Florida Department of
TRANSPORTATION

Program Structural Concrete Sample Life Cycle

May 24, 2021

Contents

Introduction

Program structural concrete sample life cycle (SLC) is governed by Program MAC Spec 346. These instructions are general instructions designed to assist the data entry personnel for program structural concrete samples.

These samples are required by the authority of a Materials Manual Section. For example, the program structural concrete samples taken at a prestressed concrete production facility are governed by Materials Manual Section 8.1. Materials Manual Section 8.1 references FDOT Specifications Section 346 for material method of acceptance requirements. That is why the samples are logged under Program MAC Spec 346. The Program and Project Versions of the 346 MAC Spec are slightly different because Materials Manual 8.1 does define some things differently for prestressed concrete samples, such as the lot size. The lot size for project samples is based on a specific contract. The lot size for prestressed concrete program samples is not based on contract(s).

These instructions describe the system functions for the sample life cycle. If there is a conflict between these instructions and the specific requirements of the governing document(s), the governing document(s) take precedence over these instructions.

Detailed instructions for samples can be found in the MAC Project Sample Manual. This manual will describe what is different for prestressed program concrete samples.

Chapter 1 – Sample Login

A.   Creating a Sample

1. From the MAC home screen, select the Manage Samples menu option.

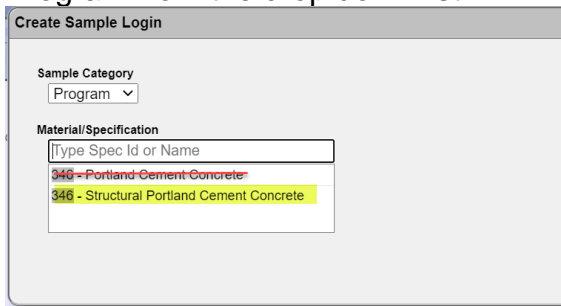| Create Sample Login	Submit Multiple Samples to FDOT	My Sa
Sample 1700080737 [Finalized]		
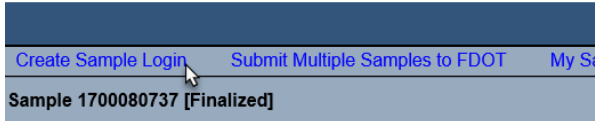
2. Select the Create Sample Login page level action on the left side of the screen.

A Create Sample dialog box will appear. A red star (★) indicates a required field.
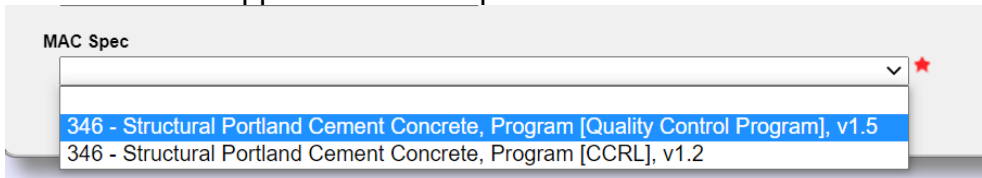
Sample Category
Program
Project
M Research   tion

Type Spec Id or
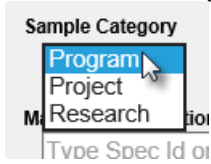
3. **Sample Category** – the dropdown list defaults to Project. Change this to Program by selecting Program from the drop down list.

Create Sample Login

Sample Category
Program ⌄

Material/Specification
Type Spec Id or Name
346 - Portland Cement Concrete
346 - Structural Portland Cement Concrete

4. **Material/Specification** – enter 346 in the Material/Specification field. Select 346 – Structural Portland Cement Concrete by clicking on it or pressing the enter key. The FDOT Specification Section title was changed and the term Structural was added in January 2020. This is the correct option to select.

A new field will appear for MAC Spec because there is more than one Program 346 MAC Spec.

MAC Spec
⌄ ★

346 - Structural Portland Cement Concrete, Program [Quality Control Program], v1.5
346 - Structural Portland Cement Concrete, Program [CCRL], v1.2

5. **MAC Spec** – Select the 346 – Structural Portland Cement Concrete, Program [Quality Control Program] option from the dropdown list.

6. Select the Continue to Sample Information Screen option.

The dialog box expands to show more fields. Additional fields will be added as more information is provided.

7. **Sample Level** – select the appropriate sample level from the Sample Level dropdown list.
a. IV = sample taken by any personnel in FDOT for reasons other than program material acceptance.
b. QC = sample taken by prestressed concrete production facility QC personnel
c. QR = the QC hold cylinder from the verified lot entered for resolution purposes when the QC and VT average compressive strengths do not compare
d. VR = the VT hold cylinder from the verified lot entered for resolution purposes
e. VT = sample taken by FDOT Verification personnel to determine if QC results can be used for acceptance

8. **Category** – select the appropriate category / type combination for the mix design being used.

