



**INDIANA DEPARTMENT OF TRANSPORTATION
DIVISION OF MATERIALS AND TESTS**

**DEPARTMENT-CERTIFIED PRECAST
CONCRETE PRODUCER PROGRAM
ITM No. 813-26**

1.0 SCOPE.

- 1.1** This document outlines the requirements for a precast concrete producer plant to become and maintain status as a Department-Certified Precast Concrete Producer plant for precast concrete products. The precast concrete producer plant shall have one of the following certifications ACPA, NPCA, or PCI: Group B1 or B1A; or Group C1 or C1A certification to fabricate precast concrete products.
- 1.2** INDOT may, in its sole discretion, remove a material, product, producer, fabricator, or engineered system from the Qualified Product List and/or determine that a material, product, producer, fabricator, or engineered system must be re-evaluated.

Inclusion on the Qualified Product List does not constitute an “endorsement” and does not guarantee that INDOT, or an INDOT contractor, will purchase or use the material, product, or engineered system.

- 1.3** This Indiana Test Method (ITM) procedure may involve hazardous materials, operations, and equipment and may not address all of the safety problems associated with the use of the test method. The user of this ITM is responsible for establishing the appropriate safety and health practices and determining the applicability of regulatory limitations/requirements prior to use.

2.0 REFERENCES. Copies of the most recent AASHTO and ASTM test methods listed below shall be retained on file by the Precast Concrete Producer’s Plant.

2.1 AASHTO Standards.

M 86	Concrete Sewer, Storm Drain, and Culvert Pipe
M 170	Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
M 199	Precast Reinforced Concrete Manhole Sections
M 207	Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe
M 259	Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers
T 22	Compressive Strength of Cylindrical Concrete Specimens
T 24	Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
T 119	Slump of Hydraulic Cement Concrete
T 121	Mass per Cubic Meter (Cubic Foot), Yield, and Air Content

	(Gravimetric) of Concrete
R 60	Sampling Freshly Mix Concrete
R 100	Making and Curing Concrete Test Specimens in the Field
T 152	Air Content of Freshly Mixed Concrete by the Pressure Method
T 196	Air Content of Freshly Mixed Concrete by the Volumetric Method
T 280	Concrete Pipe, Manhole Sections, or Tile

2.2 ASTM Standards.

C31	Making and Curing Concrete Test Specimens in the Field
C39	Compressive Strength of Cylindrical Concrete Specimens
C42	Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
C138	Mass per Cubic Meter (Cubic Foot), Yield, and Air Content (Gravimetric) of Concrete
C143	Slump of Hydraulic Cement Concrete
C172	Sampling Freshly Mix Concrete
C173	Air Content of Freshly Mixed Concrete by the Volumetric Method
C231	Air Content of Freshly Mixed Concrete by the Pressure Method
C497	Concrete Pipe, Manhole Sections, or Tile

3.0 TERMINOLOGY. Definitions for terms and abbreviations shall be in accordance with the Department's Standard Specifications Section 101 including the following:

- 3.1 ACI. American Concrete Institute
- 3.2 ACPA. American Concrete Pipe Association
- 3.3 Addenda. Any addition or deletion to the QCP
- 3.4 Audit. An inspection conducted by an independent party selected by the ACPA, NPCA, or PCI that verifies compliance with the Department-Certified Precast Concrete Producer Program
- 3.5 Audit Package. A summary report of the audit information and results, including but not limited to, overall audit scores, deficiencies noted, and precast concrete producer plant responses to noted deficiencies.
- 3.6 Certified Precast Concrete Producer Plant. A precast concrete producer's plant that has a current certification by the ACPA, NPCA, or PCI
- 3.7 Certifying Agency. The ACPA, NPCA, or PCI.
- 3.8 Department-Certified Precast Concrete Producer. A Certified Precast Concrete Producer Plant that is also in compliance with the Program

