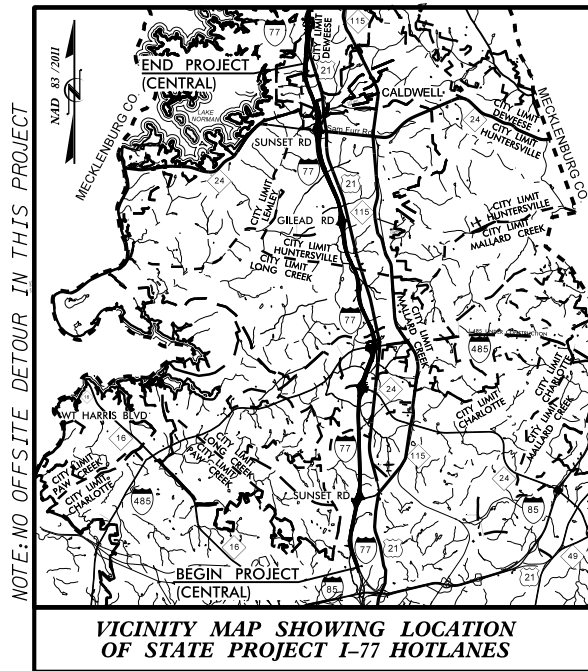


09/05/14  
 CONTRACT: C203406  
 TIP PROJECT: I-5405/I-4750AA  
 \$ DATE \$  
 \$ FILE \$  
 \$ PENTBL \$

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**PERMIT DRAWING  
SHEET 01 OF 27**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5405/I-4750AA	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45454.3.P3S1		P.E.	

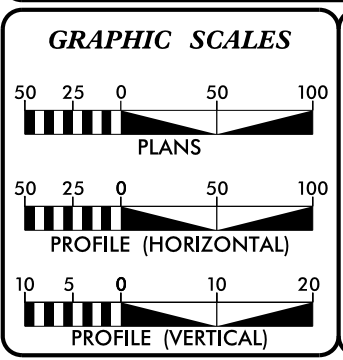
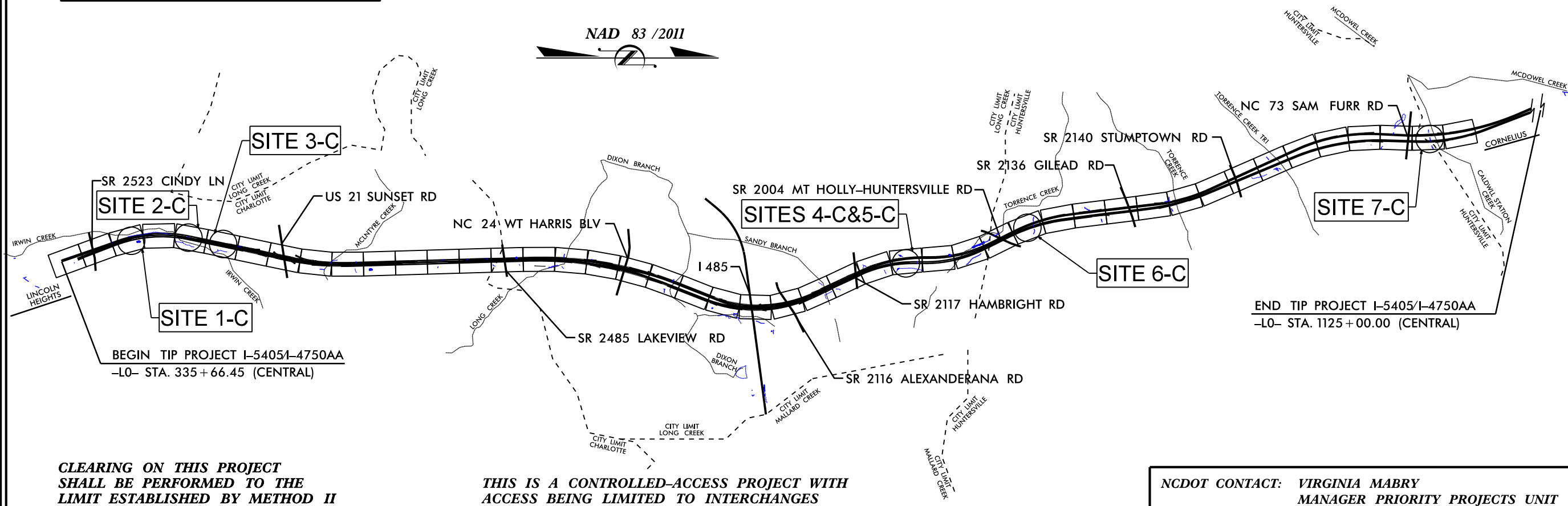


# MECKLENBURG COUNTY

**LOCATION:** I-77 FROM NORTH OF I-85  
TO NORTH OF NC 73 (SAM FURR RD.)

**TYPE OF WORK:** GRADING, DRAINAGE, PAVING, SIGNING, ITS,  
GUARDRAIL, PAVEMENT MARKINGS,  
TOLLING STRUCTURES /EQUIPMENT AND STRUCTURES

## WETLAND AND STREAM IMPACTS (CENTRAL SECTION)



**DESIGN DATA**

ADT 2012 =	185,400
ADT 2035 =	231,400
DHV =	10 %
D =	60 %
T =	8 % *
V =	70 MPH
* (TTST 4% + DUAL 4%)	
FUNC. CLASS = INTERSTATE "STATE WIDE TIER"	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT I-5405/I-4750AA	=	14.950 MI
LENGTH STRUCTURES TIP PROJECT I-5405/I-4750AA	=	0.023 MI
TOTAL LENGTH OF TIP PROJECT I-5405/I-4750AA	=	26.089 MI

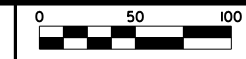
Prepared for NCDOT In the Office of:  
LOUIS BERGER  
8150 Brookriver Drive, Suite S-320  
Dallas, Texas 75247  
License No.: F-0840

2012 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	JOSE M. BARRAU, P.E. ROADWAY DESIGN ENGINEER
LETTING DATE:	JOE M. GARCIA, P.E. HYDRAULICS ENGINEER

HYDRAULICS ENGINEER	
SIGNATURE:	P.E.
ROADWAY DESIGN ENGINEER	
SIGNATURE:	P.E.