NOTE: it is important to ensure you select the appropriate entry. Not all limits for passing results are contained in the mix design. Most are contained in the MAC Spec. This selection will determine which of the MAC Spec limits are applied to the sample. If you select the wrong one, the results may show as failing when they actually pass or vice versa.

New fields will appear in the Sample Info portion of the login screen and other sections will appear.

9. **Structural Concrete Production Facility** – enter the concrete plant number that batched the 346 concrete for the prestressed concrete samples and select it from the returned list; for example 26-998.

NOTE: This may be a structural concrete production facility at the prestressed concrete products production facility, or it may be delivered from a different structural concrete production facility. For this reason, the structural concrete production facility id (26-998), not the prestressed concrete products production facility id (PCP26-998) is entered in this field. The field is restricted to the selection of production facilities with the material type of structural concrete. It is tied to the mix design field. You will not be able to select mix designs until a structural concrete production facility is selected.

10. **Prestressed Concrete Products Production Facility** – enter the that is producing the prestressed concrete products and select it from the returned list, for example, PCP26-998.

11. Allow an Approved Mix Design – the mix design filter programming for structural concrete samples in MAC is based on project concrete samples. Because of this, select this option to get a list of mix designs to choose from.

A Mix Design field will appear next to the Allow an Approved Mix Design option.

12. **Mix Design** – the field is restricted to approved mix designs on the same company profile as the structural concrete production facility. Enter the appropriate mix design and select it from the returned list.

NOTE: After the mix design is selected, MAC will display the mix design category and type. Ensure that the category and type matches this indicator or you will receive a warning that they do not match.

13. **Contracts/Projects** – this field is an optional field. It should be completed if the contract(s) is/are known at the time of the sample:
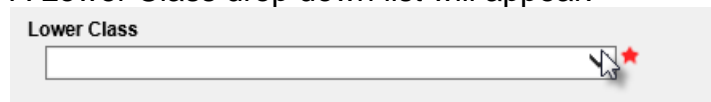
a. Enter all known contracts. If the sample represents products being produced for multiple contracts, more than one contract can be entered.

i. Enter the first contract.

ii. A new entry field will appear. Continue to enter the contracts until all contracts are identified.

b. If you know the Financial Project Id, you may enter it instead to find the contract. The field will accept either FDOT Contract Number or Financial Project Id.

14. **Sampled By** – enter the name or TIN of the person taking the sample and select it from the returned list.

15. **Date Sample Taken** – enter the date the sample was taken or select it from the calendar.

16. **Higher Class in Lieu of Lower Class** – if a higher class of concrete is used in lieu of a lower class for the entire LOT (for example, using Class VI for concrete piles which require class V special), select the Higher Class in Lieu of Lower Class option. Do **not** select the option if **ANY** portion of the LOT required the higher class.

A Lower Class drop down list will appear.

Lower Class

a. **Lower Class** – select the category / type combination that represents the lower class of concrete.

17. **FDOT Sample Number** – enter the sample number.

18. **Quantity Represented** – enter the quantity. For example, if the sample quantity is 50 cubic yards, enter 50.

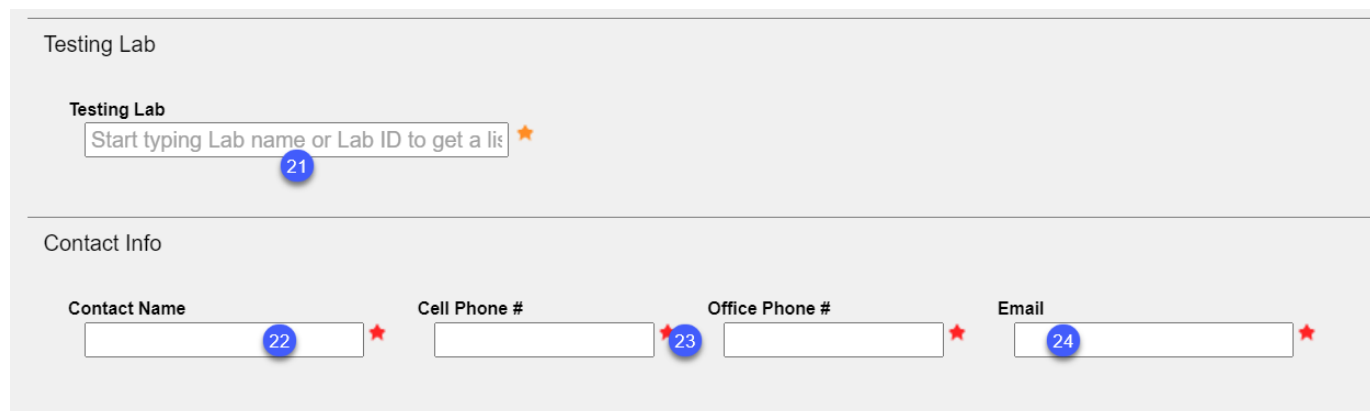19. **Unit of Measure** – enter the quantity unit of measure that the sample represents. For example, if the sample quantity is 50 cubic yards, enter Cubic Yard(s).

