

Los Angeles

DONALD R. WARREN CO.
Engineers

San Francisco

SPECIFICATIONS

FOR

GATES, VALVES AND OPERATING APPURTENANCES FOR THE
MATILIJA DAM

FOR

VENTURA COUNTY FLOOD CONTROL DISTRICT

ZONE ONE

JOB NO. LA 46-1

SCHEDULE OF BID ITEMS

ITEM NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT	DELIVERY DATE
1.	Sluice Gate, complete with steel stems, couplings and stem guides	1			
2.	Outlet Gate, complete with steel stems, couplings and stem guides	1			
3.	Gate Valve, 18-inch	2			
4.	Gate Valve, 30-inch	1			
5.	Floorstand for outlet gate including bronze stem, starter and push button station	1			
6.	Floorstand for sluice gate including bronze stem, starter and push button station	1			
7.	Floorstands for 18-inch Gate Valve	2			
8.	Floorstand for 30-inch Gate Valve	1			
9.	Pushbutton stations, surface mounting	3			
10.	Pushbutton stations, flush mounting	5			
11.	Magnetic motor starters	3			

SECTION 1

SPECIAL CONDITIONS

1-01. Scope. The work to be done under these specifications includes the furnishing and delivery free on board cars at Ojai, California, of the equipment listed below. The equipment shall be in accordance with the drawings and as specified herein.

(a) Gates and Valves complete with valve stems, floorstands and couplings.

- (1) Sluice Gate
- (2) Outlet Gate
- (3) 18-inch Gate Valves
- (4) 30-inch Gate Valves

(b) Electric Control Equipment (other than incorporated in gate floorstands).

- (1) Starters for operation of valves
- (2) Pushbutton stations

1-02. Data to be Submitted. The manufacturer shall submit with his bid: Shop drawings, wiring diagrams, operating characteristics, performance tests and other pertinent data describing the equipment he proposes to furnish.

1-03. Equipment.

(a) Sluice and Outlet Gates are covered in "Sluice and Outlet Gates" section of these specifications.

(b) Floorstands are covered in "Floorstands" section of these specifications.

(c) Gate Valves shall be double disk valves meeting the requirements of the American Water Works Association Standard Specification 7F1 except where otherwise specified. The 30-inch valve minimum requirements shall be: 100-pounds cold water, non shock. Valves shall be given coal-tar primer in accordance with AWWA specification 7 A.5. Valves shall be complete with steel stem and the coupling required for assembly with bronze threaded stem of floorstands covered in "Floorstands" section.

(d) Starters and pushbutton stations shall be as noted on the drawings or approved equal. The starters and pushbutton stations for use with motors operating the gates will be an integral part of the floorstands and are covered in "Floorstands" section of these specifications. The other units will be separate for wall or panel mounting.

1-04. Shop Test of Gate and Floorstand Assemblies. Before shipment, each gate and floorstand assembly shall be operated by means of its own floorstand for a sufficient length of time to insure that all parts are moving freely, and the entire assembly is in proper operating condition. Each assembly shall be shop marked, and all detached parts properly labeled to facilitate installation.

1-05. Supervision. A representative of the manufacturer or manufacturers shall supervise the installation of the mechanical equipment, and at its completion deliver to the District and Engineer a letter or letters certifying that proper installation was made.

1-06. Guarantee. The manufacturer or manufacturers or authorized agents shall guarantee all equipment free from defect for a period of one year after the date of acceptance, and shall correct any defect promptly and at no expense to the owner within this period.

1-07. Delivery of Items. Delivery date of equipment shall be submitted with the bids. Construction schedule indicates latest delivery dates as follows:

Gates (Complete with floorstands)	Nov. 1, 1946
Valves " " "	Dec. 1, 1946

Should any bidder be unable to furnish gates or valves, complete with floorstands, by the indicated date, a schedule shall be submitted, giving the dates on which the different components and details could be separately delivered.

1-08. Acceptance of Bids. The District reserves the right to accept the proposal of one bidder to furnish the gates and to accept the proposal of another bidder to furnish the valves.

1-09. Drawings and Specifications.

(a) General. The requirements of these specifications are intended to indicate the basic requirements of the equipment. The manufacturer or his authorized agent shall calculate the requirements of the gates and floorstand units and shall submit his proposed designs in detail with his bid as covered above.

(b) Completeness. It is the intent of the drawings and specifications that the equipment to be furnished will be complete for its intended use and not require any additional parts for installation or operation. Any part not specifically called for or specified but necessary to comply with the intent of quality or completeness shall be furnished as part of the contract under the pertinent conditions of payment.

(c) Drawings. The equipment shall conform to the drawings numbered as listed below, which form a part of these specifications, and are titled: "Matilija Dam, Ventura County Flood Control District, Zone 1, California."

Drawing No.	Designation
E-1	Electrical Plan and Details
M-1	Valve Arrangement
S-2	Longitudinal Profile
S-6	Outlet and Trash Rack
S-7	Sluice Gate Arrangement

SECTION 2

SLUICE GATE AND OUTLET GATE

2-01. Scope. The sluice and outlet gates covered in this section shall be complete with frame, disc, guides, facings, steel stems, stem guides, all couplings including coupling to bronze stem, thrust nut for attaching stem to disc and any other parts required for installation and proper operation (when assembled to floorstand) up to but not including the bronze threaded stem which is covered in "Floorstand" section. They shall be as noted on the drawings and as specified herein.

2-02. Operating Conditions.

(a) Stem lengths (from centerline of gate to base of stand)

Sluice Gate	155 feet
Outlet Gate	110 feet

(b) Maximum Operating head (from centerline gate opening to maximum water height)

Sluice Gate	155 feet
Outlet Gate	110 feet

2-03. Materials shall be as specified or an approved equal. Where the manufacturer proposes to use an alternate material, he shall submit complete evidence supporting his choice for approval by the Engineer.

(a) Iron Castings shall be grade "B" in accordance with ASTM Specification A 126.

(b) Steel Castings shall be in accordance with ASTM Specification A 95.

(c) Seat Facings in frames and discs shall be extruded metal of the following composition: Copper 58-62%, zinc 36-40%, lead 2%, or be a bearing material approved by the Engineer.

(d) Stem Couplings, and Thrust Nut for attaching stem to disc. Material shall be manganese bronze castings or other approved material.

(e) Bronze Studs and Nuts shall be naval brass in accordance with ASTM Specification B 21.

(f) Steel operating Stems and Studs for attaching side guides to frame shall be .25 to .35% carbon, open hearth cold finished steel in accordance with ASTM Specification A 108.

2-04. Fabrication.

(a) Machining. All parts shall be carefully and accurately machined to jigs and templates. All like parts shall be interchangeable so that repair parts can be attached in the field without any fitting, chipping, or re-machining.

(b) Assembly after machining, the gates shall be completely assembled in the shop and there shall be no fitting or any departure from the dimensions on the shop drawings to make the different parts fit properly together.

(c) Anchor Bolt Holes shall be accurately drilled by template to the layout called for on the drawings.

(d) Bronze seat facings in the frames and discs shall be carefully scraped or ground to a water-tight joint.

2-05. Detailed Requirements of Components.

(a) The frames shall be standard flange type with rear face machined and drilled to attach to the steel flanges located in the concrete at the dam openings. The front face shall be machined to take the sluice gate guides. The frame shall be cast iron of ample section to prevent distortion, and shall be cast in one piece or may be built-up construction subject to approval. The front face of the frame shall be machined on the vertical sides to fit the guides and shall have holes drilled and tapped for the guide studs. Keys shall be provided between the frame and the guides to prevent lateral movement of the guides.

(b) The disc shall be of cast iron or cast steel having a flat plate with horizontal and vertical ribs. The ribs and plate shall be of ample section to withstand the full pressure without distortion and a factor of safety of not less than six shall be used in the design of the disc. The disc shall have tongues on each side extending the full disc length. These tongues shall be accurately machined all over.

(c) Bronze Seat Facings shall be driven into dovetail grooves machined in the face of the disc and frame and further secured with brass rivets, or secured by other approved means. Facings shall be sufficiently wide to keep bearing pressures to a maximum of 500-pounds per square inch.

(d) Guides shall be of cast iron or cast steel of sufficient length so that not less than one-half of the disc is within the guides when the gate is open. Slots shall be machined the full length of the guides to allow a maximum of 1/16 inch clearance with the tongues on the sides of the disc. The guides shall be machined to fit the frame and shall be bolted to the frame with steel studs and keyed to the frame to prevent lateral movement. Holes for studs shall be spot faced.

(e) Thrust Nut for Attaching Stem to Disc. The disc shall have a pocket cast in the center near the top, heavily reinforced by ribs into which shall be fitted a solid manganese bronze thrust nut threaded and keyed to the stem. This nut shall be of ample size to take the thrust both ways.

(f) Stems. The gates shall have rising stems of sufficient size to safely withstand, without buckling, the whole thrust due to closing the gate under the maximum operating head.

(g) Stem Guides. Stems shall be furnished with stem guides so that the unsupported length of stem never exceeds 10 to 12 feet. Stem guides shall be bronze bushed and shall be adjustable in two directions.

(h) Couplings. The different sections of each stem shall be joined together by solid manganese bronze couplings or other approved material. The couplings shall be threaded and keyed to the stems, and all couplings of the same size shall be interchangeable to allow any coupling to fit any section of stem. Strength of coupling shall be equal to strength of stems.

2-06. Painting and Protection. All castings shall be thoroughly cleaned of all loose scale and sand. The unfinished surfaces of gates and stems shall be coated in accordance with American Water Works Association specification 7A.5. Bolt holes, screw threads and all finished surfaces shall be coated with a suitable heavy rust preventative compound. All threads on gate stems shall be securely wrapped in burlap for shipment.

SECTION 3

FLOORSTANDS

3-01. Scope. This section covers the motor operated floorstands for operating the gates and valves of the "Matilija Dam". The floorstands shall, when attached to the steel stem and coupling furnished under "Sluice Gate and Outlet Gate" section, comprise a complete operating assembly, and shall be in accordance with the drawings and the requirements specified herein.

(a) Floorstands for valves shall be complete with: Bronze threaded stem lift and adjusting nut, gears, auxiliary hand wheel, motor, outout switch and weatherproof casing.

(b) Floorstands for gates shall in addition to the above, include: A magnetic starter and pushbutton station, wired in, and protected by weatherproof casing.

3-02. Materials.

(a) Iron Castings shall be grade B, in accordance with ASTM Specification A126.

(b) Lifting Nuts shall be an approved tin bronze, or leaded tin bronze which shall meet the requirements of ASTM Specification B143.

(c) Adjusting Nuts shall be cast manganese bronze or other approved material.

(d) Bronze Stems shall be naval brass in accordance with ASTM Specification B21.

(e) Bolts, Cap Screws and Nuts shall be .25 to .35% carbon, open hearth, cold finished steel, in accordance with ASTM Specification A108.

(f) Gears shall be spur type with stub-teeth, or be of equal ruggedness and lubrication free design, and shall be of corrosion resistant material.

(g) Thrust bearings shall be type and size approved by the Engineer and shall be of corrosion resistant material or protected against intrusion of moisture.

(h) Gasketing shall be sheet rubber, 1/16th inch thickness or approved equal.

3-03. Mechanical Requirements

(a) Floorstand frame shall be of ample strength for supporting the hoist machinery and withstanding any strain liable to occur in operation or in handling. Especial care shall be given to anchorage and tensile strength of the frame.

(b) Lifting Nut depth shall be sufficient to allow the greatest possible bearing load on the threads without injury to threads. Thread shall be Acme, 1/16 inch oversize for stem furnished. Means for lubricating bearing surfaces shall be provided which will include grease cups or other approved holders.

(c) Bronze stem shall have strength requirements of steel stems and couplings covered in "Sluice Gate and Outlet Gate" section, and shall have bottom end suitable for securing to steel gate stem and coupling (covered in "Sluice Gate and Outlet Gate" Section). The threaded section shall be machine-cut with Acme standard thread, two threads per inch for sizes two (2) inches and above, and three threads per inch for smaller sizes.

(d) Adjusting nut shall be provided with suitable locking means.

(e) Handwheel shall be geared for one man manual operation when full seating pressure is against one side of gate or valve.

(f) Casing shall be weatherproof construction, and shall protect all mechanical and electrical components.

3-04. Electrical Requirements.

(a) Motors shall be slow speed, high resistance rotor, induction motor conforming to the applicable requirements of ASA Specification C50.

(1) Current supply. The motors shall operate on 440-Volt 3 phase, 60 cycle supply.

(2) Windings shall be impregnated for resistance to oil and moisture.

(3) Horsepower indicated on drawings is nominal, and the manufacturer shall calculate the power requirements based on the friction losses of his proposed design and submit his calculated requirement. Rates of opening gates and valves shall be a minimum of:

Gates.....18 inches per minute
Valves.....14 inches per minute

(b) Starters and pushbutton stations shall be as noted on drawings.

(c) Limit Switch shall be provided and mounted where easily accessible. The switch case shall be of oil and water tight construction. The adjustment shall permit the gates and valves to be positively seated to any predetermined tightness without jamming or scraping of seats.

(d) Wiring. The electrical items shall be internally wired for operation.

3-05. Painting and Protection. Exterior iron and steel surfaces shall be cleaned of all sand, scale, rust and oil and given shop coat of black machinery paint. Finished surfaces not corrosion resistant or otherwise protected from moisture shall be coated with a heavy rust preventative compound.