- 3.9 NPCA. National Precast Concrete Association
 - 3.10 PCI. Precast/Prestressed Concrete Institute
 - 3.11 Precast Concrete Producer's Plant. The specific location (the property with a street address) of a Precast Concrete Producer's production facility where precast concrete products are fabricated
 - 3.12 Program. ITM 813
 - 3.13 RFI. Request for Information. A request from the Department-Certified Precast Concrete Producer Plant to the Department to consider a change to the previously agreed-upon working drawings. This is the only acceptable manner to request consideration of a change.
 - 3.14 QCP. The Quality Control Plan for the Certified Precast Concrete Producer Plant. It is site-specific and describes in detail the production, policies, and procedures used by the plant
 - 3.15 QPL. Qualified Products List. A Department-created list referenced in the Standard Specifications that require products, sources, equipment or other specified items to be reviewed and deemed acceptable for use before they are used on a Department contract
- 4.0 **SIGNIFICANCE AND USE.** The Department-Certified Precast Concrete Producer Program is a program whereby the Producer takes responsibility for the production of quality precast concrete products in accordance with contract requirements, and the Department monitors the Producer's quality control procedures.
- 5.0 **PRODUCER PERSONNEL**
- 5.1 **Management Representative.** The Management Representative at a Precast Concrete Producer's Plant shall be an individual who is responsible for all aspects of production and quality control required by the Program and shall be the liaison with the Department.
 - 5.2 **Quality Control Technician.** The Quality Control Technician shall be an ACI-Certified Concrete Field Testing Technician, Grade I.
- 6.0 **MATERIALS.** Materials incorporated into the precast concrete products shall be in accordance with the following:
- 6.1 **Admixtures.** Chemical admixtures shall be selected from the QPL of PCC Admixtures and Admixture Systems.
 - 6.2 **Aggregates.** Aggregates shall be in accordance with ITM 203.

- 6.3 Cement.** Cement shall be selected from the QPL of Cement Sources, or a Certified Precast Concrete Producer Plant may submit another cement source for consideration for use in the Precast Concrete Producer's Plant. In lieu of the 10% limit on limestone content in the blended cement listed in 901.01(b)1, up to 10.9% limestone will be allowed in the blended cement.
- 6.4 Epoxy Coated Reinforcing Bars and Epoxy Coated WWR.** The bar coater and reinforcing bar manufacturer shall be included together on the QPL of Reinforcing Bar and WWR Epoxy Coaters.
- 6.5 Manhole Steps.** Manhole steps shall be selected from the QPL of Manhole Steps.
- 6.6 Pozzolans.** Pozzolans shall be selected from the QPL of Pozzolans Sources.
- 6.7 Reinforcing Bars and WWR.** Reinforcing bars shall be selected from the QPL of Uncoated Reinforcing Bar and WWR Manufacturers.
- 6.8 Repair Materials.** Repair materials shall be in accordance with the QCP.

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7.0 MATERIALS TESTING.

The aggregate products used at each Precast Concrete Producer Plant shall be either from an INDOT Certified Aggregate Producer or tested by the Precast Concrete Producer in accordance with the following test methods:

Test		Indiana Test Method	AASHTO Test Method	ASTM Test Method
Fine Aggregate	Acid Insoluble Content	ITM 202		
	Freeze/Thaw Soundness in Brine	ITM 209		
	Material finer than No. 200 sieve by washing		T 11	C117
	Organic Impurities		T 21	C40
	Sieve Analysis of Aggregate		T 27	C136
	Specific Gravity of Fine Aggregate		T 84	C128
Coarse Aggregate	Structurally Weak Material	Visual		
	Soundness of Aggregate by Freeze and Thaw		T 103	
	Clay Lumps and Friable Particles		T 112	C142
	Lightweight Pieces in Aggregate (Chert)		T 113	C132
	Material finer than No. 200 sieve by washing		T 11	C117
	Sieve Analysis of Aggregate		T 27	C136
	Specific Gravity of Coarse Aggregate		T 85	C127
	Los Angeles Abrasion		T 96	C131

The Precast Concrete Producer Plant shall test the plastic concrete or hardened concrete in accordance with the following test methods as applicable:

Test	AASHTO Test Method	ASTM Test Method
Absorption	T 280	C497
Air Content (Pressure Method)	T 152	C231
Air Content (Volumetric Method)	T 196	C173
Compressive Strength	T 22	C39
Concrete Cores	T 24	C42
Making and Curing Concrete Specimens	R 100	C31
Sampling Concrete	R 60	C172
Slump	T 119	C143
Three-Edge Bearing	T 280	C497
Unit Weight	T 121	C138

Air content and slump testing will not be required when using dry cast concrete production methods.

