SUMMARY OF CHANGES 2022
Updates for the 15th edition NPCA QC Manual QCM-001
Posting of 11-2-21

At The Precast Show meeting in New Orleans, the NPCA QA/QC Committee updated the NPCA Quality Control Manual for Precast Concrete Plants in a number of sections.

The format for notifying members and certified plants of these changes will not change in 2022. Members and certified plants will be notified of changes in Certification Express emails distributed to the designated primary contact and liaison to the auditor. A letter outlining changes also will be mailed to the liaison to the auditor for each certified plant location.

The 15th edition of the Quality Control Manual will include several changes and editorial updates that take effect at the start of the 2022 program year. Please see the posted manual for editorial changes indicated in red highlighted text. Members will have the opportunity to review and comment on the changes during a 60-day comment period from Nov. 2, 2021 to Dec. 31, 2021.

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 2020 – 2021 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 fifteenth edition for 2022 was approved October 2021 by NPCA's QA/QC Committee.

NPCA QA/QC Committee Members (2020 - 2021):

- Richard Alvarado, Western Precast Concrete Inc. (Chairman)
- Sam Lines, Concrete Sealants Inc. (Board Liaison)
- Matt Barbour, Barbour Concrete Co.
- Marcus Barnett, Hamilton Kent LLC
- Jason Cross, Norwalk Concrete Industies
- Joe Fisher, Voeller Mixers
- Marvin Hanks, ParkUSA
- Hugh Martin, Oldcastle Infrastructure
- David Matocha, Forterra Pipe & Precast
- Matt McSweeney, Pennsylvania Department of Transportation
- Mitchell Rainero, Permatile Concrete Products Co.
- Rusty Stever, Jensen Precast
- Jason Tucker, Texas Department of Transportation
- Paul Tucker, Midwest Tile & Concrete Products Inc.
- Todd Whittington, North Carolina Department of Transportation
- Drew Wieser, Wieser Concrete Products Inc.

Under Section 1.1.2.10 Plant-Specific Quality Control Manual:
Language updates only to this section.

STANDARD	COMMENTARY
10. Product and reinforcing steel dimensional tolerances unless shown on product drawings and/or production documentation.	

Under Section 1.1.3 QC Personnel Training:
Language updates only to this section.

STANDARD	COMMENTARY
1.1.3 QC Personnel Training	
1. Plant QC Lead and assigned backup inspectors shall hold current certificates of completion for: a. NPCA Production and Quality School (PQS)	*Because of the importance of properly trained personnel, training must remain current.*
Plant QC Lead and assigned backup inspectors shall re-certify in NPCA PQS every five years by retaking PQS Level I Refresher, PQS Level I, or PQS Level II QA/QC, PQS Level II Technical, or PQS Level II Production. Plant QC Lead and assigned backup inspectors with expired NPCA PQS must re-take PQS Level I. Plant QC personnel maintaining an active Master Precaster certification are exempt from the five year re-certification of PQS.	*NPCA Courses available for retraining every five years in the NPCA Production and Quality School (PQS) are:* **PQS Level I** **PQS Level I Refresher** **PQS Level II QA/QC** **PQS Level II Technical** **PQS Level II Production** Master Precaster
2. Plant QC Lead and assigned backup shall hold current certifications for concrete testing by: a) the American Concrete Institute (ACI) Concrete Field Testing Technician – Grade 1	
OR	
b) an industry recognized ACI equivalent or an independent third-party professional. Evidence of certification will be in the form of a formal certificate or equivalent document stamped by a professional engineer noting ASTM or equivalent test methods evaluated.	

Under Section 1.3.1 Drawings:
Editorial

STANDARD	COMMENTARY
1.3.1 Drawings Erection drawings shall include at a minimum: elevations, dimensions, connection details, and exposure of each piece.	

Under Section 1.3.2 Drawings:
Editorial

STANDARD	COMMENTARY
1.3.2 Mock-ups Prior to production of architectural precast units, the plant shall provide representative samples for evaluation. At a minimum, a 12 inch x 12 inch sample shall be submitted to show representation of color and texture of the finished surface. One sample for each different finish (including if the back side of the precast is to be exposed) should be submitted if more than one finish is being specified. Any change in materials or mix proportions requires new samples be evaluated prior to change in production.	*Mock-Ups* *Following approval of a representative sample and if required by project specifications, a complete or a portion of a full scale production unit is usually produced. The mock-up unit (s) will establish the range of acceptability with respect to color and texture variations, uniformity of air void distribution, surface defects, and overall appearance.* *Mock-up unit (s) or panels etc should be viewed at a distance that equals their distance on the structure; however this distance is not less than 20 feet.* *Mock-ups are usually approved and signed off by the architect or a designated representative and are stored at the plant and used as a comparison to production units. If requested, a mock-up may be shipped to the jobsite for comparison to the units installed on the project.*

Under Section 2.1.1 Cement:
Language and specification updates only to this section.

