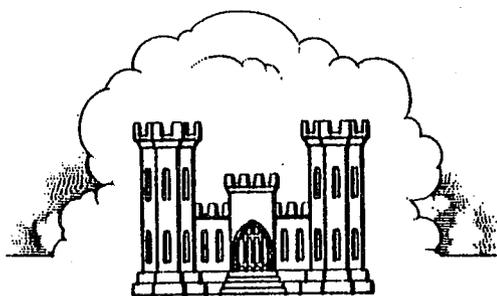


SUPPLEMENT TO STANDARD
OPERATION AND MAINTENANCE
MANUAL
SACRAMENTO RIVER
FLOOD CONTROL PROJECT

UNIT NO. 161
BUTTE SLOUGH
OUTFALL GATES



SACRAMENTO DISTRICT
CORPS OF ENGINEERS
U. S. ARMY
SACRAMENTO, CALIFORNIA

FILE COPY *J. H. 2*

CORPS OF ENGINEERS
U. S. ARMY

SUPPLEMENT TO STANDARD
OPERATION AND MAINTENANCE MANUAL
SACRAMENTO RIVER FLOOD CONTROL MANUAL

UNIT NO. 161
BUTTE SLOUGH OUTFALL GATES
SACRAMENTO RIVER, CALIFORNIA

Sacramento District
Corps of Engineers
U. S. Army
March 1957

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<u>Exhibit</u>	<u>Description</u>	
A	Flood Control Regulations	Unattached
	(Contained in Standard Manual)	
A-1	Location Map	1 Sheet
B	"As Constructed" Drawings	Unattached
C	Plates of Suggested Flood Fighting Methods	Unattached
	(Contained in Standard Manual)	
D	Check List No. 1 - Levee Inspection Report	Unattached
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F	Letter of Acceptance by State Reclamation Board	Sheets 1 and 2
G	Semiannual Report Form	Sheets 1 and 2

SUPPLEMENT TO STANDARD
OPERATION AND MAINTENANCE MANUAL
SACRAMENTO RIVER FLOOD CONTROL PROJECT

UNIT NO. 161
BUTTE SLOUGH OUTFALL GATES
SACRAMENTO RIVER, CALIFORNIA

SECTION I

INTRODUCTION

1-01. Location. The improvement covered by this manual is that part of the Sacramento River Flood Control Project which comprises the Butte Slough Outfall Gates located in Butte Slough near its junction with the Sacramento River at about river mile 138.2. As shown on the location map (Exhibit A-1) and/or drawings of Exhibit B, the outfall gates lie along the east bank (left bank) of the Sacramento River 3.73 miles downstream from Colusa, California. A separate drainage pipe lies on the same bank about 0.5 miles upstream from the junction.

1-02. Project Works. The Butte Slough Outfall Gates consist of seven 66-inch diameter corrugated metal pipes each approximately 248 feet long which extend through a dike or fill constructed across Butte Slough as a part of the levee along the east bank of the Sacramento River. Each pipe is equipped at the outlet or river end with a slide gate, steel gate tower, and gate lifting device. A walkway trestle provides access to the manually controlled slide gates. Stone protection at both ends of the pipes was placed to elevation 43.0. The intake ends of the pipes are supported on wood piles and two metal cutoff walls are provided near the crown of the levee. The drainage structure located about 0.5 miles upstream from Butte Slough Outfall Gates consists of one 78" diameter corrugated metal pipe approximately 170 feet long extending through the east levee of the Sacramento River. This pipe is equipped at the outlet end with an automatic drainage gate. For more complete details of these structures see drawing of Exhibit B.

1-03. Protection Provided. The Butte Slough Outfall Gate system is designed to control passage of flood waters from Butte Basin to the Sacramento River to a maximum of about 3,500 cubic feet per second; also to permit, when desired at low water stages during the summer season, outflow into the Sacramento River as required by local interests to control water levels of the Butte Basin for irrigation and drainage purposes.

1-04. Construction Data. - Construction of Butte Slough Outfall Gates was accomplished under Contract No. W-1105-eng-1467 by S. H. Palmer Co, Ltd. and A. J. Grier. Work was started on 9 October 1934 and completed on 29 October 1935.

1-05. Flood Flows. - For purpose of this manual, the term "flood" or high water period" shall refer to flows when the water surface in Butte Slough reaches or exceeds the reading of 59.0 on the staff gage located at Butte Slough Outfall Gates 4.4 miles northerly from the town of Meridian. The term "flood" or "high water period" may also apply when the water surface in the Sacramento River reaches or exceeds the reading of 59.0 on the State Division of Water Resources staff gage located on the Sacramento River side of Butte Slough Outfall Gates. Both gage locations referred to above are set on U. S. Corps of Engineers' datum.

1-06. Assurances Provided by Local Interests. - Assurances of cooperation by local interests is provided by State Legislation as contained in Chapter 3, Part 2, Division 5 of the State Water Code (See paragraph 2-02a of the Standard Manual.)

1-07. Acceptance by State Reclamation Board. - Responsibility for operating and maintaining the completed works was officially accepted by the Reclamation Board of the State of California on 12 September 1944 as shown on the attached letter of acceptance, Exhibit F.

1-08. Superintendent. - The name and address of the Superintendent appointed by the State or acting as a representative of the State Department of Water Resources for the continuous inspection, operation and maintenance of the project works shall be furnished the District Engineer, and in case of any change of Superintendent, the District Engineer shall be so notified.

SECTION II

FEATURES OF THE PROJECT SUBJECT TO FLOOD CONTROL REGULATIONS

2-01. Levees.

a. Description. - Levees as such will not be considered in this manual, except that portion of levee which directly affects the Butte Slough Outfall Gates from Station 3+97.73 to Station 7+20, as shown on drawings of Exhibit B. In this reach the crown width of the levee is 30 feet and both slopes are 1 on 2.5.

b. For pertinent Requirements of the Code of Federal Regulations and other requirements see the following:

- (1) Maintenance - paragraph 4-02 of the Standard Manual.
- (2) Check Lists - Exhibit E of this Supplement Manual.
- (3) Operation - paragraph 4-04 of the Standard Manual.
- (4) Special Instructions - paragraph 4-05 of the Standard Manual.

2-02. Drainage and Irrigation Structures.

a. Description. - The Butte Slough Outfall Gates and a separate drainage pipe located about 0.5 miles upstream from the Butte Slough Outfall Gates are described in paragraphs 1-01, 1-02, and 1-03 of this manual.

b. For pertinent Requirements of the Code of Federal Regulations and other requirements see the following:

- (1) Maintenance - paragraph 5-02 of the Standard Manual.
- (2) Check Lists - Exhibit E of this Supplement Manual.
- (3) Operation - paragraph 5-04 of the Standard Manual.
- (4) Additional Requirements - paragraph 5-05 of the Standard Manual.
- (5) Safety Requirements - paragraph 5-06 of the Standard Manual.

c. Special Maintenance Requirements.

(1) All eroded concrete shall be repaired as soon as any reinforcing steel is exposed or erosion reaches a depth of 4 inches. For this purpose it is recommended that the repair be made by thoroughly cleaning the surface by sandblasting and building up the concrete to its original section with pneumatically-placed Portland cement mortar. All evidences of settlement, uplift, or failure of concrete structures should be referred to the District Engineer for analysis and recommendation of remedial measure.

(2) If the inspection shows that the automatic drainage structures have been jammed in an open position by debris or other obstructions, they shall be thoroughly cleaned so that they swing freely to a true closure. If any parts of the gates have been damaged or broken, they shall be replaced by new parts.

(3) Compliance with the provisions prescribed above pertaining to drainage structures is essential for proper maintenance of the levee system covered by this manual. Levee failures caused by neglected drainage structures are of common occurrence; it is, therefore, of utmost importance that these structures always be kept in perfect working condition in accordance with the regulations.

(4) Care should be taken not to bury any of the side drainage inlets in the event that it becomes necessary to fill any of the low-lying pockets in back of the levee. Plans for the maintenance of drainage facilities at any such points should be submitted to the District Engineer for approval before such work is started.

d. Special Operating Requirement. - The slide gates on the slough end of the pipes may be operated manually to allow flow from Butte Slough into the Sacramento River at times when water in the river is lower than the water in Butte Slough. These gates may be operated by the local irrigation district during the summer season through cooperation with the Sutter Field Office of the State Department of Water Resources. During the flood season the State will be responsible for operation of the slide gates.

2-03. Channels.

a. Description. - Only those channels which are pertinent to the Butte Slough Outfall Gates and which might affect drainage through the pipes of the system will be considered in this manual. They are the approach channel to the inlet and the channel extending from the outlets to the Sacramento River.

b. For pertinent Requirements of the Code of Federal Regulations and other requirements see the following:

- (1) Maintenance - Paragraph 6-02 of the Standard Manual.
- (2) Check Lists - Exhibit E of this Supplement Manual.
- (3) Operation - Paragraph 6-04 of the Standard Manual.
- (4) Safety Requirements - Paragraph 6-05 of the Standard Manual.

It shall be the duty of the Superintendent to maintain a patrol of the project works during all periods of flood in excess of a reading of 59.0 on the gages at Butte Slough Outfall Gates as indicated in paragraph 1-05 of this manual. The Superintendent shall cause readings to be taken at intervals of two to four hours during the period when the water surface is above the flood-flow stage indicated above and record the time of the observations. One copy of the readings shall be forwarded to the District Engineer immediately following the flood, and a second copy transmitted as an inclosure to the semiannual report in compliance with paragraph 3-06 of the Standard Manual.

2-04. Miscellaneous Facilities.

a. Miscellaneous structures or facilities which were constructed as a part of, or in conjunction with, the protective works, and which might affect their functioning, include the following:

(1) Hydrographic Facilities.

(a) Two staff gages as described in paragraph 1-05 of this manual to be maintained by the State.

b. For pertinent Requirements of the Code of Federal Regulations and other requirements see the following:

- (1) Maintenance - Paragraph 7-02 of the Standard Manual.
- (2) Check Lists - Paragraph 7-03 of the Standard Manual.
- (3) Operation - Paragraph 7-04 of the Standard Manual.

SECTION III

REPAIR OF DAMAGE TO PROJECT WORKS AND

METHODS OF COMBATING FLOOD CONDITIONS

3-01. Repair of Damage. - In the event of serious damage to the project works, whether due to flood conditions or other causes, and which may be beyond the capability of local interests to repair, the Superintendent will contact a representative of the Department of Water Resources, State of California, who coordinates maintenance of project works of the Sacramento River Flood Control Project. The State representative will give assistance or advice, or will determine appropriate action to be taken.

3-02. Applicable Methods of Combating Floods. - For applicable methods of combating flood conditions reference is made to Section VIII of the Standard Manual, revised May 1955, where the subject is fully covered.

