

**APPENDIX C**

**CIVIL/STRUCTURAL DESIGN  
AND RELOCATIONS**

## APPENDIX C

### CIVIL/STRUCTURAL DESIGN AND RELOCATIONS

#### CIVIL DESIGN

##### **LEVEES**

###### **GENERAL**

The purpose of this section is to discuss the alignment and design of levees for the Recommended Plan. Levees providing SPF levels of protection will be placed on each side of the Trinity River, starting at the downstream end, where Central Expressway (U.S. Highway 75) crosses the Trinity River and ending at the upstream end bordered by the Dallas Area Rapid Transit (DART) line. The levee to the east of the Trinity River has been designated as the Lamar Street Levee, and the levee to the west as the Cadillac Heights Levee. Both levees cross various major roads and railroad lines. In lieu of doing major relocations to these transportation facilities, gate closure structures will be installed at these crossings.

###### **EXISTING CONDITIONS**

###### **Cadillac Heights Levee**

Alignment of the new levee will impact the Missouri-Kansas-Texas Railroad (M.K.T.) at two main line locations and one spur line, and will also impact Martin Luther King Blvd. An existing levee surrounding the Central Wastewater Treatment Plant (CWWTP) provides an approximate 140-year level of flood protection. Placement of the new levee will incorporate the existing levee as it runs parallel to it and will impact the service entrance roads. Several buildings, which are primarily commercial facilities, will have to be removed or relocated due to the new levee location. A major structure to be affected is the Dallas City Packing plant.

###### **Lamar Street Levee**

Alignment of the new levee will impact the Southern Pacific Railroad (S.P.) at one location and the M.K.T. at one location. No major roads will be impacted by gated structures; however, minor adjustments may be required at Martin Luther King Blvd. At this junction, the levee was realigned in order to reach a higher ground tie-in point. At the downstream end, this new levee will tie into the existing Rochester Park levee. Major road bridges which cross the new levee will not require any modifications since the low chord beam is well above the top of levee elevation.

##### **EFFECTS OF THE PROJECT**

###### **General**

Both the Lamar levee and the Cadillac Heights levee will be designed to the Standard Project Flood for the LPP design. The levees shall be made from the suitable material excavated from the proposed chain of wetlands area. Preparation of right-of-way for construction of both levees shall consist of removal of some building structures, clearing and grubbing of trees and brush vegetation, and excavation of some contaminated soils. The majority of the site preparation shall consist of removing grass type vegetation and stripping of the topsoil which can be salvaged for use

on turfing the side slopes of the new levees. All building and site demolition debris shall be salvaged and recycled to the maximum extent possible. Unsalvageable debris and contaminated soil shall be disposed in the appropriate landfill site that complies with all Federal, State, and local regulations and ordinances. See Appendix J for additional information on these sites. Cutting, trimming, or converting to mulch can be done on site; however, all material shall be removed from the project site in compliance with all Federal, State, and local regulations and ordinances.

A typical cross section will consist of a 20-foot crown width with side slopes of 1 vertical to 4 horizontal. The use of steeper slopes for the levees was considered, but not used, since the soil has a history of slides at other levees in the area, plus maintenance mowing of the slope is much easier and safer at this slope. See Appendix B, Geotechnical Engineering, for more information on the stability of the material being used. A trapezoidal inspection trench, 5 feet deep with side slopes of 1 vertical to 1 horizontal shall be excavated along the centerline of the levee alignment. The purpose of the inspection trench is to locate any unsuitable levee foundation materials and any pipe or conduits not otherwise found. An access/maintenance road shall be added to the top of the levee which consists of an eight inch thick gravel base. Other than the access road, all exposed and disturbed areas within the construction limits will be turfed for prevention of erosion.

#### **Cadillac Heights Levee**

This levee extends over a total length of 11,891 feet. The top of levee varies in elevation from 421.5 at the downstream end to elevation 426.0 at the upstream end. The initial elevation of 421.5 is constant from station 10+00 to 74+50 then has a gradual slope increase to elevation 426.0. The average height is 14.9 feet, with a maximum height of 25.75 feet. Four flood control closure structures are required due to railroads and streets crossing the levee. One major railroad, M.K.T., crosses the levee three times, thereby requiring stoplog structures. These structures are located at levee centerline stations 43+30, 53+30, and 90+30. One street crossing at Martin Luther King Blvd. will require a floodgate at levee centerline station 111+40. See the Structural section of this appendix for descriptions and operation of these structures. There is an existing levee that surrounds the Central Wastewater Treatment Plant, which has a top of levee elevation of only 415.0. Therefore, the new levee between station 67+00 and 73+00 shall be constructed a raising the existing levee by 6 feet. Various utilities exist along the alignment of the new levee, and some relocation procedures will be required prior to construction of the new levee. See the Relocations section of this appendix for a description of such actions. Plan and profiles drawings of this levee are shown on Plates C04 to C12 of this appendix.

#### **Lamar Street Levee**

This levee extends over a total length of 16,419 feet. The top of levee varies in elevation from 417.0 at the downstream end to elevation 426.0 at the upstream end. The initial downstream elevation of 417.0 is gradually increased with a varying slope to elevation 426.0. The average height is 17.6 feet, with a maximum height of 31.0 feet. Two stoplog structures are required due to railroad crossings through the levee. Two major railroads, the S.P. and the M.K.T., cross the levee at levee centerline stations 19+80 and 119+60, respectively. See the Structures section and Plates S06 and S07 of this appendix for descriptions and operation of these structures. There is an existing Rochester Park levee at the downstream end, with a top of levee elevation of only 415.0, thereby requiring that the new levee be constructed with a transition slope to meet the initial elevation of 417.0 at the beginning station 10+00. Various utilities exist along the alignment of the new levee, and relocation procedures will be required prior to construction of the new levee. To avoid major relocation construction at Martin Luther King Blvd, the levee will parallel the road until a ground tie-in elevation of 426.0 is encountered, thus eliminating the need for a flood control structure at this road crossing. Two major freeway bridges cross the levee at levee centerline stations 26+00 and 80+50; however, the low chord beam elevations are well above the top of levee elevations and no modification to the bridges will be required. See the Relocations section of this

appendix for a description of above actions. Plan and profiles drawings of this levee are shown on Plates C13 to C20 of this appendix.

## CHAIN OF WETLANDS

### GENERAL

This section will discuss the proposed design and function of the upstream and downstream chain of wetlands portion of the Dallas Floodway Extension project. The upper wetland chain consists of four separate wetland cells and the lower chain consists of three separate wetland cells. Both chains have a primary purpose of flood water conveyance.

### FUNCTION

During flooding, the upper and lower chain of wetlands acts as flood control channels to convey flood water to outfalls east of IH-45 and north of Loop 12, respectively. During non-flood events, the chains serve as wetland areas for various wildlife and aquatic growth.

### DESIGN CRITERIA

The upper wetland chain begins on the west side of Martin Luther King Jr. Blvd and ends at the southeast corner of the Central Wastewater Treatment Plant on the east side of IH-45. The chain consists of four separate wetland cells, each of varied lengths and shapes (See Plates C25 to C31). Wetland cells "A", "B" and "C" flow conversely to the Trinity River. Wetland cell "D" flows downstream with the river and outfalls into the Trinity on the east side of IH-45. Each cell has an inlet and outlet control structure. The inlet structure consists of a concrete stoplog structure with an attached trashrack. The outlet structure consists of a standard TxDOT concrete headwall (See Plate C32). The inlet and outlet structures are connected by 36" reinforced concrete pipe.

The lower wetland chain begins south of Central Expressway and ends just north of Loop 12. The chain consists of three separate wetland cells, each of varied lengths and shapes (See Plates C21 to C24). Wetland cells "E", "F" and "G" flow downstream with the river and outfall into Honey Springs Branch. The cells are connected by the same type of inlet and outlet control structures as in the upper chain.

Flooding from the river will be the main source of water to the upper wetland chain. In times of low flows or drought the cells will be fed from an existing wetland on the north side of the Central Wastewater Treatment Plant. Water will be pumped from the existing wetland to a pump vault which is located between proposed wetland cells "C" and "D". The flow will be split at the vault with partial flow feeding the three upper cells "A", "B" and "C" and the other feeding cell "D" (See Plates C28 and C30).

The typical section of a wetland cell varies in depth from 1.5' to 7' with various slopes and shelves to support an array of aquatic life and vegetation (See Plate C03).

Preparation of right-of-way for the wetland cell construction includes clearing of some trees and brush vegetation, and excavation of some contaminated soils. The majority of the site preparation shall consist of removing grass type vegetation and stripping of the topsoil which can be salvaged for use on the area to be turfed. All felled trees and brush may be disposed of as salvageable timber. Cutting, trimming, or converting to mulch can be done on site; however, all material shall be removed from the project site in compliance with all Federal, State, and local regulations and ordinances. Excavated material generated from the construction of these wetland cells shall be inspected and tested to obtain suitable material to be used as fill to build the Cadillac Heights and Lamar Levees. Excess excavated material both suitable and unsuitable shall be

disposed of at a designated site located approximately 10 miles south of the project area in Hutchins, Texas. Contaminated soils shall be disposed in the appropriate landfill site that complies with all Federal, State, and local regulations and ordinances. See Appendix J for additional information on these sites.

## IH-45 DIVERSION CHANNEL

### GENERAL

This section will discuss the proposed design and function of the IH-45 diversion channel within the Dallas Floodway Extension project. The IH-45 diversion channel consists of a 3,300-foot bypass of the Trinity River on the east and west side of IH-45 for the purpose of improving the efficiency of flow through the bridge. The IH-45 diversion channel consists of the realignment of the Trinity River 2,000 feet west and 1,300 feet east of IH-45. This phase of the project consists mainly of excavation of the bypass channel and filling the existing channel (See Plates C30 to C31).

## RECREATION FEATURES

### GENERAL

The proposed project includes construction of an extensive network of recreation trails with numerous access areas. Other features of the plan include pedestrian bridges, and picnic pavilions. Refer to Appendix I, Recreation, and the drawing entitled Recreation and Open Space Plan for a complete description of the recreation plan.

#### Trails and Access Points

The proposed project includes 18 miles of 10-foot wide, 4-inch thick reinforced concrete on compacted subgrade. The plan also includes 8.5 miles of natural surface equestrian trails and 5 miles of natural surface nature trails. In addition, seven access areas are proposed with parking available for a minimum of 20 vehicles at each area. One of these areas, located at the Sleepy Hollow Golf Course, will require no modifications. Plate C33 shows typical details for the concrete hike/bike trail and access areas.

#### Structures

Two pedestrian bridge structures will be provided for access across the river channel. The bridges will typically consist of three 50-foot prestressed concrete beam spans and will be designed to support light maintenance vehicles. Plate C33 shows typical details for the proposed structures.

## RELOCATIONS

### GENERAL

The purpose of this section is to discuss the existing transportation and utility infrastructure which would be affected by the proposed project and the remedial measures proposed to accommodate the project. In accordance with the Water Resources Development Act of 1986 (Public Law 99-662), the relocation or alteration of roads, bridges and utilities for this project will be the responsibility of the non-Federal sponsor. However, relocation of railroad bridges, and approaches thereto, are project construction costs to be cost shared by Federal government and the non-Federal sponsor. Gated sewer outlets, gate well structures, and any closure structures

required where the levee crosses a transportation facility are also project construction costs to be cost shared.

## EXISTING CONDITIONS

The project area is traversed by several existing roads, railroads, and utility lines. The Dallas Central Waste Water Treatment Plant is also located in the area. The existing transportation and utility facilities are shown on Plates C04 to C31 of this appendix. The facilities which are affected by the project have been maintained in good condition.

## EFFECTS OF THE PROJECT

The project will adversely affect existing roads, railroads, and utilities in the project area. The affected facilities are listed in Table C-1. Proposed remedial measures are shown on Plates C04 to C31, and are discussed below.

### Roads

#### *Martin Luther King Boulevard*

This facility, which is owned by the City of Dallas, consists of a 4-lane divided roadway with sidewalks. The west levee will cross the roadway at the west bridge abutment. Ramping the roadway over the levee is impractical due to its close proximity to the bridge. The top of levee will be approximately 4 feet above the bridge grade. A closure structure approximately 4 feet high and 60 feet long is proposed for the west levee at this location. The proposed structure will maintain the clear width of the existing bridge. The proposed structure has been discussed with representatives of the City of Dallas who have expressed their tentative agreement with the plan. Refer to the Structures section of this appendix for additional discussion and see Plate S01 for details. The east levee will intersect the embankment of the east bridge approach, the elevation of which is sufficient to avoid the need for a closure structure.

#### *Central Expressway (U.S. Highway 75)*

This facility, which is owned by the State of Texas, consists of a 4-lane divided highway. This facility is not affected by the west levee. The east levee will intersect the embankment of the east bridge approach. Although the existing east abutment is approximately 4 feet lower than the proposed levee, the owner has plans to raise the abutment to levee height in the near future. A closure structure at this location is not proposed.

#### *Interstate Highway 45*

This facility, which is owned by the State of Texas, will not be affected by the west levee. The east levee will cross beneath the IH-45 bridge and will not affect the bridge. The State's maintenance road will be ramped over the levee to maintain the State's access to its right of way. The existing low flow channel of the Trinity River will be realigned thru the IH-45 bridge to eliminate the current maintenance problems with erosion around the bridge pier. No alteration to the bridge structure will be required. Refer to Plates C30 and C31 for drawings of the channel realignment.

#### *Sargent Road*

This 2-lane roadway is owned by the City of Dallas. A short section of this roadway on the north side of the CWWTP will require minor realignment to accommodate the west levee alignment. The west levee will cross the southern end of Sargent Road near Kiest Blvd. Due to the close proximity of the railroad and the intersection at Kiest Blvd. in this area, ramping Sargent Road over

the levee would be impractical. The sponsor has expressed approval of the current plan to abandon the southern end of Sargent Road in this area and reroute traffic around existing roads.

#### **Rector Road**

This 2-lane roadway is owned by the City of Dallas. This roadway currently terminates approximately 200 feet northeast of the proposed Cadillac levee alignment at station 26+00. The proposed plan is to move the termination point to the southwest side of the levee and remove that portion of the road within the levee footprint.

#### **Railroads**

The SPF project levees and wetlands cross three active railroad lines and one inactive line. Each facility is discussed below. Refer to the Structures section of this appendix and Plates S02 to S07 for drawings and analyses of the proposed structures.

#### **Dallas Area Rapid Transit**

The east levee will cross under an active Dallas Area Rapid Transit (DART) bridge at the upstream end of the project. The levee will pass under the elevated bridge and will not affect the structure. The east levee will cross an inactive railroad embankment, which is also owned by DART, (previously owned by Atchison, Topeka and Santa Fe Railway.) The inactive line is immediately downstream of the active railroad and is several feet lower than the proposed east levee. The proposal is to build the levee across the old railroad embankment with no closure structure. This would effectively require abandonment of the inactive line, although, it could potentially be upgraded for use as a hiking/biking trail. The DART facilities will not be crossed by the wetlands or the west levee. A relocation agreement is proposed between the Federal Government and DART to accommodate the design and construction of the alterations described above.

#### **Union Pacific Railroad**

The Union Pacific Railroad (U.P.) owns two active lines which cross the project area. One line was formerly owned by Missouri-Kansas-Texas Railroad Company (MKT). This facility is located between Martin Luther King Blvd. and Interstate 45. The other line was formerly owned by Southern Pacific Railroad (S.P.) and is located south of Central Expressway. Both active lines will be crossed by the proposed levees. The proposal is to stage work on the railroad facilities and shift traffic between the two active lines to avoid the necessity to build a railroad detour. A description of the proposed structures is presented below.

The east levee will cross the existing embankment of the old MKT line, and a 20' x 14' stoplog structure is proposed at this location. The west levee will cross the same line at two separate locations. One crossing will be on the north side of the wastewater treatment plant and the other crossing will be west of the treatment plant. Twenty-foot wide stoplog structures are proposed for both the north and west locations, at heights of approximately 15 feet and 17.5 feet, respectively. The west levee will also cross an active railroad spur that serves the wastewater treatment plant. A 20' x 6.5' stoplog structure is proposed for the spur crossing. An inactive railroad spur, which the west levee alignment crosses near Kiest Blvd., will be removed within the footprint of the levee and the remainder of the spur will be abandoned.

The east levee will cross the embankment of the old S.P. railroad and will be approximately 8 feet higher than the existing trackage. A 20' x 8' stoplog structure is proposed for this crossing.

The proposed wetlands will require only minimal excavation under the existing railroad bridges for the purpose of hydraulically connecting the upstream and downstream wetland cells. The wetlands should not adversely affect the railroad facility.

A relocation agreement is proposed between the Federal Government and Union Pacific to accommodate the design and construction of the alterations described above. Refer to the Structures section of this appendix for additional discussion and Plates S02 to S07 for drawings of the proposed structures.

## **Utilities**

### **Sanitary Sewer**

Numerous sanitary sewer lines will be crossed by the east and west levees, as indicated on Plates C04 to C21 and Table C-1. The pipes mostly consist of relatively small diameter laterals and collectors. The pipes are various ages and consist of various materials. Since the existing pipes are unlikely to accommodate the anticipated loading and settlement imposed by the proposed levee, reconstruction of the sewer lines under the levees is proposed. A closure valve is also proposed for each pipe that is reconstructed under the levee. The inclusion of a valve on sanitary sewer lines is a decision which must be based on judgements of risk versus cost. The additional cost of valves is considered to be justified based on the risk of a rupture one or more of the numerous pipes which cross the levee.

One existing sewer line, which will be crossed at the upstream end of the east levee, will be left in place without reconstruction. The 60-inch diameter Cadiz Force Main was constructed in 1986, and consists of a prestressed concrete embedded cylinder pipe (75 p.s.i. internal pressure). Most of the pipe in the area is placed in a 96-inch diameter tunnel liner approximately 28 feet below natural ground. The void between tunnel liner and pipe is filled with grout. An existing valve with valve box is also located in the area. The proposal is to place the levee over the existing pipe and extend the valve box to the top of levee. An analysis will be required during final design to verify that the pipe has sufficient strength and joint flexibility to accommodate the levee construction.

### **Storm Drains**

Limited availability of sump volume mandates that some existing storm drains be extended under the levee and discharged on the river side of the levee. Some collector pipes are proposed to minimize the length of new pipe required and reduce the number of levee crossings proposed. The numerous storm drain lines which will be affected by the east and west levees are indicated on Plates C04 to C21 and Table C-1. The existing storm drains range in size, age, and materials. Since the existing pipes are unlikely to accommodate the anticipated loading and settlement imposed by the proposed levee, reconstruction of the storm drains under the levees is proposed. An emergency closure valve is also required at each levee crossing to prevent flooding in the event of a malfunction of the flappgates.

### **Water Lines**

Three water supply lines, which are owned and operated by the City of Dallas, will be affected by the west levee, as indicated on Plates C04 to C12 and Table C-1. Water lines will not be affected by the east levee or the wetlands. Since the subject lines convey pressure flows, the recommended plan consists of relocating the pipes over the levee. A minimum of 2 feet of cover material is proposed over the pipes.

### **Electric Transmission Towers**

TU Electric owns and operates numerous large electrical transmission lines in the project area. An electric transmission tower near the electric substation on the west side of the Central Wastewater Treatment Plant will require relocation to accommodate the west levee. Discussions with representatives of TU Electric indicate their tentative approval of the proposal.

### **Fiber Optic Cables**

Fiber optic cables, which are buried in the right-of-way of Union Pacific's rail facilities, will be affected at several locations, as indicated on Plates C04 to C1 and Table C-1. The construction of the proposed stoplog structures on the east levee will require alteration of cables owned by Qwest Communication Company and Electra Communication Company. The proposed stoplog structures on the west levee will require two alterations of the Electra cable for the LPP and one alteration for the FSP.

**Table C-1**

<b>SANITARY SEWER LINES (Cadillac Heights)</b>			
<b>Levee Station</b>	<b>Dia. (Inches)</b>	<b>Length Reloc. (LF)</b>	<b>Sluice Gate Required</b>
112+00	10	250	Yes
102+00	8	200	Yes
98+00	8	100 (removal)	No
94+00	15	300	Yes
79+70	12	450	Yes
75+80	12	200	Yes
66+00 - 74+00	10	950	Yes
43+00	12	240	Yes
26+00	10	220	Yes

<b>STORM SEWER (Cadillac Heights)</b>			
<b>Levee Station</b>	<b>Dia. (Inches)</b>	<b>Length Reloc. (LF)</b>	<b>Sluice Gate Required</b>
111+75	24	300	Yes
110+50	72	200	Yes
66+00 - 72+00	24	450	No
10+00	54	3200	No

**WATER SUPPLY**  
**(Cadillac Heights)**

Levee Station	Dia. (Inches)	Length Reloc. (LF)	Sluice Gate Required
62+00	8	200	No
43+50	6	220	No
26+00	8	200	No

**ELECTRICAL SUPPLY**  
**(Cadillac Heights)**

Levee Station	Descr.	Size (kV)	Length (LF)
45+00	Transmission Tower	138	
66+00 - 72+00	Aerial Distribution		600

**ROADWAYS**  
**(Cadillac Heights)**

Levee Station	Roadway	Length Reloc. (LF)	Rdwy Width (Ft)
92+00 - 94+00	Sargent Road	200	18
61+00	Entrance to CWWTP	450	25
59+00	Entrance to CWWTP	550	30

**FLOODGATE STRUCTURES**  
**(Cadillac Heights)**

Levee Station	Roadway	Gate Width (LF)	Gate Height (Ft)
111+40	Martin Luther King Blvd.	65	5

**STOPLOG STRUCTURES**  
**(Cadillac Heights)**

Levee Station	Railroad	Stoplog Width (Ft)	Stoplog Height (Ft)
90+30	M.K.T.	20	14
53+30	M.K.T. (spur)	20	6.5
43+30	M.K.T.	20	17.5

**FIBER OPTIC CABLES**  
**(Cadillac Heights)**

Levee Station	Company	Reloc. Length (Ft)	
90+30	Electra Comm. Co.	50	
43+30	Electra Comm. Co.	50	

**SANITARY SEWER LINES**  
**(Lamar Levee)**

Levee Station	Dia. (Inches)	Length Reloc. (LF)	Sluice Gate Required
27+00	12	150	Yes
27+00 - 34+00	10	800	No
70+00	12	200	Yes
90+00	24	220	Yes
106+00	15	150	Yes
117+00	48	300	Yes

**STORM SEWER**  
**(Lamar Levee)**

Levee Station	Size	Length Reloc. (LF)	Sluice Gate Required
24+00 (North Reach)	8' x 8' Box Culvert	300	Yes
25+00	54" Dia. Pipe	150	Yes
47+00	48" Dia. Pipe	200	Yes
76+80	24" Dia. Pipe 30" Dia. Pipe 42" Dia. Pipe 60" Dia. Pipe	450 150 950 2050	No No No Yes
119+00	66" Dia. Pipe	1200	Yes
134+00	7' x 7' Box Culvert	900	Yes

STOPLOG STRUCTURES (Lamar Levee)			
Levee Station	Railroad	Stoplog Width (Ft)	Stoplog Height (Ft)
19+80	S.P. (U.P.)	20	8
119+60	M.K.T. (U.P.)	20	14

FIBER OPTIC CABLES (Lamar Levee)			
Levee Station	Company	Reloc. Length (Ft)	
20+00	Qwest Comm. Co.	50	
120+00	Electra Comm. Co.	50	

## **STRUCTURES**

### **DESCRIPTION OF STRUCTURES**

#### **General**

Structural works included in the Dallas Floodway Extension project consist primarily of closure structures where the proposed levees intersect streets or railroads, and various gate-controlled sluice structures for control of sump and interior drainage. The proposed new structures are as follows: one new closure structure at the intersection of the MKT Railroad with the Lamar levee, station 119+60; one new closure structure at the intersection of the Southern Pacific Railroad with the Lamar levee, station 19+80; three (3) new closure structures at the Cadillac Heights levee - MKT Railroad intersections, stations 43+30, 53+30 and 90+30; one new closure structure at the Cadillac Heights levee - Martin Luther King Freeway intersection, station 111+40; five (5) separate gate-controlled sluice structures at sump outlets in the Lamar levee and four (4) gate-controlled sluice structures in the Cadillac Heights levee. All the closure structures will be cast-in-place reinforced concrete structures with rectangular openings controlled by single or dual-leaf steel swing gates and further categorized below for discussion as either floodwall type or retaining wall type closures. The swing gates will be fabricated from structural steel shapes and plate, with rubber J-shaped seals along the vertical and lower edges. The gates vary in height from 5 feet to 17.5 feet and are shown in detail on plates S-01 through S-07 of this appendix. The sluice structures will be conventional cast-in-place, reinforced concrete construction and will consist of a cut-and-cover conduit with single or multiple sluices, a centrally located gate control tower with cast iron slide gates and simple span service bridge. Details and locations of the sluice structures are shown on plates S-08 and S-09 of this appendix. Locations and details of the sluice controlled sanitary and storm sewers are shown in table C-1 of the Relocations section of this appendix.

#### **Retaining Wall Type Closure Structures**

The closure structures at stations 53+30 and 111+40 on the Cadillac Heights Levee, for the LPP, and at station 19+80 on the Lamar levee are categorized, for the purposes of this report, as retaining wall type structures and have swing gates that are 6.5', 5.0' and 8.0' in height, respectively. They are configured in a U-shaped arrangement, i.e., a footing with integral sill and vertical end walls. The structures provide a 20-foot (minimum) rectangular opening through the levee for the railroads and a 65-foot opening for the Martin Luther King (MLK) freeway. The end walls of the structure are cantilever retaining walls that are oriented transversely to and match the cross-section of the levee, thus retaining the levee material. A fabricated steel swing gate is mounted on hinges on a stiffened section of one of the end walls, sealing against the concrete surfaces of each wall and along the sill. In the case of the MLK structure, a reinforced concrete center post is used to support a dual leaf gate arrangement, each leaf being hinged on the end walls and swinging in to the center post. A portable winch is provided as loose equipment to operate the gates.

#### **Floodwall Type Closure Structures**

The closure structures at stations 43+30 and 90+30 on the Cadillac Heights Levee, and the structure at station 119+60 on the Lamar Levee and are categorized, for the purposes of this report, as floodwall type structures and have single leaf swing gates that are 17.5', 15.0' and 14.0' in height, respectively. They are configured as inverted-T shaped floodwalls that function as extensions of the levee, allowing the levee material to be tapered away from the railroad embankment. The stem of the floodwall is notched to provide the required opening for the railroad and the exposed vertical edges of the notch are stiffened to provide mounting and bearing points for the steel swing gate, which seals against the concrete surfaces around the perimeter of the notch. Again, a portable winch is provided to operate the swing gate at each structure.

### Sluice Structures

The proposed new sluice structures will be conventional cast-in-place, reinforced concrete construction and will consist of a cut-and-cover conduit with single or multiple sluices and flap gates on the river side, a centrally located gate control tower with cast iron slide gates and simple span service bridge with cast-in-place concrete abutment. Sizes and approximate locations of the sluice structures are given in Tables C-2 and C-3 below. Details of the sluice structures are shown on Plates S-08 and S-09 of this appendix.

**Table C-2**  
**Sluice Structures - Cadillac Heights Levee**

SLUICE NUMBER	LEVEE STATION (FT)	CONDUIT SIZE (FT)	INLET ELEVATION (FT. NGVD)	OUTFALL ELEVATION (FT. NGVD)
1	118+00	3- 5x5	405	404
2	91+40	3- 5x5	397	396
3	82+00	3-5x5	397	396
4	41+50	3-5x5	395	394

Note: The sluice structures are listed in order from northwest to southeast, along the proposed levee system.

**Table C-3**  
**Sluice Structures - Lamar Street Levee**

SLUICE NUMBER	LEVEE STATION (FT)	CONDUIT SIZE (FT)	INLET ELEVATION (FT. NGVD)	OUTFALL ELEVATION (FT. NGVD)
1	40+10	4x4	393	391
2	24+90	4x4	392	390
3	118+60	4- 6x6	392	390
4	92+30	4x4	395	393
5	50+60	3- 5x5	392	390

Note: The sluice structures are listed in order from northwest to southeast, along the proposed levee system.

## **DESIGN CRITERIA**

### **References**

Allowable stresses, loading conditions, design assumptions and other criteria for structural design are in accordance with the applicable sections of the "US Army Corps of Engineers Manuals" (EM) and other publications listed below:

1. Engineering and Design; Strength Design for Reinforced-Concrete Hydraulic Structures, EM 1110-2-2104, 30 June 1992.
2. Engineering and Design; Design of Hydraulic Steel Structures, EM 1110-2-2105, 31 March 1993.
3. Engineering and Design; Structural Design of Closure Structures for Local Flood Protection Projects, EM 1110-2-2705, 31 March 1994.
4. Building Code Requirements for Structural Concrete (ACI318-95).
5. Corps of Engineers Structural Engineering Computer Programs:
  - a. Design and/or Analysis of Composite Skinplate (SKNPLATE) - Program Number X0019.
  - b. Sliding Stability Analysis of Concrete Structures (CSLIDE) - Program Number X0075
  - c. Interactive Graphics 3-Dimensional Stability Analysis/Design Program (3DSAD) - Program Number X8100.
  - d. Design of Reinforced Concrete Orthogonal Culverts/Conduits (CORTCUL) - Program Number X0024.
  - e. Concrete Strength Investigation and Design in Accordance with ACI Code 318-83 (CASTR) - Program Number X0067.

### **Design Methodology**

Design of the concrete structures was accomplished using the Strength Design Method, in accordance with EM1110-2-2104, referenced above. Design of the steel gates for each closure structure was accomplished using the Allowable Stress Design Method (ASD) and computer program SKNPLATE (X0019). The design flood level for all of the closure structures was taken to be the elevation of the top of the gate (top of levee), with no allowance for freeboard. The minimum acceptable sliding factor of safety for the closure structures was taken to be 1.5 and each was designed to withstand hydrostatic uplift pressures corresponding to the design flood level on the river side and to sill height on the land side, assuming a linear variation across the entire base of the structure. The project is in seismic zone zero; therefore no augmented design is required. Additionally, no significant wave action is expected.

### **Unit Weights and Material Properties**

Reinforced Concrete = 150 pcf

Water = 62.4 pcf

Steel = 490.0 pcf

Concrete Strength = 3000. psi at 28 days

Reinforcing Steel  $f_y = 60,000$ . psi (ASTM A615, Grade 60)  
 Structural Steel  $f_y = 36,000$ . psi (ASTM A36)

### Soil Design Parameters - Cadillac Heights Levee

#### Martin Luther King Freeway (CH)

Unit weight (moist, w=23%)	$\gamma_m = 118$ pcf
Unit weight (dry)	$\gamma_{dry} = 94$ pcf
Unit weight (sat, w=30%)	$\gamma_{sat} = 122$ pcf
Shear Strength (S) Cohesion (CD)	C = 0
Shear Strength (Q) Cohesion (UU)	C = 800 psf
Internal Friction Angle (Consolidated, Drained)	$\phi = 18^\circ$
Internal Friction Angle (Unconsolidated, Undrained)	$\phi = 0^\circ$
Wall Friction Angle (concrete/soil interface)	$\delta = 12^\circ$
Allowable Bearing Capacity:	above water table below water table
	= 2000 psf = 1500 psf
Earth Pressure Coefficients:	above water table  below water table
	$k_a = 0.5$ $k_o = 0.5$ $k_p = 2.0$ $k_a = 0.8$ $k_o = 0.8$ $k_p = 2.0$

#### MKT Railroad near Sargent Road and MKT Spur Track (SC)

Unit weight (moist, w=18%)	$\gamma_m = 122$ pcf
Unit weight (dry)	$\gamma_{dry} = 108$ pcf
Unit weight (sat, w=20%)	$\gamma_{sat} = 130$ pcf
Shear Strength (S) Cohesion (CD)	C = 0
Internal Friction Angle (Consolidated, Drained)	$\phi = 25^\circ$
Wall Friction Angle (concrete/soil interface)	$\delta = 17^\circ$
Allowable bearing capacity	= 2000 psf
Earth pressure coefficients:	$k_a = 0.4$ $k_o = 0.5$ $k_p = 2.4$

#### MKT Railroad near Meat Packing Plant (CH)

Above water table:	
Unit weight (moist, w=18%)	$\gamma_m = 127$ pcf
Unit weight (dry)	$\gamma_{dry} = 108$ pcf
Unit weight (sat, w=30%)	$\gamma_{sat} = 132$ pcf
Shear Strength (S) Cohesion (CD)	C = 0
Shear Strength (Q) Cohesion (UU)	C = 800 psf
Internal Friction Angle (Consolidated, Drained)	$\phi = 18^\circ$
Internal Friction Angle (Unconsolidated, Undrained)	$\phi = 0^\circ$
Wall Friction Angle (concrete/soil interface)	$\delta = 12^\circ$
Allowable bearing capacity	= 2500 psf
Earth pressure coefficients	$k_a = 0.5$ $k_o = 2.0$

#### Below water table:

Unit weight (sat., w=38%)	$\gamma_{sat} = 110$ pcf
Unit weight (dry)	$\gamma_{dry} = 80$ pcf

Shear Strength (S) Cohesion(CD)	C = 0
Shear Strength (Q) Cohesion (UU)	C = 800 psf
Internal Friction Angle (Consolidated Drained)	$\phi$ = 18°
Internal Friction Angle (Unconsolidated Undrained)	$\phi$ = 0°
Wall Friction Angle (concrete/soil interface)	$\delta$ = 12°
Allowable bearing capacity	= 1500 psf
Earth pressure coefficients	$k_a$ = 0.8 $k_p$ = 2.0

#### Soil Design Parameters - Lamar Levee

MKT Railroad (CH, limestone at about 15 ft)

Unit weight (moist, w=23%)	$Y_m$ = 118 pcf
Unit weight (dry)	$Y_{dry}$ = 94 pcf
Unit weight (sat, w=30%)	$Y_{sat}$ = 122 pcf
Shear Strength (S) Cohesion (CD)	C = 0
Shear Strength (Q) Cohesion (UU)	C = 800 psf
Internal Friction Angle (Consolidated Drained)	$\phi$ = 18°
Internal Friction Angle (Unconsolidated Undrained)	$\phi$ = 0°
Wall Friction Angle (concrete/soil interface)	$\delta$ = 12°
Allowable bearing capacity	= 2000 psf
Earth pressure coefficients	$k_a$ = 0.5 $k_o$ = 0.5 $k_p$ = 2.0

SP Railroad (SC)

Unit weight (moist, w=13%)	$Y_m$ = 128 pcf
Unit weight (dry)	$Y_{dry}$ = 113 pcf
Unit weight (sat, w=18%)	$Y_{sat}$ = 135 pcf
Shear Strength (S) Cohesion(CD)	C = 0
Internal Friction Angle (Consolidated Drained)	$\phi$ = 28°
Wall Friction Angle (concrete/soil interface)	$\delta$ = 19°
Allowable bearing capacity	= 2500 psf
Earth pressure coefficients	$k_a$ = 0.4 $k_o$ = 0.5 $k_p$ = 2.6

