



PAT McCrory
Governor

NICHOLAS J. TENNYSON
Secretary

September 27, 2016

U.S. Army Corps of Engineers
Asheville Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

ATTN: Ms. Crystal C. Amschler, NCDOT Regulatory Coordinator

Subject: **Request for Modification Individual Section 404 Permit and Section 401 Water Quality Certification for the I-3311C (South Section)**
I-77 High Occupancy Toll (HOT) Lanes Project
From North Brevard Street on I-277 (East Brookshire Freeway) Northward Along I-77 to Cindy Lane (approx. 4.2 miles)
Mecklenburg County

NCDOT Project Number: I-3311C (South Section); Federal Aid Project No. NHS-077-1(210); WBS No. 34181.1.1

Debit \$570 from WBS 34181.1.1

Reference: **Application for Individual Section 404 Permit and Section 401 Water Quality Certification** for the I-77 High Occupancy Toll (HOT) Lanes Project (TIP #s I-5405, I-4750AA, and I-3311C, submitted September 09, 2015
Individual 404 Permit SAW-2012-00156 issued January 28, 2016 and subsequent modification issued May 20, 2016.
Individual 401 Water Quality Certification No. WQC004036 issued November 13, 2015 for I-5405, and subsequent modifications issued February 15, 2016; May 16, 2016; and June 28, 2016;

Dear Madam:

This letter addresses Section I-3311C (South Section) of the Proposed Addition of High Occupancy Toll (HOT) Lanes, and the Conversion of Existing High Occupancy Vehicular (HOV) Lanes to HOT lanes on Existing I-77 from I-277 (Brookshire Freeway – Exit 11) in Mecklenburg County to Exit 36 /NC 150 (Iredell County) and along I-277 from I-77 southward to North Brevard Street. The total length of the project (I-5405, I-4750AA, and I-3311C) is approximately 26 miles. The length of the South Section is approximately 4.2 miles.



The above referenced September 9, 2015 application presented preliminary impacts for the South Section as **3,662 linear feet** of permanent impacts to surface waters. Through the continued avoidance and minimization measures at each site, the final design now proposes **1,400 linear feet** of permanent impacts (**10** of which is bank stabilization) and **2,328 linear feet** of temporary impacts to surface waters and **0.17 acre** of temporary impacts to wetlands. Please see the enclosed acceptance letter from the Division of Mitigation Services revised December 4, 2015, Inter-Agency Permit Site Review Meeting Minutes, final permit drawings for the South Section including an updated summary of total project impacts, and project design plans.

Construction in permitted areas of the South Section is anticipated to begin as soon as this modification is received.

IMPACTS TO WATERS OF THE U.S. – South Section

Final design is included for the South Section as the basis for this permit modification.

Wetlands

Design has avoided permanent impacts to wetlands.

Temporary impacts to wetlands total 0.17 acre. Table 1 depicts all of the wetlands impacted by the final project design for the South Section.

Surface Waters

Permanent impacts to surface waters total 1,390 linear feet, and 10 linear feet of new bank stabilization, totaling 1,400 linear feet.

Temporary impacts will be necessary for construction of the various box culverts, pipe installations, bridge demolitions, and channel realignments. Temporary impacts associated with this project include 2,328 linear feet (1.02 acres) of temporary fill in surface waters.

Table 2 depicts all of the surface waters impacted by the final project design for the South Section.

Table 1 – South Section Impacts to Wetlands

Wetland Site	NRTR Wetland Number	Perm. Fill (ac)	Excavation (ac)	Mechanized Clearing (ac)	Temp. Fill (ac)
4A-S	WA	0.00	-	--	0.17
TOTAL IMPACTS		0.00	-	-	0.17

Table 2 – South Section Impacts to Surface Waters

Stream Site	Stream Name/ NRTR ID	Perm. Fill (ac)	Temp. Fill (ac)	Permanent Channel Impacts (lf)	Bank Stabilization (lf)	Temporary Channel Impacts (lf)	COE- Required Mitigation (lf)	DWR- Required Mitigation (lf)
1-S	UT to Irwin Creek / SI (Perennial)	0.05	0.01	225	-	50	225	225
1A-S	UT to Irwin Creek / SG (Intermittent)	-	<0.01	-	-	19	-	-
2-S	Irwin Creek (Perennial)	-	0.15	-	-	270	-	-
3A-S	Irwin Creek (Perennial)	-	0.15	-	-	217	-	-
3B-S	Irwin Creek (Perennial)	0.50	0.60	954	-	1,180	954	954
3C-S	UT to Irwin Creek / SE (Perennial)	0.01	<0.01	45	-	45	45	-
4B-S	Dillons Twin Lakes and Lake Jo (Perennial)	-	0.02	-	-	57	-	-
5-S	Dillons Twin Lakes and Lake Jo (Perennial)	-	0.08	-	-	350	-	-
6-S	UT to Dillons Twin Lakes and Lake Jo / SC (Intermittent)	0.01	<0.01	166	10	40	166	-
7-S	UT to Dillons Twin Lakes and Lake Jo / SB (Intermittent)	-	<0.01	-	-	100	-	-
TOTAL Perennial Stream Impacts		0.56	1.02	1,244	0	2,169	1,224	1,179
TOTAL Stream Impacts		0.57	1.02	1,390	10	2,328	1,390	1,179
1,400								

Permanent Fill in Permit Drawing Impact Summary Table displays 0.77 due to rounding.

Summary of Utility Impacts:

As with the current permitted activity, utility relocations are not anticipated to result in additional impacts.

Permit Impact Sites:

Stationing provided is approximate and is provided for general location purposes only.

Stream Permit Site 1-S: There will be approximately 225 lf (0.05 acre) of permanent stream impacts from Sta. 155+10 to 157+30 LT for stream relocation associated with widening to the west and construction of embankment slope. Additionally, there will be 0.01 acre (50 lf) of temporary stream impacts for construction access and dewatering.

Stream Permit Site 1A-S: There will be less than 0.01 acre (19 lf) of temporary impacts required for construction access to facilitate construction of a retaining wall.

Stream Permit Site 2-S: There will be approximately 0.15 acre (270 lf) of temporary stream impacts at Sta. 207+50 to Sta. 210+60 LT for construction access to demolish and reconstruct a bridge structure.

Stream Permit Site 3A-S: There will be approximately 0.15 acre (217 lf) of temporary stream impacts at Sta. 219+00 to 221+00 LT for construction access and management of water flow during construction of the upstream culvert extension.

Stream Permit Site 3B-S: There will be approximately 234 lf (0.15 acre) of permanent stream impacts at Sta. 228+50 to 231+00 RT for the extension of an existing box culvert. There will also be 720 lf (0.35 acre) of permanent stream impact for channel realignment, retaining wall construction, and stabilization of Irwin Creek from Sta. 231+00 to 238+20 RT. Additionally, 0.60 acre (1,180 lf) of temporary stream impacts are necessary from Sta. 238+20 to 250+00 RT for channel widening, stabilization, construction access, and watercourse management.

Stream Permit Site 3C-S: There will be approximately 45 lf (0.01 acre) of permanent stream impacts at Sta. 229+10 to 229+50 RT for installation of a 72" reinforced concrete drainage pipe. Additionally, there will be less than 0.01 acre (45 lf) of temporary impacts for construction access for the pipe installation, managing water flows, and reworking existing riprapped banks to provide stabilized outfalls at new ditches.

Wetland Permit Site 4A-S: There will be approximately 0.17 acre of temporary wetland fill impacts at Sta. 271+20 to 276+70 LT for construction access to extend an existing culvert, construct a retaining wall, and demolish a pedestrian bridge.

Stream Permit Site 4B-S: There will be 0.02 acre (57 lf) of temporary stream impacts at Sta. 275+50 to 276+10 RT for construction access to demolish a pedestrian bridge .

Stream Permit Site 5-S: There will be approximately 0.08 acre (350 lf) of temporary stream impacts at Sta. 290+00 to 293+80 RT for construction access to construct fill slopes.

Stream Permit Site 6-S: Due to additional geometry refinement, this impact had to be increased by 9 lf

over that previously presented during site review meetings. Approximately 166 lf (0.01 acre) of permanent stream impacts at Sta. 320+40 to 321+30 RT will be necessary to extend an existing 7'x7' box culvert (includes 10 lf of stone energy dissipation at the outfall of the extended culvert). An additional 10 lf of bank stabilization will be provided. Temporary impacts will consist of 40 lf for construction access and dewatering in order to perform the culvert extension.

Stream Permit Site 7-S: There will be less than 0.01 acre (100 lf) of temporary stream impacts at Sta. 320+20 to 321+15 RT for construction access.

MITIGATION OPTIONS

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Efforts have been taken, and will continue throughout construction, to first avoid and then minimize any impacts to jurisdictional streams and wetlands. The following is a partial list of avoidance and minimization initiatives that have been undertaken in the South Section:

Avoidance and Minimization

SITE 1-S

- Steepened slopes were utilized to minimize impacts to the stream.
- The open stream channel is being relocated and stabilized in lieu of placement within a culvert or pipe.

SITE 1A-S

- A retaining wall will be implemented to avoid permanent impacts to the stream.

SITE 2-S

- Widening will occur to the east away from Irwin Creek to avoid permanent impacts.
- The bridge structure will be replaced within the existing general alignment to eliminate impacts to Oaklawn Cemetery and FEMA Buyout Property. Additionally, relocation of Environmental Justice (EJ) properties is not anticipated.
- Bridge columns adjacent to the west side of Irwin Creek are being removed and eliminated during bridge replacement.
- Existing riprap will be restored if disturbed during construction of the new western abutment.

SITE 3A-S

- Widening was limited to the east side of I-77 avoiding permanent impacts to Irwin Creek at the downstream side of the existing culvert.

SITE 3B-S

- Large retaining walls have been designed to minimize permanent impacts to Irwin Creek and adjacent Section 4(f) properties.
- Steepened side slopes implemented where retaining walls are not provided.
- A bench was designed in relocated portions of the stream to maintain similar normal low flow conditions and pre-construction ordinary high water mark width.
- The stream bank has been widened to the east to maintain hydraulic capacity, and the widening has been designed to minimize alteration of the existing ordinary high water mark.

SITE 3C-S

- The site is complicated by geometry of the stream entering the eastern side of the Irwin Creek culvert extension. Pipe placement was shortened to that necessary to tie the stream into the culvert extension properly.

SITE 4A-S

- A retaining wall has been implemented to avoid permanent wetland impacts.

SITE 4B-S

- Steepened side slopes were utilized to avoid permanent stream impacts.

SITE 5-S

- Steepened side slopes were utilized to avoid permanent stream impacts.

SITE 6-S

- Permanent stream impacts were minimized by implementing steepened embankments to reduce the length of the culvert extension. Additionally, the extension will be lowered 1ft at the point of extension to improve the profile, and baffles will be installed to retain sediment.

SITE 7-S

- Steepened side slopes were utilized to avoid permanent stream impacts.

Revised total project impacts are included in Table 3 and Table 4.

Table 3 – Revised Summary of Wetland Impacts for I-77 HOT Lanes Project

Section	Design Stage	Impact Type	Impact Area (ac)	Impacts requiring Mitigation (ac)
Central	Final	Temp Fill	0.06	<0.01
		Fill	<0.01	
North	Final	Fill	0.00	-
South	Final	Temp Fill	0.17	-
TOTAL WETLAND MITIGATION LIABILITY				<0.01

Table 4 – Revised Summary of Stream Impacts for I-77 HOT Lanes Project

Section	Design Stage	Impact Type	Impact (lf)	USACE Mitigation (lf)	DWR Mitigation (lf)
Central	Final	Perm Fill	185	185	190
		Bank Stabilization	225		
		Temporary	491		
North	Final	Perm Fill	27	27	-
		Bank Stabilization	23		
		Temporary	298		
South	Final	Perm Fill	1,390	1,390	1,179
		Bank Stabilization	10		
		Temporary	2,328		
TOTAL STREAM MITIGATION LIABILITY				1,602	1,369

Compensation

Unavoidable impacts will be compensated by the Division of Mitigation Services (DMS, formerly EEP). NCDOT will forward this updated acceptance letter for the most recent impact values based on this permit modification once it is received.

NCDOT proposes to mitigate a total of 1,602 linear feet of streams for the I-77 HOT Lanes project with the mitigation ratio established in the original permit application (see Response to Request for More Information dated January 12, 2016 and subsequent January 15, 2016 email correspondence). The mitigation ratio of 1:1 was established for two streams, Dillons Twin Lake and Lake Jo, and Irwin Creek.

NCDOT proposes for your consideration, to mitigate the Unnamed Tributary to Irwin Creek / Stream SI at Site 1-S at a 1:1 ratio. The impact is a stream relocation that currently flows through a channel that has been modified in the past, exhibits concrete rubble in portions of the streambed and is experiencing

heavy bank erosion. The proposed impact will maintain the streams “day-lighted” condition through a rock substrate.

Since all mitigation in the south section will be performed out of HUC, per policy approved by the IRT on September 17, 2015, the mitigation quantities will be doubled.

As final design has been completed, permanent impacts have been avoided to the mainstem of Dillons Twin Lakes and Lake Jo.

Permanent impacts to Irwin Creek have been minimized to 954 feet. Pursuant to the above, this impact will be mitigated at a 1:1 ratio, then doubled to 2:1 since it will be mitigated out of HUC.

Table 5 displays the proposed mitigation ratio for the South section of the project.

Table 5 – Mitigation Summary and Detailed Mitigation Summary for South Section

Section		HUC	Mitigable Impacts & Ratio (before multiplier) (lf)	Mitigation Ratio (after multiplier)
Central		03050101	185 @ 2:1	(in HUC)
North		03050101	27 @ 2:1	(in HUC)
	Site	Stream Name		
South 03050103	1-S	UT to Irwin Creek (Perennial)	225 @ 1:1	2:1
	1A-S	UT to Irwin Creek (Intermittent)	0	-
	2-S	Irwin Creek (Perennial)	0	-
	3A-S	Irwin Creek (Perennial)	0	-
	3B-S	Irwin Creek (Perennial)	954 @ 1:1	2:1
	3C-S	UT to Irwin Creek (Perennial)	45 @ 2:1	4:1
	4B-S	Dillons Twin L. & Lake Jo (Perennial)	0	-
	5-S	Dillons Twin L. & Lake Jo (Perennial)	0	-
	6-S	UT to Dillons Twin L. & Lake Jo (Int.)	166 @ 2:1	4:1
	7-S	UT to Dillons Twin L. & Lake Jo (Int.)	0	-
Total Mitigation Liability at 1:1			1,345	-
Total Mitigation Liability at 2:1			257	-
Total Mitigation			1,602	-

FEDERALLY PROTECTED SPECIES

Please refer to the original permit application submittal dated September 9, 2015 for project- wide federally threatened and endangered species information. No changes have been made to the list of federally protected species by the United States Fish and Wildlife Service (USFWS) for Iredell and Mecklenburg Counties.

CATAWBA RIVER RIPARIAN BUFFERS

There are no regulatory Catawba River Riparian Buffers in the South Section.

REGULATORY APPROVALS

Clean Water Act Section 404: Application is hereby made for Modification to the Department of the Army Individual Section 404 Permit as required for the above-described activities.

Clean Water Act Section 401: We are also hereby requesting a modification to the Section 401 Water Quality Certification (WQC. No. WQC004036) from the Division of Water Resources.

Thank you for your continued assistance with this project as we look forward to your approval for the permit modification for the final design for the North Section. If you have any questions or need additional information, please contact Michael Turchy at either maturchy@ncdot.gov or (919) 707-6157. A copy of this permit application and its distribution list will also be posted on the NCDOT website at <https://connect.ncdot.gov/resources/Environmental/Pages>.

Sincerely,


for Philip S. Harris III, P.E., C.P.M.
Natural Environment Section Head

Cc: NCDOT Permit Application Standard Distribution List

MEETING MINUTES

Meeting Name: **Interagency I-77 HOT Lanes Project – South Section Permit Site
Review Meeting (Preliminary)
I-3311C in Mecklenburg County**

Date & Time: **July 22, 2015 1:00 PM**

Location: **NCDOT Office (Raleigh)**

TEAM MEMBERS:

<u>Name</u>	<u>Agency</u>	<u>Present</u>
Mitch Batuzich	FHWA	☐
Crystal Amschler	USACE	☒
Marella Buncick	USFWS	☒
Marla Chambers	NCWRC	☒
Dr. Cynthia Van Der Wiele	USEPA	☒
Alan Johnson	DWR	☐
Donna Hood	NCDENR, DWR	☒

PARTICIPANTS:

<u>Name</u>	<u>Affiliation</u>	<u>Present</u>
Virginia Mabry	NCDOT	☒
Donna Jackson	NCDOT	☒
Michael Turchy	NES	☒
Stephen Morgan	NCDOT, Hydraulics	☒
David Stark	NCDOT, PPU	☒
Nat Hunter	NCDOT	☒
Carla Dagnino	NCDOT, NES	☒
Theresa Ellerby	NCDOT, PDEA	☒
Scott Allen	NCDOT	☒
Ray Lovinggood	NCDOT, Hydraulics	☒
Rachel Evans	NCDOT, PPU	☒
Paul Garrett	NCDOT, PPU	☒
Mark Staley	NCDOT, REU	☒
Rodger Rochelle	NCDOT	☒
Pablo del Monte	SCC – Design	☒
Derek Ivie	SCC – Environmental	☒
Jose Barrau	LBG – Design	☒
Walter Roberts	LBG – Design	☒
Dean Hatfield	LBG – Design	☒
David Brandes	LBG – Environmental	☒
Carroll Barker	LBG – Environmental	☒
David Hannon	I-77 Mobility Partners	☒
Joe Garcia	LBG – Design	☒
Farrell Sikes	LBG - Design	☒
Judson Dalton	SCC - Construction	☒
Randy Turner	Three Oaks Engineering	☒
Steve Smith	SCC – Construction	☒
Carlos Garcia	SCC	☒
Jose Rodriguez	SCC - Construction	☒

By Phone

By Phone

By Phone

By Phone

PURPOSE: The purpose of this meeting was to review the preliminary hydraulic design and resulting environmental impacts for the South Section of the Project. The plans were reviewed, addressing each impact site sequentially. These minutes represent a summary of the items discussed during the meeting.

1. Derek Ivie reminded agencies that this will be a phased permitting process, with preliminary hydraulic design (best current information) in the South Section. An additional site review meeting, if necessary, will preclude a permit modification, which will be submitted once design is finalized for the South Section.
2. **General Comment:** Discussion occurred with regards to the level of design provided for the South Section. USACE expected to see more design with regards to the impacts in this Section. NCDOT clarified that the intent is to disclose the anticipated impacts in this section. The team will come back before the agencies to provide final design/details for impacts prior to submitting a permit modification for this section. NCDOT stated that this approach is consistent with similar projects in the past, and SCC noted that the permit, once issued, could contain conditions that do not authorize construction of impacts in preliminary sections. USACE noted that this approach would need to be verified as acceptable. Derek Ivie proceeded through the South Section impact drawings to present project impacts.
3. Site 1-S
 - Permanent fill impacts anticipated to the stream anticipated as a result of widening of I-277 to the west.
 - At this time, it is not determined whether this will be piped or relocated.
 - No comments.
4. Site 2-S
 - Existing Oaklawn Bridge alignment is proposed to be retained to minimize permanent impacts to FEMA buyout parcels and Oaklawn Cemetery, as was considered during NEPA.
 - Structure widening at Oaklawn will occur, and will include at least partial demolition.
 - Temporary impact for demolition and to reconstruct.
 - No comments.
5. Sites 3A-S, 3B-S, and 3C-S
 - Permanent impacts to Irwin Creek associated with roadway widening to the outside and extension of the existing boxed culverts.
 - Temporary impacts to construct the boxed culverts and manage flows.
 - NEPA documents anticipated over 2,000 feet of the stream to be impacted by box culvert extension.
 - Irwin Creek was historically relocated when I-77 was constructed.
 - Physical constraints of a privacy wall and a Section 4F property restrict the relocation of Irwin Creek towards the east, and the long term stability of a tall retaining wall limit the feasibility of a wall at this location.
 - The impact sheets reflect EA impacts for this stream; however, the team is working to minimize impacts with less culvert and exploring wall options to minimize impacts, if possible.
 - USACE asked if it was a possibility to avoid – it is possible to minimize impacts, but more study will be required through detailed design – likely cannot avoid, but may be able to minimize.
6. Site 3C-S
 - No comments.
7. Site 4-S
 - Temporary impacts to the wetland for construction access to demolish an abandoned pedestrian walkway bridge.
 - Work in wetland will be required be able to set the structure down and to control the demolition.

- No comments.
- **Additional Note:** An additional site has been identified near the east Right-of-Way where the pedestrian bridge crosses over Dillons Twin Lakes. Temporary impacts to this stream are anticipated for demolition access. This additional site will be added to the Impact Drawings.

8. Site 5-S

- Slope from preliminary grading shows toe of fill slope along jurisdictional edge – will need temporary impacts to construct this slope, and minor permanent impacts are anticipated based on the preliminary slope stakes.
- Discussion occurred regarding the uncertainty of permanent impacts at this site. It was decided that permanent impact estimates should be increased at this time until detailed design is advanced and impact needs are known.

9. Site 6-S/7-S

- Permanent impacts associated with construction of HOT lanes to the east.
- 7-S is a total take of the stream.
- 6-S impact is a result of culvert extension to the east.
- Temporary impacts are anticipated for construction access and dewatering.
- No comments.
- **UPDATE:** Since the meeting, the team has identified the potential need to further shift the widening eastward. As a result of this shift, the impact to 6-S would result in a total take of the stream with boxed culverts. This will be reflected in subsequent permit drawings.

This concluded review of South Section impacts.

MEETING MINUTES

Meeting Name: **Interagency I-77 HOT Lanes Project – South Section Agency Update Meeting**

I-3311C in Mecklenburg County

Date & Time: **May 18, 2015 1:00 PM**

Location: **NCDOT Office (Raleigh)**

TEAM MEMBERS:

<u>Name</u>	<u>Agency</u>	<u>Present</u>	
Mitch Batuzich	FHWA	☒	
Crystal Amschler	USACE	☒	On Phone
Marella Buncick	USFWS	☒	On Phone
Marla Chambers	NCWRC	☒	
Dr. Cynthia Van Der Wiele	USEPA	☒	
Alan Johnson	NCDENR, DWR	☐	
Donna Hood	NCDENR, DWR	☒	

PARTICIPANTS:

<u>Name</u>	<u>Affiliation</u>	<u>Present</u>	
Virginia Mabry	NCDOT, PPU	☒	
Stephen Morgan	NCDOT, Hydraulics	☒	
Pam Williams	NCDOT, PPU	☒	
Ray Lovinggood	NCDOT, Hydraulics	☒	
Carla Dagnino	NCDOT, NES	☒	
Michael Turchy	NCDOT, NES	☒	
Mark Staley	NCDOT, REU	☒	
Theresa Ellerby	NCDOT, PDEA	☐	
Pablo Del Monte	SCC – Design	☒	
Derek Ivie	SCC – Environmental	☒	
Walter Roberts	LBG – Design	☐	
David Brandes	LBG – Environmental	☒	
David Hannon	I-77 Mobility Partners	☐	
Joe Garcia	LBG – Design	☒	
Farrell Sikes	LBG – Design	☐	
Judson Dalton	SCC	☐	
RD Odell	LBG – Design	☐	
Joe Byington	SCC – Construction	☒	

MINUTES

Introduction

Attendees were reminded that this is an informational meeting for the South Section Modification to review the current design and proposed impacts and to discuss the design and associated constraints, as design is finalized. The team wanted to get input from the agencies on the proposed design and discuss early works in some of the areas. It was noted that the 401 WQ Certification for the North was received on 5/17/2016. The South Section limits were reviewed, and it was noted that some of the impact sites have changed slightly with minor differences, but impacts have been greatly reduced. Photos of each location were reviewed.

1. Site 1-S

- Location has not changed since the prior site review meeting.
- The stream is currently heavily eroded and has concrete, trash, and pipe debris within the OHWM.
- The stream will be relocated westward, and will be stabilized/lined with rock riprap due to velocity.
- Storm drain outfalls will be extended to the new location.
- Relocated stream to the west between the pipes.

2. Site 1A-S

- New impact site due to design elements at the interchange, which pushed some of the widening further east.
- A retaining wall has been implemented to avoid permanent impacts. The wall will be across the existing pipe headwall.
- Existing rip rap at the channel banks.
- Constrained by an existing Duke Power utility easement.

3. Site 2-S

- Oaklawn at Irwin Creek – no change to location or impacts since prior site review meeting.
- Demolition of the bridge structure at Oaklawn will be required, and must be phased, maintaining traffic flowing during the reconstruction.
- Traffic will be phased with half the bridge demolished at a time with traffic diverted while existing bridge is demolished and new bridge installed.
- NEPA anticipated a new bridge location which would result in additional impacts.
- Impact sheets show a widening of the existing structure in place which is a significant minimization and avoidance of impacts.
- No permanent impacts.
- FEMA properties and Oaklawn Cemetery are constraints that have been avoided.
- Irwin Creek has rip rap the entire length of this reach on both sides.
- Team proposes to eliminate one existing bent near the OHWM (closest to Irwin Creek on the west side) by lengthening the westernmost span.
- The impacts are anticipated to be necessary for demolition of the bridge and access.

4. Site 3A-S

- Located on the downstream side of major existing culvert containing Irwin Creek.
- Permanent impacts resulting from westward culvert extension have been eliminated.
- Temporary impacts are anticipated to manage water flow for construction.
- Constrained by an existing retaining wall near the existing southbound lanes.
- The Team plans to manage water diversions from inside the culverts if possible, but need latitude to install impervious dikes outside, and need access in order to install.
- Normal conditions have water in all four barrels.
- Existing heavy sediment accumulations present on existing rip rapped banks and within stream.

5. Site 3B-S

- The Team is refining design and working to minimize all permanent impacts.
- A substantial reduction from the EA and from the approved permit are proposed.

- Proposing to utilize a short culvert extension and retaining walls to reduce footprint.
- Will be required by FEMA to provide some flood storage in this location to replace ineffective flow area lost to the west by widening.
- Proposing widening of stream on the eastern side to account for the storage.
- Constrained by Right-of-Way, a brick privacy fence, two Section 4(f) recreational properties, existing sewer line, existing roadway, and bedrock.
- Normal water depth (low flow) is around 1 foot.
- The channel has a rock rip rapped banks on both sides (constructed at the time of the interstate construction) and has a rock bottom.
- The channel is deeply incised with the banks rising steeply up to natural grade.
- Almost no overbank conditions exist.
- USACE discussed overwidening and advised that typically, this is not favorable to the agencies, however, it was discussed since the normal water is so low, and the constructed channel so wide, moving of the eastern bank could be a possibility.
- USACE and other agencies encouraged that the Team explore maintaining a bench so that the widening to mitigate storage loss would occur only be above the OHWM. The team will review this possibility, but noted that benching may not be the best option given the unique conditions/constraints. Additionally, the Team noted that widening the stream will not result in a more shallow low flow, since culvert controls the low flow elevation.
- USACE advised that additional detailed cross sections may be needed to explain the conditions more clearly. DWR noted that a field visit would likely be scheduled to get a better feel for the proposed impact and constraints.
- Another option demonstrating a longer box culvert was discussed. This option would reduce ROW constraints, but introduces additional sanitary sewer issues.
 - i. Discussed existing 36" sewer line that is currently exposed in the stream bed. The existing line protrudes approximately 1' out of the stream bed and is ponding water upstream, although downstream levels are very similar in depth.
 1. Option 1 – Keep existing sewer alignment and have the sewer embedded in the under slab with a protrusion of around 12 inches. This mimics the current situation in the creek bed, but the concrete cover over the pipe would raise the upstream water level of the low flow approximately 1 foot.
 2. Option 2 – Divert the sewer line – this is likely not a practical alternative due to the need for access points in the active travel lanes of the interstate (for installation of manholes at pipe turns), the very flat slope of the sewer line, and the impacts to the stream for the construction. This alternative does not appear practical.
- Discussion occurred whether to consider upstream stream widening to the east as a temporary impact (as shown currently in the impact sheets) or a permanent impact. The existing stream banks are rip rapped already. Construction of proposed design would remove rip rap existing along the east bank (including inside the jurisdictional waters), excavate the east bank to widen the stream to the east (outside of the current JS boundary, and reinstall rip rap on the new channel bank – The Team explained that this activity would not result in the placement of new permanent fill within the current JS limits or result in a permanent loss of waters of the US, which is why it is proposed as temporary impact. USACE concurred the impact type would be temporary.
- The total permanent impacts from the current permit are 4,162 linear feet. With the current design and impact considerations at this site (though subject to change) the revised permanent impact estimate for the Project is reduced by ½.

6. Site 4A-S

- This wetland site requires a western widening of a ramp.
- A retaining wall is proposed to avoid and minimize permanent wetland impacts.
- A small permanent impact is currently shown at the south side of the wetland.

- i. Wetlands data points created by GPS with a sub-meter accuracy appears to be in error. When evaluated in the field, portions of the mapped wetland limits are clearly shown near the inlet of the existing 48" pipe in an area where fill slope and rip rap currently exist, that is also several feet higher than the surrounding points. Photographs were reviewed. The Team believes this is a mapping error and plans to survey the immediate area to confirm the elevation/wetland boundary error. If found in error, we will offer a revised jurisdictional boundary for the agencies to consider. We wanted to bring this to the agencies attention now before the modification is submitted. USACE concurred.
 - ii. Correction of the wetland boundary at this location may eliminate permanent impacts.
- Temporary impacts for construction access are proposed for construction of the retaining wall and for demolition of the pedestrian bridge.

