Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

March 28, 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 to Individual Section 404 Permit and Section 401 Water Quality Certification for the I-4750AA (North Section)**
I-77 High Occupancy Toll (HOT) Lanes Project
From north of Catawba Avenue to just north of NC 150 (approx. 8.3 miles)
Mecklenburg and Iredell Counties

NCDOT Project Number:
I-4750 AA (North Section); Federal Aid Project No. IMF-077-1(183)299; WBS No. 40099.1.1

Debit $570 from WBS 40099.1.1

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 9, 2015
Individual 404 Permit SAW-2016-00156 issued January 28, 2016.
Individual 401 Water Quality Certification No. WQC004036 issued November 13, 2015 for I-5405, subsequent modification issued February 15, 2016.

Dear Madam:

This letter addresses Section I-4750AA (North 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 North Section is approximately 8.3 miles.

The above referenced September 9, 2015 application presented preliminary impacts for the North Section as **90 linear feet** of permanent impacts to surface waters. Through the continued avoidance and minimization measures at each site, the final design now proposes **50 linear feet** of permanent impacts (**23** of which is bank stabilization) and **298 linear feet** of temporary impacts to surface waters. Please

see the enclosed acceptance letter from the Division of Mitigation Services revised December 4, 2015, Inter-Agency Permit Site Review Meeting Minutes, State Stormwater Management Plan (SMP), final permit drawings for the North Section including an updated summary of total project impacts, and project design plans.

Construction in the North Section is anticipated to begin as soon as this modification is received.

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

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

Wetlands

Design has avoided impacts to Wetlands. There are no proposed permanent or temporary fill in wetland areas.

Surface Waters

Permanent impacts to surface waters total 27 linear feet, and 23 linear feet of bank stabilization, totaling 50 linear feet.

Temporary impacts will be necessary for construction of the various box culverts, pipe installations, and bridge widening. Temporary impacts associated with this project include 298 linear feet (0.13 acre) of temporary fill in surface waters.

Table 1 depicts all of the surface waters impacted by the final project design for the North Section.

Table 1 – North Section Impacts to Waters of the U.S.

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-N	UT to Gambles Creek / SB	-	0.01	-		263	-	-
2-N	UT to Work Creek / SF2	<0.01	<0.01	9	-	15	9	-
3-N	UT to Work Creek / SH1	<0.01	<0.01	18	23	20	18	-
4-N	Lake Norman / SWI and SWJ	<0.01 (non-mitigable bridge columns)	0.12	-	-	-	-	-
TOTAL Stream Impacts		<0.01	0.13	27	23	298	27	0

Summary of Utility Impacts:

As with the current permitted activity, no utility impacts are anticipated.

Permit Impact Sites:
Stationing provided is approximate and is provided for general location purposes only.

Stream Permit Site 1-N: There will be approximately 0.01 acre (263 lf) of temporary stream impacts from Sta. 1127+50 to 1130+10 LT for the construction of a retaining wall and noise barrier.

Stream Permit Site 2-N: There will be approximately 9 lf of permanent stream impacts resulting from the extension of a 36" pipe and associated rock plating between Sta. 1291+62 to 1291+75 RT. Additionally, <0.01 acre (15 lf) of temporary stream impacts will occur for dewatering, construction access, and rock plating.

Stream Permit Site 3-N: To accommodate widening to the east, there will be 18 lf of permanent stream impacts resulting from the extension of a 9'x7' box culvert. Additionally, 23 lf of bank stabilization will be required from Sta. 1303+76 RT to 1304+32 RT. There will be <0.01 acre (20 lf) of temporary stream impacts to accommodate de-watering and construction access for the culvert extension, and the adjacent fill slopes and rock plating.

Surface Water Permit Site 4-N: To facilitate center median widening of the existing bridge structure, there will be approximately 0.12 acre of temporary surface water impacts consisting primarily of stone fill for construction of a temporary work pad. The work pad is necessary to construct the columns needed to support the widened bridge. Existing stone riprap will be restored, where appropriate.

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 North Section:

Avoidance and Minimization

Site 1-N

- Permanent impacts to streams west of the existing roadway and Lake Norman, wetlands and buffers east of the roadway were avoided by centering the roadway alignment and utilizing retaining walls on each side.
- Noise walls were designed on top of the retaining walls to avoid permanent impacts on either side.

Site 2-N:

- Widening to the east avoids wetland impacts to the west.
- Rock plating with steepened slopes has been designed to minimize the impacts.

Site 3-N:

- This site located just north of Site 2-N and is related in avoidance and minimization.
- Like Site 2-N, the site is constrained by Alcove Road on the west side with a much larger wetland and stream beyond the road.

- A retaining wall has been designed, and fill slopes have been steepened and stabilized with rock plating to the maximum extent practicable in order to minimize permanent impacts.
- An existing hazardous spill basin is being retained at this location to maintain detention capability of potential accidental hazardous materials discharges from roadway accidents.

Site 4-N:

- The bridge structure is being maintained/widened to avoid permanent mitigable impacts at this site.
- The temporary work pad will be limited to obstruct not more than 50% of the surface water opening at a time, and will be supported or substituted by barges when feasible.
- Ditch blocks will be installed in the ditches to the south of the site to serve as hazardous spill containment areas, protecting Lake Norman in the event of accidental discharges of hazardous materials from potential roadway accidents.

Revised total project impacts are included in Table 2 and Table 3.

Table 2 – 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	Preliminary	Temp Fill	0.04	-
TOTAL WETLAND MITIGATION LIABILITY				**<0.01**

Table 3 – 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	Preliminary	Perm Fill	TBD (3,662)	3,662	3,662
		Bank Stabilization	TBD		
		Temporary	TBD		
TOTAL STREAM MITIGATION LIABILITY				3,874	3,852

Compensation

Unavoidable impacts of 27 feet will be compensated by the Division of Mitigation Services (DMS, formerly EEP). The DMS acceptance letter (revised December 4, 2015) is attached.

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

Based on guidance from Donna Hood of the Division of Water Resources received via email on January 29, 2016, the proposed North Section impacts are considered to be within the existing transportation facility, and Catawba River Riparian Buffer Rules do not apply.

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,

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

Cc: NCDOT Permit Application Standard Distribution List

Environmental Quality

PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

December 4, 2015

Mr. Richard W. Hancock, P.E.
Manager, Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Hancock:

Subject: EEP Mitigation Acceptance Letter:

I-3311C, Construct HOT Lanes in each direction on I-77 from 5th Street (Exit 10) to North of I-85, Mecklenburg County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory stream and riparian wetland mitigation for the subject project. Based on the information supplied by you on December 4, 2015, the impacts are located in CUs 03050101 and 03050103 of the Catawba River Basin in the Southern Piedmont (SP) Eco-Region, and are as follows:

Stream and Wetlands	River Basin	CU Location	Eco-Region	Stream			Wetlands		
				Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh
Impacts	Catawba	03050101	SP	0	0	275.0	0	0	0
Impacts	Catawba	03050103	SP	0	0	3,662.0	0.50	0	0

*Some of the stream and wetland impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details.

This mitigation acceptance letter replaces the mitigation acceptance letter issued on November 17, 2015. This impact and associated mitigation need were under projected by the NCDOT in the 2015 impact data. DMS will commit to implement sufficient compensatory stream and riparian wetland mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010 **and consistent with the Guidance for Expanded Service Area for Mitigating Impacts within the Lower Catawba River Basin approved by the IRT on September 17, 2015.** If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-707-8420.

Sincerely,

James B. Stanfill
Credit Management Supervisor

cc: Ms. Crystal Amschler, USACE – Asheville Regulatory Field Office
Ms. Amy Chapman, Division of Water Quality, Wetlands/401 Unit

MEETING MINUTES

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

I-4750AA in Iredell County

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

Location: **NCDOT Office (Raleigh)**

TEAM MEMBERS:

Name	Agency	Present	
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:

Name	Affiliation	Present	
Virginia Mabry	NCDOT	☒	
Donna Jackson	NCDOT	☒	
Michael Turchy	NES	☒	
Stephen Morgan	NCDOT, Hydraulics	☒	
David Stark	NCDOT, PPU	☒	
Nat Hunter	NCDOT	☒	By Phone
Carla Dagnino	NCDOT, NES	☒	
Theresa Ellerby	NCDOT, PDEA	☒	
Scott Allen	NCDOT	☒	By Phone
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	☒	By Phone
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	☒	By Phone
Farrell Sikes	LBG - Design	☒	
Judson Dalton	SCC - Construction	☒	
Randy Turner	Three Oaks Engineering	☒	
Steve Smith	SCC – Construction	☒	
Carlos Garcia	SCC	☒	
Jose Rodriguez	SCC - Construction	☒	

PURPOSE: The purpose of this meeting was to review the preliminary hydraulic design and resulting environmental impacts for the **North 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 in the North. An additional site review meeting, if necessary, will preclude a permit modification, which will be submitted once design is finalized for the North Section. Derek Ivie proceeded through the North Section impact drawings to present project impacts.

2. Site 1-N
    - Permanent impacts to the stream include culvert extension and bank stabilization.
    - Temporary impacts are anticipated to construct the culvert extension, manage the watercourse, and facilitate construction access to construct the proposed adjacent fill slope north of the culvert.
    - SCC Design team is considering widening to the west that will remove this impact, but space constraints are anticipated to prohibit this shift.
    - NCDENR noted past water quality issues/complaints to the west associated with Lowe's Headquarters – mainly sediment deposits in a recreational cove of Lake Norman.
    - No additional comments.

3. Site 2-N:
    - Permanent impacts are limited to non-mitigable columns within Lake Norman to support the new bridge structure between the existing northbound and southbound bridges.
    - Temporary impacts (0.06 ac) consist of work pads within Lake Norman to facilitate construction of the new bridge columns/bents in the median.
    - DWR noted a potential concern with blocking boat access under the bridge. SCC noted that the work pads will be constructed one at a time.
    - It was noted that, due to the grade of the existing bridges (which must be matched), the drainage from the deck of the new bridge will be direct discharge. This is consistent with the current condition. The bridge is a zero slope bridge (flat). No practicable alternative to direct discharge from the bridge.

This concluded review of North Section impacts.

MEETING MINUTES

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

I-4750AA in Mecklenburg and Iredell Counties

Date & Time: **December 9, 2015 1:15 PM**

Location: **NCDOT Office (Raleigh)**

TEAM MEMBERS:

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

PARTICIPANTS:

Name	Affiliation	Present	
Virginia Mabry	NCDOT, PPU	☒	
Stephen Morgan	NCDOT, Hydraulics	☒	
David Stark	NCDOT, PPU	☐	
Nat Hunter	NCDOT	☐	
Carla Dagnino	NCDOT, NES	☒	
Rodger Rochelle	NCDOT	☒	On Phone
Linda Dosse	Transportation Planning	☒	On Phone
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	☒	
Steve Smith	SCC – Construction	☒	

MINUTES

PURPOSE: The purpose of this meeting was to review the hydraulic design and resulting environmental impacts for the North 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.

Preliminary hydraulic design and impacts were previously reviewed on July 22, 2015.

1. Virginia Mabry made introductions and a sign-in sheet was completed.

2. Derek Ivie briefly reviewed the permitting history and the three Project Sections (Separate TIP Numbers). Application was submitted to the Agencies on September 09, 2015, with final impacts for the Central Section, and Preliminary Design in the North and South Sections.
    - I-4750AA, North
    - I-5405, Central
    - I-3311 C, South

3. A permit modification will be submitted for the North Section in early 2016. Derek Ivie proceeded through the North Section impact drawings to present project impacts.

4. During the previous meeting in July, two impact areas 1N and 2N were shown. Two additional sites have been identified and were include in the permit application. Sites previously identified as Site 1-N and 2-N, are not 3-N and 4-N, respectively. There are four total impact areas.

5. Site 1-N (Not reviewed during prior meeting, but included in Permit application):

    - Temporary impact to 263 lf of a small stream on the west side of the alignment to facilitate construction of retaining wall.
    - The roadway is constrained to the east by Lake Norman, buffers, and a wetland.
    - Roadway alignment has been centered as much as possible to avoid permanent impacts to either side.
    - Retaining walls with noise walls on top were designed to limit impacts.
    - SCC presented photos of the site. This stream appears to possibly be an eroded roadside ditch.
    - No comments received.

6. Site 2-N (Not reviewed during prior meeting, but included in Permit application):

    - Impacts associated with eastward widening include 10 lf of permanent impacts for pipe extension and rock plating and 20 lf of temporary impacts for construction access and dewatering. Rock plating to minimize impact has been proposed with steepened slopes.
    - The roadway is constrained horizontally and vertically by Alcove Road on the west side with a wetland and stream west of Alcove Road.
    - SCC presented photos of the site.
    - A question was asked about the proposed rock plating – The plating will be class II riprap to stabilize a steepened slope and reduce impacts.

7. Site 3-N (Formerly Site 1-N):
    - This is located just north of 2-N and is a necessary for eastward widening.
    - Impacts include 25 lf of permanent impacts for 9x7 culvert extension, 35 lf of bank stabilization, and 79 lf of temporary impacts for construction access and dewatering.
    - This site was discussed in July as being impacted already by sediment from the Lowes' project.
    - SCC presented photos of the site showing existing heavy sediment accumulations.

8. Site 4-N (Formerly Site 2-N):
    - Impacts associated with this site have not changed since the July meeting.
    - This is temporary work pad at the causeway is required for construction of the bridges to be widened to the center.
    - It will be constructed one side at a time
    - 50% of the lake surface opening will be maintained continually.
    - SCC presented photos of the site.
    - Existing riprap to be restored under the bridge, but no new riprap is proposed to be installed below the water.
    - No comments.

9. SCC presented the total summary sheet

10. A question was asked about other causeway sections and potential impacts between 1N and 2N at Lake Norman: SCC responded that widening is limited to the median to avoid additional impacts to Lake Norman.

11. KMZ files depicting the impacts will be provided through NCDOT to the agencies.

This concluded review of the North Section Impacts.

Additional/Other Discussion: Virginia Mabry reminded the agencies that there are other separate projects that the municipalities are requesting NCDOT to construct, which could result in impacts. The most likely at this time is a pedestrian underpass in the Central Section at approx. Station 836+00. NCDOT would only construct the tunnel (not approaches), which could result in an approximate 147 lf temporary stream impact for construction access. A preliminary impact drawing and photo of the stream were presented/reviewed. USACE stated that it would be preferable to include these temporary impacts with the permit currently under review, if design can be advanced quickly. Per USACE, new public notice would not likely be required for only temporary impacts. SCC clarified that it does not desire to delay the review of existing permit application, but will try to provide any additional information as it is developed.