STANDARD	COMMENTARY
2.1 CONCRETE	
2.1.1 Portland Cement	
Cement shall conform to the requirements of ASTM C150, "Standard Specification for Portland Cement." ~~ASTM C595, "Standard Specification for Blended Hydraulic Cement." or 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.	
2.1.2 Blended Hydraulic Cement	
Cement shall conform to the requirements of ASTM C595, "Standard Specification for Blended Hydraulic Cement" or 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.	

Under Section 2.2.4 Zinc or Epoxy Reinforcement:
Standard added

STANDARD	COMMENTARY
2.2.4 Zinc or Epoxy-Coated Reinforcement	
Where required by the design, reinforcement shall be galvanized in accordance with ASTM A767, "Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement," ASTM A641, "Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire," or epoxy coated in accordance with ASTM A775, "Specification for Epoxy-Coated Reinforcing Steel Bars," ASTM A884, "Standard Specification for Epoxy-Coated Steel Wire and Welded Wired Fabric for Reinforcement," or ASTM A934, "Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars." Epoxy-coated reinforcing steel shall be supplied by a CRSI-certified applicator and accompanied by a certification or certificate of compliance. Epoxy-coated reinforcement shall be stored and handled in such a manner as to minimize damage to the epoxy coating.	

Under Section 2.3.6 Joint Sealants and Connectors:

Remove and renumber

STANDARD	COMMENTARY
~~2.3.6 Joint Sealants and Connectors~~	
~~Certificates of Conformance shall be obtained from all suppliers and maintained on file for each type of joint sealant, and pipe-to-structure connector used by the plant, a minimum of once per year.~~	~~*Joint sealants typically must conform to ASTM C990. Pipe-to-structure connectors typically must conform to ASTM C923 or C1478.*~~ ~~*Refer to sections 6.2.6 for pipe joint gasket requirements and 6.3.5. for manhole joint gasket requirements.*~~

Under Section 3.2.4 Batching Equipment:
Revised

STANDARD	COMMENTARY
3.2.4 Batching Equipment	
Weigh batching equipment shall be maintained and operated in accordance with ASTM C94 or ASTM C685.	*The tolerances given in this section are those specified in ASTM C94 and ASTM C685. Methods for calibrating the measuring equipment are outlined in those standards. There are two reasons for displaying calibration records prominently. Records that show deviations should be used by plant personnel to obtain correct readings. Also, inspectors from outside agencies can be assured that the equipment has been calibrated recently.*
3.2.4.1 Mass Batching ASTM C94 For plants that utilize mass batching or a combination of mass and volumetric (for liquid) batching, the equipment must be capable of measuring and batching the concrete raw materials within the following tolerances:	
Cement ±1% Cement plus supplementary cementitious materials ±1% for batches less than 1 cubic yard, 0 to +4% Water ±1% Fine Aggregates ±2% Coarse Aggregates ±2% Cumulative Weigh Batch Aggregate ±1% Admixtures ±3% or ± dosage per bag of cement, whichever is greater	*Cumulative Weigh Batching of aggregate applies when load cell equipment is fixed to*

Scales shall be calibrated each year or any time there is a reason to question their accuracy. Calibration stickers shall be displayed prominently at the batch control location. Current calibration and stickers shall be dated not more than one year at the end of the month from the date of the last test or certification. Records for calibration of batch plant scales shall be readily accessible to the equipment operator.

Scale calibrations shall include the entire anticipated range of use and the percent error at each test weight shall be documented. Scales shall be calibrated to within 0.2% of the certified test weight at each quarter of the anticipated load range.

Liquid admixtures shall be measured by weight or volume. Powdered admixtures shall be measured by weight. Calibration of the admixture dispensers shall be performed each year. Current calibration reports shall be dated not more than one year at the end of the month from the date of the last test or certification.

3.2.4.2 Volumetric Batching ASTM C685

Plants that utilize volumetric or continuous batching shall be capable of proportioning the component materials in concrete within the following tolerances:

Cement	0 to + 4% (~~weight~~ mass)
Water	±1% (~~weight~~ mass or volume)
Fine Aggregates	±2% (~~weight~~ mass)
Coarse Aggregates	±2% (~~weight~~ mass)
Admixtures	±3% (~~weight~~ mass or volume)

the hopper/bucket for weight measurement rather than a weigh belt.

Note that when using self-consolidating concrete, very small discrepancies in batch water content can be detrimental to the desired properties of the mix.

