

17TH ST. OUTFALL CANAL3 Dec 86PRELIMINARY COST ESTIMATE SUMMARYA. H.L.P. - PARALLEL PROTECTION

<u>LAKEFRONT TO RR TRACKS</u> (Includes NOS & WB WORK)	\$	25,920,000
---	----	------------

<u>RR TRACKS TO PUMP STA</u>	\$	396,000
------------------------------	----	---------

WORK @ PUMP STA No 6

1) Floodwell	\$	270,000
--------------	----	---------

2) Sluice Gates & Butterfly Valves	\$	5,775,000
------------------------------------	----	-----------

BRIDGE & ROAD CROSSINGS (all Gates)

1) Hammond Hwy Bridge	\$	700,000
-----------------------	----	---------

2) Veterans Hwy Bridge	\$	800,000
------------------------	----	---------

3) R.R. Tracks	\$	120,000
----------------	----	---------

4) Orpheum Ave (Backtown)	\$	85,000
---------------------------	----	--------

SUBTOTAL	\$	34,066,000
----------	----	------------

15% ± Contingencies	\$	5,110,000
---------------------	----	-----------

GROSS - TOTAL	\$	39,176,000
---------------	----	------------

WORK BY NOSEWB

\$ 16,558,000

(Dredging canal and modifying existing levees and floodwalls, net creditable towards HLP)

NET-TOTAL HLP COST
(PARALLEL PROTECTION)
(includes 15% contingencies)

\$ 22,618,000
(Construction only)

B. HLP - CONTROL VALVE STRUCTURE

\$ 14,454,000

(Location: approx 300' south of Hammond Hwy Bridge)
(includes 25% contingencies)

(Construction only)

17TH ST. OUTFALL CANAL
PRELIMINARY ESTIMATES

3 Dec 84

Hammond Hwy Bridge

Assume 4 ea. bottom roller gates are required to accommodate the proposed bridge widening by the State.

Assume the gates are 7 feet tall, 30 ft wide
4 ea @ \$175,000 = \$700,000

Orpheum Ave. @ Bucktown

Assume 1 ea. Swing Gate, 9 feet tall x 30 ft wide
1 ea @ \$85,000 = \$85,000

Vets Hwy Bridge

Assume 4 ea. bottom roller gates 47' wide, 7 feet tall
4 ea @ \$200,000 = \$800,000

RR. Crossing

Assume 2 ea. Swing Gates 24 feet wide, 4 feet tall
2 @ \$60,000 ea. = \$120,000

TOTAL = \$1,705,000

I-10 & I-610

Assume bridges are raised by the State above the required height of protection.
No. Cost.

Pump Station No. 4

- 1) Assume Horiz Disch Pumps Culverts closed with Sluice gates located at the lowest end of the discharge culvert. (9 pumps)
 $9 \text{ ea} @ \$600,000 \text{ ea} = \$5,400,000$

Assume Vert. Disch Pumps closed with butterfly valves (Tube dia 84")
 $5 \text{ ea} @ 75,000 = \$375,000$

- 2) Floodwalls at Pump Sts. (T-wells)
 $180 \text{ ft.} @ \$1500/\text{ft} = \$270,000$

RR Tracks to Pump Sts

I-Well on levee: approx 330 lf. (I-wall, levee, & retaining wall)
 $330 \text{ lf.} @ \$1200/\text{lf} = \$396,000$

Above cost estimates do not include
Contingencies

REASONABLE CONTRACT ESTIMATE

IDE

84
83

SHEET 1 OF 2

PROJECT 17th ST CANAL DRAINAGE IMPROVEMENTS
(ORIGINAL PROPOSAL RAISED TO HLP STANDARDS)

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1	MOBILIZATION & DEMOBILIZATION	1	JOB	LUMP SUM	100,000
2	CLEARING & GRUBBING	1	JOB	LUMP SUM	60,000
3	EXCAVATION (LEVEE DEGRADING)	92,600	C.Y.	8.00	740,800
4	FILL (LEVEE RAISING)	15,000	C.Y.	2.00	30,000
5	CANAL DREDGING	402,000	C.Y.	10.00	4,020,000
6	CONCRETE BLOCK MAT	185,700	S.F.	5.00	928,500
				25.00	165,000
7	RIPRAP	6600	TON	20.00	132,000
8	SELECTIVE DEMOLITION (Consists of: removal of approx 8750 LF. Concrete capped sheet pile wall; removal of approx 7480 LF. of uncapped sheet pile wall; removal of portions of existing bike path (asphalt 5420'); removal of portions of Orpheum Ave (asphalt road 1430' s.y.); and removal of misc. timber structures in canal)	1	JOB	LUMP SUM	315,000
9	ASPHALTIC CONCRETE BIKE PATH (2" thick x 8' wide x 6280' long)	5580	S.Y.	4.50	25,110
10	ASPHALT ROAD (2" thick asphalt + 6" granular material sub base)	1430	S.Y.	6.50	9,295
11	PEDESTRIAN BRIDGE (Consists of: Concrete 73.5 C.Y. Reinb Steel 8175 LB. 16"x16" Prestressed Conc. Piles 2,330 LF. Structural Timber 15.7 MFBM 12" Ø C.I. Pipe 305 LF. Fill material 26 C.Y.)	1	JOB	LUMP SUM	155,000
12	STRUCTURAL EXCAVATION	15,345	C.Y.	8.00	122,760
13	STRUCTURAL BACKFILL	10,637	C.Y.	10.00	106,370
14	PZ-27 STEEL SHEET PILING	233,883	S.F.	12.50	2,923,538
15	PMA-22 STEEL SHEET PILING	9,652	S.F.	10.00	96,520

REASONABLE CONTRACT ESTIMATE

11-83 ⁸⁴

SHEET 2 OF 2

PROJECT 17th ST. CANAL DRAINAGE IMPROVEMENTS
(ORIGINAL PROPOSAL RAISED TO HLP STANDARDS)

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
				11.00	1,670,900
16	P2-22 STEEL SHEET PILING	151,900	S.F.	10.00 12.16.50	1,519,000 1,831,419
17	P2-38 STEEL SHEET PILING	523,116	S.F.	16.00	8,369,856
18	HP 14x102 STEEL PILES	1858	L.F.	35.00	65,030
19	12"Ø TREATED TIMBER PILES	27,879	L.F.	10.00	278,790
20	10"x10" CREOSOTED TIMBER WALES	3251	L.F.	15.00	48,765
21	REINFORCED CONCRETE WALL (SHEET PILE CAP)	16,084	C.Y.	325.00 325.00	5,227,300
22	STRUCTURAL STEEL (MISC)	68,150	LB.	2.00	136,300
23	3-BULB WATER STOP	7931	L.F.	8.00	63,448
					25,919,890
	SUBTOTAL				25,472,382
	CONTINGENCIES	15.15%			3,888,160
	TOTAL CONSTRUCTION				29,360,540

BT
12-6-83

REASONABLE CONTRACT ESTIMATE 1 DEC 85

SHEET 1 OF 2

PROJECT 17TH ST. CANAL - DRAINAGE IMPROVEMENTS BY S.F.W.B.
(ORIGINAL PROPOSAL)

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1	Mobilization and Demob.	1	Job	Lump Sum	100,000
2	Clearing & Grubbing	1	Job	Lump Sum	60,000
3	Excavation (Levee Degrading)	61,000	C.Y.	7.50	457,500
4	Fill (Levee Raising)	15,000	C.Y.	2.00	30,000
5	Canal Dredging	402,000	C.Y.	10.00	4,020,000
6	Concrete Block Mat	185,700	S.F.	5.00	928,500
				25.00	165,000
7	RIP-Rap	6600	Ton	20.00	132,000
8	Selective Demolition (Consists of: removal of approx 8750 CF concrete capped sheet pile wall; removal of approx 7480 CF of uncapped sheet pile wall; removal of portions of existing bike path (asphalt: 15420'); removal of portions of Orpheum Ave. (asphalt road: 1430 S.Y.) and removal of misc. timber structures in canal)	1	Job	Lump Sum	315,000
9	Asphaltic Concrete Bike Path (2" thick x 8' wide x 6200' long)	5580	S.Y.	4.50	25,110
10	Asphalt Road (2" thick asphalt + 6" granular material sub. base)	1430	S.Y.	6.50	9,295
11	Pedestrian Bridge (Consists of: Concrete 73.5 C.Y. Steel Reinf. 8175 LB 16"x16" Prest. Conc. Piles 2,330 CF Structural Timber 15.7 MFBM 12" dia C.I. Pipe 305 LF Fill Material 26 C.Y.)	1	Job	Lump Sum	155,000
12	Structural Excavation	9855	C.Y.	8.00	78,840
13	Structural Backfill	7563	C.Y.	10.00	75,630
14	P2-27 Steel Sheet Piling	53,883	S.F.	12.50	673,538
15	PMA-22 Steel Sheet Piling	464,943	S.F.	10.00	4,649,430

