

# Specification Section 346

## Subarticle 346-1

### ORIGINATION

Date: 6-4-2025

Name: James Greene

Email: James.Greene@dot.state.fl.us

### COMMENTARY

To encourage independent process control and streamline concrete materials testing in the field, SMO proposes the Concrete Quality Assurance Acceptance Program for FY 26-27.

### INTERNAL COMMENTS AND RESPONSES

*(Please note all comments and responses are verbatim as received. The Specifications Office does not alter typos or grammar.)*

BLACK = Comment **BLUE** = Specifications Response **GREEN** = Change Made to Specification

Name: Deborah Ihsan

Date: 6-30-25

COMMENT: The justification form (page 1 of draft) does not mention deleting light weight concrete though the spec item on 346-2.4.2 is retained, “ Lightweight fine aggregate (LWFA) for internal curing- At the Contractor’s option, use LWFA to reduce the early-age concrete cracking by replacing some of normal fine aggregate with saturated LWFA.” Central office may review if there is any contradiction since 346-2.4.2 is retained.

### **RESPONSE:**

The reference to lightweight line aggregate in section 346-2.4.2 is for internal curing, and not for the production of lightweight concrete

### **ACTION TAKEN:**

No action is needed for section 346-2.4.2. A remaining reference to lightweight concrete in Table 346-7 was removed.

# Specification Section 346

## Subarticle 346-1

### ORIGINATION

Date: 6-4-2025

Name: James Greene

Email: James.Greene@dot.state.fl.us

### COMMENTARY

To encourage independent process control and streamline concrete materials testing in the field, SMO proposes the Concrete Quality Assurance Acceptance Program for FY 26-27

### INDUSTRY COMMENTS AND RESPONSES

*(Please note all comments and responses are verbatim as received. The Specifications Office does not alter typos or grammar.)*

BLACK = Comment **BLUE** = Specifications Response **GREEN** = Change Made to Specification

Name: Jacki Hart

Date: 7-10-25

COMMENT: The reduction in frequency: confirm this option is only available after 10 lots (or 5) have been tested meeting the criteria outlined in this spec. If criteria is met, the lots would be "100CY per day or one day's production, whichever is less" correct? So, the 100 cy lots would only kick in if you did more than 50CY in one day?

Under QA, please confirm that the FDOT is still doing the lab compression testing under the materials contracts if QA is selected. ie the CEI is not hiring an independent lab under the CEI contract. If CQC is elected, the contractor must hire an FDOT approved lab and pay for all QC testing, correct?

Can the contractor elect to do CQC and then later change to QA? Should there be a statement that no changes to acceptance method can be made once the first concrete is placed on site.

For QA, confirm there is no range for compressive strength so only a minimum criteria needs to be met.

In section 346-9.1.2.1 "The Engineer will use the following criteria" should be use, not used

Confirm: If CQC is elected: the current testing method is in place where QC tests and VT tests for comparison. The comparison must meet the criteria limits in the spec. Under QA there is only a requirement to meet the minimum PSI with no max limit for strength.

When the Engineer's VT test results do not compare with the QC plastic properties test results, within the limits defined by the Independent Assurance (IA) checklist criteria, located in

Materials Manual Chapter 5, disposition of the concrete will be at the option of the Contractor. :  
Maybe add that this is in Chapter 5, Section 5.5 so it is easier to find.

#### **RESPONSE:**

**No change was made to the reduced sampling frequency. For reduced frequency, a LOT is still defined as 100 CY rather than 50 CY or one day's production.**

**Regarding QA Acceptance, each District will determine how to best coordinate QA sampling and testing responsibilities.**

**Changing Acceptance methods will not be allowed due to the logistics and coordination required for the appropriate resources. Section 346-9.2 was revised for clarification.**

**Compressive strength must only meet the minimum as defined in the specification. There is no allowable range.**

**The recommended revision to 346-9.1.2.1 will be made (i.e., the word 'used' will be replaced with 'use').**

**The QA compressive strength tests will only need to meet the minimum strength. There is no maximum compressive strength limit for production samples. Comparisons with QC samples will not be required.**

**The recommended change 346-8.1 will be made (i.e., the reference to Materials Manual Chapter 5.5 rather than Materials Manual Chapter 5).**