EXHIBIT A

FLOOD CONTROL REGULATIONS
(See Standard Manual)

EXHIBIT A
Unattached

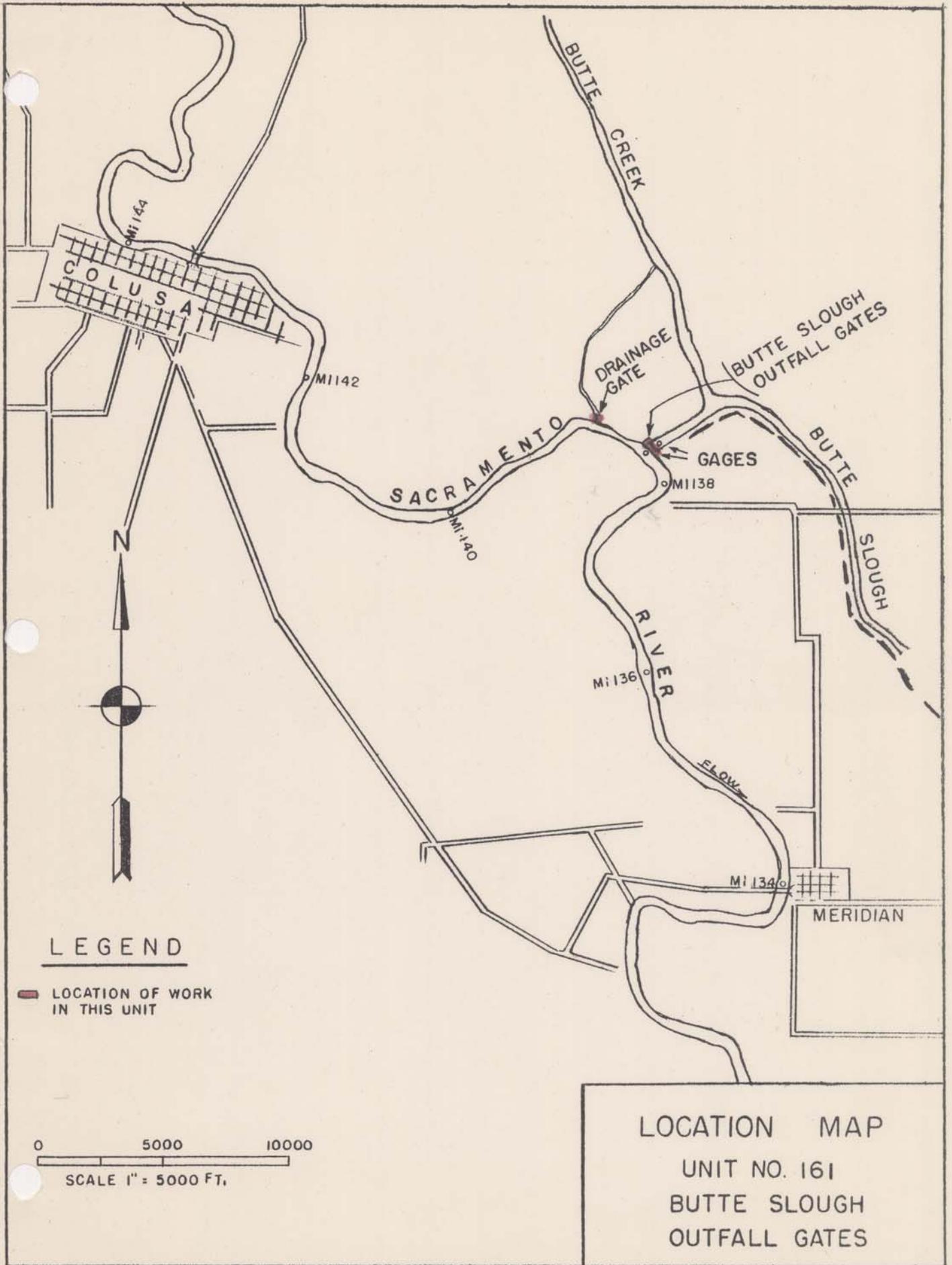


EXHIBIT B

"AS CONSTRUCTED"
DRAWINGS

See separate folder for the following drawings:

<u>File No.</u>	<u>Title</u>
50-9-1424-1	Butte Slough Outfall Gates - Culvert Type. Sheets 1 and 2

EXHIBIT B
Unattached

EXHIBIT C

PLATES OF SUGGESTED FLOOD FIGHTING METHODS
(See Standard Manual)

EXHIBIT C
Unattached

EXHIBIT D

CHECK LIST NO. 1
LEVEE INSPECTION REPORT
(See Standard Manual)

EXHIBIT D
Unattached

EXHIBIT E

CHECK LISTS OF LEVEES,
CHANNEL AND STRUCTURES

For definition of "flood" or "high water period,"
see paragraph 1-05 of this manual.

CHECK LIST NO. 2
BUTTE SLOUGH OUTFALL GATES

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Item	Remarks
(a) Location by Station	
(b) Settlement, sloughing, or loss of grade	
(c) Erosion of both slopes	
(d) Condition of roadways, including ramps	
(e) Evidence of seepage	
(f) Condition of farm gates and fencing	
(g) Maintenance measures taken since last inspection	
(h) Comments	

INSTRUCTIONS FOR COMPLETING SHEET 2, EXHIBIT E
(to be printed on back of sheet 2)

- Item (a) Indicate levee station of observation, obtained by pacing from nearest reference point; indicate right or left bank.
- Item (b) If sufficient settlement of earthwork has taken place to be noticeable by visual observation, indicate amount of settlement in tenths of a foot. If sloughing has caused a change in slope of the embankment sections, determine the new slope. Note areas where erosion or gulying of the section has occurred.
- Item (c) If sufficient erosion or gulying of back face of back toe of levee has taken place to be noticeable by visual inspection, indicate area affected and depth.
- Item (d) Note any natural change in any section of roadway or ramps. Indicate any inadequacy in surface drainage system.
- Item (e) Indicate any evidence of seepage through the embankment section.
- Item (f) Indicate the serviceability of all farm gates across the embankments and roadway, and indicate if repainting is required.
- Item (g) Indicate maintenance measures that have been performed since last inspection and their condition at the time of this inspection.
- Item (h) Record opinion, if any, of contributory causes for conditions observed and also any observations not covered under other columns.

NOTE: One copy of the Inspector's Report is to be mailed to the District Engineer immediately on completion, and one copy is to be attached to and submitted with the Superintendent's semiannual report.

CHECK LIST NO. 3

CHANNEL AND RIGHT-OF-WAY
BUTTE SLOUGH OUTFALL GATES

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Item	Remarks
(a) Name of channel and location by stations	
(b) Vegetal growth in channel	
(c) Debris and refuse in channel	
(d) New construction within right-of-way	
(e) Extent of aggradation or degradation	
(f) Condition of riprapped section	
(g) Condition of bridges	
(h) Measures taken since last inspection	
(i) Comments	

INSTRUCTIONS FOR COMPLETING SHEET 4, EXHIBIT E
(to be printed on back of sheet 4)

- Item (a) Indicate station of observation obtained by pacing from nearest reference point.
- Item (b) Note nature, extent, and size of vegetal growth within the limits of flood channel.
- Item (c) Note nature and extent of debris and refuse that might cause clogging of the conduits of the irrigation intake works, fouling of the tainter gates, or the bridges over the channel.
- Item (d) Report any construction along the diversion channel that has come to the attention of the inspector and that might affect the functioning of the project.
- Item (e) Indicate any change in grade or alignment of the channels, either by deposition or sediment or scour, that is noticeable by visual inspection. Estimate amount and extent.
- Item (f) Indicate any change that has taken place in the riprap such as disintegration of the rock, erosion, or movement of the rock. Note the presence of vegetal growth through the riprap.
- Item (g) Note any damage or settlement of the footings of the bridges. Indicate condition of wooden structures and if repainting is required. Indicate condition of bridge approaches, headwalls, and other appurtenances.
- Item (h) Indicate maintenance measures that have been performed since the last inspection and their condition at time of this inspection.
- Item (i) Record opinion, if any, of contributory causes for conditions observed, also any observations not covered under other columns.

NOTE: One copy of the Inspector's Report is to be mailed to the District Engineer immediately on completion, and one copy is to be attached to and submitted with the Superintendent's semiannual report.

CHECK LIST NO. 4

DRAINAGE AND IRRIGATION STRUCTURES
BUTTE SLOUTH OUTFALL GATES

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

(a) Location by Station		5+65 28+23
(b) Bank		Left Left
(c) Debris or other obstruction to flow		
(d) Damage or settlement of pipe or conduit		
(e) Condition of concrete headwall or invert paving		
(f) Condition of right-of-way adjacent to structure		
(g) Repair Measures Taken since last Inspection		
(h) Comments		(7-66" C.M.P.) (1-78" C.M.P.)

INSTRUCTIONS FOR COMPLETING SHEET 6, EXHIBIT E
(to be printed on back of sheet 6)

- (1) Enter station of all structures under column (a) for check list.
- (2) Inspect inlet, barrel, and outlet for accumulation of sediment, rubbish, and vegetal matter. Note condition under column (c).
- (3) If any settlement or damage to the pipe, barrel, or invert of the drain has occurred, estimate the location and amount. Note particularly if any backfill has come into the pipe or been disturbed. Record observations under column (d).
- (4) Inspect the concrete portions of the structures for evidence of settlement, cracks, "pop-outs," spaces, abrasive wear, or other deterioration. Record conditions under column (e).
- (5) Inspect backfill area adjacent to structure for evidence of erosion caused by overflow of the drainage structure and note conditions in column (f).
- (6) Under column (g) indicate physical measures that have been taken to correct conditions reported in last inspection, and their conditions at time of this inspection.
- (7) Under column (h) record opinion, if any, of contributory causes for conditions observed, also any observations not covered under other columns.
- (8) A copy of the inspector's report is to be mailed to the District Engineer immediately on completion, and a record copy shall be attached to the Superintendent's semiannual report.

EXHIBIT F

LETTER OF ACCEPTANCE
BY STATE RECLAMATION BOARD

EXHIBIT F

C
O
P
Y

824.3 (Sacramento R.) PADKO-A

9 September 1944

Completed Construction, Sacramento River Flood Control Project.

The Reclamation Board
State of California
1100 O Street
Sacramento, California

Gentlemen:

This office has been directed by the Office of the Chief of Engineers to determine which items of levee construction, weirs and pumping plants constructed under the Sacramento River Flood Control Project should be considered fully completed in accordance with the terms of the project as it now exists.

In compliance with this directive the inclosed map, file No. 50-11-2206B, has been compiled with delineates all project levees that are considered complete. In addition, Sacramento, Fremont, Tisdale, Colusa and Moulton Weirs, Knights Landing and Butte Slough Outfall Gates, and Pumping Plants Nos. 1 and 3 have been completed.

It is requested that your Board review the map and data advanced herein and advise if you concur with the findings of this office on completed items of construction under the Flood Control Project. Prompt reply would be appreciated so that a minimum of delay will be experienced by this office in complying with the desires of the Chief of Engineers.

