

**STATE OF OHIO
DEPARTMENT OF TRANSPORTATION**

**SUPPLEMENT 1074
CONCRETE PIPE CERTIFICATION PROGRAM**

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1074.01 Scope. This supplement outlines the requirements for a concrete pipe manufacturer to become certified to produce and ship concrete pipe conforming the Department's Construction and Materials Specification 706.01 through 706.04, 706.06, and 706.07.

Certified manufacturers will be authorized to produce and ship pipe directly to ODOT construction projects without obtaining on site inspection/approval by the Department for each size and lot of pipe produced.

Pipe manufactured under the certification program is not transferable. Only manufacturers will be granted certification status for their manufacturing facility.

The Department will only accept concrete pipe from certified manufacturers.

1074.02 Program Overview. Certified manufacturers will provide any or all of the following classes of concrete pipe:

TABLE 1

CONCRETE PIPE TYPE	ODOT SPEC
Non-reinforced concrete pipe	706.01
Reinforced concrete circular pipe	706.02
Reinforced concrete pipe, epoxy coated	706.03
Reinforced concrete elliptical culvert, storm drain, and sewer pipe	706.04
Perforated concrete pipe	706.06
Concrete drain tile	706.07

Certified manufacturers are responsible for the quality of pipe supplied to the Department under the certification program as follows:

- A. Assure that all concrete mix designs and reinforcing steel designs used meet all applicable specifications.
- B. Assure component raw materials (aggregate, steel, cement) used conform to applicable specifications.
- C. Assure dimensional correctness of the pipe and any components incorporated into the pipe.
- D. Perform physical tests to document material compliance with specifications and assure material certified test results are complete, accurate, and conform to specifications. Material supplier certified test data is acceptable.
- E. Physically mark each pipe at the manufacturing site with a one-inch diameter green dot on both the bell and spigot ends indicating the pipe meets specifications.
- F. Visually inspect pipe for quality.

Certified manufacturers are accountable for pipe shipped to ODOT projects as follows:

- A. Provide a TE-24 when shipping pipe to an ODOT project.
- B. Establish quality control systems assuring that ODOT projects receive pipe meeting specifications.

- C. Retain documentation that pipe shipped to ODOT projects conforms to specifications. Retention period is three (3) years from the date pipe was shipped. Documentation shall include certified test results, quality control records, inspection records, and shipping documents.

Certified manufacturers are responsible for all damages occurring during handling of the pipe for storage, loading and transport.

This supplement does not waive ODOT or ASTM specification requirements for concrete pipe or the incorporated raw materials. The final product, all components, dimensions, and testing must conform to the applicable ODOT specifications and ASTM standards.

The Department will periodically perform quality assurance inspections (QAI) to evaluate certified manufacturers for compliance with the certification program. During the performance of a QAI, certified manufacturers will provide ODOT inspectors with access to areas and facilities, and to test results, shipping documents, and records associated with concrete pipe shipped to ODOT projects.

The Department's Project Engineer may reject pipe delivered to an ODOT job site for defects, damage, or non-compliance to specifications. Based on the delivered condition of the pipe, the Engineer may request additional QAI.

1074.03 Manufacturer Certification Process. Manufacturer will request certification status as follows:

- A. Submit a letter requesting inclusion into the concrete pipe certification program to the Administrator of the Office of Materials Management.
- B. Submit a Quality Control Plan (QCP) for concrete pipe products to the Administrator of the Office of Materials Management.
- C. Demonstrate competency in knowledge and performance of the Three Edge Bearing Test.

Certification status will be granted after the inclusion letter is accepted, the QCP is accepted and successfully demonstrated, and competency in the Three Edge Bearing Test is successfully demonstrated.

Certification status will be granted on a site by site basis. Manufacturers with multiple plants must qualify each plant individually.

1074.04 Inclusion Letter. Manufacturer will submit a letter to the Administrator of the Office of Materials Management requesting inclusion into the concrete pipe certification program. The letter requesting inclusion will include the following:

- A. The legal name of the company.
- B. The type(s) of concrete pipe from Table 1 that the manufacturer will be providing under the certification program.
- C. The location and address where pipe will be manufactured, tested, stored, and shipped from.
- D. The name and telephone number of the Quality Control Representative (QCR) for that location.
- E. A statement that a company representative has read and understands the responsibilities required of a certified manufacturer conforming to this supplement.
- F. A signature by a company representative having the legal authority to bind the company to the requirements of this supplement.

