

C. Acceptance

Test as follows:

Test	Method
Grease cone penetration	AASHTO T 187
Non-Volatile	ASTM D 2939
Ash	ASTM D 128

D. Materials Warranty

General Provisions 101 through 150.

848.2.06 Preformed Plastic Gaskets**A. Requirements**

1. Use cold-applied plastic gaskets that meet the requirements of AASHTO M 198, Type B to seal tongue-and-groove concrete culverts, precast manhole, and sewer pipes. However, do not perform the Flash Point COC and Fire Point COC tests.
2. Use approved materials from those listed in QPL 21

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

The Department will accept materials only from facilities listed in QPL 21.

D. Materials Warranty

General Provisions 101 through 150.

Section 850—Aluminum Alloy Metals

850.1 General Description

This section includes the requirements for all types of aluminum alloy materials, including:

- Sheet and plate
- Bars, rods, shapes, and wire
- Bolts, nuts, and set screws
- Washers
- Rivets
- Shims
- Extruded tubing
- Pipe

850.1.01 Related References**A. Standard Specifications**

Section 106—Control of Materials

B. Referenced Documents

1. ASTM
 - B 209/B 209M, Alloy 1100, Temper 0
 - B 209/B 209M, Alloy 6061, Temper T 6
 - B 209/B 209M, Alclad Alloy 2024, Temper T 4

- B 211/B 211M, Alloy 2024, Temper T 4
 - B 221/B 221M, Alloy 6061, Temper T 6
 - B 221/B 221M, Alloy 6061, Temper 6
 - B 241/B 241M, Alloy 6061, Temper T 6
 - B 316/B 316M, Alloy 6061, Temper 6
2. ANSI
- B 18.2
 - B 1.1M

850.2 Materials

Submit a certification from the manufacturer for each item in this Section, according to Subsection 106.05, “Materials Certification.”

850.2.01 Aluminum Alloy Sheet and Plate

A. Requirements

Use aluminum alloy sheet and plate that meets the requirements of ASTM B 209/B 209M, Alloy 6061, Temper T 6.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

The Department will accept the material based either on the certification or on the results of tests conducted by the Department.

D. Materials Warranty

General Provisions 101 through 150.

850.2.02 Aluminum Alloy Bars, Rods, Shapes, and Wire

A. Requirements

Use aluminum alloy extruded bars, rods, shapes, and wire that meet the requirements of ASTM B 221/B 221M, Alloy 6061, Temper T 6.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

The Department will accept the material based either on the certification or on the results of tests conducted by the Department.

D. Materials Warranty

General Provisions 101 through 150.

850.2.03 Aluminum Alloy Bolts, Nuts, and Set Screws

A. Requirements

Use aluminum alloy bolts, nuts, and set screws made from rod that meets the requirements of ASTM B 211/B 211M, Alloy 2024, Temper T 4.

1. Use bolt heads and nuts of heavy hexagon that meet the requirements of ANSI B 18.2.
2. Use coarse series, Class 6 fit threads that meet the requirements of ANSI B 1.1M.

B. Fabrication

1. Heat-treat the finished bolts, nuts, and set screws to the T 4 temper.
2. Coat each bolt, nut, or set screw with an anodic coating of at least 0.0002 in (5 μm).
3. Seal the anodic coating with chromate.

850.2.04

C. Acceptance

The Department will accept the material based either on the certification or on the results of tests conducted by the Department.

D. Materials Warranty

General Provisions 101 through 150.

850.2.04 Aluminum Alloy Washers

A. Requirements

Use aluminum alloy washers made from aluminum alloy sheet or plate that meet the requirements of ASTM B 209/ B 209M, Alclad Alloy 2024, Temper T 4.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

The Department will accept the material based either on the certification or on the results of tests conducted by the Department.

D. Materials Warranty

General Provisions 101 through 150.

850.2.05 Aluminum Alloy Rivets

A. Requirements

Use aluminum alloy rivets that meet the requirements of ASTM B 316/B 316M, Alloy 6061, Temper 6.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

The Department will accept the material based either on the certification or on the results of tests conducted by the Department.

D. Materials Warranty

General Provisions 101 through 150.

850.2.06 Aluminum Alloy Shims

A. Requirements

Use aluminum alloy shims made from aluminum alloy sheet or plate that meets the requirements of ASTM B 209/B209M, Alloy 1100, Temper 0.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

The Department will accept the material based either on the certification or on the results of tests conducted by the Department.

D. Materials Warranty

General Provisions 101 through 150.

850.2.07 Aluminum Alloy Extruded Tubing

A. Requirements

Use aluminum alloy extruded tubes that meet the requirements of ASTM B 221/B 221M, Alloy 6061, Temper 6.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

The Department will accept the material based either on the certification or on the results of tests conducted by the Department.

D. Materials Warranty

General Provisions 101 through 150.

850.2.08 Aluminum Alloy Pipe**A. Requirements**

Use aluminum alloy pipe that meets the requirements of ASTM B 241/B 241M, Alloy 6061, Temper T 6, unless otherwise specified.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

The Department will accept the material based either on the certification or on the results of tests conducted by the Department.

D. Materials Warranty

General Provisions 101 through 150.

Section 851—Structural Steel**851.1 General Description**

This section includes the requirements for the grade and toughness of structural steel.

851.1.01 Related References**A. Standard Specifications**

Section 106—Control of Materials

B. Referenced Documents

ASTM A 673/A 673M

ASTM A 709 (ASTM A 709M)

ASTM E 23

851.2 Materials**851.2.01 Structural Steel****A. Requirements**

1. Type

Use the structural steel grade specified in the Plans. Ensure the steel meets all requirements of the governing ASTM or AASHTO specification, this Specification, and Plan requirements.

Ensure that all steel submitted as main load-carrying member components subject to tensile stress meets either S83 or S84 of ASTM A 709 (ASTM A 709M).

2. Certification

Certify that the steel meets the requirements according to Subsection 106.05, “Materials Certification.”

B. Fabrication

General Provisions 101 through 150.