REASONABLE CONTRACT ESTIMATE

1 DEC 83

SHEET 2 OF 2

PROJECT 17TH ST. CANAL - DRAINAGE IMPROVEMENTS BY JFWB
(ORIGINAL PROPOSAL)

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
				30	55,740
16	HP14x102 Steel Piles	1,858	LF	35.00	65,030
17	12"φ Treated Timber Piles	27,879	LF	10.00	278,790
18	10"x10" Creosated Timber Wakes	3,251	LF	15.00	48,765
19	Reinforced Concrete Wall (sheet pile cap)	6,023	CY	350.00	2,108,050
20	Structural Steel (Misc)	67,700	LB	2.00	135,400
21	3-Bulb Waterstop	3,540	LF	8.00	28,320
	Subtotal				14,397,908
	Contingencies	15.10 % ±		2,159,992	16,557,900 2,160,092
	Total Construction				16,558,000

BT
12-6-83

REASONABLE CONTRACT ESTIMATE 1 DEC 83

SHEET 1 OF 2

PROJECT 17TH ST. CANAL - DRAINAGE IMPROVEMENTS BY S. F. W. B.
(ORIGINAL PROPOSAL)

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1	Mobilization and Demob.	1	Job	Lump Sum	100,000
2	Clearing & Grubbing	1	Job	Lump Sum	60,000
3	Excavation (Levee Degradation)	61,000	C.Y.	7.50	457,500
4	Fill (Levee Raising)	15,000	C.Y.	2.00	30,000
5	Canal Dredging	402,000	C.Y.	10.00	4,020,000
6	Concrete Block Mat	185,700	S.F.	5.00	928,500
7	Rip-Rap	6600	Ton	20.00	132,000
8	Selective Demolition (Consists of: removal of approx 8750 LF. concrete capped sheet pile wall; removal of approx 7480 LF of uncapped sheet pile wall; removal of portions of existing bike path (asphalt: 15420'); removal of portions of Orpheum Ave. (asphalt road: 1430 S.Y.) and removal of misc. timber structures in canal)	1	Job	Lump Sum	315,000
9	Asphaltic Concrete Bike Path (2" thick x 8' wide x 6280' long)	5580	S.Y.	4.50	25,110
10	Asphalt Road (2" thick asphalt + 6" granular material sub. base)	1430	S.Y.	6.50	9,295
11	Pedestrian Bridge (Consists of: Concrete 73.5 C.Y. Steel Reinf. 8175 LB 16"x16" Prest. Conc. Piles 2330 CF Structural Timber 15.7 MFBM 12"Ø C.I. Pipe 305 LF Fill Material 24 C.Y.)	1	Job	Lump Sum	155,000
12	Structural Excavation	9855	C.Y.	8.00	78,840
13	Structural Backfill	7563	C.Y.	10.00	75,630
14	P2-27 Steel Sheet Piling	53,883	S.F.	12.50	673,538
15	PMA-22 Steel Sheet Piling	464,943	S.F.	10.00	4,649,430

REASONABLE CONTRACT ESTIMATE

1 DEC 83

SHEET 2 OF 2

PROJECT 17TH ST. CANAL - DRAINAGE IMPROVEMENTS BY S&WB
(ORIGINAL PROPOSAL)

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
16	HP14x102 Steel Piles	1,858	LF.	35.00	65,030
17	12" ϕ Treated Timber Piles	27,879	LF	10.00	278,790
18	10"x10" Creosoted Timber Wales	3,251	LF.	15.00	48,765
19	Reinforced Concrete Wall (sheet pile cap)	6,023	CY.	350.00	2,108,050
20	Structural Steel (Misc)	67,700	LB	2.00	135,400
21	3-Bulb Waterstop	3,540	LF.	8.00	28,320
	Subtotal				14,374,198
	Contingencies	15 10 %			
	Total Construction				

BT
12-6-83

REASONABLE CONTRACT ESTIMATE

IDE 83

SHEET 1 OF 2

PROJECT 17th ST. CANAL DRAINAGE IMPROVEMENTS
(ORIGINAL PROPOSAL RAISED TO HLP STANDARDS)

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1	MOBILIZATION & DEMOBILIZATION	1	JOB	LUMP SUM	100,000
2	CLEARING & GRUBBING	1	JOB	LUMP SUM	60,000
3	EXCAVATION (LEVEE DEGRADING)	92,600	C.Y.	8.00	740,800
4	FILL (LEVEE RAISING)	15,000	C.Y.	2.00	30,000
5	CANAL DREDGING	402,000	C.Y.	10.00	4,020,000
6	CONCRETE BLOCK MAT	185,700	S.F.	5.00	928,500
7	RIPRAP	6600	TON	20.00	132,000
8	SELECTIVE DEMOLITION (Consists of: removal of approx 8750 L.F. Concrete capped sheet pile wall; removal of approx 7480 L.F. of uncapped sheet pile wall; removal of portions of existing bike path (asphalt 5420'); removal of portions of Orpheum Ave (asphalt road 1430 s.y.); and removal of misc. timber structures in canal)	1	JOB	LUMP SUM	315,000
9	ASPHALTIC CONCRETE BIKE PATH (2" thick x 8' wide x 6280' long)	5580	S.Y.	4.50	25,110
10	ASPHALT ROAD (2" thick asphalt + 6" granular material sub base)	1430	S.Y.	6.50	9,295
11	PEDESTRIAN BRIDGE (Consists of: Concrete 73.5 C.Y. Reinb Steel 8175 LB. 16"x16" Prestressed Conc. Piles 2,330 L.F. Structural Timber 157 MFBM 12" Ø C.I. Pipe 305 L.F. Fill material 26 C.Y.)	1	JOB	LUMP SUM	155,000
12	STRUCTURAL EXCAVATION	15,345	C.Y.	8.00	122,760
13	STRUCTURAL BACKFILL	10,637	C.Y.	10.00	106,370
14	PZ-27 STEEL SHEET PILING	233,883	S.F.	12.50	2,923,538
15	PMA-22 STEEL SHEET PILING	9,652	S.F.	10.00	96,520

REASONABLE CONTRACT ESTIMATE

12-83

SHEET 2 OF 2

PROJECT 17th ST CANAL DRAINAGE IMPROVEMENTS
(ORIGINAL PROPOSAL RAISED TO HLP STANDARDS)

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
16	P2-22 STEEL SHEET PILING	151,900	S.F.	10.00	1,519,000
17	P2-38 STEEL SHEET PILING	523,116	S.F.	16.00	8,369,856
18	HP 14x102 STEEL PILES	1858	L.F.	35.00	65,030
19	12"Ø TREATED TIMBER PILES	27,879	L.F.	10.00	278,790
20	10"x10" CREOSOTED TIMBER WALES	3251	L.F.	15.00	48,765
21	REINFORCED CONCRETE WALL (SHEET PILE CAP)	16,084	C.Y.	325.00	5,227,300
22	STRUCTURAL STEEL (MISC)	68,150	LB.	2.00	136,300
23	3-BULB WATER STOP	7931	L.F.	8.00	63,448
	SUBTOTAL				25,473,382
	CONTINGENCIES	15 10 %			
	TOTAL CONSTRUCTION				

BT
12-6-83

17TH ST. OUTFALL CANAL

3 Dec 86

PRELIMINARY COST ESTIMATE SUMMARY

A. H.L.P. - PARALLEL PROTECTION

LAKEFRONT TO RR TRACKS \$ 25,920,000
(Includes NOS & WB WORK)

RR TRACKS TO PUMP STA \$ 396,000

WORK @ PUMP STA No. 6

1) Floodwall \$ 270,000

2) Sluice Gates & Butterfly Valves \$ 5,775,000

é ROAD

BRIDGE & CROSSINGS (all Gates)

1) Hammond Hwy Bridge \$ 700,000

2) Veterans Hwy Bridge \$ 800,000

3) R.R. Tracks \$ 120,000

4) Orpheum Ave (Backtown) \$ 85,000

SUBTOTAL \$ 34,066,000

15% ± Contingencies \$ 5,110,000

GROSS - TOTAL \$ 39,176,000

Work BY NOS & WB

\$ 16,558,000

(Dredging canal and modifying existing levees and flood walls, not creditable towards HLP)

NET-TOTAL HLP COST
(PARALLEL PROTECTION)
(includes 15% contingencies)

\$ 22,618,000
(Construction only)

B. HLP - CONTROL VALVE STRUCTURE

\$ 14,454,000

(Location: approx 300' south of Hammond Hwy Bridge)
(includes 25% contingencies)

(Construction only)

17TH ST. CANAL - PROJECT COSTS
=====

=====

LEVEE WORK

=====

LAKE TO RAILROAD (ALTERNATIVE 2) :

ITEM	COST			
	ORLEANS LEVEE		JEFFERSON LEVEE	
	OLB	USCE	JLB	USCE
Sheet Pile	\$5,844,400	-----	\$5,680,350	-----
Degrading	92,300	-----	104,800	-----
Fill	9,900	-----	-----	-----
Matting	520,500	-----	527,750	-----
Coal Tar Epoxy	261,700	-----	248,150	-----
Sand Blasting	65,450	-----	62,050	-----
Concrete	-----	\$3,080,000	-----	\$2,940,000
Reinforcing	-----	388,000	-----	368,000
Contingencies - 15%	1,019,150	520,200	993,500	496,200
Contributions*	(2,289,900)	-----	(2,213,650)	-----
TOTAL	\$5,523,500	\$3,988,200	\$5,402,950	\$3,804,200

* S&WB contribution for providing flood protection up to the authorized level.

