

Legend

- Construction Limits
- Proposed Drainage Channel

 Formerly Klotz Associates Texas PE Firm Reg. #F-929 1160 Dairy Ashford, Suite 500, Houston, Texas 77079 T 281 589 7257 E usinfrastructure@rpsgroup.com	
New Location Drainage Channel Alternatives	
SH 332 From 521 to SH 288	
RPS KLOTZ PROJ. NO.: 0121.064.004	EXHIBIT E
SCALE: 1" = 4,000'	
DATE:	

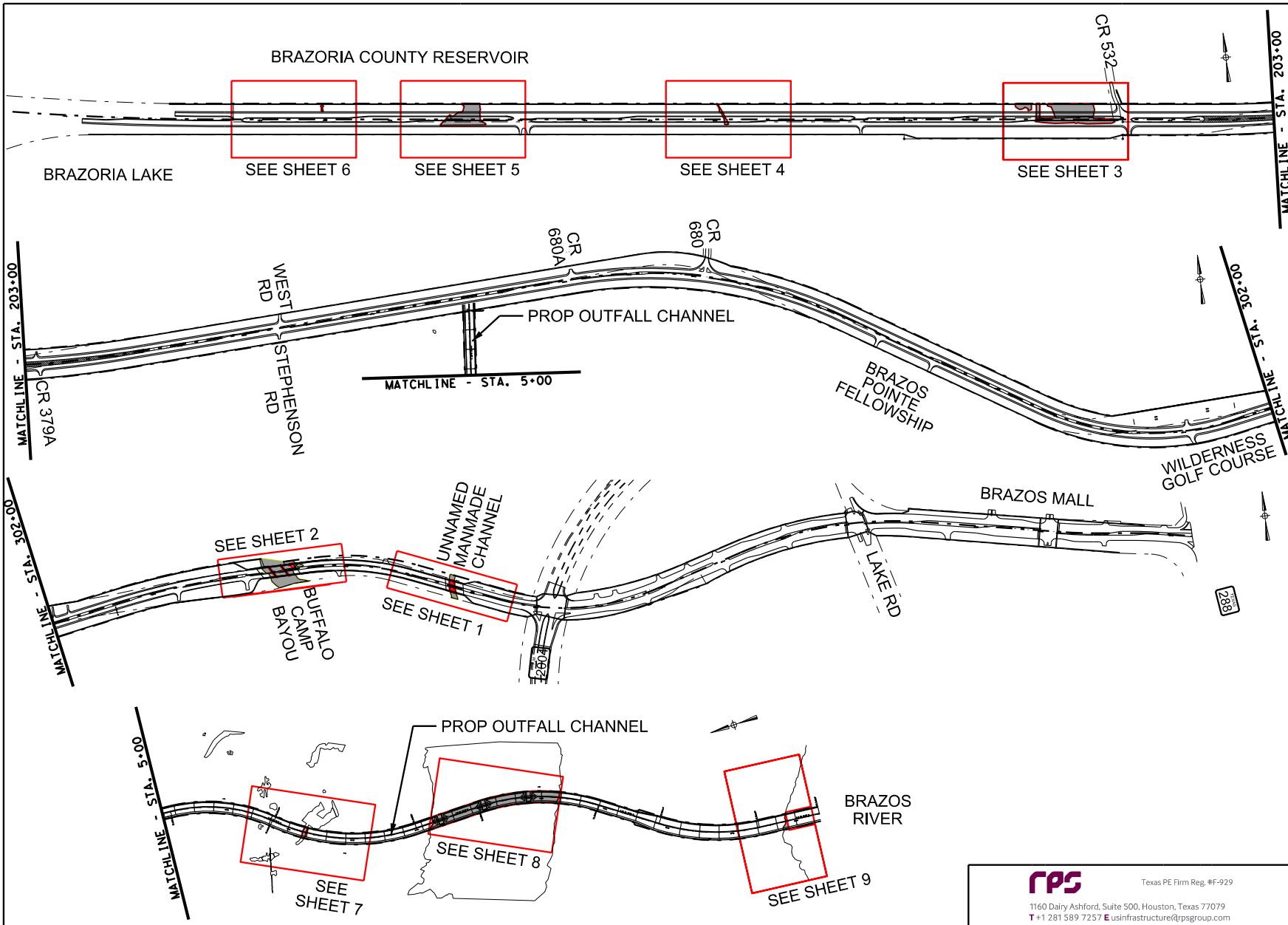
USACE Application for Department of the Army Permit
SH 332, Brazoria County
Supplemental Information**Water Resources Impact**

No. of Crossing	Aquatic Resource (Wetlands)	Type of Jurisdictional Activity	Permanent Impact		Temporary Impact		Latitude	Longitude	Type of Permit
	Include Water/Wetland Tag (Official water name)		Amount	Open water/wetland	Amount	Open water/wetland			
2	W-1 - Palustrine Forested Wetland (associated with S-2 – Buffalo Camp Bayou)	Fill to accommodate roadway widening		0.020 acre		NA	29.04941	-95.47708	IP
3	S-3 ¹ – Manmade channel (IS ²) that extends from the Brazoria Reservoir just north of SH 332 to the SH 332 roadside ditches. At time is also considered a Palustrine Emergent Wetland within the 100-year floodplain of the Brazos River, a TNW ³ .	Fill to accommodate roadway widening		0.062 acre		NA	29.05439	-95.51836	IP
3	W-2 - Palustrine Forested Wetland within the 100-year floodplain of the Brazos River.	Fill to accommodate roadway widening		0.099 acre		NA	29.05472	-95.51861	IP
3	W-3 - Palustrine Emergent Wetland within the 100-year floodplain of the Brazos River.	Fill to accommodate roadway widening		0.508 acre		NA	29.05432	-95.51798	IP
3	W-4 - Palustrine Forested Wetland within the 100-year floodplain of the Brazos River.	Fill to accommodate roadway widening		0.758 acre		NA	29.05460	-95.51791	IP
4	W-5 - Palustrine Forested Wetland within the 100-year floodplain of the Brazos River.	Fill to accommodate roadway widening		0.021 acre		NA	29.05556	-95.52588	IP
4	W-6 - Palustrine Emergent Wetland within the 100-year floodplain of the Brazos River.	Fill to accommodate roadway widening		0.019 acre		NA	29.05533	-95.52578	IP
5	W-7 - Palustrine Forested Wetland within the 100-year floodplain of the Brazos River.	Fill to accommodate roadway widening		0.460 acre		NA	29.05613	-95.53159	IP
5	W-8 - Palustrine Emergent Wetland within the 100-year floodplain of the Brazos River.	Fill to accommodate roadway widening		0.298 acre		NA	29.05607	-95.53166	IP
6	W-9 - Palustrine Emergent Wetland within the 100-year floodplain of the Brazos River.	Fill to accommodate roadway widening		0.009 acre		NA	29.05685	-95.53533	IP

