[illegible]

U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS HEADQUARTERS GALVESTON, TEXAS	Drawn by: _____	Date: _____	Rev. _____
PREPARED UNDER THE DIRECTION OF CAPTAIN J. E. ZETTORF, P.E. COLONEL, U.S. ARMY, COMMANDING	Designed by: _____	CJM	
	Checked by: _____	CJM	
	Submitted by: _____		
	Approved by: _____		Chief Engineering Branch
Chief Engineering and Construction Division			

SABINE TO GALVESTON
FEASIBILITY STUDY
(DRAFT PLANS - NOT FOR CONSTRUCTION)

Drawing No.:

C-64

File: \$FILE\$
Model Name: \$MODELNAME\$
By: \$USER\$ Date: \$DATE\$



SABINE TO GALVESTON
FEASIBILITY STUDY
(DRAFT PLANS - NOT FOR CONSTRUCTION)

PLAN MITIGATION AREA 11

Drawing No.:
C-65

U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

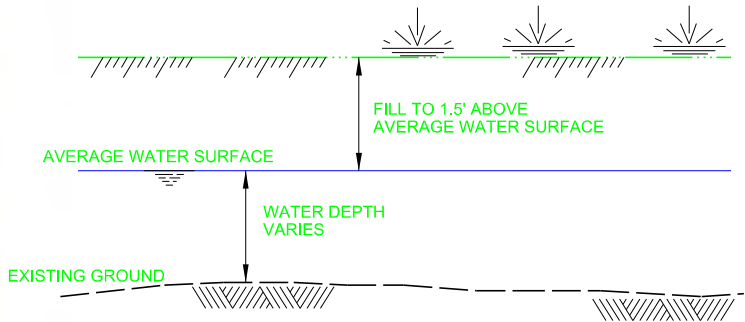
PREPARED UNDER THE DIRECTION OF
LARS N. ZETTORSTROM, P.E.

Drawn by:	CJM	Date:	Rev.
Designed by:	CJM		
Checked by:		Scale: AS SHOWN	

Approved by: _____
Chief, Engineering Branch

[illegible]

File: W:\CADD\Projects\Sn\Sabine to Galveston\Appendix sheets\C-66 Mitigation Area 28 & 29.dgn
Model Name: Default
By: m3cecdm Date: 9/21/2016 Time: 9:53:42 AM



- LEGEND**
- LEVEE
 - FLOODWALL
 - AREA BOUNDARY LIMITS
 - NEW HYDRAULIC PLACED DIKE
 - MARSH RESTORATION



Rev.	Description	Date	By

Drawn by: C/M	Date:	Rev:
Designed by: C/M	Scale: AS SHOWN	
Checked by:	Approval Recommended:	
Submitted by:	Chief Engineering Branch	
Approved by:	Chief Engineering and Construction Division	
U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS		
PREPARED UNDER THE DIRECTION OF LARS N. ZEITSTROM, P.E. COLONEL, U.S. ARMY, COMMANDING		

SABINE TO GALVESTON
FEASIBILITY STUDY
(DRAFT PLANS - NOT FOR CONSTRUCTION)

PLAN AND CROSS SECTION
MITIGATION AREA 28 AND 29

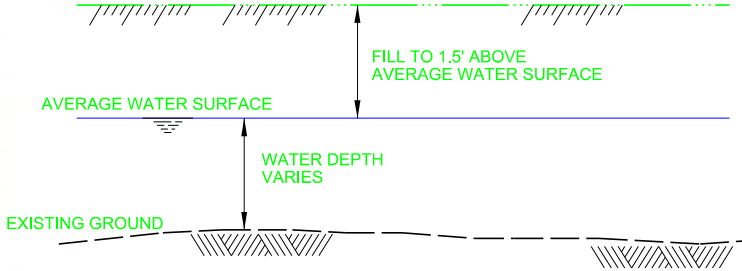
Drawing No.:
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By: m3ececim Date: 9/21/2016 Time: 9:56:00 AM



LEGEND

- LEVEE
- FLOODWALL
- AREA BOUNDARY LIMITS
- NEW HYDRAULIC PLACED DIKE
- MARSH RESTORATION
- FORESTED WETLAND



TYPICAL MARSH RESTORATION SECTION
NTS



Rev.	Description	Date	By

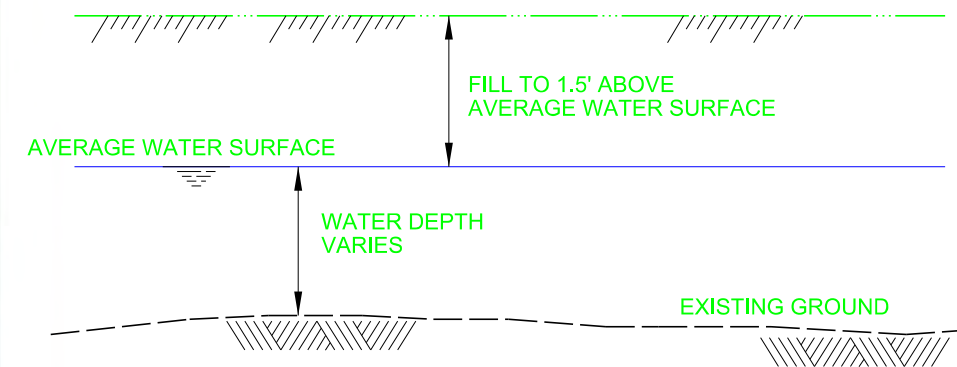
Drawn by: C/M	Date:	Rev:
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Checked by:	Approval Recommended:	
Submitted by:	Chief Engineering Branch	
Approved by:	Chief Engineering and Construction Division	
U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS		
PREPARED UNDER THE DIRECTION OF LARS N. ZETTORSTROM, P.E. COLONEL, U.S. ARMY, COMMANDING		

SABINE TO GALVESTON
FEASIBILITY STUDY
(DRAFT PLANS - NOT FOR CONSTRUCTION)

PLAN AND CROSS SECTION
MITIGATION AREA 31 AND 161

Drawing No.:

C-67



TYPICAL MARSH RESTORATION SECTION





- Pipe Diameter**
- ⊕ 2.38" - 10.75"
 - ⊕ 12.75" - 22"
 - ⊕ 24" - 42"
- Gate
- Floodwall
- Levee
- Work Areas

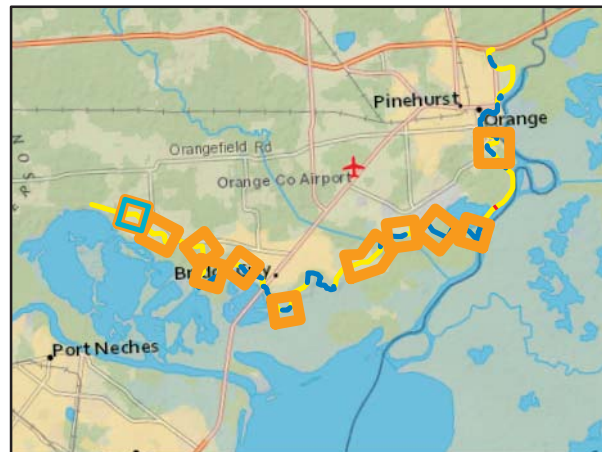
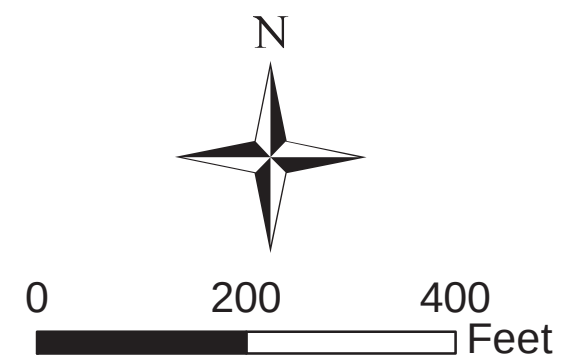


Image: 2015 TNIRIS



ORANGE COUNTY CSRM

24 June 2016

**Work Area
Pipe Crossings**

C-69



- | Pipe Diameter | | |
|---------------|----------------|--------------|
| ⊕ | 2.38" - 10.75" | — Gate |
| ⊕ | 12.75" - 22" | — Floodwall |
| ⊕ | 24" - 42" | — Levee |
| | | ⋯ Work Areas |

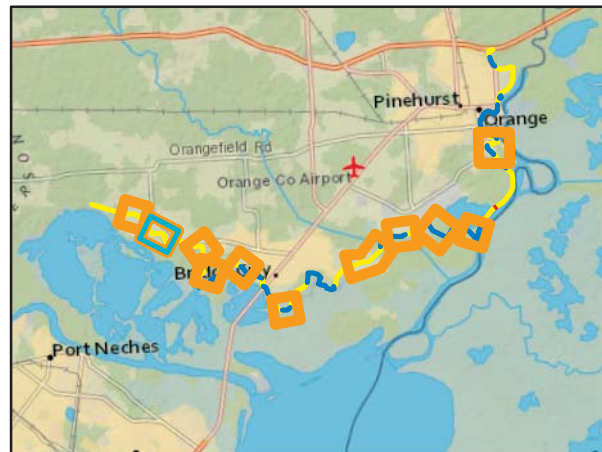
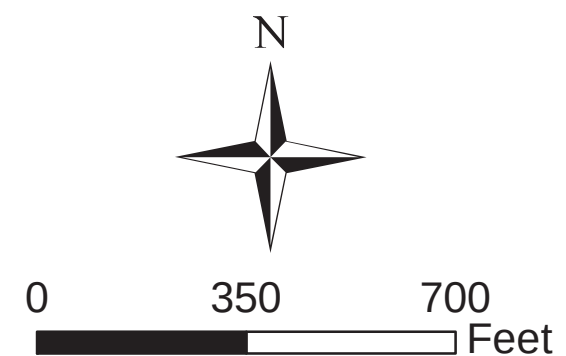


