LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA
LAKE PONTCHARTRAIN BARRIER PLAN
DETAIL DESIGN MEMORANDUM NO. 8
RIGOLETS LOCK

VOLUME 2

TABLE OF CONTENTS

Paragraph	Title	Page
	PERTINENT DATA - SEE VOLUME I	
	SECTION I - GENERAL - SEE VOLUME I	
	SECTION II - HYDRAULIC DESIGN - SEE VOLUME I	
	SECTION III - FOUNDATION INVESTIGATION - SEE VOLUME I	
	SECTION IV - STRUCTURAL DESIGN	
	CRITERIA FOR STRUCTURAL DESIGN	
1	General	IV-1
2	Basic data	IV-1
3	Unit weights	IV-1
4	Allowable working stresses	IV-2
	DESIGN OF STRUCTURES	
5	Foundation	IV-8
	GATE BAY	
6	Base slab	IV-8
7	Gate bay walls	IV-12
8	Needles and needle girder	IV-12
9	Control houses	IV-13
	SECTOR GATES	
10	General description	IV-13
11	Loading conditions	IV-13
12	Basic stresses	IV-14
13	Skin plate	IV-14
14	Vertical skin plate ribs	IV-14
15	Horizontal girders	IV-14
16	Horizontal frames and vertical trusses	IV-14
17	Fender system	IV-15

VOLUME 2

TABLE OF CONTENTS (continued)

Paragraph	Title	Page
	SECTION IV - STRUCTURAL DESIGN (continued)	
	SECTOR GATES (continued)	
18	Walkways	IV-15
19	Hinge and pintle	IV-15
20	Hinge and pintle anchorages	IV-15
	APPURTENANCES	
21	Floodwalls	IV-17
22	Timber guide walls	IV-17
23	Timber pile dolphins	IV-17
24	Steel sheet pile dolphins	IV-17
25	Powerhouse and office	IV-17
26	Storage building	IV-18
27	Needle and needle girder storage	IV-18
28	Observation platform	IV-18
29	Fences	IV-18
30	Walkways	IV-18
	MATERIALS	
31	Sources of construction materials	IV-18
	SECTION V - MECHANICAL DESIGN - SEE VOLUME I	
	SECTION VI - ELECTRICAL DESIGN - SEE VOLUME I	
	SECTION VII - ESTIMATE OF COST - SEE VOLUME I	
	SECTION VIII - RECOMMENDATION - SEE VOLUME I	
	FIGURES - SEE VOLUME I	
	TABLES - SEE VOLUME I	
	APPENDICES - SEE VOLUME I	

TABLE OF CONTENTS (continued)

PLATES

Plate No.	Title	Section
I-1	GENERAL PLAN AND VICINITY MAP	I
I-2	GENERAL PLAN OF LOCK	I
I-3	LOCK SECTIONS	I
I-4	CHANNEL SECTIONS	I
I-5	LOCK SECTIONS	I
I-6	FLOODWALLS PLAN AND PROFILE	I
I-7	LANDSCAPING	I
I-8	LANDSCAPING	I
I-9	LANDSCAPING	I
II-1	DIFFERENTIAL HEADS TRACK C	II
II-2	DIFFERENTIAL HEADS TRACK F	II
II-3	MAXIMUM REVERSE DIFFERENTIAL HEADS ALL HURRICANE TRACKS	II
II-4	HEAD DIFFERENTIALS DURATION CURVE	II
II-5	FILLING SYSTEM CURVES	II
II-6	FILLING SYSTEM CURVES	II
II-7	FILLING SYSTEM CURVES	II
II-8	GATE SWITCH OPERATIONS	II
III-1	SOIL BORINGS 2AU2, 2AU3, AND 2AU4 DATA	III
III-2	SOIL BORING 3RU DATA	III
III-3	SOIL BORING 1-UL DATA	III
III-4	DETAIL SHEAR STRENGTH DATA, BORINGS 2AU4 AND 3RU	III
III-5	DETAIL SHEAR STRENGTH DATA, BORING 1-UL	III
III-6	SOIL BORING LOGS	III
III-7	SOIL BORING LOGS	III
III-8	CONSTRUCTION "Q" STABILITY	III
III-9	CONSTRUCTION "Q" STABILITY	III
III-10	CONSTRUCTION "Q" STABILITY	III
III-11	CONSTRUCTION "Q" STABILITY	III
III-12	CONSTRUCTION "Q" STABILITY	III
III-13	OPERATING "Q" STABILITY	III
III-14	OPERATING "Q" STABILITY	III
III-15	PILING DATA LAKESIDE GATE BAY	III
III-16	PILING DATA GULFSIDE GATE BAY	III
III-17	PILING DATA	III
A	SOIL BORING LEGEND	III
III-18	EXCAVATION PLAN	III
III-19	EXCAVATION SECTIONS	III
III-20	NORTH LEVEE CONNECTION	III
III-21	SOUTH LEVEE CONNECTION	III
III-22	CONNECTION LEVEE SECTIONS	III

TABLE OF CONTENTS (continued)

PLATES

Plate No.	Title	Section
III-23	GULFSIDE FLOODWALL I-WALL STABILITY	III
III-24	T-WALL FLOODWALL UNBALANCED WATER ANALYSIS	III
III-25	DEWATERING SYSTEM	III
III-26	SEEPAGE ANALYSIS	III
III-27	GATE BAY SEEPAGE AND UNBALANCED WATER ANALYSIS	III
*IV-1	GULFSIDE GATE WATER LOAD DIAGRAMS	IV
*IV-2	LAKESIDE GATE WATER LOAD DIAGRAMS	IV
*IV-3	BASE SLAB AND PILING LAYOUT	IV
*IV-4	GATE BAY CONCRETE DIMENSIONS	IV
*IV-5	GULFSIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-6	GULFSIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-7	GULFSIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-8	GULFSIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-9	GULFSIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-10	GULFSIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-11	GULFSIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-12	GULFSIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-13	LAKESIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-14	LAKESIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-15	LAKESIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-16	LAKESIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-17	LAKESIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-18	LAKESIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-19	LAKESIDE GATE BAY BASE SLAB DESIGN CONDITIONS	IV
*IV-20	GATE BAYS RECESS WALLS	IV
*IV-21	GATE BAYS RECESS WALLS	IV
*IV-22	GATE BAYS GATE SUPPORT BLOCK	IV
*IV-23	GATE BAYS NEEDLE DAM	IV
*IV-24	GATE BAYS NEEDLE GIRDER	IV
*IV-25	WALKWAY PLAN AND DETAILS	IV
*IV-26	WALKWAY DETAILS	IV
*IV-27	WALKWAY DETAILS	IV
*IV-28	HORIZONTAL FRAME AND SEAL DETAILS	IV
*IV-29	TRUSS AND FENDER DETAILS	IV
*IV-30	HINGE DETAILS	IV
*IV-31	PINTLE DETAILS	IV
*IV-32	TRUSS AND FRAME DIMENSIONS AND WATER LOAD DISTRIBUTION	IV
*IV-33	GULFSIDE GATE SKIN PLATE AND SUPPORTS	IV
*IV-34	LAKESIDE GATE SKIN PLATE AND SUPPORTS	IV
*IV-35	GULFSIDE GATE HORIZONTAL GIRDERS	IV

Plates marked thus (*) are bound in Volume 2. Remainder of plates are bound in Volume 1.

TABLE OF CONTENTS (continued)

PLATES

Plate No.	Title	Section
*IV-36	LAKESIDE GATE HORIZONTAL GIRDERS	IV
*IV-37	GULFSIDE GATE TRUSS MEMBERS AND ALLOWABLE LOADS RECESS TRUSS	IV
*IV-38	GULFSIDE GATE TRUSS MEMBERS AND ALLOWABLE LOADS CENTER TRUSS	IV
*IV-39	GULFSIDE GATE TRUSS MEMBERS AND ALLOWABLE LOADS CHANNEL TRUSS	IV
*IV-40	LAKESIDE GATE TRUSS MEMBERS AND ALLOWABLE LOADS RECESS TRUSS	IV
*IV-41	LAKESIDE GATE TRUSS MEMBERS AND ALLOWABLE LOADS CENTER TRUSS	IV
*IV-42	LAKESIDE GATE TRUSS MEMBERS AND ALLOWABLE LOADS CHANNEL TRUSS	IV
*IV-43	BOATLOAD STRESSES	IV
*IV-44	BOATLOAD STRESSES	IV
*IV-45	BOATLOAD STRESSES	IV
*IV-46	BOATLOAD STRESSES	IV
*IV-47	BOATLOAD STRESSES	IV
*IV-48	BOATLOAD STRESSES	IV
*IV-49	BOATLOAD STRESSES	IV
*IV-50	BOATLOAD STRESSES	IV
*IV-51	VERTICAL TRUSS JOINT AND MEMBER NUMBERS	IV
*IV-52	GULFSIDE GATE DEAD LOAD DISTRIBUTION	IV
*IV-53	GULFSIDE GATE CHANNEL TRUSS-LOADING	IV
*IV-54	GULFSIDE GATE CHANNEL TRUSS-LOADING	IV
*IV-55	GULFSIDE GATE CENTER TRUSS-LOADING	IV
*IV-56	GULFSIDE GATE CENTER TRUSS-LOADING	IV
*IV-57	GULFSIDE GATE RECESS TRUSS-LOADING	IV
*IV-58	GULFSIDE GATE RECESS TRUSS-LOADING	IV
*IV-59	GULFSIDE GATE TRUSS MEMBER FORCES	IV
*IV-60	LAKESIDE GATE DEAD LOAD DISTRIBUTION	IV
*IV-61	LAKESIDE GATE CHANNEL TRUSS-LOADING	IV
*IV-62	LAKESIDE GATE CHANNEL TRUSS-LOADING	IV
*IV-63	LAKESIDE GATE CENTER TRUSS-LOADING	IV
*IV-64	LAKESIDE GATE CENTER TRUSS-LOADING	IV
*IV-65	LAKESIDE GATE RECESS TRUSS-LOADING	IV
*IV-66	LAKESIDE GATE RECESS TRUSS-LOADING	IV
*IV-67	LAKESIDE GATE TRUSS MEMBER FORCES	IV
*IV-68	GULFSIDE GATE CHANNEL TRUSS-TOP BEAM	IV

Plates marked thus (*) are bound in Volume 2. Remainder of plates are bound in Volume 1.

TABLE OF CONTENTS (continued)

PLATES

Plate No.	Title	Section
*IV-69	LAKESIDE GATE CHANNEL TRUSS-TOP BEAM	IV
*IV-70	GULFSIDE GATE RECESS AND CENTER TRUSSES-TOP BEAM	IV
*IV-71	LAKESIDE GATE RECESS AND CENTER TRUSSES-TOP BEAM	IV
*IV-72	GULFSIDE GATE HORIZONTAL FRAME MEMBERS ALLOWABLE LOADS	IV
*IV-73	LAKESIDE GATE HORIZONTAL FRAME MEMBERS ALLOWABLE LOADS	IV
*IV-74	HINGE AND PINTLE REACTIONS	IV
*IV-75	HINGE AND PINTLE REACTIONS	IV
*IV-76	HINGE DESIGN	IV
*IV-77	HINGE DESIGN	IV
*IV-78	PINTLE DESIGN	IV
*IV-79	PINTLE DESIGN	IV
*IV-80	LOCK GUIDE WALLS AND CHANNEL DOLPHIN	IV
*IV-81	STEEL SHEET PILE DOLPHIN	IV
*IV-82	POWERHOUSE AND OFFICE	IV
*IV-83	POWERHOUSE AND OFFICE	IV
*IV-84	OBSERVATION PLATFORM	IV
*IV-85	GULFSIDE FLOODWALL I-WALL DESIGN ANALYSIS	IV
*IV-86	GULFSIDE T-FLOODWALL	IV
*IV-87	NEEDLE AND NEEDLE GIRDER STORAGE RACK	IV
V-1	OUTSIDE PIPING	V
V-2	PIPING DETAILS	V
V-3	SECTOR GATE MACHINERY OPERATING LOADS	V
V-4	DETAIL DESIGN OF OPERATING MACHINERY	V
V-5	DETAIL DESIGN OF LOADING CONDITIONS	V
V-6	OPERATING MACHINERY - HYDRAULIC CIRCUIT SCHEMATIC	V
V-7	OPERATING MACHINERY - HYDRAULIC CIRCUIT EQUIPMENT LIST	V
VI-1	ELECTRICAL ONE LINE DIAGRAM	VI
VI-2	GATE 1 CONTROL CIRCUIT	VI
VI-3	GATE 2 CONTROL CIRCUIT	VI
VI-4	NAVIGATION SIGNAL	VI
VI-5	NAVIGATION SIGNAL AND HORN CONTROL CIRCUIT	VI
VI-6	LIGHTING PLAN	VI
VI-7	LIGHTING DETAILS	VI
VI-8	LIGHTING CONTROL CIRCUITS	VI
VI-9	CATHODIC PROTECTION	VI

Plates marked thus (*) are bound in Volume 2. Remainder of plates are bound in Volume 1.

LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA
LAKE PONTCHARTRAIN BARRIER PLAN
DETAIL DESIGN MEMORANDUM NO. 8
RIGOLETS LOCK

VOLUME I

TABLE OF CONTENTS

Paragraph	Title	Page
	PERTINENT DATA	A
	SECTION I - GENERAL	
1	Project authorization	I-1
2	Purpose	I-1
3	Previous reports	I-1
4	Location	I-1
5	Datum plane	I-2
6	Description	I-2
7	Beautification	I-3
8	Departures from General Design Memorandum No. 2, Supplement No. 2, dated June, 1969.	I-4
9	Environmental analysis	I-5
	SECTION II - HYDRAULIC DESIGN	
1	Hydraulics of lock	II-1
2	Filling and emptying	II-1
3	Gate operation	II-1
4	Filling and emptying time	II-2
	SECTION III - FOUNDATION INVESTIGATION	
1	General	III-1
2	Investigation	III-1
3	Soil conditions	III-1
4	Design problems	III-2
5	Unwatering system	III-2
6	Temporary protection dikes and spoil retention dikes	III-4
7	Lock excavation method	III-4
8	Stability of slopes	III-5
9	Cantilevered I-wall	III-5
10	Gate bay and T-wall	III-6
11	Pile penetrations	III-7
12	Test piles	III-8
13	Seepage and hydrostatic uplift control	III-8
14	Ultimate settlements	III-8

VOLUME I

TABLE OF CONTENTS (continued)

Paragraph	Title	Page
	SECTION III - FOUNDATION INVESTIGATION (continued)	
15	Structure backfill	III-9
16	Spoil disposal	III-9
17	Erosion protection	III-9
18	Engineering observations	III-10
	SECTION IV - STRUCTURAL DESIGN - SEE VOLUME 2	
	SECTION V - MECHANICAL DESIGN	
	GATE OPERATING MACHINERY	
1	General	V-1
2	Arrangement	V-1
3	Description of hydraulic circuit	V-1
4	Description of gear train powered from hydraulic motor drive	V-3
5	Limit switch and drive	V-4
6	Computations	V-4
7	Plates	V-4
	UTILITIES	
8	Fire protection	V-5
9	Potable water	V-5
10	Sewerage system	V-5
11	Diesel generating unit	V-5
12	Diesel generating unit fuel oil storage tank	V-6
	SECTION VI - ELECTRICAL DESIGN	
	POWER SYSTEM	
1	Power supply	VI-1
2	Emergency generator	VI-1
3	Power distribution	VI-3
	GATE CONTROL	
4	General	VI-3
5	Scheme of control	VI-3
6	Operation	VI-4

TABLE OF CONTENTS (continued)

Paragraph	Title	Page
	SECTION VI - ELECTRICAL DESIGN (continued)	
	SIGNAL AND COMMUNICATION SYSTEMS	
7	Disc and light navigation signals	VI-6
8	Horn signals	VI-6
9	Public address system	VI-6
10	Telephone system	VI-6
	LIGHTING SYSTEM	
11	Building lighting	VI-6
12	Lock lighting	VI-7
13	Gate lights	VI-7
14	Security lights	VI-8
15	Guard lights	VI-8
16	Emergency lights	VI-9
	CATHODIC PROTECTION	
17	General	VI-9
18	System	VI-9
19	Rectifiers	VI-9
20	Anodes	VI-9
	GROUNDING SYSTEM	
21	General	VI-10
22	Gate grounding system	VI-10
23	Reservation grounding system	VI-10
	INSULATED WIRE AND CABLE	
24	Power, control, and lighting circuits	VI-10
25	Switchboard wire	VI-10
26	Communication cables	VI-10
27	Installation	VI-10
28	Conductors	VI-11
	CALCULATIONS	
29	Sizing of emergency generator	VI-11
30	Cathodic protection computations	VI-15

TABLE OF CONTENTS (continued)

Paragraph	Title	Page
	SECTION VII - ESTIMATE OF COST	
1	Estimate of cost	VII-1
2	Comparison of cost estimate	VII-4
	SECTION VIII - RECOMMENDATION	
1	Recommendation	VIII-1

FIGURES

Figure No.	Title	Section
V-1 through V-86	Sector gate design data	V
VI-1		VI
VI-2		VI

TABLES

Table No.	Title	Page
1	Pile factor of safety	III-7
VI-1	Power selection	VI-14

APPENDICES

Appendix No.	Title
A	Field Pumping Test

SECTION IV - STRUCTURAL DESIGN

CRITERIA FOR STRUCTURAL DESIGN

1. General. Structural design has been made in accordance with standard engineering practice, with criteria set forth in Engineering Manual for Civil Works Construction published by the Office, Chief of Engineers, and Standard Specifications for Highway Bridges, published by the American Association of State Highway Officials.

2. Basic data. Basic data relevant to the dimensions of the structure, water elevations, channel and levee slopes, etc., are shown on plates and in the following table:

Top of lock walls	el. 13.5
Sill	el. -14.0
Width of lock channel	110 ft.
Maximum water surface - gulfside (Normal operating conditions)	el. 6.0
Minimum water surface - landside	el. -3.0
Maximum water surface - landside (Normal operating conditions)	el. 6.0
Minimum water surface - gulfside	el. -3.0
Maximum operating differential head - direct and reverse	9.0 ft. (els. 6.0 & -3.0)
Maximum differential head - direct and reverse	See plates IV-1 and 2
Maximum storm tide elevation at which lock will be operated	el. 4.0

3. Unit weights. The following values of unit weights, earth pressure, and soil properties were used in the design:

Unit weights:	Wt.-lb. per cu. ft.
Water	64
Concrete	150
Sand backfill (above water)	120
(submerged)	56
Shell (above water)	98
(submerged)	34

Lateral pressure:

Sand backfill (ϕ = 30°)	Equivalent fluid pressure
Active (above water)	40.0 lbs.
Active (submerged)	18.7 lbs.
At rest (above water)	66.0 lbs.
At rest (submerged)	30.8 lbs.
Passive (above water)	360.0 lbs.
Passive (submerged)	168.0 lbs.

4. Allowable working stresses. The allowable working stresses for concrete and structural steel are in accordance with those recommended in "Working Stresses for Structural Design" EM 1110-1-2101 of 1 November 1963 including Change 2 dated 17 January 1972. For convenient reference pertinent allowable stresses are tabulated as follows:

CONCRETE	Stress psi
Compressive strength (28 days)	f'c = 3,000
Modulus of elasticity ratio	N = 9
Flexure:	
Extreme fiber in compression	fc = 1,050
Shear:	
(As a measure of diagonal tension at a distance d from face of support) Beams with no web reinforcement	Vc = 60
Members with vertical or inclined web reinforcement or properly combined bent bars and vertical stirrups	V = 274
Slabs and footings:	
Peripheral shear	V = 110
Bearing:	
On full area	fc = 750
On one-third area or less	fc = 1,125

Bond (Deformed bars):	
Top bars (max. 350 psi)	$U = \frac{185}{D}$
Bars other than top bars (max. 500 psi)	$U = \frac{260}{D}$
Reinforcing steel (tension and compression)	fs = 20,000
Minimum tensile steel, flexural members:	.0025 bd with a max. of #9, 12"

Temperature and shrinkage reinforcement

Unrestrained member. Minimum area of steel: .0025 bt, half each face with maximum No. 6 bars at 12 inches in each face.

Member restrained at one edge. Minimum area of steel parallel to restrained edge: .0040 bt, half in each face, with maximum No. 9 bars at 12 inches in each face. Steel will be used for a distance equal to 1/4 length of the restraint from the restrained edge. Remainder of steel ratio will be as given for unrestrained member.

Member restrained at opposite edges. Area of steel perpendicular to restrained edges: .0040 bt, half each face, with maximum No. 9 bars at 12 inches in each face. Area of steel parallel to restrained edges for a distance from each restrained edge equal to 1/4 the length of restraint will be .0040 bt, half in each face. Remainder of steel parallel to restrained edges will be as a given for unrestrained members.

Member restrained at two adjacent edges. Area of steel parallel to the restrained edges: .0040 bt, half in each face, with maximum of No. 9 bars at 12 inches in each face. This steel will be used for distance equal to 1/4 the length of restraint from each restrained edge. Remainder of steel ratio will be as given for unrestrained members.

STRUCTURAL STEEL (ASTM - A36)

	Dead Load and Hydraulic Loading (psi)	Dead Load and Hydraulic Loading w/Wave or Boat Load (psi)
Basic tensile stress	18,000	24,000
Tension:		
Structural steel net section except at pinholes	18,000	24,000
Net section at pinholes	13,500	18,000
Shear:		
On the gross section of beam and plate girder webs	12,000	16,000
Compression:		
On gross section of axially loaded compression member for $\frac{Kl}{r}$ less than C_c	$30{,}000\ K_1$	$40{,}000\ K_1$

Where $K_1 = \dfrac{1 - \left[\dfrac{\left(\frac{Kl}{r}\right)^2}{2C_c^2}\right]}{F.S.}$

$C_c = 126.1$

K = effective length factor

$$F.S. = \frac{5}{3} + \frac{3}{8}\left(\frac{\frac{Kl}{r}}{C_c}\right) - \frac{\left(\frac{Kl}{r}\right)^3}{8C_c^3}$$

For axially loaded column with $\frac{Kl}{r} > C_c$	$\dfrac{124 \times 10^6}{\left(\frac{Kl}{r}\right)^2}$	$\dfrac{165 \times 10^6}{\left(\frac{Kl}{r}\right)^2}$

On gross area of plate girder stiffeners	18,000	24,000
On web of rolled shapes at toe of fillet	22,500	30,000

Bending:

Tension and compression on extreme fibers of rolled sections, plate girders, and built-up members having axis of symmetry and meeting required dimension properties	20,000	26,500
Tension and compression on extreme fibers of unsymmetrical members (with compression flange supported)	18,000	24,000
Tension on extreme fiber of other rolled shapes, built-up members, and plate girders	18,000	24,000
Compression on extreme fibers of rolled shapes, plate girders, and built-up members having axis of symmetry in the plane of the web		
(Formula 4)	$18{,}000 - \frac{0.566}{C_b}\left(\frac{l}{r}\right)^2$	$24{,}000 - \frac{0.755}{C_b}\left(\frac{l}{r}\right)^2$
or		
(Formula 5)	$\frac{10{,}000{,}000}{\frac{ld}{A_f}}$	$\frac{12{,}000{,}000}{\frac{ld}{A_f}}$

Where $C_b = 1.75 - 1.05\frac{M_1}{M_2} + 0.3\left(\frac{M_1}{M_2}\right)^2$ but ≤ 2.3 and M_1 is the smaller, M_2 the larger bending moment at the ends of the unbraced length.

Use larger value computed by formulas 4 or 5 but not more than basic stress. Where $\frac{l}{r} < 40$ formula 4 may be neglected.

r is the radius of gyration of a tee-section comprising the compression flange plus one-sixth of the web area, about an axis in the plane of the web.

Tension and compression on extreme fibers of large pins	27,000	32,500
Bearing:		
Milled surfaces and pins in reamed, drilled, or bored holes	27,000	32,500
High strength bolts on projected area	40,000	48,000
Welds:		
Fillet welds (shear only)		
Using A 233, Class E-60 electrodes or submerged arc Grade SAW-1	11,500	15,000
Using A 233, Class E-70 electrodes or submerged arc Grade SAW-2	13,000	17,500
Groove welds		
Complete penegration groove welds shall have same allowables for tension, compression, bending, shear and bearing stresses as those allowed for the connected material.		
Bolts:		
Tension:		
Unfinished bolts A 307	11,500	15,500
High strength bolts A 325	33,500	44,500
Shear:		
Bearing type connection:		
Unfinished bolts A 307	8,500	11,000
High strength bolts A 325, when threading is excluded from shear plane	18,500	24,500

Combined stresses (axial compression and bending):

Members subject to both axial compression and bending stresses shall be proportioned to satisfy the following requirements:

(a) When $\frac{f_a}{F_a} \leq 0.15$ $\quad \frac{f_a}{F_a} + \frac{f_b}{F_b} \leq 1.0 \quad \frac{f_a}{F_a} + \frac{f_b}{F_b} \leq 1.0$

(b) When $\frac{f_a}{F_a} > 0.15$ $\quad \frac{f_a}{F_a} + \frac{C_m f_b}{\left(1 - \frac{f_a}{0.83F'_e}\right) F_b} \leq 1$

$$\frac{f_a}{F_a} \quad \frac{C_m f_b}{\left(1 - \frac{f_a}{1.11F'_e}\right) F} \leq 1$$

$$F'_e = \frac{149{,}000{,}000}{\left(\frac{Kl_b}{r_b}\right)^2}$$

and in addition at points braced in the plane of bending $\quad \frac{f_a}{18{,}000} + \frac{f_b}{F_b} \leq 1.0 \quad \frac{f_a}{24{,}000} + \frac{f_b}{F_b} \leq 1.0$

C_m = a coefficient whose value is given in "Manual of Steel Construction," Seventh Edition.

Combined stresses (axial tension and bending):

Members subject to both axial tension and bending stresses shall be proportioned to satisfy the following formula:

$$\frac{f_a}{18{,}000} + \frac{f_b}{F_b} \leq 1.0 \quad \frac{f_a}{24{,}000} + \frac{f_b}{F_b} \leq 1.0$$

Where f_b and F_b are respectively the computed and permitted bending tensile stresses; however, the computed bending compressive stress, taken alone, shall not exceed the values permitted by formulas (4) and (5).

MISCELLANEOUS METALS

Cast steel, Class 70-36	Fy = 36,000 psi (All allowable stresses are same as for structural steel, ASTM A36.)
Forged steel, Class G	Fy = 50,000 psi
Stainless steel, AISI 420	Fy = 50,000 psi (All allowable stresses are proportional to those for structural steel, ASTM A36.)
Bronze Bushing Bearing at sliding surfaces:	2,500 psi moving

DESIGN OF STRUCTURES

5. Foundation. The results of subsurface explorations, soils tests, and foundation studies are presented in Section III. The gate bays will be supported on steel H-piling. Unbalanced lateral forces are resisted by battering of piles. The piling extend to the elevations shown in Section III and terminate in the sand layer above the Pleistocene clay deposits.

GATE BAY

6. Base slab.

a. The base slab, treated as a monolithic unit, has been designed to withstand the bending moment produced in both the transverse and longitudinal directions for the following conditions of loading:

Gulfside gate

Case Ia. Construction condition without backfill. Gate in open position. Water elevation -25.0. Pile reactions within 110'

chamber width assumed uniformly distributed in transverse direction. See plate IV-5. This case produces critical transverse moment in the base slab.

Case Ib. Construction condition with backfill in place. Water elevation -25.0. Gate in open position. Pile reactions within 110' chamber width assumed uniformly distributed in transverse direction. See plate IV-6. This case produces critical compression loading in the piling.

Case I + II 1. Hurricane condition. Gate closed. Still water surface level (SWL) at elevation 12.8 on gulf side and water at elevation -1.0 on lock side. Uplift from elevation 12.8 on gulf side of cutoff and elevation -1.0 on lock side of cutoff. Pile reactions within 110' chamber width assumed uniformly distributed in transverse direction. See plate IV-7. This case produces critical tension loading in the piling.

Case I + II 5. Operating condition. Gate closed. Water surface elevation 6.0 on gulf side and -3.0 on lock side. Uplift from elevation 6.0 on gulf side of cutoff and elevation -3.0 on lock side of cutoff. Pile reactions within 110' chamber width assumed uniformly distributed in transverse direction. See plate IV-8.

Case I + II 7. Hurricane condition. Gate closed. Still water surface elevation -2.5 on gulf side and 11.5 on lock side. Uplift from elevation -2.5 on gulf side of cutoff and elevation 11.5 on lock side of cutoff. Pile reactions within 110' chamber width assumed uniformly distributed in transverse direction. See plate IV-9.

Case I + II 10. Operating condition. Gate closed. Water surface elevation -3.0 on gulf side and 6.0 on lock side. Uplift from elevation -3.0 on gulf side of cutoff and elevation 6.0 on lock side of cutoff. Pile reactions within 110' chamber width assumed uniformly distributed in transverse direction. See plate IV-10.

Case I + II 11. Structure complete. Backfill in place. Gate in open position. Water elevation 1.5 on gulf side and lock side. Uplift from elevation 1.5. Pile reactions within 110' chamber width assumed uniformly distributed in transverse direction. See plate IV-11.

Case I + II 12. Structure unwatered. Needle dams in place. Water surface elevation 5.0 gulf side and lock side. Gate removed. Pile reactions within 110' chamber width assumed uniformly distributed in transverse direction. See plate IV-12.

Case I + II 12 is critical for uplift on the gulf side structure. The factor of safety against flotation without considering piling is 1.23. Assuming tension in piling to provide a factor of safety against uplift of 1.3, very small tension will exist in the piling. All piles will be provided with steel anchorage to transfer tension from concrete to piles. This case produces both critical uplift and critical longitudinal moment in the base slab.

Lakeside gate

Case Ia. Same as for gulf side gate. See plate IV-13.

Case Ib. Same as for gulf side gate. See plate IV-14. This case produces critical transverse moment in the base slab.

Case I + II 1. Hurricane condition. Gate closed. Still water surface elevation 6.0 on lock side and -4.5 on lake side. Uplift from elevation 6.0 on lock side of cutoff and -4.5 on lake side of cutoff. Pile reactions within 110' chamber width assumed uniformly distributed in transverse direction. See plate IV-15.

Case I + II 4. Operating condition. Gate closed. Water surface elevation 6.0 on lock side and -3.0 on lake side. Uplift from elevation 6.0 on lock side of cutoff and elevation -3.0 on lake side of cutoff. Pile reactions within 110' chamber width assumed uniformly distributed in transverse direction. See plate IV-16.

Case I + II 6B. Hurricane condition. Gate closed. Still water elevation -3.0 on lock side and elevation 6.0 on lake side. Uplift fom elevation -3.0 on lock side of cutoff and elevation 6.0 on lake side of cutoff. Pile reactions within 110' chamber width assumed uniformly distributed in transverse direction. See plate IV-17.

Case I + II 7. Same as for gulf side gate Case I + II 11. See plate IV-18.

Case I + II 8. Same as for gulf side gate Case I + II 12. See plate IV-19.

Case I + II 8 is critical for uplift on the lake side structure. The factor of safety against flotation without considering piling is 1.08. Assuming tension in piling to provide a factor of safety against uplift of 1.3, tension in the A piles will vary from 10.3 kips to 11.2 kips, and in the B piles will vary from 6.8 kips to 7.7 kips. All piles will be provided with steel anchorage to transfer tension from concrete to piles. This case produces both critical uplift and critical longitudinal moment in the base slab.

b. Use of separate monolith section for each sector gate leaf with a thinner slab across the 110' chamber width was considered. This design would require a drainage system to relieve uplift pressure during dewatering. The design used in lieu of this arrangement will provide a better tie between the monoliths on each side of the chamber. The heavier slab tie will reduce the effect of movements between the monoliths and minimize maintenance and operational problems for gate operation and sealing.

c. Both gates will be kept open, except during tide changes or storms with water differentials in excess of 0.5 foot. This will limit maximum velocities in the approach channel to approximately 2.0 f.p.s. The lock will normally be operated between a minimum water surface elevation of -3.0 and a maximum water surface elevation of 4.0. The gates and machinery will be designed to operate with the water surface differential up to 9.0 feet in cases of emergency. When the water surface rises above elevation 4.0 or falls below elevation -3.0, the lock will normally remain closed with both gates being in the closed position.

d. Unbalanced water and lateral earth loads will be resisted by battering piles in two directions. Piles will have a batter of 1 horizontal to 4 vertical or 1 horizontal to 3 vertical. See plates IV-5 through IV-19.

e. In determining amount and arrangement of transverse reinforcement, the total amount of all forces on the structure producing transverse bending has been assumed uniformly distributed over the width of base slab parallel to the centerline.

f. The longitudinal reinforcement required in the base slab will be distributed in a 30-foot strip under the massive lock wall because of the obvious concentration of moments in this area. The longitudinal moments shown on the plates is for a 1-foot strip of the center slab between gate bay walls.

7. Gate bay walls.

a. Gate recess walls were designed as rectangular panels supported along the sides and bottom. Moment coefficients were taken from Standard Drawing No. ES-104, "Structural Design: Rectangular Slabs with Uniform Load" as published by the U.S. Department of Agriculture, Soil Conservation Service, and the bulletin, "Concrete Information No. ST-63, Rectangular Concrete Tanks," as published by the Portland Cement Association, Chicago, Illinois. In the USDA drawings, the moment coefficients are expressed as a function of a uniform rectangular load and the PCA bulletin moment coefficients are expressed as a function of a triangular hydrostatic load. Both publications consider variations in edge restraint. The design has investigated the following conditions:

(1) Sides fixed, bottom hinged, top free.

(2) Sides fixed, bottom fixed, top free.

(3) Sides fixed, bottom hinged, top hinged.

b. Design moments were computed by USDA drawings for a rectangular load and by the PCA tables for a triangular load equivalent in magnitude to earth and water loading using at rest earth pressures and for edge restraints given above. See plates IV-20 and IV-21.

c. The walkway at top of recess wall was designed as a horizontal rectangular beam to support the top edge of recess wall. In addition, the walkway was designed to support a live load of 200 psf.

d. The massive lock walls flanking the gate recess were designed to resist the pressure of earth and water, combined with reactions from recess walls, sector gates, and needle beams. See plate IV-22.

8. Needles and needle girder. The needle dam consists of reinforced concrete needles supported by a single span steel needle girder, with two intermediate vertical supports to reduce moments and deflections due to the weight of the girder. Concrete needles are superior to wooden needles. They are more permanent and easier to place, since uplift on needles is not a problem. Loading, moment, and shear diagrams for the needles and the needle girder are shown on plates IV-23 and IV-24. Concrete needles designed for this lock are detailed to be used also at Chef Menteur and Seabrook locks.

9. Control houses. Control houses on lock walls will be two-story with operating floor at elevation 19.5 to keep hydraulic pump, valves, electric motor, and control panels above maximum still water elevation. The lower story will be without windows, provided with a watertight door, and the space not occupied by machinery will be used for storage.

SECTOR GATES

10. General description. The lock gates are sector type gates designed for welded construction. Each gate consists of two identical gate leaves, with a central angle of 70°. The radius to outside of skin plate is 60'-9 1/8" for the gulf side gate and 60'-9 1/16" for the lake side gate. The height of gate leaf is 27'-6". Each leaf has three vertical trusses which carry the loads to the hinge and pintle. Vertical dead load reaction is carried by pintle alone. The operation of gate leaves is by means of rack and pinion. The rack centerline is 18" below top of gate leaf and the operating machinery is mounted on the lock wall. See plate IV-28.

11. Loading conditions.

a. Loading conditions assumed as the basis for design of gate leaves are as follows:

(1) Case I. Dead load only.

(2) Case II. Water load only.

(3) Case III. Boat load only.

The gates were investigated for all combinations of dead load, water load, and boat load from the loading conditions given on plates IV-1, 2 and 43 through 48.

b. Boat loads are assumed to be applied as a concentrated reaction at critical location anywhere between 3.0 feet above and 3.0 feet below the water surface elevation. For design, when the point of boat load application falls between truss panel points, a simple beam is assumed to distribute the boat load between supports. Boat loads are assumed to act normal to members of the gate where applied.

c. During hurricane tides, when water on gulf side of the lock rises above elevation 4.0, it is intended to keep both gates closed until water levels recede. If one gate should for some

reason or other remain open, the water level across the individual gates will be greater and this condition is assumed in the design loadings.

12. Basic stresses. The computed forces in the various members were determined from any loading or combinations of loadings required to produce maximum force in the respective members. A basic tensile design stress of 18,000 psi was used in designing dead load and water load. Where forces result from hurricane water load with or without wave or boat impact, the basic tensile stress was increased to 24,000 psi. The minimum thickness of material is 3/8".

13. Skin plate. The skin plate was designed as a member spanning in the horizontal direction across vertical ribs. The spacing of the horizontal ribs will permit using 7/16" skin plate below elevation 5.0 on the gulf side gate and a 3/8" skin plate above elevation 5.0. The lake side gate will use a 3/8" skin plate below elevation 6.0 and no skin plate will be used above elevation 6.0. The skin plate thickness includes 1/16" extra metal to allow for loss due to corrosion. The skin plate is not designed to withstand a concentrated boat load.

14. Vertical skin plate ribs. The skin plate is supported by vertical ribs consisting of WT 8 x 25 spanning in a vertical direction. The ribs are designed as beams continuous over two spans, with a portion of the skin plate acting as one flange. The lake side gate ribs do not all continue above elevation 6.0. These ribs are designed as a two-span non-prismatic beam. Maximum moments and stresses are indicated on plates IV-33 and IV-34. Vertical skin plate ribs are not designed to withstand a concentrated boat load.

15. Horizontal girders. Horizontal girders carrying the loads of skin plate and ribs are 24" deep curved girders. They were designed to withstand the water and boat loads. The water load was assumed to act directly on the girder, the concentrated rib reactions being neglected. Loads, shears, and moments are shown on plates IV-35 and IV-36. The weights of skin plate, vertical ribs, and horizontal girders are carried to the three vertical trusses by the skin plate. Vertical shear plates and vertical ribs connect the skin plate directly to truss member involved.

16. Horizontal frames and vertical trusses. The various members of the horizontal and vertical frames are designed for maximum forces resulting from combinations of dead load, water load, and boat load. The water load distribution to the members

of the horizontal frames is indicated on plate IV-32. Forces in vertical trusses are shown on plates IV-59 and IV-67. Member sizes and allowable loads are shown on plates IV-37 through IV-42. The effect of bending moment in top and bottom horizontal frames resulting from friction in hinge and pintle has been investigated, using a friction coefficient of 0.25.

17. Fender system. A fender system is provided for the channel side of the gate. The system consists of 8 x 12 Greenheart timbers bolted to vertical W 12 x 79 beams, which in turn are welded to W 18 x 96 horizontal beams. The system is connected to the channel truss by connecting the horizontal beams to the vertical truss members. See plate IV-29.

18. Walkways. Access across the lock is provided by walkways mounted on the gates. The width of walkway is 2'-8" between centerline of rails. For detail of walkway see plates IV-26 and IV-27.

19. Hinge and pintle. The gate frames are supported at the top by a hinge and at the bottom by a pintle. Horizontal reactions are transferred to the lock walls through bronze bushings on the cylindrical hinge and spherical pintle. All vertical loads are transferred to the concrete base slab through the spherical pintle. Loading conditions are shown on plates IV-74 and IV-75. Critical loading conditions and bearing pressures are shown for the hinge on plate IV-76 and for the pintle on plate IV-78. Details of hinge are shown on plate IV-30 and of pintle on plate IV-31.

20. Hinge and pintle anchorages.

a. Critical loadings for hinge anchorage are shown on plates IV-76 and IV-77 and for pintle anchorage on plate IV-79. Anchor bolts for the hinge anchorage were designed for a maximum tensile stress of 33,500 psi using a steel with a minimum yield point of 60,000 psi. In order to ensure firm contact between the movable and the fixed hinge castings under all normal conditions, the anchor bolts will be pretensioned by tightening the nuts sufficiently to induce a stress of approximately 138,600 pounds in each bolt (30,000 psi) prior to the time of mounting the gates.

b. The amount of pretension stress will be determined in the field by measuring the torque applied in tightening the nuts with the contact surface between nut, bolt, and casting well lubricated and assuming a coefficient of friction of 0.10.

The amount of torque to be applied was determined by the formula given on page 25 of "Fasteners Data Book," published by the Industrial Fasteners Institute of Cleveland, Ohio. This formula with nomenclature and constants is presented below:

$$\frac{PL}{W} = U_B R_B + R_T \left[\frac{U_T \, \mathrm{Sec}B \, \frac{1}{2\pi N R_P}}{1 - \frac{U_T \mathrm{Sec}B}{2\pi N R_P}} \right]$$

P = Force applied to wrench in pounds.

L = Effective length of wrench in inches.

W = Total induced tension in bolt (138,600 pounds for 2 3/4" bolt).

R_P = Pitch radius of thread in inches (1.29 inches for 2 3/4" bolt).

R_B = Effective radius of action of frictional forces on bearing face of bolt or nut (1.72 inches for 2 3/4" bolt).

R_T = Effective radius of frictional forces on thread of contact faces (1.29 inches for 2 3/4" bolt).

U_B = Effective coefficient of friction on bearing face = 0.10.

U_T = Effective coefficient of friction on contacting surfaces of thread flanks = 0.10.

B = Angle between mating faces of threads and a normal to the thread axis = 30°.

N = Number of threads per inch = 4.

PL = Applied torque.

For a 2 3/4" diameter bolt:

$$PL = 138,600 \times 0.10 \times 1.72 + 138,600 \times 1.29 \left[\frac{0.10 \times 1.155 + \frac{1}{6.283 \times 4 \times 1.29}}{1 - \frac{0.10 \times 1.155}{6.283 \times 4 \times 1.29}} \right]$$

$$= 23,839 + 26,247$$

$$= 50,086 \text{ in. lb.}$$

$$= 4,174 \text{ ft. lb.}$$

APPURTENANCES

21. Floodwalls. Floodwalls are provided between the gate bays and adjacent levees. The cantilevered floodwalls consist of steel sheet piling with concrete stems above elevation -3.0 on steel H-piles. The T-wall floodwalls are supported on steel H-piles at elevation -3.0 and have a seepage cutoff wall of steel sheet piling. The steel sheet piling cutoff will extend to elevations shown on plate III-15.

22. Timber guide walls. Timber guide walls are provided on each side of the channel at the east and west end of the lock and on each side of the chamber. The lengths of the approach guide walls are shown on plate IV-80. The walls consist of treated timber piles, vertical and batter, and Greenheart timber fendering.

23. Timber pile dolphins are provided at each end and each side of the navigation channel where the banks intersect the Rigolets Pass. These will be provided with signals to assist navigation and operation of the lock. See plate IV-80.

24. Steel sheet pile dolphins are provided at the ends of each approach guide wall. These are filled with grouted riprap, concrete capped, and designed to be stable with a 1,000 kip impact force. See plate IV-81.

25. Powerhouse and office. The structure will be of masonry construction with an aluminum roof and concrete floor slab supported on prestressed concrete piling. The floor will be placed at elevation 19.5 to minimize damage from hurricane waves

and permit visual observations of the area on both sides of the levee from this structure. The structure is designed for hurricane wind conditions. See plates IV-82 and IV-83.

26. Storage building. The structure will be of masonry construction supported by a concrete slab on prestressed concrete piling. The structure is resistant to damage from hurricane wind and minor waves. However, it can be damaged by heavy waves, and is considered expendable. See plate IV-82.

27. Needle and needle girder storage will be a concrete platform supported on prestressed concrete piles. The storage will provide for anchorage of the materials, and will be accessible for either land or barge supported cranes. See plate IV-87.

28. Observation platform. This structure will be a reinforced concrete platform with access ramp and stairs supported on prestressed concrete piling. The platform will be at elevation 30.0 and designed to resist hurricane wind gusts up to 160 mph. See plate IV-84.

29. Fences. A 6-foot fence will be provided around the perimeter of the lock area for security purposes. See plate I-2.

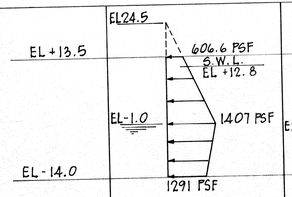
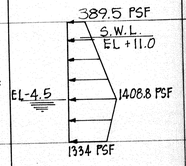
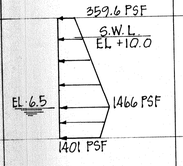
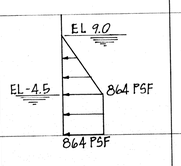
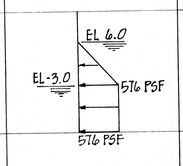
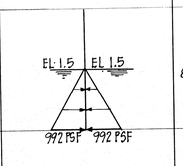
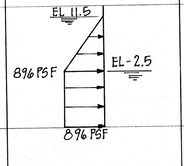
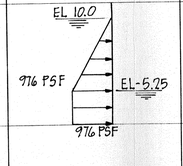
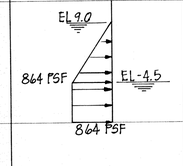
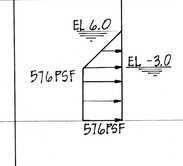
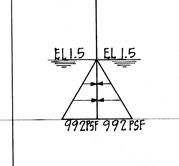
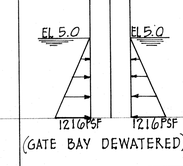
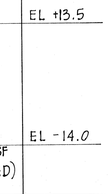
30. Walkways. Walkways will be provided with 4-inch high kickplate and handrail. For walks accessible to the public, closure between rails by wire mesh will be provided.

MATERIALS

31. Sources of construction materials. The sources of shell, concrete aggregate, and stone are as listed in "Design Memorandum No. 12, Source of Construction Materials," Lake Pontchartrain and Vicinity, Louisiana, Hurricane Protection, dated June 1966.

← LAKESIDE GULFSIDE →

TYPICAL ALL CASES

												
LOAD CASE	II 1	II 2	II 3	II 4	II 5	II 6	II 7	II 8	II 9	II 10	II 11	II 12	LOAD CASE
DEAD + WATER LOAD				0.5 Fy / 0.35 fc'	0.5 Fy / 0.35 fc'		0.67 Fy / 0.45 fc'	0.67 Fy / 0.45 fc'	0.5 Fy / 0.35 fc'	0.5 Fy / 0.35 fc'		0.5 Fy / 0.35 fc'	DEAD + WATER LOAD
DEAD + WATER LOAD + WAVE	0.67 Fy / 0.45 fc'	0.67 Fy / 0.45 fc'	0.67 Fy / 0.45 fc'										DEAD + WATER LOAD + WAVE
DEAD + WATER LOAD + BOAT				0.67 Fy / 0.45 fc'	0.67 Fy / 0.45 fc'	0.67 Fy / 0.45 fc'			0.67 Fy / 0.45 fc'	0.67 Fy / 0.45 fc'	0.67 Fy / 0.45 fc'		DEAD + WATER LOAD + BOAT

ALLOWABLE BASIC STRESSES - STEEL / CONCRETE

GULFSIDE GATE

WATER LOAD DIAGRAMS

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA | STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GULFSIDE GATE
WATER LOAD DIAGRAMS

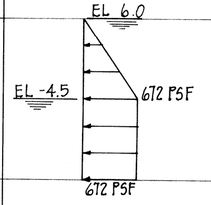
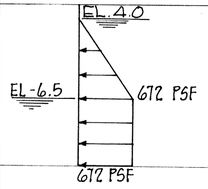
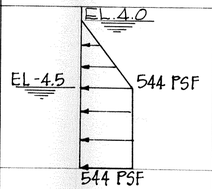
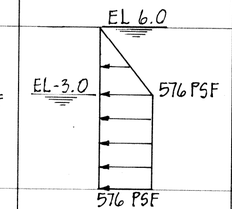
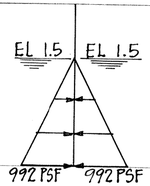
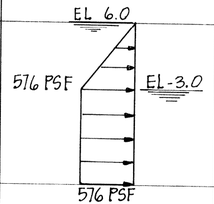
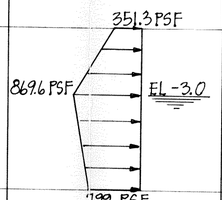
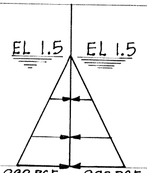
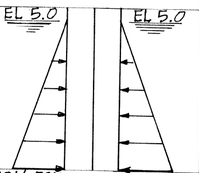
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE SEPT. 1973 FILE NO. H-2-24419

PLATE IV 1

← LAKESIDE GULFSIDE →

TYPICAL ALL CASES

EL. +6.0 EL -14.0										EL +6.0 EL -14.0
LOAD CASE	II 1	II 2	II 3	II 4	II 5	II 6A	II 6B	II 7	II 8	LOAD CASE
DEAD LOAD + WATER LOAD	0.67 Fy / 0.45 fc'	0.67 Fy / 0.45 fc'	0.5 Fy / 0.35 fc'	0.5 Fy / 0.35 fc'		0.5 Fy / 0.35 fc'			0.5 Fy / 0.35 fc'	DEAD LOAD + WATER LOAD
DEAD LOAD + WATER LOAD + WAVE							0.67 Fy / 0.45 fc'			DEAD LOAD + WATER LOAD + WAVE
DEAD LOAD + WATER LOAD + BOAT			0.67 Fy / 0.45 fc'	0.67 Fy / 0.45 fc'	0.67 Fy / 0.45 fc'	0.67 Fy / 0.45 fc'		0.67 Fy / 0.45 fc'		DEAD LOAD + WATER LOAD + BOAT

ALLOWABLE BASIC STRESSES - STEEL / CONCRETE

LAKESIDE GATE

WATER LOAD DIAGRAMS

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

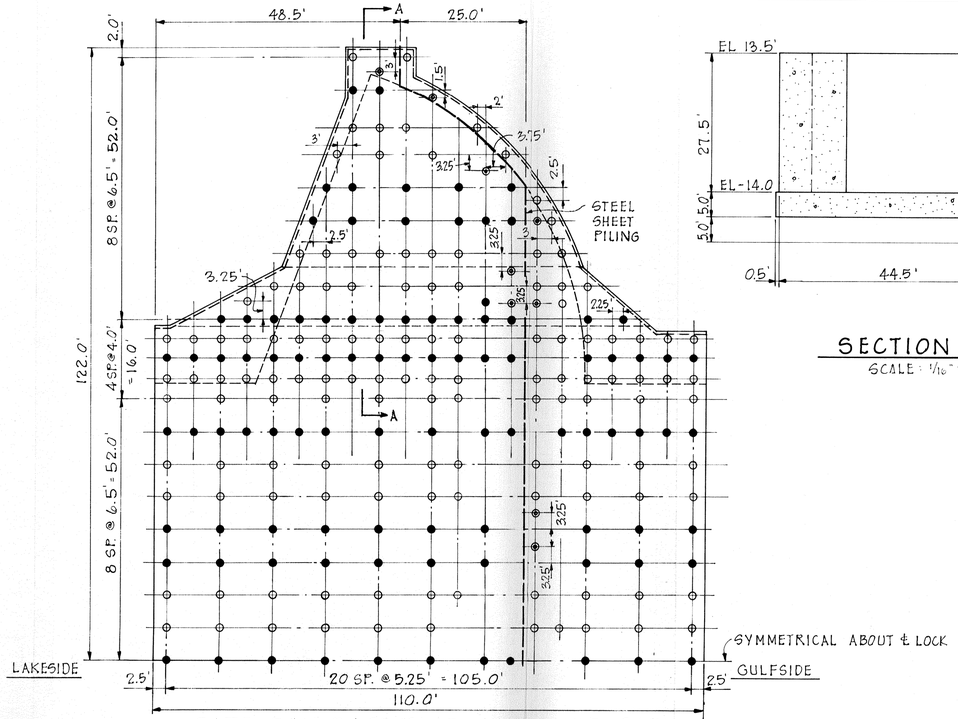
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

LAKESIDE GATE
WATER LOAD DIAGRAMS

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

DATE: SEPT. 1973 FILE NO. H-2-24419

PLATE IV 2

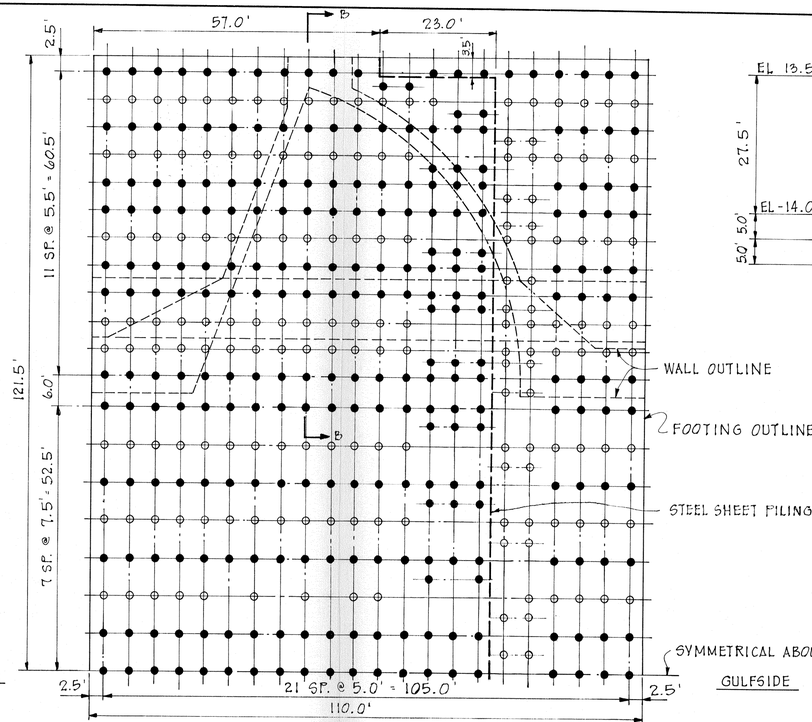


GATE BAY BASE SLAB - LAKESIDE GATE

SCALE : 1/16" = 1'-0"

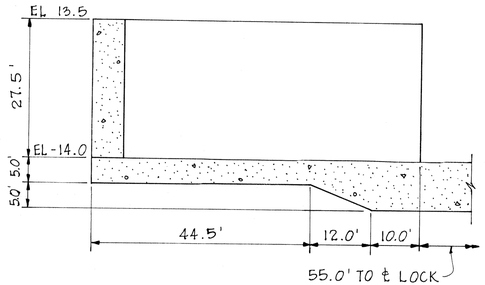
SECTION A-A

SCALE : 1/16" = 1'-0"



GATE BAY BASE SLAB - GULFSIDE GATE

SCALE : 1/16" = 1'-0"



SECTION B-B

SCALE : 1/16" = 1'-0"

LEGEND

- ○ B PILES - BATTERED TOWARD GULFSIDE
- ● A PILES - BATTERED TOWARD LAKESIDE
- ◎ VERTICAL PILING

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

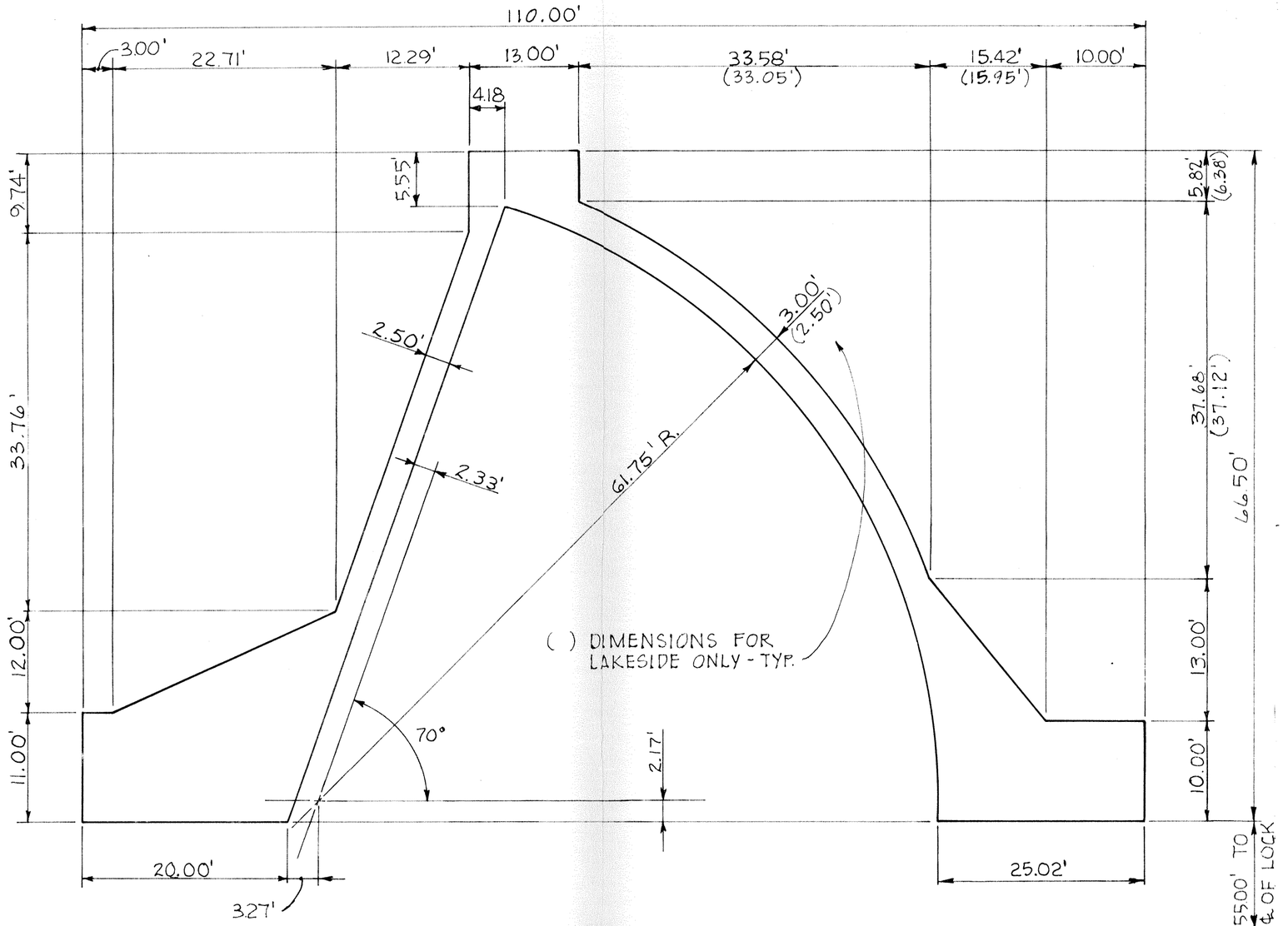
BASE SLAB AND PILING LAYOUT

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

DATE: SEPT., 1973

FILE NO. H-2-24419

PLATE IV 3



GATE BAY WALL - GULFSIDE & LAKESIDE GATE

A JOINT VENTURE	
B.M. DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

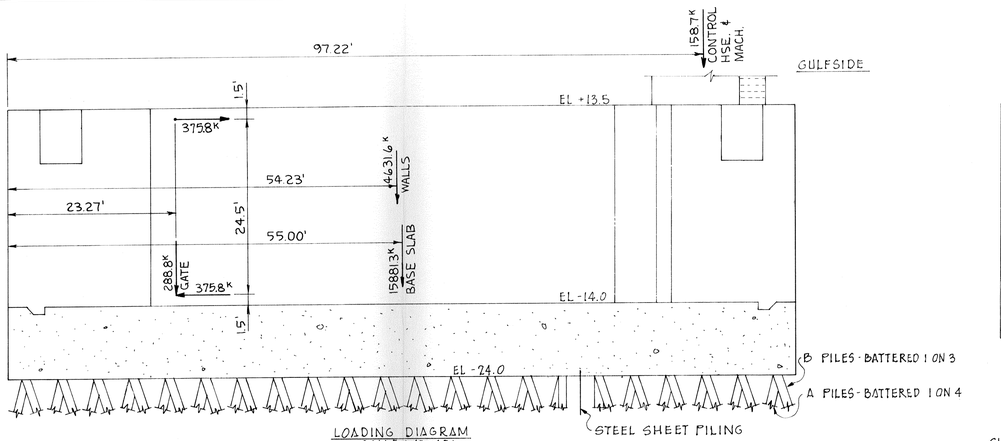
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GATE BAY CONCRETE DIMENSIONS

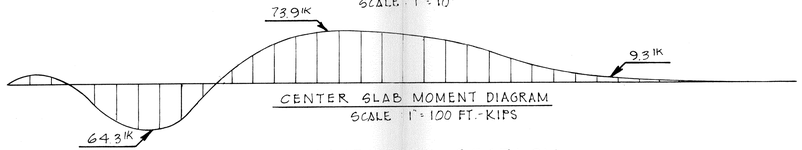
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE SEPT., 1973 FILE NO H-2-24419

PLATE IV 4

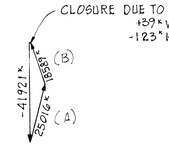


LOADING DIAGRAM
SCALE: 1" = 10'

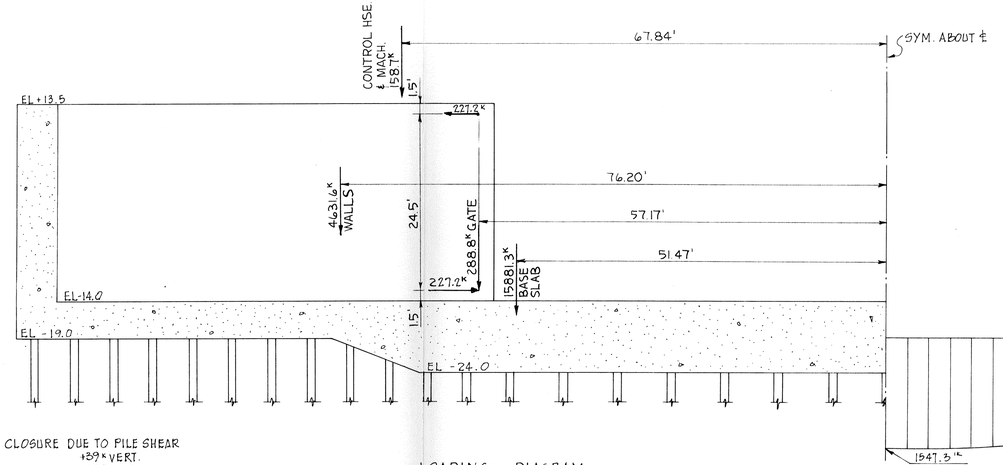


CENTER SLAB MOMENT DIAGRAM
SCALE 1" = 100 FT.-KIPS

LONGITUDINAL SECTION



PILE FORCE DIAGRAM
(TOTAL STRUCTURE)



LOADING DIAGRAM
SCALE: 1" = 10'

MOMENT DIAGRAM
SCALE: 1" = 1000 FT.-KIPS

TRANSVERSE SECTION

CASE Ia

CONSTRUCTION CONDITION WITHOUT BACKFILL. GATE IN OPEN POSITION. WATER ELEVATION -25.0'.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH ASSUMED UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

CRITICAL TRANSVERSF BASE SLAB MOMENT IS OBTAINED USING THIS LOAD CASE.

