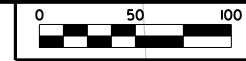


SB LAND LLC
25647 / 133

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

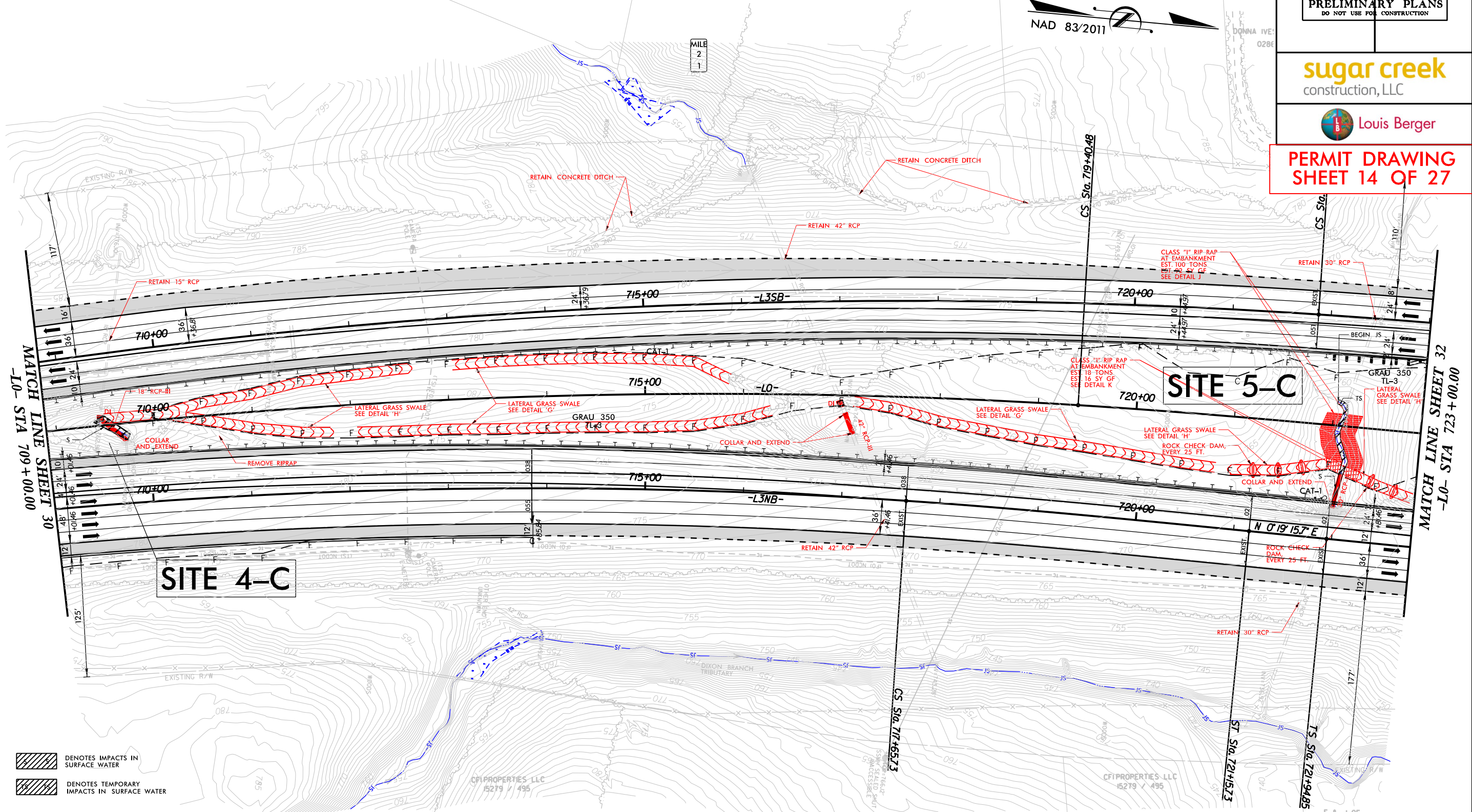
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

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 14 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.

-LO-		-L3SB-		-L3NB-		
PI Sta 708+25.24	PIs Sta 720+65.49	PI Sta 709+94.59	PIs Sta 716.22239311	PI Sta 707+26.21	PIs Sta 718+82.41	PIs Sta 724+48.44
$\Delta = 2^\circ 33' 27.2''$ (RT)	$\Theta_s = 1^\circ 47' 25.8''$	$\Delta = 2^\circ 57' 54.1''$ (RT)	$\Theta_s = 2^\circ 22' 42.7''$	$\Delta = 2^\circ 31' 42.4''$ (RT)	$\Theta_s = 1^\circ 47' 25.8''$	$\Theta_s = 1^\circ 54' 17.8''$
$D = 0^\circ 57' 17.7''$	$L_s = 375.00'$	$D = 0^\circ 54' 34.0''$	$L_s L_s = 317387.81'$	$D = 1^\circ 01' 23.3''$	$L_s = 350.00'$	$L_s = 380.35'$
$L = 2,257.50'$	$LT = 250.00'$	$L = 2,415.18'$	$LTLF = 2112888'$	$L = 2,104.16'$	$LT = 233.35'$	$LT = 253.58'$
$T = 1,142.26'$	$ST = 125.00'$	$T = 1,222.60'$	$STSF = 1030894'$	$T = 1,064.63'$	$ST = 116.68'$	$ST = 126.80'$
$R = 6,000.00'$		$R = 6,300.00'$		$R = 5,600.00'$		
		$e = 3.40\%$		$e = 3.80\%$		
		$RO = 300'$		$RO = 300'$		
		$DS = 70$ MPH		$DS = 70$ MPH		

30-AUG-2015 15:45
 TP_P:\P\fdms2\63311-5405-HYD_PRM_WET_PSH_031-02.dgn
 imargarita

