

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL

LMNED-DD

SUBJECT

GDM Design, 17th Street Outfall Canal Control Structure, Lake Pontchartrain La. & Vic. Hurricane Protection Project, HLP, Orleans/Jefferson Parish Co.

TO

FROM

DATE

CMT 1

C/F & M Br

C/Des. Br.

25 May 87

Mr. Desai/2657.

1. Reference is made to LMNED-HD DF dated 8 May 1987, (copy enclosed), subject as above. It is requested that you provide us with the following information for preparation of the GDM scope design of the subject structure

- (a) The excavation plan
- (b) Backfill plan
- (c) The stability requirement for the apron channel, transition channel and bypass channel

2. The information requested is required NLT 19 June 1987 to allow sufficient time for preparing the structural design, GDM plates and cost estimates within the given schedule

Encl.
as

Walter D Judlin II
Chief, Design Br.

_____ JUDLIN

_____ MARSALONE

_____ CINDY

_____ DD *EG*

_____ DE

_____ DG

_____ DL

_____ DR

_____ DW

_____ SUSPENSE

_____ RELEASE

_____ FILE

_____ DESTROY

LMNED-HD

SUBJECT: GDM Design, 17th Street Outfall Canal Control Structure, Lake Pontchartrain LA & Vic, Hurricane Protection Project, HLP, Orleans/Jefferson Parish, LA

TO C/Des Br

FROM C/H&H Br

DATE 8 May 87

CMT 2

Mr. Broussard/beb/2428

RDB

UCD

1. The following information is provided as partial response to CMT 1. As coordinated with Mr. Desai of Design Branch and Mr. Stutts of Design Services Branch, full response will be provided after receiving information from Mr. Bodet of the Sewerage and Water Board with respect to pump capacities at different lake levels with appropriate pool to pool heads.

2. The control structure geometry to accommodate the butterfly valve:

Number of gates = 6

Size of gate = 23.5 ft vertical by 30 ft horizontal

Size of opening = 23 ft by 25 ft (3450 SF)

Top of structure = 29.5 ft NGVD

Top of flood protection = 19.5 ft NGVD

Sill elevation = -18.4 ft NGVD

Length of structure across channel = 190 ft

Width of structure parallel to flow = 43.5 ft w/semicircular nose

Nominal discharge = 9630 cfs (future pump station capacity)

Q per gate = 1605 CFS

Velocity off apron \approx 3.0 ft/sec

Area of dredged channel \approx 4100 sq ft

Maximum velocity natural channel \approx 4.5 ft/sec

Flow is tranquil

3. The apron geometry at the inlet and outlet ends of the control structure:

A 25-ft concrete apron, upstream and downstream of the structure at elevation -18.4 ft NGVD

4. The minimum transition length of the channel that would be required from apron to the dredged channel section:

From test conducted at the Waterways Experiment Station a minimum transition length of 50 feet is recommended

5. The geometry of the bypass channel:

The preliminary geometry of the bypass channel is a sheetpiled box section. 90 ft wide from the dredged channel bottom of -18.4 ft NGVD. Confirmation of this preliminary geometry will be made after receipt of the information outlined in para 1 and after HEC-2 backwater runs are made.

6. The required protection level of the construction cofferdam and its design parameters:

Stage-frequency curves will be provided after receipt of the information outlined in para 1 so that risk analysis may be performed to select cofferdam heights.

7. Riprap protection, if any, that would be required on either side of the structure.

Erosion protection off each apron should be a 10-ft blanket of riprap 12-inches thick from dredged channel bottom of -18.4 ft NGVD to top of levee with the following gradation:

<u>Percent Lighter by Weight</u>	<u>Limits of Stone Weight in Pounds</u>	
100	90	40
50	40	20
15	20	5

$$\gamma_s = 155 \text{ lb/cu ft}$$

8. The design loads and loading conditions for the design of the butterfly valve and control structure:

Two conditions should be considered for the hydraulic loading of the butterfly control valve: the maximum and minimum stages in combination with some reasonable extreme. For the maximum condition, a lake stage of 11.5 ft NGVD combined with a canal stage of 2.0 ft NGVD should be considered as representative of a "dry" Standard Project Hurricane; i.e., with little or no pumping. For the minimum condition a lake stage of 7.0 ft NGVD combined with a canal stage of -5.0 ft NGVD should be considered as representative of the minimal stages which can occur when the Standard Project Hurricane travels across Lake Pontchartrain on a path which produces critically low stages on the south shore. This tabulation of design loading conditions assumes that reverse head cannot develop because the gate will always allow flow from the canal when the canal stage is higher than the lake elevation. Wave loading will not be a problem for these gates because they are sheltered from waves generated in the lake by the Hammond Highway Bridge and other structures on the lake-side of the gates.



CECIL W. SOILEAU
Chief, Hydraulics & Hydrologic Branch

LMNED-HD

SUBJECT: GDM Design, 17th Street Outfall Canal Control Structure, Lake Pontchartrain LA & Vic, Hurricane Protection Project, HLP, Orleans/Jefferson Parish, LA

TO C/Des Br

FROM C/H&H Br

DATE 8 May 87 CMT 2
Mr. Broussard/beb/2428

1. The following information is provided as partial response to CMT 1. As coordinated with Mr. Desai of Design Branch and Mr. Stutts of Design Services Branch, full response will be provided after receiving information from Mr. Bodet of the Sewerage and Water Board with respect to pump capacities at different lake levels with appropriate pool to pool heads.

