SECTION 11294 - GRIT HOPPER GATE

City of San Diego, CWP Guidelines

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NTS: This Section specifies a product of the Beaumont Birch Company, and the CWP is aware of no equals at the present time.

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PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

A. The WORK of this Section includes providing the grit hopper gate, with hydraulic operator, controls for hopper operation, steel framework and all appurtenances, complete.

1.2 RELATED SECTIONS

A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. Section 05120 Structural Steel
2. Section 05500 Miscellaneous Metalwork
3. Section 09800 Protective Coating
4. Section 11000 Equipment General Provisions
5. Section 11328 Dumpsters and Receptacles
6. Section 15000 Piping Components

1.3 SPECIFICATIONS AND STANDARDS

A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

1. ASTM A 36 Structural Steel

2. ASTM A 276 Stainless and Heat-Resisting Steel Bars and Shapes

1.4 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted in compliance with Section 01300:

1. General arrangement drawing showing gate attachment, configuration, and dimensions.

2. List of materials of construction.

3. Four-way valve details.

4. Manufacturer's catalogue showing details of the equipment including installation instructions.

1.5 OWNER'S MANUAL

A. The following shall be included in the OWNER'S MANUAL in compliance with Section 01300:

1. Manufacturer's printed recommendations for operation and maintenance of the equipment.

2. Certification that the gate unit has satisfactorily passed the indicated factory test.

1.6 SERVICES OF MANUFACTURER

A. **Inspection, Startup, and Field Adjustment**: An authorized representative of the manufacturer shall visit the site for not less than [ ] day to furnish the indicated services.

B. **Instruction of OWNER'S Personnel**: The authorized service representative shall also furnish the indicated services for instruction of the OWNER'S personnel in the operation and maintenance of the equipment including step-by-step troubleshooting procedures with necessary test equipment for not less than [one] day.

PART 2 -- PRODUCTS

2.1 DESIGN REQUIREMENTS

A. Grit hopper gate shall be cylinder operated, water retaining drained type.

B. The gate shall be designed to fit a [ ]-inch by [ ]-inch flanged opening in the bottom of the grit hopper. The water retaining feature shall maintain a seal against a 4-inch column of water when the gate is fully closed, but permit accumulated liquids to drain without allowing grit to reach the gate rollers and track.

C. The gate shall be designed to withstand twice the load imposed by a hopper filled with material having a specific gravity of 2.65. The cylinder shall be designed to open the gate with 50 psig water when the gate is fully wedged into the closed position and the hopper is fully loaded.

D. The equipment indicated herein shall be installed in an environment where the ambient temperature is expected to fluctuate seasonally between [ ] degrees F and [ ] degrees F. The humidity is expected to range between [ ] percent and [ ] percent.

2.2 MATERIALS

A. Materials shall satisfy the following requirements:

1.	Gate frame, leaf rollers	-	Cast iron, ASTM A 48, Class 30
2.	Drain box	-	Cast iron, ASTM A 48, or Steel ASTM A 36
3.	Frame extension, yoke and cylinder mounting frame	-	Fabricated steel, ASTM A 36
4.	Hydraulic cylinder, piston and rod,	-	Stainless steel, ASTM A 276, Type 316

four-way valve mounting bracket

5.	Piston rings	-	Teflon
6.	Bolts, nuts and all other threaded components	-	Stainless steel, ASTM A 276, Type 316

2.3 EQUIPMENT FEATURES

A. **Frame**: The frame shall be gasketed and bolted to the grit hopper. Pads cast into the frame shall permit connection of the frame extension members and proper distribution of operating thrusts. The surface joining with the gate leaf shall be machined for a close fit.

B. **Leaf**: The leaf shall be designed with gutters on both sides and at the cylinder end to capture and convey leakage from the grit hopper to the drain box at the side opposite from the cylinder. The joint between the frame and the leaf shall be on an inclined plane to provide a quick opening and closing seal with no metal-to-metal contact except at the very end of the cylinder stroke. The surface contacting the gate frame shall be machined to provide a close tolerance joint. Extension on each side of the leaf shall form the gutters and provide mounting pads for the rollers.

C. **Rollers**: Rollers shall be 5 inches in diameter, cast with a chilled tread. The rollers shall be grease lubricated and fitted with eccentric pins to provide adjustment of clearance between the gate leaf and frame.

D. **Frame Extension and Yoke**: The frame extension shall provide a runway for the leaf rollers and support the yoke and cylinder from the gate frame. Frame extension members shall be bolted to the sides of the frame to provide a track to engage the rollers. The yoke shall be gusseted at all corners and shall provide a mounting frame for a cylinder.

E. **Drain Box**: A drain box with 6-inch spigotted outlet shall be provided at the end of the gate opposite from the cylinder operator. The drain box shall be designed to collect drainage from the leaf channels and conduct this material to the outlet. A 1-inch flushing connection with plug shall be provided at the end of the drain box.

F. **Cylinder Operator**: The cylinder operator shall operate with 50 psig water, but shall be capable of withstanding pressures up to 125 psig. The piston rod shall connect to the gate leaf through a bolted connection which shall permit adjustment of closing position. The cylinder shall be fitted with O-ring gaskets, a packed rod box, and shall have adjustable soft opening and closing end stop features.

G. **Four-Way Valve and Appurtenances**: The gate shall be provided with four-way valve, pressure regulator, strainer, and isolation valve mounted on a fabricated bracket, suitable for field mounting in the indicated position. The four-way valve shall have connections for water supply, drain and to the top and bottom of the cylinder. The valve selector handle shall have positions marked OPEN, CLOSED, and HOLD.

2.4 FACTORY TESTING

A. The complete unit including gate, cylinder operator and control valve shall be assembled and piped up in the manufacturer's shop and operated through six open/closed cycles. The gate and all appurtenances shall operate without binding or leakage.

2.5 MANUFACTURERS

A. The grit hopper gate of the type indicated shall be manufactured by one of the following (or equal):

1. Beaumont Birch Company, Pennsauken, New Jersey

PART 3 -- EXECUTION

3.1 INSTALLATION

A. The grit hopper gate shall be installed and aligned in accordance with the manufacturer's recommendations.

** END OF SECTION **