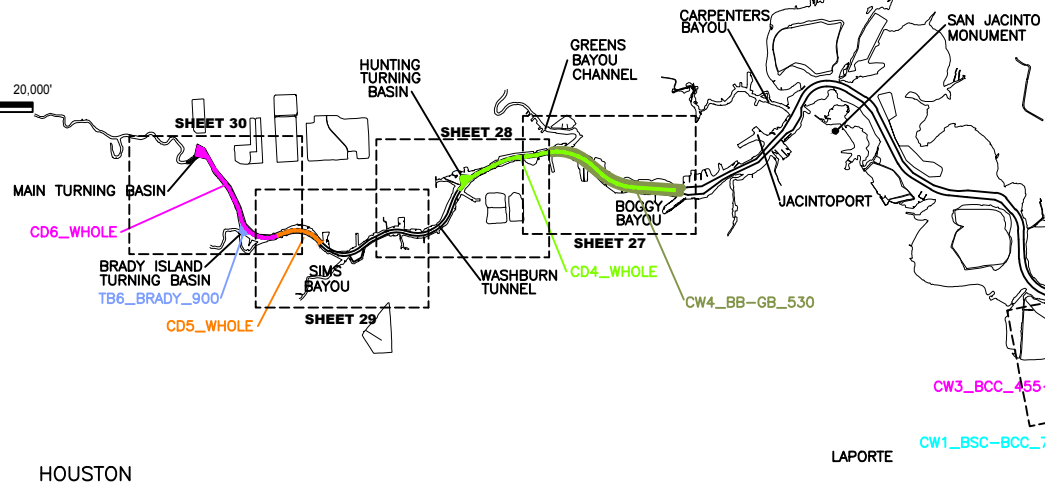


U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

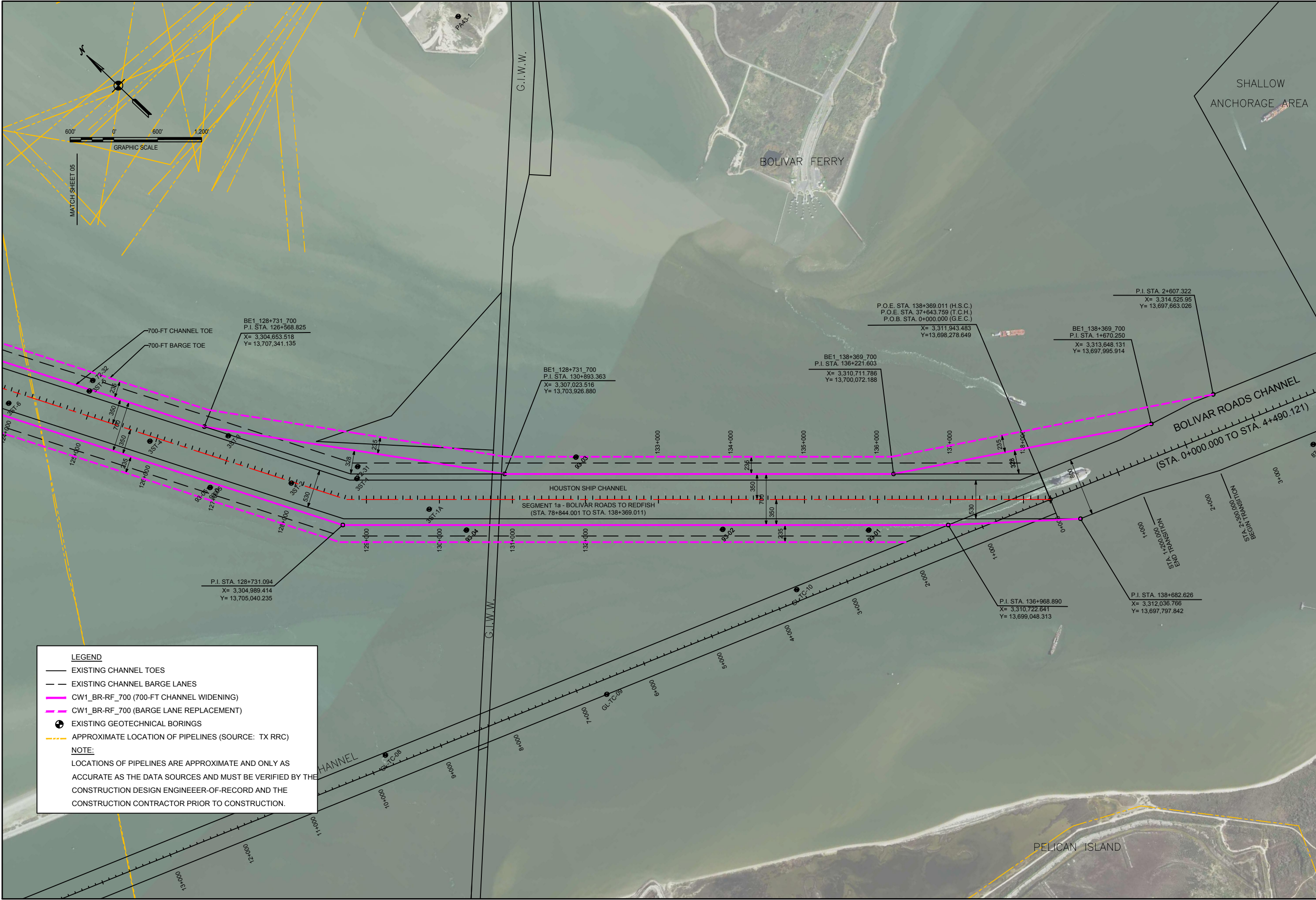
TurnerCollie & Braden Inc.
GANAGAN & BRYANT ASSOCIATES, INC.
5444 WESTHEIMER RD., SUITE 200
HOUSTON, TX 77056

Plate No.:
02
Sheet 02 of 25



U.S. ARMY ENGINEER DISTRICT GALVESTON CONTRACT ENGINEERS GALVESTON, TEXAS Turner Collette & Braden Inc. SAHMAN ASSOCIATES, INC. 5444 WESTHEIMER RD. SUITE 200 HOUSTON, TX 77056	Drawn by:	SAH	Date:	08/22/2019	Rev.
	Designed by:	--			
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	Submitted by:		Approval:	Recommended:	
	Approved by:				

Plate No.:
03
Sheet 03 of 38



Rev.	Description	Date	By

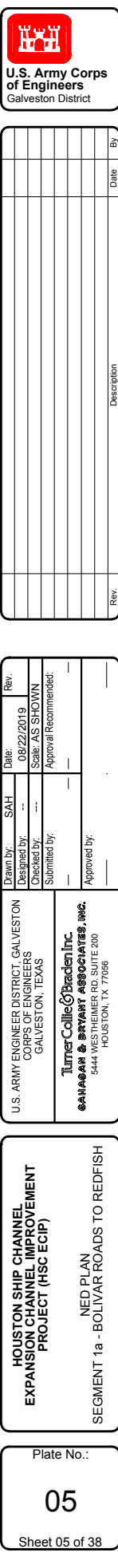
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Submitted by:	---	Approval Recommended:	---	---
Approved by:	---	---	---	---

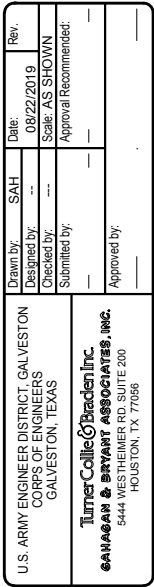
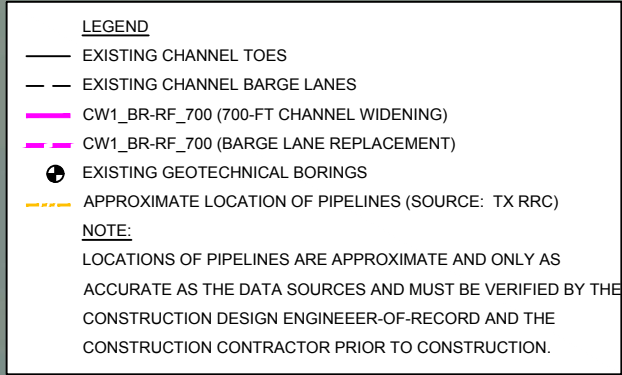
U.S. Army Engineer District, Galveston
Corps of Engineers
Galveston, Texas

