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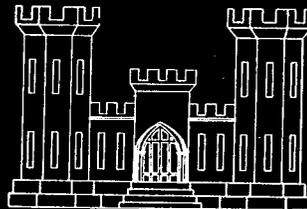
U.S. ARMY

FLOOD CONTROL PROJECT

AYOUS RAPIDES, BOEUF AND COCODRIE
LOUISIANA

CHANNEL IMPROVEMENTS, DIVERSION CHANNELS AND CONTROL STRUCTURES

OPERATION AND MAINTENANCE MANUAL



PREPARED IN THE OFFICE OF THE DISTRICT ENGINEER

NEW ORLEANS DISTRICT

NEW ORLEANS, LOUISIANA

OCTOBER 1955



US Army Corps
of Engineers
New Orleans District

Notice of Study Termination

**Eastern Rapides and
South-Central Avoyelles
Parishes, Louisiana, Project**

Reevaluation Study

May 1987



DEPARTMENT OF THE ARMY

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS

P.O. BOX 60267

NEW ORLEANS, LOUISIANA 70160-0267

Notice of Study Termination

This is to inform everyone interested that the U.S. Army Corps of Engineers, New Orleans District, is terminating the reevaluation study of the Eastern Rapides and South-Central Avoyelles Parishes, Louisiana, Project. As a result of a decline in agriculture price levels, the Eastern Rapides and South-Central Avoyelles Parishes, Louisiana, Project is no longer economically justified, and the project will be classified as "inactive." With an "inactive" classification, the project will receive no further funding, and no additional work will be accomplished on the project. If conditions change and economic justification appears possible, the project could be reactivated, and the reevaluation study could be completed.

If you desire any additional information on the termination of the Eastern Rapides and South-Central Avoyelles Parishes, Louisiana, Project, please send your request to:

District Engineer
U.S. Army Engineer District, New Orleans
P.O. Box 60267
New Orleans, Louisiana 70160-0267
ATTN: LMNPD-FG

I ask that this notice be brought to the attention of people known to be interested in the project. Newspapers, periodicals, and radio and television stations may use this notice as a news item. Postmasters and other officials are requested to display the notice prominently.

A handwritten signature in black ink, appearing to read "Lloyd K. Brown", is written over the typed name.

Lloyd K. Brown
Colonel, Corps of Engineers
District Engineer

Since the Eastern Rapides Project would provide an adequate outlet for the increased flows that would occur with enlargement of Bayou Courtableau, we had based our studies of the enlargement of Bayou Courtableau on the assumption that additional outlet capacity for these flows would not be required. We now have to address these outlet measures under the Bayou Cocodrie and Tributaries Project authority and include the cost of the outlet measures in the economic analysis of that project. The effects of the termination of the Eastern Rapides Project on the Bayou Cocodrie and Tributaries Project have not been determined.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
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Reevaluation Study

The reevaluation study of the Eastern Rapides and South-Central Avoyelles Parishes, Louisiana, Project was initiated in 1972. Public meetings were held in June 1976 in Marksville and Opelousas, Louisiana, to discuss the authorized plan and ten alternatives to that plan. Following the meetings, further evaluation studies of the alternatives showed that only the authorized plan and a borrow pit plan were economically justified. The borrow pit plan was similar to the authorized plan except that the flood flows from the Eastern Rapides watershed would be diverted into the West Atchafalaya Basin Protection Levee borrow pit south of Bayou Courtableau, instead of being diverted into the floodway.

We developed a modified version of the authorized plan in the reevaluation studies that would have significantly reduced the effects of the plan on the Henderson Lake area. The modified plan was tentatively determined to be the best of the alternative plans, and it would have been presented for public comment had the project remained economically feasible.

The first cost of the modified plan is estimated at \$67.7 million dollars, exclusive of the cost of the watershed plans developed by the U.S. Soil Conservation Service. The estimated annual cost of the plan is \$11.9 million, and the average annual economic benefits, based on the latest agricultural price levels, is estimated at \$11.3 million. The benefit-cost ratio is about 0.95 to 1. The project must have a benefit-cost ratio of at least 1.0 to 1 to be economically justified under Federal criteria.

Effects on Bayou Courtableau Enlargement

Termination of the reevaluation study will also impact our studies of the enlargement of Bayou Courtableau, which is being addressed under the authority of the Bayou Cocodrie and Tributaries, Louisiana, Project. The Eastern Rapides watershed and the Bayou Cocodrie and tributaries watershed share a common outlet.

Eastern Rapides and South-Central Avoyelles Parishes, Louisiana, Project

The Eastern Rapides and South-Central Avoyelles Parishes, Louisiana, Project was authorized by the Flood Control Act of 1970 (Public Law 91-611). The project would have provided for construction of flood control and drainage improvements in the portions of Rapides, Avoyelles, and St. Landry Parishes located south of the Red River and west of the Atchafalaya Basin Floodways and between Alexandria and Courtableau, Louisiana.

The project would have provided an outlet for two companion watershed projects developed by the U.S. Department of Agriculture, Soil Conservation Service. These were the Chatlin Lake Canal watershed project in Rapides Parish and the Avoyelles-St. Landry watershed project in Avoyelles and St. Landry Parishes.

The project would have also provided for enlargement of the Chatlin Lake Canal, Bayou du Lac, Bayou des Glaises, and the West Atchafalaya Basin Protection Levee landside borrow pit to provide a more efficient outlet for drainage and flood flows from Alexandria to Courtableau, Louisiana. At Courtableau, a flood control structure would have been constructed through the floodway levee and additional levees would have been constructed on each side of the floodway levee to guide increased flood flows to and from the structure.

An outlet channel would have been constructed through the Butte la Rose ridge to prevent increased flooding in the Atchafalaya Basin Floodway. Acquisition of 3,700 acres of land in the Lake Pearl area of Avoyelles Parish would have been included in the project to mitigate fish and wildlife losses caused by the construction of the project.

The authorized plan for the Eastern Rapides Project would have resulted in a significant increase in the volume of flood flows diverted from the Courtableau area to the Atchafalaya Basin Floodway. These flows would have had an adverse effect on sportfishing in the Henderson Lake area, a significant concern among sportsmen who use the area.

OPERATION AND MAINTENANCE MANUAL
BAYOUS RAPIDES, BOEUF AND COCODRIE, LOUISIANA
CHANNEL IMPROVEMENTS, DIVERSION CHANNELS AND CONTROL STRUCTURES

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OPERATION AND MAINTENANCE MANUAL

BAYOUS RAPIDES, BOEUF AND COCODRIE, LOUISIANA

CHANNEL IMPROVEMENTS, DIVERSION CHANNELS AND CONTROL STRUCTURES

INTRODUCTION

1. Authorization. The project was authorized by the Flood Control Act of 18 August 1941 (Public Law No. 228, 77th Congress, 1st Session).

2. Location. The project is located in central Louisiana, in Rapides, Avoyelles, Evangeline and St. Landry Parishes. The upper limit of the project is the Bayou Rapides Control Structure located about 3 miles southwest of Alexandria, La., and the lower limit is at the confluence of Bayous Cocodrie, Boeuf and Courtableau near Washington, La.

3. Description. The project consists of diversion channels, channel improvements by clearing and snagging and enlargement and re-alignment, totaling approximately 104 miles, control structures, construction or alteration of bridges and relocation of oil pipe lines and other facilities. (See Exhibit No. 3).

4. Protection Provided. The project will confine the runoff generally within the banks of the channels, produce a general lowering of all flood heights, and provide primary drainage arteries that will result in promoting the development and changed land use of a considerable area in the Boeuf and Cocodrie Basins. The facilities for diversion of flow from the Bayou Rapides area will provide relief from floodwaters during high stages of Red River when the capacity of the pumping station at Alexandria, La., is exceeded.

A total of twenty-seven (27) bridges were constructed by general contractors under contract with Federal government and by Louisiana State Department of Highways and railroad companies under reimbursable contracts with Federal government between 13 June 1947 and 18 April 1952. Utility alterations, including the Interstate Oil Pipe Line Company's relocation of six 8-inch oil pipe lines, were accomplished in the period June 1946-December 1951, under reimbursable contracts with the Federal government.

b. (No work has been done on that portion of the project consisting of channel enlargement and clearing of Bayou Cocodrie (Mile 16.8 to 42.1) and Bayou Boeuf, (Mile 92.8 to Mile 106.3) and when these items are completed the operation and maintenance thereof will be as prescribed for the completed portion of the project.

LOCAL COOPERATION REQUIREMENTS

6. Requirements. Local cooperation for the operation and maintenance of the project is provided for in Section 3 of the Flood Control Act of 22 June 1936. This Section is incorporated in Section 2 of the project authorization Act and provides in part as follows:

"Sec. 3. That hereafter no money appropriated under authority of this Act shall be expended on the construction of any project until States, political subdivisions thereof, or other responsible local agencies have given assurances satisfactory to the Secretary of War that they will * * *

(c) Maintain and operate all the works after completion in accordance with regulations prescribed by the Secretary of War."

7. Compliance. a. Local cooperation as required above was provided by the Board of Commissioners of the Red River, Atchafalaya and Bayou Boeuf Levee District by resolution adopted 3 March 1945 and Acts of Assurances dated 9 March 1945 which provide, in part, as follows:

"That the Board of Commissioners of the Red River, Atchafalaya and Bayou Boeuf Levee District, * * * will assume full responsibility for all maintenance and operation charges after completion of said project. * * * "

b. Owner agencies upon completion of modification of bridges and utilities assumed responsibility for maintenance and operation of their structures.

GENERAL

8. Approved Regulations. Under authority of the Flood Control Act approved 22 June 1936 as amended and supplemented (49 Stat.1571; 50 Stat. 877; and 55 Stat. 638; 33 U.S.C. 701c; 701c-1), the Secretary of War approved regulations on 9 August 1944 to govern the operation and maintenance of local flood control works constructed by the Federal Government. These general regulations, which were published in the Federal Register of 17 August 1944, are attached hereto as Exhibit No. 1. The regulations shall govern the operation and maintenance of these facilities so far as the provisions of the regulations are applicable to the project. Paragraphs 208.10(b), (c), (e) and (f), are not applicable.

9. Purpose of Manual. The purpose of this manual is to furnish information pertinent to the project works and to assist local interests in carrying out their obligation of operation and maintenance.

Further information in regard to the structures and the procedure to be followed in their operation can be obtained from the District Engineer, New Orleans District, Corps of Engineers, U.S. Army, New Orleans, Louisiana. As used in this manual, the term "local interests", shall refer to the Board of Commissioners of the Red River, Atchafalaya and Bayou Boeuf Levee District.

10. Duties of the Superintendent. Local interests shall appoint a permanent committee consisting of or headed by an official to be known as the "Superintendent". He shall be responsible for the development and maintenance of, and directly in charge of, an organization responsible for the efficient operation and maintenance of all the structures and facilities during flood periods and for continuous inspection and maintenance of the project works during periods of low water, all without cost to the United States. It shall be the duty of the Superintendent to make all inspections and conduct all tests required herein. He shall make certain that the required maintenance measures are being carried out and that the protective facilities are being operated in such a manner as to obtain maximum benefits. The Superintendent shall submit a semi-annual report to the District Engineer covering inspection, operation, and maintenance of the protective works. Suggested form for the report is shown herein as Exhibit No. 2. The Superintendent shall keep on file with the District Engineer, New Orleans District, Corps of Engineers, his name, home and business addresses, home and business telephone numbers, and any changes thereto.

11. General Requirements. The structures and facilities shall be continuously maintained in such a manner and operated at such

times as may be necessary to obtain the maximum benefits therefrom.

A reserve supply of materials needed during a flood emergency shall be kept on hand at all times.

No encroachment or trespass which will be detrimental to the efficient operation or maintenance of the project works shall be permitted upon the rights-of-way for the protective facilities.

