

**METHODS OF SAMPLING AND TESTING**  
**MT 401-04**  
**METHOD OF SAMPLING AND INSPECTING CORRUGATED ALUMINUM PIPE**  
**(AASHTO M196, M197)**

**1 Scope:**

- 1.1 This specification covers the testing and inspection guidelines for aluminum clad alloy culverts and underdrains.

**2 Referenced Documents:**

**2.1 AASHTO:**

M196 Corrugated Aluminum Pipe for Sewers and Drains  
M 197 Aluminum Alloy Sheet for Corrugated Aluminum Pipe

**ASTM:**

B 209 Specification for Aluminum and Aluminum-Alloy Sheet and Plate

**3 Sampling:**

- 3.1 Sampling shall be performed or witnessed by the testing agency at the point of fabrication.
- 3.2 Random sampling shall consist of at least one set of three 1" x 12" samples per gauge, alloy and temper, lot number and type of corrugation. Samples shall be obtained a minimum of 3" from any edge.
- 3.3 Previously tested material that is properly marked and accepted need not be re-sampled but must be listed in the test report.
- 3.4 In the event that the samples fail to comply, two additional sets of three samples will be taken from the same gauge, alloy and temper, lot number and type of corrugation. Both sets must comply with the requirements or the entire lot number will be rejected.
- 3.5 Each corrugated sheet used in annular corrugated pipe, and each 2 ft. (0.6m) to 5 ft. (1.5m) of coiled sheet used in helically corrugated pipe, shall be identified by the fabricator showing the following:
- 3.5.1 Name of sheet manufacturer.
- 3.5.2 Identification of the pipe fabricator, if different than the sheet manufacturer.
- 3.5.3 Alloy and temper.
- 3.5.4 Specified thickness.
- 3.5.5 Fabricator's date of corrugating or forming into pipe by a six (6) digit number indicating in order the year, month and day of the month.
- 3.6 The marking shall be applied to the sheet by a permanent method such as coining into the metal. This identification shall appear on the outside of the pipe.
- 3.7 *Sheet Manufacturer's Analysis:*  
The manufacturer of each brand shall furnish a certificate setting forth the name or brand of aluminum alloy to be furnished, and a statement that the material conforms to the specified chemical composition limits. The certificate shall be sworn to for the manufacturer by a person having legal authority to bind the company.

**3 Fabrication:** (continued)**3.8** *Sheet Manufacturer's Guarantee:*

The manufacturer of the sheets shall submit, with the analysis, a guarantee providing that all aluminum alloy furnished shall conform to the applicable requirements of the latest revision of ASTM B209 for Alclad alloy 3004-H34 unless otherwise specified and shall bear a suitable identification brand or mark, and shall be replaced without cost to the purchaser when not in conformity with the specified analysis, sheet thickness, or cladding thickness, and the guarantee shall be so worded as to remain in effect so long as the manufacturer continues to furnish material.

**3.9** Fabrication of the corrugated aluminum pipe shall conform to the requirements of AASHTO M 196, the Standard Specifications, and the plans for the specific project, and the Special Provisions.

**4 Certification:**

**4.1** The testing agency shall submit appropriate manufacturer's mill test reports and chemical analysis representing each lot number used. The certification shall be submitted with the samples, and under separate cover. The reports shall include the following:

**4.1.1** Lot number.

**4.1.2** Gauge.

**4.1.3** Corrugation size.

**4.1.4** Diameter and quantity of pipe.

**4.1.5** Type of seam.

**4.1.6** Name of supplier.

**4.1.7** Montana highway project for which the material is designated.

**4.1.8** Two copies of Form 407 will accompany the material to the project site.

**5 Approval for Shipments of Culverts**

**5.1** Culverts and/or related material shall not be approved for shipment until they have been found to comply with our specifications.

**5.2** Evidence of approval shall be by means of the inspecting agency's ID stamp or tag placed on a noticeable location on each section of the inspected material.

**5.3** In the event of any questions pertaining to the approval for shipment of culverts and/or related material, contact the Materials Bureau.

**6 Field Inspection and Acceptance**

**6.1** The field inspection shall be made by the Project Manager who shall be furnished by the seller with an itemized statement of the sizes and lengths of culvert pipe in each shipment. This inspection shall include an examination of the culvert pipe for deficiency in length of finished pipe, and any evidence of damage during shipment. Along with the proper approval stamp or tag from the inspecting agency.