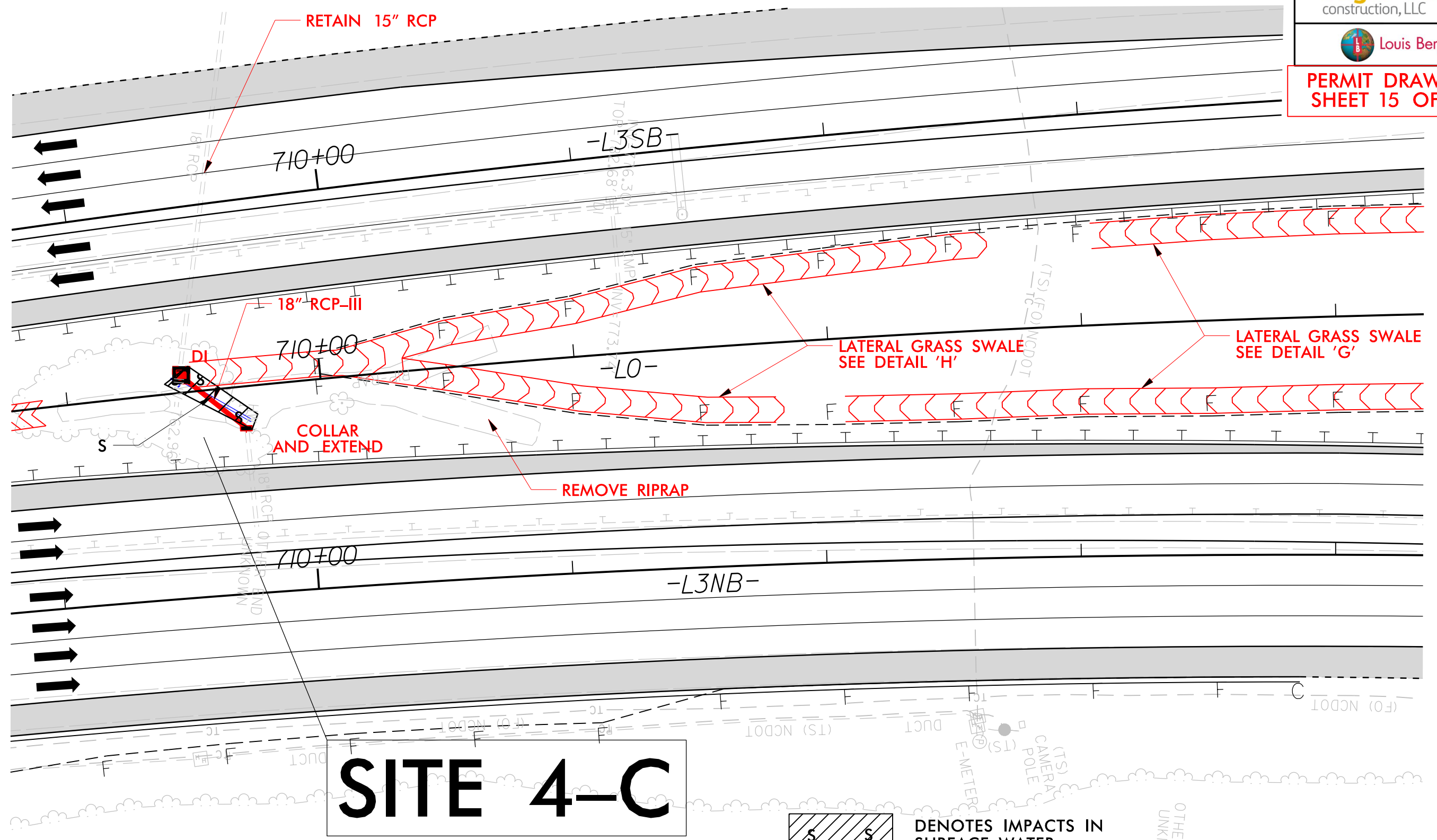
E & J OF
HUNTERSVILLE LLC
22500 / 255

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 15 OF 27



SITE 4-C



DENOTES IMPACTS IN SURFACE WATER

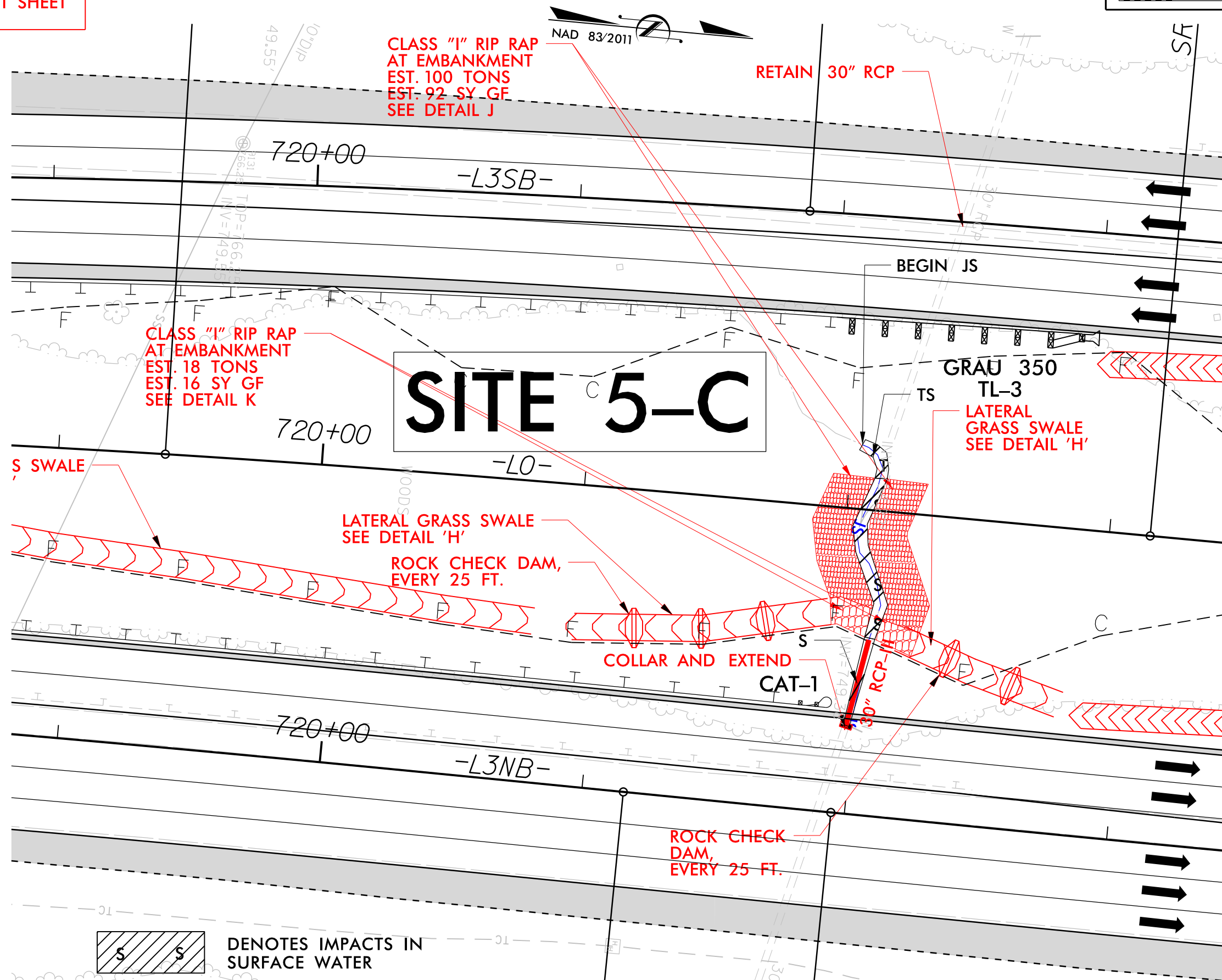
30-AUG-2015 15:16
IP:\P\fdms29633\1-5405-HYD-PRM-WET_PSH-031-03.dgn
imager.ctb AT CAMARCO

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 16 OF 27

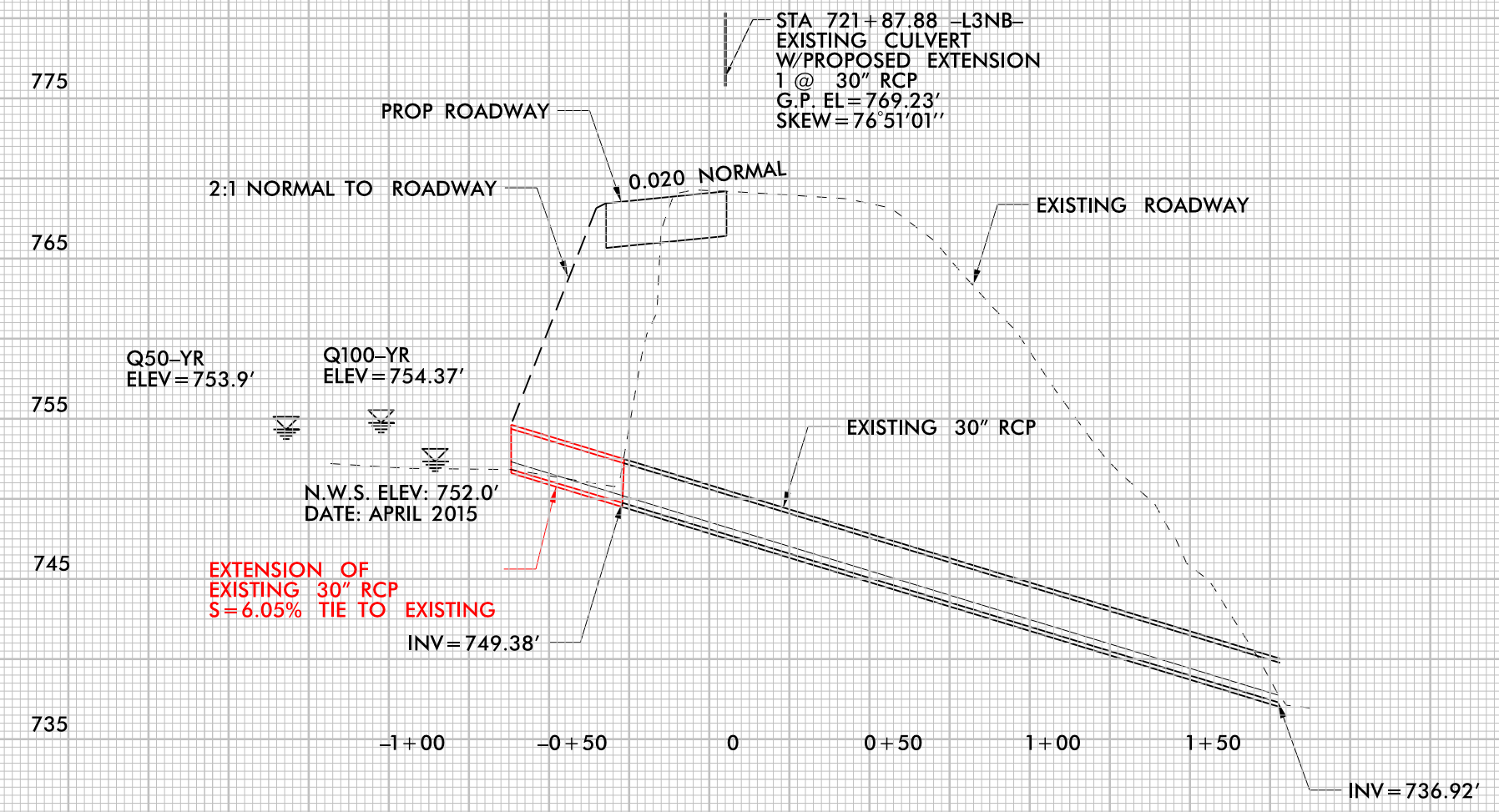
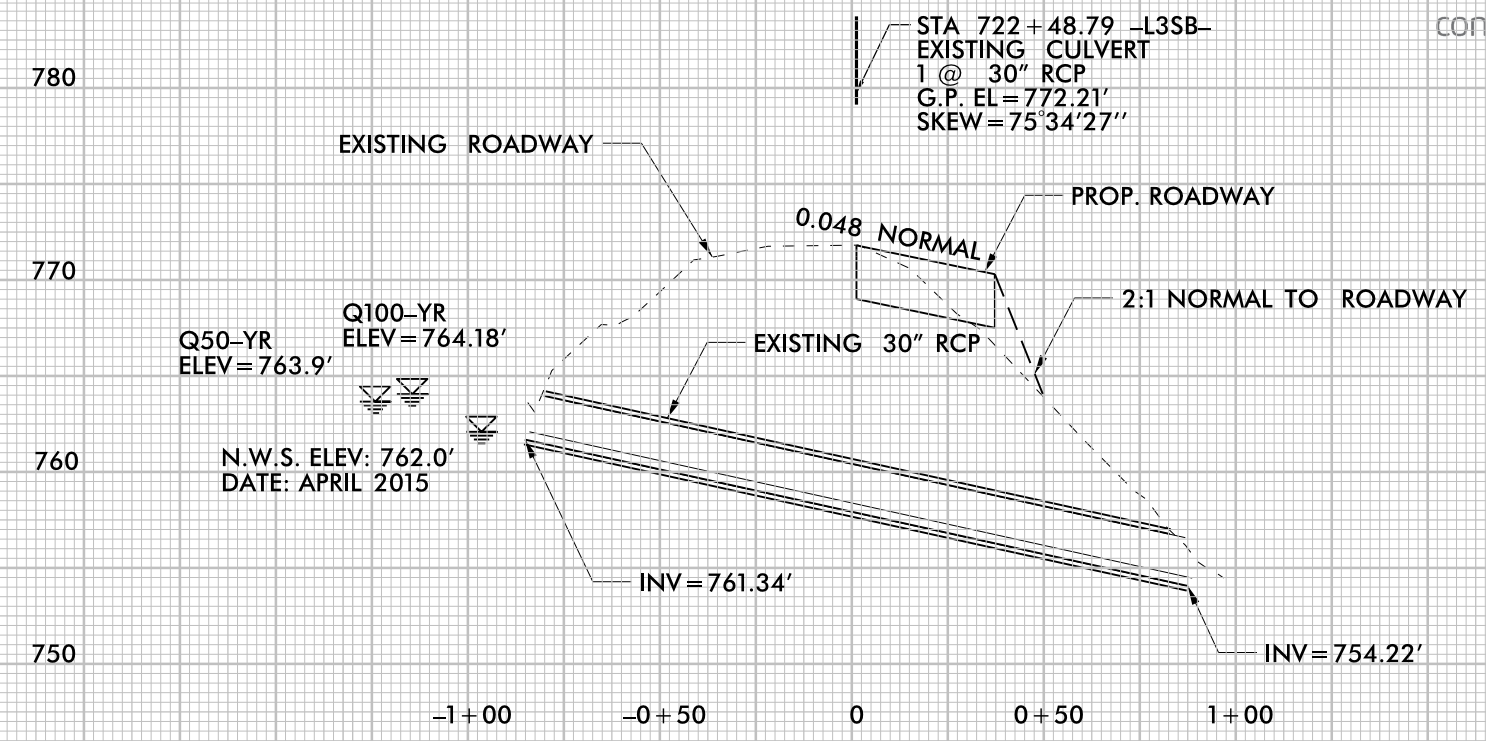