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

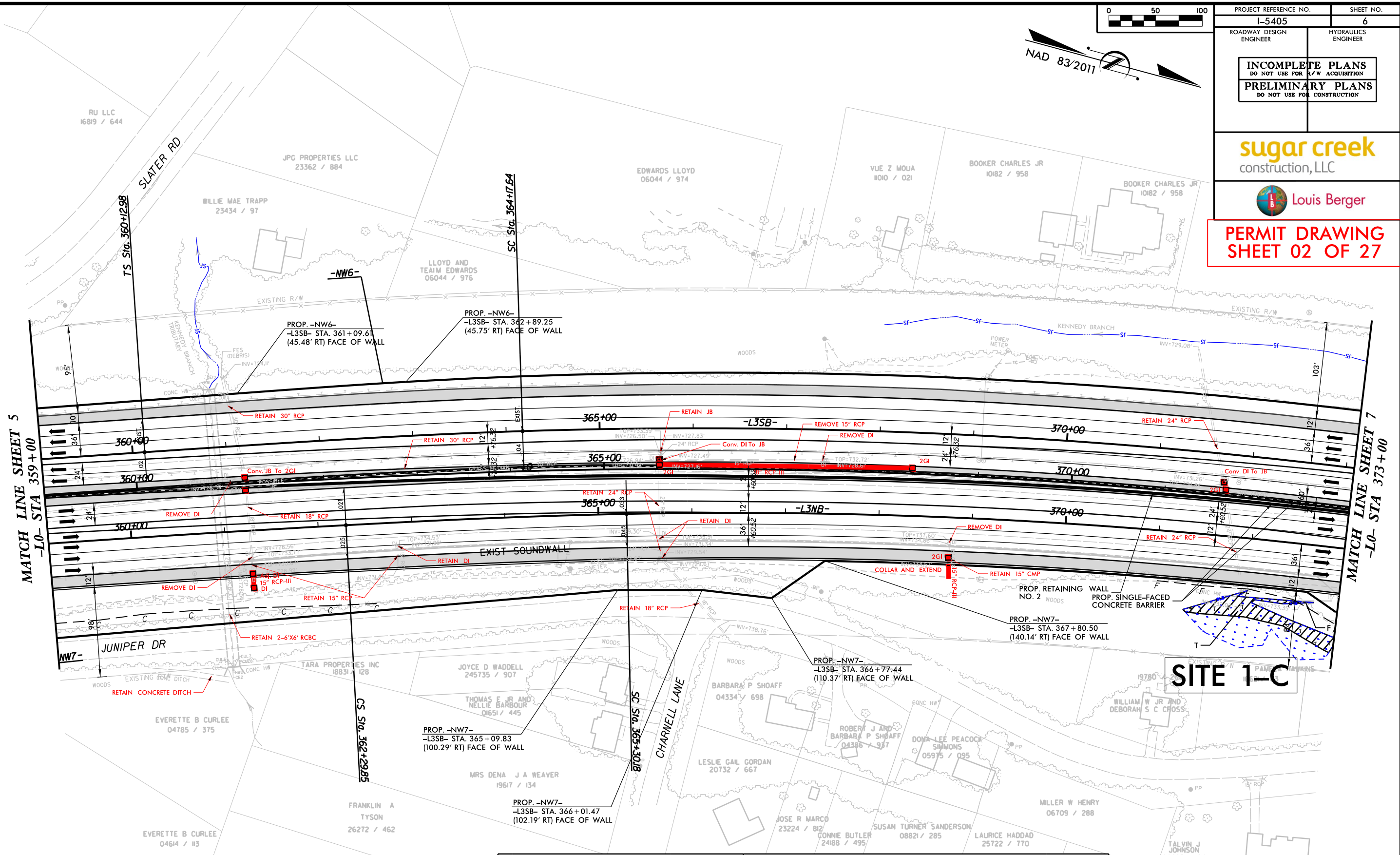


**INCOMPLETE PLANS**  
DO NOT USE FOR R/W ACQUISITION  
**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

**sugar creek**  
construction, LLC



**PERMIT DRAWING**  
**SHEET 02 OF 27**



MATCH LINE SHEET 5  
-L0- STA 359+00

MATCH LINE SHEET 7  
-L0- STA 373+00

-L3SB-		-L3NB-		
PI Sta 362+82.77	PI Sta 377+96.83	PI Sta 357+37.05	PI Sta 364+08.07	PI Sta 378+44.13
Δs = 1° 59' 55.4"	Δ = 26° 45' 07.1" (RT)	Δ = 2° 49' 26.6" (RT)	Δs = 0° 25' 48.7"	Δ = 26° 15' 04.0" (RT)
Ls = 404.66'	D = 0° 59' 16.3"	D = 0° 17' 11.3"	Δs = 1° 31' 36.7"	D = 1° 01' 00.4"
LT = 269.79'	L = 2,708.08'	L = 985.79'	Ls = 300.33'	L = 2,581.78'
ST = 134.90'	T = 1,379.19'	T = 492.99'	LT = 178.23'	T = 1,313.96'
	R = 5,800.00'	R = 20,000.00'	e = NC	R = 5,635.00'
	e = 3.60%	RO = 300'	RO = N/A	e = 3.30%
	RO = 300'	DS = 70 MPH	DS = 70 MPH	RO = 300'
				DS = 70 MPH

**NOTES:**  
1.) FOR -L3NB- PROFILE SEE SHEET 52.  
2.) FOR -L3SB- PROFILE SEE SHEET 52.

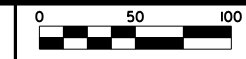
RBC REAL ESTATE FINANCE INC  
24758 / 658

DENOTES FILL IN WETLAND  
 DENOTES TEMPORARY FILL IN WETLAND

**NOTE:**  
-BEST FIT HORIZONTAL GEOMETRY SHOWN.  
EXISTING GEOMETRY TO BE RETAINED  
UNLESS OTHERWISE INDICATED.  
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE  
TO BE RETAINED UNLESS OTHERWISE  
INDICATED.

10-JUL-2015 08:24  
IP: P:\Projects\30384\1-5405-HYD-PRM-WET\_PSH-006-01.dgn  
imgarc02b AT CAMARCO



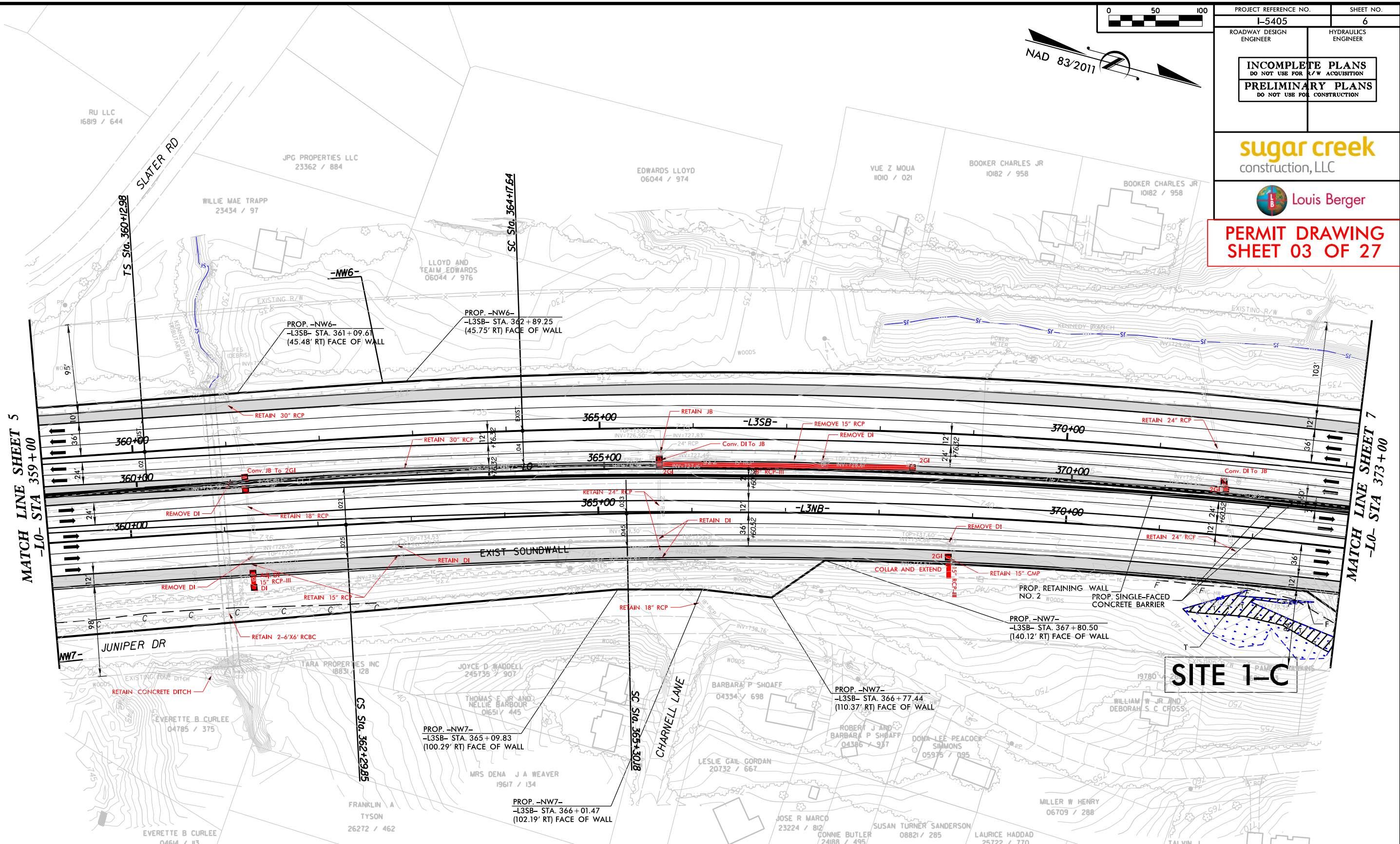


PROJECT REFERENCE NO. L-5405	SHEET NO. 6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

**sugar creek**  
construction, LLC



**PERMIT DRAWING**  
**SHEET 03 OF 27**



MATCH LINE SHEET 5  
-L0- STA 359+00

MATCH LINE SHEET 7  
-L0- STA 373+00

**SITE 1-C**

-L3SB-		-L3NB-	
PI Sta 362+82.77	PI Sta 377+96.83	PI Sta 357+37.05	PI Sta 364+08.07
Δ = 1° 59' 55.4"	Δ = 26° 45' 07.1" (RT)	Δ = 2° 49' 26.6" (RT)	Δ = 0° 25' 48.7"
Ls = 404.66'	D = 0° 59' 16.3"	D = 0° 17' 11.3"	Δ = 1° 31' 36.7"
LT = 269.79'	L = 2,708.08'	L = 985.79'	Ls = 300.33'
ST = 134.90'	T = 1,379.19'	T = 492.99'	LT = 178.23'
	R = 5,800.00'	R = 20,000.00'	ST = 122.13'
	e = 3.60%	e = NC	
	RO = 300'	RO = N/A	
	DS = 70 MPH	DS = 70 MPH	

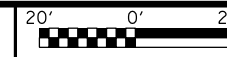
**NOTES:**  
 1.) FOR -L3NB- PROFILE SEE SHEET 52.  
 2.) FOR -L3SB- PROFILE SEE SHEET 52.

