1.0 GENERAL

1.1 REFERENCES

.1 Provide flap gates in accordance with the following standards (latest revision) except where specified otherwise.

.2 American Society for Testing and Materials (ASTM)

.1	ASTM A36/A36M	Specification for Carbon Structural Steel.
.2	ASTM A48/A48M	Specification for Grey Iron Castings.
.3	ASTM A123/A123M	Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
.4	ASTM A126	Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
.5	ASTM A307	Specification for Carbon Steel Bolts, Studs and Thread Rod 60000 PSI Tensile Strength.
.6	ASTM F593	Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs
.7	ASTM F594	Specification for Stainless Steel Nuts.
.8	ASTM C990	Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants

.3 Canadian Standards Association (CSA)

.1	CSA-G40.21	Structural Quality Steel.
.2	CAN/CSA-G164	Hot-Dip Galvanizing of Irregularly Shaped Articles.

.4 Structural Steel Painting Council (SSPC)

.1	SSPC-SP10	Near White Metal Blast Cleaning.

.5 American Association of State Highway and Transportation Officials (AASHTO)

.1	AASHTO M198	Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using, Preformed Flexible Joint Sealants.

.6 U.S Federal Specification

.1	SS-S-210A	Sealing compound, preformed plastic, for expansion joints and pipe joints.

1.2 SUBMITTALS

.1 Provide the following submittals.

.2 Shop drawings and product data for the flap gates at least 30 days prior to fabrication. Indicate on the shop drawings dimensions; materials including specifications; details required to fabricate, locate, and install the flap gates, including all related fittings and embedded parts; and coatings, including specifications.

.3 Manufacturer's written instructions for unloading, handling, storing, and installing gates and for repairing damaged coatings prior to performing the work.

.4 Manufacturer's supplied documentations for operation and maintenance. .

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Inspect each shipment of material and timely replace any damaged materials.

.2 Unload, handle, and store materials in accordance with the manufacturer's written instructions. Do not damage the shop-applied coating. Do not store flap gate components in direct contact with the ground.

2.0 PRODUCTS

2.1 MATERIALS

.1 Provide materials in accordance with the following.

.2 Flap gates:

.1 Flap gate's components shall be fabricated from the following materials:

Component	Material	Specification
Frame and cover	Cast iron	ASTM A48, Class 30 ASTM A126, Class B
Seating Faces	Machined cast iron	ASTM A48, Class 30 ASTM A126, Class B
Mounting Gasket	Butyl rubber sealant	SS-S-210A, ASTM C990, AASHTO M-198
Hinge link, link arms	Galvanized steel	CSA-G40.21, CAN/CSA-G164, ASTM A36/A36M, A123/A123M
Assembly Fasteners: • bolts, studs, and anchors • nuts and washers	• Galvanized steel • Stainless steel	• ASTM A307, A123/A123M •ASTM F593, ASTM F594, Type 304]

.2 Seating Heads: Seating heads shall be measured from the water surface to the centre of the gate slide. The gate assembly shall be designed to the three meters of Seating Head.

.3 Gate Seating Faces: Ensure that in the closed position the clearance between the cover and the frame does not exceed 0.1 mm.

.4 Gate Frame: Ensure that the cast iron gate frame has a flat back configuration suitable for attachment to a concrete wall or a round pipe flange, and the self-contained gate consists of a

.5 Mounting gaskets and anchors: Ensure that the gate is mechanically fastened to the mounting surface with anchor bolts or with fasteners.

.6 Shop coating: Paint surfaces of the gate assembly, excluding galvanized, stainless steel and bronze items, as follows:

.1 Surface preparation: [Near white metal in accordance with SSPC-SP10].

.2 Coating: [3 coats, Amerlock 400 high-solids epoxy paint as manufactured by PPG Protective & Marine Coating. Dry film thickness of 150 to 200 µm per coat. Colour: black.]

3.0 EXECUTION

3.1 INSTALLATION AND ASSEMBLY

.1 Assemble and install the flap gate components in accordance with the manufacturers' written instructions, at the locations, of the sizes, and at the elevations specified in the Contract Documents.

.2 After installation, clean, lubricate, and otherwise service the flap gate components in accordance with the manufacturer's written instructions.

.3 Test each flap gate at least three times by raising and lowering it throughout its full range of operation. Make any required changes or adjustments until the operation of flap gate and all appurtenant components are satisfactory to the Minister.

3.2 REPAIR OF DAMAGED COATINGS

.1 Prepare damaged paint surfaces and re-coat with paint in accordance with the paint manufacturer's written instructions.

.2 Repair damaged galvanized surfaces with a zinc-rich paint that is in accordance with CAN/CGSB-1.181.

.3 Power tool clean galvanized surfaces to be repaired to a bright metal surface. Apply multiple coats of zinc-rich paint in accordance with the manufacturer's written instructions to obtain a minimum dry film thickness of 50 microns or greater where required by the paint manufacturer.

END OF SECTION