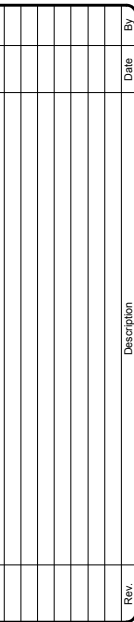
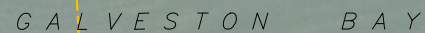
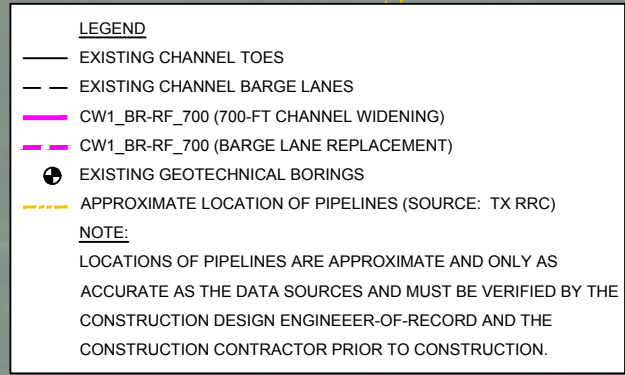
Turner Collier O'Brien Inc.
SAHAGAN & BRYANT ASSOCIATES, INC.
5444 WESTHEIMER RD. SUITE 200
HOUSTON, TX 77056

HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENT
PROJECT (HSC ECIIP)

NED PLAN
SEGMENT 1a - BOLIVAR ROADS TO REDFISH

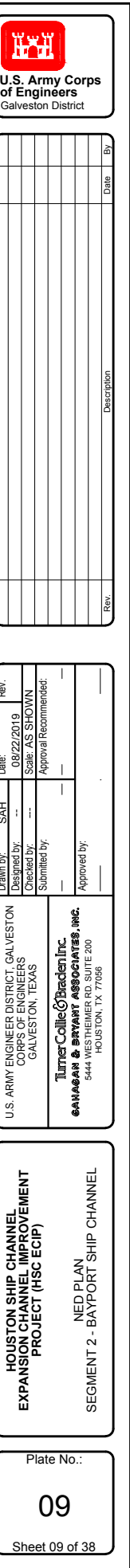


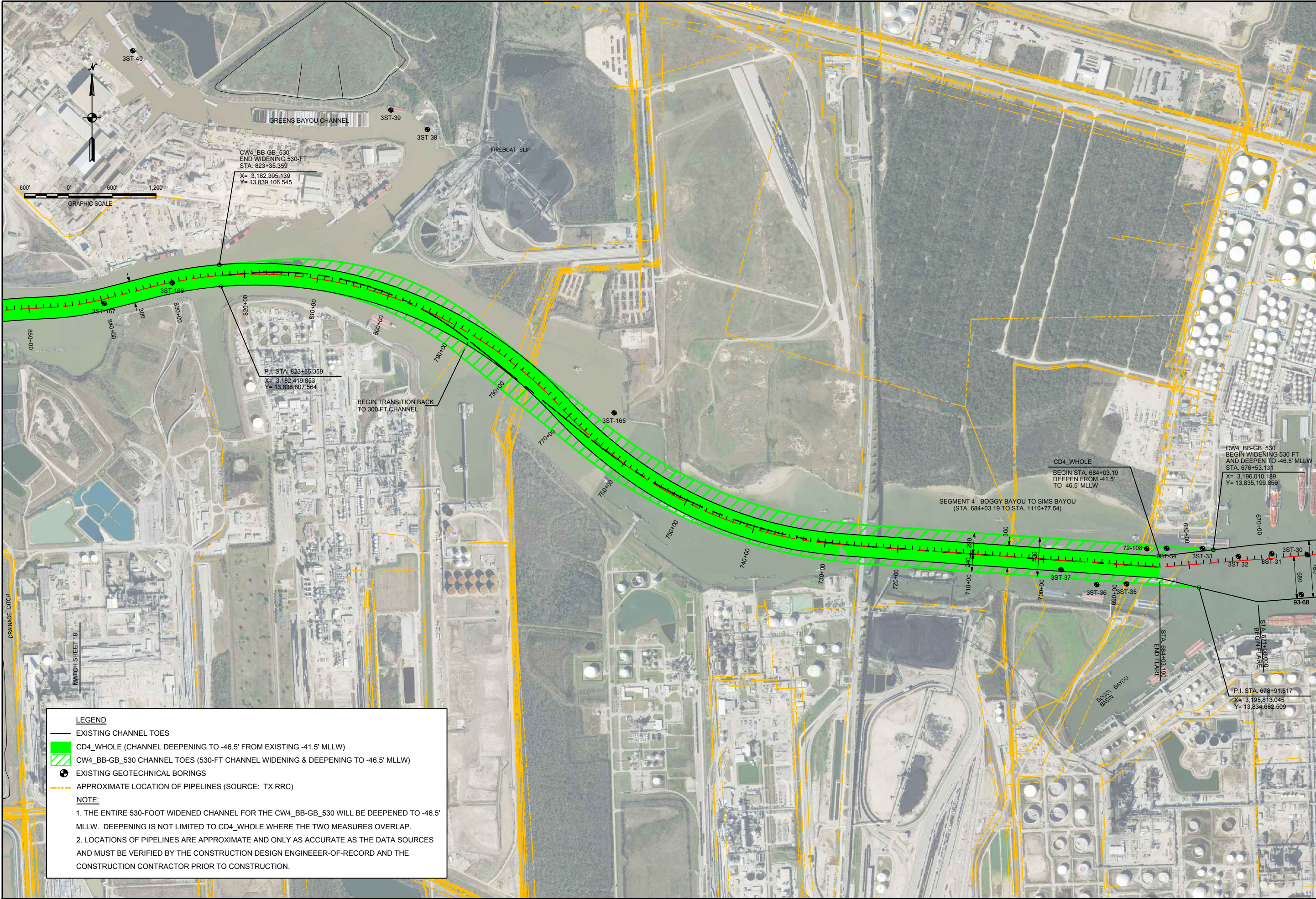
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Turner College® Braden Inc.
SARAGAN & BRYANT ASSOCIATES, INC.
 5444 WESTHEIMER RD. SUITE 200
 HOUSTON, TX 77056

Plate No.:
07
Sheet 07 of 38





Rev.	Description	Date	By

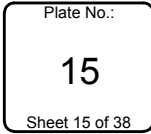
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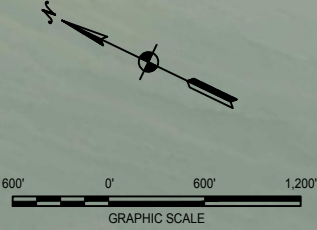
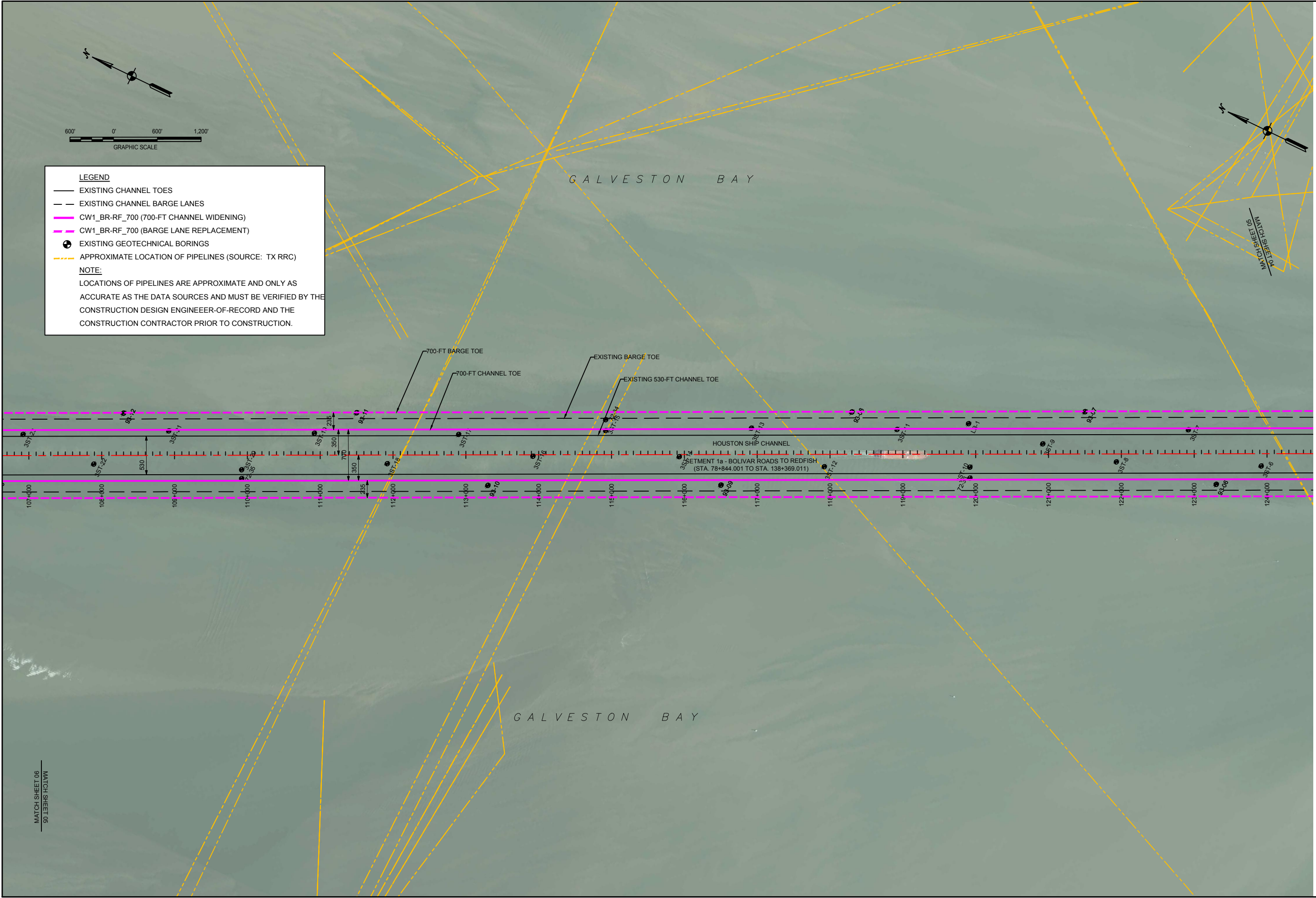
U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