#### **ACTION TAKEN:**

**The following sentence was added to 346-9.2. Change in acceptance method will not be allowed after the Pre-construction conference.**

**The recommended revision to 346-9.1.2.1 was made (i.e., the word 'used' will be replaced with 'use').**

**The recommended change 346-8.1 was made (i.e., the reference to Materials Manual Chapter 5.5 rather than Materials Manual Chapter 5).**

Name: Davidge Turley

Date: 7-10-25

COMMENT: 346-4.1 indicates to test each load of concrete for slump which is directed to the Contractor. Is it the intent of the specification change for the Department to perform this task as well? If it is the intent for the Department to perform slump test on every truck for drilled shaft mixes, then should specification 455 section C. drilled shafts (455-15.8) be changed to where the Department tests the slurry? It would be inefficient for the slurry tester to be QC as normally the QC slurry tester is the QC concrete tester.

**RESPONSE:**

**The Department will perform plastic concrete tests on the initial delivery from each plant of each concrete design mix each day. The Contractor may perform additional process control tests at their desired frequency. Contractor process control tests are not required and will not be recorded by the Department.**

**The intent of this specification change was to address structural concrete acceptance. Revisions to slurry testing in 455 will need further review and coordination. Any required changes will be addressed in the next revision cycle.**

**ACTION TAKEN:**

**The following has been added to 346-9.1**

**The Engineer will perform plastic properties tests of concrete on all trucks prior to the first corrected truck and the corrected truck.**

Name: Jeff Begovich

Date: 7-10-25

COMMENT: Should the Acceptance cylinders be investigated for low strength and the core results determine that the strength is good the contractor should be compensated for those costs. With Acceptance testing there is no path for the contractor to confirm or deny failing test results. It basically defeats the purpose of a checks and balances system.

**RESPONSE:**

**QA compressive strength test results will be final. An Engineering Analysis will be performed to investigate low compressive strength test results.**

**ACTION TAKEN:**

**No action required.**

Name: John Savage

Date: 7-17-25

COMMENT: Contractors often use early break data to expedite construction activities such as backfilling around structures, load drilled shafts, etc. Under the default acceptance method, will the engineer cast cylinders for early breaks, or will that effort be the contractor's responsibility?

Under the default acceptance method, if the QA cylinders (cast by the engineer) are lost or damaged, what happens?

Would the contractor be responsible for coring the structure in question, and be responsible for the coring cost (346-9.2.4)?

If yes, this seems to assign additional costs to the contractor for an event outside of the contractor's control, or would the contractor be reimbursed for this cost?

#### **RESPONSE:**

**The Department will collect up to six additional cylinders per day of production when requested by the Contractor. The Contractor will be responsible for performing compressive strength tests.**

**The party responsible for lost or damages cylinders will pay for coring operations. To clarify further, a change was made to state that the Contractor should provide a curing box of appropriate size in addition to providing a secure area for testing and initial curing of test specimens.**

#### **ACTION TAKEN:**

**The following has been added to 346-9.1.1.**

**At the request of the Contractor and upon approval by the Engineer, the Engineer will collect up to six additional cylinders per day of production for Contractor process control. The Contractor will be responsible for performing compressive strength tests for the process control cylinders.**

**Provide a curing box of appropriate size and secure area for testing and initial curing of test specimens.**

**If more than one of the three QA cylinders from a LOT is lost, missing, damaged or destroyed while in the area secured by the Contractor, the Contractor will core the structure at no additional expense to the Department to determine the compressive strength. Prior to coring, obtain Engineer's approval for coring the structure and its proposed coring location.**

**When more than one of the three QA cylinders from a LOT is lost, missing, damaged or destroyed while in the area secured by the Contractor, the Contractor will core the structure at no additional expense to the Department to determine the compressive strength. Prior to coring, obtain Engineer's approval for coring the structure and its**

### **proposed coring location.**

Name: Andrew Pinkham

Date: 7-19-25

COMMENT: The revision to this section directly impacts the testing processes at precast producers. Because many other governing documents reference Section 346, this presents a situation where the precast producers are already questioning if they need to continue performing QC testing on materials, and if they elect to use the proposed option, there may be unintended shifts in risk and workload.