DENOTES FILL IN WETLAND  
 DENOTES TEMPORARY FILL IN WETLAND

**NOTE:**  
 -BEST FIT HORIZONTAL GEOMETRY SHOWN.  
 EXISTING GEOMETRY TO BE RETAINED UNLESS OTHERWISE INDICATED.  
 -SHOULDERS, SIDE SLOPES, DRAINAGE, ARE TO BE RETAINED UNLESS OTHERWISE INDICATED.

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 imarc02b AT CAMARCO

ENLARGEMENT SHEET



PROJECT REFERENCE NO. L-5405 SHEET NO. 6A

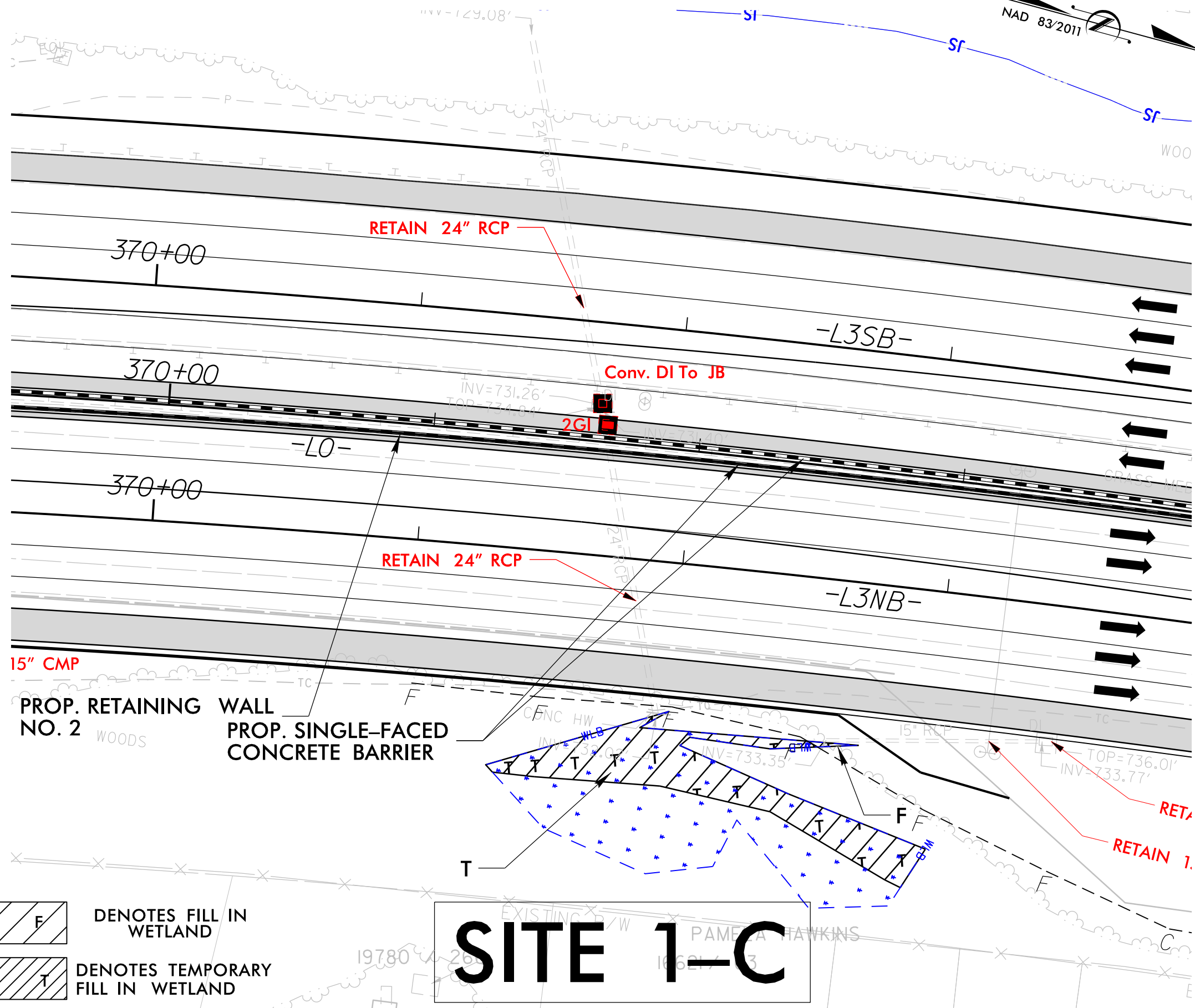
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS  
DO NOT USE FOR R/W ACQUISITION  
PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

sugar creek  
construction, LLC

Louis Berger

PERMIT DRAWING  
SHEET 04 OF 27



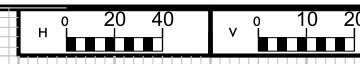
DENOTES FILL IN WETLAND  
 DENOTES TEMPORARY FILL IN WETLAND

**SITE 1-C**

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 imager.ctb AT CAMARCO



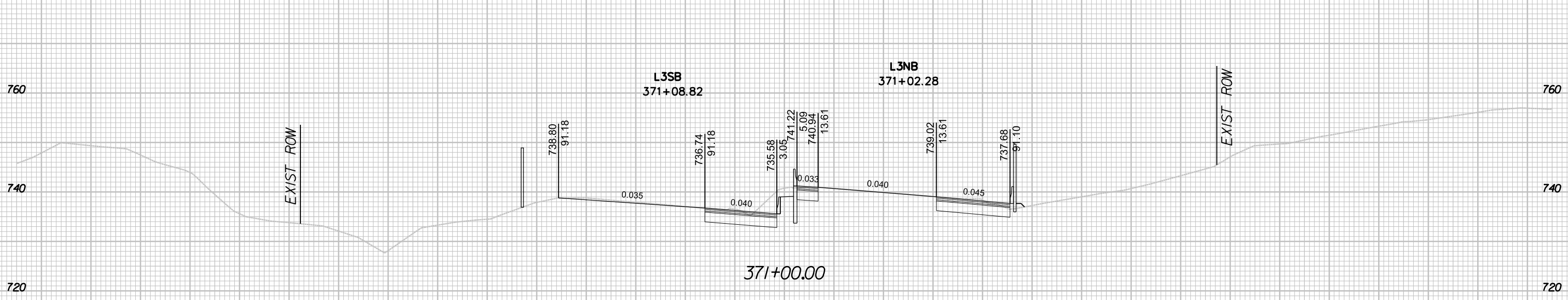
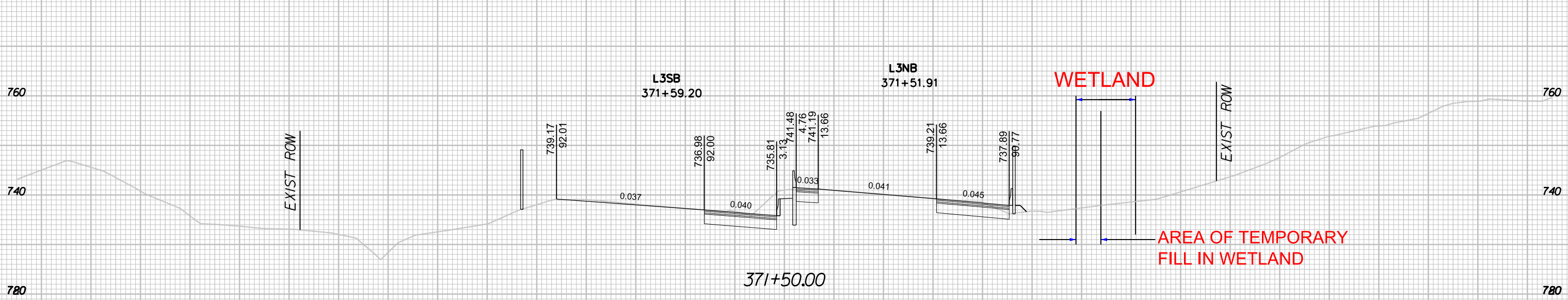
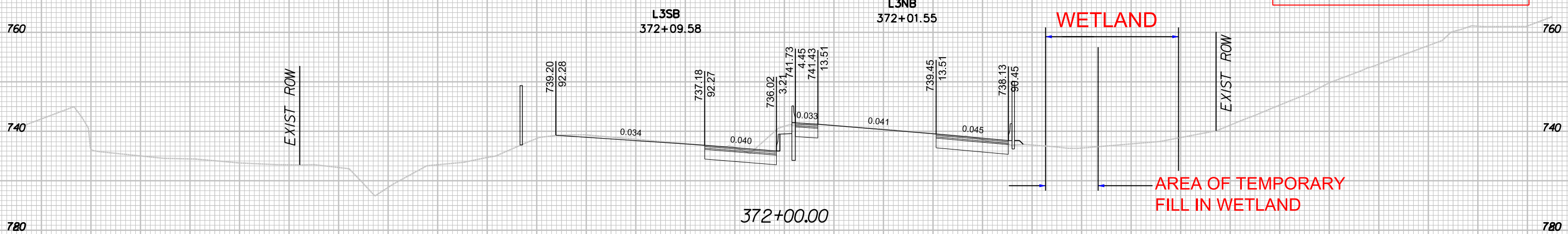
8/23/99