8.0 QUALITY CONTROL.

8.1 QCP. Each Precast Concrete Producer Plant providing precast concrete products under the Program shall have a written QCP that shall contain the methods of production, and quality control policies and procedures used by the plant. The QCP shall be in accordance with ACPA, NPCA, or PCI Plant Certification requirements, any Indiana-specific addendums to ACPA, NPCA, or PCI Plant Certification requirements, and the Program. All Indiana-specific addendums are provided in Appendix A.

8.2 Product Marking. Precast concrete products shall be marked with the date of manufacture, Department provided Plant identification number, name or trademark of the Certified Precast Concrete Producer, ACPA, NPCA, or PCI certification identification marking, and the applicable Standard Specification required marking.

8.2.1 The ACPA product marking shall be the "QCast" emblem, the letters "QCAST", or the words "ACPA Certified Product".

8.2.2 The NPCA marking shall be the words "NPCA Certified Product".

8.2.3 The PCI marking shall be the "PCI certification" emblem or the words "PCI Certified Product".

9.0 DEPARTMENT AND PRODUCER RESPONSIBILITIES.

9.1 Producer.

9.1.1 Beginning Fabrication. Working drawings are drawings signed and stamped by a professional engineer and are required to be submitted to the Department for some precast concrete products. The contract documents, generally the specifications and special provisions, dictate which precast items require working drawings to be submitted to the Department. Precast products that require working drawings to be submitted are the following: reinforced precast concrete structural members, box culverts as indicated in 714.04(c) including headwalls, wingwalls, footings, three-sided culverts, including headwalls, wingwalls, and spandrel walls, MSE wall face panels, modular block wall blocks, and other precast items when indicated in the contract documents. When working drawings are required to be submitted to the Department, the Department-Certified Precast Concrete Producer Plant shall not begin fabrication on any part of the precast product depicted in

the working drawings until the working drawings for the product have been reviewed by the Department and returned via the Contractor to the Department-Certified Precast Concrete Producer marked as “no exceptions taken” or other similar language indicating it is acceptable for the plant to begin fabrication of the product.

Requests for deviations to previously reviewed working drawings shall be submitted as a Request for Information (RFI) thru the Contractor to the Department for review. Fabrication incorporating the proposed deviations shall not begin until a response is received from the Department.

For those precast products where contract documents or specifications do not require working drawings to be submitted, fabrication may begin at the discretion of the producer.

If explicitly stated in the respective AASHTO or ASTM standard for the product, the practice of “over-steeling” or increasing the size of the reinforcing used in the product may be done without notification to the Department.

9.1.2 Welding Reinforcing Bars. If the fabricator chooses to tack weld it shall only be done on ASTM A706 (weldable grade) reinforcing bars and only at the intersections of bars. Tack welding shall not be used to splice reinforcing bars. Additional requirements are as follows:

9.1.2.1 Standard weld procedure specifications (WPSs) that are site specific and welding-machine specific shall be developed at each facility and shall be qualified to AWS D1.4. These WPSs shall be approved by an AWS Certified Welding Inspector (CWI) prior to any production welding.

9.1.2.2 A CWI is not required to be on site for daily production tack welding.

9.1.2.3 A CWI must witness in-person the tack welder qualification testing and WPS preparation. The name and number of the CWI, the tack welders qualified, the date of qualification, and any other pertinent information the fabricator deems necessary must be noted and kept on file at the fabrication facility and added to the QCP.

9.1.2.4 All individuals performing tack welding for the fabricator shall be qualified by a CWI every 12 months.

9.1.2.5 All weld procedures must be reviewed and approved by a CWI every 12 months and shall be included in the QCP.

9.1.2.6 The fabricator shall include a section in their QCP on performing tack welding and inspection of tack welding. Also addressed shall be the appearance of a weld, what constitutes an unacceptable weld, and the disposition of unacceptable welds.