### **RESPONSE:**

**The QA Acceptance method was not intended for use at pre-cast facilities. A change in 346-9.2 was added as clarification.**

### **ACTION TAKEN:**

**The following were added to 346-9.2.**

**The CQC Acceptance method will be the only Acceptance method allowed for offsite pre-cast operations**

Name: Patrick Hewell

Date: 7-21-25

COMMENT: “Acceptance Samples” being randomly selected individual samples, whereas Quality Control/Process Control is a much broader contributing and mandatory aspect among pre/during/post Process of the production operation and produced materials thereof and entails critical direct communication between the Prime Contractor QC & Producer QC as noted in the 346-6 Quality Control.

If the revision intent is simply to streamline the “Acceptance Sample” procedure, then it should be further understood that Section 346-6 Quality Control remains as being mandated & expected. By clarifying the intent, this would also eliminate any cost expectations before/after the procurement process stemmed by confusion of what would be QC mandatory related expectations of the overall Quality Process being both Process Control / QC in contrast to the revised stand-alone random “Acceptance Sampling” section being of two fundamentally different categories and objectives. This clarification would also eliminate such confusion as early compressive strength sample responsibility, communications of qc plastic property results between Contractor and Producer as described in 346-6, etc.

Question Being: Is the intent of this revision only for the criteria of the “Acceptance Sample Testing” and thus NOT to be confused with Quality Control and/or Process Control expectations as described in section 346-6. With Section 346-6 Quality Control to remain in the 346 Specification?

### **RESPONSE:**

**The Department will perform plastic concrete tests on the initial delivery from each plant of each concrete design mix each day. The Contractor may perform additional process control tests at their desired frequency. Contractor process control tests are not required and will not be recorded by the Department.**

**The Department will collect up to six additional cylinders per day of production when requested by the Contractor. The Contractor will be responsible for performing compressive strength tests and any additional testing.**

**ACTION TAKEN:**

**The following has been added to 346-9.1**

**The Engineer will perform plastic properties tests of concrete on all trucks prior to the first corrected truck and the corrected truck.**

**At the request of the Contractor, the Engineer will collect up to six additional cylinders per day of production. Any additional testing requested by the Contractor shall be the responsibility of the Contractor.**

Name: Dan Hurtado

Date: 7-25-25

COMMENT: I appreciate the suggested changes to Section 346. I am not sure they capture all of the intended change in direction. Several locations in 346-9.2 still address VT testing, holds, etc. Request a call with the FTBA Structures Committee, SMO and SDO to go over the proposed changes before moving forward.

**RESPONSE:**

**A meeting was scheduled with Dan Hurtado to discuss issues and concerns.**

**ACTION TAKEN:**

**Concerns and issues were addressed during the meeting.**

Name: Ken Musacchio

Date: 7-28-25

COMMENT: Regarding the following change : "346-9.2.3 Strength Test Definition: The strength test of a LOT is defined as the average compressive strength tests of at least three companion cylinders cast from the same sample of concrete and tested at the same age."

The proposed change to strength test definition does not take into account release or early acceptance cylinders. The average of two cylinders for these field-cured cylinders has been acceptable in these circumstances.

Please leave as-is.

**RESPONSE:**

**Compressive strength test results from two cylinders will be acceptable following curing practice for release, opening to traffic, and other process control measurements. Acceptance requires compressive strength from three cylinders.**

**ACTION TAKEN:**

**The following has been added to 346-9.2.3.**

**For acceptance, the strength test of a LOT is defined as the average compressive strength tests of three companion cylinders cast from the same sample of concrete and tested at the same age.**

Name: Ivan Lasa

Date: 7-28-25

COMMENT: "346-8.1 Contractor Quality Control Requirements: When Contractor Quality Control (CQC) Acceptance is chosen, ...." It is not clear who will choose the acceptance method. Is it the Contractor? The Engineer?? Or specified by the Department in the Contract documents.

346-9.1.2.1 Reduced Frequency for Acceptance Tests: ..... . The Engineer will used the following criteria:" It is not clear if the reduced frequency of testing is mandatory. Or if it is at the discretion of the Engineer. There may be other factors on the project that would suggest not reducing the frequency of tests (e.g.: placing concrete in rough salt water, concerns regarding dewatering or form work, etc.)