I-4750AA SMP General Project Narrative

The I-77 High Occupancy Toll (HOT) Lanes P3 Project involves widening the existing facility by adding managed lanes to help alleviate congestion and provide reliable travel time for the users. The North Section of the HOT Lanes project is in both Mecklenburg and Iredell Counties and is NCDOT TIP Project No. I-4750AA. The North Section begins north of the Catawba Avenue Interchange continuing along I-77 and ending north of NC 150 (West Plaza Drive) Interchange. The existing facility will be widened to the median and/or to the outside in order to accommodate the additional lanes, proposed noise barriers, tolling features, and required infrastructure.

Proposed roadway modifications were designed with respect to minimizing environmental impacts to the maximum extent practicable (MEP). When conditions in the corridor allowed, the proposed improvements were shifted away from jurisdictional streams and wetlands to avoid impacts. Retaining walls were implemented in some locations to avoid expanding the roadway footprint into jurisdictional areas. The side slopes in fill areas were steepened and reinforced to minimize any impacts to jurisdictional features. Within this section, the existing median was utilized for the proposed widening which minimizes construction activities outside of the existing roadway shoulders. By not increasing the overall footprint of the existing roadway when feasible, impending impacts to jurisdictional areas were minimized.

Best Management Practices (BMPs) were utilized to reduce the environmental impacts and promote water quality both during construction and post-construction. Most roadway improvements were designed to have open shoulder typical sections and any proposed fill or cut slopes will be stabilized, preferably with grass, upon completion. These grassed shoulders will serve as a filter strips as roadway water sheet flows from the facility. Existing and proposed grassed or lined ditches will collect roadway storm water along the project and convey it to existing discharge points. The proposed ditches will be designed to have non-erosive velocities and stabilized with grass, where appropriate. Where high velocities prevent the use of grass lined ditches, they will be stabilized by the placement of rip rap or permanent soil reinforcement matting.

The existing storm drainage systems and cross culverts will be utilized and retained to collect and convey stormwater. Using the existing systems will maintain existing drainage patterns and minimize additional discharge points that will require stabilization. Any new proposed pipe outlets will be properly stabilized with geotextile fabric and rip rap to reduce velocities and erosion. New outlet pipes will be discharged away from jurisdictional features to the MEP.

Reinforced concrete box culverts to be extended will be constructed in dry conditions. Erosion Control measures will be employed to the MEP to reduce siltation and turbidity. Rip rap will be placed along the stream bank at newly constructed culvert outlets and inlets for permanent bank stabilization, where necessary. Newly constructed, grassed ditches carrying stormwater to jurisdictional streams will have stabilized outfalls to jurisdictional streams to prevent erosion. Rip rap placement in the bed of jurisdictional streams will be limited to the minimum amounts necessary to stabilize the channel.

All widening /improvement work on the causeway sections that cross Lake Norman will take place in the existing median area. This will eliminate any impacts outside of the existing transportation facility thus eliminating Catawba River Riparian Buffer impacts. The bridge over Lake Norman at Reeds Creek will be widened to the inside as well. There will be non-mitigable impacts resulting from the placement of bridge columns in Lake Norman. Temporary work pads will be constructed in the lake from non-erodible material to widen the bridges. When feasible, support works may be conducted from a barge. Currently, deck drains on the existing bridge discharge directly into Lake Norman. Deck drains on the widened bridge will also discharge directly into the lake as there is no practicable alternative due to the existing flat longitudinal grade. Existing storm drainage along the causeway areas discharges directly into Lake Norman. The proposed storm drainage will connect to the existing drainage systems and also directly discharge into the lake as there is no practicable alternative.

The placement of hazardous spill basins (HSB) was thoroughly reviewed within the North Section. Each outfall, both existing and proposed, was analyzed on a case by case basis regarding the feasibility and functionality of placing a HSB. While assessing the possible locations for the HSBs, numerous constraints were encountered. Much of the North Section is on an embankment type section. The majority of these sections, proposed and existing, have 2:1 or steeper fill slopes with vegetated cover generally described as heavily wooded. This presents very limited access to bottom areas at pipe and ditch outfalls for basin placement. In addition, since large portions of the project consist of retaining the outside shoulders, creating access to a proposed basin would involve clearing stabilized wooded and vegetated areas to install the basin introducing maintenance and stabilization concerns. The natural topography through the north section, especially around the Lake Norman areas, is very steep. Existing terrain has slopes greater than 25% in some areas making constructing a basin almost impossible as well as impracticable. Widening an existing roadway within the existing right-of-way also limits where a basin could be placed. Through much of the corridor the existing transportation facility limits are very close to the existing right-of-way. Even where terrain would allow the placement of a basin the right-of-way limits the available area for construction of the basin. The causeways over Lake Norman do not provide any practicable locations for HSB placement. All of the proposed roadway work is contained within the median as there is no available shoulder to widen without introducing new fill material into the lake. Another limiting factor in locating the basins are the proposed retaining walls and noise walls. There are five noise walls and two retaining walls in the North Section that are either required by NCDOT and /or for construction purposes. Retaining walls limit access to areas below the roadway surface due to the elevation difference having no way to traverse down. The noise walls act as a vertical barrier between the roadway and adjacent terrain. With no viable passageway for access behind these walls, placing a basin along or behind the walls would not be practicable.

Even with the many constraints that were encountered throughout the North Section, 17 locations were identified as possible sites. These sites will provide a strategy so that any potential spill can be directed through a facility where the flow can be interrupted and temporarily stored. The facilities will consist of existing basins along the corridor, converted skimmer basins from the erosion control phase and ditch blocks with a pipe. As a result of the constraining factors mentioned above, the storage volume requirement for these facilities cannot be fully achieved. However, these hazardous spill containment

areas will provide a minimum control section in which a potential spill hazard can be blocked and kept from reaching resource waters. Because of the proximity to traffic for these facilities and the risk of impact and tampering, no mechanical devices (sluice gates) are proposed. A list of the facilities used and stationing can be found in the table that follows:

Facility /	**L Line Station**
Existing Basin	1274+80 L, 1282+35 R, 1302+30 R, 1516+50 L
Converted Skimmer Basin	1142+10 R, 1146+25 L, 1247+60 R
Ditch Block w/ Pipe	1164+30 L, 1185+50 L, 1186+25 R, 1261+20 R, 1327+50 R, 1334+70 R, 1401+12 L, 1403+25 R, 1415+00 L, 1427+10 R

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.02; Released April 2015)

General Project Information

WBS Element:	C203406 (North Section)	**TIP Number:**	I-4750AA	**Project Type:**	Roadway Widening	**Date:**	3/14/2016
NCDOT Contact:	Virginia Mabry			**Contractor / Designer:**	Pablo del Monte		
	Address: 1020 Birch Ridge Drive Door B1, Building B Raleigh, NC 27610			**Address:**	Sugar Creek Construction, LLC 6135 Lakeview Rd. Suite 250 Charlotte, NC 28269		
	Phone: 919-707-6604			**Phone:**	817-470-9498		
	Email: vmabry@ncdot.gov			**Email:**	pdelmonte@sugarcreekllc.us		
City/Town:	Davidson, Mooresville			**County(ies):**	Iredell	Mecklenburg	
River Basin(s):	Catawba			**CAMA County?**	No	No	
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	8.268 mi.	**Surrounding Land Use:**	Agriculture, forests, residential and commercial

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	109.0 ac.	139.0 ac.
Typical Cross Section Description:	The proposed cross-section for most of the project is a four to eight lane, concrete median barrier divided section utilizing 4' to 10' paved shoulders. North of the West Plaza Dr. interchange the median becomes a variable width grass median. Lanes along I-77 are 12'.	Existing I-77 ranges from a 4 to 6 lane roadway with a variable width grass median. All travel lanes are 12', outside paved shoulders are 10', and inside paved shoulders vary from 3' to 6'.
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 231,400 Year: 2035	Existing: 185,400 Year: 2012
General Project Narrative: (Description of Minimization of Water Quality Impacts)	See attached narrative.	

Waterbody Information

Surface Water Body (1):	UT to Lake Norman		**NCDWR Stream Index No.:**	11-(75)	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SC			**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

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Additional Waterbody Information

Surface Water Body (2):	UT to Lake Norman		**NCDWR Stream Index No.:**	11-105		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SD			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (3):	UT to Lake Norman		**NCDWR Stream Index No.:**	11-105		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SE1			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (4):	UT to Work Creek		**NCDWR Stream Index No.:**	11-105		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SE2			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (5):	UT to Lake Norman		**NCDWR Stream Index No.:**	11-105		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SF1			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

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Additional Waterbody Information

Surface Water Body (6):	UT to Work Creek		**NCDWR Stream Index No.:**	11-105		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SF2			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (7):	UT to Work Creek		**NCDWR Stream Index No.:**	11-105		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SH1			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (8):	UT to Work Creek		**NCDWR Stream Index No.:**	11-105		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SH2			**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?		**Deck Drains Discharge Over Buffer?**		**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (9):	UT to Work Creek		**NCDWR Stream Index No.:**	11-105		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SI			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

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Additional Waterbody Information

Surface Water Body (10):	UT to Work Creek		**NCDWR Stream Index No.:**	11-105		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SH3			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (11):	UT to Work Creek		**NCDWR Stream Index No.:**	11-105		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SJ			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (12):	UT to Lake Norman		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:				
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SK1			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (13):	UT to Lake Norman		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SL1			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

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Surface Water Body (14):	UT to Lake Norman		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SM			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (15):	UT to Lake Norman		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SN			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (16):	UT to Lake Norman		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SO1			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (17):	UT to Reeds Creek		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SP			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

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Additional Waterbody Information

Surface Water Body (18):	UT to Reeds Creek		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SQ			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (19):	UT to Reeds Creek		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SO2			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (20):	UT to Reeds Creek		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SR1			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (21):	UT to Reeds Creek		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SR2			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

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Surface Water Body (22):	UT to Reeds Creek		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SS			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (23):	UT to Reeds Creek		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	ST1			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (24):	UT to Reeds Creek		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	ST2			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (25):	UT to Byers Creek		**NCDWR Stream Index No.:**	11-(89)-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SV			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

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Surface Water Body (26):	UT to Byers Creek		**NCDWR Stream Index No.:**	11-(89)-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SU2			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (27):	UT to Byers Creek		**NCDWR Stream Index No.:**	11-(89)-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SU1			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (28):	UT to Byers Creek		**NCDWR Stream Index No.:**	11-(89)-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SW			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (29):	UT to Byers Creek		**NCDWR Stream Index No.:**	11-(89)-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SX1			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

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Surface Water Body (30):	UT to Byers Creek		**NCDWR Stream Index No.:**	11-(89)-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SX2			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (31):	Byers Creek		**NCDWR Stream Index No.:**	11-(89)-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SY1			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (32):	Byers Creek		**NCDWR Stream Index No.:**	11-(89)-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SY2			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (33):	UT to Byers Creek		**NCDWR Stream Index No.:**	11-(89)-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SZ			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

WBS Element: C203406 (North Sec **TIP No.:** I-4750AA **County(ies):** Iredell Mecklenburg

Additional Waterbody Information

Surface Water Body (34):	UT to Byers Creek		**NCDWR Stream Index No.:**	11-(89)-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SAA1			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (35):	Catawba River (Lake Norman below elev. 760)		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)	Class B		
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SWA			**Buffer Rules in Effect:**	Catawba	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (36):	Catawba River (Lake Norman below elev. 760)		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)	Class B		
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SWB			**Buffer Rules in Effect:**	Catawba	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (37):	Catawba River (Lake Norman below elev. 760)		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)	Class B		
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SWC			**Buffer Rules in Effect:**	Catawba	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.02; Released April 2015)

WBS Element: C203406 (North Sec **TIP No.:** I-4750AA **County(ies):** Iredell Mecklenburg

Additional Waterbody Information

Surface Water Body (38):	Catawba River (Lake Norman below elev. 760)		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)	Class B		
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SWD			**Buffer Rules in Effect:**	Catawba	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (39):	Catawba River (Lake Norman below elev. 760)		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)	Class B		
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SWE			**Buffer Rules in Effect:**	Catawba	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (40):	Catawba River (Lake Norman below elev. 760)		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)	Class B		
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SWH			**Buffer Rules in Effect:**	Catawba	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (41):	Work Creek		**NCDWR Stream Index No.:**	11-105		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)	Class B		
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SWF			**Buffer Rules in Effect:**	Catawba	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.02; Released April 2015)

WBS Element:	C203406 (North Sec	TIP No.:	I-4750AA	County(ies):	Iredell Mecklenburg	Page	12	of	13

Additional Waterbody Information

Surface Water Body (42):	Unnamed Buffer Area of Lake Norman		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)	Class B		
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SWG			**Buffer Rules in Effect:**	Catawba	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (43):	Catawba River (Lake Norman below elev. 760)		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)	Class B		
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SWI			**Buffer Rules in Effect:**	Catawba	
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	Yes	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (44):	Catawba River (Lake Norman below elev. 760)		**NCDWR Stream Index No.:**	11-(75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply IV (WS-IV)	Class B		
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SWJ			**Buffer Rules in Effect:**	Catawba	
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	No	
Deck Drains Discharge Over Water Body?	Yes	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.02; Released April 2015)

WBS Element: C203406 (North Sectic **TIP No.:** I-4750AA **County(ies):** Iredell Mecklenburg