Under Section 4.1.3 Forms and Forming Equipment:
Revised

STANDARD	**COMMENTARY**

4.1.3 Forms and Forming Equipment

Forms and forming equipment for manufacturing precast products shall be of a quality that prevents product damage due to forces and vibrations subjected to the forms.

All forms and forming equipment (including pallets, headers, truing rings) shall be measured prior to initial use and/or after repairs ~~not less than each year thereafter~~ for dimensional conformance with applicable tolerances**.** ~~Current r~~ Reports shall ~~be dated not more than one year at the end of the month from the date of the last report.~~ be maintained in the plant records for a minimum of three (3) years.

Forms shall be carefully cleaned of concrete build-up after each use. Coatings of form release agents shall not be allowed to build up.

Forms for manufacturing precast concrete products shall be of the type and design consistent with industry standards and practices. They should be capable of consistently providing uniform products and dimensions. Forms shall be constructed so that the forces and vibrations to which the forms will be subjected can cause no product damage.

Under Section 4.1.6.1 Surface Finishes:
Editorial

STANDARD	COMMENTARY

4.1.6.1 Surface Finishes

All exposed surfaces shall be free of form defects, joint marks and shall be within the color variation as defined by the approved samples and/or mock up. All details such as false joints, chamfers, etc. shall be as designed on the approved shop drawings.
Architectural finishes shall be according to the requirements of project documents and performed per industry standards or supplier specifications.
Precast concrete producers shall submit finishes for approval when required by the project documents. Life size mockups are recommended for the approval of architectural finishes, because color variations and surface imperfections are not always apparent on small scale samples. The sample finishes shall be approved prior to the start of production.

Under 4.1.6.1.6 Bush-hammered or tooling:
Editorial

4.1.6.1 Bush-hammered or tooling

The use of tooling techniques, hammers or equipment to abrade the surface of the precast should only be performed by ~~only~~ trained personnel. The protective cover of the reinforcement should be increased to account for the removed concrete surface.

Under Section 4.1.7 Plant Requirements:
Remove and renumber

STANDARD	COMMENTARY

4.1.7 Plant Requirements:

1. Maintain an active housekeeping plan. Continual efforts shall be made by all production personnel to maintain a clean work area. Spot-check by QC Inspector at least once each work shift.
2. ~~Maintain records of form and forming equipment dimensional checks on all new equipment and each year thereafter. Current reports shall be dated not more than one year at the end of the month from the date of the last report.~~ Renumber remaining elements. See 4.3.5.
2. Maintain inspection records of all handling equipment in accordance with applicable requirements.
3. For reinforcement fabricated with mechanized equipment and used in machine-cast, or dry-cast products, perform and document reinforcing checks on a minimum of one (1) reinforcing cages or 3% of each production run daily, whichever is greater. At least one cage shall be checked when a shift change occurs during the course of a production run and whenever a setting is changed.
4. For machine-cast and/or dry-cast products, dimensional checks shall be performed and documented on a minimum of one (1) products or 3% of each production run daily, whichever is greater.
5. Appearance of architectural precast concrete shall match approved samples and meet industry standards. Compatibility of veneers shall be established and documented. Production and quality control measures shall be developed and documented in the plant-specific QC manual.
6. Unless otherwise noted, maintain records for a minimum of three (3) years.

Under Section 4.3.3 Positioning of Reinforcement:
Revised

STANDARD	**COMMENTARY**
4.3.3 Positioning of Reinforcement* Reinforcing steel shall be positioned as specified by the design and the concrete cover must conform to product requirements.	

Unless otherwise required, the tolerance on concrete cover shall be one-third of that specified but not more than ½ inch. Concrete cover shall not be less than ½ inch, however concrete cover greater than ½ inch is recommended. Positive means shall be taken to assure that the reinforcement does not move significantly during the casting operations. Cages shall be supported away from all form surfaces. Liberal use of chairs, spacers, and positioning wheels is encouraged especially with small diameter bars or wire. Rolled welded-wire reinforcement shall be mechanically straightened to use in straight-walled products.

Plants shall maintain a documented process of reinforcing steel / cage inspections including information on the required cage design versus the actual cage used; including the following as applicable to the product produced:

- Bar size and/or WWR bar diameter;
- Bar spacing and/or WWR style;
- Steel area (A_s);
- The quantity of bars;
  (Inspections may include one or more of the above per detailed reinforcing steel plan documents);
- The effective depth (d), (the distance from the compressive face to the centroid of the tensile reinforcement member);
- The concrete cover, never less than ½" clear;
- The lap splice length;
- Cage dimensions: length, width, height, and/or diameter, as applicable;
- Reinforcing steel condition:
  - Clean or light red rust, not flaking or pitted;
  - Free from oils, dirt, or other contaminants;
  - If welded, meets the requirements of section 4.2.2;
  - If welded, does not contain any damage, such as gouges and undercut;
- Reinforcement hooks and bends (90° and 180°). If design, project specifications, and/or detailed reinforcing steel plans require a bend in reinforcing steel around a corner, substitution of straight sections tied together shall not be acceptable practice.