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	49.9	49.0
PILE B	55.1	54.2

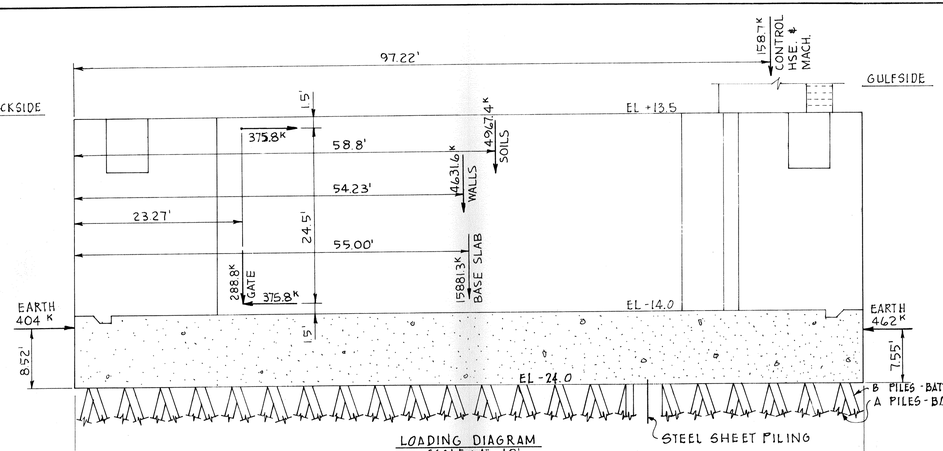
A JOINT VENTURE

BOARDMAN, LATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

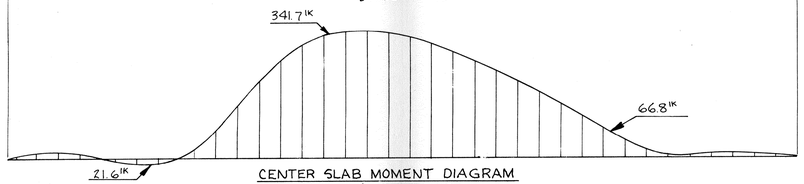
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 8 - DETAIL DESIGN
RIGOLETS LOCK
GULFSIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: SEPT., 1973 FILE NO. H-2-24419

PLATE IV 5

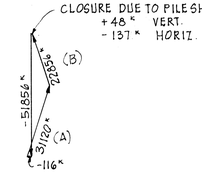


LOADING DIAGRAM
SCALE : 1" = 10'

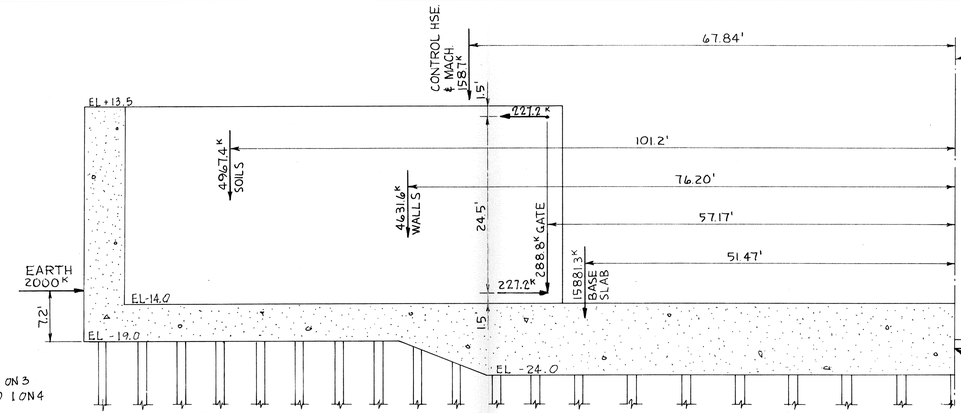


CENTER SLAB MOMENT DIAGRAM
SCALE 1" = 200 FT - KIPS

LONGITUDINAL SECTION



PILE FORCE DIAGRAM
(TOTAL STRUCTURE)



LOADING DIAGRAM
SCALE : 1" = 10'

TRANSVERSE SECTION

CASE Ib

CONSTRUCTION CONDITION WITH BACKFILL IN PLACE. WATER ELEVATION -25.0'. GATE IN OPEN POSITION.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH ASSUMED UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

CRITICAL PILE COMPRESSION IS OBTAINED USING THIS LOAD CASE.

MOMENT DIAGRAM
SCALE: 1" = 500 FT-KIPS

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	64.4	58.6
PILE B	69.9	64.3

A JOINT VENTURE

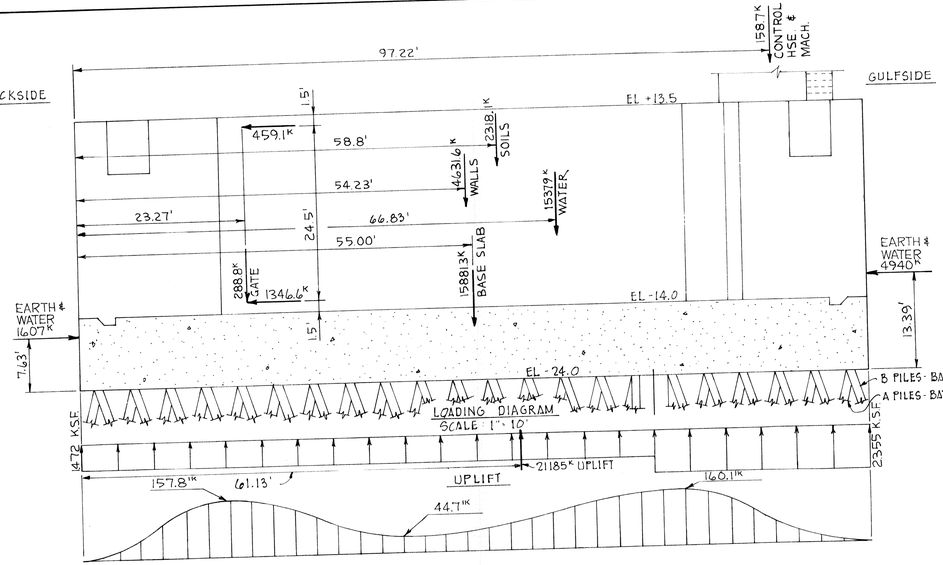
BM DOMBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA. | STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 8 - DETAIL DESIGN
RIGOLETS LOCK
GULFSIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS

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

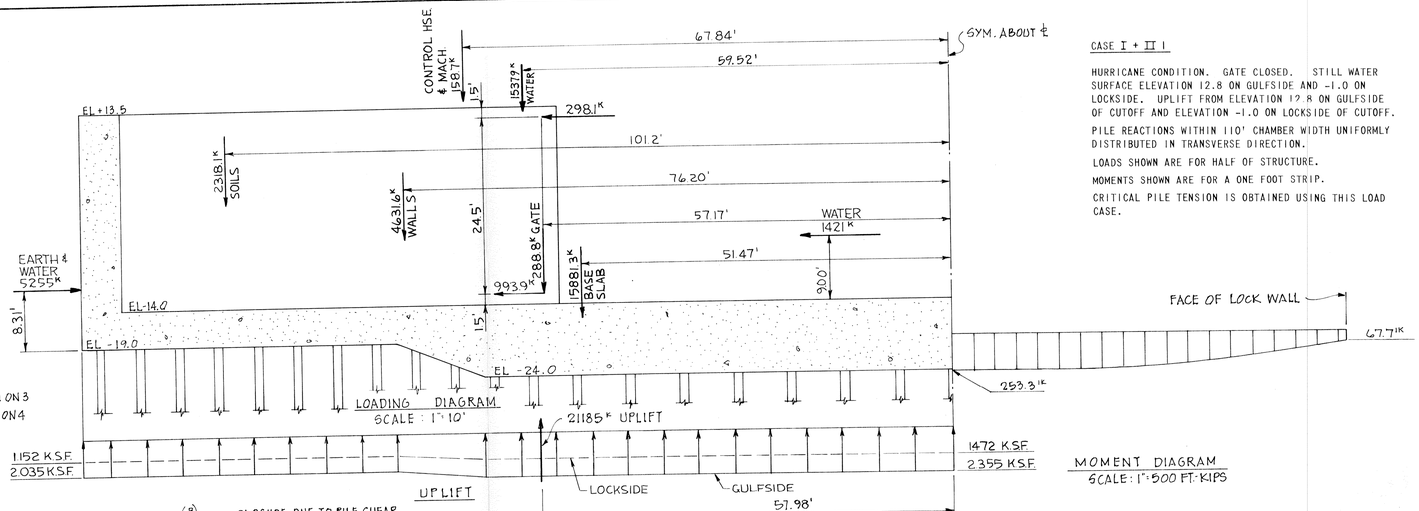
DATE SEPT. 1973 FILE NO H-2-24419

PLATE IV 6



CENTER SLAB MOMENT DIAGRAM
SCALE: 1"=200 FT.-KIPS

LONGITUDINAL SECTION



CASE I + II 1

HURRICANE CONDITION. GATE CLOSED. STILL WATER SURFACE ELEVATION 12.8 ON GULFSIDE AND -1.0 ON LOCKSIDE. UPLIFT FROM ELEVATION 12.8 ON GULFSIDE OF CUTOFF AND ELEVATION -1.0 ON LOCKSIDE OF CUTOFF.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

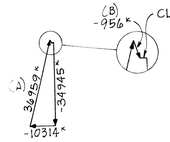
LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

CRITICAL PILE TENSION IS OBTAINED USING THIS LOAD CASE.

MOMENT DIAGRAM
SCALE: 1"=500 FT.-KIPS

TRANSVERSE SECTION



PILE FORCE DIAGRAM
(TOTAL STRUCTURE)

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	77.6	68.4
PILE B	1.6	- 7.2

A JOINT VENTURE

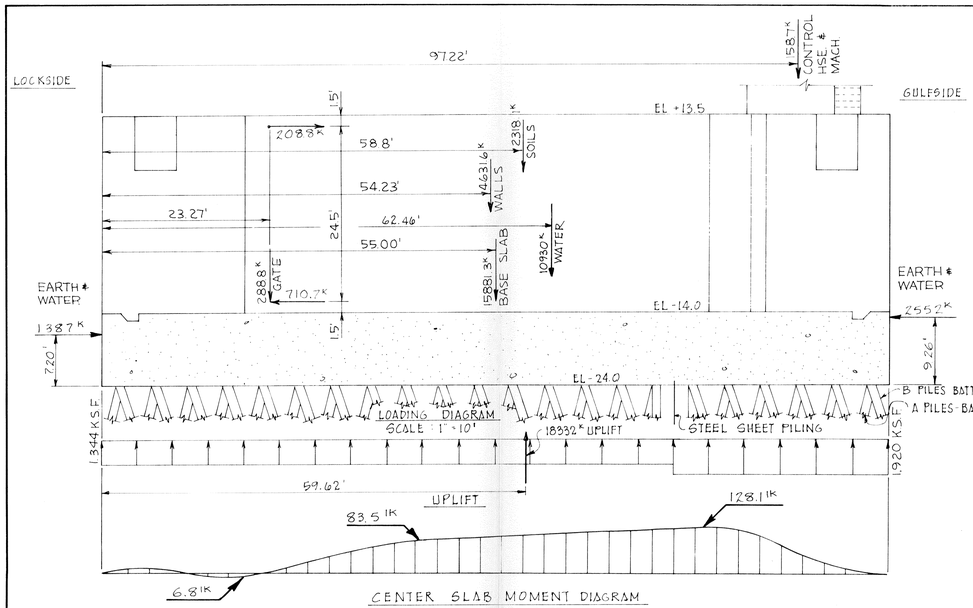
B.W. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA. | STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN, BARRIER, TEXAS
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
GULFSIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS

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

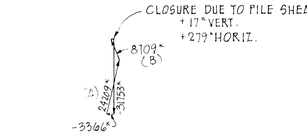
DATE: SEPT., 1973 | FILE NO. H-2-24419

PLATE IV 7

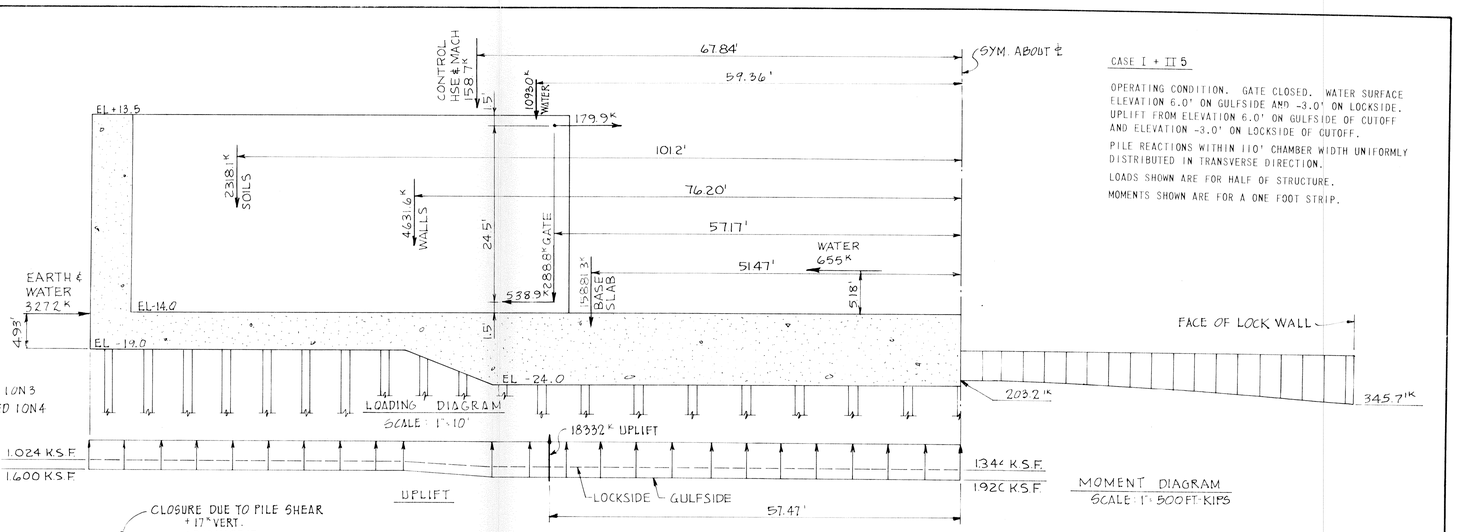


CENTER SLAB MOMENT DIAGRAM
SCALE: 1" = 200 FT.-KIPS

LONGITUDINAL SECTION



PILE FORCE DIAGRAM
(TOTAL STRUCTURE)



TRANSVERSE SECTION

CASE I + II 5

OPERATING CONDITION. GATE CLOSED. WATER SURFACE ELEVATION 6.0' ON GULFSIDE AND -3.0' ON LOCKSIDE. UPLIFT FROM ELEVATION 6.0' ON GULFSIDE OF CUTOFF AND ELEVATION -3.0' ON LOCKSIDE OF CUTOFF.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	49.9	45.8
PILE B	27.5	23.6

MOMENT DIAGRAM
SCALE: 1" = 500 FT-KIPS

A JOINT VENTURE

BOWMAN, ARTT AND ASSOCIATES, INC. NEW ORLEANS, LA.	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

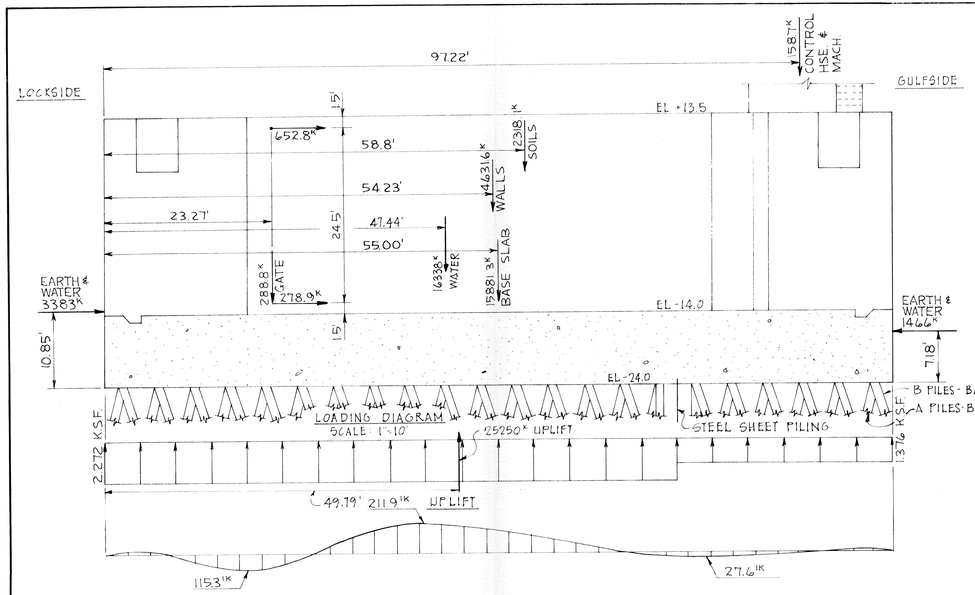
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN

DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
GULFSIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS

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

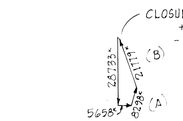
DATE SEPT. 1973 FILE NO. H-2-24419

PLATE IV.8

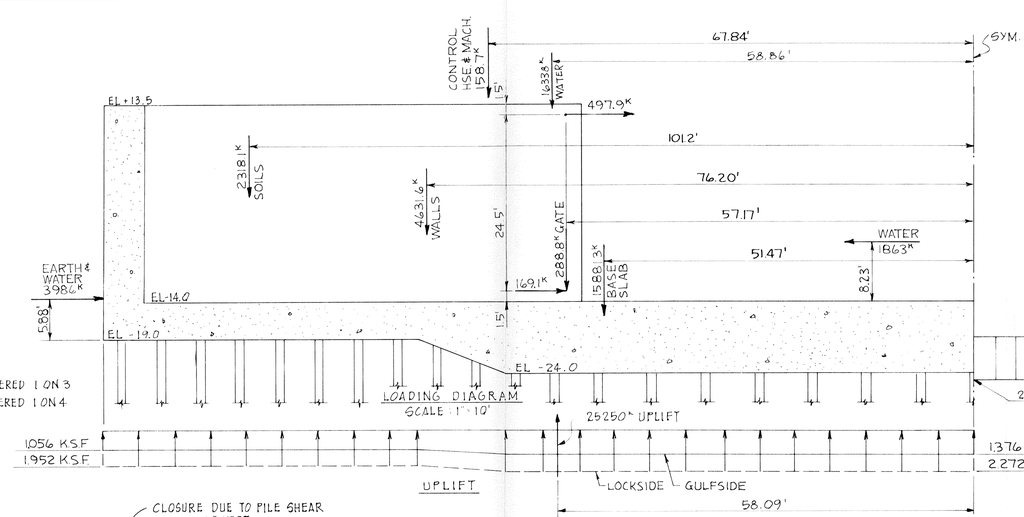


CENTER SLAB MOMENT DIAGRAM
SCALE 1"= 500 FT-KIPS

LONGITUDINAL SECTION



PILE FORCE DIAGRAM
(TOTAL STRUCTURE)



TRANSVERSE SECTION

CASE I + II 7

HURRICANE CONDITION. GATE CLOSED. STILL WATER SURFACE ELEVATION -2.5' ON GULFSIDE AND 11.5' ON LOCKSIDE. UPLIFT FROM ELEVATION -2.5' ON GULFSIDE OF CUTOFF AND ELEVATION 11.5' ON LOCKSIDE OF CUTOFF.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH ASSUMED UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

MOMENT DIAGRAM
SCALE 1"= 500 FT-KIPS

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	25.0	7.8
PILE B	72.3	55.8

A JOINT VENTURE

BN DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY, LAKE MAUREPAS-PONTCHARTRAIN BARRIER PLAN

DESIGN MEMORANDUM NO 8 - DETAIL DESIGN

RIGOLETS LOCK

GULFSIDE GATE BAY

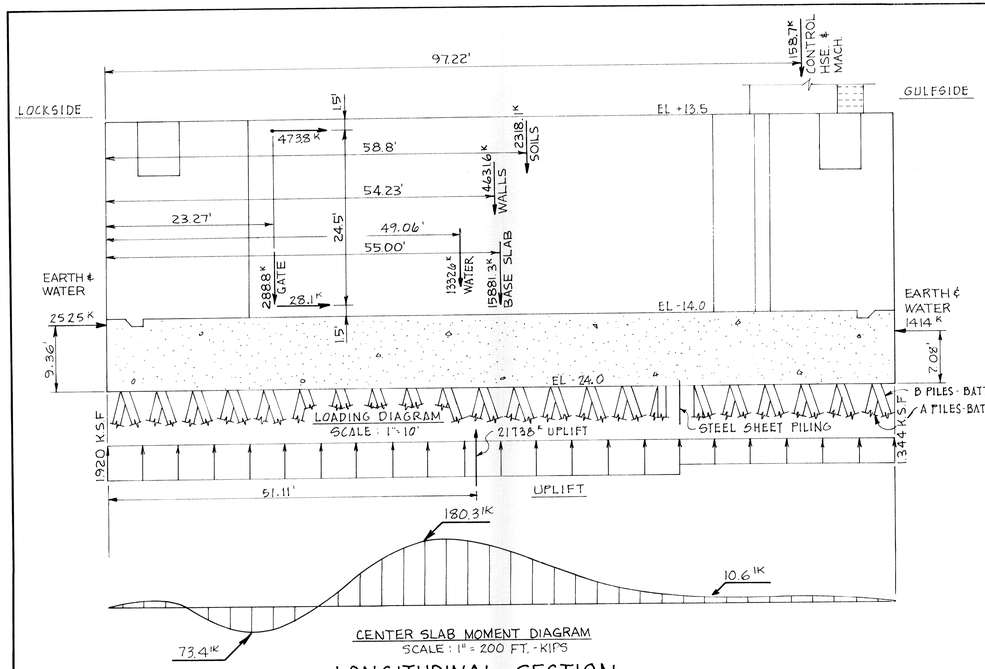
BASE SLAB

DESIGN CONDITIONS

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

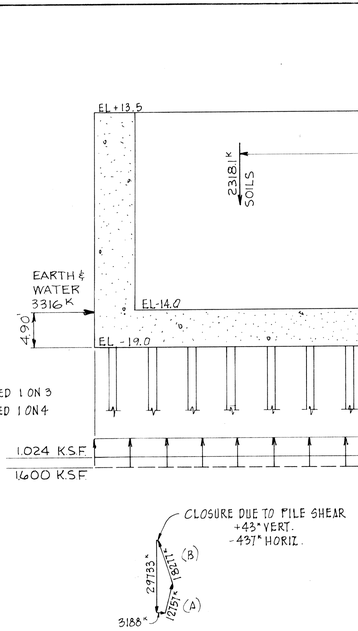
DATE SEPT., 1973 FILE NO. H-2-24419

PLATE IV.9



CENTER SLAB MOMENT DIAGRAM
SCALE : 1" = 200 FT. - KIPS

LONGITUDINAL SECTION



TRANSVERSE SECTION

MOMENT DIAGRAM
SCALE : 1" = 500 FT.-KIPS

CASE I + II 10

OPERATING CONDITION. GATE CLOSED. WATER SURFACE ELEVATION -3.0' ON GULFSIDE AND 6.0' ON LOCKSIDE. UPLIFT FROM ELEVATION-3.0' ON GULFSIDE OF CUTOFF AND ELEVATION 6.0' ON LOCKSIDE OF CUTOFF.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

PILE FORCE DIAGRAM
(TOTAL STRUCTURE)

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	30.5	19.9
PILE B	58.8	48.7

A JOINT VENTURE

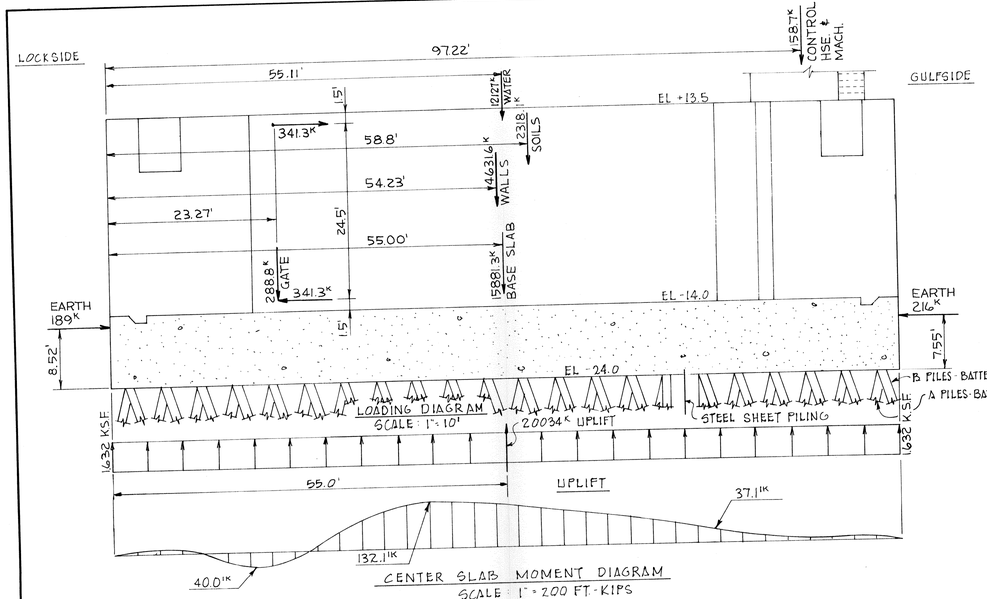
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 8 - DETAIL DESIGN
RIGOLETS LOCK
GULFSIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS

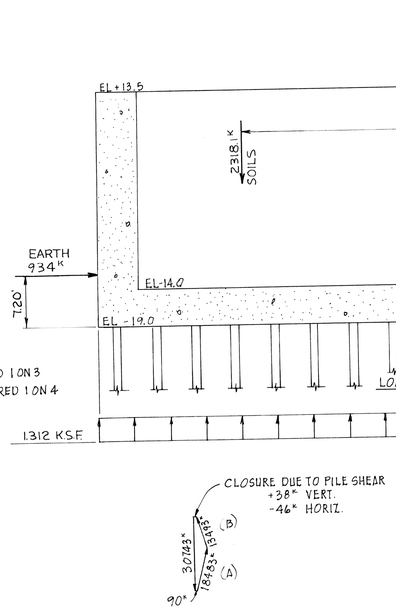
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE SEPT. 1973 FILE NO. H-2-24419

PLATE IV 10



LONGITUDINAL SECTION



PILE FORCE DIAGRAM
(TOTAL STRUCTURE)

TRANSVERSE SECTION

MOMENT DIAGRAM
SCALE: 1" = 500 FT.-KIPS

CASE I + II 11

STRUCTURE COMPLETE. BACKFILL IN PLACE. GATE IN OPEN POSITION. WATER ELEVATION 1.5' ON GULFSIDE AND LOCKSIDE. UPLIFT FROM ELEVATION 1.5'.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH ASSUMED UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	38.2	34.9
PILE B	41.2	38.1

A JOINT VENTURE

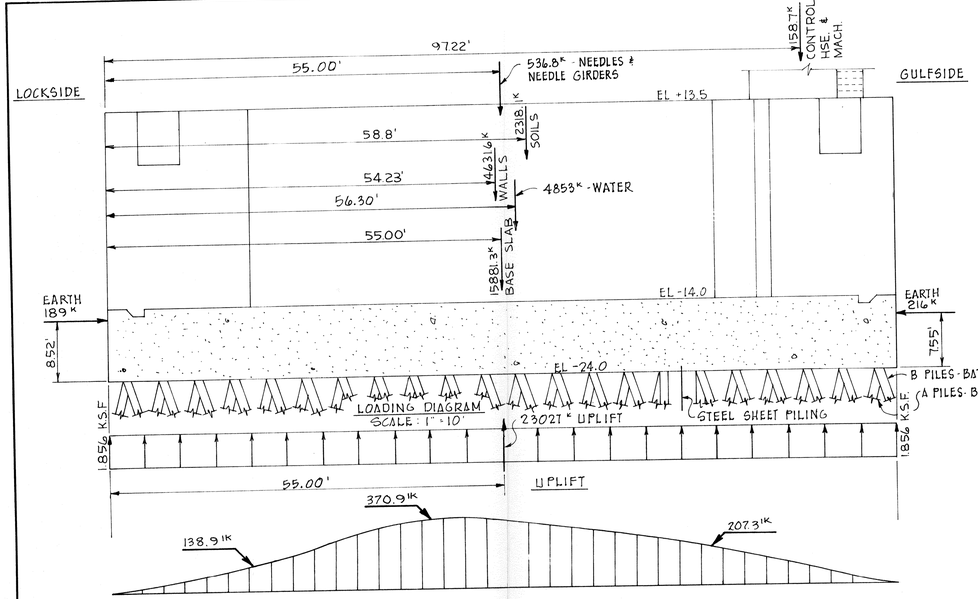
BM DOMBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN, BARRIER PLAN
DESIGN MEMORANDUM NO 8 - DETAIL DESIGN
RIGOLETS LOCK
GULFSIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS

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

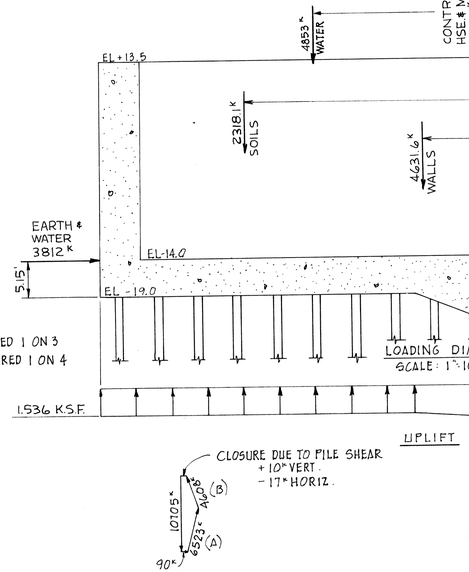
DATE SEPT., 1973 FILE NO H-2-24419

PLATE IV 11



CENTER SLAB MOMENT DIAGRAM
SCALE 1" = 400 FT.-KIPS

LONGITUDINAL SECTION



PILE FORCE DIAGRAM
(TOTAL STRUCTURE)

TRANSVERSE SECTION

CASE I + II 12

STRUCTURE UNWATERED. NEEDLE DAMS IN PLACE. WATER SURFACE ELEVATION 5.0 GULFSIDE AND LOCKSIDE. GATE REMOVED. UPLIFT FROM ELEVATION 5.0.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

CRITICAL UPLIFT FACTOR OF SAFETY IS OBTAINED USING THIS LOAD CASE.

CRITICAL LONGITUDINAL BASE SLAB MOMENT IS OBTAINED USING THIS LOAD CASE.

MOMENT DIAGRAM
SCALE: 1" = 1000 FT-KIPS

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	15.3	10.5
PILE B	15.8	11.3

A JOINT VENTURE

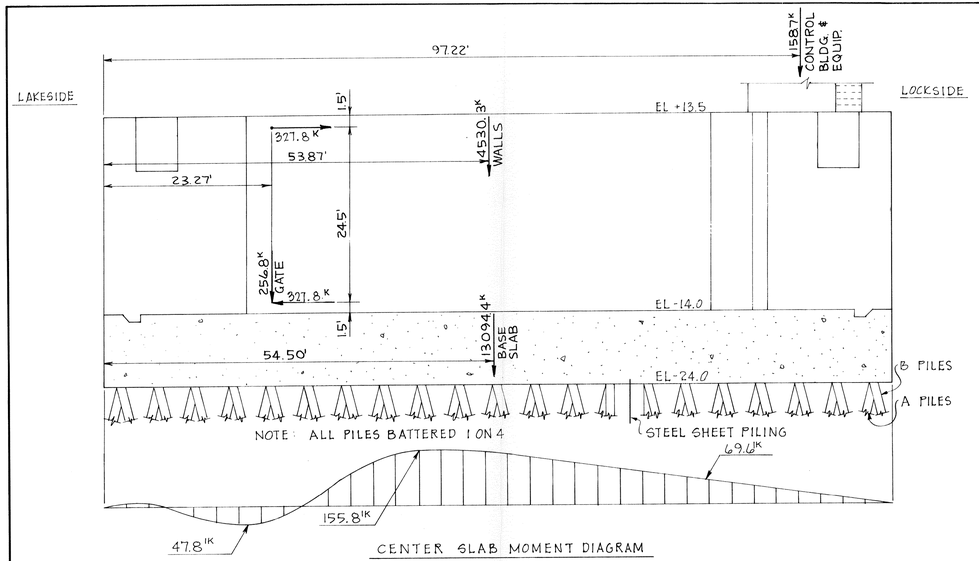
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA. | STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
GULFSIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS

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

DATE SEPT., 1973 FILE NO H-2-24419

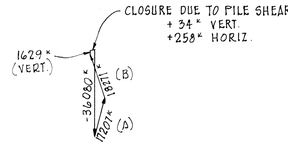
PLATE IV 12



CENTER SLAB MOMENT DIAGRAM

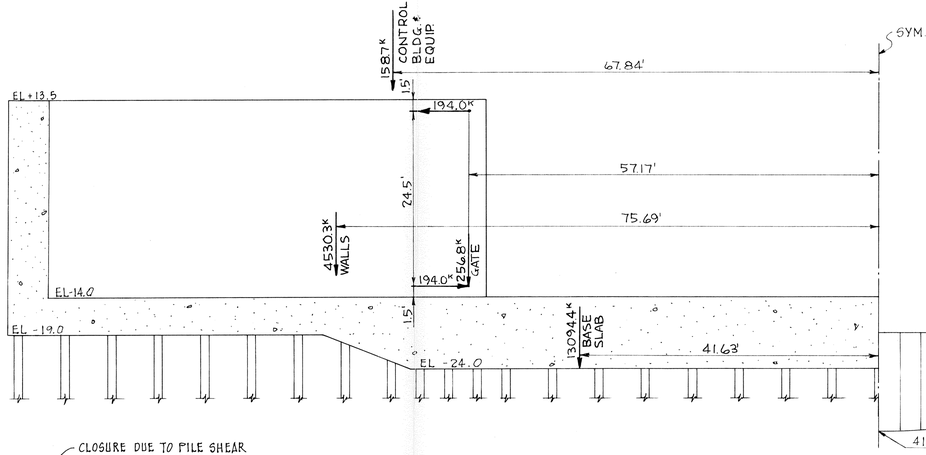
LONGITUDINAL SECTION

SCALE: 1" = 10'
MOMENT: 1" = 200 FT-KIPS



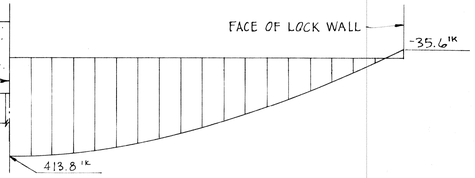
PILE FORCE DIAGRAM

(TOTAL STRUCTURE)



LOADING DIAGRAM

SCALE: 1" = 10'



MOMENT DIAGRAM

SCALE: 1" = 300 FT-KIPS

TRANSVERSE SECTION

CASE Ia

CONSTRUCTION CONDITION WITHOUT BACKFILL. GATE IN OPEN POSITION. WATER ELEVATION -25.0'.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH ASSUMED UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

CRITICAL PILE COMPRESSION IS OBTAINED USING THIS LOAD CASE.

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	100.3	94.4
PILE B	74.4	68.5

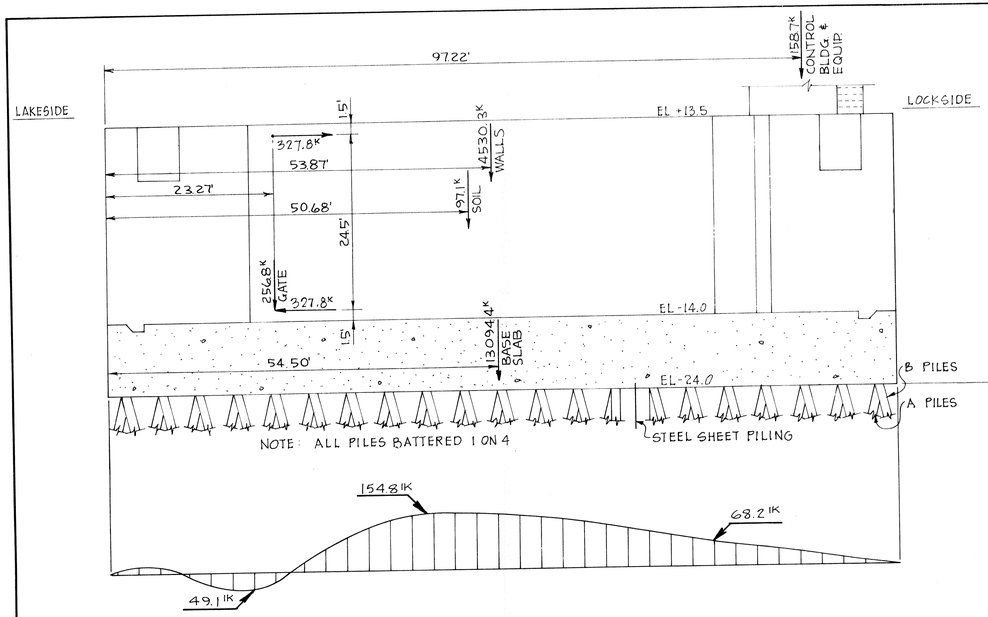
A JOINT VENTURE

MODJESKI AND MASTERS, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
GULF INTRACOASTAL WATERWAY
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
LAKESIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS

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

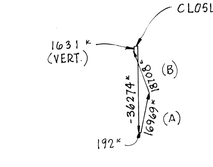
DATE SEPT., 1973 FILE NO. H-2-24419



CENTER SLAB MOMENT DIAGRAM

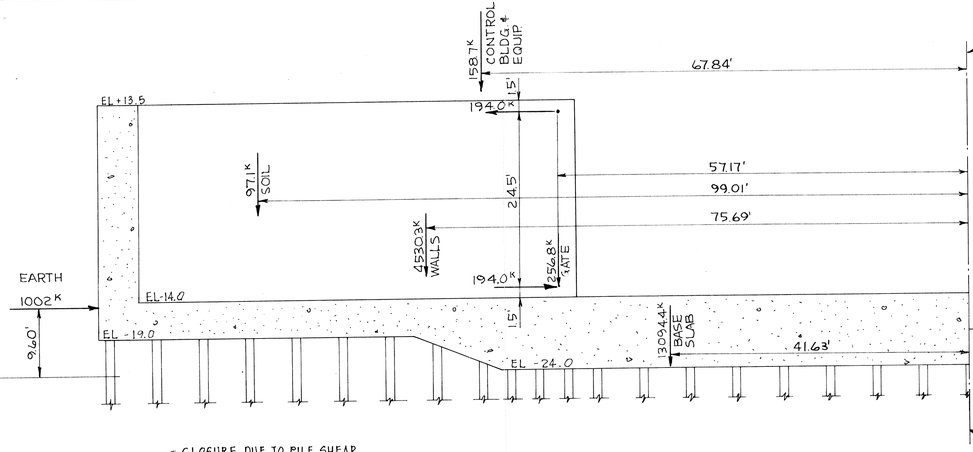
LONGITUDINAL SECTION

SCALE: 1" = 10'
MOMENT: 1" = 200' FT. KIPS



PILE FORCE DIAGRAM

(TOTAL STRUCTURE)



LOADING DIAGRAM
SCALE: 1" = 10'

MOMENT DIAGRAM
SCALE: 1" = 300 FT·KIPS

TRANSVERSE SECTION

CASE Ib

CONSTRUCTION CONDITION WITH BACKFILL IN PLACE. WATER ELEVATION -25.0'. GATE IN OPEN POSITION.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH ASSUMED UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

CRITICAL TRANSVERSE BASE SLAB MOMENT IS OBTAINED USING THIS LOAD CASE.

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	98.9	93.1
PILE B	76.0	70.2

A JOINT VENTURE

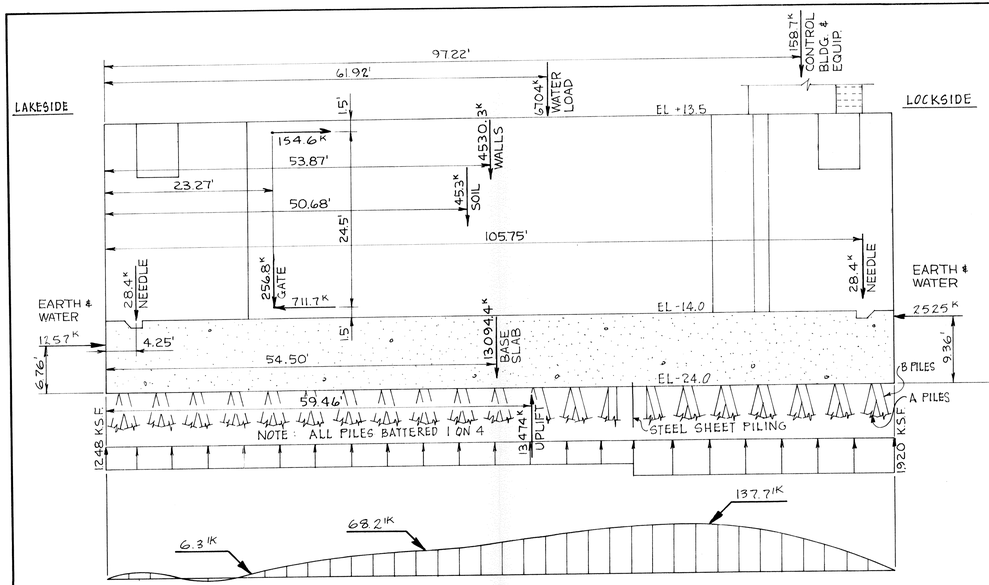
BN DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 8 - DETAIL DESIGN
RIGOLETS LOCK
LAKESIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS

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

DATE SEPT. 1973 FILE NO H-2-24419

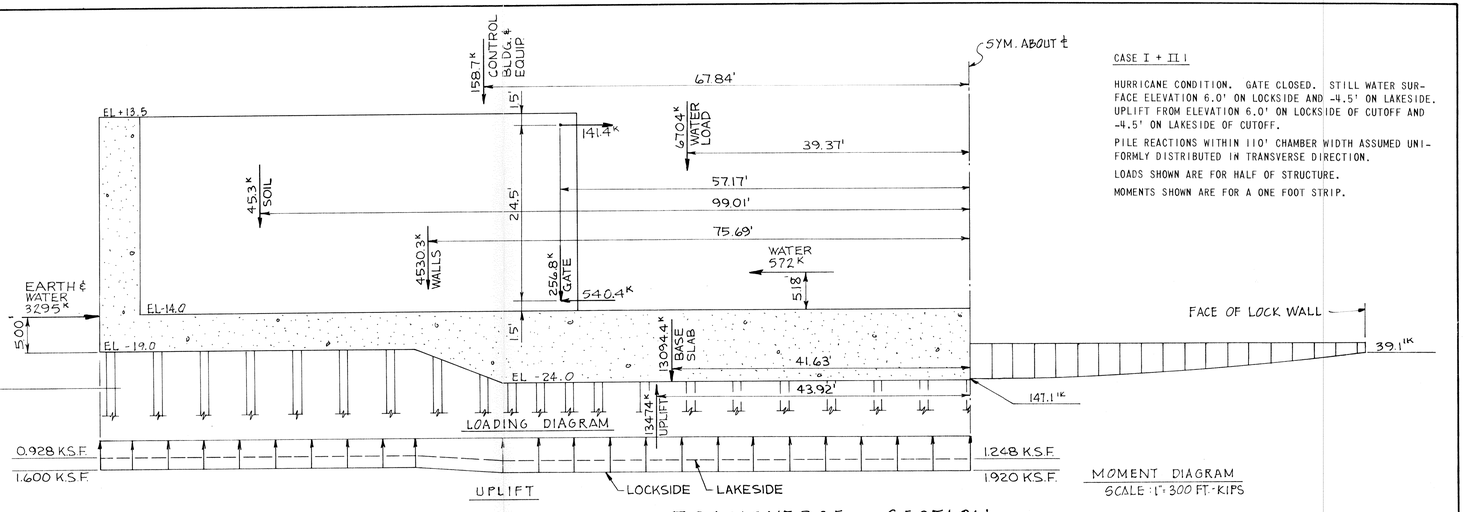
PLATE IV 14



CENTER SLAB MOMENT DIAGRAM

LONGITUDINAL SECTION

SCALE: 1" = 10'
MOMENT: 1" = 200 FT. KIPS



TRANSVERSE SECTION

LOADING DIAGRAM SCALE: 1" = 10'

MOMENT DIAGRAM
SCALE: 1" = 300 FT.-KIPS

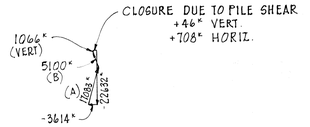
CASE I + II

HURRICANE CONDITION. GATE CLOSED. STILL WATER SURFACE ELEVATION 6.0' ON LOCKSIDE AND -4.5' ON LAKESIDE. UPLIFT FROM ELEVATION 6.0' ON LOCKSIDE OF CUTOFF AND -4.5' ON LAKESIDE OF CUTOFF.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH ASSUMED UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.



PILE FORCE DIAGRAM

(TOTAL STRUCTURE)

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	105.1	87.1
PILE B	28.8	10.8

A JOINT VENTURE

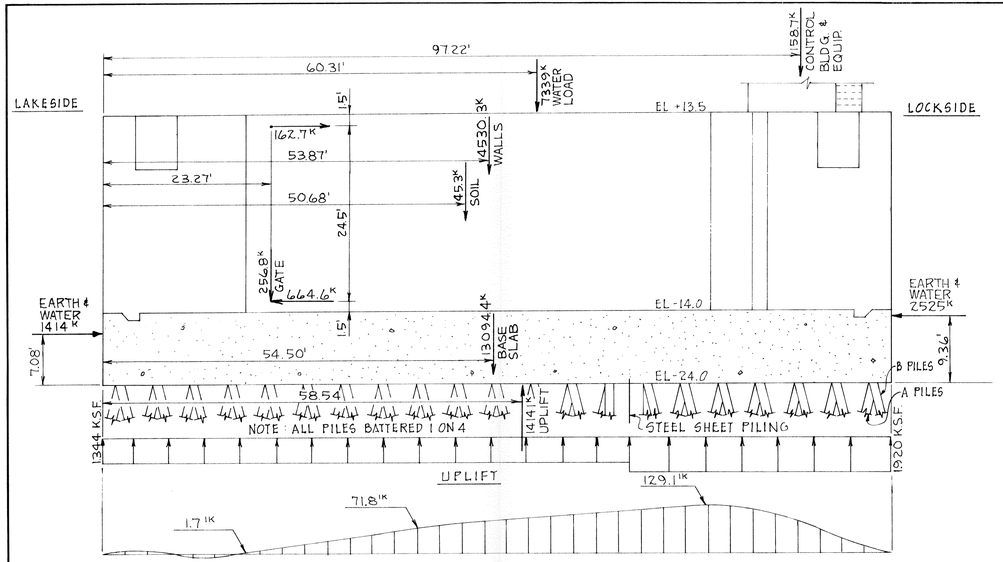
BM DONALDSON AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
LAKESIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS

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

DATE SEPT., 1973 FILE NO. H-2-24419

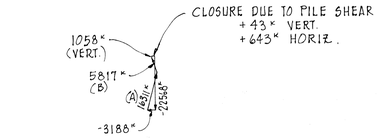
PLATE IV 15



CENTER SLAB MOMENT DIAGRAM

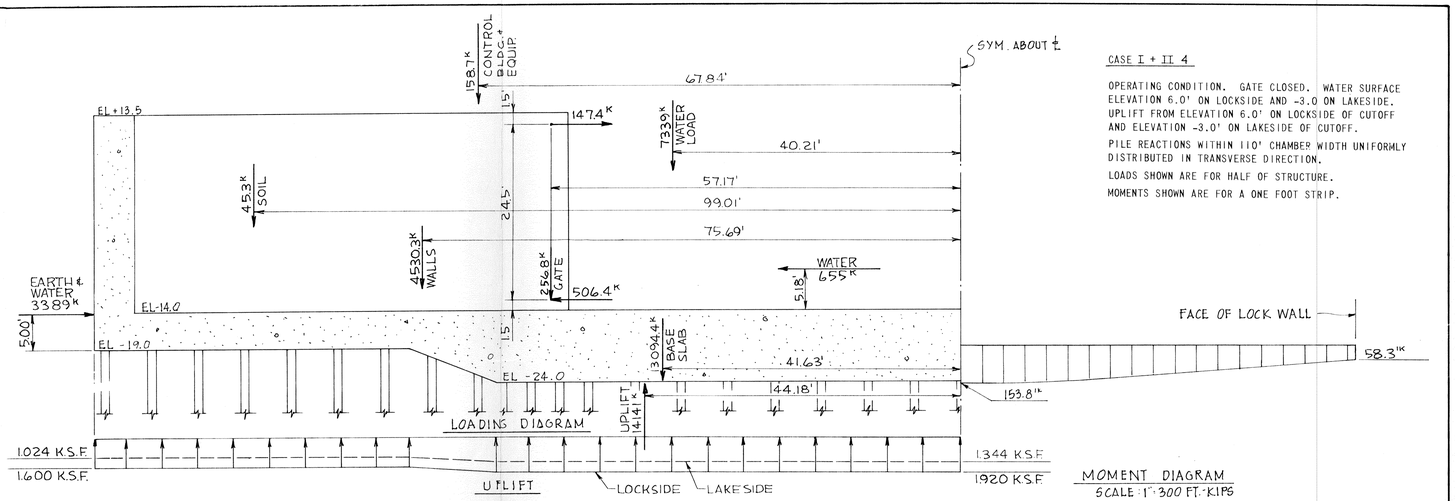
LONGITUDINAL SECTION

SCALE: 1" = 10'
MOMENT: 1" = 200 FT. KIPS



PILE FORCE DIAGRAM

(TOTAL STRUCTURE)



TRANSVERSE SECTION

LOADING DIAGRAM SCALE: 1" = 10'

CASE I + II 4

OPERATING CONDITION. GATE CLOSED. WATER SURFACE ELEVATION 6.0' ON LOCKSIDE AND -3.0 ON LAKESIDE. UPLIFT FROM ELEVATION 6.0' ON LOCKSIDE OF CUTOFF AND ELEVATION -3.0' ON LAKESIDE OF CUTOFF.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

MOMENT DIAGRAM

SCALE: 1" = 300 FT. KIPS

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	99.5	84.1
PILE B	30.3	14.9

A JOINT VENTURE

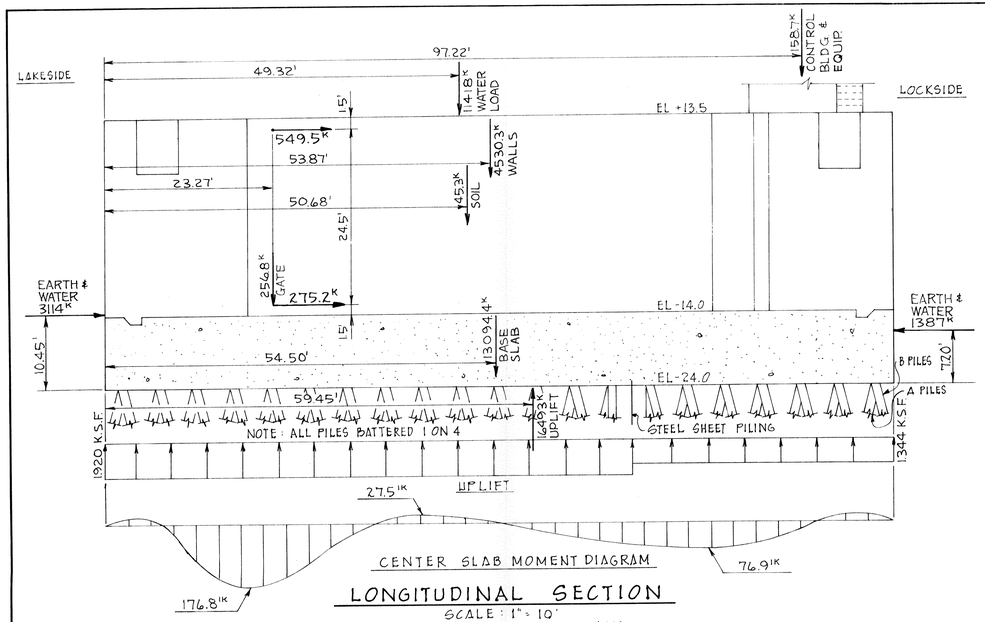
BM DONNELLY AND ASSOCIATES, INC. NEW ORLEANS, LA | STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
LAKESIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS

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

DATE: SEPT., 1973 | FILE NO. H-2-24419

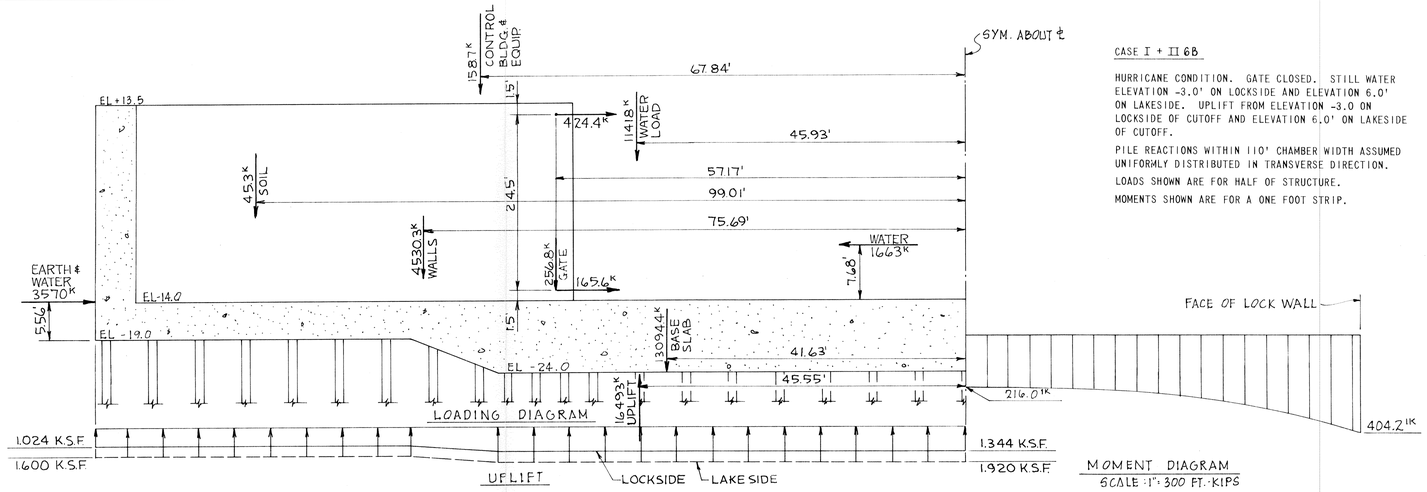
PLATE IV. 16



CENTER SLAB MOMENT DIAGRAM

LONGITUDINAL SECTION

SCALE : 1" = 10'
MOMENT : 1" = 200 FT.-KIPS



LOADING DIAGRAM

UPLIFT

TRANSVERSE SECTION

LOADING DIAGRAM SCALE : 1" = 10'

CASE I + II 6B

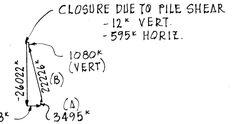
HURRICANE CONDITION. GATE CLOSED. STILL WATER ELEVATION -3.0' ON LOCKSIDE AND ELEVATION 6.0' ON LAKESIDE. UPLIFT FROM ELEVATION -3.0 ON LOCKSIDE OF CUTOFF AND ELEVATION 6.0' ON LAKESIDE OF CUTOFF.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH ASSUMED UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

MOMENT DIAGRAM
SCALE : 1" = 300 FT.-KIPS



PILE FORCE DIAGRAM

(TOTAL STRUCTURE)

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	31.9	8.6
PILE B	98.6	75.3

A JOINT VENTURE

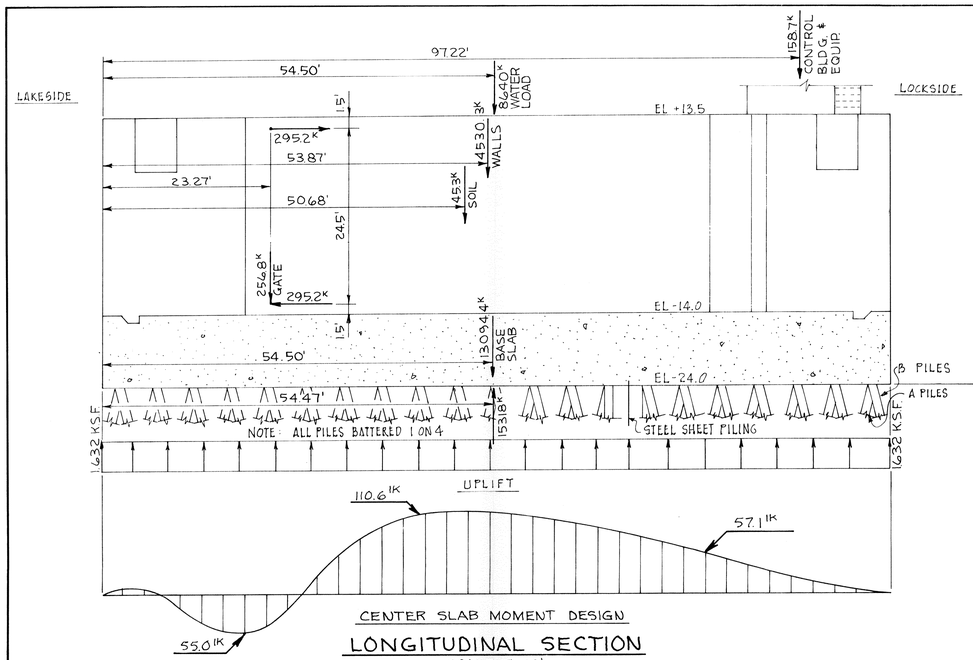
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
LAKESIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS

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

DATE SEPT., 1973 FILE NO. H-2-24419

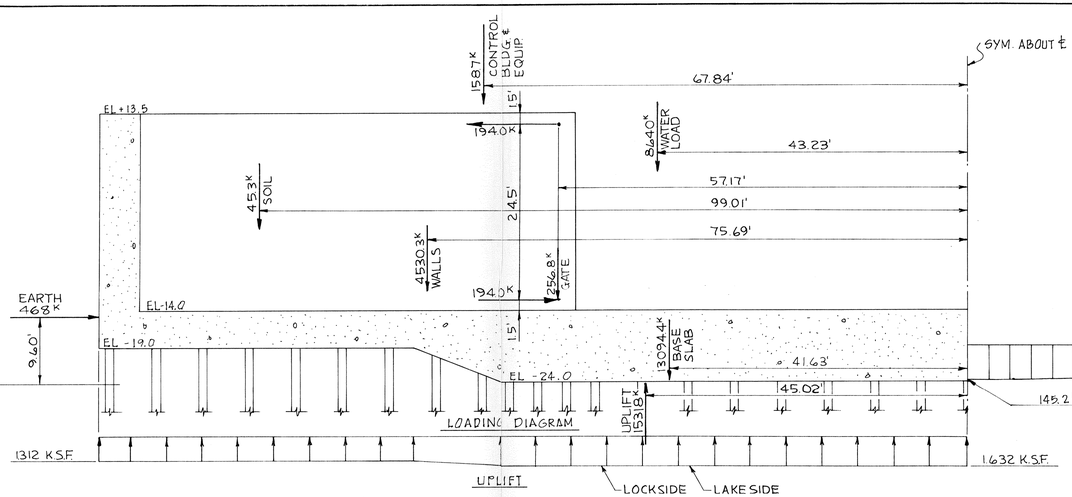
PLATE IV. 17



CENTER SLAB MOMENT DESIGN

LONGITUDINAL SECTION

SCALE 1" = 10'
MOMENT 1" = 100 1K



TRANSVERSE SECTION

LOADING DIAGRAM SCALE: 1" = 10'

CASE I + III 7

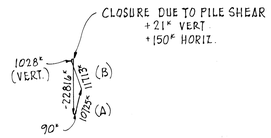
STRUCTURE COMPLETE. BACKFILL IN PLACE. GATE IN OPEN POSITION. WATER ELEVATION 1.5' ON GULFSIDE AND LOCKSIDE. UPLIFT FROM ELEVATION 1.5'.

PILE REACTIONS WITHIN 110' CHAMBER WIDTH ASSUMED UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

MOMENT DIAGRAM
SCALE: 1" = 300 FT.-KIPS



PILE FORCE DIAGRAM

(TOTAL STRUCTURE)

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	62.8	58.6
PILE B	47.9	43.7

A JOINT VENTURE

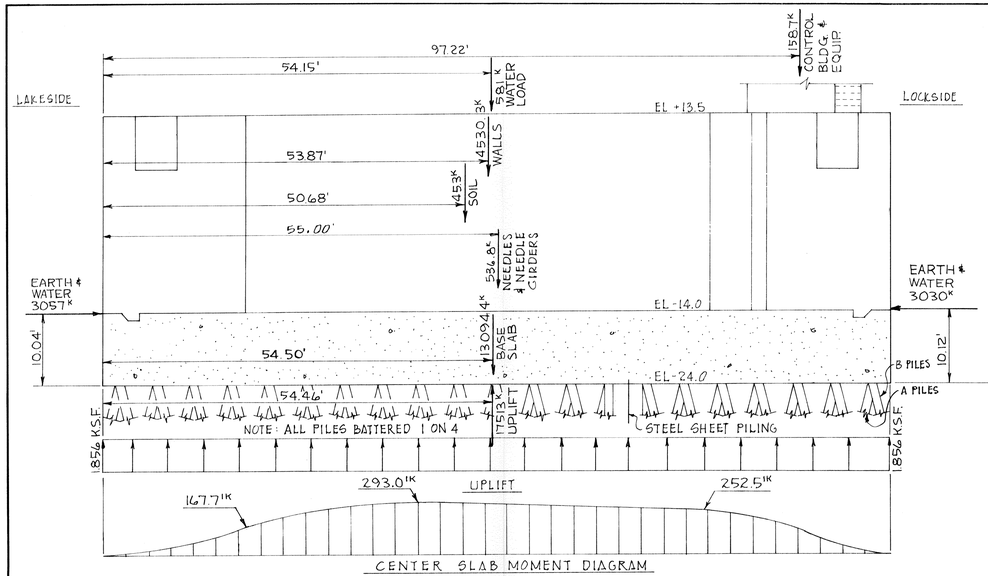
BOARDWALK AND ASSOCIATES, INC. NEW ORLEANS, LA. | STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 8-DETAIL DESIGN
RIGOLETS LOCK
LAKESIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS

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

DATE SEPT., 1973 FILE NO. H-2-24419

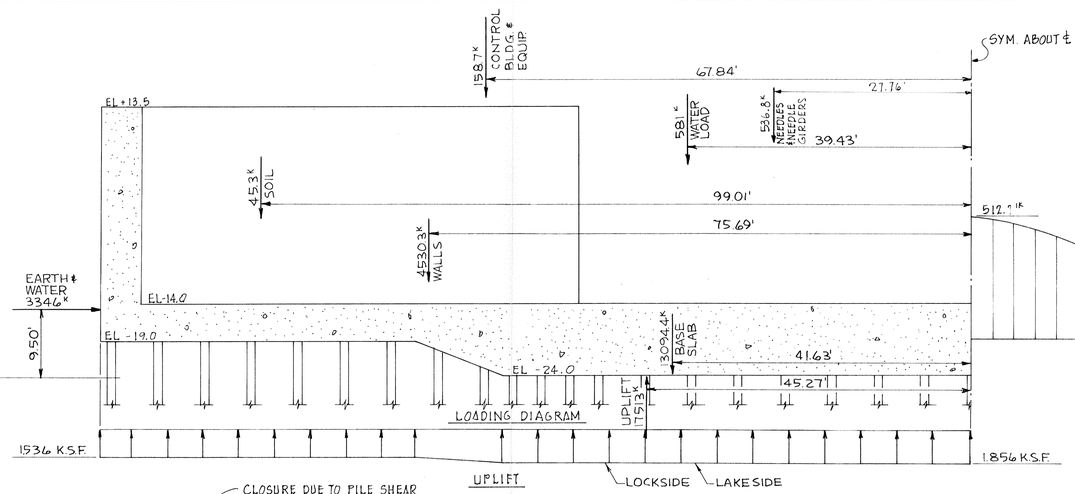
PLATE IV 18



CENTER SLAB MOMENT DIAGRAM

LONGITUDINAL SECTION

SCALE: 1" = 10'
MOMENT: 1" = 400 FT-KIPS



TRANSVERSE SECTION

LOADING DIAGRAM SCALE: 1" = 10'

CASE I + II B

STRUCTURED UNWATERED. NEEDLE DAMS IN PLACE. WATER SURFACE ELEVATION 5.0 GULFSIDE AND LOCKSIDE. GATE REMOVED. UPLIFT FROM ELEVATION 5.0.

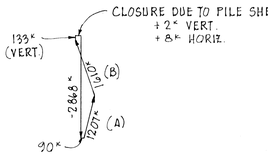
PILE REACTIONS WITHIN 110' CHAMBER WIDTH UNIFORMLY DISTRIBUTED IN TRANSVERSE DIRECTION.

LOADS SHOWN ARE FOR HALF OF STRUCTURE.

MOMENTS SHOWN ARE FOR A ONE FOOT STRIP.

CRITICAL UPLIFT FACTOR OF SAFETY IS OBTAINED USING LOAD CASE.

CRITICAL LONGITUDINAL BASE SLAB MOMENT IS OBTAINED USING THIS LOAD CASE.



PILE FORCE DIAGRAM

(TOTAL STRUCTURE)

PILE LOADS (KIPS)		
	MAX.	MIN.
PILE A	8.3	5.5
PILE B	7.7	4.9

MOMENT DIAGRAM

SCALE: 1" = 300 FT.-KIPS

A JOINT VENTURE

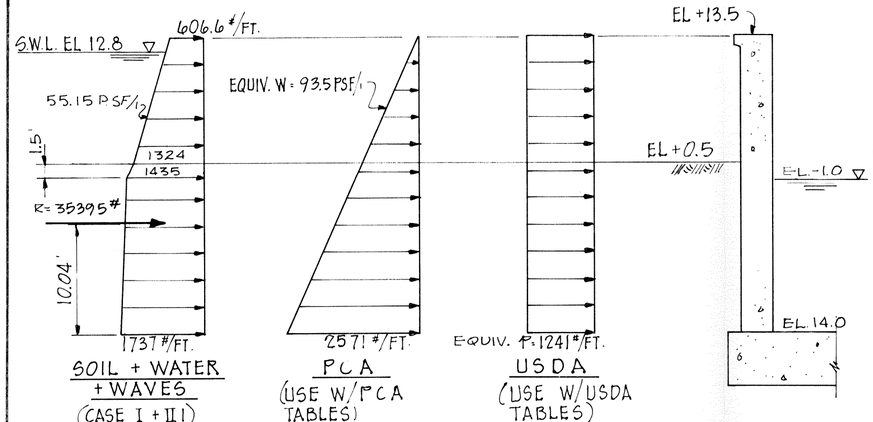
BM DONNELLEY AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
LAKESIDE GATE BAY
BASE SLAB
DESIGN CONDITIONS

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

DATE SEPT., 1973 FILE NO. H-2-24419

PLATE IV 19



SOIL + WATER + WAVES (CASE I + III)

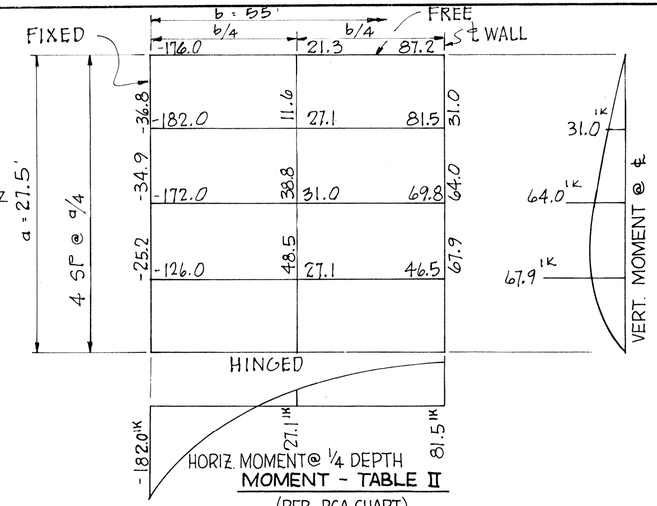
PCA (USE W/PCA TABLES)

USDA (USE W/USDA TABLES)

EQUIVALENT LOADS - USED FOR DESIGN

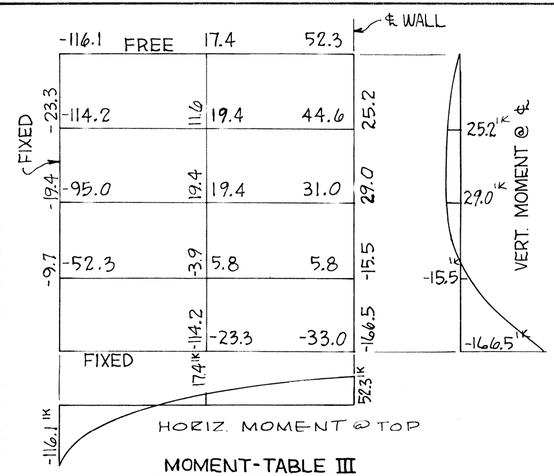
WALL EXTERNAL LOADING DIAGRAMS

SCALE: 1"=10'-0"



MOMENT - TABLE II

(PER PCA CHART)



MOMENT - TABLE III

(PER PCA CHART)

$b/a = \frac{55}{27.5} = 2.0$

PCA METHOD

$M = C \times wa^3 = 1940\,C$ IK

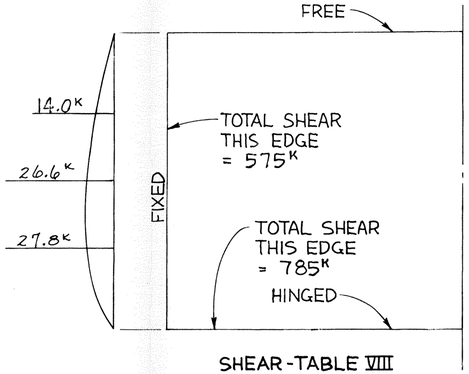
$V = C \times wa^2 = 70.8\,C$ K

USDA METHOD

$M = C \times pa^2 = 938.5\,C$ IK

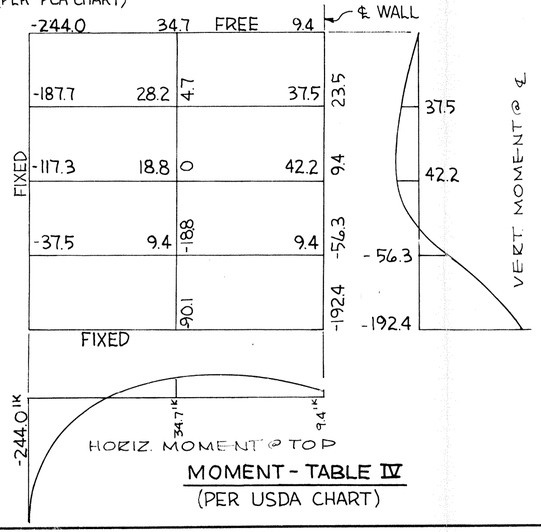
$f_c' = 3000$ PSI $\quad f_c = 1050$ PSI $\quad n = 9$

$A_s = \frac{M\,12}{20 \times 7/8 \times de} = \frac{M}{1.46\,de}$



SHEAR - TABLE VIII

(PER PCA CHART)



MOMENT - TABLE IV

(PER USDA CHART)

NOTES:

CONTROLLING EXTERNAL LOAD AGAINST THE WALL OCCURS DURING HURRICANE CONDITIONS AND INCREASED ALLOWABLE STRESSES ARE APPLICABLE.

TWO MOMENT CURVES AND ONE SHEAR DIAGRAM ARE PLOTTED USING THE TABLES IN BULLETIN "CONCRETE INFORMATION NO. ST 63, RECTANGULAR CONCRETE TANKS" PUBLISHED BY THE PORTLAND CEMENT ASSOCIATION. BECAUSE OF THE WALL SURCHARGE LOAD DUE TO THE HURRICANE, ONE MOMENT DIAGRAM IS PLOTTED USING A RECTANGULAR WALL LOADING AND CHARTS PUBLISHED BY THE U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, ENGINEERING DIVISION.

DESIGNS ARE BASED ON EQUIVALENT LOADS AS SHOWN.

WALL FORCES DUE TO UNBALANCED INTERNAL LOAD AGAINST THE WALL ARE CONTROLLED BY LOADING CASE I + II9 HAVING EQUIVALENT FLUID W = 29 PSF. FORCES ARE PROPORTIONAL FOR THE WALL EXTERNAL LOAD.

GULFSIDE GATE RECESS

55' x 27.5' WALL

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

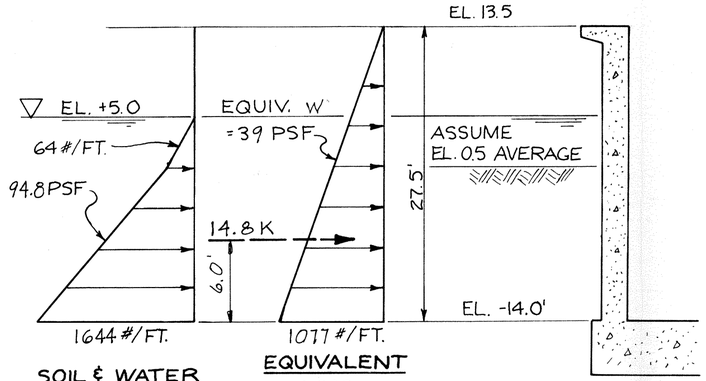
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GATE BAYS
RECESS WALLS

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

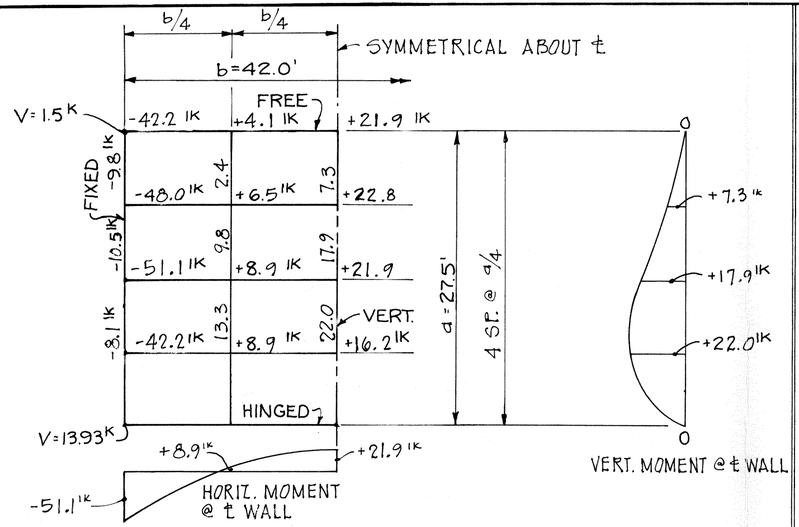
DATE SEPT., 1973 FILE NO H-2-24419

PLATE IV 20

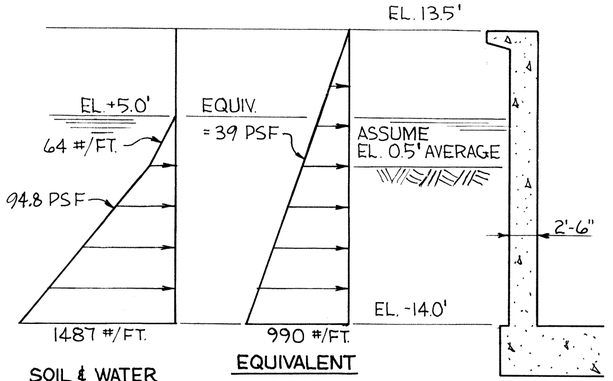


WALL EXTERNAL LOADING DIAGRAMS

SCALE: 1" = 10'-0"



MOMENT TABLE II



WALL EXTERNAL LOADING DIAGRAMS

SCALE: 1" = 10'-0"

55' X 27.5' WALL

WALL EXTERNAL EQUIVALENT LOAD OF 39 PSF/I FOR THE DEWATERED CONDITION WILL PRODUCE FORCES IN THE WALL PROPORTIONAL TO THOSE COMPUTED FOR GULFSIDE GATE RECESS, 55'X27.5' WALL USING AN EQUIVALENT LOAD OF 93.5 PSF/I.

WALL INTERNAL LOAD IS PRODUCED BY CASE I AND II6 (WITH WAVES) AND PROVIDES AN EQUIVALENT LOAD OF ≈ 39 PSF/I WITH INCREASED ALLOWABLE STRESSES PERMITTED.

42' X 27.5' WALL

CONTROLLING LOADING IS CASE I AND II8 FOR THE DEWATERED CONDITION WHICH IS THE SAME AS FOR GULFSIDE GATE RECESS, 42'X27.5' WALL. THEREFORE, USE SAME DESIGN.

LAKESIDE GATE RECESS

NOTES:

CONTROLLING EXTERNAL LOAD AGAINST THE WALL OCCURS DURING THE DEWATERED CONDITION AND NORMAL ALLOWABLE STRESSES ARE APPLICABLE.

MOMENTS AND SHEARS ARE PLOTTED USING THE TABLES IN "CONCRETE INFORMATION NO. ST 63, RECTANGULAR CONCRETE TANKS" PUBLISHED BY THE PORTLAND CEMENT ASSOCIATION.

DESIGN IS BASED UPON EQUIVALENT LOADS AS SHOWN.

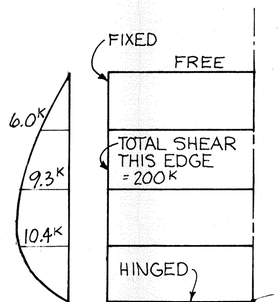
$\frac{b}{a} = \frac{42}{27.5} \cong 1.5$

$M = CxWa^3 = 810C^{lk}$

$V = CxWa^2 = 29.5C^{lk}$ $\quad n = 9$

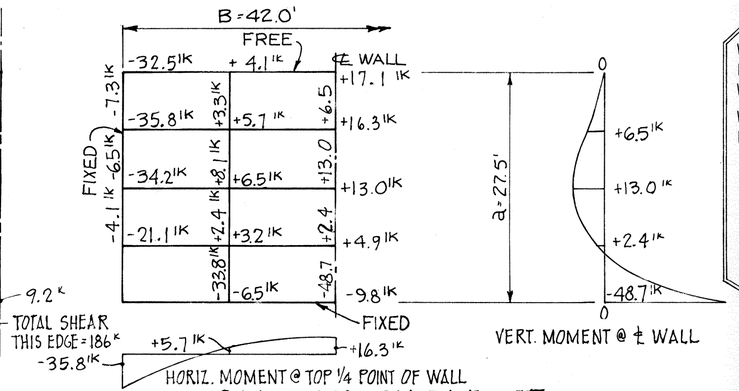
$f'c = 3000$ PSI $\quad fc = 1050$ PSI

$A_s = \frac{M}{fsjd_e} = \frac{M}{1.46d_e}$



GULFSIDE GATE RECESS

42' x 27.5' WALL



MOMENT TABLE III

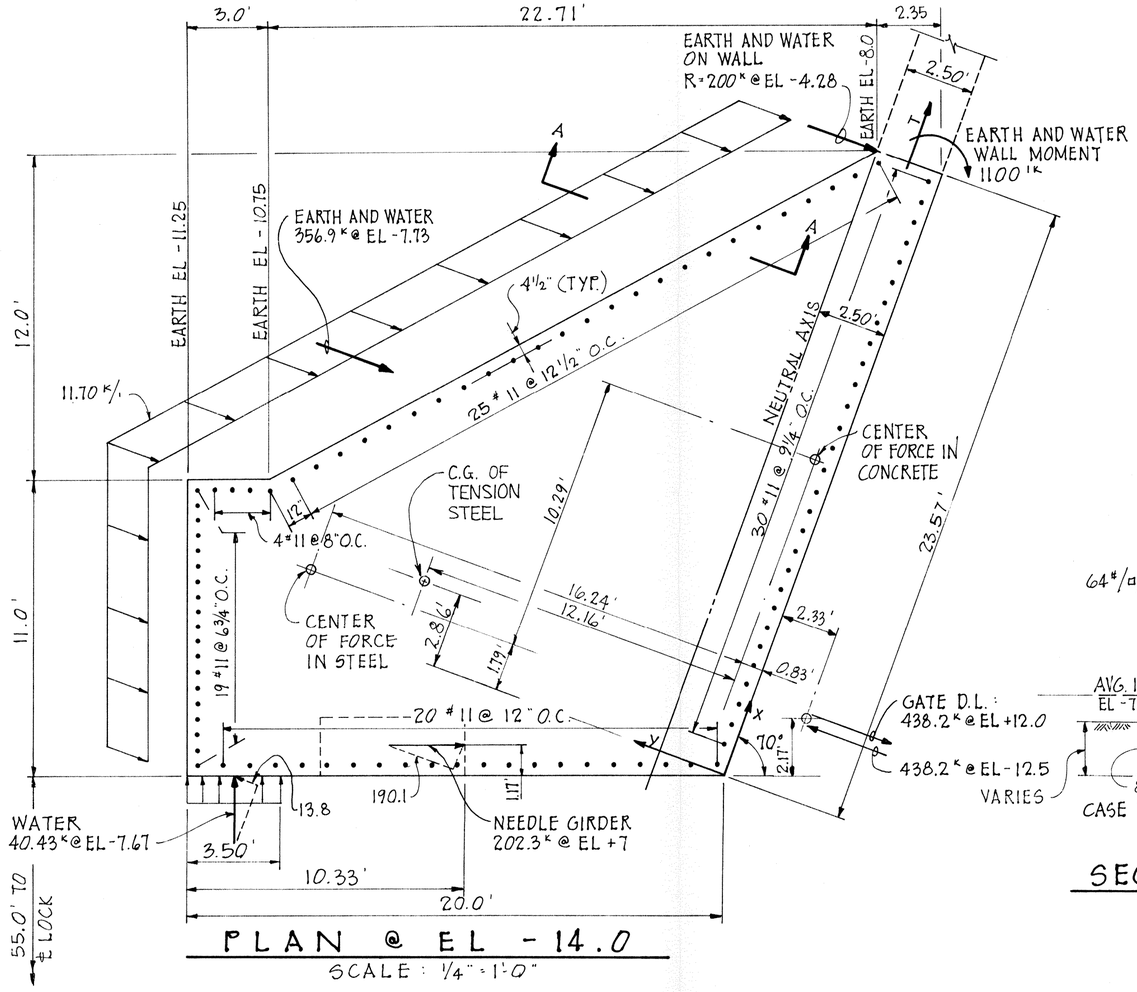
A JOINT VENTURE
B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA
STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GATE BAYS
RECESS WALLS

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

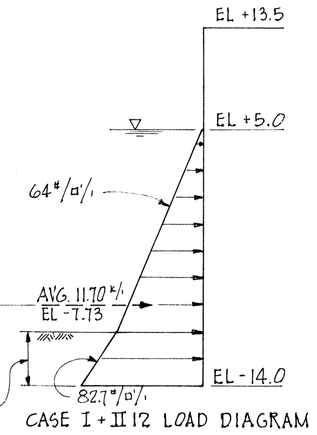
DATE SEPT., 1973 FILE NO H-2-24419



PLAN @ EL -14.0

SCALE : 1/4" = 1'-0"

NOTE : LOADS SHOWN ARE FOR CRITICAL CONDITION: CASE I + II 12 (DEWATERED CONDITION)



CASE I + III 12 LOAD DIAGRAM

SECTION A-A

MOMENT AT EL -14.0

200 ᴷ	× 9.72'	=	1944 IK
190.1 ᴷ	× 21.00'	=	3992 IK
356.9 ᴷ	× 6.27'	=	2238 IK
438.2 ᴷ	× 24.5'	=	10736 IK
- 13.8 ᴷ	× 6.33'	=	- 87 IK
M_{-14}	=		18823 IK

FROM COMPUTER OUTPUT-COMPRESSION STEEL NEGLECTED

EQUATION FOR n.a. : $-0.009y + 0.270 = 0$

$y = 30"$

f_s MAX. = 19.31 K.S.I. $A_s = 99.8\square"$ * TENSION STEEL

f_c MAX. = 0.27 K.S.I. $= 152.8\square"$ TOTAL STEEL

f_c' = 3000 P.S.I.

f_c = 1050 P.S.I.

n = 9

f_s = 20,000 P.S.I.

TENSION IN WALL, T

TOTAL TENSION AND COMPRESSION FORCES = 18823 ÷ 16.24 = 1159 ᴷ

$T = \frac{1159\,(10.29)}{(26.5)} = 450$ ᴷ WHERE 26.5 = 27.5 - 1.0

$A_s = \frac{450}{20} = 22.5$ SQ. IN. IN TOP OF WALL

* COMPUTED STEEL REINFORCEMENT IS MINIMUM FOR BENDING STRENGTH REQUIREMENT.

A JOINT VENTURE

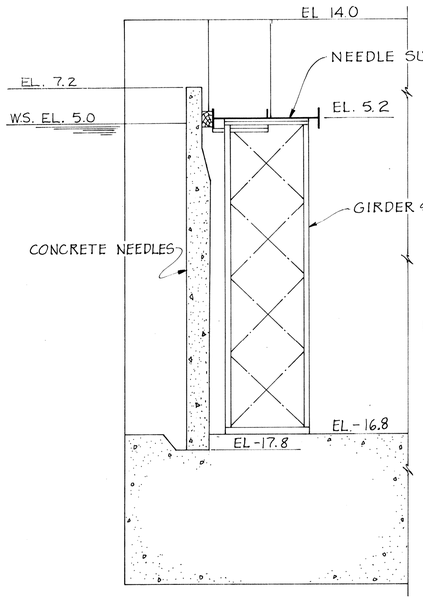
B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA | STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

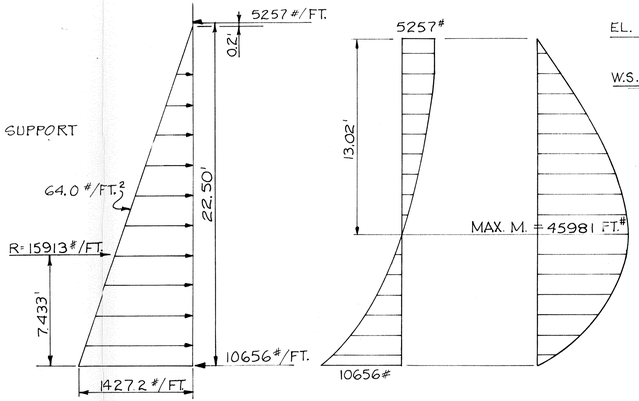
GATE BAYS
GATE SUPPORT BLOCK

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

DATE: SEPT., 1973 FILE NO H-2-24419

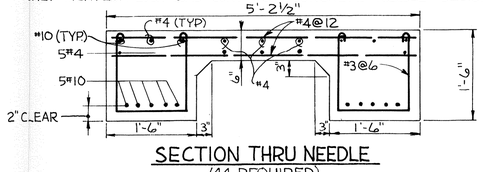


SECTION THRU NEEDLE DAM



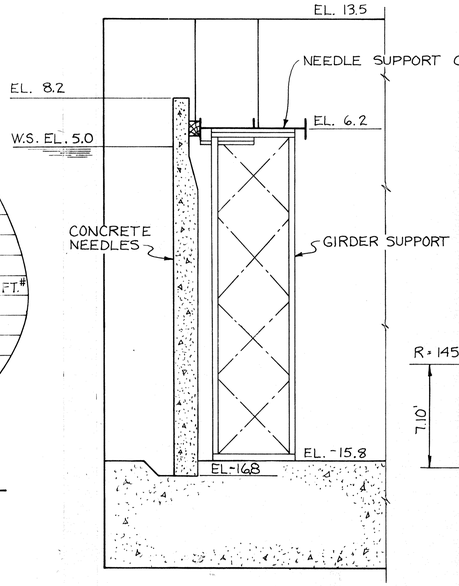
LOAD SHEAR MOMENT

CHEF MENTEUR LOCK LOAD CONTROLS CONCRETE NEEDLE DESIGN



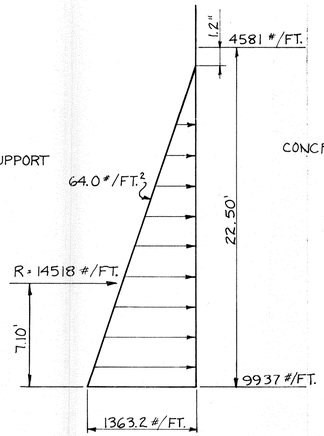
SECTION THRU NEEDLE
(44 REQUIRED)

CHEF MENTEUR LOCK



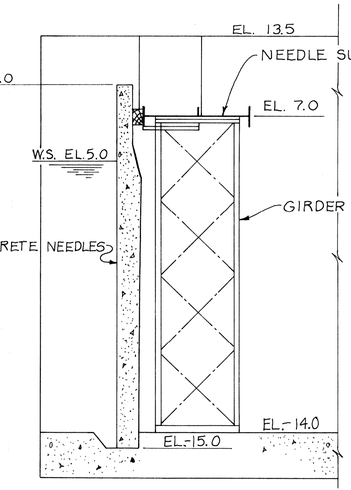
SECTION THRU NEEDLE DAM

SEABROOK LOCK

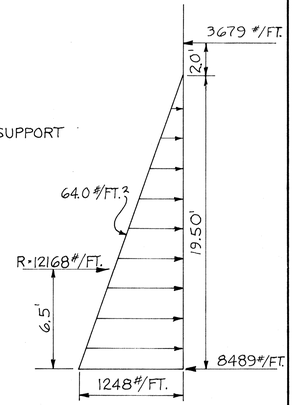


LOAD

LOAD DOES NOT CONTROL
CONCRETE NEEDLE DESIGN



SECTION THRU NEEDLE DAM



LOAD

LOAD DOES NOT CONTROL
CONCRETE NEEDLE DESIGN

RIGOLETS LOCK

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

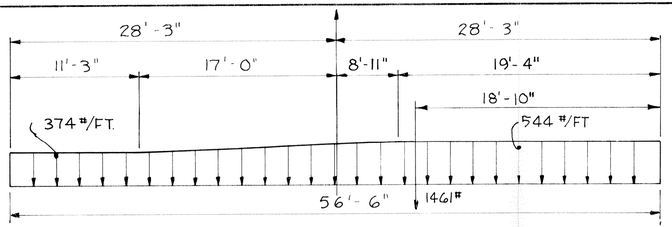
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GATE BAYS
NEEDLE DAM

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

DATE: SEPT. 1973 FILE NO. H-2-24419

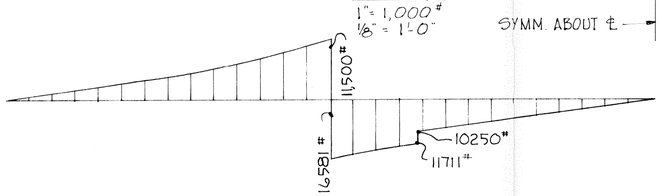
PLATE IV-23



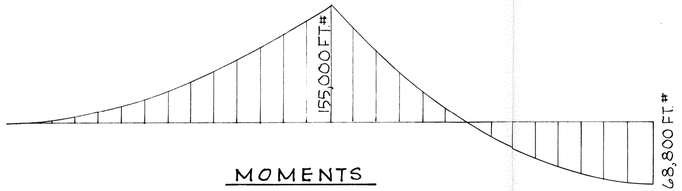
LOADS

1" = 1,000 #

1/8" = 1'-0"

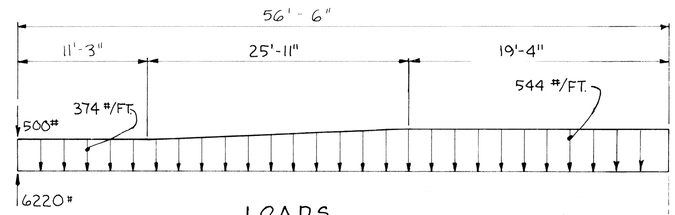


SHEARS



MOMENTS

LIFTING STRESSES

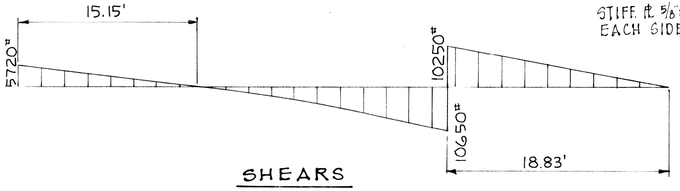


LOADS

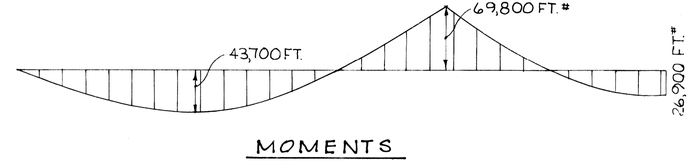
1" = 1,000 #

SYMM. ABOUT ℄

STIFF. PL 5/8"x10" EACH SIDE

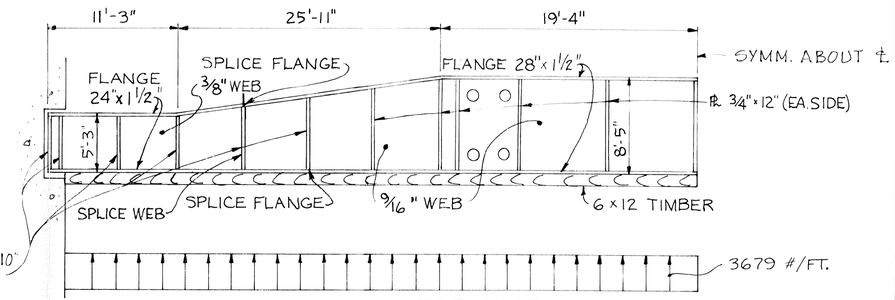


SHEARS



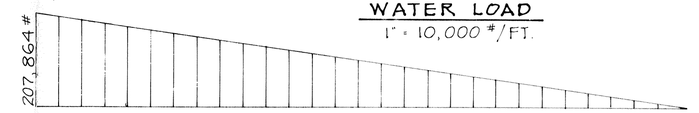
MOMENTS

DEAD LOAD OF GIRDER

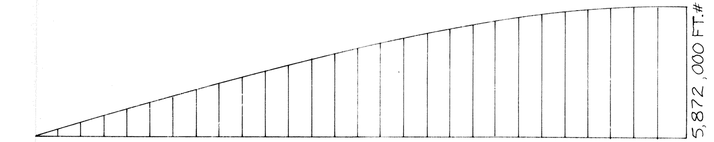


WATER LOAD

1" = 10,000 #/FT.



SHEARS



MOMENTS

WATER LOAD

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

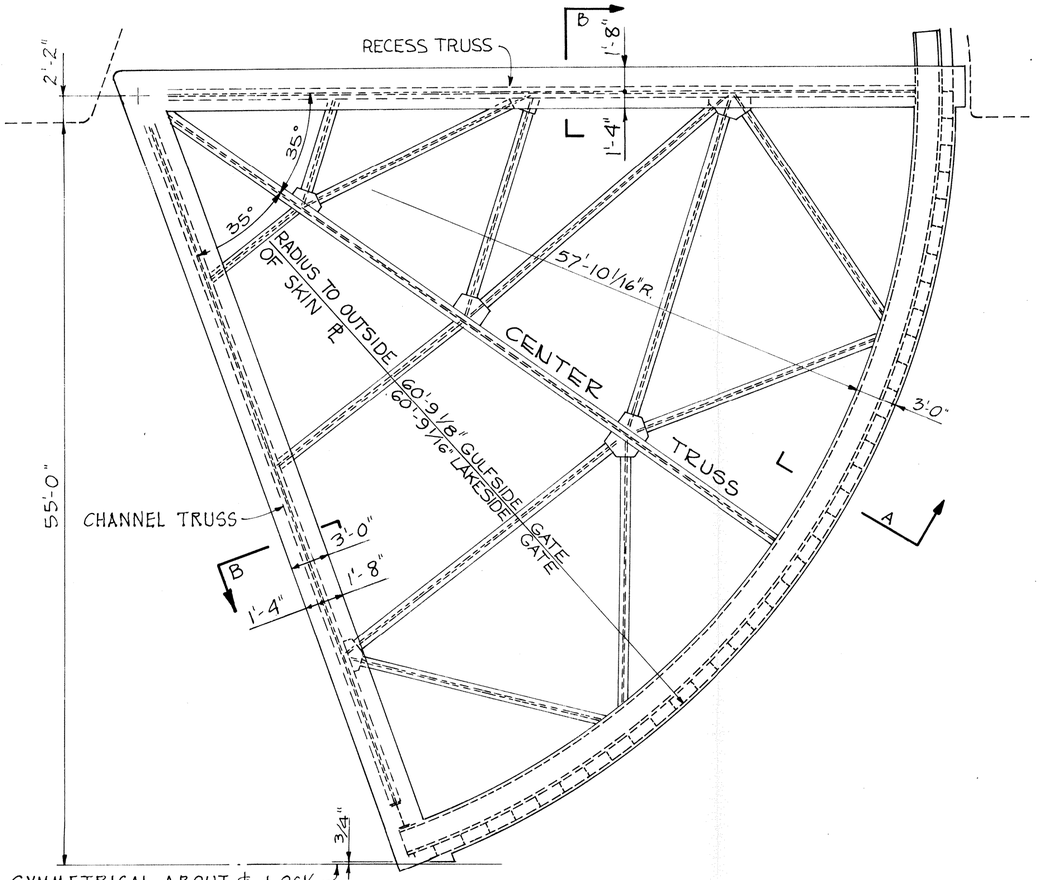
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 8 - DETAIL DESIGN
RIGOLETS LOCK

GATE BAYS
NEEDLE GIRDER

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

DATE SEPT. 1973 FILE NO. H-2-24419

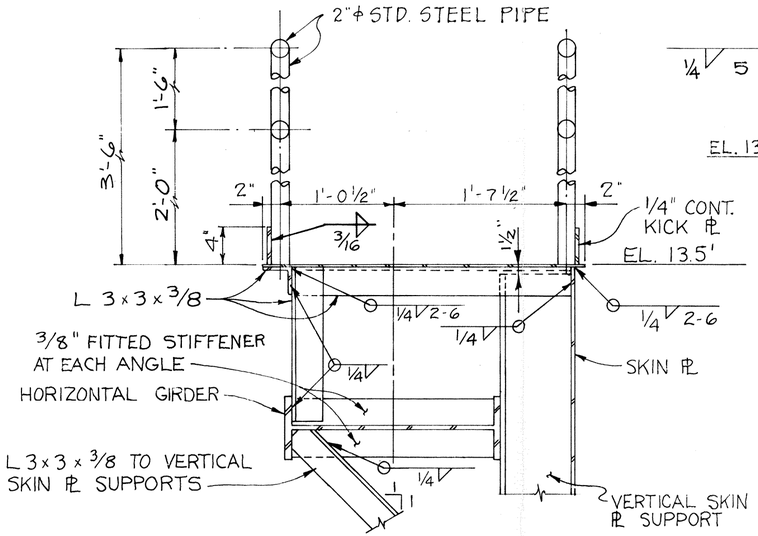
PLATE IV 24



PLAN OF WALKWAYS

HANDRAIL AND GAP PLATE NOT SHOWN

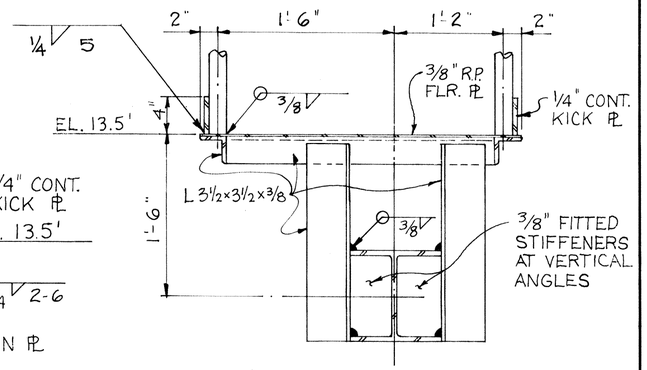
SCALE : 1/8" = 1'-0"



SECTION A

SCALE : 1" = 1'-0"

SECTION SHOWN FOR GULFSIDE GATE; LAKESIDE GATE SAME EXCEPT ADD L3x3x3/8 TO SUPPORT WALKWAY WHERE SKIN PLATE IS NOT PRESENT.



SECTION B

SCALE : 1" = 1'-0"

NOTES:

HANDRAIL CONNECTIONS WILL BE DETAILED TO WITHSTAND A FORCE OF 200 lbs. APPLIED AT TOP RAIL.

KICK PLATE WILL BE DETAILED WITH 1/2" SQUARE OPENINGS AT 5' MAX. TO DRAIN WATER OFF WALKWAY.

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

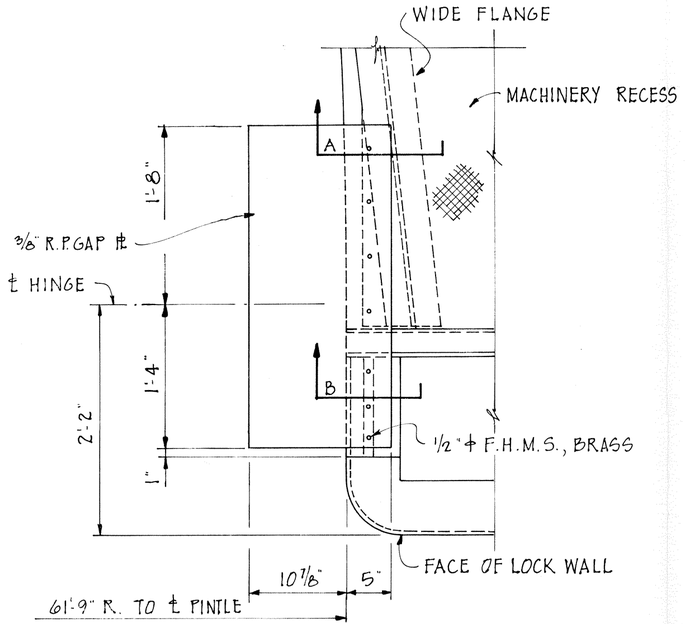
STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

WALKWAY PLAN AND DETAILS

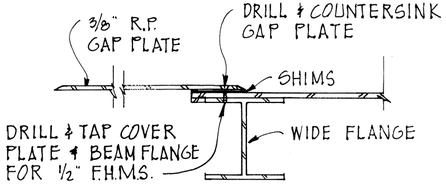
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: SEPT. 1973 FILE NO H-2-24419



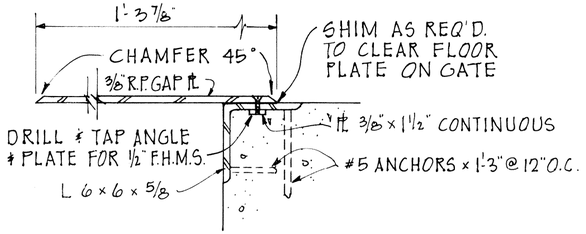
GAP PLATE

SCALE : 1" = 1'-0"



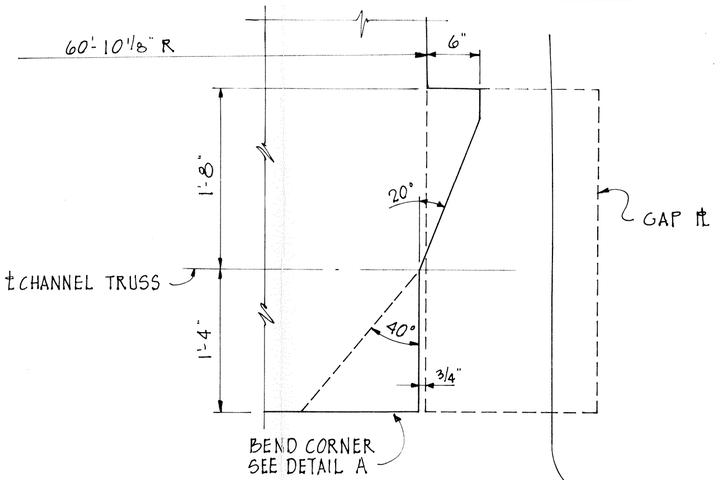
SECTION A

SCALE : 1 1/2" = 1'-0"



SECTION B

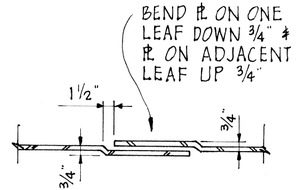
SCALE : 1 1/2" = 1'-0"



WALKWAY DETAIL

CHANNEL TRUSS

SCALE : 1" = 1'-0"



DETAIL A

NO SCALE

DETAIL IS AT GATE JUNCTION AT ℄ LOCK.

A JOINT VENTURE

B.M. GORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

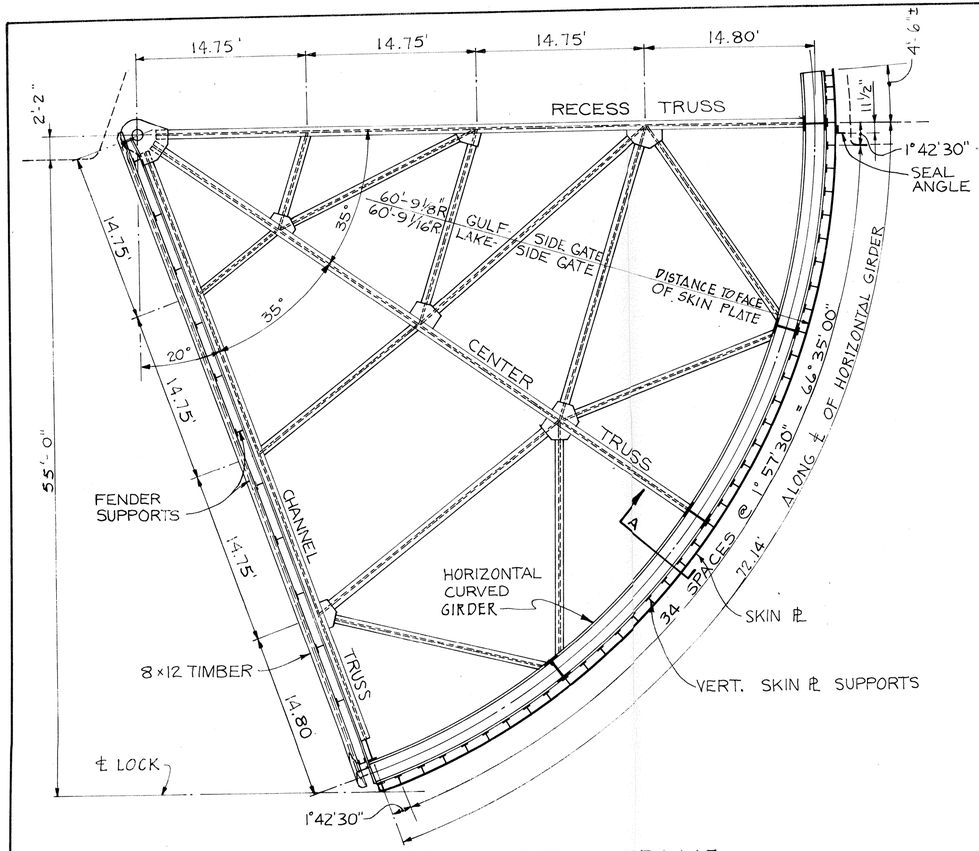
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

WALKWAY DETAILS

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

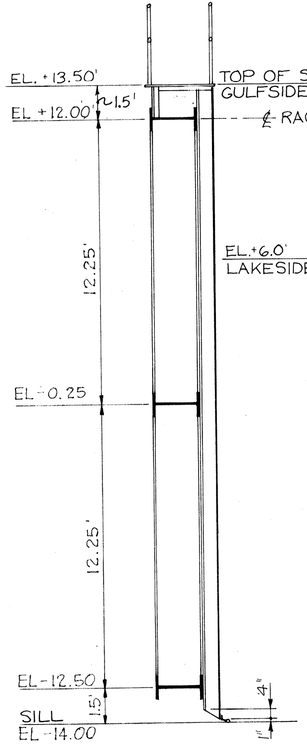
DATE SEPT. 1973

FILE NO H-2-24419



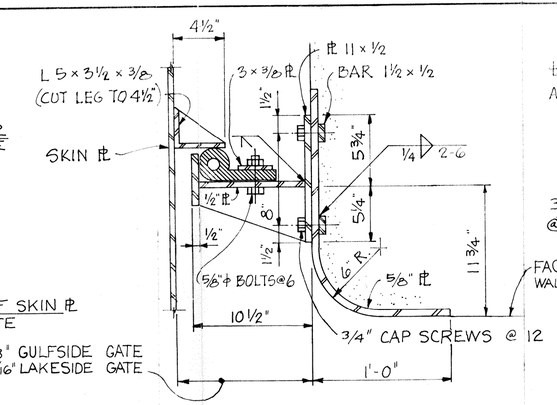
PLAN OF TOP HORIZONTAL FRAME

SCALE: 1/8" = 1'-0"

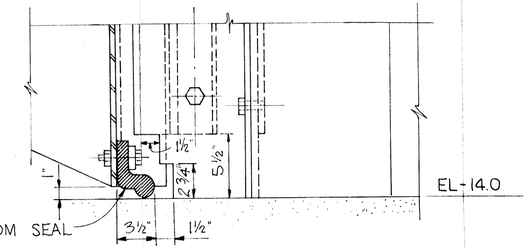


SECTION A

SCALE: 1/4" = 1'-0"



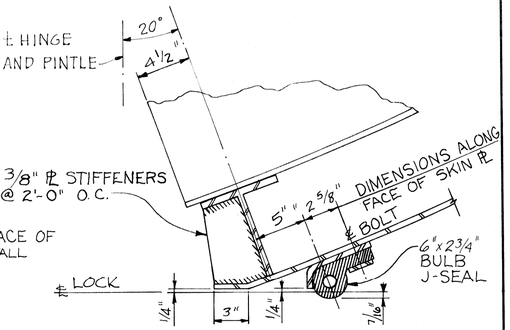
PLAN



ELEVATION

SEAL DETAILS

SCALE: 1½" = 1'-0"



CENTER SEAL DETAIL

SCALE: 1½" = 1'-0"

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA. | STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

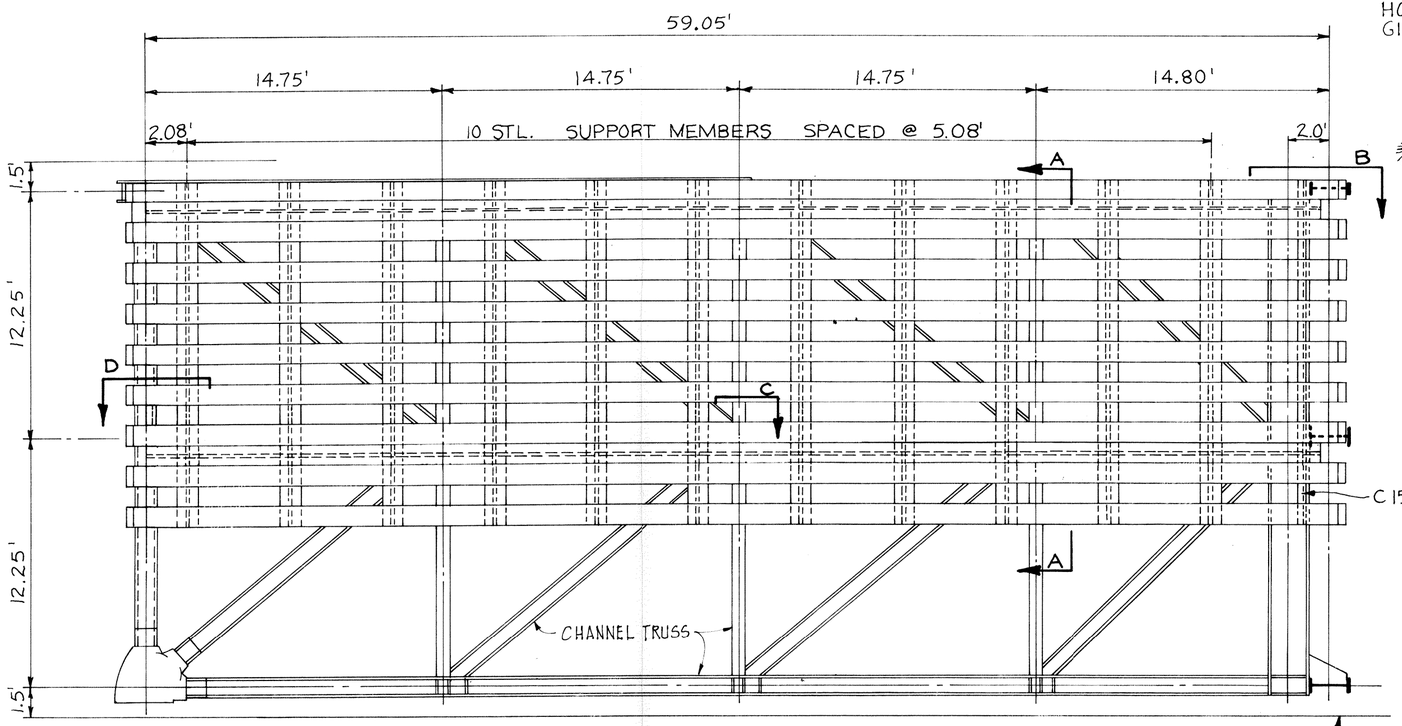
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

HORIZONTAL FRAME AND SEAL DETAILS

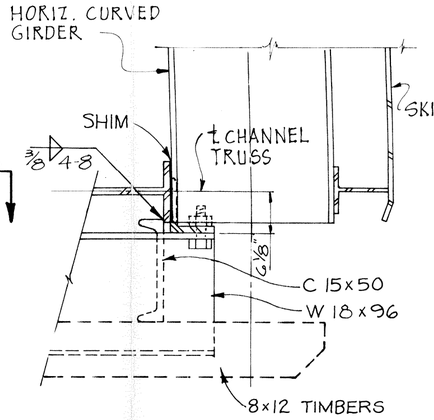
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE SEPT., 1973 FILE NO H-2-24419

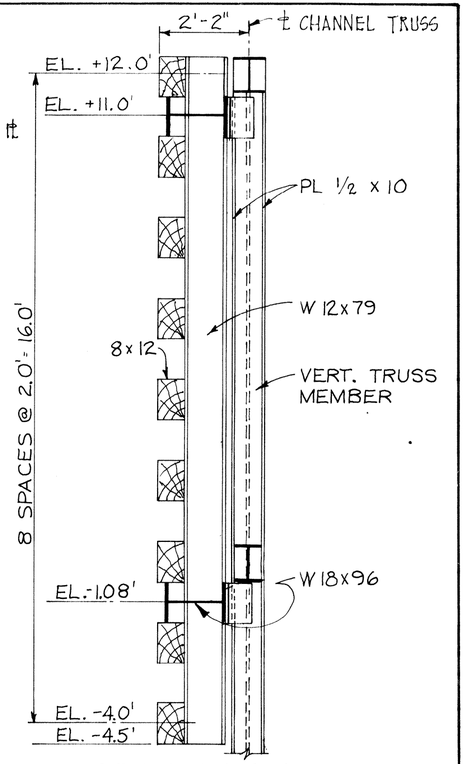
PLATE IV 28



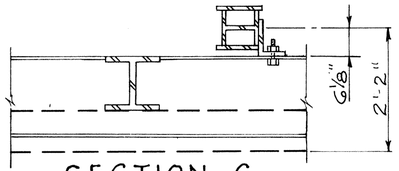
ELEVATION
SCALE : 3/16" = 1'-0"



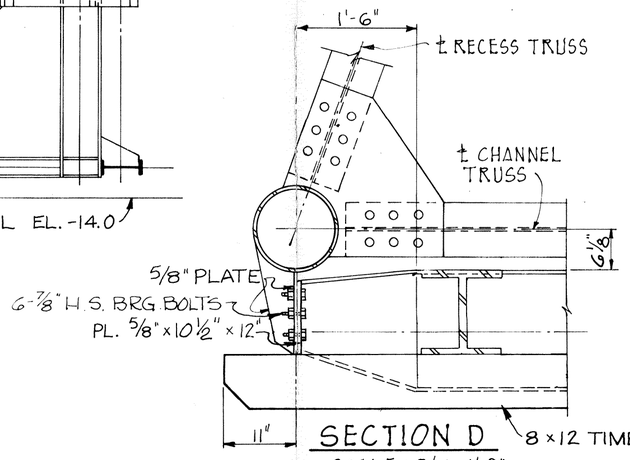
SECTION B
SCALE : 3/4" = 1'-0"



SECTION A-A
SCALE : 3/8" = 1'-0"



SECTION C
SCALE : 1/2" = 1'-0"



SECTION D
SCALE : 3/4" = 1'-0"

A JOINT VENTURE	
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

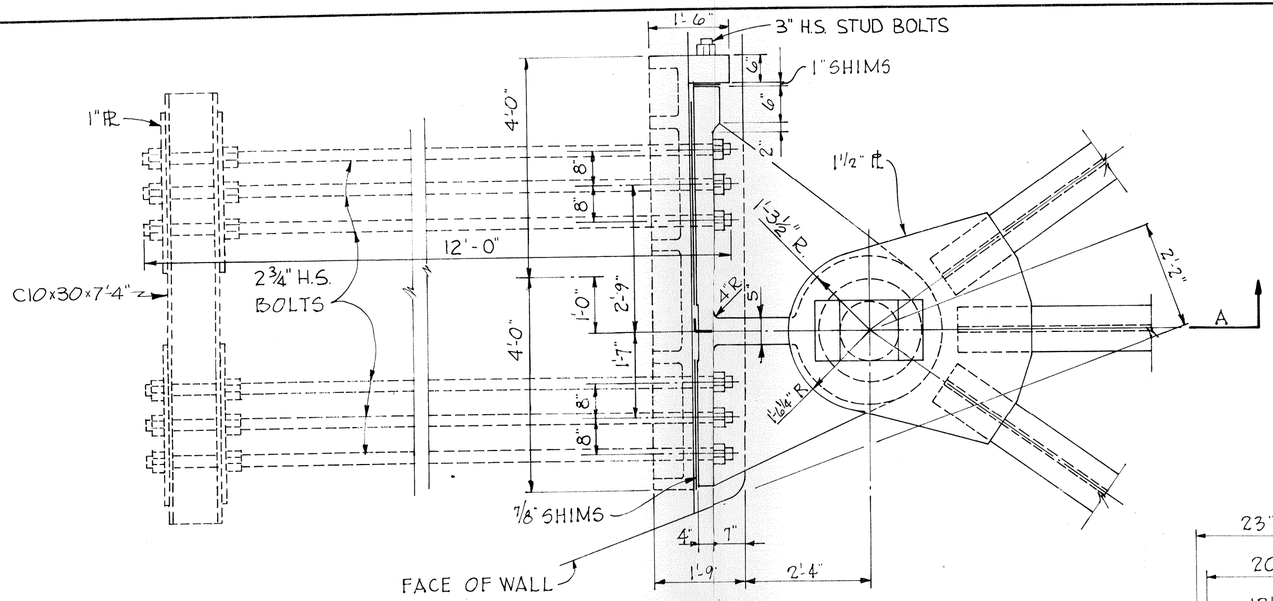
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

TRUSS AND FENDER DETAILS

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

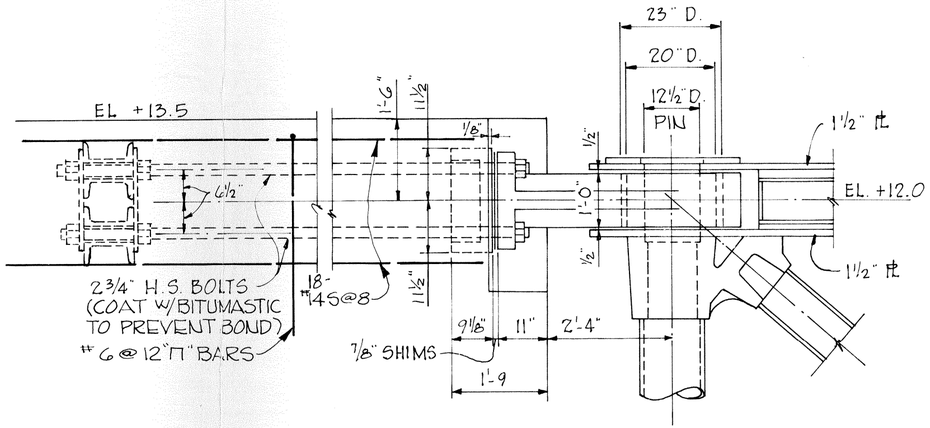
DATE SEPT., 1973 FILE NO H-2-24419

PLATE IV 29



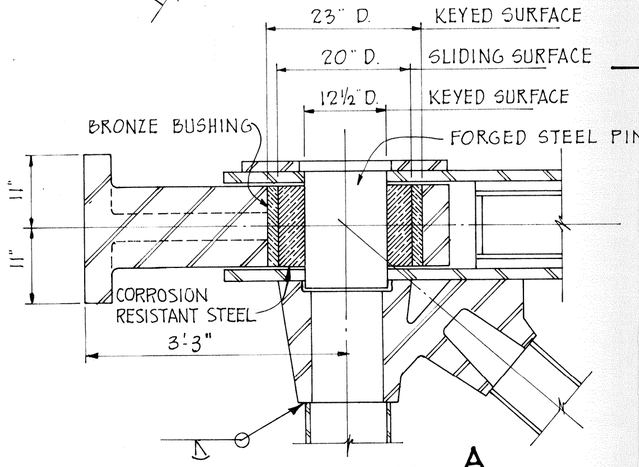
PLAN AT HINGE

SCALE : ½" = 1'-0"



ELEVATION AT HINGE

SCALE : ½" = 1'-0"



SECTION A

SCALE : ¾" = 1'-0"

A JOINT VENTURE

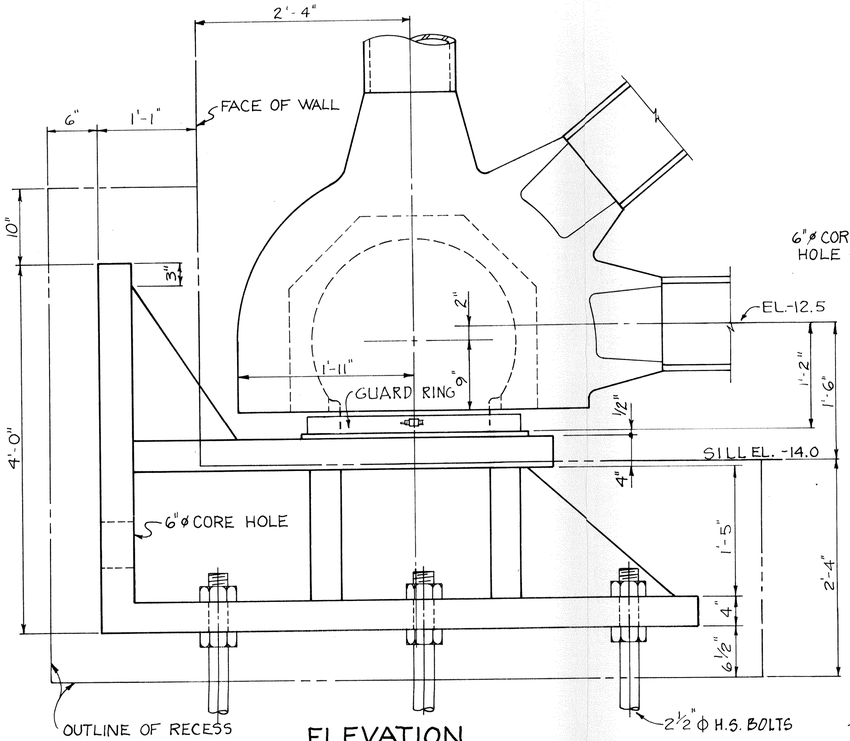
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

HINGE DETAILS

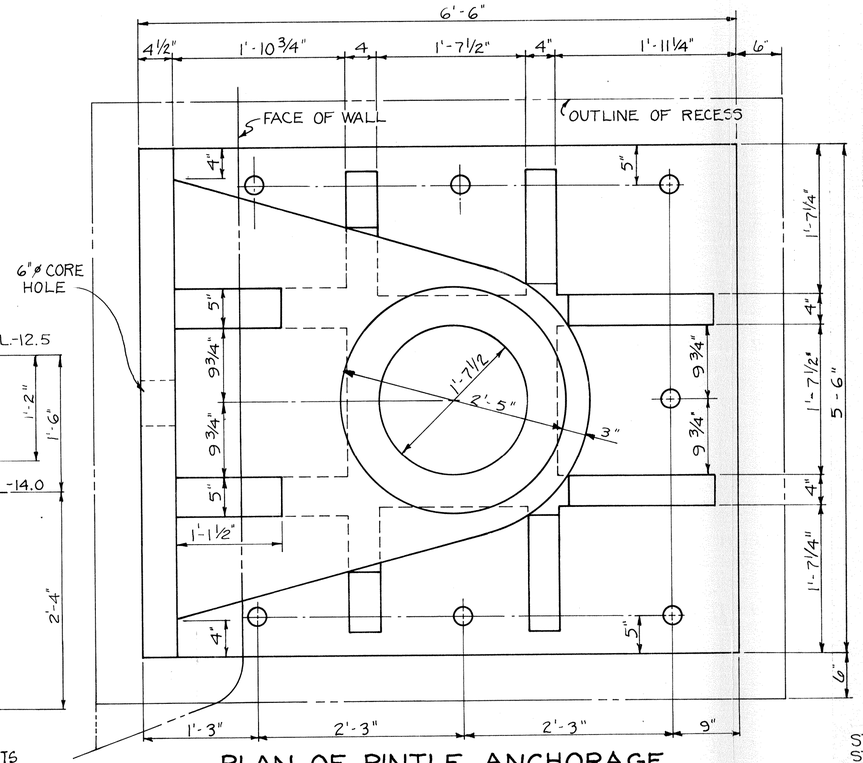
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE SEPT., 1973 FILE NO. H-2-24419



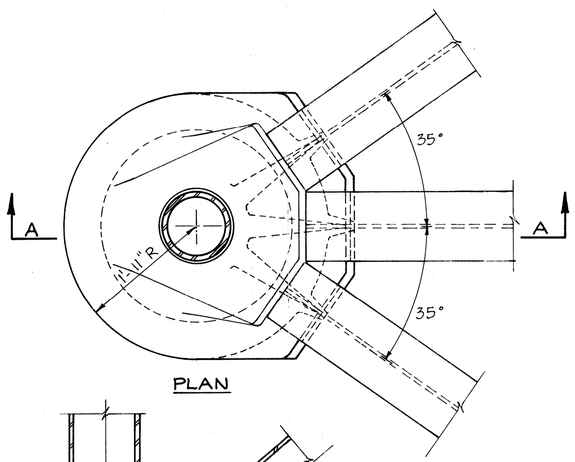
ELEVATION

SCALE: 1"=1'-0"

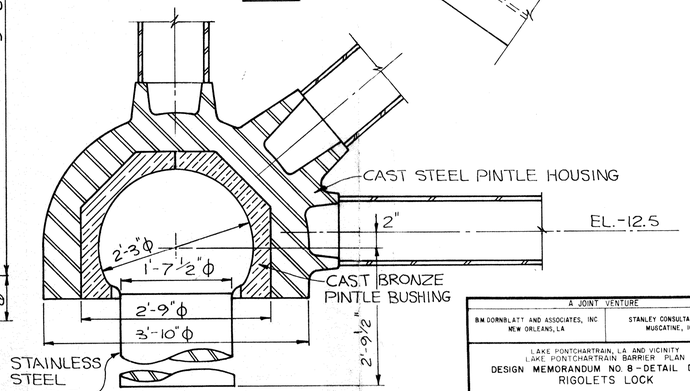


PLAN OF PINTLE ANCHORAGE

SCALE: 1"=1'-0"



PLAN



SECTION A-A

PINTLE DETAILS

SCALE: 3/4"=1'-0"

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

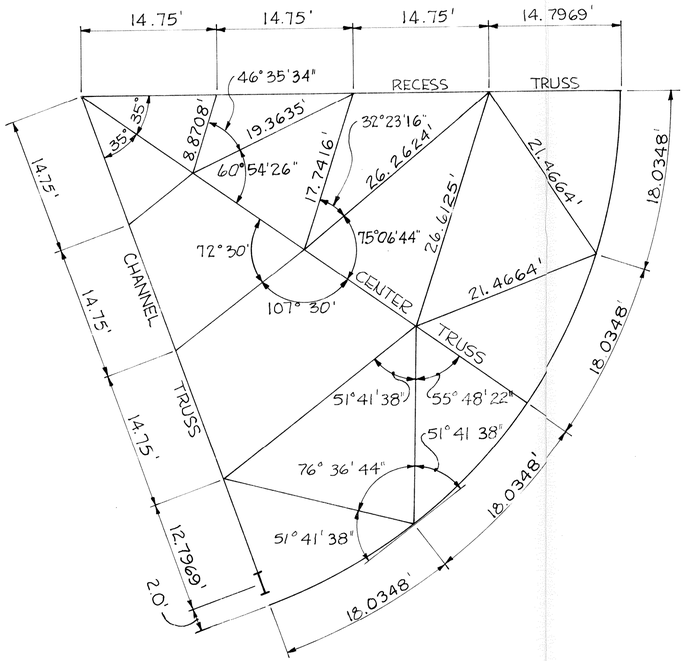
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

PINTLE DETAILS

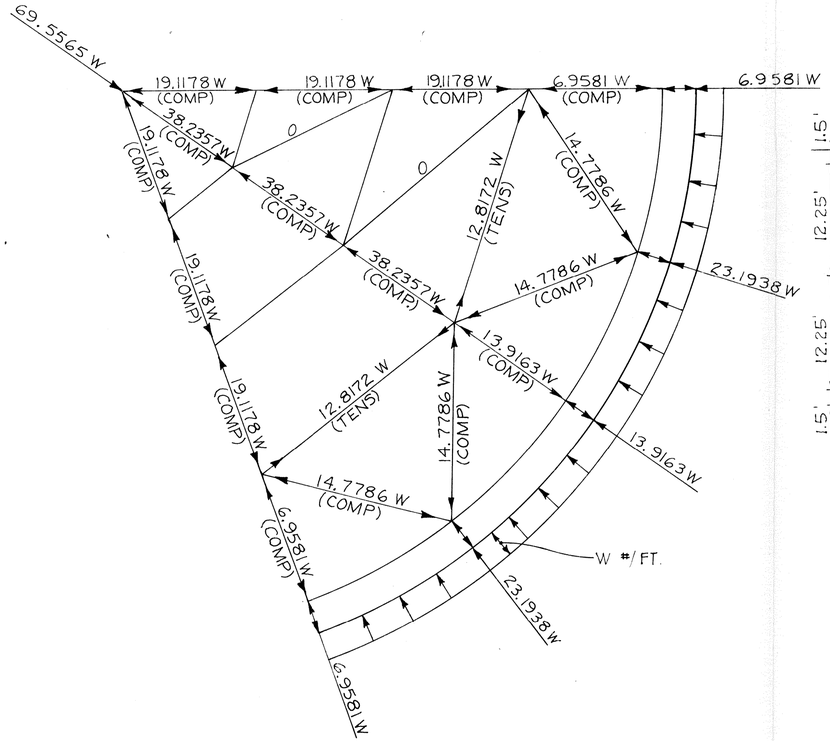
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE SEPT., 1973 FILE NO. H-2-24419

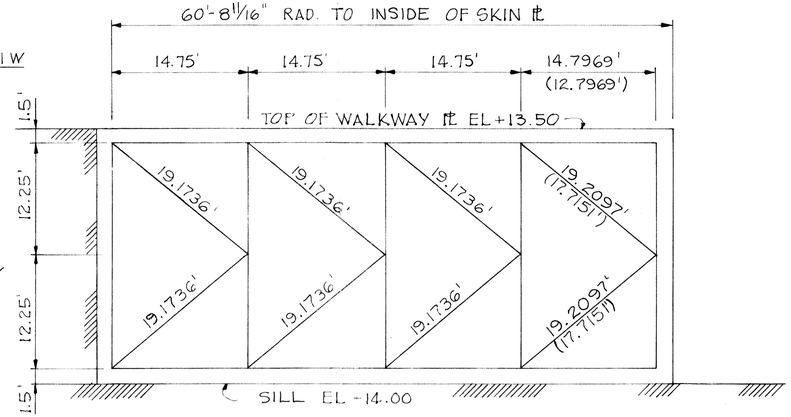
PLATE IV.31



HORIZONTAL FRAME DIMENSIONS



WATER LOAD DISTRIBUTION



TYPICAL TRUSS

( ) - DIMENSIONS FOR CHANNEL TRUSS ONLY

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

TRUSS AND FRAME DIMENSIONS
AND
WATER LOAD DISTRIBUTION

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

DATE SEPT. 1973 FILE NO. H-2-24419

PLATE IV 32

LOWER PLATE

MAX LOAD: 1466 PSF (CASE II 3) - ALLOWABLE 24,000 PSI
7/16" SKIN PL (EFFECTIVE THICKNESS 3/8")
1/16" ALLOWED FOR CORROSION
$S = 1/6 \times 12 \times (3/8)^2 = 0.281$ IN.^{3}
$M_{MAX} = \frac{1466\ L^2\ (12)}{12} = 1466\ L^2$ CENTER SPAN
$\frac{M}{S} = F_b$; $\frac{1466 L^2}{0.281} = 24{,}000$; $L = 2.14'$
MAX SPAN ALLOWED = 2.14' CENTER SPAN, USE 34 SPACES @ 1° 57' 30"
MAX SPAN ALLOWED = 1.95' END SPAN, USE 2 SPACES @ 1° 42' 30"
USE 2.076' CENTER SPAN
1.811' END SPAN

UPPER PLATE

MAX LOAD: CASE III - ALLOWABLE 24,000 PSI
3/8" SKIN PL (EFFECTIVE THICKNESS 5/16")
1/16" ALLOWED FOR CORROSION
$S = 1/6\ (12)(5/16)^2 = 0.195$ IN.^{3}
SPAN = 2.076' (SEE LOWER PLATE)
$M_{MAX} = \frac{12\ WL^2}{12} = \frac{W(2.076)^2\ (12)}{12} = 4.310\ W$ IN.#

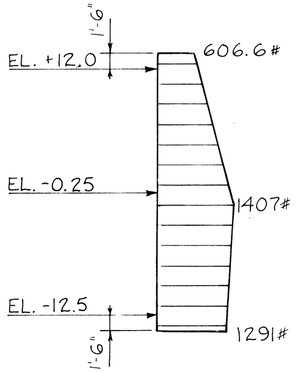
$\frac{M}{S} = F_b$; $\frac{4.310\ W}{0.195} = 24{,}000$; W = 1086 PSF - MAX. WATER LOAD ALLOWED ON SKIN PL

FROM CASE III COMPUTE ELEVATION OF MAX. WATER LOAD ALLOWED ON 3/8" SKIN PL

1086 - 606.6 = 479.4 PSF, $\frac{479.4}{55.15} = 8.7'$, EL. 13.5 - 8.7 = EL. 4.8'

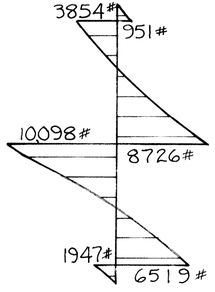
USE 7/16" PL BELOW EL. +5.0', 3/8" PL ABOVE EL. +5.0'

SKIN PLATE DESIGN

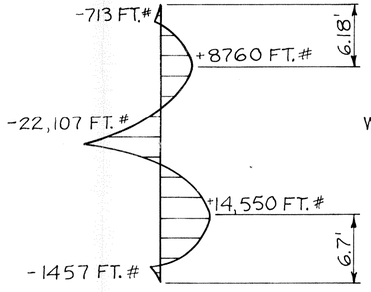


LOAD

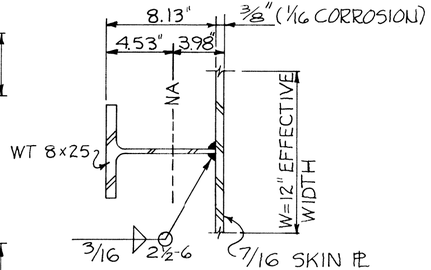
CASE II 1 CONTROLS DESIGN



SHEAR



MOMENT



MAX. M = 22.1 IK/FT. (2.076) = 45.9 IK

$\frac{W}{t} = \frac{3000}{\sqrt{F_Y}} = 15.81$

$W = [2(15.81)(3/8)] + 3/8 = 12.23$"

USE W = 12"

USING 1/16" CORROSION ALLOWANCE
I = 140 IN.^{4}, MIN S = 31.12 IN.^{3}, A = 10.95 IN.^{2}

MAX $f = \frac{45.9\ (12)}{31.12} = 17.7$ KSI < 24.0 KSI OK

MAX V = OK

MAX HORIZONTAL SHEAR =

$\frac{10{,}098\ (12)(3/8)(3.79)}{140} = 1230$ #/IN.

USE 3/16" WELD 2½" LONG @ 6" EACH SIDE

VERTICAL SKIN PLATE SUPPORT

GULFSIDE GATE

A JOINT VENTURE
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA
STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GULFSIDE GATE
SKIN PLATE AND SUPPORTS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
DATE: SEPT., 1973 FILE NO H-2-24419

MAX. LOAD : 869.6 PSF (CASE II 6B) - ALLOWABLE F_b = 24 KSI

3/8" SKIN PL (EFFECTIVE THICKNESS 5/16")

1/16" ALLOWED FOR CORROSION

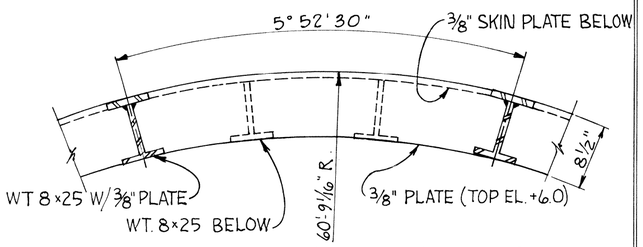
S = 0.195 IN.^{3}

$$M_{MAX.} = \frac{869.6\ L^2\ (12)}{12} = 869.6\ L^2\ \text{IN.}^{\#}$$

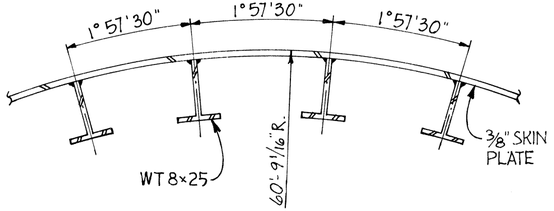
$$\frac{M}{S} = F_b\ ;\ \frac{869.6\ L^2}{0.195} = 24{,}000\ ;\ L = 2.32'$$

USE SAME SPACING AS FOR GULFSIDE GATE

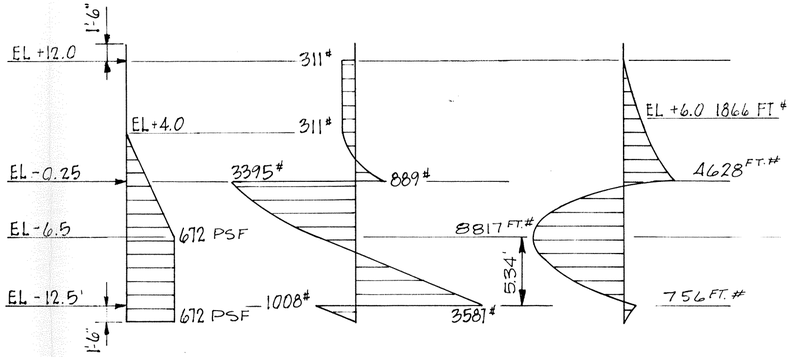
SKIN PLATE DESIGN



PLAN SECTION ABOVE EL +6.0



PLAN SECTION BELOW EL +6.0



CASE II 2 CONTROLS DESIGN

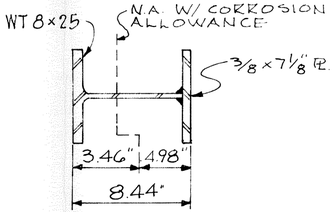


DIAGRAM VALUES ARE PER FOOT OF SKIN PLATE.

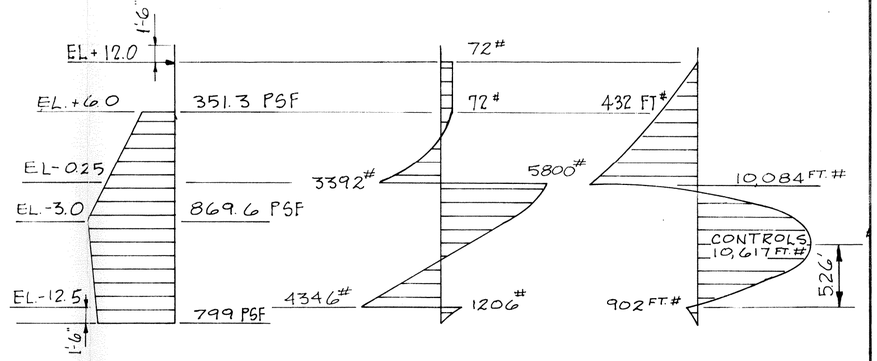
USING 1/16" CORROSION ALLOWANCE

I = 105.1 IN.^{4} MIN. S = 21.09 IN.^{3}

MAX. M = 1.866 (2.076) = 3.874 FT. K

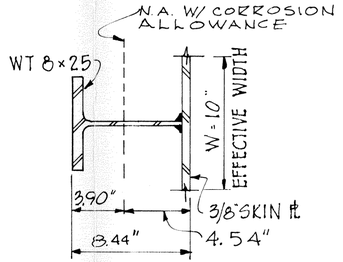
$$\text{MAX. } f = \frac{3.874(12)}{21.09} = 2.20\ \text{KSI} < 24\ \text{KSI}$$

VERTICAL SKIN PLATE SUPPORT ABOVE EL +6.0



CASE II 6B CONTROLS DESIGN

DIAGRAM VALUES ARE PER FOOT OF SKIN PLATE.



$$\frac{W}{T} = \frac{3000}{\sqrt{F_y}} = 15.81$$

$$W = [2(15.81)(5/16)] + 5/16 = 10.19$$

USE 10" EFF. WIDTH

USING 1/16" CORROSION ALLOWANCE

I = 124.37 IN.^{4} MIN. S = 27.35 IN.^{4}

MAX. M = 10.617 (2.076) = 22.04 FT. K

$$\text{MAX. } f_b = \frac{22.04\ (12)}{27.35} = 9.67\ \text{KSI} < 24\ \text{KSI}$$

V = 5800 (2.076) = 12,041#

$$\text{MAX. HORIZONTAL SHEAR} = \frac{12{,}041^{\#}\ (5/16)(10)(4.35)}{124.37} = 1316.1\ \#/\text{IN}$$

USE 3/16" WELD 2 1/2" LONG @ 6" EACH SIDE

VERTICAL SKIN PLATE SUPPORT BELOW EL +6.0

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

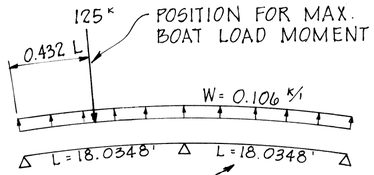
STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

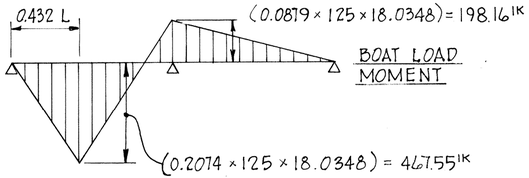
LAKESIDE GATE
SKIN PLATE AND SUPPORTS

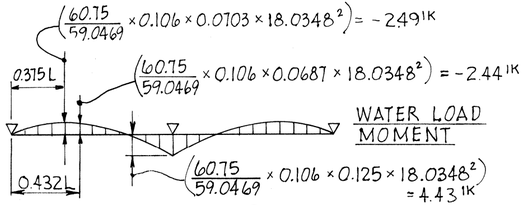
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE SEPT., 1973 FILE NO H-2-24419

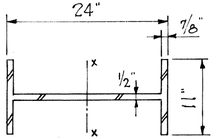


LOADING
(II 4 + BOAT LOAD CONTROLS)





MOMENT

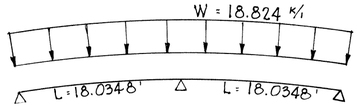


$S_{x-x} = 254.6$ IN.^{3} $I = 3055$ IN.^{4}

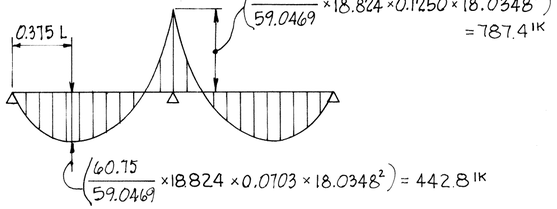
$M_{MAX.} = 467.55^{IK} - 2.44^{IK} = 465.1^{IK}$

$f_b = \frac{465.1 \times 12}{254.6} = 21.92$ KSI < 24 KSI

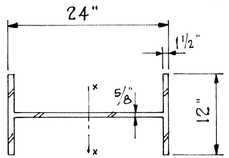
TOP GIRDER



LOADING
(II 1 CONTROLS)



MOMENT

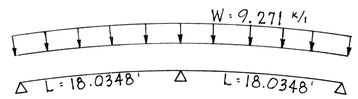


$S_{x-x} = 419.9$ IN.^{3} $I = 5039$ IN.^{4}

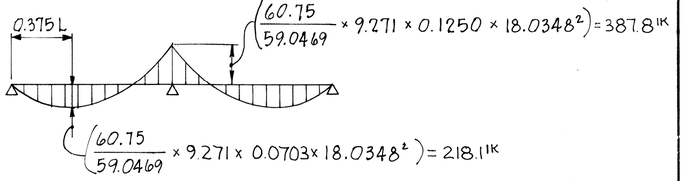
$M_{MAX.} = 787.4^{IK}$

$f_b = \frac{787.4 \times 12}{419.9} = 22.50$ KSI < 24 KSI

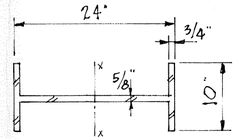
CENTER GIRDER



LOADING
(II 3 CONTROLS)



MOMENT



$S_{x-x} = 218.4$ IN.^{3} $I = 2620$ IN.^{4}

$M_{MAX.} = 387.8^{IK}$

$f_b = \frac{387.8 \times 12}{218.4} = 21.31$ KSI < 24 KSI

BOTTOM GIRDER

A JOINT VENTURE

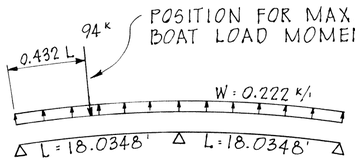
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA | STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GULFSIDE GATE
HORIZONTAL GIRDERS

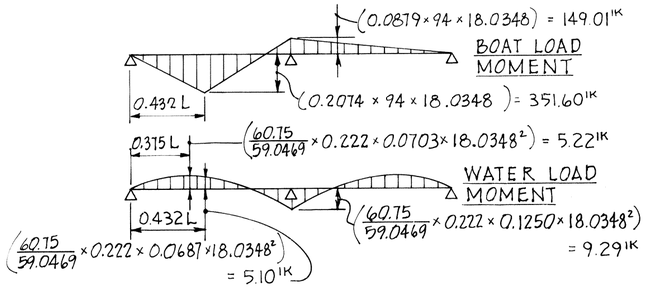
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE SEPT., 1973 FILE NO H-2-24419

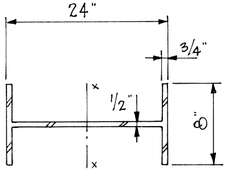


LOADING

(II 4 + BOAT LOAD CONTROLS)



MOMENT

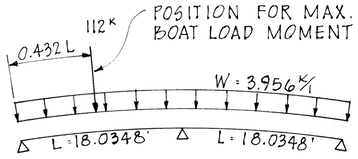


$S = 174.7$ IN.^{3} $I = 2096$ IN.^{4}

$M_{MAX.} = 351.60^{IK} - 5.10^{IK} = 346.5^{IK}$

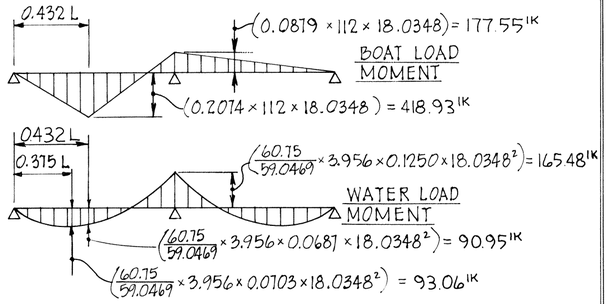
$f_b = \frac{346.5 \times 12}{174.7} = 23.80$ KSI < 24 KSI

TOP GIRDER

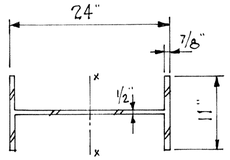


LOADING

(II 3 + BOAT LOAD CONTROLS)



MOMENT

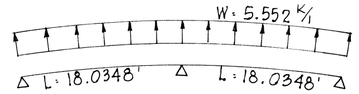


$S = 254.6$ IN.^{3} $I = 3055$ IN.^{4}

$M_{MAX.} = 418.93^{IK} + 90.95^{IK} = 509.9^{IK}$

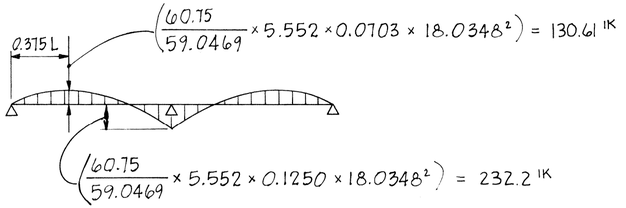
$f_b = \frac{509.9 \times 12}{254.6} = 24.03$ KSI ≈ 24 KSI OK.

CENTER GIRDER

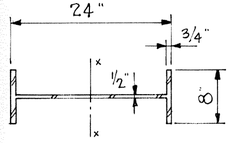


LOADING

(II 6B CONTROLS)



MOMENT



$S = 174.7$ IN.^{3} $I = 2096$ IN.^{4}

$M_{MAX.} = 232.2^{IK}$

$f_b = \frac{232.2 \times 12}{174.7} = 15.95$ KSI < 24 KSI

BOTTOM GIRDER

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

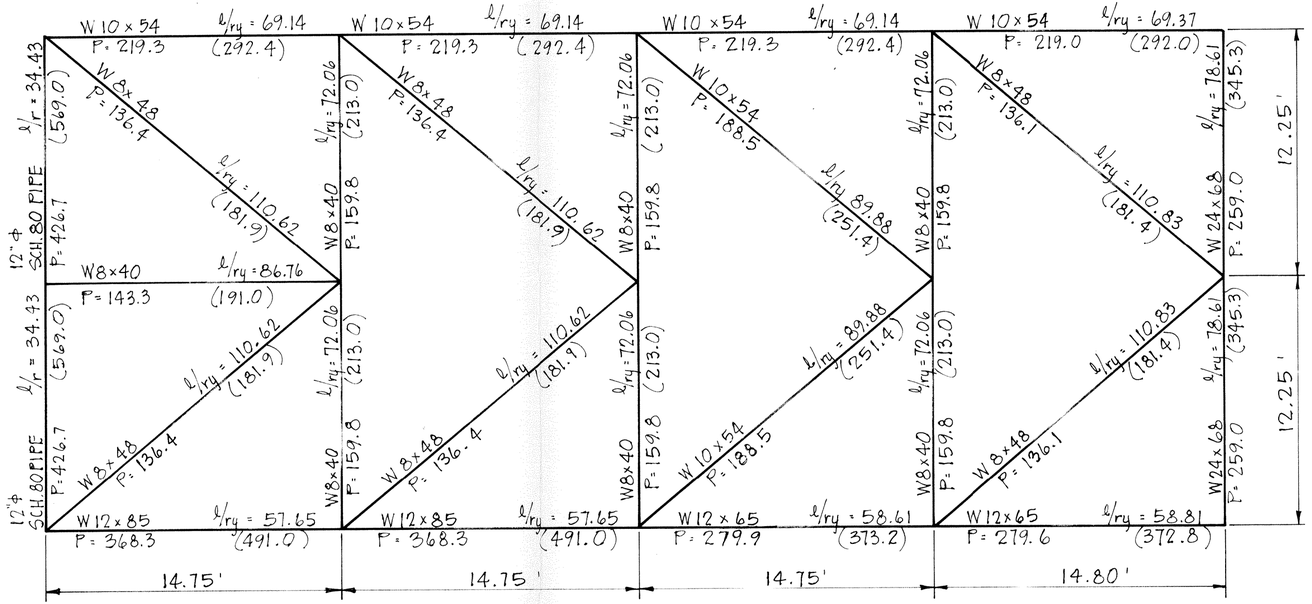
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

LAKESIDE GATE
HORIZONTAL GIRDERS

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

DATE SEPT., 1973 FILE NO. H-2-24419

GULFSIDE SECTOR GATES



ELEVATION RECESS TRUSS
TRUSS MEMBERS

NOTES:

P EQUALS ALLOWABLE COMPRESSIVE LOAD IN KIPS. FIRST LOAD COMPUTED FOR BASIC STRESS EQUAL 18,000 PSI; LOAD IN PARENTHESES FOR BASIC STRESS EQUAL 24,000 PSI.

A JOINT VENTURE

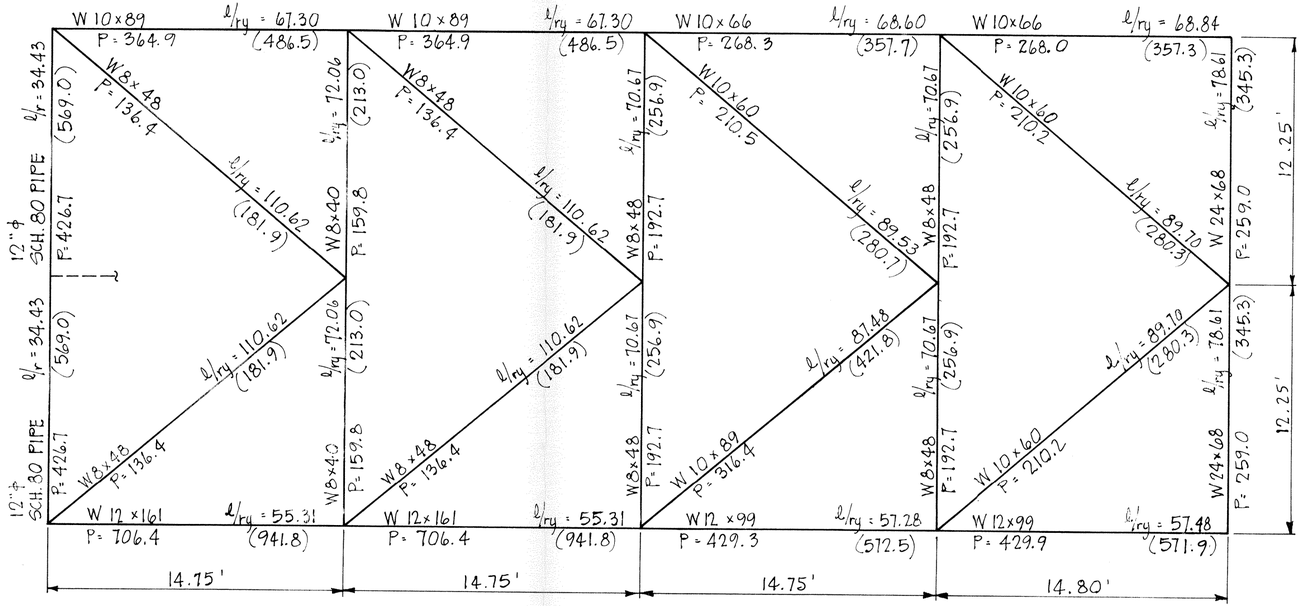
BM DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
GULFSIDE GATE
TRUSS MEMBERS AND ALLOWABLE LOADS
RECESS TRUSS

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

DATE: SEPT., 1973 FILE NO H-2-24419

GULFSIDE SECTOR GATES



ELEVATION CENTER TRUSS
TRUSS MEMBERS

NOTES:

P EQUALS ALLOWABLE COMPRESSIVE LOAD IN KIPS. FIRST LOAD COMPUTED FOR BASIC STRESS EQUAL 18.000 PSI; LOAD IN PARENTHESES FOR BASIC STRESS EQUAL 24,000 PSI.

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

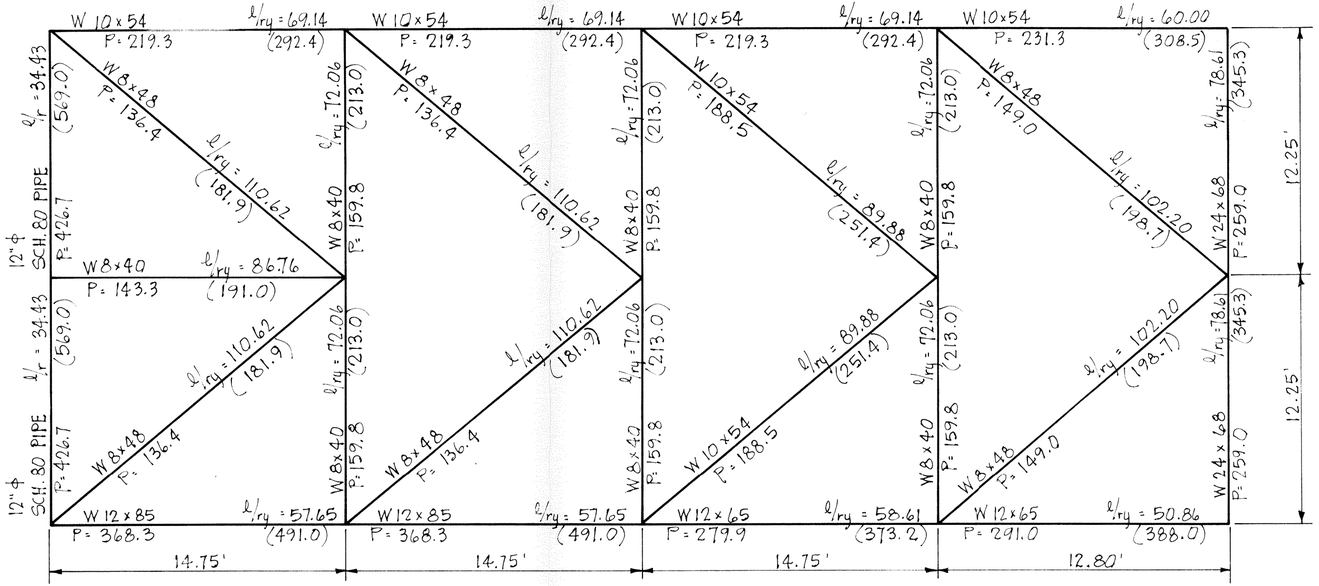
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 – DETAIL DESIGN
RIGOLETS LOCK

GULFSIDE GATE
TRUSS MEMBERS AND ALLOWABLE LOADS
CENTER TRUSS

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

DATE SEPT., 1973 FILE NO. H-2-24419

GULFSIDE SECTOR GATES



ELEVATION CHANNEL TRUSS
TRUSS MEMBERS

NOTES:

P EQUALS ALLOWABLE COMPRESSIVE LOAD IN KIPS. FIRST LOAD COMPUTED FOR BASIC STRESS EQUAL 18,000 PSI; LOAD IN PARENTHESES FOR BASIC STRESS EQUAL 24,000 PSI.

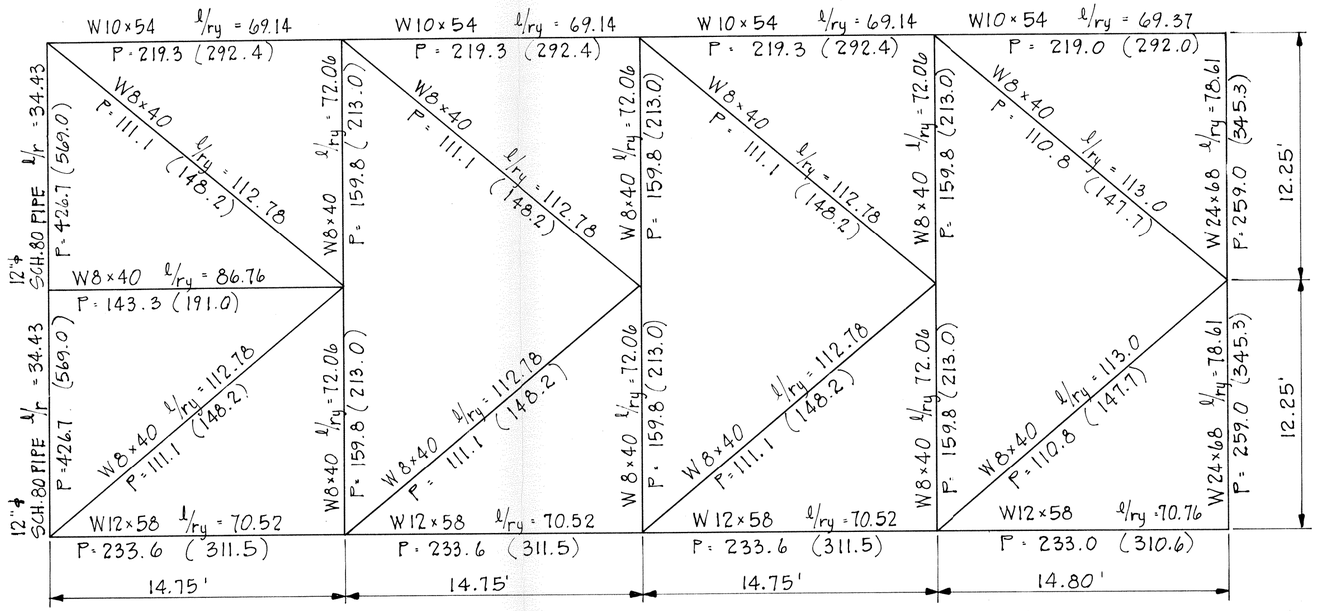
A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
HURRICANE PROTECTION
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
GULFSIDE GATE
TRUSS MEMBERS AND ALLOWABLE LOADS
CHANNEL TRUSS
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE SEPT., 1973 FILE NO H-2-24419

LAKESIDE SECTOR GATE



ELEVATION RECESS TRUSS
TRUSS MEMBERS

NOTES:

P EQUALS ALLOWABLE COMPRESSIVE LOAD IN KIPS. FIRST LOAD COMPUTED FOR BASIC STRESS EQUAL 18,000 PSI; LOAD IN PARENTHESES FOR BASIC STRESS EQUAL 24,000 PSI.

A JOINT VENTURE

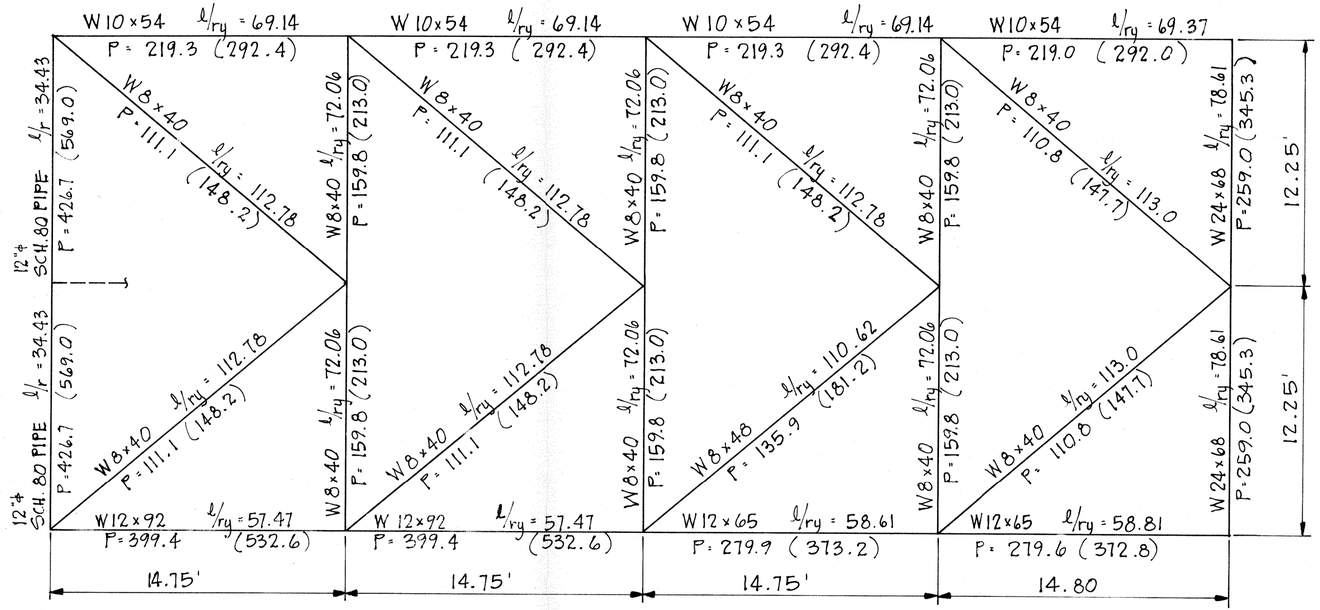
B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
LAKESIDE GATE
TRUSS MEMBERS AND ALLOWABLE LOADS
RECESS TRUSS

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

DATE: SEPT., 1973 FILE NO. H-2-24419

LAKESIDE SECTOR GATE



ELEVATION CENTER TRUSS
TRUSS MEMBERS

NOTES:

P EQUALS ALLOWABLE COMPRESSIVE LOAD IN KIPS. FIRST LOAD COMPUTED FOR BASIC STRESS EQUAL 18,000 PSI; LOAD IN PARENTHESES FOR BASIC STRESS EQUAL 24,000 PSI.

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

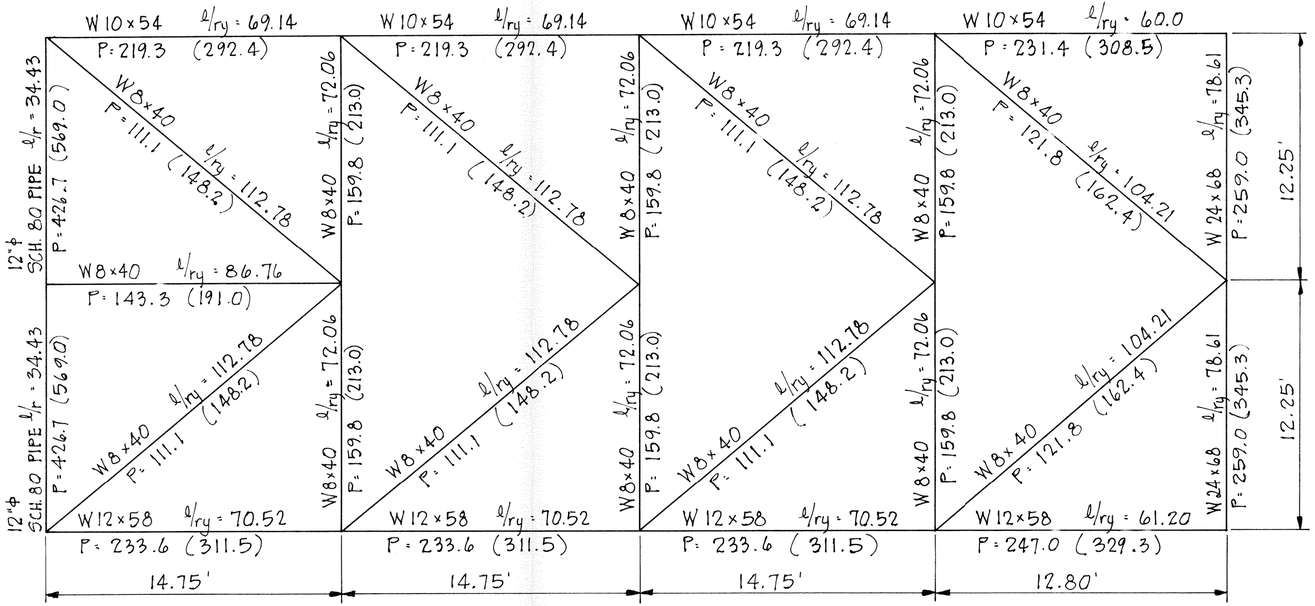
STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
LAKESIDE GATE
TRUSS MEMBERS AND ALLOWABLE LOADS
CENTER TRUSS

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

DATE: SEPT., 1973 FILE NO. H-2-24419

LAKESIDE SECTOR GATE



ELEVATION CHANNEL TRUSS
TRUSS MEMBERS

NOTES:

P EQUALS ALLOWABLE COMPRESSIVE LOAD IN KIPS. FIRST LOAD COMPUTED FOR BASIC STRESS EQUAL 18,000 PSI; LOAD IN PARENTHESES FOR BASIC STRESS EQUAL 24,000 PSI.

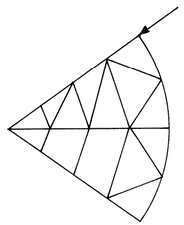
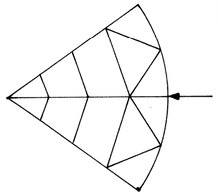
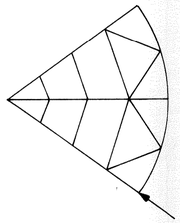
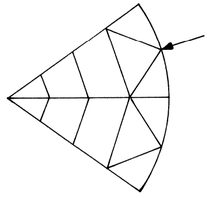
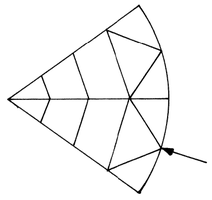
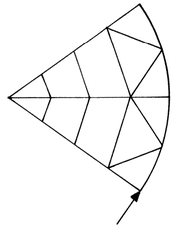
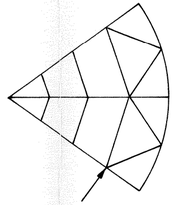
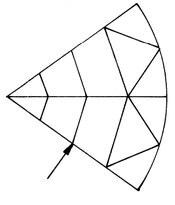
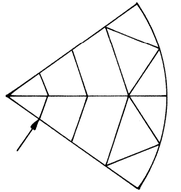
A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
LAKESIDE GATE
TRUSS MEMBERS AND ALLOWABLE LOADS
CHANNEL TRUSS

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

DATE SEPT. 1973 FILE NO. H-2-24419

LOAD POSITION									
LOAD @ EL +12	III 1	III 2	III 3	III 4	III 5	III 6	III 7	III 8	III 9
LOAD @ EL -0.25	III 10	III 11	III 12	III 13	III 14	III 15	III 16	III 17	III 18

CASE NUMBERS

NOTES:

1. CASES SHOWN ARE WITH BOAT LOAD AT CENTERLINE OF TOP AND CENTERLINE OF CENTER HORIZONTAL GIRDERS. STRESSES FOR BOAT LOADS BETWEEN ARE CALCULATED BY USING REACTIONS FROM SIMPLE SPAN BETWEEN EACH LEVEL.
2. DISTRIBUTION OF BOAT LOAD AT CENTERLINE OF BOTTOM HORIZONTAL GIRDER IS IDENTICAL TO THAT AT TOP GIRDER (LOAD @ EL. + 12).
3. ALL LOADS, REACTIONS, AND STRESSES ARE IN KIPS.

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

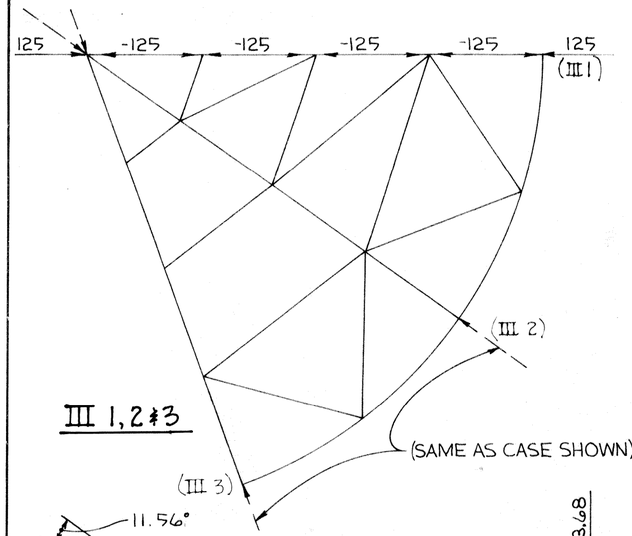
STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

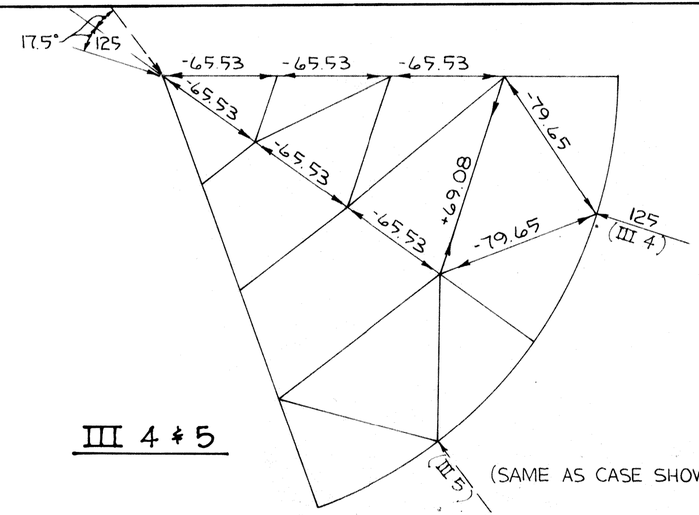
BOATLOAD STRESSES

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

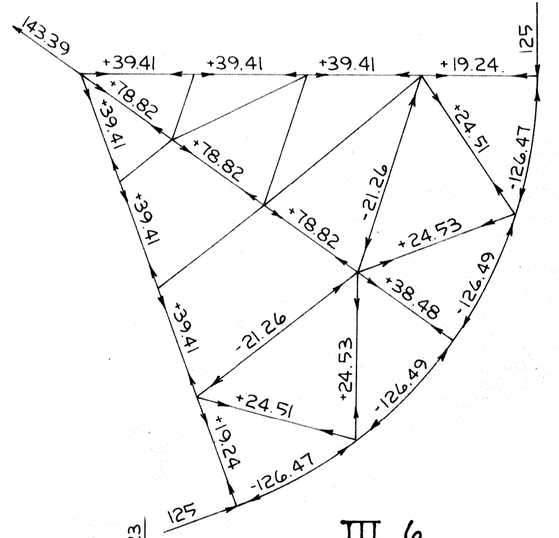
DATE: SEPT., 1973 FILE NO. H-2-24419



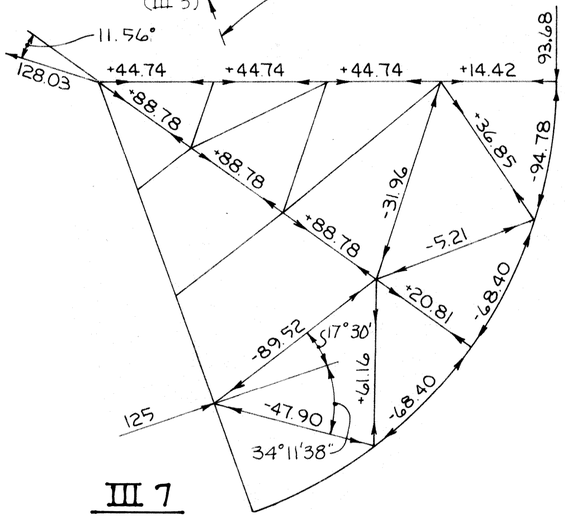
III 1, 2 & 3



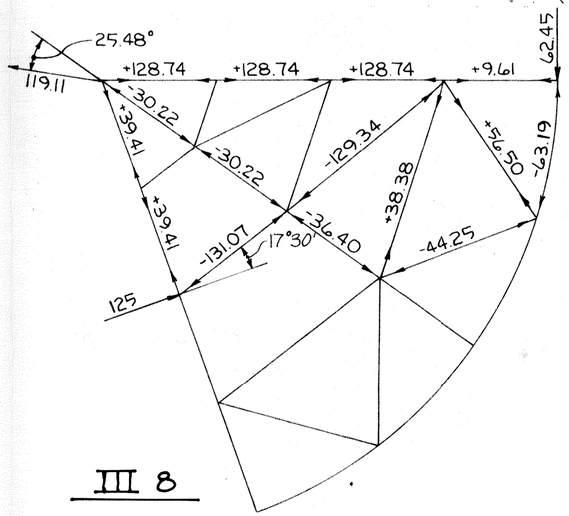
III 4 & 5



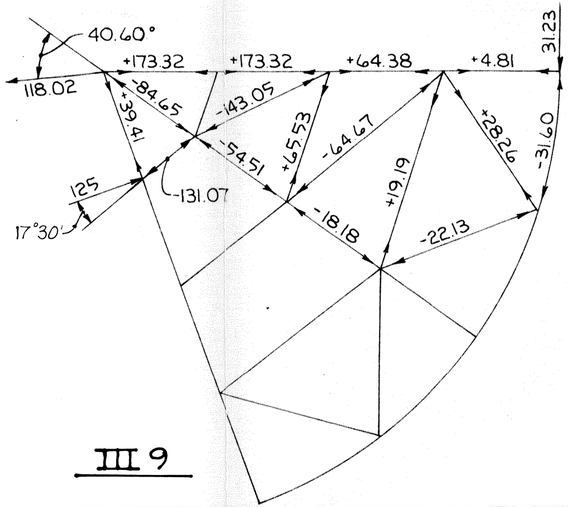
III 6



III 7



III 8



III 9

A JOINT VENTURE

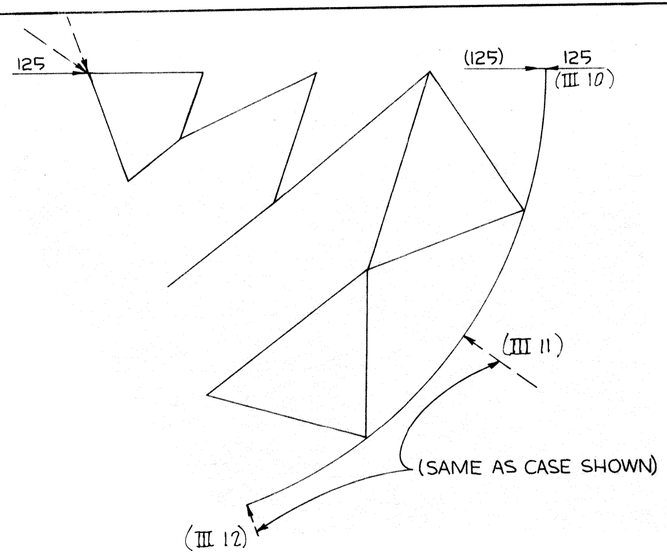
B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

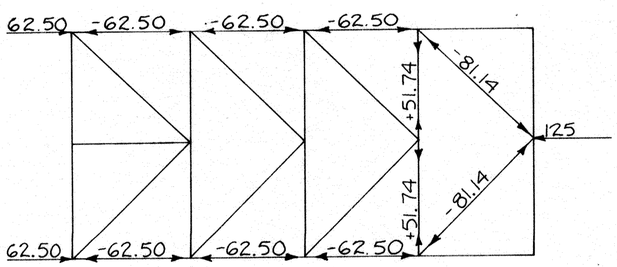
BOATLOAD STRESSES

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

DATE SEPT., 1973 FILE NO. H-2-24419

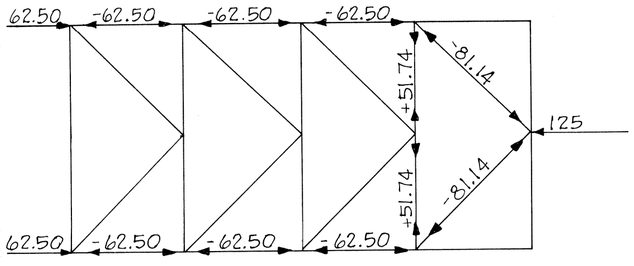


III 10, 11, 12



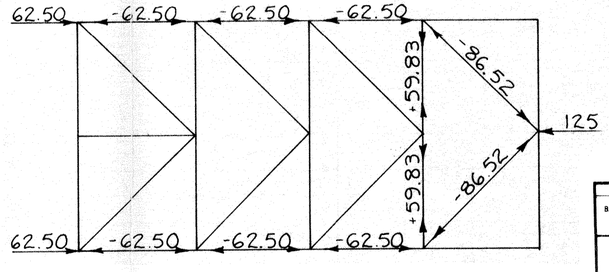
ELEVATION - RECESS TRUSS

III 10



ELEVATION - CENTER TRUSS

III 11



ELEVATION - CHANNEL TRUSS

III 12

A JOINT VENTURE

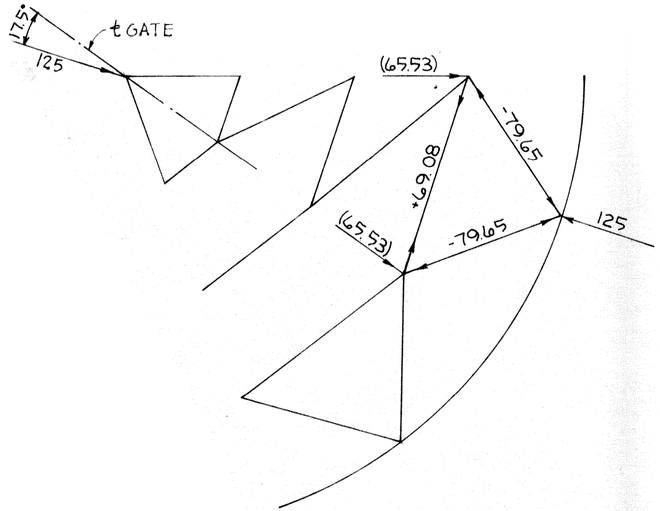
B.M. DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

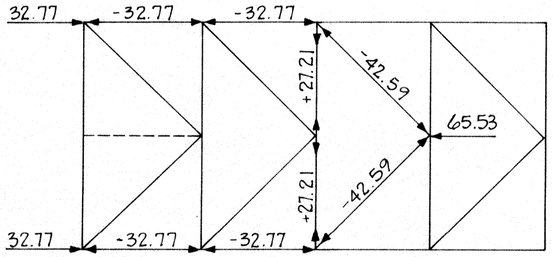
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

BOATLOAD STRESSES

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

DATE SEPT., 1973 FILE NO. H-2-24419

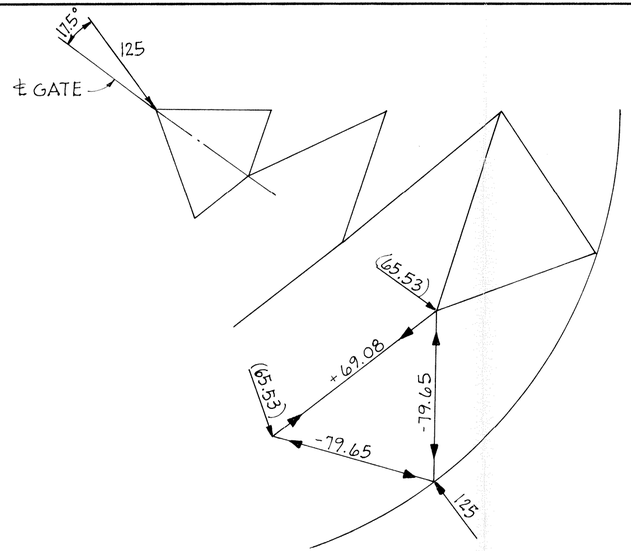


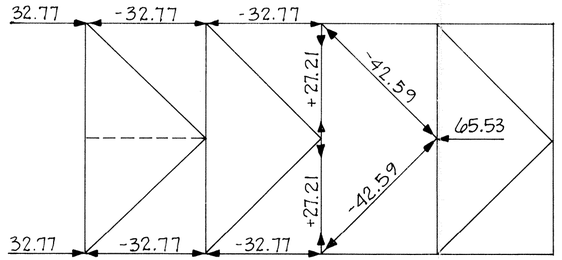


ELEVATION - RECESS AND CENTER TRUSSES

III 13

(----) RECESS TRUSS ONLY





ELEVATION - CENTER AND CHANNEL TRUSSES

III 14

(----) CHANNEL TRUSS ONLY

A JOINT VENTURE

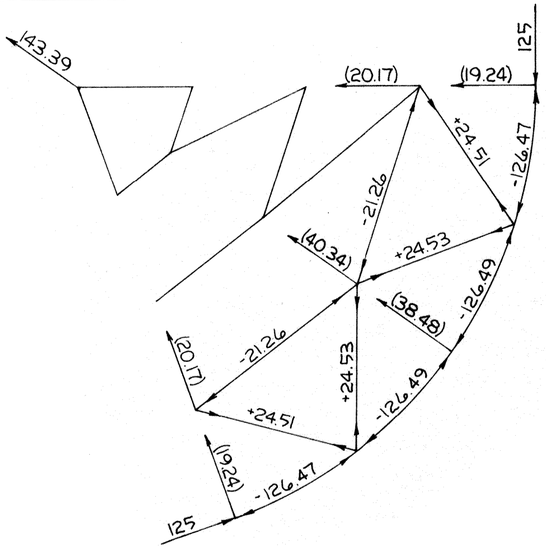
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

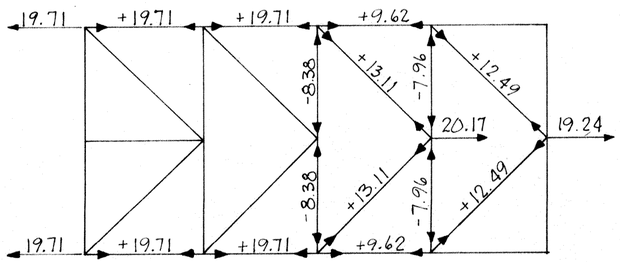
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

BOATLOAD STRESSES

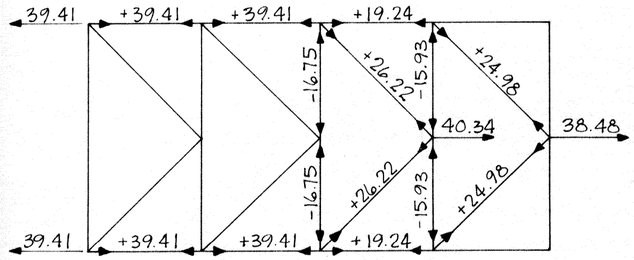
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE SEPT., 1973 FILE NO H-2-24419

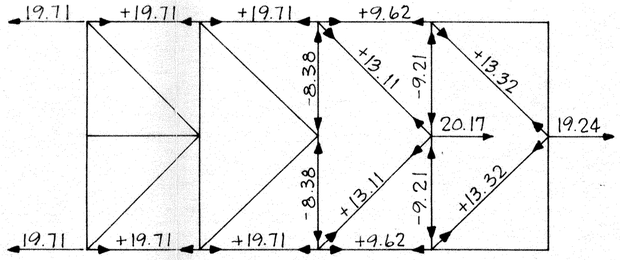




ELEVATION - RECESS TRUSS



ELEVATION - CENTER TRUSS



ELEVATION - CHANNEL TRUSS

III 15

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA.	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

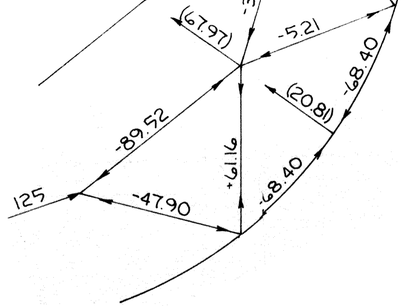
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

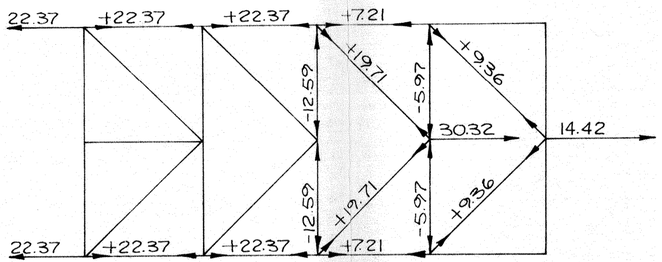
BOATLOAD STRESSES

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

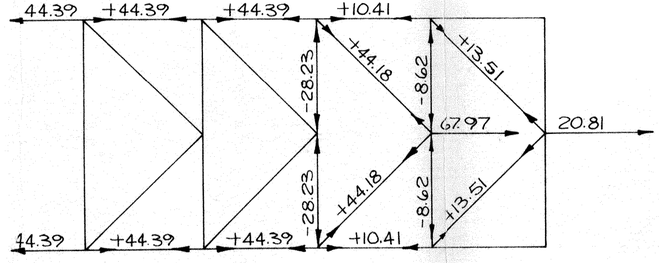
DATE SEPT., 1973 FILE NO H-2-24419

PLATE IV 47





ELEVATION - RECESS TRUSS



ELEVATION - CENTER TRUSS

III 16

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

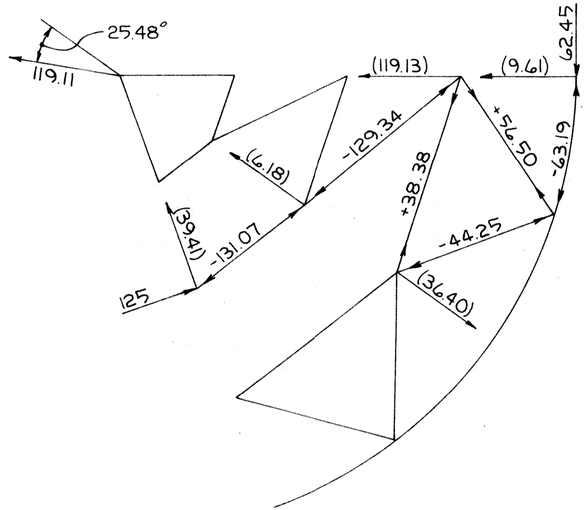
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

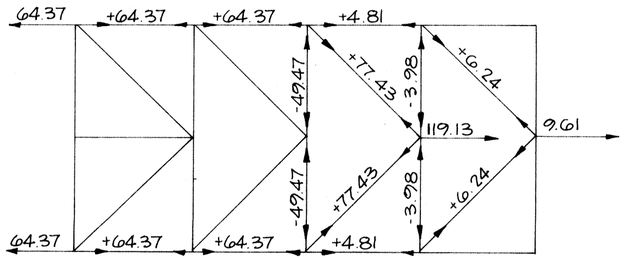
BOATLOAD STRESSES

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

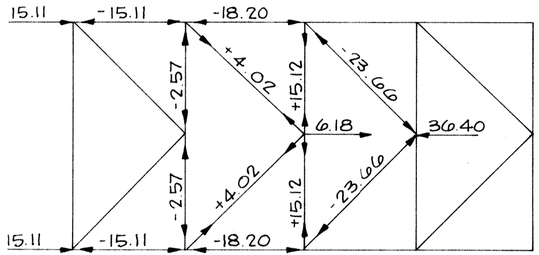
DATE SEPT., 1973 FILE NO H-2-24419

PLATE IV.48

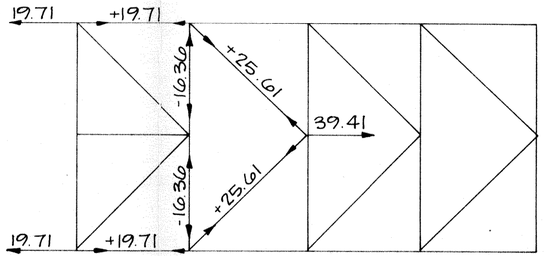




ELEVATION - RECESS TRUSS



ELEVATION - CENTER TRUSS



ELEVATION - CHANNEL TRUSS

III 17

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

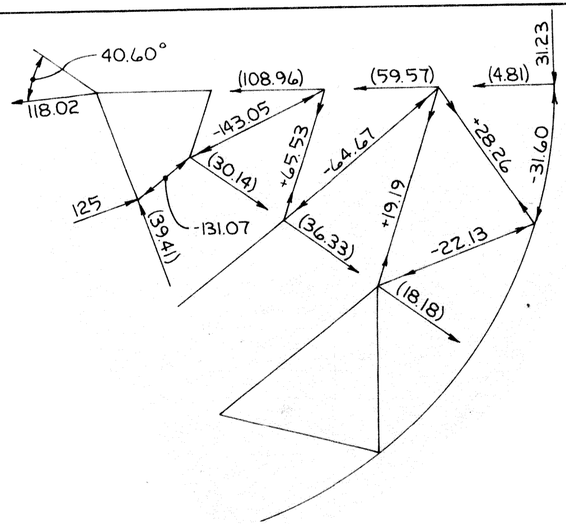
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

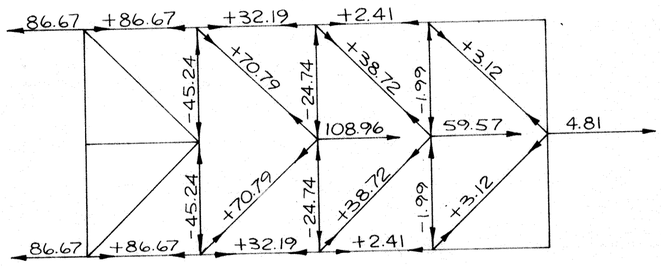
BOATLOAD STRESSES

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

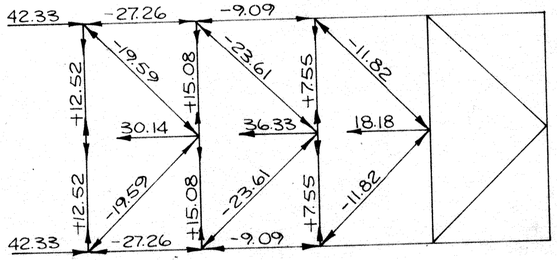
DATE SEPT., 1973 FILE NO. H-2-24419

PLATE IV 49

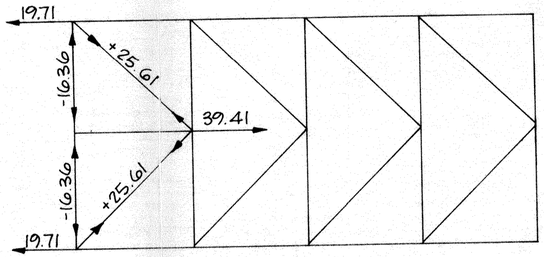




ELEVATION - RECESS TRUSS



ELEVATION - CENTER TRUSS



ELEVATION - CHANNEL TRUSS

III 18

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

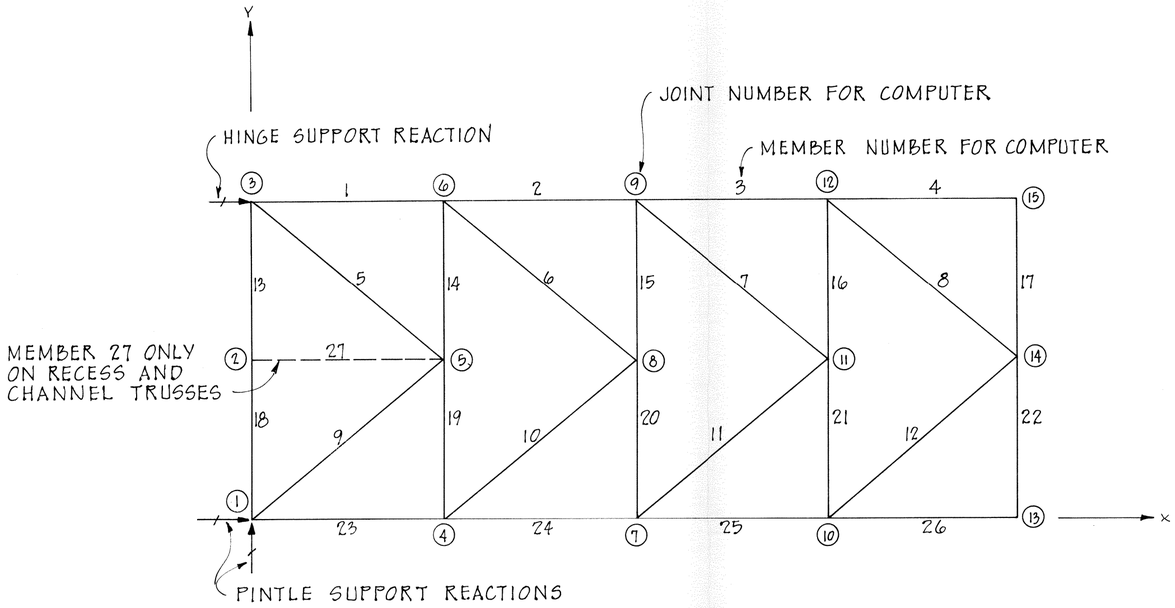
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

BOATLOAD STRESSES

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

DATE SEPT., 1973 FILE NO H-2-24419

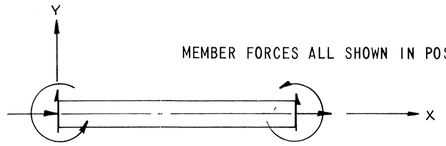
PLATE IV 50



TYPICAL TRUSS FRAME

NOTES:

1. FOR TRUSS DIMENSIONS, SEE PLATES IV 26, 27 & 30.
2. EACH TRUSS IS ANALYZED AS A PLANE FRAME WITH RIGID JOINTS.
3. ALL LOADING INPUT IS IN THE FORM OF JOINT LOADS.
4. COMPUTER PROGRAM USED IS "STRESS" (STRUCTURAL ENGINEERING SYSTEM SOLVER) USING THE I.B.M. 1130 COMPUTER.
5. SIGN CONVENTION FOR MEMBER FORCES:



MEMBER FORCES ALL SHOWN IN POSITIVE DIRECTION.

EACH MEMBER HAS ITS OWN RIGHT-HANDED COORDINATE SYSTEM, JOINT NUMBER LISTED FIRST IS AT THE ORIGIN.

6. COMPUTER OUTPUT: AXIAL FORCES AND SHEARS ARE IN KIPS, MOMENTS ARE IN INCH-KIPS.

A JOINT VENTURE

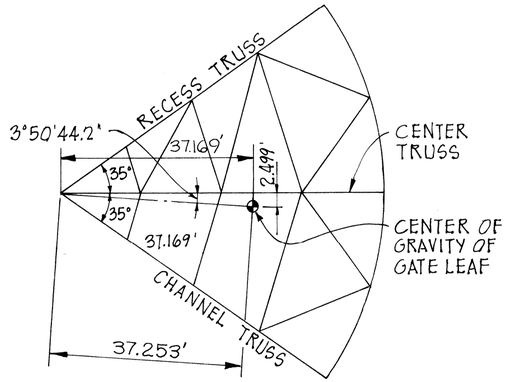
B.M. DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

VERTICAL TRUSS
JOINT AND MEMBER NUMBERS

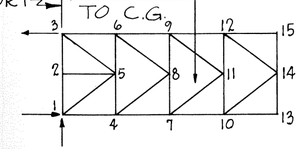
U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: SEPT., 1973 FILE NO. H-2-24419



PLAN - GULFSIDE GATE LEAF

℄ SUPPORT → 44.2575' TO C.G. — 66.030^{K} - TOTAL WT.



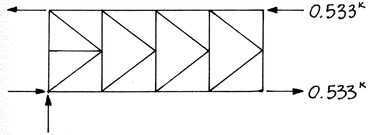
MOMENT AT ℄ SUPPORT USING JOINT LOADS

JOINTS	TOTAL LOAD	MOMENT ARM	MOMENT
1,2,3	3.30^{K}	0.0'	0.0^{IK}
4,5,6	7.49^{K}	14.75'	110.478^{IK}
7,8,9	8.73^{K}	29.50'	257.535^{IK}
10,11,12	12.13^{K}	44.25'	536.753^{IK}
13,14,15	34.39^{K}	59.0469'	2030.623^{IK}
		Σ MOMENT =	2935.389^{IK}

Σ M USING C.G. COMPUTATION = 66.030^{K} × 44.2575' = 2922.322^{IK}

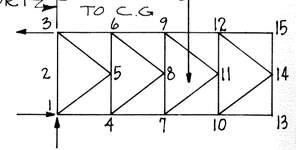
2922.322^{IK}
− 2935.389^{IK}
CORRECTION MOMENT REQ'D. = 13.067^{IK}

CORRECTION LOAD = $\frac{13.067}{24.5}$ = 0.533^{K}



RECESS TRUSS

℄ SUPPORT → 41.0833' TO C.G. — 113.573^{K} TOTAL WT.



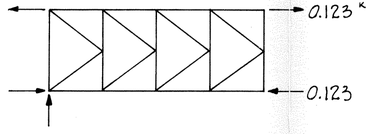
MOMENT AT ℄ SUPPORT USING JOINT LOADS

JOINTS	TOTAL LOAD	MOMENT ARM	MOMENT
1,2,3	18.72^{K}	0.0'	0.0^{IK}
4,5,6	9.21^{K}	14.75'	135.848^{IK}
7,8,9	10.59^{K}	29.50'	312.405^{IK}
10,11,12	14.77^{K}	44.25'	653.573^{IK}
13,14,15	60.31^{K}	59.0469'	3561.119^{IK}
		Σ MOMENT =	4662.945^{IK}

Σ M USING C.G. COMPUTATION = 113.573^{K} × 41.0833' = 4665.956^{IK}

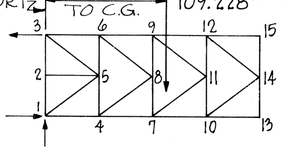
4665.956^{IK}
− 4662.945^{IK}
CORRECTION MOMENT REQ'D. = 3.011^{IK}

CORRECTION LOAD = $\frac{3.011}{24.5}$ = 0.123^{K}



CENTER TRUSS

℄ SUPPORT → 37.6798' TO C.G. — 109.228^{K} TOTAL WT.



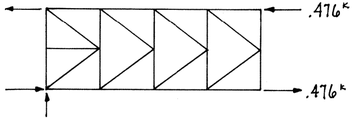
MOMENT AT ℄ SUPPORT USING JOINT LOADS

JOINTS	TOTAL LOAD	MOMENT ARM	MOMENT
1,2,3	8.84^{K}	0.0'	0.0^{IK}
4,5,6	19.82^{K}	14.75'	292.345^{IK}
7,8,9	19.91^{K}	29.50'	587.345^{IK}
10,11,12	22.72^{K}	44.25'	1005.360^{IK}
13,14,15	37.96^{K}	57.0469'	2165.500^{IK}
		SUBTOTAL =	4050.550^{IK}
		ADD JOINT 13, 14, & 15 MOMENTS	+ 76.805^{IK}
		Σ MOMENT =	4127.355^{IK}

Σ M USING C.G. COMPUTATION = 109.228 × 37.6798 = 4115.687^{IK}

4115.687^{IK}
− 4127.355^{IK}
CORRECTION MOMENT REQ'D. = 11.668^{IK}

CORRECTION LOAD = $\frac{11.668}{24.5}$ = 0.476^{K}



CHANNEL TRUSS

JOINT DEAD LOAD CORRECTIONS

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

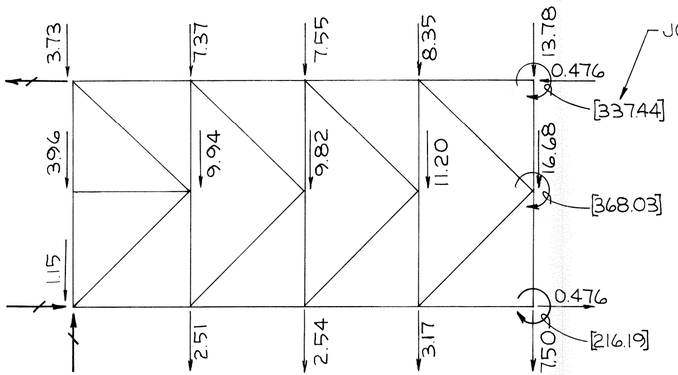
STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GULFSIDE GATE
DEAD LOAD DISTRIBUTION

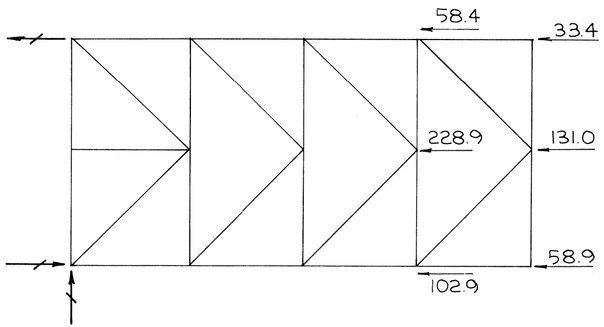
U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: SEPT., 1973 FILE NO. H-2-24419

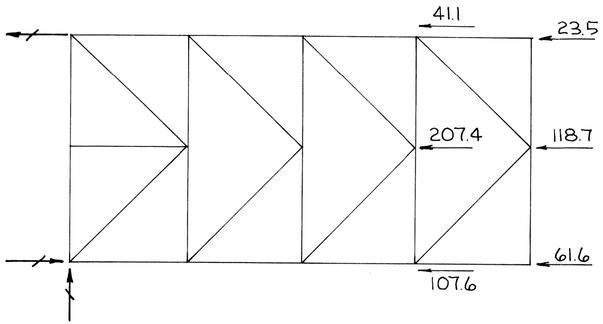


JOINT MOMENT IN INCH-KIPS

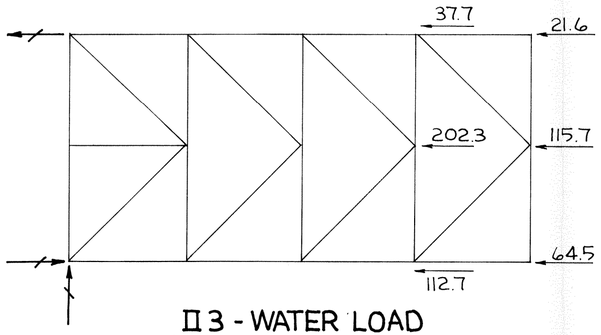
I - DEAD LOAD



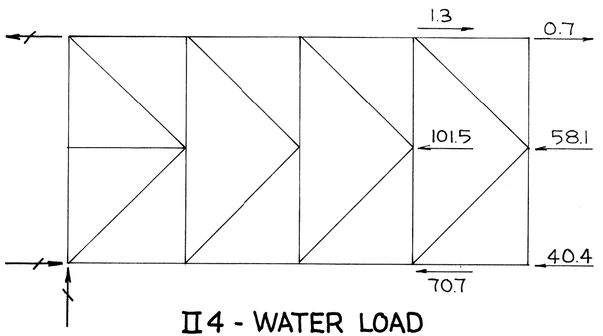
II 1 - WATER LOAD



II 2 - WATER LOAD



II 3 - WATER LOAD



II 4 - WATER LOAD

NOTES:

1. ALL JOINT LOADS ARE IN KIPS.
2. REFER TO PLATE IV-51 FOR TYPICAL FRAME AND JOINT NUMBERING

LOADING - GULFSIDE GATE CHANNEL TRUSS

A JOINT VENTURE

B.M. GORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

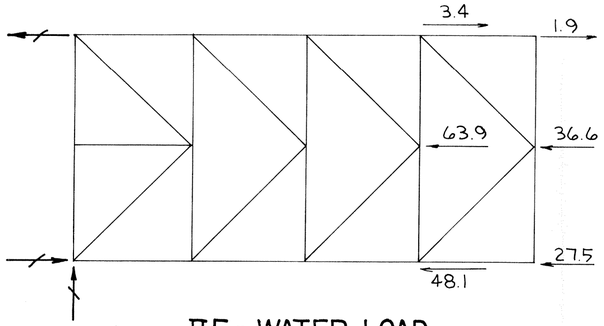
STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

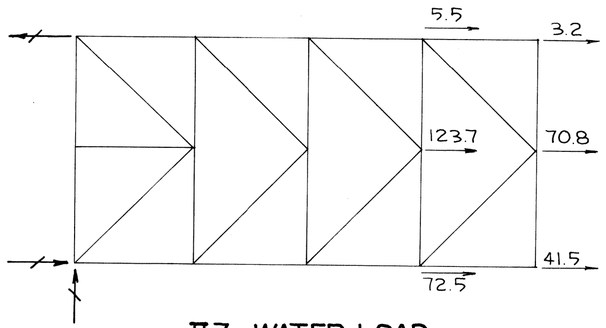
GULFSIDE GATE
CHANNEL TRUSS - LOADING

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

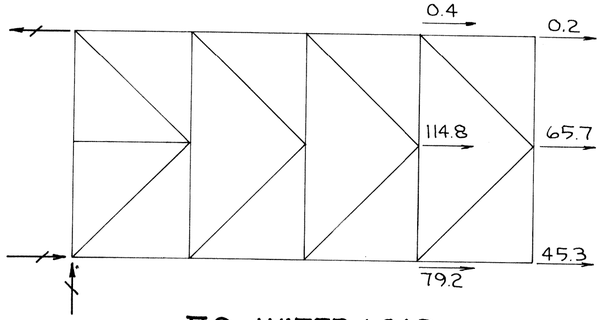
DATE SEPT., 1973 FILE NO H-2-24419



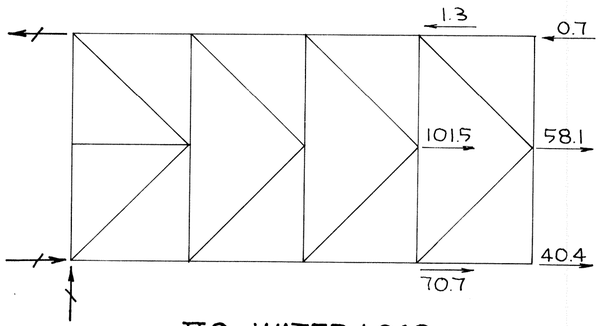
II5 - WATER LOAD



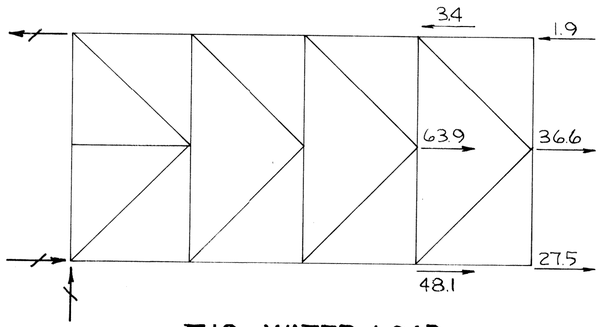
II7 - WATER LOAD



II8 - WATER LOAD



II9 - WATER LOAD



II10 - WATER LOAD

NOTES:

1. ALL JOINT LOADS ARE IN KIPS.
2. REFER TO PLATE IV 51 FOR TYPICAL FRAME AND JOINT NUMBERING

LOADING - GULFSIDE GATE CHANNEL TRUSS

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

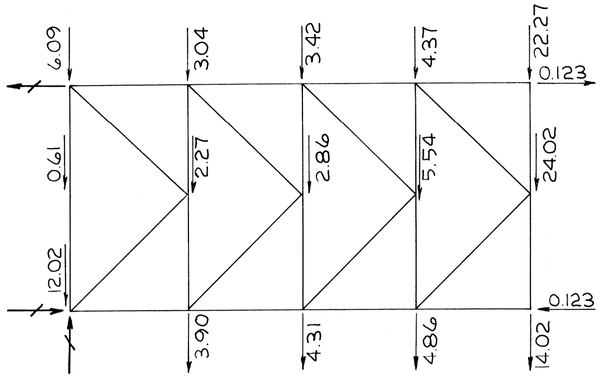
STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

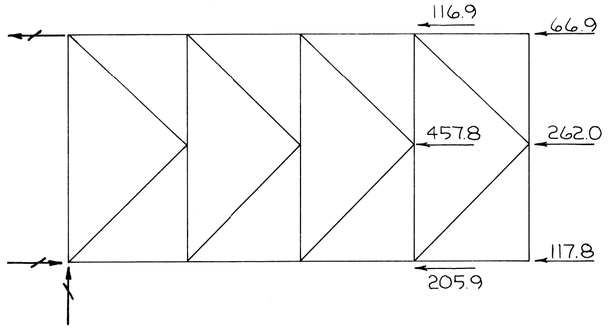
GULFSIDE GATE
CHANNEL TRUSS - LOADING

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

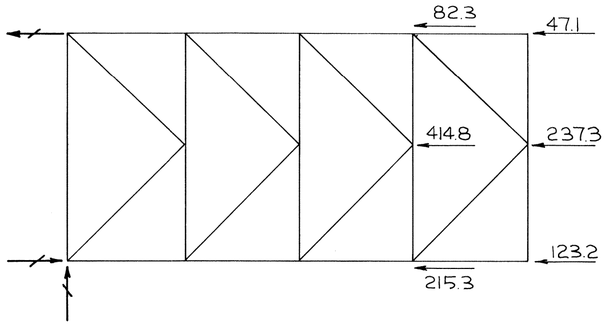
DATE SEPT., 1973 FILE NO. H-2-24419



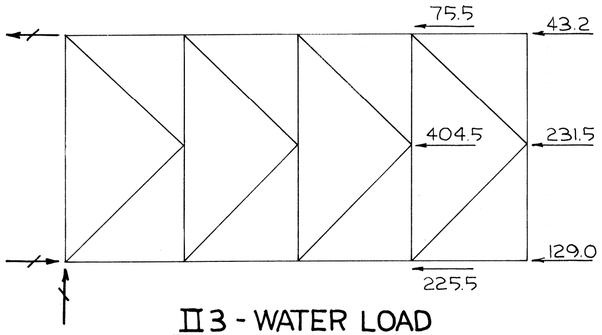
I - DEAD LOAD



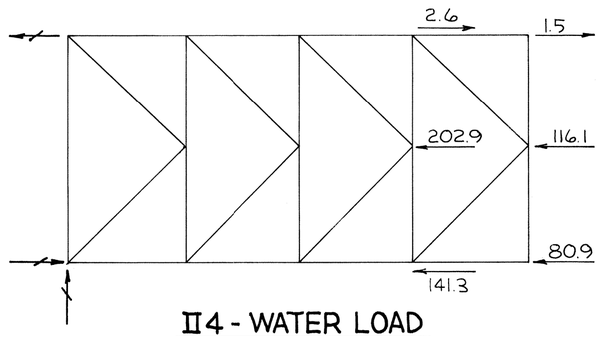
II 1 - WATER LOAD



II 2 - WATER LOAD



II 3 - WATER LOAD



II 4 - WATER LOAD

NOTES:

1. ALL JOINT LOADS ARE IN KIPS.
2. REFER TO PLATE VI 51 FOR TYPICAL FRAME AND JOINT NUMBERING

LOADING - GULFSIDE GATE CENTER TRUSS

A JOINT VENTURE

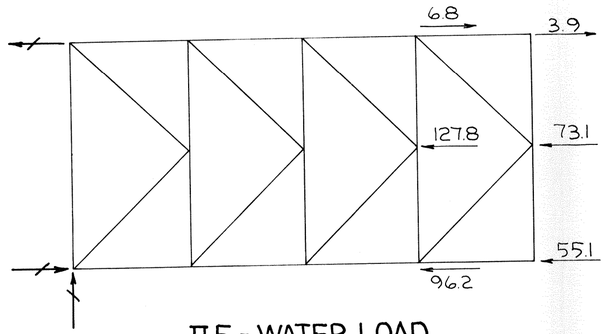
B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

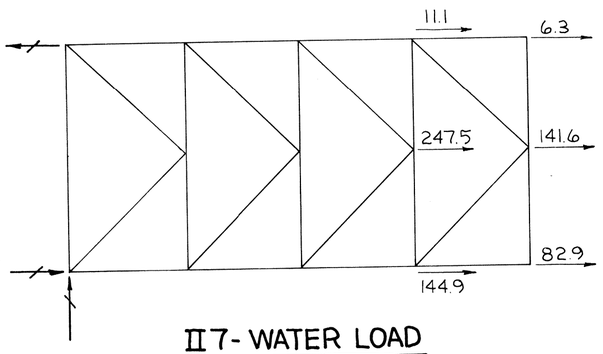
GULFSIDE GATE
CENTER TRUSS - LOADING

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

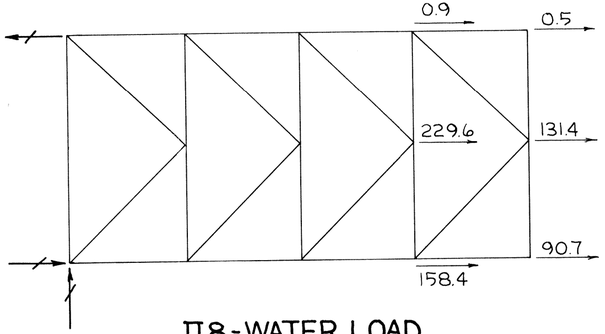
DATE SEPT., 1973 FILE NO. H-2-24419



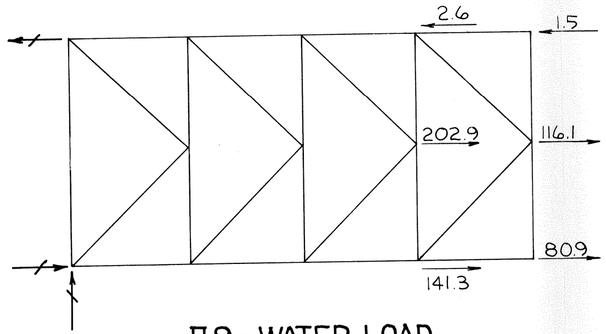
II 5 - WATER LOAD



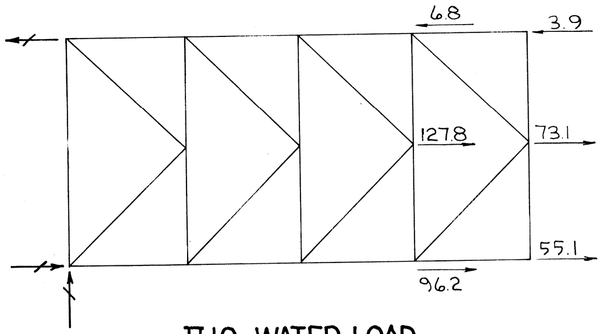
II 7 - WATER LOAD



II 8 - WATER LOAD



II 9 - WATER LOAD



II 10 - WATER LOAD

LOADING - GULFSIDE GATE CENTER TRUSS

NOTES:

1. ALL JOINT LOADS ARE IN KIPS.
2. REFER TO PLATE IV 5! FOR TYPICAL FRAME AND JOINT NUMBERING

A JOINT VENTURE

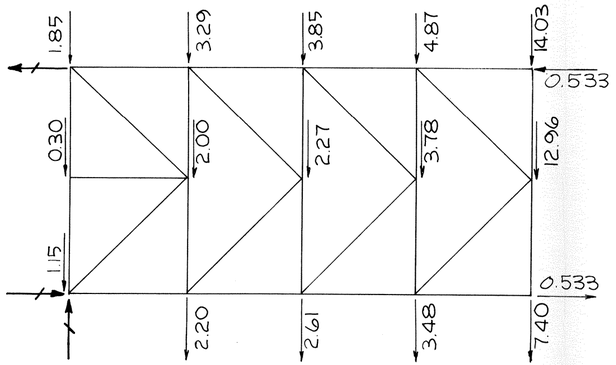
B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA.	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

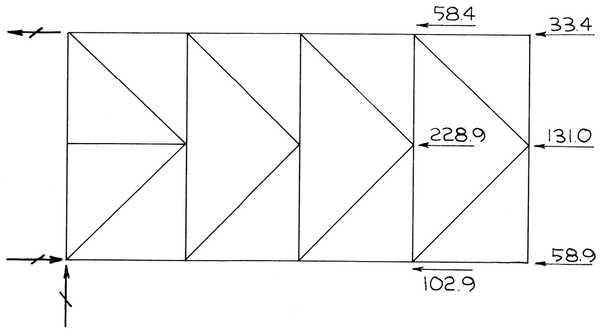
GULFSIDE GATE
CENTER TRUSS - LOADING

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

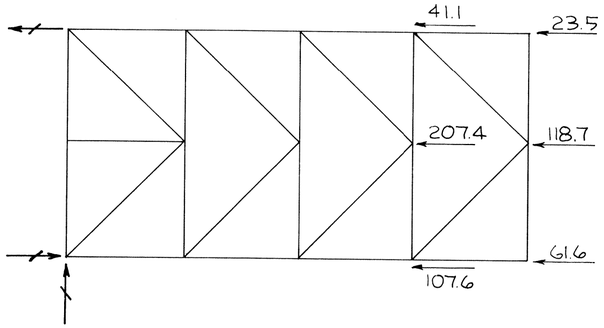
DATE SEPT. 1973 FILE NO. H-2-24419



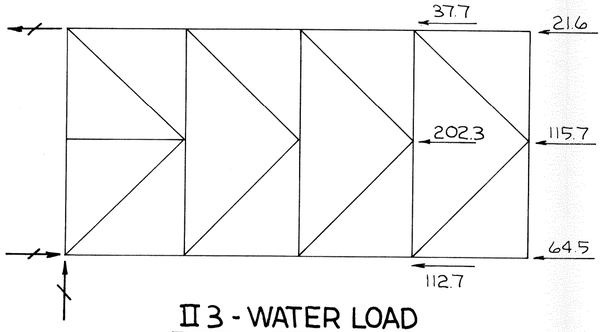
I - DEAD LOAD



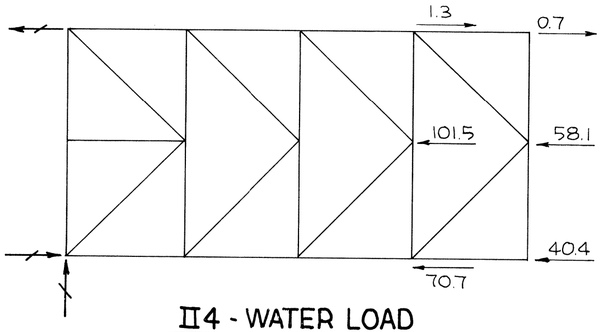
II1 - WATER LOAD



II2 - WATER LOAD



II3 - WATER LOAD



II4 - WATER LOAD

NOTES:

1. ALL JOINT LOADS ARE IN KIPS.
2. REFER TO PLATE IV 51 FOR TYPICAL FRAME AND JOINT NUMBERING

LOADING - GULFSIDE GATE RECESS TRUSS

A JOINT VENTURE

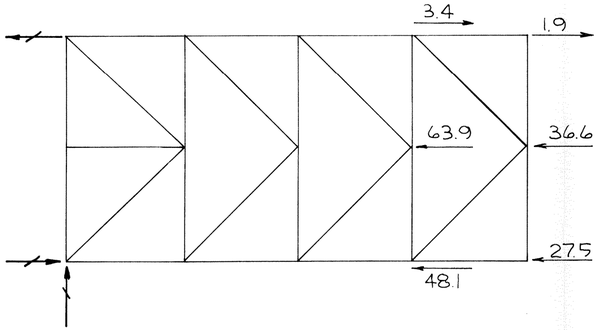
B.M. DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

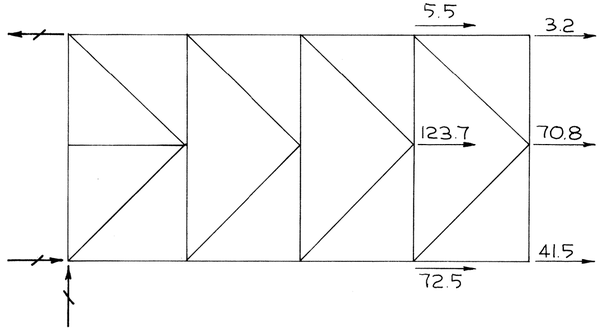
GULFSIDE GATE
RECESS TRUSS - LOADING

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

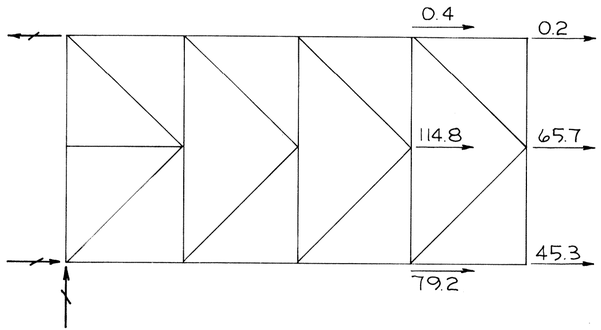
DATE: SEPT, 1973 FILE NO. H-2-24419



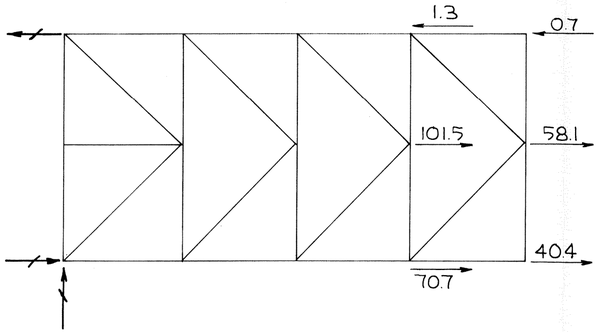
II 5 - WATER LOAD



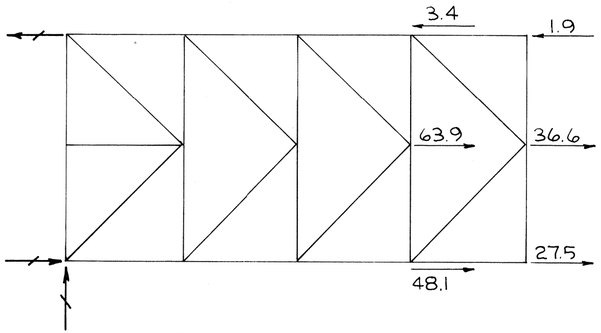
II 7 - WATER LOAD



II 8 - WATER LOAD



II 9 - WATER LOAD



II 10 - WATER LOAD

LOADING - GULFSIDE GATE RECESS TRUSS

NOTES:

1. ALL JOINT LOADS ARE IN KIPS.
2. REFER TO PLATE IV 51 FOR TYPICAL FRAME AND JOINT NUMBERING

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GULFSIDE GATE
RECESS TRUSS - LOADING

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

DATE: SEPT., 1973 FILE NO H-2-24419

RECESS TRUSS

MEMBER NO.	CRITICAL LOAD CONDITION	BASIC STRESS	SUMMARY OF FORCES		
			AXIAL	SHEAR	MOMENT
1	I+II1	0.67 Fy	189.0$^{K}_{C}$	0.6^{K}	54^{11K}
2	I+II1	0.67 Fy	221.8$^{K}_{C}$	0.0^{K}	15^{11K}
3	I+II1	0.67 Fy	137.8$^{K}_{C}$	0.1^{K}	22^{11K}
4	I+II4+B1	0.67 Fy	126.3$^{K}_{C}$	0.2^{K}	20^{11K}
5	I+II4	0.50 Fy	48.0$^{K}_{T}$	0.1^{K}	15^{11K}
6	I+II4	0.50 Fy	42.3$^{K}_{T}$	0.1^{K}	17^{11K}
7	I+II1	0.67 Fy	110.4$^{K}_{C}$	1.0^{K}	120^{11K}
8	I+II5+B2	0.67 Fy	64.2$^{K}_{C}$	0.3^{K}	32^{11K}
9	I+II5	0.50 Fy	49.3$^{K}_{C}$	0.0^{K}	4^{11K}
10	I+II4	0.50 Fy	44.0$^{K}_{C}$	0.2^{K}	42^{11K}
11	I+II1	0.67 Fy	183.5$^{K}_{C}$	1.1^{K}	133^{11K}
12	I+II1	0.67 Fy	106.3$^{K}_{C}$	0.3^{K}	41^{11K}
13	I+II9(2)	0.67 Fy	33.2$^{K}_{C}$	0.3^{K}	26^{11K}
14	I+II5+B3	0.67 Fy	75.7$^{K}_{C}$	0.4^{K}	36^{11K}
15	I+II9+B4	0.67 Fy	92.2$^{K}_{C}$	0.4^{K}	39^{11K}
16	I+II9	0.50 Fy	44.8$^{K}_{C}$	0.6^{K}	44^{11K}
17	I+II4(1)	0.67 Fy	14.2$^{K}_{C}$	1.5^{K}	4683^{11K}
18	I+II5(2)	0.67 Fy	34.5$^{K}_{C}$	0.2^{K}	29^{11K}
19	I+II4	0.50 Fy	30.4$^{K}_{C}$	0.4^{K}	40^{11K}
20	I+II1	0.67 Fy	118.0$^{K}_{T}$	1.1^{K}	92^{11K}
21	I+II1	0.67 Fy	72.5$^{K}_{T}$	0.9^{K}	63^{11K}
22	I+II9(1)	0.67 Fy	7.7$^{K}_{T}$	1.4^{K}	4506^{11K}
23	I+II1	0.67 Fy	422.1$^{K}_{C}$	0.2^{K}	63^{11K}
24	I+II1	0.67 Fy	389.0$^{K}_{C}$	0.8^{K}	91^{11K}
25	I+II3	0.67 Fy	255.9$^{K}_{C}$	0.2^{K}	26^{11K}
26	I+II3	0.67 Fy	67.5$^{K}_{C}$	1.2^{K}	134^{11K}
27	I+II4(3)	0.67 Fy	132.8$^{K}_{C}$	0.2^{K}	24^{11K}

BOAT LOADS

B1 = 125.00$^{K}_{C}$
B2 = 59.61$^{K}_{C}$
B3 = 45.24$^{K}_{C}$
B4 = 24.23$^{K}_{C}$

CENTER TRUSS

MEMBER NO.	CRITICAL LOAD CONDITION	BASIC STRESS	SUMMARY OF FORCES		
			AXIAL	SHEAR	MOMENT
1	I+II1	0.67 Fy	409.2$^{K}_{C}$	1.1^{K}	120^{11K}
2	I+II1	0.67 Fy	458.9$^{K}_{C}$	0.6^{K}	68^{11K}
3	I+II1	0.67 Fy	280.1$^{K}_{C}$	0.3^{K}	51^{11K}
4	I+II4+B1	0.67 Fy	126.2$^{K}_{C}$	0.4^{K}	45^{11K}
5	I+II4	0.50 Fy	73.1$^{K}_{T}$	0.1^{K}	17^{11K}
6	I+II9	0.50 Fy	68.1$^{K}_{T}$	0.1^{K}	27^{11K}
7	I+II1	0.67 Fy	233.3$^{K}_{C}$	2.0^{K}	245^{11K}
8	I+II1	0.67 Fy	114.7$^{K}_{C}$	0.8^{K}	113^{11K}
9	I+II4	0.50 Fy	75.0$^{K}_{C}$	0.1^{K}	22^{11K}
10	I+II4	0.50 Fy	66.3$^{K}_{C}$	0.3^{K}	45^{11K}
11	I+II1	0.67 Fy	354.3$^{K}_{C}$	2.8^{K}	351^{11K}
12	I+II1	0.67 Fy	205.7$^{K}_{C}$	0.7^{K}	81^{11K}
13	I+II9(2)	0.67 Fy	53.1$^{K}_{C}$	0.0^{K}	44^{11K}
14	I+II4	0.50 Fy	44.1$^{K}_{C}$	0.8^{K}	68^{11K}
15	I+II9	0.50 Fy	121.9$^{K}_{C}$	0.4^{K}	43^{11K}
16	I+II9	0.50 Fy	80.3$^{K}_{C}$	1.2^{K}	90^{11K}
17	I+II4(1)	0.67 Fy	22.6$^{K}_{C}$	2.8^{K}	4549^{11K}
18	I+II5(2)	0.67 Fy	65.8$^{K}_{C}$	0.3^{K}	56^{11K}
19	I+II4	0.50 Fy	48.2$^{K}_{T}$	0.4^{K}	44^{11K}
20	I+II1	0.67 Fy	223.5$^{K}_{T}$	1.4^{K}	118^{11K}
21	I+II1	0.67 Fy	140.3$^{K}_{T}$	1.3^{K}	97^{11K}
22	I+II9(1)	0.67 Fy	14.8$^{K}_{T}$	2.7^{K}	4453^{11K}
23	I+II1	0.67 Fy	815.5$^{K}_{C}$	0.8^{K}	183^{11K}
24	I+II1	0.67 Fy	765.0$^{K}_{C}$	3.7^{K}	437^{11K}
25	I+II3	0.67 Fy	507.3$^{K}_{C}$	1.3^{K}	154^{11K}
26	I+II3	0.67 Fy	136.2$^{K}_{C}$	3.1^{K}	331^{11K}
27	-	-	-	-	-

BOAT LOADS

B1 = 125.00$^{K}_{C}$

CHANNEL TRUSS

MEMBER NO.	CRITICAL LOAD CONDITION	BASIC STRESS	SUMMARY OF FORCES		
			AXIAL	SHEAR	MOMENT
1	I+II1	0.67 Fy	162.8$^{K}_{C}$	0.7^{K}	65^{11K}
2	I+II1	0.67 Fy	211.0$^{K}_{C}$	0.1^{K}	19^{11K}
3	I+II1	0.67 Fy	135.4$^{K}_{C}$	0.1^{K}	23^{11K}
4	I+II4+B1	0.67 Fy	123.1$^{K}_{C}$	0.6^{K}	66^{11K}
5	I+II5	0.50 Fy	77.1$^{K}_{T}$	0.1^{K}	18^{11K}
6	I+II5+B2	0.67 Fy	88.0$^{K}_{T}$	0.1^{K}	11^{11K}
7	I+II1	0.67 Fy	99.5$^{K}_{C}$	1.0^{K}	119^{11K}
8	I+II5+B3	0.67 Fy	60.3$^{K}_{C}$	0.1^{K}	13^{11K}
9	I+II4	0.50 Fy	78.8$^{K}_{C}$	0.0^{K}	7^{11K}
10	I+II4	0.50 Fy	63.2$^{K}_{C}$	0.2^{K}	31^{11K}
11	I+II1	0.67 Fy	194.4$^{K}_{C}$	1.1^{K}	138^{11K}
12	I+II1	0.67 Fy	112.1$^{K}_{C}$	0.6^{K}	71^{11K}
13	I+II9(2)	0.67 Fy	53.7$^{K}_{C}$	0.6^{K}	47^{11K}
14	I+II9(2)	0.67 Fy	48.1$^{K}_{C}$	0.1^{K}	13^{11K}
15	I+II9(2)	0.67 Fy	78.7$^{K}_{C}$	0.4^{K}	36^{11K}
16	I+II9(2)	0.67 Fy	52.6$^{K}_{C}$	0.5^{K}	40^{11K}
17	I+II9(2)	0.67 Fy	13.3$^{K}_{C}$	5.6^{K}	449^{11K}
18	I+II5(2)	0.67 Fy	58.8$^{K}_{C}$	0.4^{K}	49^{11K}
19	I+II5(2)	0.67 Fy	42.7$^{K}_{T}$	0.1^{K}	22^{11K}
20	I+II5(2)	0.67 Fy	58.6$^{K}_{T}$	0.1^{K}	20^{11K}
21	I+II5(2)	0.67 Fy	39.0$^{K}_{T}$	0.3^{K}	25^{11K}
22	I+II5(2)	0.67 Fy	7.1$^{K}_{T}$	3.8^{K}	299^{11K}
23	I+II1	0.67 Fy	448.2$^{K}_{C}$	0.0^{K}	45^{11K}
24	I+II1	0.67 Fy	399.8$^{K}_{C}$	0.8^{K}	91^{11K}
25	I+II3	0.67 Fy	258.2$^{K}_{C}$	0.0^{K}	22^{11K}
26	I+II3	0.67 Fy	70.5$^{K}_{C}$	1.4^{K}	127^{11K}
27	I+II4(4)	0.50 Fy	45.7$^{K}_{T}$	0.4^{K}	40^{11K}

BOAT LOADS

B1 = 125.00$^{K}_{C}$
B2 = 25.61$^{K}_{T}$
B3 = 63.57$^{K}_{C}$

DEFLECTION SUMMARY*

LOADING CASE	POINT 13	
	VERT.	HORIZ.
I	- .356	- .041
II1	+ .067	- .271
II2	+ .013	- .267
II3	- .011	- .272
II4	- .068	- .158
II5	- .054	- .105
II7	+ .047	+ .172
II8	+ .072	+ .178
II9	+ .068	+ .158
II10	+ .054	+ .105

* DEFLECTIONS ARE IN INCHES AND ARE AVERAGE OF THOSE COMPUTED FOR RECESS, CENTER AND CHANNEL TRUSS.

MINUS INDICATES DEFLECTION DOWN OR TOWARD HINGE AND PINTLE.

PLUS INDICATES DEFLECTION UP OR AWAY FROM HINGE AND PINTLE.

NOTES:

(1) BOAT LOAD APPLIED TRANSVERSE TO BEAM BETWEEN SUPPORTS.

(2) BOAT LOAD APPLIED TRANSVERSE TO BEAM AT FENDER CONNECTIONS.

(3) AXIAL COMPRESSION DUE TO BOAT LOAD EQUALS 133^{K}.

(4) AXIAL TENSION DUE TO BOAT LOAD EQUAL 45.5^{K}.

A JOINT VENTURE

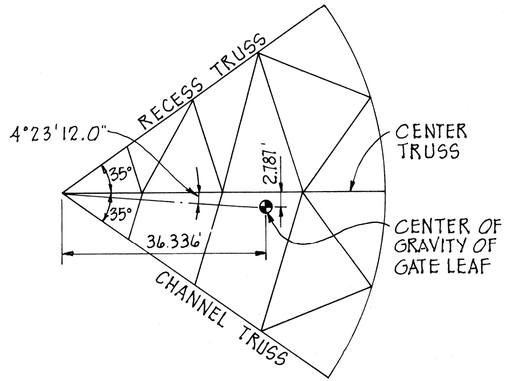
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA | STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GULFSIDE GATE
TRUSS MEMBER FORCES

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

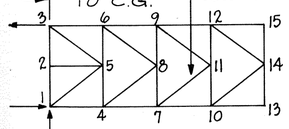
DATE: SEPT. 1973 FILE NO. H-2-24419



PLAN - LAKESIDE GATE LEAF

RECESS TRUSS

℄ SUPPORT → 43.6391' TO C.G. 58.859 K TOTAL WT.



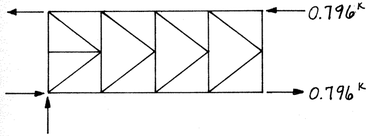
MOMENT AT ℄ SUPPORT USING JOINT LOADS

JOINTS	TOTAL LOAD	MOMENT ARM	MOMENT
1,2,3	2.83 K	0.0'	0.0 IK
4,5,6	6.66 K	14.75'	98.235 IK
7,8,9	8.39 K	29.50'	247.505 IK
10,11,12	12.03 K	44.25'	532.3275 IK
13,14,15	28.96 K	59.0469'	1709.9982 IK
		Σ MOMENT =	2588.0657 IK

Σ M USING C.G. COMPUTATION = 58.859 K × 43.6391' = 2568.555 IK

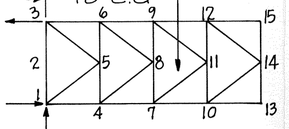
2568.555 IK
− 2588.0657 IK
CORRECTION MOMENT REQ'D. = 19.5107 IK

CORRECTION LOAD = $\frac{19.5107}{24.5}$ = 0.796 K



CENTER TRUSS

℄ SUPPORT → 40.3525' TO C.G. 96.491 K TOTAL WT.



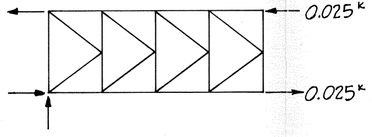
MOMENT AT ℄ SUPPORT USING JOINT LOADS

JOINTS	TOTAL LOAD	MOMENT ARM	MOMENT
1,2,3	17.45 K	0.0'	0.0 IK
4,5,6	7.11 K	14.75'	104.8725 IK
7,8,9	9.06 K	29.50'	267.2700 IK
10,11,12	12.97 K	44.25'	573.9225 IK
13,14,15	49.93 K	59.0469'	2948.2117 IK
		Σ MOMENT =	3894.2767 IK

Σ M USING C.G. COMPUTATION = 96.491 K × 40.3525' = 3893.656 IK

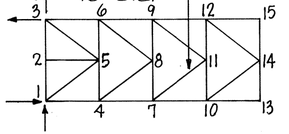
3893.656 IK
− 3894.2767 IK
CORRECTION MOMENT REQ'D. = 0.6207 IK

CORRECTION LOAD = $\frac{0.6207}{24.5}$ = 0.025 K



CHANNEL TRUSS

℄ SUPPORT → 36.9434' TO C.G. 101.494 K TOTAL WT.



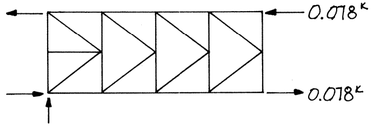
MOMENT AT ℄ SUPPORT USING JOINT LOADS

JOINTS	TOTAL LOAD	MOMENT ARM	MOMENT
1, 2, 3	8.36 K	0.0'	0.0 IK
4,5,6	19.0 K	14.75'	280.25 IK
7,8,9	19.34 K	29.50'	570.530 IK
10,11,12	22.18 K	44.25'	981.465 IK
13,14,15	32.6 K	57.0469'	1859.7289 IK
		SUBTOTAL =	3691.9739 IK
	ADD JOINT 13,14,15 MOMENTS		+ 59.472 IK
		Σ MOMENT =	3751.4459 IK

Σ M USING C.G. COMPUTATION = 101.494 × 36.9434 = 3749.530 IK

3749.530 IK
− 3751.4459 IK
CORRECTION MOMENT REQ'D. = 1.9159 IK

CORRECTION LOAD = $\frac{1.9159}{24.5}$ = 0.078 K



JOINT DEAD LOAD CORRECTIONS

A JOINT VENTURE

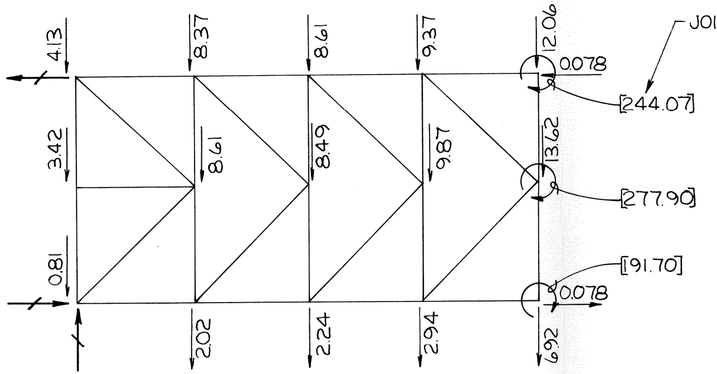
B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

LAKESIDE GATE
DEAD LOAD DISTRIBUTION

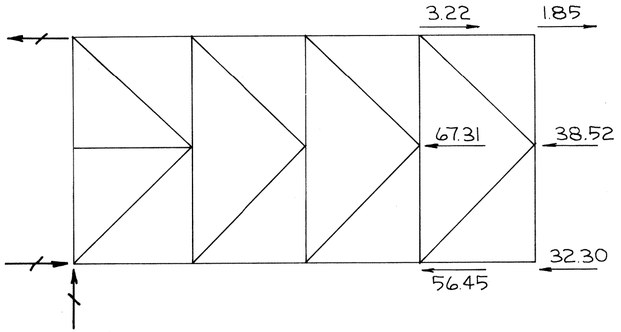
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE: SEPT. 1973 FILE NO. H-2-24419

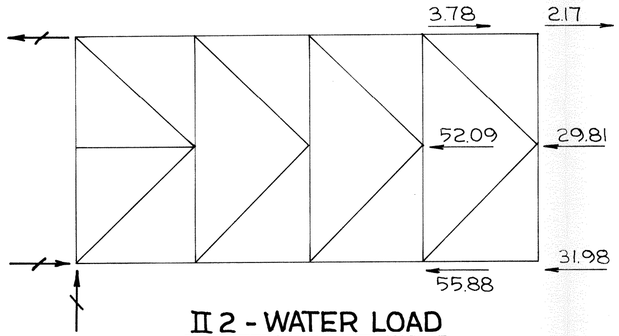


I - DEAD LOAD

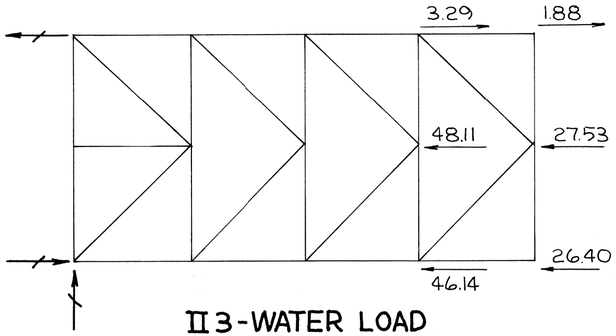
JOINT MOMENT IN INCH-KIPS



II 1 - WATER LOAD



II 2 - WATER LOAD



II 3 - WATER LOAD

NOTES:

1. ALL JOINT LOADS ARE IN KIPS.
2. REFER TO PLATE IV 51 FOR TYPICAL FRAME AND JOINT NUMBERING

LOADING - LAKESIDE GATE CHANNEL TRUSS

A JOINT VENTURE

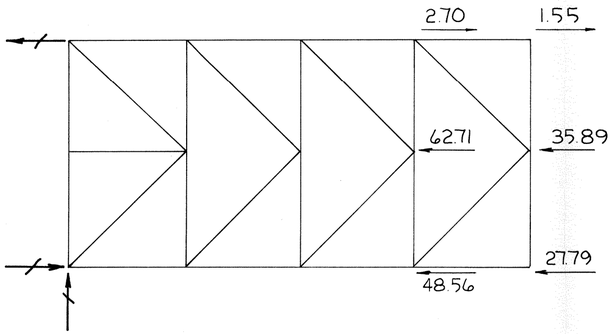
B.M. DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA.	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

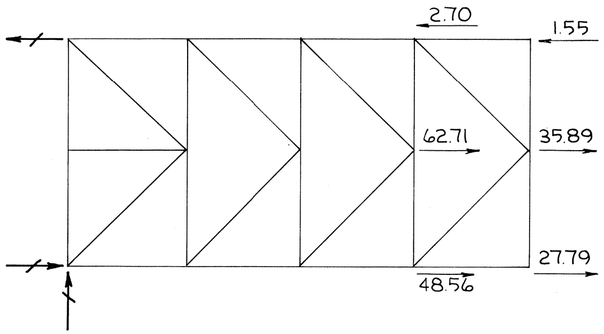
LAKESIDE GATE
CHANNEL TRUSS - LOADING

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

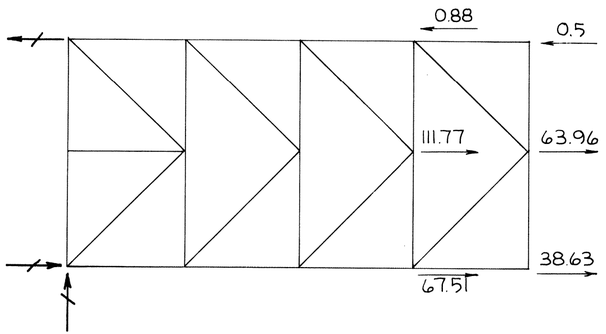
DATE: SEPT., 1973 FILE NO. H-2-24419



II 4 - WATER LOAD



II 6A - WATER LOAD



II 6B - WATER LOAD

NOTES:

1. ALL JOINT LOADS ARE IN KIPS.
2. REFER TO PLATE IV 51 FOR TYPICAL FRAME AND JOINT NUMBERING

LOADING - LAKESIDE GATE CHANNEL TRUSS

A JOINT VENTURE

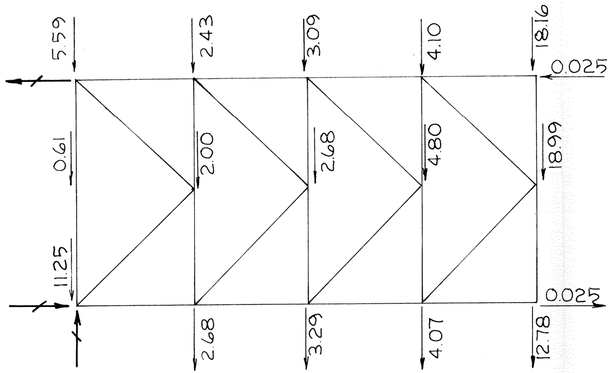
B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

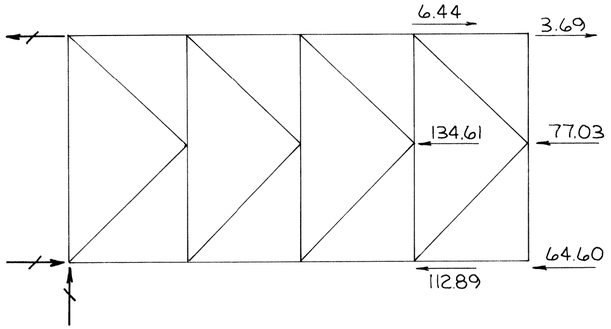
LAKESIDE GATE
CHANNEL TRUSS - LOADING

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

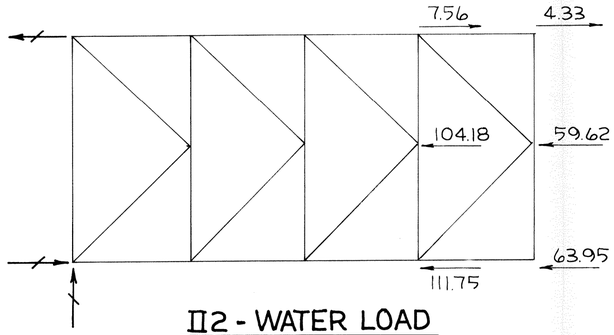
DATE SEPT., 1973 FILE NO. H-2-24419



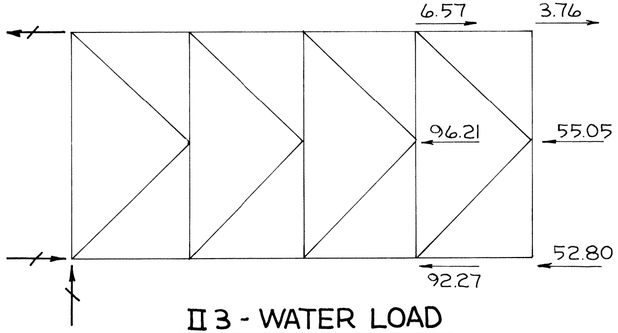
I - DEAD LOAD



II 1 - WATER LOAD



II 2 - WATER LOAD



II 3 - WATER LOAD

LOADING - LAKESIDE GATE CENTER TRUSS

NOTES:

1. ALL JOINT LOADS ARE IN KIPS.
2. REFER TO PLATE IV 51 FOR TYPICAL FRAME AND JOINT NUMBERING

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC
NEW ORLEANS, LA

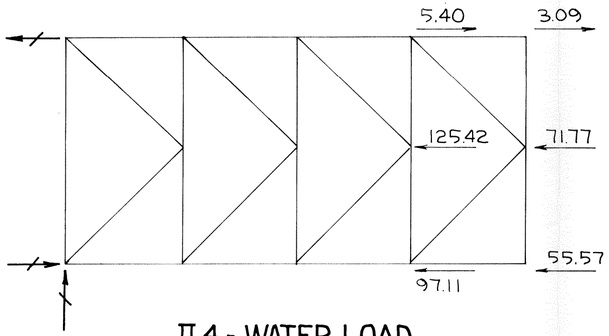
STANLEY CONSULTANTS, INC
MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

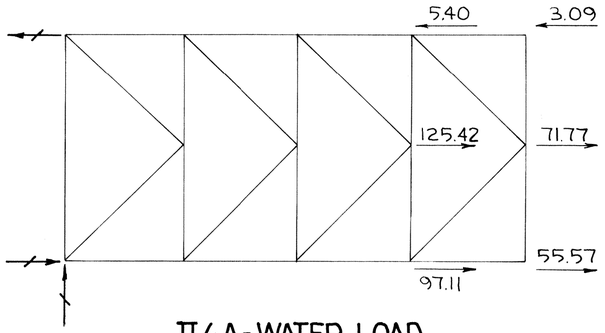
LAKESIDE GATE
CENTER TRUSS - LOADING

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

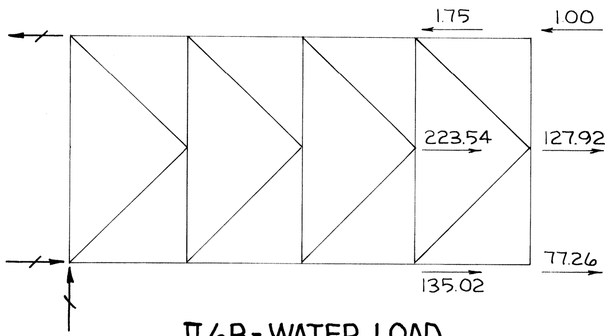
DATE SEPT., 1973 FILE NO. H-2-24419



II 4 - WATER LOAD



II 6A - WATER LOAD



II 6B - WATER LOAD

NOTES:

1. ALL JOINT LOADS ARE IN KIPS.
2. REFER TO PLATE IV 51 FOR TYPICAL FRAME AND JOINT NUMBERING

LOADING - LAKESIDE GATE CENTER TRUSS

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

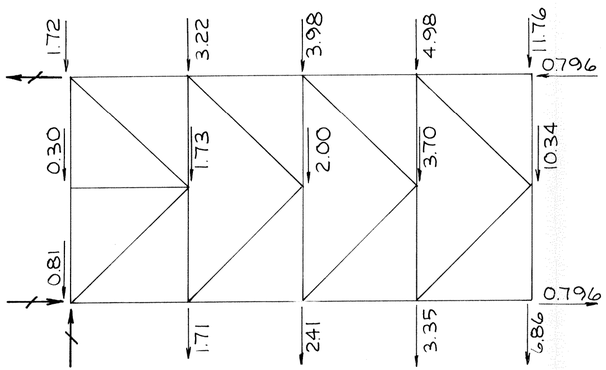
STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

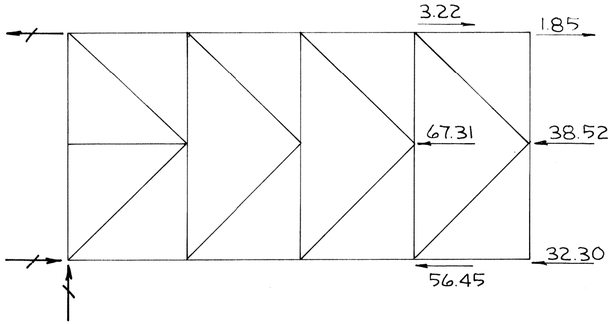
LAKESIDE GATE
CENTER TRUSS - LOADING

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

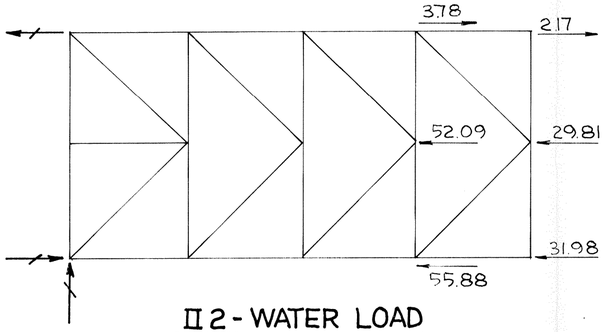
DATE SEPT., 1973 FILE NO. H-2-24419



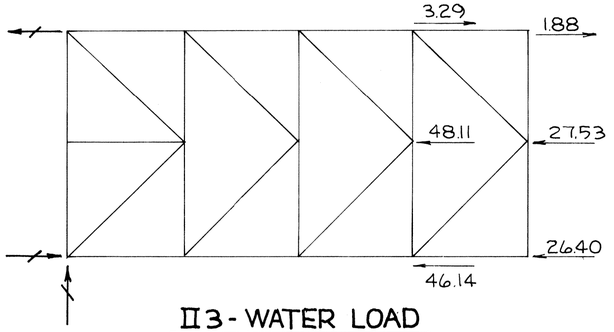
I - DEAD LOAD



II 1 - WATER LOAD



II 2 - WATER LOAD



II 3 - WATER LOAD

NOTES:

1. ALL JOINT LOADS ARE IN KIPS.
2. REFER TO PLATE IV51 FOR TYPICAL FRAME AND JOINT NUMBERING

LOADING - LAKESIDE GATE RECESS TRUSS

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA.

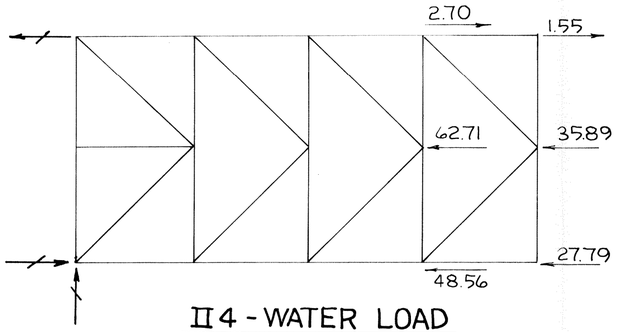
STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

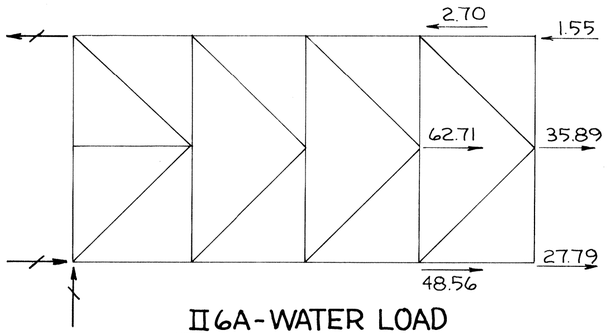
LAKESIDE GATE
RECESS TRUSS - LOADING

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

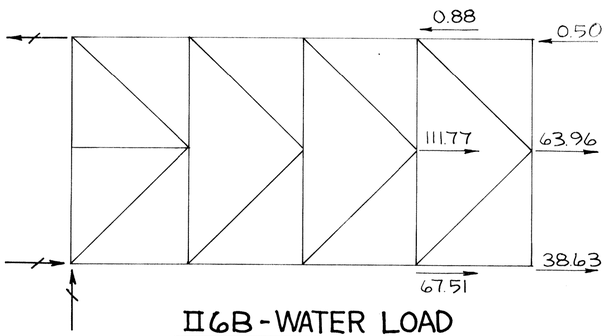
DATE SEPT., 1973 FILE NO. H-2-24419



II 4 - WATER LOAD



II 6A - WATER LOAD



II 6B - WATER LOAD

NOTES:

1. ALL JOINT LOADS ARE IN KIPS.
2. REFER TO PLATE IV 51 FOR TYPICAL FRAME AND JOINT NUMBERING

LOADING - LAKESIDE GATE RECESS TRUSS

A JOINT VENTURE

BM BORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA | STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

LAKESIDE GATE
RECESS TRUSS - LOADING

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

DATE SEPT. 1973 FILE NO. H-2-24419

RECESS TRUSS

MEMBER NO.	CRITICAL LOAD CONDITION	BASIC STRESS	SUMMARY OF FORCES		
			AXIAL	SHEAR	MOMENT
1	I+□6A+B1	0.67 Fy	246.9$^{K}_{T}$	0.2^{K}	30^{IIK}
2	I+□6A+B1	0.67 Fy	217.0$^{K}_{T}$	0.2^{K}	17^{IIK}
3	I+□4+B2	0.67 Fy	107.0$^{K}_{C}$	0.1^{K}	23^{IIK}
4	I+□4+B3	0.67 Fy	94.7$^{K}_{C}$	0.1^{K}	10^{IIK}
5	I+□3	0.50 Fy	42.8$^{K}_{T}$	0.1^{K}	8^{IIK}
6	I+□4+B4	0.67 Fy	108.7$^{K}_{T}$	0.1^{K}	7^{IIK}
7	I+□6A+B5	0.67 Fy	128.8$^{K}_{T}$	0.1^{K}	23^{IIK}
8	I+□3+B6	0.67 Fy	67.1$^{K}_{C}$	0.0^{K}	7^{IIK}
9	I+□4	0.50 Fy	44.2$^{K}_{C}$	0.0^{K}	1^{IIK}
10	I+□4	0.50 Fy	39.0$^{K}_{C}$	0.1^{K}	10^{IIK}
11	I+□4+B7	0.67 Fy	103.5$^{K}_{C}$	0.2^{K}	22^{IIK}
12	I+□3+B6	0.67 Fy	111.8$^{K}_{C}$	0.0^{K}	6^{IIK}
13	I+□6A(2)	0.67 Fy	29.6$^{K}_{C}$	0.4^{K}	32^{IIK}
14	I+□4+B8	0.67 Fy	72.6$^{K}_{C}$	0.6^{K}	46^{IIK}
15	I+□6A+B9	0.67 Fy	86.1$^{K}_{C}$	0.2^{K}	25^{IIK}
16	I+□6A	0.50 Fy	33.4$^{K}_{C}$	0.5^{K}	42^{IIK}
17	I+□4(1)	0.67 Fy	11.9$^{K}_{C}$	1.1^{K}	4665^{IIK}
18	I+□3(2)	0.67 Fy	30.6$^{K}_{C}$	0.2^{K}	28^{IIK}
19	I+□4+B8	0.67 Fy	71.9$^{K}_{T}$	0.3^{K}	35^{IIK}
20	I+□4+B10	0.67 Fy	68.3$^{K}_{T}$	0.4^{K}	33^{IIK}
21	I+□3+B11	0.67 Fy	75.1$^{K}_{T}$	0.3^{K}	27^{IIK}
22	I+□6A(1)	0.67 Fy	7.0$^{K}_{T}$	1.5^{K}	4522^{IIK}
23	I+□4	0.50 Fy	196.3$^{K}_{C}$	0.0^{K}	28^{IIK}
24	I+□4	0.50 Fy	166.6$^{K}_{C}$	0.1^{K}	17^{IIK}
25	I+□3+B12	0.67 Fy	159.3$^{K}_{C}$	0.0^{K}	7^{IIK}
26	I+B13	0.67 Fy	58.1$^{K}_{C}$	0.2^{K}	31^{IIK}
27	I+□4(3)	0.67 Fy	132.8$^{K}_{C}$	0.2^{K}	27^{IIK}

BOAT LOADS

B1 = 130.87$^{K}_{T}$
B2 = 109.69$^{K}_{C}$
B3 = 94.39$^{K}_{C}$
B4 = 70.79$^{K}_{T}$
B5 = 56.89$^{K}_{T}$
B6 = 72.86$^{K}_{C}$
B7 = 31.29$^{K}_{C}$
B8 = 45.24$^{K}_{C}$
B9 = 36.35$^{K}_{C}$
B10 = 19.99$^{K}_{T}$
B11 = 46.46$^{K}_{T}$
B12 = 56.12$^{K}_{C}$
B13 = 58.67$^{K}_{C}$

CENTER TRUSS

MEMBER NO.	CRITICAL LOAD CONDITION	BASIC STRESS	SUMMARY OF FORCES		
			AXIAL	SHEAR	MOMENT
1	I+□6B	0.67 Fy	283.7$^{K}_{T}$	0.1^{K}	37^{IIK}
2	I+□6B	0.67 Fy	239.8$^{K}_{T}$	0.3^{K}	28^{IIK}
3	I+□6A+B1	0.67 Fy	125.6$^{K}_{T}$	0.3^{K}	44^{IIK}
4	I+□4+B2	0.67 Fy	93.3$^{K}_{C}$	0.2^{K}	23^{IIK}
5	I+□6A	0.50 Fy	61.9$^{K}_{T}$	0.0^{K}	5^{IIK}
6	I+□6A	0.50 Fy	57.1$^{K}_{T}$	0.0^{K}	10^{IIK}
7	I+□6B	0.67 Fy	191.3$^{K}_{T}$	0.5^{K}	72^{IIK}
8	I+□3+B4	0.67 Fy	67.8$^{K}_{C}$	0.1^{K}	16^{IIK}
9	I+□4	0.50 Fy	62.5$^{K}_{C}$	0.0^{K}	8^{IIK}
10	I+□4+B3	0.67 Fy	79.9$^{K}_{C}$	0.1^{K}	17^{IIK}
11	I+□4	0.50 Fy	129.9$^{K}_{C}$	0.4^{K}	52^{IIK}
12	I+□3+B4	0.67 Fy	144.7$^{K}_{C}$	0.1^{K}	11^{IIK}
13	I+□6A(2)	0.67 Fy	45.2$^{K}_{C}$	0.3^{K}	36^{IIK}
14	I+□4	0.50 Fy	37.6$^{K}_{C}$	0.8^{K}	62^{IIK}
15	I+□6B	0.67 Fy	125.0$^{K}_{C}$	0.8^{K}	77^{IIK}
16	I+□6B	0.67 Fy	79.1$^{K}_{C}$	1.6^{K}	119^{IIK}
17	I+□4(1)	0.67 Fy	18.4$^{K}_{C}$	2.0^{K}	4719^{IIK}
18	I+□3(2)	0.67 Fy	56.6$^{K}_{C}$	0.3^{K}	47^{IIK}
19	I+□6A	0.50 Fy	37.1$^{K}_{T}$	0.8^{K}	73^{IIK}
20	I+□4	0.50 Fy	85.2$^{K}_{T}$	0.4^{K}	41^{IIK}
21	I+□4+B5	0.67 Fy	95.5$^{K}_{T}$	0.6^{K}	51^{IIK}
22(1)	I+□6A	0.67 Fy	13.2$^{K}_{T}$	1.9^{K}	4474^{IIK}
23	I+□4	0.50 Fy	361.9$^{K}_{C}$	0.0^{K}	53^{IIK}
24	I+□4	0.50 Fy	318.9$^{K}_{C}$	0.6^{K}	56^{IIK}
25	I+□4	0.50 Fy	219.1$^{K}_{C}$	0.2^{K}	20^{IIK}
26	I+□4	0.50 Fy	58.3$^{K}_{C}$	1.2^{K}	124^{IIK}
27	-	-	-	-	-

BOAT LOADS

B1 = 67.04$^{K}_{T}$
B2 = 94.39$^{K}_{C}$
B3 = 23.61$^{K}_{C}$
B4 = 72.86$^{K}_{C}$
B5 = 38.01$^{K}_{T}$

CHANNEL TRUSS

MEMBER NO.	CRITICAL LOAD CONDITION	BASIC STRESS	SUMMARY OF FORCES		
			AXIAL	SHEAR	MOMENT
1	I+□6A+B1	0.67 Fy	273.1$^{K}_{T}$	0.4^{K}	54^{IIK}
2	I+□6A+B1	0.67 Fy	228.1$^{K}_{T}$	0.3^{K}	25^{IIK}
3	I+□4+B2	0.67 Fy	104.2$^{K}_{C}$	0.2^{K}	26^{IIK}
4	I+□4+B3	0.67 Fy	91.7$^{K}_{C}$	0.4^{K}	42^{IIK}
5	I+□4+B4	0.67 Fy	96.7$^{K}_{T}$	0.1^{K}	10^{IIK}
6	I+□5+B4	0.67 Fy	83.3$^{K}_{T}$	0.0^{K}	8^{IIK}
7	I+□6B	0.67 Fy	113.9$^{K}_{T}$	0.3^{K}	43^{IIK}
8	I+□3+B5	0.67 Fy	72.0$^{K}_{C}$	0.0^{K}	6^{IIK}
9	I+□6A	0.50 Fy	71.4$^{K}_{C}$	0.0^{K}	9^{IIK}
10	I+□4	0.50 Fy	58.2$^{K}_{C}$	0.1^{K}	13^{IIK}
11	I+□4+B6	0.67 Fy	114.1$^{K}_{C}$	0.2^{K}	24^{IIK}
12	I+□3+B5	0.67 Fy	119.1$^{K}_{C}$	0.1^{K}	11^{IIK}
13	I+□6A(2)	0.67 Fy	50.4$^{K}_{C}$	0.7^{K}	56^{IIK}
14	I+□6A(2)	0.67 Fy	45.5$^{K}_{C}$	0.2^{K}	28^{IIK}
15	I+□6A(2)	0.67 Fy	61.2$^{K}_{C}$	0.1^{K}	22^{IIK}
16	I+□6A(2)	0.67 Fy	41.2$^{K}_{C}$	0.5^{K}	42^{IIK}
17	I+□6A(2)	0.67 Fy	11.7$^{K}_{C}$	4.2^{K}	337^{IIK}
18	I+□3(2)	0.67 Fy	54.7$^{K}_{C}$	0.4^{K}	52^{IIK}
19	I+□4(2)	0.67 Fy	39.0$^{K}_{T}$	0.2^{K}	31^{IIK}
20	I+□4(2)	0.67 Fy	55.1$^{K}_{T}$	0.3^{K}	31^{IIK}
21	I+□4(2)	0.67 Fy	35.4$^{K}_{T}$	0.4^{K}	35^{IIK}
22	I+□4(2)	0.67 Fy	6.4$^{K}_{T}$	3.7^{K}	300^{IIK}
23	I+□4	0.50 Fy	222.2$^{K}_{C}$	0.3^{K}	52^{IIK}
24	I+□4	0.50 Fy	177.6$^{K}_{C}$	0.1^{K}	15^{IIK}
25	I+□3+B7	0.67 Fy	162.1$^{K}_{C}$	0.2^{K}	17^{IIK}
26	I+B8	0.67 Fy	60.7$^{K}_{C}$	0.0^{K}	4^{IIK}
27	I+□4(4)	0.67 Fy	45.8$^{K}_{T}$	0.5^{K}	48^{IIK}

BOAT LOADS

B1 = 130.87$^{K}_{T}$
B2 = 109.69$^{K}_{C}$
B3 = 94.39$^{K}_{C}$
B4 = 25.61$^{K}_{T}$
B5 = 77.69$^{K}_{C}$
B6 = 31.29$^{K}_{C}$
B7 = 56.12$^{K}_{C}$

DEFLECTION SUMMARY*

LOADING CASE	POINT 13	
	VERT.	HORIZ.
I	- .406	- .052
□1	- .112	- .173
□2	- .117	- .160
□3	- .096	- .136
□4	- .094	- .152
□6A	+ .094	+ .152
□6B	+ .114	+ .230

* DEFLECTIONS ARE IN INCHES AND ARE AVERAGE OF THOSE COMPUTED FOR RECESS, CENTER AND CHANNEL TRUSS.

MINUS INDICATES DEFLECTION DOWN OR TOWARD HINGE AND PINTLE.

PLUS INDICATES DEFLECTION UP OR AWAY FROM HINGE AND PINTLE

NOTES:

(1) BOAT LOAD APPLIED TRANSVERSE TO BEAM BETWEEN SUPPORTS.

(2) BOAT LOAD APPLIED TRANSVERSE TO BEAM AT FENDER CONNECTIONS.

(3) AXIAL COMPRESSION DUE TO BOAT LOAD EQUALS 133^{K}.

(4) AXIAL TENSION DUE TO BOAT LOAD EQUALS 45.5^{K}.

A JOINT VENTURE

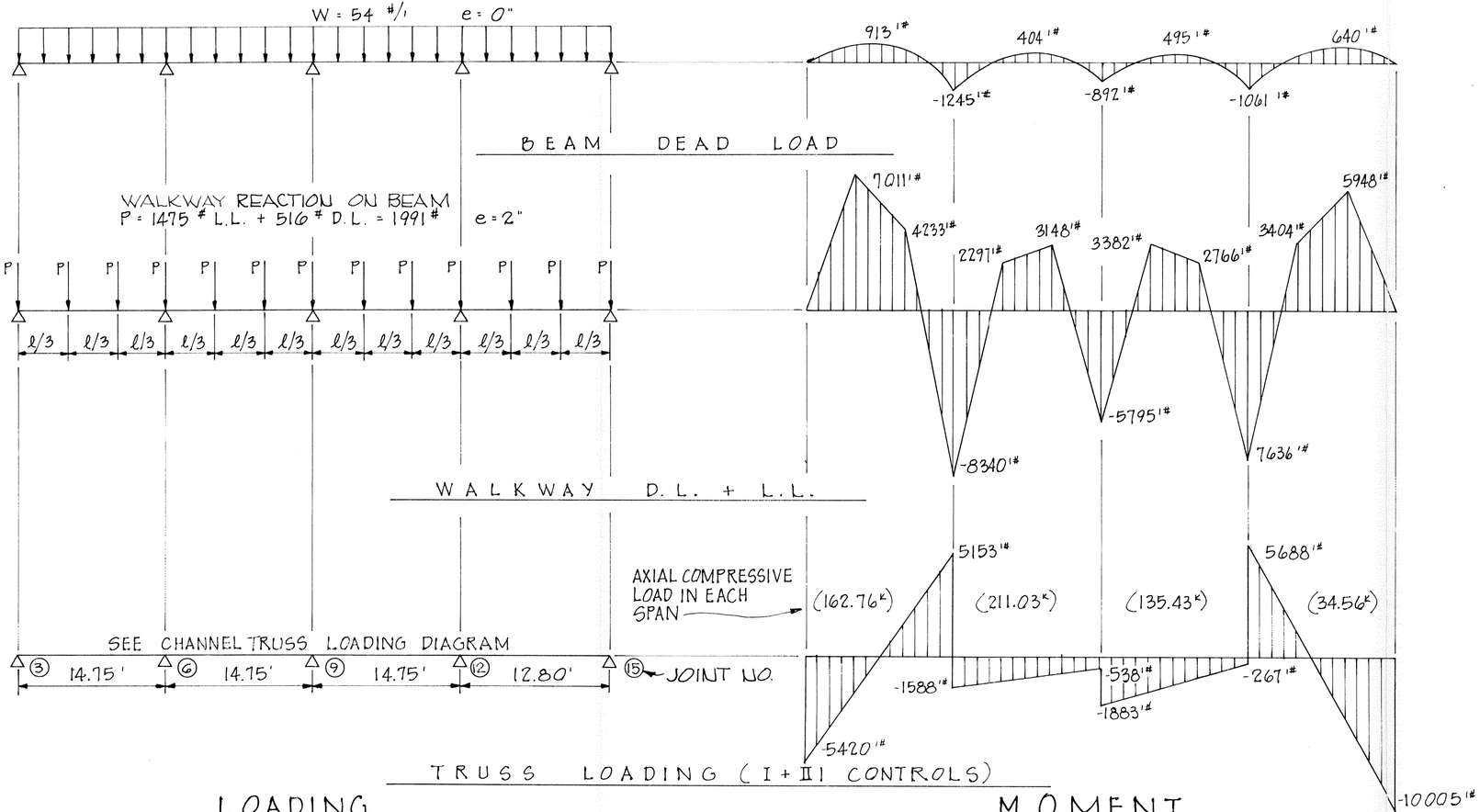
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

LAKESIDE GATE
TRUSS MEMBER FORCES

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

DATE: SEPT. 1973 FILE NO H-2-24419



TOP BEAM - GULFSIDE GATE - CHANNEL TRUSS

W10 × 54

$r_x = 4.39$ IN. $\frac{KL}{r_x} = 40.32$ $Fe' = \frac{149000}{(40.32)^2} = 91.65$

$r_y = 2.56$ IN. $\frac{KL}{r_y} = 69.14$

$F_b = 24.0$ KSI $F_a = 18.39$ KSI

BENDING

@ JOINT NO. 6 : M = -1.245 -8.340 - 1.588 = -11.173 ^{1K}

$f_b = \frac{-11.173 \times 12}{60.4} = -2.220$ KSI

AXIAL COMPRESSION

@ 2nd SPAN P = 211.032^K $f_a = \frac{211.032}{15.9} = 13.272$ KSI

TORSION

$M_t = 1991\,\# \times 2" = 3982"\,\#$ (@ 1/3 POINTS EACH SPAN)

$\sigma_{wo} = 1.265$ KSI (WARPING NORMAL STRESS)

COMBINED STRESSES

$$\frac{f_a}{F_a} + \frac{C_m (f_b + f_t)}{\left(1 - \frac{f_a}{1.11\,Fe'}\right) F_b} \leq 1.0$$

$$\frac{13.272}{18.39} + \frac{0.85 \times (2.220 + 1.265)}{\left(1 - \frac{13.272}{1.11 \times 91.65}\right) 24} = .864 < 1.0$$

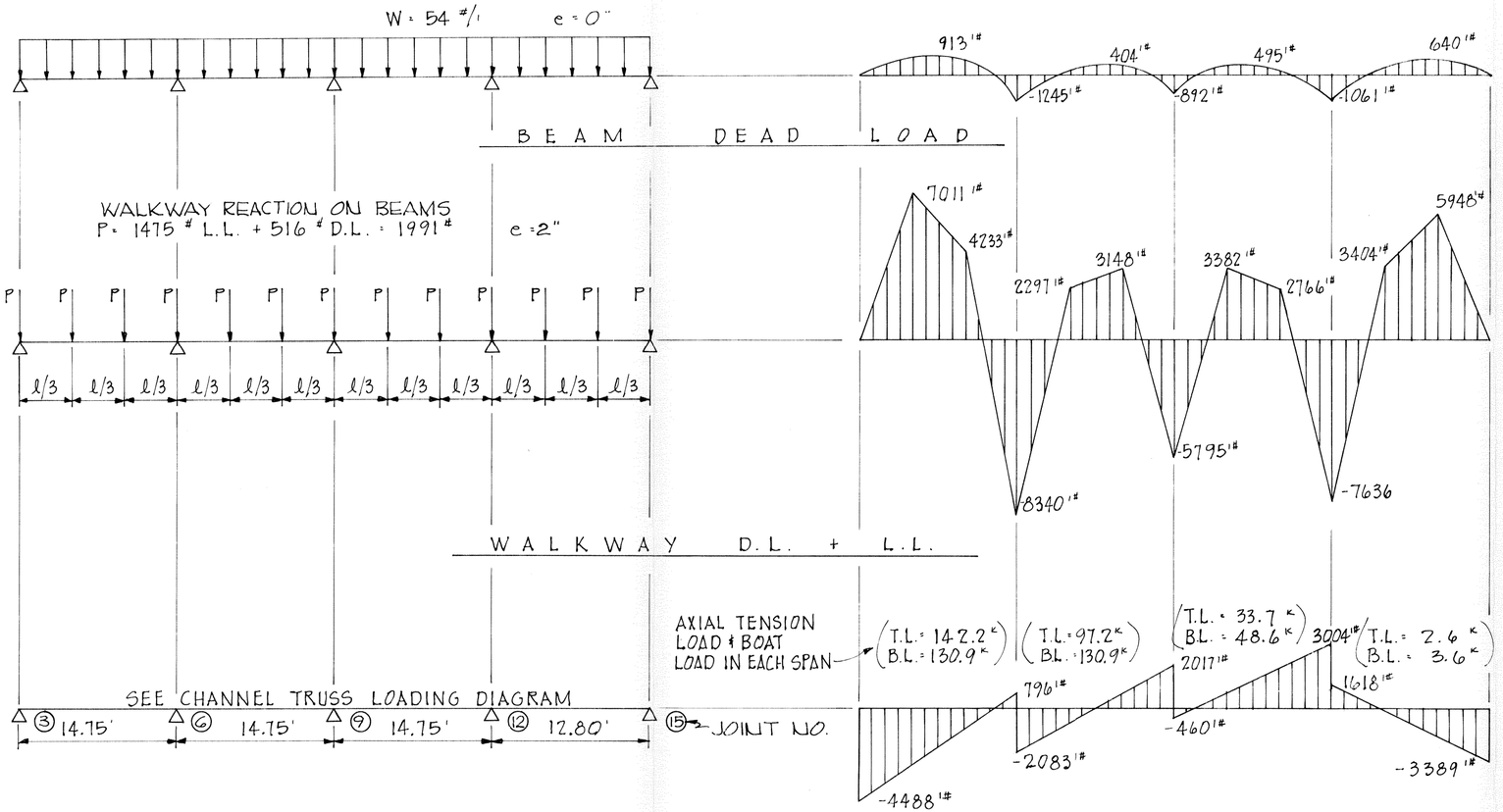
A JOINT VENTURE	
BM DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GULFSIDE GATE
CHANNEL TRUSS - TOP BEAM

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

DATE SEPT., 1973 FILE NO. H-2-24419



TRUSS LOADING (I + II 6A + BOAT LOAD CONTROLS)

LOADING — MOMENT

TOP BEAM - LAKESIDE GATE - CHANNEL TRUSS

W 10 x 54

$r_x = 4.39$ IN. $\quad \frac{KL}{r_x} = 40.32$

$r_y = 2.56$ IN. $\quad \frac{KL}{r_y} = 69.14$

$F_b = 24.0$ KSI $\quad F_a = 24.0$ KSI

BENDING

@ JOINT NO. 6: $M = -8.340 - 1.245 - 2.083 = -11.668$ ^K

$f_b = \frac{-11.668 \times 12}{60.4} = -2.318$ KSI

AXIAL TENSION

@ 2nd SPAN $\quad P = 273.1$ ^K $\quad f_a = \frac{273.1}{15.9} = 17.18$ KSI

TORSION

$M_t = 1991\ \# \times 2" = 3982$ "# (@ 1/3 POINTS EACH SPAN)

$\sigma_{wo} = -1.265$ KSI (WARPING NORMAL STRESS)

COMBINED STRESSES

$$\frac{f_a}{F_a} + \frac{(f_b + f_t)}{F_b} \leqq 1.0$$

$$\frac{17.18}{24.0} + \frac{(2.318 + 1.265)}{24.0} = 0.865 < 1.0$$

A JOINT VENTURE

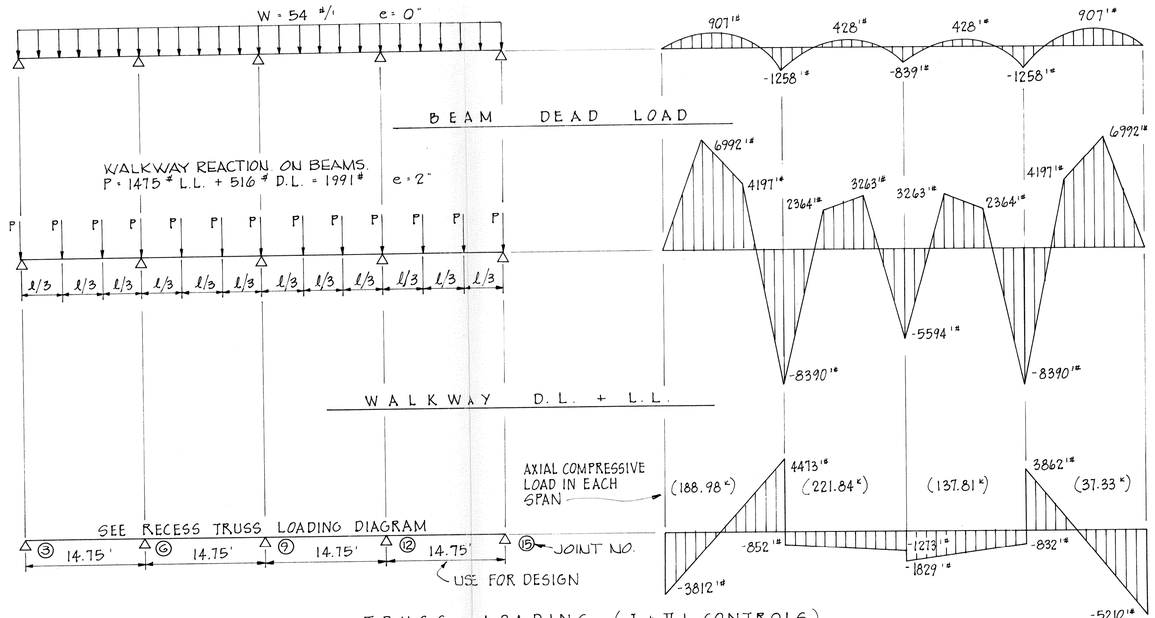
BM DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

LAKESIDE GATE
CHANNEL TRUSS - TOP BEAM

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

DATE SEPT, 1973 $\quad$ FILE NO. H-2-24419



LOADING MOMENT

TOP BEAM - GULFSIDE GATE - RECESS TRUSS

W 10 × 54

$r_x = 4.39$ IN. $\frac{KL}{r_x} = 40.32$ $\quad F_e' = \frac{149000}{(40.32)^2} = 91.65$ KSI

$r_y = 2.56$ IN. $\frac{KL}{r_y} = 69.14$

$F_b = 24.0$ KSI $\quad F_a = 18.39$ KSI

BENDING

@ JOINT NO. 6 : M = -1.258 -8.390 -0.852 = -10.5 'K

$f_b = \frac{-10.5 \times 12}{60.4} = -2.086$ KSI

@ MIDSPAN M = .907 + 5.595 + .330 = 6.832 'K

$f_b = \frac{6.832 \times 12}{60.4} = 1.357$ KSI

AXIAL COMPRESSION

@ 2nd SPAN $\quad P = 221.840$ K $\quad f_a = \frac{221.840}{15.9} = 13.952$ KSI

@ 1st SPAN $\quad P = 188.979$ K $\quad f_a = \frac{188.979}{15.9} = 11.885$ KSI

TORSION

$M_t = 1991\ \# \times 2" = 3982\ "\#$ (@ 1/3 POINTS EACH SPAN)

$f_{wo} = 1.265$ KSI (WARPING NORMAL STRESS)

COMBINED STRESSES

$$\frac{f_a}{F_a} + \frac{C_m (f_b + f_t)}{\left(1 - \frac{f_a}{1.11\,Fe'}\right) F_b} \leq 1$$

$$\frac{13.952}{18.39} + \frac{0.89 \times (2.086 + 1.265)}{\left(1 - \frac{13.952}{1.11 \times 91.65}\right) 24} = .903 < 1.0$$

MEMBERS 1 & 2

W 10 × 89

409.169 K — 78.77 "K — 119.85 "K — 409.169 K

1.122 K — L = 14.75' = 177" — 1.122 K

LOADING - (I + II CONTROLS)

$r_x = 4.55$ IN. $\frac{KL}{r_x} = 38.90$

$r_y = 2.63$ IN. $\frac{KL}{r_y} = 67.30$

$F_a = 18.57$ KSI $\quad F_b = 24.0$ KSI

$Fe' = \frac{149000}{(38.90)^2} = 98.47$ KSI

$f_a = \frac{409.169\ K}{26.2\ in^2} = 15.62$ KSI

$f_b = \frac{119.85\ "K}{99.7\ IN^3} = 1.20$ KSI

$$\frac{f_a}{F_a} + \frac{C_m (f_b)}{\left(1 - \frac{f_a}{1.11\,Fe'}\right) F_b} \leq 1$$

$$\frac{15.62}{18.57} + \frac{0.4 \times 1.20}{\left(1 - \frac{15.62}{1.11 \times 98.47}\right) 24} = .864 < 1.0$$

MEMBERS 3 & 4

W 10 × 54

280.125 K — 0.262 K — 0.262 K — 280.125 K

4.61 "K — L = 14.75' = 177" — 51.16 "K

LOADING - (I + II CONTROLS)

$r_x = 4.39$ IN. $\frac{KL}{r_x} = 40.32$

$r_y = 2.56$ IN. $\frac{KL}{r_y} = 69.14$

$F_a = 18.39$ KSI $\quad F_b = 24$ KSI

$Fe' = \frac{149000}{(40.32)^2} = 91.65$

$f_a = \frac{280.125\ K}{15.9\ in^2} = 17.62$ KSI

$f_b = \frac{51.16\ "K}{60.4\ IN^3} = 0.847$ KSI

$$\frac{17.62}{18.39} + \frac{0.64 \times 0.847}{\left(1 - \frac{17.62}{1.11 \times 91.65}\right) 24} = .985 < 1.0$$

TOP BEAM - GULFSIDE GATE - CENTER TRUSS

A JOINT VENTURE

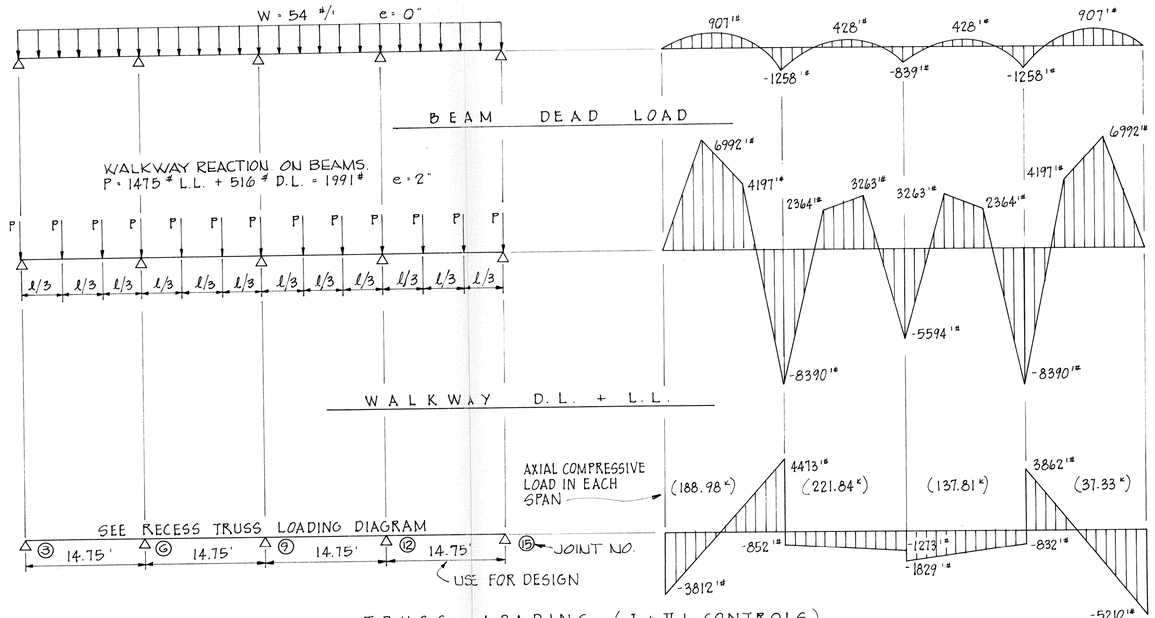
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GULFSIDE GATE
RECESS AND CENTER TRUSSES-TOP BEAM

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

DATE: SEPT., 1975 FILE NO. M-2-24419



LOADING MOMENT

TOP BEAM - GULFSIDE GATE - RECESS TRUSS

W 10 × 54

$r_x = 4.39$ IN. $\frac{KL}{r_x} = 40.32$ $\quad F_e' = \frac{149000}{(40.32)^2} = 91.65$ KSI

$r_y = 2.56$ IN. $\frac{KL}{r_y} = 69.14$

$F_b = 24.0$ KSI $\quad F_a = 18.39$ KSI

BENDING

@ JOINT NO. 6 : M = -1.258 -8.390 -0.852 = -10.5 'K

$f_b = \frac{-10.5 \times 12}{60.4} = -2.086$ KSI

@ MIDSPAN M = .907 + 5.595 + .330 = 6.832 'K

$f_b = \frac{6.832 \times 12}{60.4} = 1.357$ KSI

AXIAL COMPRESSION

@ 2nd SPAN $\quad P = 221.840$ K $\quad f_a = \frac{221.840}{15.9} = 13.952$ KSI

@ 1st SPAN $\quad P = 188.979$ K $\quad f_a = \frac{188.979}{15.9} = 11.885$ KSI

TORSION

$M_t = 1991\ \# \times 2" = 3982\ "\#$ (@ 1/3 POINTS EACH SPAN)

$f_{wo} = 1.265$ KSI (WARPING NORMAL STRESS)

COMBINED STRESSES

$$\frac{f_a}{F_a} + \frac{C_m (f_b + f_t)}{\left(1 - \frac{f_a}{1.11\,Fe'}\right) F_b} \leq 1$$

$$\frac{13.952}{18.39} + \frac{0.89 \times (2.086 + 1.265)}{\left(1 - \frac{13.952}{1.11 \times 91.65}\right) 24} = .903 < 1.0$$

MEMBERS 1 & 2

W 10 × 89

409.169 K — 78.77 "K — 119.85 "K — 409.169 K

1.122 K — L = 14.75' = 177" — 1.122 K

LOADING - (I + II CONTROLS)

$r_x = 4.55$ IN. $\frac{KL}{r_x} = 38.90$

$r_y = 2.63$ IN. $\frac{KL}{r_y} = 67.30$

$F_a = 18.57$ KSI $\quad F_b = 24.0$ KSI

$Fe' = \frac{149000}{(38.90)^2} = 98.47$ KSI

$f_a = \frac{409.169\ K}{26.2\ in^2} = 15.62$ KSI

$f_b = \frac{119.85\ "K}{99.7\ IN^3} = 1.20$ KSI

$$\frac{f_a}{F_a} + \frac{C_m (f_b)}{\left(1 - \frac{f_a}{1.11\,Fe'}\right) F_b} \leq 1$$

$$\frac{15.62}{18.57} + \frac{0.4 \times 1.20}{\left(1 - \frac{15.62}{1.11 \times 98.47}\right) 24} = .864 < 1.0$$

MEMBERS 3 & 4

W 10 × 54

280.125 K — 0.262 K — 0.262 K — 280.125 K

4.61 "K — L = 14.75' = 177" — 51.16 "K

LOADING - (I + II CONTROLS)

$r_x = 4.39$ IN. $\frac{KL}{r_x} = 40.32$

$r_y = 2.56$ IN. $\frac{KL}{r_y} = 69.14$

$F_a = 18.39$ KSI $\quad F_b = 24$ KSI

$Fe' = \frac{149000}{(40.32)^2} = 91.65$

$f_a = \frac{280.125\ K}{15.9\ in^2} = 17.62$ KSI

$f_b = \frac{51.16\ "K}{60.4\ IN^3} = 0.847$ KSI

$$\frac{17.62}{18.39} + \frac{0.64 \times 0.847}{\left(1 - \frac{17.62}{1.11 \times 91.65}\right) 24} = .985 < 1.0$$

TOP BEAM - GULFSIDE GATE - CENTER TRUSS

A JOINT VENTURE

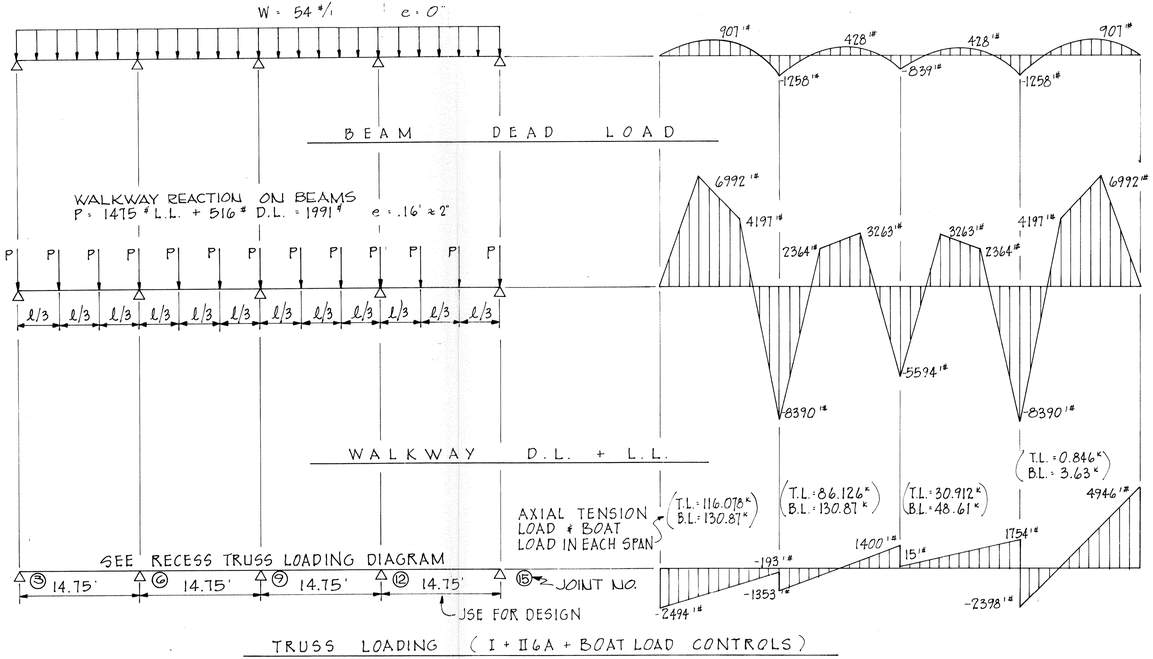
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GULFSIDE GATE
RECESS AND CENTER TRUSSES-TOP BEAM

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

DATE: SEPT., 1975 FILE NO. M-2-24419



TRUSS LOADING (I + II 6A + BOAT LOAD CONTROLS)

LOADING MOMENT

TOP BEAM - LAKESIDE GATE - RECESS TRUSS

W 10 × 54

r_x = 4.39 IN. $\frac{KL}{r_x}$ = 40.32

r_y = 2.56 IN. $\frac{KL}{r_y}$ = 69.14

F_b = 24.0 KSI F_a = 18.39 KSI Fe' = 91.65 KSI

BENDING

@ JOINT NO. 6 : M = -8.390 - 1.258 - 1.353 = -11.001 '#

$f_b = \frac{-11.001 \times 12}{60.4}$ = 2.186 KSI.

AXIAL TENSION

T = 116.078 + 130.87 = 246.948

$f_a = \frac{246.948}{15.9}$ = 15.53 KSI

TORSION

M_t = 1991 # × 2" = 3982 "# (@ ⅓ POINTS EACH SPAN)

σ_{wo} = -1.265 KSI (WARPING NORMAL STRESS)

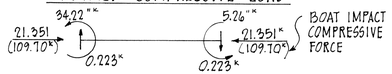
COMBINED STRESSES

$\frac{f_a}{F_a} + \frac{f_b + f_t}{F_b} \leq 1.0$

$\frac{15.53}{24.0} + \frac{2.186 + 1.265}{24}$ = .791 < 1.0

W 10 × 54

MAXIMUM COMPRESSIVE LOAD



LOADING - (I + II 4 + BOAT CONTROLS)

r_x = 4.39 IN. $\frac{KL}{r_x}$ = 40.32

r_y = 2.56 IN. $\frac{KL}{r_y}$ = 69.14

F_a = 18.39 KSI

$Fe' = \frac{149000}{40.32^2}$ = 91.65 KSI

$f_a = \frac{131.051}{15.9}$ = 8.24 KSI

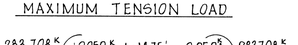
F_b = 24.0 KSI

$f_b = \frac{34.22}{60.4}$ = 0.566 KSI

$\frac{f_a}{F_a} + \frac{Cm\,(f_b)}{\left(1 - \frac{f_a}{1.11\,Fe'}\right) F_b} \leq 1$

$.448 + \frac{.54 \times .566}{\left(1 - \frac{8.24}{1.11 \times 91.65}\right) 24}$ = .462 < 1.0

MAXIMUM TENSION LOAD



LOADING-(I + II 6b CONTROLS)

T = 283.708^K

$f_a = \frac{283.708}{15.9}$ = 17.84

$f_b = \frac{36.57}{60.4}$ = .605

$\frac{f_a}{F_a} + \frac{f_b}{F_b} \leq 1.0$

$\frac{17.84}{24} + \frac{.605}{24}$ = 0.768 < 1.0

TOP BEAM - LAKESIDE GATE - CENTER TRUSS

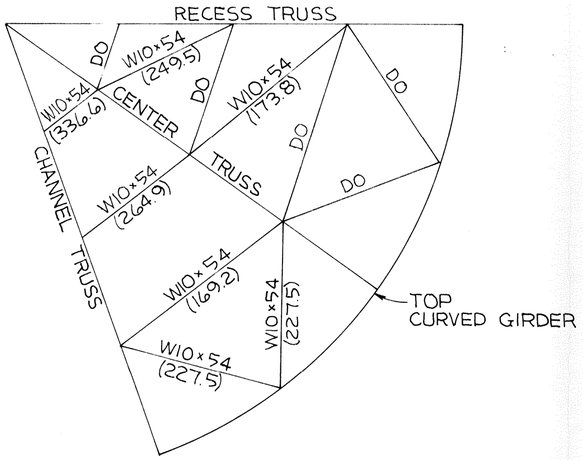
A JOINT VENTURE
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA
STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

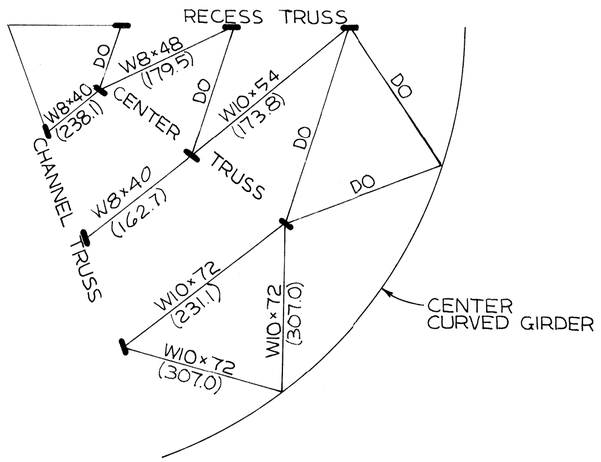
LAKESIDE GATE
RECESS AND CENTER TRUSSES-TOP BEAM

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

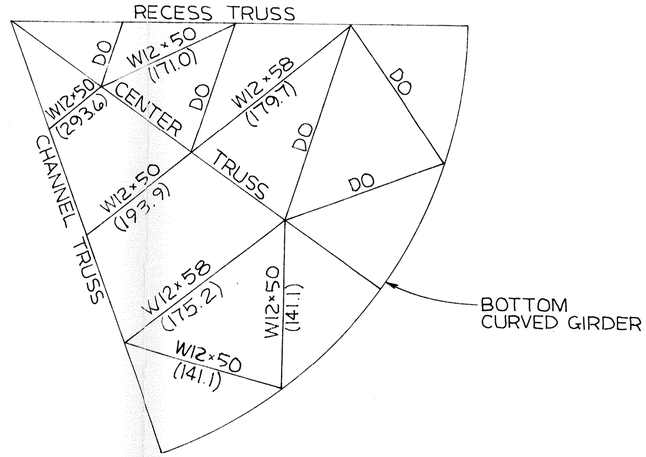
DATE SEPT. 1973 FILE NO. H-2-24419



PLAN @ EL. +12.0'



PLAN @ EL. -0.25'



PLAN @ EL. -12.5'

GULFSIDE SECTOR GATES

HORIZONTAL FRAME MEMBERS

( ) – MAXIMUM ALLOWABLE COMPRESSIVE LOAD IN KIPS FOR EACH MEMBER SHOWN, ASSUMING PINNED-END COLUMN AND BASIC STRESS = $0.67F_y$.

A JOINT VENTURE

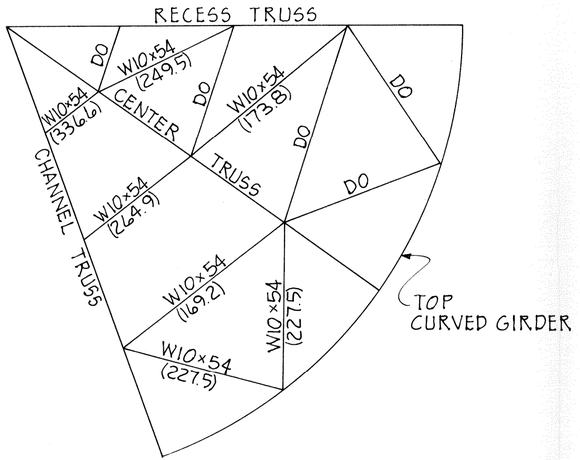
B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 – DETAIL DESIGN
RIGOLETS LOCK

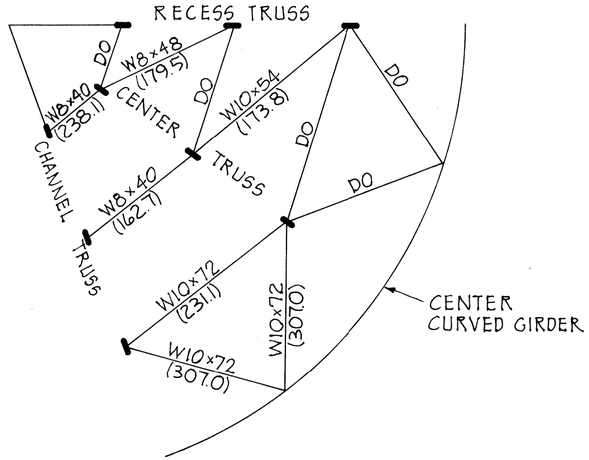
GULFSIDE GATE
HORIZONTAL FRAME MEMBERS
ALLOWABLE LOADS

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

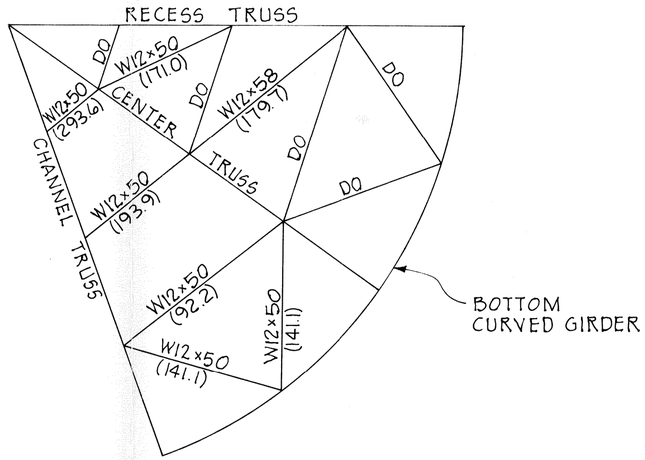
DATE: SEPT., 1973 FILE NO. H-2-24419



PLAN @ EL +12.0'



PLAN @ EL -0.25'



PLAN @ EL. -12.5'

LAKESIDE SECTOR GATES

HORIZONTAL FRAME MEMBERS

( ) - MAXIMUM ALLOWABLE COMPRESSIVE LOAD IN KIPS FOR EACH MEMBER SHOWN, ASSUMING PINNED-END COLUMN AND BASIC STRESS = $0.67F_y$.

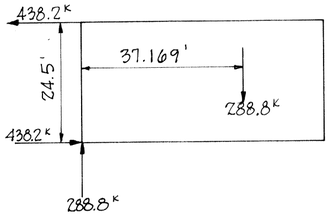
A JOINT VENTURE

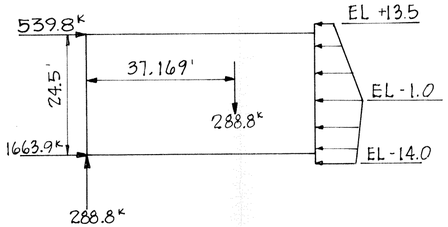
B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

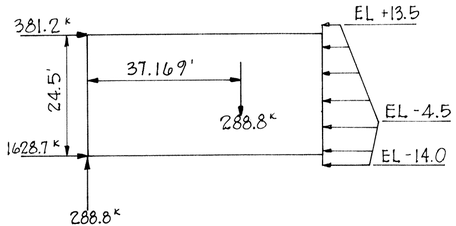
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK
LAKESIDE GATE
HORIZONTAL FRAME MEMBERS
ALLOWABLE LOADS

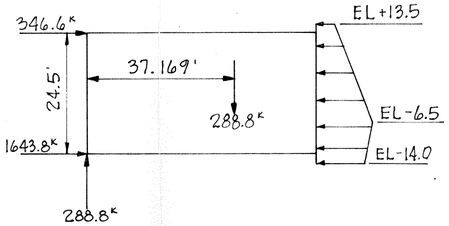
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

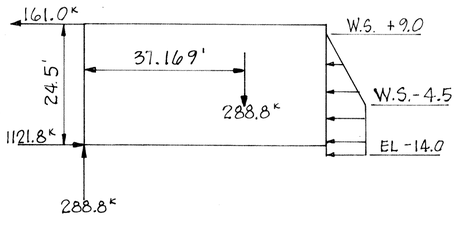
DATE: SEPT., 1973 FILE NO. H-2-24419

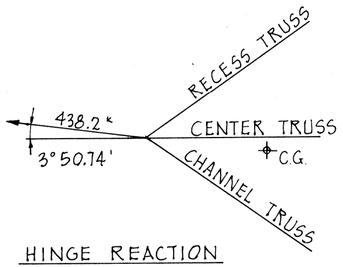




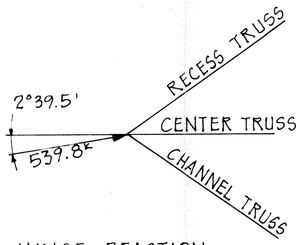




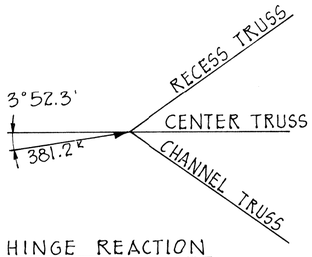




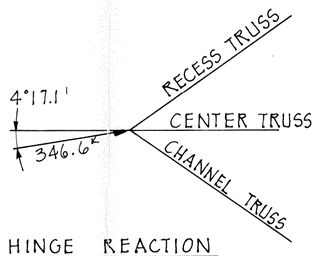
HINGE REACTION



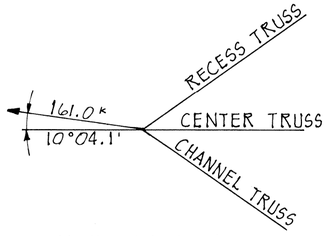
HINGE REACTION



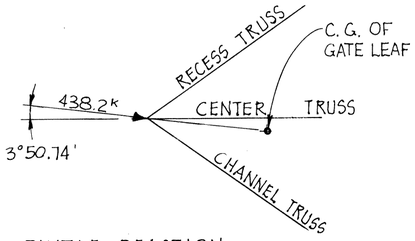
HINGE REACTION



HINGE REACTION

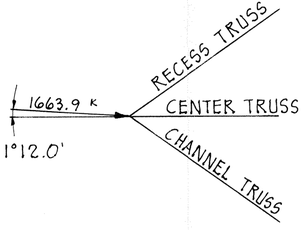


HINGE REACTION



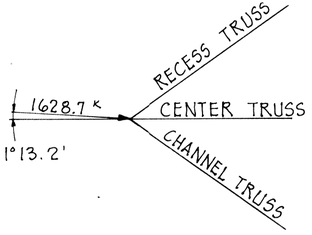
PINTLE REACTION

CASE I - DEAD LOAD



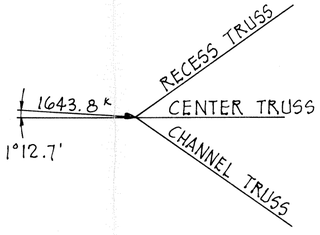
PINTLE REACTION

CASE I + II 1



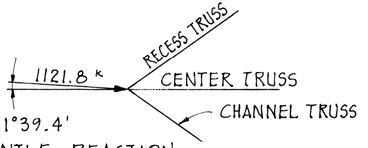
PINTLE REACTION

CASE I + II 2



PINTLE REACTION

CASE I + II 3



PINTLE REACTION

CASE I + II 4

A JOINT VENTURE

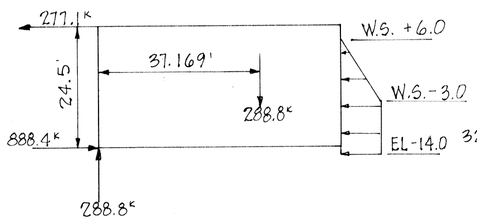
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

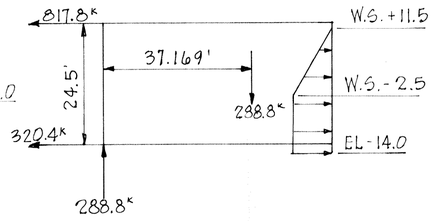
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

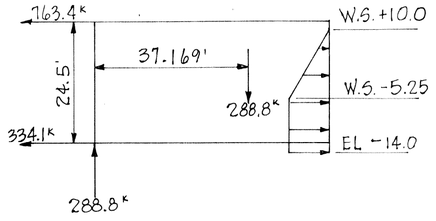
HINGE AND PINTLE REACTIONS

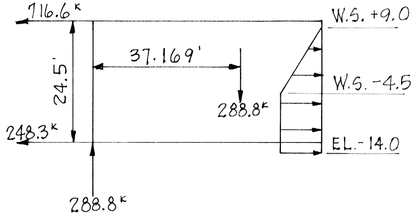
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

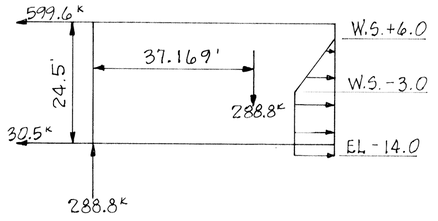
DATE: SEPT. 1973 FILE NO H-2-24419

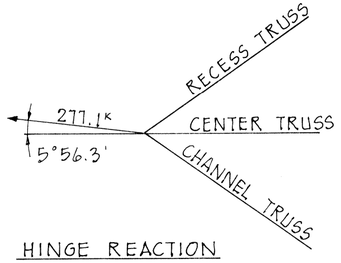




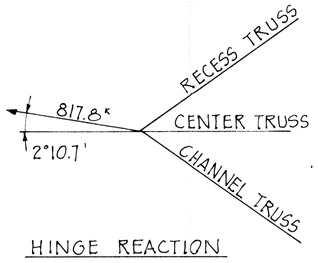




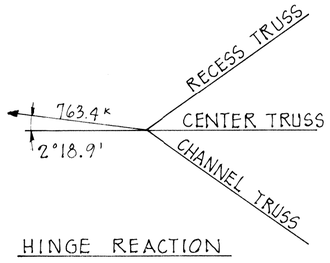




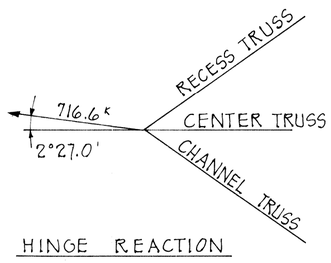
HINGE REACTION



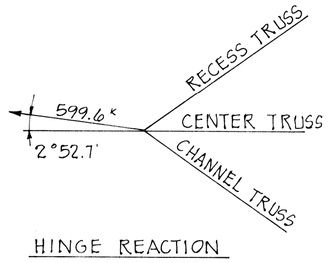
HINGE REACTION



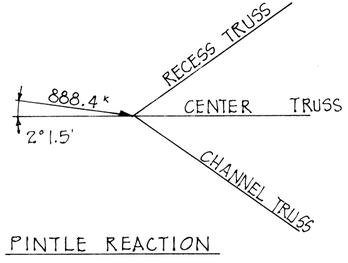
HINGE REACTION



HINGE REACTION

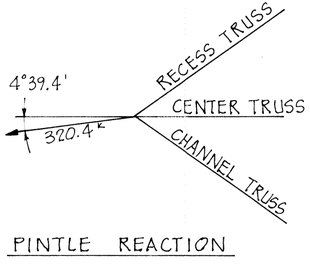


HINGE REACTION



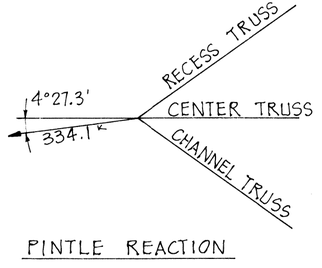
PINTLE REACTION

CASE I+II 5



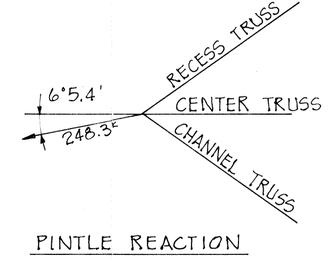
PINTLE REACTION

CASE I+II 7



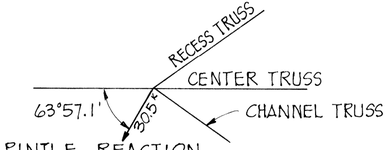
PINTLE REACTION

CASE I+II 8



PINTLE REACTION

CASE I+II 9



PINTLE REACTION

CASE I+II 10

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO 8 - DETAIL DESIGN
RIGOLETS LOCK

HINGE AND PINTLE REACTIONS

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

DATE SEPT., 1973 FILE NO H-2-24419

MAXIMUM LOADS FOR BEARING STRESSES:

STATIC CASE I + II7 = 817.8 K TENSION
MOVING CASE I + II10 = 599.6 K TENSION

BEARING AREA OF 12"×20" ϕ BUSHING = 240 □"

BEARING STRESSES:

MOVING $\frac{599.6 \times 1000}{240}$ = 2498 PSI < 2500 PSI ALLOWABLE

STATIC $\frac{817.8 \times 1000}{240}$ = 3408 PSI

MAXIMUM TENSILE LOAD FOR STRUCTURAL DESIGN:

DEAD LOAD PLUS CASE II9 CONTROLS (NORMAL STRESSES)
USE P = 716.6 K; USE 720 K FOR DESIGN

NET SECTION AT PIN HOLE:

720 K / 2 PLATES = 360 K / PLATE

$\frac{360{,}000}{13500}$ = 26.7 □" REQ'D. AREA TRANSVERSE TO LOAD

26.7 × 2/3 = 17.8 □" REQ'D. AREA IN DIRECTION OF LOAD

WITH 1½ PLATES:

17.8 □" / 1.50" = 11.87" REQ'D. WIDTH IN DIRECTION OF LOAD

11.87 + 12.50"/2 = 18.12", USE 18¼" RADIUS ON PLATE

BENDING ON PIN:

(12½" DIAMETER, A = 122.7 □", S = 191.7 IN.³)

$M_{MAX} = \frac{720 \times 14.50}{4}$ = 2610 "K

$f_b = \frac{2610}{191.7}$ = 13.62 KSI < 27.0 KSI

SHEAR ON PIN:

$V = 4/3 \times \frac{360000}{122.7}$ = 3912 PSI < 12000 PSI

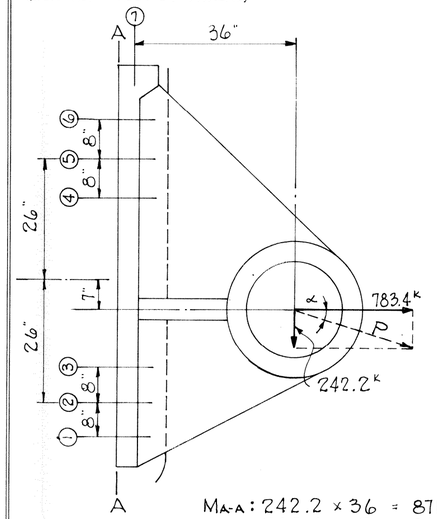
BEARING ON 1½" PLATES:

$\frac{720000}{2 \times (12.5 \times 1.50)}$ = 19,200 PSI < 27,000 PSI

ONE 2¾" ϕ H.S. BOLT
PRESTRESS = 138.6 K
(30.0 KSI @ ROOT OF THREAD)

BOLT GROUP
4 × 18²
4 × 26²
4 × 34²
Σd² = 8624 IN.²

P = 817.8 K; USE 820 K



α = 17°10.7'

M_{A-A}: 242.2 × 36 = 8719 "K
783.4 × 7 = 5484 "K
3235 "K

BOLT LOAD = $\frac{783.4}{12 \text{ BOLTS}} \pm \frac{3235 \times 34}{8624}$ = 65.3 ± 12.8

@ ⑥ = 78.1 K < 138.6 K PRESTRESS
@ ① = 52.5 K < 138.6 K "DO"

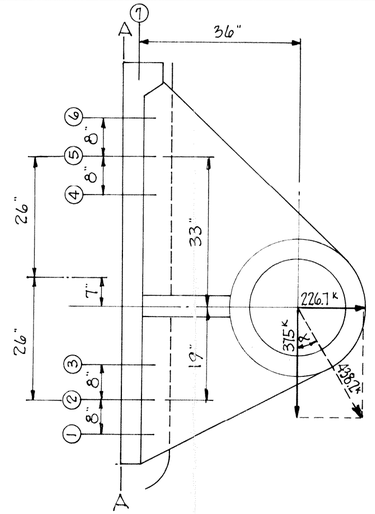
BOLT LOAD @ ① = 242.2/2 = 121.1 K

FOR 3"ϕ STUD, STRESS @ ROOT OF THREAD =

$\frac{121.1 \text{ K}}{5.62 \text{ □"}}$ = 21.55 KSI < 33.5 KSI ALLOWABLE
< 30.0 KSI PRESTRESS

MAXIMUM TENSION LOAD

(I + II7, NO INCREASE ALLOWED ON BOLT PRESTRESS)



α = (35°) − (3°50'44.2")
= 31°09'15.8"

M_{A-A}: 375 × 36 = 13500 "K
226.7 × 7 = 1587 "K
11913 "K

BOLT LOAD = $\frac{226.7}{12 \text{ BOLTS}} \pm \frac{11913 \times 34}{8624}$ = 18.9 ± 46.9

@ ⑥ = 65.8 K < 138.6
@ ① = NO TENSION DUE TO LOAD

BOLT LOAD @ ⑦ = 375/2 = 187.5 K

FOR 3"ϕ STUD, STRESS @ ROOT OF THREAD =

$\frac{187.5 \text{ K}}{5.62 \text{ □"}}$ = 33.36 KSI < 33.5 KSI ALLOWABLE
> 30.0 KSI PRESTRESS

OK FOR TEMPORARY CONDITION.

MAXIMUM ASYMMETRIC LOAD

(I - DEAD LOAD ONLY, NOT IN OPERATING POSITION)

NOTES:

1. TWO CASES SHOWN ARE THOSE WHICH GIVE MAXIMUM TENSILE BOLT LOADS. OTHER CASES DO NOT CONTROL AMOUNT OF PRESTRESS REQUIRED IN ANCHOR BOLTS.
2. INCREASED STRESSES CANNOT BE PERMITTED ON BOLT PRESTRESS LOAD THEREFORE CASE I + II7 CONTROLS AS MAXIMUM TENSION LOAD RATHER THAN CASE I + II9

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

HINGE DESIGN

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

DATE SEPT., 1973 FILE NO H-2-24419

MAXIMUM LOADS FOR BEARING STRESSES:

STATIC CASE I + II7 = 817.8 K TENSION
MOVING CASE I + II10 = 599.6 K TENSION

BEARING AREA OF 12"×20" ϕ BUSHING = 240 □"

BEARING STRESSES:

MOVING $\frac{599.6 \times 1000}{240}$ = 2498 PSI < 2500 PSI ALLOWABLE

STATIC $\frac{817.8 \times 1000}{240}$ = 3408 PSI

MAXIMUM TENSILE LOAD FOR STRUCTURAL DESIGN:

DEAD LOAD PLUS CASE II9 CONTROLS (NORMAL STRESSES)
USE P = 716.6 K; USE 720 K FOR DESIGN

NET SECTION AT PIN HOLE:

720 K / 2 PLATES = 360 K / PLATE

$\frac{360{,}000}{13500}$ = 26.7 □" REQ'D. AREA TRANSVERSE TO LOAD

26.7 × 2/3 = 17.8 □" REQ'D. AREA IN DIRECTION OF LOAD

WITH 1½ PLATES:

17.8 □" / 1.50" = 11.87" REQ'D. WIDTH IN DIRECTION OF LOAD

11.87 + 12.50"/2 = 18.12", USE 18¼" RADIUS ON PLATE

BENDING ON PIN:

(12½" DIAMETER, A = 122.7 □", S = 191.7 IN.³)

$M_{MAX} = \frac{720 \times 14.50}{4}$ = 2610 "K

$f_b = \frac{2610}{191.7}$ = 13.62 KSI < 27.0 KSI

SHEAR ON PIN:

$V = 4/3 \times \frac{360000}{122.7}$ = 3912 PSI < 12000 PSI

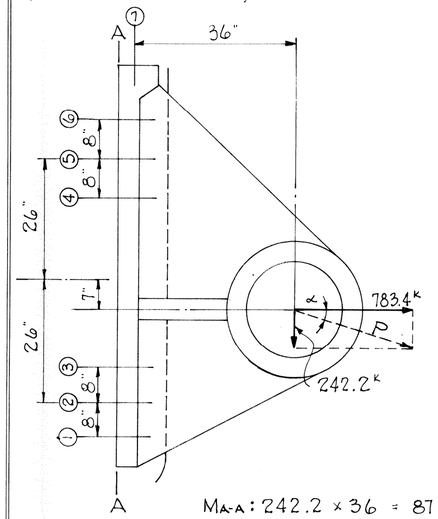
BEARING ON 1½" PLATES:

$\frac{720000}{2 \times (12.5 \times 1.50)}$ = 19,200 PSI < 27,000 PSI

ONE 2¾" ϕ H.S. BOLT
PRESTRESS = 138.6 K
(30.0 KSI @ ROOT OF THREAD)

BOLT GROUP
4 × 18²
4 × 26²
4 × 34²
Σd² = 8624 IN.²

P = 817.8 K; USE 820 K



α = 17°10.7'

M_{A-A}: 242.2 × 36 = 8719 "K
783.4 × 7 = 5484 "K
3235 "K

BOLT LOAD = $\frac{783.4}{12 \text{ BOLTS}} \pm \frac{3235 \times 34}{8624}$ = 65.3 ± 12.8

@ ⑥ = 78.1 K < 138.6 K PRESTRESS
@ ① = 52.5 K < 138.6 K "DO"

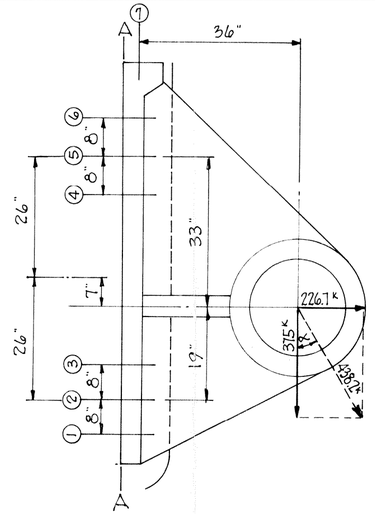
BOLT LOAD @ ① = 242.2/2 = 121.1 K

FOR 3"ϕ STUD, STRESS @ ROOT OF THREAD =

$\frac{121.1 \text{ K}}{5.62 \text{ □"}}$ = 21.55 KSI < 33.5 KSI ALLOWABLE
< 30.0 KSI PRESTRESS

MAXIMUM TENSION LOAD

(I + II7, NO INCREASE ALLOWED ON BOLT PRESTRESS)



α = (35°) − (3°50'44.2")
= 31°09'15.8"

M_{A-A}: 375 × 36 = 13500 "K
226.7 × 7 = 1587 "K
11913 "K

BOLT LOAD = $\frac{226.7}{12 \text{ BOLTS}} \pm \frac{11913 \times 34}{8624}$ = 18.9 ± 46.9

@ ⑥ = 65.8 K < 138.6
@ ① = NO TENSION DUE TO LOAD

BOLT LOAD @ ⑦ = 375/2 = 187.5 K

FOR 3"ϕ STUD, STRESS @ ROOT OF THREAD =

$\frac{187.5 \text{ K}}{5.62 \text{ □"}}$ = 33.36 KSI < 33.5 KSI ALLOWABLE
> 30.0 KSI PRESTRESS

OK FOR TEMPORARY CONDITION.

