Florida Department of
TRANSPORTATION

Project Administrator Material Method of Acceptance

August 5, 2026

Contents

Where can I find Material Method of Acceptance requirements?

Specifications Sections 6 and ***105*** describe some general requirements for materials and how the Department determines if a material is acceptable. ***Specifications Section 6*** describes:

- Material Method of Acceptance types
- Definition of Defective Material
- Applicable Acceptance Documents found outside the Specifications

Specifications Section 105 describes:

- Quality Control documentation requirements
- MAC requirement
    - Acceptance data must be entered into the Department's database
- Earthwork Records System
- Lump Sum Project Job Guide Schedule (JGS) requirements
- Quality Control Program
    - List of materials included in the program
    - Producer Quality Control general requirements
    - Links to Producer Quality Control Material specific requirements
    - Contractor Quality Control requirements
        - Qualified Laboratories
        - Qualified Personnel
        - Contractor Quality Control Plan

What are the Project Administrator's responsibilities for Material Method of Acceptance?

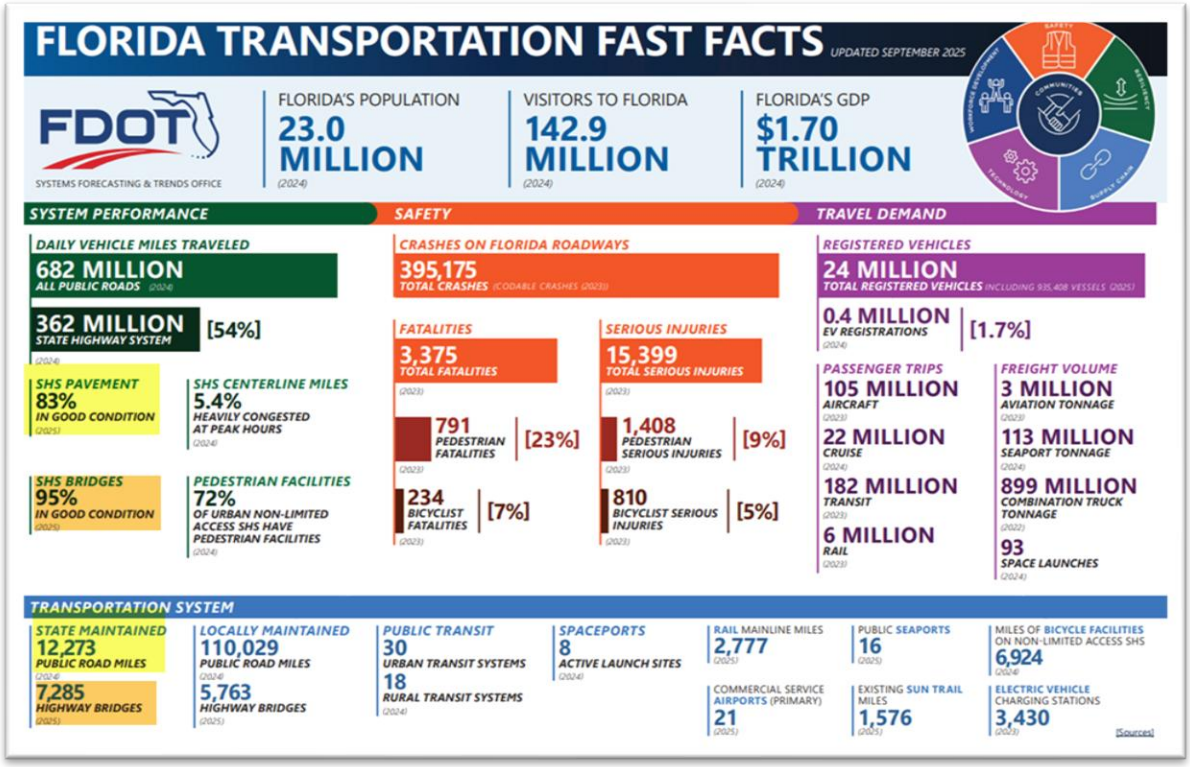
The Project Administrator (PA) is the person in responsible charge of the material method of acceptance (MOA) on a contract. ***Construction Project Administration Manual*** has describes specific PA requirements in ***CPAM Section 5.8 Control of Materials***.

These instructions describe basic Materials concepts that PAs should understand to ensure materials are acceptable. Also the concepts are the basis of PA MAC functions. Specific instructions for MAC PA functions can be found in multiple documents. This document describes the fundamental requirements that MAC PA functions are based on. More detailed instructions that use these concepts in different MAC modules can be found in the following documents:
MAC FAQs
Earthwork Records System (ERS) PA Manual
PA Review of Standard and Nonstandard Job Guide Schedule (JGS)
PA Instructions for Lump Sum Nonstandard JGS (contract compliance)
PA Contractor QC Plan Review
Materials Certification Review for the PA
Project Sample User Manual

Chapter 1 – Why Materials Matter

Making sure the materials incorporated into a project are acceptable and meeting the contract document requirements ensures the long-term performance of the State of Florida infrastructure. Not maintaining the Department's minimum requirements can have impacts years after the project is complete.

The infrastructure is an asset to the State of Florida. Maintaining the system by ensuring project material requirements are met safeguards the infrastructure as a resource for the State.



FDOT Fast Facts

FDOT publishes Fast Facts for the public to know what we do and how well we do it. There are some Fast Facts that indicate the material quality of the system. The Department has legislative requirements to maintain both these measures.

- Pavement conditions must be at least 80% in good condition
    - We measure how rutted, cracked and rough the pavement is to determine this measure
- Bridges are 95% in good condition.
    - We inspect all bridges in FL, not just bridges on the state highway system

Chapter 2 – Who is the Project Administrator in MAC?

A. Allowable PA Delegates

Before we can cover the PA's functions in MAC, we need to understand who the PA from a MAC perspective. The PA role is a system role in MAC. The role can be assigned to someone who is not the actual PA on the contract. The PA role has a lot of responsibilities related to materials and their acceptability. These responsibilities are not because of MAC. The PA has always been responsible for each aspect that MAC records. With the implementation of MAC, some processes that were manual are now included in MAC so that all acceptance requirements can be recorded and confirmed.

In MAC, the PA role can be assigned to the PA or a delegate. The State Construction Office defines the personnel who can be designated as a delegate for the actual PA. When the PA has a delegate, it is still the PA's responsibility to ensure the delegate is performing all the PA functions in a timely manner.

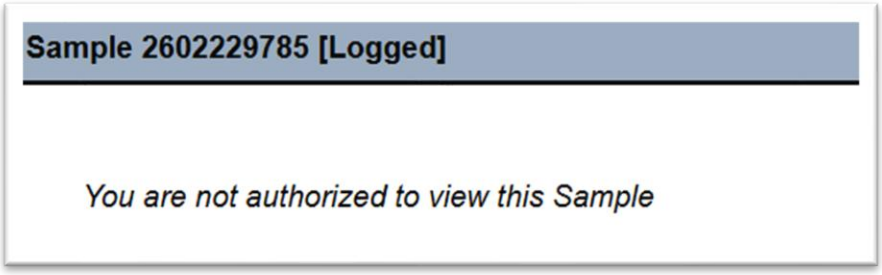
The following personnel have been defined as permissible PA delegates:

- All project samples except asphalt plants samples and Earthwork Records System (ERS) samples – Contract Support Specialist or Senior (Lead) Inspector
    - Senior Inspector is not a material lead inspector, but the primary inspector over all other lead material inspectors
        - These two positions require knowledge of all materials in the contract, not a specific material
- Asphalt Plant Samples – Asphalt Plant Verification Technician or the Resident Asphalt Specialist
    - Delegate is allowed due to the complexity of asphalt plant samples
- Earthwork Records System (ERS) Samples – Lead Earthwork Verification Technician

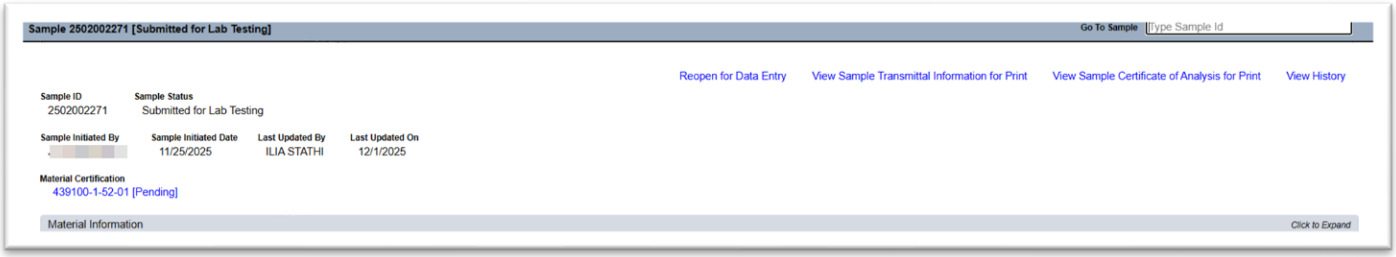
B. System Roles in MAC

The PA role in MAC is a system role. System based roles perform functions in support of a program, for example the Independent Assurance Program, Quality Control Program, Laboratory Qualification Program, or Materials Certification Review. Users in system roles are higher level users with knowledge and understanding of the program requirements they are assigned to monitor. As such, they are not restricted to specific entries. Many PAs also have company roles and experience how restrictive company roles are. Those restrictions are not present when the PA switches to their system role of PA.