7. Site 4B-S

- No changes since prior meeting.
- Temporary access for demolition of the pedestrian bridge.

8. Site 5-S

- Permanent impacts at this site have been avoided utilizing steepened slopes.
- Temporary impacts are proposed for access and construction of the slopes.

9. Site 6-S

- The culvert extension has been reduced since prior meeting to minimize impacts. Photos of the culvert opening were reviewed.
- Permanent impacts result from culvert extension and bank stabilization.
- A small temporary impact is proposed for construction access and watercourse management.
- Steepened side slopes have been implemented here. USEPA asked if the side slopes could be further steepened (such as to 1.5:1) to further minimize culvert extension. It was noted that slopes are contractually governed by technical provisions, but the Team will review the possibility of further steepening.

10. Site 7-S

- Permanent impacts to this riprapped stream have been avoided. Only temporary impacts are proposed for construction access.

Early Works in Upland Areas

As has been the case in the other Project Sections, the Team will be requesting to work at risk in upland areas prior to permit issuance. These works are critical in order to meet the Project schedule. The proposed activity most proximal to jurisdictional waters was reviewed in plan and cross section. This work involves a temporary traffic shift of the southbound I-77 lanes westward towards Irwin Creek near Oaklawn and partial demolition of Oaklawn Bridge. The bridge will be demolished and constructed in phases while maintaining traffic.

- I-77 northbound and southbound traffic will be shifted to under a single span of the Oaklawn Bridge. Approximately 10'-15' of temporary widening will be required to the west of the existing pavement. The work will not encroach into the jurisdictional limits of the creek.
- The Team asked if the agencies had any objections to this work prior to the issuance of any permit modifications for the south.
- USACE requested a formal written request be made outlining the work.

- DWR noted that erosion and sediment control plan should be developed and implemented for early works areas, and requested that sediment control fence or other BMP be installed outside of the temporary widening.
- The Team advised that will consider/evaluate the use of non-erodible fill materials where temporary slopes will be exposed.
- NCWRC asked to maintain as much of the natural vegetation as possible, especially trees. The Team noted that clearing for temporary widening at Irwin Creek would be minimal, and is not anticipated to remove many large trees.

Other Projects (Lakeview and Hambright)

- Virginia Mabry discussed the status of the local projects being requested of the Team.
- These are very preliminary in design.
- NCDOT is working on a draft Categorical Exclusion.
- Improvements will result in impacts, but the Team is trying to implement avoidance and minimization to keep impacts within Nationwide Permit levels, if possible.
- NCDOT noted that it is the Team's preference to keep these separate from the I-77 Permitting. The Team does not want to open up or jeopardize with more public comment on the existing permit.
- USACE indicated they would need to see the Categorical Exclusion before providing direction.
- While a Categorical Exclusion does not require a public hearing, NCDOT intends to solicit public input and hold a public meeting in June, tentatively.

Schedule

The Team plans to come back before agencies next month (June) with the design for the final Permit Site Review Meeting for the South Section, and would like to have all permitting completed (including Other Projects) by September 2016.

ATTENDANCE SHEET

Meeting Name: **Interagency Project Agency Update Meeting, I-77 HOT Lanes Project I-3311C (South Section): Federal Aid Project No. NHS-077-1 (210); WBS No. 34181.1.1**

Date & Time: **May 18, 2016 1:00 PM**

Location: **NCDOT Office (Raleigh)**

[illegible]

ATTENDANCE SHEET

Meeting Name: **Interagency Project Agency Update Meeting, I-77 HOT Lanes Project I-3311C (South Section): Federal Aid Project No. NHS-077-1 (210); WBS No. 34181.1.1**

Date & Time: **May 18, 2016 1:00 PM**

Location: **NCDOT Office (Raleigh)**

[illegible]

ATTENDANCE SHEET

Meeting Name: **Interagency Project Agency Update Meeting, I-77 HOT Lanes Project I-3311C (South Section): Federal Aid Project No. NHS-077-1 (210); WBS No. 34181.1.1**

Date & Time: **May 18, 2016 1:00 PM**

Location: **NCDOT Office (Raleigh)**

[illegible]

MEETING MINUTES

Meeting Name: **Interagency I-77 HOT Lanes Project – South Section Permit Site Review Meeting (Final)**

I-3311C in Mecklenburg County

Date & Time: **June 23, 2016 2:30 PM**

Location: **NCDOT Office (Raleigh)**

TEAM MEMBERS:

<u>Name</u>	<u>Agency</u>	<u>Present</u>	
Mitch Batuzich	FHWA	☐	
Crystal Amschler	USACE	☒	On Phone
Marella Buncick	USFWS	☒	On Phone
Marla Chambers	NCWRC	☒	On Phone
Dr. Cynthia Van Der Wiele	USEPA	☒	
Alan Johnson	NCDENR, DWR	☐	
Donna Hood	NCDENR, DWR	☒	On Phone

PARTICIPANTS:

<u>Name</u>	<u>Affiliation</u>	<u>Present</u>	
Virginia Mabry	NCDOT, PPU	☒	
Stephen Morgan	NCDOT, Hydraulics	☒	
Pam Williams	NCDOT, PPU	☒	
Jamie Lancaster	NCDOT, PPU	☒	
Carla Dagnino	NCDOT, NES	☒	
Michael Turchy	NCDOT, NES	☒	
David Stark	NCDOT, PPU	☒	
Theresa Ellerby	NCDOT, PDEA	☒	
Pablo Del Monte	SCC – Design	☒	
Derek Ivie	SCC – Environmental	☒	
Carrol Barker	LBG – Design	☒	On Phone
David Brandes	LBG – Environmental	☒	
David Hannon	I-77 Mobility Partners	☒	On Phone
Joe Garcia	LBG – Design	☒	On Phone
Jose Barrau	LBG – Design	☒	On Phone
Dean Hatfield	LBG – Design	☒	
Jose Felix Heredero	LBG – Design	☒	On Phone
Ambros			
Joe Byington	SCC – Construction	☒	

MINUTES

PURPOSE: The purpose of this meeting was to review the hydraulic design and resulting environmental impacts for the South Section of the Project. The plans were reviewed, addressing each impact site sequentially. These minutes represent a summary of the items discussed during the meeting.

Introduction

Attendees were introduced, and the team advised that many of the changes implemented since the prior meeting (informational meeting held May 18, 2016), were in response to prior agency comments.

1. Site 1-S

- Location / impact has not changed since the prior informational meeting.
- The stream will be relocated westward, and will be stabilized/lined with rock riprap due to velocity.
- Storm drain outfalls will be extended to the new location.
- No Agency Comments.

2. Site 1A-S

- Location / impact has not changed since the prior informational meeting.
- A retaining wall has been implemented to avoid permanent impacts. The wall will be across the existing pipe headwall. Minor temporary impacts proposed for access and construction.
- Existing rip rap at the channel banks.
- No Agency Comments.

3. Site 2-S

- Oaklawn at Irwin Creek – Location / impact has not changed since the prior informational meeting.
- Impact sheets show a widening of the existing structure in place which is a significant minimization and avoidance of impacts.
- No permanent impacts.
- FEMA properties and Oaklawn Cemetery are constraints that have been avoided.
- Irwin Creek has rip rap the entire length of this reach on both sides.
- Team proposes to eliminate one existing bent near the OHWM (closest to Irwin Creek on the west side) by lengthening the westernmost span.
- The proposed temporary impacts are anticipated to be necessary for demolition of the bridge and access.
- No Agency Comments.

4. Site 3A-S

- Located on the downstream side of major existing culvert containing Irwin Creek.
- Location / impact has not changed since the prior informational meeting.
- Permanent impacts resulting from westward culvert extension have been eliminated.
- Temporary impacts are anticipated to manage water flow for construction.
- Constrained by an existing retaining wall near the existing southbound lanes.
- The Team plans to manage water diversions from inside the culverts if possible, but need latitude to install impervious dikes outside, and need access in order to install.
- No Agency Comments.

5. Site 3B-S

- The Team has designed a culvert extension that is intermediate in length, between the two options presented at the prior informational meeting.
- A short culvert extension and retaining walls will be utilized to reduce permanent footprint.
- The existing channel has a rock rip rapped banks on both sides (constructed at the time of the interstate construction) and has a rock bottom.

- The Team has provided additional detailed cross sections as requested by the Agencies.
- Proposing widening of stream on the eastern side to account for FEMA storage.
 - i. DWR asked about the quantity of fill vs cut depicted in the cross sections and the effect on the 100yr floodplain. In some instances, it appears the channel volume is reduced.
 - ii. Designer (LBG) explained that the stream is effectively acting as a drainage channel and conveyance efficiency of the channel is improved through the conveyance due to the smooth surface of the proposed wall, which has a lower Manning's n-value than the existing brush and riprap. The design HEC-RAS model indicates no rise.
 - iii. DWR asked about the analysis of rural areas versus urban areas. LBG responded that the calculations for this culvert take into account the urban nature of the creek and allows for a shorter time of concentration and more of a flashy type of flow. The HEC RAS model accounts for this.
- The Team has adjusted the design to include a short bench within the widened portion of the stream to maintain the approximate existing low flow width within the OHWM.
- DWR asks about existing utility relocation needs. Various utility components exist that will need to be adjusted, and there is no room to simply move them over (junction boxes, utility cabinets, etc). The Team advised that the noted utilities are primarily NCDOT ITS-related. Functionality has to be maintained, but the locations can be provided elsewhere. The Team confirmed that all utilities necessary will be moved or relocated without resulting in additional impacts to jurisdictional resources.
- Mitigation will be addressed in the South Section Permit Modification Application.
- The agencies asked if any of the existing trees could be retained for bank stabilization and shade value.
 - i. Due to the nature of the work, most all of the trees at this location will need to be removed, especially at the southern end, in order to build the project.
 - ii. The stabilization and benefits that bank-side vegetation provides is acknowledged by NCDOT and the team. Reasonable opportunities to retain, avoid or minimize the tree clearing along stream banks will be reviewed. The Team will look for opportunities to retain individual trees, or perform clearing (w/o grubbing) if possible, at the northern portion of the site.
 - iii. Consistent with riprapped stream banks along adjacent reaches of the stream, it is expected that natural revegetation of the riprap banks will occur.
- The agencies requested consideration of eliminating the use of geo-fabric underneath the new riprap, citing concerns at times with not properly keying in the new riprap. The Team advised that the use of the geo-fabric is a standard specification, but Geotechnical Staff will be consulted regarding the possibility of elimination.

6. Site 3C-S

- Location / impact is essentially the same as presented in the prior informational meeting.
- No Agency Comments.

7. Site 4A-S

- A retaining wall is proposed to avoid and minimize permanent wetland impacts.
- After visiting the site (as discussed in the prior informational meeting), staking the toe of existing embankment along the east boundary, and surveying the stakes, the wetland limits were adjusted to properly depict field conditions along the east boundary of the wetland. Permanent wetland impacts have been eliminated.
- Temporary impacts for construction access are proposed for construction of the retaining wall and for demolition of the pedestrian bridge.
- No Agency Comments.

8. Site 4B-S

- Location / impact has not changed since the prior informational meeting.
- Temporary access for demolition of the pedestrian bridge.
- No Agency Comments.

9. Site 5-S

- Location / impact has not changed since the prior informational meeting.
- Permanent impacts at this site have been avoided utilizing steepened slopes.
- Temporary impacts are proposed for access and construction of the slopes.
- No Agency Comments.

10. Site 6-S

- Since the prior informational meeting, the Team has added a short section of riprap to the stream bed at the new culvert outfall, to protect against scouring, since the culvert cannot be buried.
- Permanent impacts result from culvert extension, scour protection, and bank stabilization.
- A small temporary impact is proposed for construction access and watercourse management.
- No Agency Comments.

11. Site 7-S

- Location / impact has not changed since the prior informational meeting.
- No Agency Comments.

Schedule

The Team plans to submit the Permit Modification Application for the South Section in July, and would like to have all permitting completed by September 2016.

ATTENDANCE SHEET

Meeting Name: Interagency Project Agency Update Meeting, I-77 HOT Lanes Project
I-3311C (South Section): Federal Aid Project No. NHS-077-1 (210); WBS
No. 34181.1.1

Date & Time: June 23, 2016 2:30 PM

Location: NCDOT Office (Raleigh)

Name	Representing	Email	Phone
David Brandes	Louis Berger	dbrandes@louisberger.com	803 244-4502
DEAN HATFIELD	LOUIS BERGER	dhatfield@louisberger.com	919 866 4425
Derek Irvie	Sugar Creek, LLC	dervie@sugarcreekllc.us	469-400-7498
Virginia Maling	NCDOT		
José Marin	Louis Berger		
Joe Garcia	Louis Berger		
Mamuel	Louis Berger		
Donna Hood	DWR		
Crysta Ashler	USACE		
Marcia Chandler	USFWS		
Stephen Morgan	NCDOT Hydraulics	smorgan@ncdot.gov	919-707-6739
Morella Bunick	USFWS		
CYNTHIA VAN DER WIELE	USEPA	vanderwiele.cynthia@epa.gov	919.450.6811

phone

phone

phone

phone

ATTENDANCE SHEET

Meeting Name: **Interagency Project Agency Update Meeting, I-77 HOT Lanes Project I-3311C (South Section): Federal Aid Project No. NHS-077-1 (210); WBS No. 34181.1.1**

Date & Time: **June 23, 2016 2:30 PM**

Location: **NCDOT Office (Raleigh)**

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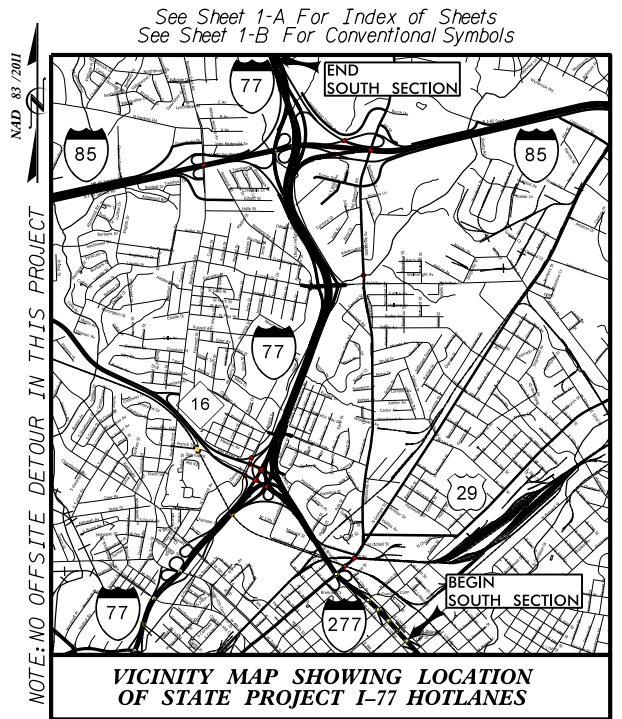
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Location: **NCDOT Office (Raleigh)**

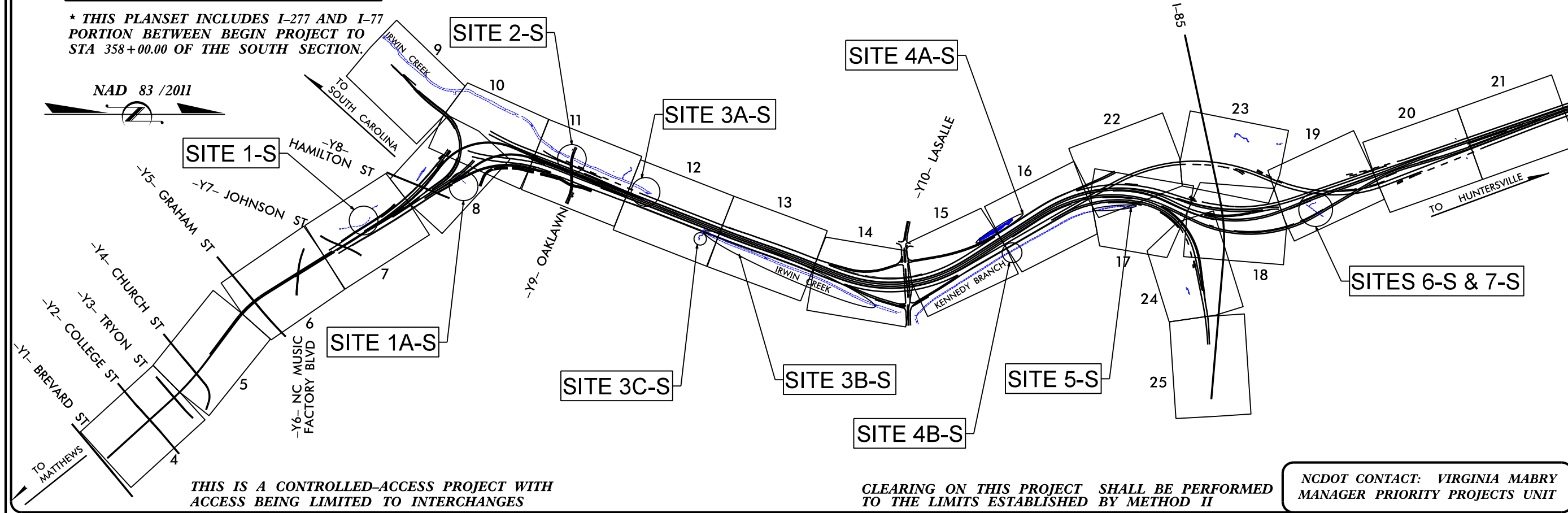
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TIP PROJECT: I-3311C

CONTRACT: C203406



* THIS PLANSET INCLUDES I-277 AND I-77 PORTION BETWEEN BEGIN PROJECT TO STA 358+00.00 OF THE SOUTH SECTION.



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG COUNTY

I-277 FROM WEST OF BREVARD STREET
TO I-77 NORTH OF I-85 INTERCHANGE

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

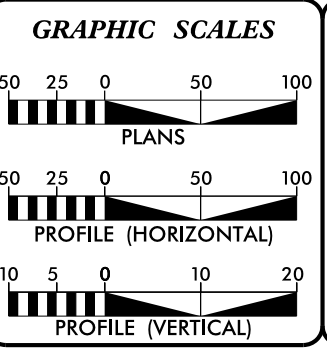
WETLAND AND STREAM IMPACTS (SOUTH SECTION)

PERMIT DRAWING
SHEET 01 OF 35

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-3311C	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
45454.3.P3S1	NHFP-077-1(216)	P.E.	
45454.3.P3S1	NHFP-077-1(216)	CONSTRUCTION	
45454.3.P3S1	NHFP-077-1(216)	UTILITIES	

sugar creek
construction, LLC

IMPACT SHEETS
SUBMITTAL NO. DSG-0094R3
SEPTEMBER 22, 2016



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-3311C	=	3.41 MI
LENGTH STRUCTURES TIP PROJECT I-3311C	=	0.79 MI
TOTAL LENGTH OF TIP PROJECT I-3311C	=	4.20 MI

Prepared for NCDOT In the Office of:
LOUIS BERGER GROUP, Inc.
1001 Wade Avenue, Suite 400
Raleigh, North Carolina 27605
License No.: F-0840

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: TBD	DEAN HATFIELD, PE PROJECT ENGINEER
LETTING DATE: TBD	RAYMOND ODELL, PE PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

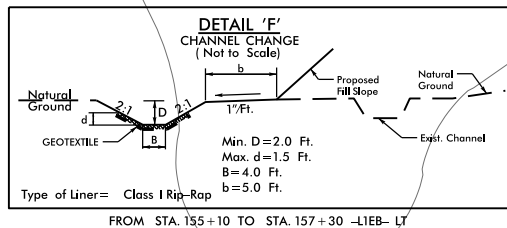
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

\$ DATE\$
\$ FILEL\$
\$ PENTBL\$

DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DUKE POWER CO
ATTN: TAX DEPT - PB05B
0318 / 126



MECKLENBURG COUNTY
03926 / 219

MUSIC FACTORY LLC
DB 22235 PG 127
MB 48 PG 03

NAD 83/2011

PROJECT REFERENCE NO. L-3311C		SHEET NO. 7
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
sugar creek construction, LLC		
Louis Berger		

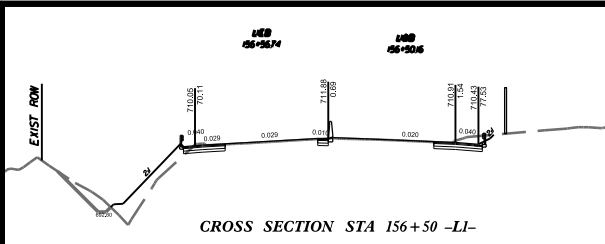
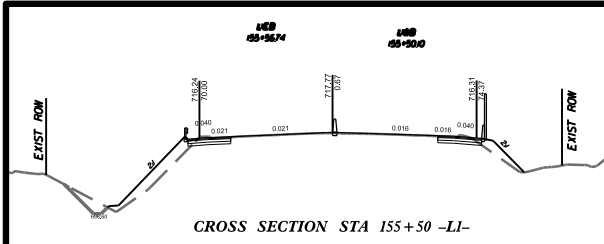
PERMIT DRAWING
SHEET 02 OF 35

MATCH LINE SHEET 6
-LI- STA 149+00.00

MATCH LINE SHEET 8
-LI- STA 163+00.00

NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.
-DESIGN EXCEPTION FOR GORE 4'
-LIEB- STA. 161+40.00

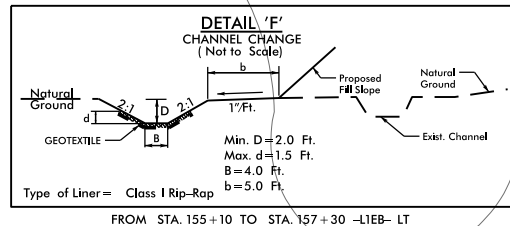
NOTES:
1.) FOR -LIEB- PROFILE SEE SHEET 13.
2.) FOR -LIWB- PROFILE SEE SHEET 13.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2P



DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DUKE POWER CO
ATTN: TAX DEPT - PB05B
0318 / 126



MECKLENBURG COUNTY
03926 / 219

MUSIC FACTORY LLC
DB 22235 PG 127
MB 48 PG 03

NAD 83/2011

PROJECT REFERENCE NO.		SHEET NO.
L-3311C		7A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

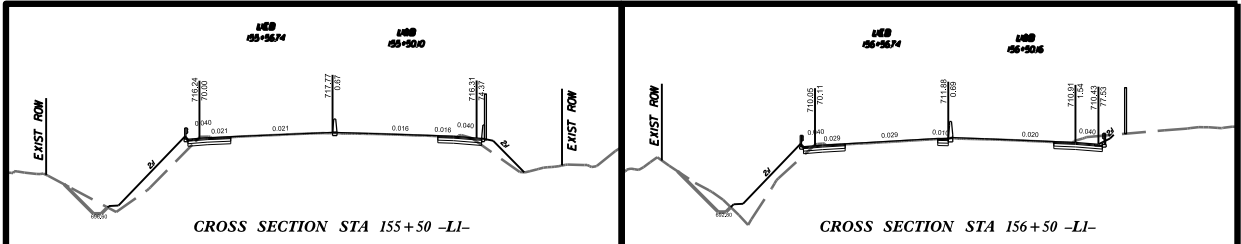
PERMIT DRAWING
SHEET 03 OF 35

MATCH LINE SHEET 6
-LI- STA 149+00.00

MATCH LINE SHEET 8
-LI- STA 163+00.00

NOTE:
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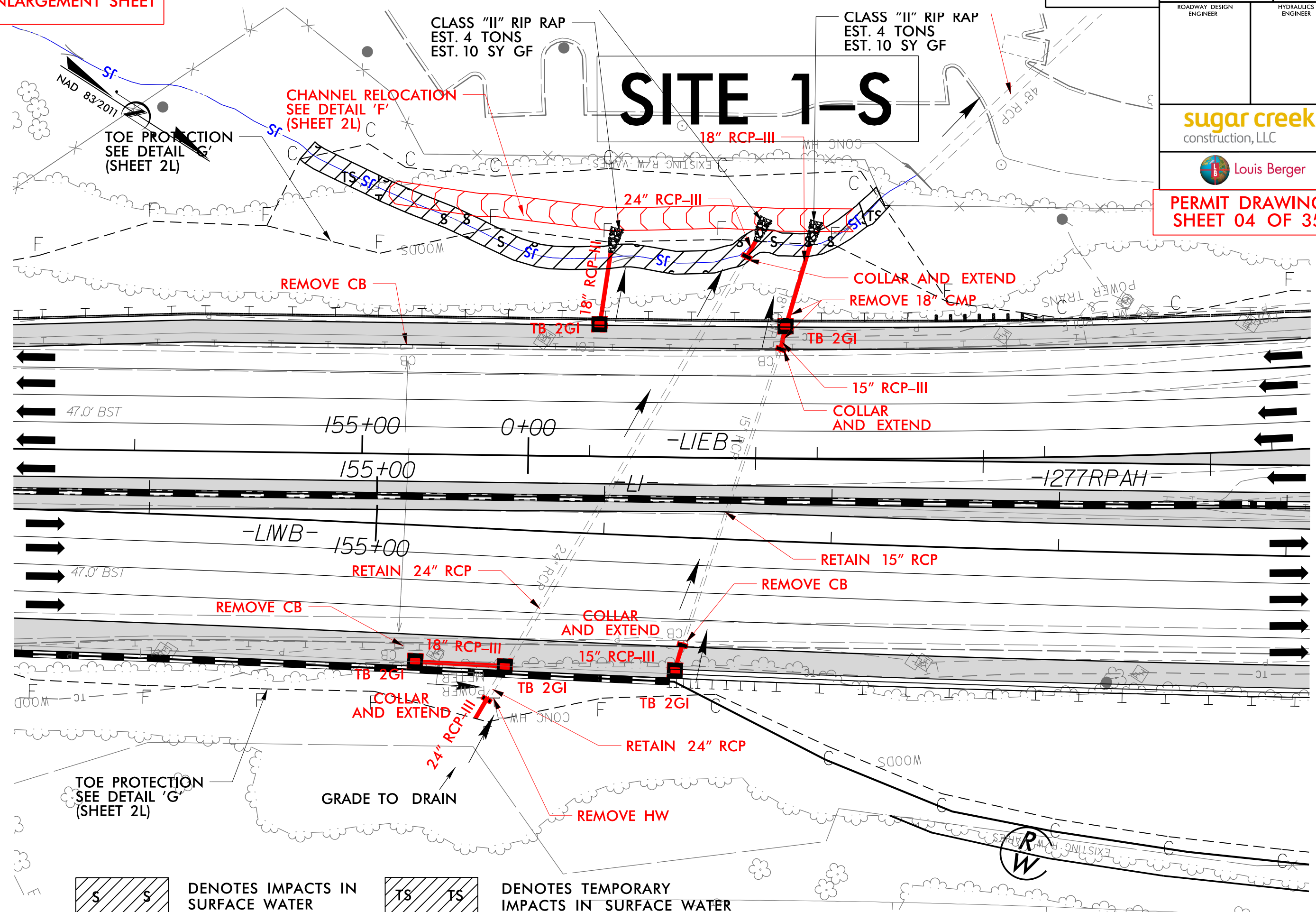
NOTES:
1.) FOR -LIEB- PROFILE SEE SHEET 13.
2.) FOR -LIWB- PROFILE SEE SHEET 13.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2P



ENLARGEMENT SHEET



PERMIT DRAWING
SHEET 04 OF 35



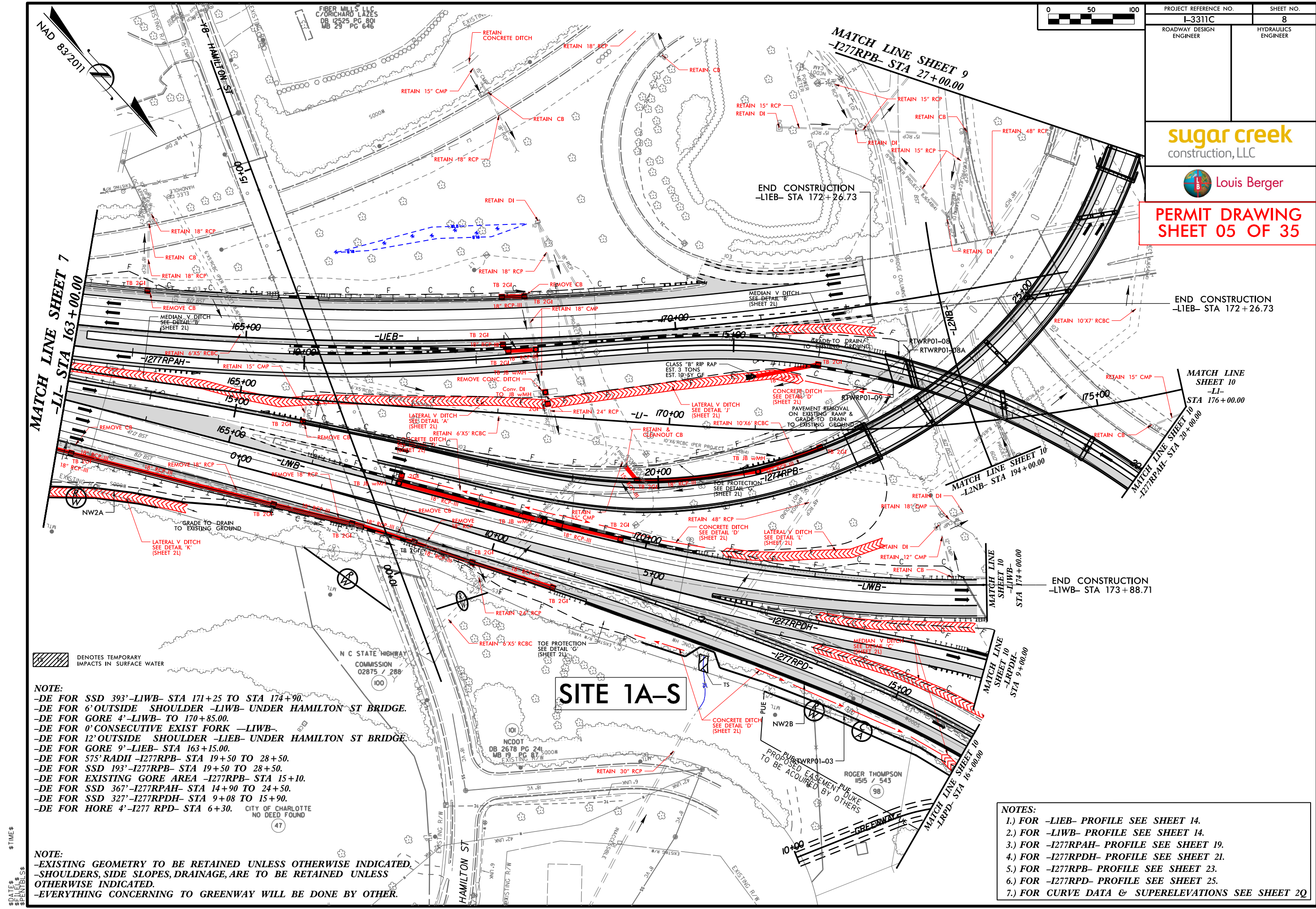
A rectangular block with diagonal hatching (lines from top-left to bottom-right). Inside the block, there are two 'S' symbols, one on the left and one on the right.

