METHODS OF SAMPLING AND TESTING
MT 110-09
METHOD OF ACCEPTANCE FOR
REINFORCED CONCRETE PIPE AND ASSOCIATED ITEMS
(Montana Test Method)

2009 Changes:

MT-110 has been completely rewritten.

Procedure continues below

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1 Scope:

1.1 This procedure is an inspection and verification process applicable to all suppliers of pre-cast concrete pipe and associated items.

2 Referenced Documents:

2.1 ***AASHTO:***
M 55 Steel, Welded Wire Reinforcement, Plain, for Concrete
M 85 Portland Cement
M 170 Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
M 206 Reinforced Arch Concrete Culvert, Storm Drain, and Sewer Pipe
M 207 Reinforced Elliptical Concrete Culvert, Storm Drain, and Sewer Pipe
M 259 Precast Reinforced Concrete Box Sections for Culvert, Storm Drains, and Sewers

ASTM:
C361 Standard Specification for Reinforced Concrete Low-Head Pressure Pipe

MT Manual:
MT-108 Sampling and Certification of Portland Cement

Construction Bureau:
Manual for Uniform Installation and Inspection of Culverts and Pipes

3 Definitions:

3.1 ACPA – American Concrete Pipe Association
NPCA – National Precast Concrete Association

4 Inspection Process for ACPA and NPCA Certified Plants

4.1 Each participating manufacturer must maintain sufficient procedures and documentation to assure that their products are manufactured and tested in accordance with the guidelines of ACPA and/or NPCA certification programs. An MDT Inspector will conduct a thorough inspection of each Certified Plant to verify compliance with these requirements. Plants meeting these requirements will be listed on the Qualified Products List.

4.1.1 Yearly:

Inspection Checklist

- Verify ACPA and/or NCPA certification:
- Verify that certified manufacturing plants have a Quality Control Manual, applicable AASHTO, ASTM standards, organizational chart, and personnel training and qualification records.
- Verify that documents are maintained for all suppliers of materials for the months the plant is producing.
- Verify that production and testing equipment has been properly calibrated according to the calibration requirements as stated in the Quality Control manual.

4.1.1 Yearly: (continued)

- Verify mix designs are current and approved.
- Conduct Monthly inspection outlined in Sec. 4.
- Verify that any deficiencies recorded from the previous inspection have been addressed.
- Verify that the manufacturers detailed design information meets MDT requirements.

4.2 Monthly:

4.2.1 Approximately once a month MDT will inspect the fabricating plant's certification reports, test results, and other records from the previous inspection date to present. The Inspector will ensure that the plant is 'Buy America' compliant for all steel products Occasionally concrete cylinders and reinforcing steel samples may be obtained and tested by MDT.

Inspection Checklist

- Verify that any deficiencies recorded from the previous inspection have been addressed.
- Verify mill certifications for cement.
- Verify Fly Ash certifications.
- Verify additive certifications.
- Verify absorption test results.
- Verify the aggregate sieve analysis.
- Verify steel certifications and conformance to 'Buy America' requirements.
- Verify fabricated cages and reinforcement conform to MDT specifications.
- Verify a dimensional test report on one pipe size to ensure that they match the dimensions shown on the detailed drawings or AASHTO Standard Specifications.
- Verify gasket material certification and test reports.
- Verify cylinder break strength results.
- Verify records of Three Edge Bearing Tests.
- Occasionally observe the following concrete tests;
- Slump
- Air Content
- Temperature of the mix
- Making of cylinders
- Unit weight and yield of concrete
- Cylinder compression testing.
- Concrete Absorption
- Three Edge Bearing Test

5 Inspection Process for Non-Certified Plants

5.1 Non-certified plants are inspected by MDT to confirm the products meet MDT specifications. Components such as concrete, reinforcing steel and other items may be sampled, fabrication

5 Inspection Process for Non-Certified Plants (continued)

drawings checked and the final product inspected for quality. The plant's quality control program must be sufficient that MDT can confirm quality of materials and processes used. MDT level of inspection will vary depending upon the thoroughness of the quality control program at the plant.

- Verify personnel training and qualification records.
- Verify production and testing equipment has been properly calibrated.
- Verify rate and frequency of testing is adequate and Quality Control records are maintained.
- Verify mill certifications for cement.
- Verify steel certifications and conformance to 'Buy America' requirements. Sample as required.
- Occasionally observe the following concrete tests;
- Slump
- Air Content
- Temperature of the mix
- Making of cylinders
- Unit weight and yield of concrete
- Concrete Absorption
- Three Edge Bearing Test
- Verify concrete cylinders are made and tested periodically to represent the concrete placed in all items.
- Concrete items other than concrete pipe will be entered on Form No. 19A. These items, together with pipe too large to test, are represented by cylinder tests as outlined above.

6 Mark of Inspection:

6.1 Non-certified manufacturers of concrete pipe and other concrete items must notify MDT when producing products for a project so that inspection arrangements can be made. All concrete products produced by a non-certified plant must carry a mark of inspection. (see Fig. 1) This will be stamped on each length of pipe, by the inspector, where it will be clearly visible. The circle M indicates the pipe was inspected. Final acceptance will be made in the field.

6.2 Occasionally products from non-certified plants may be shipped to a project without the circle-M if the non-certified plant verification process (sec. 5 above) has been conducted and arrangements have been made between the EPM and the District Lab prior to shipment. Final acceptance will be made in the field.

CIRCLE M STAMP
Fig. 1