

**SUPERIOR MIX**

**PRODUCERS LEVEL 1 QUALITY CONTROL PROGRAM  
Non- Structural (347)**

**MIAMI PLANT # 87-555**

**REVISED  
06/20/11**

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# Quality Control Plan

## General Information

A. Superior Mix Tax Id # 23-8014904355-0  
6945 NW 53 Terrace  
Miami, FL 33166  
Phone #: 305-887-0030  
Fax #: 305-887-0091

B. Plant Number # 00-000 Permanent Plant at Miami Dade  
County  
6945 NW 53 Terrace  
Miami, FL 33166  
Phone #: 305-887-0030  
Fax #: 305-887-0091

(GPS) X/Y Coordinate: 25.821972—80.310056

Contact Person: Ernesto Hernandez Phone: 786-586-8153  
Located at: address above

E-Mail Address: Ernesto@superiormix.net

QCP Received: QCP Dated: Date Reviewed:  
Evaluated By: Accepted, By:

### Production Notification:

The District Materials Engineer will be notified of daily production for FDOT project by Hare Lumber & Ready Mix, Plant Managers by fax or Email that will Identify Plant#, Project #, Mix#, and CY or M<sup>3</sup> to be batched.

### 105-3.2 Personnel

#### 105-3.2.1 Qualifications

General Manager: Ernesto Hernández

Q. A. Manager, Pedro Otero (ACI, DOT) TIN: O36167067  
Batch Operator, Marcelo Ferras (DOT) TIN: F62054075  
Aggregate Testing Technician, Andres Rosas (ACI, DOT) TIN: R22000076  
Aggregate Testing Technician, Orlando Conde (ACI, DOT) TIN: C53064057  
Quality Control Tech, Orlando Conde (ACI, DOT) TIN: C53064057  
Quality Control Tech, Andres Rosas (ACI, DOT) TIN: R22000076  
Mix Design Tech: Pedro Otero (ACI, DOT) TIN: O36167067

### **105-3.2.2 Level of Responsibility**

#### **Quality Control Manager Responsibilities Described:**

The quality control Manager shall have the following duties and responsibilities:

1. Implement policies and procedures of quality control program.
2. Maintain liaison with Project Manager and the FDOT on all activities relating to quality control.
3. Supervise the activities of all quality control technicians, ensuring sufficient manpower in all areas related to quality control testing and inspection.
4. Review all quality control procedures to ensure compliance with project specifications.
5. Ensure all quality control records are properly prepared and reviewed.
6. Ensure that quality control activities are performed in accordance with documented instructions and procedures.
7. Develop and maintain a filing, storage and retrieval system for quality control records.

#### **Batch Operator Responsibilities Described:**

1. Supervising the activities of all plant personnel including truck Drivers
2. Ensure all plant equipment are maintained and in compliance with FDOT specifications
3. Ensure that all materials are stored as per FDOT specifications
4. Responsible for signing concrete certification/delivery tickets.

#### **Design Mix Technicians Responsibilities Described:**

1. Designing concrete mixes, and running trial mixes in the lab.
2. Perform tests on hardened properties of concrete such as strength of cylinders.

#### **Quality Control Technicians Responsibilities Described:**

1. Perform tests on plastic concrete such as slump, temperature, air content, making and curing concrete cylinders and calculating water to cementitious materials ratio as required by FDOT.
2. Ensure that quality control records are properly kept at the plant.  
Laboratory Supervisor/ Mix Design Technician.

### **Plant Managers Responsibilities Described:**

1. Supervising the activities of all plant personnel including truck Drivers.
2. Ensure all plant equipment are maintained and in compliance with FDOT specifications.
3. Ensure that all materials are stored as per FDOT specifications.
4. Responsible for signing concrete certification/delivery tickets.

### **3.3 Raw Materials Information**

#### **3.3.1 Fine Aggregate**

##### **Vulcan Materials Pit #87-049 screening sand**

Mr. Nestor Vega  
12201 NW 25 Street  
Miami, FL 33182  
Phone: 305-594-4336

**Sampling locations** will be from belt to the batch plant bins, from the batch bin discharge or stockpile.

**Sampling frequency** will be a minimum of **1 sample per month (30 days)**. When found out of tolerance will be sampled weekly until 3 consecutive tests are found to be within the specified control tolerance. Control tolerance will be  $\pm 0.15$  from the suppliers stated mean F.M. of 2.88 for screening.

