



Florida Department of TRANSPORTATION



Materials Acceptance and Certification (MAC) Structural Concrete Sample Guide

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Introduction

Structural Concrete Sample Guide

This guide is intended to provide brief instructions and details for Sample Life Cycle for MAC Specs related to structural concrete that are managed by the State Materials Office Structural Materials Section Physical Lab. The point of contact for the information in this guide is:

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Project Administrators (PAs) are responsible for reviewing contract documents for project specific requirements and notifying the State Materials Office Technical Expert of any such requirements. Examples are Developmental Specifications, Special Provisions, Technical Special Provisions (TSPs), Change Orders and Plan Notes. These will not need to be considered if the project specific requirements are not related to material method of acceptance. For example, a Special Provision revising the method of measurement would not need to be addressed in MAC, but a TSP with sampling and testing requirements for a specialized material (like fiber reinforced concrete) would need to be addressed.

Structural Concrete Sample Information

Sample Login

Structural concrete sample levels are PC, QC, IV, VT, QR or VR. The sample login is generated based on the sample level. The sample information needed is based on sampling per source/material type versus LOT based system. Required input is structural concrete production facility and mix design, FDOT Sample Number and quantity represented. If the production facility and/or mix design selected are not on the Contractor QC Plan and designated as suitable for the project, the data will be designated with an "off-list" flag. Resolution requires two samples, one for each hold cylinder. The QC hold cylinder is logged in under the QR sample level. The VT hold cylinder is logged in under the VR sample level.

The plastic properties tests performed in the field and the compressive strength tests performed by the laboratory are included on the same sample in MAC.

Sample Receipt

Structural concrete samples are not designated as auto-receipt. The laboratory performing the compressive strength test must indicate they have taken custody of the concrete cylinders (receive the sample) before they can enter the compressive strength test results.

Result Entry

The plastic properties test results can be entered by the field data entry personnel as soon as sample is saved or submitted. The compressive strength results can be entered after the sample is received. The test definition allows for the entry of 1, 2 or 3 cylinders. Typically there will be 3 cylinders. Resolution Testing is done on 1 cylinder. If 1 of the 3 cylinders was lost, make a note of the lost cylinder in the test notes.

Submit Sample to FDOT for Verification

A data reviewer for the company of the lab testing the sample must review the data entry's information and confirm it as correct and complete before the sample can be finalized by the PA. By submitting the sample to FDOT for Verification, the Data Reviewer is acknowledging that the data has been reviewed and is ready for finalization. The sample cannot be submitted to FDOT for Verification by the company inputting the field test results. The company data entry for the laboratory cannot submit the sample to FDOT for Verification until the field test results are entered.

PA/FDOT Verifier Sample Finalization

Structural concrete samples are not eligible for multi-finalization. The PA (for project samples) or the FDOT Verifier (for program samples) must review the sample information using the MAC Concrete Finalization guide list.

Comparison Packages

The PA or FDOT Verifier will create comparison packages for structural concrete samples after they are finalized. The comparison package consists of an original sample (QC), a verification sample (VT) and could include up to 3 additional associated QC samples. The search criteria for structural concrete samples is MAC Spec, Contract or Financial Project Id and mix design. The system will warn the user if a comparison package includes samples with different mix designs.

LIMS Material IDs and MAC Specs:

MAC Specs for structural concrete use the class of concrete as the MAC Spec category and the types are as follows:

- Conventional - standard structural concrete
- Slip Form - conventional concrete that has been adjusted for slip form operations
- Increased Slump - conventional concrete with an adjusted slump based on 346 table 2 footnotes.
- Free Flowing - a specialty concrete typically used in project specific requirements and precast/prestressed operations
- Self-consolidating - a specialty concrete typically used in project specific requirements

1. MAC Spec 346

LIMS Material Ids 159F, 159L, 160F and 160L

QC, Class I (3000 PSI) / Conventional	
	ASTM C143 Slump of Hydraulic Cement Concrete [Version 1 - Official]
QC, Class I (3000 PSI)	ASTM C173/ASTM C231 Air Content of Freshly Mixed Concrete [Version 2 - Official]
QC, Class I (3000 PSI)	ASTM C1064 Temperature of Freshly Mixed Portland Cement Concrete [Version 1 - Official]
QC, Class I (3000 PSI)	FM 5-501 - Early Sampling for W/C Ratio [Version 1 - Official]
QC, Class I (3000 PSI)	ASTM C39 Compressive Strength [Version 1 - Official]

A sample level PC will be added to 346 for early breaks, such as for form removal.

NOTE: There is a Project version of Section 346 for ready-mix cast in place concrete. There is a Program version for concrete used prestressed concrete product production facilities under the governance of Materials Manual 8.1. Project 346 samples are finalized and comparison packages are built by the PA. Program 346 samples are finalized and comparison packages are built by the FDOT Verifier.

2. MAC Spec 350

LIMS Material Ids 145F and 145L

QC, Class I Pavement (3000 PSI)
ASTM C143 Slump of Hydraulic Cement Concrete [Version 1 - Official]
ASTM C173/ASTM C231 Air Content of Freshly Mixed Concrete [Version 2 - Official]
ASTM C1064 Temperature of Freshly Mixed Portland Cement Concrete [Version 1 - Official]
FM 5-501 - Early Sampling for W/C Ratio [Version 2 - Official]
ASTM C39 Compressive Strength [Version 1 - Official]

3. MAC Spec 353

LIMS Material Ids 146F and 146L

Not yet complete.

Non-structural Concrete Sample Information

Note: there is no requirement to test non-structural concrete for compressive strength. Non-structural concrete mix designs are not part of the MAC mix design system. The acceptance criteria for non-structural concrete is certification/delivery ticket.

1. MAC Spec 347

LIMS Material Ids 161

Material/Spec Id	Material Title	Specification Category	Spec Type [?]
347	Portland Cement Concrete - Class NS	Project	Supplemental Specification
Method of Acceptances		Sample Levels	
Certification, Sampling And Testing		IV	

Sample Level IV has been added to MAC Spec 347 for the purpose of collecting test results when cylinders are cast for 347 concrete. It is not intended to be used for acceptance purposes.

Auger Cast Pile Grout Information

1. MAC Spec 455 Auger Cast Pile Grout

LIMS Material Ids 100, 100F, 100L

Not yet complete.