DENOTES IMPACTS IN
SURFACE WATER

A rectangular block with diagonal hatching from the top-left to the bottom-right. The letters 'TS' are printed in the center of the block, appearing twice.

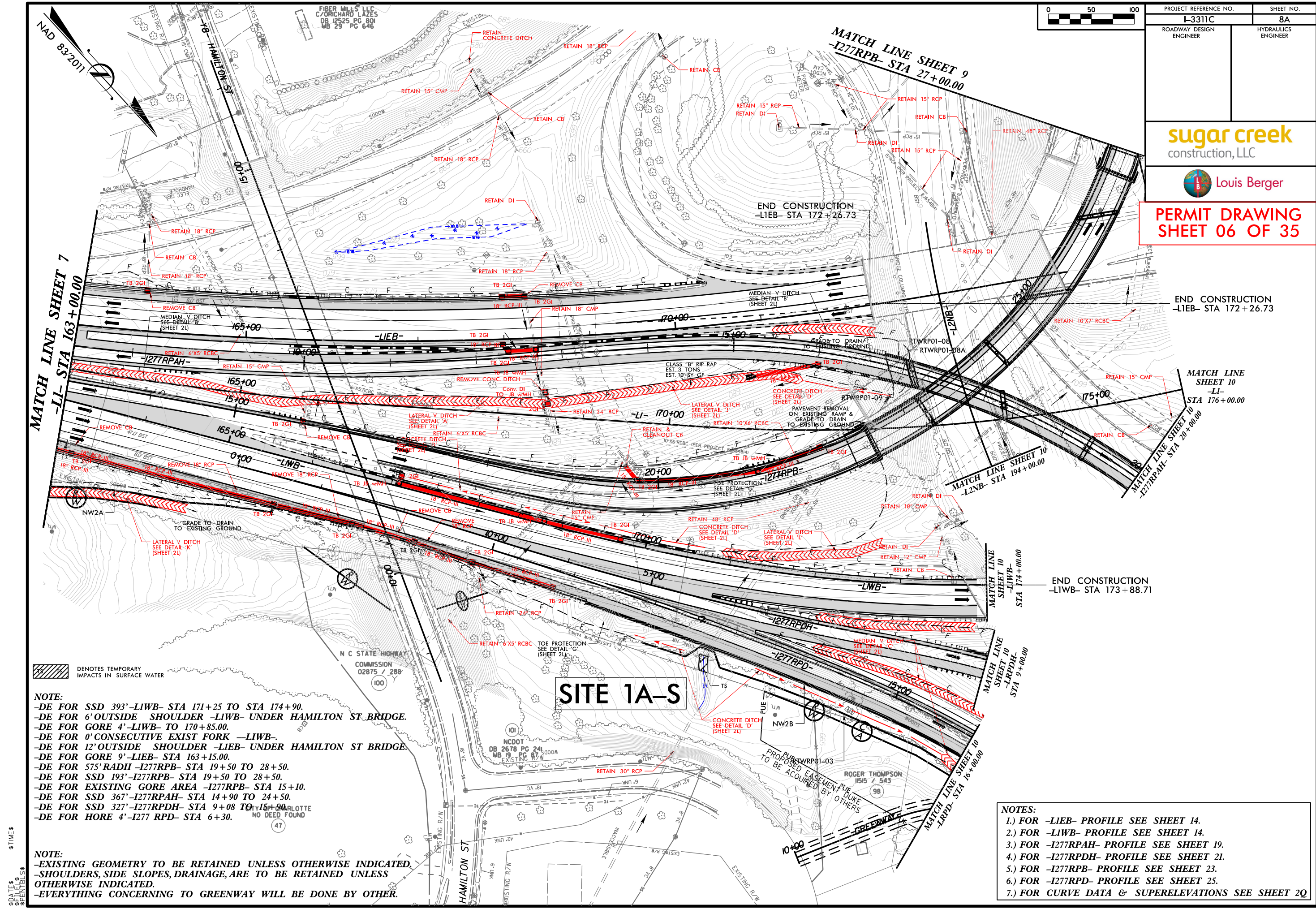
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

DATE\$	FILE\$	TIME\$
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- NOTES:
- 1.) FOR -LIEB- PROFILE SEE SHEET 14.
 - 2.) FOR -LIWB- PROFILE SEE SHEET 19.
 - 3.) FOR -I277RPAH- PROFILE SEE SHEET 19.
 - 4.) FOR -I277RPDH- PROFILE SEE SHEET 21.
 - 5.) FOR -I277RPB- PROFILE SEE SHEET 23.
 - 6.) FOR -I277RPD- PROFILE SEE SHEET 25.
 - 7.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 20



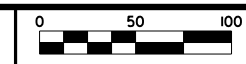
\$DATE\$
\$FILE\$
\$PLOT\$

NOTE:
-DE FOR SSD 393'-LIWB- STA 171+25 TO STA 174+90.
-DE FOR 6' OUTSIDE SHOULDER -LIWB- UNDER HAMILTON ST BRIDGE.
-DE FOR GORE 4'-LIWB- TO 170+85.00.
-DE FOR 0' CONSECUTIVE EXIST FORK -LIWB-
-DE FOR 12' OUTSIDE SHOULDER -LIEB- UNDER HAMILTON ST BRIDGE.
-DE FOR GORE 9'-LIEB- STA 163+15.00.
-DE FOR 575' RADII -I277RPB- STA 19+50 TO 28+50.
-DE FOR SSD 193'-I277RPB- STA 19+50 TO 28+50.
-DE FOR EXISTING GORE AREA -I277RPB- STA 15+10.
-DE FOR SSD 367'-I277RPAH- STA 14+90 TO 24+50.
-DE FOR SSD 327'-I277RPDH- STA 9+08 TO 15+90.
-DE FOR HORE 4'-I277 RPD- STA 6+30.

NOTE:
-EXISTING GEOMETRY TO BE RETAINED UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE TO BE RETAINED UNLESS OTHERWISE INDICATED.
-EVERYTHING CONCERNING TO GREENWAY WILL BE DONE BY OTHER.

SITE 1A-S

NOTES:
1.) FOR -LIEB- PROFILE SEE SHEET 14.
2.) FOR -LIWB- PROFILE SEE SHEET 19.
3.) FOR -I277RPAH- PROFILE SEE SHEET 19.
4.) FOR -I277RPDH- PROFILE SEE SHEET 21.
5.) FOR -I277RPB- PROFILE SEE SHEET 23.
6.) FOR -I277RPD- PROFILE SEE SHEET 25.
7.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 20



PROJECT REFERENCE NO. I-3311C		SHEET NO. 8A
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
 Louis Berger		

PERMIT DRAWING
SHEET 06 OF 35

END CONSTRUCTION
-LIEB- STA 172+26.73

MATCH LINE
SHEET 10
-LI-
STA 176+00.00

END CONSTRUCTION
-LIWB- STA 173+88.71

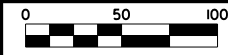
MATCH LINE
SHEET 10
-LIWB-
STA 174+00.00

MATCH LINE
SHEET 10
-LRPDH-
STA 9+00.00

MATCH LINE
SHEET 10
-L2NB- STA 194+00.00

MATCH LINE SHEET 9
-I277RPB- STA 27+00.00

NOTE:
-EXISTING GEOMETRY TO BE RETAINED UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE TO BE RETAINED UNLESS OTHERWISE INDICATED.
-EVERYTHING CONCERNING TO GREENWAY WILL BE DONE BY OTHER.
-DESIGN EXCEPTION FOR 9' INSIDE SHOULDER UNDER OAKLAWN BRIDGE.
-DESIGN EXCEPTION FOR GORE 4' L2SBI STA. 211+35.00.
-DESIGN EXCEPTION FOR GORE 4' L2SBI STA. 211+30.00.
-DESIGN EXCEPTION FOR GORE 4' L2NB2 STA. 209+80.00.



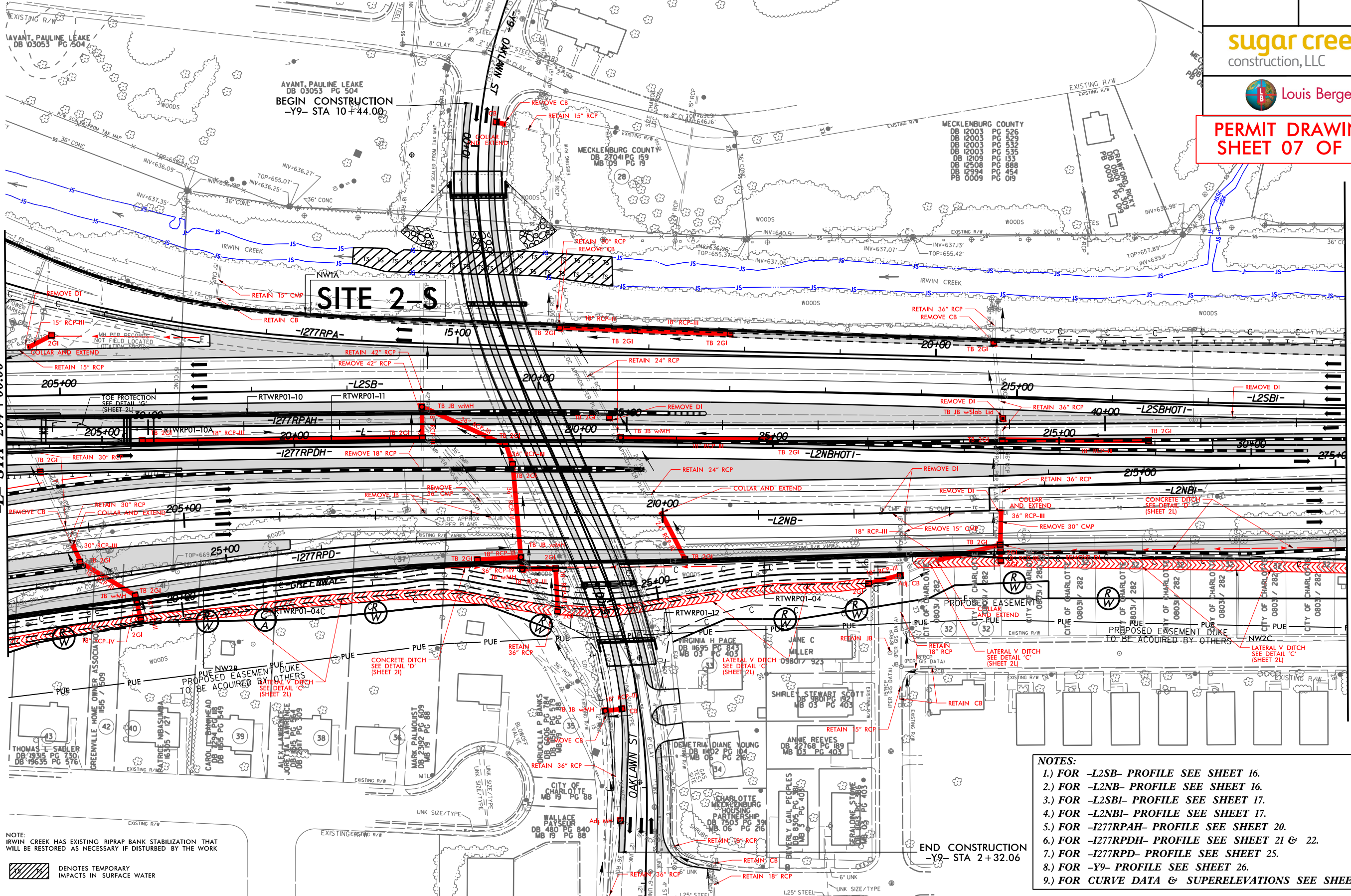
NAD 83/2011

PROJECT REFERENCE NO. L-3311C		SHEET NO. 11
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
sugar creek construction, LLC		
Louis Berger		

**PERMIT DRAWING
SHEET 07 OF 35**

MATCH LINE SHEET 10
-L- STA 204+00.00

MATCH LINE SHEET 12
-L- STA 218+00.00



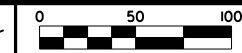
- NOTES:
- 1.) FOR -L2SB- PROFILE SEE SHEET 16.
 - 2.) FOR -L2NB- PROFILE SEE SHEET 16.
 - 3.) FOR -L2SBI- PROFILE SEE SHEET 17.
 - 4.) FOR -L2NBI- PROFILE SEE SHEET 17.
 - 5.) FOR -1277RPAH- PROFILE SEE SHEET 20.
 - 6.) FOR -1277RPDH- PROFILE SEE SHEET 21 & 22.
 - 7.) FOR -1277RPD- PROFILE SEE SHEET 25.
 - 8.) FOR -Y9- PROFILE SEE SHEET 26.
 - 9.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 27

NOTE:
IRWIN CREEK HAS EXISTING RIPRAP BANK STABILIZATION THAT WILL BE RESTORED AS NECESSARY IF DISTURBED BY THE WORK

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

\$DATE\$
\$FILE\$
\$SHEET\$

NOTE:
-EXISTING GEOMETRY TO BE RETAINED UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE TO BE RETAINED UNLESS OTHERWISE INDICATED.
-EVERYTHING CONCERNING TO GREENWAY WILL BE DONE BY OTHER.
-DESIGN EXCEPTION FOR 9' INSIDE SHOULDER UNDER OAKLAWN BRIDGE.
-DESIGN EXCEPTION FOR GORE 4' L2SBI STA. 211+35.00.
-DESIGN EXCEPTION FOR GORE 4' L2SBI STA. 211+30.00.
-DESIGN EXCEPTION FOR GORE 4' L2NB2 STA. 209+80.00.



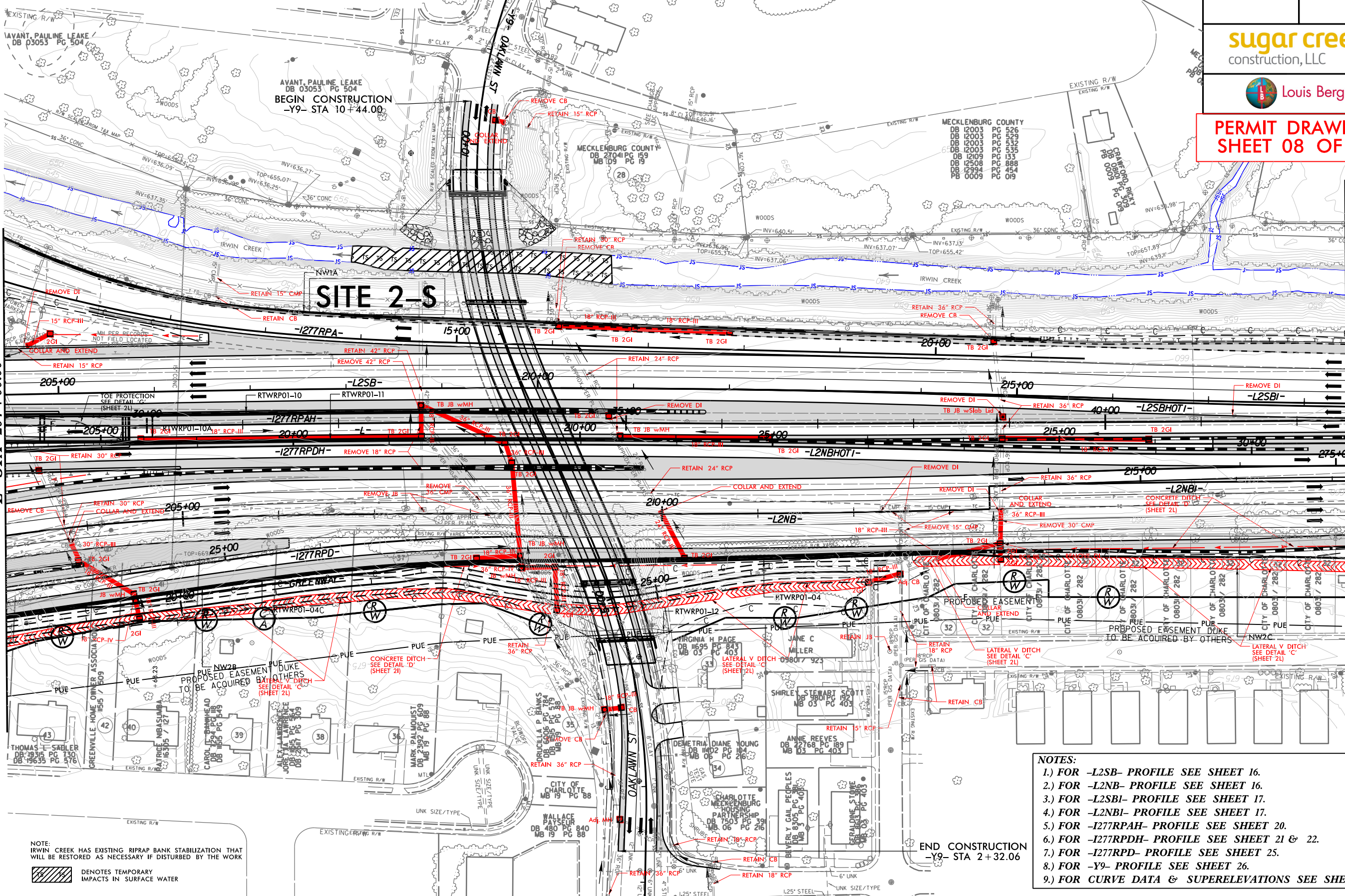
NAD 83/2011

PROJECT REFERENCE NO. L-3311C		SHEET NO. 11A
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
sugar creek construction, LLC		
Louis Berger		

**PERMIT DRAWING
SHEET 08 OF 35**

MATCH LINE SHEET 10
-L- STA 204+00.00

MATCH LINE SHEET 12
-L- STA 218+00.00

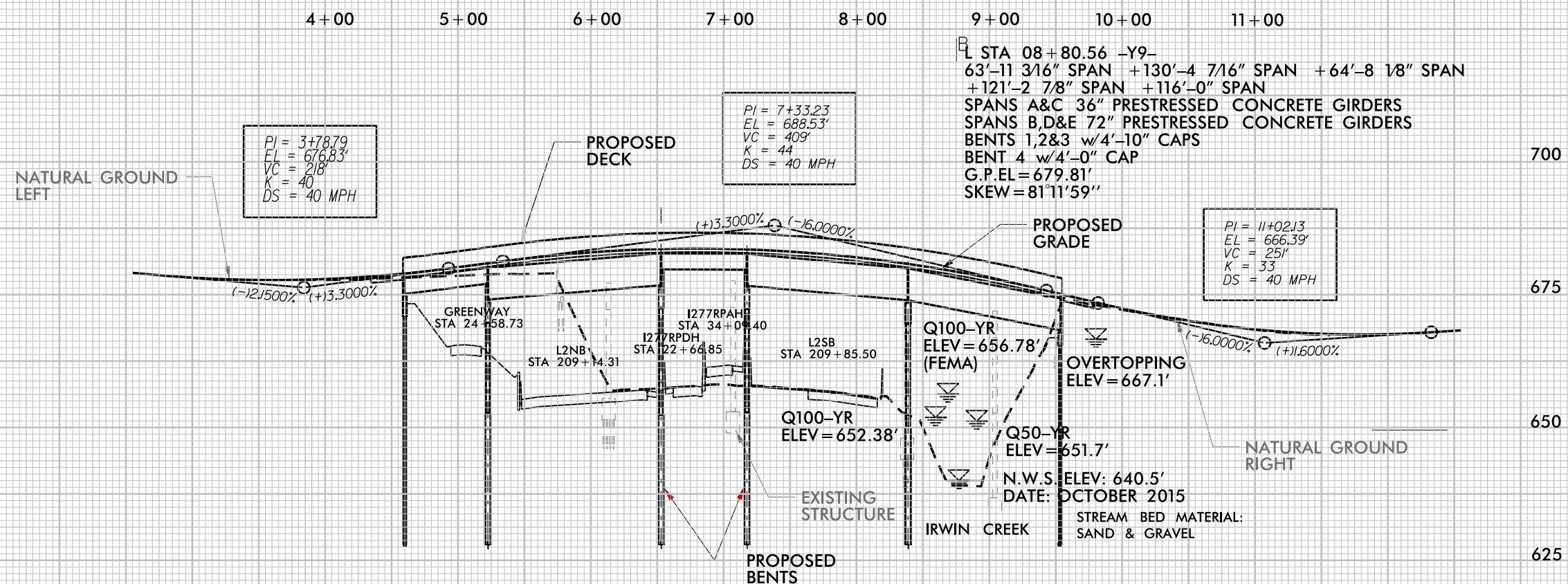


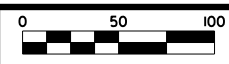
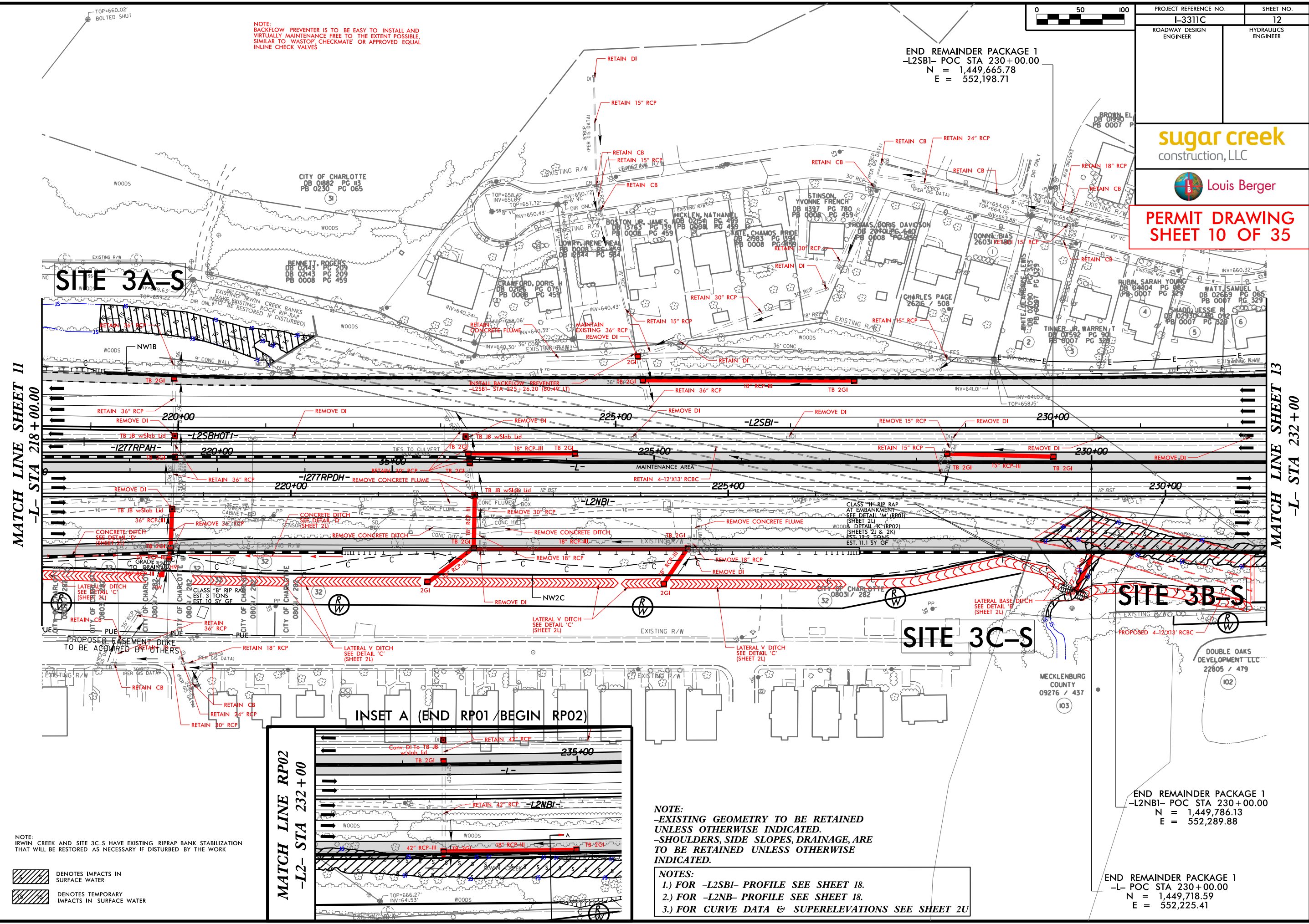
NOTE:
IRWIN CREEK HAS EXISTING RIPRAP BANK STABILIZATION THAT WILL BE RESTORED AS NECESSARY IF DISTURBED BY THE WORK

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

- NOTES:
- 1.) FOR -L2SB- PROFILE SEE SHEET 16.
 - 2.) FOR -L2NB- PROFILE SEE SHEET 16.
 - 3.) FOR -L2SBI- PROFILE SEE SHEET 17.
 - 4.) FOR -L2NBI- PROFILE SEE SHEET 17.
 - 5.) FOR -L277RPAH- PROFILE SEE SHEET 20.
 - 6.) FOR -L277RPDH- PROFILE SEE SHEET 21 & 22.
 - 7.) FOR -L277RPD- PROFILE SEE SHEET 25.
 - 8.) FOR -Y9- PROFILE SEE SHEET 26.
 - 9.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 27

END CONSTRUCTION
-Y9- STA 2+32.06





PROJECT REFERENCE NO. L-3311C		SHEET NO. 12
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
sugar creek construction, LLC		
Louis Berger		

PERMIT DRAWING
SHEET 10 OF 35

END REMAINDER PACKAGE 1
-L2SB1- POC STA 230+00.00
N = 1,449,665.78
E = 552,198.71

END REMAINDER PACKAGE 1
-L2NB1- POC STA 230+00.00
N = 1,449,786.13
E = 552,289.88

END REMAINDER PACKAGE 1
-L- POC STA 230+00.00
N = 1,449,718.59
E = 552,225.41

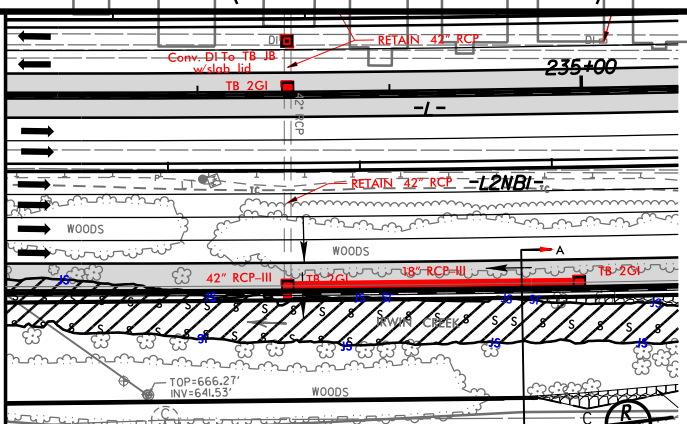
NOTE:
IRWIN CREEK AND SITE 3C-S HAVE EXISTING RIPRAP BANK STABILIZATION THAT WILL BE RESTORED AS NECESSARY IF DISTURBED BY THE WORK

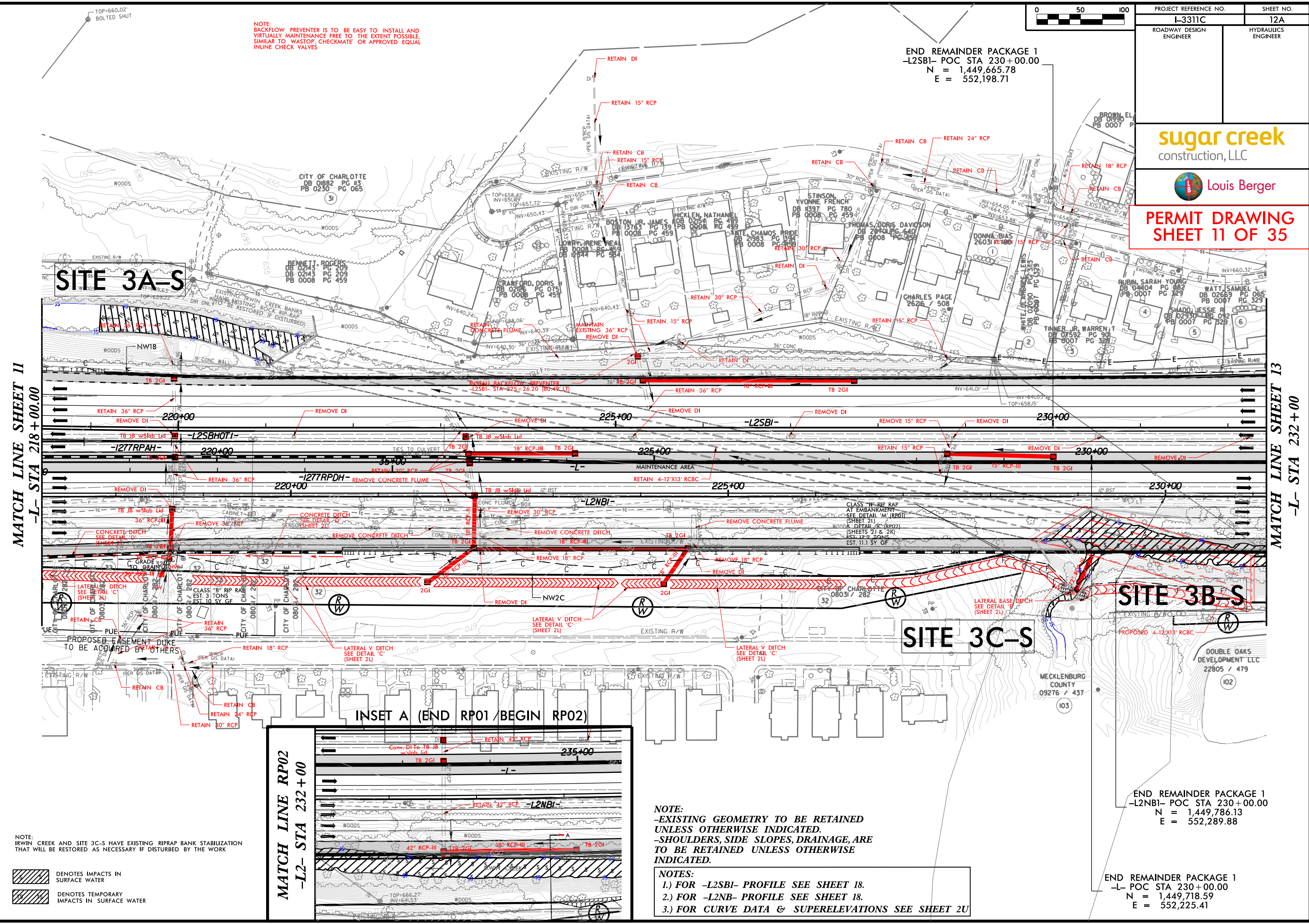
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
-EXISTING GEOMETRY TO BE RETAINED UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE TO BE RETAINED UNLESS OTHERWISE INDICATED.

