MATERIAL SPECIFICATION

572. FLAP GATES, METAL

1. SCOPE

This specification covers the quality of metal flap gates for water control.

2. CLASS AND TYPE OF GATE

The class of gate will be expressed as the numerical value of the seating head, which the gate must be built to withstand. For this purpose, the head shall be expressed in terms of feet of water measured to the center of the gate.

Gates shall be of the specified type as defined below:

Light Duty:

Type MLF-1 gates shall be cast iron or cast steel and shall be fitted with un-bushed linkage systems and galvanized steel fasteners, or with bronze bushed linkage systems and bronze or stainless steel fasteners.

Moderate Duty:

Type MMF-1 gates shall be cast iron or cast steel and shall be fitted with bronze seat facings, bronze bushed linkage systems and bronze or stainless steel fasteners.

Heavy Duty:

Type MHF-1 gates shall have gray cast iron frames and flaps and shall be fitted with naval bronze seat facings, gray cast iron or high-strength bronze hinge arms, bronze bushings, bronze hinge pins, and bronze fasteners.

Type MHF-1R gates shall be the same as Type MHF-1 gates except that the frame shall be fitted with a rubber seat facing instead of a metal seat facing.

Type MHF-2 gates shall have gray cast iron frames and flaps and shall be fitted with stainless steel seat facings, gray cast iron or stainless steel hinge arms, and stainless steel bushings, hinge pins, and fasteners.

Type MHF-2R gates shall be the same as Type MHF-2 gates except that the frame shall be fitted with a rubber seat facing instead of a metal seat facing.

Type MHF-3 gates shall have austenitic gray cast iron frames, flaps and hinge arms and shall be fitted with nickel-copper alloy seat facings, bushings, hinge pins and fasteners.

Type MHF-3R gates shall be the same as Type MHF-3 except that the frame shall be fitted with a rubber seat facing instead of a metal seat facing.

3. QUALITY OF MATERIALS

Materials in flap gates and appurtenances shall conform to the requirements of the applicable specifications listed below for the alloy, grade, type, or class of material and the condition and finish appropriate to the structural and operational requirements:

Materials	ASTM Specifications
Cast iron and Gray cast iron	A 48, Class 30, or A 126, Class B
Cast Steel	A 27 or A 148
Structural steel shapes, plates, and bars	A 36
Carbon steel bars	A 108 or A 575
Stainless steel	A 167, A 276 or A 582 Type 302, 303, 304, or 304L
Austenitic gray cast iron	A 436
Castings, nickel and nickel-alloy	A 494
Carbon steel sheets & strips	A 569
Bronze bar, rods, shapes and Naval bronze	B 21 or B 98
Red Brass	B 43
Silicon bronze	B 98 or B 584
Phosphor bronze	B 103 or B 139
Manganese bronze	B 138 or B 584
Nickel-copper alloy plate, sheet, strip	B 127
Nickel-copper alloy rod, bar	B 164
Cast bronze	B 584
Rubber gaskets and seals	D 2000

4. FRAME

The frame shall be cast iron or cast steel for light and moderate duty gates and as specified for heavy-duty gates, and of the specified type. For moderate and heavy-duty gates, the rear face shall be machined as required to match the specified attaching means. For the heavy-duty gate, a groove shall be matched on the perimeter of the front face to receive the seat facing.

5. FLAP

For light and moderate duty gates, the flap shall be cast iron or cast steel and shall be built to withstand the seating head expressed by the gate class designation, as defined in Section 2 of this specification.

For heavy-duty gates, the flap shall be built to withstand the seating head expressed by the gate class designation, as defined in Section 2 of this specification. A groove shall be machined on the perimeter of the face to receive the seat facing.

6. LINKAGE SYSTEM

The linkage system by which the flap is mounted onto the frame shall be double-pivoted type for gates over eight (8) inches in diameter. It shall be designed to prevent the flap form folding inside of the seat and wedging in the open position. For the moderate heavy-duty gates, the top pivot shall be so designed as to allow adjustment of gate alignment and sensitivity.

7. SEAT FACINGS

Light Duty Gates - All facings shall be machined to a smooth finish to insure proper contact.

Moderate Duty Gates - Seat facings shall be securely attached by welding, or other approved means, and machined to a smooth finish to insure proper contact.

Heavy Duty Gates - Metal facings shall be pressed or impacted into machined dove-tailed grooves on the flap and frame (or securely attached in the seat grooves by means of studs, set screws or other approved means) and machined to a smooth finish to insure proper contact. Rubber facings shall be pressed into a dovetailed groove in the frame.

8. WALL THIMBLE

For moderate and heavy-duty gates when a wall thimble is specified, it shall be of the same cast iron used in the gate frame and of the section, type, and depth specified. The front flange shall be machined to match the gate frame and drilled and tapped to accurately receive the gate attachment studs.

Gaskets or mastic to be installed between the thimble and the gate frame shall conform to the recommendations of the gate manufacturer and shall be furnished with the thimble.

9. GALVANIZING

Unless otherwise specified, cast steel and fabricated steel parts shall be galvanized in accordance with Material Specification 582.

10. PAINTING

When specified, gates and accessories shall be painted by the designated paint system.

11. INSTALLATION INSTRUCTIONS

The Contractor shall provide the Engineer with the manufacturer's complete installation data, instructions for adjustments, and drawings or templates showing the location of anchor bolts for each gate.

12. CERTIFICATION

The supporting data submitted to the Engineer shall include the name of the manufacturer, the manufacturer's model number (for standard catalogue items) or the seating head for which the gate is designed together with such drawings and specifications as may be necessary to show that the gate conforms to the requirements of this specification.