- When a person with both company roles and the PA role navigates to a sample that is not yet Finalized while in their company roles and the sample is in the custody of another company, MAC shows they are not authorized to view the sample



  - When the same user switches to their PA role, they can see the sample but cannot perform company role based functions



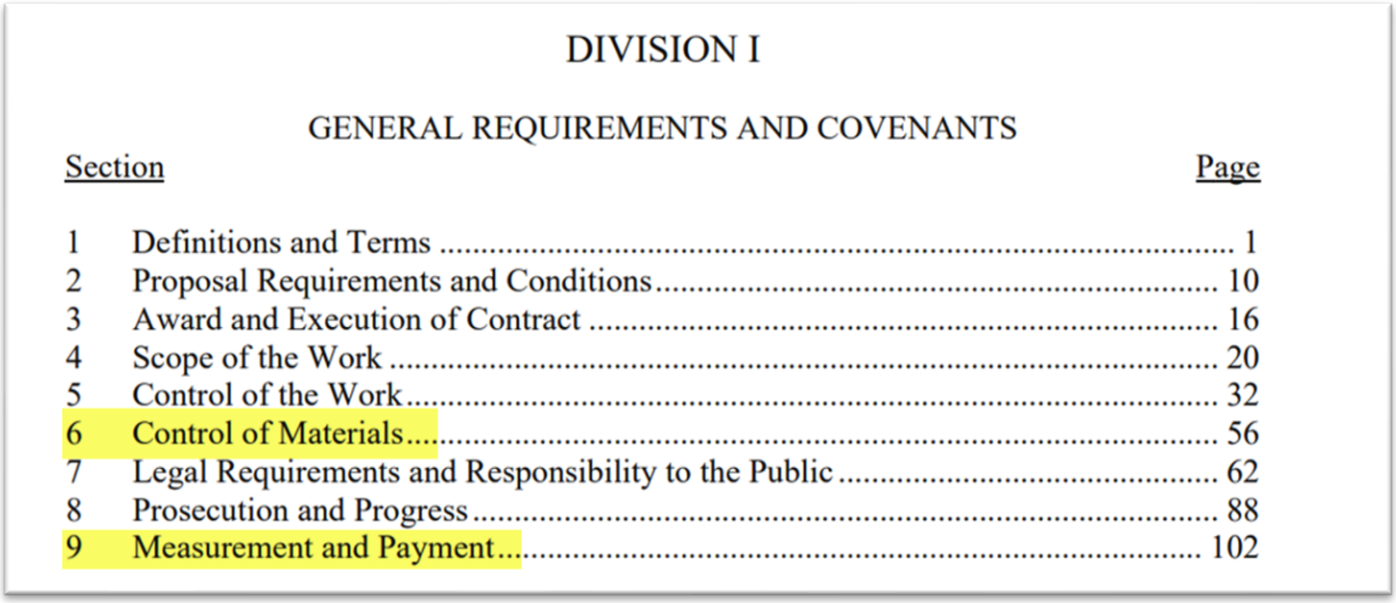
Users in system roles are expected to monitor themselves. MAC does not assign access to the PA with any additional restrictions such as Contract Number or Financial Project Id. In other words, PAs can perform PA functions on any record with those functions in MAC regardless of what contract it is, what project it is, what District it's in, etc. It is not difficult for a PA to inadvertently navigate to the wrong record. PAs should take care when navigating to the different MAC screens with PA functions to ensure they are on the appropriate entry.

If you perform PA functions on a screen that is not related to your project or contract, notify the appropriate District Application Coordinator (DAC). Each District Materials and Research Office (DMRO) has a primary and backup DACs listed on the MAC Contacts List. They can assist with restoring the record if possible and work with any other DACs who may be impacted.

DACs and system administrators monitor users with system roles for compliance with FDOT security policies and may revoke access for violations or abuse.

Chapter 3 – Basic Contract Concepts

In the ***Specifications Division I,*** the Department establishes some basic contract concepts that apply to all contracts. This chapter describes three of those contract concepts and how they impact MOA. They are a key to understanding MOA and how MOA impacts contract administration.



DIVISION I

GENERAL REQUIREMENTS AND COVENANTS

A. Specifications Section 9

There are two concepts defined in ***Specifications Section 9 – Measurement and Payment***.

1. Method of Measurement

Method of measurement is the specific techniques for documenting quantities and selection for pay items. There are three:

- Final Measurement – where someone is measuring and calculating the in-place amount, for example the ton(s) of hot mix asphalt placed
- Plan Quantity – where the quantity paid is the same as the amount calculated from the plan lines, for example cubic yards of embankment
- Lump Sum – where there is a single amount paid for the entire pay item, such as clearing and grubbing

2. Basis of Payment

Basis of Payment is the criteria used to determine the compensation for work. Basis of payment language includes what the payment encompasses. Here is one example of the specific language for basis of payment from Section 121.

121-7 Basis of Payment.

When the item of flowable fill is included in the Contract, payment will be made at the Contract unit price per cubic yard. Such price and payment will include all cost of the mixture, in place and accepted, determined as specified above. No measurement and payment will be made for material placed outside the neat line limits or outside the adjusted limits, or for unused or wasted material.

Payment will be made under:

Item No. 121- 70- Flowable Fill - per cubic yard.

B. Specifications Section 6

Specifications Section 6 – Control of Materials describes the third contract concept, MOA. Here, the Department defines the different methods we use to determine material acceptability. This concept is a main building block for MAC.

We have 2 types of MOAs

- Sampling and Testing – someone is taking or providing a sample that is tested for specific acceptance tests
- Certification – someone is providing a certification statement that the material or product meets specific acceptance requirement
    - The Approved Products List (APL) is a subset of the Certification MOA

C. Construction Project Administration Manual (CPAM)

While ***Specification Section 6*** has two categories for MOA, the ***Construction Project Administration Manual*** has three. They are found in ***CPAM Section 5.8 Control of Materials***. It includes the two methods listed in Section 6 plus it includes Visual Inspection.

The State Construction Office defines Visual Inspection as MOA. PAs need to know which inspection processes have a potential to impact materials acceptance. Most of the results of inspections are not entered into MAC. For example, cross slope is important to the final placement of hot mix asphalt, but it is considered an inspection item with no impact on MOA so is not entered into MAC.

There are three project inspection items entered into MAC:

- Guardrail stamps found on the guardrail panels as described in Guardrail Stamp Number Verification in MAC
    - They are input by project personnel and reviewed by SMO to ensure the guardrail came from a production facility with an accepted guardrail producer quality control plan
        - This is because the contractor most likely got the panels the from a supplier and not directly from the guardrail producer
- Stabilizing mixing depth
    - They are not tests, but if the depth is shallow, ***Specification Section 160*** says that it is to be remixed, then retested
    - If it is too deep, QC must perform additional density testing
        - Since this measurement can trigger more required testing, it is recorded in MAC as supporting data
- Asphalt lots that are visually inspected (also known as paper lots)
    - They are entered into MAC as an incomplete comparison package and designated as visual inspection
        - The main reason for this is that the Asphalt Sample Number Lot Number report have a way to include these lots and will not indicate missed frequency when it was not missed

Chapter 4 – MOA Full Definition

While the basic concepts for MOA sound simple, the actual requirements can be complex. This chapter will define the full definition for the sampling and testing MOA and certification MOA.

A. Sampling and Testing

Sampling and testing is more than just a test or tests and some pass/fail limits. Here is an example of what most people think of as MOA language. This was extracted from a Technical Special Provision.

> *The clay liner shall be of plastic soils consisting of A-5, A-6, A-7 or A-2-7 (AASHTO M145) material with more than 25% passing the No. 200 U.S. standard sieve. The clay soils shall be free of organic content and shall provide a minimum saturated unit weight of 115 pounds per cubic foot.*

Is this language an example of a sampling and testing or certification MOA? The answer is we don't have enough information to make that determination. This is an example of what we call the "Must Meet" language. The language does not include all the elements found in the full definition of either MOA.

What needs to be included in the contract requirements for the PA to identify if a material accepted under the sampling and testing MOA is acceptable? First, let's look at the elements needed for a Sampling and Testing MOA.

1. What Tests are Required?

We need to know what test or tests since more than one acceptance test might be required. These are usually recognized national standards such as an AASHTO or ASTM test method or Florida test method. In the TSP example, AASTHO M145 was listed, but others are missing, like possibly AASHTO T-88 for the sieve analysis and FM 1-T 267 for the organic content.

For example, ***Specification Section 346, Table 346-7*** lists the acceptance tests for structural concrete. We do not perform all these tests on every LOT of concrete. There are tests on this list for self-consolidating concrete that are not used for conventional concrete.

Table 346-7
Concrete Sampling and Testing Methods

Description	Method
Low Levels of Chloride in Concrete and Raw Materials	FM 5-516
Density (Unit Weight), Yield and Air Content (Gravimetric) of Concrete	ASTM C138
Temperature of Freshly Mixed Portland Cement Concrete	ASTM C1064
Sampling Freshly Mixed Concrete (4)	ASTM C172
Static Segregation of Self-Consolidating Concrete using Column Techniques	ASTM C1610
Slump Flow of Self-Consolidating Concrete	ASTM C1611
Relative Viscosity of Self-Consolidating Concrete	ASTM C1611
Visual Stability Index of Self-Consolidating Concrete	ASTM C1611
Passing Ability of Self-Consolidating Concrete by J-Ring	ASTM C1621
Rapid Assessment of Static Segregation Resistance of Self-Consolidating Concrete Using Penetration Test	ASTM C1712
Aggregate Distribution of Hardened Self-Consolidating Concrete	FM 5-617
Hardened Visual Stability Index of Self-Consolidating Concrete	AASHTO R 81
Fabricating Test Specimens with Self-Consolidating Concrete	ASTM C1758
Concrete Resistivity as an Electrical Indicator of its Permeability	AASHTO T 358

(1) The Department will use the same type of meter for Verification testing as used for QC testing. When using pressure type meters, use an aggregate correction factor determined by the concrete producer for each mix design to be tested. Record and certify test results for correction factors for each type of aggregate at the concrete production facility.
(2) Provide curing facilities that have the capacity to store all QC, Verification, and Resolution cylinders simultaneously for the initial curing. Cylinders will be delivered to the testing laboratory in their molds. The laboratory will remove the specimens from the molds and begin final curing.
(3) Lightweight concrete also includes hardened specimen density. The ASTM C567 may be used in lieu of ASTM C39 to verify the density.
(4) Take the test sample from the middle portion of the batch in lieu of collecting and compositing samples from two or more portions, as described in ASTM C172.

