



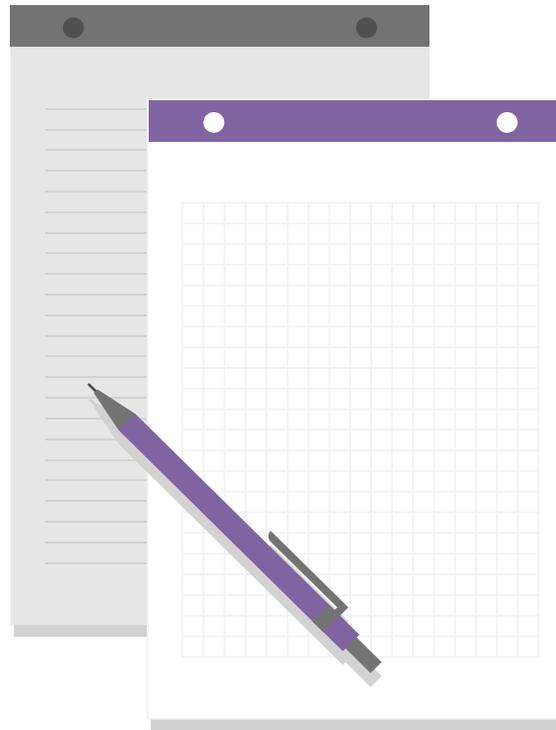
Florida Department of
TRANSPORTATION



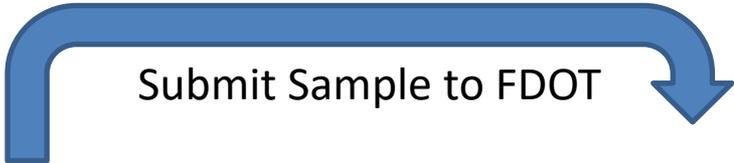
**Sampling and Testing
Construction Academy
2025**