Turner Collier & Braden Inc.
SAVANAH & BRYANT ASSOCIATES, INC.
5444 WESTHEIMER RD. SUITE 200
HOUSTON, TX 77056

HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENT
PROJECT (HSC ECIP)

NED PLAN
SEGMENT 4 BOGGY BAYOU TO SIMS BAYOU





LEGEND

- EXISTING CHANNEL TOES
- - EXISTING CHANNEL BARGE LANES
- CW1_BR-RF_700 (700-FT CHANNEL WIDENING)
- CW1_BR-RF_700 (BARGE LANE REPLACEMENT)
- EXISTING GEOTECHNICAL BORINGS
- - - - APPROXIMATE LOCATION OF PIPELINES (SOURCE: TX RRC)

NOTE:
LOCATIONS OF PIPELINES ARE APPROXIMATE AND ONLY AS ACCURATE AS THE DATA SOURCES AND MUST BE VERIFIED BY THE CONSTRUCTION DESIGN ENGINEER-OF-RECORD AND THE CONSTRUCTION CONTRACTOR PRIOR TO CONSTRUCTION.

U.S. Army Corps of Engineers
Galveston District

Rev.	Date	Description

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

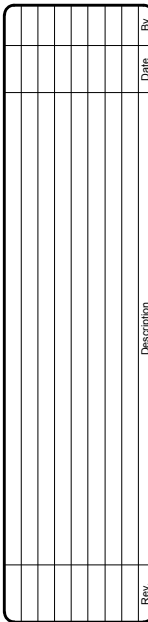
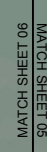
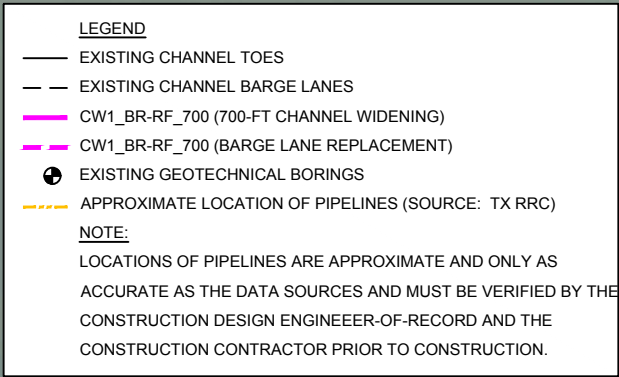
Turner Collier O'Brien Inc.
5444 WESTHEIMER RD. SUITE 200
HOUSTON, TX 77056

SAHARAN & BRYANT ASSOCIATES, INC.

**HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENT
PROJECT (HSC ECIP)**

RECOMMENDED PLAN - LPP
SEGMENT 1a - BOLIVAR ROADS TO REDFISH

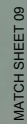
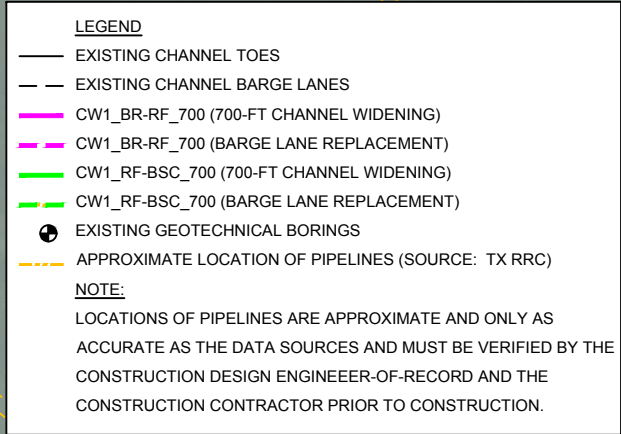
Plate No.:
16
Sheet 16 of 38



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

Turner College & Braden Inc.
SANAGAN & WYATT ASSOCIATES, INC.
5444 WESTHEIMER RD, SUITE 200
HOUSTON, TX 77056

Plate No.:
17
Sheet 17 of 38



MATCH SHEET 06

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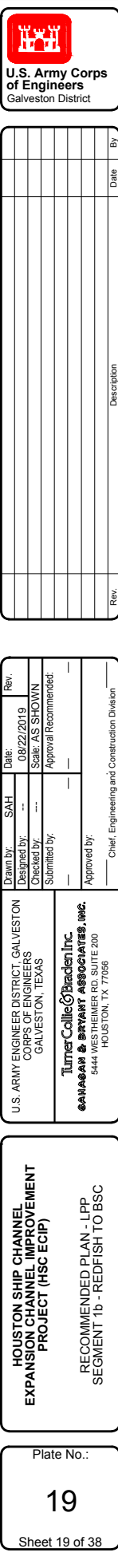
Turner Collic & Braden Inc. SARANAM & BRYANT ASSOCIATES, INC. 5444 WESTHEIMER RD, SUITE 200 HOUSTON, TX 77056	U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS	Exam of --- SAT ---	08/02/2019	Res.
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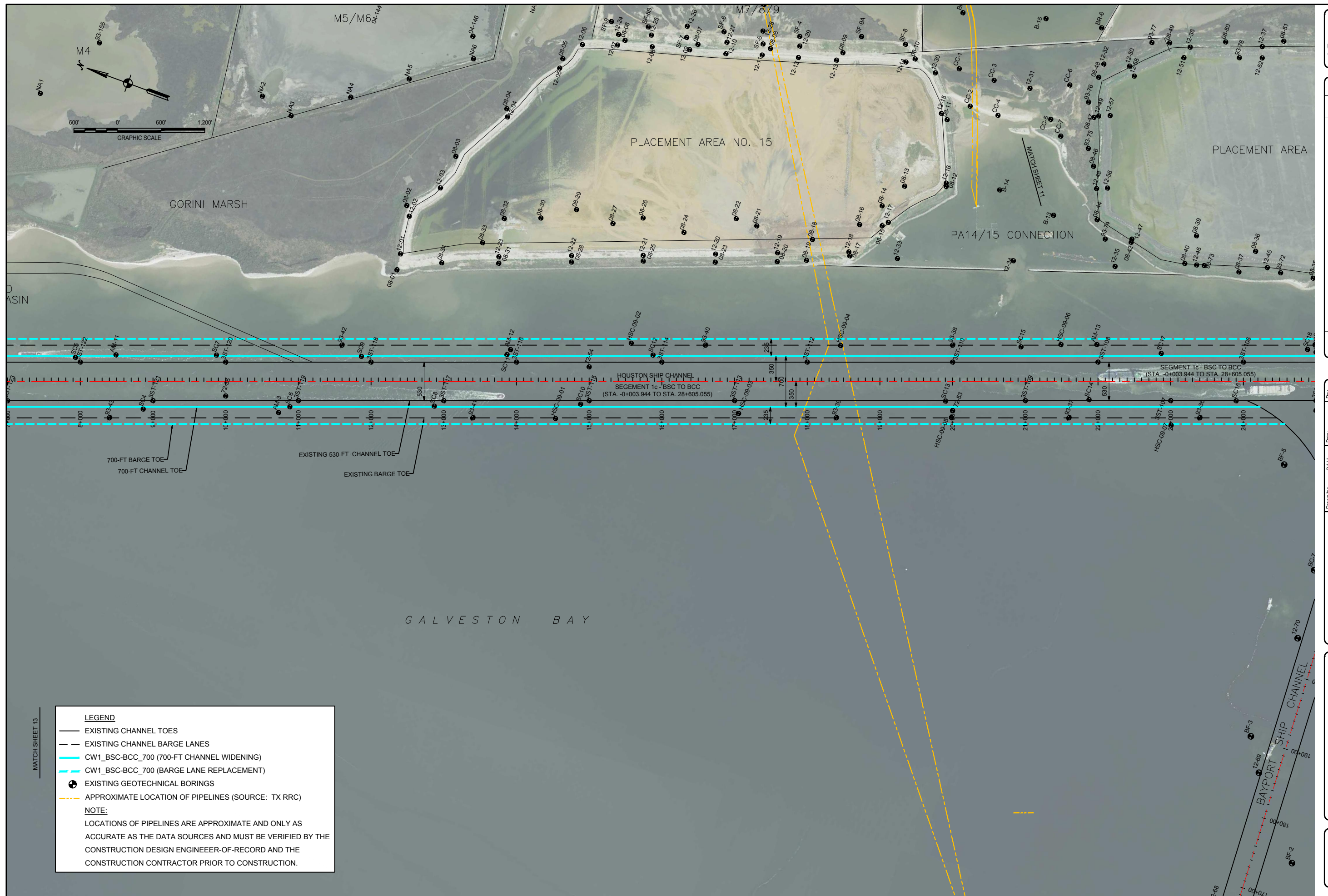
HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENT
PROJECT (HSC ECP)

