METHODS OF SAMPLING AND TESTING
MT 406-04
METHOD OF SAMPLING AND INSPECTION OF SIGNING MATERIAL AND SIGNS
(*Montana Method*)

1 Scope

1.1 Following the determination of a successful bidder, and upon the letting of a project to contract, a letter is sent to the prime contractor by the Materials Bureau requesting the source of bid items in the contract. These items include signing material and signs. Upon receipt of the information, the Certification Inspection Supervisor in the Materials Bureau will arrange for inspection. The following procedures and requirements shall be observed whenever signs are included in a project.

2 Referenced Documents

2.1 Montana Department of Transportation Detailed Drawings

3 Reporting

3.1 A copy of all correspondence, test results, certificates and other pertinent documents shall be submitted to the Materials Bureau, attention Certification Inspection Supervisor.

4 Signing Material

4.1 Inspection of signing material will be performed by either another state, by a commercial inspection and testing agency, or if the material was not pre-inspected by field personnel.

5 Sign Fabrication Inspection

5.1 Sign fabrication inspection involves visual observation of sign materials, fabrication procedures, and the manufactured product to ensure that it will serve the intended purpose for its expected performance life.

5.2 Material specifications are outlined in the Standard Specifications for Road and Bridge Construction and in the contract special provisions. Materials used in the fabrication of highways signs are inspected by an inspection agency for each construction contract.

5.3 In-Plant sign inspection and approval does not constitute mandatory acceptance by the Project Manager of the delivered product. It is possible that signs may be damaged in transit because of inadequate packaging or poor handling and will be rejected at the project site. Approval of a sign at the point of fabrication means that the inspector has assured himself that all materials used meet the plan specifications and that finished signs are satisfactory in appearance and workmanship.

6 Materials

6.1 Inspection & Sampling: Following is a listing of the materials used in the fabrication of signs and the required sampling procedures before the subject material may be approved for use.

6.2 6061 T6 or 5052 H38 Aluminum Sheeting can be accepted on certification of conformance and certified mill test reports. No sample is required unless deemed necessary by the Inspector. If samples are required, they shall be sampled as follows: Two samples of size 3/4 inch x 9 inch of each gauge will be taken from each consignment of aluminum received for signing. Samples will be oriented with the longer dimension parallel to the direction of rolling. The Materials Bureau will machine these samples to comply with ASTM E8-80A. A Certificate of Compliance including Certified Mill Test Reports of each gauge is required.

6.3 Aluminum Sign Blanks: Each consignment of aluminum sign blanks is spot checked with a micrometer for gauge thickness conformance. Certificates of Compliance and a Certified Mill Test Report of each gauge are required.

6.4 6063 T6 Extruded Aluminum T-Sections (Wind Beam): Certificates of Compliance, Certified Mill Test Reports, and Chemical Analysis are required for each order. No sample is required unless deemed necessary by the Inspector.

6.5 HD (High Density) Plywood: The minimum allowable plywood grade shall be B-B high density overlay 60/60 with amber overlay on both sides, and a minimum thickness of 3/4" or as shown on plans. A spot check on thickness requirements, grade-trademark for Grade and Type of plywood, and a letter attesting to the standard of the plywood received is required. No sample is required unless deemed necessary by the Inspector.

6.6 Reflective Sheeting: A portion of each roll will be visually inspected for imperfections. A Certificate of Compliance including the type, grade, color, and purchase order number is required for each roll used in the signing fabrication.

Note 1 –Reflective sheeting from each manufacturer will be sent to the Materials Bureau for reflectivity testing on an annual basis.

6.7 Sign Faces: No sampling is required for reflective or non-reflective sign faces. A visual inspection for conformance and imperfections will be performed on each order of sign faces received. A Certificate of Compliance is required for each shipment. The certificate will include type of material and purchase order number.

6.8 Applied or Demountable Copy A Certificate of Compliance is required for each order prior to usage. The reflective sheeting for all sign copies shall be Silver-White No. 2 (Parkway - if a 3M product). Encapsulated lens, wide angle reflective sheeting may be used when specified in the plans.

7 Fabrication: Items to be observed by the Inspector During Sign Fabrication

7.1 Approved materials.

7.2 Visual check of material color and color match with a 150 watt flood light held at eye level at a distance of 50 feet from material being observed.

7.3 Visual check of uniform legend color tone and uniform reflectivity with a 150 watt flood light held at eye level at a distance of 50 feet from legend being observed.

