



Concrete Related Specifications & Documents

Summary of Changes
01/2013 – 01/2015





Section 346 Portland Cement Concrete

346-2: Materials

- **346-2.1 Materials**
- Changed name of QPL to APL (Approved Products List)

346-2: Materials

- **346-2.3 Pozzolans and Slag**
- Drilled Shaft -- Added the authority to use Ternary Blends (Fly Ash and Slag) and defined the percentages to be used.
- Precast Concrete -- Added the authority to use Ternary Blends (Fly Ash and Slag) and defined the percentages to be used.

346-2: Materials

- **346-2.3 Pozzolans and Slag Cont'd**
- For all other Concrete not shown above -- Defined the percentages to be used.

346-2: Materials

- **346-2.3 Pozzolans and Slag Cont'd**
- Changed the name of Silica Fume, Metakaolin and Ultrafine Fly Ash to Highly Reactive Pozzolans
- Defined the curing process and approval by the Engineer

346-2: Materials

- **346-2.3(6) Pozzolans and Slag Cont'd**
- Defined the procedure for cement replacement
- Deleted curing requirement in accordance with the manufacturer and approved by the Engineer

346-2: Materials

- **346-2.5.3 High Range Water-Reducing Admixtures**
- 346-2.5.3.1 Deleted the restriction to not allow Type I, II, F, G admixtures in Drilled shaft concrete

346-2 Materials

- **346-2.5 Admixtures**
- **346-2.5.5 Accelerating Admixture for Precast Drainage and Incidental Concrete products**
- Clarified title of subsection
- Deleted the environment restriction

346-3: Classification, Strength, Slump and Air Content

- Table 2
- Moved Note (d) to class of concrete column for class IV and above concrete
- Note (d) – Clarified that resistivity must meet or exceed requirements

346-3: Classification, Strength, Slump and Air Content

- **Table 2**

- Added Note (f) to class of concrete column for class IV and above concrete
- Note (f) – Clarified the use of highly reactive pozzolans to enhance strength and workability. Resistivity testing is not required

346-3: Classification, Strength, Slump and Air Content

- **346-3.2 Drilled Shaft Concrete**
- Clarified and reorganized the section

346-3: Classification, Strength, Slump and Air Content

- **346-3.2 Drilled Shaft Concrete**
- Defined the slump loss test requirements and the qualification of the person performing the test
- Defined the temperature requirements for the slump loss test

346-3: Classification, Strength, Slump and Air Content

- **346-3.2 Drilled Shaft Concrete**
- Added the curing requirements for acceptance cylinders before moving to the laboratory
- Removed requirement to cast strength cylinder and clarified the engineering analysis requirement should the elapsed time be exceeded.

346-3: Classification, Strength, Slump and Air Content

- **346-3.3 Mass Concrete**
- Clarified the person designated to inspect and approve the installation of monitoring devices
- Added requirement to provide summary sheet from the data logger and what must be reported on it

346-3: Classification, Strength, Slump and Air Content

- **346-3.3 Mass Concrete**
- Added the provision to request reduced monitoring of same least dimensioned mass concrete elements and discussed the support requirements for the request

346-4: Composition of the Concrete

- **346-4.2 Chloride Content Limits for Concrete Construction**
- **346-4.2.2 Control Level for Corrective Action**
- Defined the period of time the failing chloride test covers

346-5 Sampling and Testing Methods

- Table 5
- Clarified type of equipment to be used for verification testing

346-7: Mixing and Delivering Concrete

- **346-7.2 Transit Truck Mixing**
- **346-7.2.1 Transit Time**
- Added reject concrete exceeding the maximum transit time
- Added a possible exception to the rejection

346-7: Mixing and Delivering Concrete

- **346-7.4 Concreting in Cold Weather**
- Redefined the minimum air temperature

346-7: Mixing and Delivering Concrete

- **346-7.5 Concreting in Hot Weather**
- Redefined the minimum temperature for the range of hot weather concrete

346-7: Mixing and Delivering Concrete

- **346-7.6 Adding Water to Concrete at the Placement Site**
- Deleted the initial slump test before adding water

346-9: Acceptance Sampling and Testing

- **346-9.1 General**
- Deleted inspections in lieu of plastic properties testing at the precast plants
- Clarified when data is not verified in the verification process

346-9: Acceptance Sampling and Testing

- **346-9.2 Sampling Frequency**
- Update Table 8, deleted maximum

346-9: Acceptance Sampling and Testing

- **346-9.5 Resolution Procedure**
- Clarified procedure for comparing verification and quality control samples for resolution
- Clarified when a lot is verified

346-12: Reduction for plastic Properties

- Added certified to clarify the invoice type

Questions?