Verification of the reinforcing steel for conformance with the design, form dimensions, form tightness, form cleanliness, form release agent application, embedded items and blockouts shall be performed and documented on a minimum of one (1) reinforcing steel cage and form setup or 3%, whichever is greater, of each production run daily,

whichever is greater, chosen on a random basis by QC personnel for each product category produced in the plant. At least one cage and form setup shall be checked when a shift change occurs during the course of a production run.

These reinforcing steel, form dimensions, form tightness, form cleanliness, form release agent application, embedded items and blockouts checks shall be maintained in the plant records for a minimum of three (3) years.

Under Section 4.4.6 Hot Weather Precautions:
Revised

STANDARD	COMMENTARY
4.4.6 Hot Weather Precautions	
In hot weather the temperature of concrete at the time of placing shall not exceed 90 degrees F (32 degrees C).	*There are generally more problems in placing concrete in hot weather than there are in cold weather, therefore emphasizing the importance of quality practices. Refer to ACI 305R, "Specifcation for Hot Weather Concreting."*
If allowed by project specifications or authority having jurisdiction, the maximum temperature of concrete at the time of placement shall not exceed 95 degrees F (35 degrees C)	
For the purposes of this manual and according to ACI 305R, "Specification for Hot Weather Concreting," hot weather is defined as any combination of the following conditions that tend to impair the quality of freshly-mixed or hardened concrete by accelerating the rate of moisture loss and the rate of cement hydration: - High ambient temperature - High concrete temperature - Low relative humidity - Wind - Solar radiation	*The following list presents some hot weather rules-of-thumb:* 1. *Concrete sets and hardens faster. This means that concrete must be deposited, consolidated and finished quickly if the concrete temperature is high.* 2. *On warm windy days, plastic shrinkage cracks are likely to form unless precautions are taken.*
Special precaution shall be taken in hot weather for concrete that is cast out-of-doors in order to prevent plastic shrinkage cracking and low strengths. These precautions may include: 1. Using cold water or adding ice as part of the mixing water. 2. Sprinkling aggregate stockpiles. 3. Fog spraying forms immediately prior to casting. 4. Placing fog sprays upwind and above the products during concreting, particularly during finishing of unformed surfaces.	*Unless curing begins immediately, the surface of the concrete is likely to dry out, resulting in cracking or weakening of the concrete surface.*

5. Application of a product that aids in the control of evaporation of water from the concrete surface, such as wet burlap, plastic sheeting and / or curing compound as soon as concreting is completed.
6. Monitor concrete temperatures during curing.

Under Section 4.6.5 Plant Requirements:
Revised

STANDARD	COMMENTARY
4.6.5 Plant Requirements: A post-pour inspection shall be made and documented for 1 piece or 3%, whichever is greater, of each precast product produced. The inspections shall document any damage, excessive bugholes or honeycombing, poor dimensional tolerances, or other problems such as exposed reinforcing. A mark shall be made on the product indicating whether it is acceptable, requires repair, or it has been rejected.	

Under Section 5.1.1 Independent Third-Party Testing Laboratory:
Editorial

STANDARD	COMMENTARY
5.1.1.1 Independent Third Party Testing Laboratory Third party laboratories may be accredited to ISO/IEC 17025, or the applicable AASHTO laboratory accreditation. Plants that employ a third-party laboratory for testing and/or calibration services shall, at a minimum, obtain the credentials of personnel performing the testing and the calibration records for the equipment used. Technicians from a third-party laboratory performing plastic concrete testing at the precast facility shall provide a current ACI Field Technician Level I certification. Technicians from a third-party laboratory performing compressive strength testing and/or aggregate testing shall provide an appropriate and current ACI certification for the testing being performed along with a current equipment calibration certificate.	

Plants subject to owner specific certification and testing requirements shall have appropriate documentation on file for auditor review.

Under Section 5.1.3 Equipment Calibration Records:
Revsied

STANDARD	COMMENTARY

5.1.3 Equipment Calibration Records

Records for calibration of equipment shall be maintained so that the equipment operator has ready access to the records. Current calibration stickers shall be attached to and prominently displayed on all equipment requiring calibration. All of the following equipment shall be calibrated a minimum of once per year. Current calibration reports shall be dated not more than one year at the end of the month from the date of the last calibration or certification.