Image: 2015 TNIRIS



ORANGE COUNTY CSRM

24 June 2016

**Work Area
Pipe Crossings**

C-70



- Pipe Diameter**
- ⊕ 2.38" - 10.75"
 - ⊕ 12.75" - 22"
 - ⊕ 24" - 42"
- Gate
 - Floodwall
 - Levee
 - ⋯ Work Areas

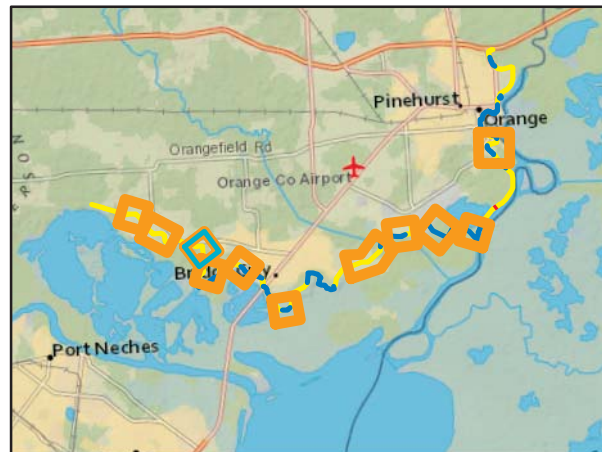
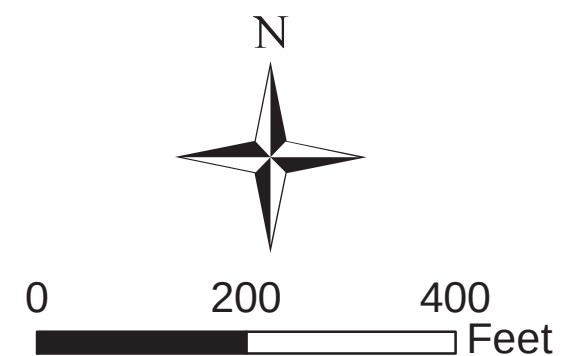


Image: 2015 TNIRIS



ORANGE COUNTY CSRM

24 June 2016

**Work Area
Pipe Crossings**

C-71



- Pipe Diameter**
- 2.38" - 10.75"
 - 12.75" - 22"
 - 24" - 42"
- Gate
Floodwall
Levee
Work Areas

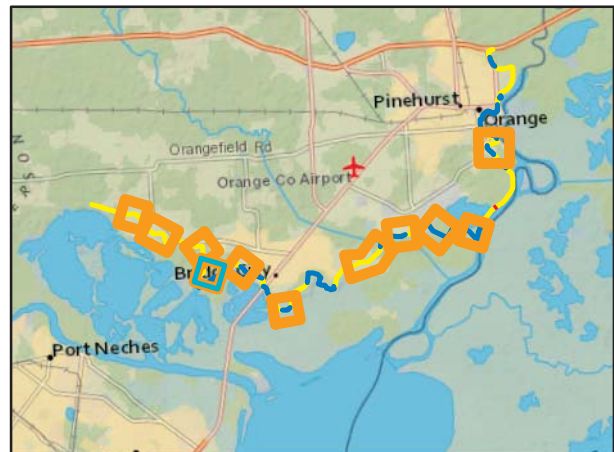
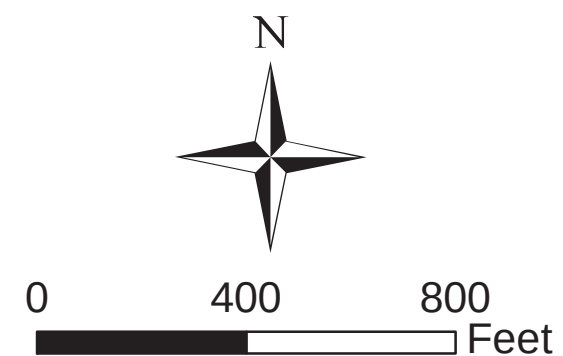


Image: 2015 TNRI



ORANGE COUNTY CSRM

24 June 2016

Work Area Pipe Crossings

C-72



- | Pipe Diameter | | |
|---------------|----------------|--------------|
| ⊕ | 2.38" - 10.75" | — Gate |
| ⊕ | 12.75" - 22" | — Floodwall |
| ⊕ | 24" - 42" | — Levee |
| | | ⋯ Work Areas |

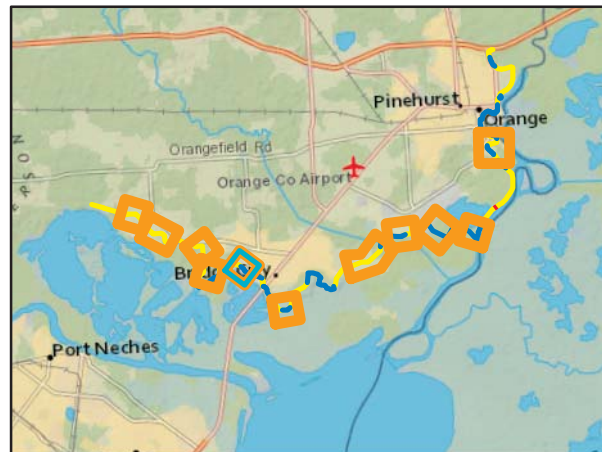
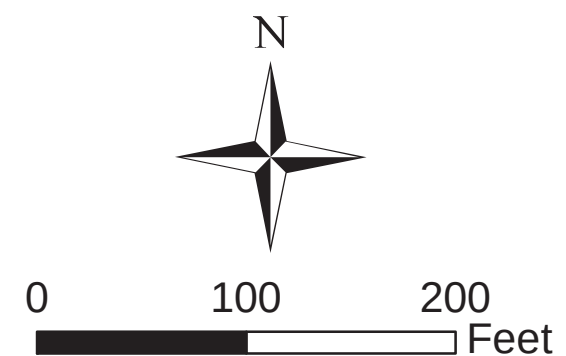


Image: 2015 TNIRIS



ORANGE COUNTY CSRM

24 June 2016

**Work Area
Pipe Crossings**

C-73



- | Pipe Diameter | | |
|---------------|----------------|--------------|
| ⊕ | 2.38" - 10.75" | — Gate |
| ⊕ | 12.75" - 22" | — Floodwall |
| ⊕ | 24" - 42" | — Levee |
| | | ⋯ Work Areas |

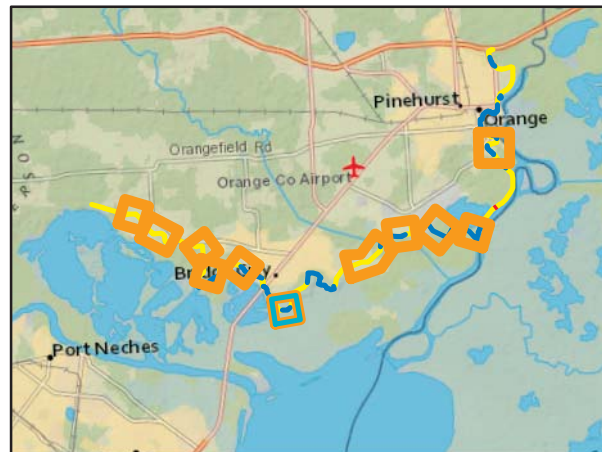
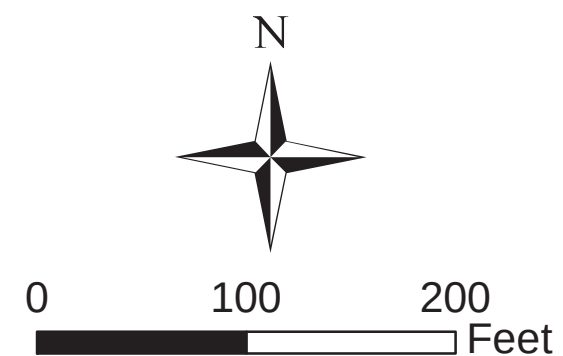


Image: 2015 TNRIS



ORANGE COUNTY CSRM

24 June 2016

**Work Area
Pipe Crossings**

C-74



- | Pipe Diameter | | |
|---------------|----------------|--------------|
| ⊕ | 2.38" - 10.75" | — Gate |
| ⊕ | 12.75" - 22" | — Floodwall |
| ⊕ | 24" - 42" | — Levee |
| | | ⋯ Work Areas |

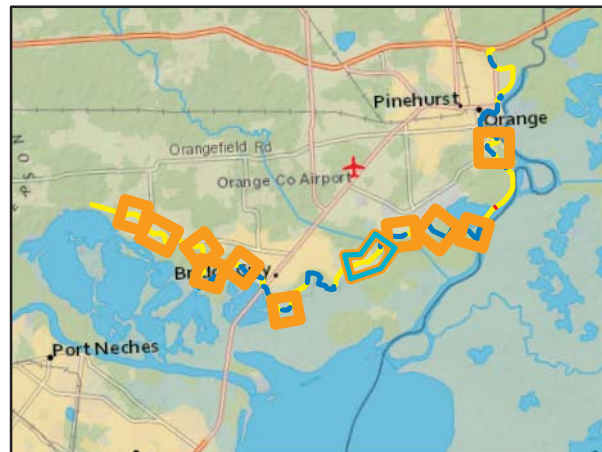
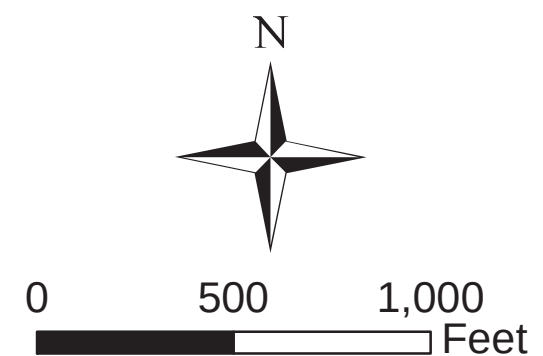


