

SUMMARY OF CHANGES 2021

Updates for the 14th Edition NPCA QC Manual QCM-001

Posting of 11-2-20

At its mid-year meeting, the NPCA Quality Assurance/Quality Control Committee made updates and changes to the NPCA Quality Control Manual for Precast Plants in a number of sections.

The format for notifying members and certified plants of these changes will not change in 2021. Members and certified plants are notified of changes in a Certification Express email distributed to the designated primary and secondary contacts and liaison to the auditor. A letter outlining changes will also be mailed to the liaison to the auditor for each certified plant location.

The 14th Edition of the Quality Control Manual will include several changes and editorial updates that will take effect at the start of the 2021 program year. Please see the posted manual for all of the editorial changes made in red highlighted text. Members have the opportunity to review and comment on the changes during the 60-day comment period from Nov. 2, 2020 to Dec. 31, 2020.

The Table of Contents has been renumbered as required to accommodate the changes in language throughout the manual as detailed below.

Under FOREWORD:

Updated the Quality Assurance Committee roster to reflect the membership of the 2019 – 2020 committee members. The first edition of the NPCA QC Manual was published in 1987 in consultation with the members of the National Precast Concrete Association and has been revised regularly since then. The fourteenth edition for 2021 was approved October 2020 by NPCA's Quality Assurance committee.

NPCA Quality Assurance Committee Members (2019 - 2020):

- Andrew Nashawaty, Scituate Concrete Pipe Corp. (Chairman)
- Wes Dees, BUILDTECH SOURCING LLC (Board Liaison)
- Matt Barbour, Barbour Concrete Co.
- Eric Barger, C.R. Barger & Sons Inc.
- Marcus Barnett, Hamilton Kent LLC
- Frank Bowen, Rosetta Hardscapes
- Jason Cross, Norwalk Concrete Industries
- Lynn Grimm, Lindsay Precast Inc
- Marvin Hanks, ParkUSA
- Hugh Martin, Oldcastle Infrastructure
- Matt McSweeney, Pennsylvania Department of Transportation
- Kelly Patterson, Columbia Precast Products LLC
- Mitchell Rainero, Permatile Concrete Products Co.
- Rusty Stever, Jensen Precast

- Jason Tucker, Texas Department of Transportation
- James Walker, Wilbert Vaults of Houston
- Todd Whittington, North Carolina Department of Transportation
- Drew Wieser, Wieser Concrete Products Inc.

Under Section 2.1.1 Cement:

Language and specification updates only to this section.

STANDARD

COMMENTARY

2.1.1 Cement

Cement shall conform to to the requirements of ASTM C150, "Standard Specification for Portland Cement." ~~or shall be Type IS – portland blast furnace slag cement or Type IP – portland pozzolan cement conforming to the requirements of~~ ASTM C595, "Standard Specification for Blended Hydraulic Cement." or shall conform to the requirements of ASTM C1157 "Standard Performance Specification for Hydraulic Cement". Evidence of conformance shall be a certified mill test report for each shipment or lot of cement.

Five Six base types of Portland cement are specified in ASTM C150 but only three types are commonly used:

Type I - This cement is most commonly used available in most of North America and is intended for use in general concrete construction.

Type II - Moderate heat of hydration and Provides moderate sulfate resistance cement and is used extensively where soils or groundwater are moderately high in sulfates and in massive construction.

Type II(MH) – Provides moderate sulfate resistance and moderate heat of hydration and is a newer cement type that may not be available in all areas.

Type III - High early strength cement is used where rapid strength gain is needed.

Type V – Provides high sulfate resistance and is specified where high sulfate resistance is needed.

The remaining cement type is other two types are not readily available in most parts of the country. Type IV, low heat of hydration cement, is typically manufactured only for large dam construction. Type V, sulfate-resisting cement is specified where high sulfate resistance is needed.

When using blended cements, trial batches should be tested to ensure adequate strength is reached prior to stripping the product.

Under Section 2.1.6 Supplementary Cementitious Materials:
Language and specification updates.

STANDARD

COMMENTARY

2.1.6 Supplementary Cementitious Materials

Supplementary cementitious materials (SCMs) shall conform to the applicable specifications shown below. Evidence of conformance shall be a certified mill test report for each shipment or lot of SCMs.

When using SCMs and depending on the cement replacement levels, certain SCMs may delay the initial strength gain of the concrete. Proper measures should be taken to ensure product has achieved adequate strength prior to stripping and shipping.

Pozzolans	“Standard Specification for Coal Fly Ash and Raw or Calcinated Natural Pozzolan for Use in Concrete”	ASTM C618
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Standard types fly ash:

- *Class C fly ash*
- *Class F fly ash*

Variations to standard types fly ash commonly used:

- *MFA – Modified fly ash*
- *UFFA – Ultra-fine fly ash*

GBA – Ground Bottom ash

Silica Fume	“Standard Specification for Silica Fume Used in Cementitious Mixtures”	ASTM C1240
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Slag Cement	“Standard Specification for Ground Granulated Blast-Furnace Slag Cement for use in Concrete and Mortars”	ASTM C989
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Metakaolin	“Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete”	
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Under Section 2.2.3 Bar Mats and Welded-Wire Reinforcement:
Language updated

STANDARD

COMMENTARY

2.2.3 ~~Bar Mats and~~ Welded-Wire Reinforcement

~~Steel bar mats and~~ Welded wire reinforcement shall conform to the specification required in the design:

~~“Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement”.....ASTM A184~~

“Standard Specification for Steel Wire, and Welded Wire Reinforcement, Plain and Deformed, for Concrete” ASTM A1064

Suppliers of bar mats and welded wire reinforcement shall furnish mill certificates with each shipment. Records of incoming reinforcing steel mill certificates shall be kept current and on file for a minimum of three (3) years.

Welded wire reinforcement delivered in rolls should be used in circular or curved products, unless the reinforcement is first straightened. Otherwise it is quite difficult to position and support the reinforcement within straight-walled product

Under Section 5.3.5.5 Cores Curing with Heat and Moisture: the frequency of testing was modified.

STANDARD

5.3.5.5 Cores

~~As an alternate to the use of test cylinders, or~~ If cylinder tests fall below the specified value, three cores may be used ~~from the same date of production and mix design~~ to determine concrete strength. Cores shall be obtained and tested in accordance with ASTM C42.

COMMENTARY

Depending upon the level of consolidation, core samples from the bottom of sections may result in higher than average strength levels. Care should be taken to avoid cutting reinforcing bars where cores are obtained. Reinforcement in cores can affect the strength, depending on the quality and orientation of the reinforcement. The average value for cores of 85% of the specified strength is realistic since cores will generally yield lower strength results than test cylinders because of differences in size of specimens, conditions for obtaining samples and curing.

Under the Plant Terms and Conditions – Section 7.2.14.4

Correct numbering error

7.2.14.4 Plants refusing an unannounced audit for reasons other than those stated in Subsection 7.2. ~~1314~~.3 above constitute grounds for the plant to be decertified.

Comments shall be made in writing: Members may respond with comments via email to Phillip Cutler, P.E., director of quality assurance programs, at pcutler@precast.org.

Should you have any questions about the changes to the NPCA Quality Control Manual for Precast Concrete Plants 14th Edition or changes for program year 2021, please contact Phillip by email or at (800) 366-7731.