RAILROAD TO PUMP STATION NO. 6 :

ITEM	COST			
	ORLEANS LEVEE		JEFFERSON LEVEE	
	OLB	SWB	JLB	SWB
Floodwalls	\$20,000	\$49,350	-----	\$34,350
Contingencies - 15%	3,000	7,450	-----	5,200
TOTAL	\$23,000	\$56,800	-----	\$39,550

17TH ST. CANAL - PROJECT COSTS
=====

=====

BRIDGE WORK

=====

BRIDGE/ALTERNATIVE	OLB	JLB	LaDOTD
Hammond Hwy - Sealing			\$241,900
Veterans Hwy - Sealing	\$1,304,900	\$1,304,900	
Railroad - Floodgates	120,000	120,000	
TOTAL	1,424,900	1,424,900	\$241,900

- * The I-10/610 bridges are to be replaced by LaDOTD for structural and hydraulic reasons and thus are not included in the project costs. The cost for sealing Veterans Hwy is a revised cost estimate based on a revised sealing scheme as discussed in the cover letter. The cost for floodgates at the railroad is based on the actual contract price for work in progress to provide such protection.

=====

PUMP STATION NO.6 WORK

=====

ITEM	USCE	SWB
Sliding Gates	\$2,700,000	
Butterfly Valves	375,000	
Electrical Service	90,000	
Work Platform	100,000	
Floodwalls	147,050	\$67,400
Contingencies - 15%	511,850	10,150
TOTAL	\$3,923,900	\$77,550

17TH ST. CANAL - PROJECT COSTS

=====

=====

TOTAL COSTS

=====

	OLB	JLB	USCE	OTHERS
Levee Work: Lake to RR	\$5,523,500	\$5,402,950	\$7,792,400	-----
Levee Work: RR to PS 6	23,000	-----	-----	\$96,350
Bridge Work	1,424,900	1,424,900	-----	241,900
Pump Station No. 6 Work	-----	-----	3,923,900	77,550
TOTAL	\$6,971,400	\$6,827,850	\$11,716,300	\$415,800

TOTAL PROJECT COST - \$25,931,350

JEFF. PAR. LEFT LEVEE
100 YR STORM (From Chiu 12/9/84)
STABILITY

REACH A (Kenner Area)

F.S. = 1.78 (Flood Side) FS = 1.86 (Protected Side)

REACH B (Mid - 1/3 of LEFT)

FS = 1.0 (Flood Side) FS = 1.2 (Protected Side)

REACH C

FS = 1.07 (Flood Side) FS = 1.28 (Protected Side)

Jefferson Lakefront Levee

100 yr Storm with existing protection (WTL = 10.5)

1. Embankment Stability

Reach A	* Floodside	FS = 1.78
Sta 153+00	Protected side	FS = 1.86
Sta 41+00	FLOODSIDE	FS = 1.1 (S-CASE)
Reach B	Floodside	FS = 0.97
Sta 263+00	Protected side	FS = 1.19
Reach C	Floodside	FS = 1.07
Sta 501+00 (Floodside)	Protected side	FS = 1.28
Sta 441+00 (Protected side)		

2. I-wall Analysis

Reach B (Sta 295+00)

Existing tip EI = -7.

Analyzed with dynamic wave

Q case - FS = 1.25

S-case - FS = 0.8

Tip ok for no wave analysis (FS > 1.5)

* Note: water in the lake drawn down for floodside analysis.

ST CHARLES / JEFFERSON PARISH RETURN LEVEE

9/86

A)

REACH I (F.S. = 1.5)

X-SECTION STA.	LEVEE EL	WATER EL	"S" CASE		EUSTIS REPORT 1967 "S" CASE CRITICAL
			REQ'D TIP ELEV.		
97+60	6.56	10.5	-5.6 (-9.0)		OLD B/L STA 121+00 LEVEE EL ≈ 7.3 WATER EL 11.0
133+20	5.50	10.5	-11.9 (-9.5)	*	<u>TIP EL. -8.0</u>

F.S. = 1.3 Eustis tip + Set

REACH II(A) (F.S. = 1.5)

X-SECTION STA	LEVEE EL	WATER EL	"S" CASE		EUSTIS REPORT 1967 "S" CASE CRITICAL
			REQ'D TIP ELEV.		
143+20	7.3	11.0	-5.1 (-6.5)		OLD B/L STA 190+00 LEVEE EL. 9.0 WATER EL 11.0
155+20	5.6	11.0	-13.6 * -21.9 -6.5	*	<u>TIP EL -5.0</u>

~~(For F.S. = 1.0 REQ'D TIP ELEV. -8.2)~~
(For F.S. = 1.0 REQ'D TIP ELEV. -6.7)

Eustis tip + Set

B) RECHECKED EUSTIS SHEETPILE DESIGN (1967) USING THE COR'S NEW SHEAR STRENGTH & STRATIFICATION FOR THE RETURN LEVEE WITH EUSTIS 1967 CROSS SECTIONS.

OLD B/L STA. 121+00, LEVEE EL 7.3, WATER EL 11.0 → REQ'D TIP EL -4.1 (REACH I)
 OLD B/L STA. 190+00, LEVEE EL 9.0, WATER EL 11.0 → REQ'D TIP EL +2.4 (REACH II)

LAKE FRONT. LA & VIC HURRICANE PROT. PROJ.

H.C.P.

EAST JEFFERSON PARISH

15 Dec 84

PRELIMINARY COST ESTIMATES:

ST. CHARLES / JEFF. PARISH RETURN LEVEE \$ 26,750,000
(T-WALL AIRPORT TO LAKEFRONT)

JEFF. LKFT LEVEE. RANGE: \$ 83,040,000
(REACH "A" = I-wall on level TO
REACHES "B" & "C" = T-wall on levee) \$ 103,900,000
WORK AT PUMPING STATIONS \$ 10,000,000

17TH ST. OUTFALL CANAL \$ 9,400,000
(1/2 COST OF STRUCTURE SOLUTION)

TOTAL COST (RANGE) \$ 129,190,000
TO
\$ 150,050,000
SAY \$ 129,000,000
TO
\$ 150,000,000

ABOVE ESTIMATES INCLUDE:

25% CONTINGENCIES

12% E&D (17TH ST. CANAL: USE 20% E&D)

10% S&A

$$\begin{array}{r} 253 + 80 \\ 77 + 00 \\ \hline 174 + 80 \end{array} \quad (5280)$$

3.35 miles

$$5030 = 9,$$

$$5030' = 8,000,000$$

$$17,680' = 28,119,284$$

$$= 28,120,000$$

$$253 + 80$$

$$197 + 31$$

$$56 + 42$$

$$\$1,590.44/\text{ft.}$$

the requester for resolution. Upon receipt of a revision request, the Administrator shall mail an acknowledgment of receipt of such request to the CEO. Within 90 days of receiving the request with all necessary information, the Administrator shall notify the CEO of one or more of the following:

- (a) The effective map(s) shall not be modified;
- (b) The base flood elevations on the effective FIRM shall be modified and new base flood elevations shall be established under the provisions of Part 67 of this subchapter;
- (c) The changes requested are approved and the map(s) amended by Letter of Map Revision (LOMR);
- (d) The changes requested are approved and a revised map(s) will be printed and distributed;
- (e) The changes requested are not of such a significant nature as to warrant a reissuance or revision of the flood insurance study or maps and will be deferred until such time as a significant change occurs;
- (f) An additional 90 days is required to evaluate the scientific or technical data submitted; or
- (g) Additional data are required to support the revision request.

§65.10 Mapping of areas protected by levee systems.

(a) *General.* For purposes of the NFIP, FEMA will only recognize in its flood hazard and risk mapping effort those levee systems that meet, and continue to meet, minimum design, operation, and maintenance standards that are consistent with the level of protection sought through the comprehensive flood plain management criteria established by § 60.3 of this subchapter. Accordingly, this section describes the types of information FEMA needs to recognize, on NFIP maps, that a levee system provides protection from the base flood. This information must be supplied to FEMA by the community or other party seeking recognition of such a levee system at the time a flood risk study or restudy is conducted, when a map revision under the provisions of Part 65 of this subchapter is sought based on a levee system, and upon request by the Administrator during the review of previously recognized structures. The FEMA review will be for the sole purpose of establishing appropriate risk zone determinations for NFIP maps and shall not constitute a determination by FEMA as to how a structure or system will perform in a flood event.