USACE Application for Department of the Army Permit
SH 332, Brazoria County
Supplemental Information

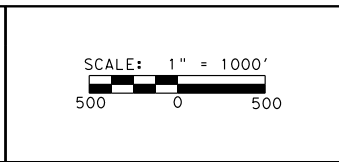
No. of Crossing	Aquatic Resource (Wetlands)	Type of Jurisdictional Activity	Permanent Impact		Temporary Impact		Latitude	Longitude	Type of Permit
	Include Water/Wetland Tag (Official water name)		Amount	Open water/wetland	Amount	Open water/wetland			
ASA ⁴	W-16 - Palustrine Forested Wetland within the 100-year floodplain of the Brazos River ³ .	Fill to accommodate new proposed drainage channel		0.059 acre		NA	29.05044	-95.50097	IP
ASA	W-20 - Palustrine Forested Wetland within the 100-year floodplain of the Brazos River.	Fill to accommodate new proposed drainage channel		2.066 acre		NA	29.04847	-95.50210	IP
Totals				4.379 acres		NA			
No. of Crossing	Aquatic Resource (Streams)	Type of Jurisdictional Activity	Permanent Impact		Temporary Impact		Latitude	Longitude	Type of Permit
	Include Water/Wetland Tag (Official water name)		Amount	Open water/wetland	Amount	Open water/wetland			
1	S-1 - Manmade channel (PS ⁵) that appears to extend from a pump station on Oyster Creek southward to the Dow Chemical Plant in the Clute-Lake Jackson area.	Bridge	Permanent impacts would occur because of erosion control placed below the OHWM ⁶ . Total new permanent impact = 90 linear feet			NA	29.048462	-95.473571	IP
2	S-2 - Buffalo Camp Bayou (PS) a Tributary of the Brazos River.	Bridge	Permanent impacts would occur because of concrete and fill, bridge columns and erosion control placed below the OHWM. Total new permanent impact = 90 linear feet			NA	29.049254	-95.477491	IP
9	S-4 - Brazos River (PS)	Construction of outfall structure to the Brazos River	Permanent impacts would occur because erosion control measures for the proposed new drainage channel outfall placed below the OHWM (0.049). Total new permanent impact = 134 linear feet			NA	29.03978	-95.50759	IP
Totals				314 linear feet		NA			

¹S-3 is a shallow linear feature that supports fluctuating amounts of herbaceous wetland vegetation depending on water depth and likely functions as a wetland at times.; ²Intermittent Stream; ³TNW = Traditional Navigable Water; ⁴ASA = additional survey area associated with the proposed new drainage channel; ⁵Perennial Stream; ⁶OHWM = Ordinary High-Water Mark



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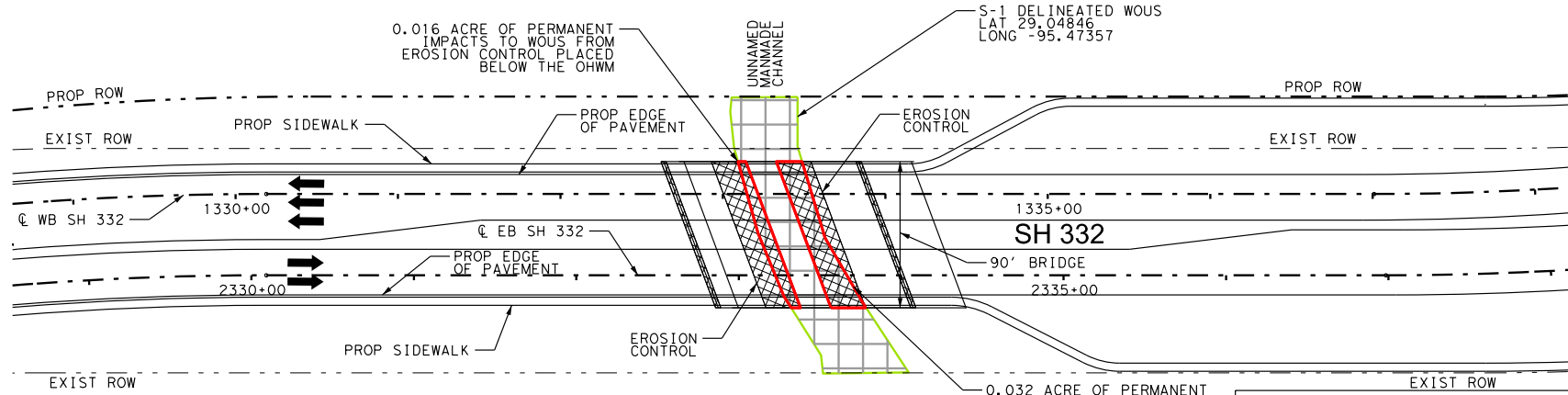
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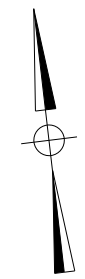
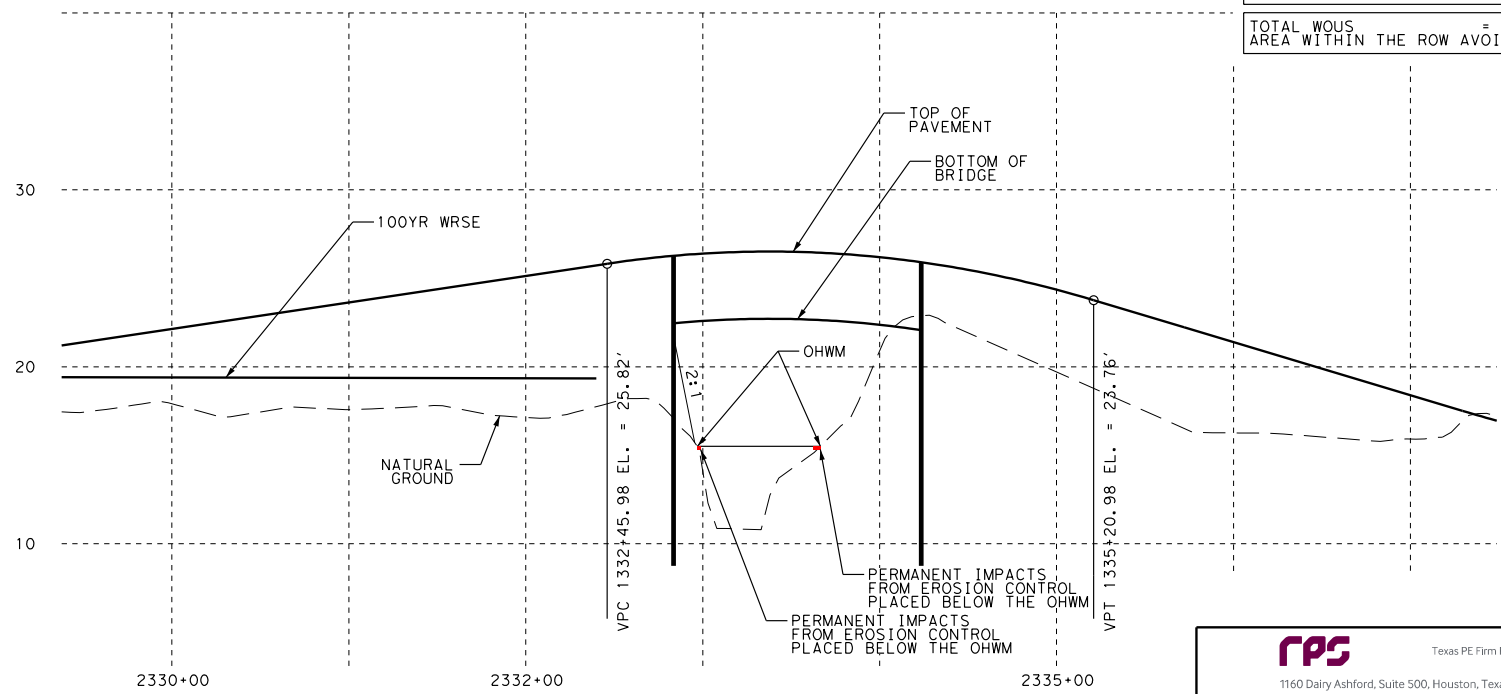
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**EXHIBIT C
PROJECT LAYOUT
SH 332 from FM 521 to SH 288
Brazoria County**

