Section 4100. General Provisions

4100.01 DESCRIPTION.

A. Apply Section 1106 to all materials. Apply Article 1101.02 when a standard specification or test method is included by reference using abbreviations. These references are to be construed as the latest standard specification or test method published prior to the date of the contract.

B. When the Specifications do not describe material quality, use only high quality materials capable of withstanding normal installation stresses.

4100.02 INSPECTION ARRANGEMENTS.

A. Notify the Contracting Authority at its central office of the source of the various materials required for each project. Provide notification sufficiently in advance of any shipment of materials so that inspection may be arranged at the producing plant if the Engineer so elects.

B. If the quantity of materials rejected for failure to meet specification requirements is 20% or more of the material presented for inspection, the inspection operation may be suspended until the producer has either:
- Regraded the material, or
- Revised the production methods to produce material meeting requirements of this specification.

C. A producer or jobber may request inspection of material for warehouse stock or for use in plants where stocks of materials (inspected and reserved for use in construction or maintenance in which the Contracting Authority has an interest) cannot be kept segregated from materials which will be used on other work. The cost of inspection of the materials which have been inspected and reserved, but are later diverted to other uses not connected with this construction or maintenance, may be charged to the producer or jobber.

D. At the option of the Engineer, acceptance may be based on
- Tests of official samples,
- Tests of producer's samples,
- Producer's certifications,
- Visual inspection, or
- Any combination of the above.

E. Any material furnished on a certification, approved brand, or producer's sample basis may be subject to additional testing or inspection, and approval on this basis may be withdrawn at any time.

F. Laboratory facilities may be required as provided in Section 2520 for the inspection of any material.

4100.03 MEASUREMENT OF LIQUID BITUMINOUS MATERIALS.

Liquid bituminous materials will be measured in U.S. standard gallons (liters) at a temperature of 60°F (16°C). Volumes measured at other temperatures will be corrected to a base 60°F (16°C), using Petroleum Measurement Tables, ASTM D 1250, Table 25, as follows:
- Group 0 for asphalt products having specific gravities of 0.9654 and higher.
- Group 1 for asphalt products having specific gravities from 0.8495 to 0.9653.
- Group 0 for tars of grades RT-1, RT-2, RT-3, and RT-4 or emulsions.

A. Field Measurement.

1. Before each shipment of bitumen to be paid for directly by the Contracting Authority is unloaded, allow the Engineer the opportunity to make the measurements that are necessary to determine the net quantity of materials delivered.

2. Payment will be based on billed volume except when the Engineer has made field measurements to determine the quantity of material delivered. When quantities computed from field measurements agree within 1.0% of the billed volume, payment will be based on the billed volume.

B. Shipments.
Unless otherwise provided in the contract, Materials I.M. 437 applies.

4100.04 METHODS OF SAMPLING AND TESTING.
Unless designated otherwise in the contract documents or the Office of Materials Test Method No. Iowa or Materials I.M.s, perform materials testing using apparatus and methods that comply with requirements of the current AASHTO "Standard Specifications for Highway Materials and Methods of Sampling and Testing," including published interim standards.

4100.05 UNITS OF AGGREGATE FOR SAMPLING.

A. Aggregates to be used may be required to be separated into distinct units. Keep these separate for a sufficient time to provide for proper testing and inspection. Ensure each unit meets the requirements for the kind of material represented.

B. When the Engineer approves, aggregates from more than one approved source may be combined by accurately proportioning each material. Ensure each source meets the specification requirements for the intended use.

C. When aggregates from more than one approved source are combined to meet PCC requirements, ensure the combination of coarse aggregate meets requirements of Articles 4115.03 and 4115.04. Ensure the combination does not contain more than 0.8 of the maximum percentage of any objectionable materials specified in Article 4115.02. Aggregates for use in such combinations will be accepted only with the Engineer's approval and according to provisions stated in that approval. The provisions include the following:

- The maximum percentage of each of the objectionable materials that the aggregate from each source may contain, and
- The percentage of aggregate from each source that the combination is required to contain.

4100.06 TESTING ZINC COATING.

A. The weight (mass) of coating on zinc-coated articles will be determined using Iowa DOT Office of Materials Laboratory Test Methods. Normally, Test Method No. Iowa 802 will be used. Test Method No. Iowa 803 may be used when allowed by the coating specification or when the Engineer approves nondestructive testing. Method 804 may be used when a coating is specified by uniformity.

B. Test specimens will be selected after delivery to the project site, unless arrangements have been made for sampling them at the point of production or some intermediate point.

4100.07 GALVANIZING.
When galvanizing is called for and the requirements are not specified in the contract documents, apply the requirements listed below. Determine the weight (mass) of both zinc and cadmium coatings according to Article 4100.06.

A. Malleable Iron or Steel Castings.
Apply ASTM A 153, Class A.

B. Rolled, Pressed, and Forged Hardware Articles.
Except for those that are included under Classes C and D, apply ASTM A 153, Class B.

C. Drive Screws and Bolts (over 3/8 inch (8.5 mm) in diameter), Washers 3/16 inch (4.8 mm) and 1/4 inch (6.4 mm) Thick, and Similar Articles.
Apply ASTM ~~A 153, Class C~~ F 2329.

D. Screws, Stove Bolts, and Bolts (3/8 inch (9.5 mm) and under in diameter), Washers Under 3/16 inch (4.8 mm) Thick, Rivets, Nails, and Similar Articles.
Apply ASTM ~~A 153, Class D~~ F 2329.

E. Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip, 1/8 inch (3 mm) Thick and Heavier.
Apply ASTM A 123.

F. Welded and Seamless Steel Pipe and Tubing.
Apply ASTM A 53.

4100.08 CONCRETE COMPRESSION TEST SPECIMENS.

A. Concrete compression test specimens may be cast:

- According to Materials I.M. 315, or
- Horizontally in molds with a diameter of 4 1/2 inches (114.3 mm) and length of 9 inches (228.6 mm) or a diameter of 6 inches (152.4 mm) and length of 12 inches (304.8 mm).

B. When compressive strength is a specification requirement, use of horizontal molds is subject to agreement of the Contractor.