When the F.M. varies from suppliers stated mean by more than 0.15 the supplier will be notified and the frequency will be increased to 1 sample per week until the F.M. is within the control limits for 3 consecutive tests. All materials found out of tolerance ( $\pm 0.20$ ) will not be used. Gradations will meet Section 346 Division III Section 902. When material is found to be out of gradation requirements the supplier will be notified and sampling frequency will be increased to once a week until 3 consecutive tests fall within control tolerance limits.

#### **Coarse Aggregates**

##### **Titan America, LLC Pit # 87-145 #67 rock**

Mr. Robert Melendez  
11000 N.W. 121 Way  
Medley, FL. 33178  
Phone: 305-827-7441

**Sampling locations** will be from belt to the batch plant bins, from the batch bin discharge or stockpile.

Minimum **sampling frequency** will be a minimum of **1 sample per month (30 days) for gradation**. Minimum sampling frequency for absorption will be 1 per month (30 days). Control tolerance will be established for the critical sieve at 5% from maximum specifications limits.

When the **control tolerance** is exceeded the supplier will be notified and sampling frequency will be increased to 1 sample per week until 3 consecutive tests fall within the control tolerance limits. Materials out of specifications will not be used.

## **Water and Ice**

**Water source** is provided by a well.

**Specification Compliance:** see attachment. (Water Analysis)

**Testing:** Complete chemical analysis will be performed by A & S Laboratory prior to initial production (complete analysis appended) and at a minimum of one test per 3 months until 8 consecutive test results are passing there after the frequency will be a minimum of **one test per 6 months**. If a **failure** occurs the testing frequency will be put back to **one test per 3 months**.

A & S Laboratory, Inc  
2550 Success Drive  
Odessa FL 33556  
Phone: 727 375 0388

**Recycled Water:** Water source/ N/A  
Specification Compliance: N/A  
Testing: N/A  
Purpose: N/A

**Reclaimed Water:** Water source: N/A  
Specification Compliance: N/A  
Testing: N/A  
Purpose: N/A

**Ice:** If required Water source: City  
Specification Compliance: 346  
Method of introduction: manually (by hand) and/or mechanical blowing.

## **Cement**

The source will be Cemex Miami - **CMT 24**. The cement types are as follows:

**Type I/II cement** will be used in concrete all classes of concrete  
Mill Certification and Delivery Ticket See attachment.

Mr. Jeffrey Passerello  
Miami, FL. 33178  
Phone: 305-229-2925

## **Admixtures**

Euclid Chemicals  
19218 Redwood Rd.  
Cleveland, Ohio  
Mr. Carlos Conejo  
Phone: 239-633-0438

The following admixtures for use in concrete supplied by BASF Construction Chemicals, LLC:

**AEA 92 S (S924-0023)** Air Entraining Admixtures

**Eucon LR (S924-0303)** Water reducing & Retarder

Verification of Compatibility: Compatibility of admixtures with component materials has been demonstrated through trial mix evaluation, and performance history.

Admixtures are measured by pulse counter meters sight gauges, and are introduced into the mixer with the batch water automatically by use of compressed air injection method.

### **105-3.3.3 Disposition of Failing Materials**

When gradation results deviate from control limits, supplier will be notified by phone or follow up letter testing will be increased to 1 sample per shipment until test results are within the control limits for 3 consecutive tests. Failing materials will not be used in production of FDOT concrete.

### 105-3.4 Storage Facilities for Raw Materials

**Aggregate** received by truck will be unloaded and stockpiled into properly labeled ground storage. Ground Storage consists of three concrete walls and concrete base or sufficient enough space or berms to prevent contamination. Loader operator will be instructed to avoid contamination between materials in bins and underlying materials.

Aggregates are moved by front-end loaders to ground level hopper with belt feed to batch plant bins, material is gravity fed from storage bins to scale and introduced into Mixer

**Cementitious materials** are received by trucks tanker and pneumatically conveyed into a locked, watertight properly labeled silo fill tube. To prevent contamination and to assure that the right cementitious materials are not going in the wrong silo. Cement is weighted and charged into the truck mixer with the aggregates by ribbon loading method.