9.1.3 Photographic or Digital Image Documentation. The following reinforced precast concrete products:

- structural members as per Standard Specifications 707,
- box structures greater than 12 ft span or of a size not shown in ASTM C 1577, Table 1, and
- three-sided structures

shall be photographed by the Department-Certified Precast Concrete Producer immediately after final placement of reinforcement and prior to placing enclosing formwork. Photographs of precast concrete headwalls, wingwalls, and footings will not be required.

The photographs or digital images shall:

- be in one of the following formats: .jpg, .jpeg, .tif, .pdf, or .png,
- be in color,
- be taken from a sufficient number of locations and at appropriate angles to show all reinforcement and other appurtenances being encased in concrete from that location. (for example, a box culvert section may have one photo per face of the box, provided the photo captures all of the necessary detail in the face being shot.),
- have a tape measure or other device included in the photos,
- include the identifying information below.

The following information shall be legibly handwritten on a whiteboard (dry erase board), placed adjacent to the precast piece being photographed, and shall be legible in the photograph. The addition of identifying information electronically by editing the photograph after the photo has been taken is not acceptable and is grounds for consideration of removal from the QPL. Each photograph or digital image shall include the following identifying information for each piece of a precast product presented in the manner allowed above:

Date INDOT released the working drawing for construction,
 Date the image was taken,
 INDOT contract number (ex: B-26598)
 Structure number as shown on working drawings (ex: str. no. 5, or
 CV173-93-02.59)

Piece number of the structure as shown on the working drawings (ex: piece 4 of 10)

The file naming convention is as follows: 5-digit INDOT contract number_structure number_piece number of total number_date photo was taken in YYMMDD format.

For example: 26598_5_4of10_230608.jpg or
26598_CV173-93-02.59_4of10_230608.jpg

The photographs or digital images shall be uploaded to the Department's designated file location along with the corresponding working drawings (revised drawing upload only necessary if any changes were made via an agreed-upon RFI) within 30 days of the fabrication of the precast piece.

9.2 Department.

9.2.1 QPL. The Department will maintain a QPL of Department-Certified Precast Concrete Producers that meet the requirements of the Program.

9.2.2 Auditing. The Department may conduct audits on a random basis of each Department-Certified Precast Concrete Producer Plant to ensure and verify compliance with the QCP and this ITM.

10.0 QPL.

10.1 Consideration for Inclusion. A precast concrete producer requesting to have their plant become a Department-Certified Precast Concrete Producer and have their plant included on the QPL shall do so in writing to the State Materials Engineer, Division of Materials and Tests. The request shall include:

10.1.1 a copy of the compliance certificate issued by the ACPA, NPCA, or PCI,

10.1.2 a copy of the most recent final report audit conducted in accordance with the ACPA, NPCA, or PCI certification programs,

10.1.3 a copy of the response to deficiencies of the audit, if applicable,

10.1.4 a copy of the current QCP that is specific to the plant,

10.1.5 a copy of the coarse and fine aggregate test results for ASTM C33 performed by either an AASHTO-accredited laboratory or the Division of Materials and Tests, and

10.1.6 the name and contact information for the designated Management Representative for the plant.

