



Concrete Related Specifications & Documents

Summary of Changes
01/2015 – 01/2017





Section 346 Portland Cement Concrete



346-1 Description

- Changed name of Producer listing to match Materials Acceptance and Certification System (MAC)
- Administrative changes in wording to match MAC

346-2 Materials

346-2.2 Types of Cement

- Added Type IL cement for use in all classes of concrete and as an alternate to Type II (MH) in mass concrete
- Restricted high alkali cement in extremely aggressive environments or in mass concrete

346-2 Materials

346-2.2 Types of Cement cont'd

- Clarified the percent by weight of individual components for blended cement (Type IS, IP, IL)
- When ternary blends are used, clarified the test requirements
- Designated the surface resistivity values for ternary blends in the various environments

346-2 Materials

346-2.2 Types of Cement cont'd

- Clarified Table 1 by adding Type IL cement to the moderately and extremely aggressive environment columns. Added ternary blend cements to the extremely aggressive environment column

346-2 Materials

346-2.3 Pozzolans and Slag

- Deleted the requirement for fly ash or slag in class II (3400) and class I (3000) concrete used in a slightly aggressive environment
- Deleted any references to ternary blend cements and moved information to 346-2.2

346-2 Materials

346-2.4 Coarse Aggregate Gradation

- Added requirement for input from the District Materials Office with producer Quality Control Plan acceptance when using size #8 or #89 in a concrete design mix

346-2 Materials

346-2.5.2 Air Entrainment Admixtures

- Clarified the use of an air entrainment admixture for dry cast concrete

346-2 Materials

346-2.5.5 Corrosion Inhibitor Admixture

- Clarified precast concrete when using a non-chloride admixture types C or E

346-3 Classification, Strength, Slump and Air Content

346-3.1 General

- Clarified the air content range for all classes of concrete
- Clarified various acronyms
- Added footnote g to table 2 and reference g in the column for target slump value
- Placed footnotes a thru f in table format

346-3 Classification, Strength, Slump and Air Content

346-3.2 Drilled Shaft Concrete

- Clarified ambient temperature conditions for drilled shaft concrete for summer and normal conditions
- Clarified requirement to perform slump loss test at the anticipated ambient temperature

346-3 Classification, Strength, Slump and Air Content

346-3.3 Mass Concrete

- Clarified the requirement for the Mass Concrete Control Plan
- Clarified the duties of the Specialty Engineer
- Clarified reduced monitoring of the elements
- Clarified what a Mass Concrete Control Plan is not required for



346-3 Classification, Strength, Slump and Air Content

346-3.4 Flowing Concrete for Precast/Prestressed Concrete

- Deleted requirement to perform surface resistivity test

346-5 Sampling and Testing Methods

346-5 Table 5

- Updated the Method column
- Added ASTM C1758 to the Method column
- Added footnote requiring the concrete cylinders to be delivered to the lab in their molds and the lab to demold the cylinders

346-6 Quality Control

346-6.1 General

- Updated the requirements to meet the new Specification 105. Deleted requirement for the narrative

346-7 Mixing and Delivering Concrete

346-7.3 On-site Batching and Mixing

- Deleted requirement for the narrative in the Contractor's Quality Control Plan

346-7 Mixing and Delivering Concrete

346-7.5 Concreting in Hot Weather

- Clarified the high end of the temperature requirement

346-7 Mixing and Delivering Concrete

346-7.6 Adding Water to Concrete at the Placement Site

- Clarified where water may be added
- Clarified what happens when the slump is outside the tolerance range

346-7 Mixing and Delivering Concrete

346-7.7 Sample Location

- Deleted requirement for the narrative in the Contractor's Quality Control Plan
- Clarified the requirements for the sample correlation

346-8 Plastic Concrete Sampling and Testing

- Clarified QC sampling frequency increase when five loads in two days of production for the same mix design are outside the specified tolerances
- Deleted reference to amending the Contractor's QC plan

346-9 Acceptance Sampling and Testing

346-9.1 General

- Clarified the test age for compressive strength

346-9 Acceptance Sampling and Testing

346-9.2 Sampling Frequency

- Deleted reference to amending the Contractor's QC plan

346-9 Acceptance Sampling and Testing

346-9.2.1 Reduced Frequency for Acceptance Tests

- Clarified exception for the precast/prestress production facility

346-9 Acceptance Sampling and Testing

346-9.5 Resolution Procedure

- Clarified the comparison results for the verification cylinders and the verification hold cylinder
- Expanded the test window for the QC and V hold cylinders
- Deleted reference to the Contractor's Quality Control Plan



346-10 Investigation of Low Strength Concrete and Structural Adequacy

346-10.1 General

- Clarified and reorganized this subsection
- Engineer will determine whether to core or require a structural analysis
- Before taking core samples the Engineer must approve

346-10 Investigation of Low Strength Concrete and Structural Adequacy

346-10.2 Investigation and Determination of Structural Adequacy

- Clarified the requirements for determining whether to make an investigation at no additional cost to the Department
- Clarified the core strength limit



346-10 Investigation of Low Strength Concrete and Structural Adequacy

346-10.3 Coring for Determination of Structural Adequacy

- Clarified the material to be used to repair core holes

Questions?