KLOTZ PROJ. No:	0121.064.004	SHEET
DATE:	MARCH 2020	1



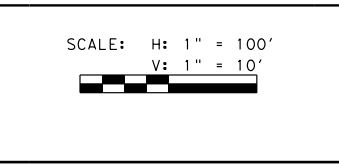
TOTAL WOUS AREA IMPACTED BY EROSION CONTROL	= 0.048 ACRE
DELINEATED WOUS WITHIN ROW	= 0.166 ACRE
TOTAL WOUS AREA WITHIN THE ROW AVOIDED	= 0.118 ACRE



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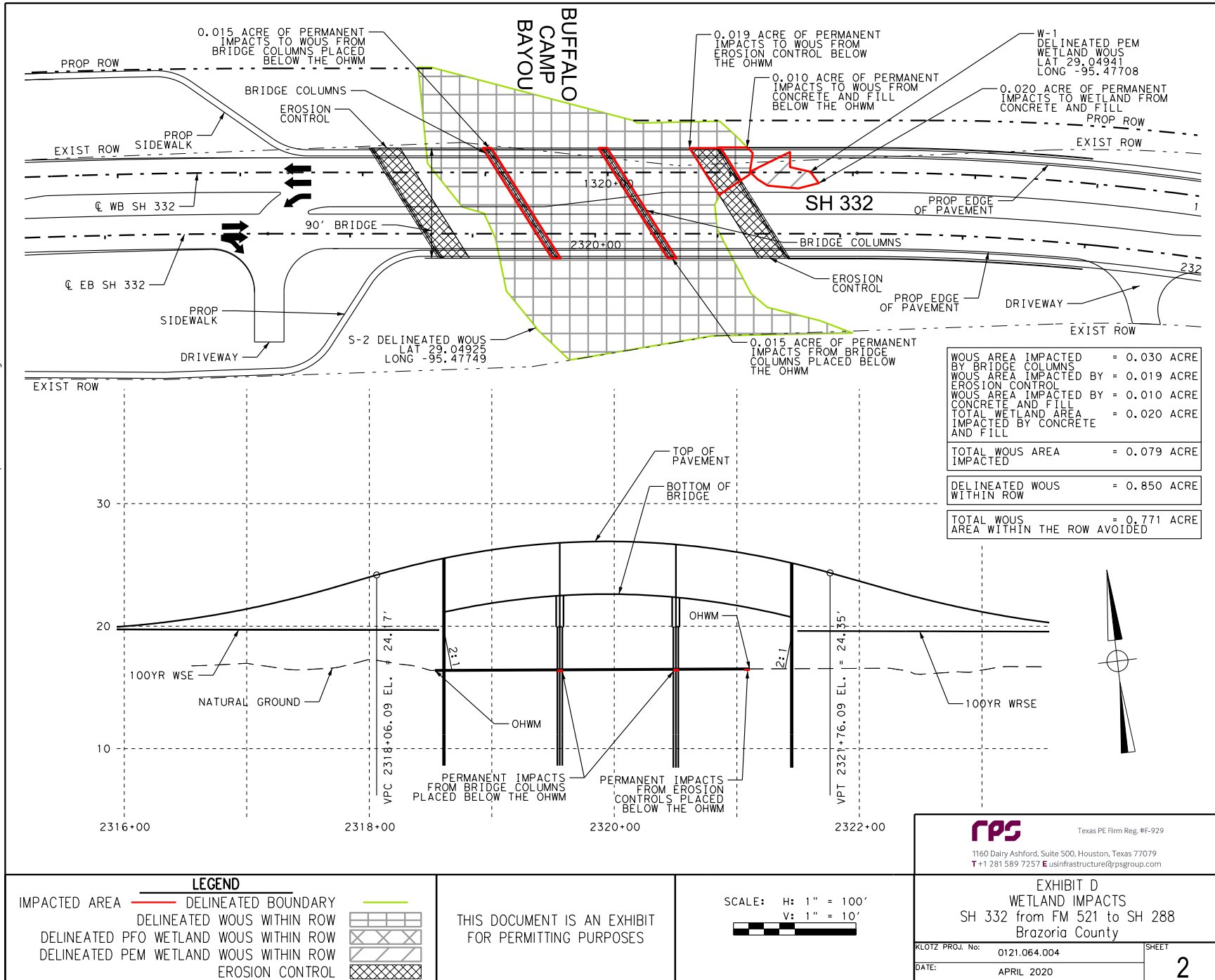
LEGEND	
IMPACTED AREA	DELINEATED BOUNDARY
DELINEATED WOUS WITHIN ROW	DELINEATED PFO WETLAND WOUS WITHIN ROW
DELINEATED PEM WETLAND WOUS WITHIN ROW	EROSION CONTROL