(b) *Design criteria.* For levees to be recognized by FEMA, evidence that

adequate design and operation and maintenance systems are in place to provide reasonable assurance that protection from the base flood exists must be provided. The following requirements must be met:

(1) *Freeboard.* (i) Riverine levees must provide a minimum freeboard of three feet above the water-surface level of the base flood. An additional one foot above the minimum is required within 100 feet in either side of structures (such as bridges) riverward of the levee or wherever the flow is constricted. An additional one-half foot above the minimum at the upstream end of the levee, tapering to not less than the minimum at the downstream end of the levee, is also required.

(ii) Occasionally, exceptions to the minimum riverine freeboard requirement described in (b)(1)(i) above may be approved. Appropriate engineering analyses demonstrating adequate protection with a lesser freeboard must be submitted to support a request for such an exception. The material presented must evaluate the uncertainty in the estimated base flood elevation profile and include, but not necessarily be limited to an assessment of statistical confidence limits of the 100-year discharge; changes in stage-discharge relationships; and the sources, potential, and magnitude of debris, sediment, and ice accumulation. It must be also shown that the levee will remain structurally stable during the base flood when such additional loading considerations are imposed. Under no circumstances will freeboard of less than two feet be accepted.

(iii) For coastal levees, the freeboard must be established at one foot above the height of the one percent wave or the maximum wave runup (whichever is greater) associated with the 100-year stillwater surge elevation at the site.

(iv) Occasionally, exceptions to the minimum coastal levee freeboard requirement described in (b)(1)(iii) may be approved. Appropriate engineering analyses demonstrating adequate protection with a lesser freeboard must be submitted to support a request for such an exception. The material presented must evaluate the uncertainty in the estimated base flood loading conditions. Particular emphasis must be placed on the effects of wave attack and overtopping on the stability of the levee. Under no circumstances, however, will a freeboard of less than two feet above the 100-year stillwater surge elevation be accepted.

(2) *Closures.* All openings must be provided with closure devices that are structural parts of the system during

operation and design according to sound engineering practice.

(3) *Embankment protection.* Engineering analyses must be submitted that demonstrate that no appreciable erosion of the levee embankment can be expected during the base flood, as a result of either currents or waves, and that anticipated erosion will not result in failure of the levee embankment or foundation directly or indirectly through reduction of the seepage path and subsequent instability. The factors to be addressed in such analyses include, but are not limited to: Expected flow velocities (especially in constricted areas); expected wind and wave action; ice loading; impact of debris; slope protection techniques; duration of flooding at various stages and velocities; embankment and foundation materials; levee alignment, bends, and transitions; and levee side slopes.

(4) *Embankment and foundation stability.* Engineering analyses that evaluate levee embankment stability must be submitted. The analyses provided shall evaluate expected seepage during loading conditions associated with the base flood and shall demonstrate that seepage into or through the levee foundation and embankment will not jeopardize embankment or foundation stability. An alternative analysis demonstrating that the levee is designed and constructed for stability against loading conditions for Case IV as defined in the U.S. Army Corps of Engineers (COE) manual, "Design and Construction of Levees" (EM 1110-2-1913, Chapter 6, Section II), may be used. The factors that shall be addressed in the analyses include: Depth of flooding, duration of flooding, embankment geometry and length of seepage path at critical locations, embankment and foundation materials, embankment compaction, penetrations, other design factors affecting seepage (such as drainage layers), and other design factors affecting embankment and foundation stability (such as berms).

(5) *Settlement.* Engineering analyses must be submitted that assess the potential and magnitude of future losses of freeboard as a result of levee settlement and demonstrate that freeboard will be maintained within the minimum standards set forth in paragraph (b)(1) of this section. This analysis must address embankment loads, compressibility of embankment soils, compressibility of foundation soils, age of the levee system, and construction compaction methods. In addition, detailed settlement analysis using procedures such as those

Letter to Grand Council @ F.S. for

100 yr service

Do not certify

~~60732 - +~~
~~...~~
Adm. ...
(1871-1971)
Director ...
Wet

I provided this
info. to Van Stults
on 9 Dec 84

AM

17TH ST. OUTFALL CANAL

PRELIMINARY COST ESTIMATES (DEC 84)
(PRICE LEVELS)
(Construction cost only, NO E&D or S&A)

Parallel Protection: \$ 22,618,000.

Assumes Gates at all bridge crossings
Gate at Orpheum Ave (Bucktown)
Accommodates widening of Hammond Hwy
Bridge.
Sluice Gates at the lowest ~~to~~ end of
culverts of Horizontal Disch Pumps. at the
Pump Stz.
Assumes work required for HLP is
performed in conjunction with the NOS&WB
canal widening work.
HO, I-610 will be handled by others

CONTROL VALVE STRUCTURE: \$ 14,454,000.

Assumes: Location south side of Hammond Hwy.
Bridge.
Gates at Hammond Hwy Bridge
Gate at Orpheum Ave. (Bucktown)
Accommodates widening of Hammond Hwy
Bridge.

NOTE: Above estimates include the following
1) Parallel Protection 15% Contingencies
2) Control Valve Struct. 25% Contingencies (to
allow for modeling at NES)