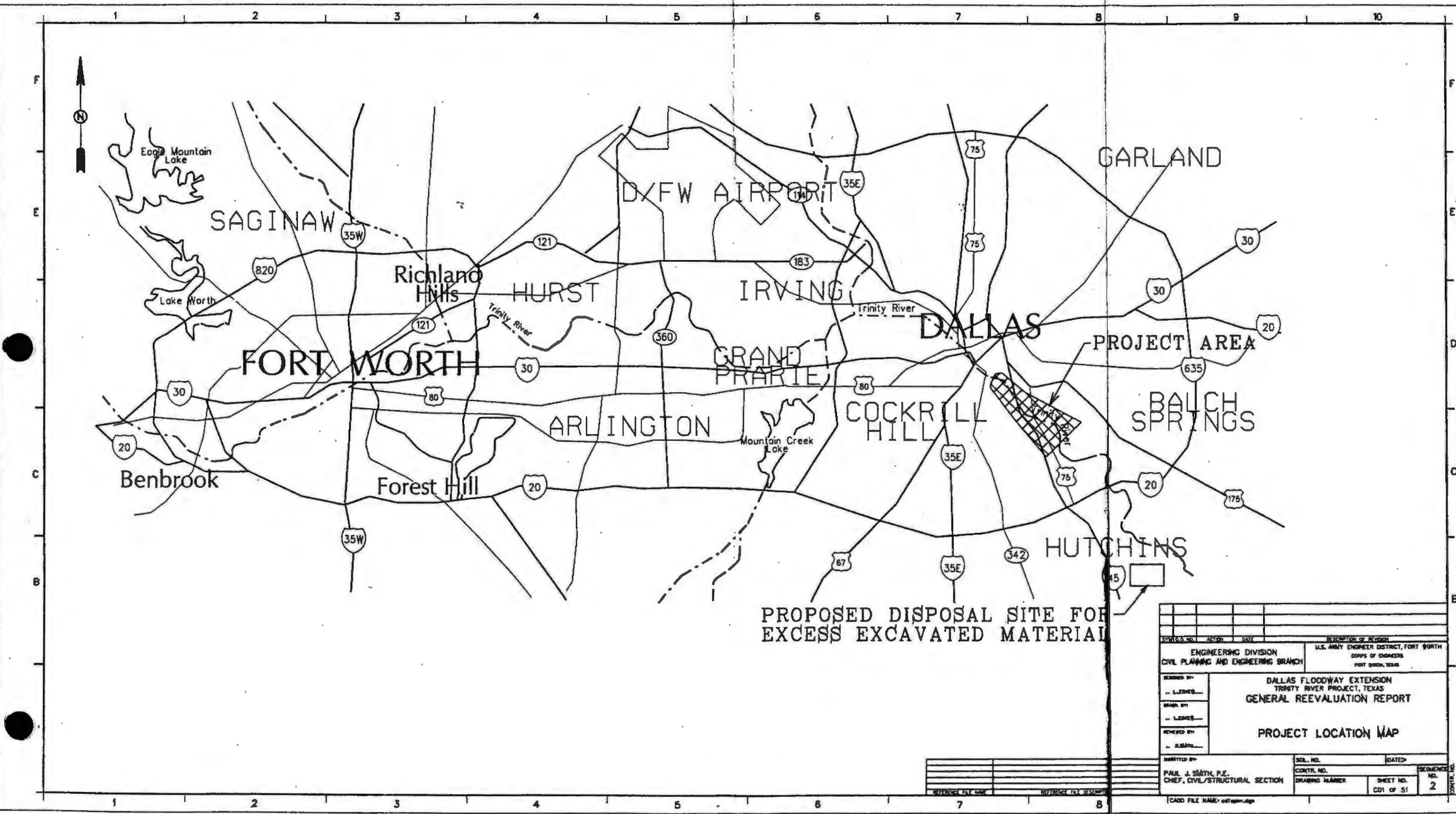
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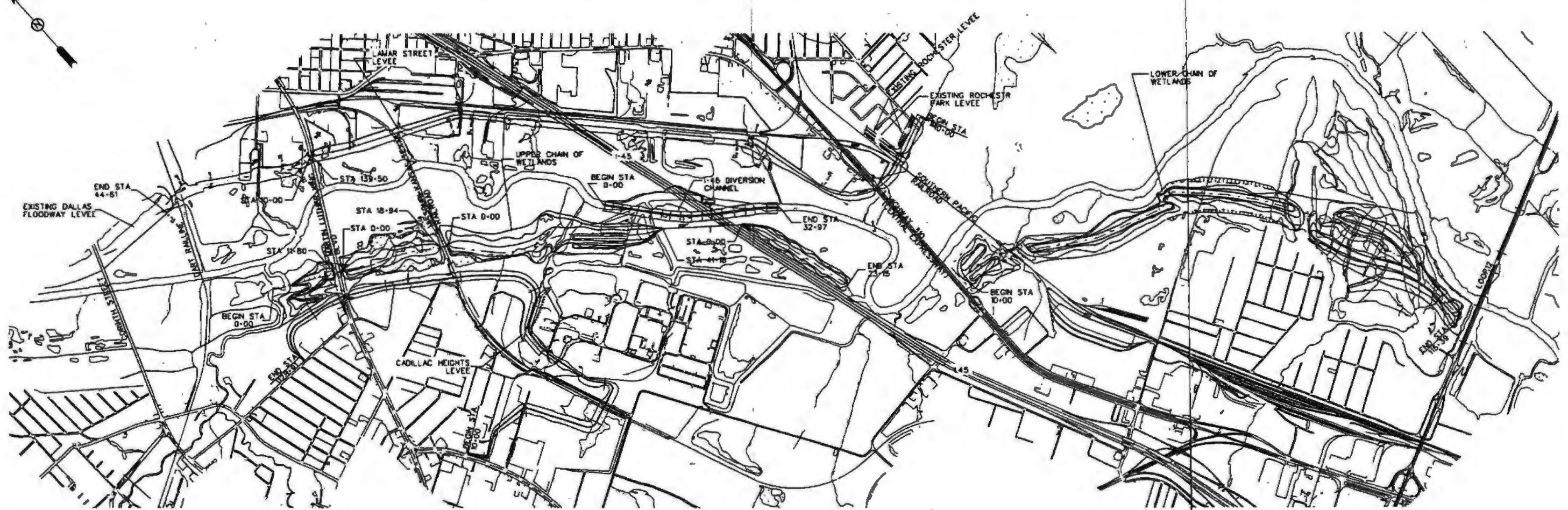
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	2	C01	PROJECT LOCATION PLAN	30	C29	UPPER CHAIN OF WETLANDS PLAN & PROFILE WETLAND D STA. 18-00 - 23-15.59	49	S15	LAMAR STREET LEVEE, SUMP OUTLET SLUICE, SECTIONS AND DETAILS, STA. 11B-60	
	3	C02	SITE LOCATION MAP	31	C30	UPPER CHAIN OF WETLANDS PLAN & PROFILE IH45 DIVERSION CHANNEL STA. 0-00 - 24-00	50	S16	CADILLAC HEIGHTS LEVEE, SUMP OUTLET SLUICE, PLAN AND SECTION, STA. 43-40, 82-00, 90-80, 11B-00	
E	4	C03	TYPICAL SECTIONS	32	C31	UPPER CHAIN OF WETLANDS PLAN & PROFILE IH45 DIVERSION CHANNEL STA. 24-00 - 32-97.42	51	S17	CADILLAC HEIGHTS LEVEE, SUMP OUTLET SLUICE, SECTIONS AND DETAILS, STA. 43-40, 82-00, 90-80, 11B-00	
	5	C04	CADILLAC HEIGHTS LEVEE PLAN & PROFILE STA. 10-00 - 26-00	33	C32	CHAIN OF WETLANDS CONTROL STRUCTURE DETAILS				
	6	C05	CADILLAC HEIGHTS LEVEE PLAN & PROFILE STA. 26-00 - 40-00	34	C33	MISCELLANEOUS DETAILS				
	7	C06	CADILLAC HEIGHTS LEVEE PLAN & PROFILE STA. 40-00 - 49-00	35	S01	CADILLAC HEIGHTS LEVEE, MARTIN LUTHER KING FLOODGATE, STA. 111-40				
	8	C07	CADILLAC HEIGHTS LEVEE PLAN & PROFILE STA. 49-00 - 62-00	36	S02	CADILLAC HEIGHTS LEVEE, MKT RAILROAD FLOODGATE, ELEVATION SECTIONS AND DETAILS, STA. 43-30				
	9	C08	CADILLAC HEIGHTS LEVEE PLAN & PROFILE STA. 62-00 - 74-60	37	S03	CADILLAC HEIGHTS LEVEE, MKT RAILROAD FLOODGATE, PLAN, SECTIONS AND DETAIL, STA. 43-30				
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	11	C10	CADILLAC HEIGHTS LEVEE PLAN & PROFILE STA. 89-50 - 103-50	39	S05	CADILLAC HEIGHTS LEVEE, MKT RAILROAD SPUR TRACK FLOODGATE, PLAN ELEVATIONS AND SECTIONS, STA. 53-50				
	12	C11	CADILLAC HEIGHTS LEVEE PLAN & PROFILE STA. 103-50 - 11B-00	40	S06	LAMAR STREET LEVEE, MKT RAILROAD FLOODGATE, PLAN, ELEVATION AND SECTIONS, STA. 120-00				
	13	C12	CADILLAC HEIGHTS LEVEE PLAN & PROFILE STA. 11B-00 - 126-88.86	41	S07	LAMAR STREET LEVEE, SOUTHERN PACIFIC RAILROAD FLOODGATE PLAN, ELEVATIONS AND SECTIONS, STA. 19-80				
	14	C13	LAMAR STREET LEVEE PLAN & PROFILE STA. 10-00 - 30-00	42	S08	TYPICAL SLUICE STRUCTURE FOR STORM AND SANITARY SEWER, PLAN AND ELEVATION				
	15	C14	LAMAR STREET LEVEE PLAN & PROFILE STA. 30-00 - 56-00	43	S09	TYPICAL SLUICE STRUCTURE FOR STORM AND SANITARY SEWER, SECTIONS AND DETAILS				
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C	17	C16	LAMAR STREET LEVEE PLAN & PROFILE STA. 80-00 - 104-00	45	S11	LAMAR STREET LEVEE, SUMP OUTLET SLICES, SECTIONS AND DETAILS, STA. 24-90, 40-10, 92-30				
	18	C17	LAMAR STREET LEVEE PLAN & PROFILE STA. 104-00 - 126-00	46	S12	LAMAR STREET LEVEE, SUMP OUTLET SLUICE, PLAN AND SECTION, STA. 50-60				
	19	C18	LAMAR STREET LEVEE PLAN & PROFILE STA. 126-00 - 139.58 80-00 - 19-00	47	S13	LAMAR STREET LEVEE, SUMP OUTLET SLUICE, SECTIONS AND DETAILS, STA. 50-60				
	20	C19	LAMAR STREET LEVEE PLAN & PROFILE STA. 19-00 - 30-00							
	21	C20	LAMAR STREET LEVEE PLAN & PROFILE STA. 30-00 - 44-61							
B	22	C21	CHAIN OF WETLANDS PLAN & PROFILE STA. 10-00 - 36-00							
	23	C22	CHAIN OF WETLANDS PLAN & PROFILE STA. 36-00 - 64-00							
	24	C23	CHAIN OF WETLANDS PLAN & PROFILE STA. 64-00 - 90-00							
	25	C24	CHAIN OF WETLANDS PLAN & PROFILE STA. 90-00 - 115-39							
	26	C25	UPPER CHAIN OF WETLANDS PLAN & PROFILE WETLAND A STA. 0-00 - 11-87.98 AND WETLAND B STA. 0-00 TO 13-00							
	27	C26	UPPER CHAIN OF WETLANDS PLAN & PROFILE WETLAND B STA. 13-00 - 18-94.34 & WETLAND C STA. 0-00 - 20-00							
	28	C27	UPPER CHAIN OF WETLANDS PLAN & PROFILE WETLAND C STA. 20-00 - 41-18.19							

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REMOVED BY:	JEF COOK		DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS		
ADDED BY:	JAELE JAMES		GENERAL REEVALUATION REPORT		
REVISED BY:	JEF COOK		INDEX OF DRAWINGS		
SUBMITTED BY:	PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION		SD. NO.	DATED	
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## LEGEND

NOTE: LEGEND ON THIS SHEET IS APPLICABLE TO SHEETS C04 THROUGH C3

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ENGINEERING DIVISION CIVIL PLANNING AND ENGINEERING BRANCH			U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		
DESIGNED BY:	DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS GENERAL REEVALUATION REPORT				
- BLAUMAR					
DRAWN BY:					
- J. MARTINEZ					
REVIEWED BY:					
- J. SMITH					
SITE LOCATION MAP					
SUBMITTED BY:		SOL. NO.	DATED:		
PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION		CONTR. NO.	SEQUENCE NO.		
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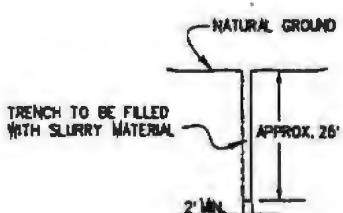
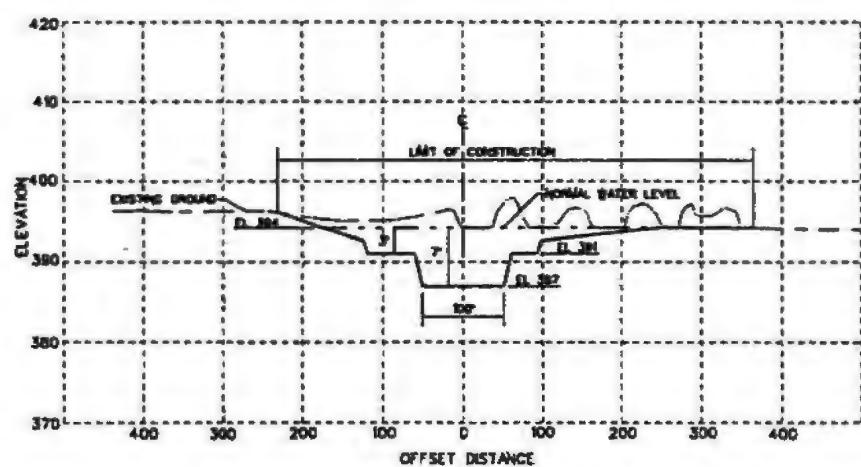
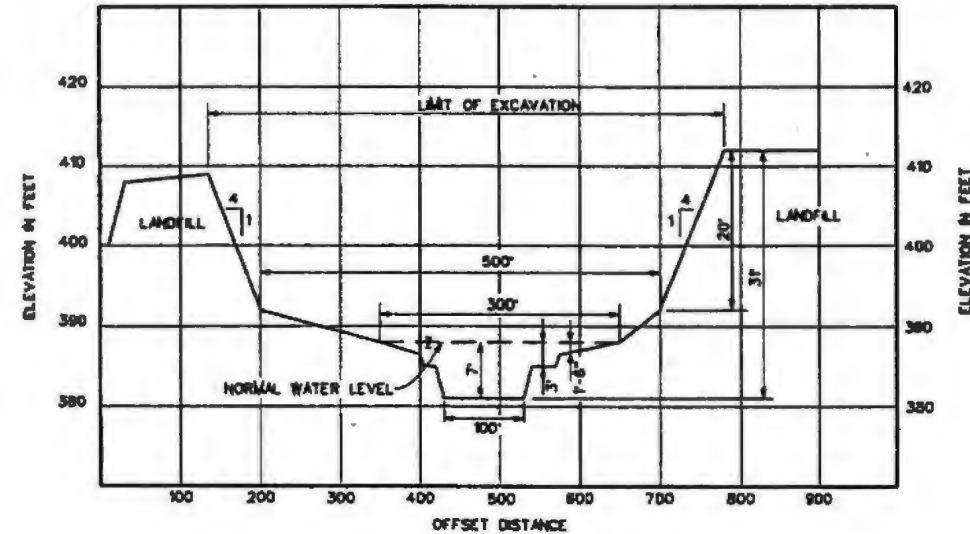
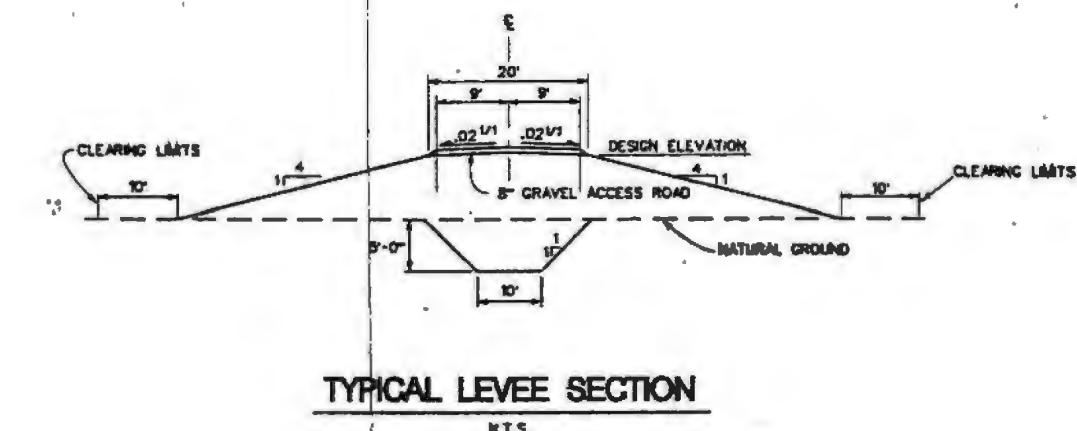
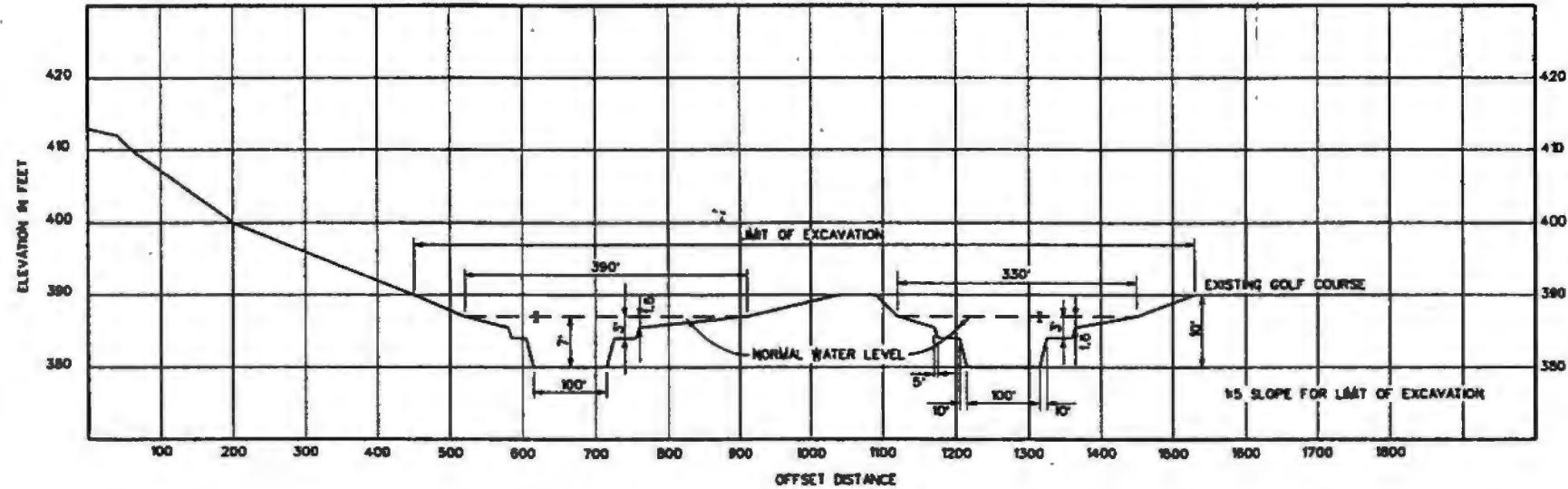
**ENGINEERING BRANCH**      **FORT WORTH, TEXAS**

**DALLAS FLOODWAY EXTENSION  
TRINITY RIVER PROJECT, TEXAS**

**GENERAL REEVALUATION REPORT**

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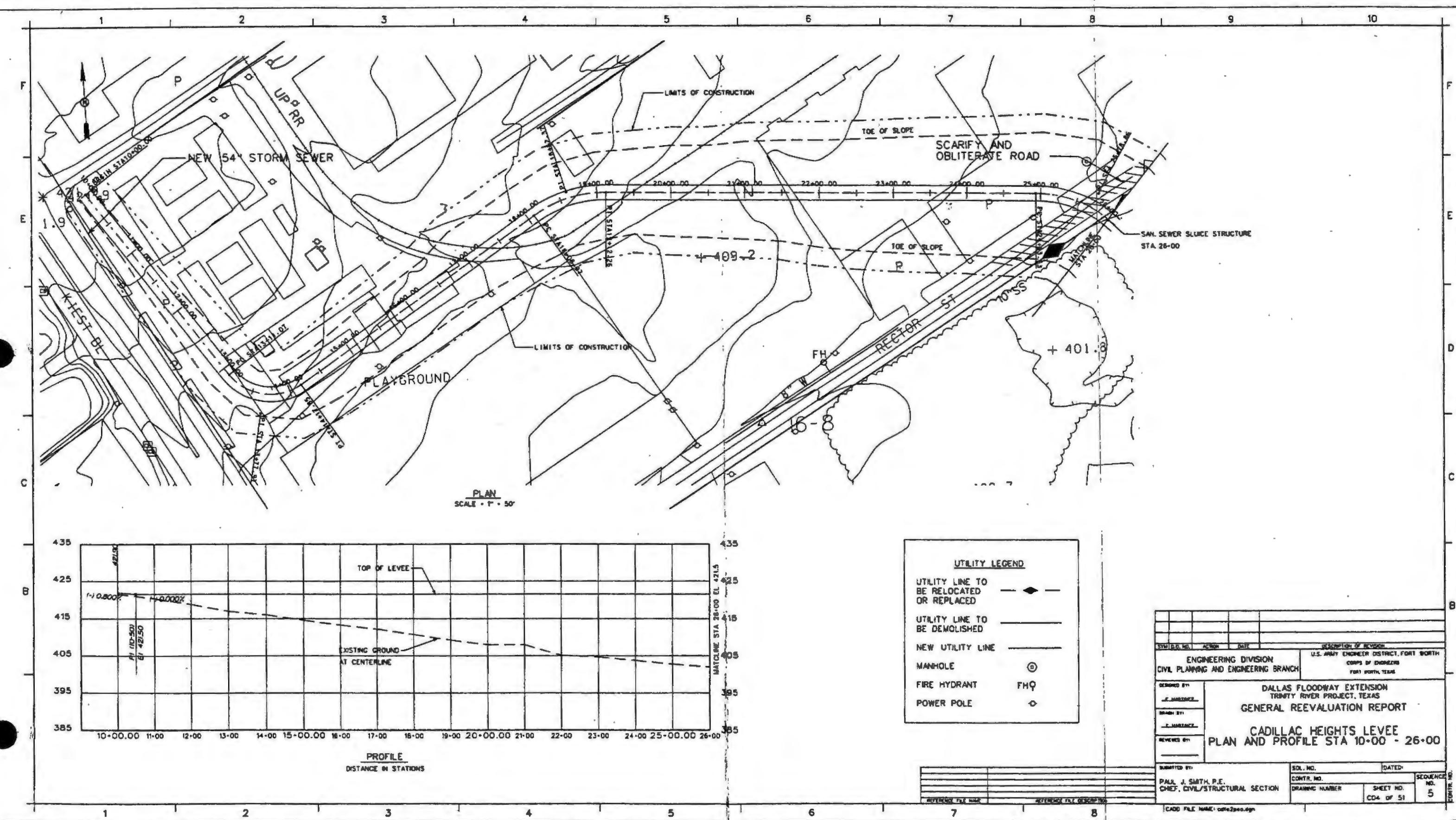


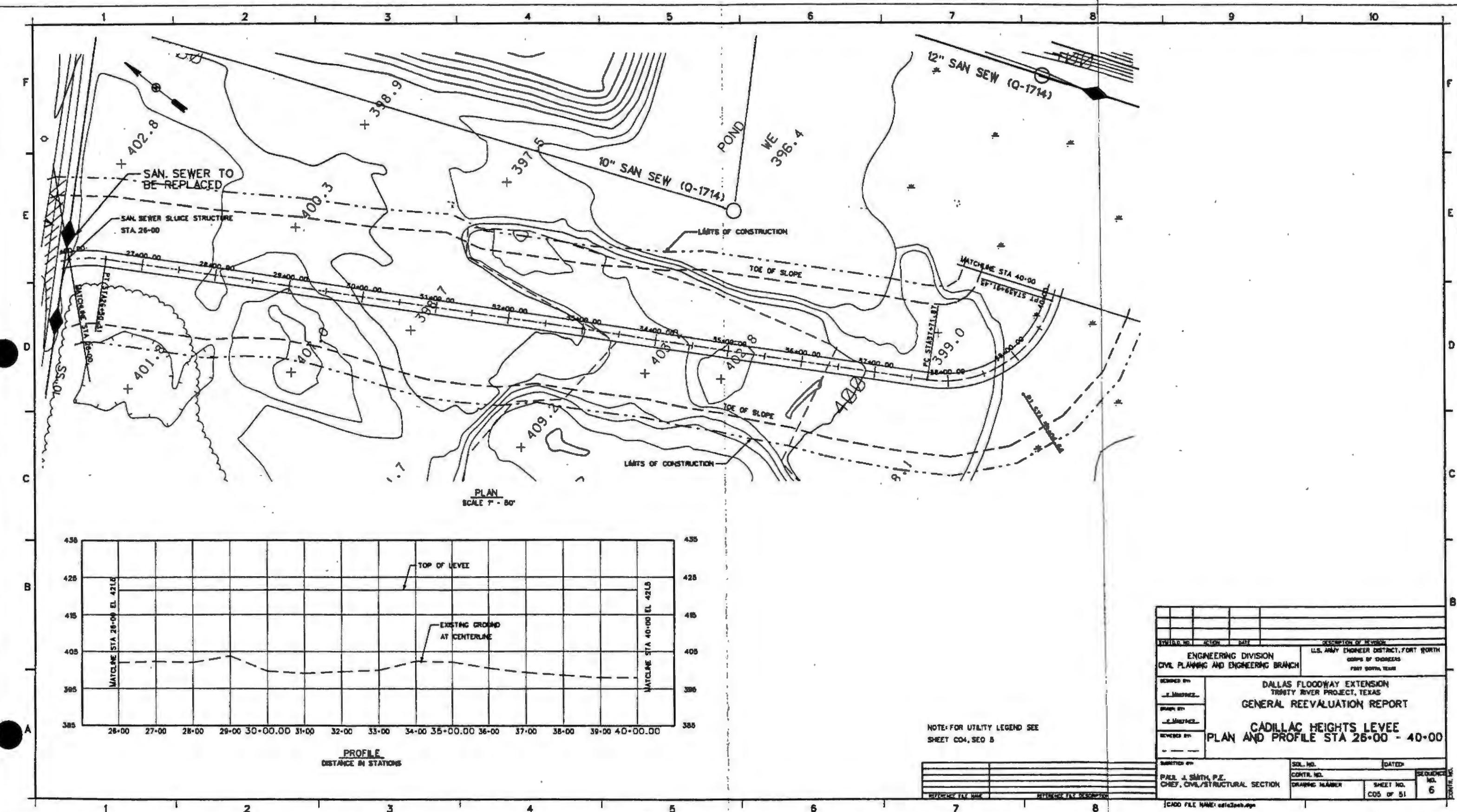
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REVIEWED BY:			GENERAL REEVALUATION REPORT
APPROVED BY:			

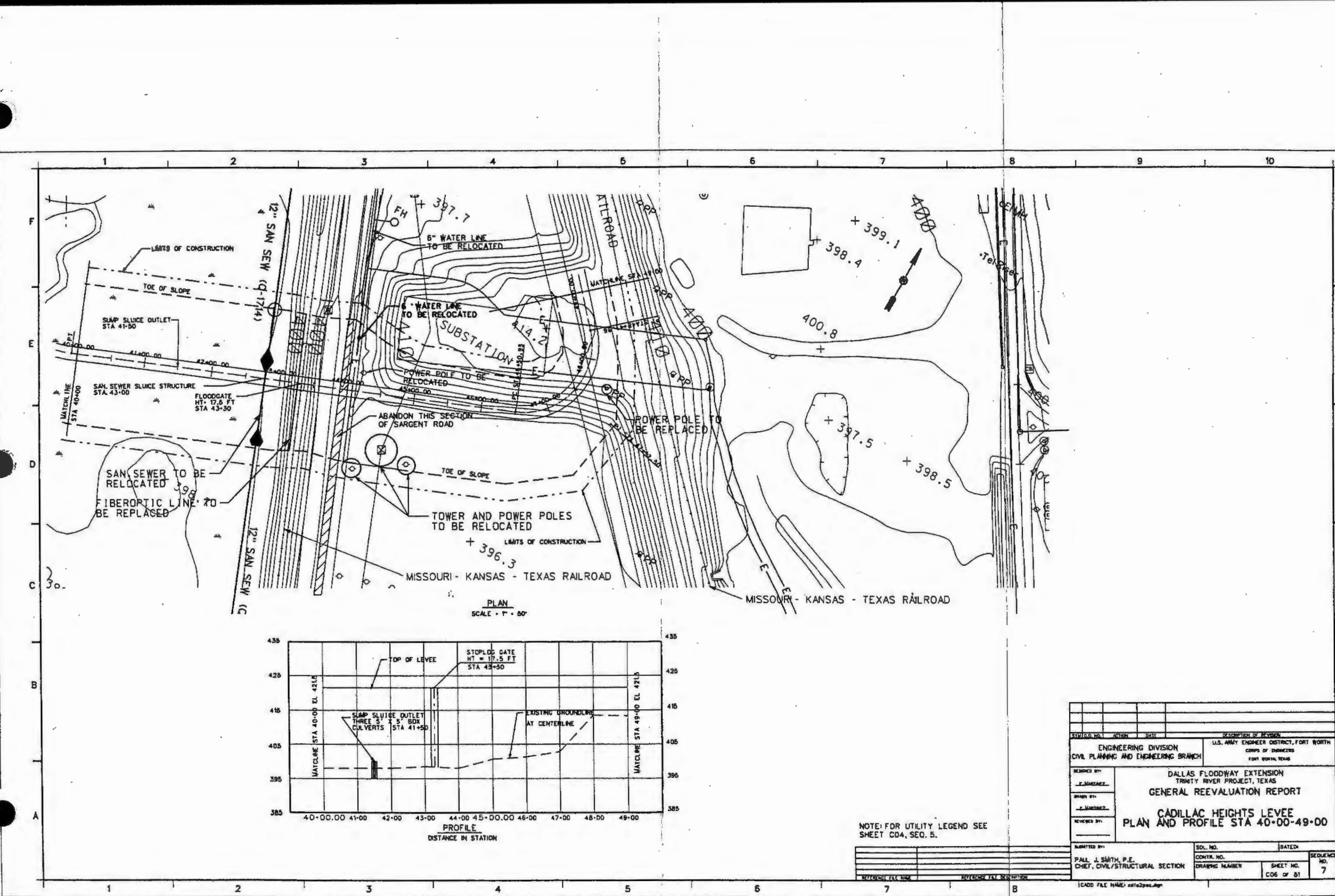
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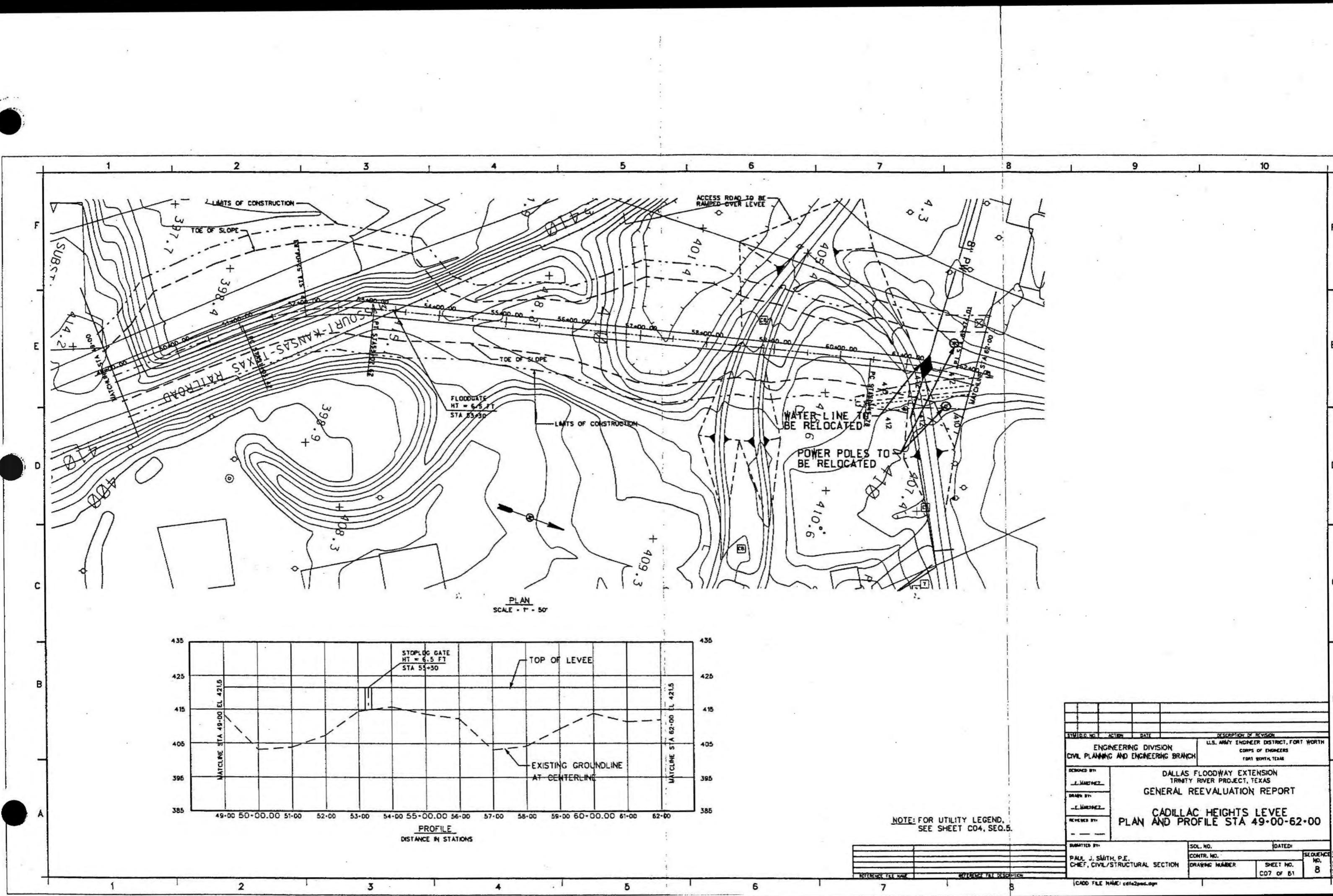
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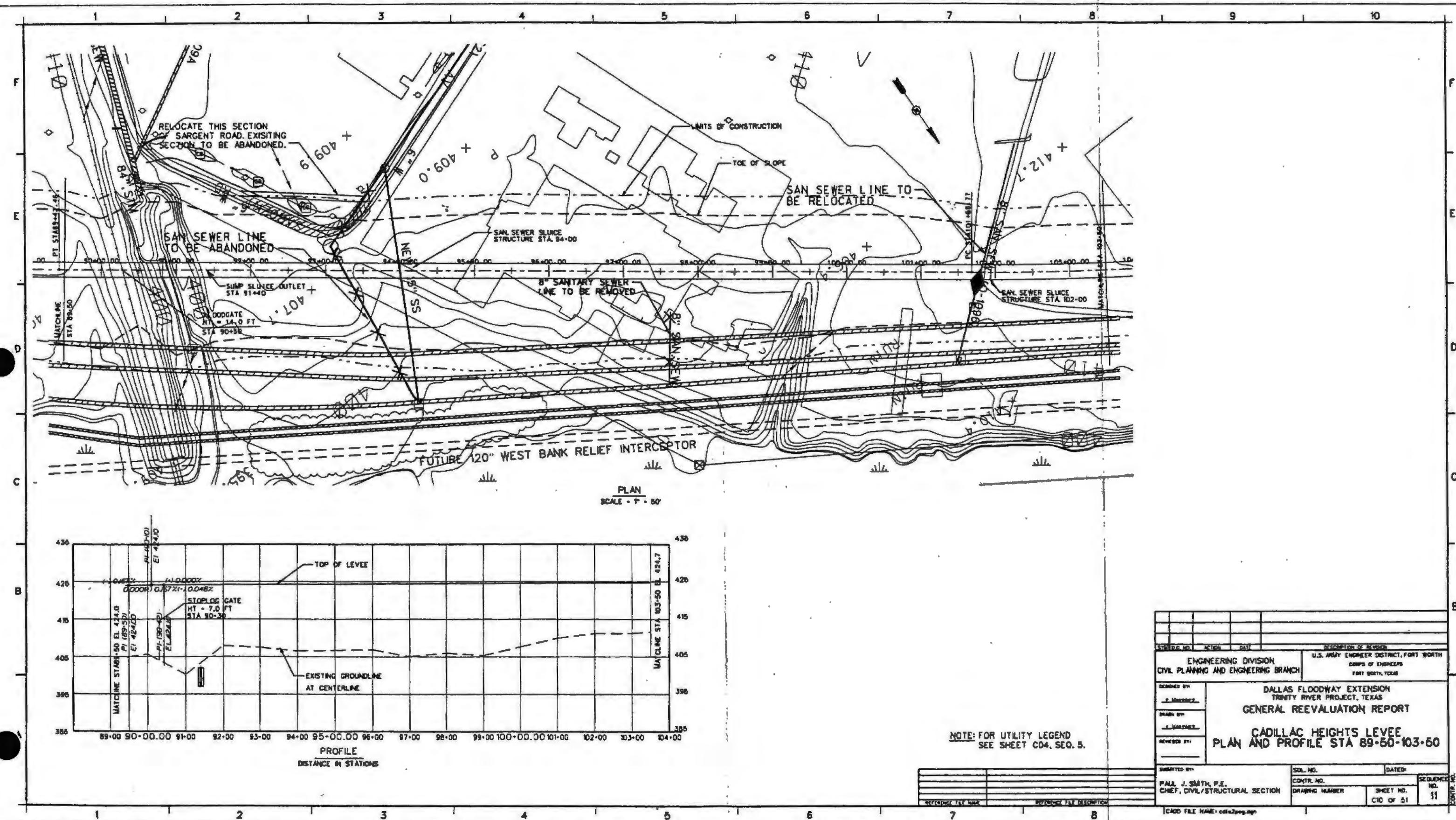
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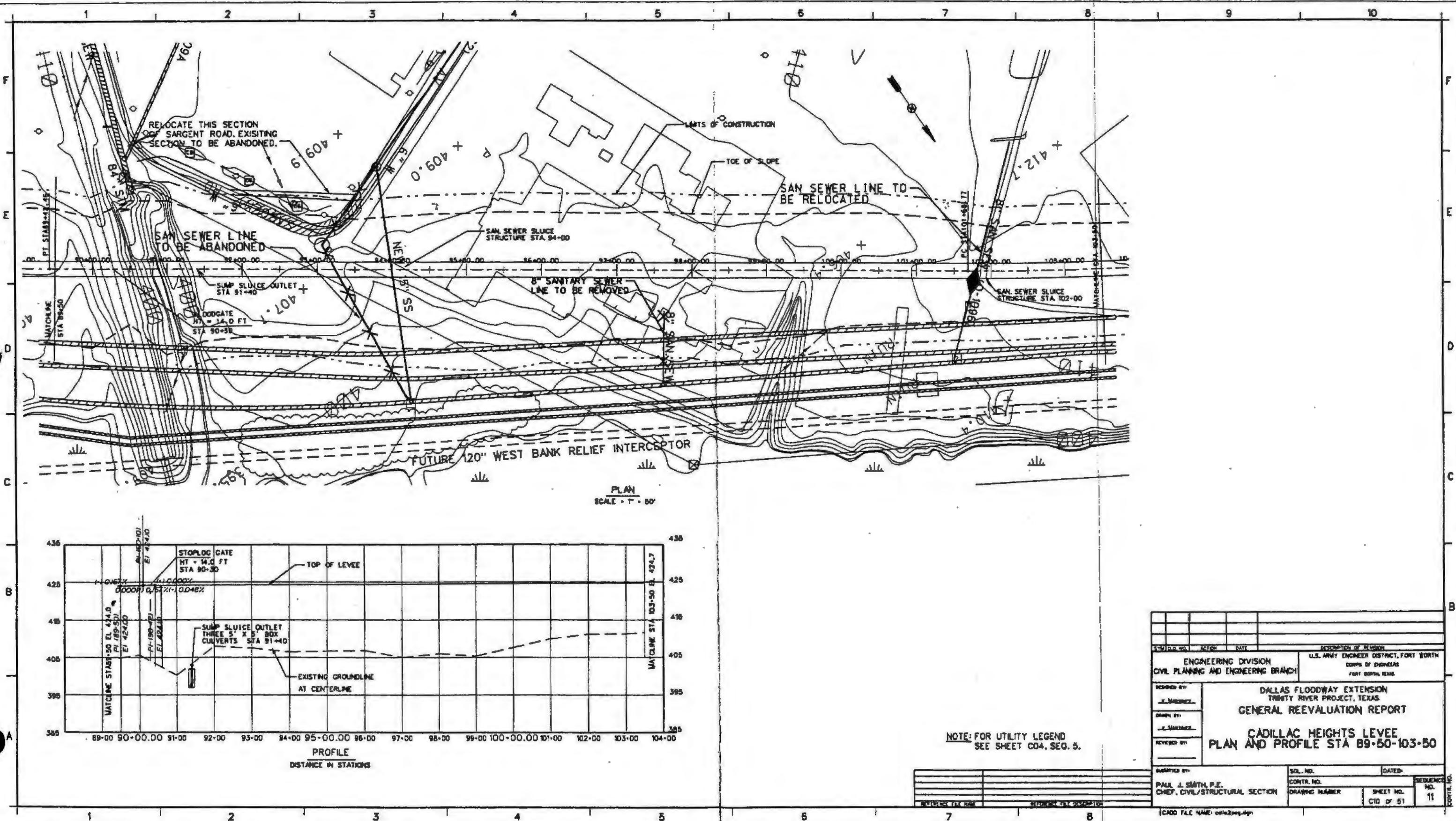