RECOMMENDED PLAN - LPP

SEGMENT 1a - BOLIVAR ROADS TO REDFISH
SEGMENT 1b - REDFISH TO BSC

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Sheet 18 of 38



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Submitted by:	Approval Recommended:
Approved by:	

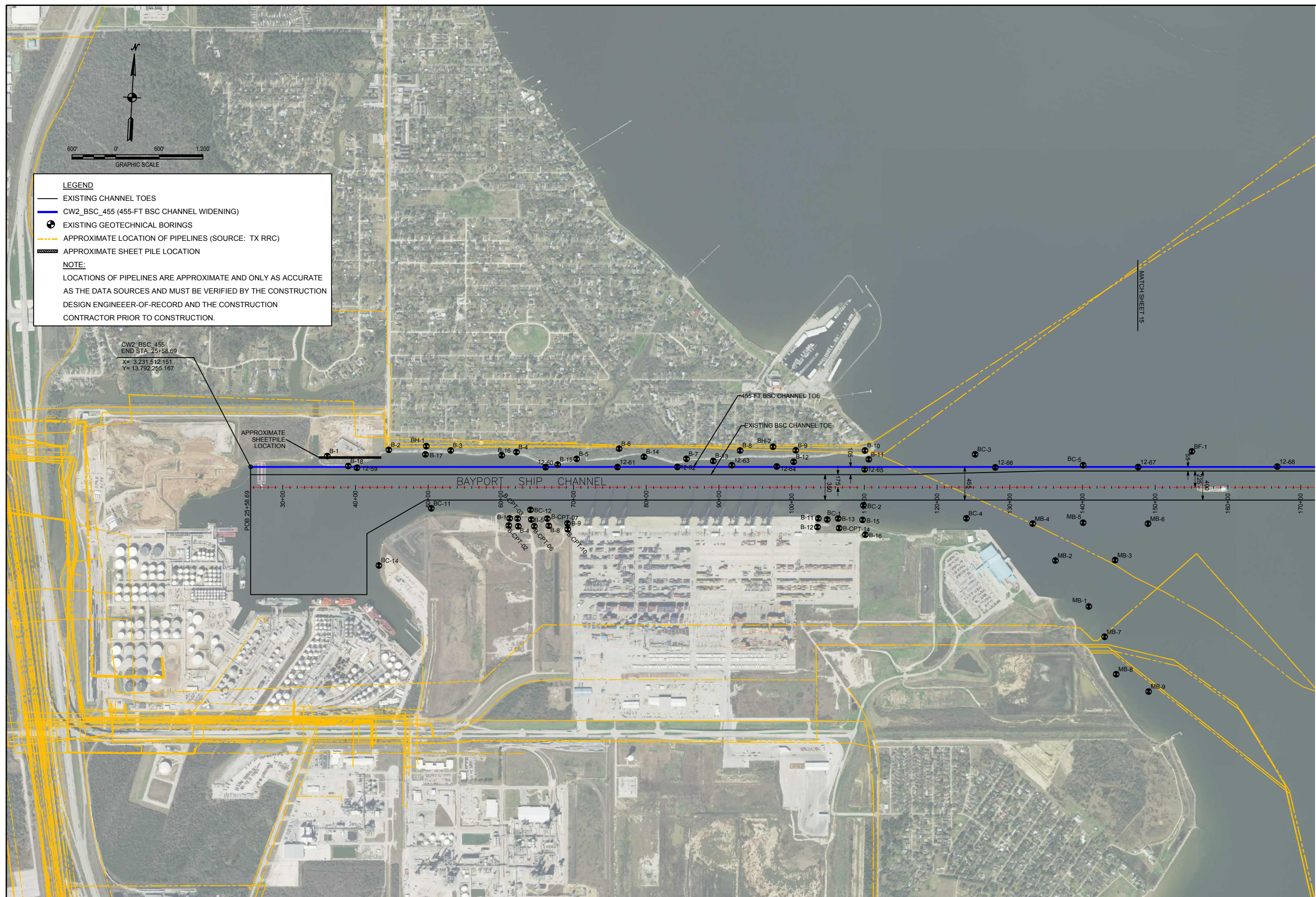
U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

Turner Collier & Braden Inc.
SANAGAN & BRYANT ASSOCIATES, INC.
5444 WESTHEIMER RD. SUITE 200
HOUSTON, TX 77056

HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENT
PROJECT (HSC ECIP)

RECOMMENDED PLAN - LPP
SEGMENT 1c - BSC TO BCC

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22
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**U.S. Army Corps
of Engineers**
Galveston District

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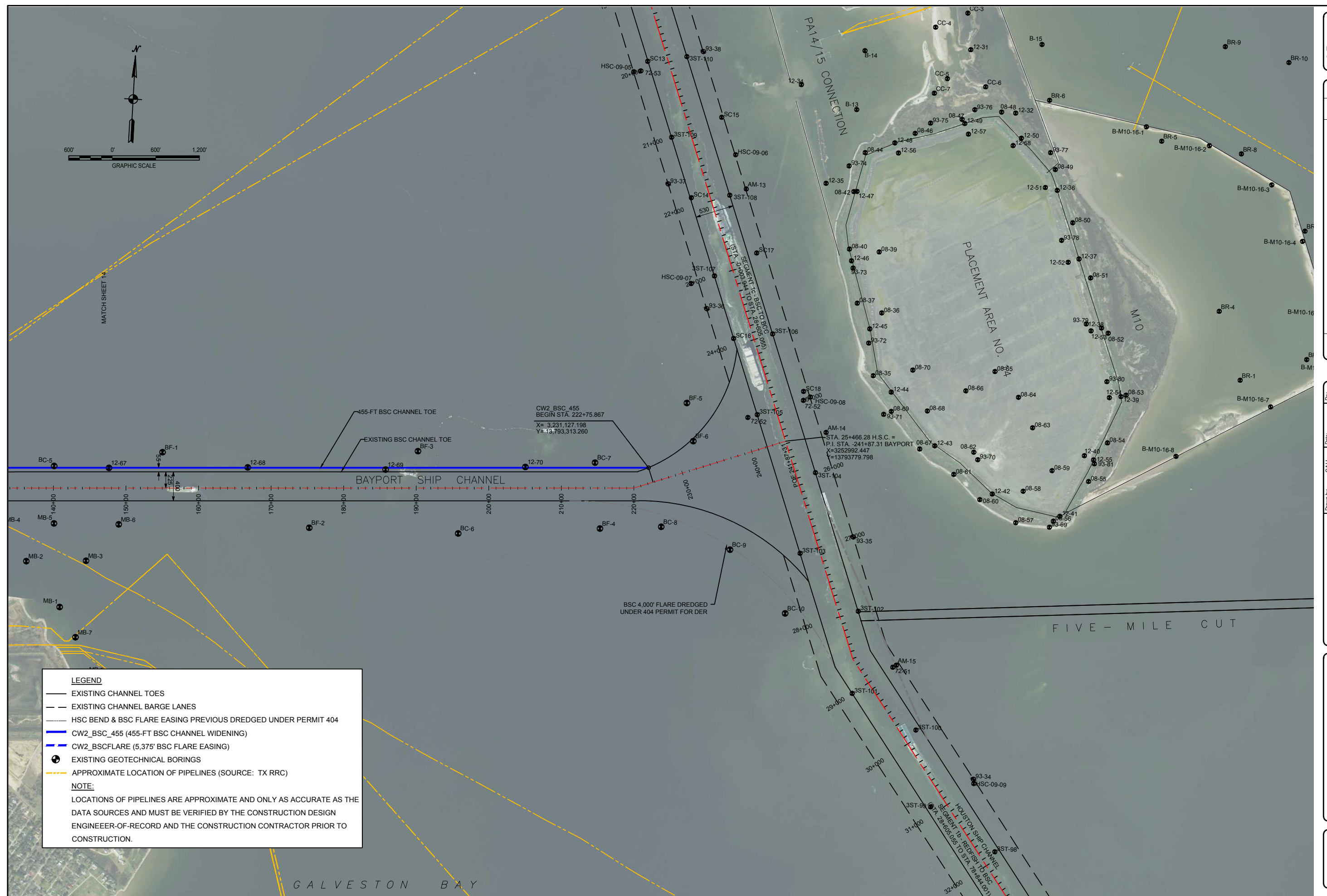
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U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENT
PROJECT (HSC ECIP)

RECOMMENDED PLAN - LPP
SEGMENT 2 - BAYPORT SHIP CHANNEL

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24
Sheet 24 of 38

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

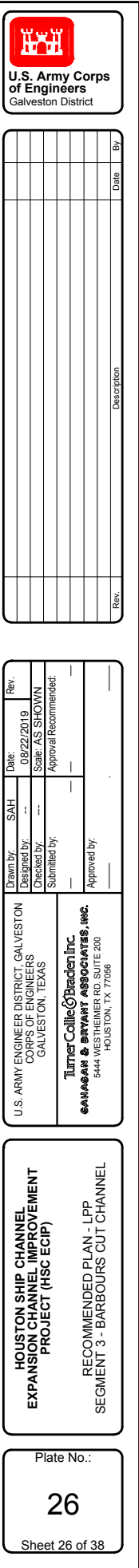
Turner Collier & Braden Inc.
GANAGAN & BRYANT ASSOCIATES, INC.
5444 WES THEIMER RD, SUITE 200
HOUSTON, TX 77056

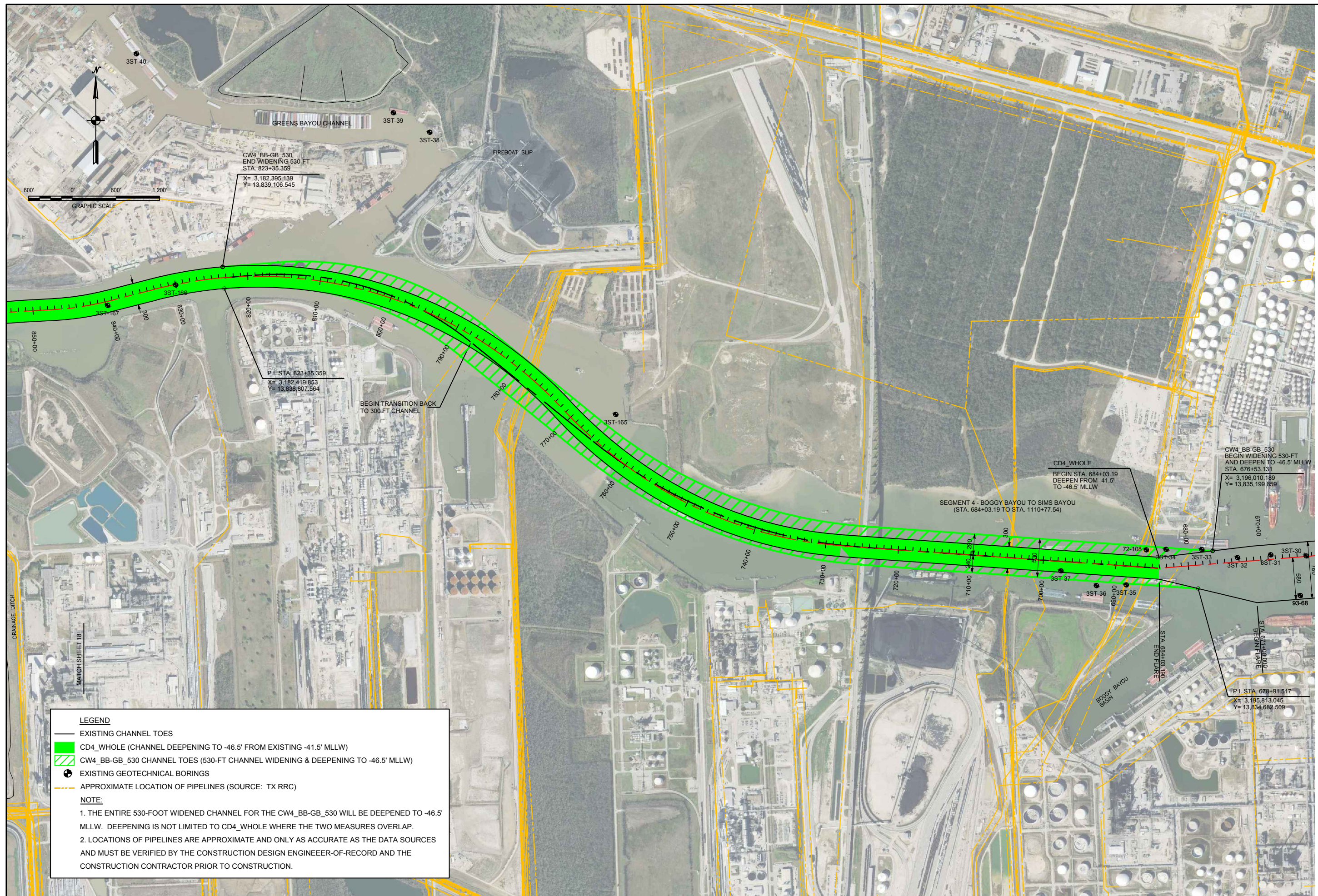
HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENT
PROJECT (HSC ECIP)

RECOMMENDED PLAN - LPP
SEGMENT 2 - BAYPORT SHIP CHANNEL

Plate No.:

Sheet 25 of 38



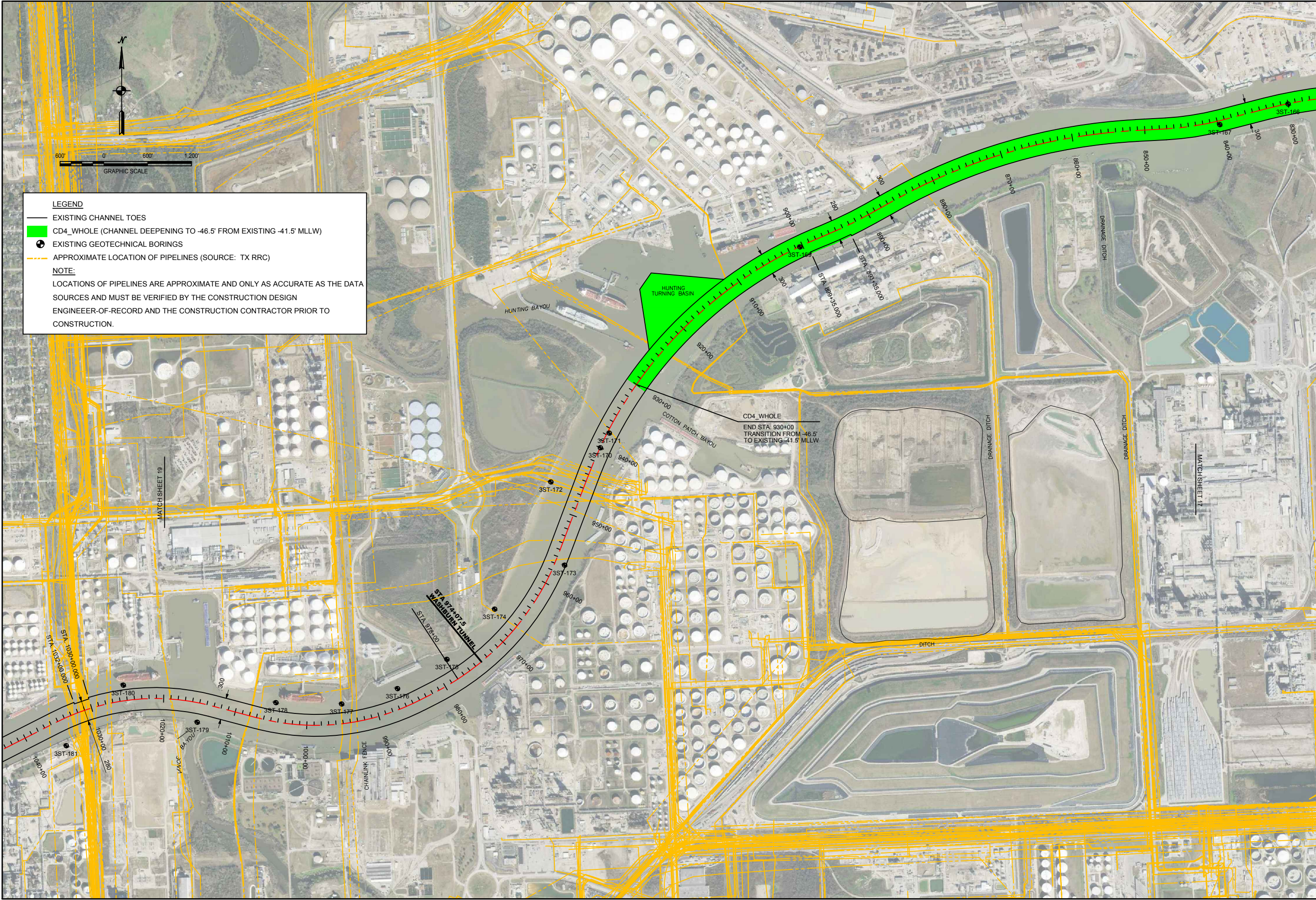
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U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS	Drawn by	SAIT	08/22/2019	rev.
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HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENT
PROJECT (HSC ECP)