Level Spreaders, Hazardous Spill Basins, and Forebays

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Level Spreader, Hazardous Spill Basin, or Forebay?	Drainage Area (ac)	New Built-Upon Area (ac)	Required / Minimum Treatment			Treatment Achieved		BMP Associated w/ Buffer Rules?
15	L 1142+10 R (1) 35.495479 / -80.869740	(37)Catawba River (Lake	Hazardous Spill Basin	1.12	0.13	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	2889.0	cf	2889.0	cf	N/A
15	L 1146+25 L (2) 35.496343 / -80.869929	(36)Catawba River (Lake	Hazardous Spill Basin	0.26	0.00	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	1692.0	cf	1692.0	cf	N/A
17	L 1164+30 L (3) 35.500967 / -80.867767	(36)Catawba River (Lake	Hazardous Spill Basin	3.89	0.23	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	6940.0	cf	843.0	cf	N/A
17	L 1185+50 L (4) 35.506710 / -80.866482	(38)Catawba River (Lake	Hazardous Spill Basin	7.06	0.32	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	12240.0	cf	850.0	cf	N/A
17	L 1186+25 R (5) 35.506858 / -80.865799	(39)Catawba River (Lake	Hazardous Spill Basin	2.19	0.00	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	4421.0	cf	2325.0	cf	N/A
22	L 1247+60 R (6) 35.523466 / -80.863530	(39)Catawba River (Lake	Hazardous Spill Basin	1.00	0.07	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	2980.0	cf	2980.0	cf	N/A
23	L 1261+20 R (7) 35.526709 / -80.862840	(39)Catawba River (Lake	Hazardous Spill Basin	7.34	0.11	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	12026.0	cf	3190.0	cf	N/A
23	L 1274+80 L (8) 35.530915 / -80.862689	(2)UT to Lake Norman	Hazardous Spill Basin	3.18	0.04	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	5358.0	cf	61000.0	cf	N/A
23	L 1282+35 R (9) 35.532862 / -80.861330	(4)UT to Work Creek	Hazardous Spill Basin	11.84	0.17	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	17483.0	cf	27125.0	cf	N/A
25	L 1302+30 R (10) 35.538207 / -80.860122	(41)Work Creek	Hazardous Spill Basin	5.01	0.36	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	8418.0	cf	5615.0	cf	N/A
27	L 1327+50 R (11) 35.545113 / -80.858763	(9)UT to Work Creek	Hazardous Spill Basin	7.04	0.48	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	11503.0	cf	1403.0	cf	N/A
27	L 1334+70 R (12) 35.546944 / -80.858356	(11)UT to Work Creek	Hazardous Spill Basin	2.69	0.23	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	6100.0	cf	515.0	cf	N/A
31	L 1401+12 L (13) 35.565278 / -80.858591	(43)Catawba River (Lake	Hazardous Spill Basin	0.52	0.09	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	2156.0	cf	700.0	cf	N/A
31	L 1403+25 R (14) 35.565807 / -80.857794	(44)Catawba River (Lake	Hazardous Spill Basin	0.44	0.04	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	2173.0	cf	1500.0	cf	N/A
32	L 1415+35 L (15) 35.569020 / -80.857570	(43)Catawba River (Lake	Hazardous Spill Basin	3.97	0.33	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	7082.0	cf	13650.0	cf	N/A
33	L 1427+10 R (16) 35.572009 / -80.856057	(44)Catawba River (Lake	Hazardous Spill Basin	1.08	0.00	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	2744.0	cf	1320.0	cf	N/A
37	L 1516+50 L (17) 35.596819 / -80.860483	(27)UT to Byers Creek	Hazardous Spill Basin	2.71	0.13	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	5450.0	cf	35140.0	cf	N/A

*Hazardous spill basins are pollution prevention measures designed for spill containment rather than stormwater treatment. Under Required / Minimum Treatment and Treatment Achieved, provide the minimum required volume and the actual HSB volume, respectively. Refer to the NCDOT Stormwater Best Management Practices Toolbox (2014) for design guidance.

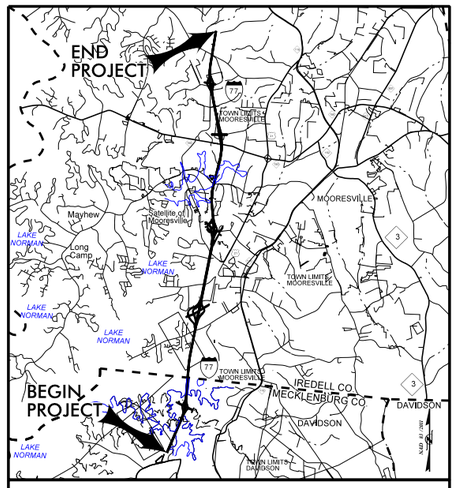
Additional Comments

Please see attached narrative for additional information.

TIP PROJECT: I-4750AA

CONTRACT: C203406

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG & IREDELL COUNTIES

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

sugar creek construction, LLC

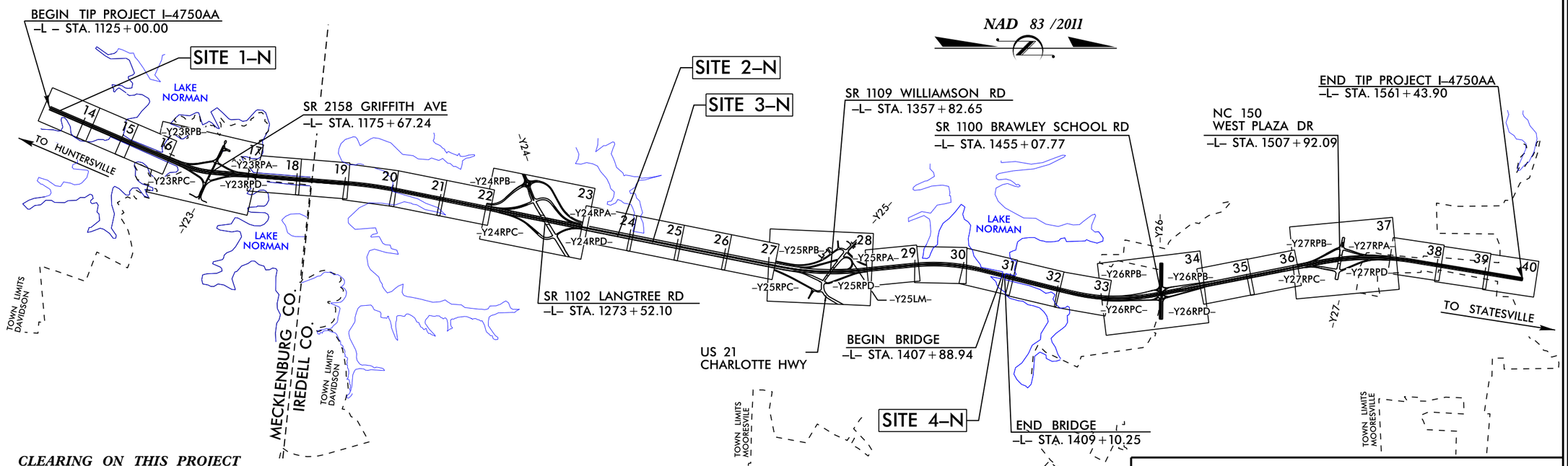
PERMIT DRAWING SHEET 1 OF 12

LOCATION: *I-77 FROM NORTH OF SR 5544 (CATAWBA AVE.) TO NORTH OF NC 150 (WEST PLAZA DR.)*

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

WETLAND AND STREAM IMPACTS (NORTH SECTION)

NAD 83 /2011



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

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

NCDOT CONTACT: *VIRGINIA MABRY*
MANAGER PRIORITY PROJECTS UNIT

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

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
"STATEWIDE TIER"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-4750AA	=	*8.245 MI*
LENGTH STRUCTURES TIP PROJECT I-4750AA	=	*0.023 MI*
TOTAL LENGTH OF TIP PROJECT I-4750AA	=	*8.268 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: N/A

LETTING DATE: TBD

DEAN HATFIELD, P.E.
PROJECT ENGINEER

R. D. ODELL, P. E.
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 *P.E.*

PROJECT REFERENCE NO.	SHEET NO.
I-5405	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 3/16/2016	HYDRAULICS ENGINEER 3/16/2016

0' 50' 100'

PERMIT DRAWING
SHEET 2 OF 12

sugar creek construction, LLC

Louis Berger

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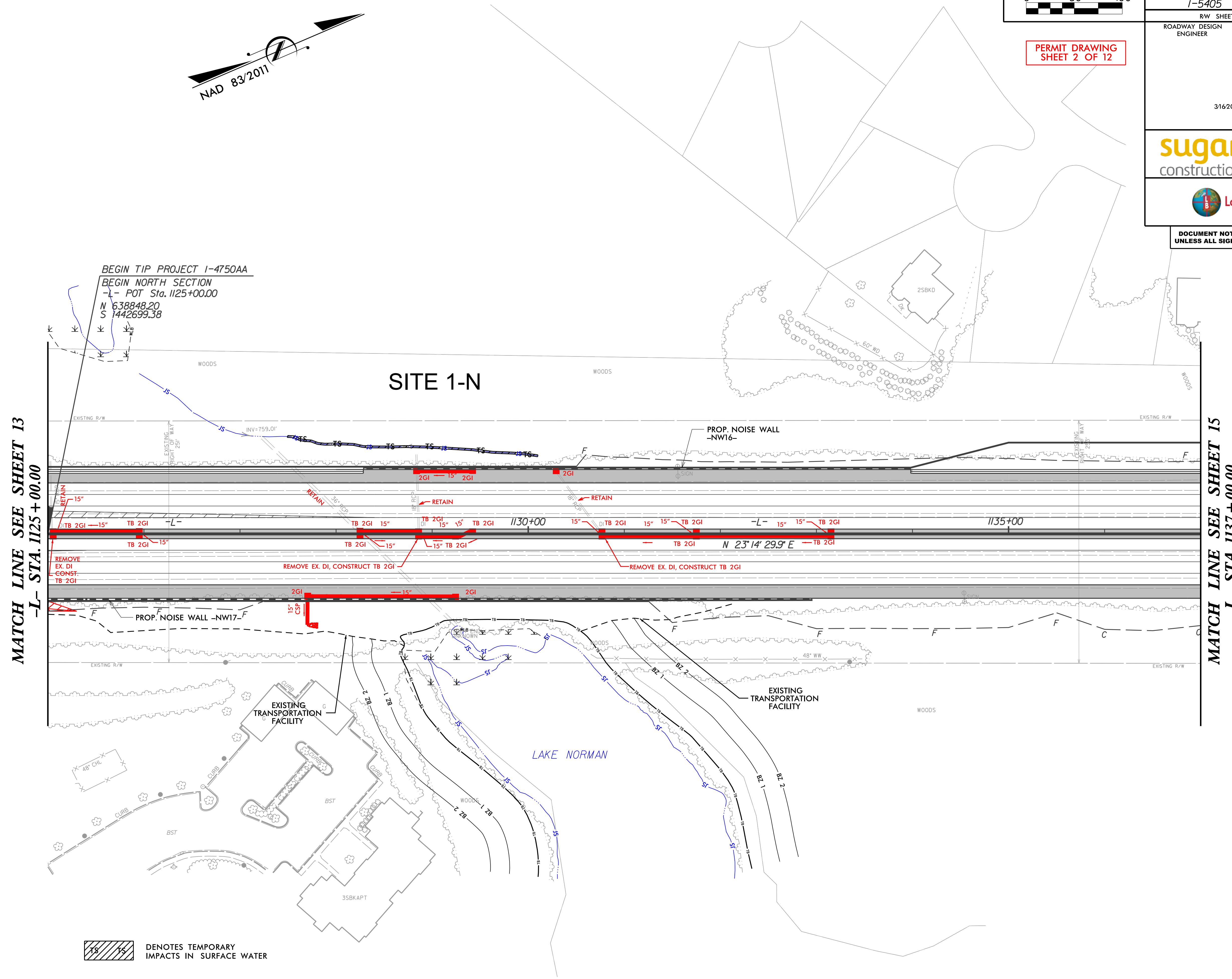
REVISIONS



NAD 83/2011
BEGIN TIP PROJECT I-4750AA
BEGIN NORTH SECTION
-L- POT Sta. 1125+00.00
N 638848.20
S 1442699.38
SITE 1-N
WOODS
EXISTING R/W
PROP. NOISE WALL –NW16–
RETAIN
TB 2GI
2GI
15"
1130+00
1135+00
-L-
N 23° 14' 29.9" E
REMOVE EX. DI, CONSTRUCT TB 2GI
REMOVE EX. DI CONST. TB 2GI
PROP. NOISE WALL –NW17–
15" CSP
EXISTING TRANSPORTATION FACILITY
LAKE NORMAN
BZ 1
BZ 2
48" WW
60" WO
25BKD
35BKAPT
BST
CURB
48" CHL
MATCH LINE SEE SHEET 13 -L- STA. 1125+00.00
MATCH LINE SEE SHEET 15 -L- STA. 1137+00.00

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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PROJECT REFERENCE NO.	SHEET NO.
I-5405	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
3/16/2016	3/16/2016

PERMIT DRAWING SHEET 3 OF 12

sugar creek construction, LLC

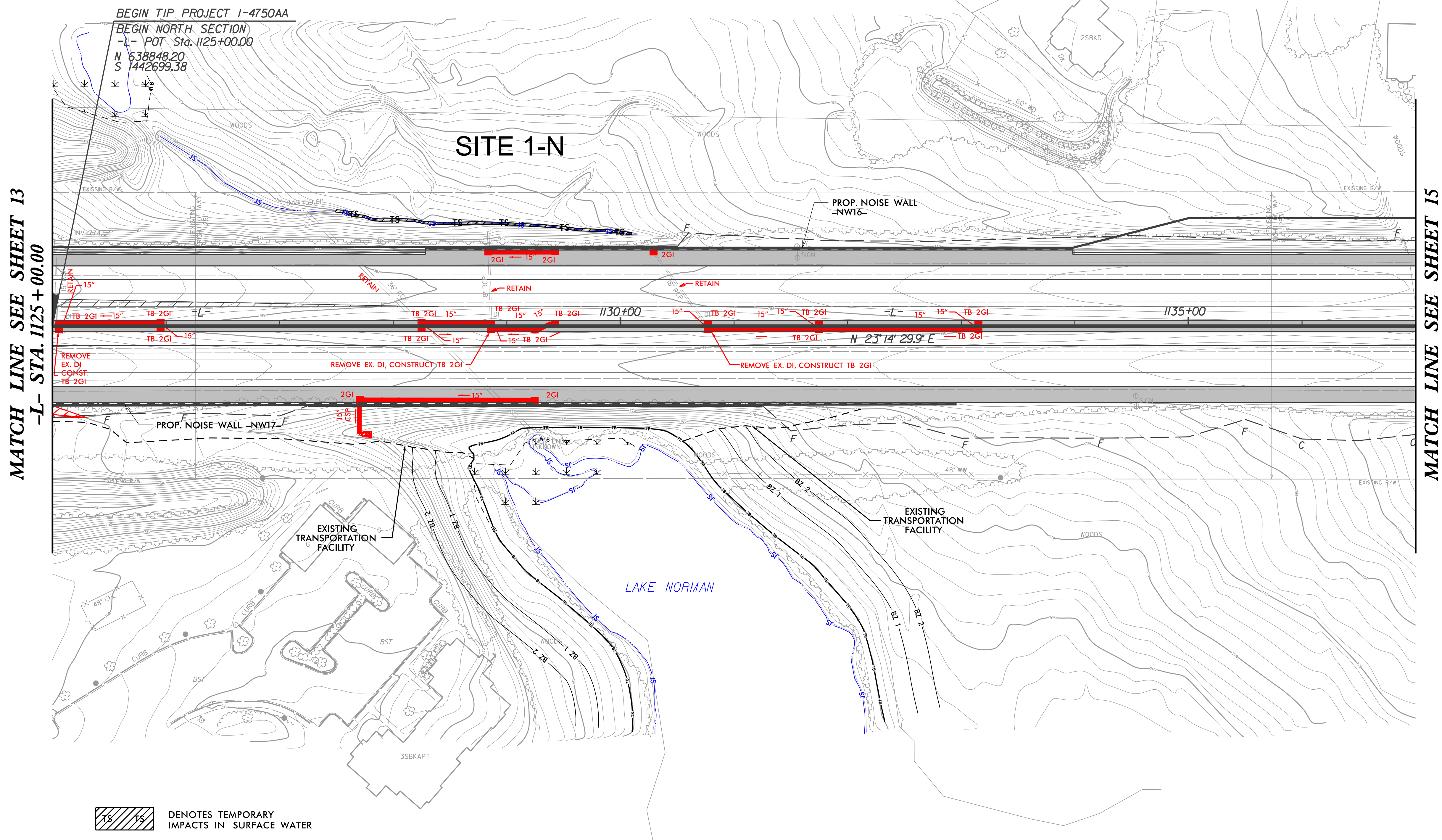
Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0' 50' 100'

NAD 83/2011

REVISIONS



SITE 1-N
BEGIN TIP PROJECT I-4750AA
BEGIN NORTH SECTION
-L- POT Sta. 1125+00.00
N 638848.20
S 1442699.38
MATCH LINE SEE SHEET 13
-L- STA. 1125+00.00
MATCH LINE SEE SHEET 15
-L- STA. 1137+00.00
PROP. NOISE WALL -NW16-
PROP. NOISE WALL -NW17-
1130+00
1135+00
N 23° 14' 29.9" E
REMOVE EX. DI CONST. TB 2GI
REMOVE EX. DI, CONSTRUCT TB 2GI
RETAIN
TB 2GI
2GI
15"
EXISTING TRANSPORTATION FACILITY
LAKE NORMAN
WOODS

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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PROJECT REFERENCE NO.	SHEET NO.
I-5405	24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
3/16/2016	3/16/2016

PERMIT DRAWING
SHEET 4 OF 12

0' 50' 100'

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

NAD 83/2011

MATCH LINE SEE SHEET 23
-L- STA. 1285+00.00

MATCH LINE SEE SHEET 25
-L- STA. 1299+00.00

WOODS
RIP RAP
18" RCP
EXISTING RIGHT OF WAY 264'
18" GR
BOULDERS
EXISTING R/W
ALCOVE ROAD 20' BST
48" WM
48" CHL
24" CONC
2SBKD
PROP. NOISE WALL -NW24-
10+00
S 15°03'25.6" W
-Y24RPA-
RETAIN
REMOVE DI, CONSTRUCT 2GI
REMOVE DI CONSTRUCT 2GI
1290+00
1295+00
-L-
N 11°18'25.6" E
REMOVE DI CONSTRUCT TB 2GI
REMOVE DI & 10 +/- LF EX 15" CMP
JB w/Slab Lid
REMOVE
15" CSP
36"
SEE DETAIL A
SEE DETAIL B
ROCK PLATING CLASS II RIP RAP
REBAR
NAIL
SIGN
RETAIN EX. RIP RAP. IF NECESSARY RESTORE AFTER CONSTRUCTION ACTIVITIES.)

SITE 2-N

DETAIL A
BERM 'V' DITCH
(Not to Scale)

Natural Ground
2:1
D
2:1
b
RDWY
3:1
Min. D= 1.0 Ft.
b= 3 Ft. (Min.)

FROM -L- STA. 1287+50 TO STA. 1289+50 RT

DETAIL B
BERM 'V' DITCH
(Not to Scale)

Natural Ground
Geotextile
2:1
D
2:1
b
d
RDWY
3:1
Min. D= 1.0 Ft.
b= 3 Ft. (Min.)
Max. d= 1.0 Ft. Type of Liner= Cl. B Rip Rap

FROM -L- STA. 1289+50 TO STA. 1290+60 RT

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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PROJECT REFERENCE NO.	SHEET NO.
I-5405	24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
3/16/2016	3/16/2016

PERMIT DRAWING
SHEET 5 OF 12

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0' 50' 100'

NAD 83/2011

REVISIONS

MATCH LINE SEE SHEET 23 –L– STA. 1285+00.00

MATCH LINE SEE SHEET 25 –L– STA. 1299+00.00

SITE 2-N

PROP. NOISE WALL –NW24–

RETAIN

REMOVE DI, CONSTRUCT 2GI

REMOVE DI CONSTRUCT 2GI

REMOVE DI CONSTRUCT TB 2GI

REMOVE DI & 10 +/- LF EX 15" CMP

JB w/Slab Lid

REMOVE

SEE DETAIL A

SEE DETAIL B

ROCK PLATING CLASS II RIP RAP

RETAIN EX. RIP RAP IF NECESSARY, RESTORE AFTER CONSTRUCTION ACTIVITIES)

S 15° 03' 25.6" W

N 11° 18' 25.6" E

–Y24RPA–

10+00

1290+00

1295+00

WOODS

BOULDERS

EXISTING R/W

ALCOVE ROAD 20' BST

DETAIL A
BERM 'V' DITCH
(Not to Scale)

Natural Ground
2:1
D
2:1
b
RDWY
15:1
Min. D = 1.0 Ft.
b = 3 Ft. (Min.)

FROM –L– STA. 1287+50 TO STA. 1289+50 RT

DETAIL B
BERM 'V' DITCH
(Not to Scale)

Natural Ground
Geotextile
2:1
D
2:1
b
d
RDWY
2:1
Min. D = 1.0 Ft.
b = 3 Ft. (Min.)
Max. d = 1.0 Ft. Type of Liner = Cl. B Rip Rap

FROM –L– STA. 1289+50 TO STA. 1290+60 RT

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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PROJECT REFERENCE NO.	SHEET NO.
I-5405	25
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
3/16/2016	3/16/2016

0' 50' 100'

PERMIT DRAWING
SHEET 6 OF 12

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

NAD 83/2011

MATCH LINE SEE SHEET 24 –L– STA. 1299+00.00

MATCH LINE SEE SHEET 26 –L– STA. 1313+00.00

PROP. NOISE WALL –NW24–

SITE 3-N

1300+00 1305+00 1310+00

N 11° 18' 25.6" E

REMOVE DI, COLLAR & EXTEND EX. 18"

REMOVE EX. DI, COLLAR & EXTEND EX. 18" RCP

REMOVE EX. DI, CONSTRUCT TB 2GI

REMOVE EX. DI, COLLAR AND EXTEND EX. 18

REMOVE EX. DI, COLLAR AND EXTEND 18" CMP

REMOVE EX. DI CONSTRUCT TB JB w/Slab Lid

REMOVE DI & EX. 18" RCP

REMOVE EX. JB, CONSTRUCT TB JB w/MH

HAZARDOUS SPILL CONTAINMENT AREA 10 RETAIN EXISTING BASIN

ROCK PLATING CLASS II RIP RAP

CLASS II RIP RAP

REMOVE EX. WW2 EXTEND EX. RCBC

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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PROJECT REFERENCE NO.	SHEET NO.
I-5405	25
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
3/16/2016	3/16/2016

0' 50' 100'

PERMIT DRAWING
SHEET 7 OF 12

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

NAD 83/2011

MATCH LINE SEE SHEET 24
-L- STA. 1299+00.00

MATCH LINE SEE SHEET 26
-L- STA. 1313+00.00

PROP. NOISE WALL -NW24-

SITE 3-N

1300+00 1305+00 1310+00

N 11° 18' 25.6" E

RETAIN

REMOVE DI, COLLAR & EXTEND EX. 18"

REMOVE EX. DI, COLLAR & EXTEND EX. 18" RCP

REMOVE EX. DI, CONSTRUCT TB 2GI

REMOVE EX. DI, COLLAR AND EXTEND EX. 18

REMOVE EX. DI, COLLAR AND EXTEND 18" CMP

REMOVE EX. DI CONSTRUCT TB JB w/Slab Lid

REMOVE DI & EX. 18" RCP

REMOVE EX. JB, CONSTRUCT TB JB w/MH

TB 2GI

2GI

15"

CLASS II RIP RAP

ROCK PLATING CLASS II RIP RAP

HAZARDOUS SPILL CONTAINMENT AREA 10 RETAIN EXISTING BASIN

REMOVE EX. WW; EXTEND EX. RCBC

JS

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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PROJECT REFERENCE NO.	SHEET NO.
I-5405	31
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
3/16/2016	3/16/2016

0' 50' 100'

PERMIT DRAWING
SHEET 8 OF 12

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

SITE 4-N

MATCH LINE SEE SHEET 30 –L– STA. 1397+00.00

MATCH LINE SEE SHEET 32 –L– STA. 1411+00.00

LAKE NORMAN

PROP. NOISE WALL –NW25–

HAZARDOUS SPILL CONTAINMENT AREA 13 SEE DETAIL C

CL.B RIP RAP EST. 1 TON

EXISTING TRANSPORTATION FACILITY

BEGIN BRIDGE –L– STA. 1407+88.99

END BRIDGE –L– STA. 1409+09.82

COLUMN IMPACTS

15" CSP

REMOVE CONC. DITCH

1400+00

1405+00

1410+00

N 13° 50' 46.7" E

REMOVE EX. DI CONSTRUCT 2GI

REMOVE EX. DI CONSTRUCT TB 2GI

REMOVE EX. DI & CONC. DITCHES CONST. TB 2GI

15" SLOTTED DRAIN

RETAIN

HAZARDOUS SPILL CONTAINMENT AREA 14 SEE DETAIL C

CL.B RIP RAP EST. 2 TONS

W WATERLYNN RD

WOODS

EXISTING R/W

DETAIL C
DITCH BLOCK
(Not to Scale)

Outside Ditch Traffic Flow

N.G./T.B.

20:1

3.0'

0.5' Min.

3:1 w/ C.R. etc.

3:1

Proposed Pipe

℄ DITCH

Proposed pipe to have 0.5' min. cover

–L– STA. 1403+25 RT
–L– STA. 1401+12 LT

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTES:
- TOP OF BANK (TB) REPRESENTS 760 CONTOUR.
- EXISTING RIPRAP TO BE RESTORED UNDERNEATH THE BRIDGE, NO ADDITIONAL RIPRAP PROPOSED.
- EXISTING CHANNEL NOT TO BE MORE THAN 50% BLOCKED BY TEMPORARY WORK PAD AT WATER SURFACE AND ONLY ONE TEMPORARY WORK PAD TO BE INSTALLED IN LAKE NORMAN AT A TIME. SUPPORT WORKS MAY BE CONDUCTED FROM A BARGE, WHEN FEASIBLE.

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
I-5405	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
3/16/2016	3/16/2016

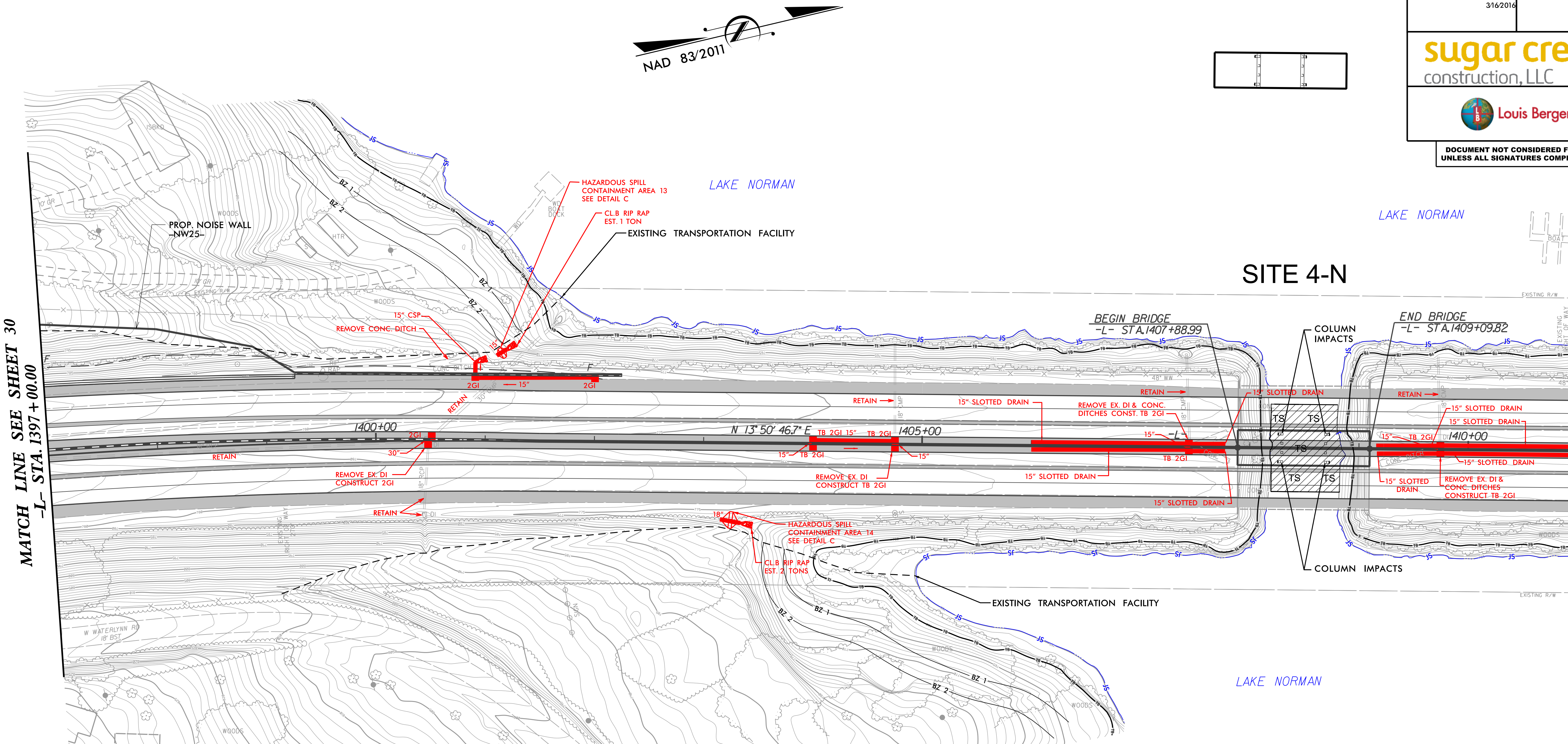
sugar creek construction, LLC

Louis Berger

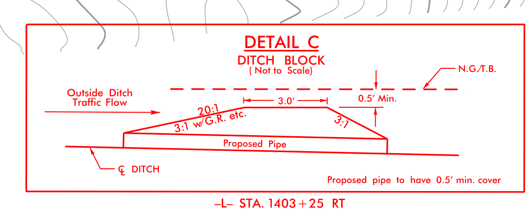
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 9 OF 12