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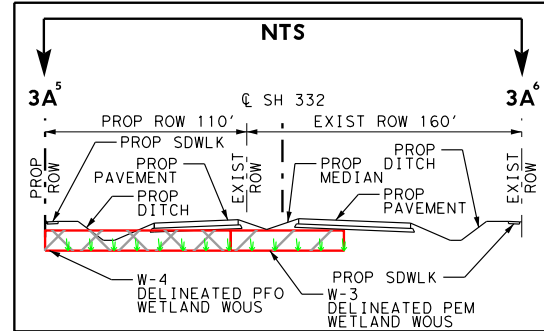
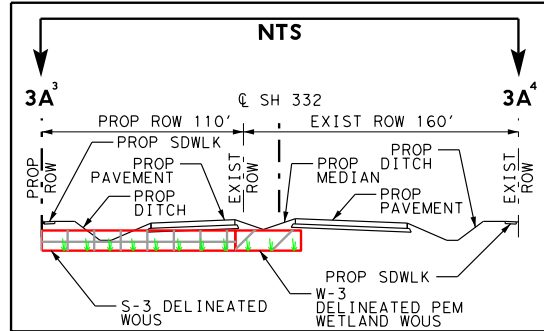
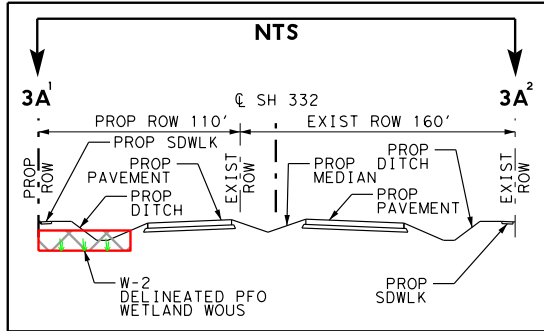
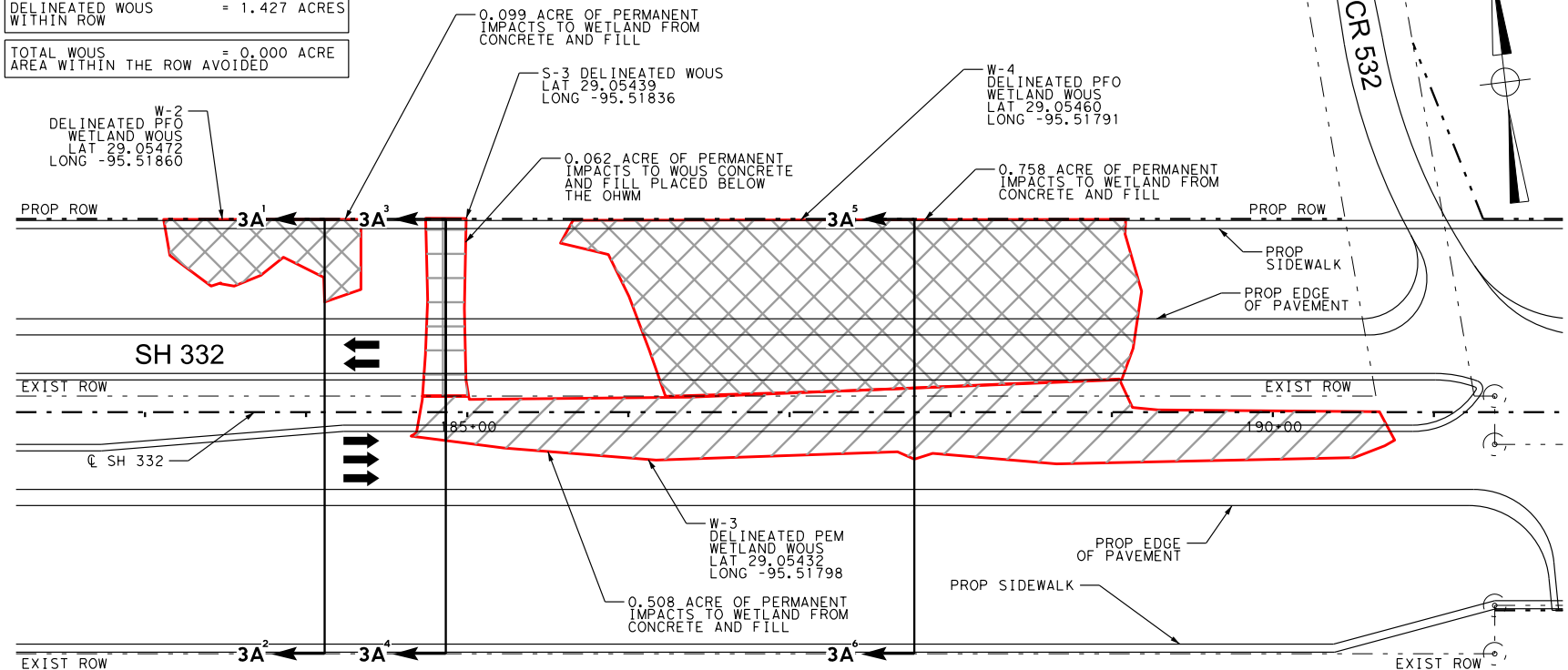
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EXHIBIT D WETLAND IMPACTS SH 332 from FM 521 to SH 288 Brazoria County	
KLOTZ PROJ. No: 0121.064.004	SHEET
DATE: APRIL 2020	1



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TOTAL WOUS AREA IMPACTED BY CONCRETE AND FILL = 1.427 ACRES
 DELINEATED WOUS WITHIN ROW = 1.427 ACRES
 TOTAL WOUS AREA WITHIN THE ROW AVOIDED = 0.000 ACRE



NOTES:
 THE IMPACTED AREA IS THE AS THE DELINEATED BOUNDARY FOR THIS EXHIBIT.
 EXIST GROUND IS NOT SHOWN IN THE CROSS SECTIONS BECAUSE THE PROP ROADWAY WILL BE CONSTRUCTED ABOVE THE EXIST GROUND. EXIST ROADWAY IS NOT SHOWN IN THE CROSS SECTIONS BECAUSE THE EXISTING ROADWAY WILL BE REMOVED AND THE PROP ROADWAY WILL THEN BE CONSTRUCTED.