5/14/99

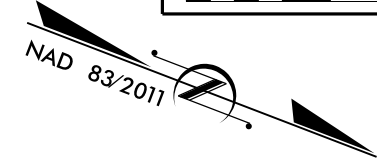
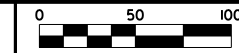
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

SITE 5-C

PERMIT DRAWING SHEET 17 OF 27



P:\15-2015\18338-1-5405-HYD-PRM-WET_PFL_01.dgn
11/11/2015 10:33 AM
HYDRAULIC

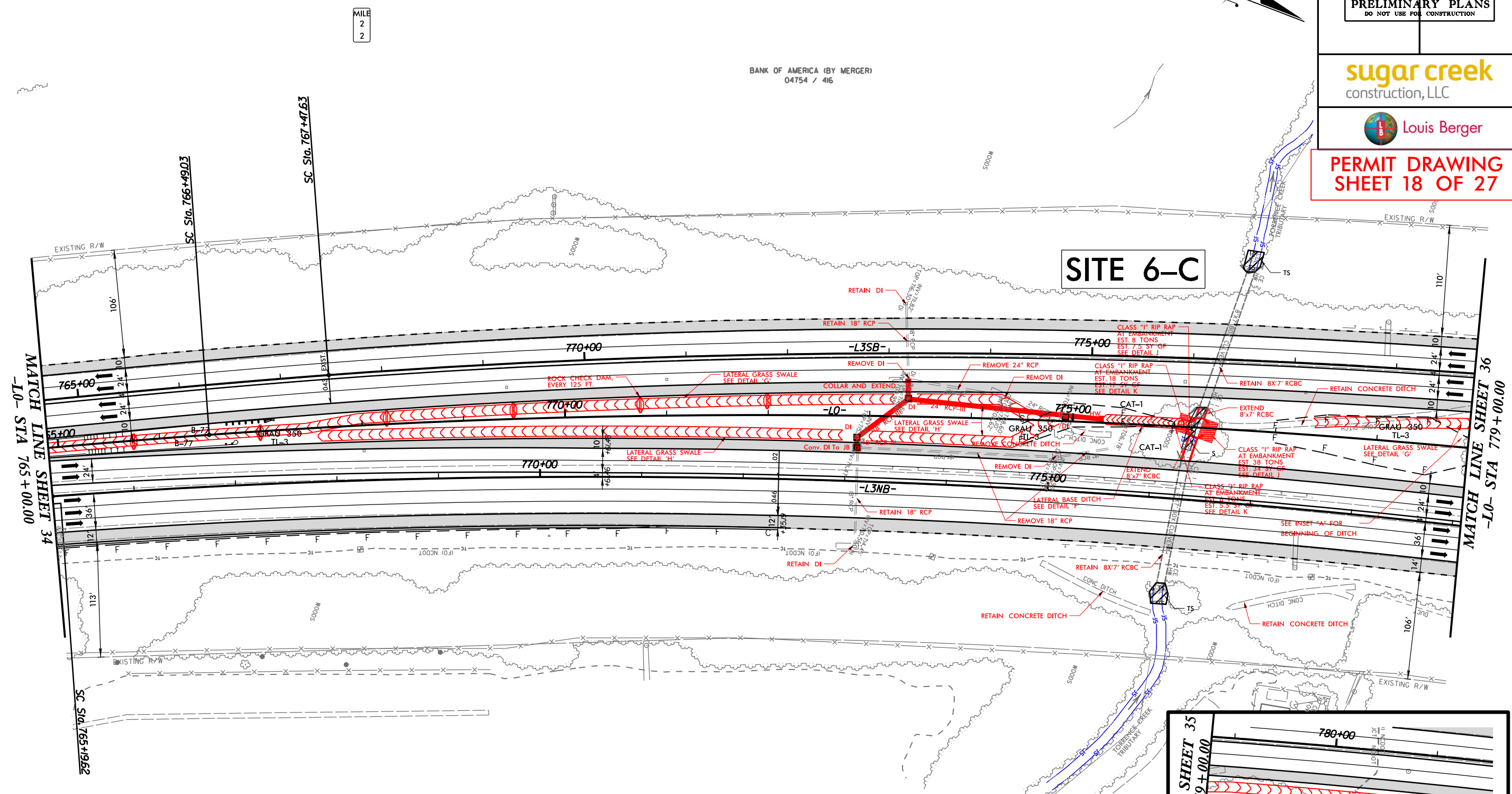


PROJECT REFERENCE NO. I-5405	SHEET NO. 35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

sugar creek
construction, LLC



PERMIT DRAWING
SHEET 18 OF 27



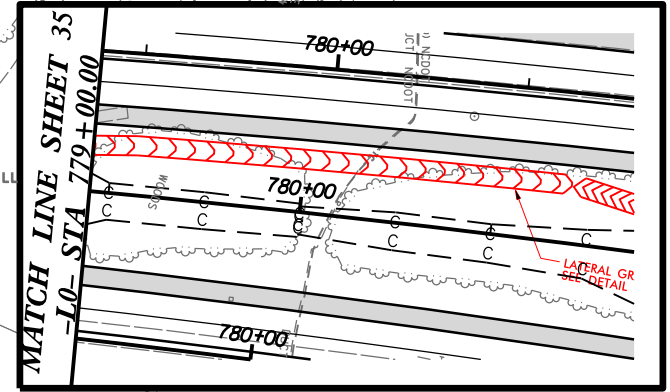
MATCH LINE SHEET 34
-10- STA 765+00.00

MATCH LINE SHEET 36
-10- STA 779+00.00

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 81.
 - 2.) FOR -L3SB- PROFILE SEE SHEET 81.