No improvement shall be passed over, under, or through the structures, or improved channels, nor shall any excavation or construction be permitted within the limits of the project rights-of-way, nor shall any change be made in any feature of the works without prior determination by the District Engineer, New Orleans District, Corps of Engineers, or his authorized representative that such improvement, excavation, construction, or alteration will not be detrimental to the proper functioning of the protective facilities. Such improvements or alterations as may be found to be desirable and permissible under the above determination shall be constructed in accordance with standard engineering practice. Advice regarding the result of proposed improvements or alterations on the functioning of the project and information concerning the methods of construction acceptable under standard engineering practice shall be obtained from the District Engineer, or, if otherwise obtained, shall be submitted for his approval. Drawings or prints showing such improvements or alterations as finally constructed shall be furnished the District Engineer after completion of the work.

The District Engineer and his authorized representative shall have access at all times to all portions of the channels and structures.

Repairs and maintenance measures, as the District Engineer deems necessary for proper functioning of the channels and structures, shall be promptly performed.

Appropriate measures shall be taken by local interests to insure that the activities of all local organizations operating public or private facilities connected with the protective works are coordinated with those of the Superintendent's organization during flood periods.

DESCRIPTION OF PROJECT FEATURES

12. Channel Improvements and Diversion Channels. A continuous channel, approximately 60 miles in length, was constructed from the Bayou Rapides Control Structure to the mouth of Bayou Cocodrie by excavation of diversion channels and the enlargement and realignment of reaches of the existing channels of Bayou Boeuf and Bayou Cocodrie. In addition to the continuous channel, Bayou Boeuf channel from mile 49.7 of the continuous channel to the Bayou Lamourie Control Structure, a distance of approximately 3.6 miles, was improved by enlargement and clearing and snagging operations. The cross sections of these channels are shown on Exhibit No. 4. For channel alignments see Exhibit No. 3.

13. Bayou Rapides Control Structure. The structure is a reinforced concrete twin 10' x 10' box culvert with wing walls at the outlet and inlet ends and manually operated slide gates at the upstream end. The approach and outlet channels, bottoms and slopes, are protected against scour by riprap placed on filter blankets of gravel and sand. Provisions for emergency closure, utilizing stoplogs, has been made at the inlet and outlet ends of the structure.

The stop logs are to be provided by local interests when the need for closure is apparent. The stop log recesses at the inlet and outlet ends of one culvert of the structure will accommodate 64-10" x 10" x 12'-0" and 32-10" x 10" x 11'-9" stop logs, respectively. The length of the concrete portion of the structure is approximately 240 feet. Relief for uplift pressures from the sand strata upon which the structure rests is provided by drainage wells. See Exhibit No. 5.

14. Bayou Lamourie Control Structure. The control structure is a single-barrel 10' x 10' reinforced concrete box culvert with wing walls at the inlet and outlet ends and manually operated slide gates at the upstream end. The approach and outlet channels, bottoms and slopes, are protected against scour by riprap placed on filter blankets of gravel and sand. Provisions for emergency closure, utilizing stop logs, has been made at the inlet and outlet ends of the structure. The stop logs are to be furnished by local interests when the need for closure is apparent. The stop log recesses at the inlet and outlet ends of the structure will accommodate 16-10"x10"x11'-2" and 15-10"x10"x11'-2" stop logs, respectively. The length of the concrete portion of the structure is approximately 102'-6". Slab drain outlets are provided in the downstream wing walls only. See Exhibit No. 9.

15. Lecompte Control Structure. The control structure is an ungated spillway with a concrete weir, 128 feet in length, built to elevation 62.1 feet mean sea level extending across the channel to prevent low water flow from escaping from Bayou Boeuf. A 10-inch diameter opening, with invert at elevation 56.0, is located in the

center of the weir. Side slopes and bottom of spillway are paved with concrete slab and riprap up and downstream from the weir. The entrance channel has a bottom width of 85.33 feet at elevation 56.0 feet mean sea level, and the exit channel has a bottom width of 45 feet at elevation 51.1 feet mean sea level. Slab drain outlets are provided in the slab at the downstream end of the structure. See Exhibit No. 13.

16. Bridges and Facilities. Twenty-eight bridges were constructed over the diversion channel as follows:

<u>Mile</u>	<u>Type</u>	<u>Owner</u>	<u>Use</u>
5.0	Timber	Levee District	Local
13.7	"	State	Hwy. No. 224
20.4	Concrete	"	" No. 23
22.6	Timber	T. & P. R. R.	Railroad
27.4	Concrete	State	Hwy. No. 223
30.2	"	"	" No. 271
32.8	Timber	Levee District	Local
34.6	Concrete	State	Hwy. No. 26
35.3	Timber	Levee District	Local
36.1	"	C.R.I. & P.R.R.	Railroad
37.1	"	Levee District	Local
37.6	"	Parish	Highway
*40.2	"	R.R. & G. R.R.	Railroad
40.4	Concrete	State	Hwy. No. 24
42.4	Timber	Levee District	Footbridge
42.8	"	" "	"
43.1	"	Parish	Highway
43.5	"	"	"
44.8	"	"	"
46.1	"	Levee District	Local
46.3	"	" "	"
48.3	"	Parish	Hwy. No. 613
48.6	"	"	Highway
51.4	Concrete	M. P. R. R.	Railroad
53.7	"	State	Hwy. No. 205
56.4	Timber	"	" No. 278
57.6	Wire & Pipe	Interstate Oil Pipe Line Co.	Oil pipelines 6-8 inch
59.6	Concrete	State	Hwy. No. 21

*Bridge was removed in 1955.

MAINTENANCE

17. Channels and Floodways. Periodic inspection of the channels and floodways shall be made by the Superintendent at intervals not to

exceed 90 days to be certain that no debris, wild growth, unauthorized structures and shoals are obstructing the channels and floodways. Immediate steps shall be taken to remedy any adverse condition disclosed by such inspections. Channels in the vicinity of all bridges shall be kept under close surveillance and steps shall be taken promptly to correct any conditions that might have a tendency to cause damage to the bridges or their abutments.

18. Bayou Rapides Control Structure. Adequate measures shall be taken to insure that:

a. The inlet and outlet channels are kept open and that trash, drift, or debris is not allowed to accumulate in or near the structure.

b. At least every 90 days the manually operated gates and their mechanisms are oiled, greased in accordance with the manufacturer's recommendations, and trial operated. The lift mechanisms are "Twin Hoists, N-32 Floor Stands", designed for operating 10' x 10' fabricated steel sluice gates and manufactured by the Chapman Valve Co., Indian Orchard, Mass. The manufacturer recommends use of No. 5211 Alvania grease as manufactured by Shell Oil Company for the lift mechanisms.

c. The small flap gates on the relief wells are operating freely and the drainagewells in the wing walls are open and free flowing.

d. The gates and operating mechanism, except machine finished surfaces, as well as all exposed structural steel, are periodically painted and kept free of rust. Machine finished surfaces of

the gate and the operating mechanism should be kept free of rust by application of oil and grease.

e. Periodic inspections be made to be certain that riprap, headwalls and culvert are in good condition and erosion is not occurring adjacent to the structure which might endanger its water tightness or stability. Immediate steps shall be taken to repair damage, replace missing or broken parts disclosed by inspections.

19. Bayou Lamourie Control Structure. Adequate measures shall be taken to insure that:

a. The inlet and outlet channels are kept open and that trash, drift, or debris is not allowed to accumulate in or near the structure.

b. At least every 90 days the manually operated gates and its mechanism are oiled, greased in accordance with the manufacturer's recommendations, and trial operated. The lift mechanism is "Type U" Hardesty tandem gate stand designed for operating the 10' x 10' fabricated steel sluice gate and manufactured by the Armco Drainage and Metal Products, Inc. The manufacturer recommends use of Shell Oil Company Alvania No. 1, Texaco Multi-Fak No. 2, or Lubriplate Type 630-AA for lubricating the lift mechanism.

c. The small flap gates on the slab drain outlets in the downstream wing walls of the structure are operating freely.

d. The gates and operating mechanism, except machine finished surfaces, as well as all exposed structural steel, are periodically painted and kept free of rust. Machine finished surfaces of the gate and the operating mechanism shall be kept free of rust by application of oil and grease.

e. That periodic inspections be made to be certain that riprap, headwalls and culverts are in good condition and erosion is not occurring adjacent to the structure which might endanger its water tightness or stability. Immediate steps shall be taken to repair damage, replace missing or broken parts disclosed by inspections.

20. Lecompte Control Structure. Adequate measures shall be taken to insure:

a. That trash, drift, or debris is not allowed to accumulate at or near the structure.

b. That the 10-inch diameter outlet in the weir is not obstructed.

c. That periodic inspections be made to be certain that the riprap and concrete pavement are in good condition and erosion is not occurring adjacent to the structure which might endanger its stability and that the outlets for the slab drains are functioning. Immediate steps shall be taken to repair any damage disclosed by inspections.

21. Bridges. Proper steps shall be taken to prevent restriction of bridge openings by shoaling, drift or debris. The Superintendent shall promptly notify owner agencies of any conditions requiring correction at their bridges. Periodic inspections shall be made to be certain that riprap protection is in good condition and erosion is not occurring at or near the structures.

OPERATIONS DURING HIGH WATER PERIODS

22. Channels. The channels shall be patrolled during periods of high water. Appropriate measures shall be taken to prevent formation of debris. The channels shall be thoroughly inspected after

each major highwater period and remedial measures shall be taken to insure clear and unobstructed channels.

23. Bayou Rapides Control Structure.

a. The manually operated slide gates shall be opened only after the Alexandria Floodgate and/or pumps are operating to produce the greatest possible discharge and the water surface elevation on the land side of the Alexandria Floodgate is at or above 73.0 feet mean sea level, with the exception that during periods when water shortages are experienced along the Rapides-Boeuf-Cocodrie system or its connecting streams and it is deemed advisable to augment the water supply by diversions from Bayou Rapides.

b. The emergency closure, by means of stop logs, shall be placed in operation upon failure of the slide gate to close, or for use in unwatering the structure in the event repairs below the water surface are necessary.

c. Measures shall be taken to keep the approach channel clear of debris, drift or other objects so that flow through the structure will not be impeded.

24. Bayou Lamourie Control Structure.

a. When the water surface elevation at the upstream end of the structure is at or below 62.2 feet mean sea level, the control gate shall be in a closed position.

b. When the water surface elevation at the upstream end of the structure exceeds 62.2 feet mean sea level, the gate shall be raised to sufficient opening to maintain an elevation of 62.2 feet mean sea level at the upstream end of the structure, and to prevent,

insofar as possible, the water surface from exceeding that elevation, provided that, at no time, and, under no condition, shall the gate be opened so that a water surface elevation in excess of 65.5 feet mean sea level results at the downstream end of the culvert.

c. The emergency closure, by means of stop logs, shall be placed in operation upon failure of the slide gate to close, or for use in unwatering the structure in the event repairs below the water surface are necessary.

d. Measures shall be taken to keep the approach channel clear of debris, drift or other objects so that flow through the structure will not be impeded.

25. Lecompte Control Structure. Measures shall be taken to keep the structure free of drift and debris.

26. Bridges. Drift and debris shall not be allowed to accumulate around the bridge structures.

EXHIBITS

27. List of Exhibits.

- Exhibit No. 1. General regulations on operation and maintenance of local flood control works constructed by the Federal Government (2 sheets)
- Exhibit No. 2. Form of Inspection, Maintenance and Operation Report to be submitted semi-annually.
- Exhibit No. 3. General Plan of the Project.
- Exhibit No. 4. Cross sections of channel improvements.
- Exhibit No. 5. General Plan of Bayou Rapides Control Structure.

EXHIBITS (Cont'd)

- Exhibit No. 6. Photos of Bayou Rapides Control Structure.
- Exhibit No. 7. Operating Mechanism, Bayou Rapides Control Structure.
- Exhibit No. 8. Gate details, Bayou Rapides Control Structure.
- Exhibit No. 9. General Plan of Bayou Lamourie Control Structure.
- Exhibit No. 10. Photos of Bayou Lamourie Control Structure.
- Exhibit No. 11. Operating Mechanism, Bayou Lamourie Control Structure.
- Exhibit No. 12. Gate details, Bayou Lamourie Control Structure.
- Exhibit No. 13. General Plan of Lecompte Control Structure.
- Exhibit No. 14. Photos of Lecompte Control Structure.

drainage structures shall be examined, oiled, and trial operated at least once every 90 days. Where drainage structures are provided with stop log or other emergency closures, the condition of the equipment and its housing shall be inspected regularly and a trial installation of the emergency closure shall be made at least once each year. Periodic inspections shall be made by the Superintendent to be certain that:

(i) Pipes, gates, operating mechanism, riprap, and headwalls are in good condition;

(ii) Inlet and outlet channels are open;

(iii) Care is being exercised to prevent the accumulation of trash and debris near the structures and that no fires are being built near bituminous coated pipes;

(iv) Erosion is not occurring adjacent to the structure which might endanger its water tightness or stability.

Immediate steps will be taken to repair damage, replace missing or broken parts, or remedy adverse conditions disclosed by such inspections.

(2) *Operation.* Whenever high water conditions impend, all gates will be inspected a short time before water reaches the invert of the pipe and any object which might prevent closure of the gate shall be removed. Automatic gates shall be closely observed until it has been ascertained that they are securely closed. Manually operated gates and valves shall be closed as necessary to prevent inflow of flood water. All drainage structures in levees shall be inspected frequently during floods to ascertain whether seepage is taking place along the lines of their contact with the embankment. Immediate steps shall be taken to correct any adverse condition.

(c) *Closure structures*—(1) *Maintenance.* Closure structures for traffic openings shall be inspected by the superintendent every 90 days to be certain that:

(i) No parts are missing;

(ii) Metal parts are adequately covered with paint;

(iii) All movable parts are in satisfactory working order,

(iv) Proper closure can be made promptly when necessary;

(v) Sufficient materials are on hand for the erection of sand bag closures and that the location of such materials will be readily accessible in times of emergency.

Tools and parts shall not be removed for other use. Trial erections of one or more closure structures shall be made once each year, alternating the structures chosen so that each gate will be erected at least once in each 3-year period. Trial erection of all closure structures shall be made whenever a change is made in key operating personnel. Where railroad operation makes trial erection of a closure structure infeasible, rigorous inspection and drill of operating personnel may be substituted therefor. Trial erection of sand bag closures is not required. Closure materials will be carefully checked prior to and following flood periods, and damaged or missing parts shall be repaired or replaced immediately.

(2) *Operation.* Erection of each movable closure shall be started in sufficient time to permit completion before flood waters reach the top of the structure sill. Information regarding the proper method of erecting each individual closure structure, together with an estimate of the time required by an experienced crew to complete its erection will be given

in the Operation and Maintenance Manual which will be furnished local interests upon completion of the project. Closure structures will be inspected frequently during flood periods to ascertain that no undue leakage is occurring and that drains provided to care for ordinary leakage are functioning properly. Boats or floating plant shall not be allowed to tie up to closure structures or to discharge passengers or cargo over them.

(f) *Pumping plants*—(1) *Maintenance.* Pumping plants shall be inspected by the Superintendent at intervals not to exceed 30 days during flood seasons and 90 days during off-flood seasons to insure that all equipment is in order for instant use. At regular intervals, proper measures shall be taken to provide for cleaning plant, buildings, and equipment, repainting as necessary, and lubricating all machinery. Adequate supplies of lubricants for all types of machines, fuel for gasoline or diesel powered equipment, and flash lights or lanterns for emergency lighting shall be kept on hand at all times. Telephone service shall be maintained at pumping plants. All equipment, including switch gear, transformers, motors, pumps, valves, and gates shall be trial operated and checked at least once every 90 days. Megger tests of all insulation shall be made whenever wiring has been subjected to undue dampness and otherwise at intervals not to exceed one year. A record shall be kept showing the results of such tests. Wiring disclosed to be in an unsatisfactory condition by such tests shall be brought to a satisfactory condition or shall be promptly replaced. Diesel and gasoline engines shall be started at such intervals and allowed to run for such length of time as may be necessary to insure their serviceability in times of emergency. Only skilled electricians and mechanics shall be employed on tests and repairs. Operating personnel for the plant shall be present during tests. Any equipment removed from the station for repair or replacement shall be returned or replaced as soon as practicable and shall be trial operated after reinstallation. Repairs requiring removal of equipment from the plant shall be made during off-flood seasons insofar as practicable.

(2) *Operation.* Competent operators shall be on duty at pumping plants whenever it appears that necessity for pump operation is imminent. The operator shall thoroughly inspect, trial operate, and place in readiness all plant equipment. The operator shall be familiar with the equipment manufacturers' instructions and drawings and with the "Operating Instructions" for each station. The equipment shall be operated in accordance with the above-mentioned "Operating Instructions" and care shall be exercised that proper lubrication is being supplied all equipment, and that no overheating, undue vibration or noise is occurring. Immediately upon final recession of flood waters, the pumping station shall be thoroughly cleaned, pump house sumps flushed, and equipment thoroughly inspected, oiled and greased. A record or log of pumping plant operation shall be kept for each station, a copy of which shall be furnished the District Engineer following each flood.

(g) *Channels and floodways* — (1) *Maintenance.* Periodic inspections of improved channels and floodways shall be made by the Superintendent to be certain that:

(i) The channel or floodway is clear of debris, weeds, and wild growth;

(ii) The channel or floodway is not being restricted by the depositing of waste materials, building of unauthorized structures or other encroachments;

(iii) The capacity of the channel or floodway is not being reduced by the formation of shoals;

(iv) Banks are not being damaged by rain or wave wash, and that no sloughing of banks has occurred;

(v) Riprap sections and deflection dikes and walls are in good condition;

(vi) Approach and egress channels adjacent to the improved channel or floodway are sufficiently clear of obstructions and debris to permit proper functioning of the project works.

Such inspections shall be made prior to the beginning of the flood season and otherwise at intervals not to exceed 90 days. Immediate steps will be taken to remedy any adverse conditions disclosed by such inspections. Measures will be taken by the Superintendent to promote the growth of grass on bank slopes and earth deflection dikes. The Superintendent shall provide for periodic repair and cleaning of debris basins, check dams, and related structures as may be necessary.

(2) *Operation.* Both banks of the channel shall be patrolled during periods of high water, and measures shall be taken to protect those reaches being attacked by the current or by wave wash. Appropriate measures shall be taken to prevent the formation of jams of ice or debris. Large objects which become lodged against the bank shall be removed. The improved channel or floodway shall be thoroughly inspected immediately following each major high water period. As soon as practicable thereafter, all snags and other debris shall be removed and all damage to banks, riprap, deflection dikes and walls, drainage outlets, or other flood control structures repaired.

(h) *Miscellaneous facilities* — (1) *Maintenance.* Miscellaneous structures and facilities constructed as a part of the protective works and other structures and facilities which function as a part of, or affect the efficient functioning of the protective works, shall be periodically inspected by the Superintendent and appropriate maintenance measures taken. Damaged or unserviceable parts shall be repaired or replaced without delay. Areas used for ponding in connection with pumping plants or for temporary storage of interior run-off during flood periods shall not be allowed to become filled with silt, debris, or dumped material. The Superintendent shall take proper steps to prevent restriction of bridge openings and, where practicable, shall provide for temporary raising during floods of bridges which restrict channel capacities during high flows.

(2) *Operation.* Miscellaneous facilities shall be operated to prevent or reduce flooding during periods of high water. Those facilities constructed as a part of the protective works shall not be used for purposes other than flood protection without approval of the District Engineer unless designed therefor. (49 Stat. 1571, 50 Stat. 877; and 55 Stat. 638; 33 U.S.C. 701c; 701c-1) (Regs. 9 August 1944, CE SPEWFF)

[SEAL]

J. A. ULIO,
Major General,
The Adjutant General.

[F. R. Doc. 44-12285; Filed, August 16, 1944;
9:44 a. m.]

EXHIBIT NO 1

TITLE 33—NAVIGATION AND
NAVIGABLE WATERS

Chapter II—Corps of Engineers, War
Department

PART 208—FLOOD CONTROL REGULATIONS
MAINTENANCE AND OPERATION OF FLOOD
CONTROL WORKS

Pursuant to the provisions of section 3 of the Act of Congress approved June 22, 1936, as amended and supplemented (49 Stat. 1571; 50 Stat. 877; and 55 Stat. 638; 33 U. S. C. 701c; 701c-1), the following regulations are hereby prescribed to govern the maintenance and operation of flood control works:

§ 208.10 *Local flood protection works; maintenance and operation of structures and facilities*—(a) *General.* (1) The structures and facilities constructed by the United States for local flood protection shall be continuously maintained in such a manner and operated at such times and for such periods as may be necessary to obtain the maximum benefits.

(2) The State, political subdivision thereof, or other responsible local agency, which furnished assurance that it will maintain and operate flood control works in accordance with regulations prescribed by the Secretary of War, as required by law, shall appoint a permanent committee consisting of or headed by an official hereinafter called the "Superintendent," who shall be responsible for the development and maintenance of, and directly in charge of, an organization responsible for the efficient operation and maintenance of all of the structures and facilities during flood periods and for continuous inspection and maintenance of the project works during periods of low water, all without cost to the United States.

(3) A reserve supply of materials needed during a flood emergency shall be kept on hand at all times.

(4) No encroachment or trespass which will adversely affect the efficient operation or maintenance of the project works shall be permitted upon the right-of-way for the protective facilities.

(5) No improvement shall be passed over, under, or through the walls, levees, improved channels or floodways, nor shall any excavation or construction be permitted within the limits of the project right-of-way, nor shall any change be made in any feature of the works without prior determination by the District Engineer of the War Department or his authorized representative that such improvement, excavation, construction, or alteration will not adversely affect the functioning of the protective facilities. Such improvements or alterations as may be found to be desirable and permissible under the above determination shall be constructed in accordance with standard engineering practice. Advice regarding the effect of proposed improvements or alterations on the functioning of the project and information concerning methods of construction acceptable under standard engineering practice shall be obtained from the District Engineer or, if otherwise obtained, shall be submitted for his approval. Drawings or prints showing such improvements or alterations as finally constructed shall be furnished the District Engineer after completion of the work.

(6) It shall be the duty of the superintendent to submit a semiannual report to the District Engineer covering inspection, maintenance, and operation of the protective works.

(7) The District Engineer or his authorized representatives shall have access at all times to all portions of the protective works.

(8) Maintenance measures or repairs which the District Engineer deems necessary shall be promptly taken or made.

(9) Appropriate measures shall be taken by local authorities to insure that the activities of all local organizations operating public or private facilities connected with the protective works are coordinated with those of the Superintendent's organization during flood periods.

(10) The War Department will furnish local interests with an Operation and Maintenance Manual for each completed project, or separate useful part thereof, to assist them in carrying out their obligations under these regulations.

(b) *Levees*—(1) *Maintenance.* The Superintendent shall provide at all times such maintenance as may be required to insure serviceability of the structures in time of flood. Measures shall be taken to promote the growth of sod, exterminate burrowing animals, and to provide for routine mowing of the grass and weeds, removal of wild growth and drift deposits, and repair of damage caused by erosion or other forces. Where practicable, measures shall be taken to retard bank erosion by planting of willows or other suitable growth on areas riverward of the levees. Periodic inspections shall be made by the Superintendent to insure that the above maintenance measures are being effectively carried out and, further, to be certain that:

(i) No unusual settlement, sloughing, or material loss of grade or levee cross section has taken place;

(ii) No caving has occurred on either the land side or the river side of the levee which might affect the stability of the levee section;

(iii) No seepage, saturated areas, or sand boils are occurring;

(iv) Toe drainage systems and pressure relief wells are in good working condition, and that such facilities are not becoming clogged;

(v) Drains through the levees and gates on said drains are in good working condition;

(vi) No revetment work or riprap has been displaced, washed out, or removed;

(vii) No action is being taken, such as burning grass and weeds during inappropriate seasons, which will retard or destroy the growth of sod;

(viii) Access roads to and on the levee are being properly maintained;

(ix) Cattle guards and gates are in good condition;

(x) Crown of levee is shaped so as to drain readily, and roadway thereon, if any, is well shaped and maintained;

(xi) There is no unauthorized grazing or vehicular traffic on the levees;

(xii) Encroachments are not being made on the levee right-of-way which might endanger the structure or hinder its proper and efficient functioning during times of emergency.

Such inspections shall be made immediately prior to the beginning of the flood season; immediately following each major high water period, and otherwise at intervals not exceeding 90 days; and such intermediate times as may be necessary to insure the best possible care of

the levee. Immediate steps will be taken to correct dangerous conditions disclosed by such inspections. Regular maintenance repair measures shall be accomplished during the appropriate season as scheduled by the Superintendent.

(2) *Operation.* During flood periods the levee shall be patrolled continuously to locate possible sand boils or unusual wetness of the landward slope and to be certain that:

(i) There are no indications of slides or sloughs developing;

(ii) Wave wash or scouring action is not occurring;

(iii) No low reaches of levee exist which may be overtopped;

(iv) No other conditions exist which might endanger the structure.

Appropriate advance measures will be taken to insure the availability of adequate labor and materials to meet all contingencies. Immediate steps will be taken to control any condition which endangers the levee and to repair the damaged section.

(c) *Flood walls*—(1) *Maintenance.* Periodic inspections shall be made by the Superintendent to be certain that:

(i) No seepage, saturated areas, or sand boils are occurring;

(ii) No undue settlement has occurred which affects the stability of the wall or its water tightness;

(iii) No trees exist, the roots of which might extend under the wall and offer accelerated seepage paths;

(iv) The concrete has not undergone cracking, chipping, or breaking to an extent which might affect the stability of the wall or its water tightness;

(v) There are no encroachments upon the right-of-way which might endanger the structure or hinder its functioning in time of flood;

(vi) Care is being exercised to prevent accumulation of trash and debris adjacent to walls, and to insure that no fires are being built near them;

(vii) No bank caving conditions exist riverward of the wall which might endanger its stability;

(viii) Toe drainage systems and pressure relief wells are in good working condition, and that such facilities are not becoming clogged.

Such inspections shall be made immediately prior to the beginning of the flood season, immediately following each major high water period, and otherwise at intervals not exceeding 90 days. Measures to eliminate encroachments and effect repairs found necessary by such inspections shall be undertaken immediately. All repairs shall be accomplished by methods acceptable in standard engineering practice.

(2) *Operation.* Continuous patrol of the wall shall be maintained during flood periods to locate possible leakage at monolith joints or seepage underneath the wall. Floating plant or boats will not be allowed to lie against or tie up to the wall. Should it become necessary during a flood emergency to pass anchor cables over the wall, adequate measures shall be taken to protect the concrete and construction joints. Immediate steps shall be taken to correct any condition which endangers the stability of the wall.

(d) *Drainage structures*—(1) *Maintenance.* Adequate measures shall be taken to insure that inlet and outlet channels are kept open and that trash, drift, or debris is not allowed to accumulate near drainage structures. Flap gates and manually operated gates and valves on

INSPECTION, OPERATION AND MAINTENANCE REPORT

FLOOD CONTROL PROJECT

BAYOUS RAPIDES, BOEUF AND COCADRIE, LOUISIANA

(Semi-Annual Reports to be submitted, 30 June and 31 December to the District Engineer, Corps of Engineers, New Orleans District, New Orleans 9, La.)

DIVERSION CHANNEL *

Inspection and Maintenance

Date of Inspection: _____ 19____

Location of Inspection: (Mile to Mile) _____

a. Condition of channel: _____

Action taken to correct adverse conditions: _____

b. Condition of channel at bridges: (For description of bridges See Page 9 of Manual)

<u>Bridge (Mile)</u>	<u>Remarks</u>
5.0	_____
13.7	_____
20.4	_____
22.6	_____

Bridge
(Mile)

Remarks

27.4

30.2

32.8

34.6

35.3

36.1

37.1

37.6

40.4

42.4

42.8

43.1

43.5

44.8

46.1

46.3

48.3

48.6

51.4

53.7

56.4

57.6

59.6

Action taken to correct adverse conditions: _____

(* NOTE: Similar report to be submitted for each main channel when construction complete)

CONTROL STRUCTURES

BAYOU RAPIDES CONTROL STRUCTURE

Inspection and Maintenance

Date of Inspection _____ 19 _____

<u>Feature Inspected</u>	<u>Condition of Feature</u>
1. Slide gates	_____
2. Gate Frames	_____
3. Hoisting Stems	_____
4. Hoisting Mechanism	_____
5. Culverts	_____
6. Head Walls	_____
7. Riprap	_____
8. Approach Channel	_____
9. Discharge Channel	_____
10. Relief Well Outlets	_____

Action taken to correct adverse conditions reported above:

Trial Operation

Slide Gates (Every 90 days)

1. Trial Operated, (a) _____ 19____; (b) _____ 19____
2. Oiled & Greased, (a) _____ 19____; (b) _____ 19____

Operation

	<u>Date</u>	<u>Gage Reading</u>	
		<u>Inlet</u>	<u>Outlet</u>
Slide Gates Opened	_____	_____	_____
Slide Gates Closed	_____	_____	_____

Remarks: _____

BAYOU LAMOURIE CONTROL STRUCTURE

Inspection and Maintenance

Date of Inspection _____ 19____

<u>Feature Inspected</u>	<u>Condition of Feature</u>
1. Slide Gate	_____
2. Gate Frame	_____
3. Hoisting Stem	_____
4. Hoisting Mechanism	_____
5. Culvert	_____
6. Headwalls	_____
7. Riprap	_____
8. Approach Channel	_____

Feature Inspected

Condition of Feature

- 9. Discharge Channel _____
- 10. Slab Drain Outlets _____

Action taken to correct adverse conditions reported above:

Trial Operation

Slide Gate (Every 90 days)

- 1. Trial Operated, (a) _____ 19____; (b) _____ 19____
- 2. Oiled & Greased, (a) _____ 19____; (b) _____ 19____

Operation

	<u>Date</u>	<u>Gage Reading</u>	
		<u>Inlet</u>	<u>Outlet</u>
Slide Gate Opened	_____	_____	_____
Slide Gate Closed	_____	_____	_____

Remarks: _____

LECOMPTE CONTROL STRUCTURE

Inspection and Maintenance

Date of Inspection _____ 19____

Condition of Structure: _____

Action taken to correct adverse conditions: _____

BRIDGES

Inspection and Maintenance

Date of Inspection _____ 19 _____

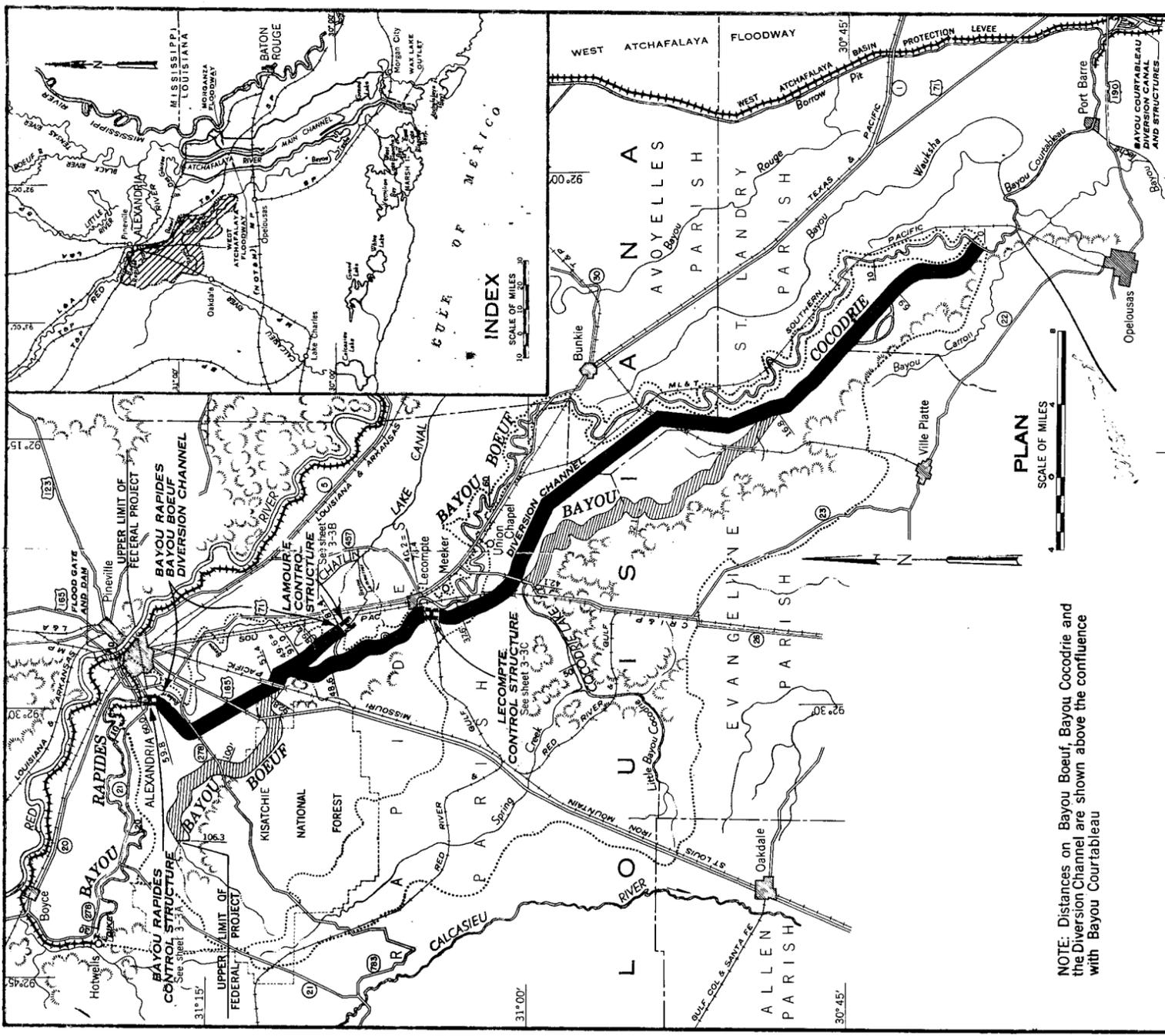
Condition of Bridges _____

Action taken to correct adverse conditions: _____

_____ 19 _____
(Date Submitted) (Signed) Superintendent

_____ (Home Address) _____ (Telephone No.)

_____ (Business Address) _____ (Telephone No.)



NOTE: Distances on Bayou Boeuf, Bayou Cocodrie and the Diversion Channel are shown above the confluence with Bayou Courtableau

-  Channel improvement and Diversion Channel
-  Channel improvement authorized but not started
-  Control structure
-  Bridges
-  Drainage limit
-  Stream mileage

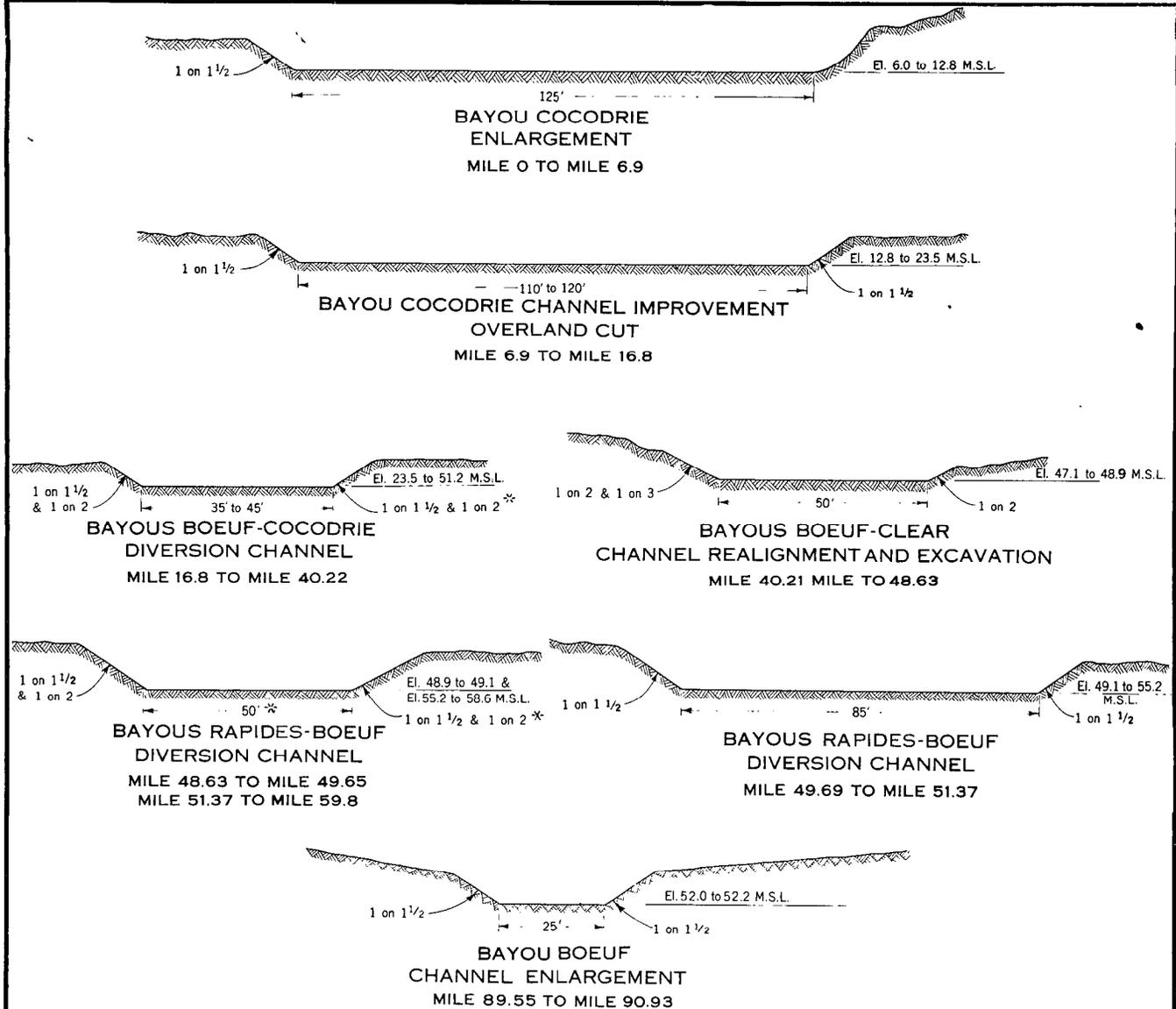
OPERATION AND MAINTENANCE MANUAL
 FLOOD CONTROL PROJECT
**BAYOUS RAPIDES, BOEUF
 AND COCODRIE, LA.**
 GENERAL PLAN

SCALES AS SHOWN

OFFICE OF THE DISTRICT ENGINEER NEW ORLEANS, LA.

FILE NO. H-2-20064

EXHIBIT NO. 3



* Mile 39.98 to Mile 40.15: Side slopes 1 on 3 where depth of cut greater than 25'
Mile 51.37 to Mile 59.8: Side slopes 1 on 3 with 35' bottom width.

OPERATION AND MAINTENANCE MANUAL
FLOOD CONTROL PROJECT
BAYOUS RAPIDES, BOEUF
AND COCODRIE, LA.
TYPICAL CROSS SECTIONS
OF CHANNELS

OFFICE OF THE DISTRICT ENGINEER NEW ORLEANS, LA.
FILE NO. H-2-20664

EXHIBIT NO. 4

Highway 21

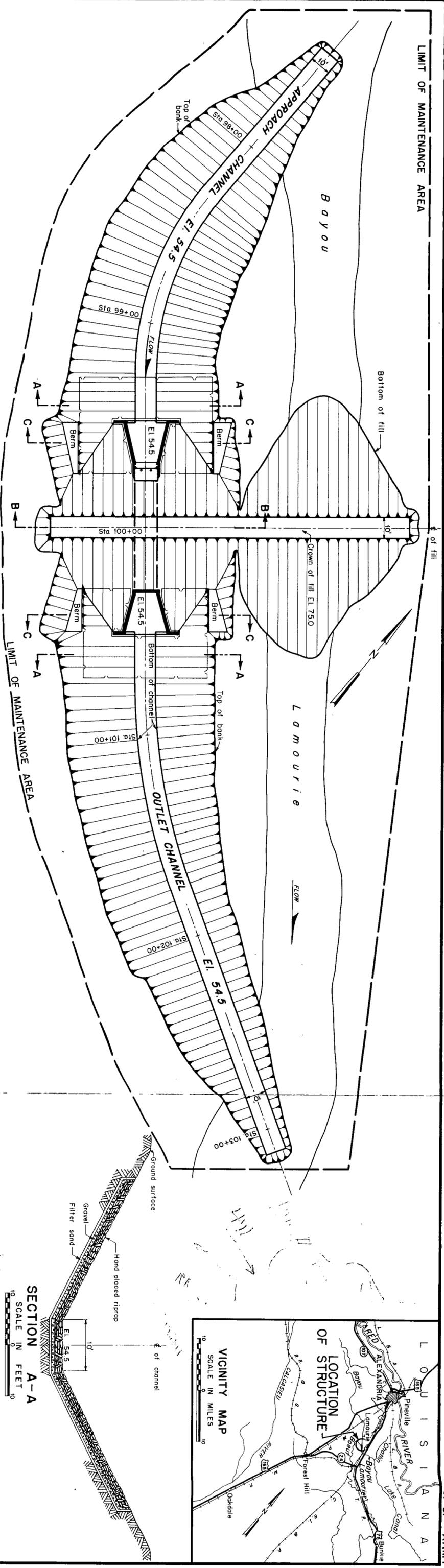
CONTROL STRUCTURE -- BAYOU SIDE



OUTLET -- LANDSIDE

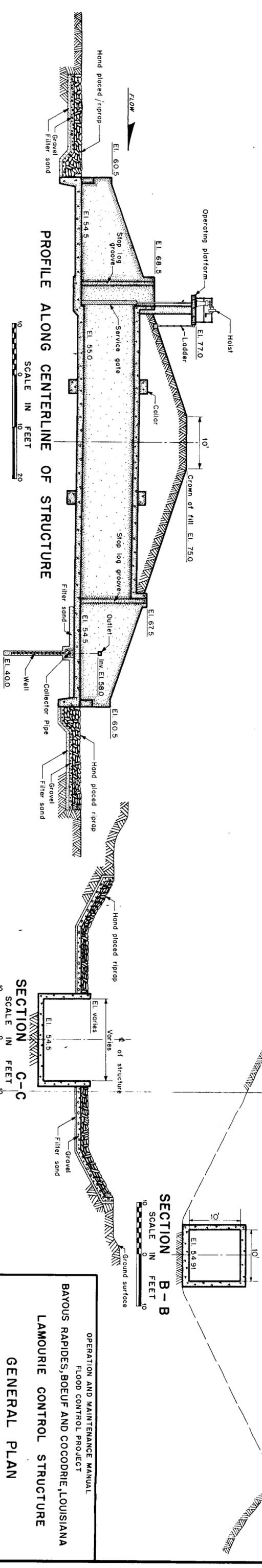
OPERATION AND MAINTENANCE MANUAL
BAYOU RAPIDES CONTROL STRUCTURE
FILE NO. H-2-20064
EXHIBIT NO. 6

LIMIT OF MAINTENANCE AREA



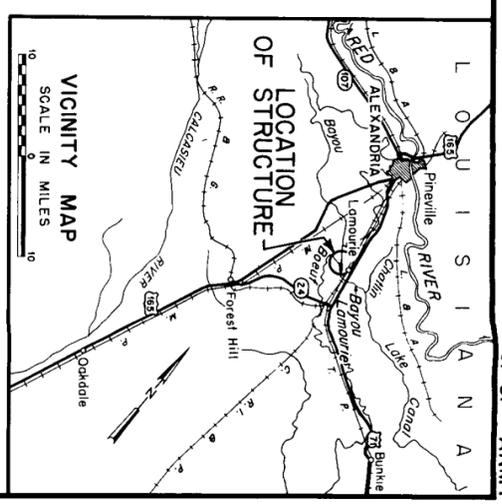
PLAN

SCALE IN FEET
0 20 40 60



PROFILE ALONG CENTERLINE OF STRUCTURE

SCALE IN FEET
0 10 20



VICINITY MAP

SCALE IN MILES
0 10

SECTION A-A

SCALE IN FEET
0 10

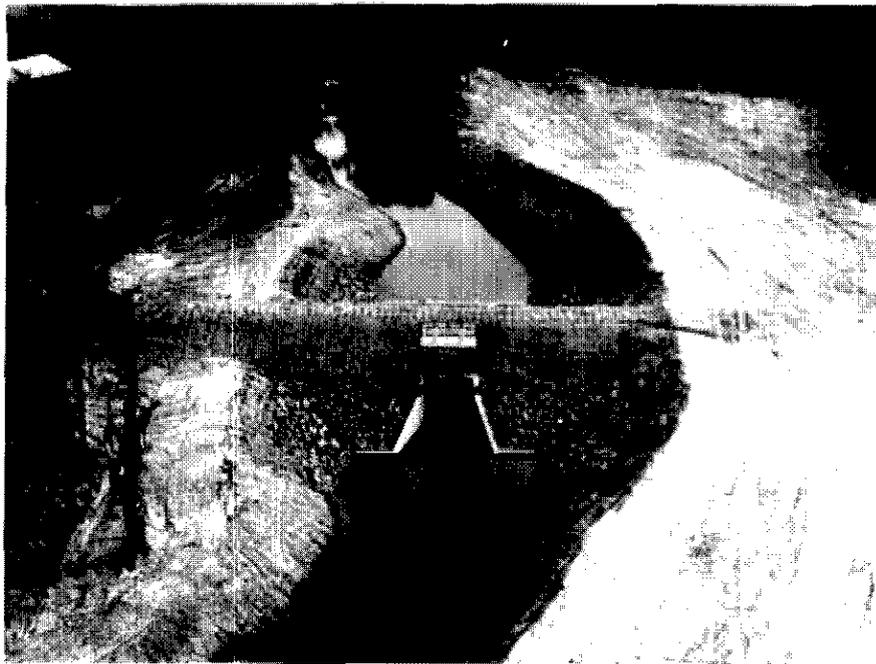
SECTION B-B

SCALE IN FEET
0 10

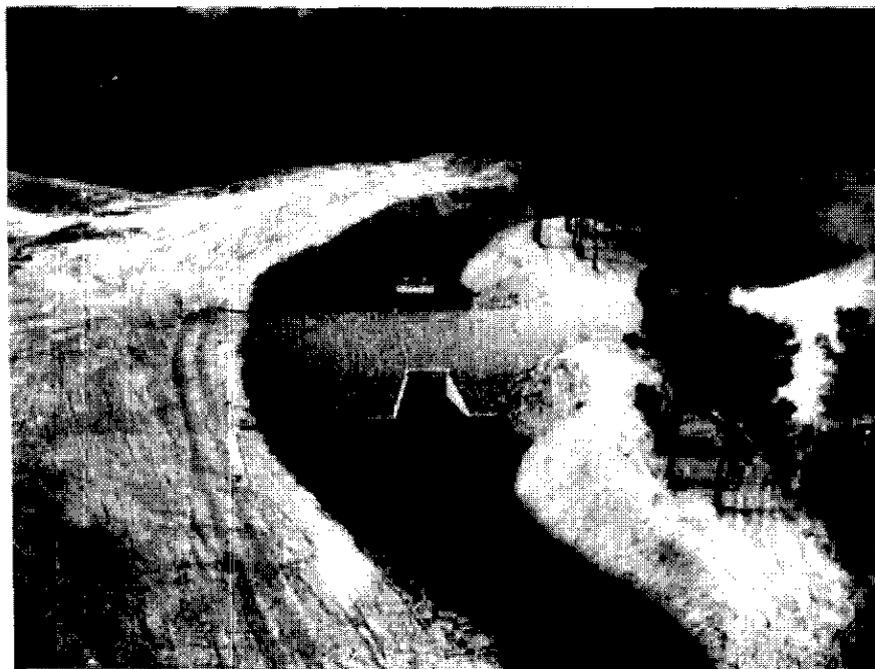
SECTION C-C

SCALE IN FEET
0 10

OPERATION AND MAINTENANCE MANUAL
 FLOOD CONTROL PROJECT
 BAYOUS RAPIDES, BOEUF AND COCODRIE, LOUISIANA
 LAMOURIE CONTROL STRUCTURE
 GENERAL PLAN
 SCALES AS SHOWN
 OFFICE OF THE DISTRICT ENGINEER, NEW ORLEANS, LA.
 FILE NO. H-2-17498



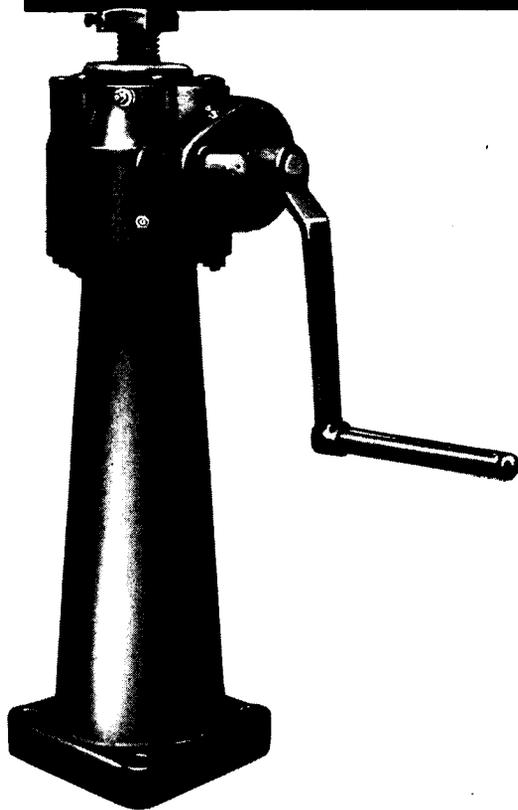
CONTROL STRUCTURE—LOOKING DOWNSTREAM



OUTLET—LOOKING UPSTREAM

OPERATION AND MAINTENANCE MANUAL
BAYOU LAMOURIE CONTROL STRUCTURE
FILE NO. H-2-20064
EXHIBIT NO. 10

ARMCO ENCLOSED GEAR PEDESTAL LIFT TYPE CPE12



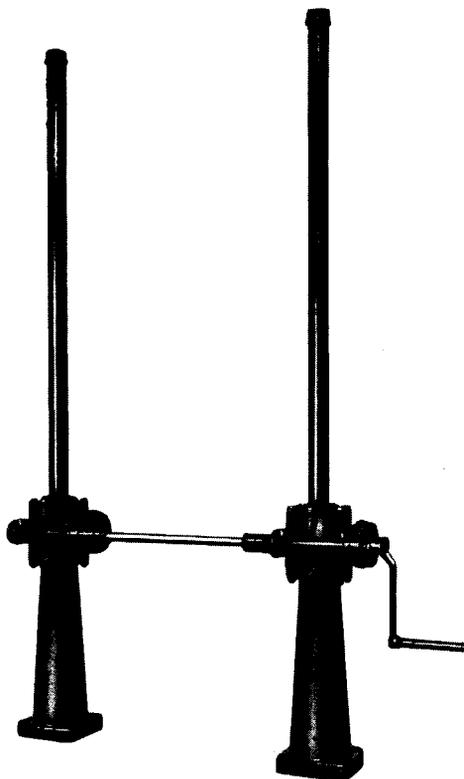
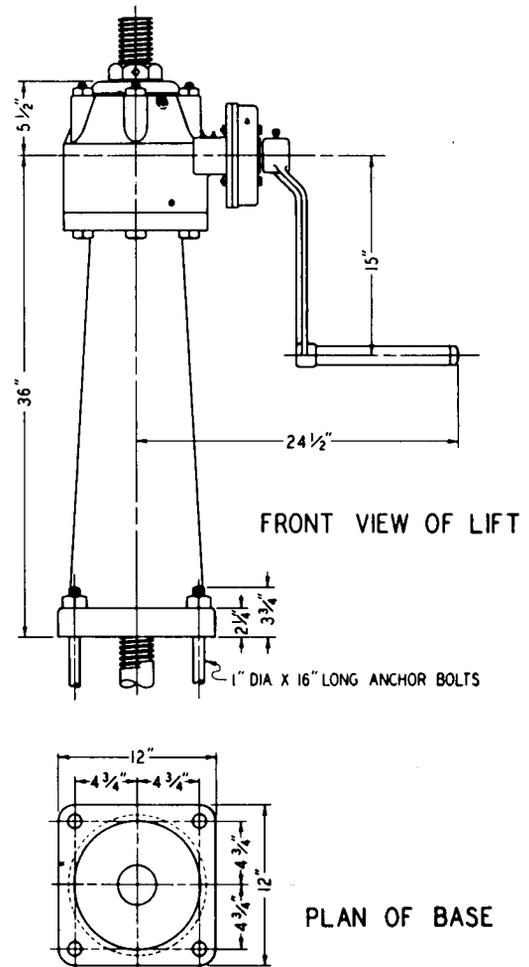
Type CPE12 Armco Lift has enclosed double gears with thrust ball bearings above and below the flange of the lifting nut. The bevel and pinion gears are steel with cut teeth. The spur gear is cast iron and the spur pinion is steel, both with cut teeth.

Bronze bushings are used as bearings for the spur pinion shaft and the bevel pinion shaft.

Gear ratio on the high speed is 4:1 and 12:1 on low speed. See Table 42, page 81 for additional data.