MAXIMUM ASYMMETRIC LOAD

(I - DEAD LOAD ONLY, NOT IN OPERATING POSITION)

NOTES:

1. TWO CASES SHOWN ARE THOSE WHICH GIVE MAXIMUM TENSILE BOLT LOADS. OTHER CASES DO NOT CONTROL AMOUNT OF PRESTRESS REQUIRED IN ANCHOR BOLTS.
2. INCREASED STRESSES CANNOT BE PERMITTED ON BOLT PRESTRESS LOAD THEREFORE CASE I + II7 CONTROLS AS MAXIMUM TENSION LOAD RATHER THAN CASE I + II9

A JOINT VENTURE

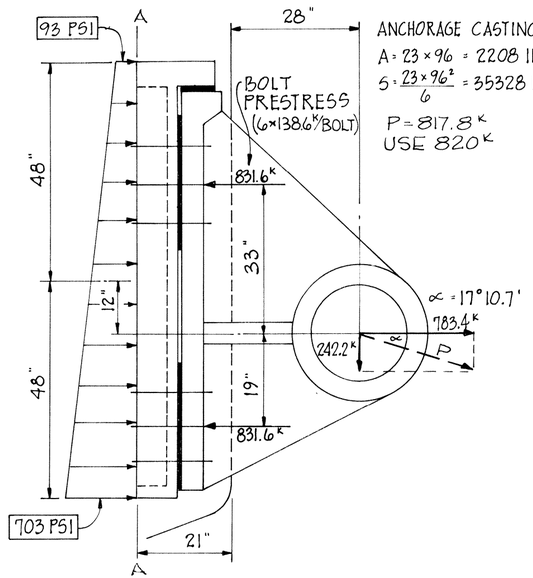
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

HINGE DESIGN

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

DATE SEPT., 1973 FILE NO H-2-24419



N = 1663.2 − 783.4 = 879.8ᴷ

MA-A: 1663 × 5 = 8316 } "ᴷ
783.4 × 12 = 9401 } "ᴷ
242.2 × 49 = 11868 } "ᴷ
10783 } "ᴷ

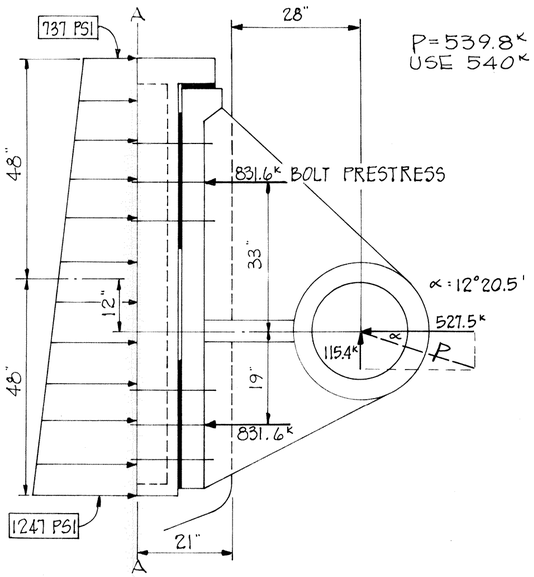
CONCRETE BEARING STRESS =

$$\frac{879.8}{2208} \pm \frac{10783}{35328} = 0.398 \pm 0.305$$

= 93 PSI COMPRESSION
703 PSI COMPRESSION

MAXIMUM TENSION LOAD

(CASE I + II7)



N = 1663.2 + 527.5 = 2190.7ᴷ

MA-A: 1663.2 × 5 = 8316 } "ᴷ
115.4 × 49 = 5665 } "ᴷ
527.5 × 12 = 6330 } "ᴷ
8991 } "ᴷ

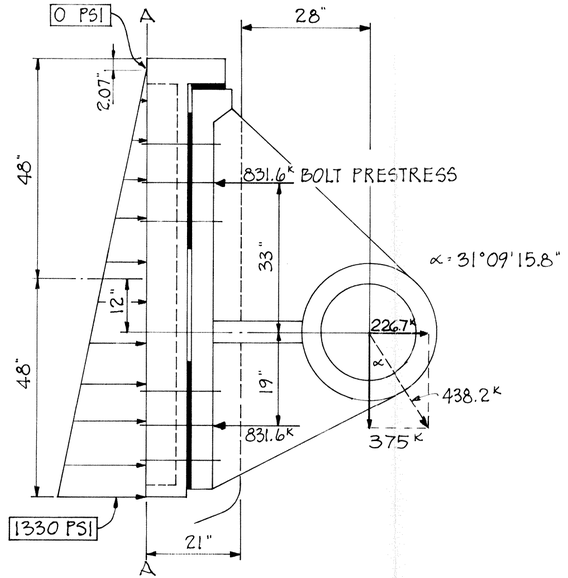
CONCRETE BEARING STRESS =

$$\frac{2190.7}{2208} \pm \frac{8991}{35328} = 0.992 \pm 0.255$$

= 737 PSI COMPRESSION
1247 PSI COMPRESSION

MAXIMUM COMPRESSIVE LOAD

(CASE I + III)



N = 1663.2 − 226.7 = 1436.5ᴷ

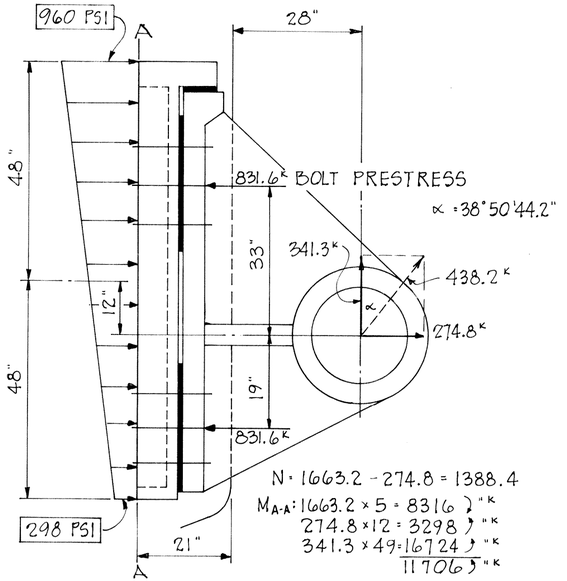
MA-A: 1663.2 × 5 = 8316 } "ᴷ
226.7 × 12 = 2720 } "ᴷ
375.0 × 49 = 18375 } "ᴷ
23971 } "ᴷ

$e = \frac{23971}{1436.5} = 16.69" > \frac{48}{3}$ 48 − 16.69 = 31.31"
31.31" × 3 = 93.93"

CONCRETE BEARING STRESS =
$p \times 93.93 \times 23 \times \frac{1}{2} = 1436.5^{K}$
p = 1330 PSI COMPRESSION

MAXIMUM ASYMMETRIC LOAD

(CASE I - DEAD LOAD ONLY, NOT IN OPERATING POSITION)



N = 1663.2 − 274.8 = 1388.4

MA-A: 1663.2 × 5 = 8316 } "ᴷ
274.8 × 12 = 3298 } "ᴷ
341.3 × 49 = 16724 } "ᴷ
11706 } "ᴷ

CONCRETE BEARING STRESS =

$$\frac{1388.4}{2208} \pm \frac{11706}{35328} = 0.629 \pm 0.331$$

= 960 PSI COMPRESSION
298 PSI COMPRESSION

DEAD LOAD WITH GATE IN RECESS POSITION

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

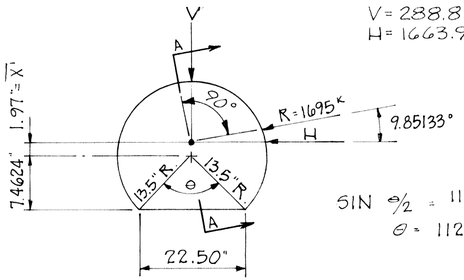
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

HINGE DESIGN

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

DATE SEPT., 1973 FILE NO H-2-24419

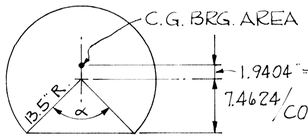
MAXIMUM COMPRESSIVE LOAD
(CASE I PLUS II 1)



V = 288.8K ; USE 290K
H = 1663.9K ; USE 1670K

SIN θ/2 = 11.25/13.5 = 0.83333
θ = 112.8854°

ELEVATION



SECTION A-A
(PERPENDICULAR TO RESULTANT R)

COS α/2 = 7.574/13.5 α/2 = 55.8725°
α = 111.745°
= 1.9503 RADIANS
SIN α = 0.928842

BUSHING

BEARING AREA = π × R² − ½ × R² × (α − SIN α)
= π × 13.5² − ½ × 13.5² × (1.9503 − 0.928842)
= 572.56 − 93.08 = 479.48 □"

BEARING STRESS = 1695 × 1000 / 479.48 = 3535 psi (NOT MOVING)

CENTER OF GRAVITY OF BEARING AREA :

(A) X̄ + ½ R² (α − SIN α) 4/3 R SIN³ α/2 / (α − SIN α) = 0

(479.48) X̄ + ½ (13.5)² (4/3) (13.5) (0.82779)³ = 0

X̄ = 930.402 / 479.48 = 1.9404"

X̄' = 194 ÷ COS 9.85133° = 1.97" USE 2"

LET RESULTANT PASS THRU CENTER OF GRAVITY OF BEARING AREA.

USE 27" DIAMETER PINTLE BALL.

PINTLE SHAFT : (STAINLESS STEEL)

BENDING IN SHAFT = 1670 × (2+9+3) = 23380 IN-KIP

S = πd³/32 = π(19.5)³/32 = 727.95 IN.³

f_b = 23380 IN-KIP / 727.95 IN.³ = 32.12 KSI < 45.0 KSI

SHEAR = 1670 × 1000 / π × 9.75² × 4/3 = 7456 PSI O.K.

BEARING :

I OF EMBEDDED SHAFT = ½ × 19.5 × 21.5³ = 16150 IN.⁴

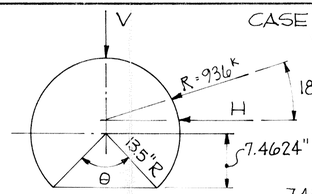
M = 1670 × 24.75 = 41333 "K

P = 1670/(19.5 × 21.5) ± 41333 × 10.75 / 16150

= 3.983 ± 27.513 = +31.496 KSI < 32.500 KSI
−23.530 KSI

BEARING ON PINTLE ANCHORAGE CASTING CONTROLS

CASE I + II 5



V = 288.8K ; USE 290K
H = 888.4 ; USE 890K

θ = 112.8854°

7.4624" / COS 18.0478 = 7.8486"

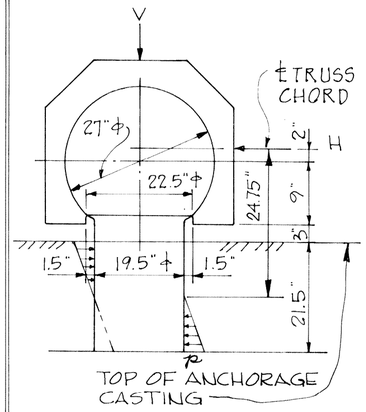
ELEVATION

COS α/2 = 7.8486/13.5 α/2 = 54.4525° α = 108.9050°
= 1.9008 RADIANS
SIN α = 0.946057

BEARING AREA =
π × 13.5² − ½ × 13.5² × (1.9008 − 0.946057) = 485.56 □"

BEARING STRESS =
936 × 1000 / 485.56 = 1928 PSI < 2500 PSI ALLOWABLE

MAXIMUM OPERATING LOAD (MOVING)



PINTLE DIMENSIONS

A JOINT VENTURE

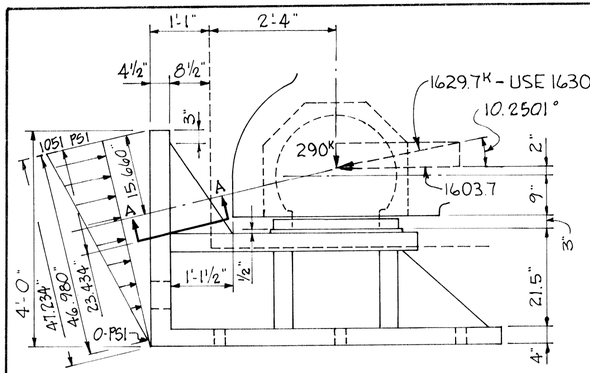
B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA. | STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

PINTLE DESIGN

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

DATE SEPT., 1973 FILE NO H-2-24419

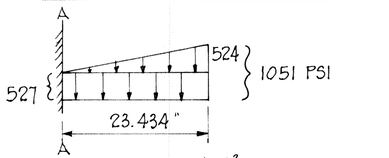


CONCRETE BEARING STRESS

$p \times \frac{46.980 \times 66}{2} = 1630^K$

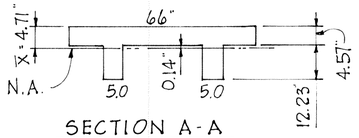
$p = 1.051$ KSI < 1.125 KSI

BENDING AT SECTION A-A



M_{A-A} : $\frac{0.524 \times 23.434^2}{3} \times 66 = 6331^{"K}$

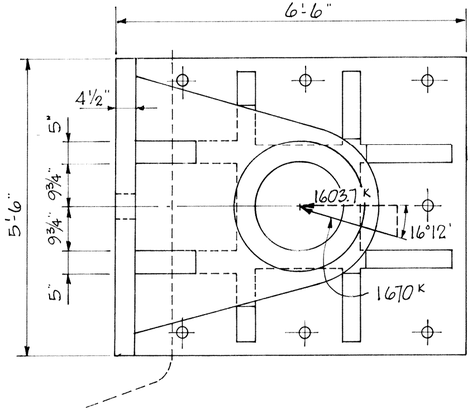
$\frac{0.527 \times 23.434^2}{2} \times 66 = \frac{9550^{"K}}{15881^{"K}}$



SECTION A-A

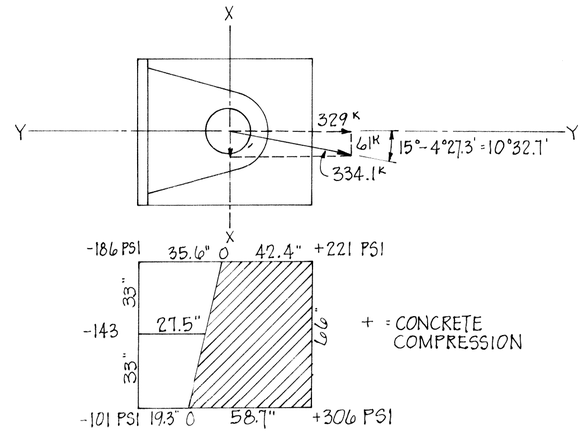
$I = 8203$ IN.^{4}

$f_b = \frac{15881 \times 12.09}{8203} = 23.41 < 24.0$ KSI



MAXIMUM COMPRESSIVE LOAD

(CASE I + II 1)



V = GATE REACTION + CASTING WEIGHT

$= 290 + 20 = 310^K$

$M_x = (329^K \times 39.5") + (310^K \times 2") = 13616^{"K}$

$M_y = 61^K \times 39.5" = 2410^{"K}$

$e_x = M_x/V = 43.923"$

$e_y = M_y/V = 7.774"$

$p = \frac{310{,}000}{66 \times 78}\left(1 \pm \frac{6 \times 43.923}{78} \pm \frac{6 \times 7.774}{66}\right)$

$= 60.2176\,(1 \pm 3.379 \pm 0.707) = 306$ PSI MAX. COMPR.

REPLACE CONCRETE STRESS WITH BOLT TENSION:

MAX. BOLT TENSION = $\frac{164.5 \text{ PSI} \times 31.55 \times 33}{2} = 85{,}600$ lbs.

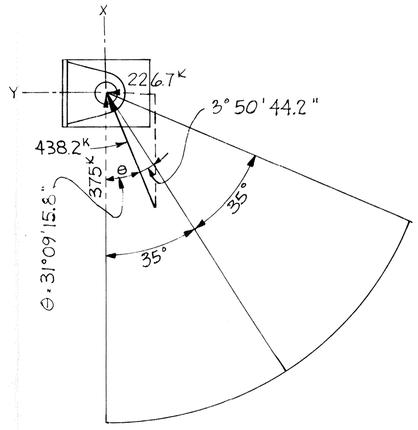
A REQ'D. = $\frac{85.6^K}{44.5 \text{ KSI}} = 1.93^{\square"}$ OF BOLT

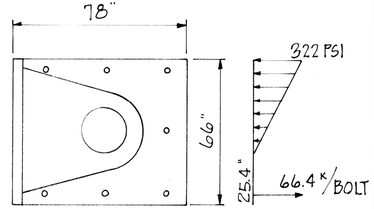
2½" ϕ BOLTS = $3.72^{\square"}$ @ ROOT OF THREADS

USE 2½" ϕ H.S. BOLTS

MAXIMUM TENSION LOAD

(CASE I + II 8)





$438.2^K \times \cos\theta = 375.0$

V = 290 + 20 = 310 K

$M_y = 375 \times 39.5 = 14813^{"K}$

$e_y = 14813/310 = 47.784"$

$p = \frac{310}{66 \times 78}\left(1 \pm \frac{6 \times 47.784}{66}\right)$

$= 60.2176\,(1 \pm 4.344)$

$= 322$ PSI COMPR.

201 PSI TENSION

REPLACE CONC. STRESS W/ BOLT STRESSES:

$201/523 \times 66 = 25.4"$

$\frac{½ \times 0.201 \times 25.4 \times 78}{3 \text{ BOLTS}} = 66.4^K/\text{BOLT}$

USE 2½" BOLTS

$\frac{66.4^K}{3.72^{\square"}} = 17.85$ KSI < 33.5 KSI.

MAXIMUM ASYMMETRIC LOAD

(CASE I - DEAD LOAD ONLY, NOT IN OPERATION)

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA | STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

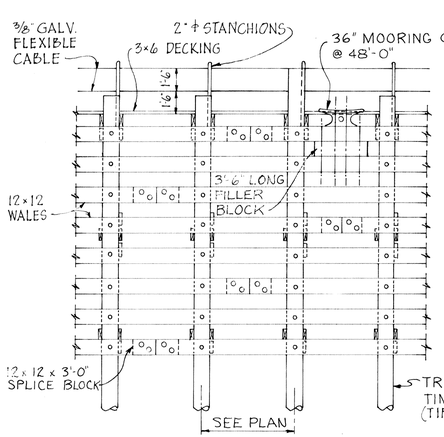
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN

DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

PINTLE DESIGN

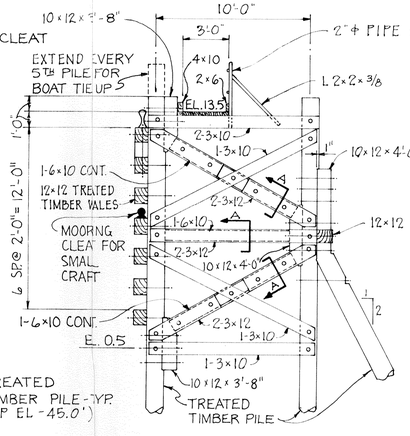
U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE SEPT., 1973 FILE NO. H-2-24419



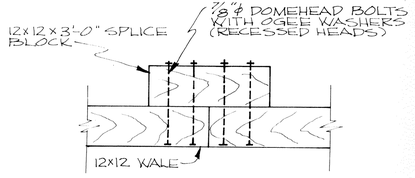
TYPICAL ELEVATION

SCALE: 3/16"=1'-0"



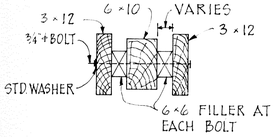
TYPICAL SECTION

SCALE: 3/16"=1'-0"



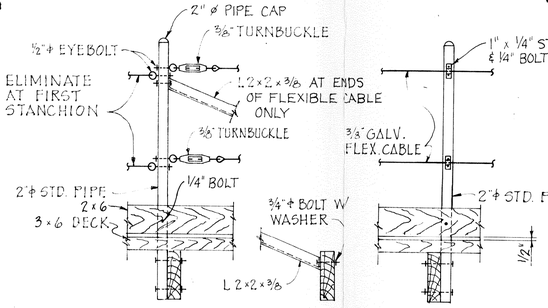
FENDER SPLICE

SCALE: 1/2"=1'-0"



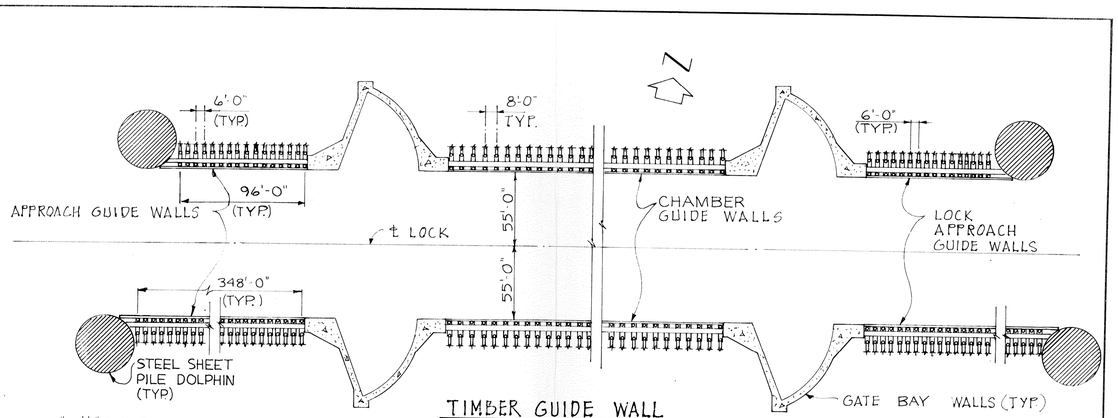
SECTION A

NO SCALE



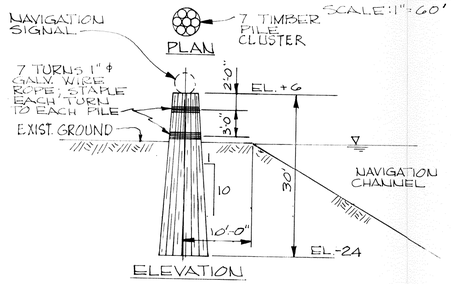
HANDRAIL DETAILS

SCALE: 3/4"=1'-0"



TIMBER GUIDE WALL LAYOUT PLAN

SCALE: 1"=60'



TIMBER PILE DOLPHIN

NO SCALE (4 REQ'D - ONE ON EA. SIDE AT EA. END OF CHANNEL)

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

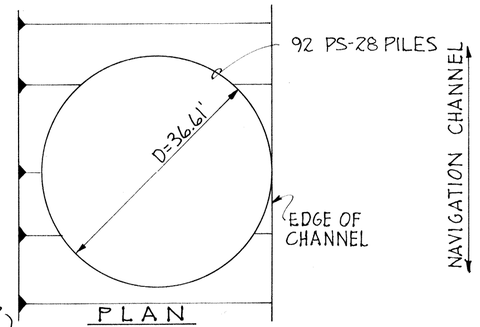
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. - DESIGN

LOCK GUIDE WALLS AND CHANNEL DOLPHIN

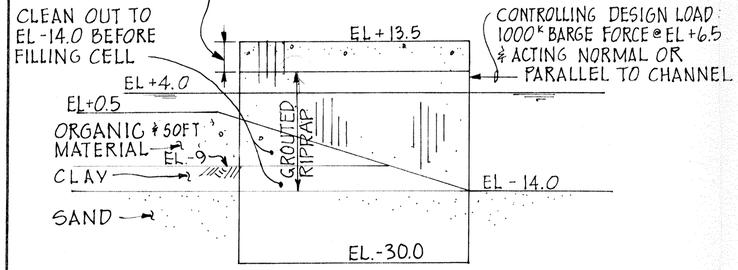
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS CORPS OF ENGINEERS

DATE SEPT., 1973 FILE NO. H-2-2441

PLATE IV 80



PLAN



ELEVATION

DESIGN DATA:

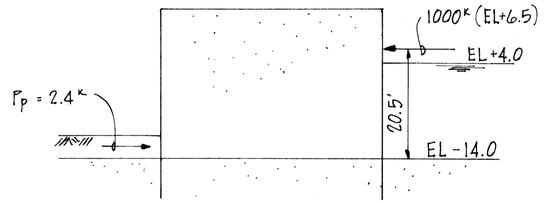
D = CELL DIAMETER = 36.61'
E = EFFECTIVE WIDTH = 32.5'

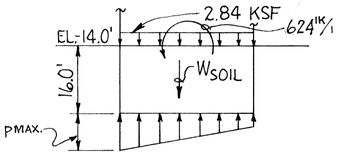
ASSUMED SOIL PROPERTIES				
MAT'L.	WEIGHT		COHESION C(PSF)	INT. FRICTION ∠ ϕ
	SATURATED (PCF)	SUBMERGED (PCF)		
ORGANIC MAT'L	—	15	100	0
CLAY	—	60	200	0
SAND	—	60	0	30°
CELL FILL	145	81	CONCRETE	

MIN. FACTORS OF SAFETY:
BEARING CAPACITY: 3.00
OTHER ARE NOT CRITICAL

NEGLECT EFFECT OF ORGANIC MATERIAL

STEEL SHEET PILE DOLPHIN





$p = 9.5(.145) + 18(.081) + 16(.056)$
$= 3.7$ KSF

$M = \frac{20{,}500 - 221}{32.5} = 624$ IK/'

$e = \frac{624}{3.7\,(32.5)} = 5.19'$

$p_{MAX.} = 3.7\left[1 + \frac{6(5.19)}{32.5}\right] = 7.2$ KSF

TERZAGHI COEF.

ULTIMATE CAPACITY = $0.060 \times 16 \times 20 = 19.2$
$+ 0.060 \times 32.5 \times \frac{1}{2} \times 8 = 7.8$
27.0

$F.S. = \frac{27.0}{7.2} = 3.75 > 3.0$

BEARING CAPACITY

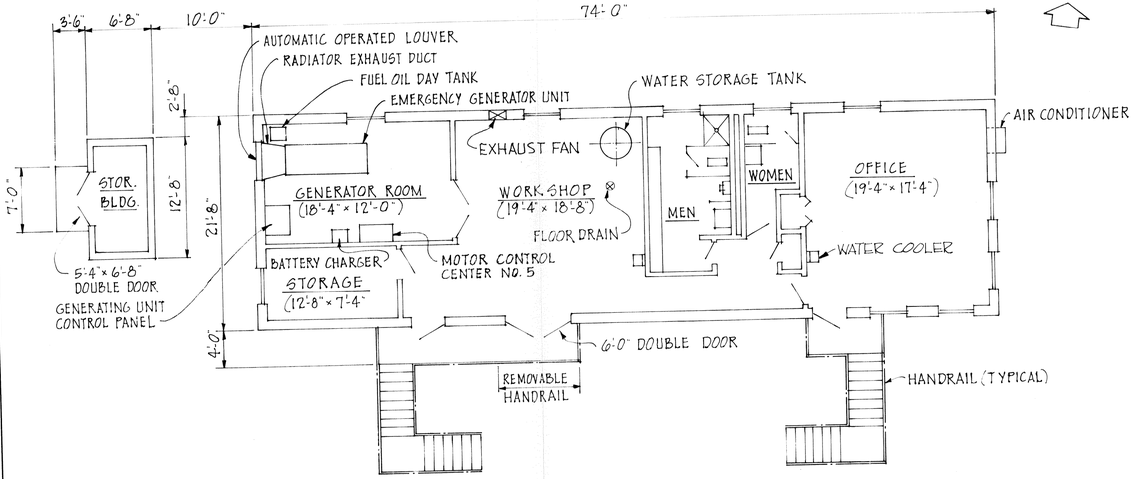
A JOINT VENTURE
B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA
STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

STEEL SHEET PILE DOLPHIN

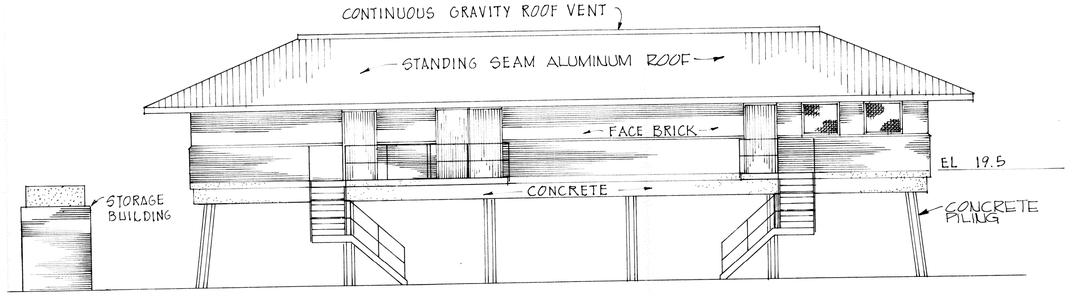
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

DATE SEPT., 1973 FILE NO. H-2-24419



PLAN

SCALE: 1/8" = 1'-0"



ELEVATION

SCALE: 1/8" = 1'-0"

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA	STANLEY CONSULTANTS, INC MUSCATINE, IOWA

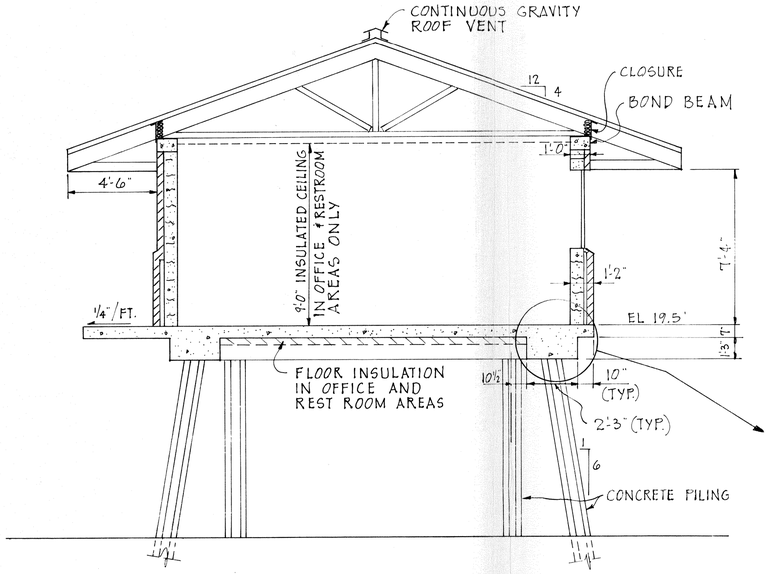
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

POWERHOUSE AND OFFICE

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

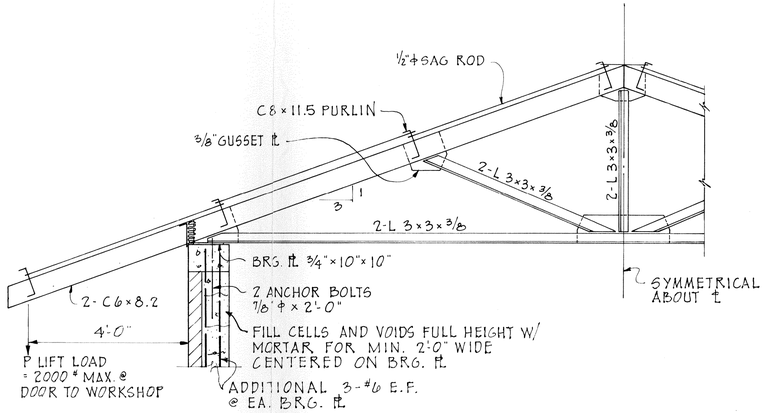
DATE SEPT., 1973 FILE NO. H-2-24419

PLATE IV 82



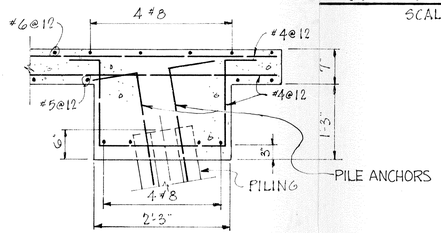
BUILDING SECTION

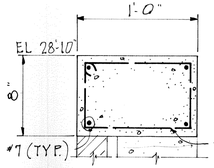
SCALE : 1/4" = 1'-0"



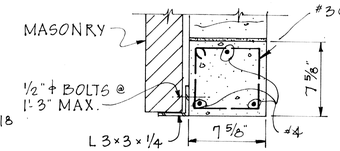
ROOF TRUSS

SCALE : 1/2" = 1'-0"





BOND BEAM



LINTLE BEAM

WALL DETAILS

SCALE : 1½" = 1'-0"

MATERIALS

CONCRETE f_c' = 3000 PSI
f_s = 20 000 PSI
n = 9

WALLS : 8" CONC. BLOCK & 4" BRICK
PARTITIONS : 8" CONC. BLOCK
ROOF :
INSULATION :
ROOF :
FLOOR :

WALL REINFORCING :
VERT. : #4 @ 4'-0" O.C. EA. FACE
HORIZ. : "EXTRA HEAVY" WALL REINF., 3/16" LONGIT. RODS & #9 GALV. WIRE GROSS RODS, 16" O.C. VERT.

BUILDING DESIGN LIVE LOADS

ROOF : 65 PSF
FLOOR : 100 PSF
WIND : 160 MPH INDIVIDUAL COMPONENTS
120 MPH OVERALL STABILITY

A JOINT VENTURE

BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA	STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

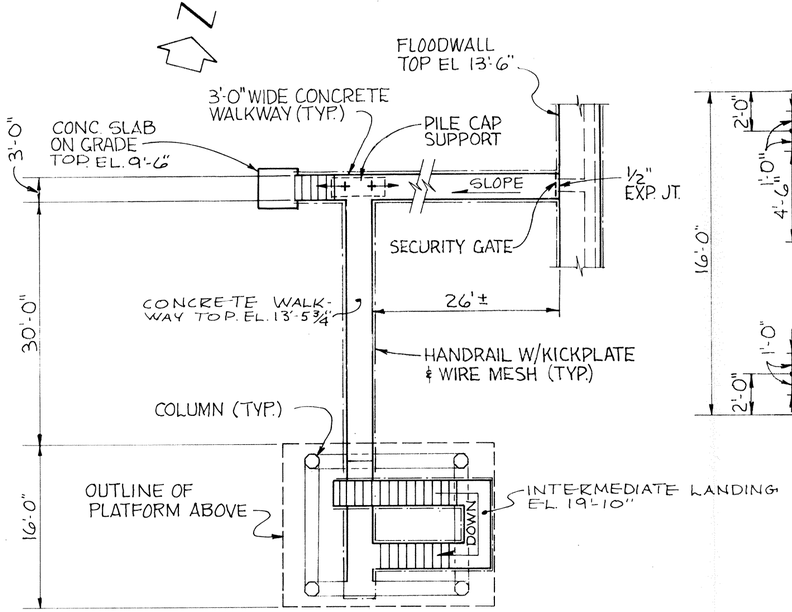
LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

POWERHOUSE AND OFFICE

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

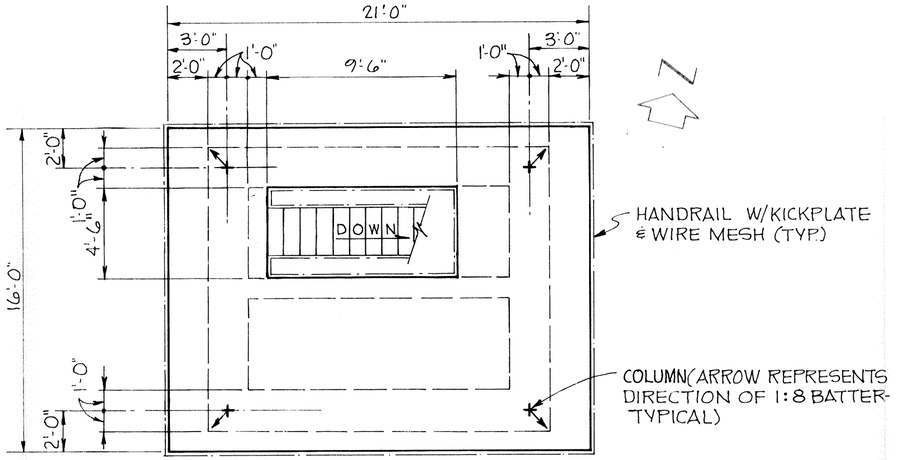
DATE SEPT., 1973 FILE NO. H-2-24419

PLATE IV 83

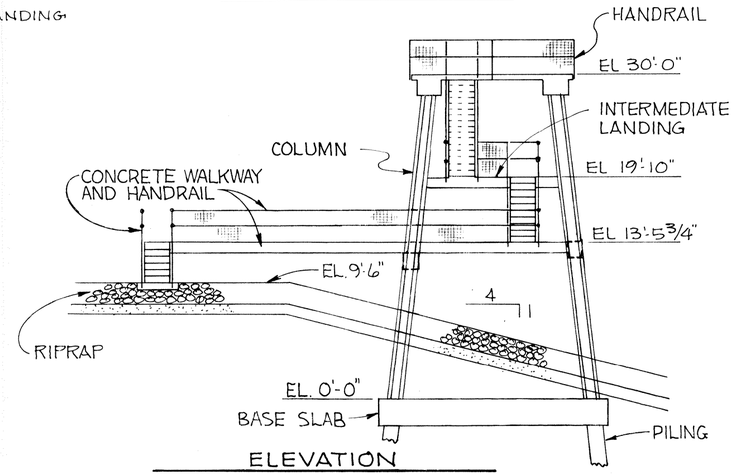


PLAN

WALKWAY AND STAIRS



PLATFORM PLAN



ELEVATION

(LOOKING EAST)

DESIGN LIVE LOADS

WALK & PLATFORM	100 P.S.F.
HANDRAILS	50 #/FT. APPLIED @ TOP RAIL VERTICAL & HORIZONTAL
WIND	160 M.P.H.

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

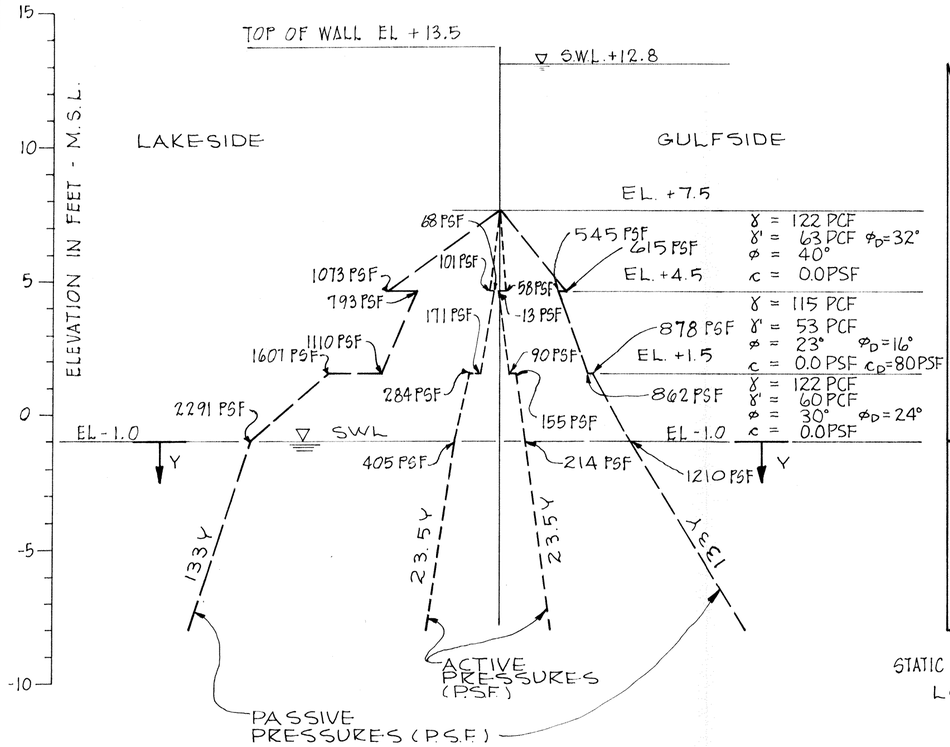
LAKE PONTCHARTRAIN, LA AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

OBSERVATION PLATFORM

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

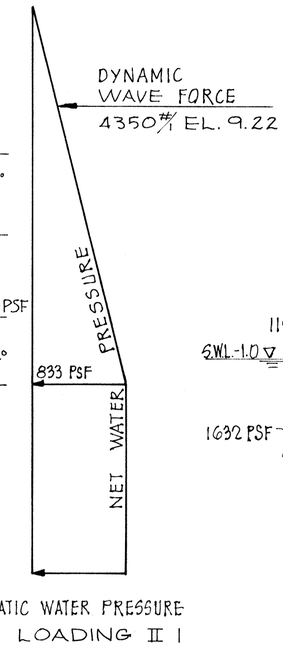
DATE: SEPT., 1973 FILE NO. H-2-24419

PLATE IV 84



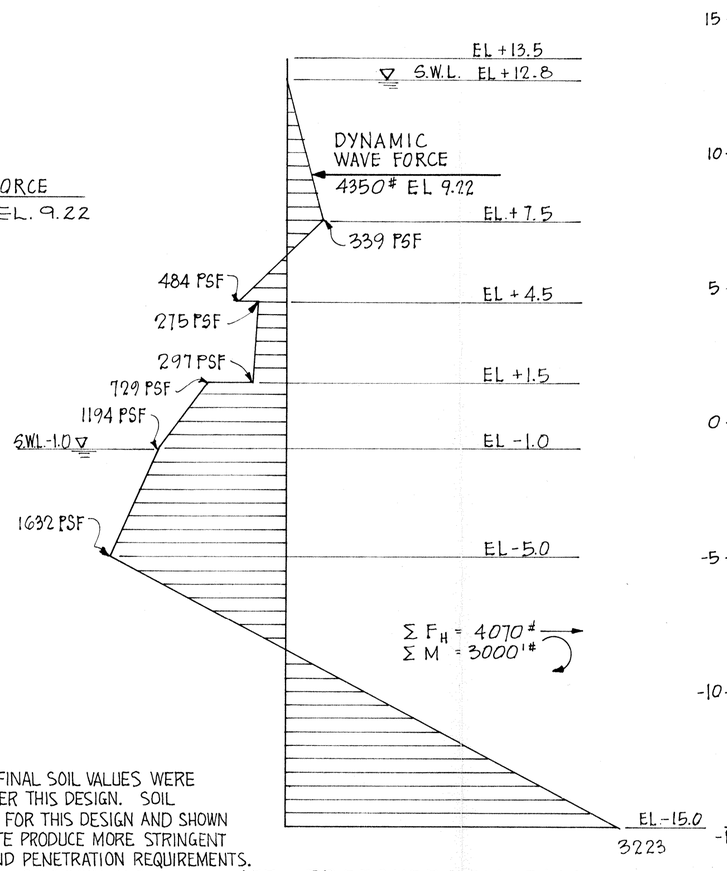
PRESSURE DIAGRAM (F.S.=1.25-S CASE)

SCALE: HORZ.: 1"=1000'
VERT.: 1"= 4'



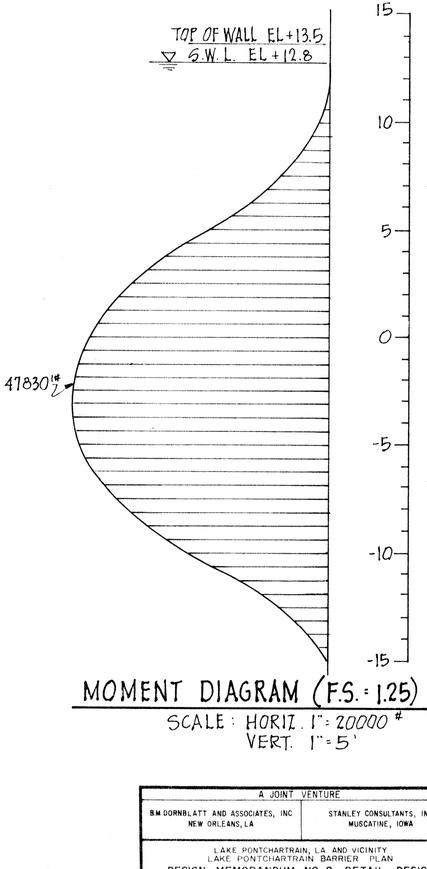
STATIC WATER PRESSURE
LOADING II I

NOTE: FINAL SOIL VALUES WERE REVISED AFTER THIS DESIGN. SOIL VALUES USED FOR THIS DESIGN AND SHOWN ON THIS PLATE PRODUCE MORE STRINGENT STRENGTH AND PENETRATION REQUIREMENTS. SINCE DESIGN IS MINIMUM AND PENETRATION IS CONTROLLED BY SEEPAGE, REVISION OF THIS ANALYSIS IS NOT DEEMED NECESSARY.



NET PREESURE DIAGRAM

S CASE F.S.=1.25
LOADING I+II I
SCALE: HORIZ. 1"=1000 PSF
VERT. 1"= 4'



MOMENT DIAGRAM (F.S.=1.25)

SCALE: HORIZ. 1"= 20000 #
VERT. 1"= 5'

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

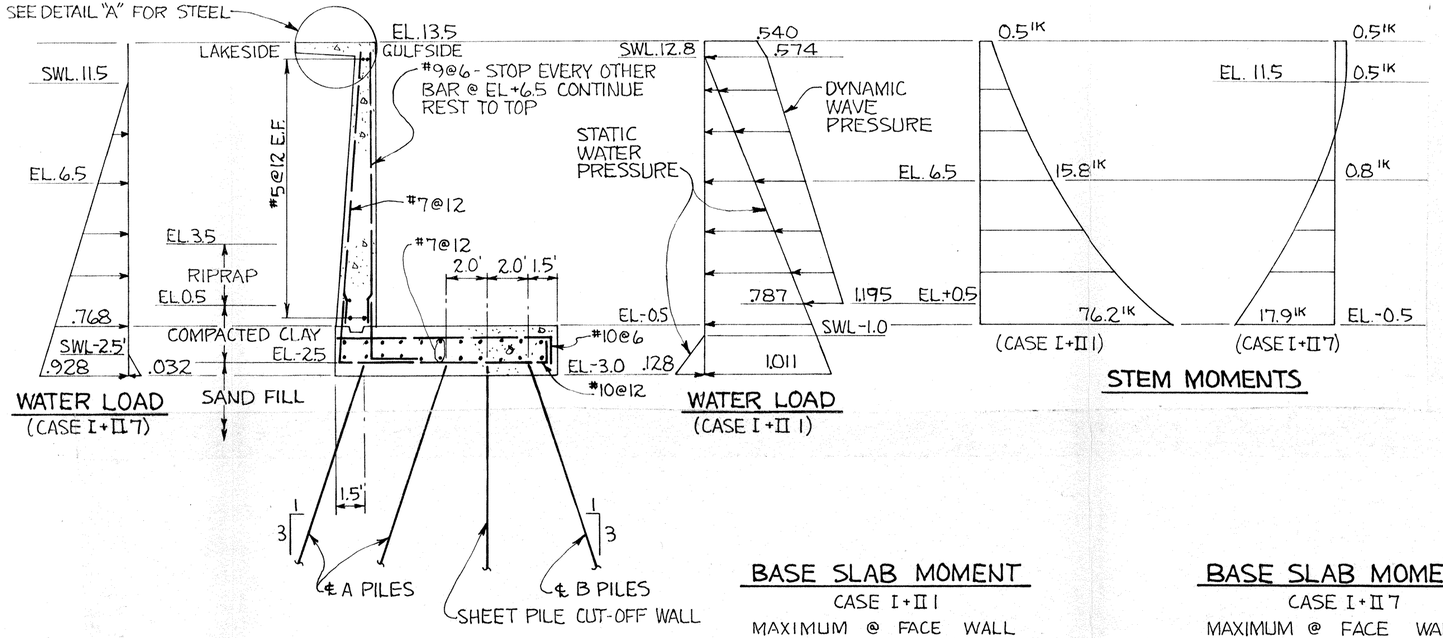
STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

GULFSIDE FLOODWALL
I - WALL DESIGN ANALYSIS

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

DATE SEPT., 1973 FILE NO H-2-24419



WALKWAY

DESIGN FOR LL = 150 PSF

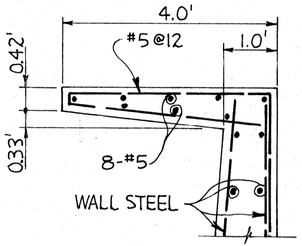
D.L. ~ 88 PSF

W = 238 PSF

$M = 0.238(4)(2) = 1.9^{IK}$

$A_s = \frac{1.9}{1.46(5.5)} = 0.24^{\square"}$

USE #5 @ 12"



DETAIL "A"

PILE LOAD SUMMARY

CASE	PILE A		PILE B	
	MAX (K)	MIN (K)	MAX (K)	MIN (K)
I+II 1	- 59.0	- 54.7	+ 126.9	+ 61.5
I+II 7	+ 45.4	+ 41.1	- 11.5	- 5.2

BASE SLAB MOMENT

CASE I+II 1

MAXIMUM @ FACE WALL

	LOAD	ARM	MOMENT
WATER	-7.7 K/FT	-4.50'	+34.6 IK/FT
RIPRAP	-1.7 K/FT	-4.50'	+7.7 IK/FT
CLAY	-0.5 K/FT	-4.50'	+2.3 IK/FT
CONCRETE	-3.4 K/FT	-4.50'	+15.3 IK/FT
B-PILES	-13.4 K/FT	-7.50'	+100.4 IK/FT
A-PILES	+9.0 K/FT	-3.50'	-31.5 IK/FT
UPLIFT	+3.5 K/FT	-7.25'	-25.4 IK/FT
UPLIFT	+0.7 K/FT	-2.75'	-1.9 IK/FT
	-13.5 K/FT		+101.5 IK/FT

BASE SLAB MOMENT

CASE I+II 7

MAXIMUM @ FACE WALL

	LOAD	ARM	MOMENT
RIPRAP	-3.0 K/FT	-4.50'	+13.5 IK/FT
CLAY	-1.0 K/FT	-4.50'	+4.5 IK/FT
CONCRETE	-3.4 K/FT	-4.50'	+15.3 IK/FT
A-PILES	+10.2 K/FT	-7.50'	-76.5 IK/FT
B-PILES	-1.0 K/FT	-3.50'	+3.5 IK/FT
UPLIFT	+0.1 K/FT	-7.25'	-0.7 IK/FT
UPLIFT	+5.1 K/FT	-2.75'	-14.0 IK/FT
	+7.0 K/FT		-54.4 IK/FT

A JOINT VENTURE

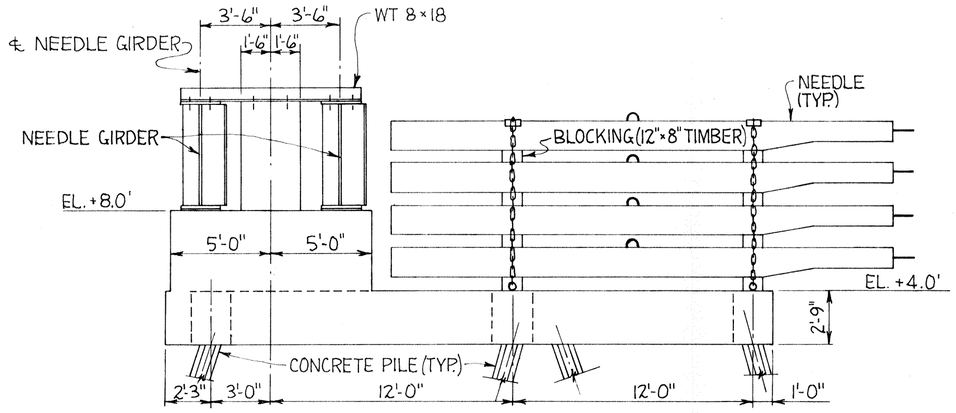
BM DORNBLATT AND ASSOCIATES, INC NEW ORLEANS, LA | STANLEY CONSULTANTS, INC MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

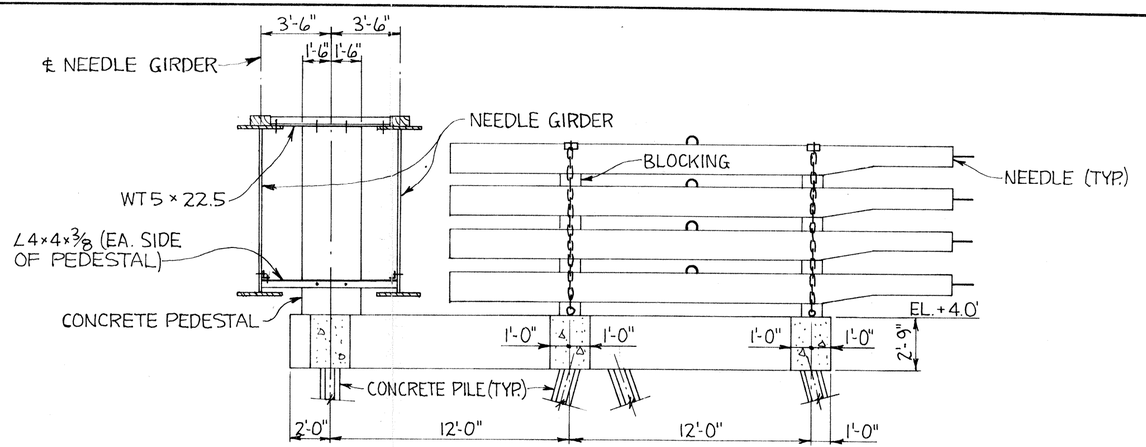
GULFSIDE T-FLOODWALL

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

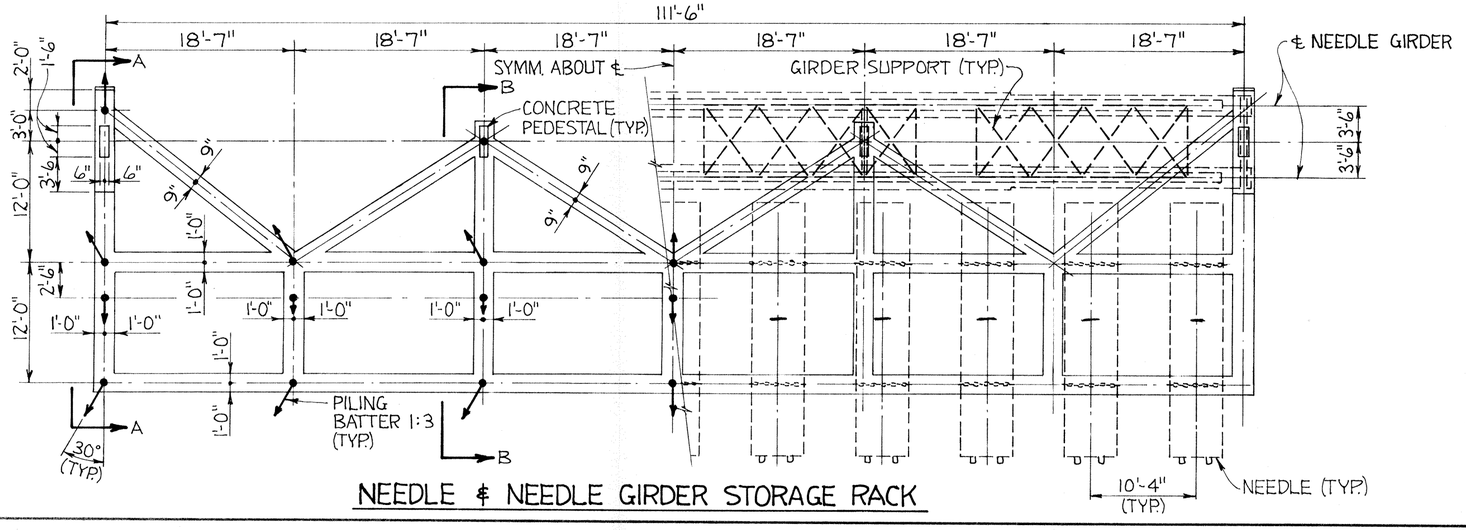
DATE SEPT., 1973 FILE NO. H-2-24419



SECTION A-A



SECTION B-B



NEEDLE & NEEDLE GIRDER STORAGE RACK

A JOINT VENTURE

B.M. DORNBLATT AND ASSOCIATES, INC. NEW ORLEANS, LA

STANLEY CONSULTANTS, INC. MUSCATINE, IOWA

LAKE PONTCHARTRAIN, LA. AND VICINITY
LAKE PONTCHARTRAIN BARRIER PLAN
DESIGN MEMORANDUM NO. 8 - DETAIL DESIGN
RIGOLETS LOCK

NEEDLE AND NEEDLE GIRDER STORAGE RACK

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

DATE: SEPT., 1973

FILE NO. H-2-24419