- Concrete batching scales
- Water meters
- Admixture batching equipment
- Concrete compression test machines
- Portable scales
- Slump Cone
- Air meter – intervals not to exceed three months, per ASTM C 231
- Density (Unit weight) bucket
- Rebound hammer (if used)
- Thermometers, temperature recorders and clocks
- Three-edge bearing test machines
- Pipe and manhole measuring devices (i.e., go-no-go gages)
- Vacuum and hydrostatic testing equipment

Calibration of batching scales, compression testing machines and three-edge bearing testing machines shall be performed by an independent, third-party calibration company. Unless otherwise specified, all other calibrations shall be performed in-house, by the supplier, or by an independent, third-party calibration company.

Under Section 5.2.2 Moisture Content:
Revised

STANDARD	COMMENTARY

5.2.2 Moisture Content

5.2.2.1 Conventional and/or Dry-Cast Concrete

For conventional and/or dry-cast ~~concrete~~ processes~~,~~ made without moisture probes or meters and automatic mixing water adjustment systems, aggregate surface moisture content (i.e., water in excess of that absorbed by the aggregates) shall be determined at least once per day in accordance with ASTM C70, "Standard Test Method for Surface Moisture in Fine Aggregate," by alternate methods such as moisture meters or probes, or by ASTM C566, "Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying." Drying aggregate using a microwave or hot plate shall be permitted in addition to using an oven.

For conventional and/or dry-cast processes when aggregate bins fitted with moisture probes or meters, aggregate surface moisture content shall be determined a minimum of once per week in order to validate moisture probe accuracy and performance.

5.2.2.2 Self-Consolidating Concrete

For SCC processes when aggregate bins are fitted with moisture probes or meters used with automatic mixing water adjustment systems, the aggregate surface moisture content shall be determined a minimum of once per week in order to validate moisture probe or meter calibration. Moisture tests shall be performed in accordance with ASTM C70, "Standard Test Method for Surface Moisture in Fine Aggregate," or by ASTM C566, "Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying." Drying aggregate using a microwave or hot plate shall be permitted in addition to using an oven. Samples for moisture tests shall be taken as close as possible to the area where the probe is located.

For SCC processes made without moisture probes or meters and automatic mixing water adjustment systems, the aggregate surface moisture content shall be determined at least once a day prior to making the first SCC batch and then once every four hours of elapsed time after the first ~~batch~~ test, while SCC is being ~~mixed~~ produced. Moisture tests shall be performed in accordance with ASTM C70, "Standard Test Method for Surface Moisture in Fine Aggregate," or by ASTM C566, "Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying." Drying

aggregate using a microwave or hot plate shall be permitted in addition to using an oven. ~~In addition, Slump Flow and VSI tests shall be performed in accordance with section 5.3.1.2 for every three batches of SCC produced (This is to ensure that moisture fluctuations of aggregates are accounted for correctly). In lieu of this additional Slump Flow and VSI testing, moisture tests may be performed as specified in this section every three batches.~~

Under Section 5.3.1.2 Slump Flow and Visual Stability Index:
Revised

STANDARD	COMMENTARY
5.3.1.2 Slump Flow and Visual Stability Index For SCC mixtures, slump flow and Visual Stability Index (VSI) tests of fresh concrete of each mix design shall be performed each day by testing ~~the~~ one of the first two batch~~es~~ of SCC as defined by the initial mix qualification process. Reject the concrete if the upper specification limit is exceeded. If the slump flow test result is less than the lower production range limit reject the concrete unless the mixture has been approved for vibration and is subsequently vibrated. Thereafter, slump flow and VSI testing shall be performed as follows: - When changing mix designs - When changing raw materials, - and - As required in Section 5.2.2.2 Slump flow and VSI tests shall be performed in accordance with ASTM C1611 “Standard Test Method for Slump Flow of Self-Consolidating Concrete”	

Under Section 6.2.1.2 & 6.2.2.2 Three-Edge Bearing Testing (TEB):
Third paragraph Editorial: Font changed

STANDARD	COMMENTARY
If allowed by project specifications or authority having jurisdiction, compressive strength cylinder testing and companion rational design calculations may replace TEB testing.	

Under Part 2 Plant Terms and Conditions Part – 2.5 Continuous Improvement:
Editorial – Clarifications

2.5 Continuous Improvement

Satisfaction of continuous improvement requirements will be based solely on the plant providing objective evidence to the auditor that activities are in place and/or have taken place at the plant. A total of eight additional points are available for the plants successful continuous improvement efforts. These eight possible points will be added to the plant final score. NPCA plant auditors will be required to visit the NPCA Producer Portal and view plant documentation online prior to their inspection of the plant. This initial evaluation of plant records shall include those activities pointed at continuous improvement activities engaged by the plant.

