Golden Harvest, Inc.
Golden Gates™

Model GH-850 Side-Hinged Restrained Tidal Gate

- **Restoration of Estuarine Fish, Plants, Shellfish, Waterfowl and Wildlife**
- **Restores Tidal Flushing of Marshes without Flooding of Upland Property Behind Dikes and Levees**
- **Natural Control of Marshes and Estuaries**
- **Fish Friendly Design**

General

This section covers Side-Hinged Restrained Tide Gates. The equipment provided under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with the drawings, specifications, engineering data, instructions and recommendations of the equipment manufacturer.

Gates and operators shall be supplied with all the necessary parts and accessories indicated on the drawings, specified, or otherwise required for a complete, properly operating installation, and shall be the latest standard product of a manufacturer regularly engaged in the production of fabricated water control gates.

Approved Manufacturers

Gates supplied under this section shall be Model GH-850-R Gates as manufactured by Golden Harvest Inc. (800-338-6238) or pre-approved equal.

Governing Standards

Except as modified or supplemented herein, all gates and operators shall conform to the applicable requirements of AWWA standards.

Quality Assurance

The manufacturer shall have 10 years experience in the production of hydraulic control gates and have a licensed engineering staff with a minimum of 10 years of experience in the design of hydraulic control gates. The manufacturer's shop welds, welding procedures and welders shall be qualified and certified in accordance with the requirement of the latest edition of AWS Sections D1.1, 1.2 and 1.6.

The fully assembled gates shall be shop inspected and adjusted before shipping.

Submittals

1. The manufacturer shall submit for approval by the purchaser drawings showing the principal dimensions, general construction and materials used in the gate and lift mechanism.

A. Shop drawings inclusive of all gate components:

a. Gate door
b. Tide gate hinge assembly with hinge tube, plate, and gusset details
c. Lower, immediate, and upper bearing support brackets and bearing
d. Float tube assembly including connection to control box
e. Hydraulic cylinder, mount, and crank arm details
f. Hydraulic cylinder, hydraulic lines, control box, and control box supports

Model GH-850 Side-Hinged Restrained Tidal Gate

Performance

1. Gate design shall allow the gate to open fully when the water level upstream of the gate exceeds the water level downstream of the gate.
2. Gate design shall provide gate float closure settings between elevations **(Project Specified)** min. and **(Project Specified)** maximum water levels.
3. Tide gates shall be substantially watertight under the design head conditions. Under the design seating head and after flap cycle is closed, the leakage shall not exceed 0.10 US gallons per minute per foot of seating perimeter.

B. Materials and Construction

General Design

Gate closure setting shall result in release of hydraulic system such that gate closure will occur on a rising (flood) tide at the pre-set elevation. Gate hinge tube mounting shall be orientated in an offset position as shown on the Contract Drawings to facilitate gate closure when the gate hydraulic system pressure is released. Gate opening swing shall provide for a minimum gate opening angle of roughly 70 degrees prior to hydraulic cylinder actuation

1. All metal parts shall be type 316/316L stainless steel and shall provide adequate corrosion resistance for the environment.
2. Gate shall include adjustable resilient neoprene seals attached to the inside spigot of the gate frame.
3. Side-Hinged Tidal Actuated Control System shall be supplied with the following;
    A. Stainless steel hydraulic cylinder, hydraulic control lines, and aluminum hydraulic control manifold. Hydraulic controls shall be housed in a locking NEMA 4X stainless steel tamper-proof box.
    B. A float tube and float assembly with connection to the hydraulic control box as shown on the Contract Drawings.
    C. Normal operation is to be controlled by differential water levels.
    D. A manual hydraulic pump shall be provided to assist in maintenance procedures.
4. Upper and lower gate hinge pin bearings shall be PTFE Sleeve type Bearings, or equal.
5. All fasteners and mounting hardware shall be included. Fasteners and anchor bolts shall be type 316 stainless steel.

C. Execution

1. Contractor shall exercise the following precautions with Tidal Control Gates.
    A. Handling: Avoid bending, scraping or overstressing the gates.
    B. Transportation: Loading, transporting and unloading of the gates shall be conducted such that the gates are kept clean and free from damage.
    C. Protection: Provide sheltered onsite storage. Provide blocking, platforms, or skids to protect the gates from contact with the ground. Protect the gates from damage from construction activities or equipment.

2. Commissioning and Operations Testing Assistance

    A. The manufacturer for each type of Tidal Control Gate shall provide up a minimum of one [1-ea] 8-hour day (per gate) to certify the installation, provide initial adjustments to gate and provide training services. As required, the Contractor shall coordinate with the manufacturer and Owner's representative to schedule gate installation oversight.

3. Operation and Maintenance Manual

A. The manufacturer of each type of Tidal Control Gate shall provide the Owner with an Operation and Maintenance (O & M) Manual. The O & M Manual will include:

a. Description of each gate, its function and its operation.
b. Type and frequency of recommended maintenance procedures.
c. Procedure for adjusting gate closure elevation (for Side-hinged Actuated Tidal Control Gate)
d. Approved shop drawings and parts list

4. Warranty

The gate manufacturer shall provide a full 1-year guaranty/warranty against defects and workmanship.