- 10.1.7** Any additional requirements resulting from 12.0, conditions for reinstatement.
- 10.2** Upon review, consideration, and verification of the documents and information listed in 9.1 of this ITM, each precast concrete producer deemed to meet the requirements of the Program will be considered a Department-Certified Precast Concrete Producer and the plant will be added to the QPL.
- 10.3** The Department will maintain a QPL of Department-Certified Precast Concrete Producers by plant location.
- 10.4** **Notification of Changes.** In the event of a change in ownership of the Department-Certified Precast Concrete Producer Plant, the Department Certification and standing on the QPL will expire on the date of such change. The new ownership of the Precast Concrete Producer's Plant may ask the Department to not expire the Department Certification and standing on the QPL by submitting a statement to the Concrete Engineer, Division of Materials and Tests with details of the change in ownership and providing verification that the plant, under new ownership, is in compliance with and satisfies all the Department-Certified Precast Concrete Producer Program requirements, as well as ACPA, NPCA or PCI certification program requirements. The Department has discretion to approve or reject the request submitted.
- 10.4.1** The Plant shall inform the Department's Concrete Section (with the Division of Materials and Tests) within one week of any changes in the name and contact information for the designated Management Representative for the plant.
- 10.5** **Maintaining Standing on the QPL.** A Department-Certified Precast Concrete Producer Plant must comply with all requirements of this Program in order to maintain standing on the QPL. Those requirements are set out in this ITM and include but are not limited to the following:
- 10.5.1** Whenever an audit is performed by a certifying agency, each Department-Certified Precast Concrete Producer Plant is required to submit to the Division of Materials and Tests a copy of the audit and the response to deficiencies of the audit, if applicable, to demonstrate continued compliance with the ACPA, NPCA, or PCI certification programs. The Department will respond with an acknowledgement that the Plant is in compliance.

In addition, Plants that are certified by NPCA shall also have the NPCA auditor complete the INDOT DOT Addendum (Appendix A of this ITM) as part of the audit. This Addendum shall be included with the submittal of the audit.

10.5.2 New audit documents shall be submitted within 16 months of the last audit date shown on the QPL of Certified Precast Concrete Producers. Audit documents shall be submitted within 60 days of the date an audit is performed at that specific plant.

10.5.3 All addenda to the plant's QCP, new QCPs, or updated/revised QCPs shall be submitted to the Division of Materials and Tests within one month of their adoption by the plant. Electronic copies of these documents are acceptable.

10.6 Removal from QPL. The Department may remove a Department-Certified Precast Concrete Producer Plant from the QPL for any reason related to performance and/or quality, including but not limited to the following:

10.6.1 If the Plant fails to successfully pass an audit from the certifying agency that was used for the previous audit, or the plant scores:

- below 85 on an NPCA audit,
- below 84 percent on an ACPA audit, or
- below 84 on an PCI audit,

the Plant will be removed from the QPL indefinitely.

10.6.2 If the Plant fabricates precast elements prior to receiving notification that the Department has reviewed the working drawings and returned them with notification indicating there are no exceptions taken to the plant proceeding with fabrication, the Plant will be removed from the QPL indefinitely.

This section does not apply to standard designs of precast pipe, manholes, box culverts, and other precast products where a standard design has been performed and is explicitly listed in the respective AASHTO or ASTM standard for the product.

10.6.3 If the Plant makes unauthorized deviations from either the Department-reviewed working drawings or the standard designs presented in the applicable AASHTO or ASTM, such as, but not limited to, substitutions of reinforcement sizes, lengths, or spacing; adding, deleting, or changing lifting devices; and/or the inclusion or deletion of other items into or from the precast product, the Plant will be removed from the QPL indefinitely. Note: "over-steeling" as described in 9.1.1 is not considered an unauthorized deviation so long as the governing AASHTO or ASTM specification allow this practice.

10.6.4 The Department reserves the right to remove a Department-Certified

Precast Concrete Producer's Plant from the QPL if that plant has not produced a significant amount of precast concrete products for any Department contract for the previous 24 months. To satisfy this requirement a plant needs to either regularly supply material to INDOT contracts, supply a substantial amount of material to at least one contract, or supply pieces for significant elements on at least one contract (e.g., three-sided or box structure, 200 ft of pipe, etc.).

10.6.5 If the Plant fails to follow and adhere to quality control practices outlined and/or detailed in the certifying agency's quality control manual and/or the plant's QCP, the Plant will be removed from the QPL indefinitely. Plant failures that will result in this removal include but are not limited to failure to perform quality control testing at the frequencies specified by this Program, any other certifying agency's auditing entity and/or the Plant's QCP.

10.6.6 If the Plant fails to submit the final audit document package either:

- within 16 months of the last audit date shown on the list of Department-Certified Precast Concrete Producers for NPCA or ACPA-performed audits, or
- within 8 months of the last audit date shown on the list of Department-Certified Precast Concrete Producers for PCI-performed audits, or
- within 60 days from the date an audit is performed, the Plant will be removed from the QPL indefinitely.