Ret. Lease \$ 28,120,000

T-wall Based on 1 trap. Sec
for 4 miles

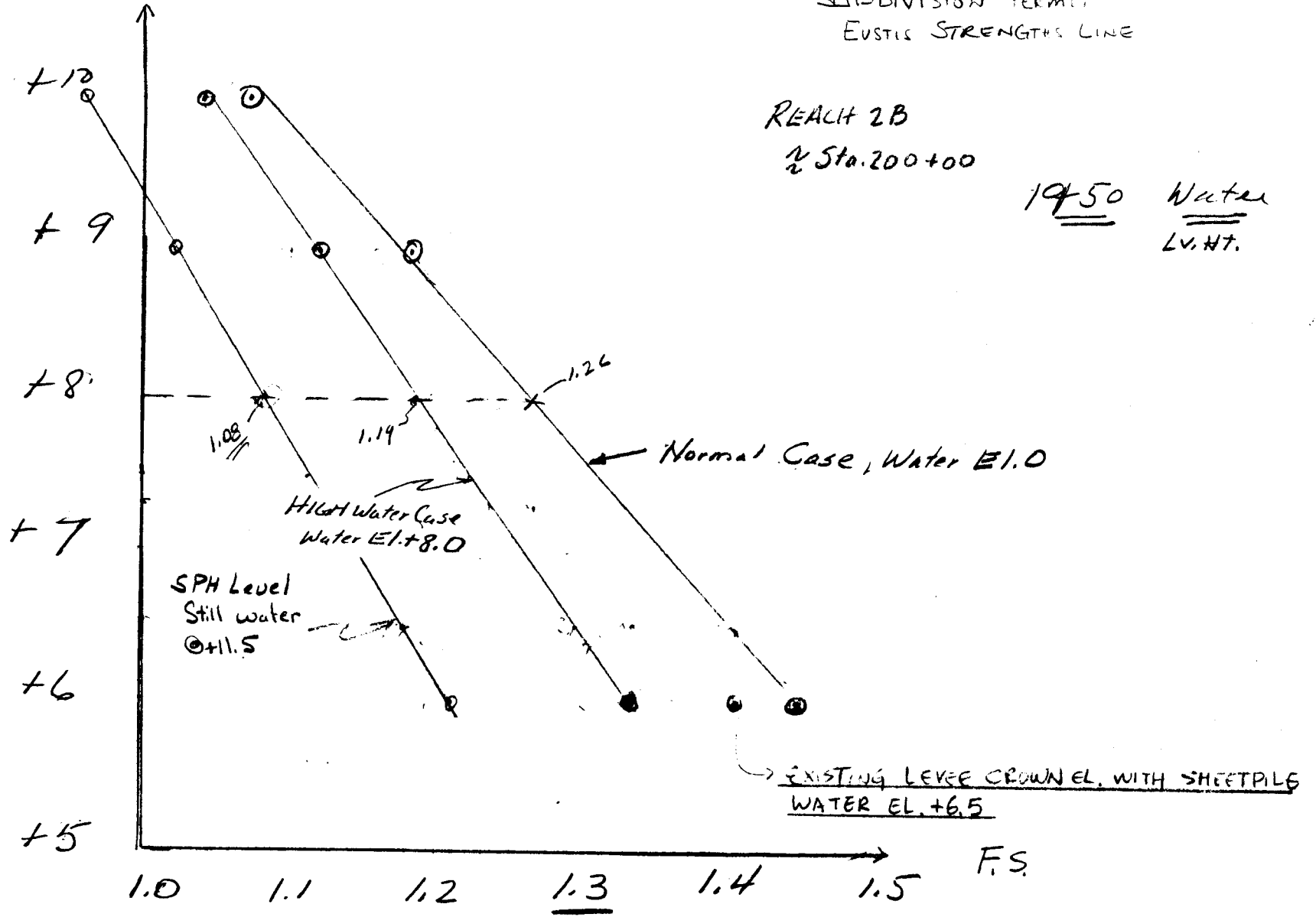
I-wall on Lease
\$ 36,500,000

LEEVE CROWN ELEVATION

SUBDIVISION PERMIT
EUSTIC STRENGTHS LINE

REACH 2B
1/2 Sta. 200+00

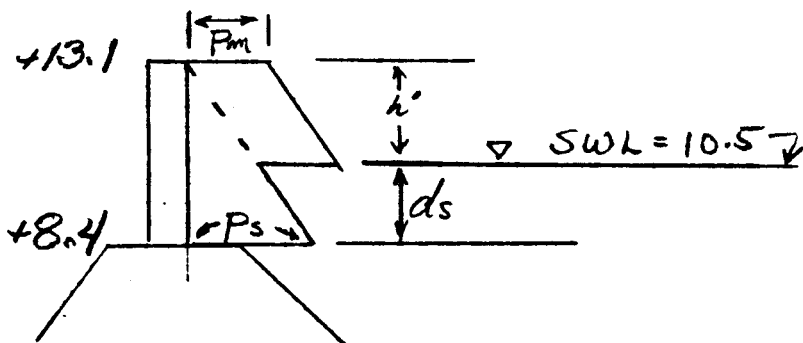
1950 Water
Lv. Ht.



FEB 84

PROJECT	JEFF. PAR. LAKEFRONT	PAGE 1 OF	COMPUTED BY	DATE
SUBJECT	STA 41+00 Wave Forces on Floodwall		CHECKED BY	DATE

100-YR FLOOD - 10% WAVE



$$SWL = 10.5$$

$$H_0' = 10.2$$

$$d_s = 10.5 - 8.4 = 2.1$$

$$h_c = 0.78(H_{10}) = 8.0$$

$$h' = 13.1 - 10.5 = 2.6$$

$$d_0 = 12.4$$

$$P_s = w(d_s + h_c) = 64(2.1 + 8) = 650 \text{ \#/ft}^2$$

$$P_m = w d_0^2 / 2 = 64(12.4) / 2 = 400 \text{ \#/ft}^2$$

$$R_s = P_s (d_s + h') / 2 = 650(2.1 + 2.6) / 2 = 1530 \text{ \#/ft}$$

$$R_m = P_m h' = 400(2.6) = 1040 \text{ \#/ft}$$

$$R_T = R_s + R_m = 1530 + 1040 = 2570 \text{ \#/ft}$$

$$M_s = R_s (d_s + h') / 3 = 1530(2.1 + 2.6) / 3 = 2400 \text{ ft\#/ft}$$

$$M_m = R_m (d_s + h' / 2) = 1040(2.1 + 2.6 / 2) = 3540 \text{ ft\#/ft}$$

$$M_T = M_s + M_m = 2400 + 3540 = 5940 \text{ ft\#/ft}$$

$$X_{RT} = \frac{M_T}{R_T} = \frac{5940}{2570} = 2.3 + 8.4 = 10.7 \text{ ft. N.G.V.D.}$$

2500

12300

16700

21000

10.3

9.4

9.3

25800

PROJECT ST CHARLES PARISH RETURN LEVEE	PAGE 4 OF 4	COMPUTED BY R. PINNER	DATE 9/86
SUBJECT LEVEE STABILITY - EUSTIS 1967 REPORT		CHECKED BY	DATE

LAKE PONTCHARTRAIN PROTECTION LEVEE 1967 IMPROVEMENTS.

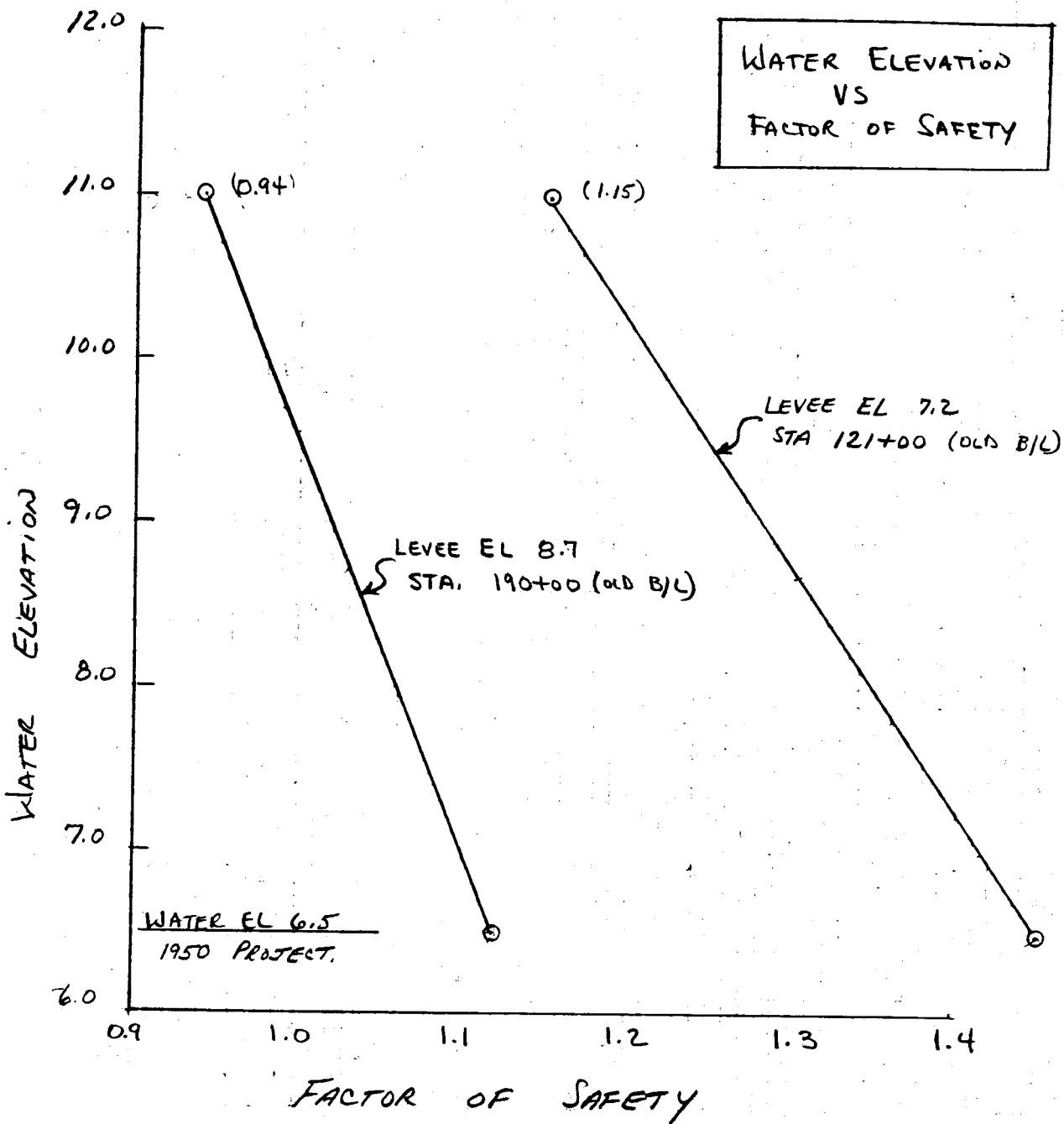
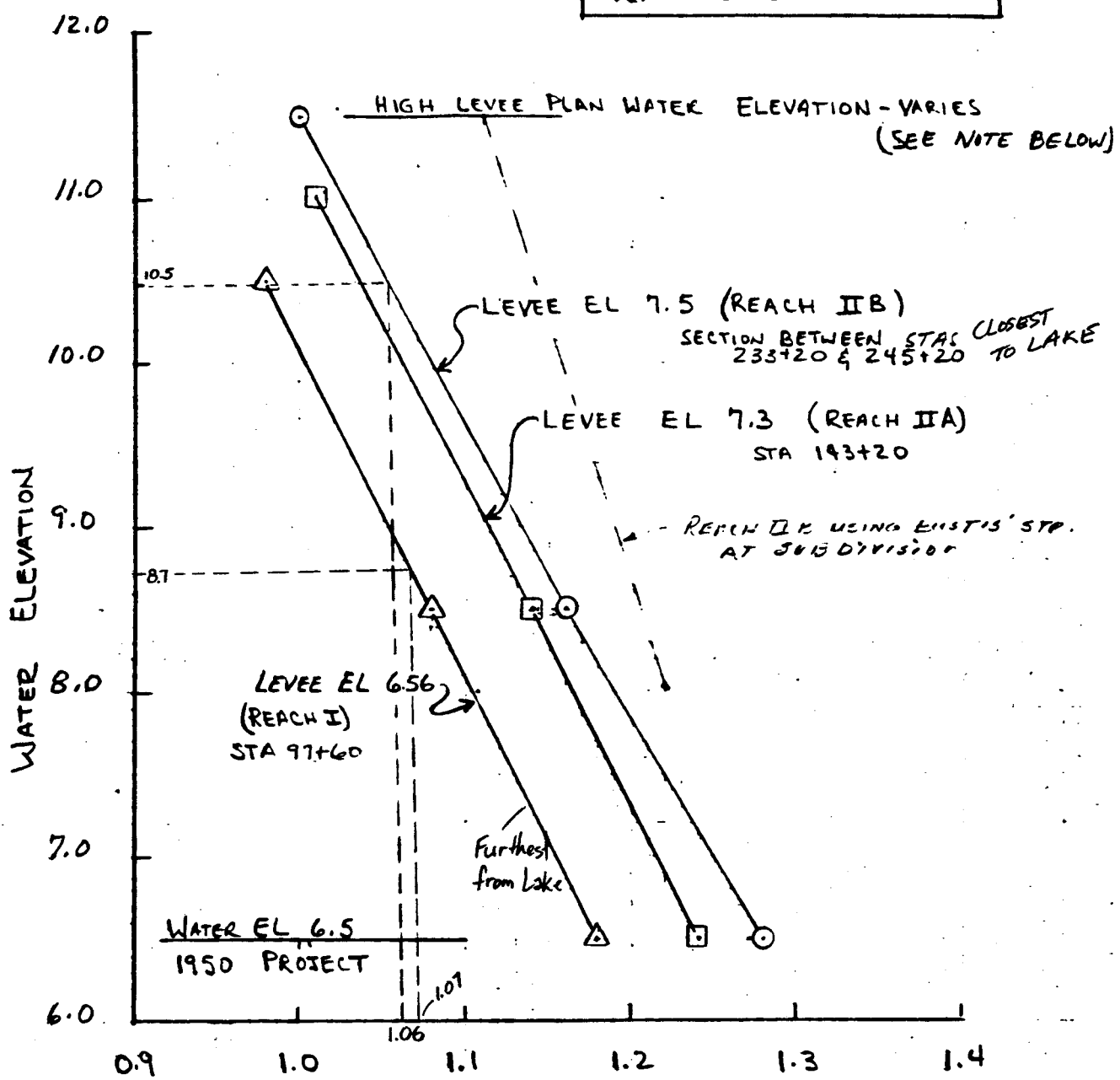