2. Who Performs the Test?

This is company or entity of the person performing the test, for example, the Contractor, the Producer, the Department or a 3rd party. We can usually tell by the contract language.

- Contractor testing is described in the ***Specifications*** in active voice
  - Represented in MAC with sample levels QC or PC
  - For example, in ***Specification Section 120***, states in active voice:

  Determine the QC standard Proctor maximum density and optimum moisture content by sampling and testing the material in accordance with FM 1-T 099.

- Department testing normally says “the Department will” or “the Engineer will”
  - Represented in MAC by sample levels VT or IV
  - For example, as shown in ***Specification Section 120***:

  120-10.6.1 Standard Proctor Maximum Density Determination*: The Engineer will verify the QC test results if the results compare within 4.5 lb/ft3 of the Verification test result. Otherwise, the Engineer will take one additional sample of material from the soil type in question. The State Materials Office (SMO) or an AASHTO accredited laboratory designated by the SMO will perform Resolution testing.*

- The Code of Federal Regulations requires the Department to verify the results, typically under sample level VT, and to have a resolution system when QC and VT do not compare
    - When the resolution system calls for additional testing, that is performed under sample level RT, QR, VR or QCR
        - This is part of the MOA when QC data is used for acceptance

3. How Often is the Material Sampled and Tested?

We need to know how often to sample and test. Another term for "how often" is "minimum frequency". We set a minimum frequency because it is unrealistic to test the entire quantity of all the materials. By having a minimum frequency and requiring samples to be taken randomly, we give all the material an equal chance to be sampled and tested.

For example, ***Specification Section 346, Table 346-9*** shows the minimum frequency for sampling and testing structural concrete. This varies based on the type of concrete and the concrete operation.

Table 346-9
Sampling Frequency

Class Concrete (1)	LOT Size
I (Seal)	Each seal placement
I (Pavement)	According to Section 350
II, II (Bridge Deck), III, IV, V, VI, VII	50 cubic yards, or one day's production, whichever is less
IV (Drilled Shaft)	50 cubic yards, or one day's production, whichever is less (2)

(1) For any class of concrete used for roadway concrete barrier, the lot size is defined as 100 cubic yards, or one day's production, whichever is less.
(2) Start a new LOT when there is a gap of more than two hours between the end of one drilled shaft placement and the beginning of the next drilled shaft placement.

4. Does the Material Need a Qualified Sampler, Tester or Lab?

The fourth element of the sampling and testing MOA is based on one of the requirements found in the Code of Federal Regulations (CFR). All acceptance tests must be sampled by qualified samplers and tested by qualified testers in qualified labs. These requirements can be found in ***Specifications Section 105***.

5. Material produced at a facility under the Aggregate Control Program or QC Program

Materials under the Quality Control or Aggregate Control Program must be produced by a production facility acceptable to the Department under those programs. For example, even though guardrail is usually procured by the contractor from a supplier, the supplier must provide guardrail materials from a Guardrail Producer with an Accepted Producer QC Plan. This is why guardrail inspection being logged into MAC, to confirm this requirement is met.

6. *What are the Acceptance Limits?*

For most acceptance test methods, the limits for acceptance must be designated. This comes from the contract documents, not in the test method. The same test may have different limits for different situations. For example, ***Specification Section 346, Table 346-3*** shows the minimum acceptance values for sampling and testing structural concrete. This varies based on the class of concrete.

Table 346-3
Compressive Strength, w/cm, and Slump of Concrete Classes

Class of Concrete	28-day Specified Minimum Compressive Strength (f'c) (psi)	Maximum Water to Cementitious Materials Ratio (pounds per pounds)	Target Slump Value (inches)
I (Seal)	3,000	0.53	8
I (Pavement) (1) (5)	3,000	0.50	1.5 or 3
II (3)	3,400	0.53	3 (2)
II (Bridge Deck)	4,500	0.44	3 (2)
III	5,000	0.44	3 (2)
IV	5,500	0.41 (4)	3 (2)
IV (Drilled Shaft)	4,000	0.41	8.5
V	6,500	0.37 (4)	3 (2)
VI	8,500	0.37 (4)	3 (2)
VII	10,000	0.37 (4)	3 (2)

Notes:
(1) Meet the requirements of Section 350.
(2) For increased slump concrete, flowing concrete, SCC and slip form concrete meet the requirements of 346-3.1.
(3) For precast three-sided culverts, box culverts, endwalls, inlets, manholes and junction boxes, the target slump value and air content will not apply. The maximum allowable slump is 6 inches, except as noted in (2). The Contractor is permitted to use concrete meeting the requirements of ASTM C478 (4,000 psi) in lieu of the specified Class II concrete for precast endwalls, inlets, manholes and junction boxes.
(4) When silica fume or metakaolin is required, the maximum water to cementitious material ratio will be 0.35. When ultrafine fly ash is used, the maximum water to cementitious material ratio will be 0.30.
(5) If 28-day strength is 2,500 or greater, concrete may be accepted if 28-day compressive strength is reached by 56 days.

7. *What if there is a Failing Test?*

When material is failing an acceptance test, there may be language in the ***Contract Documents*** on what to do if there is a failure. These are described as actions the Department can take if the failure is minimal up to when the material is failing so badly that it meets the definition of defective material. ***Specification Section 6*** states that defective material must be removed and replaced.

The two examples most people think of are hot mix asphalt and structural concrete. They both have language for minimal failures up to severe failures. Let's look at ***Specification*** language for both materials that cover a minimal failure up to defective material.

a. Minimal Failure with a Pay Reduction – Specifications Section 346

Specification Section 346 has two criteria to define if a failure can be considered a minimal failure.

346-9.7 Structural Adequacy: The Engineer will evaluate the structural adequacy for verified concrete that does not meet the minimum specified compressive strength of Table 346-3.

For structural adequacy, with standard molded and cured compressive strength cylinders, the compressive strength of concrete is satisfactory provided that the two following criteria are met:

1. The average compressive strength does not fall below the specified minimum compressive strength by more than:

a. 500 psi if the specified minimum compressive strength is equal to or less than 5,000 psi.

b. 10% of the specified minimum compressive strength if the specified minimum compressive strength is greater than 5,000 psi.

2. The average compressive strength with the previous two LOTs is equal to or exceeds the specified minimum compressive strength. This condition only applies if there are two or more previous LOTs to calculate the average.

If the concrete meets both criteria 1. and 2., the PA can apply a pay reduction and leave the material in place.

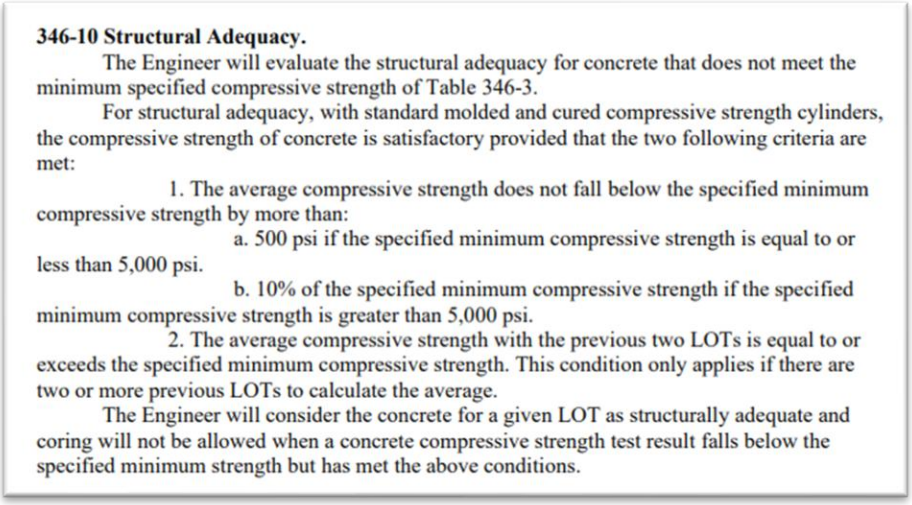
b. Minimal Failure with a Pay Reduction – Specification Section 334

For hot mix asphalt, any composite pay factor (CPF) between 0.99 and 0.90 is just a pay reduction at that percentage. Specifications Section 334 has language for actions when the CPF is between 0.89 and 0.80, but they are addressed to the producer. It's still just a pay reduction at that percentage

334-5.9.2 CPFs Less Than 0.90 and Greater Than or Equal to 0.80: If the composite pay factor for the LOT is less than 0.90 and greater than or equal to 0.80, cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction of the Engineer that the problem can immediately be (or already has been) resolved. Actions taken must be approved by the Engineer before production resumes.

c. Severe Failure – Specification Section 346

Specification Section 346 states the Contractor is required to perform some additional steps to determine the structure's structural adequacy.



346-10 Structural Adequacy.

The Engineer will evaluate the structural adequacy for concrete that does not meet the minimum specified compressive strength of Table 346-3.