1074.05 Quality Control Plan (QCP). Manufacturer will submit a QCP to the Administrator of the Office of Materials Management. An ODOT representative will review the QCP within 45 days of receipt and accept, reject, or accept as noted. The manufacturer will be responsible for revising QCPs that are rejected or accepted as noted, and forwarding the revised copy to the Department.

QCP should include the following:

- A. The procedures and processes that will be used for ordering, testing, inspecting, verifying, controlling, storing, shipping and documenting the quality of concrete pipe and associated raw materials for conformance with specifications.
- B. General concrete mix designs for each type of concrete pipe production process (Dri-Cast, Packer Head) that the manufacturer intends to supply to ODOT projects.
- C. Copies of all forms and checklists that will be used to ensure the quality process and a description of how each form or checklist is to be used.
- D. A detailed description of when pipe will be inspected for quality (i.e. defects, deformation, damage, uniformity, dimensions, markings) and how inspections will be documented.
- E. A detailed description of the filing and record keeping system that will be used including location(s) where documents and records will be kept and the length of time documents and records will be retained. Filing and record

keeping system must be sufficient to tie results, test data, inspection reports, bill of lading and other shipping documents, and all other quality control results and forms to specific sizes and lots of concrete pipe products, and to specific ODOT projects where pipe was shipped. Documents and records must be kept for a minimum of three (3) years from the date pipe was shipped.

- F. A detailed description of the methods and processes that will be used to assure that complete and accurate pipe shipments are made. Shipments will not be made until testing procedures are complete, documented, and verified for conformance with specifications. All shipments to an ODOT project must be shipped on an ODOT TE-24.
- G. A detailed description of the methods and processes that will be used to track and retrieve rejected or non-spec pipe shipped to an ODOT project in spite of 1074.05 B) 6) including notification to ODOT and maximum retrieval time. Retrieval of rejected or non-spec pipe will be 2 working days or less from when the pipe was rejected or determined to be non-spec.
- H. Copies of the latest certifications and calibration records for the testing equipment used to perform any tests required by specifications. The manufacturer will update the QCP to include the latest certifications and calibrations.
- I. The name, title and telephone number of the person who will be the quality control representative (QCR).
- J. The names of personnel who are qualified to perform strength testing. Strength testing will consist of external load crushing strength testing by the Three Edge Bearing Test.
- K. The location(s) where the QCP, applicable specifications, and any other specifications or standards used in the quality control process or referenced in the QCP are filed. The manufacturer is required to have the most current copies on site.

The manufacturer will keep the information in the QCP accurate and updated. Additions, updates and changes to the QCP require written notification to the Department within two (2) weeks from the date the addition, update, or change was made and the reason(s) for the addition(s), update(s) or change(s). Part of the certification process requires acceptance of the manufacturer's QCP by ODOT. Therefore, the Department reserves the right to reject additions, updates, or changes that interfere with or diminish the quality process.

Please note that there is no standard QCP format. Each manufacturer will develop their own format. The Department will not provide a standard QCP format. A QCP above the

minimum requirements of this specification will help assure a quality operation. ODOT representatives will meet with any concrete pipe manufacturer to help eliminate multiple submissions, misunderstandings, and communication issues.

1074.06 Quality Control Representative (QCR). Certified manufacturers will designate a QCR at each plant location to be a liaison between the manufacturer and the Department. The QCR will be knowledgeable and competent with respect to the manufacturing of concrete pipe, the related quality control processes and procedures, applicable specifications and standards, and the manufacturer's QCP.

The QCR will be the Department's main point of contact for all issues involving the quality control of concrete pipe produced by the manufacturer and any other issues involving the concrete pipe certification program.

The QCR will be identified in the inclusion letter and in the QCP. Inclusion letters and QCPs not containing the name of the QCR will be rejected without further review or comments.

The QCR will assure all quality aspects of pipe supplied to the Department as follows:

- A. Assure that concrete mix designs and reinforcing steel designs are accurate and adequate, and that pipe is made using these designs.
- B. Assure that all raw materials used to manufacture pipe for ODOT projects conform to applicable specifications.
- C. Assure dimensional correctness of pipe supplied to ODOT projects.
- D. Assure all required tests are performed in accordance with applicable specifications, that the frequency of the testing conforms with applicable specifications, and that all test procedures and results are documented.
- E. Assure pipe is labeled and marked in accordance with ASTM specifications and this supplement.
- F. Assure pipe is inspected for quality (i.e. defects, deformation, damage, uniformity, dimensions, markings) in accordance with this supplement and all applicable specifications.
- G. Assure pipe shipped to an ODOT project is not damaged prior to or during loading of the pipe for shipment.
- H. Assure the filing and record keeping system used is sufficient to meet the minimum requirements of this supplement.