10.6.7 If the audit cites a Plant for the same deficiency(ies) for two or more consecutive audits, the Department will evaluate the severity of the repeat deficiency(ies) and will consider taking action against the Standing of the Plant on the QPL. Action taken will be related to the severity of the deficiency(ies) in the sole opinion of the Department up to and including immediate removal from the QPL.

10.6.8 If the Plant fails to:

- upload photographs with identifying information to the Department's designated file location within 30 days of fabrication of the precast product;
- fails to properly include a label in each photograph with the information and in the manner specified in 12.1.2 of this ITM;
- fails to follow the stated file naming convention for uploaded files; and/or

- fails to correct any issues with photographic documentation after written notification of said issue(s), the Plant will be removed from the QPL indefinitely.

11.0 REMOVAL AUTHORITY. The removal of a Precast Concrete Producer Plant from the QPL of Department-Certified Precast Concrete Producers will be at the discretion of the State Materials Engineer, Division of Materials and Tests. If a Plant disagrees with the decision of the State Materials Engineer, they may lodge their disagreement and request a review by the Director, Division of Materials and Tests.

12.0 REINSTATEMENT. The formerly Department-Certified Precast Concrete Producer may submit a written request to the State Materials Engineer requesting consideration for reinstatement into the Program. The request shall detail the causes and reasons which caused removal from the QPL. In addition, the formerly Department-Certified Precast Concrete Producer shall state the solutions to the problem areas which caused removal and measures taken or enacted to prevent reoccurrence of problems.

If, after reviewing the request, it appears to the Department that an inspection of the formerly Department-Certified Precast Concrete Producer Plant would be appropriate or justified, the Department will schedule an inspection of the plant at a mutually agreeable time. If the Plant inspection shows the Plant is in compliance with the Program, all items listed in 10.1 of this ITM shall be provided to the Department and the State Materials Engineer will determine if the producer may be reinstated to the QPL.

At the complete discretion of the State Materials Engineer, some situations may warrant conditional reinstatement.

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Indiana DOT Addendum for NPCA Audits
Materials & Tests Unit
Precast Concrete Plant Verification Checklist Addendum

Company
Name:

Date of Verification:

Facility Address:

Facility Number:

General

1. Did the plant produce any products for INDOT in the previous 12 months and what size?

Materials

1. Passed Steel items comply with "Buy America" requirements, and the plant maintains the proper traceability.

Comments:

Concrete Mix Designs and Mix Proportions

2. Passed Current mix designs are on file.
3. Passed Concrete component material sources correspond with mix design.
4. Passed Material proportions coincide with the actual batch used in the plant's operations.

Comments:

Previous Audits and Reporting

5. Passed A copy of the last NPCA plant audit completed for Indiana is available
6. Passed Deficiencies from the previous audit have been resolved to INDOT's satisfaction.

- 7. Passed Note if any deficiencies are recurring.
- 8. Passed Final audit results are being reported to INDOT within the timeframe(s) stated in Indiana Test Method (ITM) 813 Section 10.5.2. The date of the last known audit for INDOT is available on INDOT's qualified products list of Certified Precast Concrete Producers.
- 9. Passed A summary of items supplied to an INDOT contract is being reported to INDOT within the timeframe(s) stated in ITM-813 Section 10.5.4.

Comments:

Inspection

- 10. Passed Documentation of pre-pour and post-pour inspections are being maintained and are complete
- 11. Passed Working drawings for precast concrete products that are required (see Section 9.1.1) to be signed and stamped by a professional engineer are on file.
- 12. Passed All revisions are approved and are noted in the approved drawings and are on file per ITM-813 section 9.1.1. (Any deviations from the approved drawings including bar sizes are not allowed without documented approval from INDOT).
- 13. Passed Each piece with any nominal dimension larger than 12.0 LFT is being photographed immediately after final placement of steel and prior to pour per ITM-813 section 9.1.3. The digital images are maintained in INDOT's Sharepoint site along with the corresponding drawings.

Comments: