DRAFT 2

U.S. ARMY, CORPS OF ENGINEERS
NEW ORLEANS DISTRICT

VOLUME 2 OF 2

Proj. Engr. Sect.

RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

LAKE PONTCHARTRAIN, LOUISIANA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DETAIL DESIGN MEMORANDUM NO. 6

prepared by

Frederic R. Harris, Inc.
Consulting Engineers
New Orleans, Louisiana

MARCH 1973

THIS VOLUME SHOULD ALSO HAVE AN INDEX TAB

VOLUME II

U.S. ARMY, CORPS OF ENGINEERS
NEW ORLEANS DISTRICT

RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

LAKE PONTCHARTRAIN, LOUISIANA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DETAIL DESIGN MEMORANDUM NO. 6

Prepared by

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS
NEW ORLEANS, LOUISIANA

March 1973

RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
LAKE PONTCHARTRAIN, LOUISIANA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DETAIL DESIGN MEMORANDUM NO. 6

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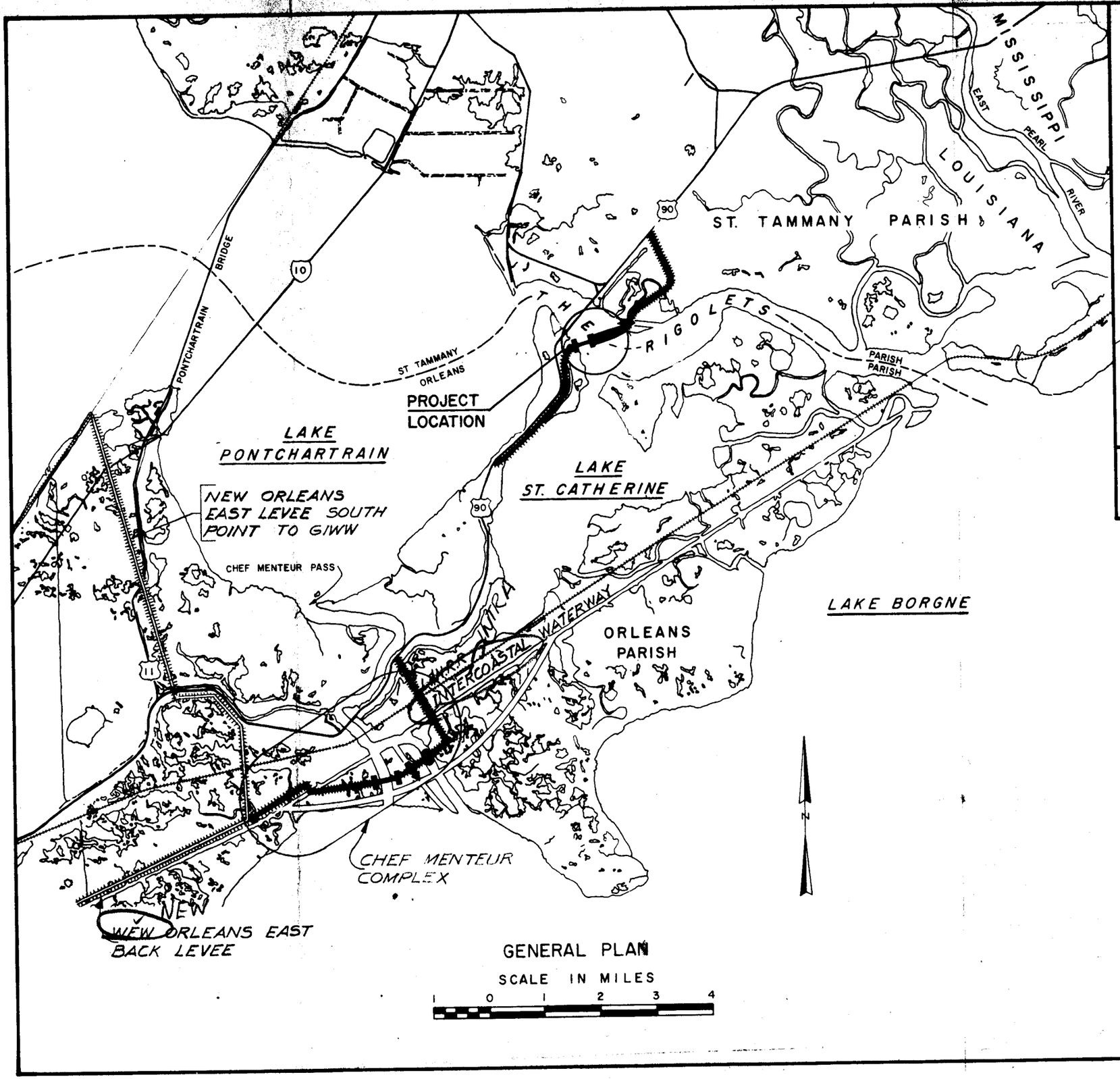

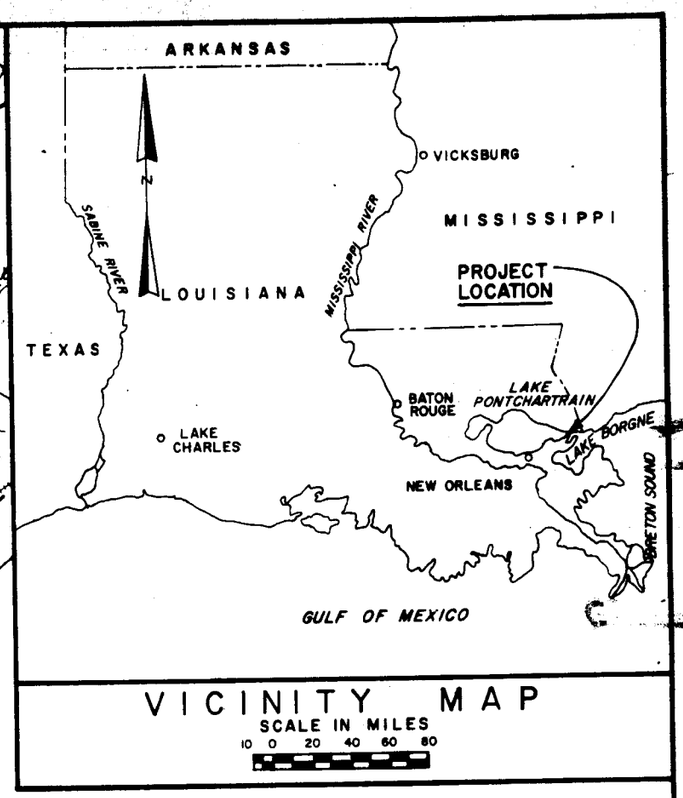

VICINITY MAP
SCALE IN MILES
10 0 20 40 60 80

LEGEND

AUTHORIZED IMPROVEMENTS

- Levee Enlargement
- New Levee
- Control Structure
- Lock
- Floodgate
- Navigation Channel

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LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

GENERAL PLAN AND VICINITY MAP

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973

FILE NO M-2-24417

PLATE I-1

N

N 30°-00'-00"

FORT PIKE STATE MONUMENT

Sta 251+200 B/L "A"
Sta 0+00.0 Connecting Levee
Sta 234+11.32

Sta 0+00.0
Sta 2+00.0
Sta 3+41.61

184°-38'-34"

B/L "A"

U.S. HWY 90

FORT PIKE CANAL

Sta 13+52.60

S 30°-42'-56" W

Sta 19+05.54

P.I. Sta 22+54.51

℄ Sta 22+80.00

P.T. Sta 26+19.22

TIE-IN-LEVEE

Limit of Previous Contract

N 30°-09'-00"

W 89°-44'-00"

SAWMILL PASS

SPOIL DISPOSAL AREA

CONTROL STRUCTURE

Approach Channel

Control Structure Sta 37+53.66
℄ Approach Channel

Sta 32+03.66

Sta 43+03.66

P.C. Sta 45+53.66

THE RIGOLETS

BORROW AREA

P.T. Sta 47+64.52

TEMPORARY STORAGE AREA

CLOSURE DAM

240°-42'-56"

N 76°-57'-53" E

P.T. Sta 68+95.14

P.C. Sta 71+70.02

B/L "A"-"B"

N 60°-42'-56" E

"B" Sta 81+85.65

Limit of Contract
B/L "A"-"B" Sta 60+32.00
℄ Sta 82+26.76

ST. TAMMANY PARISH

Tidal Flow

W 89°-43'-0.0"

BORROW AREA

B/L "B"-"D"

-6 -12 -18 -24 -30

500 0 500 1000 1500

SCALE IN FEET

Note Elevations and depth contours are in feet and refer to mean sea level.

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LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN

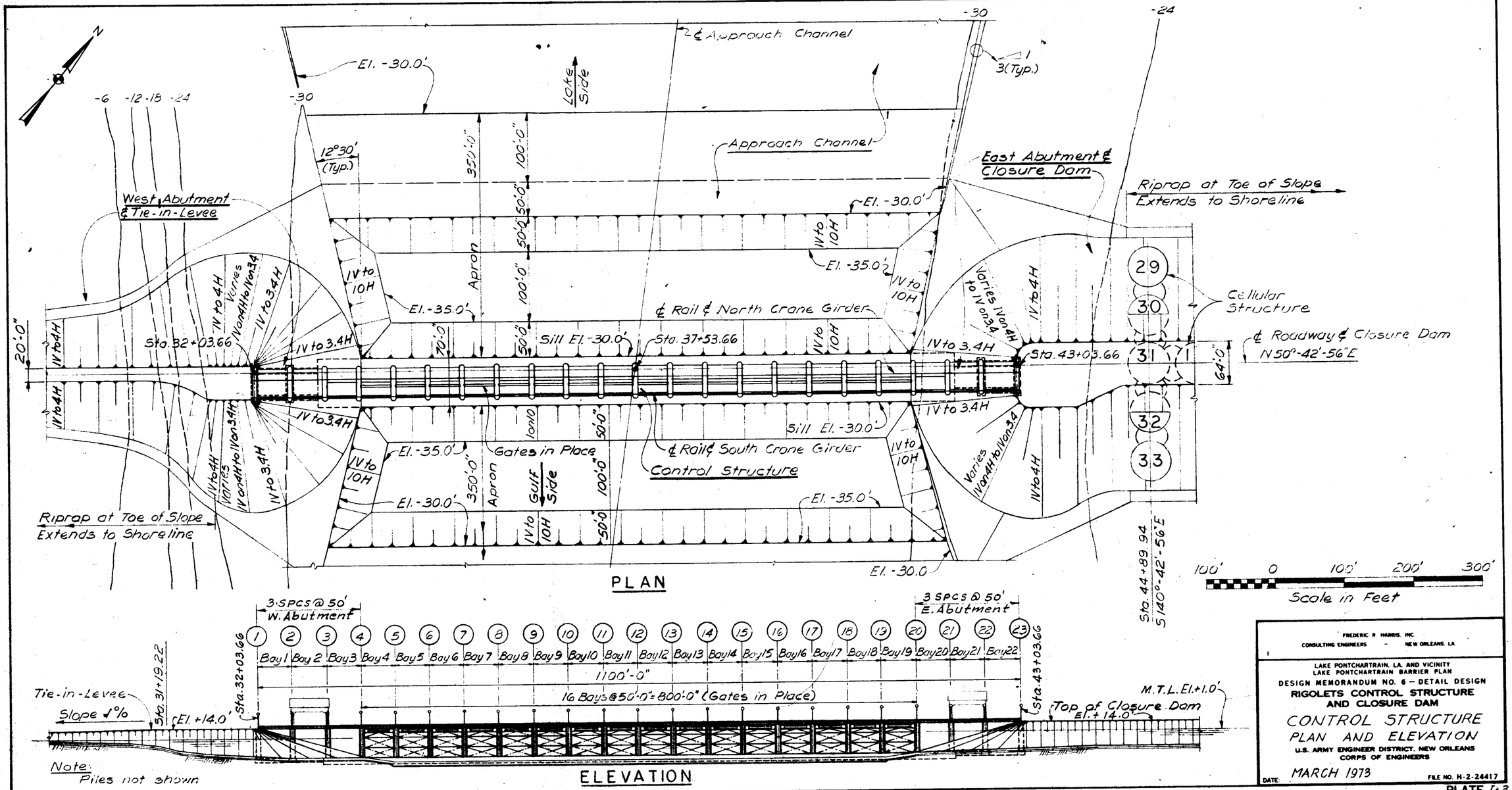
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

GENERAL PLAN

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417

PLATE I-2



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LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

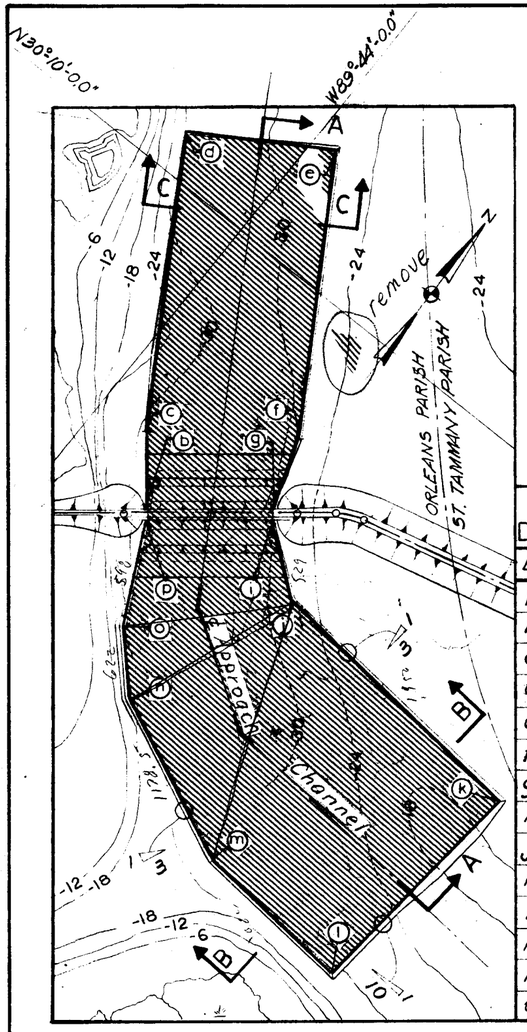
CONTROL STRUCTURE PLAN AND ELEVATION

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: MARCH 1973

FILE NO. H-2-24417

PLATE I-3

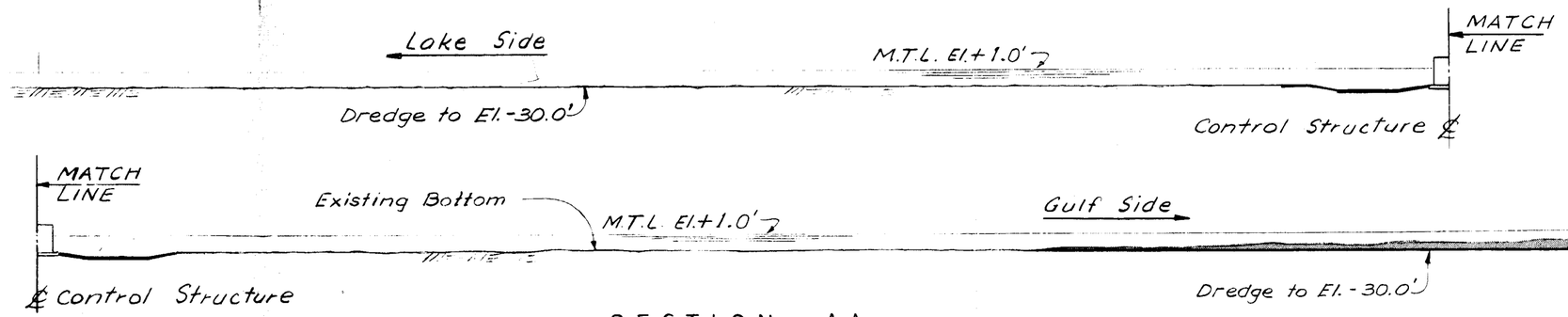


PLAN

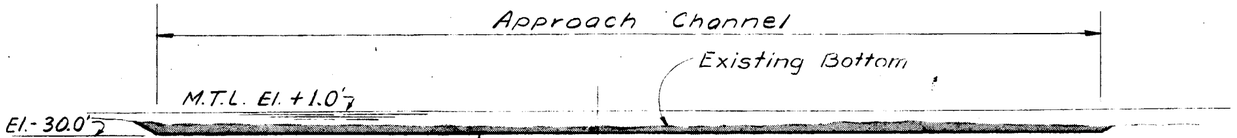
500 0 500 1,000 1,500

Scale in Feet

APPROACH CHANNEL DREDGE LIMITS DATA		
LINE	BEARING	DISTANCE
p - b	N 39°-17'-04" W	70.00'
b - c	N 51°-47'-04" W	510.00'
c - d	N 29°-17'-04" W	2,040.00'
d - e	N 60°-42'-56" E	1,040.00'
e - f	S 29°-17'-04" E	1,067.00'
f - g	S 26°-47'-04" E	1,306.00'
g - i	S 39°-17'-04" E	70.00'
i - j	S 51°-47'-04" E	529.00'
j - k	S 85°-47'-04" E	1,350.00'
k - l	S 04°-12'-56" W	1,590.00'
l - m	N 85°-47'-04" W	1,084.00'
m - n	N 64°-47'-04" W	1,178.50'
n - o	N 45°-47'-04" W	621.81'
o - p	N 26°-47'-04" W	598.60'



SECTION A-A



SECTION B-B

SECTION C-C

200 0 200 400 600

Scale in Feet

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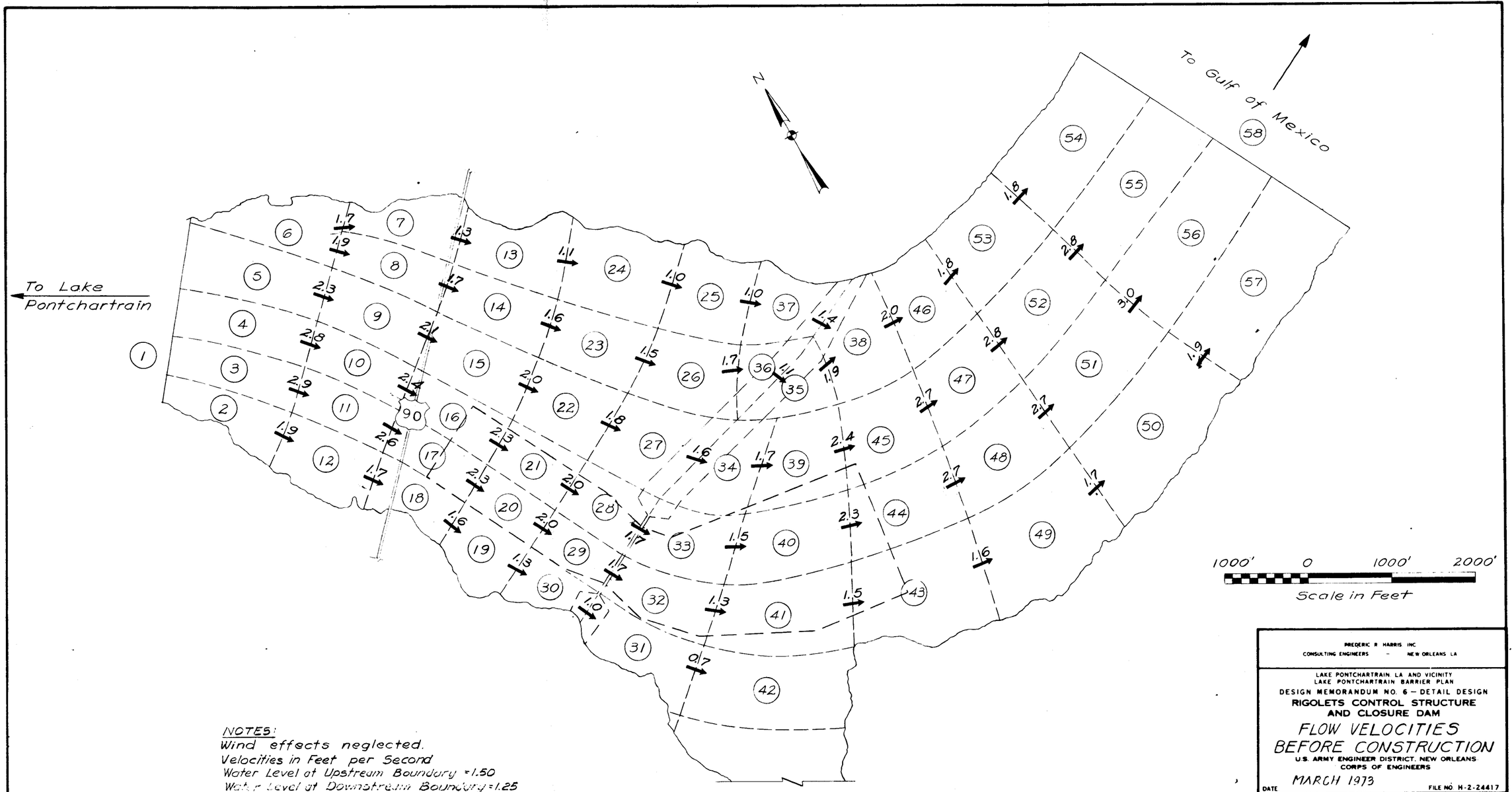
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
APPROACH CHANNEL
PLAN AND SECTIONS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO H-2-24417

PLATE 1-4



NOTES:
Wind effects neglected.
Velocities in Feet per Second
Water Level at Upstream Boundary = 1.50
Water Level at Downstream Boundary = 1.25

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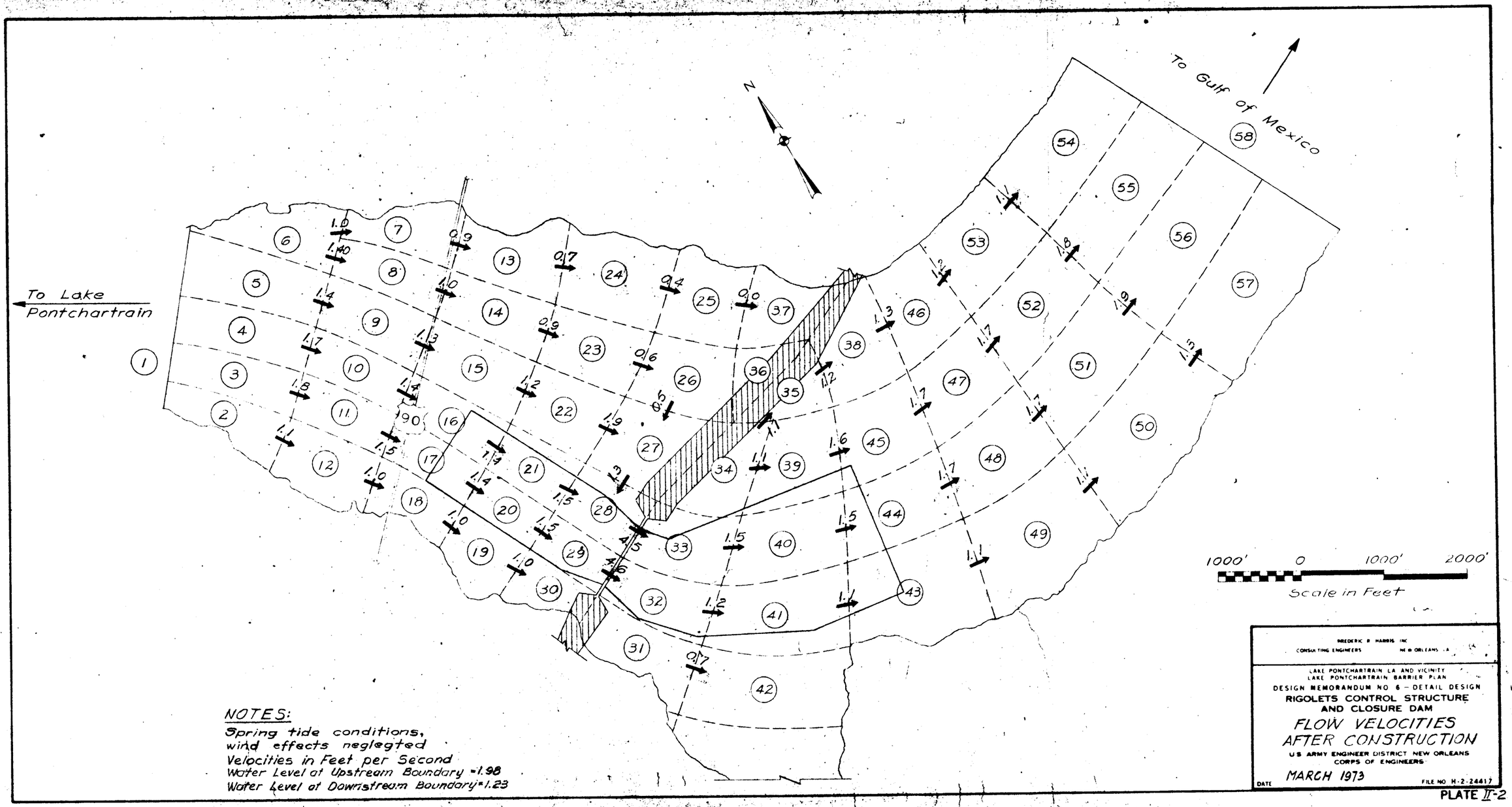
LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

FLOW VELOCITIES BEFORE CONSTRUCTION

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO H-2-24417

PLATE II-1



NOTES:
Spring tide conditions,
wind effects neglected
Velocities in Feet per Second
Water Level at Upstream Boundary = 1.98
Water Level at Downstream Boundary = 1.23

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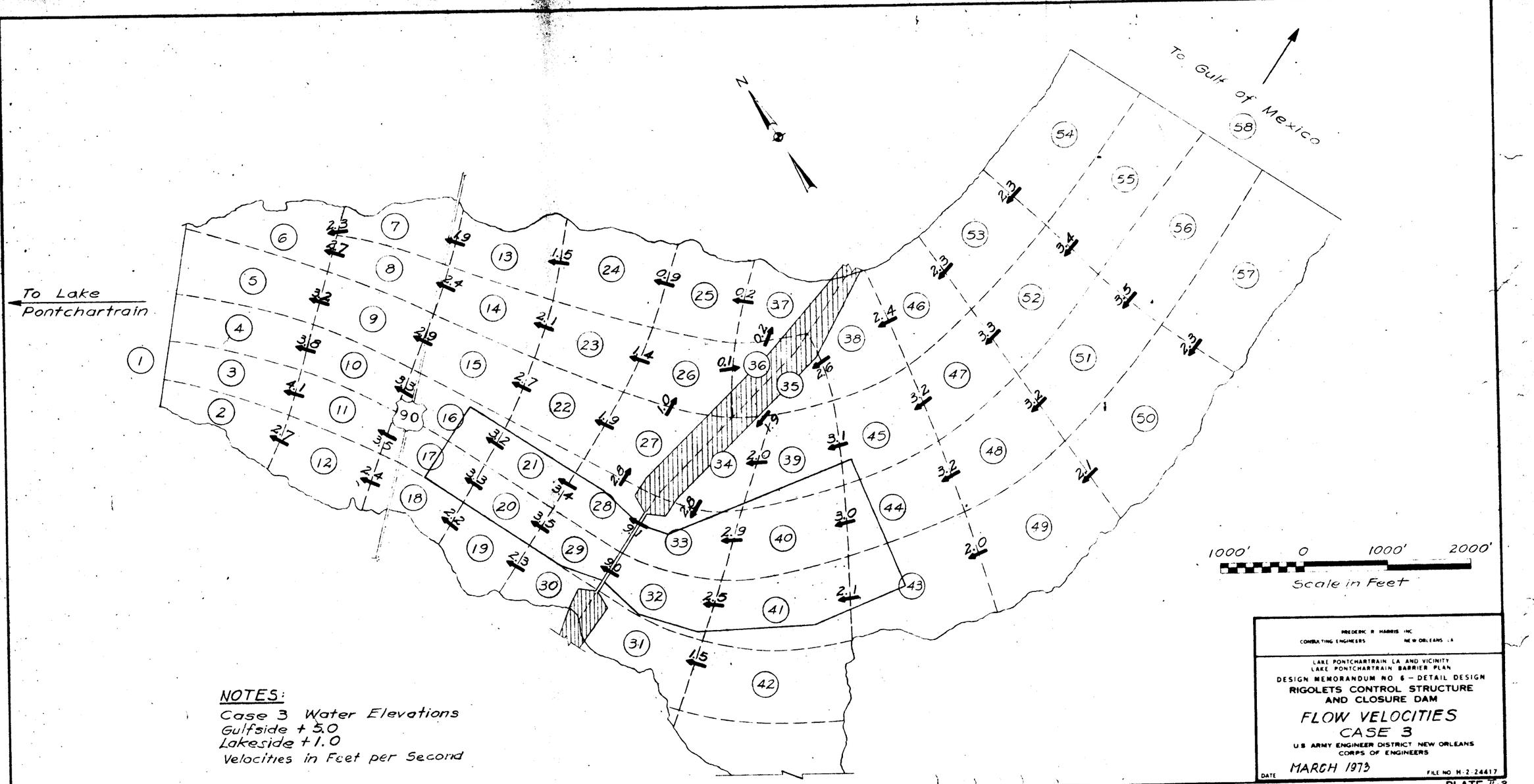
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
FLOW VELOCITIES AFTER CONSTRUCTION
US ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973 FILE NO H-2-24417

PLATE II-2



NOTES:
Case 3 Water Elevations
Gulfside +5.0
Lakeside +1.0
Velocities in Feet per Second

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CONSULTING ENGINEERS NEW ORLEANS LA

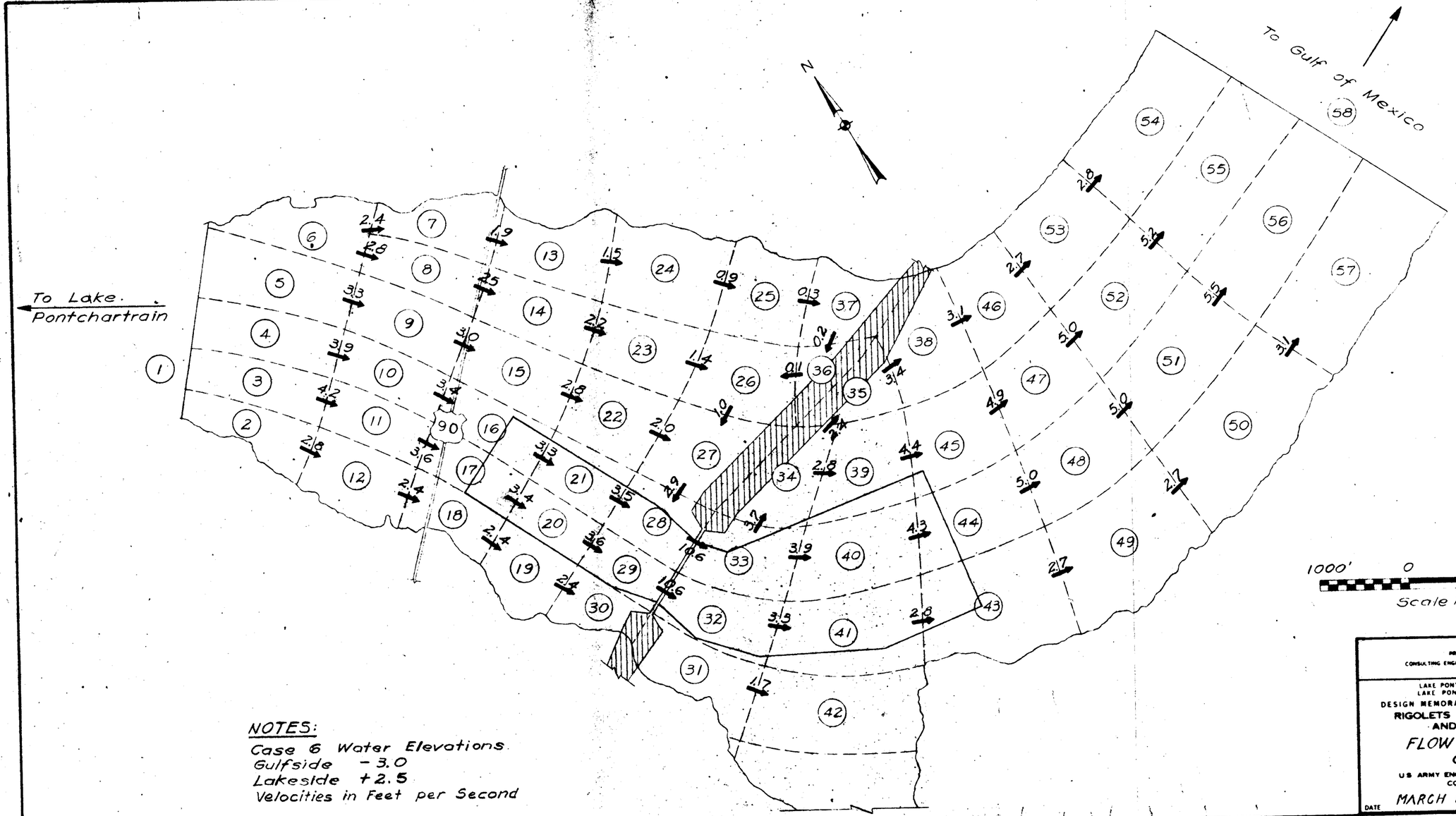
LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

FLOW VELOCITIES CASE 3

U S ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO M-2 24617

PLATE II-3



NOTES:
Case 6 Water Elevations
Gulfside -3.0
Lakeside +2.5
Velocities in Feet per Second

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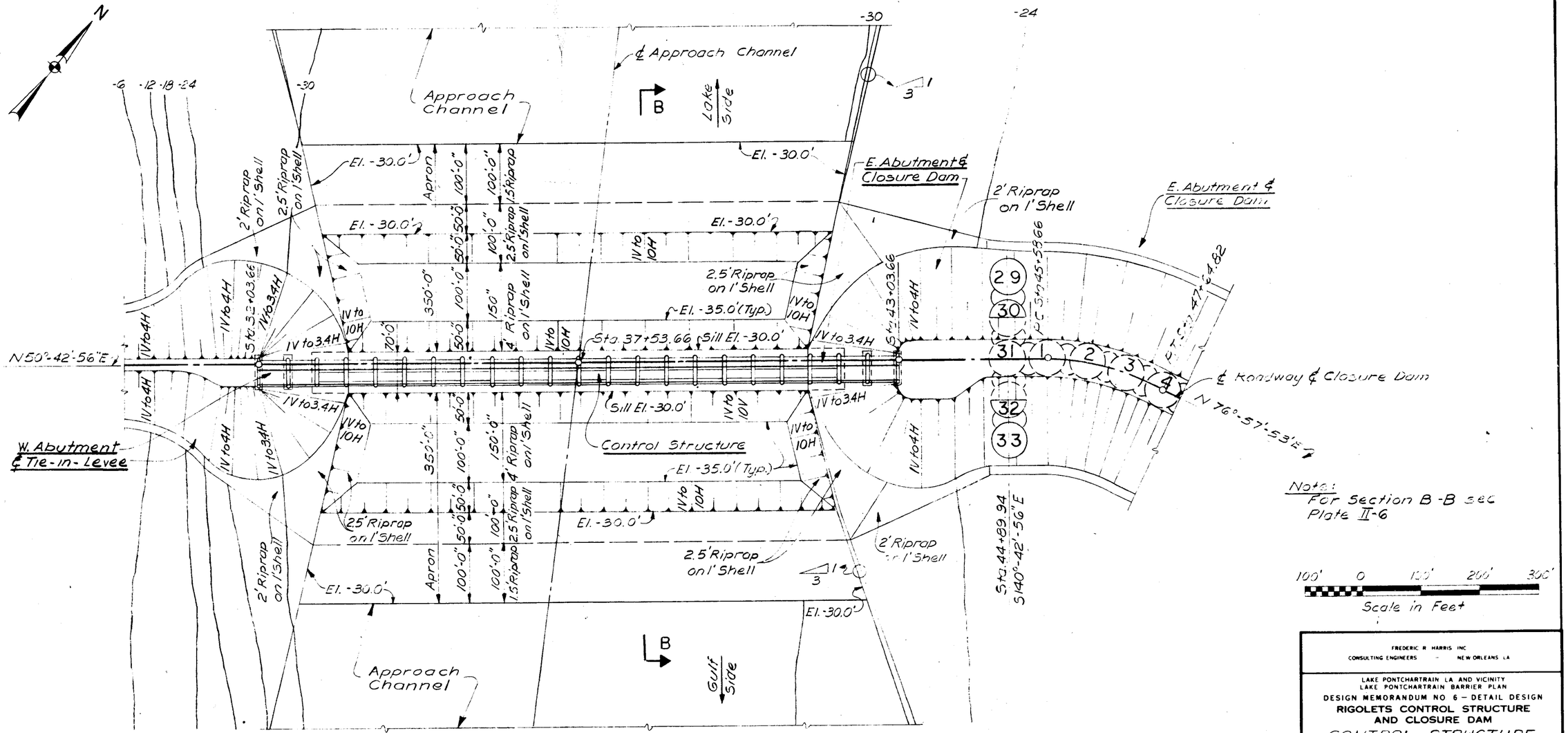
LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
FLOW VELOCITIES
CASE 6
US ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO H-2-24417

PLATE II-4



Note: For Section B-B see Plate II-6

100' 0 100' 200' 300'
Scale in Feet

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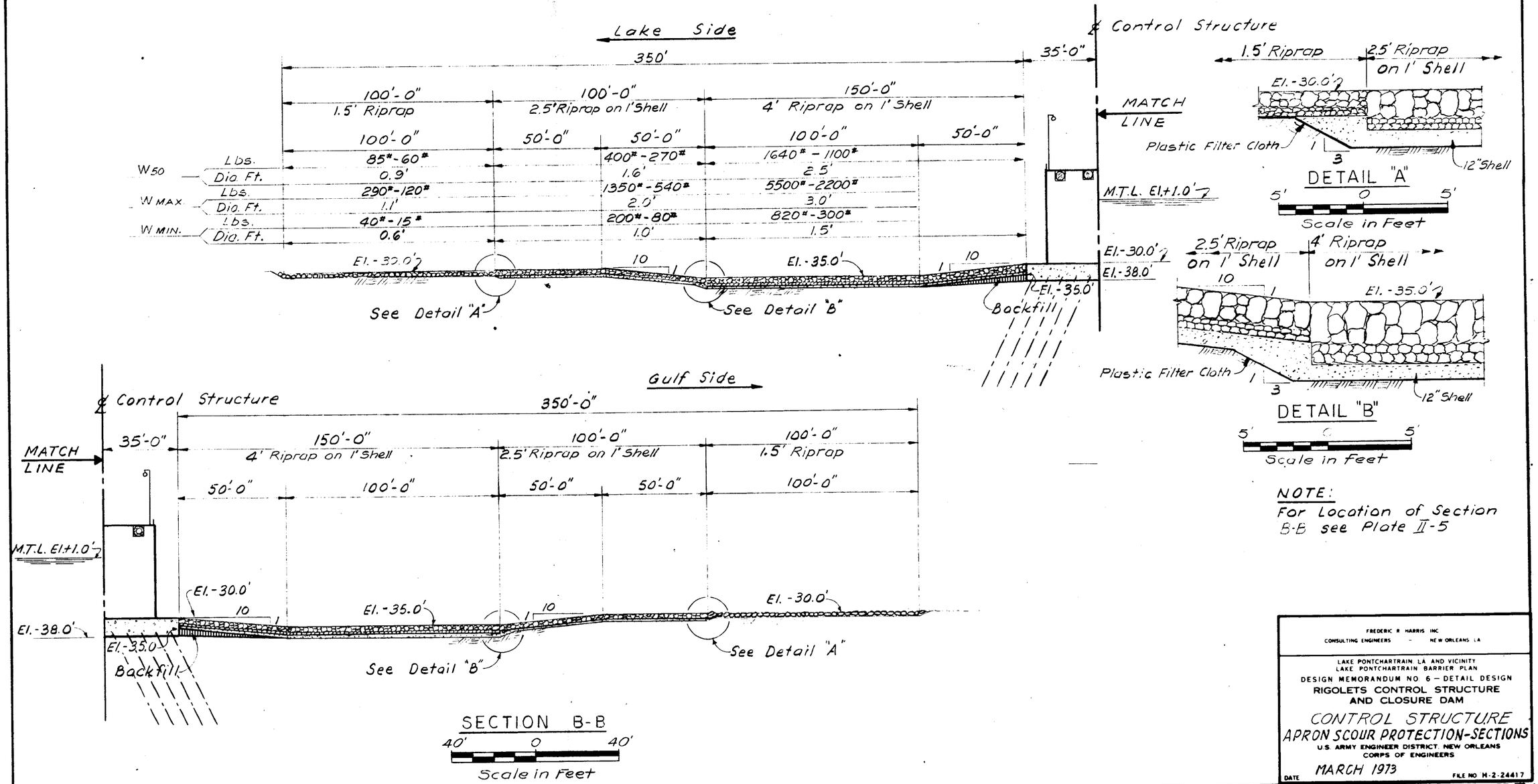
LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CONTROL STRUCTURE APRON SCOUR PROTECTION-PLAN
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973 FILE NO H-2-24417

PLATE II-5



NOTE:
For Location of Section B-B see Plate II-5

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CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

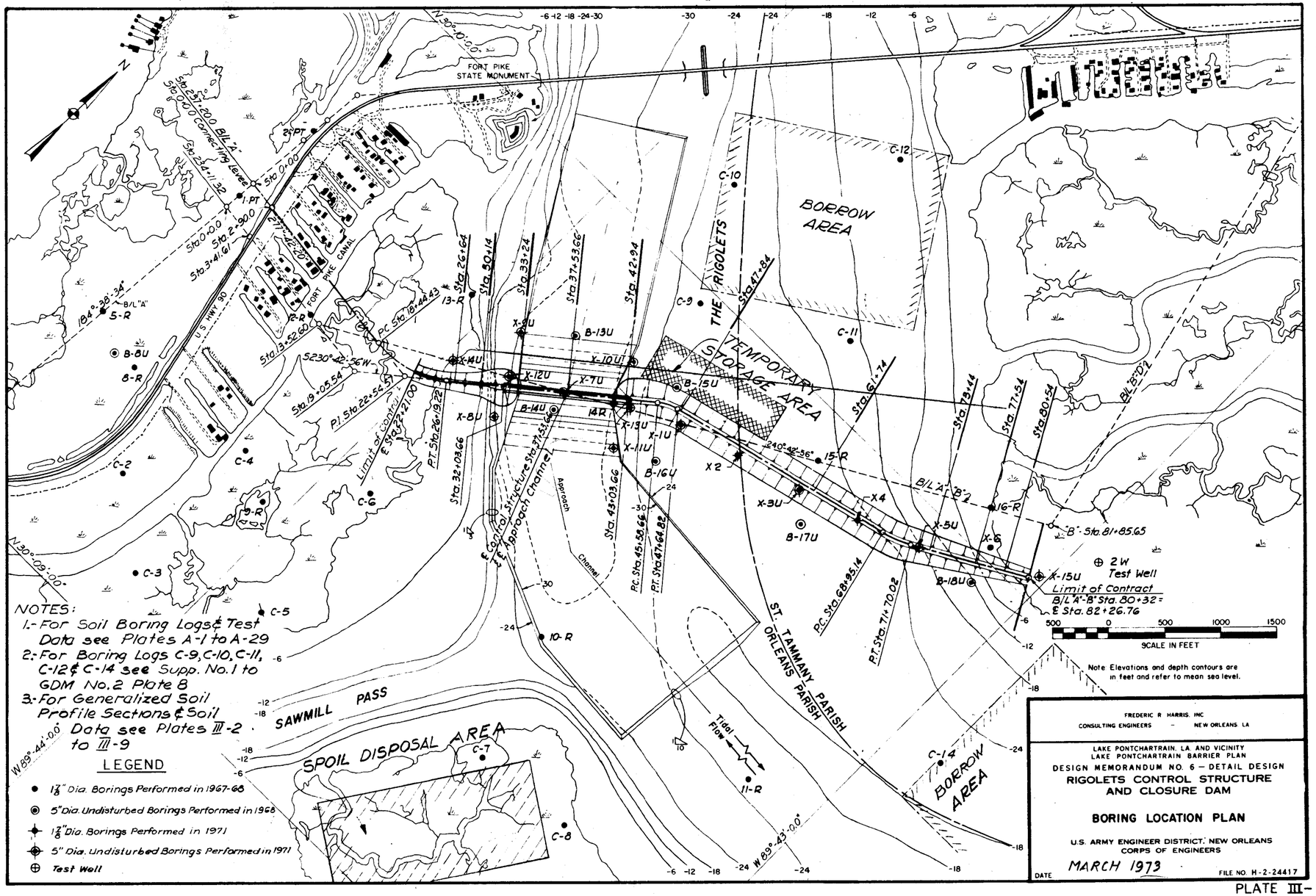
CONTROL STRUCTURE APRON SCOUR PROTECTION-SECTIONS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973

FILE NO M-2-24417

PLATE II-6



NOTES:

1.- For Soil Boring Logs & Test Data see Plates A-1 to A-29

2.- For Boring Logs C-9, C-10, C-11, C-12 & C-14 see Supp. No. 1 to GDM No. 2 Plate 8

3.- For Generalized Soil Profile Sections & Soil Data see Plates III-2 to III-9

LEGEND

- 1⅞" Dia. Borings Performed in 1967-68
- 5" Dia. Undisturbed Borings Performed in 1968
- 1⅞" Dia. Borings Performed in 1971
- 5" Dia. Undisturbed Borings Performed in 1971
- ⊕ Test Well

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LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN

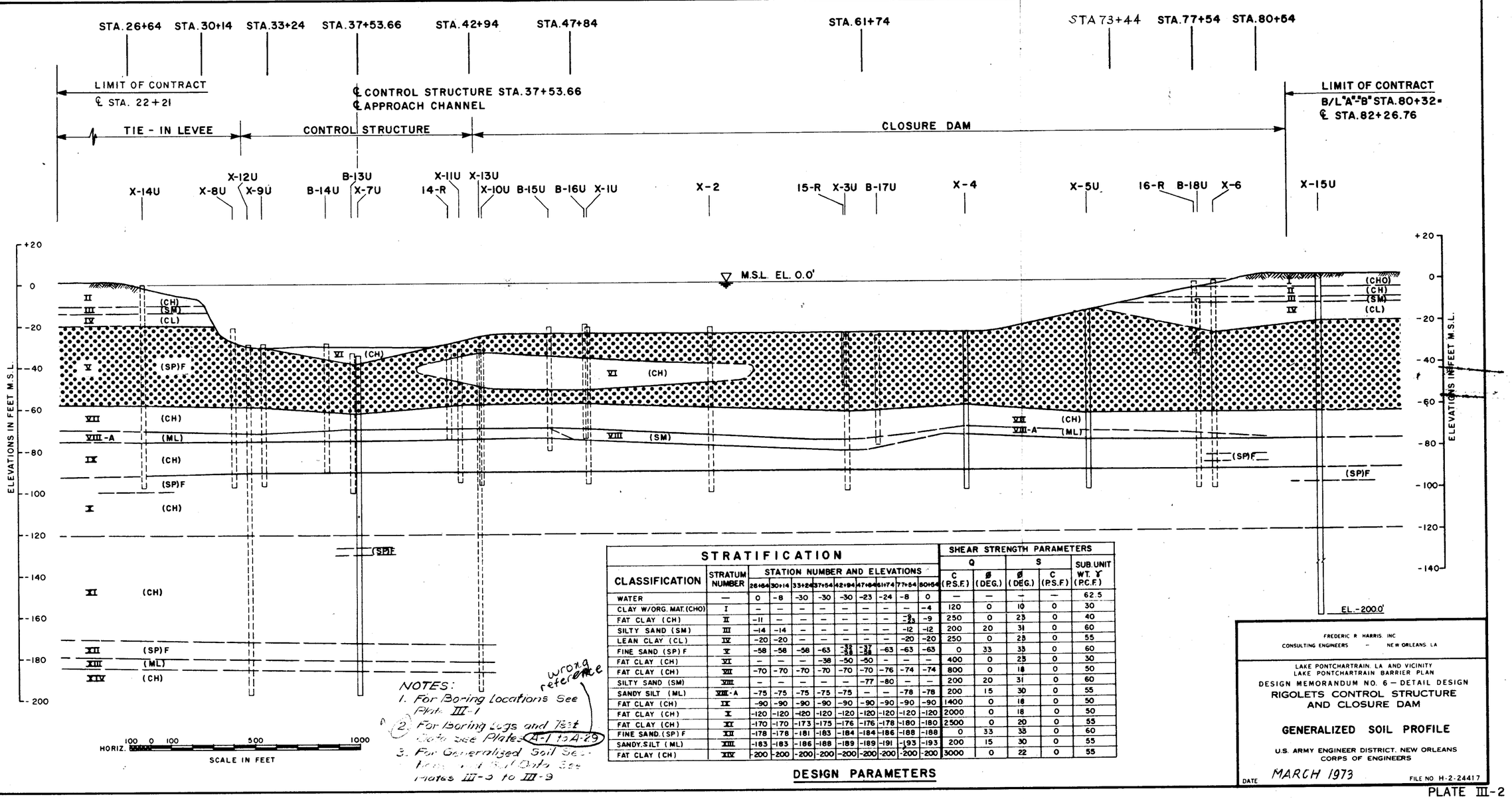
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

BORING LOCATION PLAN

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417

PLATE III-1



NOTES:
1. For Boring Locations See Plate III-1
2. For Boring Logs and Test Data see Plates A-1 to A-29
3. For Generalized Soil Sections and Test Data See Plates III-3 to III-9

wrong reference

STRATIFICATION

CLASSIFICATION	STRATUM NUMBER	STATION NUMBER AND ELEVATIONS 26+64	30+14	33+24	37+54	42+94	47+84	61+74	77+54	80+54	SHEAR STRENGTH PARAMETERS Q C (P.S.F.)	Q ∅ (DEG.)	S ∅ (DEG.)	S C (P.S.F.)	SUB. UNIT WT. γ (P.C.F.)
WATER	—	0	-8	-30	-30	-30	-23	-24	-8	0	—	—	—	—	62.5
CLAY W/ORG. MAT. (CHO)	I	—	—	—	—	—	—	—	—	-4	120	0	10	0	30
FAT CLAY (CH)	II	-11	—	—	—	—	—	—	-2.5	-9	250	0	23	0	40
SILTY SAND (SM)	III	-14	-14	—	—	—	—	—	-12	-12	200	20	31	0	60
LEAN CLAY (CL)	IV	-20	-20	—	—	—	—	—	-20	-20	250	0	28	0	55
FINE SAND (SP) F	V	-58	-58	-58	-63	-33 -58	-37 -58	-63	-63	-63	0	33	33	0	60
FAT CLAY (CH)	VI	—	—	—	-38	-50	-50	—	—	—	400	0	25	0	30
FAT CLAY (CH)	VII	-70	-70	-70	-70	-70	-70	-76	-74	-74	800	0	18	0	50
SILTY SAND (SM)	VIII	—	—	—	—	—	-77	-80	—	—	200	20	31	0	60
SANDY SILT (ML)	VIII-A	-75	-75	-75	-75	-75	—	—	-78	-78	200	15	30	0	55
FAT CLAY (CH)	IX	-90	-90	-90	-90	-90	-90	-90	-90	-90	1400	0	18	0	50
FAT CLAY (CH)	X	-120	-120	-120	-120	-120	-120	-120	-120	-120	2000	0	18	0	50
FAT CLAY (CH)	XI	-170	-170	-173	-175	-176	-176	-178	-180	-180	2500	0	20	0	55
FINE SAND. (SP) F	XII	-178	-178	-181	-183	-184	-184	-186	-188	-188	0	33	35	0	60
SANDY SILT (ML)	XIII	-183	-183	-186	-188	-189	-189	-191	-193	-193	200	15	30	0	55
FAT CLAY (CH)	XIV	-200	-200	-200	-200	-200	-200	-200	-200	-200	3000	0	22	0	55

DESIGN PARAMETERS

FREDERIC R HARRIS, INC
CONSULTING ENGINEERS — NEW ORLEANS, LA

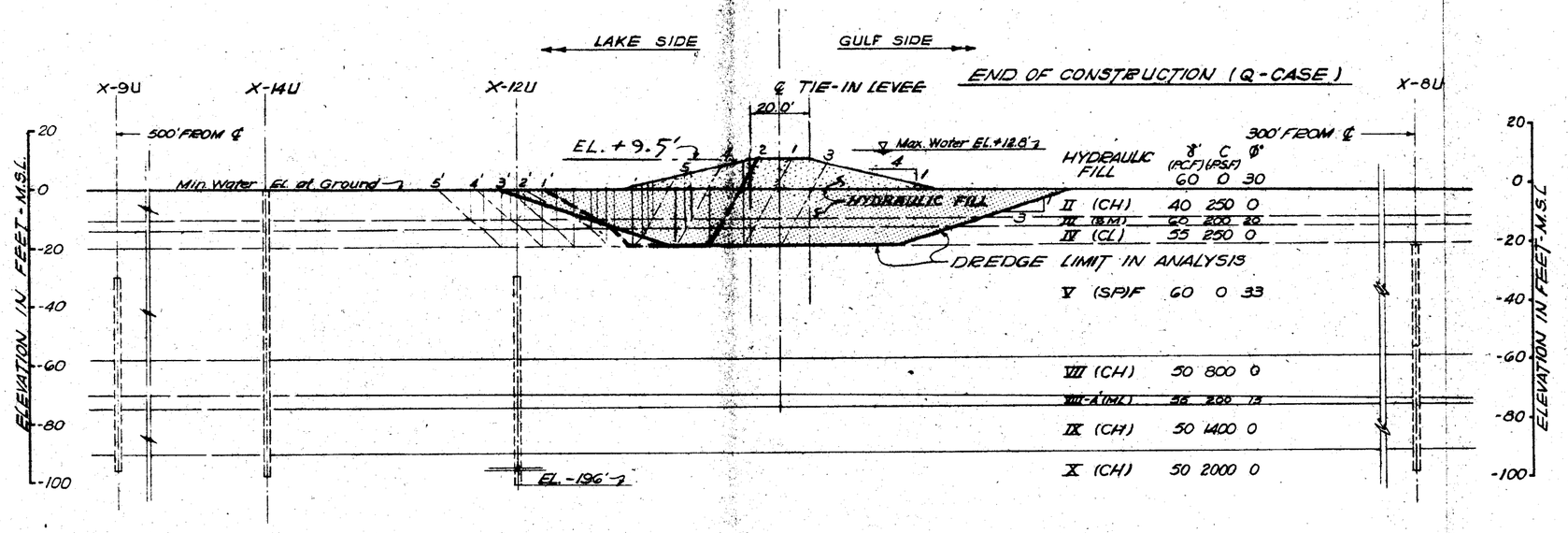
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

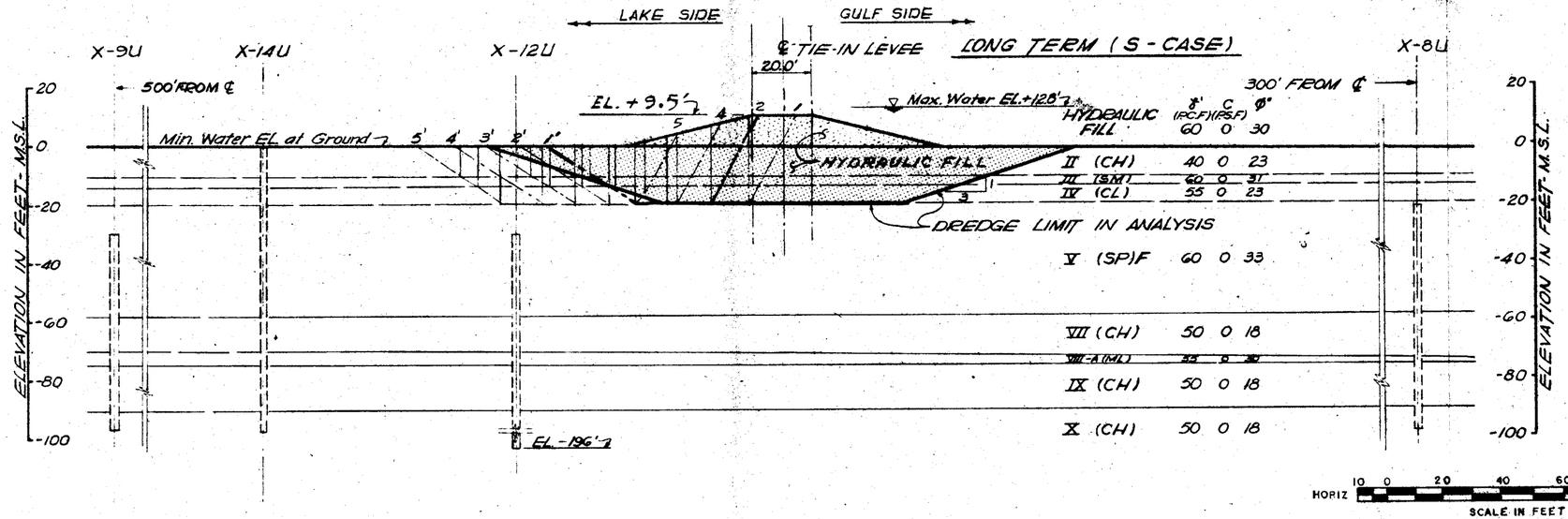
GENERALIZED SOIL PROFILE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO H-2-24417

PLATE III-2





HORIZ 10 0 20 40 60 80 100
SCALE IN FEET

SLIDING BLOCK STABILITY ANALYSIS

END OF CONSTRUCTION STABILITY

SLIP SURFACE NO.	ELEV.	+DA	DRIVING -DP	FORCES +DW	TOTAL	+RA	RESISTING +RR	FORCES +CP	TOTAL	SAFETY FACTOR R/D
11'	-20.0	27556	11062	14671	31165	18371	27225	13747	59343	1.90
12'	-20.0	27556	11241	14671	30987	18371	29475	12944	60790	1.96
13'	-20.0	27556	11370	14671	30858	18371	32225	11542	62133	2.01
14'	-20.0	27556	9581	14671	32646	18371	34975	11933	65279	2.00
15'	-20.0	27556	8014	14671	34214	18371	38475	11167	68013	1.99
21'	-20.0	24162	11062	14671	27771	16108	15600	13747	45455	1.64
22'	-20.0	24162	11241	14671	27592	16108	17850	12944	46902	1.70
23'	-20.0	24162	11370	14671	27463	16108	20600	11542	48250	1.76
24'	-20.0	24162	9581	14671	29253	16108	23350	11933	51300	1.75
25'	-20.0	24162	8014	14671	30819	16108	26850	11167	54125	1.76
31'	-20.0	25824	11062	14671	29433	17216	39725	13747	70688	2.40
32'	-20.0	25824	11241	14671	29255	17216	41975	12944	72135	2.47
33'	-20.0	25824	11370	14671	29124	17216	44725	11542	73483	2.52
34'	-20.0	25824	9581	14671	30915	17216	47475	11933	76624	2.48
35'	-20.0	25824	8014	14671	32479	17216	50975	11167	79358	2.44
41'	-20.0	20336	11062	9430	18703	13557	5000	13747	32304	1.73
42'	-20.0	20336	11241	9430	18524	13557	7250	12944	33151	1.79
43'	-20.0	20336	11370	9430	18395	13557	10000	11542	35099	1.90
44'	-20.0	20336	9581	9430	20185	13557	12750	11933	38240	1.89
45'	-20.0	20336	8014	9430	21751	13557	16250	11167	40974	1.87
51'	-20.0	15498	11241	4750	9007	956	2250	12944	27261	2.76
52'	-20.0	15498	11370	4750	877	9560	5000	11542	26109	2.94
53'	-20.0	15498	9581	4750	10667	956	7750	11933	29269	2.77
55'	-20.0	15498	8014	4750	12234	9560	11250	11167	27228	2.47

* Critical Wedge 21' F.S. = 1.64
With Earthquake Loading +DH = 0.05W

				+DH						
21'	-20.0	24162	11062	674[illegible]	20740	16108	15600	13747	45455	2.19

LONG TERM STABILITY

11'	-20.0	27556	10771	14671	31456	18371	37600	17576	73547	2.33
12'	-20.0	27556	11302	14671	30925	18371	35115	17024	70510	2.28
13'	-20.0	27556	10260	14671	31967	18371	40345	15202	73918	2.31
14'	-20.0	27556	9078	14671	33149	18371	45385	13458	77218	2.33
15'	-20.0	27556	8419	14671	33809	18371	50905	12469	81745	2.42
21'	-20.0	24162	10771	14671	28062	16108	19100	17576	52784	1.88
22'	-20.0	24162	11302	14671	27531	16108	23690	17024	56818	2.06
23'	-20.0	24162	10260	14671	28573	16108	28720	15202	60033	2.10
24'	-20.0	24162	9078	14671	29754	16108	33760	13458	63326	2.13
25'	-20.0	24162	8419	14671	30414	16108	39280	12469	67857	2.23
42'	-20.0	20334	11302	9430	18462	13556	12890	17024	43370	2.35
43'	-20.0	20334	10260	9430	19503	13556	18120	15202	46878	2.40
44'	-20.0	20334	9078	9430	20685	13556	23240	13458	50174	2.42
45'	-20.0	20334	8419	9430	21343	13556	28640	12469	54705	2.57
52'	-20.0	17168	11302	4750	10416	10928	4390	17024	32342	3.06
53'	-20.0	17168	10260	4750	11458	10928	9620	15202	35750	3.06
54'	-20.0	17168	9078	4750	12639	10928	14660	13458	39046	3.05
55'	-20.0	17168	8419	4750	13499	10928	20180	12469	43877	3.24

* Critical Wedge 21' F.S. = 1.88
With Earthquake Loading +DH = .05W

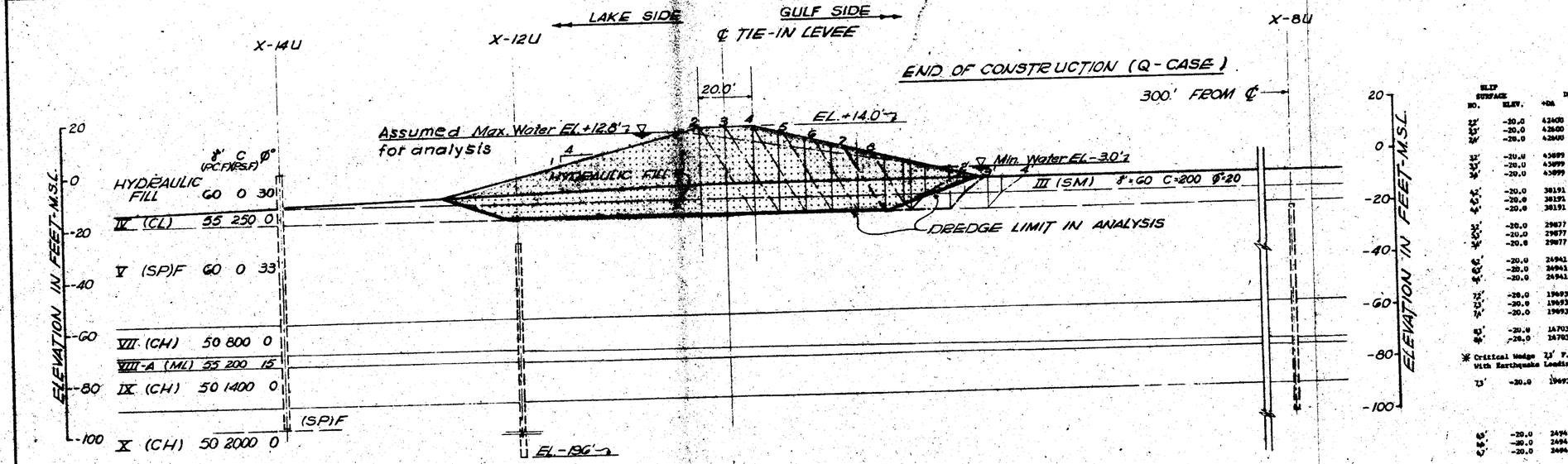
				+DH						
21'	-20.0	24162	10771	7000	20391	16108	19100	17576	52784	2.60

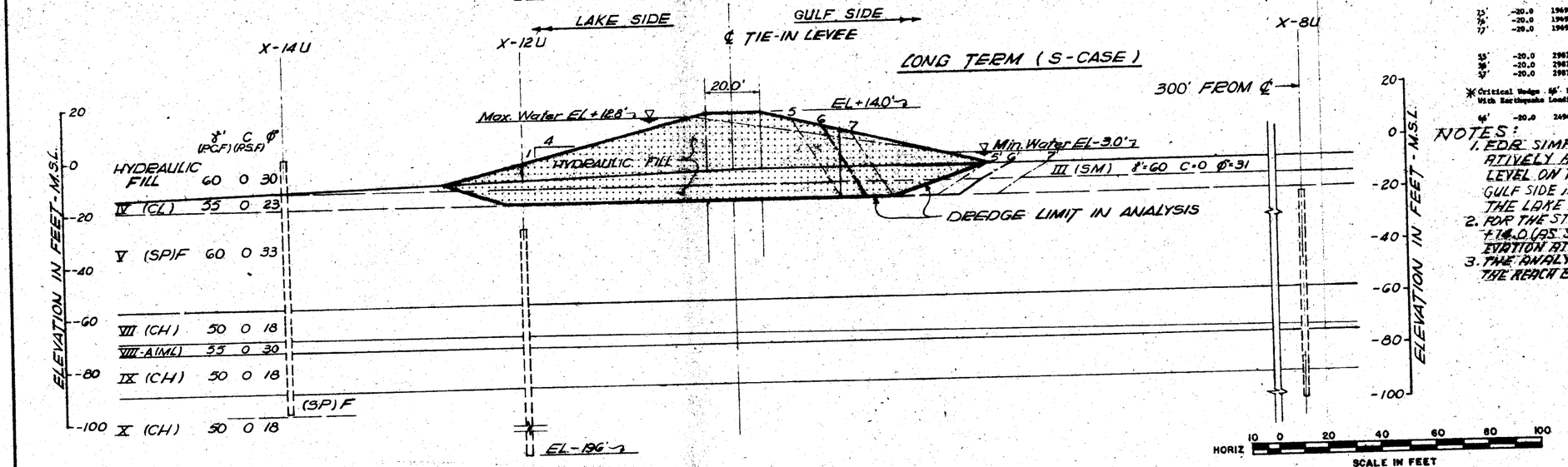
NOTE:
THE ANALYSIS OF THE SECTION SHOWN APPLIES TO THE REACH BETWEEN STA. 22+21 AND 28+50 (APPROXIMATELY)

FREDERIC R HARRIS, INC.
CONSULTING ENGINEERS – NEW ORLEANS, LA.

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
STABILITY ANALYSIS
TIE-IN LEVEE
STA. 26+64
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: MARCH 1973
FILE NO. H-2-24417

PLATE III-3





SLIDING BLOCK STABILITY ANALYSIS

END OF CONSTRUCTION STABILITY

SLIP SURFACE NO.	ELEV.	DRIVING +HA	DRIVING -HP	FORCES +HW	FORCES TOTAL	RESISTING +HA	RESISTING +HP	FORCES +HW	FORCES TOTAL	SAFETY FACTOR R/D
	-20.0	42400	8818	20966	54348	28267	55500	9306	93073	1.71
	-20.0	42600	5024	20966	58342	28267	39230	7502	90439	1.63
	-20.0	42600	4284	20966	59082	28267	63000	7611	98878	1.67
	-20.0	43899	8818	17222	34302	30599	42000	9306	81905	1.51
	-20.0	43899	5024	17222	38097	30599	45750	7502	83851	1.44
	-20.0	43899	4284	17222	38837	30599	49500	7611	87710	1.49
	-20.0	38191	8818	13728	43100	25461	38700	9306	63467	1.32
	-20.0	38191	5024	13728	46895	25461	34450	7502	67413	1.44
	-20.0	38191	4284	13728	47635	25461	38200	7611	71272	1.50
	-20.0	29877	8818	12074	33133	19918	19500	9306	48724	1.47
	-20.0	29877	5024	12074	36927	19918	23250	7502	50670	1.37
	-20.0	29877	4284	12074	37667	19918	27000	7611	54529	1.45
	-20.0	24941	8818	8954	25076	16627	10950	9306	36883	1.47
	-20.0	24941	5024	8954	28871	16627	14700	7502	38829	1.34
	-20.0	24941	4284	8954	29611	16627	18450	7611	42688	1.44
	-20.0	19693	8818	6084	16956	13128	2500	9306	24934	1.47
	-20.0	19693	5024	6084	20753	13128	6250	7502	26880	* 1.30
	-20.0	19693	4284	6084	21493	13128	10000	7611	30739	1.43
	-20.0	14703	5024	3463	13141	9416	3750	7502	20668	1.57
	-20.0	14703	4284	3463	13881	9416	7500	7611	24527	1.77

* Critical Wedge 73' F.S. = 1.30
With Earthquake Loading, +HE = 0.03W

				+HE						
73'	-20.0	19693	5024	4050	18719	13128	6250	7502	26880	1.44

LONG TERM STABILITY

66'	-20.0	24941	7975	8954	25920	16627	13700	11771	44098	1.70
66'	-20.0	24941	4920	8954	28815	16627	18400	7254	43281	* 1.49
66'	-20.0	24941	4231	8954	29664	16627	24800	6369	47796	1.61
73'	-20.0	19693	7975	6084	17802	13128	7400	11771	32299	1.82
73'	-20.0	19693	4920	6084	20856	13128	11400	7254	31783	1.52
73'	-20.0	19693	4231	6084	21546	13128	16800	6369	36297	1.68
55'	-20.0	29877	7975	12074	33976	19918	25400	11771	57090	1.68
55'	-20.0	29877	4920	12074	39831	19918	29100	7254	56272	1.52
55'	-20.0	29877	4231	12074	39721	19918	34500	6369	60788	1.60

* Critical Wedge 66' F.S. = 1.49
With Earthquake Loading +HE = .05W

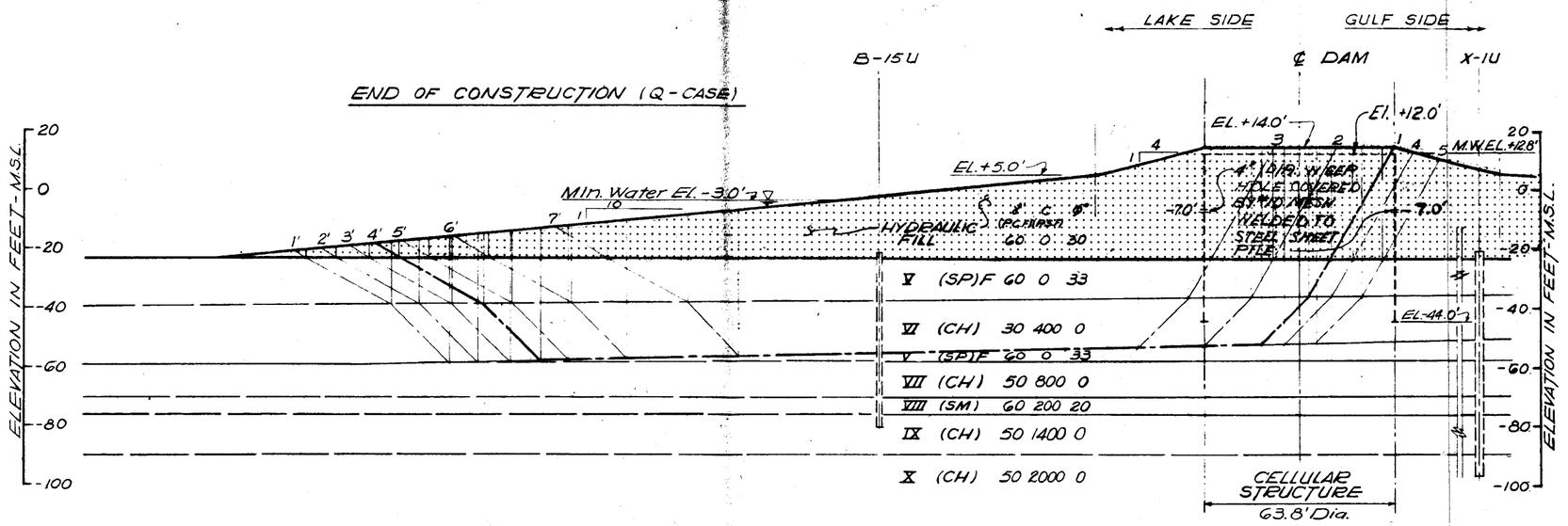
				+HE						
66'	-20.0	24941	4920	6200	35221	16627	19400	7254	43281	1.64

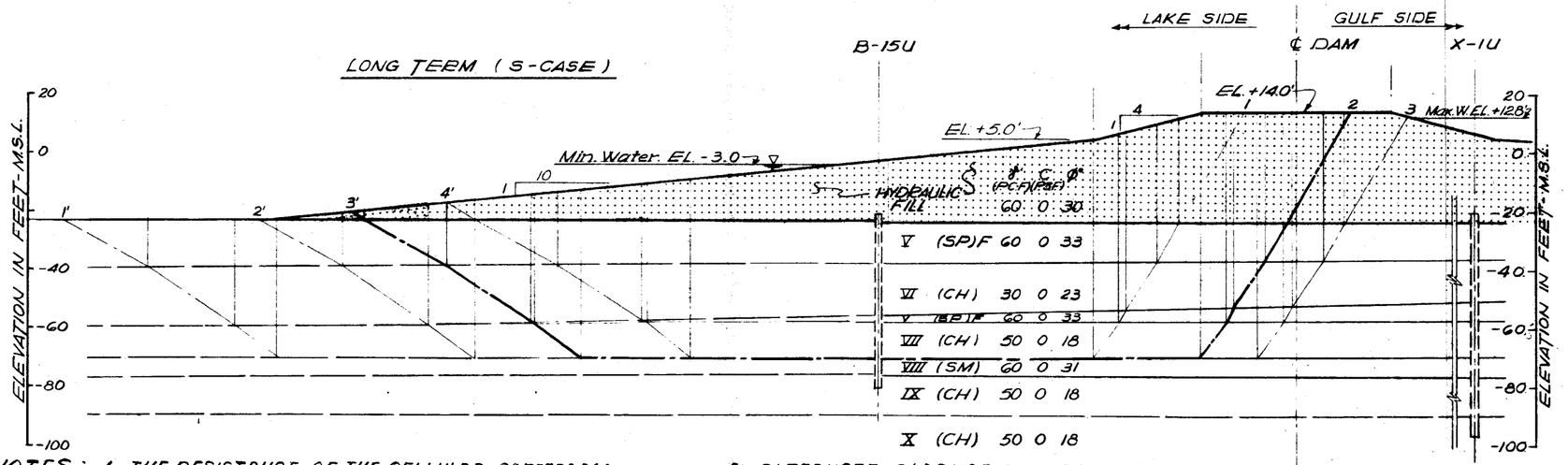
NOTES:
1. FOR SIMPLICITY OF ANALYSIS, IT WAS CONSERVATIVELY ASSUMED THAT THE MAXIMUM WATER LEVEL ON THE LAKE SIDE IS EQUAL TO THAT ON THE GULF SIDE i.e. EL.+12.8 FEET IN LIEU OF 11.5 FEET ON THE LAKE SIDE AND EL.-3.0 ON THE GULF SIDE.
2. FOR THE STABILITY ANALYSIS A CROWN ELEVATION OF +14.0 (AS SHOWN) WAS USED; THE ACTUAL CROWN ELEVATION AT STA. 30+14 IS +13.0.
3. THE ANALYSIS OF THE SECTION SHOWN APPLIES TO THE REACH BETWEEN STA 28+50 AND 37+00 (APPROX.)

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS - NEW ORLEANS, LA.

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
STABILITY ANALYSIS
TIE-IN LEVEE
STA. 30+14
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417

PLATE III-4





NOTES:
1. THE RESISTANCE OF THE CELLULAR COFFERDAM WAS IGNORED IN THE STABILITY ANALYSIS.
2. THE ANALYSIS OF THE SECTION SHOWN APPLIES TO THE REACH BETWEEN STA. 43+00 AND 56+50 (APPROXIMATELY).
3. ALTERNATE CLOSURE DAM SCHEME ASSUMES NO REMOVAL OF UNSUITABLE MATERIAL.

HORIZ. 10 0 20 40 60 80 100
SCALE IN FEET

SLIDING BLOCK STABILITY ANALYSIS

END OF CONSTRUCTION STABILITY

SLIP SURFACE NO.	ELEV.	DRIVING +DA	DRIVING -DP	FORCES +DW	TOTAL	RESISTING +RA	RESISTING +RB	FORCES +RP	TOTAL	SAFETY FACTOR R/D
11'	-59.0	146757	43627	59436	162565	73448	109200	42646	225295	1.38
12'	-59.0	146757	43847	59436	162346	73448	105200	43114	221763	1.36
13'	-59.0	146757	46153	59436	160039	73448	101200	45686	220334	1.37
14'	-59.0	146757	46877	59436	159315	73448	97200	47345	217994	*1.36
15'	-58.0	146757	48200	58500	157057	73448	93200	49017	215665	1.37
16'	-58.0	146757	52810	58500	152446	73448	85200	54368	213016	1.39
17'	-58.0	146757	65204	58500	140052	73448	70400	65960	209808	1.49
21'	-59.0	152528	43627	50700	159600	76660	101200	42646	220506	1.38
22'	-59.0	152528	43847	50700	159381	76660	97200	43114	216975	1.36
23'	-59.0	152528	46153	50700	157074	76660	93200	45686	215346	1.37
24'	-59.0	152528	46877	50700	156390	76660	89200	47345	213205	1.36
25'	-58.0	152528	48200	49888	154217	76660	85200	49017	210877	1.36
26'	-58.0	152528	52810	49888	149606	76660	77200	54368	208228	1.39
27'	-58.0	152528	65204	49888	137212	76660	62400	65960	205020	1.49
31'	-59.0	149199	43627	42213	147784	78648	93600	42646	214895	1.45
32'	-59.0	149199	43847	42213	147565	78648	88800	43114	210563	1.42
33'	-59.0	149199	46153	42213	145259	78648	84800	45686	209134	1.43
34'	-59.0	149199	46877	42213	144535	78648	80800	47345	206794	1.43
35'	-58.0	149199	48200	41527	143526	78648	76800	49017	204465	1.43
36'	-58.0	149199	52810	41527	137915	78648	68800	54368	201816	1.46
37'	-58.0	149199	65204	41527	125521	78648	54000	65960	198608	1.58
41'	-59.0	142653	43627	63897	162923	71363	112000	42646	226010	1.38
42'	-59.0	142653	43847	63897	162703	71363	108000	43114	222478	1.36
43'	-59.0	142653	46153	63897	160397	71363	104000	45686	221049	1.37
44'	-59.0	142653	46877	63897	159673	71363	100000	47345	218709	1.36
45'	-58.0	142653	48200	62899	157352	71363	96000	49017	216380	1.37
46'	-58.0	142653	52810	62899	152741	71363	88000	54368	213732	1.39
47'	-58.0	142653	65204	62899	140347	71363	73200	65960	210523	1.50
52'	-59.0	129087	43847	63897	149138	65450	112000	43114	220565	1.47
53'	-59.0	129087	46153	63897	146831	65450	108000	45686	219137	1.49
54'	-59.0	129087	46877	63897	146108	65450	104000	47345	216796	1.48
55'	-58.0	129087	48200	62899	143787	65450	100000	49017	214468	1.49
56'	-58.0	129087	52810	62899	139176	65450	92000	54368	211819	1.52

* Critical Wedge 14', F.S = 1.36
With Earthquake Loading, +DH = 0.05W

14'	-59.0	146757	46877	90936 +DH	190816	73448	97200	47345	217994	1.14

LONG TERM STABILITY

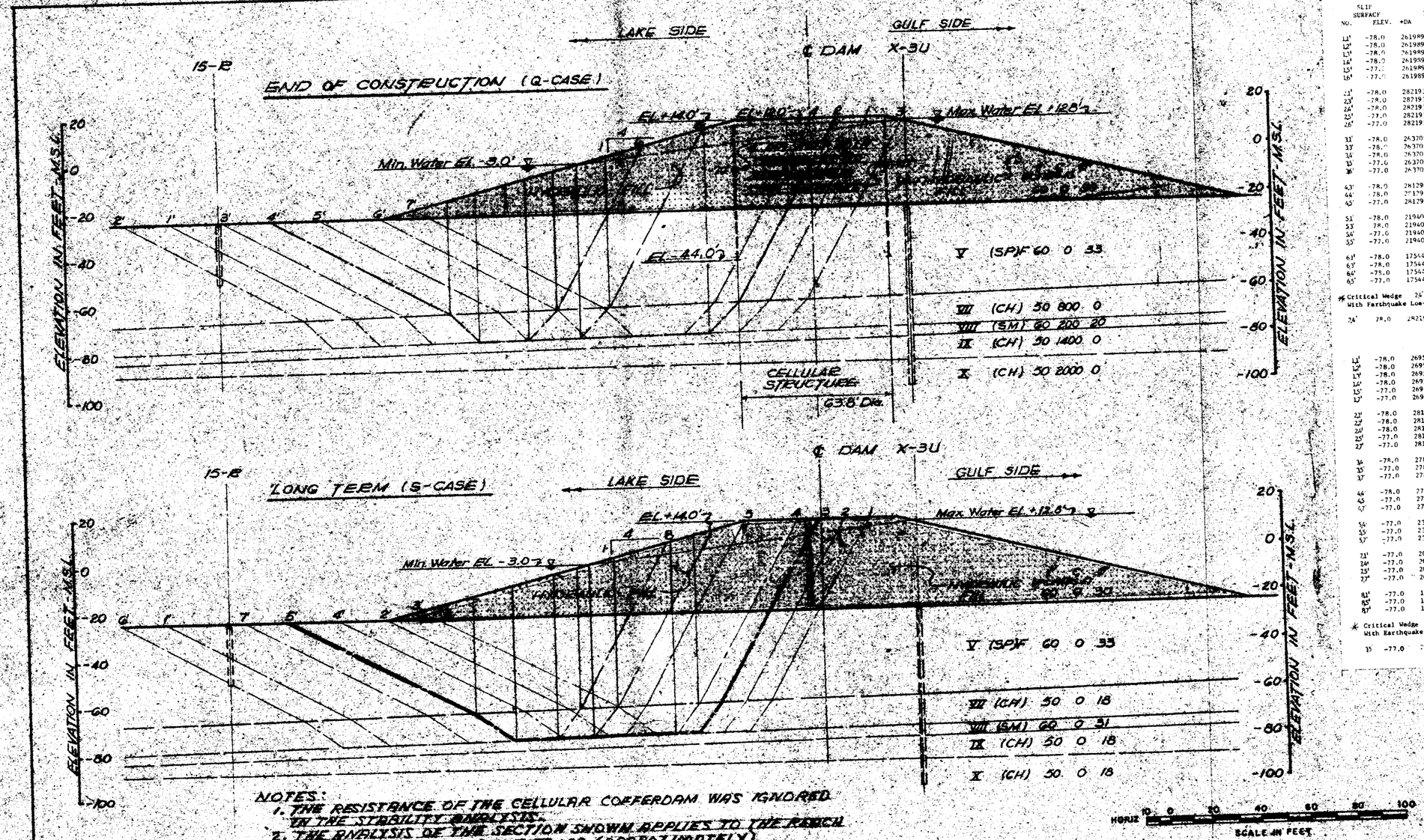
11'	-70.0	206803	51033	44928	200697	125463	265522	66806	457792	2.28
12'	-70.0	206803	77512	44928	174219	125463	216976	93395	435835	2.50
13'	-70.0	206803	66568	44928	185163	125462	186555	86913	398933	2.15
14'	-70.0	206803	80283	44928	171448	125463	152233	111632	389329	2.27
21'	-70.0	235195	51033	64646	248808	141504	316822	66806	525132	2.11
22'	-70.0	235195	77512	64646	222329	141504	268275	93395	503175	2.26
23'	-70.0	235195	66568	64646	233274	141504	237855	86913	466273	*1.99
24'	-70.0	235195	80283	64646	219558	141504	203532	111632	456669	2.07
31'	-70.0	217810	51033	74880	241656	131001	347211	66806	545019	2.25
32'	-70.0	217810	77512	74880	215178	131001	298664	93395	523061	2.43
33'	-70.0	217810	66568	74880	226122	131001	268244	86913	486159	2.14
34'	-70.0	217810	80283	74880	212407	131001	233921	111632	476555	2.24

* Critical wedge 23', F.S = 1.99
With Earthquake Loading, +DH = 0.05W

23'	-70.0	235195	66568	103120 +DH	271747	141504	237855	86913	466273	1.72

FREDERIC R HARRIS, INC
CONSULTING ENGINEERS - NEW ORLEANS, LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
STABILITY ANALYSIS
CLOSURE DAM (ALTERNATE SCHEME)
STA. 47+84
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417



NOTES:
1. THE RESISTANCE OF THE CELLULAR COFFERDAM WAS IGNORED IN THE STABILITY ANALYSIS.
2. THE ANALYSIS OF THE SECTION SHOWN APPLIES TO THE REACH BETWEEN STA. 56+50 AND 73+00 (APPROXIMATELY).

SLIDING BLOCK STABILITY ANALYSIS

END OF CONSTRUCTION STABILITY

SLIP SURFACE NO.	ELEV.	DRIVING +DA	DRIVING -DP	FORCES +DW	TOTAL	RESISTING FORCES +RA	+RP	TOTAL	SAFETY FACTOR R/D
11'	-78.0	261989	86517	71635	247106	152377	122600	145244	419721	1.69
12'	-78.0	261989	86517	71635	247106	152377	130696	145244	428021	1.73
13'	-78.0	261989	89330	71635	244951	152377	104000	145945	402323	1.64
14'	-78.0	261989	96662	71635	236961	152377	88000	154011	394388	1.66
15'	-77.0	261989	106010	70761	226739	151246	72000	167453	391469	1.72
16'	-77.0	261989	122614	70761	210136	151246	52000	197145	400391	1.90
21'	-78.0	282193	86517	60652	256328	167475	111200	145244	423919	1.65
23'	-78.0	282193	89330	60652	253515	167475	94400	145945	407821	1.60
24'	-78.0	282193	96662	60652	246183	167475	62400	154011	383866	1.55
25'	-77.0	282193	106010	59904	236098	167475	61600	168623	397695	1.6
26'	-77.0	282193	122614	59904	219490	167475	42000	197145	407020	1.85
31'	-78.0	263708	86517	82867	260065	155129	134400	145244	434773	1.67
33'	-78.0	263708	89330	82867	257244	155129	117600	145945	418974	1.62
34'	-78.0	263708	96662	82867	249913	155129	100800	154011	409940	1.64
35'	-77.0	263708	106010	81868	239566	155129	84800	168623	408552	1.70
36'	-77.0	263708	122614	81868	222963	155129	64800	197145	417074	1.87
43'	-78.0	281296	89330	49920	241785	169573	85600	145945	401119	1.65
44'	-78.0	281296	96662	49920	234553	169573	69600	154011	393196	1.67
45'	-77.0	281296	106010	49296	224581	169573	53600	168623	391796	1.74
51	-78.0	219407	86517	29203	162093	136408	68800	145244	350452	2.16
53	78.0	219407	89330	29203	159280	136408	51600	145945	333954	2.09
54'	-77.0	219407	96662	28328	151513	136408	35200	154011	325619	2.14
55'	-77.0	219407	106010	28828	142225	136408	18800	168623	323831	2.27
61'	-78.0	175444	86517	14320	103258	108536	50800	145244	304581	2.94
63'	-78.0	175444	89330	14320	100436	108536	33600	145945	288082	2.86
64'	-75.0	175444	95612	14320	94153	108536	17200	154011	279768	2.97
65'	-77.0	175444	106010	14133	83567	108536	000	168623	277959	3.31

* Critical Wedge 24' F.S. = 1.55
With Earthquake Loading +DE = 0.05W = 71664
+DW

24'	-78.0	282193	96662	71664	257195	167475	62400	154011	383886	1.49

LONG TERM STABILITY

11'	-78.0	269571	87202	66112	248681	172265	218513	156891	547669	2.21
12'	-78.0	269571	121471	66112	214212	172265	96228	219476	487970	2.27
13'	-78.0	269571	138644	66112	197019	172265	65978	252201	489445	2.48
14'	-78.0	269571	107070	66112	228613	172265	124496	190412	487574	2.13
15'	-77.0	269571	95486	65301	239386	172265	152931	168447	493703	2.06
16'	-77.0	269571	92052	65301	242821	172265	176947	163643	512856	2.11
21'	-78.0	281193	87202	60652	256443	180788	200057	156891	537738	2.11
22'	-78.0	281193	121471	60652	220374	180788	77773	219476	478038	2.16
24'	-78.0	281193	107070	60652	234775	180788	106441	190412	477653	2.01
25'	-77.0	281193	95486	59904	245610	180788	134535	168447	483172	1.96
27	-77.0	281193	92052	59904	249045	180788	154691	163643	502924	2.01
34	-78.0	278765	107070	52579	224275	179712	86967	190412	457092	2.03
35	-77.0	278765	95686	51924	235204	179712	115061	168447	463221	1.96
37	-77.0	278765	92052	51924	234638	179712	139018	163643	482374	2.02
44	-78.0	271937	107070	44647	209514	173871	70144	190412	434429	2.07
45	-77.0	271937	95486	44085	220536	173871	98239	168447	440557	1.99
47	-77.0	271937	92052	44085	223970	173871	123170	163643	460685	2.05
54	-77.0	233813	107070	33852	160594	150018	34789	190412	375221	2.33
55	-77.0	233813	95686	33852	172178	150018	63028	168447	381545	2.21
57	-77.0	233813	92052	33852	175613	150018	87034	163643	400697	2.28
73'	-77.0	208770	87202	23868	145435	133565	98083	156891	388510	2.67
74'	-77.0	208770	107070	23868	125567	133565	16375	190412	340353	2.71
75'	-77.0	208770	95486	23868	137151	133565	42077	168447	344089	2.50
77'	-77.0	208770	92052	23868	140586	133565	65991	163643	363200	2.58
81'	-77.0	181067	87202	14133	107998	115203	77675	156891	349769	3.23
85'	-77.0	181067	95486	14133	99716	115203	21668	168447	305319	3.06
87'	-77.0	181067	92052	14133	103149	115203	102824	163643	381671	3.70

* Critical Wedge 35' F.S. = 1.96
With Earthquake Loading +DH = 0.05W

35	-77.0	278765	95486	30468	213747	179712	113061	168447	463221	2.17

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CONSULTING ENGINEERS — NEW ORLEANS, LA.

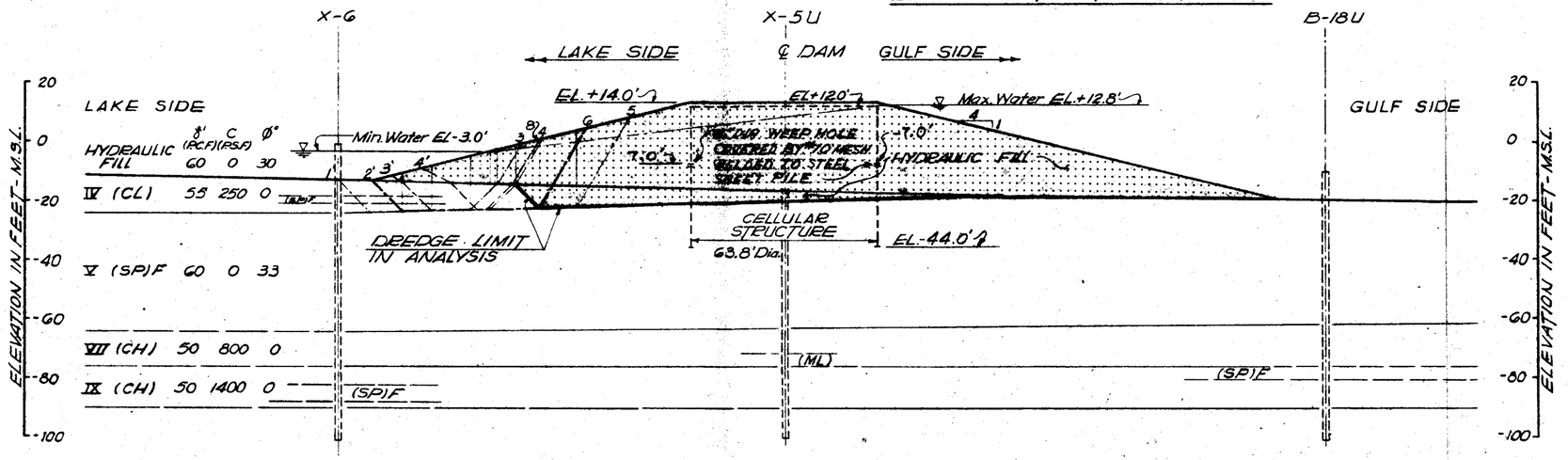
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 - DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
STABILITY ANALYSIS
CLOSURE DAM (TYPICAL SECTION)
STA. 61+74
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: MARCH 1973

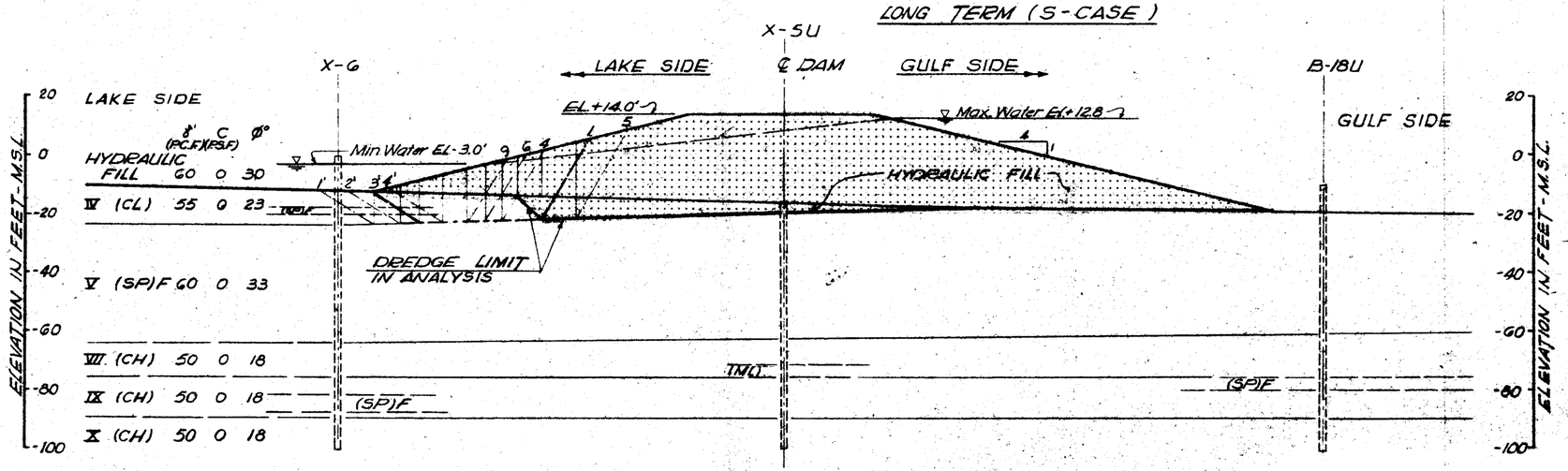
FILE NO. N-2-2447

PLATE III-6

END OF CONSTRUCTION (Q - CASE)



LONG TERM (S-CASE)



HORIZ. 10 0 20 40 60 80 100
SCALE IN FEET

SLIDING BLOCK STABILITY ANALYSIS

END OF CONSTRUCTION STABILITY

SLIP SURFACE NO.	ELEV.	+DA	DRIVING -DP	FORCES +DH	TOTAL	+RA	RESISTING +RB	FORCES +RP	TOTAL	SAFETY FACTOR R/D
11'	-24.0	13386	3520	663	10527	8001	8375	5656	22033	2.09
12'	-24.0	13386	3676	663	10371	8001	5750	5303	19054	1.83
13'	-23.0	13386	5401	671	8536	8001	3250	5313	16564	1.94
41	-24.0	15147	3520	2035	13663	8936	10000	5656	24593	1.79
42	-23.5	15147	3676	1989	13460	8936	7250	5303	21489	1.59
43	-23.5	15147	5401	1989	11654	8936	4750	5313	18999	1.63
61	-24.0	23424	3520	4212	24116	15616	14000	5656	35273	1.46
62	-23.5	23424	3676	4138	23866	15616	11500	5303	32419	*1.35
63	-23.0	23424	5481	4024	21967	15616	9000	5313	29929	1.36
51	-24.0	33116	3520	7332	36928	22077	25430	5656	53163	1.44
52	-23.5	33116	3676	7176	36616	22077	22930	5303	50310	1.37
53	-23.0	33116	5481	7020	34656	22077	20430	5313	47820	1.38
81	-23.5	15433	3520	1989	13902	9180	9750	5656	24586	1.76
82	-23.5	15433	3676	1989	13746	9180	7000	5303	21483	1.56
83	-23.5	15433	5481	1942	11893	9180	4625	5313	19118	1.60
84	-23.5	15422	8543	1942	8821	9173	875	7263	17311	1.96
* Critical Wedge 62' F.S. = 1.35 With Earthquake Loading, +DH = 0.05W				+DH						
62'	-23.5	23424	3676	6800	26548	15616	11500	5303	32420	1.22

LONG TERM STABILITY

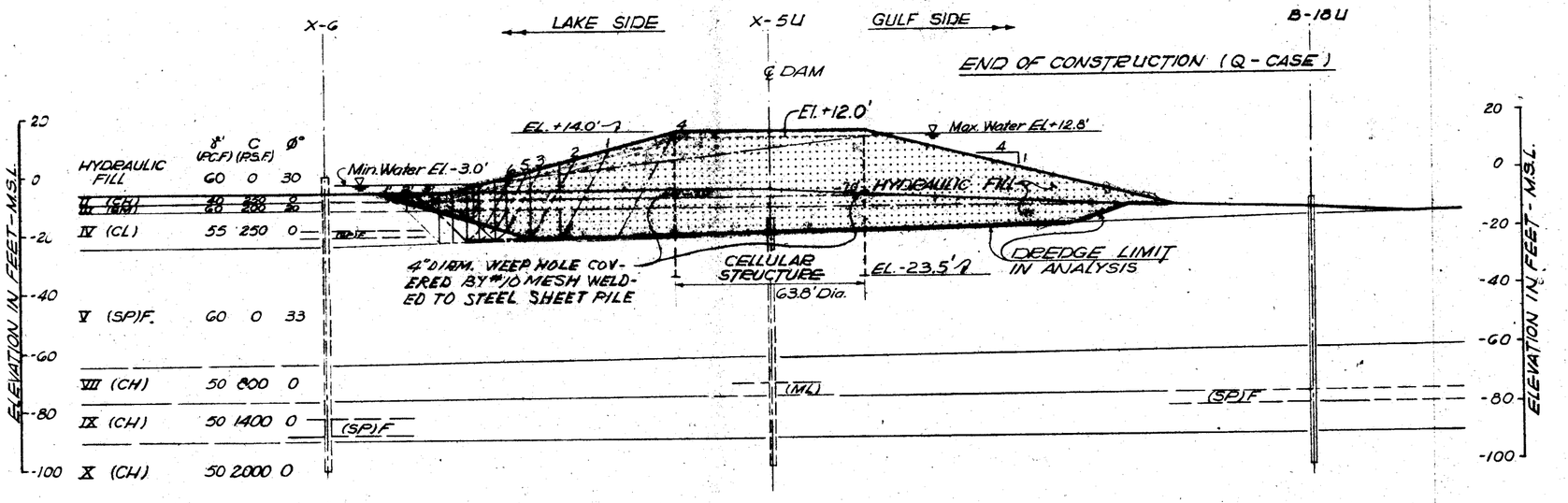
11'	-24.0	23914	3603	5740	26051	15942	23953	4622	44519	1.70
12'	-24.0	23914	3541	5740	26114	15942	21413	4541	41898	1.60
13'	-24.0	23914	4052	5740	25602	15942	19477	5198	40618	*1.58
14'	-23.0	23914	5216	5491	24188	15942	16591	6765	39300	1.62
41	-24.0	15366	3603	2745	14508	9430	13486	4622	27539	1.89
42	-24.0	15366	3541	2745	14571	9430	10945	4541	24918	1.71
43	-24.0	15366	4052	2745	14059	9430	9010	5198	23638	1.68
44	-23.0	15366	5216	2620	12770	9430	6123	6765	22320	1.74
51	-24.0	24543	3603	7332	28271	16362	30817	4622	51802	1.83
52	-24.0	24543	3541	7332	28334	16362	28277	4541	49181	1.73
53	-24.0	24543	4052	7332	27822	16362	26341	5198	47901	1.72
54	-23.0	24543	5216	7020	26346	16362	23455	6765	46583	1.76
61	-24.0	13011	3603	1341	10749	7896	16544	4622	23063	2.14
62	-24.0	13011	3541	1341	10812	7896	8004	4541	20442	1.89
63	-24.0	13011	4052	1341	10300	7896	6068	5198	19163	1.86
64	-23.0	13011	5216	1279	9073	7896	3182	6765	17844	1.96
91	-24.0	10948	3603	1341	8686	6567	11452	4622	22642	2.60
92	-23.5	10948	3541	1310	8718	6567	8799	4541	19908	2.28
93	-23.0	10948	4052	1279	8175	6567	6604	5198	18370	2.24
94	-23.0	10948	5216	1279	7011	6567	3718	6765	17051	2.43
* Critical Wedge 13' F.S. = 1.58 With Earthquake Loading, +DH = 0.05W				+DH						
13'	-24.0	23914	4052	5729	25591	15942	19477	5198	40618	1.58

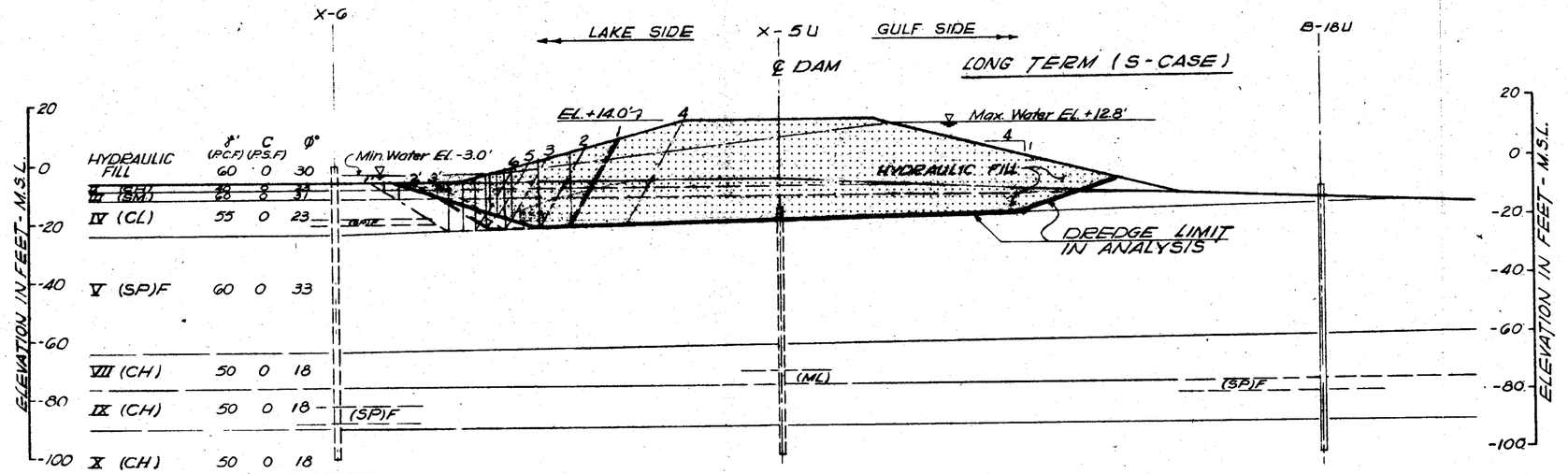
NOTES: 1.) THE RESISTANCE OF THE CELLULAR COFFERDAM WAS IGNORED IN THE STABILITY ANALYSIS.
2.) THE ANALYSIS OF THE SECTION SHOWN APPLIES TO THE REACH BETWEEN STA. 73+00 AND 74+00 (APPROXIMATELY).

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS — NEW ORLEANS, LA.

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 - DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM.
STABILITY ANALYSIS CLOSURE DAM. STA. 73+44
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: MARCH 1973
FILE NO. H-2-24417

PLATE III-7





NOTES:
1. THE RESISTANCE OF THE CELLULAR COFFERDAM WAS IGNORED IN THE STABILITY ANALYSIS.
2. THE ANALYSIS OF THE SECTION SHOWN APPLIES TO THE REACH BETWEEN STA. 74+00 AND 79+00 (APPROXIMATELY).

HORIZ 10 0 20 40 60 80 100
SCALE IN FEET

SLIPING BLOCK STABILITY ANALYSIS

END OF CONSTRUCTION STABILITY

SLIP SURFACE NO.	ELEV.	DRIVING +DA	-DP	FORCES +DW	TOTAL	RESISTING +RA	+RB	FORCES +RF	TOTAL	SAFETY FACTOR R/D
1¹	-23.0	31978	8224	5941	29246	21319	17150	9141	47611	1.63
1²	-23.0	31978	8103	5941	29367	21319	14650	7101	43070	1.47
1³	-23.0	31978	9213	5941	28256	21319	12400	8697	42416	1.50
2¹	-23.0	23289	8224	4024	19089	15526	7750	9141	32418	1.69
2²	-23.0	23289	8103	4024	19210	15526	5250	7101	27877	*1.45
2³	-23.0	23289	9213	4024	18100	15526	3000	8697	27223	1.50
3¹	-23.0	18679	8224	2620	13076	11090	4750	9141	24982	1.91
3²	-23.0	18679	8103	2620	13196	11090	2500	7101	20692	1.56
3³	-23.0	18679	9213	2620	12086	11090	0	8697	19787	1.63
4¹	-23.0	44531	8224	8611	44918	29667	39083	9141	77912	1.73
4²	-23.0	44531	8103	8611	45039	29667	36583	7101	73371	1.63
4³	-23.0	44531	9213	8611	43928	29667	34333	8697	72717	1.66
5¹	-23.0	14992	8224	1279	9847	9403	3375	9141	21920	2.20
5²	-23.0	14992	9103	1279	10067	9403	1000	7101	17504	1.73
6¹	-23.0	12774	8224	631	5181	7727	2375	9141	19244	3.71
6²	-23.0	12774	8103	631	5302	7727	0	7101	14829	2.79

*Critical Wedge 22° F.S. = 1.45
With Earthquake Loading +DH = .05W +DV

2²	-23.0	23289	9103	4024	19730	15526	5250	7101	27877	1.41

LONG TERM STABILITY

1¹	-23.0	31978	7449	7920	31569	21319	24796	10097	56202	1.78
1²	-23.0	31978	7720	7020	31229	21319	17556	10704	49579	*1.58
1³	-23.0	31978	9028	7020	29970	21319	17421	12744	51484	1.72
2¹	-23.0	23289	7449	5491	21331	15526	14426	10097	40049	1.87
2²	-23.0	23289	7774	5491	21005	15526	9196	10714	35436	1.68
2³	-23.0	23289	9028	5491	19751	15526	7061	12744	35331	1.78
3¹	-23.0	17307	7449	4024	13803	11101	7364	10097	28563	2.05
3²	-23.0	17307	7774	4024	13557	11101	2135	10714	23950	1.76
3³	-23.0	17307	9028	4024	12303	11101	0	12744	23845	1.93
4¹	-23.0	44531	7449	10264	47346	29667	46286	10097	86070	1.72
4²	-23.0	44531	7720	10264	47075	29667	41056	10704	81427	1.73
4³	-23.0	44531	9028	10264	45766	29667	38921	12744	81352	1.77
5¹	-23.0	12454	7449	1279	6576	7989	5036	10097	23123	3.51
5²	-23.0	12454	7724	1279	6269	7989	0	10714	18703	2.98

*Critical Wedge 12° F.S. = 1.59
With Earthquake Loading +DV = .05W +DV

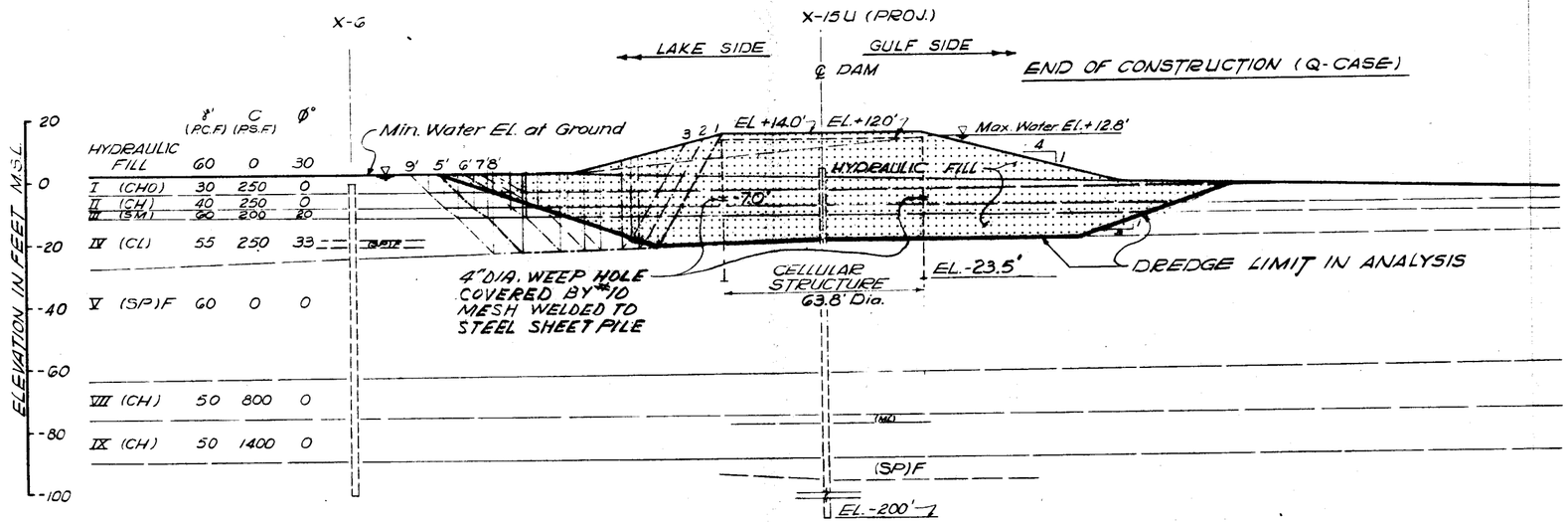
1²	-23.0	31978	7720	7425	31633	21319	17556	10714	49579	1.56

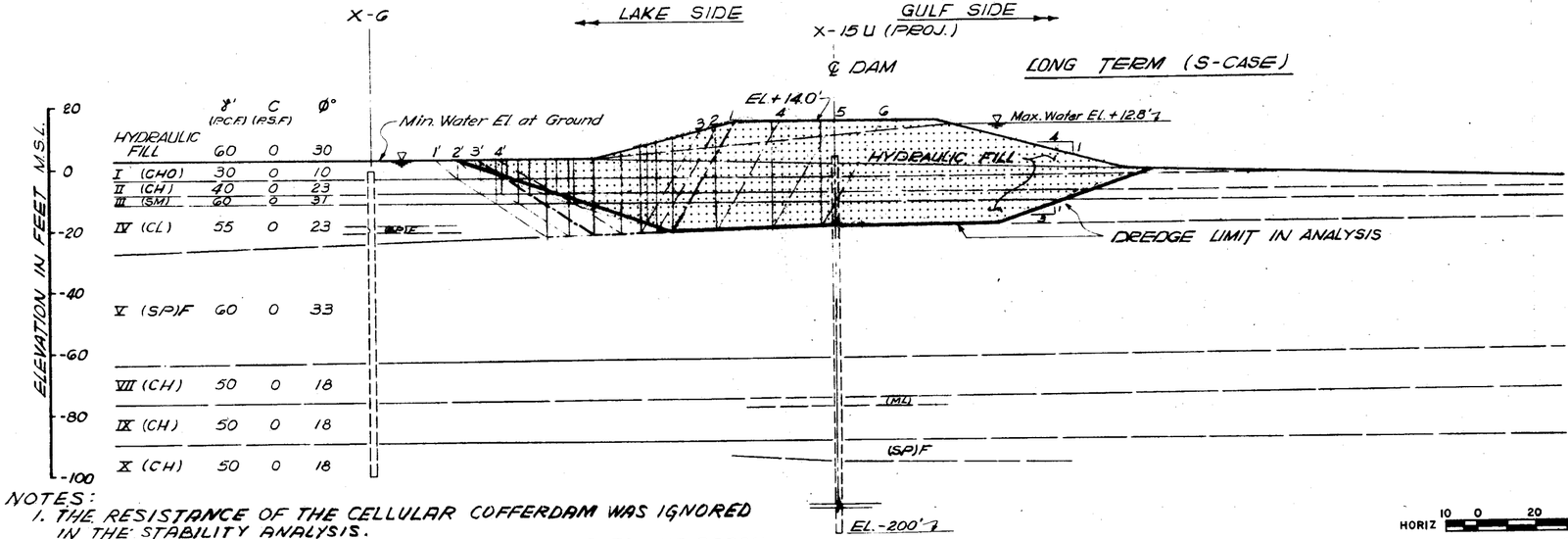
FREDERIC R HARRIS, INC.
CONSULTING ENGINEERS — NEW ORLEANS, LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
STABILITY ANALYSIS
CLOSURE DAM
STA. 77+54
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417

A-A

PLATE III-8





NOTES:
1. THE RESISTANCE OF THE CELLULAR COFFERDAM WAS IGNORED IN THE STABILITY ANALYSIS.
2. THE ANALYSIS OF THE SECTION SHOWN APPLIES TO THE REACH BETWEEN STA 79+00 AND 82+26.76 (APPROXIMATELY).

HORIZ 10 0 20 40 60 80 100
SCALE IN FEET

SLIDING BLOCK STABILITY ANALYSIS

END OF CONSTRUCTION STABILITY

SLIP SURFACE NO.	ELEV.	DRIVING +DA	-DA	FORCES +DW	TOTAL	RESISTING +RA	+RB	FORCES +RF	TOTAL	SAFETY FACTOR R/D
15'	-23.0	43777	12744	5148	36181	29185	10750	12142	52077	*1.43
16'	-23.0	43777	16705	5148	32220	29185	7750	13696	50632	1.57
17'	-23.0	43777	13418	5148	35507	29185	5500	17075	51760	1.45
18'	-23.0	43777	17944	5148	30980	29185	4500	16589	50274	1.62
19'	-23.0	43777	12744	5148	36181	29185	13000	12142	54327	1.50
23'	-23.0	40975	12744	4251	32481	25227	9250	12142	46620	1.43
24'	-23.0	40975	16705	4251	28520	25227	6250	13696	45174	1.58
25'	-23.0	40975	13418	4251	31807	25227	4000	17075	46302	1.45
26'	-23.0	40975	17944	4251	27281	25227	3000	16589	44816	1.64
29'	-23.0	40975	12744	4251	32481	25227	11500	12142	48870	1.50
33'	-23.0	34250	12744	3369	24875	21073	8000	12142	41215	1.65
36'	-23.0	34250	16705	3369	20914	21073	4750	13696	39520	1.88
37'	-23.0	34250	13418	3369	24201	21073	2750	17075	40898	1.68
38'	-23.0	34250	17944	3369	19675	21073	1750	16589	39412	2.00
39'	-23.0	34250	12744	3369	24875	21073	10250	12142	43465	1.74
* Critical Wedge 15' F-S = 1.43 With Earthquake Loading +DH = 0.05W										
				+DH						
15'	-23.0	43777	12744	10876	41909	29185	10750	12142	52077	1.24

LONG TERM STABILITY

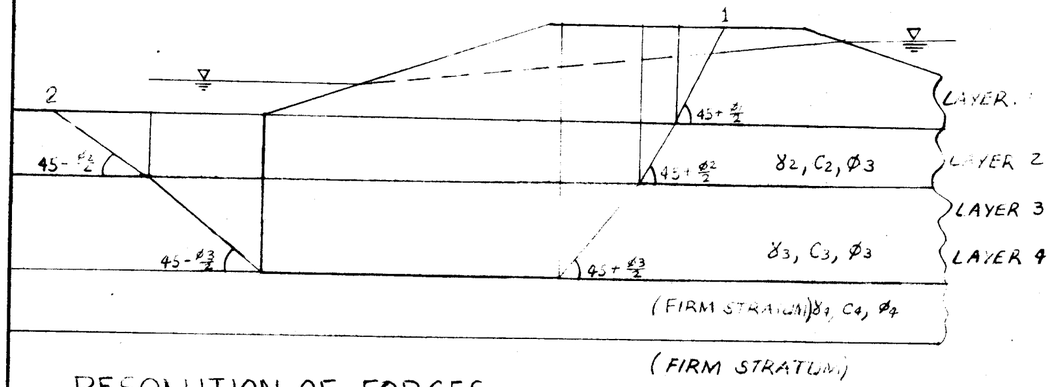
11'	-23.0	43777	14685	6060	35153	29185	28616	19798	77600	2.20
12'	-23.0	43777	15836	6060	34001	29185	24323	21251	74759	2.19
13'	-23.0	43777	16033	6060	33804	29185	19818	23014	72017	*2.13
14'	-23.0	43777	17594	6060	32244	29185	14173	26812	70170	2.17
21'	-23.0	39152	14685	5148	29615	25797	24408	19798	70005	2.36
22'	-23.0	39152	15836	5148	28464	25797	20115	21251	67164	2.35
23'	-23.0	39152	16033	5148	28266	25797	15610	23014	64422	2.27
24'	-23.0	39152	17594	5148	26706	25797	9965	26812	62575	2.34
31'	-23.0	31934	14685	4251	21500	20977	20413	19798	61190	2.84
32'	-23.0	31934	15836	4251	20349	20977	16119	21251	58349	2.86
33'	-23.0	31935	16033	4251	20153	20978	11614	23014	55607	2.75
34'	-23.0	31934	17594	4251	18591	20977	5970	26812	53760	2.89
43'	-23.0	44052	17080	8892	35864	29368	23851	23722	76943	2.14
53'	-23.0	48393	17080	10857	42170	32262	48474	23722	104559	2.48
63'	-23.0	47212	17080	14976	45107	21474	63933	23722	119131	2.64
* Critical Wedge 13' F-S = 2.13 With Earthquake Loading +DH = 0.05W										
				+DH						
13'	-23.0	43777	16033	8478	36222	29185	19818	23014	72017	1.99

FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
STABILITY ANALYSIS
CLOSURE DAM
STA. 80+54
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

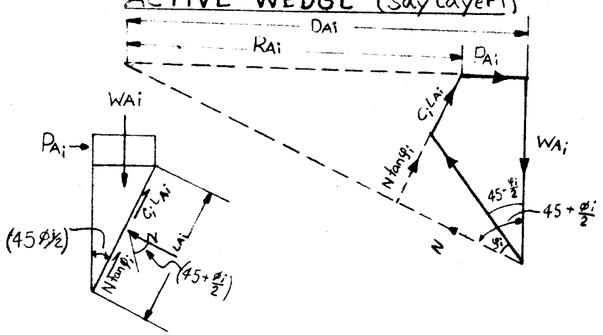
DATE MARCH 1973 FILE NO. H-2-24417

PLATE III-9



RESOLUTION OF FORCES

ACTIVE WEDGE (say Layer i)



WAi = WEIGHT OF ACTIVE WEDGE IN LAYER i

DAi = WAi tan $(45+\frac{\Phi i}{2})$ = HORIZONTAL DRIVING FORCE ASSUMING NO SHEAR STRENGTH ON LAi

PAi = ORDINARY RESULTANT ACTIVE FORCE

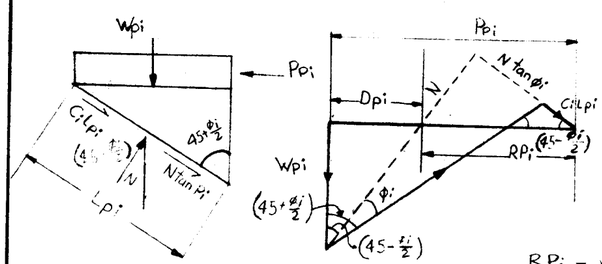
$PAi = WAi \tan(45-\frac{\Phi i}{2}) - 2C_i L_{Ai} \cos(45+\frac{\Phi i}{2})$

RAi = HORIZONTAL EQUIVALENT OF SHEAR STRENGTH ON LAi

RAi = DAi - PAi

$= W_{Ai}\left[\tan(45+\frac{\Phi i}{2}) - \tan(45-\frac{\Phi i}{2})\right] + 2C_i L_{Ai} \cos(45+\frac{\Phi i}{2})$

PASSIVE WEDGE (say Layer i)



WPi = WEIGHT OF PASSIVE WEDGE IN LAYER i

DPi = WPi tan $(45-\frac{\Phi i}{2})$ = HORIZONTAL DRIVING FORCE ASSUMING NO SHEAR STRENGTH ON LPi

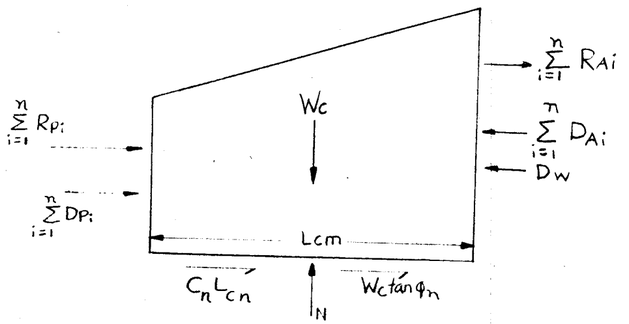
PPi = ORDINARY RESULTANT PASSIVE FORCE

$PPi = WPi \tan(45+\frac{\Phi i}{2}) + 2C_i L_{Pi} \cos(45-\frac{\Phi i}{2})$

RPi = HORIZONTAL EQUIVALENT OF SHEAR STRENGTH ON LPi = PPi - DPi

$RP_i = W_{Pi}\left[\tan(45+\frac{\Phi i}{2}) - \tan(45-\frac{\Phi i}{2})\right] + 2C_i L_{Pi} \cos(45-\frac{\Phi i}{2})$

CENTRAL WEDGE



Wc = WEIGHT OF CENTRAL WEDGE

CN, PN = SOIL PROPERTIES OF SLIDING STRATA i = n

Lcn = LENGTH OF CENTRAL WEDGE

Dw = RESULTANT OF NET PORE WATER PRESSURE ACTING ON THE TWO ENDS OF CENTRAL WEDGE

$D_w = \gamma_w\left[\frac{1}{2}(\text{EL. UP} - \text{EL. DN})^2 + (\text{EL. UP} - \text{EL. DN})(\text{EL. DN} - \text{EL. SL})\right]$

EL. UP = WATER ELEVATION ON ACTIVE SIDE OF CENTRAL WEDGE

EL. DN = WATER ELEVATION ON PASSIVE SIDE OF CENTRAL WEDGE

EL. SL = ELEVATION OF THE SLIDING SURFACE OF THE SLIDING WEDGE

γ_ω = UNIT WEIGHT OF WATER = 62.4 PCF

FACTOR OF SAFETY OF ENTIRE SLIDING MASS $= \frac{\Sigma \text{ RESISTING FORCES}}{\Sigma \text{ DRIVING FORCES}} = \frac{\sum_{i=1}^{n} R_{Ai} + \sum_{i=1}^{n} R_{Pi} + C_n L_{cn} + W_c \tan\Phi_n}{\sum_{i=1}^{n} D_{Ai} - \sum_{i=1}^{n} D_{Pi} + D_w}$

$F.S. = \frac{R}{D} = \frac{RA + RP + RB}{DA - DP - DW}$

$\sum_{i=1}^{n} R_{Ai} = RA, \quad \sum_{i=1}^{n} R_{Pi} = RP$

$\sum_{i=1}^{n} D_{Ai} = DA, \quad \sum_{i=1}^{n} D_{Pi} = DP, \quad D_w = DW$

$C_n L_{cn} + W_c \tan\Phi_n = RB$

FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

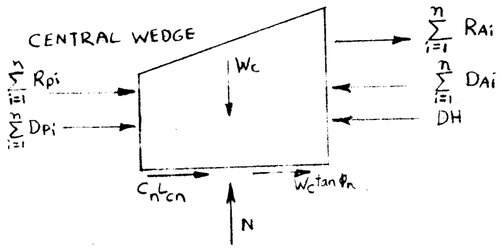
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
STABILITY ANALYSIS – METHOD 4
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417

ANALYSIS FOR EARTHQUAKE CONDITION

SEISMIC COEFFICIENT FOR THIS AREA IS 0.05.

HORIZONTAL DRIVING FORCE DUE TO EARTHQUAKE, DH = 0.05W. W = SATURATED WEIGHT OF THE ENTIRE SLIDING MASS. THIS ANALYSIS WAS PERFORMED FOR THE CRITICAL SLIDING WEDGE DETERMINED FOR END OF CONSTRUCTION (Q - CASE) AND LONG TERM (S - CASE) STABILITY.

COMBINATION OF EARTHQUAKE AND WORST COMBINATION OF STORM AND HIGH TIDE OCCURRING SIMULTANEOUSLY IS REMOTE. HENCE, NORMAL WATER LEVEL CONDITION, EL + 1.50 ON BOTH SIDES OF THE DAM IS USED FOR EARTHQUAKE CONDITION ANALYSIS. DW = 0.



DH = 0.05 W

FACTOR OF SAFETY (F.S.) = $\frac{\text{RESISTING FORCES}}{\text{DRIVING FORCES}}$

$$= \frac{\sum_{i=1}^{n} R_{Ai} + \sum_{i=1}^{n} R_{Pi} + C_n L_{cn} + W_c \tan\phi_n}{\sum_{i=1}^{n} D_{Ai} - \sum_{i=1}^{n} D_{Pi} + D_H}$$

$$= \frac{RA + RP + RB}{DA - DP + DH}$$

USE RA, RP, RB, DA AND DP FROM THE CRITICAL WEDGE DATA FOR COMPUTING FACTOR OF SAFETY AGAINST SLIDING FOR EARTHQUAKE CONDITION.

WANG CALCULATOR WAS USED TO COMPUTE F.S. GIVEN THE SOIL PROPERTIES, IDENTIFICATION OF SLIDING LAYER, WEIGHT AND LENGTH OF SLIDING SURFACE OF ACTIVE, PASSIVE AND CENTRAL WEDGES OF THE SLIDING BLOCK.

WANG CALCULATOR INPUT

ϕ_i i =1 . . . . J. J = TOTAL NUMBER OF

i =1 . . . . J, SOIL STRATA IN CROSS SECTION

N = n NUMBER OF LAYER IN WHICH SLIDING TAKES PLACE, $n \leq J$

W_{Ai}, L_{Ai} ACTIVE WEDGE WEIGHT AND LENGTH OF SLIDING SURFACE IN EACH STRATA $i = 1, \ldots, n$

W_{Pi}, L_{Pi} PASSIVE WEDGE, WEIGHT AND LENGTH OF SLIDING SURFACE IN EACH STRATA $i = 1, \ldots, n$

W_c, L_{cn} CENTRAL WEDGE WEIGHT AND LENGTH OF SLIDING SURFACE IN n^{th} STRATA

EL. SL, EL. UP, EL. DN, ELEVATIONS OF SLIDING SURFACE, WATER ELEVATIONS UP, UPSTREAM (ACTIVE) SIDE, DN, DOWN STREAM (PASSIVE) SIDE OF CENTRAL WEDGE.

TRIAL NO. TO IDENTIFY THE TRIAL SLIDING WEDGE.

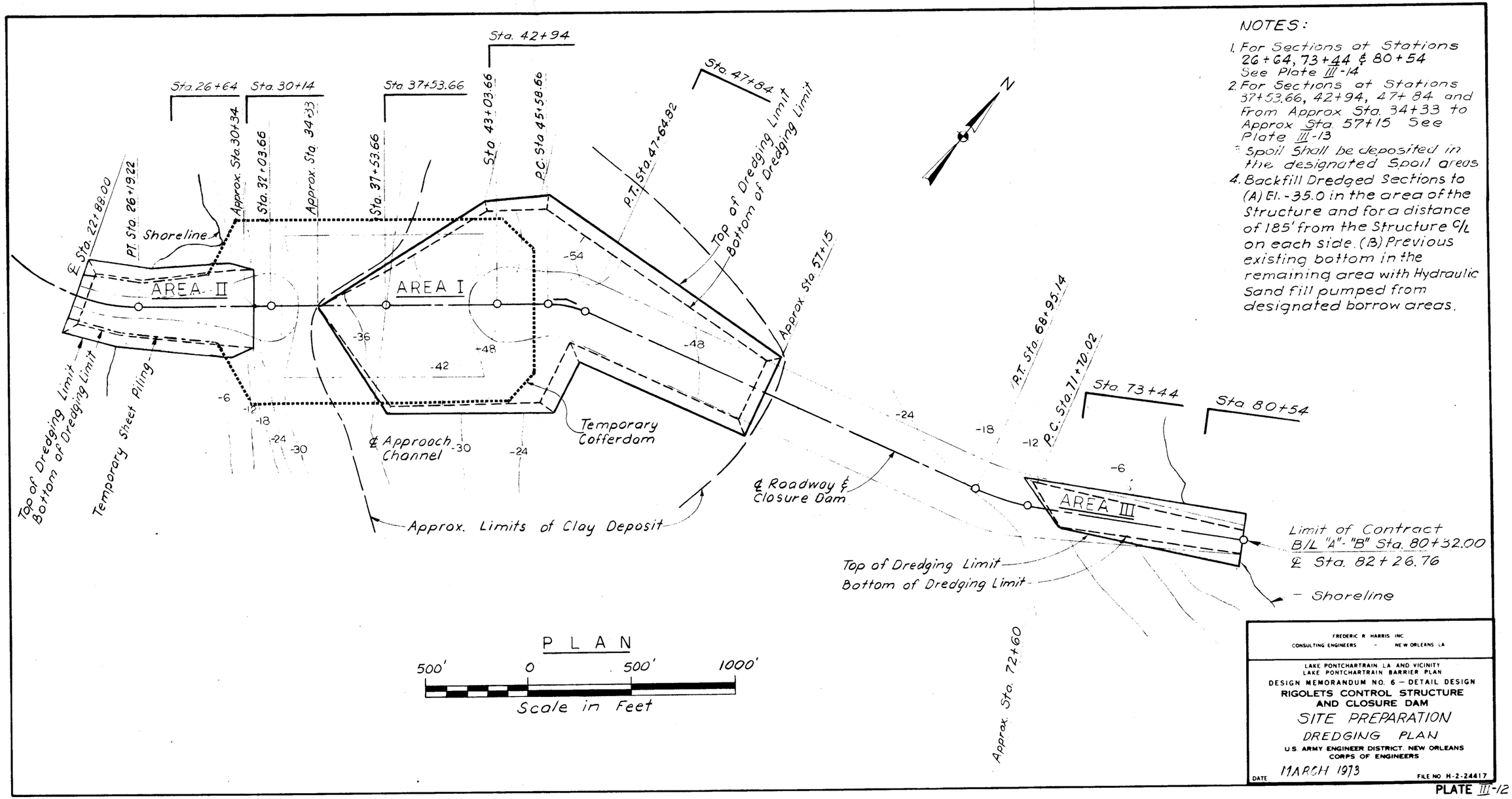
STABILITY COMPUTATION SHEETS INDICATE COMPUTATION OF WEIGHTS AND LENGTH OF SLIDING SURFACES OF ACTIVE, PASSIVE AND CENTRAL (NEUTRAL) SLIDING WEDGES OF SEVERAL TRIALS TO DETERMINE THE SLIDING WEDGE WITH THE LEAST FACTOR OF SAFETY.

THE CRITICAL WEDGE COMPUTATION WAS CHECKED BY HAND COMPUTATION.

REFERENCE: DEPARTMENT OF NAVY, "DESIGN MANUAL - SOIL MECHANICS, FOUNDATIONS AND EARTH STRUCTURES" NAVFAC, DM-7, 1971

FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
STABILITY ANALYSIS — METHOD (CONT'D) —
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417



PLAN

NOTES:

1. For Sections at Stations 26+64, 73+44 & 80+54 See Plate III-14
2. For Sections at Stations 37+53.66, 42+94, 47+84 and From Approx Sta. 34+33 to Approx Sta. 57+15 See Plate III-13
3. Spoil Shall be deposited in the designated Spoil areas
4. Backfill Dredged Sections to (A) El. -35.0 in the area of the Structure and for a distance of 185' from the Structure ℄ on each side. (B) Previous existing bottom in the remaining area with Hydraulic Sand fill pumped from designated borrow areas.

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LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN

RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

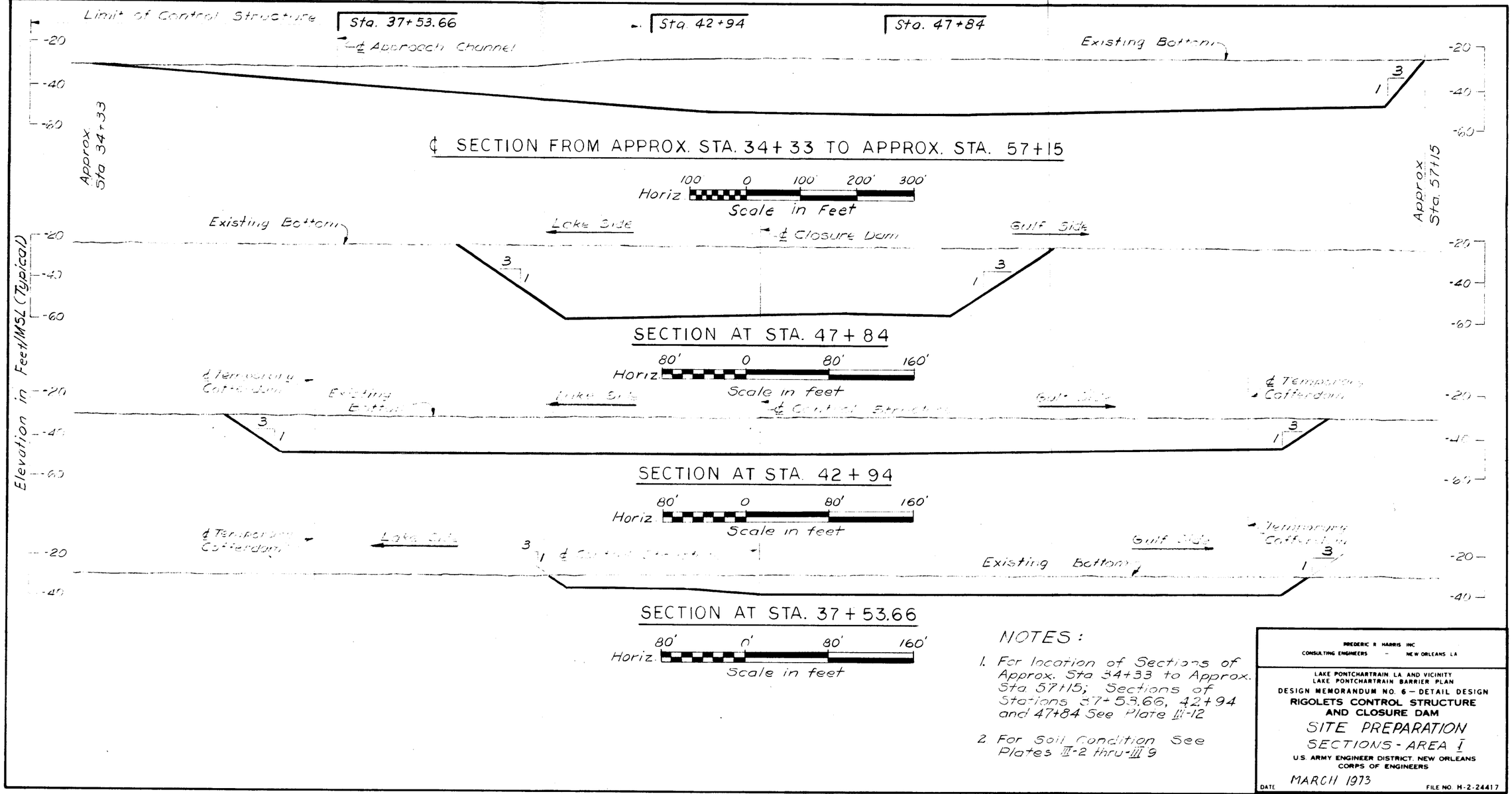
SITE PREPARATION

DREDGING PLAN

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO H-2-24417

PLATE III-12



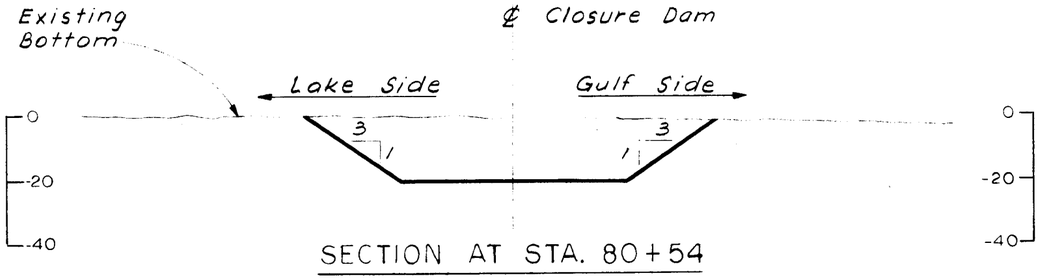
NOTES:

1. For location of Sections of Approx. Sta 34+33 to Approx. Sta 57+15; Sections of Stations 37+53.66, 42+94 and 47+84 See Plate III-12
2. For Soil Condition See Plates III-2 thru-III 9

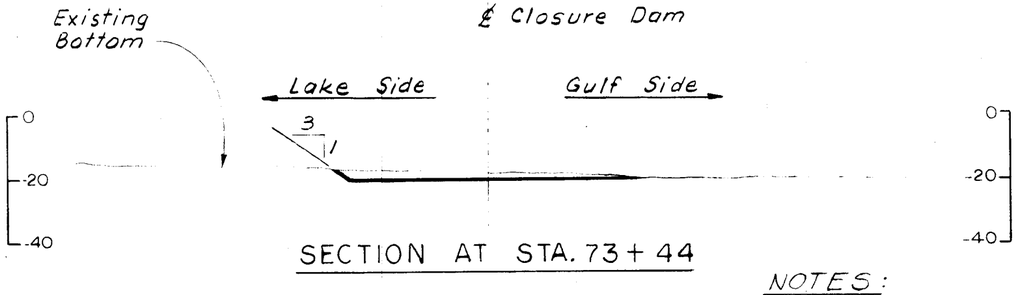
FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
SITE PREPARATION
SECTIONS - AREA I
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417



SECTION AT STA. 80+54

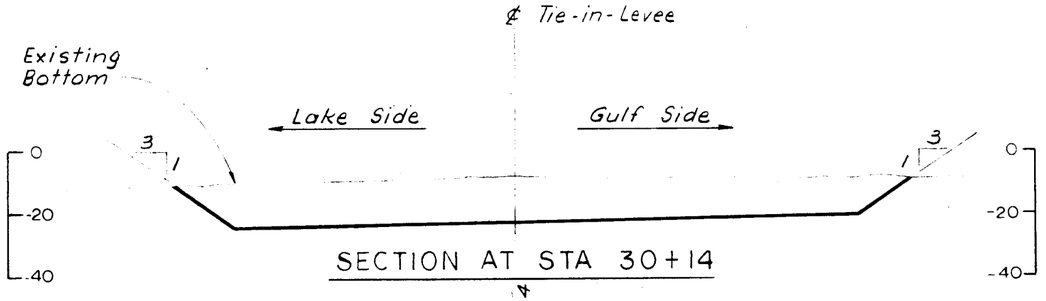


SECTION AT STA. 73+44

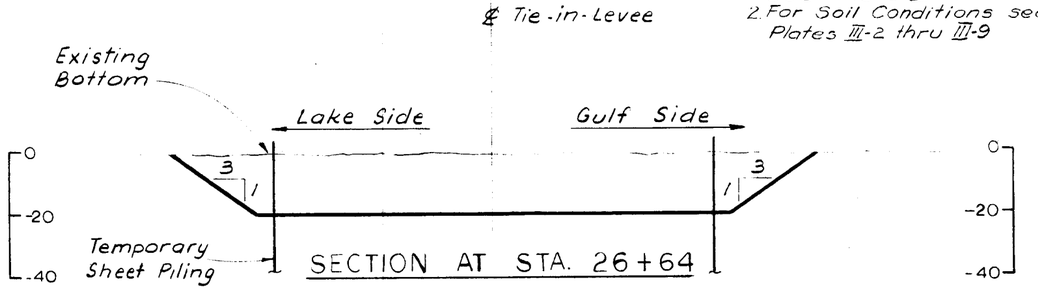
NOTES:

1. For Location of Sections of Stations: 26+64, 30+14, 73+44, 80+54; Section from Sta. 22+80 to Sta. 30+34 and Section from Sta 72+60 to Sta 82+26.76 See Plate III-12
2. For Soil Conditions see Plates III-2 thru III-9

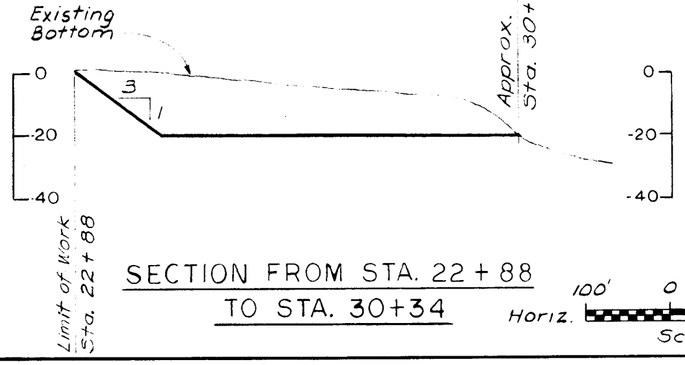
Elevations in Feet/MSL (Typical)



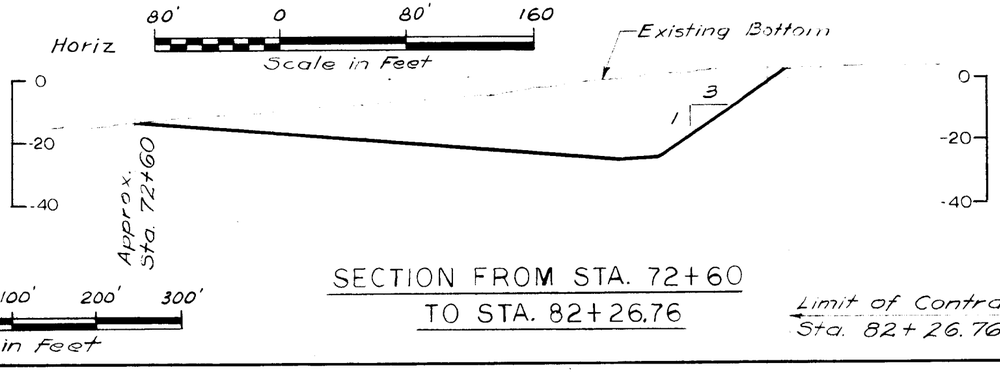
SECTION AT STA 30+14



SECTION AT STA. 26+64



SECTION FROM STA. 22+88
TO STA. 30+34



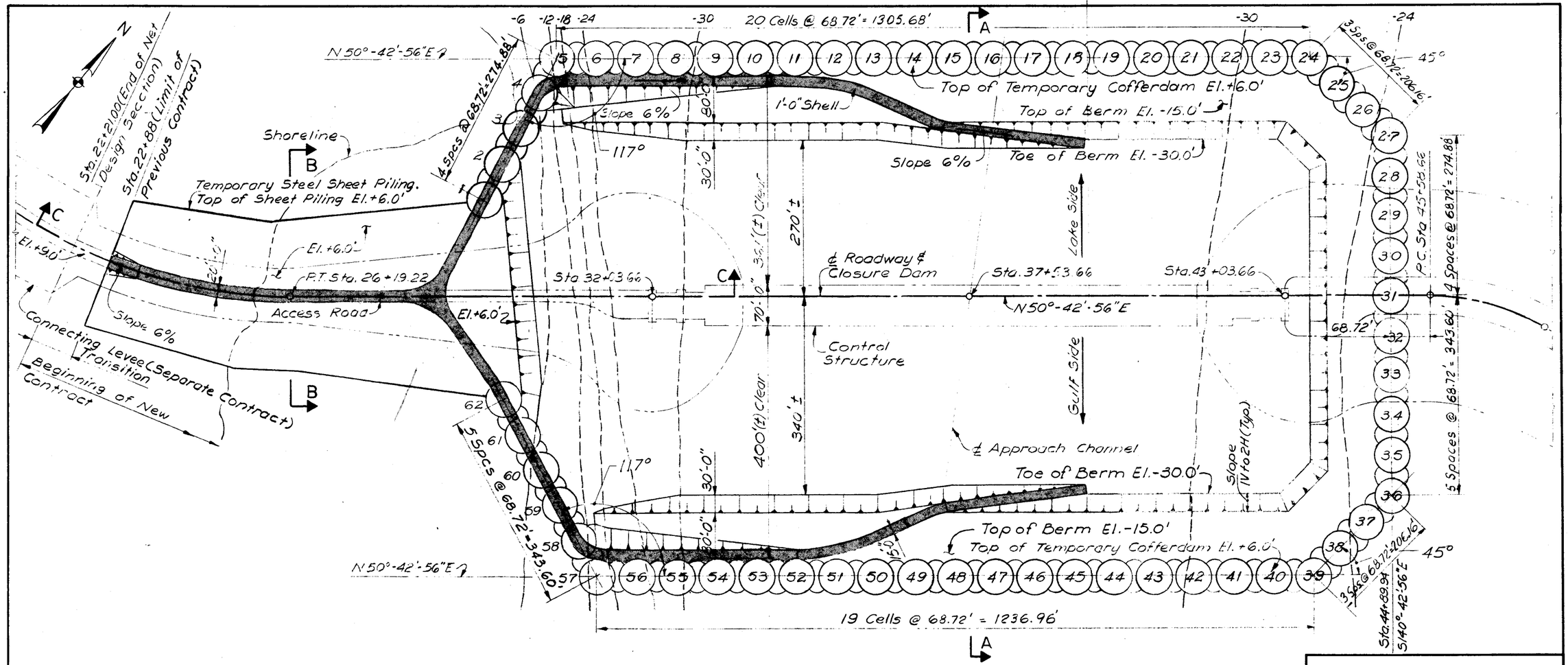
SECTION FROM STA. 72+60
TO STA. 82+26.76

Limit of Contract
Sta. 82+26.76

FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
SITE PREPARATION
SECTIONS - AREA II & III
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO H-2-24417

PLATE III-14



PLAN

100' 0 100' 200' 300'

Scale in Feet

Notes:

1.-For Section A-A see Plates V1, V2, V3 & V4

2.-For Sections B-B & C-C see Plate IV-4

FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

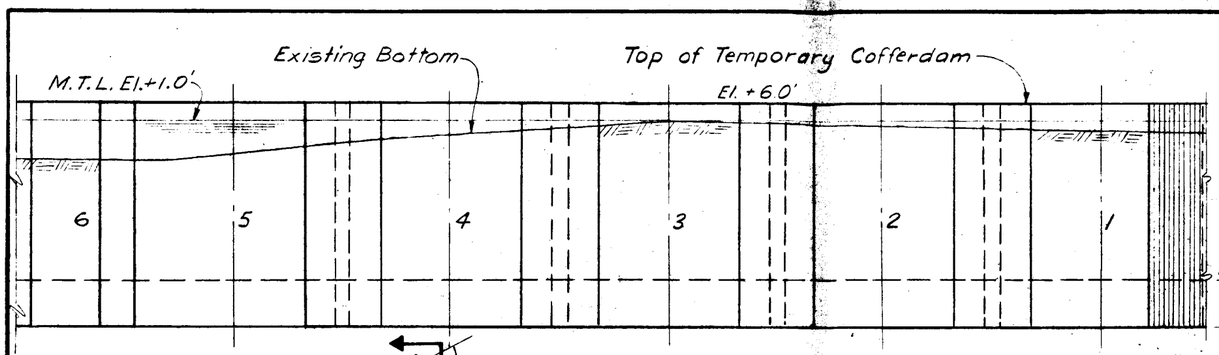
COFFERDAM PLAN

U.S ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

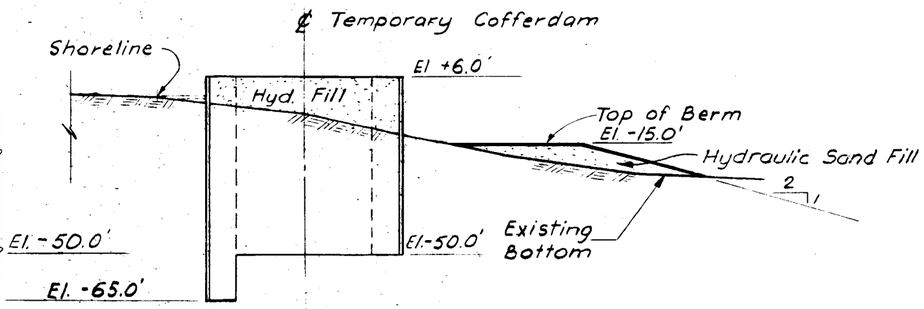
DATE MARCH 1973

FILE NO H-2-24417

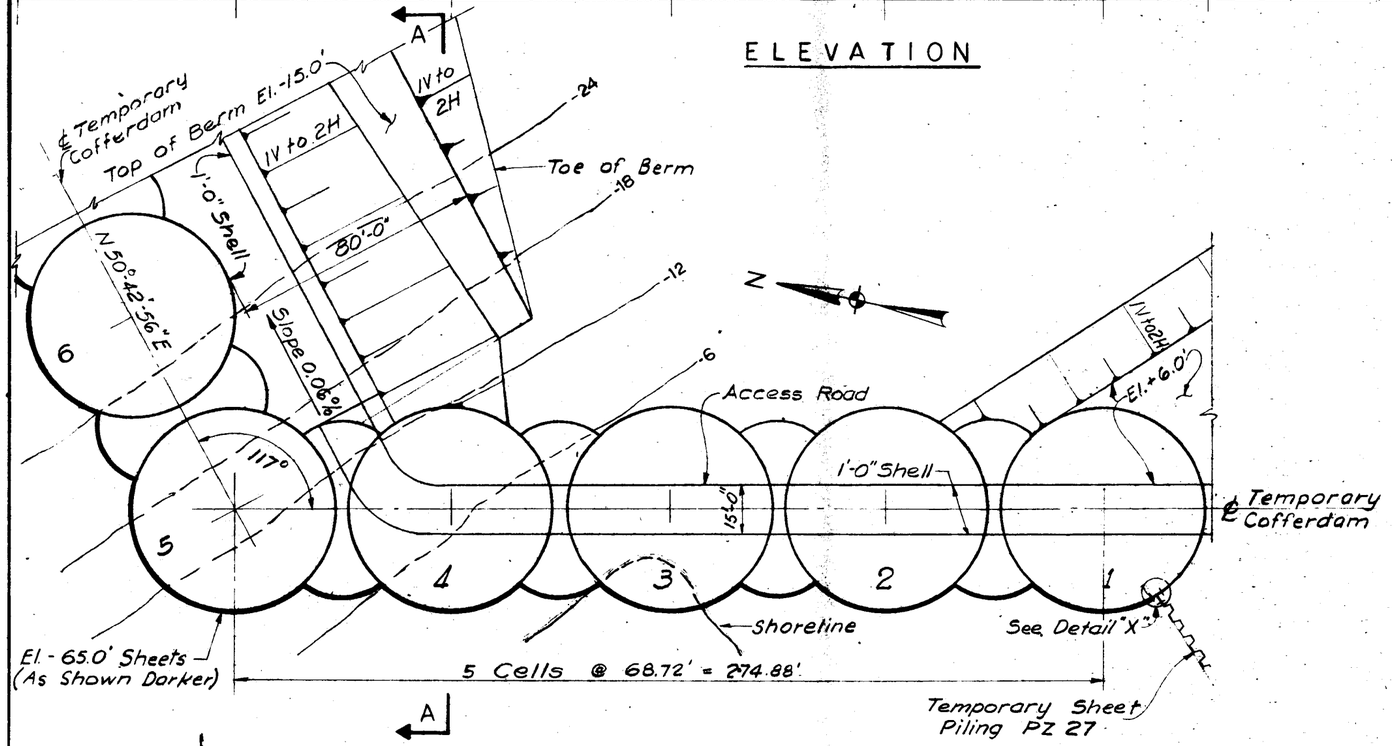
PLATE III-15



ELEVATION



SECTION A-A



PLAN

NOTES:

1. For Location of Cells see Plate III-15
2. For Detail "X" see Plate III-21
3. For Detail of Cells 1 & 5 see Plate III-21

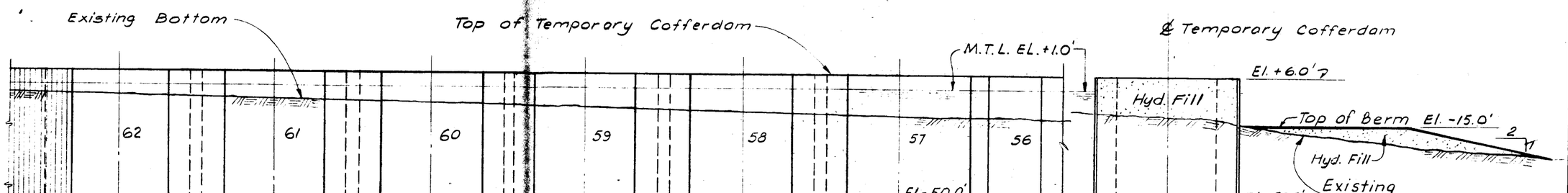
50' 0 50' 100'

Scale in Feet

FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS, LA

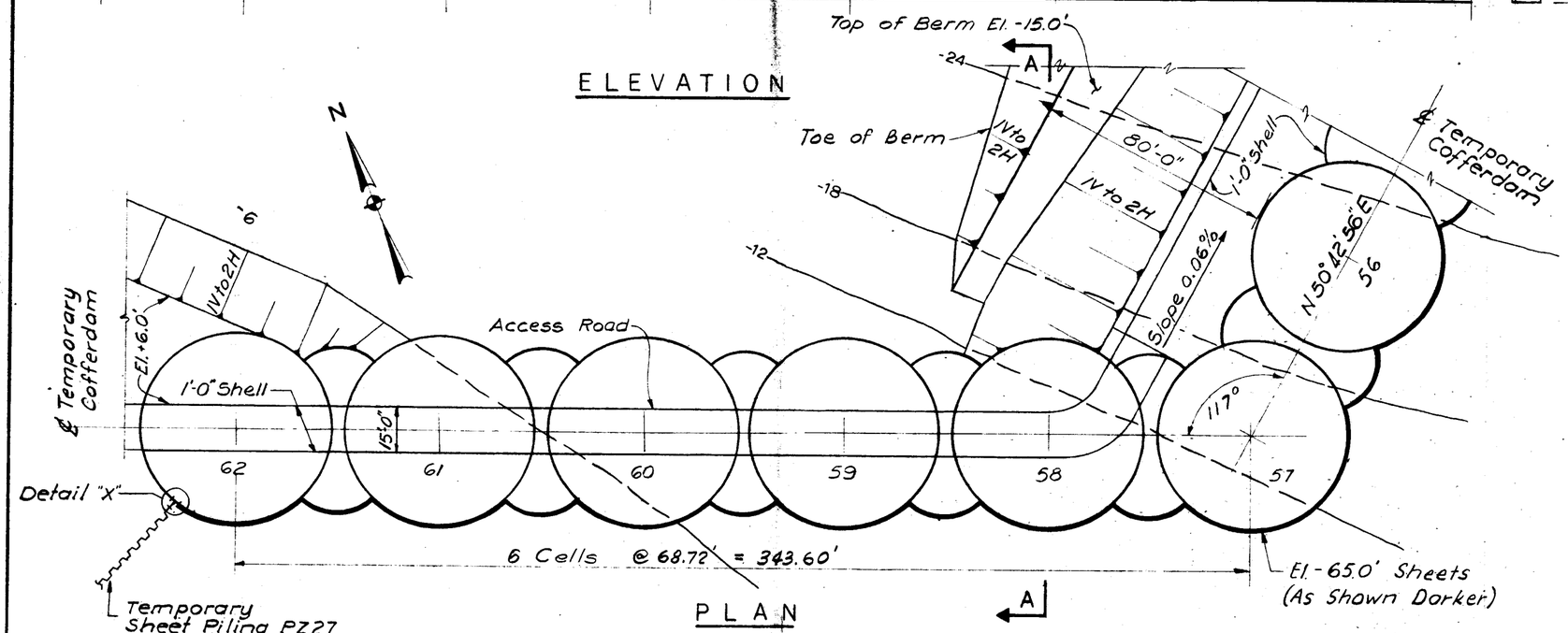
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
COFFERDAM
NW CORNER, PLAN & ELEVATION
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. M-2-24417

PLATE III-16



ELEVATION

SECTION A-A



PLAN

1. For Location of Cells see Plate III-15
2. For Detail "X" see Plate III-21
3. For Detail of Cells 57 & 62 see Plate III-21

50' 0 50' 100'

Scale in Feet

FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

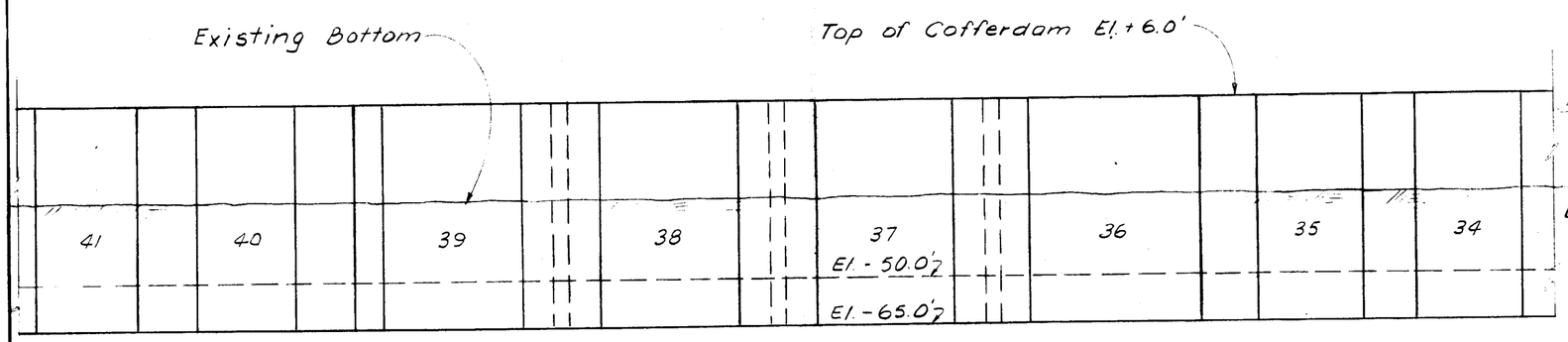
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

COFFERDAM
SW CORNER, PLAN & ELEV.