For structural adequacy, with standard molded and cured compressive strength cylinders, the compressive strength of concrete is satisfactory provided that the two following criteria are met:

1. The average compressive strength does not fall below the specified minimum compressive strength by more than:
   a. 500 psi if the specified minimum compressive strength is equal to or less than 5,000 psi.
   b. 10% of the specified minimum compressive strength if the specified minimum compressive strength is greater than 5,000 psi.
2. The average compressive strength with the previous two LOTs is equal to or exceeds the specified minimum compressive strength. This condition only applies if there are two or more previous LOTs to calculate the average.

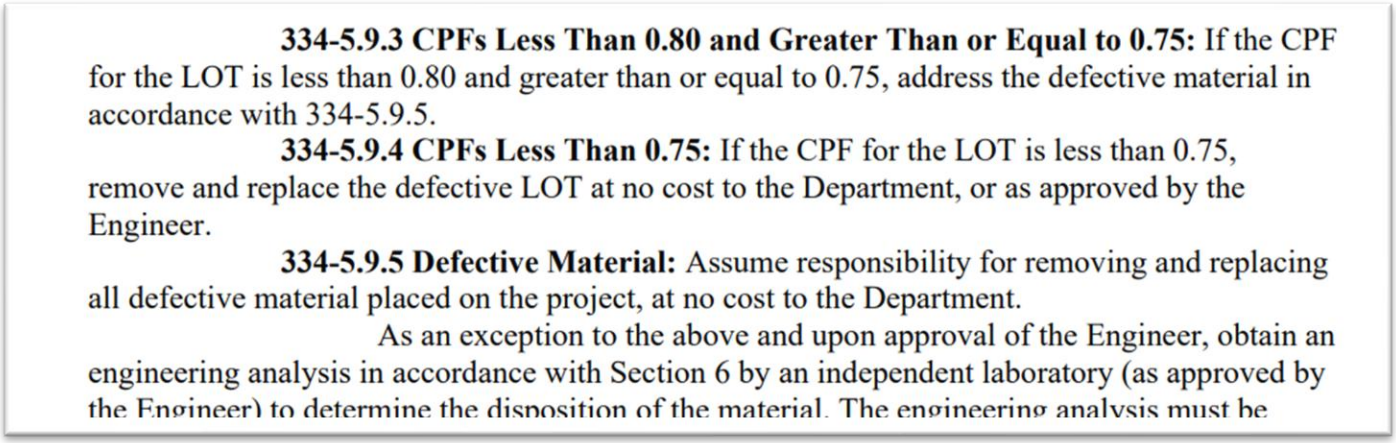
The Engineer will consider the concrete for a given LOT as structurally adequate and coring will not be allowed when a concrete compressive strength test result falls below the specified minimum strength but has met the above conditions.

If we get to this point, the material is considered defective material and should be removed and replaced; however, it is difficult to remove and replace defective structural concrete because by the time we know it's defective, it's hardened. So we allow it to remain in place in most cases. A pay reduction is applied to account for the loss of the structure's life expectancy.

This is not the same as we saw in a. Minimal Failure with a Pay Reduction – Specifications Section 346. In this case, the Department is making an Engineering decision based on the analysis to leave defective material in place and the pay reduction is much more stringent to account for the loss of structure's life.

d. Severe Failure – Specification Section 334

When hot mix asphalt has a CPF less than 0.80%, more must be done than a pay reduction.



334-5.9.3 CPFs Less Than 0.80 and Greater Than or Equal to 0.75: If the CPF for the LOT is less than 0.80 and greater than or equal to 0.75, address the defective material in accordance with 334-5.9.5.

334-5.9.4 CPFs Less Than 0.75: If the CPF for the LOT is less than 0.75, remove and replace the defective LOT at no cost to the Department, or as approved by the Engineer.

334-5.9.5 Defective Material: Assume responsibility for removing and replacing all defective material placed on the project, at no cost to the Department.

As an exception to the above and upon approval of the Engineer, obtain an engineering analysis in accordance with Section 6 by an independent laboratory (as approved by the Engineer) to determine the disposition of the material. The engineering analysis must be

- For CPFs between 0.79 and .75, the Contractor must perform an Engineering Analysis
- If it is 0.74 or lower, the material must be removed and replaced

B. Certification

Certification MOA is less complex than Sampling and Testing MOA, but it has some similar considerations.

1. What kind of certification document is required?

There are different types of certifications. They include:

- Certification Statement
  - A document on contractor, producer or manufacturer letterhead with specific language as to what is being certified
    - They may or may not have test results
- Certified Test Report
  - A document from a laboratory summarizing the test results of a specific sample of product or material
    - They can be in many formats depending on the laboratory
- Certified Mill Analysis
  - A document from a producer, for example a steel mill, with test results on the chemical and physical makeup of the product
- Label
  - A manufacturer's label, typically used for APL products to confirm the product is correct for the application it's being used for.

2. Who is the Certification from?

All MOA certifications are submitted to the PA by the contract. The certification statement be from:

- The contractor

105-6 Contractor Certification of Compliance.

Provide the Engineer with a notarized monthly certification of compliance with the Contract Documents, to accompany each progress estimate, on a form provided by the Engineer. The Department may not authorize payment of any progress estimate not accompanied by an executed certification document.

Final payment in accordance with 9-8 will not be made until a final notarized certification summarizing all QC exceptions has been submitted.

- The manufacturer

145-5 Certification.

For geosynthetic materials, submit to the Engineer a certification from the manufacturer confirming that the material is appropriate for the intended use. The manufacturer's certification shall be attested to within the past one year by a person having legal authority to bind the manufacturing company, and must include the project number, APL product number, LOT number, and product name.

530-2.2 Articulating Concrete Block (ACB) Revetment Systems: Obtain all precast block, cabling, anchors, and necessary incidental materials from the same manufacturer. ACB revetment systems must meet the requirements of ASTM D6684, ASTM D7276 and ASTM D7277. Submit to the Engineer certification from the manufacturer that the ACB revetment system meets the requirements of this Section.

ACB system components must meet the following requirements:

Concrete .....Section 347, ASTM D6684
Cables and Fittings.....ASTM D6684
Drainage Geotextile Type D-2*..... Section 985-3
Granular Underlay .....Section 901
*Use products listed on the Department's APL.

Cables must maintain at least 85% of original tensile strength (ASTM D638) after 1,000 hours exposure to a saturated solution of calcium hydroxide (pH greater than or equal to 11) at 73°F, plus or minus three degrees. Cables must not exceed a maximum of 0.5% moisture absorption at seven days, per ASTM D570. Cable crimps must be aluminum or stainless steel Type 304 or 316.

- The producer

450-2.4 Product Certification: Ensure the QC inspector inspects all completed products at the plant not less than 24 hours before shipment to verify that all Contract Documents requirements are met. Upon verification that all Contract Document requirements have been met and all necessary repairs have been satisfactorily completed, the product will be stamped with the approved Production Facility Quality Control Stamp identified in the Producer QC Plan.

With each monthly request submitted for payment, attach a certification stating that the listed precast prestressed products have been produced under the Producer QC Plan and meet the Contract Document requirements. Ensure the certification is signed by a legally responsible person of the plant and is submitted on the plant's letterhead.

3. What does the Certification Document have to say?

There are two parts to this requirement.

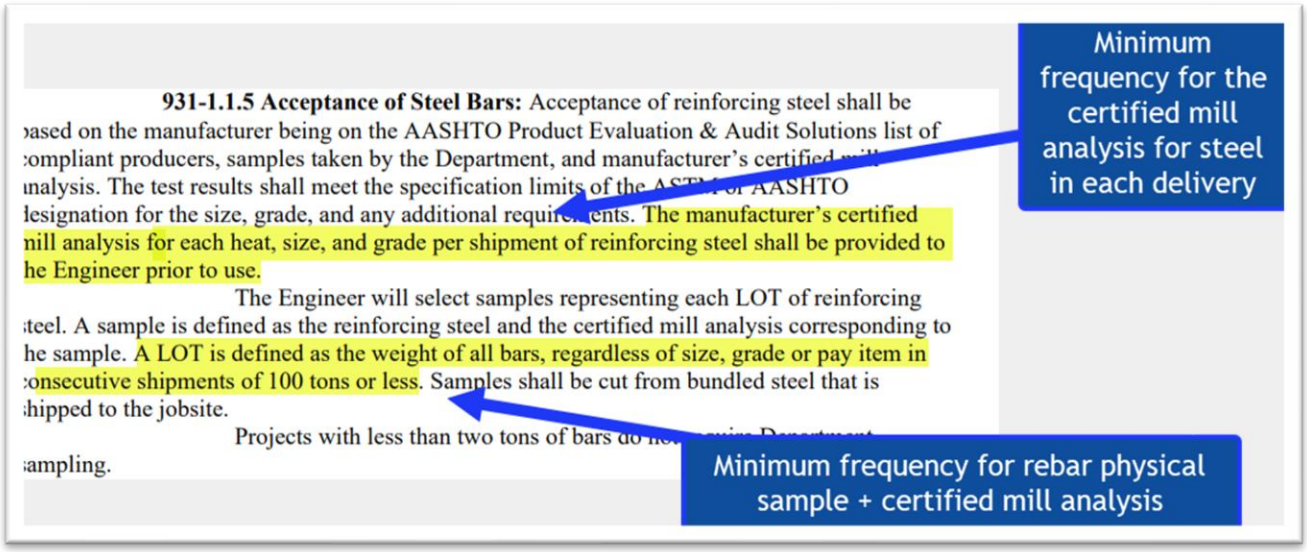
- The certification document must have the correct language. In some cases, the SMO provides a template with specific language.
    - All certification documents required by the FDOT must be reviewed by the Central Office Legal Office
        - This is because the company providing the certification is legally accountable to the Department and may have repercussions for falsified certifications up to prosecution.
- The certification document must be for the correct product
    - The document may be perfectly worded for the product it represents, but if that is not the product that was used, it is considered unacceptable
        - For example, the producer certifications for precast and prestressed concrete products
            - There is one example for precast pipe and drainage structures, one for incidental precast concrete products and a third for prestressed concrete products
        - All have similar wording and are the primary MOA for these products at the project.
            - If a producer with a production facility listed as both an incidental precast concrete product producer and a prestressed concrete product producer provides a certification that says the prestressed products are acceptable, but the project only has incidental precast concrete products, the certification is unacceptable even if it is worded perfectly for prestressed concrete products

4. What is the Minimum Frequency?

Certifications have a minimum frequency too. For example, reinforcing steel bars have a minimum frequency for certified mill analyses to be submitted to the PA for each heat, size, and grade per shipment prior to use.