20. Lot # – enter the lot number.

Testing Lab

Testing Lab

Start typing Lab name or Lab ID to get a lis

Contact Info

Contact Name | Cell Phone # | Office Phone # | Email

21. **Testing Lab** – enter the FDOT Lab Id or description of the lab and select it from the returned list.

22. **Contact Name** – enter the name of the contact person who can respond to questions from the laboratory about the sample.

23. **Cell Phone # or Office Phone #** – enter the cell phone number or office phone number of the contact person. Both may be entered, but only one is required. When one is entered, the red star by the other field goes away.

23. **Email** – enter the contact person's email.

24. Select Save or Save and Submit to save the data.

a. Selecting Save will set the sample status to Logged. You can make changes to the data without losing what you have entered so far. You can save the sample without all required fields, but you will receive a warning message.

b. Selecting Save and Submit will set the sample status to Submitted for Lab Testing, ready for plastic properties to be entered and the laboratory to acknowledge receipt of the cylinders.

a. Selecting Save will save the data entered so far and allow you to continue at a later time if you don't have all the information to submit the sample at this point. The Sample status will be Logged.

NOTE: After selecting Save or Save and Submit, the sample login data entry person can enter the plastic properties test results. If you select Save you will need to return to the sample and select the Submit Sample for Testing Option.

Submit Sample for Testing   Create New Sample Login from

)   **Sample Status**
80744   Logged

NOTE: At this point, the person who created the sample can enter the plastic properties test results See Chapter 3 – Test Result Entry. You do not have to wait for the laboratory to receive the samples to enter the plastic property test results.

B.   Warning Messages versus System Messages

Another thing to know is that there is a difference between a system warning and a system error. A system warning can be dismissed upon reading it and you can continue with the login process. It typically signifies something that might be an issue under certain circumstances, but not always. A system error mean that there is something so bad on the sample that you are not permitted to proceed with saving the sample. The error must be addressed before you can advance.

An example of a system warning would be if you attempted to save a sample without all the required information.
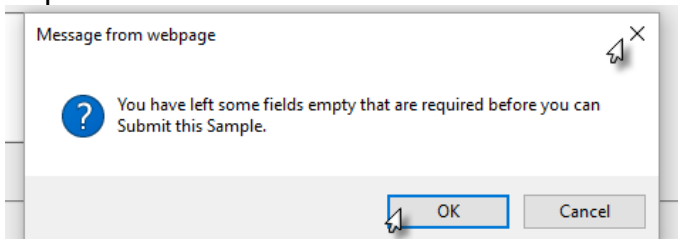
Select the X to close the dialog box and go back to the sample to complete more fields. Or select the OK to proceed with saving the sample without the required fields.

Some system warnings appear on the sample. For example, if you select a different category and type than the mix design, you will see this warning message. The system warning messages have the word WARNING in bold read font and an x to dismiss the warning once you have read it.
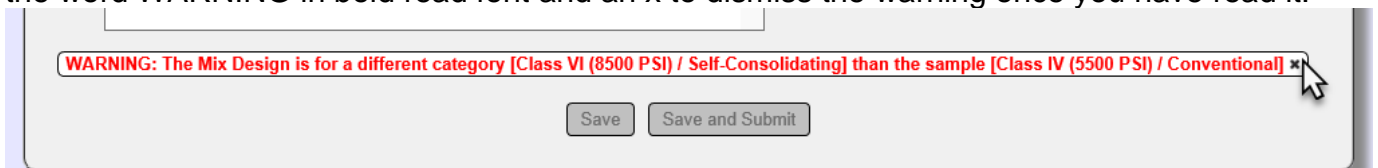
An example of a system error would be when you attempt to submit the same sample without the required fields.

ERRORS:

- Date Sample Taken is required
- Contact Name is required
- Cell Phone # is required
- Office Phone # is required
- Email is required

Save Save and Submit

You see that the Save and Submit option is still available (it's not greyed out), but clicking on it will only regenerate the error message until the error is addressed.