In order for plants to be considered for continuous improvement points they must participate in two of the following each program year. The plant will earn up to a total of two points maximum for successful participation to be added to the plant final score.

(1) The plant shall upload documents to the Certified Producer Portal and earn 1% to be added to the plant final score for completing the following items;
    a. The plant shall update their plant profile sheet annually;
    b. The plant shall download their renewal certificate annually;
    c. The plant shall download their final inspection report and certificate annually (hard copies can be made available upon request);
    d. At a minimum, the plant shall upload annual certification records for raw materials, annual calibration of equipment, current ACI certifications and current PQS certifications for quality personnel;
    e. Plants producing stormwater and/or sanitary concrete pipe shall upload current annual absorption test data;
    f. Plants producing round manhole products shall upload current annual absorption test data;
    g. Plants producing septic tanks shall upload current annual watertightness test data for all models produced;
    h. Plants producing grease interceptors shall upload current annual watertightness test data for all models produced.

(2) The plant shall perform and generate final reports for semi-annual self-audits using the Self-Audit tool within the Producer Portal. The plant shall earn 1% to be added to the plant final score for completion of semi-annual self-audits;

(3) The plant shall complete education requirements and uploads equivalent to 1 hour of education for each plant employee annually. The plant shall earn 1% to be added to the plant final score for completion of the following;
    a. Plant Quality Personnel – certificate upload for NPCA PQS training beyond current minimum specified in section 1.1.3 of the NPCA QC Manual, PQS Level II QA/QC-Technical, PQS Level II-Production (including a current Master Precaster certification in year one followed by 4 hours of continuing industry-related education in year two). Industry related education uploaded information shall include learning objectives, course description and certificate of completion.

    b. Non-Quality Plant Personnel – Any NPCA course offering applies. Industry-related education uploaded information shall include learning objectives, course description and certificate of completion.

The plant is eligible to earn up to an additional 6~~%~~ points to be added to the plant final score for continuous improvement efforts in the four categories of Section 1.1.4 of this manual. Satisfactory activity in these four categories shall be evaluated by active participation and objective evidence provided by the plant to the designated third-party auditor during the plants annual unannounced plant inspection. Participation in all areas is not mandatory and plants are allowed to have multiple continuous improvement efforts in each category. Plants cannot use continuous improvement efforts more than a single time, new items must be defined each program year.

Plants earning probationary status or failing its annual inspection are not eligible for continuous improvement added values.

Under Part 5 Plant Terms and Conditions – Grading, Certification Status, and Corrective Actions:
Editorial – Clarifications

PART 5

GRADING, CERTIFICATION STATUS, and CORRECTIVE ACTIONS

5.1 Certified Status

5.1.1 A plant qualifies as a certified plant if it achieves a plant score of 75% or greater in each applicable Critical Requirement section of the pertinent grading schedule and achieves an overall score of 80% or greater.

5.1.2 A plant fails its audit if it achieves an overall score less than 75%.

5.1.3 A new plant that fails its audit and wishes to be considered for Certified Status, must reapply to the program.

5.1.4 A certified plant that fails its audit and does not appeal its audit and wishes to be considered for Certified Status, must reapply to the program.

5.1.5 A certified plant that fails its audit and wishes to appeal its audit, see section 5.3 below.

5.1.~~3~~6 A plant qualifies for NPCA product listing if it provides a complete and NPCA approved document submittal and passes it's initial or annual unannounced audit.

5.1.~~4~~7 A plant is not eligible for product listing if it earns probationary status or fails ~~it's~~ its annual unannounced audit.

5.1.~~5~~8 Plants with a product listing earning probationary status or failing its annual unannounced audit will loose listing status and must reapply to the product listing program.

5.2 Probationary Certification Status

5.2.1 A plant that does not comply with the conditions set forth in section 5.4.1; Corrective Action response, achieves a score of less than 75% for any critical requirement or achieves an overall plant score greater than or equal to 75% and less than 80% is eligible to receive probationary certification status.

5.2.2 Probationary Certification status shall remain in effect until such time when the plant pays applicable fees, responds in writing to all deficiencies with corrective action, and passes its unannounced re-audit ~~is re-audited and/or~~ ~~for~~ within a period not to exceed 90 calendar days from the previous audit and the conditions calling for probationary status no longer exist, as determined by the audit agency and/or NPCA or its agent. Plants failing to pay ~~the~~ applicable fees within 30 days of the invoice date and receive an unannounced re-audit of the plant within 90 days from the previous audit will not be considered for certification.

5.2.3 In no way will the plant listing on the NPCA Web site or anywhere else indicate that a plant has received probationary certification status.

5.2.4 The plant must pass their unannounced re-audit and receive an overall score of 80% or greater and must score at least 75% on all Critical Requirements in order to be removed from probationary status.