- I. Assure shipments are complete and accurate, and that all necessary shipping documents, including an ODOT TE-24, accompany shipments to ODOT projects.
- J. Initiate and oversee tracking and retrieval actions of non-spec or rejected pipe that is shipped to an ODOT project.
- K. Assure certifications and calibrations for testing equipment are valid and up to date.
- L. Assure the certified manufacturer's QCP meets the minimum requirements of this supplement and is accurate and updated as necessary in a timely manner.
- M. Assist ODOT inspectors during quality assurance inspections (QAI) and validation testing.
- N. Investigate and perform corrective action measures in the event that one or more quality control processes or procedures are determined to be inadequate or deemed insufficient by the QCR, the certified manufacturer, or the Department.
- O. Maintain current copies of all applicable ODOT and ASTM specifications, and any other specifications or standards used in the quality control process or referenced in the QCP.

1074.07 Strength Testing Qualification. Personnel performing strength testing on concrete pipe products for use on ODOT projects must be ODOT qualified. Strength testing in this supplement refers to external load crushing strength testing by the Three Edge Bearing Test method, and all strength test results must be signed by the ODOT qualified person that performed the test.

To become ODOT qualified, strength testing personnel must demonstrate competency and knowledge with respect to the Three Edge Bearing Test method by passing both a practical test and a written exam.

Strength testing qualification pertains to a specific individual and a specific plant. An individual who is already qualified at a specific plant can become qualified at additional plants by obtaining prior approval from the Department and passing the practical exam regarding the use of the strength testing equipment at the other plant(s) where qualification is being requested.

The practical test will consist of performing the Three Edge Bearing Test method. The practical test will be witnessed by an ODOT inspector from the Office of Materials Management. Persons performing the practical test will be given two (2) trials if necessary. A second trial will only be necessary if the ODOT inspector deems the first

trial was not performed satisfactory. If a second trial is necessary, it must be performed on the same day as the first trial.

The practical test will cover all aspects of performing the Three Edge Bearing Test, which includes:

- A. Inspect the testing equipment and sample seating equipment for damage, defects, alignment and proper operation prior to seating the sample into the testing apparatus.
- B. Inspect the test sample for proper seating and alignment once the sample has been loaded into the testing apparatus, and correct improper seating and alignment if necessary.
- C. Physically perform the test.
- D. Read and record the load.
- E. Perform necessary load calculations and conversions.

Persons failing both trials of the practical test must wait at least 30 days before they can re-take the test.

The written exam will consist of 10 questions concerning specification requirements for the Three Edge Bearing Test.

- A. ODOT personnel will determine the exam questions, write the exam, and grade the exams.
- B. All exam questions will be formulated from material contained in section 4 of the latest edition of ASTM standard C 497.
- C. Exam questions will be True or False or multiple choice.

Persons failing the written exam must wait at least 30 days before they can re-take the exam.

Persons passing the practical test but failing the written exam will only need to re-take and pass the written exam to obtain strength testing qualification if the written exam is re-taken and passed within one year from when the practical test was passed. If more than one (1) year has elapsed, both the practical test and written exam will have to be re-taken to obtain strength testing qualification.

Persons passing the written exam but failing the practical test will only need to re-take and pass the practical test to obtain strength testing qualification if the practical test is re-taken and passed within one year from when the written exam was passed. If more than one (1) year has elapsed, both the practical test and written exam will have to be re-taken to obtain strength testing qualification.

Persons who successfully pass both the practical test and written exam will obtain strength testing qualification. Qualification will be valid for a period of five (5) years from the earliest date that the practical test or written exam were passed. After the five (5) year period has elapsed, qualification will expire and the person must successfully pass the practical test and written exam at that time to obtain or retain qualification.

It is the certified manufacturer's responsibility to contact ODOT to schedule initial and re-takes of both the practical test and written exam. It is also the certified manufacturer's responsibility to schedule both the practical test and written exam when the qualification of a person in their employment has or is about to expire.

Requests to take or re-take the practical test or written exam must be submitted in writing to the Concrete Engineer of the Office of Materials Management.

1074.08 Quality Assurance Inspections (QAI). Certified manufacturers will be subject to QAI by ODOT inspectors from the Office of Materials Management. During a QAI, one (1) or more ODOT inspectors will arrive at the certified manufacturer's site, make contact with the QCR or other on-site personnel if the QCR is absent, and give notice that a QAI is being performed.