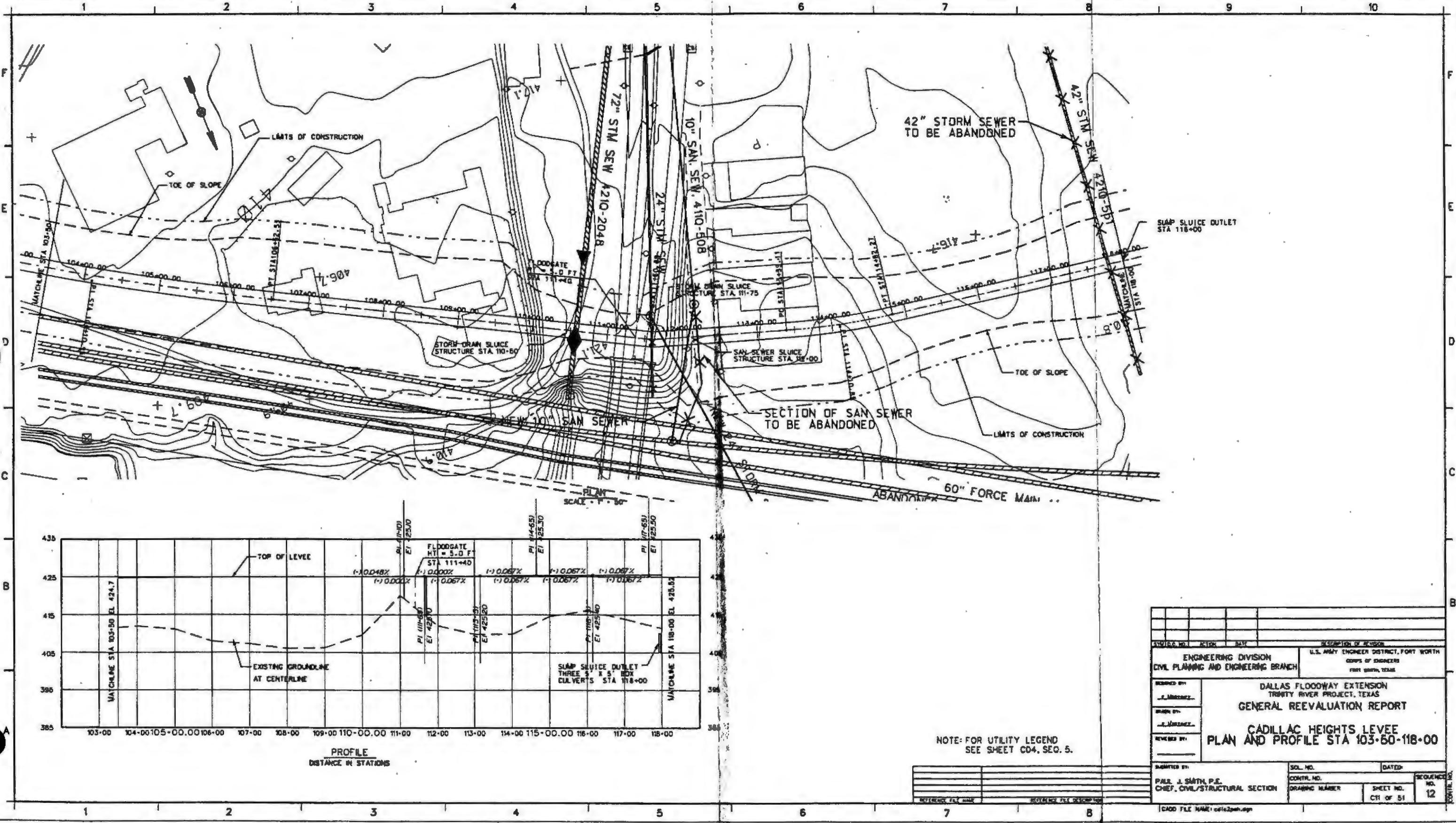


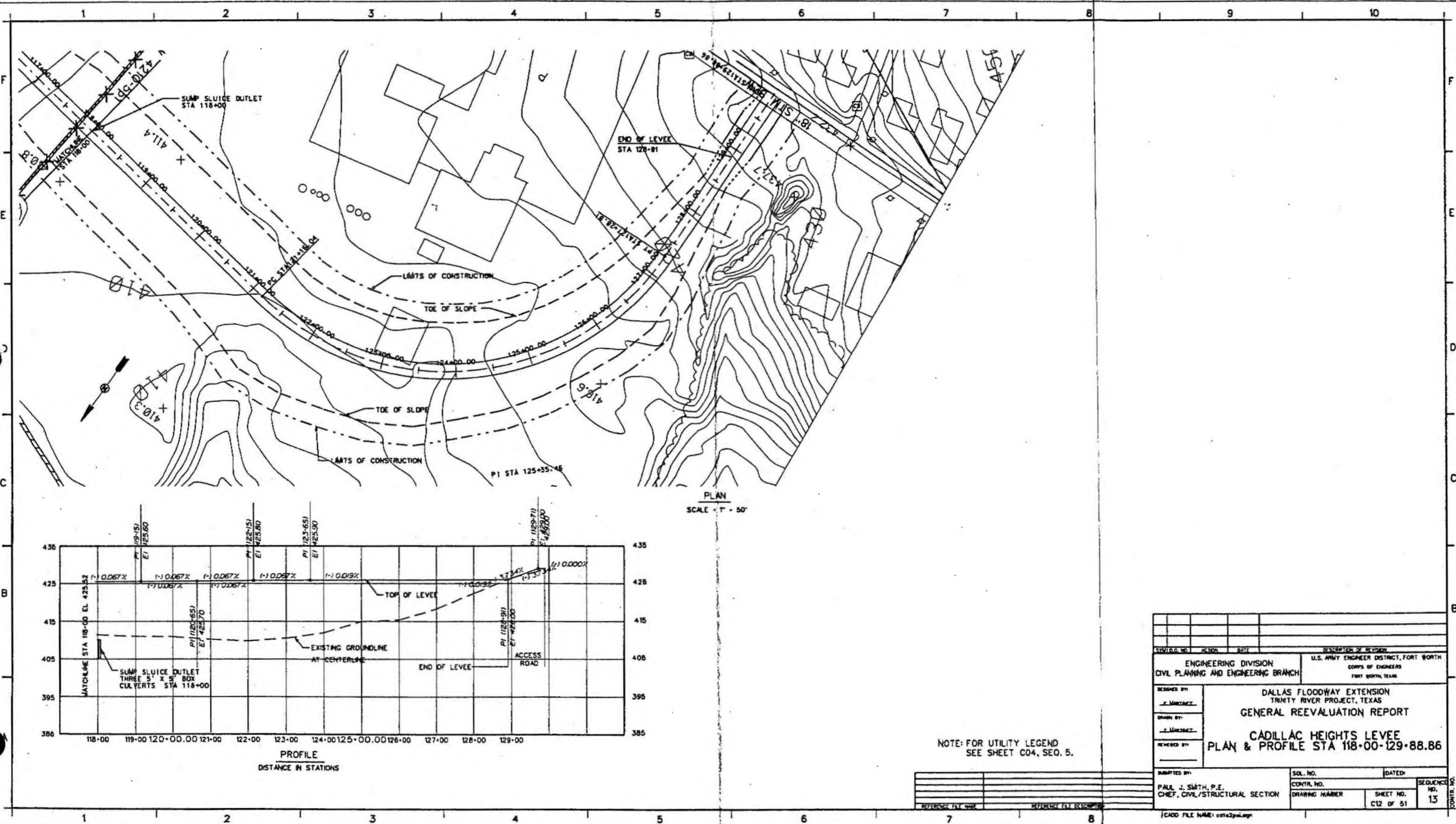


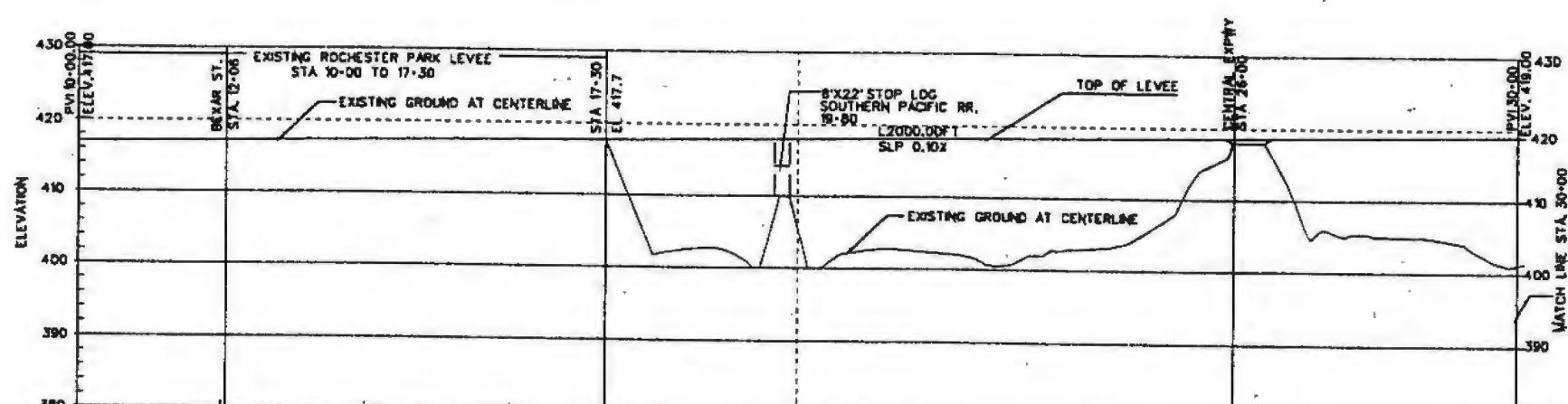
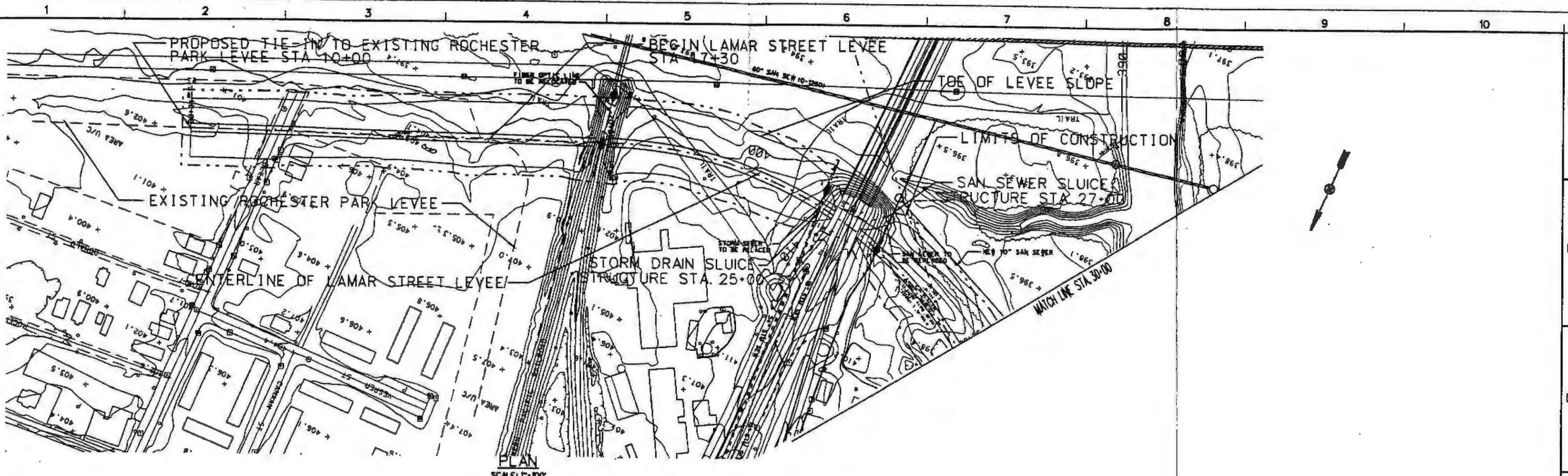










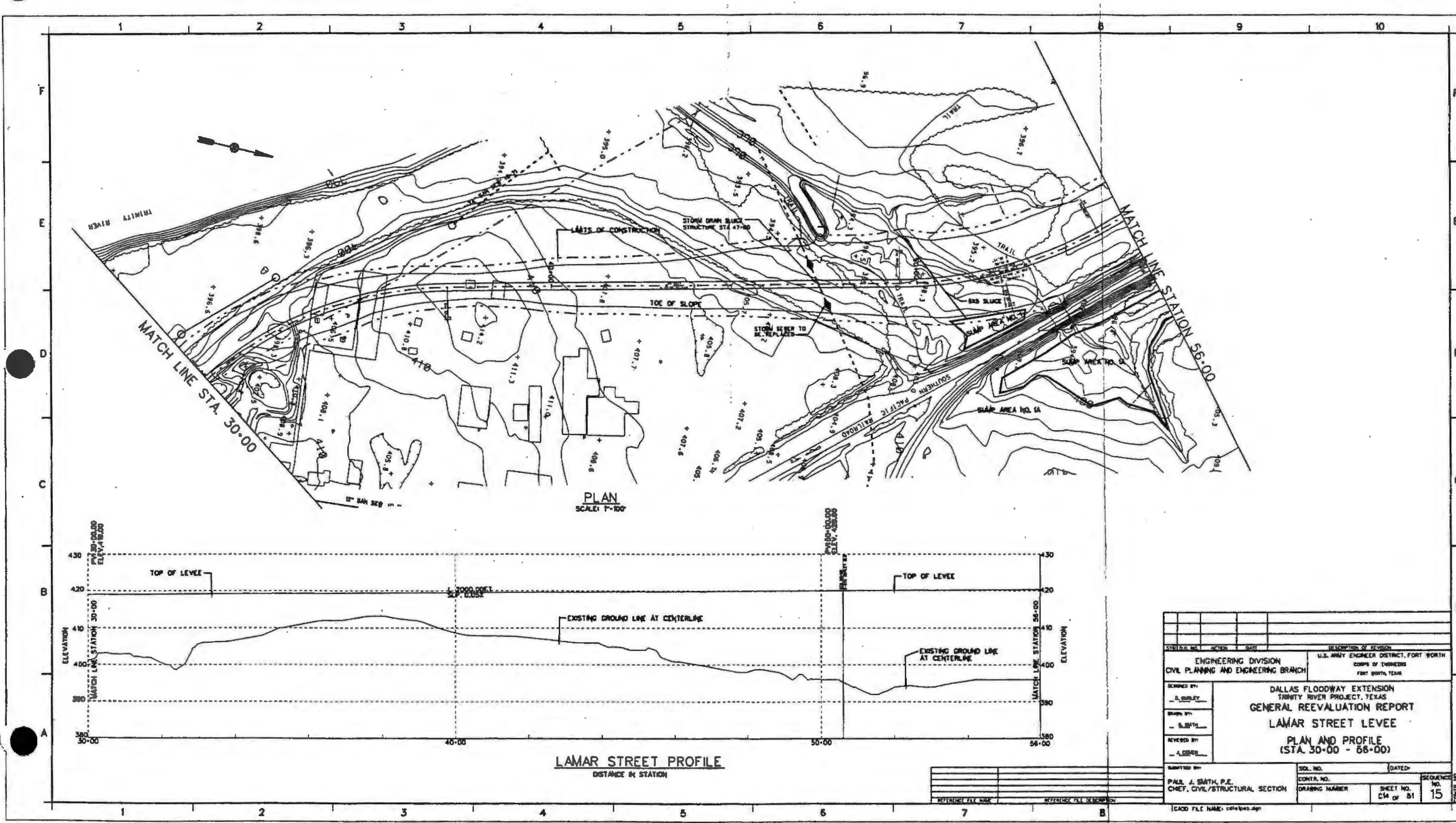


LAMAR STREET PROFILE  
DISTANCE IN STATIONS

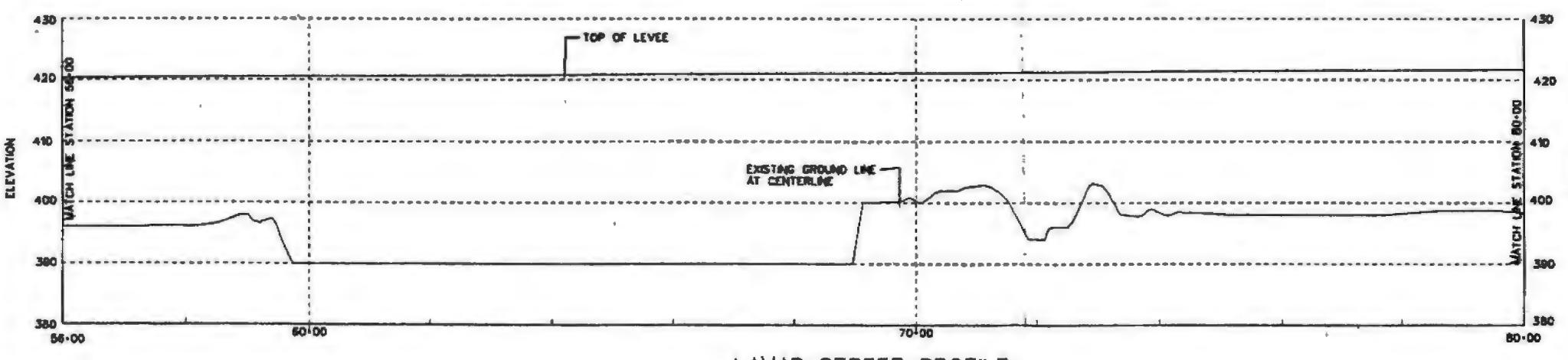
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DESIGNED BY — D. SMITH —			DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS
DRAWN BY — D. SMITH —			GENERAL REEVALUATION REPORT
REVIEWED BY — ALGREN —			LAMAR STREET LEVEE
SUPERVISED BY			PLAN AND PROFILE (STA. 10-00 - 30-00)
PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION			SOL. NO. CONTR. NO. DRAWING NUMBER SHEET NO. C13 of B1
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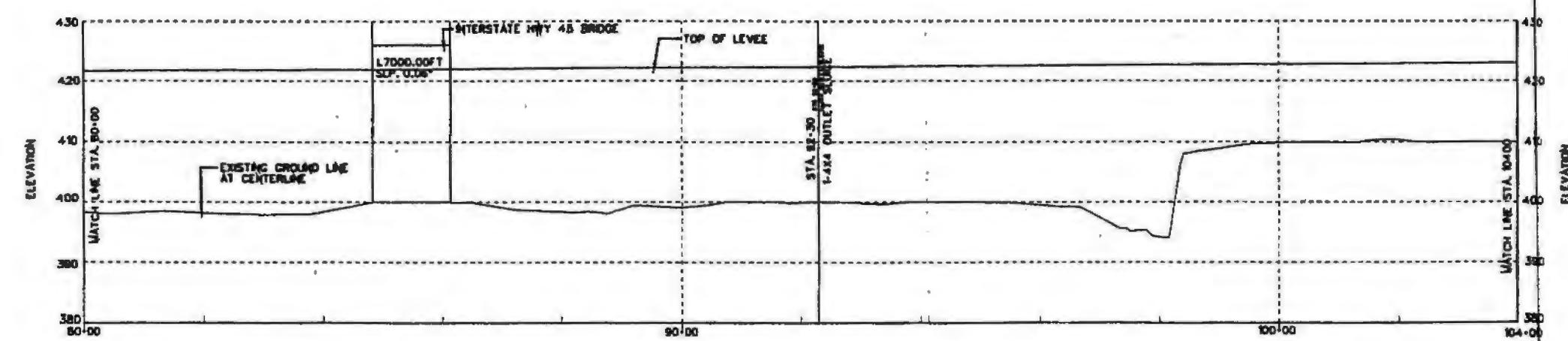
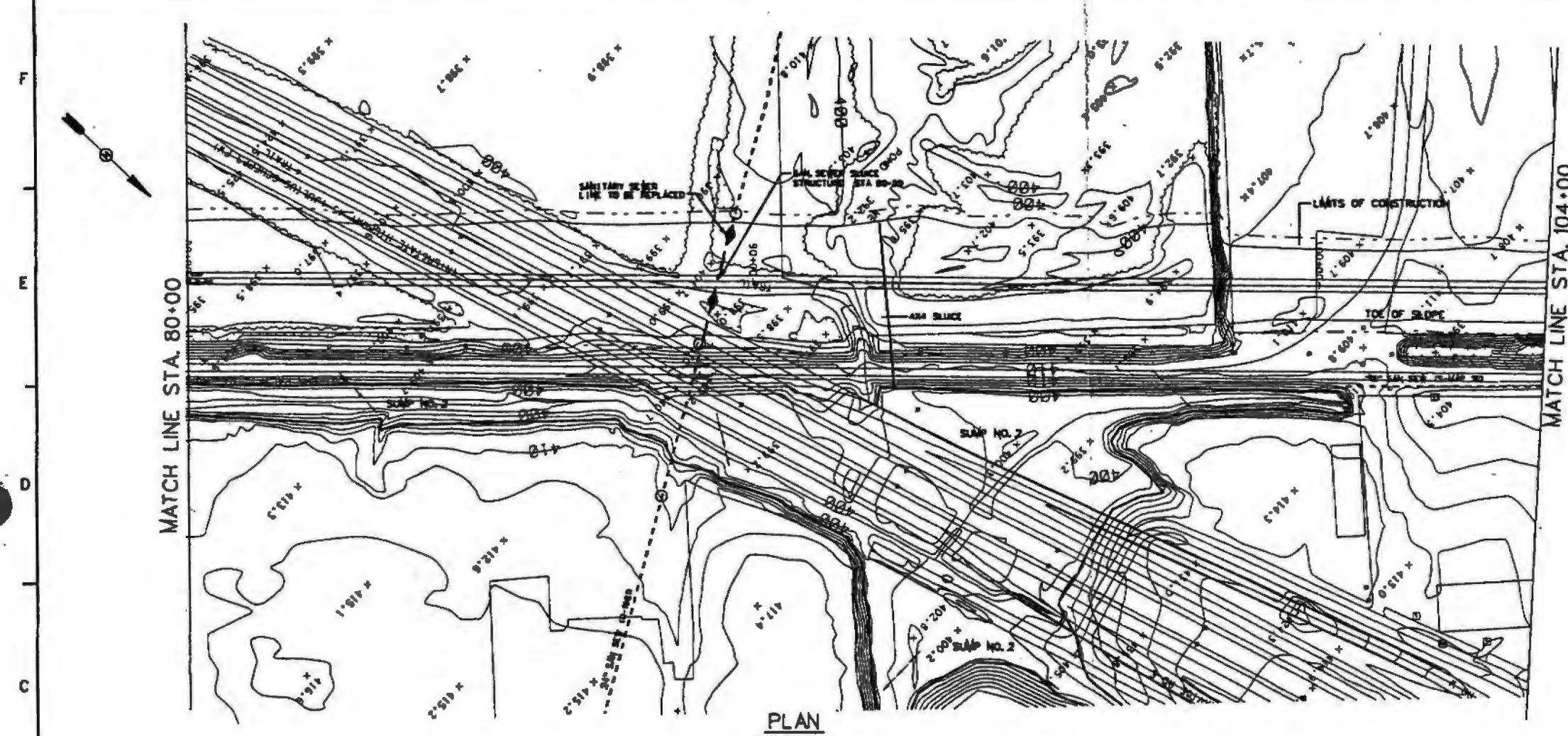
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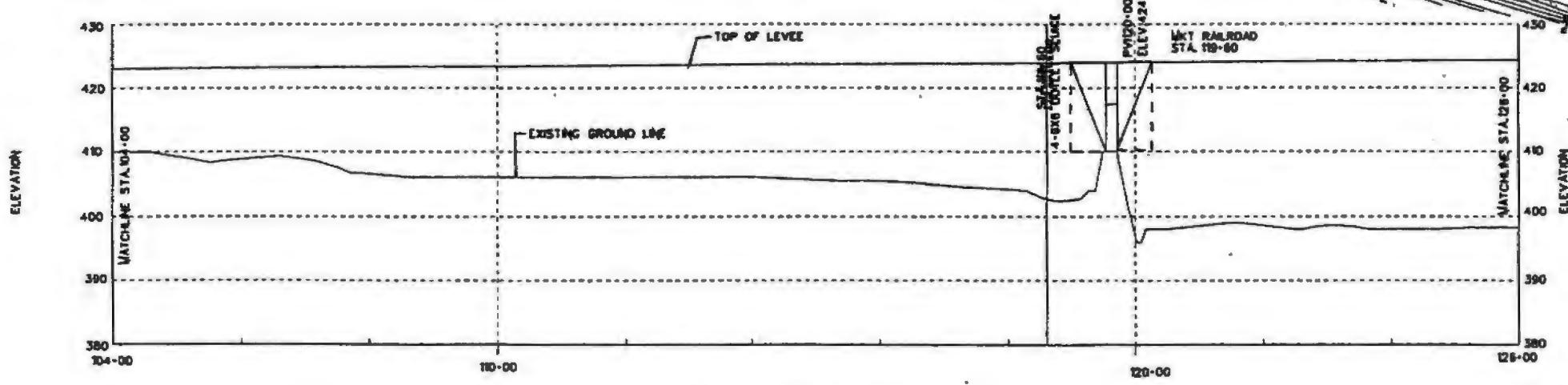
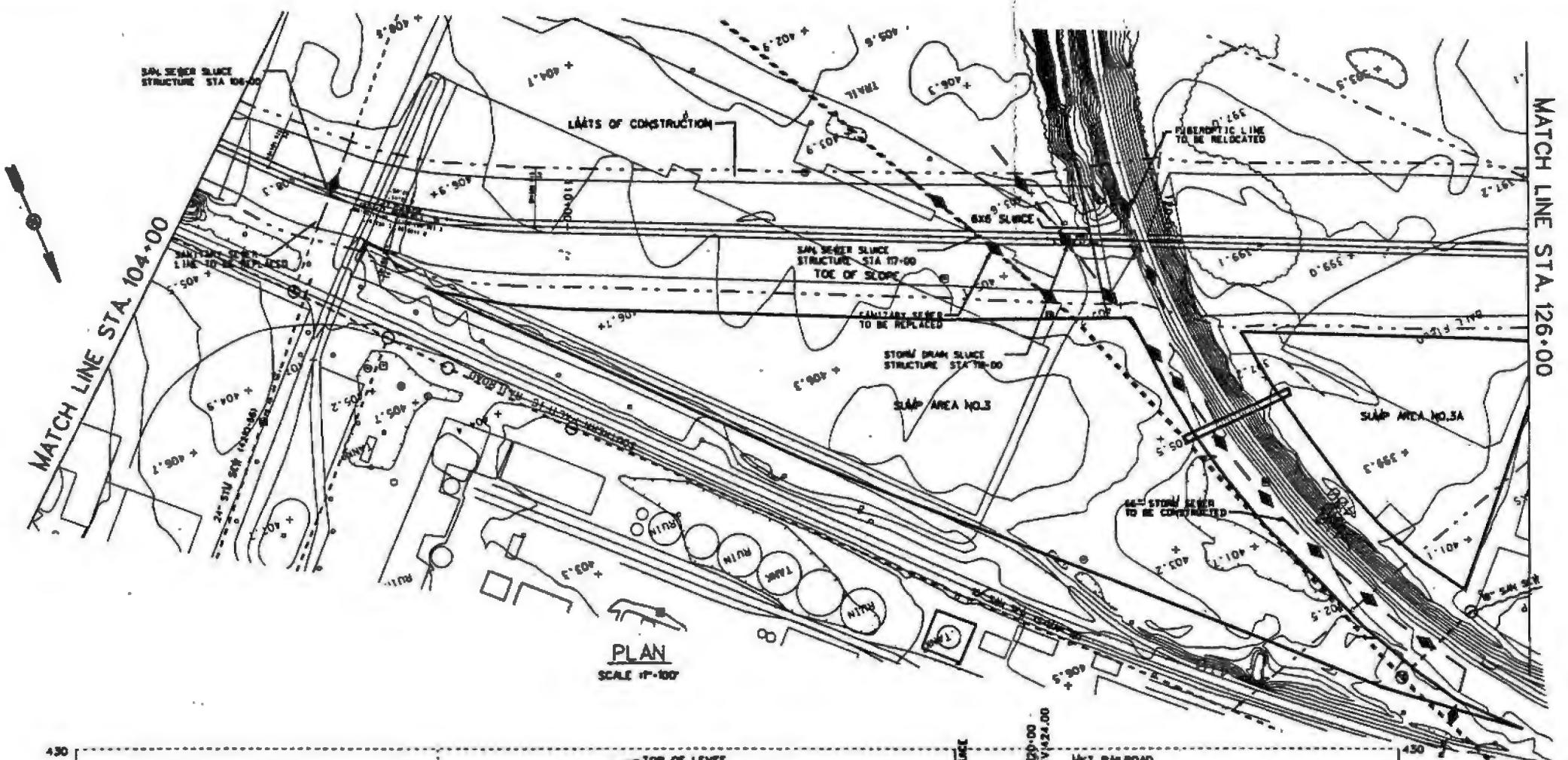
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DESIGNED BY:	DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS		
SUPERVISED BY:	GENERAL REEVALUATION REPORT LAMAR STREET LEVEE		
REVIEWED BY:	PLAN AND PROFILE (STA. 56-00 - 80-00)		
SUBMITTED BY:			
PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION		SOL. NO.	DATED:
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REMOVED BY			
P. SMITH			
REMOVED BY			
J. SMITH			
REMOVED BY			
A. COOPER			
REMOVED BY			
			DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS <b>GENERAL REEVALUATION REPORT</b>
			<b>LAMAR STREET LEVEE</b>
			<b>PLAN AND PROFILE</b>
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LAMAR STREET PROFILE

