and optional information. The Material Information cannot be changed. There is no need to change the Material Specification, because MAC would not allow the user to enter a Category that did not match the MAC Spec. Sample Level cannot be changed. Click the “Update Sample Info” link to the far right of the screen to perform this task.

- Save creates a unique Sample MAC ID, in this case, 18003599994, which is made up of 10 numeric characters. The first two characters are the last two digits of the year.

- The Sample Status is “Logged”. Note that some MAC information can be found in more than one location, e.g. MAC ID and Sample Status. In the sample’s life-cycle, the Production Facility is still in control of the data, i.e., the owner of the sample data.

- Save creates a summary page of subsequent actions for the user. These actions will be discussed later.

- Because the “Save and Submit” option was not used, there is still a link to “Submit Sample for Testing”. This is required to enter data for test results. Either “Save and Submit” or “Submit Sample for Testing”, immediately
sends the sample’s log-in information to the lab to begin the Sample Test Cycle. This completes the Sample Login process.

- Any of the grey bars can be clicked, in any location to reveal the information that is currently hidden. Clicking the bar again, collapses the bar and hides the information from view.
Chapter 2 Perform Test Submitted
(explain Toggle, When you can and can't update)

At this point the Material Information and Sample Information requirements are complete. The following steps are required to perform tests. These directions are for a single sample. A discussion of multiple samples will be presented later.

A. Laboratory Information
   1. Sample Submitted
      When the sample is submitted the Sample Status changes to “Submitted for Lab Testing”

2. Laboratory Actions
   The sample is now in the possession of the lab. Click on the “Laboratory Information” bar. Note that the Lab Status is “Waiting on Receipt”. For Aggregates,
the only step needed is to click on the link “Acknowledge Sample Receipt”

<table>
<thead>
<tr>
<th>Laboratory Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab</td>
</tr>
<tr>
<td>DSM001 - State Materials Office</td>
</tr>
</tbody>
</table>

3. Date Received
A new screen opens and the “Date Received” is a required entry. The “Comment” is optional.

Click in the Date field. This is the date the sample is received in the Lab.

Either click a date on the calendar, or press the “Enter” key to select today's date.

4. Laboratory Receipt
After clicking “Save”, the Laboratory status is “Received”. The Sample Status is still “Submitted for Lab Testing”. Note that if an error was made, it can be corrected by clicking on the link “Update Received Date”
B. Performing Tests

1. Associated Tests

Each MAC Product has “Associated Tests” that are the normal lab tests. These are default tests and can be found by clicking the bottom bar of the screen.

In the example below, four Lab tests for Coarse Aggregate are listed. The Test Status is “Ready for Testing”. Note that the test result entry can be started by clicking the “Perform Test” link for one test at a time, or for all by clicking the link “Perform Multiple Tests”.

For these instructions, this figure shows the left side of the screen and the next figure shows the right side of the screen. This helps to make the display more readable.
2. Selecting Tests

Note that there are several features for entering data. Test result entry can be started by clicking the “Perform Test” link for one test at a time, or

Test result entry can be started for a single Test by clicking 1 “Perform Test”.

Test result entry can be started for all Tests by clicking 2 “Perform Multiple Tests”.

If a Test needs to be performed, but was not one of the default tests it can be added by click 3 “Add Test”. You can use the type-ahead feature and you must click on the Test name once you recognize it in the drop-down list. See the next figure. If the press the Enter key but do not click the test name, the field remains blank. Another option is to type the entire Test name and the click on the Test name. Another option is to type any portion of the Test name, in any order inside the name, and click on the correct Test once you recognize it in the drop-down list.
Note that all Aggregate Tests are described as Optional. This does not mean that a lab can ignore **required** Tests. However, if a L.A. Abrasion Test is not required, the user can submit the sample results for Aggregate Gradation, Total Minus 200, and Specific Gravity, without L.A. Abrasion Test. If there is a specific reason why the Test **cannot** be performed click **4** “Mark Test Not Performed” and document the circumstance.

If the user would like to remove a test, click the link **5** “Remove Test”. No Reason is required. This feature can be used to clarify the list of needed tests for the Laboratory Technician.

3. **Begin Test Entry**
When the link “Perform Test” is clicked, a worksheet opens with all required entries for the test method. MAC has added features to simplify data entry, which will be discussed later. You can also click Perform Multiple Tests” which will open the worksheets for all test to be visible. A user with a Data Entry or Data Reviewer role is required. The following example is shown for FM 1-T 011
All fields should be entered as directed by the test method. The MAC screen allows an option to simplify data entry. Select Yes or No for “Is this combined FM 1-T 011 and AASHTO T 27 Test?” Select Yes if a single sample is used to run both tests. This will add fields to the screens for FM 1-T 011 and auto populate fields in AASHTO T 27 Aggregate Gradation. Always enter the FM 1-T 011 test data first.

4. Errors/Warnings
MAC flags some data entry as ERRORS or WARNINGS. For example, the minimum start mass for a C10 in FM 1-T 011 is 5,000 g. If you enter anything less MAC flags an ERROR in red type. In this case, more aggregate must be properly split out, and added to the test sample, or a new sample collected.

<table>
<thead>
<tr>
<th>Is this combined FM 1-T 011 and AASHTO T 27 Test?</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass Before Wash (g)</td>
<td>2,300.0</td>
</tr>
</tbody>
</table>

**ERROR: Sample Mass is less than Minimum Required Sample Mass**

If a typo is made, for example, entering a “Mass After Wash” that is larger than “Mass Before Wash”, MAC flags a Warning.

<table>
<thead>
<tr>
<th>Mass Before Wash (g)</th>
<th>5,126.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass After Wash (g)</td>
<td>5,167.0</td>
</tr>
</tbody>
</table>

**Warning: Mass After Wash cannot be greater than Mass Before Wash. Please update the Mass After Wash value.**

In this case, Warning reminds you that the correct value can be re-entered.

5. Save
A test can be saved at any point by clicking the “Save” button. If all the required fields are not entered, “Save” creates a Test Status of “Testing in Progress”. When all are completed, “Save” creates a Test Disposition on the “Associated Tests” screen of Pass or Fail. The Test Status becomes “Test Complete”. Note the difference between “Status” and “Disposition”. “Disposition” implies that the testing is completed.

6. Test Disposition
As noted above, a Test Disposition can be Pass or Fail. The lab’s Data reviewer should ensure that all tests were performed correctly. All tests, whether passing or failing must be submitted to FDOT.

7. Specification failure
Specification failures are programmed in the MAC Test and will flag when the data is entered.

<table>
<thead>
<tr>
<th>Mass Loss After Wash (g)</th>
<th>116.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass in Pan (g)</td>
<td>2.0</td>
</tr>
</tbody>
</table>
| Total Percent of Minus 200 (%) | 2.30 | **Does not meet target/limit [Total Percent of Minus 200 ≤ 1.75]**
8. General Errors
MAC is programmed with other flags as previously noted. These flags appear when values entered for Masses required by Test Methods, etc. or typos resulting in negative values are computed. A Star next to a field means that field is mandatory.

9. Submit to FDOT
When “Submit to FDOT” is selected, the Production Facility is no longer in control of the data, i.e., the owner of the sample data is now the FDOT. The Sample Lifecycle is now Finalized.

10. Technical Help after Submittal
If any error occurs or if there are any questions, email “SM-Aggregates” for help.