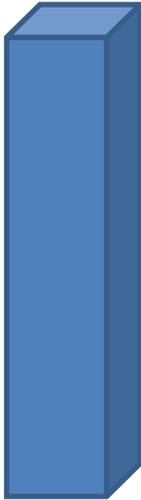
Sampling and Testing



Sampling and Testing



Company Roles



System Roles





Sampling and Testing

MAC Sample Life Cycle is complicated

Logged

Routed to

Submitted for
Lab Testing

Finalized

Sampling and Testing

Physical Sample is taken





Sampling and Testing

MAC doesn't know it exists
until someone enters it in

Create Sample Login ✕

Sample Category

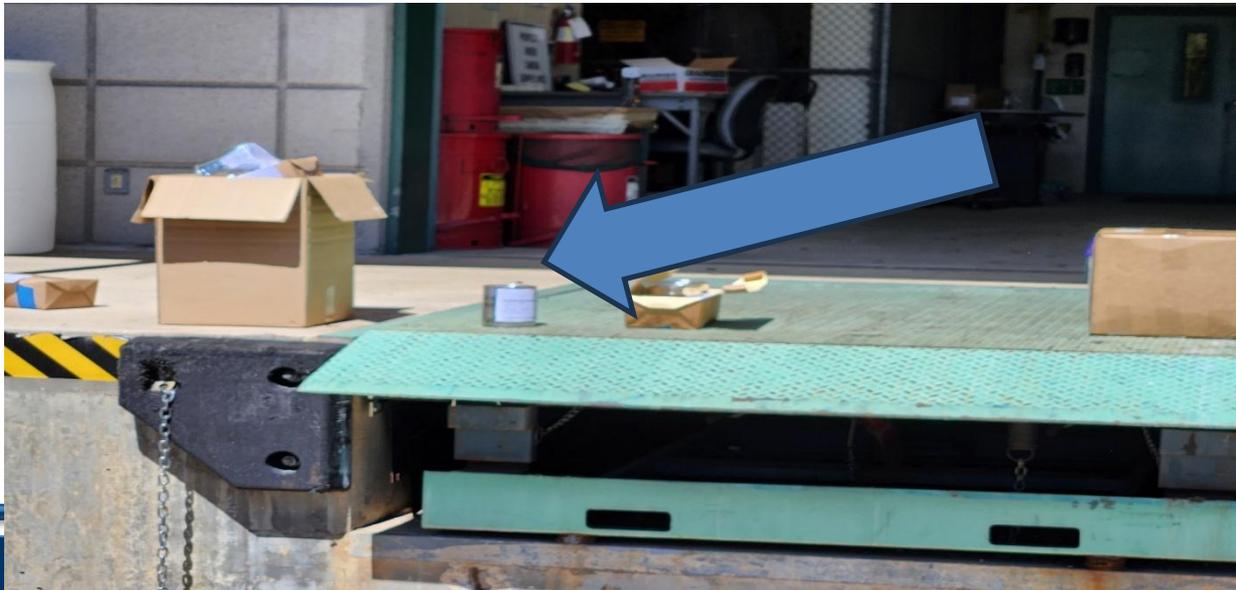
Contract/Project ★

Pay Items

Material/Specification

Sampling and Testing

Physical Sample is
transported to a lab





Sampling and Testing

MAC doesn't know it is transported to a lab until it is received

Laboratory Information

Lab	Reason for Routing	Status	Type	Date Sample Received	Comment
DSM001 - State Materials Office	Initial Routing	Waiting on Receipt	Full		Acknowledge Sample Receipt

Sampling and Testing

Physical Sample is tested





Sampling and Testing

MAC doesn't know it's been tested
until the data is entered

Perform Test

Test
FM 1-T 267 Organic Content

Tester Testing Lab I03017 - Southern Earth Sciences, Inc. Date Test Performed *

Crucible Number	Specimen Name	Mass of Crucible (g)	Mass of Soil + Crucible (g)	Mass After Ignition (g)	Organic Content (%)
		A	B	C	
<input type="text"/>	<input type="text"/> *	<input type="text"/> *	<input type="text"/> *	<input type="text"/> *	
<input type="text"/>	<input type="text"/> *	<input type="text"/> *	<input type="text"/> *	<input type="text"/> *	
<input type="text"/>	<input type="text"/> *	<input type="text"/> *	<input type="text"/> *	<input type="text"/> *	

Average Organic Content (%)
RAP T&L (>2.5% or >4.0%) 0

Test Notes +

Save



Sampling and Testing

Lab enters data on last test

View Tests

Tests to View

- FM 5-563 Asphalt Content by Ignition Oven
- FM 1-T 030 Superpave Gradation
- FM 1-T 209 Maximum Specific Gravity
- FM 1-T 166 Omb - Plant
- FM 1-T 166 Omb - Roadway
- Asphalt Volumetrics

FM 5-563 Asphalt Content by Ignition Oven

Tester	Testing Lab	Date Test Performed
W23001098	D04001 - District 4 and 6 Materials Office	2/21/2025

Basket Weight (g)	4,027.9	A
Beginning Basket + Sample Weight (g)	5,578.9	B
Begin Sample Weight (g)	1,551.0	B - A
End Basket + Sample Weight (g)	5,482.0	C
Final Sample Weight (g)	1,454.1	D = C - A
Asphalt Content from Print Out (%)	6.15	E
Calibration Factor (%)	-0.06	F
Design Asphalt Content (%)	6.2	
Percent Asphalt Content (%)	6.09	E + F
Extracted Aggregate Weight (g)	1,453.2	G
Percent Difference Between Final Sample Weight and Extracted Aggregate Weight (%)	0.06	(D - G) ÷ D * 100
Washed Sample Weight (g)	1,390.4	H
Weight of Minus 200 by Wash (g)	62.8	I = G - H

Test Notes

FM 1-T 030 Superpave Gradation

Tester	Testing Lab	Date Test Performed
W23001098	D04001 - District 4 and 6 Materials Office	2/21/2025

Sieve	Weight Retained	Percent Passing	Target
75	0.00	100	100



Sampling and Testing

MAC doesn't know all test
data is complete until it is submitted

[Reopen for Data Entry](#)

[Submit for FDOT Verification](#)

[Delete Sample](#)

[View Sample Transmittal Infor](#)





Sampling and Testing

It's always perfect so we are done

MAC Statistics

- Number of Samples - 2,037,010
- Number of Projects Certified - 6,031
- Number of Projects with samples - 4,992
- Number of Projects with ERS Projects - 1,084



Sampling and Testing

- Materials Acceptance decisions are made based on the data on the samples
- Impacts MC Review
- PA has “life cycle” steps after the sample life cycle is complete to ensure the data is correct and complete



Sampling and Testing

- Automation is used wherever possible, however
 - Even the automated stuff needs checking



Sampling and Testing

Sample “statuses” after
sample life cycle is complete

Pending Finalization

Finalized

Compares

QC Upheld



Sampling and Testing

- Track open sample status
 - Move them along in a timely manner
- A Finalized sample = or \neq “Closed”