5.2.5 Plants that fail to pass their unannounced re-audit will be required to reapply to the program.

5.3 Provisional Certification Status

5.3.1 ~~The~~ Provisional Certification Status ~~period~~ is effective when a plant that is currently certified in the program, fails ~~an~~ its annual unannounced audit, and files an appeal~~s the results of the audit~~. This period is intended to allow sufficient time ~~for a plant~~ to process the appeal ~~the results of the failed audit~~, while maintaining Provisional ~~c~~Certification~~ed~~ ~~s~~Status. ~~The Provisional Certification period is as follows:~~

5.3.1.1 A certified plant that fails its annual unannounced audit and files a complete appeal of the results of their audit has 10 days from the date of the plant audit to file the formal appeal documentation with NPCA.

5.3.1.2 A complete appeal shall be received by NPCA, from the plant, in writing and in the form of a letter or an email along with all supporting documentation ~~addressed and~~ sent to the program Administrator. Supporting documentation shall include items such as, but not limited to, a copy of the preliminary and/or final report grading schedule, photographs, completed inspection form, test results, and copies of

material to illustrate compliance to requirements along with corrective action responses to all deficiencies noted in the inspection report. The plant representative shall also supply reasons they believe a scoring appeal is warranted.

5.3.1.3 A plant issuing incomplete appeal documentation will not be considered for Provisional Certification Status and will need to reapply to the Certification Program.

5.3.1.4 Hearings for appeals will usually be scheduled to coincide with the regularly scheduled monthly meetings of the NPCA Quality Assurance Review Subcommittee, but hearings may be held at other times which are mutually convenient for the Review Subcommittee, management of the plant which filed the appeal, and the inspection agency and may consist of a conference call.

5.3.1.5 Hearings for appeals will/shall be closed meetings with only the Quality Assurance Review Subcommittee, the Administrators, management of the appealing plant, and if required the agency representative. The management of the plant which filed the appeal will/shall first present its case orally and the committee may ask questions of the speaker. The agency representative will then orally present its case followed by answering questions raised by the committee. Management of the appealing plant then will/shall make its closing statement and that will/shall be followed by the closing statement of the agency representative. Representatives of the appealing plant and the agency will/shall then be excused so that the Subcommittee can deliberate in executive session.

5.3.1.6 If a member of the Quality Assurance Review Subcommittee is a representative of the appealing plant, or it is determined that they have a conflict of interest, that Subcommittee member shall excuse themselves from the deliberations in executive session.

5.3.1.7 Decisions of the Quality Assurance Review Subcommittee will/shall be sent to both the plant management and the agency within ten calendar days of the hearing. The Quality Assurance Review Subcommittee's decision(s) will/shall be final, and no further appeals will/shall be considered.

5.3.1.~~18~~ A plant that appeals the results of the audit and the appeal is approved, the Provisional Certification period ends on the date of the approved appeal. Thereafter, the plant resumes normal certifi~~ed~~cation status.

5.3.1.~~2~~9 For plants that appeal the results of the audit and the appeal is denied, the Provisional Certification period ends on the date of the denied appeal and the plant is no longer certified. To re-enter the certification program, the plant must reapply, pay ~~certification~~ applicable fees and successfully pass its unannounced audit.

5.3.1.~~3~~10 Plants that do not appeal the results of a failed audit are not eligible for Provisional Certification. ~~See section 6.2 for appeal deadline.~~

5.4 Corrective Actions

5.4.1 All plants passing their audit (regardless of score) must respond in writing indicating corrective action taken ~~to~~ for all deficiencies noted in their report. All plants failing to submit a written response with documented evidence within 45 days of the plant audit ~~will~~ / shall receive ~~probationary status~~ and be subject to the conditions set forth in section 5.2.1; Probationary Certification Status. Documented evidence shall be supplied (photographs, completed inspection forms, test results, copies of material certifications) to illustrate compliance to requirements and of the corrective action taken to both NPCA and the agency.

Under Part 6 Plant Terms and Conditions – Appeal Procedure
Editorial – Clarifications

PART 6

APPEAL PROCEDURE

6.1 If plant management disagrees with the grade resulting from a plant audit, the approval of a product submittal or decision on product listing, management may file an appeal for review by the NPCA Quality Assurance Review Subcommittee, or their designees. See section 5.2, Probationary Certification Status or section 5.3, ~~for information regarding~~ Provisional Plant Certification Status ~~during~~ for information on the appeal~~s~~ process. ~~Provisional Plant Certification does not pertain to NPCA Product Listing.~~

6.2 Plants wishing to file a formal appeal of their audit must do so within 45 calendar days of the plant audit. ~~The~~ A complete appeal shall be submitted in the form of a letter or email addressed and sent to the program Administrator. ~~A plant must appeal an its audit within 45 calendar days of the plant audit.~~ A copy of the Preliminary or Final Report grading schedule shall accompany the letter or email. Individual grades on specific sections with which management disagrees shall be ~~circled~~ cited and all supporting documentation (photographs, completed inspection forms, test results, copies of material and certification to illustrate compliance to requirements along with corrective action responses to all deficiencies noted in the inspection report) shall be provided along with reasons why management believes each ~~circled~~ cited grade should be changed. If the plant fails to

provide a complete written appeal and all relevant documentation the appeal will be denied.