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LEGEND

IMPACTED AREA/DELINEATED BOUNDARY	
WETLAND PLANTS	
DELINEATED WOUS WITHIN ROW	
DELINEATED PFO WETLAND WOUS WITHIN ROW	
DELINEATED PEM WETLAND WOUS WITHIN ROW	

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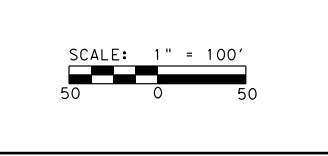
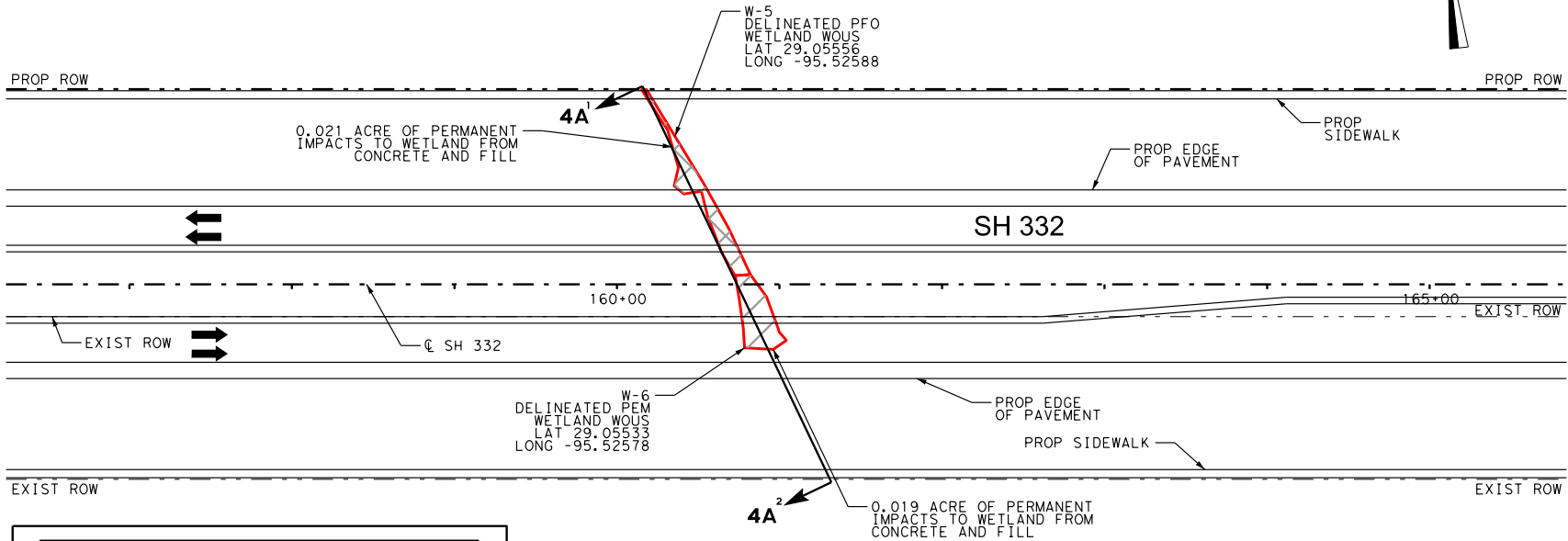


EXHIBIT D
 WETLAND IMPACTS
 SH 332 from FM 521 to SH 288
 Brazoria County

KLOTZ PROJ. No: 0121.064.004 SHEET
 DATE: APRIL 2020 **3**

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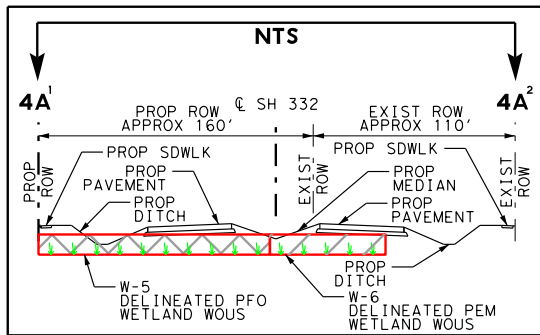
0.021 ACRE OF PERMANENT IMPACTS TO WETLAND FROM CONCRETE AND FILL

W-5
DELINEATED PFO
WETLAND WOUS
LAT 29.05556
LONG -95.52588

SH 332

W-6
DELINEATED PEM
WETLAND WOUS
LAT 29.05533
LONG -95.52578

0.019 ACRE OF PERMANENT IMPACTS TO WETLAND FROM CONCRETE AND FILL



NOTES:

THE IMPACTED AREA IS THE AS THE DELINEATED BOUNDARY FOR THIS EXHIBIT.
EXIST GROUND IS NOT SHOWN IN THE CROSS SECTIONS BECAUSE THE PROP ROADWAY WILL BE CONSTRUCTED ABOVE THE EXIST GROUND. EXIST ROADWAY IS NOT SHOWN IN THE CROSS SECTIONS BECAUSE THE EXISTING ROADWAY WILL BE REMOVED AND THE PROP ROADWAY WILL THEN BE CONSTRUCTED.