Sampling and Testing

Finalized = Closed

- Logged
- Received
- Tested
- Submitted
- Finalized
 - Nothing else - DONE



Sampling and Testing

Finalized \neq Closed

- Logged
- Received
- Tested
- Submitted
- Finalized
- ***Compares*** •



Some place else
to go after sample
screen



Sampling and Testing

- Finalize **project** samples

Sample 2200897939 [Pending Finalization]

Finalize Sample



- BUT FIRST



Sampling and Testing

- Use checklists to finalize samples
- Asphalt
 - Plant
 - Roadway
- Soils
- ERS
- Structural Concrete



Soils/Earthwork Materials

(Material IDs 120, 145, 160, 200 and 548)

- A. **Check to see that the following sample header is accurate:**
- Aggregate Mine Production Facility Id (if applicable)
 - Date Sample Taken is correct
 - Sample Number
 - LOT Number
 - All samples identify the LOT Number
 - Verification Samples identify all QC LOTs that the sample represents in the LOTs represented field
 - Category, Type, Sample Purpose
- NOTE:** Do not return the sample for data correction if the Category, Type or Sample Purpose is incorrect. A new sample with the correct key fields must be created and the incorrect sample must be deleted.
- B. **Check the following test data:**
- Test data is properly reported and look reasonable
 - Dates Tests Performed are correct
 - AASHTO T88 soil gradation analysis does not have negative values for total percent passing
 - Accurate soil gradation analysis is required and dependent upon on accurate reporting of AASHTO M145 soil classification
- C. **Check to ensure the following qualifications are valid. These would only be returned if the reason for the issue is data entry error. Do not return if the information that triggered the issue is correct:**
- Review each entered test method to ensure the Technician's qualification is valid for both the sampler and tester
 - Correct TIN is identified
 - The Base Material Aggregate Production Facility is in approved status if applicable
 - The laboratory is qualified in the appropriate test methods
- D. **Other Verifications:**
- All LOTs are sampled, tested, identified and reported on all samples (Refer to Specifications for frequency of sampling and testing)
 - Tests that are not performed have a note explaining the disposition of the material



Sampling and Testing

- AASHTO T88 soil gradation analysis does not have negative values for total percent passing
 - Accurate soil gradation analysis is required and dependent upon on accurate reporting of AASHTO M145 soil classification



Acceptance and Certification System

Susan Musselma

on System



Inspections Facilities Checklists Evaluations

Certification/MAR

Preview

Show Targets/Limits

Display All Lines

AASHTO M 145 Soils Classification

Classification

Embankment Utilization

Validate

- A-1-a
- A-1-b
- A-3
- A-2-4
- A-2-5
- A-2-6
- A-2-7
- A-4
- A-5
- A-6
- A-7-5
- A-7-6
- A-8





Sampling and Testing

PROJECT ID

PI

LOGID

TESTING UNIT

Comparison Results [4]

	Comparison Name	Comparison Results	
1	Soils Lab: M145 Soil Classification Comparison	Does Not Compare	Does Not Compare
2	Soils Lab: T99 Standard Proctor Comparison	Compares	
3	Soils Lab: T89/T90 LL/PI Comparison	Compares	
4	Soils Lab: T267 OC Comparison	Compares	



View ✕

Test
AASHTO M 145 Soils Classification

Tester	Testing Lab	Date Test Performed
S31543080	103057 - Universal Engineering Sciences, LLC.	1/5/2024

Classification	A-3
Soil Utilization Symbol	S

Imported Results

% Passing #10	92
% Passing #40	59
% Passing #200	4
LL	0
PL	0
PI	0

Test Notes

Sieve Analysis

Sieve Size	Sieve Added	Mass Retained (g)	% Retained	% Finer	% Finer (Total)
3"	No				
2"	No				
1 1/2"	No				
1"	No				
3/4"	Yes	14.60	1.40	98.60	98.6
1/2"	Yes	14.60	1.40	98.60	98.6
3/8"	Yes	14.60	1.40	98.60	98.6
#4	Yes	80.10	7.71	92.29	92.3
#8	No				
#10		131.40	12.64	87.36	87.4
#16	No				
#30	No				
#40		4.90	4.59	95.41	83.3
#50	No				
#60	Yes	116.20	108.89	-8.89	-7.8
#100	Yes	54.20	50.79	49.21	43.0
#200		91.70	85.93	14.07	12.3

Negative value check status?