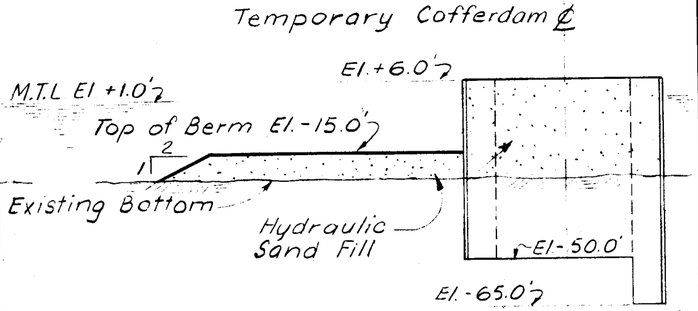
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417

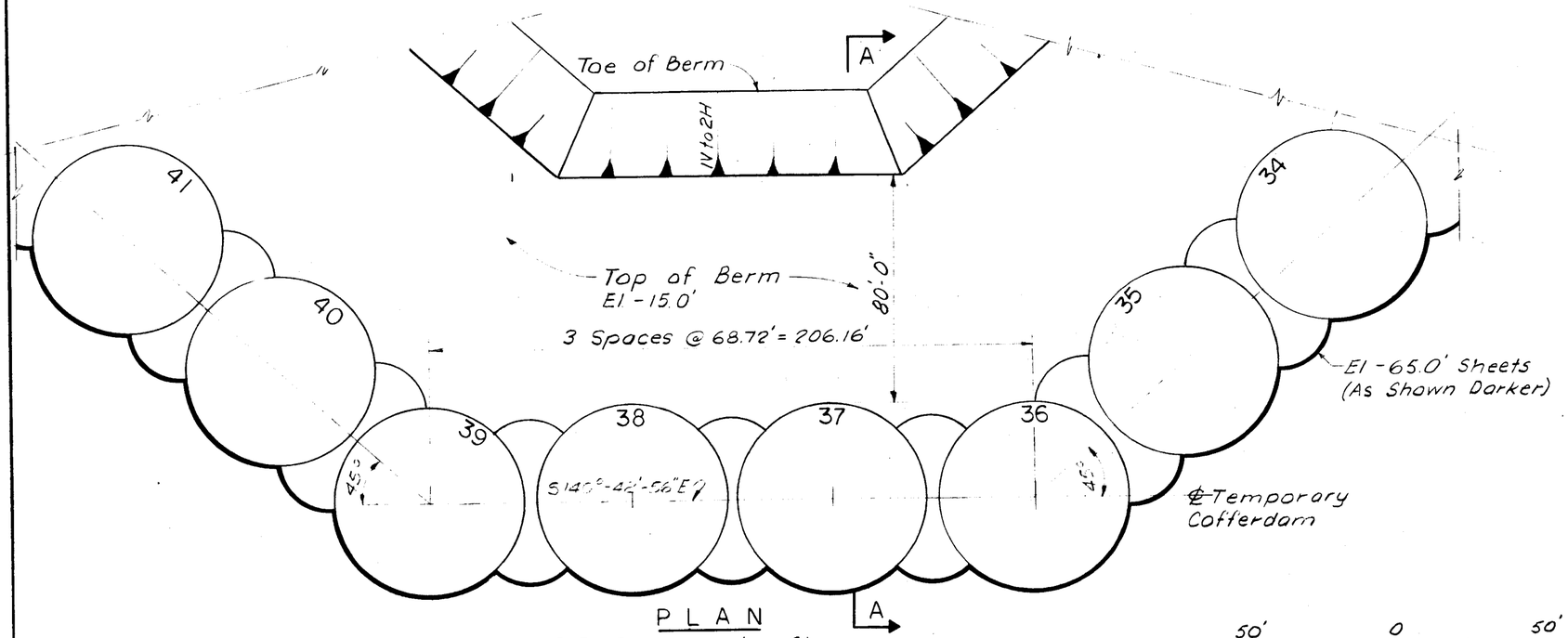
PLATE III-17



ELEVATION



SECTION A-A



PLAN

S.E. Corner As Shown
N.E. Corner Opposite Hand

50' 0 50' 100'

Scale in Feet

NOTES:

1. For Location of Cells see Plate III-15
2. For Details of Cells 36 & 39 see Plate III-21

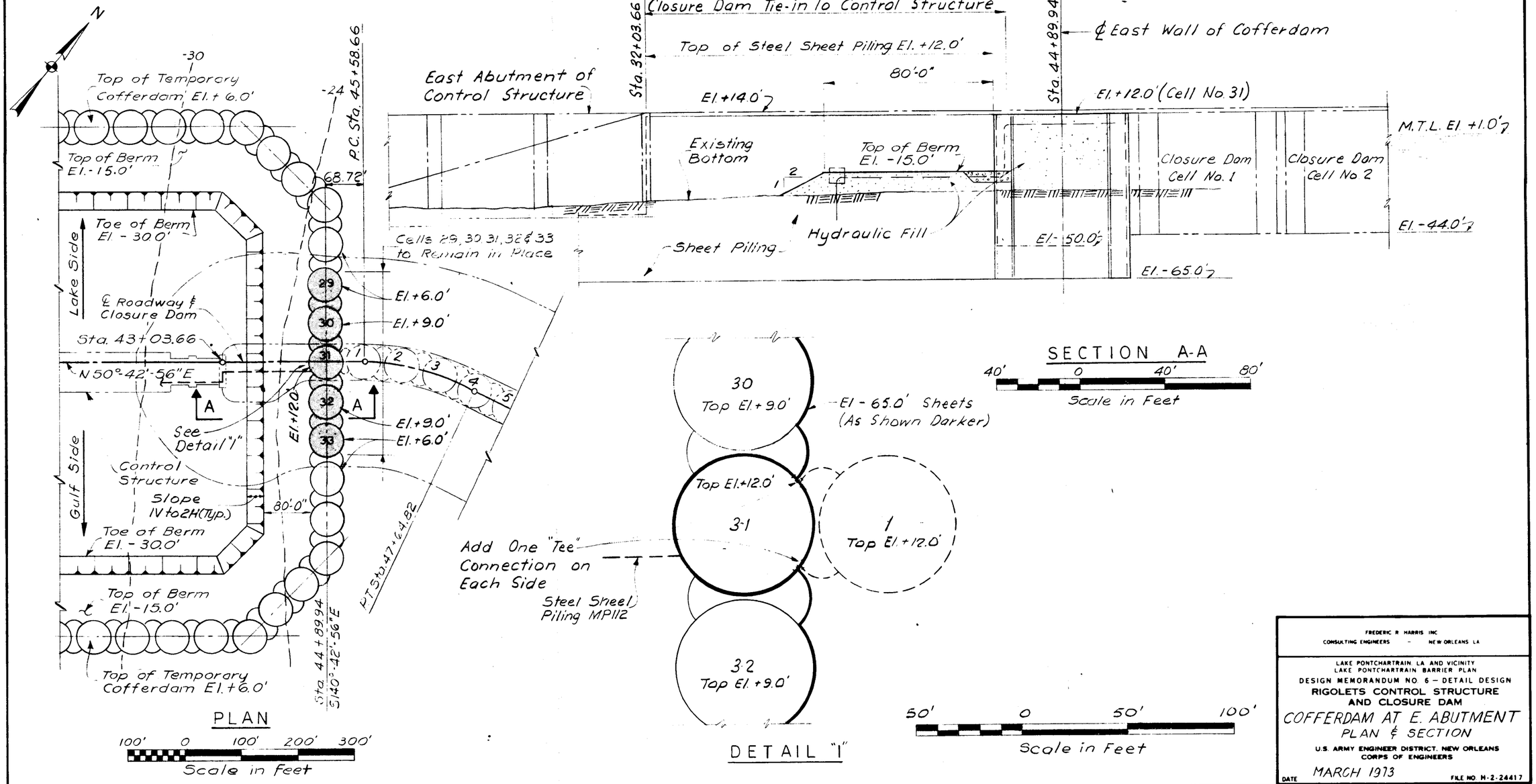
Cells 1 & 62 are shown in detail on plate III-21

FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
COFFERDAM
N.E. & S.E. CORNERS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO H-2-24417

PLATE III-18



FREDERIC R. HARRIS INC.
CONSULTING ENGINEERS — NEW ORLEANS, LA.

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

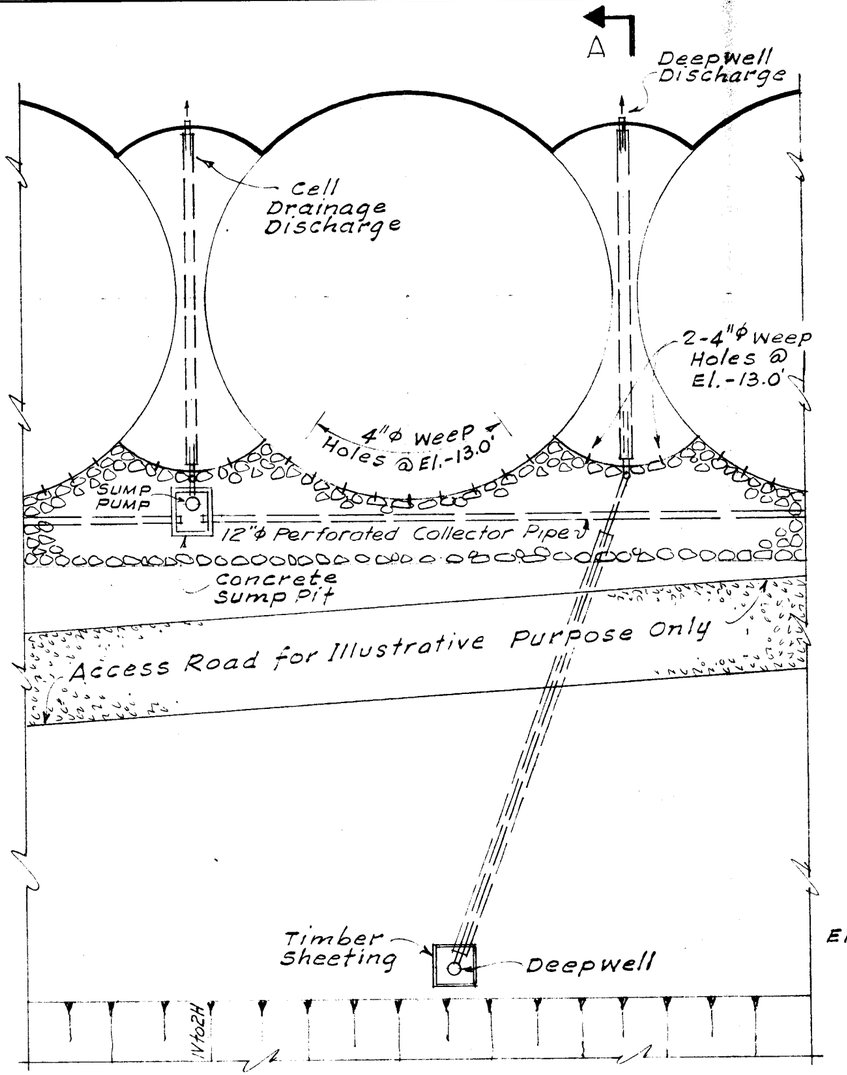
COFFERDAM AT E. ABUTMENT PLAN & SECTION

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973

FILE NO. M-2-24417

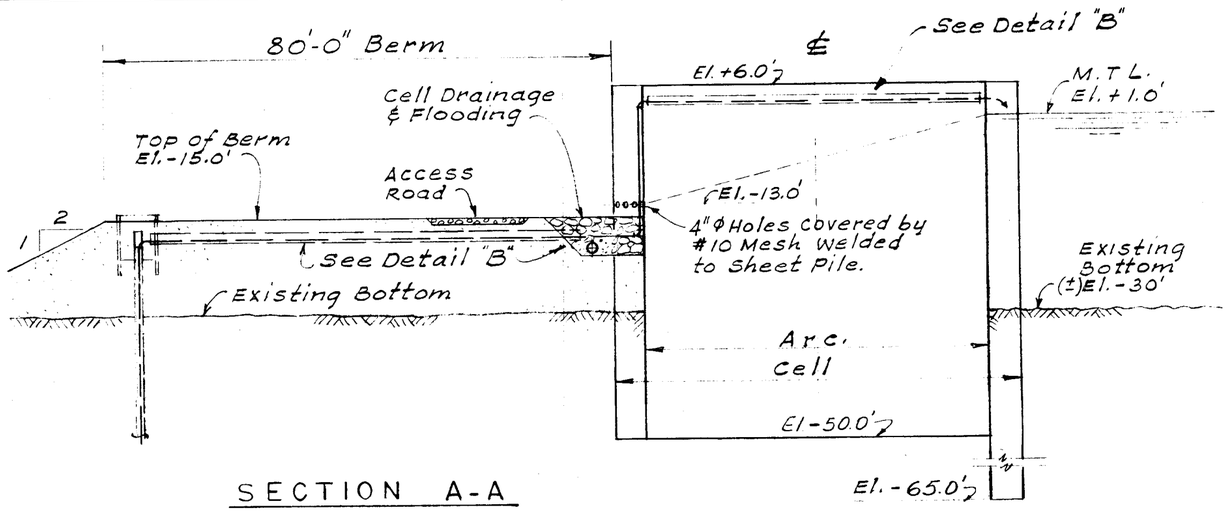
PLATE III-19



PART PLAN

20' 0' 20' 40'

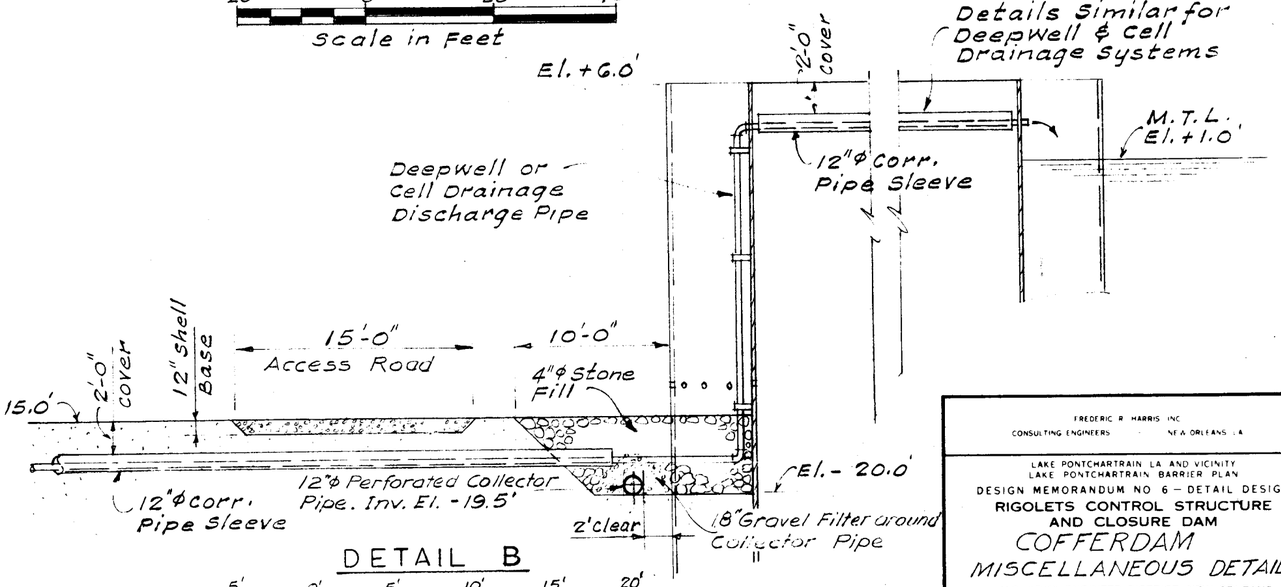
Scale in Feet



SECTION A-A

20' 0' 20' 40'

Scale in Feet



DETAIL B

5' 0' 5' 10' 15' 20'

Scale in Feet

FREDERIC R HARRIS INC
CONSULTING ENGINEERS NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

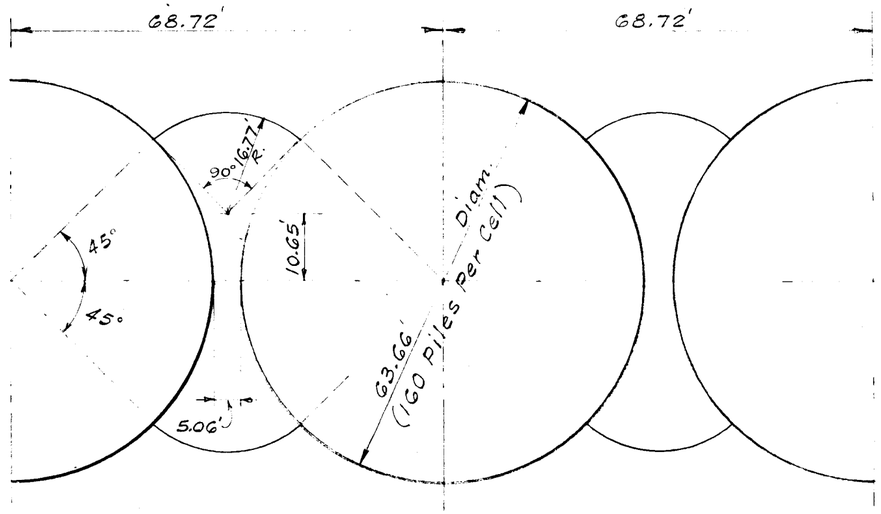
COFFERDAM MISCELLANEOUS DETAILS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973

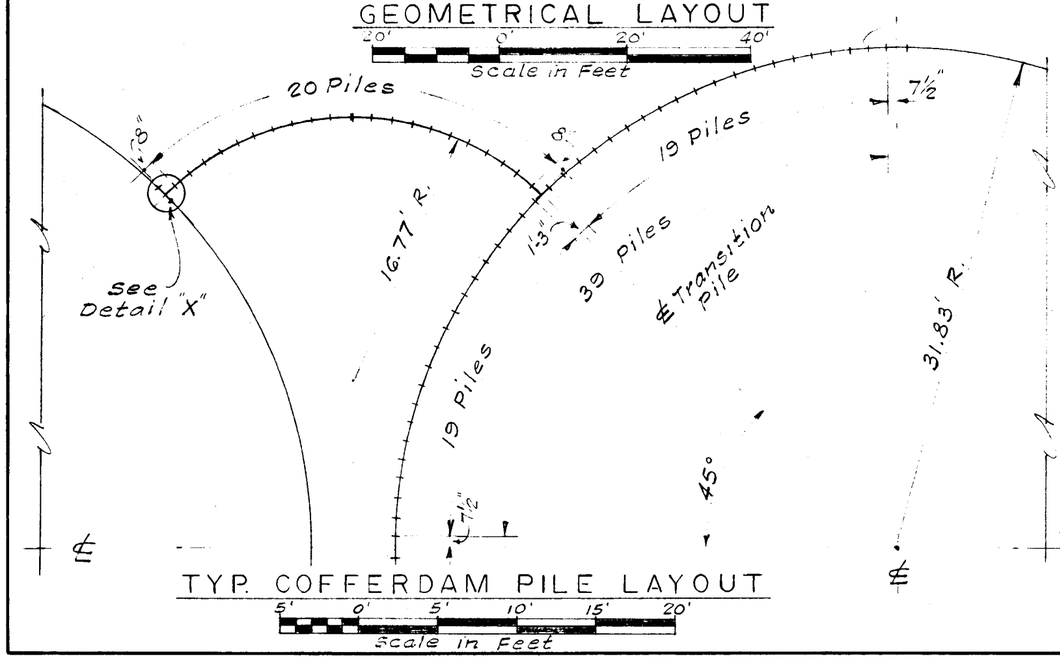
FILE NO H-2-24417

PLATE III-20



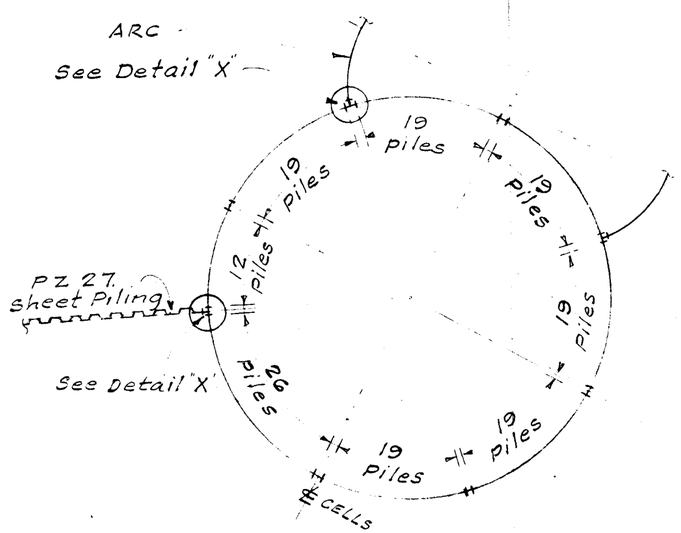
GEOMETRICAL LAYOUT

20' 0' 20' 40'
Scale in Feet



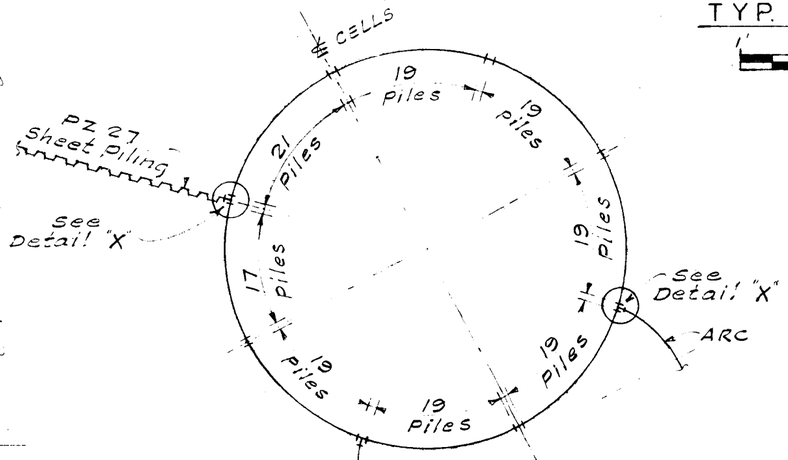
TYP. COFFERDAM PILE LAYOUT

5' 0' 5' 10' 15' 20'
Scale in Feet

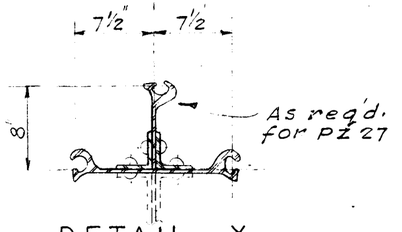


DETAIL AT CELL NO. 1

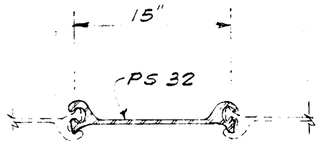
20' 0' 20' 40'
Scale in Feet



DETAIL AT CELL NO. 62



DETAIL - X
TRANSITION SHEET PILE
FOR ARCS



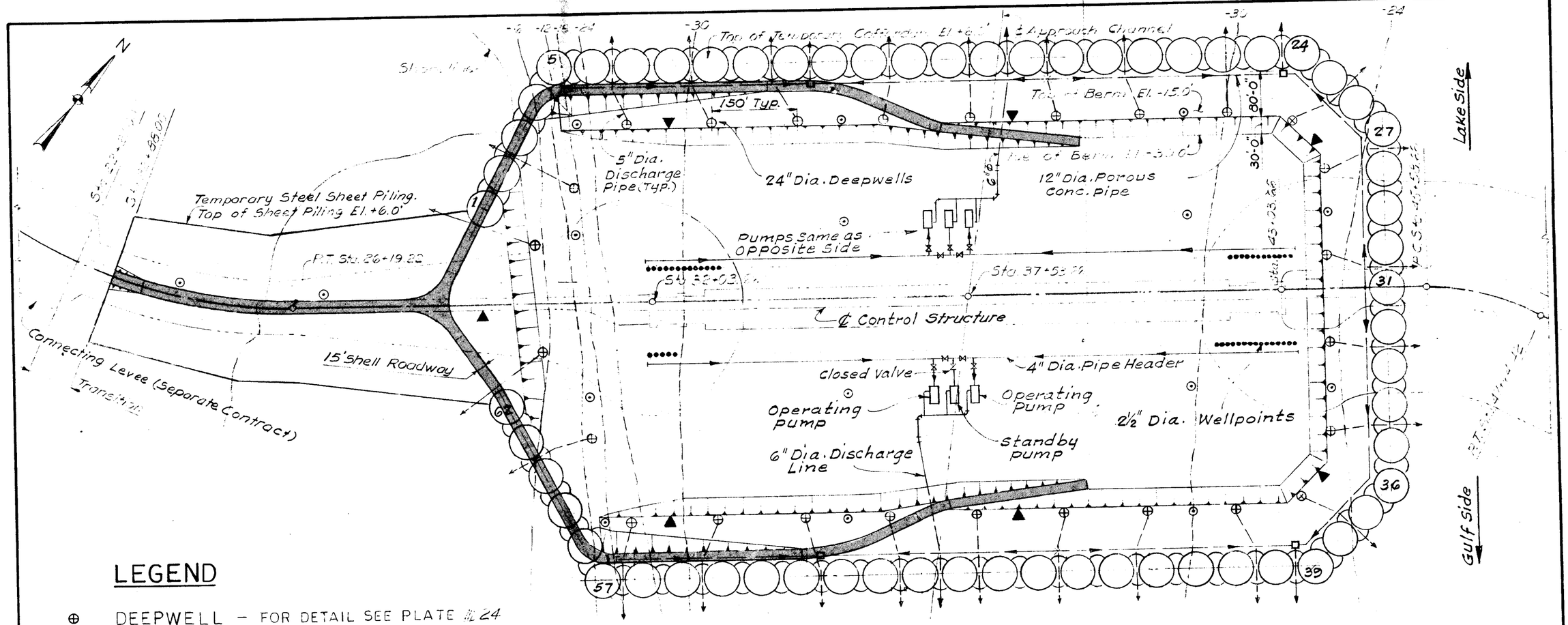
TYP. CELLULAR SECTION

1' 0' 1' 2'
Scale in Feet

FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM
COFFERDAM PILE LAYOUT
SHEET PILE DETAILS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO H-2-24417

PLATE II-21



LEGEND

- ⊕ DEEPWELL – FOR DETAIL SEE PLATE III 24
- • WELLPOINT – " " " PLATE III 24
- ⊙ PIEZOMETER – " " " PLATE III 25
- ▼ AUTOMATIC WATER LEVEL CONTROL DEVICE FOR DETAIL SEE PLATE III 25
- □ SUMP PIT – (FOR COFFERDAM DRAINAGE)

PLAN

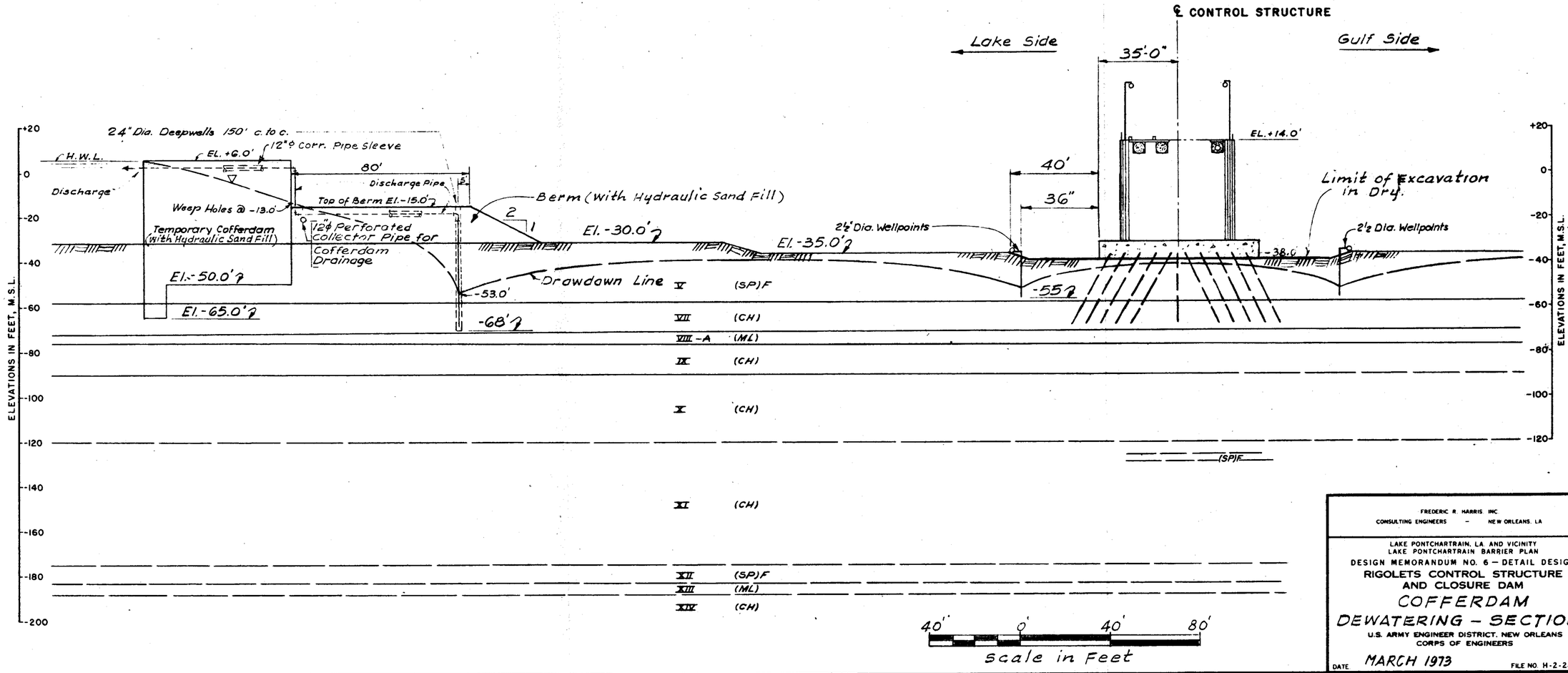
100' 0 100' 200' 300'

Scale in Feet

FREDERIC R HARRIS INC
CONSULTING ENGINEERS – NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
COFFERDAM DEWATERING – PLAN
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO H-2-24417

PLATE III-22



FREDERIC R. HARRIS INC.
CONSULTING ENGINEERS — NEW ORLEANS, LA

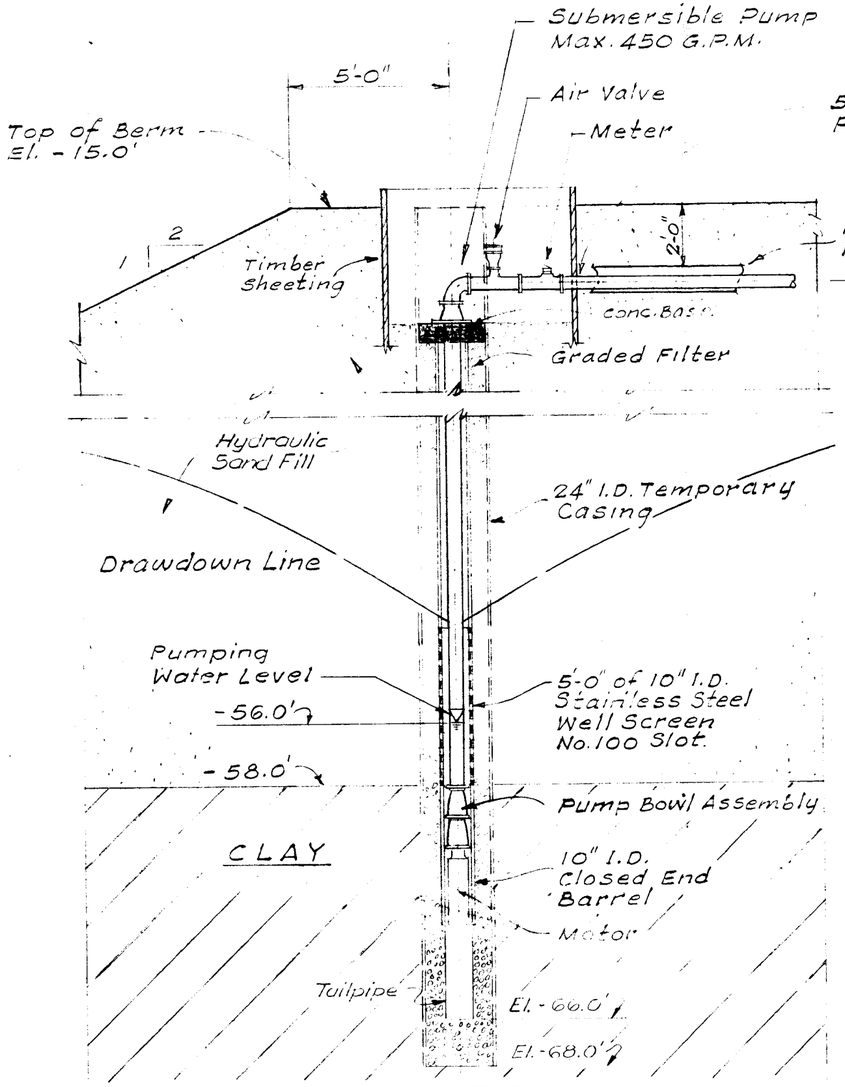
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

COFFERDAM DEWATERING — SECTION

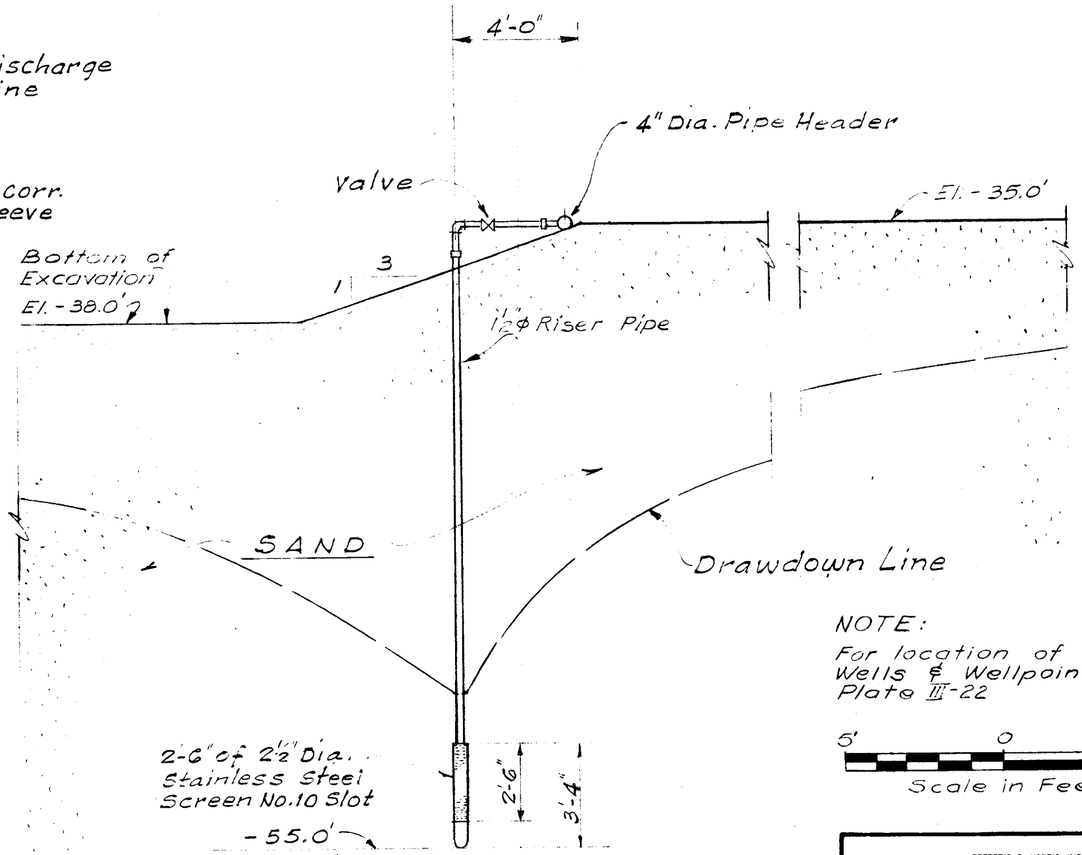
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417

PLATE III-23



DETAIL OF DEEPWELL



DETAIL OF WELLPOINT

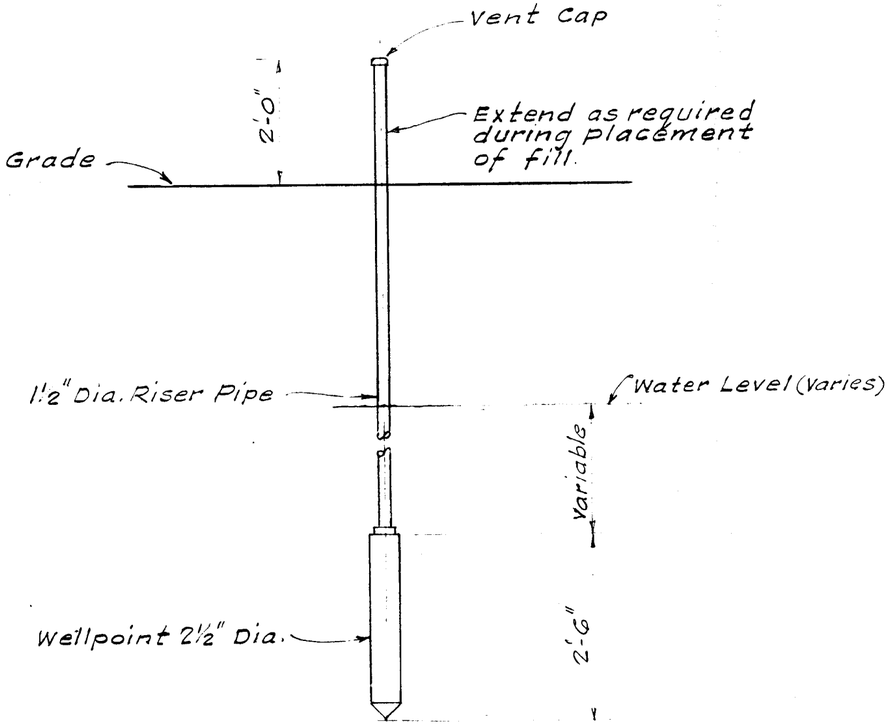
NOTE:
For location of Pump Wells & Wellpoints see Plate III-22

5' 0 5'
Scale in Feet

FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

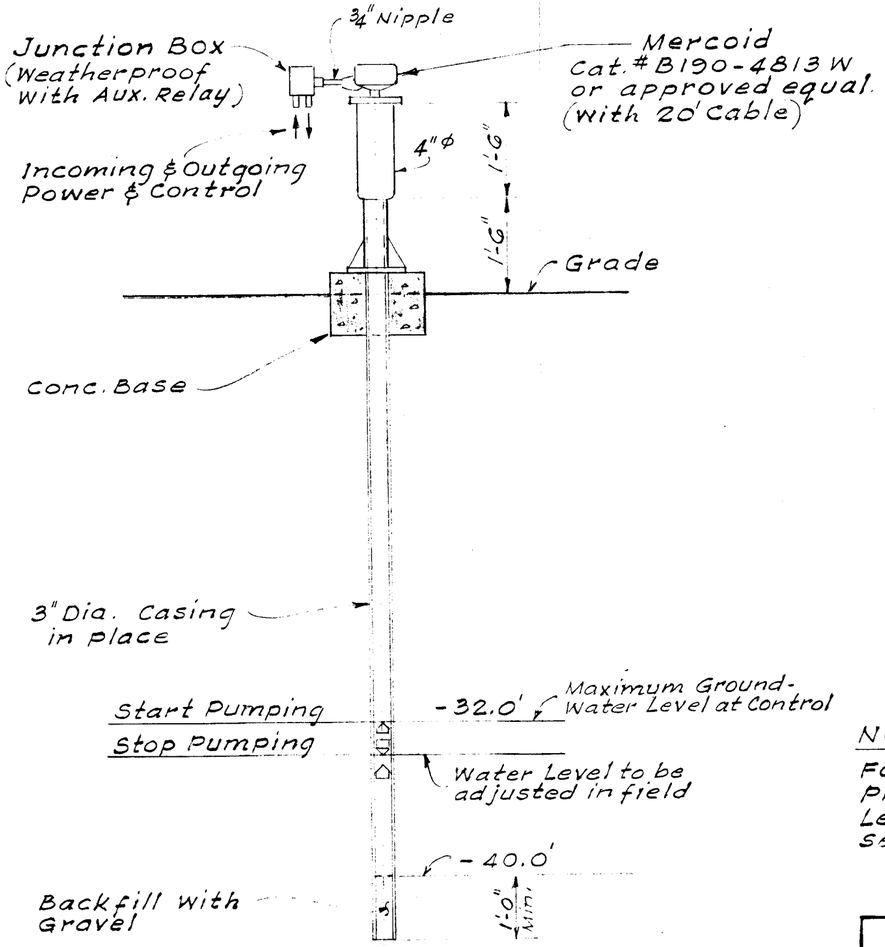
LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM
COFFERDAM
DEEPWELL & WELLPOINT
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973 FILE NO. H-2-24417

PLATE III-24



PIEZOMETER INSTALLATION

NOT TO SCALE



AUTOMATIC WATER LEVEL CONTROL DEVICE

NOT TO SCALE

NOTE:

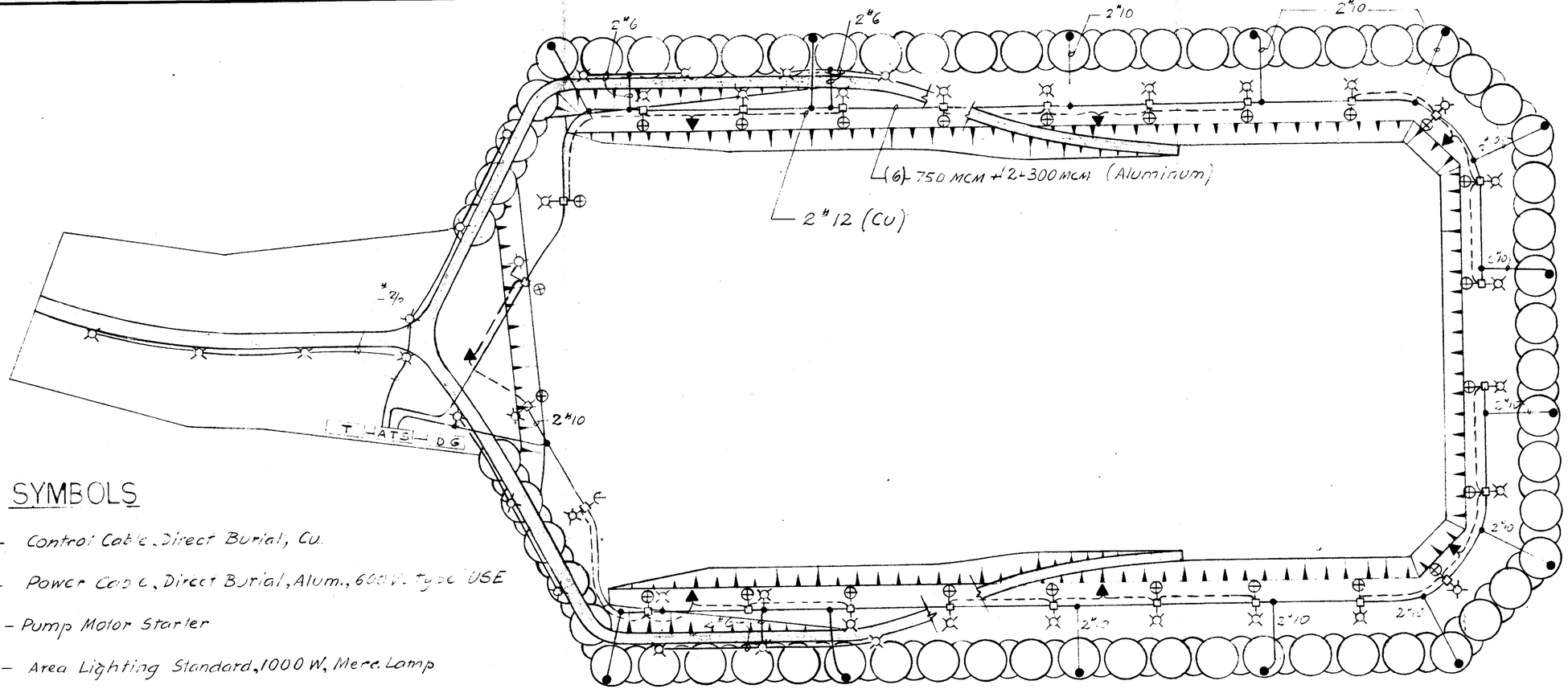
For location of piezometers & Water Level Control Devices see Plate III-22

FREDERIC R. HARRIS INC.
CONSULTING ENGINEERS — NEW ORLEANS, LA.

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
COFFERDAM – PIEZOMETER & WATER LEVEL CONTROL DEVICE
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417

PLATE III-25



SYMBOLS

--- Control Cable, Direct Burial, Cu.

—— Power Cable, Direct Burial, Alum., 600V. Type USE

□ – Pump Motor Starter

☼ – Area Lighting Standard, 1000 W. Merc. Lamp

⊗ – Pump Motor, 15 HP, 480V, 3φ

▲ – Automatic Water level control for every group of 4 pumps

T – Transformer 500 KVA; 13.2 KV/480-277 V, Δ-Y

DG – Standby Diesel Generator, 750 KVA, 480-277 V

ATS – Automatic Transfer Switch

● – Marine Lights, 300 Watts, Cable #12 [illegible] 120 V

PLAN

100' 0' 100' 200' 300'

Scale in Feet

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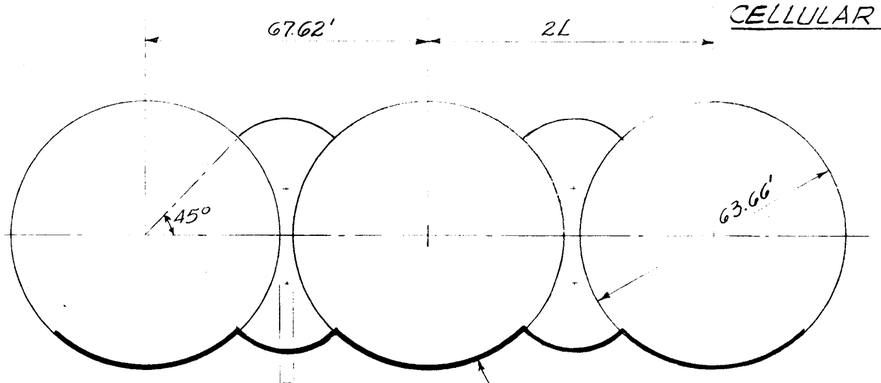
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
COFFERDAM
POWER DISTRIBUTION SYSTEM
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973

FILE NO H-2-24417

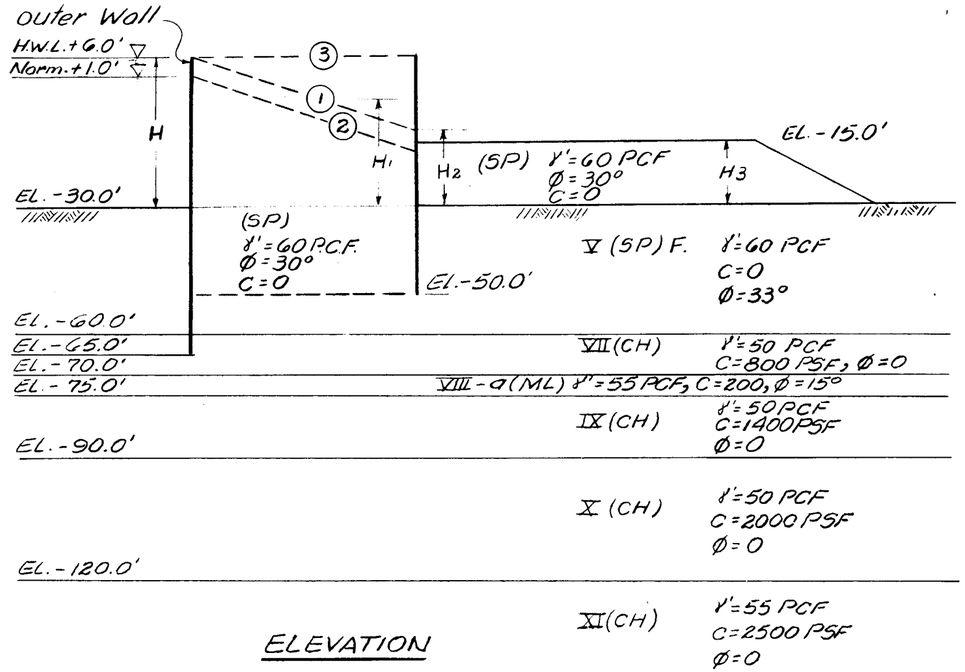
PLATE III-26

CELLULAR COFFERDAM



PLAN

Outer Row To Be Extended to EL.-65.0'
To cut off Sand, All Others to EL.-50.0'



ELEVATION

DESIGN DATA

Piling Section MP 102 (15" Driving Distance)
U.S.S. Pile Book

D = Diameter of Cell = 63.66'; B = Effective Width = 52.9'

2L = 67.62'; L = 33.81'; z = 3.96'; θ = 45°

γ = Weight of Saturated Sand Fill = 122.5 PCF

γ' = Weight of Sumerged Sand Fill = 60.0 PCF

t = Allowable Interlock Tension = 8,000 P/lin. Inch.

f = Co-efficient of friction, Steel on Steel = 0.30

Tan. δ = Co-efficient of friction Steel on Soil = 0.40

K_f = Co-efficient of Earth Pressure = $\frac{Cos^2\theta}{2-Cos^2\theta}$ = 0.60

K_A = Co-efficient of Active Earth Pressure = $Tan^2(45-\frac{\phi}{2})$ = 0.33

K_p = Co-efficient of Passive Earth Pressure = $\frac{1}{K_f} = \frac{1}{0.6}$ = 1.67

γ_w = Unit Weight of Water = 62.5 PCF

LOADING CONDITIONS

L.C #1 Highest water Elevation = +6.0, Saturation Line 3H to 1V, Berm Saturated

L.C #2 Normal water Elevation = +1.0, Saturation Line 3H to 1V Berm Saturated

L.C #3 Water to top of Cofferdam (El. +6.0), Fill in Cell Saturated to top of Cofferdam, Berm fill Saturated

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TEMPORARY CELLULAR COFFERDAM
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PILE INTERLOCK TENSION

CRITICAL AT TOP OF BERM

L.C. #1

Pressure at top of berm $P = \gamma K_f (H-H_1) + \gamma' K_f (H_1-H_3) + \gamma_w (H_2-H_3)$
$= .012 \times 0.6(36-27.2) + 0.06 \times .6(27.2-15.0)$
$+ .062(18.4-15.0) = 1.28^K/sf$

L.C. #2 $P = 1.26^K/sf$

L.C. #3 $P = 2.07^K/sf$

Max. $t = PL \sec\theta = 2.07 \times 33.81 \times 1.414$
$= 98.9^K/sf$

Max. interlock stress $= \frac{98.9}{12} = 8.24^K/in > 8$

Factor of safety $= \frac{16}{8.24} = \underline{1.94} < 2$
But Satisfactory

NOTE:
For K = 0.33 (EM 1110-2-2906)
Max. interlock stress = $6.9^K/in$
Factor of safety $= \frac{16}{6.9} = 2.32 > 2$ O.K.

APPLIED FORCES AND OVERTURING MOMENT

Pressure due to water $P_w = \frac{1}{2} \times .0625 \times 36^2$
$= 40.5^K$

Overturning moment $M_o = P_w(\frac{36}{3}) = 486^{I-K}$

BERM RESISTANCE

Berm resistance $P_B = \gamma' K_p \times H_3^2 \times \frac{1}{2} + \gamma_w \times H_3^2 \times \frac{1}{2}$
$= 0.06 \times 1.67 \times 15^2 \times \frac{1}{2} + .0625 \times 15^2 \times \frac{1}{2}$
$= 11.27 + 7.03 = 18.3^K$

$M_B = 11.27' \times \frac{15}{3} + 7.03 \times \frac{15}{3}$
$= 91.5^{I-K}$

INTERLOCK FRICTION RESISTANCE AT INNER FACE

$M_f = P \times f \times B$

$P_t = \frac{1}{2}\gamma K_A (H-H_1)^2 + \gamma K_A (H-H_1) H_1 + \frac{1}{2}\gamma' K_A H_1^2 + \frac{1}{2}\gamma_w H_2^2$

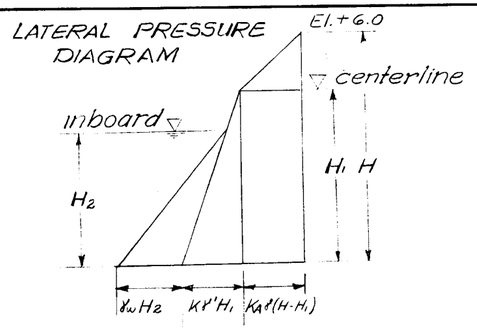
L.C. #1

$P_t = \frac{1}{2}(0.12)(0.33)(8.8)^2 + (0.12)(0.33)(8.8)(27.2) + \frac{1}{2}(0.06)(0.33)(27.2)^2 +$
$+ \frac{1}{2}(.0625)(18.4)^2 = 29.08^K$

$P = P_t - P_B = 29.08 - 18.3 = 10.78^K$

$M_f = (10.78)(0.30)(52.9) = 171^{I-K}$

LATERAL PRESSURE DIAGRAM



L.C. #2

$P_t = 26.56^K$
$P = 8.26^K$
$M_f = (8.26)(0.30)(52.9) = \underline{131}^{I-K}$

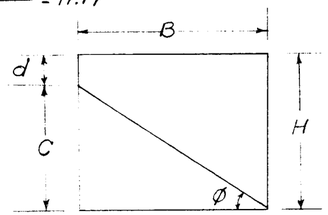
L.C. #3

$P_t = 53.4^K$, $P = 53.4 - 18.3 = 35.1^K$
$M_f = (35.1)(0.3)(52.9) = 557^{I-K}$

HORIZONTAL SHEAR RESISTANCE OF FILL

Q = Shearing force per unit length of Cofferdam

$Q = \frac{3M}{2B} = \frac{3(486-91.5)}{2(52.9)} = 11.17$



M_r = Moment due to ultimate shear resistance of cell $= \frac{ac^2\gamma'}{2} + \frac{c^3\gamma'}{3}$

Factor of safety $= \frac{M_B + M_f + M_r}{M_o}$

L.C. #1 F.S. $= \frac{91.5 + 171 + 722}{456} = 2.02$

L.C. #2 F.S. $= \frac{91.5 + 131 + 722}{486} = \underline{1.94} < 2.0$, But O.K.

L.C. #3 F.S. $= \frac{91.5 + 557 + 722}{486} = 2.82$

VERTICAL SHEAR RESISTANCE OF FILL

L.C. #1

P_s = shearing resistance at ℄ of cell
$= \frac{1}{2}\gamma K_f (H-H_1)^2 + K_f \gamma' (H-H_1) H_1 + \frac{1}{2}\gamma' K_f H_1^2$
$= \frac{1}{2}(0.12)(0.60)(8.8)^2 + 0.6(0.12)(8.8)(27.2)$
$+ \frac{1}{2}(.06)(.6)(27.2)^2 = 33.34^K$;

$S_n = P_s \tan\phi = (33.34)(0.57) = 19.24^K$

$S_t = P_t f = (29.08)(0.3) = 8.72^K$

$S_n + S_t = \underline{27.96}$

L.C. #2

$P_s = 37.72^K$; $S_n = 21.76^K$; $S_t = 7.97^K$

$S_n + S_t = 29.73^K$

L.C. #3

$P_s = \frac{1}{2}(.06)(0.6)(36)^2 = 23^K$

$S_n = 13^K$

$P_t = 53.4^K$

$S_t = P_t f = (53.4)(0.3) = 16^K$

$S_n + S_t = 29.0^K$

Factor of safety $= \frac{S_n + S_t}{Q}$

$= \frac{27.96}{11.17} = \underline{2.50} > 1.50$ O.K.

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LAKE PONTCHARTRAIN BARRIER PLAN
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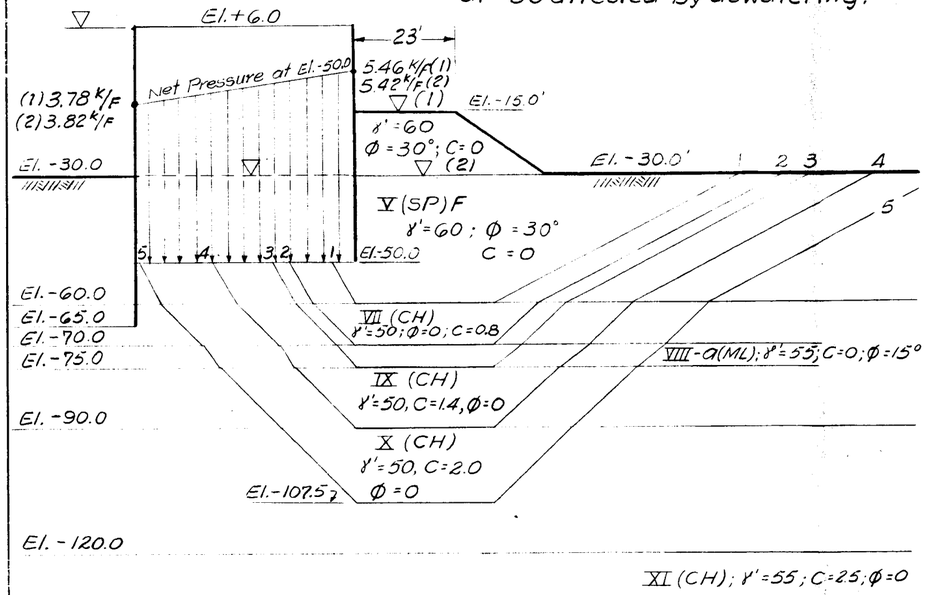
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
TEMPORARY CELLULAR COFFERDAM
US ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973 FILE NO H-2-24417

BEARING CAPACITY ANALYSIS

- For the critical case assuming the saturation line in the cell at -30 affected by dewatering.



FAILURE SURFACE		FACTOR OF SAFETY	
No.	ELEVATION	▽ (1)	▽ (2)
1-1	-60.0	4.95	5.59
2-2	-70.0	2.57	2.74
3-3	-75.0	2.37	2.63
4-4	-90.0	2.15 > 2.0 O.K.	2.20
5-5	-107.5	2.44	2.50

PULLOUT RESISTANCE OUTER FACE

Q_{tu} = Ultimate Pullout capacity per LF
$= (\frac{1}{2}\gamma' K_A h^2)(\tan\delta)$ (Perimeter)
For penetration to El. -50.0'

$Q_{tu} = (\frac{1}{2})(.06)(.33)(20)^2(0.4)(2) = 3.2^K$

Q_p = Avg. Pile Reaction due to Overturning Moment $= \frac{M}{38(1+\frac{B}{4L})} = \frac{486-91.5}{3(52.9)\left(\frac{1+52.9}{4(33.81)}\right)} = 1.78^K$

Factor of Safety $= \frac{Q_{tu}}{Q_p} = \frac{3.2}{1.78} = \underline{1.8 > 1.5}$ O.K.

The outer row of sheet piles will extend to El. -65.0, therefore the actual factor of safety will be > 1.8

$Q_{tu} = (\frac{1}{2})(.06)(.33)(30)^2(0.4)(2) + (.06)(30)(0.4)(2) + \underbrace{(0.60)(5)(2)}_{\text{clay}}$ for CH - VIII, $C_A = 0.6$ KSF
$= 7.2 + 1.44 + 6.0 = 14.64$

Actual factor of safety $= \frac{14.64}{1.78} = \underline{8.25 > 2.0}$
O.K.

SELECTION OF DESIGN PARAMETERS

PILE INTERLOCK TENSION

Max. $t = Pl \sec\theta$; $P = \gamma HK$

Selection of Co-eff. of lateral earth pressure (K)

1. Draft EM 1110-2-2906 recommends using $K_A = \tan^2(45-\Phi/2) = .33$
2. NAVFAC DM-7 and USS Steel Sheet Piling Design Manual recommends using $K_f = \frac{\cos^2\Phi}{2-\cos^2\Phi} = 0.6$
3. Terzoghi (ASCE transactions paper No. 2253, Vol. 110, 1945) recommends using value of K between 0.4 and 0.5
4. NOD recommends using value of $K_f = \frac{\cos^2\Phi}{2-\cos^2\Phi} = \underline{0.6}$ $(=2, > 1 \& 3)$

BERM RESISTANCE

$P_p = \frac{1}{2}\gamma_p H^2$

SELECTION OF CO-EFF. OF LATERAL EARTH PRESSURE (K) - BERM RESISTANCE

1. NAVFAC DM-7 recommend using $K_p = \tan^2(45+\frac{\Phi}{2}) = 3.0$
2. USS Steel Sheet Piling Design Manual recommends using Coulomb's Theory and the Culmann's Curve for calculating the passive pressure.
3. NOD recommends using inverse of K_f, i.e., $\frac{2-\cos^2\Phi}{\cos^2\Phi} = \underline{1.67}$ $(<1 \& 2)$

VERTICAL SHEAR RESISTANCE OF FILL

$S_n = P_s \tan\phi$; $P_s = \frac{1}{2}\gamma K H^2$; $S_t = P_t(f)$; $P_t = \frac{1}{2}\gamma K H^2$

SELECTION OF CO-EFF. OF LATERAL EARTH PRESURE (K) FOR P_s

1. NAVFAC DM-7 and USS Steel Sheet Piling Design Manual recommends using $K_f \frac{\cos^2\Phi}{2-\cos^2\Phi} = 0.6$
2. Terzoghi (ASCE transaction paper No. 2253, Vol. 110, 1945) recommends using value of K between 0.4 and 0.5
3. NOD recommends using value of $K_f = \frac{\cos^2\Phi}{2-\cos^2\Phi} = \underline{0.6}$ $(=1, >2)$

SELECTION OF CO-EFF. OF LATERAL EARTH PRESURE (K) FOR P_t

1. Navfac DM-7 recommends using $K_f = \frac{\cos^2\Phi}{2-\cos^2\Phi} = 0.6$
2. USS Steel Sheet Piling Design Manual recommends using $K_A = \tan^2(45-\Phi/2) = 0.33$
3. Terzaghi recommends using value of $K_A < 0.4$
4. NOD recommends using $K_A = \tan^2(45-\Phi/2) = \underline{0.33}$ $(<1, =2, 3)$

PULLOUT RESISTANCE OUTER FACE SHEETS

$Q_{tu} = (\frac{1}{2}\gamma' K h^2)(\tan\delta)$ (PERIMETER)

SELECTION OF CO-EFF. OF LATERAL EARTH PRESSURE AND SOIL ON STEEL

1. USS Steel Sheet Piling Design Manual recommends using $K_A = \tan^2(45-\Phi/2)$ and $\tan\delta = 0.25$
2. NAVFAC DM-7 recommends using $K = 0.5$ and $\tan\delta = 0.25$
3. Draft EM 1110-2-2906 recommends using $K = 0.5$ and $\tan.\delta = 0.5$
4. NOD recommends using $K_A = \tan^2(45-\Phi/2)$ & $\tan.\delta = 0.4$

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LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
TEMPORARY CELLULAR COFFERDAM
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973 FILE NO H-2-244

SEEPAGE AND RUN-OFF QUANTITIES

ESTIMATION OF SEEPAGE QUANTITY THROUGH COFFERDAM

SOURCES

(1) Through the interlocks in sheetpile.
(2) Through the weep-holes provided in cofferdam cells

(1) SEEPAGE QUANTITY THROUGH THE INTERLOCK 'Q_1'

Q_1 = Quantity of water passing through the interlocks = 0.1 GPM/Ft. of wall length for each 10 ft. differential in head across sheetpiling (Ref. 2)

$= (0.1 \times \frac{36}{10} \times 3585 + 0.1 \times \frac{12}{10} \times 2130)$ G.P.M.

$= 1295.0 + 255.0 = \underline{1550}$ G.P.M.

(2) SEEPAGE QUANTITY THROUGH THE 4"DIA. WEEP-HOLES PROVIDED AT El.-13.0 IN CELLULAR COFFERDAM

Every cell has 9 weep-holes on inboard

Area of 4"dia. weep-hole $= \frac{\pi \times 4^2}{4 \times 12 \times 12} = \frac{\pi}{36}$ SF.

Total No. of weep-holes $= 9 \times$ No. of cells
$= 9 \times 62 = \underline{558}$

Net water head = 13 + 6 = 19 Ft.

There is no simple method to compute the seepage quantity through the weep-hole. So it has been attempted to find the ratio between the area of interlock and weep-hole.

Assume the area of interlock = 0.25 SQ." Every cell has 59 sheetpiles on either side. For 19 ft. of water, the total area of interlock opening for each cell $= 59 \times 19 \times \frac{0.25}{12}$
$= 23.4$ SQ'.

For 19 ft. of water, the area of weep-holes in one cell $= 9 \times \frac{\pi}{36} = 0.79$ SQ'

Weep-hole area $= \frac{0.79}{23.4} \times$ area of interlock opening
$= 3.5\% \times$ area of interlock opening.
But use 10% to be on safe side.

Q_2 = Quantity of water passing through weep-holes.
$= 10\% \times 0.10 \times 4115 \times \frac{19}{10} = \underline{80}$ G.P.M.

Total quantity of water passing through the cofferdam and sheetpiling
$= Q_1 + Q_2 = 1550 + 80 = \underline{1630}$ G.P.M.

ESTIMATION OF RUN-OFF QUANTITY

Quantity of run-off Q (Cub. Ft./ SEC.) $= C \times I \times A$

Where C = Co-efficient of run-off = 0.50 (Ref. 1)
I = Rainfall intensity in inches per hour for the time of concentration of run-off = 2.50" to be expected once in 2 years

A = Drainage area in acres = 34.86
$Q = 0.5 \times 2.5 \times 34.86 = 43.6$ CF/SEC. $= \underline{19,600}$ G.P.M.

REFERENCES

(1) Elvyn E. Seelye "Data Book for Civil Engineers Design - Vol. One -" Second Edition." New York - John Wiley and Sons, Inc., Sept. 1953

(2) Department of Army, Navy, Airforce "De-watering and Groundwater Control for Deep Excavations" TM 5-818-5, NAVFAC P-418, AFM 88-5, Chap. 6

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RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
SEEPAGE AND RUN-OFF
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973 FILE NO. H-2-24417

DESIGN OF DEWATERING SYSTEM

DATA

(1) The results of field pumping test for test well 2W (Appendix A) are assumed to design the dewatering system required for constructing the control structure.

(2) Co-efficient of horizontal permeability 'K_H' = 109×10^{-4} CM/SEC (soil strata $\overline{V}$-SPF)

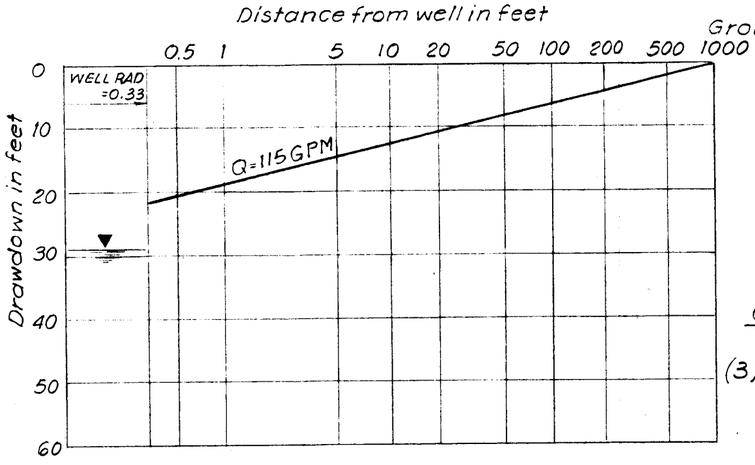
(3) Specific yield = 4 G.P.M. per ft. of drawdown (soil strata $\overline{V}$-SPF)

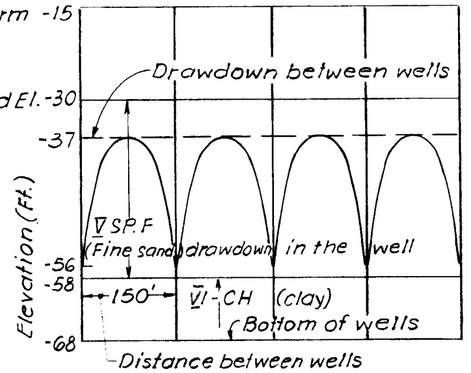
(4) Range of grain size at 10% finer by weight 'D_{10}' = 0.08-0.168 MM (soil strata $\overline{V}$-SPF)

CONDITIONS

(1) The deep wells are to be located on the top of the berm at El. -15, at a distance of 5' from the edge of the berm.

(2.) The water table is to be lowered down to El. -37.0 between the wells and to max. El. -56.0 in the well.





CONES OF DEPRESSION BETWEEN WELLS

DEEP WELLS. DESIGN

(1) Spacing between wells
using the drawdown curve for Q = 115 G.P.M
- well spacing = 150'

(2)

Drawdown at well distance from the center of wells (Ft.)	Drawdown in the well (Ft.)
0	29.0
150	5.0
150	5.0
300	3.5
300	3.5
450	2.5
450	2.5
600	1.5
600	1.5
750	1.0
750	1.0
	56.0 (approx.) O.K.

(3) Drawdown between Wells

Dist. from the mid. point between the adjacent wells (Ft.)	Drawdown (Ft.)
75	7.0
75	7.0
225	4.0
225	4.0
375	3.0
375	3.0
525	2.0
525	2.0
675	1.5
675	1.5
825	1.0
825	1.0

Max. Drawdown between wells = 37.0 (approx.) O.K.
So use 10" dia. deep wells with pumping rate of 115 G.P.M. at 150' c. to c. with a maximum capacity of 450 G.P.M.

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DEWATERING SYSTEM

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417

WELL SCREEN AND SLOT SIZE

(1.) SCREEN LENGTH (Without filter)

*$L_s = \frac{Q}{7.48 \times A_o \times V_c}$

Where L_s = Optimum length of screen, in ft.
Q = Discharge in G.P.M. = 450 (use max. capacity for 10" dia. well)
A_o = Effective open area per ft. of screen, in sq. ft.
= 50% of the area of screen, per ft. of screen, in sq. ft.
$= 0.50 \times \pi \times \frac{10"}{12} = 1.3$ sq. ft.

V_c = Entrance velocity in ft. per min.
$= 0.20 \times 60 = 12$ ft. per min. (NAVFAC)

$\therefore L_s \frac{450}{7.48 \times 1.3 \times 12} = 3.85'$; Provide 5.0 Length

(2) SLOT SIZE without filter
Width of slot = D_{50} of the aquifer = .006"-.014"
= .010" (average)

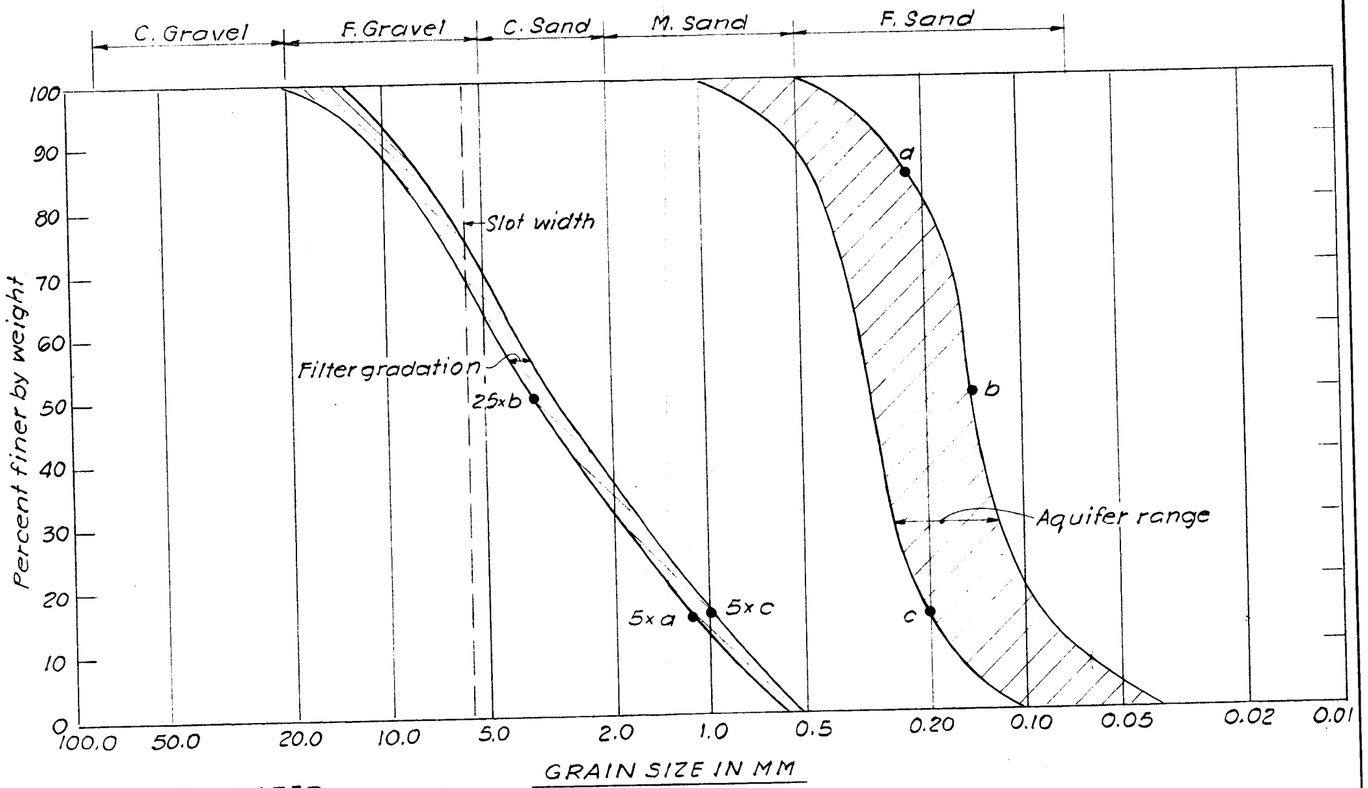
So use # 10 slot.

(3.) SLOT SIZE with filter
Screen - Filter Criteria (NAVFAC)

Slots : $\frac{\text{Min. Filter } D_{85}}{\text{Slot Width}} \geq 1.2$, $D_{85} = 7.0$ mm

width of slot = $\frac{7.0}{1.2} = 5.8$ mm $\cong 0.23"$
So use #100 slot screen.

* William C. Walton "Selected Analytical Methods for Well and Aquifer Evaluation" Bulletin 49, State of Illinois, Dept. of Registration & Education



WELL FILTER

Assume the permeability of filter material (gravel pack) = 300×10^{-2} CM/SEC.

FILTER GRADATION

(1) $\frac{\text{Max. filter } D_{15}}{\text{Min. aquifer } D_{85} = a} \leq 5.0$, Max. filter $D_{15} = 5 \times a$

(2) $\frac{\text{Max. filter } D_{50}}{\text{Min. aquifer } D_{85} = b} \leq 25$, Max. filter $D_{50} = 25 \times b$

(3) $\frac{\text{Min. filter } D_{15}}{\text{Max. aquifer } D_{15} = c} \leq 5$, Min. filter $D_{15} = 5 \times C$

THICKNESS OF FILTER
For large-diameter wells, 6"-8" thick filter is required (NAVFAC).
So provide 7" thick filter in the well.
Effective well radius $\cong$ 5" (Radius of well) + 7" (Filter) = 12"

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CONSULTING ENGINEERS — NEW ORLEANS LA

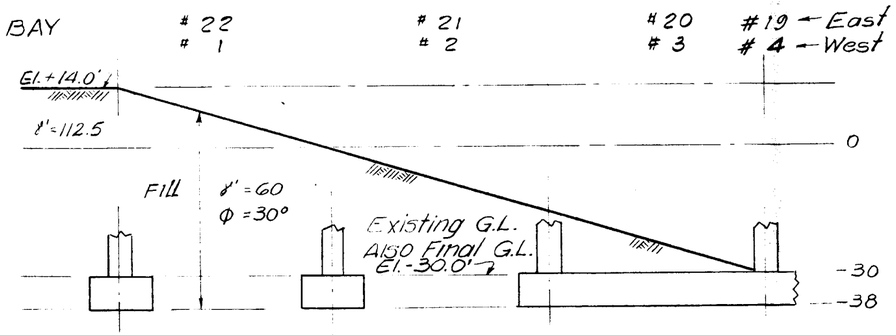
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

DEWATERING SYSTEM

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO H-2-24417

CONTROL STRUCTURE - PILE DESIGN



V SP(F), γ' = 60 PCF, Ca = 0, Φ = 33° — -60

VII (CH) — γ' = 50, C = 800 PSF, Ca = 400, eo = 1.15, Cc = 0.35, Cr = .05, Pc = 5.6 KSF — -70

VIII - a (ML), γ' = 55, Φ = 15°, C = 200, Ca = 200; — -75

IX (CH) - γ' = 50, C = 1400, Ca = 1000, eo = 1.45, Cc = 0.87, Cr = .07, Pc = 6.2 KSF — -90

X (CH) — γ' = 50, C = 2000, Ca = 1100, eo = 1.11, Cc = 0.42, Cr = .05, Pc = 8.2 KSF — -120

XI (CH) — γ' = 55, C = 2500, Ca = 1200, eo = 1.26, Cc = 0.46, Cr = 0.06, Pc = 10.0 KSF

XII (SP) F — γ' = 60, Φ = 33° — -173

XIII (ML), — γ' = 55, Φ = 15°, C = 200 — -180

XIV (CH), — γ' = 55, C = 3000, eo = 0.99, Cc = 0.21, Pc = 10.0 KSF — -186

NOTATIONS AND DESIGN DATA - FOR H PILE

Q_{ult} = Ultimate Capacity of Pile (K)
Q_p = Design Capacity of pile (K)
A_p = Pile Perimeter (LF)
= 4.00' for H-Steel 12 HP
= 4.75' for H-Steel 14 H P
ΔZ = Thickness of soil Stratum (FT)
Z = Depth of Penetration (FT)
$P_{O_{AVG}}$ = Average Overburden Pressure (KSF)
K_R = Co-efficient of earth Pressure
= 1.0 For compression Pile
= 0.7 For tension Pile
$Tan A$ = Applied Co-efficient of friction in soil
= 0.5 for stratum V
= 0.3 for stratum VIII - a
$Tan\delta = \frac{Tan\alpha + Tan\Phi}{2}$
$Tan\alpha$ = Friction factor Between Steel & Soil
= 0.4 for stratum V (assigned)
= 0.2 for stratum VIII - a (assigned)
$Tan\Phi$ = Friction factor between soil & soil
Φ = Angle of internal friction of soil
$C_A = \frac{C + Ca}{2}$
= 0.6 KSF for stratum VII
= 0.2 KSF for stratum VIII - a
= 1.2 KSF for stratum IX
= 1.5 KSF for stratum X
= 1.8 KSF for stratum XI
C = Cohesion
Ca = Adhesion between steel & soil

FORMULAE

$Q_{ult} = FS \times Q_p = A_p \leq SZ\ (K)$
Let $Q = \leq SZ\ (K/LF)$
$S = [K_R (P_O)_{AVG} Tan_A + C_A]\ (KSF)$

SELECTION OF TYPE AND SIZE OF PILES

Assume Range of Pile Design Load
Q_p = 40 - 120 TON / PILE
Structural Capacity of Pile
$Q_{max} = A_s (0.35) F_y = 12.6 A_s (K)$
(From AISI Code F_y = 36 KSI)
Allowable Piles design load = $Q_p = Q_{MAX} - Q_D (K)$
Drag force on piles = $Q_D = Q'_D \times A_p$
$Q'_D = \leq SZ\ (K/LF)$ At drag force limit

Referring to Chart 1 & 2 the Drag Force factors are determined as follows:

TABLE I

BAY No.	#1 & #22	#2 & 21	#3 & 20	#4 & 19
Q'_D (K/LF)	64	48	36	0

It is recommended to:
1. Use non-displacement, Steel H-Piles driven into CLAY.
2. Use full cross-section area As, Assuming that corrosion effect is negligible.
3. Assume the drag force due to high fill occurs at abutments only.
4. Assume the limit depth of drag force up to El. -75.0'

FREDERIC R. HARRIS INC.
CONSULTING ENGINEERS — NEW ORLEANS, LA.

LAKE PONTCHARTRAIN, LA. AND VICINITY
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DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CONTROL STRUCTURE
PILE DESIGN CAPACITY
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: MARCH 1973
FILE NO. H-2-2441

SELECTION OF TYPE AND SIZE OF PILES (CONTD.)

The max. pile capacity (Q_{max}) and allowable design pile load (Q_p) for various sizes of steel H-pile to be selected are compared as follows :

TABLE II

H-PILE	Ap (SF)	As (SI)	Q_{MAX} (K)	BAY 1 & 22			BAY 2 & 21			BAY 3 & 20			BAY 4 TO 19		
				Q'_D (K/LF)	Q_D (K)	Q_p (K)	Q'_D (K/LF)	Q_D (K)	Q_p (K)	Q'_D (K/LF)	Q_D (K)	Q_p (K)	Q'_D (K/LF)	Q_D (K)	Q_p (K)
12 HP53	4	15.58	196	64	256	-	48	192	4	36	144	52	0	0	196
12 HP74	4	21.76	274	64	256	18	48	192	82	36	144	130	0	0	274
14 HP73	4.75	21.46	272	64	304	-	48	228	84	36	171	101	0	0	272
14 HP89	4.75	26.19	332	64	304	28	48	228	104	36	171	161	0	0	332
14 HP102	4.75	30.01	378	64	304	74	48	228	150	36	171	207	0	0	378
14 HP117	4.75	34.44	435	64	304	131	48	228	207	36	171	264	0	0	435

PILE LENGTH AND DESIGN CAPACITY

$Q_{ult.} = (Q' - 2Q'_D)\, Ap\,(K)$

$Q_p = \frac{Q_{ult.}}{F.S} = \frac{(Q' - 2Q'_D)}{F.S}\, Ap\,(K)$

FOR COMPRESSION PILE

F.S = 1.75

$Q_p = \frac{(Q' - 2Q'_D)}{1.75}\, Ap\,(K)$

Reqd. $Q' = \frac{1.75\,Q_p}{Ap} + 2Q'_D\,(K/LF)$

FOR TENSION PILE

F.S = 2.0 , $Q'_D = 0$

$Q_p = \frac{Q' Ap}{2}\,(K)$

Reqd. $Q' = \frac{2Q_p}{Ap}\,(K/LF)$

1. Using 12 HP Steel H-Pile

Ap = 4.0 FT.

For tension, Reqd: $Q' = \frac{2}{4} Q_p = 0.5\,Q_p\,(K/LF)$

For compression,

Reqd. $Q' = \frac{1.75 Q_p}{4} + 2Q'_D = 0.438\,Q_p + 2Q'_D\,(K/LF)$

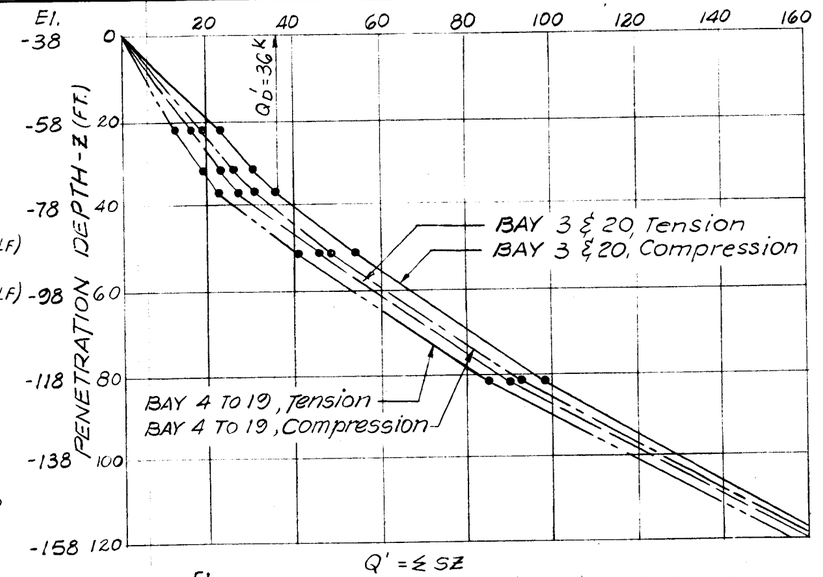
2. Using 14 HP Steel H-Pile

Ap = 4.75 FT.

For tension; Reqd. $Q = \frac{2Q_p}{4.75} = 0.42\,Q_p$

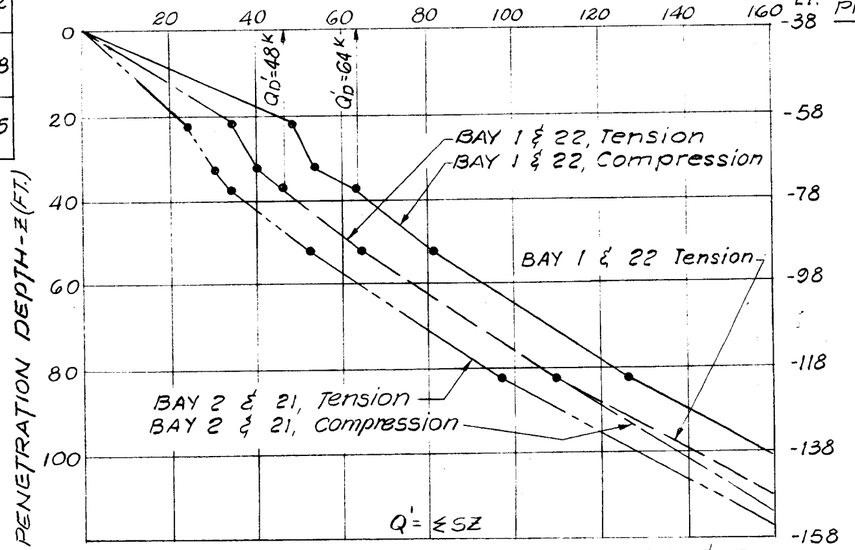
For compression,

Reqd. $Q' = \frac{1.75}{4.75} Q_p + 2Q'_D = 0.368\,Q_p + 2Q'_D$



PILE DESIGN CHART (Q' VS Z) FOR BAY 3, 20 AND 4 TO 19

Chart 2



PILE DESIGN CHART (Q' vs SZ) FOR BAYS 1, 2, 21 & 22

Chart 1

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LAKE PONTCHARTRAIN BARRIER PLAN
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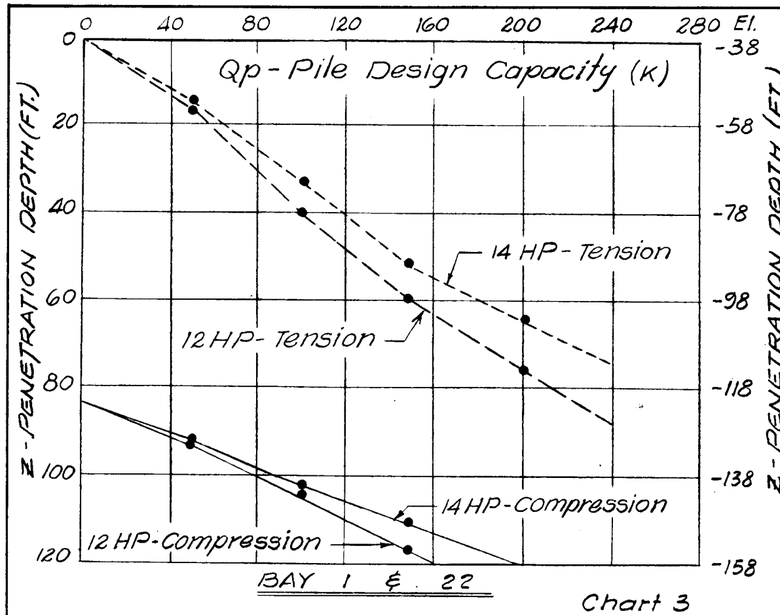
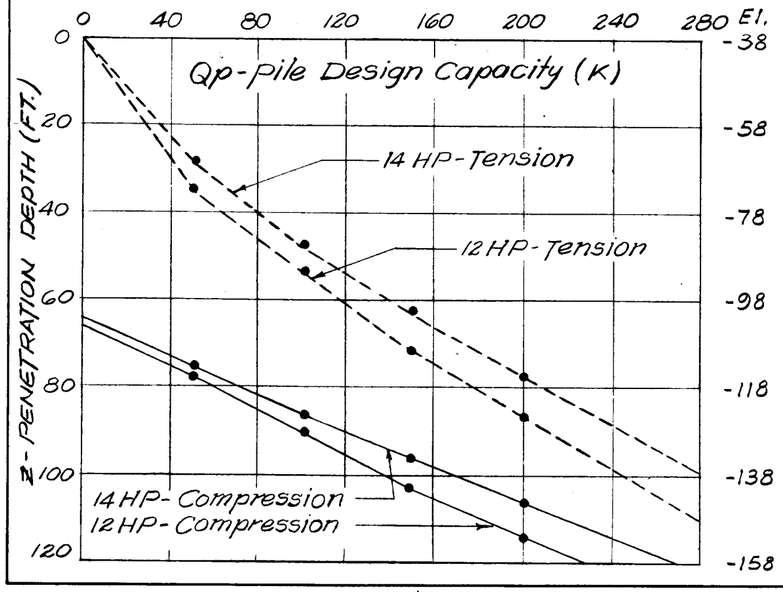
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CONTROL STRUCTURE
PILE DESIGN CAPACITY
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417



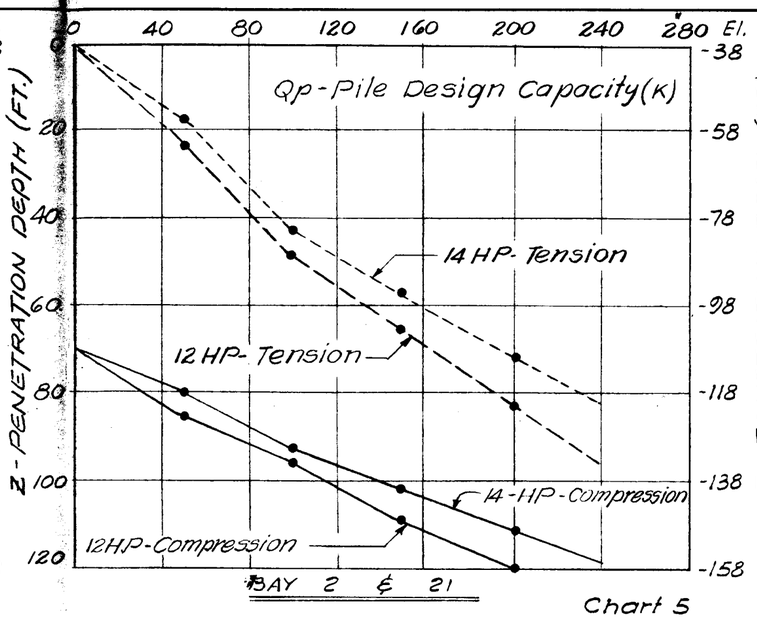
BAY 1 & 22

Chart 3



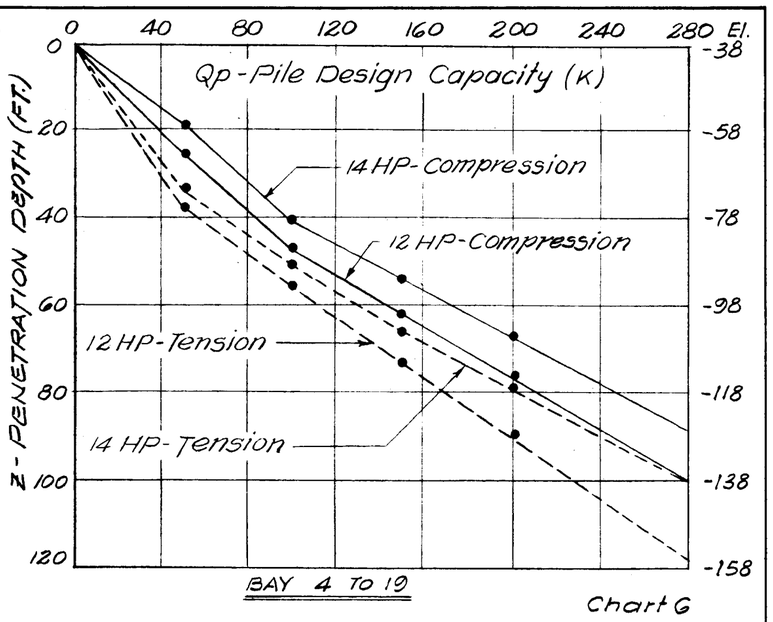
BAY 3 & 20

Chart 4



BAY 2 & 21

Chart 5



BAY 4 TO 19

Chart 6

PILE DESIGN CHARTS

PILE DESIGN CAPACITY (Qp) VS PENETRATION DEPTH (Z)

BAYS 1 TO 22

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CONTROL STRUCTURE
PILE DESIGN CAPACITY
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
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DATE MARCH 1973
FILE NO. H-2-24417

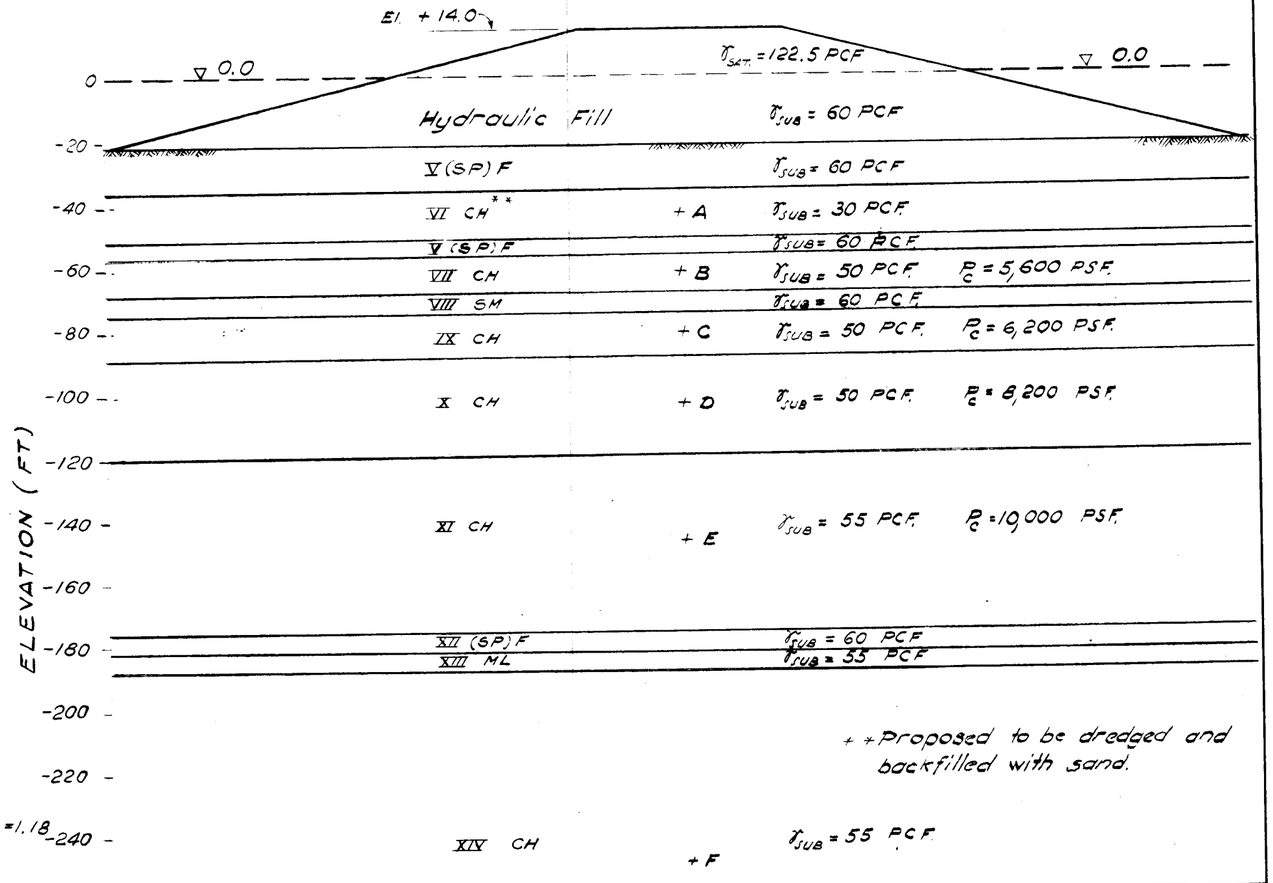
SETTLEMENT ANALYSIS

Assumptions

1. Soil Stratification and Embankment Cross Section as shown in fig. are assumed for settlement computations
2. Water level is assumed as 0.0
3. Settlement Computations for Layer VI - CH apply to the Condition when no Dredging is proposed.
4. Settlement Computations of subsequent Clay Layers are based when Removal of Layer VI - CH and Backfill with Hydraulic Sand is Proposed.
5. When Pre-Consolidation Pressure 'P_c' > $P_o + \Delta P$ (where P_o = Overburden Pressure and ΔP = Pressure Increment), the Re-Compression Index 'C_r' is used for Settlement Computations.
6. The Settlements are computed upto an El. -312.0 where the Effect of 'ΔP' ($\frac{\Delta P}{P_o} = 0.1$) is Negligible.
7. As there is no Boring information below El. -200.0, it is assumed that layer XIV - CH Extends up to El. -312.0
8. Due to low Magnitude of Compressions, Secondary Settlements are Neglected.

Center point ℄ elevation	Depth below Ground surf. (Ft)	Layer	Layer thickness H (Ft.)	Initial void ratio e_o	Unit weight γ_{sub} Lb/cuft.	Re-Compression Index C_r	Over-burden Pressure P_o Lb/sq. ft.	Pressure increment (Dispersed) ΔP Lb/sq. ft.	Primary settlement $\frac{H \times C_r}{1+e_o} \log \frac{P_o+\Delta P}{P_o}$ (inches)
A -44.0	20	VI - CH	16	1.82	30	* 1.18	1,020	3,100	49.1
B -64.0	40	VII - CH	12	1.15	50	0.05	1,920	3,350	1.5
C -84.0	60	IX - CH	14	1.45	50	0.07	2,930	3,220	** 1.5
D -104.0	80	X - CH	30	1.11	55	0.05	4,030	3,000	** 2.1
E -147.0	123	XI - CH	56	1.26	50	0.06	6,320	2,500	** 2.5
F -250.0	227	XIV - CH	124	1.26	55	0.06	11,965	1,760	** 2.4

*C_c = 1.18



** Proposed to be dredged and backfilled with sand.

CROSS SECTION AT STA. 47+84

Total theoretical settlement of the embankment:
1.5" + 1.5" + 2.1" + 2.4" = 10.0"
(Layer VI - CH is removed and backfilled with SPF)

** In the over consolidated clays, since $P_o + \Delta P < P_c$, it is beyond the vertical stress, practically the settlements in those layers may be negligible.

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LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
SETTLEMENT ANALYSIS
STA. 47 + 84
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417

TIME - RATE SETTLEMENT

Assumptions

1. The Coefficient of vertical Consolidation for Different Clay Layers is evaluated from the Laboratory Consolidation Curves. It was frequently noticed that there was a big Difference in 'C_v' Values for the same Layer and same Range of Pressure, So the 'C_v' Values used for Time - Rate of Settlement Computations are Selected on the basis of Statistical Average.

2. The 'C_v' Values for Layers XI -CH and XIV -CH are assumed as 0.30 Ft^2/Day, due to lack of Information.

3. For Layer VII - CH, $C_v = 0.07$ Ft^2/Day, Drainage Path 'H' = 6
   For Layer IX - CH, $C_v = 0.04$ Ft^2/Day, Drainage Path 'H' = 14
   For Layers X - CH and XI -CH (combined) Drainage Path 'H' = 43
   For Layer XIV - CH, $C_v = 0.3\ Ft.^2/Day$ Drainage Path 'H' = 62
   $C_v = 0.3\ Ft.^2/Day$

Computations

Time Factor 'T' = $\frac{C_v \times t}{H^2}$ where t = Time

If t = 6 months

For Layer VII-CH, $T = 0.36$, $U = 65\%$ where U = Percent Consolidation
" " IX -CH, $T = 0.04$, $U = 24\%$
" " X & XI -CH, $T = 0.03$, $U = 20\%$
" " XIV -CH, $T = 0.014$, $U = 10\%$

In 6 months total Settlement = $0.65 \times 1.5" + 0.24 \times 1.5" + 0.20 \times 4.6" + 0.10 \times 2.4" = 1.9"$

If t = 1 Year

For Layer VII -CH, $T = 0.71$ $U = 87\%$
" " IX -CH, $T = 0.075$ $U = 30\%$
" " X & XI -CH, $T = 0.059$ $U = 30\%$
" " XIV -CH, $T = 0.03$ $U = 20\%$

In One Year total Settlement = $0.87 \times 1.5" + 0.3 \times 1.5" + 0.28(2.1' + 2.5") + 0.2 \times 2.4" = 3.6"$

If t = 2 Years

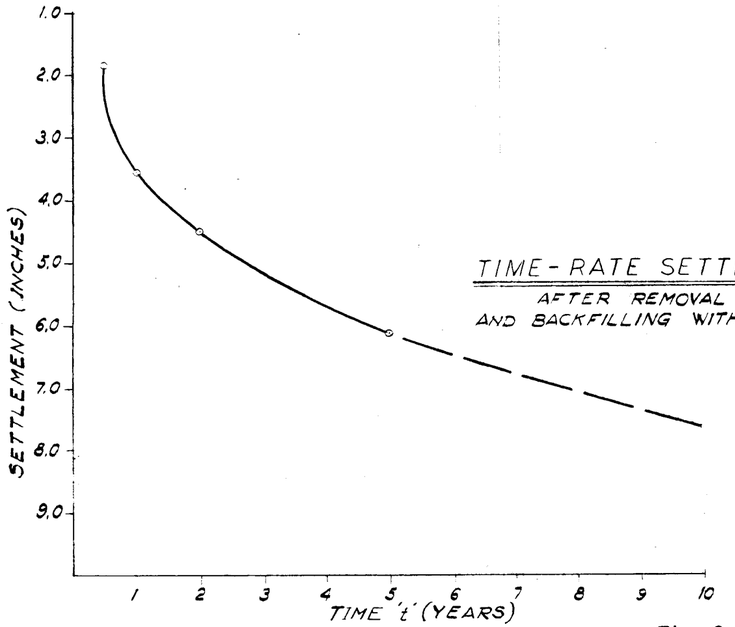
For Layer VII - CH, $T = 1.41$, $U = 90\%$
" " IX - CH, $T = 0.15$, $U = 45\%$
" " X & XI - CH, $T = 0.118$, $U = 37\%$
" " XIV - CH, $T = 0.057$, $U = 30\%$

In 2 Years total Settlement = $0.9 \times 1.5" + 0.45 \times 1.5" + 0.37 \times 4.6" + 0.3 \times 2.4" = 4.5"$

If t = 5 Years

For Layer VII - CH, $T = 3.35$, $U = 95\%$
" " IX - CH, $T = 0.38$ $U = 68\%$
" " X & XI - CH $T = 0.30$, $U = 60\%$
" " XIV - CH $T = 0.14$, $U = 43\%$

In 5 Years total Settlement = $0.95 \times 1.5" + 0.68 \times 1.5" + 0.60 \times 4.6" + 0.43 \times 2.4" = 6.2"$



TIME - RATE SETTLEMENT CURVE
AFTER REMOVAL OF LAYER VI-CH
AND BACKFILLING WITH HYDRAULIC SAND

Fig. 2

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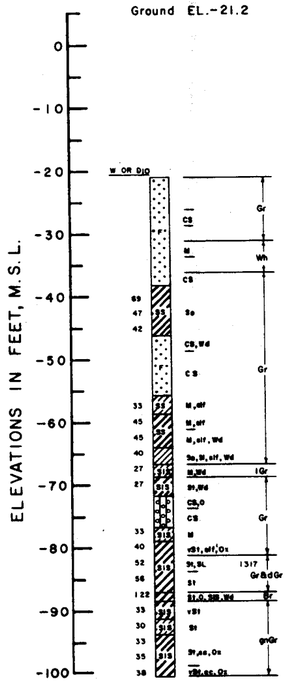
LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM
SETTLEMENT ANALYSIS
STA. 47+84
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973 FILE NO. H-2-24417

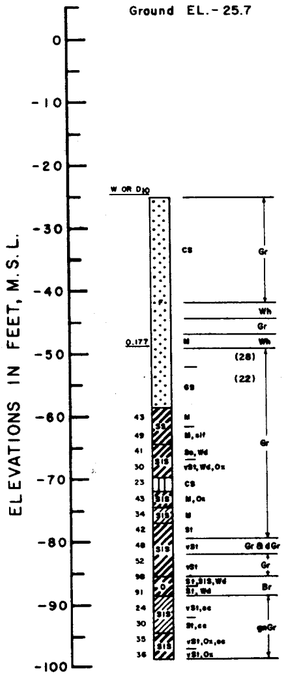
BORING NO. X-2

STA. 53+00
14 - 15 APRIL 1971
150 FT. RIGHT OF B.L.
Ground EL. -21.2



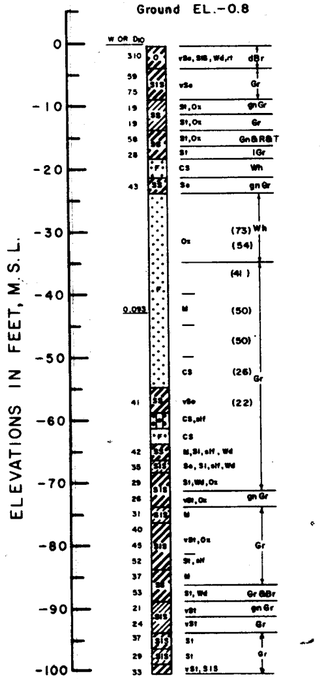
BORING NO. X-4

STA. 65+00
7 - 8 APRIL 1971
400 FT. RIGHT OF B.L.
Ground EL. -25.7



BORING NO. X-6

STA. 77+00
1 APRIL 1971
340 FT. RIGHT OF B.L.
Ground EL. -0.8



NOTES

1. FOR BORING LOCATION SEE PLATE III-1.
2. FOR SOIL BORING LEGEND SEE PLATE A
3. 3 GENERAL TYPE BORINGS WERE TAKEN WITH A 1⅞" I.D. CORE BARREL SAMPLER.

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LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 - DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

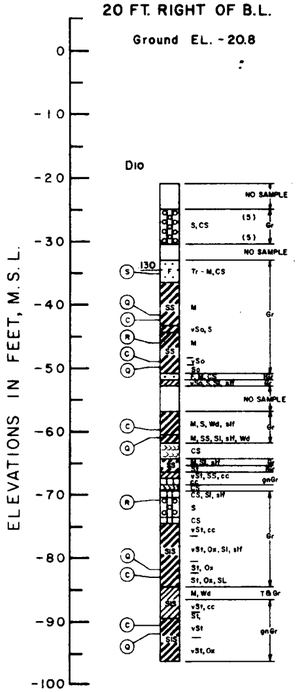
GENERAL SOIL BORINGS
NO. X-2, X-4 AND X-6

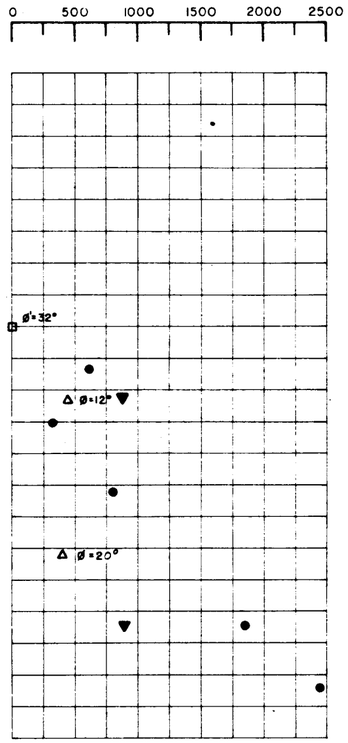
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

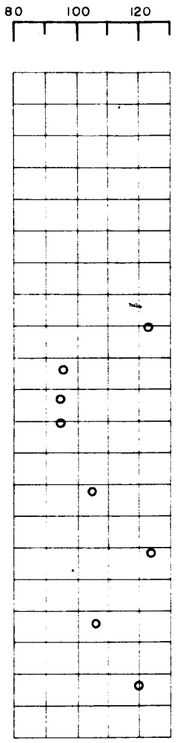
DATE MARCH 1973
FILE NO. H-2-24417

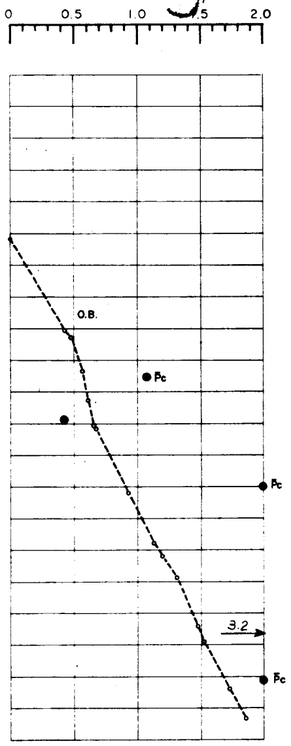
BORING NO. X-IU

STA. 47+20
5,6+9 AUG. 1971
20 FT. RIGHT OF B.L.
Ground EL. -20.8









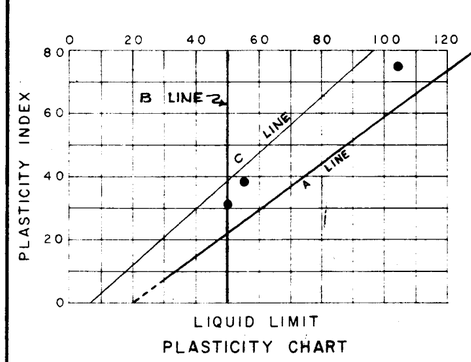
GENERAL NOTES

- ▼ UC – Unconfined compression shear
- ● (Q) Unconsolidated undrained triaxial shear
- △ (R) Consolidated undrained triaxial shear
- □ (S) Consolidated drained direct shear
- (C) Consolidation test
- -○- W – Natural water content
- ●— L.L. – Liquid limit
- —● P.L. – Plastic limit
- c – Unit cohesion
- ø – Angle of friction
- ○ γ – Unit weight of soil - wet density
- σ̄ – Normal stress
- O.B. – Overburden
- P̄c – Preconsolidation pressure
- e – Void ratio
- Cc – Compression index

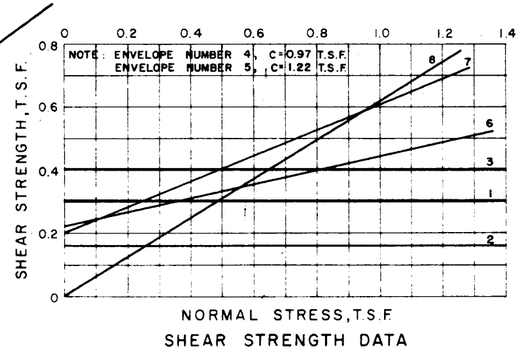
Borings were taken with a 5"ø steel tube piston-type sampler

For boring legend see Plate A
For boring location see Plate III-1
For consolidation test results see Plates III-55 thru III-66

● P̄c = 3.2 T.S.F.



LIQUID LIMIT
PLASTICITY CHART



NORMAL STRESS, T.S.F.
SHEAR STRENGTH DATA

ENVELOPE NO.	EL.	TYPE	STRENGTH ø°	STRENGTH C, T.S.F.	CLASS
1	- 41.7	Q-●	0	0.30	CH
2	- 50.1		0	0.16	CH
3	- 61.0		0	0.40	CH
4	- 82.1		0	0.97	CH
5	- 92.0		0	1.22	CH
6	- 46.3	R-△	12	0.22	CH
7	- 71.0		20	0.20	SM
8	- 35.1	S-□	32	0	SM

FREDERIC R. HARRIS INC.
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LAKE PONTCHARTRAIN, LA AND VICINITY
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RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

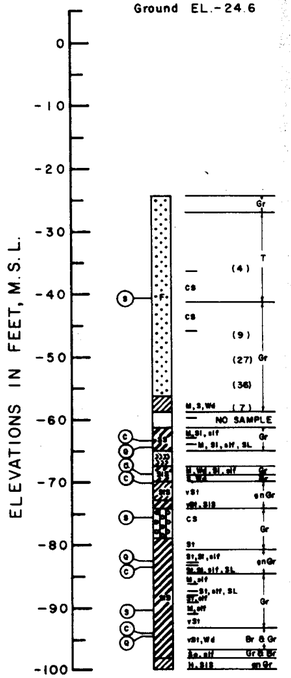
UNDISTURBED SOIL BORING
NO. X- IU, SOIL TEST DATA

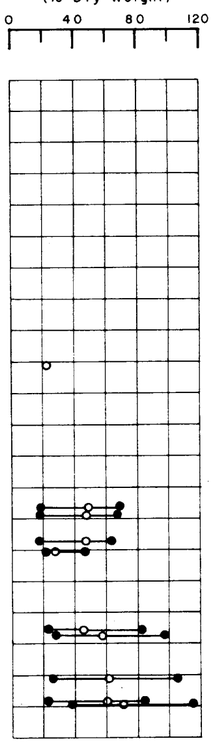
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

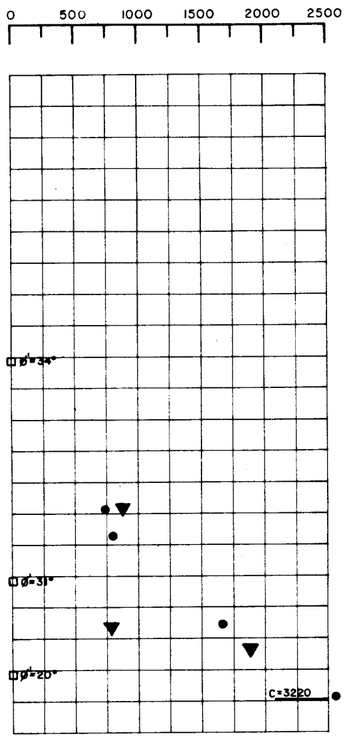
DATE: MARCH 1973
FILE NO. H-2-24417

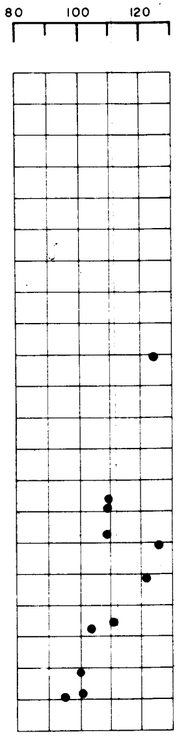
BORING NO. X-3U

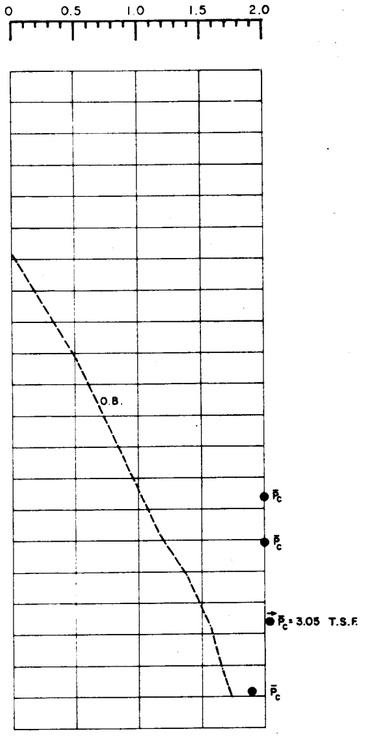
STA. 59+00
9 and 13 APRIL 1971
300 FT. RIGHT OF B.L. -8-
Ground EL. -24.6

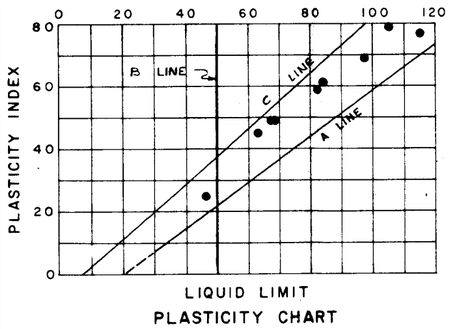


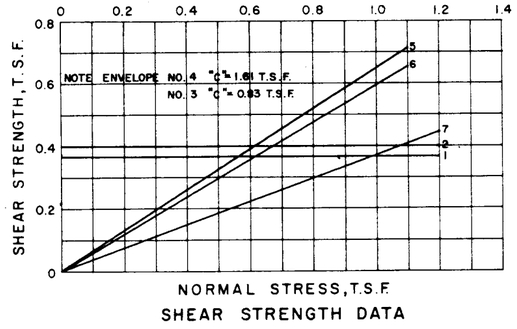












ENVELOPE NO.	ENVELOPE EL.	TYPE	STRENGTH Ø°	STRENGTH C, T.S.F.	CLASS
1	-64.8	Q-●	0	0.37	CH
2	-68.7		0	0.40	CH
3	-82.8		0	0.83	CH
4	-94.9		0	1.61	CH
5	-40.8	S-□	34°	0	SM
6	-76.0		31°	0	SM
7	-90.9		20°	0	CH

For General Notes
See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

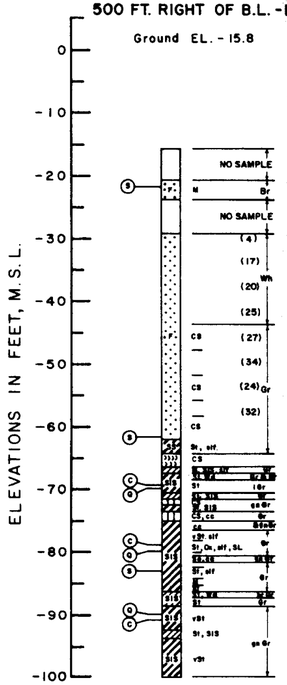
UNDISTURBED SOIL BORING
NO. X-3U, SOIL TEST DATA

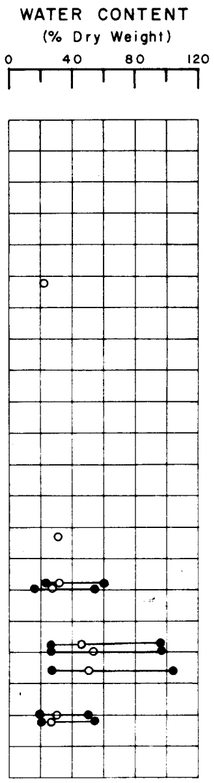
U.S ARMY ENGINEER DISTRICT. NEW ORLEANS
CORPS OF ENGINEERS

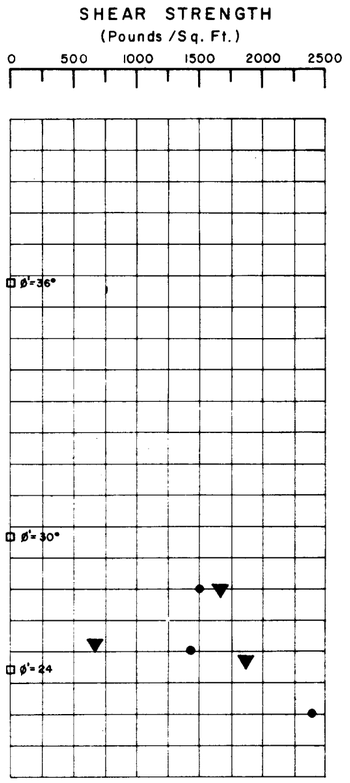
DATE MARCH 1973 FILE NO H-2-24417

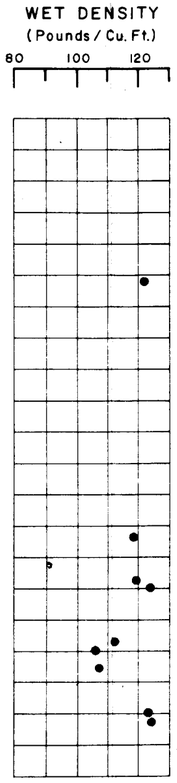
BORING NO. X-5U

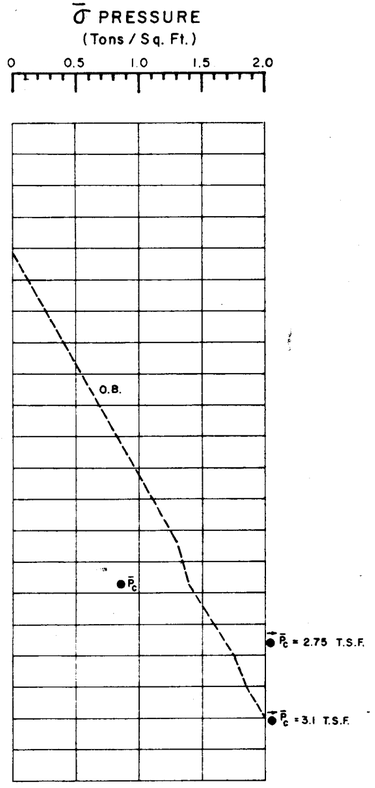
STA. 71+00
5-6 APRIL 1971
500 FT. RIGHT OF B.L. -B-
Ground EL. - 15.8

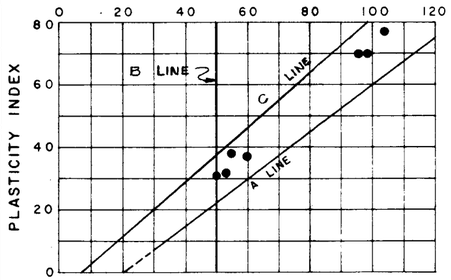




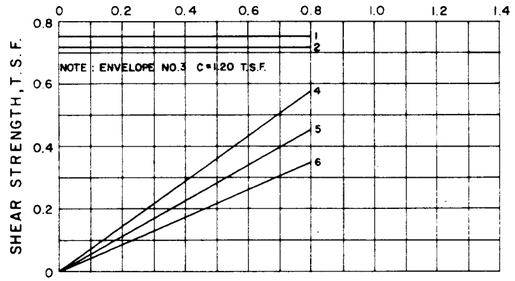








PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	ENVELOPE EL.	TYPE	STRENGTH ø°	STRENGTH C, T.S.F.	CLASS
1	-69.6	Q-●	0	0.75	CH
2	-79.7		0	0.72	CH
3	-89.8		0	1.20	CH
4	-21.9	S-□	36°	0	SP
5	-61.9		30°	0	SM
6	-83.2		24	0	CH

For General Notes
See Plate III-39

FREDERIC R. HARRIS INC.
CONSULTING ENGINEERS NEW ORLEANS, LA.

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

UNDISTURBED SOIL BORING
NO. X-5U, SOIL TEST DATA

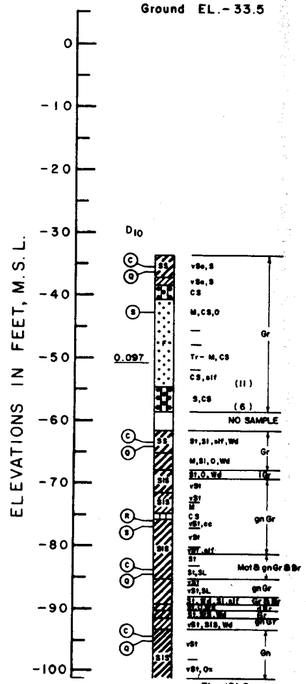
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

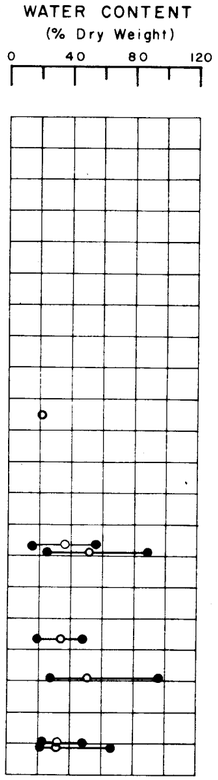
MARCH 1973

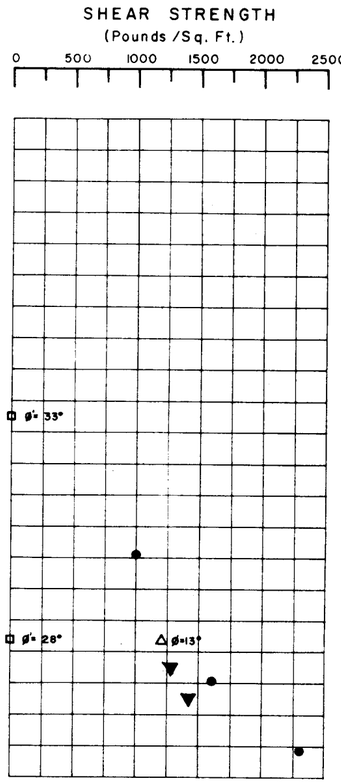
FILE NO. H-2-24417

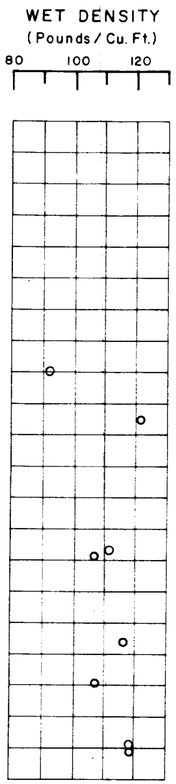
BORING NO. X-7U

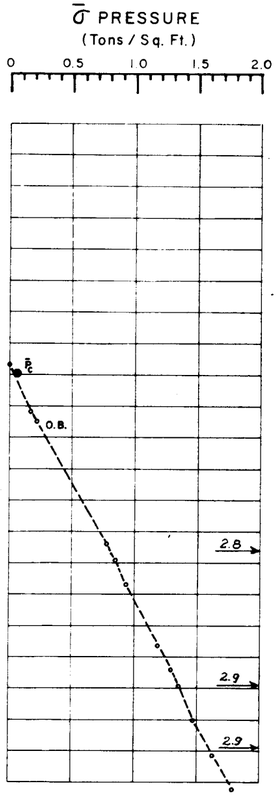
STA. 36+62
8-22 JULY 1971
ON B.L.
Ground EL. - 33.5

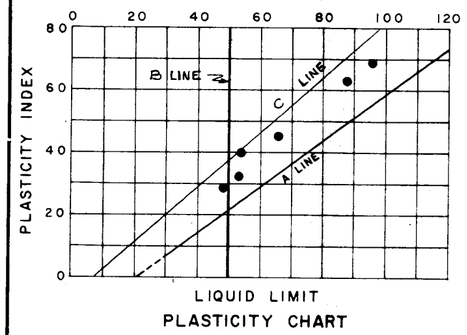


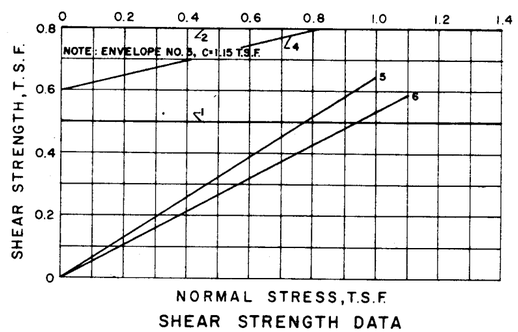












ENVELOPE NO.	EL.	TYPE	STRENGTH ø°	STRENGTH C, T.S.F.	CLASS
1	- 64.7	Q-●	0	0.50	CH
2	- 84.7		0	0.80	CH
3	- 95.5		0	1.15	CH
4	- 78.1	R-△	13	0.60	CH-ML
5	- 42.7	S-□	33	0	SP
6	- 78.1		28	0	CH-ML

For General Notes
See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 - DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

UNDISTURBED SOIL BORING
NO. X-7U, SOIL TEST DATA

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO H-2-24417

BORING NO. X-7U

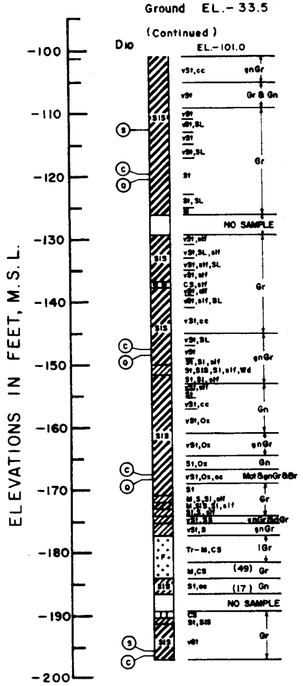
STA. 36+62

8-22 JULY 1971

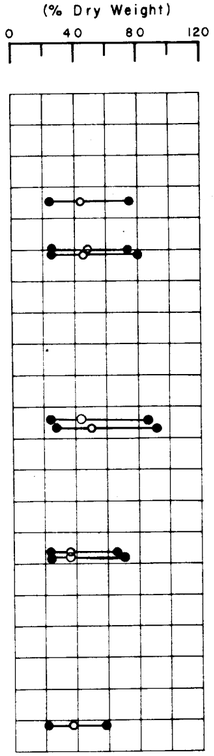
ON B.L.

Ground EL.- 33.5

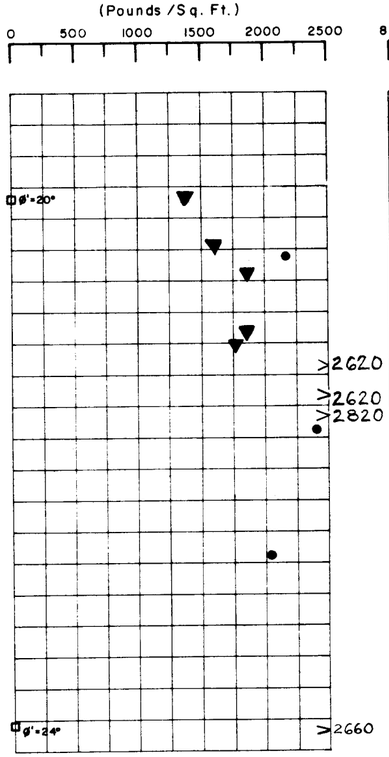
(Continued)



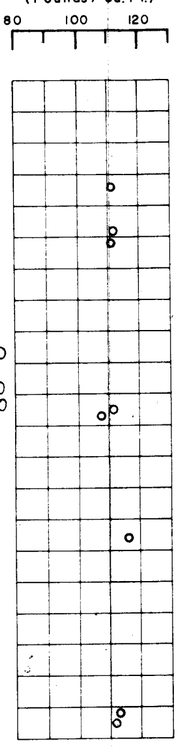
WATER CONTENT
(% Dry Weight)



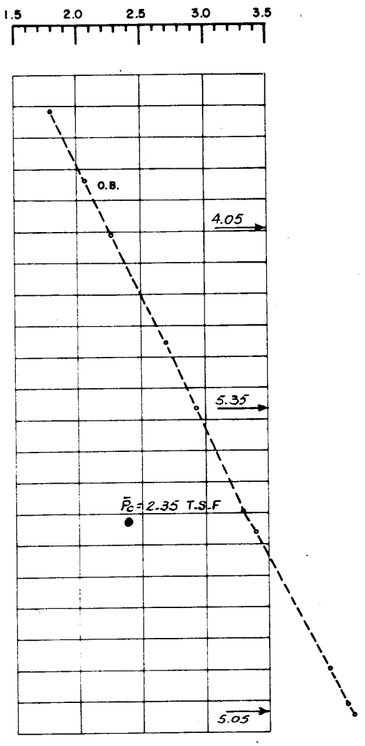
SHEAR STRENGTH
(Pounds / Sq. Ft.)

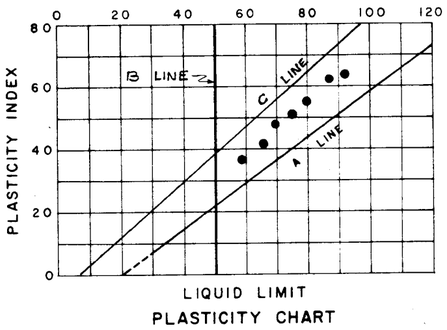


WET DENSITY
(Pounds / Cu. Ft.)

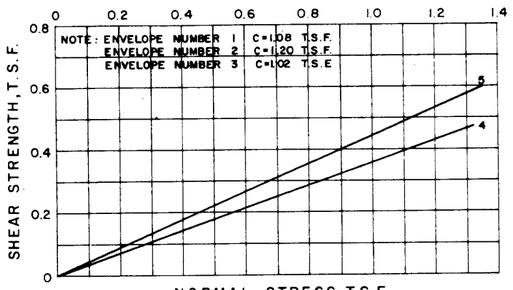


$\bar{\sigma}$ PRESSURE
(Tons / Sq. Ft.)





PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	ENVELOPE EL.	TYPE	STRENGTH ø°	STRENGTH C, T.S.F.	CLASS
1	-120.7	Q-●	0	1.08	CH
2	-148.7	Q-●	0	1.20	CH
3	-168.5	Q-●	0	1.02	CH
4	-112.2	S-□	20	0	CH
5	-195.4	S-□	24	0	CH

For General Notes
See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

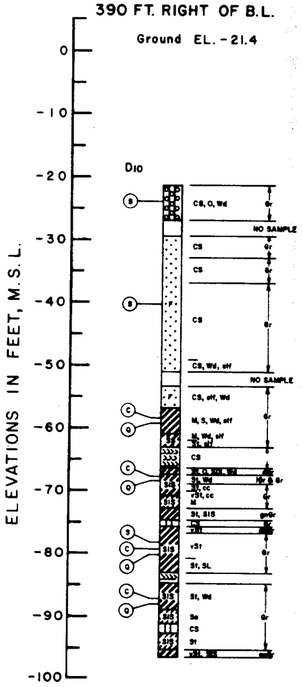
UNDISTURBED SOIL BORING
NO. X- 7U, SOIL TEST DATA

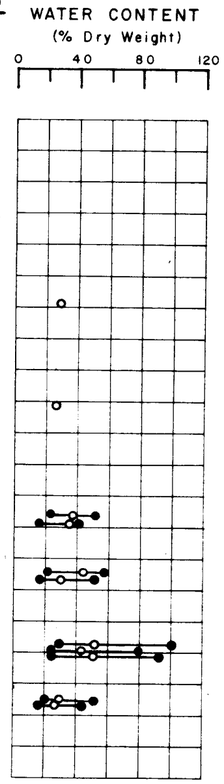
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

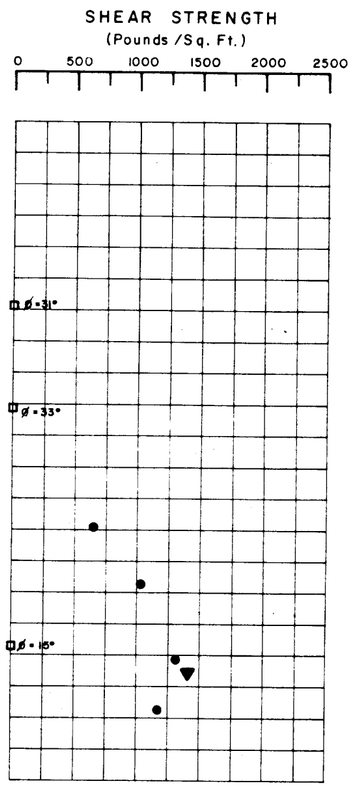
DATE MARCH 1973 FILE NO H-2-24417

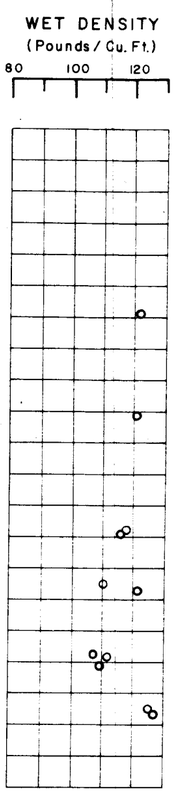
BORING NO. X-8U

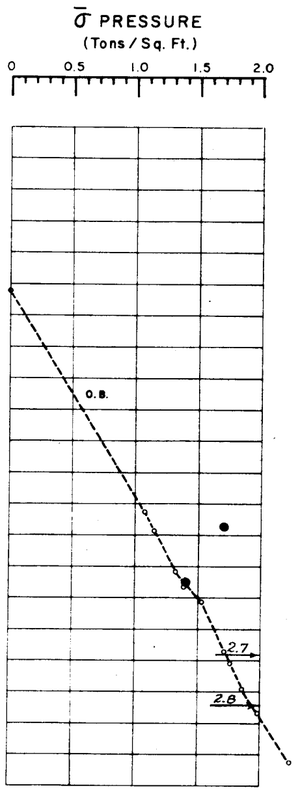
STA. 30+90
11-12 AUG. 1971
390 FT. RIGHT OF B.L.
Ground EL. -21.4

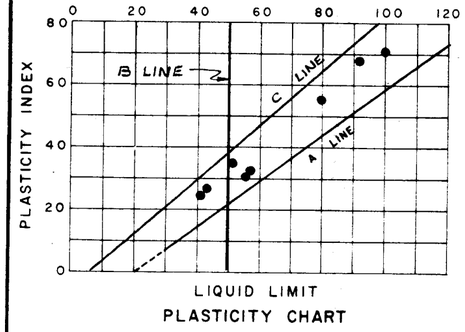




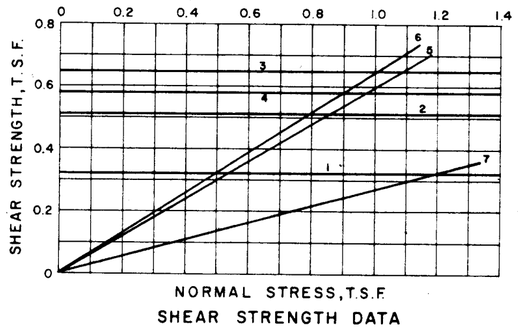








PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	ENVELOPE EL.	TYPE	STRENGTH ø°	STRENGTH C, T.S.F.	CLASS
1	-59.6	Q-●	0	0.32	CH
2	-68.5		0	0.51	CH
3	-80.5		0	0.65	CH
4	-88.5		0	0.58	CL
5	-24.3	S-□	31	0	SM
6	-40.3		33	0	SM
7	-78.7		15	0	CH

For General Notes
See Plate III-39

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS - NEW ORLEANS, LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

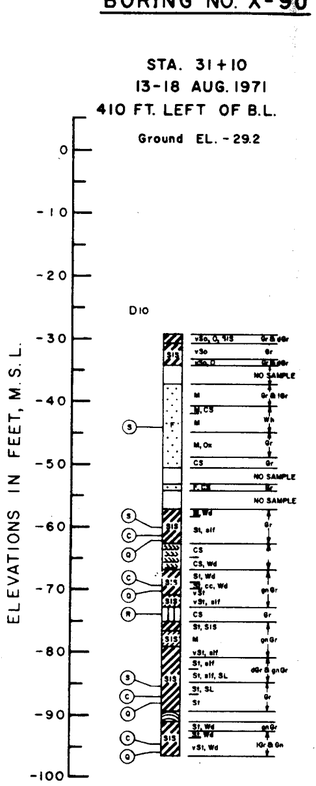
UNDISTURBED SOIL BORING
NO. X-8U, SOIL TEST DATA

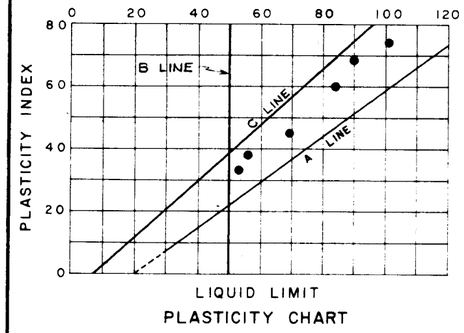
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

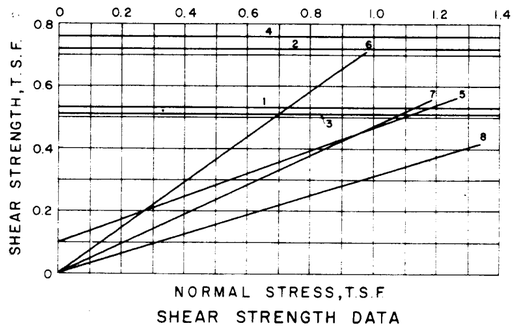
DATE MARCH 1973 FILE NO. H-2-24417

BORING NO. X-9U

STA. 31+10
13-18 AUG. 1971
410 FT. LEFT OF B.L.
Ground EL. -29.2







ENVELOPE NO.	EL.	TYPE	STRENGTH Ø°	STRENGTH C, T.S.F.	CLASS
1	- 62.5	Q-●	0	0.53	CH
2	- 70.6		0	0.72	CH
3	- 88.4		0	0.51	CH
4	- 96.2		0	0.76	CH
5	- 74.3	R-△	20	0.10	SM
6	- 44.4	S-□	36	0	SP
7	- 60.5		25	0	CH
8	- 85.7		16	0	CH

For General Notes
See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS NEW ORLEANS

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

UNDISTURBED SOIL BORING
NO. X- 9U, SOIL TEST DATA

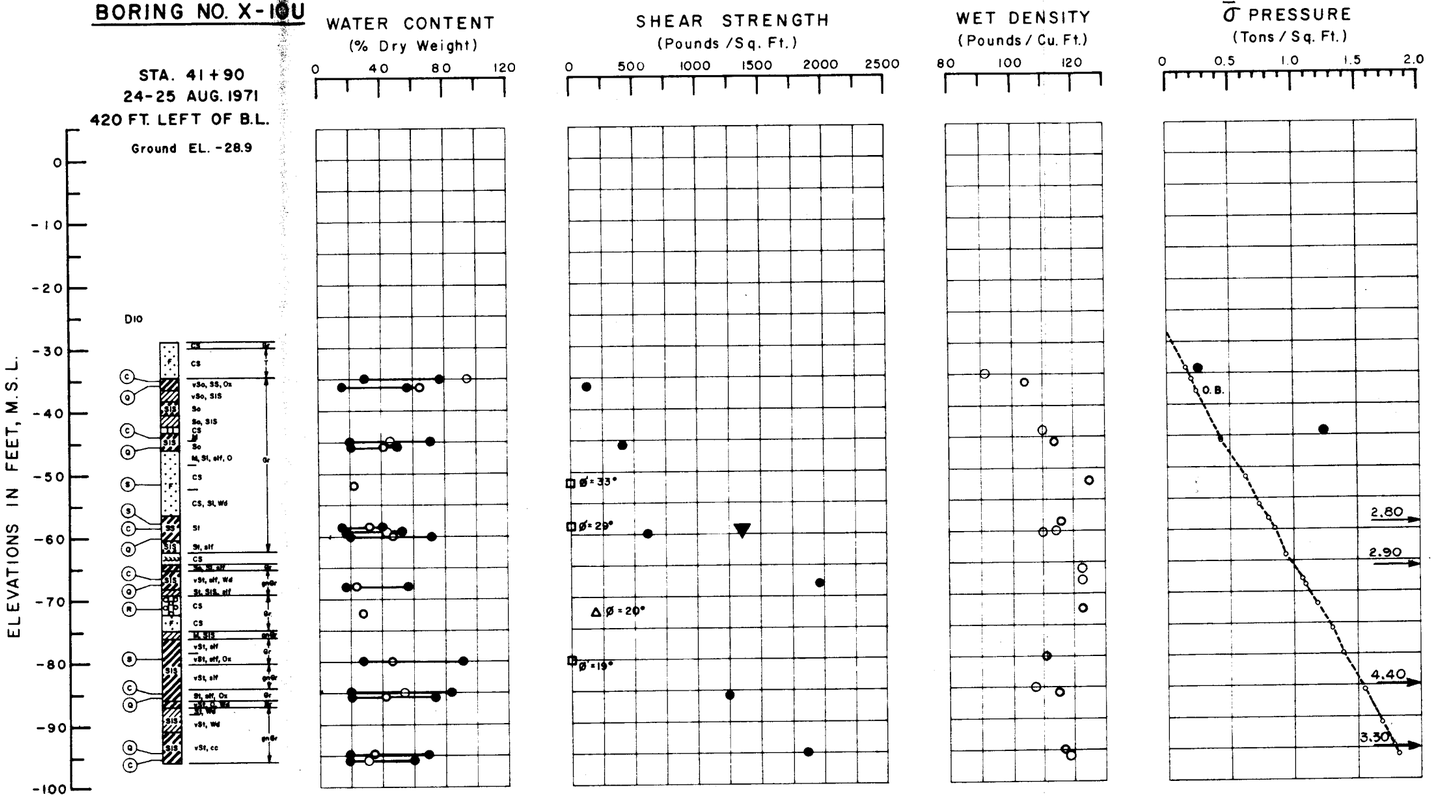
US ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

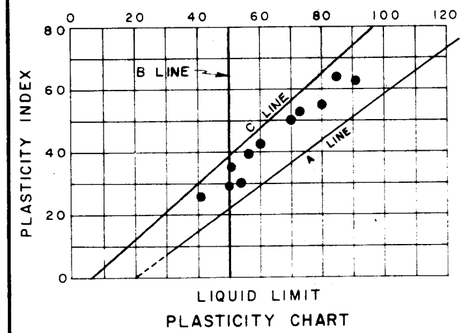
MARCH 1973

FILE NO H-2-24417

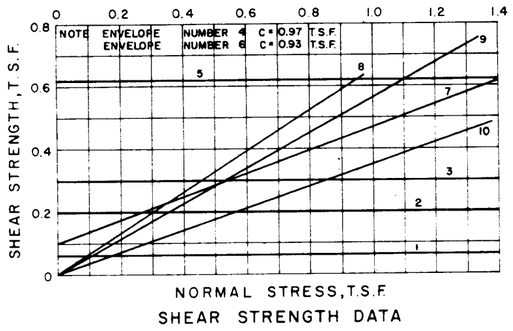
BORING NO. X-10U

STA. 41+90
24-25 AUG. 1971
420 FT. LEFT OF B.L.
Ground EL. -28.9





PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	ENVELOPE EL.	TYPE	STRENGTH Ø°	STRENGTH C, T.S.F.	CLASS
1	-36.1	Q●	0	0.06	CH
2	-45.7		0	0.20	CH
3	-60.0		0	0.30	CH
4	-68.0		0	0.97	CH
5	-85.8		0	0.62	CH
6	-94.9		0	0.93	CH
7	-72.0	R-Δ	20	0.10	SM
8	-51.9	S-□	33	0	SP
9	-58.2		29	0	CL
10	-80.0		19	0	CH

For General Notes
See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 - DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

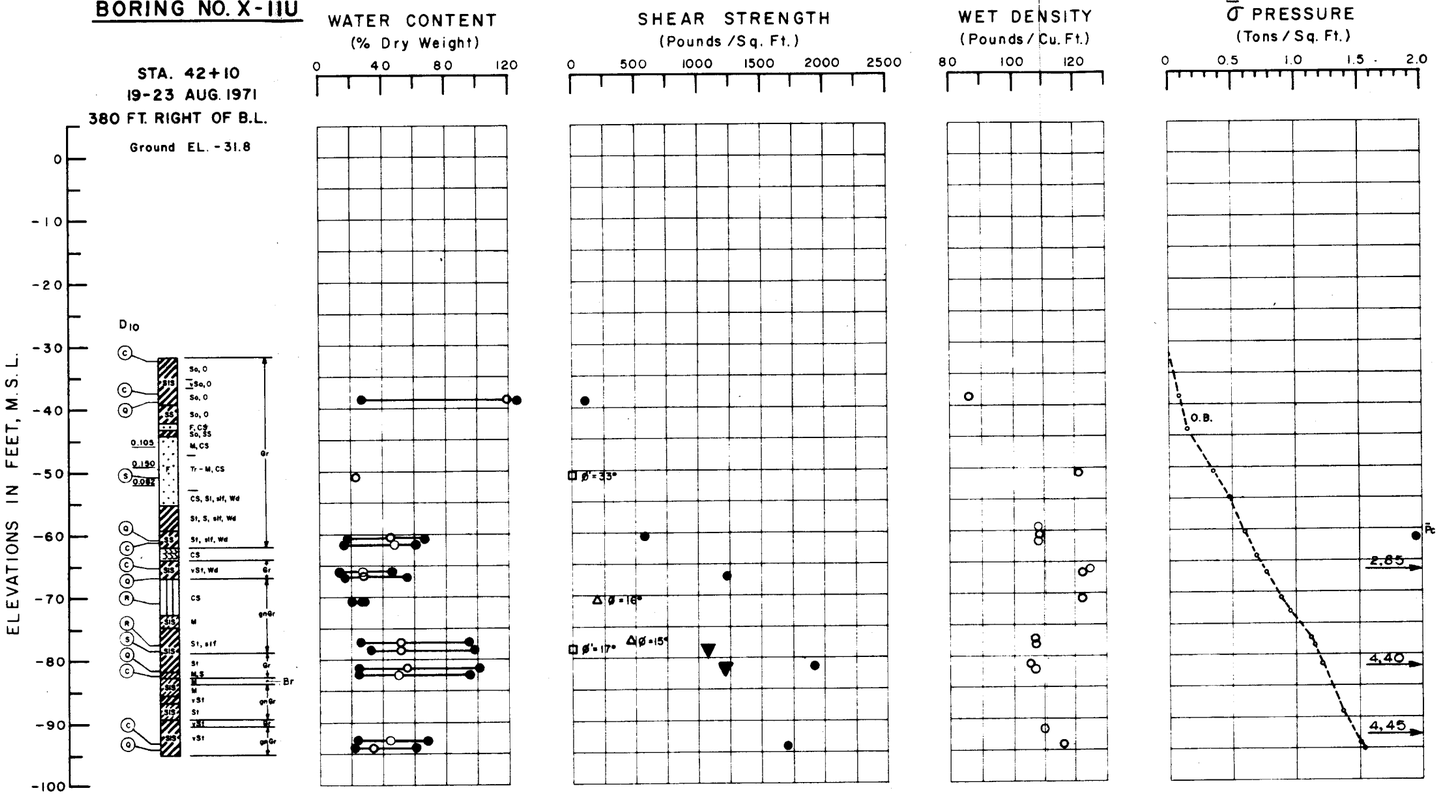
UNDISTURBED SOIL BORING
NO. X-10U, SOIL TEST DATA

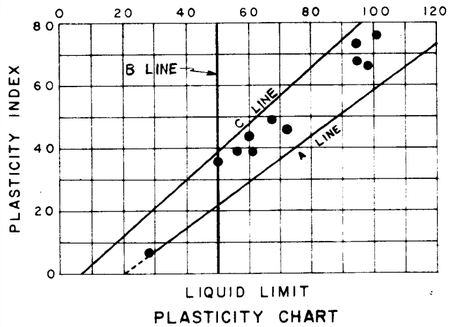
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

DATE: MARCH 1973 FILE NO H-2-24417

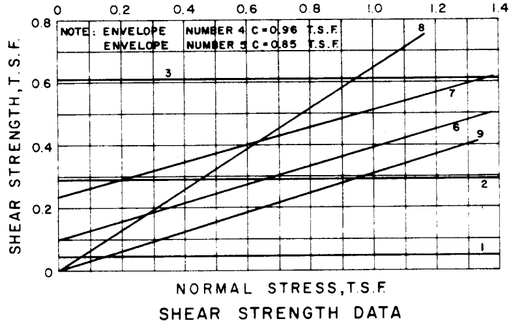
BORING NO. X-11U

STA. 42+10
19-23 AUG. 1971
380 FT. RIGHT OF B.L.
Ground EL. -31.8





PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	ENVELOPE EL.	TYPE	STRENGTH, ø°	STRENGTH, C, T.S.F.	CLASS
1	-38.8	Q-●	0	0.05	CH
2	-60.3		0	0.29	CH
3	-66.9		0	0.61	CH
4	-81.3		0	0.96	CH
5	-94.0		0	0.85	CH
6	-70.8	R-△	16	0.10	CL-ML
7	-77.2		15	0.24	CH
8	-50.8	S-□	33	0	SP
9	-78.5		17	0	CH

For General Notes
See Plate III-39

FREDERIC R HARRIS INC.
CONSULTING ENGINEERS NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

UNDISTURBED SOIL BORING
NO. X-11U, SOIL TEST DATA

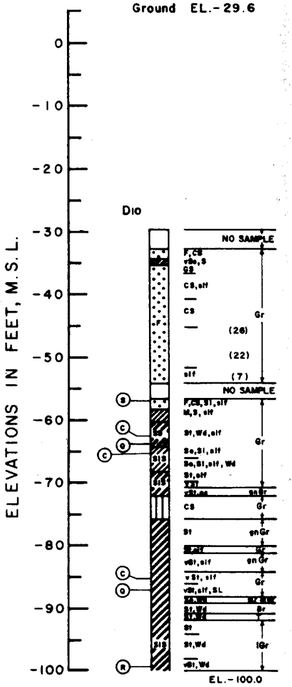
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

MARCH 1973

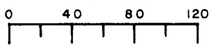
FILE NO H-2-24417

BORING NO. X-12U

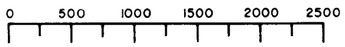
STA. 31+20
31 MAR - 2 JULY 1971
ON B.L.
Ground EL. - 29.6



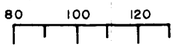
WATER CONTENT
(% Dry Weight)



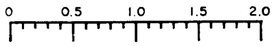
SHEAR STRENGTH
(Pounds / Sq. Ft.)

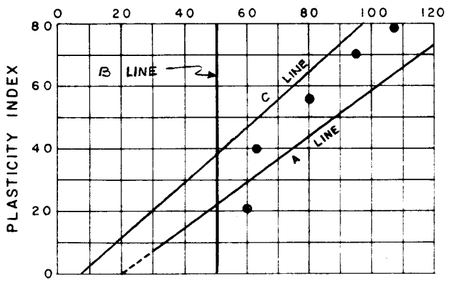


WET DENSITY
(Pounds / Cu. Ft.)

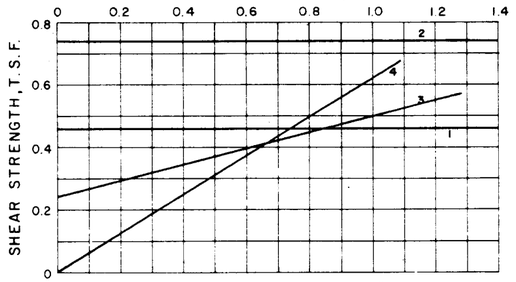


$\bar{\sigma}$ PRESSURE
(Tons / Sq. Ft.)





PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	EL.	TYPE	STRENGTH ϕ°	STRENGTH C, T.S.F.	CLASS
1	-63.8	Q-●	0	0.46	CH
2	-86.9		0	0.74	CH
3	-99.8	R-△	14	0.50	CH
4	-57.2	S-□	32	0	SM

For General Notes
See Plate III-39

FREDERIC R. HARRIS INC
CONSULTING ENGINEERS NEW ORLEANS, LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 - DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

UNDISTURBED SOIL BORING
NO. X-12U, SOIL TEST DATA

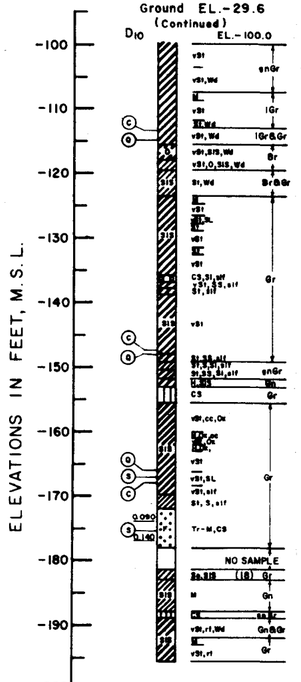
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

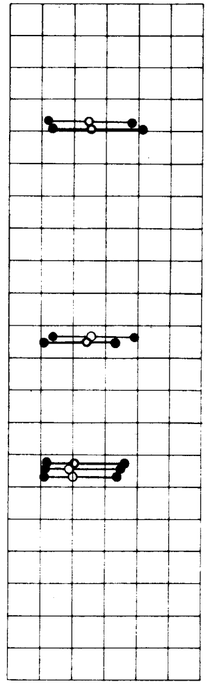
MARCH 1973

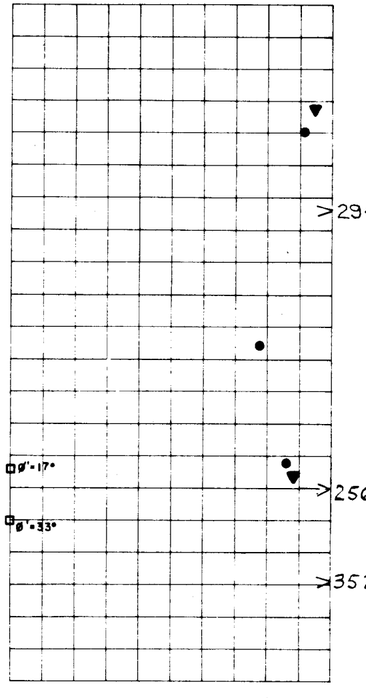
FILE NO. H-2-24417

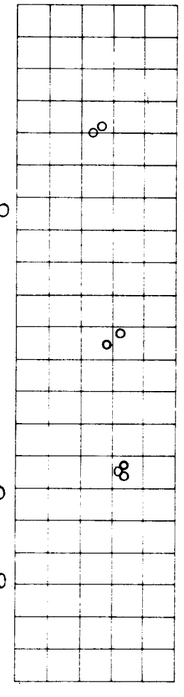
BORING NO. X-12U

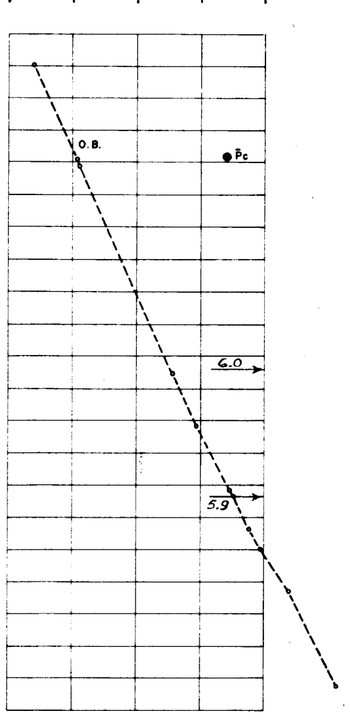
STA. 31+20
31 MAR - 2 JULY 1971
ON B.L.
Ground EL.-29.6
(Continued)

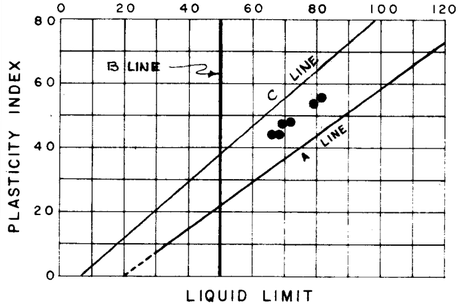




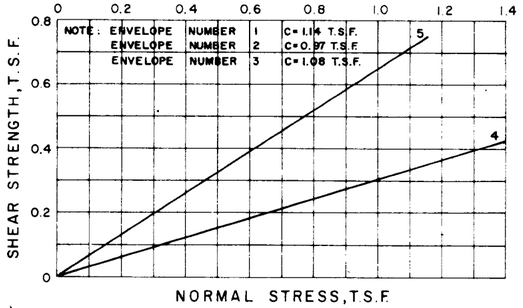








PLASTICITY CHART



NOTE: ENVELOPE NUMBER 1 C= 1.14 T.S.F.
ENVELOPE NUMBER 2 C=0.97 T.S.F.
ENVELOPE NUMBER 3 C= 1.08 T.S.F.

SHEAR STRENGTH DATA

ENVELOPE NO.	EL.	TYPE	STRENGTH ø°	STRENGTH C, T.S.F.	CLASS
1	-114.9	Q- ●	0	1.14	CH
2	-147.8		0	0.97	CH
3	-166.1		0	1.08	CH
4	-167.0	S- □	17	0	CH
5	-175.0		33	0	SP

For General Notes
See Plate III-39

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS NEW ORLEANS, LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

UNDISTURBED SOIL BORING
NO. X-12U, SOIL TEST DATA

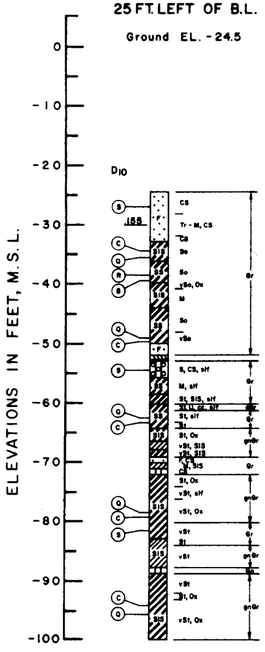
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

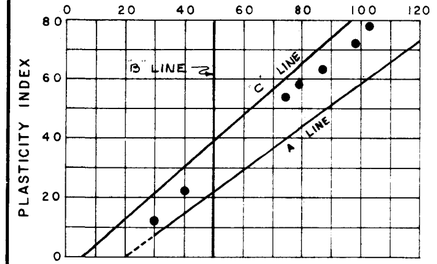
MARCH 1973

FILE NO. H-2-24417

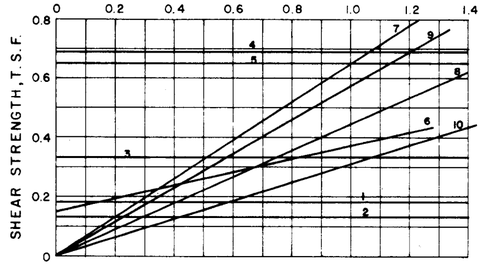
BORING NO. X-13U

STA. 42+50
27 JULY THRU 4 AUG 1971
25 FT. LEFT OF B.L.
Ground EL. -24.5





PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	EL.	TYPE	STRENGTH ϕ°	STRENGTH C, T.S.F.	CLASS
1	-35.7	Q-●	0	0.18	CH
2	-49.1		0	0.13	CH
3	-62.8		0	0.33	CH
4	-78.9		0	0.69	CH
5	-95.6		0	0.65	CL
6	-38.9	R-Δ	12	0.15	CH
7	-27.4	S-□	33	0	SP
8	-39.6		24	0	CH
9	-54.4		30	0	CL
10	-81.7		17	0	CH

For General Notes
See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 - DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

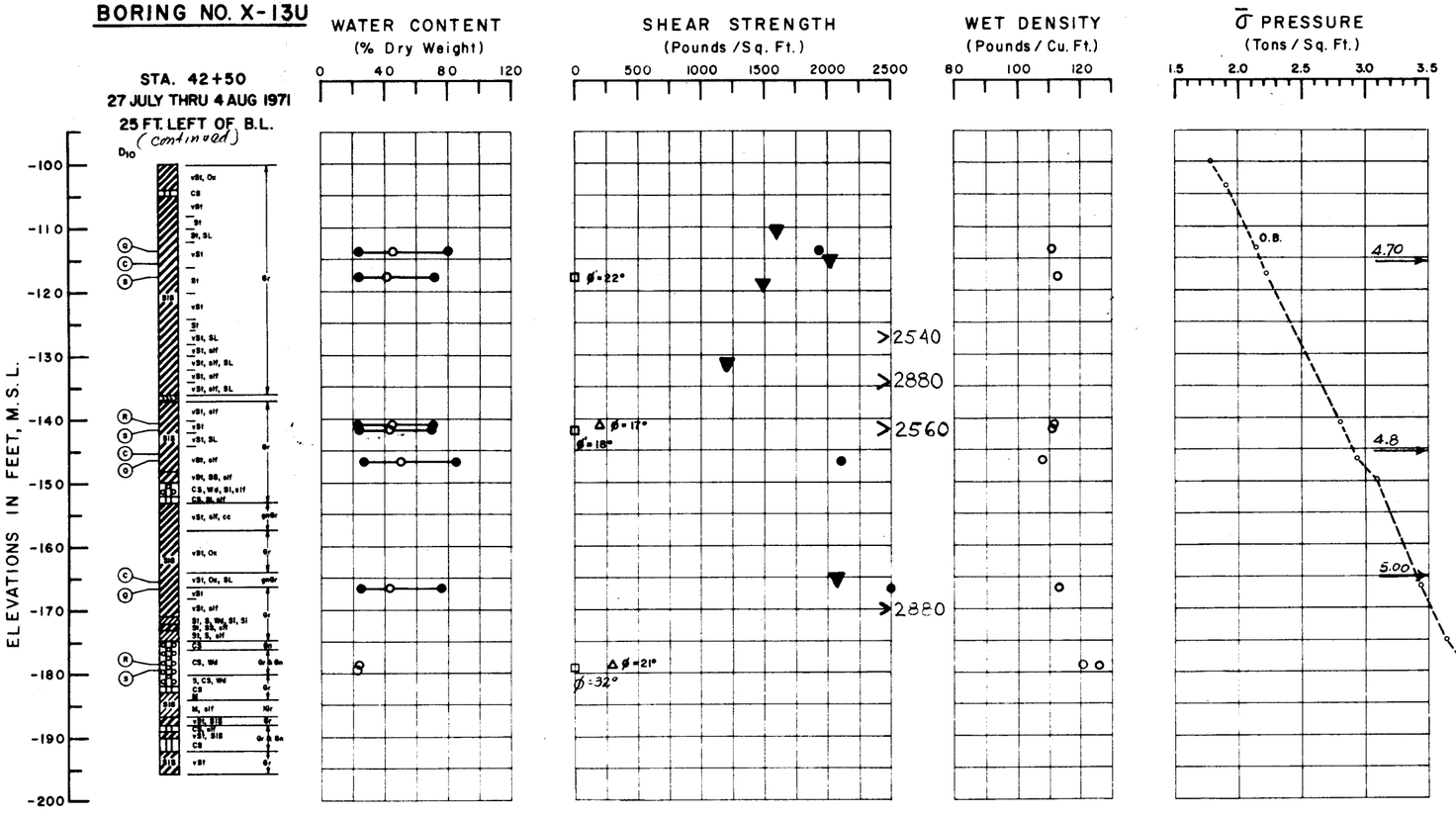
UNDISTURBED SOIL BORING
NO. X-13U, SOIL TEST DATA

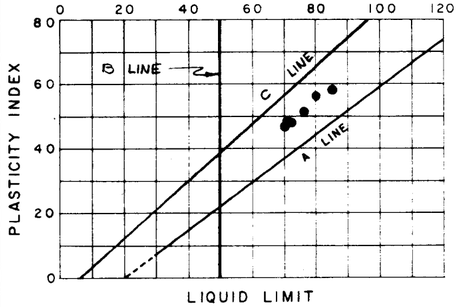
U S ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO H-2-24417

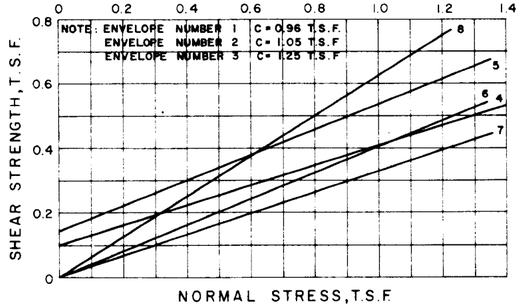
BORING NO. X-13U

STA. 42+50
27 JULY THRU 4 AUG 1971
25 FT. LEFT OF B.L.
(continued)





PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	EL.	TYPE	STRENGTH φ°	STRENGTH C, T.S.F	CLASS
1	-113.9	Q-●	0	0.96	CH
2	-146.7		0	1.05	CH
3	-166.8		0	1.25	CH
4	-141.0	R-Δ	17	0.10	CH
5	-178.8		21	0.15	SC
6	-117.9	S-□	22	0	CH
7	-141.9		18	0	CH
8	-179.7		32	0	SC

For General Notes
See Plate III-39

FREDERIC R. HARRIS INC.
CONSULTING ENGINEERS NEW ORLEANS, LA.

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

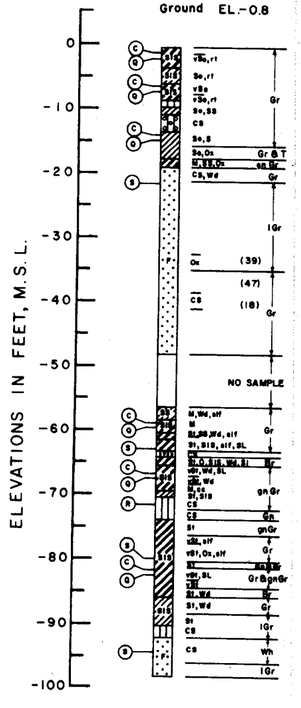
UNDISTURBED SOIL BORING
NO. X-13U, SOIL TEST DATA
(continued)

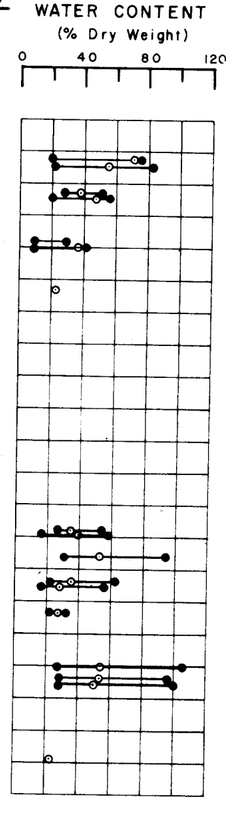
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

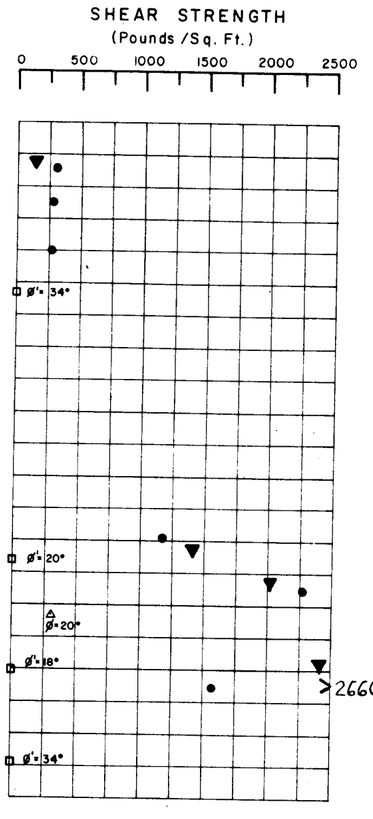
DATE MARCH 1973 FILE NO. H-2-24417

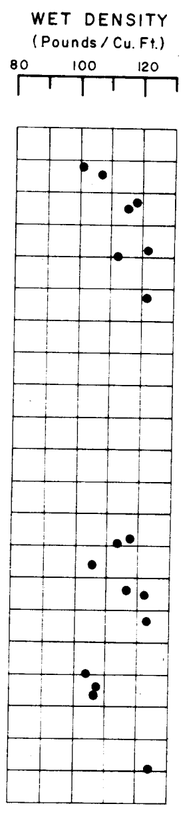
BORING NO. X-14U

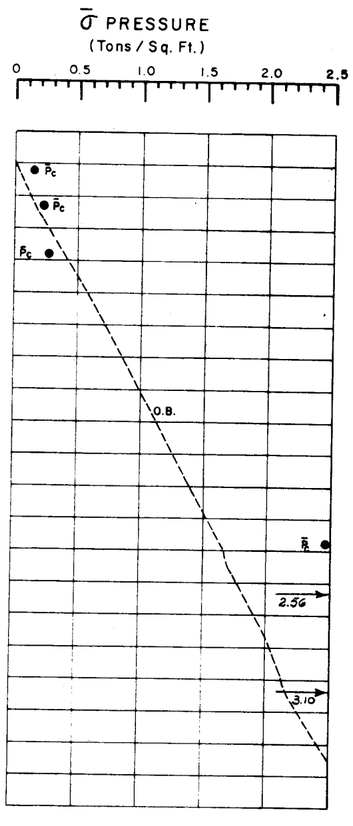
STA. 26+00
25 - 30 MARCH 1971
ON B.L.-B-
Ground EL.-0.8

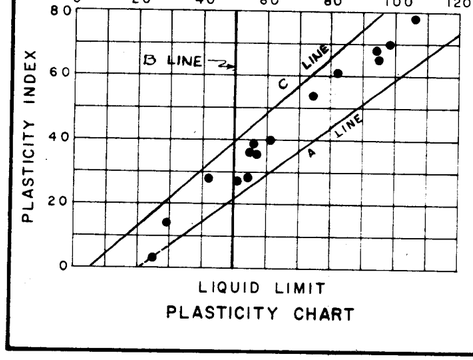




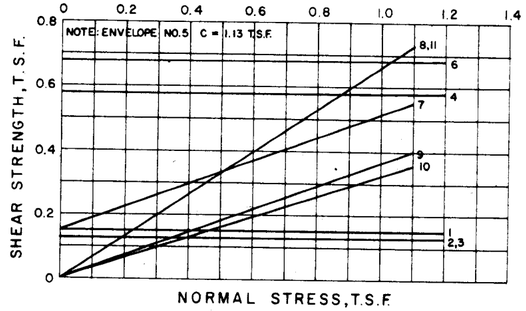








PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	EL.	TYPE	STRENGTH ø°	STRENGTH C, T.S.F.	CLASS
1	-2.8	Q-●	0	0.15	CH
2	-7.6		0	0.13	CH
3	-15.1		0	0.13	CL
4	-60.1		0	0.58	CH
5	-68.0		0	1.13	CH
6	-83.0		0	0.78	CH
7	-71.9	R-△	20°	0.15	ML
8	-22.0	S-□	34°	0	SP
9	-63.1		20°	0	CH
10	-80.1		18°	0	CH
11	-95.0		34°	0	SM

For General Notes
See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 - DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

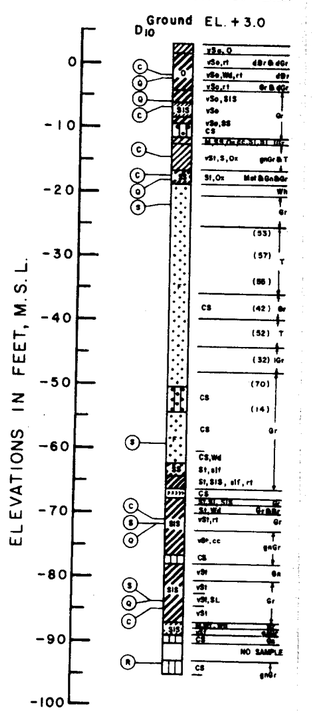
UNDISTURBED SOIL BORING
NO. X-14U, SOIL TEST DATA

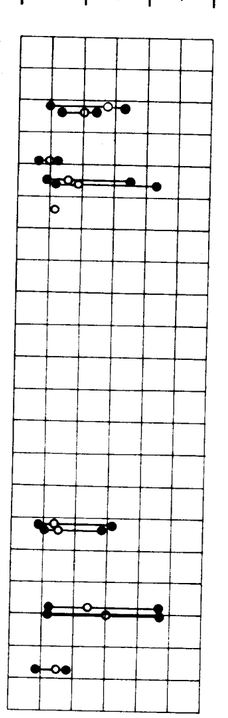
U.S ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

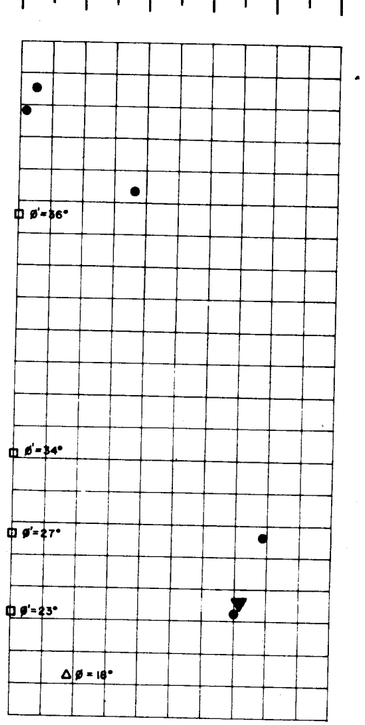
DATE MARCH 1973 FILE NO H-2-24417

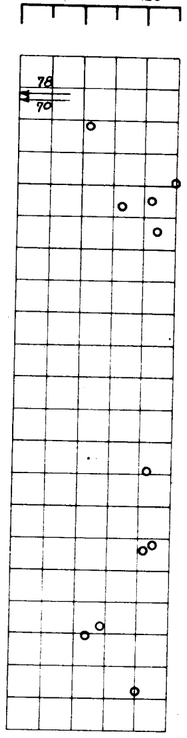
BORING NO. X-15U

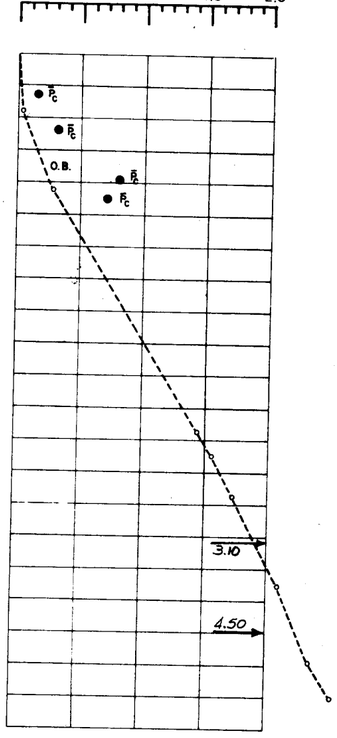
STA. 81+85
16-23 APRIL 1971
482 FT. RIGHT OF B.L.

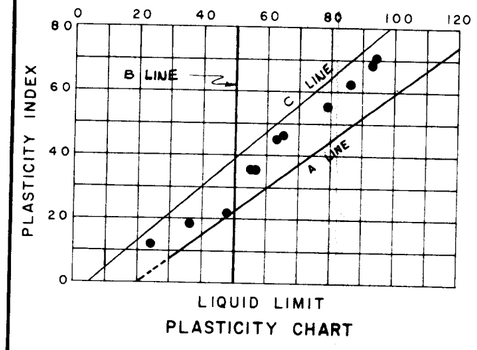




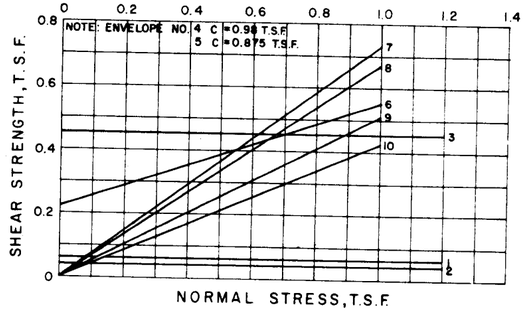








PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	EL.	TYPE	STRENGTH ϕ°	STRENGTH C, T.S.F.	CLASS
1	- 2.5	Q - ●	0	0.06	O H
2	- 6.0		0	0.04	C H
3	- 18.3		0	0.45	C H
4	- 71.9		0	0.98	C H
5	- 84.0		0	0.875	C H
6	- 94.1	R - Δ	18°	0.22	C L
7	- 22.1	S - □	36°	0	S M
8	- 59.8		34°	0	S M
9	- 71.9		27°	0	C H
10	- 84.0		23°	0	C H

For General Notes
See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 - DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

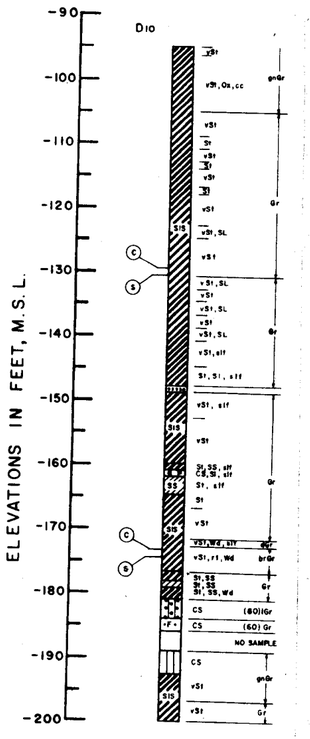
UNDISTURBED SOIL BORING
NO. X-15U, SOIL TEST DATA

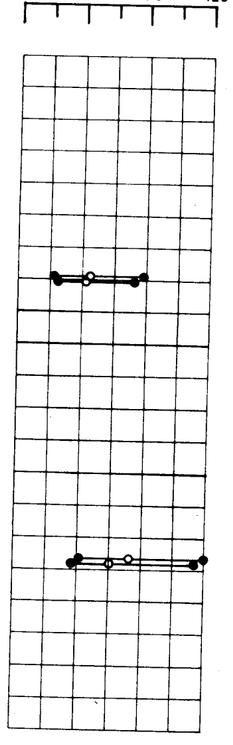
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

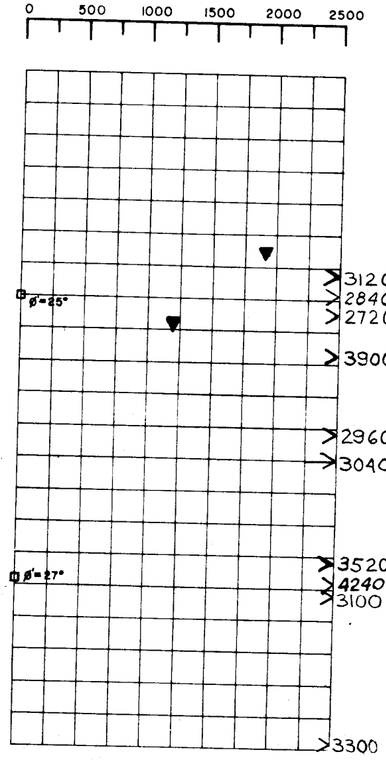
DATE MARCH 1973
FILE NO H-2-24417

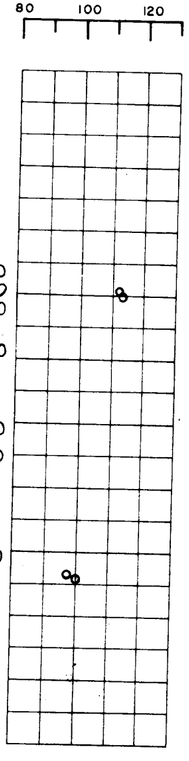
BORING NO. X-15U

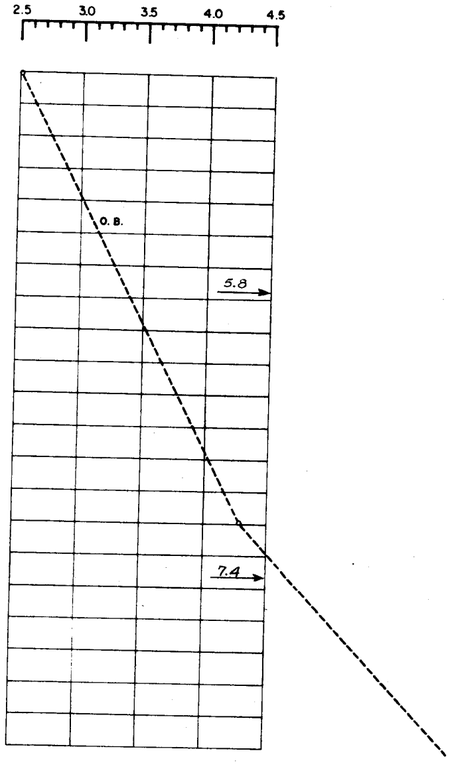
(CONTINUED)

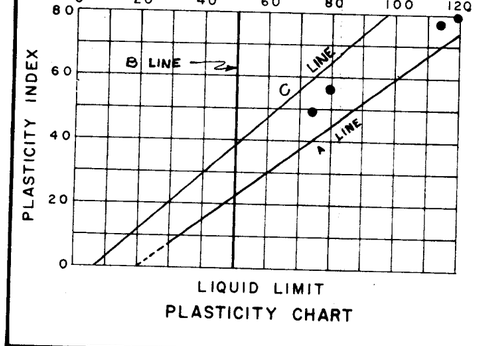


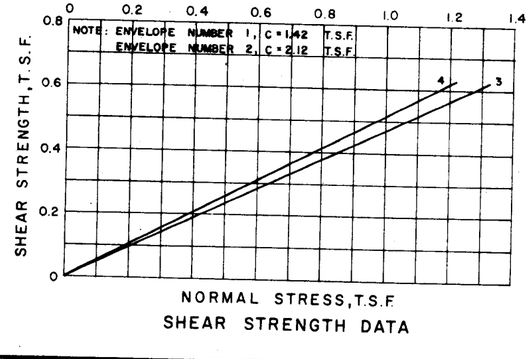












ENVELOPE NO.	ENVELOPE EL.	TYPE	STRENGTH φ°	STRENGTH C, T.S.F.	CLASS
1	-130.1	Q-●	0	1.42	CH
2	-174.2	Q-●	0	2.12	CH
3	-130.1	S-□	25	0	CH
4	-174.2	S-□	27	0	CH

For General Notes
See Plate III-39

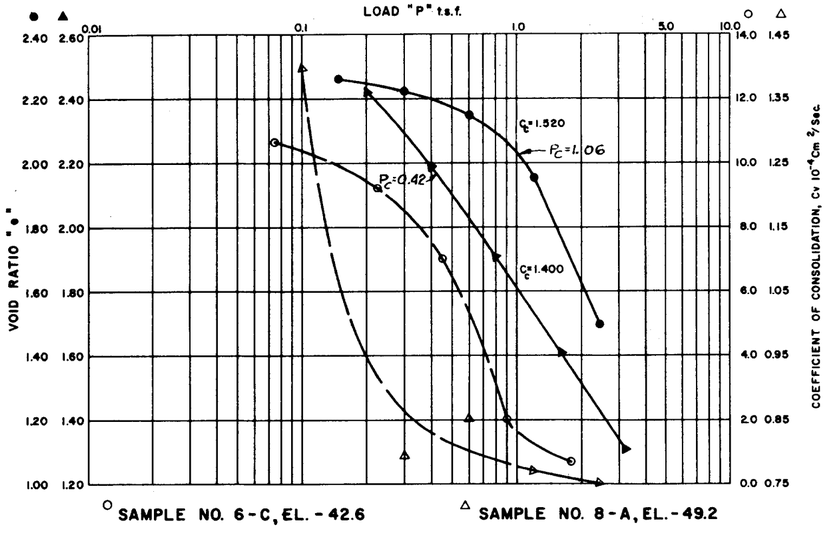
FREDERIC R HARRIS INC
CONSULTING ENGINEERS NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

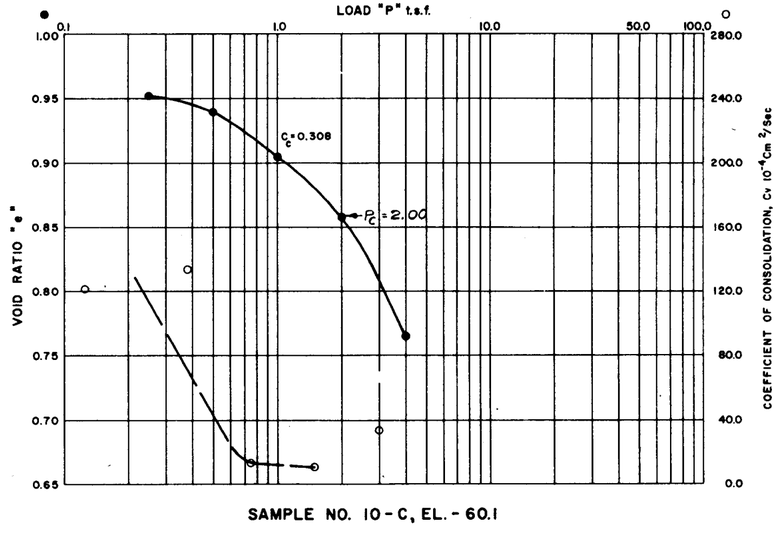
UNDISTURBED SOIL BORING
NO. X-15U, SOIL TEST DATA

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417



○ SAMPLE NO. 6-C, EL. -42.6 △ SAMPLE NO. 8-A, EL. -49.2



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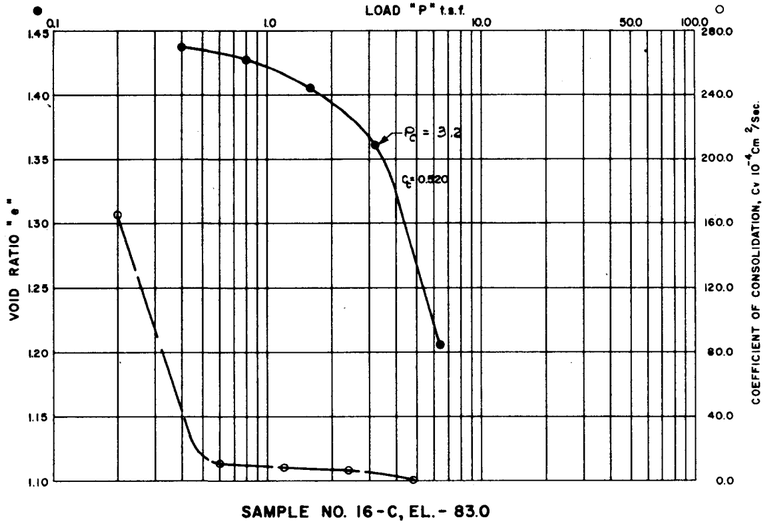
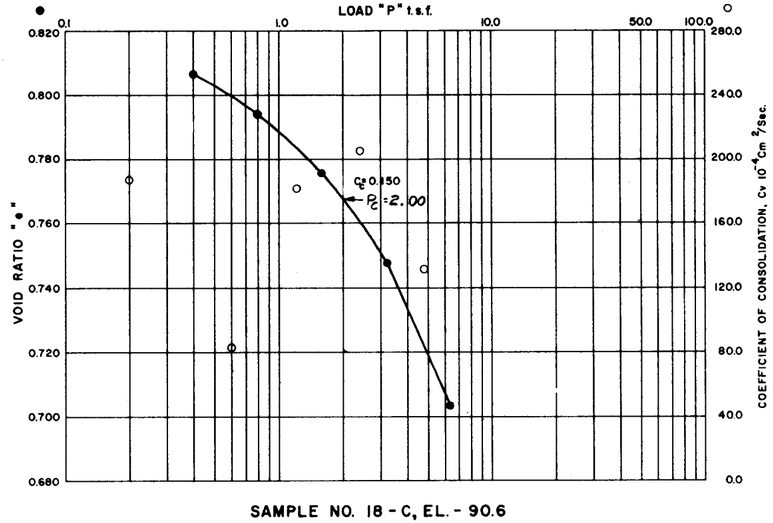


SAMPLE NO. 16-C, EL. -83.0



SAMPLE NO. 18-C, EL. -90.6

For General Notes See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
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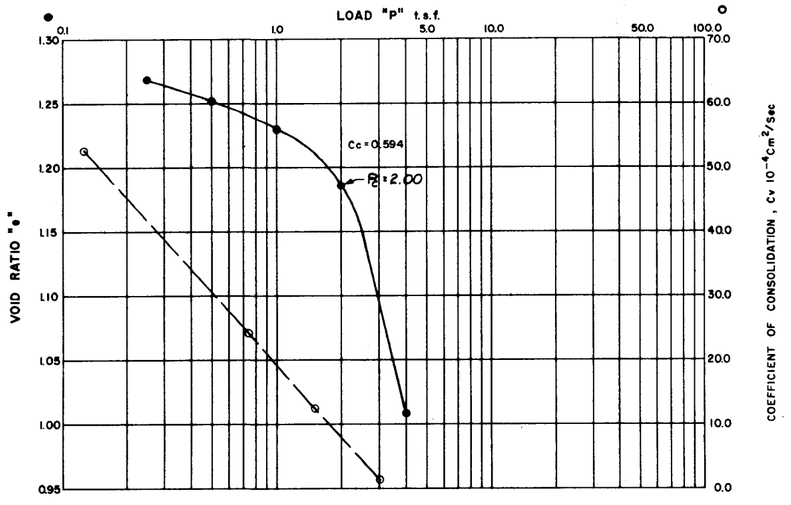
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

CONSOLIDATION TEST RESULTS

BORING X-1U

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO H-2-24417



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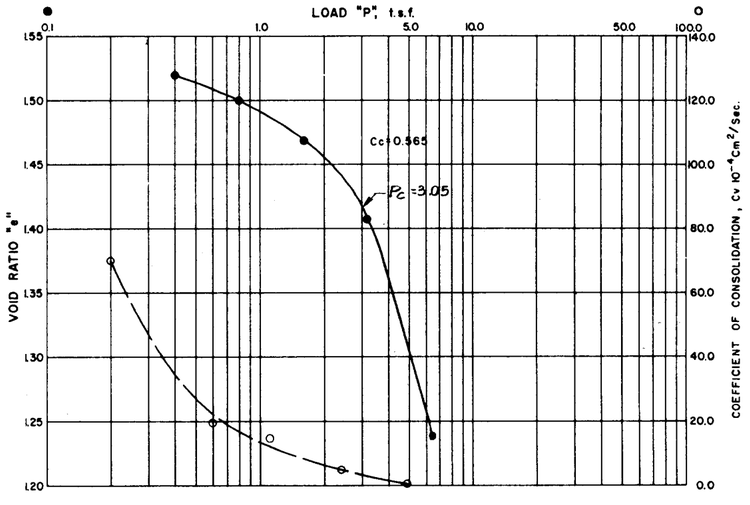

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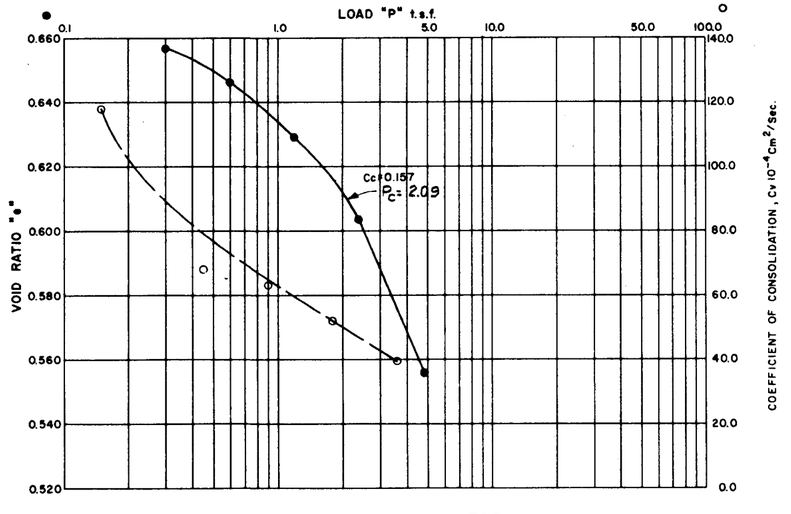

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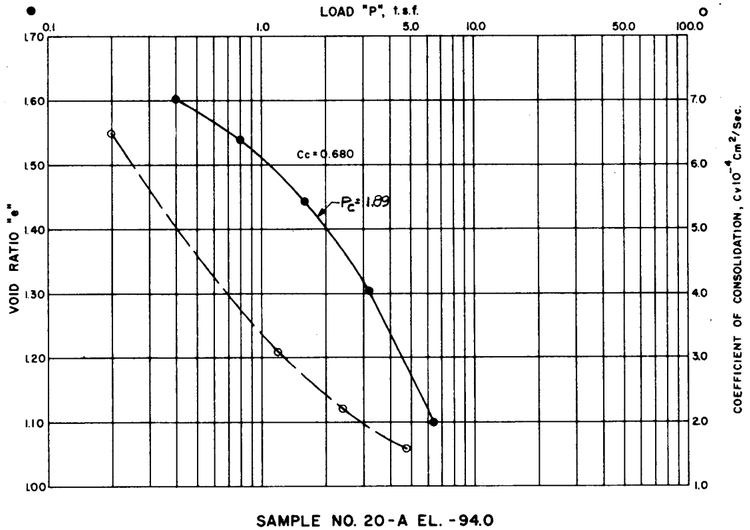

SAMPLE NO. 20-A EL. -94.0

For General Notes
See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA AND VICINITY
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RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

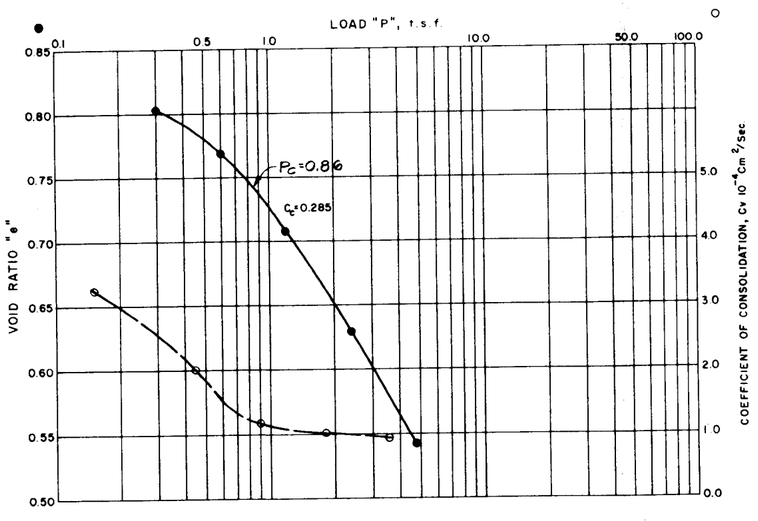
CONSOLIDATION TEST RESULTS

BORING X-3U

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973

FILE NO H-2-24417



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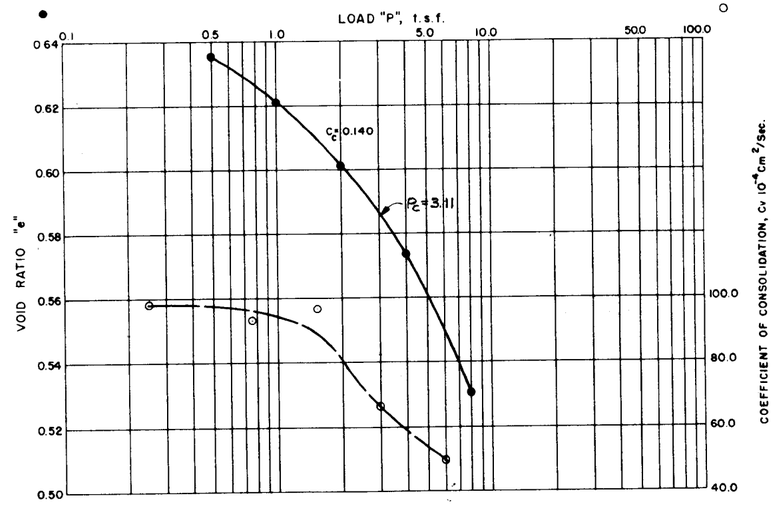
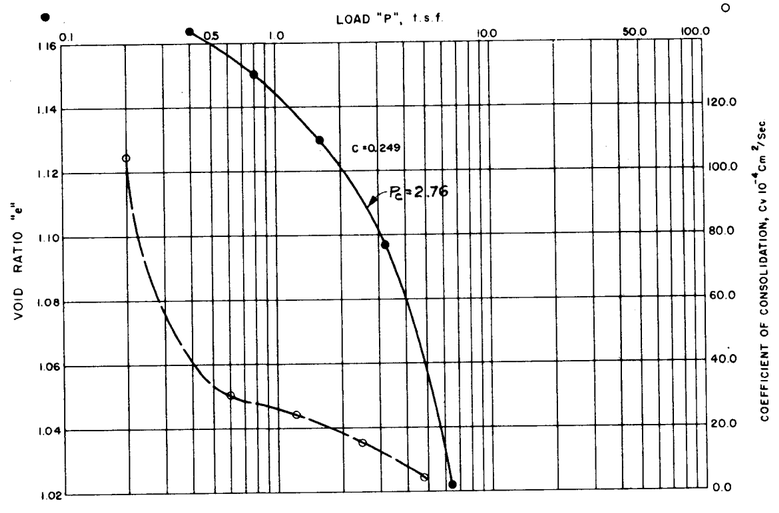


SAMPLE NO. 18-C, EL.-90.7



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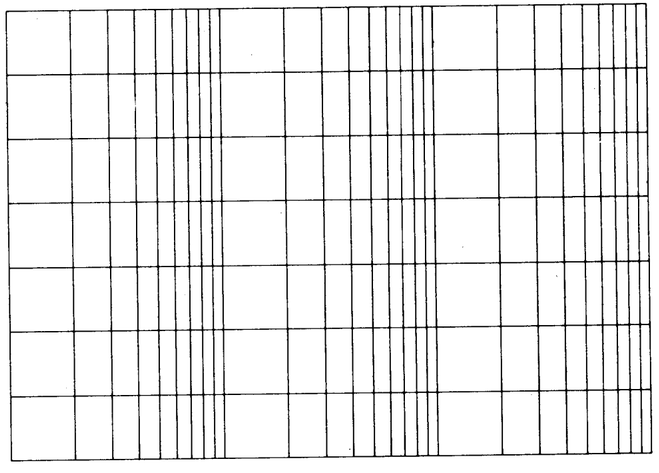


For General Notes
See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS NEW ORLEANS LA

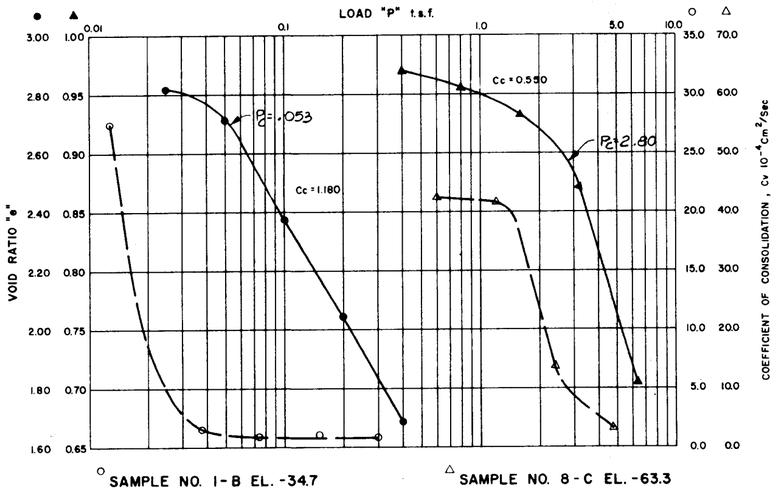
LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

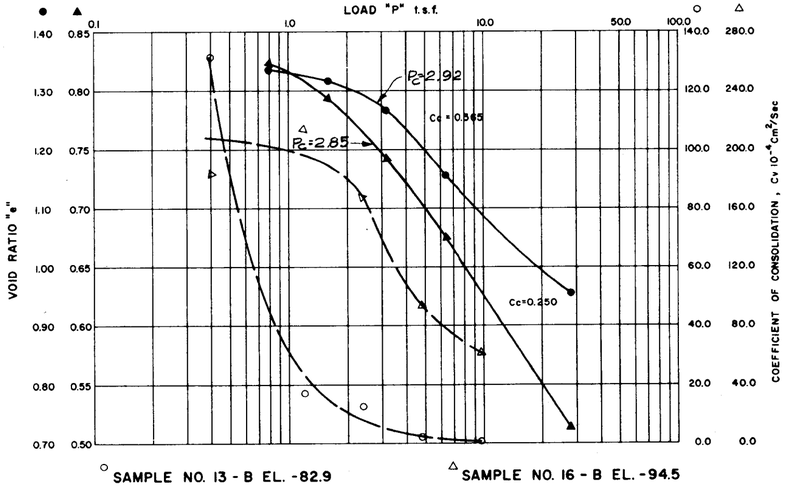
CONSOLIDATION TEST RESULTS

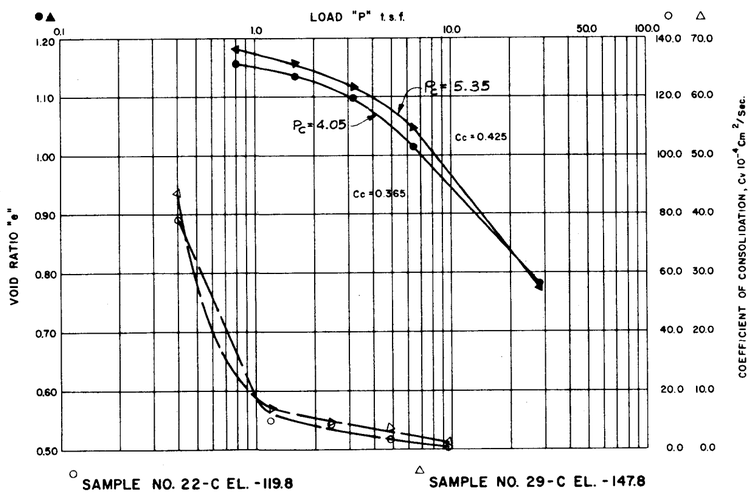
BORING X-5U

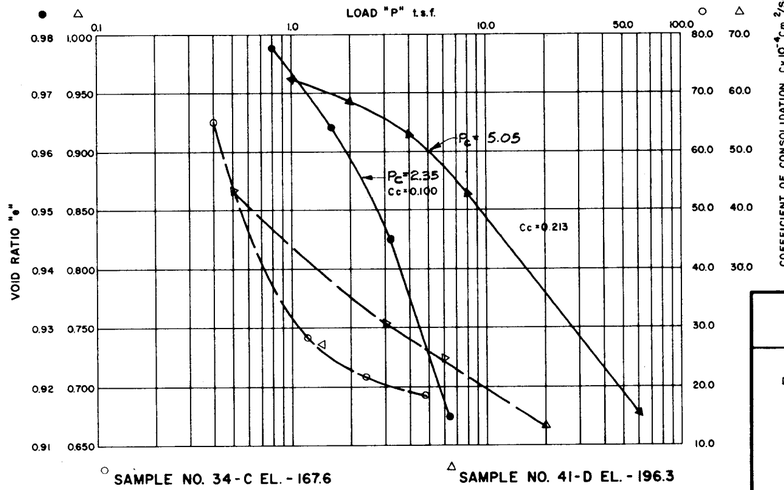
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417









For General Notes
See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

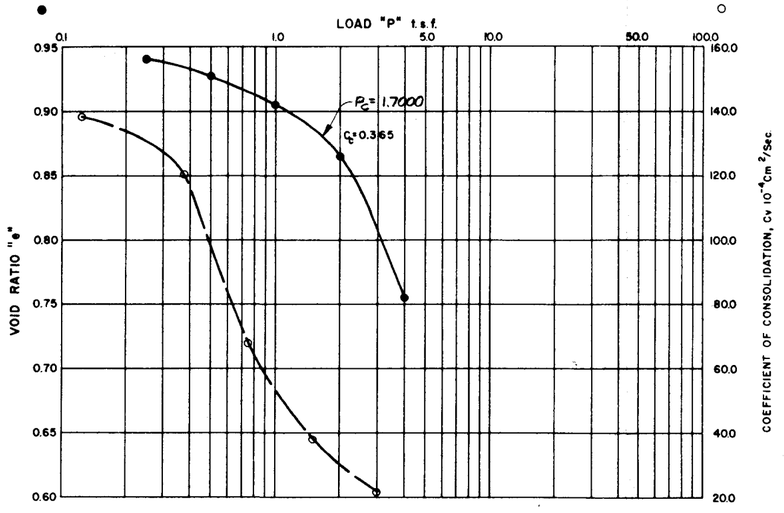
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

CONSOLIDATION TEST RESULTS

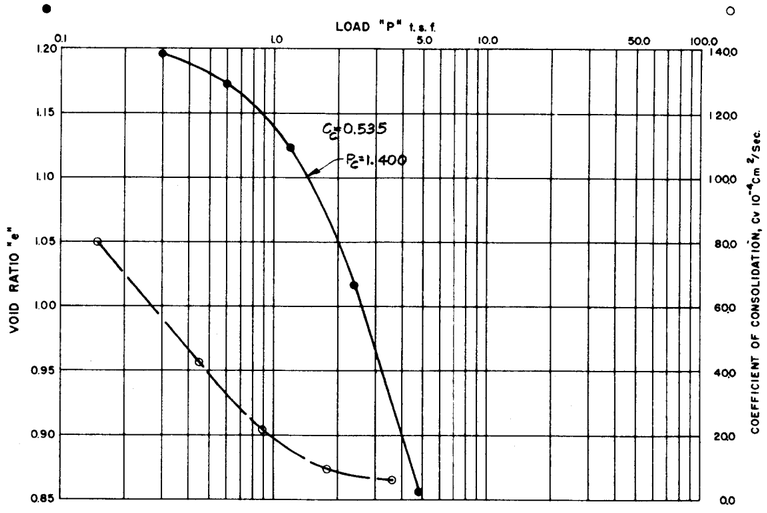
BORING X-7U

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

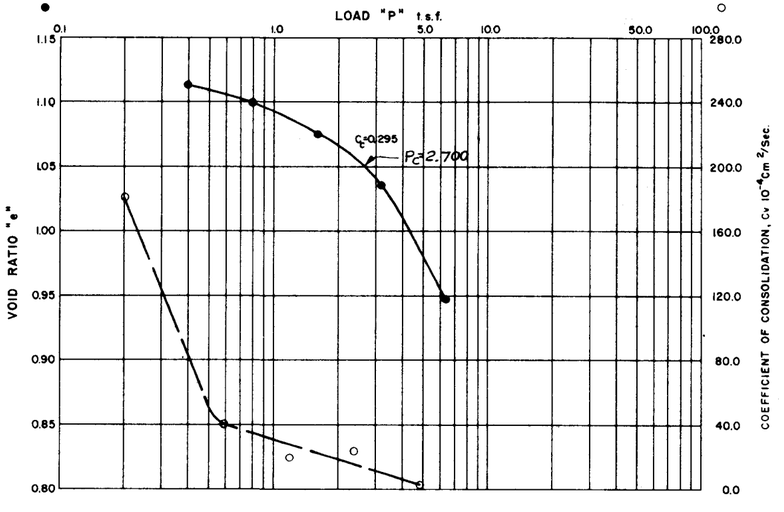
DATE MARCH 1973 FILE NO H-2-24417



SAMPLE NO. 10-B, EL. - 58.7



SAMPLE NO. 12-C_2, EL. - 67.6



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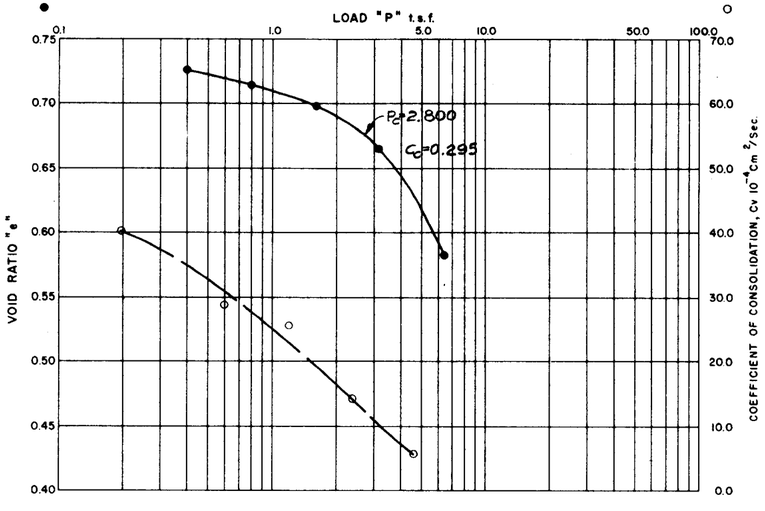

SAMPLE NO. 17-C, EL. - 87.6

For General Notes
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FREDERIC R HARRIS INC
CONSULTING ENGINEERS NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
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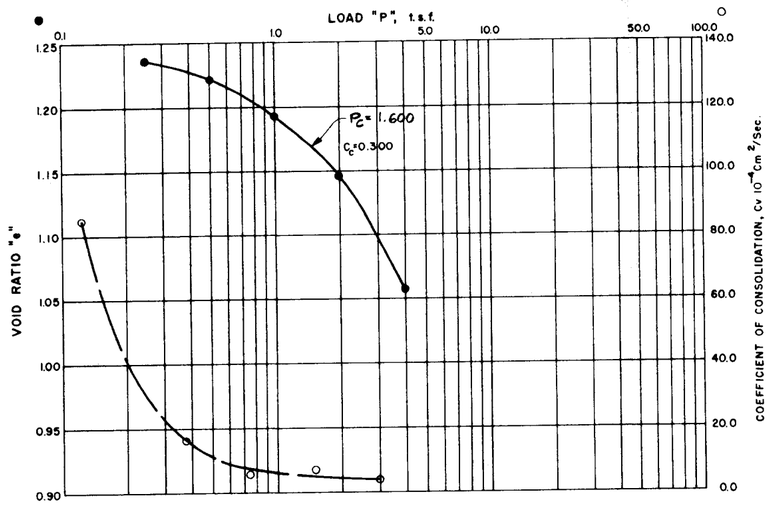
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

CONSOLIDATION TEST RESULTS

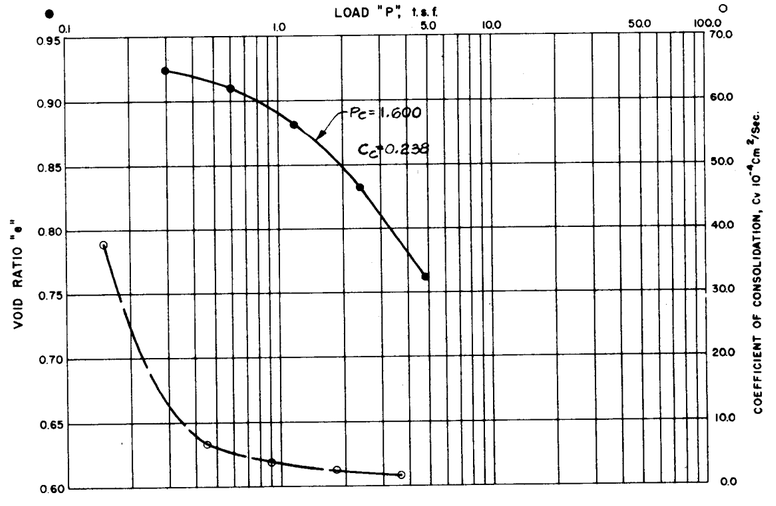
BORING X-8U

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

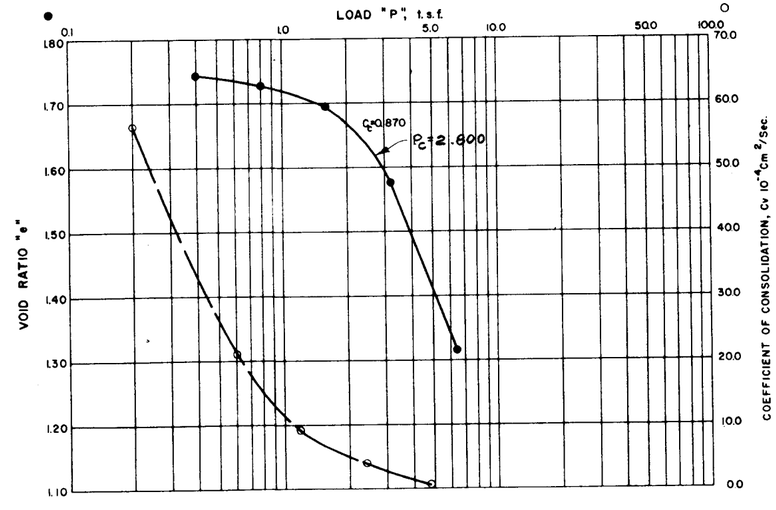
DATE MARCH 1973 FILE NO H-2-24417



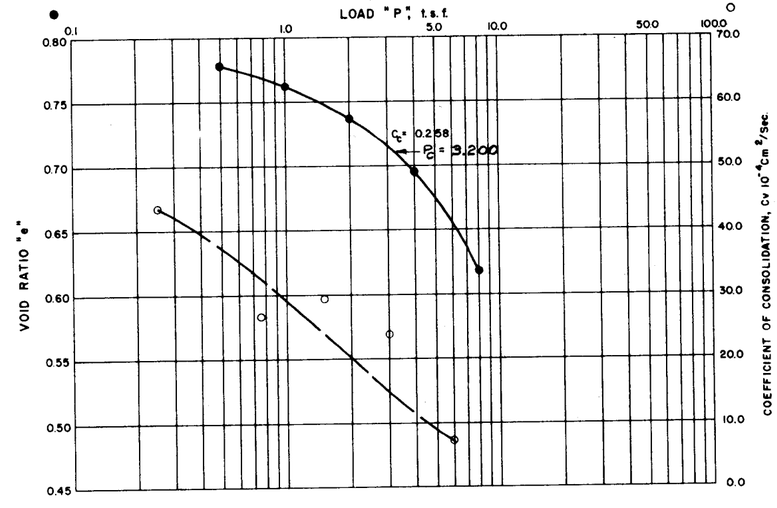
SAMPLE NO. 9 - A, EL. -61.6



SAMPLE NO. 11 - A, EL. -69.7



SAMPLE NO. 15 - C, EL. -87.0



SAMPLE NO. 17 - C, EL. -94.8

For General Notes
See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

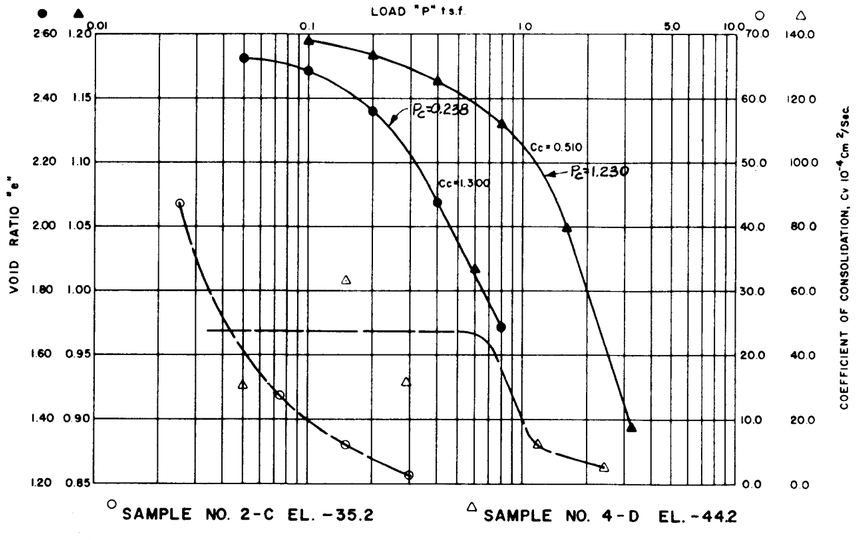
LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

CONSOLIDATION TEST RESULTS

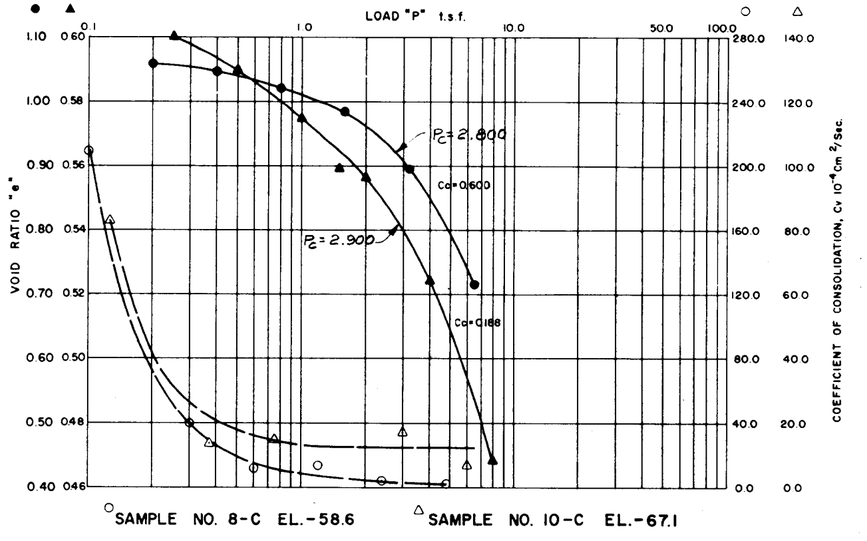
BORING X-9U

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

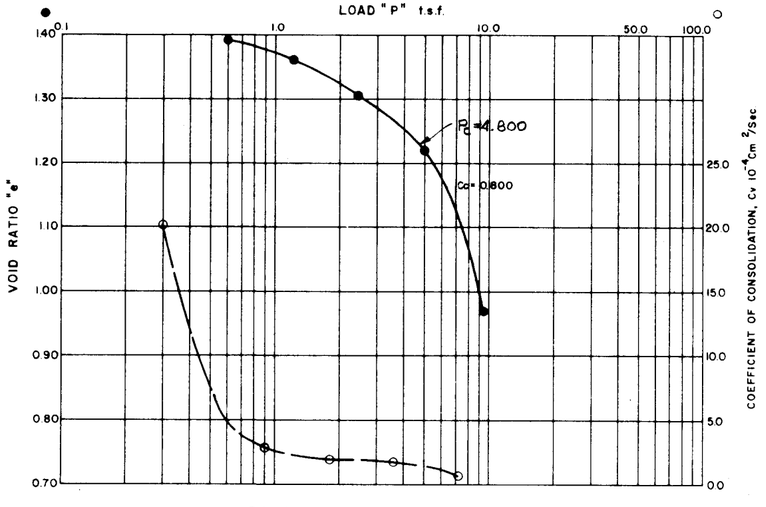
DATE MARCH 1973 FILE NO H-2-24417



○ SAMPLE NO. 2-C EL. -35.2 △ SAMPLE NO. 4-D EL. -44.2



○ SAMPLE NO. 8-C EL. -58.6 △ SAMPLE NO. 10-C EL. -67.1



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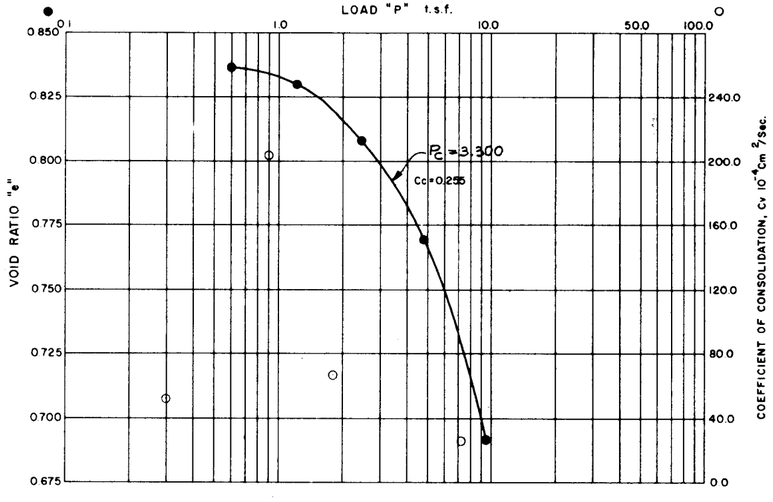


SAMPLE NO. 17-D EL. -95.5

For General Notes
See Plate III-39

FREDERIC R HARRIS INC.
CONSULTING ENGINEERS NEW ORLEANS LA

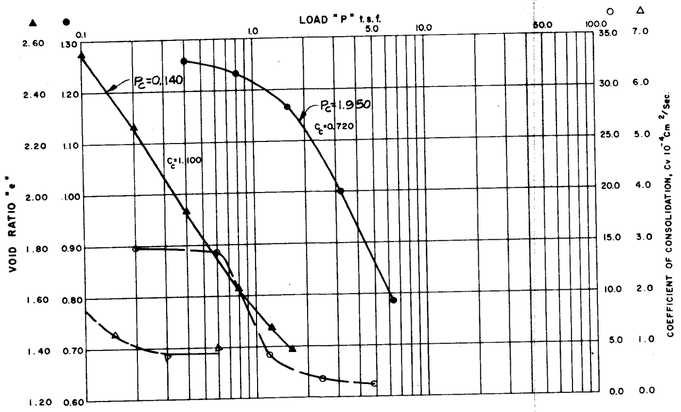
LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

CONSOLIDATION TEST RESULTS

BORING X-10U

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417



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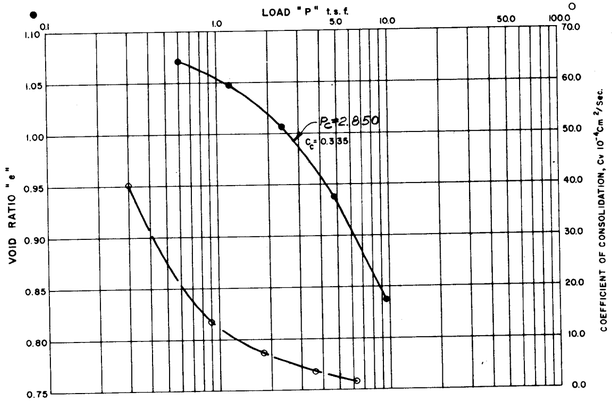

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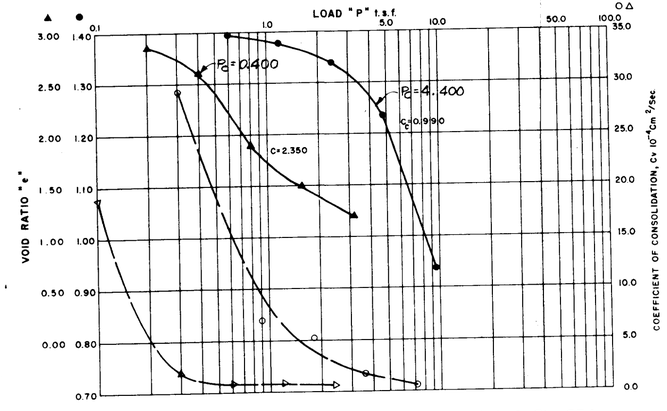
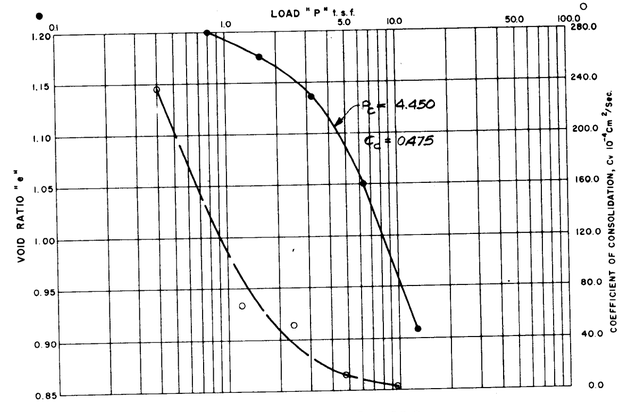


○ SAMPLE NO. 13-C, EL.-81.7 △ SAMPLE NO. 2-C, EL.-37.4



SAMPLE NO. 16-B, EL.-92.8

For General Notes
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FREDERIC R HARRIS INC
CONSULTING ENGINEERS NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
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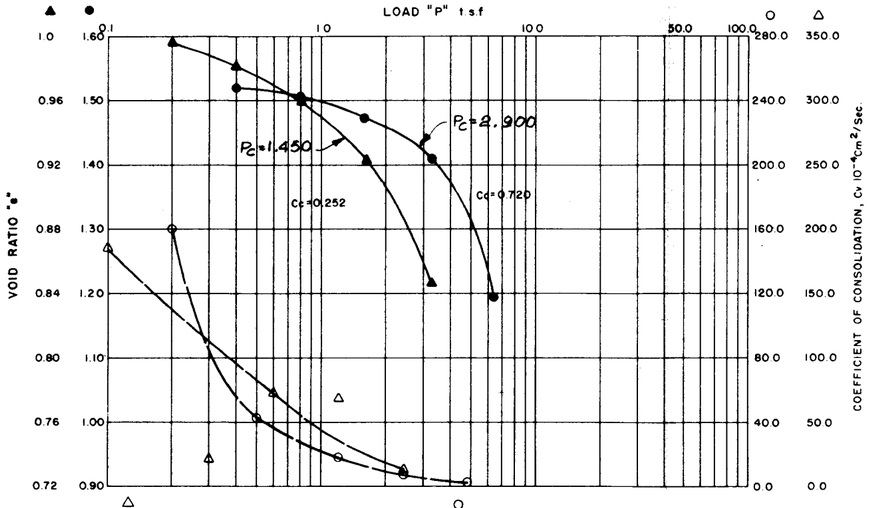
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

CONSOLIDATION TEST RESULTS

BORING X-110

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417



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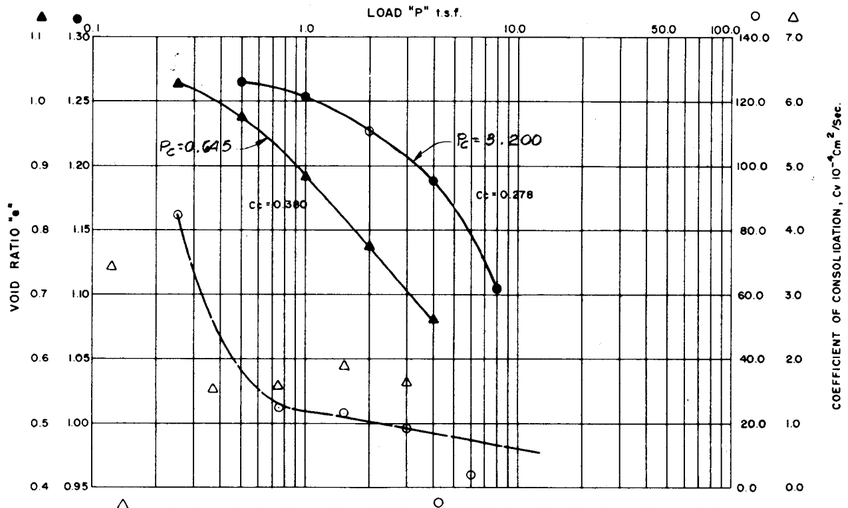
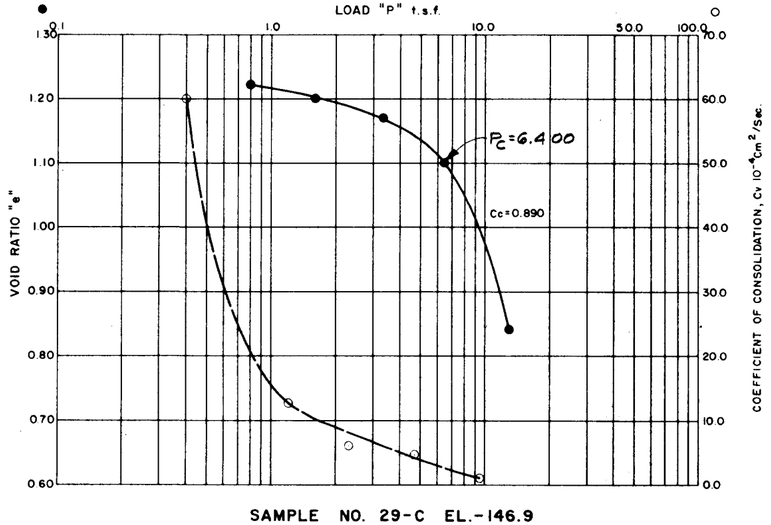


SAMPLE NO. 9-B , EL.-65.9 SAMPLE NO. 21-B , EL.-114.0



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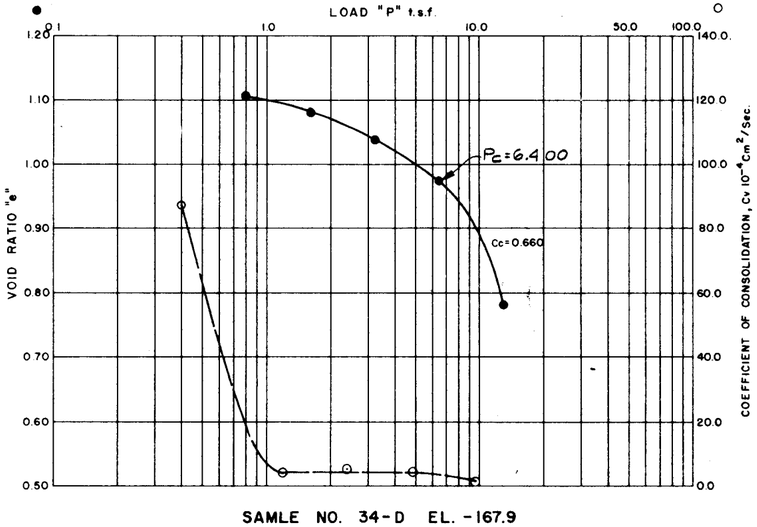

SAMLE NO. 34-D EL. -167.9

For General Notes
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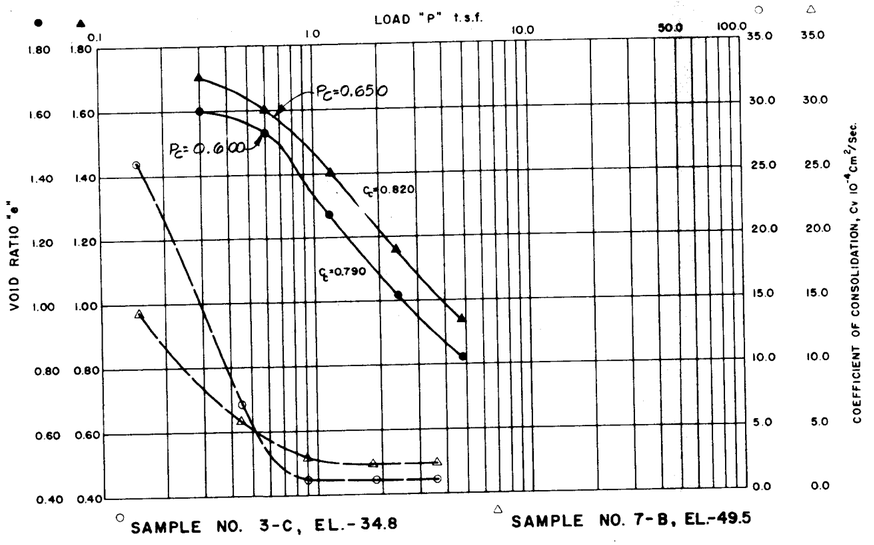
FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

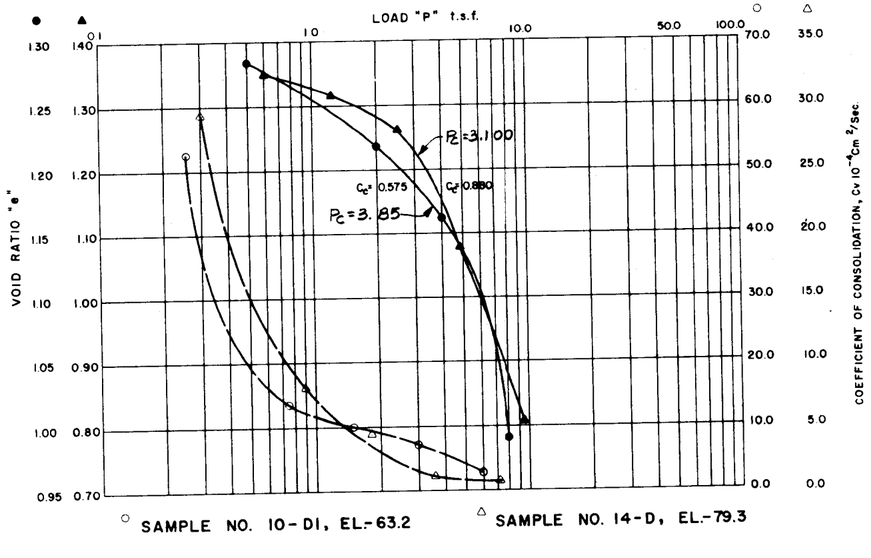
LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

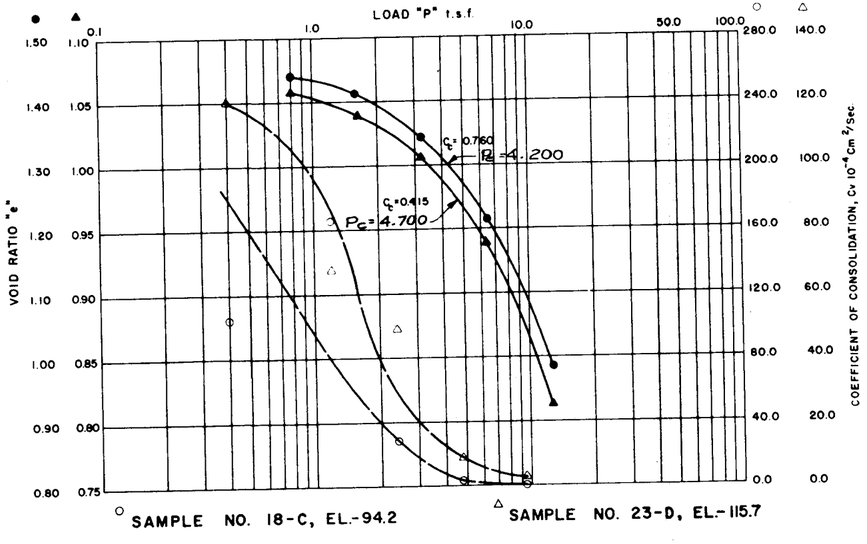
CONSOLIDATION TEST RESULTS
BORING X-12U

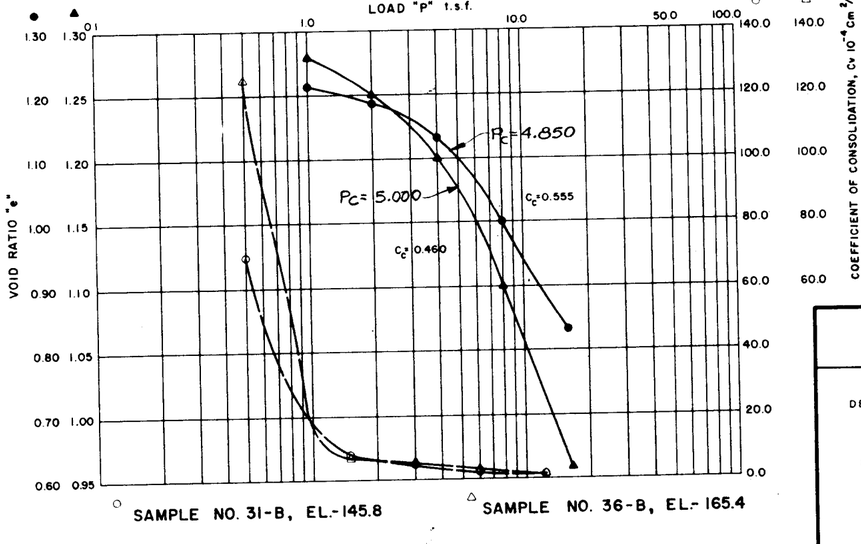
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO H-2-24417









For General Notes
See Plate III-39

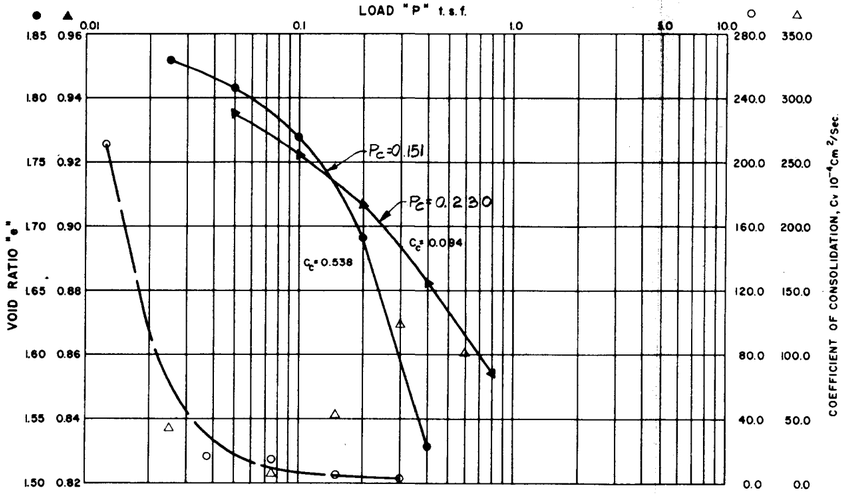
FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

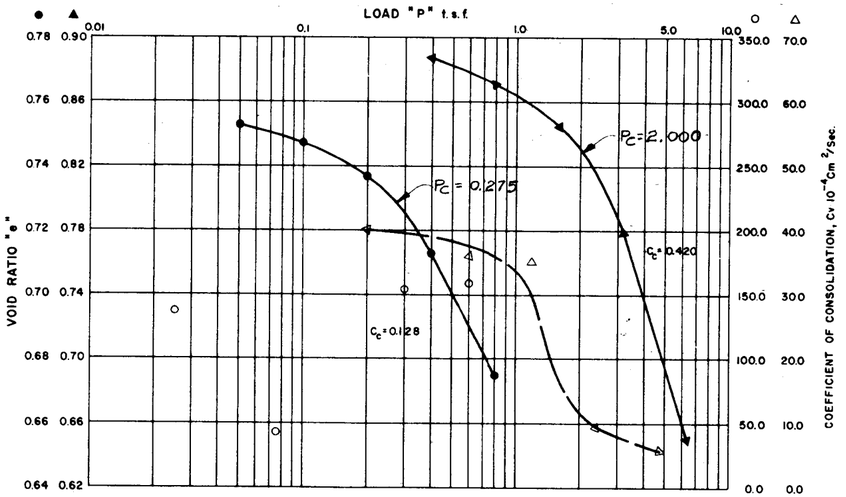
CONSOLIDATION TEST RESULTS
BORING X-13U

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

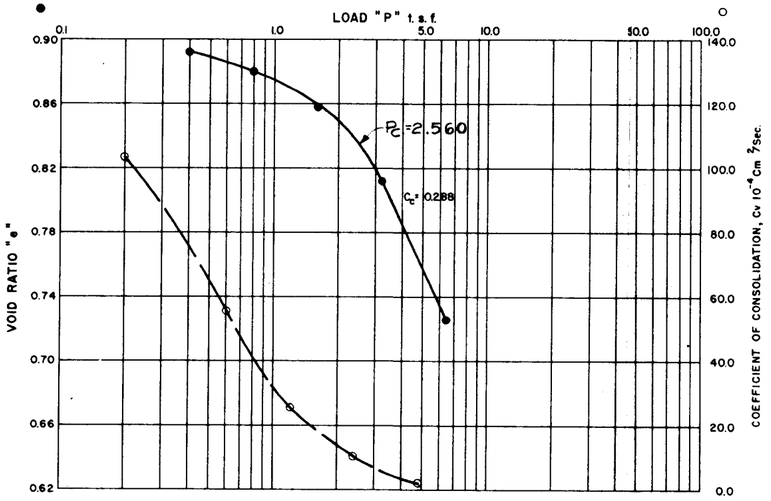
DATE MARCH 1973 FILE NO H-2-24417



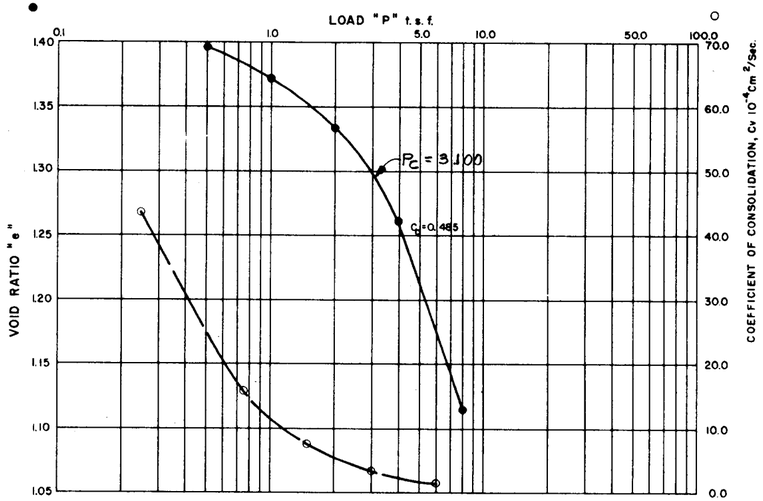
○ SAMPLE NO. 1-B_1, EL. -1.4 △ SAMPLE NO. 2-C_2, EL. -6.7



○ SAMPLE NO. 4-B_2, EL. -14.2 △ SAMPLE NO. 15-C, EL. -59.2



SAMPLE NO. 17-C, EL. -67.1



SAMPLE NO. 21-B, EL. -81.6

For General Notes
See Plate III-39

FREDERIC R. HARRIS INC.
CONSULTING ENGINEERS — NEW ORLEANS, LA.

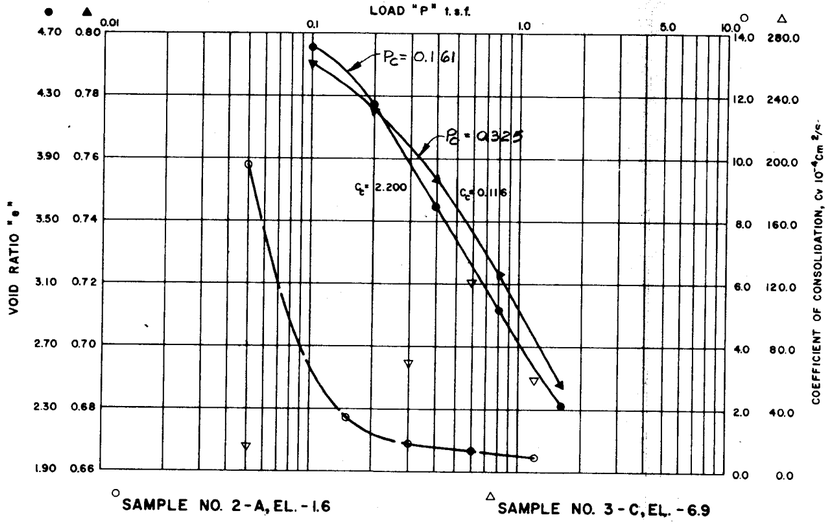
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

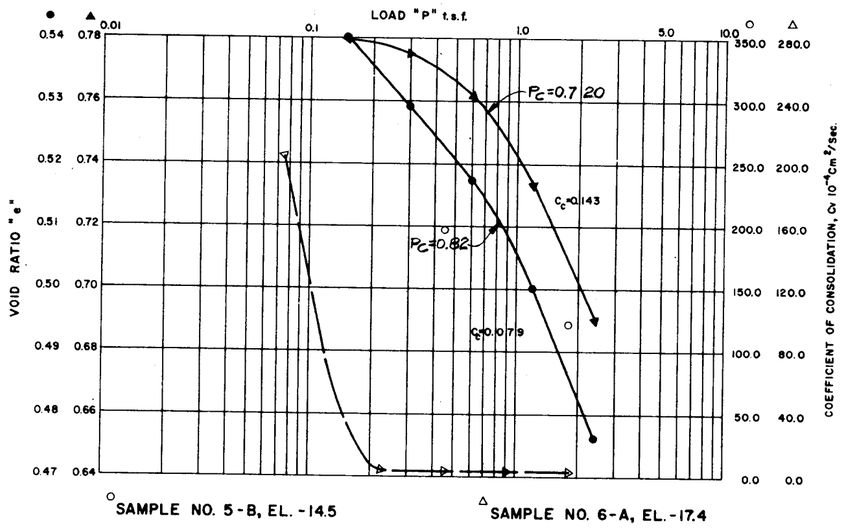
CONSOLIDATION TEST RESULTS

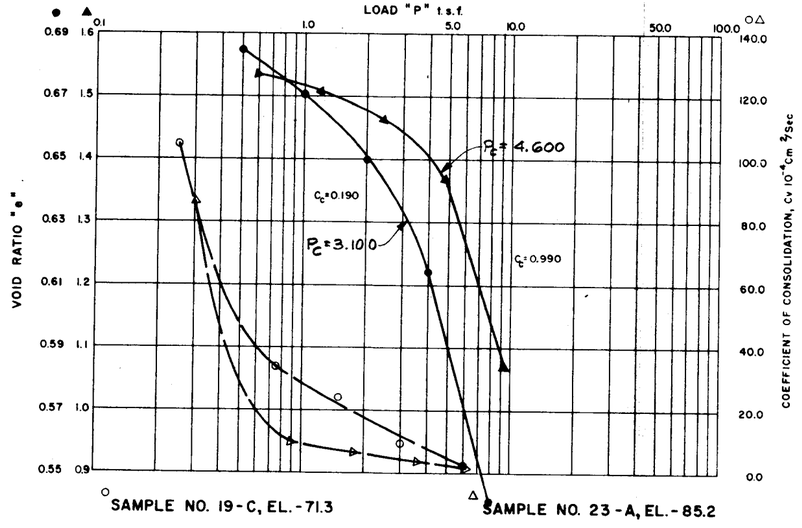
BORING X-14U

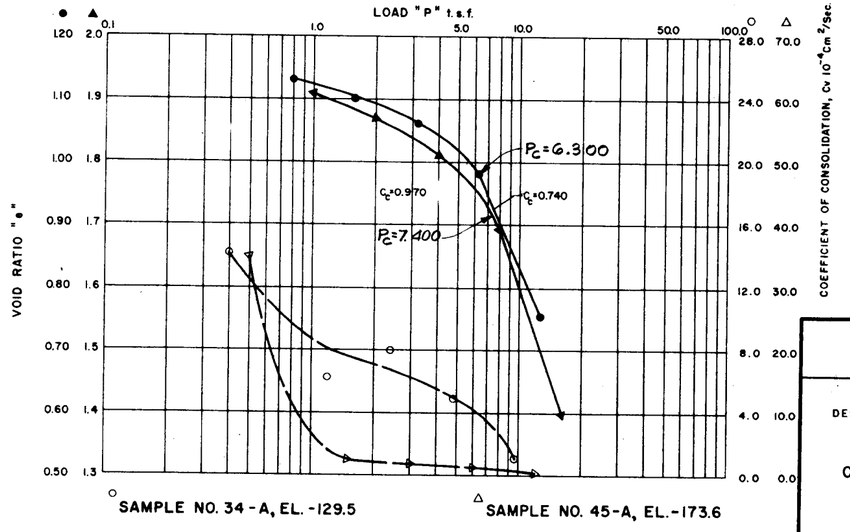
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417









For General Notes
See Plate III-39

FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

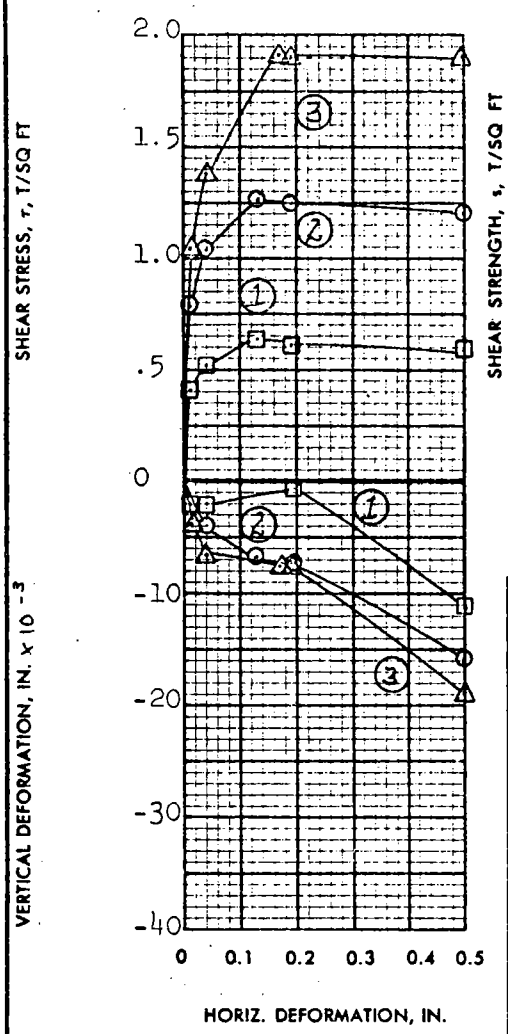
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

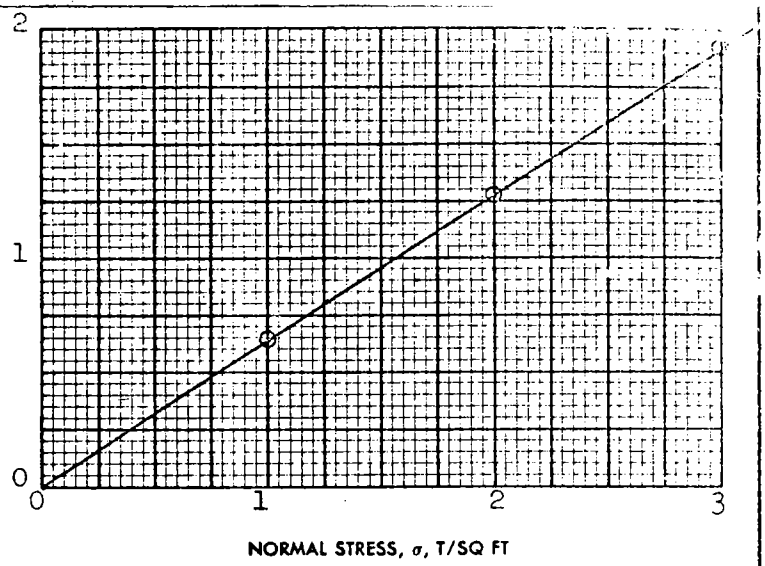
CONSOLIDATION TEST RESULTS

BORING X-15U

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	25.1 %	25.2%	26.1%	%
	VOID RATIO	e_o	0.682	0.691	0.716	
	SATURATION	S_o	97.9%	97.0 %	97.0 %	%
	DRY DENSITY, LB/CU FT	γ_d	98.7	98.2	96.8	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	< 1	< 1	< 1	
FINAL	WATER CONTENT	w_f	23.3%	23.1%	23.2%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.64	1.27	1.93	
ACTUAL TIME TO FAILURE, MIN		t_f	960	900	1200	
RATE OF STRAIN, IN./MIN			.00016	.00016	.00016	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

$\phi' = 32°$

TAN $\phi' = 0.635$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.539 IN. THICK

CLASSIFICATION SILTY SAND(SM),gray

LL - PL - PI - G. 2.66

REMARKS

PROJECT LK. PONT.,LA.&VIC.-HURR. PROT.(1971)

RIGOLETS CONTROL STR.&CLOSURE DAM;DDM NO. 6

AREA

BORING NO. X-1-U SAMPLE NO. 4-C

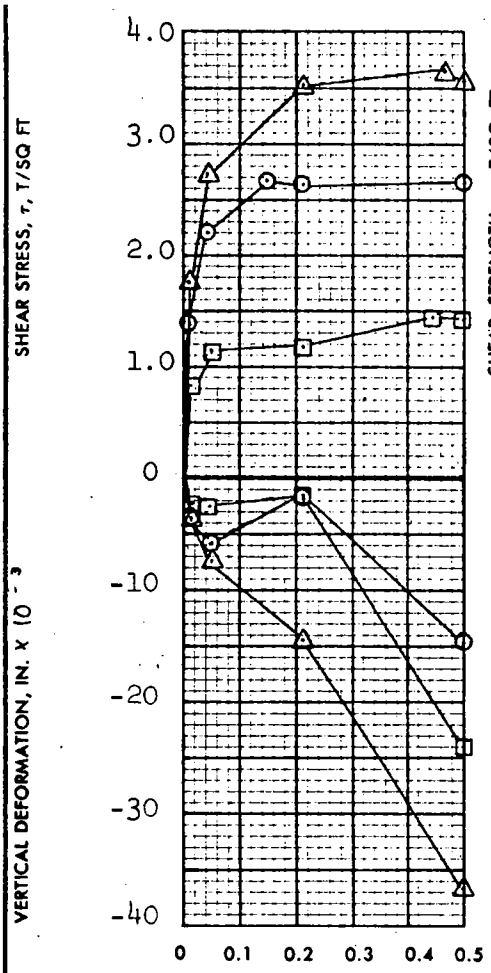
DEPTH EL -35.1 MSL DATE 13 Dec. 1971

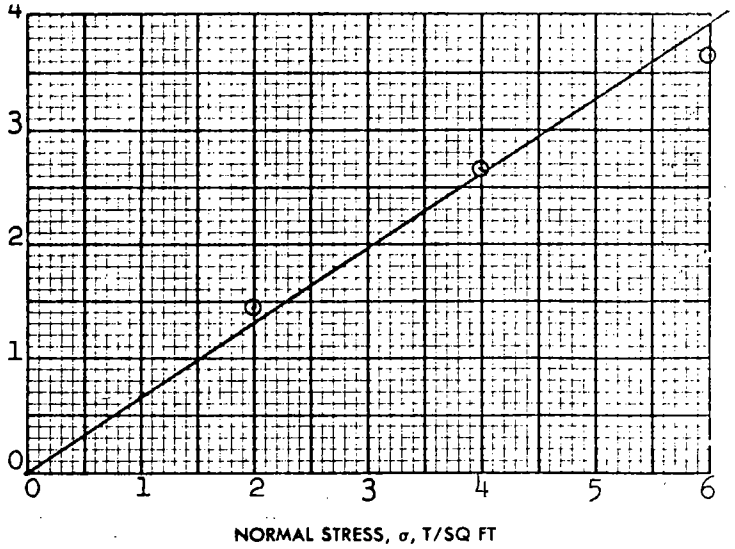
GDA

DIRECT SHEAR TEST REPORT

ENG FORM 2092 (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT)

PLATE III-67





SHEAR STRENGTH PARAMETERS

$\phi' = 33°$

TAN $\phi' = 0.655$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	22.5%	22.1%	21.8%	%
	VOID RATIO	e_o	0.641	0.621	0.636	
	SATURATION	S_o	93.7%	95.0%	91.5%	%
	DRY DENSITY, LB/CU FT	γ_d	101.6	102.8	101.9	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}				
FINAL	WATER CONTENT	w_f	24.3%	24.2%	23.8%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	1.44	2.68	3.65	
ACTUAL TIME TO FAILURE, MIN		t_f	2580	900	2880	
RATE OF STRAIN, IN./MIN			.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.546 IN. THICK

CLASSIFICATION SAND(SP), F, gray, contains a trace of silt and clay

LL - PL - PI - G. 2.67

REMARKS

PROJECT LK. PONT., LA.&VIC.-HURR. PROT.(1971)

RIGOLETS CONTROL STR.&CLOSURE DAM;DDM NO. 6

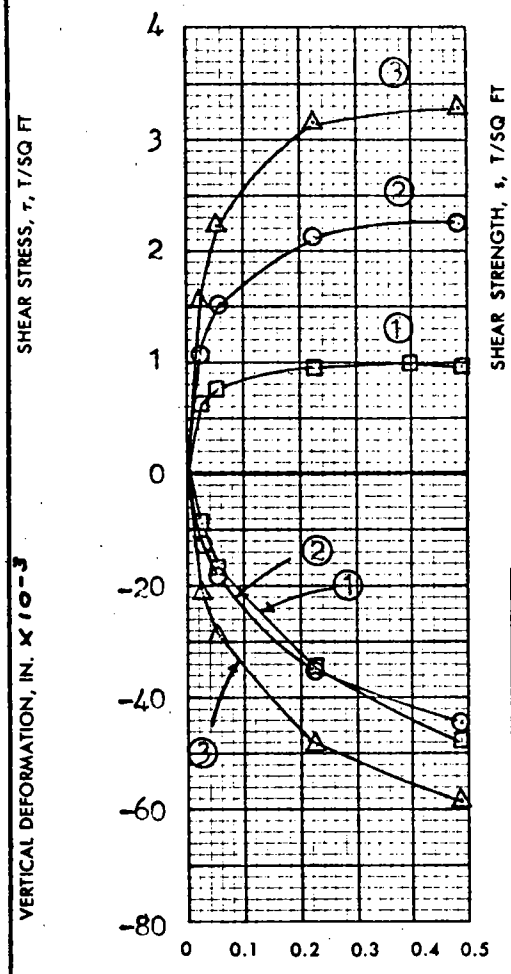
AREA

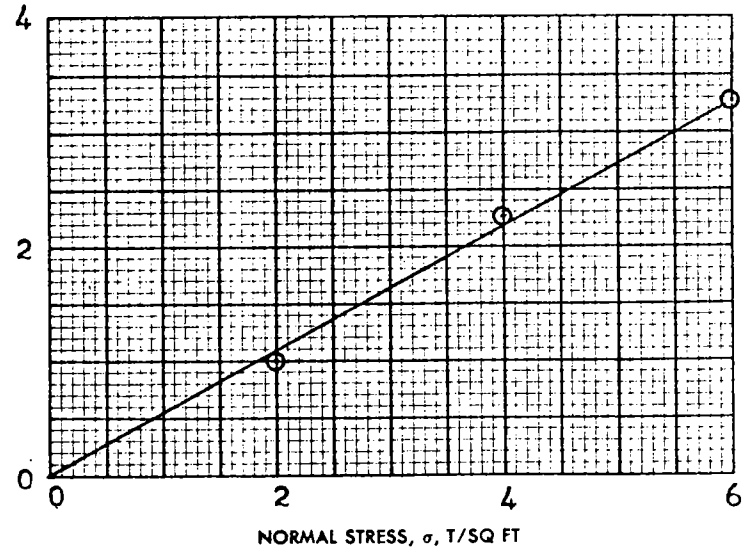
BORING NO. X-10-U SAMPLE NO. 6-D

DEPTH EL -51.9 MSL DATE 5 Jan. 1972

BWG

DIRECT SHEAR TEST REPORT





SHEAR STRENGTH PARAMETERS

$\phi' = 29°$

TAN $\phi' = 0.548$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	33.4%	31.6%	33.3 %	%
	VOID RATIO	e_o	0.955	0.913	0.951	
	SATURATION	S_o	94.4%	93.4%	94.5 %	%
	DRY DENSITY, LB/CU FT	γ_d	86.2	88.1	86.4	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	< 1	< 1	< 1	
FINAL	WATER CONTENT	w_f	25.3%	23.9%	28.3 %	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	1.00	2.24	3.29	
ACTUAL TIME TO FAILURE, MIN		t_f	2280	2760	2760	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.538 IN. THICK

CLASSIFICATION LEAN CLAY(CL),gray, contains pockets of sand

LL 41 | PL 15 | PI 26 | G. 2.70

REMARKS

PROJECT LK. PONT.,LA.& VIC.-HURR. PROT.(1971)

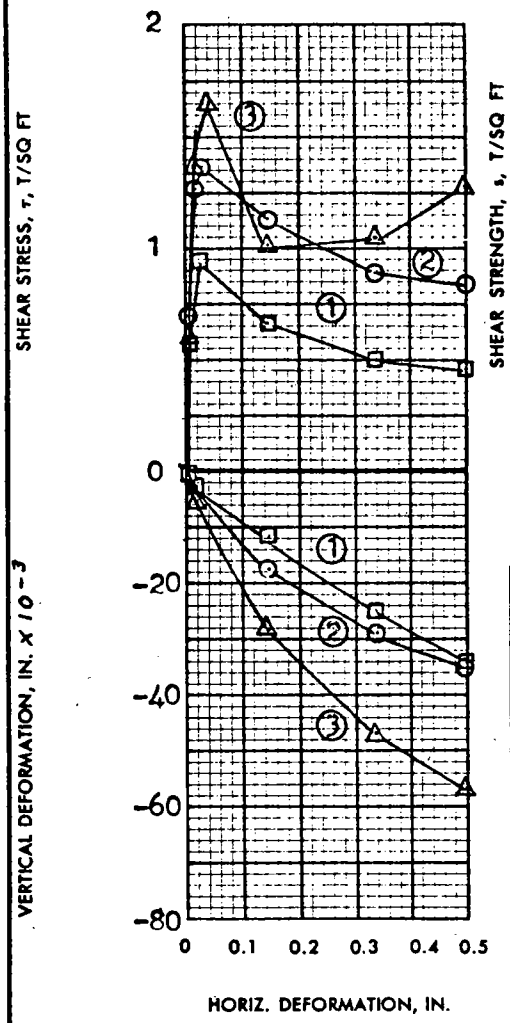
RIGOLETS CONTROL STR.& CLOSURE DAM; DDM NO.6

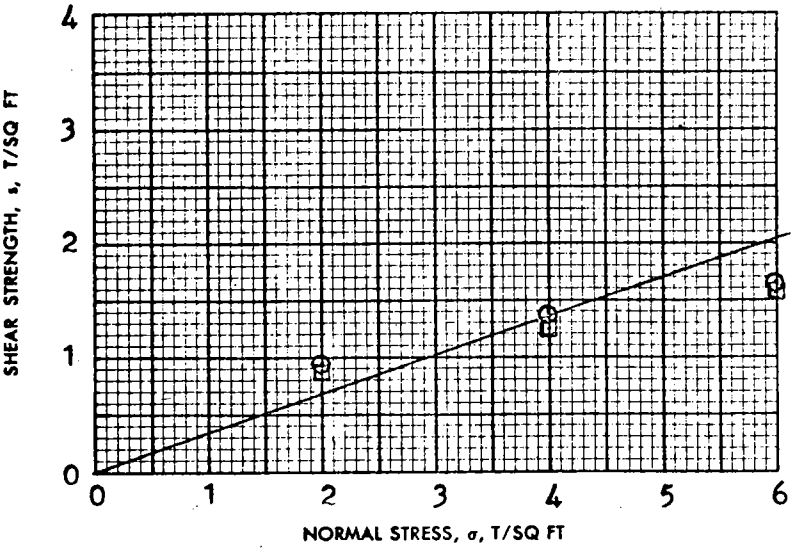
AREA

BORING NO. X-10U | SAMPLE NO. 8-B

~~DEPTH~~ EL -58.2 MSL | DATE 6 January,1972

CDA **DIRECT SHEAR TEST REPORT**





SHEAR STRENGTH PARAMETERS

ϕ' = 19°

TAN ϕ' = 0.343

c' = 0 T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	44.6%	43.9%	44.4%	%
	VOID RATIO	e_o	1.25	1.22	1.23	
	SATURATION	S_o	98.5%	99.3%	99.6%	%
	DRY DENSITY, LB/CU FT	γ_d	76.7	77.5	77.4	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	1	1	3	
FINAL	WATER CONTENT	w_f	46.5%	42.3%	40.8%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.94	1.37	1.66	
ACTUAL TIME TO FAILURE, MIN		t_f	390	450	540	
RATE OF STRAIN, IN./MIN			.00013	.00013	.00013	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.538 IN. THICK

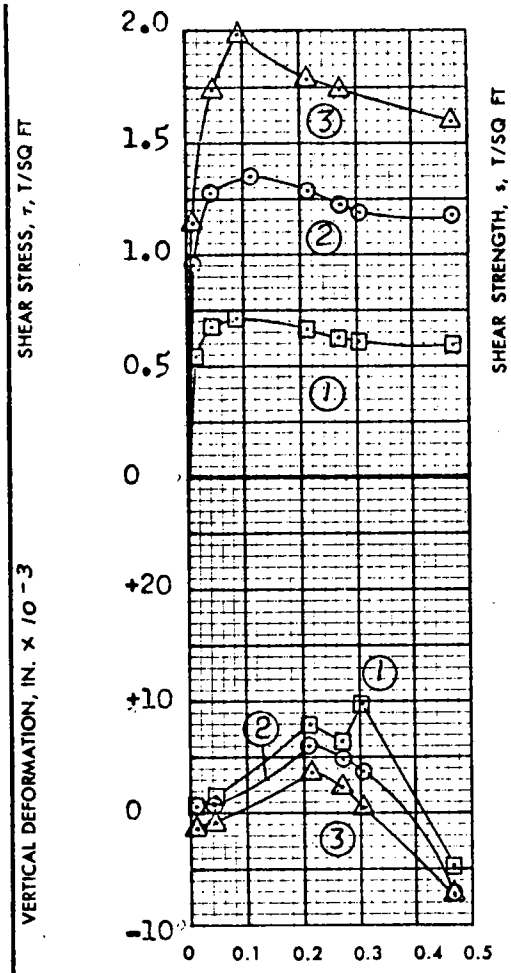
CLASSIFICATION PLASTIC CLAY(CH), gray, slightly slickensided

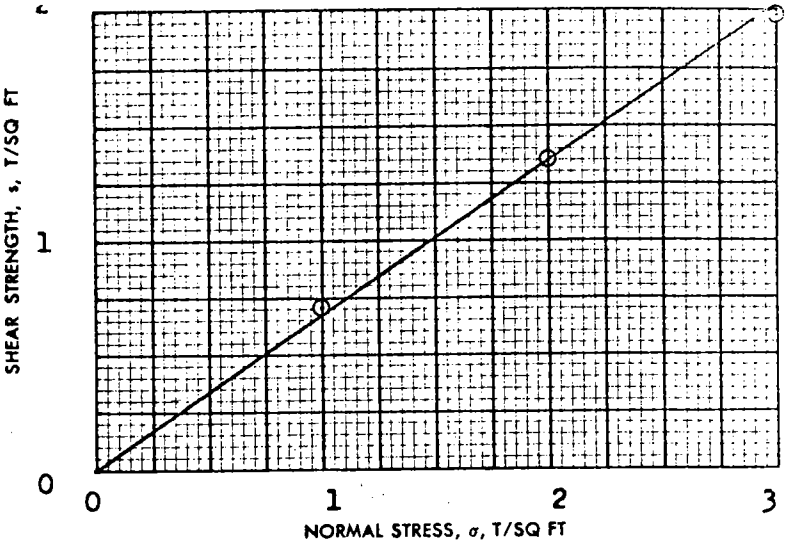
LL 91 | PL 28 | PI 63 | G_s 2.76

REMARKS Rerun test
☐ Strength values of original test.

PROJECT LK. PONT.,LA.& VIC.-HURR. PROT.(1971)
RIGOLETS CONTROL STR. & CLOSURE DAM, DDM NO.6
AREA
BORING NO. X-10U | SAMPLE NO. 13-D
DEPTH EL -80 MSL | DATE 8 February,1972
WJH

DIRECT SHEAR TEST REPORT





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	22.4%	21.9 %	21.1%	%
	VOID RATIO	e_o	0.647	0.620	0.620	
	SATURATION	S_o	92.1%	94.0 %	90.5 %	%
	DRY DENSITY, LB/CU FT	γ_d	100.8	102.5	102.5	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}				
FINAL	WATER CONTENT	w_f	23.2 %	22.4%	22.8%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.71	1.35	1.98	
ACTUAL TIME TO FAILURE, MIN		t_f	660	780	660	
RATE OF STRAIN, IN./MIN			.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

ϕ' = 34°

TAN ϕ' = 0.675

c' = 0 T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.550 IN. THICK

CLASSIFICATION SILTY SAND(SM),gray

LL – PL – PI – G. 2.66

REMARKS

PROJECT LK.PONT.,LA.,& VIC.- HURR. PROT. RICOLETS CONTROL STRUCT. & CLOSURE DAM DDM # 6(1971)

AREA

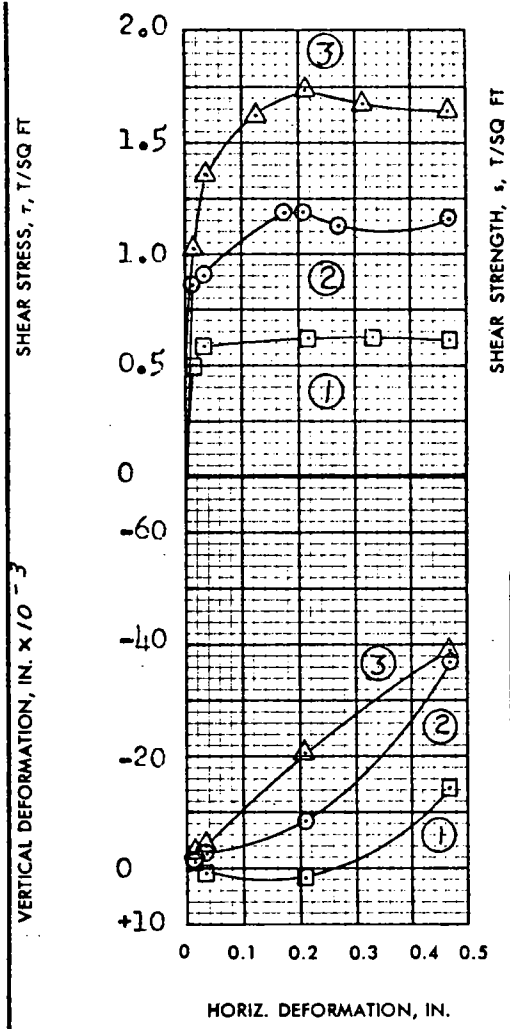
BORING NO. X3-U SAMPLE NO. 6-D

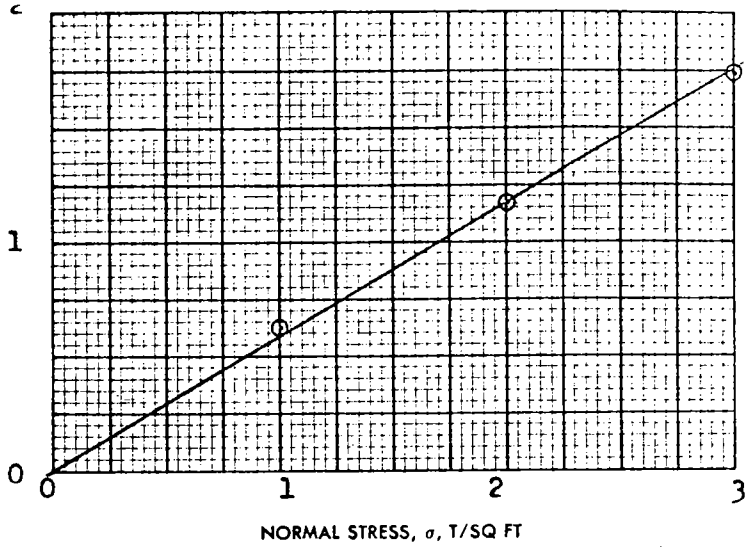
~~DEPTH~~ EL - 40.8 MSL DATE 16 June, 1971

JHMc

DIRECT SHEAR TEST REPORT

ENG FORM 2092 1 JUN 65 (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) USCE GPO SOILS PLATE III-71





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	24.5 %	24.1 %	24.5 %	%
	VOID RATIO	e_o	0.719	0.710	0.757	
	SATURATION	S_o	91.7 %	91.3 %	87.1 %	%
	DRY DENSITY, LB/CU FT	γ_d	97.7	98.2	96.7	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}				
FINAL	WATER CONTENT	w_f	24.5%	25.1%	25.8 %	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.63	1.18	1.74	
ACTUAL TIME TO FAILURE, MIN		t_f	2010	1140	1320	
RATE OF STRAIN, IN./MIN			.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

ϕ' = 31°

TAN ϕ' = 0.59

c' = 0 T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.550 IN. THICK

CLASSIFICATION SILTY SAND(SM),gray, contains finely divided organic matter

LL - | PL - | PI - | | G. 2.69

REMARKS

PROJECT LK.PONT.LA.,& VIC.- HURR. PROT.- RIGOLETS CONTROL STRUCT. AND CLOSURE DAM

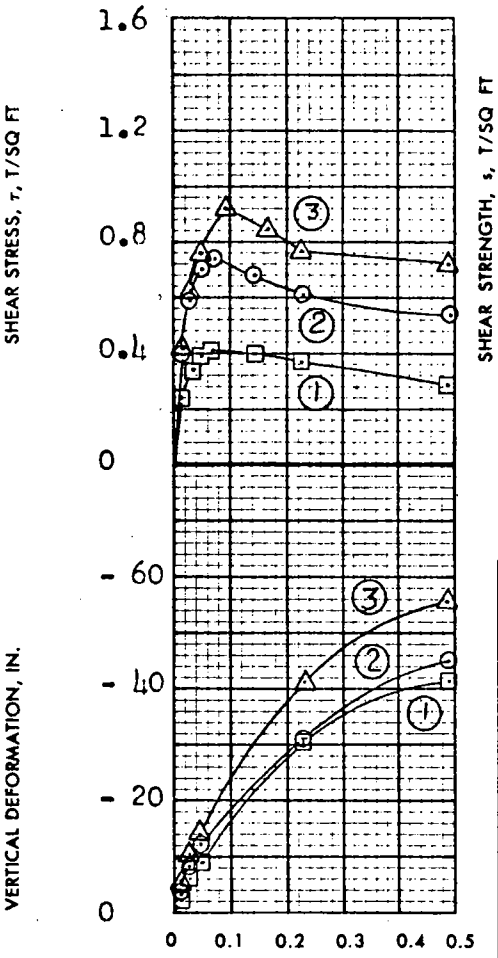
AREA D.D.M. # 6(1971)

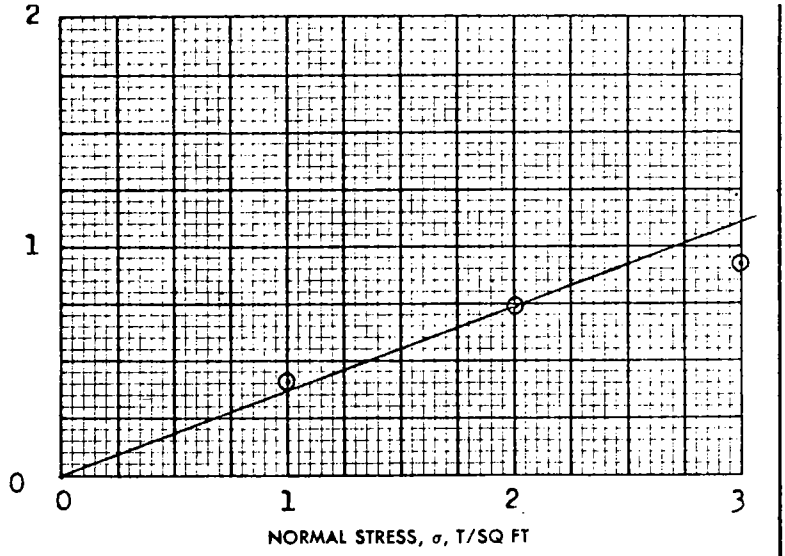
BORING NO. X 3-U | SAMPLE NO. 15 - C

DEPTH EL - 76.0 MSL | DATE 21 June 1971

JHMc **DIRECT SHEAR TEST REPORT**

ENG FORM 1 JUN 65 2092 (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT PAPER) WES SOIL **PLATE III-72**





SHEAR STRENGTH PARAMETERS

$\phi' = 20°$

TAN $\phi' = 0.37$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	62.3 %	57.3 %	64.2 %	%
	VOID RATIO	e_o	1.77	1.65	1.80	
	SATURATION	S_o	96.1 %	94.8 %	97.4 %	%
	DRY DENSITY, LB/CU FT	γ_d	61.6	64.2	60.8	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	7	9	10	
FINAL	WATER CONTENT	w_f	60.6 %	54.4 %	50.3 %	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.41	0.74	0.92	
ACTUAL TIME TO FAILURE, MIN		t_f	480	510	660	
RATE OF STRAIN, IN./MIN			.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.550 IN. THICK

CLASSIFICATION PLASTIC CLAY(CH), gray

LL 105 | PL 26 | PI 79 | G. 2.73

REMARKS

PROJECT LK.PONT., LA., & VIC.-HURR. PROT.-RIGOLETS

CONTROL STR. & CLOSURE DAM; D D M # 6(1971)

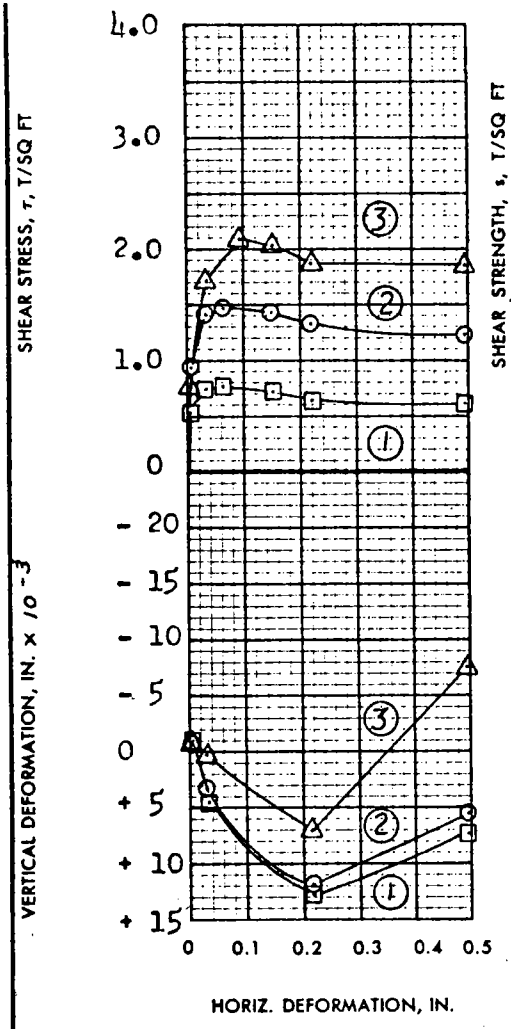
AREA

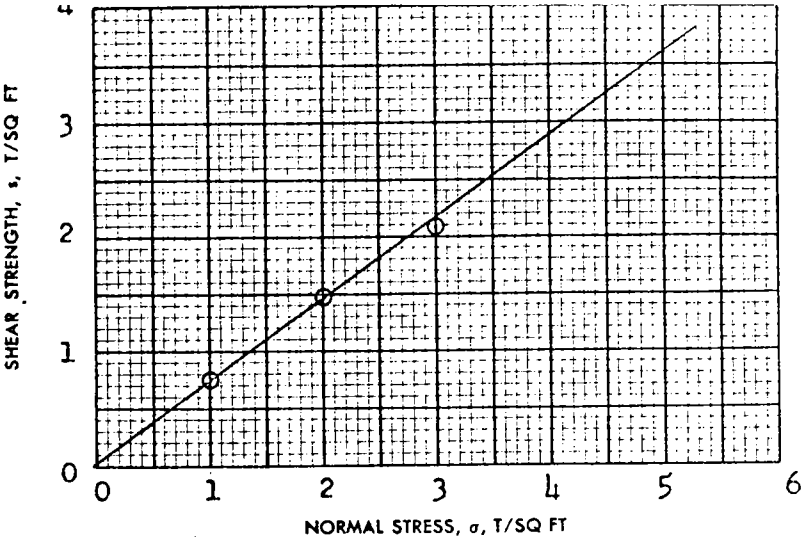
BORING NO. X 3-U | SAMPLE NO. 19-B

DEPTH EL - 90.9 MSL | DATE 23 June 1971

JHMc

DIRECT SHEAR TEST REPORT





SHEAR STRENGTH PARAMETERS

$\phi' = 36^\circ$

TAN $\phi' = 0.74$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	22.2%	21.7%	22.1%	%
	VOID RATIO	e_o	0.582	0.561	0.558	
	SATURATION	S_o	100+%	100+%	100+%	%
	DRY DENSITY, LB/CU FT	γ_d	98.9	100.2	100.4	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}				
FINAL	WATER CONTENT	w_f	18.9%	19.2%	20.2%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.76	1.48	2.09	
ACTUAL TIME TO FAILURE, MIN		t_f	450	450	630	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.550 IN. THICK

CLASSIFICATION SAND (SP), F, off-white, contains pockets of clay and finely divided*

LL - | PL - | PI - | G. 2.65

REMARKS *organic matter.

PROJECT LK. PONT. LA., & VIC. - HURR. PROT. - RIGOLETS
CONTROL STR. & CLOSURE DAM, D D M # 6

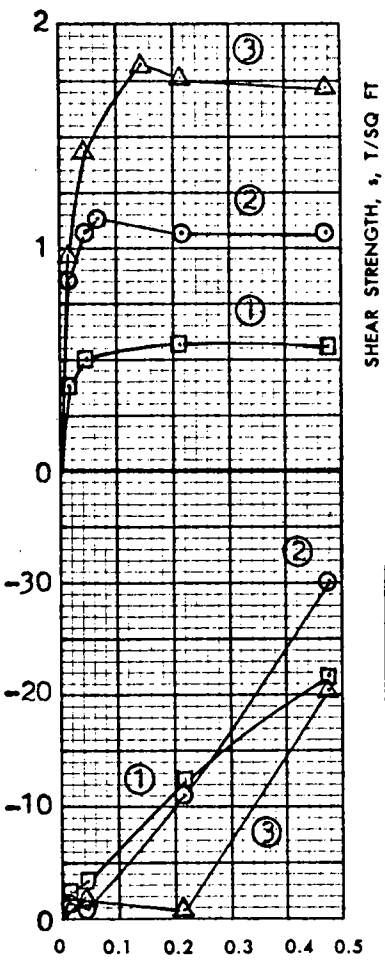
AREA (1971)

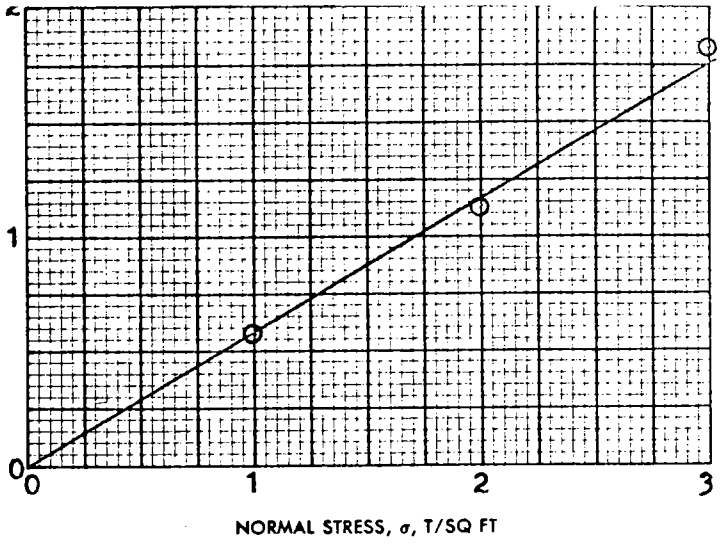
BORING NO. X 5-U | SAMPLE NO. 1-B

~~DEPTH~~ EL - 21.9 MSL | DATE 28 June 1971

WJH **DIRECT SHEAR TEST REPORT**

ENG FORM 2092 1 JUN 65 (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) USAE WES CE PLATE III-74





SHEAR STRENGTH PARAMETERS

$\phi' = 30°$

TAN $\phi' = 0.57$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	25.5%	26.0%	26.0%	%
	VOID RATIO	e_o	0.786	0.789	0.752	
	SATURATION	S_o	88.6 %	88.3%	92.6%	%
	DRY DENSITY, LB/CU FT	γ_d	93.7	93.5	95.5	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	<1	<1	<1	
FINAL	WATER CONTENT	w_f	27.1%	26.8%	20.8%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.57	1.13	1.83	
ACTUAL TIME TO FAILURE, MIN		t_f	1320	510	930	
RATE OF STRAIN, IN./MIN			.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.550 IN. THICK

CLASSIFICATION SILTY SAND(SM),gray, contains thin layers of plastic clay

LL - PL - PI - G. 2.68

REMARKS

PROJECT LK. PONT.,LA.& VIC.-HURR. PROT.

RIGOLETS CONTROL STR.& CLOSURE,DDM#6 (1971)

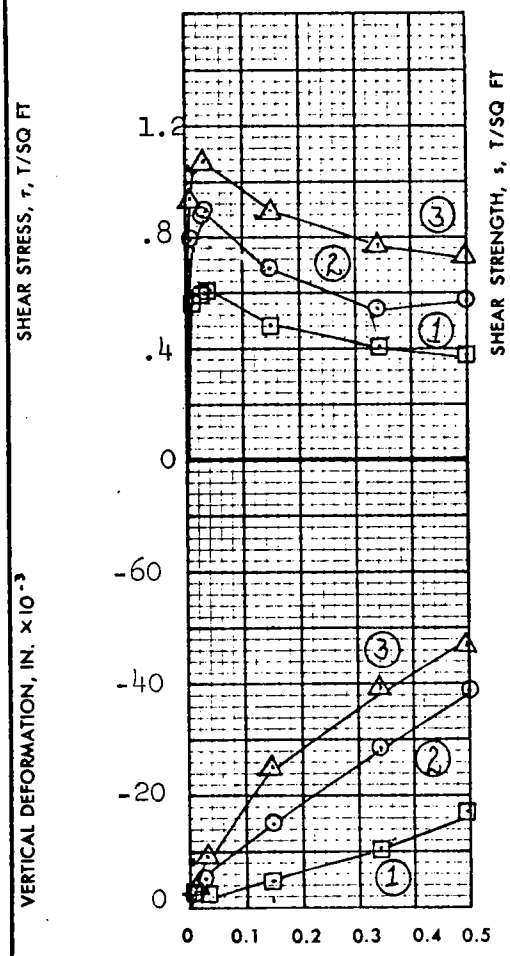
AREA

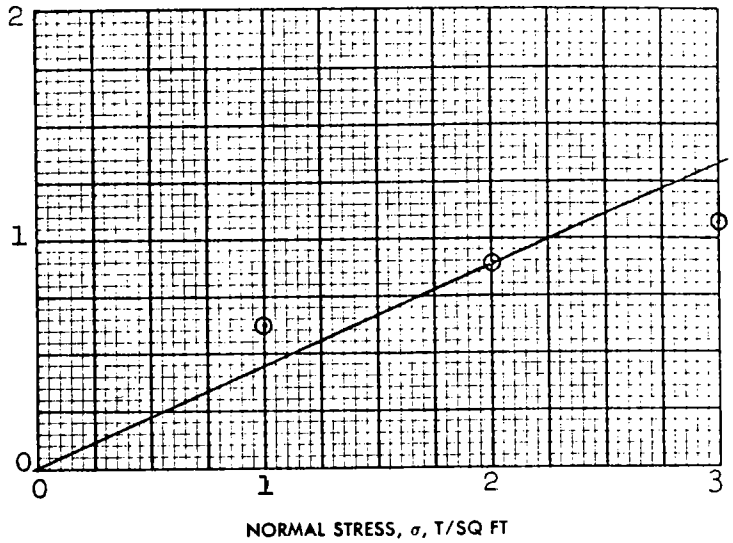
BORING NO. X5-U SAMPLE NO. 11-B

~~DEPTH~~ EL -61.9 MSL DATE 1 July,1971

WJH DIRECT SHEAR TEST REPORT

ENG FORM 2092 1 JUN 65 (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCE... USAEWES SOIL PLATE III-75





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	47.8%	50.5%	52.2%	%
	VOID RATIO	e_o	1.37	1.40	1.45	
	SATURATION	S_o	95.9%	99.2%	99.0%	%
	DRY DENSITY, LB/CU FT	γ_d	72.4	71.6	70.0	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	1	3	3	
FINAL	WATER CONTENT	w_f	49.4%	48.1%	48.6%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.61	0.89	1.07	
ACTUAL TIME TO FAILURE, MIN		t_f	450	330	360	
RATE OF STRAIN, IN./MIN			.00012	.00012	.00012	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

$\phi' = 24°$

TAN $\phi' = 0.445$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.550 IN. THICK

CLASSIFICATION PLASTIC CLAY(CH), gray, fissured

LL 104 | PL 27 | PI 77 | G_s 2.75

REMARKS

PROJECT LK. PONT., LA., & VIC.-HURR. PROTECTION-
RIGOLETS CONTROL STRUCT. & CLOSURE DAM; DDM

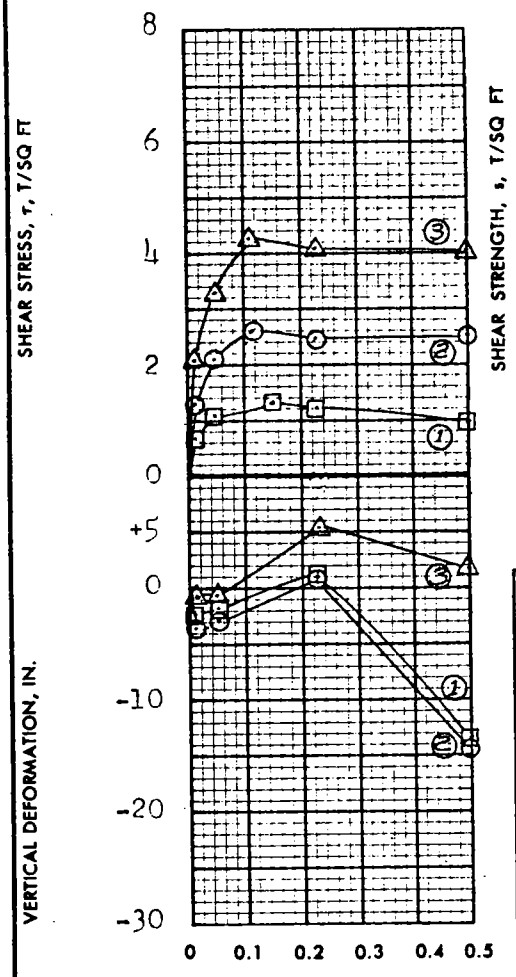
AREA NO. 6 (1971)

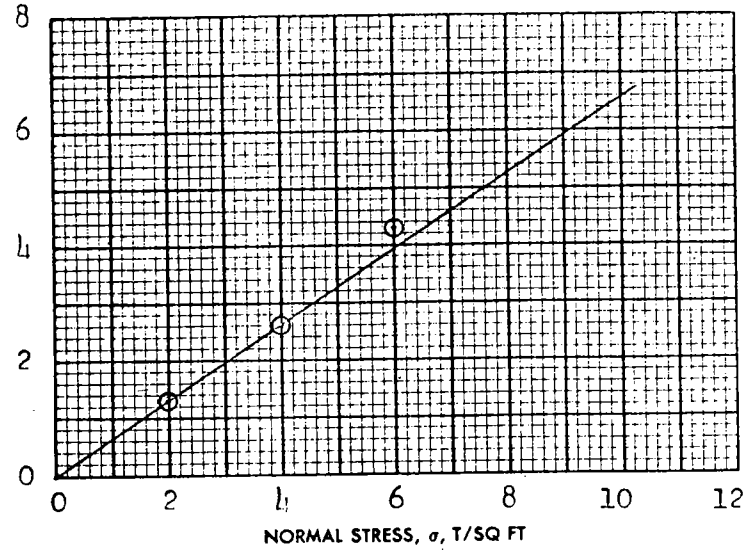
BORING NO. X5-U | SAMPLE NO. 16-C

DEPTH EL -83.2 MSL | DATE 31 August 1971

BWG

DIRECT SHEAR TEST REPORT





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	21.2 %	21.6 %	22.9 %	%
	VOID RATIO	e_o	0.667	0.674	0.684	
	SATURATION	S_o	84.9 %	85.6 %	89.4 %	%
	DRY DENSITY, LB/CU FT	γ_d	100.0	99.6	99.0	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	1	1	1	
FINAL	WATER CONTENT	w_f	23.6 %	22.9 %	23.2 %	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	1.34	2.60	4.22	
ACTUAL TIME TO FAILURE, MIN		t_f	930	750	720	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

ϕ' = 33°

TAN ϕ' = 0.65

c' = 0 T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.544 IN. THICK

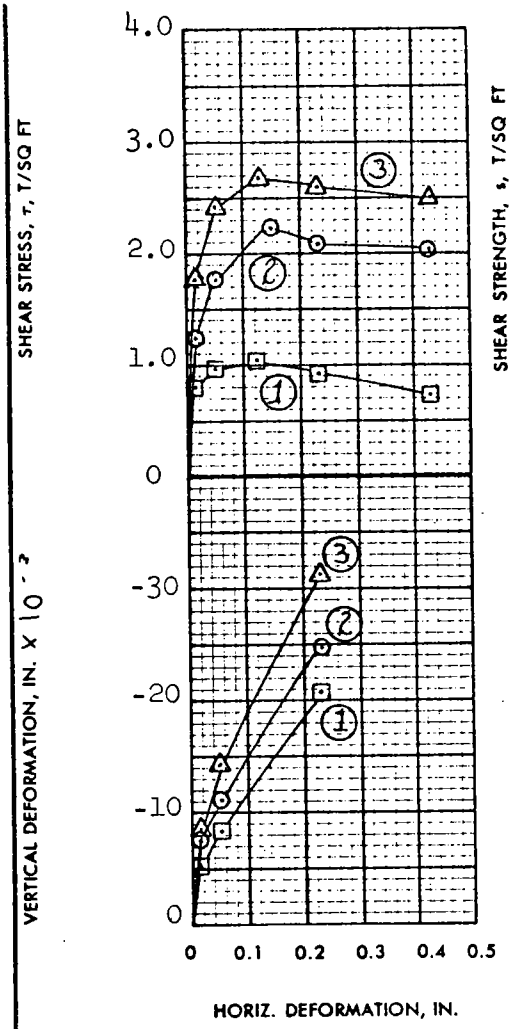
CLASSIFICATION SAND (SP), F gray, with a trace of silt; contains plastic clay lenses.

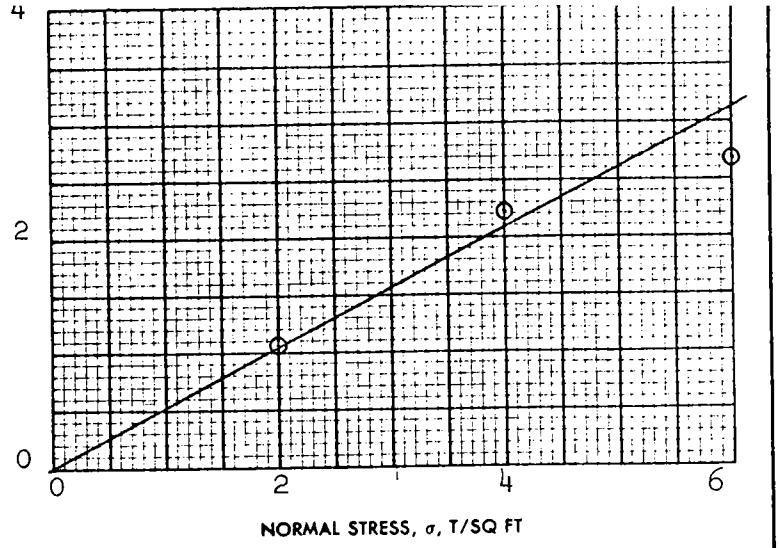
LL - | PL - | PI - | | G_s 2.67

REMARKS CORRECTED REPORT
8 February 1972

PROJECT LK. PONT., LA. & VIC: HURRICANE PROTECTION
RIGOLETS CONTROL STR. & CLOSURE DAM: DDM No. 6
AREA (1971)
BORING NO. X-7-U | SAMPLE NO. 3-B
DEPTH EL -42.7 MSL | DATE 20 October 1971
BWG

DIRECT SHEAR TEST REPORT





SHEAR STRENGTH PARAMETERS

$\phi' = 28^\circ$

TAN $\phi' = 0.525$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	34.3%	34.9%	35.8%	%
	VOID RATIO	e_o	0.921	0.924	0.977	
	SATURATION	S_o	100+ %	100+%	100+%	%
	DRY DENSITY, LB/CU FT	γ_d	88.7	88.6	86.2	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	< 1	< 1	< 1	
FINAL	WATER CONTENT	w_f	31.7%	30.7%	31.3%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	1.05	2.21	2.69	
ACTUAL TIME TO FAILURE, MIN		t_f	750	900	750	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN: UNDISTURBED — 3.00 IN. SQUARE — 0.544 IN. THICK

CLASSIFICATION: Alternate seams of PLASTIC CLAY (CH) and CLAYEY SILT (ML), gray.

LL 48 | PL 19 | PI 29 | | G_s 2.73

REMARKS: Atterberg limits on mixture of materials.

PROJECT: LK. PONT.,LA.& VIC.;HURR. PROT.- RIGOLETS CONTROL STRUCTURE & CLOSURE DAM;DDM NO.6

AREA: (1971)

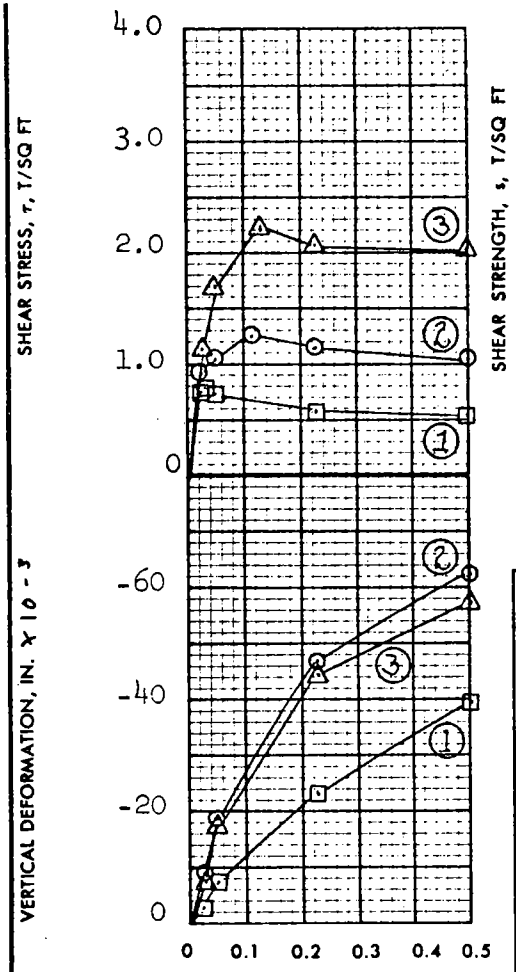
BORING NO. X-7-U | SAMPLE NO. 12-A

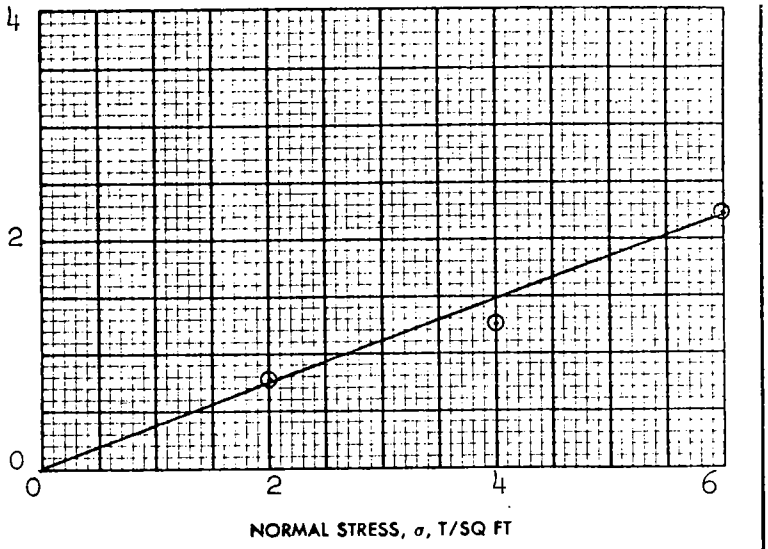
DEPTH — EL -78.1 MSL | DATE 21 Oct. 1971

BWG

DIRECT SHEAR TEST REPORT

USAEWES.SOI





SHEAR STRENGTH PARAMETERS

$\phi' = 20°$

TAN $\phi' = 0.368$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	45.0%	42.8%	42.8 %	%
	VOID RATIO	e_o	1.23	1.20	1.18	
	SATURATION	S_o	100+ %	95.9 %	99.4 %	%
	DRY DENSITY, LB/CU FT	γ_d	76.7	77.9	78.3	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	1	1	1	
FINAL	WATER CONTENT	w_f	46.9%	32.7%	38.8%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.78	1.25	2.21	
ACTUAL TIME TO FAILURE, MIN		t_f	210	720	810	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN: UNDISTURBED — 3.00 IN. SQUARE — 0.544 IN. THICK

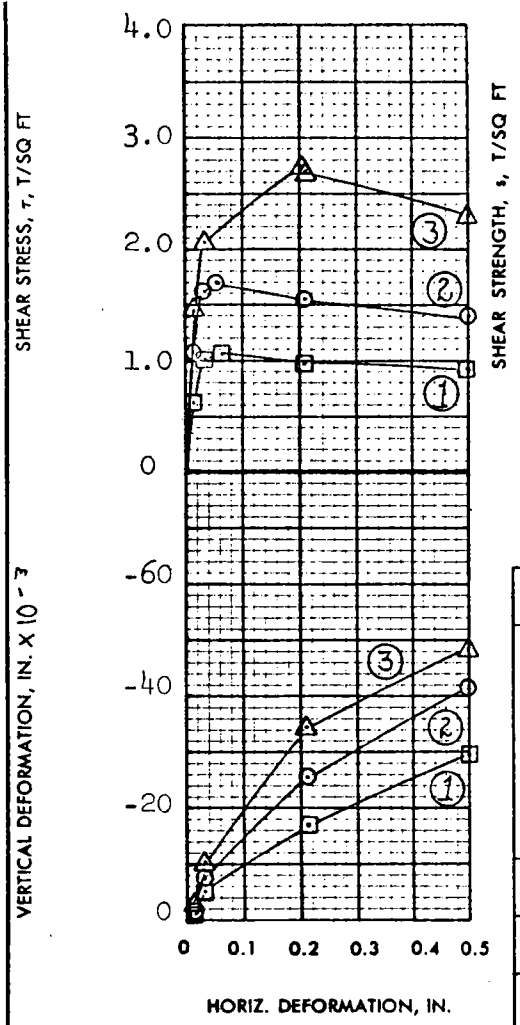
CLASSIFICATION: PLASTIC CLAY (CH), gray, fissured.

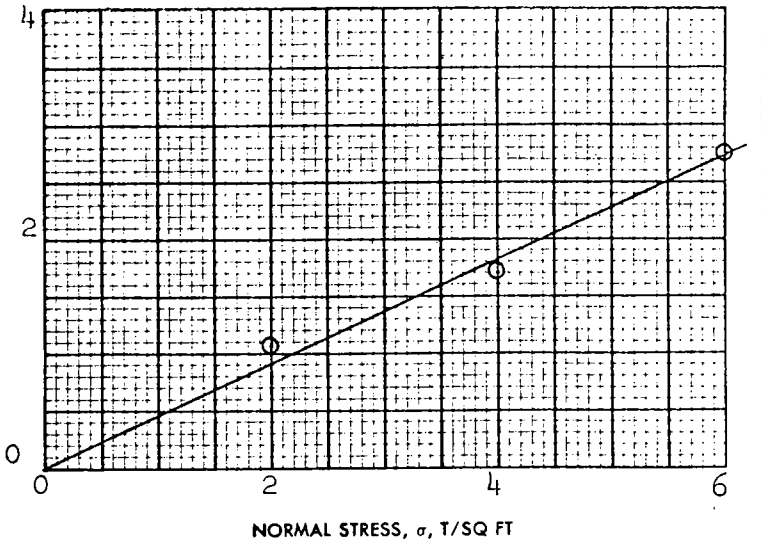
LL 75 | PL 24 | PI 51 | G. 2.74

REMARKS

PROJECT: LK. PONT.,LA.&VIC.;HURR. PROT.
RIGOLETS CONT. STR. AND CLOSURE DAM, DDM NO.6
AREA (1971)
BORING NO. X-7-U | SAMPLE NO. 20-D
DEPTH EL -112.2 MSL | DATE 26 Oct, 1971
BWG

DIRECT SHEAR TEST REPORT





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	39.0 %	35.5 %	39.6 %	- %
	VOID RATIO	e_o	1.09	1.05	1.07	
	SATURATION	S_o	97.3 %	92.0 %	100+ %	%
	DRY DENSITY, LB/CU FT	γ_d	81.1	82.7	82.1	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	2	<1	<1	
FINAL	WATER CONTENT	w_f	37.8 %	37.3%	31.6%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	1.06	1.70	2.73	
ACTUAL TIME TO FAILURE, MIN		t_f	510	480	1230	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

$\phi' = 24°$

TAN $\phi' = 0.455$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN	UNDISTURBED	3.00 IN. SQUARE	0.544 IN. THICK
CLASSIFICATION	PLASTIC CLAY (CH), gray, containing silt strata.		
LL 59	PL 22	PI 37	G_s 2.72

REMARKS

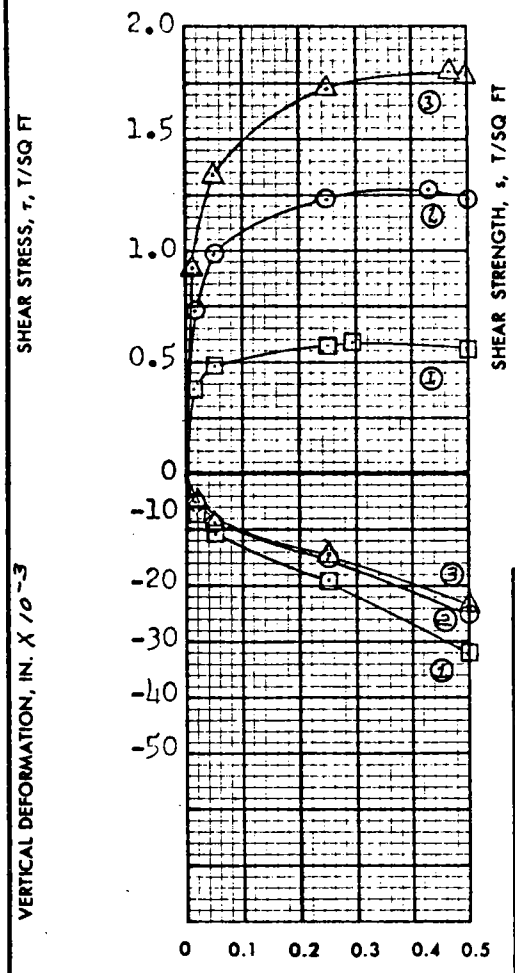
PROJECT LK. PONT.,LA.& VIC.-HURR. PROT.-
RIGOLETS CONT. STRUCTURE & CLOSURE DAM,DDM NO.6
AREA (1971)
BORING NO. X-7-U SAMPLE NO. 41-C
~~DEPTH~~ EL -195.4 MSL DATE 27 Oct. 1971
BWG

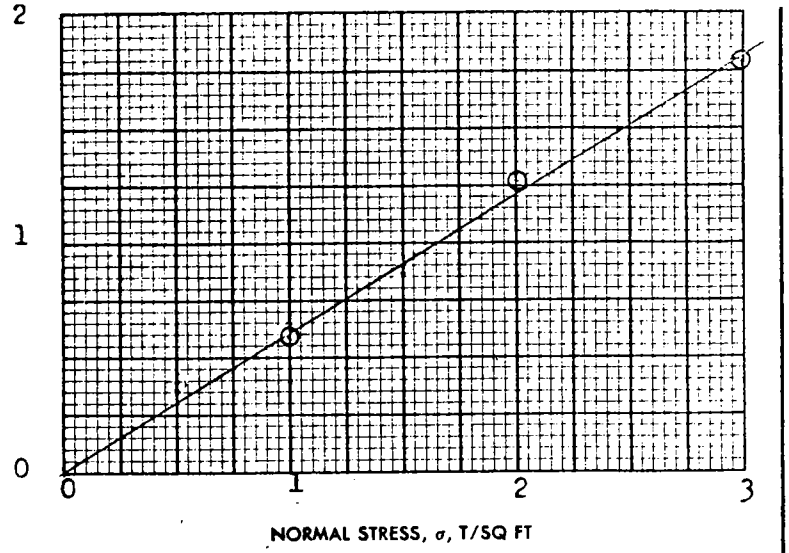
DIRECT SHEAR TEST REPORT

USAEWES SOILS TEST SECTION

ENG FORM 2092 1 JUN 65 (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) GPO : 1966 OP—

PLATE III-80





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	29.0%	27.9%	28.8%	%
	VOID RATIO	e_o	0.793	0.737	0.730	
	SATURATION	S_o	97.3%	100+%	100+%	%
	DRY DENSITY, LB/CU FT	γ_d	92.6	95.6	96.0	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	<1.0	<1.0	<1.0	
FINAL	WATER CONTENT	w_f	21.1%	19.9%	19.7%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.58	1.26	1.80	
ACTUAL TIME TO FAILURE, MIN		t_f	1560	2220	2460	
RATE OF STRAIN, IN./MIN			.00019	.00019		
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

$\phi' = 31°$

TAN $\phi' = 0.6125$

$c' = 0$ T/SQ FT

[ ] CONTROLLED STRESS

[X] CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED 3.00 IN. SQUARE 0.539 IN. THICK

CLASSIFICATION SILTY SAND(SM),dark gray, contains pockets of plastic clay

LL - PL - PI - G. 2.66

REMARKS

PROJECT LK. PONT.,LA.&VIC. - HURR. PROT.(1971)

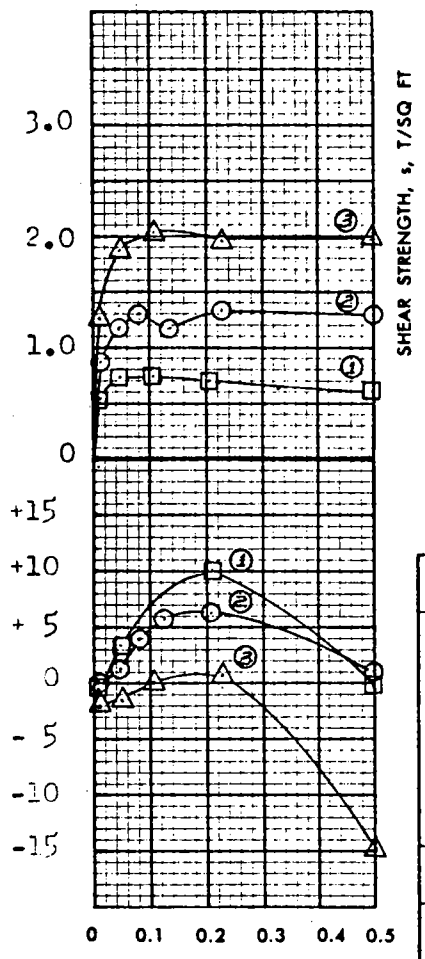
RIGOLETS CONTROL STR.& CLOSURE DAM;DDM No.6

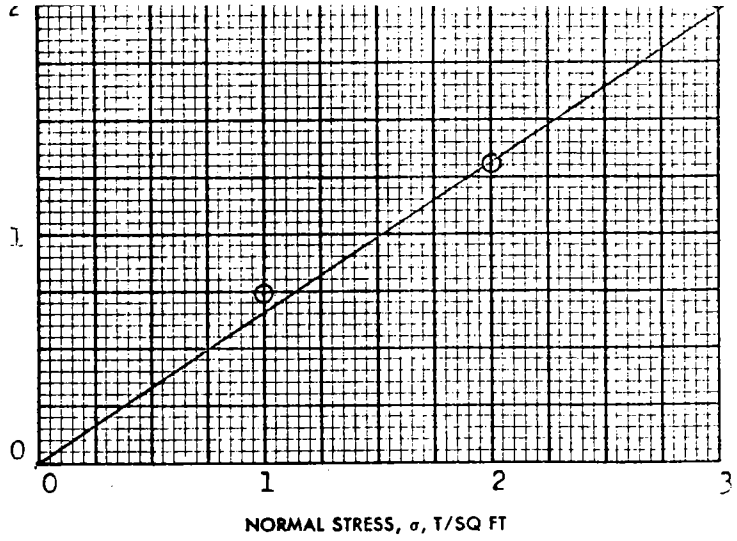
AREA

BORING NO. X-8U SAMPLE NO. 1-D

DEPTH EL -24.3 MSL DATE 14 December 1971

GDA **DIRECT SHEAR TEST REPORT**





SHEAR STRENGTH PARAMETERS

$\phi' = 33^\circ$

TAN $\phi' = 0.651$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	26.9%	25.8%	25.5%	%
	VOID RATIO	e_o	0.746	0.741	0.741	
	SATURATION	S_o	95.9%	92.6%	91.5%	%
	DRY DENSITY, LB/CU FT	γ_d	95.1	95.4	95.4	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	<1.0	<1.0	<1.0	
FINAL	WATER CONTENT	w_f	25.1 %	25.4%	26.7%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.74	1.30	2.01	
ACTUAL TIME TO FAILURE, MIN		t_f	660	540	660	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.537 IN. THICK

CLASSIFICATION SILTY SAND(SM),gray

LL - PL - PI - G_s 2.66

REMARKS

PROJECT LK. PONT.,LA. & VICINITY-HURR. PROT.(1971)

RICOLETS CONTROL STR.& CLOSURE DAM;DDM.No.6

AREA

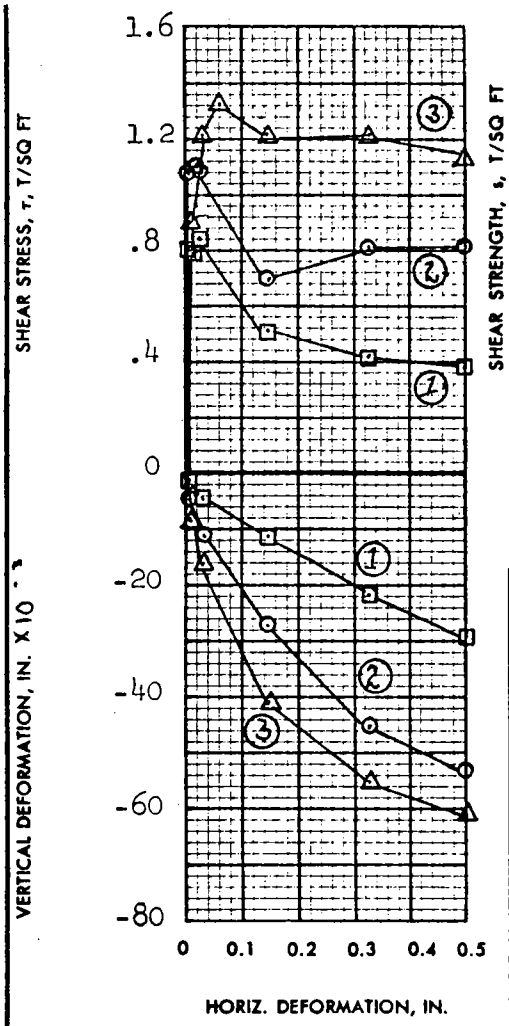
BORING NO. X-8U SAMPLE NO. 5-D

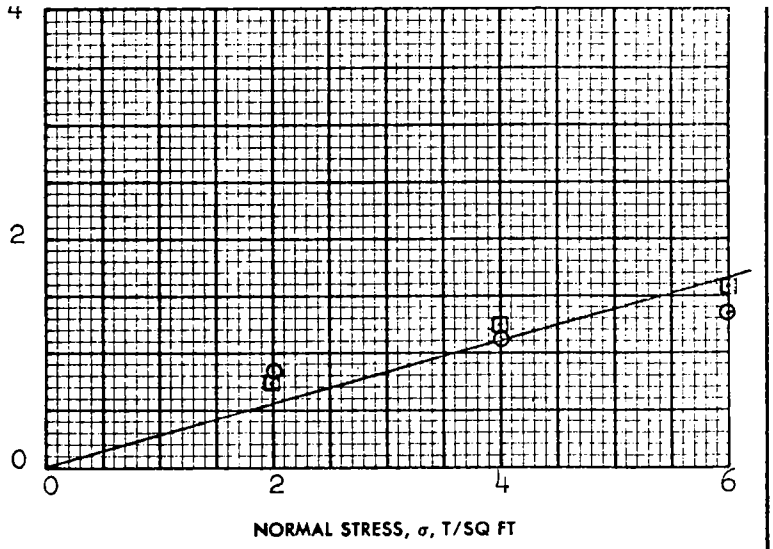
DEPTH EL -40.3 MSL DATE 15 December 1971

GDA **DIRECT SHEAR TEST REPORT**

ENG FORM 1 JUN 65 **2092** (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) GPO : 1966 OF-2

PLATE III-82





SHEAR STRENGTH PARAMETERS

$\phi' = 15°$

TAN $\phi' = 0.275$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	48.1%	50.4%	49.9%	%
	VOID RATIO	e_o	1.36	1.41	1.41	
	SATURATION	S_o	97.6%	98.6%	97.7%	%
	DRY DENSITY, LB/CU FT	γ_d	73.1	71.4	71.4	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	1	3	4	
FINAL	WATER CONTENT	w_f	48.6 %	47.4%	46.0%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.84	1.10	1.33	
ACTUAL TIME TO FAILURE, MIN		t_f	240	270	660	
RATE OF STRAIN, IN./MIN			.00012	.00012	.00012	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.538 IN. THICK

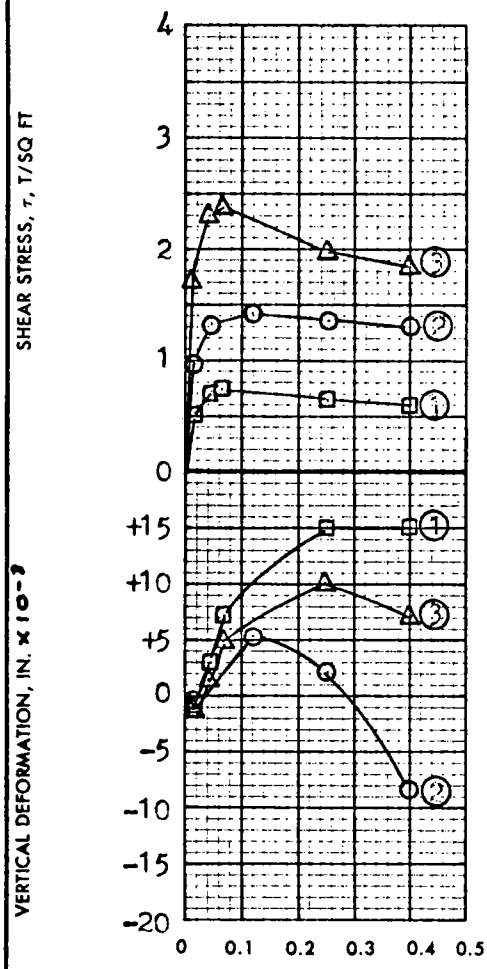
CLASSIFICATION PLASTIC CLAY(CH),gray, with traces of fine sand

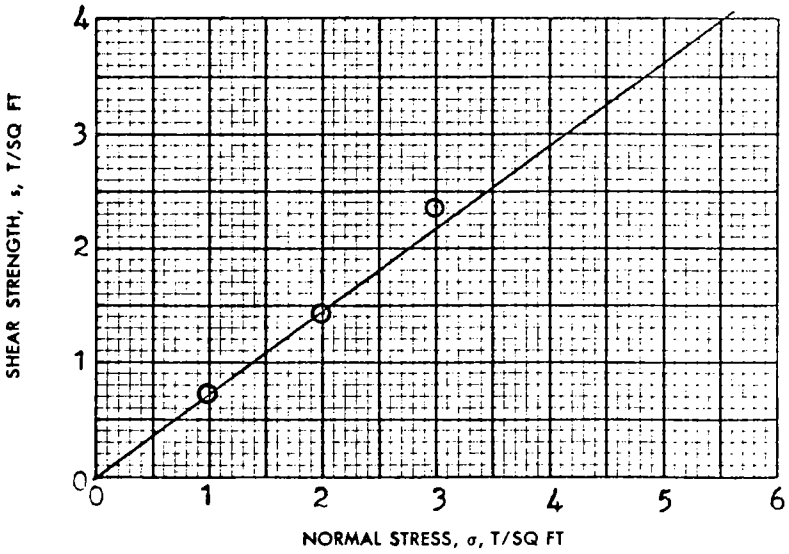
LL 100 | PL 29 | PI 71 | G. 2.76

REMARKS Rerun test.
☒ Strength values of original test

PROJECT LK. PONT.,LA.&VIC.-HURR. PROT.(1971)
RIGOLETS CONTROL STR.&CLOSURE DAM;DDM NO.6
AREA
BORING NO. X-8-U | SAMPLE NO. 15-B
DEPTH-EL -78.7 MSL | DATE 8 Feb. 1972
WJH

DIRECT SHEAR TEST REPORT





SHEAR STRENGTH PARAMETERS

$\phi' = 36°$

TAN $\phi' = 0.72$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	20.4 %	20.0 %	20.0 %	%
	VOID RATIO	e_o	0.621	0.626	0.604	
	SATURATION	S_o	87.7 %	85.3 %	88.4 %	%
	DRY DENSITY, LB/CU FT	γ_d	102.8	102.5	103.9	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}				
FINAL	WATER CONTENT	w_f	18.0 %	16.1 %	16.4 %	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.74	1.44	2.38	
ACTUAL TIME TO FAILURE, MIN		t_f	480	720	480	
RATE OF STRAIN, IN./MIN			.00015	.00015	.00015	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN	UNDISTURBED	3.00 in.Square	0.538 IN. THICK
CLASSIFICATION	SAND (SP), F, tan		
LL –	PL –	PI –	G. 2.67

REMARKS

PROJECT LK. PONT.,LA.& VIC.-HURR. PROT.(1971)

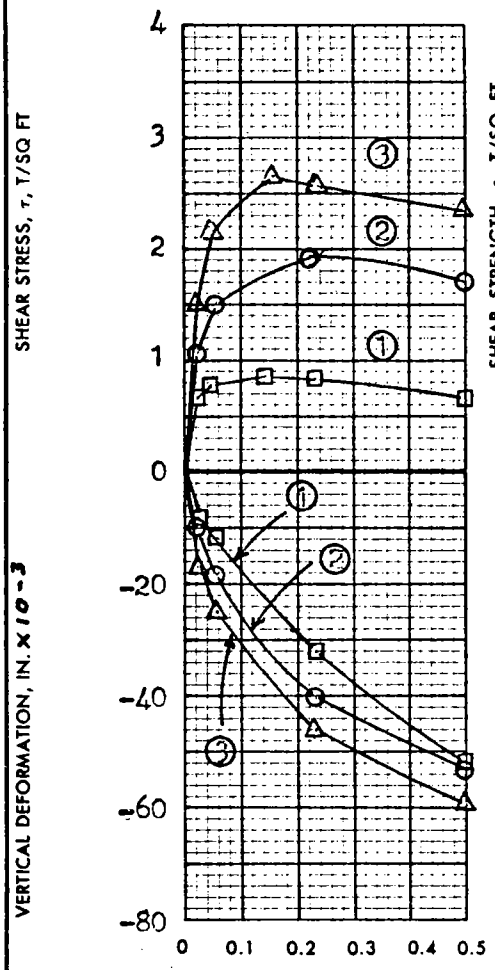
RIGOLETS CONTROL STR. CONTROL DAM; DDM # 6

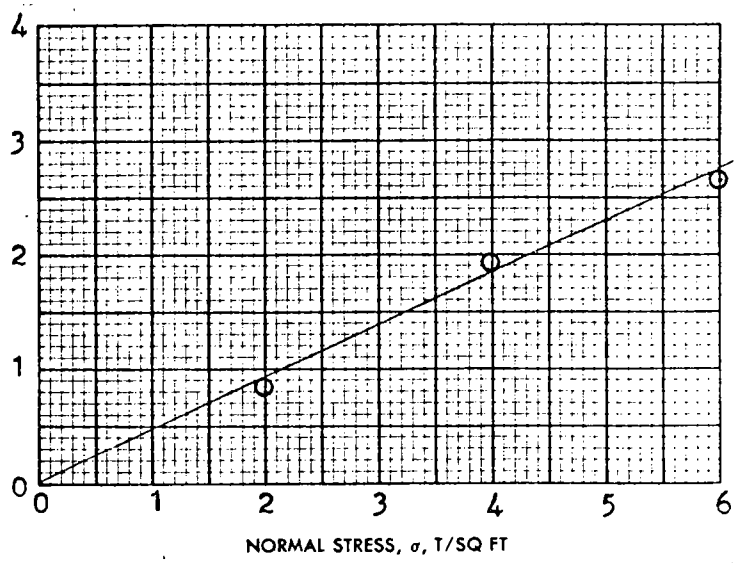
AREA

BORING NO. X-9U SAMPLE NO. 4-D

~~DEPTH~~ EL -44.4 MSL DATE 21 December,1971

GDA DIRECT SHEAR TEST REPORT





SHEAR STRENGTH PARAMETERS

ϕ' = 25°

TAN ϕ' = 0.467

c' = 0 T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	38.5 %	41.9%	43.2%	%
	VOID RATIO	e_o	1.13	1.13	1.13	
	SATURATION	S_o	92.7%	100+ %	100+ %	%
	DRY DENSITY, LB/CU FT	γ_d	79.7	79.6	79.7	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	1	1	2	
FINAL	WATER CONTENT	w_f	43.6 %	35.7%	32.2%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.85	1.93	2.65	
ACTUAL TIME TO FAILURE, MIN		t_f	840	1260	900	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE, 1=0.546, 2&3=0.625 IN. THICK

CLASSIFICATION PLASTIC CLAY(CH), gray, contains SAND(SM) & SILT(ML) strata

LL	PL	PI		G.
56	18	38		2.72

REMARKS

PROJECT LK. PONT.,IA.& VIC.-HURR. PROT. (1971)

RIGOLETS CONTROL STR.& CLOSURE DAM; DDM # 6

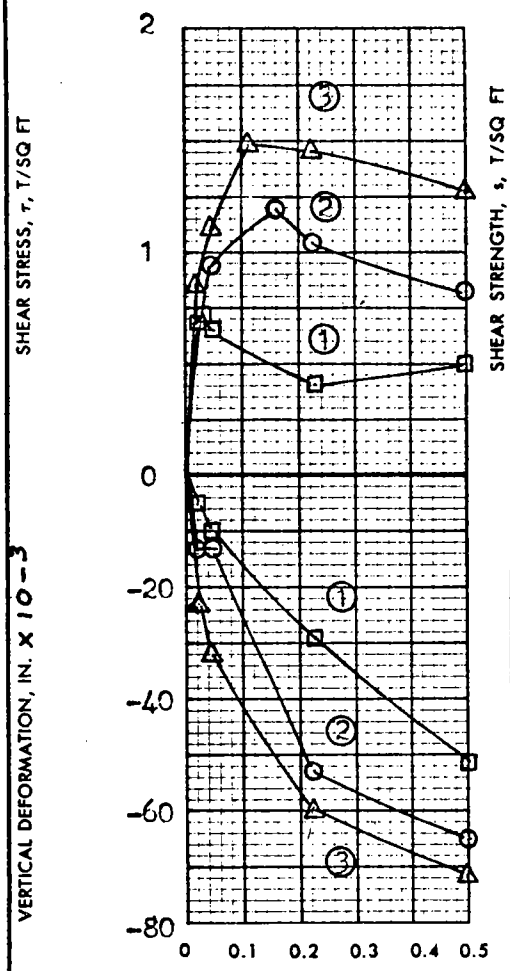
AREA

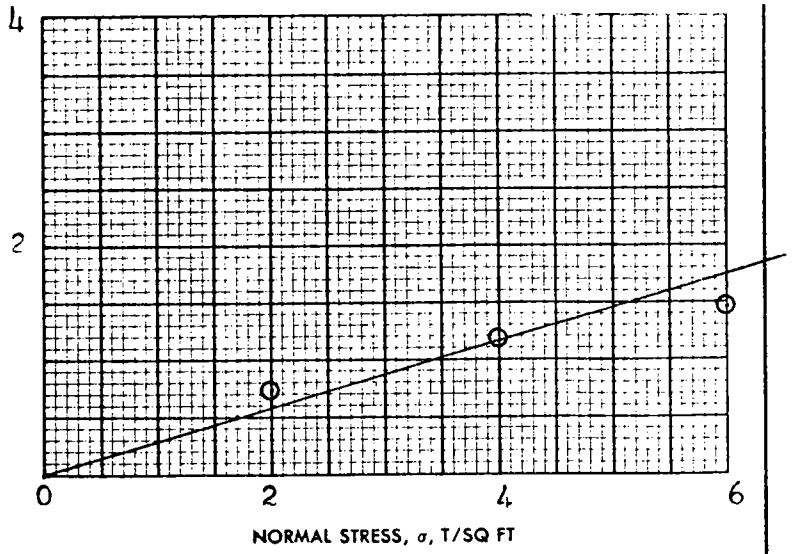
BORING NO. X-9U — SAMPLE NO. 8-D

~~DEPTH~~ EL -60.5 MSL — DATE 16 December,1971

BWG

DIRECT SHEAR TEST REPORT





SHEAR STRENGTH PARAMETERS

$\phi' = 16°$

TAN $\phi' = 0.294$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	60.9 %	61.0%	61.2%	%
	VOID RATIO	e_o	1.72	1.71	1.71	
	SATURATION	S_o	97.4 %	98.1%	98.4%	%
	DRY DENSITY, LB/CU FT	γ_d	63.1	63.3	63.4	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	7	3	8	
FINAL	WATER CONTENT	w_f	58.1 %	48.5%	41.9%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.72	1.19	1.48	
ACTUAL TIME TO FAILURE, MIN		t_f	240	960	720	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN: UNDISTURBED — 3.00 IN. SQUARE — 0.538 IN. THICK

CLASSIFICATION: PLASTIC CLAY(CH), gray

LL 101 | PL 27 | PI 74 | G. 2.75

REMARKS

PROJECT LK. PONT., LA. & VIC.-HURR. PROT.(1971)

RIGOLETS CONTROL STR. & CLOSURE DAM; DDM #6

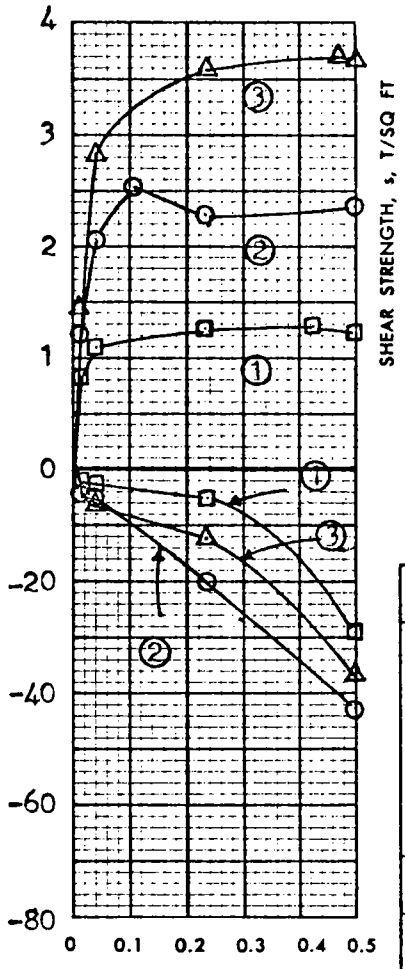
AREA

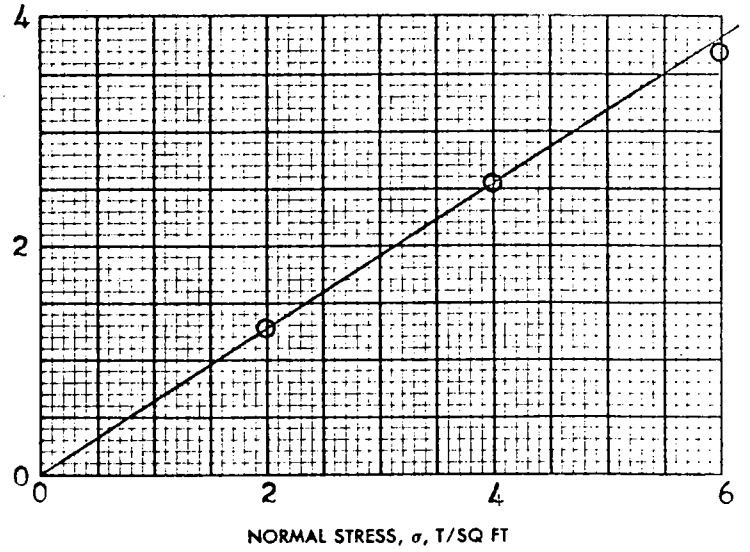
BORING NO. X-9U | SAMPLE NO. 15-A

~~DEPTH~~ EL -85.7 MSL | DATE 28 December, 1971

GDA

DIRECT SHEAR TEST REPORT





SHEAR STRENGTH PARAMETERS

$\phi' = 33^\circ$

TAN $\phi' = 0.645$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	23.4 %	23.5%	23.9 %	%
	VOID RATIO	e_o	0.672	0.670	0.658	
	SATURATION	S_o	91.6 %	92.2%	95.5 %	%
	DRY DENSITY, LB/CU FT	γ_d	98.2	98.3	99.0	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}				
FINAL	WATER CONTENT	w_f	25.4 %	24.7%	24.3 %	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	1.29	2.53	3.70	
ACTUAL TIME TO FAILURE, MIN		t_f	2310	690	2550	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.546 IN. THICK

CLASSIFICATION SAND (SP)[F], light gray

LL – | PL – | PI – | G. 2.63

REMARKS

PROJECT LK.PONT.,LA.& VIC.-HURR. PROT.(1971)

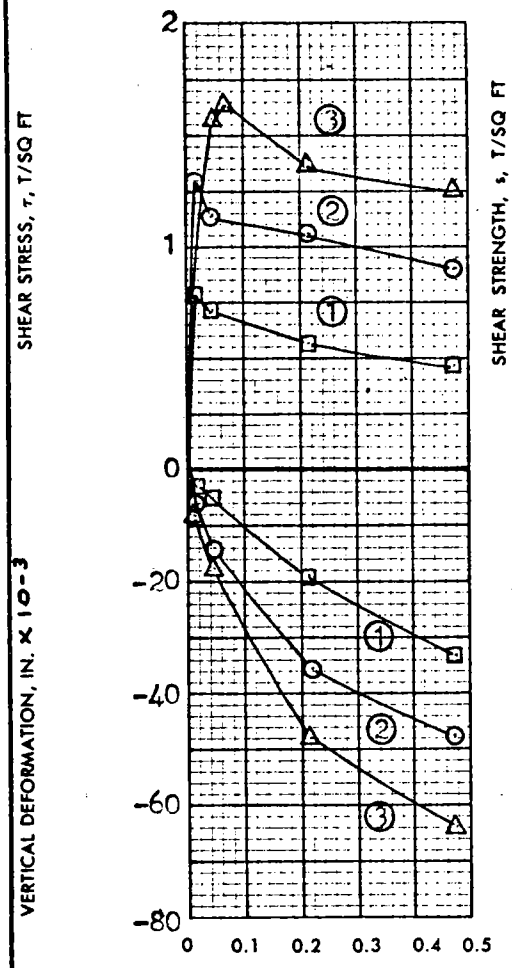
RIGOLETS CONTROL STR.& CLOSURE DAM; DDM #6

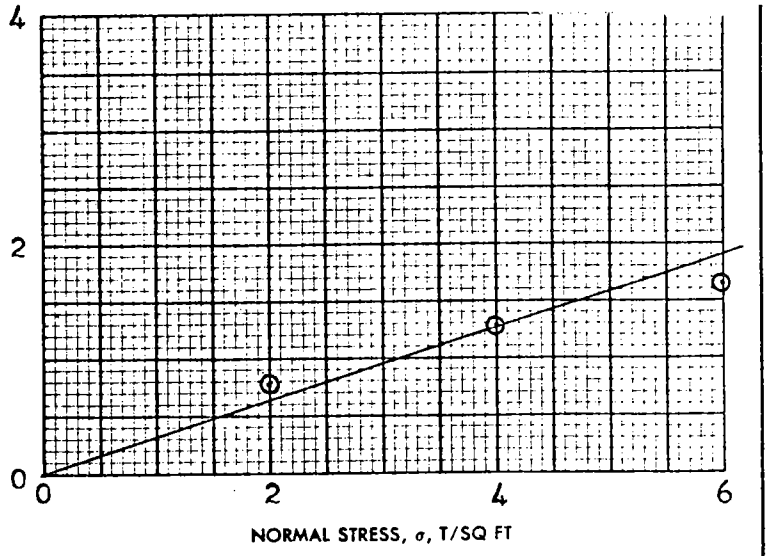
AREA

BORING NO. X-11U | SAMPLE NO. 5-D

~~DEPTH~~ EL -50.8 MSL | DATE 6 January,1972

BWG **DIRECT SHEAR TEST REPORT**





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	52.2%	50.4%	50.8%	%
	VOID RATIO	e_o	1.46	1.41	1.41	
	SATURATION	S_o	99.0%	99.0%	99.8%	%
	DRY DENSITY, LB/CU FT	γ_d	70.2	71.8	71.7	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	1	2	3	
FINAL	WATER CONTENT	w_f	52.0%	47.0%	43.7%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.78	1.29	1.64	
ACTUAL TIME TO FAILURE, MIN		t_f	180	180	480	
RATE OF STRAIN, IN./MIN			.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

$\phi' = 17^\circ$

TAN $\phi' = 0.314$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☐ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.538 IN. THICK

CLASSIFICATION PLASTIC CLAY(CH), gray, slickensided

LL	PL	PI		G.
98	32	66		2.77

REMARKS

PROJECT LK. PONT., LA. & VIC.-HURR. PROT. (1971)

RIGOLETS CONTROL STR. & CLOSURE DAM; DDM #6

AREA

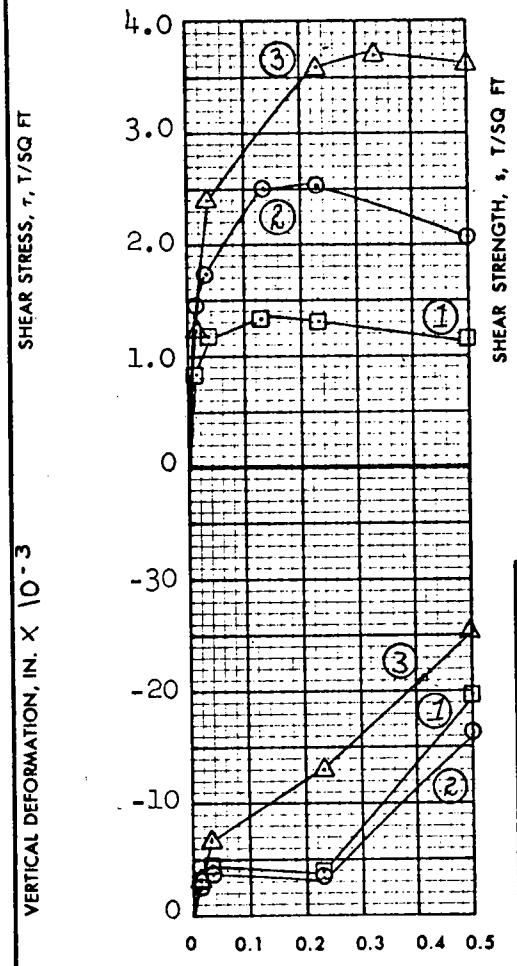
BORING NO. X-11U — SAMPLE NO. 12-D

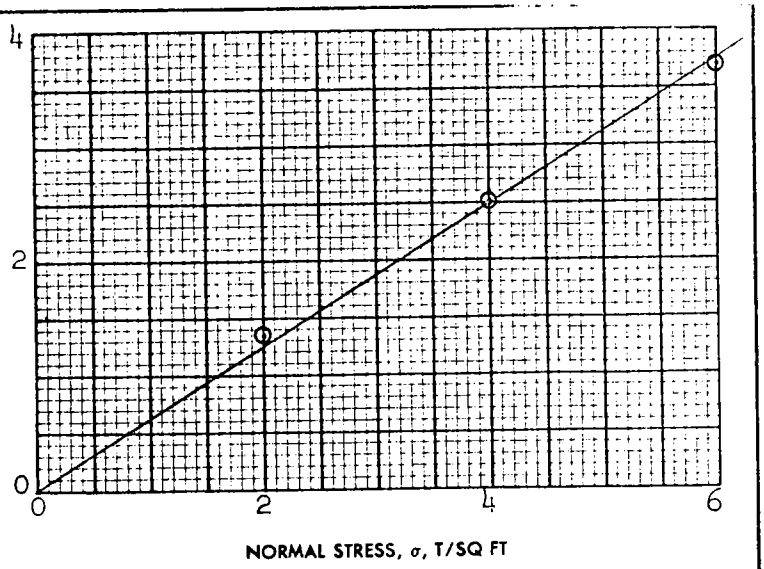
~~DEPTH~~ EL -78.5 MSL — DATE 11 January, 1972

GDA **DIRECT SHEAR TEST REPORT**

ENG FORM 2092 1 JUN 65 (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT)

PLATE III-88





SHEAR STRENGTH PARAMETERS

$\phi' = 32°$

TAN $\phi' = 0.625$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	26.6 %	26.3 %	26.1 %	%
	VOID RATIO	e_o	0.768	0.755	0.753	
	SATURATION	S_o	93.2 %	93.7 %	93.2%	%
	DRY DENSITY, LB/CU FT	γ_d	95.0	95.7	95.8	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	1	1	1	
FINAL	WATER CONTENT	w_f	25.3 %	25.9 %	24.6 %	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	1.33	2.50	3.70	
ACTUAL TIME TO FAILURE, MIN		t_f	810	840	1830	
RATE OF STRAIN, IN./MIN			.00019	.00019	.00019	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.539 IN. THICK

CLASSIFICATION SILTY SAND(SM),gray, contains a few small shells and traces of *

LL - PL - PI - G. 2.69

REMARKS *organic matter

PROJECT LK. PONT.LA.&VIC.-HURR. PROT.-(1971)

RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM;

AREA DDM NO.6.

BORING NO. X-12-U SAMPLE NO. 7-A

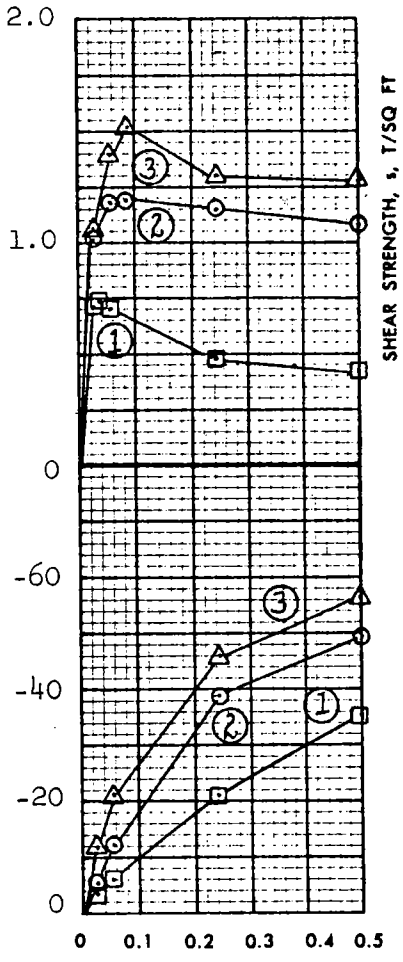
DEPTH EL -57.2 MSL DATE 28 Sept. 1971

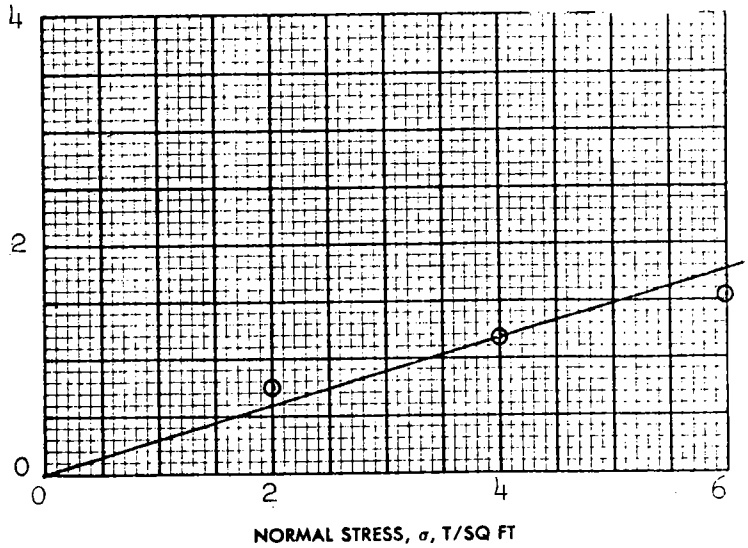
WJH SOILS TEST SECTION

DIRECT SHEAR TEST REPORT

ENG FORM 2092 (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) GPO : 1966 O

PLATE III - 89





SHEAR STRENGTH PARAMETERS

$\phi' = 17°$

TAN $\phi' = 0.298$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	40.8 %	40.2%	39.4%	%
	VOID RATIO	e_o	1.14	1.12	1.10	
	SATURATION	S_o	98.1 %	98.3 %	98.1 %	%
	DRY DENSITY, LB/CU FT	γ_d	80.1	80.7	81.2	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	1	2	2	
FINAL	WATER CONTENT	w_f	44.2 %	40.5%	36.0%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.74	1.19	1.53	
ACTUAL TIME TO FAILURE, MIN		t_f	270	480	540	
RATE OF STRAIN, IN./MIN			.00019	.00019	.00019	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN	UNDISTURBED	3.00 IN. SQUARE	0.539 IN. THICK	
CLASSIFICATION	PLASTIC CLAY(CH), gray			
LL 70	PL 23	PI 47		G. 2.74

REMARKS

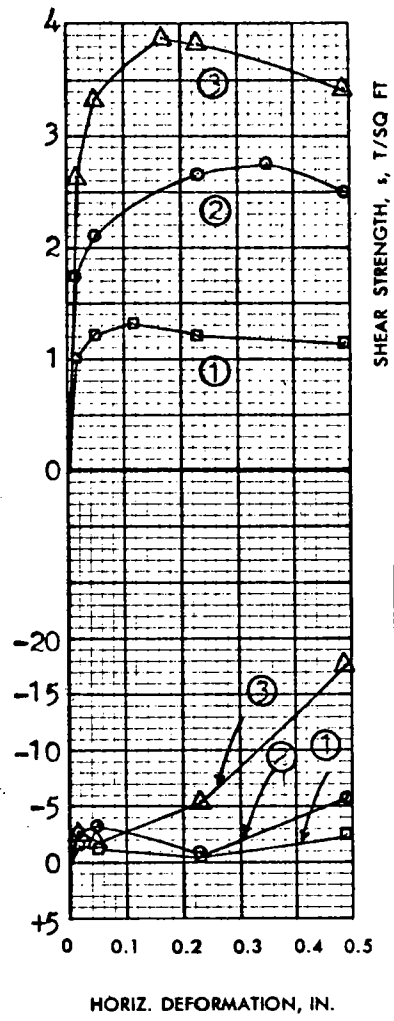
PROJECT LK. PONT., LA.&VIC.-HURR. PROT.-(1971)
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM;
AREA DDM NO.6.
BORING NO. X-12-U SAMPLE NO. 34-C
DEPTH EL -167.0 MSL DATE 7 October 1971
WJH BWG

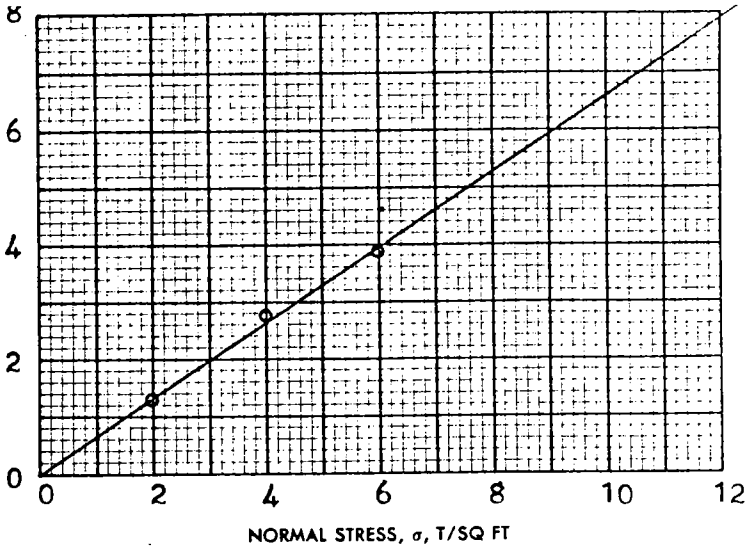
DIRECT SHEAR TEST REPORT

ENG FORM 2092 1 JUN 65 (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT)

GPO : 1966 O-

PLATE III-90





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	23.2%	21.8%	22.3%	%
	VOID RATIO	e_o	0.615	0.572	0.610	
	SATURATION	S_o	100+ %	100+ %	98.0%	%
	DRY DENSITY, LB/CU FT	γ_d	103.6	106.4	103.9	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}				
FINAL	WATER CONTENT	w_f	23.4%	23.4%	23.1%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	1.31	2.76	3.88	
ACTUAL TIME TO FAILURE, MIN		t_f	720	2110	990	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

$\phi' = 33°$

TAN $\phi' = 0.655$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.544 IN. THICK

CLASSIFICATION SAND(SP)^{F}, gray, contains CLAY(CH) lenses

LL - PL - PI - G. 2.68

REMARKS

PROJECT LK. PONT., LA. & VIC.-HURR. PROT. -(1971)

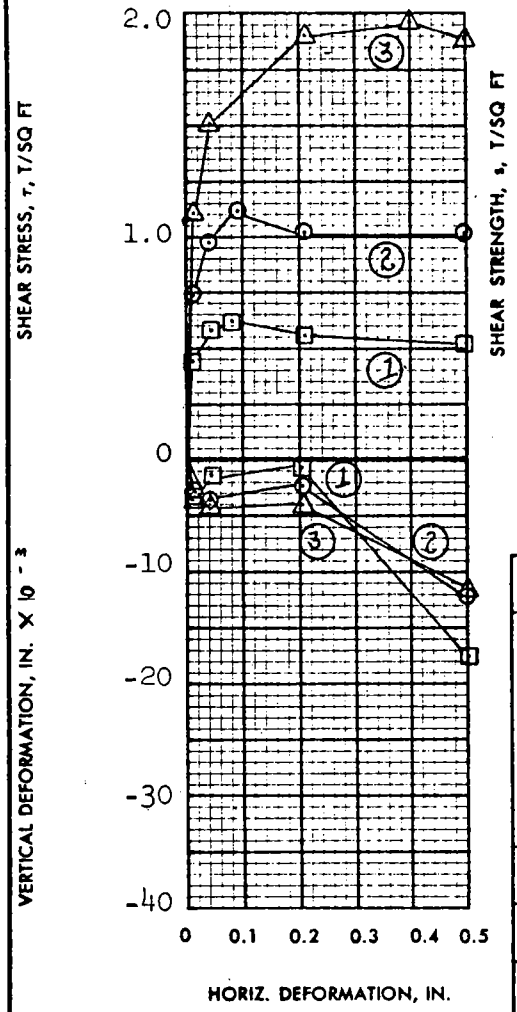
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

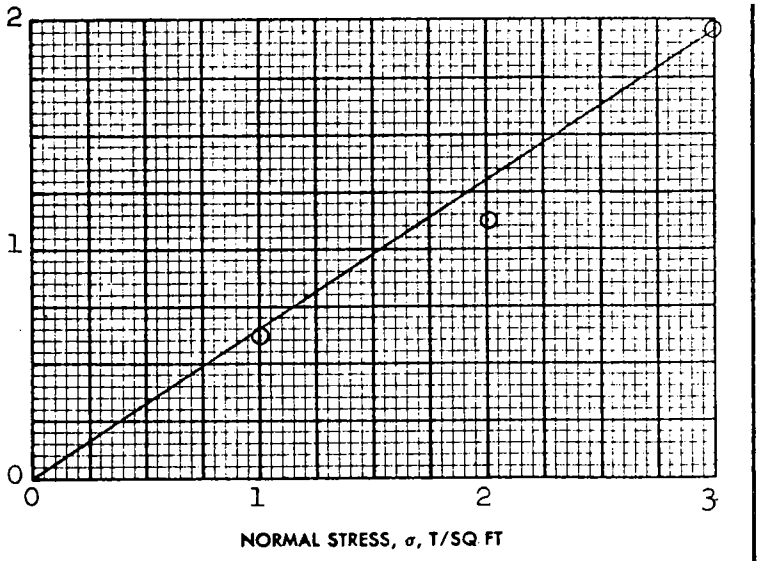
AREA DDM NO. 6

BORING NO. X-12U SAMPLE NO. 36-C

~~DEPTH~~ EL -175.0 MSL DATE 29 September, 1971

BG DIRECT SHEAR TEST REPORT





SHEAR STRENGTH PARAMETERS

$\phi' = 33^\circ$

TAN $\phi' = 0.653$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	23.9 %	23.8 %	24.1 %	%
	VOID RATIO	e_o	0.642	0.625	0.652	
	SATURATION	S_o	99.0 %	100+ %	98.3 %	%
	DRY DENSITY, LB/CU FT	γ_d	101.1	102.2	100.5	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	< 1	< 1	< 1	
FINAL	WATER CONTENT	w_f	20.9 %	21.7 %	21.4%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.63	1.13	1.96	
ACTUAL TIME TO FAILURE, MIN		t_f	600	660	2400	
RATE OF STRAIN, IN./MIN			.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.538 IN. THICK

CLASSIFICATION SAND(SP), F, gray;

LL - | PL - | PI - | | G_s 2.66

REMARKS

PROJECT LK. PONT., LA.&VIC.-HURR. PROT.(1971)

RIGOLETS CONTROL STR.&CLOSURE DAM;DDM NO. 6

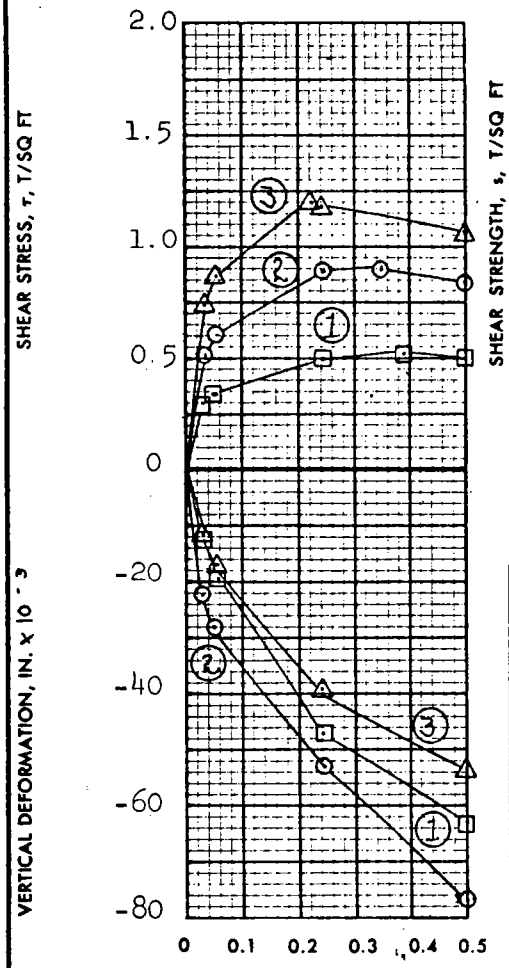
AREA

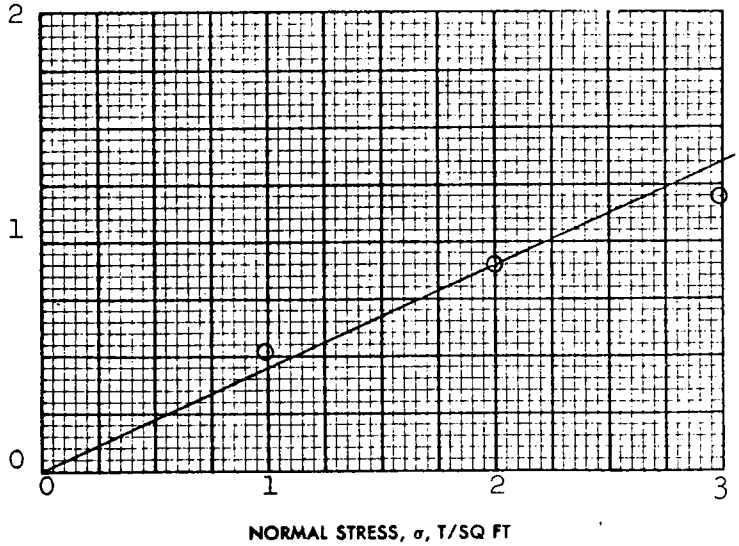
BORING NO. X-13-U | SAMPLE NO. 1-D

DEPTH EL -27.4 MSL | DATE 1/17/72

GDA

DIRECT SHEAR TEST REPORT





SHEAR STRENGTH PARAMETERS

$\phi' = 24°$

TAN $\phi' = 0.45$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☐ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	79.8%	82.2%	80.6%	%
	VOID RATIO	e_o	2.17	2.25	2.33	
	SATURATION	S_o	98.9%	98.3%	93.1%	%
	DRY DENSITY, LB/CU FT	γ_d	53.0	51.7	50.5	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	4	16	16	
FINAL	WATER CONTENT	w_f	54.1%	46.9%	49.4%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.52	0.90	1.20	
ACTUAL TIME TO FAILURE, MIN		t_f	2130	1920	1260	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 1= 0.546 IN. THICK, 2&3=0.625

CLASSIFICATION PLASTIC CLAY(CH),gray, fissured

LL 112 | PL 27 | PI 85 | | G_s 2.69

REMARKS

PROJECT LK. PONT.,LA.&VIC.-HURR. PROT.(1971)

RIGOLETS CONTROL STR.&CLOSURE DAM;DDM NO. 6

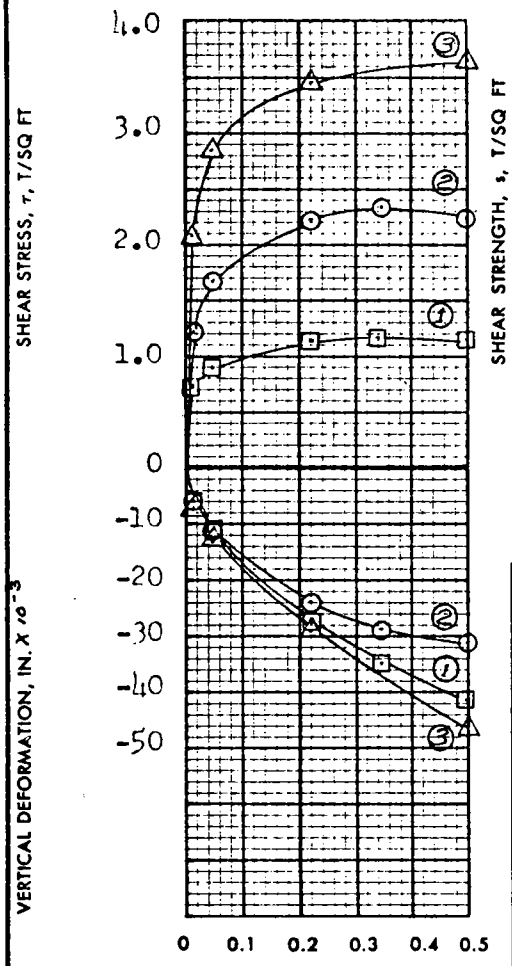
AREA

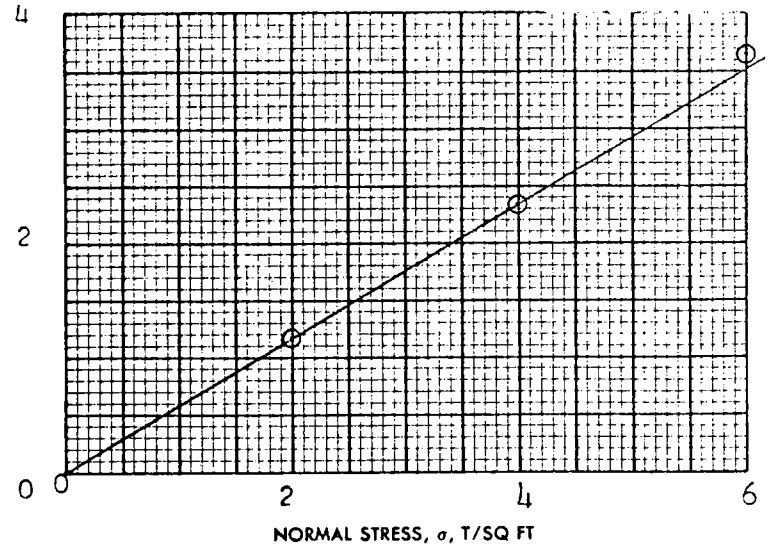
BORING NO. X-13-U | SAMPLE NO. 4-D

~~DEPTH~~ EL -39.6 MSL | DATE 11 Jan. 1972

BWG

DIRECT SHEAR TEST REPORT





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	30.5%	30.9%	31.8%	%
	VOID RATIO	e_o	0.867	0.836	0.842	
	SATURATION	S_o	93.9%	98.7%	98.3%	%
	DRY DENSITY, LB/CU FT	γ_d	89.3	90.8	90.5	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	<1	<1	<1	
FINAL	WATER CONTENT	w_f	27.2%	25.4%	24.3%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2	4	6	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	1.17	2.35	3.64	
ACTUAL TIME TO FAILURE, MIN		t_f	1980	1980	2760	
RATE OF STRAIN, IN./MIN			100018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

ϕ' = 30°

TAN ϕ' = 0.585

c' = 0 T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN: UNDISTURBED — 3.00 IN. SQUARE — 0.538 IN. THICK

CLASSIFICATION: SANDY CLAY(CL),gray, contains shell fragments

LL	PL	PI		G_s
30	18	12		2.67

REMARKS

PROJECT: LK. PONT., LA.& VIC. - HURR PROT.(1971

RIGOLETS CONTROL STR. & CLOSURE DAM;DDM NO. 6

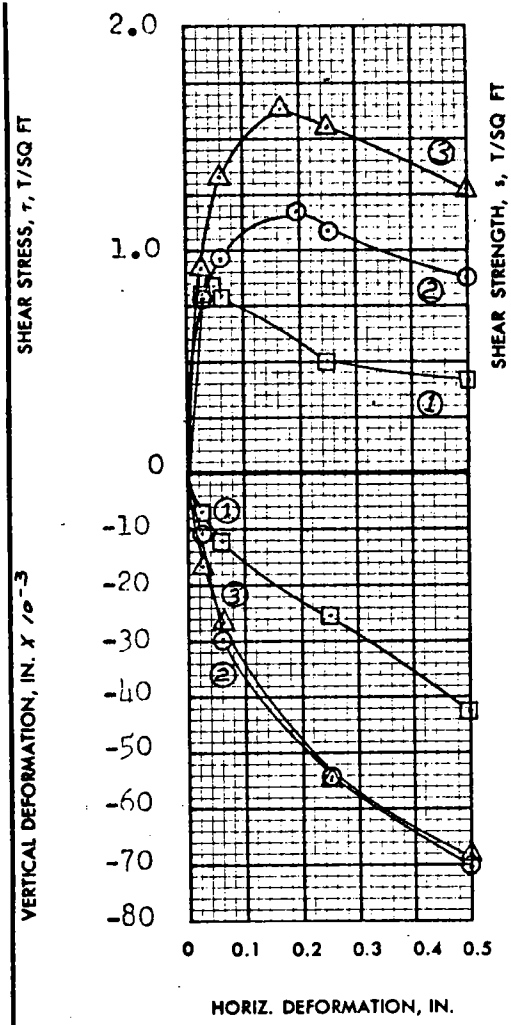
AREA

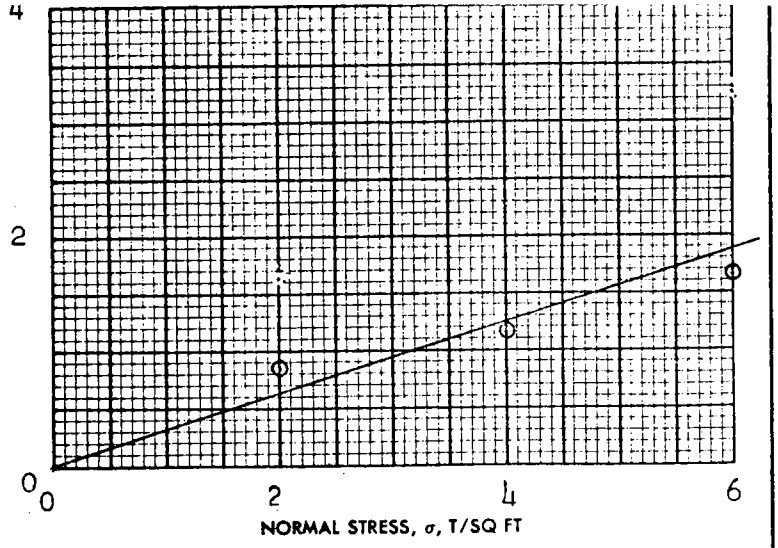
BORING NO. X-13U — SAMPLE NO. 8-C

DEPTH-EL -54.4 MSL — DATE 12 January 1972

GDA

DIRECT SHEAR TEST REPORT





SHEAR STRENGTH PARAMETERS

$\phi' = 17°$

TAN $\phi' = 0.314$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	53.4%	52.6%	52.7%	%
	VOID RATIO	e_o	1.50	1.49	1.47	
	SATURATION	S_o	97.5%	96.7%	98.2%	%
	DRY DENSITY, LB/CU FT	γ_d	68.4	68.7	69.2	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	2.8	3.6	4.1	
FINAL	WATER CONTENT	w_f	54.8%	46.7%	39.0%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.84	1.17	1.63	
ACTUAL TIME TO FAILURE, MIN		t_f	270	1020	8.70	
RATE OF STRAIN, IN./MIN			.00020	.00020	.00020	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 1 & 2 0.546 IN. THICK; 3=0.625

CLASSIFICATION PLASTIC CLAY(CH),dark gray, contains a trace of sand

LL 98 | PL 26 | PI 72 | | G_s 2.74

REMARKS

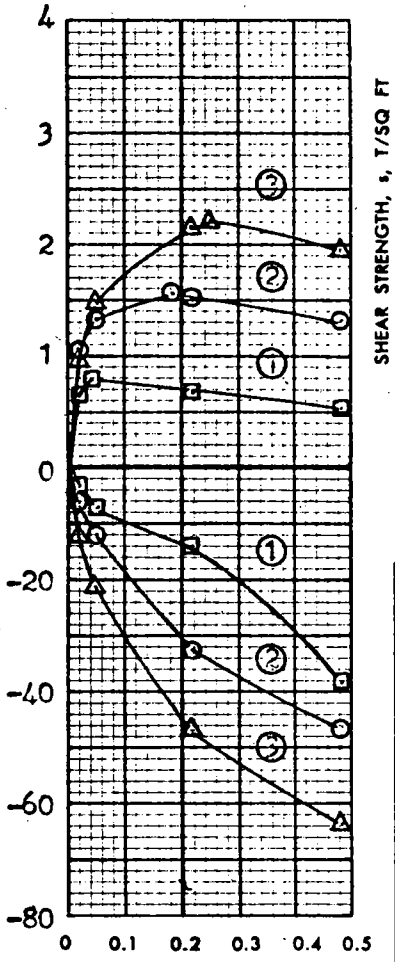
PROJECT LK. PONT., LA. & VIC.-HURR. PROT.(1971)
RIGOLETS CONTROL STR. & CLOSURE DAM;DDM NO.6

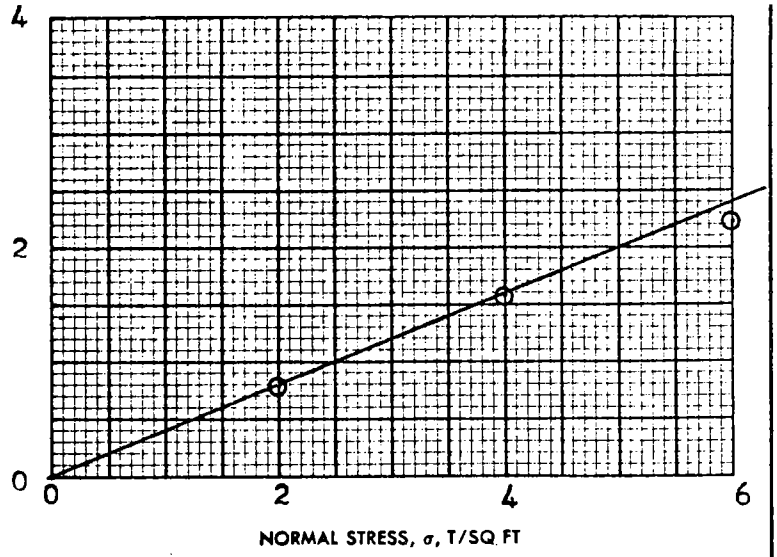
AREA

BORING NO. X-13 U | SAMPLE NO. 15-B

DEPTH EL -81.7 MSL | DATE

BWG **DIRECT SHEAR TEST REPORT**





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	41.4 %	41.5%	41.1%	%
	VOID RATIO	e_o	1.16	1.17	1.16	
	SATURATION	S_o	98.1 %	97.5%	97.4%	%
	DRY DENSITY, LB/CU FT	γ_d	79.4	79.2	79.5	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	2	2	2	
FINAL	WATER CONTENT	w_f	41.1 %	36.3%	32.2%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.80	1.57	2.21	
ACTUAL TIME TO FAILURE, MIN		t_f	300	1140	1500	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

ϕ' = 22°

TAN ϕ' = 0.40

c' = 0 T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.538 IN. THICK

CLASSIFICATION PLASTIC CLAY(CH), gray

LL	PL	PI		G.
72	24	48		2.75

REMARKS

PROJECT LK. PONT., LA. & VIC.-HURR. PROT. (1971)

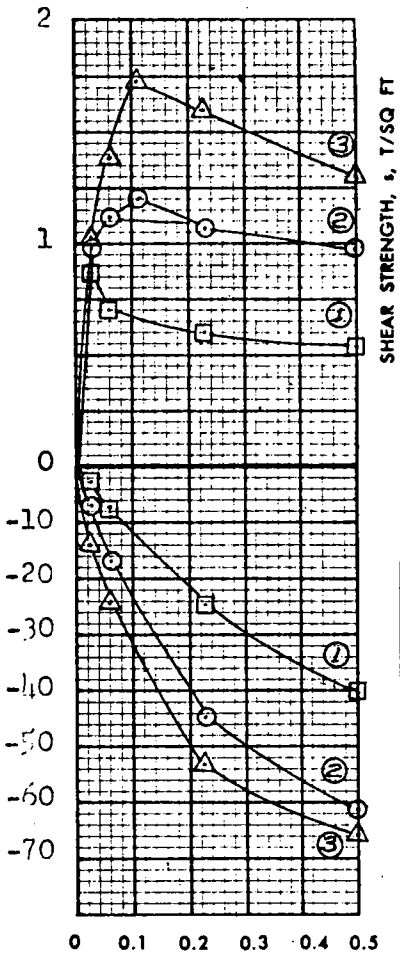
RIGOLETS CONTROL STR. & CLOSURE DAM; DDM # 6

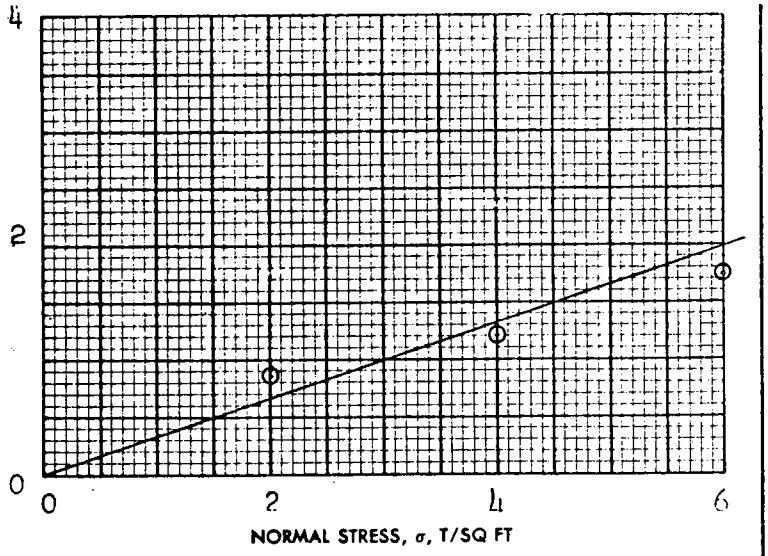
AREA

BORING NO. X-13U — SAMPLE NO. 24-B

~~DEPTH~~ EL -117.9 MSL — DATE 13 January, 1972

GDA **DIRECT SHEAR TEST REPORT**





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	43.3 %	43.9 %	42.2 %	%
	VOID RATIO	e_o	1.22	1.23	1.22	
	SATURATION	S_o	97.6%	98.2%	95.1 %	%
	DRY DENSITY, LB/CU FT	γ_d	77.5	77.1	77.3	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	1.4	1.5	1.8	
FINAL	WATER CONTENT	w_f	45.9 %	42.3 %	39.5 %	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.87	1.20	1.73	
ACTUAL TIME TO FAILURE, MIN		t_f		660	750	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

$\phi' = 18°$

TAN $\phi' = 0.333$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 1&2 0.546 / 3 -0.625 IN. THICK

CLASSIFICATION PLASTIC CLAY(CH), gray

LL 70 | PL 24 | PI 46 | | G_s 2.75

REMARKS

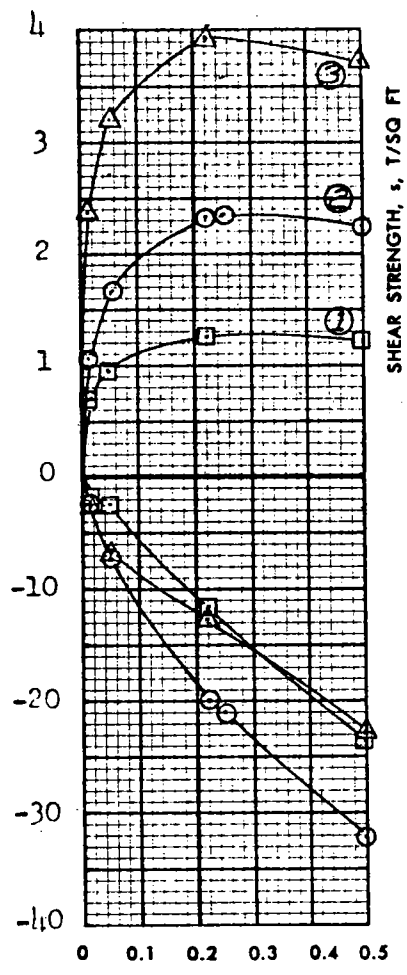
PROJECT LK. PONT., LA.-HURR. PROT. RIGOLETS
CONT. STR. & CLOSURE DAM; DDM NO.6

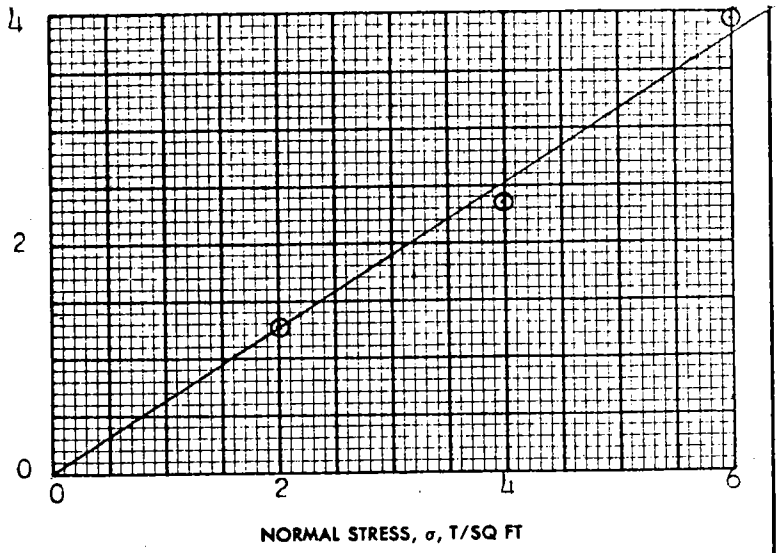
AREA

BORING NO. X-13-U | SAMPLE NO. 30-B

DEPTH EL -141.9 MSL | DATE 13 January 1972

BWG **DIRECT SHEAR TEST REPORT**





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	23.9%	24.1%	24.3%	%
	VOID RATIO	e_o	0.688	0.697	0.688	
	SATURATION	S_o	93.1%	92.7%	94.6%	%
	DRY DENSITY, LB/CU FT	γ_d	99.1	98.6	99.1	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	<1	<1	<1	
FINAL	WATER CONTENT	w_f	24.4%	24.4%	22.6%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	2.0	4.0	6.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	1.27	2.34	3.95	
ACTUAL TIME TO FAILURE, MIN		t_f	1680	1500	1320	
RATE OF STRAIN, IN./MIN			.00018	.00018		
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

$\phi' = 32^\circ$

TAN $\phi' = 0.635$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.538 IN. THICK

CLASSIFICATION CLAYEY SAND(SC),gray, contains pockets of plastic clay

LL - | PL - | PI | | G. 2.68

REMARKS

PROJECT LK. PONT.,LA.&VIC.-HURR. PROT.(1971)
RIGOLETS CONTROL STR. & CLOSURE DAM;DDM NO.6

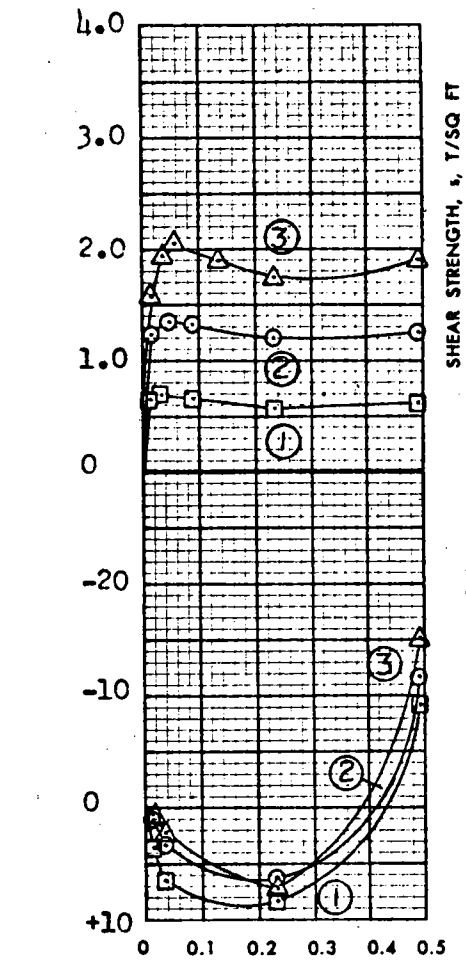
AREA

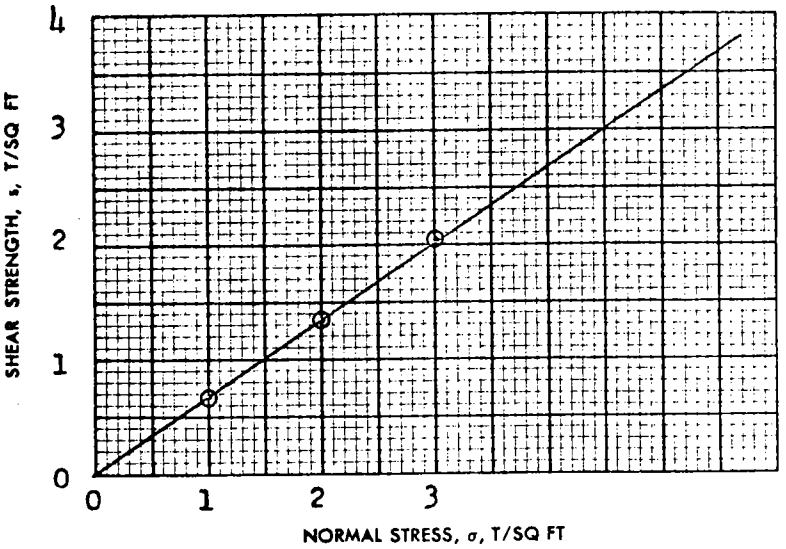
BORING NO. X-13-U | SAMPLE NO. 39-D

DEPTH EL -179.7 MSL | DATE 18 January 1972

GDA

DIRECT SHEAR TEST REPORT





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	21.3 %	21.6 %	22.2%	%
	VOID RATIO	e_o	0.655	0.672	0.679	
	SATURATION	S_o	86.8%	85.8%	87.3 %	%
	DRY DENSITY, LB/CU FT	γ_d	100.7	99.7	99.3	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}				
FINAL	WATER CONTENT	w_f	23.2 %	24.0 %	24.1%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.69	1.35	2.05	
ACTUAL TIME TO FAILURE, MIN		t_f	360	420	480	
RATE OF STRAIN, IN./MIN			.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

$\phi' = 34^\circ$

TAN $\phi' = 0.675$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.550 IN. THICK

CLASSIFICATION SAND(SP), grayish white, contains pockets of plastic clay

LL - | PL - | PI - | | G. 2.67

REMARKS

PROJECT LK. PONT. LA., & VIC.-HURR. PROT. - RIGOLETS CONTROL STRUCT. AND CLOSURE DAM

AREA

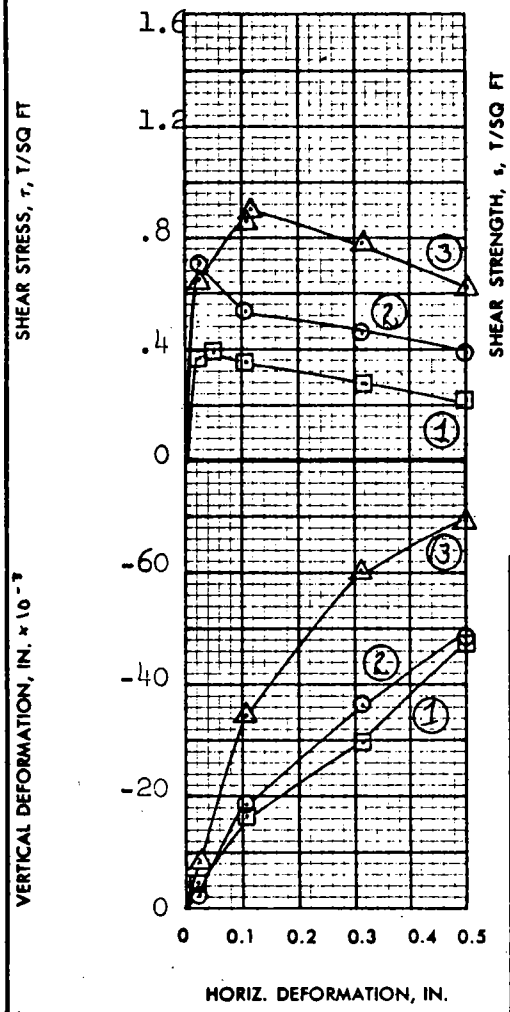
BORING NO. X 14-U | SAMPLE NO. 6-B

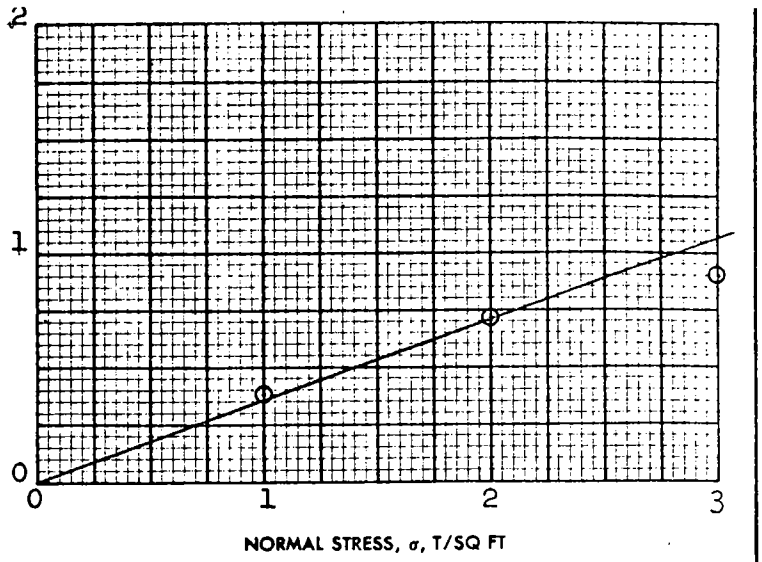
DEPTH EL - 22.0 MSL | DATE 14 July 1971

JHMc

DIRECT SHEAR TEST REPORT

ENG FORM 1 JUN 65 **2092** (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) **PLATE III-99**





SHEAR STRENGTH PARAMETERS

$\phi' = 20°$

TAN $\phi' = 0.355$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	52.1 %	51.6 %	54.3%	%
	VOID RATIO	e_o	1.50	1.50	1.52	
	SATURATION	S_o	96.2 %	95.3 %	99.0 %	%
	DRY DENSITY, LB/CU FT	γ_d	69.1	69.3	68.6	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	2	1	2	
FINAL	WATER CONTENT	w_f	55.8 %	50.1 %	48.6%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.39	0.71	0.90	
ACTUAL TIME TO FAILURE, MIN		t_f	540	300	1560	
RATE OF STRAIN, IN./MIN			.00012	.00012	.00012	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 1&2 0.0550 IN. THICK, 3 0.0625

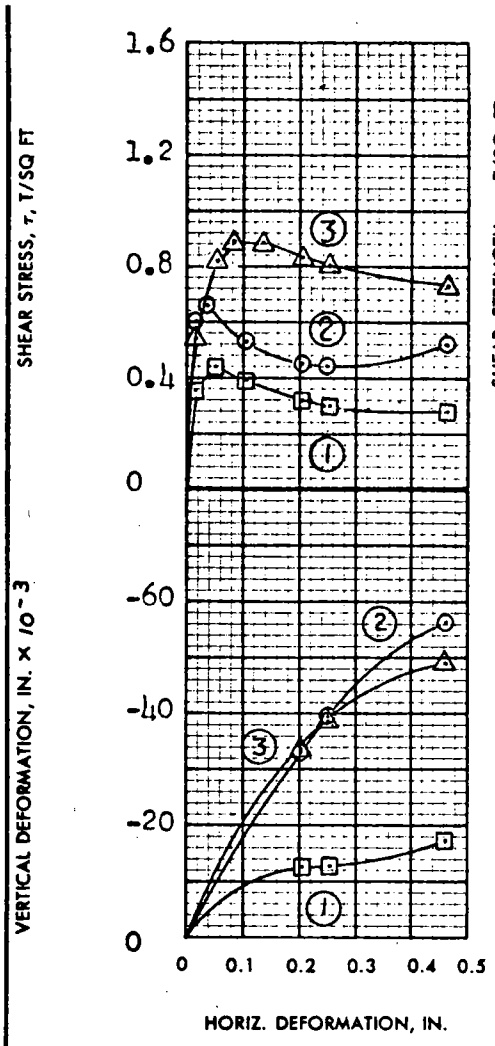
CLASSIFICATION PLASTIC CLAY(CH),gray, contains trace of finely divided organic*

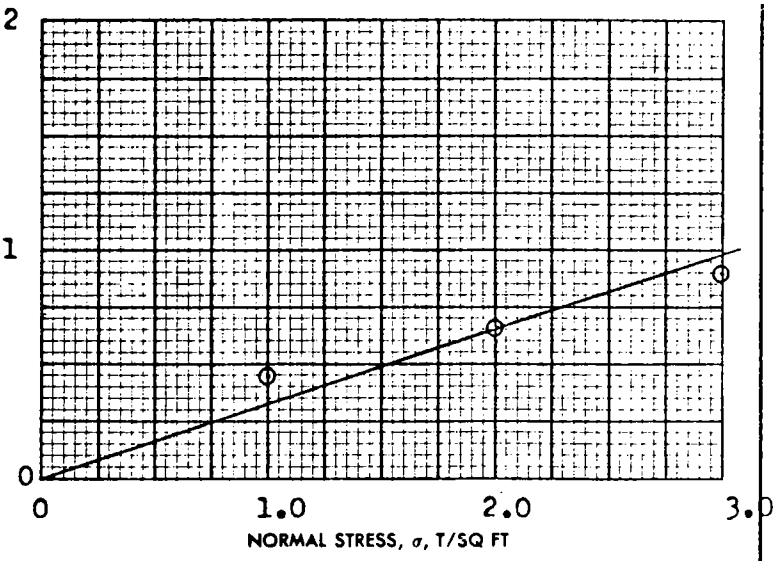
LL 94 | PL 26 | PI 68 | G. 2.77

REMARKS *matter, fissured

PROJECT LK. PONT.LA., & VIC.-HURR. PROT.-
RIGOLETS CONTROL STURCT. & CLOSURE DAM;
AREA DDM NO 6 (1971)
BORING NO. X14-U | SAMPLE NO. 16-C
DEPTH EL -63.1 MSL | DATE 1 September 1971
BWG

DIRECT SHEAR TEST REPORT





TEST NO.			1.	2	3	
INITIAL	WATER CONTENT	w_o	54.1 %	54.9 %	51.6 %	%
	VOID RATIO	e_o	1.45	1.64	1.57	
	SATURATION	S_o	100+ %	92.7 %	91.0 %	%
	DRY DENSITY, LB/CU FT	γ_d	70.6	65.6	67.3	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	<1	<1	3	
FINAL	WATER CONTENT	w_f	62.8 %	58.5 %	54.1 %	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.44	0.66	0.89	
ACTUAL TIME TO FAILURE, MIN		t_f	330	240	540	
RATE OF STRAIN, IN./MIN			.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

ϕ' = 18°

TAN ϕ' = 0.33

c' = 0 T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.550 IN. THICK

CLASSIFICATION PLASTIC CLAY(CH),gray, slickensided

LL	PL	PI		G_s
106	28	78		2.77

REMARKS

PROJECT LK.PONT.LA.,& VIC.-HURR. PROT.-
RIGOLETS CONTROL STRUCT. & CLOSURE DAM;

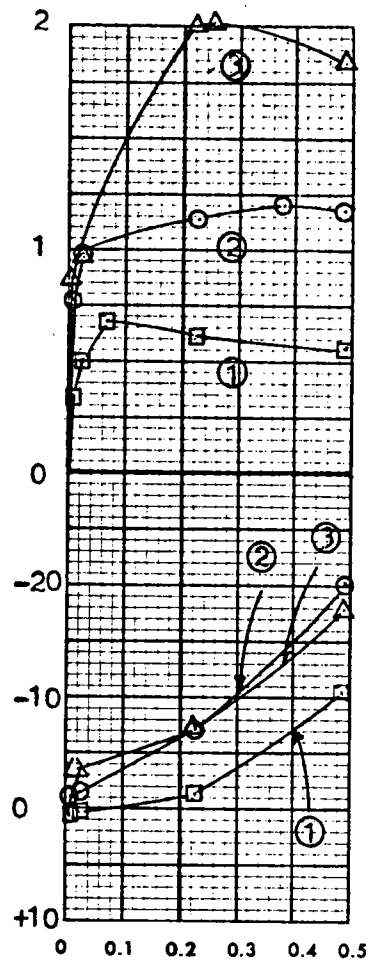
AREA DDM NO. 6 (1971)

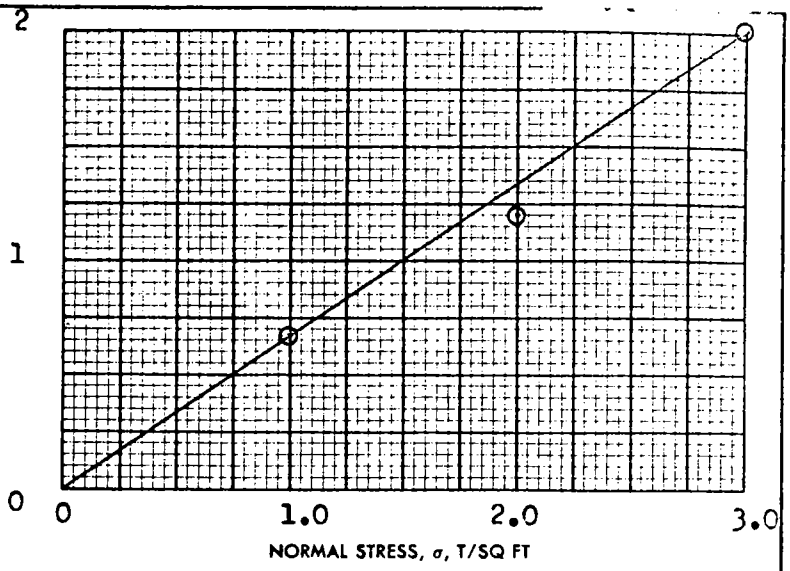
BORING NO. X-14-U — SAMPLE NO. 20 - D

DEPTH EL - 80.1 MSL — DATE 21 July,1971

JHMc

DIRECT SHEAR TEST REPORT





SHEAR STRENGTH PARAMETERS

$\phi' = 34°$

TAN $\phi' = 0.67$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	23.0%	22.4%	23.0 %	%
	VOID RATIO	e_o	0.655	0.653	0.658	
	SATURATION	S_o	94.1%	91.9%	93.7 %	%
	DRY DENSITY, LB/CU FT	γ_d	101.1	101.2	100.9	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	15	7	< 1	
FINAL	WATER CONTENT	w_f	22.6%	24.2%	22.7%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.68	1.20	2.01	
ACTUAL TIME TO FAILURE, MIN		t_f	720	2220	1500	
RATE OF STRAIN, IN./MIN			.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.550 IN. THICK

CLASSIFICATION SILTY SAND(SM),light gray, trace of organic matter and pockets of*

LL - PL - PI - G. 2.68

REMARKS * plastic clay

PROJECT LK. PONT.,LA.& VIC.-HURR. PROT. RUGOLETS

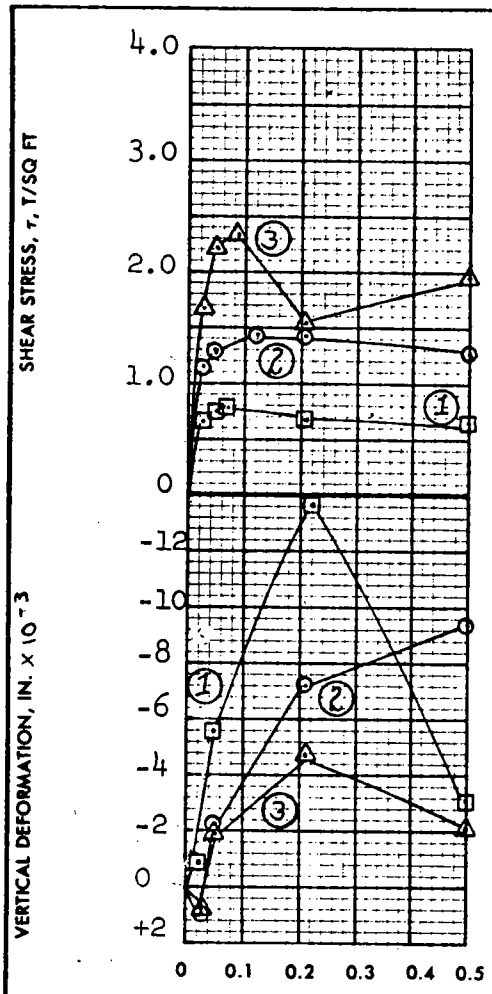
CONTROL STR. & CLOSURE DAM,DDM #6 (1971)

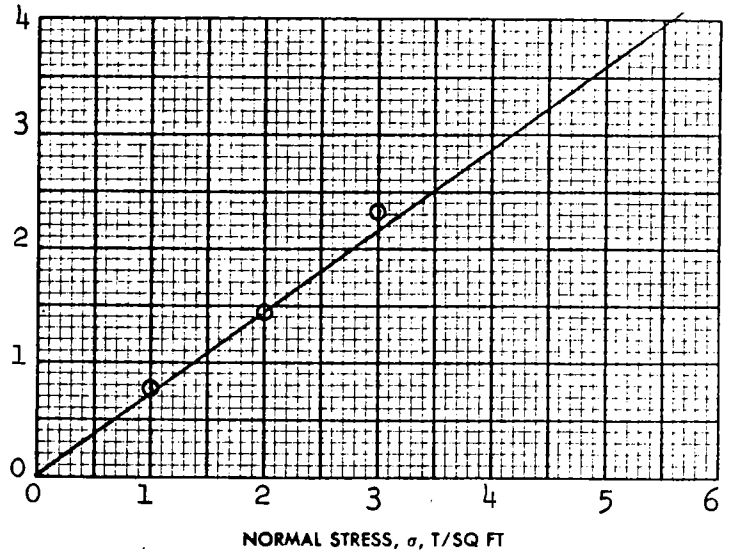
AREA

BORING NO. X-14-U SAMPLE NO. 24-C

DEPTH EL -95.0 MSL DATE 26 July,1971

JHMC DIRECT SHEAR TEST REPORT





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	22.9 %	22.5%	23.1%	%
	VOID RATIO	e_o	0.671	0.633	0.615	
	SATURATION	S_o	90.8 %	94.5 %	99.9%	%
	DRY DENSITY, LB/CU FT	γ_d	99.4	101.7	102.8	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}				
FINAL	WATER CONTENT	w_f	24.7 %	25.0%	25.1%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.79	1.44	2.32	
ACTUAL TIME TO FAILURE, MIN		t_f	510	780	570	
RATE OF STRAIN, IN./MIN			.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

ϕ' = 36°

TAN ϕ' = 0.72

c' = 0 T/SQ FT

☐ CONTROLLED STRESS

☒ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.550 IN. THICK

CLASSIFICATION SILTY SAND(SM),gray

LL - | PL - | PI - | | G_s 2.66

REMARKS

PROJECT LK. PONT;LA.,&VIC. -HURR. PROT.-
RIGOLETS CONTROL STRUCTURE & CLOSURE DAM,

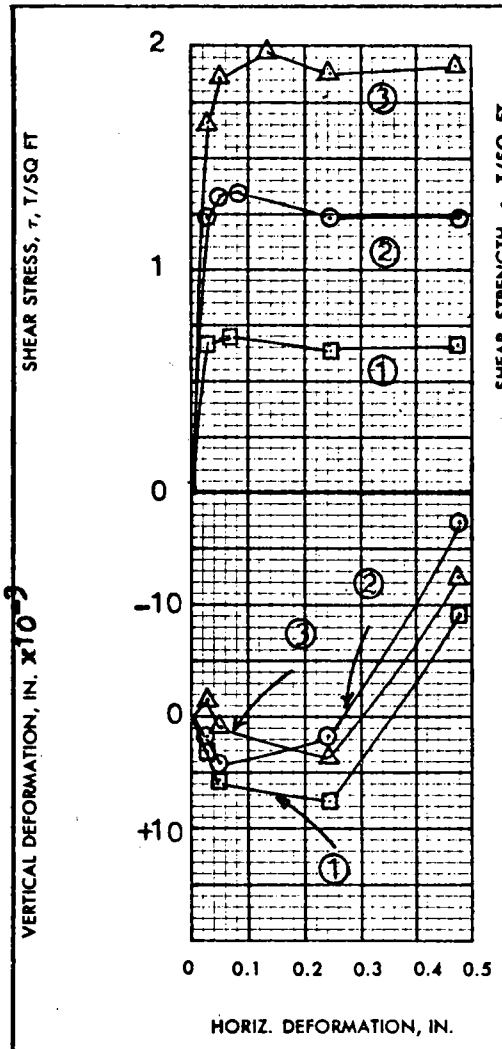
AREA DDM NO. 6

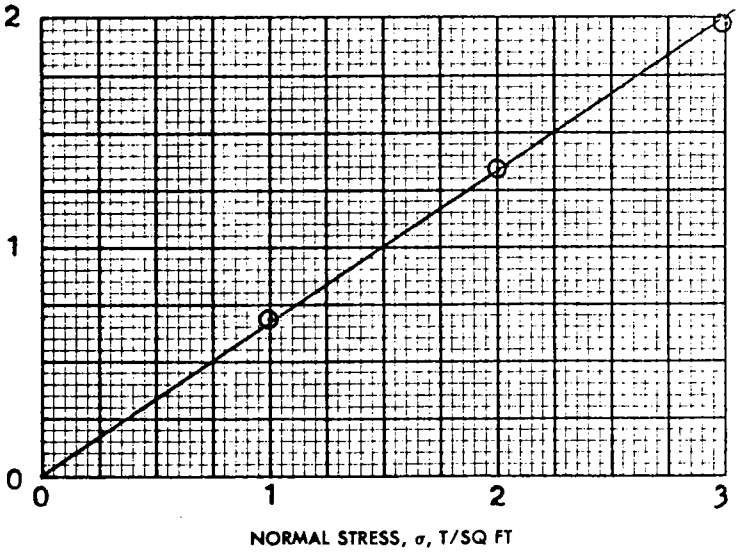
BORING NO. X-15-U | SAMPLE NO. 7-B

~~DEPTH~~ EL -22.1 MSL | DATE 7 September 1971

BWG

DIRECT SHEAR TEST REPORT





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	23.3%	23.9%	22.9%	%
	VOID RATIO	e_o	0.693	0.702	0.658	
	SATURATION	S_o	90.1%	91.2%	93.3%	%
	DRY DENSITY, LB/CU FT	γ_d	98.8	98.3	100.9	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}				
FINAL	WATER CONTENT	w_f	22.5%	21.9%	22.6%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.69	1.34	1.98	
ACTUAL TIME TO FAILURE, MIN		t_f	420	540	780	
RATE OF STRAIN, IN./MIN			.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

$\phi' = 34^\circ$

TAN $\phi' = 0.67$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☐ CONTROLLED STRAIN

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.544 IN. THICK

CLASSIFICATION SILTY SAND(SM),light gray

LL - | PL - | PI - | G. 2.68

REMARKS

PROJECT LK.PONT.IA.& VIC.-HURR. PROT.-RIGOLETS

CONTROL STRUCTURE & CLOSURE DAM; DDM #6

AREA

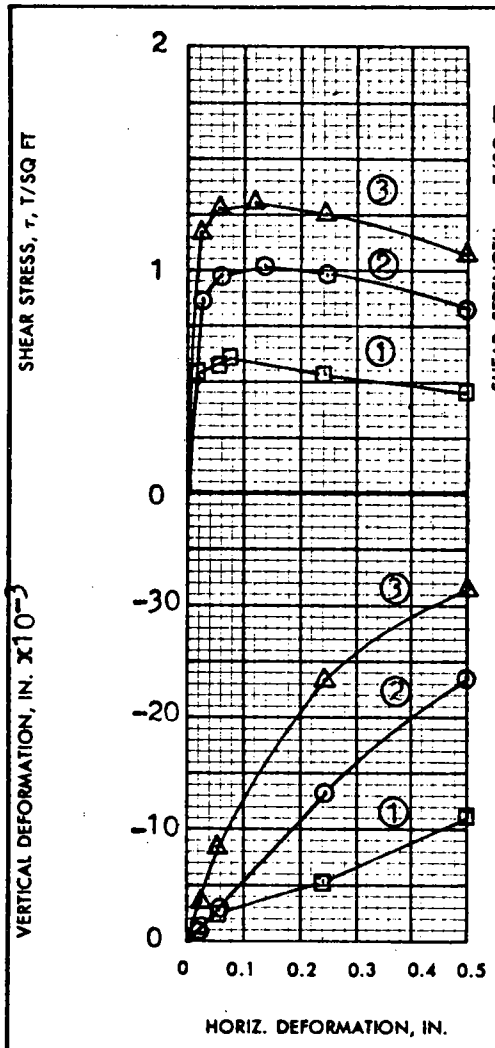
BORING NO. X-15U | SAMPLE NO. 16-D

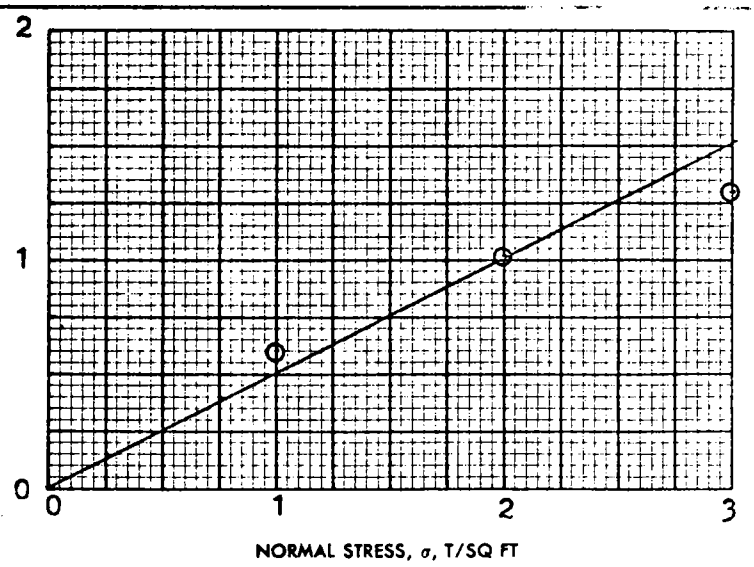
~~DEPTH~~ EL -59.8 MSL | DATE 8 September,1971

BWG **DIRECT SHEAR TEST REPORT**

ENG FORM 2092 (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT)

PLATE III-104





SHEAR STRENGTH PARAMETERS

$\phi' = 27^\circ$

TAN $\phi' = 0.505$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☐ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	27.0%	27.9%	27.9%	%
	VOID RATIO	e_o	0.764	0.797	0.793	
	SATURATION	S_o	97.5%	96.6%	97.1%	%
	DRY DENSITY, LB/CU FT	γ_d	97.7	95.9	96.1	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	< 1	< 1	< 1	
FINAL	WATER CONTENT	w_f	30.3%	28.6%	27.7%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.60	1.01	1.30	
ACTUAL TIME TO FAILURE, MIN		t_f	450	780	690	
RATE OF STRAIN, IN./MIN			.00019	.00019	.00019	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.544 IN. THICK

CLASSIFICATION PLASTIC CLAY(CH),gray, fissured

LL - PL - PI - G. 2.76 From Q

REMARKS

PROJECT LK.PONT.LA,& VIC.-HURR, PROT.-RIGOLETS

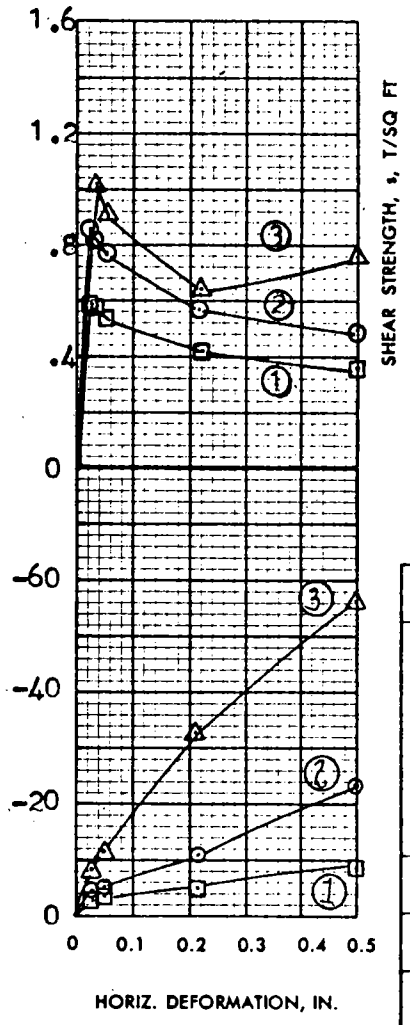
CONTROL STRUCTURE & CLOSURE DAM; DDM #6

AREA

BORING NO. X-15U SAMPLE NO. 19-D

~~DEPTH~~ EL -71.9 MSL DATE 15 September,1971

BWG **DIRECT SHEAR TEST REPORT**



SHEAR STRENGTH PARAMETERS

$\phi' = 23°$

TAN $\phi' = 0.43$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☐ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	48.1 %	47.1 %	46.8%	%
	VOID RATIO	e_o	1.32	1.32	1.31	
	SATURATION	S_o	99.8 %	97.8 %	97.9%	%
	DRY DENSITY, LB/CU FT	γ_d	73.8	73.6	74.1	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	< 1	2	2	
FINAL	WATER CONTENT	w_f	50.4 %	52.5 %	48.4%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.59	0.86	1.02	
ACTUAL TIME TO FAILURE, MIN		t_f	180	180	270	
RATE OF STRAIN, IN./MIN			.00019	.00019	.00019	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 1=0.544 2&3=0.539 IN. THICK

CLASSIFICATION PLASTIC CLAY(CH),gray, fissured

LL - PL - PI - G. 2.74 From Q

REMARKS

PROJECT LK.PONT.IA.& VIC.-HURR. PROT.-RIGOLETS

CONTROL STRUCTURE & CLOSURE DAM DDM#6

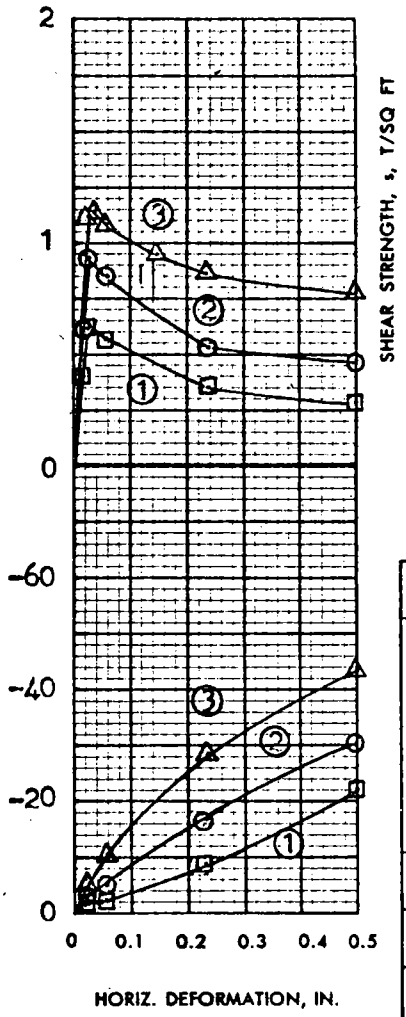
AREA

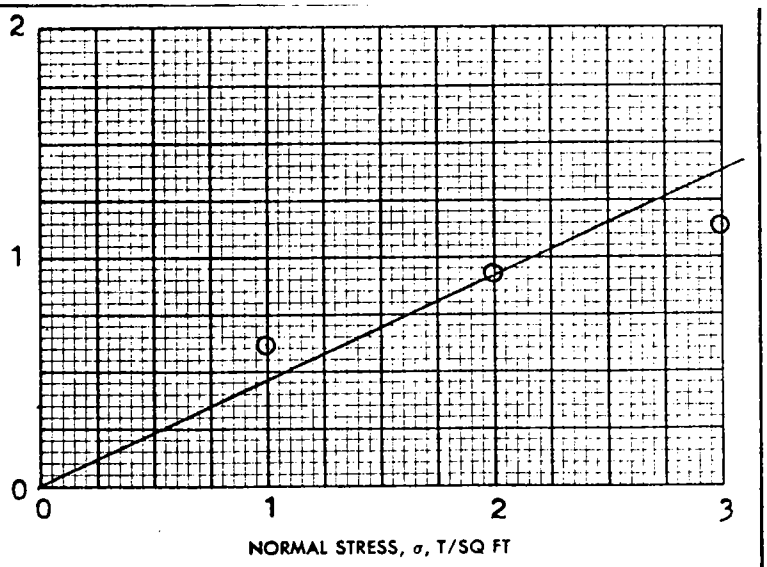
BORING NO. X-15U SAMPLE NO. 22-D

~~DEPTH~~ EL -84.0 MSL DATE 21 September, 1971

BWG DIRECT SHEAR TEST REPORT

ENG FORM 2092 (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) PLATE III-106





TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	43.6 %	43.2%	42.9%	%
	VOID RATIO	e_o	1.18	1.12	1.19	
	SATURATION	S_o	100+ %	100+%	98.4%	%
	DRY DENSITY, LB/CU FT	γ_d	78.1	80.4	77.9	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	< 1	< 1	2	
FINAL	WATER CONTENT	w_f	47.7 %	40.1%	44.1%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.62	0.93	1.14	
ACTUAL TIME TO FAILURE, MIN		t_f	180	180	240	
RATE OF STRAIN, IN./MIN			.00018	.00018	.00018	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

SHEAR STRENGTH PARAMETERS

$\phi' = 25°$

TAN $\phi' = 0.465$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☐ CONTROLLED STRAIN

TYPE OF SPECIMEN	UNDISTURBED	3.00 IN. SQUARE	0.544 IN. THICK
CLASSIFICATION	PLASTIC CLAY(CH),gray, contains silt pockets, fissured		
LL -	PL -	PI -	G_s 2.73 From Q

REMARKS

PROJECT LK.PONT.LA.& VIC.-HURR. PROT.-RIGOLETS

CONTROL STRUCTURE & CLOSURE DAM DDM#6

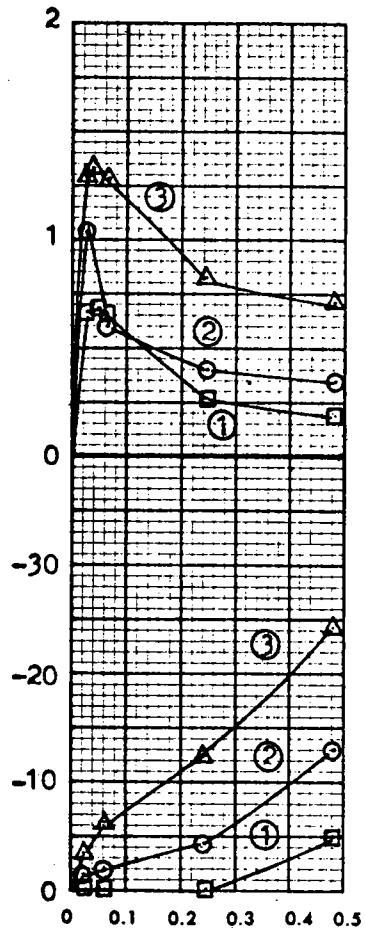
AREA

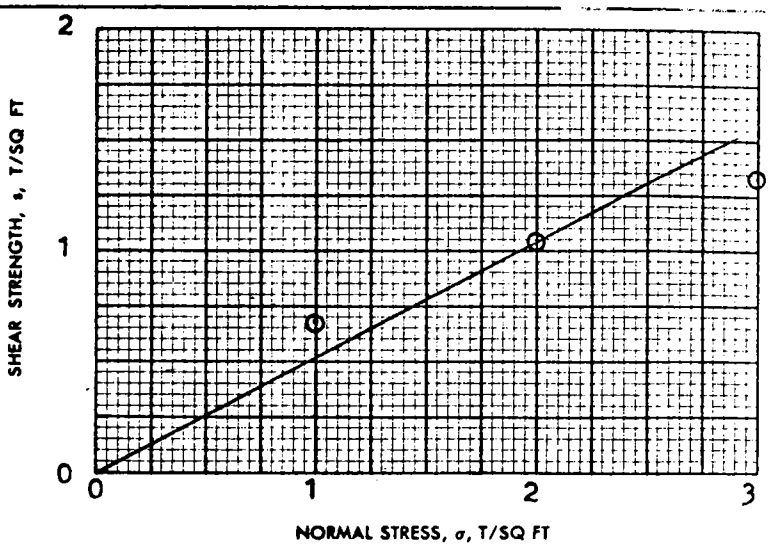
BORING NO. X-15U SAMPLE NO. 34-B

DEPTH EL -130.1 MSL DATE 22 September, 1971

BWG **DIRECT SHEAR TEST REPORT**

ENG FORM 2092 (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) USAEWES SOT **PLATE III-107**





SHEAR STRENGTH PARAMETERS

$\phi' = 27°$

TAN $\phi' = 0.52$

$c' = 0$ T/SQ FT

☐ CONTROLLED STRESS

☐ CONTROLLED STRAIN

TEST NO.			1	2	3	
INITIAL	WATER CONTENT	w_o	58.3 %	64.3%	59.3%	%
	VOID RATIO	e_o	1.56	1.67	1.60	
	SATURATION	S_o	97.9 %	100+%	97.1%	%
	DRY DENSITY, LB/CU FT	γ_d	63.9	61.3	62.9	
VOID RATIO AFTER CONSOLIDATION		e_c				
TIME FOR 50 PERCENT CONSOLIDATION, MIN		t_{50}	< 1	2	2	
FINAL	WATER CONTENT	w_f	67.0 %	65.4%	62.8%	%
	VOID RATIO	e_f				
	SATURATION	S_f	%	%	%	%
NORMAL STRESS, T/SQ FT		σ	1.0	2.0	3.0	
MAXIMUM SHEAR STRESS, T/SQ FT		τ_{max}	0.68	1.04	1.33	
ACTUAL TIME TO FAILURE, MIN		t_f	300	180	240	
RATE OF STRAIN, IN./MIN			.00017	.00017	.00017	
ULTIMATE SHEAR STRESS, T/SQ FT		τ_{ult}				

TYPE OF SPECIMEN UNDISTURBED — 3.00 IN. SQUARE — 0.544 IN. THICK

CLASSIFICATION PLASTIC CLAY(CH), dark gray, contains finely divided organic matter*

LL - | PL - | PI - | | G_s 2.62 From Q

REMARKS *fissured

PROJECT LK.PONT.LA.& VIC.-HURR. PROT.-RIGOLETS

CONTROL STRUCTURE & CLOSURE DAM; DDM#6

AREA

BORING NO. X-15U | SAMPLE NO. 45-B

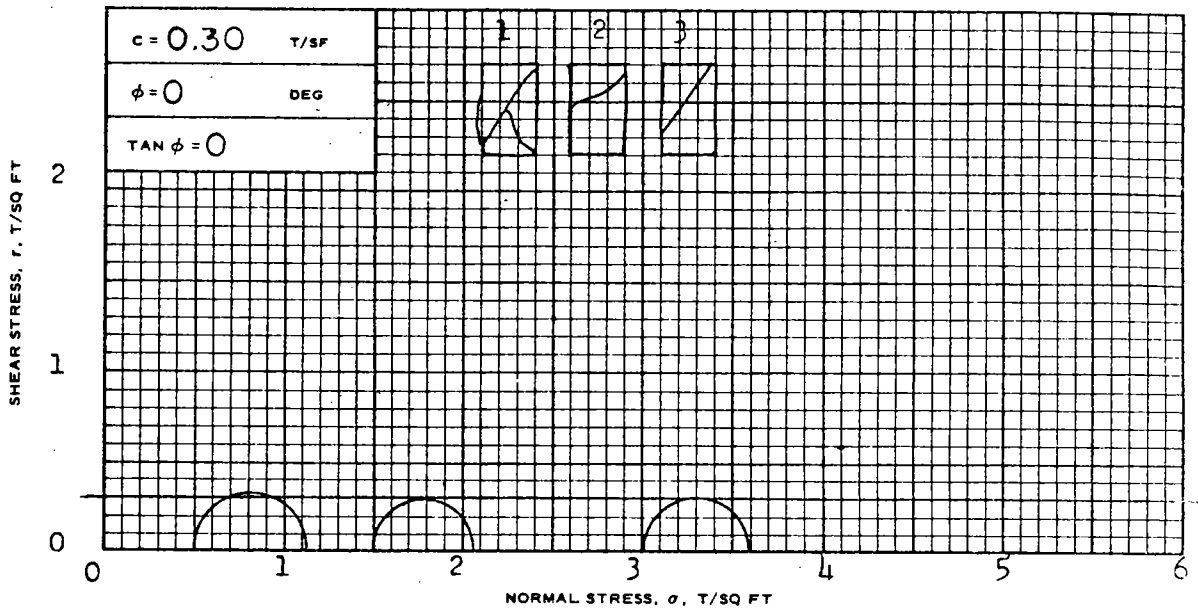
DEPTH-EL -174.2 MSL | DATE 23 September,1971

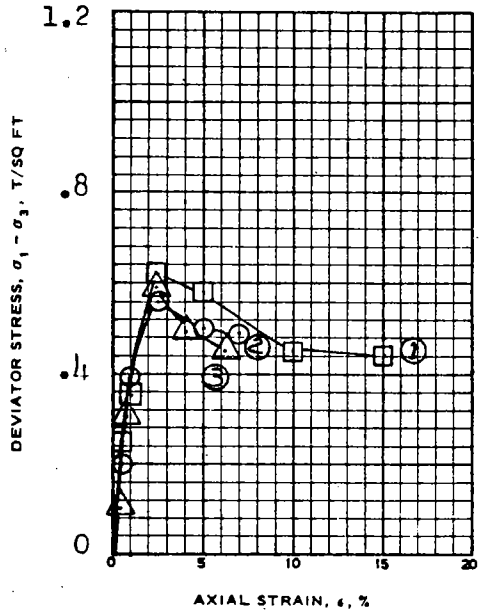
BWG

DIRECT SHEAR TEST REPORT

ENG FORM 2092 1 JUN 65 (EM 1110-2-1906) PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) USAEWES

PLATE III-108





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	73.3	75.9	78.4
	DRY DENSITY LB/ CU FT	γ_{d_o}	55.2	54.3	53.2
	SATURATION, %	S_o	97.1	98.1	98.5
	VOID RATIO	e_o	2.00	2.05	2.11
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	S_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.62	0.56	0.59
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	12	19	20
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.41	1.41	1.41
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), gray, contains sand lenses

LL	PL	PI	G_s
112	28	84	2.65

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA.-HURR. PROT. RIGOLETS
CONT. STR. & CLOSURE DAM, 1971

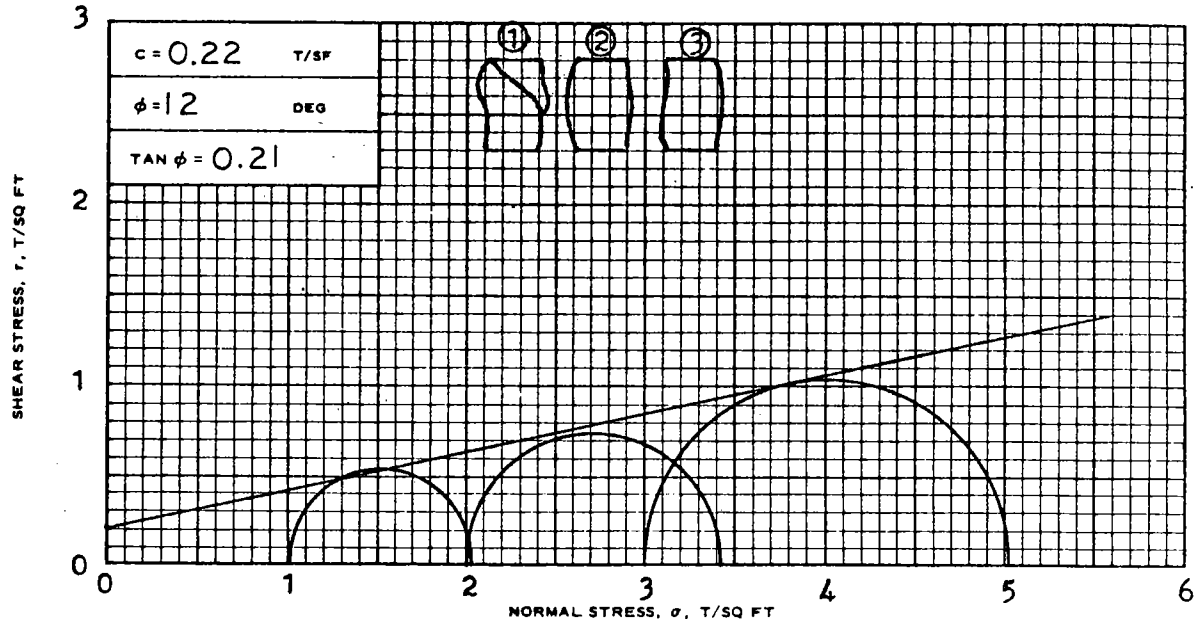
BORING NO. X-1-U SAMPLE NO. 6-B

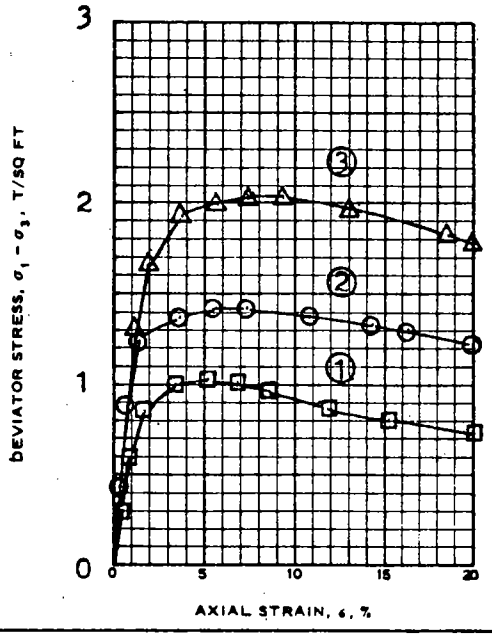
DEPTH/ELEV -41.7 MSL

LABORATORY USAEWES DATE 20 October, 1971

JMS TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	84.8	84.3	80.1	
	DRY DENSITY LB/ CU FT	γ_{d_o}	50.8	51.3	52.7	
	SATURATION, %	s_o	99.0	99.9	98.7	
	VOID RATIO	e_o	2.30	2.26	2.18	
BEFORE SHEAR	WATER CONTENT, %	w_c	76.7	63.8	54.0	
	DRY DENSITY LB/CU FT	γ_{d_c}	54.6	61.3	66.9	
	SATURATION, %	s_c	99.6	98.9	96.5*	
	VOID RATIO	e_c	2.06	1.73	1.50	
	FINAL BACK PRESSURE, T/SQ FT	u_o	3.13	3.13	3.13	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.02	1.42	2.62	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	62	66	90	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY (CH), grayish brown, contains a few small silt lenses

LL 128	PL 29	PI 99	G_s 2.68

REMARKS: * Pore pressure response indicated 100% saturation

TYPE OF SPECIMEN UNDIST. TYPE OF TEST R

PROJECT LK. PONT.,LA.& VICINITY-HURR. PROT. ('71) RIGOLETS CONTROL STR.&CLOSURE DDM #6

BORING NO. X-1U SAMPLE NO. 7-B

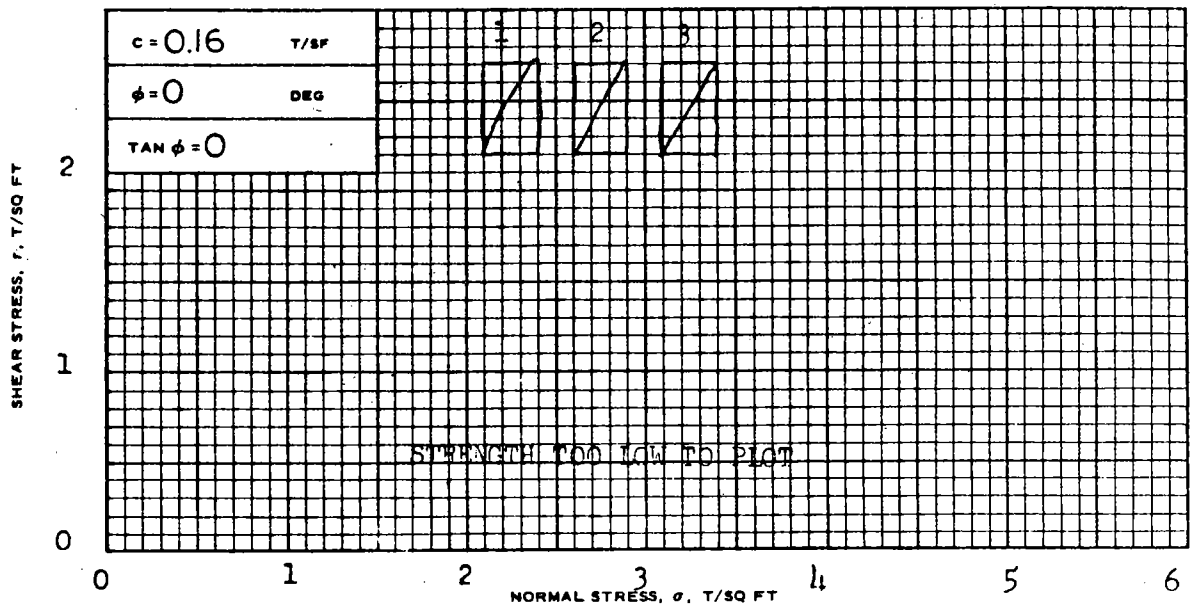
~~DEPTH~~/ELEV -46.3 MSL

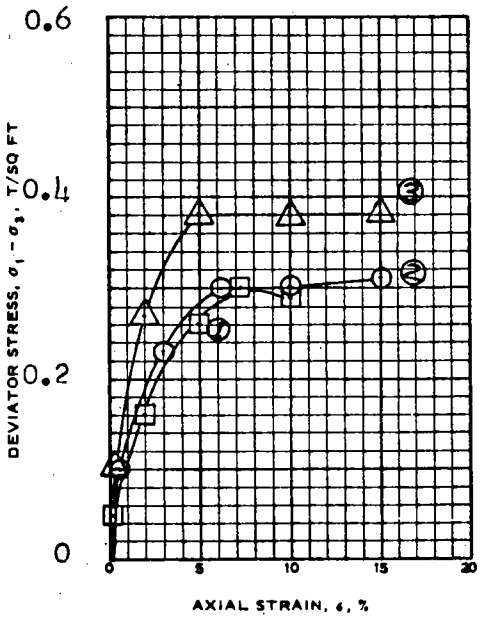
LABORATORY USAEWES DATE 18 October,1971

JAL TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)

PLATE III-110





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	82.1	84.0	84.1
	DRY DENSITY LB/CU FT	γ_{d_o}	51.3	51.0	51.5
	SATURATION, %	S_o	97.4	98.7	100+
	VOID RATIO	e_o	2.26	2.28	2.25
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	S_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.30	0.31	0.38
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	133	70	75
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.40	1.40	1.40
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), dark gray, contains seams of silty sand

LL 126	PL 30	PI 90	G_s 2.68

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS: Shear plane visible at approx. 7.2% axial strain on test no. 1 and 6.2% axial strain on test no. 2.

PROJECT LK. PONT., LA. - HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM, 1971

BORING NO. X-1-U SAMPLE NO. 8-B

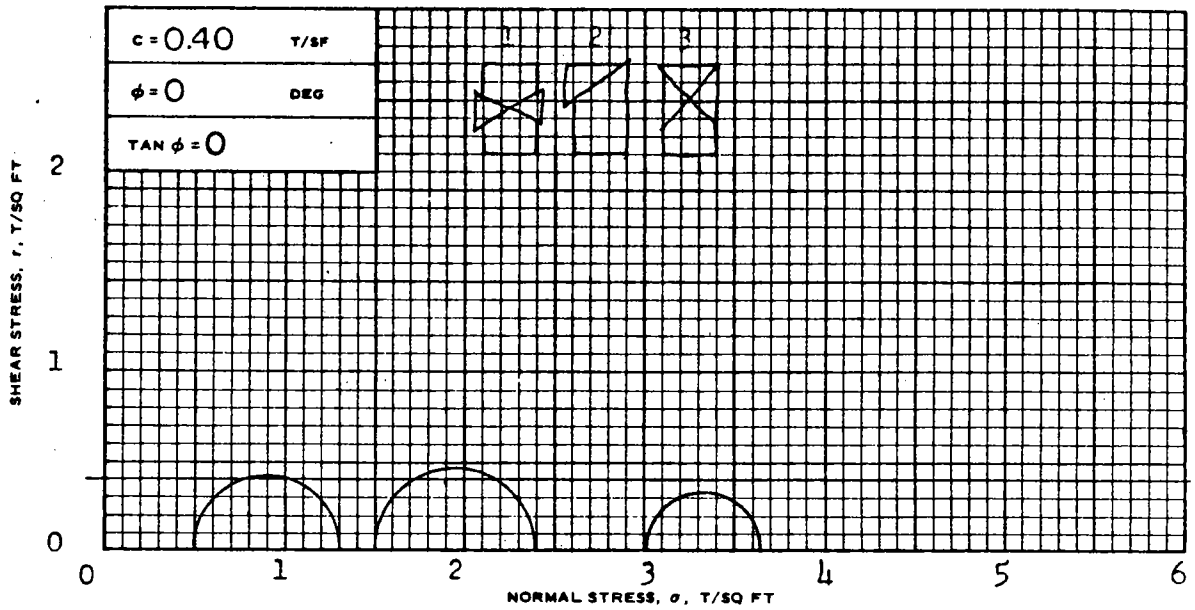
DEPTH/ELEV -50.1 MSL

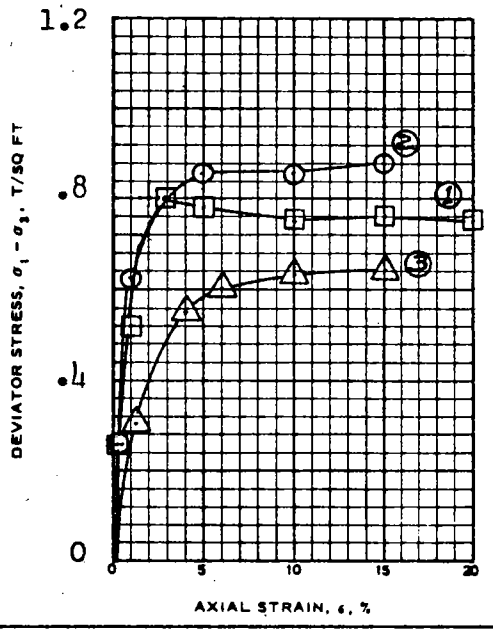
LABORATORY USAEWES DATE 22 October, 1971

GDA TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)

PLATE III - ///





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	38.4	37.6	38.8
	DRY DENSITY LB/CU FT	γ_{d_o}	82.9	83.5	81.4
	SATURATION, %	s_o	100+	100+	98.5
	VOID RATIO	e_o	1.02	1.01	1.06
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	s_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.80	0.88	0.64
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	16	110	103
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.39	1.39	1.39
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), gray, with sand and organic matter

LL 55	PL 17	PI 38	G_s 2.69	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST Q

REMARKS: Shear plane visible at approx. 2.2% axial strain on test no.3.

PROJECT LK. PONT., LA.-HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM, 1971

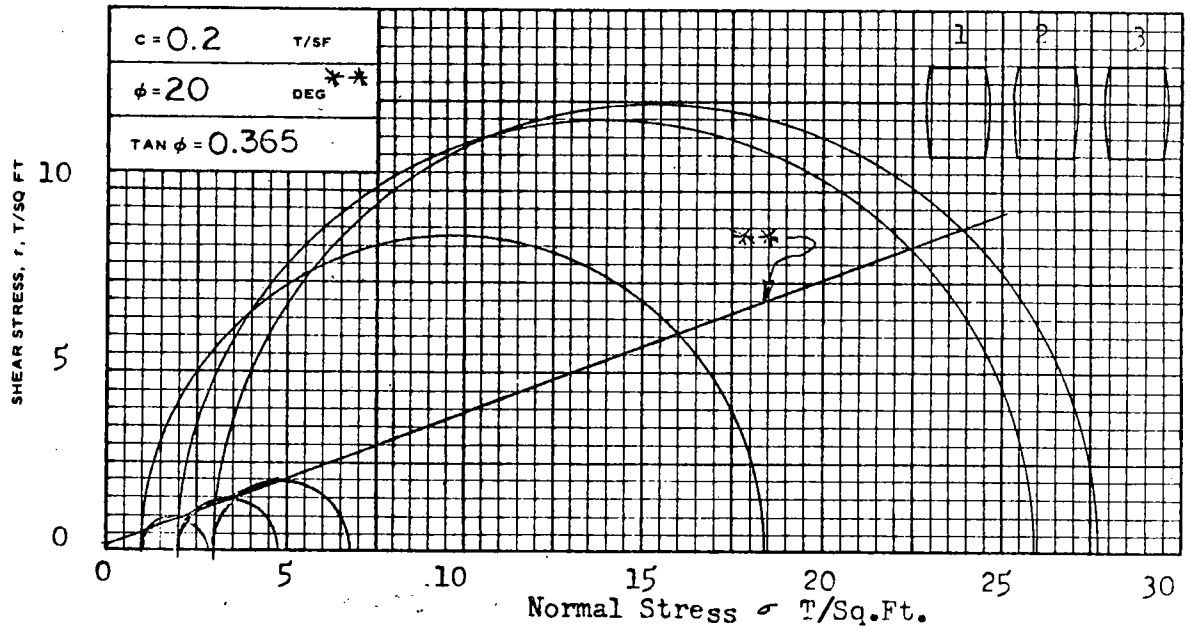
BORING NO. X-1-U SAMPLE NO. 10-D

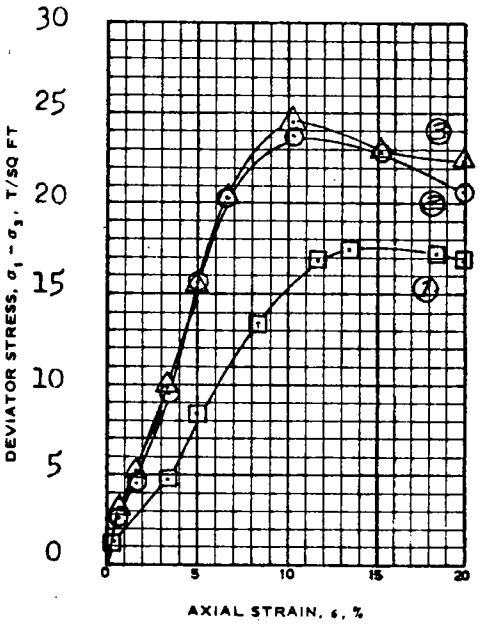
DEPTH/ELEV -61.0 MSL

LABORATORY USAEWES DATE 21 October 1971

GDA TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	26.3	25.9	25.7	
	DRY DENSITY LB/CU FT	γ_{d_o}	97.4	97.8	97.8	
	SATURATION, %	S_o	98.8	98.1	97.4	
	VOID RATIO	e_o	0.711	0.705	0.701	
BEFORE SHEAR	WATER CONTENT, %	w_c	25.4	25.0	24.4	
	DRY DENSITY LB/CU FT	γ_{d_c}	99.0	100.1	100	
	SATURATION, %	S_c	99.1	100+	97.78	*
	VOID RATIO	e_c	0.684	0.666	0.666	
	FINAL BACK PRESSURE, T/SQ FT	u_o	4.68	4.68	4.68	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	17.41	23.84	24.62	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	150	113	113	
$(\sigma_1 - \sigma_3)$ at max pore pressure			1.7	2.8	3.7	
INITIAL DIAMETER, IN.		D_o	1.39	1.40	1.40	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

** pressure

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS SILTY SAND(SM),tan

LL - PL - PI - G_s 2.67

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST R

REMARKS: Pore pressure response indicated 100% saturation.

PROJECT LK. PONT.,LA. & VICINITY-HURR.PROT. (1971)RIGOLETS CONT.STR.&CLOSURE DAM:DDM 6

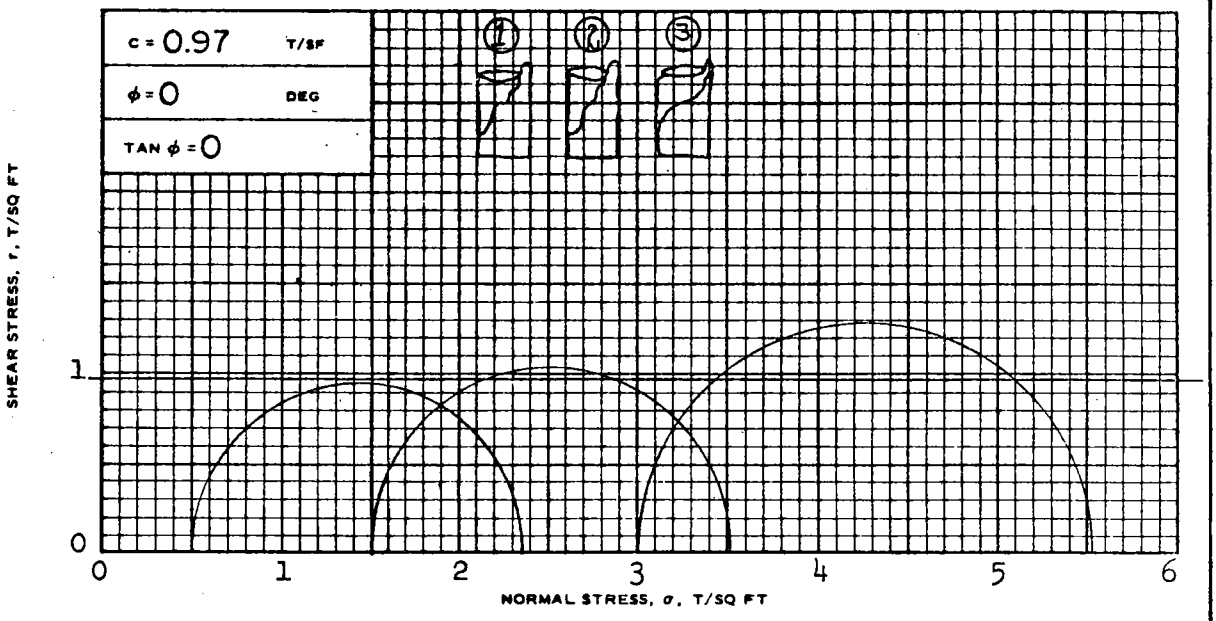
BORING NO. X-1U SAMPLE NO. 13-C

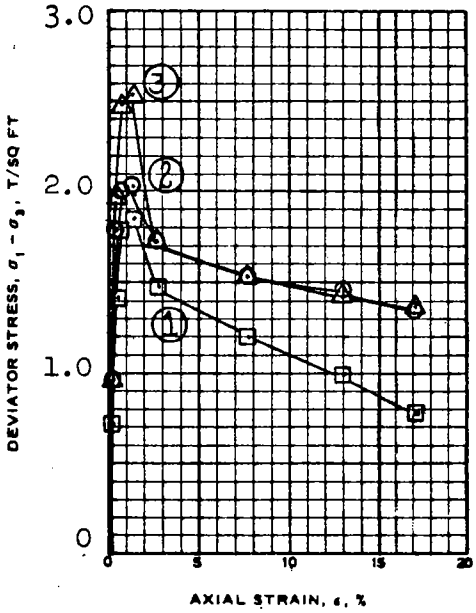
DEPTH/ELEV -71.0 MSL

LABORATORY USAEWES DATE 18 October 1971

JAL TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	55.0	54.5	54.3
	DRY DENSITY LB/ CU FT	γ_{d_o}	68.2	68.5	68.9
	SATURATION, %	S_o	100+	99.8	100+
	VOID RATIO	e_o	1.50	1.49	1.47
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	S_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.85	2.02	2.53
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	15	15	15
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.39	1.39	1.39
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), mottled gray, light gray and brown, fissured

LL	PL	PI	G_s
104	29	75	2.73

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA. & VIC.-HURR. PROT. (1971)
RIGOLETS CONTROL STR. & CLOSURE DAM; DDM NO. 6

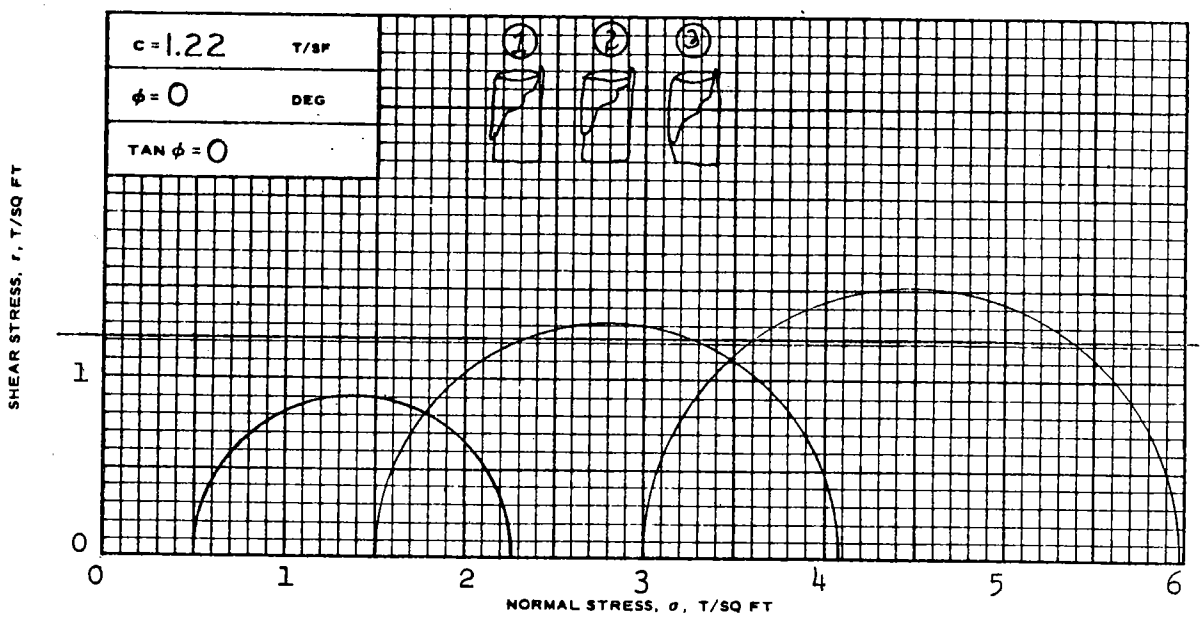
BORING NO. X-1-U SAMPLE NO. 16-B

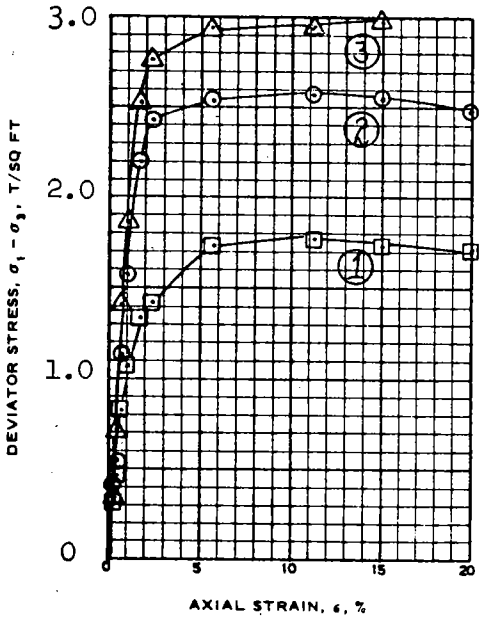
DEPTH/ELEV -82.1 MSL

LABORATORY USAEWES DATE 13 October 1971

TES TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	29.1	28.8	28.1
	DRY DENSITY LB/ CU FT	γ_{d_o}	91.0	94.1	94.4
	SATURATION, %	S_o	91.4	97.4	95.6
	VOID RATIO	e_o			
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	S_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.76	2.58	2.98
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	146	146	197
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.40	1.39	1.39
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- strain TEST

DESCRIPTION OF SPECIMENS CLAY(CH), light gray, crumbly, contains strata of plastic clay

LL 50	PL 19	PI 31	G 2.72

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA.&VIC.-HURR. PROT.(1971)
RIGOLETS CONTROL STR.&CLOSURE DAM;DDM NO.6

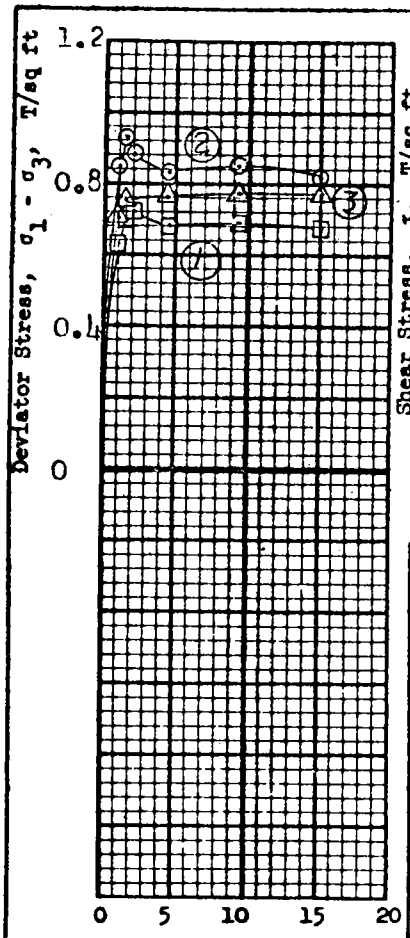
BORING NO. X-1-U SAMPLE NO. 18-D

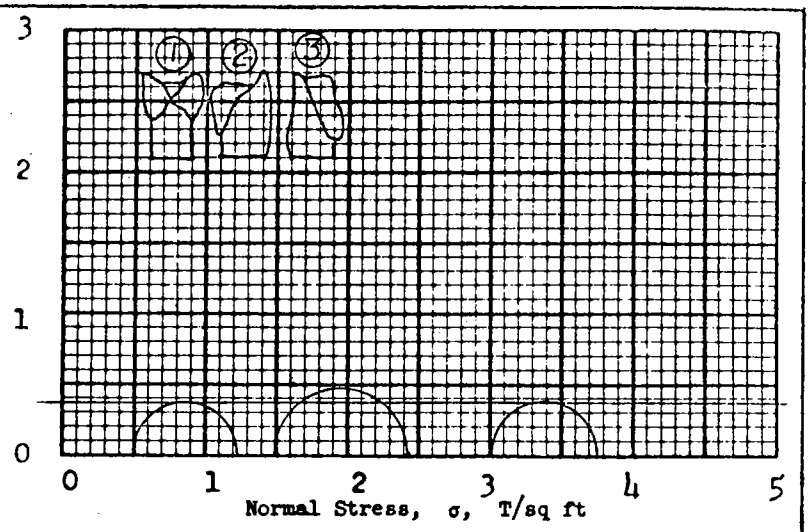
DEPTH/ELEV -92.0 MSL

LABORATORY USAEWES DATE 13 Oct. 1971

TES TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





Test No.			1	2	3	
Initial	Water content	w_o	47.3%	46.4%	48.3%	%
	Void ratio	e_o	1.30	1.28	1.32	
	Saturation	S_o	99.3 %	99.0 %	99.7 %	%
	Dry density, lb/cu ft	γ_d	74.0	74.6	73.5	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.72	0.93	0.77	
Time to failure, min		t_f	13	10	63	
Rate of strain, percent/min			0.148	0.148	0.148	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.39	1.39	1.39	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.37 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH),gray, contains shell fragments and pockets*

LL	PL	PI		G_s
67	18	49		2.73

Remarks *of fine sand

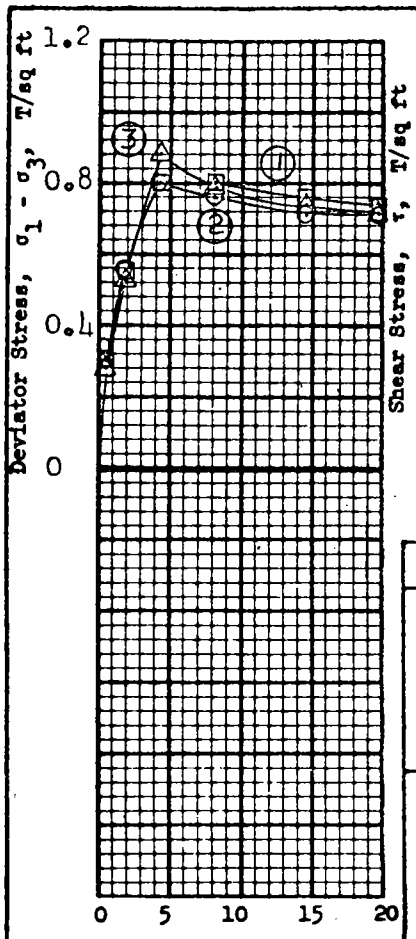
Project LK.PONT.LA.,& VIC.- HURR. PROT.- RIGOLETS CONTROL STRUCT. & CLOSURE DAM

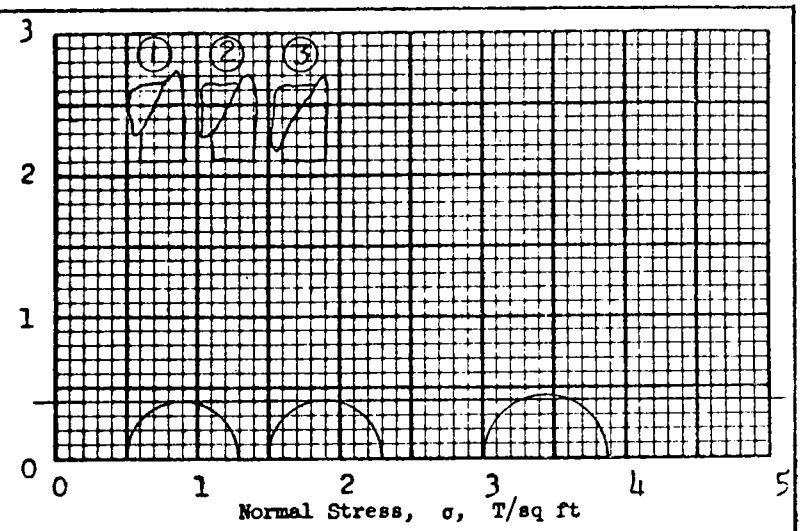
Area DDM # 6

Boring No. X3-U | Sample No. 12-D

Depth El - 64.8 MSL | Date 8 June 1971

TES TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	
Initial	Water content	w_o	45.6%	46.3%	47.5%	%
	Void ratio	e_o	1.25	1.26	1.29	
	Saturation	S_o	98.5 %	99.2%	99.4%	%
	Dry density, lb/cu ft	γ_d	75.0	74.6	73.6	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft	$(\sigma_1-\sigma_3)_{max}$		0.80	0.80	0.88	
Time to failure, min		t_f	33	33	33	
Rate of strain, percent/min			0.129	0.129	0.129	
Ult deviator stress, T/sq ft	$(\sigma_1-\sigma_3)_{ult}$					
Initial diameter, in.		D_o	1.40	1.41	1.40	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.40 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q	Type of specimen UNDISTURBED		
Classification PLASTIC CLAY(CH), gray, contains numerous shell fragments			
LL 63	PL 18	PI 45	G_s 2.70

Remarks _____

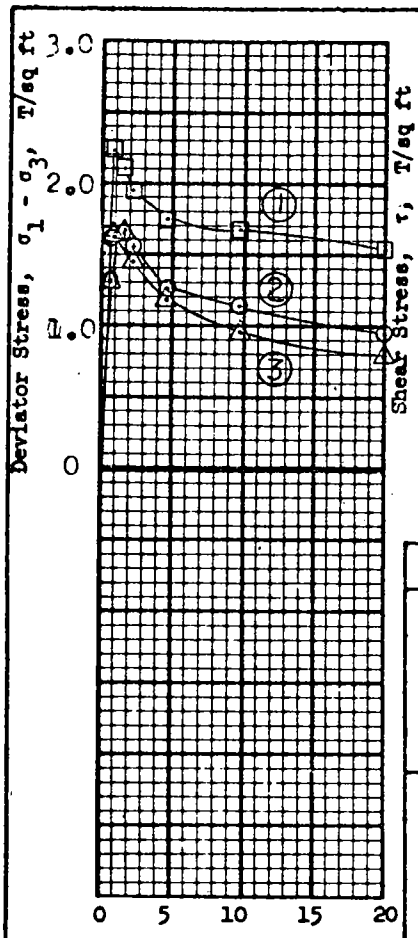
Project LK. PONT. LA., & VIC.-HURR. PROT.-
RIGOLETS CONTROL STRUCT. & CLOSURE DAM

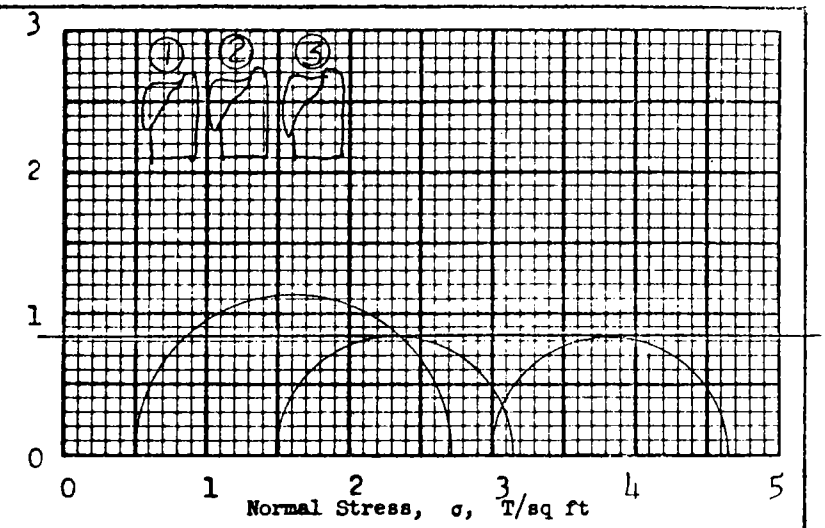
Area DDM # 6

Boring No. X3-U | Sample No. 13-D

Depth El - 68.7 MSL | Date 8 June 1971

TES TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	
Initial	Water content	w_o	43.4 %	45.8 %	45.6 %	%
	Void ratio	e_o	1.21	1.28	1.28	
	Saturation	S_o	99.0 %	98.8 %	98.3 %	%
	Dry density, lb/cu ft	γ_d	78.1	75.7	75.7	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	2.23	1.65	1.67	
Time to failure, min		t_f	6	12	12	
Rate of strain, percent/min			0.124	0.124	0.124	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.40	1.41	1.41	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.83 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q	Type of specimen UNDISTURBED		
Classification PLASTIC CLAY(CH), gray, contains shell fragments			
LL 82	PL 23	PI 59	G_s 2.76

Remarks _____

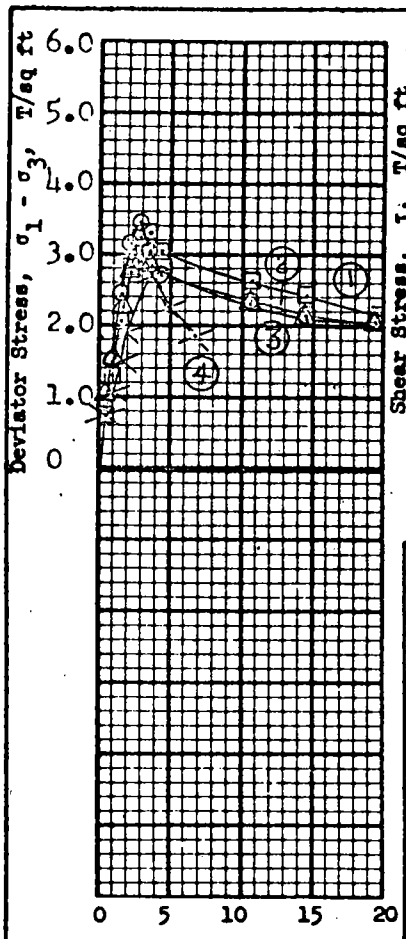
Project LK.PONT.LA.,&VIC.- HURR.PROT.-
RIGOLETS CONTROL STRUCT. AND CLOSURE DAM

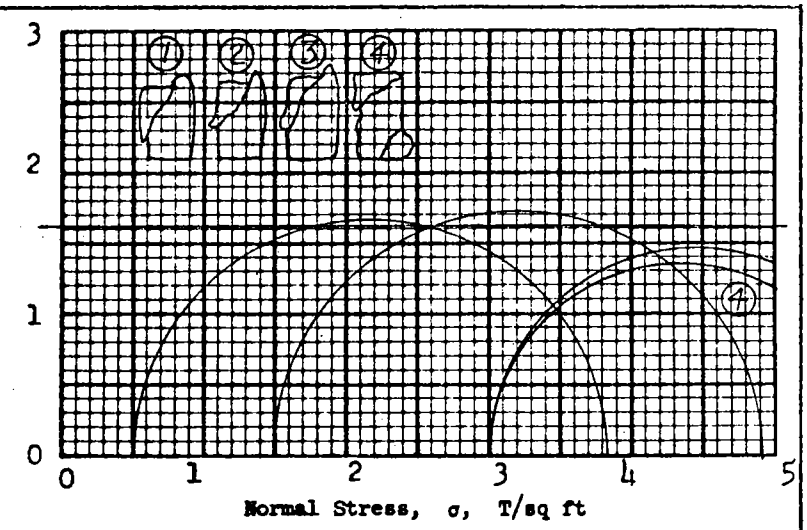
Area

Boring No. X3-U | Sample No. 17-B

Depth El - 82.8 MSL | Date 9 June 1971

TES TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	4
Initial	Water content	w_o	65.1 %	64.7%	72.8%	77.8 %
	Void ratio	e_o	1.60	1.60	1.79	1.92
	Saturation	S_o	98.9 %	98.3%	98.8%	98.5 %
	Dry density, lb/cu ft	γ_d	58.4	58.4	54.3	51.9
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	3.0
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	3.34	3.42	2.91	2.69
Time to failure, min		t_f	30	24	24	51
Rate of strain, percent/min			0.121	0.121	0.121	0.073
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.40	1.41	1.40	1.41
Initial height, in.		H_o	3.00	3.00	3.00	3.00

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 161 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH), dark brown, contains finely divided organic*

LL 115 | PL 38 | PI 77 | | G_s 2.43

Remarks *matter and root fragments

Project LK. PONT. LA., & VIC.- HURR. PROT. - RIGOLETS CONTROL STRUCT. AND CLOSURE DAM

Area

Boring No. X 3 - U | Sample No. 20 - B

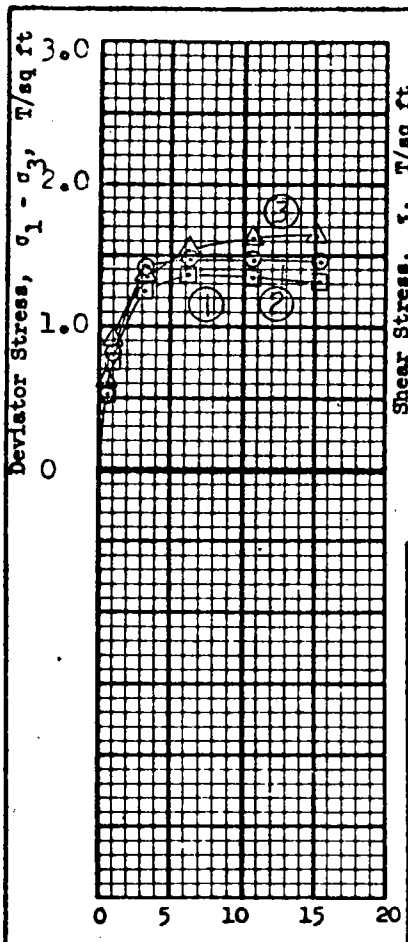
Depth El - 94.9 MSL | Date 9 June 1971

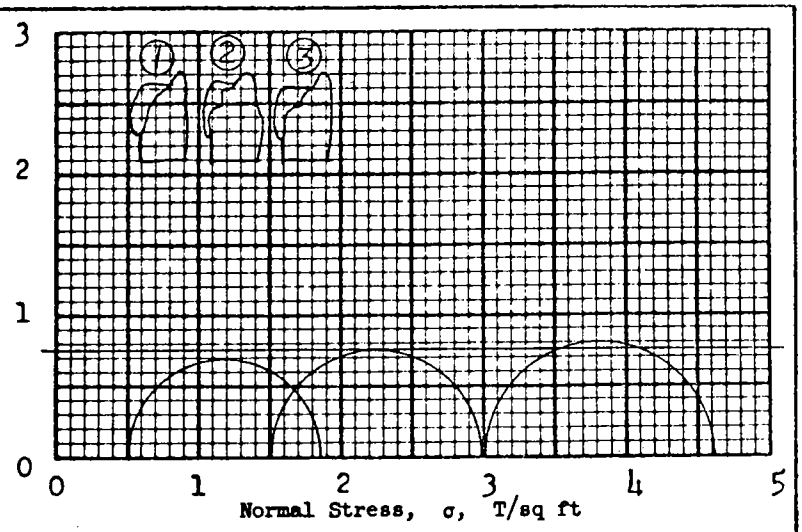
TES TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 63 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT USAEWES SOIL

PLATE III -119





Test No.			1	2	3	
Initial	Water content	w_o	27.0 %	28.1 %	27.2 %	%
	Void ratio	e_o	0.743	0.775	0.748	
	Saturation	S_o	99.2 %	99.0 %	99.3 %	%
	Dry density, lb/cu ft	γ_d	97.8	96.0	97.5	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.36	1.49	1.63	
Time to failure, min		t_f	43	43	106	
Rate of strain, percent/min			0.144	0.144	0.144	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.40	1.40	1.40	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.75 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH), gray, contains small sand pockets and *

LL 54 | PL 16 | PI 38 | G_s 2.73

Remarks *decayed root fragments

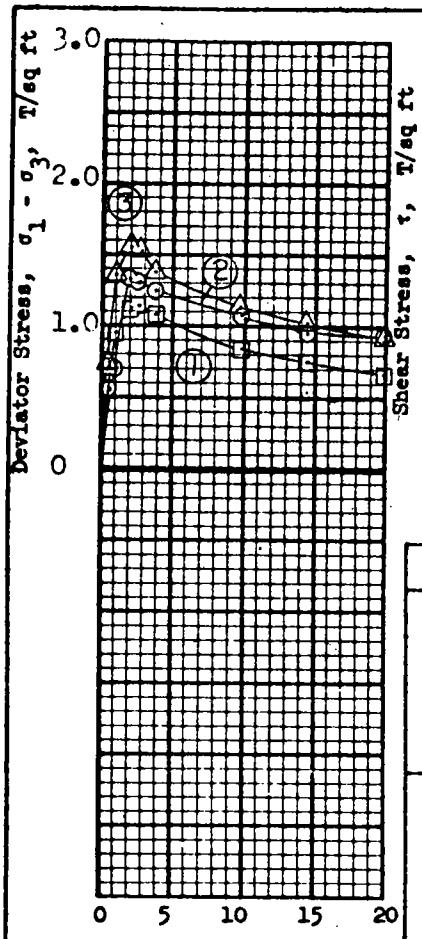
Project LK PONT. LA.,& VIC.*- HURR. PROT.- RIGOLETS CONTROL STURCT. AND CLOSURE DAM

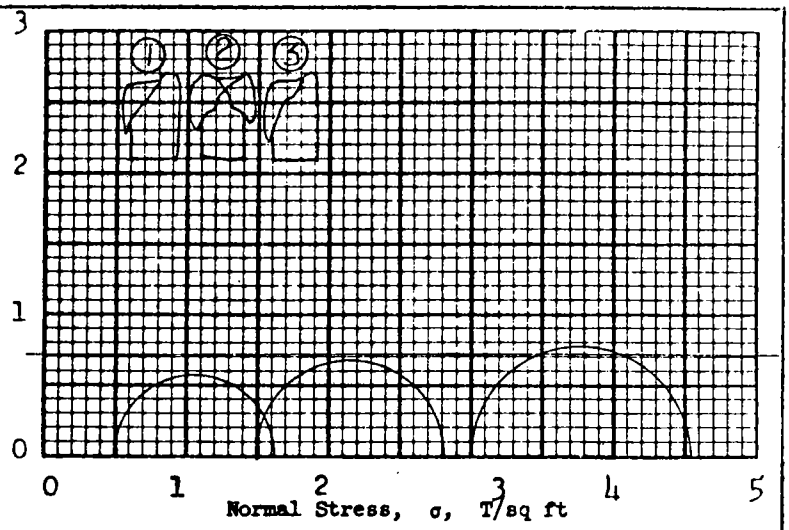
Area

Boring No. X 5 - U | Sample No. 13-B

Depth El - 69.6 MSL | Date 10 June 1971

TES TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	
Initial	Water content	w_o	52.4 %	54.6%	53.9%	%
	Void ratio	e_o	1.46	1.52	1.51	
	Saturation	S_o	98.7 %	98.8 %	98.2 %	%
	Dry density, lb/cu ft	γ_d	69.8	68.2	68.5	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft	$(\sigma_1-\sigma_3)_{max}$		1.13	1.32	1.55	
Time to failure, min		t_f	15	11	11	
Rate of strain, percent/min			0.182	0.182	0.182	
Ult deviator stress, T/sq ft	$(\sigma_1-\sigma_3)_{ult}$					
Initial diameter, in.		D_o	1.40	1.40	1.40	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.72 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q	Type of specimen UNDISTURBED		
Classification PLASTIC CLAY(CH),gray			
LL 96	PL 26	PI 70	G_s 2.75

Remarks _____

Project LK.PONT.LA.,& VIC.- HURR. PRCT.- RIGOLETS CONTROL STRUCT. AND CLOSURE DAM

Area

Boring No. X5-U | Sample No. 15-D

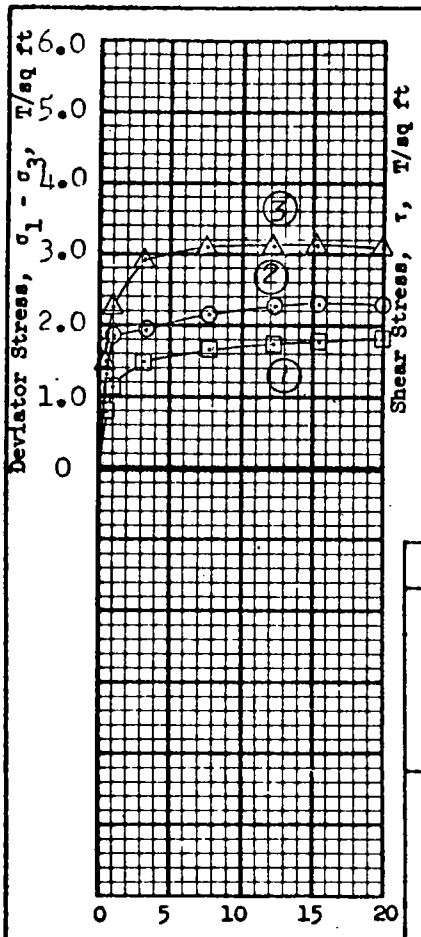
~~Depth~~ El - 79.7 MSL | Date 10 June 1971

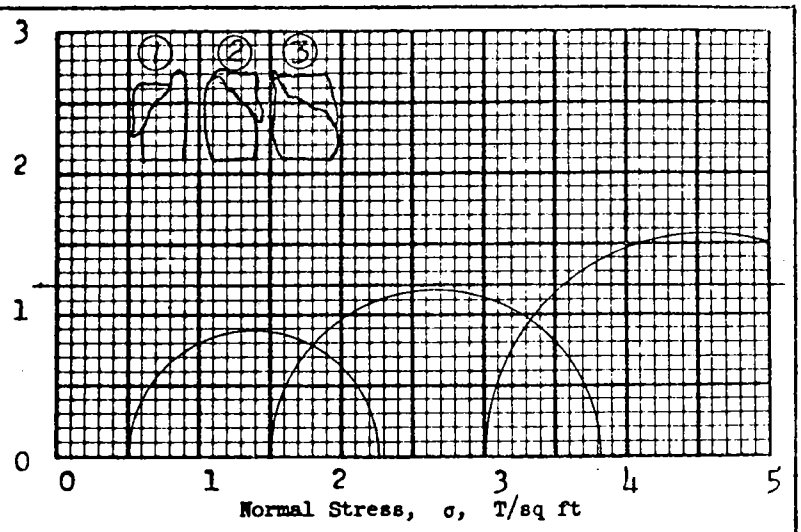
TES TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 68 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT USAEWES SOILS

PLATE III-121





Test No.			1	2	3	
Initial	Water content	w_o	24.7 %	26.0 %	25.9%	%
	Void ratio	e_o	0.706	0.734	0.718	
	Saturation	S_o	94.5 %	95.6%	97.4%	%
	Dry density, lb/cu ft	γ_d	98.8	97.2	98.1	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.76	2.31	3.10	
Time to failure, min		t_f	103	103	103	
Rate of strain, percent/min			0.149	0.149	0.149	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.39	1.41	1.40	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 1.20 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q	Type of specimen UNDISTURBED			
Classification PLASTIC CLAY(CH),gray				
LL 50	PL 19	PI 31		G_s 2.70

Remarks _____

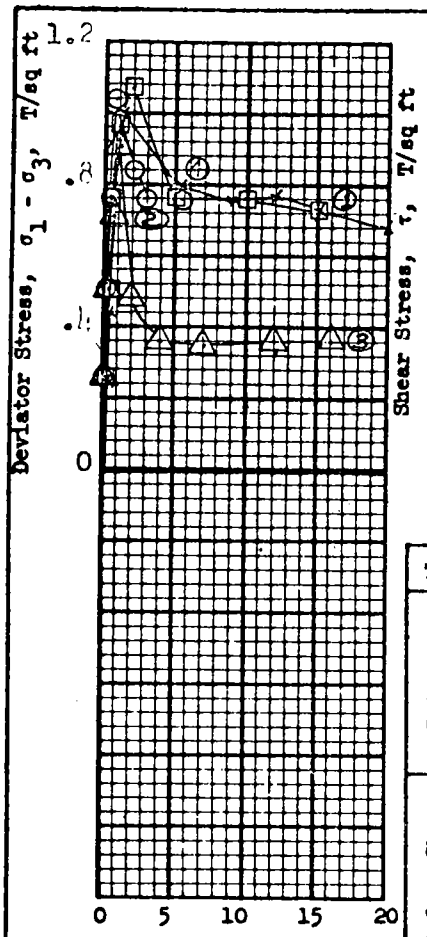
Project LK.PONT.LA.,& VIC.- HURR. PROT.- RIGOLETS CONTROL STURCT. AND CLOSURE DAM

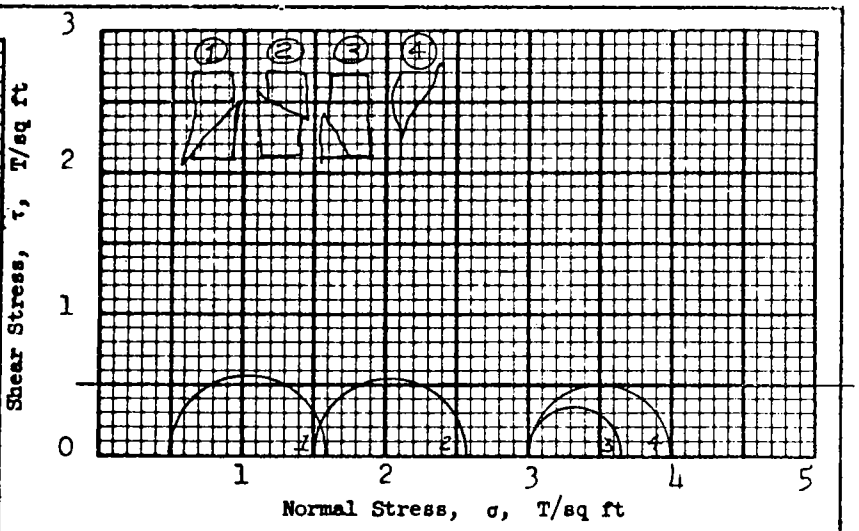
Area

Boring No. X 5 & U | Sample No. 18-B

Depth El - 89.8 MSL | Date 15 June 1971

TES TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	4
Initial	Water content	w_o	50.6 %	51.7 %	52.3 %	52.1 %
	Void ratio	e_o	1.42	1.45	1.46	1.50
	Saturation	S_o	98.7 %	98.8 %	99.2 %	96.2 %
	Dry density, lb/cu ft	γ_d	71.4	70.6	70.2	69.2
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	3.0
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.07	1.04	0.66	1.00
Time to failure, min		t_f	8	16	20	13
Rate of strain, percent/min			0.158	0.496	0.060	0.090
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.39	1.39	1.39	1.41
Initial height, in.		H_o	3.00	3.00	3.00	3.00

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.50 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH), gray, containing shell fragments.

LL 88 | PL 25 | PI 63 | G_s 2.77

Remarks _____

Project LK. PONT., LA. HURR. PROT. RIGOLETS CONT. & STR. & CLOSURE DAM

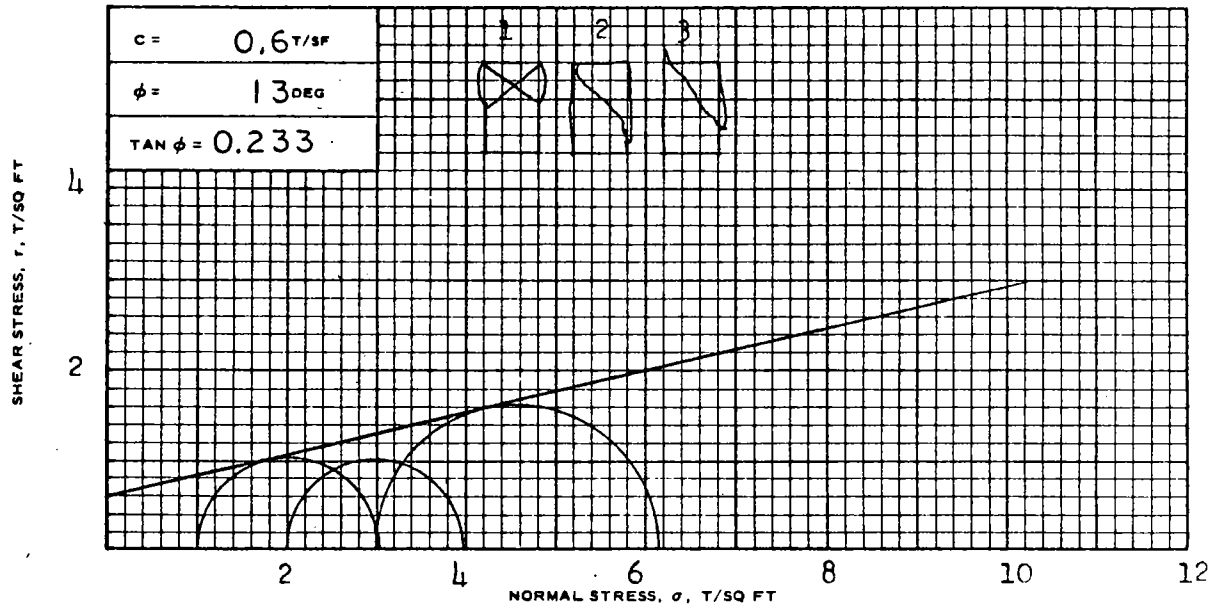
Area

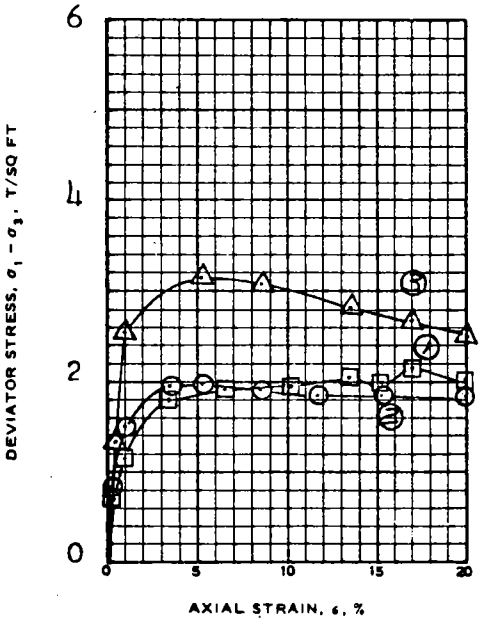
Boring No. X-7-U | Sample No. 8-D

Depth El -64.7 MSL | Date 4 October 1971

GDA

TRIAXIAL COMPRESSION TEST REPORT





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	34.0	35.0	33.6
	DRY DENSITY LB/ CU FT	γ_{d_o}	86.7	85.5	87.2
	SATURATION, %	S_o	96.1	96.2	96.2
	VOID RATIO	e_o	0.966	0.993	0.954
BEFORE SHEAR	WATER CONTENT, %	w_c	33.0	31.8	31.6
	DRY DENSITY LB/CU FT	γ_{d_c}	89.7	91.5	92.8
	SATURATION, %	S_c	100+	100+	100+
	VOID RATIO	e_c	0.900	0.863	0.836
	FINAL BACK PRESSURE, T/SQ FT	u_o	4.68	4.68	4.68
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	2.03	1.99	3.15
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	213	92	92
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.41	1.42	1.42
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS Alternate seams of PLASTIC CLAY (CH) and CLAYEY SILT (ML), gray.

LL	PL	PI	Gs
48	19	29	2.73

REMARKS: Atterberg limits on mixture of materials.

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST R

PROJECT LK. PONT., LA. & VIC. - HURR. PROT.
RIGOLETS CONTROL STRUCTURE & CLOSURE DAM

BORING NO. X-7U SAMPLE NO. 12-A

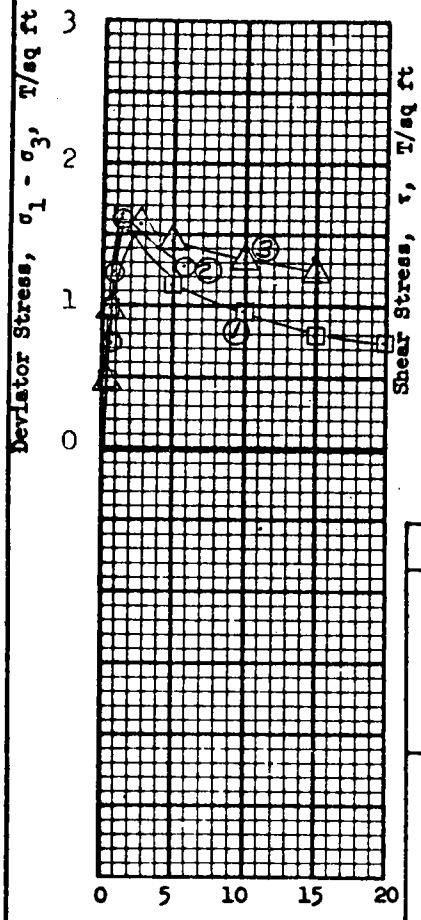
DEPTH/ELEV -78.1 MSL

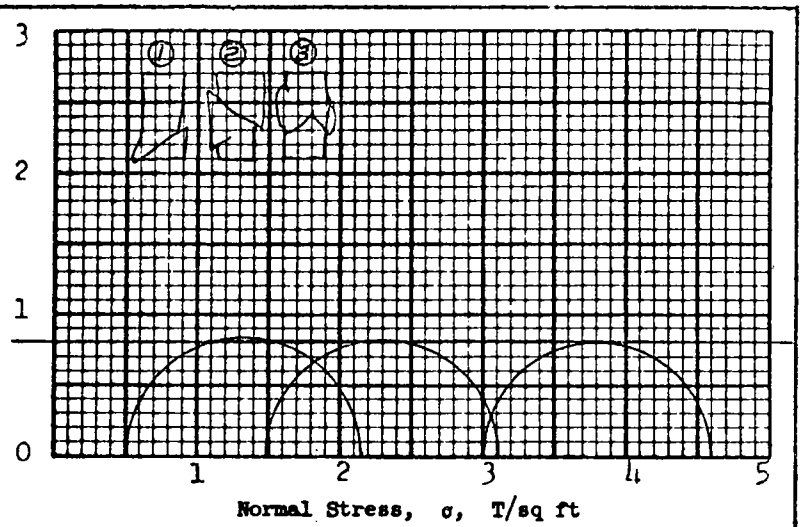
LABORATORY USAEWES DATE 13 October 1971

JAL TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)

USAEWES SOILS TEST SECTION





Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.80 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Test No.			1	2	3	
Initial	Water content	w_o	49.2 %	50.0 %	51.2 %	%
	Void ratio	e_o	1.37	1.39	1.43	
	Saturation	S_o	98.8 %	98.9 %	98.5 %	%
	Dry density, lb/cu ft	γ_d	72.3	71.9	70.6	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.64	1.61	1.59	
Time to failure, min		t_f	7	32	50	
Rate of strain, percent/min			0.175	0.411	0.545	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.41	1.41	1.41	
Initial height, in.		H_o	3.00	3.00	3.00	

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY (CH), bluish gray.

LL 96 | PL 27 | PI 69 | | G_s 2.75

Remarks _____

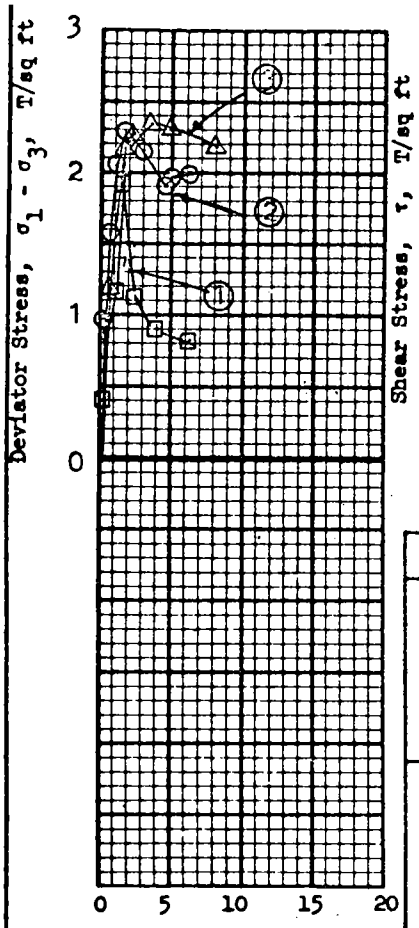
Project LK. PONT., LA. HURR. PROT. RIGOLETS CONT. & STR. & CLOSURE DAM 1971

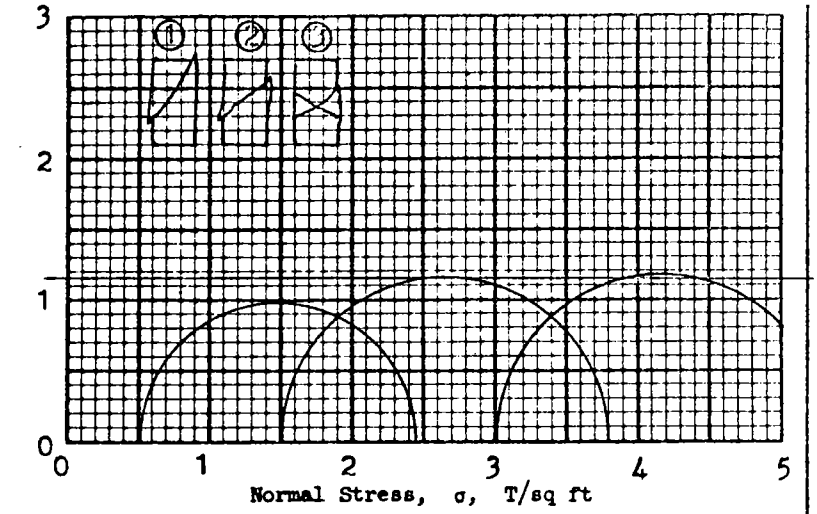
Area

Boring No. X-7-U | Sample No. 13-D

Depth El -84.7 MSL | Date 8 OCTOBER 1971

FAM TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	
Initial	Water content	w_o	31.3 %	30.7 %	32.0 %	%
	Void ratio	e_o	0.888	0.884	0.909	
	Saturation	S_o	96.6 %	95.2 %	96.4 %	%
	Dry density, lb/cu ft	γ_d	90.6	90.8	89.6	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.96	2.30	2.34	
Time to failure, min		t_f	18	23	44	
Rate of strain, percent/min			0.107	0.073	0.082	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.39	1.41	1.41	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 1.15 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY (CH), gray, crumbly; contains silt seams.

LL 66 | PL 21 | PI 45 | G_s 2.74

Remarks _____

Project LK. PONT., LA. & VIC.-HURR. PROTECTION

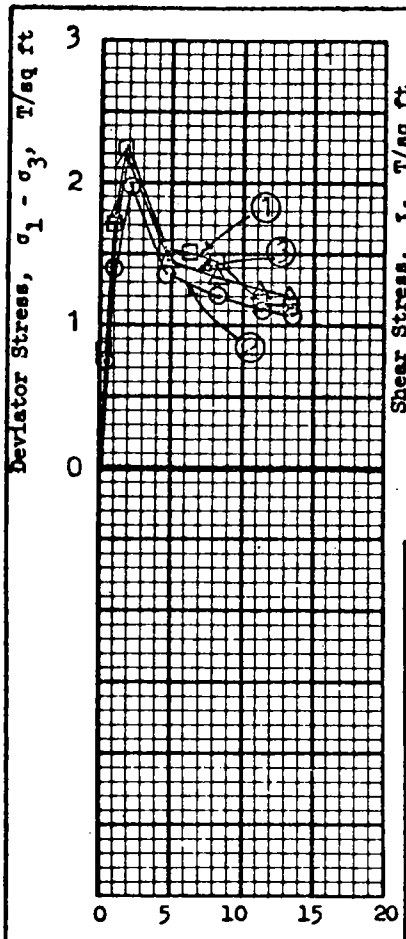
RIGOLETS CONTROL STRUCTURE & CLOSURE DAM

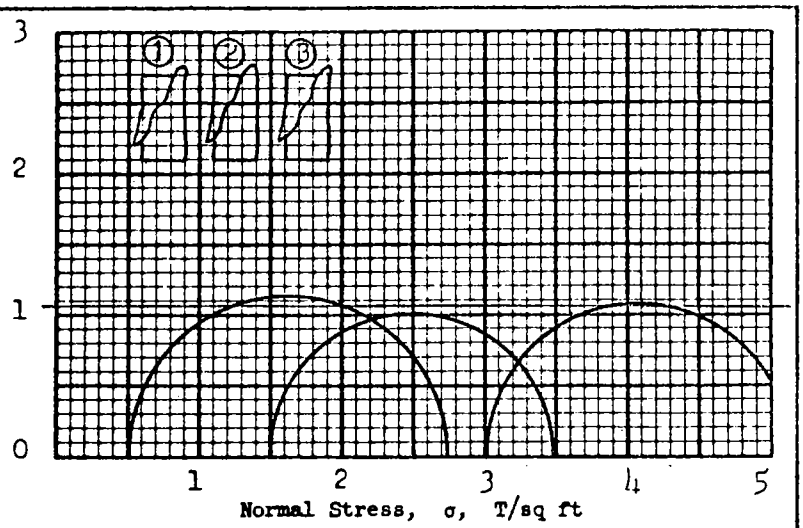
Area DDM NO. 6 (1971)

Boring No. X-7U | Sample No. 16-C

~~Depth~~ El -95.5 MSL | Date 9 September, 1971

GDA TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	
Initial	Water content	w_o	44.9 %	44.7%	45.3 %	%
	Void ratio	e_o	1.23	1.23	1.24	
	Saturation	S_o	100 %	99.6 %	100+ %	%
	Dry density, lb/cu ft	γ_d	76.7	76.8	76.2	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	2.23	1.98	2.17	
Time to failure, min		t_f	20	25	20	
Rate of strain, percent/min			0.087	0.087	0.087	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.41	1.41	1.41	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 1.08 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY (CH), gray, fissured.

LL 80 | PL 25 | PI 55 | | G_s 2.74

Remarks _____

Project LK. PONT.,LA.& VIC.-HURR. PROT.

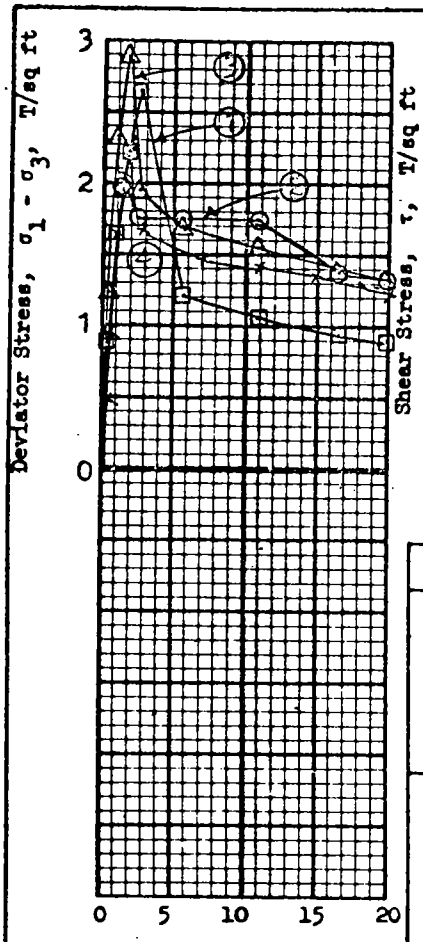
RIGOLETS CONTROL STRUCTURE & CLOSURE DAM

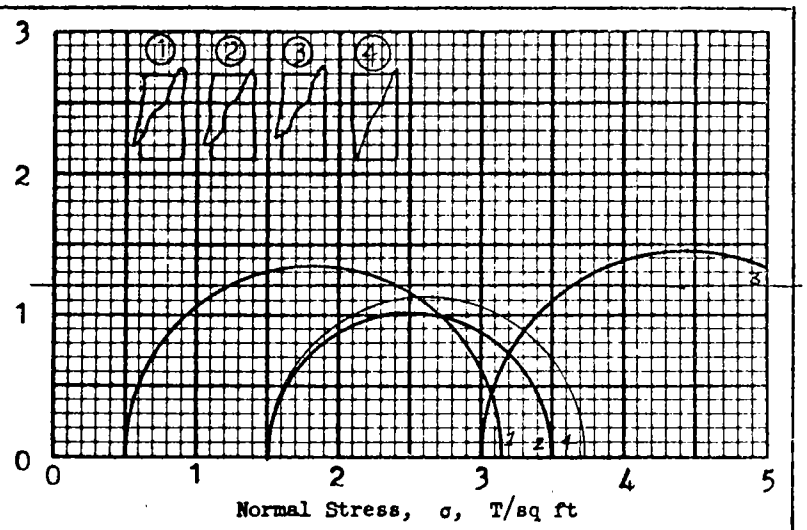
Area DDM NO. 6

Boring No. X-7U | Sample No. 22-D

~~Depth~~ El -120.7 MSL | Date 30 September, 1971

TFS TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	4
Initial	Water content	w_o	50.8 %	50.0 %	49.8 %	49.9%
	Void ratio	e_o	1.39	1.36	1.36	1.40
	Saturation	S_o	99.8 %	100+ %	100 %	97.3%
	Dry density, lb/cu ft	γ_d	71.3	72.2	72.3	71.0
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	1.5
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	2.65	1.99	2.89	2.23
Time to failure, min		t_f	29	15	19	21
Rate of strain, percent/min			0.086	0.086	0.086	0.094
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.39	1.39	1.39	1.41
Initial height, in.		H_o	3.00	3.00	3.00	3.00

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 1.20 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY (CH), gray, slickensided.

LL 92 | PL 28 | PI 64 | G_s 2.73

Remarks _____

Project LK. PONT.,LA.& VIC.-HURR. PROT.

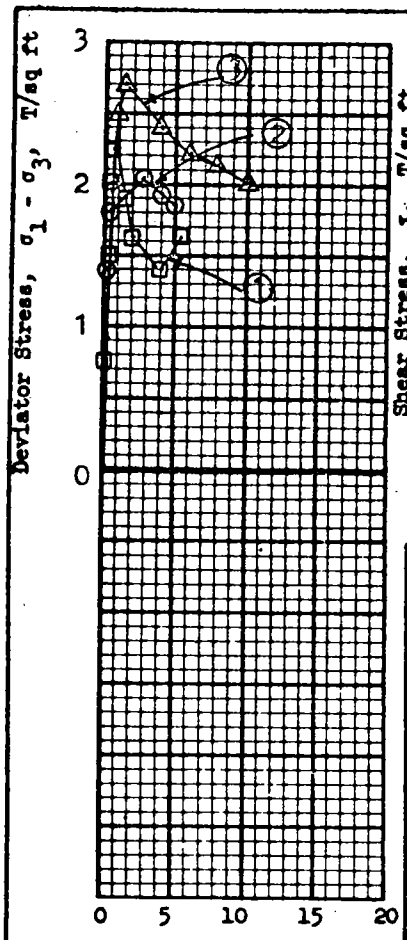
RIGOLETS CONTROL STRUCTURE & CLOSURE DAM

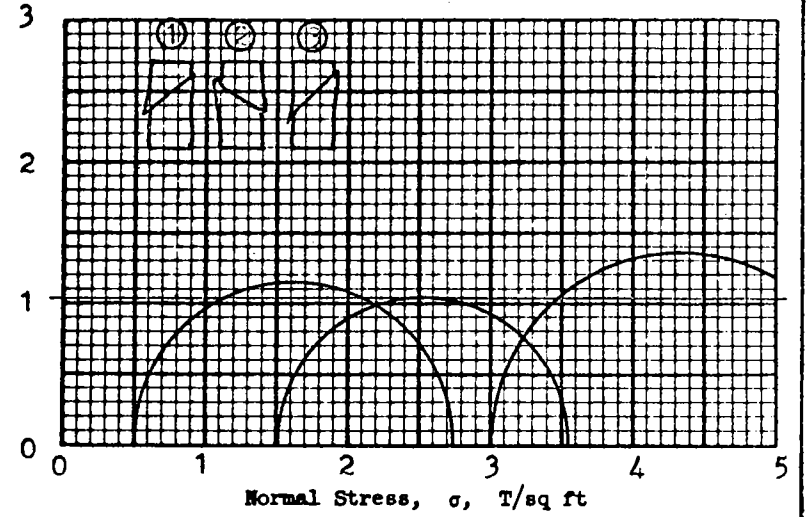
Area DDM NO.6

Boring No. X-7U | Sample No. 29-D

~~Depth~~ El -148.7 MSL | Date 30 September, 1971

TES TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	
Initial	Water content	w_o	36.1 %	36.1 %	38.0 %	%
	Void ratio	e_o	1.02	1.02	1.08	
	Saturation	S_o	98.4 %	98.4%	97.8%	%
	Dry density, lb/cu ft	γ_d	86.1	86.0	83.3	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	2.24	2.04	2.70	
Time to failure, min		t_f	91	96	18	
Rate of strain, percent/min			0.050	0.029	0.072	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.40	1.40	1.40	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 1.02 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY (CH), gray.

LL 66 | PL 24 | PI 42 | G_s 2.78

Remarks _____

Project LK.PONT.,LA.& VIC.-HURR. PROTECTION

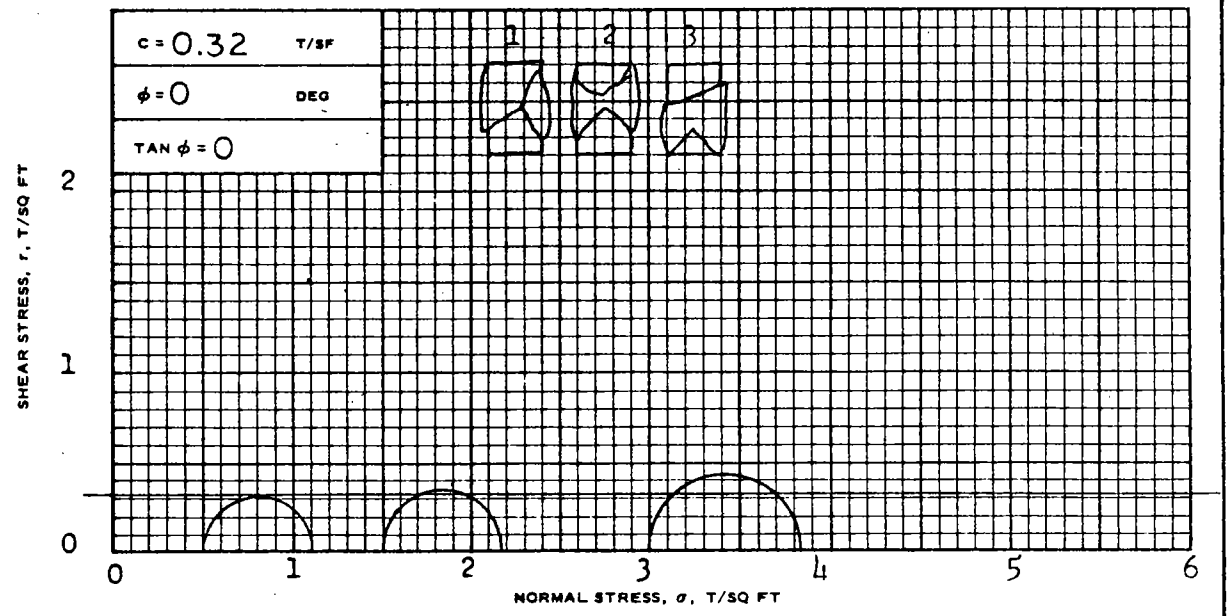
RIGOLETS CONTROL STRUCTURE & CLOSURE DAM

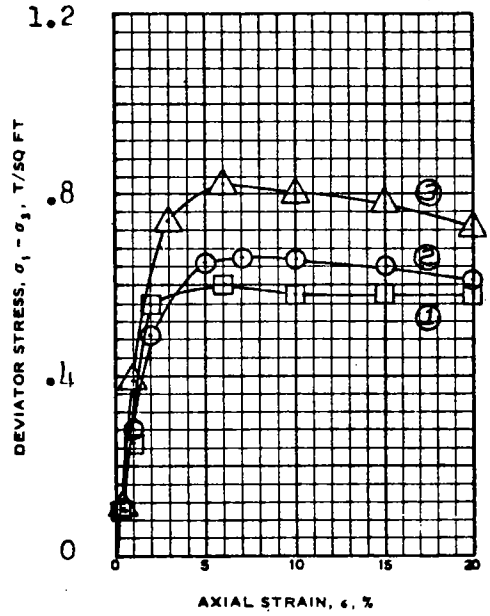
Area DDM NO. 6

Boring No. X-7-U | Sample No. 34-D

~~Depth~~ El -168.5 MSL | Date 1 October, 1971

GDA TRIAXIAL COMPRESSION TEST REPORT





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	36.3	36.0	33.0
	DRY DENSITY LB/CU FT	γ_{d_o}	84.0	84.0	88.0
	SATURATION, %	s_o	97.8	96.0	96.5
	VOID RATIO	e_o	1.01	1.02	0.930
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	s_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.60	0.66	0.82
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	24	55	27
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.40	1.40	1.41
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED-TEST: Strain

DESCRIPTION OF SPECIMENS: PLASTIC CLAY(CH), gray, contains silty sand pockets and lenses, and scattered shells 1/8" to 1/2" in diameter

LL	PL	PI	G_s	TYPE OF SPECIMEN	TYPE OF TEST
41	16	25	2.72	UNDISTURBED	Q

REMARKS: Atterberg limits performed on mixture of clay and sand.

PROJECT: LK. PONT., LA.- HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM, 1971

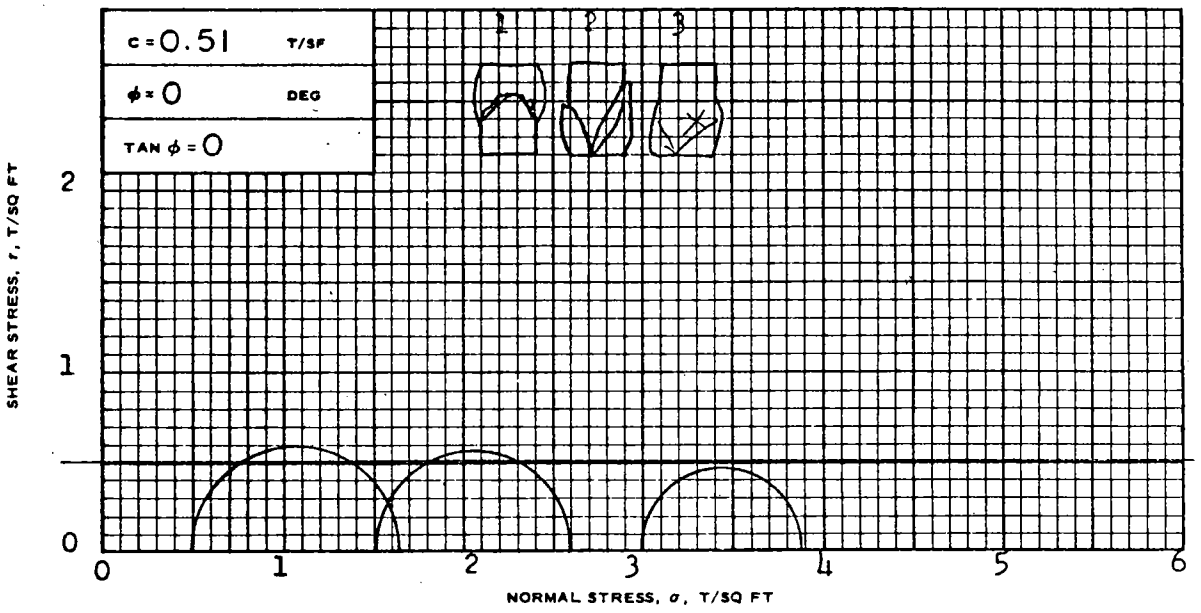
BORING NO. X-8-U SAMPLE NO. 10-C

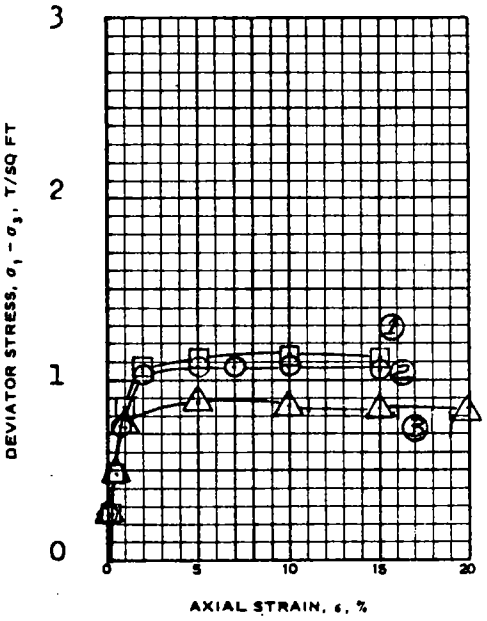
DEPTH/ELEV -59.6 MSL

LABORATORY USAEWES DATE 20 October, 1971

JMS TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	29.2	29.2	29.7	
	DRY DENSITY LB/ CU FT	γ_{d_o}	94.5	94.3	92.9	
	SATURATION, %	S_o	100+	100+	98.9	
	VOID RATIO	e_o	0.777	0.781	0.808	
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_o				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.13	1.08	0.88	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	97	46	68	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.41	1.41	1.41	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS LEAN CLAYC(CL),gray, contains silt and fine sand

LL 51	PL 16	PI 35	G_s 2.69	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA.-HURR. PROT. RICOLETS CONT. STR. & CLOSURE DAM, 1971

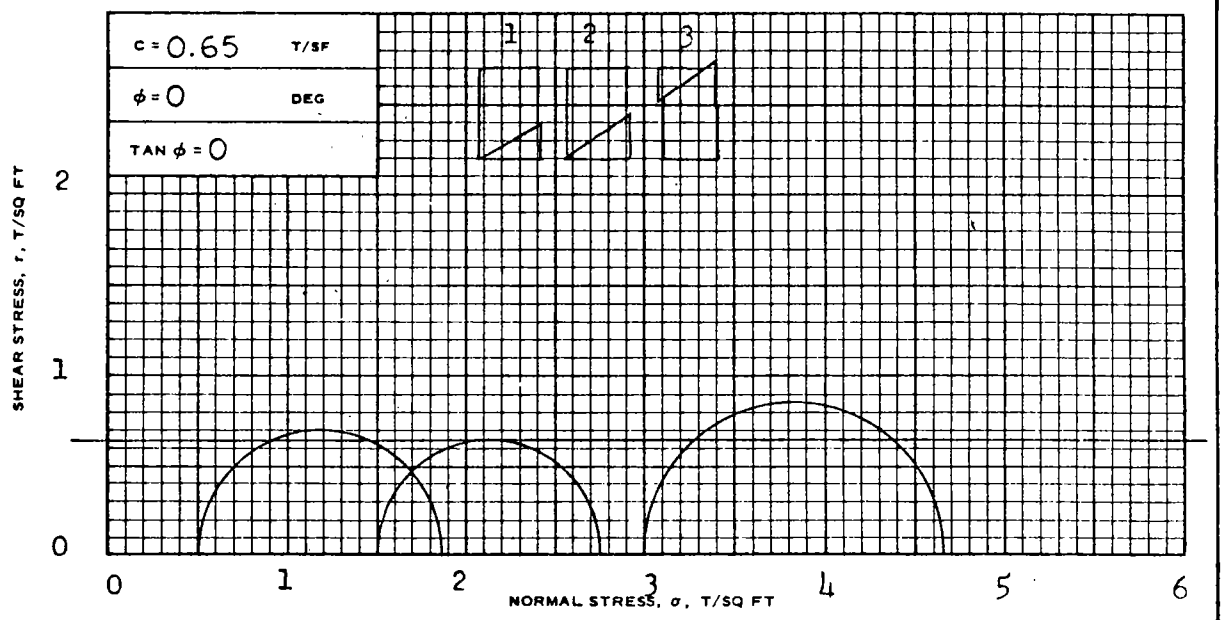
BORING NO. X-8-U SAMPLE NO. 12-D

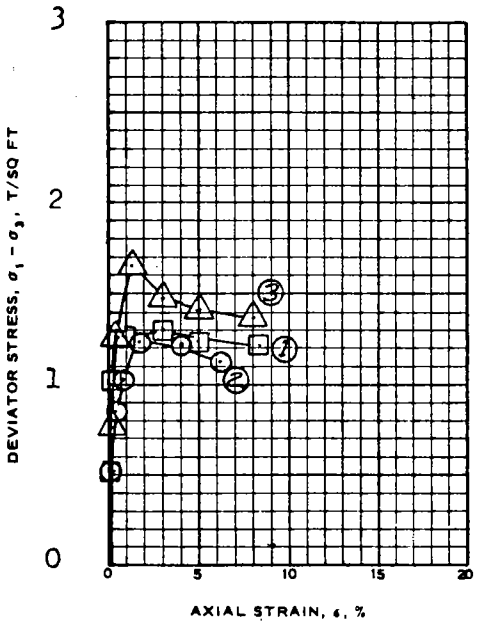
DEPTH/ELEV -68.5 MSL

LABORATORY USAEWES DATE 21 October, 1971

FAM TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	48.0	49.8	52.7
	DRY DENSITY LB/ CU FT	γ_{d_o}	74.9	72.9	70.1
	SATURATION, %	S_o	100+	100+	99.9
	VOID RATIO	e_o	1.29	1.36	1.45
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	S_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.36	1.24	1.65
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	5	15	27
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.39	1.39	1.39
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH),gray, contains 1/16" thick vertical seam of cemented silty sand; concretions

LL	PL	PI	G_s
92	24	68	2.75

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT L.K. PONT., LA.- HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM 1971

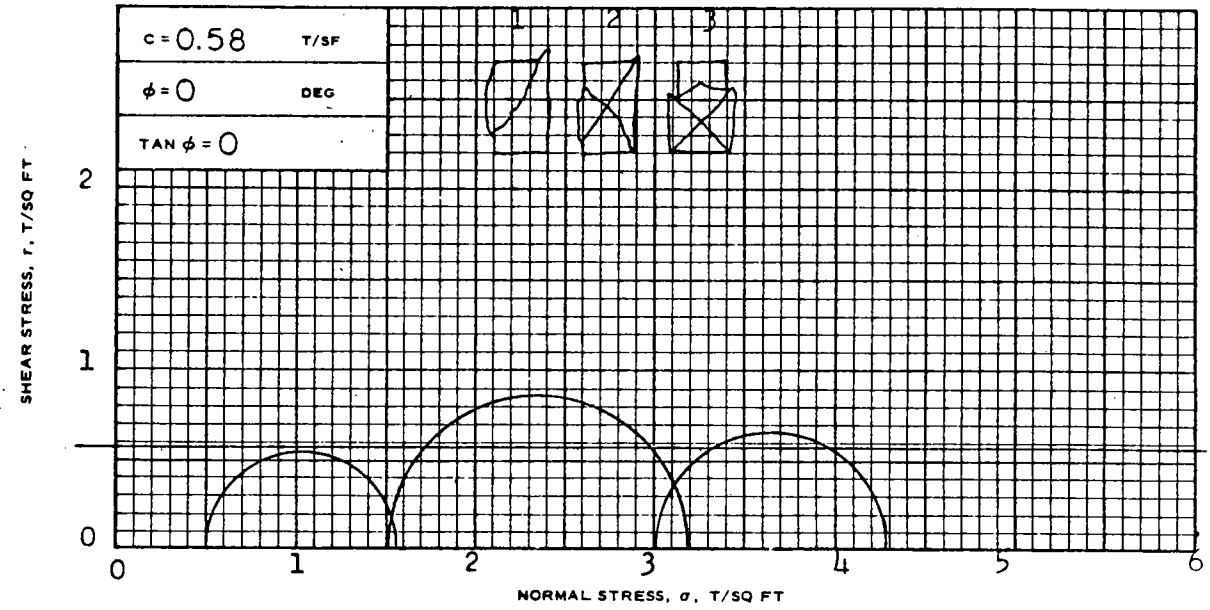
BORING NO. X-8-U SAMPLE NO. 15-D

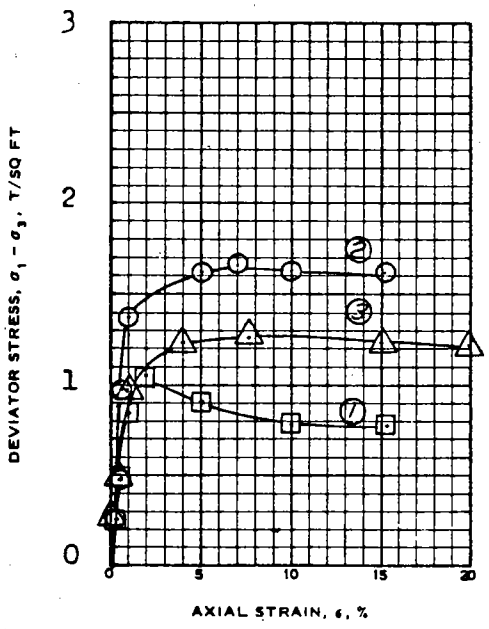
DEPTH/ELEV -80.5 MSL

LABORATORY USAEWES DATE 1 November 1971

GDA TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	25.8	23.5	26.3
	DRY DENSITY LB/CU FT	γ_{d_o}	98.5	103.7	97.7
	SATURATION, %	s_o	98.0	100+	97.9
	VOID RATIO	e_o	0.711	0.625	0.725
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	s_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_e			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT	$(\sigma_1 - \sigma_3)_{MAX}$		1.05	1.67	1.26
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	7	67	36
ULTIMATE DEVIATOR STRESS, T/SQ FT	$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.41	1.41	1.41
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED-TEST: Strain

DESCRIPTION OF SPECIMENS: LEAN CLAY(CL), light gray, contains a few small pockets of sand

LL	PL	PI	G_s	TYPE OF SPECIMEN	TYPE OF TEST
43	16	27	2.70	UNDISTURBED	Q

REMARKS:

PROJECT: LK. PONT., LA.-HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM, 1971

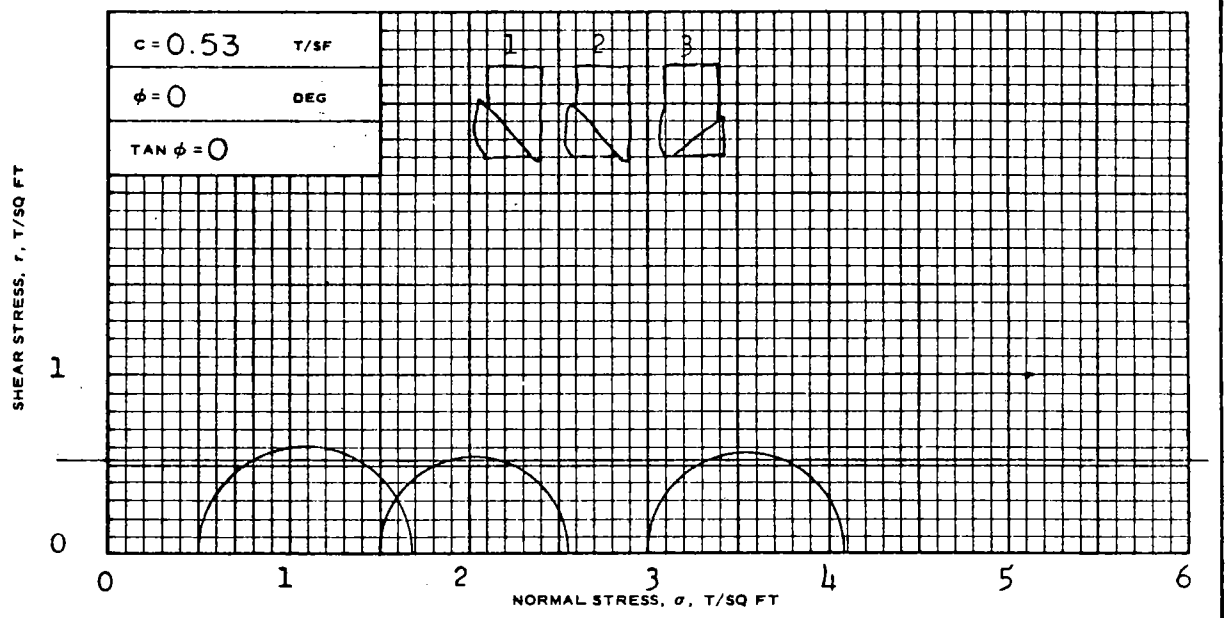
BORING NO. X-8-U SAMPLE NO. 17-D

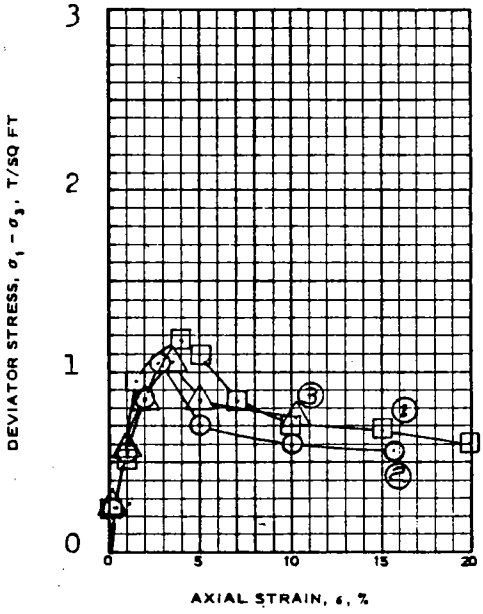
DEPTH/ELEV -88.5 MSL

LABORATORY USAEWES DATE 20 October, 1971

JMS TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	51.3	49.6	50.3
	DRY DENSITY LB/ CU FT	γ_{d_o}	71.2	71.6	71.7
	SATURATION, %	s_o	100+	98.5	99.9
	VOID RATIO	e_o	1.38	1.37	1.37
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	s_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.18	1.05	1.07
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	12	12	12
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.41	1.40	1.41
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH),gray, contains sandy silt lenses

LL	PL	PI	G_s
84	24	60	2.72

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA.- HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM, 1971

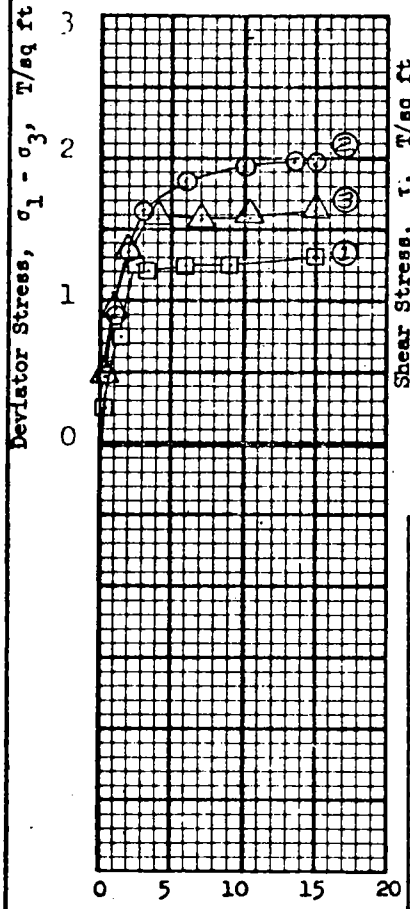
BORING NO. X-9-U SAMPLE NO. 9-B

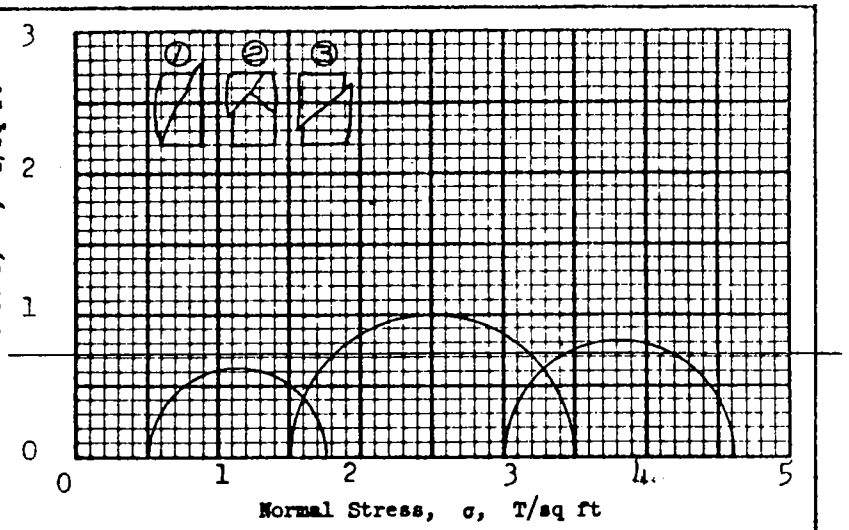
DEPTH/ELEV -62.5 MSL

LABORATORY USAWES DATE 21 October, 1971

FAM TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110–2–1906)





Test No.			1	2	3	
Initial	Water content	w_o	27.9 %	28.0 %	31.4 %	%
	Void ratio	e_o	0.765	0.748	0.831	
	Saturation	S_o	98.1 %	100+ %	100+ %	%
	Dry density, lb/cu ft	γ_d	96.3	96.1	91.7	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.26	1.99	1.62	
Time to failure, min		t_f	74	80	60	
Rate of strain, percent/min			0.204	0.168	0.252	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.40	1.41	1.41	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.72 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY (CH), gray, contains concretions

LL 53 | PL 20 | PI 33 | | G_s 2.69

Remarks _____

Project LK. PONT., LA.-HURR. PROT. PIGOLETS CONT. STR. & CLOSURE DAM, 1971

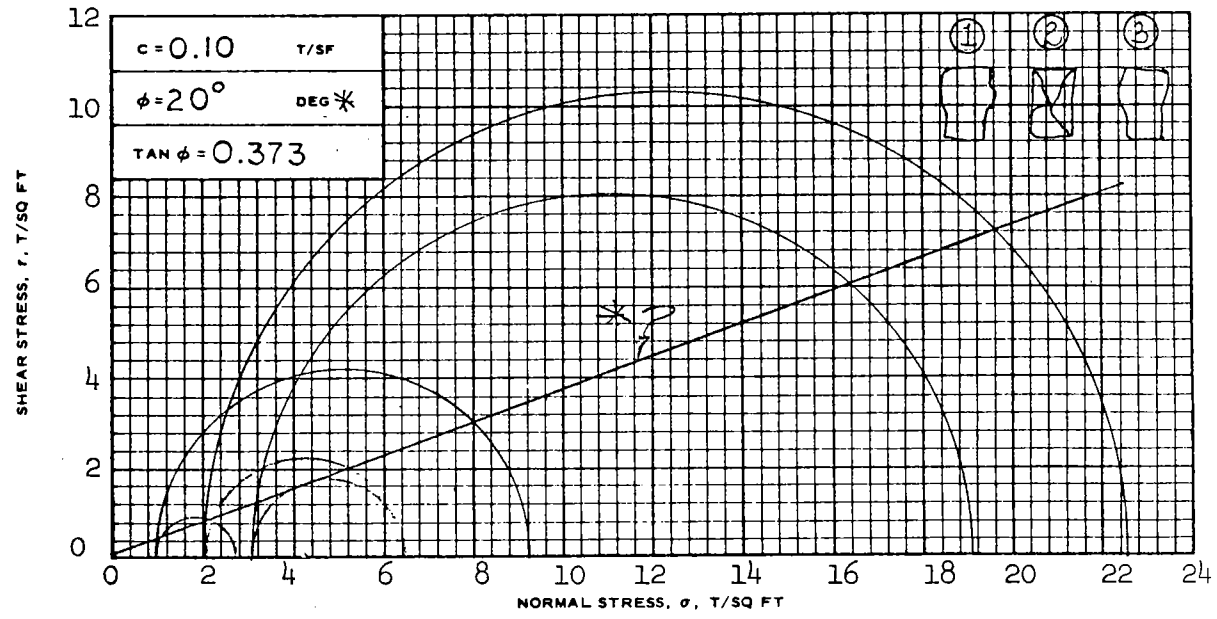
Area

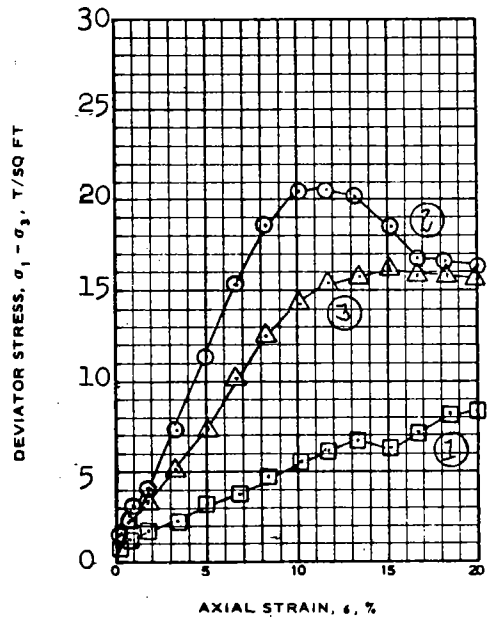
Boring No. X-9U | Sample No. 11-B

Depth El -70.6 MSL | Date 20 October, 1971

JMS

TRIAXIAL COMPRESSION TEST REPORT





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	30.0	27.4	28.2
	DRY DENSITY LB/ CU FT	γ_{d_o}	94.1	95.5	95.0
	SATURATION, %	S_o	100+	97.1	98.7
	VOID RATIO	e_o	0.784	0.759	0.768
BEFORE SHEAR	WATER CONTENT, %	w_c	27.6	26.6	27.0
	DRY DENSITY LB/CU FT	γ_{d_c}	95.8	97.2	97.3
	SATURATION, %	S_c	98.5	98.4	100+
	VOID RATIO	e_c	0.754	0.727	0.725
	FINAL BACK PRESSURE, T/SQ FT	u_o	3.96	3.96	3.96
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	8.29	20.56	16.06
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	216	189	242
* $(\sigma - \sigma_3)$ at max pore pressure			1.8	4.3	3.5
INITIAL DIAMETER, IN.		D_o	1.39	1.40	1.40
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- strain TEST

DESCRIPTION OF SPECIMENS SILTY SAND(SM),gray

LL	PL	PI	Gs
NP	NP	NP	2.69

REMARKS:

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST R

PROJECT LK. PONT.,LA.&VIC.-HURR. PROT.(1971)
RIGOLETS CONTROL STR.&CLOSURE DAM;DDM # 6

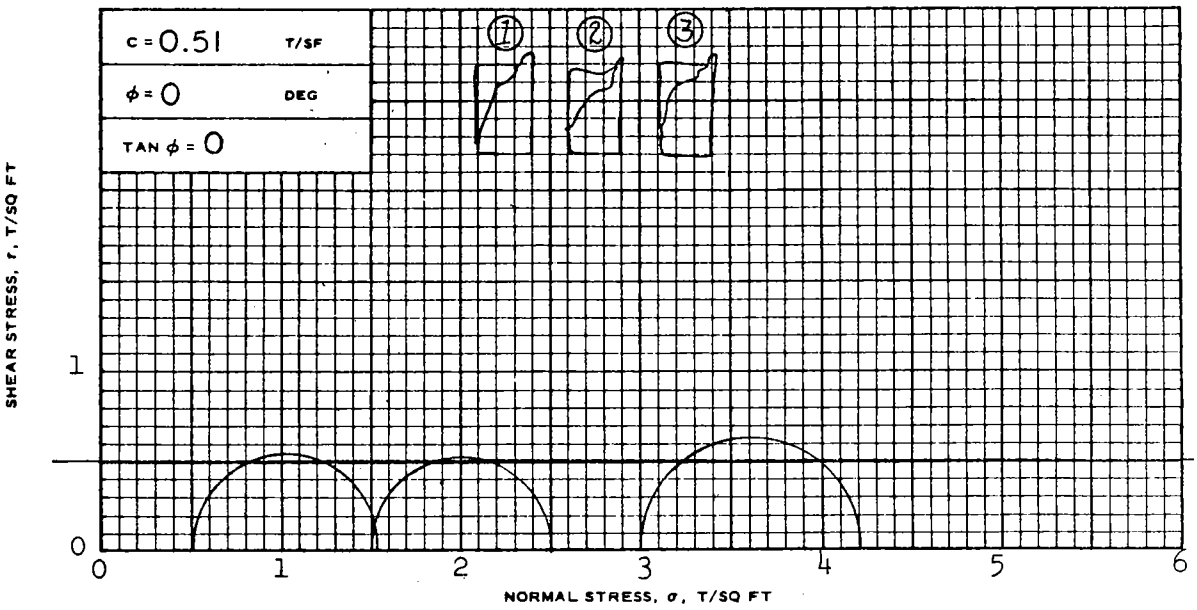
BORING NO. X-9-U SAMPLE NO. 12-B

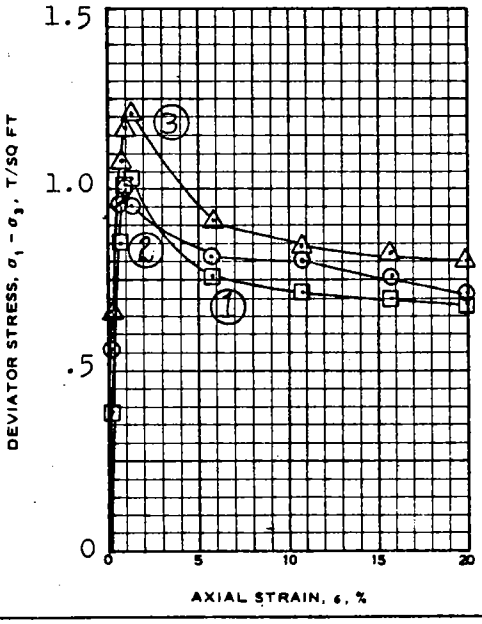
~~DEPTH~~/ELEV -74.3 MSL

LABORATORY USAWES DATE 18 Oct. 1971

JAL TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	56.8	56.3	58.0
	DRY DENSITY LB/ CU FT	γ_{d_o}	66.7	66.9	65.9
	SATURATION, %	S_o	99.4	99.2	99.6
	VOID RATIO	e_o	1.56	1.55	1.59
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	S_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.03	1.00	1.21
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	148	114	148
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.39	1.39	1.39
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH),gray, contains scattered small concretions

LL 90	PL 22	PI 68	Gs 2.73

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT.,LA.-HURR. PROT. RIGOLETS
CONTROL STR.&CLOSURE DAM DDM NO. 6.

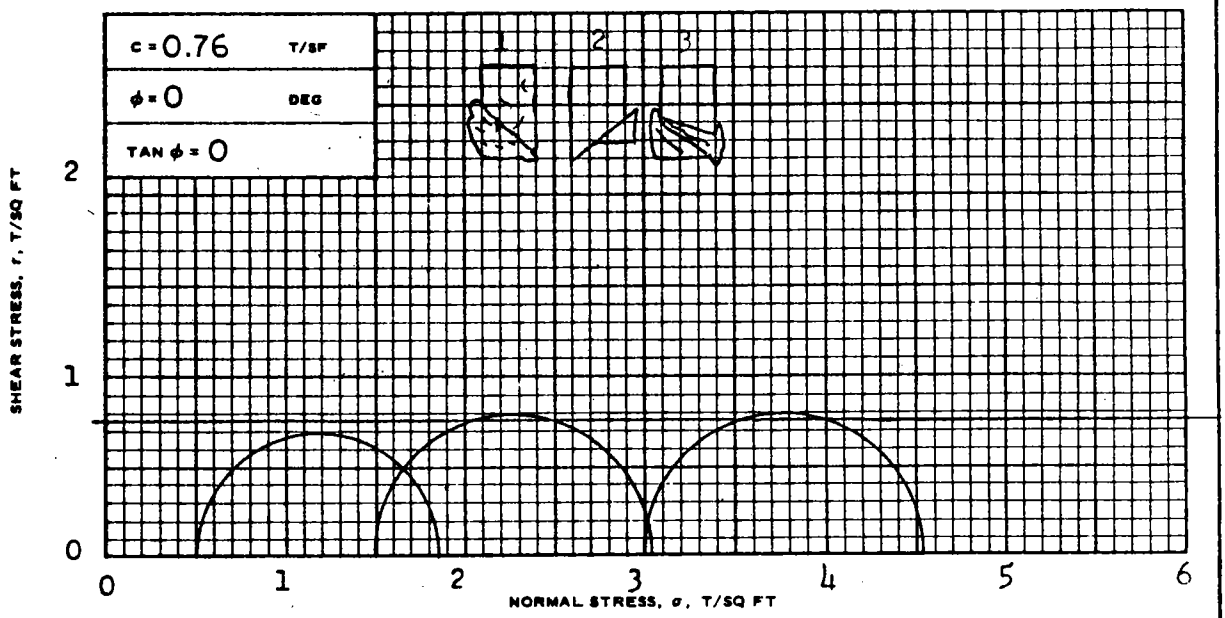
BORING NO. X-9-U SAMPLE NO. 15-D

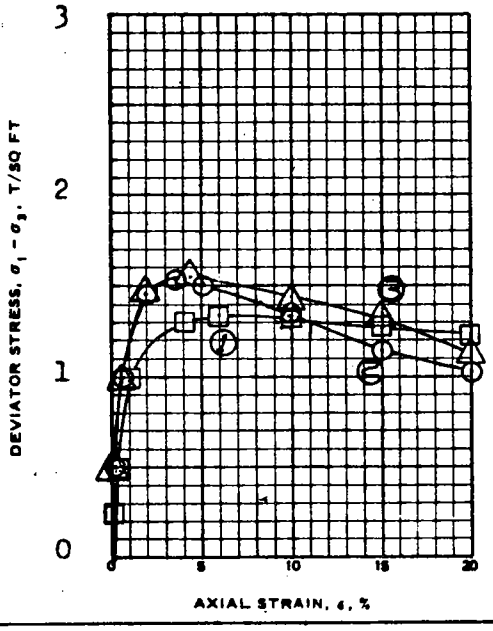
DEPTH/ELEV -88.4 MSL

LABORATORY USAEWES DATE 18 October 1971

TES TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	36.7	37.1	37.7	
	DRY DENSITY LB/CU FT	γ_{d_o}	83.5	83.5	82.4	
	SATURATION, %	S_o	96.9	98.0	96.7	
	VOID RATIO	e_o	1.03	1.03	1.06	
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_b				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.34	1.52	1.52	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	28	14	27	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.41	1.40	1.41	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), gray

LL 69	PL 24	PI 45	G_s 2.72	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA. - HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM, 1971

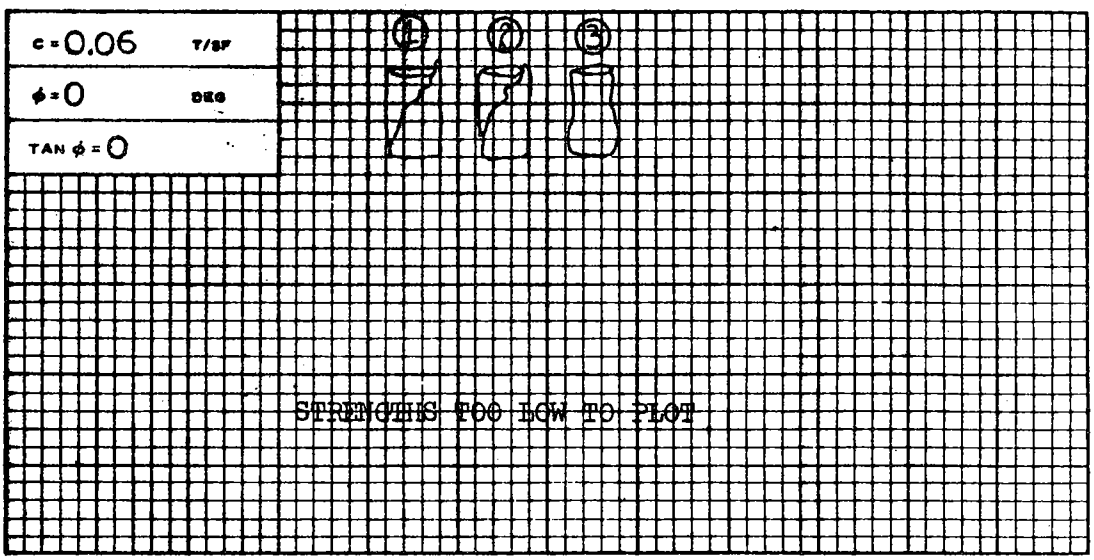
BORING NO. X-9-U SAMPLE NO. 17-D

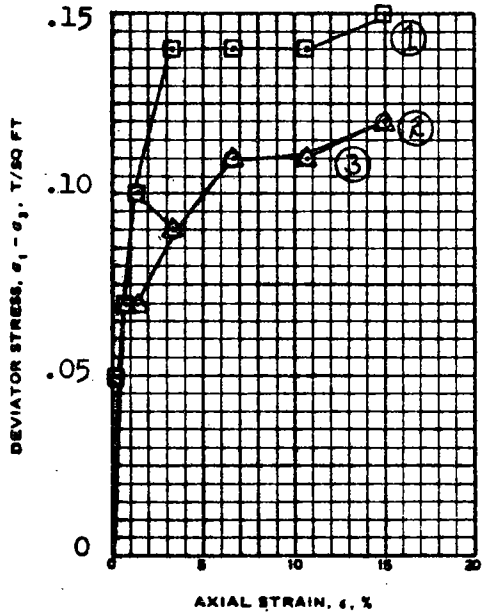
DEPTH/ELEV -96.2 MSL

LABORATORY USAEWES DATE 22 October, 1971

FAM TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	65.7	70.0	57.4
	DRY DENSITY LB/CU FT	γ_{d_o}	62.7	59.8	67.4
	SATURATION, %	s_o	100+	100+	100+
	VOID RATIO	e_o	1.66	1.79	1.47
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	s_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_b			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.15	0.12	0.12
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	125	125	125
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.37	1.38	1.38
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), gray, contains large deposits of fine sand

LL 51	PL 15	PI 36	G_s 2.67	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA. & VIC.-HURR. PROT. (1971)
RIGOLETS CONTROL STR. & CLOSURE DAM; DDM NO6

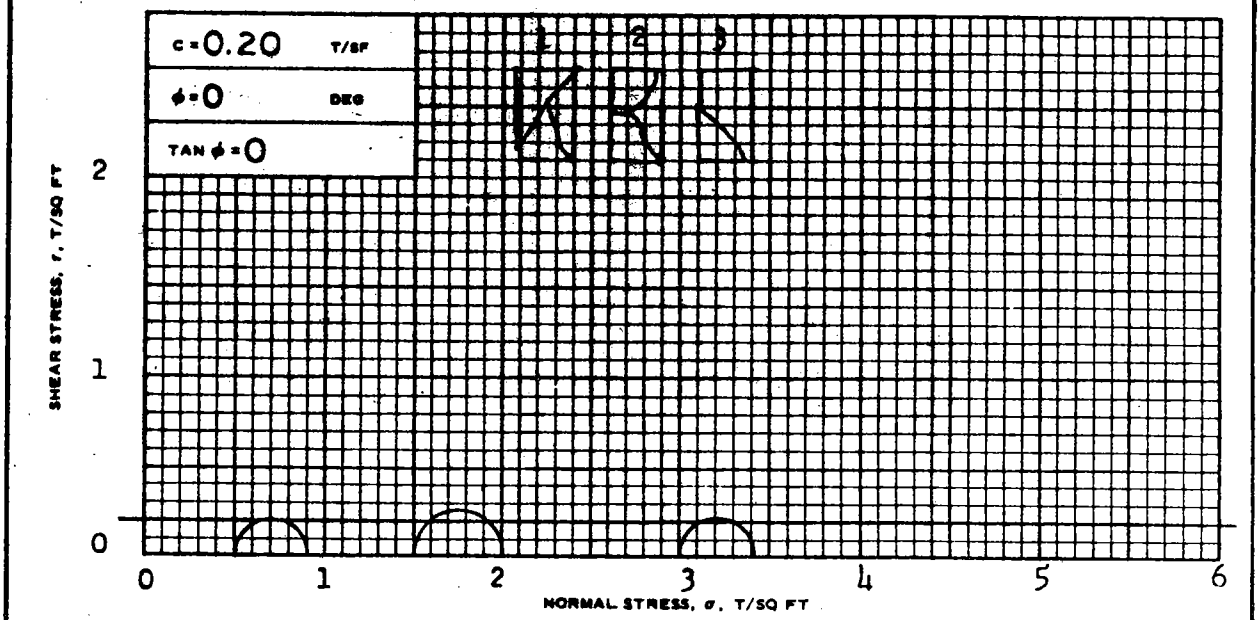
BORING NO. X10-U SAMPLE NO. 2-D

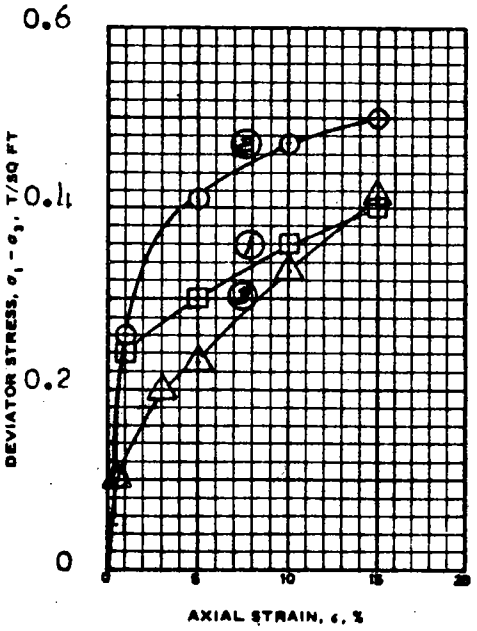
DEPTH/ELEV -36.1 MSL

LABORATORY USAEWES DATE 18 Oct. 1971

TES TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	42.8	40.8	40.6	
	DRY DENSITY LB/CU FT	γ_{d_o}	78.7	80.9	80.6	
	SATURATION, %	S_o	100	100+	100	
	VOID RATIO	e_o	1.16	1.09	1.10	
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_e				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.40	0.50	0.41	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	59	30	30	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.40	1.39	1.40	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH),gray, contains silt lenses

LL 50	PL 21	PI 29	G_s 2.71	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA.-HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM, 1971

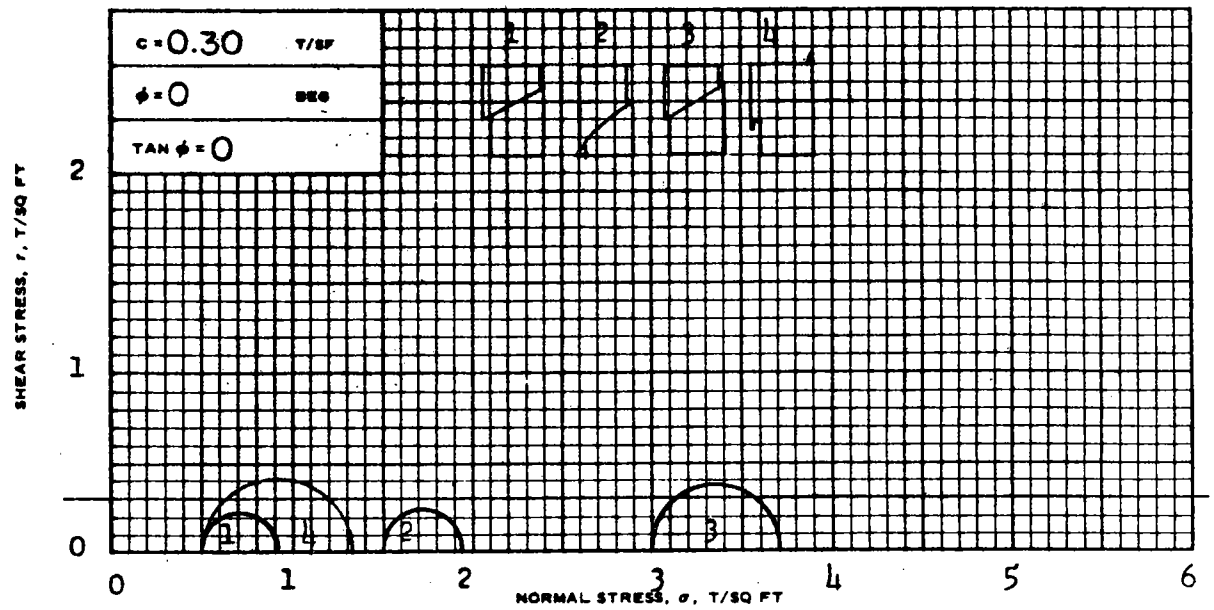
BORING NO. X-10-U SAMPLE NO. 5-B

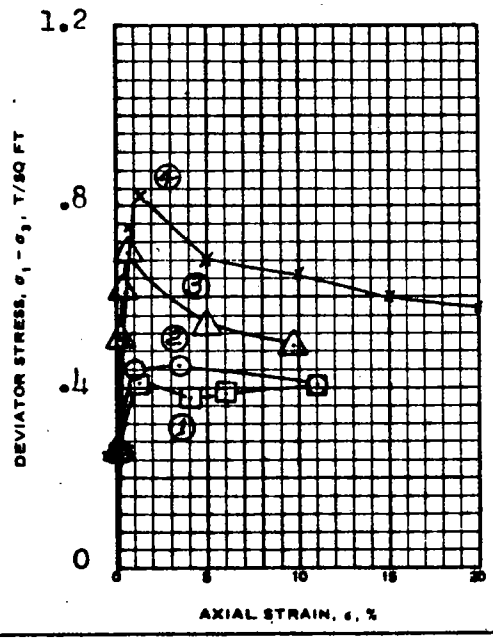
DEPTH/ELEV -45.7 MSL

LABORATORY USAEWES DATE 20 October, 1971

JMS TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3	4
INITIAL	WATER CONTENT, %	w_o	49.0	45.2	48.0	45.9
	DRY DENSITY LB/CU FT	γ_{d_o}	73.1	76.3	73.9	75.7
	SATURATION, %	S_o	100+	99.9	100+	99.8
	VOID RATIO	e_o	1.34	1.24	1.31	1.26
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_b				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0	0.5
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.41	0.45	0.70	0.82
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	231	73	13	10
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.39	1.39	1.39	1.40
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), gray

LL 71	PL 20	PI 51	G_s 2.74

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA. - HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM 1971

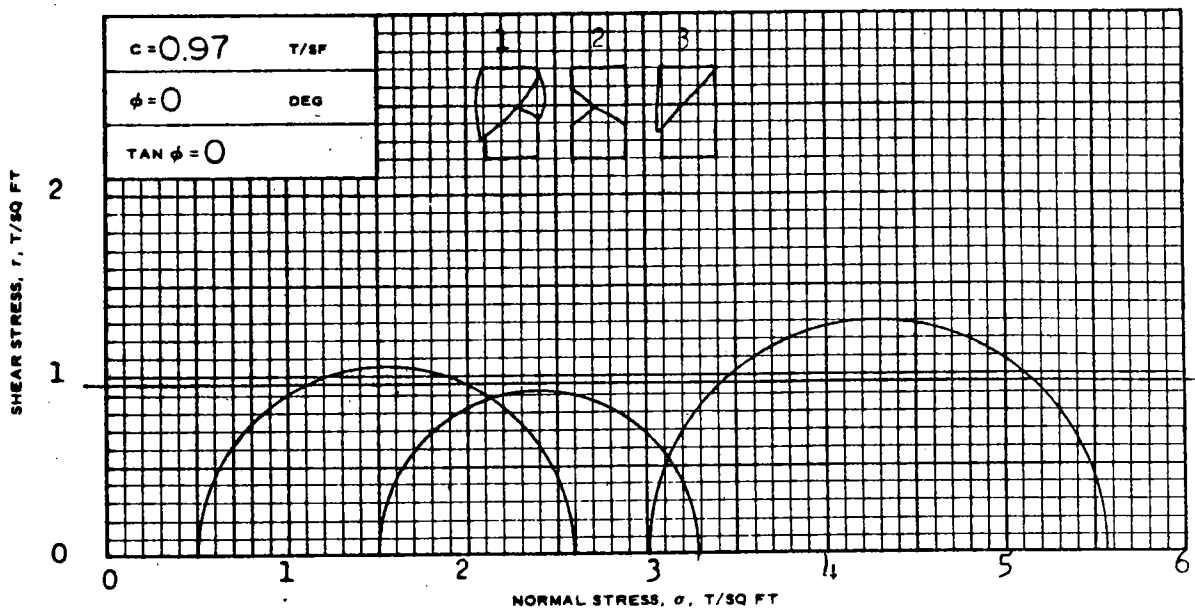
BORING NO. X-10-U SAMPLE NO. 8-D

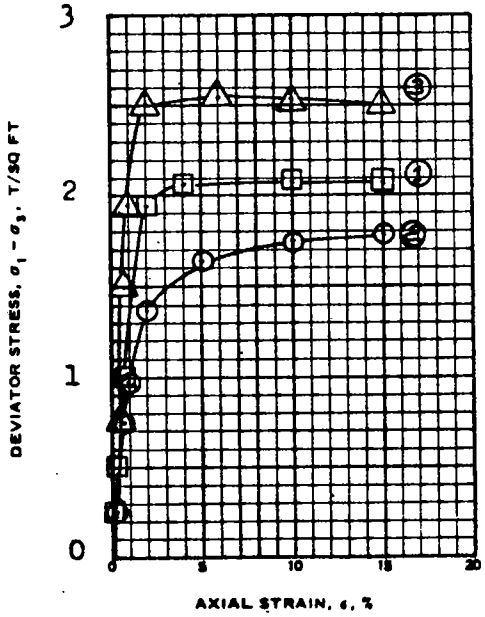
DEPTH/ELEV -60.0 MSL

LABORATORY USAEWES DATE 1 November 1971

GDA TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	22.3	25.3	24.5
	DRY DENSITY LB/CU FT	γ_{d_o}	102.3	98.2	98.9
	SATURATION, %	s_o	93.4	95.8	94.4
	VOID RATIO	e_o	0.642	0.710	0.698
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	s_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_b			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	2.08	1.78	2.56
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	60	92	35
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.40	1.41	1.40
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), bluish gray

LL 56 | PL 17 | PI 39 | G_s 2.69

TYPE OF SPECIMEN UNDISTURBED | TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA. - HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM, 1971

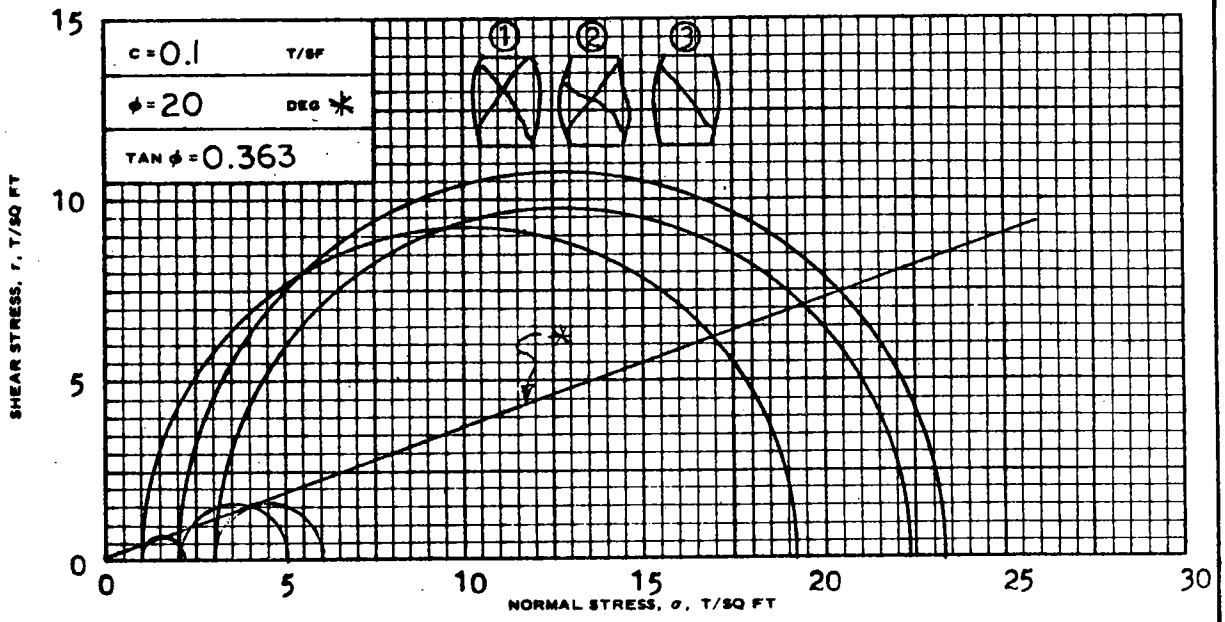
BORING NO. X-10-U | SAMPLE NO. 10-D

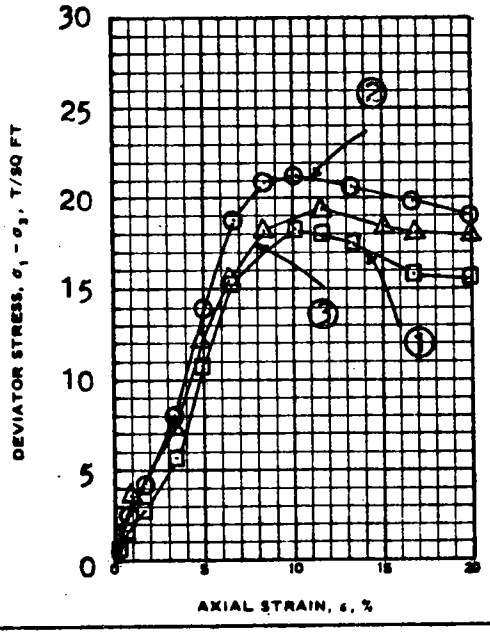
DEPTH/ELEV -68.0 MSL

LABORATORY USAEWES | DATE 21, October, 1971

JMS TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	26.9	26.5	28.7
	DRY DENSITY LB/ CU FT	γ_{d_o}	96.4	97.0	94.4
	SATURATION, %	s_o	98.4	98.4	100
	VOID RATIO	e_o	0.730	0.719	0.766
BEFORE SHEAR	WATER CONTENT, %	w_c	26.3	25.7	27.0
	DRY DENSITY LB/CU FT	γ_{d_c}	97.8	98.6	97.4
	SATURATION, %	s_c	99.7	99.4	100+
	VOID RATIO	e_c	0.705	0.690	0.712
	FINAL BACK PRESSURE, T/SQ FT	u_o	3.96	3.96	3.96
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	18.16	21.32	19.38
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	129	129	151
$(\sigma_1-\sigma_3)$ at max pore pressure *			1.2	3.2	3.2
INITIAL DIAMETER, IN.		D_o	1.38	1.38	1.40
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS SILTY SAND (SM), gray

LL - | PL - | PI - | G_s 2.67

TYPE OF SPECIMEN UNDIST. | TYPE OF TEST R

REMARKS: Portion of sample allowed to drain before trimming

PROJECT LK. PONT.,LA. & VICINITY-HURR. PROT. (1971)RIGOLETS CONT.STR.&CLOSURE DAM;DDM#6

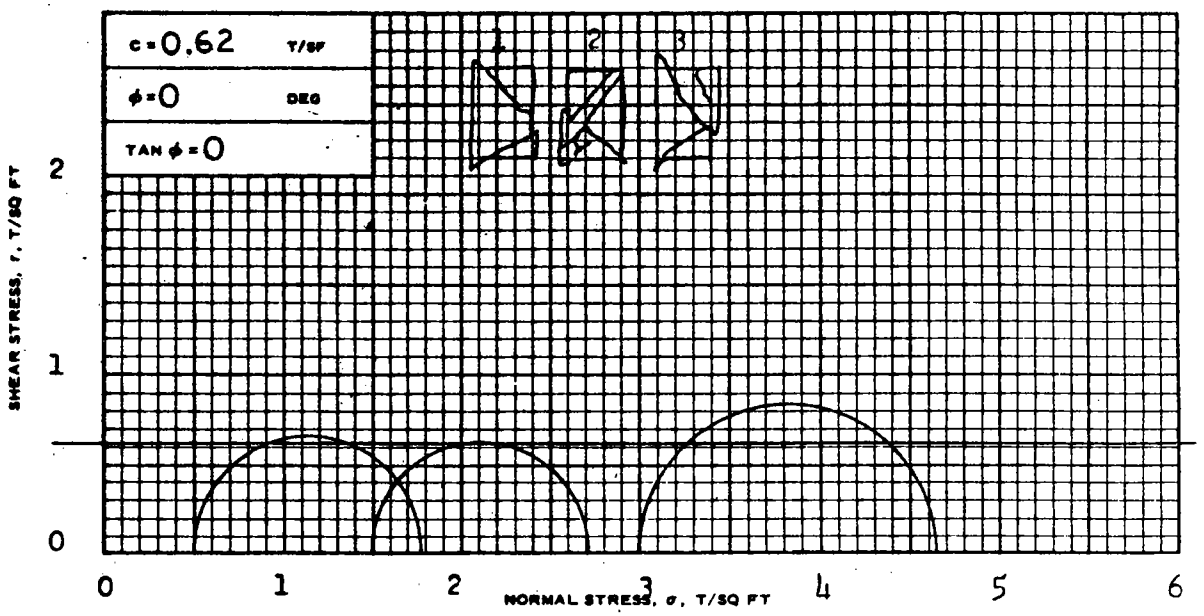
BORING NO. X-106 | SAMPLE NO. 11-D

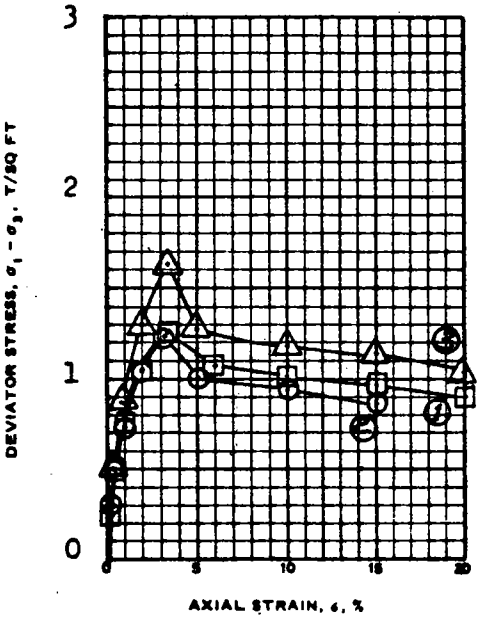
DEPTH/ELEV -72.0 MSL

LABORATORY USAEWES | DATE 28 October,1971

JAL TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





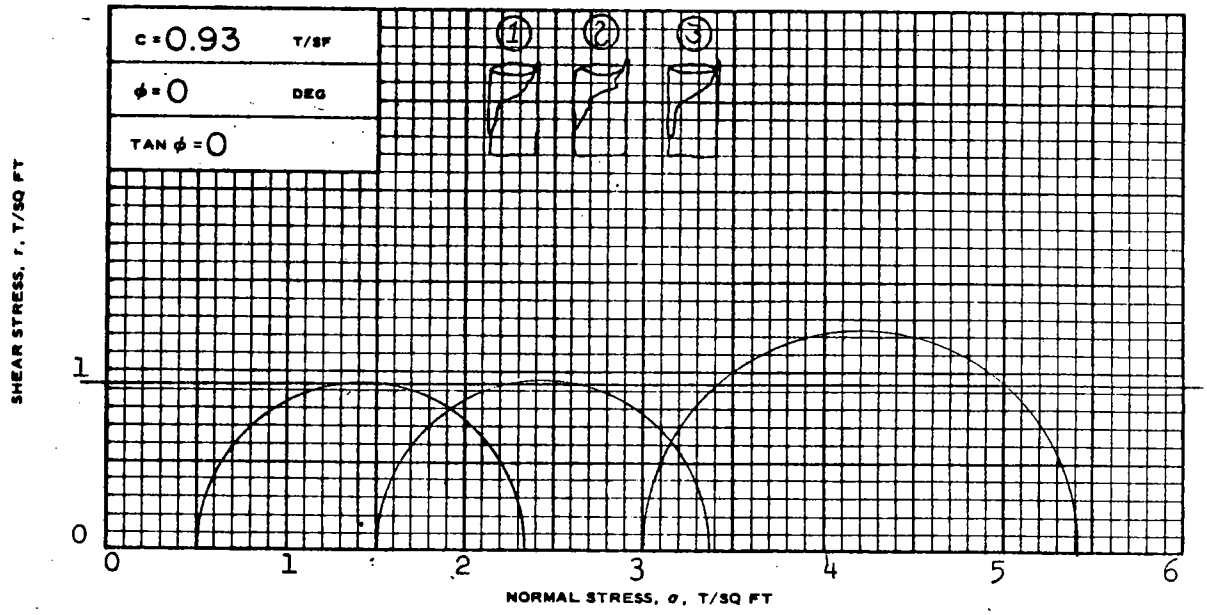
SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	41.2	42.4	41.0	
	DRY DENSITY LB/CU FT	γ_{d_o}	79.8	82.6	79.9	
	SATURATION, %	S_o	98.7	100+	99.0	
	VOID RATIO	e_o	1.14	1.06	1.13	
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_e				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.27	1.21	1.62	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	13	31	17	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.41	1.40	1.40	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

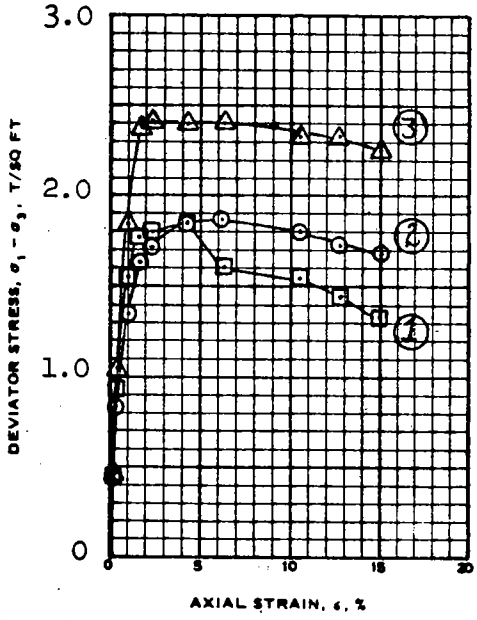
CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), dark gray, contains a few shell fragments

LL 73	PL 20	PI 53	G_s 2.73	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST Q
REMARKS:				PROJECT LK. PONT., LA.-HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM, 1971	
				BORING NO. X-10-U	SAMPLE NO. 15-B
				DEPTH/ELEV -85.8 MSL	
				LABORATORY USAEWES	DATE 21 October 1971
				FAM	TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	34.7	34.4	33.6
	DRY DENSITY LB/ CU FT	γ_{d_o}	87.1	84.7	87.9
	SATURATION, %	s_o	100+	93.8	98.8
	VOID RATIO	e_o	0.935	0.990	0.918
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	s_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.84	1.87	2.41
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	58	85	31
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.39	1.40	1.39
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH),gray, contains numerous small concretions 1/8" to 1/4" in diameter,silt pockets and lenses;crumbly

LL	PL	PI	G_s
69	19	50	2.70

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK.PONT.,LA.& VIC.-HURR. PROT. (1971) RIGOIETS CONTROL STR.&CLOSURE DAM;DDM NO.6

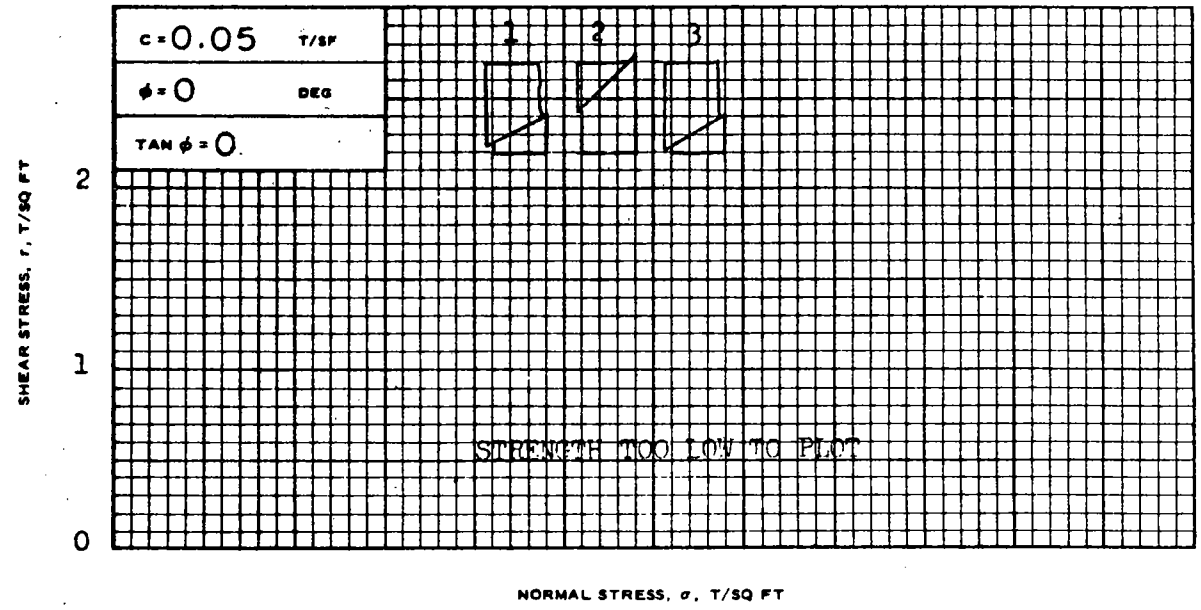
BORING NO. X-10-U SAMPLE NO. 17-C

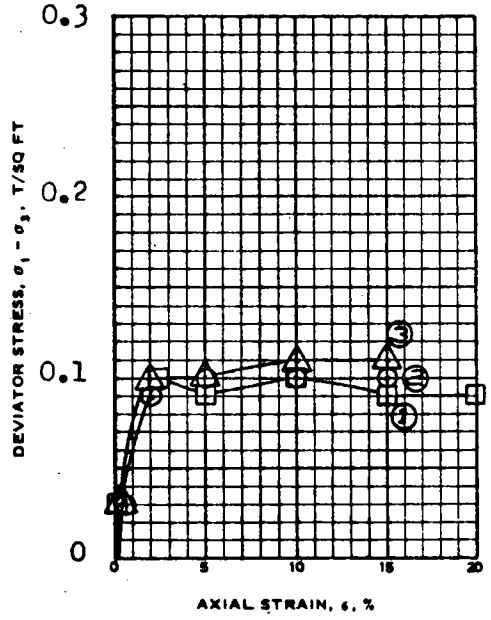
DEPTH/ELEV ~94.9 MSL

LABORATORY USAEWES DATE 19 Oct. 1971

TES TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	119.5	119.9	118.8
	DRY DENSITY LB/ CU FT	γ_{d_o}	39.6	38.8	39.8
	SATURATION, %	S_o	99.6	97.2	99.7
	VOID RATIO	e_o	3.19	3.28	3.17
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	S_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_b			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.10	0.10	0.11
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	114	76	138
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.39	1.38	1.39
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), gray, fissured

LL	PL	PI	G_s
125	27	98	2.66

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA.- HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM 1971

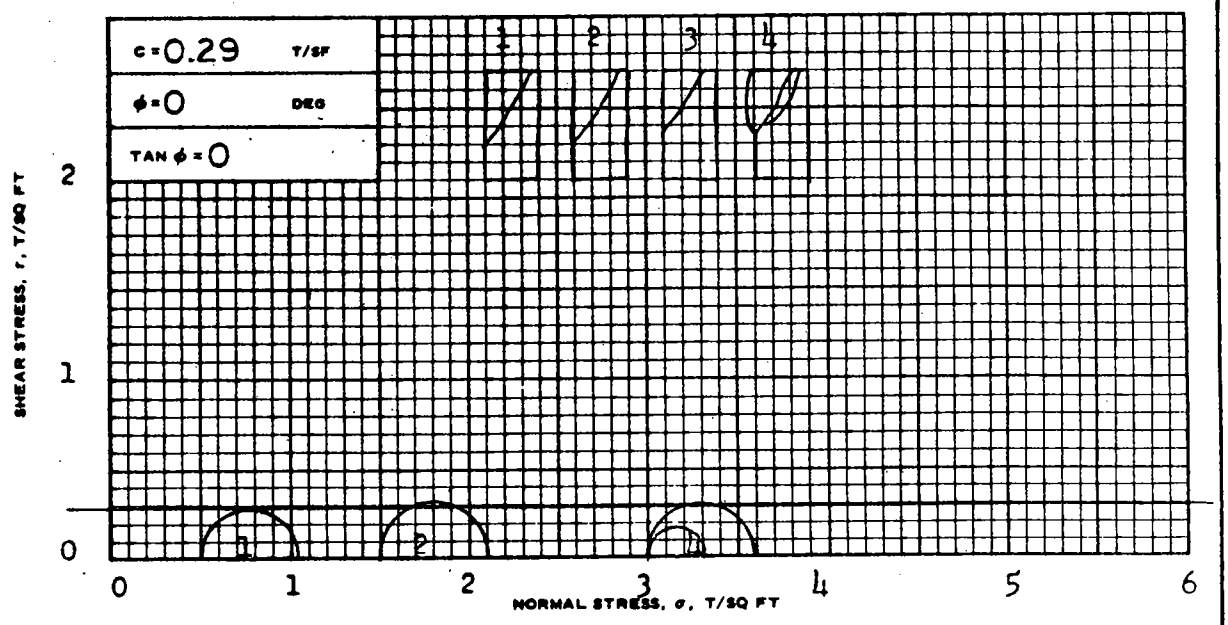
BORING NO. X-11-U SAMPLE NO. 2-D

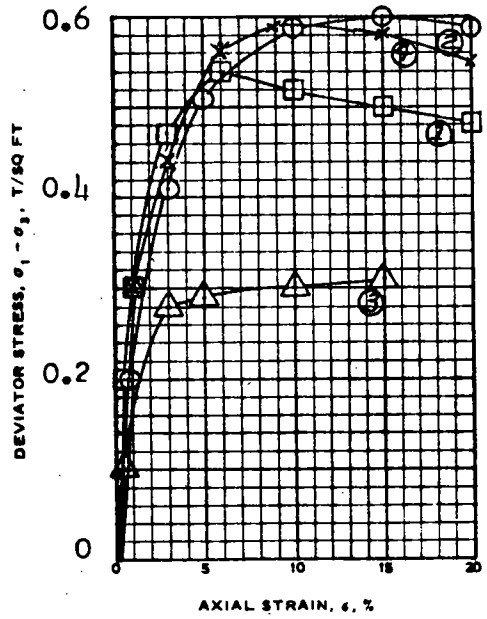
DEPTH/ELEV -38.8 MSL

LABORATORY USAEWES DATE 2 November 1971

GDA TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3	4
INITIAL	WATER CONTENT, %	w_o	44.4	42.7	47.5	47.2
	DRY DENSITY LB/CU FT	γ_{d_o}	76.1	76.6	72.4	73.6
	SATURATION, %	s_o	98.6	95.6	96.1	98.4
	VOID RATIO	e_o	1.22	1.21	1.34	1.30
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	s_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_a				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.54	0.60	0.31	0.59
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	23	72	61	18
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.41	1.41	1.40	1.41
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), gray, contains sand lenses and a few shells up to 4" diameter

LL 67 | PL 18 | PI 49 | G_s 2.71

TYPE OF SPECIMEN UNDISTURBED | TYPE OF TEST Q

REMARKS:

Atterberg limits taken from mixture of clay and sand.

PROJECT LK. PONT., LA.- HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM, 1971

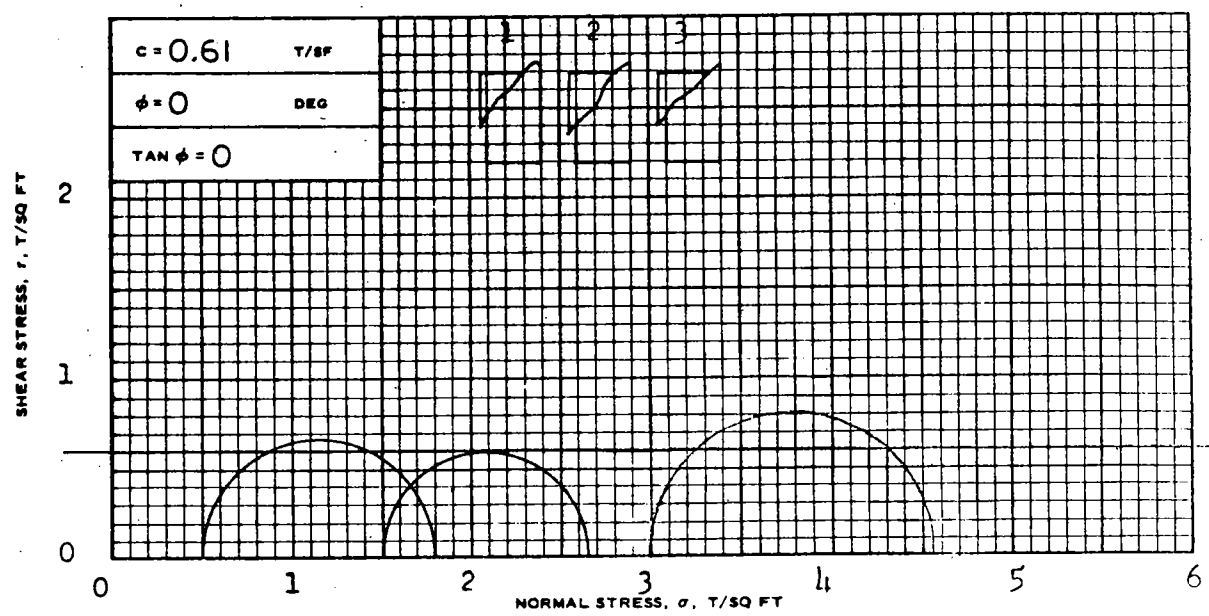
BORING NO. X-11-U | SAMPLE NO. 8-A

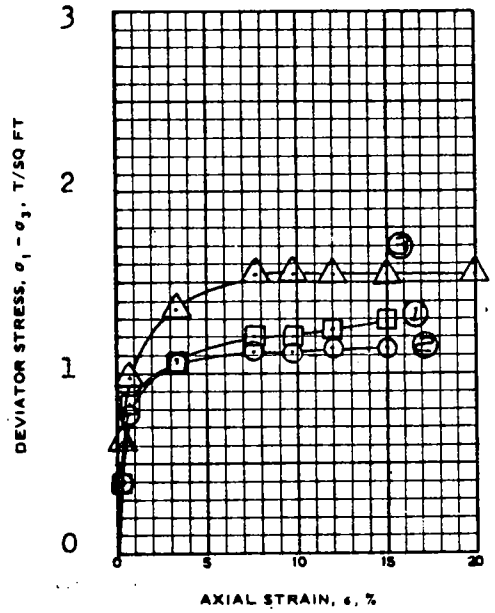
DEPTH/ELEV -60.3 MSL

LABORATORY USAEWES | DATE 22 October, 1971

JMS TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	27.8	27.8	28.6	
	DRY DENSITY LB/ CU FT	γ_{d_o}	96.5	96.2	95.1	
	SATURATION, %	S_o	99.5	98.8	99.0	
	VOID RATIO	e_o	0.760	0.765	0.786	
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_o				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.29	1.13	1.54	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	208	208	166	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.39	1.39	1.39	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH),gray;contains a few tiny decayed roots; crumbly

LL	PL	PI	G_s
56	17	39	2.72

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA.- HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM 1971

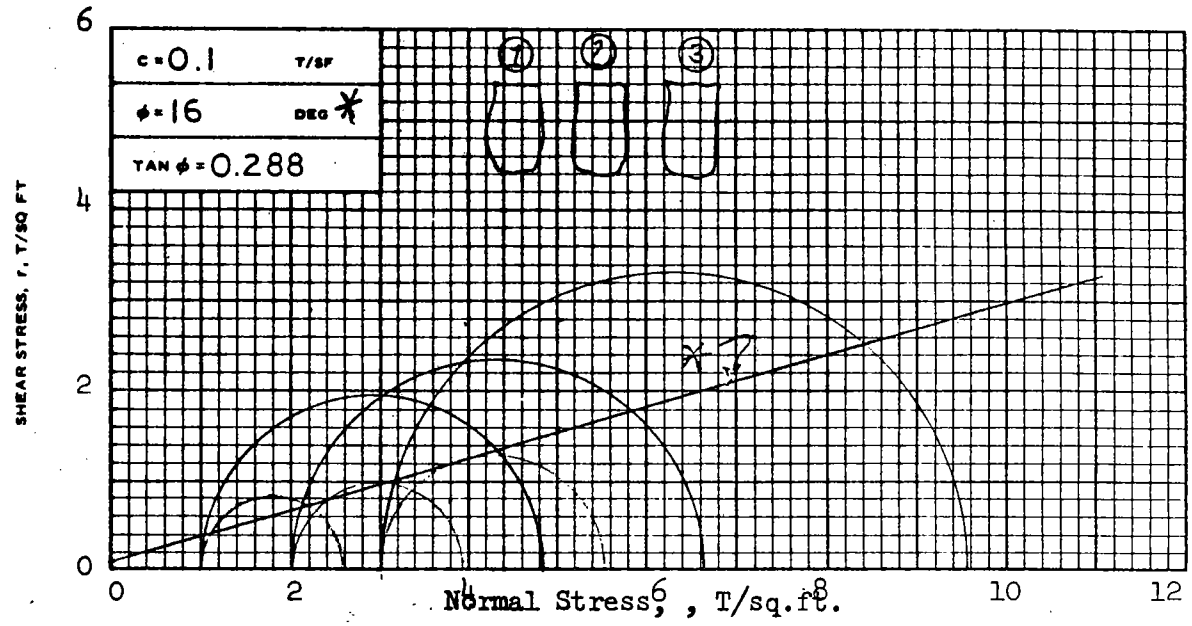
BORING NO. X-11-U SAMPLE NO. 9-D

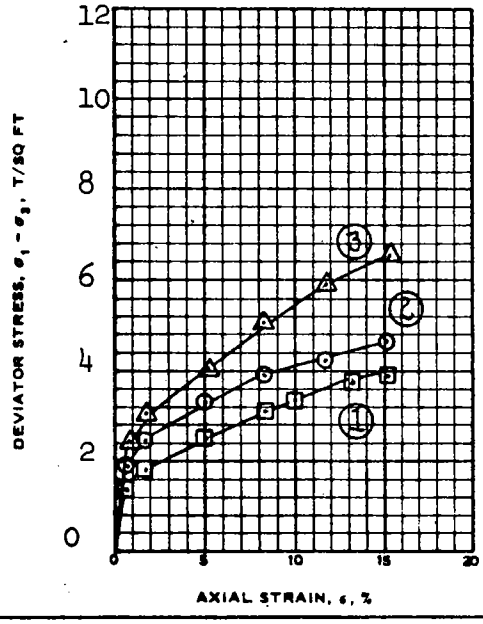
DEPTH/ELEV -66.9 MSL

LABORATORY USAEWES DATE 9 November 1971

TES TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	26.8	27.8	26.4	
	DRY DENSITY LB/ CU FT	γ_{d_o}	96.8	95.4	97.0	
	SATURATION, %	s_o	98.0	98.3	97.2	
	VOID RATIO	e_o	0.736	0.712	0.731	
BEFORE SHEAR	WATER CONTENT, %	w_c	26.0	25.9	24.4	
	DRY DENSITY LB/CU FT	γ_{d_c}	98.4	98.1	100.2	
	SATURATION, %	s_c	98.9	97.8*	97.1*	
	VOID RATIO	e_c	0.707	0.712	0.676	
	FINAL BACK PRESSURE, T/SQ FT	u_o	3.96	3.96	3.96	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	3.85	4.65	6.57	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	213	213	214	
$(\sigma_1 - \sigma_3)$ at max pore pressure			1.6	1.9	2.5	
INITIAL DIAMETER, IN.		D_o	1.39	1.38	1.41	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- strain TEST

DESCRIPTION OF SPECIMENS SILTY CLAY(CL-ML),gray; lightly cemented

LL 28	PL 21	PI 7	G 2.69	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST R

REMARKS: * Pore pressure response indicated 100% saturation.

PROJECT LK. PONT.,LA.&VIC.-HURR. PROT.(1971)
RIGOLETS CONTROL STR.&CLOSURE DAM;DDM #6

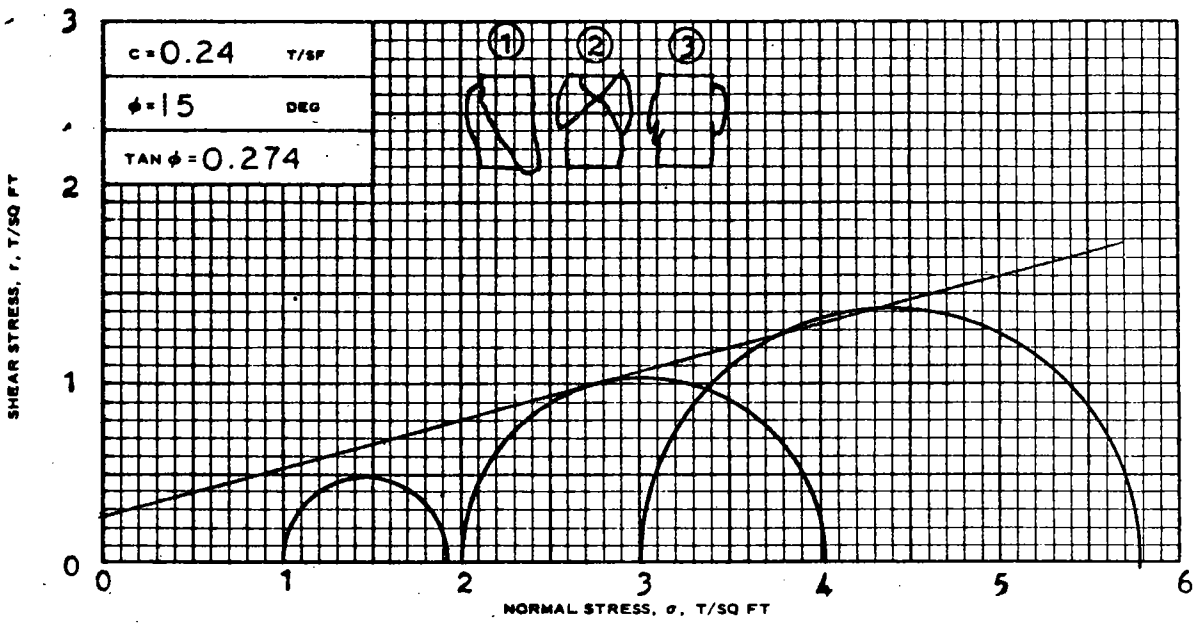
BORING NO. X-11-U SAMPLE NO. 10-D

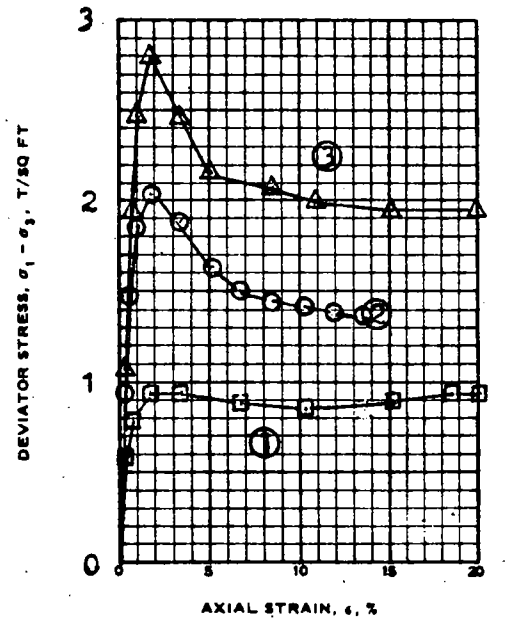
DEPTH/ELEV -70.8 MSL

LABORATORY USAEWES DATE 17 Nov. 1971

JAL TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	51.7	52.8	51.1
	DRY DENSITY LB/ CU FT	γ_{d_o}	70.3	70.0	71.1
	SATURATION, %	s_o	98.9	100+	99.5
	VOID RATIO	e_o	1.43	1.44	1.41
BEFORE SHEAR	WATER CONTENT, %	w_c	52.9	54.7	50.0
	DRY DENSITY LB/CU FT	γ_{d_c}	71.8	73.3	73.7
	SATURATION, %	s_c	100+	100+	100+
	VOID RATIO	e_c	1.38	1.33	1.32
	FINAL BACK PRESSURE, T/SQ FT	u_o	4.68	4.68	4.68
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.93	2.03	2.78
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	32	32	31
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.39	1.39	1.39
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY (CH), greenish gray, fissured

LL 95	PL 27	PI 68	G_s 2.74	TYPE OF SPECIMEN UNDIST.	TYPE OF TEST R

REMARKS:

PROJECT LK.PONT.,LA.& VICINITY-HURR. PROT.(71)

RIGOLETS CONTROL STR.& CLOSURE DDM #6

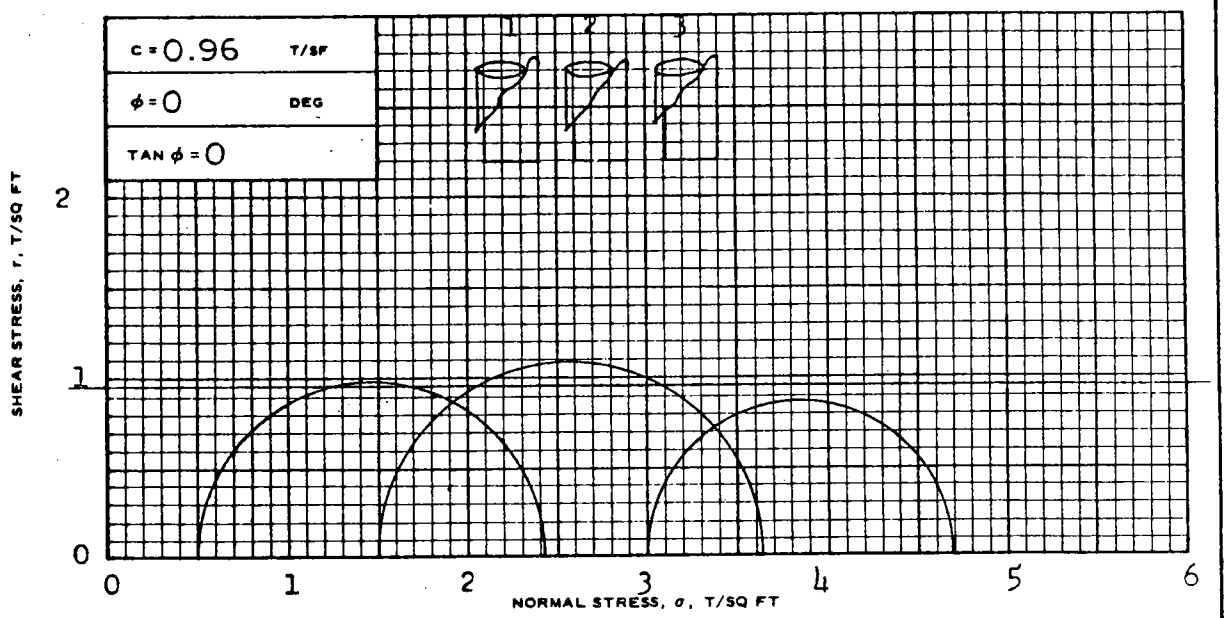
BORING NO. X-11U SAMPLE NO. 12-B

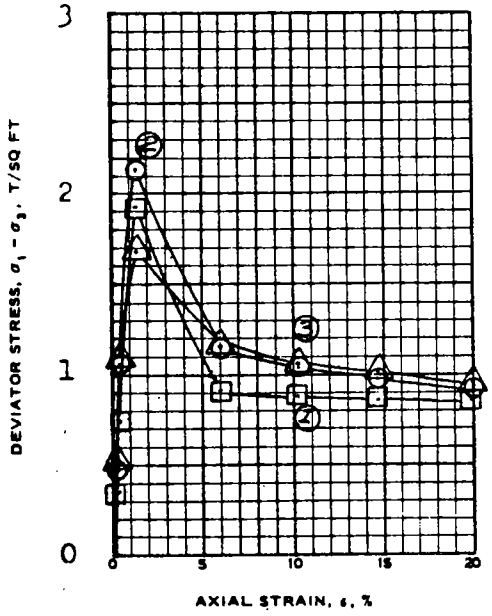
~~DEPTH~~/ELEV -77.2 MSL

LABORATORY USAEWES DATE 11 Nov.,1971

JAL TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	55.4	55.7	55.3
	DRY DENSITY LB/CU FT	γ_{d_o}	68.0	67.9	68.0
	SATURATION, %	s_o	100+	100	100+
	VOID RATIO	e_o	1.51	1.51	1.51
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	s_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_e			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.92	2.13	1.69
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	18	18	18
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.39	1.39	1.39
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), gray, contains scattered decayed rootlets

LL 101	PL 25	PI 76	G_s 2.73

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA.- HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM 1971

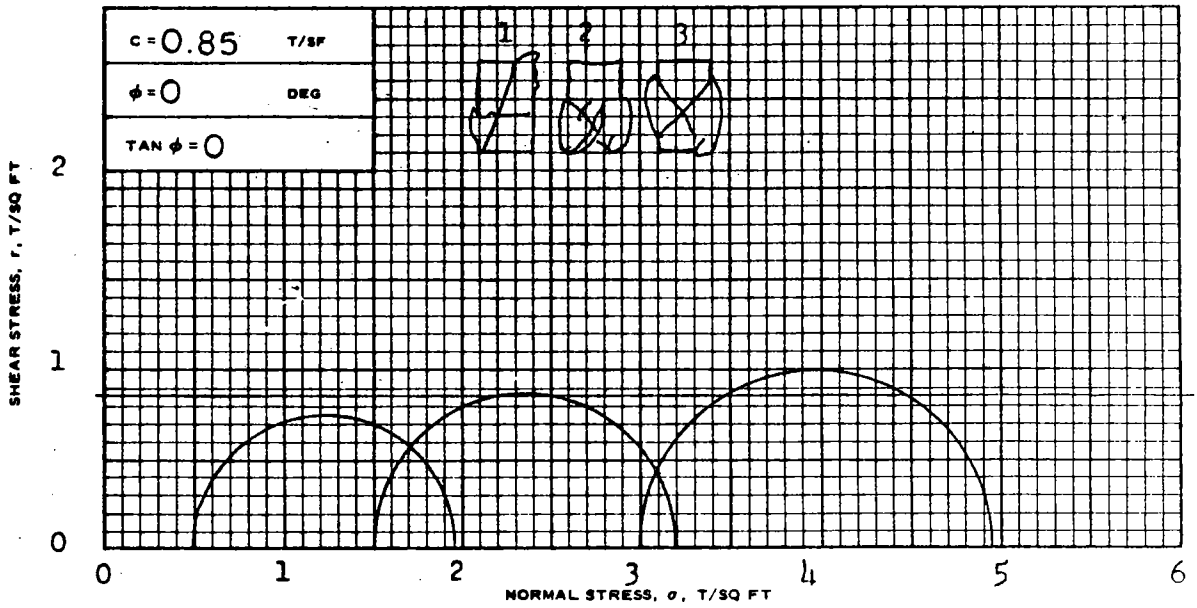
BORING NO. X-11-U SAMPLE NO. 13-B

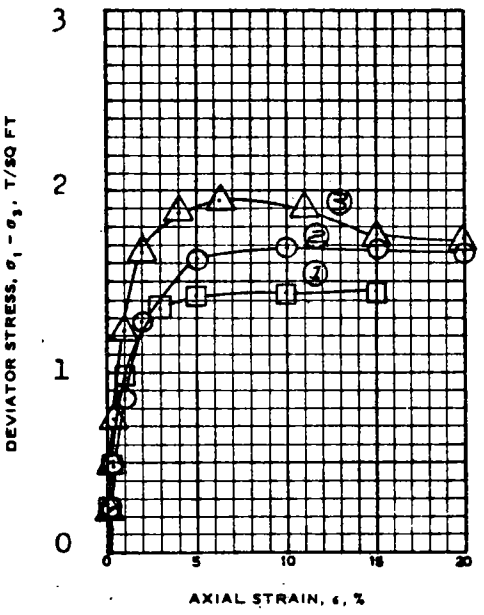
DEPTH/ELEV -81.3 MSL

LABORATORY USAEWES DATE 8 November 1971

TES TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	33.8	34.4	33.7
	DRY DENSITY LB/ CU FT	γ_{d_o}	87.4	86.6	87.0
	SATURATION, %	s_o	97.1	97.0	95.9
	VOID RATIO	e_o	0.950	0.968	0.959
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	s_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.44	1.69	1.94
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	57	40	23
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.41	1.40	1.42
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), gray, contains two layers of sandy silt

LL 61 | PL 22 | PI 39 | G_s 2.73

TYPE OF SPECIMEN UNDISTURBED | TYPE OF TEST Q

REMARKS:

CLAY
SILT
CLAY
SILT
CLAY

Typical specimen

PROJECT LK. PONT., LA.- HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM, 1971

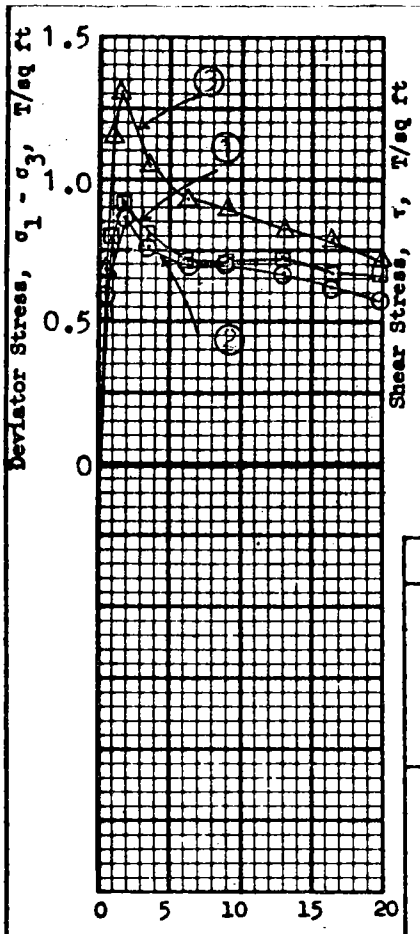
BORING NO. X-11-U | SAMPLE NO. 16-C

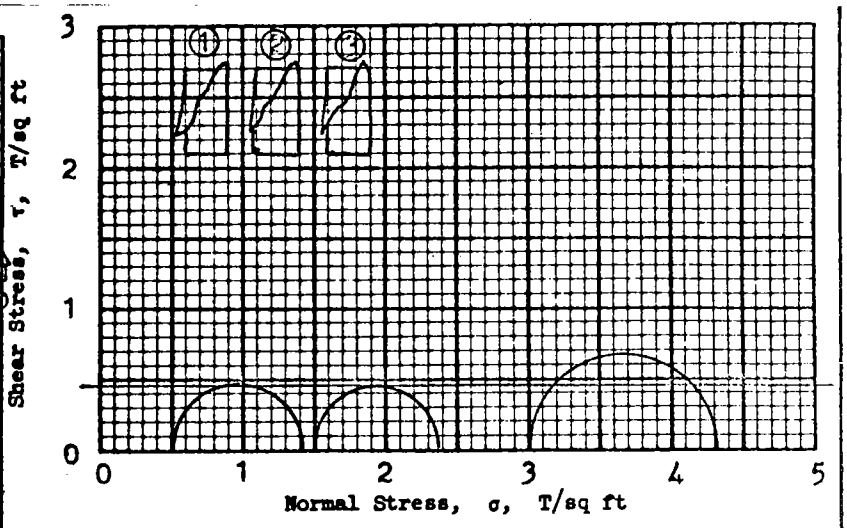
DEPTH/ELEV -94.0 MSL

LABORATORY USAEWES | DATE 22 October, 1971

TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





Test No.			1	2	3	
Initial	Water content	w_o	51.4 %	53.0 %	47.3 %	%
	Void ratio	e_o	1.44	1.48	1.34	
	Saturation	S_o	99.2 %	99.6 %	98.1 %	%
	Dry density, lb/cu ft	γ_d	71.2	69.9	74.2	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.91	0.86	1.31	
Time to failure, min		t_f	17	17	14	
Rate of strain, percent/min			0.110	0.110	0.110	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.39	1.39	1.39	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.455 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY (CH), gray, containing shell fragments, decayed *

LL 80 | PL 24 | PI 56 | G_s 2.78

Remarks *wood and strata of fine sand.

Project LK. PONT., LA. & VIC.-HURR. PROT.

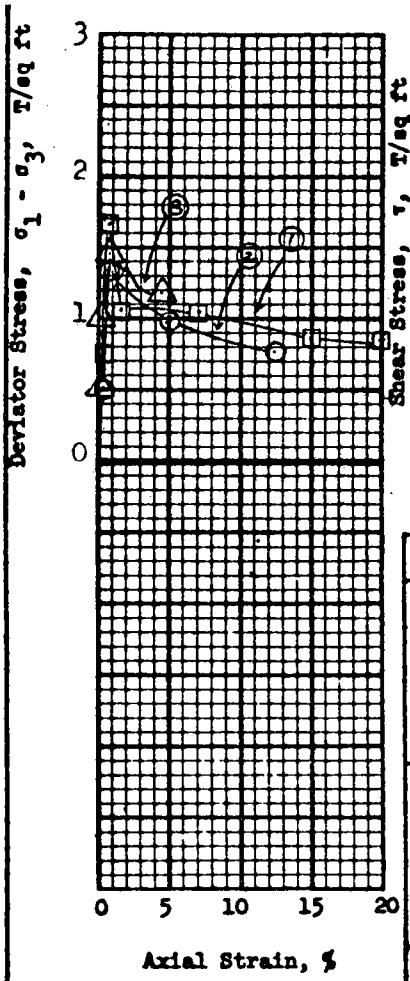
RIGOLETS CONTROL STRUCTURE & CLOSURE DAM

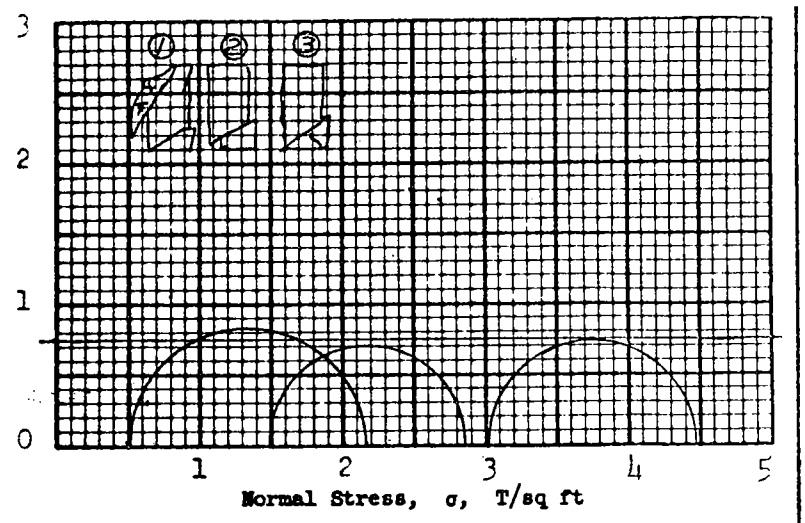
Area DDM NO.6

Boring No. X-12U | Sample No. 8-D

~~Depth~~ El -63.8 MSL | Date 27 September, 1971

TFS TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	
Initial	Water content	w_o	59.9 %	60.2 %	60.4 %	%
	Void ratio	e_o	1.65	1.66	1.67	
	Saturation	S_o	99.8 %	99.7 %	99.5 %	%
	Dry density, lb/cu ft	γ_d	64.8	64.5	64.3	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.66	1.34	1.47	
Time to failure, min		t_f	5	10	33	
Rate of strain, percent/min			0.174	0.083	0.018	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.40	1.40	1.40	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.74 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY (CH), GRAY.