RECOMMENDED PLAN - LPP
SEGMENT 4 BOGGY BAYOU TO SIMS BAYOU

Plate No.:
27
Sheet 27 of 38



LEGEND

- EXISTING CHANNEL TOES
- CD4_WHOLE (CHANNEL DEEPENING TO -46.5' FROM EXISTING -41.5' MLLW)
- EXISTING GEOTECHNICAL BORINGS
- APPROXIMATE LOCATION OF PIPELINES (SOURCE: TX RRC)

NOTE:

LOCATIONS OF PIPELINES ARE APPROXIMATE AND ONLY AS ACCURATE AS THE DATA SOURCES AND MUST BE VERIFIED BY THE CONSTRUCTION DESIGN ENGINEER-OF-RECORD AND THE CONSTRUCTION CONTRACTOR PRIOR TO CONSTRUCTION.

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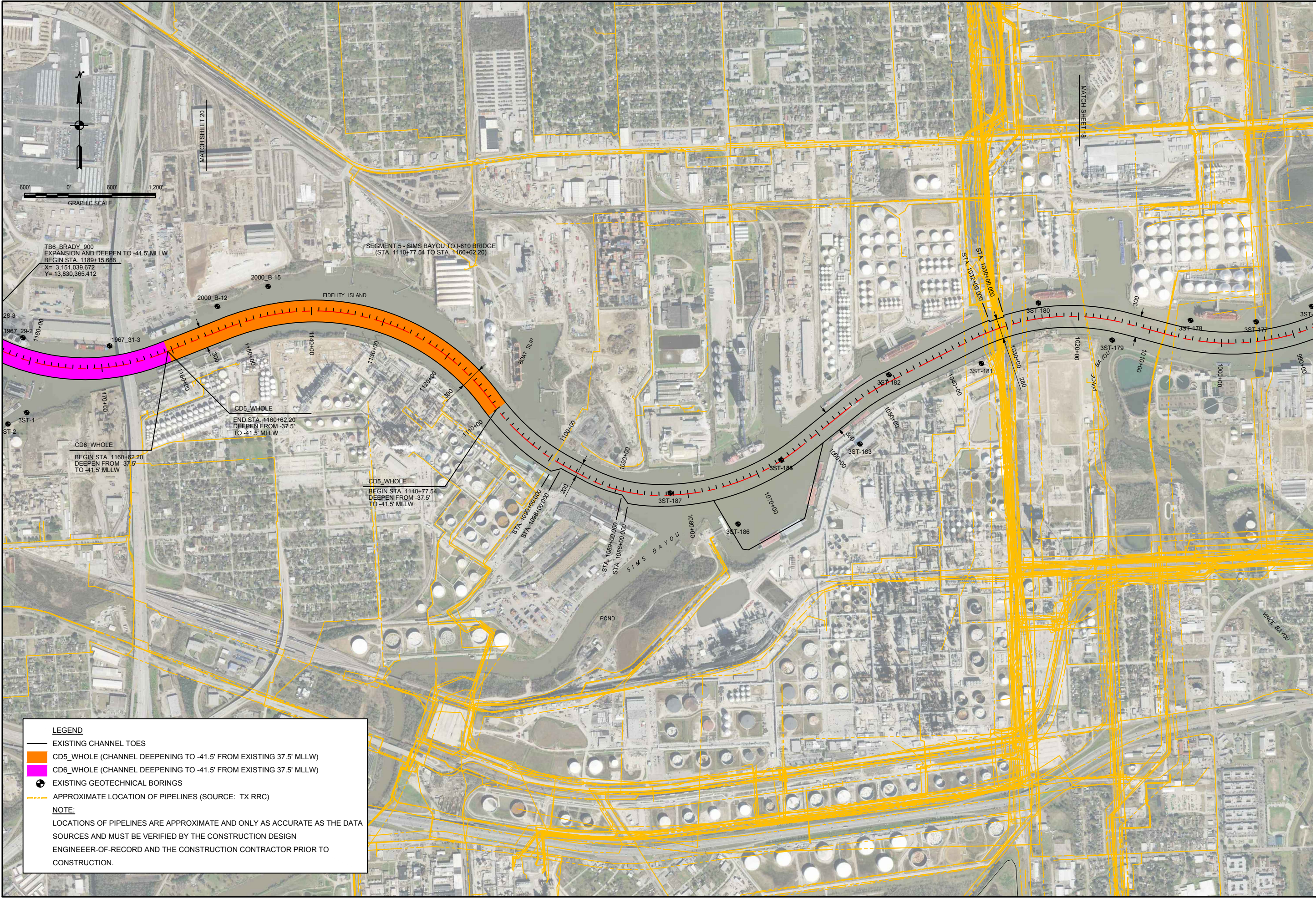
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U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

Turner Collette O'Brien Inc.
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5444 WESTHEIMER RD. SUITE 200
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**HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENT
PROJECT (HSC ECIP)**

RECOMMENDED PLAN - LPP
SEGMENT 4 BOGGY BAYOU TO SIMS BAYOU



LEGEND

- EXISTING CHANNEL TOES
- CD5_WHOLE (CHANNEL DEEPENING TO -41.5' FROM EXISTING 37.5' MLLW)
- CD6_WHOLE (CHANNEL DEEPENING TO -41.5' FROM EXISTING 37.5' MLLW)
- EXISTING GEOTECHNICAL BORINGS
- - - APPROXIMATE LOCATION OF PIPELINES (SOURCE: TX RRC)

NOTE:
LOCATIONS OF PIPELINES ARE APPROXIMATE AND ONLY AS ACCURATE AS THE DATA SOURCES AND MUST BE VERIFIED BY THE CONSTRUCTION DESIGN ENGINEER-OF-RECORD AND THE CONSTRUCTION CONTRACTOR PRIOR TO CONSTRUCTION.

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Galveston District

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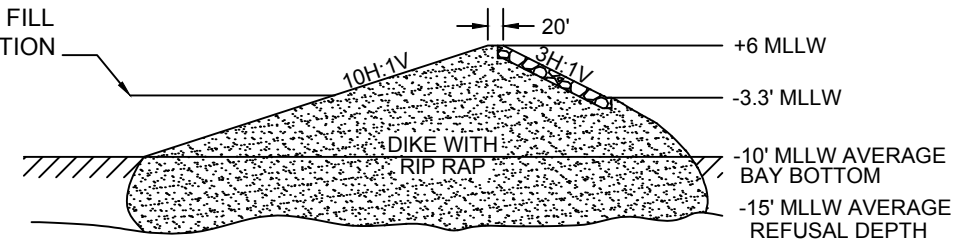
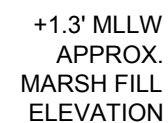
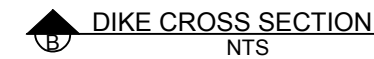
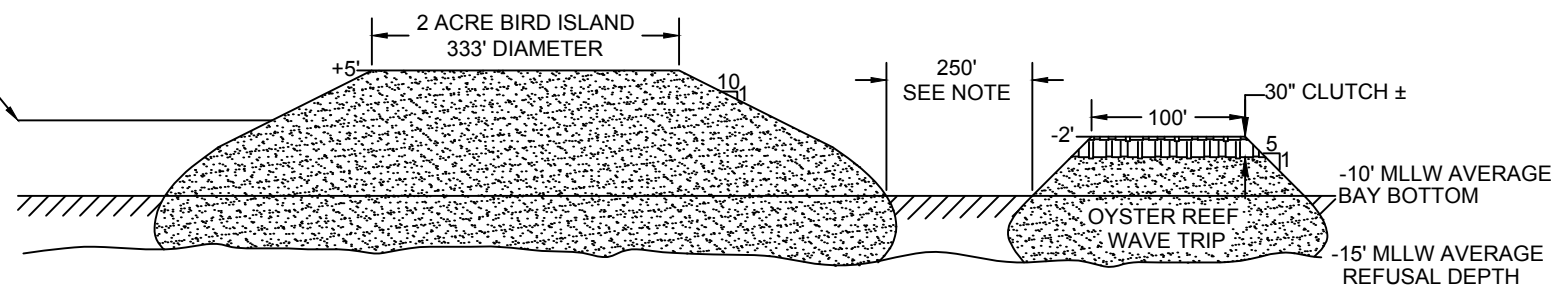
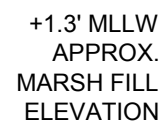
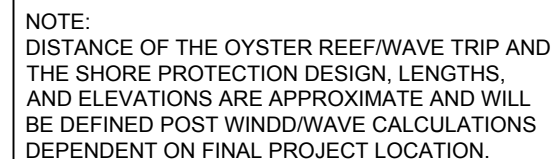
U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