Fail

Does not meet target/limit [Negative value check status? Equals (ignoring case) 'Pass']

Structural Concrete Materials

(Material IDs 346, 350 and 353)

A. Check to see that the following sample header is accurate:

- FDOT sample number
- Date Sample Taken is correct
- LOT number/s
- Structural Concrete Production Facility Id number is correct and is on the QC Plan
- Mix design number is correct and is on the QC Plan
- Sample MAC Spec category and type match the mix design category and type
 - If not, the sample must be deleted and reentered if mismatch is due to incorrect category/type except for Class I (3000 PSI) used under MAC Spec 350 for formed concrete pavement*** - mismatch can be ignored if the category/type is correct only in this case
- All samples in the comparison package have the same:
 - MAC Spec
 - Category/Type
 - Mix Design
 - QC and VT have the same production facility

NOTE: Do not return the sample for data correction if key fields are incorrect. A new sample with the correct key fields must be created and the incorrect sample must be deleted.

B. Check the following test data:

- Dates Tests Performed are correct
- All test results are properly reported and look reasonable
- The appropriate meter for the air content test has been selected
 - If the air content was performed using a pressure meter, review the mix design to ensure that it has an aggregate correction factor
- The correct number of cylinders is indicated
- The correct age is indicated



Florida Department of TRANSPORTATION



Specimen Info

Type of Specimen	4" x 8" Cylinder		
Is Hardened Density Needed?	No		
Age	28 Days		
	Specimen 1	Specimen 2	Specimen 3
Length 1 (in)	8.00	8.00	8.00
Diameter 1 (in)	4.01	4.00	3.99
Diameter 2 (in)	3.98	3.98	3.98
Average Diameter (in)	4.00	3.99	3.99
Area (in ²)	12.56637	12.50362	12.50362
Max Load (lbs)	70,300	72,545	7,915
Fracture Type	5	5	5
End Treatment Used	Unbonded Pads	Unbonded Pads	Unbonded Pads
Compressive Strength (psi)	5,594	5,802	633

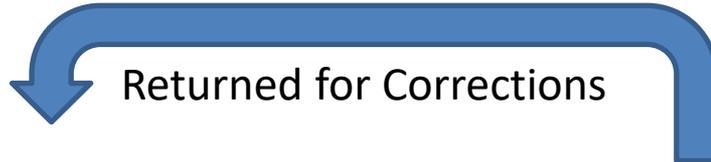
Potential Error. Review Max Load Inputs

Average Compressive Strength (psi) 4,010



Does not meet target/limit [Average Compressive Strength \geq 5,500]