NOTES:
1.) FOR -L2SB1- PROFILE SEE SHEET 18.
2.) FOR -L2NB- PROFILE SEE SHEET 18.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2U

MATCH LINE RP02
-L2- STA 232+00



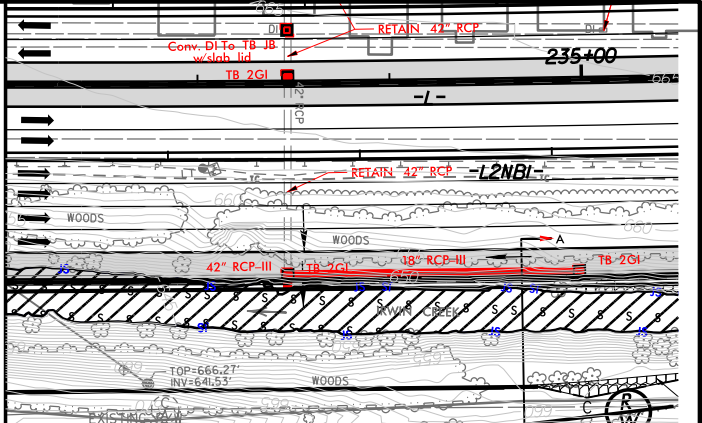


\$DATE\$
\$FILE\$
\$TIME\$
\$PENLBS\$

NOTE:
IRWIN CREEK AND SITE 3C-S HAVE EXISTING RIPRAP BANK STABILIZATION THAT WILL BE RESTORED AS NECESSARY IF DISTURBED BY THE WORK

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

MATCH LINE RP02
-L2- STA 232+00

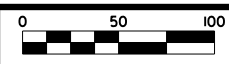


NOTE:
-EXISTING GEOMETRY TO BE RETAINED UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE TO BE RETAINED UNLESS OTHERWISE INDICATED.

NOTES:
1.) FOR -L2SBI- PROFILE SEE SHEET 18.
2.) FOR -L2NB- PROFILE SEE SHEET 18.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2U

END REMAINDER PACKAGE 1
-L2NB1- POC STA 230+00.00
N = 1,449,786.13
E = 552,289.88

END REMAINDER PACKAGE 1
-L- POC STA 230+00.00
N = 1,449,718.59
E = 552,225.41

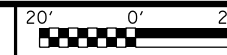


PROJECT REFERENCE NO. L-3311C		SHEET NO. 12A
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER

**PERMIT DRAWING
SHEET 11 OF 35**

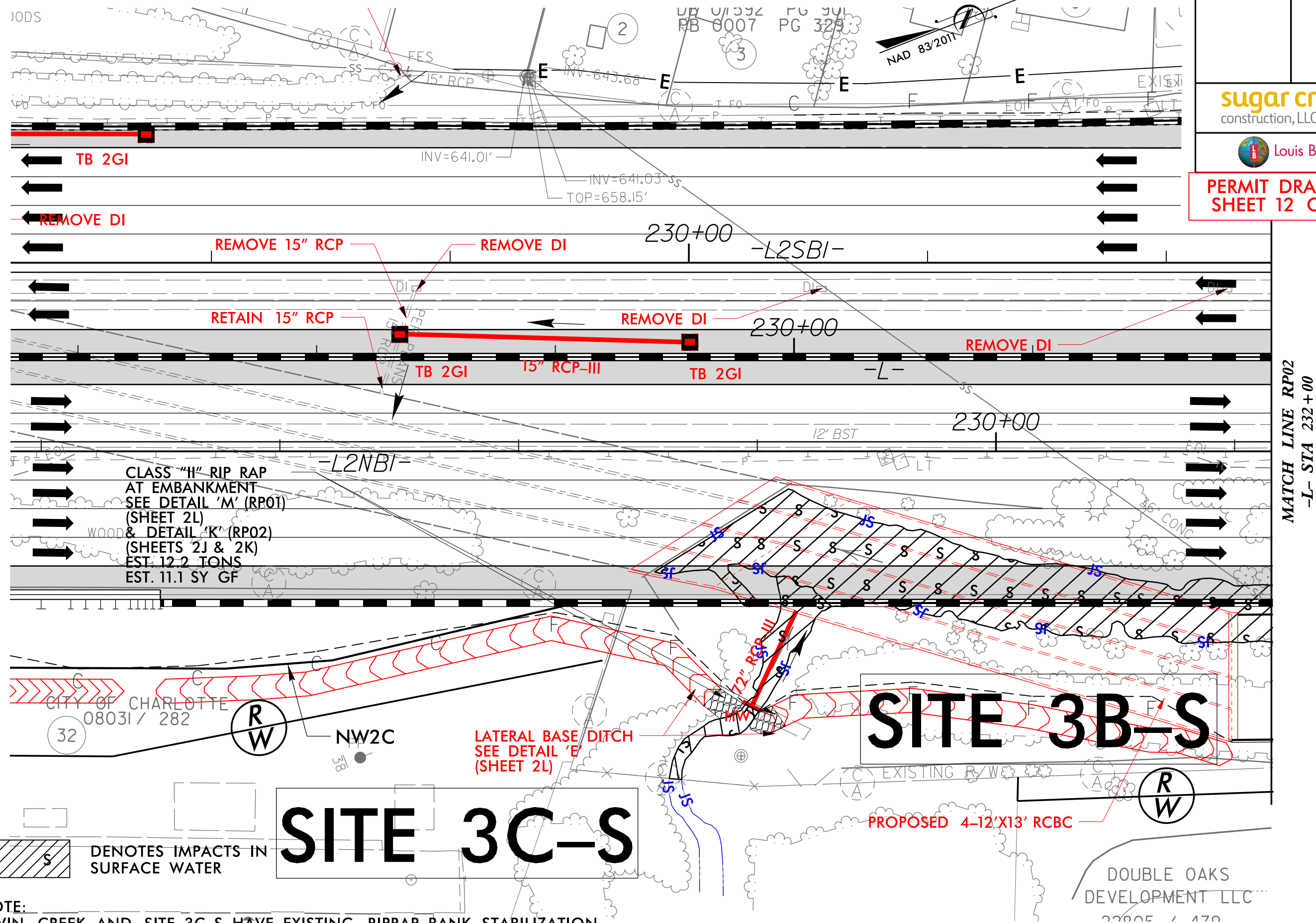
END REMAINDER PACKAGE 1
-L2SBI- POC STA 230+00.00
N = 1,449,665.78
E = 552,198.71

ENLARGEMENT SHEET



PROJECT REFERENCE NO.	SHEET NO.
L-3311C	12B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
	

PERMIT DRAWING
SHEET 12 OF 35



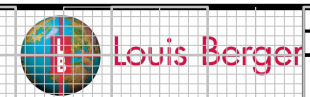
DENOTES IMPACTS IN
SURFACE WATER

NOTE:
IRWIN CREEK AND SITE 3C-S HAVE EXISTING RIPRAP BANK STABILIZATION
THAT WILL BE RESTORED AS NECESSARY IF DISTURBED BY THE WORK

\$DATE\$
\$FILE\$
\$TIME\$
\$PENL\$

5/14/99

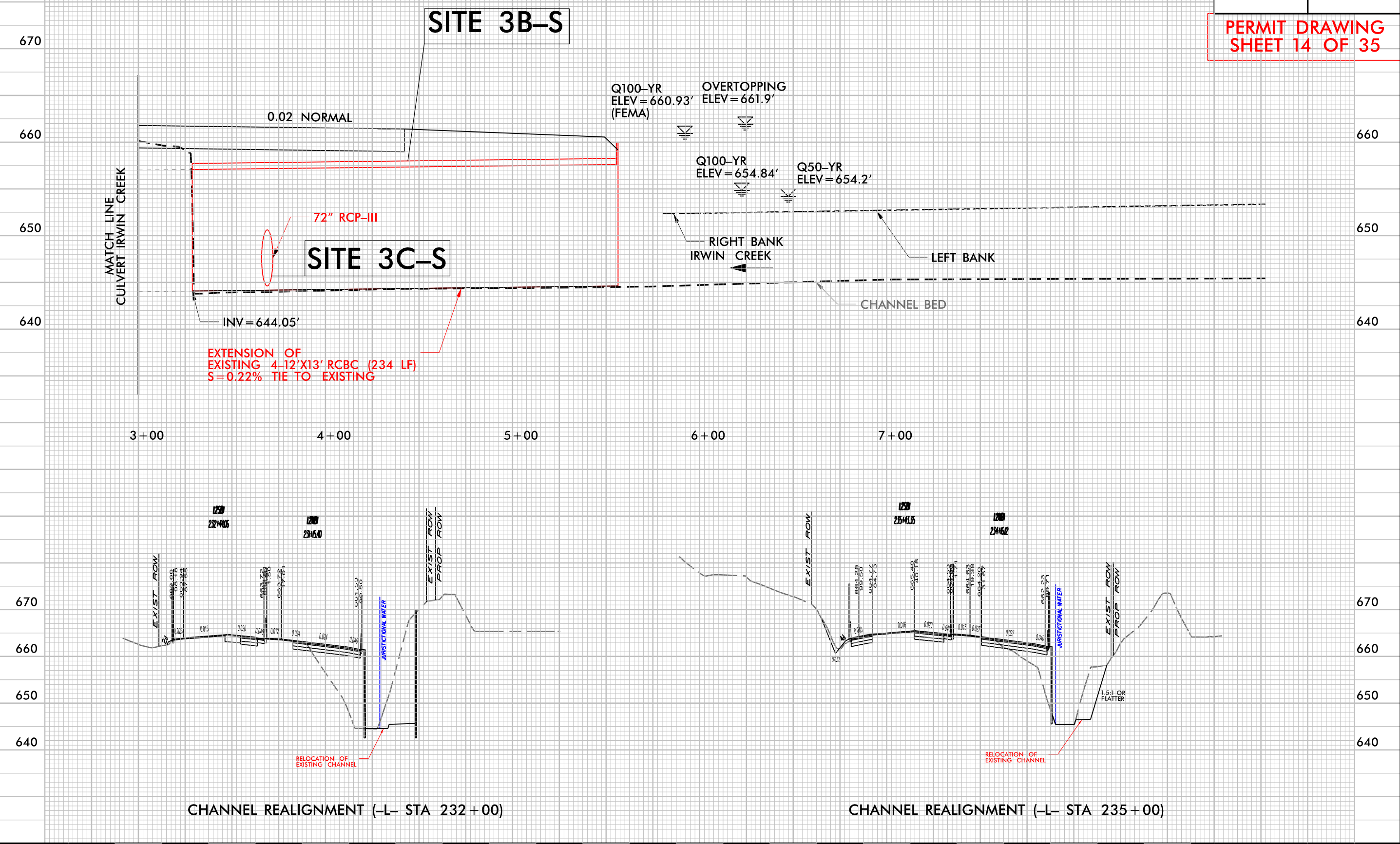
sugar creek
construction, LLC



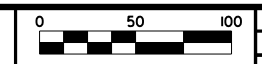
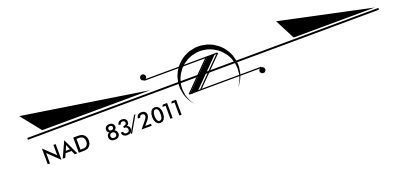
PROJECT REFERENCE NO.	SHEET NO.
1-3311C	12D
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SITES 3A-S, 3B-S & 3C-S

PERMIT DRAWING
SHEET 14 OF 35

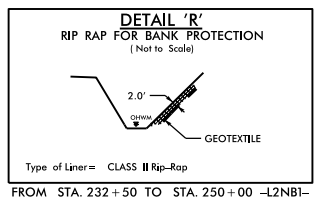


22 SEP 2016 10:23 1-3311C-HYD-PRM-SOUTH-WET-PFL-03.dgn



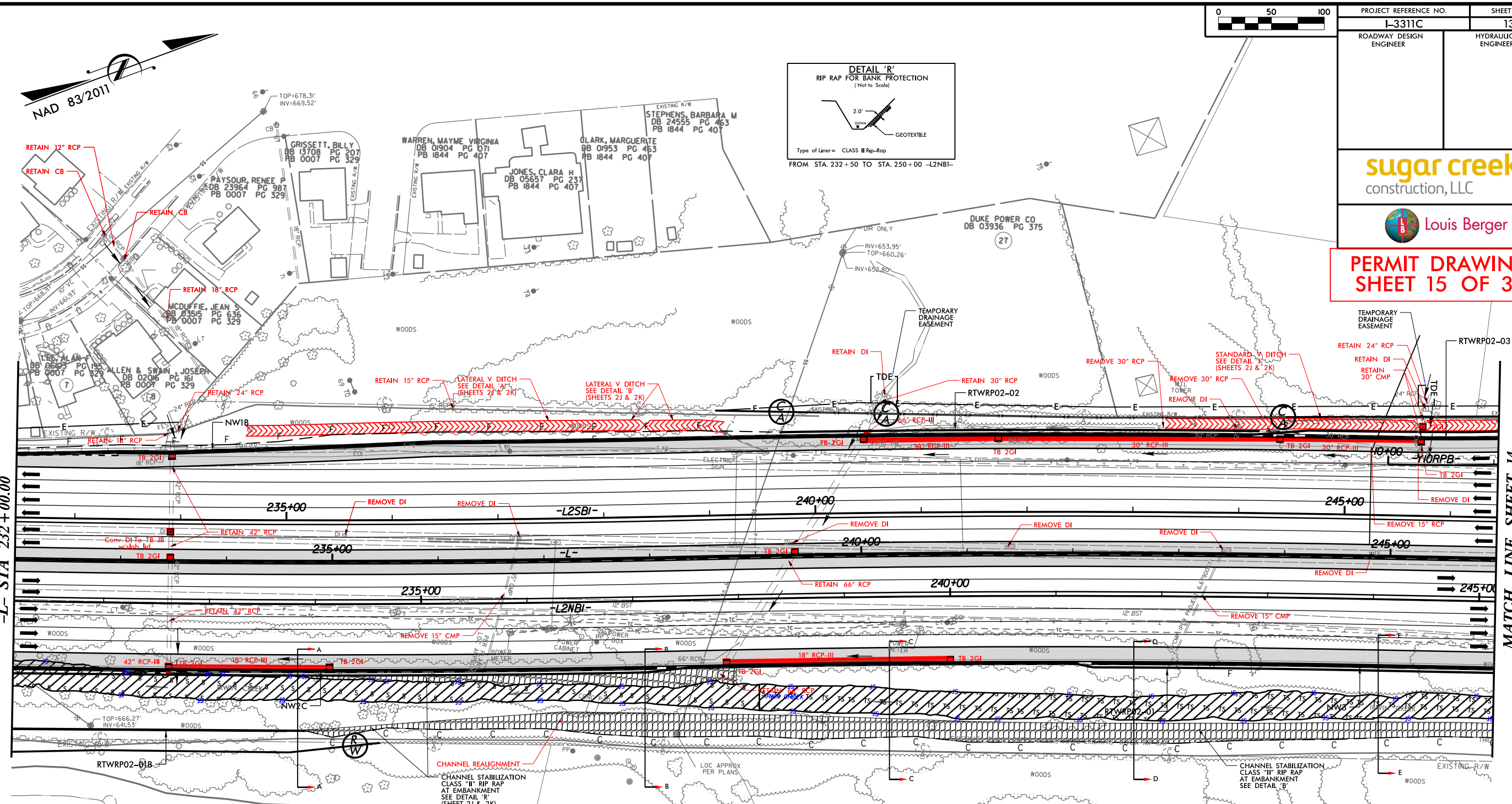
PROJECT REFERENCE NO. L-3311C		SHEET NO. 13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
sugar creek construction, LLC		
 Louis Berger		

**PERMIT DRAWING
SHEET 15 OF 35**



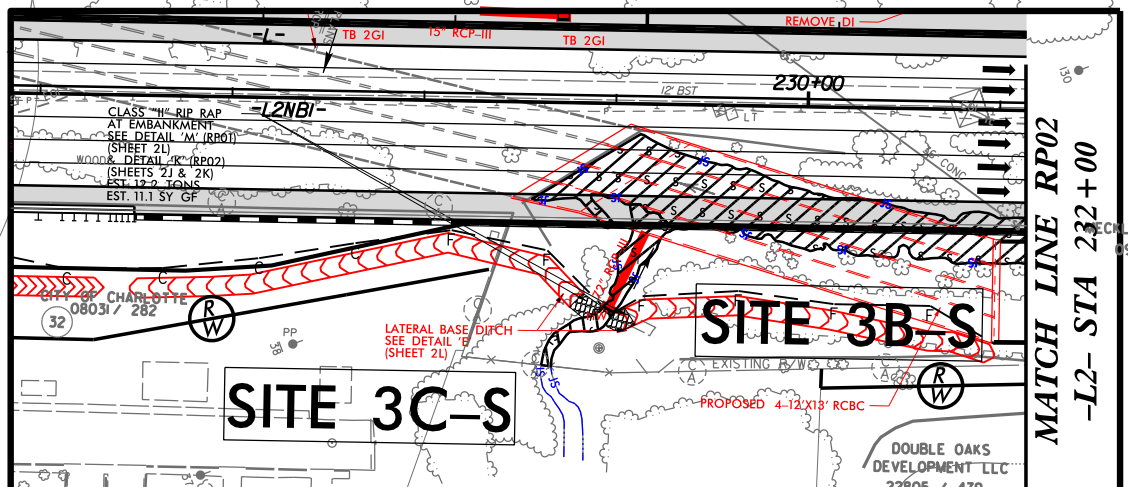
MATCH LINE SHEET 12
-L- STA 232+00.00

MATCH LINE SHEET 14
-L- STA 246+00.00



SITE 3B-S

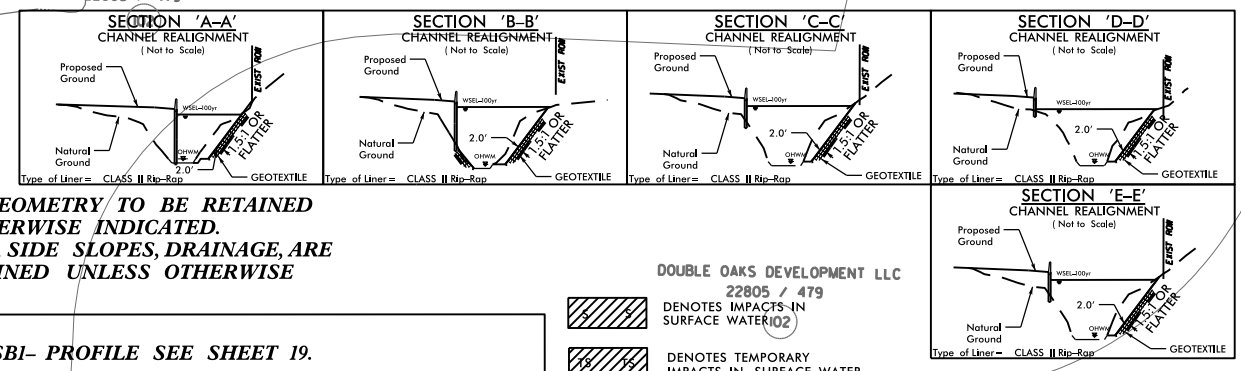
INSET A (END RP01 / BEGIN RP02)



SITE 3C-S

NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.

- NOTES:**
- 1.) FOR -L2SB1- PROFILE SEE SHEET 19.
 - 2.) FOR -L2NB1- PROFILE SEE SHEET 19.
 - 3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2M.

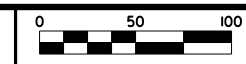
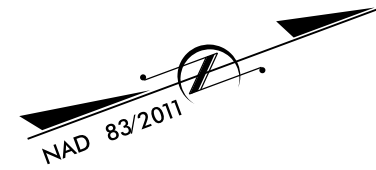


DOUBLE OAKS DEVELOPMENT LLC
22805 / 479

DENOTES IMPACTS IN
SURFACE WATER(02)

DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

NOTE:
IRWIN CREEK HAS EXISTING RIPRAP BANK STABILIZATION THAT
WILL BE RESTORED AS NECESSARY IF DISTURBED BY THE WORK



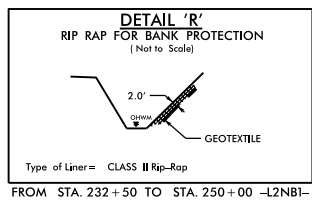
PROJECT REFERENCE NO.		SHEET NO.
I-3311C		13A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

sugar creek

construction, LLC

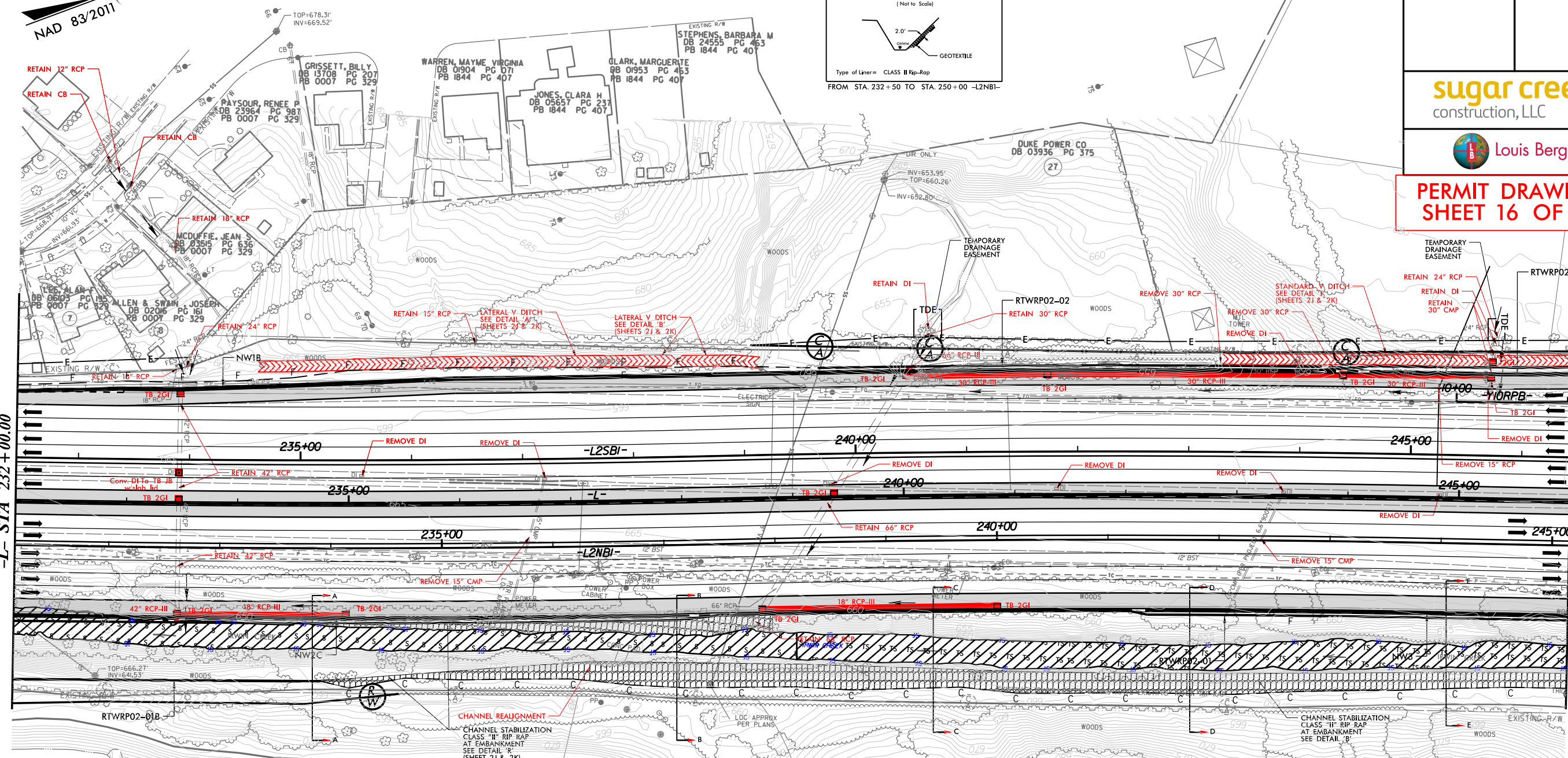
 Louis Berger

PERMIT DRAWING
SHEET 16 OF 35



MATCH LINE SHEET 12
-L- STA 232+00.00

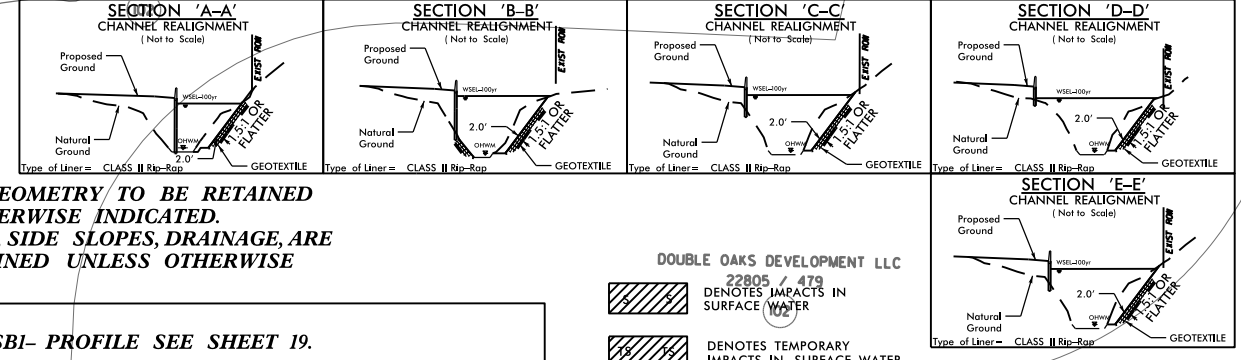
MATCH LINE SHEET 14
-L- STA 246+00.00



SITE 3B-S

INSET A (END RP01/BEGIN RP02)

DOUBLE OAKS DEVELOPMENT LLC
22805 / 479



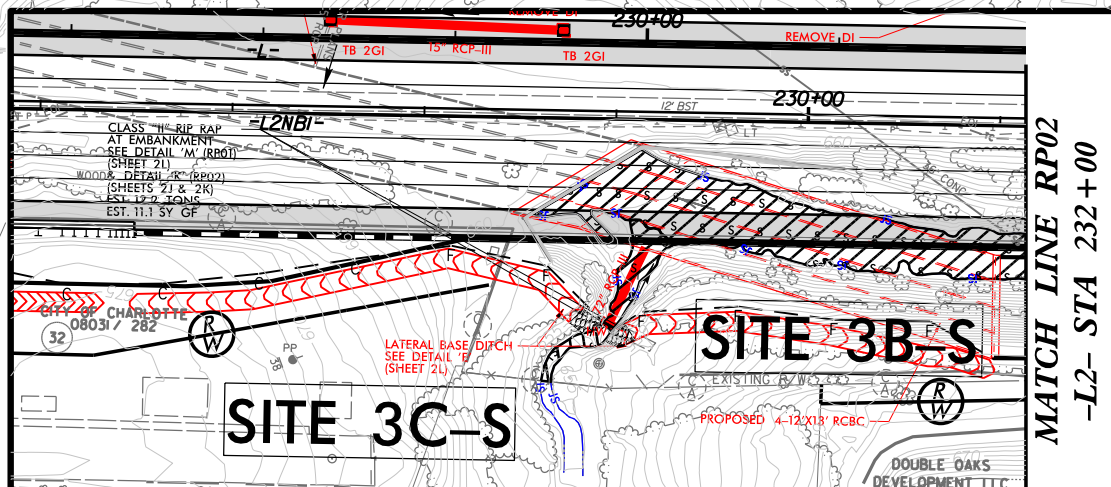
NOTE:
-EXISTING GEOMETRY TO BE RETAINED UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE TO BE RETAINED UNLESS OTHERWISE INDICATED.