QAI will be performed to audit a manufacturer's adherence to their QCP and quality processes, and to validate strength testing procedures.

The certified manufacturer is responsible for scheduling an initial QAI. Excluding the initial QAI, all other QAI will be performed at the discretion of the Department with no scheduling or advance notice given to the certified manufacturer, QCR, or any other personnel employed by or involved with the certified manufacturer.

During the performance of a QAI, certified manufacturers will provide ODOT inspectors with access to pertinent areas and facilities, test results, shipping documents, and records associated with pipe shipped to ODOT projects, and to all files and documentation pertaining to the QCP and quality processes.

Personnel who are strength testing qualified will assist ODOT inspectors with any strength testing validation performed during the QAI.

The QCR will assist ODOT inspectors with all aspects during the performance of a QAI.

1074.09 Testing. Certified manufacturers will have the authority to approve concrete pipe based upon test results by size and lot in lieu of ODOT inspectors witnessing tests for approval purposes.

Certified manufacturers will perform and document all testing required by ODOT and ASTM specifications, this supplement, and any other applicable specifications and standards.

- A. Material supplier certified test data is acceptable documentation for purchased materials used in manufacturing pipe. Certified manufacturer is responsible for assuring material supplier certified test data is valid.
- B. Normal, regular, and routine testing does not need to be witnessed by an ODOT representative.
- C. The documenting of tests performed by a certified manufacturer will include testing dates, test methods used, frequency of testing, type of sample, number of samples tested, date sample was made and corresponding lot number, quantity sample represents, sample dimensions, test results, and personnel performing the tests.

External load crushing strength testing by the Three Edge Bearing Test method will be the primary strength testing method recognized and allowed under the certification program. The testing of cores to determine strengths of concrete pipe products for approval purposes is acceptable for pipe with diameters greater than 72 inches if prior approval is obtained.

Certified manufacturers will perform strength testing for validation purposes. Validation testing will be witnessed by an ODOT representative. Pass or fail determinations during validation testing will be made according to ASTM C76. Retests of pipe not meeting the external load crushing strength requirements as per section 11.3.2 of ASTM C76 are allowed.

- A. ODOT personnel will select a maximum of three (3) pipe for validation testing on each occurrence. The pipe selected will be from different lots. Pipe that the certified manufacturer has already deemed as not meeting specifications will not be subject to validation testing if the certified manufacturer provides documentation to that effect.
- B. Validation testing will initially be performed a minimum of four (4) times per year.
- C. The Department will reduce validation testing to a minimum of two (2) times per year for certified manufacturers that have no failures during four (4) consecutive validation occurrences if the certified manufacturer is adhering to their QCP and quality processes as determined by QAIs.

- D. Certified manufacturers that fail a validation test will be placed on probation for one (1) year. Validation testing for certified manufacturers on probation will be performed a minimum of six (6) times per year. Any failures during the probationary period will result in certification status being revoked and the manufacturer will not be eligible to re-apply for certification status for one (1) year from the date certification was revoked.

1074.10 Loss Of Strength Testing Qualification And Appeals Process. The Department will inform certified manufacturers verbally and by letter of any loss of qualification by personnel employed by the certified manufacturer. The letter will include the effective date of the loss of qualification, the reasons for the loss of qualification, the minimum waiting period before the personnel in question is eligible to re-apply for qualification, and whether the loss of qualification can be appealed.

Various inappropriate actions or infractions as listed below will result in the loss of ODOT qualification for strength testing and cannot be appealed.

- A. ODOT qualified personnel with a particular certified manufacturer that change manufacturers. The person must successfully pass both the practical test and written exam again to become ODOT qualified for strength testing.
- B. ODOT qualified personnel that purposefully or willfully falsify test results or documentation.

Various inappropriate actions or infractions as listed below will result in the loss of ODOT qualification for strength testing which can be appealed on the first offense. If these inappropriate actions or infractions are repeated, the Department reserves the right to revoke qualification for a maximum of one (1) year without an appeal.

- A. ODOT qualified personnel that are observed performing strength testing incorrectly by an ODOT inspector.
- B. ODOT qualified personnel that do not cooperate with ODOT inspectors during validation strength testing.
- C. Any other inappropriate action or infraction by ODOT qualified personnel that results in inaccurate data or affects the quality control process or the quality of the pipe.

