STRUCTURE 20G

This structure is a reinforced concrete, gated spillway with discharge controlled by a cable operated, vertical lift gate. Operation of the gate is automatically controlled so that the gate hydraulic operating system opens or closes the gate in accordance with the operational criteria. The structure is located near the mouth of the Military Canal at its junction with Levee 31E.

PURPOSE

This structure maintains optimum upstream water control stages in the Military Canal; it passes the design flood (40 percent of the Standard Project Flood) without exceeding upstream flood design stage, and restricts downstream flood stages and discharge velocities to non-damaging levels; and it prevents saline intrusion during periods of high flood tides.

OPERATION

This structure will be operated to maintain an optimum headwater elevation of 2.0 feet, when sufficient water is available to maintain this level. The automatic controls on the gate function as follows:

<u>High Range</u>

When the headwater elevation rises to 2.2 feet, the gates will open at six inches per minute;

When the headwater elevation rises or falls to 2.0 feet, the gates will become stationary;

When the headwater elevation falls to 1.80 feet, the gates will close.

<u>Intermediate Range</u>

When the headwater elevation rises to 1.8 feet, the gates will open at six inches per minute;

When the headwater elevation rises or falls to 1.6 feet, the gates will become stationary;

When the headwater elevation falls to 1.4 feet, the gates will close.

Low Range

When the headwater elevation rises to 1.4 feet, the gates will open at six inches per minute;

When the headwater elevation rises or falls to 1.2 feet, the gates become stationary;

When the headwater elevation falls to 1.0 feet, the gates will close.

The selection of operational range will be based on field conditions. The high range is used, normally.

Salinity Regulation

In addition to maintaining optimum upstream fresh water control, as described above under Flood Control Regulation, the automatic controls on this structure have an over-riding control which closes the gates, regardless of the upstream water level in the rare event of a high flood tide, whenever the differential between the head and tailwater pool elevations reaches 0.2 feet.

FLOOD DISCHARGE CHARACTERISTICS

	Design	Standard Project Flood
Discharge	900 cfs	1700 cfs
	40 % SPF	100 % cfs
Headwater Elevation	2.0 feet	3.0 feet
Tailwater Elevation	1.5 feet	2.0 feet
Type Discharge	uncontrolled submerged	uncontrolled submerged
Estimated Maximum Hurricane Tide	15.0 feet MSL	

DESCRIPTION OF STRUCTURE

Type: Fixed crest, reinforced concrete gated spillway

Weir Crest

Net Length 25.0 feet

Elevation -8.3 feet

Service Bridge Elevation 7.0 feet

Water Level which will by-pass structure 7.0 feet

Gates

Number 1

Size 12.3 ft. high by 25.8 ft. wide

Type Vertical lift

Bottom Elevation of gates, full open 4.7 feet

Top Elevation of gates, full closed 4.0 feet

Control Automatic, on-site upstream control with over-ride differential water surface control sensed by bubbler system and remote computer control.

Lifting Mechanism

Normal power source: commercial electricity

Emergency power source: L.P. gas driven generator

Type hoist: Hydraulic cylinder actuated by electric motor driven pump, with emergency hand pump; connected to gate by steel cables.

Date of Transfer: July 12, 1966

ACCESS: from South Allapattah Road via access road on right bank of Military Canal.

HYDRAULIC AND HYDROLOGIC MEASUREMENTS

Water Level: Remote digital upstream and downstream recorders.

Gate Position Recorder: On-site, analog and remote digital recorder.

Rain Gauge: Remote digital recorder.

DEWATERING FACILITIES

Storage: Needles at Homestead Field Station, beams at West Palm Beach Field

Station

Type: Needle beams and vertical aluminum needles

Size and Number (per bay):

Upstream

Number: 1 beam; needles, 5 @ 4', 1 @ 3', 1 @ 2' wide

Size: beam 33 WF200 with 24" flange end sections, length 26' -11" needles 20' long.