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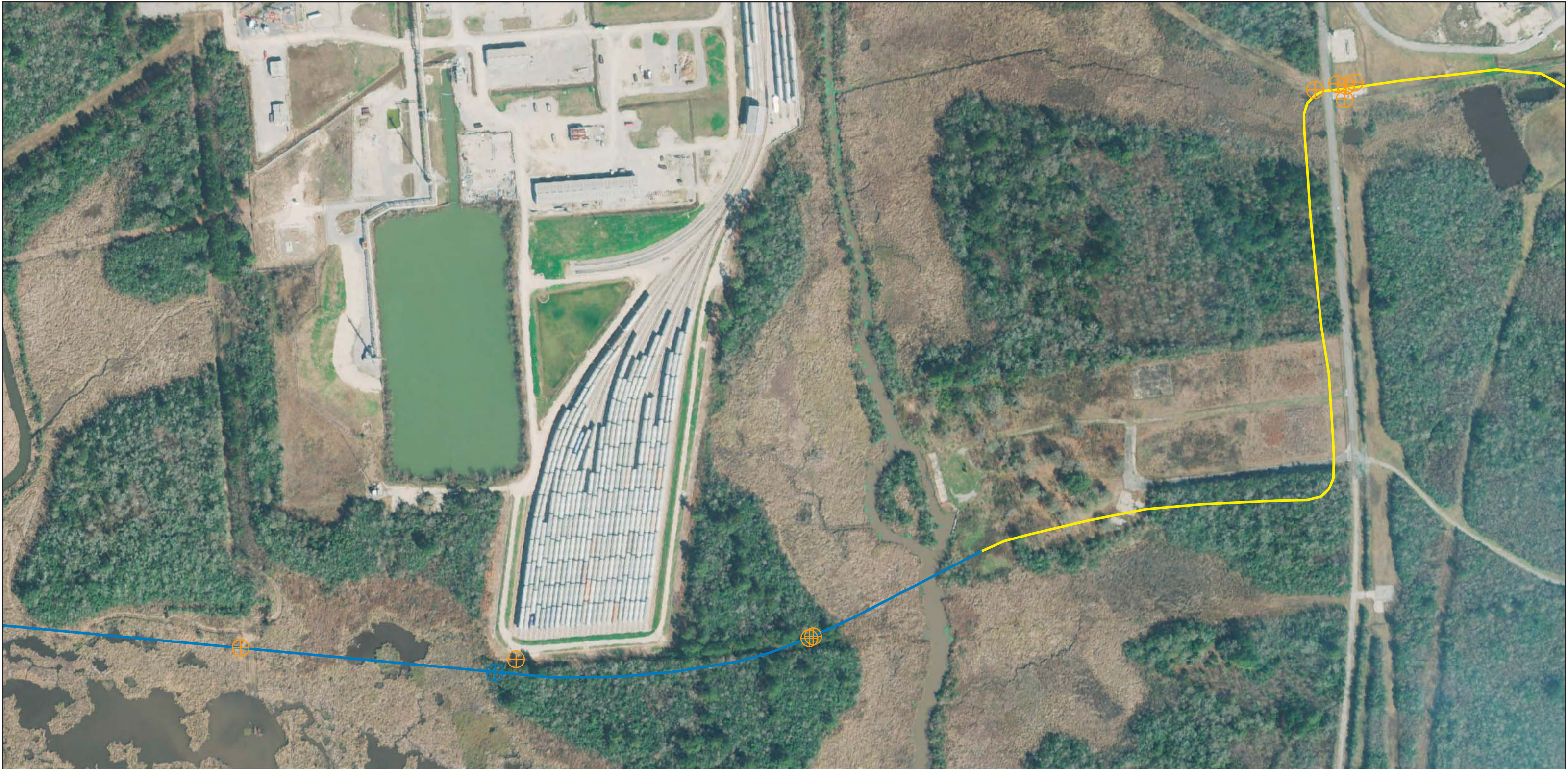


ORANGE COUNTY CSRM

24 June 2016

**Work Area
Pipe Crossings**

C-75



- Pipe Diameter**
- 2.38" - 10.75"
 - 12.75" - 22"
 - 24" - 42"
- Gate
Floodwall
Levee
Work Areas

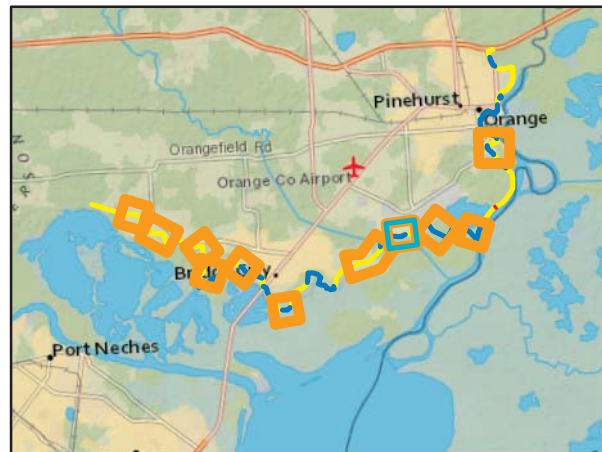
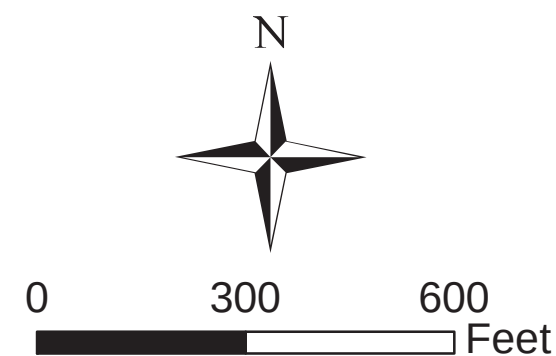


Image: 2015 TNRS



**ORANGE COUNTY
CSRM**

24 June 2016

**Work Area
Pipe Crossings**

C-76



- | Pipe Diameter | | |
|---------------|----------------|--------------|
| ⊕ | 2.38" - 10.75" | — Gate |
| ⊕ | 12.75" - 22" | — Floodwall |
| ⊕ | 24" - 42" | — Levee |
| | | ⋯ Work Areas |

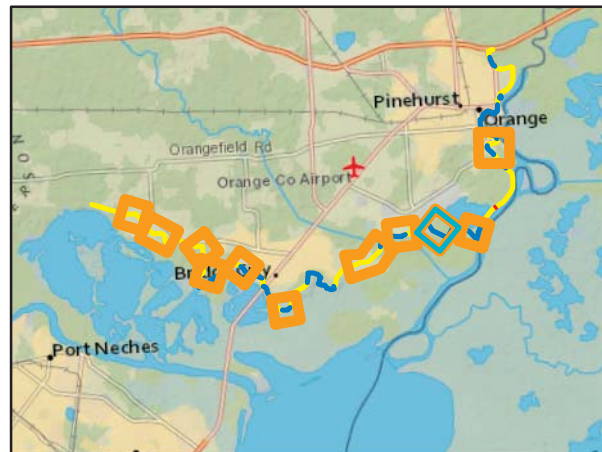
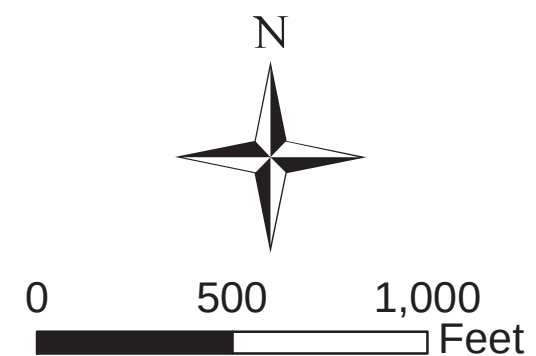


Image: 2015 TNRIS



ORANGE COUNTY CSRM

24 June 2016

Work Area
Pipe Crossings

C-77



- Pipe Diameter**
- ⊕ 2.38" - 10.75"
 - ⊕ 12.75" - 22"
 - ⊕ 24" - 42"
- Gate
— Floodwall
— Levee
Work Areas

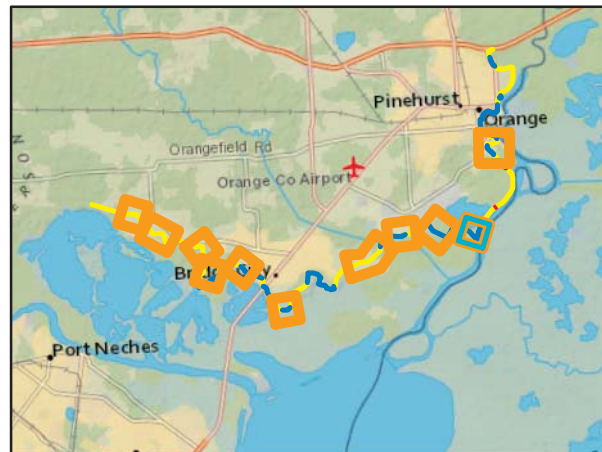
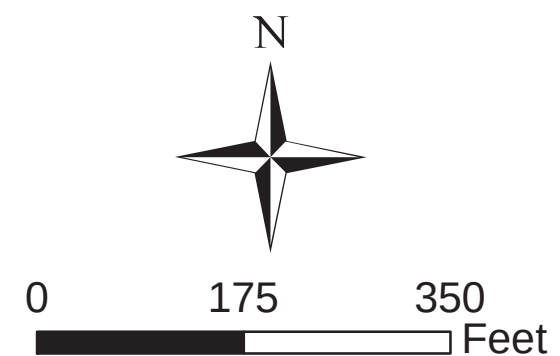