780 300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 780

**CROSS SECTIONS  
SITE 1-C**

**PERMIT DRAWING  
SHEET 05 OF 27**

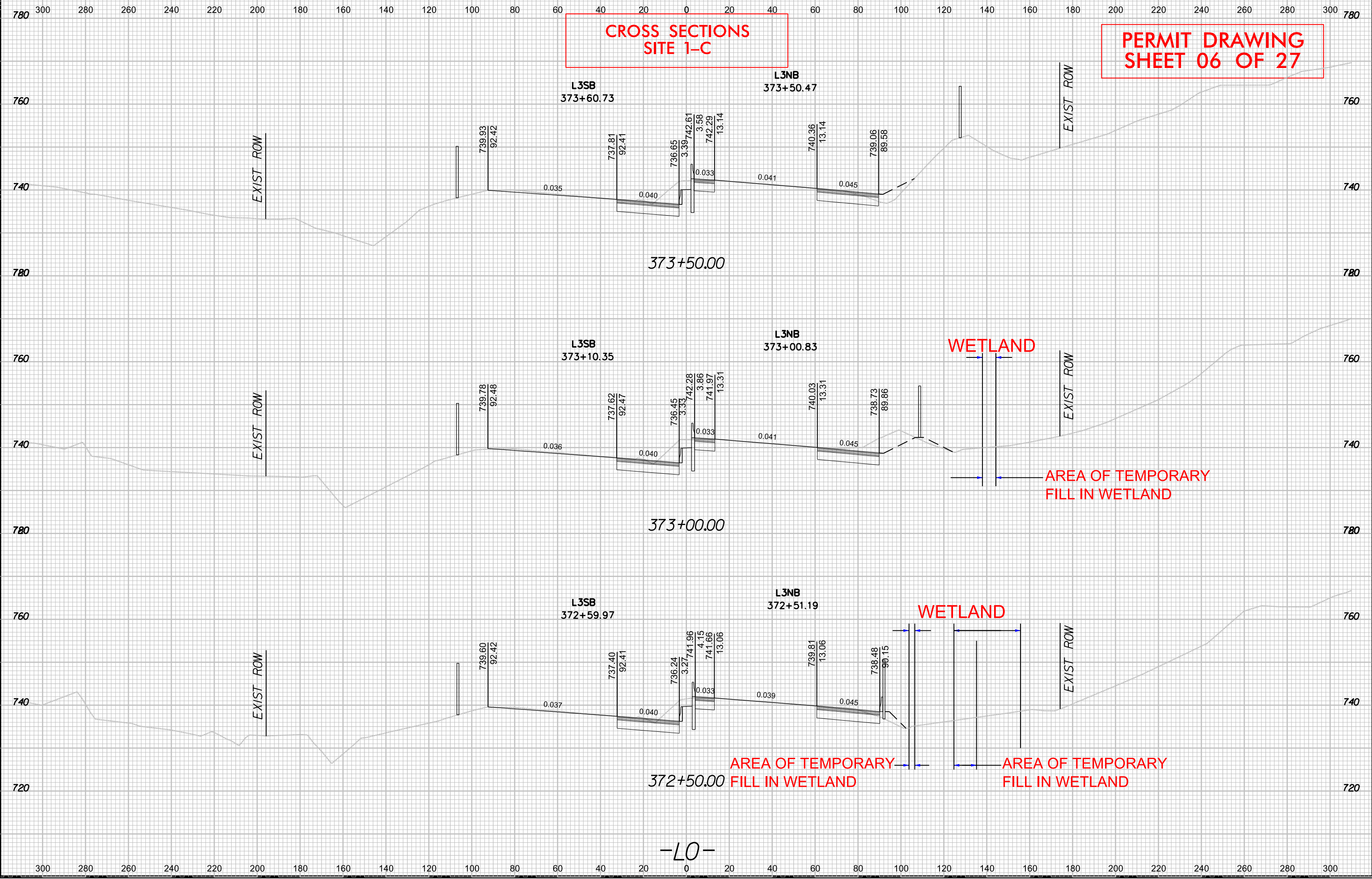


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mcarlos

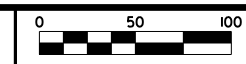
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mezar-cla #1 CAMARCO

**CROSS SECTIONS  
SITE 1-C**

**PERMIT DRAWING  
SHEET 06 OF 27**

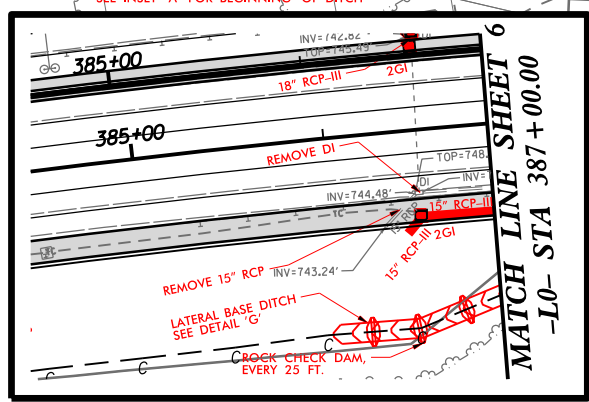
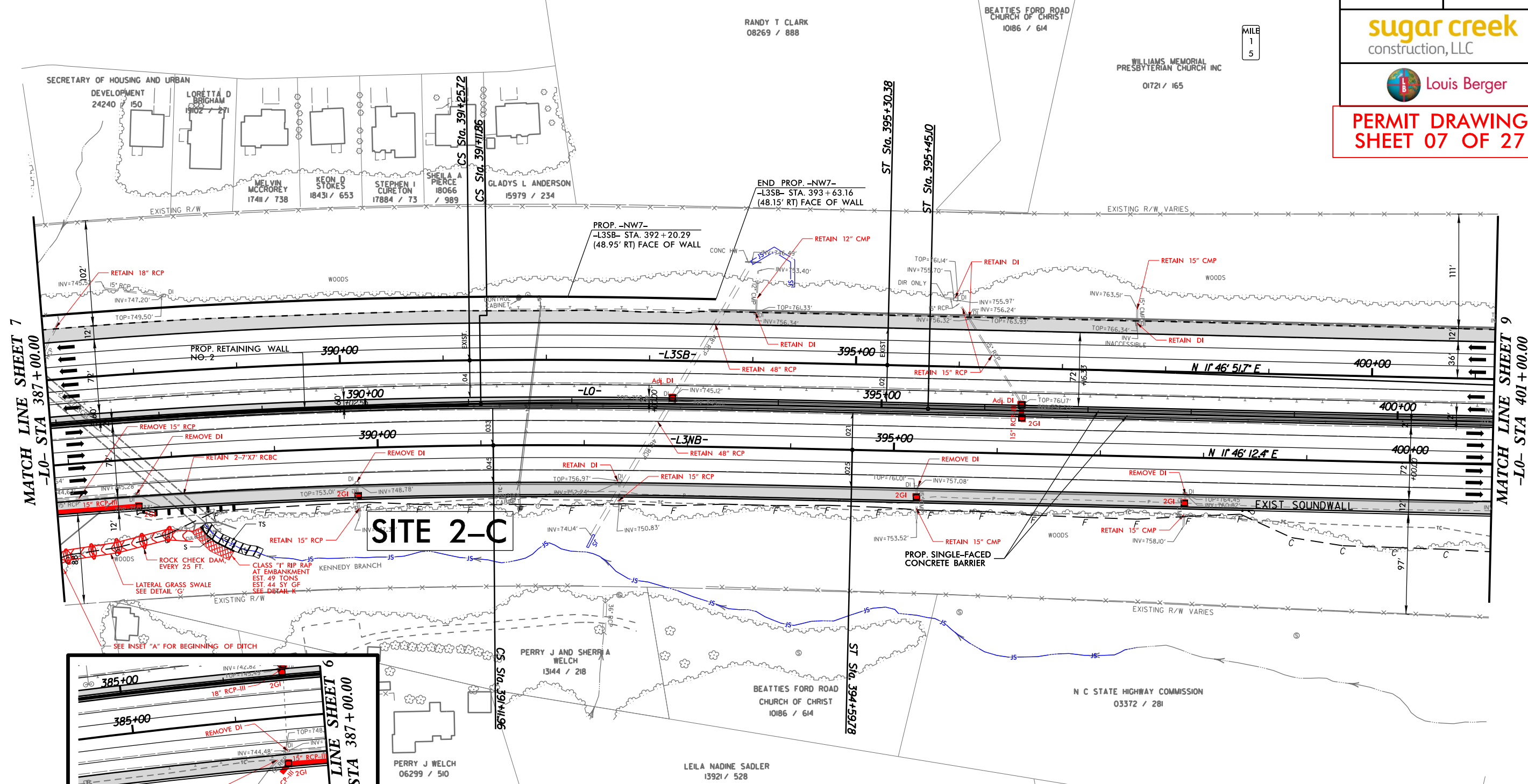


**NOTE:**  
 -BEST FIT HORIZONTAL GEOMETRY SHOWN.  
 -EXISTING GEOMETRY TO BE RETAINED  
 UNLESS OTHERWISE INDICATED.  
 -SHOULDERS, SIDE SLOPES, DRAINAGE, ARE  
 TO BE RETAINED UNLESS OTHERWISE  
 INDICATED.



MILE  
1  
5

PROJECT REFERENCE NO. I-5405	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	
<b>PERMIT DRAWING SHEET 07 OF 27</b>	



**INSET A**

**NOTES:**  
 1.) FOR -L3NB- PROFILE SEE SHEET 54.  
 2.) FOR -L3SB- PROFILE SEE SHEET 54.

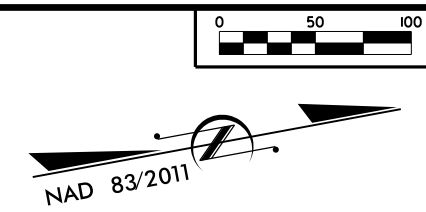
DENOTES IMPACTS IN SURFACE WATER  
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

-L0-		-L3SB-		-L3NB-	
PI Sta 377+98.80	PIs Sta 392+56.29	PI Sta 377+96.83	PIs Sta 392+60.62	PI Sta 378+44.13	PIs Sta 392+27.91
$\Delta = 26' 11'' 10.3''$ (RT)	$\Delta s = 2' 07'' 17.8''$	$\Delta = 26' 45' 07.1''$ (RT)	$\Delta s = 1' 59' 55.4''$	$\Delta = 26' 15' 04.0''$ (RT)	$\Delta s = 1' 46' 06.0''$
$D = 0' 58' 45.9''$	$Ls = 433.24'$	$D = 0' 59' 16.3''$	$Ls = 404.66'$	$D = 1' 01' 00.4''$	$Ls = 347.83'$
$L = 2,673.66'$	$LT = 288.85'$	$L = 2,708.08'$	$LT = 269.79'$	$L = 2,581.78'$	$LT = 231.90'$
$T = 1,360.59'$	$ST = 144.43'$	$T = 1,379.19'$	$ST = 134.90'$	$T = 1,313.96'$	$ST = 115.95'$
$R = 5,850.00'$		$R = 5,800.00'$		$R = 5,635.00'$	
		$e = 3.60\%$		$e = 3.30\%$	
		$RO = 300'$		$RO = 300'$	
		$DS = 70$ MPH		$DS = 70$ MPH	

02-SEP-2015 15:09  
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 imagarico

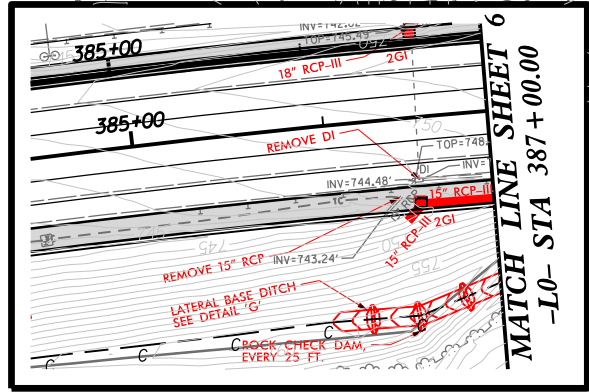
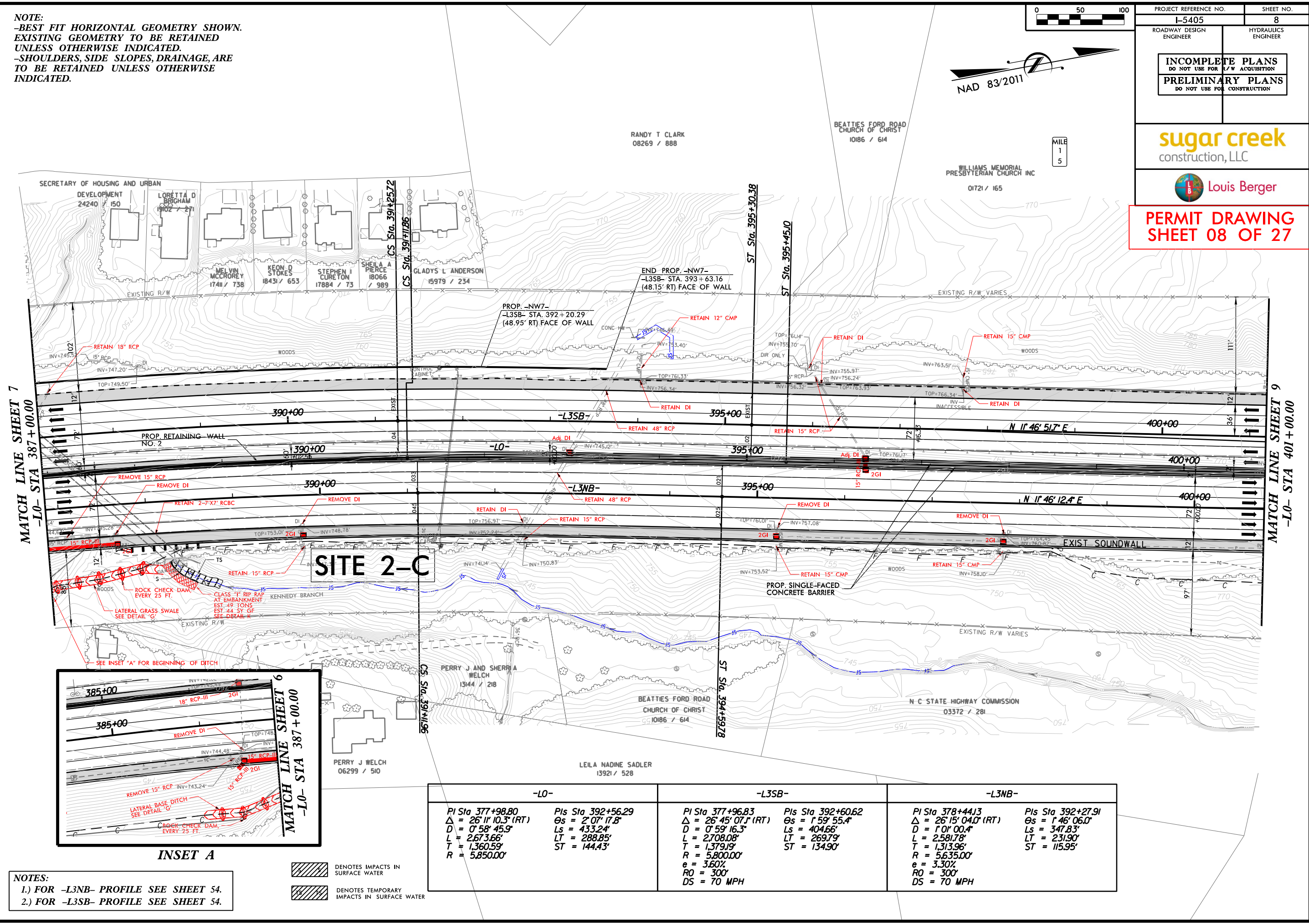


**NOTE:**  
 -BEST FIT HORIZONTAL GEOMETRY SHOWN.  
 -EXISTING GEOMETRY TO BE RETAINED  
 UNLESS OTHERWISE INDICATED.  
 -SHOULDERS, SIDE SLOPES, DRAINAGE, ARE  
 TO BE RETAINED UNLESS OTHERWISE  
 INDICATED.