Cementitious material is discharged into the scale by gravity and auger fed method. Concrete is mixed and delivered in truck pneumatic discharge mixer.

**Admix materials** are delivered in a bulk Tanker and pumped into properly labeled storage tanks.

Admix bottles are viewed by batch operator on camera and are located in a covered shed. Each bottle is identified. Electronic signal is sent to the batch computer and then to the dispensing bottle. Admixtures are discharged from dispensing bottle thru lines to mix with water and then into the mixer.

A **fully automated Command Batch Alkon (Spectrum VI)** batch computer system weighs the designated mix. The batch system consists of load cells on cement, water and aggregate scales with digital display to the batch computer. Admixtures are introduced with the headwater into the mixer followed by introduction of aggregates and cementitious materials.

### 105-3.5 Production Equipment:

**Mixers:** Truck mixers are of the inclined axis revolving drum type. Mixers will meet the requirements of the materials manual and FDOT 347. Truck Manufactured by McNeilus.

See Attachments:

**Method of charging mixer:** Plant will meet the requirements of 347 for mixing and Delivering Concrete and materials.



## **Batch sequence for Regular and High Slump concrete:**

### **I. Regular Slump Concrete**

#### **1. Truck Mixer**

- a. Truck mixer will be discharged by the driver prior to batching to ensure that the drum is empty.
- b. The truck water tank will be filled by the driver prior to or during batching.

#### **2. Measuring of Materials**

- a. Moisture determinations will be carried out by the Batch Plant Operator or under his direction thereof prior to batching and subsequently as required by Department Specification.
- b. Scales will be zeroed by the Plant Operator prior to the start of batching.
- c. The Plant Operator will verify all weight or measurement tolerances per Department Specification.
- d. Coarse than fine aggregates will be weighed on the aggregates scale.
- e. Cement then pozzolan (fly ash or slag), if required, will be weighed in a separate scale from that of the aggregates scale.
- f. Water will be weighed or metered into the batch.
- g. Admixtures will be measured via a pulse counter meter and a volumetric sight gauge.
- h. When all of the materials have been weighed within tolerances, discharging into the truck mixer will begin.

#### **3. Charging The Truck mixer**

- a. The truck mixer drum will be set at charging speed by the driver.
- b. The Plant Operator will sequence the batch.
- c. Approximately 70% to 90% of the batch water will be discharged into the drum.
  - i. Percentages of initial discharge of water will be regulated, if required at the discretion of the Plant Operator, to ensure high quality concrete.
- d. Admixtures, sequenced as per manufacture's recommendation, will be discharged into the drum along with the water.
- e. Approximately 10% to 15% of the aggregates will begin charging.
  - i. Percentages of aggregates will be regulated, if required at the discretion of the Plant Operator, to ensure high quality concrete.
- f. After approximately 10% to 15% of the total aggregates weight has been discharged, cementitious material(s) will begin charging by ribbon loading along with the aggregates.
- g. Discharging of the aggregates and cement will continue until the scales are empty followed by the remainder of the batch water.

- i. The number of drops, not to exceed two, will be at the discretion of the Plant Operator. Weight measurements will be within ranges established on the scale certification.
  - h. At this point, the drum will slowed to agitating speed and the truck will be moved to the wash down area by the driver.
- 4. Wash Down
  - a. The truck revolution counter will be zeroed by the driver prior to mixing. The drum will be brought to mixing speed per department Specification.
  - b. The water used to wash the fins will be taken from the truck mounted water tank. The water tank will not be refilled. If slump adjustments are needed after the completion of the batch or on subsequent batches, the Plant Operator will make the adjustments. Adjustments will be made by using jobsite allowable water and / or additional moisture determinations.
  - c. At the completion of the wash down, the driver will regulate the truck mixer drum to agitating speed. The mixing revolutions will be verified by the driver and reported to the Plant Operator who will then document the number of revolutions on the delivery ticket.
  - d. When all pertinent documents are completed, the driver will proceed to the jobsite with the delivery ticket.
  - e. The driver will conduct jobsite activities within the limitations specified within Department Specification.

