A revision to the Standard Specifications for §603, Culverts and Storm Drains, was issued via Engineering Instruction 98-038. The effective date of the new specification is July 22, 1999. The revised specification addressed the following:

- Aluminum Coated Type 2 Pipe was added as an alternative culvert material
- Polymer Coated Steel was deleted from §602 and added to §603
- Polyethylene Pipe was added
- Clay Pipe was removed

§603-2 Materials
The acceptance criteria for the various culvert materials is identified in the corresponding §700, Materials Details, of the Standard Specifications. Materials Methods that describe the inspection techniques are MM-12 for metal culverts and MM-1 for concrete culverts.

§603-3 Construction Details
§603-3.02 Laying Pipe

Concrete: When lifting holes exist, lay pipe with the holes in the 12 o’clock position. If any pipe pieces have the word “top” marked on them, they should be oriented correctly. Typically, this occurs with elliptical pipe designs, but occasionally, round culverts with special steel reinforcements require these markings.

Metal Pipe: The thickness of the pipe must be verified with a micrometer caliper. Coating thickness should be verified with a Type 2 Fixed Probe Magnetic Gauge. The calipers and gauge are provided by the Contractor.

Polyethylene Pipe: The pipe after installation will have a maximum deflection of 5% of its nominal inside diameter. The Engineer may order the contractor to perform mandrel testing to determine the 5% specification compliance.

§603-3.03 Bedding and Backfilling Pipe
Adhere to the appropriate Standard Sheet for the proper procedures. Aluminum or aluminum-coated pipe must be coated with a zinc chromate primer or an approved alternative if it is to come in contact with portland cement.

Compaction: All pipes should be backfilled according to the appropriate Standard Sheets: Metal and Plastic 203-5R, Concrete 203-4R. In addition, lifts should not exceed 150 mm.

Controlled Low Strength Material (CLSM): If this material is specified, measures must be taken to assure that the pipe will maintain its line and grade during the placement of the CLSM. Depending on the pipe material, the Contractor must insure that the pipe does not float during the placement of the CLSM.

§603-3.04 Damaged Pipe and Repair
Concrete: The latest revision to the specification, §706-02, can be found in Engineering Instruction 98-019.

Repair of concrete pipe is discussed under Fabrication Requirements. Materials Method 1, Quality Assurance Procedure for Concrete Pipe Items, also covers quality assurance and repair procedures for concrete pipe items.

Metal: Damaged pipe coatings must be repaired according to Materials Method 12, Corrugated Metal Pipe and Corrugated Structural Plate for Pipe.
Polyethylene: Damaged polyethylene pipe may be acceptable provided the damaged section is removed. The remaining section may be incorporated at terminal locations only. The minimum length of a pipe section is 1 meter.

§603-3.06 Joints
The maximum allowable space at all joints, regardless of material type, is 13 mm.

Concrete: If the Contract requires an internal pressure test, follow the procedures indicated in §603-3.06 C.

Metal: The circumference of consecutive sections may not vary by more than 38 mm. Arched pipe may require matched ends with a numbering system to identify the construction sequence of the sections.

Polyethylene: Only manufactured ends may be used at joints. No field cuts are allowed in this location unless approved by the Engineer.

References
Materials Method 1
Materials Method 12