**DISTANCE IN STATIONS**

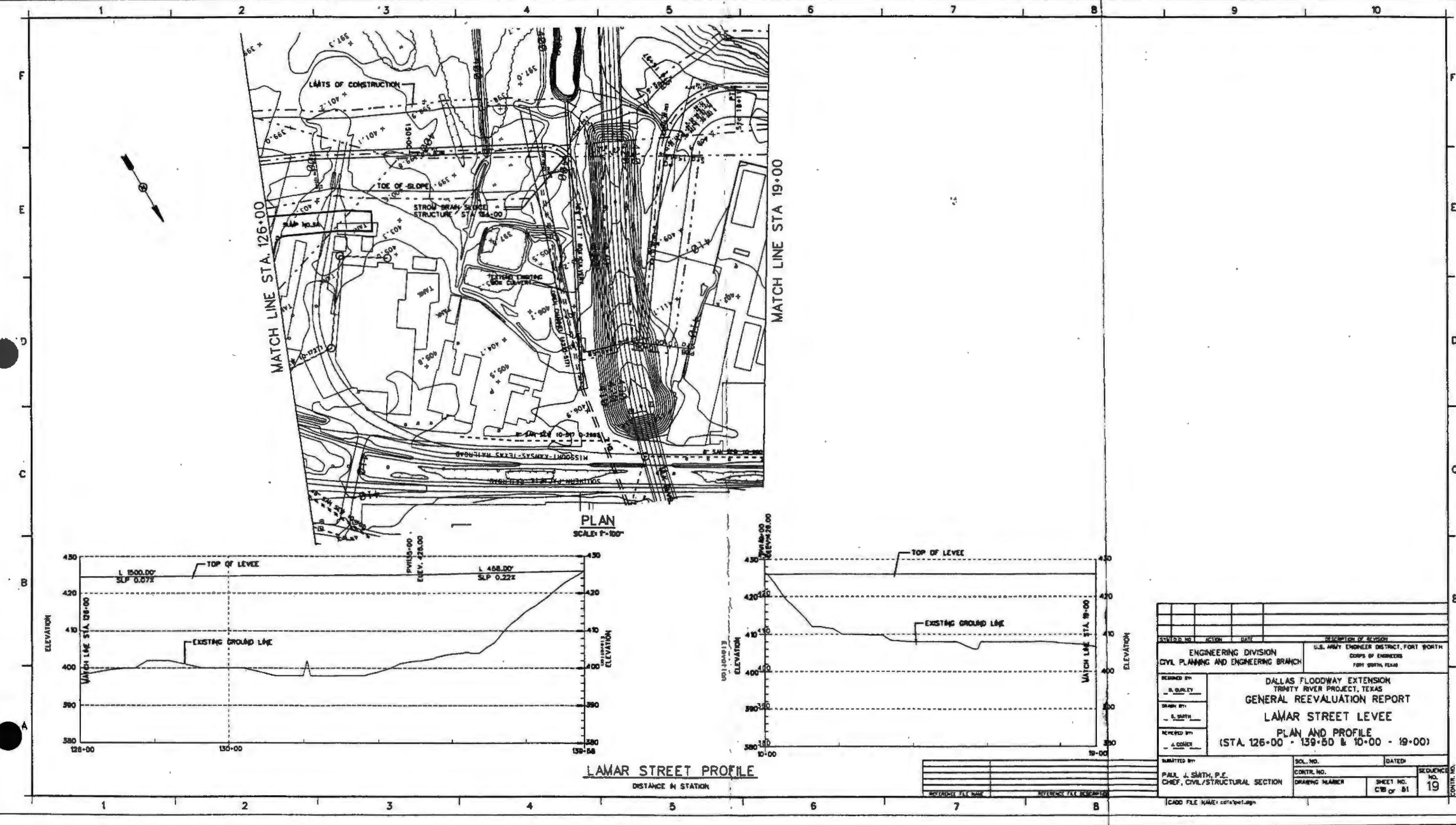
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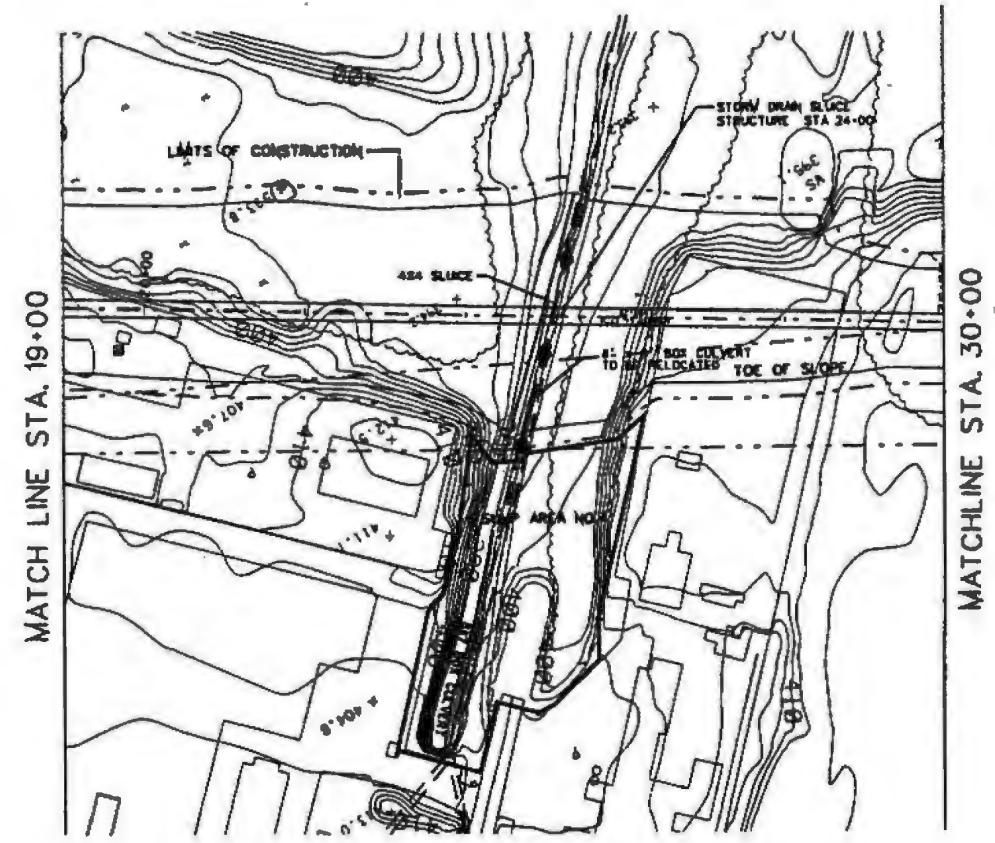
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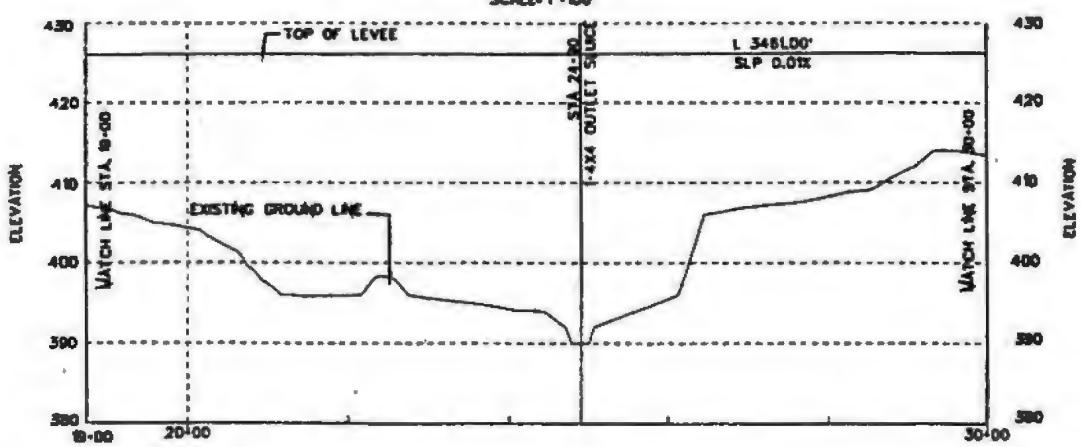
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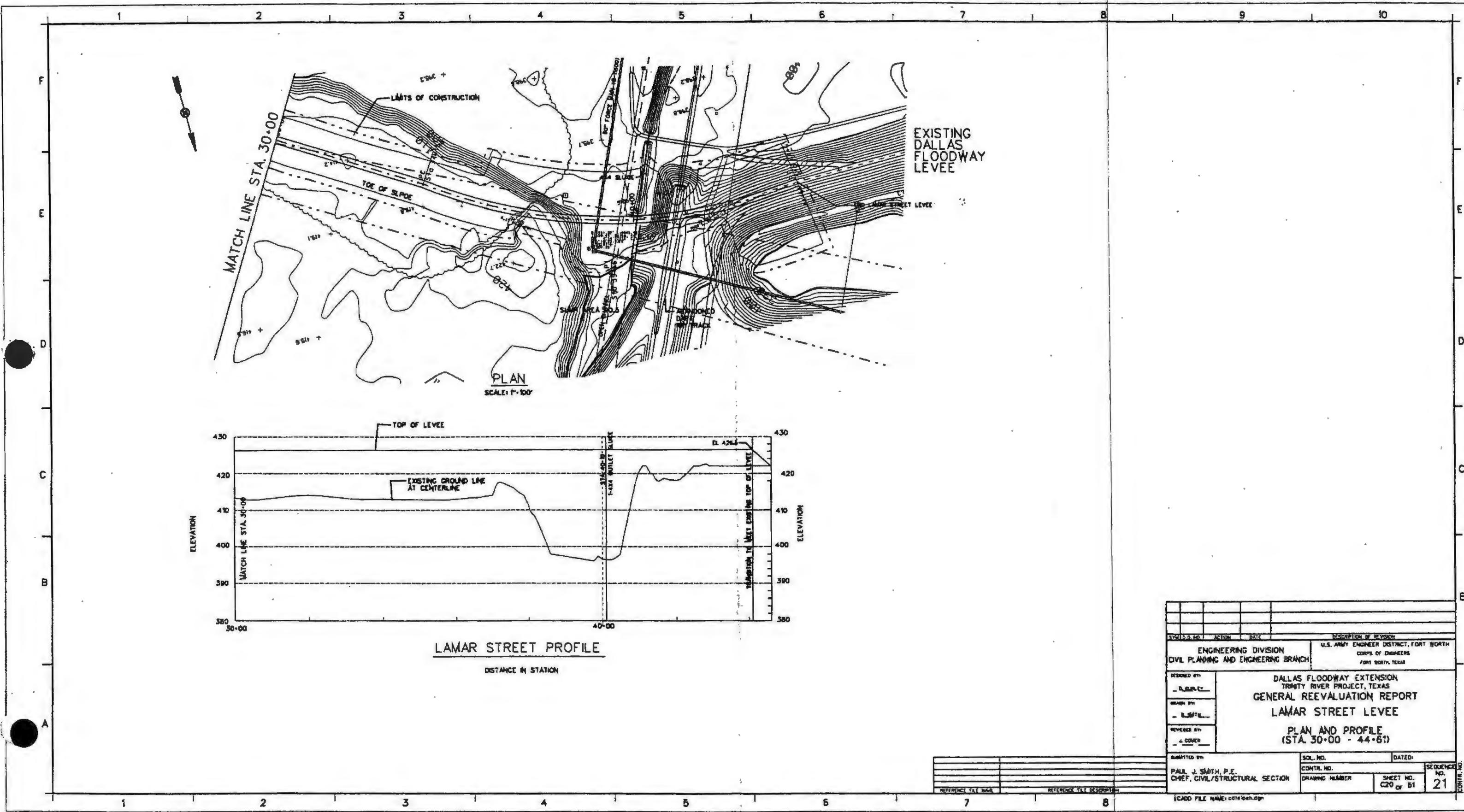
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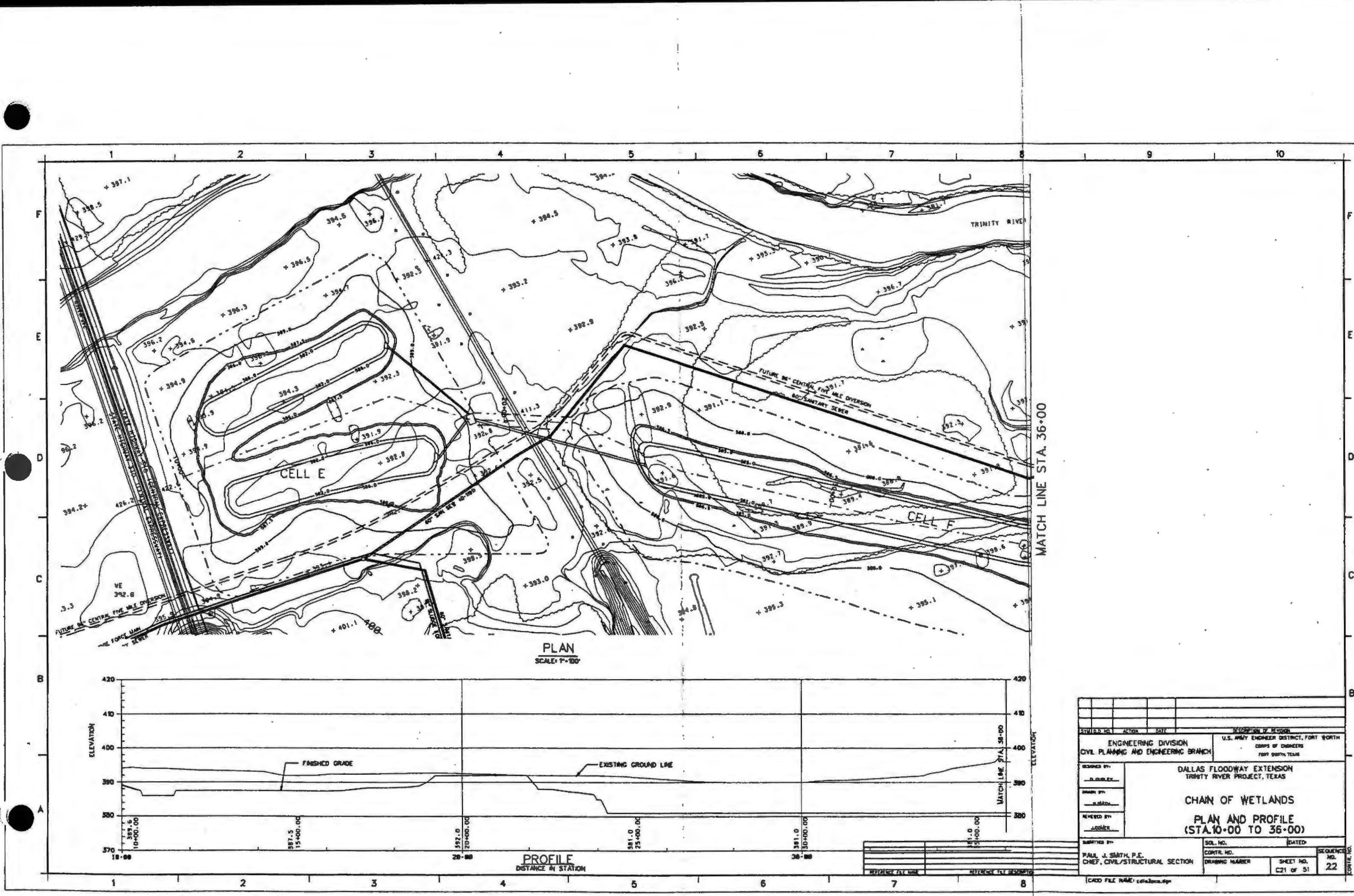


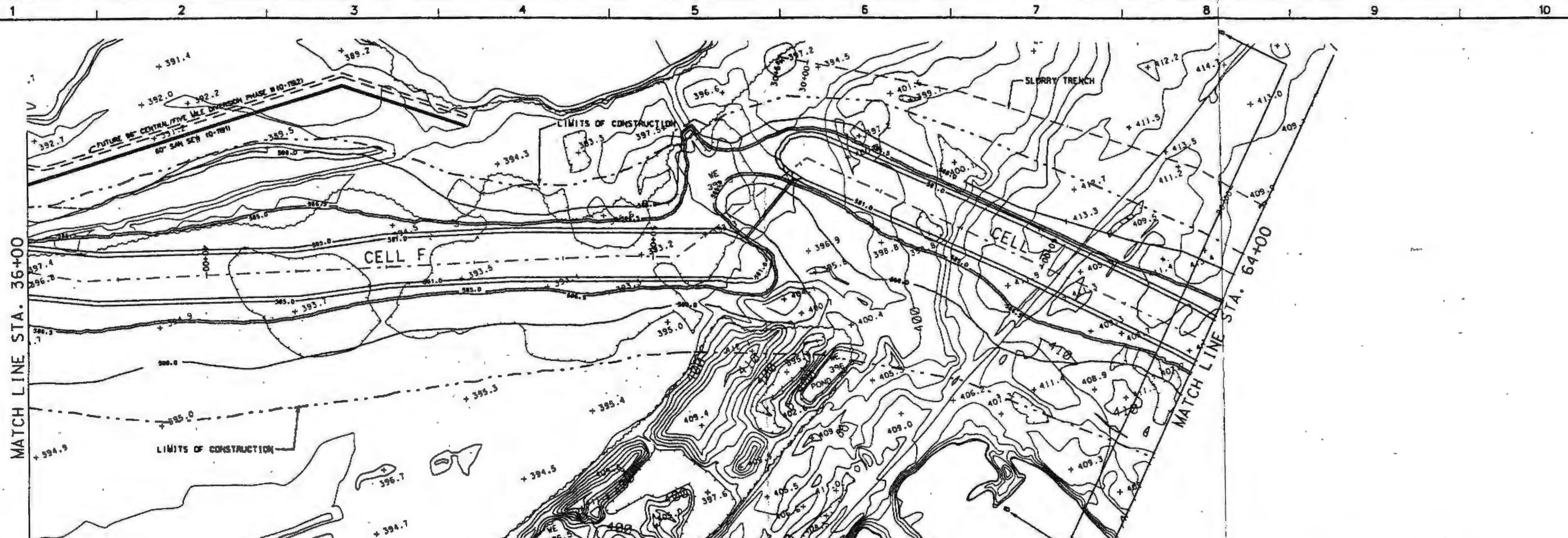
## LAMAR STREET PROFILE

**DISTANCE IN STATION**

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DESCRIPTION OF REVISION		
U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		
<p><u>ENGINEERING DIVISION</u> <u>CIVIL PLANNING AND ENGINEERING BRANCH</u></p> <p><u>D. GIBLEY</u> <u>D. SMITH</u> <u>J. COOPER</u></p> <p><u>B. SMITH</u></p> <p><u>REVIEWED BY</u> <u>J. COOPER</u></p> <p><u>SUBMITTED BY</u> <u>PAUL J. SMITH, P.E.</u> <u>CHIEF, CIVIL/STRUCTURAL SECTION</u></p> <p><u>GENERAL REEVALUATION REPORT</u> <u>DALLAS FLOODWAY EXTENSION</u> <u>TRINITY RIVER PROJECT, TEXAS</u> <u>LAMAR STREET LEVEE</u> <u>PLAN AND PROFILE</u> <u>(STA 19-00 - 30-00)</u></p>		
<p>SOL. NO. <u>DATE</u></p> <p>CONTR. NO.</p> <p>DRAWING NUMBER</p> <p>SEQUENCE NO. <u>C10 OF 61</u></p> <p>20</p>		
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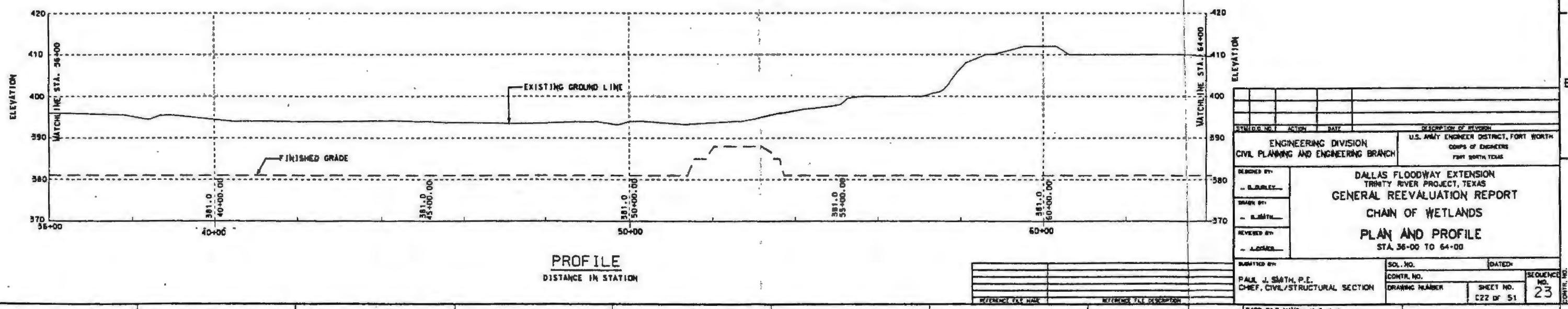






PLAN

SCALE: 1"=100'



1 1 2 1 3 1 4 1 5 1 6 1 7 1 8 1 9 1 10

F

W

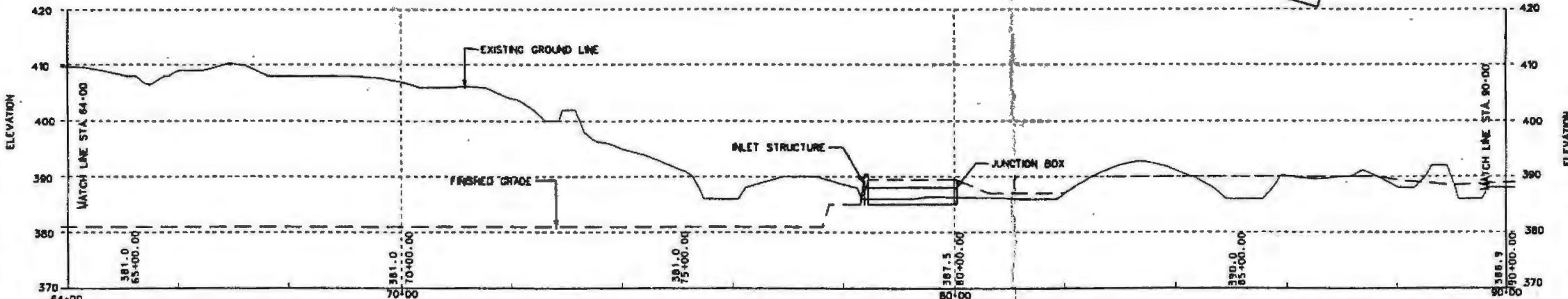
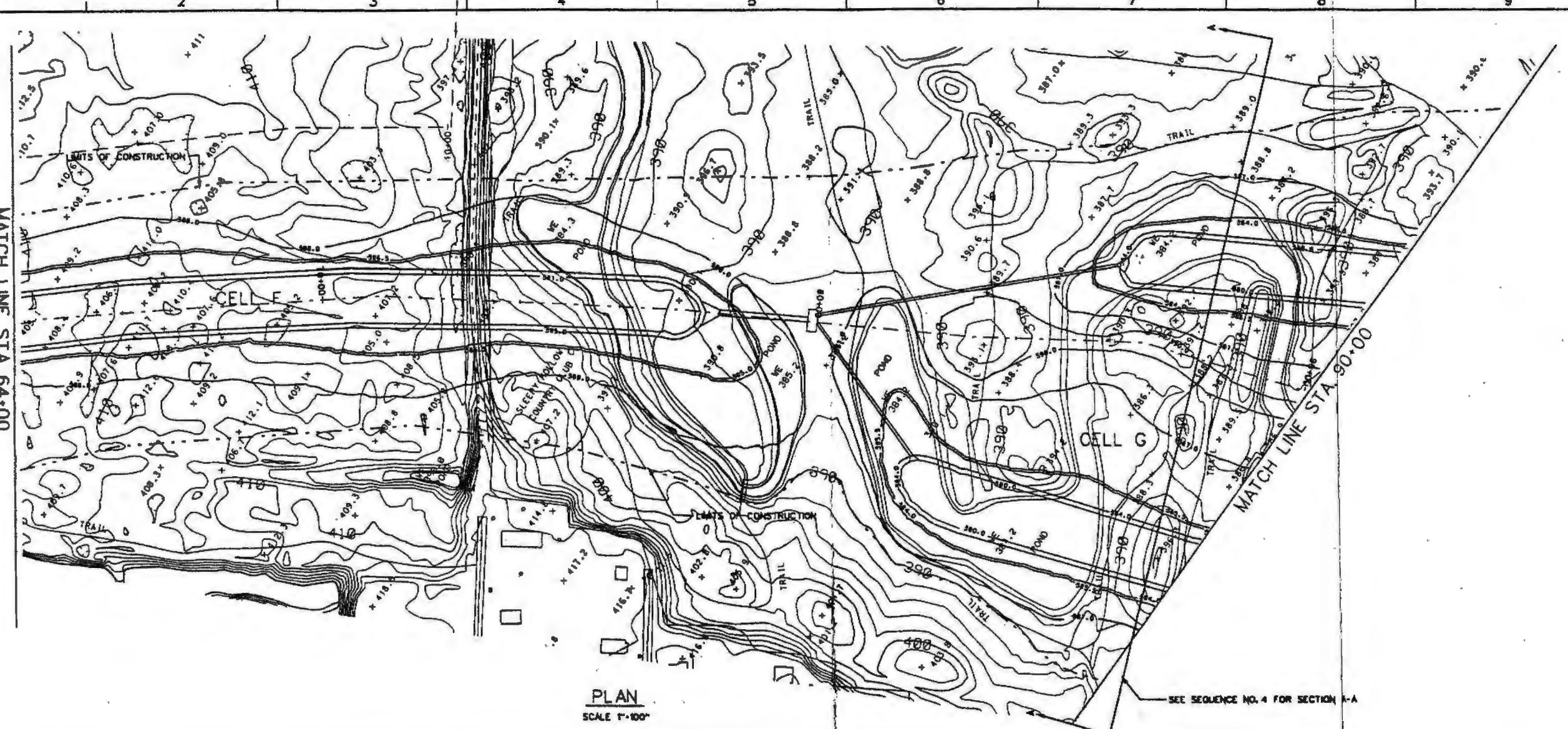
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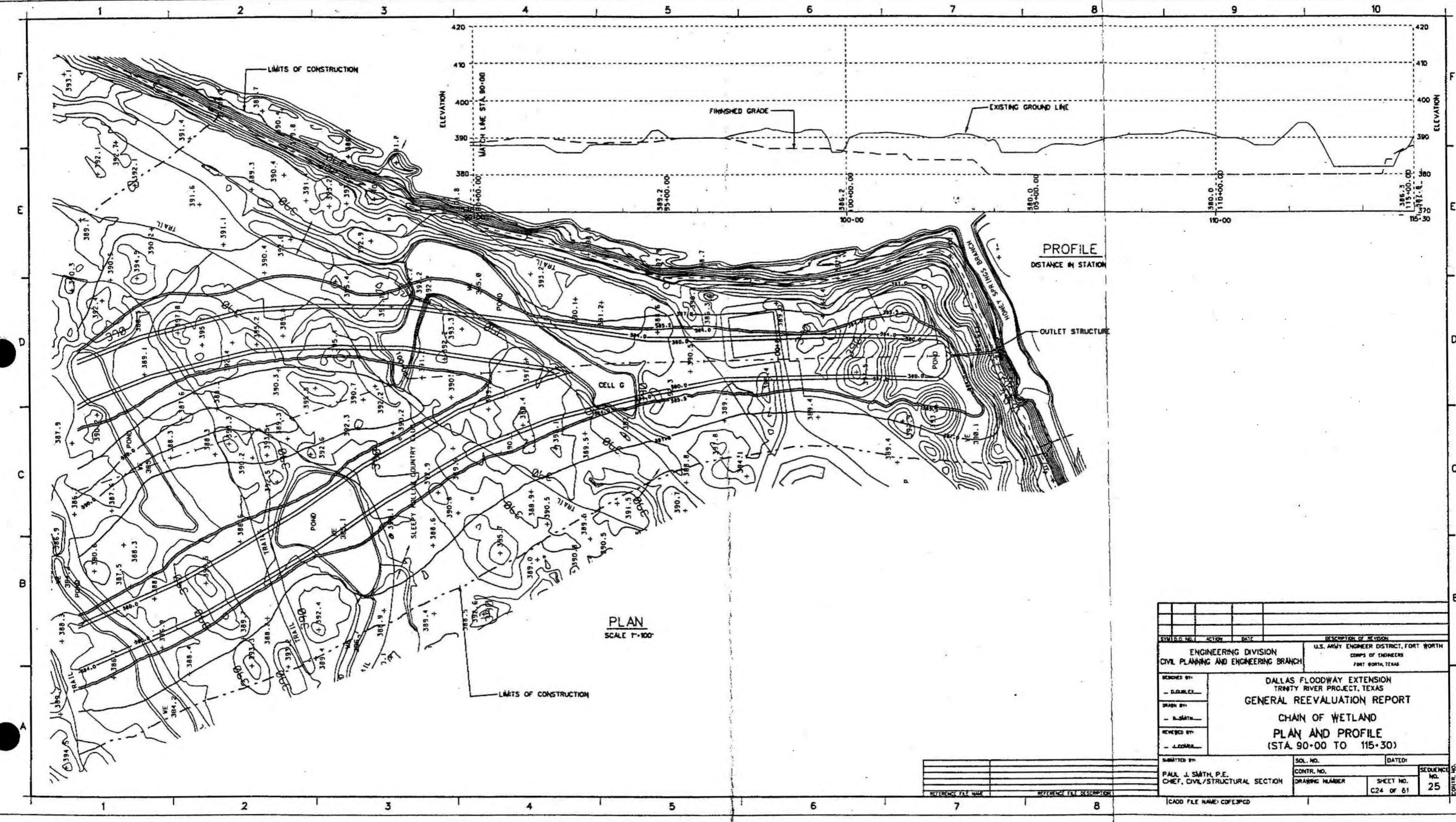
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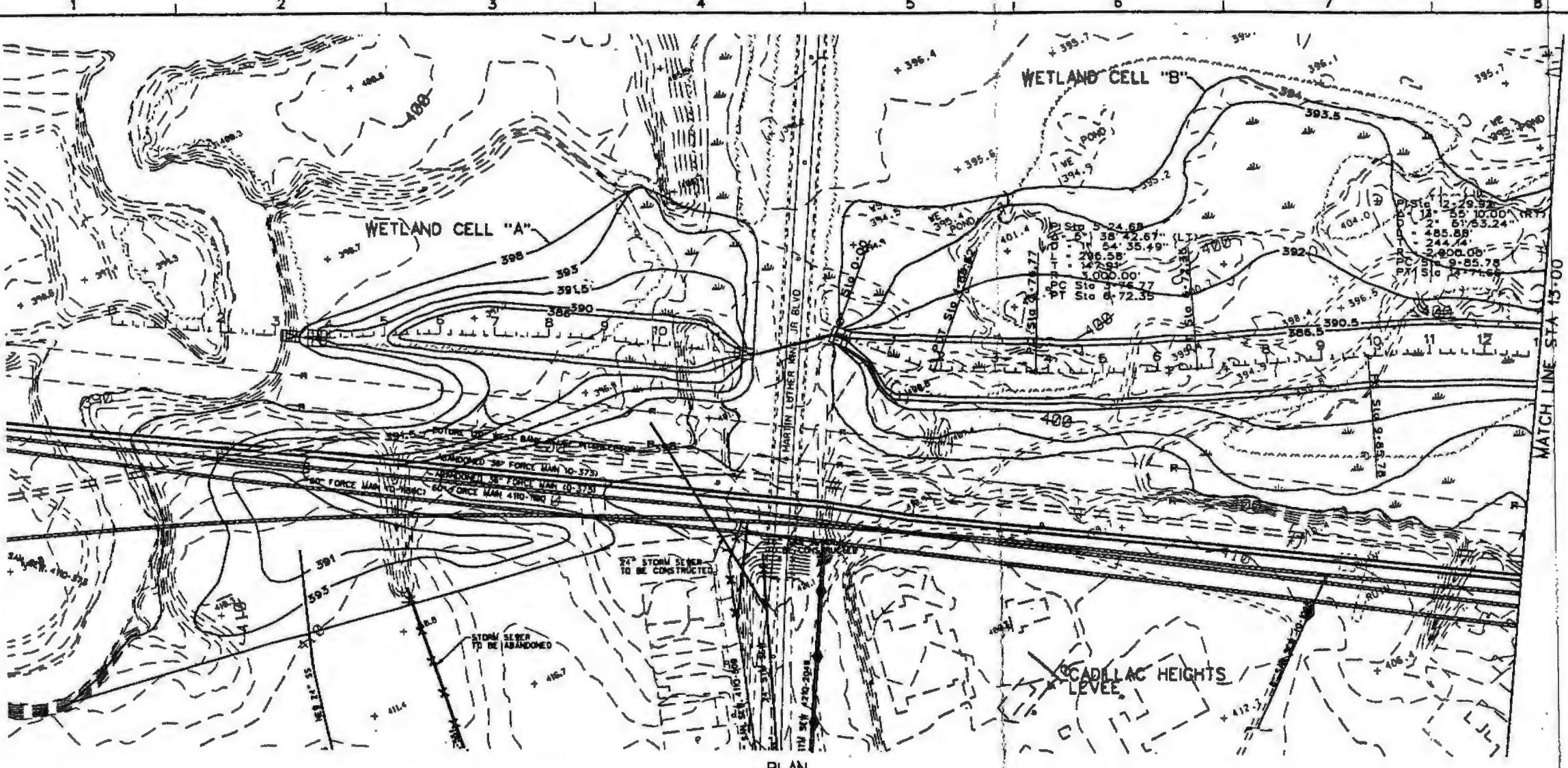
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MATCH LINE STA. 64-00

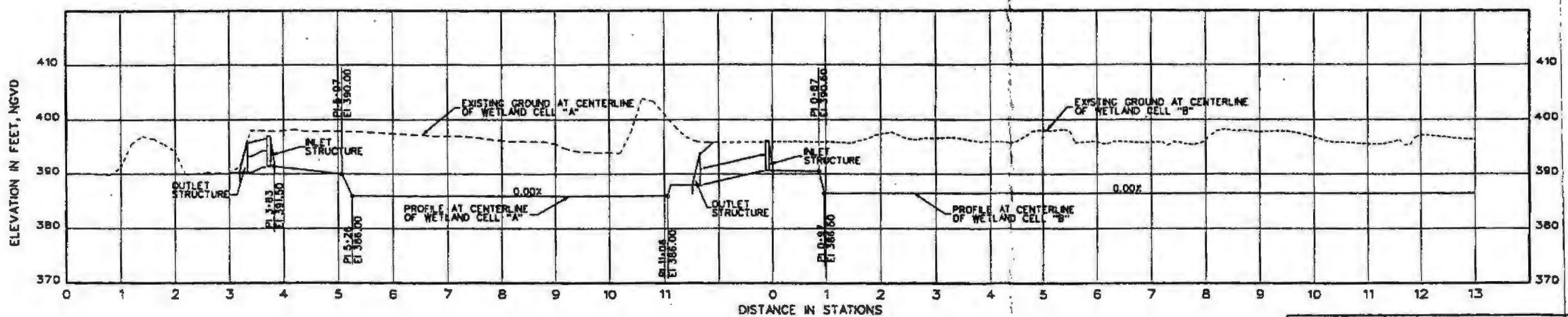


STN. NO.	ACTION	DATE	DESCRIPTION OF REVISION
			U.S. ARMY ENGINEER DISTRICT, FORT WORTH CIVIL PLANNING AND ENGINEERING BRANCH FORT WORTH, TEXAS
RECHECKED BY:	D. DOUBLET		
DRAWN BY:	D. DOUBLET		
REVIEWED BY:	L. COOK		
SUBMITTED BY:	PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION		
SOL. NO.	CONTR. NO.	DATED:	
SEQUENCE NO.	DRAWING NUMBER		
CADD FILE NAME: COPE3PCC		SHEET NO. C23 OF B1	24





PLAN



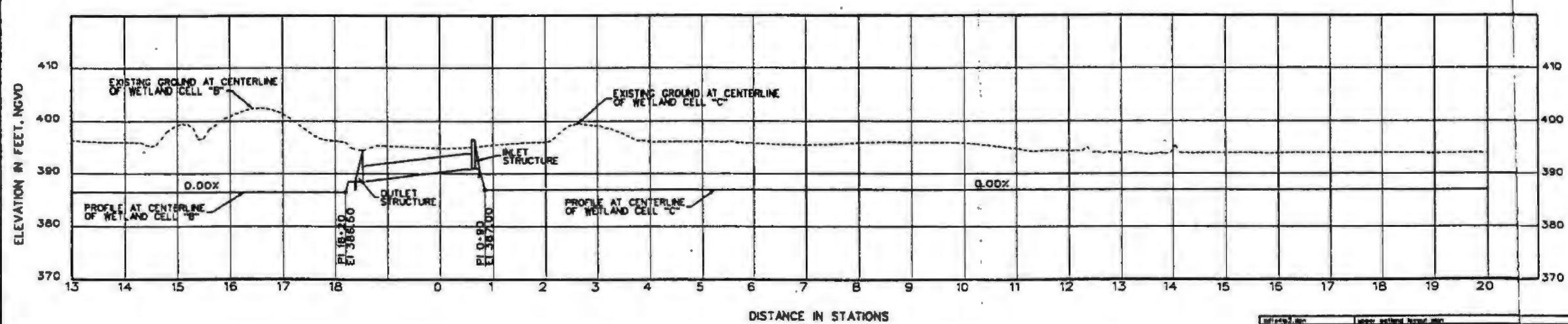
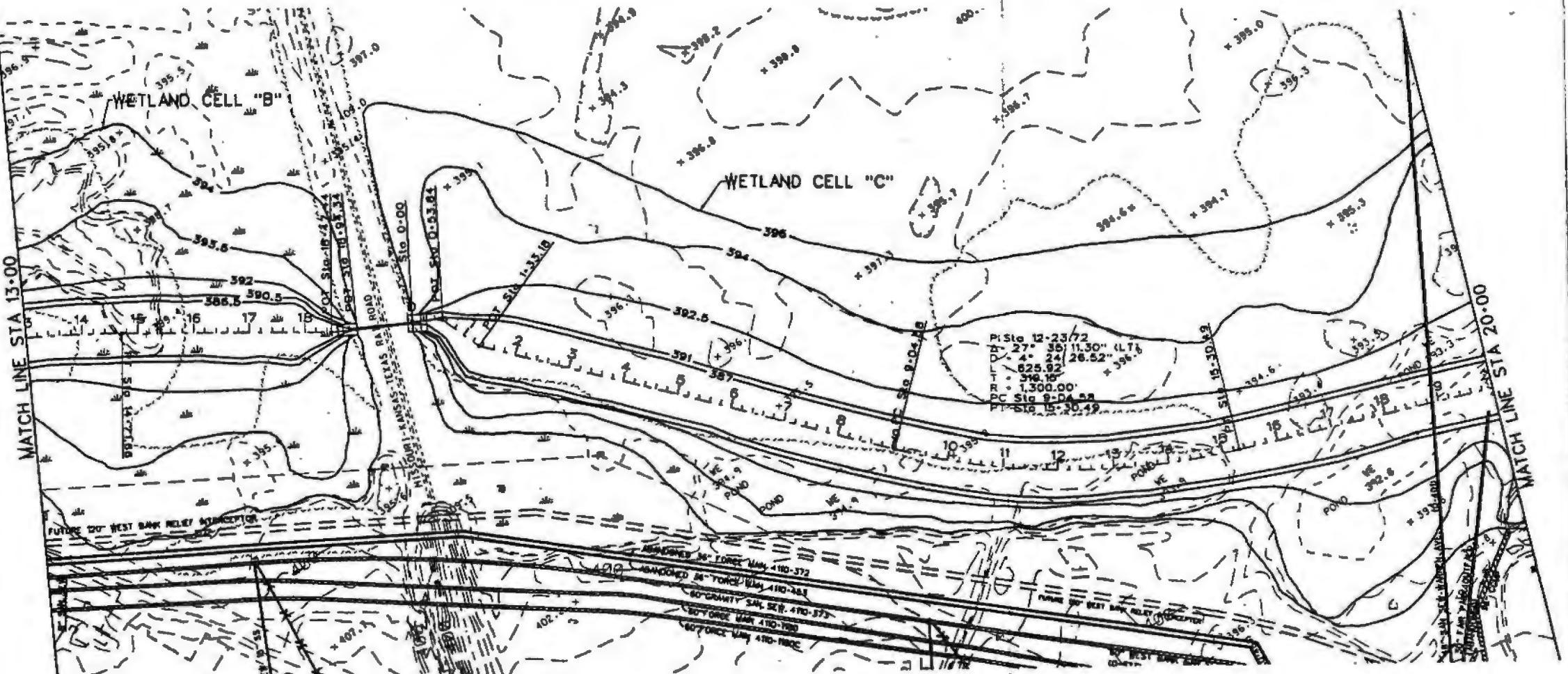
PROFILE

100 200  
SCALE IN FEET

STN D.D. NO.	ACTION	DATE	DESCRIPTION OF REVISION	
			U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH TEXAS	
DESIGNED BY	ENGINEERING DIVISION CIVIL PLANNING AND ENGINEERING BRANCH		DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS GENERAL REEVALUATION REPORT	
DRAWN BY			PLAN AND PROFILE - UPPER CHAIN	
REVIEWED BY			WETLAND A - STA 0-00 TO 11-87-98 WETLAND B - STA 0-00 TO 13-00	
SUBMITTED BY			SUBMITTED BY	
PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION		SOL. NO.		DATED
		CONTR. NO.		
		DRAWING NUMBER		SEQUENCE NO.
				NO. 26

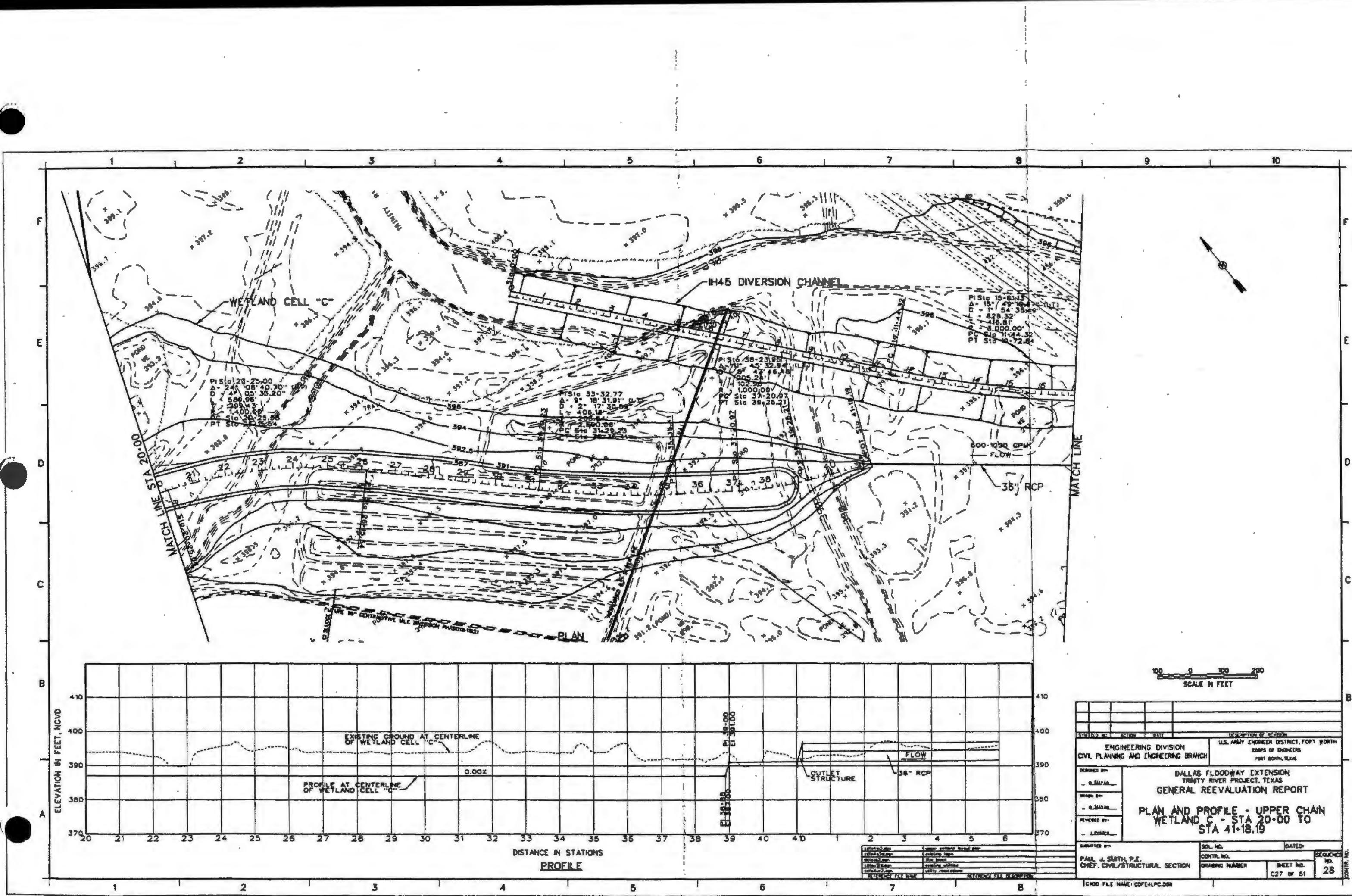
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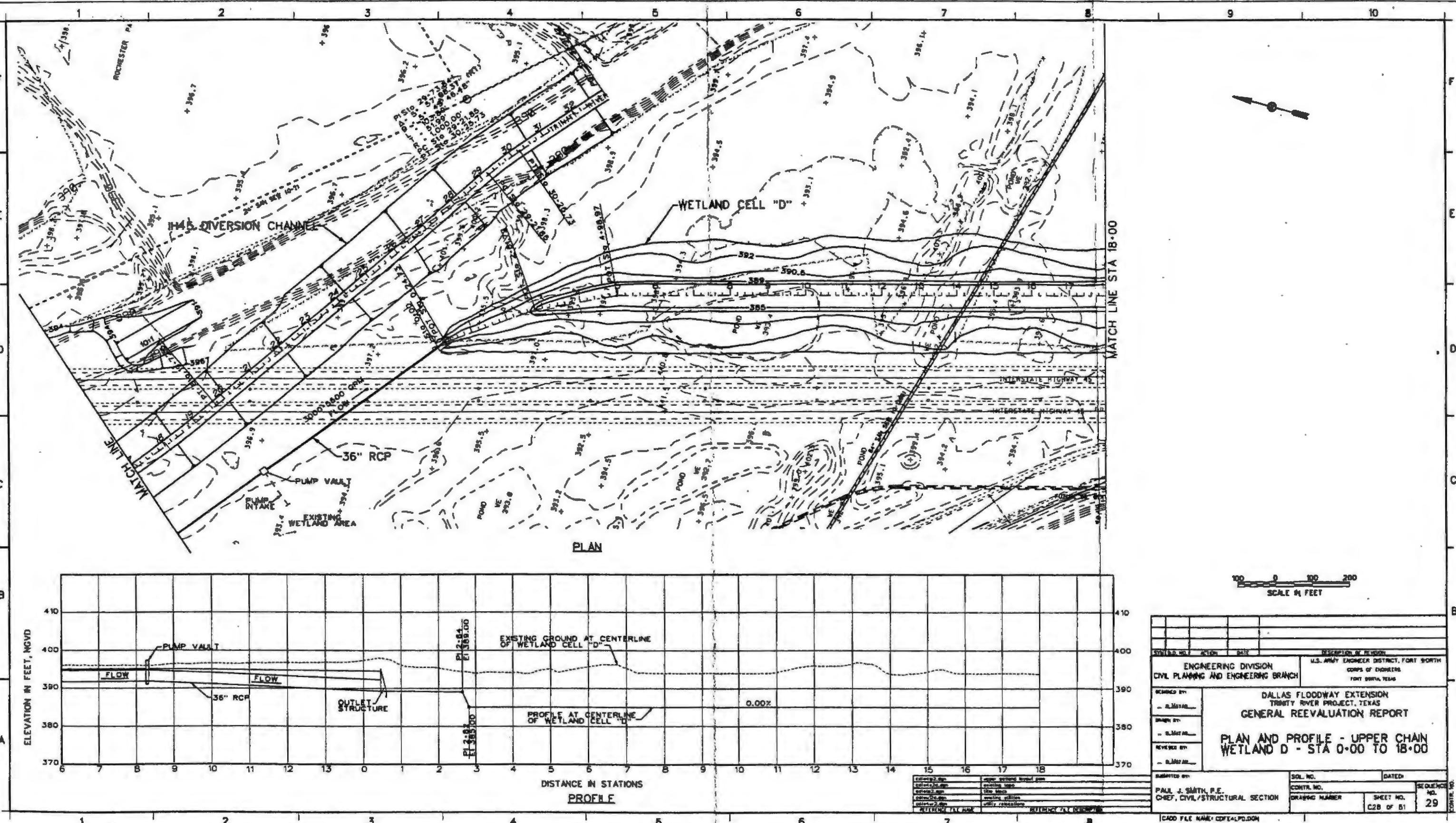
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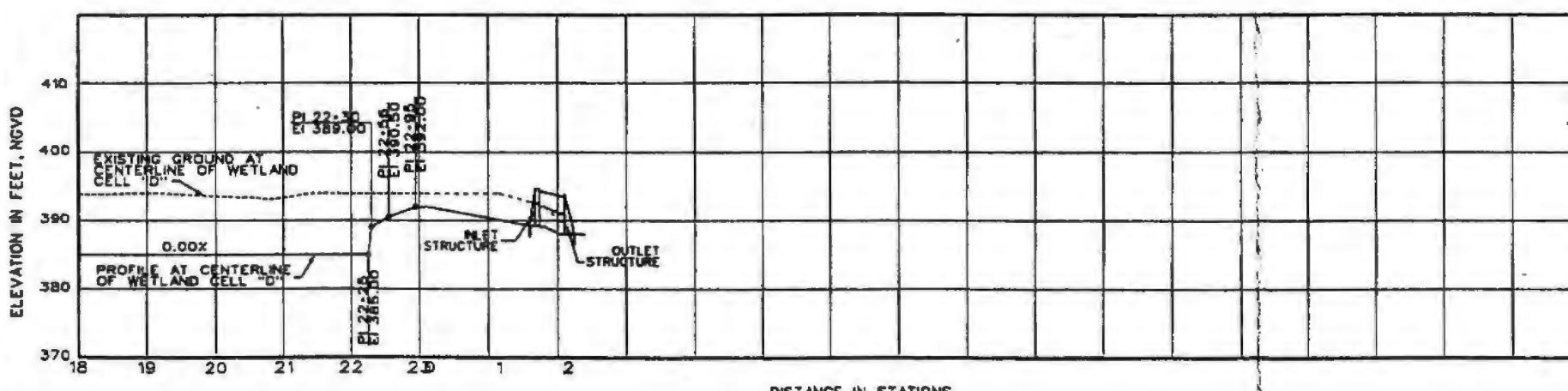
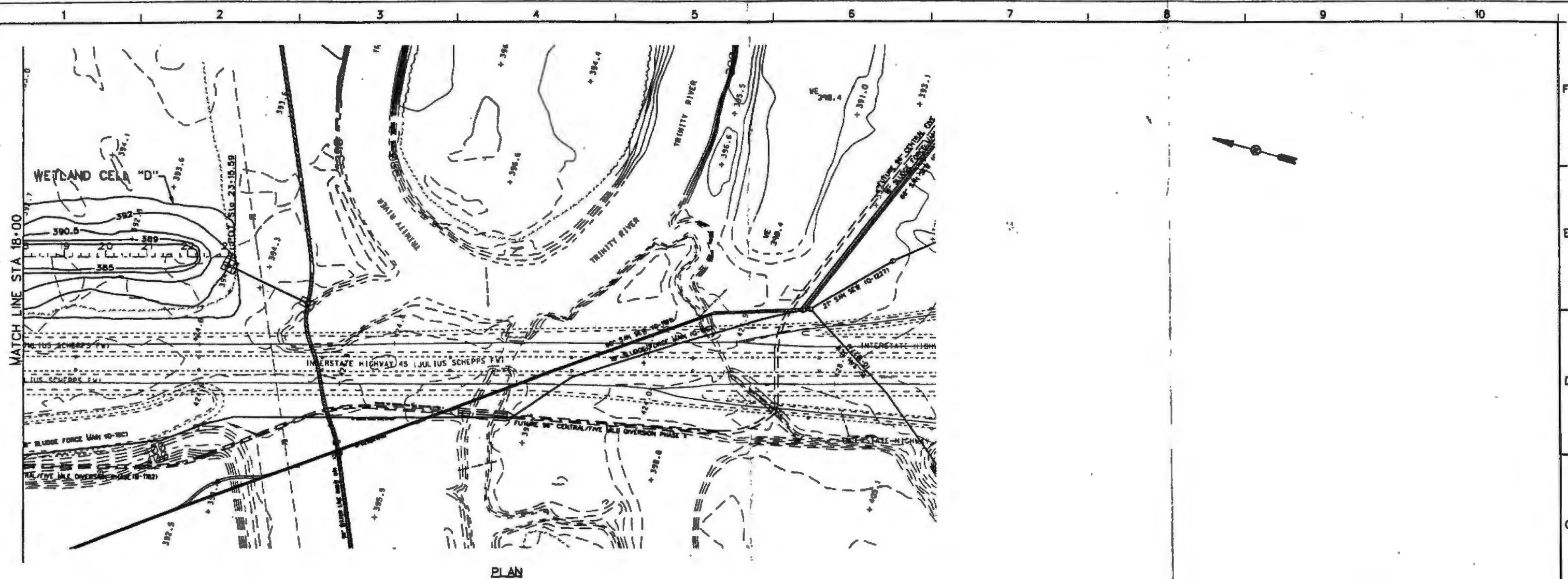


REF ID	DESCRIPTION
STRUCTURE	inlet structure
STRUCTURE	outlet structure
STRUCTURE	outlet structure
STRUCTURE	outlet structure
STRUCTURE	outlet structure

STUDIO NO.	ACTION	DATE	DESCRIPTION OF REPORT
			U.S. ARMY ENGINEER DISTRICT, FORT WORTH CIVIL PLANNING AND ENGINEERING BRANCH
RECORDED BY	R. SMITH		GENERAL REEVALUATION REPORT
DRAWN BY	R. SMITH		DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS
REVIEWED BY	J. SMITH		PLAN AND PROFILE - UPPER CHAIN
			WETLAND B - STA 13.00 TO 18.94.34
			WETLAND C - STA 0.00 TO STA 20.00
SUBMITTED BY	SOL. NO.	DATED	
PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION			
CONTR. NO.	DRAWING NUMBER	SHEET NO.	SEQUENCE NO.
		C26 of 51	27





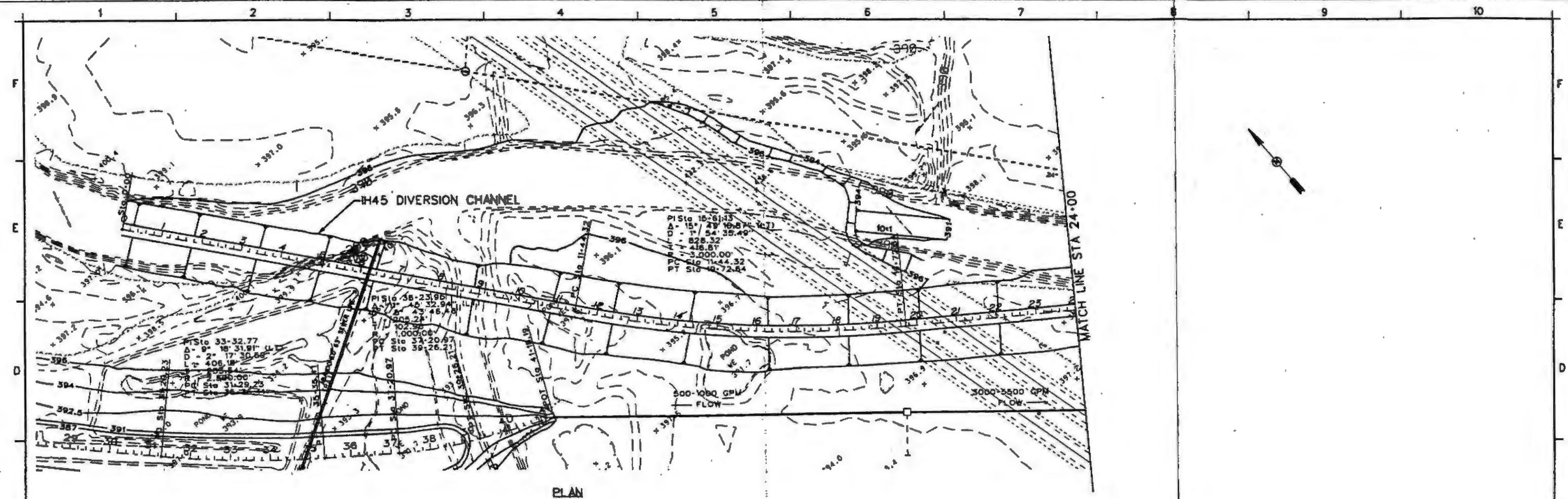


CREATED BY	LAST UPDATED BY
PAUL J. SMITH, P.E.	PAUL J. SMITH, P.E.
CHEF, CIVIL/STRUCTURAL SECTION	CHEF, CIVIL/STRUCTURAL SECTION
SOL. NO.	DATED:
CONTR. NO.	SEQUENCE NO.
DRAWING NUMBER	SHEET NO.
	C29 OF 31

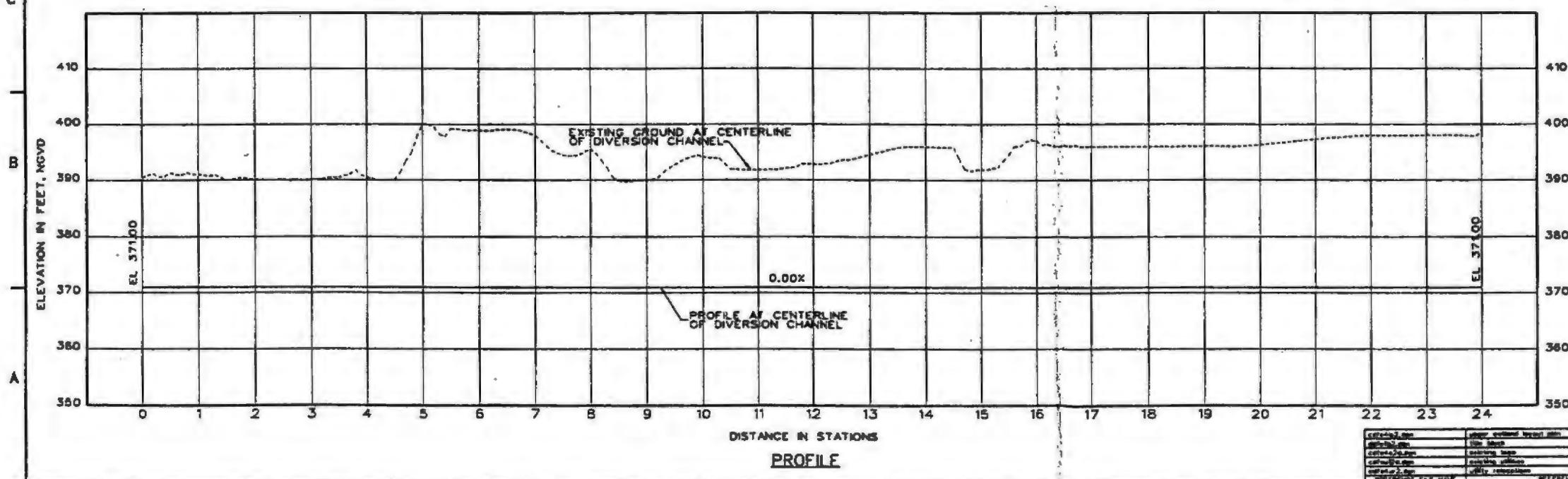
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SCALE IN FEET

SPM D.D. NO.	ACTION	DATE	DESCRIPTION OF REVISION
ENGINEERING DIVISION CIVIL PLANNING AND ENGINEERING BRANCH			U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH TEAM
DESIGNED BY:	- J. MATAR		DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS
DRAINED BY:	- J. MATAR		GENERAL REEVALUATION REPORT
REVISED BY:	- J. CONOR		PLAN AND PROFILE - UPPER CHAIN WETLAND D - STA 18.00 TO 23+15.59
SUPERVISED BY:			



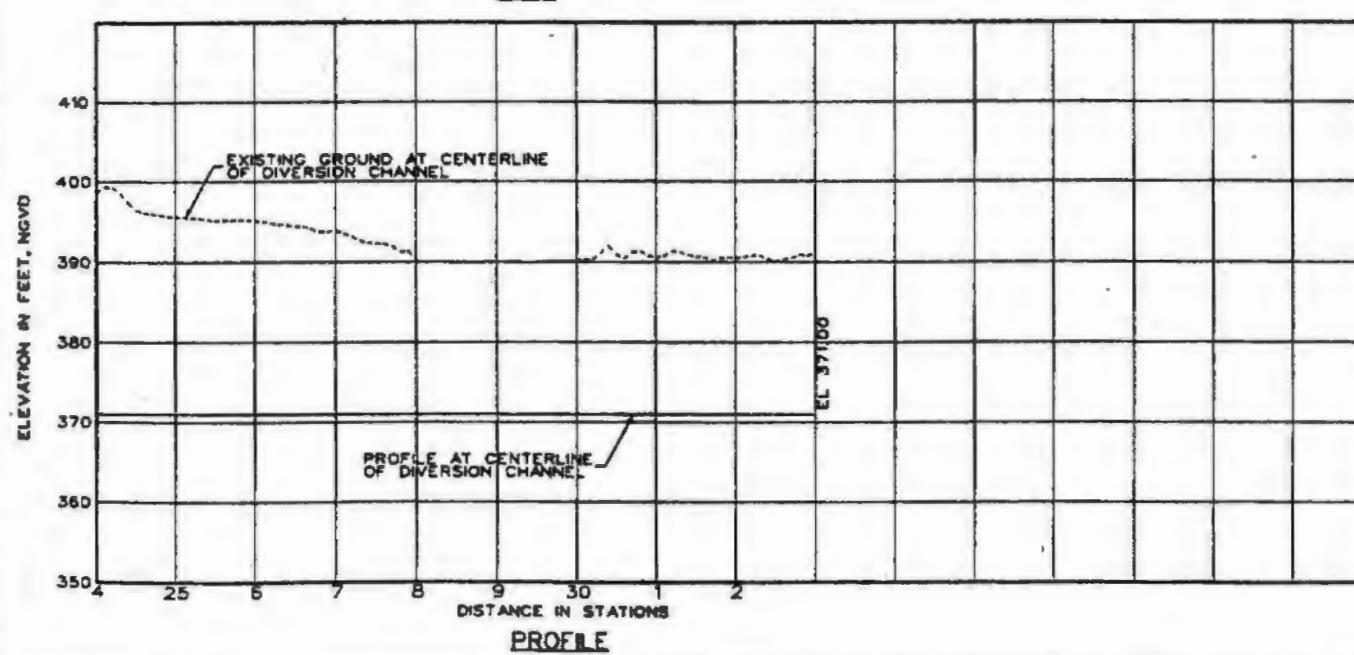
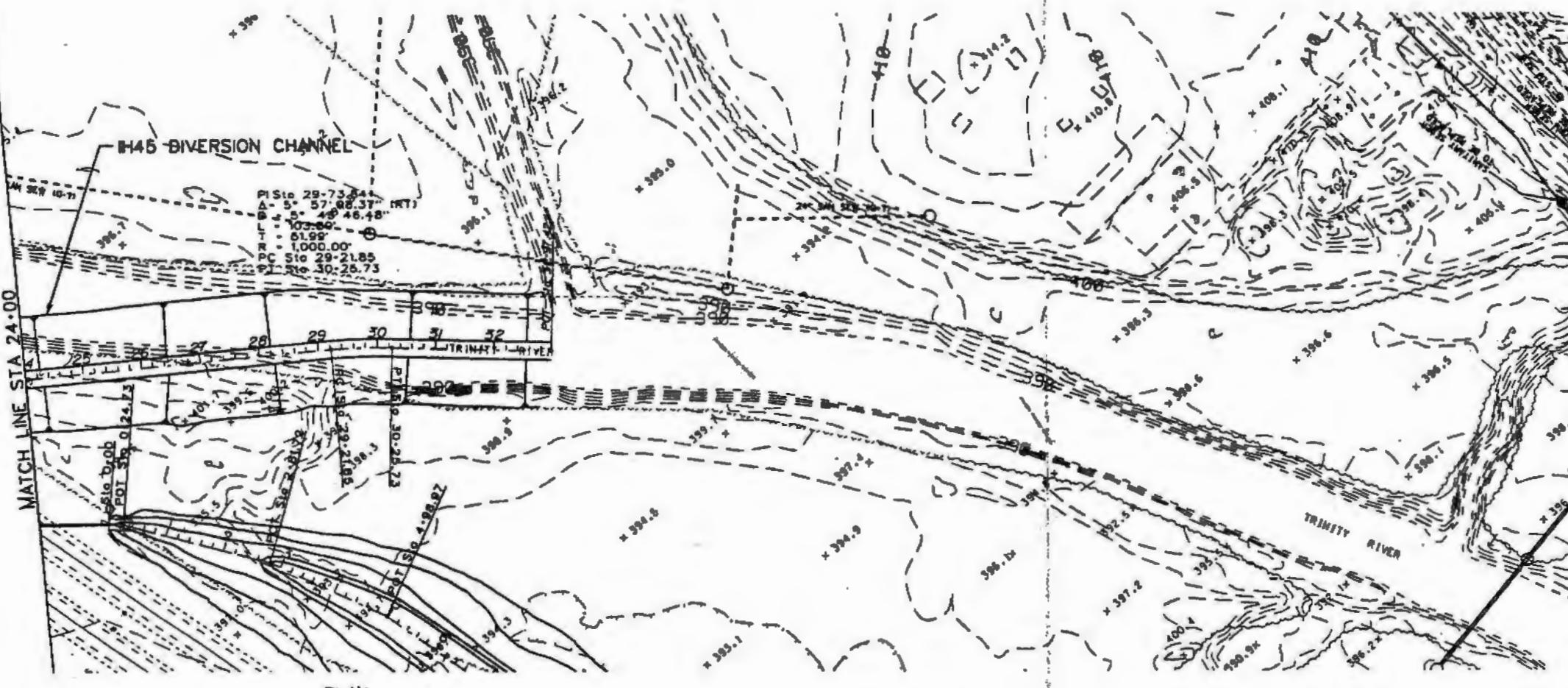
PLAN



PROFILE

STATION NO.	ACTION	DATE	DESCRIPTION OF REVISION
			U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DESIGNED BY:			
P. NAME			
DESIGN BY:			
P. NAME			
REVERSED BY:			
A. CODE			
SUPERVISED BY:			
			DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS GENERAL REEVALUATION REPORT
			IH 45 DIVERSION CHANNEL PLAN AND PROFILE STA 0-00 TO STA 24-00
SOL. NO.	DATED:		
PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION			
CONTR. NO.			
SEQUENCE NO.			
DRAWING NUMBER			
SHEET NO.			
CADD FILE NAME: CDEPUDJCH			31

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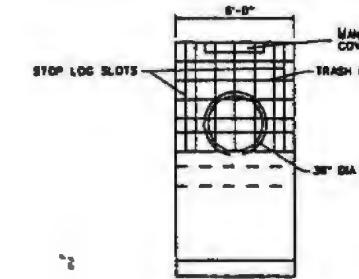
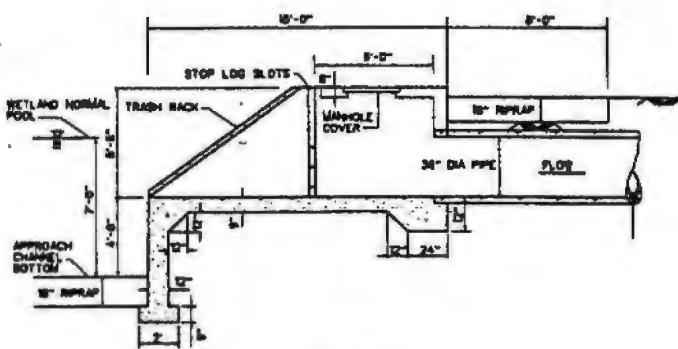


100 0 100 200  
SCALE IN FEET

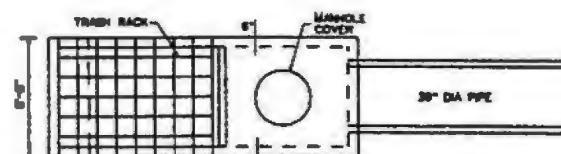
existing soil	upper yellow loamy sand
existing soil	loamy sand
existing soil	existing loam
existing soil	existing silty loam
existing soil	loam fine
existing soil	silty loam
existing soil	loamy sand

PAUL J. SMITH, P.E.  
CHIEF, CIVIL/STRUCTURAL SECTION

STUD NO.	ACTION	DATE	DESCRIPTION OF REPORT
ENGINEERING DIVISION CIVIL PLANNING AND ENGINEERING BRANCH			U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT DODGE, TEXAS
DESIGNED BY	- J. MAYAL		DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS
DRAWN BY	- J. MAYAL		GENERAL REEVALUATION REPORT
REVISED BY	- J. MAYAL		IH 45 DIVERSION CHANNEL PLAN AND PROFILE STA 24.00 TO STA 32.97.42
SUBMITTED BY			SOIL NO. DATED
CONT. NO.			SEQUENCE NO.
DRAWING NUMBER			FILE NO.
CADD FILE NAME: COFESP.DWG			NO. 32



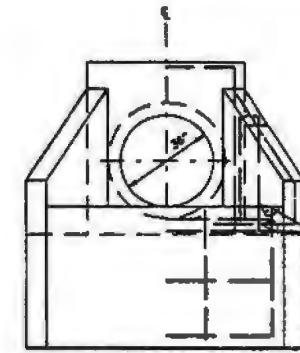
FRONT ELEVATION



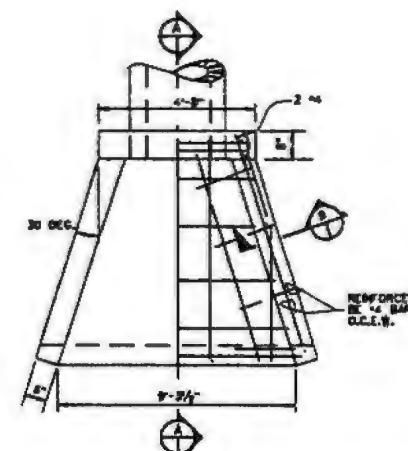
PLAN

**INLET STRUCTURE**

1" = 4'



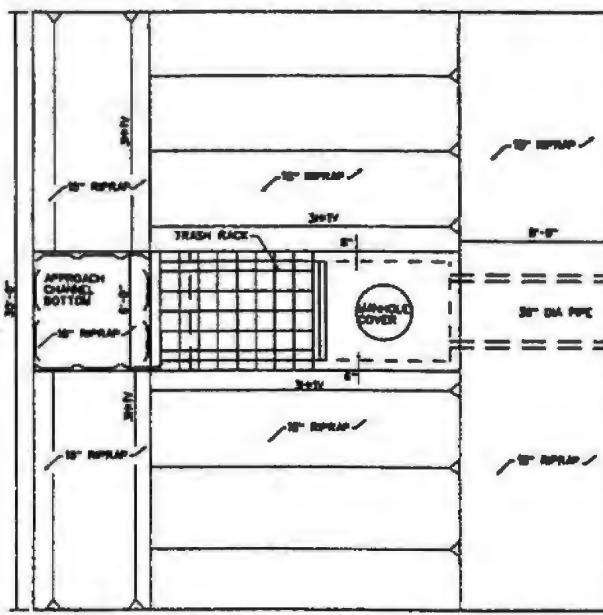
ELEVATION



PLAN

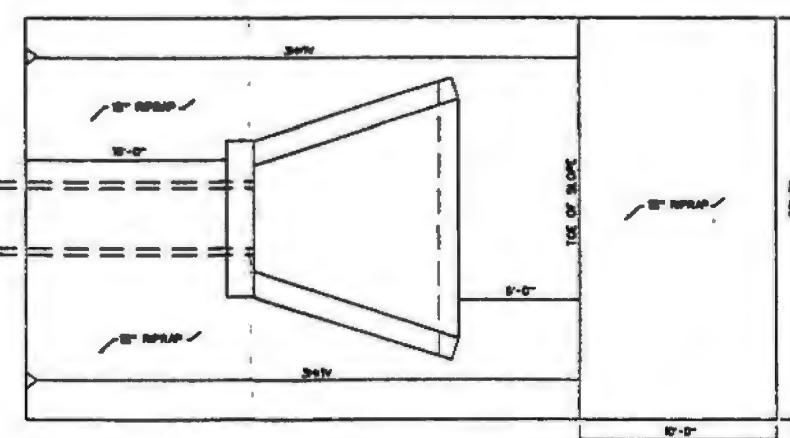
**OUTLET STRUCTURE  
TYPE B CONCRETE HEADWALL**

NOT TO SCALE

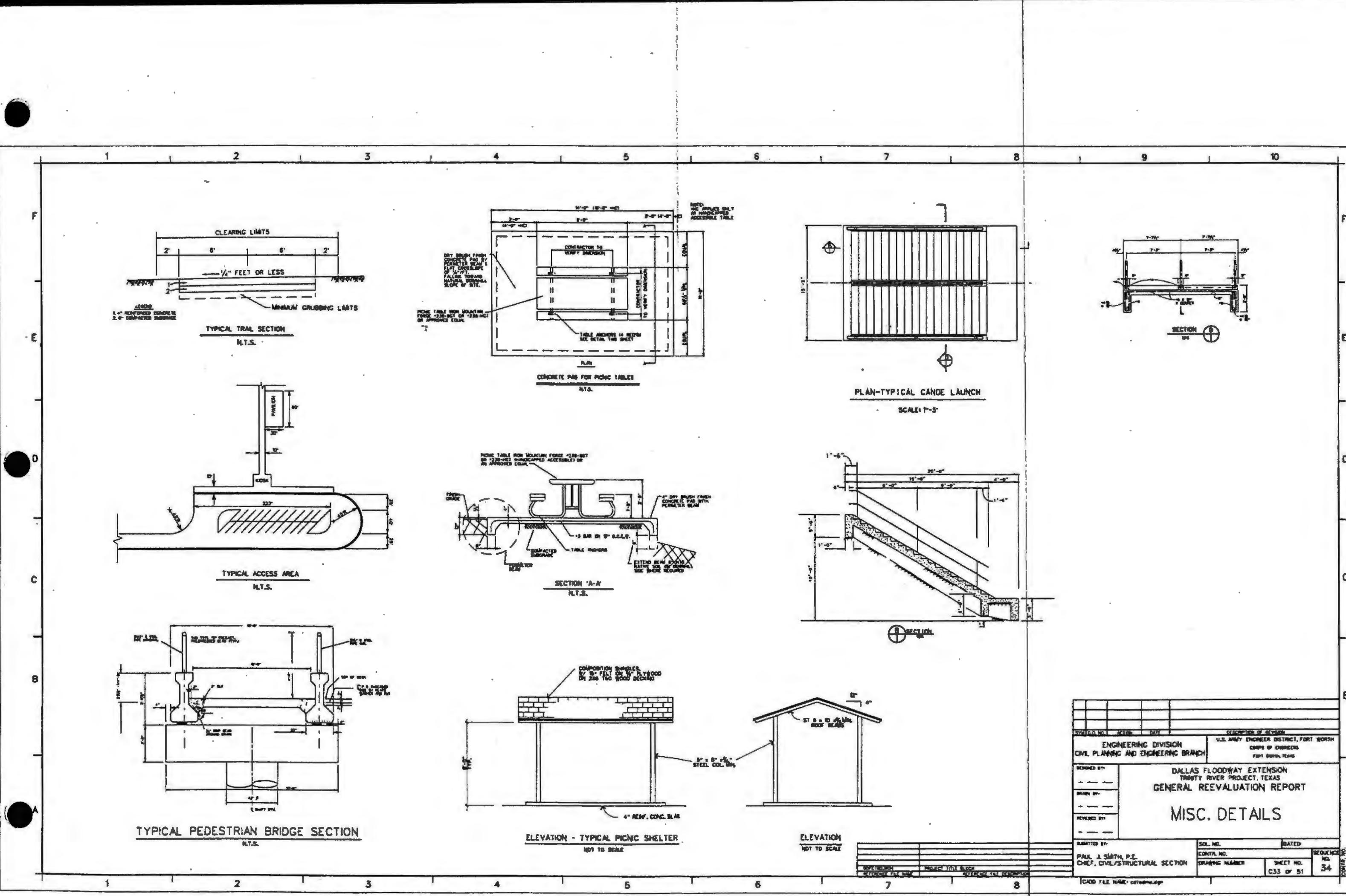


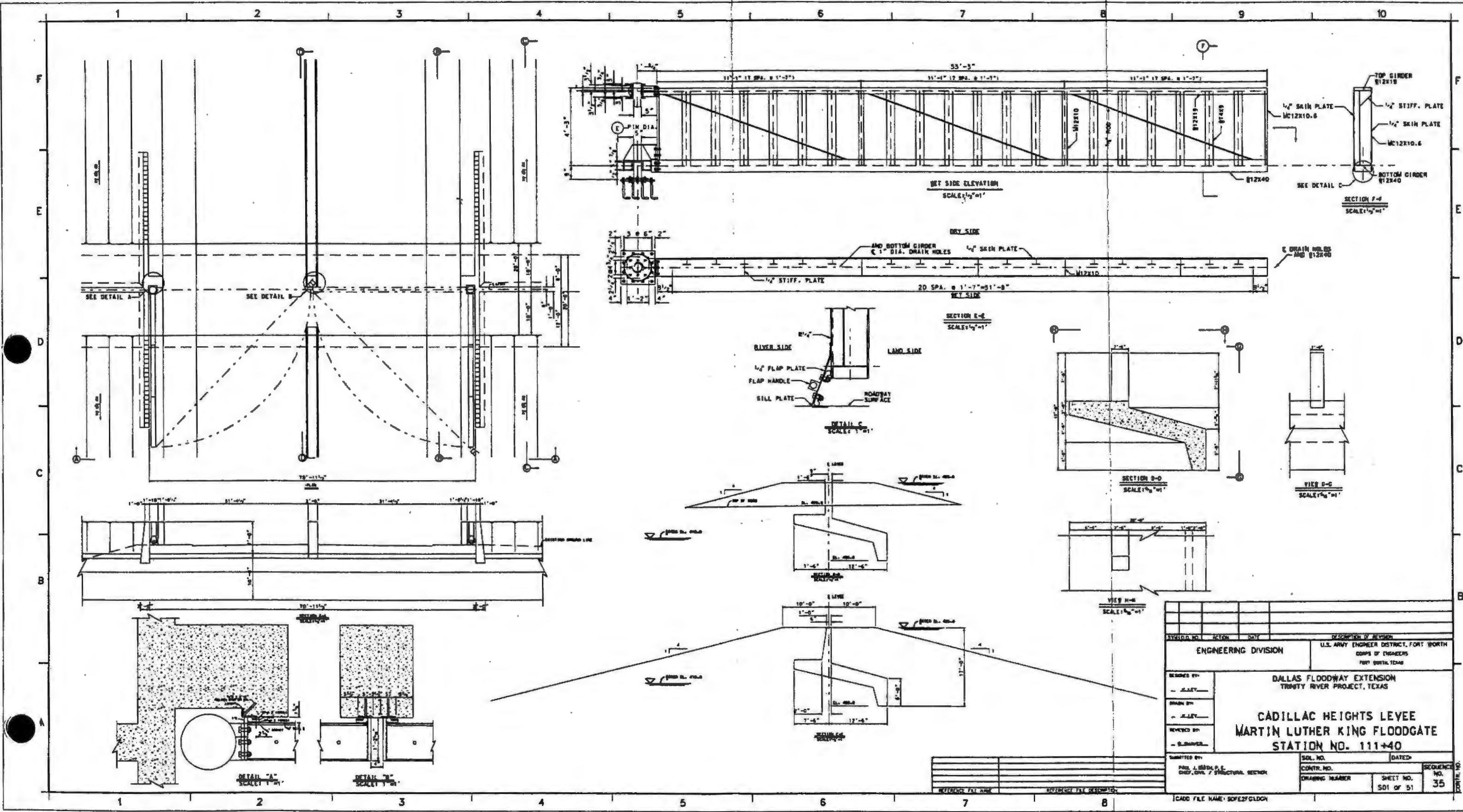
**TYPICAL PLAN VIEW OF  
INLET AND OUTLET STRUCTURE**

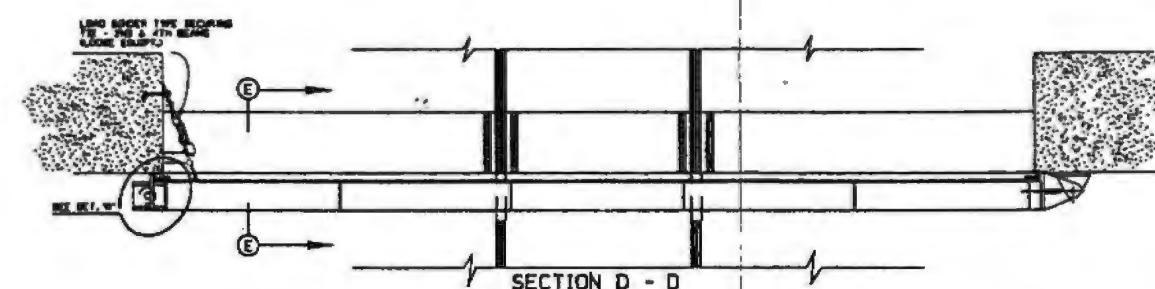
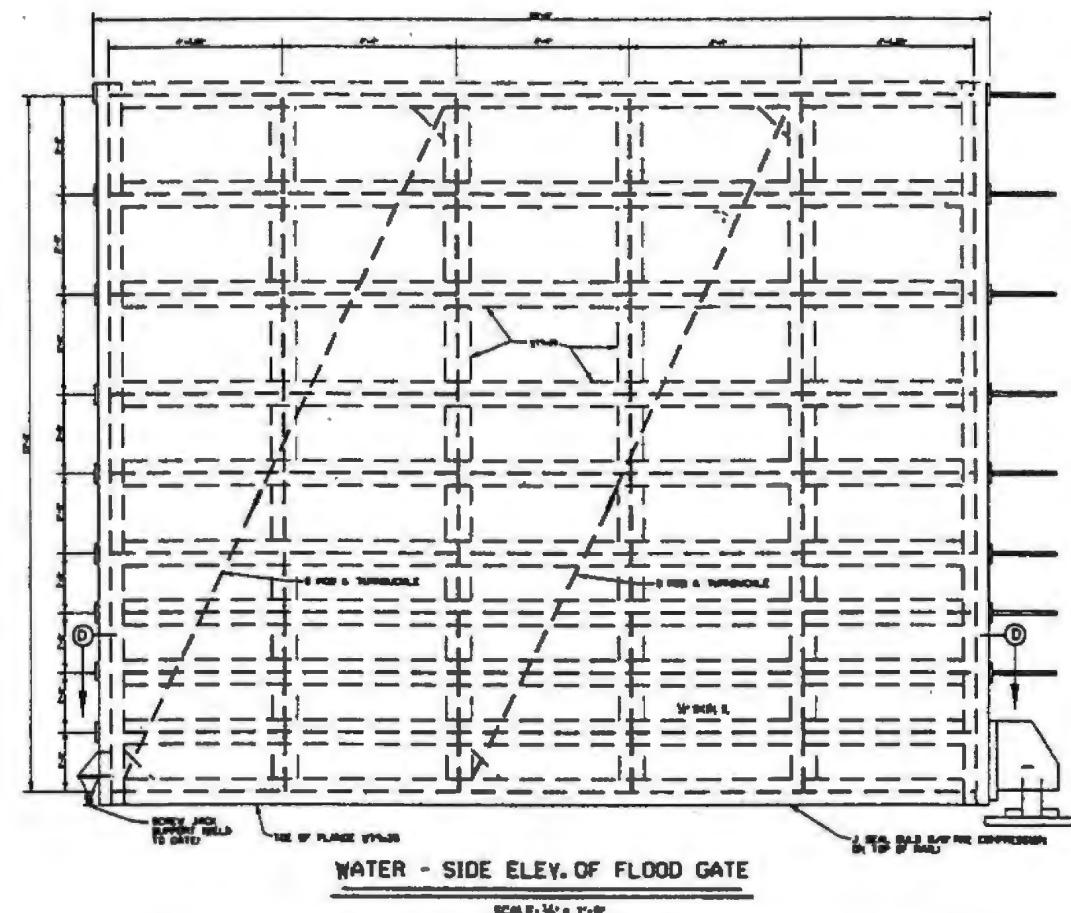
1" = 4'