## **II. Drill Shaft and Seal Concrete**

1. The discharge rate of the batch plant will be held to a maximum of 175 lbs per second.
2. The truck mixer will be loaded using approximately 70% of the required total batch water.
3. The truck mixer will then be moved to the wash down area where it will be allowed to mix.
4. The balance of the batch water will then be added using a calibrated meter. This will be accomplished under the direct supervision of the Plant Operator.
5. The total number of mixing revolutions of the mixer drum will not exceed 100 at the plant.
6. The load size will be held to a maximum of 9.0 cubic yards (6.9 cubic meters).
7. All plants will batch drill shaft and seal concrete using a two drop system if a full load is required. The Plant Operator will ensure this will be carried out.
  - a. Approximately 35% of the batch water will be discharged up front for the first drop. The second drop will follow with 35% of the batch water up front. The balance will be added as described in “3” and “4” above.
  - b. Percentages of initial discharge of water will be regulated, if required at the discretion of the Batch Operator, to ensure high quality concrete.

Mixers will be inspected by the producer at least once each week to meet the FDOT Specification for Mixers and Material. A copy of the weekly mixer inspection shall be carried in the cab of each FDOT certified mixer See

Attachment. The **water tank calibration date (done once a year)** will be entered on the FDOT card.

**Scales:** The scales will be calibrated and maintained in accordance with the Materials Manuals. The accuracy of scales and water meters shall be checked in the range that it is being used and must be within one half (0.5%) of maximum load required. The **scales and water meter will be inspected every three months by a certified scale company** registered with the Bureau of Weights and Measures of the Florida Department of Agriculture and meet the standards of chapter 531 of the Florida Statutes. Copies of calibration and certification will be maintained at the plant, in plant files and readily accessible to FDOT personal.

**Scale –Rite Inc.**  
10871 SW 188<sup>th</sup> St. Unit # 16  
Miami, FL, 33197  
Phone: 786-586-4518

Admixture Dispenser: Method of transporting is by truck tanker, discharged into above ground storage tanks.

**Admixture measuring Dispensers are certified annually** by the admixture supplier calibration certification will be maintained at the plant, in plant files and readily accessible to FDOT personal.

Euclid Chemicals  
19218 Redwood Rd.  
Cleveland, Ohio  
Mr. Carlos Conejo  
Phone: 239-633-0438

### **105-3.6Plant Requirements:**

#### **3.6Plant Identification:**

##### **Vince Hagen Concrete Plant**

**Aggregate Bin:** 100 Tons 3 compartments

**Aggregate Batcher:** 10 cubic yards capacity Aggregate Batcher

**Cement Silo:** Gravity Feed / Screw Conveyor Feeder  
#1 350 BBL (1400 cubic feet)  
#2 350 BBL (1400 cubic feet)

**Cement Weight Batcher** 10 cubic yards capacity

Push button manual aggregate batching controls with manual and computer recording system.

**Load Cells:**

Sensotronics - Aggregate Load Cell 3K Sensotronics  
Capacity: 31,000# x 10# Grads  
Digital Readout: CNCELL Model PA 8101

Cement Load Cell (4) 1K Sensotronics  
Capacity: 7,000# x 10# Grads  
Digital Readout: CNCELL Model PA 8101

Water Meter 3”

**105-3.6.2 Process Control**

**Aggregate Moisture:**

Two hours prior to batching samples for aggregate moisture determination shall be obtained at either the belt conveying material to the batch plant or from discharge of the batch plant bins Free **moisture** shall be determined by **Cook out for fine aggregate and coarse aggregates**. On concrete **placement expected to exceed 3 hours, an additional moisture test shall be performed** at approximately half way through the batching operations. These values will be used for an adjustment of batch proportions.

Aggregates shall be maintained in a condition of total absorption and with some free moisture. As a minimum, batch weights shall be adjusted for a change in free moistures at any time there is a change of more than one-half of one percent.

Wetting coarse aggregate ground storage with water. Coarse aggregate shall be maintained in a condition of total absorption and with some free moisture. Coarse aggregate is delivered to the stockpiles and sprinkled continuously for

24 hours prior to use. Documentation of coarse aggregate and fine moisture condition is to be provided for in the Specifications and or Contract Documents.