CHART BASED ON EUSTIS ENGR. CO. REPORT FOR LAKE PONTCHARTRAIN PROTECTION LEVEE 1967 IMPROVEMENTS. ^(ASSUMED) STRATIFICATION & SHEAR STRENGTHS ARE BASED ON BORINGS A-11J, A-11T, A-24J, & A-24T. OF EUSTIS REPORT. SEE FIG 2 & 3 OF EUSTIS REPORT FOR STABILITY CROSS-SECTIONS OR ATTACHED SHEET.

**F.S. OF EXISTING LEVEE
VS.
WATER ELEVATION**



FACTOR OF SAFETY

- △-△ CROSS SECTION @ STA 97+60: REACH I STA 77+00 TO STA 139+00: HLP WATER EL 10.5
- CROSS SECTION @ STA 143+20: REACH II A STA 140+00 TO STA. 197+38: HLP WATER EL 11.0
- COMPOSITE SECT. BETWEEN STA 233+20 & 245+20: REACH II B STA 197+40 TO STA 248+80: HLP WATER EL 11.5

Jeff. Left. Levee

100 yr. Storm

El. 10.5 SWL

plus wave action ← pressures?

17TH ST. CANAL

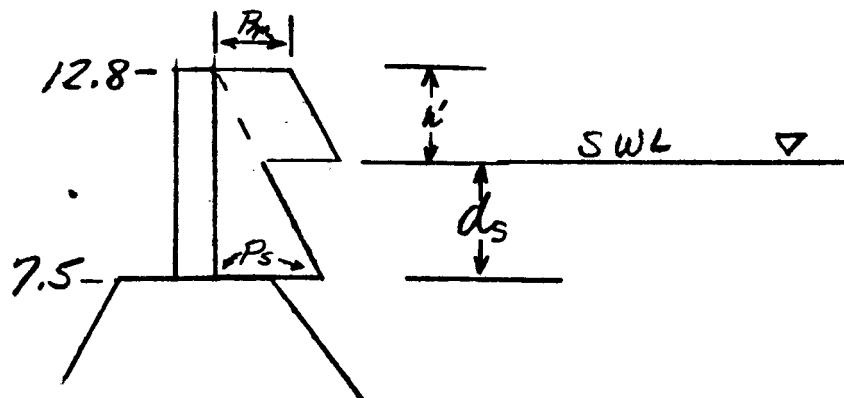
100 yr. Storm

SWL

El. 10.5 at Lake End

PROJECT	JEFF. PAR. LAKEFRONT	PAGE	OF	COMPUTED BY	JMA	DATE	5 Dec 86
SUBJECT	STA 295+00 WAVE FORCES ON FLOOD WALL	CHECKED BY		DATE			

100-YR FLOOD - 10% WAVE



$$\begin{aligned}
 SWL &= 10.5 \\
 H_{10} &= 10.2 \\
 d_s &= 10.5 - 7.5 = 3.0 \\
 h_c &= 0.78(10.2) = 8.0 \\
 h' &= 12.8 - 10.5 = 2.3 \\
 d_p &= 12.4
 \end{aligned}$$

$$\begin{aligned}
 P_s &= w(d_s + h_c) \\
 &= 64(3 + 8) = 705 \text{ \#/ft}^2
 \end{aligned}$$

$$P_m = w d_p / 2 = 64(12.4) / 2 = 400 \text{ \#/ft}^2$$

$$R_s = P_s (d_s + h') / 2 = 705 (3 + 2.3) / 2 = 1870 \text{ \#/ft}$$

$$R_m = P_m h' = 400(2.3) = 920 \text{ \#/ft}$$

$$R_T = R_s + R_m = 1870 + 920 = 2790 \text{ \#/ft}$$

$$M_s = R_s (d_s + h') / 3 = 1870 (3 + 2.3) / 3 = 3300 \text{ ft\#/ft}$$

$$M_m = R_m (d_s + h' / 2) = 920 (3 + 2.3 / 2) = 3820 \text{ ft\#/ft}$$

$$M_T = M_s + M_m = 3300 + 3820 = 7120 \text{ ft\#/ft}$$

$$X_{RT} = \frac{M_T}{R_T} = \frac{7120}{2790} = 2.55 + 7.5 = 10.05 \text{ ft N.G.U.D.}$$

STABILITY OF EXISTING BANK *

CANAL SIDE

SUMMARY:

<u>REACH</u>	<u>STATION</u>	FACTOR OF SAFETY		<u>SWB</u> proposed section
		<u>WATER @ -5</u>	<u>WATER @ -3</u>	
I	554 TO 589	1.11 1.21	1.21	1.32
II	589 TO 614	1.06 1.21	1.14	1.30
III	614 TO 625	1.14 1.22 1.21	1.21	1.31
IV	625 TO 635	1.12 1.27	1.18	1.38
V	635 TO 670	1.22 1.24	1.28	1.29

* NOTE: JEFFERSON PARISH SIDE WAS CRITICAL BANK
IN ALL REACHES.