Section 347

Portland Cement Concrete – Class NS

347-2 Materials

347-2.1 General

- Added recycled asphalt pavement (RAP) may be used and the quantity to be used

347-2 Materials

347-2.4.2 Aggregate Storage

- Deleted requirement for aggregate type to be identified
- Deleted the access for the Engineer to sample aggregate

347-3 Production, Mixing and Delivery

347-3.1 Concrete Production Requirements

- Identified the type of production facility approved to produce for the Department
- Clarified the moisture test requirement and the time frames
- Clarified the title of agency the scale company must be registered with

347-3 Production, Mixing and Delivery

347-3.3 Delivery

- Defined the allowable time for delivery to include placement

347-4 Control of Quality

347-4.1 Concrete Mix Design

- Clarified the submittal process and the requirements to accompany the submittal

347-4 Control of Quality

347-4.3 Records

- Clarified the records which are required to retained at the production facility

347-5 Certification and Acceptance

347-5.1 General

- Clarified when the delivery ticket must be furnished
- Clarified the reference to the Contract Documents
- Deleted the option for the Engineer to accept the concrete

Questions





Section 921

Portland Cement and Blended Cement

921-1 General

921-.1.1 Type of Cement

- Added type IL blended cement and deleted type IP(MS)



921-1 General

921-.1.2 Alkali Content

- Deleted only
- Deleted alkali silica reactive test for both coarse and fine aggregate
- When high alkali cement is used new test requirements are spelled out



921-1 General

921-.1.3 Heat of Hydration

- Added type IL cement requiring a heat of hydration
- Deleted reference to ASTM C186 and the requirement at seven days
- Added a reference to ASTM C1702 and the three day requirement



921-2 Terminology

- Placed definitions in alphabetical order



921-5 Quality Control Plan

921-5.1 General

- Changed copy of the monthly mill test report to monthly mill test report
- Changed FDOT work to Department work



921-5 Quality Control Plan

921-5.2 Acceptance of Portland Cement

- Deleted the word printed
- Changed the word provided to submitted



921-5 Quality Control Plan

921-5.5 Sampling of Cement

- Deleted the 10 pound size and added the one quart size



Questions





Section 923

Water for Concrete

923-2 Evaluation of Water for Concrete

923-2.1 General

- Deleted provide and added submit to the producers test data submittal



923-3 Chemical Requirements

923-3.1 Testing

- Added acronym for Standard Methods



923-3 Chemical Requirements

923-3.2 Recycled and Reclaimed Water

- Table 1 -- Added Standard Method 2540B to the test method column and deleted AASHTO T26 from the test method column
- Table 1 – Increased the maximum (%) for total chlorides in the maximum (%) column
- Table 1 – Redefined total sulfates in the chemical test column



923-3 Chemical Requirements

923-3.3 Open Bodies of Water and Well Water

- Renamed the Alkalinity Calculated in terms of Calcium Carbonate by deleting Acidity or
- Table 2 -- Added Standard Method 2320B and 2540E to the test method column and deleted AASHTO T26 from the test method column
- Table 2 – Increased the maximum (%) for total chlorides in the maximum (%) column



923-3 Chemical Requirements

923-3.3 Open Bodies of Water and Well Water Cont'd

- Table 2 – Deleted total sulfates in the chemical test column as a requirement



Questions





Section 924

Admixtures for Concrete

924-2 Acceptance of Admixtures

924-2.2 Certification

- Administrative change – deleted the word provide and added submit



924-2 Acceptance of Admixtures

924-2.7 For Corrosion Inhibitors

- Administrative change – deleted the word furnish and added submit, also deleted the word with



Questions





Section 929 Pozzolans and Slag

929-1 Basis for Source Approval

929-1.1 General

- Administrative change – added the word Section and deleted the -3
- Changed name of Producer listing to match Materials Acceptance and Certification System (MAC)



929-1 Basis for Source Approval

924-1.2 Approved Laboratory

- Clarified paragraph for ease of reading
- Added requirement for proficiency sample results to be forwarded to the State Materials Office



929-2 Fly Ash

924-2.2 Fly Ash (Class F)

929-2.2.1 Petroleum Coke Class F

- Deleted test method ASTM C1012, ASTM C1202, ASTM G109, and FM 5-522
- Added test method FM C1012 and FM 5-578



929-2 Fly Ash

924-2.2 Fly Ash (Class F)

929-2.2.2 Bark Ash Class F

- Added requirements for improved results when tested and compared to ASTM C618 Class F



929-2 Fly Ash

929-2.3 Fly Ash (Class C)

- Added requirements for improved results when tested and compared to ASTM C618 Class C
- Added other durability test in accordance with 929-2.2.1