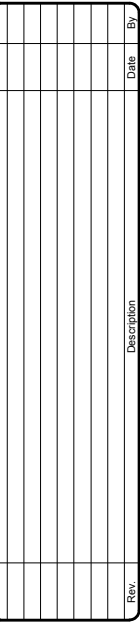
Turner Collier & Braden Inc.
SARAGAN & BRYANT ASSOCIATES, INC.
5444 WESTHEIMER RD. SUITE 200
HOUSTON, TX 77056

**HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENT
PROJECT (HSC ECIP)**

RECOMMENDED PLAN - LPP
SEGMENT 5 SIMS BAYOU TO I-610-BRIDGE

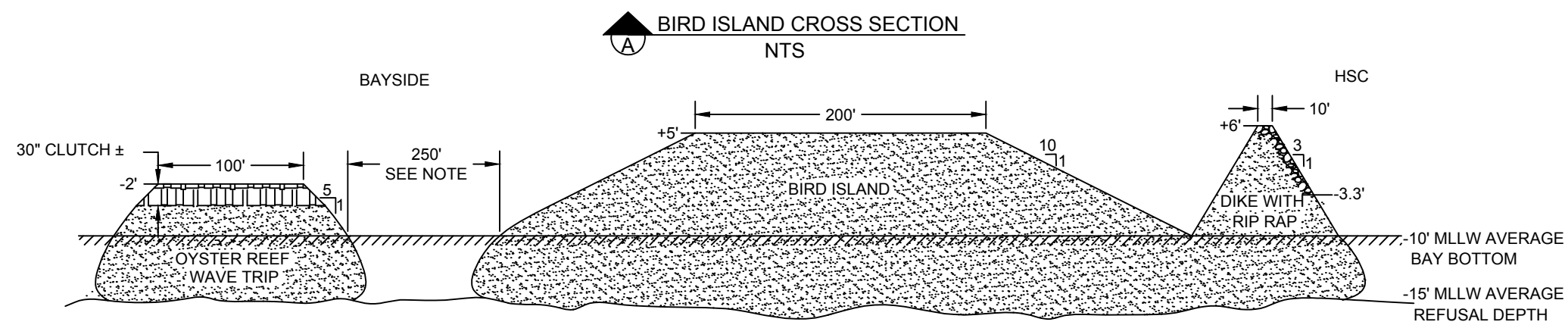
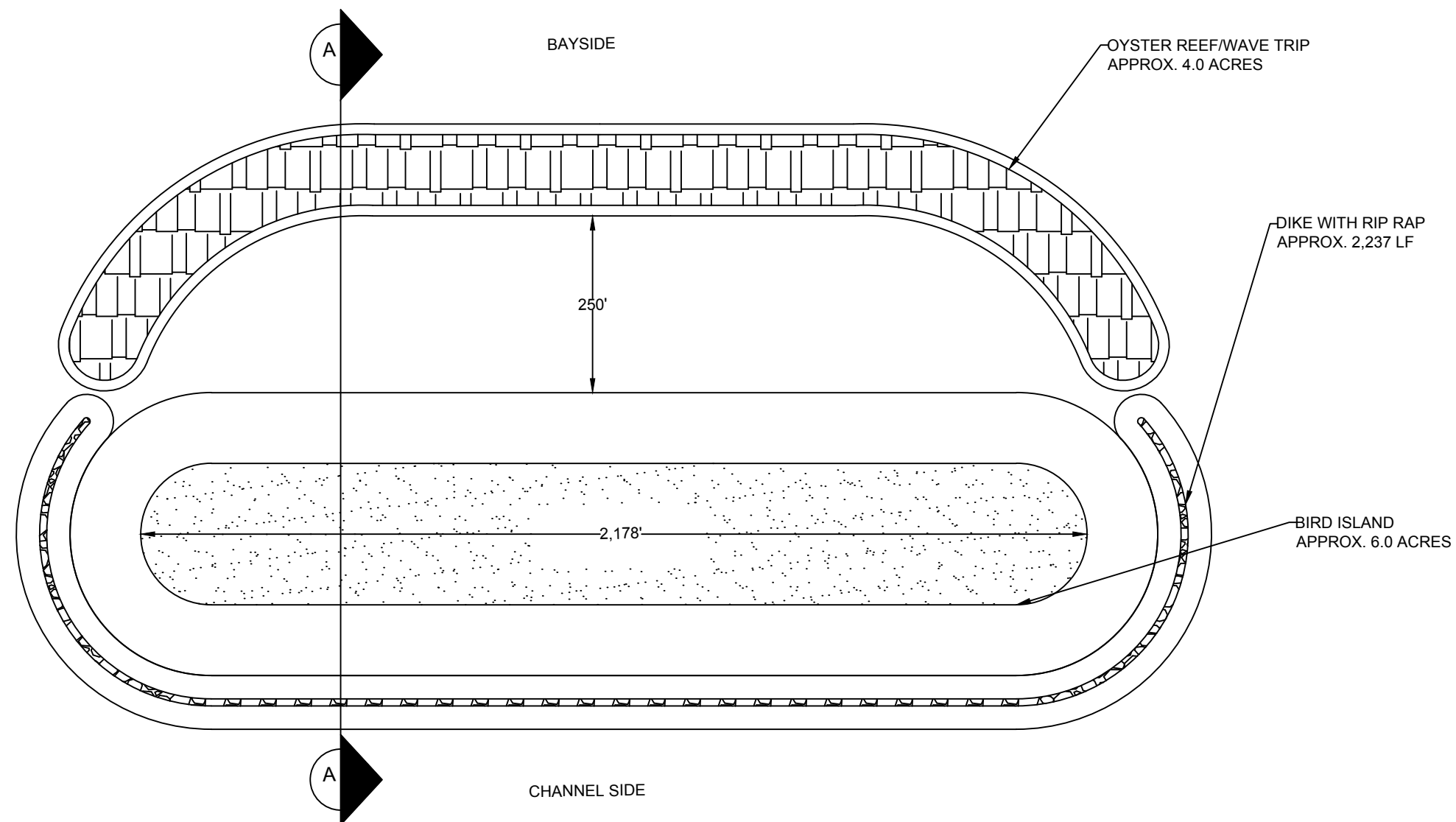
Plate No.:
29
Sheet 29 of 38





HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENT
PROJECT (HSC ECIP)