Image: 2015 TNRIS



ORANGE COUNTY CSRM

24 June 2016

**Work Area
Pipe Crossings**

C-78



- Pipe Diameter**
- 2.38" - 10.75"
 - 12.75" - 22"
 - 24" - 42"
- Legend:**
- Gate
 - Floodwall
 - Levee
 - Work Areas

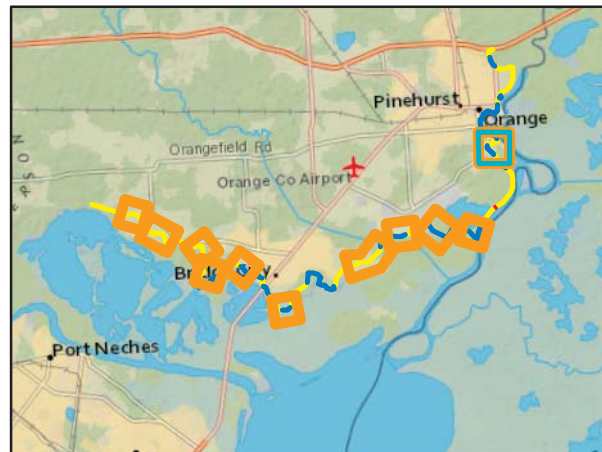
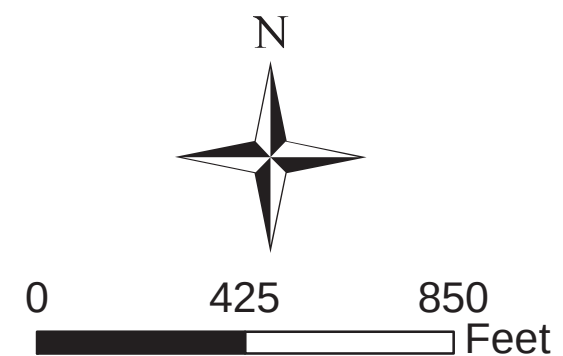


Image: 2015 TNRIIS



ORANGE COUNTY CSRM

24 June 2016

**Work Area
Pipe Crossings**

C-79



Pipe Diameter



4" - 10.75"



12" - 20"



22" - 36"



Work Area



Levee



Floodwall



Image: 2015 TNIRIS



0 150 300 Feet

**PORT ARTHUR
AND VICINITY
CSRM**

6 July 2016

**Work Area
Pipe Crossings**

C-80



Pipe Diameter



4" - 10.75"



12" - 20"



22" - 36"



Work Area



Levee



Floodwall



Image: 2015 TNRIS

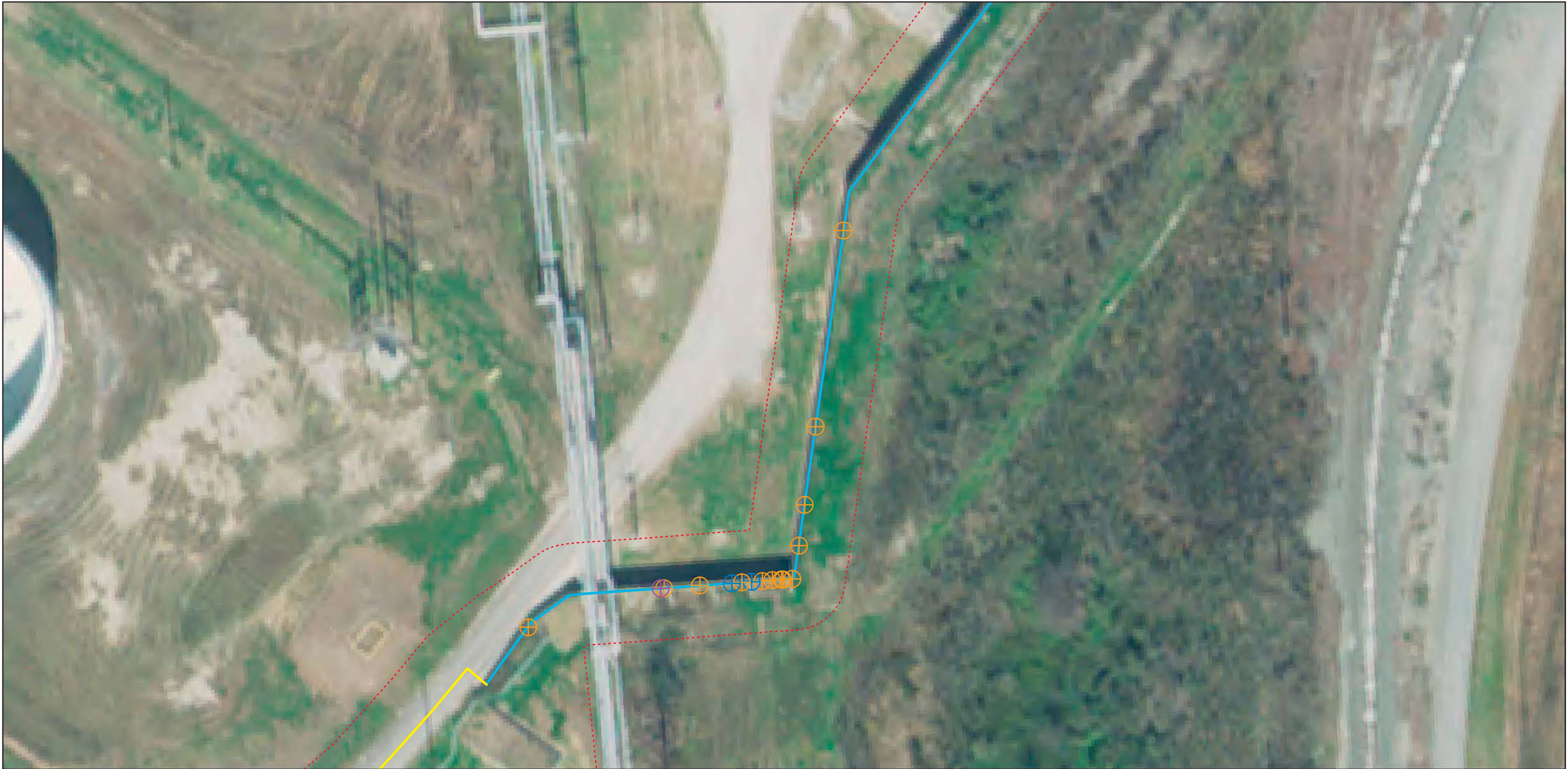


PORT ARTHUR
AND VICINITY
CSRM

6 July 2016

Work Area
Pipe Crossings

C-81



Pipe Diameter



4" - 10.75"



12" - 20"



22" - 36"



Work Area



Levee



Floodwall



Image: 2015 TNRS



**PORT ARTHUR
AND VICINITY
CSRM**

6 July 2016

**Work Area
Pipe Crossings**

C-82



Pipe Diameter



4" - 10.75"



12" - 20"



22" - 36"



Work Area



Levee



Floodwall



Image: 2015 TNRIS



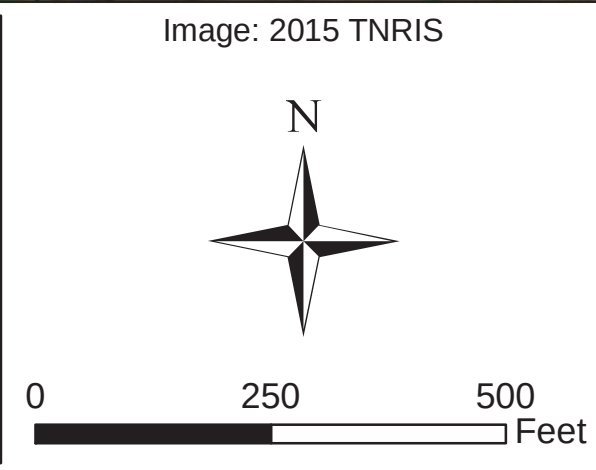
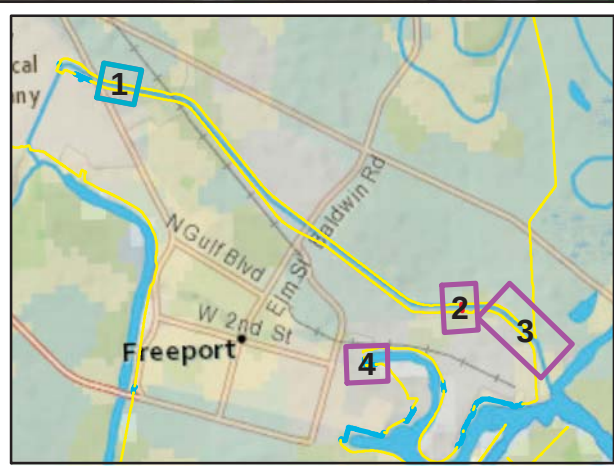
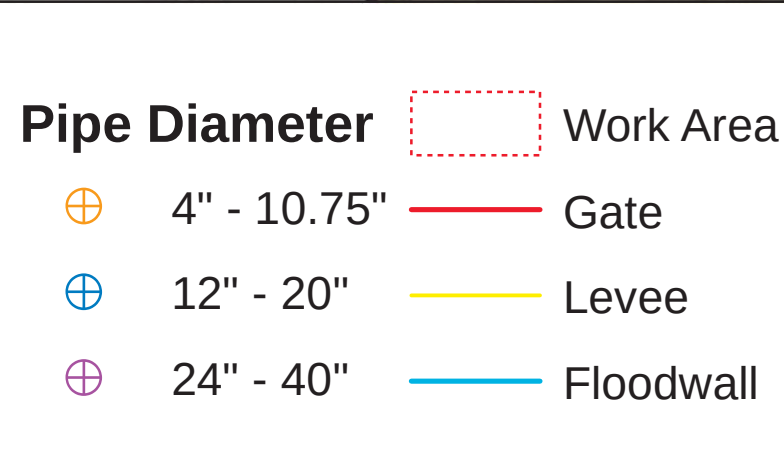
0 125 250
Feet