### **Fresh Concrete:**

Concrete will be transported to the placement site in truck mixers meeting the requirements of section 347. Trucks will be free of previously loaded materials, including washout water. The drum will be reversed prior to loading. The drum will be completely charged, revolution counters will be set to zero, and then mixing will begin.

Concrete materials will be loaded, mixed, and delivered by methods described in the FDOT specifications.

Drum hopper and tail fins will be washed with metered water. This will be added to the total batch water and subtracted from the allowable job site water. No un-metered water shall enter the drum or tail fin area.

A company issued delivery ticket using Attachment "E" as an example will be provided with each load.

In the event that the slump of the concrete is adjusted at the plant, the water will be metered from the truck water tank.

### **Chloride Testing**

Superior Mix will submit samples to an approved independent testing laboratory at the frequency required to comply with the above referenced specifications. The chloride samples will be obtained at the same period a sample for the plastic limits is collected. The independent lab will be notified that there is a maximum **14 days** turn around for chloride test results. The testing lab will be:

A & S Laboratory, Inc  
2550 Success Drive  
Odessa FL 33556  
Phone: 727-375-0388  
Email: aslabs@verizon.net

The chloride content shall be determined as the average of 3 tests on samples taken from concrete. The range of results of the 3 tests shall not exceed a chloride content of 0.08 lb/yd<sup>3</sup> (0.05 kg/m<sup>3</sup>) for valid determination. When test results are

outside the 0.08 lb/yd<sup>3</sup> (0.05 kg /m<sup>3</sup>) allowable ranges, an additional 3 tests will be run until the test results are within the required range. Chloride content for prestressed concrete and applications that require Type II cement plus pozzolans shall not exceed 0.40 lb/yd<sup>3</sup> (0.25 kg/m<sup>3</sup>). Reinforced Concrete shall not exceed 0.70 lb/yd<sup>3</sup> (0.40 kg/m<sup>3</sup>). Chloride content limits do not apply for Non Reinforced concrete.

Sampling and testing frequency will comply with the current Specifications and Contract Documents.

Control level for corrective action will comply with the current Specifications and Contract Documents.

### **Temperature:**

Unless a hot weather mix designed to comply with Specifications and Contract Documents is in use the supplier will take measures to control the temperature not to exceed specifications. The supplier will use Ice/Chilled water to regulate the concrete temperature.

If **chilled water** is used, it will be done by portable chiller.  
The **ice used** for this project is made from city water.

Introduction Ice or chilled water when concrete temperatures are anticipated to exceed 85 degrees F (30 degrees C). Design mixes developed for hot weather concreting will be acceptable until the temperature reaches 100 degrees F (40 degrees C).

### **105-3.7 Other Requirements:**

#### **3.7.1 Copy of Certification:**

Example of concrete delivery ticket, see attached.

#### **3.7.2 Statement of Compliance:**

See Attached

### **105-3.7.4 Documentation Procedure:**

Location of Documents:

Records will be kept at the plant and in a location made readily accessible to FDOT personnel for inspection and review.

Records: All records outlined in materials manual shall be kept for three years and shall be available to the FDOT upon request

## **TESTING FACILITIES:**

### **105-3.10 Testing Laboratories:**

Laboratory: Dunkelburger Engineering & Testing, Inc.  
Accredited by CMEC  
Location: 1225 Omar Rd.  
West Palm Beach, FL. 33405  
Phone: 561-689-4299

Test Methods: 346

#### Material Testing:

##### Aggregates:

Sampling	FSTM FM 1-T 002/ASTM D75
Gradation	AASHTO T27 / ASTM C 136
Moisture	AASHTO T255/ASTM C 566
Absorption	FSTM FM 1-T 084 / ASTM C128

##### Concrete Testing:

Slump	ASTM C143
Air	ASTM C231 or ASTM C173
Making and curing	ASTM C31
Test Cylinders	
Testing Cylinders	ASTM C39
Taking and Testing	ASTM C42
Drilled Cores	
Early Sampling of	FM5-501
Fresh Concrete	
Yield Test	ASTM C138
Temperature	ASTM C1064
Sampling Freshly	
Mixed Concrete	ASTM C172

## **ATTACHMENTS**