- NOTES:**
- 1.) FOR -L2SB1- PROFILE SEE SHEET 19.
 - 2.) FOR -L2NB1- PROFILE SEE SHEET 19.
 - 3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2M.

DOUBLE OAKS DEVELOPMENT LLC
22805 / 479

DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
IRWIN CREEK HAS EXISTING RIPRAP BANK STABILIZATION THAT WILL BE RESTORED AS NECESSARY IF DISTURBED BY THE WORK



MATCH LINE RP02
-L2- STA 232+00

LENBURG COUNTY
9276 / 437

\$ TIME \$
\$ DATE \$
\$ FILE \$
\$ PEN \$

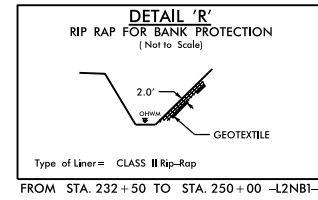
15' DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
IRWIN CREEK HAS EXISTING RIPRAP BANK STABILIZATION THAT WILL BE RESTORED AS NECESSARY IF DISTURBED BY THE WORK

CHARLOTTE MECKLENSBURG BOARD OF EDUCATION
DB 01767 PG 030
DB 12098 PG 568
PB 0003 PG 491

NAD 83/2011

DETAIL 'R'
RIP RAP FOR BANK PROTECTION
(Not to Scale)



Type of Liner = CLASS II Rip-Rap
FROM STA. 232+50 TO STA. 250+00 -L2NBI-

0 50 100

PROJECT REFERENCE NO. SHEET NO.

L-3311C

14

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

sugar creek
construction, LLC

Louis Berger

PERMIT DRAWING
SHEET 17 OF 35

MATCH LINE SHEET 13
-L- STA 246+00.00

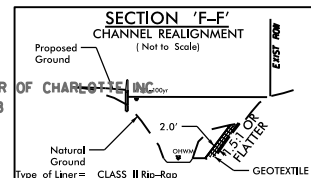
MATCH LINE SHEET 15
-L- STA 260+00.00

SITE 3B-S

NOTE:
-EXISTING GEOMETRY TO BE RETAINED UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE TO BE RETAINED UNLESS OTHERWISE INDICATED.
-DESIGN EXCEPTION FOR SSD 498'
-L2NBI- STA 251+40 TO STA 264+30

NOTES:
1.) FOR -L2SBI- PROFILE SEE SHEET 20.
2.) FOR -L2NBI- PROFILE SEE SHEET 20.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2N.

SECTION 'F-F'
CHANNEL REALIGNMENT
(Not to Scale)



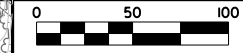
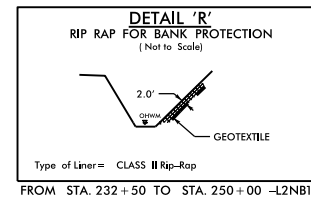
Proposed Ground
Natural Ground
Type of Liner = CLASS II Rip-Rap
GEOTEXTILE

NEW LIFE FELLOWSHIP CENTER
08732 / 128

NEW LIFE FELLOWSHIP CENTER OF CHARLOTTE INC
1023 / 044



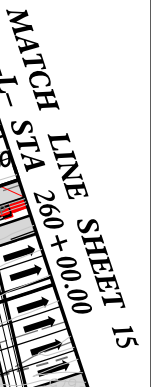
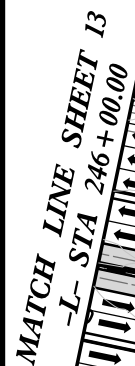
26



sugar creek
construction, LLC



PERMIT DRAWING
SHEET 18 OF 35

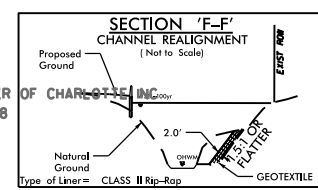


SITE 3B-S

NOTE:
~~-EXISTING GEOMETRY TO BE RETAINED
 UNLESS OTHERWISE INDICATED.
 -SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
 TO BE RETAINED UNLESS OTHERWISE
 INDICATED.
 -DESIGN EXCEPTION FOR SSD 498'
 -L2NB1- STA 251+40 TO STA 264+30~~

NOTES:

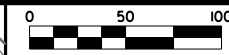
- 1.) FOR -L2SBI- PROFILE SEE SHEET 20.
- 2.) FOR -L2NBI- PROFILE SEE SHEET 20.
- 3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2N.



NEW LIFE FELLOWSHIP CENTER
08732 / 128

NEW LIFE FELLOWSHIP CENTER OF CHARLOTTE INC
11023 / 044

/// DENOTES TEMPORARY
FILL IN WETLAND



PROJECT REFERENCE NO.		SHEET NO.
I-3311C		15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	



sugar creek
construction, LLC



Louis Berger

**PERMIT DRAWING
SHEET 19 OF 35**

SITE 4A-S

MATCH LINE SHEET 14
-L- STA 260+00.00

MATCH LINE SHEET 16
-L- STA 274+00.00

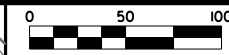
NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.
-DESIGN EXCEPTION FOR SSD 498'
-L2NBI- STA 251+40 TO STA 264+30-

NOTES:
1.) FOR -L2SBI- PROFILE SEE SHEET 21.
2.) FOR -L2NBI- PROFILE SEE SHEET 21.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 20.

\$ TIME \$
\$ DATE \$
\$ FILE \$
\$ SPC \$

CAM DEVELOPMENT LLC
DB 19681 PG 120
PB 0004 PG 579

/// DENOTES TEMPORARY
FILL IN WETLAND



PROJECT REFERENCE NO.		SHEET NO.
I-3311C		15A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	



sugar creek
construction, LLC



Louis Berger

**PERMIT DRAWING
SHEET 20 OF 35**

SITE 4A-S

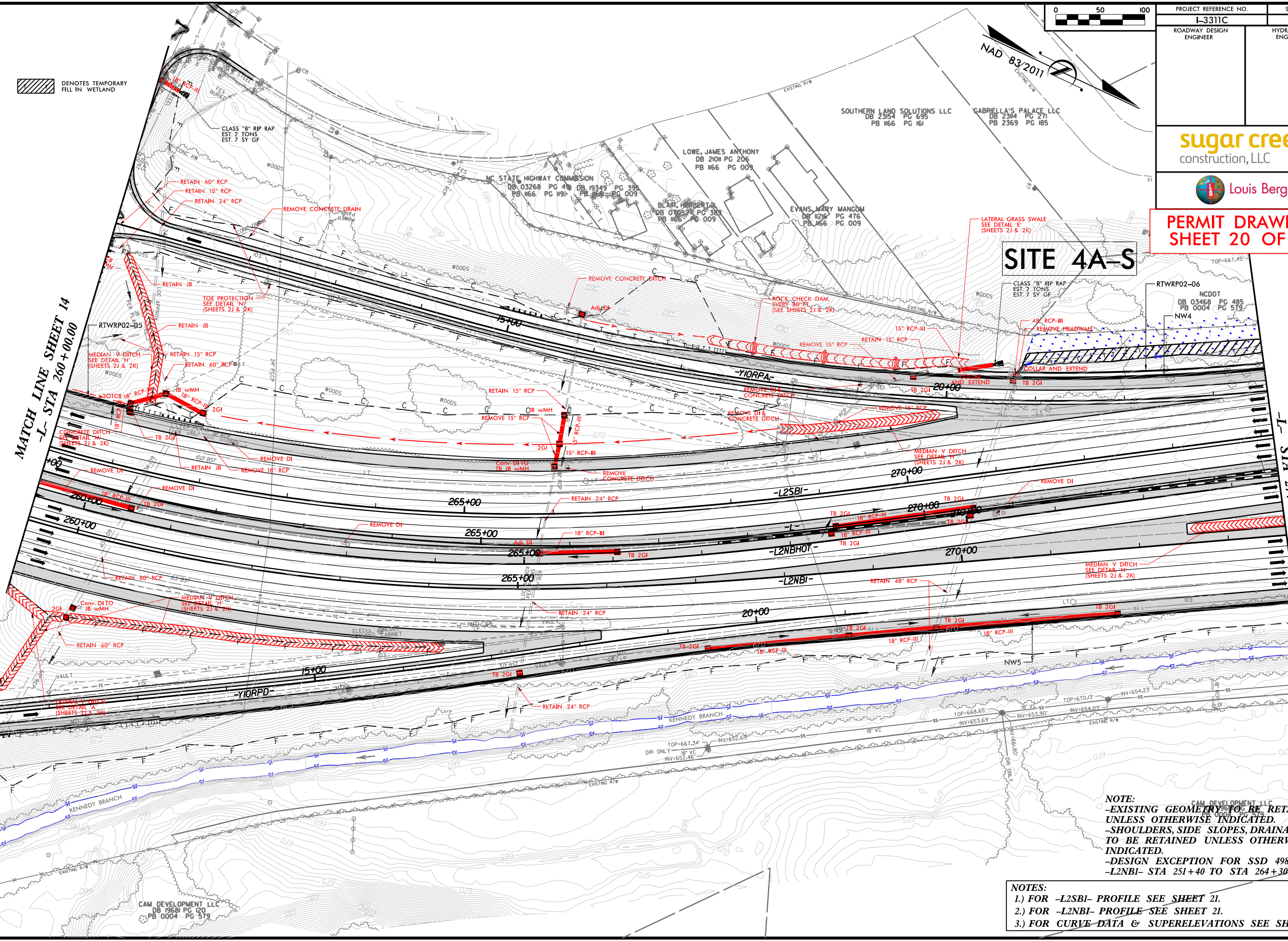
MATCH LINE SHEET 14
-L- STA 260+00.00

MATCH LINE SHEET 16
-L- STA 274+00.00

NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.
-DESIGN EXCEPTION FOR SSD 498'
-L2NBI- STA 251+40 TO STA 264+30-

NOTES:
1.) FOR -L2SBI- PROFILE SEE SHEET 21.
2.) FOR -L2NBI- PROFILE SEE SHEET 21.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 20.

\$ TIME \$
\$ DATE \$
\$ FILE \$
\$ SPC \$



SITE 4A-S

CLASS "B" RIP RAP
EST. 2 TONS
EST. 7 SY GF

RTWRP02-06

NCDOT
DB 03468 PG 485
PB 0004 PG 579

NW4

48" RCP-III
REMOVE HEADWALL

COLLAR AND EXTEND

TB 2GI

REMOVE DI

TB 2GI

Adj. DI

REMO
CONC

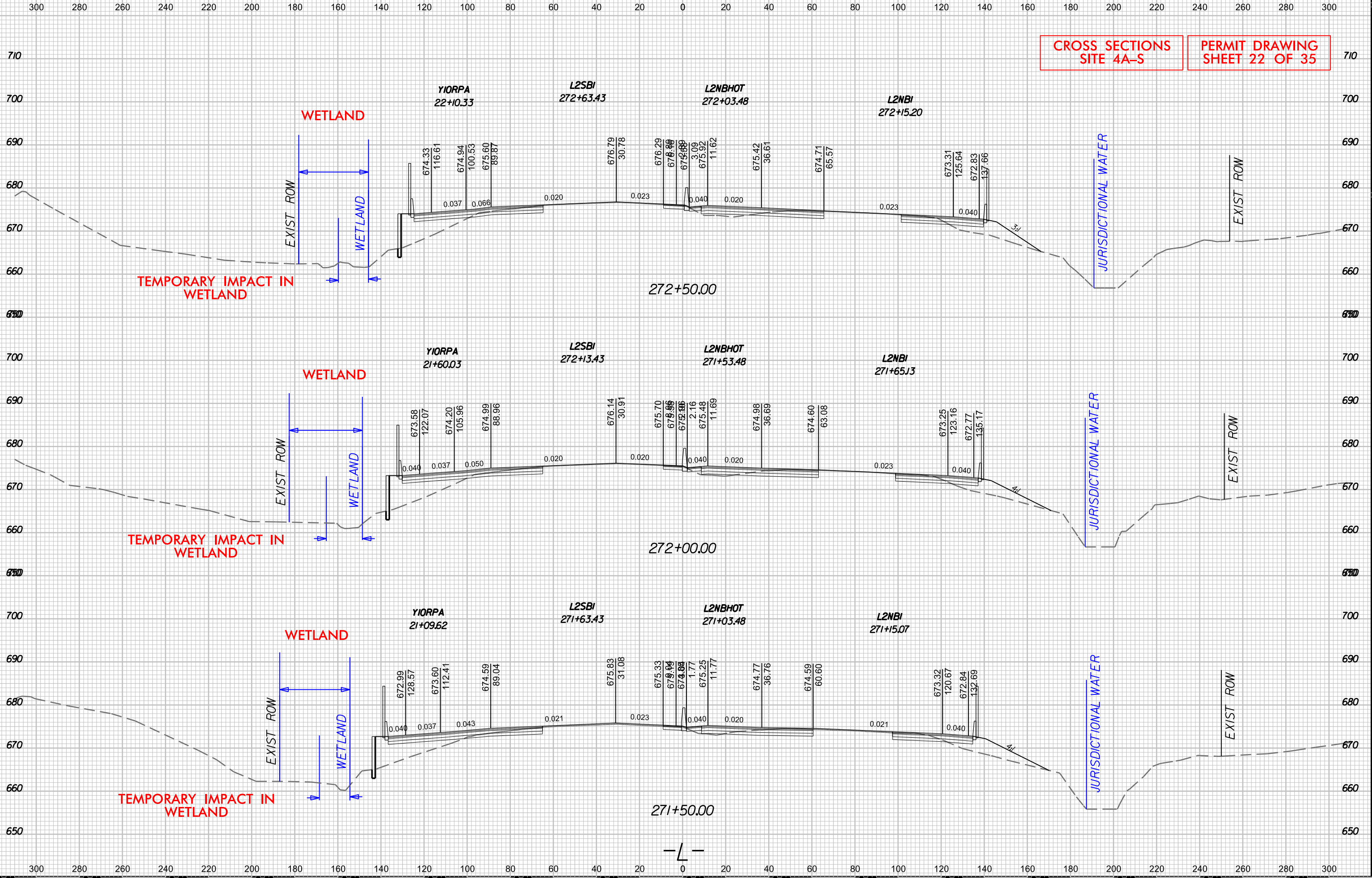
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\$PENL\$

8/23/99



PROJ. REFERENCE NO.	SHEET NO.
I-3311C	X-36

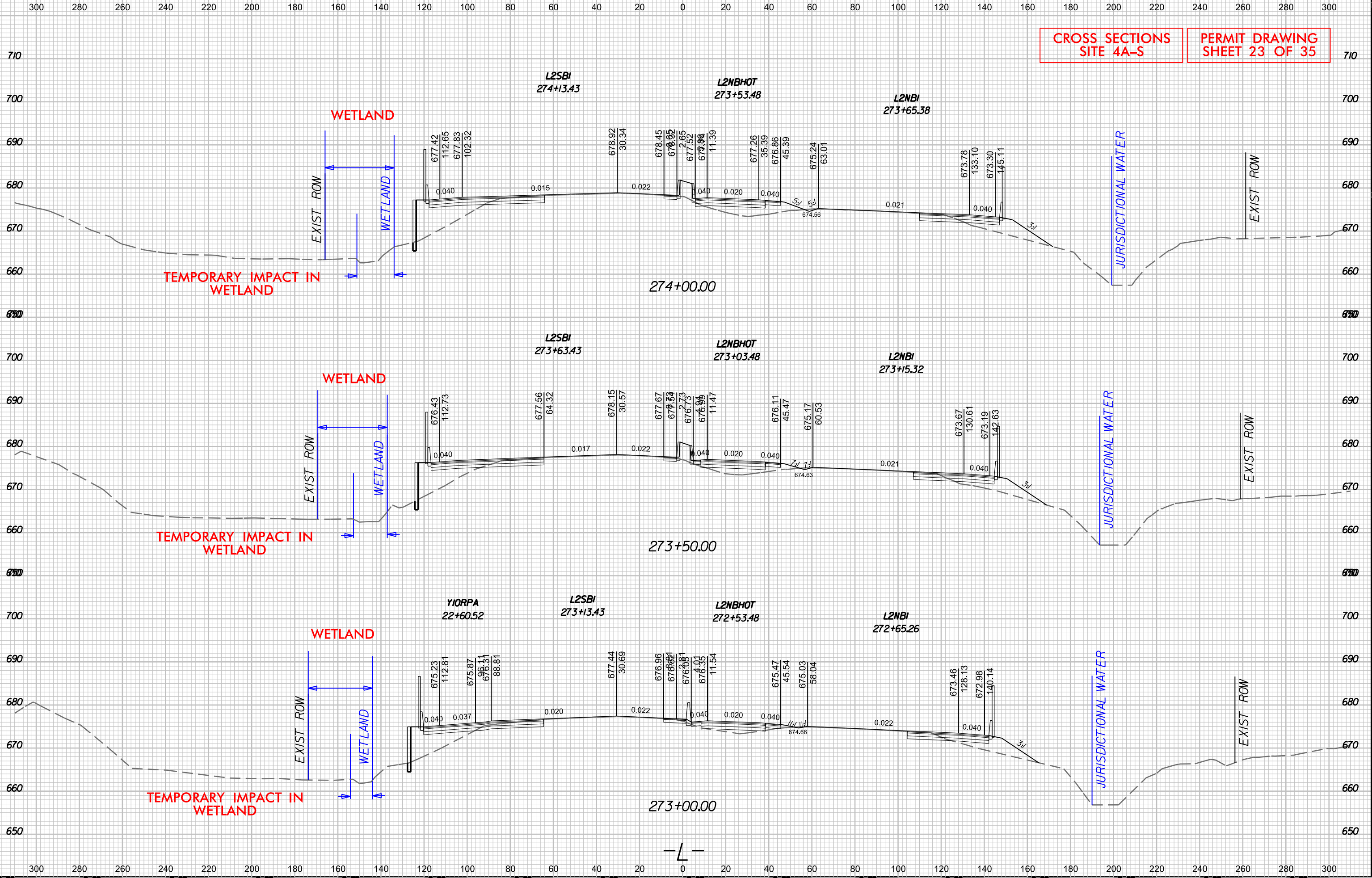


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8/23/99



PROJ. REFERENCE NO.	SHEET NO.
I-33IIC	X-37

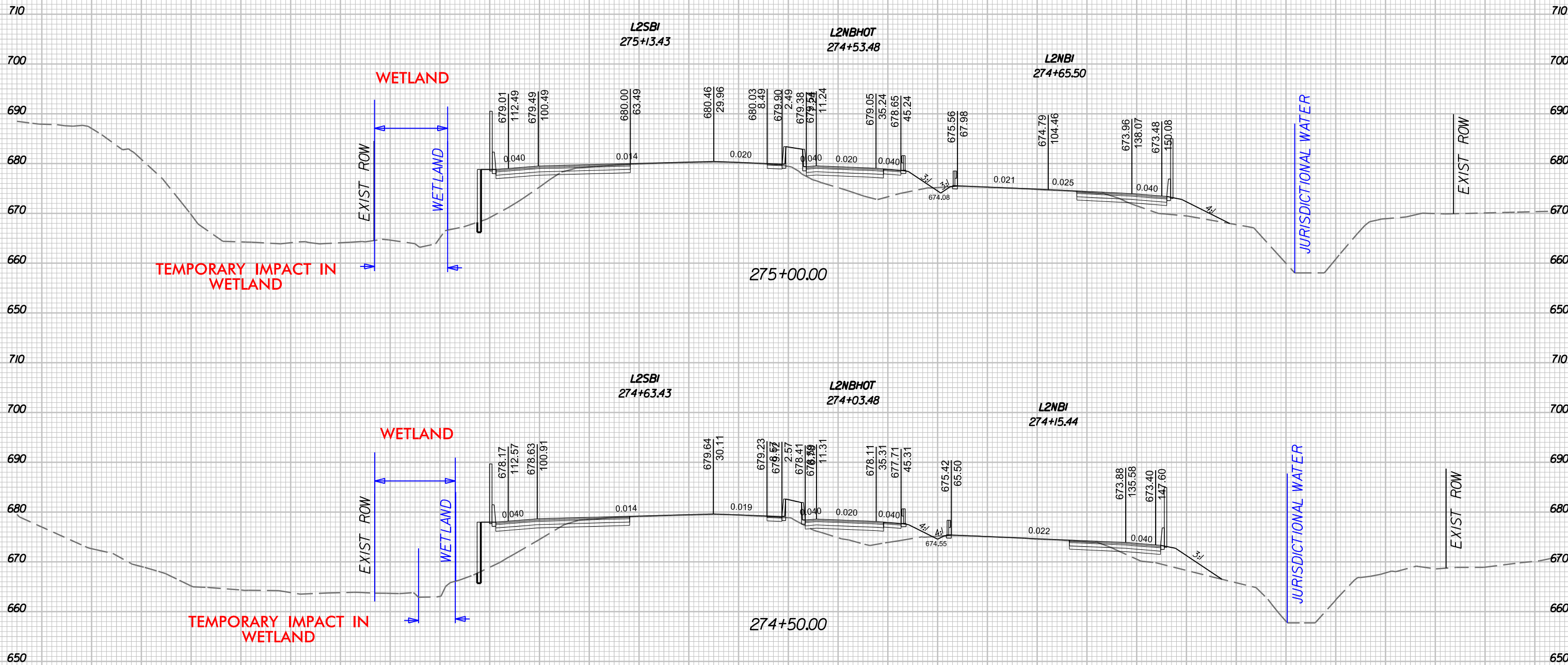


8/23/99

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

CROSS SECTIONS
SITE 4A-S

PERMIT DRAWING
SHEET 24 OF 35



8/23/99



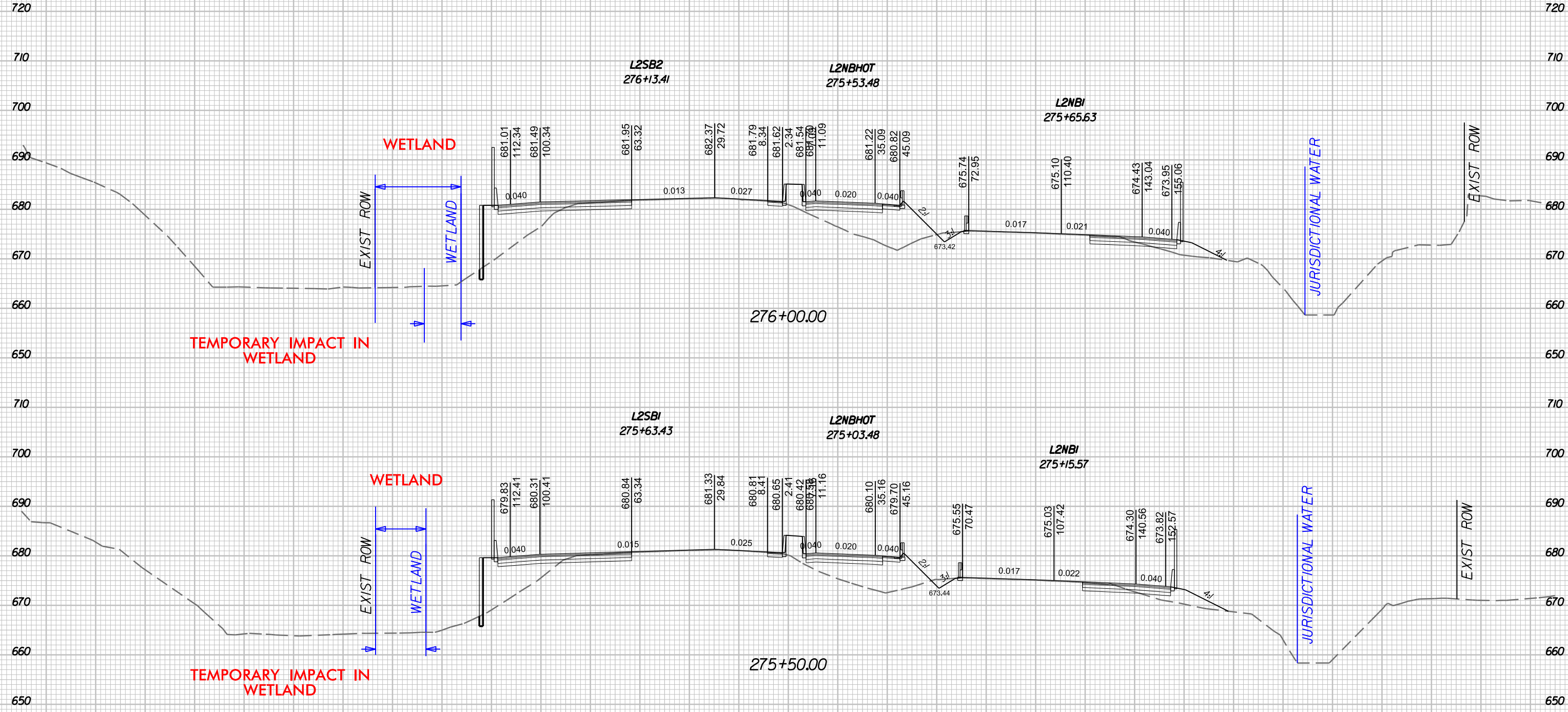
PROJ. REFERENCE NO.
I-3311C

SHEET NO.
X-39

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CROSS SECTIONS
SITE 4A-S

PERMIT DRAWING
SHEET 25 OF 35



22-SEP-2016 10:34
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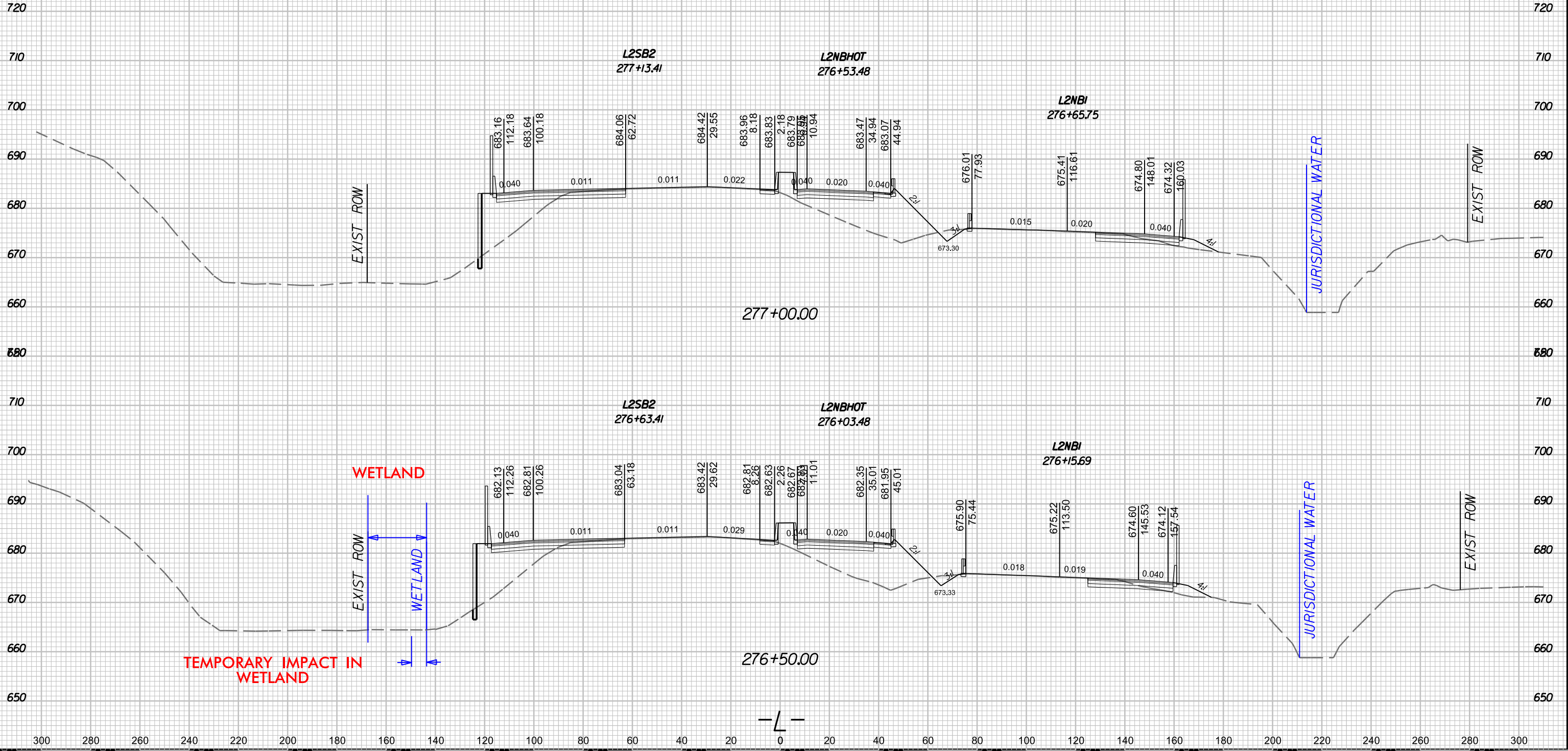
8/23/99