SEARCHED BY:	INDEXED BY:	SERIALIZED BY:	FILED BY:	DATE:	DESCRIPTION OF DRAWING:
—	—	—	—	—	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CIVIL PLANNING AND ENGINEERING BRANCH
RECORDED BY:	DRAFTER:	REVIEWED BY:	APPROVED BY:	—	GENERAL REEVALUATION REPORT
—	—	—	—	—	DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS
CHAIN OF WETLANDS CONTROL STRUCTURE DETAILS					
SOL. NO.	DATED	SEQUENCE NO.		SOL. NO.	DATED
CONTR. NO.	—	—		CONTR. NO.	—
DRAWING NUMBER	—	—		DRAWING NUMBER	—
DRAWING FILE NAME: C0FED0.DGN				SEQUENCE NO. NO. 33	

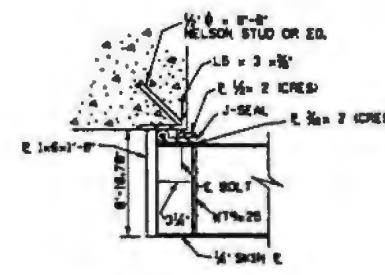






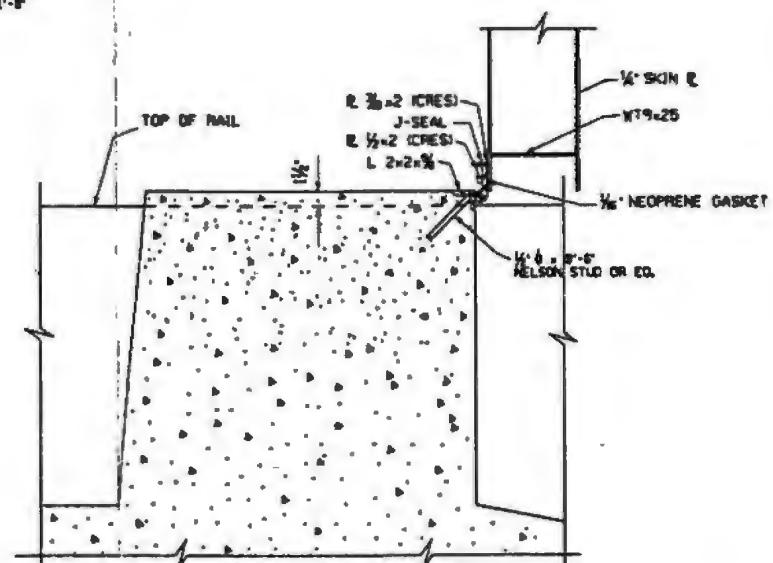
**SECTION D -**

SCALE  $\frac{1}{4}$ " = 1'



**DETAIL "A"**

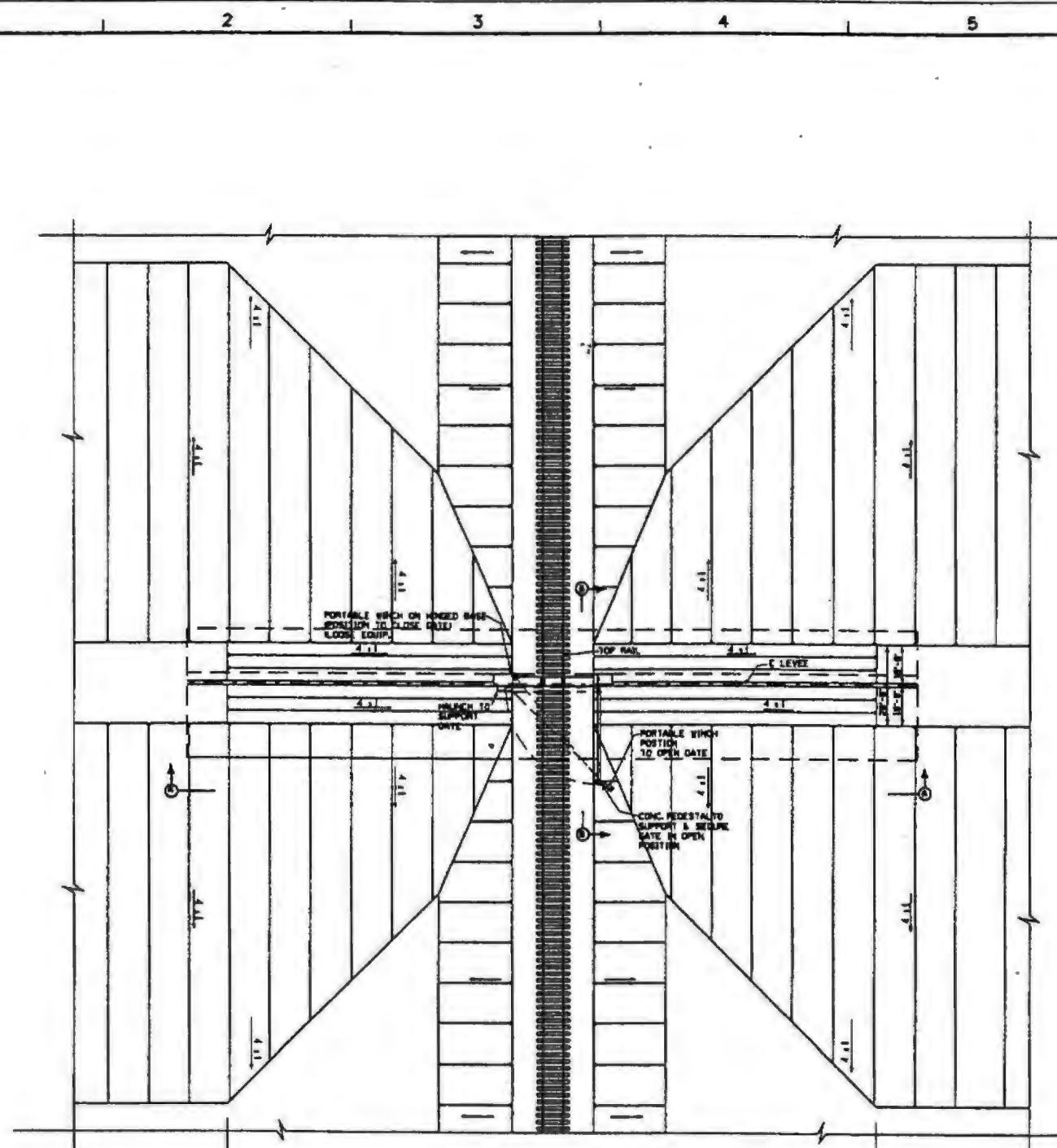
第4章 F<sub>1</sub> 14° L-1



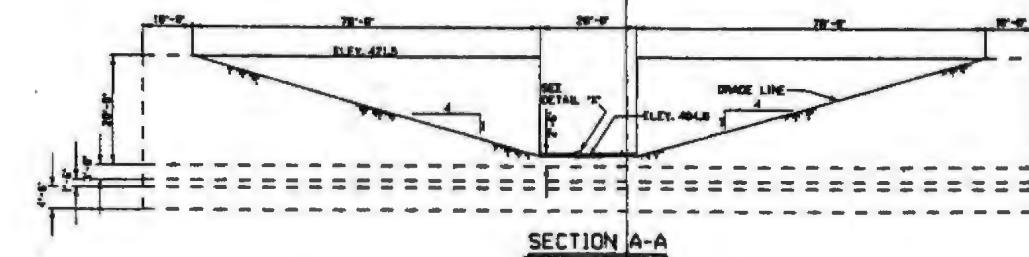
**SECTION E-E**

SCM E-1412-11-00

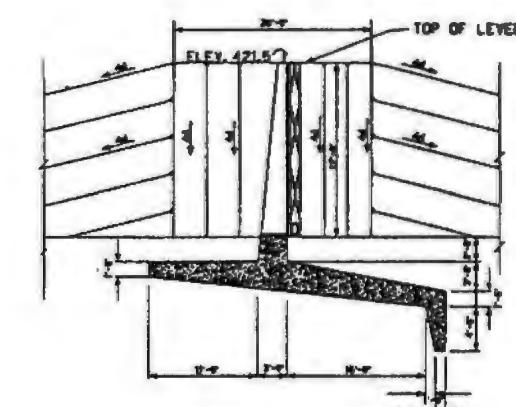
STANDARD NO. ACTION DATE			DESCRIPTION OF DRAWING	
			U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DRAWN BY <u>J. BOSCH</u>	<p style="text-align: center;"><b>DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS</b></p> <p style="text-align: center;"><b>GENERAL REEVALUATION REPORT</b></p> <p style="text-align: center;"><b>CADILLAC HEIGHTS LEVEE MKT RAILROAD FLOODGATE</b></p> <p style="text-align: center;"><b>ELEVATION, SECTIONS &amp; DETAIL STATION NO. 43 • 30</b></p>			
REVIEWED BY <u>J. BOSCH</u>				
SUBMITTED BY  PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION	SOL. NO.	DATED		SEQUENCE NO. 36
	CONTR. NO.	DRAWING NUMBER	SHEET NO. 502 OF 51	



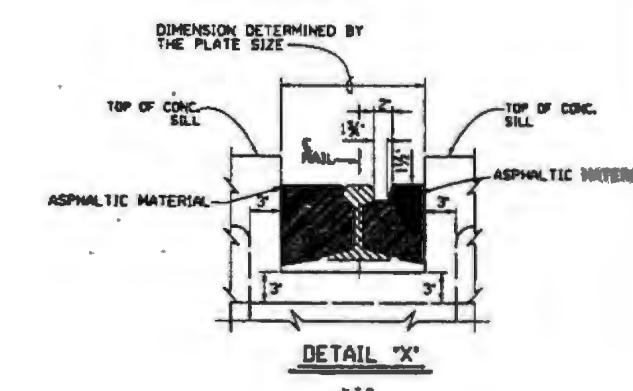
**PLAN**  
SCALE:  $\frac{1}{16}$ " = 1'-0"



**SECTION A-A**

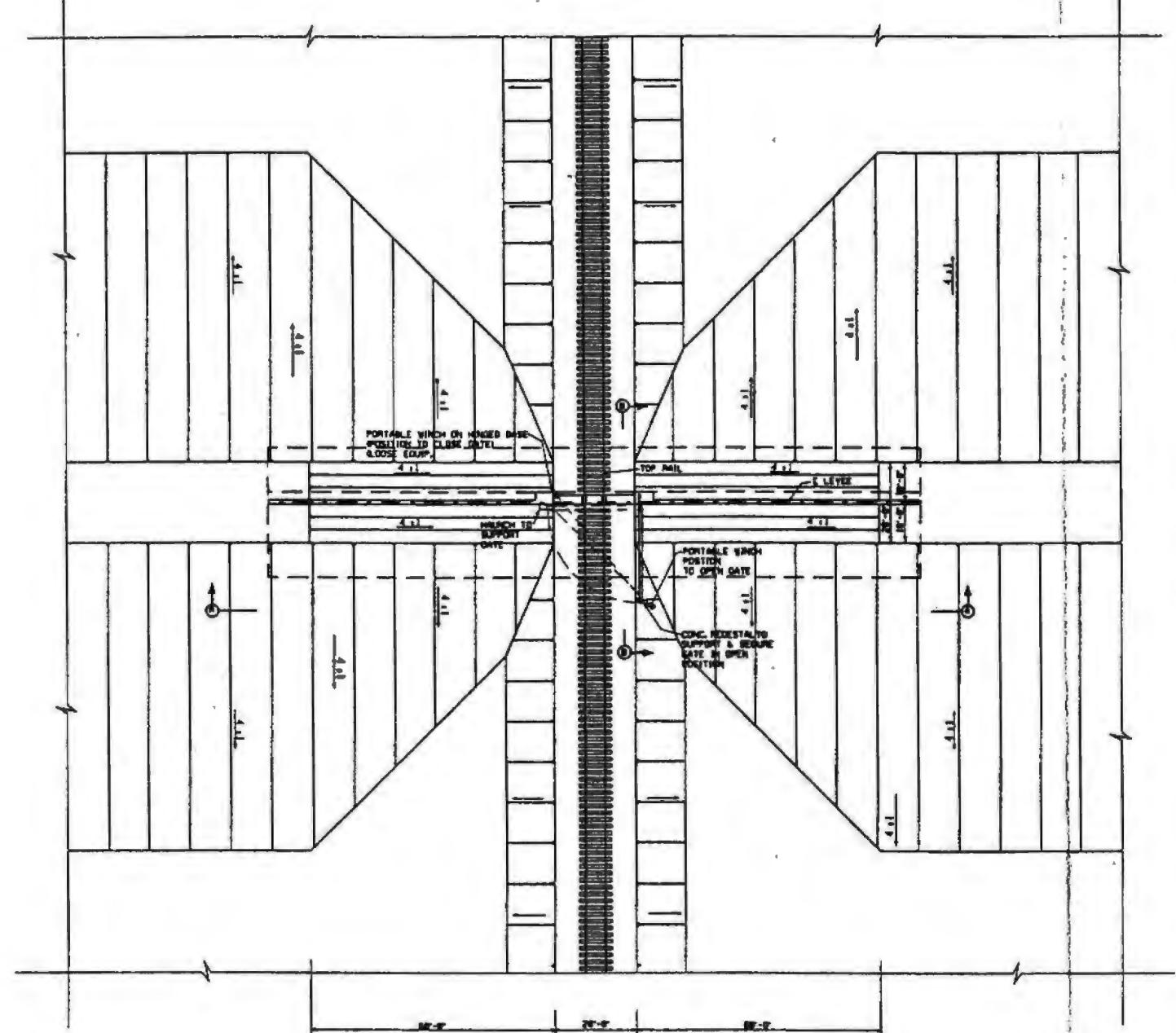


**SECTION B-B**

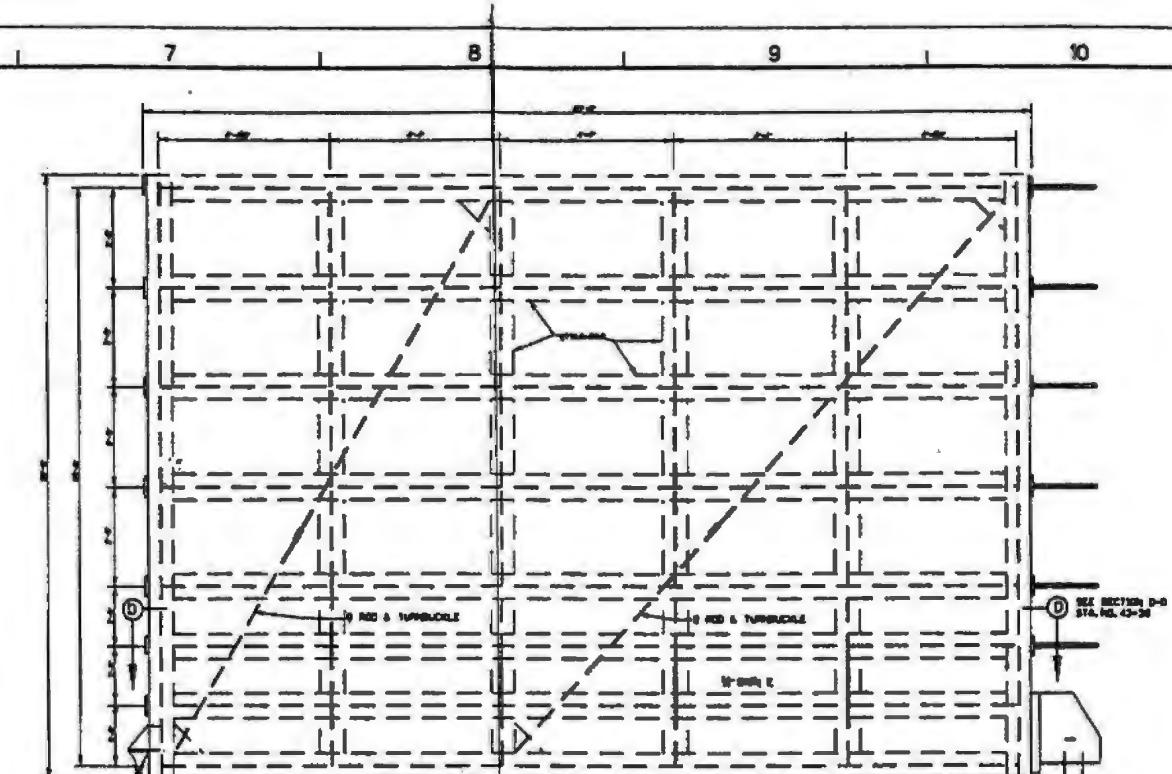


**DETAIL 'X'**

STUD NO.	ACTION	DATE	DESCRIPTION OF SECTION
ENGINEERING DIVISION CIVIL PLANNING AND ENGINEERING BRANCH		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY <b>K. WORSTER</b>	DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS		GENERAL REEVALUATION REPORT
DRAWN BY <b>K. WORSTER</b>			CADILLAC HEIGHTS LEVEE MKT RAILROAD FLOODGATE
REVISED BY <b>M. SISON</b>			PLAN, SECTIONS & DETAIL
SUPERVISED BY			STATION NO. 43+30
SUBMITTED BY <b>PAUL J. SMITH, P.E.</b> CHIEF, CIVIL/STRUCTURAL SECTION		SOL. NO. CONTR. NO. DRAWING NUMBER	DATED: SEQUENCE NO. SHEET NO. 503 OF 51 37
REFERENCE FILE NAME		REFERENCE FILE DESCRIPTION	
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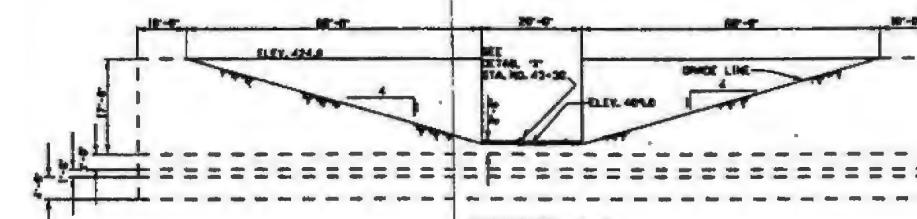


PLAN  
SCALE:  $\frac{1}{8}$ " = 1'-0"



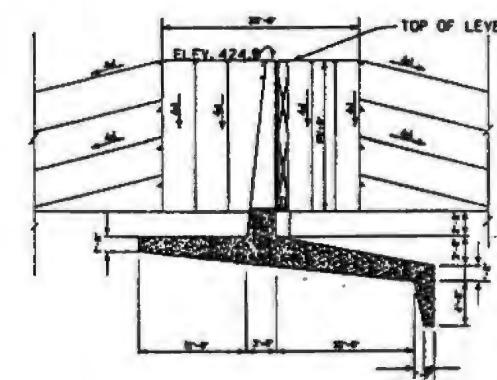
**WATER - SIDE ELEV. OF FLOOD GATE**

• 100 •



SECTION A-A

SCALLOP • 1-8



SECTION B-8

Section 200-1 Me

1 2 3

2

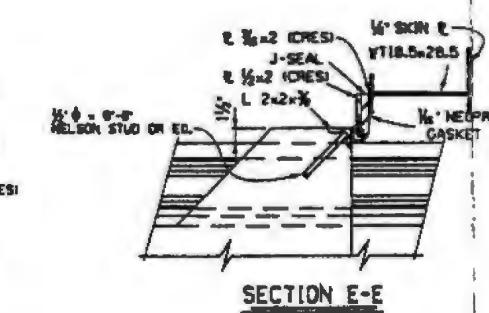
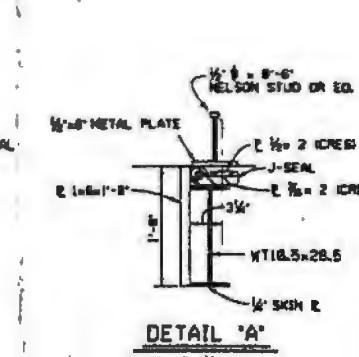
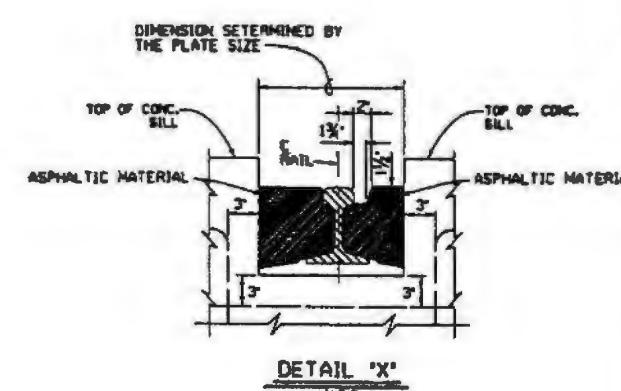
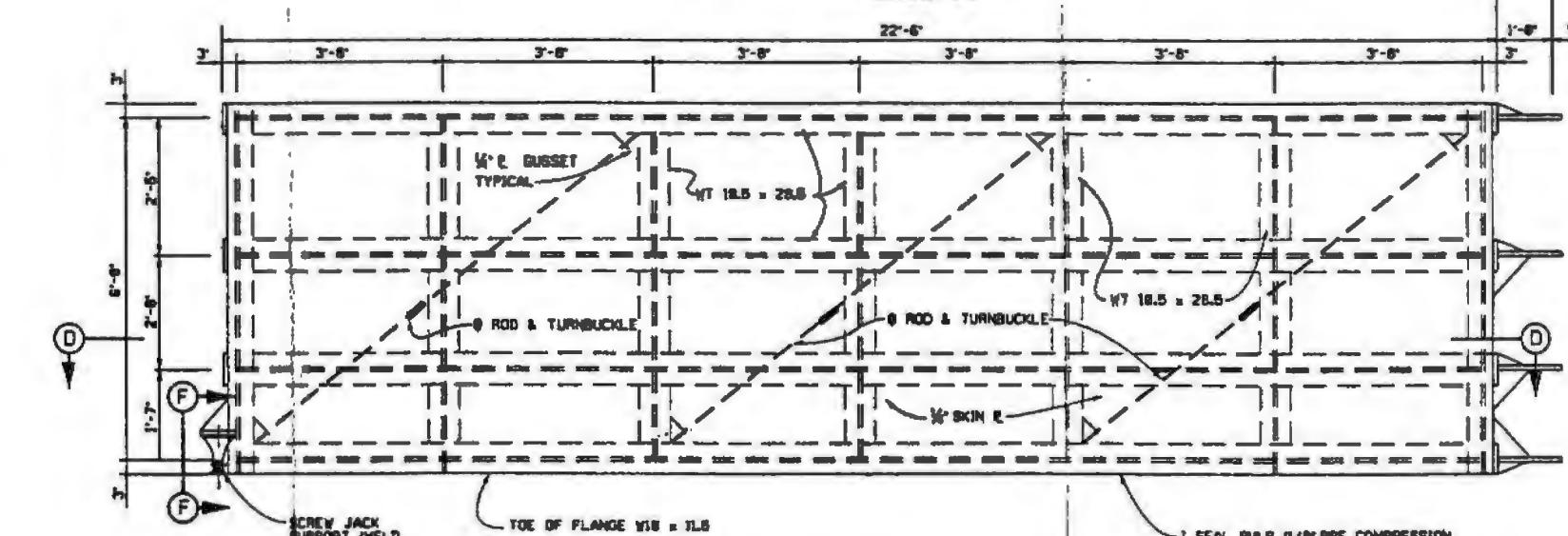
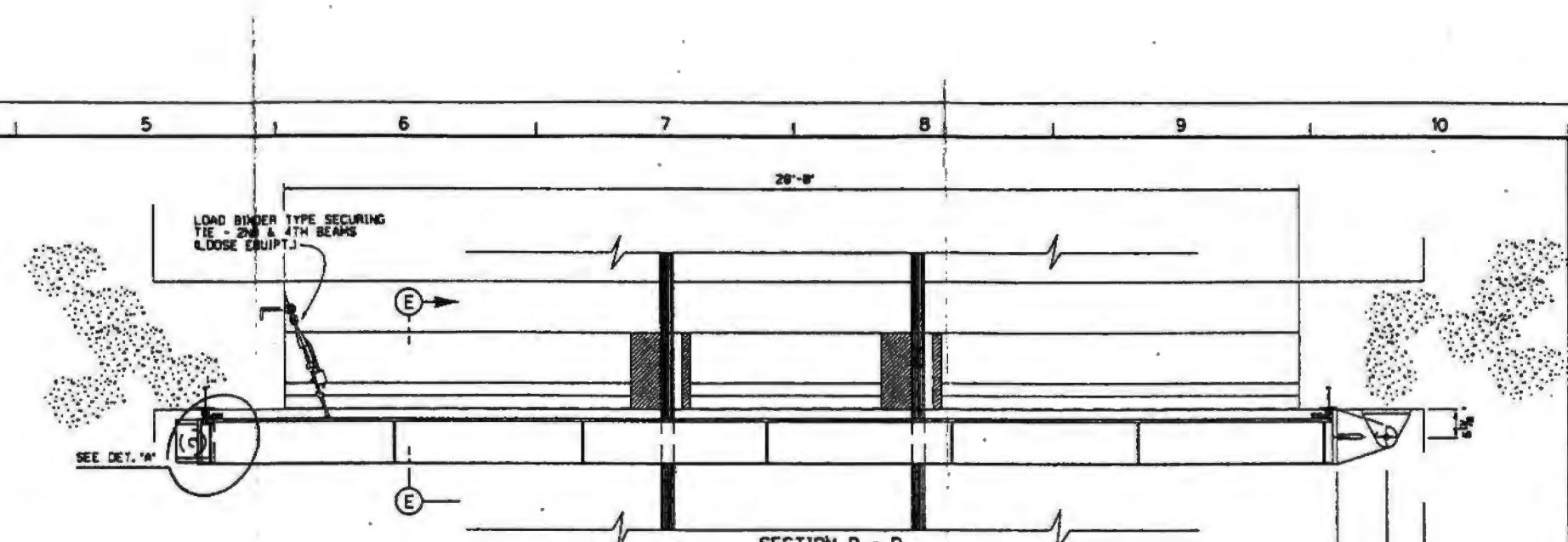
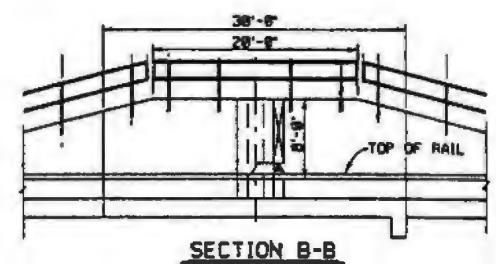
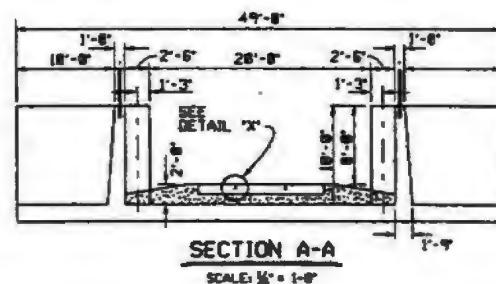
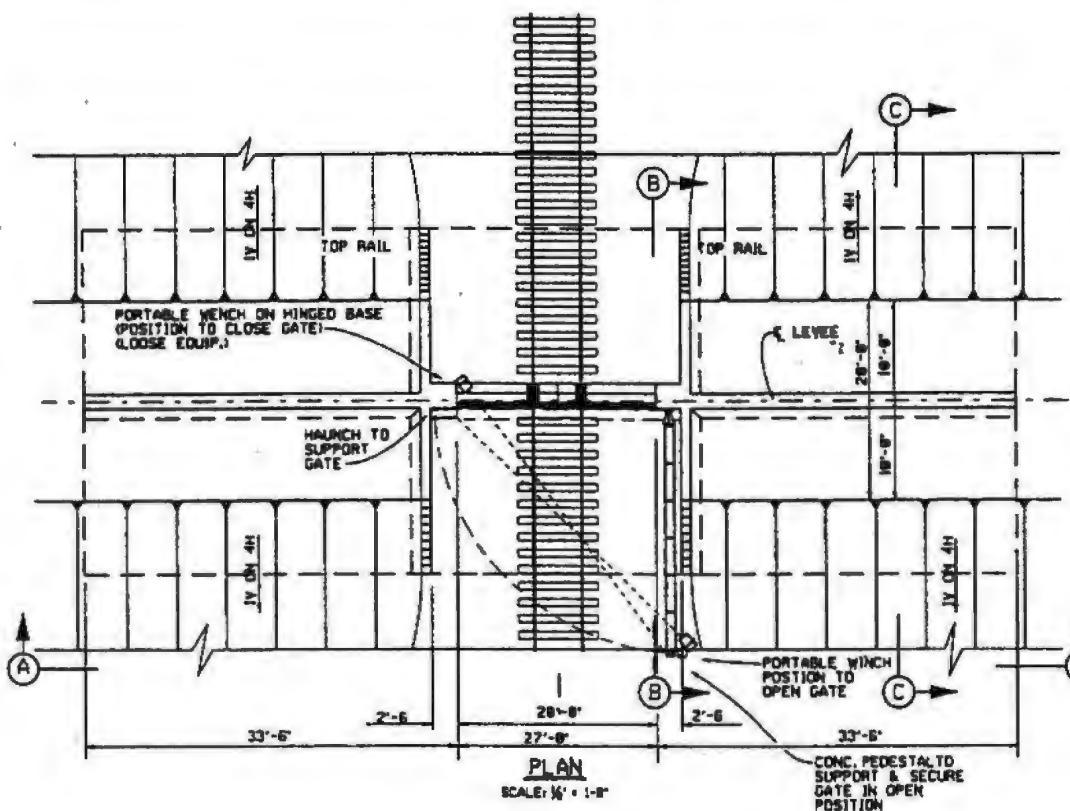
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1

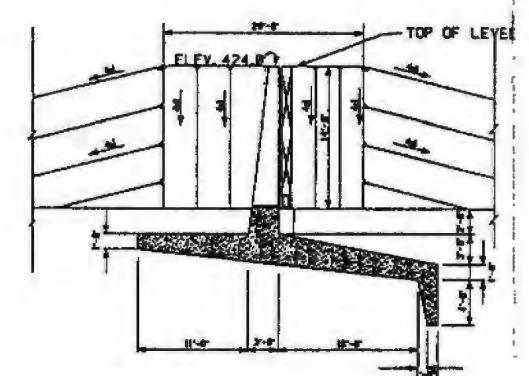
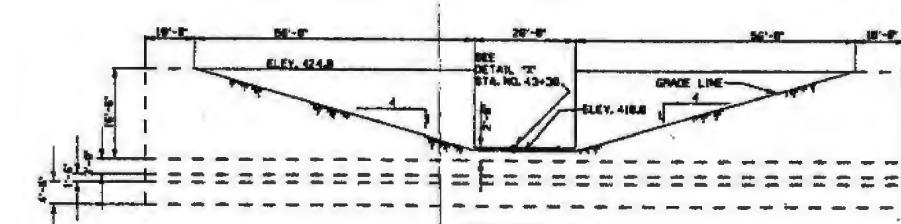
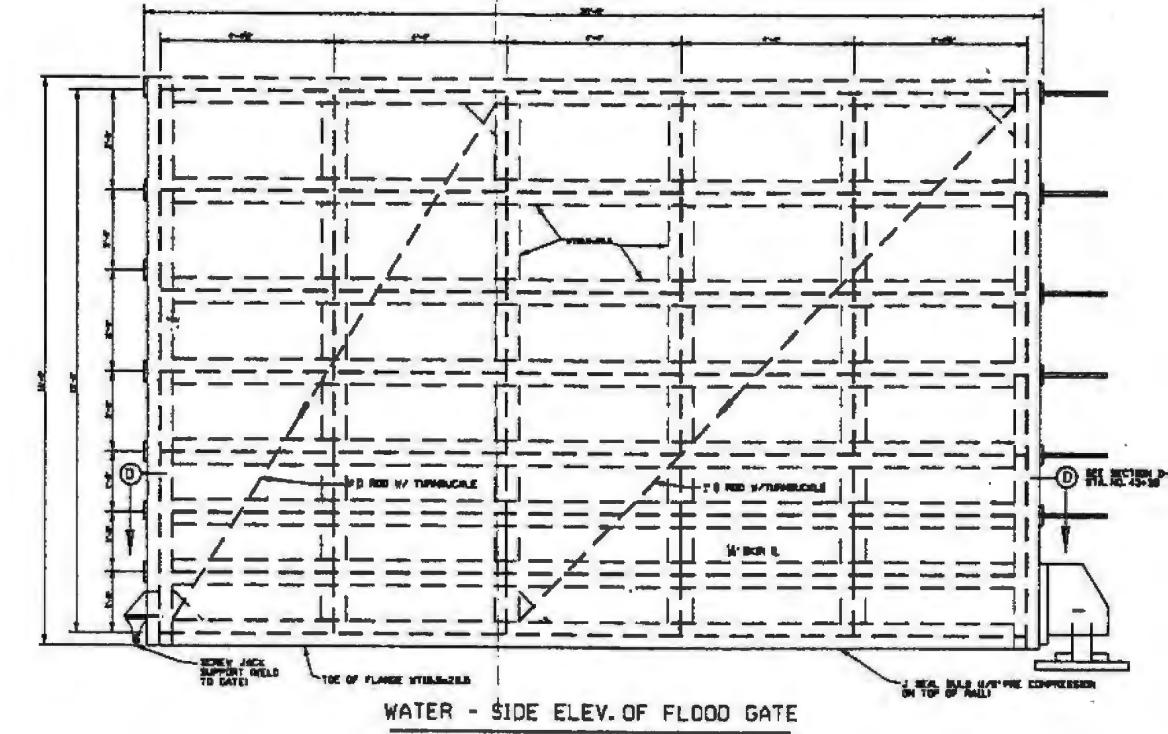
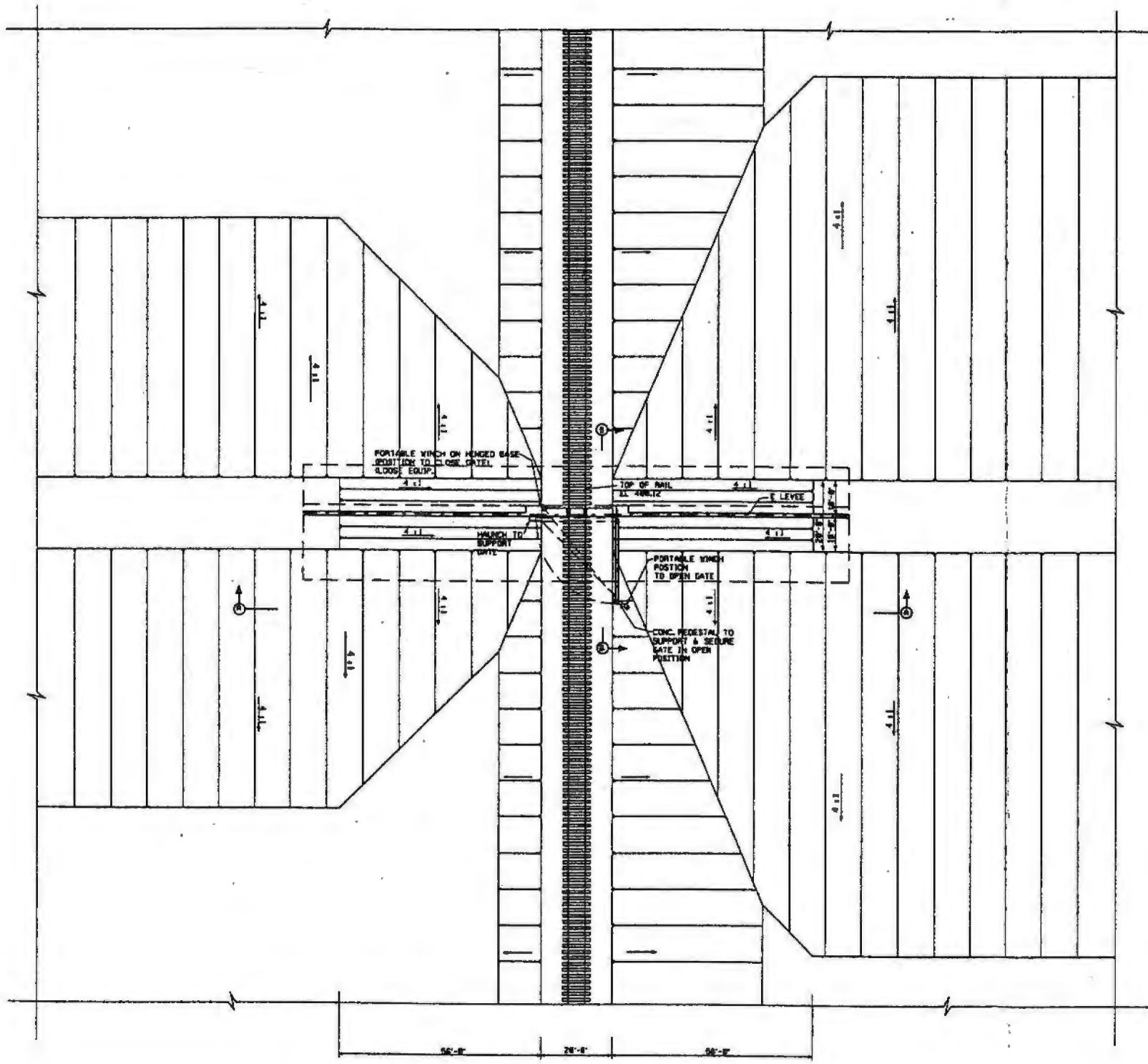
10