17th St Outfall Canal
Existing Conditions

STA	LEVEE STABILITY ANALYSIS F.S.			
	LOW WATER		HIGH WATER	
	EL -3	EL -5	100 YR STORM	SWL
554-589	1.21	1.11	1.17	10.5
589-614	1.14	1.06	1.20	10.5
614-625	1.21	1.14		
625-635	1.18	1.12		
635-670	1.29*	1.24*	1.68 (HEADLINE IN SAND) EL 0.0 NGVD	or 1.57 (HEADLINE IN SAND) EL 11.5 NGVD

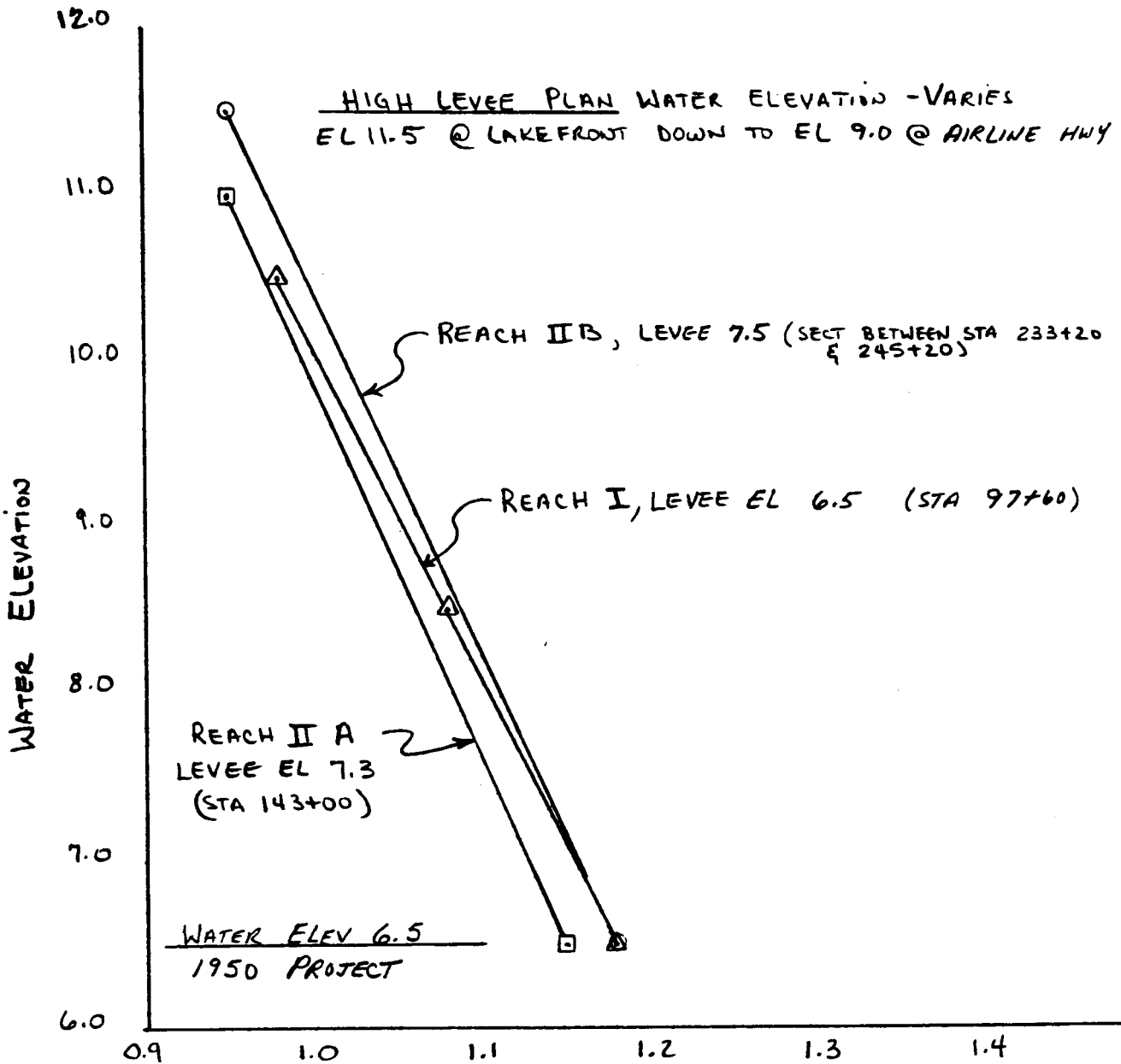
SWL
11.5

* S+W B Section is existing condition

North of Hammond Highway:
Orleans Parish side bulkhead F.S. < 1.0

COMPUTATION SHEET

PROJECT ST CHARLES/JEFFERSON PARISH RETURN LEVEE	PAGE OF	COMPUTED BY R. PINNER	DATE 11/6/88
SUBJECT EXISTING LEVEE F.S. FOR VARIES WATER ELEVATION		CHECKED BY	DATE



FACTOR OF SAFETY

- △-△ CROSS SECTION @ STA 97+60: REACH I STA 77+00 TO STA 139+00: HLP WATER EL 10.5
- CROSS SECTION @ STA 143+20: REACH II A STA 140+00 TO STA 197+38: HLP WATER EL 11.0
- COMPOSITE SECTION BETWEEN STA 233+20 & 245+20: REACH II B STA 197+40 TO STA 248+80: HLP WATER EL 11.5

MARCH 83 PRICE LEVELS

J. Icomiro X 2697

REASONABLE CONTRACT ESTIMATE 13 Apr 83					SHEET 1 OF
PROJECT METAIRIE RELIEF OUTFALL CANAL CONTROL VALVES - S. OF HARRISON HWY					INVITATION NO.
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	<u>CONTROL VALVES -</u>	<u>6 ea. 23.5' x 30'</u>			
	<u>PHASE I (Western 1/2 of Structure)</u>				
	<u>CONTROL & APPROACH STRUCTURES</u>				
	Mobilization & Demob.	1	Job	Lump Sum	100,000
	CLEARING & GRUBBING	1	Job	Lump Sum	50,000
	COFFER DAM (Furnish - Install - Remove)				
	PS-28 Steel Sheet Piling (6 Cells)	117,000	SF.	16.00	1,872,000
	PS-28 "Y" Cell Connectors	1200	L.F.	50.00	60,000
	P2-38 Steel Sheet Piling	20,100	S.F.	22.00	442,200
	Structural Steel (Tie & bracing system)	63,200	Lb.	1.00	63,200
	Cell Fill (Shell)	8,050	C.Y.	20.00	161,000
	Dewatering System	1	Job	Lump Sum	200,000
	Structure Excavation	7250	C.Y.	3.50	25,375
	Structure Backfill	1600	C.Y.	4.00	6,400
	PMA-22 Steel Sheet Piling (Cut-off-wall)	12,000	SF.	12.00	144,000
	14"x14" Prestressed Conc. Piles	34,650	L.F.	22.00	762,300
	Concrete in Stabilization Slab	133	C.Y.	175.00	23,275
	Concrete in Box Slab	1389	C.Y.	220.00	305,580
	Concrete in Walls	1517	C.Y.	295.00	447,515
	Concrete in Machinery Room Floor & Roof Slabs	100	C.Y.	300.00	30,000
	Structural Steel (3 Valves)	257,750	Lb.	2.25	579,938
	Structural Steel (Machinery Support)	3,000	Lb.	1.75	5,250
	Mechanical & Electrical Machinery (3-Valves)	1	Job	Lump Sum	150,000

checked 5/25/83 LT
5/25/83 JIM
Note: This estimate will be used in letter report to be submitted Jul. 83

REASONABLE CONTRACT ESTIMATE

SHEET 2 OF

PROJECT METAIRIE RELIEF OUTFALL CANAL
CONTROL VALVES - S. OF HAMMOND HWY.

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	PHASE I				
	<u>CONTROL & APPROACH STRUCTURES (Control)</u>				
	Subtotal				5,428,033
	Contingencies	25%+			1,356,967
	Total Construction				6,785,000
	<u>CHANNEL WORK</u>				
	P2-38 Steel Sheet Piling (Retaining Wall - Furnish & Drive - Remove)	26,400	S.F.	22.00	580,800
	Structural Steel (Tie-back System)	24,200	Lb	1.00	24,200
	Excavation LEVCES & FLOODWALLS Training Walls: (200 x 80' long)	10,500	C.Y.	2.50	26,250
	Drive P2-38 Steel Sheet Piling (reused from cofferdam & retaining wall)	12,800	S.F.	5.00	64,000
	Misc. Struct. Steel (Tie-back system - reused from cofferdam & retaining wall)	11,750	Lb	0.50	5,875
	Concrete Cop	120	C.Y.	295.00	35,400
	Subtotal				105,275
	Contingencies	25%+			26,725
	Total Construction				132,000
	Subtotal				631,250
	Contingencies	25%+			157,750
	TOTAL CONSTRUCTION				789,000
	TOTAL PHASE I CONSTRUCTION				7,706,000

REASONABLE CONTRACT ESTIMATE					SHEET 3 OF
PROJECT METAIRIE RELIEF OUTFALL CANAL CONTROL VALVES - S. OF HAMMOND HWY.					INVITATION NO.
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	<u>PHASE II</u>				
	<u>CONTROL & APPROACH STRUCTURES</u>				
	Cofferdam (Install & Remove):				
	PZ-38 Steel Sheet Piling (drive only)	2250	SF	5.00	11,250
	PS-28 Steel Sheet Piling Cells (drive only)	117,000	SF	5.00	585,000
	PS-28 "Y" Connectors (drive only)	1200	LF	5.00	6,000
	Cell Fill (Shell)	8050	CY	20.00	161,000
	Dewatering System	1	Job	Lump Sum	200,000
	Salvage Steel Sheet Piling	2077	Ton	40.00	- 83,080
	Structure Excavation	2150	CY	3.50	7,525
	Structure Backfill	1600	CY	4.00	6,400
	PMA-22 Steel Sheet Piling (cut-off wall)	8340	SF	12.00	100,080
	14"X14" Prestressed Conc. Piles	28054	LF	22.00	617,188
	Concrete in Stabilization Slab	115	CY	175.00	20,125
	Concrete in Base Slab	1209	CY	220.00	264,880
	Concrete in Walls	1034	CY	295.00	305,030
	Concrete in Machinery Room Floor & Roof Slabs	96	CY	300.00	28,800
	Structural Steel (3 Valves)	257,750	Lb	2.25	577,938
	Structural Steel (Machinery Support)	3000	Lb	1.75	5,250
	Mechanical & Electrical Machinery (3 Valves)	1	Job	Lump Sum	150,000