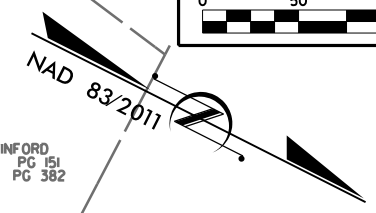
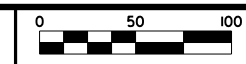


PROJ. REFERENCE NO.	SHEET NO.
I-3311C	X-40

CROSS SECTIONS
SITE 4A-S

PERMIT DRAWING
SHEET 26 OF 35





PROJECT REFERENCE NO. L-3311C		SHEET NO. 16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

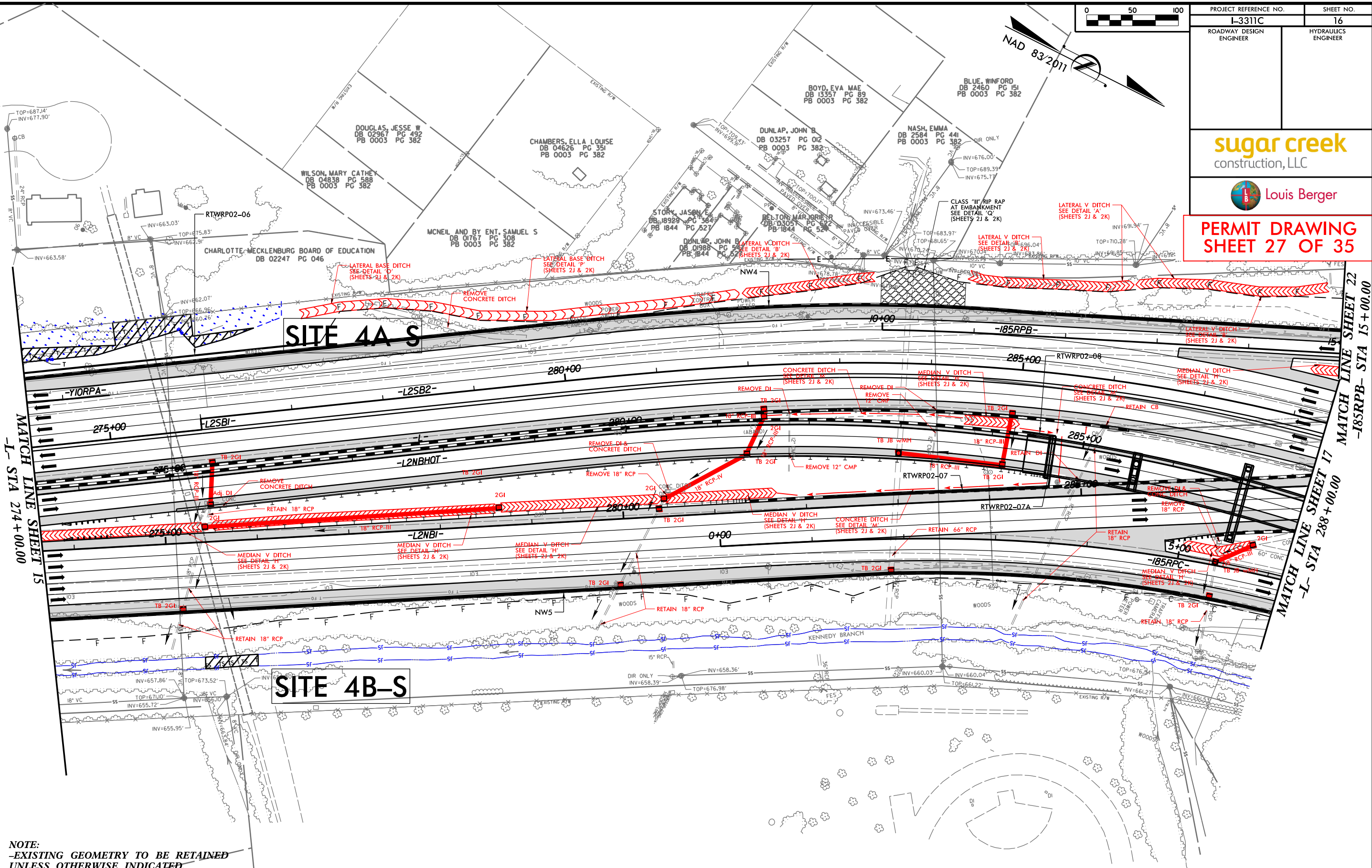


sugar creek
construction, LLC



Louis Berger

**PERMIT DRAWING
SHEET 27 OF 35**

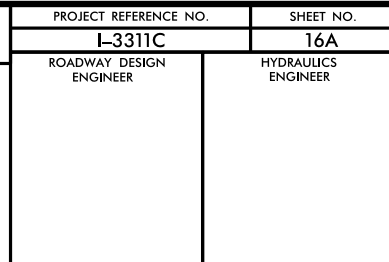


NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.

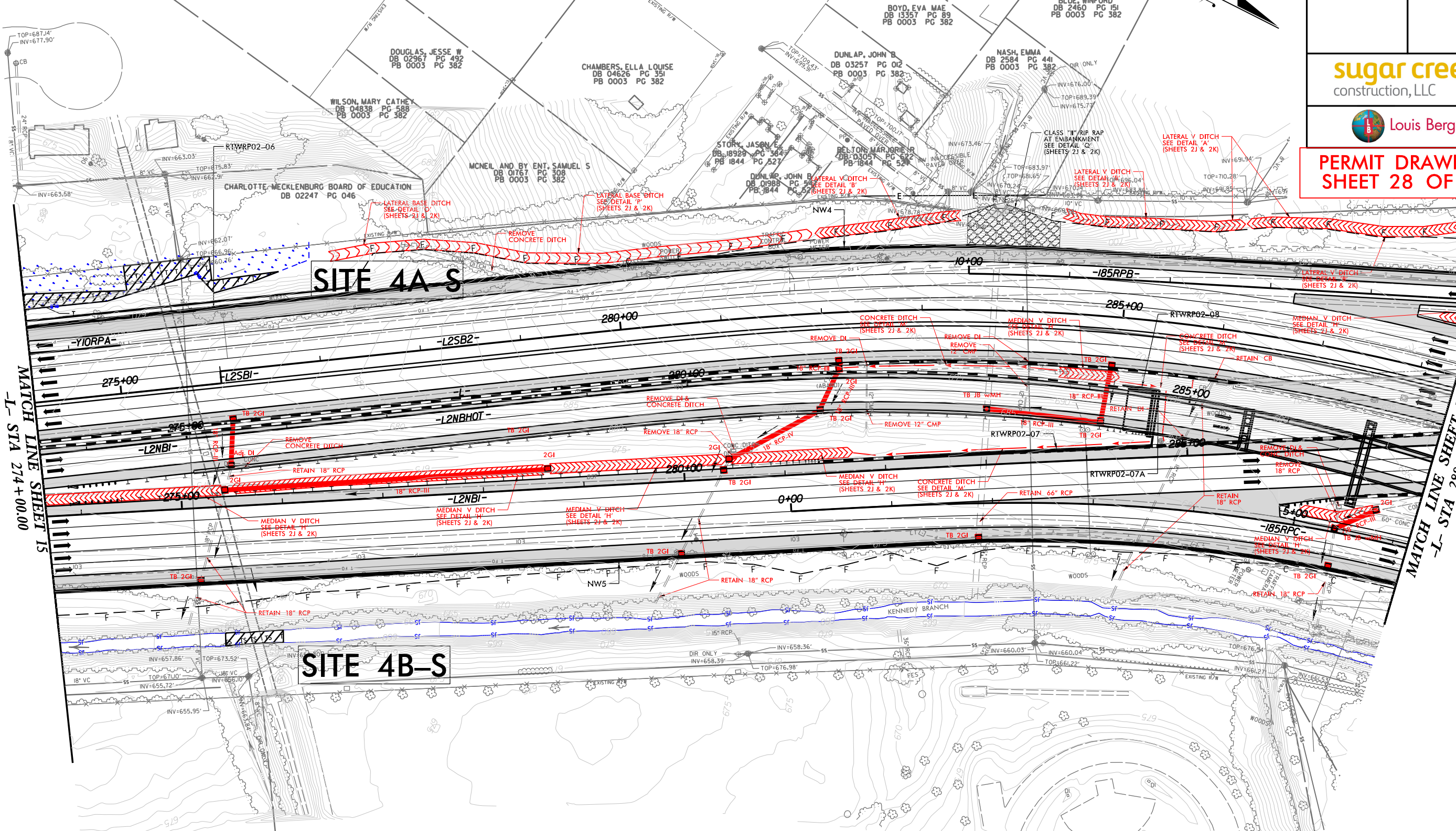
- NOTES:**
- 1.) FOR -L2SB2- PROFILE SEE SHEET 22.
 - 2.) FOR -L2NBI- PROFILE SEE SHEET 22.
 - 3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2P.

CHARLOTTE MECKLENBURG BOARD OF EDUCATION
DB 02247 PG 046
PB 0003 PG 162

- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY FILL IN WETLAND



Louis Berger

PERMIT DRAWING
SHEET 28 OF 35

NOTE:
~~-EXISTING GEOMETRY TO BE RETAINED~~
~~UNLESS OTHERWISE INDICATED.~~
~~-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE~~
~~TO BE RETAINED UNLESS OTHERWISE~~
~~INDICATED.~~

NOTES:

- 1.) FOR -L2SB2- PROFILE SEE SHEET 22.
2.) FOR -L2NBI- PROFILE SEE SHEET 22.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2P.

CHARLOTTE MECKLENBURG BOARD OF EDUCATION
DB 02247 PG 046
PB 0003 PG 162

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

 DENOTES TEMPORARY FILL IN WETLAND

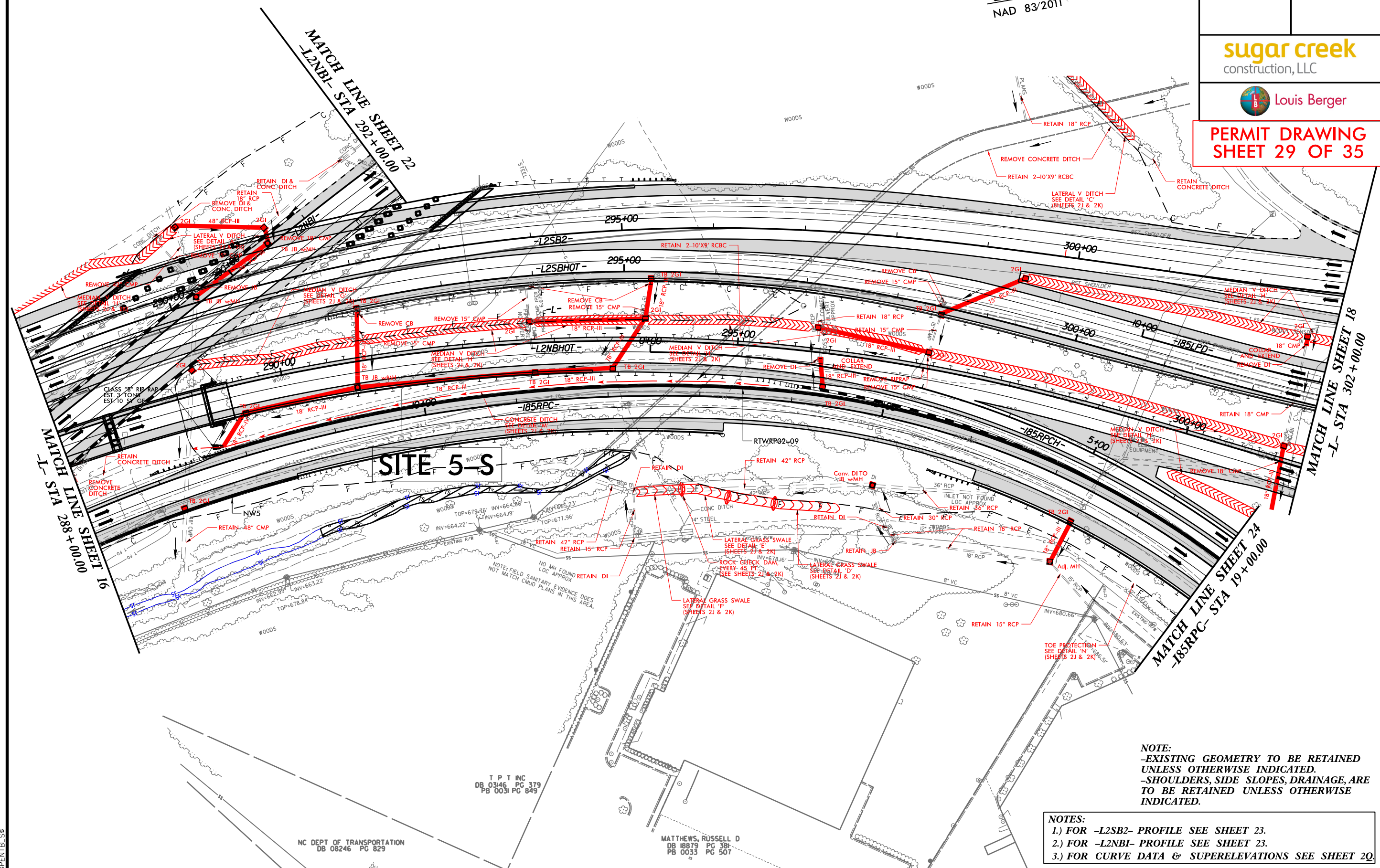
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PERMIT DRAWING
SHEET 29 OF 35



NOTE:
EXISTING RIPRAP ALONG KENNEDY BRANCH
WILL BE RESTORED IF DISTURBED



NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.

NOTES:
 1.) FOR -L2SB2- PROFILE SEE SHEET 23.
 2.) FOR -L2NBI- PROFILE SEE SHEET 23.
 3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 20.

T P T INC
DB 03146 PG 379
PB 0031 PG 849

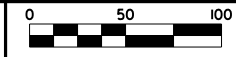
NC DEPT OF TRANSPORTATION
DB 08246 PG 829

MATTHEWS, RUSSELL C
DB 18879 PG 381
PB 0033 PG 507

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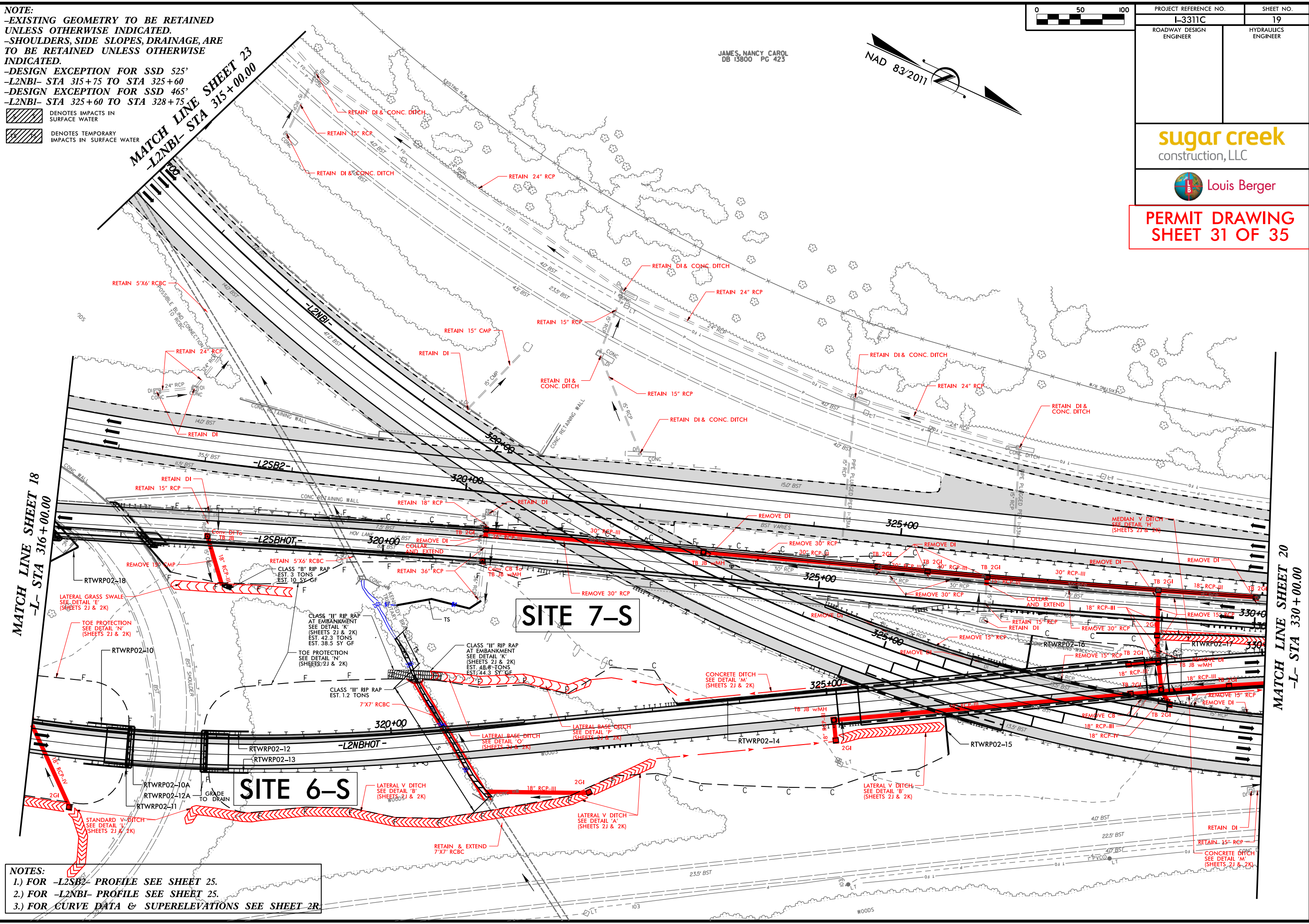
NOTE:
-EXISTING GEOMETRY TO BE RETAINED
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-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.
-DESIGN EXCEPTION FOR SSD 525'
-L2NBI- STA 315+75 TO STA 325+60
-DESIGN EXCEPTION FOR SSD 465'
-L2NBI- STA 325+60 TO STA 328+75

/// DENOTES IMPACTS IN
SURFACE WATER
/// DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



PROJECT REFERENCE NO. I-3311C		SHEET NO. 19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

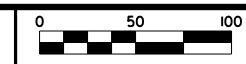
**PERMIT DRAWING
SHEET 31 OF 35**



NOTES:
1.) FOR -L2SB2- PROFILE SEE SHEET 25.
2.) FOR -L2NBI- PROFILE SEE SHEET 25.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2R

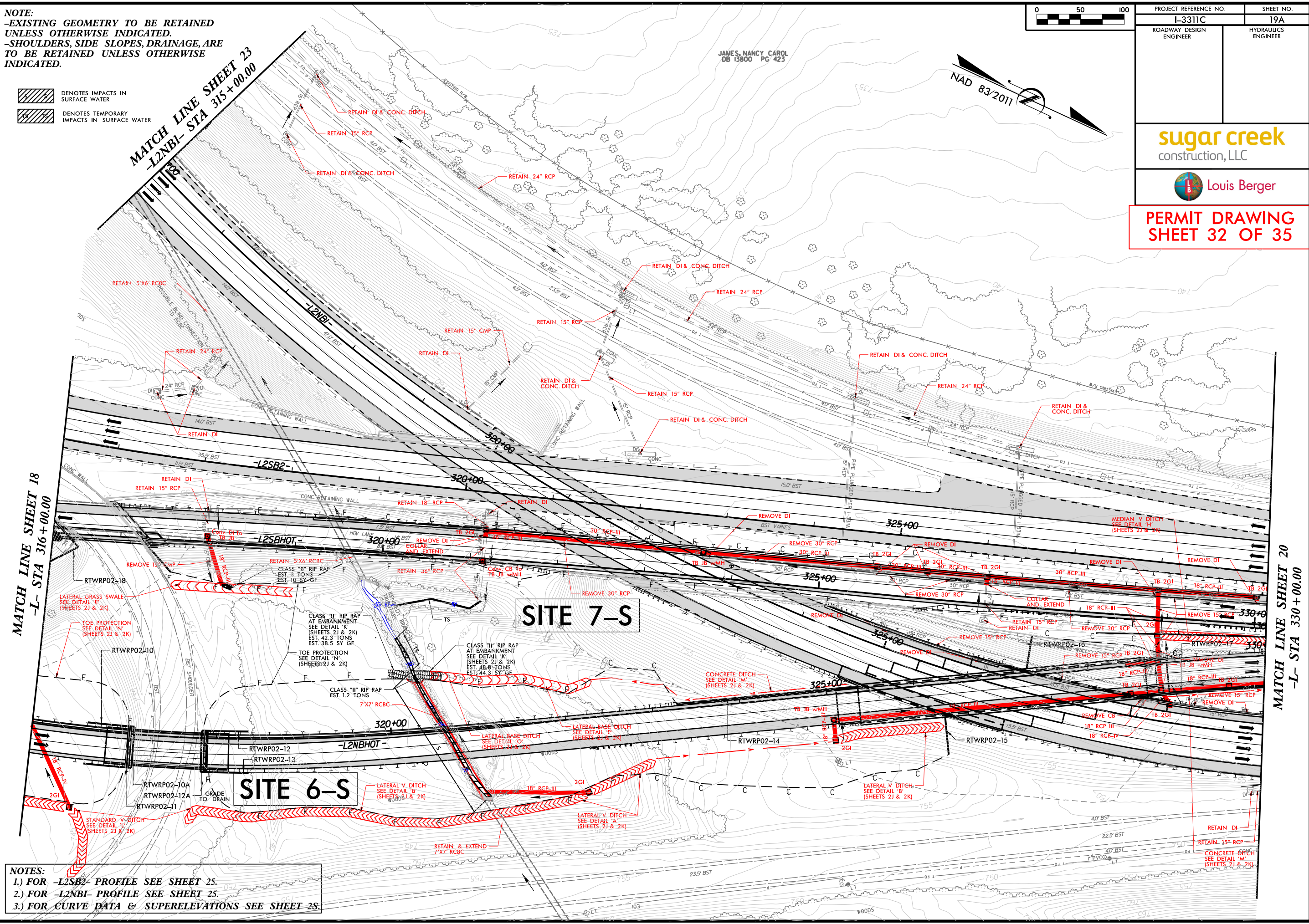
NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.

/// DENOTES IMPACTS IN
SURFACE WATER
/// DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



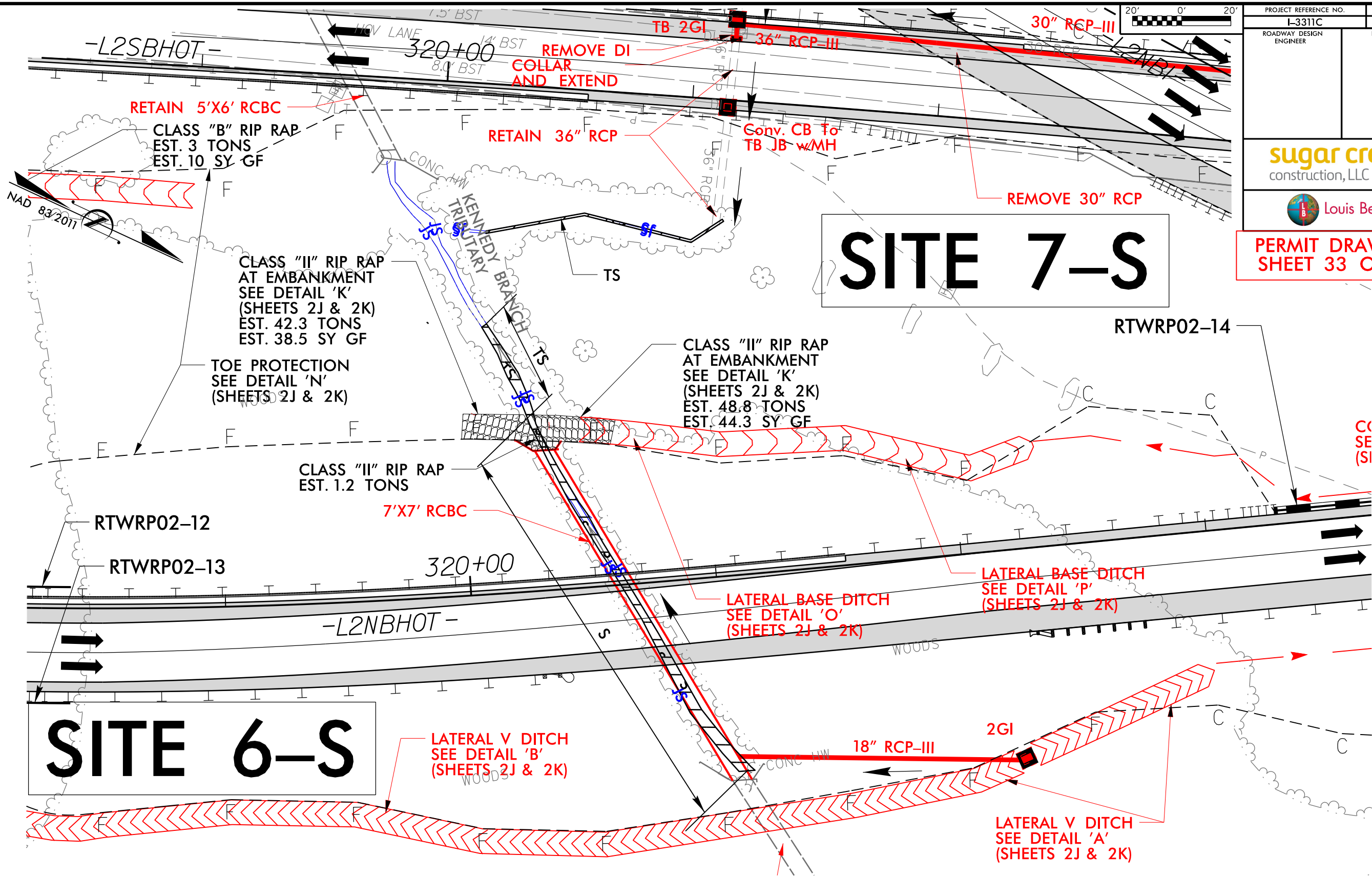
PROJECT REFERENCE NO. I-3311C		SHEET NO. 19A
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER

**PERMIT DRAWING
SHEET 32 OF 35**



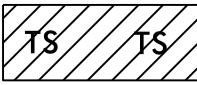
NOTES:
1.) FOR -L2SB2- PROFILE SEE SHEET 25.
2.) FOR -L2NBI- PROFILE SEE SHEET 25.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 25.

