



United States  
Department of the Interior  
Bureau of Reclamation

DELTA-MENDOTA CANAL

DESIGNERS'  
OPERATING CRITERIA

CENTRAL VALLEY PROJECT

Design and Construction Division  
Denver, Colorado  
September 1951



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF RECLAMATION  
DENVER FEDERAL CENTER  
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To: Construction Engineer, Tracy, California  
From: Chief Designing Engineer  
Subject: Designers' Operating Criteria for Delta-Mendota Canal--Central Valley Project

Transmitted herewith are designers' operating criteria for Delta-Mendota Canal. These criteria are intended to supplement the design drawings, but are not intended as an operator's manual nor as a maintenance handbook.

Operating instructions for mechanical equipment of the Delta-Mendota Canal have not yet been prepared but, since the canal is already in operation, these criteria are being transmitted without further delay. If you need operating instructions for any specific items of equipment, please advise us and they will be given priority. Meanwhile, there is included as an appendix to these criteria, operating instructions for the radial gates of the Delta Cross Channel. They are typical of the operating instructions which are being prepared for mechanical equipment.

Enclosure

*W. T. Walden*

Copy to: Commissioner, Attention: 200 and 400  
Regional Director, Sacramento, California  
District Manager, Stockton, California  
Superintendent of Operations, Tracy, California

## CONTENTS

<u>Part</u>		<u>Page</u>
I	General Description . . . . .	1
	A. Description of Canal . . . . .	1
	B. Description of Wasteways . . . . .	2
	C. Plan of Operation . . . . .	3
	D. General Operation Instructions . . . . .	3
II	Structures . . . . .	4
	A. General . . . . .	4
	B. Concrete Checks . . . . .	4
	C. Control Structure . . . . .	5
	D. Siphons . . . . .	7
	E. Culverts and Overchutes . . . . .	8
	F. Drainage Inlets . . . . .	9
	G. Irrigation Turnouts . . . . .	10
	H. Irrigation Crossings . . . . .	11
	I. Wasteway Turnouts . . . . .	11
	J. Wasteway Drop Structures . . . . .	13
	K. San Luis Wasteway--Reservoir Outlet Structure . . . . .	14
	L. Drains Under Canal Lining and Structures . . . . .	15
	M. Intercepting Drains . . . . .	15
	N. Bridges and Road Crossings . . . . .	16
	O. List of Drawings . . . . .	17

Appendix

Operating Instructions--Radial Gates--Delta Cross Channel

## APPENDIX

### OPERATING INSTRUCTIONS RADIAL GATES DELTA CROSS CHANNEL

#### 1. General Function and Operation

Two 60-foot 0-inch by 30-foot 0-inch radial gates are installed as flood gates in the Delta Cross Channel floodgate structure as shown on Drawing No. 214-D-16819. Normally, the gates will be fully raised and remain in the open position except during periods of floods in the Sacramento River. During high water periods, any intermediate gate opening can be maintained by the operator, since the gates can be operated under high tail water and low upstream water conditions.

Each radial gate consists of a curved leaf which rotates about a pivot at the center of the gate-leaf curvature. The leaf is attached to two rigid arms which are the radius arms for rotating the gate leaf about the pivot point. (See Drawing No. 214-D-16686.)

The gates have angular-type belt seals along both ends. Because of the peculiar upstream and downstream water condition of the Delta Cross Channel, the bottom seal on the sill plate are eliminated. The end seals seat against embedded seal plates in the floodgate structure.

Electric motor-operated hoists (see Drawing No. 214-D-16800), located on the operating deck above the radial gates, are provided for raising and lowering the gates. The hoists are actuated by a push-button control station located near the hoist motors. The control stations are provided with "Raise," "Lower," and "Stop" push buttons. The hoisting speed of the gates is at a rate of 1-1/4 feet per minute. It is preferable that both gates be operated simultaneously; however, in case of a hoist failure on one gate the remaining gate may be operated independently. Limit switches, operated by the gate hoist and interconnected with the hoist motor, stop movement of the gate at each extreme of travel. Each gate hoist is equipped with an electrical brake which engages to hold the gate in position when the hoist motor is deenergized.

Movement of the gates may be stopped at any time when either raising or lowering by means of the "Stop" button. Gate movement may then be resumed or reversed by means of the appropriate "Raise" or "Lower" push button.

#### 2. Maintenance Guide

The gates should be operated periodically to insure that they are operating properly. It is recommended that periodic inspection of the side seals be made and any debris which may impair the functions of the

seals removed. The gate pin bearings should be lubricated with a soft graphite grease at appropriate intervals and the surfaces of the gates inspected externally as well as internally for effects of corrosion or need of new paint. The guide roller pins should be occasionally greased through the fittings provided on the pins, and any lodged debris between guide rollers and wall plates should be removed.

The gear train of the hoist drum units should be coated with grease similar to Texaco Crater IX. Pillow block roller bearings should be lubricated periodically with a good soda base grease of medium consistency containing a rust inhibitor. Maintenance and lubrication of the gate-hoist motors and gear reduction units should be in accordance with the instructions furnished by the manufacturer. The hoist ropes should be liberally greased, whenever warranted, to prevent damage of the strand wires by corrosion. The grease recommended for this is Federal Stock No. 14-L-165, similar to Texaco Crater No. IX. The adjustments of the ropes should be such that all ropes engage the gate simultaneously at the start of the hoisting operation.