Continue with Other Specifications



Section 347 Portland Cement Concrete Class NS

Section 347 Portland Cement Concrete Class NS

- No major changes to Section 347

Questions?





Section 901 Coarse Aggregate

901-1 General

- **901-1.2 Deleterious Substances**
- Clarified welded wire fabric – Deleted word Fabric and added word Reinforcement

Questions?





Section 902 Fine Aggregate

Section 902

Fine Aggregate

- No major changes to Section 902

Questions?





921 PORTLAND CEMENT AND BLENDED CEMENT

921 PORTLAND CEMENT AND BLENDED CEMENT

- No major changes to Section 921

Questions?





923 WATER FOR CONCRETE

923

WATER FOR CONCRETE

- No major changes to Section 923

Questions?





929 POZZOLANS AND SLAGS

929

POZZOLANS AND SLAGS

- No major changes to Section 929

Questions?





Materials Manual 9.2 Volume II

9.2.4 GENERAL INFORMATION

- Deleted the “B” status the Department may place plant in

9.2.6 CONCRETE PRODUCERS ROLES & RESPONSIBILITIES

- **9.2.6.1 Cementitious Material**
- Update title of highly reactive pozzolans and defined.

9.2.6 CONCRETE PRODUCERS ROLES & RESPONSIBILITIES

- **9.2.6.1.2 General Requirements**
- Moved requirement to check scales up to at least the maximum load normally handled on each respective scale

9.2.6 CONCRETE PRODUCERS ROLES & RESPONSIBILITIES

- **9.2.6.4 Water Measuring Devices**
- Defined the total mixing water

9.2.6 CONCRETE PRODUCERS ROLES & RESPONSIBILITIES

- **9.2.6.4.1 Batch Adjustments for Materials**
- **Batch Adjustments for Moisture**
- Deleted the option to continue testing until a passing result is obtained

9.2.7 DESIGN MIXES

- Clarified this section
- Moved submittal data required to accompany design mix submittal to the end of the section, behind 9.2.7.2
- Added requirement for specific gravity to be on all material certificates for cementitious material

9.2.7 DESIGN MIXES

- **Concrete trial mix temperature between 68°F to 86°F**
- Deleted the air content range and showed a maximum

9.2.7 DESIGN MIXES

- **Concrete trial mix temperature of 94°F**
- Deleted the air content range and showed a maximum
- Deleted the extended mixing requirement for precast/prestressed

9.2.7 DESIGN MIXES

- **9.2.7.1 Hot Weather concrete trial mix for extended transit time mixes**
- Updated the title of the subsection

9.2.7 DESIGN MIXES

- **9.2.7.2 Concrete trial mix for Specifications Section 353 (slab replacement)**
- Updated the title of the subsection

9.2.8 Drilled Shaft Concrete

- Updated the Slump Loss Test (SLT) procedures for both laboratory and field and temperature requirements
- Mixes approved based on aggregate substitution does not require a new SLT

9.2.9 Plant Batching Requirements

- **9.2.9.3 Scales**

- Added requirement to check scales up to at least the maximum load normally handled on each respective scale

9.2.11 Mixing and Delivering Concrete

- **Transit Mixer**
- Deleted the authorizing of the BPO to adjust the water on the delivery ticket
- Added requirement to print delivery ticket before leaving for the jobsite

9-2.13 PERSONNEL

- **Concrete Batch Plant Operator**
- Deleted CTQP from title

9-2.13 PERSONNEL

- **9.2.13.2 Certified Technicians**
- Clarified certified by deleting qualified

9-2.13 PERSONNEL

- **9.2.13.3 Concrete Production Facility Manager of Quality Control**
- Removed CTQP from titles
- Changed name to NRMCA title

9-2.13 PERSONNEL

- **9.2.13.4 Concrete Mix Designer**
- Delete CTQP from titles

9.2.14 Records

- (4) Added Total Minus 200 test requirement
- (8) Added location for posting of the federal poser

9-2.15 SAMPLING AND TESTING OF MATERIALS

- **9-2.15.1 General**
- Table 1 – Added Absorption (FM 1-T084 & T085) testing and time frame
- Table 1 – Added time frame to Total Minus 200 (FM 1-T011) testing

9-2.15 SAMPLING AND TESTING OF MATERIALS

- **9-2.15.1 General**
- Added footnote to Table 1 to clarify the absorption data

Delivery Ticket Example

- Added the word total to water added at the jobsite
- Added the amount of admixture added at the jobsite and the time added

Questions?

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