Very truly yours,

1 Incl
Map, file No. 50-11-2206B

R. C. HUNTER
Colonel, Corps of Engineers
District Engineer

EXHIBIT F
Sheet 1 of 2

C
O
P
Y

THE RECLAMATION BOARD
of the
STATE OF CALIFORNIA

September 12, 1944

Secretary
California Debris Commission
Wright Building
1209 - 8th Street
Sacramento, California (8)

Dear Sir:

Reference is made to your file No. 824.3 (Sacramento R.) PADKO-A, subject, completed construction, Sacramento River Flood Control Project, dated September 9, 1944.

We have reviewed the map and data available and concur with your findings on the completed items under the flood control project as shown on the map file No. 50-11-2206B.

Very truly yours,

THE RECLAMATION BOARD

A. M. Barton

Chief Engineer and General Manager

By /s/ G. F. Mellin
G. F. Mellin

EXHIBIT F
Sheet 2 of 2

EXHIBIT G

SUGGESTED SEMIANNUAL REPORT FORM

EXHIBIT G

CORPS OF ENGINEERS, U. S. ARMY
Office of the District Engineer
SACRAMENTO DISTRICT
Wright Bldg., 1209-8th St.
Sacramento, California

C
O
P
Y

TO: The District Engineer
Sacramento District
Corps of Engineers
1209-8th Street
Sacramento, California

(1 May 19____)
(1 Nov. 19____)

Dear Sir:

The semi-annual report for the period (1 May 19____ to 31 October 19____) (1 November 19____ to 30 April 19____) Sacramento River Flood Control Project, Butte Slough Outfall Gates is as follows:

a. The physical condition of the protective works is indicated by the inspector's report, copies of which are inclosed, and may be summarized as follows:

(Superintendent's summary of conditions)

It is our intention to perform the following maintenance work in order to repair or correct the conditions indicated:

Outline the anticipated maintenance operations for the following 6 months.)

b. During this report period, major high water stages (water level at 55.0 on staff gages located at Butte Slough Outfall Gates) occurred on the following dates:

<u>Dates</u>	<u>Maximum Elevation</u>
_____	_____
_____	_____
_____	_____

Comments on the behavior of the protective works during such high water periods are as follows:

(Superintendent's log of flood observations)

During the high water stages when the water level reached a height of _____, on the gage or excess thereof dates _____, it was necessary to organize and carry out flood operations as follows:

(See Maintenance Manual _____.)

c. The inspections have indicated (no) or (the following) encroachments or trespasses upon the project right-of-way.

d. (No) (_____) permits have been issued for (the following) improvements or construction within the project right-of-way.

Executed copies of the permit documents issued are transmitted for your files.

e. The status of maintenance measures, indicated in the previous semi-annual report as being required or as suggested by the representatives of the District Engineer, is as follows:

(Statement of maintenance operations, item by item with percent completion.)

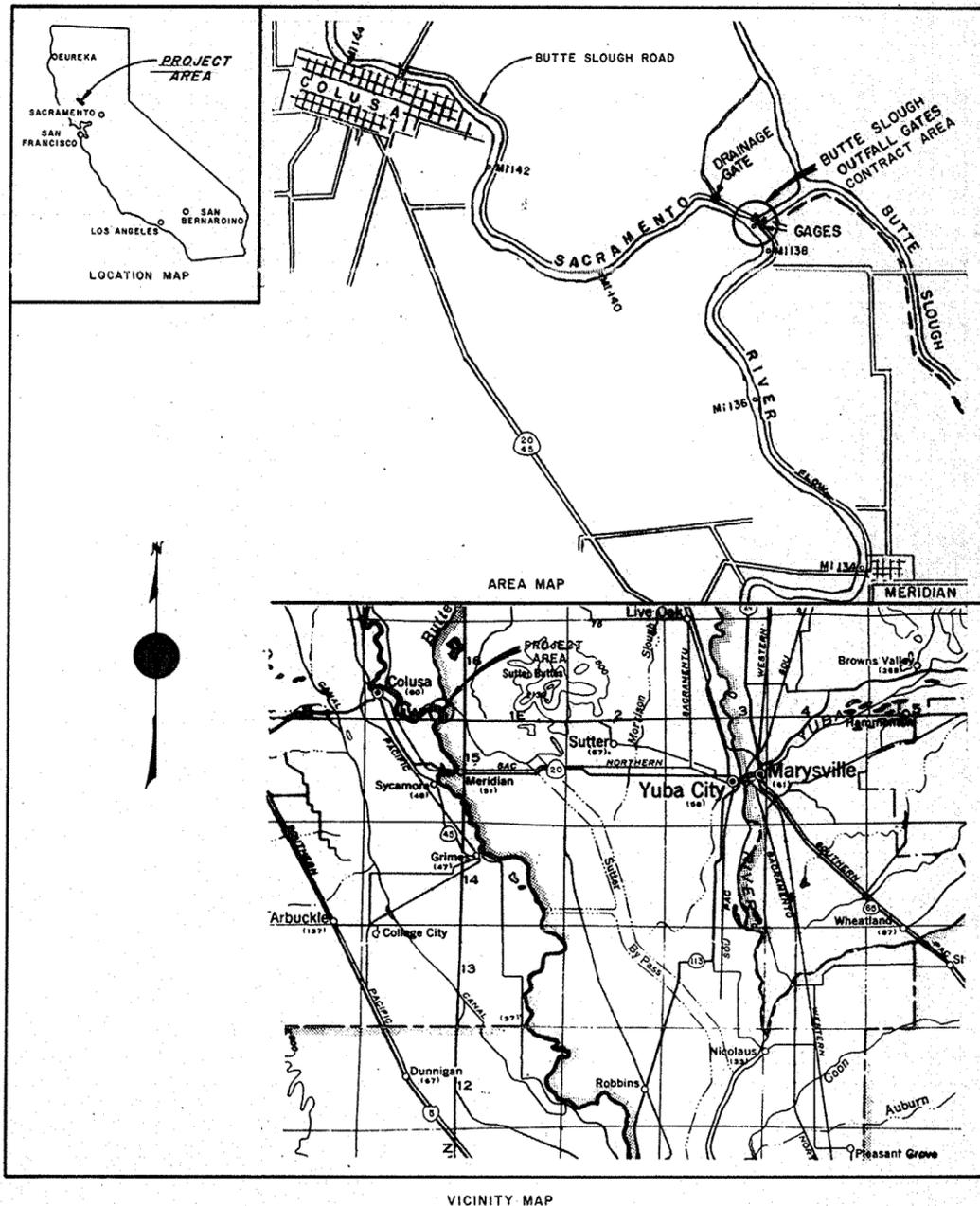
f. The fiscal statement of the Superintendent's operations for the current report period is as follows:

	<u>Labor</u>	<u>Material</u>	<u>Equipment</u>	<u>Overhead</u>	<u>Total</u>
1. Inspection					
2. Maintenance					
3. Flood fighting operations					
TOTAL					

Respectfully submitted,

Superintendent of Works

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF DESIGN AND CONSTRUCTION



DIVISION OF FLOOD MANAGEMENT
COLUSA AND SUTTER COUNTIES
BUTTE SLOUGH OUTFALL GATES
SPECIFICATION NO. 85-12

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE
1	B-29K1-1	LOCATION MAP, VICINITY MAP, AREA MAP AND LIST OF DRAWINGS
2	B-29S1-1	OUTLET STRUCTURE - PLAN AND DETAILS
3	B-29S1-2	INLET STRUCTURE - PLAN AND DETAILS
REFERENCE DRAWINGS		
	1424-1	SHEET - 1 AS CONSTRUCTED } FLOOD CONTROL PROJECT, PROPOSED, SHEET - 2 AS CONSTRUCTED } BUTTE SLOUGH OUTFALL GATES - CULVERT TYPE
	1424-1	



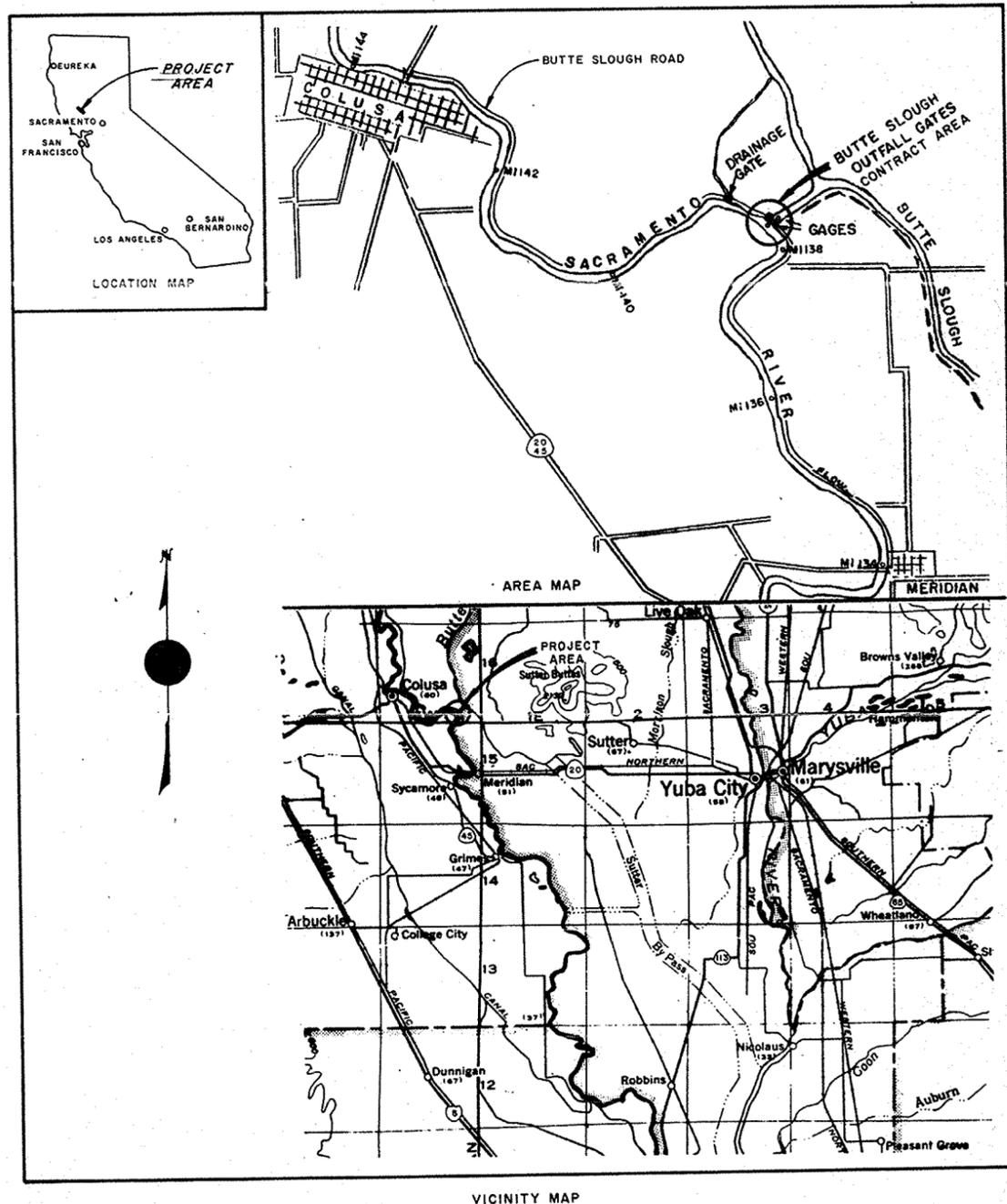
Think Safe - Be Safe

APPROVAL RECOMMENDED:	APPROVED DATE:
<i>K.G. Bennett</i> CHIEF DESIGN OFFICE REG. NO. C13538	<i>John H. ...</i> CHIEF, DIVISION OF DESIGN AND CONSTRUCTION REG. NO. 10223

DRAWING NO. B-29K1-1	SHEET NO. 1
-----------------------------	--------------------

REV.	DATE	DESCRIPTION	SUB.	APP'D.

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF DESIGN AND CONSTRUCTION



DIVISION OF FLOOD MANAGEMENT
COLUSA AND SUTTER COUNTIES
BUTTE SLOUGH OUTFALL GATES
SPECIFICATION NO. 85-12

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE
△ 1	B-29K1-1	LOCATION MAP, VICINITY MAP, AREA MAP AND LIST OF DRAWINGS
△ 2	B-29S1-1	OUTLET STRUCTURE - PLAN AND DETAILS
△ 3	B-29S1-2	INLET STRUCTURE - PLAN AND DETAILS
REFERENCE DRAWINGS		
1424-1		SHEET - 1 AS CONSTRUCTED } FLOOD CONTROL PROJECT, PROPOSED, SHEET - 2 AS CONSTRUCTED } BUTTE SLOUGH OUTFALL GATES - CULVERT TYPE
1424-1		
ADDITIONAL DRAWINGS		
4	B-29S1-3	STOPLOG AND DETAILS

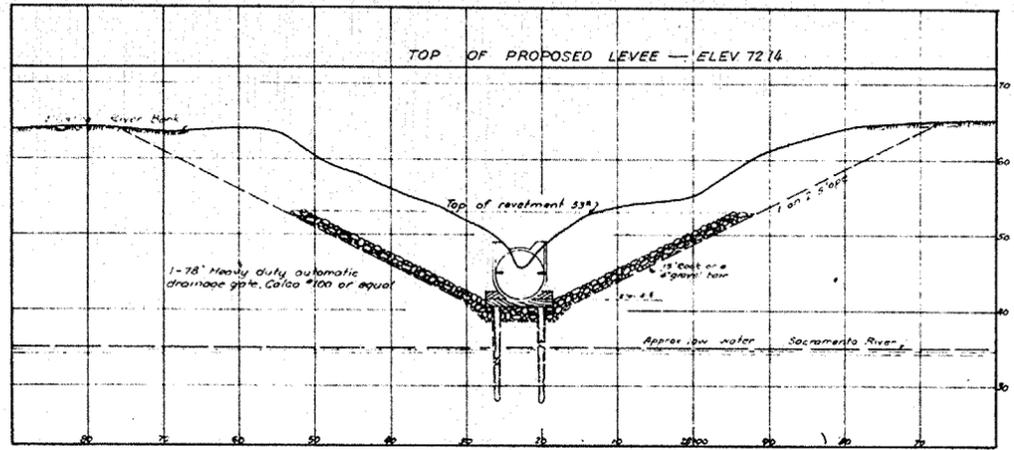
Think Safe - Be Safe

APPROVAL RECOMMENDED:	APPROVED DATE: APR 07 1965
<i>K.G. Bennett</i> CHIEF DESIGN OFFICE REG. NO. C13538	<i>John H. Anderson</i> CHIEF, DIVISION OF DESIGN AND CONSTRUCTION REG. NO. 10223

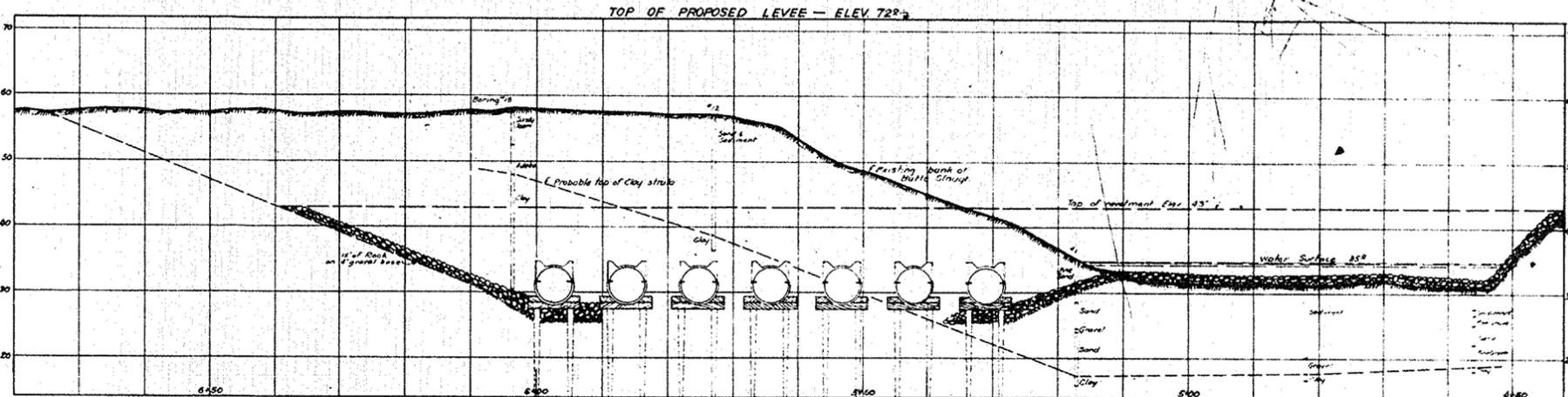
REV.	DATE	DESCRIPTION	BY	CHKD
1	4-27-65	As per Addendum No. 1	JLL	EGB

DRAWING NO. **B-29K1-1** SHEET NO. **1**

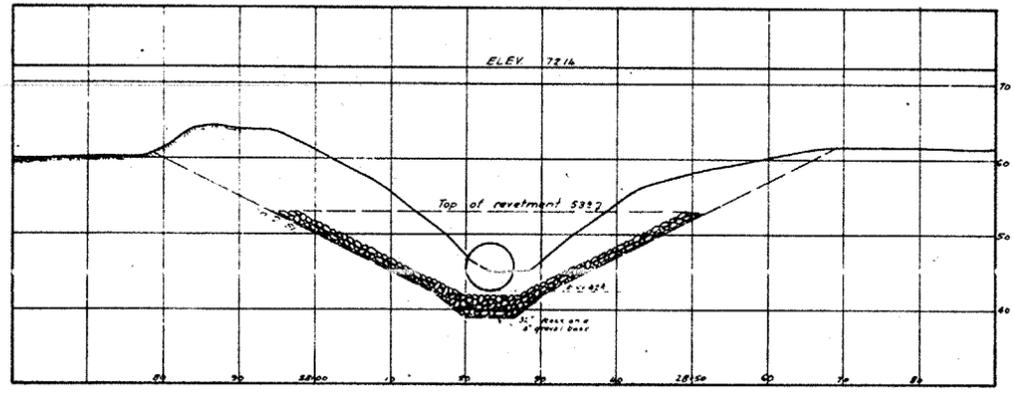
SPEC. NO. 65-12



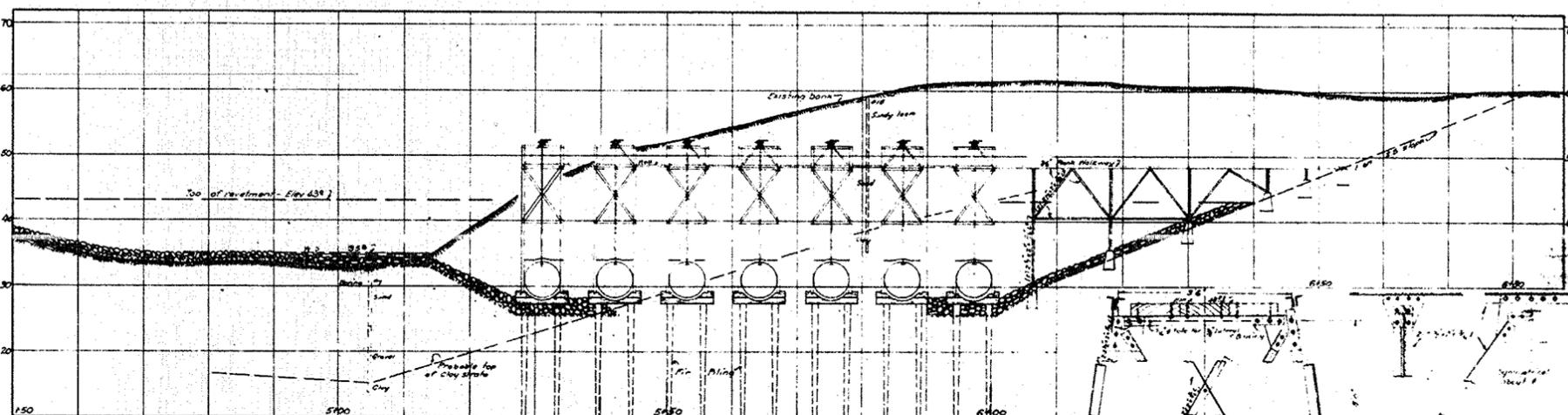
ELEVATION OF OUTLET STRUCTURE
STATION 28+23



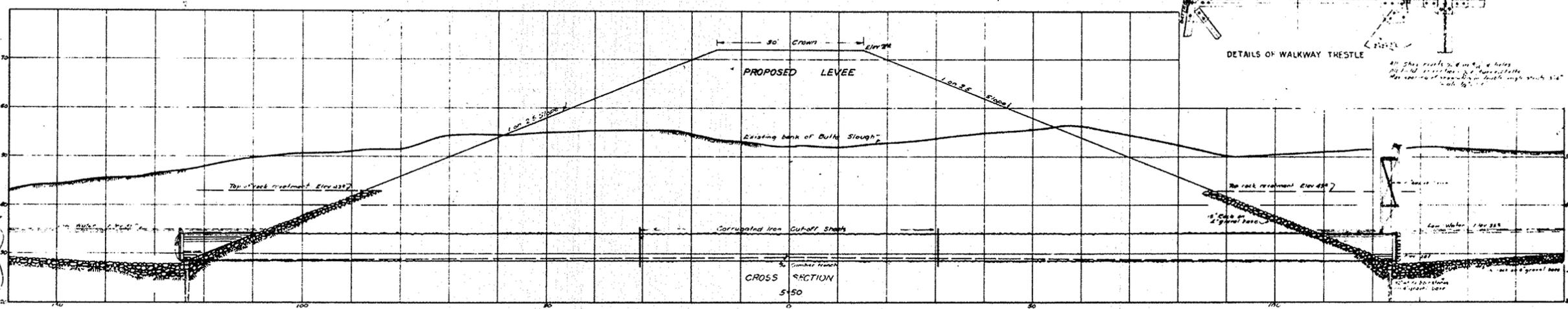
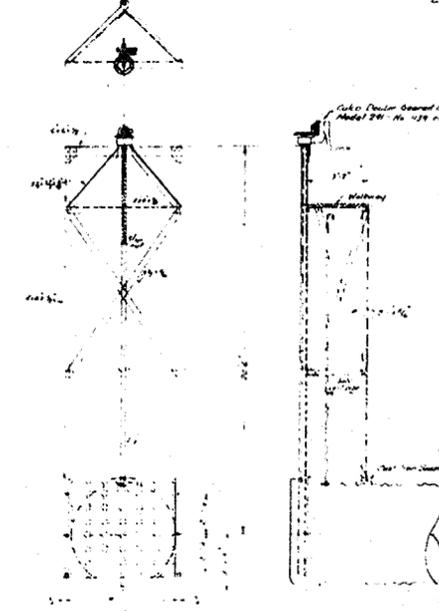
ELEVATION OF OUTLET STRUCTURE