**PORT ARTHUR
AND VICINITY
CSRM**

6 July 2016

**Work Area
Pipe Crossings**

C-83



**FREEPORT AND VICINITY
CSRM**

6 July 2016

**Work Area
Pipe Crossings**

C-84





**US Army Corps
of Engineers**®
Galveston District

Pipe Diameter

 4" - 10.75"

 12" - 20"

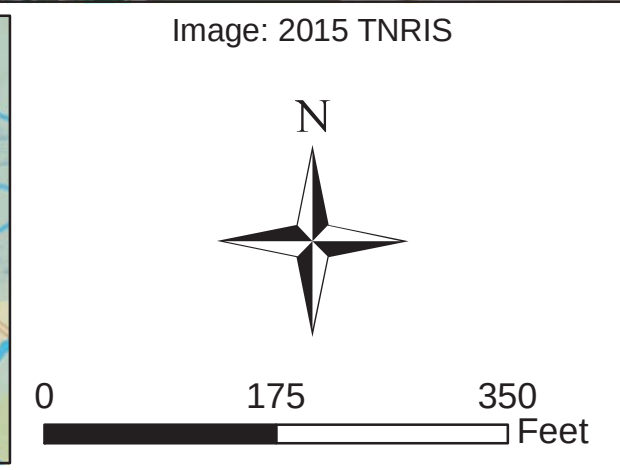
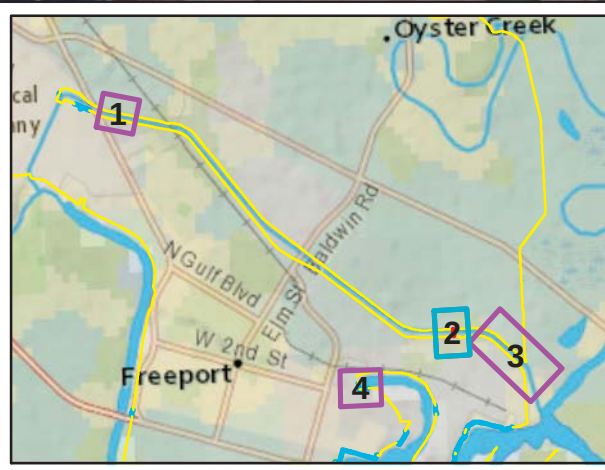
 24" - 40"

 Work Area

 Gate

 Levee

 Floodwall

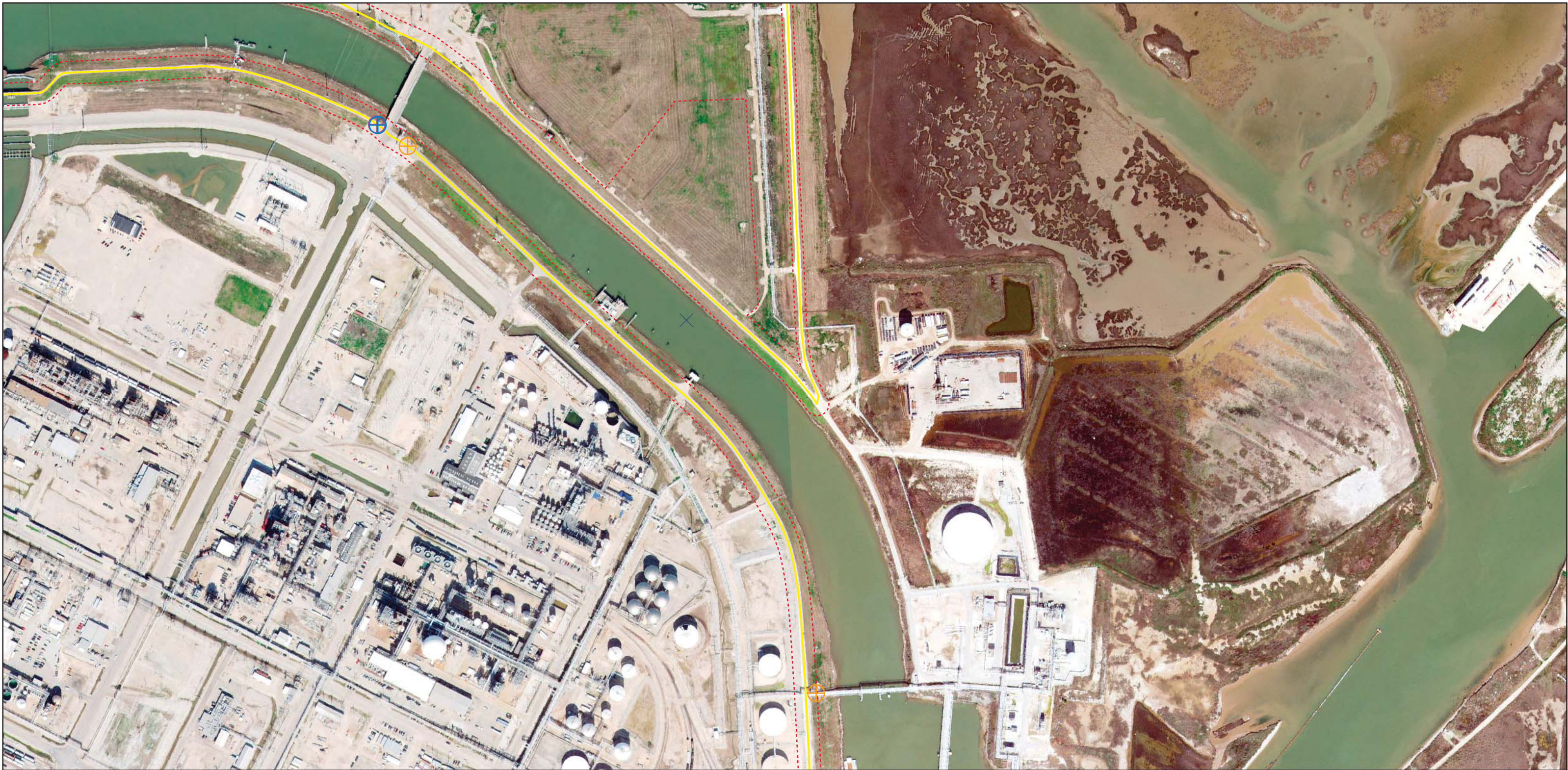


**FREEPORT AND VICINITY
CSRM**

6 July 2016

**Work Area
Pipe Crossings**

C-85



- Pipe Diameter**
- | | | |
|---|-------------|-----------|
| ⊕ | 4" - 10.75" | Work Area |
| ⊕ | 12" - 20" | Gate |
| ⊕ | 24" - 40" | Levee |
| | | Floodwall |

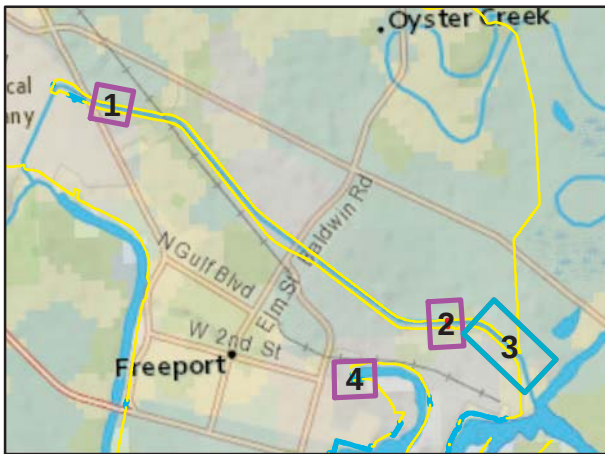
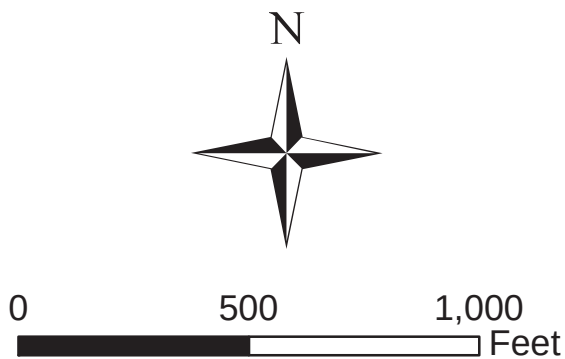