-L0-		-L3SB-		-L3NB-	
Pis Sta 765+29.04	PI Sta 777+61.08	Pis Sta 766+30.49	PI Sta 779+21.60	Pis Sta 775+90.68	PI Sta 775+90.68
$\Theta_s = 1' 21' 57.5"$	$\Delta = 16' 45' 28.1" (RT)$	$\Theta_s = 1' 18' 27.0"$	$\Delta = 17' 20' 15.4" (RT)$	$\Delta = 16' 15' 17.3" (RT)$	
Ls = 360.00'	D = 0' 45' 32.0"	Ls = 351.43'	D = 0' 44' 38.8"	D = 0' 45' 50.2"	
LT = 240.0'	L = 2,208.21'	LT = 234.29'	L = 2,330.01'	L = 2,127.75'	
ST = 120.0'	T = 1,112.05'	ST = 117.5'	T = 1,173.98'	T = 1,071.07'	
	R = 7,550.00'		R = 7,700.00'	R = 7,500.00'	
			e = 2.80%	e = 2.10%	
			RO = 300'	RO = 300'	
			DS = 70 MPH	DS = 70 MPH	

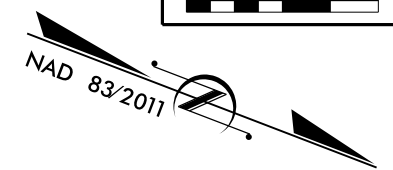
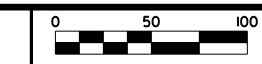


INSET A

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

KEFFER PROPERTIES LP
09973 / 922

01-SEP-2015 19:05
IP: P:\P\fdms2\96333\1-5405-HYD-PRM-WET_PSH-035-01.dgn
imgarc2b AT CAMARCO



PROJECT REFERENCE NO. I-5405	SHEET NO. 35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

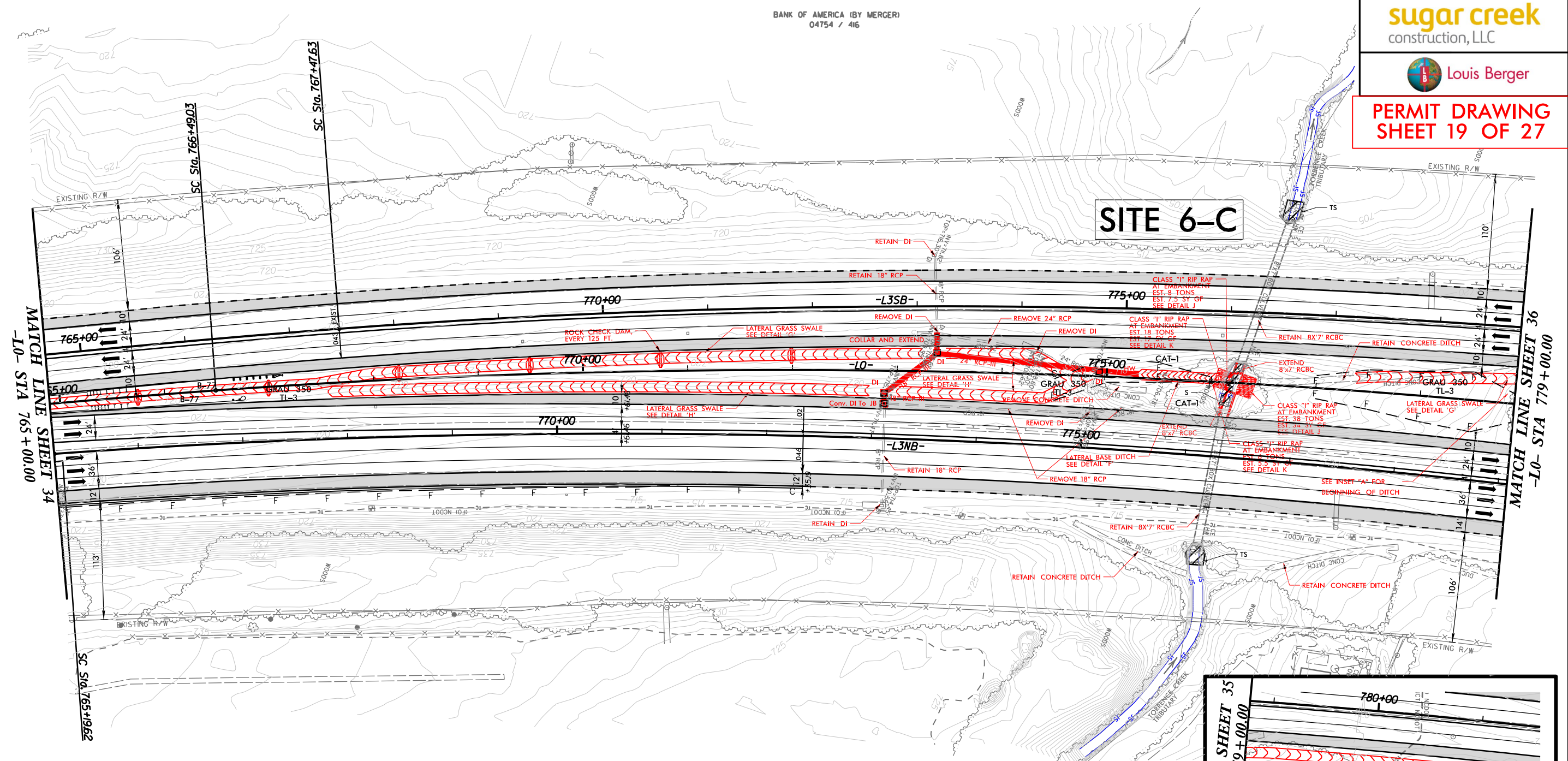
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

sugar creek
construction, LLC

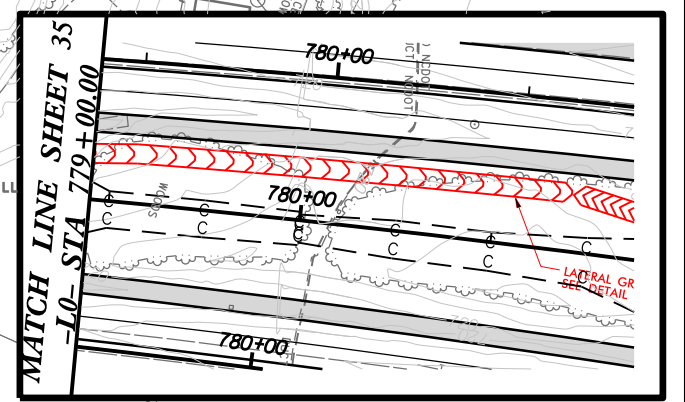
Louis Berger

PERMIT DRAWING SHEET 19 OF 27



MATCH LINE SHEET 34
-10- STA 765+00.00

MATCH LINE SHEET 36
-10- STA 779+00.00



MATCH LINE SHEET 35
-10- STA 779+00.00

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 81.
2.) FOR -L3SB- PROFILE SEE SHEET 81.

-L0-		-L3SB-		-L3NB-	
Pis Sta 765+29.04	PI Sta 777+61.08	Pis Sta 766+30.49	PI Sta 779+21.60	Pis Sta 775+90.68	
Os = 1° 21' 57.5"	Δ = 16° 45' 28.1" (RT)	Os = 1° 18' 27.0"	Δ = 17° 20' 15.4" (RT)	Δ = 16° 15' 17.3" (RT)	
Ls = 360.00'	D = 0° 45' 32.0"	Ls = 351.43'	D = 0° 44' 38.8"	D = 0° 45' 50.2"	
LT = 240.0'	L = 2,208.21'	L = 2,330.01'	L = 2,330.01'	L = 2,127.75'	
ST = 120.0'	T = 1,112.05'	T = 1,173.98'	T = 1,173.98'	T = 1,071.07'	
	R = 7,550.00'	R = 7,700.00'	R = 7,500.00'	R = 7,500.00'	
		e = 2.80%	e = 2.10%	e = 2.10%	
		RO = 300'	RO = 300'	RO = 300'	
		DS = 70 MPH	DS = 70 MPH	DS = 70 MPH	