TOTAL WOUS AREA IMPACTED BY CONCRETE AND FILL	= 0.040 ACRE
DELINEATED WOUS WITHIN ROW	= 0.040 ACRE
TOTAL WOUS AREA WITHIN THE ROW AVOIDED	= 0.000 ACRE



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LEGEND

IMPACTED AREA/DELINEATED BOUNDARY	
WETLAND PLANTS	
DELINEATED PFO WETLAND WOUS WITHIN ROW	
DELINEATED PEM WETLAND WOUS WITHIN ROW	

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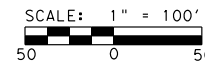
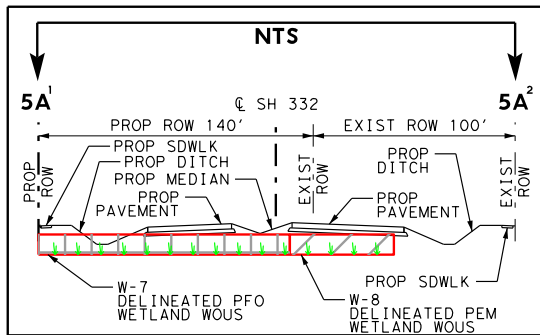
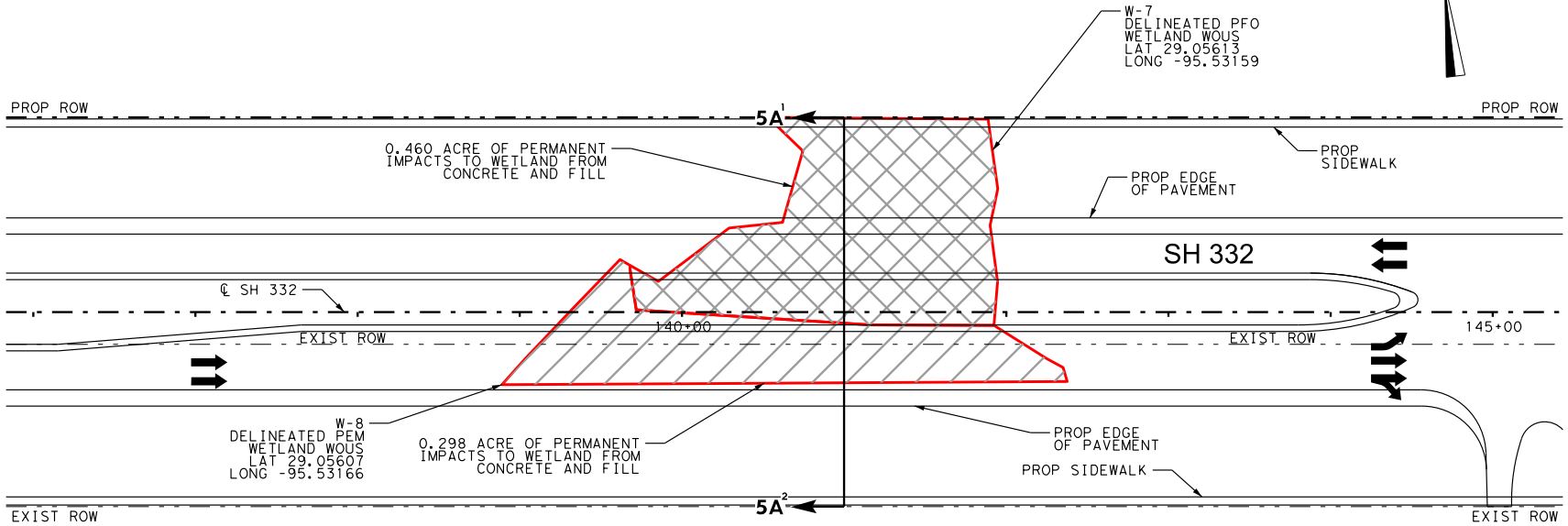


EXHIBIT D
WETLAND IMPACTS
SH 332 from FM 521 to SH 288
Brazoria County

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NOTES:

THE IMPACTED AREA IS THE AS THE DELINEATED BOUNDARY FOR THIS EXHIBIT.
EXIST GROUND IS NOT SHOWN IN THE CROSS SECTIONS BECAUSE THE PROP ROADWAY WILL BE CONSTRUCTED ABOVE THE EXIST GROUND, EXIST ROADWAY IS NOT SHOWN IN THE CROSS SECTIONS BECAUSE THE EXISTING ROADWAY WILL BE REMOVED AND THE PROP ROADWAY WILL THEN BE CONSTRUCTED.

TOTAL WOUS AREA IMPACTED BY CONCRETE AND FILL	= 0.758 ACRE
DELINEATED WOUS WITHIN ROW	= 0.758 ACRE
TOTAL WOUS AREA WITHIN THE ROW AVOIDED	= 0.000 ACRE

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IMPACTED AREA/DELINEATED BOUNDARY	
WETLAND PLANTS	
DELINEATED PFO WETLAND WOUS WITHIN ROW	
DELINEATED PEM WETLAND WOUS WITHIN ROW	

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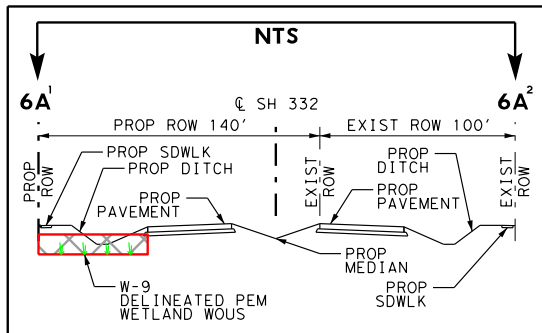
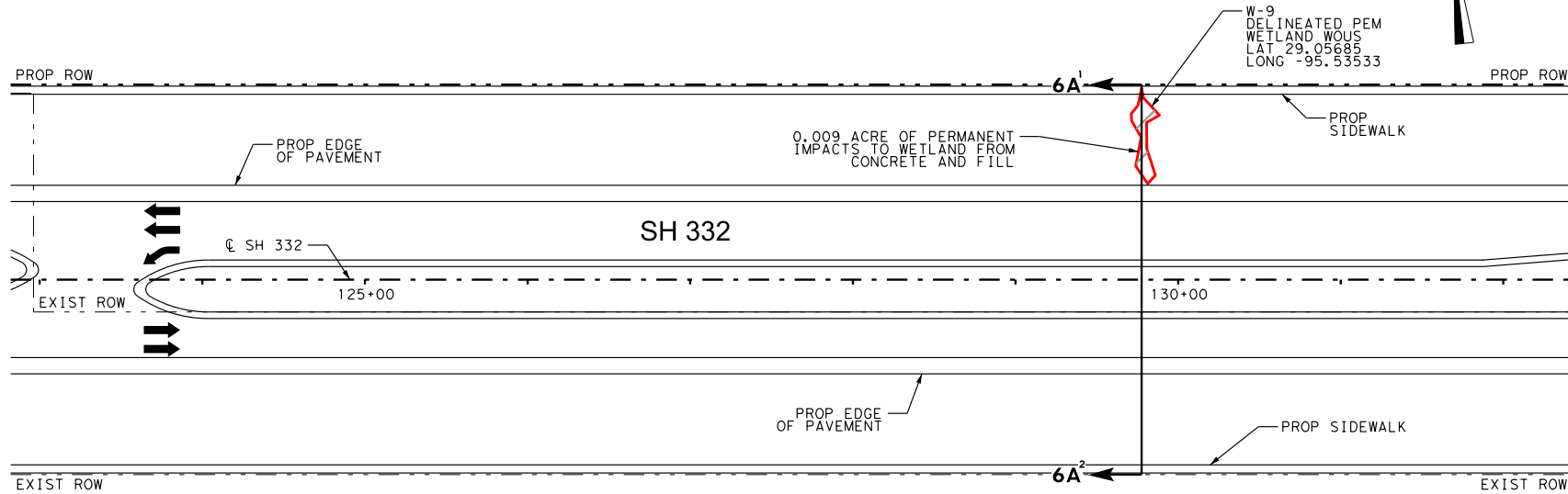