Sampling and Testing



Company Roles

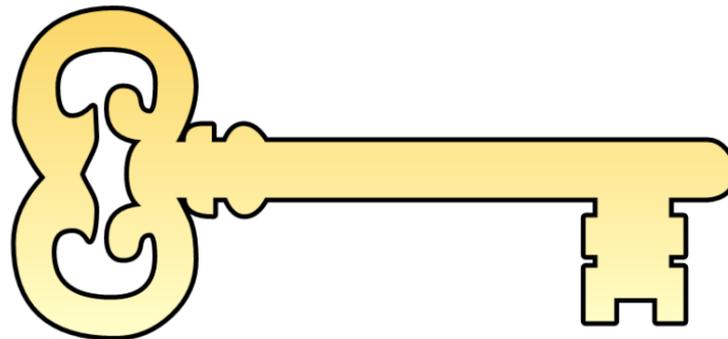


System Roles



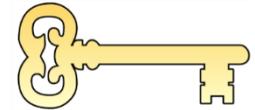
Sampling and Testing

Changing Key Fields on a Sample

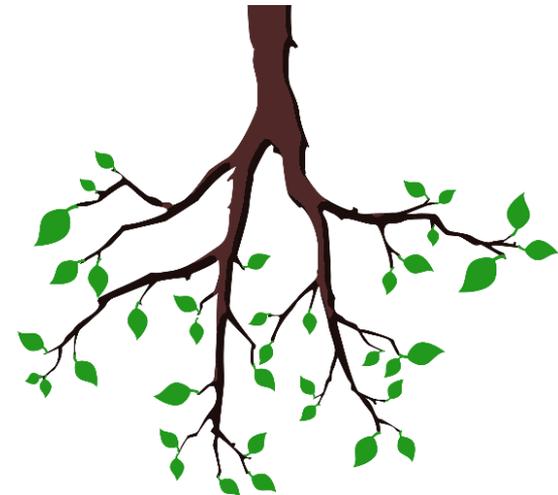
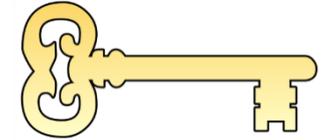
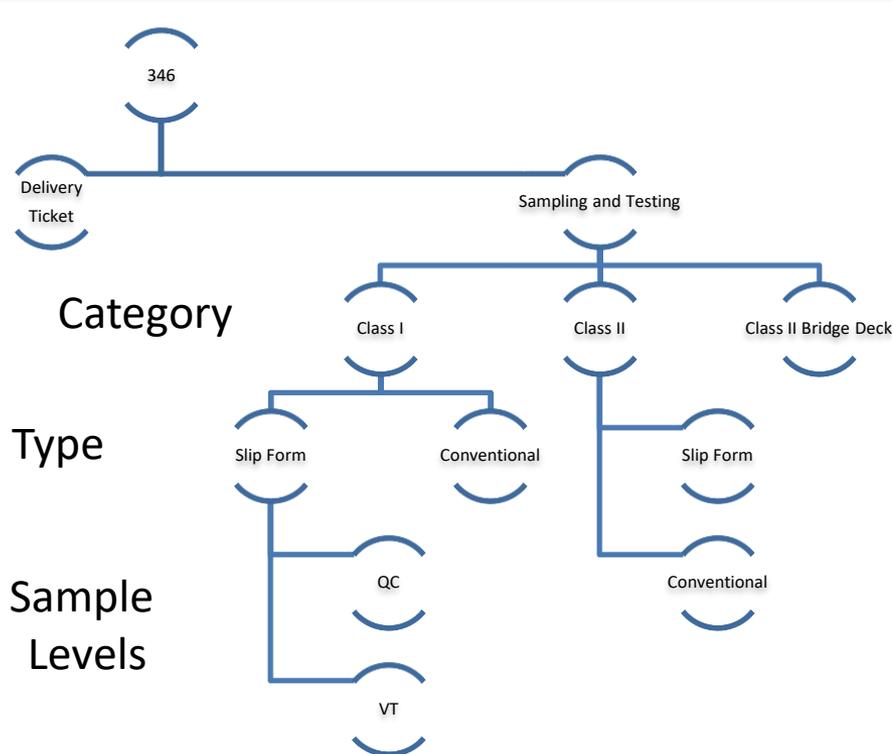


Sampling and Testing

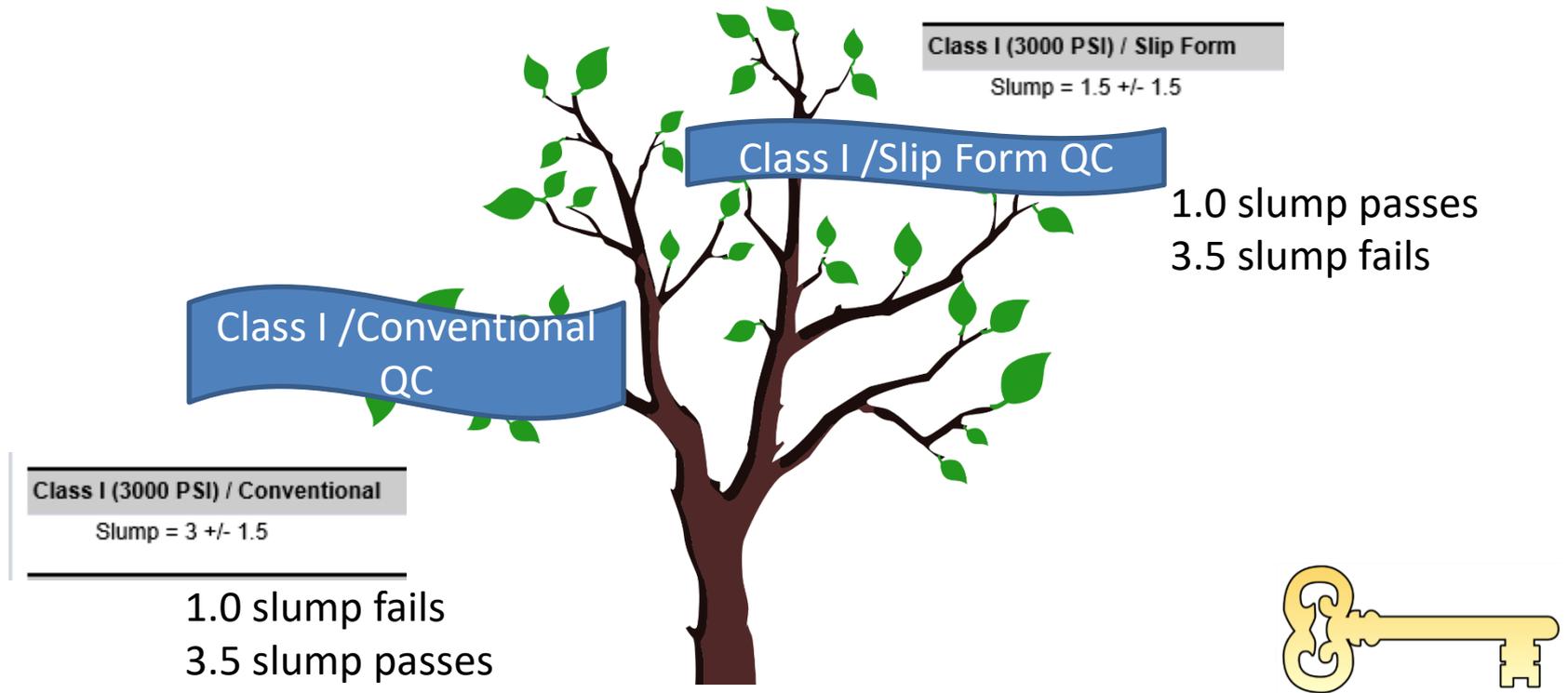
- User selected wrong MAC Spec, category, sample level, etc. on sample
- Don't change key fields
 - The system will **let** you, but it won't **work**
- New Sample Created with correct key fields & processed through life cycle
- Then incorrect sample must be deleted



Sampling and Testing



Sampling and Testing





Sampling and Testing

Material	MAC Spec
160 - Stabilizing	160 - Stabilizing, Supplemental Specification, 10/2021, v6.0

Sample Information

Company			
Method of Acceptance	Sample Level	Category	Sample Purpose
Sampling And Testing	VT	Stabilized Subgrade on Non-Mainline / Using Existing Base Stabilizer	Split Material from QC

Associated Tests [3]

	Lab or Field	Lab ID	Tester	Test Disposition	Test Status	Required
AASHTO T 89 and AASHTO T 90 Liquid Plastic Limit						
1	Initial Test	Lab			Ready for Testing	Required
FM 1-T 180 Modified Proctor						
2	Initial Test	Lab			Ready for Testing	Required
FM 1-T 267 Organic Content						
3	Initial Test	Lab			Ready for Testing	Required



Sampling and Testing

Material
160 - Stabilizing

MAC Spec
160 - Stabilizing, Supplemental Specification, 10/2021, v6.0

Sample Information

Company
[REDACTED]

Method of Acceptance
Sampling And Testing

Sample Level
VT

Category
Stabilized Subgrade on Non-Mainline / Using Existing Base Stabilizer

Sample Purpose
Independent LBR

Associated Tests [2]

[Click to Collapse](#)

[View Tests](#)

		Lab or Field	Lab ID	Tester	Test Disposition	Test Status	Required	Which test Rules?
FM 1-T 180 Modified Proctor								
1	Initial Test	Lab	I01024	Gloria White [4623]	Pass	Test Complete	Required	View
FM 5-515 Limerock Bearing Ratio								
2	Initial Test	Lab	I01024	Gloria White [4623]	Pass	Test Complete	Required	View



Sampling and Testing

Material 160 - Stabilizing	MAC Spec 160 - Stabilizing, Change Order [10/2021], v1.0
--------------------------------------	--------------------------------------------------------------------

Sample Information

Company
[Redacted]

Method of Acceptance Sampling And Testing	Sample Level VT	Category Stabilized Subgrade on Non-Mainline / Using Existing Base Stabilizer	Sample Purpose Independent LBR
-----------------------------------------------------	---------------------------	-----------------------------------------------------------------------------------------	------------------------------------------

Associated Tests [3]

	Lab or Field	Lab ID	Tester	Test Disposition	Test Status	Required	Which test Rules?
FM 1-T 180 Modified Proctor							
1	Initial Test	Lab			Ready for Testing	Required	
AASHTO T 89 and AASHTO T 90 Liquid Plastic Limit							
2	Initial Test	Lab			Ready for Testing	Added	Remove Test
FM 1-T 267 Organic Content							
3	Initial Test	Lab			Ready for Testing	Added	Remove Test

Did not add FM 5-515



Sampling and Testing

Field	Old Value	New Value
Sample Updated by [redacted] on 10/10/2023 2:32:35 PM		
Sample Purpose Sequence	2226	2227
Sample Purpose	Split Material from QC	Independent LBR

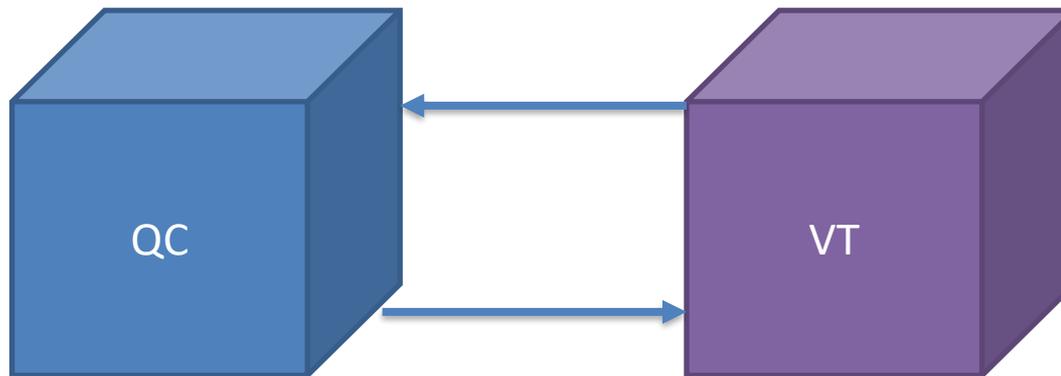


Sampling and Testing

- Pending Finalization Search Demo
- Hands on Exercise
 - Send the sample back?

Sampling and Testing

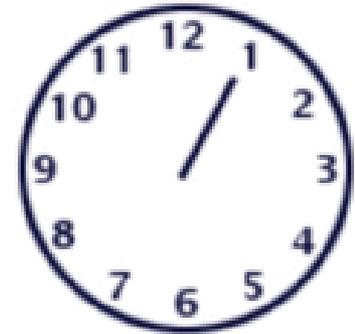
Project Comparison Packages



Sampling and Testing

- Structural concrete comparison packages
- How long does the resolution lab have to perform resolution?

*The Engineer will ensure that the QR and VR cylinders are tested within 14 calendar days **of the acceptance strength tests.***





Sampling and Testing

- ***Don't wait*** for all the samples in the package to be finalized to create the package
- As ***soon*** as you finalize the original and verification samples, create the comparison package and ***run the comparison***
- Add associated samples later



Sampling and Testing

- Turnaround Time
 - Date Sample Taken
 - Date Received
 - Auto-Receipt
 - Date Test Performed
 - Multiple Tests on the same sample



Sampling and Testing

- Date Sample Taken – 12/20/2024
- Date Sample Created – 12/20/2024
 - 0 Days TAT
- Date Received – 12/20/2024
 - **0** Days TAT
- Date Plastic Properties Performed – 12/20/2024
 - 0 Days TAT



Sampling and Testing

- Date Compressive Strength Test Performed –
01/20/2025
– **30** Days TAT
- Date Compressive Test Results Reported –
01/22/2025
– **2** Days TAT
- Date Sample Submitted to FDOT – 1/31/2025
– **11** Days TAT

Sampling and Testing

- Are samples in a comparison package with a comparison status of **Compares** open or closed?

CLOSED 😊

Sampling and Testing

- Are samples in a comparison package with a comparison status of **Does Not Compare** open or closed?

OPEN ☹️



Sampling and Testing

- How do you get them closed?
- 2 ways
 - Perform (Run) Resolution and get **any** resolution status or
 - If resolution is required and not performed, designate it as Resolution Not Performed

Sampling and Testing

- Get orphan samples into incomplete packages
- Incomplete packages don't always end up as an Exception

CLOSED 

Incomplete Comparison Package Reason Code

Comparison Test(s) Not Performed
Missing or Damaged IV Sample
Missing or Damaged QC Sample
Missing or Damaged VT Sample
Random Number Did not Come Up
Sample(s) in LIMS
Small Quantities



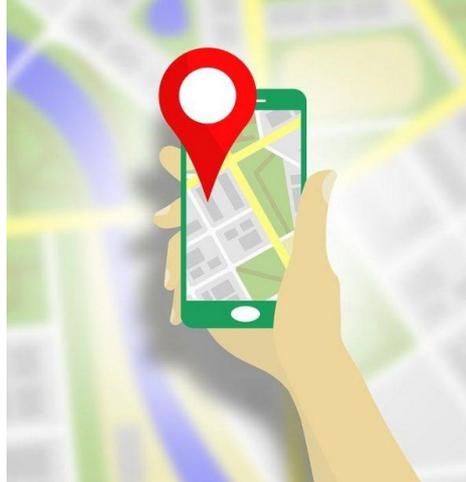
Sampling and Testing

- Pause for MAC Comparison Package demo



Sampling and Testing

APL Tracking



Sampling and Testing

- 01/01/2023 MAC replaces Pay Item Tracking System (PTS)
- **All active jobs**, not just let on or after 01/2023
- APL Products permanently installed





Sampling and Testing

- APL Tracking moved to PrC for projects let on or after 01/01/2026
- What about current projects?