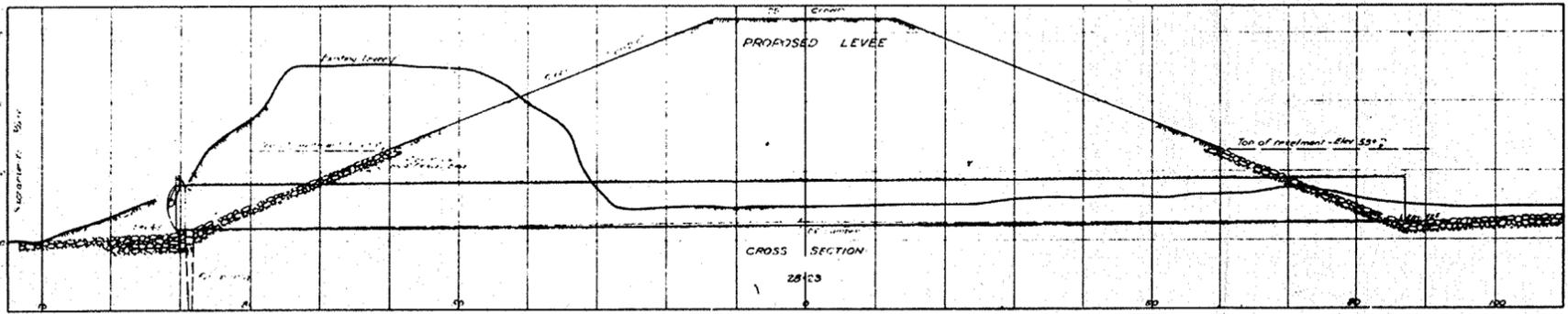
ELEVATION OF INLET



ELEVATION OF INLET STRUCTURE

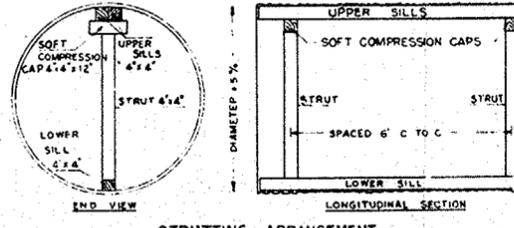


CROSS SECTION
5+50



CROSS SECTION
28+23

THIS DRAWING IS ONE OF TWO REFERRED TO IN PARAGRAPH B OF SPECIFICATIONS NO. 6417 AND FORMS A PART THEREOF.



STRUTTING ARRANGEMENT

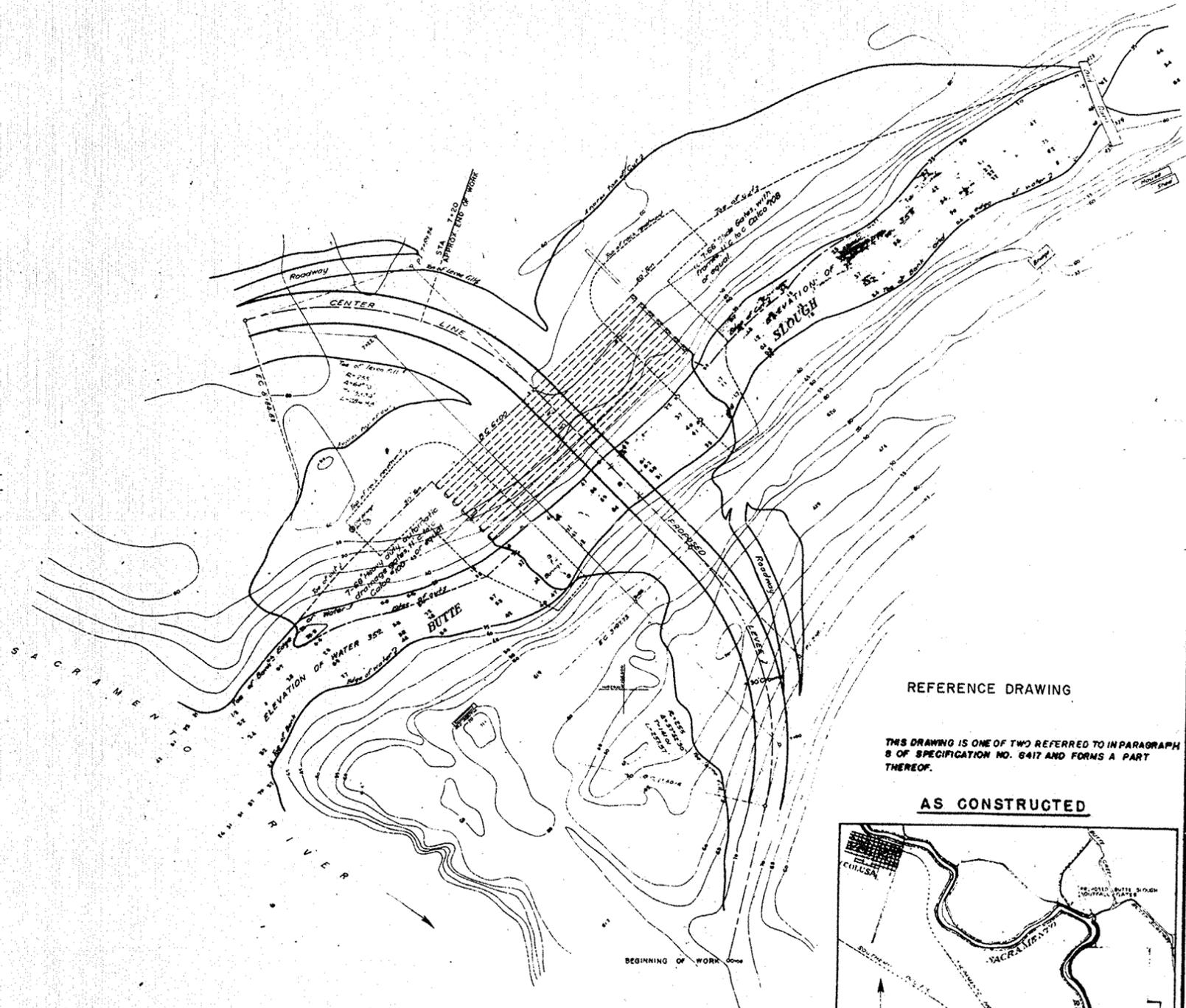
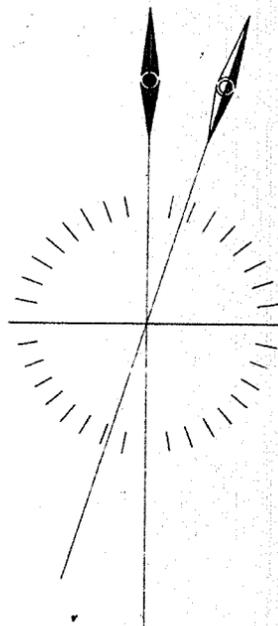
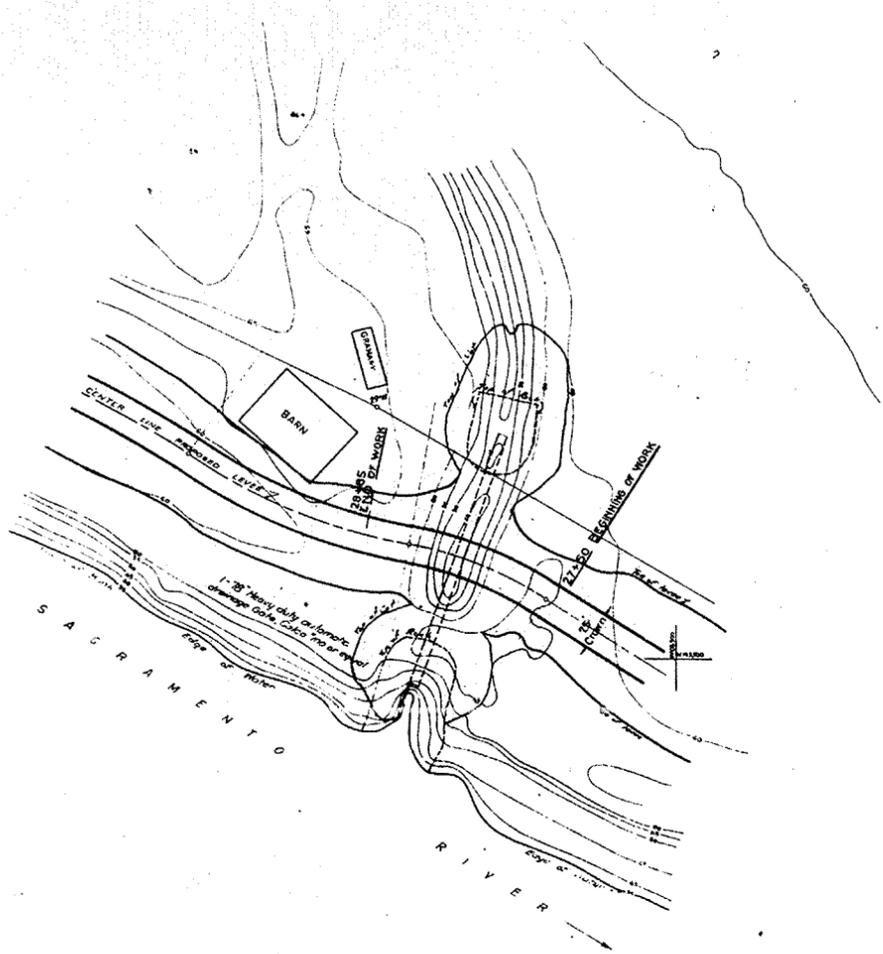
REFERENCE DRAWING AS CONSTRUCTED

SACRAMENTO RIVER, CALIFORNIA
FLOOD CONTROL PROJECT
PROPOSED
BUTTE SLOUGH
OUTFALL GATES-CULVERT TYPE

IN 2 SHEETS SCALE 1" HIGH TO 10 FT SHEET NO. 2

U.S. Engineers Office, Sacramento, California, June 1934

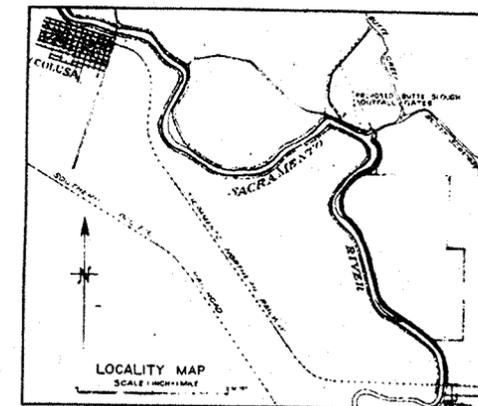
Designed by *Ray G. Healey*
Approved by *John W. Waters*
Checked by *W. B. ...*
U.S. Army Corps of Engineers, U.S.A.