929-2 Metakaolin

929-4.1 General

- Deleted the requirement for a crystalline silica on the material safety data sheet
- Deleted test method ASTM C1012, ASTM C1202, ASTM G109, and FM 5-522
- Added test method FM C1012 and FM 5-578



929-2 Metakaolin

929-4.1 General

- Clarified requirement for an independently approved testing laboratory



Questions





Materials Manual

Volume II Section 9.2

Materials Manual Vol II Sect 9.2

9.2.1 Purpose

- Administrative changes in wording to match MAC



Materials Manual Vol II Sect 9.2

9.2.2 Authority

- Administrative change in reference only



Materials Manual Vol II Sect 9.2

9.2.3 Scope

Administrative change for clarity and consistency with other Material Manuals



Materials Manual Vol II Sect 9.2

9.2.4 References

Administrative change for clarity and consistency with other Material Manuals



Materials Manual Vol II Sect 9.2

9.2.5 General Information

- Administrative changes in wording to match MAC



Materials Manual Vol II Sect 9.2

9.2.6 Concrete Producers Roles and Responsibilities

9.2.6.3.1 Wetting Coarse Aggregate Stockpiles, Storage Bins and Silos

- Administrative changes in wording to match MAC



Materials Manual Vol II Sect 9.2

9.2.6 Concrete Producers Roles and Responsibilities

9.2.6.8 Batching Accuracy

- Administrative changes in wording to match MAC



Materials Manual Vol II Sect 9.2

9.2.6 Concrete Producers Roles and Responsibilities

9.2.6.9 Substitution of Materials

- Added requirement for approval of substitution before concrete placement
- Administrative changes in wording to match MAC



Materials Manual Vol II Sect 9.2

9.2.6 Concrete Producers Roles and Responsibilities

9.2.6.9 Substitution of Materials Cont'd

- Added approval of substitution of fly ash, mix may contain only one fly ash and require a new mix number
- Deleted cement and added cementitious



Materials Manual Vol II Sect 9.2

9.2.6 Concrete Producers Roles and Responsibilities

9.2.6.9 Substitution of Materials Cont'd

- Moved wording for clarification
- Deleted the requirement for a chloride test for a fly ash or aggregate substitution new mix design



Materials Manual Vol II Sect 9.2

9.2.7 Design Mixes

- Relocated items to be included with mix design submittals for clarity
- Clarified air content requirement



Materials Manual Vol II Sect 9.2

9.2.7 Design Mixes Cont'd

- Clarified the specification reference
- Clarified where proposed design mixes verified out of state should be sent to
- Deleted requirement to verify hot weather mix design for slab replacement mixes



Materials Manual Vol II Sect 9.2

9.2.7 Design Mixes

9.2.7.1 Concrete trial mix temperature between 68 to 86 degrees F (standard temperature mixes)

- Clarified air content range



Materials Manual Vol II Sect 9.2

9.2.7 Design Mixes

9.2.7.2 Concrete trial mix temperature of 94 degrees F (hot weather mixes)

- Clarified air content range



Materials Manual Vol II Sect 9.2

9.2.7 Design Mixes

9.2.7.4 Concrete trial mix for Specification Section 353 (slab replacement)

- Clarified procedure and test to be performed during verification procedure
- Added time frame for adding the accelerator after completion of initial mixing



Materials Manual Vol II Sect 9.2

9.2.12 Quality Control Program

- Administrative changes in wording to match MAC



Materials Manual Vol II Sect 9.2

9.2.13 Personnel

- Changed certified to qualified personnel



Materials Manual Vol II Sect 9.2

9.2.13 Personnel

9.2.13.2 Qualified Technicians

- Added the word qualified to title of subsection



Materials Manual Vol II Sect 9.2

9.2.13 Personnel

9.2.13.3 Concrete Production Facility Manager of Quality Control

- Clarified the title of the NRMCA qualification
- Administrative changes in wording to match MAC



Materials Manual Vol II Sect 9.2

9.2.14 Records

- Administrative changes in wording to match MAC
- Deleted requirement for the absorption worksheet to be retained



Materials Manual Vol II Sect 9.2

9.2.15 Sampling and Testing of Materials

9.2.15.1 General

- Administrative changes in wording to match MAC
- Deleted requirement for the absorption test in Table 1
- Deleted records retention time frame



Materials Manual Vol II Sect 9.2

9.2.15 Sampling and Testing of Materials

9.2.15.1 General Cont'd

- Deleted plant absorption data to confirm aggregate producer's value



Materials Manual Vol II Sect 9.2

9.2.15 Sampling and Testing of Materials

9.2.15.2 Chloride Testing

- Deleted plant chloride certification requirement
- Added requirement to enter chloride data into the Department's material data base and the time frame for entering data



Materials Manual Vol II Sect 9.2

9.2.15 Sampling and Testing of Materials

9.2.15.2 Chloride Testing

- Administrative changes in wording to match MAC
- Updated SMO contact for accepting chloride testing laboratories
- Updated SMO contacts for submitting failing chloride results



Materials Manual Vol II Sect 9.2

9.2.18 Forms

- Updated Appendix B



Questions

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