Every time a delivery truck with reinforcing steel bars arrives on the project site, the PA should expect the Contractor to collect and submit as many certified mill analyses that represent the heat, size and grade of the bars in the delivery.

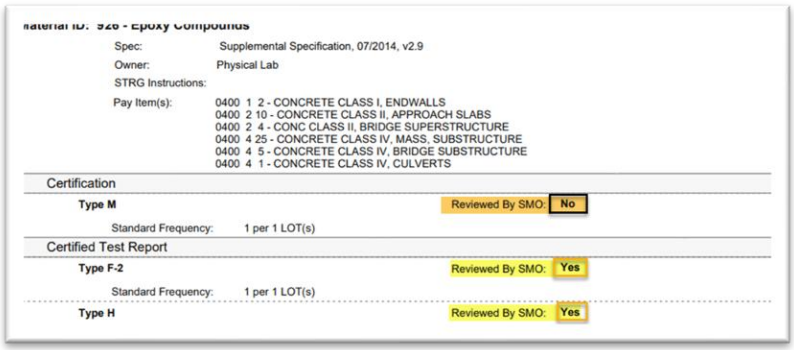
Specification Section 931 contains the MOA language for **both** the frequency of the submittal of the certified mill analysis per shipment and the frequency of taking physical samples which includes the steel and certified mill analysis.



5. Does SMO need to Review the Certification?

Finally, some certification documents are logged into MAC for the SMO to review. Others are collected and stored in the Department's Electronic Document Management System or whatever is required by the retention schedule. The JGS hard copy report was updated to make it clearer when a certification document is reviewed by SMO. Here is a JGS with MAC Spec 926 - Epoxy Compounds. This Spec has certification documents that are logged into MAC and one that is kept with the project records.

- If a Type M epoxy is used, the contractor needs to collect and submit a certification document 1 per LOT
    - The PA stores this document with the project records following the Department's retention schedule
- If it is a Type F-2 or Type H epoxy, the Contractor must submit a certified test report for each lot to the PA
    - The PA then enters a sample into MAC and attached the submitted document for the SMO to review



Chapter 5 – MOA and Method of Measurement/Basis of Payment

A. What does Payment have to do with Material Acceptability?

Now that we have defined all the elements of each MOA, let's return to the other two concepts previously mentioned – method of measurement and basis of payment. What do they have to do with MOA? All three concepts are interconnected. Sometimes you will find MOA requirements in the method of measurement or basis of payment language.

Pay items, especially those with "unit price includes" language almost always have multiple MOA requirements. While it makes way more sense from an accounting perspective to pay for one single assembly, instead of the individual components, it can make tracking and determining MOA more complex. Why? Because each component can have one or more MOAs.

For high mast light poles, there are about 20 different Material Methods of Acceptance, mostly APL, some certifications, and a few with sampling and testing requirements.

715-18 Method of Measurement.

The quantities to be paid for will be as follows, completed and accepted:

1. Conduit: Payment will be made in accordance with Section 630.
2. Luminaire and Truss Arm: The Contract unit price will include the truss arm, luminaire with lamp, and all necessary mounting hardware as indicated in the Plans and Standard Plans.
3. Service Point: Payment will be made in accordance with Section 639.
4. Load Center: The Contract unit price will include the enclosure, panel boards, breakers, lightning arrestor, contactors, photo electric switch, grounding, and the concrete pad as shown in the Plans and Standard Plans.
5. Luminaire: The Contract unit price will include the luminaire with lamp and necessary mounting hardware as indicated in the Plans and Standard Plans.
6. Pull Box: Payment will be made in accordance with Section 635.
7. High Mast Lighting Pole Complete: The Contract unit price will include the pole, luminaires with lamps, lowering system, breakers and anchor bolts with lock nuts and washers, and foundation as indicated in the Plans and Standard Plans.

When the SMO assigns pay items to MAC Materials so that MAC can compile the standard JGS, we must include any of the materials or products that the price of the pay item includes. This is what that relationship looks like for one of the pay items for a high mast light pole.

0715 19 11 - HIGH MAST LIGHT POLE, FURNISH AND INSTALL, 80'	
1	346 - Portland Cement Concrete
2	415 - Reinforcing Steel
3	925 - Curing Materials for Concrete
4	931 - Metal Accessory Materials for Concrete Pavement and Concrete Structures
5	962 - Structural Steel and Miscellaneous Metal Items (Other than Aluminum)
6	415 - Reinforcing for Concrete
7	105 - Incidental Precast Concrete Product Certification
8	346 - Structural Portland Cement Concrete

While a high mast light pole or a pay item such as an overhead cantilevered sign are extreme examples, even the most common, straightforward pay items can have more than one MOA.

- Hot mix asphalt has sampling and testing requirements performed at the asphalt production facility to determine if the mix produced is within the targets of the mix design
    - ***Specifications Section 334*** for structural asphalt
    - ***Specifications Section 337*** for friction course
- Then when the asphalt is placed on the roadway, it is tested for smoothness either with a Rolling Straightedge or a laser profiler under ***Specification Section 330***
- In more recent FDOT Specification workbooks, additional testing may be required for the bond between the asphalt and the base or between the different asphalt layers as described in ***Specification Section 300***

When ***Contract Documents*** have “included in the cost” language, MAC Materials are associated to pay items that are related to a different ***Specification Section*** that the one the MAC Material is based on.

- ***Specification Section 346*** has no pay items
- ***Specification Section 400*** has a few pay items
    - There are only a few concrete pay items based on ***Specification Section 400*** for example 0400 2 19 - CONC CLASS II (SOUND BARRIER WALL)
- Other ***Specification Sections*** have pay items that include structural concrete in the cost of the pay item.
    - There are nearly 3,000 pay items with MAC Material 346 assigned to it
        - The pay items are for things like inlets, manholes, concrete endwalls, drilled shafts, concrete barrier walls, retaining walls, pole footings and sign footings

Here is a specific example.

- In ***Specification Section 521***, ***Article 521-2 Materials*** references ***Specification Section 346*** and ***Specification Section 347***

521-2 Materials.

Meet the following requirements:

Flowable Fill	Section 121
Concrete	Sections 346 and 347
Reinforcing Steel	Section 415
Joint Materials*	932-1
Barrier Delineators *	Sections 705

*Use products listed on the Department's Approved Product List (APL).

- ***Article 521-9 Basis of Payment*** states:

521-9 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including all reinforcing, concrete, flowable fill, soil stabilization, miscellaneous materials, and incidentals necessary to complete the work.

Payment will be made under:

Item No. 521- 1-	Median Concrete Barrier - per foot.
Item No. 521- 5-	Concrete Traffic Railing - Bridge - per foot.
Item No. 521- 6-	Concrete Parapet - per foot.
Item No. 521- 8-	Concrete Barrier - with Junction Slab - per foot.
Item No. 521- 9-	Opaque Visual Barrier - per foot.
Item No. 521- 72-	Shoulder Concrete Barrier - per foot.

In MAC, a barrier wall pay item has all these Materials associated to it along with MAC Material 346.

0521 72 1 - BARRIER WALL CONC (BRIDGE)			
1	346 - Portland Cement Concrete	Susan Musselman	3/22/2016
2	415 - Reinforcing Steel	KENNETH BERGUM	5/21/2018
3	931 - Metal Accessory Materials for Concrete Pavement and Concrete Structures	Susan Musselman	3/25/2016
4	993 - Object Markers & Delineators	Susan Musselman	4/27/2018
5	415 - Reinforcing for Concrete	KENNETH BERGUM	5/21/2018
6	105 - Incidental Precast Concrete Product Certification	Susan Musselman	10/11/2019
7	932FRP - Fiber Reinforced Polymer (FRP) Reinforcing Bars	Susan Musselman	11/7/2019
8	346 - Structural Portland Cement Concrete	Susan Musselman	12/17/2019

B. Pay Items with Optional Materials

Some pay items may have more than one material option. In these cases, SMO assigns all material options to the pay item. This means PAs may see assignments on the JGS that are not used by the Contractor. This means PAs need to be familiar with the ***Specification*** language that gives Contractors different options and discuss with the Contractor ahead of time which option will be used. Here are some of the common examples. There are many more not included in this document.

1. Optional Base

Most people think the MOA language for base is found in ***Specification Section 285***. That's not where most of it is located. There is some minor language about deficient thickness, but ***Specification Section 285*** is for Method of Measurement and Basis of Payment.

- The MOA language for rock base is found in ***Specification Section 200***
- The MOA language for asphalt base is found in ***Specification Section 234***

Table 285-1 lists options and their thicknesses per base group.