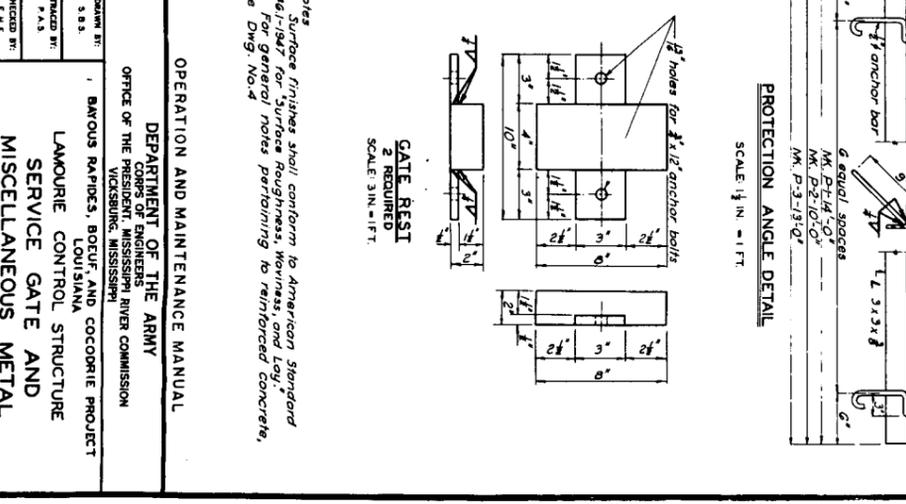
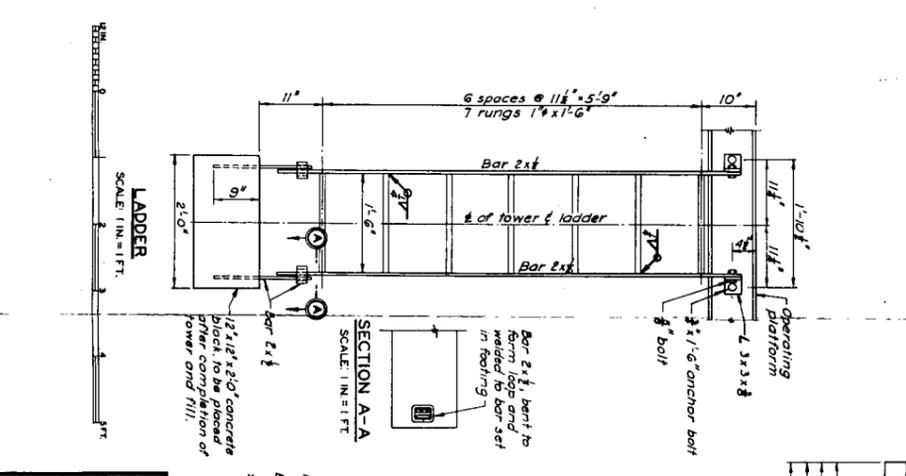
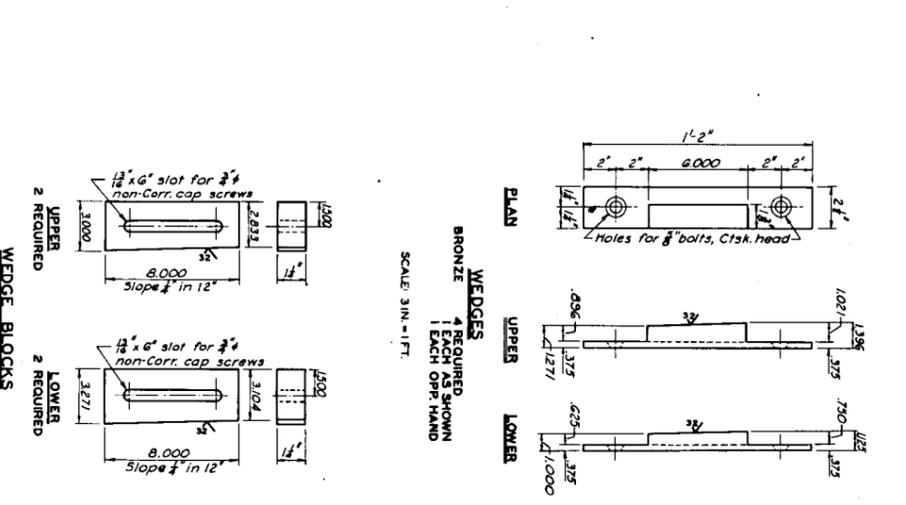
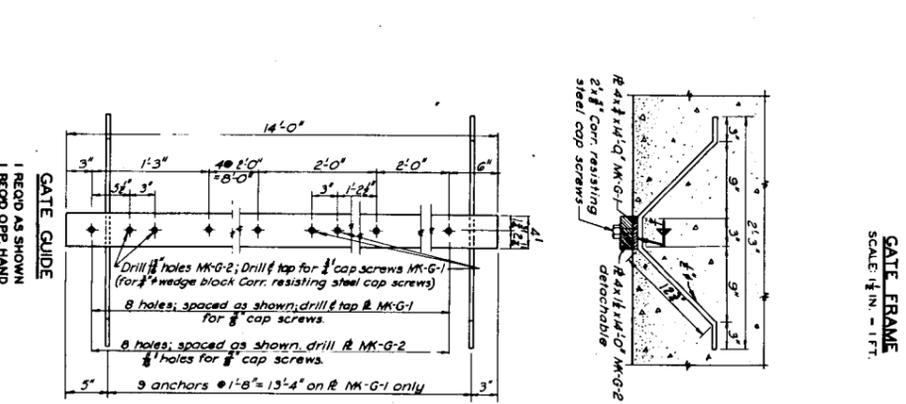
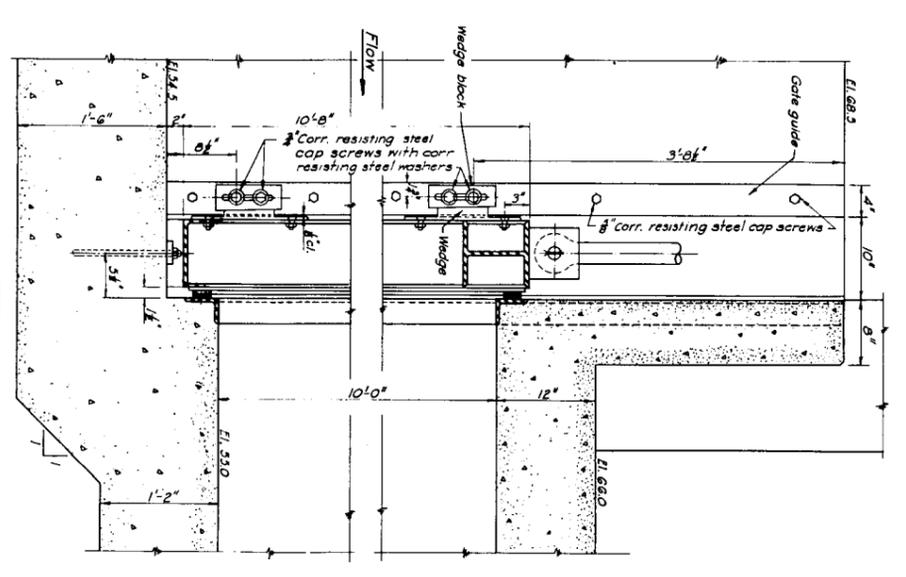
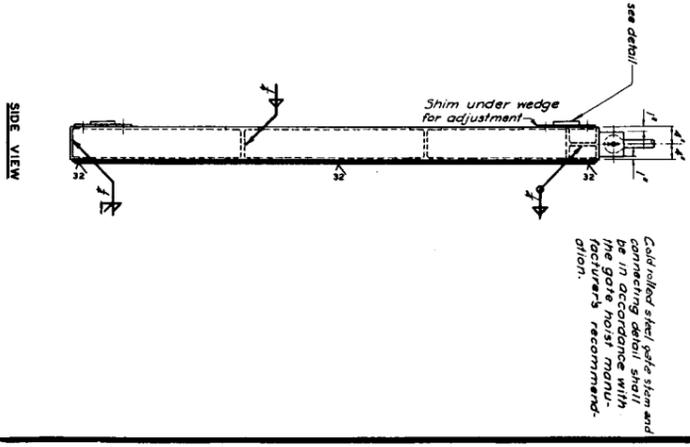
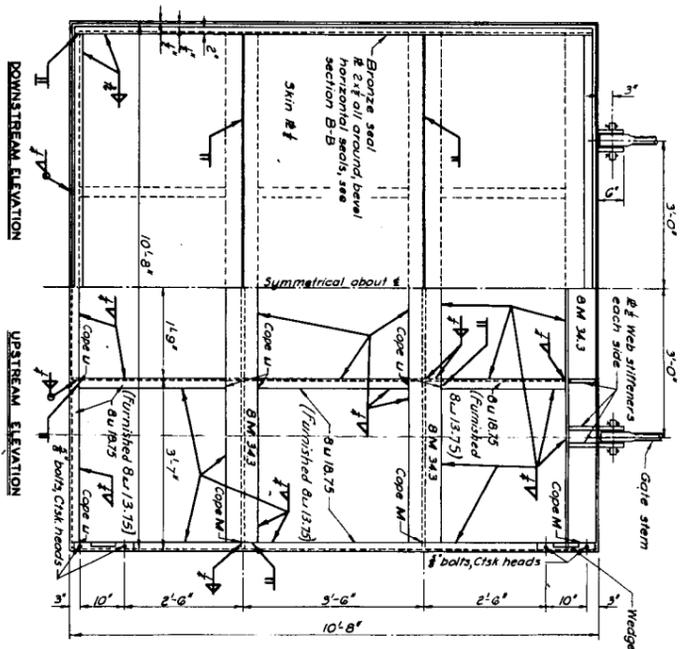
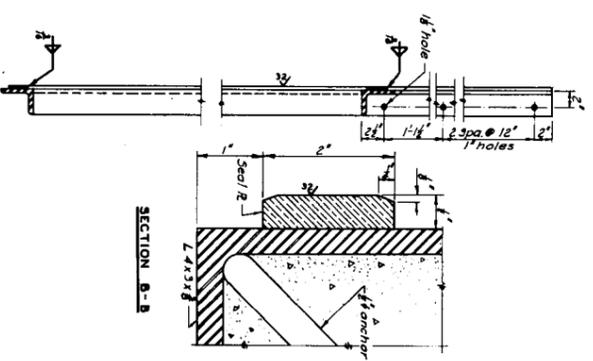
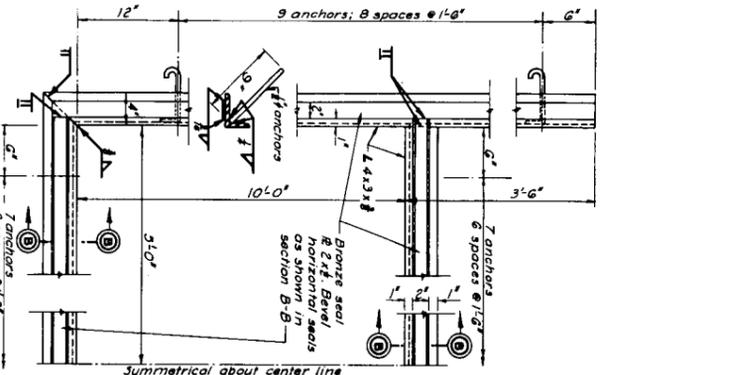
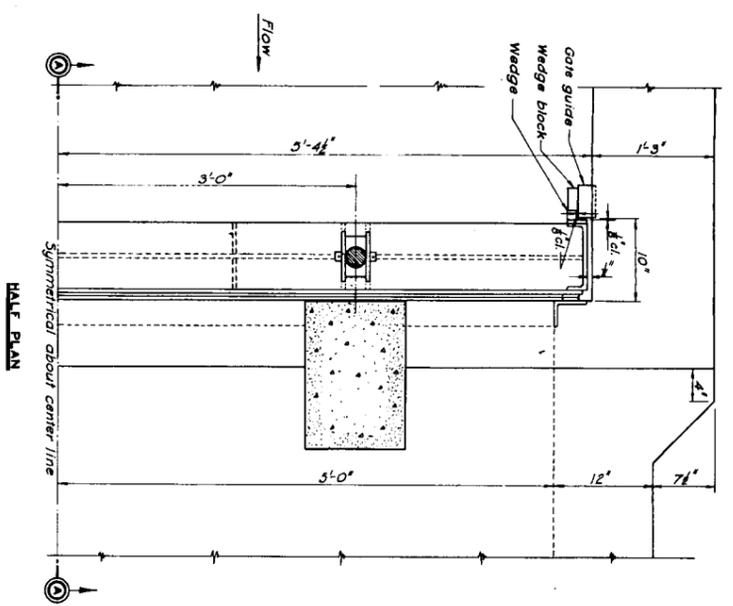
Anchor bolts are supplied with the lift.

Figure 35—Details of Armco Lift Type CPE12



Two Armco CPE12 Lifts in tandem. Note stem cover.

OLD TYPE "U"