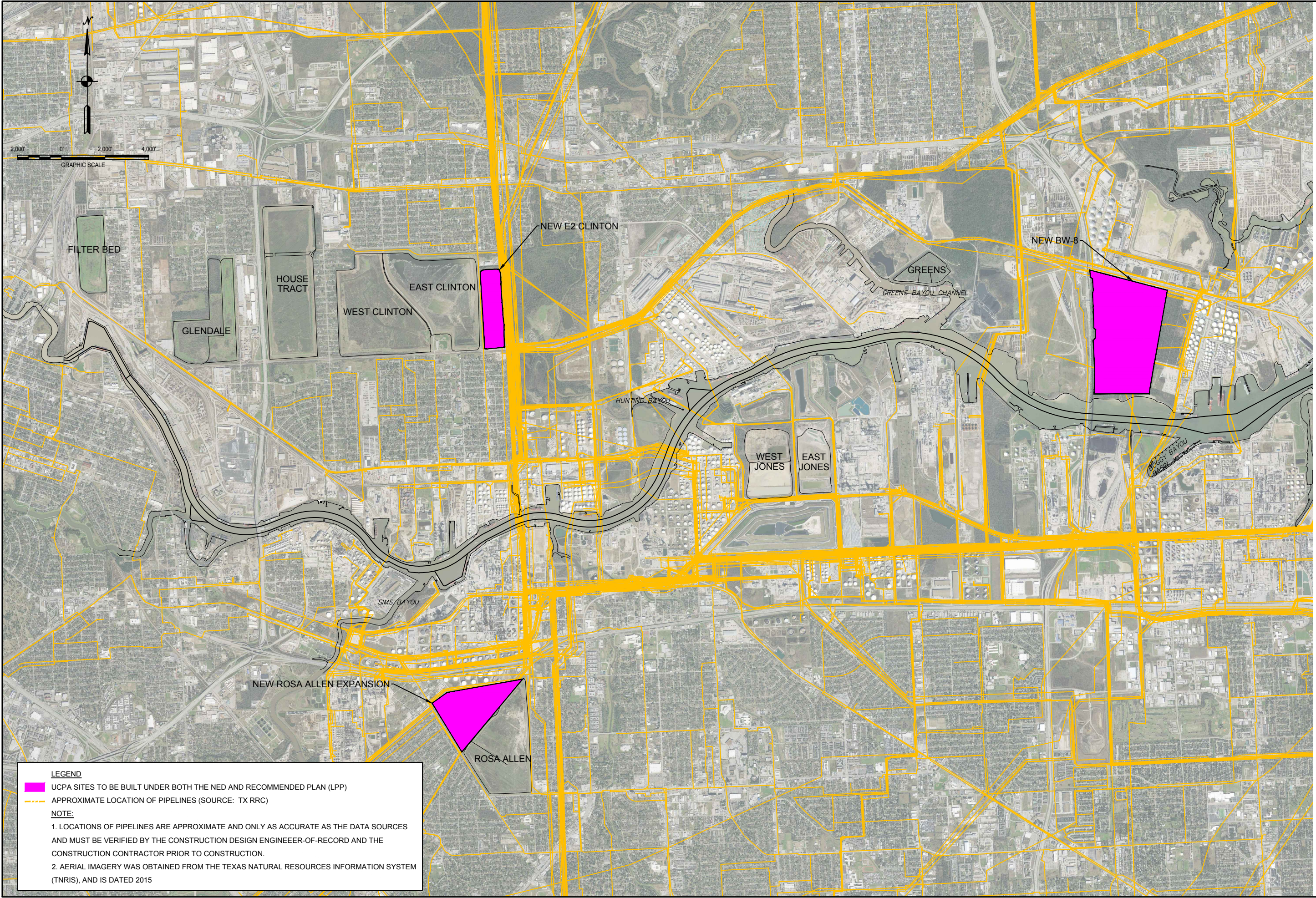
8-ACRE BIRD ISLAND
BENEFICIAL USE SITE



NOTE:
DISTANCE OF THE OYSTER REEF/WAVE TRIP AND
THE SHORE PROTECTION DESIGN, LENGTHS,
AND ELEVATIONS ARE APPROXIMATE AND WILL
BE DEFINED POST WINDD/WAVE CALCULATIONS
DEPENDENT ON FINAL PROJECT LOCATION.

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U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS	Drawn by: SAH	Date: 08/22/2019	Rev.
	Designed by: --	Scale: AS SHOWN	
	Submitted by: ---	Approval Recommended:	
		Approved by: ---	




LEGEND

- UCPA SITES TO BE BUILT UNDER BOTH THE NED AND RECOMMENDED PLAN (LPP)
- APPROXIMATE LOCATION OF PIPELINES (SOURCE: TX RRC)

NOTE:

1. LOCATIONS OF PIPELINES ARE APPROXIMATE AND ONLY AS ACCURATE AS THE DATA SOURCES AND MUST BE VERIFIED BY THE CONSTRUCTION DESIGN ENGINEER-OF-RECORD AND THE CONSTRUCTION CONTRACTOR PRIOR TO CONSTRUCTION.
2. AERIAL IMAGERY WAS OBTAINED FROM THE TEXAS NATURAL RESOURCES INFORMATION SYSTEM (TNRIS), AND IS DATED 2015



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Galveston District

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

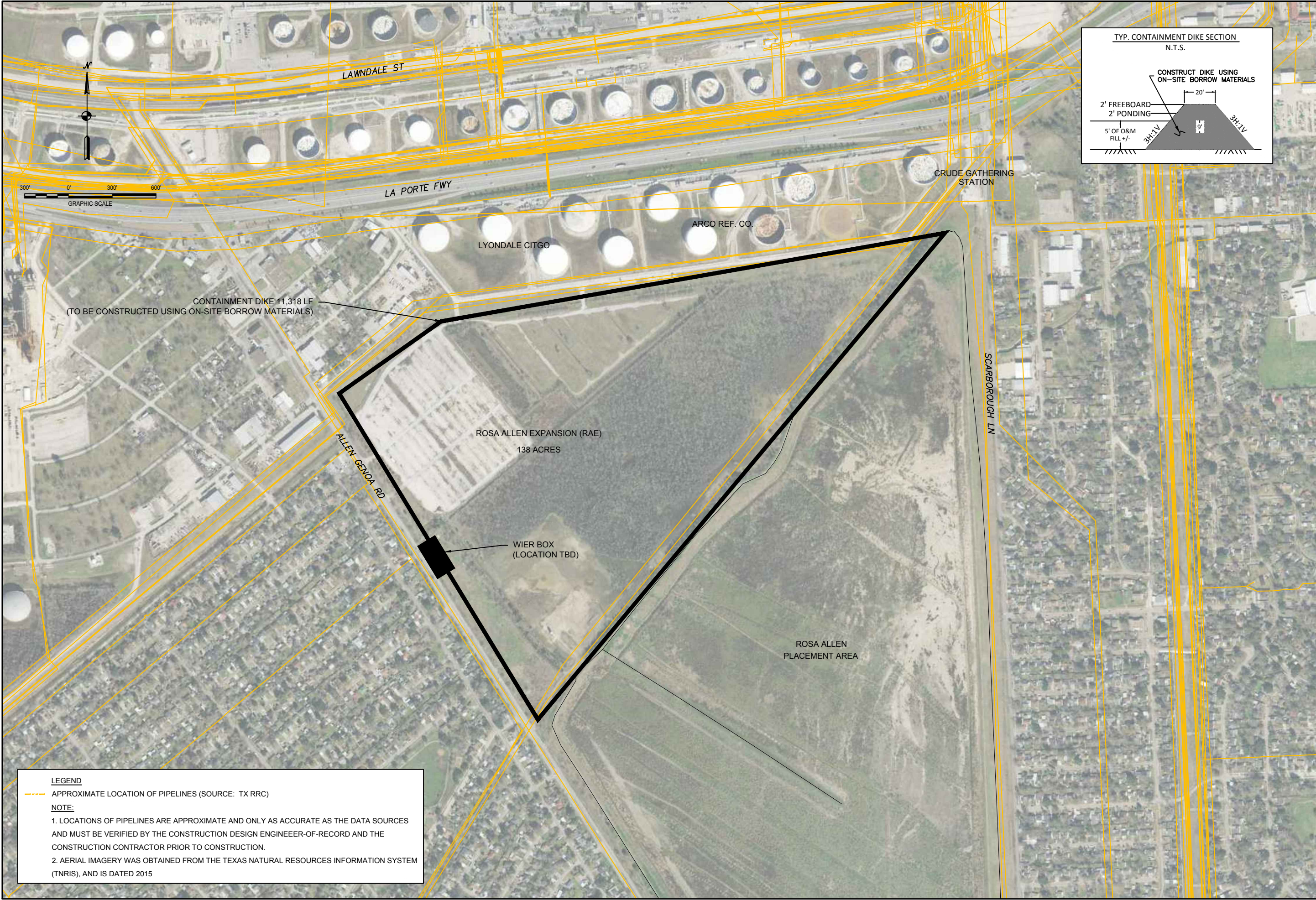
Turner Collier O'Brien Inc.
5444 WESTHEIMER RD. SUITE 200
HOUSTON, TX 77056

SANABAN & BRYANT ASSOCIATES, INC.

HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENT
PROJECT (HSC ECIP)

SEGMENT 4, 5 & 6
NEW UPLAND CONFINED PLACEMENT AREAS

Plate No.:
35
Sheet 35 of 38



LEGEND

--- APPROXIMATE LOCATION OF PIPELINES (SOURCE: TX RRC)

NOTE:

1. LOCATIONS OF PIPELINES ARE APPROXIMATE AND ONLY AS ACCURATE AS THE DATA SOURCES AND MUST BE VERIFIED BY THE CONSTRUCTION DESIGN ENGINEER-OF-RECORD AND THE CONSTRUCTION CONTRACTOR PRIOR TO CONSTRUCTION.
2. AERIAL IMAGERY WAS OBTAINED FROM THE TEXAS NATURAL RESOURCES INFORMATION SYSTEM (TNRIS), AND IS DATED 2015



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Approved by: ---		

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

Turner Collier & Braden Inc.
SARASOTA & BRADEN ASSOCIATES, INC.
5444 WESTHEIMER RD, SUITE 200
HOUSTON, TX 77056

HOUSTON SHIP CHANNEL EXPANSION CHANNEL IMPROVEMENT PROJECT (HSC ECIP)	RECOMMENDED PLAN ROSA ALLEN EXPANSION PLACEMENT AREA
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