Appeals pertaining to the loss of ODOT strength testing qualification should be sent to the Concrete Engineer of the Office of Materials Management. The appeals process is as follows:

- A. The person in question who lost qualification, or a representative from the same employer, must submit a written request for an appeal. The written request must be on the certified manufacturer's letterhead, and should include:
 - 1. The name of the individual who's loss of qualification is being appealed.
 - 2. A description of the circumstances leading to the loss of qualification.
 - 3. The date that qualification was lost.
 - 4. A description of training or steps taken to assure that the inappropriate action or infraction that originally resulted in the loss of qualification is not repeated.
 - 5. Signature of the person in question who lost qualification.
 - 6. Signature of a company representative who has legal authority to bind the company to any terms and conditions resulting from the appeal.
- B. The Department will respond back in writing within 30 days as to whether or not qualification is re-instated.

1074.11 Loss Of Certification Status And Appeals Process. The Department will inform certified manufacturers verbally and by letter of any loss of certification status. The letter will include the effective date of the loss of certification status, the reason(s) for the loss of certification status, and whether or not the loss of certification status can be can be appealed.

Various inappropriate actions or infractions as follows will result in the loss of certification status and cannot be appealed.

- A. QCR leaves employment with a certified manufacturer. Certification status will be re-instated when a competent replacement is designated by the manufacturer and begins work. Certified manufacturer will notify the Department on the next business day of the loss of a QCR, and on the same business day that a replacement QCR is designated and begins work. Pipe manufactured during the interim from when a QCR leaves employment and the replacement QCR begins cannot be used on ODOT projects. The Department encourages certified manufacturers to designate a replacement QCR prior to an existing QCR leaving employment.
- B. All personnel in the employ of the certified manufacturer who are ODOT qualified for strength testing either leave employment with the manufacturer, allow their qualification to expire, or lose their qualification. Certification

status will be re-instated when at least one (1) person in the employment of the certified manufacturer becomes ODOT qualified for strength testing. Only pipe tested by an ODOT qualified individual can be used on ODOT projects, and only strength test results signed by an ODOT qualified individual can be used for quality control documentation.

- C. A certified manufacturer on probation that has pipe fail during validation testing. The manufacturer will not be eligible to re-apply for certification status for a period of one (1) year from the date certification status was revoked.
- D. Purposefully or willfully shipping non-spec pipe to an ODOT project. The manufacturer will not be eligible to re-apply for certification status for a period of one (1) year from the date certification status was revoked.
- E. Purposefully or willfully falsifying test results or documents, or purposefully or willfully performing tests or test methods improperly, or deliberately failing to respond to a request by ODOT personnel to provide test results or other documentation. The manufacturer will not be eligible to re-apply for certification status for a period of one (1) year from the date certification status was revoked.
- F. Deliberately, purposefully, or willfully refusing to cooperate with ODOT inspectors during a QAI or validation testing. The manufacturer will not be eligible to re-apply for certification status for a period of one (1) year from the date certification status was revoked.

Inappropriate actions or infractions as follows will result in the loss of ODOT certification status but may be appealed. If these actions are repeated, the Department reserves the right to revoke certification status for up to one (1) year without an appeal.

- A. QCR consistently not fulfilling or performing the duties required by this supplement. The manufacturer will be required to determine the cause for non-performance and take corrective actions which may require the QCR to be trained at the manufacturer's expense.
- B. Failure to cooperate with ODOT inspectors during a QAI or validation testing without a valid reason, or failure to cooperate on a consistent basis.
- C. Failure to provide the Department with requested test results or documentation in a timely manner.
- D. Repeated failure to ship pipe on ODOT TE-24, or misuse of TE-24 system.
- E. Inappropriate actions or infractions that affect the quality control process or the quality of the pipe, or that are deemed inappropriate by the Department.

Appeals pertaining to the loss of certification status should be sent to the Administrator of the Office of Materials Management. The appeals process is as follows:

- A. A representative of the manufacturer that lost certification status must submit a written request for an appeal. The representative must be employed by the manufacturer. The written request must be on the manufacturer's letterhead, and should include:
 - 1. What inappropriate actions or infractions are being appealed.
 - 2. A description of the circumstances leading to the loss of certification status.
 - 3. The date that certification status was lost.
 - 4. A description of training or steps taken to assure that the inappropriate actions or infractions that originally resulted in the loss of certification status are not repeated.
 - 5. Signature of a company representative who has legal authority to bind the company to any terms and conditions resulting from the appeal.
- B. The Department will respond back in writing within 15 working days as to whether or not an appeal hearing will be granted, and if an appeal hearing is granted, the date, time, and location of the appeal hearing.
- C. If an appeal hearing is granted, the Department will document the results of the hearing in a letter to the manufacturer within 15 working days from the date the appeal was held.