~~Plants wishing to file a formal appeal of their audit must do so within 45 calendar days of the plant audit. The complete appeal shall be received in the form of a letter or an email along with all supporting documentation addressed and sent to the program Administrator. Supporting documentation shall include items such as, but not limited to, a copy of the preliminary or final report grading schedule, photographs, completed inspection form, test results, and copies of material to illustrate compliance to requirements along with corrective action responses to all deficiencies noted in the inspection report. The plant representative shall also supply reasons they believe a scoring appeal is warranted.~~

6.3 If necessary, the Review Subcommittee shall request a response from the inspection agency. The agency will respond ~~briefly~~ in writing to the Administrator within 21 calendar days of receipt of notice of appeal by the Administrator.

6.3.1 If the agency agrees with the appeal and agrees that the grade should be changed as requested in the appeal, the agency will prepare a revised report and grading schedule.

6.3.2 If the inspection agency disagrees with the appeal and believes that the grades originally assigned are appropriate and the plant wishes to have the appeal heard by the Quality Assurance Review Subcommittee (which acts as the appeals board), the chair~~person~~man (or designated program administrator) of the NPCA Quality Assurance/Quality Control Committee will poll the Review Subcommittee members to determine if they (a) agree with the appeal and disagree with the agency's response, or (b) disagree with the appeal and agree with the agency's response. The chair~~person~~man (or designated program administrator) shall poll the members to determine if a hearing of the appeal is needed and if so, to establish a date for the hearing. Subcommittee members who have a conflict of interest with regard to the plant ~~in question~~ must ~~remove~~ excuse themselves from the polling.

6.5 Hearings for appeals will usually be scheduled to coincide with the regularly scheduled monthly meetings of the NPCA Quality Assurance Review Subcommittee, but hearings may be held at other times which are mutually convenient for the Review Subcommittee, management of the plant which filed the appeal, and the inspection agency and may consist of a conference call.

6.6 Hearings for appeals will be closed meetings with only the Quality Assurance Review Subcommittee, the Administrators, management of the appealing plant, and if required the agency representative. The management of the plant which filed the appeal will first present its case orally and the committee may ask questions of the speaker. The agency

representative will then orally present its case followed by answering questions raised by the committee. Management of the appealing plant then will make its closing statement and that will be followed by the closing statement of the agency representative. Representatives of the appealing plant and the agency will then be excused so that the Subcommittee can deliberate in executive session.

6.7 If a member of the Quality Assurance Review Subcommittee is a representative of the appealing plant, or it is determined that they have a conflict of interest, that Subcommittee member shall excuse themselves from the deliberations in executive session.

6.8 Decisions of the Quality Assurance Review Subcommittee will be sent to both the plant management and the agency within ten calendar days of the hearing. The Quality Assurance Review Subcommittee's decision(s) will be final and no further appeals will be considered.

Under Part 8 Plant Terms and Conditions – Additional Random Unannounced Audits:
Editorial – Clarification

PART 8

8.0 Additional Random Unannounced Audits

8.0.1 The frequency of unannounced additional random unannounced audits shall be determined by the NPCA QA/QC Committee, and/or NPCA, at its sole discretion, and shall not occur in less than 90 days from the previous plant audit.

8.0.2 If NPCA receives written evidence from a credible authority that asserts that an NPCA certified plant is not in substantial compliance with the requirements of the applicable program, the NPCA QA/QC ~~uality Assurance~~ Committee, and/or NPCA at its sole discretion ~~and the Inspection Agency, jointly and at their sole discretion~~, shall determine if there is sufficient cause to conduct an unannounced re-audit at the plant. The cost of such an audit shall be borne by the plant and subpart 8.0.1 above shall be satisfied unless otherwise negotiated between the credible authority and NPCA.

8.0.3 Should a plant fail an audit; the plant must follow the procedures set forth in Section 5.3.

Should you have any questions about the changes to the NPCA Quality Control Manual for Precast Concrete Plants 15th Edition, changes for program year 2022, please contact Phillip Cutler, P.E., director of quality assurance programs, pcutler@precast.org, (800) 366-7731