Chapter 2 – Sample Receipt & Result Entry

Sample receipt and result entry are the same as described in the [MAC Project Sample Manual](#).

NOTE: The Submit for FDOT Verification function is not applicable to the user entering the plastic properties results. It will not appear on structural concrete samples until the compressive strength test results are entered or the compressive strength test is designated as not performed. If the data entry person for the plastic properties tests has not entered the test results, the lab data entry person should contact the Contact person listed on the sample and advise them that the plastic properties test result entry is holding up the sample submission to FDOT.

The Data Reviewer for the plastic properties does not have the ability to Submit the Sample to FDOT for Verification. Because theses samples have both field and lab tests on the same sample, the data entry person for the plastic properties should confirm that the plastic properties tests are correct and complete or marked as not performed in a timely manner so that the Data Reviewer for the laboratory can Submit the Sample to FDOT for Verification.

Chapter 3 – Reviewing the Data and Submitting the Sample to FDOT for Verification

Once the data entry person has completed the data entry, a Data Reviewer for the company of the laboratory must review the data and confirm that it is ready to be submitted to FDOT for Verification. The Data Reviewer should review the sample information. If there are sample data entry errors, contact the Contact person listed on the sample or the FDOT Verifier.

ASTM C39 Compressive Strength										
5	Initial Test	Lab	DSM001	D52500365	Pass	Test Complete	Required	Perform Test	Mark Test Not Performed	Retest

Showing 1 to 5 of 5

1. Select the Perform Test option to review the compressive strength test results.

A Perform Test dialog box will appear.

Test
ASTM C39 Compressive Strength

Tester		Testing Lab	Date Test Performed	How many Specimen?
☒		DSM001 - State Materials Office	1/12/2017	3 ⌄

Specimen Info

Type of Specimen	4" x 8" Cylinder ⌄
Is Hardened Density Needed?	No ⌄
Age	28 Days ⌄

	Specimen 1	Specimen 2	Specimen 3
Length (in)	8.00	8.00	8.00
Diameter 1 (in)	4.01	4.04	4.05
Diameter 2 (in)	4.03	4.00	4.02
Average Diameter (in)	4.02	4.02	4.04
Area (in^2)	12.69	12.69	12.82
Length CF	1	1	1
Max Load (lbs)	78,000	79,250	80,150
Fracture Type	1 ⌄	1 ⌄	1 ⌄
End Treatment Used	Ground ⌄	Ground ⌄	Ground ⌄
Compressive Strength (psi)	6,147	6,245	6,252

Average Compressive Strength (psi)   6,210

Test Notes +

Save

2. Review the entries and ensure they are correct and complete. If changes need to be made, make the changes and select the Save option to save the changes. If no changes need to be made select the x at the top right corner of the Perform Test dialog box to close the test with no changes.

3. Ensure that all required tests are performed or marked as Test Not Performed. If you do not have access to the plastic properties tests, contact the Contact person listed on the sample.

Submit for FDOT Verification   Create New Sample Login from this Sample

Sample ID	Sample Status		
1700044280	Submitted for Lab Testing		

Sample Initiated By	Sample Initiated Date	Last Updated By	Last Updated On
Susan Musselman	1/12/2017	Susan Musselman	1/12/2017

Material Certification
201032-4-52-01 [Pending]

4. When the sample is ready to be submitted for finalization, click on the Submit for FDOT Verification option.

NOTE: The Data Reviewer for the company of the laboratory cannot submit the sample for FDOT Verification if the company that created the sample has not entered the plastic property test results. All required tests must be completed or designated as Not Performed for the Submit to FDOT Verification option to appear.

A Submit for FDOT Verification dialog box will appear advising you that when this sample is submitted, you will no longer be able to update the sample and/or test data.
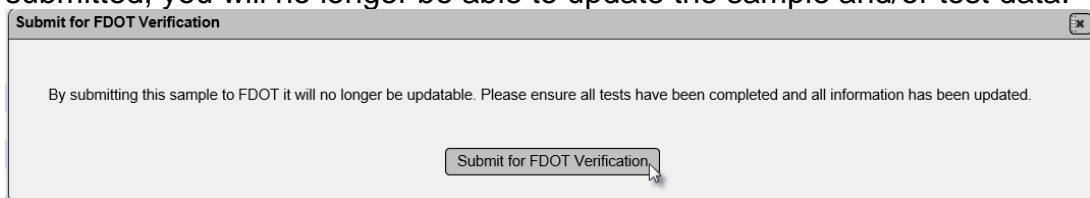
5. Select the Submit for FDOT Verification button to submit the sample.