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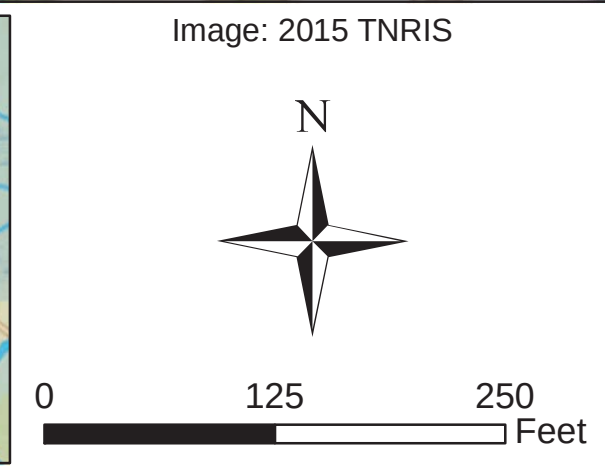
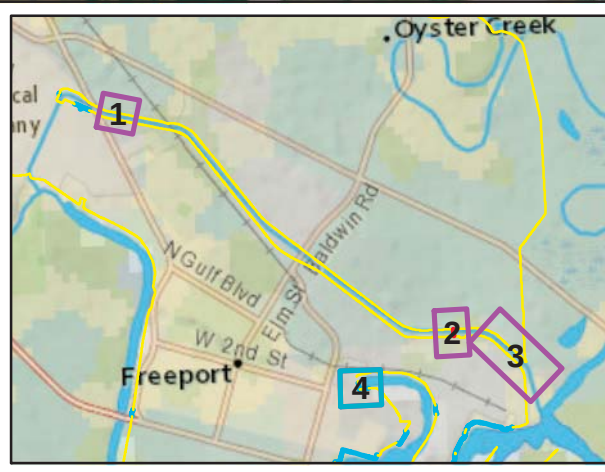
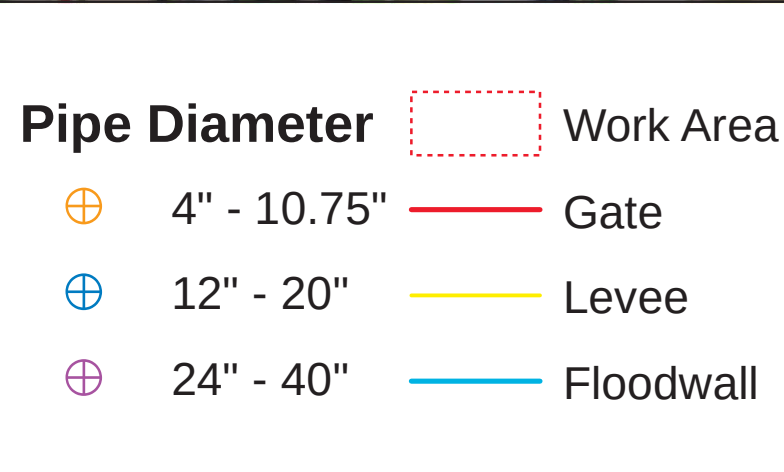


FREEPORT AND VICINITY CSRM

6 July 2016

**Work Area
Pipe Crossings**

C-86



FREEPORT AND VICINITY

CSRM

6 July 2016

Work Area

Pipe Crossings

C-87

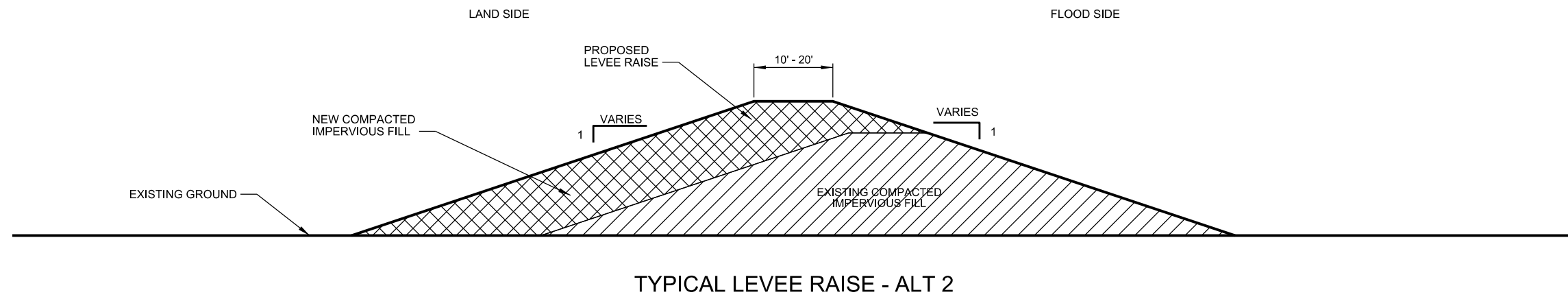
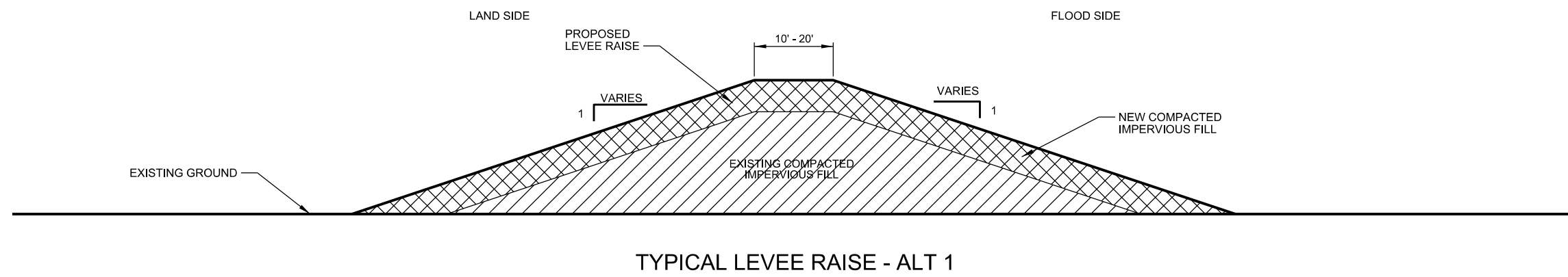
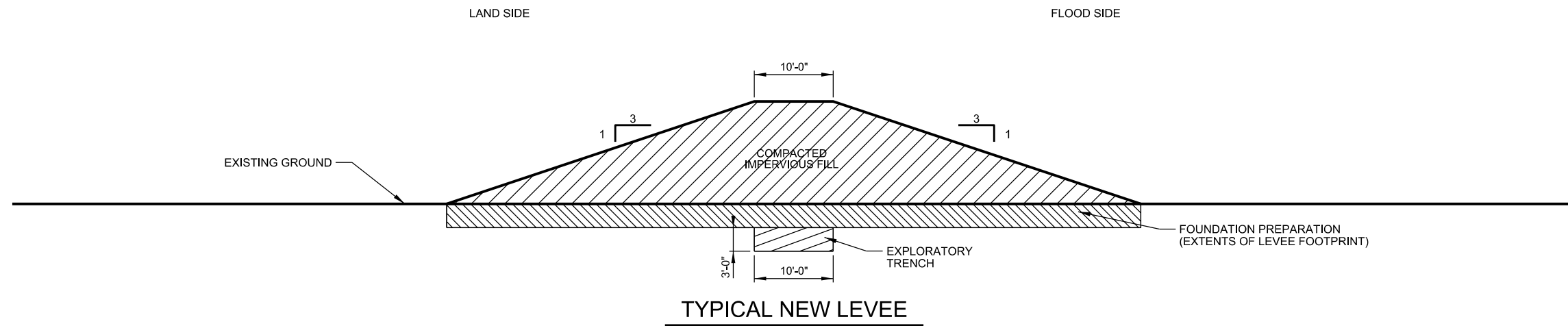
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U.S. ARMY ENGINEER DISTRICT, GALVESTON COMBINED DISTRICT OFFICE GALVESTON, TEXAS				Drawn by: _____	FRC _____	Date: _____	Rev. _____
				Designed by: _____	FRC _____	Scale: AS SHOWN	
				Checked by: _____			
				Submitted by: _____		Approval Recommended: _____	
				_____		Chief, Engineering Branch	
				_____		Approved by: _____	
PREPARED UNDER THE DIRECTION OF MAJOR ZEPHYRUS P. LARSON COLONEL U.S. ARMY, COMMANDING				*** Chief, Engineering and Construction Division ***			

SABINE TO GALVESTON
FEASIBILITY STUDY
(DRAFT PLANS - NOT FOR CONSTRUCTION)

TYPICAL LEVEE SECTIONS

Drawing No.:
B-01



ASSUMPTIONS:

1. TYPICAL NEW LEVEE - MATERIAL QUANTITY INCLUDES 4 FT OF SETTLEMENT IN ADDITION TO SECTION SHOWN.

[illegible]

Approved by: _____	Chief, Engineering and Construction Division	_____	_____
Submitted by: _____	_____	_____	_____
Checked by: _____	_____	_____	_____
Designed by: _____	CJM	_____	_____
Drawn by: _____	_____	_____	_____
Date: _____	_____	_____	_____
Scale: AS SHOWN	_____	_____	_____
Approval Recommended: _____	_____	_____	_____
Chief, Engineering Branch	_____	_____	_____