REFERENCE DRAWING

THIS DRAWING IS ONE OF TWO REFERRED TO IN PARAGRAPH 8 OF SPECIFICATION NO. 6417 AND FORMS A PART THEREOF.

AS CONSTRUCTED



SACRAMENTO RIVER, CALIFORNIA.
 FLOOD CONTROL PROJECT
 PROPOSED
 BUTTE SLOUGH
 OUTFALL GATES-CULVERT TYPE

IN 2 SHEETS SCALE: 1 INCH = 50 FEET SHEET NO. 161
 CONTOUR INTERVAL 5 FEET

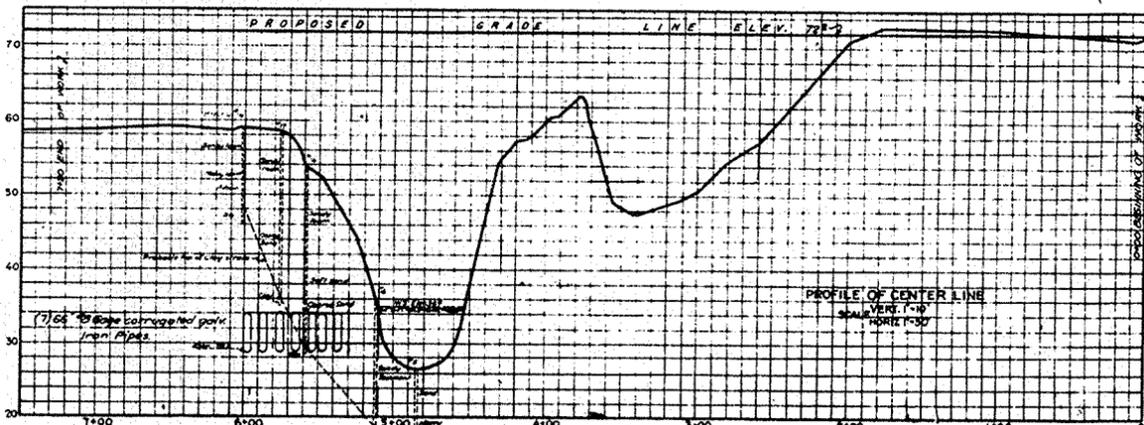
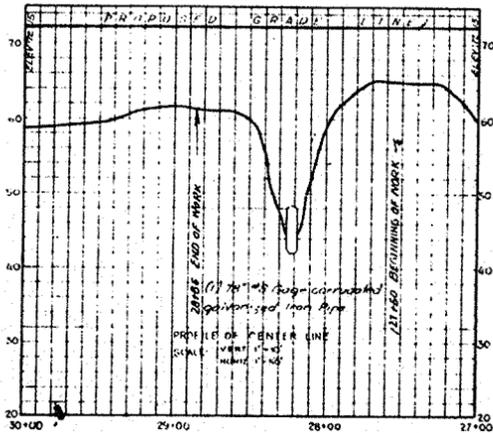
U.S. ENGINEER OFFICE, SACRAMENTO, CALIFORNIA, JUNE 1934.

Submitted by *Charles E. Healey* Field work under supervision of *H.M. Rich*

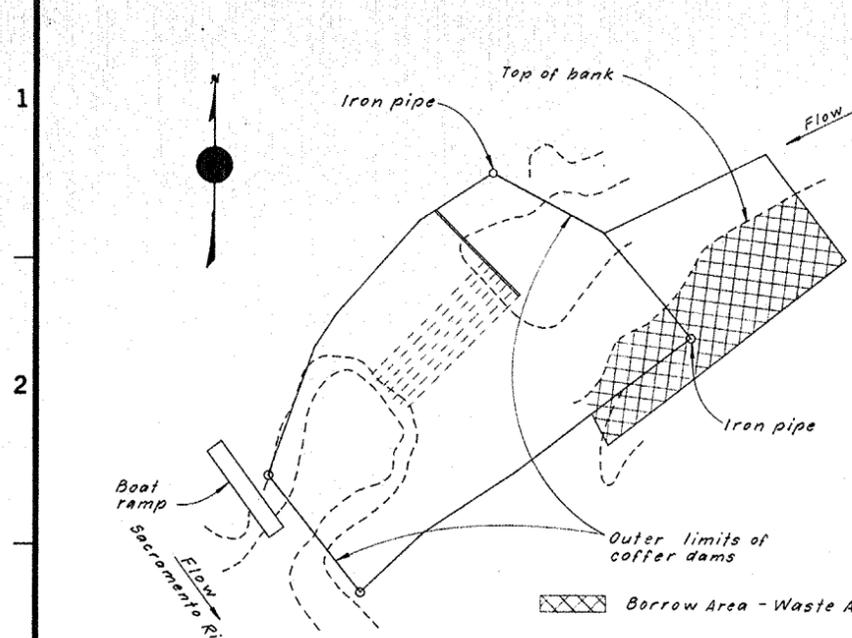
Approved by *[Signature]* Captain Corps of Engineers, U.S.A.

UNIT NO. 161 / SPEC. NO. 6417

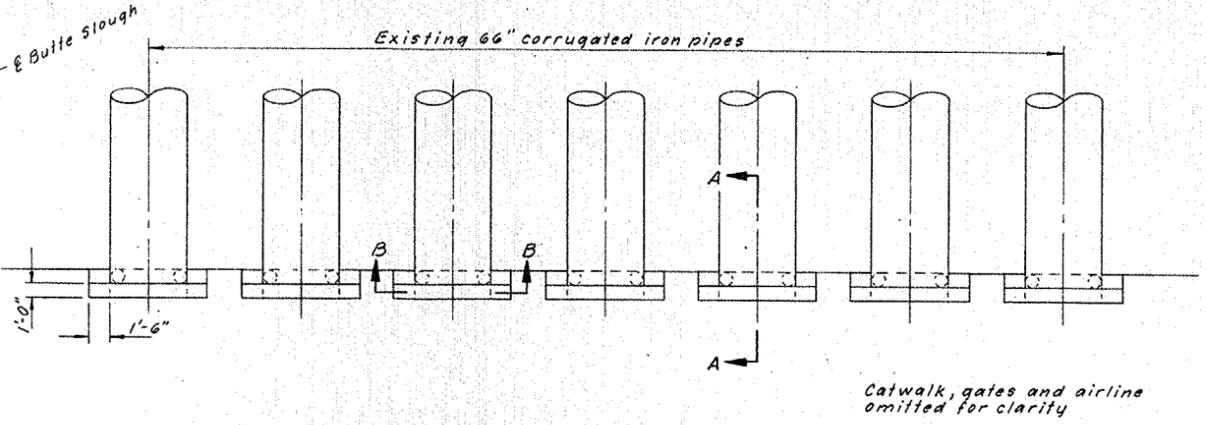
Note:
 All elevations referred to in this drawing are based on the datum of Mean Sea Level as written on the drawing unless otherwise indicated.



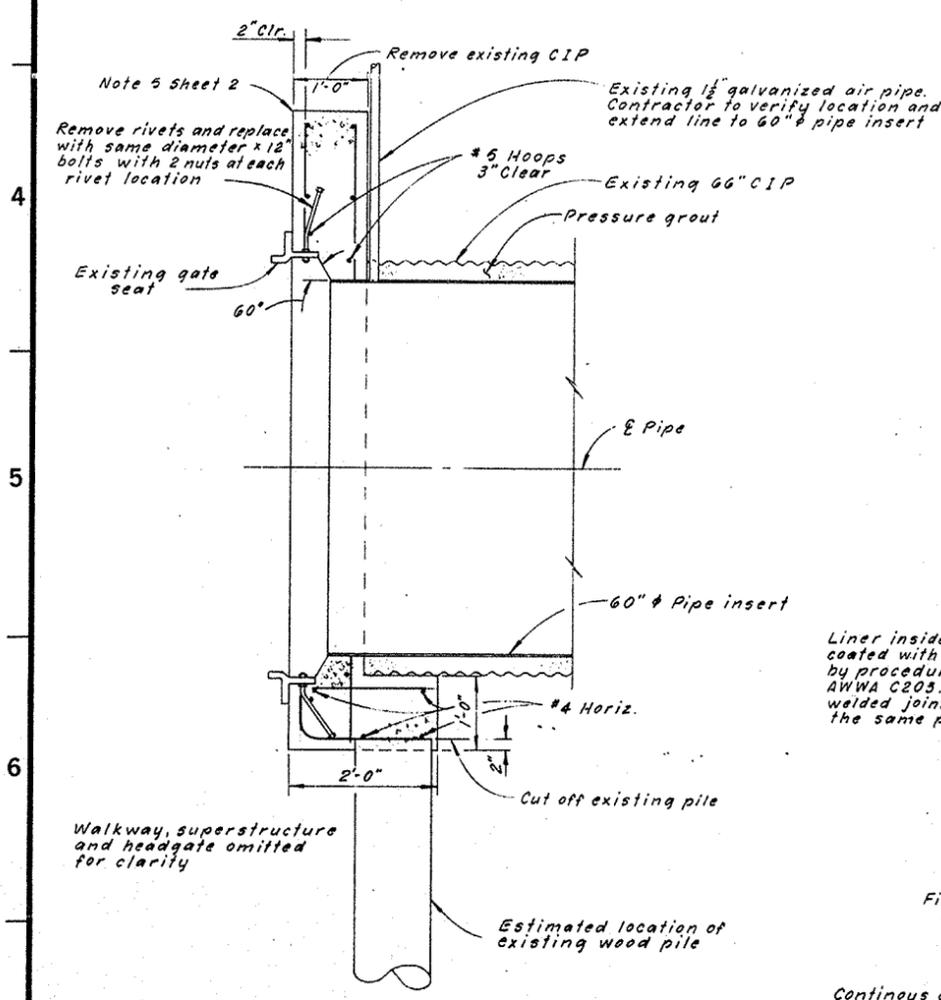
171A



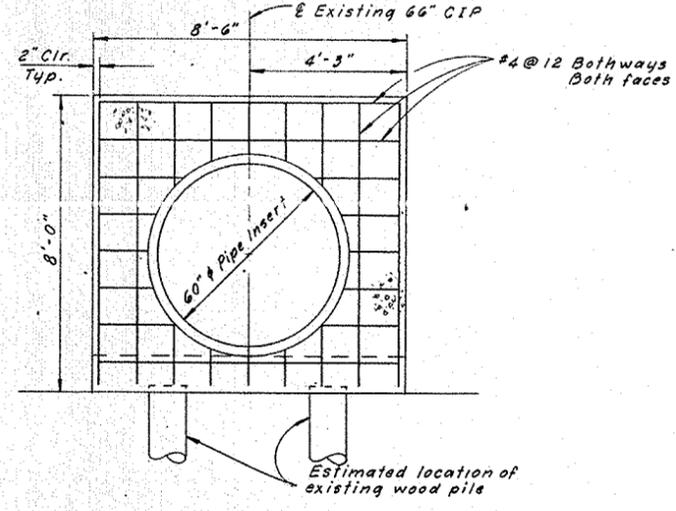
**PLAN
WORK AREA RIGHT OF WAY**
Scale: 1"=100'