SITE 4-N



0' 50' 100'
NAD 83/2011
LAKE NORMAN
HAZARDOUS SPILL CONTAINMENT AREA 13 SEE DETAIL C
CL.B RIP RAP EST. 1 TON
EXISTING TRANSPORTATION FACILITY
PROP. NOISE WALL -NW25-
15" CSP
REMOVE CONC. DITCH
RETAIN
1400+00
N 13° 50' 46.7" E
1405+00
1410+00
REMOVE EX. DI CONSTRUCT 2GI
REMOVE EX. DI CONSTRUCT TB 2GI
15" SLOTTED DRAIN
REMOVE EX. DI & CONC. DITCHES CONST. TB 2GI
BEGIN BRIDGE -L- STA.1407+88.99
END BRIDGE -L- STA.1409+09.82
COLUMN IMPACTS
HAZARDOUS SPILL CONTAINMENT AREA 14 SEE DETAIL C
CL.B RIP RAP EST. 2 TONS
MATCH LINE SEE SHEET 30 -L- STA. 1397+00.00
MATCH LINE SEE SHEET 32 -L- STA. 1411+00.00



DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTES:
- TOP OF BANK (TB) REPRESENTS 760 CONTOUR.
- EXISTING RIPRAP TO BE RESTORED UNDERNEATH THE BRIDGE, NO ADDITIONAL RIPRAP PROPOSED.
- EXISTING CHANNEL NOT TO BE MORE THAN 50% BLOCKED BY TEMPORARY WORK PAD AT WATER SURFACE AND ONLY ONE TEMPORARY WORK PAD TO BE INSTALLED IN LAKE NORMAN AT A TIME. SUPPORT WORKS MAY BE CONDUCTED FROM A BARGE, WHEN FEASIBLE.

REVISIONS

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5/28/99

sugar creek construction, LLC

Louis Berger

PROJECT REFERENCE NO.	SHEET NO.
I-5405	72
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
3/16/2016	3/16/2016

HORIZONTAL 0 50 100

VERTICAL 0 10 20

DOCUMEN UNLESS AL

PERMIT DRAWING SHEET 10 OF 12

-SBL-

PI = 1399+74.00
EL = 781.24'
VC = 340'
K = 2789
DS = 80+ MPH

(-)11.2128%

(-)11.2128%

(-)11.3345%

PROP GRADE -L- SOUTHBOUND

EXIST GROUND

PI = 1405+87.00
EL = 773.06'
VC = 400'
K = 300
DS = 80+ MPH

(-)11.3345%

0.0000%

BEGIN BRIDGE
-L- STA.1407+88.99

LAKE NORMAN BRIDGE

0.0000%

END BRIDGE
-L- STA.1409+09.82

PI = 1410+50.00
EL = 773.06'
VC = 250'
K = 1177
DS = 80+ MPH

(+)0.0000%

(+)0.2125%

MAX.TARGET NORMAL OPERATING ELEV.758.0' MSL

TS

SEE SHEET 31 FOR PLAN

-NBL-

PI = 1406+25.00
EL = 773.06'
VC = 300'
K = 260
DS = 80+ MPH

(-)11.1546%

PROP GRADE -L- NORTHBOUND

EXIST GROUND

(-)11.1546%

0.0000%

BEGIN BRIDGE
-L- STA.1407+88.99

LAKE NORMAN BRIDGE

0.0000%

END BRIDGE
-L- STA.1409+09.82

PI = 1410+50.00
EL = 773.06'

(+)0.2114%

MAX.TARGET NORMAL OPERATING ELEV.758.0' MSL

TS

SEE SHEET 31 FOR PLAN

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
EXISTING CHANNEL NOT TO BE MORE THAN 50% BLOCKED BY TEMPORARY WORK PAD AT WATER SURFACE AND ONLY ONE TEMPORARY WORK PAD TO BE INSTALLED IN LAKE NORMAN AT A TIME. SUPPORT WORKS MAY BE CONDUCTED FROM A BARGE, WHEN FEASIBLE.

830 820 810 800 790 780 770 760 750 740

1397 1398 1399 1400 1401 1402 1403 1404 1405 1406 1407 1408 1409 1410 1411

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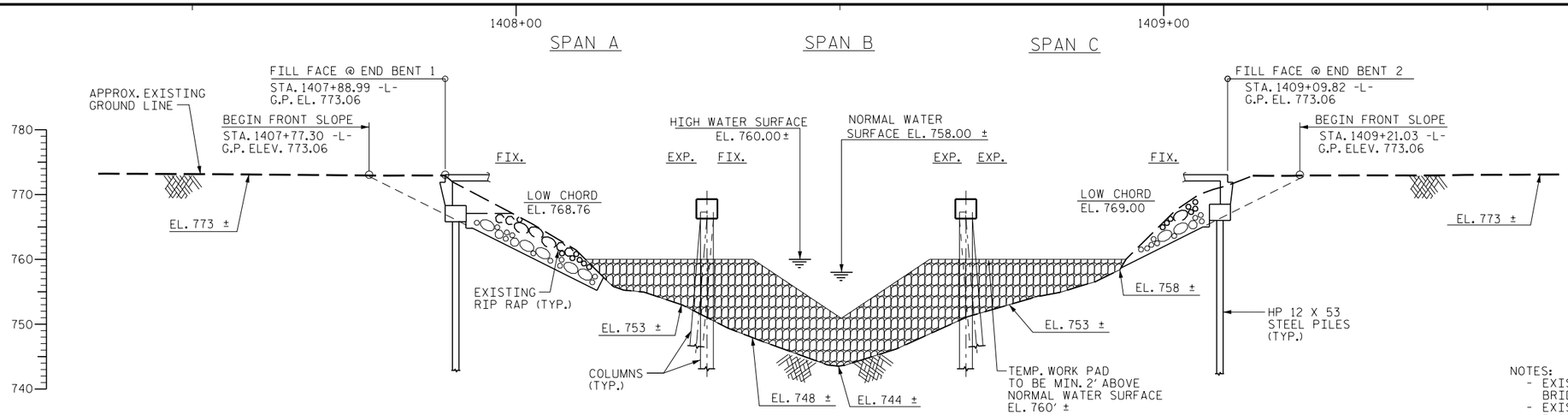
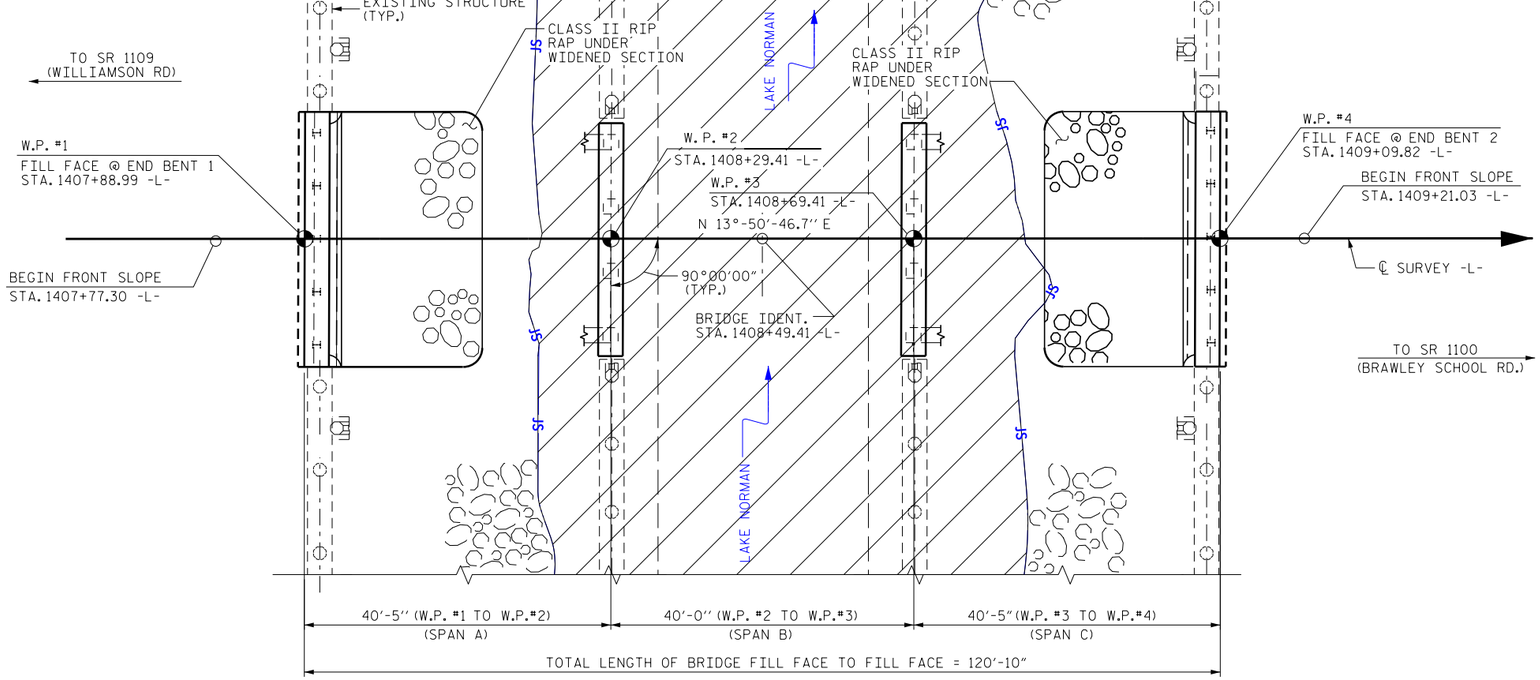
PERMIT DRAWING
SHEET 11 OF 12



NOTES:
- EXISTING RIPRAP TO BE RESTORED UNDERNEATH THE BRIDGE. NO ADDITIONAL RIPRAP PROPOSED.
- EXISTING CHANNEL NOT TO BE MORE THAN 50% BLOCKED BY TEMPORARY WORK PAD AT WATER SURFACE AND ONLY ONE TEMPORARY WORK PAD TO BE INSTALLED IN LAKE NORMAN AT A TIME. SUPPORT WORKS MAY BE CONDUCTED FROM A BARGE, WHEN FEASIBLE.

SECTION ALONG ℄ SURVEY -L-

(SECTIONS THROUGH BENTS AND END BENTS ARE TAKEN AT RIGHT ANGLES



PLAN

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT NO. I-4750AA
IREDELL COUNTY
STATION: 1408+49.53 -L-
WIDENING AND REHABILITATION OF BRIDGE No. 480052 & 480053
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRELIMINARY
GENERAL DRAWING FOR BRIDGE WIDENING ON I-77NB & I-77SB LANES OVER LAKE NORMAN BETWEEN SR-1245 AND SR-1100

DRAWN BY : J. MYA	DATE : 8-2015	
CHECKED BY : R. DECOLA	DATE : 11-2015	
DESIGN ENGINEER OF RECORD :	DATE :	

sugar creek construction, LLC

Louis Berger
Prepared by:
LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
NC COA No. F-0840

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S16-1
1			3			TOTAL SHEETS
2			4			2

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WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	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-N	1127+50 - 1130+10 LT	TEMP. CONST. ACCESS							0.01		263	
2-N	1291+62 - 1291+75 RT	36" PIPE EXTENSION						< 0.01	< 0.01	9	15	
3-N	1303+76 - 1304+20 RT	9'x7' RCBC EXTENSION						< 0.01	< 0.01	18	20	
		BANK STABILIZATION						< 0.01		23		
4-N	1408+20 - 1408+85 CL	TEMP WORK PADS							0.12			
TOTALS*:								< 0.01	0.13	50	298	0

*Rounded totals are sum of actual impacts

NOTES:
Permanent non-mitigable SW impacts due to bridge piers at Site 4-N < 0.01 acres.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
03/03/16
MECKLENBURG, IREDELL
North Section (I-4750AA)

Revised 2013 10 24

WETLAND PERMIT IMPACT SUMMARY - PROJECT TOTALS

Site No.	Station (From/To)	Structure Size / Type	WETLAND 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)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
SUBTOTAL CENTRAL SECTION			<0.01	0.06	0.00	0.00	0.00	0.07	0.09	410	491	
SUBTOTAL NORTH SECTION			0.00	0.00	0.00	0.00	0.00	<0.01	0.13	50	298	
SUBTOTAL SOUTH SECTION (**PRELIMINARY**)			0.00	0.04	0.00	0.00	0.00	0.00	0.00	3662	0.00	
PROJECT TOTAL*:			<0.01	0.10	0.00	0.00	0.00	0.08	0.22	4122	789	0

*Rounded totals are sum of actual impacts

NOTES:
South Section impacts are based on Preliminary Design, and Permanent Impacts are estimated for this Design Section.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
03/16/16
MECKLENBURG, IREDELL