Table 285-1
Optional Base Groups 1 through 7

Base Materials	Base Group (Base Group Pay Item)						
	1 (701)	2 (702)	3 (703)	4 (704)	5 (705)	6 (706)	7 (707)
Limerock, LBR 100	4"	5"	5-1/2"	6"	7"	8"	8-1/2"
Cemented Coquina, LBR 100	4"	5"	5-1/2"	6"	7"	8"	8-1/2"
Shell Rock, LBR 100	4"	5"	5-1/2"	6"	7"	8"	8-1/2"
Bank Run Shell, LBR 100	4"	5"	5-1/2"	6"	7"	8"	8-1/2"
Calcarenite, LBR 100	4"	5"	5-1/2"	6"	7"	8"	8-1/2"
Recycled Concrete Aggregate, LBR 150(1)	4"	5"	5-1/2"	6"	7"	8"	8-1/2"
Graded Aggregate Base, LBR 100	4-1/2"	5-1/2"	6-1/2"	7-1/2"	8-1/2"	9"	10"
Type B-12.5	4"(3)	4"(3)	4"(3)	4"(3)	4-1/2"	5"	5-1/2"
B-12.5 and 4" Granular Subbase, LBR 100 (2)	-	-	-	-	-	-	-
RAP Base	5"	-	-	-	-	-	-

(1) Do not use on interstate roadways.
(2) The construction of both the subbase and Type B-12.5 will be bid and used as Optional Base. Granular subbases include limerock, cemented coquina, shell rock, bank run shell, recycled concrete aggregate and graded aggregate base. All subbase thicknesses are 4" minimum prior to adding the required prime coat.
(3) Based on minimum practical thickness.
(4) To be used for widening, three feet or less.

FDOT used to have separate pay items for each option. For example, there was a pay item 285-001-XX1 for limerock (4"), another pay item 285-001-XX2 for cemented coquina (4"), another pay item 285-001-XX3 (4") for shell rock and so on. All Base Group pay items used to follow this pattern.

Now there is one pay item for each base group. For Base Group 01, it's 0285701. This makes it easier for the PA when tracking pay item quantities and making payment on monthly and final estimates. There's only one to track instead of nine. However, when addressing MOA requirements, the standard JGS will include all MAC Materials for all options. In the case of Base Group 01, that's rock base, graded aggregate base, or asphalt base.

0285701 - OPTIONAL BASE, BASE GROUP 01			
1	200 - Rock Base	Dino Jameson	4/6/2016
2	204 - Graded Aggregate Base	John Shoucair	10/17/2016
3	234 - Superpave Asphalt Base	Marcus Madison	5/20/2016
4	911 - Limerock Material for Base and Stabilized Base	John Shoucair	4/18/2016
5	300 - Prime and Tack Coats	CURTIS CURL	8/1/2022

Most of the time, it's going to be limerock base. However, some contracts may call exclusively for graded aggregate base or asphalt base using Special Provisions, TSPs, or plan notes. PAs need to be familiar with the contract language in their contract(s) to ensure when the option is specified, that is the material that is used.

When the Contractor identifies which option(s) they are using, any other MAC Materials assigned on the standard JGS can be ignored.

- If the Contractor says they're using rock base, MAC Materials 200 (for sampling and testing) and 911 (for the delivery tickets) apply and 204, 234 and 300 can be ignored
- If the Contractor says they're using graded aggregate base, MAC Materials 200 (for sampling and testing) and 204 (for the delivery tickets) apply and 911, 234 and 300 can be ignored
- If the Contractor says they're using asphalt base, MAC Materials 234 (for sampling and testing – normally logged into MAC under MAC Material 334 if there is structural and base asphalt on the contract) 330 and 300, apply and 200, 204 and 911 can be ignored

2. Optional Drainage Pipe

Some drainage pipe pay items (for example, **0430171143 - PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 60"SS**), can be either concrete or flexible pipe. Further, flexible pipe can be either metal pipe or plastic pipe. For these pay items, SMO assigns MAC Materials for concrete and flexible pipe as well as excavation and geosynthetic materials since ***Specification Section 430*** says that they are also included in the cost of the pipe. Because these are all materials under the QC Program, the Contractor's source of the pipe must be listed on the Contractor Quality Control Plan.

0430171143 - PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 60"SS			
1	120 - Excavation and Embankment	Dino Jameson	12/12/2017
2	449 - Precast Concrete Drainage Products	Susan Musselman	10/10/2019
3	943 - Corrugated Steel Pipe and Pipe Arch (Including Underdrain)	CHASE KNIGHT	3/22/2016
4	948 - Optional Drainage Products and Liner Repair Systems	CHASE KNIGHT	1/27/2016
5	985 - Geosynthetic Materials	Dino Jameson	10/20/2016

3. Light Pole Footers

Specification Section 715 includes language when the pole or sign are large enough to warrant a drilled shaft footer that the footer can be either precast or cast in place.

> ***715-9.1 Concrete Foundations****: Provide foundations for light poles of the sizes and shapes shown in the Plans. Construct precast or cast-in-place concrete foundations in accordance with the Standard Plans. Obtain precast foundations from a plant that is currently on the Department's Production Facility Listing. Producers seeking inclusion on the list shall meet the requirements of Section 105.*

Cast in place footers requirements:

- A Structural Concrete production facility on the Contractor Quality Control Plan with drilled shaft mix design(s) listed for the footer(s)
- Sampling and testing for the structural concrete and reinforcing steel
  - Certified Mill Analysis for the reinforcing steel
  - Possible certification documents if metal or plastic spacers are used
- Confirmation of APL acceptance for the curing compound

Precast footer requirements:

- Incidental Precast Concrete Products production facility/facilities on the Contractor Quality Control Plan
- A certification document from each Incidental Precast Concrete Products production facility meeting the requirements of MAC Material 105

These are just some examples of how the method of payment can make MOA more complex. PAs need to be familiar with the contract documents and be on the lookout for MOA references in other parts of the contract besides the Materials or Acceptance Articles. Not all Specification Sections have an Acceptance Article.

Chapter 6 – How does MAC use MOA Requirements?

MAC Specs have identifiers for most MOA requirements. MAC uses these to detect data that is out of tolerance. This chapter describes how MAC designates possible MOA issues. A few examples are provided. MAC flags 39 different MC review conditions that fall under one of seven Exception Categories or MC Review Processes.

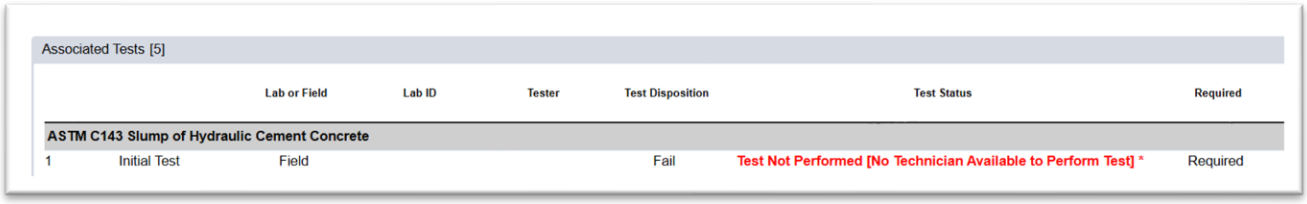
A. Exception Categories

1. Missed Frequency

MAC will not detect all missed frequency situations. It can detect a few described below. It cannot detect if enough samples were taken. The Sample Number Lot Number reports are designed to identify possible missed samples.

A. Required Tests not Performed

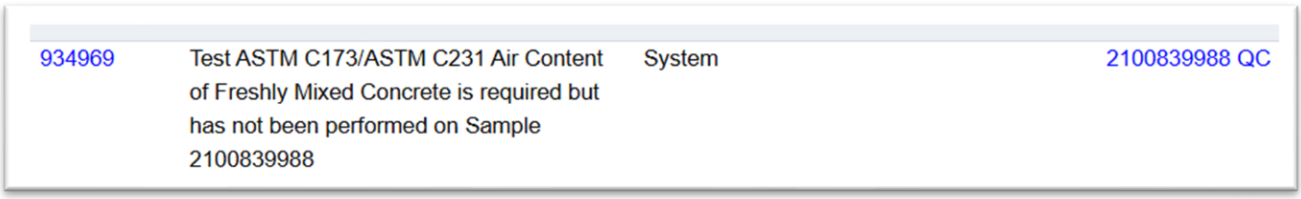
When an acceptance test is designated as required and the user indicates that it was not performed, it is a missed frequency regardless of the reason provided.



Associated Tests [5]

		Lab or Field	Lab ID	Tester	Test Disposition	Test Status	Required
ASTM C143 Slump of Hydraulic Cement Concrete							
1	Initial Test	Field			Fail	Test Not Performed [No Technician Available to Perform Test] *	Required

Required Test Not Performed sample flag



934969	Test ASTM C173/ASTM C231 Air Content of Freshly Mixed Concrete is required but has not been performed on Sample 2100839988	System	2100839988 QC

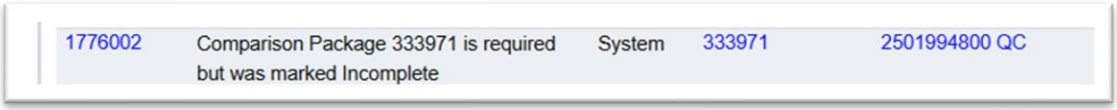
Required Test Not Performed MC Review finding

B. Incomplete Packages

Incomplete Comparison Packages may indicate missed frequency based on the reason provided by the user.