LL 107 | PL 28 | PI 79 | | G_s 2.75

Remarks _____

Project LK. PONT., LA. HURR. PROT. RIGOLETS CONT. &STR. & CLOSURE DAM 1971

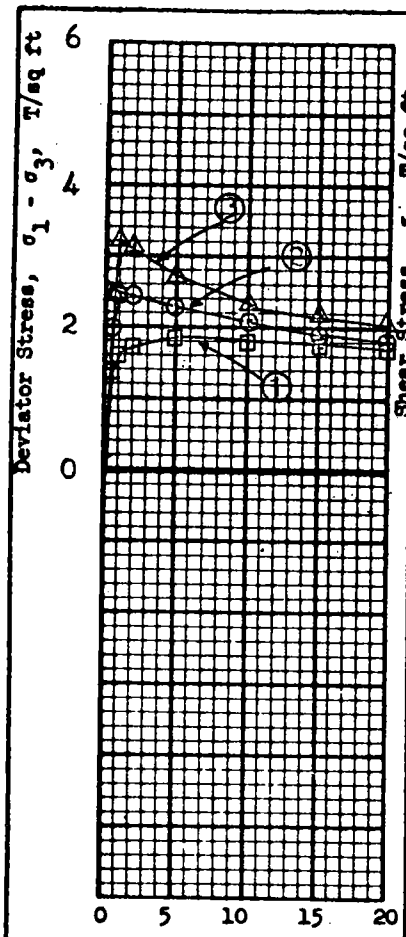
Area

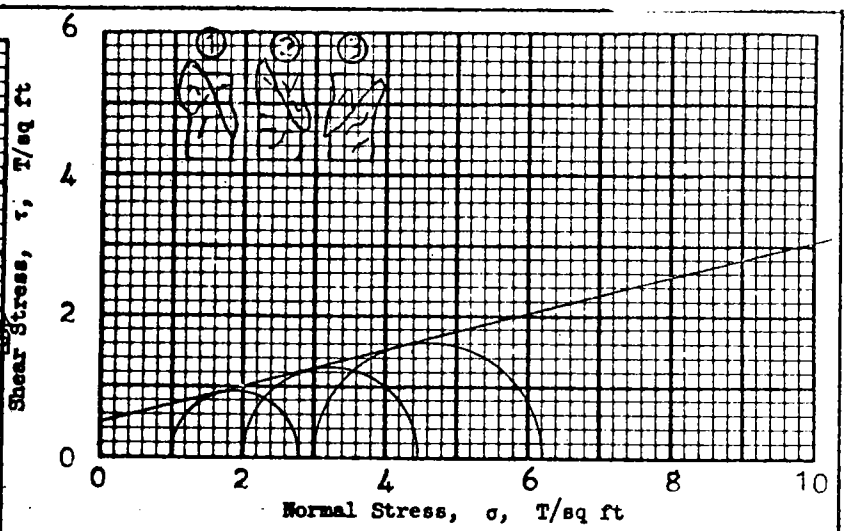
Boring No. X-12-U | Sample No. 14-C

Depth El -86.9 MSL | Date 7 October 1971

FAM

TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	
Initial	Water content	w_o	36.0 %	39.1 %	39.1 %	%
	Void ratio	e_o	0.996	1.06	1.06	
	Saturation	S_o	96.1 %	98.1 %	98.1 %	%
	Dry density, lb/cu ft	γ_d	83.2	80.8	80.7	
Before Shear	Water content	w_c	37.7 %	39.6 %	39.3 %	%
	Void ratio	e_c	0.968	1.00	0.991	
	Saturation	S_c	100+ %	100+ %	100+ %	%
	Final back pressure, PSI	u_o	70	70	70	
	Dry Density Lbs/cu.ft.	γ_d	84.4	82.9	83.4	
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	1.0	2.0	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.81	2.45	3.21	
Time to failure, min		t_f	59	12	12	
Rate of strain, percent/min			0.085	0.085	0.086	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.41	1.40	1.40	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 14°

tan ϕ = 0.25

c = 0.50 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test R | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH), light gray, slickensided

LL 63 | PL 23 | PI 40 | G_s 2.66

Remarks _____

Project LK.PONT.,LA.&VIC.-HURR. PROT.-(1971)

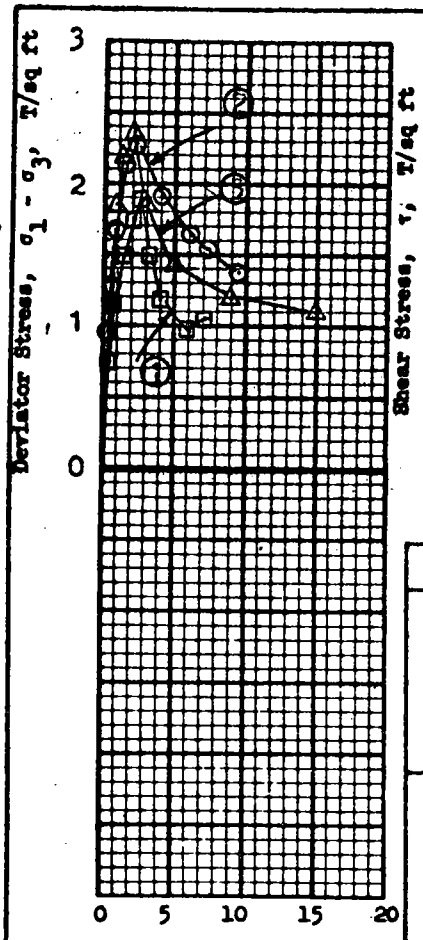
RIGOLETS CONTROL STRUCTURE&CLOSURE DAM;DDM#6

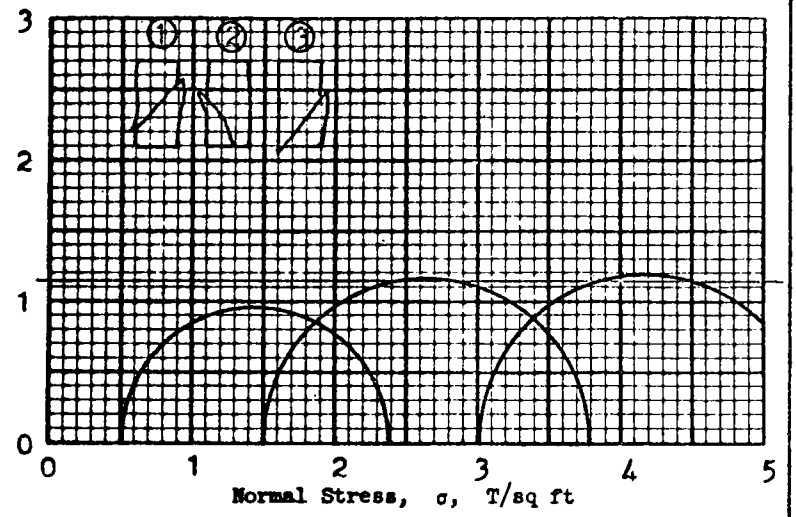
Area

Boring No. X-12U | Sample No. 17-D

~~Depth~~ El -99.8 MSL | Date 14 September, 1971

PJR | TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	
Initial	Water content	w_o	49.9 %	49.7%	49.4%	%
	Void ratio	e_o	1.37	1.36	1.36	
	Saturation	S_o	97.6 %	97.9 %	97.3 %	%
	Dry density, lb/cu ft	γ_d	70.6	70.9	71.0	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.88	2.29	2.35	
Time to failure, min		t_f	21	26	24	
Rate of strain, percent/min			0.124	0.079	0.085	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.40	1.39	1.40	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 1.14 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q	Type of specimen UNDISTURBED		
Classification PLASTIC CLAY (CH), gray and brown with organic matter.			
LL 82	PL 26	PI 56	G_s 2.68

Remarks _____

Project LK.PONT.,LA.& VIC-HURRICANE PROTECTION

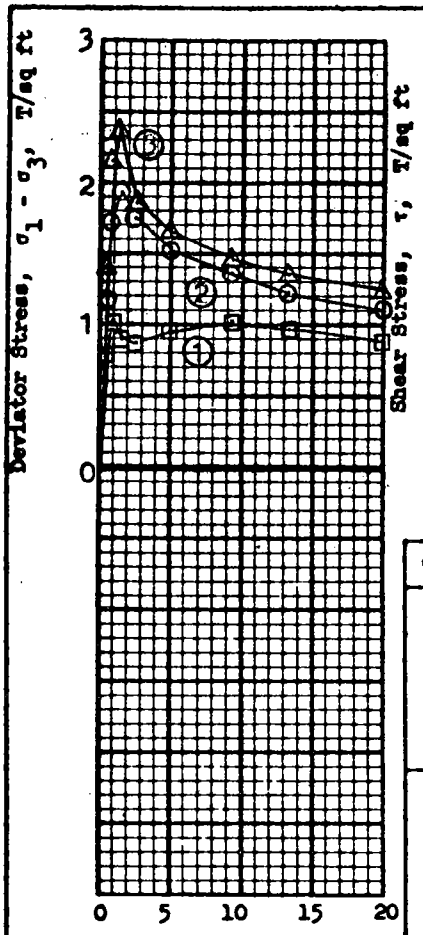
RIGOLETS CONTROL STRUCTURE&CLOSURE DAM

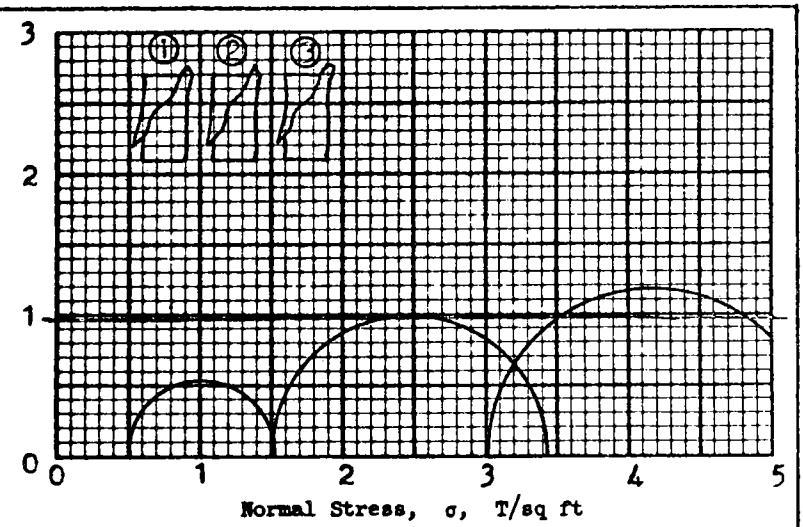
Area DDM NO.6

Boring No. X-12U | Sample No. 21-C

~~Depth~~ El -114.9 MSL | Date 28 September, 1971

GDA TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	
Initial	Water content	w_o	48.4 %	49.1 %	48.6 %	%
	Void ratio	e_o	1.38	1.38	1.37	
	Saturation	S_o	96.8 %	98.2 %	97.9 %	%
	Dry density, lb/cu ft	γ_d	72.5	72.4	72.8	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.01	1.94	2.37	
Time to failure, min		t_f	10	16	14	
Rate of strain, percent/min			0.094	0.094	0.094	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.39	1.39	1.41	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.97 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY (CH), gray, containing fine sand pockets & lenses

LL 66 | PL 22 | PI 44 | G_s 2.76

Remarks Insufficient material for check test.

Project LK. PONT.,LA.& VIC.-HURR. PROT.

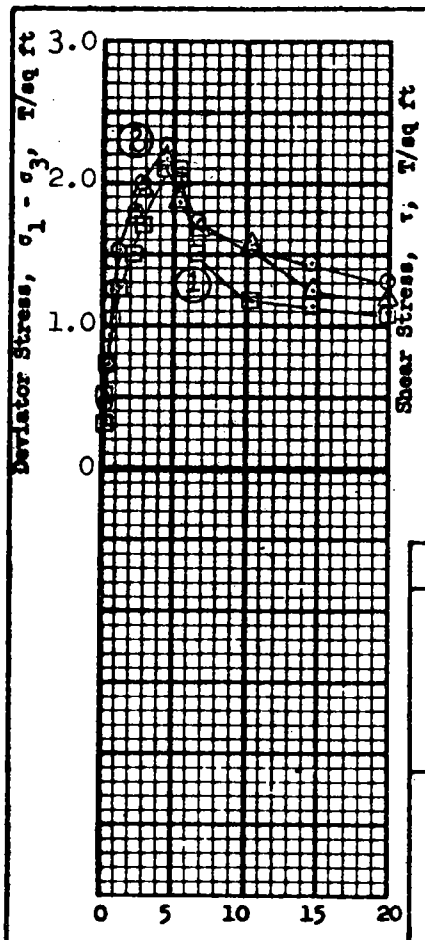
RIGOLETS CONTROL STRUCTURE& CLOSURE DAM

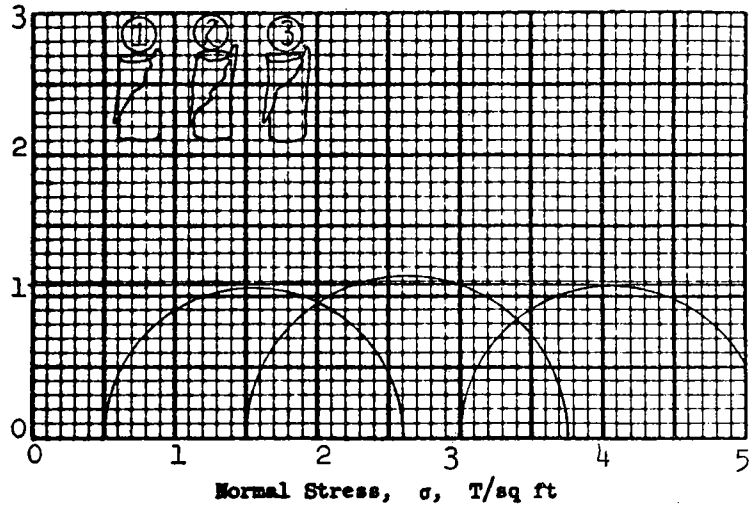
Area DDM NO.6

Boring No. X-12U | Sample No. 29-D

~~Depth~~ El -147.8 MSL | Date 29 September, 1971

TES TRIAXIAL COMPRESSION TEST REPORT





Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 1.08 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Test No.			1	2	3	
Initial	Water content	w_o	40.9 %	40.8 %	41.6 %	%
	Void ratio	e_o	1.08	1.09	1.13	
	Saturation	S_o	100+ %	100+ %	99.8 %	%
	Dry density, lb/cu ft	γ_d	81.3	81.0	79.4	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	2.10	2.26	2.16	
Time to failure, min		t_f	52	52	52	
Rate of strain, percent/min			0.087	0.087	0.087	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.40	1.41	1.42	
Initial height, in.		H_o	3.00	3.00	3.00	

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY (CH), gray, containing scattered small concretions,

LL 72 | PL 24 | PI 48 | G_s 2.71

Remarks _____

Project LK. PONT., LA. & VIC.-HURR. PROTECTION

RIGOLETS CONTROL STRUCTURE & CLOSURE DAM;

Area DDM NO. 6 (1971)

Boring No. X-12-U | Sample No. 34-B

Depth El -166.1 MSL | Date 29 Sept. 1971

TES TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT

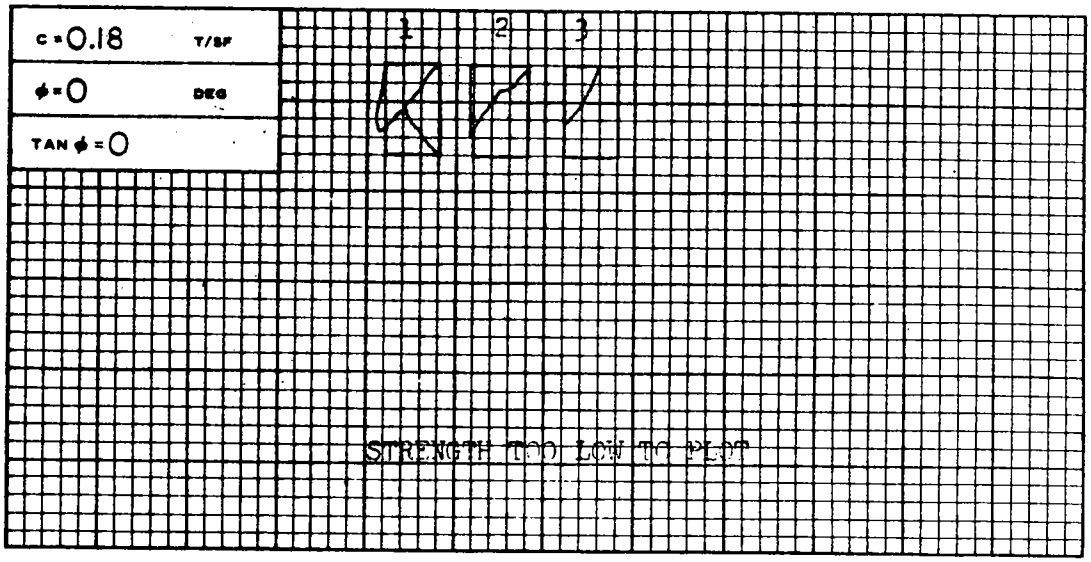
USAEWES SOILS

PLATE III - 158

c = 0.18 T/SF

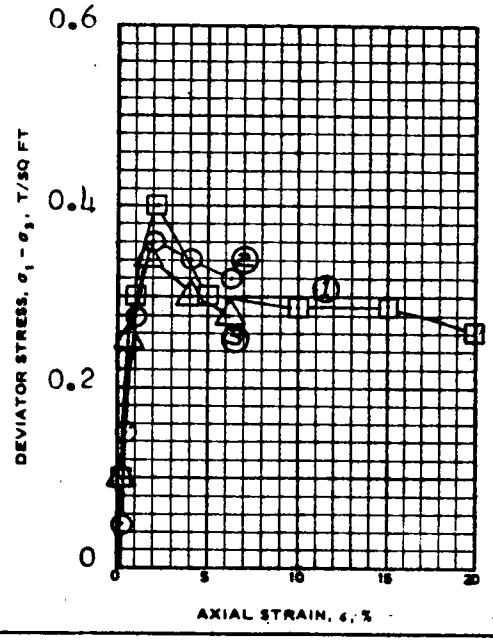
ϕ = 0 DEG

TAN ϕ = 0



SHEAR STRESS, τ, T/SQ FT

NORMAL STRESS, σ, T/SQ FT



DEVIATOR STRESS, $\sigma_1 - \sigma_3$, T/SQ FT

AXIAL STRAIN, ϵ, %

SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	81.9	80.3	79.9
	DRY DENSITY LB/CU FT	γ_{d_o}	52.1	52.8	53.0
	SATURATION, %	S_o	99.3	99.2	99.1
	VOID RATIO	e_o	2.21	2.17	2.16
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	S_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.40	0.36	0.34
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	9	16	25
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.40	1.40	1.41
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), gray, contains a few sand lenses

LL 103	PL 25	PI 78	G_s 2.68

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA. -HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM 1971

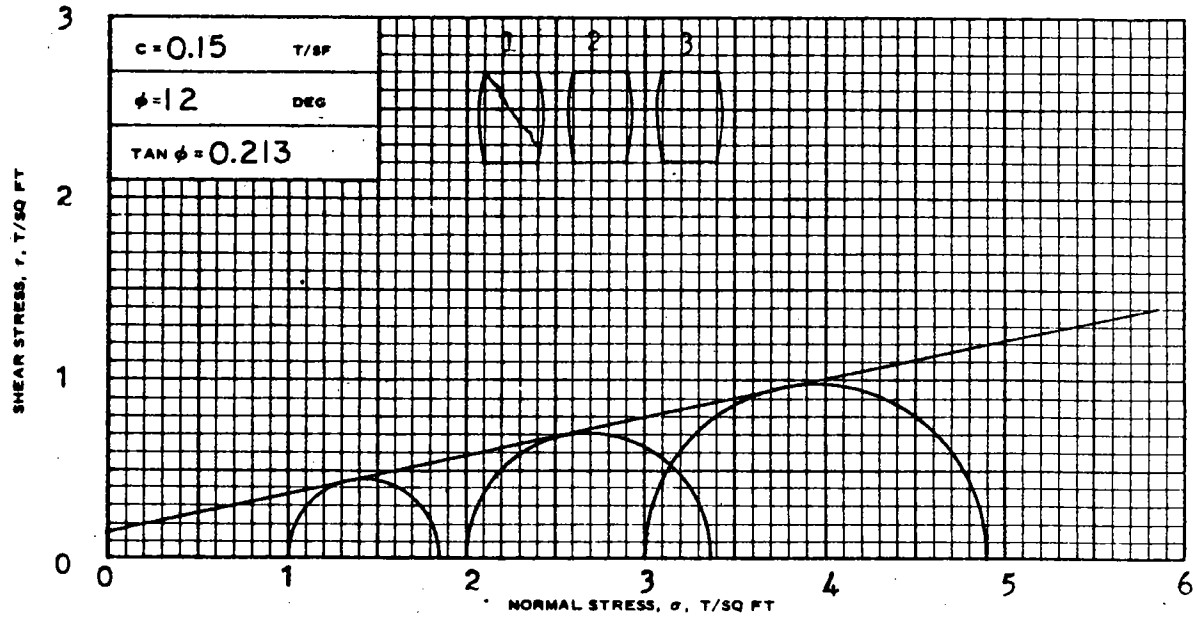
BORING NO. X-13-U SAMPLE NO. 3-D

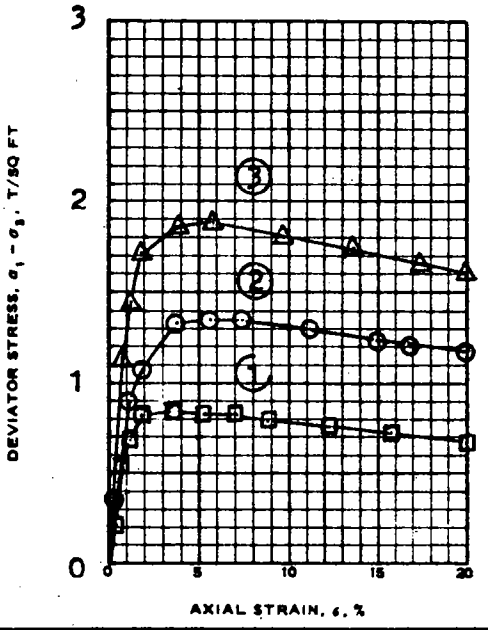
DEPTH/ELEV -35.7 MSL

LABORATORY USAEWES DATE 1 november 1971

JMS TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	81.1	80.6	78.4	
	DRY DENSITY LB/CU FT	γ_{d_o}	52.4	52.6	53.8	
	SATURATION, %	S_o	98.8	98.6	99.1	
	VOID RATIO	e_o	2.22	2.21	2.14	
BEFORE SHEAR	WATER CONTENT, %	w_c	64.4	60.0	52.1	
	DRY DENSITY LB/CU FT	γ_{d_c}	61.6	69.2	75.2	
	SATURATION, %	S_c	100+	100+	100+	
	VOID RATIO	e_c	1.74	1.44	1.24	
	FINAL BACK PRESSURE, T/SQ FT	u_o	4.68	4.68	4.68	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.84	1.36	1.88	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	70	112	116	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.39	1.39	1.40	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), dark gray, contains fine sand lenses and fine sand seam

LL	PL	PI	G_s
114	25	89	2.70

TYPE OF SPECIMEN UNDIST. TYPE OF TEST R

REMARKS:

PROJECT LK. PONT., IA. & VIC.-HURR. PROT. (1971)
RIGOLETS CONTROL STR. & CLOSURE DAM; DDM#6

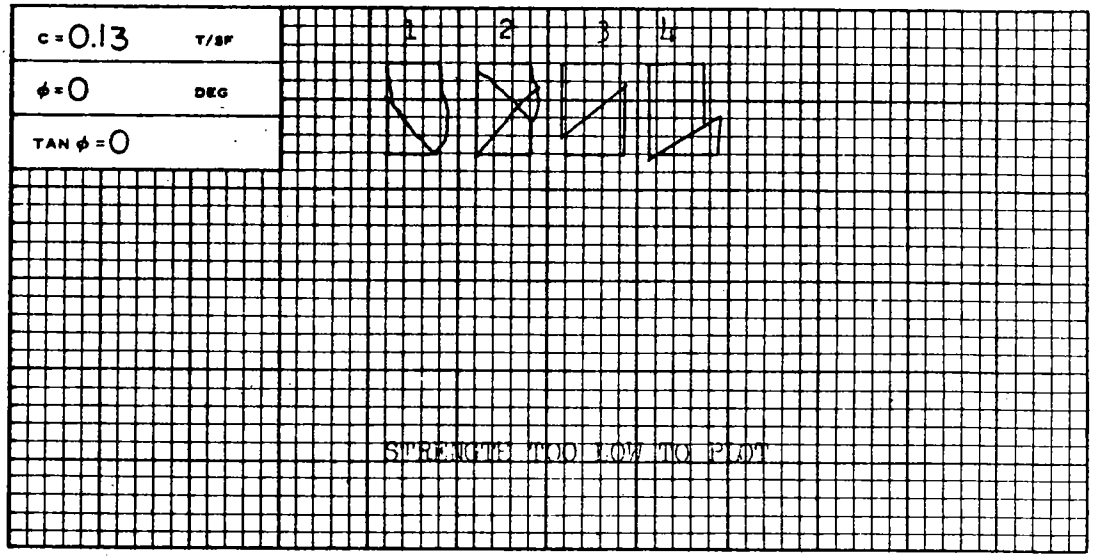
BORING NO. X-13U SAMPLE NO. 4-C

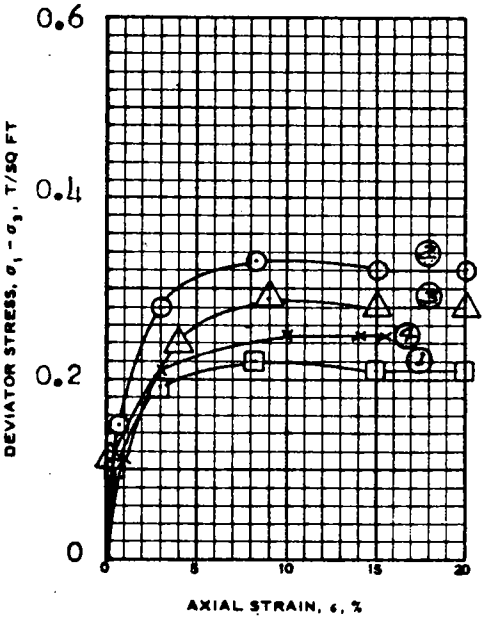
~~DEPTH~~/ELEV - 38.9 MSL

LABORATORY USAEWES DATE 12 Nov., 1971

JAL TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3	4
INITIAL	WATER CONTENT, %	w_o	59.2	53.3	55.2	69.6
	DRY DENSITY LB/ CU FT	γ_{d_o}	63.7	67.0	66.8	58.8
	SATURATION, %	S_o	97.8	96.2	99.2	100+
	VOID RATIO	e_o	1.61	1.48	1.48	1.82
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_e				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0	1.5
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.22	0.33	0.29	0.25
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	25	29	26	33
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.39	1.39	1.39	1.38
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH),gray, contains pockets of sand

LL 74	PL 20	PI 50	G_s 2.66	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA. - HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM 1971

BORING NO. X-13-U SAMPLE NO. 7-A

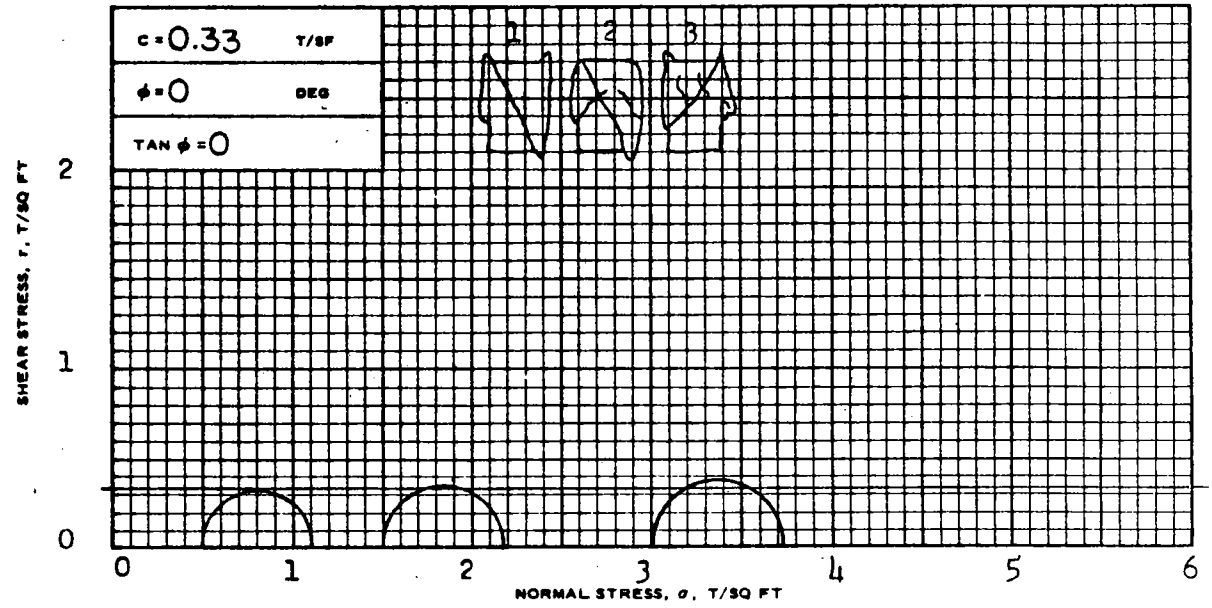
DEPTH/ELEV -49.1 MSL

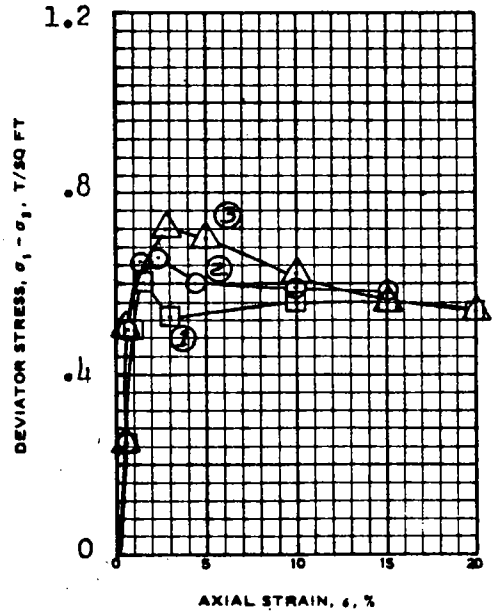
LABORATORY USAEWES DATE 3 November 1971

GDA TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)

PLATE III -16-





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	54.2	48.2	48.2	
	DRY DENSITY LB/CU FT	γ_{d_o}	69.0	73.8	73.7	
	SATURATION, %	S_o	100+	100+	100+	
	VOID RATIO	e_o	1.47	1.31	1.31	
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_b				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	0.60	0.66	0.72	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	12	22	34	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAH(CH), gray, contains fine sand

LL 79	PL 21	PI 58	G_s 2.73	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA.- HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM 1971

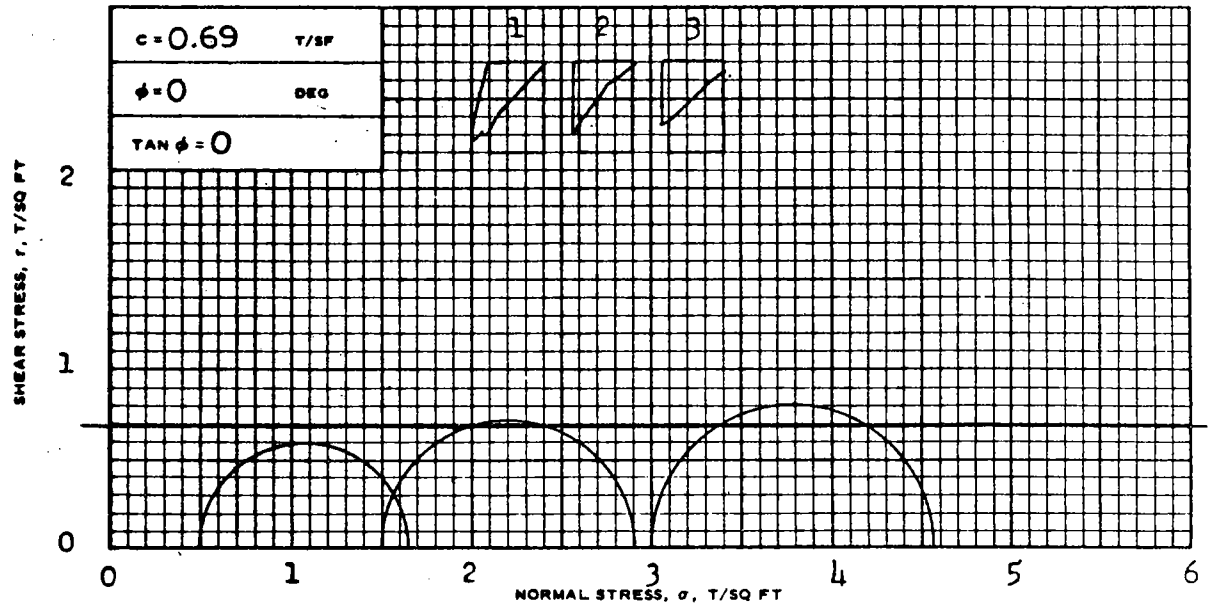
BORING NO. X-13-U SAMPLE NO. 10-C

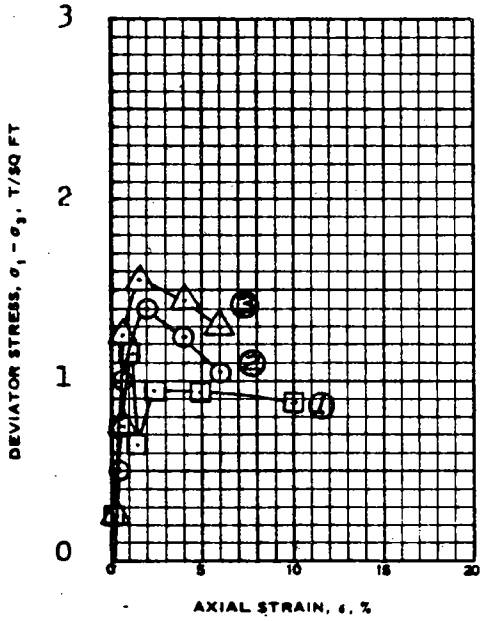
DEPTH/ELEV -62.8 MSL

LABORATORY USAEWES DATE 28 October 1971

FAM TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	47.6	50.8	48.7
	DRY DENSITY LB/CU FT	γ_{d_o}	73.2	70.9	72.3
	SATURATION, %	s_o	97.3	98.7	98.1
	VOID RATIO	e_o	1.34	1.41	1.36
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	s_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.15	1.40	1.56
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	7	46	22
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.40	1.40	1.40
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), gray, contains small amounts of organic matter

LL 87	PL 24	PI 63	Gs 2.74

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA. -HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM 1971

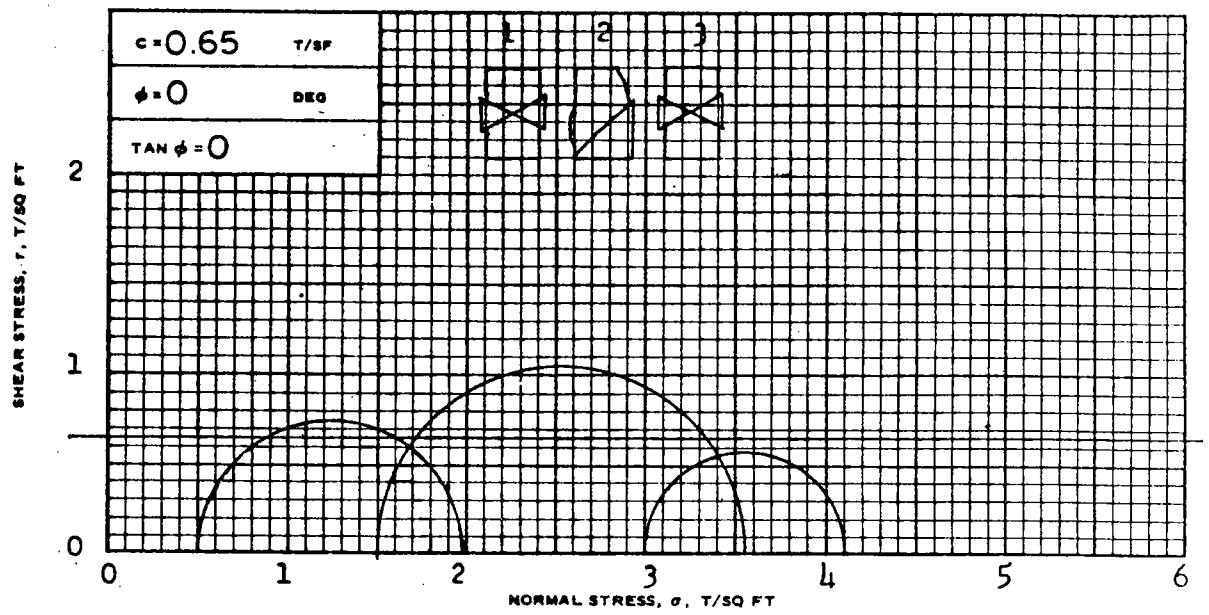
BORING NO. X-13-U SAMPLE NO. 14-C

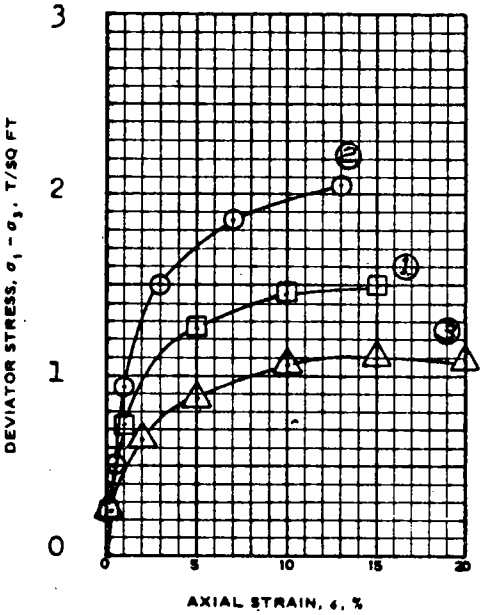
~~DEPTH~~/ELEV -78.9 MSL

LABORATORY USAEWES DATE 2 November 1971

JMS TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	31.8	30.4	31.8	
	DRY DENSITY LB/CU FT	γ_{d_o}	90.2	90.9	90.6	
	SATURATION, %	S_o	98.0	95.3	99.0	
	VOID RATIO	e_o	0.883	0.868	0.874	
BEFORE SHEAR	WATER CONTENT, %	w_c				
	DRY DENSITY LB/CU FT	γ_{d_c}				
	SATURATION, %	S_c				
	VOID RATIO	e_c				
	FINAL BACK PRESSURE, T/SQ FT	u_e				
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.49	2.05	1.10	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	75	42	57	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS LEAN CLAY(CL),gray, with sand, and contains seams of plastic clay

LL	PL	PI	G_s	TYPE OF SPECIMEN	TYPE OF TEST
40	18	22	2.72	UNDISTURBED	Q

REMARKS:

PROJECT LK. PONT., LA.- HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM 1971

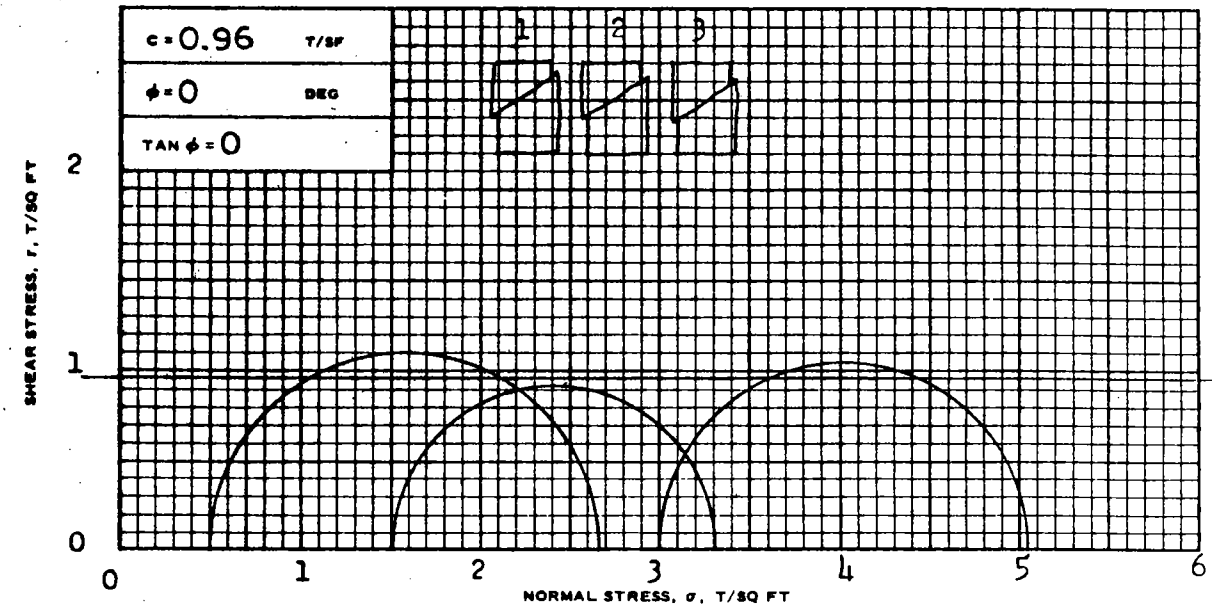
BORING NO. X-13-U SAMPLE NO. 18-D

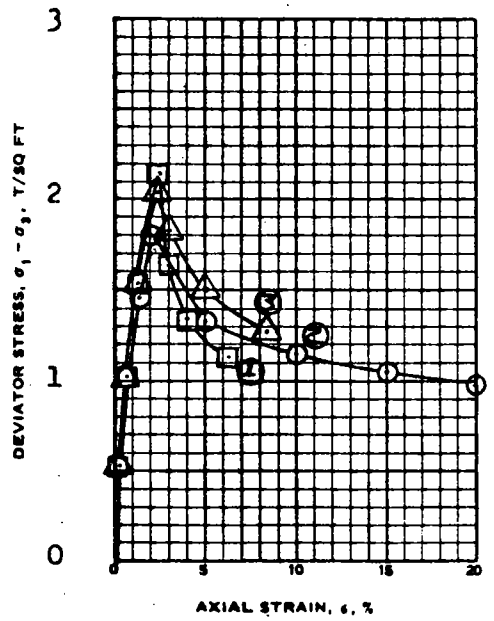
DEPTH/ELEV -95.6 MSL

LABORATORY USAEWES DATE 2 November 1971

GDA TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	45.4	45.4	45.6
	DRY DENSITY LB/CU FT	γ_{d_o}	76.1	76.1	76.1
	SATURATION, %	S_o	99.1	99.1	99.5
	VOID RATIO	e_o	1.26	1.26	1.26
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	S_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	2.15	1.80	2.04
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	32	27	31
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.39	1.39	1.39
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY (CH), gray

LL 80	PL 24	PI 56	G_s 2.75

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA.- HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM, 1971

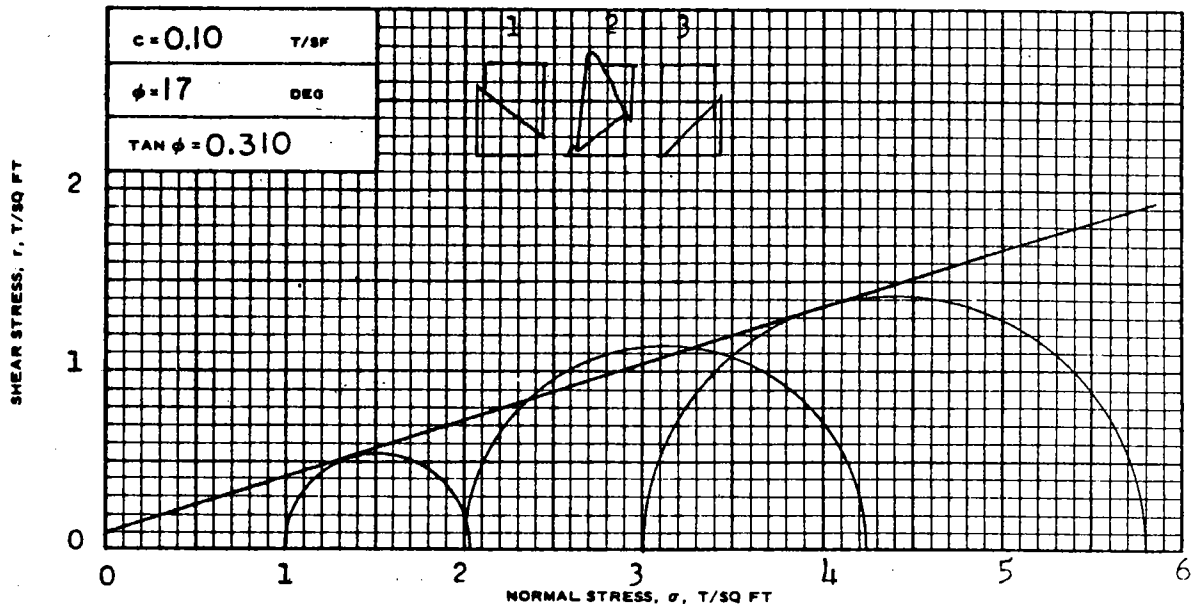
BORING NO. X-13-U SAMPLE NO. 23-B

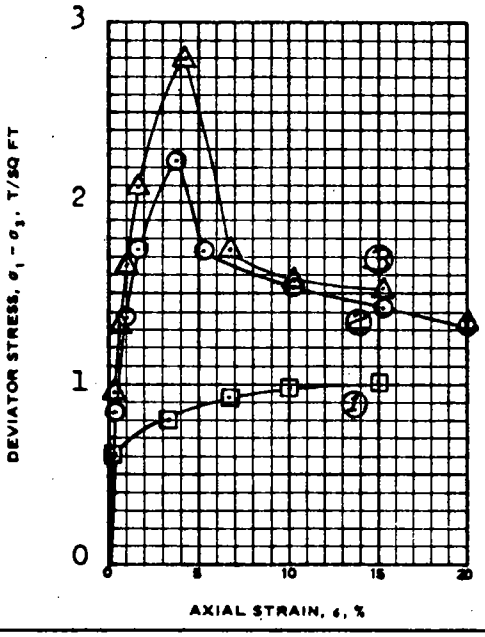
DEPTH/ELEV -113.9 MSL

LABORATORY USAEWES DATE 28 October 1971

GDA TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3	
INITIAL	WATER CONTENT, %	w_o	44.3	43.9	44.2	
	DRY DENSITY LB/ CU FT	γ_{d_o}	77.1	77.4	77.2	
	SATURATION, %	S_o	98.8	98.6	98.8	
	VOID RATIO	e_o	1.24	1.23	1.24	
BEFORE SHEAR	WATER CONTENT, %	w_c	45.7	44.9	44.3	
	DRY DENSITY LB/CU FT	γ_{d_c}	77.6	79.1	80.2	
	SATURATION, %	S_c	100+	100+	100+	
	VOID RATIO	e_c	1.23	1.18	1.16	
	FINAL BACK PRESSURE, T/SQ FT	u_o	6.84	6.84	6.84	
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0	
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	1.01	2.24	2.80	
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	441	115	120	
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$				
INITIAL DIAMETER, IN.		D_o	1.40	1.40	1.40	
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00	

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH),gray, slickensided

LL 71	PL 23	PI 48	G_s 2.77	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST R

REMARKS:

PROJECT LK. PONT., LA.& VIC.-HURR. PROT.(197[illegible])
RIGOLETS CONTROL STR.& CLOSURE DAM;DDM#6

BORING NO. X-13U SAMPLE NO. 30-A

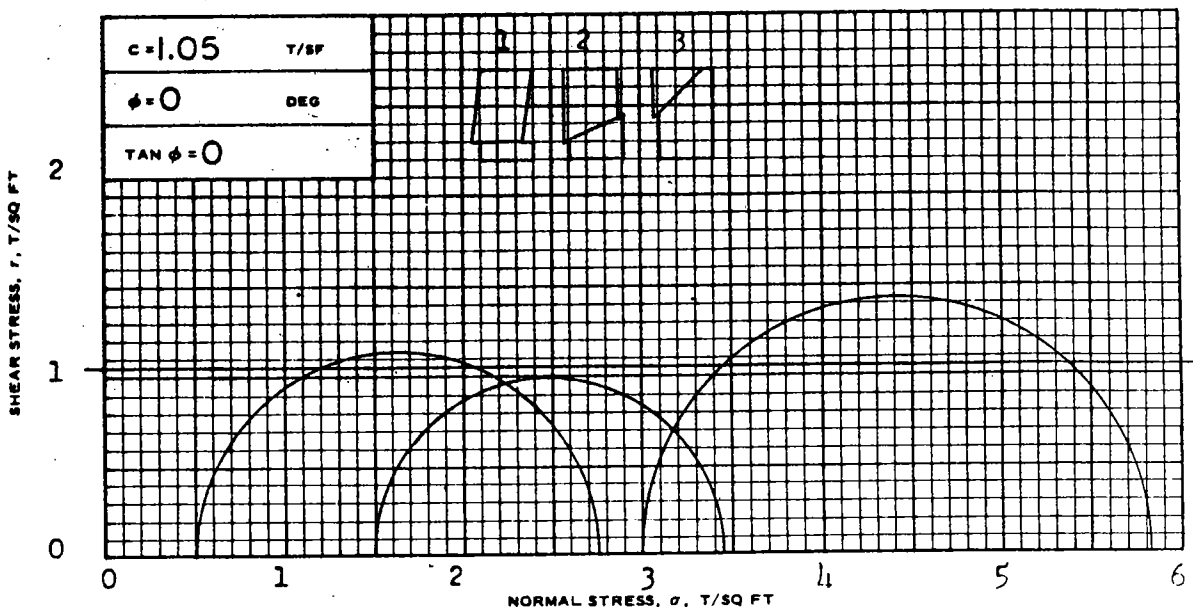
DEPTH/ELEV - 141.0 MSL

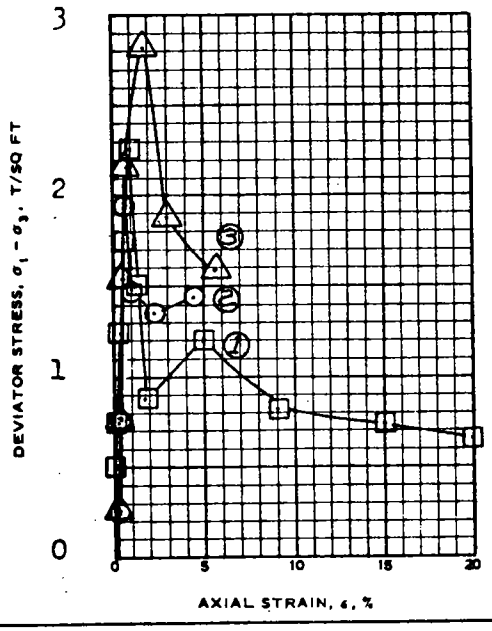
LABORATORY USAEWES DATE 16 November 1971

JAL TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)

PLATE III-166





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	50.3	50.6	50.3
	DRY DENSITY LB/ CU FT	γ_{d_o}	71.6	71.4	71.7
	SATURATION, %	s_o	99.5	99.4	99.5
	VOID RATIO	e_o	1.38	1.39	1.38
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	s_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	2.26	1.94	2.81
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	71	14	29
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.40	1.40	1.40
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY(CH), gray

LL	PL	PI	G_s
85	27	58	2.73

TYPE OF SPECIMEN UNDISTURBED TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA.- HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM 1971

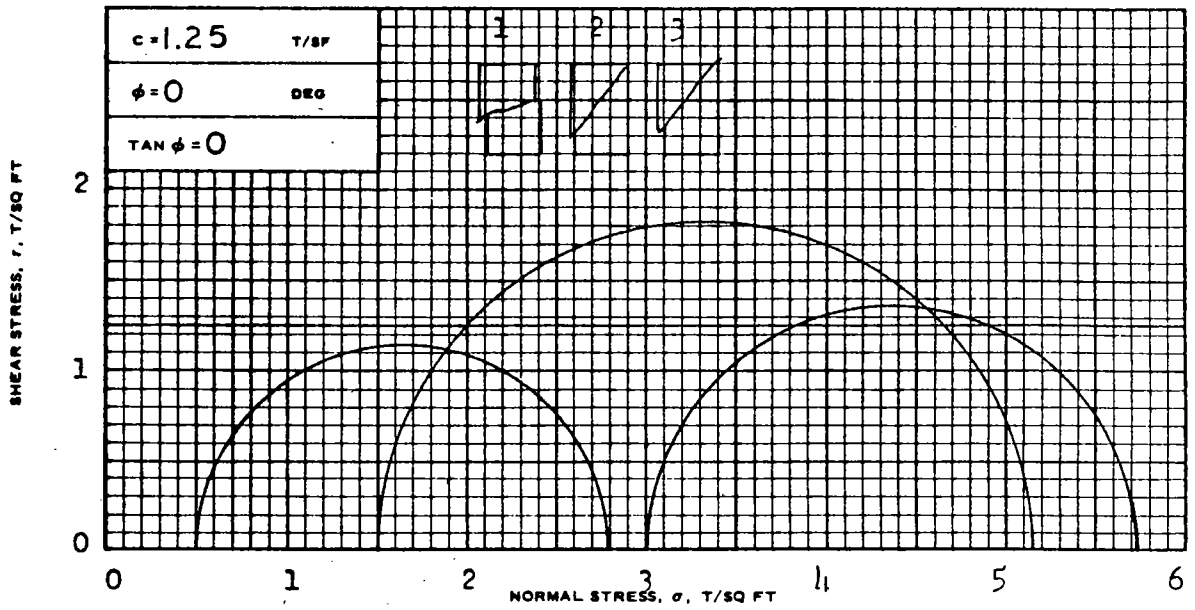
BORING NO. X-13-U SAMPLE NO. 31-C

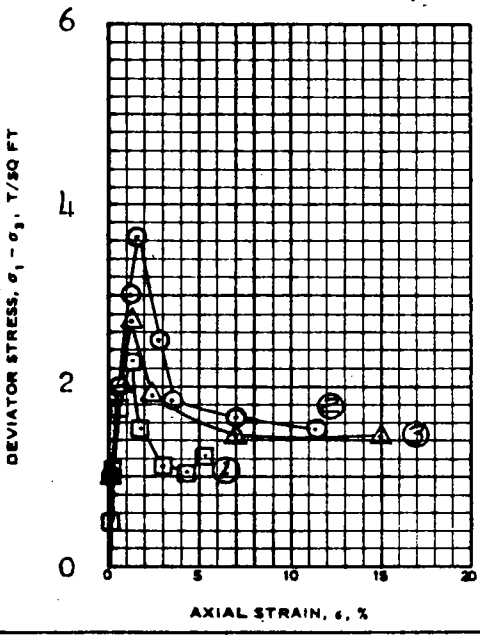
DEPTH/ELEV -146.7 MSL

LABORATORY USAEWES DATE 1 November 1971

JMS TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	42.1	40.9	45.4
	DRY DENSITY LB/CU FT	γ_{d_o}	79.7	81.2	76.3
	SATURATION, %	S_o	100+	100+	99.4
	VOID RATIO	e_o	1.16	1.12	1.26
BEFORE SHEAR	WATER CONTENT, %	w_c			
	DRY DENSITY LB/CU FT	γ_{d_c}			
	SATURATION, %	S_c			
	VOID RATIO	e_c			
	FINAL BACK PRESSURE, T/SQ FT	u_o			
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	0.5	1.5	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	2.28	3.65	2.71
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	16	22	12
ULTIMATE DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{ULT}$			
INITIAL DIAMETER, IN.		D_o	1.39	1.40	1.40
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- Strain TEST

DESCRIPTION OF SPECIMENS PLASTIC CLAY (CH), gray, fissured

LL 76	PL 25	PI 51	G_s 2.76	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST Q

REMARKS:

PROJECT LK. PONT., LA.-HURR. PROT. RIGOLETS CONT. STR. & CLOSURE DAM 1971

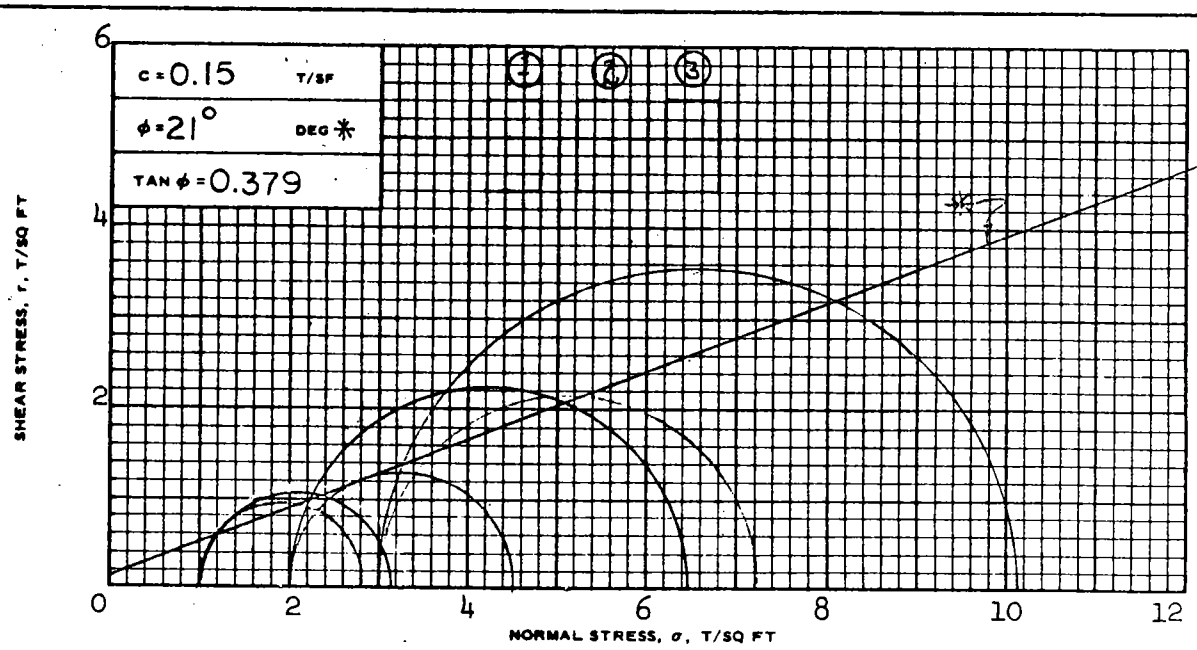
BORING NO. X-13-U SAMPLE NO. 36-C

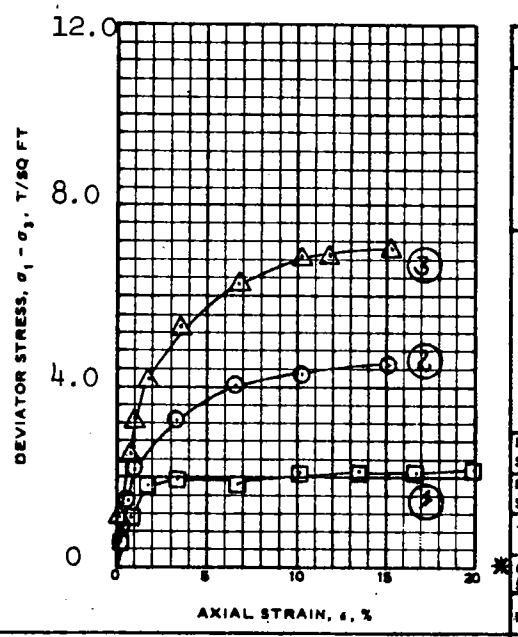
DEPTH/ELEV -166.8 MSL

LABORATORY USAEWES DATE 2 November 1971

GDA TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





SPECIMEN NO.			1	2	3
INITIAL	WATER CONTENT, %	w_o	24.6	24.0	22.5
	DRY DENSITY LB/CU FT	γ_{d_o}	99.4	99.8	104.4
	SATURATION, %	s_o	96.4	95.1	100+
	VOID RATIO	e_o	0.684	0.676	0.602
BEFORE SHEAR	WATER CONTENT, %	w_c	23.3	21.9	21.3
	DRY DENSITY LB/CU FT	γ_{d_c}	102.1	104.0	108.3
	SATURATION, %	s_c	97.7	96.4	100+
	VOID RATIO	e_c	0.639	0.609	0.544
	FINAL BACK PRESSURE, T/SQ FT	u_o	3.96	3.96	3.96
MINOR PRINCIPAL STRESS, T/SQ FT		σ_3	1.0	2.0	3.0
MAXIMUM DEVIATOR STRESS, T/SQ FT		$(\sigma_1 - \sigma_3)_{MAX}$	2.15	4.50	7.15
TIME TO $(\sigma_1 - \sigma_3)_{MAX}$, MIN		t_f	254	285	285
* $(\sigma_1 - \sigma_3)$ at max. pore pressure			1.8	2.5	4.2
INITIAL DIAMETER, IN.		D_o	1.40	1.40	1.40
INITIAL HEIGHT, IN.		H_o	3.00	3.00	3.00

CONTROLLED- strain TEST

DESCRIPTION OF SPECIMENS CLAYEY SAND(SC),gray, contains pockets of plastic clay

LL -	PL -	PI -	G_s 2.68	TYPE OF SPECIMEN UNDISTURBED	TYPE OF TEST R

REMARKS:

PROJECT LK. PONT., LA.-HURR. PROT. RIGOLETS
CONT. STR. & CLOSURE DAM, 1971

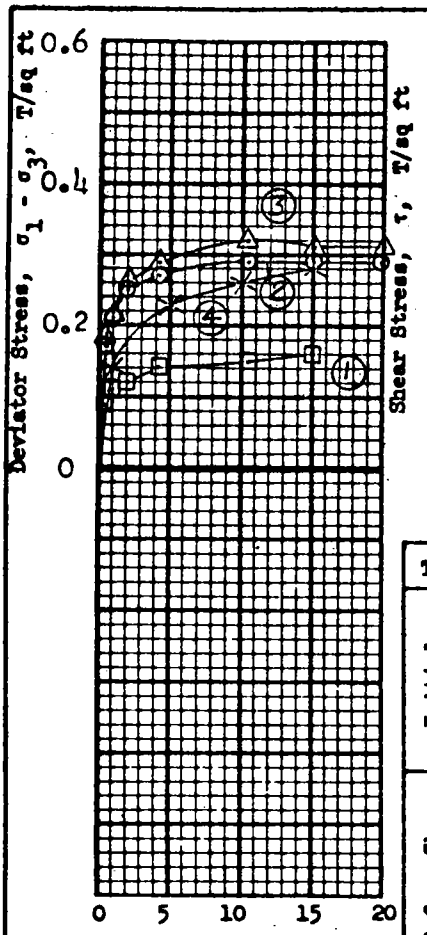
BORING NO. X-13U SAMPLE NO. 39-C

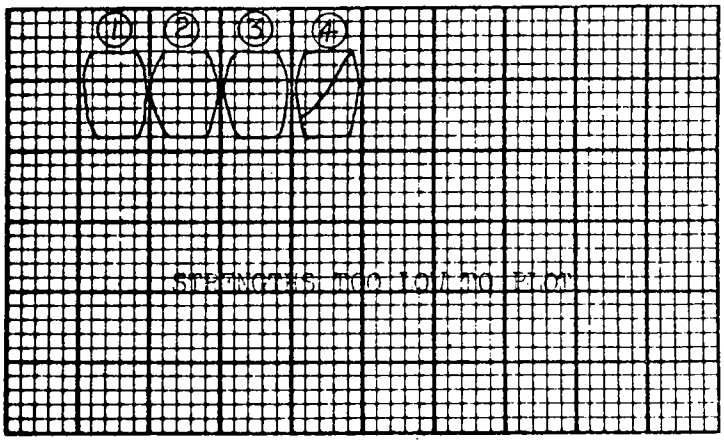
ORFIH/ELEV -178.8 MSL

LABORATORY USAEWES DATE 16 November 1971

JAL TRIAXIAL COMPRESSION TEST REPORT

ENG FORM NO. 2089 REV JUNE 1970 PREVIOUS EDITION IS OBSOLETE TRANSLUCENT (EM 1110-2-1906)





Test No.			1	2	3	4
Initial	Water content	w_o	64.5 %	52.0 %	51.0 %	51.6%
	Void ratio	e_o	1.75	1.42	1.41	1.42
	Saturation	S_o	100+ %	100+%	99.1 %	99.6%
	Dry density, lb/cu ft	γ_d	62.1	70.8	71.0	70.6
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	0.5
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.16	0.29	0.32	0.28
Time to failure, min		t_f	96	67	67	31
Rate of strain, percent/min			0.155	0.155	0.155	0.488
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.40	1.40	1.41	1.41
Initial height, in.		H_o	3.00	3.00	3.00	3.00

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.15 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH),gray, contains root fragments up to 1/4" in*

LL 82 | PL 21 | PI 61 | G_s 2.74

Remarks *diameter

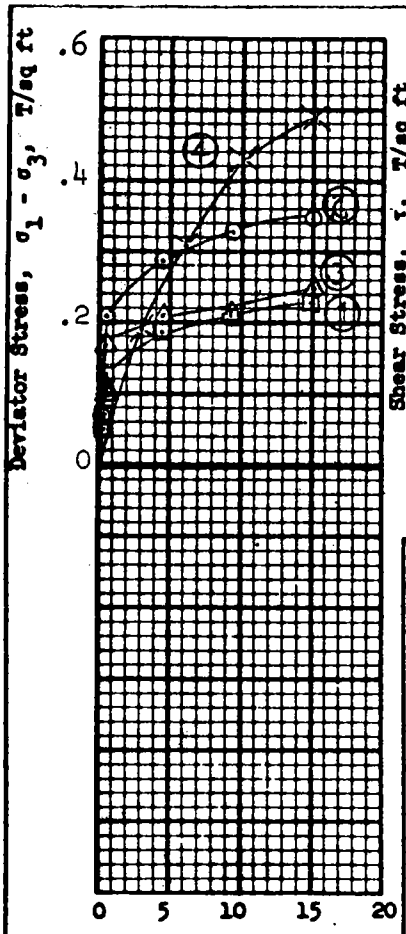
Project LK.PONT.LA.,& VIC.-HURR.PROT. - RIGOLETS CONTROL STRUCT. & CLOSURE DAM

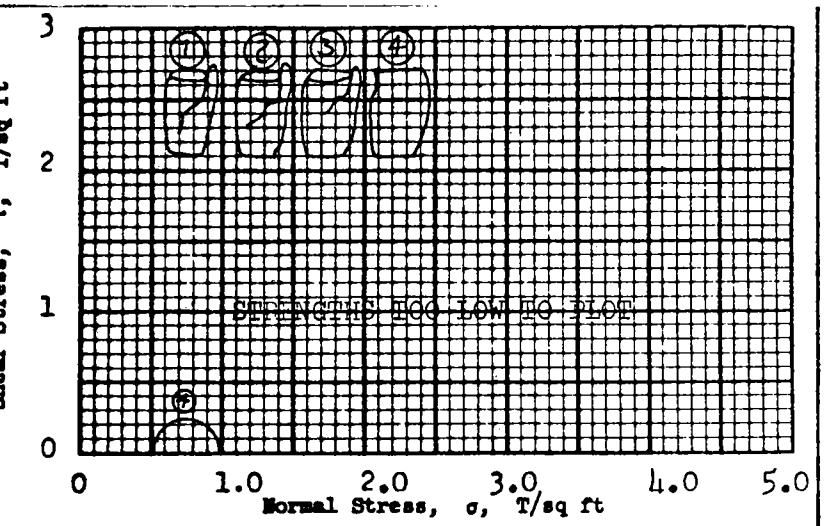
Area

Boring No. X 14 - U | Sample No. 1-C

~~Depth~~ El - 2.8 MSL | Date 15 June 1971

TES TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	4
Initial	Water content	w_o	48.9 %	46.2 %	50.4 %	34.3%
	Void ratio	e_o	1.27	1.23	1.23	0.938
	Saturation	S_o	100+ %	100+ %	100+ %	99.5%
	Dry density, lb/cu ft	γ_d	74.5	76.2	72.8	87.6
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	0.5
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.22	0.34	0.25	0.49
Time to failure, min		t_f	109	109	109	31
Rate of strain, percent/min			0.138	0.138	0.138	0.480
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.38	1.39	1.38	1.40
Initial height, in.		H_o	3.00	3.00	3.00	3.00

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.13 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH),gray, contains 1/8" in diameter concretions

LL 56 | PL 20 | PI 36 | | G_s 2.72

Remarks _____

Project LK. PONT.LA.&VIC.-HURR. PROT.-

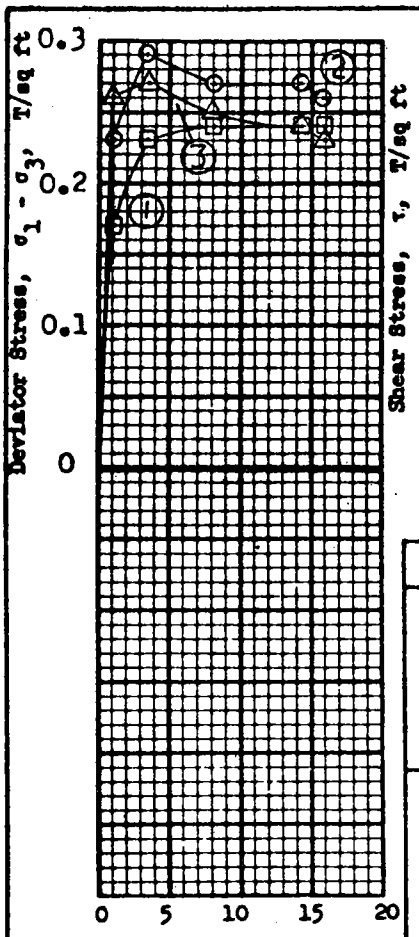
RIGOLETS CONTROL STR.& CLOSURE DAM, DDM NO.6

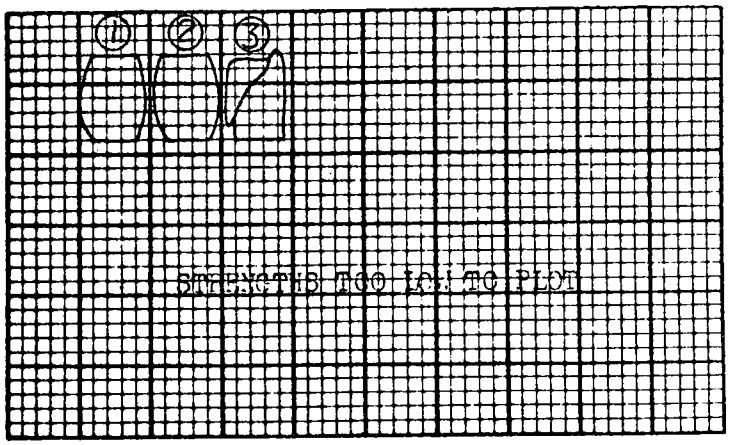
Area 1971

Boring No. X14-U | Sample No. 2-D

Depth El -7.6 MSL | Date 17 June 1971

TES TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	
Initial	Water content	w_o	37.5 %	35.5 %	39.8 %	%
	Void ratio	e_o	0.994	0.948	1.05	
	Saturation	S_o	100+ %	100+ %	100+ %	%
	Dry density, lb/cu ft	γ_d	84.2	86.2	81.9	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.24	0.29	0.27	
Time to failure, min		t_f	56	24	24	
Rate of strain, percent/min			0.142	0.142	0.142	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.39	1.39	1.39	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.13 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification SANDY CLAY(CL),gray

LL 42 | PL 14 | PI 28 | | G_s 2.69

Remarks _____

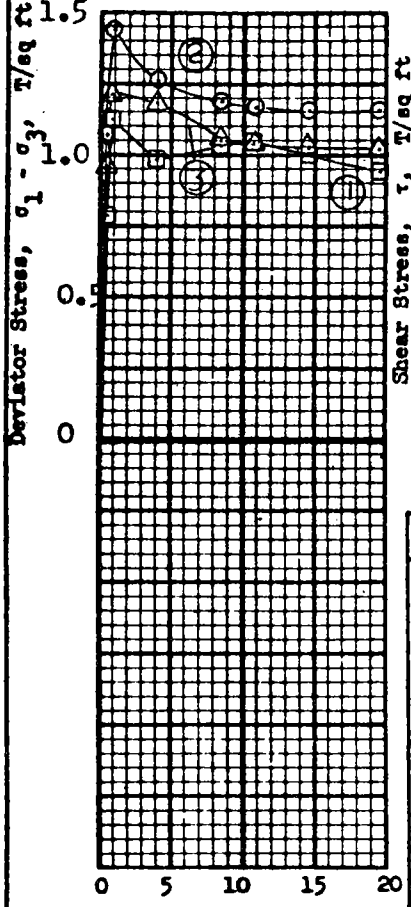
Project LK.PONT.LA.,& VIC.,- HURR.PROT.-
RIGOLETS CONTROL STRUCT. & CLOSURE DAM

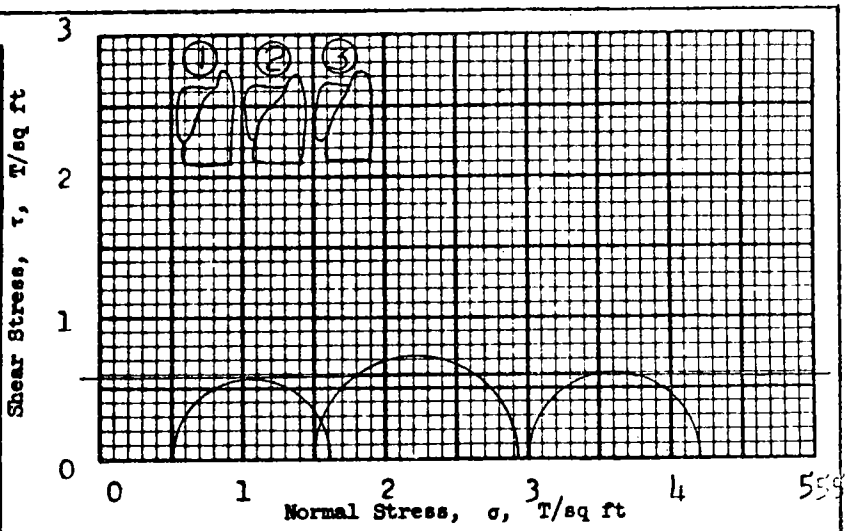
Area

Boring No. X 14 - U | Sample No. 4-C

~~Depth~~ El - 15.1 MSL | Date 17 June 1971

TES TRIAXIAL COMPRESSION TEST REPORT





Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.58 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Test No.			1	2	3	
Initial	Water content	w_o	40.3 %	38.3 %	39.8 %	%
	Void ratio	e_o	1.11	1.05	1.09	
	Saturation	S_o	98.4 %	98.8 %	99.0 %	%
	Dry density, lb/cu ft	γ_d	80.3	82.5	81.1	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.12	1.44	1.21	
Time to failure, min		t_f	0.69	0.69	0.69	
Rate of strain, percent/min			0.130	0.130	0.130	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.40	1.40	1.40	
Initial height, in.		H_o	3.00	3.00	3.00	

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH), gray, contains pockets of fine sand up to*

LL 56 | PL 17 | PI 39 | | G_s 2.71

Remarks *1/2" in diameter

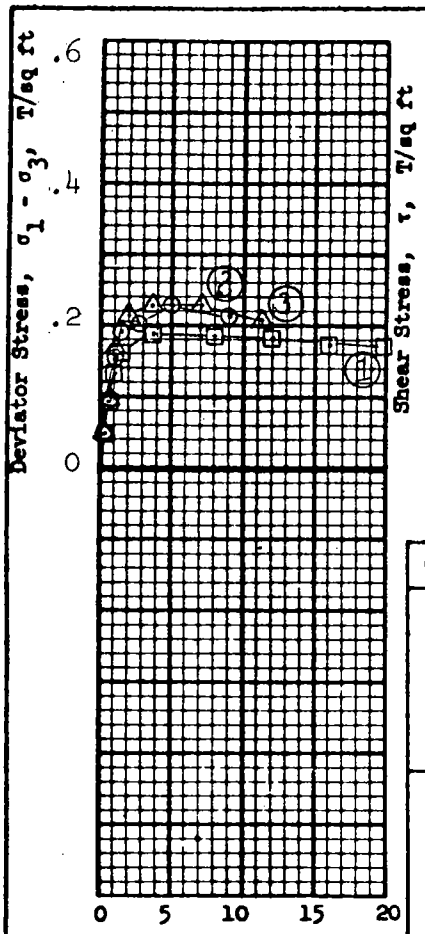
Project LK.PONT.LA.,&VIC.-HURR.PROT.-
RIGOLETS CONTROL STRUCT. & CLOSURE DAM

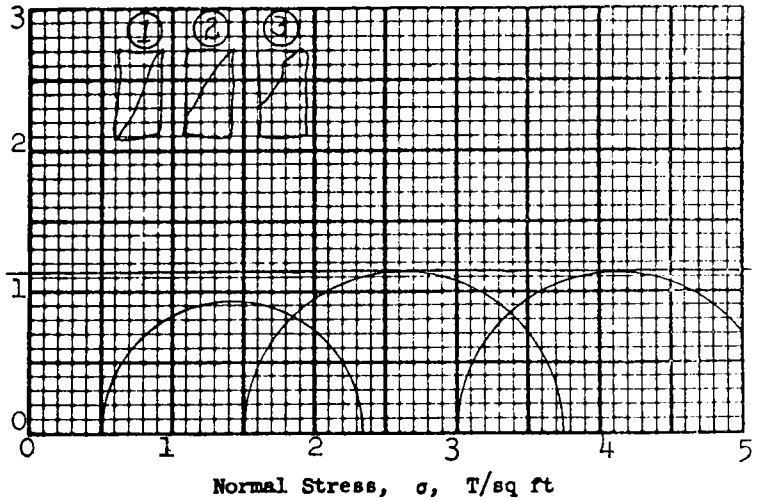
Area

Boring No. X 14- U | Sample No. 15-D

Depth El -60.1 MSL | Date 18 June 1971

TES TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	
Initial	Water content	w_o	28.8 %	26.8 %	27.9 %	%
	Void ratio	e_o	0.822	0.759	0.800	
	Saturation	S_o	96.4 %	97.1%	95.9 %	%
	Dry density, lb/cu ft	γ_d	94.2	97.6	95.4	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.85	2.25	2.26	
Time to failure, min		t_f	18	28	24	
Rate of strain, percent/min			0.206	0.176	0.153	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.42	1.42	1.41	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 1.13 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH), gray

LL 55 | PL 18 | PI 37 | | G_s 2.75

Remarks _____

Project LK. PONT.LA.& VIC.-HURR. PROT.-
RIGOLETS CONTROL STR. & CLOSURE DAM, DDM # 6

Area (1971)

Boring No. X14-U | Sample No. 17-D

Depth El -68.0 MSL | Date 18 June 1971

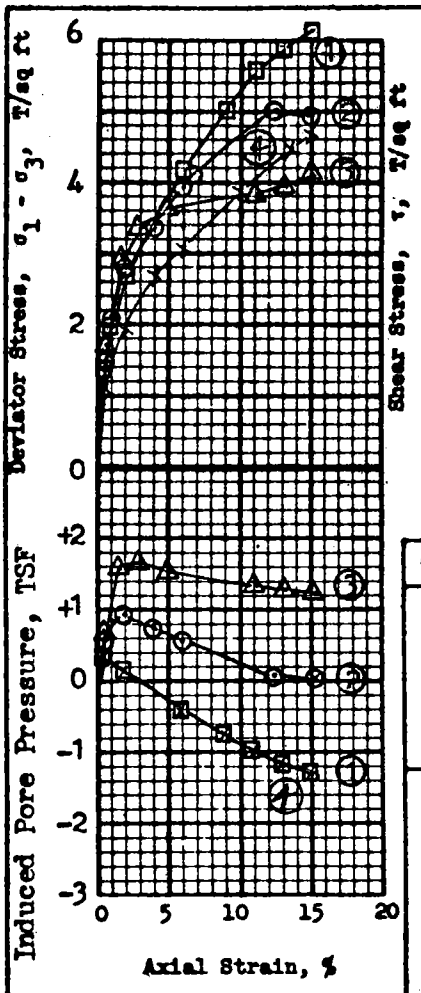
JMS

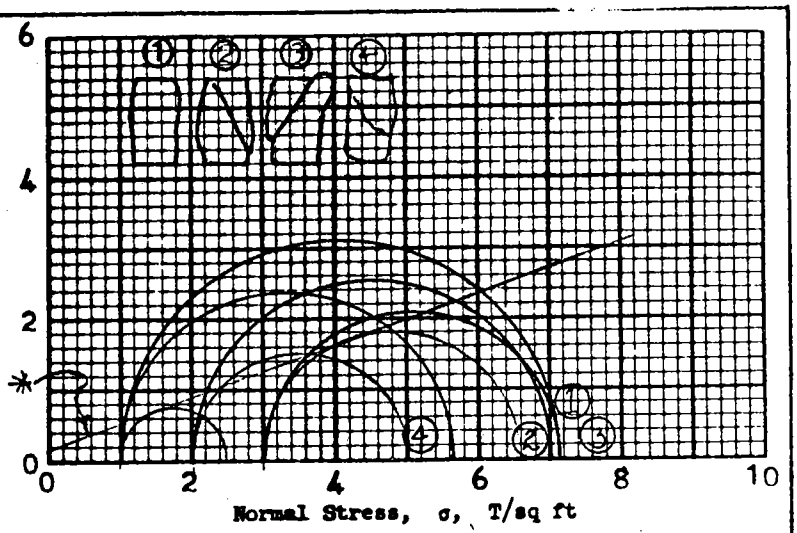
TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT USAEWES SOILS

PLATE III-174





Test No.			1	2	3	4
Initial	Water content	w_o	25.9 %	27.5 %	27.6 %	26.6 %
	Void ratio	e_o	0.716	0.750	0.750	0.740
	Saturation	S_o	97.7 %	99.0 %	99.4 %	97.0 %
	Dry density, lb/cu ft	γ_d	98.2	96.3	96.3	96.9
Before Shear	Water content	w_c	25.8 %	26.6 %	26.6 %	26.4 %
	Void ratio	e_c	0.708	0.722	0.724	0.720
	Saturation	S_c	98.4 %	99.5 %	99.2 %	99.0 %
	Final back pressure, PSI	u_o	70	70	70	75
	Dry Density Lbs/cu.ft.	γ_d	98.7	97.9	97.8	98.0
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	1.0	2.0	3.0	1.0
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	6.14	5.01	4.14	4.66
Time to failure, min		t_f	114	94	114	120
Rate of strain, percent/min			0.132	0.132	0.131	0.120
*$(\sigma_1-\sigma_3)$ at max pore pressure			1.5	3.0	3.6	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.40	1.39	1.39	1.40
Initial height, in.		H_o	3.00	3.00	3.00	3.00

Shear Strength Parameters

* ϕ = 20°

tan ϕ = 0.366

c = 0.15 T/sq ft

Method of saturation BP

☐ Controlled stress

☒ Controlled strain

Type of test R | Type of specimen UNDISTURBED

Classification SANDY SILT(ML),gray, contains 1/8" lenses of plastic clay

LL 25 | PL 22 | PI 3 | | G_s 2.70

Remarks See attached plot for effective values

Portion of sample allowed to drain before trimming

Sheet 1 of 2

Insufficient material for check test.

Project LK. PONT.,LA.& VIC.-HURR. PROT.

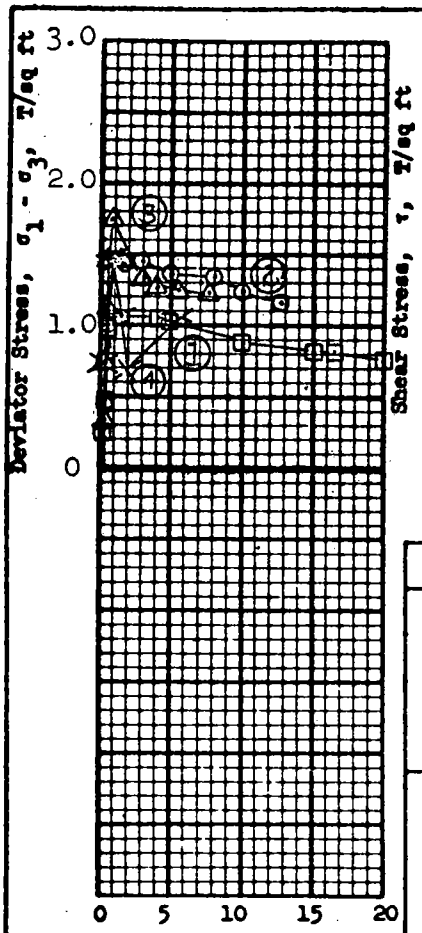
RIGOLETS CONTROL STR.&CLOSURE DAM,DDM#6(1971

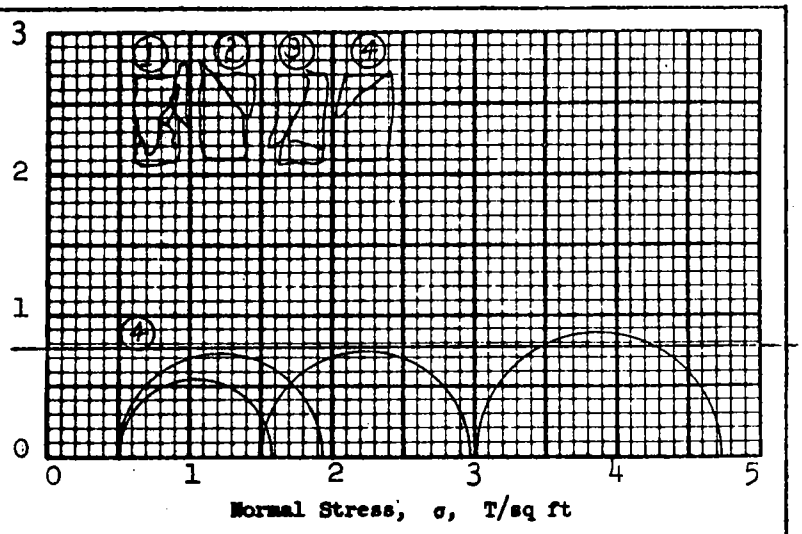
Area

Boring No. X-14-U | Sample No. 18-D

~~Depth~~ El -71.9 MSL | Date 21 June,1971

PJR TRIAXIAL COMPRESSION TEST REPORT





Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.78 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Test No.			1	2	3	4
Initial	Water content	w_o	54.3 %	49.4 %	54.2%	50.3%
	Void ratio	e_o	1.52	1.38	1.51	1.40
	Saturation	S_o	98.2 %	98.4 %	98.7 %	98.8%
	Dry density, lb/cu ft	γ_d	68.2	72.2	68.4	71.4
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	0.5
Max deviator stress, T/sq ft	$(\sigma_1-\sigma_3)_{max}$		1.07	1.48	1.74	1.44
Time to failure, min		t_f	71	12	27	8
Rate of strain, percent/min			0.210	0.081	0.030	0.100
Ult deviator stress, T/sq ft	$(\sigma_1-\sigma_3)_{ult}$					
Initial diameter, in.		D_o	1.40	1.41	1.40	1.41
Initial height, in.		H_o	3.00	3.00	3.00	3.00

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH), gray

LL 99 | PL 29 | PI 70 | | G_s 2.75

Remarks _____

Project LK. PONT. LA. & VIC.-HURR. PROT.-
RIGOLETS CONTROL STR. & CLOSURE DAM, DDM #6

Area

Boring No. X 14-U | Sample No. 21-C

Depth El -83.0 MSL | Date 21 June 1971

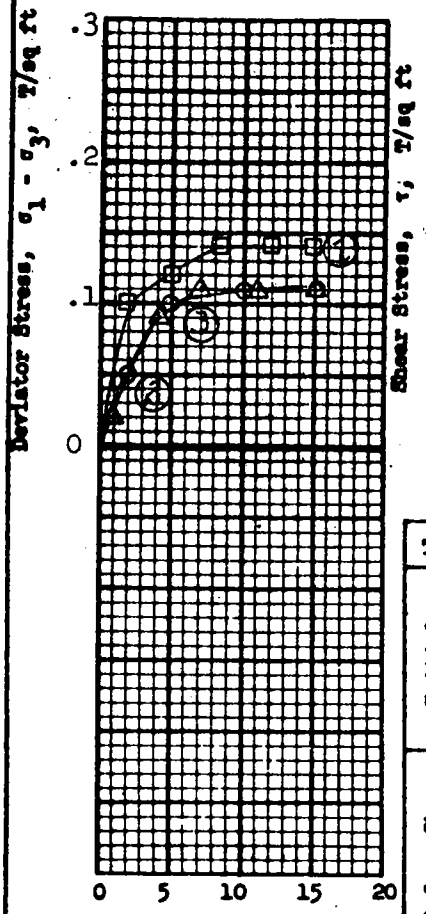
FAM

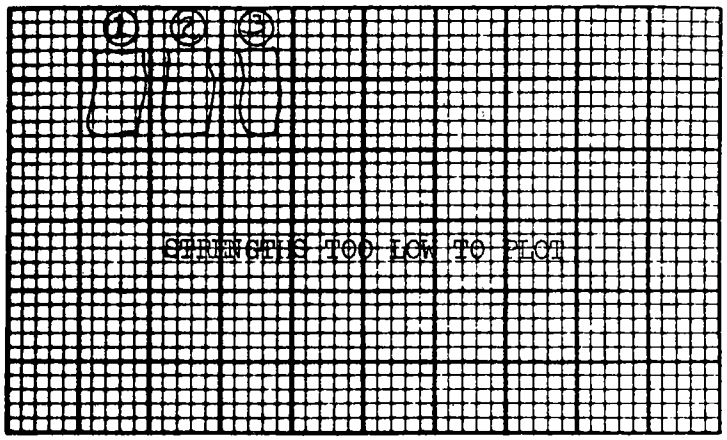
TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT

USAEWES SOI





Test No.			1	2	3	
Initial	Water content	w_o	308.7%	327.0%	320.5%	%
	Void ratio	e_o	7.14	7.64	7.34	
	Saturation	S_o	98.1 %	97.2 %	99.1 %	%
	Dry density, lb/cu ft	γ_d	17.4	16.4	17.0	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.14	0.11	0.11	
Time to failure, min		t_f	17	35	8	
Rate of strain, percent/min			7.14	7.64	7.34	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.40	1.40	1.41	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.06 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification ORGANIC CLAY(OH), dark brown

LL 315 | PL 137 | PI 178 | G_s 2.27

Remarks _____

Project LK.PONT.LA.&VIC.-HURR. PROT.-
RIGOLETS CONTROL STRUCTURE & CLOSURE DAM,

Area DDM NO.6

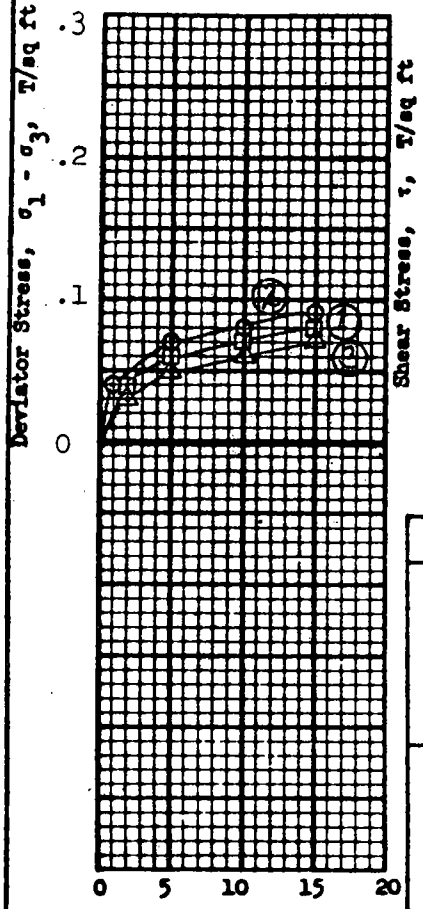
Boring No. X-15-U | Sample No. 2-B

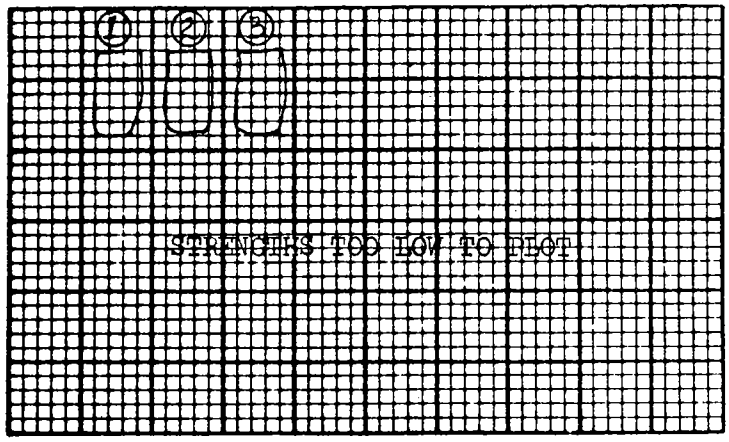
Depth El -2.5 MSL | Date 21 July 1971

JMS TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT USAEWES SOILS PLATE III - 177





Test No.			1	2	3	
Initial	Water content	w_o	60.1 %	55.2 %	58.6 %	%
	Void ratio	e_o	1.67	1.49	1.64	
	Saturation	S_o	97.2 %	100 %	96.5 %	%
	Dry density, lb/cu ft	γ_d	63.1	67.6	63.9	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.08	0.09	0.07	
Time to failure, min		t_f	74	70	42	
Rate of strain, percent/min			0.203	0.214	0.360	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.41	1.41	1.41	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.04 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH), gray

LL 55 | PL 19 | PI 36 | | G_s 2.70

Remarks _____

Project LK. PONT., LA. & VIC. -HURR. PROT.- RIGOLETS CONTROL STRUCTURE & CLOSURE DAM,

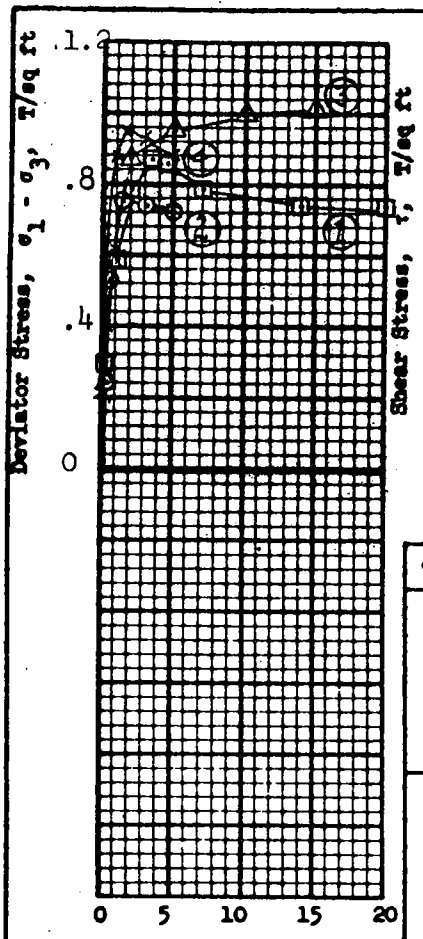
Area DDM NO. 6

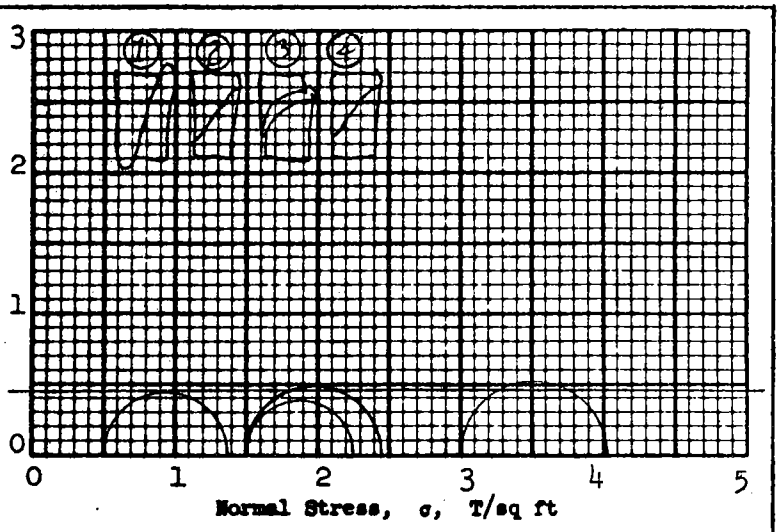
Boring No. X 15-U | Sample No. 3-B

Depth El -6.0 MSL | Date 21 July 1971

JMS

TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	4
Initial	Water content	w_o	31.0 %	43.6 %	36.0 %	38.8 %
	Void ratio	e_o	0.989	1.20	1.03	1.14
	Saturation	S_o	86.2 %	99.9 %	96.1 %	93.6 %
	Dry density, lb/cu ft	γ_d	86.3	77.9	84.5	80.3
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	1.5
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	0.87	0.75	1.02	0.95
Time to failure, min		t_f	17	10	197	18
Rate of strain, percent/min			0.208	0.139	0.076	0.091
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.41	1.42	1.42	1.41
Initial height, in.		H_o	3.00	3.00	3.00	3.00

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.45 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH), bluish gray, contains pockets of fine sand

LL 86 | PL 23 | PI 63 | G_s 2.75

Remarks _____

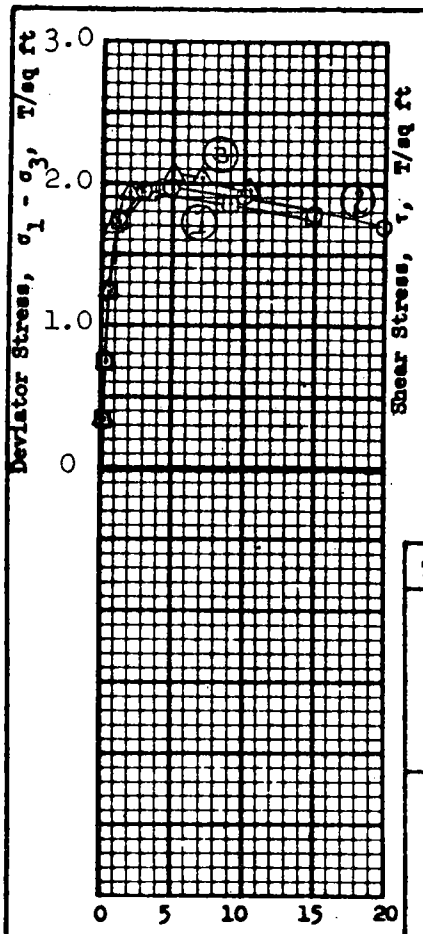
Project LK. PONT., LA. & VIC.-HURR. PROT.-
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM,

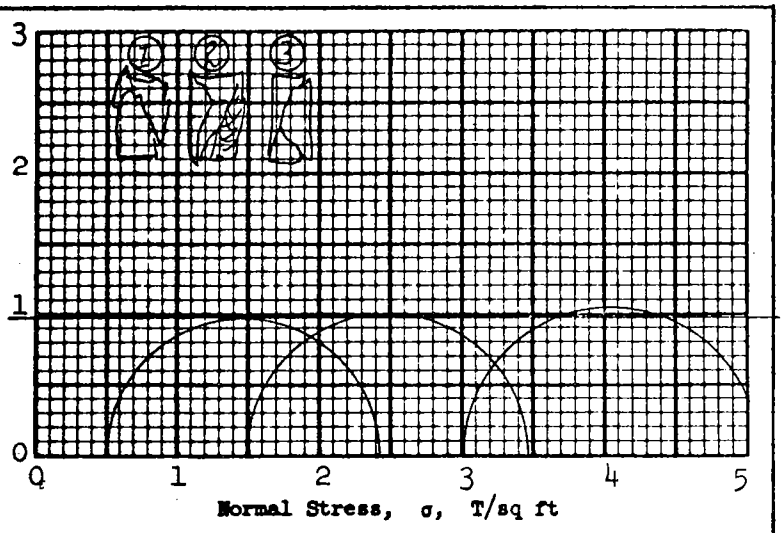
Area DDM NO. 6

Boring No. X 15-U | Sample No. 6-B

Depth El -18.3 MSL | Date 22 July 1971

JMS TRIAXIAL COMPRESSION TEST REPORT





Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.98 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

			Test No.	1	2	3	
Initial	Water content	w_o	29.0 %	33.4 %	31.9 %	%
	Void ratio	e_o	0.823	0.934	0.902	
	Saturation	S_o	97.2 %	98.7 %	97.6 %	%
	Dry density, lb/cu ft	γ_d	94.5	89.1	90.6	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.93	1.98	2.06	
Time to failure, min		t_f	12	24	27	
Rate of strain, percent/min			0.283	0.205	0.185	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.41	1.40	1.41	
Initial height, in.		H_o	3.00	3.00	3.00	

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH), gray, contains scattered concretions

LL 56 | PL 20 | PI 36 | | G_s 2.76

Remarks _____

Project LK. PONT., LA.& VIC.-HURR. PROT.-
RIGOLETS CONTROL STRUCTURE & CLOSURE DAM,

Area DDM NO. 6

Boring No. X 15-U | Sample No. 19-D

Depth El -71.9 MSL | Date 23 July 1971

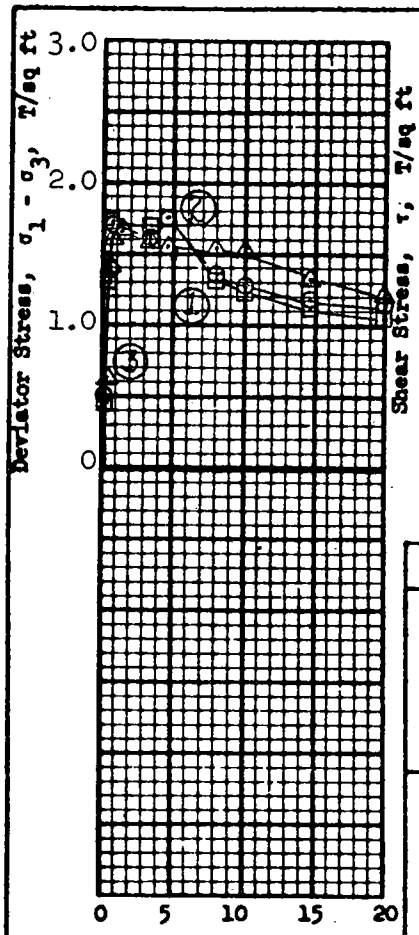
FAM TRIAXIAL COMPRESSION TEST REPORT

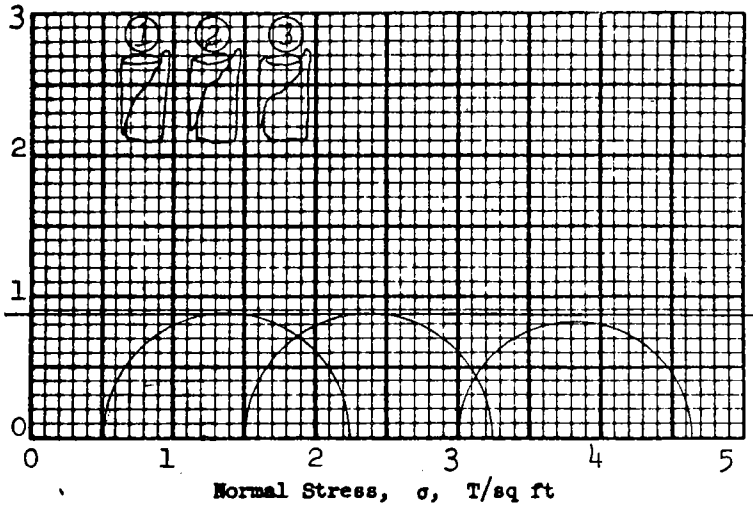
ENG FORM 2089 1 JUN 65 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT

USAEWES SOILS

PLATE III-180





Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 0.875 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Test No.			1	2	3	
Initial	Water content	w_o	47.2 %	47.4 %	48.8 %	%
	Void ratio	e_o	1.30	1.32	1.35	
	Saturation	S_o	99.5 %	98.4 %	99.0 %	%
	Dry density, lb/cu ft	γ_d	74.4	73.8	72.8	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	1.75	1.75	1.64	
Time to failure, min		t_f	46	46	13	
Rate of strain, percent/min			0.101	0.101	0.101	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.39	1.39	1.39	
Initial height, in.		H_o	3.00	3.00	3.00	

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH), gray, contains seams and pockets of silt

LL 93 | PL 24 | PI 69 | | G_s 2.74

Remarks _____

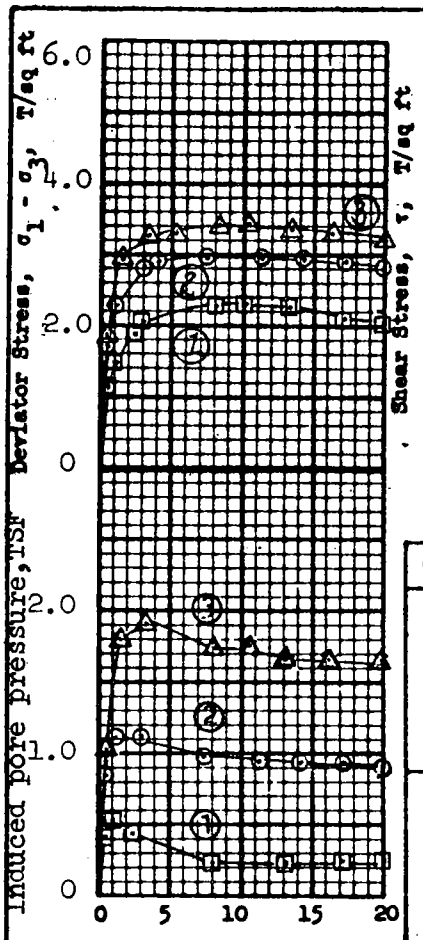
Project LK. PONT., LA. & VIC.-HURR. PROT.-
RIGOLETS CONTROL STRUCTURE & CLOSURE DAM,

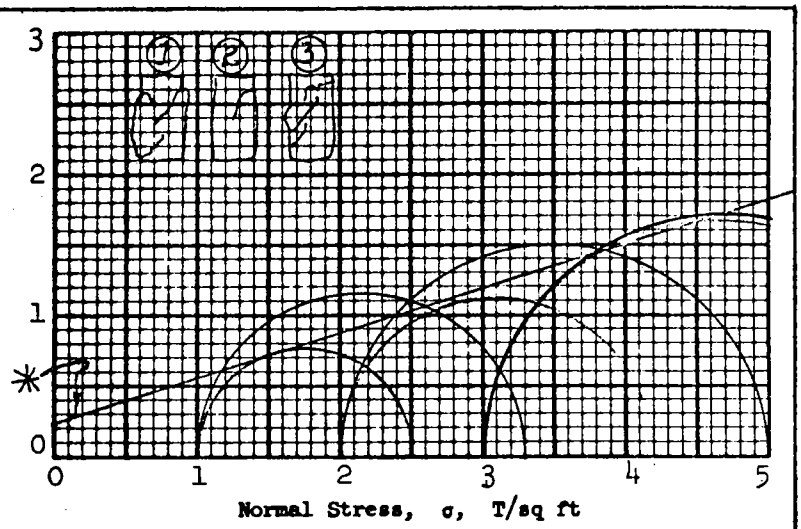
Area DDM NO.6, (1971)

Boring No. X-15-U | Sample No. 22-D

Depth El -84.0 MSL | Date 22 July 1971

TES TRIAXIAL COMPRESSION TEST REPORT





Test No.			1	2	3	
Initial	Water content	w_o	29.6 %	29.4 %	29.2 %	%
	Void ratio	e_o	0.838	0.814	0.801	
	Saturation	S_o	95.4 %	97.5 %	98.4 %	%
	Dry density, lb/cu ft	γ_d	91.7	92.9	93.6	
Before Shear	Water content	w_c	30.3 %	29.6 %	29.1 %	%
	Void ratio	e_c	0.797	0.750	0.718	
	Saturation	S_c	100+ %	100+ %	100+ %	%
	Final back pressure, T/sq ft	u_o	70	70	70	
	Dry Density Lbs./cu.ft.	γ_d	93.8 %	96.3 %	98.1 %	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	1.0	2.0	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	2.30	2.99	3.41	
Time to failure, min		t_f	74	55	60	
Rate of strain, percent/min			0.135	0.135	0.135	
* $(\sigma_1 - \sigma_3)$ at max. pore pressure			1.5	2.2	3.3	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.40	1.40	1.39	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 18°

tan ϕ = 0.32

c = 0.22 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test R | Type of specimen UNDISTURBED

Classification SILTY CLAY(CL),gray, contains trace of fine sand

LL 36 | PL 17 | PI 19 | | G_s 2.70

Remarks See attached plot for effective values.

Project LK. PONT.,LA.&VIC.-HURR. PROT.- RIGOLETS CONTROL STRUCTURE & CLOSURE DAM,

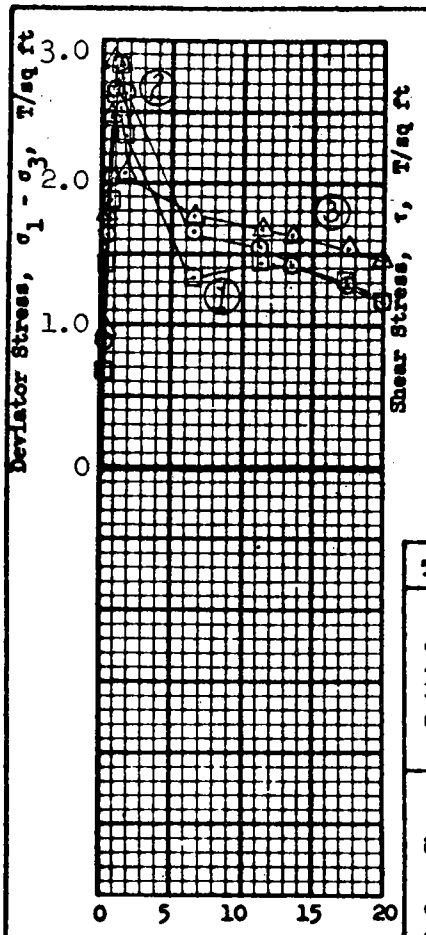
Area DDM NO. 6

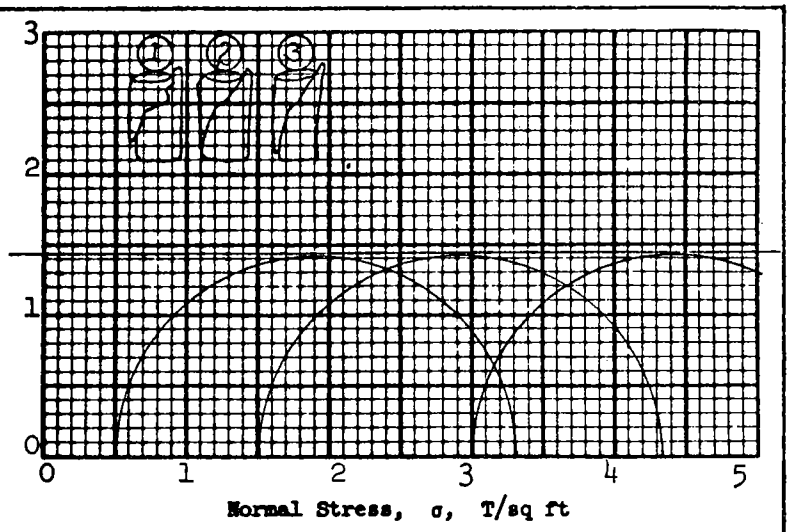
Boring No. X 15-U | Sample No. 25-B

Depth El -94.1 MSL | Date 20 July 1971

PJR & JAL TRIAXIAL COMPRESSION TEST REPORT

Sheet 1 of 2





Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 142 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Test No.			1	2	3	
Initial	Water content	w_o	42.2 %	42.6 %	41.9 %	%
	Void ratio	e_o	1.15	1.16	1.14	
	Saturation	S_o	100+ %	100+ %	100+ %	%
	Dry density, lb/cu ft	γ_d	79.2	78.8	79.5	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft	$(\sigma_1-\sigma_3)_{max}$		2.81	2.85	2.86	
Time to failure, min		t_f	13	14	11	
Rate of strain, percent/min			0.094	0.094	0.094	
Ult deviator stress, T/sq ft	$(\sigma_1-\sigma_3)_{ult}$					
Initial diameter, in.		D_o	1.39	1.39	1.39	
Initial height, in.		H_o	3.00	3.00	3.00	

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH), gray

LL 74 | PL 25 | PI 49 | | G_s 2.73

Remarks _____

Project LK. PONT., LA. & VIC.-HURR. PROT.-
RIGOLETS CONTROL STRUCTURE & CLOSURE DAM,

Area DDM NO. 6

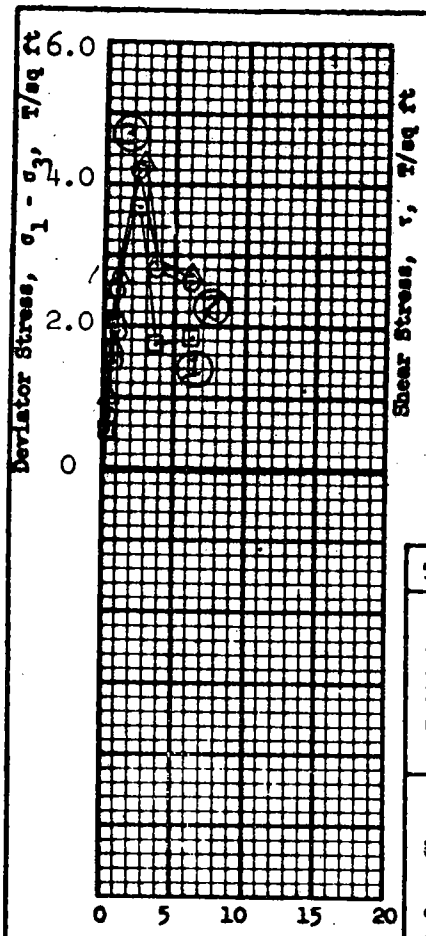
Boring No. X 15-U | Sample No. 34-B

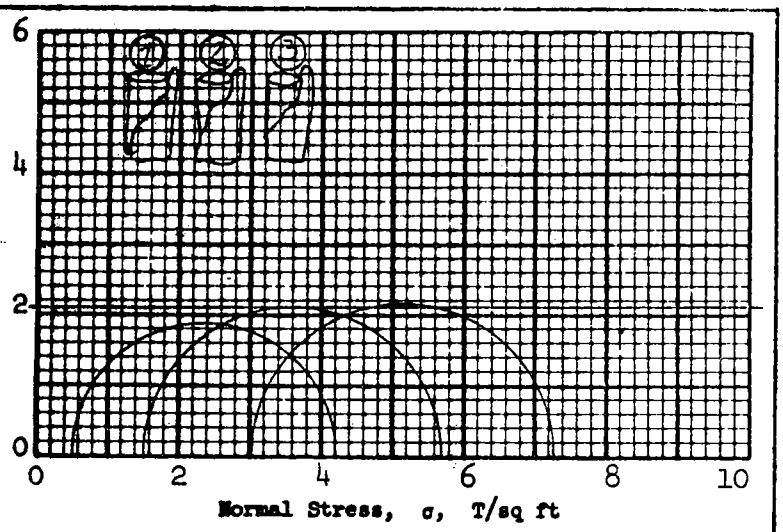
Depth El -130.1 MSL | Date 22 July 1971

TES TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT USAEWES SOILS PLATE III-183





Test No.			1	2	3	
Initial	Water content	w_o	60.7 %	62.2 %	60.6 %	%
	Void ratio	e_o	1.63	1.67	1.62	
	Saturation	S_o	97.6 %	97.6 %	98.0 %	%
	Dry density, lb/cu ft	γ_d	62.1	61.3	62.5	
Before Shear	Water content	w_c	%	%	%	%
	Void ratio	e_c				
	Saturation	S_c	%	%	%	%
	Final back pressure, T/sq ft	u_o				
Final	Water content	w_f	%	%	%	%
	Void ratio	e_f				
Minor principal stress, T/sq ft		σ_3	0.5	1.5	3.0	
Max deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{max}$	3.70	4.20	4.27	
Time to failure, min		t_f	29	28	31	
Rate of strain, percent/min			0.087	0.087	0.087	
Ult deviator stress, T/sq ft		$(\sigma_1-\sigma_3)_{ult}$				
Initial diameter, in.		D_o	1.39	1.39	1.39	
Initial height, in.		H_o	3.00	3.00	3.00	

Shear Strength Parameters

ϕ = 0°

tan ϕ = 0

c = 2.12 T/sq ft

Method of saturation _____

☐ Controlled stress

☒ Controlled strain

Type of test Q | Type of specimen UNDISTURBED

Classification PLASTIC CLAY(CH), dark gray, contains finely divided organic*

LL 114 | PL 37 | PI 77 | G_s 2.62

Remarks *matter

Project LK. PONT., LA. & VIC.-HURR. PROT.-
RIGOLETS CONTROL STRUCTURE & CLOSURE DAM,

Area DDM NO. 6

Boring No. X-15-U | Sample No. 45-B

Depth El -174.2 MSL | Date 22 July 1971

TES TRIAXIAL COMPRESSION TEST REPORT

ENG FORM 1 JUN 63 2089 (EM 1110-2-1902) PREVIOUS EDITIONS ARE OBSOLETE

TRANSLUCENT USAEWES SOILS

PLATE III-184

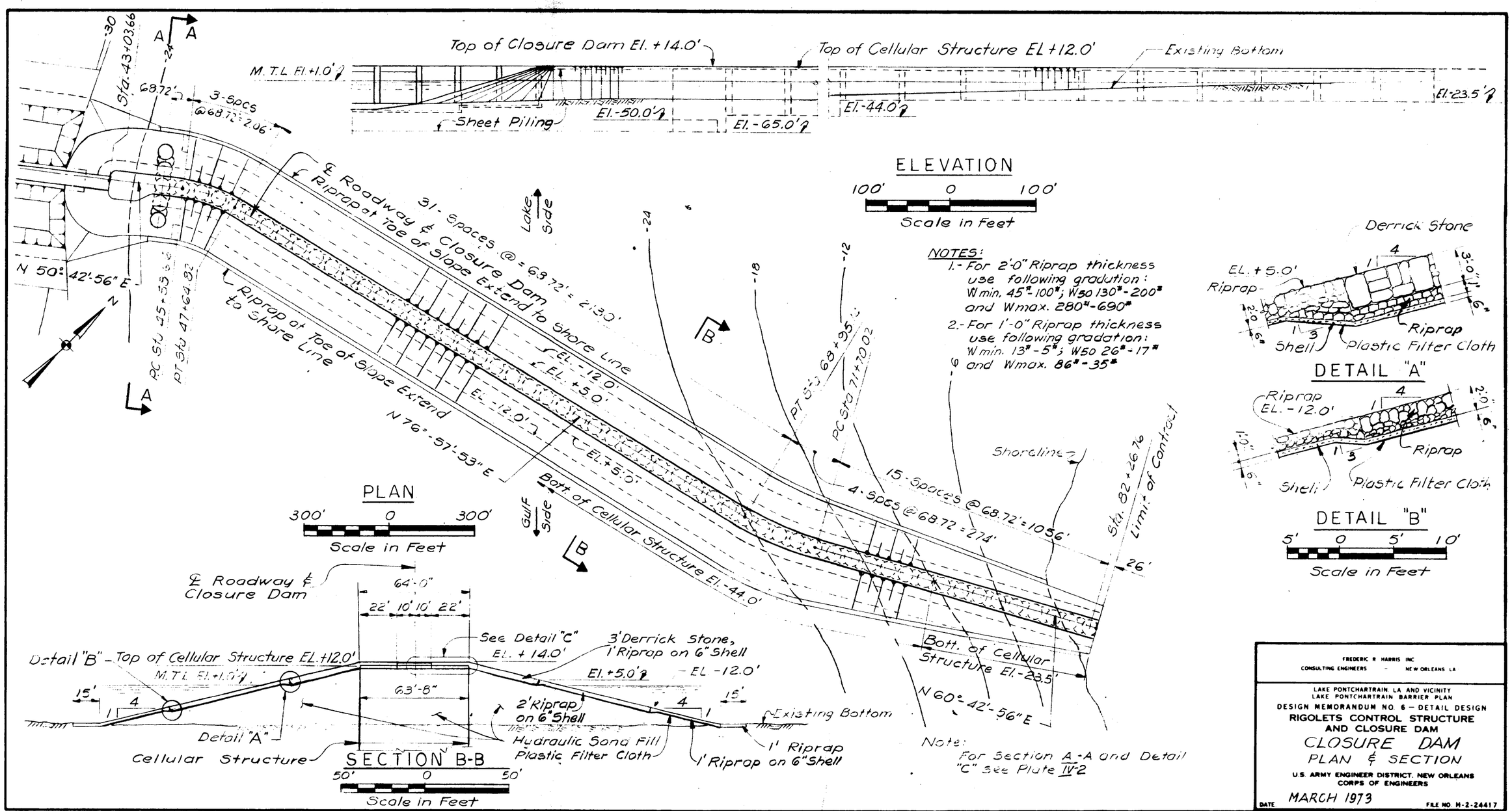
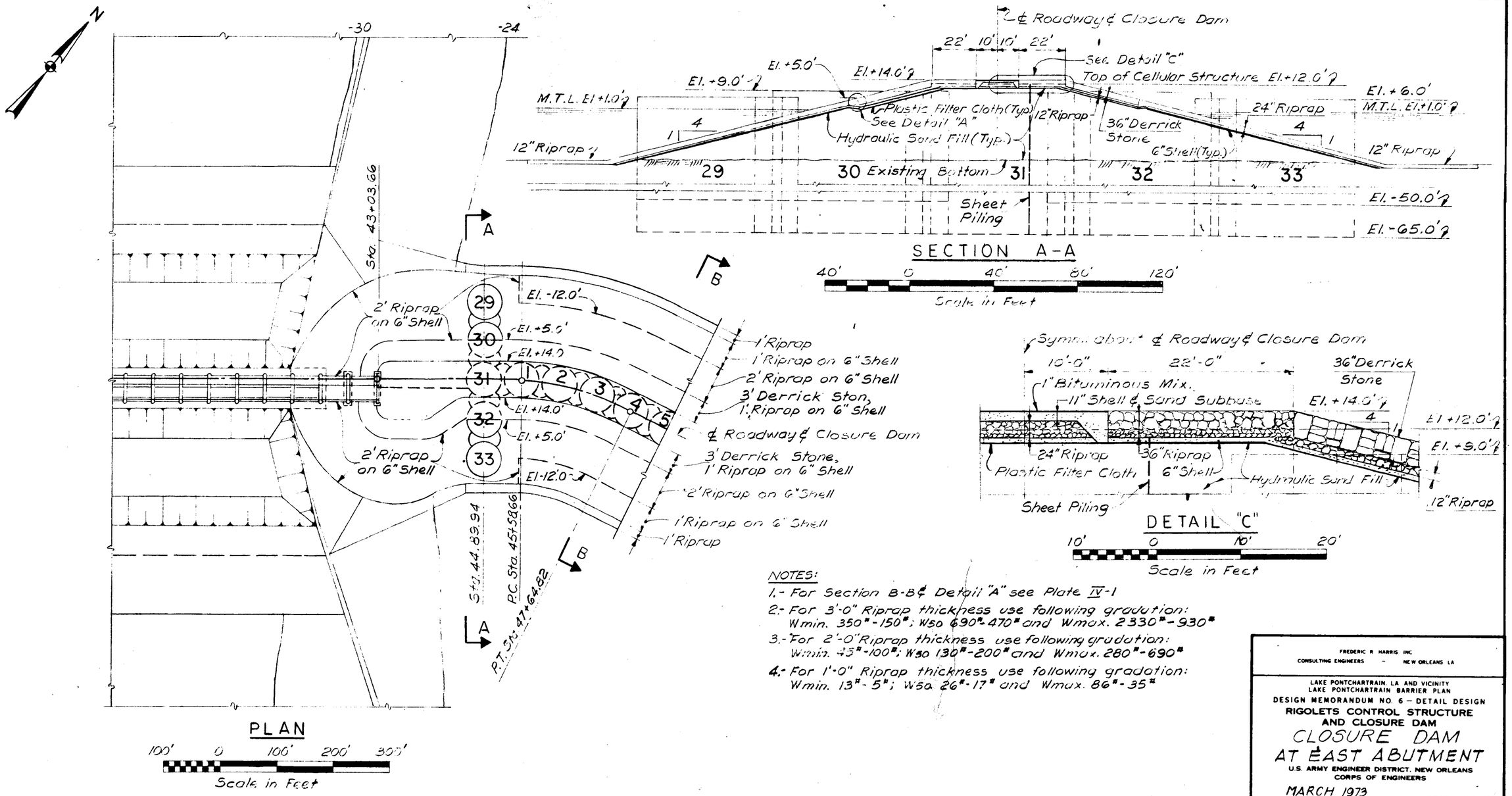

Top of Closure Dam El. +14.0'
Top of Cellular Structure EL +12.0'
Existing Bottom
M.T.L. El +1.0'
Sheet Piling
El. -50.0'
El. -65.0'
El. -44.0'
El. -23.5'
ELEVATION
100' 0 100'
Scale in Feet
Sta. 43+03.66
68.72'
3-Spcs @68.72' = 206'
℄ Roadway & Riprap at Toe of Slope Extend to Shore Line
31-Spaces @ = 68.72' = 2130'
Lake Side
EL. -12.0'
EL. +5.0'
Riprap at Toe of Slope Extend to Shore Line
N 50° 42' 56" E
PC Sta 45+53.38
PT Sta 47+64.82
N 76° 57' 53" E
Bott. of Cellular Structure El. -44.0'
Gulf Side
PT Sta 69+95.43
PC Sta 71+10.02
15-Spaces @ 68.72' = 1056'
4-Spcs @ 68.72' = 274'
Shoreline
Sta. 82+26.76
Limit of Contract
26'
N 60° 42' 56" E
PLAN
300' 0 300'
Scale in Feet
℄ Roadway & Closure Dam
64'-0"
22' 10' 10' 22'
See Detail "C"
El. +14.0'
3' Derrick Stone, 1' Riprap on 6" Shell
Detail "B" - Top of Cellular Structure EL. +12.0'
M.T.L. El +1.0'
El. +5.0'
EL. -12.0'
15'
4
1
63'-8"
2' Riprap on 6" Shell
Existing Bottom
Detail "A"
Cellular Structure
Hydraulic Sand Fill
Plastic Filter Cloth
1' Riprap on 6" Shell
SECTION B-B
50' 0 50'
Scale in Feet
NOTES:
1.- For 2'-0" Riprap thickness use following gradation: W min. 45#-100#; W50 130#-200# and W max. 280#-690#
2.- For 1'-0" Riprap thickness use following gradation: W min. 13#-5#; W50 26#-17# and W max. 86#-35#
Derrick Stone
EL. +5.0'
Riprap
3'-0"
2'-0"
6"
Shell
Plastic Filter Cloth
DETAIL "A"
Riprap EL. -12.0'
1'-0"
DETAIL "B"
5' 0 5' 10'
Scale in Feet
Note: For Section A-A and Detail "C" See Plate IV-2
FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA
LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CLOSURE DAM
PLAN & SECTION
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. M-2-24417

PLATE IV-1



NOTES:

1.- For Section B-B & Detail "A" see Plate IV-1

2.- For 3'-0" Riprap thickness use following gradation: Wmin. 350#-150#; W50 690#-470# and Wmax. 2330#-930#

3.- For 2'-0" Riprap thickness use following gradation: Wmin. 45#-100#; W50 130#-200# and Wmax. 280#-690#

4.- For 1'-0" Riprap thickness use following gradation: Wmin. 13#-5#; W50 26#-17# and Wmax. 86#-35#

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LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

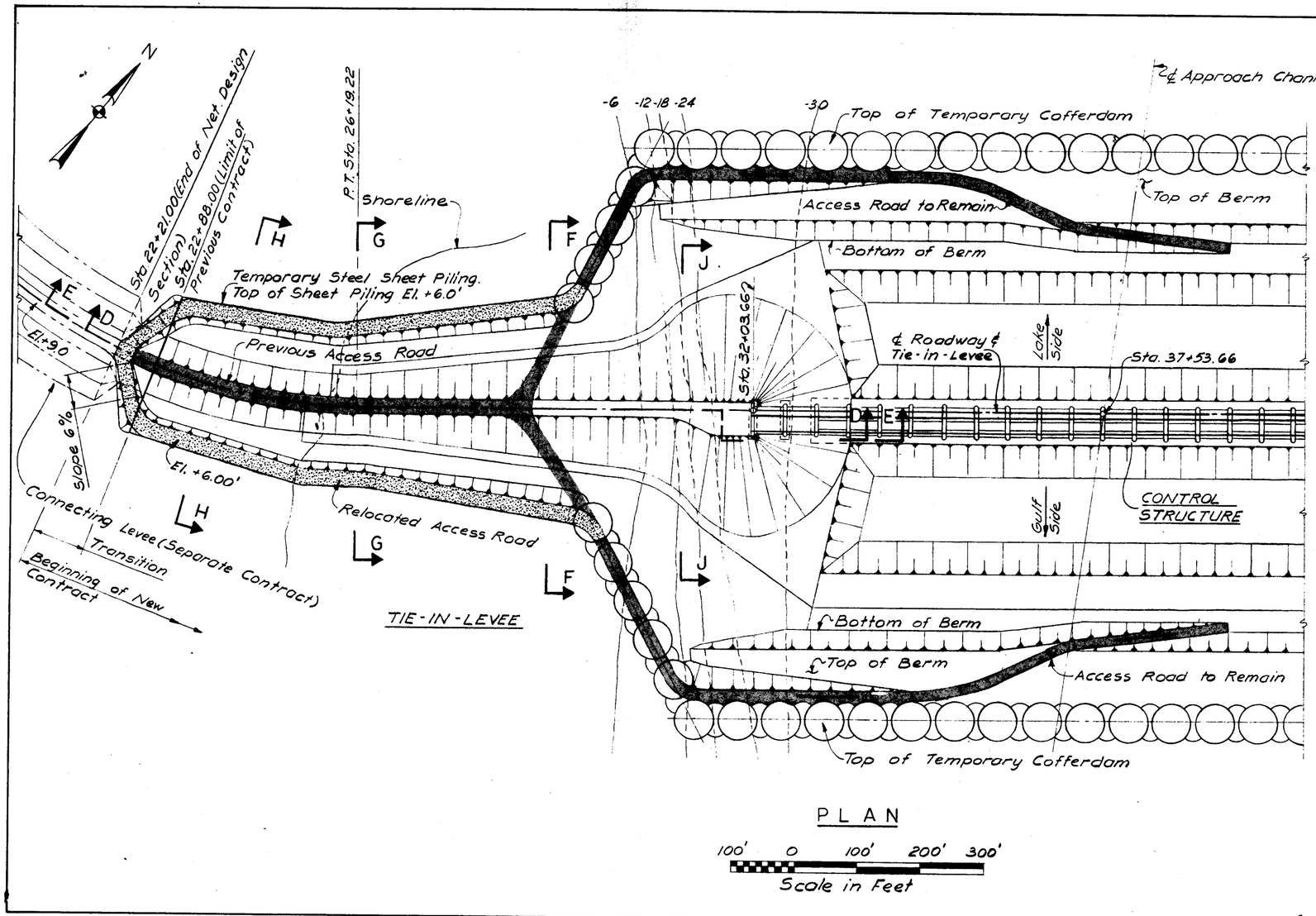
CLOSURE DAM AT EAST ABUTMENT

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973

FILE NO. H-2-24417

PLATE IV-2



NOTES:

1.- For Sections D-D ℄ E-E see Plate IV-4

2.- For Sections F-F, G-G, H-H ℄ J-J see Plate IV-5

3.- For Sequence of Construction see Plate IV-4

FREDERIC R. HARRIS INC.
CONSULTING ENGINEERS NEW ORLEANS, LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN

DESIGN MEMORANDUM NO 6 – DETAIL DESIGN

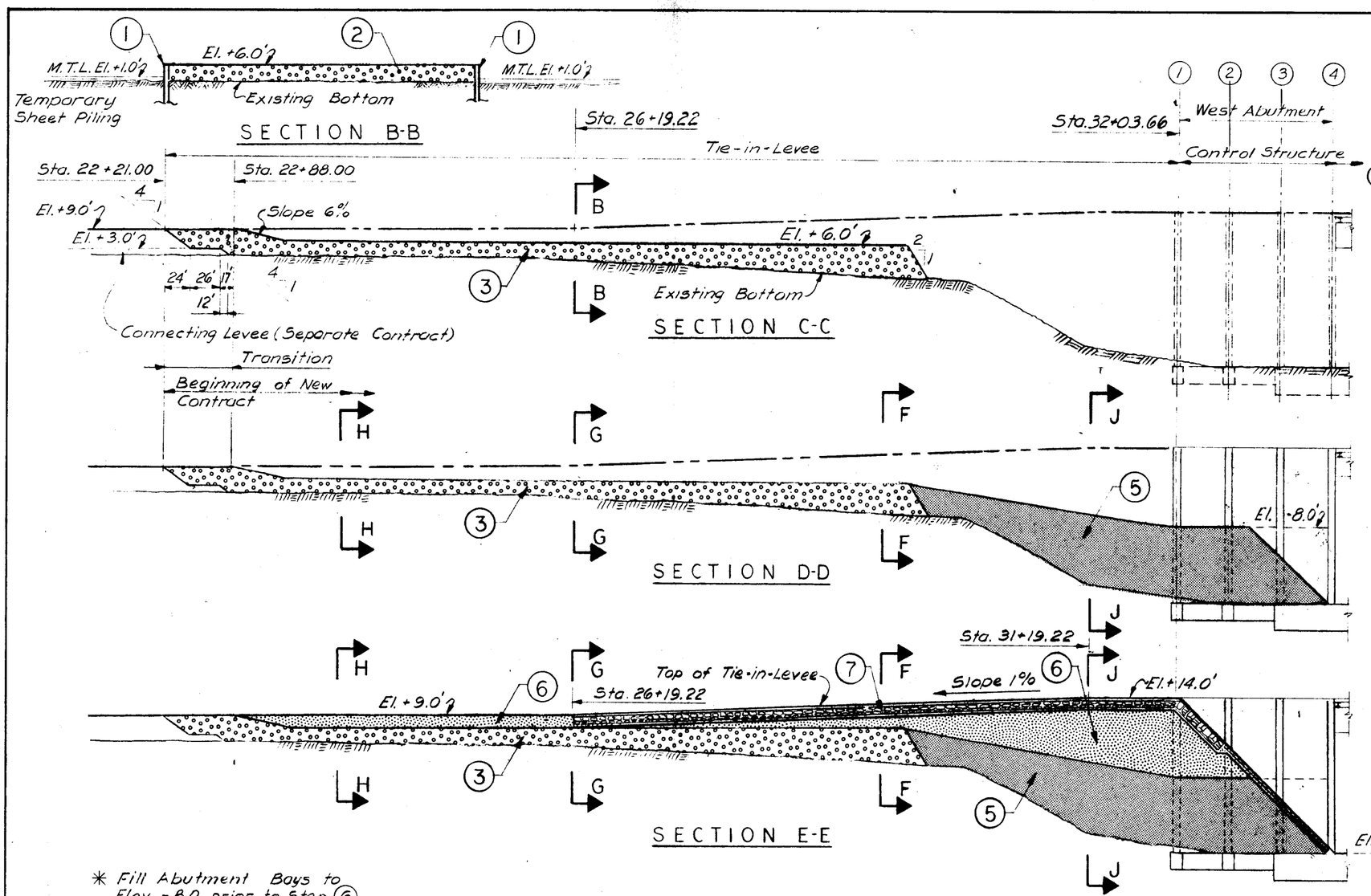
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

TIE-IN-LEVEE

METHOD OF CONSTRUCTION

U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO H-2-244



* Fill Abutment Bays to Elev. -8.0 prior to Step (6)

SEQUENCE OF CONSTRUCTION

(1) Install the sheet pile bulkhead in conjunction with the temporary cofferdam for the control structure. See Plate III-15

(2) Place hydraulic sand fill to El. +6.0' in the staging area.

(3) & (4) Excavate in the staging area in the dry to conform to the design section for the tie-in-levee and relocate access road for the site traffic.

* (5) Backfill for the end of west abutment of the control structure with the excavated materials or the available fill materials at the site.

(6) Make up the final design grade and slope between the control structure and the connecting levee with the fill material.

(7) Place riprap, derrick stone, and surface layer for the roadway.

(8) Demolish the access road and temporary sheet pile bulkhead.

NOTES:

1.- For location of Sections B-B and C-C see Plate III-15

2.- For location of Sections D-D and E-E see Plate IV-3

HORIZ. 100 0 100 200

VERT. 20 0 20 40 60

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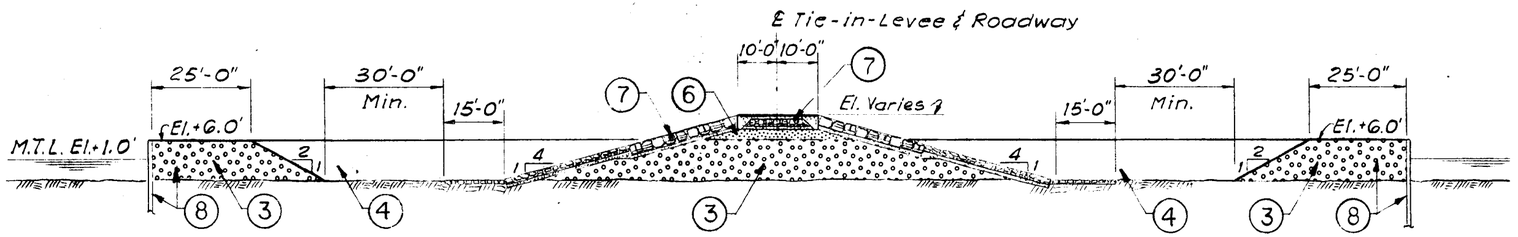
CONSULTING ENGINEERS - NEW ORLEANS, LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

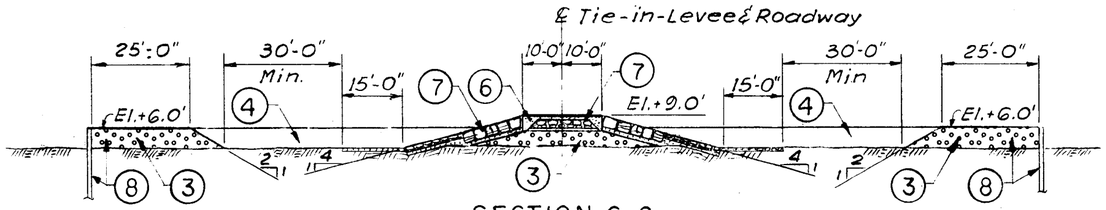
TIE-IN-LEVEE METHOD OF CONSTRUCTION

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

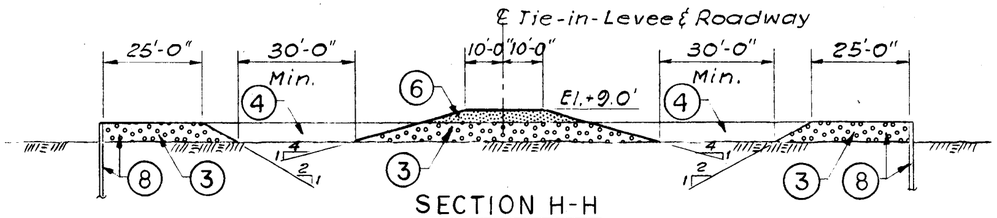
DATE: MARCH 1973 FILE NO. H-2-24417



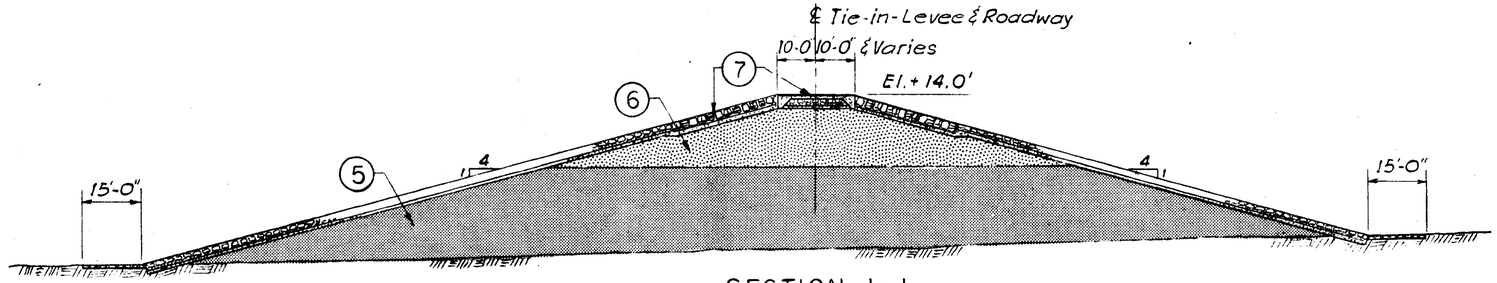
SECTION F-F



SECTION G-G



SECTION H-H



SECTION J-J

NOTES:

1.- For Sequence of Construction see Plate IV-4

2.- For location of Sections F-F, G-G, H-H and J-J see Plate IV-3

30 0 30

Scale in Feet

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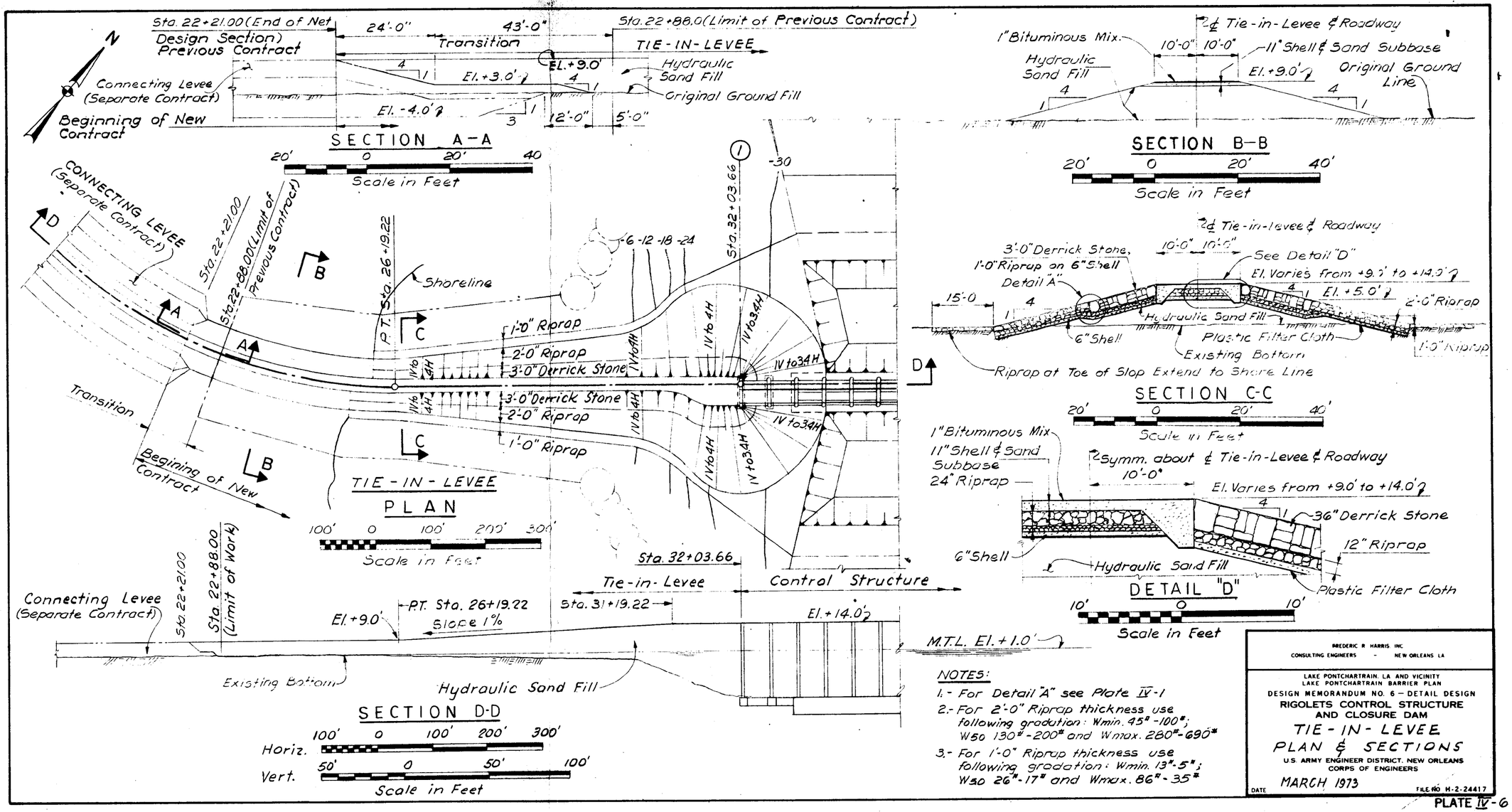
CONSULTING ENGINEERS — NEW ORLEANS, LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
TIE-IN-LEVEE
METHOD OF CONSTRUCTION
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417

PLATE IV-5



NOTES:

1.- For Detail "A" see Plate IV-1

2.- For 2'-0" Riprap thickness use following gradation: Wmin. 45#-100#; W50 130#-200# and Wmax. 280#-690#

3.- For 1'-0" Riprap thickness use following gradation: Wmin. 13#-5#; W50 26#-17# and Wmax. 86#-35#

FREDERIC R HARRIS INC.
CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 - DETAIL DESIGN

RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

TIE-IN-LEVEE PLAN & SECTIONS

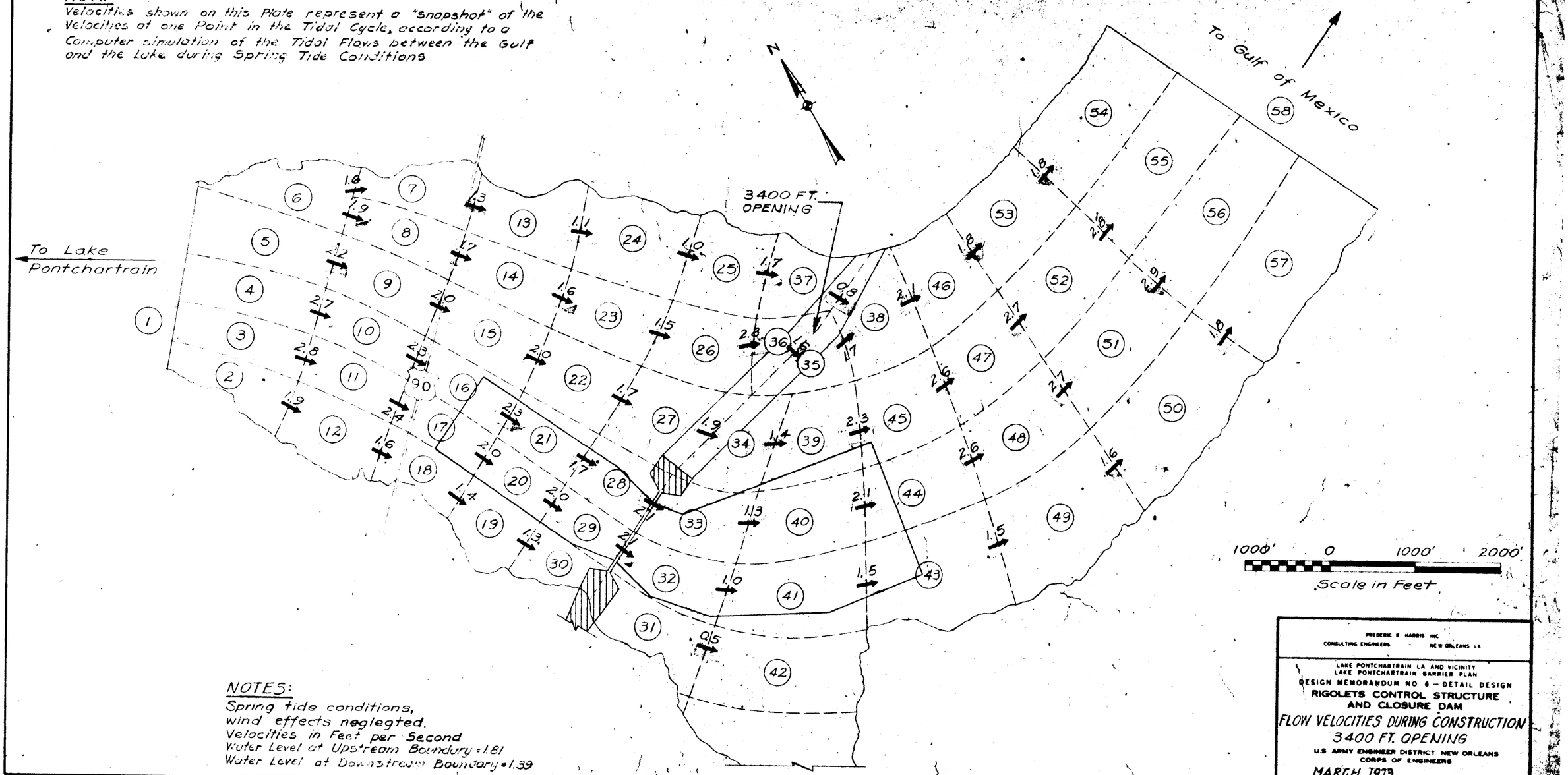
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973

FILE NO H-2-24417

PLATE IV-6

NOTE:
Velocities shown on this Plate represent a "snapshot" of the Velocities at one Point in the Tidal Cycle, according to a Computer simulation of the Tidal Flows between the Gulf and the Lake during Spring Tide Conditions



NOTES:
Spring tide conditions,
wind effects neglegted.
Velocities in Feet per Second
Water Level at Upstream Boundary = 1.81
Water Level at Downstream Boundary = 1.39

FREDERIC R HARRIS INC
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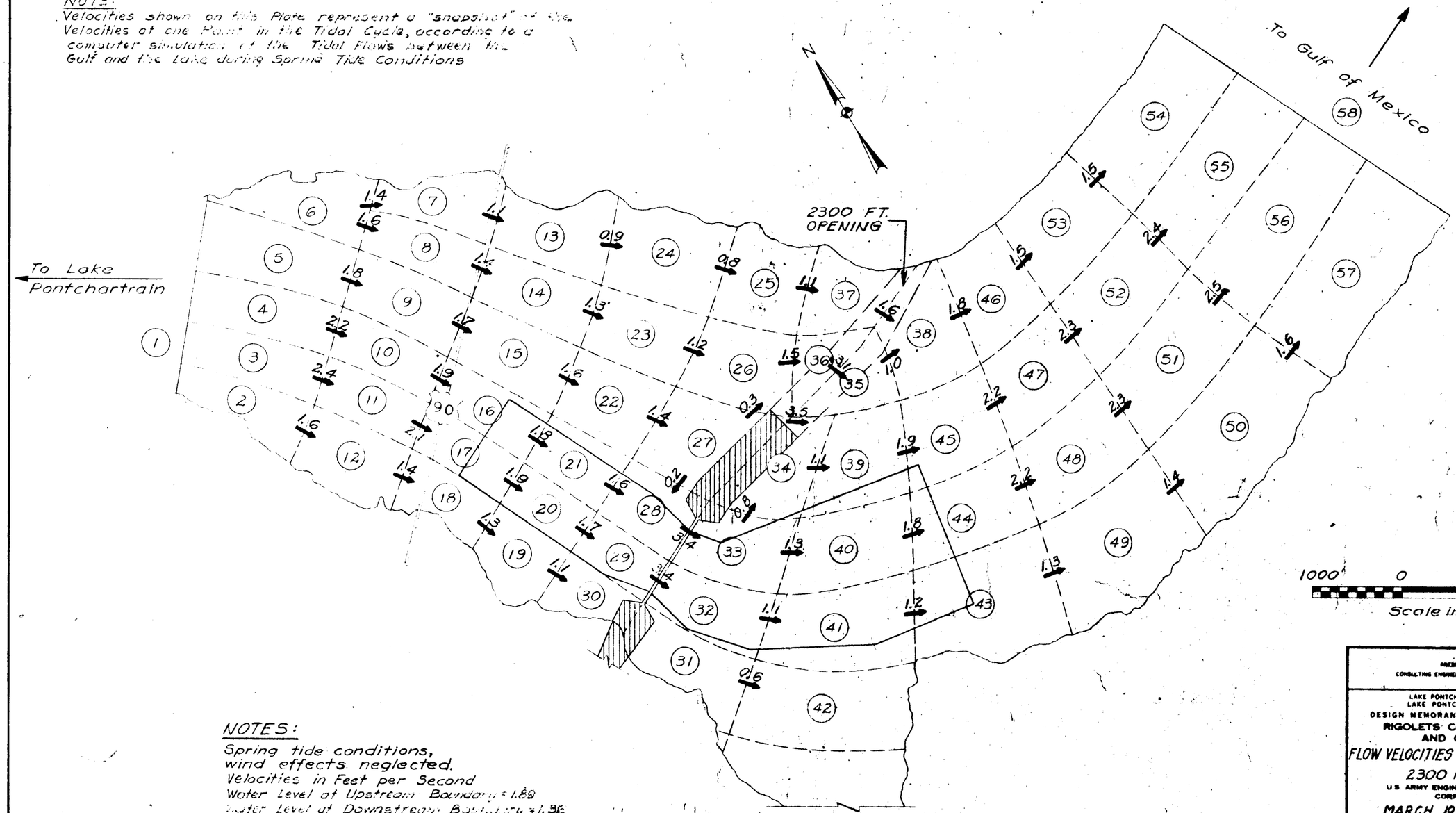
LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
FLOW VELOCITIES DURING CONSTRUCTION
3400 FT. OPENING
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO H-2-24417

PLATE 7

NOTE:
Velocities shown on this Plate represent a "snapshot" of the Velocities at one Point in the Tidal Cycle, according to a computer simulation of the Tidal Flows between the Gulf and the Lake during Spring Tide Conditions



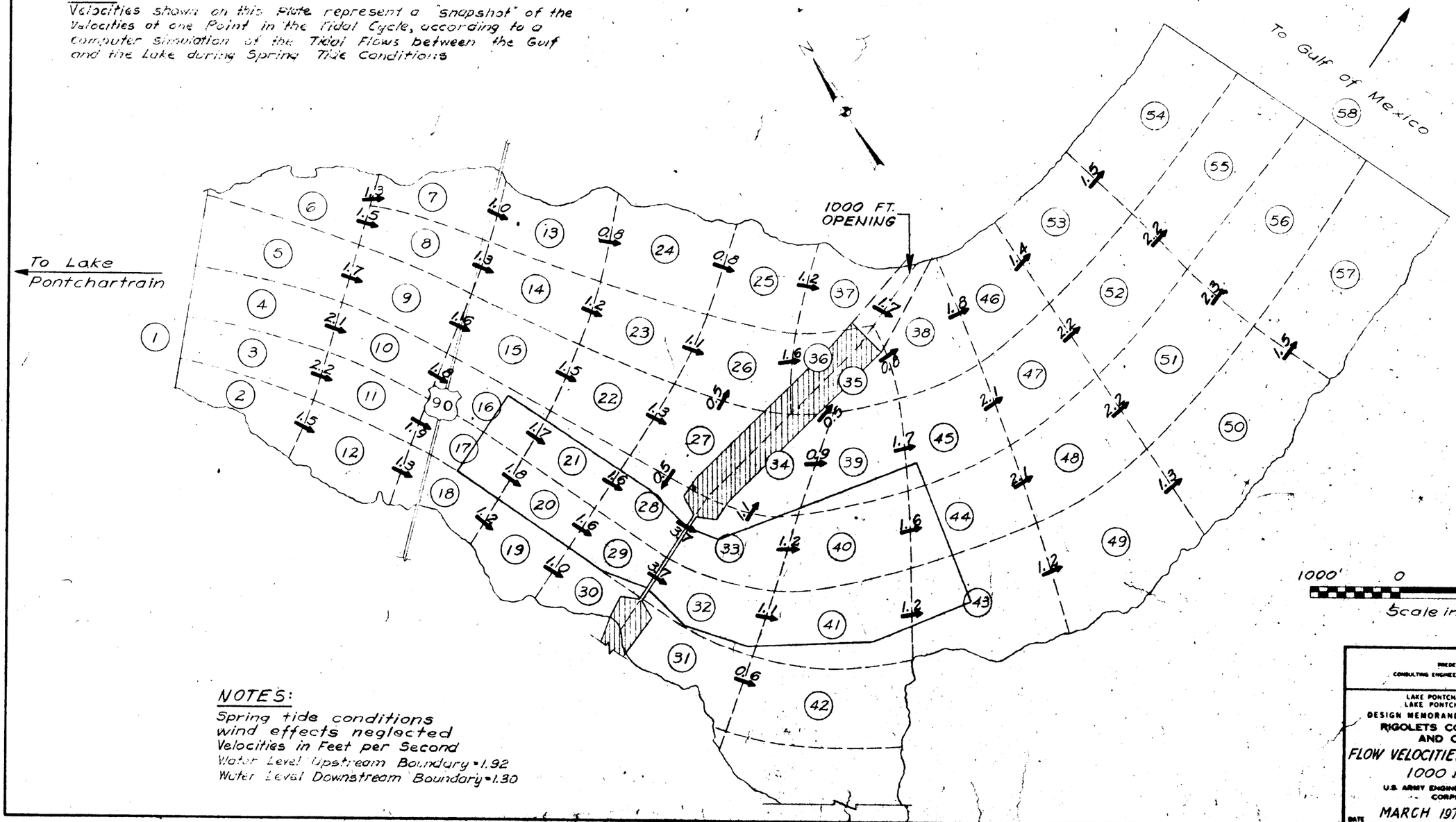
NOTES:
Spring tide conditions,
wind effects neglected.
Velocities in Feet per Second
Water Level at Upstream Boundary = 1.89
Water Level at Downstream Boundary = 1.35

FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
FLOW VELOCITIES DURING CONSTRUCTION – 2300 FT. OPENING
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1979
FILE NO. M-2-24417

PLATE IV-8

NOTE:
Velocities shown on this plate represent a "snapshot" of the Velocities at one Point in the Tidal Cycle, according to a computer simulation of the Tidal Flows between the Gulf and the Lake during Spring Tide Conditions



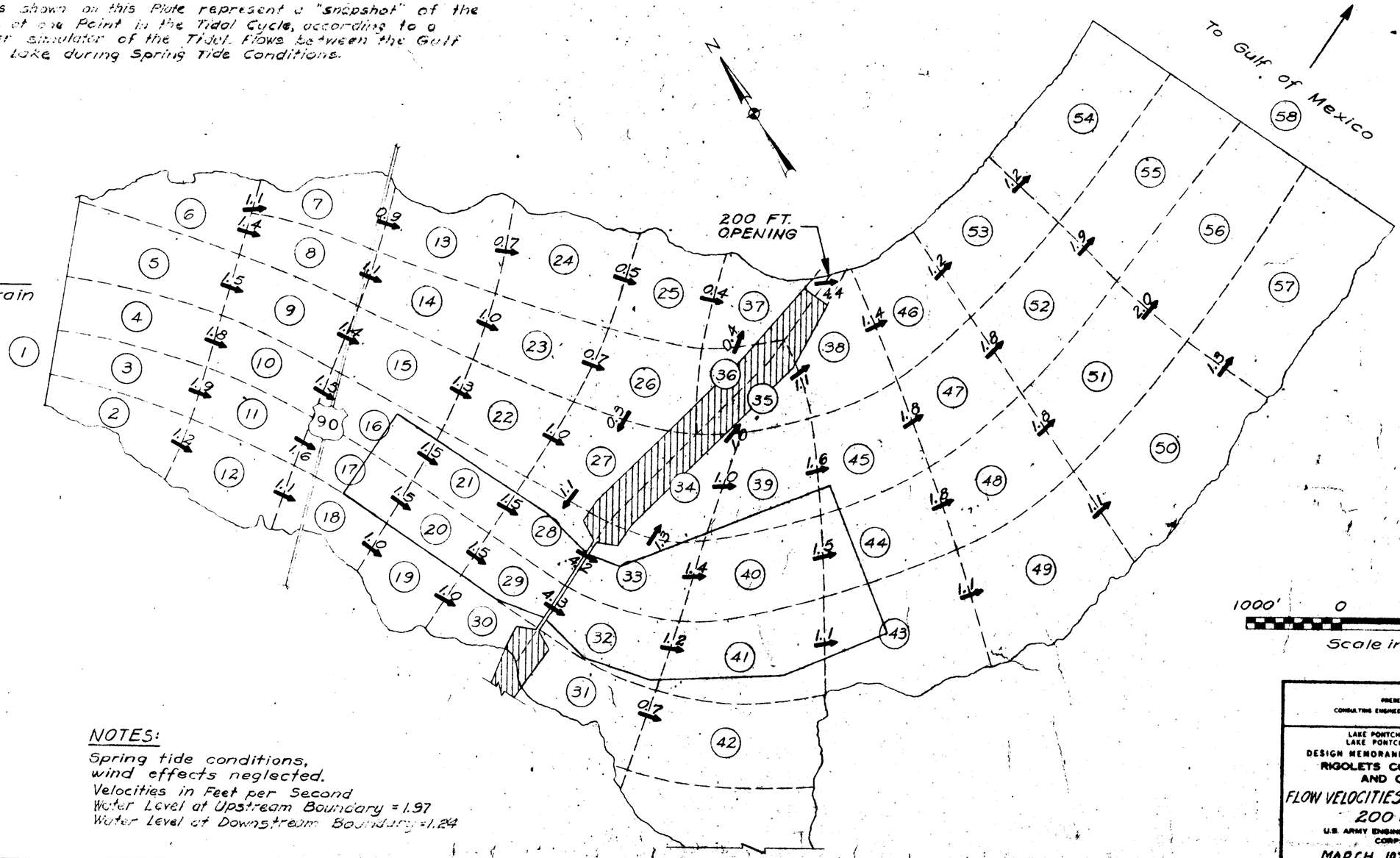
NOTES:
Spring tide conditions
wind effects neglected
Velocities in Feet per Second
Water Level Upstream Boundary = 1.92
Water Level Downstream Boundary = 1.30

FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
FLOW VELOCITIES DURING CONSTRUCTION
1000 FT. OPENING
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24617

PLATE IV-9

NOTE:
Velocities shown on this Plate represent a "snapshot" of the Velocities at one Point in the Tidal Cycle, according to a computer simulator of the Tidal Flows between the Gulf and the Lake during Spring Tide Conditions.