Revised 2013 10 24

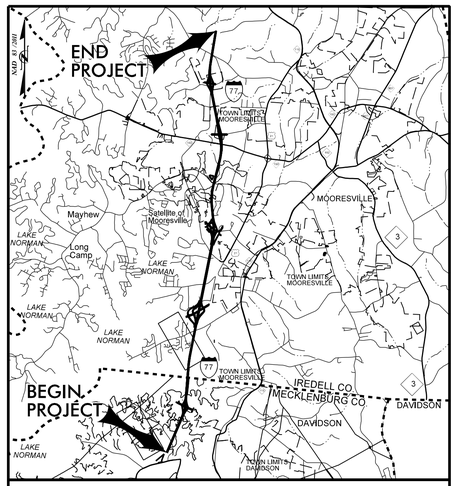
SHEET 1 OF 1

09/08/09

TIP PROJECT: I-4750AA

CONTRACT: C203406

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG & IREDELL COUNTIES

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

LOCATION: *I-77 FROM NORTH OF SR 5544 (CATAWBA AVE.) TO NORTH OF NC 150 (WEST PLAZA DR.)*

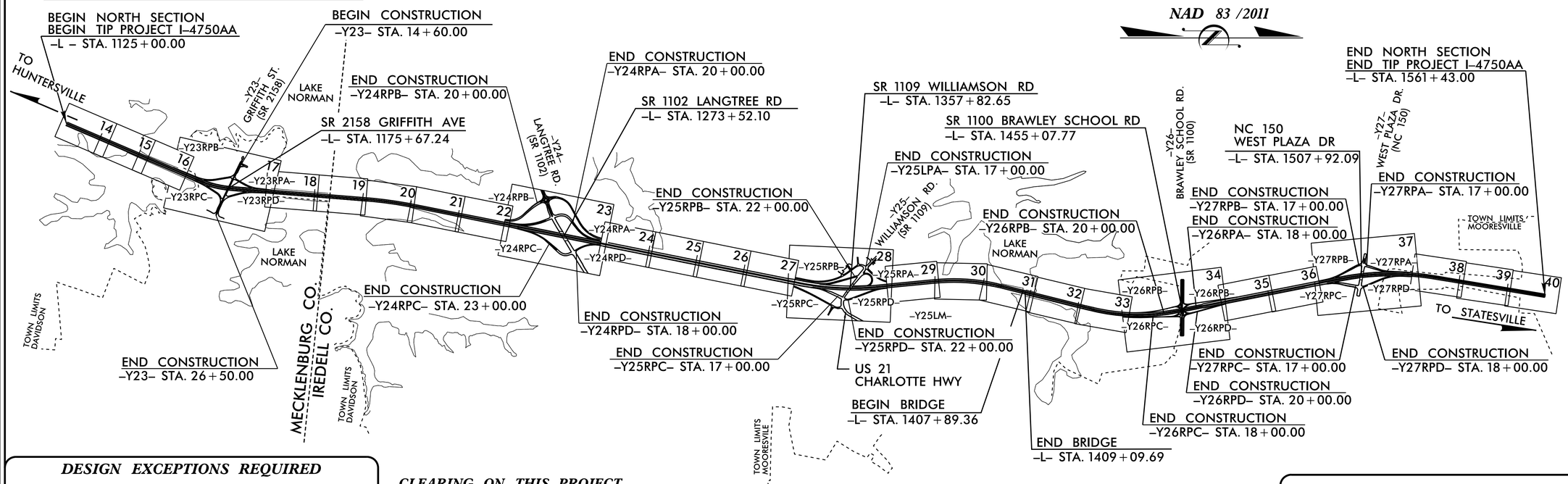
TYPE OF WORK: *GRADING, DRAINAGE, PAVING, SIGNING, ITS, GUARDRAIL, PAVEMENT MARKINGS, TOLLING STRUCTURES /EQUIPMENT AND STRUCTURES*

sugar creek construction, LLC

INTERMEDIATE ROADWAY PLANS
TYPICAL SECTIONS, SHOULDER DRAINS
FINAL HYDRAULIC DESIGN PLANS
SUBMITTAL NO. DSG0060
JANUARY 20, 2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83 /2011



DESIGN EXCEPTIONS REQUIRED

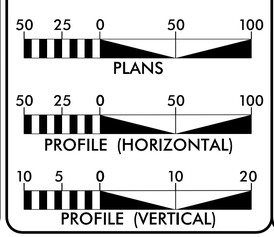
MEDIAN SHOULDER WIDTH AT -Y25- (WILLIAMSON ROAD)
VERTICAL CLEARANCE AT -Y25- (WILLIAMSON ROAD)

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

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

NCDOT CONTACT: VIRGINIA MABRY MANAGER PRIORITY PROJECTS UNIT

GRAPHIC SCALES



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 "STATEWIDE TIER"

PROJECT LENGTH

*LENGTH ROADWAY TIP PROJECT I-4750AA * (NORTH SECTION)* = *8.245 MI*

*LENGTH STRUCTURES TIP PROJECT I-4750AA * (NORTH SECTION)* = *0.023 MI*

TOTAL LENGTH OF TIP PROJECT I-4750AA (NORTH SECTION) = *8.268 MI*

** NOTE: PROJECT LENGTH BASED ON NORTHBOUND LANES*

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: N/A

LETTING DATE: TBD

DEAN HATFIELD, P.E.
PROJECT ENGINEER

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

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

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12/05/11

PROJECT REFERENCE NO.	SHEET NO.
C203406	1B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — 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 — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- 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 — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H–Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line
- Designated U/G Water Line (S.U.E.*)
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

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

NAD 83/2011

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

0′ 50′ 100′

PROJECT REFERENCE NO.	SHEET NO.
C203406	14
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

BEGIN TIP PROJECT I-4750AA
BEGIN NORTH SECTION
-L- POT Sta. 1125+00.00

MATCH LINE SEE SHEET 13
-L- STA. 1125+00.00

MATCH LINE SEE SHEET 15
-L- STA. 1137+00.00

1975 LLC
21052 / 804

BRANDON L RIDGE
21529 / 549

ELIZABETH KENTON, LLC
21586 / 224

GERALD SCHROEDER
09928 / 868

E2 PROPERTIES LLC
26779 / 821

WMCI CHARLOTTE III LLC
16556 / 246

LAKE NORMAN

600′ BUFFER TRANSITION

1300′ SB EGRESS

1300′ NB INGRESS

BEGIN PROP. RETAINING WALL -L- STA. 1125+00.00

BEGIN PROP. -NW16-

END EXP. GUTTER -L- +30.00

PROP. SINGLE-FACE CONCRETE BARRIER

END PROP. RETAINING WALL -L- STA. 1130+50.00

REMOVE EXIST. GUARDRAIL

PROP. NOISE WALL -NW16-

PROP. -NW16-

BEGIN EXP. GUTTER -L-+00.00

PROP. -NW16-

PROP. EXP. GUTTER

GRAU-350 TL-3

REMOVE EX. DI CONSTRUCT TBDDI

REMOVE EX. DI, CONSTRUCT TBDDI

REMOVE GUARDRAIL IN MEDIAN

END PROP. RETAINING WALL -L- STA. 1131+25.00

PROP. NOISE WALL -NW17-

BEGIN PROP. RETAINING WALL -L- STA. 1127+25.00

SEE DETAIL A TIE TO EXISTING

CL. B RIP RAP EST. 2 TONS EST. 7 SY GEO.

END PROP. -NW17-

REMOVE EXIST. GUARDRAIL

PROP. GUARDRAIL

PROP. DOUBLE FACED CONC. BARRIER

PROP. SINGLE-FACE CONCRETE BARRIER

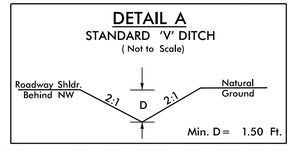
DO NOT DISTURB FENCE

N 23°14′ 29.9″ E

1130+00

1135+00

DETAIL A
STANDARD 'V' DITCH
(Not to Scale)



FROM -L- STA. 1115+00 TO STA. 1125+30 RT

NOTES:

1.) FOR -L- PROFILE SEE SHEET 52.

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
C203406	15
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED 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.

0′ 50′ 100′

NAD 83/2011

MATCH LINE SEE SHEET 14 –L– STA. 1137+00.00

MATCH LINE SEE SHEET 16 –L– STA. 1149+00.00

JEFFREY L. JORGENSEN 20905 / 234

LINCOLN C CONAWAY 19152 / 909

SHEBRA S PATTERSON 08767 / 870

CURTIS NAY HELMS II 11551 / 193

LORENZO FRIDAY JR. 20808 / 818

KYM NWOSU 18647 / 886

PETER G KOURES 23316 / 978

TRACY S. FORD 21690/359

RUTHANN M FOX REVOCABLE LIVING TRUST 25374 / 626

CROWN HARBOR HOMEOWNERS ASSOCIATION OF MECK INC 16495 / 338

ELIZABETH KENTON LLC 20629 / 628

LAKE NORMAN

WMCI CHARLOTTE III LLC 16556 / 246

1300′ SB EGRESS

PROP. NOISE WALL –NW16–

REMOVE GUARDRAIL IN MEDIAN

PROP. EXP. GUTTER

REMOVE EX. DI CONSTRUCT 2GI (1503)

PROP. –NW16–

END EXP. GUTTER –L– +50.00

PROP. –NW16–

PROP. SINGLE-FACED CONCRETE BARRIER

CL B RIP RAP EST. 2 TONS EST. 7 SY GEO

4OTCB (1504)

600′ LANE AND BUFFER TRANSITION

560′ LANE TRANSITION

TIE FENCE TO NOISE WALL

END PROP. –NW16–

500′ BUFFER

TIE EXIST.GUARDRAIL TO CONCRETE BARRIER

REMOVE AND RESET EXIST. GUARDRAIL

EXIST. PS

5′ BUFFER

15″ SLOTTED DRAIN

TB 2GI

TBDDI

REMOVE EX. DI, CONSTRUCT TBDDI

REMOVE EX. DI CONSTRUCT 2GI (1505)

REMOVE EX. DI, CONSTRUCT TBDDI (1506)

RETAIN

–L– 1140+00

–L– 1145+00

N 23°14′29.9″ E

I-77 SBL 37.9 BST

I-77 NBL 36.0 BST

PROP. GUARDRAIL

REMOVE EXIST. GUARDRAIL

PROP. DOUBLE FACED CONC. BARRIER

TIE TO EXIST. GUARDRAIL

REMOVE AND RESET EXIST. GUARDRAIL

1300′ NB INGRESS

560′ LANE TRANSITION

500′ BUFFER

600′ LANE AND BUFFER TRANSITION

NOTES:

1.) FOR –L– PROFILE SEE SHEET 53.

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

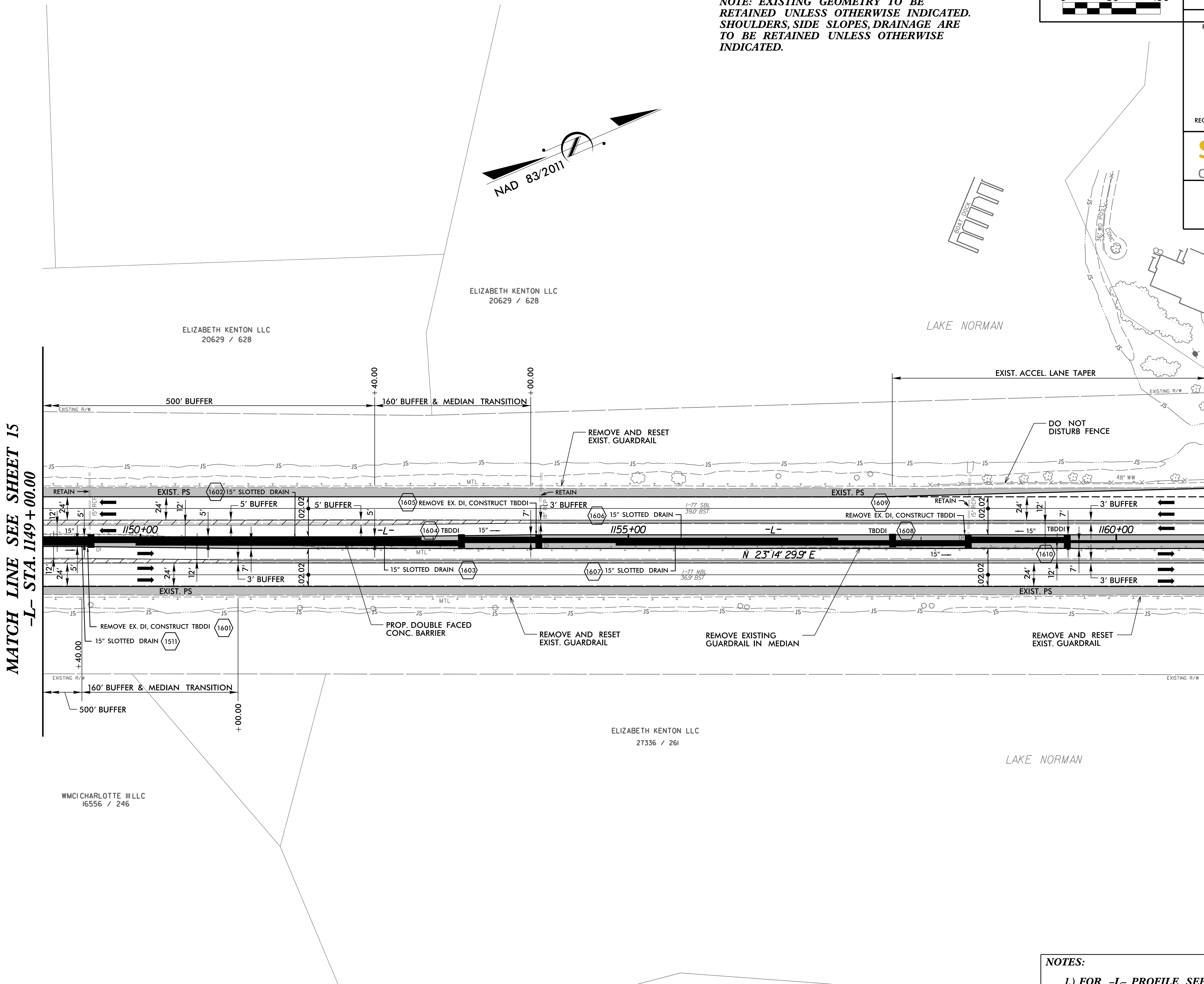
PROJECT REFERENCE NO.	SHEET NO.
C203406	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS



0' 50' 100'
NAD 83/2011
ELIZABETH KENTON LLC
20629 / 628
ELIZABETH KENTON LLC
20629 / 628
LAKE NORMAN
BOAT DOCK
EXIST. ACCEL. LANE TAPER
500' BUFFER
160' BUFFER & MEDIAN TRANSITION
+40.00
+00.00
REMOVE AND RESET EXIST. GUARDRAIL
DO NOT DISTURB FENCE
MATCH LINE SEE SHEET 15
-L- STA. 1149+00.00
MATCH LINE SEE SHEET 17
-L- STA. 1161+00.00
RETAIN
EXIST. PS
1602 15" SLOTTED DRAIN
5' BUFFER
1605 REMOVE EX. DI, CONSTRUCT TBDDI
3' BUFFER
1606 15" SLOTTED DRAIN
I-77 SBL 39.0' BST
1609
REMOVE EX. DI, CONSTRUCT TBDDI
1150+00
-L-
1604 TBDDI
1155+00
TBDDI 1608
1160+00
N 23° 14' 29.9" E
1610
15" SLOTTED DRAIN 1603
1607 15" SLOTTED DRAIN
I-77 NBL 36.9' BST
REMOVE EX. DI, CONSTRUCT TBDDI 1601
15" SLOTTED DRAIN 1511
PROP. DOUBLE FACED CONC. BARRIER
REMOVE AND RESET EXIST. GUARDRAIL
REMOVE EXISTING GUARDRAIL IN MEDIAN
REMOVE AND RESET EXIST. GUARDRAIL
EXISTING R/W
ELIZABETH KENTON LLC
27336 / 261
LAKE NORMAN
WMCI CHARLOTTE III LLC
16556 / 246

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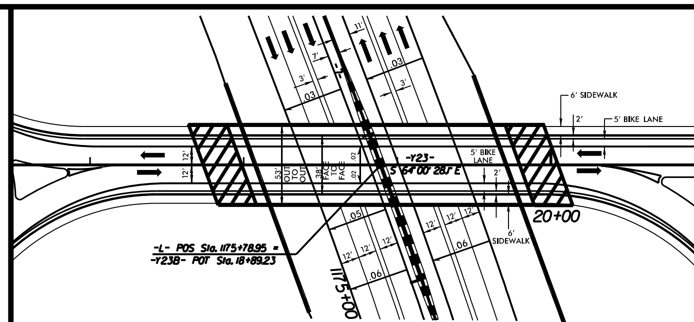
NOTES:

1.) FOR -L- PROFILE SEE SHEET 54.