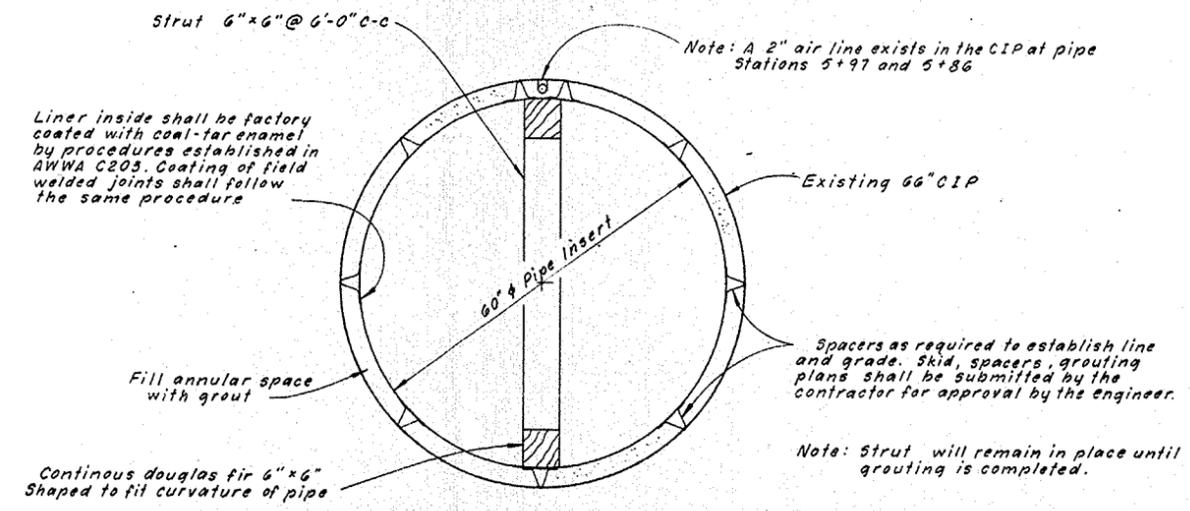
**PLAN
UPSTREAM LIFT GATES
HEADWALLS**
Scale: 3/8"=1'-0"



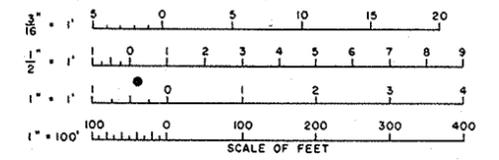
**SECTION A-A
HEADWALL DETAIL**
Scale: 1"=1'-0"



**SECTION B-B
INLET HEADWALLS
REBAR DETAIL**
Scale: 1/2"=1'-0"



**PIPE INSERT CROSS-SECTION
TYPICAL 7 PIPES**
Scale: 1"=1'-0"



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DIVISION OF FLOOD MANAGEMENT
COLUSA AND SUTTER COUNTIES
BUTTE SLOUGH OUTFALL GATES

**INLET STRUCTURE
PLAN AND DETAILS**

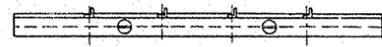
SUBMITTED: _____ APPROVED: DATE: _____

APPROVAL RECOMMENDED: *John J. [Signature]* K.G. Barnett

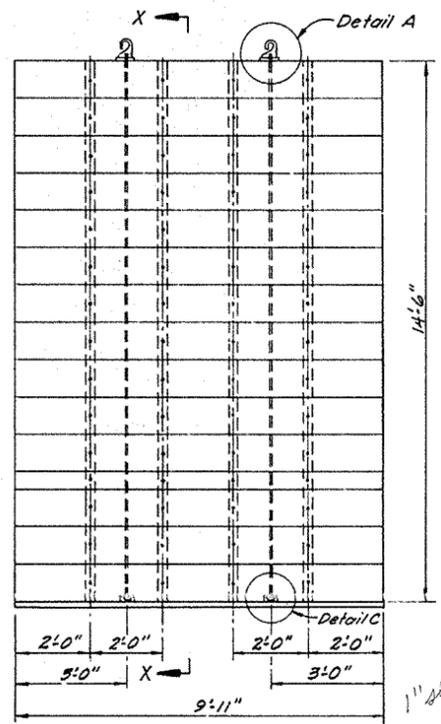
DESIGNED: *B. [Signature]* DRAWN: *E. [Signature]* CHECKED: *R. [Signature]* REVIEWED: *S. [Signature]*

APPROVED: *[Signature]*

DRAWING NO. **B-29SI-2** SHEET NO. **3**

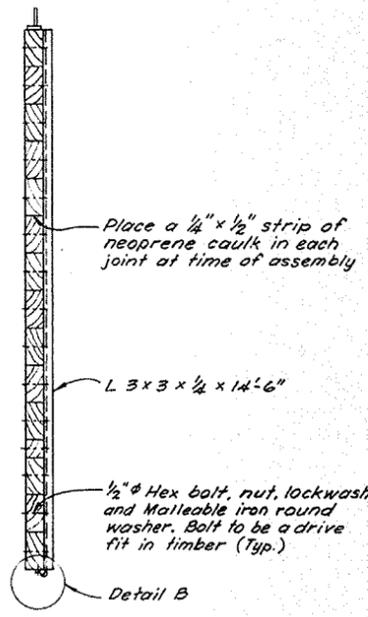


PLAN
Scale: 1/2" = 1'

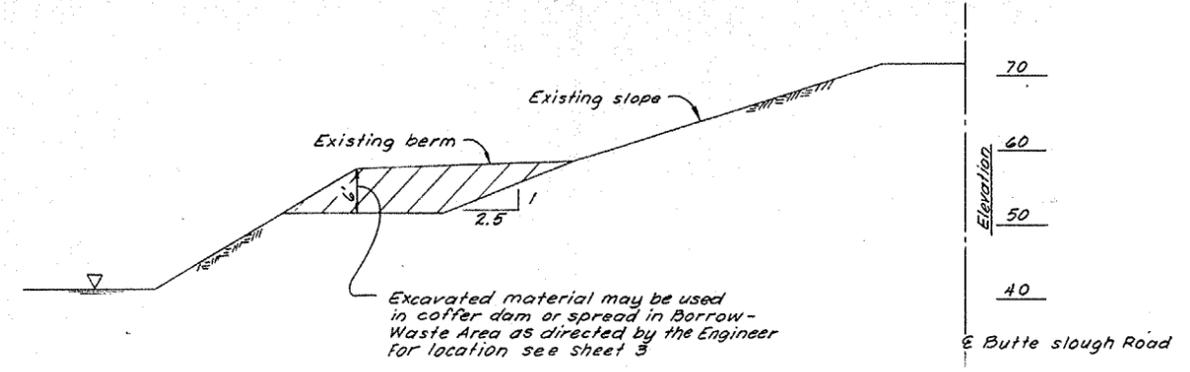


ELEVATION
STOPLOG
2 Required
Scale: 1/2" = 1'

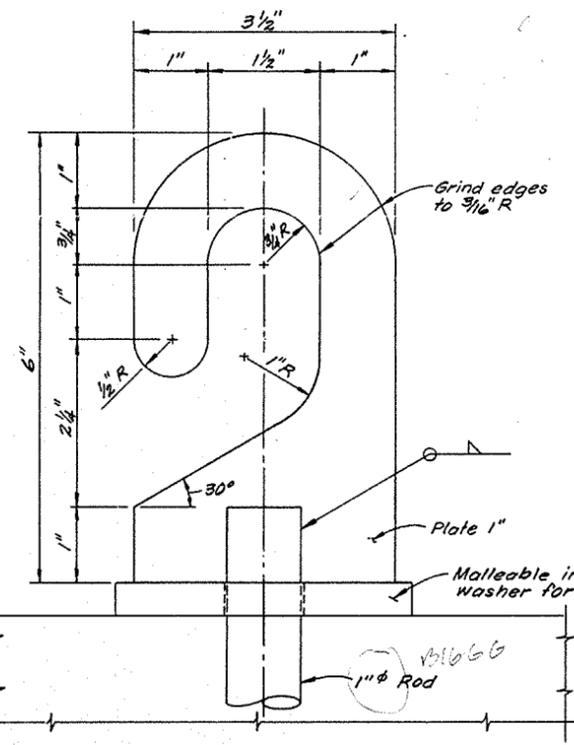
stoplog opening 10'-0"



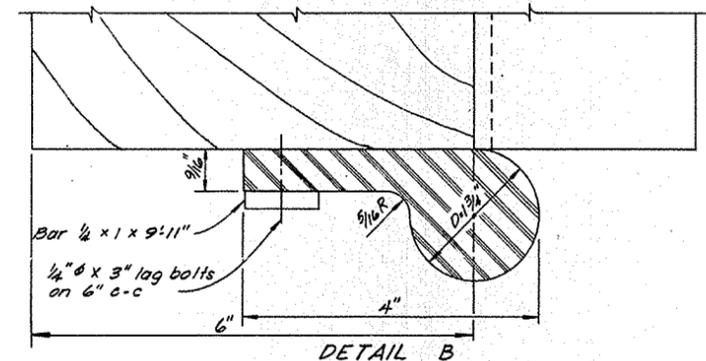
SECTION X-X
Scale 1/2" = 1'



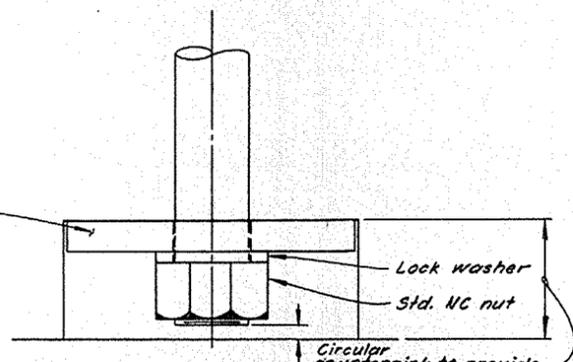
BERM
HALF-SECTION
Station 6+20±
Scale 1" = 10'