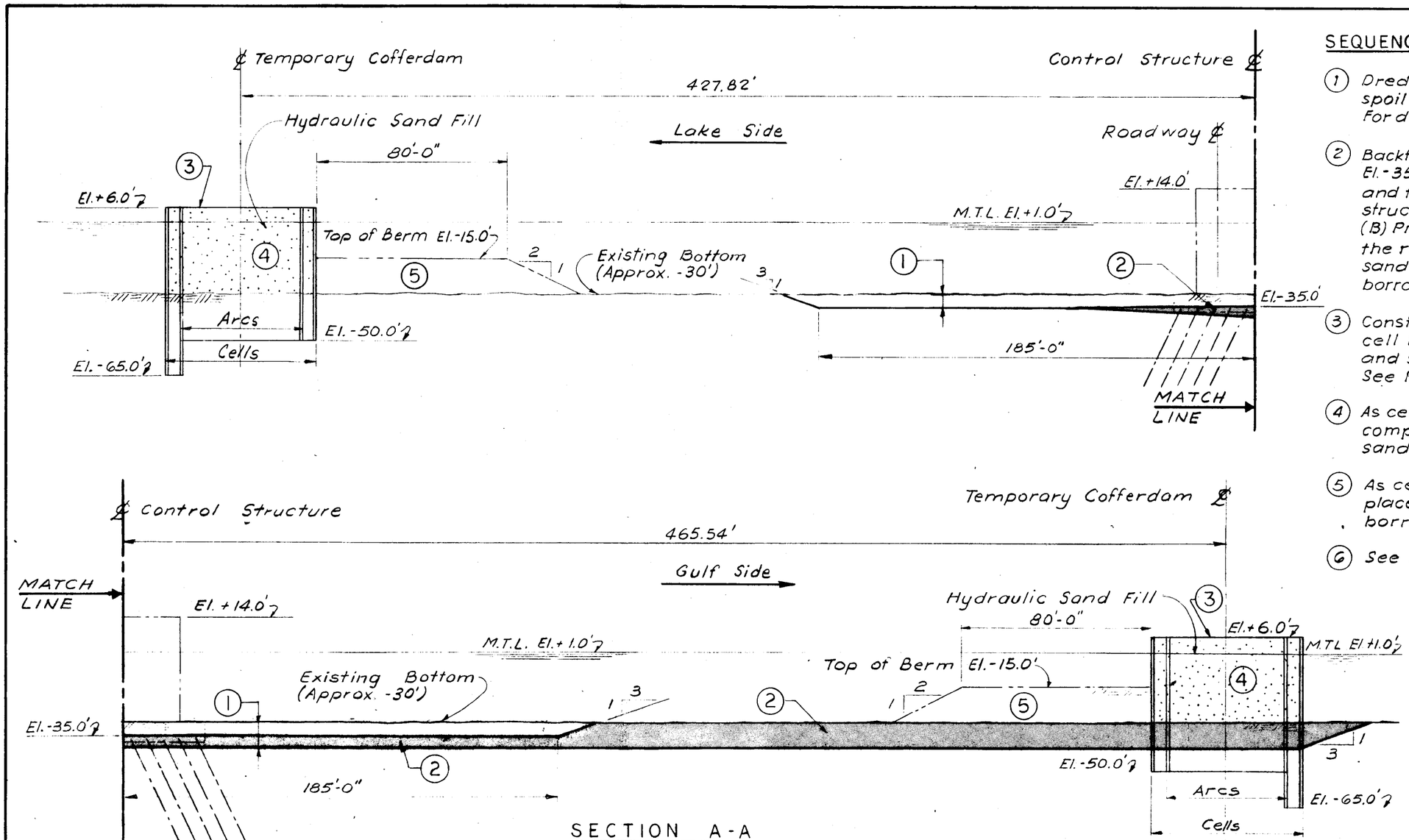


NOTES:
Spring tide conditions,
wind effects neglected.
Velocities in Feet per Second
Water Level at Upstream Boundary = 1.97
Water Level at Downstream Boundary = 1.24

FREDERIC R HARRIS, INC
CONSULTING ENGINEERS — NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
FLOW VELOCITIES DURING CONSTRUCTION
200 FT. OPENING
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1979
FILE NO H-2-24417

PLATE IV-10



SEQUENCE OF CONSTRUCTION

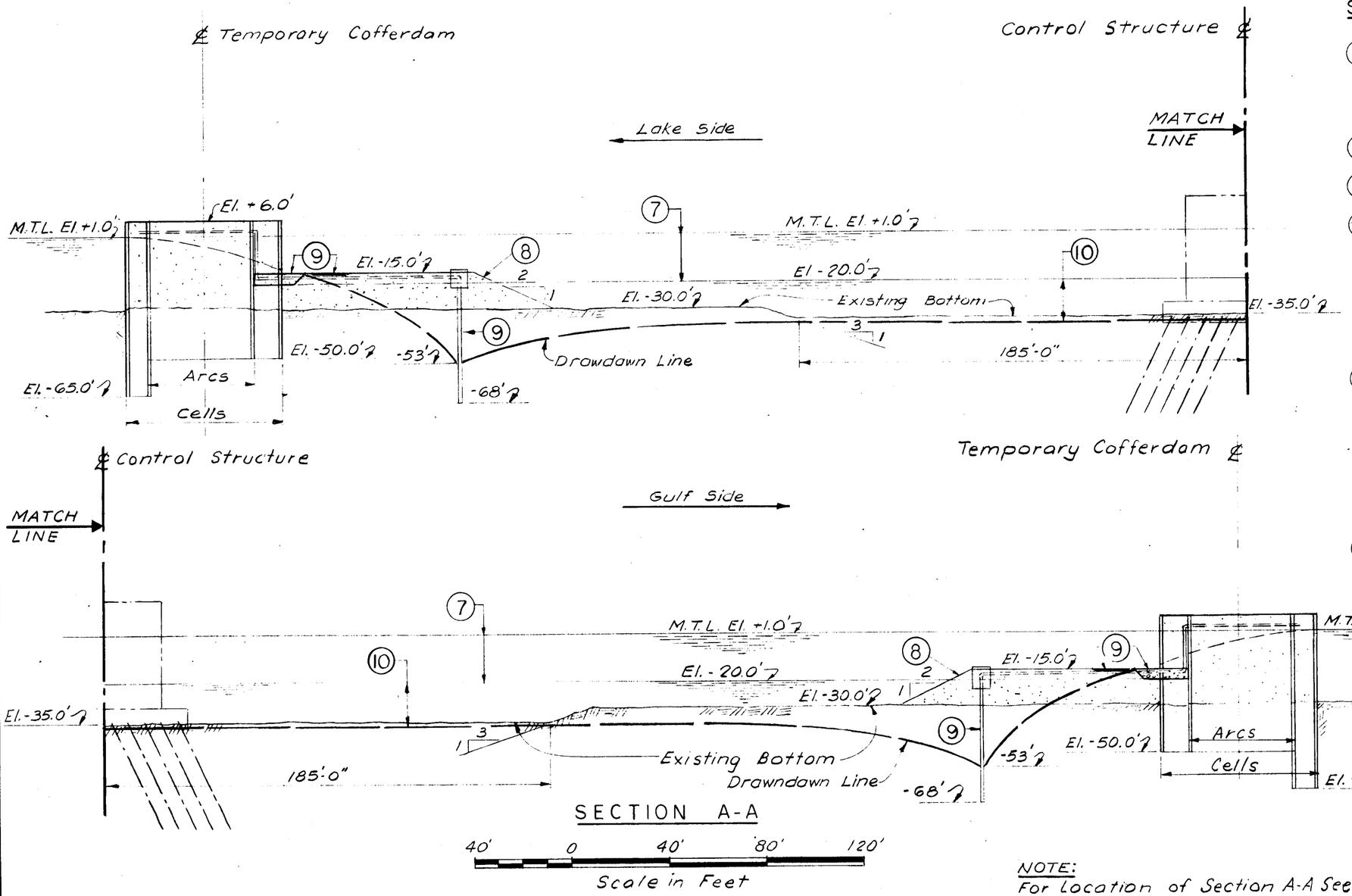
1. Dredge unsuitable material and spoil in designated areas. For dredging plan see Plate III-12
2. Backfill dredged sections to (A) El.-35.0 in the area of the structure and for a distance of 185' from the structure ℄ on each side. (B) Previous existing bottom in the remaining area with hydraulic sand fill pumped from designated borrow areas.
3. Construct cofferdam starting at cell No. 31 and advancing north and south simultaneously. See Plate III-15
4. As cells are completed, fill completed cells with hydraulic sand fill from borrow areas.
5. As cells advance and are filled place berm hydraulically from borrow areas.
6. See Plate V-2

NOTE:
For Location of Section A-A See Plate III-15

FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CONTROL STRUCTURE
METHOD OF CONSTRUCTION I
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO M-2-24417

PLATE V-1



SEQUENCE OF CONSTRUCTION

(6) Complete cofferdam by driving sheet pile bulkhead and complete hydraulic fill of berm and staging area. See Plate III-15

(7) Dewater to elevation – 20.0.

(8) Shape up berms.

(9) Install:

a. cell drainage system
b. deepwells and piping
c. access roadway
d. piezometers and water level controls.

(10) Complete dewatering of excavation using deepwells in conjunction with external pumping system until ground water is lowered approximately 2 feet below existing bottom. Install remainder of deep wells, piezometers, and water level controls.

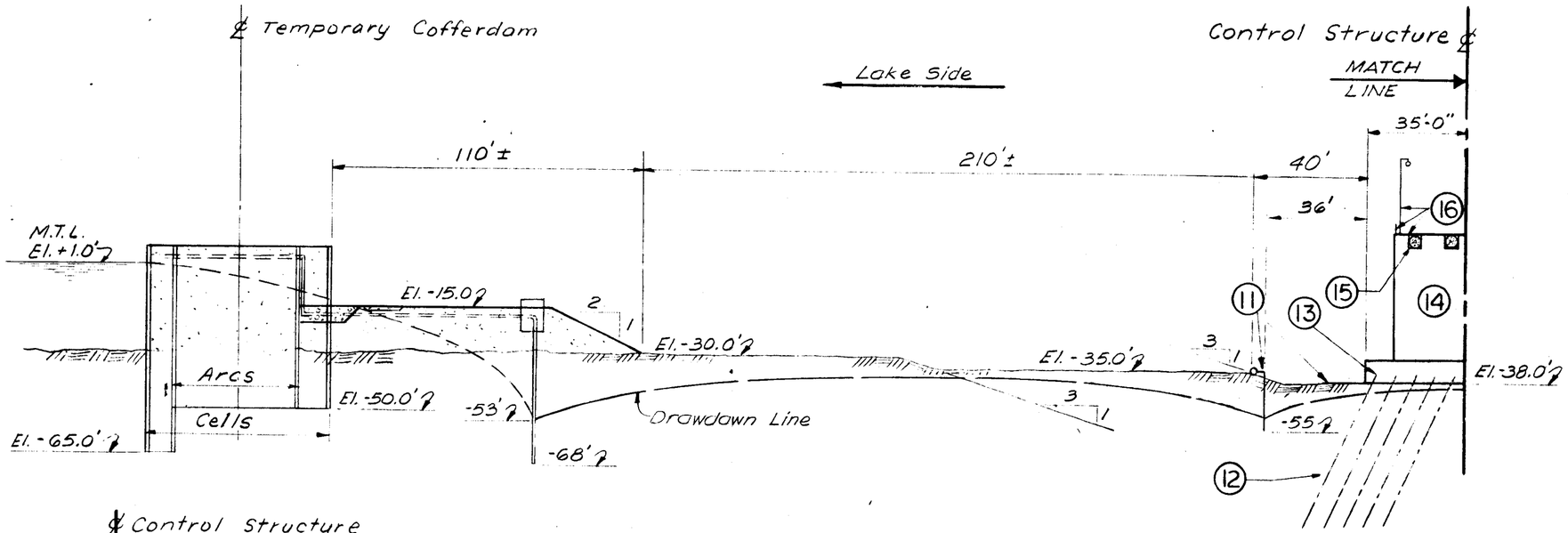
(11) See Plate V-3

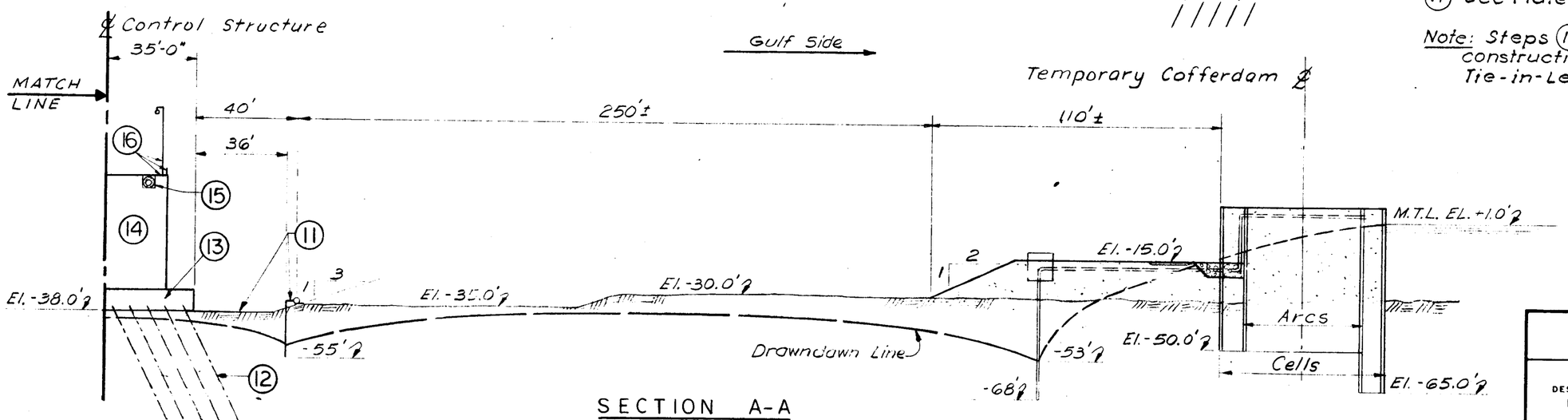
NOTE:
For Location of Section A-A See Plate III-15

FREDERIC R HARRIS INC
CONSULTING ENGINEERS – NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CONTROL STRUCTURE
METHOD OF CONSTRUCTION II
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO M-2-24417

PLATE V-2





SEQUENCE OF CONSTRUCTION

(11) Instal wellpoint system, lower water level to or below El.-40.0 and excavate for control structure area.

(12) Conduct field pile test program then drive steel H piles.

(13) Construct base slab.

(14) Construct barrier piers.

(15) Install prestressed concrete girders.

(16) Instal roadways, crane rails, walkways, handrails, and lighting standards.

(17) See Plate V-4

Note: Steps (12)-(16) also include construction of abutments, Tie-in-Levee, and slope protection.

SECTION A-A

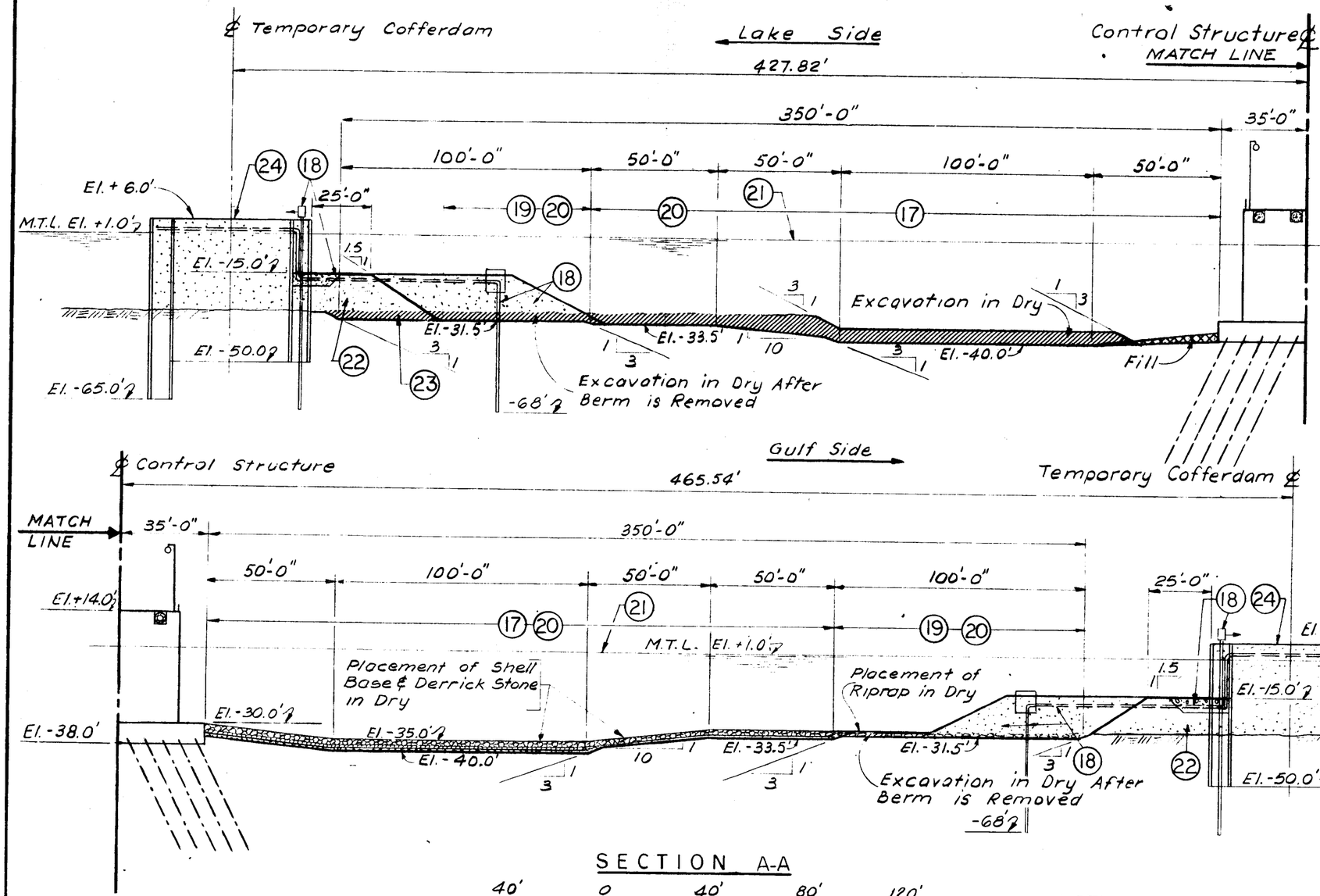
40' 0 40' 80' 120'

Scale in Feet

NOTE:
For location of Section A-A See Plate III-15

FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CONTROL STRUCTURE
METHOD OF CONSTRUCTION III
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417



SEQUENCE OF CONSTRUCTION

(17) Remove wellpoint system and relocate as necessary to keep water level 2' below bottom of excavation for dry placement of approach channel apron protection.

(18) Install self powered, temporary deepwells as needed to maintain desired water level. Remove deepwells, access roadway and cell drainage system - leaving reduced dem.

(19) Excavate and place stone.

(20) Remove remaining deepwells, piezometers, material and clean up entire area.

(21) Flood construction area by removing limited number of Z sheet piles along each side near shore.

(22) Remove remaining berms.

(23) Excavate and place stone in the wet Lake Side

(24) Remove cells and Z sheet piles

SECTION A-A

40' 0 40' 80' 120'

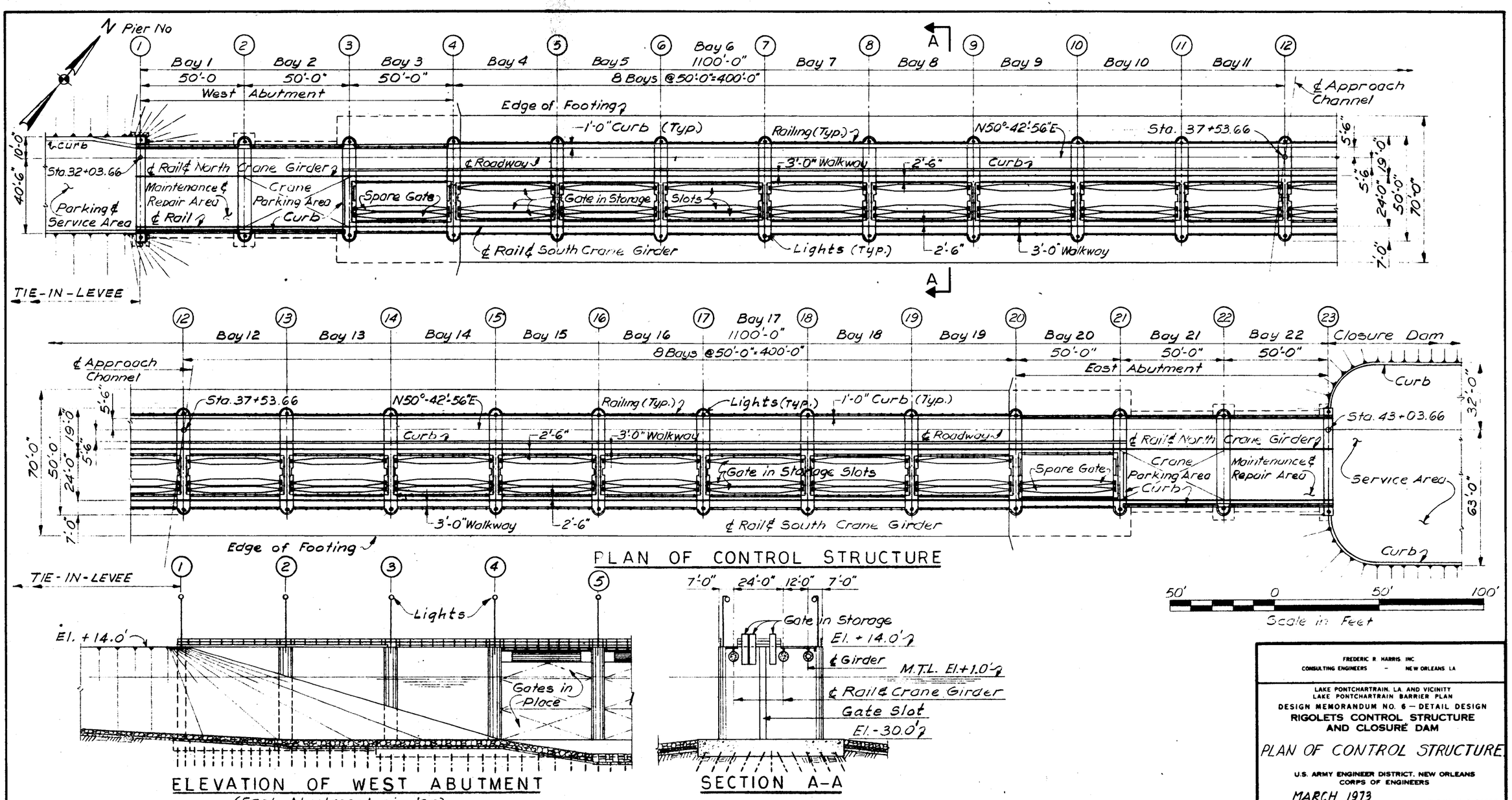
Scale in Feet

NOTE:
For Location of Section A-A See Plate III-15

FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS LA

LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CONTROL STRUCTURE
METHOD OF CONSTRUCTION IV
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO M-2-24417

PLATE V-4



PLAN OF CONTROL STRUCTURE

ELEVATION OF WEST ABUTMENT
(East Abutment similar)

SECTION A-A

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

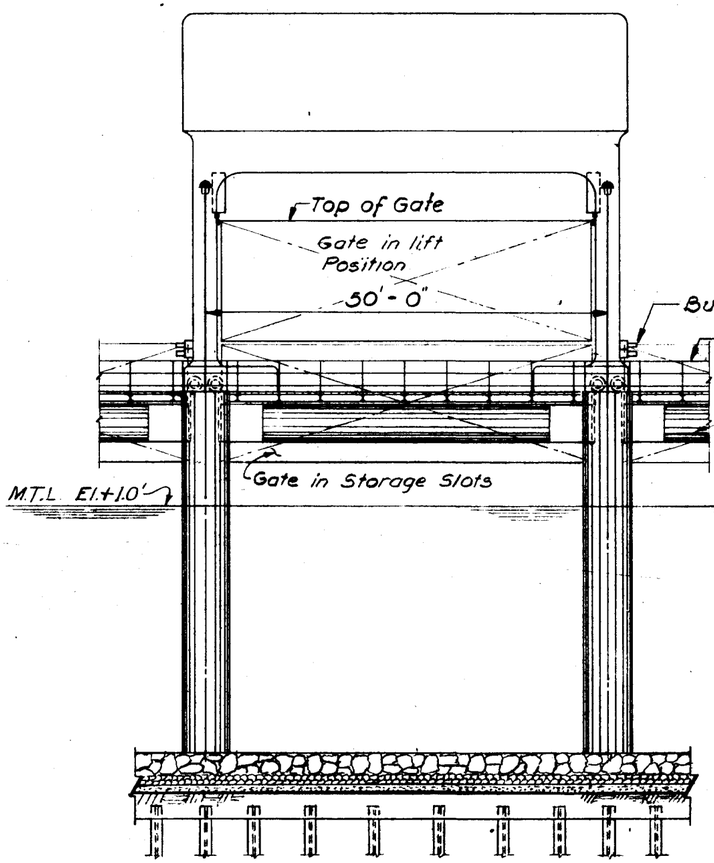
PLAN OF CONTROL STRUCTURE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

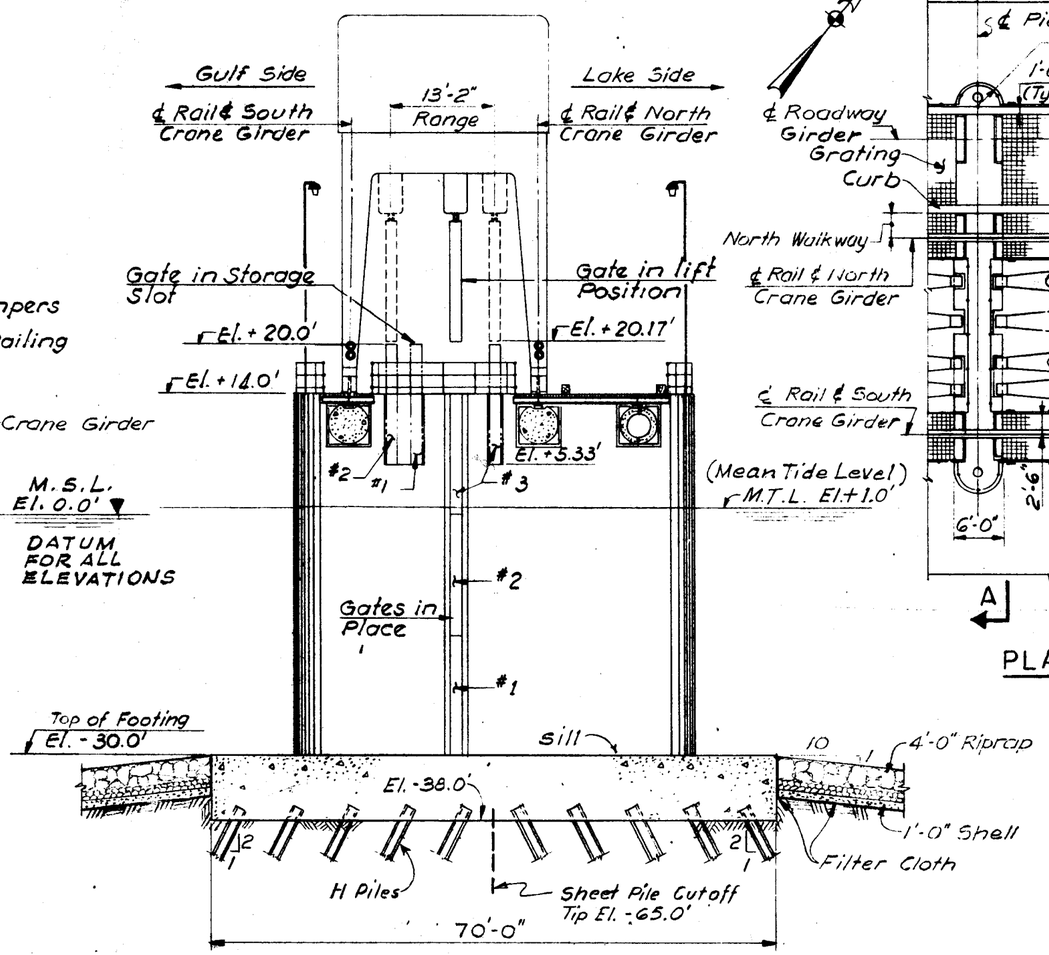
DATE MARCH 1973

FILE NO. H-2-24417

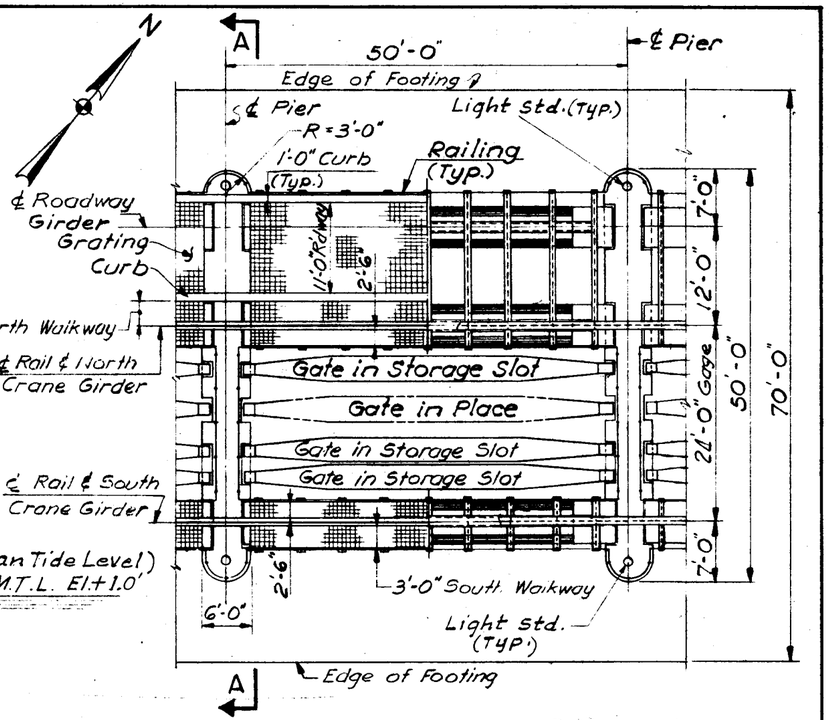
PLATE V-5



ELEVATION



SECTION A-A



PLAN OF TYPICAL BAY

NOTE:
For Pile Plan See Plate V-16

5' 0 5' 10' 15' 20' 25' 30' 35'
Scale in Feet

FREDERIC R HARRIS INC.
CONSULTING ENGINEERS - NEW ORLEANS LA.

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CONTROL STRUCTURE
TYPICAL BAY-PLAN & ELEVATION
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: MARCH 1973
FILE NO. H-2-24417

PLATE V-6

LOADS - GROUP A

Unit weights PCF

Sea water	64.
Brackish water	63.
Saturated fill	123
Moist fill	110
Submerged fill	60
Concrete	150.
Steel	490.

Concentrated Loads - KIPS

Crane

55'-0 x 30'-0 x 46'-4 400

Gate

46'-2 x 2'-6 av x 14'-8 200

Total Estimate 600

Operational wind - 10 PSF (45 Knots)

Truck - AASHO H20-44

Hydrostatic Head - (based on water levels from Table II-2)

Case	Gulfside	Lakeside
2	+9.0'	-4.5'
5	-4.0'	+9.0'

Earthquake

Zone Coefficient Z = 0.25

Coefficients for horiz. pressure of fill : $\phi = 30°$

Active	0.333
Passive	3.00
At rest	0.60

LOADS - GROUP B

Hurricane wind - 100 PSF (150 Knots)

Hydrostatic Head (based on water levels from Table II-2)

Case	Gulfside	Lakeside
1	+12.8'	-3.0'
4	-3.0'	+11.5'

Hydrodynamic wave forces

On Gates - See Sainflou Diagrams, Plates V-20 & 21

On Gratings - 350 PSF

LB/FT - on one Girder (from Plate V-27

	Gulfside	Lakeside
Max. horiz.	3100	2290
Coincident vertical	1120	600
Max. vert.	4200	2520
Coincident horiz.	1000	430

Maximum Drag on 14" H Piles - KIPS (from Plate III-34)

Abutments:

1st Bay	304
2nd Bay	228
3rd Bay	171

Gated Structure - none

Construction loading

(Same Unit Weights, Pressure and Earthquake Coefficients as for Group A)

Allowable working stresses

(when earthquake, shrinkage or temperature effects are added, increase stresses by 1/3)

Material and Grade	Kind of stress	Stresses for Load Group A	Stresses for Load Group B or (A + B)
Field-placed Concrete f'_c = 3,000 PSI	flexural compression	.35 f'_c = 1.05 KSI	.45 f'_c = 1.35 KSI
Ditto	shear and bearing	83% ACI	100% ACI
Reinforcing Steel f_y = 60 KSI	tension	20. KSI	24. KSI
Precast pretensioned Concrete, f'_c = 6,000 PSI	flexural compression	2.10 KSI	2.70 KSI
Ditto	tension	0.	0
Stressing tendons f_{pu} = 250 KSI	tension	ACI	ACI
Structural Steel f_y = 36 KSI Bolts, studs, welds	all	83% AISC	100% AISC
H Piles, f_y = 36 KSI	axial compr.	10.5 KSI	12.6 KSI
Ditto	flexure	15. KSI	18. KSI
Ditto	Shear	10.5 KSI	12.6 KSI

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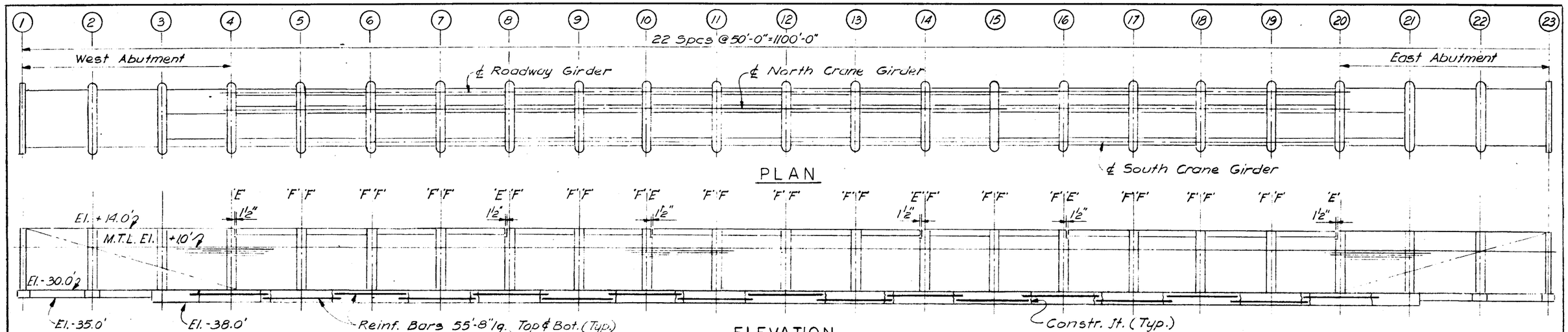
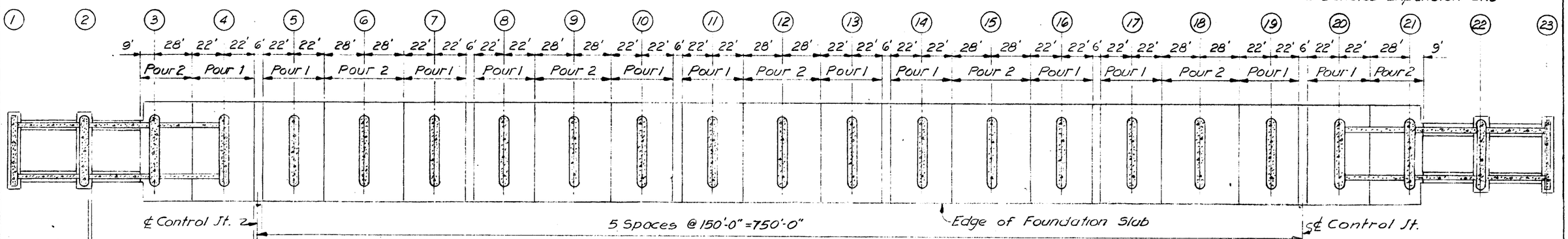
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 - DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
STRUCTURAL DESIGN
LOADS AND STRESSES
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417



LEGEND:
'F' Denotes Fixed End
'E' Denotes Expansion End



FOUNDATION PLAN

50' 0 50' 100'

Scale in Feet

NOTE:
For Piles and Details not Shown see Plate V-16

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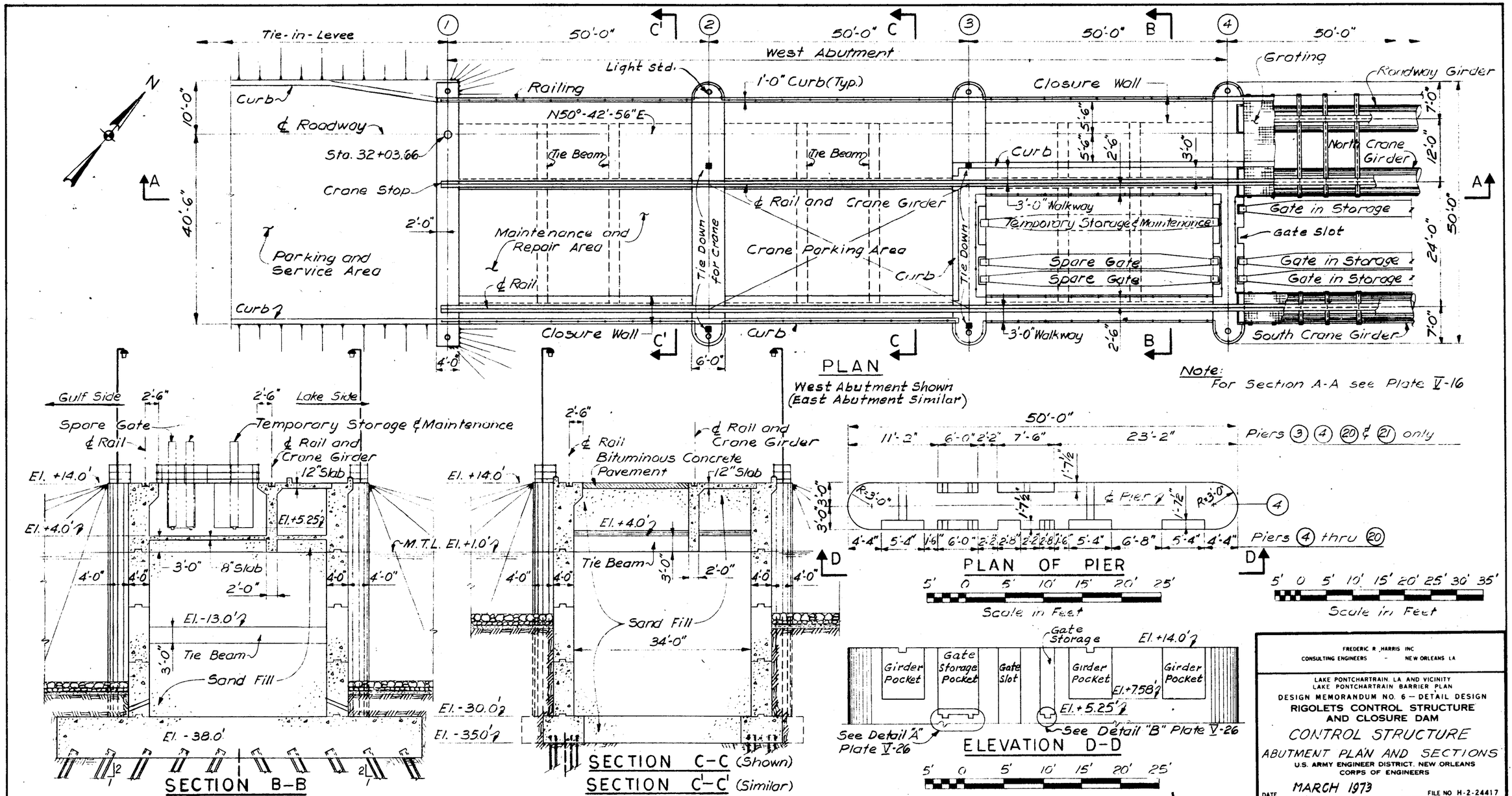
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CONTROL STRUCTURE
CONSTRUCTION & CONTROL JOINTS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417

PLATE V-8



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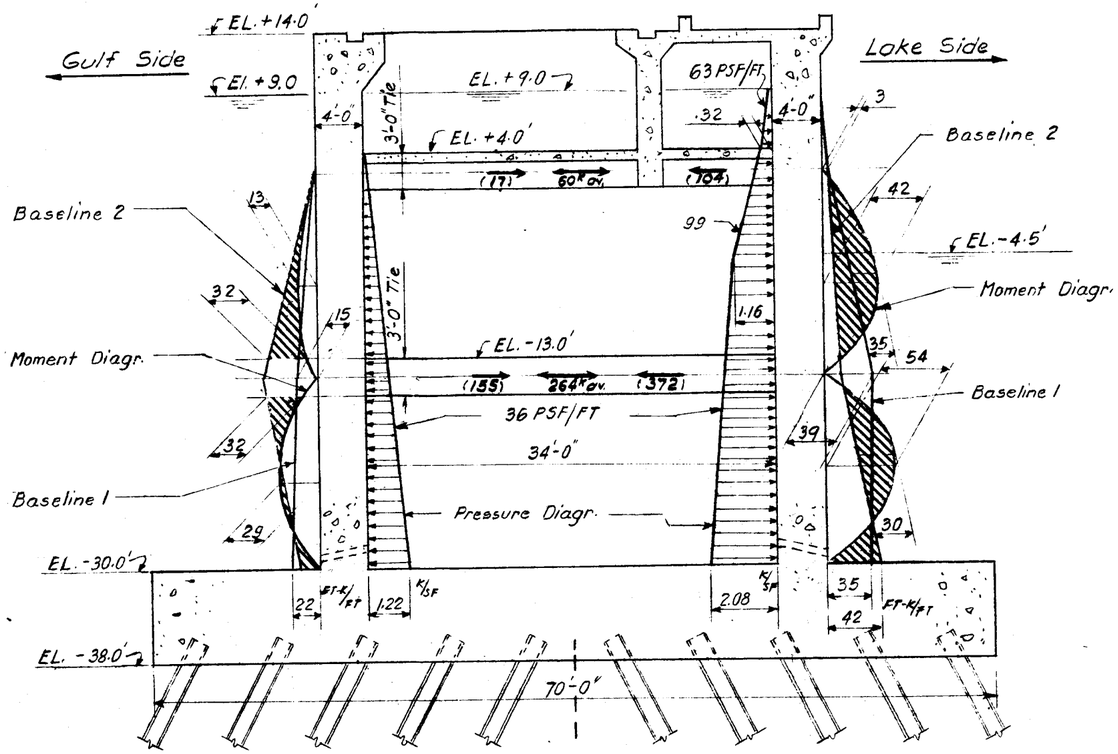
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CONTROL STRUCTURE
ABUTMENT PLAN AND SECTIONS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417

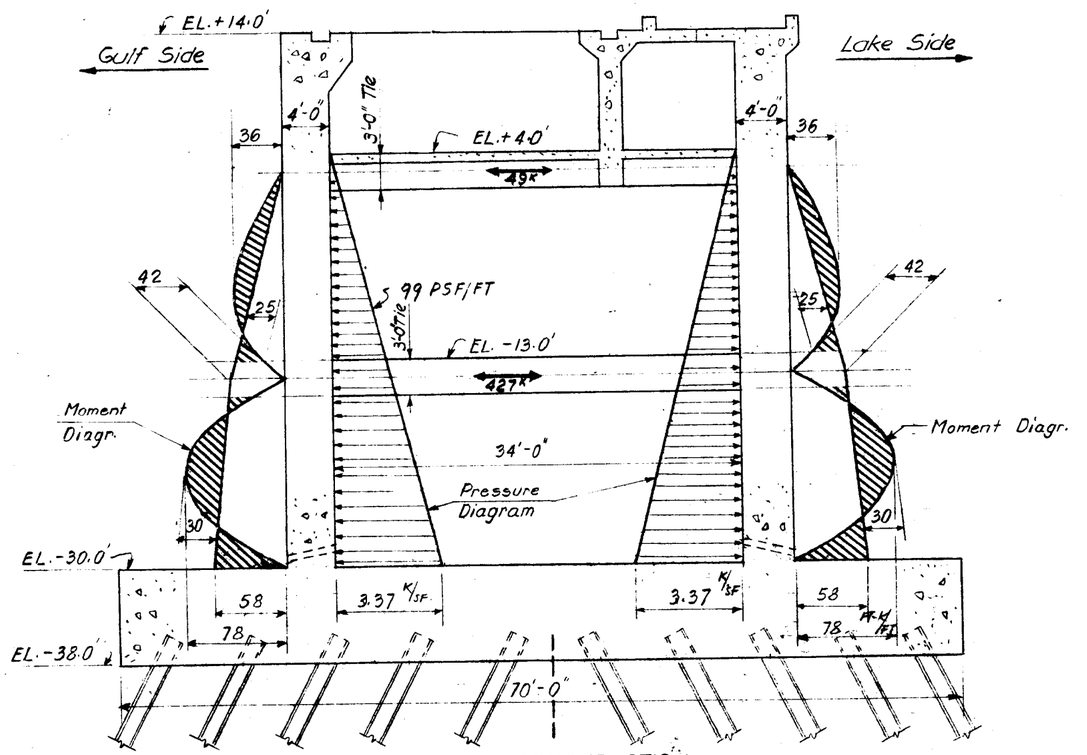
PLATE V-9



CASE 2 (OF TABLE II-2)-DURING HURRICANE

NOTE:
Baseline 1 does not show the effect of averaging the tensions in the ties.
An approximate allowance for this is made by means of baseline 2

Pressures indicated in K/SF, moments - Ft. K/Ft.



DURING CONSTRUCTION

Note to moment diagrams, plates
Moments shown are based on ACI 318-71-13.4.1.1, with strips taken vertically, and represent average values, Ft-K/Ft, before allocation to column and middle strips. Actual moments, as well as tensions in ties, are smaller than shown.

5' 0 5' 10' 15' 20'
Scale in Feet

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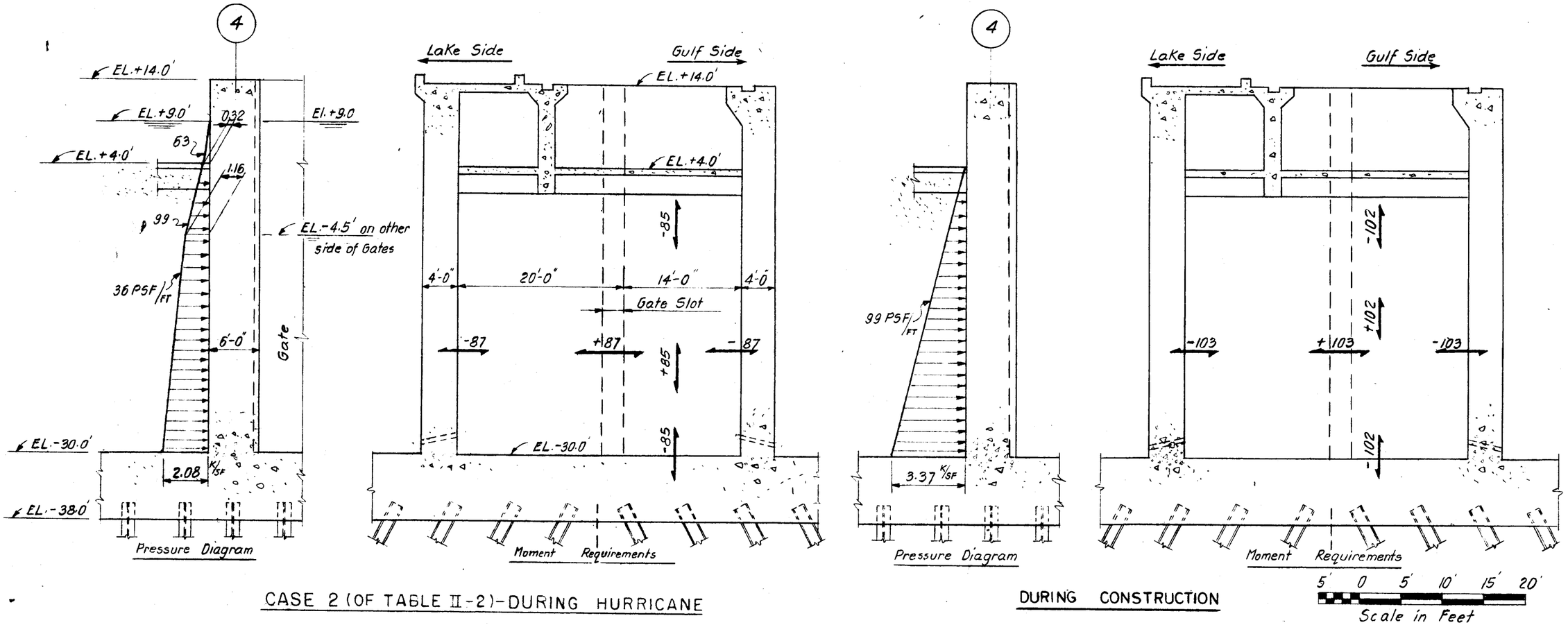
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
ABUTMENT WALLS IN BAY 3
PRESSURES AND MOMENTS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: MARCH 1973
FILE NO. H-2-24417

PLATE V-10



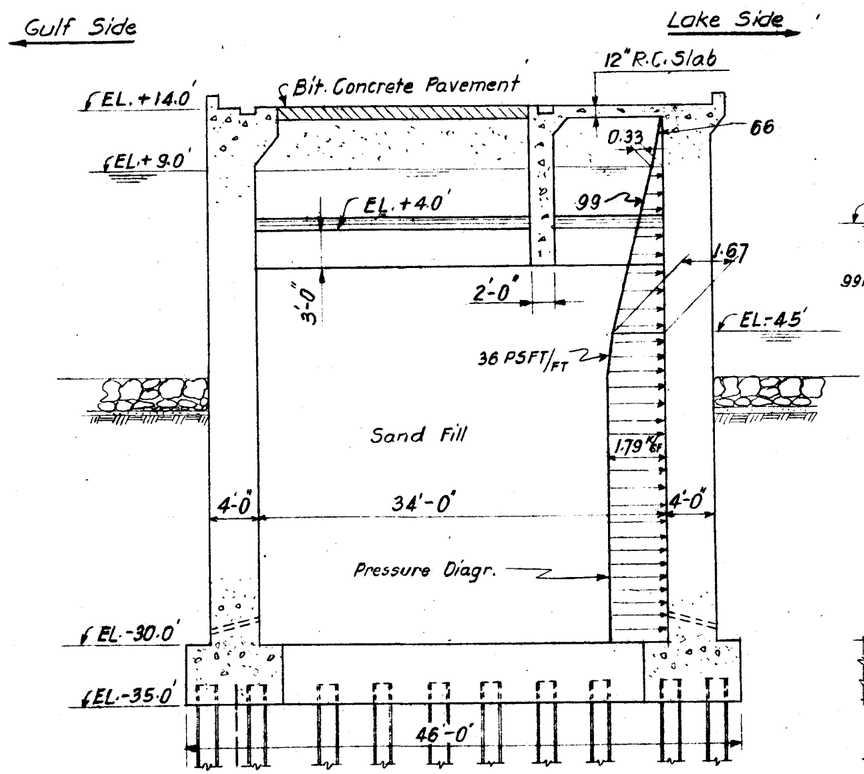
CASE 2 (OF TABLE II-2)-DURING HURRICANE

DURING CONSTRUCTION

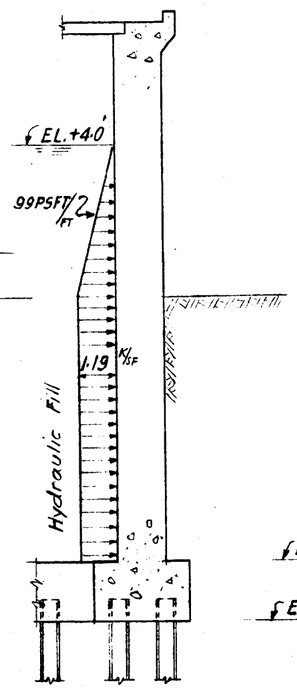
FREDERIC R HARRIS INC
CONSULTING ENGINEERS — NEW ORLEANS, LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM
ABUTMENT CROSS WALL (4)
PRESSURES AND MOMENTS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: MARCH 1973
FILE NO. H-2-24417

PLATE V-11

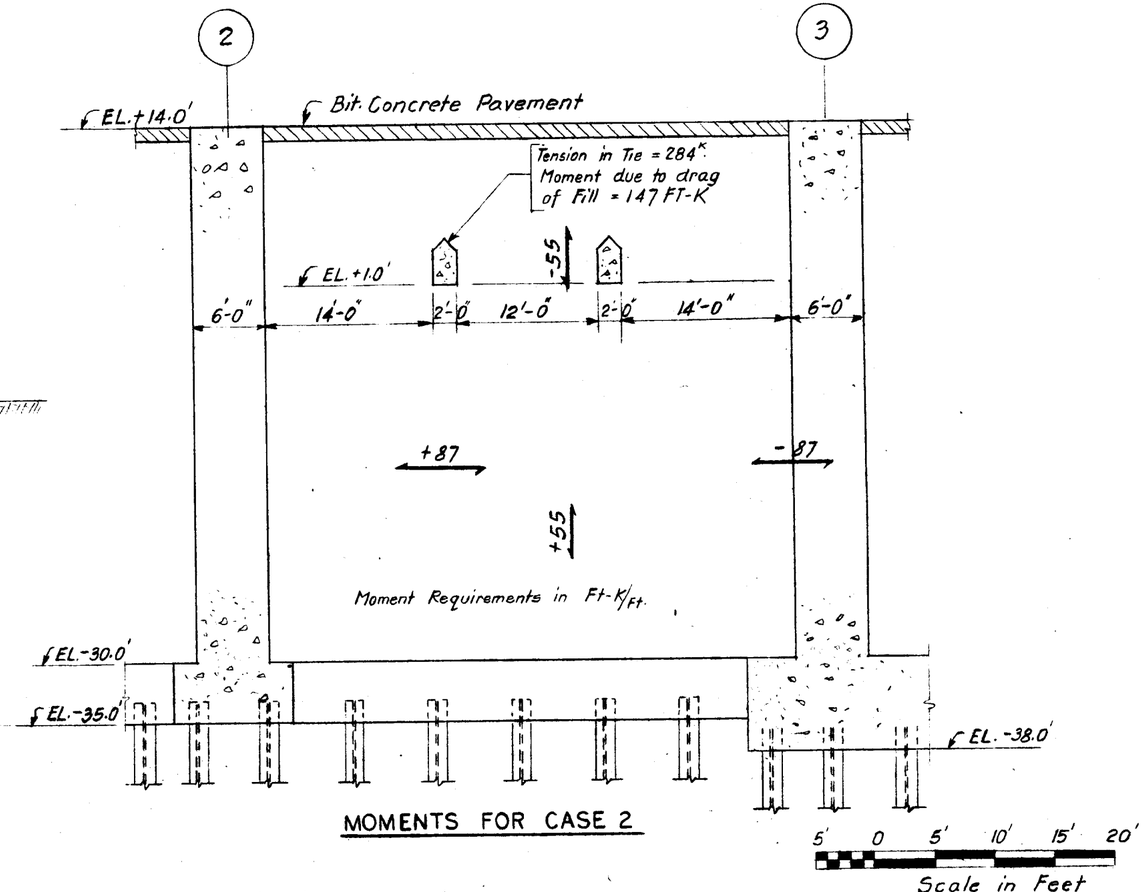


CASE 2 (OF TABLE II-2)—DURING HURRICANE



DURING CONSTRUCTION

NOTE: Pressures smaller than Case 2; Case 2 governs.



MOMENTS FOR CASE 2

Moments shown have been derived by Yield line analyses and include safety factors.

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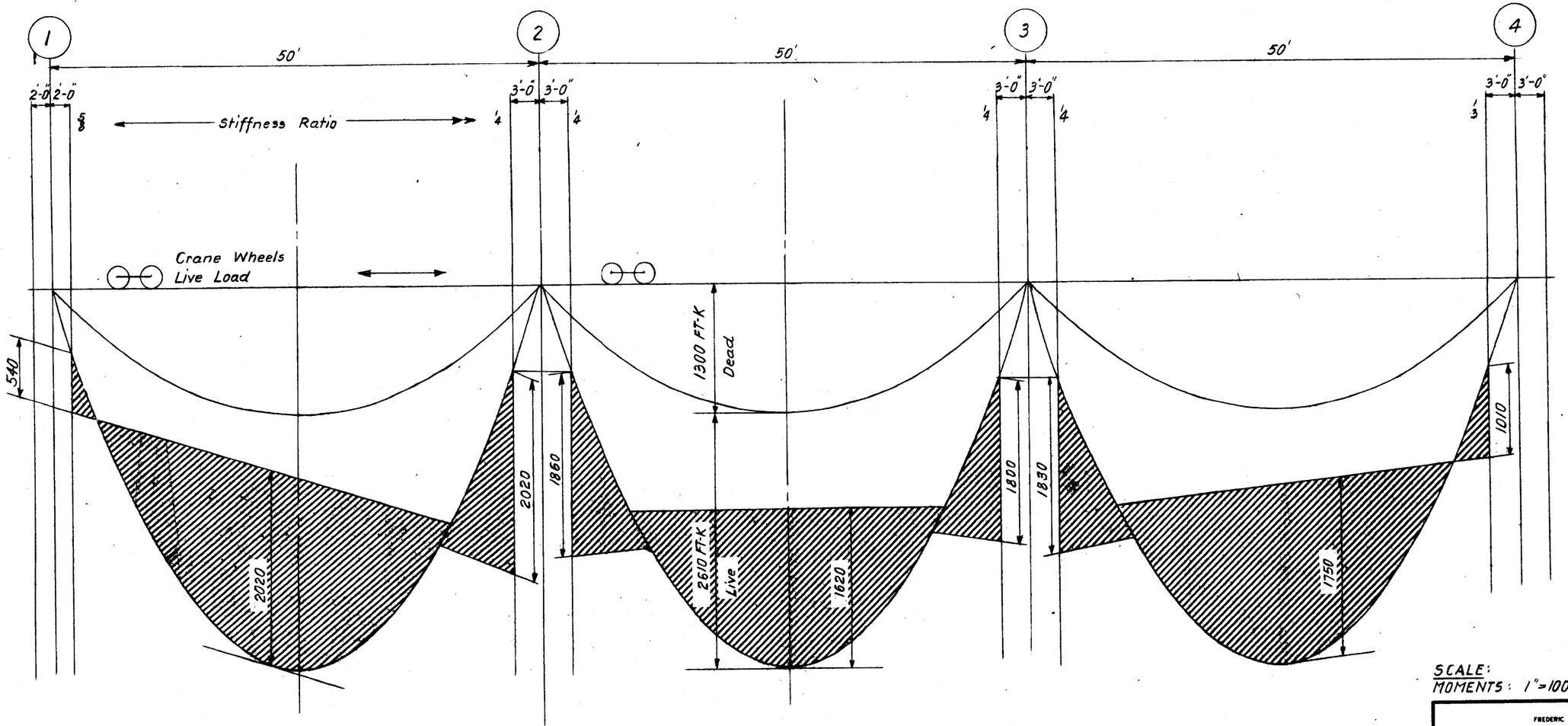
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

ABUTMENT WALLS IN BAY 2
PRESSURES AND MOMENTS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417



MOMENT DIAGRAM

SCALE:
MOMENTS: 1"=1000 FT-K

NOTE:
For abbreviations, loading and shear diagrams see Plate V-14

10' 0 10' 20' 30'
Scale in Feet

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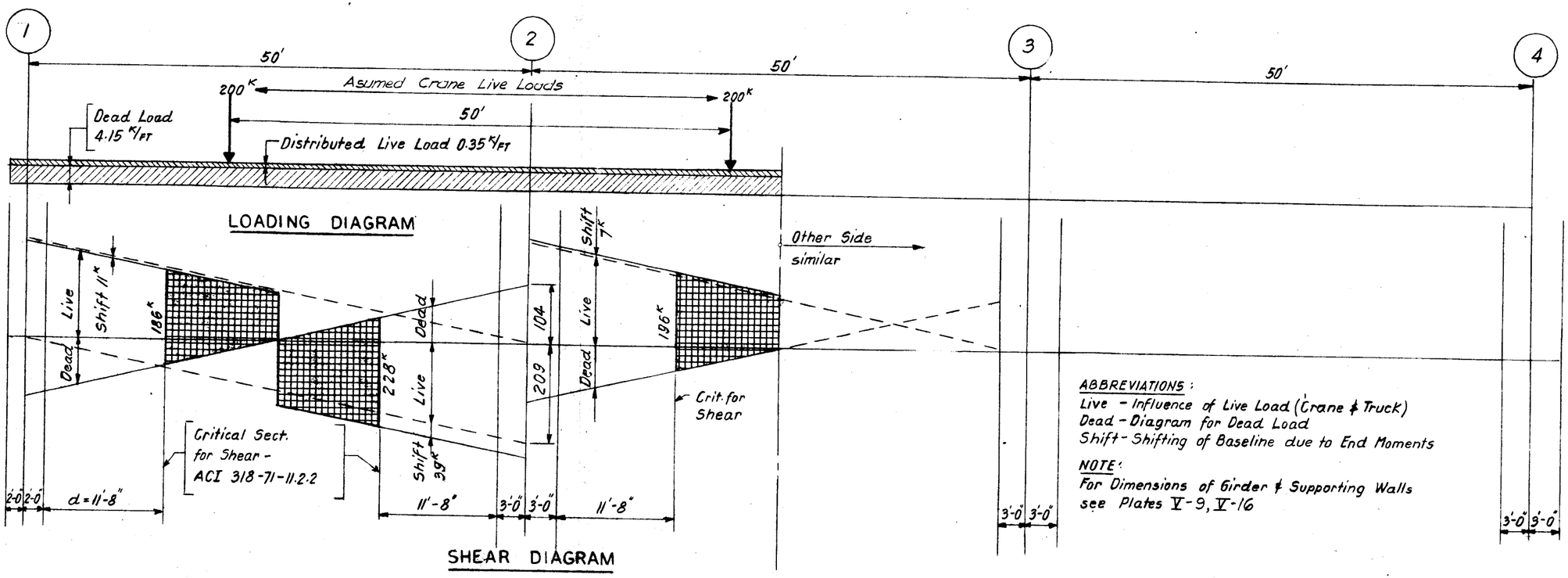
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM
ABUTMENT CRANE GIRDER
MOMENT DIAGRAM
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417



ABBREVIATIONS:
Live - Influence of Live Load (Crane & Truck)
Dead - Diagram for Dead Load
Shift - Shifting of Baseline due to End Moments

NOTE:
For Dimensions of Girder & Supporting Walls
see Plates V-9, V-16

NOTE:
For Moment Diagram see
Plate V-13

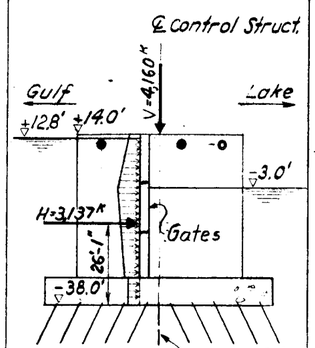
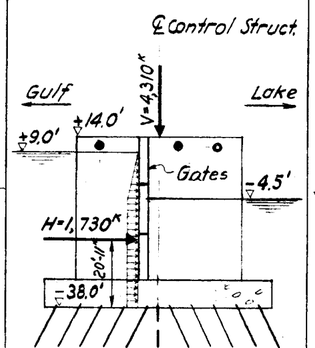
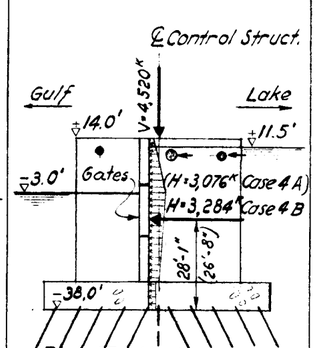
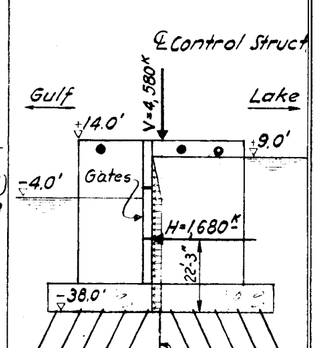
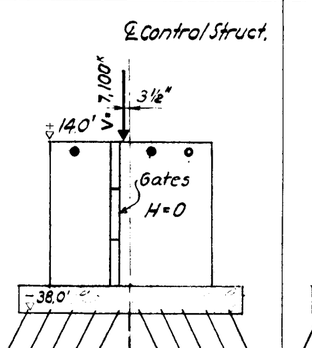
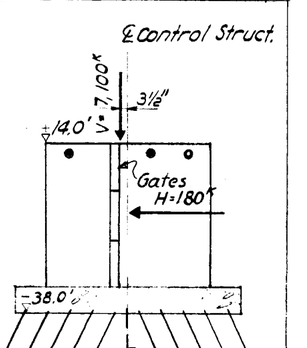
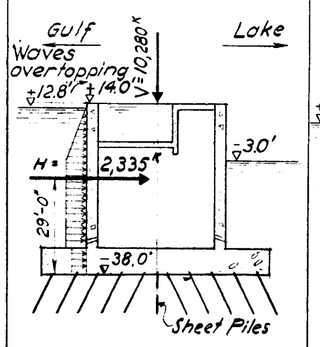
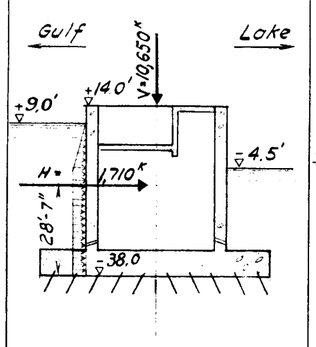
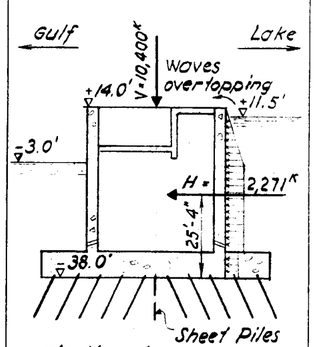
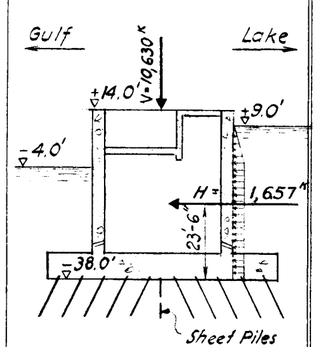
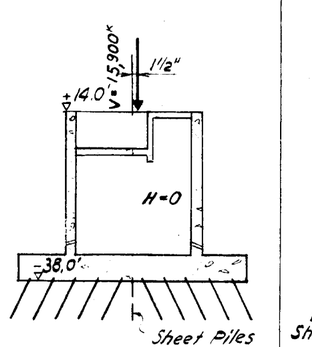
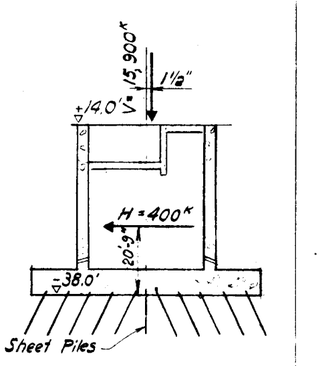
SCALE:
Shear: 1" = 200^K

10' 0 10' 20' 30'
Scale in Feet

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS — NEW ORLEANS, LA

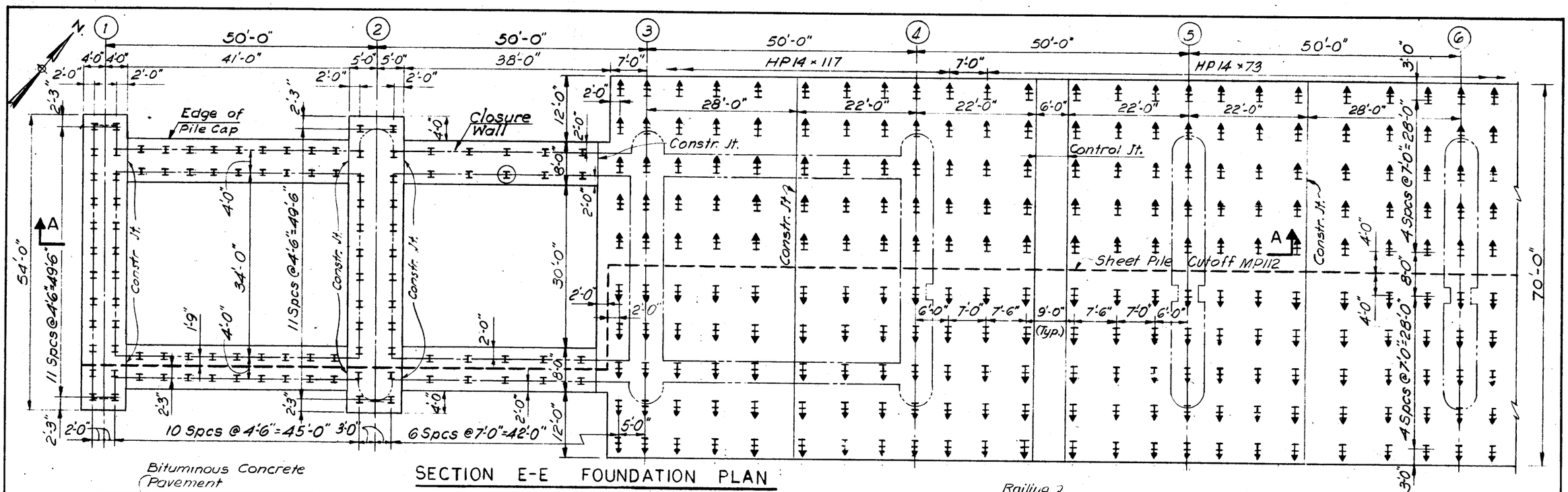
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM
ABUTMENT CRANE GIRDER
LOADING & SHEAR DIAGRAM
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: MARCH 1973
FILE NO. H-2-24417

PLATE V-14

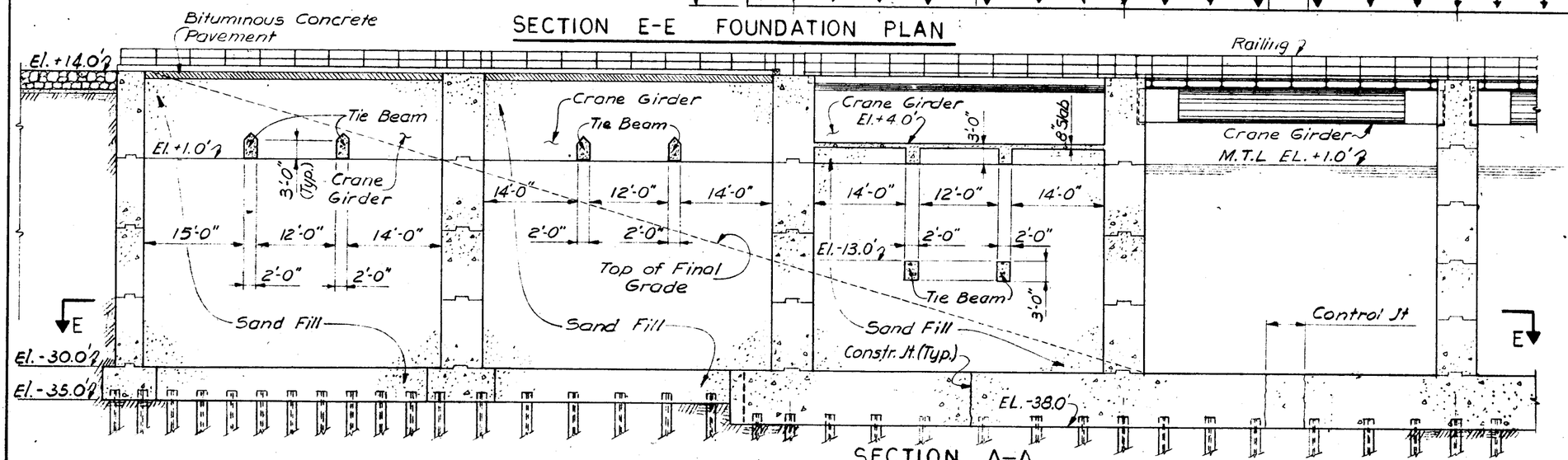
	FROM TABLE II-2				DURING CONSTRUCTION (IN THE DRY)	
Case	1	2	4	5	NO EARTHQUAKE	WITH EARTHQUAKE
Load Group	B	A	B	A	B	B (+ 1/3)
Typical Bay (5 - 18)	 Similar to Case 4A opposite hand.	 Similar to Case 5 - opposite hand.	 Plate V-46 Case 4A (Waves on girders excluded) Plate V-47 Case 4B (Waves on girders included)	 Plate V-45	 No horiz. forces-pile stresses smaller than case 5.	 Increase of pile stress due to horiz. earthquake force - smaller than the allowable 1/3
Bay 3 @ 20	 Plate V-18		 Similar to Case 1 - opposite hand.	 Similar to Case 2 - opposite hand.	 Plate V-19	 Same remarks as for typ. bay (above)

FREDERIC R. HARRIS INC.
CONSULTING ENGINEERS NEW ORLEANS, LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 - DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
PILE FOUNDATIONS
INDEX OF LOADING CASES
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973 FILE NO. H-2-244



SECTION E-E FOUNDATION PLAN



SECTION A-A

NOTE:
For Locations of Construction & Control Joints in Foundation Slab see Plate V-8

5' 0 5' 10' 15' 20' 25' 30' 35'
Scale in Feet

FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

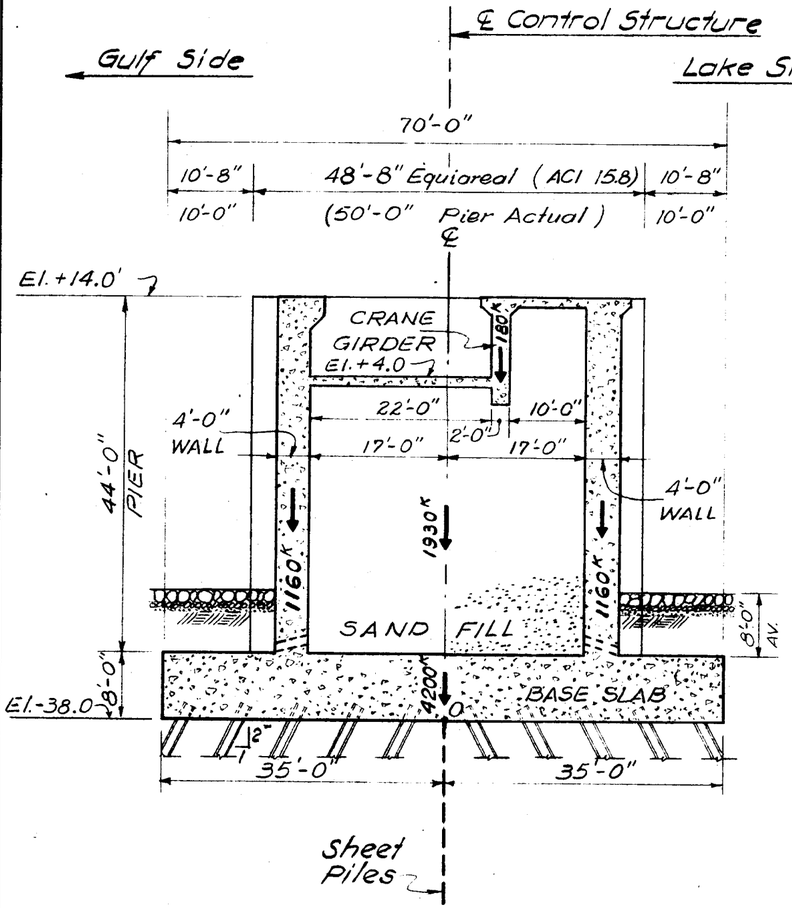
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

CONTROL STRUCTURE PILE PLAN

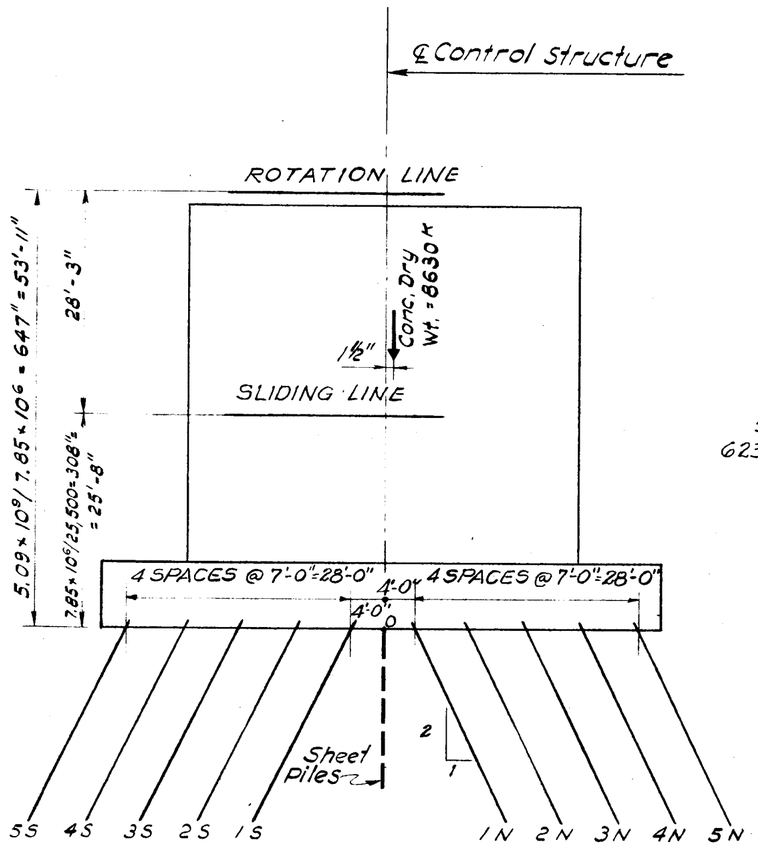
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417

PLATE V-16



SECTION
SHOWING WALLS
AND WEIGHT OF CONCRETE IN THE DRY
FOR 50' BAY



SECTION
SHOWING H-PILE CENTER LINES

WEST ABUTMENT
BAY 3 (BAY 20 SIMILAR)
WITH 70 BATTER PILES HP 14x117
ELASTIC ANALYSIS
BASED ON ASCE PAPER Nº 2401
BY A. HRENNIKOFF

ASSUMPTIONS:

BASE SLAB PERFECTLY RIGID
SOIL MODULUS = 55 psi/in
PILE LENGTH FOR CALC. OF AXIAL SPRING CONST. = 0.5 x 115' = 57.5 FT.

RESULTS OF ANALYSIS:

REACTION	EACH PILE	DISPLACEMENT
144.6 K	Axial per	1" Axial
94.3 K	Transverse per	1" Transverse
5,420 in-K	Bending per	1" Transverse
623,000 in-K	Bending per	1 Radian Rotation

ENTIRE FOOTING
(REACTIONS REFERRED TO "O")

82,200 K	Vertical per	1" Vertical
25,500 K	Horizontal } per	1" Horiz. (Note)
7.85 x 10^6 in-K	Moment }	
7.85 x 10^6 K	Horizontal } per	1" Radian Rotation (Note)
5.09 x 10^9 in-K	Moment }	

NOTE:
For Horiz. Movement without Rotation, the force should act on the Sliding Line; For Rotation without Translation, on the Rotation Line. For Location of these Lines see Section at Left.

5' 0 5' 10' 15' 20'
Scale in Feet

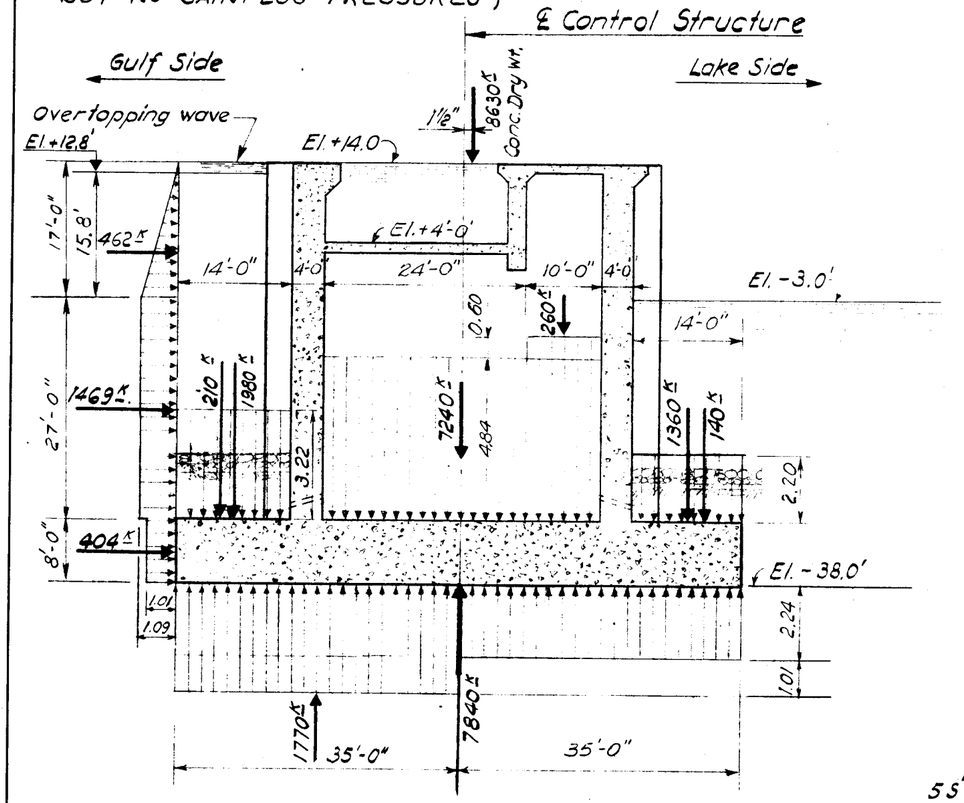
FREDERIC R HARRIS INC
CONSULTING ENGINEERS - NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 - DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
PILES - BAY 3 (ABUTMENT)
ELASTIC PROPERTIES
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973 FILE NO. H-2-24417

PLATE V-17

CASE 1 OF TABLE 2 - HURRICANE WITH WAVES FROM GULFSIDE

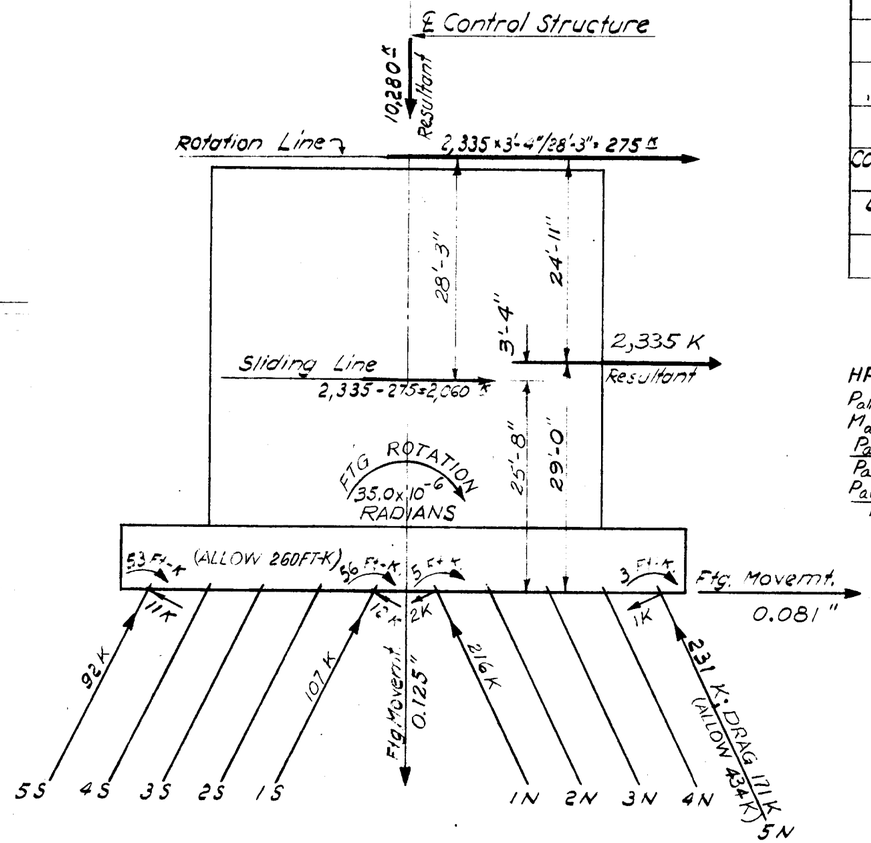
(WAVES IN SHOALING WATER ASSUMED TO CAUSE OVERTOPPING, BUT NO SAINFLOU PRESSURES)



PRESSURE DIAGRAM

FOOTING MOVEMENTS

Vertical: 10,280/82,200 = 0.125"
Horiz.: 2,060/25,500 = 0.081"
Rotation: 275/7.85 × 10⁶ = 35.0 × 10⁻⁶ rad.



RESULTANTS AND PILE REACTIONS

5' 0 5' 10' 15' 20'
Scale in Feet

PILE STRESSES

ROW	5S	4S	3S	2S	1S
COMPRESSION Kips	92	96	100	103	107
BENDING Ft-K.	53	54	54	55	56
SHEAR Kips	11	11	12	12	12

ROW	1N	2N	3N	4N	5N
COMPRESSION Kips	216	220	224	227	231
BENDING Ft.-K.	5	4	4	4	3
SHEAR Kips	2	2	2	1	1

Bay 20 similar

HP 14 × 117 Piles
$P_{allow} = 12.6 \times 34.44 = 434^{K}$
$M_{allow} = 18 \times 172.6 = 3120^{in\text{-}K}$
$\frac{P_{act}}{P_{allow}} + \frac{M_{act.}}{M_{allow}} = \frac{231}{434} + \frac{36}{3120} = 0.55 < 1.0$ o.k.
$\frac{P_{act} + P_{DRAG}}{P_{allow}} = \frac{231 + 171}{434} = \frac{402}{434} = 0.93 < 1.0$ o.k.

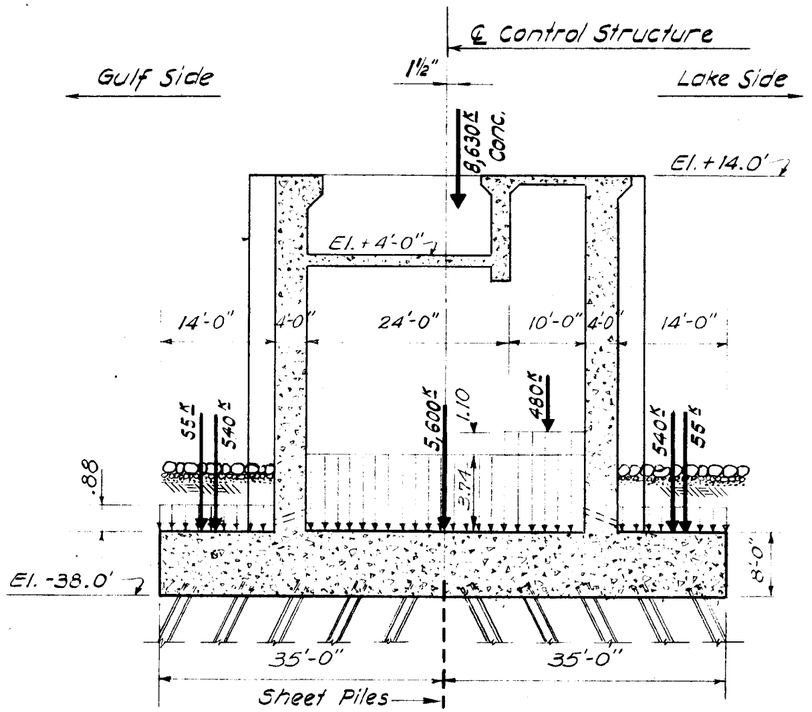
NOTE:
For dimensions and elastic properties see Plate V-17

FREDERIC R HARRIS, INC.
CONSULTING ENGINEERS - NEW ORLEANS, LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
PILES – BAY 3
LOADING CASE 1
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: MARCH 1973
FILE NO. H-2-24417

CONSTRUCTION LOADING

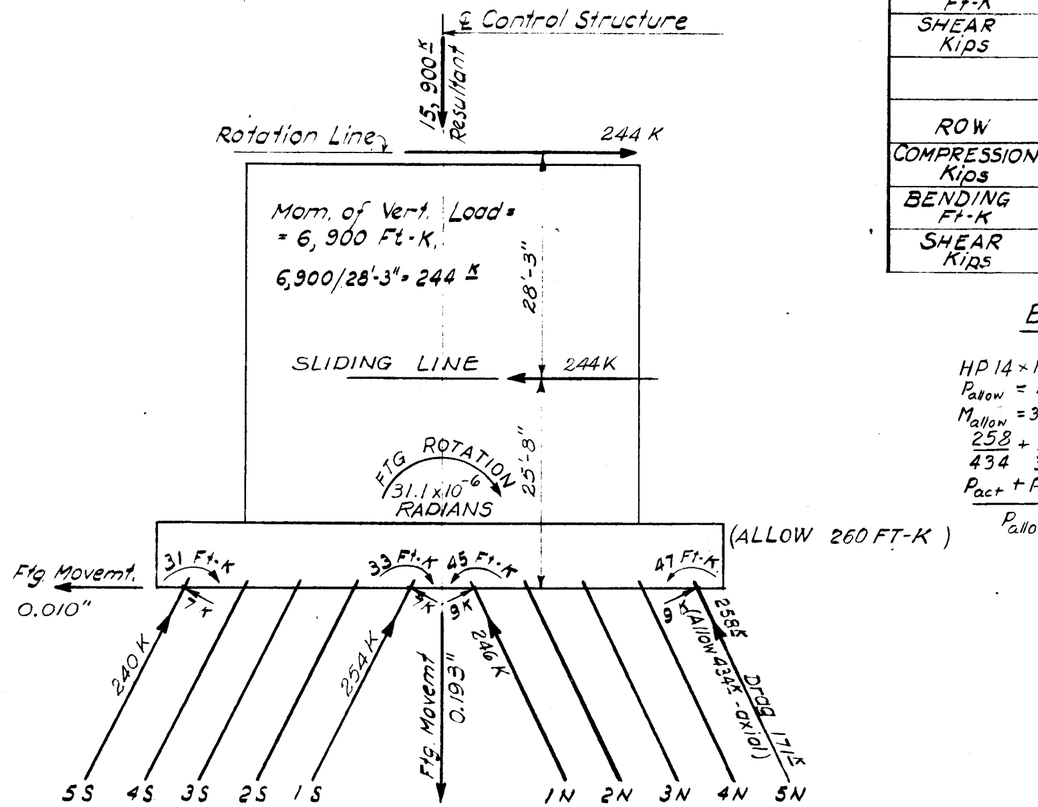
(DUE TO DWN WEIGHT, INCLUDING SAND FILL WEIGHING 110 PCF).



PRESSURE DIAGRAM

FOOTING MOVEMENTS

Vertical: 15,900/82,200 = 0.193"
Horiz.: 244/25,500 = 0.010"
Rotation: 244/7.85 × 10⁶ = 31.1 × 10⁻⁶ rad.



RESULTANTS AND PILE REACTIONS

5' 0 5' 10' 15' 20'
Scale in Feet

PILE STRESSES					
ROW	5S	4S	3S	2S	1S
COMPRESSION Kips	240	244	247	250	254
BENDING Ft-K	31	32	32	32	33
SHEAR Kips	7	7	7	7	7
ROW	1N	2N	3N	4N	5N
COMPRESSION Kips	246	249	252	255	258
BENDING Ft-K	45	46	46	46	47
SHEAR Kips	9	9	9	9	9

Bay 20 similar

HP 14 × 117 Piles
$P_{allow} = 434^{K}$
$M_{allow} = 3120^{in-K}$ } Plate V-18

$\frac{258}{434} + \frac{564}{3120} = 0.78 < 1.0$ K

$\frac{P_{act} + P_{drag}}{P_{allow}} = \frac{258 + 171}{434} = 0.99 < 1.0$ K

NOTE:
For dimensions and elastic properties see plate V-17

Scale:
Pressures: 1" = 4 KSF

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LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
PILES - BAY 3
CONSTRUCTION LOADING
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
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DATE: MARCH 1973
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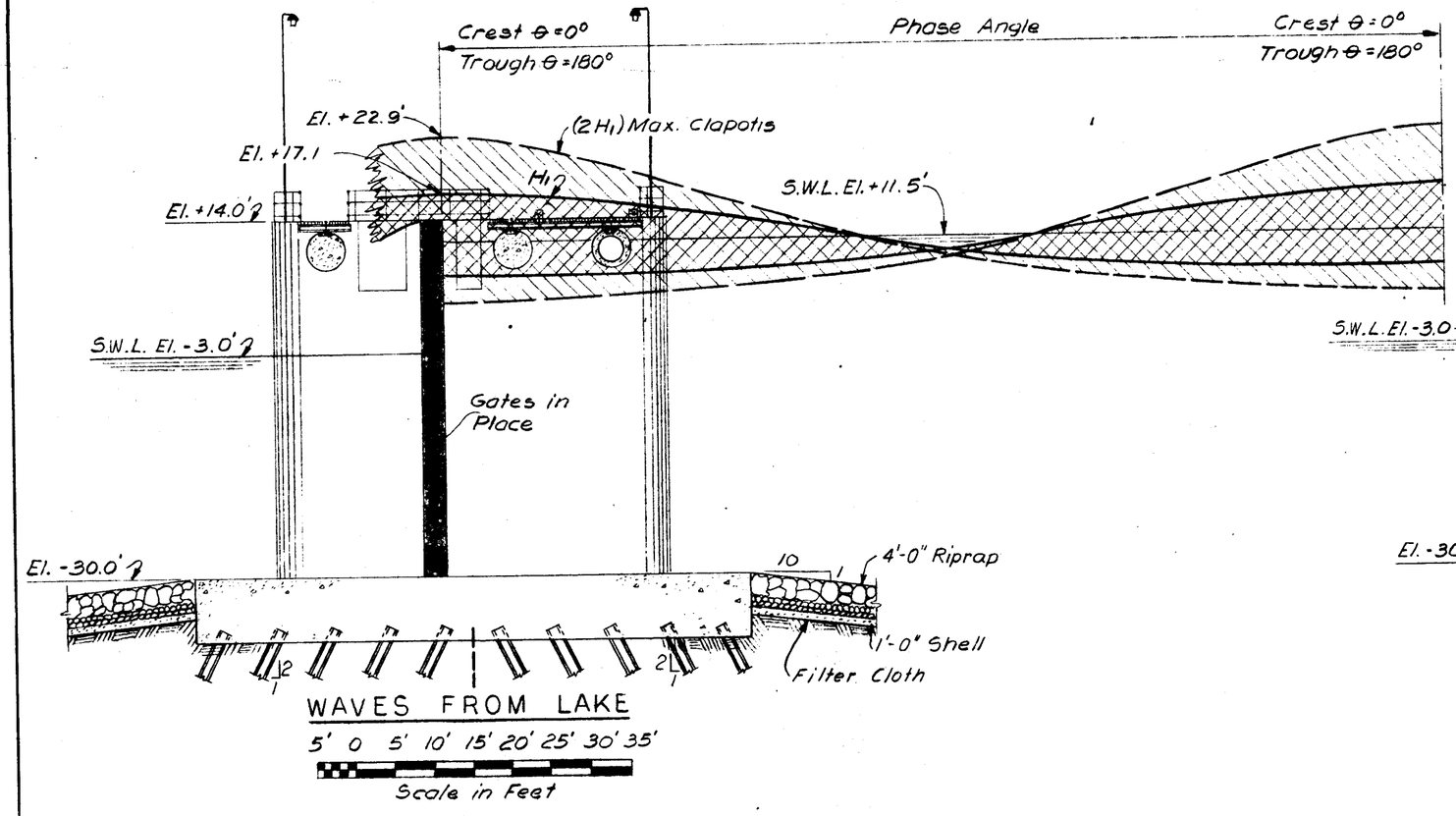
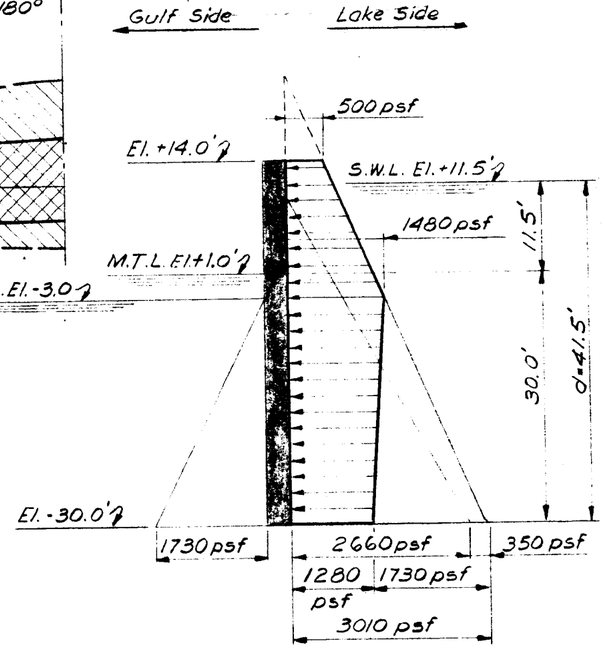
WAVE PROPERTIES

$H_s = 5.45'$ $d = 41.5'$
$L_o = 308'$ $L_1 = 244'$
$H_1 = 9.77'$ $2H_1 = 19.54'$
$T = 7.75$ Sec. $h_o = 1.6'$





SAINFLOU PRESSURE DIAGRAM

Scale. Horiz. 1/2" = 1000 psf
Vert. 1/16" = 1'-0"

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LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

CONTROL STRUCTURE
SAINFLOU DIAGRAM LAKE SIDE

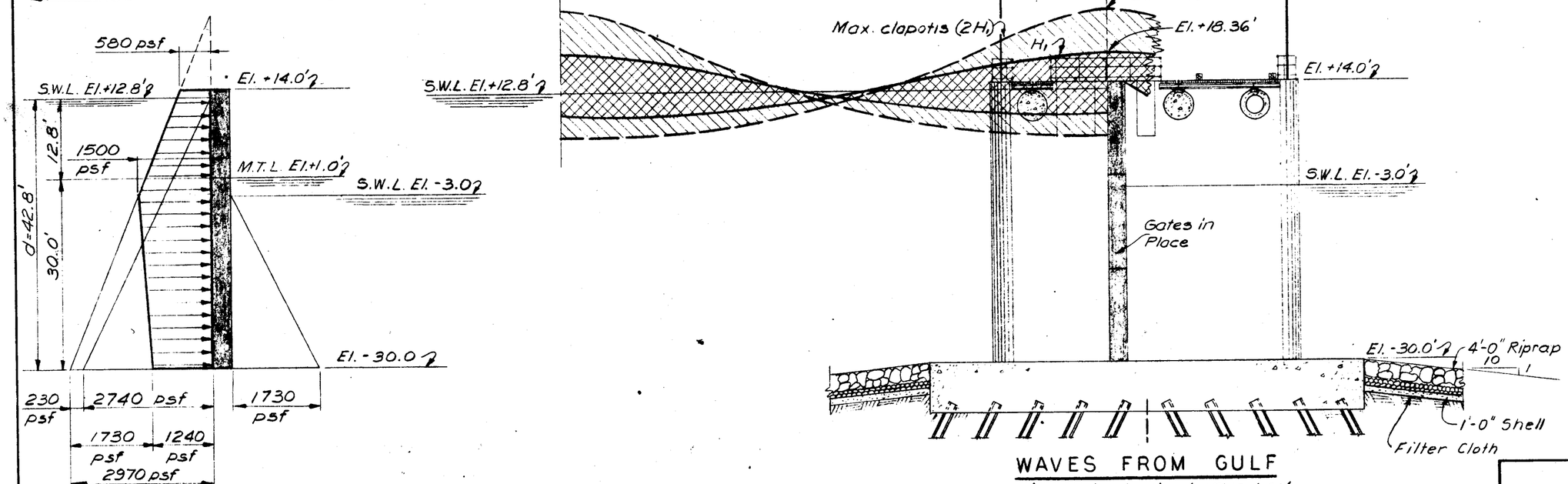
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO H-2-24417

PLATE V-20

WAVE PROPERTIES

$H_s = 5.80'$ $d = 42.8'$
$L_0 = 172'$ $L_1 = 166'$
$H_1 = 9.70'$ $2H_1 = 19.40'$
$T = 5.8$ Sec. $h_0 = 2.06'$



SAINFLOU PRESSURE DIAGRAM

Scale: Horiz. 1/2" = 1000 psf
Vert. 1/16" = 1'-0"

WAVES FROM GULF

5' 0 5' 10' 15' 20' 25' 30' 35'

Scale in Feet

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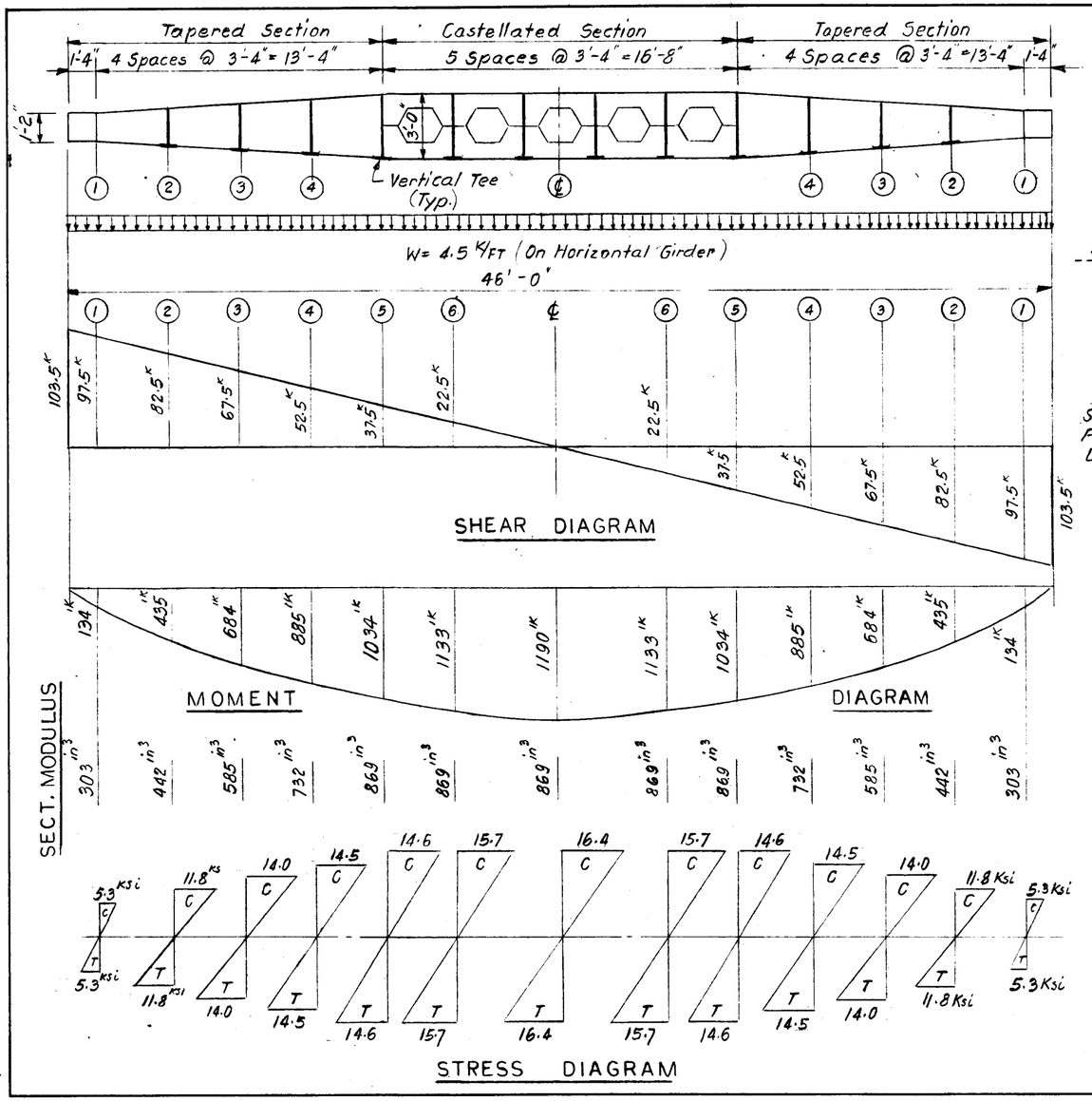
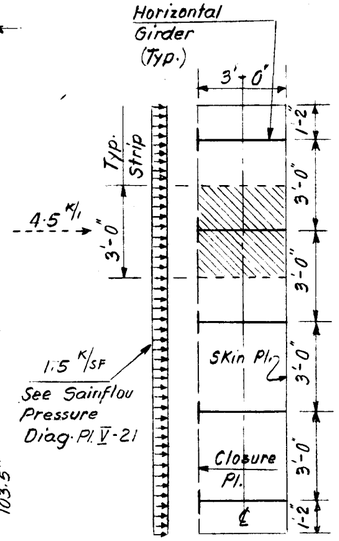
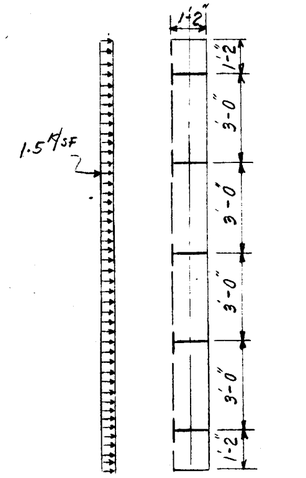
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CONTROL STRUCTURE
SAINFLOU DIAGRAM GULF SIDE
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO H-2-24417

PLATE V-21







Consider each individual Panel to consist of a series of horizontal Girders spaced at 3'-0" c/c. and connected by vertical Tee's & Closure Plates.
Each horizontal Girder carries a load contributed by a 3' wide strip

Load/FT. of Span = $1.5^{KSF} \times 3' = 4.5^{K/I}$
Span of horiz. Girder = 46'

SHEAR FORCE:

At Supports: $\frac{4.5^{K/I} \times 46'}{2} = 103.5^{K}$

At Point (1): $103.5^{K} - 4.5^{K/I} \times 1.33' = 97.5^{K}$
At Point (2): $103.5^{K} - 4.5^{K/I} \times 4.67' = 82.5^{K}$
At Point (3): $103.5^{K} - 4.5^{K/I} \times 8.0' = 67.5^{K}$
At Point (4): $103.5^{K} - 4.5^{K/I} \times 11.33' = 52.5^{K}$

BENDING MOMENT

At ℄: $\frac{103.5^{K}}{2} \times 23' = 1190^{'K}$

At Point (1): $\left(\frac{103.5' + 97.5^{K}}{2}\right) 1.33' = 134^{'K}$

At Point (2): $\left(\frac{103.5^{K} + 82.5^{K}}{2}\right) 4.67' = 435^{'K}$

At Point (3): $\left(\frac{103.5' + 67.5}{2}\right) 8.0'' = 684^{'K}$

At Point (4): $\left(\frac{103.5^{K} + 52.5}{2}\right) 11.33' = 885^{'K}$

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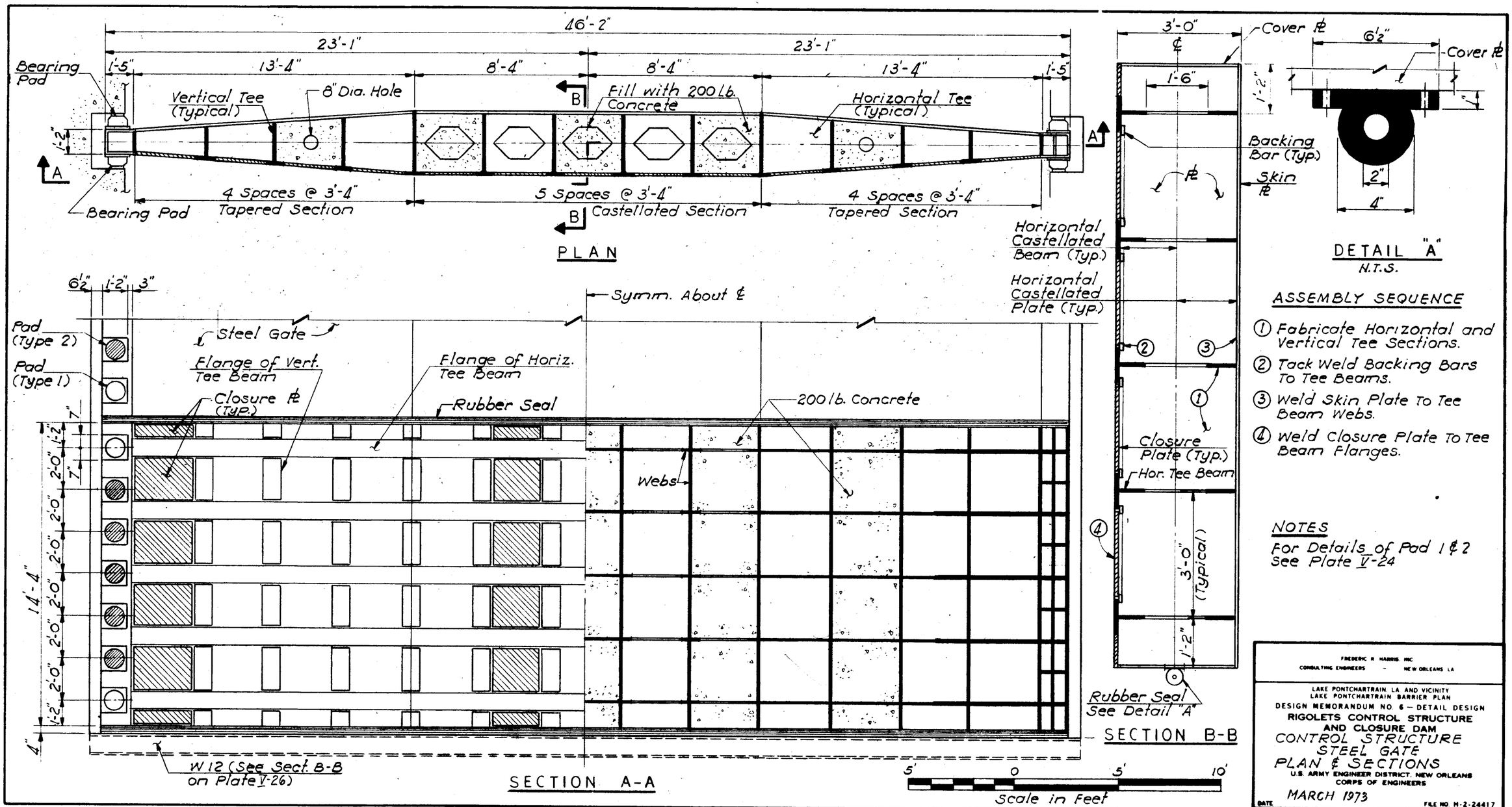
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

VERTICAL LIFT GATES ANALYSIS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417



ASSEMBLY SEQUENCE

1. Fabricate Horizontal and Vertical Tee Sections.
2. Tack Weld Backing Bars To Tee Beams.
3. Weld Skin Plate To Tee Beam Webs.
4. Weld Closure Plate To Tee Beam Flanges.

NOTES

For Details of Pad 1 & 2 See Plate V-24

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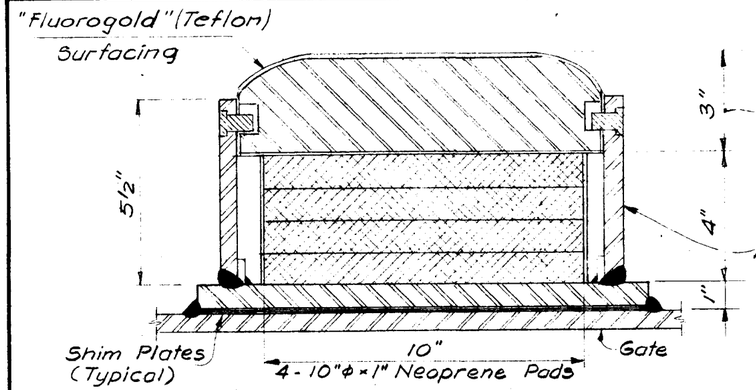
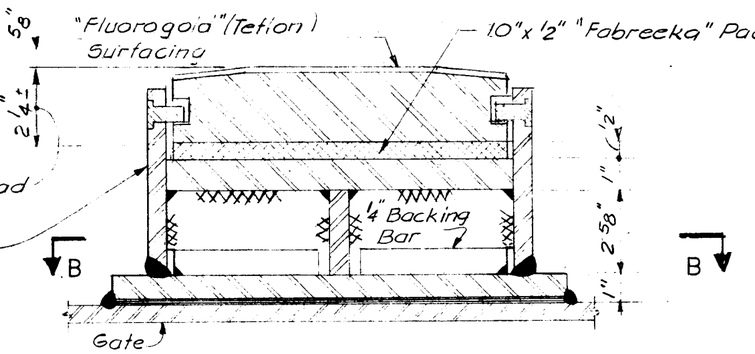
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CONTROL STRUCTURE
STEEL GATE
PLAN & SECTIONS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417

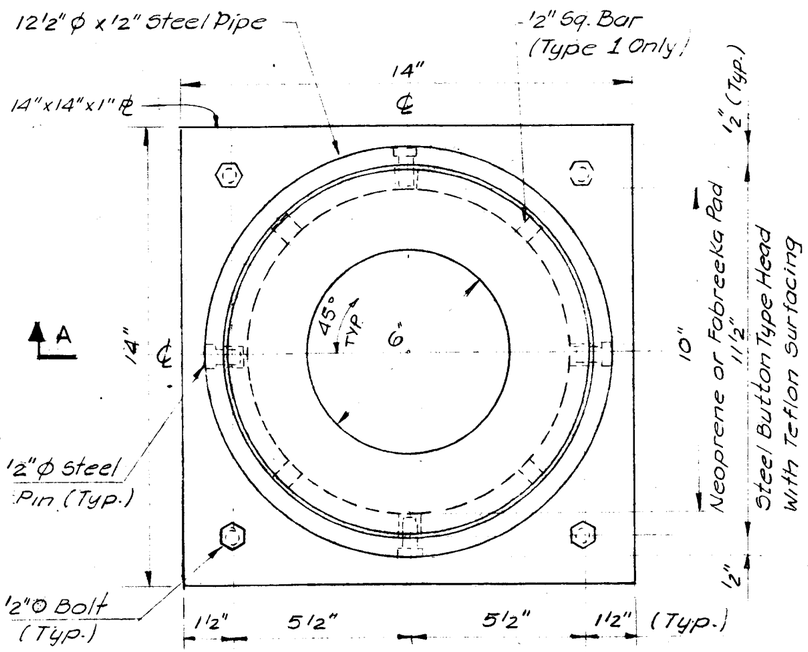
PLATE V-23



SECTION A-A (TYPE 1)

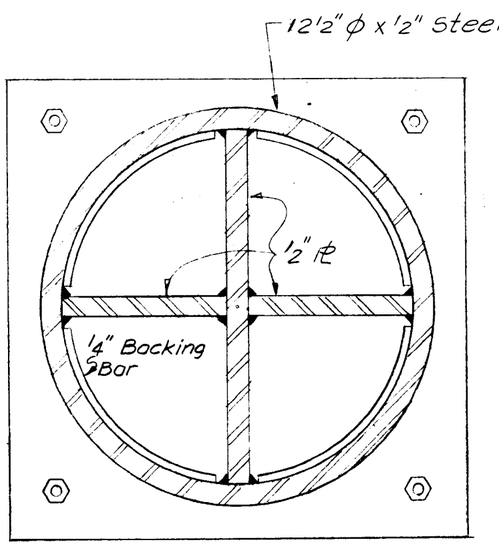


SECTION A-A (TYPE 2)



PLAN

BEARING PAD (TYPES 1 & 2)



SECTION B-B

NOTES:

Type 1 Pads are Designed for Aligning Gates During Placement.

Type 2 Pads are Designed for Carrying the Gate Reactions to the Bearing Plate in the Gate Slot.

6" 0 6"

Scale in Inches

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LAKE PONTCHARTRAIN LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

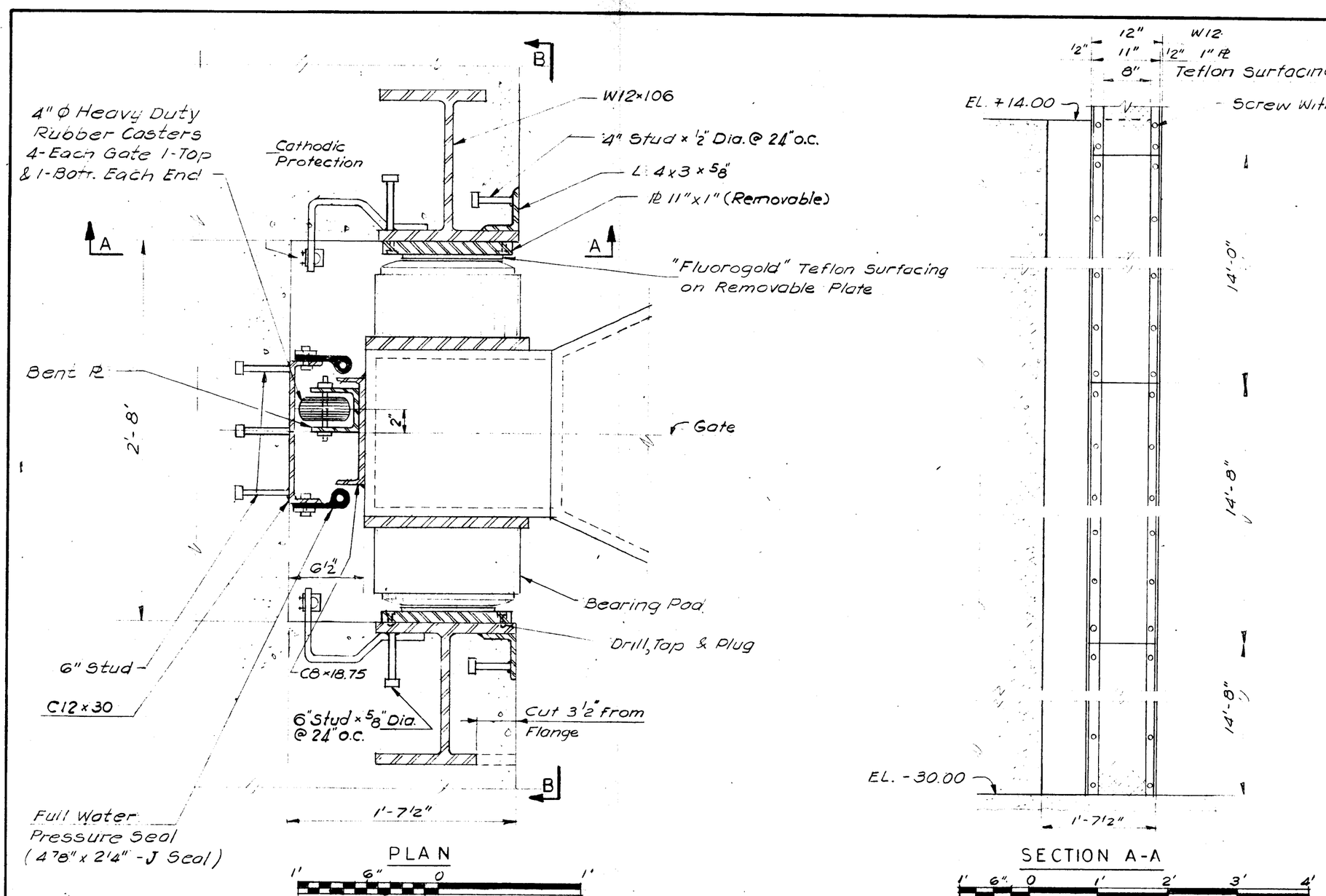
CONTROL STRUCTURE
GATE BEARING PADS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973

FILE NO M-2-24417

PLATE V-24



NOTES

For Section B-B See Plate V-26
For Detail of Bearing Pad See Plate V-24
For Details of Cathodic Protection see Plate VII-3

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LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CONTROL STRUCTURE
GATE BEARINGS
PLAN & SECTION
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
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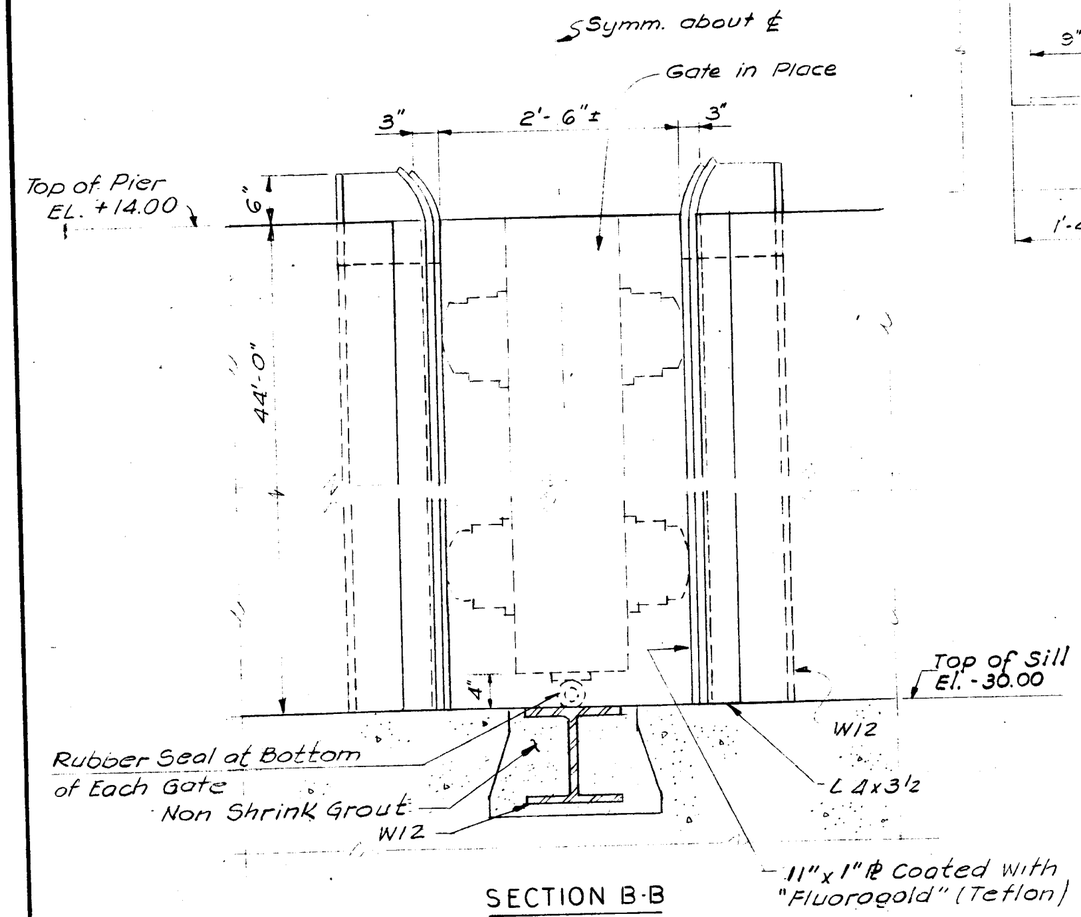
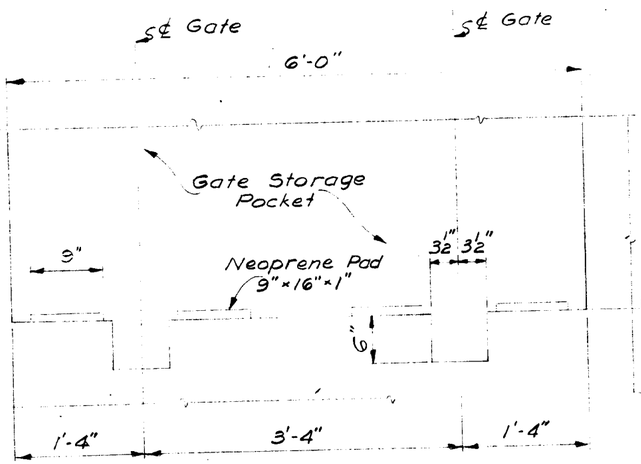
DATE MARCH 1973
FILE NO. M-2-24417

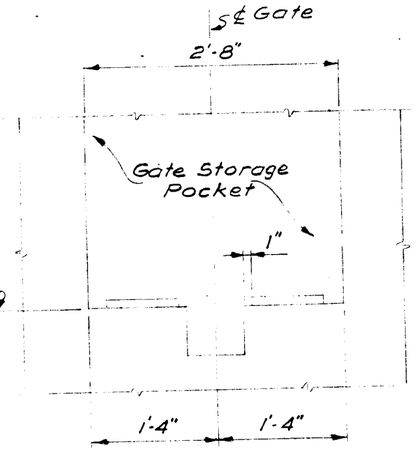
PLATE V-25



SECTION B-B

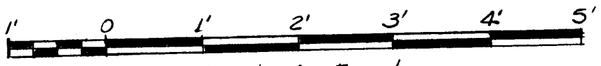


DETAIL "A"



DETAIL "B"

El. +5.25'



Scale in Feet

NOTES:

For location of Section B-B see Plate V-23

For Details of Cathodic Protection see Plate VII-3

For location of Details "A" & "B" see Plate V-9

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LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM
CONTROL STRUCTURE
GATE BEARING GUIDE
SECTION
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO M-2-24417

PLATE V-26

Morison Equation: $F = \rho C_M \nabla \frac{d}{dt} \underline{q} + \frac{1}{2} \rho C_D D \underline{q} |\underline{q}|$

Horizontal Component: $F_h = -\rho C_M \nabla \sigma^2 \frac{H}{2} \frac{\cosh k(d+y)}{\sinh kd} \sin \sigma t + \frac{1}{2} \rho C_D D \sigma^2 (\frac{H}{2})^2 \frac{\cosh^2 k(d+y)}{\sinh^2 kd} \cos \sigma t |\cos \sigma t|$

Vertical Component: $F_V = -\rho C_M \nabla \sigma^2 \frac{H}{2} \frac{\sinh k(d+y)}{\sinh kd} \cos \sigma t - \frac{1}{2} \rho C_D D \sigma^2 (\frac{H}{2})^2 \frac{\sinh^2 k(d+y)}{\sinh^2 kd} \sin \sigma t |\sin \sigma t|$

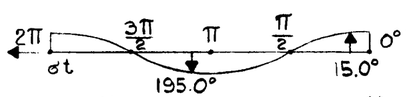
Phase Angle for Maximum Horizontal Component: $\sin \sigma t = \pm \frac{2 \rho C_M \nabla}{\rho C_D D H} \frac{\sinh kd}{\cosh k(d+y)}$

Phase Angle for Maximum Vertical Component: $\cos \sigma t = \pm \frac{2 \rho C_M \nabla}{\rho C_D D H} \frac{\sinh kd}{\sinh k(d+y)}$

NOTATION:

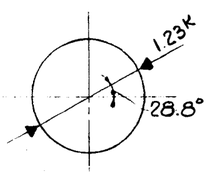
F	Total Wave Force
ρ	Mass Density of Water
C_M	Hydrodynamic Inertia Coefficient
C_D	Hydrodynamic Drag Coefficient
∇	Volume of Displaced Water
D	Projected Area of Object
$\underline{q}(u,v)$	Velocity of Water Particle
σ	Circular Frequency
K	Wave Number
d	Water Depth
H	Wave Height
L	Wave Length

GULF SIDE WAVE FORCES

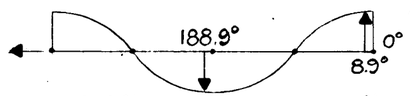


H = 9.7 ft L = 160 ft

C_M = 1.8
C_D = 4.2

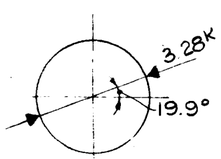


NORMAL WAVE



H = 19.4 ft L = 160 ft

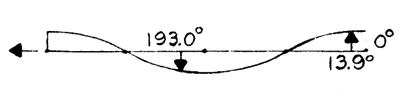
C_M = 1.6
C_D = 3.1



STANDING WAVE

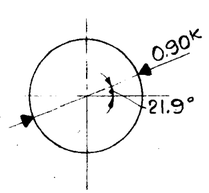
V = 21.0 ft³/L.ft
D = 6.5 ft²/L.ft

LAKE SIDE WAVE FORCES

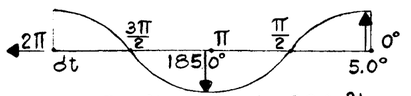


H = 9.8 ft. L = 224 ft.

C_M = 1.9
C_D = 3.9

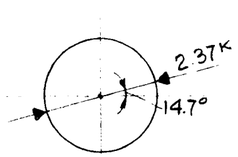


NORMAL WAVE

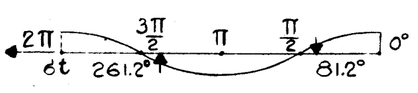


H = 19.6 ft. L = 224 ft.

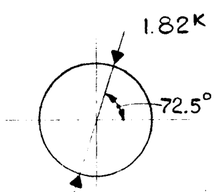
C_M = 1.0
C_D = 2.8

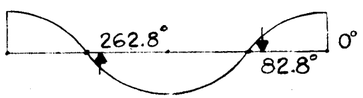


STANDING WAVE

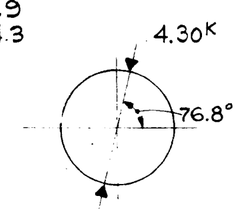


C_M = 1.8
C_D = 6.3

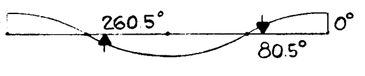




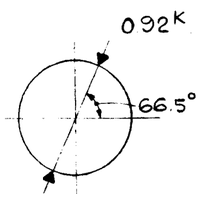
C_M = 1.9
C_D = 4.3

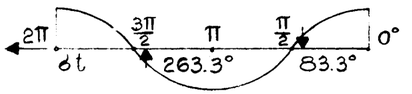


V = 21.0 ft³/L.ft
D = 7.4 ft²/L.ft

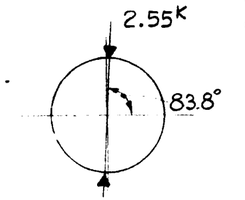


C_M = 1.8
C_D = 6.3





C_M = 1.9
C_D = 4.3



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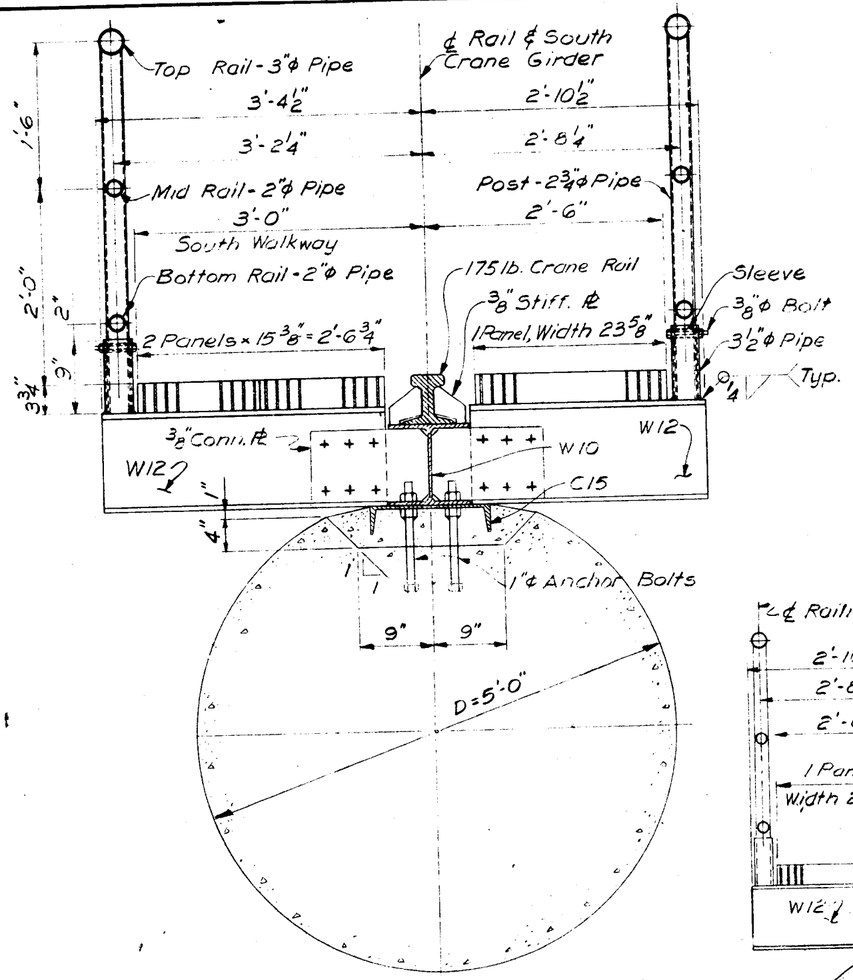
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

WAVE FORCES ON GIRDERS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

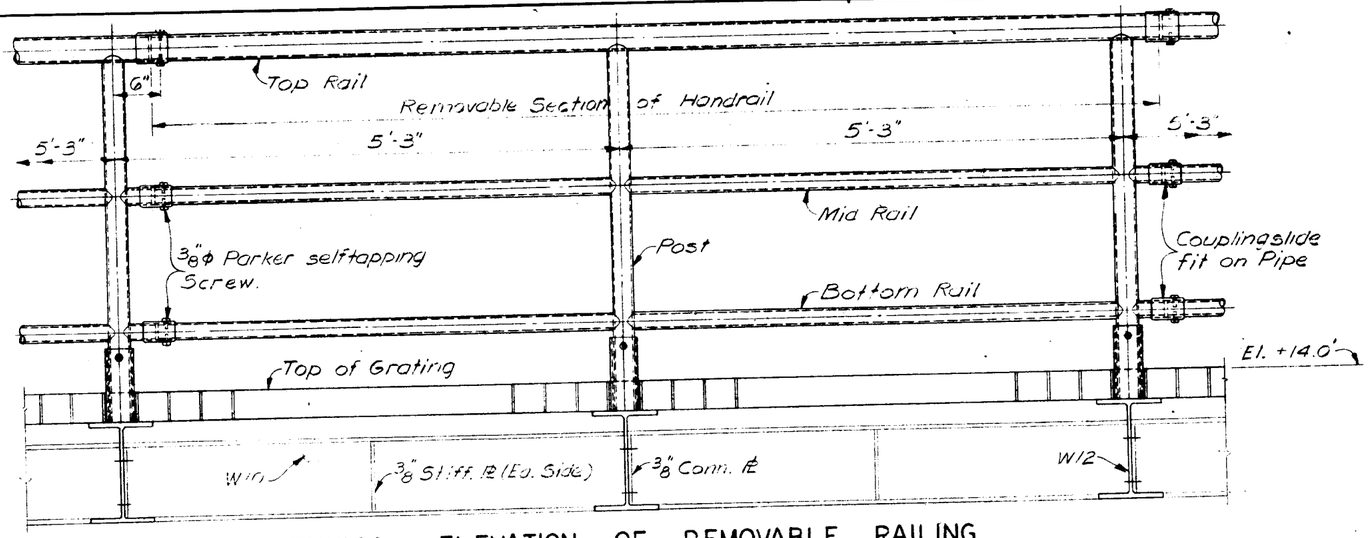
DATE MARCH 1973 FILE NO. H-2-24417



SECTION THROUGH SOUTH CRANE GIRDER

1' 0 1' 2' 3' 4'

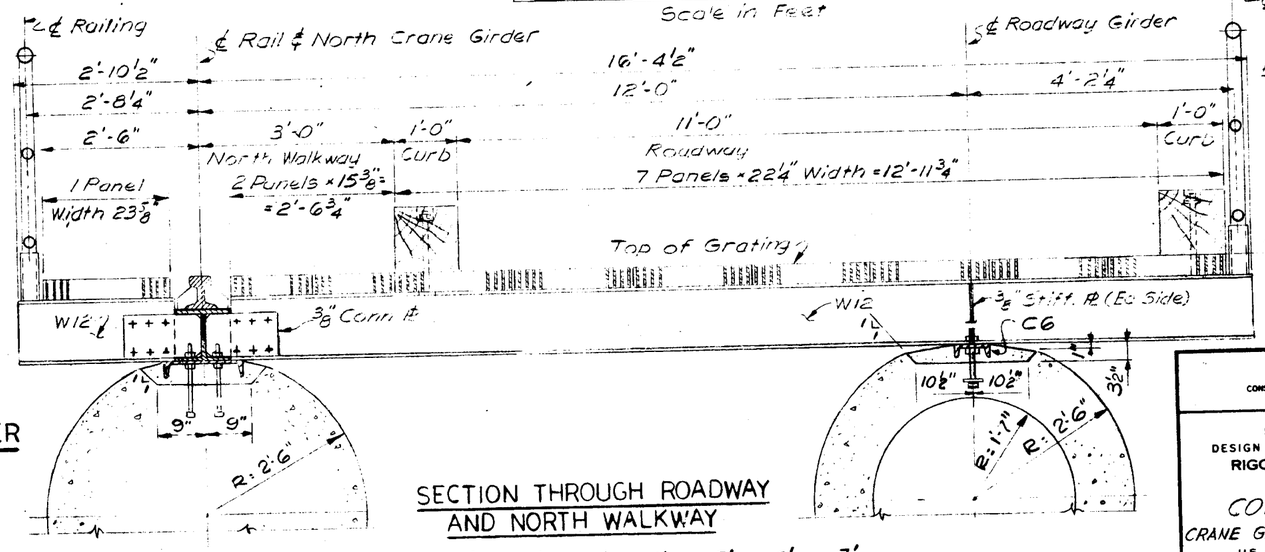
Scale in Feet



TYPICAL ELEVATION OF REMOVABLE RAILING

1' 0 1' 2' 3' 4'

Scale in Feet



NOTE

For details and dimensions not shown see Section Trough South Crane Girder.

SECTION THROUGH ROADWAY AND NORTH WALKWAY

1' 0 1' 2' 3' 4' 5' 6' 7'

Scale in Feet

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LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

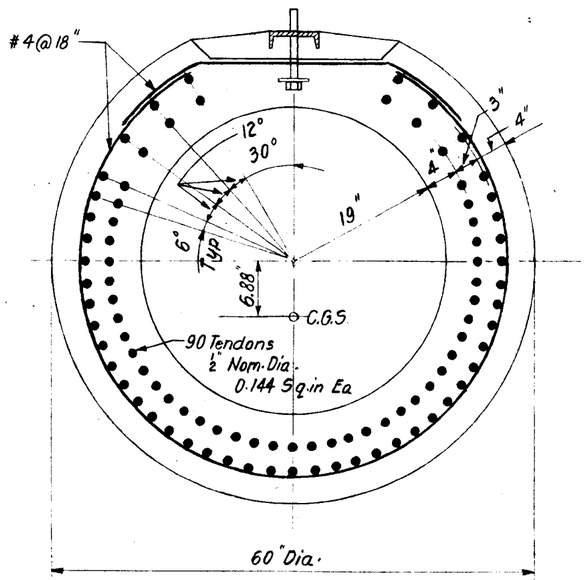
CONTROL STRUCTURE

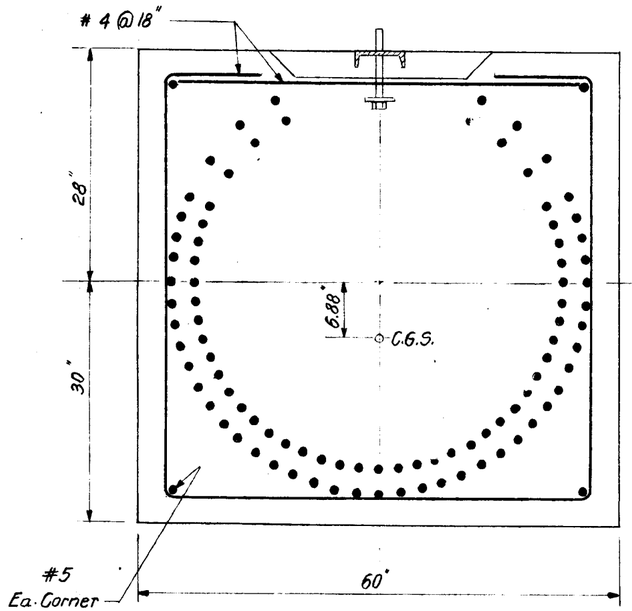
CRANE GIRDER AND ROADWAY DETAILS

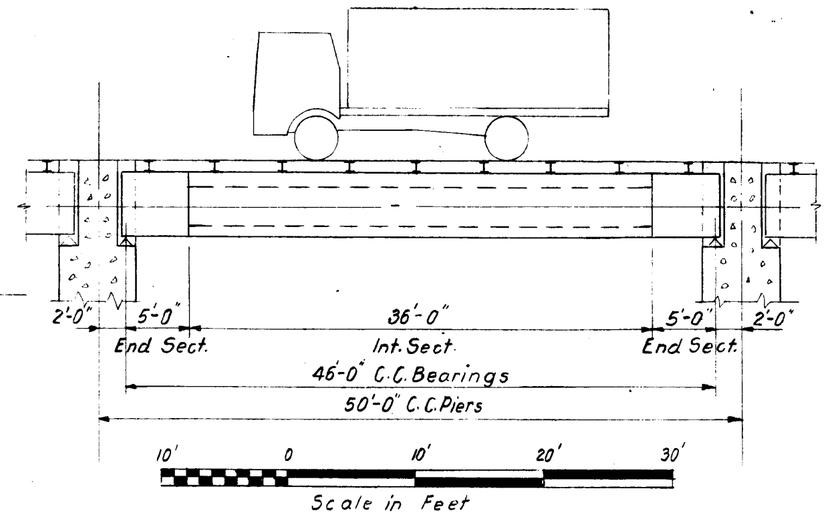
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417

PLATE V-28







ROADWAY GIRDER ELEVATION

MATERIAL PROPERTIES:

Concrete: $f'_c = 6000$ psi, $f'_{ci} = 3,500$ psi

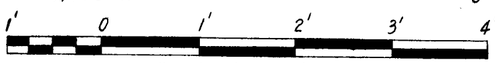
Steel: 7-wire stress relieved strands, $f_{pu} = 250$ ksi

INTERIOR SECTION

Assumed Area = $\frac{\pi}{4}(60^2 - 38^2) = 1700$ in^2

I = = 533,000 in^4

S = = 17,766 in^3



Spacing of Tendons in Inner Circle = 2.41" c.c.