\$DATE\$
\$FILE\$
\$PENTBL\$



SITE 7-S

SITE 6-S

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

PROJECT REFERENCE NO. L-3311C		SHEET NO. 19B	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
			
PERMIT DRAWING SHEET 33 OF 35			

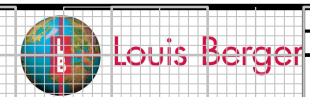
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5/14/99

22 SEP 2016 20:02
175 515-2016-2311C-HYD-PRM-SOUTH-WET_PFL_04.dgn
175 515-2016-2311C-HYD-PRM-SOUTH-WET_PFL_04.dgn

STA 320+62.85 -L2NBHOT-
EXISTING CULVERT
W/PROPOSED EXTENSION
1@ 7'X7' RCBC
G.P.EL=753.07'
SKEW=116°17'09"

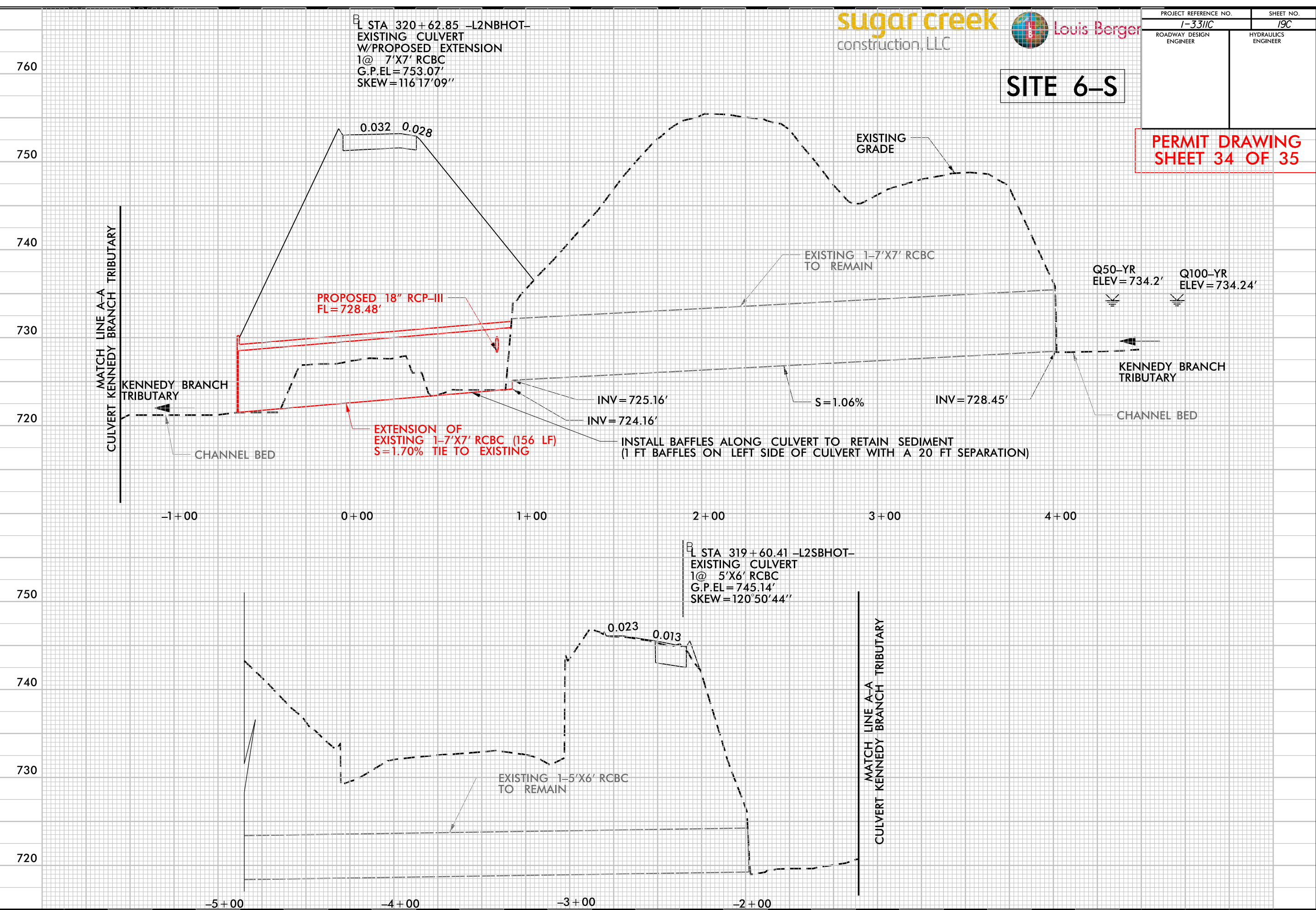
sugar creek
construction, LLC



SITE 6-S

PROJECT REFERENCE NO.	SHEET NO.
1-3311C	19C
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 34 OF 35



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-S	155+10 - 157+30 LT	FILL / CHANNEL RELOCATION						0.05		225		
		TEMP. FILL / ACCESS							0.01		50	
1A-S	171+00 RT	TEMP. FILL / ACCESS							< 0.01		19	
2-S	207+50 - 210+60 LT	TEMP. FILL / ACCESS							0.15		270	
3A-S	219+00 - 221+00 LT	TEMP. FILL / ACCESS							0.15		217	
3B-S	228+50 - 231+00 RT	4-12'x13' RCBC						0.15		234		
	231+00 - 238+20 RT	CHANNEL REALIGN. / STABILIZ						0.35		720		
	238+20 - 250+00 RT	CHANNEL STABILIZATION							0.60		1180	
3C-S	229+10 - 229+50 RT	72" RCP						0.01	< 0.01	45	45	
4A-S	271+20 - 276+70 LT	TEMP. FILL / ACCESS		0.17								
4B-S	275+50 - 276+10 RT	TEMP. FILL / ACCESS							0.02		57	
5-S	290+00 - 293+80 RT	TEMP. FILL / ACCESS							0.08		350	
6-S	320+40 - 321+30 RT	7' X 7' RCBC						0.01	< 0.01	166	40	
		BANK STABILIZATION								10		
7-S	320+20 - 321+15 LT	TEMP. FILL / ACCESS							< 0.01		100	
TOTALS*:				0.17				0.57	1.02	1400	2328	0
*Rounded totals are sum of actual impacts NOTES:												
										NC DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS 09-22-2016 MECKLENBURG I-3311C South Section		
Revised 2013 10 24										SHEET	35	OF 35

CONTRACT: C203406

See Sheet 1-B For Conventional Symbols

NAD 83 7/2011

NOTE: NO OFFSITE DETOUR IN THIS PROJECT

END
REMAINDER PACKAGE 2

Cindy Ln

77

85

85

Lasalle St

16

Oaklawn Ave

77

BEGIN
REMAINDER PACKAGE 2

VICINITY MAP SHOWING LOCATION
OF STATE PROJECT I-77 HOTLANES

NAD 83 /2011

END REMAINDER PACKAGE 1
BEGIN REMAINDER PACKAGE 2
 -L2SB1- POC STA. 230+00.00
 -L2NB1- POC STA. 230+00.00

SSD 498': L2NB1 STA 251+40 TO STA 264+30
SSD 525': L2NB1 STA 315+75 TO STA 325+60
SSD 465': L2NB1 STA 325+60 TO STA 328+75
GORE 4': I85LPD STA 15+55
GORE 4': I85LPD STA 20+25
7' INSIDE SHOULDER: I-85 UNDER BRIDGES

**CLEARING ON THIS PROJECT SHALL BE PERFORMED
TO THE LIMITS ESTABLISHED BY METHOD II**

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

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"

LENGTH ROADWAY TIP PROJECT I-33IIC	= 1.70 MI
LENGTH STRUCTURES TIP PROJECT I-33IIC	= 0.56 MI
TOTAL LENGTH OF TIP PROJECT I-33IIC	= 2.26 MI
* NOTE: PROJECT LENGTH BASED ON SOUTHBOUND LANES	

RIGHT OF WAY DATE:
APRIL 11, 2014

LETTING DATE:
APRIL 11, 2014

DEAN HATFIELD, P.E.
PROJECT ENGINEER

R. D. ODELL, P.E.
PROJECT DESIGN ENGINEER

P.E.

SIGNATURE: _____

**ROADWAY DESIGN
ENGINEER**

SIGNATURE: _____ *P.E.*



P.E.

STATE HIGHWAY DESIGN ENGINEER

08/22/2016 12:20:52
-33IIC_RDY_RP02-TSH.dgn
77_Halfsize_RDY.tbi

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS
CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
Property Corner	
Property Monument	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
Known Contamination Area: Soil	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
Contaminated Site: Known or Potential	

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	
Sign	
Well	
Small Mine	
Foundation	
Area Outline	
Cemetery	
Building	
School	
Church	
Dam	

HYDROLOGY:

Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY:

Baseline Control Point	
Existing Right of Way Marker	
Existing Right of Way Line	
Proposed Right of Way Line	
Proposed Right of Way Line with Iron Pin and Cap Marker	
Proposed Right of Way Line with Concrete or Granite RW Marker	
Proposed Control of Access Line with Concrete C/A Marker	
Existing Control of Access	
Proposed Control of Access	
Existing Easement Line	
Proposed Temporary Construction Easement	
Proposed Temporary Drainage Easement	
Proposed Permanent Drainage Easement	
Proposed Permanent Drainage / Utility Easement	
Proposed Permanent Utility Easement	
Proposed Temporary Utility Easement	
Proposed Aerial Utility Easement	
Proposed Permanent Easement with Iron Pin and Cap Marker	

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	

Equality Symbol

Pavement Removal

VEGETATION:

Single Tree	
Single Shrub	
Hedge	
Woods Line	

Orchard	
Vineyard	

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

UTILITIES:

POWER:	
Existing Power Pole	
Proposed Power Pole	
Existing Joint Use Pole	
Proposed Joint Use Pole	
Power Manhole	
Power Line Tower	
Power Transformer	
U/G Power Cable Hand Hole	
H-Frame Pole	
U/G Power Line LOS B (S.U.E.*)	
U/G Power Line LOS C (S.U.E.*)	
U/G Power Line LOS D (S.U.E.*)	

TELEPHONE:

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Cable LOS B (S.U.E.*)	
U/G Telephone Cable LOS C (S.U.E.*)	
U/G Telephone Cable LOS D (S.U.E.*)	
U/G Telephone Conduit LOS B (S.U.E.*)	
U/G Telephone Conduit LOS C (S.U.E.*)	
U/G Telephone Conduit LOS D (S.U.E.*)	
U/G Fiber Optics Cable LOS B (S.U.E.*)	
U/G Fiber Optics Cable LOS C (S.U.E.*)	
U/G Fiber Optics Cable LOS D (S.U.E.*)	

WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line LOS B (S.U.E.*)	
U/G Water Line LOS C (S.U.E.*)	
U/G Water Line LOS D (S.U.E.*)	
Above Ground Water Line	

TV:

TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Cable LOS B (S.U.E.*)	
U/G TV Cable LOS C (S.U.E.*)	
U/G TV Cable LOS D (S.U.E.*)	
U/G Fiber Optic Cable LOS B (S.U.E.*)	
U/G Fiber Optic Cable LOS C (S.U.E.*)	
U/G Fiber Optic Cable LOS D (S.U.E.*)	

GAS:

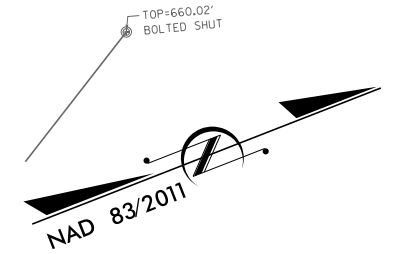
Gas Valve	
Gas Meter	
U/G Gas Line LOS B (S.U.E.*)	
U/G Gas Line LOS C (S.U.E.*)	
U/G Gas Line LOS D (S.U.E.*)	
Above Ground Gas Line	

SANITARY SEWER:

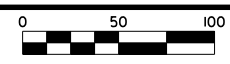
Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Forced Main Line LOS B (S.U.E.*)	
SS Forced Main Line LOS C (S.U.E.*)	
SS Forced Main Line LOS D (S.U.E.*)	

MISCELLANEOUS:

Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line LOS B (S.U.E.*)	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
U/G Test Hole LOS A (S.U.E.*)	
Abandoned According to Utility Records	
End of Information	



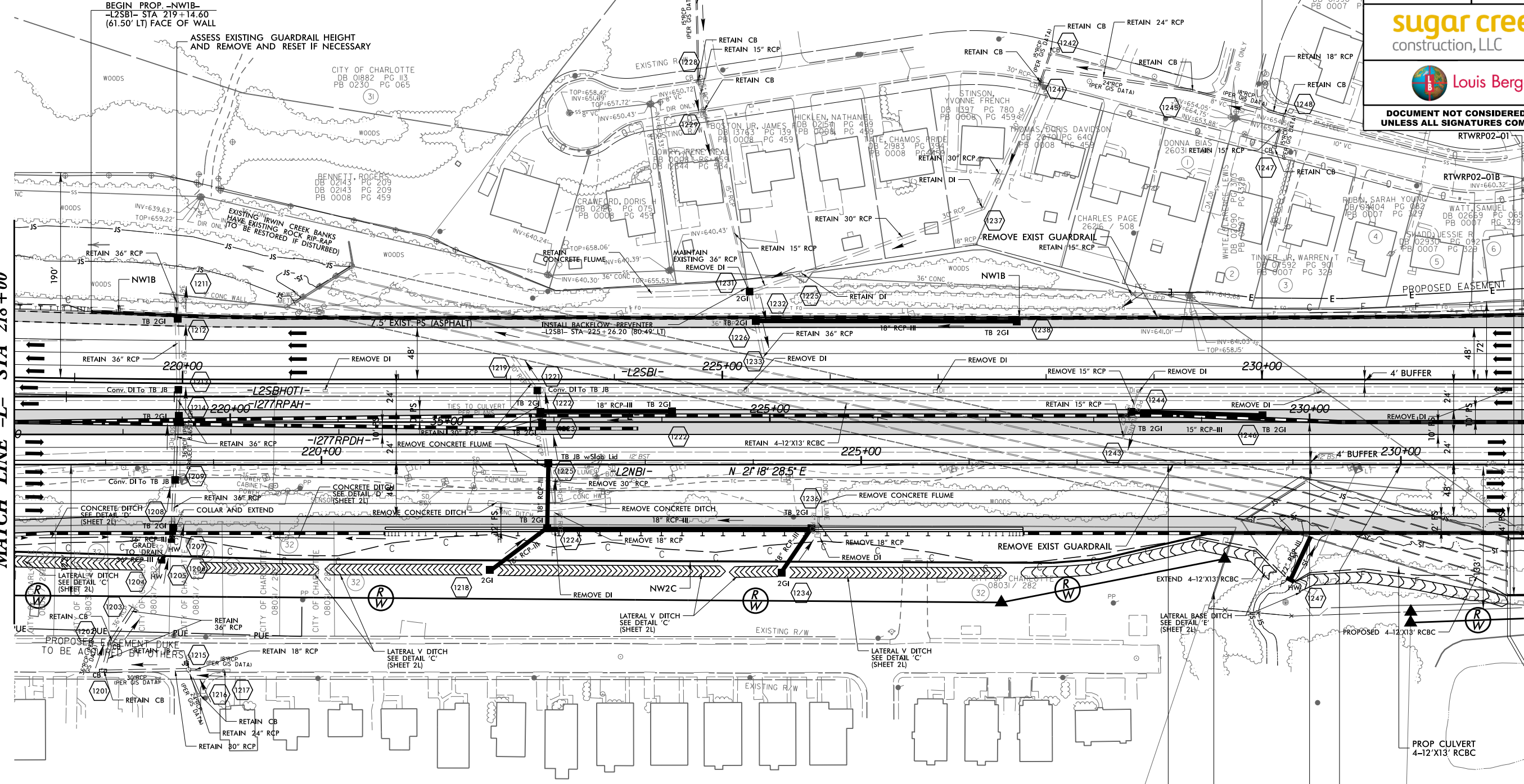
NOTE:
BACKFLOW PREVENTER IS TO BE EASY TO INSTALL AND
VIRTUALLY MAINTENANCE FREE TO THE EXTENT POSSIBLE.
SIMILAR TO WASTOP CHECKMATE OR APPROVED EQUAL
INLINE CHECK VALVES



PROJECT REFERENCE NO.		SHEET NO.
I-3311C		4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
		
 Louis Berger		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

MATCH LINE L- STA 218+00

MATCH LINE SHEET 5
-L- STA 232+00



NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.

NOTES:
1.) FOR -L2SBI- PROFILE SEE SHEET 18.
2.) FOR -L2NB- PROFILE SEE SHEET 18.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2L.

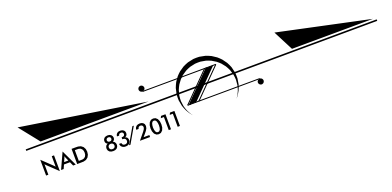
BEGIN REMAINDER PACKAGE 2
-L2NB1- POC STA 230+00.00
N = 552,289.88
E = 1,449,786.13

BEGIN REMAINDER PACKAGE 2
-L2- POC STA 230+00.00
N = 552,225.41
E = 1,449,718.59

BEGIN PROP. -RTWRP01-01B-
-L2NB1- STA 230+90.40 (120.87' RT)

BEGIN PROP. -RTWRP01-01-
-L2NB1- STA 231+01.29 (64.45' RT)

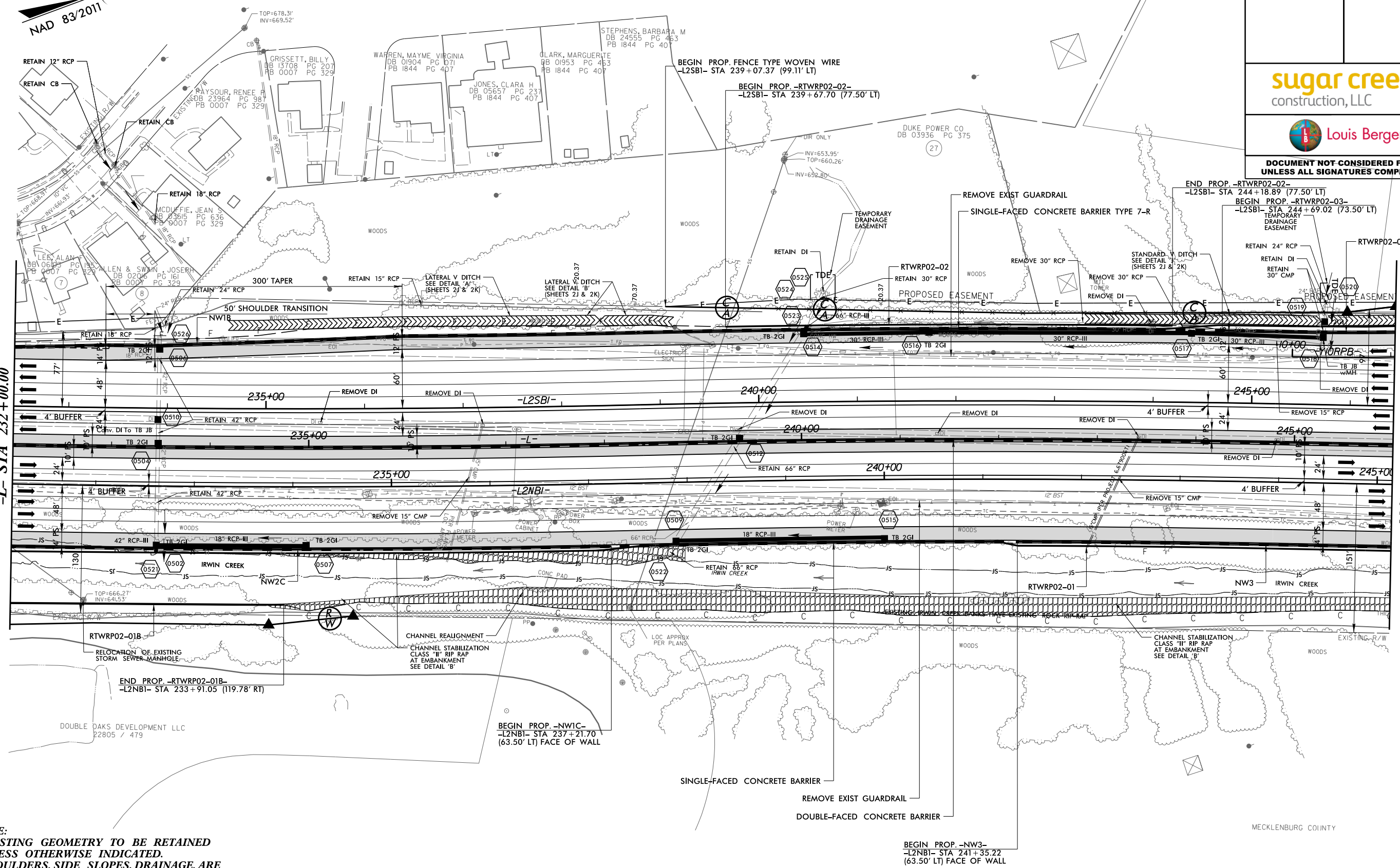
08/19/2016 9:45:30
L-3311C-RTWRP02-POV-P5H-04.dgn
177-Half-size-POV.tb1



PROJECT REFERENCE NO.		SHEET NO.
I-3311C		5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
		
 Louis Berger		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

MATCH LINE SHEET 4
-L- STA 232 + 00.00

MATCH LINE SHEET 6
-L- STA 246 + 00.00



NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.

- NOTES:**
- 1.) FOR -L2SBI- PROFILE SEE SHEET 19.
 - 2.) FOR -L2NBI- PROFILE SEE SHEET 19.
 - 3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2M.

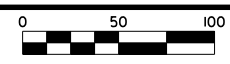
08/19/2016 10:59:56
L-3311C_RP02-ROD_PSH_05.dgn
177-HotSize-ROD.tbl

DOUBLE OAKS DEVELOPMENT LLC
22805 / 479

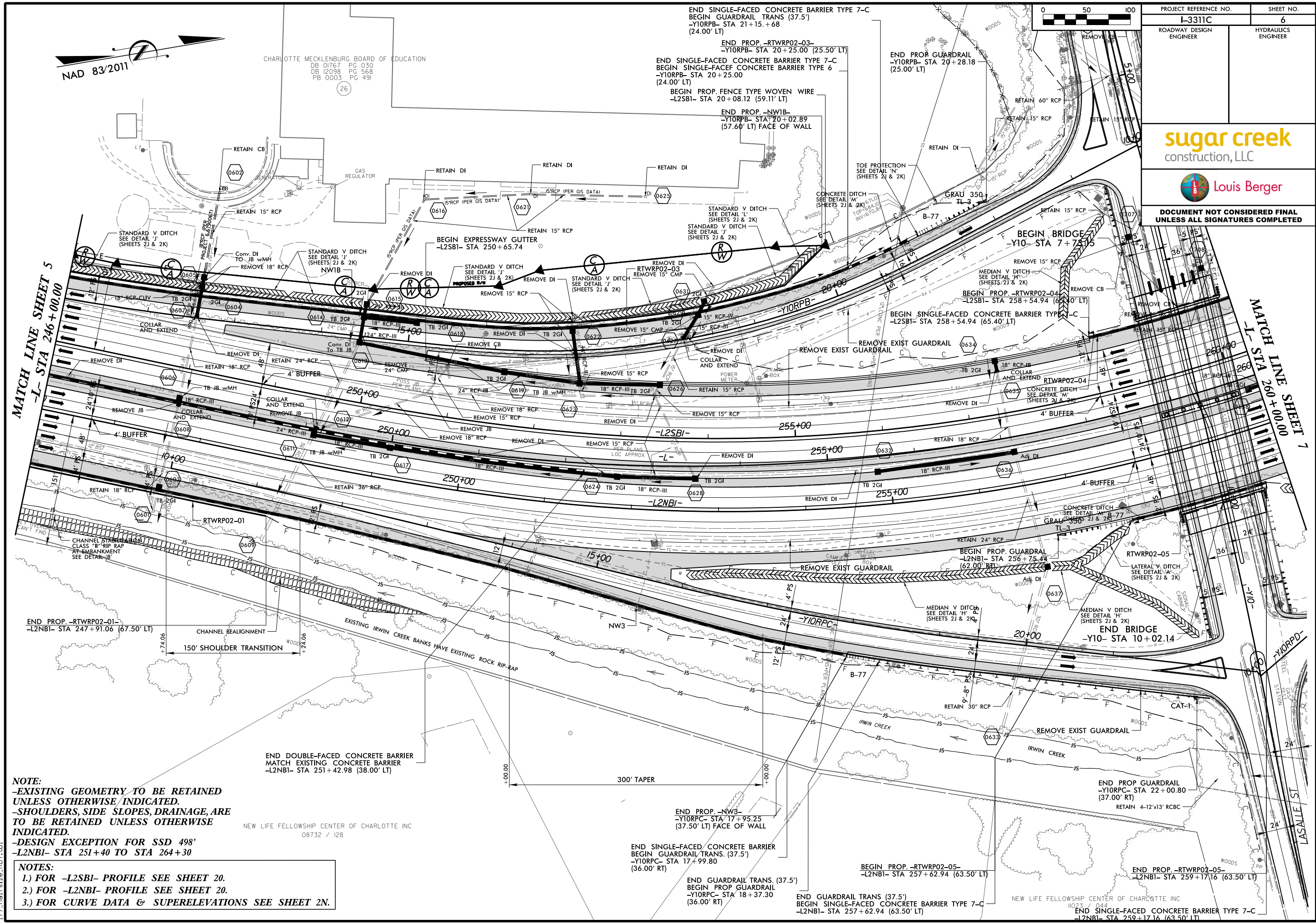
MECKLENBURG COUNTY



CHARLOTTE MECKLENBURG BOARD OF EDUCATION
DB 01761 PG 030
DB 12098 PG 568
PB 0003 PG 491



PROJECT REFERENCE NO.		SHEET NO.	
I-3311C		6	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
  Louis Berger			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



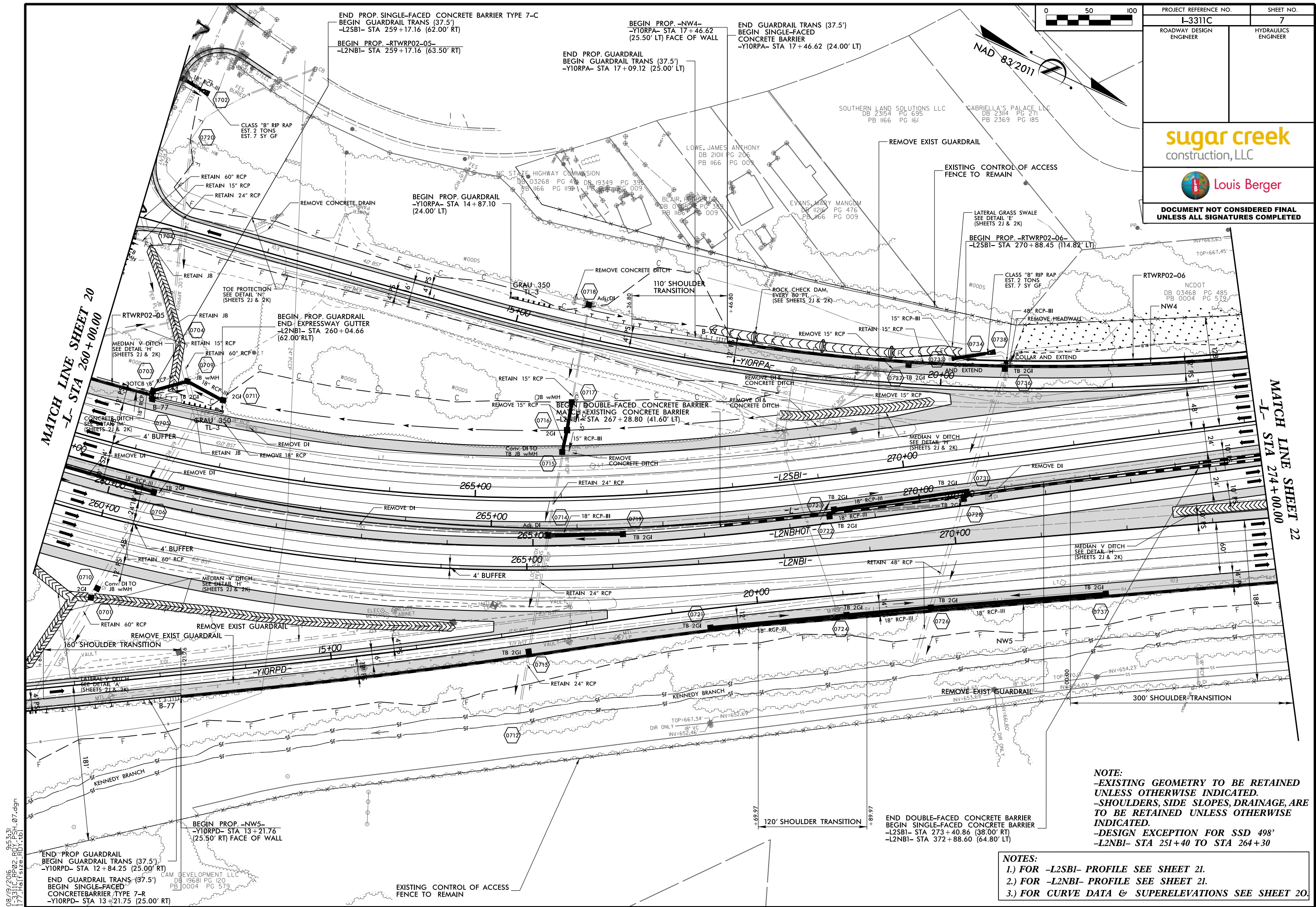
NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.
-DESIGN EXCEPTION FOR SSD 498'
-L2NBI- STA 251+40 TO STA 264+30

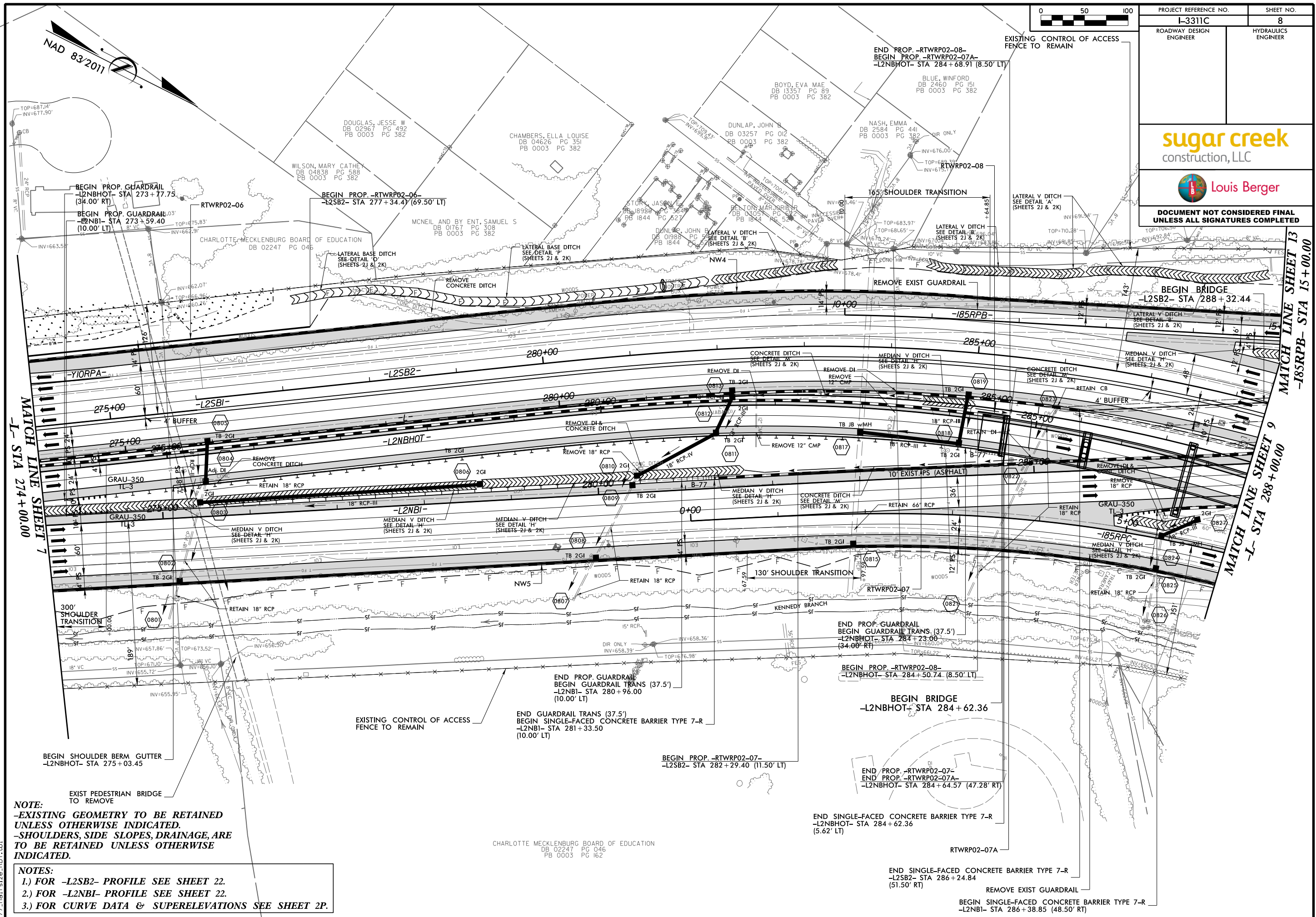
NOTES:
1.) FOR -L2SBI- PROFILE SEE SHEET 20.
2.) FOR -L2NBI- PROFILE SEE SHEET 20.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2N.