Comparison Package ID	Comparison Definition	Comparison Type	Comparison Status	Incomplete Comparison Package Reason
361	Local Material Mainline Mod. Proctor	Includes Original Sample	Incomplete Package	Missing or Damaged QC Sample

Incomplete Comparison Package Missing QC Sample

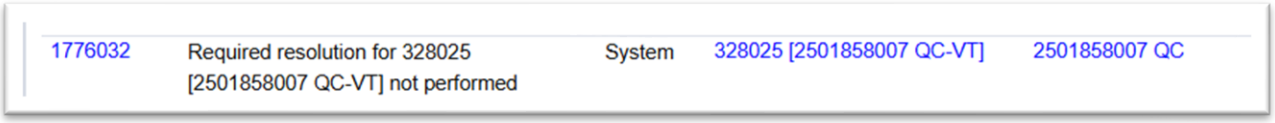


Incomplete Comparison Package MC Review finding

C. Resolution Not Performed

When a comparison package status is Does Not Compare, resolution is always required. When resolution cannot be performed, the user indicates Resolution Not Performed and provides the reason. It is a missed frequency regardless of the reason provided.

Comparison Package Resolution Not Performed reason

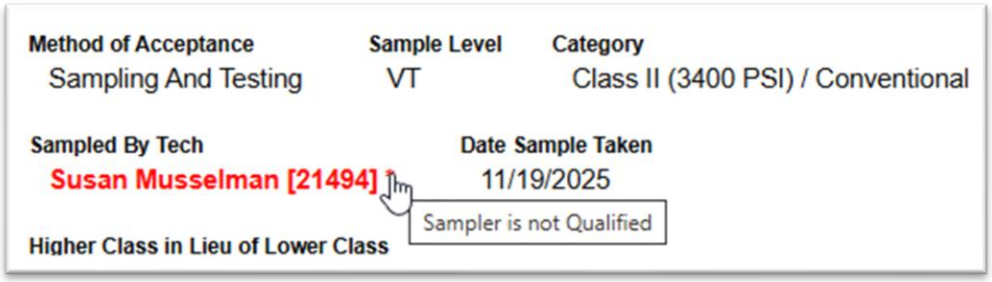


Comparison Package MC Review finding

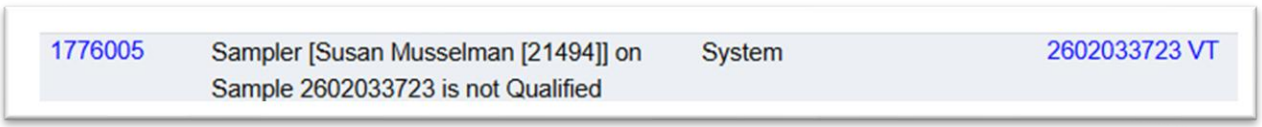
2. *Qualifications*

A. Unqualified Sampler

Acceptance samples must be sampled by a qualified sampler. MAC Specs designate when a qualified sampler is required and the qualification area needed. MAC applies a flag when the Sampled By Technician does not have the qualification area in an acceptable status on the Date Sample Taken.



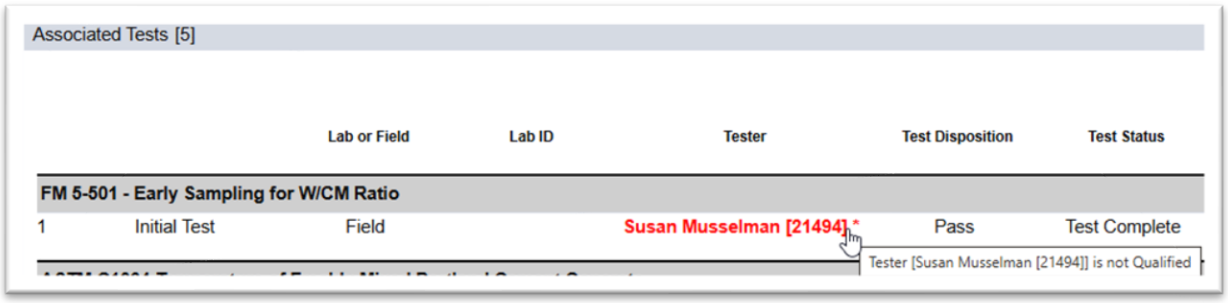
Unqualified Sampler sample flag



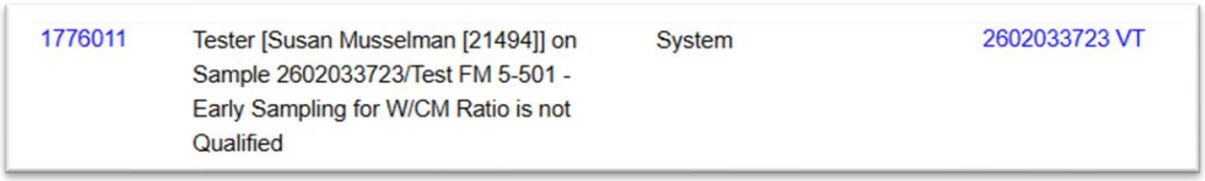
Unqualified Sampler MC Review finding

B. Unqualified Tester

Acceptance tests must be tested by a qualified tester. MAC Specs designate on the acceptance test when a qualified tester is required, and the qualification area needed. MAC applies a flag when the Test Performed By Technician does not have the qualification area in an acceptable status on the Date Test Performed.



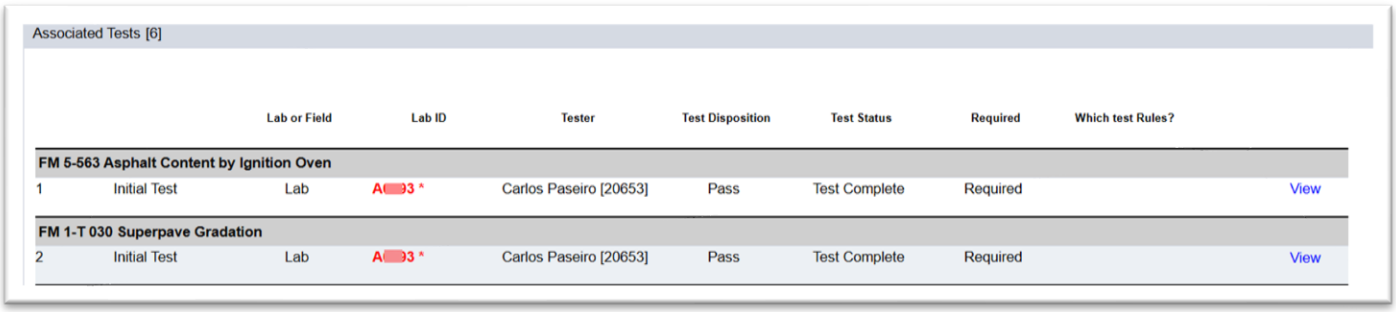
Unqualified Tester sample flag



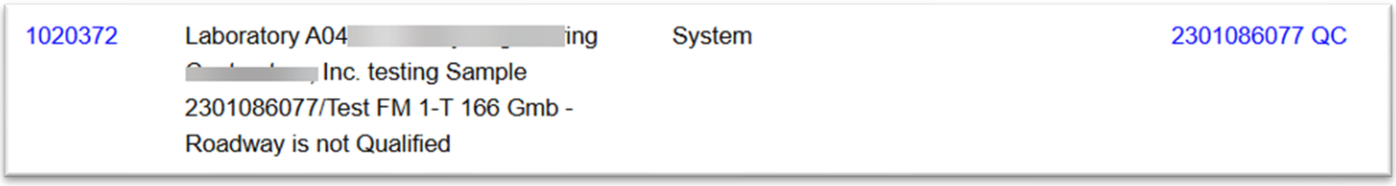
Unqualified Tester MC Review finding

C. Unqualified Lab

Acceptance tests must be tested in a qualified lab. MAC Specs designate on the acceptance test when a lab tester is required, and the test method needed. MAC applies a flag when the Lab in the LAB ID field on a test does not have the test method in a valid status on the Date Test Performed.

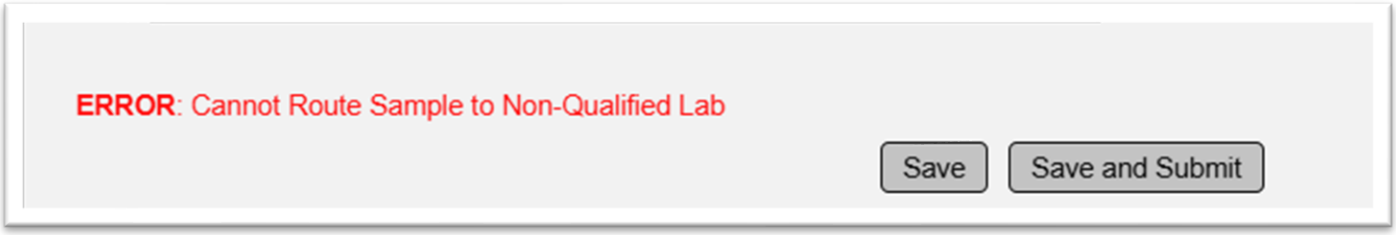


Unqualified Lab sample flag



Unqualified Lab MC Review finding

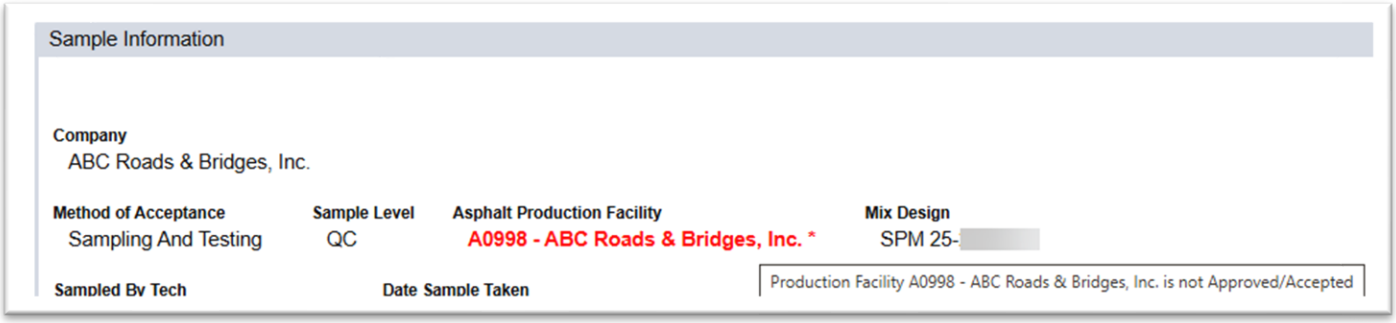
NOTE: This occurs very rarely in MAC as there are safeguards to creating samples with an unqualified lab or routing samples to an unqualified lab.