7.4 Visual check of splices.

7.5 Fabrication

7.5.1 Correct thickness of aluminum or plywood.

7.5.2 Correct material for reflectorized and non-reflectorized signs, (sheeting and copy).

7.5.3 Correct "T" sections (wind beam) and proper spacing of "T" sections, (Standard Drawing No. 619-04 and 619-06).

7.5.4 Correct spacing of rivets with heads painted to match signs, (Standard Drawing No. 619-04).

7.5.5 Correct spacing of aluminum clips on "T" sections on plywood, (Standard Drawing No. 619-06).

7.5.6 Correct sign size, color, and whether copy and background sheeting are reflectorized or non-reflectorized.

7.5.7 Corners of control signs rounded.

7.5.8 Corners of guide signs rounded when so noted on plans.

7.6 Non-Standard Items:

7.6.1 Conformance to contract special provisions. Conformance to special mounting details shown on the plans.

8 Application of Materials

8.1 Use of approved equipment and qualified personnel.

8.2 Sheeting properly applied.

8.3 Absence of foreign particles under applied sheeting.

8.4 Absence of air bubbles under applied sheeting.

8.5 Absence of loose edges.

9 Workmanship

9.1 Correct sign layout and size.

9.2 Sharp clear screened sign messages.

9.3 Proper horizontal and vertical spacing.

9.4 Correctly spelled words.

9.5 Symbols correctly depicted.

9.6 Back of sign clean and free of corrosion.

9.7 Sign number on back of guide signs.

10 Design Conformance

10.1 Completed Signs:

10.1.1 All completed signs will conform to the Manual on Uniform Traffic Control Devices, and Standard Highway Signs as specified in the MUTCD, 1978 with addendums; except as may be provided for in the Montana Standard Drawings, Montana Sign Index, or contract plans and approved shop drawings.

10.1.2 All completed signs that are in conformance will be stamped on the back of the sign, by the inspector, with the inspecting agency's stamp of approval.

10.1.3 Test reports for signing material, inspected and sampled by a commercial agency, will be sent to the inspecting agency by the Materials Bureau upon completion of the tests.

10.1.4 Test reports for material sampled by field personnel will be issued upon completion of the tests.

10.1.5 The supplier for all major signing material must provide the manufacturer's Certificates of Compliance. Copies of all certificates will be kept in the Materials Bureau project files.

10.1.6 Acceptance reports for material used on pre-inspected signs that were supplied from out-of-state will be submitted to the field in the final report.

10.1.7 The field shall provide the Materials Bureau with inspection and acceptance reports whenever un-inspected signing material that has been supplied from out-of-state is delivered to the project. (Section 10.2.4).

10.2 Signs Supplied Locally or from Out-of-State:

10.2.1 Signs that have been supplied locally or out-of-state are inspected at the source as designated by the Materials Bureau. Following inspection, a report listing the number and kind of signs will be submitted to the field and to the Materials Bureau.

10.2.2 In the event that the signs have not been pre-inspected, the Materials Bureau shall require a Field Inspection and Acceptance Report in addition to the manufacturer's Certificates of Compliance (Section 10.1.5).

10.2.3 Signs are inspected for conformance with the Montana Department of Transportation specification requirements. Locally inspected signs will bear evidence of having been inspected by the presence of the inspecting agency's stamp of approval. Unpackaged signs will bear a stamp on the back of the sign, while packaged signs will bear a stamp on the package face.

10.2.4 Locally supplied signs that have not been inspected may be delivered to a project only in the case of extreme urgency for installation. For such cases, the suppliers have been directed to immediately forward a letter to the Materials Bureau and to the Project Manager describing the circumstances under which the signs (not inspected) were shipped. This letter must designate the project and location to which the signs were delivered and list the kind and quantity of signs. Signs that have been shipped without inspection shall not be accepted until the manufacturer has submitted this letter.

10.2.5 It is imperative that the Materials Bureau, attention Certification Inspection Supervisor, be informed of the field inspection and acceptance of all signs that do not show evidence of inspection at the source. The following information will be included in this inspection report:

10.2.5.1 Appearance and workmanship

10.2.5.2 Conformance to specifications

10.2.5.3 Type, size, and quantity

10.2.5.4 Gauge of aluminum

10.2.5.5 Thickness or ply of plywood

10.3 Final Signing Material and Sign Acceptance Reports:

10.3.1 Signing material and signs which have been inspected by a commercial agency will be accepted upon receipt of all required Certificates of Compliance.

10.3.2 Signing material and signs which have been supplied from out-of-state but which have not been inspected will be accepted upon receipt of required certificates from the supplier, a field inspection, and an acceptance report.

10.3.3 Signing material and signs which have been supplied from out-of-state and have been inspected by a commercial agency will be accepted on the reports issued by the agency.

10.3.4 Signing material and signs which have been supplied locally and have been inspected by the District will be accepted on the reports issued by the District.

10.3.5 All signing material and signs, regardless of source and inspection procedure, are subject to final field approval.

PAGE INTENTIONALLY LEFT BLANK