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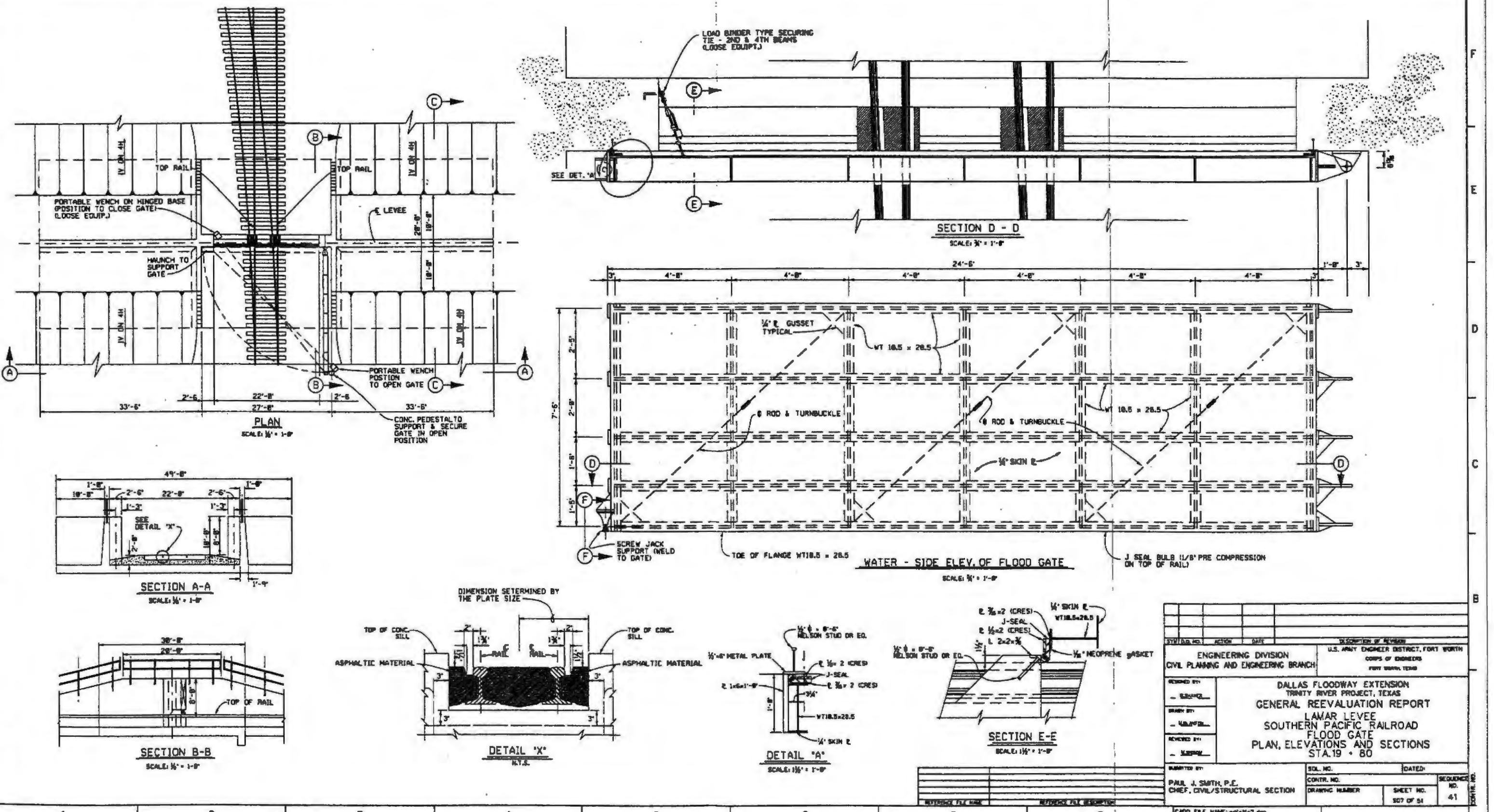
CADD FILE NAME: mdd2104.scp



HYDRO. NO.	ACTION	DATE	DESCRIPTION OF REVISION
			U.S. ARMY ENGINEER DISTRICT, FORT WORTH SCOPE OF ENGINEERS FORT WORTH, TEXAS
REMOVED BY:	P. SMITH		DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS
DRAWN BY:	K. BLANTON		GENERAL REEVALUATION REPORT
REMOVED BY:	M. SAWYER		MKT RAILROAD SPUR TRACK
			FLOOD GATE
			PLAN, ELEVATIONS AND SECTIONS
			STA. 53 + 50
SOL. NO.	DATED:		
REF. NO.	CONTR. NO.		SEQUENCE NO.
PAUL J. SMITH, P.E. CHEF, CIVIL/STRUCTURAL SECTION		DRAWING NUMBER	SHEET NO. 505 OF 51
REFERENCE FILE NAME:		REFERENCE FILE DESCRIPTION:	

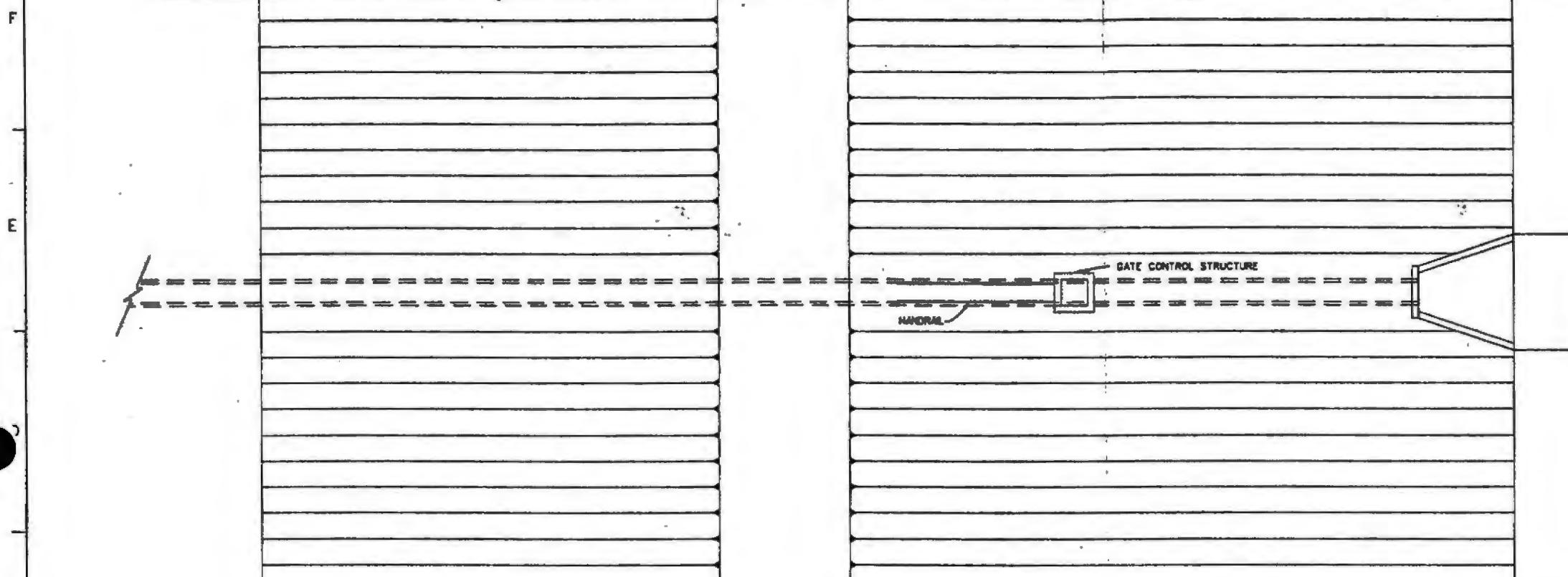


SYM. NO. NO.	ACTION	DATE
ENGINEERING DIVISION CIVIL PLANNING AND ENGINEERING BRANCH		DESCRIPTION OF REVISION U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DESIGNED BY: <b>K. WORSTER</b>	DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS	
DRAWN BY: <b>K. WORSTER</b>	LAMAR LEVEE MKT RAILROAD FLOODGATE PLAN, ELEVATION & SECTIONS STATION 119+60	
REVIEWED BY: <b>M. BISSON</b>	SOL. NO.	DATED:
SUBMITTED BY: <b>PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION</b>	CONTR. NO.	SEQUENCE NO. 40
	DRAWING NUMBER	SHEET NO. 504 OF 51

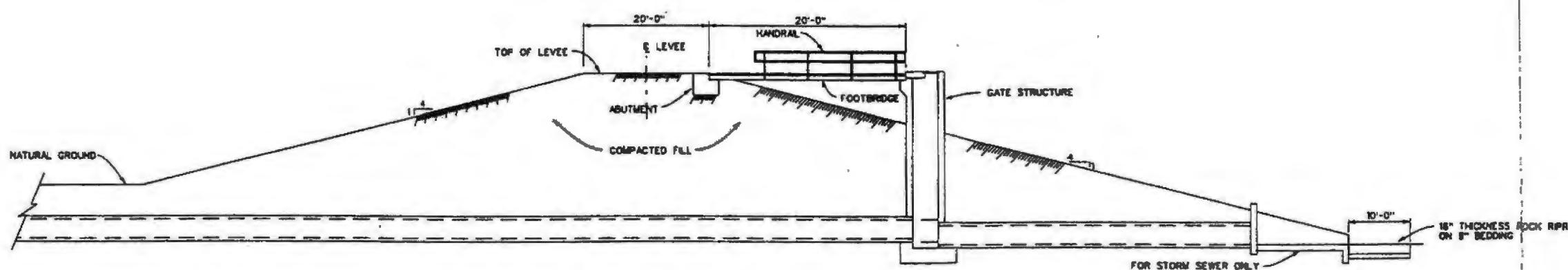


STN. NO.		ACTION	DATE	DESCRIPTION OF REVISION	
				U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
ENGINEERING DIVISION CIVIL PLANNING AND ENGINEERING BRANCH		<p align="center"><b>DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS</b></p> <p align="center"><b>GENERAL REEVALUATION REPORT</b></p> <p align="center"><b>LAMAR LEVEE SOUTHERN PACIFIC RAILROAD FLOOD GATE PLAN, ELEVATIONS AND SECTIONS STA. 19 + 80</b></p>			
REMOVED BY:					
- BURKE					
DRAWN BY:					
- KELLY					
RECHECKED BY:					
- KELLY					
SUBMITTED BY:	SOL. NO. <input type="text"/> DATED: <input type="text"/> CONTR. NO. <input type="text"/> DRAWING NUMBER <input type="text"/> SHEET NO. <input type="text"/> SET OF <input type="text"/>				
PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION					
CADDY FILE NAME: <input type="text"/>					

1 2 3 4 5 6 7 8 9 10



PLAN VIEW  
N.T.S.



SERVICE BRIDGE ELEVATION  
N.T.S.

CADILLAC LEVEE		
STA	PIPE SIZE	TYPE
26-00	10 INCH	SAN. SEWER
43-00	12 INCH	SAN. SEWER
60-00	10 INCH	SAN. SEWER
75-80	12 INCH	SAN. SEWER
79-70	12 INCH	SAN. SEWER
94-00	15 INCH	SAN. SEWER
102-00	8 INCH	SAN. SEWER
112-00	10 INCH	SAN. SEWER
110-80	72 INCH	STORM DRAIN
111-75	24 INCH	STORM DRAIN

LAMAR LEVEE		
STA	PIPE SIZE	TYPE
27-00	12 INCH	SAN. SEWER
70-00	12 INCH	SAN. SEWER
90-00	24 INCH	SAN. SEWER
106-00	15 INCH	SAN. SEWER
117-00	48 INCH	SAN. SEWER
23-00	54 INCH	STORM DRAIN
47-00	48 INCH	STORM DRAIN
78-80	60 INCH	STORM DRAIN
118-00	66 INCH	STORM DRAIN
134-00	7' X 7' BOX	STORM DRAIN
24-00 N. reach	8' X 8' BOX	STORM DRAIN

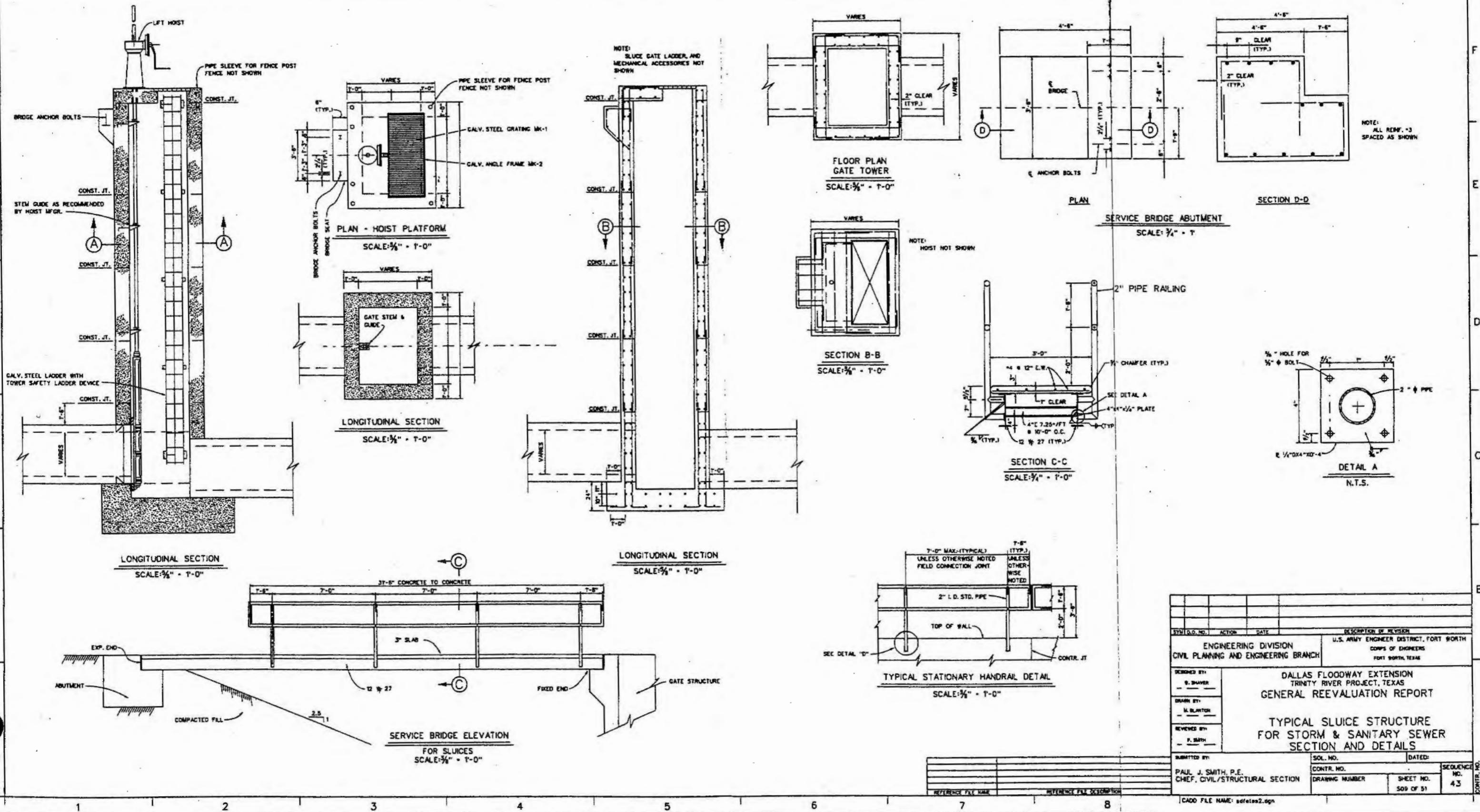
CLOSURE STRUCTURE LOCATIONS  
FOR SEWER AND STORM DRAINS

STUD NO.	ACTION	DATE	DESCRIPTION OF REVISION
			U.S. ARMY ENGINEER DISTRICT, FORT WORTH COMPS OF ENGINEERS FORT WORTH, TEXAS
REMOVED BY:	DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS		GENERAL REEVALUATION REPORT
ADDED BY:			TYPICAL SLUICE STRUCTURE FOR STORM AND SANITARY SEWER PLAN AND ELEVATION
REMOVED BY:			RECORDED BY:
ADDED BY:			SO. NO.
RECORDED BY:			DATED:
PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION			CONT'L NO.
			DRAWING NUMBER
			SEQUENCE NO.
			SHEET NO.
			SO. OF 51

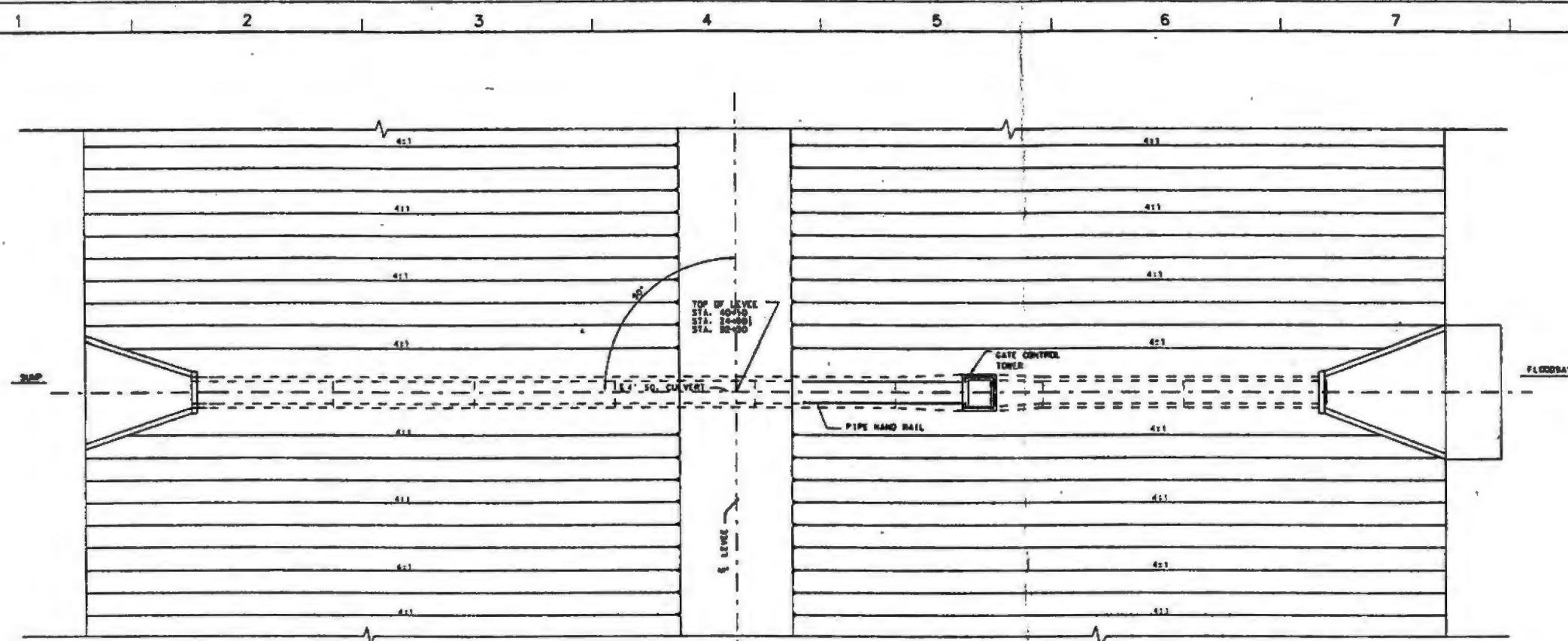
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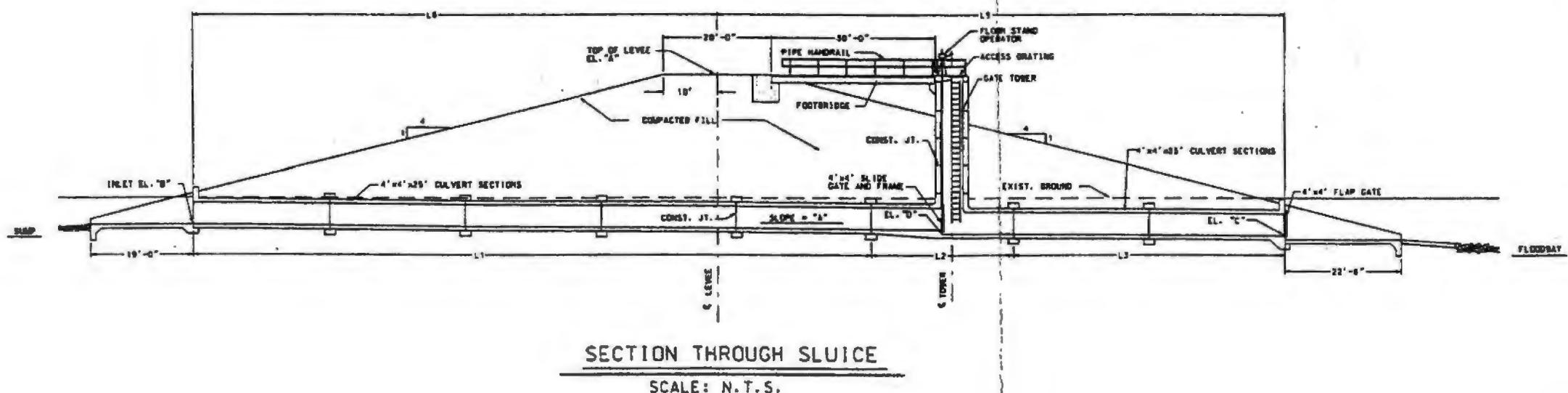


STN. D.O. NO.	ACTION	DATE	DESCRIPTION OF REVISION
ENGINEERING DIVISION CIVIL PLANNING AND ENGINEERING BRANCH			U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DESIGNED BY: <u>B. SHAYER</u>	DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS GENERAL REEVALUATION REPORT		
DRAWN BY: <u>M. BLANTON</u>			
REVIEWED BY: <u>F. SMITH</u>			
SUBMITTED BY:  PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION	SOL. NO.	DATED:	SEQUENCE NO. 43
	CONTR. NO.		NO.
	DRAWING NUMBER	SHEET NO. SOP 951	



### **PLAN VIEW**

SCALE: N.T.S.



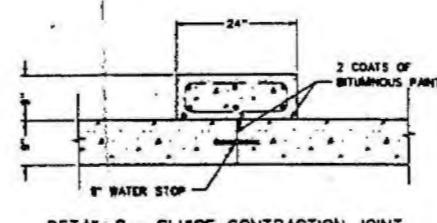
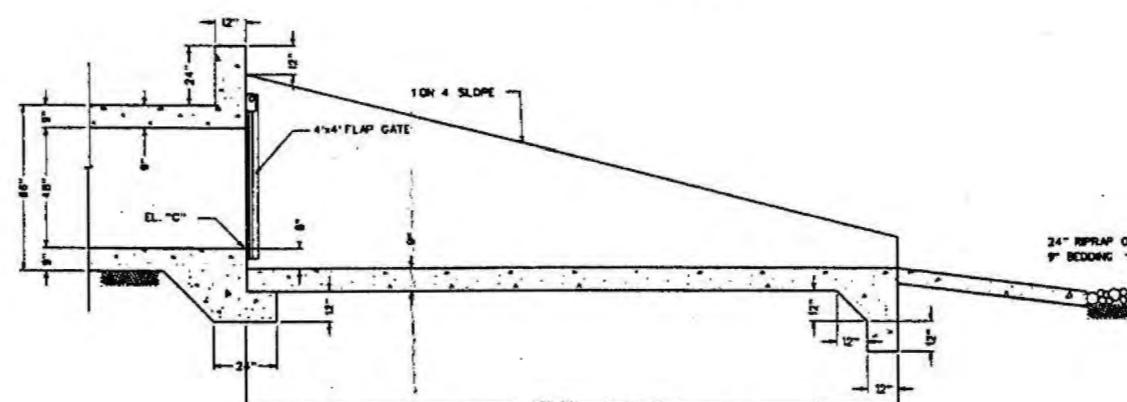
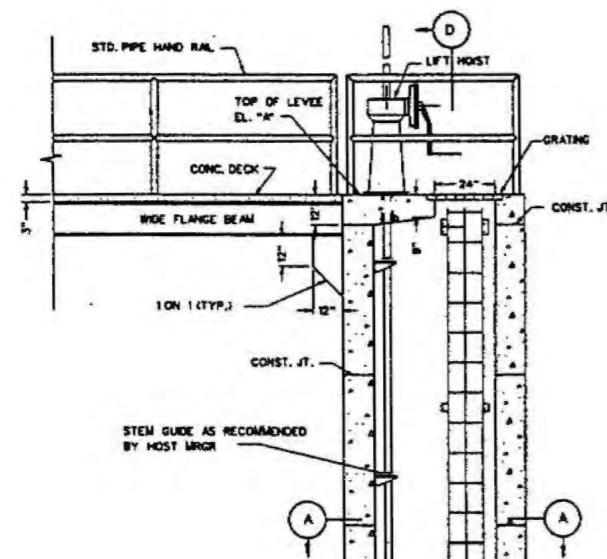
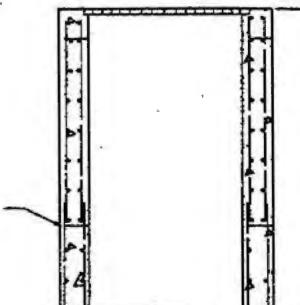
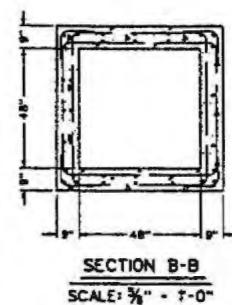
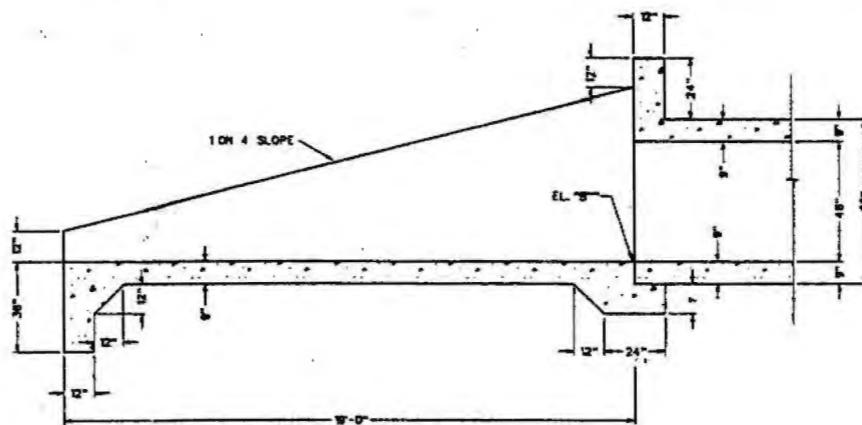
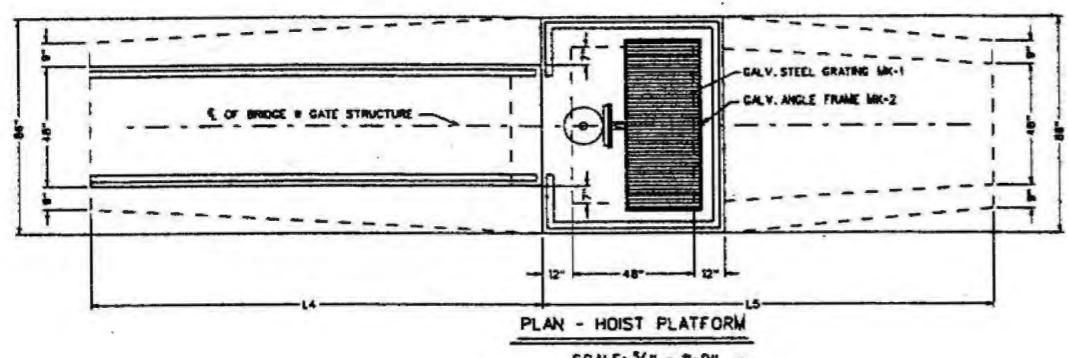
## SECTION THROUGH SLUICE

SCALE: N.T.S.

		STATION		
		46-10	24-80	82-20
LENGTH	L1	150.5	150.0	150.0
	L2	24.2	30.6	20.2
	L3	75.0	75.0	50.0
	L4	120.5	123.5	96.5
	L5	120.5	134.5	104.5
SLOPE				
	SLOPE A	0.50X	0.48Z	0.43Z
ELEVATION	A	426.4	426.2	422.4
	B	393.0	392.0	393.0
	C	391.0	390.0	393.0
	D	391.4	390.4	393.4

## SLUICE DATA

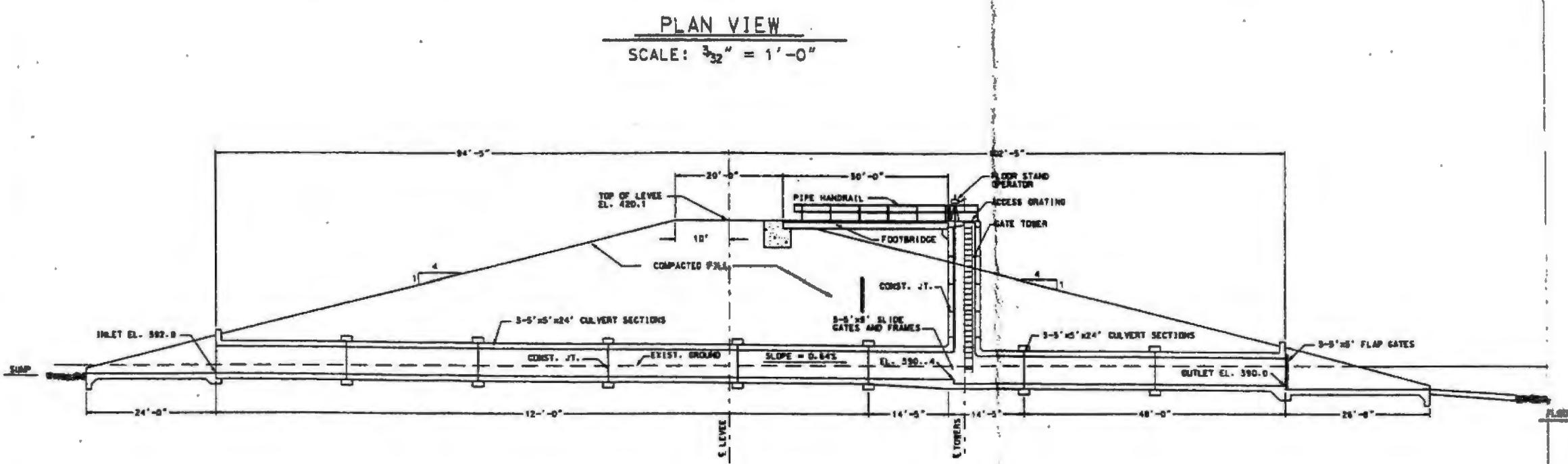
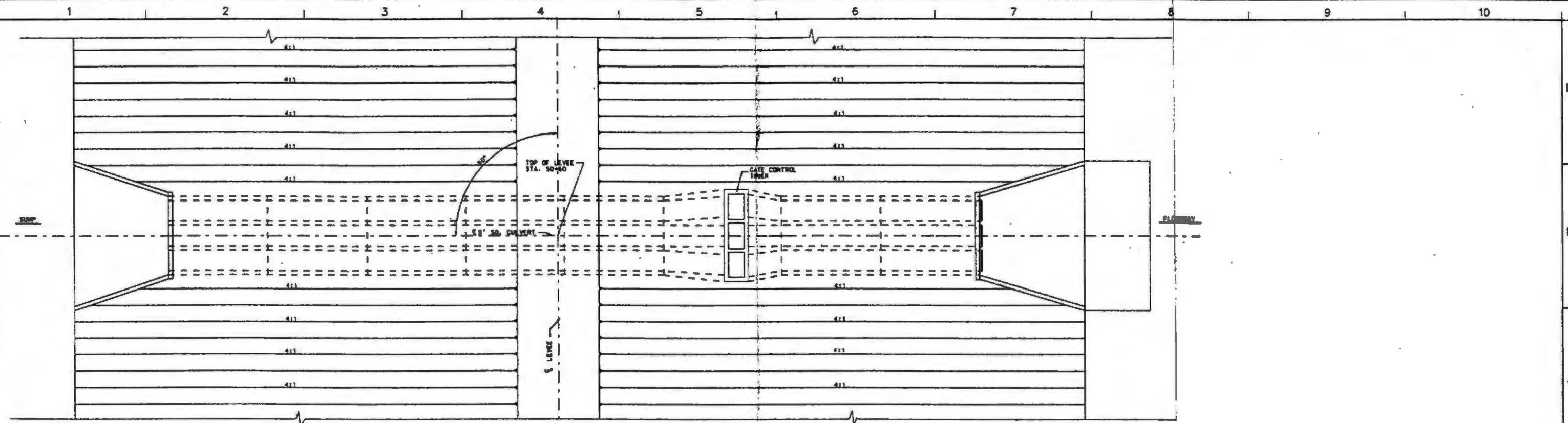
			DESCRIPTION OF DIVISION	
DIVISION NO.		ACTION DATE	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
ENGINEERING DIVISION				
REVIEWED BY:				
V. HUNTER				
DRAWN BY:				
V. HUNTER				
REVIEWED BY:				
V. HUNTER				
SIGNED BY:				
PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION				
GENERAL REEVALUATION REPORT		DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS		
LAMAR STREET LEVEE SUMP OUTLET SLUICES PLAN AND SECTION STATION 24+90, 40+10, 92+30				
SOL. NO.		DATED:		
CONTR. NO.		SEQUENCE NO.		
DRAWING NUMBER		SHEET NO.		
		310 OF 51		
		44		



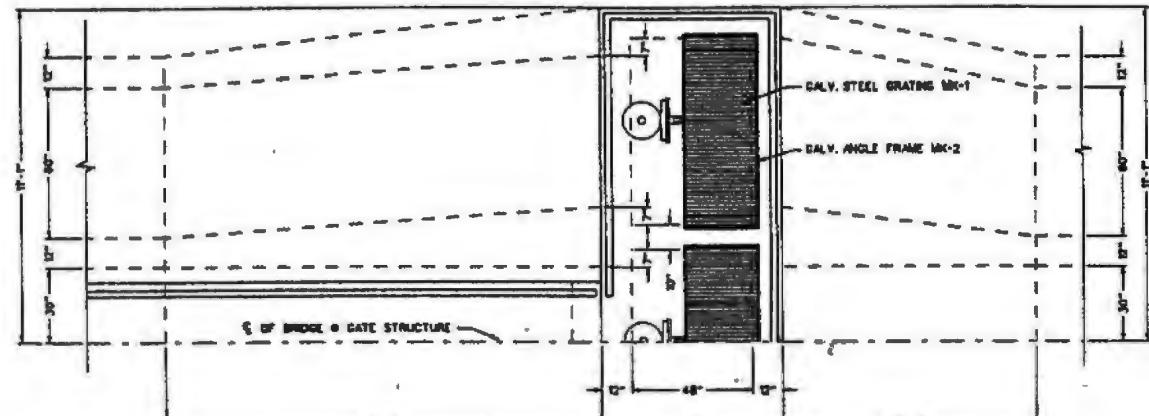
ELEVATION	SLOPE	STATION		
		40-10	24-90	92-30
L2	24.3	30.8	28.2	
L4	10.6	13.8	11.6	
L5	13.6	16.8	14.6	
L7	35.0	36.8	29.0	