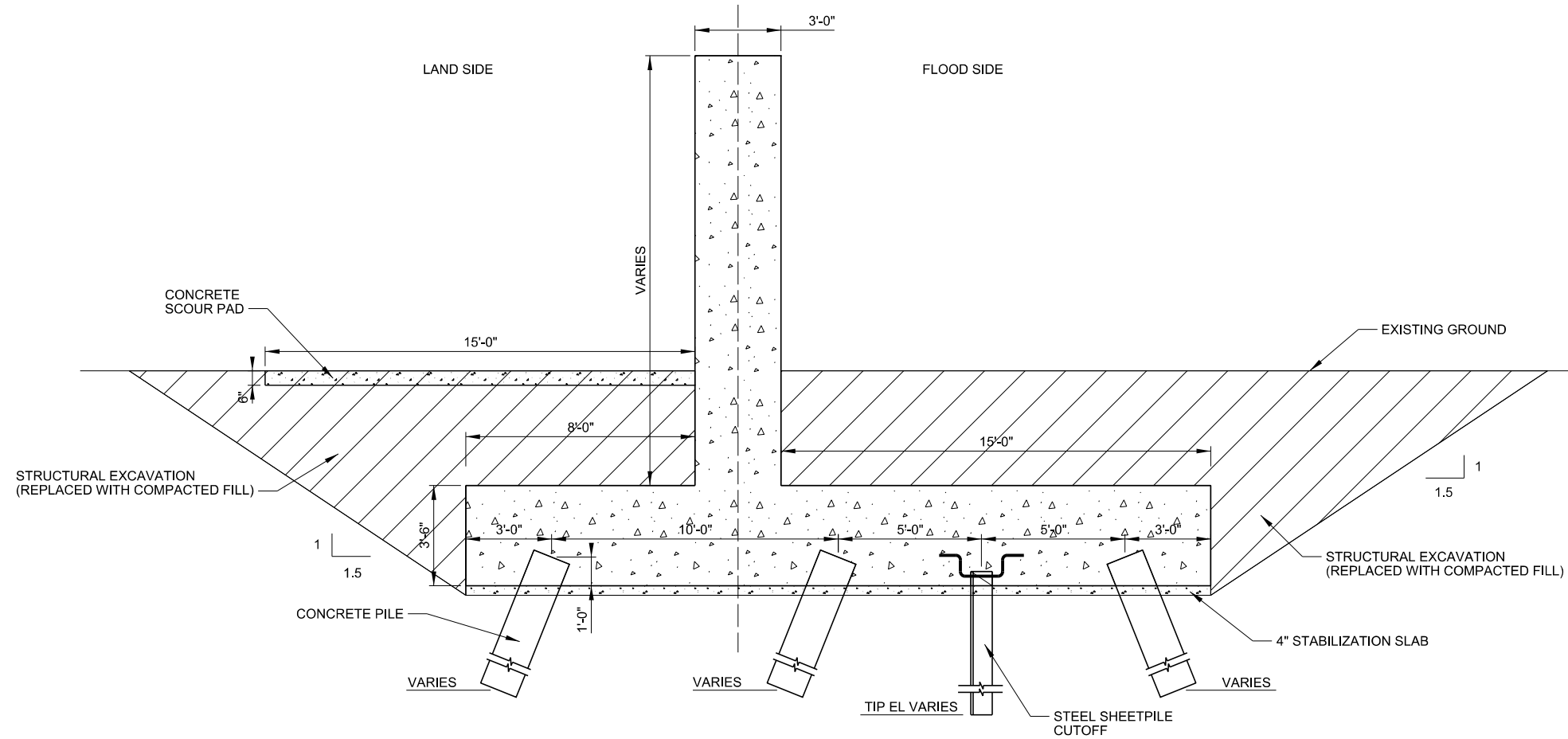
U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

PREPARED UNDER THE DIRECTION OF
LARS N. ZETTORSTROM, P.E.,
COLONEL, U.S. ARMY, COMMANDING

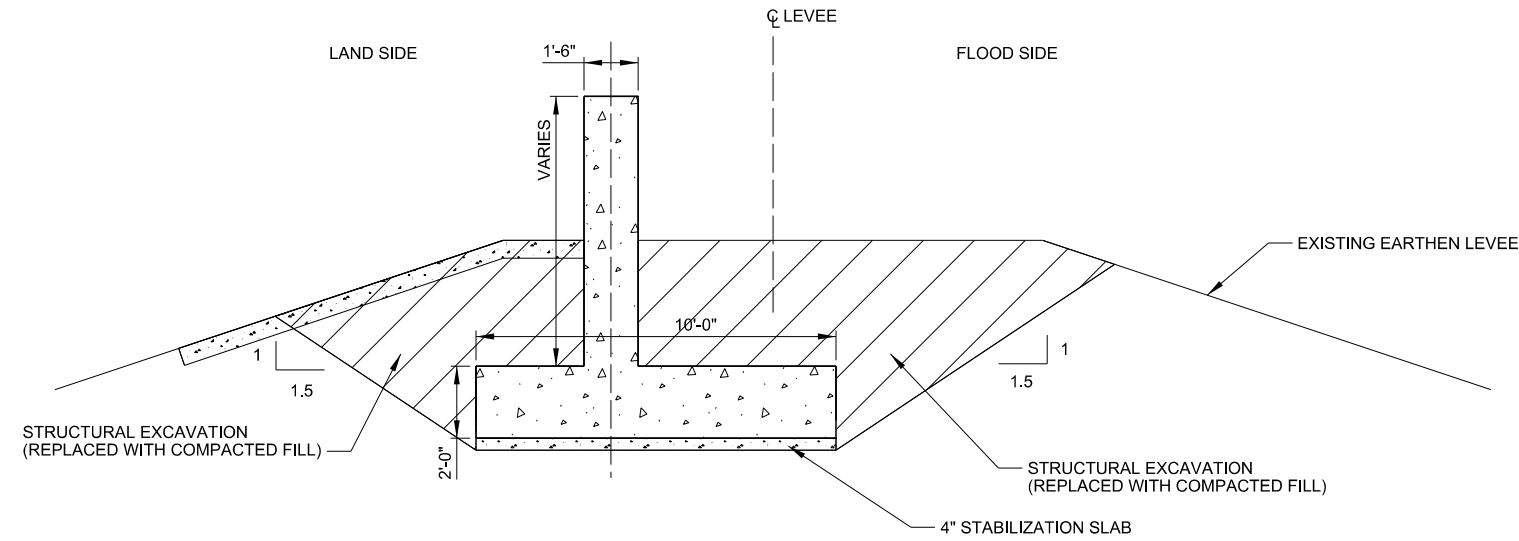
FLOODWALL
TYPICAL SECTIONS

Drawing No.:

S-01



A TYPICAL FLOODWALL SECTION
TYPICAL FOR STICKUP HEIGHTS ABOVE 7 FT



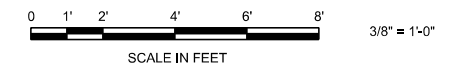
B TYPICAL FLOODWALL SECTION -
IN PLACE OF EARTHEN LEVEE RAISE
--- TYPICAL FOR STICKUP HEIGHTS FROM 4 TO 7 FT

ASSUMPTIONS:

1. EXISTING GROUND AT EL 5.0
2. STRUCTURAL EXCAVATION TO BOTTOM OF FLOODWALL CONSTRUCTION.
3. SIMILAR SOIL CONDITIONS EXIST IN ALL FLOODWALL LOCATIONS.
4. 16" PRESTRESSED CONCRETE PILES, 3 PILES/ROW AT 5 FT SPACING.
FOR COST ESTIMATING PURPOSES, PILES ARE 60 FT IN LENGTH.
5. SHEETPILE CUTOFF TIP ELEVATION OF -23 FT, FOR COST ESTIMATING PURPOSES.
6. FLOODWALL CONSTRUCTED TO THE 50 YR INTERMEDIATE RSLC SCENARIO.
ADAPTABLE TO 100 YR INT OR 50 YR HIGH RSLC SCENARIO.
7. ALL FLOODWALL SHOWN ON C-XX SHEETS SHALL BE SECTION 'A', UNLESS OTHERWISE NOTED AS SECTION 'B'.

ASSUMPTIONS:

1. EXISTING GROUND IS EARTHEN LEVEE OF EXISTING LEVEE SYSTEM.
2. DEGRADE LEVEE TO PLACE FLOODWALL.
3. FLOODWALL UTILIZED WHERE EARTHEN LEVEE RAISE IS NOT FEASIBLE.
4. LEVEE ELEVATION VARIES.





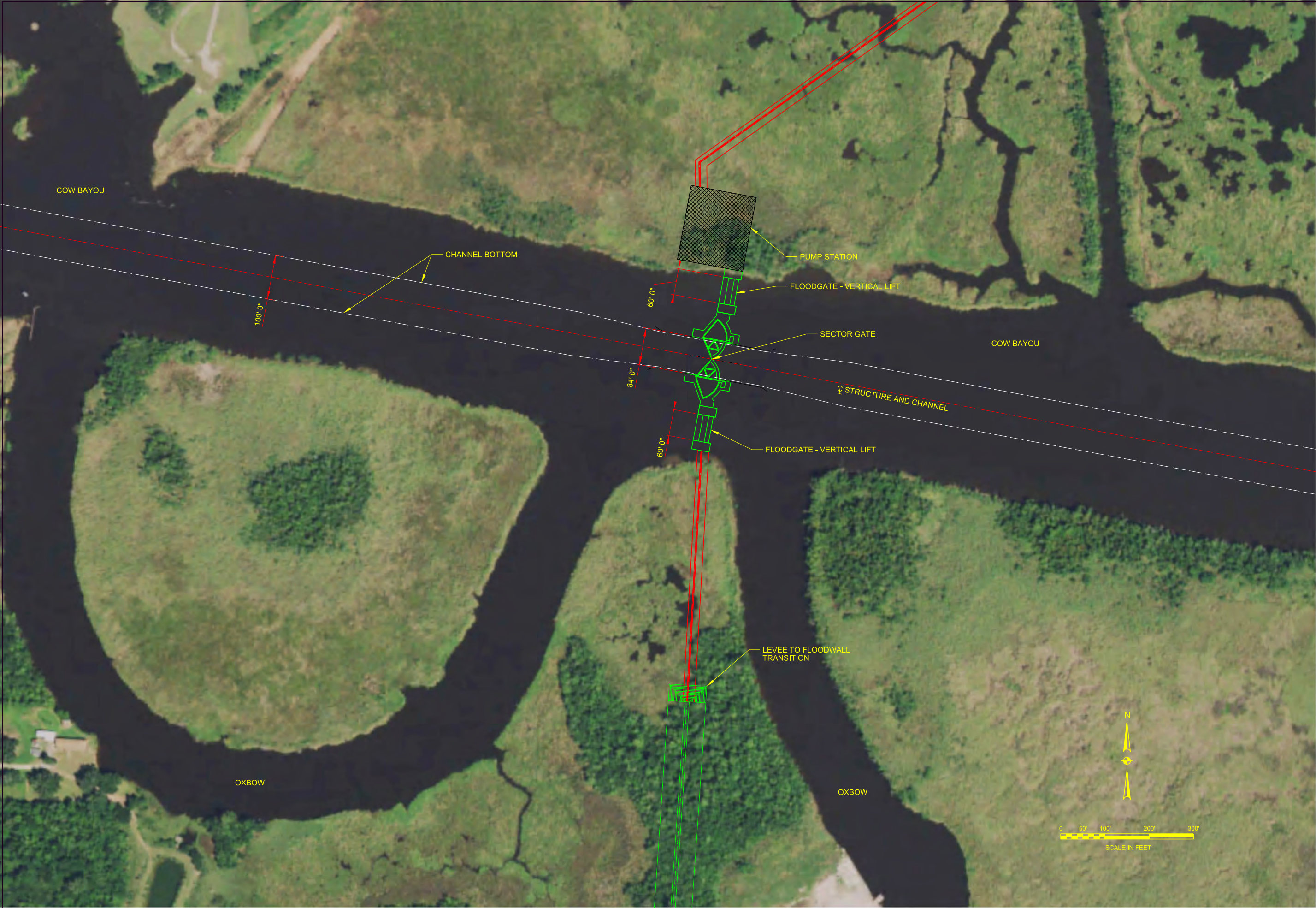
Rev.	Description	Date	By

Drawn by: C/M	Date:	Rev:
Designed by: C/M	Scale: AS SHOWN	
Checked by: X	Approval Recommended:	
Submitted by:	Chief Engineering Branch	
Approved by:	Chief Engineering and Construction Division	
U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS		
PREPARED UNDER THE DIRECTION OF LARS N. ZETTORSTROM, P.E. COLONEL, U.S. ARMY, COMMANDING		