PAVEMENT–BRIDGE RELATIONSHIP SKETCH N.T.S.

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

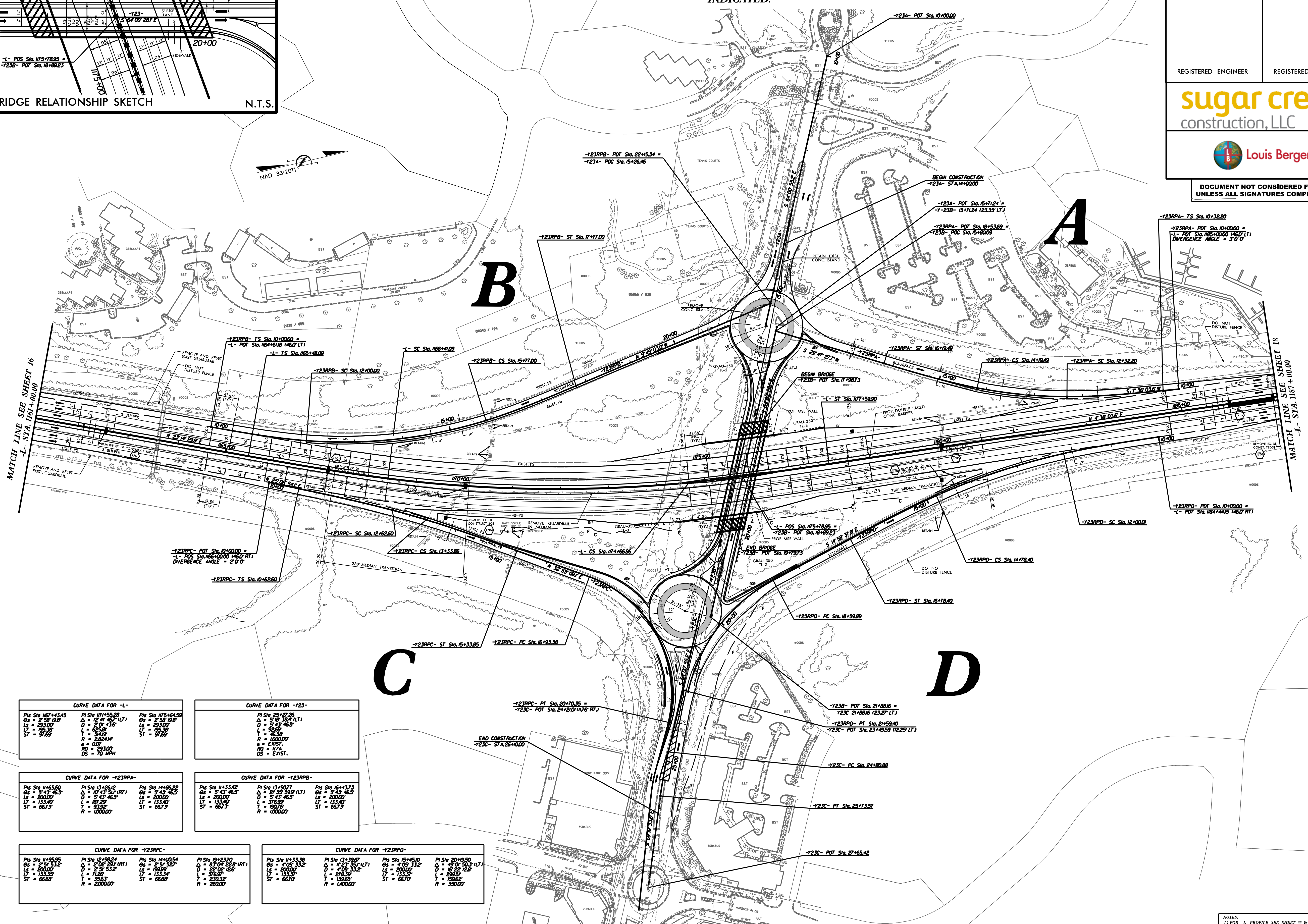
0' 100' 200'	PROJECT REFERENCE NO.	SHEET NO.
	C203406	17
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER REGISTERED ENGINEER	HYDRAULICS ENGINEER REGISTERED ENGINEER

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS



CURVE DATA FOR -L-		
PIs Sta 1167+43.45	PI Sta 1171+55.28	PIs Sta 1175+64.59
θs = 2° 58' 19.8"	Δ = 12° 41' 46.7" (LT)	θs = 2° 58' 19.8"
Ls = 293.00'	D = 2° 01' 43.6"	Ls = 293.00'
LT = 195.36'	L = 625.81'	LT = 195.36'
ST = 97.69'	T = 314.19'	ST = 97.69'
	R = 2,824.14'	
	e = 0.07	
	RO = 293.00'	
	DS = 70 MPH	

CURVE DATA FOR -Y23-
PI Sta 25+27.26
Δ = 5° 18' 38.4" (LT)
D = 5° 43' 46.5"
L = 92.69'
T = 46.38'
R = 1,000.00'
e = EXIST.
RO = N/A
DS = EXIST.

CURVE DATA FOR -Y23RPA-		
PIs Sta 11+65.60	PI Sta 13+26.12	PIs Sta 14+86.22
θs = 5° 43' 46.5"	Δ = 10° 43' 51.1" (RT)	θs = 5° 43' 46.5"
Ls = 200.00'	D = 5° 43' 46.5"	Ls = 200.00'
LT = 133.40'	L = 187.29'	LT = 133.40'
ST = 66.73'	T = 93.92'	ST = 66.73'
	R = 1,000.00'	

CURVE DATA FOR -Y23RPB-		
PIs Sta 11+33.42	PI Sta 13+90.77	PIs Sta 16+43.73
θs = 5° 43' 46.5"	Δ = 21° 35' 59.9" (LT)	θs = 5° 43' 46.5"
Ls = 200.00'	D = 5° 43' 46.5"	Ls = 200.00'
LT = 133.40'	L = 376.99'	LT = 133.40'
ST = 66.73'	T = 190.76'	ST = 66.73'
	R = 1,000.00'	

CURVE DATA FOR -Y23RPC-			
PIs Sta 11+95.95	PI Sta 12+98.24	PIs Sta 14+00.54	PI Sta 19+23.70
θs = 2° 51' 53.2"	Δ = 2° 02' 29.1" (RT)	θs = 2° 51' 52.7"	Δ = 83° 04' 22.8" (RT)
Ls = 200.00'	D = 2° 51' 53.2"	Ls = 199.99'	D = 22° 02' 12.6"
LT = 133.35'	L = 71.26'	LT = 133.34'	L = 376.97'
ST = 66.68'	T = 35.63'	ST = 66.68'	T = 230.32'
	R = 2,000.00'		R = 260.00'

CURVE DATA FOR -Y23RPD-			
PIs Sta 11+33.38	PI Sta 13+39.67	PIs Sta 15+45.10	PI Sta 20+19.50
θs = 4° 05' 33.2"	Δ = 11° 23' 35.1" (LT)	θs = 4° 05' 33.2"	Δ = 49° 01' 50.3" (LT)
Ls = 200.00'	D = 4° 05' 33.2"	Ls = 200.00'	D = 16° 22' 12.8"
LT = 133.37'	L = 278.39'	LT = 133.37'	L = 299.51'
ST = 66.70'	T = 139.65'	ST = 66.70'	T = 159.62'
	R = 1,400.00'		R = 350.00'

NOTES:
1.) FOR –L– PROFILE SEE SHEET 55 & 56.
2.) FOR –Y23– PROFILE SEE SHEET 98.
3.) FOR –Y23– RAMPS PROFILE SEE SHEET 86 & 87.

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PROJECT REFERENCE NO.	SHEET NO.
C203406	18
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

REGISTERED ENGINEER

HYDRAULICS ENGINEER

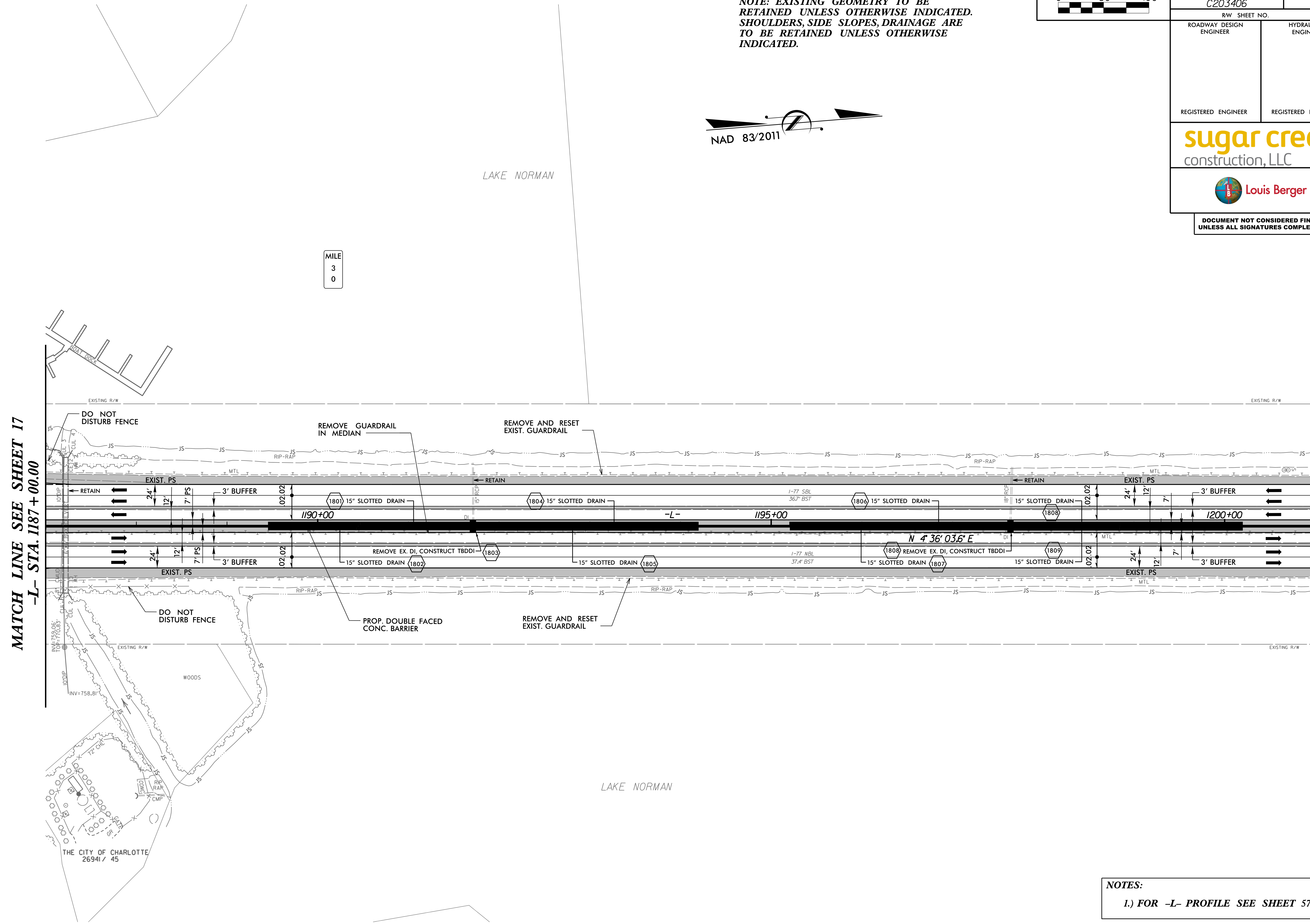
REGISTERED ENGINEER

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.



0' 50' 100'
NAD 83/2011
LAKE NORMAN
MILE 3 0
MATCH LINE SEE SHEET 17 -L- STA. 1187+00.00
MATCH LINE SEE SHEET 19 -L- STA. 1201+00.00
EXISTING R/W
DO NOT DISTURB FENCE
REMOVE GUARDRAIL IN MEDIAN
REMOVE AND RESET EXIST. GUARDRAIL
RIP-RAP
MTL
EXIST. PS
RETAIN
3' BUFFER
15" SLOTTED DRAIN
1190+00
-L-
1195+00
1200+00
N 4° 36' 03.6" E
REMOVE EX. DI, CONSTRUCT TBDDI
I-77 SBL 36.7' BST
I-77 NBL 37.4' BST
PROP. DOUBLE FACED CONC. BARRIER
WOODS
THE CITY OF CHARLOTTE 26941/ 45

NOTES:

1.) FOR -L- PROFILE SEE SHEET 57.

REVISIONS

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REVISIONS

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

0' 50' 100'

PROJECT REFERENCE NO.	SHEET NO.
C203406	19
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

MECKLENBURG COUNTY
IREDELL COUNTY

LAKE NORMAN

MATCH LINE SEE SHEET 18 -L- STA. 1201+00.00

EXISTING R/W

REMOVE AND RESET EXIST. GUARDRAIL

REMOVE GUARDRAIL IN MEDIAN

RIP-RAP

EXIST. PS

RETAIN

3' BUFFER

15" SLOTTED DRAIN (1901)

15" RCP

REMOVE EX. DI, CONSTRUCT TBDDI (1903)

15" SLOTTED DRAIN (1904)

1205+00

-L-

1210+00

MTL

N 4° 36' 03.6" E

15" SLOTTED DRAIN (1905)

3' BUFFER (1902)

15" SLOTTED DRAIN (1907)

15" SLOTTED DRAIN (1908)

3' BUFFER I-77 SBL 36.8' BST

3' BUFFER I-77 NBL 36.8' BST

15" SLOTTED DRAIN (1910)

15" SLOTTED DRAIN (1911)

+34.67

45.00' (TYP.)