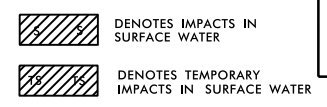
PROJECT REFERENCE NO. I-5405	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

PERMIT DRAWING  
 SHEET 08 OF 27



**INSET A**

**NOTES:**  
 1.) FOR -L3NB- PROFILE SEE SHEET 54.  
 2.) FOR -L3SB- PROFILE SEE SHEET 54.

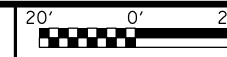


-L0-		-L3SB-		-L3NB-	
PI Sta 377+98.80	PIs Sta 392+56.29	PI Sta 377+96.83	PIs Sta 392+60.62	PI Sta 378+44.13	PIs Sta 392+27.91
$\Delta = 26' 11'' 10.3''$ (RT)	$\Theta s = 2' 07'' 17.8''$	$\Delta = 26' 45' 07.1''$ (RT)	$\Theta s = 1' 59' 55.4''$	$\Delta = 26' 15' 04.0''$ (RT)	$\Theta s = 1' 46' 06.0''$
D = 0' 58' 45.9"	Ls = 433.24'	D = 0' 59' 16.3"	Ls = 404.66'	D = 1' 01' 00.4"	Ls = 347.83'
L = 2,673.66'	LT = 288.85'	L = 2,708.08'	LT = 269.79'	L = 2,581.78'	LT = 231.90'
T = 1,360.59'	ST = 144.43'	T = 1,379.19'	ST = 134.90'	T = 1,313.96'	ST = 115.95'
R = 5,850.00'		R = 5,800.00'		R = 5,635.00'	
		e = 3.60%		e = 3.30%	
		RO = 300'		RO = 300'	
		DS = 70 MPH		DS = 70 MPH	

02-SEP-2015 15:14  
 P:\P\pdm\2\633\1-5405-HYD-PRM-WET\_PSH\_008-02.dgn  
 imagarico



**ENLARGEMENT SHEET**



PROJECT REFERENCE NO. I-5405 SHEET NO. 8A

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

**INCOMPLETE PLANS**  
DO NOT USE FOR R/W ACQUISITION  
**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

**sugar creek**  
construction, LLC

Louis Berger

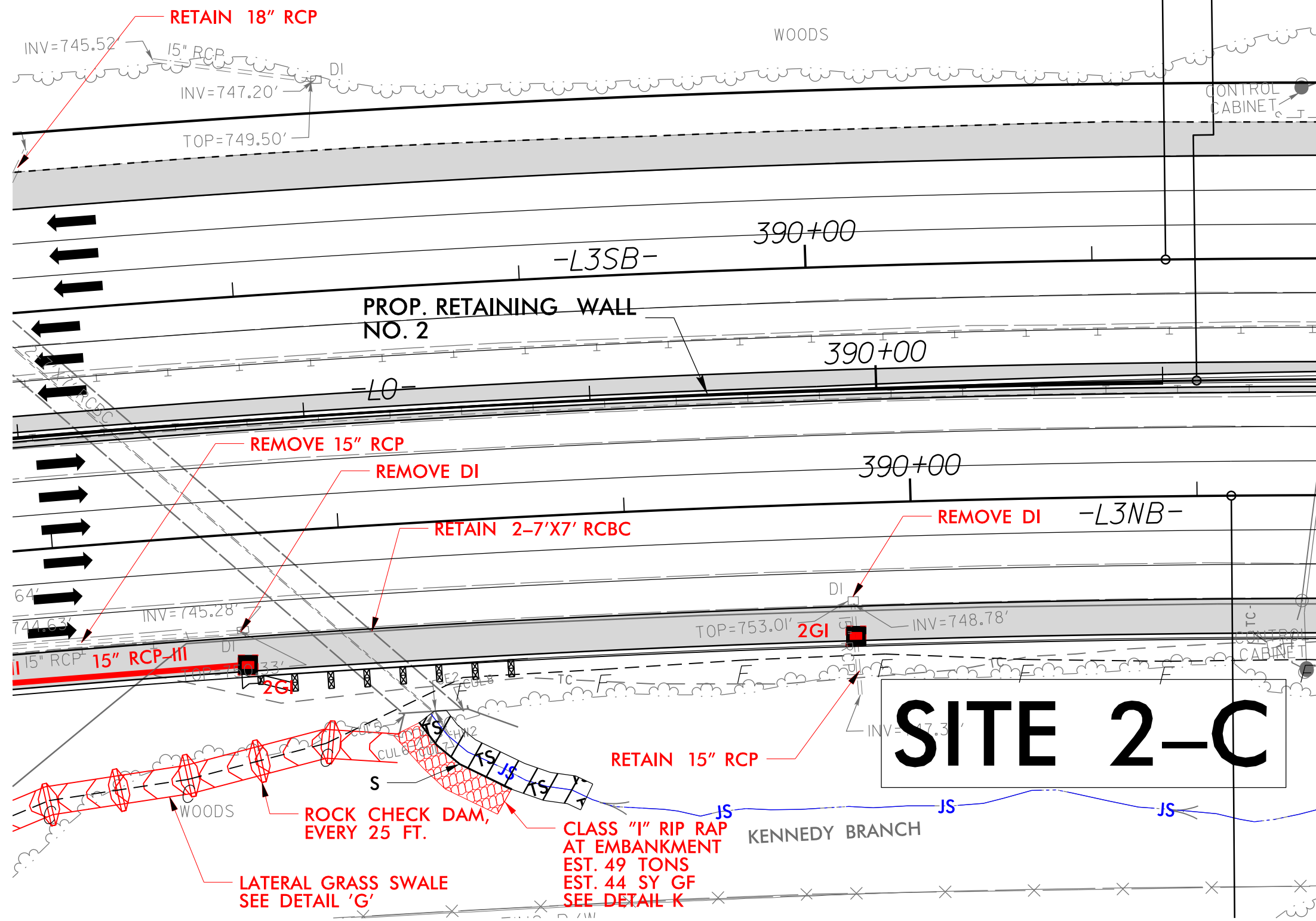
**PERMIT DRAWING SHEET 09 OF 27**



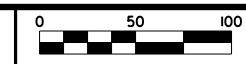
DENOTES IMPACTS IN SURFACE WATER



DENOTES TEMPORARY IMPACTS IN SURFACE WATER



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 AT CAMARCO  
 imar.cib

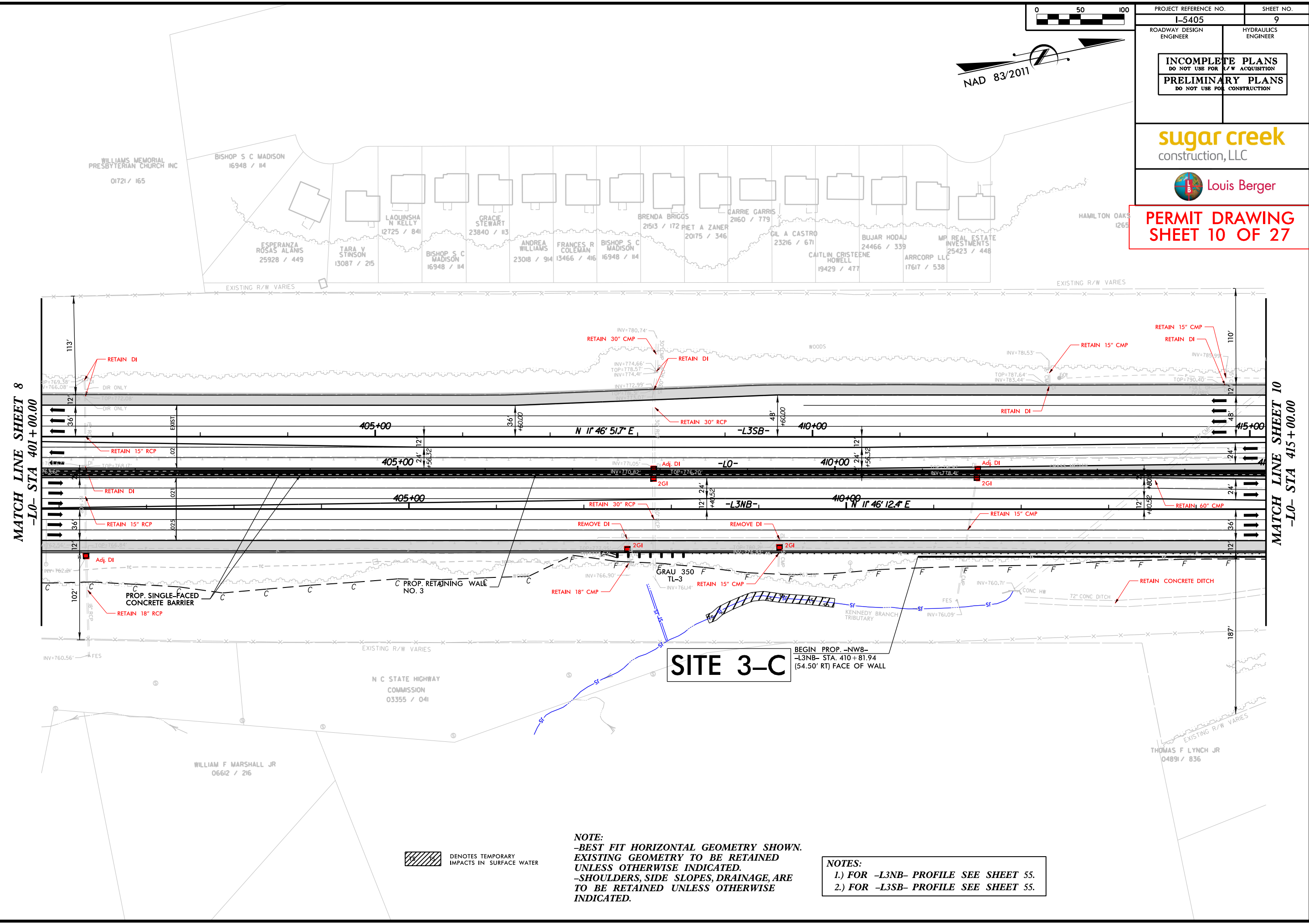


PROJECT REFERENCE NO. <b>I-5405</b>	SHEET NO. <b>9</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