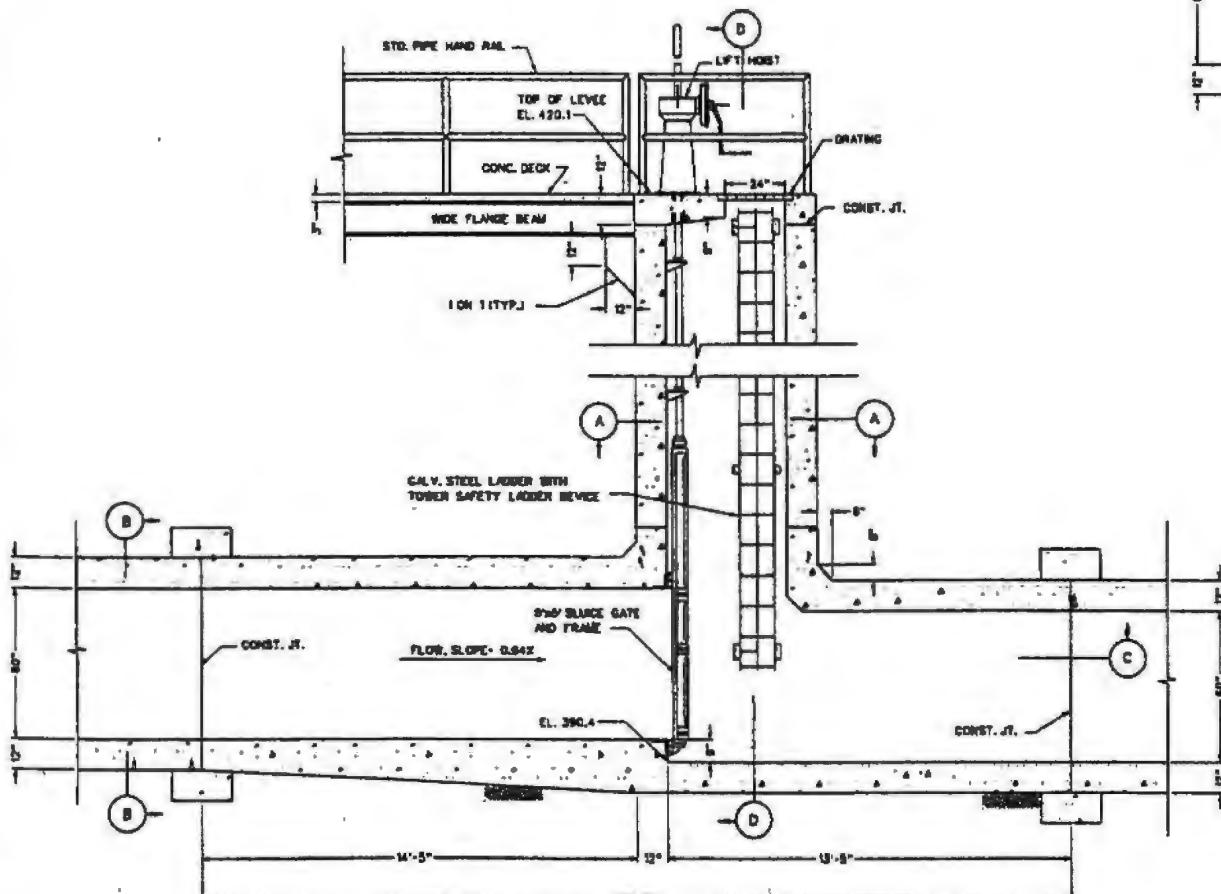
DESIGNED BY:	W. HOUYER	ACTION DATE	DESCRIPTION OF REVISION	
DRAWN BY:	W. HOUYER		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CIVIL PLANNING AND ENGINEERING BRANCH	
REVIEWED BY:	Z. SHAYER		FORT WORTH, TEXAS	
SUBMITTED BY:			DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS	
				GENERAL REEVALUATION REPORT
LAMAR STREET LEVEE SUMP OUTLET SLUICES SECTIONS AND DETAILS STATIONS 24-90, 40-10, 92-30				
SOL. NO.	DATED:			
CONTR. NO.				
DRAWING NUMBER		SEQUENCE NO.		
PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION		NO. 45		
REFERENCE FILE NAME: sdslsd2.dwg		REFERENCE FILE DESCRIPTION		
REF ID: S1		SHEET NO. 45		



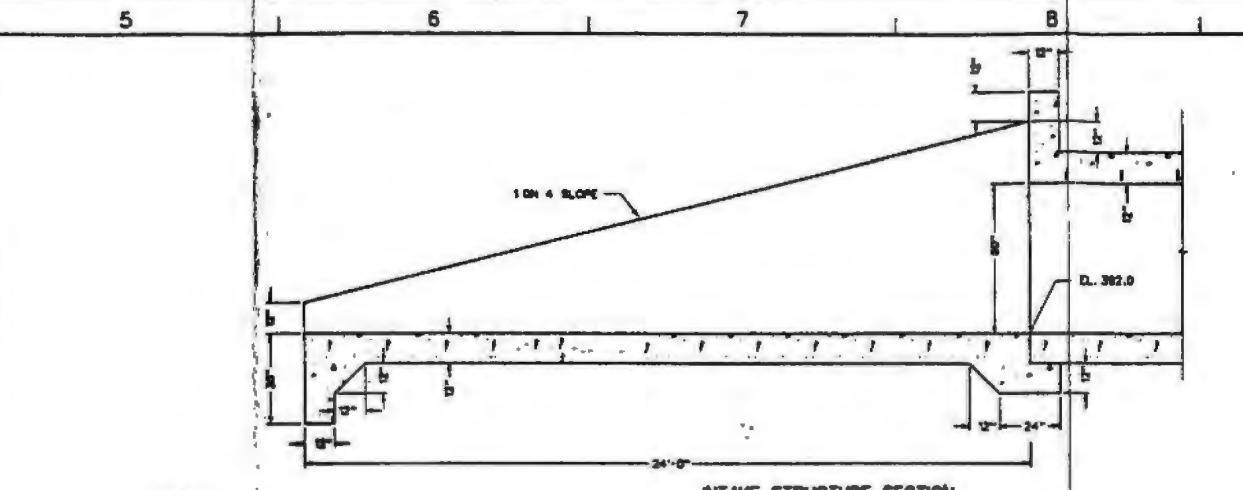
STW/G.O. NO.	ACTION	DATE	DESCRIPTION OF REVISION		
			U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		
ENGINEERING DIVISION CIVIL PLANNING AND ENGINEERING BRANCH					
REMOVED BY:	DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS				
REMOVED BY:	GENERAL REEVALUATION REPORT				
REMOVED BY:	LAMAR STREET LEVEE SUMP OUTLET SLUICE PLAN AND SECTION STATION 50+60				
SERIALIZED BY:					
SO. NO.	DATED:				
CONTR. NO.					
DRAWING NUMBER	SHEET NO.				
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REFERENCE FILE NUMBER:					NO. 46
CADD FILE NAME: asev1clos.dwg					



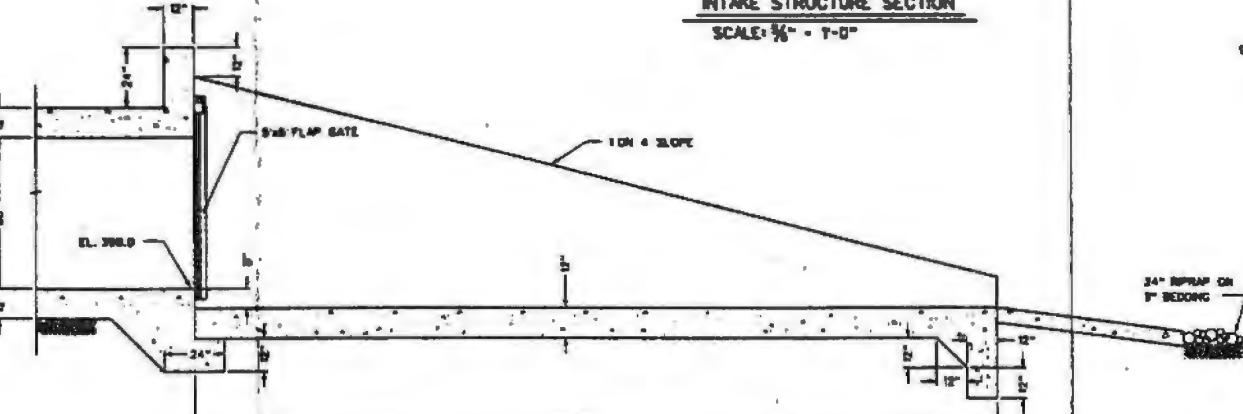
PLAN - HOIST PLATFORM  
SCALE:  $\frac{1}{64}$ " - 1'-0"



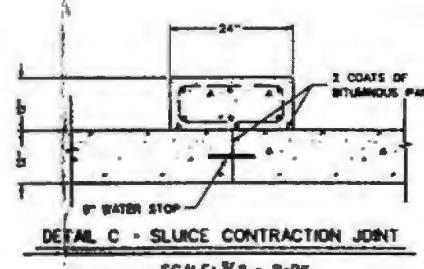
LONGITUDINAL SECTION  
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INTAKE STRUCTURE SECTION  
SCALE:  $\frac{1}{64}$ " - 1'-0"

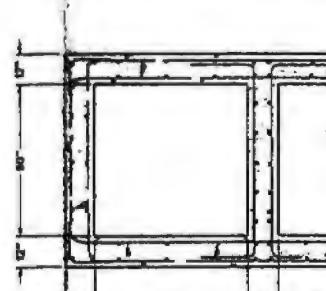


OUTLET STRUCTURE SECTION  
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DETAIL C - SLUICE CONTRACTION JOINT

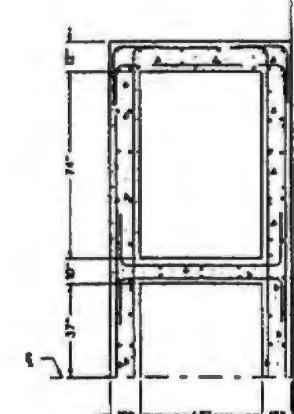
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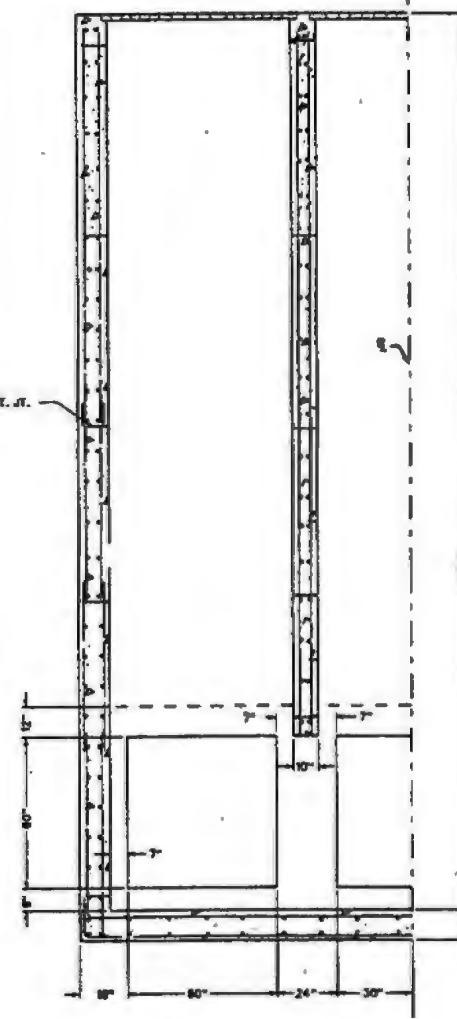
SECTION A-A  
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SECTION B-B

SCALE:  $\frac{1}{64}$ " - 1'-0"



SECTION B-B  
SCALE:  $\frac{1}{64}$ " - 1'-0"



SECTION D-D  
SCALE:  $\frac{1}{64}$ " - 1'-0"

STRUCTURE NO.	ACTION	BATE	DESCRIPTION OF REVIEW
			U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DESIGNED BY:	V. HENRY		GENERAL REEVALUATION REPORT
DRAWN BY:	V. HENRY		DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS
REVIEWED BY:	V. HENRY		LAMAR STREET LEVEE SUMP OUTLET SLUICE SECTIONS AND DETAILS STATION 50+60
SUBMITTED BY:	PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION		DATE:
SOL. NO.	CONTR. NO.	DATED:	
SEQUENCE NO.	DRAWING NUMBER	SHEET NO.	SEQUENCE NO.
		515 OF 61	47

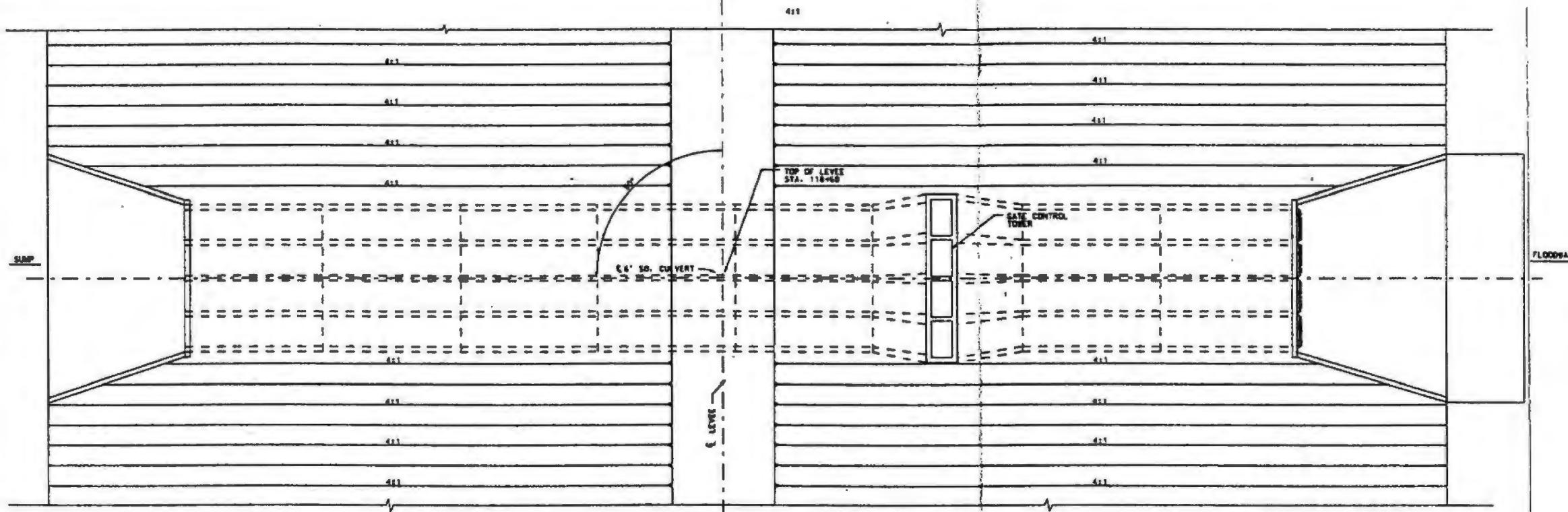
1 2 3 4 5 6 7 8 9 10

F

F

E

E



PLAN VIEW

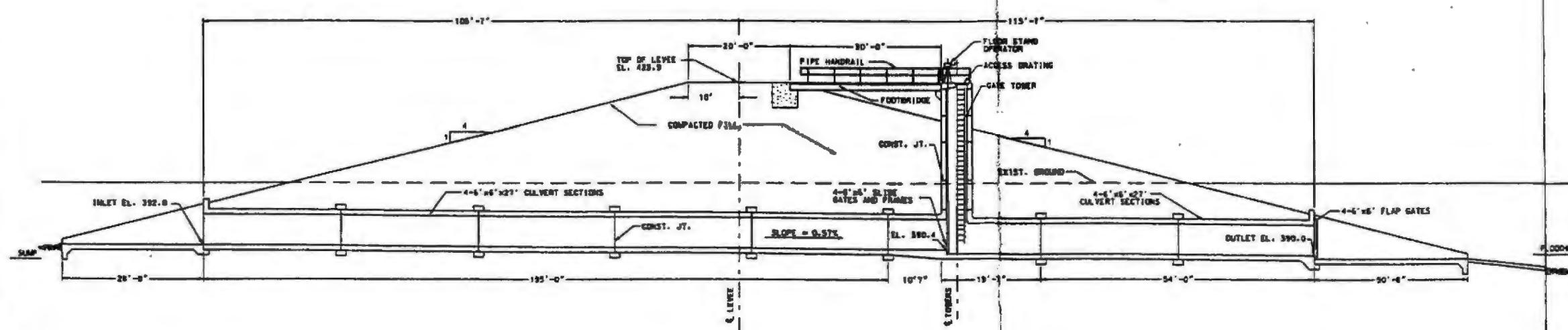
SCALE:  $\frac{1}{30}$ " = 1'-0"

C

C

B

B

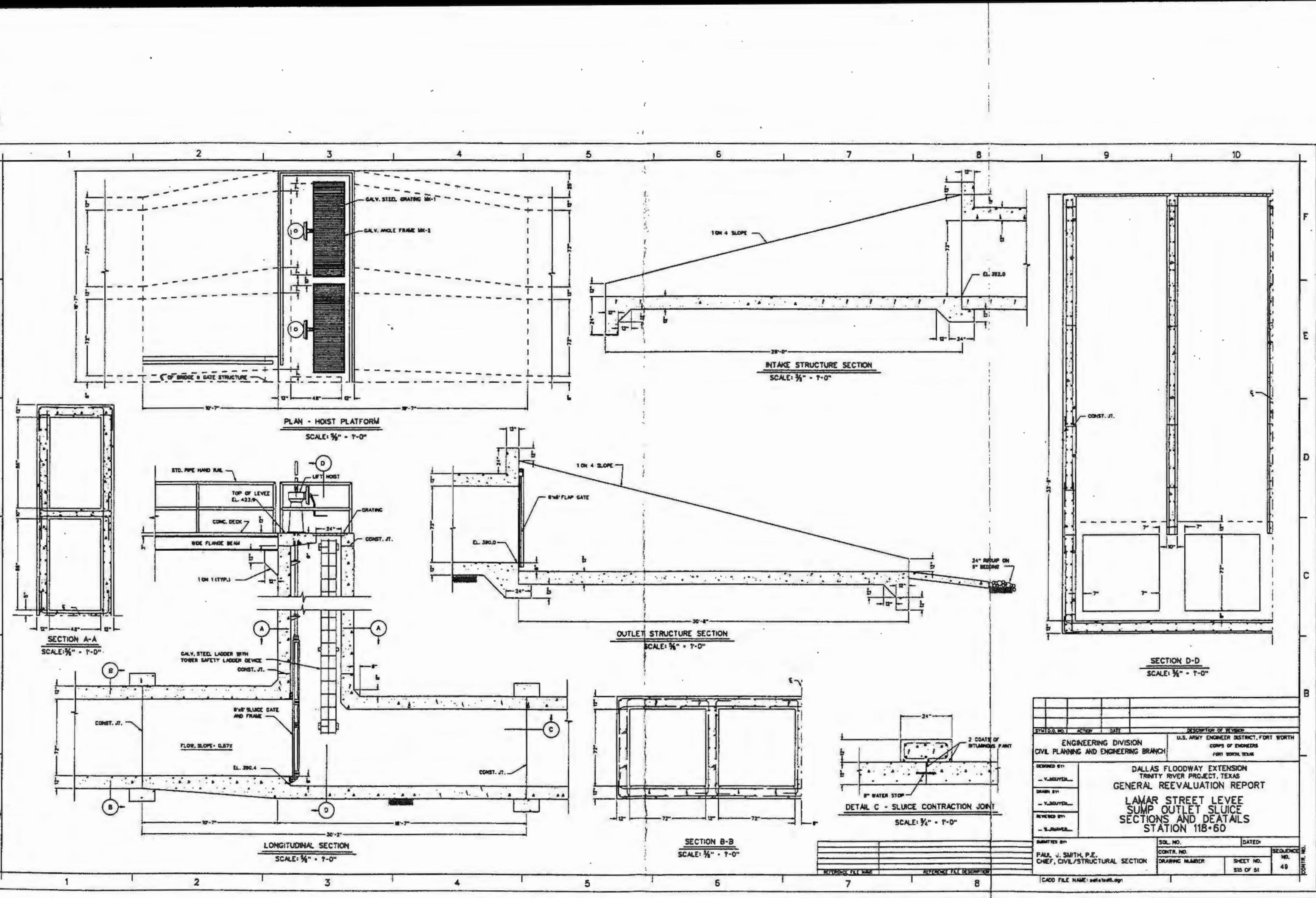


SECTION THROUGH SLUICE

SCALE:  $\frac{1}{30}$ " = 1'-0"

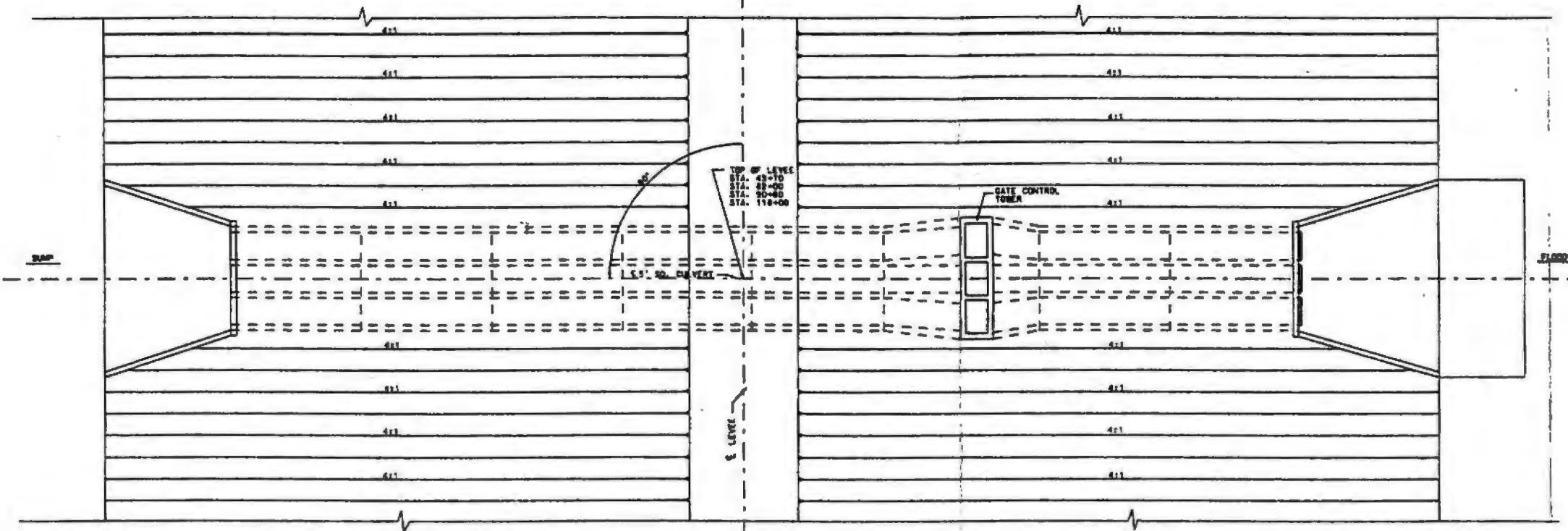
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STN. G.O. NO.	ACTION	DATE	DESCRIPTION OF Revision
			U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DESIGNED BY:	V. RAVEN		ENGINEERING DIVISION CIVIL PLANNING AND ENGINEERING BRANCH
DRAWN BY:	V. RAVEN		DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS
REVISED BY:	V. RAVEN		GENERAL REEVALUATION REPORT
INSPECTED BY:			LAMAR STREET LEVEE SUMP OUTLET SLUICE PLAN AND SECTION STATION 118+60
SOL. NO.		DATED:	
CONTR. NO.			
DRAWING NUMBER		SEQUENCE NO.	
SHEET NO.		48	
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SEQUENCE NO. 48			



1 2 3 4 5 6 7 8 9 10

F

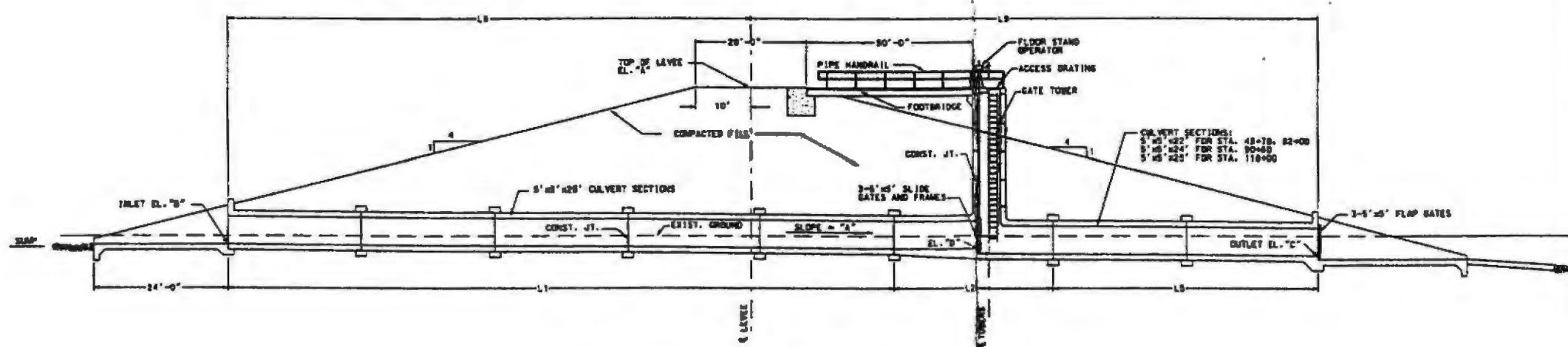


	STATION			
	41-50	82-00	90-80	118-00
L1	108.0	144.0	160.0	176.0
L2	20.0	26.4	32.0	37.0
L3	68.0	96.0	72.0	48.0
L4	78.0	113.2	98.4	82.0
L5	120.0	172.2	122.4	98.0
SLOPE				
SLOPE A	0.102	0.102	0.102	0.102
ELEVATION				
A	421.5	422.8	424.1	425.5
B	395.0	397.0	387.0	406.0
C	384.0	386.0	388.0	404.5
D	384.0	386.0	388.0	404.5

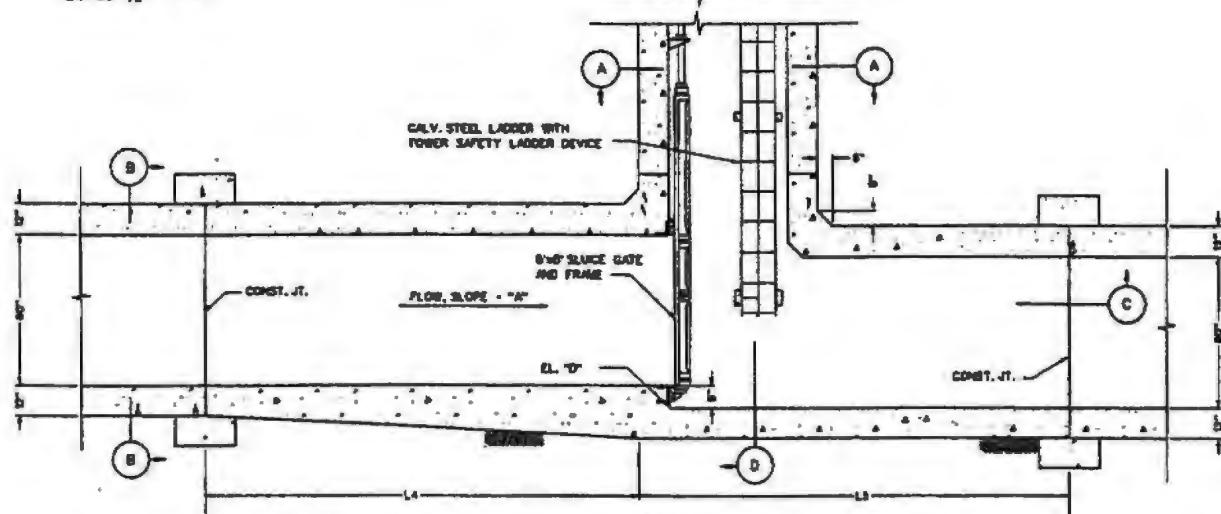
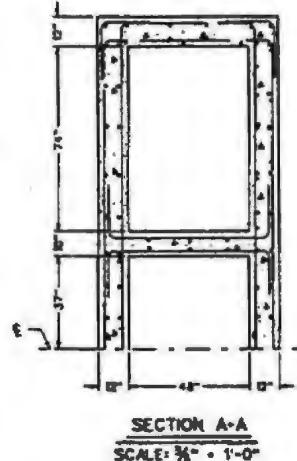
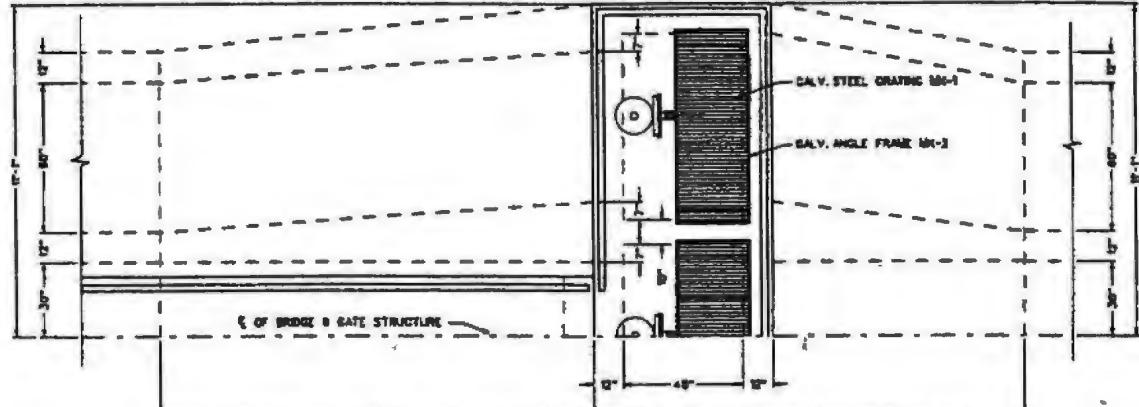
SLUICES DATA

PLAN VIEW  
SCALE: N.T.S.

SECTION THROUGH SLUICE  
SCALE: N.T.S.

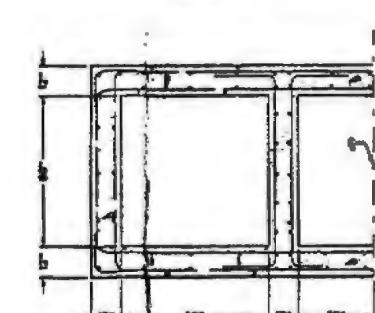
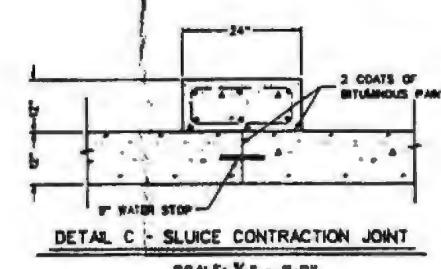
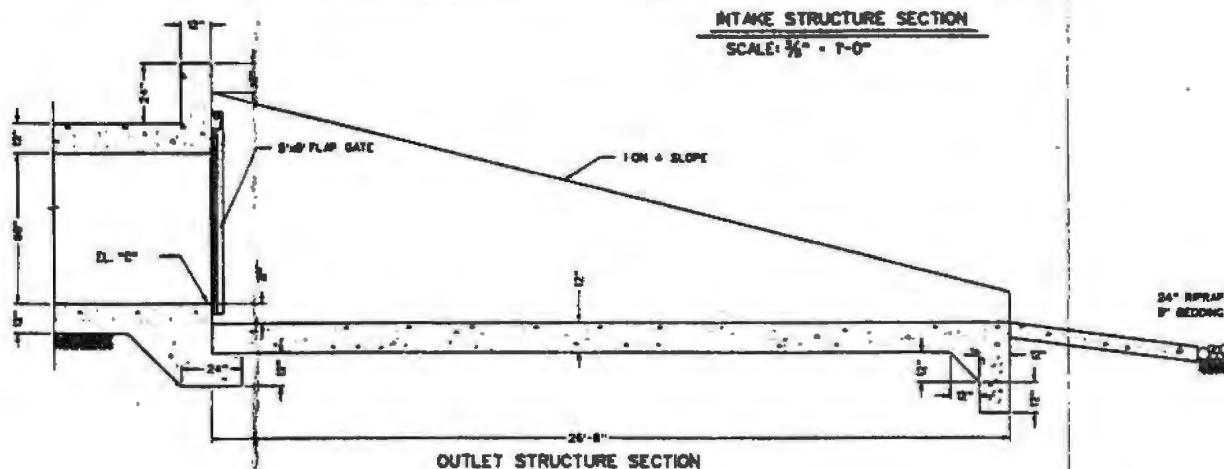
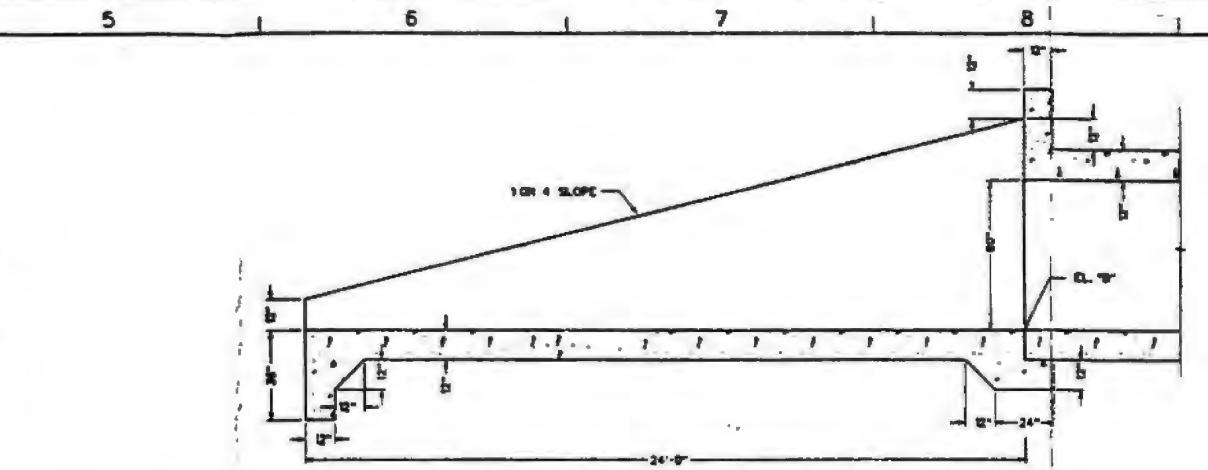


SEARCHED BY	INDEXED BY	FILED BY	DESCRIPTION OF RECORD		
— V. J. SMITH	— V. J. SMITH	— V. J. SMITH	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		
SERIALIZED BY	INDEXED BY	FILED BY	DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS		
REVIEWED BY	APPROVED BY	SUPERVISOR	GENERAL REEVALUATION REPORT		
— V. J. SMITH	— V. J. SMITH	— V. J. SMITH	CADILLAC HEIGHTS LEVEE SUMP OUTLET SLUICES PLANS AND SECTIONS		
SUBMITTED BY	STATION 41-50, 82-00, 90-80, 118-00				
PAUL J. SMITH, P.E. CHIEF, CIVIL/STRUCTURAL SECTION		SOL. NO.	DATED:		
		CONTR. NO.			
		DRAWING NUMBER			
		SEQUENCE NO.			
		SHEET NO.			
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F E D C B A



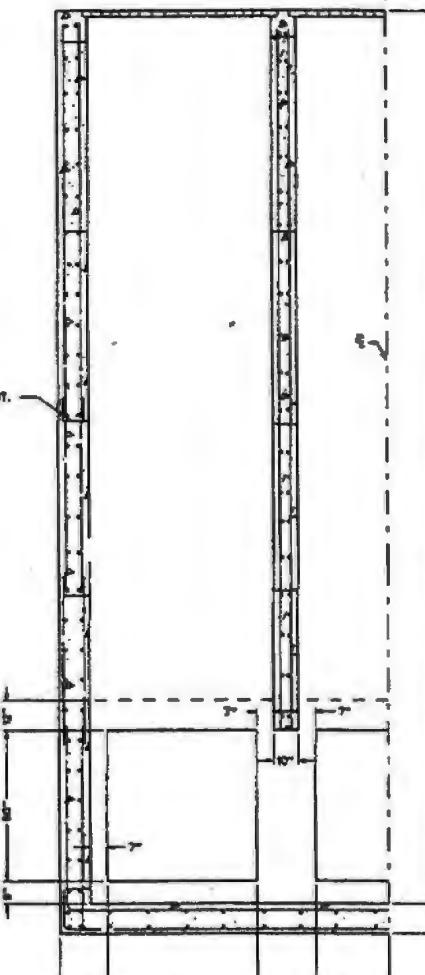
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F E D C B A

LEVEL...	SLAISON...			
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L1.....	28.0...	20.4...	18.0...	12.0...
L2.....	9.0...	9.2...	9.1...	2.0...
L3.....	10.0...	11.2...	10.1...	10.0...
L4.....	26.7...	26.0...	27.3...	20.7...

SLUICES DATA

SUBMITTED BY	SOL. NO.	DATED	DESCRIPTION OF REVIEW	
			REVIEWED BY	APPROVED BY
PAUL J. SMITH, P.E.				
CHEF, CIVIL/STRUCTURAL SECTION				



REV'D D.D. NO.	ACTION	DATE	DESCRIPTION OF REVIEW	
			U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY	V. J. SMITH		GENERAL REEVALUATION REPORT	
DRAWN BY	V. J. SMITH		DALLAS FLOODWAY EXTENSION TRINITY RIVER PROJECT, TEXAS	
REVISED BY	V. J. SMITH		CADILLAC HEIGHTS LEVEE SUMP OUTLET SLUICES SECTIONS AND DETAILS	
SUPERVISED BY			STATION 41-50, 82-00, 91-40, 118-00	
			SOL. NO.	DATED
			CONTR. NO.	
			DRAWING NUMBER	SHEET NO.
				SEQUENCE NO.
				51
				OF 51

STRUCTURE CAT. NO.	STRUCTURE CAT. DESC.	STRUCTURE CAT. NO.	STRUCTURE CAT. DESC.

ICADD FILE NAME:slote2nd2.dwg