SABINE TO GALVESTON
FEASIBILITY STUDY
(DRAFT PLANS - NOT FOR CONSTRUCTION)

ADAMS BAYOU
GATE STRUCTURE PLAN

Drawing No.:
S-02



Rev.	Description	Date	By

Drawn by: C/M	Date:	Rev:
Designed by: C/M	Scale: AS SHOWN	
Checked by:	Approval Recommended:	
Submitted by:	Chief Engineering Branch	
Approved by:	Chief Engineering and Construction Division	
U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS		
PREPARED UNDER THE DIRECTION OF LARS N. ZETTORSTROM, P.E. COLONEL, U.S. ARMY, COMMANDING		

SABINE TO GALVESTON
FEASIBILITY STUDY
(DRAFT PLANS - NOT FOR CONSTRUCTION)

COW BAYOU
GATE STRUCTURE PLAN

Drawing No.:
S-03



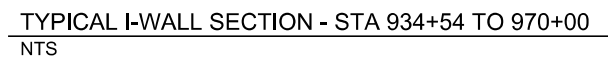
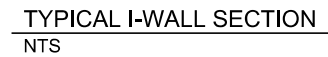
Rev.	Description	Date	By

Drawn by: C/M	Date:	Rev:
Designed by: C/M	Scale: AS SHOWN	
Checked by:	Approval Recommended:	
Submitted by:	Chief Engineering Branch	
Approved by:	Chief Engineering and Construction Division	
U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS		
PREPARED UNDER THE DIRECTION OF LARS N. ZETTORSTROM, P.E. COLONEL, U.S. ARMY, COMMANDING		

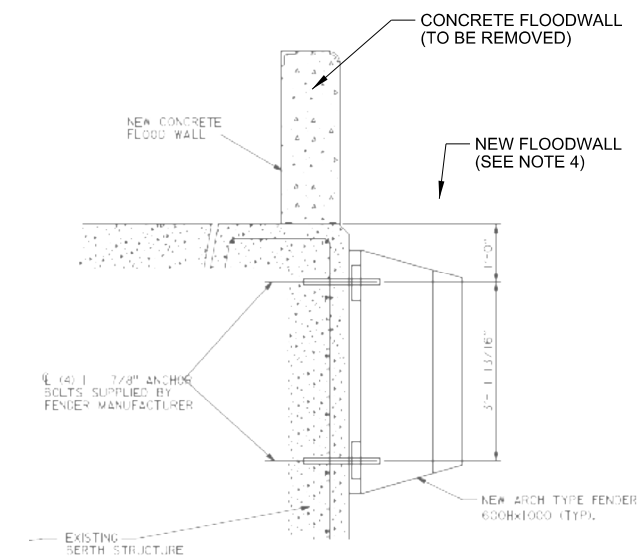
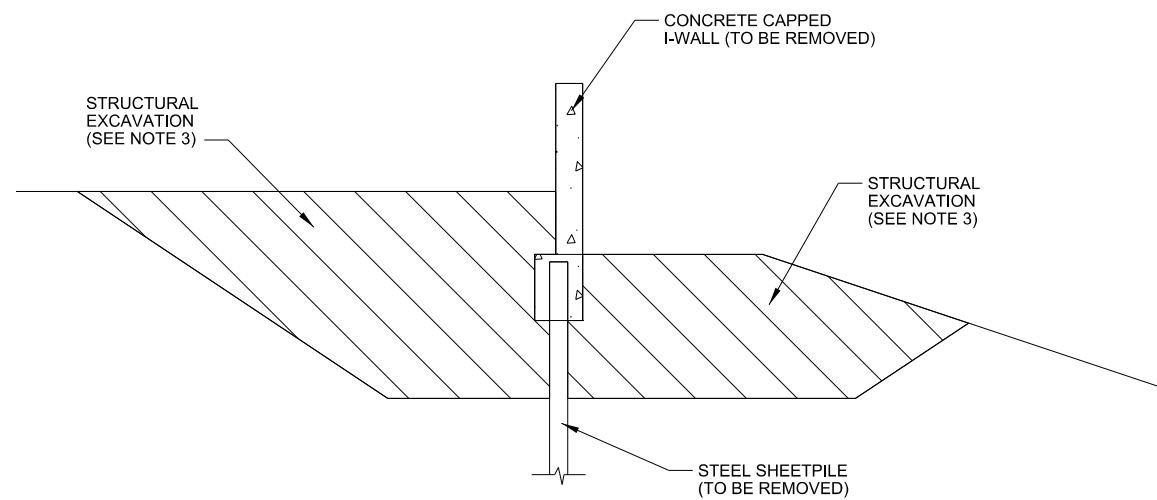
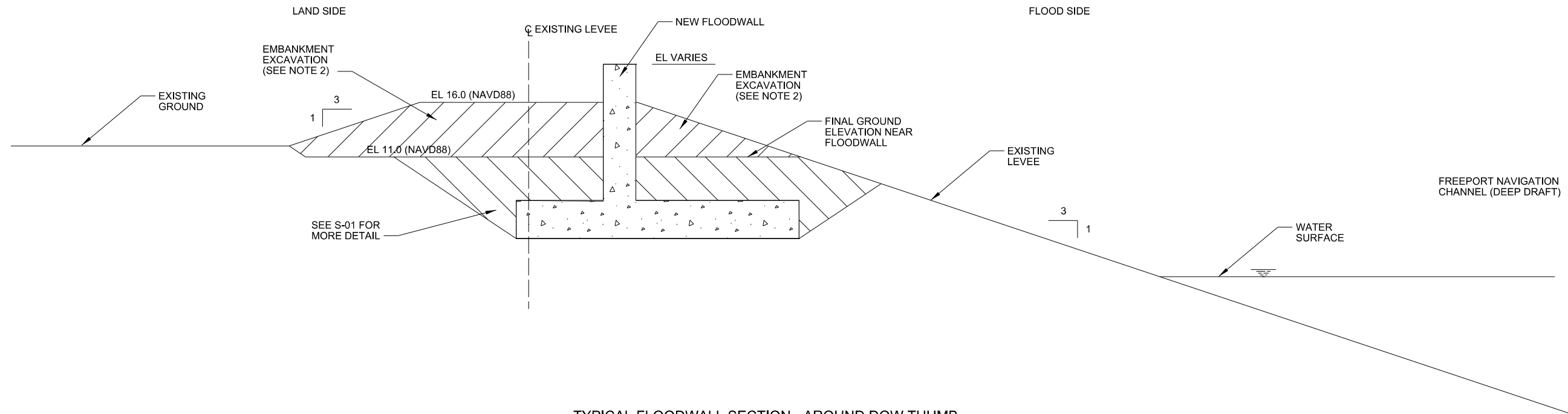
SABINE TO GALVESTON
FEASIBILITY STUDY
(DRAFT PLANS - NOT FOR CONSTRUCTION)

DOW BARGE CANAL
GATE STRUCTURE PLAN

Drawing No.:
S-04



File: W:\CADD\Projects\Sn\Sabine to Galveston\Appendix sheets\S-05 Port Arthur Floodwall - Typical Sections.dgn
Model Name: Drawing
Date: 9/21/2016 Time: 10:00:38 AM
By: m3ec3cjm



TYPICAL FLOODWALL SECTION - OLD RIVER SOUTH (BERTH 1,2,3 & 5)
NTS

- ASSUMPTIONS:
1. CONSTRUCT NEW FLOODWALL (SHEET S-01) ALONG CENTERLINE OF EXISTING FLOODWALL.
 2. EMBANKMENT REMOVAL DUE TO INSTABILITY OF EXISTING LEVEE.
 3. STRUCTURAL EXCAVATION FOR REMOVAL OF EXISTING I-WALL AND PLACEMENT OF NEW FLOODWALL.
 4. NEW FLOODWALL TO BE PLACED IN FRONT OF DOCK. ACTUAL FLOODWALL CONFIGURATION TO BE DETERMINED DURING PED PHASE. ASSUMPTION FOR COST ESTIMATE IS FLOODWALL SECTION A/S-01.

[illegible]

U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS	Prepared under the direction of LARS N. ZETTORSTROM, P.E. COLONEL, U.S. ARMY, COMMANDING		Chief, Engineering and Construction Division
	Approved by:	Chief, Engineering Branch	
	Submitted by:	Approval Recommended:	
	Checked by: C/JM	Solicited AS SHOWN	

SABINE TO GALVESTON
FEASIBILITY STUDY
(DRAFT PLANS - NOT FOR CONSTRUCTION)

Drawing No.:

S-06