**sugar creek**  
construction, LLC



**PERMIT DRAWING**  
**SHEET 10 OF 27**



MATCH LINE SHEET 8  
-L0- STA 401+00.00

MATCH LINE SHEET 10  
-L0- STA 415+00.00

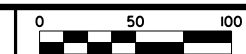
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

**NOTE:**  
 -BEST FIT HORIZONTAL GEOMETRY SHOWN.  
 -EXISTING GEOMETRY TO BE RETAINED UNLESS OTHERWISE INDICATED.  
 -SHOULDERS, SIDE SLOPES, DRAINAGE, ARE TO BE RETAINED UNLESS OTHERWISE INDICATED.

**NOTES:**  
 1.) FOR -L3NB- PROFILE SEE SHEET 55.  
 2.) FOR -L3SB- PROFILE SEE SHEET 55.

09-JUL-2015 18:56  
 IP: P:\P\dms2\9633\I-5405-HYD-PRM-WET\_PSH-009-01.dgn  
 mfluenteville





PROJECT REFERENCE NO. <b>I-5405</b>	SHEET NO. <b>9</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

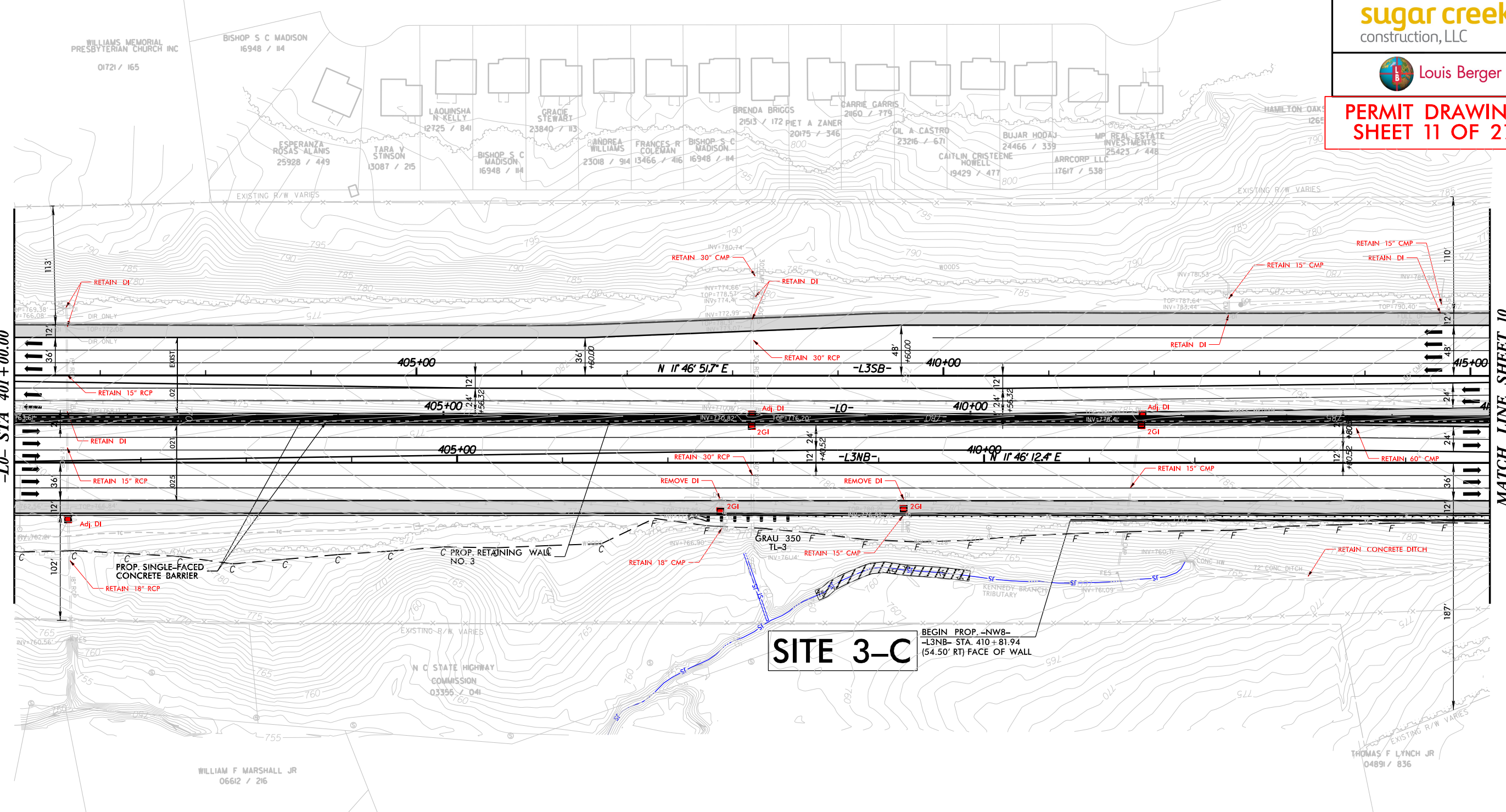
**sugar creek**  
construction, LLC



**PERMIT DRAWING**  
**SHEET 11 OF 27**

MATCH LINE SHEET 8  
-L0- STA 401+00.00

MATCH LINE SHEET 10  
-L0- STA 415+00.00



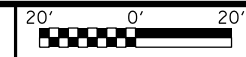
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

**NOTE:**  
 -BEST FIT HORIZONTAL GEOMETRY SHOWN.  
 -EXISTING GEOMETRY TO BE RETAINED UNLESS OTHERWISE INDICATED.  
 -SHOULDERS, SIDE SLOPES, DRAINAGE, ARE TO BE RETAINED UNLESS OTHERWISE INDICATED.

**NOTES:**  
 1.) FOR -L3NB- PROFILE SEE SHEET 55.  
 2.) FOR -L3SB- PROFILE SEE SHEET 55.

09-JUL-2015 18:58  
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 AT: HYUNDAI

ENLARGEMENT SHEET



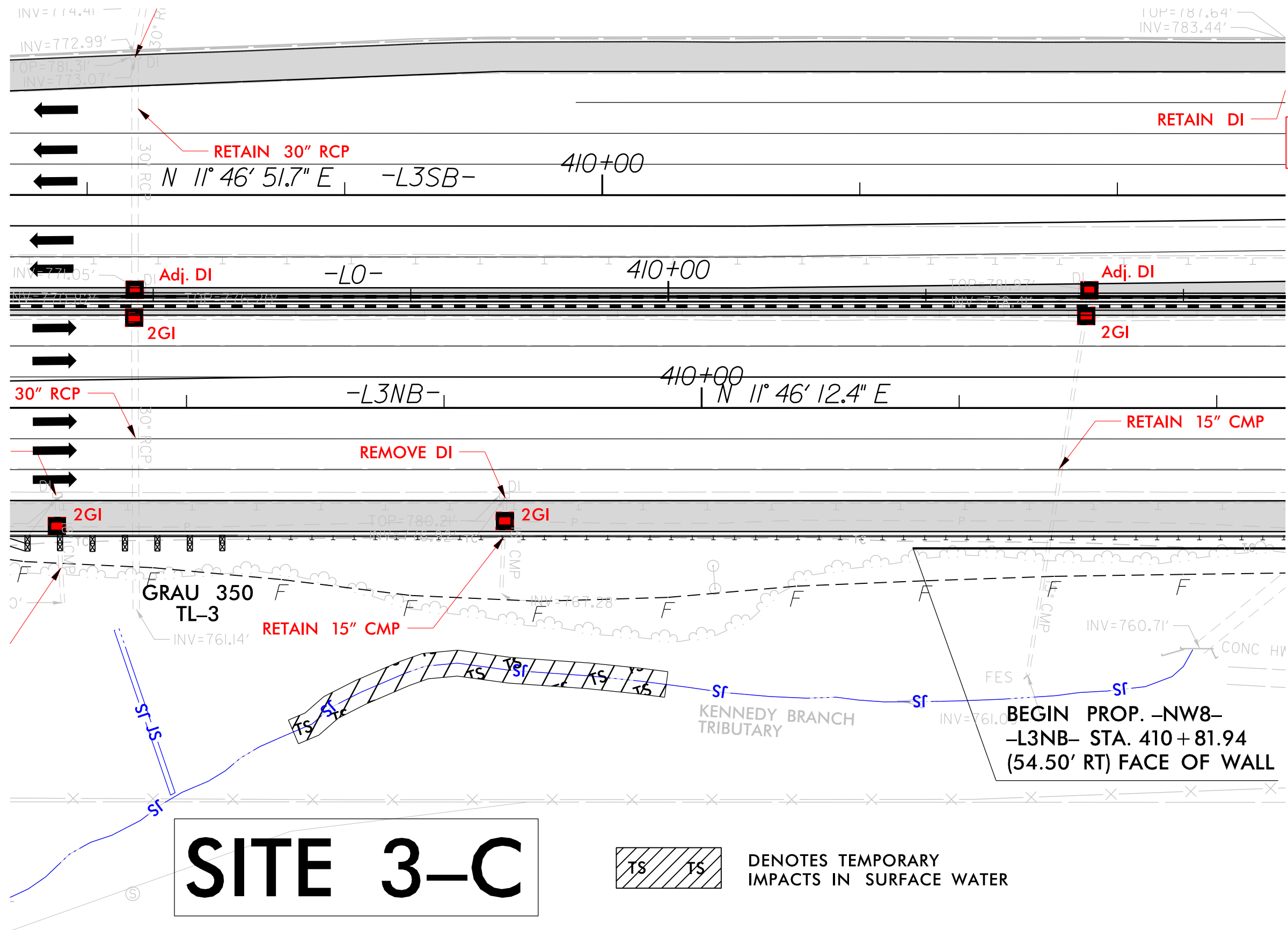
PROJECT REFERENCE NO. I-5405 SHEET NO. 9A