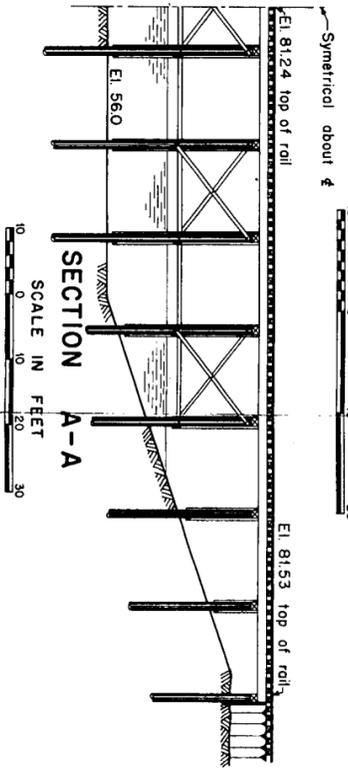
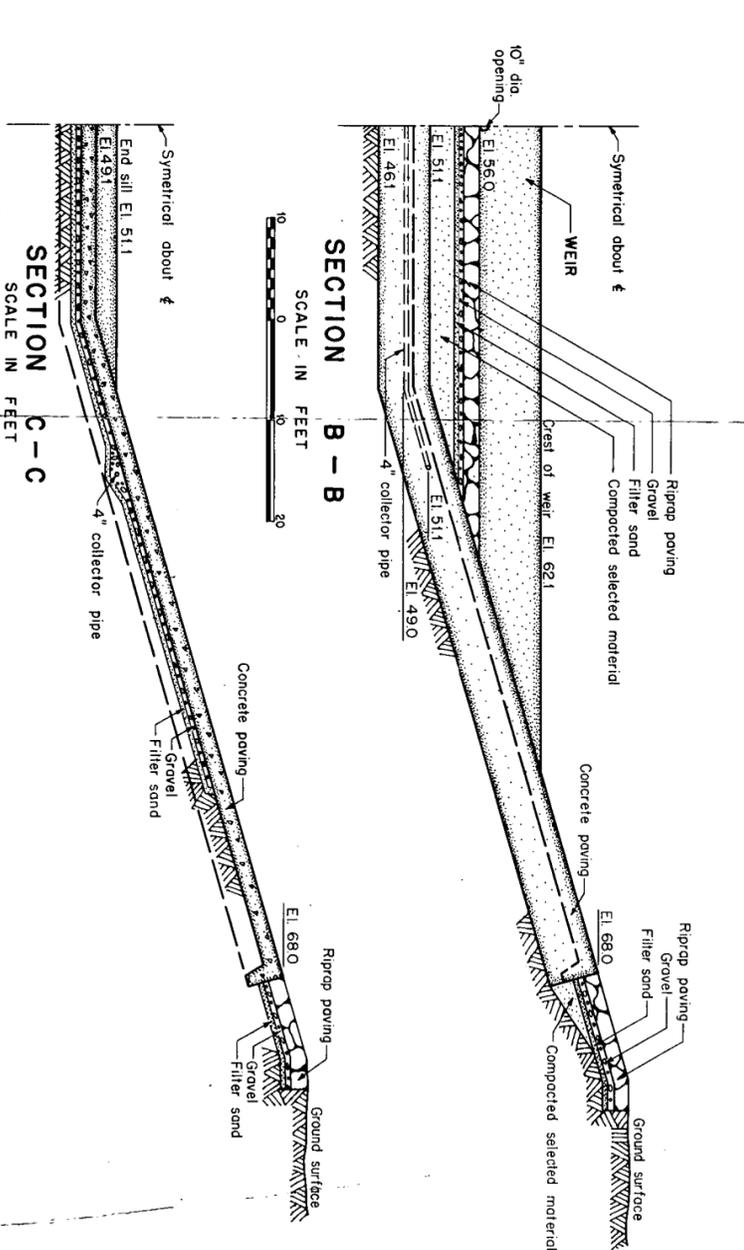
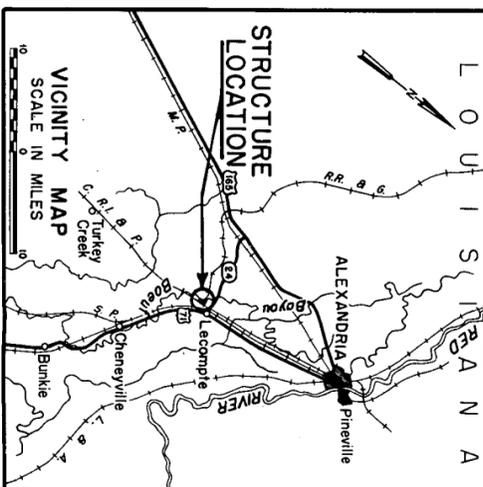
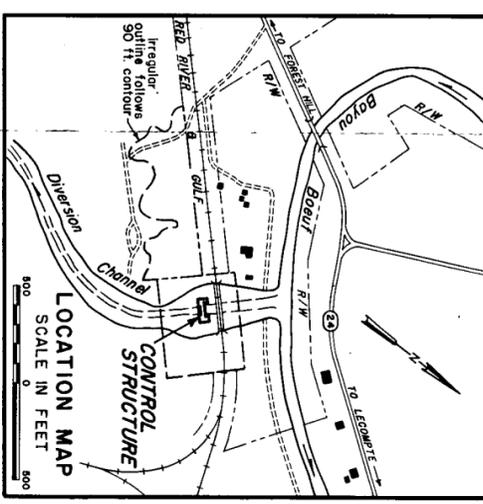
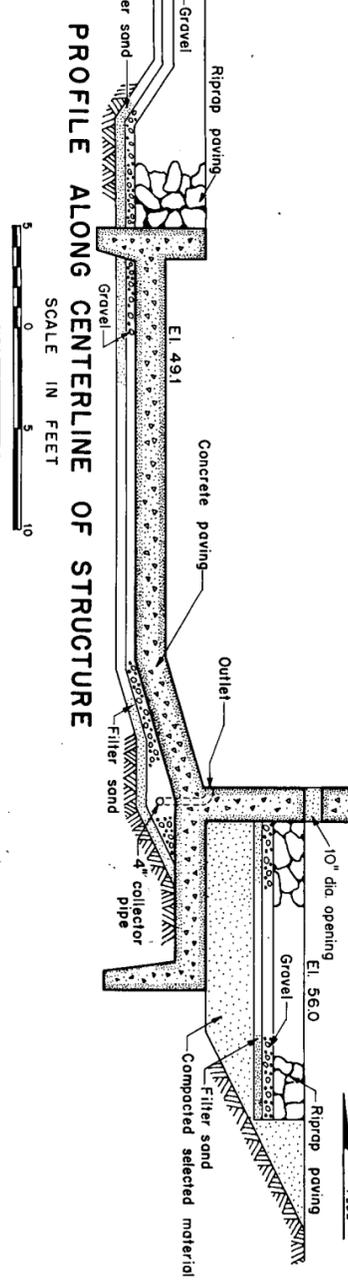
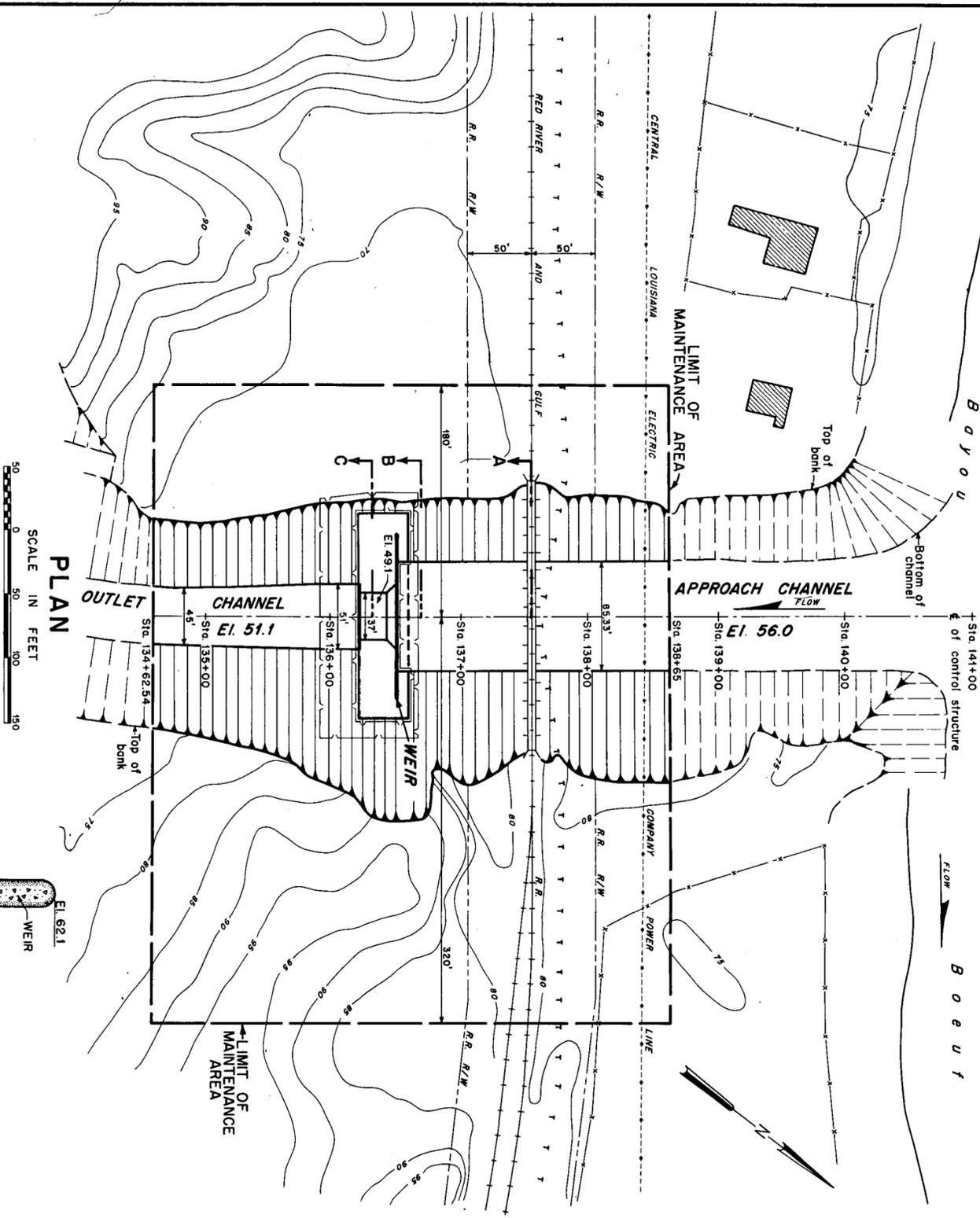


Notes
Surface finishes shall conform to American Standard B 46.1-1942 for cast iron, and B 46.2-1942 for cast steel. For general notes pertaining to reinforced concrete, see Div. No. 4.

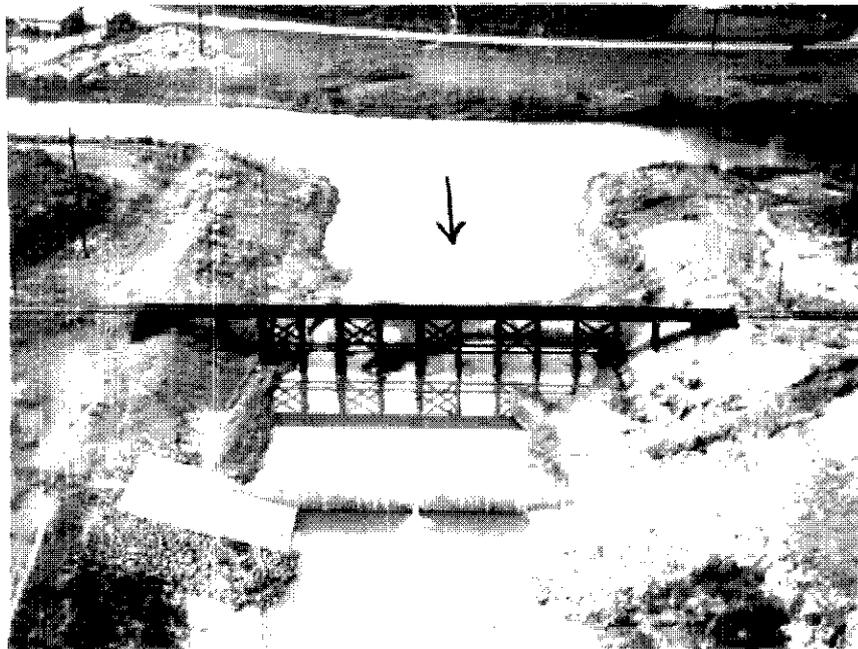
OPERATION AND MAINTENANCE MANUAL

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
MISSISSIPPI RIVER COMMISSION
VICKSBURG, MISSISSIPPI
LOUISIANA
BAYOU RAPIDS, BOEUF, AND COCOBIE PROJECT
SERVICE GATE AND MISCELLANEOUS METAL

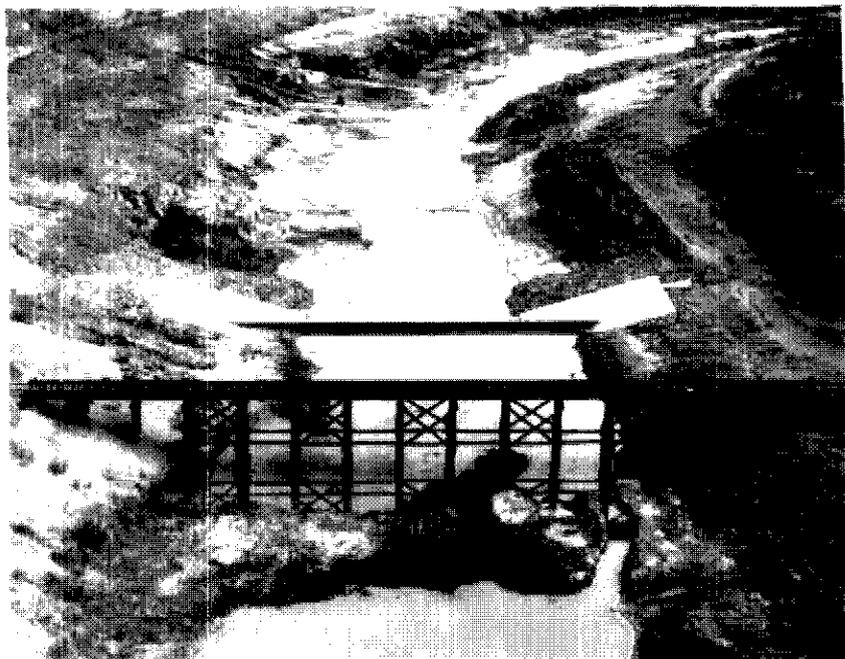
DESIGNED BY: P.A.S.	CHECKED BY: E.H.E.	DATE: NOV. 1950	SHEET: 6
SUBMITTED BY: [Signature]		SCALE: AS SHOWN	
APPROVED BY: [Signature]		DATE: NOV. 1950	
PROJECT: NO. CEN-18-D-1-34		DRAWING NO. 6	
FILE NO. H-4-1772			



OPERATION AND MAINTENANCE MANUAL
FLOOD CONTROL PROJECT
BOYOUS RAPIDES, BOEUF AND COCODRIE, LOUISIANA.
LECOMTE CONTROL STRUCTURE
GENERAL PLAN
SCALES AS SHOWN
OFFICE OF THE DISTRICT ENGINEER, NEW ORLEANS, LA.
FILE NO. H-2-17497



WEIR STRUCTURE—LOOKING UPSTREAM



WEIR STRUCTURE—LOOKING DOWNSTREAM

Note: Railroad bridge was removed in 1955.

OPERATION AND MAINTENANCE MANUAL
LECOMPTE CONTROL STRUCTURE

FILE NO. H-2-20064
EXHIBIT NO. 14