2. The control structure geometry to accommodate the butterfly valve:

Number of gates = 6
Size of gate = 23.5 ft vertical by 30 ft horizontal
Size of opening = 23 ft by 25 ft (3450 SF)
Top of structure = 29.5 ft NGVD
Top of flood protection = 19.5 ft NGVD
Sill elevation = -18.4 ft NGVD
Length of structure across channel = 190 ft
Width of structure parallel to flow = 43.5 ft w/semicircular nose
Nominal discharge = 9680cfs (future pump station capacity)
Q per gate = 1605 CFS
Velocity off apron \approx 3.0 ft/sec
Area of dredged channel \approx 4100 sq ft
Maximum velocity natural channel \approx 4.5 ft/sec
Flow is tranquil

-18.4
23
A.6

3. The apron geometry at the inlet and outlet ends of the control structure:

A 25-ft concrete apron, upstream and downstream of the structure at elevation -18.4 ft NGVD

4. The minimum transition length of the channel that would be required from apron to the dredged channel section:

From test conducted at the Waterways Experiment Station a minimum transition length of 50 feet is recommended

5. The geometry of the bypass channel:

The preliminary geometry of the bypass channel is a sheetpiled box section. 90 ft wide from the dredged channel bottom of -18.4 ft NGVD. Confirmation of this preliminary geometry will be made after receipt of the information outlined in para 1 and after HEC-2 backwater runs are made.

6. The required protection level of the construction cofferdam and its design parameters:

Stage-frequency curves will be provided after receipt of the information outlined in para 1 so that risk analysis may be performed to select cofferdam heights.

7. Riprap protection, if any, that would be required on either side of the structure.

Erosion protection off each apron should be a 10-ft blanket of riprap 12-inches thick from dredged channel bottom of -18.4 ft NGVD to top of levee with the following gradation:

<u>Percent Lighter by Weight</u>	<u>Limits of Stone Weight in Pounds</u>	
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15	20	5

$$\gamma_s = 155 \text{ lbs/cu ft}$$

8. The design loads and loading conditions for the design of the butterfly valve and control structure:

Two conditions should be considered for the hydraulic loading of the butterfly control valve: the maximum and minimum stages in combination with some reasonable extreme. For the maximum condition, a lake stage of 11.5 ft NGVD combined with a canal stage of 2.0 ft NGVD should be considered as representative of a "dry" Standard Project Hurricane; i.e., with little or no pumping. For the minimum condition a lake stage of 7.0 ft NGVD combined with a canal stage of -5.0 ft NGVD should be considered as representative of the minimal stages which can occur when the Standard Project Hurricane travels across Lake Pontchartrain on a path which produces critically low stages on the south shore. This tabulation of design loading conditions assumes that reverse head cannot develop because the gate will always allow flow from the canal when the canal stage is higher than the lake elevation. Wave loading will not be a problem for these gates because they are sheltered from waves generated in the lake by the Hammond Highway Bridge and other structures on the lake-side of the gates.

CECIL W. SOILEAU
Chief, Hydraulics & Hydrologic Branch

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REFERENCE OR OFFICE SYMBOL

LMNED-DD

SUBJECT

GDM design, 17th Street Outfall Canal Control Structure, Lake Pont., La. & Vic. Hurricane Prot. Project, HLP, Orleans/Jefferson Parish, La.

TO C/H & H Br.

FROM C/DES. Br.

DATE 9/April/1987

CMT 1

Mr. Desai/2657 ^{ONG} JRM

1. Reference is made to the conversation of 8 April 1987 between Messrs Reynold D Brussard of your branch and Mohon S. Desai of this office concerning the design requirements for the subject structure. It is requested that you provide the following information for preparation of the GDM design for the subject structure.

- (a) The control structure Geometry to accommodate the butterfly valve.
- (b) The Apron Geometry at the inlet and outlet ends of the control structure.
- (c) The minimum transition length of the channel that would be required from apron to the dredged channel section.
- (d) The geometry of the bypass channel.
- (e) The required protection level of the construction cofferdam and its design parameters.
- (f) Riprap protection, if any, that would be required on either side of the structure.
- (g) The design loads and loading conditions for the design of the butterfly valve and control structure.

Bernard Smith
Sgt Walter D Judlin III
Chief, Design Br.

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REFERENCE OR OFFICE SYMBOL

SUBJECT

17th St. Canal Parallel Flood Protection Phase 1B -
Hammond Highway to southern Railway OLB
Project No. 2043-2027

CELMN-ED-DD

TO

FROM

DATE

CMT 1

C/F & M Br.

C/Struc. Des. Br.

3 Nov. 1987

Mr. Dasui/2657

It is requested you review the subject plans and specifications and provide your response no later than 13 Nov 1987

Encl. As

Walter D. Judlin
chief, Design Branch