08/19/2016 9:50:47
L-3311C-RP02-RDY-PSH-06.dgn
177-Hotfix-size-RDY.tbl

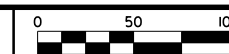
NEW LIFE FELLOWSHIP CENTER OF CHARLOTTE INC
08732 / 128

NEW LIFE FELLOWSHIP CENTER OF CHARLOTTE INC
1003 / 044

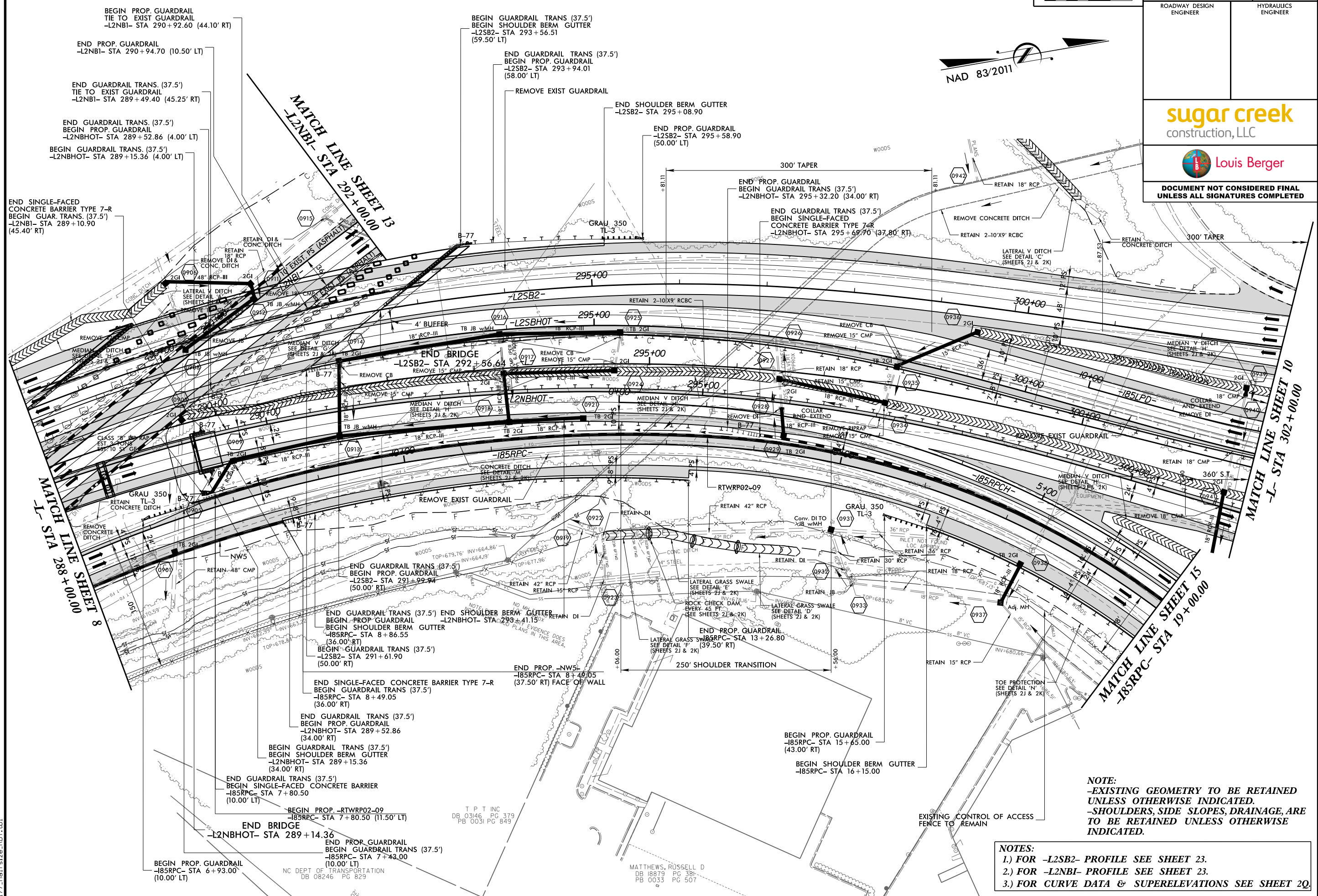




08/19/2016 9:56:12
I-3311C-RP02-RDY_PSH-08.dgn
77 H:\16070-RDY-P



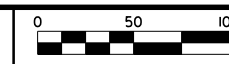
PROJECT REFERENCE NO.		SHEET NO.
I-3311C		9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
		
 Louis Berger		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



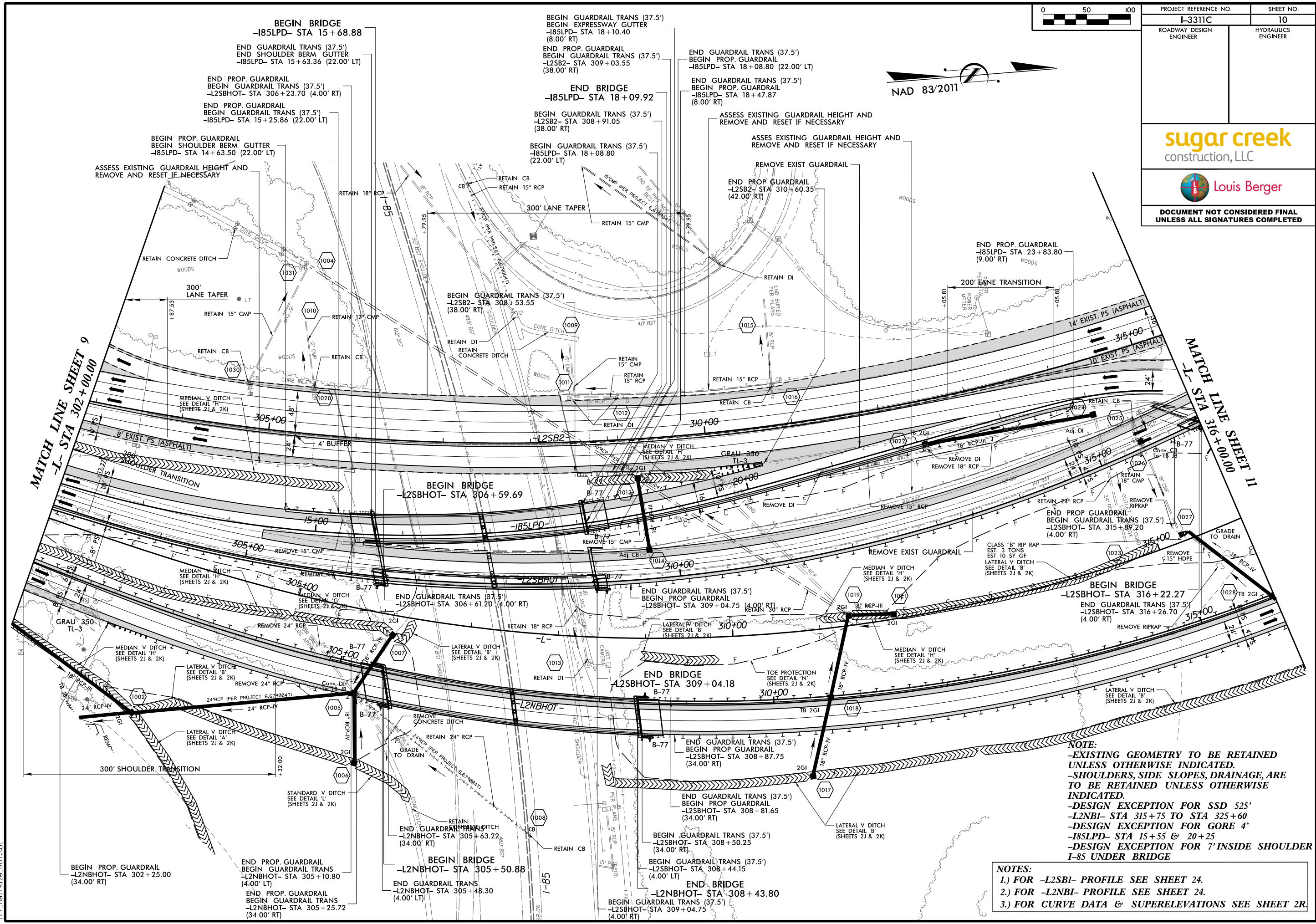
NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.

- NOTES:
- 1.) FOR -L2SB2- PROFILE SEE SHEET 23.
 - 2.) FOR -L2NBI- PROFILE SEE SHEET 23.
 - 3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 20.

08/19/2016 9:58:48
I-3311C-RP02-REV-P5H-09.dgn
177-Half-size-REV.tbl



PROJECT REFERENCE NO.		SHEET NO.
L-3311C		10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
		
 Louis Berger		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



NOTE:
-EXISTING GEOMETRY TO BE RETAINED UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE TO BE RETAINED UNLESS OTHERWISE INDICATED.
-DESIGN EXCEPTION FOR SSD 525'
-L2NBI- STA 315+75 TO STA 325+60
-DESIGN EXCEPTION FOR GORE 4'
-I85LPD- STA 15+55 & 20+25
-DESIGN EXCEPTION FOR 7' INSIDE SHOULDER I-85 UNDER BRIDGE

NOTES:
1.) FOR -L2SBI- PROFILE SEE SHEET 24.
2.) FOR -L2NBI- PROFILE SEE SHEET 24.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2R.

08/19/2016 10:04:33
L-3311C-RP02-RD-PSH-10.dgn
177-Half-size-RD-1b

NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.
-DESIGN EXCEPTION FOR SSD 525'
-L2NBI- STA 315+75 TO STA 325+60
-DESIGN EXCEPTION FOR SSD 465'
-L2NBI- STA 325+60 TO STA 328+75

MATCH LINE SHEET 14
-L2NBI- STA 315+00.00

BEGIN GUARDRAIL TRANS (37.5')
BEGIN SHOULDER BERM GUTTER
-L2SBHOT- STA 317+35.34 (4.00' RT)
END GUARDRAIL TRANS (37.5')
BEGIN PROP. GUARDRAIL
-L2SBHOT- STA 317+29.93 (34.00' RT)
BEGIN GUARDRAIL TRANS (37.5')
-L2SBHOT- STA 316+92.43 (34.00' LT)

MATCH LINE SHEET 10
-L- STA 316+00.00

08/19/2016 10:04:25
I-3311C-RP02-REV. PSH-11.dgn
177-Half-size-REV.tbl

NOTES:
1.) FOR -L2SB2- PROFILE SEE SHEET 25.
2.) FOR -L2NBI- PROFILE SEE SHEET 25.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 25.

EXISTING CONTROL OF ACCESS
FENCE TO REMAIN

END PROP. GUARDRAIL
BEGIN GUARDRAIL TRANS (37.5')
-L2SBHOT- STA 325+54.60 (4.00' RT)

BEGIN EXPRESSWAY GUTTER
END SHOULDER BERM GUTTER
-L2SBHOT- STA 322+32.42
BEGIN GUARDRAIL TRANS (37.5')
-L2NBI- STA 322+14.54 (50.30' RT)

ASSES EXISTING GUARDRAIL HEIGHT AND
REMOVE AND RESET IF NECESSARY
END GUARDRAIL TRANS (37.5')
BEGIN PROP. GUARDRAIL
-L2NBI- STA 322+52.04 (49.60' RT)

END GUARDRAIL TRANS (37.5')
END SHOULDER BERM GUTTER
BEGIN SINGLE-FACED
CONCRETE BARRIER TYPE 7-R
-L2NBI- STA 326+31.83 (22.00' LT)

END PROP. GUARDRAIL
BEGIN GUARDRAIL TRANS (37.5')
-L2NBI- STA 325+94.33 (22.00' LT)
END GUARDRAIL TRANS (37.5')
BEGIN PROP. GUARDRAIL
-L2SBHOT- STA 326+49.60 (4.00' LT)

MATCH EXISTING CONCRETE BARRIER
BEGIN GUARDRAIL TRANS (37.5')
-L2SBHOT- STA 326+12.10 (12.40' RT)

END GUARDRAIL TRANS (37.5')
BEGIN PROP. GUARDRAIL
-L2NBI- STA 324+57.28 (21.34' LT)
BEGIN PROP. GUARDRAIL
TIE TO EXIST GUARDRAIL
-L2SB2- STA 324+21.40 (12.40' RT)

BEGIN GUARDRAIL TRANS (37.5')
BEGIN SHOULDER BERM GUTTER
-L2NBI- STA 324+19.78 (21.34' LT)

RETAIN DI & CONC. DITCH
RETAIN 24" RCP

BEGIN PROP. -RTWRP02-17-
-L2NBHOT- STA 328+65.44 (35.50' RT)

BEGIN GUARDRAIL
TRANS (37.5')
-L2NBHOT- STA 328+65.24 (4.00' LT)

END GUARDRAIL TRANS (37.5')
BEGIN PROP. GUARDRAIL
-L2NBHOT- STA 329+02.74 (4.00' LT)

END PROP GUARDRAIL
-L2SBHOT- STA 329+39.05 (4.00' RT)

END EXPRESSWAY GUTTER
-L2SBHOT- STA 330+03.90

RETAIN DI & CONC. DITCH

RETAIN DI & CONC. DITCH

RETAIN DI & CONC. DITCH

RETAIN DI & CONC. DITCH

RETAIN DI & CONC. DITCH

RETAIN DI & CONC. DITCH

RETAIN DI & CONC. DITCH

RETAIN DI & CONC. DITCH

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RETAIN DI & CONC. DITCH

RETAIN DI & CONC. DITCH

RETAIN DI & CONC. DITCH

RETAIN DI & CONC. DITCH

RETAIN DI & CONC. DITCH

MATCH LINE SHEET 12
-L- STA 330+00.00

END PROP. GUARDRAIL
-L2SBHOT- STA 327+61.50 (4.00' RT)

0 50 100

PROJECT REFERENCE NO.
I-3311C

SHEET NO.
11

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

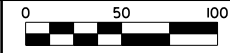
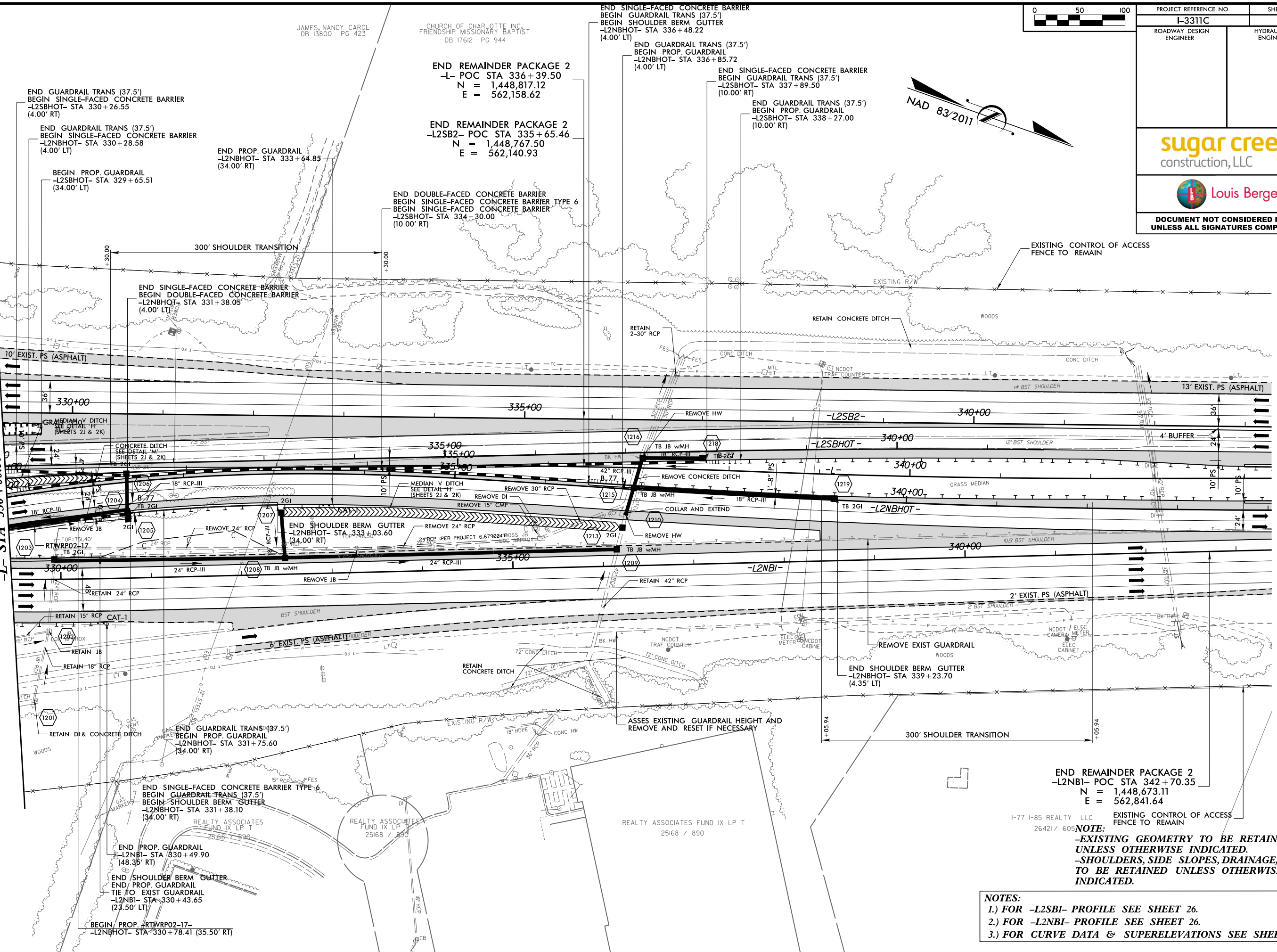
sugar creek
construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

08/19/2016 10:06:59
I-3311C-RP02-RDY-PSH-12.dgn
177-Half-size-RDY.tb1

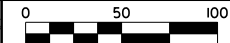
MATCH LINE SHEET 11
-L- STA 330+00.00



PROJECT REFERENCE NO.		SHEET NO.	
I-3311C		12	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
sugar creek construction, LLC			
 Louis Berger			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

NOTES:
1.) FOR -L2SBI- PROFILE SEE SHEET 26.
2.) FOR -L2NBI- PROFILE SEE SHEET 26.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2T.

NAD 83/2011



PROJECT REFERENCE NO. L-3311C SHEET NO. 13

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCH LINE SHEET 8 -I85RPB- STA 15+00.00

MATCH LINE SHEET 9 -L2NBI- STA 292+00.00

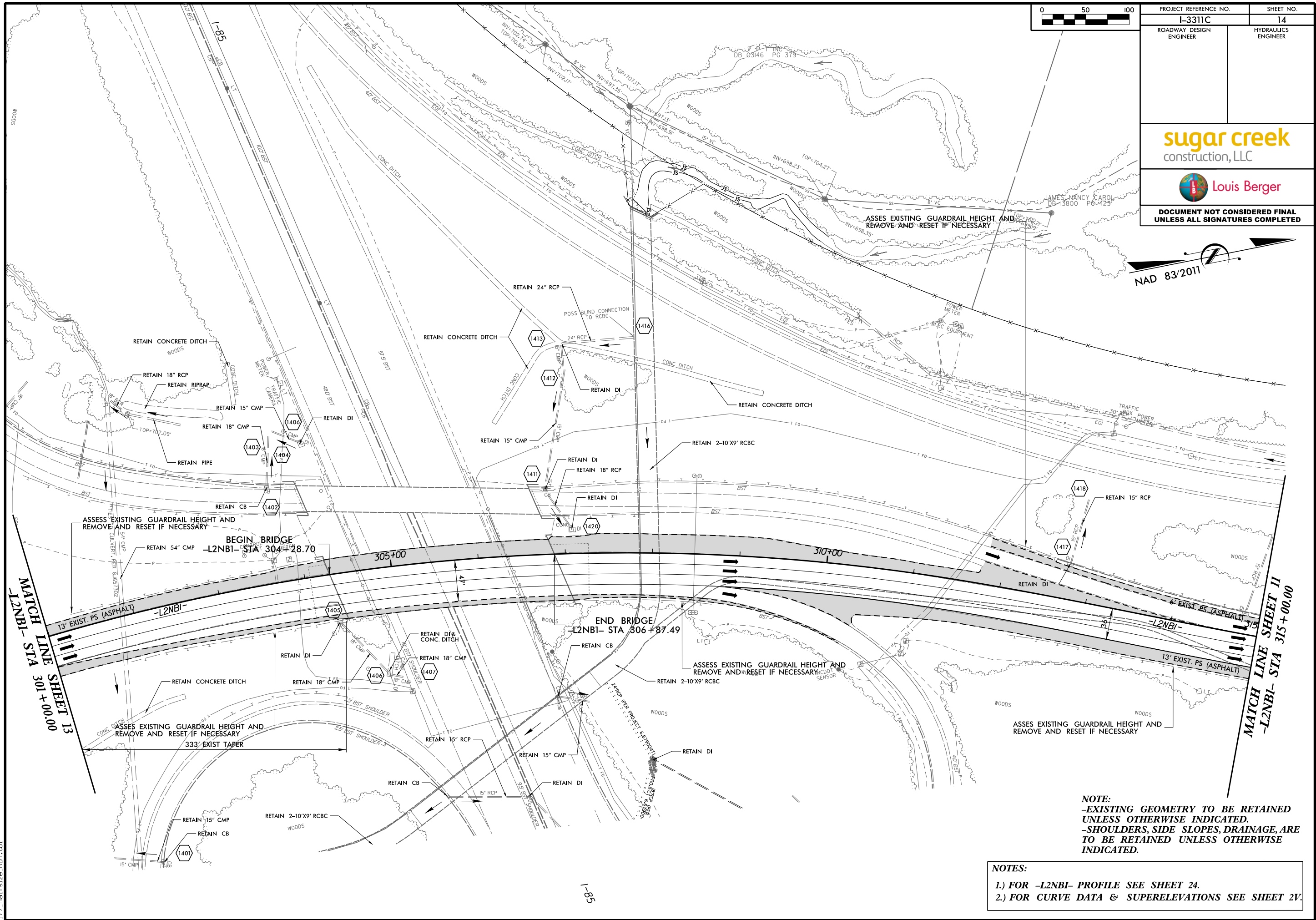
MATCH LINE SHEET 14 -L2NBI- STA 301+00.00

NOTE:
-EXISTING GEOMETRY TO BE RETAINED UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE TO BE RETAINED UNLESS OTHERWISE INDICATED.

NOTES:
1.) FOR -I85RPB- PROFILE SEE SHEET 36.
2.) FOR -L2NBI- PROFILE SEE SHEET 23.
3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2U

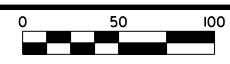
08/19/2016 10:09:45 L-3311C-RP02-RDY-PSH-13.dgn 177-Hotfix-size-RDY.tbl

08/19/2016 10:12:30
I-3311C-RP02-RDY-PSH-14.dgn
177-Half-size-RDY.tb1



NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.

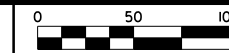
NOTES:
1.) FOR -L2NBI- PROFILE SEE SHEET 24.
2.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2V.



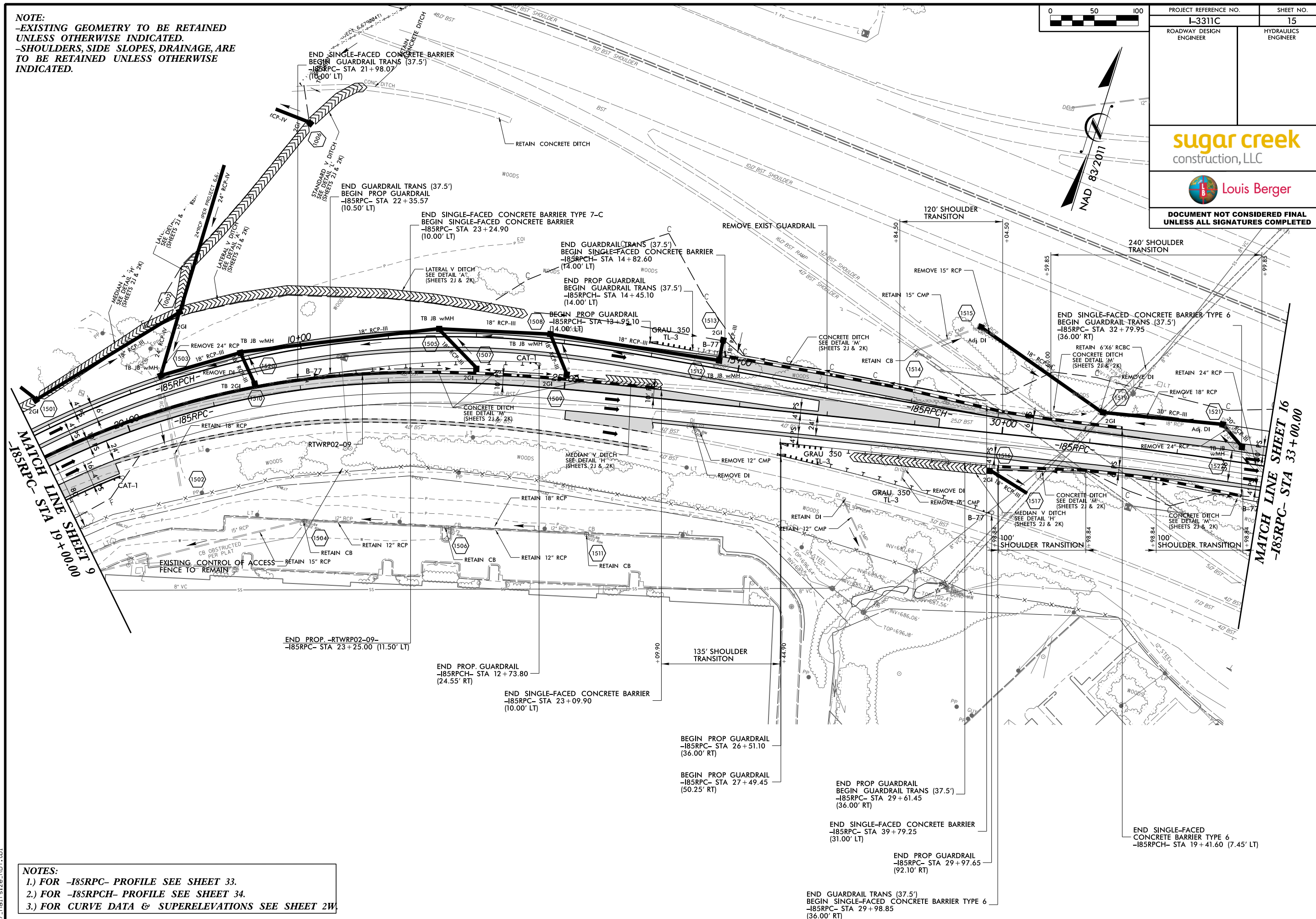
PROJECT REFERENCE NO. I-3311C		SHEET NO. 14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
sugar creek construction, LLC		
Louis Berger		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



NOTE:
-EXISTING GEOMETRY TO BE RETAINED
UNLESS OTHERWISE INDICATED.
-SHOULDERS, SIDE SLOPES, DRAINAGE, ARE
TO BE RETAINED UNLESS OTHERWISE
INDICATED.



PROJECT REFERENCE NO.		SHEET NO.
I-3311C		15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
		
		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



- NOTES:
- 1.) FOR -185RPC- PROFILE SEE SHEET 33.
 - 2.) FOR -185RPCH- PROFILE SEE SHEET 34.
 - 3.) FOR CURVE DATA & SUPERELEVATIONS SEE SHEET 2W.

08/19/2016 10:15:08
I-3311C-RP02-RDY-PSH-15.dgn
177-Hot-size-RDY.tb1

08/19/2016 10:17:42
I-3311C-RP02-RDY-PSH-16.dgn
177-HotSize-RDY.tb1