EXHIBIT D
WETLAND IMPACTS
SH 332 from FM 521 to SH 288
Brazoria County

KLOTZ PROJ. No: 0121.064.004
DATE: APRIL 2020

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5

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TOTAL WOUS AREA IMPACTED BY CONCRETE AND FILL	= 0.009 ACRE
DELINEATED WOUS WITHIN ROW	= 0.009 ACRE
TOTAL WOUS AREA WITHIN THE ROW AVOIDED	= 0.000 ACRE

NOTES:

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IMPACTED AREA/DELINEATED BOUNDARY	
WETLAND PLANTS	
DELINEATED PFO WETLAND WOUS WITHIN ROW	
DELINEATED PEM WETLAND WOUS WITHIN ROW	

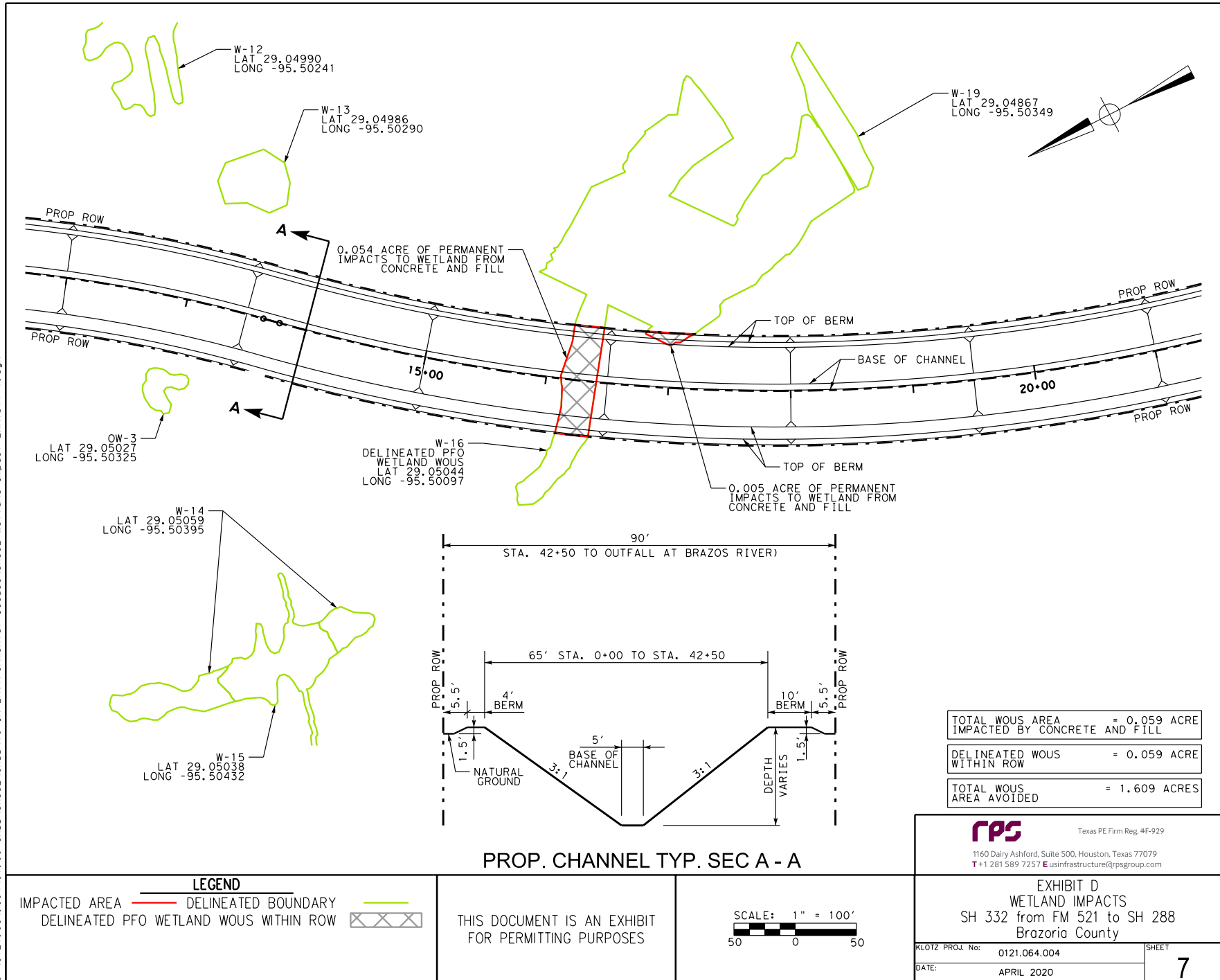
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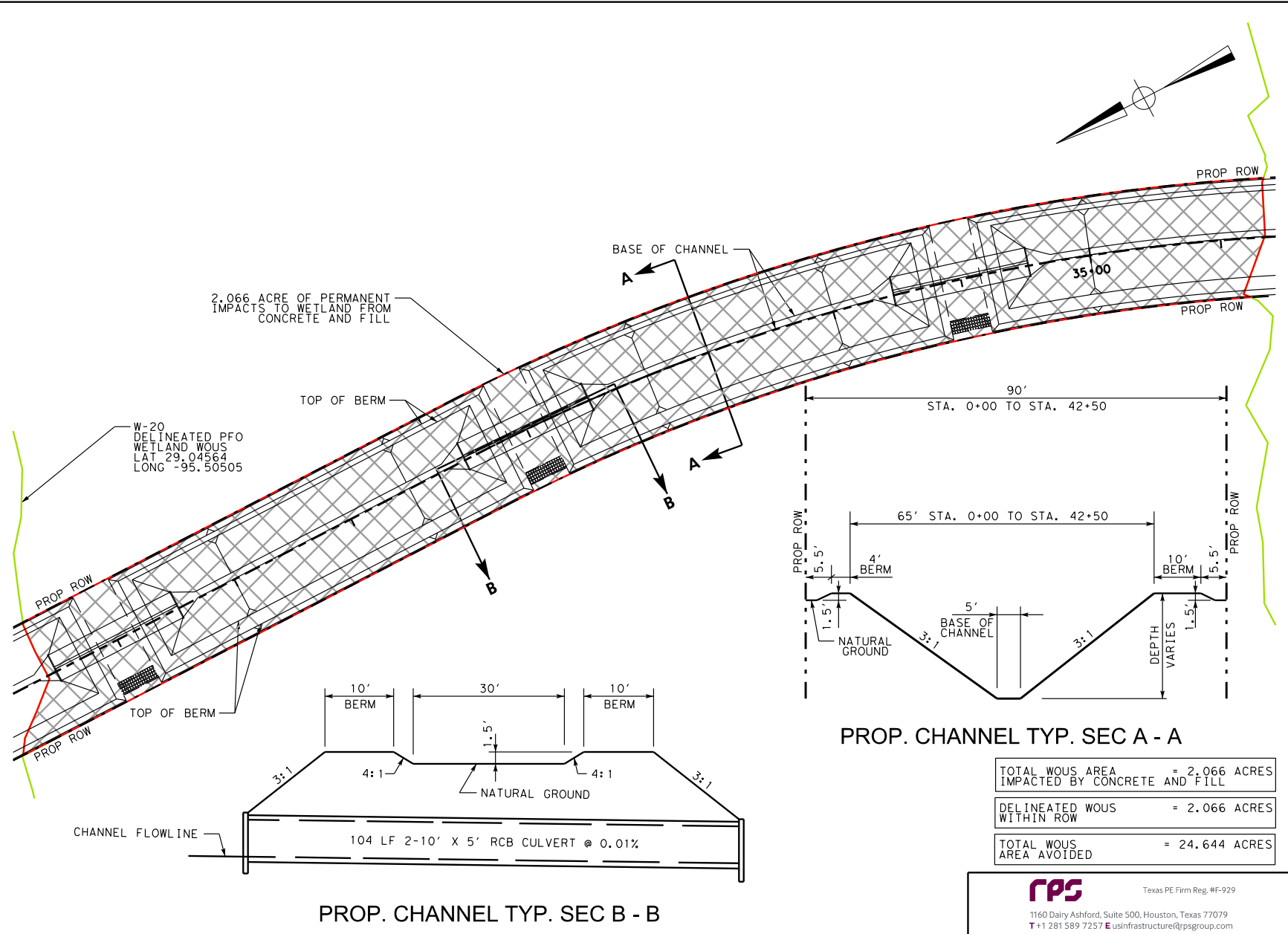
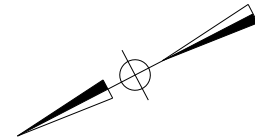
EXHIBIT D
 WETLAND IMPACTS
 SH 332 from FM 521 to SH 288
 Brazoria County