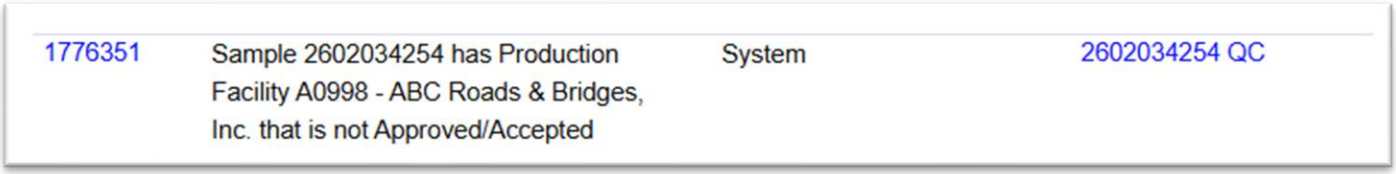
D. Unqualified Production Facility

Another rare occurrence is an unqualified production facility flag and finding. In some cases, these can be false due to a known MAC bug. Review any flags or findings with the appropriate technical experts before processing any resolution.

It is also rare because of all the material types eligible to be on the Contractor QC Plan, only hot mix asphalt, aggregate, or structural concrete production facilities have a MAC sample with the production facility on the login screen. Other material types will require a manual finding.



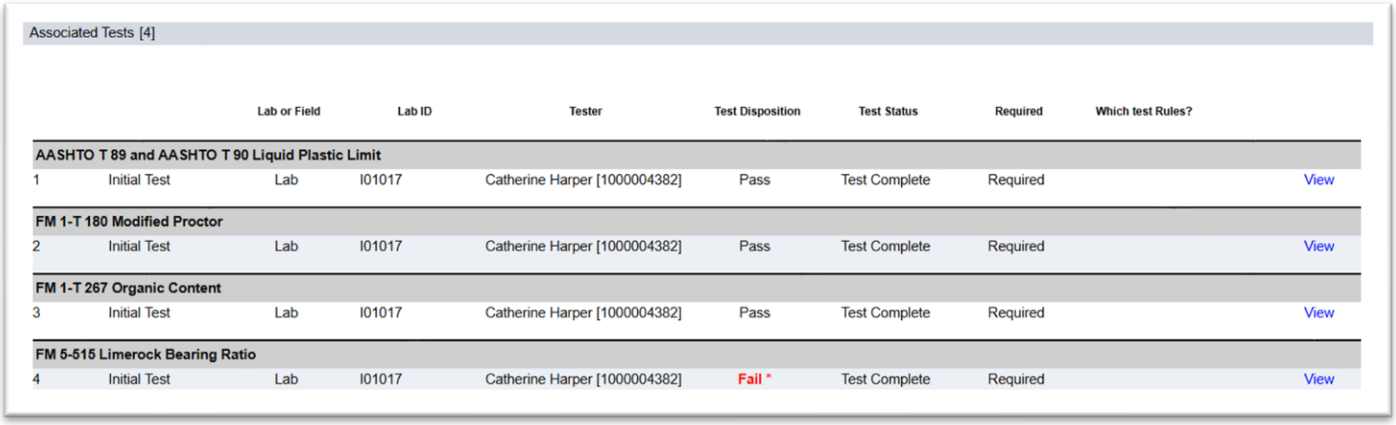
Unqualified Production Facility sample flag



Unqualified Production Facility MC Review finding

3. Nonstandard Materials

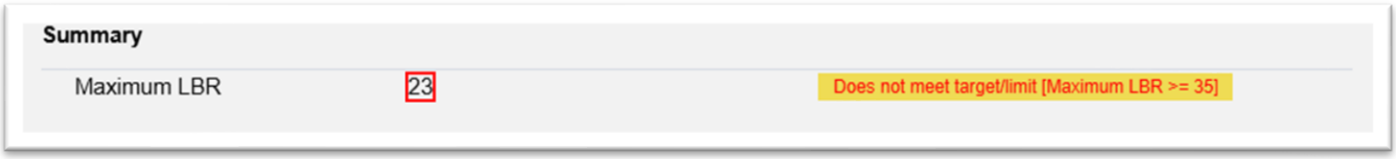
MAC Specs define the limit/range a test result must be to pass on required tests that have Specification limits. MAC flags the test disposition as failing. MAC displays the passing limit on the test next to the result that does not meet that limit.



Associated Tests [4]

		Lab or Field	Lab ID	Tester	Test Disposition	Test Status	Required	Which test Rules?	
AASHTO T 89 and AASHTO T 90 Liquid Plastic Limit									
1	Initial Test	Lab	I01017	Catherine Harper [1000004382]	Pass	Test Complete	Required		View
FM 1-T 180 Modified Proctor									
2	Initial Test	Lab	I01017	Catherine Harper [1000004382]	Pass	Test Complete	Required		View
FM 1-T 267 Organic Content									
3	Initial Test	Lab	I01017	Catherine Harper [1000004382]	Pass	Test Complete	Required		View
FM 5-515 Limerock Bearing Ratio									
4	Initial Test	Lab	I01017	Catherine Harper [1000004382]	Fail *	Test Complete	Required		View

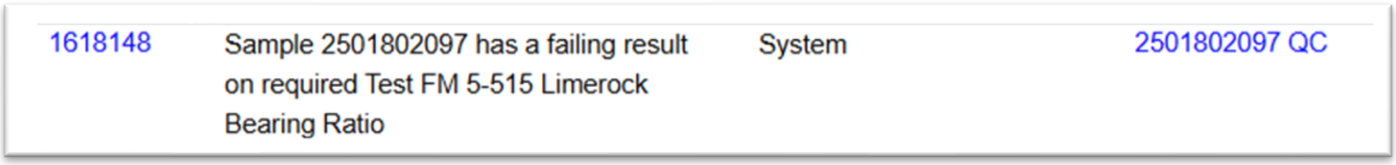
Associated Tests Test Disposition Fail flag



Summary

Maximum LBR	23	Does not meet target/limit [Maximum LBR >= 35]

Test screen failure indicator with target the result does not meet



1618148	Sample 2501802097 has a failing result on required Test FM 5-515 Limerock Bearing Ratio	System	2501802097 QC

Required Test Failing Result MC Review finding

These are not all the conditions MAC uses to indicate when there is an issue. The PA is the primary source of ensuring that all the MOA requirements are met, including those that MAC does not or cannot find. To do that, the PA must be familiar with what makes materials acceptable. See the e MC Review for the PA manual for more information.

B. Other Findings

MAC flags conditions that have a potential to be an MC Review issue but are not in every case. More research is needed to ensure the conditions that trigger the finding are not a true MC Review issue needing MAR.

1. Open Samples

Open sample findings do not appear until the MC Reviewer puts the MC Review in Final Review status. PAs should generate the Open Sample report on a regular basis as the project progresses to ensure samples are being processed in a timely manner. The conditions that trigger an Open Sample Finding are:

- Sample is not Finalized
- Sample is required to be in a comparison package but is not
- Sample is in a comparison package, but Comparison logic was not applied
    - PAs can create comparison packages without applying the comparison logic by selecting the Create Package option instead of the Create Package and Run Compare option
- Comparison Package Status is Does Not Compare and Resolution is either:
    - Not indicated on the Package
        - Resolution was performed, however, resolution sample()s not added and resolution logic not applied to give the package a Resolution Status
    - Package not Indicated Resolution Not Performed
        - Resolution cannot be performed and cannot be; for example, resolution samples are missing

2. Other Conditional Checking Logic

MAC has some findings that are meant to trigger further investigation to see if there is an issue with the sample when there is no specific logic, but the sample has data that indicates there may be an issue. Some conditions are:

- Asphalt Resolution Test failed
- Not an indicator of Nonstandard Material
- PA and MC Reviewer need to verify appropriate acceptance criteria does not also fail
- Resolution Used
- PA and MC Reviewer need to verify appropriate acceptance criteria was applied
- Comparison Package does not Compare
- PA and MC Reviewer need to verify appropriate acceptance criteria was applied
- 346 Sample Quantity Represented is not in CY
- PA and MC Reviewer need to verify frequency was not missed
- 350 Sample Quantity is not in SY
- PA and MC Reviewer need to verify frequency was not missed

3. Job Guide Schedule

Because there are requirements to ensure the Nonstandard Job Guide Schedule (NSJGS) is complete as defined by ***Specification Section 105***, there are 5 findings to remind PAs and MC Reviewers to check that they comply with those requirements. They are:

- Project is missing an initiated JGS
    - There is no NSJGS entry
- Project is missing Initial report
    - Applies to both NSJGS and Work Order NSGJS
        - Each generates its own finding
- Project is missing Final report
    - Applies to both NSJGS and Work Order NSGJS
        - Each generates its own finding