The sample status will change to Pending Finalization.

Chapter 4 – FDOT Finalization of Program Structural Concrete Samples

A user with the system role of FDOT Verifier will finalize the Program Structural Concrete samples. The process for finalizing samples is the same as described in the MAC Project Sample Manual. FDOT verifiers should use the project sample finalization checklists for program samples. The contract/project field is optional so there may not be any information in that field. If the Contract Id(s) are known, they should be entered. If you think the sample needs to include Contract Id(s) and it does not, return the sample for Sample Information corrections.

Chapter 5 – Correcting Returned Samples and Resubmitting to FDOT for Finalization

The process for correcting samples and resubmitted to FDOT is the same as described in the MAC Project Sample Manual.

Chapter 6 – Sample Comparison Packages

The FDOT Verifier must associate all program structural concrete samples to a comparison package.

The process for creating comparison packages samples is the same as described in the MAC Project Sample Manual, with the following differences:

MAC populate the filters with the information from the last samples you finalized.

Many times this will be correct.

4. If this is not correct, select the x next to the Material/Spec Field. The correct filters are:

a. Material/Spec = 346 – Structural Portland Cement Concrete

b. Spec Edition = 346 – Structural Portland Cement Concrete, Program [Quality Control Program] v1.

c. Additional filters may be needed; for example Production Facility Id and mix design number.

Chapter 7 – FDOT Verifier MC Review Findings for Program Samples

MAC reviews sample and test data and flags samples with known issues as part of the Materials Certification (MC) Review. MC Review is project based, but program samples with a contract on it will have their findings sent to the MC Review of that contract. If a sample has multiple contracts, findings will be sent to all the contracts on the sample.

Program sample findings must be processed as part of the MC Review so that the MC Review Program Maintenance Users can generate the Project Materials Certification Letter (PMCL).

The following is a summary of the findings and the MC Review action needed for each. This is the general action for these findings. The DMRO always has the option to promote any program sample finding to MAR, if needed, depending on the severity or frequency of the finding. These are selected by the Prestressed Concrete QC Program Maintenance User (PMU) of the managing district of the production facility – not the managing district of the contract.

Finding	MC Review Action	Promote to MAR?
Resolution is required for {Comparison Name} but was not performed	MC Reviewer can exclude. No action needed from FDOT Verifier	No
Resolution for {Comparison Name} was used for acceptance	MC Reviewer can exclude. No action needed from Prestressed Program Maintenance User	No
Sample {Sample Name} has Production Facility {Facility Name} that is not Approved/Accepted	Promote to MAR	Yes. Prestressed PMU needs to document recommendation and resolution.
Comparison is required by the MAC Spec for Sample {Sample Name} but was not performed	MC Reviewer can exclude. No action needed from Prestressed Program Maintenance User	No
{Comparison Name} comparison status Does Not Compare	MC Reviewer can exclude. No action needed from Prestressed Program Maintenance User	No
Sample {Sample Name} Quantity is greater than 50 CY for Material 346	MC Reviewer can exclude. No action needed from Prestressed Program Maintenance User	No
Sample {Sample Name} Quantity Unit of Measure is not CY for Material 346	MC Reviewer can exclude. No action needed from Prestressed Program Maintenance User	No
Test {Test Name} is required but has not been performed on Sample {Sample Name}	Plastic Properties or Compressive Strength – Exclude	No.

Finding	MC Review Action	Promote to MAR?
Tester {TIN} on sample {Sample ID} is not Qualified	Plastic Properties or Compressive Strength – Promote to MAR	Yes. Prestressed PMU needs to document recommendation and resolution.
Laboratory {Lab Name} testing sample {Sample ID} is not Qualified	Plastic Properties or Compressive Strength – Promote to MAR	Yes. Prestressed PMU needs to document recommendation and resolution.
Sample {Sample Name} has a failing result on required Test {Test Name}	Plastic Properties QC – Promote to MAR	Yes. Prestressed PMU needs to document recommendation and resolution.
Sample {Sample Name} has a failing result on required Test {Test Name}	Compressive Strength QC – Promote to MAR	Yes. Prestressed PMU needs to document recommendation and resolution.
	Plastic Properties VT – MC Resolved or Exclude	If Excluded, no action needed from Prestressed PMU. If MC Reviewer MC Resolves, Prestressed PMU may need to respond to finding.
	Compressive Strength VT – MC Resolved or Exclude	If Excluded, no action needed from Prestressed PMU. If MC Reviewer MC Resolves, Prestressed PMU may need to respond to finding.