REASONABLE CONTRACT ESTIMATE					SHEET 4 OF
PROJECT METARIE RELIEF OUTFALL CANAL CONTROL VALVES - S. OF HAMMOND HWY.					INVITATION NO.
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
<u>PHASE II</u>					
<u>CONTROL STRUCTURE & APPROACH STRUCTURE (cont'd)</u>					
	Subtotal				2,945,384
	Contingencies 25% ±				741,614
	TOTAL CONSTRUCTION				3,707,000
<u>CHANNEL WORK</u>					
	Excavation	6300	CY.	2.50	15,750
	Erosion Protection:				
	Shell Bedding (reused shell from cofferdam cell fill)	370	CY.	5.00	1,850
	Riprap	2200	TON	30.00	66,000
	Subtotal				83,600
	Contingencies 25% ±				21,400
	TOTAL CONSTRUCTION				105,000
<u>LEVEES & FLOODWALLS</u>					
	Training Walls: (212 80' long)				
	Drive P2-38 Steel Sheet Piling (re-used from cofferdam & retaining wall)	12,800	SF.	5.00	64,000
	Misc. Struct. Steel (tri-back system - re-used from cofferdam & retaining wall)	11,750	LB	0.50	5,875
	Concrete Cap	120	CY.	295.00	35,400
	Return Floodwalls:				
	P2-38 Steel Sheet Piling	65,000	SF	22.00	1,430,000
	Concrete Cap	963	CY.	295.00	284,085
	Lamb Sealing				200,000

REASONABLE CONTRACT ESTIMATE

SHEET 5 OF

PROJECT METAIRIE RELIEF OUTFALL CANAL
CONTROL VALVES - S. OF HARMONDS HWY

INVITATION NO.

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
PHASE II LEVEES & FLOODWALLS (Cont'd)-					
	40' Bottom Roller Gate (W. Bank)	1	Job	Lump Sum	190,000
	32' Bottom Roller Gate (E. Bank)	1	Job	Lump Sum	150,000
	Subtotal:				2,359,360
	Contingencies 25% ±				589,640
	TOTAL CONSTRUCTION				2,949,000
	TOTAL PHASE II				
Summary					
PHASE I:					
	Control & Approach Structures				4,785,000
	Channel Work				789,000
	Levees & Floodwalls				132,000
	TOTAL CONSTRUCTION PHASE I				7,706,000
PHASE II					
	Control & Approach Structures				3,707,000
	Channel Work				105,000
	Levees & Floodwalls				2,949,000
	TOTAL CONSTRUCTION PHASE II				6,761,000
	TOTAL CONSTRUCTION				14,467,000
	E & D (20% ±)				2,893,000
	S & A (10% ±)				1,447,000
	TOTAL COST				18,807,000
			3/4	\$	19,000,000

11/19/86				(MAY 86)		(NOV 86)	
PROJECT	DATE	COMPUTED BY	DATE	ORIGINAL ESTIMATE	CURRENT ESTIMATE		
SUBJECT		CHECKED BY		(Reach C - Study Reach)			
JEFFERSON PARISH LAKEFRONT	11/19/86	T G	11/19/86	PLAN			
GDM STUDY				<p>LEVEE EMBANKMENT</p> <p>REACHES B & C, EI 16.5 Haul / Hydr Clay, w/ geotab</p> <p>REACH A, EI 21.5 Haul Clay, w/ geotab.</p> <p>(reference Plan no 7 Latest Alternative Study 27 May 86)</p>	<p># 34.3 M</p> <p><u> x 3 </u></p> <p>103.0</p> <p>+ 10.0 STRUC</p> <p>#113.0 TOTAL</p>	<p>C - #39.7 M</p> <p>B - 41.8</p> <p>A - <u>34.8</u></p> <p>116.30</p> <p>+ 10.0 STRUC</p> <p>#126.3 TOTAL</p> <p>(UP #13.3 M)</p>	<p>Levee</p> <p>Original vs Current - up #13.3 M</p> <p>I-Wall</p> <p>Original vs Current - down #10.4 M</p> <p>I-Wall vs Levee</p> <p>Original I-Wall - #3.4 M</p> <p>Current I-Wall - #27.1 M</p>
				<p>I-WALL SECTION</p> <p>w/o Barge Berm</p> <p>(reference Plan no. 5 Latest Alternative Study 27 May 86)</p>	<p>33.2</p> <p><u> x 3 </u></p> <p>99.6</p> <p>+ 10.0 STRUC.</p> <p>#109.6 M TOTAL</p>	<p>C - #28.9 M</p> <p>B - 38.5</p> <p>A - <u>21.8</u></p> <p>89.2</p> <p>+ 10.0 STRUC</p> <p>#99.2 M TOTAL</p> <p>(- #10.4 M)</p>	

PROJECT	SUBJECT	PAGE ___ OF ___	COMPUTED BY	DATE	CHECKED BY	DATE		
				12/29/86				
	PLAN							
	LEVEE - HAUL/HYDR. w/Geo FABRIC (no. 7)							
						<p>ORIGINAL ESTIMATE (Reach C was Study Reach)</p> <p>\$ 34.3 / Reach x 3 ----- 103.0 + 10.0 STRUC. \$ 113.0 TOTAL</p>	<p>CURRENT ESTIMATE</p> <p>Reach C \$ 39.7 Reach B 41.8 Reach A 53.0 ----- 134.5 + 10.0 STRUC. \$ 144.5 TOTAL</p> <p>(up \$30.0 M)</p>	<p>REASON FOR CHANGE</p> <p>Settlement required 2nd Levee Lift & 3rd Hydraulic & Rock Lift.</p> <p>Settlement required 2nd & 3rd Levee Lifts & 3rd Hydraulic Lift</p> <p>Settlement required 2nd & 3rd Levee Lifts & 3rd Hydraulic Lift also ground elevation in lake significantly lower (\$15.0 M increase in Shell & Rock Estimate)</p>
	I-WALL - w/o Barge Berm (no. 5)							
						<p>33.2 / Reach x 3 ----- 99.6 + 10.0 STRUC. \$ 109.6 M TOTAL</p>	<p>Reach C 28.9 Reach B 46.0 Reach A 21.8 ----- 96.7 + 10.0 STRUC. \$ 106.7 M TOTAL</p> <p>(down \$3.0 M)</p>	<p>Settlement required additional clay Fill but current Shell, Rock Design change reduced Estimate.</p> <p>Significantly higher Clay Fill Cost due to Settlement & Ground line w/ no Adjacent Borrow, (quantity) (quantity)</p> <p>Due to the Higher Soil Strengths Shell, Rock, & I-wall Quantities are Reduced Significantly.</p>

17th St Outfall Canal
Existing Conditions

STA	LEEVE STABILITY ANALSES F.S.				
	LOW WATER		HIGH WATER	100 YR STORM	
	NGVD EL -3	NGVD EL -5	NGVD 100 Yr Storm EL		
554-589	1.21	1.11	10.5	1.17	
589-614	1.14	1.06	10.5	1.20	
614-625	1.21	1.14	10.5	1.18 [Headline in Sand @ EL 0.0 NGVD]	1.13 [Headline in Sand @ EL 10.5 NGVD]
625-635	1.18	1.12	11.0	1.48 [Headline in Sand @ EL 0.0 NGVD]	1.13 [Headline in Sand @ EL 11.0 NGVD]
635-670	1.29*	1.24*	11.5	1.68* [Headline in Sand @ EL 0.0 NGVD]	1.57* [Headline in Sand @ EL 11.5 NGVD]

* S+WB Section is existing condition (Dredging completed 4/85)

REC'D
5 DEC 84
JW

JEFF. PAN / ST. CHARLES PAN RETURN LEVEE

	<u>SURGE HEIGHT</u>	<u>DESIGN RUNUP OR FREEBOARD</u>	<u>DESIGN ELEV FOR PROTECTIVE STRUCTURES</u>
100 YR STORM	10.5 - 8.7	2.0	12.5 - 11.0
HLP SPH	12.0 - 9.7	5.0 - 2.0	* 17.0 - 14.0 - 12.0
BARRIER SPH	8.7 - 7.0	4.3 - 2.0	* 13.0 - 11.0 - 9.0

* Transition 500' at North end of levee