Sampling and Testing

- APL Tracking Reports



Sampling and Testing

Sample

Aggregate Duplicate Samples	A summary report that highlights aggregate control program duplicated samples
Aggregate Process Behavior [End User Report]	Aggregate Process Behavior Chart to display changes in the output of a particular process over a period of time (time sequence).
Aggregate Sample Analysis Report	Aggregate product test data summary report which highlights specific test results with in a date range or the last 30 samples.
Aggregate Sample Physical Prop [End User Report]	Provides average aggregate physical property results for LA Abrasion, Absorption, and Bulk Specific Gravity by District, County or Facility ID.
Aggregate Test Count [End User Report]	Aggregate Test Count Report provides a count of tests performed for each Mine by product.
Air Void Report [End User Report]	Asphalt Sample Air Void Report
APL/BABA Tracking Spec Summary [End User Report]	This report summarizes all MAC Specs that include APL & BABA tracking sample requirements. It is not a project specific listing.



Sampling and Testing

Project

[Active Contract Details \[End User Report\]](#)

A summary of contracts that are active in MAC. These have a Contractor QCP initiated but do not have a completed MC Review.

[All Material Comparisons \[End User Report\]](#)

Provides Comparison package status of "Compares" or "Does not Compare" with Resolution status for non-comparing packages. Also provides non-comparing percentages by producer.

[APL Project Tracking Summary \[End User Report\]](#)

A Summary of the MAC Specs with APL & BABA Tracking requirements and the samples on a project under those entries.



APL & BABA Project Tracking Summary

Generated on: 4/11/2024 2:22:03 PM



Project: 438057-1-52-01

Bad?

415 - Reinforcing for Concrete

Spec: Supplemental Specification, APL & BABA Tracking, Sampling And Testing, 01/2009, v1.3

Categories:

Reinforcing for Concrete

MAC Sample ID	APL Product

527 - Detectable Warnings

Spec: Special Provision, APL & BABA Tracking, Sampling And Testing, 01/2009, v1.1

Categories:

Detectable Warnings

MAC Sample ID	APL Product
1281754	Removable Blackout 100 by Brite-line Technologies, LLC. [527-000-046 - Detectable Warnings on Walking Surfaces]
1284745	Removable Blackout 100 by Brite-line Technologies, LLC. [527-000-046 - Detectable Warnings on Walking Surfaces]
1304624	Removable Blackout 100 by Brite-line Technologies, LLC. [527-000-046 - Detectable Warnings on Walking Surfaces]
1312519	Geotex 4x6 by Propex Operating Company, LLC [527-000-045 - Detectable Warnings on Walking Surfaces]
1199378	Removable Blackout 100 by Brite-line Technologies, LLC. [527-000-046 - Detectable Warnings on Walking Surfaces]
1235402	Removable Blackout 100 by Brite-line Technologies, LLC. [527-000-046 - Detectable Warnings on Walking Surfaces]
1238019	Removable Blackout 100 by Brite-line Technologies, LLC. [527-000-046 - Detectable Warnings on Walking Surfaces]

700 - Highway Signing

Spec: Supplemental Specification, APL & BABA Tracking, Sampling And Testing, 01/2016, v3.2

Categories:

Highway Signing

MAC Sample ID	APL Product



APL & BABA Project Tracking Summary

Generated on: 4/11/2024 2:22:03 PM

937 - Post-Installed Anchor Systems for Structural Applications in Concrete Elements

Spec: Supplemental Specification, APL & BABA Tracking, Sampling And Testing, 01/2009, v1.2

Categories:

Post-Installed Anchor Systems for Structural Applications in Concrete Elements

MAC Sample ID	APL Product
1297592	Ultrabond 1 by Adhesives Technology Corp. [937-002-011 - Structural Adhesive Bonding Compound Type HSHV]
1313937	Ultrabond 1 by Adhesives Technology Corp. [937-002-011 - Structural Adhesive Bonding Compound Type HSHV]



Sampling and Testing – PA notifications

- Sample Submitted for FDOT Verification
- Sample has failing Concrete tests
- Sample Failed Test(s) for Higher in lieu of Lower
- Sample Resubmitted



Sampling and Testing



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