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TOTAL WOUS AREA IMPACTED BY CONCRETE AND FILL	= 2.066 ACRES
DELINEATED WOUS WITHIN ROW	= 2.066 ACRES
TOTAL WOUS AREA AVOIDED	= 24.644 ACRES

PROP. CHANNEL TYP. SEC B - B

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EXHIBIT D
WETLAND IMPACTS
SH 332 from FM 521 to SH 288
Brazoria County

LEGEND

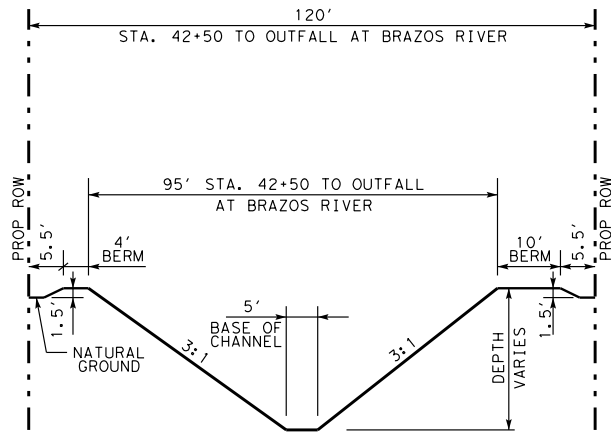
IMPACTED AREA	DELINEATED BOUNDARY	DELINEATED PFO WETLAND WOUS WITHIN ROW

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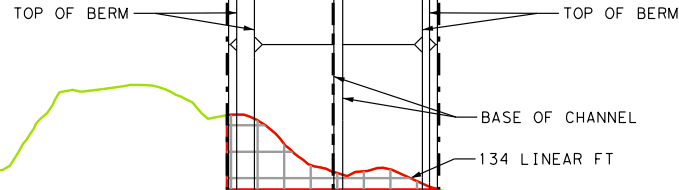


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PROP. CHANNEL TYP. SEC C - C



S-4
DELINEATED WOUS
LAT 29.03978
LONG -95.50759

0.049 ACRE OF PERMANENT
IMPACTS TO WOUS FROM
CONCRETE AND FILL
BELOW THE OHWM

BRAZOS RIVER

TOTAL WOUS AREA IMPACTED BY CONCRETE AND FILL	= 0.049 ACRE
DELINEATED WOUS WITHIN ROW	= 0.049 ACRE
TOTAL WOUS AREA WITHIN THE ROW AVOIDED	= 0.000 ACRE



Texas PE Firm Reg. #F-929

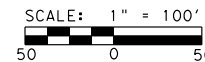
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EXHIBIT D
WETLAND IMPACTS
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Brazoria County

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DATE:	APRIL 2020	9

LEGEND		
IMPACTED AREA	DELINEATED BOUNDARY	DELINEATED WOUS WITHIN ROW

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