▨ DENOTES IMPACTS IN SURFACE WATER

▨ DENOTES TEMPORARY IMPACTS IN SURFACE WATER

KEFFER PROPERTIES LP
09973 / 922

01-SEP-2015 19:08
I:\P\F\I-5405-HYD-PRM-WET_PSH-035-02.dgn
imargarita

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 20 OF 27

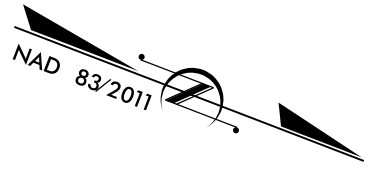
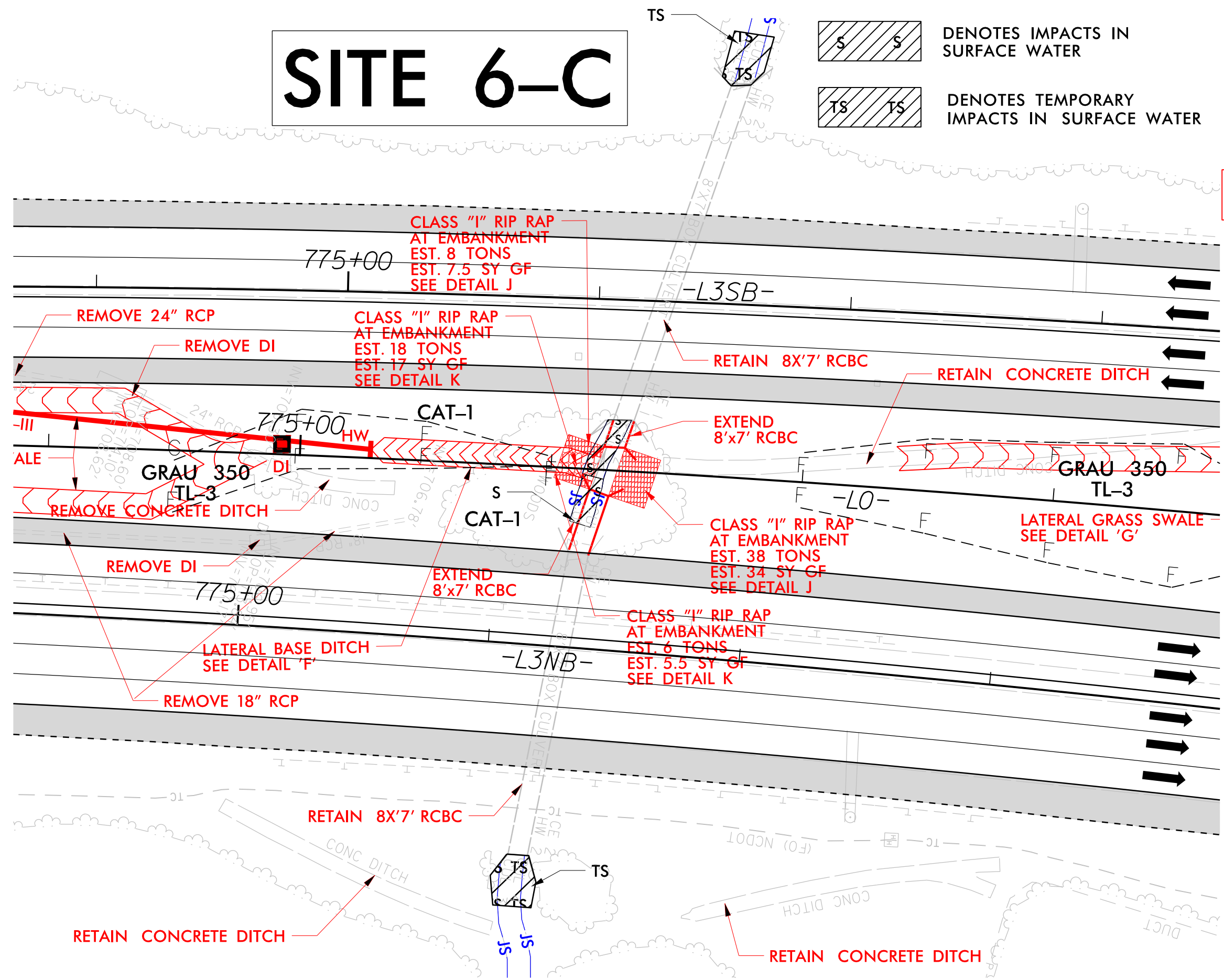
SITE 6-C



DENOTES IMPACTS IN SURFACE WATER



DENOTES TEMPORARY IMPACTS IN SURFACE WATER



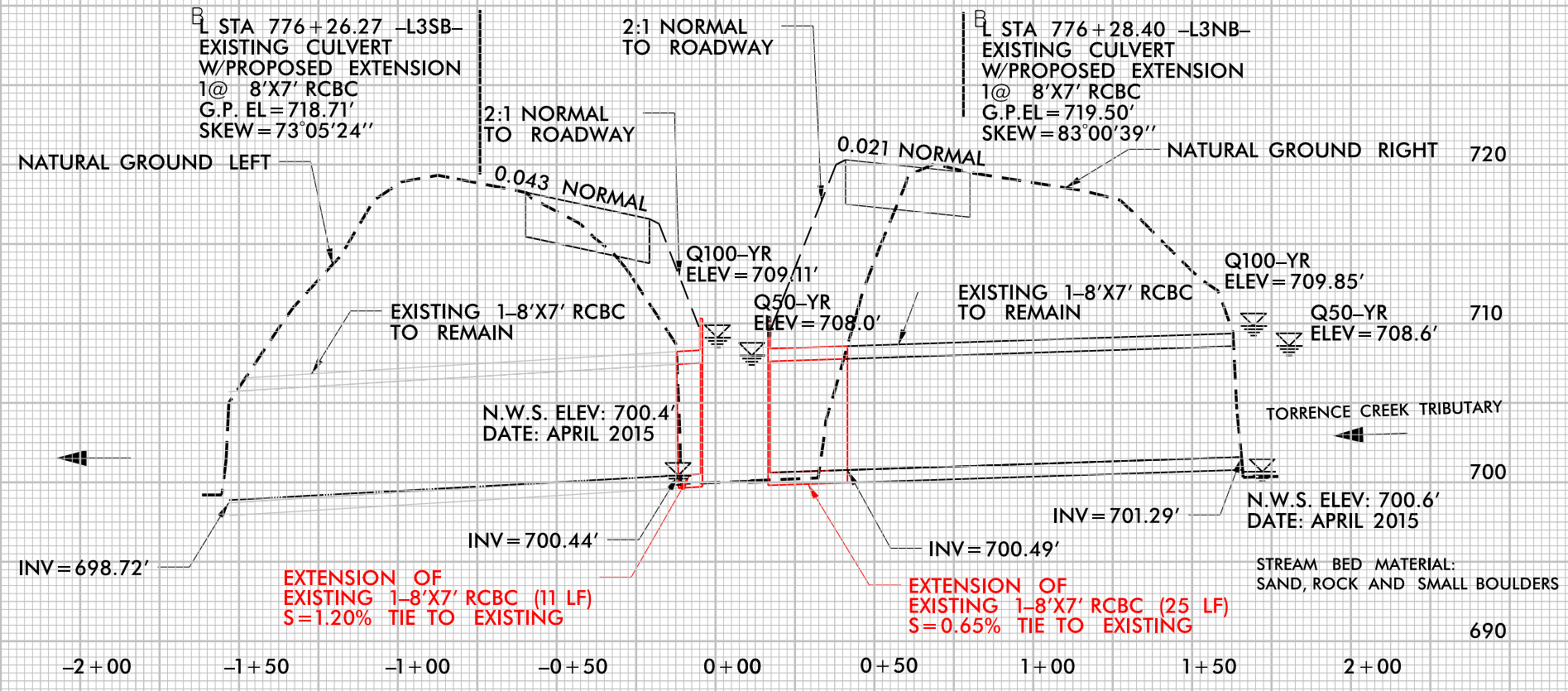
30-AUG-2015 15:24 IP: P:\P\fdms2\633\1-5405-HYD-PRM-WET_PSH-035-03.dgn imager.ctb AT CAMARCO

5/14/99

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

SITE 6-C

PERMIT DRAWING SHEET 21 OF 27

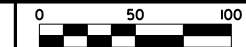


7 AUG 2015 15:33
C:\Users\j...
1-5405-HYD-PRM-WET_PFL_02.dgn

NOTES:
 1.) FOR -L3NB- PROFILE SEE SHEET 94.
 2.) FOR -L3SB- PROFILE SEE SHEET 94.

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.

DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



PROJECT REFERENCE NO. I-5405 SHEET NO. 48

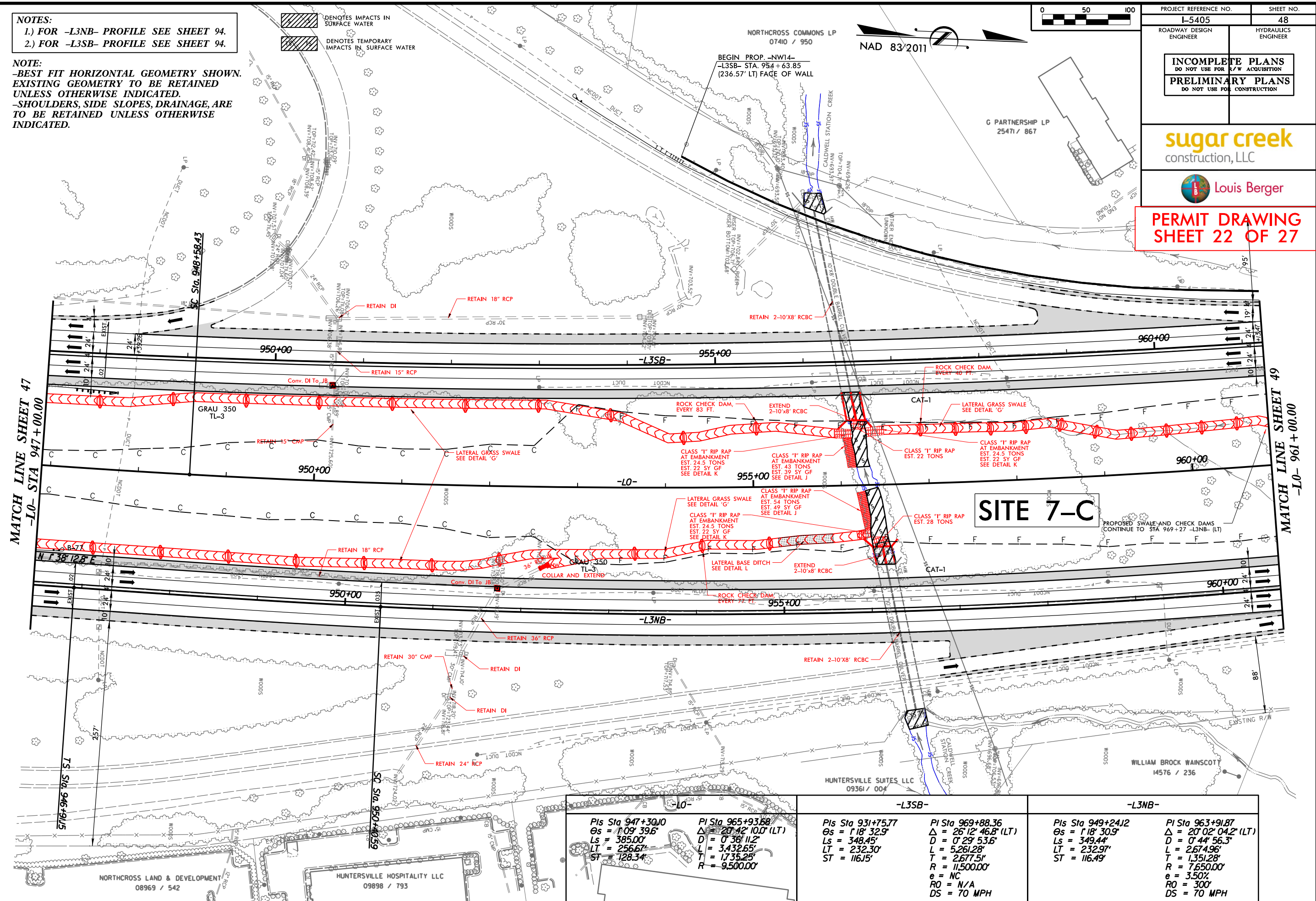
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

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 22 OF 27



MATCH LINE SHEET 47
 -10- STA 947+00.00

MATCH LINE SHEET 49
 -10- 961+00.00

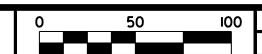
-L3SB-		-L3NB-	
Pls Sta 947+30.10	PI Sta 965+93.68	Pls Sta 931+75.77	PI Sta 969+88.36
Os = 1'09' 39.6"	Δ = 20' 42' 10.0" (LT)	Os = 1'18' 32.9"	Δ = 26' 12' 46.8" (LT)
Ls = 385.00'	D = 0' 38' 11.2"	Ls = 348.45'	D = 0' 29' 53.5"
LT = 256.67'	L = 3,432.65'	LT = 232.30'	L = 5,261.28'
ST = 128.34'	T = 1,735.25'	ST = 116.15'	T = 2,677.51'
	R = 9,500.00'		R = 11,500.00'
			e = NC
			RO = N/A
			DS = 70 MPH

02-SEP-2015 15:49
 P:\P\F\dm2\26333\I-5405_HYD_PRM_WET_PSH_048-01.dgn
 imager.ctb

NOTES:
 1.) FOR -L3NB- PROFILE SEE SHEET 94.
 2.) FOR -L3SB- PROFILE SEE SHEET 94.

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.

DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



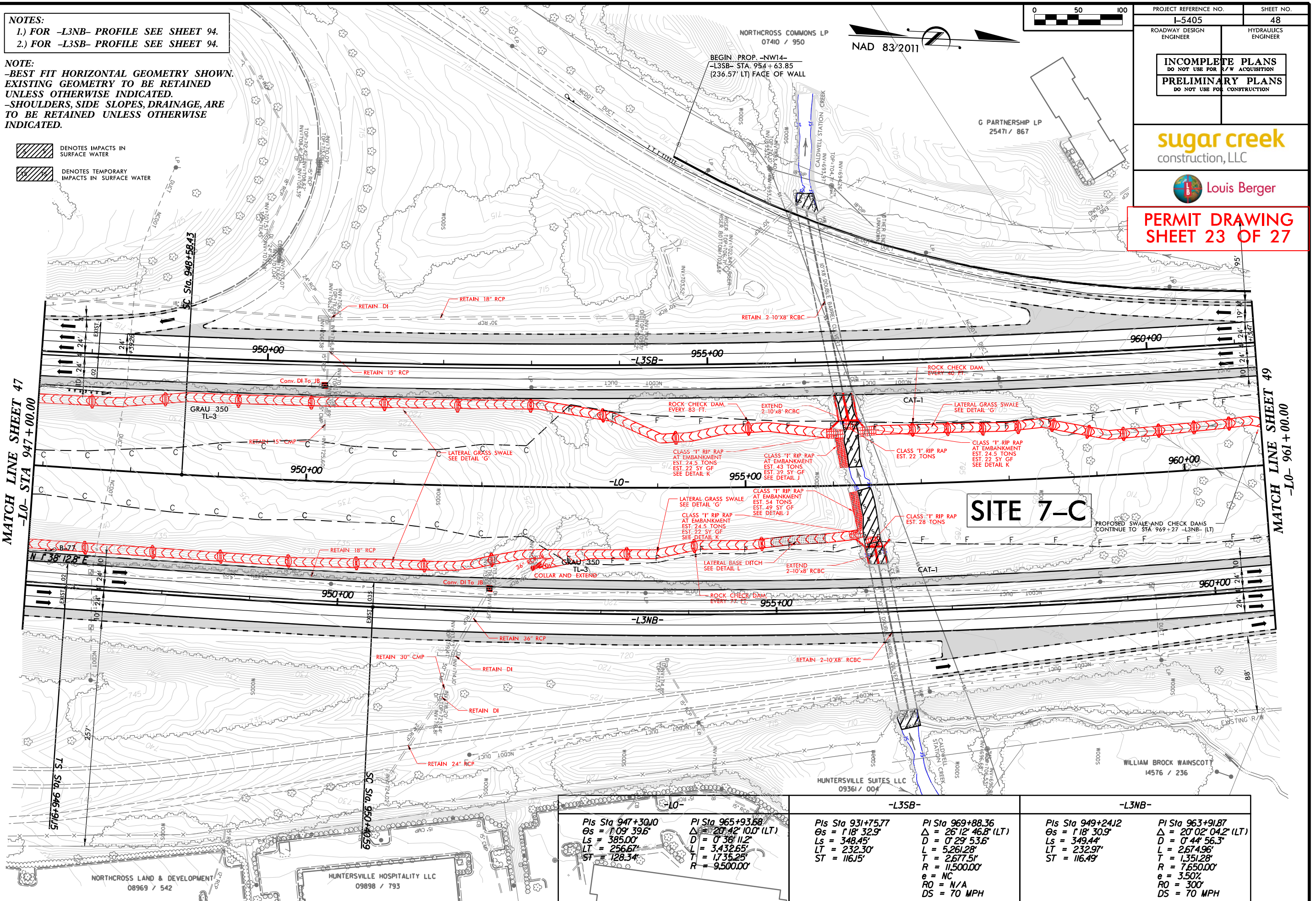
NAD 83/2011

PROJECT REFERENCE NO. I-5405	SHEET NO. 48
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 23 OF 27