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER  
**INCOMPLETE PLANS**  
DO NOT USE FOR R/W ACQUISITION  
**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

**sugar creek**  
construction, LLC



**PERMIT DRAWING SHEET 12 OF 27**



# SITE 3-C

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

09-JUL-2015 19:00  
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M:\uenteville

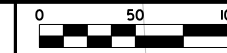


SB LAND LLC  
25647 / 133

JOYCE MCKINNEY R/T KELLER  
19764 / 312

JOHN W DELLINGER  
12529 / 524

JOHN W DELLINGER  
12529 / 524



PROJECT REFERENCE NO. I-5405 SHEET NO. 31

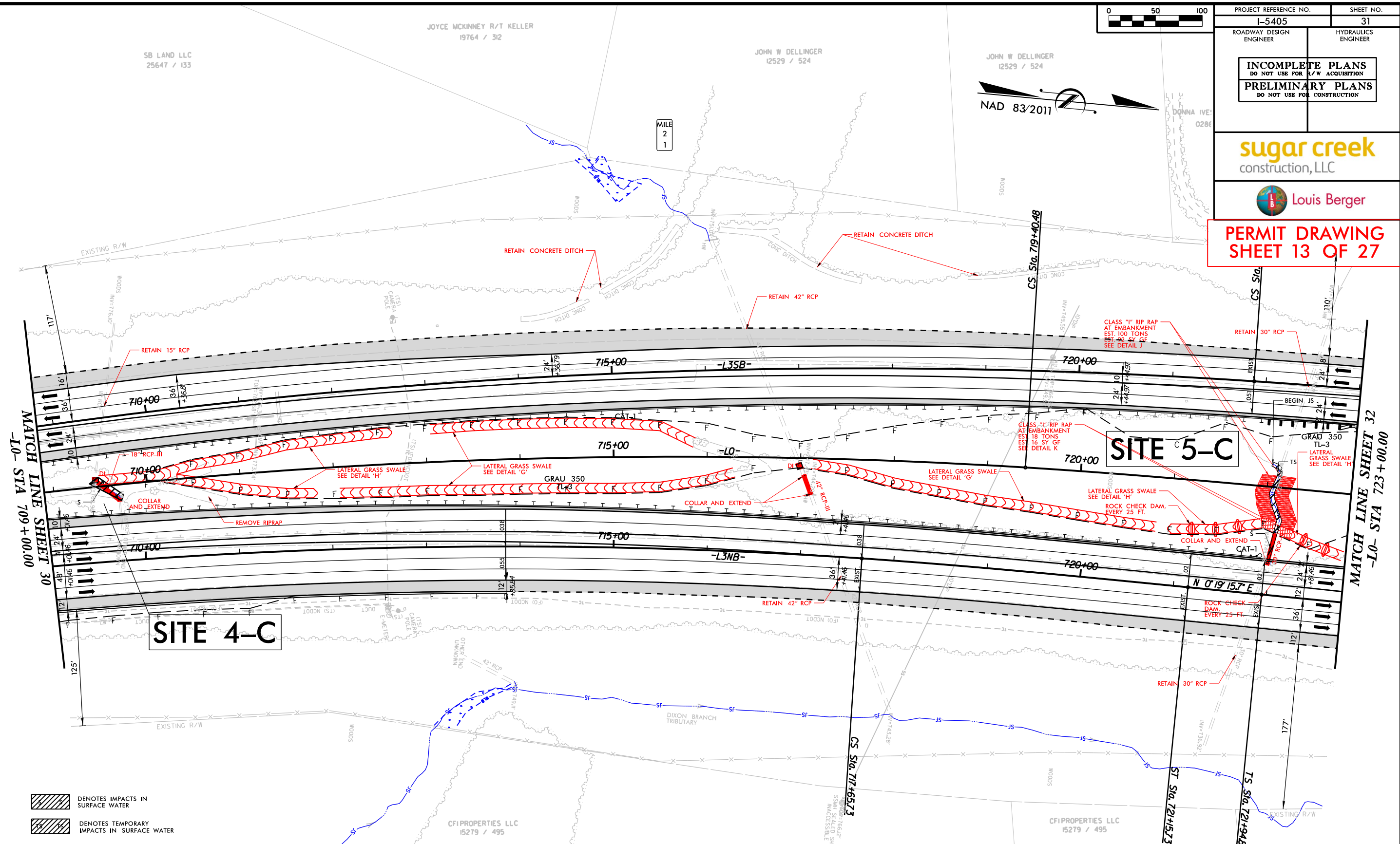
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

**INCOMPLETE PLANS**  
DO NOT USE FOR R/W ACQUISITION  
**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

**sugar creek**  
construction, LLC

**Louis Berger**

**PERMIT DRAWING**  
**SHEET 13 OF 27**



- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

**NOTE:**  
-BEST FIT HORIZONTAL GEOMETRY SHOWN.  
EXISTING GEOMETRY TO BE RETAINED  
UNLESS OTHERWISE INDICATED.  
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE  
TO BE RETAINED UNLESS OTHERWISE  
INDICATED.

**NOTES:**  
1.) FOR -L3NB- PROFILE SEE SHEET 77.  
2.) FOR -L3SB- PROFILE SEE SHEET 77.

-L0-		-L3SB-		-L3NB-		
PI Sta 708+25.24	PIs Sta 720+65.49	PI Sta 709+94.59	PIs Sta 716.16, 722.39, 716.11	PI Sta 707+26.21	PIs Sta 718+82.41	PIs Sta 724+48.44
$\Delta = 21^{\circ} 33' 27.2''$ (RT)	$\Theta_s = 1^{\circ} 47' 25.8''$	$\Delta = 21^{\circ} 57' 54.1''$ (RT)	$\Theta_s = 262^{\circ} 42.7''$	$\Delta = 21^{\circ} 31' 42.4''$ (RT)	$\Theta_s = 1^{\circ} 47' 25.8''$	$\Theta_s = 1^{\circ} 54' 17.8''$
$D = 0^{\circ} 57' 17.7''$	$L_s = 375.00'$	$D = 0^{\circ} 54' 34.0''$	$L_s L_s = 317397.81'$	$D = 1^{\circ} 01' 23.3''$	$L_s = 350.00'$	$L_s = 380.35'$
$L = 2,257.50'$	$LT = 250.00'$	$L = 2,415.18'$	$LTLF = 2112888.8'$	$L = 2,104.16'$	$LT = 233.35'$	$LT = 253.58'$
$T = 1,142.26'$	$ST = 125.00'$	$T = 1,222.60'$	$STSF = 1030894'$	$T = 1,064.63'$	$ST = 116.68'$	$ST = 126.80'$
$R = 6,000.00'$		$R = 6,300.00'$		$R = 5,600.00'$		
		$e = 3.40\%$		$e = 3.80\%$		
		$RO = 300'$		$RO = 300'$		
		$DS = 70$ MPH		$DS = 70$ MPH		

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