**RESPONSE:**

**Section 346-9.2 directs the Contractor to select CQC acceptance during the Pre-construction meeting if desired.**

**ACTION TAKEN:**

**No action needed.**

Name: Jeong Ko

Date: 7-29-25

COMMENT: 1. For 346-9.1: It said the default acceptance method is QA Acceptance. Section 346 is for Structural Portland Cement Concrete including Precast / Prestressed Concrete. Comment: Should "Except for Precast/Prestressed Concrete" be added?



2. For 346-8: The following paragraph, stating Technicians requirement and others, was deleted. "Perform plastic concrete tests on the initial delivery from ~~~for delivery, placement and finishing meets the requirements of this specifications."

Comment: Should this deleted section be reverted to its original content with minor revisions for the following reasons?

2a. 346-8.1 applies only to Contractor Quality Control Requirements.

2b. QA Acceptance Technicians also meet the requirements of Section 105.

2c. QA Acceptance Technicians also need to be present and perform tests.

2d. Other

3. For 346-6.4: This section isn't changed/revised. In second paragraph, "If a load doesn't not fall within the tolerances, test each subsequent load and the first adjusted load."

Comment: In QA Acceptance Method, not Contractor QC Acceptance Method, should Contactor perform plastic property test on each subsequent load and the first adjusted load?

### **RESPONSE:**

**The QA Acceptance method was not intended for use at pre-cast facilities. A change in 346-9.2 was added as clarification.**

**QA technicians should meet requirements of Section 105 and be present for sampling and testing as needed.**

**The Department will perform plastic property tests on each subsequent load and the first adjusted load.**

### **ACTION TAKEN:**

**The following sentences were added to 346-9.2.**

**The CQC Acceptance method will be the only Acceptance method allowed for offsite pre-cast operations.**

**The following sentence was added to 346-9.1.1.**

**The Engineer will provide QA technicians meeting the requirements of Section 105 to perform tests as required during the placement operation.**

**The Engineer will perform plastic properties tests of concrete on all trucks prior to the first corrected truck and the corrected truck.**

Name: Alan McMillan

Date: 7-30-25

COMMENT: 346-8 Plastic Concrete Sampling and Testing:

- The section removes the requirement that testing technicians be qualified per Section 105, "Ensure QC technicians meeting the requirements of Section 105 are present and performing tests throughout the placement operation." This is moved to 346-8.1 for Contractor Quality Control Requirements, but omitted from the separate, alternate 346-9 Acceptance Sampling and

Testing.

- Suggest changing "The Engineer will perform plastic properties tests and cast a set of three QA cylinders for all structural concrete incorporated into the project." to "The Engineer will perform plastic properties tests throughout the placement operation using testing technicians qualified per Section 105 and will cast a set of three QA cylinders for all structural concrete incorporated into the project."

346-9.1.2.1 Reduced Frequency for Acceptance Tests:

- This section indicates that reduced frequency is an option, and describes the criteria for approval, but does not specify what initiates reduced frequency. If the Contractor is not performing the testing, presumably it will not be at the Contractor's request. Who is this rule intended for? If CEI requests reduced frequency, does that affect the Department's payment to said CEI, since they are now testing less?
- Suggest either A) removing entirely or B) specify what personnel can initiate the request.

#### **RESPONSE:**

**Agree that QA technicians should meet requirements of Section 105 and be present for sampling and testing as needed.**

**Reduced frequency for acceptance tests has not changed. The Contractor will request reduced frequency if desired and the Engineer will approve if no issues are identified. Removal of this option may be considered in the future.**

#### **ACTION TAKEN:**

**The following sentence was added to 346-9.1.1.**

**The Engineer will provide QA technicians meeting the requirements of Section 105 to perform tests as required during the placement operation.**

**No action required for reduced frequency.**

Name: Herb Potter

Date: 7-31-25

COMMENT: This change does not make a lot of sense. This reverts the testing requirements back on the CEI, thereby increasing costs of having someone testing at every pour as well as watching the placement which are often not in the same place when pouring caps, decks etc. Additionally there are very rarely failures in concrete mixes any more. This is a great place to actually save costs by keeping the testing with QC, and switching VT to over the shoulder observation of the plastic properties testing with the option to cast IV cylinders at a random frequency.

#### **RESPONSE:**

**This change eliminates required QC testing as well as QC-VT comparisons and resolutions which will reduce overall costs and streamline operations. A robust Department**

**Verification or Quality Assurance program is a FHWA requirement.**

**ACTION TAKEN:**

**No action is required.**