MATCH LINE SHEET 47
-L0- STA 947+00.00

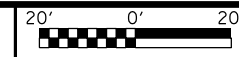
MATCH LINE SHEET 49
-L0- 961+00.00

SITE 7-C

Pls Sta 947+30.10 $\Theta_s = 1'09'' 39.6''$ $L_s = 385.00'$ $LT = 256.67'$ $ST = 128.34'$	Pl Sta 965+93.68 $\Delta = 20'42'' 10.0'' (LT)$ $D = 0'38'' 11.2''$ $L = 3,432.65'$ $T = 1,735.25'$ $R = 9,500.00'$	Pls Sta 931+75.77 $\Theta_s = 1'18'' 32.9''$ $L_s = 348.45'$ $LT = 232.30'$ $ST = 116.15'$	Pl Sta 969+88.36 $\Delta = 26'12'' 46.8'' (LT)$ $D = 0'29'' 53.5''$ $L = 5,261.28'$ $T = 2,677.51'$ $R = 11,500.00'$ $e = NC$ $RO = N/A$ $DS = 70 MPH$	Pls Sta 949+24.12 $\Theta_s = 1'18'' 30.9''$ $L_s = 349.44'$ $LT = 232.97'$ $ST = 116.49'$	Pl Sta 963+91.87 $\Delta = 20'02'' 04.2'' (LT)$ $D = 0'44'' 56.3''$ $L = 2,674.96'$ $T = 1,351.28'$ $R = 7,650.00'$ $e = 3.50\%$ $RO = 300'$ $DS = 70 MPH$
--	--	--	--	--	--

02-SEP-2015 15:21
 P:\P\4\dm2\633\I-5405-HYD-PRM-WET_PSH_048-02.dgn
 imargarita

ENLARGEMENT SHEET



PROJECT REFERENCE NO. I-5405 SHEET NO. 48A

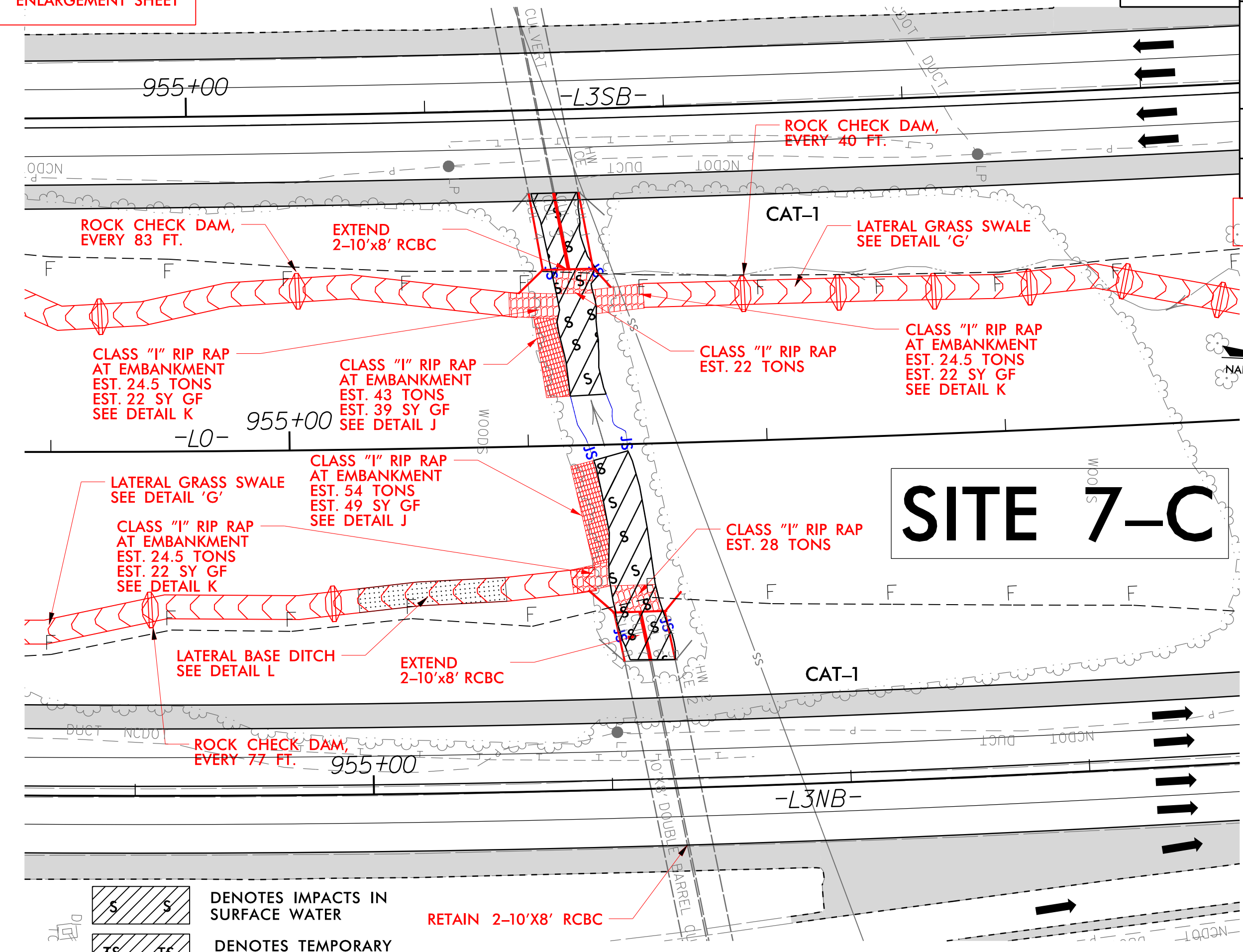
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

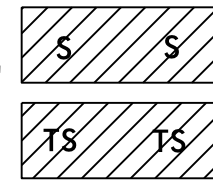
sugar creek
construction, LLC

Louis Berger

PERMIT DRAWING SHEET 24 OF 27



SITE 7-C



DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

RETAIN 2-10'X8' RCBC



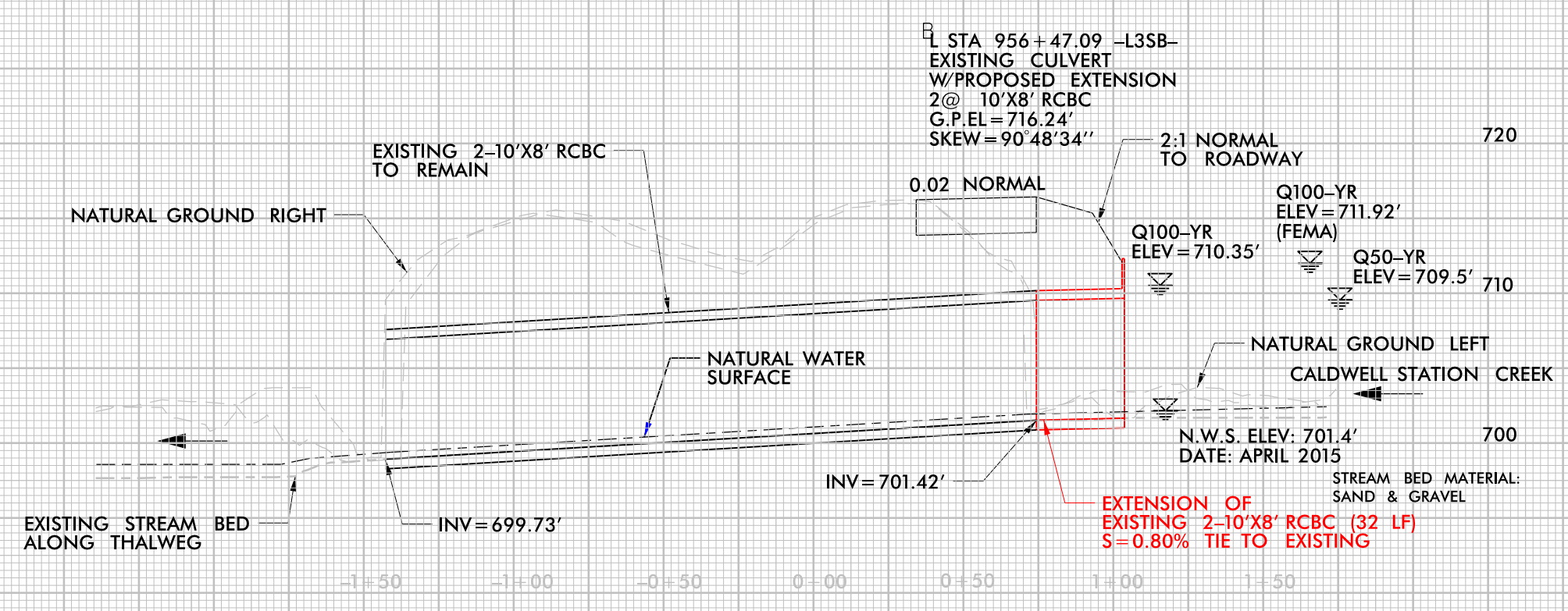
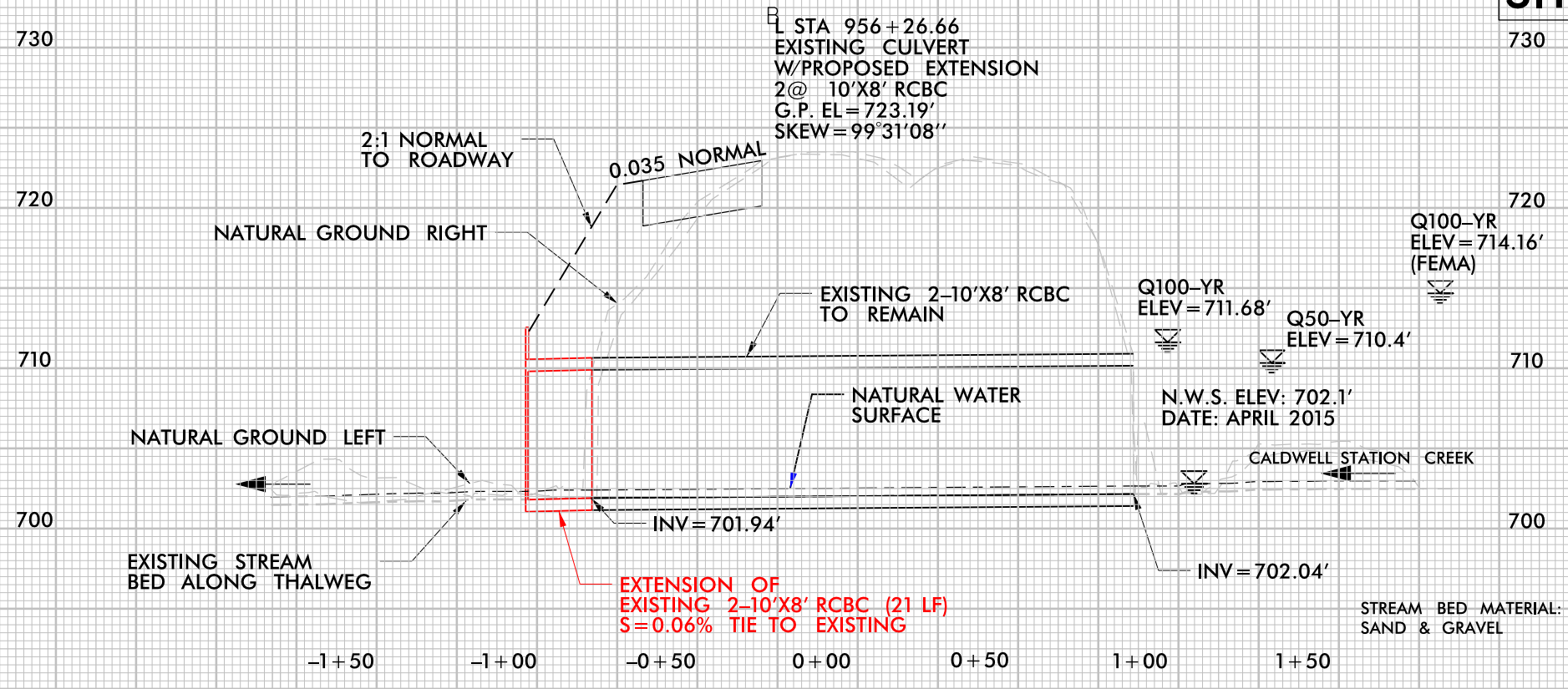
02-SEP-2015 15:22 IP: P:\WF\dms2\6331\I-5405-HYD-PRM-WET_PSH_048-03.dgn