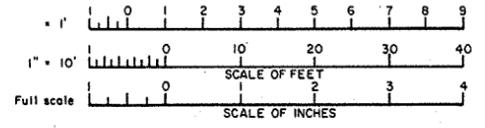
DETAIL A
LIFTING HOOK
Full scale



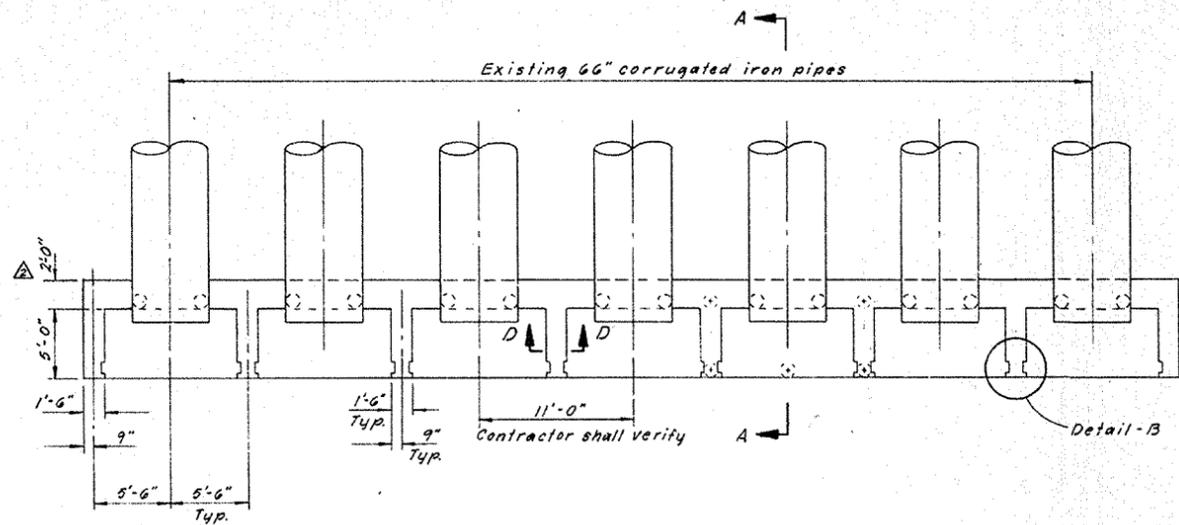
DETAIL B
J SEAL
Full Scale



DETAIL C
Full scale

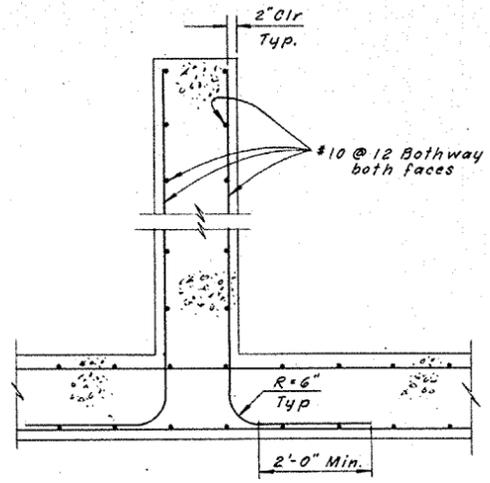


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DIVISION OF FLOOD MANAGEMENT COLUSA AND SUTTER COUNTIES BUTTE SLOUGH OUTFALL GATES	
STOPLOG AND DETAILS	
DESIGNED: <i>Paul H. Williams</i>	APPROVED: <i>K.G. Barnett</i> DATE: APR 22 1984
DRAWN: <i>D. Green</i>	APPROVAL RECOMMENDED: <i>Wesley...</i>
CHECKED: <i>Paul H. Williams</i>	REG. C.E. NO. 16280
REVIEWED: <i>John J. Baker</i>	REG. C.E. NO. 10989
DESIGNED: <i>Paul H. Williams</i>	DRAWING NO. B-29SI-3
DRAWN: <i>D. Green</i>	SHEET NO. 4

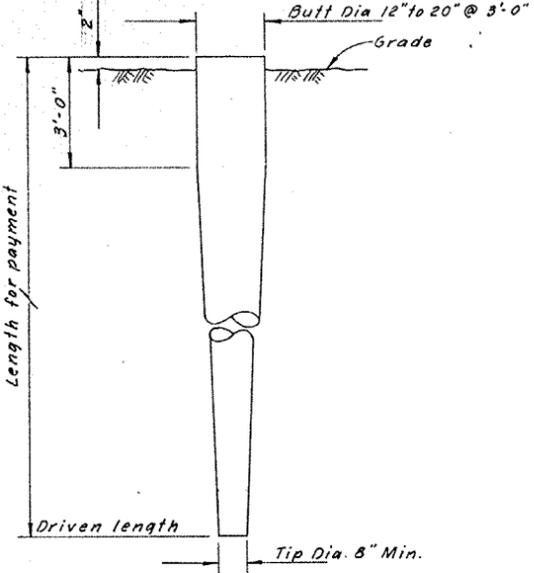


(S) New driven wood piles
 Typical all bays
 Gates omitted for clarity
 (D) Estimated location of existing wood pile

PLAN
DOWNSTREAM STOPLOG STRUCTURE
 Scale: $\frac{3}{8}$ " = 1'-0"



SECTION D-D
 Scale: $\frac{3}{8}$ " = 1'-0"



WOOD PILE (TYPICAL)
 Not to scale

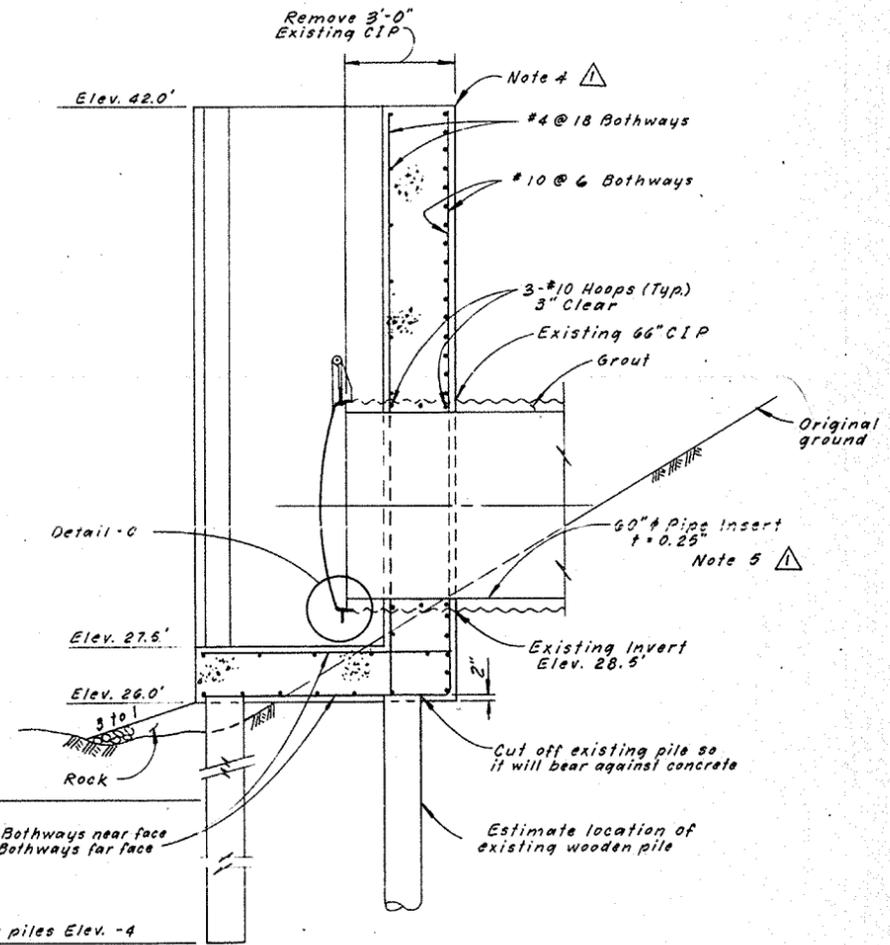
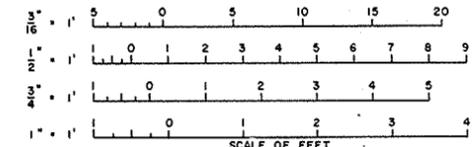


CROSS SECTION
 Not to scale

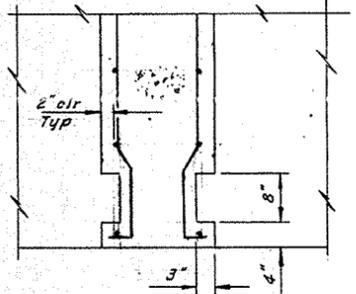
NOTES

- Contractor shall determine W1 and W2 prior to fabrication, 7ea. Flange W1 req'd. 7ea. ring W2 req'd.
- After welding, all exposed surfaces to be sandblasted to white metal and give 2 coats of cold tar enamel within 1 hour.
- Contractor to verify size, length and location of existing rivets and replace with same nominal diameter grade 8 bolts, NC, self locking nuts.

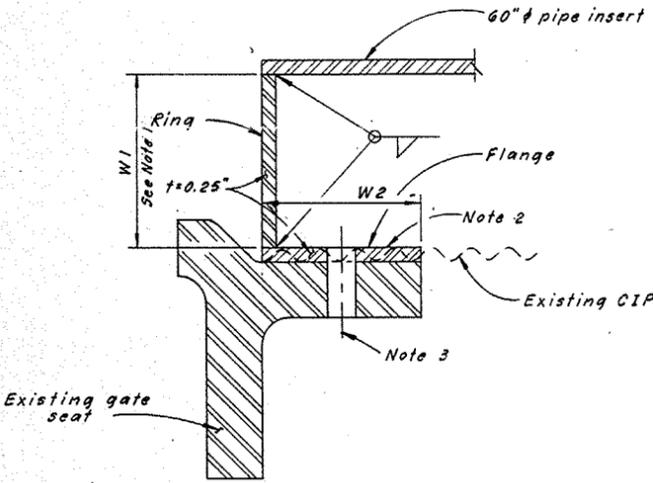
- ▲ Note 4. Chamfer all exposed edges $\frac{3}{8}$ "
- ▲ Note 5. Contractor shall verify length of 60" pipe insert before ordering



SECTION A-A
 Scale: $\frac{1}{2}$ " = 1'-0"



DETAIL-B
TYPICAL STOPLOG NOTCH
 Scale: 1" = 1'-0"



DETAIL-C
 Not to scale

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 COLUSA AND SUTTER COUNTIES
BUTTE SLOUGH OUTFALL GATES
OUTLET STRUCTURE
 PLAN AND DETAILS

SUBMITTED:		APPROVED: DATE: APR 03 1993	
APPROVAL RECOMMENDED: <i>H. J. Gale</i>		APPROVED: <i>K. G. Bennett</i>	
DESIGNED: <i>E. J. ...</i>		DRAWING NO. B-29SI-1	
DRAWN: <i>E. J. ...</i>		SHEET NO. 2	
CHECKED: <i>R. ...</i>		SPEC. NO. 85-12	
REVIEWED: <i>R. ...</i>			
SUB. APP'D:			