Req'd. Min. Spacing - ACI 318-71-7.4.6 = 2.0" c.c.

END SECTION

Assumed Area = $60 \times 60 = 3600$ in^2

I = = 1,080,0000 in^4

S = = 36,000 in^3

Prestress (KSI)

(See PCI Design Handbook, Sect. 4.4)

Jacking Stress	187.0
Loss:	
Cutting of Tendons	-12.5
Initial Prestress	174.5
Creep of Concrete	- 7.5
Shrinkage of Conc.	- 5.3
Relax'n of Tendons	-17.7
Remaining Stress	144.0

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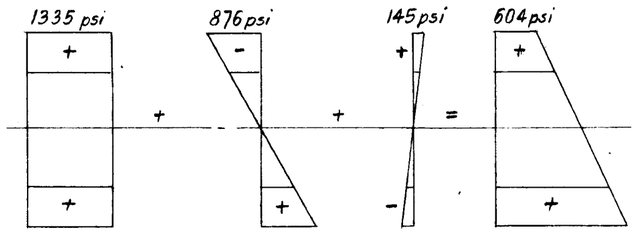
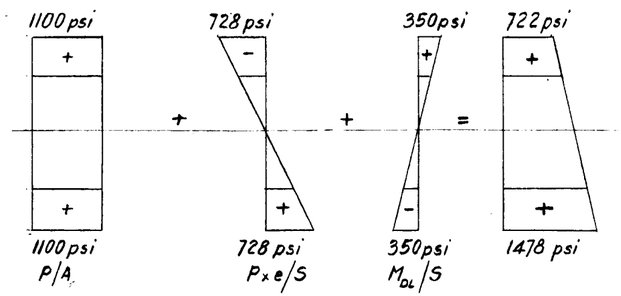
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM
ROADWAY GIRDER
SECTION PROPERTIES
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417

PRETENSIONING & DEAD LOAD

RELEASE STRESSES AT 5' FROM SUPPORTS:

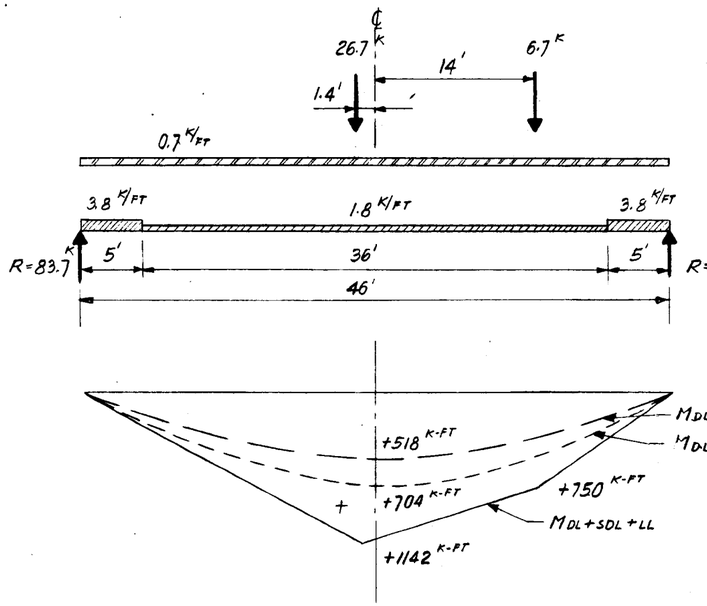


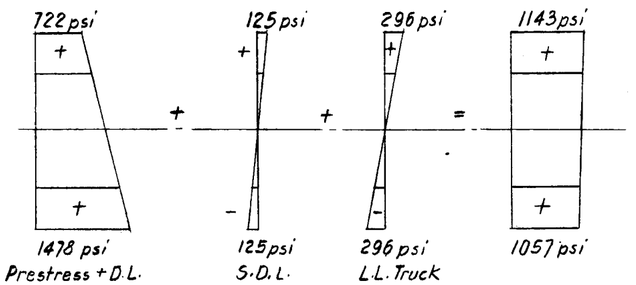
EFFECTIVE PRESTRESS AT MIDSPAN:



Case	Load Group	Service Load Combinations
I	A	Dead Load + Truck
II	B	Max. Vertical Wave
III	B	Max. Horizontal Wave

CASE I: DEAD LOAD + TRUCK





+ Denotes Compressive Stress
- Denotes Tensile Stress

NOTE:
For Girder Properties and Strand Pattern see Plate V-29

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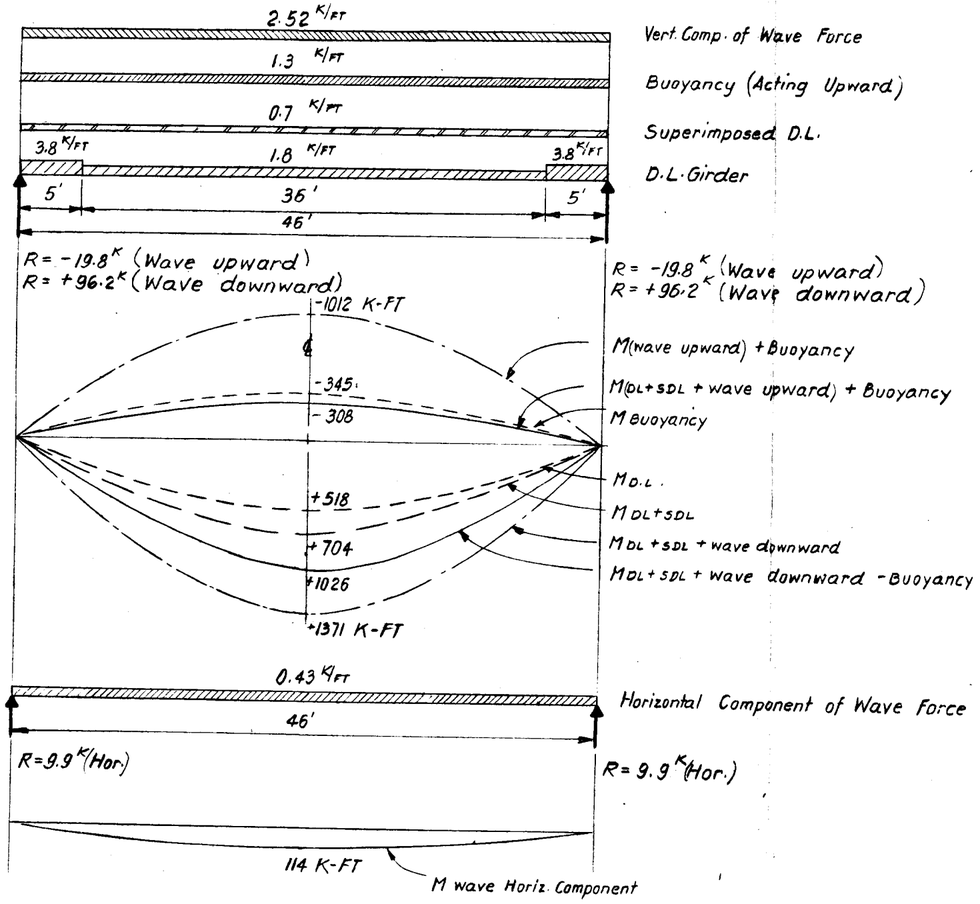
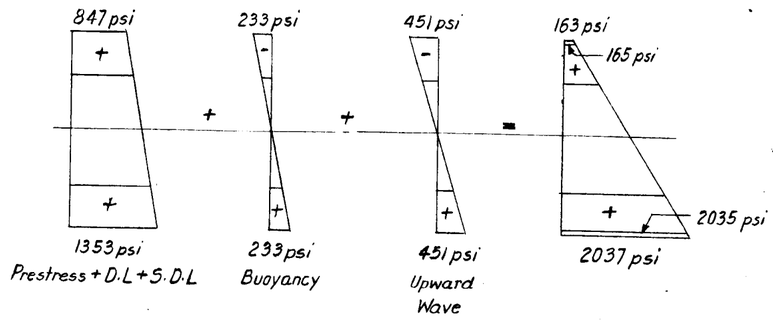
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
ROADWAY GIRDERS
STRESS DIAGRAMS I
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. M-2-2441

CASE II LOADING: DEAD LOAD + BUOYANCY + WAVE (MAX. VERT. + COINCIDENT HORIZONTAL)

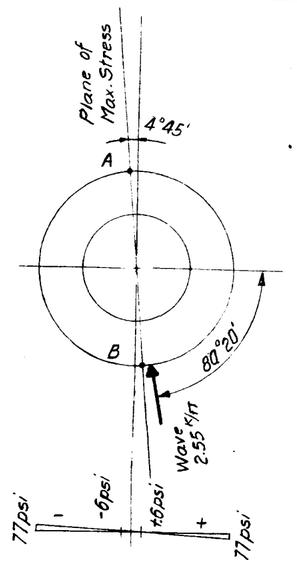


UPWARD WAVE



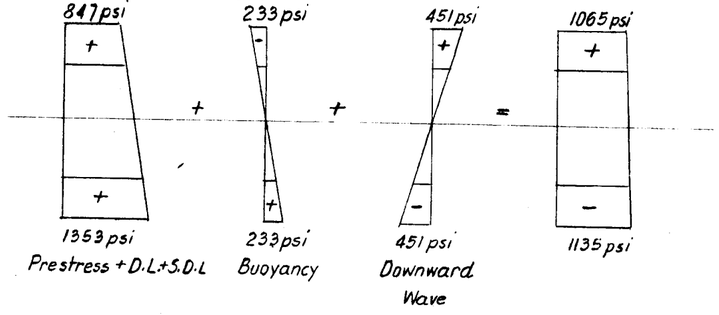
Max. Stress: $f_B = 2035 + 6 = 2041$ psi

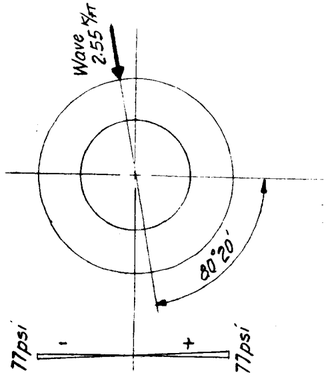
Min. Stress: $f_A = 165 - 6 = 159$ psi



Horiz. Wave Comp.

DOWNWARD WAVE





+ Denotes Compressive Stress.
- Denotes Tensile Stress

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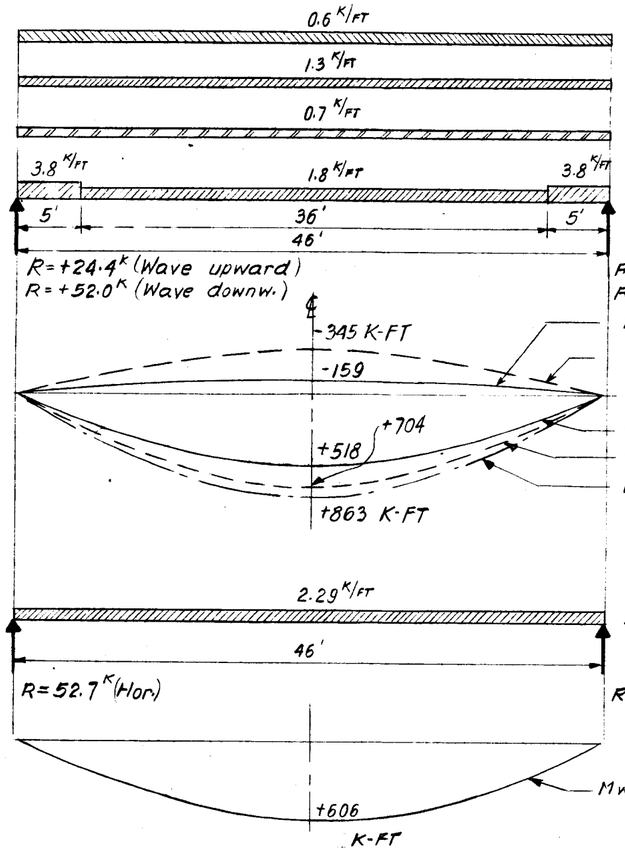
CONSULTING ENGINEERS — NEW ORLEANS LA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
ROADWAY GIRDERS-CASE II
MOMENTS & STRESSES
U S ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO H-2-24417

CASE III LOADING: DEAD LOAD + BUOYANCY + WAVE (MAX. HOR. + COINCIDENT VERT.)



Wave (Vert. Comp. of max. Lateral Force)

Buoyancy

Superimposed D.L.

D.L. Girder

R = +24.4 K (Wave upward)
R = +52.0 K (Wave downward)

M D.L + S.D.L + wave (acting upward) - Buoyancy

M Buoyancy

M D.L + S.D.L + wave (acting downward) - Buoyancy

M D.L + S.D.L.

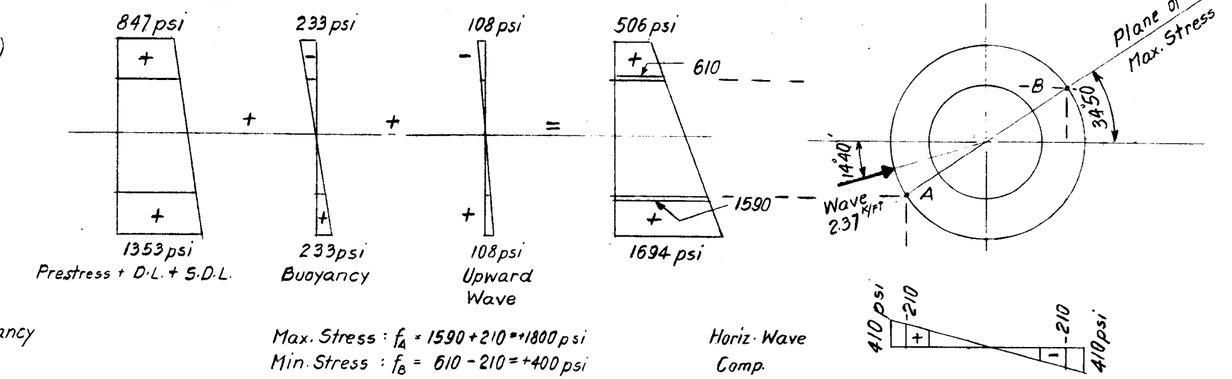
M D.L + S.D.L + wave (acting downward)

Horizontal Component of Wave Force

R = 52.7 K (Hor.)

M wave Horiz Component

UPWARD WAVE



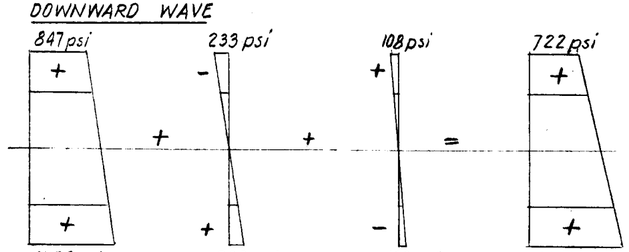
Prestress + D.L. + S.D.L. | Buoyancy | Upward Wave

Max. Stress: f_A = 1590 + 210 = +1800 psi

Min. Stress: f_B = 610 - 210 = +400 psi

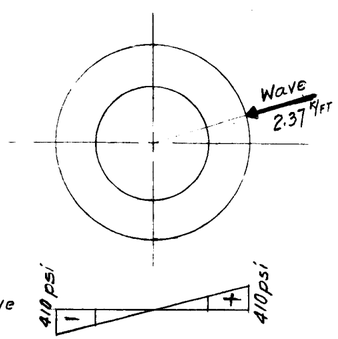
Horiz. Wave Comp.

DOWNWARD WAVE



Prestress + D.L. + S.D.L. | Buoyancy | Downward Wave

Horiz. Wave Comp.



+ Denotes Compressive Stress

- Denotes Tensile Stress

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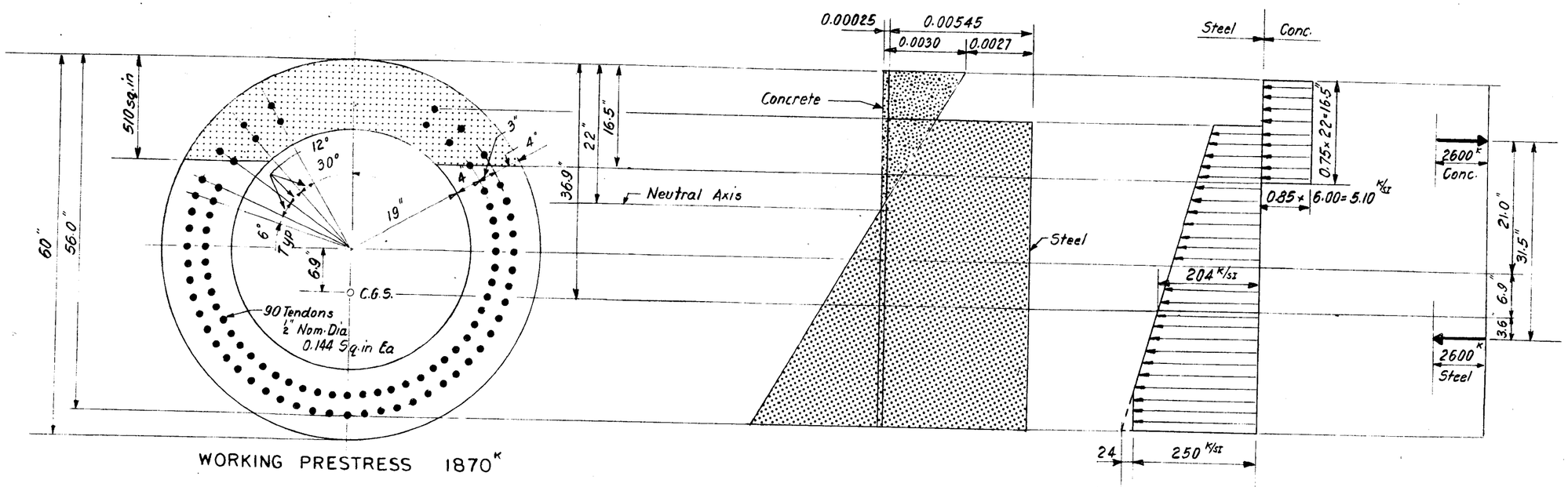
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
ROADWAY GIRDERS-CASE III
MOMENTS & STRESSES
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417



SECTION

STRAIN DIAGRAM

STRESS DIAGRAM

FORCE DIAGRAM

MOMENTS:

Ultimate Moment = 2600 × 31.5" = 6800 Ft-K

Mom. available for downward Loads = 6800 × 0.70 (9.2.1.2b) = 4,700 Ft-K

(Coeff. 0.70 may be increased, similar to 9.2.1.2d, but no advantage is taken of this)

Required Ultim. Moment Resistance (Eq. 9-1):

1.4 × (518 + 186) + 1.7 × 438 = 1730 < 4,700 O.K.

NOTE: References are to A.C.I. 318-71

1' 0 1' 2' 3' 4'

Scale in Feet

SCALES:

Strain: 1" = 0.004

Con. Stress: 1" = 10 K/SI

Steel Stress: 1" = 200 K/SI

Forces: 1" = 5000K

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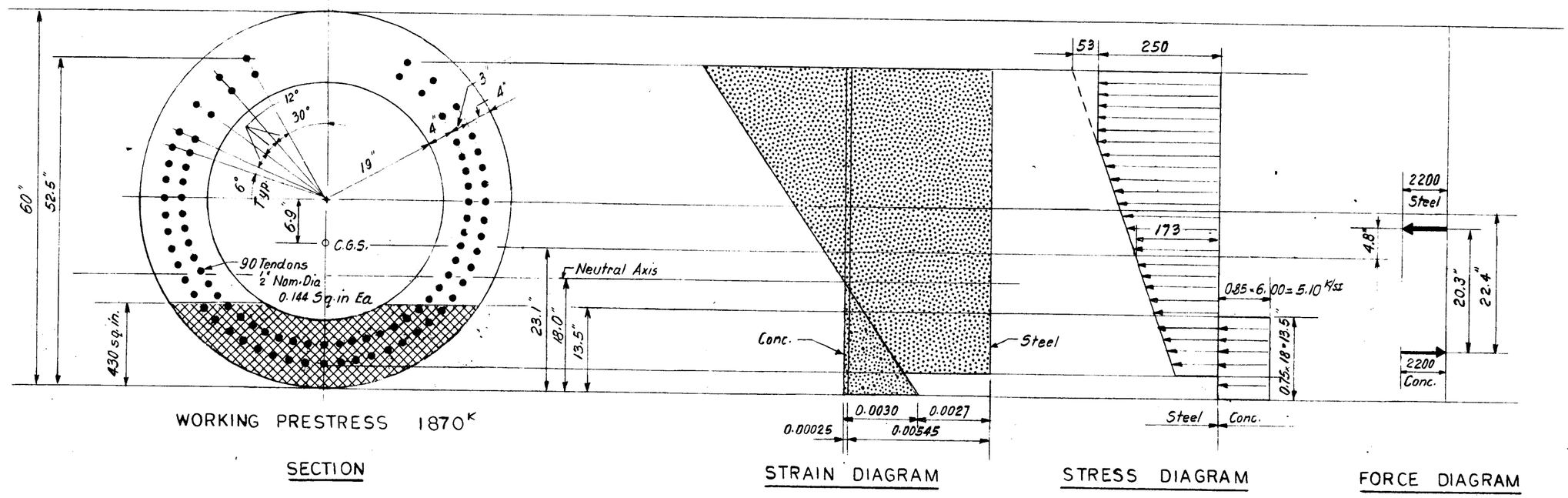
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN

RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

ROADWAY GIRDER – TRUCK LOADING
ULTIMATE MOMENT RESISTANCE

U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-2441



WORKING PRESTRESS 1870^{K}

SECTION

STRAIN DIAGRAM

STRESS DIAGRAM

FORCE DIAGRAM

MOMENTS:

Ultimate Moment = 2200×20.3" = 3,700 Ft-K

Mom. available for upward Loads = 3,700 × 0.70 (9.2.1.2b) = 2600 Ft-K

(Coeff. 0.70 may be increased, similar to 9.2.1.2d but no advantage is taken of this)

Required Ultim. Moment Resistance (Eq. 9-3):

$1.3 \times 667 - 0.9(518 + 186 - 345)$ = 550 < 2,600 O.K.

NOTE: References are to A.C.I. 318-71

1' 0 1' 2' 3' 4'

Scale in Feet

SCALES:

Strain: 1" = 0.004

Con. Stress: 1" = 10 K/SI

Steel Stress: 1" = 200 K/SI

Forces: 1" = 5000 K

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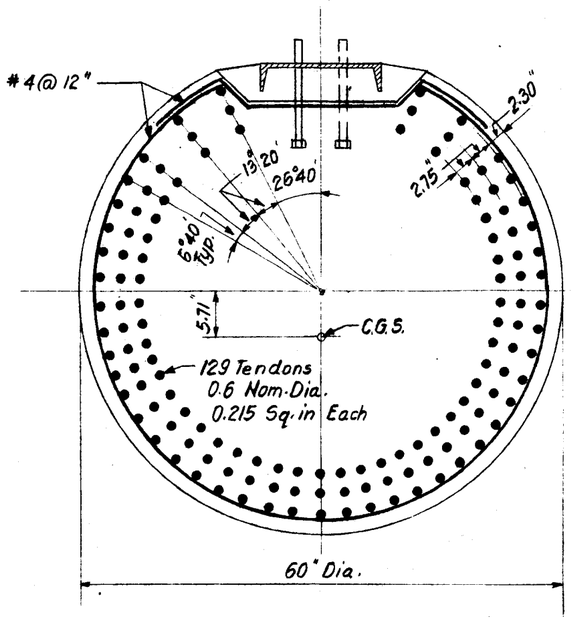
CONSULTING ENGINEERS NEW ORLEANS, LA

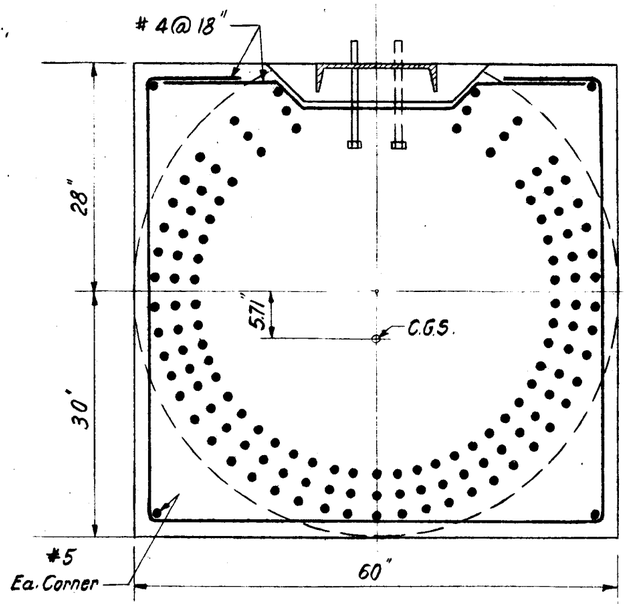
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

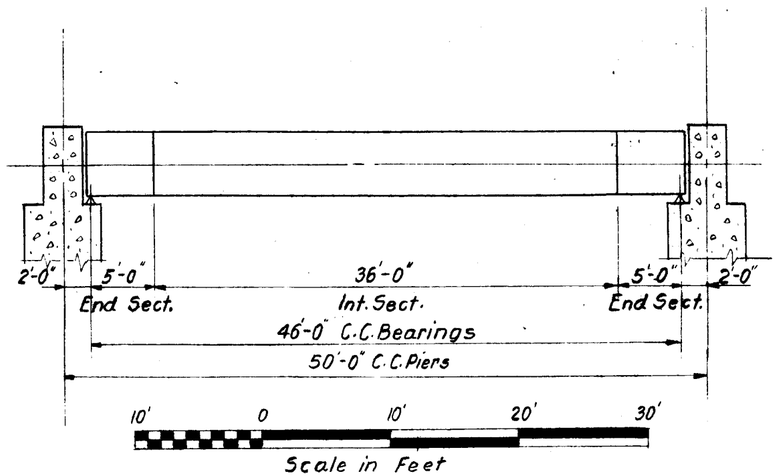
ROADWAY GIRDER - UPWARD WAVE ULTIMATE MOMENT RESISTANCE

U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO H-2-2441







CRANE GIRDER ELEVATION

MATERIAL PROPERTIES:

Concrete: $f'_c = 6000$ psi, $f'_{ci} = 4200$ psi

Steel: 7-wire stress relieved strands, $f_{pu} = 250$ Ksi

INTERIOR SECTION

Assumed Area = $\frac{\pi}{4} \times 60 \times 60 = 2827$ in^2

I = 636,000 in^4

S = 21,200 in^3

END SECTION

Assumed Area = $60 \times 60 = 3600$ in^2

I = 1,080,0000 in^4

S = 36,000 in^3

Spacing of Tendons in Inner Circle = 2.59" c.c.

Req'd. Min. Spacing - ACI 318-71-7.4.6 = 2.4" c.c.

Prestress (KSI)

(see PCI Design Handbook, Sect. 4.4)

Jacking Stress	167.2
Loss:	
Cutting of Tendons	-13.2
Initial Prestress	154.0
Creep of Concrete	-8.5
Shrinkage of Conc.	-6.1
Relax'n of Tendons	-6.9
Remaining Stress	132.5

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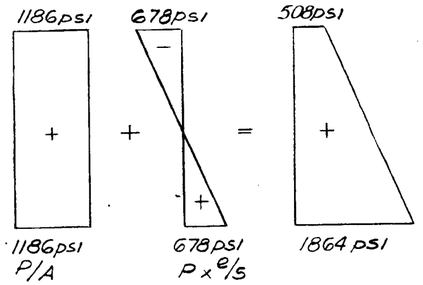
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

CRANE GIRDER SECTION PROPERTIES

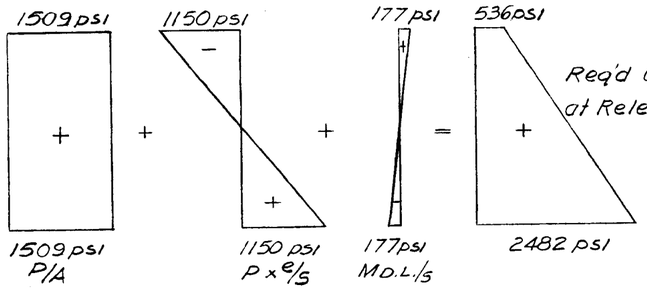
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973 FILE NO. H-2-24417

RELEASE OF STRESS - AT ENDS

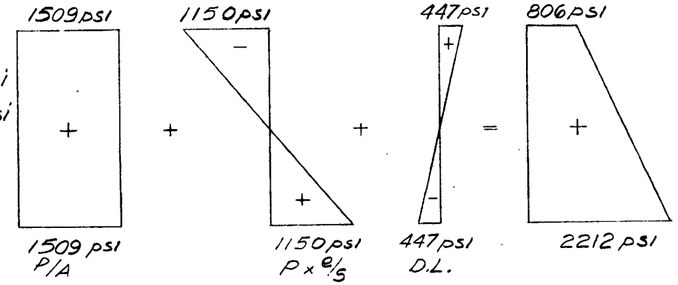


RELEASE OF STRESS - 5' FROM ENDS

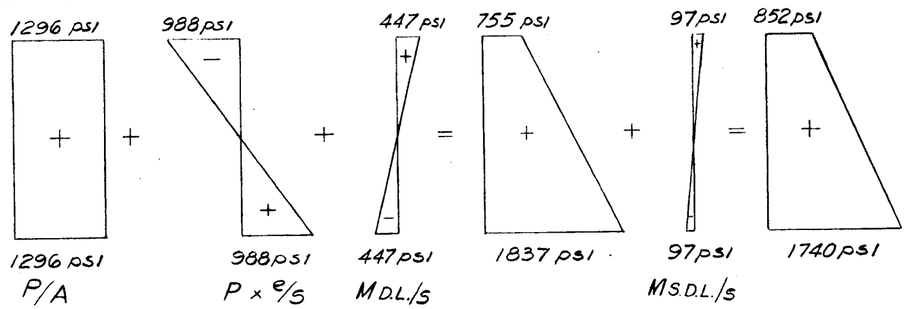


Req'd Conc. Strength f'ci at Release = $\frac{2482}{0.60}$ = 4200psi

RELEASE OF STRESS - AT MID SPAN



EFFECTIVE PRE-STRESS AT MID SPAN (AFTER LOSSES)



\+ Denotes Compressive Stress
\- Denotes Tensile Stress

NOTE:
For Girder Properties and Strand Pattern see Plate V-35

Case	Load Group	Service Load Combinations
I	A	Dead Load + Crane & Gate + Impact + Truck
II	A	Dead Load + Crane + (No Gate) + Operational Wind + Impact + Truck
III	B	Case I + Earthquake
IV	B	Case II + Earthquake
V	B	Max. Vertical Wave
VI	B	Max. Horizontal Wave

NOTES:
1. See text for explanation of Loading conditions
2. For Load Groups see Plate V-7

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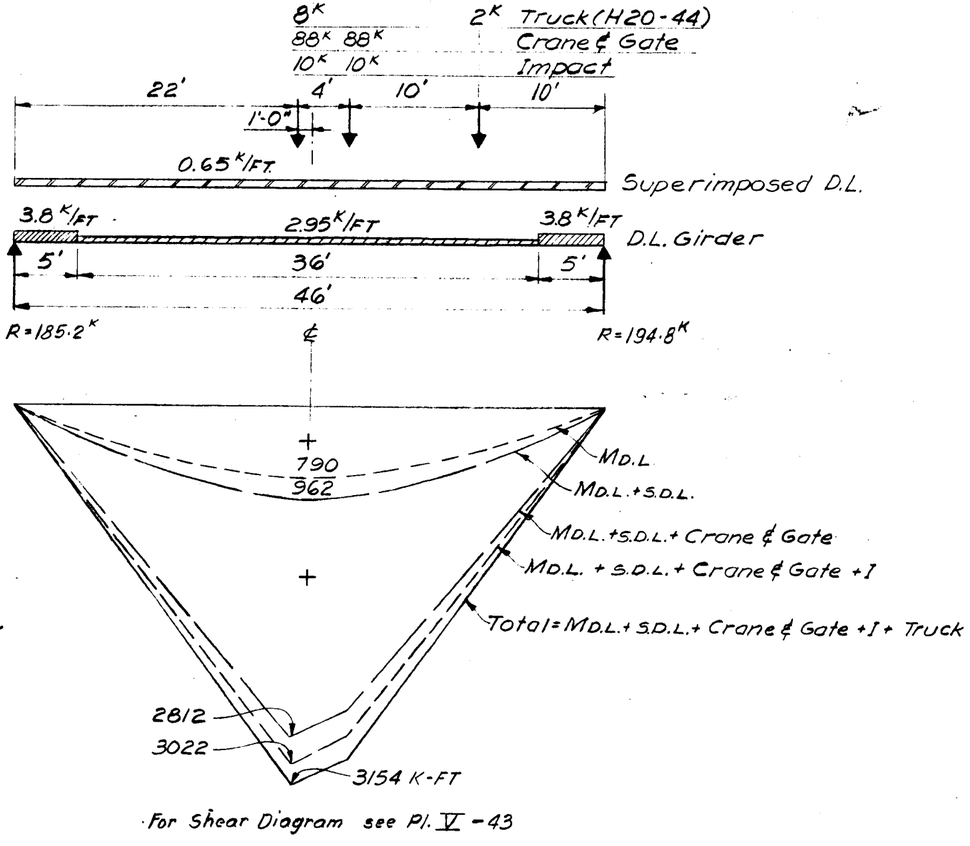
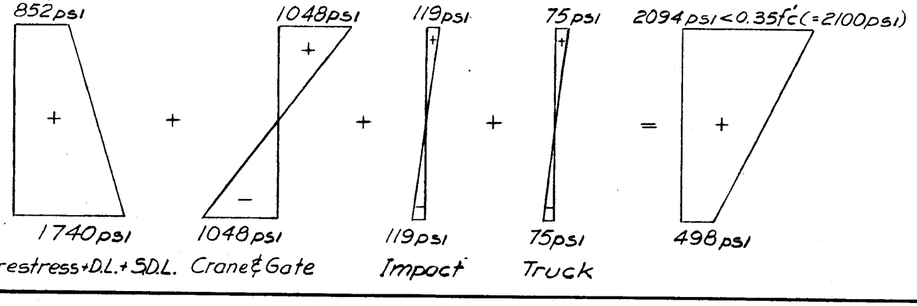
CONSULTING ENGINEERS - NEW ORLEANS, LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CRANE GIRDERS - PRETENSIONING STRESS DIAGRAMS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: MARCH 1973
FILE NO. H-2-24417

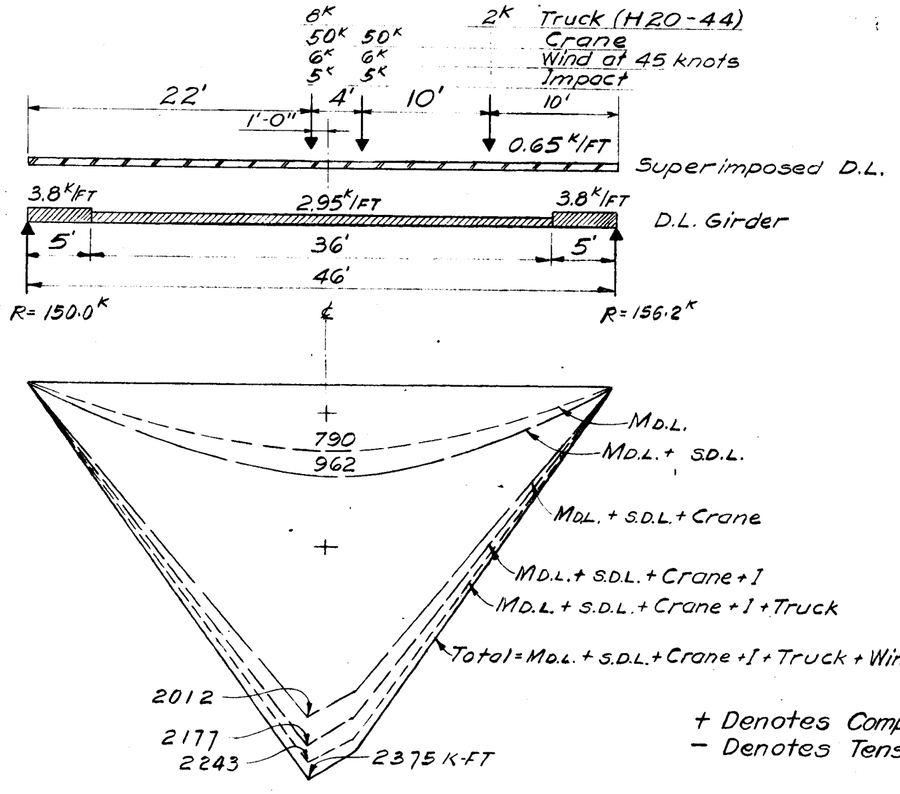
CASE I - Dead Load + Crane & Gate + Impact + Truck



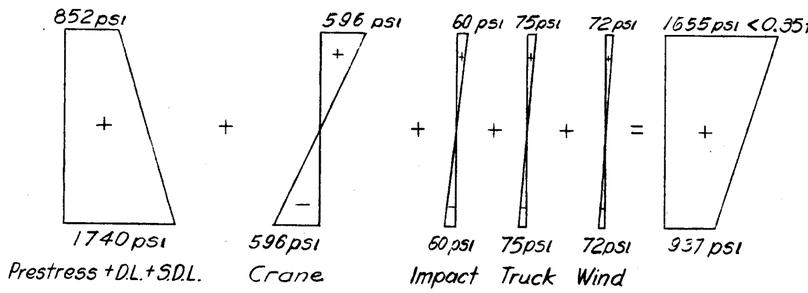
For Shear Diagram see Pl. V-43



CASE II - Dead Load + Crane + Impact + Truck + Operational Wind (45 knots)



\+ Denotes Compressive Stress
− Denotes Tensile Stress



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LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

CRANE GIRDERS - CASES I & II
MOMENTS & STRESSES

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973

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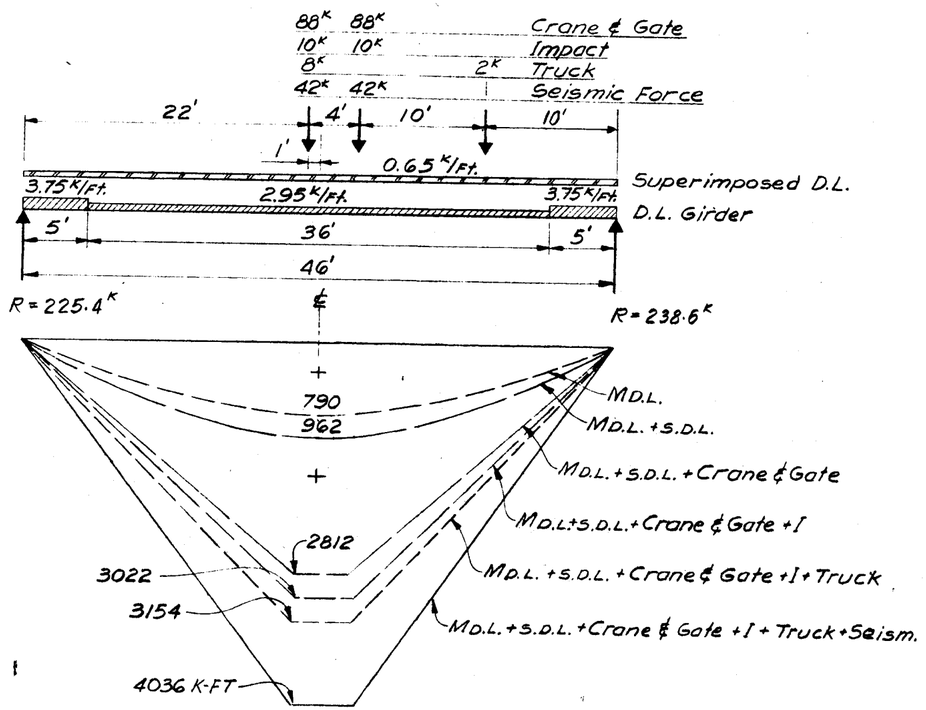
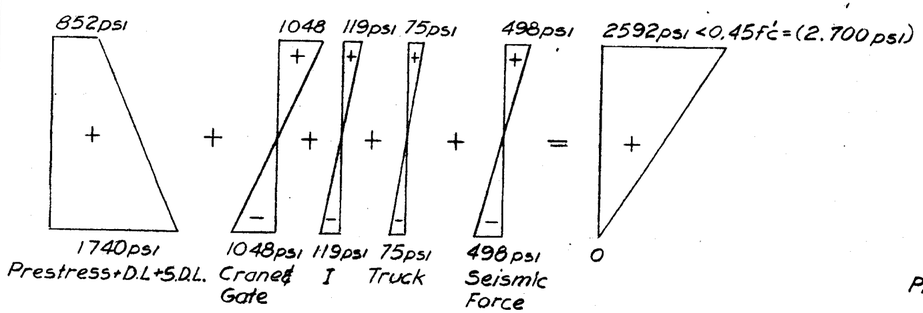
CASE III : Dead Load + Crane ¢ Gate + Impact + Truck + Seismic Force

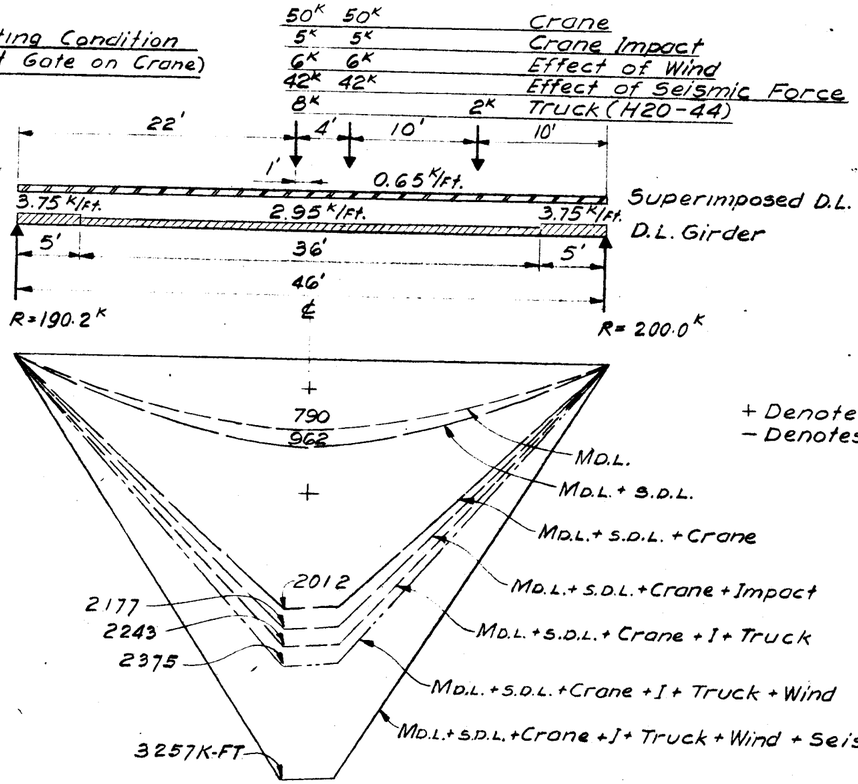


For Shear Diagram see Plate V-43

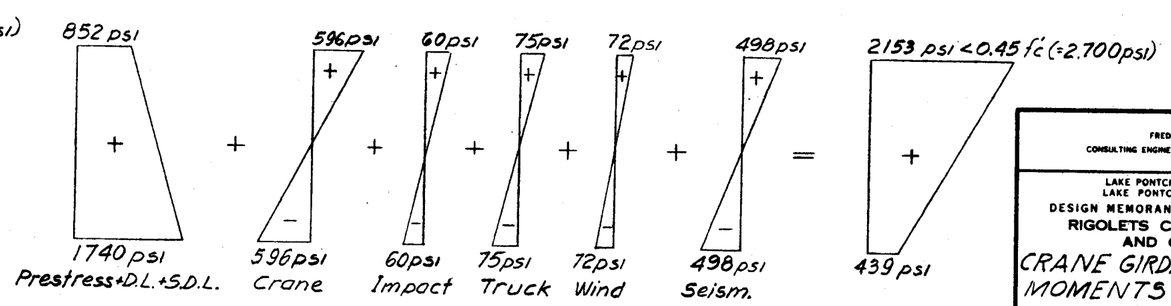


CASE IV : Dead Load + Crane + Impact + Truck + Operational Wind at 45 Knots + Seismic Force

(Operating Condition Without Gate on Crane)



+ Denotes Compressive Stress
− Denotes Tensile Stress



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CRANE GIRDERS-CASES III ¢ IV
MOMENTS ¢ STRESSES
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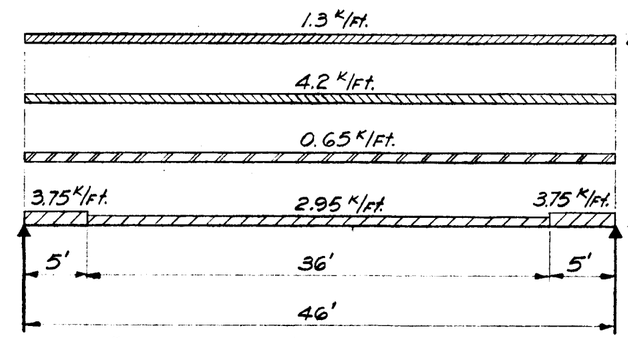
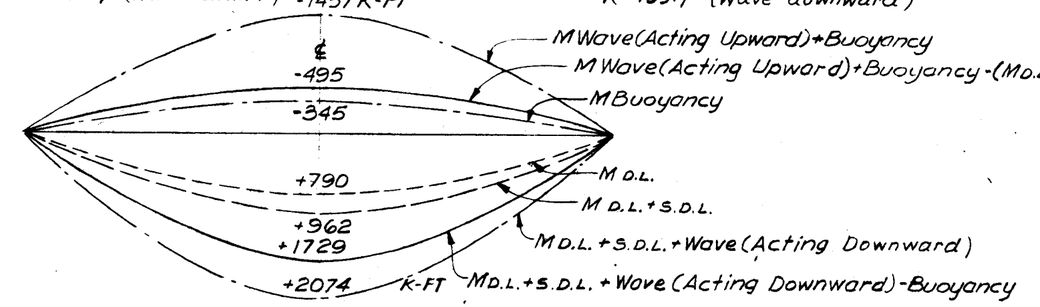
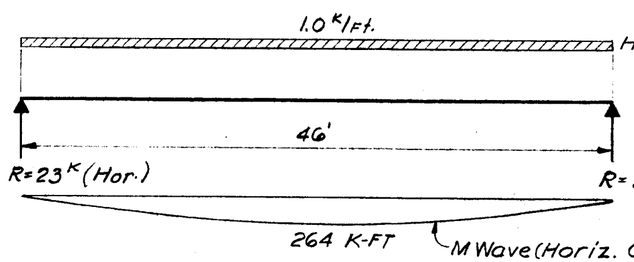
CASE V : Dead Load + Buoyancy + Wave (Max. Vertical + Coincident Horiz.)



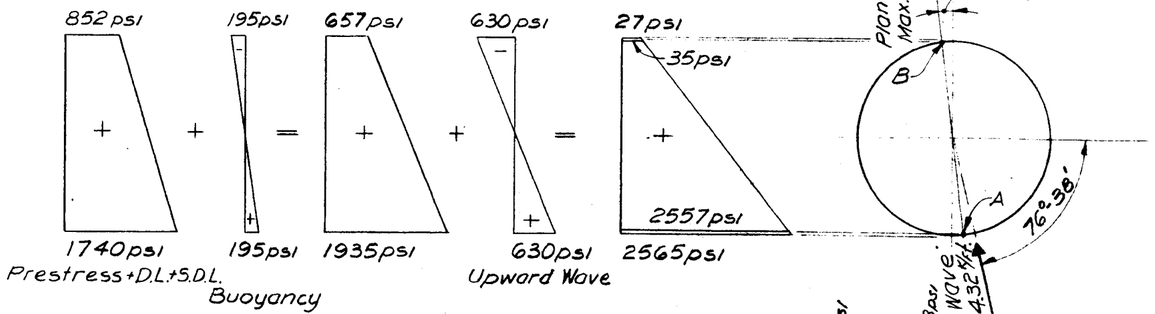
R = - 39.6 K (Wave upward)
R = +153.7 K (Wave downw.)

R = - 39.6 K (Wave upward)
R = +153.7 K (Wave downward)





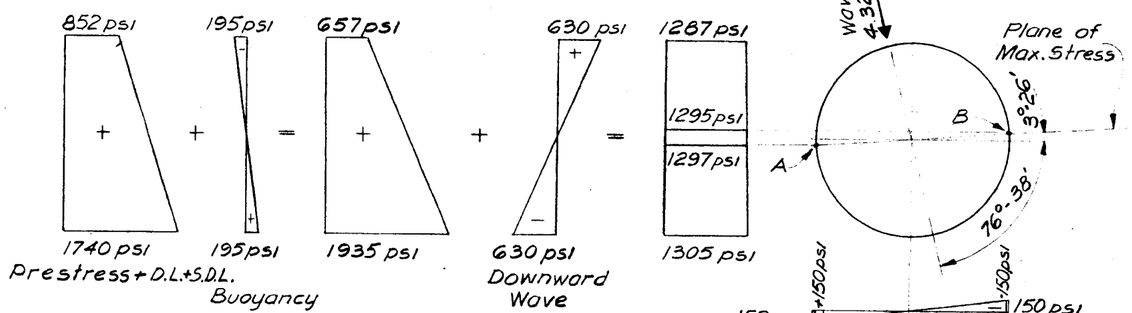
UPWARD WAVE



Max. Stress: fA = 2557 + 18 = 2575 psi
Min. Stress: fB = 35 - 18 = 17 psi

Horiz. Wave Comp.

DOWNWARD WAVE



Max. Stress: fA = 1297 + 150 = 1447 psi
Min. Stress: fB = 1295 - 150 = 1145 psi

Horiz. Wave Comp.

+ Denotes Compressive Stress
− Denotes Tensile Stress

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RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CRANE GIRDERS - CASE V
MOMENTS & STRESSES
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
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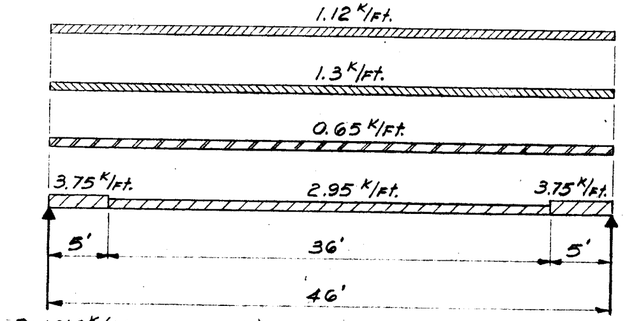
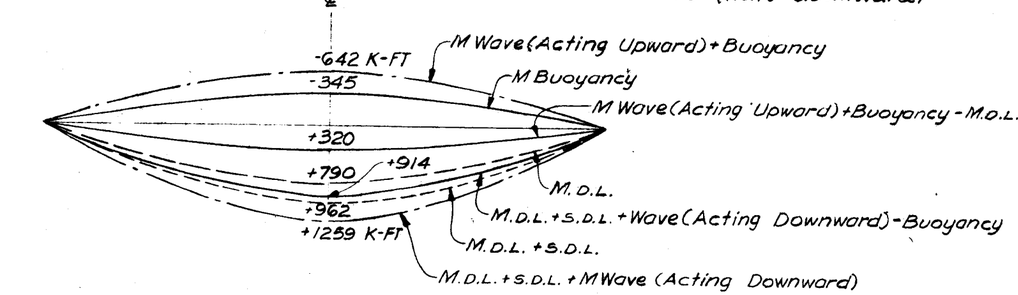
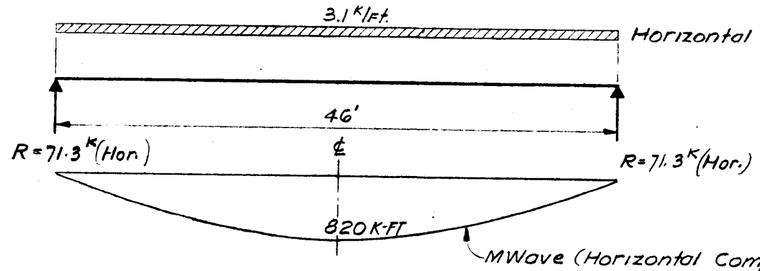
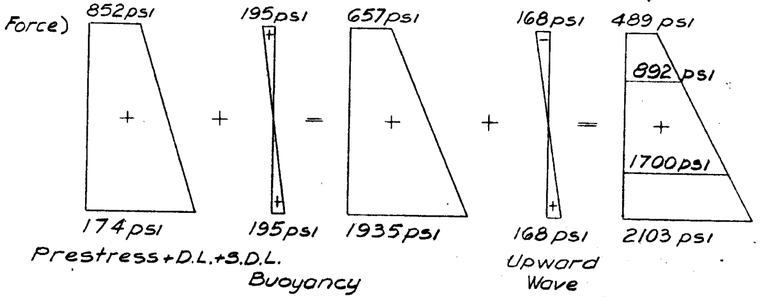
CASE VI : Dead Load + Buoyancy + Wave (Max. Horiz. + Coincident Vert.)



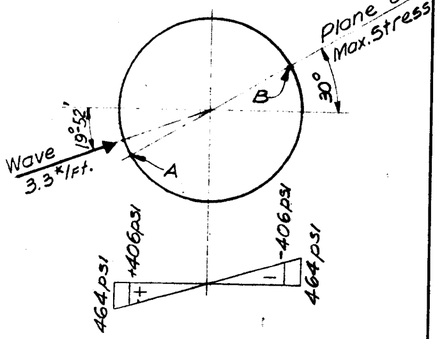




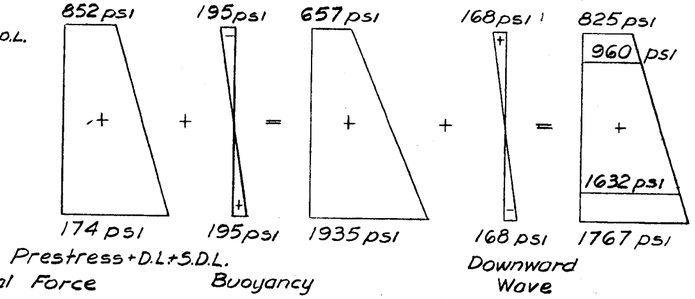
UPWARD WAVE



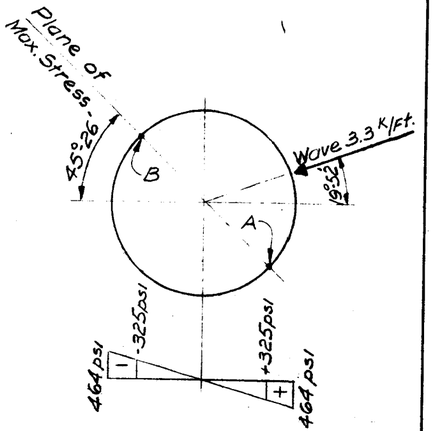
Max. Stress : fA = 1700 + 406 = 2106 psi
Min. Stress : fB = 892 - 406 = 486 psi



DOWNWARD WAVE



Max. Stress : fA = 1632 + 325 = 1957 psi
Min. Stress : fB = 960 - 325 = 635 psi



+ Denotes Compressive Stress
- Denotes Tensile Stress

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LAKE PONTCHARTRAIN BARRIER PLAN
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RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CRANE GIRDERS-CASE VI
MOMENTS & STRESSES
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
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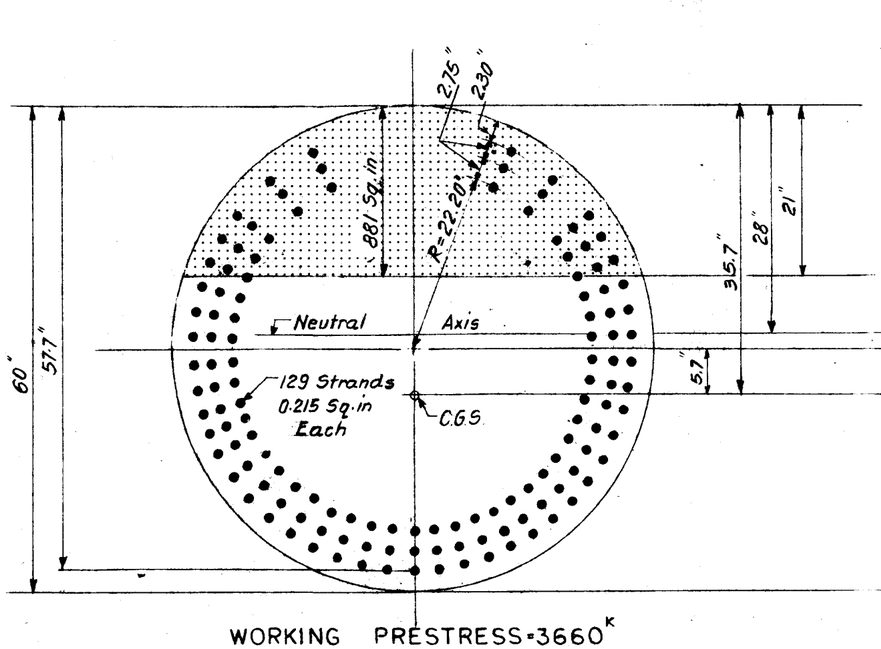
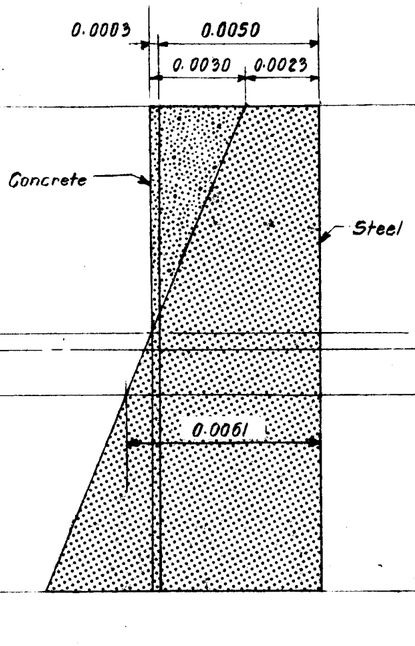
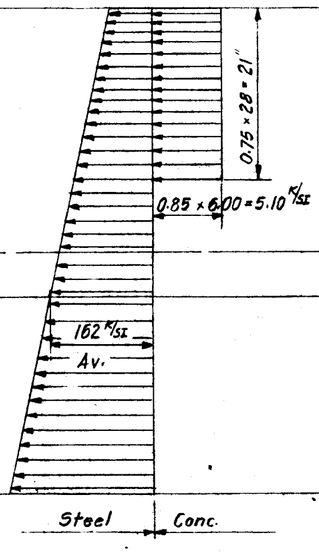


WORKING PRESTRESS = 3660^{K}

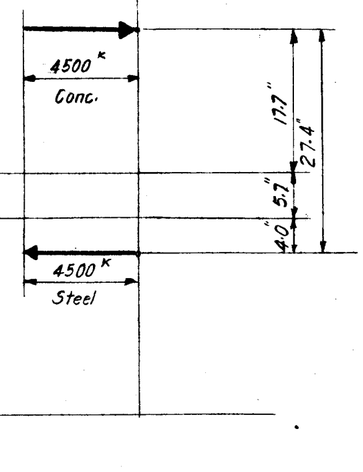
SECTION



STRAIN DIAGRAM



STRESS DIAGRAM



FORCE DIAGRAM

MOMENTS:

Ultimate Mom. = 4,500^{K} × 27.4" = 10,300 Ft.-K

Mom. available for downward Loads: 10,300 × 0.70 (9.2.1.2b) = 7,200 FT-K

Required Ultim. Moment Resistance:

Case I Plate V-37: Dead + Live Load (Eq. 9-1): 962 × 1.4 + 2,192 × 1.7 = 5,070 < 7,200 o.K

Case III Plate V-38: Do. + Earthquake (9.3.2, 9.3.3): 0.75 (5,070 + 1.1 × 1.7 × 882) = 5,040 < 7,200 o.K

NOTE: References are to A.C.I. 318-71

1' 0 1' 2' 3' 4'

Scale in Feet

SCALES:

Strain:	1" = 0.004
Con. Stress:	1" = 10 K/SI
Steel Stress:	1" = 200 K/SI
Forces:	1" = 5000 K

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LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

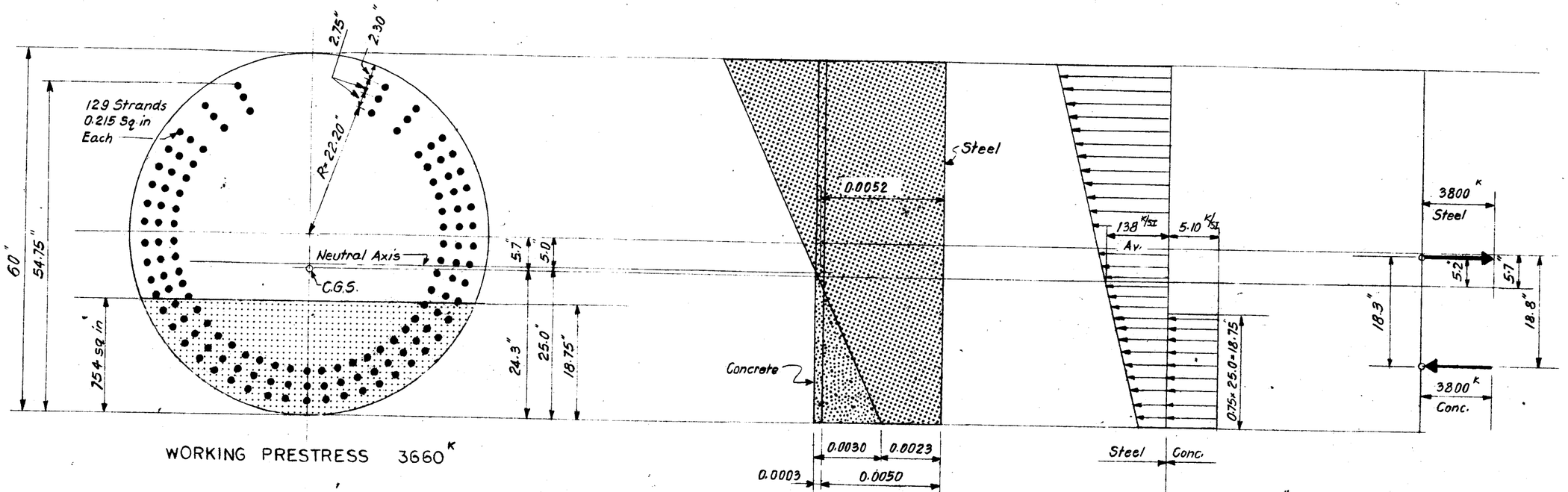
CRANE GIRDERS - CASES I & III ULTIMATE MOMENT RESISTANCE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: MARCH 1973

FILE NO. H-2-24417

PLATE V-41



MOMENTS:

Ultimate Mom. = $3800^{K} \times 18.3''$ = 5,800 FT-K

Mom. available for upward Force = $5{,}800 \times 0.70$ (9.2.1.2b) = 4,000 FT-K

Required Ultim. Moment Resistance for upward Wave:

Dead Load - Buoyancy = 922 - 345 = 577 FT-K

Upward Wave $P1.\overline{V}\cdot 39: \frac{1}{8} \times 4.2 \times (46'-0'')^2 = 1112$ FT-K

Eq. 9-3; $1.3 \times 1112 - 0.9 \times 577 = 927 < 4{,}000$ o.k.

NOTE: References are to A.C.I. 318-71

1' 0 1' 2' 3' 4'

Scale in Feet

SCALES:

Con. Stress: 1" = 10 K/SI

Steel Stress: 1" = 200 K/SI

Forces: 1" = 5000 K

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RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

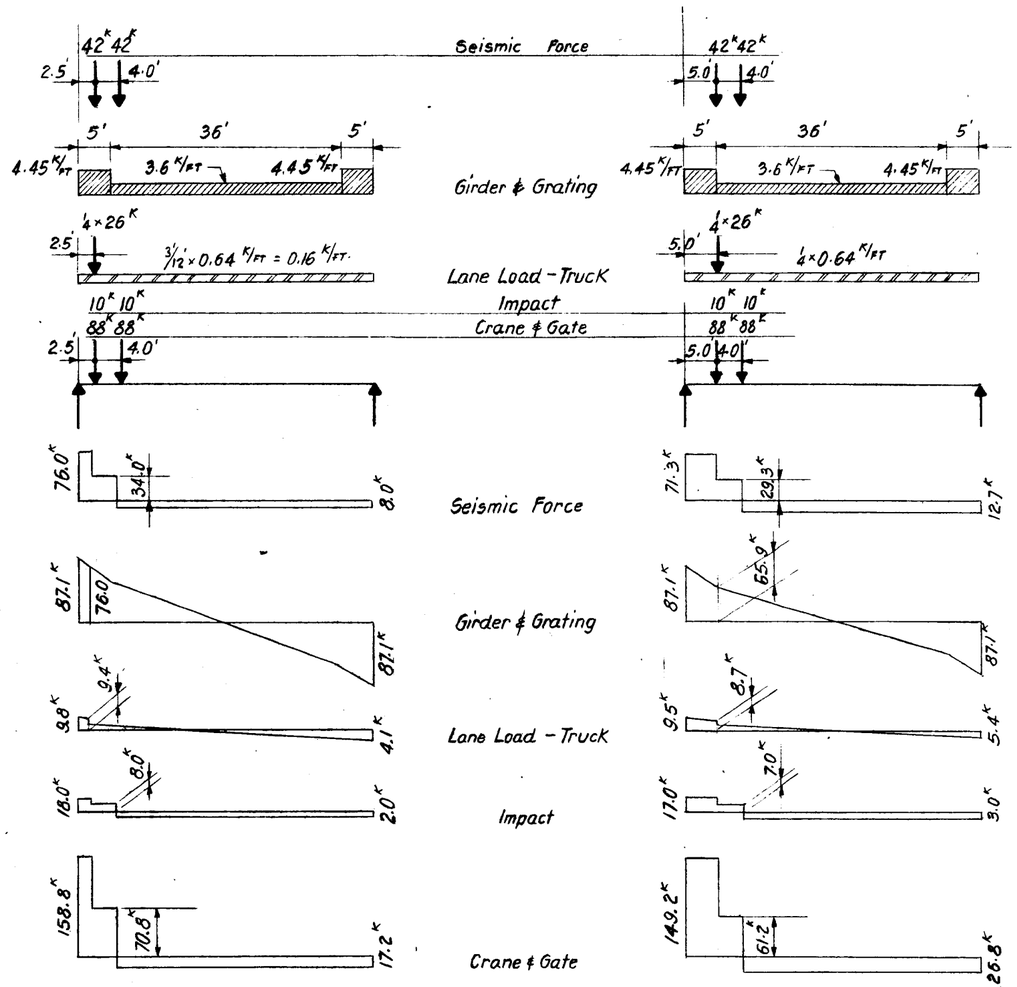
CRANE GIRDERS - UPWARD WAVE ULTIMATE MOMENT RESISTANCE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: MARCH 1973

FILE NO. H-2-24417

CASE I : DEAD LOAD + CRANE & GATE + IMPACT + TRUCK . CASE III : CASE I + EARTHQUAKE



LOADING AND SHEAR DIAGRAMS

For Max. Shear 2.5' from Support (Square Section)

LOADING AND SHEAR DIAGRAMS

For Max. Shear 5.0' from Support (Circular Section)

ULTIMATE DESIGN SHEAR

2.5' from Support

CASE I: $V_u = 1.4D + 1.7L =$
$= 1.4 \times 76.0 + 1.7 (158.8 + 18.0 + 1.3 \times 8.9) = 427.0^K$
(ACI 9.3.1)

CASE III: $V_u = 0.75 [1.4D + 1.7L + 1.7 (1.1E)] =$
$= 0.75 (427 + 1.7 \times 1.1 \times 76) = 428.0^K$
(ACI 9.3.3)

Shear Stress: $v_c = \frac{V_u}{\phi b d}$ $\phi = 0.85$ (per ACI 9.2.13)
$b = 60''$, $d = 0.8 \times 60'' = 48''$
(ACI 11.2.1)

Allowable Concrete Shear Stress (ACI 11.5.1)
(Eq. 11-10 does not govern)
$v_c = 5\sqrt{6000} = 387$ psi; $\frac{v_c}{2} = 193$

CASE I:
$v_u = \frac{427 \times 1000}{0.85 \times 60 \times 48} = 174$ psi $< \frac{v_c}{2}$

CASE III:
$v_u = \frac{428 \times 1000}{0.85 \times 60 \times 48} = 175$ psi $< \frac{v_c}{2}$

No Shear Reinforcement is required for Stress at End Sections (ACI 11.1.d)

NOTE:
References are to ACI 318-71

ULTIMATE DESIGN SHEAR

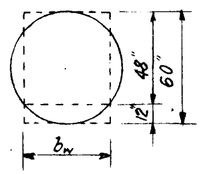
5.0' from Support

CASE I:
$V_u = 1.4 \times 65.9 + 1.7 \times (149.2 + 17.0 + 1.3 \times 8.7) = 399^K$

CASE III:
$V_u = 0.75 \times (399.0 + 1.87 \times 71.3) = 400^K$

Shear Stress $v_u = \frac{V_u}{\phi b_w d}$

Equivalent Rectangular Section:



$60'' \times b_w = A_c = 2827$ in^2
$b_w = \frac{2827}{60} = 47.3$ in

CASE I:
$v_u = \frac{399 \times 1000}{0.85 \times 47.3 \times 48} = 207$ psi $> \frac{v_c}{2}$

CASE III:
$v_u = \frac{400 \times 1000}{0.85 \times 47.3 \times 48} = 208$ psi $> \frac{v_c}{2}$

Required Area of Shear Reinforcement:
ACI Eq. 11-2 (Stirrups @ 12" c/c.)

$A_v = \frac{A_{ps}}{80} \times \frac{f_{pu}}{f_y} \times \frac{s}{d} \sqrt{\frac{d}{b_w}} = \frac{27.8}{80} \times \frac{250}{60} \times \frac{12}{48} \sqrt{\frac{48}{47.3}} = 0.364$ in^2

Furnished A_v = 2 Legs # 4 = 0.40

10' 0 10' 20' 30' 40'
Scale in Feet

SCALE:
Shear : 1" = 200^K

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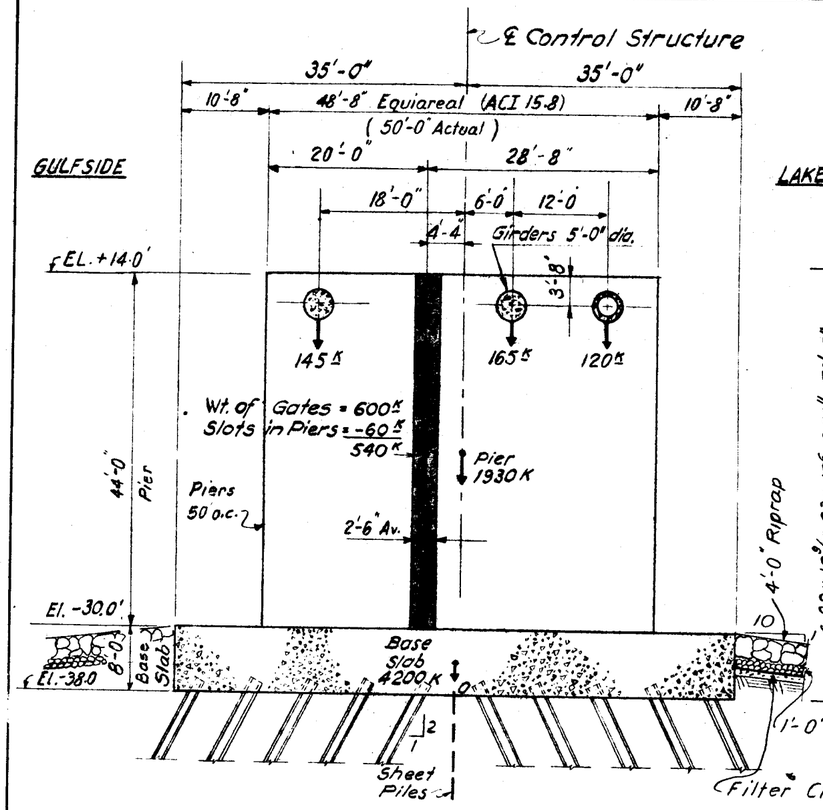
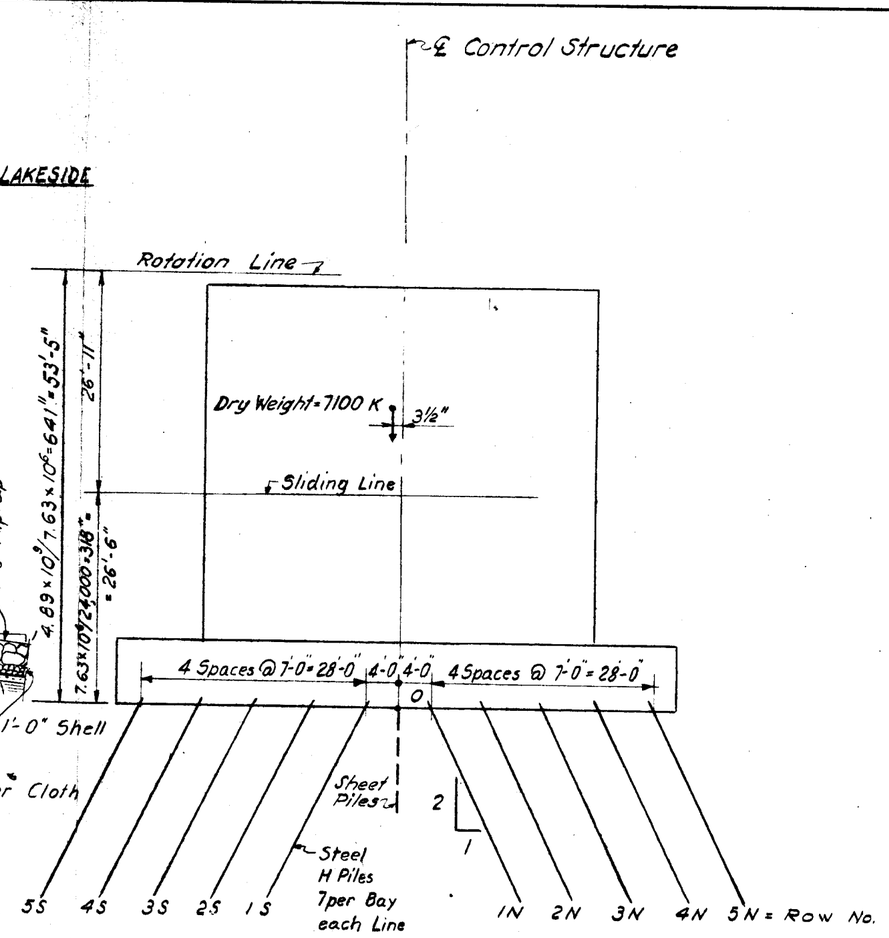
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
CRANE GIRDER
SHEAR DIAGRAMS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417

PLATE V-43



SHOWING GATES & GIRDERS AND WEIGHTS IN THE DRY FOR 50' BAY



SHOWING H-PILE CENTERLINES

SECTIONS

BAYS 5-18
TYP. BAY 50 x 70'
WITH 70 BATTER PILES HP14x73
ELASTIC ANALYSIS
BASED ON A.S.C.E. PAPER NO. 2401
BY A. HRENNIKOFF

ASSUMPTIONS:

Base Slab perfectly rigid
Soil Modulus = 55 psi/in.
Pile Length for Calc. of Axial Spring Const. = 0.5 x 75' = 37.5 FT.

RESULTS OF ANALYSIS:

REACTION		DISPLACEMENT
EACH PILE		
1386 K Axial	per	1" Axial
81.6 K Transverse 4130 IN K Bending	per	1" Transverse
419000 IN K Bending	per	1 Radian Rotation
ENTIRE FOOTING (PER BAY) (REACTIONS REFERRED TO "0")		
78,800 K Vertical	per	1" Vertical
24,000 K 7.63 x 10⁶ IN K Horizontal/Moment	per	1" Horiz. (Note)
7.63 x 10⁶ K 4.89 x 10⁹ IN K Horizontal/Moment	per	1 Radian Rotation (Note)

NOTE:
For Horiz. Movement without Rotation, the Force should act on the Sliding Line; for Rotation without Translation, on the Rotation Line. For Location of these Lines see Sect. at left.

5' 0 5' 10' 15' 20' 25' 30' 35'
Scale in Feet

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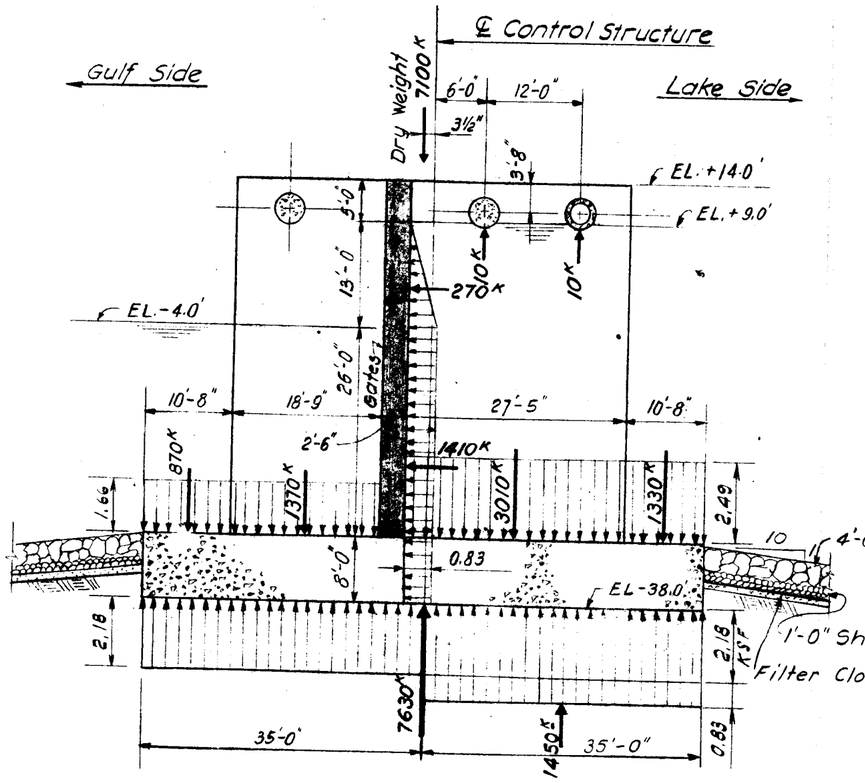
LAKE PONTCHARTRAIN, LA AND VICIN.
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
PILES FOR GATED BAYS 4-19
ELASTIC PROPERTIES
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417

PLATE V-44

CASE 5 OF TABLE II-2: HURRICANE WITHOUT WAVES FROM LAKESIDE

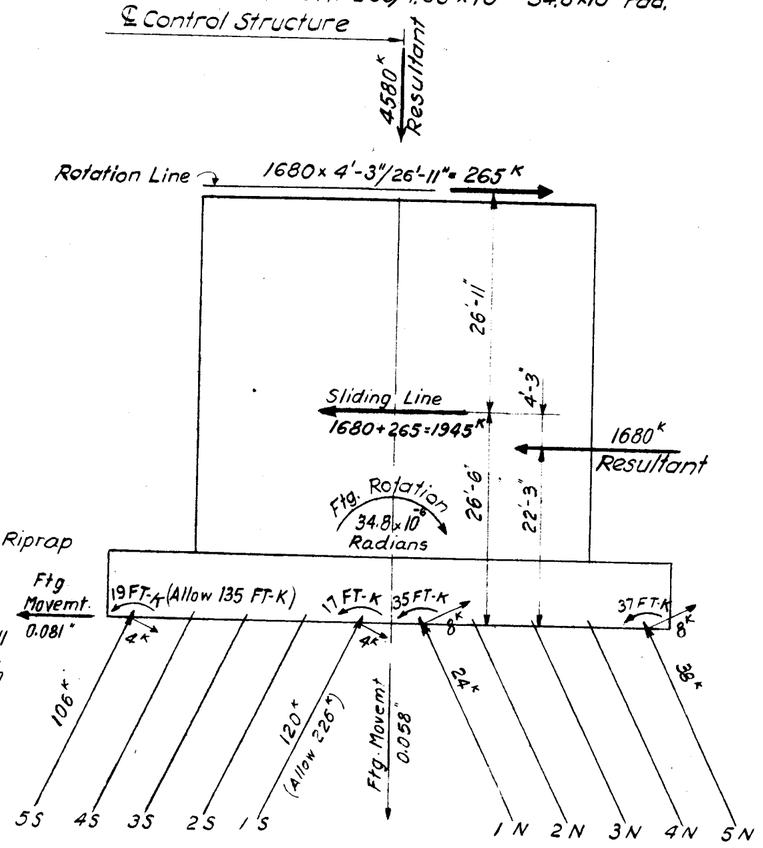


PRESSURE DIAGRAM
℄ LOADS ON 50' BAY

Pressures in K.S.F.

FOOTING MOVEMENTS

Vertical: 4,580/78,800 = 0.058"
Horiz.: 1,945/24,000 = 0.081"
Rotation: 265/7.63 x 10^6 = 34.8 x 10^{-6} rad.

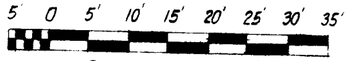


RESULTANTS AND PILE REACTIONS

BAYS 5-18

PILE STRESSES					
ROW	5S	4S	3S	2S	1S
COMPRESSION Kips	106	110	113	116	120
BENDING Ft-K	19	18	18	18	17
SHEAR Kips	4	4	4	4	4
ROW	1N	2N	3N	4N	5N
COMPRESSION Kips	24	28	31	34	38
BENDING Ft-K	35	36	36	36	37
SHEAR Kips	8	8	8	8	8

NOTE:
For dimensions and elastic properties see Plate V-44



SCALE:
Pressures: 1" = 4 KSI

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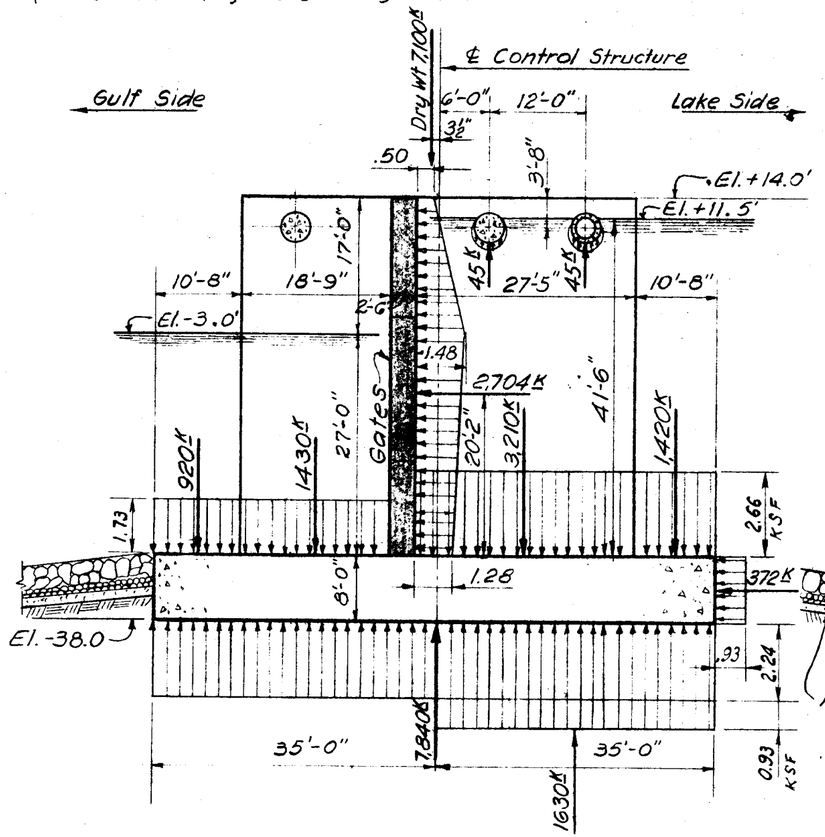
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
PILES FOR GATED BAYS 4-19
LOADING CASE 5
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417

CASE 4A OF TABLE II-2: HURRICANE WITH WAVES FROM LAKESIDE

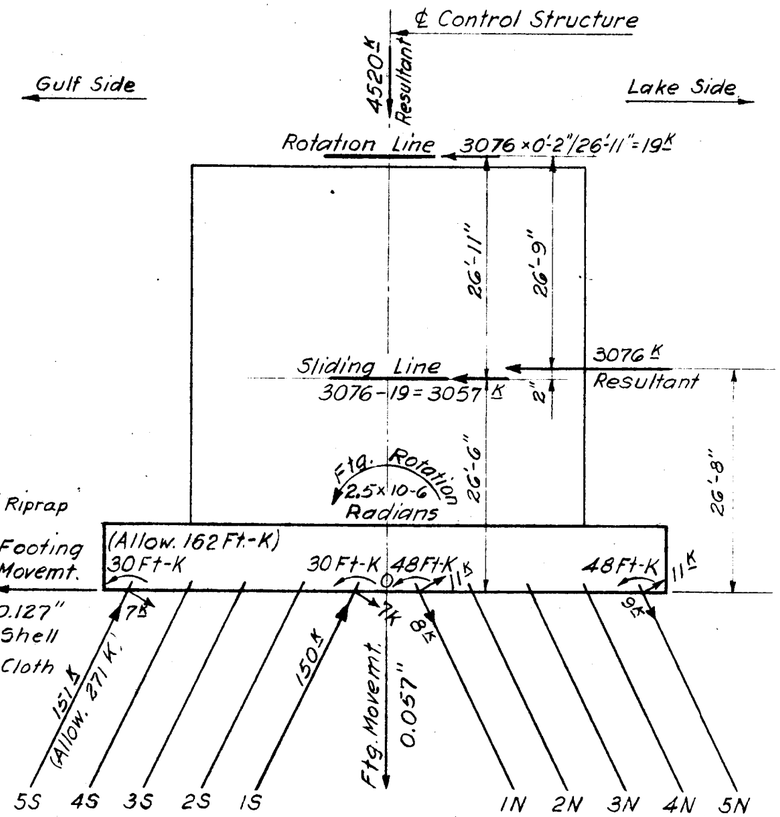
(Wave force on girders disregarded)



PRESSURE DIAGRAM

FOOTING MOVEMENTS

Vertical : 4,520/78,800 = 0.057"
Horiz. : 3,057/24,000 = 0.127"
Rotation : 19/7.63 × 10^6 = 2.5 × 10^{-6} rad.



RESULTANTS AND PILE REACTIONS

BAYS 5-18

5' 0 5' 10' 15' 20' 25' 30' 35'

Scale in Feet

PILE STRESSES					
ROW	5S	4S	3S	2S	1S
COMPRESSION Kips	151	151	150	150	150
BENDING Ft-K	30	30	30	30	30
SHEAR Kips	7	7	7	7	7
ROW	1N	2N	3N	4N	5N
TENSION Kips	8	8	8	9	9
BENDING Ft-K	48	48	48	48	48
SHEAR Kips	11	11	11	11	11

NOTE:
For dimensions and elastic properties see Plate V-44

Scale:

Pressures 1" = 4 KSF

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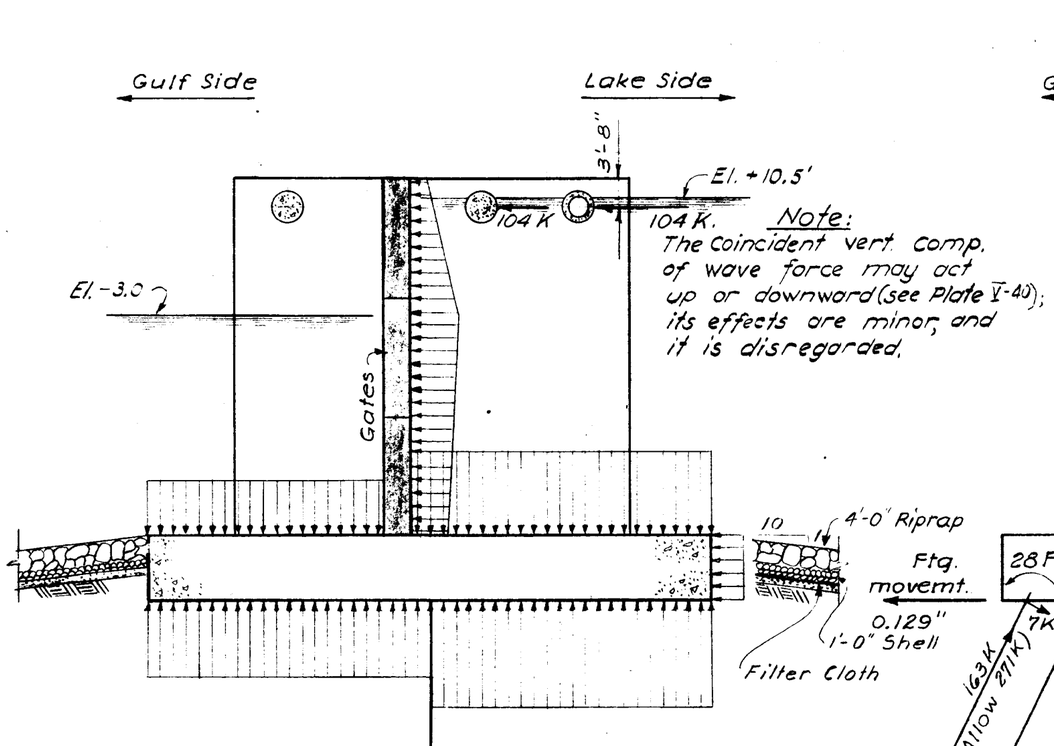
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 – DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
PILES FOR GATED BAYS 4-19
LOADING CASE 4A
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973 FILE NO. H-2-24417

CASE 4B OF TABLE II-2: HURRICANE WITH WAVES FROM LAKESIDE

(Wave forces on girders included.)



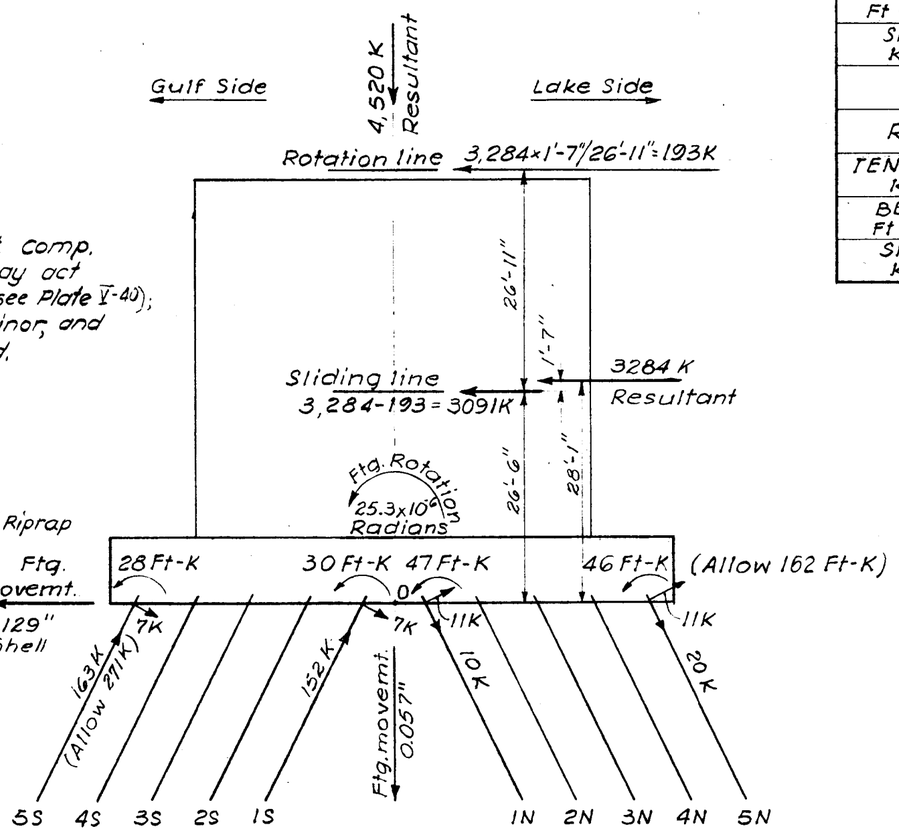
Note: The coincident vert. comp. of wave force may act up or downward (see Plate V-40); its effects are minor, and it is disregarded.

PRESSURE DIAGRAM

NOTE: For numerical values see PLATE V-46

FOOTING MOVEMENTS

Vertical : 4,520/78,800 = 0.057"
Horiz. : 3,091/24,000 = 0.129"
Rotation : 193/7.63 x 10^6 = 25.3 x 10^{-6} rad.



RESULTANTS AND PILE REACTIONS

PILE STRESSES					
ROW	5S	4S	3S	2S	1S
COMPRESSION, Kips	163	160	158	155	152
BENDING, Ft - Kips	28	28	29	30	30
SHEAR, Kips	7	7	7	7	7
ROW	1N	2N	3N	4N	5N
TENSION, Kips	10	12	15	18	20
BENDING, Ft - Kips	47	47	46	46	46
SHEAR, Kips	11	11	11	11	11

NOTE: For dimensions and elastic properties see PLATE V-44

5' 0 5' 10' 15' 20' 25' 30' 35'

Scale in Feet

Scale:

Pressures : 1" = 4 KSF

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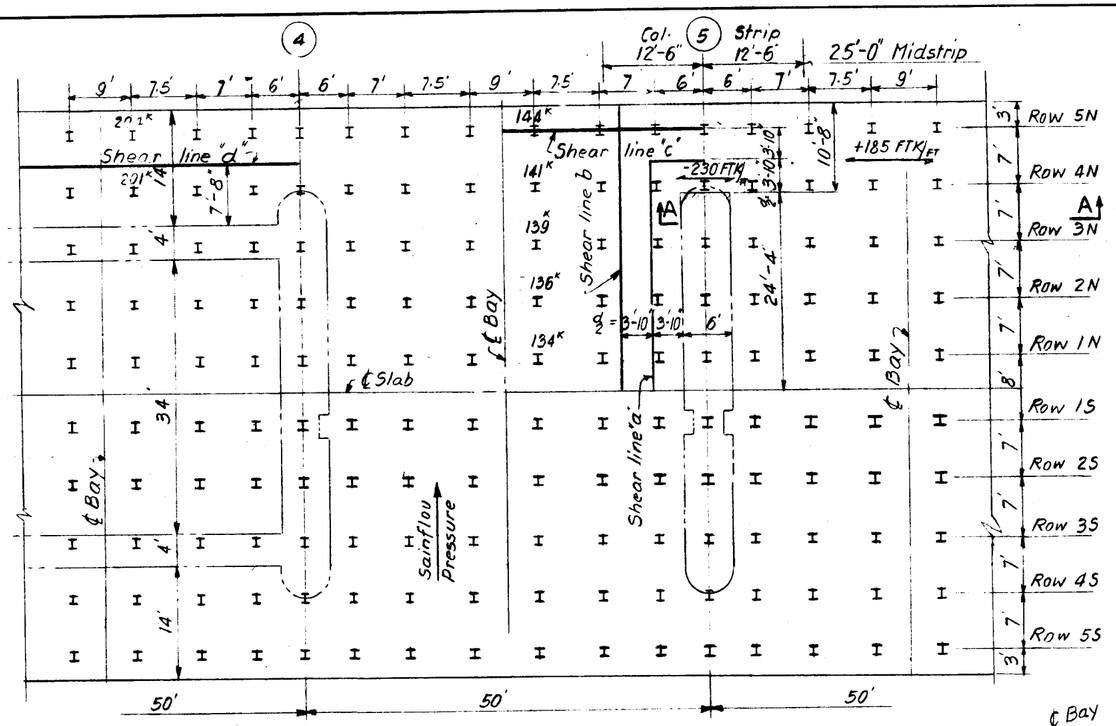
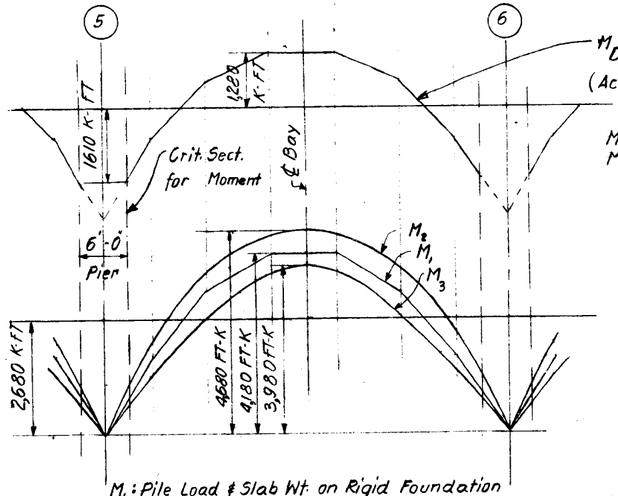
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
PILES FOR GATED BAYS 4-19
LOADING CASE 4B
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417



Buoyant Wt. of 8 FT. Base Slab = 0.69 KSF
+ = Tension at Top Surface ; - = Tension at Bott. Surface
Vertical Components of Pile Reactions are shown thus "141 K"

PLAN



$M_{Design} = M_1 \times \frac{M_3}{M_2}$
(Actual Pile Load on elastic Foundation)

Max. Mom. = 1610/7 = 230 FTK/FT.
Mom. Resist. of #11 @ 12 = 247 FTK/FT > 230 O.K.

M_1: Pile Load & Slab Wt. on Rigid Foundation
M_2: Uniform Load on Rigid Fdn. (Total Load same as M1)
M_3: Uniform Load on Elastic Fdn.
(Hetenyi, "Beams on Elastic Foundations", Page 63)

SECTION A-A

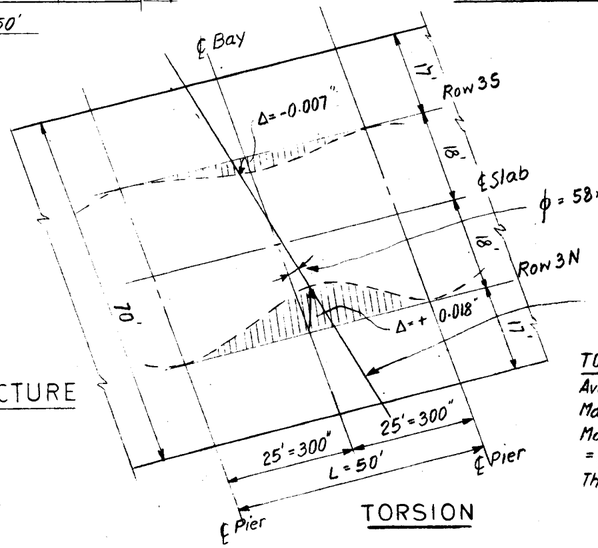
Moments in a 7 Ft wide Strip

SHEAR STRESS: $v = V/(bd)$; $d = 7'-8"$

Line "a":	$v = 1130^K/(34'-8" \times 7'-8") = 30$ psi	Allowable = 110 psi	
Line "b":	$v = 1030^K/(35'-0" \times 7'-8") = 25$ psi	Allowable = 60 psi	
Line "c":	$v = 480^K/(25'-0" \times 7'-8") = 17$ psi		
Line "d":	$v = 600^K/(25'-0" \times 7'-8") = 22$ psi		

OPP. HAND TO CASE 4B (PLATE V-47) FOR GATED STRUCTURE

CASE 1 (PLATE V-18) FOR BAY 3 IN ABUTMENT

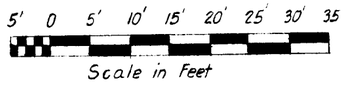


TORSION

Rotated Axis of Middle Cross Section

TORSIONAL STRESS:

Aver. Twist of the Slab: $\theta = 58 \times 10^{-6}/300" = 0.19 \times 10^{-6}$ Rad./in
Max. Twist $\approx 0.30 \times 10^{-6}$ Rad./in
Max. Torsional Stress = Shear Mod. × Thk. × θ =
$= 1500^{KSI} \times 96" \times 0.30 \times 10^{-6} = 43$ psi
This may be neglected (A.C.I. 11.7.1 & 8.10.3 & 8.10.5)



SCALE:
Moments : 1" = 3000 FT-K

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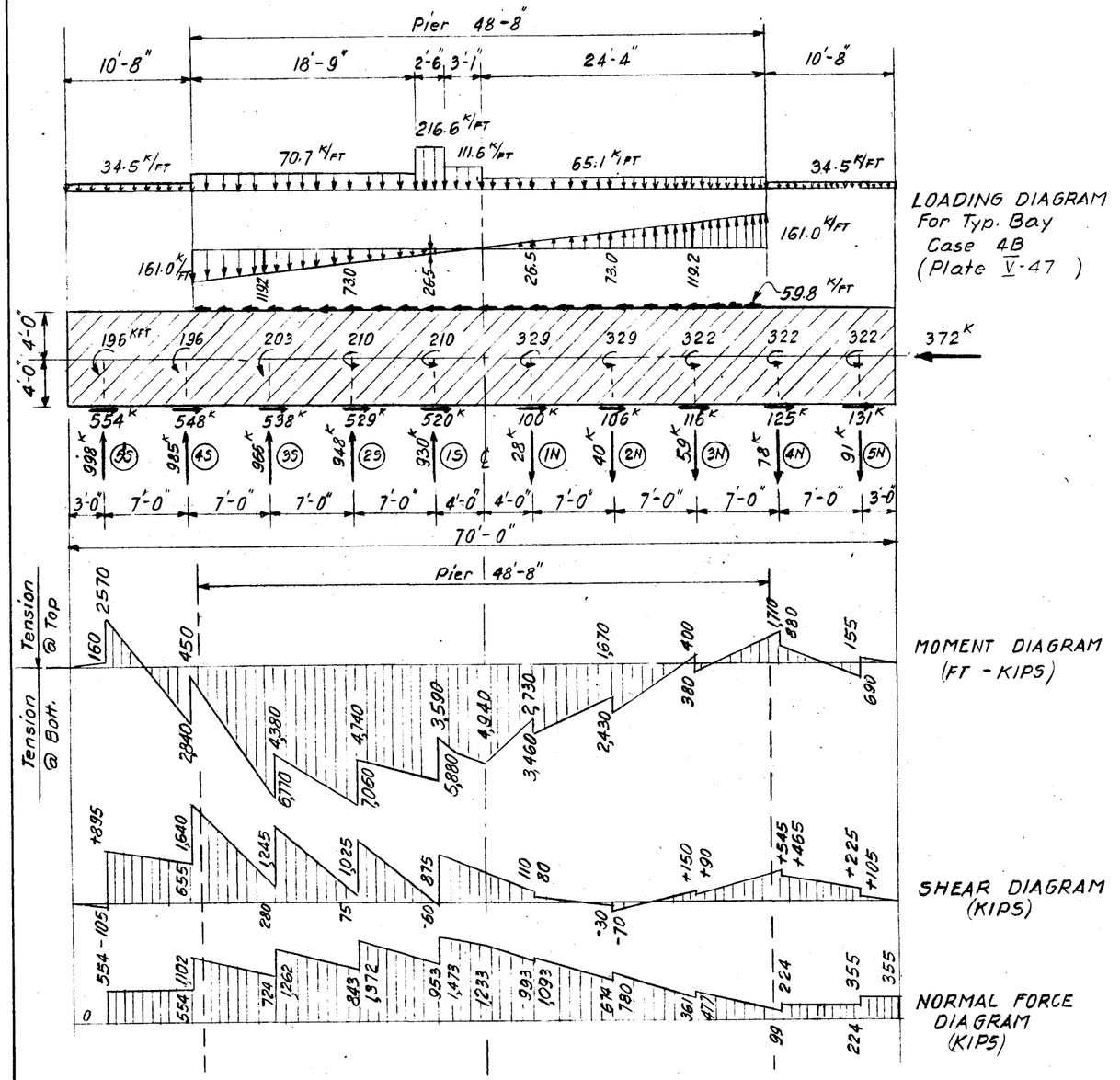
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM
BASE SLAB
LONGITUDINAL MOMENTS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE MARCH 1973
FILE NO. H-2-24417

PLATE V-48



LOADING DIAGRAM
For Typ. Bay
Case 4B
(Plate V-47)

MOMENT DIAGRAM
(FT - KIPS)

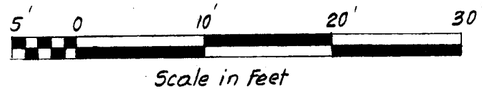
SHEAR DIAGRAM
(KIPS)

NORMAL FORCE
DIAGRAM
(KIPS)

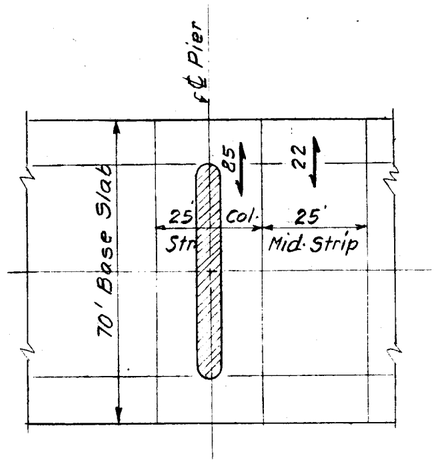
The Max. Mom. occurs at Pile Row 2S, & is 7,060 K-FT/50' width. This Mom. is not critical, however, since the avail. depth is about 52' (Base Slab + Pier) at that location.
Assuming ACI 318-71 Sect. 15.4.2(a) & 15.8 are applicable, the govern. Sect. is about 10' from the Edge of the Base Slab & carries a Mom. of 2840 FTK/50' width. This may be apportioned betw'n a Col. strip 25' wide (centered under the Pier) & a middle strip as follows:

Col. Strip = 75% x 2840/25' = 85 FTK/FT
Mid. Strip = 25% x 2840/25' = 22 FTK/FT

Mom. Resist. of #11 @ 12 is 247 FTK/FT > 85 O.K.



Scale in Feet



SCALES
Moments: 1" = 6000 FTK.
Forces: 1" = 2000 K.
Pressures: 1" = 600 K/FT.
Detail: 1" = 30'

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CONSULTING ENGINEERS — NEW ORLEANS, LA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE
AND CLOSURE DAM

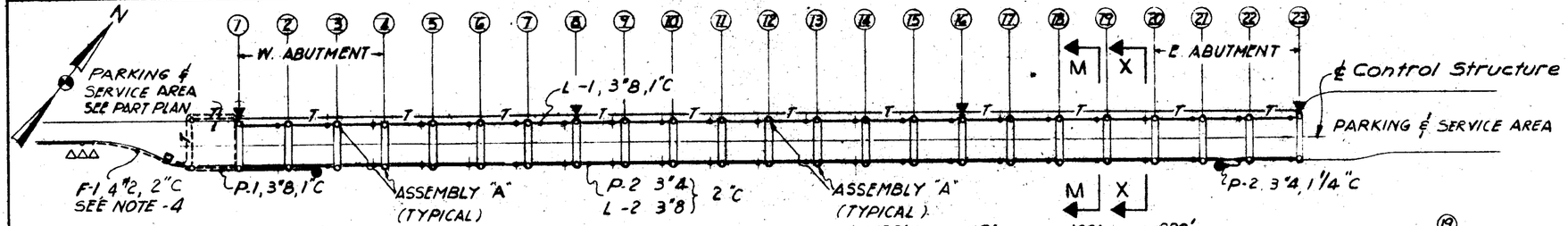
BASE SLAB
TRANSVERSE MOMENT

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973

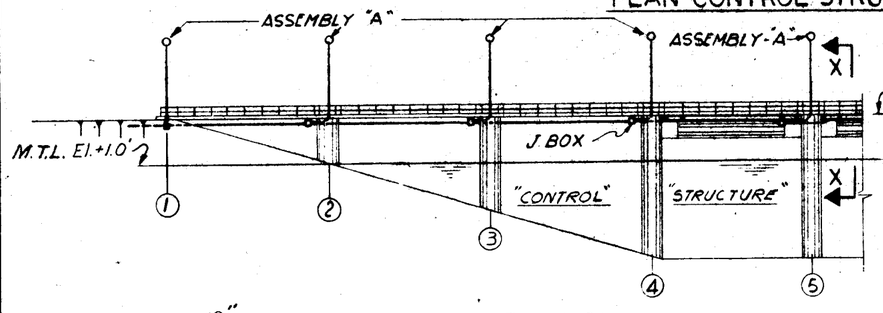
FILE NO. H-2-24417

PLATE V-49



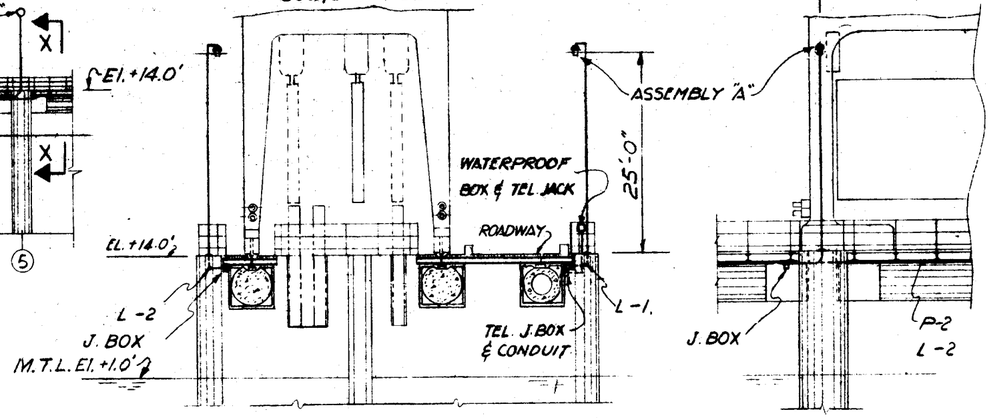
PLAN "CONTROL STRUCTURE"

100' 0' 100' 200'
Scale in Feet



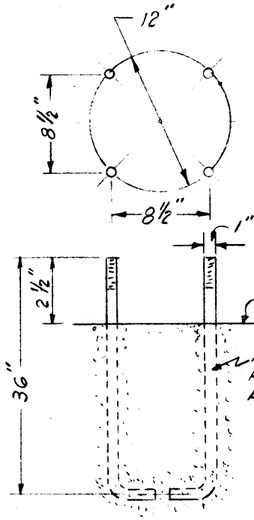
ELEVATION

50' 0' 50'
Scale in Feet



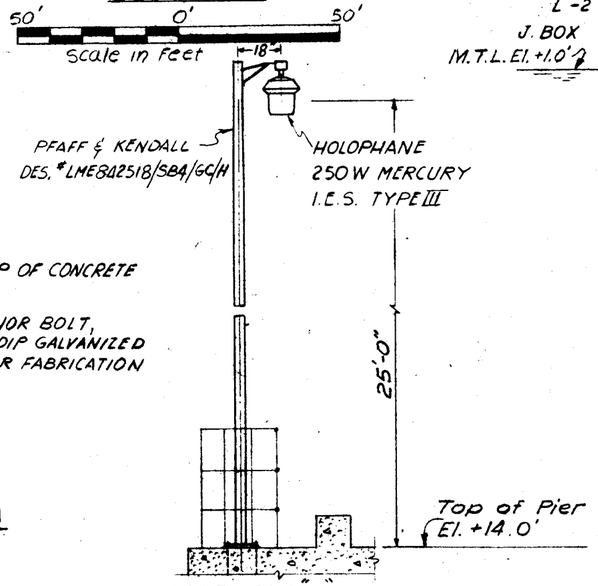
SECTION X-X 5' 0' 5' 10' 15' 20' 25' SIDE VIEW

Scale in Feet

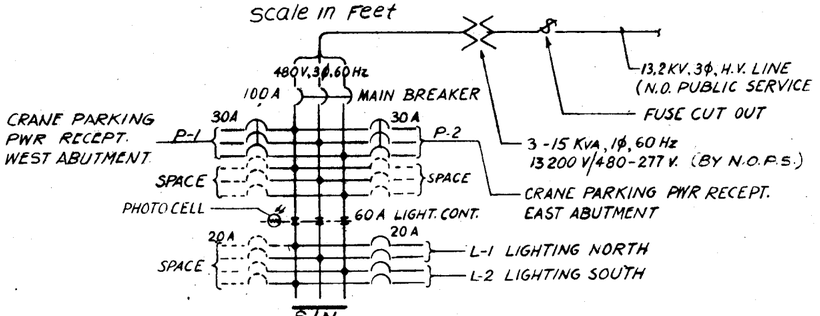


POLE FOUNDATION

not to scale



ASSEMBLY "A"



S/N

WIRING DIAGRAM OF DISTRIBUTION PANEL IN METER CABINET

SYMBOLS

- O - ASSEMBLY "A" 250W MERCURY, POLE MTD 25 FT. HEIGHT HOLOPHANE CAT. # 203-A-CW-277 OR APPR. EQUAL.
- ■ - JUNCTION BOX, CAST IRON, 12"×8"×4". WATERPROOF.
- ◭ - POWER RECEPTACLE, 30A, 480V, 3W 4P. WATERPROOF ENCLOSURE.
- ——— CONDUIT RUN EXPOSED
- – – – CONDUIT BURIED UNDERGROUND OR CONCEALED.
- —T— TELEPHONE CONDUIT 1" WITH TWO PAIRS TWISTED WIRE #19.
- ▼ TELEPHONE RECEPT. WEATHERPROOF 4-POLE 5 AMP. 250 VOLT POLARIZED.
- ΔΔΔ SUBSTATION 45 KVA, 3Ø, 60 Hz 13200/480-277 V. POLE MTD. (BY N.O.P.S.)

NOTES:

1. FOR SECTION 'M-M', SEE CATHODIC PROTECTION DRAWING PLATE VII-3
2. CRANE RAILS, HAND RAILS & LIGHTING STANDARDS SHALL BE EFFECTIVELY GROUNDED.
3. FOR CONNECTIONS SEE NOTE-2 ON PLATE VII-2.
4. ALL BURIED CONDUIT SHALL BE ENCASED IN A CONCRETE ENVELOPE; CONCRETE COVER OVER CONDUIT SHALL BE 3".

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CONSULTING ENGINEERS — NEW ORLEANS, LA.

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

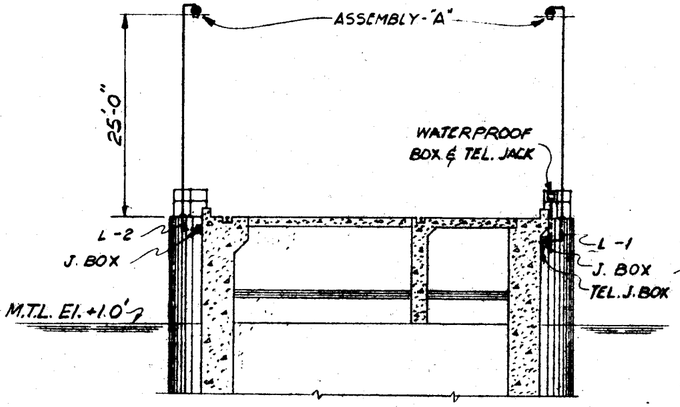
POWER AND LIGHTING GENERAL LAYOUT

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

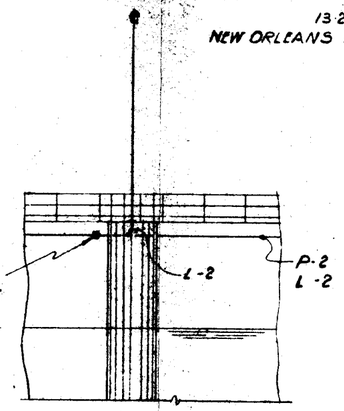
DATE: MARCH 1973

FILE NO. H-2-24417

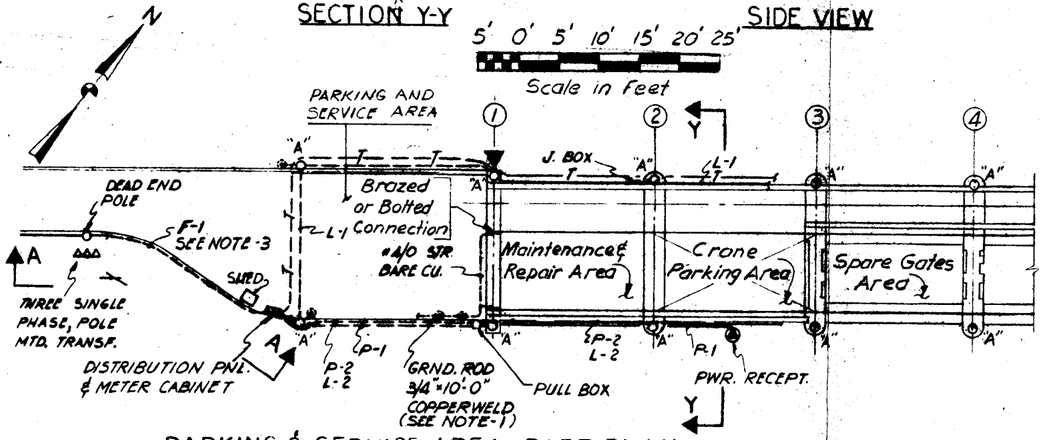
PLATE VII-1



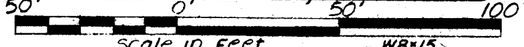
SECTION Y-Y

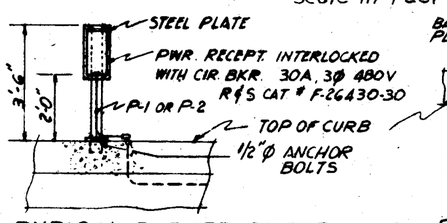


SIDE VIEW

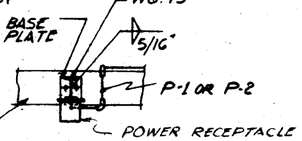


PARKING & SERVICE AREA, PART PLAN

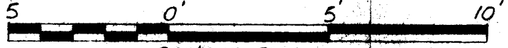


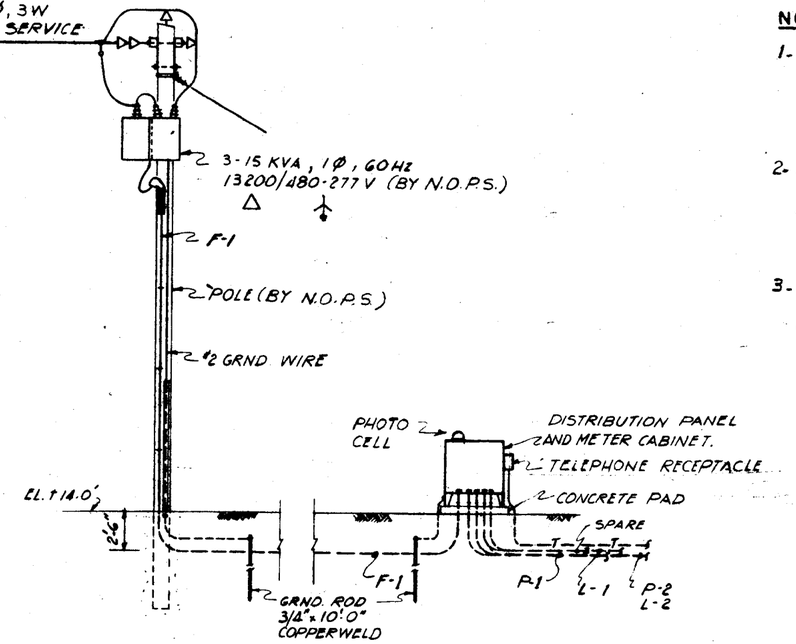


TYPICAL PARKED CRANE POWER RECEPTACLE MTG.

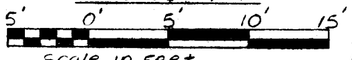


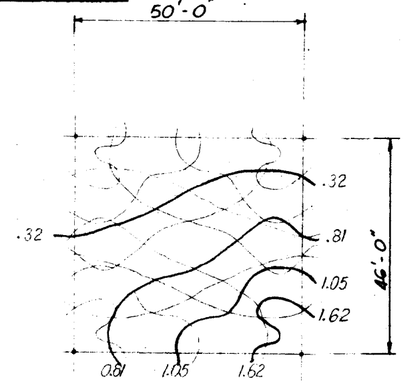
TOP VIEW





SECTION A-A





PLOTTED ISOLUX CURVES FOR FOUR LUMINAIRES TYPICAL BETWEEN BENTS 5 & 19

NOTES:

1. DRIVE SUFFICIENT GROUND RODS TO ACHIEVE GROUND RESISTANCE OF 25 OHMS OR LESS UNDER DRY SOIL CONDITIONS.

   SPACING SHALL NOT BE LESS THAN 6 FT.

2. ALL BURIED CONNECTIONS SHALL BE BRAZING PROCESS TYPE.
   ALL ABOVE GROUND CONNECTIONS SHALL BE EITHER BRAZED OR BY MECHANICAL CONNECTOR.

3. ALL BURIED CONDUIT SHALL BE ENCASED IN A CONCRETE ENVELOPE; CONCRETE COVER OVER CONDUIT SHALL BE 3"

FREDERIC R. HARRIS, INC.
CONSULTING ENGINEERS — NEW ORLEANS, LA.

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

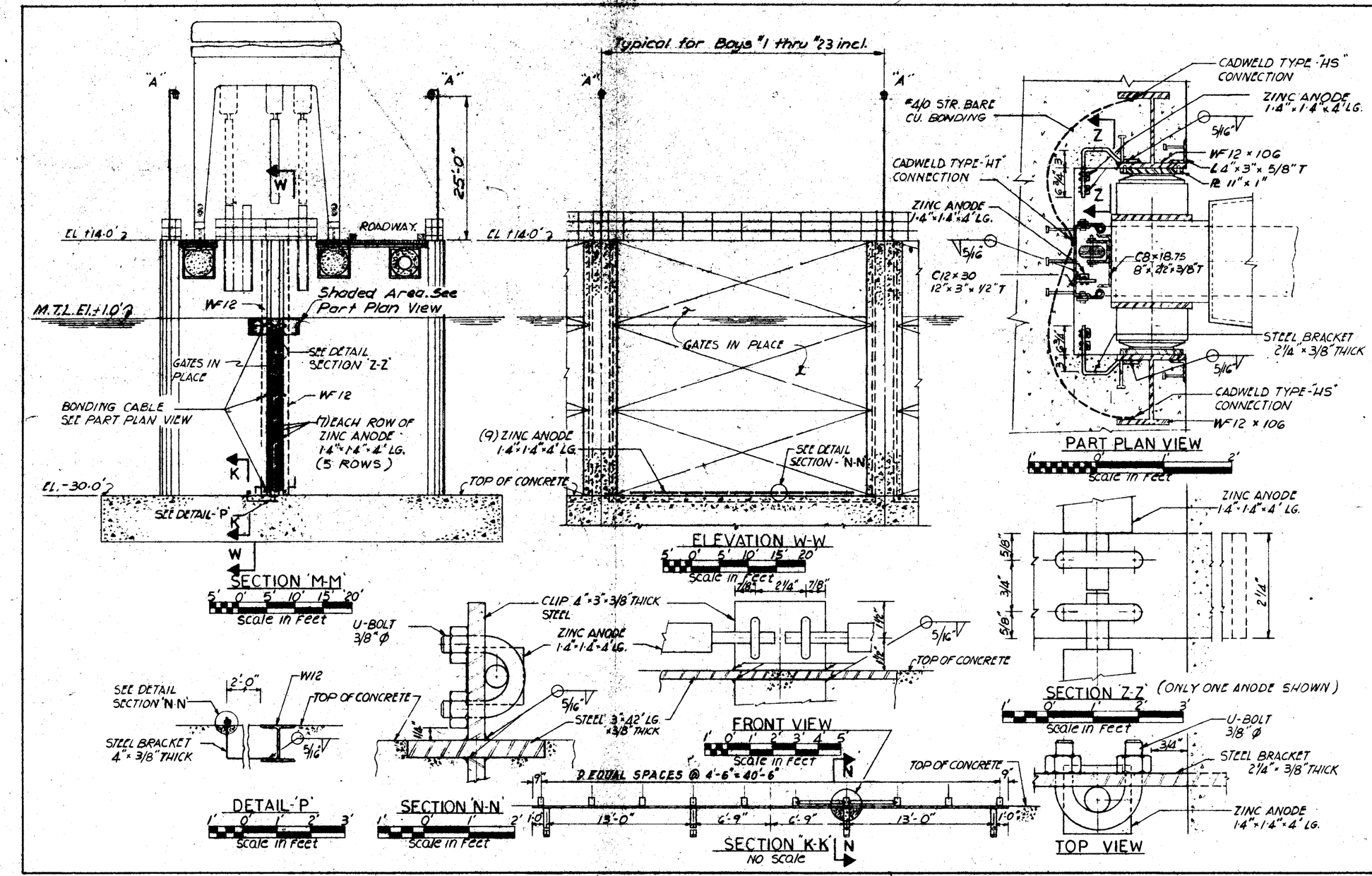
POWER AND LIGHTING DETAILS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: MARCH 1973

FILE NO. H-2-24417

PLATE VII-2



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LAKE PONTCHARTRAIN, LA. AND VICINITY,
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 6 — DETAIL DESIGN
RIGOLETS CONTROL STRUCTURE AND CLOSURE DAM

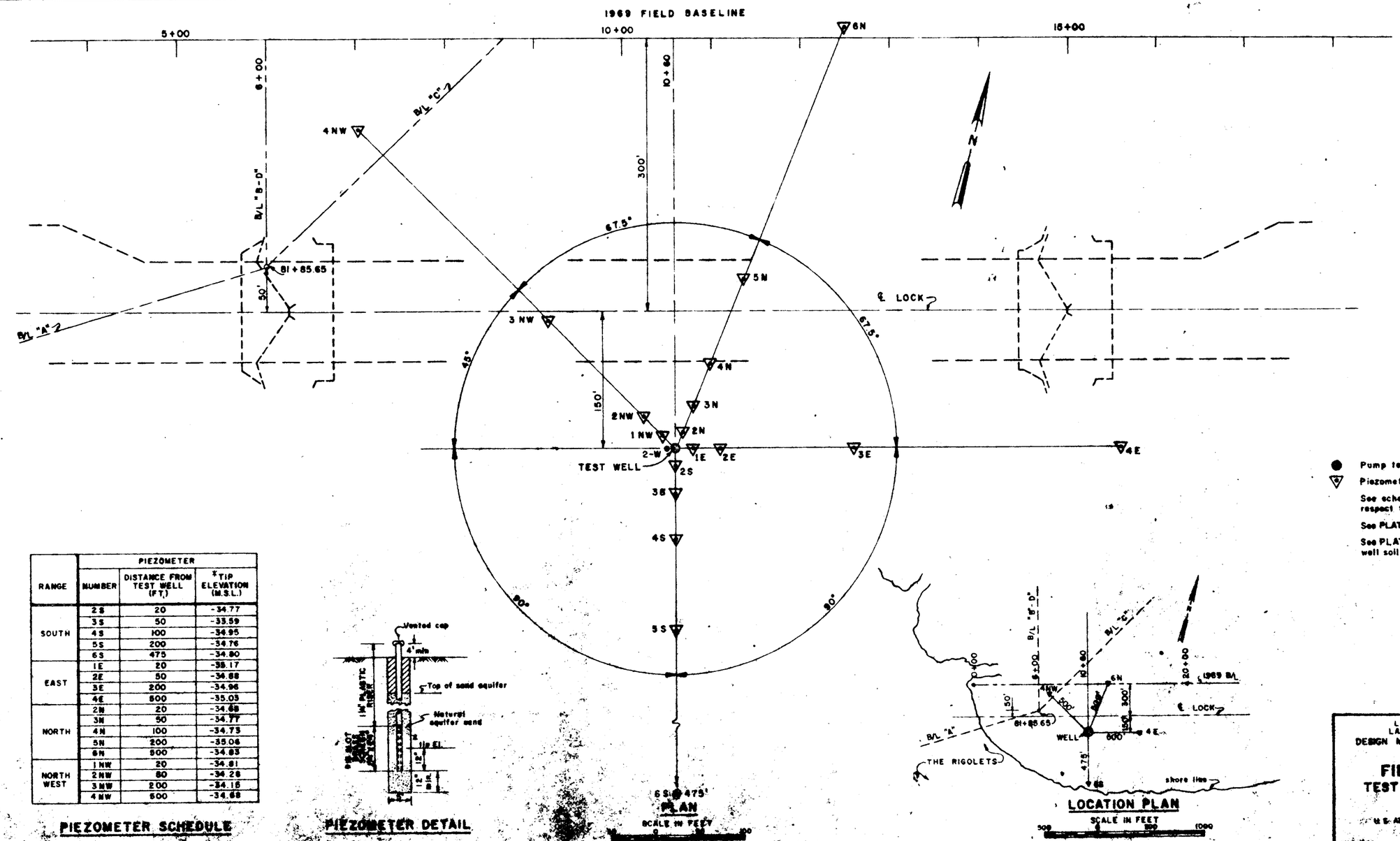
CATHODIC PROTECTION
LAYOUT AND DETAILS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE MARCH 1973

FILE NO. H-2-24417

PLATE VII 3



RANGE	PIEZOMETER NUMBER	PIEZOMETER DISTANCE FROM TEST WELL (FT.)	PIEZOMETER *TIP ELEVATION (M.S.L.)
SOUTH	2S	20	-34.77
	3S	50	-33.59
	4S	100	-34.95
	5S	200	-34.76
	6S	475	-34.80
EAST	1E	20	-35.17
	2E	50	-34.88
	3E	200	-34.96
	4E	500	-35.03
NORTH	2N	20	-34.68
	3N	50	-34.77
	4N	100	-34.73
	5N	200	-35.06
	6N	500	-34.83
NORTH WEST	1NW	20	-34.81
	2NW	80	-34.28
	3NW	200	-34.18
	4NW	500	-34.68

PIEZOMETER SCHEDULE

PIEZOMETER DETAIL

GENERAL NOTES

- Pump test well, 6-in. ID.
- Piezometer and general type soil borings.

See schedule for locations of piezometers with respect to test well.

See PLATE No. 2 for field pumping test data.

See PLATE Nos. 3 and 4 for piezometer and well soil boring data.

LOCATION PLAN

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

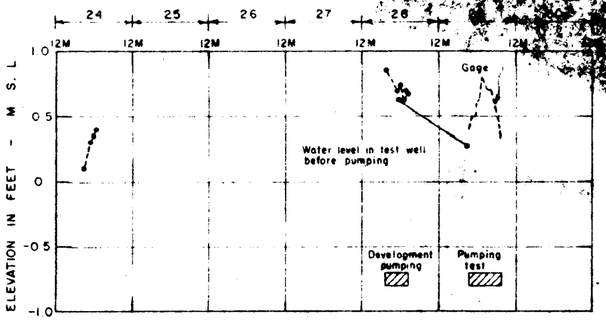
FIELD PUMPING TEST
TEST WELL AND PIEZOMETER LOCATIONS

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

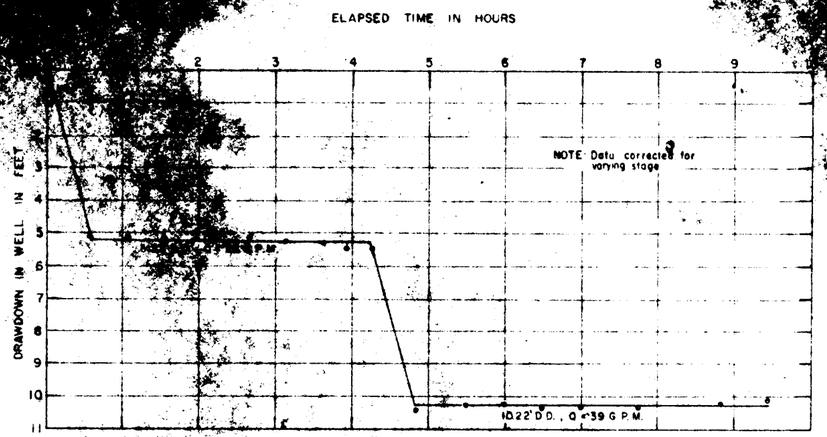
JULY 1960

FILE NO. H-8-54403

PLATE 1

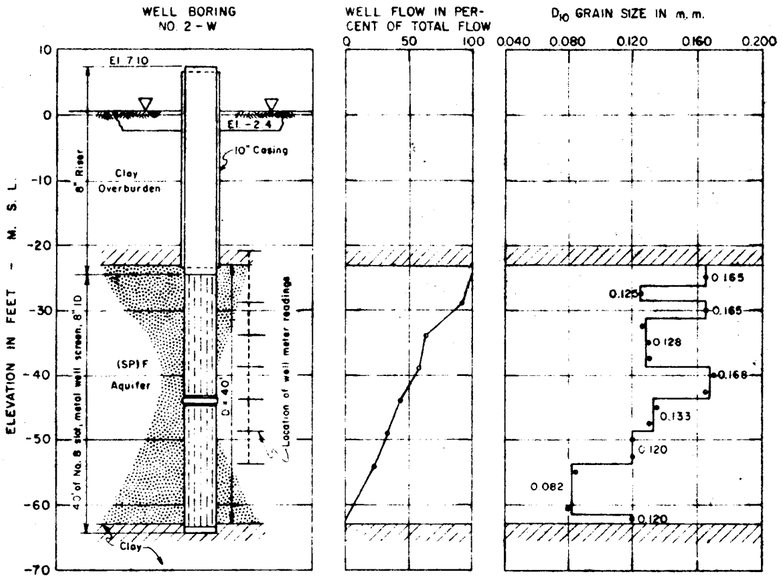


SCHEDULE OF TEST PUMPING

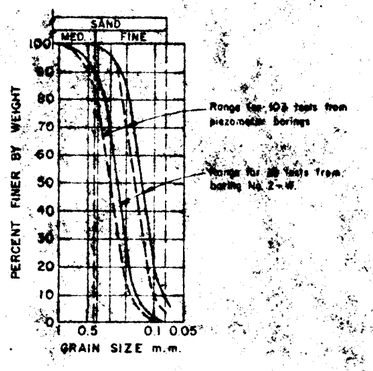


DRAWDOWN IN WELL VERSUS TIME

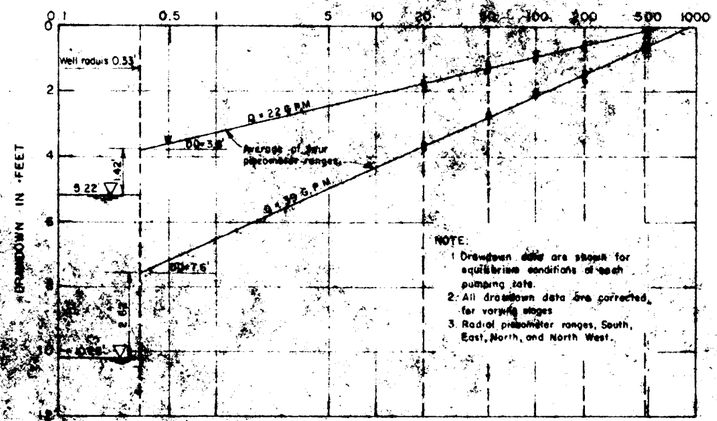
WELL FLOW VS DRAWDOWN IN WELL



WELL DETAIL, FLOW DATA, AND D_{10} SIZE



GRAIN SIZE GRADATION



DRAWDOWN IN WELL AND PIEZOMETERS

PERMEABILITY CALCULATIONS

$$K_H = \frac{Q_w \ln R/r_w}{2\pi D(H-h_w)}, \quad Q_w = \frac{39}{7.5} = 5.2 \text{ cfm}, \quad R = 900', \quad r_w = 0.33', \quad D = 40', \quad H - h_w = 7.6'$$

$$2\pi = 6.2832$$

$$K_H = \frac{5.2 \ln 2{,}700}{6.2832 \times 40 \times 7.6} = \frac{5.2 \times 7.9}{1{,}910} = \frac{41}{1{,}910} = 0.0215' \text{ per. min.}$$

$$K_H = 0.0215 \times 0.508 = 0.0109 = 109 \times 10^{-4} \text{ cm per sec.}$$

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 8 - DETAIL DESIGN
RIGOLETS LOCK

FIELD PUMPING TEST
FIELD PERMEABILITY DATA

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

JULY 1969

FILE NO. H-2-24419

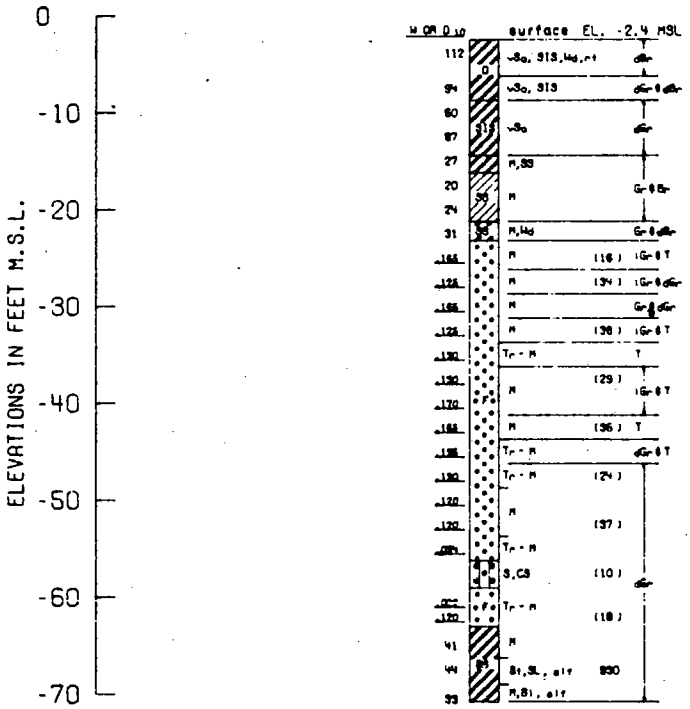
PLATE A-2

BOR. 2-W

10 FT. WEST OF WELL SITE

WATER SURFACE ELEV 0.80 MSL

30 APRIL 69



NOTE: Boring located 450' south of 1969 B/L sta. 10+60.

NOTE: General type boring logs were taken with a 1⅞ inch I.D. core barrel sampler
1⅜ I.D. 2 inch O.D. splitspoon sampler
See PLATE A for boring legend

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

FIELD PUMPING TEST

WELL BORING NO. 2-W

U S ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

JULY 1969

FILE NO H-2-24419

PLATE A-3

BOR. P-6-S
475 FT. SOUTH OF WELL
WATER TABLE 1.0
25 APRIL 1968

BOR. P-5-S
200 FT. SOUTH OF WELL
15 APRIL 1968

BOR. P-4-S
100 FT. SOUTH OF WELL
WATER TABLE 0.4
16 APRIL 1968

BOR. P-3-S
50 FT. SOUTH OF WELL
WATER TABLE 0.4
26 APRIL 1968

BOR. P-2-S
20 FT. SOUTH OF WELL
WATER TABLE 0.6
29 APRIL 1968

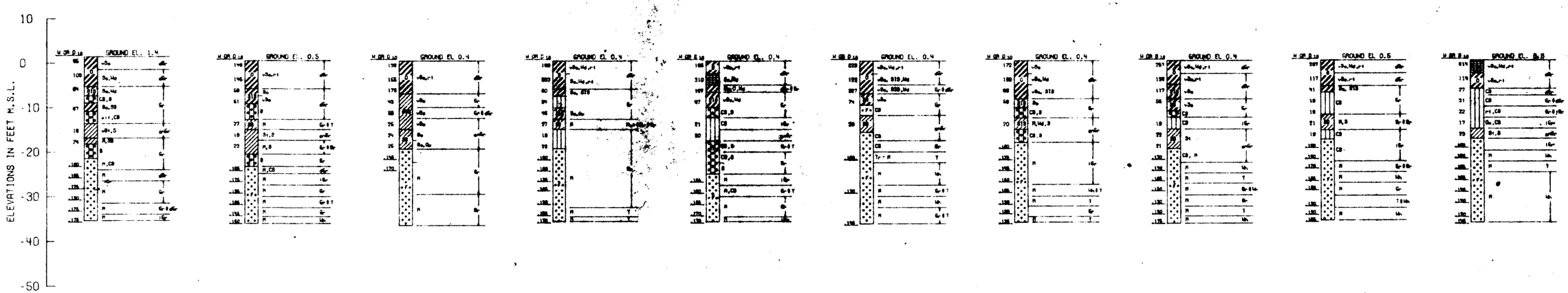
BOR. P-2-N
20 FT. NORTH OF WELL
WATER TABLE 0.1
7 MARCH 1968

BOR. P-3-N
50 FT. NORTHEAST OF WELL
WATER TABLE 0.0
24 APRIL 1968

BOR. P-4-N
100 FT. NORTHEAST OF WELL
WATER TABLE 0.2
23 APRIL 1968

BOR. P-5-N
200 FT. NORTH OF WELL
WATER TABLE 0.4
19 APRIL 1968

BOR. P-6-N
500 FT. NORTHEAST OF WELL
WATER TABLE 0.2
22 APRIL 1968



BOR. P-4-NW
500 FT. NORTHWEST OF WELL
WATER TABLE 0.0
17 APRIL 1968

BOR. P-3-NW
200 FT. NORTHWEST OF WELL
WATER TABLE 0.1
18 APRIL 1968

BOR. P-2-NW
50 FT. NORTHWEST OF WELL
WATER TABLE 0.2
16 APRIL 1968

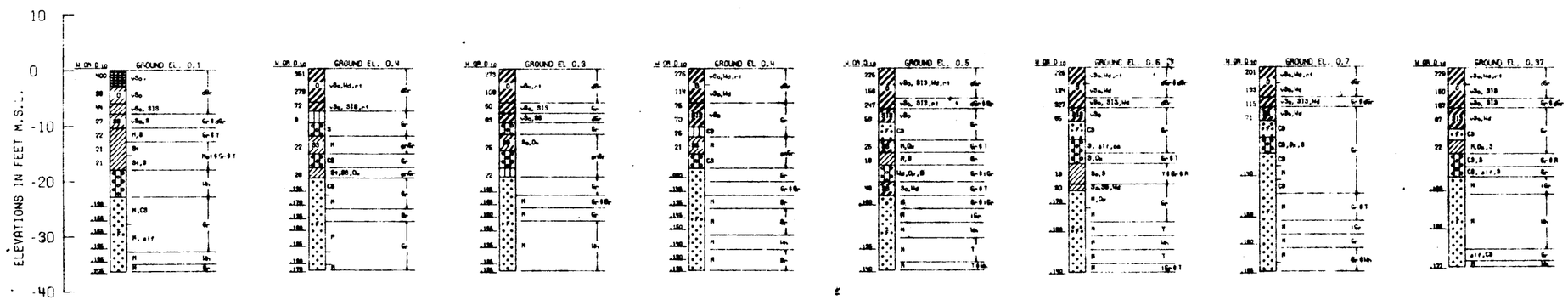
BOR. P-1-NW
20 FT. NORTHWEST OF WELL
WATER TABLE 0.2
24 APRIL 1968

BOR. P-1-E
20 FT. EAST OF WELL
WATER TABLE 0.1
6 MARCH 1968

BOR. P-2-E
50 FT. EAST OF WELL
WATER TABLE 0.3
5 MARCH 1968

BOR. P-3-E
200 FT. EAST OF WELL
WATER TABLE 0.5
5 MARCH 1968

BOR. P-4-E
500 FT. EAST OF WELL
WATER TABLE 0.1
1 MARCH 1968



NOTE: General type boring logs were taken with a 1 7/8 inch I.D. core barrel sampler.
See PLATE A for boring legend.

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

FIELD PUMPING TEST
PIEZOMETER BORING LOGS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

JULY 1969

FILE NO. N-2-24419

PLATE A-4

UNIFIED SOIL CLASSIFICATION

MAJOR DIVISION		TYPE	LETTER SYMBOL	SYMBOL	TYPICAL NAMES
COARSE-GRAINED SOILS More than half of material is larger than No. 200 sieve size.	GRAVELS More than half of coarse fraction is larger than No. 4 sieve size.	CLEAN GRAVEL (Little or No Fines)	GW		GRAVEL, Well Graded, gravel-sand mixtures, little or no fines
			GP		GRAVEL, Poorly Graded, gravel-sand mixtures, little or no fines
		GRAVEL WITH FINES (Appreciable Amount of Fines)	GM		SILTY GRAVEL, gravel-sand-silt mixtures
			GC		CLAYEY GRAVEL, gravel-sand-clay mixtures
	SANDS More than half of coarse fraction is smaller than No. 4 sieve size.	CLEAN SAND (Little or No Fines)	SW		SAND, Well-Graded, gravelly sands
			SP		SAND, Poorly-Graded, gravelly sands
		SANDS WITH FINES (Appreciable Amount of Fines	SM		SILTY SAND, sand-silt mixtures
			SC		CLAYEY SAND, sand-clay mixtures
FINE-GRAINED SOILS More than half the material is smaller than No. 200 sieve size.		SILTS AND CLAYS (Liquid Limit < 50)	ML		SILT & very fine sand, silty or clayey fine sand or clayey silt with slight plasticity
			CL		LEAN CLAY; Sandy Clay; Silty Clay; of low to medium plasticity
			OL		ORGANIC SILTS and organic silty clays of low plasticity
		SILTS AND CLAYS (Liquid Limit > 50)	MH		SILT, fine sandy or silty soil with high plasticity
			CH		FAT CLAY, inorganic clay of high plasticity
			OH		ORGANIC CLAYS of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			Pt		PEAT, and other highly organic soil
WOOD			Wd		WOOD
SHELLS			Sl		SHELLS
NO SAMPLE					

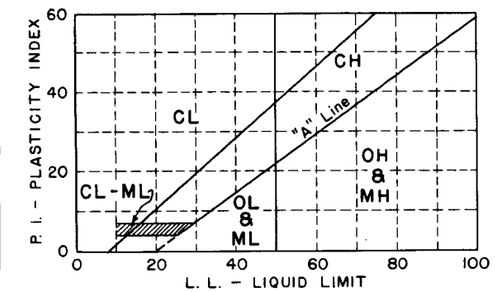
NOTE: Soils possessing characteristics of two groups are designated by combinations of group symbols

DESCRIPTIVE SYMBOLS

COLOR	
COLOR	SYMBOL
TAN	T
YELLOW	Y
RED	R
BLACK	BK
GRAY	Gr
LIGHT GRAY	lGr
DARK GRAY	dGr
BROWN	Br
LIGHT BROWN	lBr
DARK BROWN	dBr
BROWNISH-GRAY	br Gr
GRAYISH-BROWN	gy Br
GREENISH-GRAY	gn Gr
GRAYISH-GREEN	gy Gn
GREEN	Gn
BLUE	Bl
BLUE-GREEN	Bl Gn
WHITE	Wh
MOTTLED	Mot

CONSISTENCY FOR COHESIVE SOILS		
CONSISTENCY	COHESION IN LBS./SQ.FT. FROM UNCONFINED COMPRESSION TEST	SYMBOL
VERY SOFT	< 250	vSo
SOFT	250 - 500	So
MEDIUM	500 - 1000	M
STIFF	1000 - 2000	St
VERY STIFF	2000 - 4000	vSt
HARD	> 4000	H

MODIFICATIONS	
MODIFICATION	SYMBOL
Traces	Tr-
Fine	F
Medium	M
Coarse	C
Concretions	cc
Rootlets	rt
Lignite fragments	lg
Shale fragments	sh
Sandstone fragments	sds
Shell fragments	slf
Organic matter	O
Clay strata or lenses	CS
Silt strata or lenses	SIS
Sand strata or lenses	SS
Sandy	S
Gravelly	G
Boulders	B
Slickensides	SL
Wood	Wd
Oxidized	Ox



PLASTICITY CHART

For classification of fine - grained soils

NOTES:

FIGURES TO LEFT OF BORING UNDER COLUMN "W OR D_{10}"

- Are natural water contents in percent dry weight
- When underlined denotes D_{10} size in mm *

FIGURES TO LEFT OF BORING UNDER COLUMNS "LL" AND "PL"

- Are liquid and plastic limits, respectively

SYMBOLS TO LEFT OF BORING

- ▽ Ground-water surface and date observed
- (C) Denotes location of consolidation test **
- (S) Denotes location of consolidated-drained direct shear test **
- (R) Denotes location of consolidated-undrained triaxial compression test **
- (Q) Denotes location of unconsolidated-undrained triaxial compression test **
- (T) Denotes location of sample subjected to consolidation test and each of the above three types of shear tests **
- FW Denotes free water encountered in boring or sample

FIGURES TO RIGHT OF BORING

- Are values of cohesion in lbs./sq.ft. from unconfined compression tests
- In parenthesis are driving resistances in blows per foot determined with a standard split spoon sampler ($1\frac{3}{8}$" I.D., 2" O.D.) and a 140 lb. driving hammer with a 30" drop
- Where underlined with a solid line denotes laboratory permeability in centimeters per second of undisturbed sample
- Where underlined with a dashed line denotes laboratory permeability in centimeters per second of sample remoulded to the estimated natural void ratio

* The D_{10} size of a soil is the grain diameter in millimeters of which 10% of the soil is finer, and 90% coarser than size D_{10}.

**Results of these tests are available for inspection in the U.S. Army Engineer District Office, if these symbols appear beside the boring logs on the drawings.

GENERAL NOTES:

While the borings are representative of subsurface conditions at their respective locations and for their respective vertical reaches, local variations characteristic of the subsurface materials of the region are anticipated and, if encountered, such variations will not be considered as differing materially within the purview of clause 4 of the contract.

Ground-water elevations shown on the boring logs represent ground-water surfaces encountered on the dates shown. Absence of water surface data on certain borings implies that no ground-water data is available, but does not necessarily mean that ground water will not be encountered at the locations or within the vertical reaches of these borings.

Consistency of cohesive soils shown on the boring logs is based on driller's log and visual examination and is approximate, except within those vertical reaches of the borings where shear strengths from unconfined compression tests are shown.

REVISION	DATE	DESCRIPTION	BY
3	5-3-71	ADDED UPPER LIMIT LINE (P.I.=0.9(LL-8)) ON PLASTICITY CHART	LMVED-G LETTER D'T'D 29 APRIL 1971
2	6-8-64	SYMBOL FW, NOTE REVISED	ORAL FROM L.M.V.G.G. 5 JUNE 1964
1	9-17-63	1ST. PAR. OF GENERAL NOTES REVISED	L.M.V.D. MULTIPLE LETTER, DATED 5 SEPT., 1963

SOIL BORING LEGEND

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
FILE NO. H-2-21800

PLATE A