5/14/99

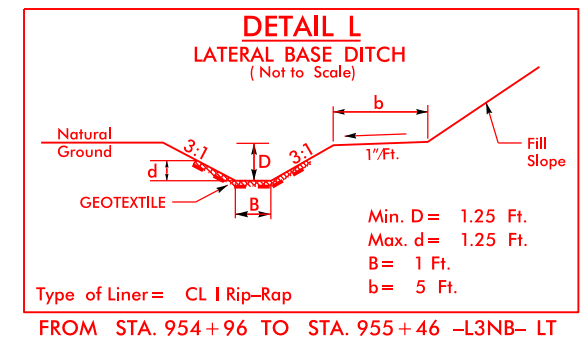
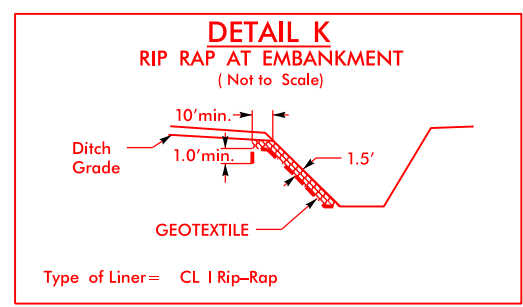
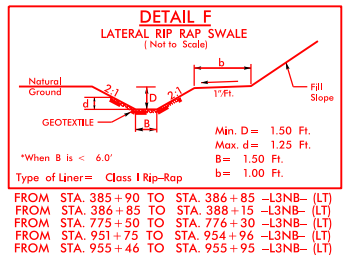
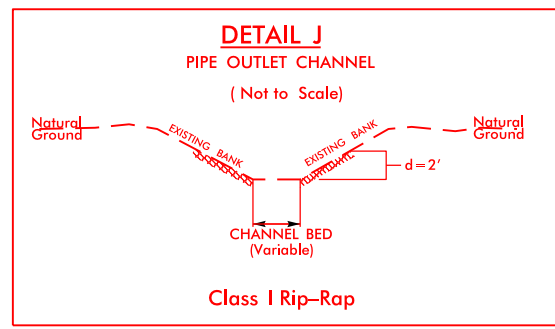
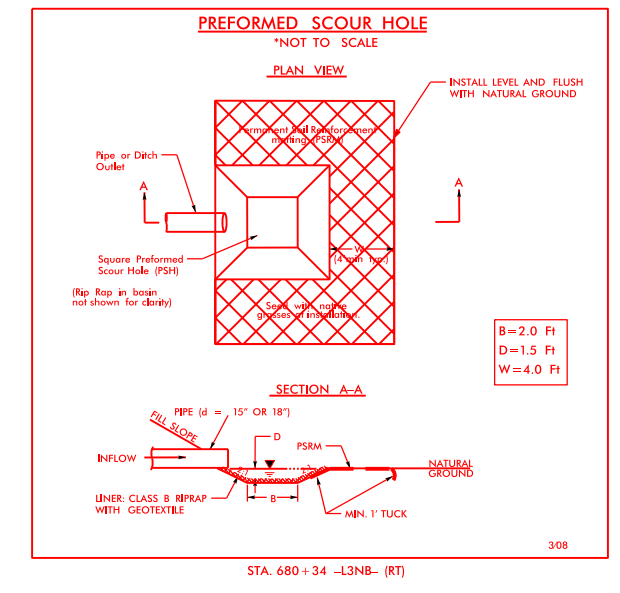
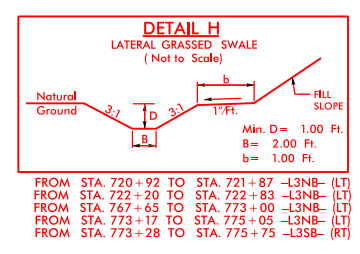
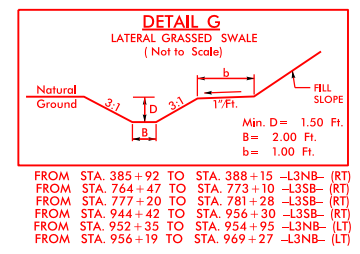
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

SITE 7-C

PERMIT DRAWING SHEET 25 OF 27



7 AUG 2015 15:46
L:\5495-HYD-PRM-WET_PFL_03.dgn
HYDRAULIC



02-SEP-2015 15:24
 p:\pwr\dms2\633\I-5405-HYD_PRM_WET_002C.dgn
 imager.clo

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS					
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)	
1-C	371+40 - 372+80 RT	TEMP. FILL / ACCESS	< 0.01	0.06									
2-C	388+12 - 388+58 RT	TEMP. FILL / ACCESS BANK STABILIZATION							0.01		40	60	
3-C	407+60 - 411+90 RT	TEMP. FILL							0.03			150	
4-C	709+50 MID	FILL						< 0.01			33		
5-C	721+97 - 722+03 MED	30" RCP BANK STABILIZATION						< 0.01	< 0.01		35 65	17	
6-C	776+15 - 776+25 MED	8' x 7' RCBC BANK STABILIZATION						< 0.01			26 21		
	776+15 - 776+25 LT/RT	8' x 7' RCBC / DEWATERING							< 0.01			42	
7-C	955+50-956+05 MED	2@10'x8' RCBC/CHAN. PROT. BANK STABILIZATION						0.05			91 99		
	955+50-956+05 LT/RT	2@10'x8' RCBC / DEWATERING							0.02			40	
TOTALS*:			< 0.01	0.06				0.07	0.08		410	309	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 08-03-2015
 MECKLENBURG
 I-5405 / I-4750AA
 Central Section
 SHEET 27 OF 27