24'

12'

7'

.02.02

.01

S

PROP. DOUBLE FACED CONC. BARRIER

REMOVE AND RESET EXIST. GUARDRAIL

MATCH LINE SEE SHEET 20 -L- STA. 1215+00.00

LAKE NORMAN

MECKLENBURG COUNTY
IREDELL COUNTY

NOTES:

1.) FOR -L- PROFILE SEE SHEET 58.

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REVISIONS

NAD 83/2011

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

0' 50' 100'

PROJECT REFERENCE NO.	SHEET NO.
C203406	20
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

sugar creek construction, LLC

Louis Berger

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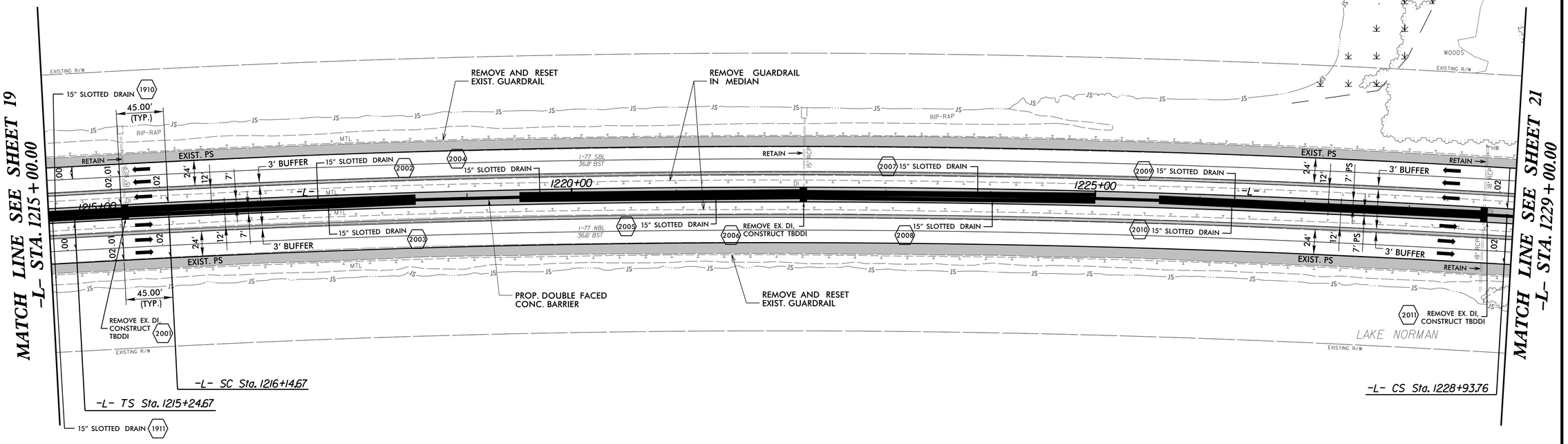
LAKE NORMAN



LAKE NORMAN

CURVE DATA FOR -L-		
PIs Sta 1215+84.67	PI Sta 1222+54.85	PIs Sta 1229+23.74
Θs = 0° 13' 13.5"	Δ = 6° 15' 55.4" (RT)	Θs = 0° 13' 13.5"
Ls = 90.00'	D = 0° 29' 23.4"	Ls = 90.00'
LT = 60.00'	L = 1,279.09'	LT = 60.00'
ST = 30.00'	T = 640.18'	ST = 30.00'
	R = 11,697.00'	
	e = 0.02	
	RO = 90.00'	
	DS = 70 MPH	

NOTES:

1.) FOR -L- PROFILE SEE SHEET 59.

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177_Fullsize_RDY.tbl

PROJECT REFERENCE NO.	SHEET NO.
C203406	21

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — REGISTERED ENGINEER

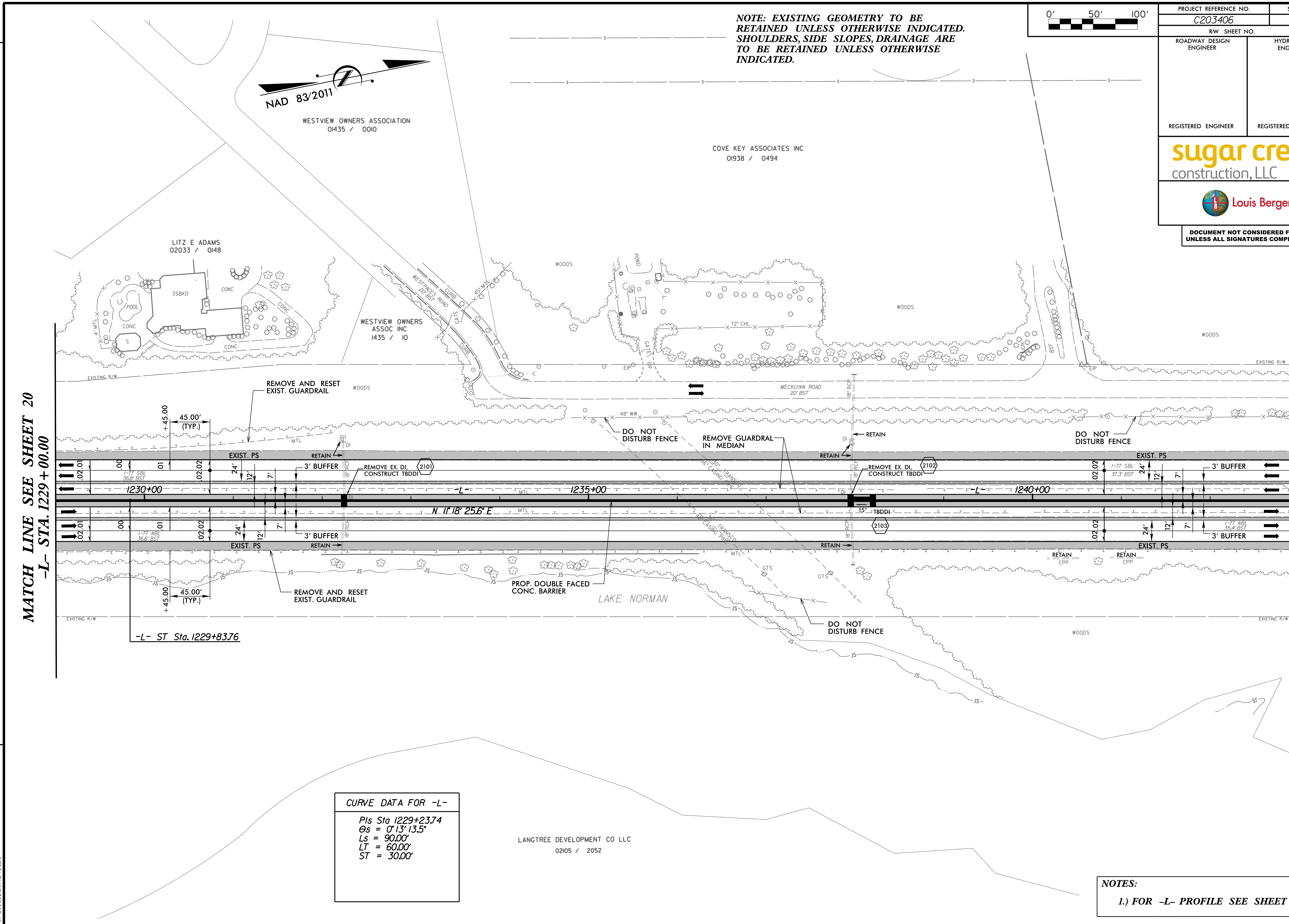
HYDRAULICS ENGINEER — REGISTERED ENGINEER

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.



0′ 50′ 100′
NAD 83/2011
WESTVIEW OWNERS ASSOCIATION
01435 / 0010
COVE KEY ASSOCIATES INC
01938 / 0494
LITZ E ADAMS
02033 / 0148
WESTVIEW OWNERS ASSOC INC
1435 / 10
POOL
CONC
WOODS
WESTPACES ROAD 20′ BST
CURB
GATE
72″ CHL
MECKLYNN ROAD 20′ BST
EXISTING R/W
REMOVE AND RESET EXIST. GUARDRAIL
45.00′ (TYP.)
+45.00
EXIST. PS
RETAIN
3′ BUFFER
REMOVE EX. DI, CONSTRUCT TBDDI
2101
2102
2103
DO NOT DISTURB FENCE
REMOVE GUARDRAIL IN MEDIAN
I-77 SBL 36.8′ BST
I-77 NBL 36.6′ BST
I-77 SBL 37.3′ BST
I-77 NBL 35.4′ BST
1230+00
1235+00
1240+00
-L-
N 11° 18′ 25.6″ E
24′
12′
7′
TBDDI
PROP. DOUBLE FACED CONC. BARRIER
-L- ST Sta. 1229+83.76
LAKE NORMAN
MATCH LINE SEE SHEET 20 -L- STA. 1229+00.00
MATCH LINE SEE SHEET 22 -L- STA. 1243+00.00
LANGTREE DEVELOPMENT CO LLC
02105 / 2052

CURVE DATA FOR -L-

PIs Sta 1229+23.74
Θs = 0°13′13.5″
Ls = 90.00′
LT = 60.00′
ST = 30.00′

NOTES:

1.) FOR -L- PROFILE SEE SHEET 60.

REVISIONS

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I77_Fullsize_RDY.tbl

PROJECT REFERENCE NO.	SHEET NO.
C203406	22
R/W SHEET NO.	

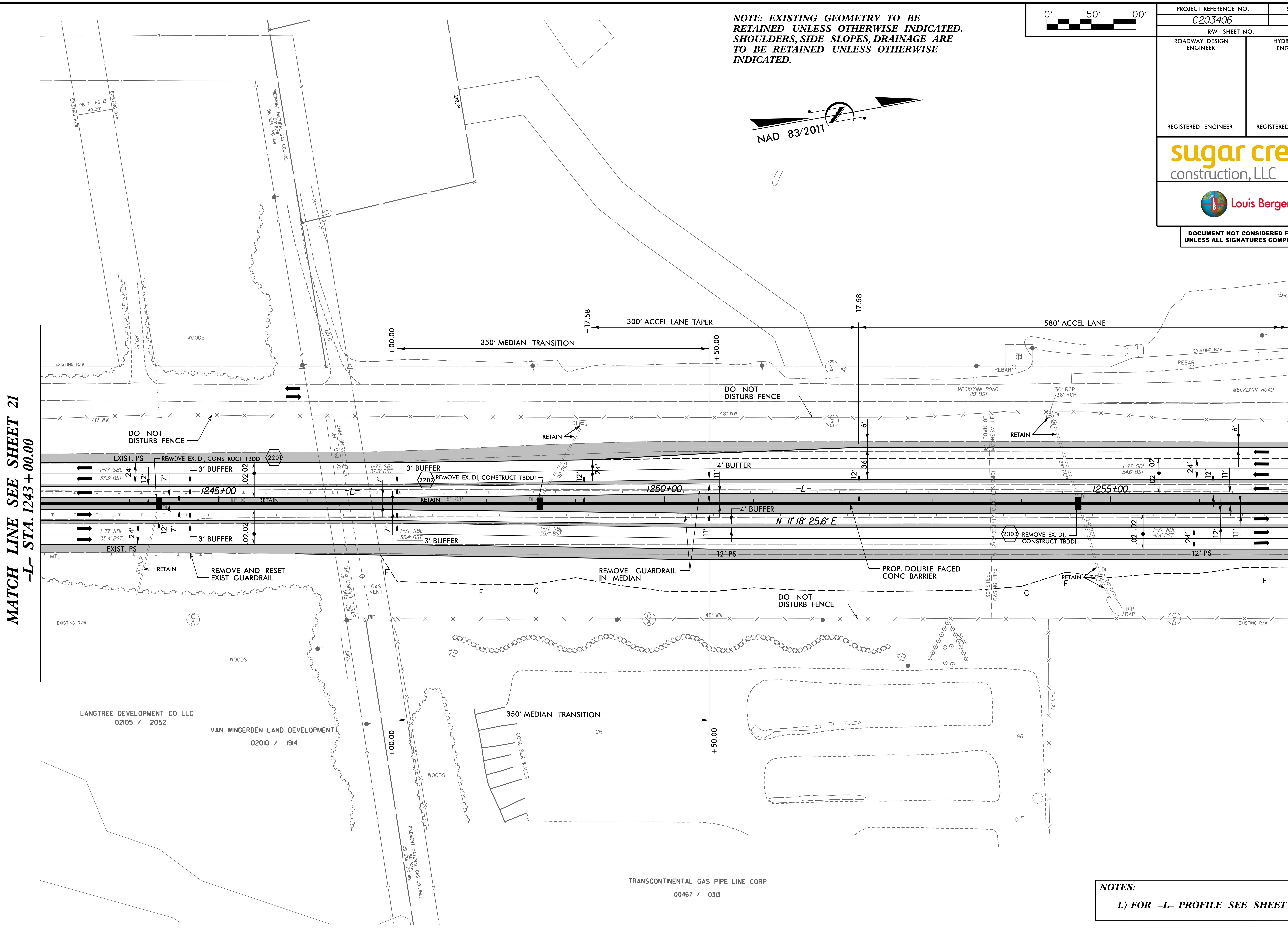
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

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.



0' 50' 100'
NAD 83/2011
MATCH LINE SEE SHEET 21
-L- STA. 1243+00.00
MATCH LINE SEE SHEET 23
-L- STA. 1257+00.00
350' MEDIAN TRANSITION
300' ACCEL LANE TAPER
580' ACCEL LANE
DO NOT DISTURB FENCE
EXIST. PS
REMOVE EX. DI, CONSTRUCT TBDDI
3' BUFFER
4' BUFFER
1245+00
1250+00
1255+00
-L-
N 11° 18' 25.6" E
RETAIN
REMOVE AND RESET EXIST. GUARDRAIL
REMOVE GUARDRAIL IN MEDIAN
PROP. DOUBLE FACED CONC. BARRIER
12' PS
MECKLYNN ROAD
EXISTING R/W
WOODS
LANGTREE DEVELOPMENT CO LLC
02105 / 2052
VAN WINGERDEN LAND DEVELOPMENT
02010 / 1914
TRANSCONTINENTAL GAS PIPE LINE CORP
00467 / 0313
CONC. BLK WALLS
REVISIONS

NOTES:

1.) FOR -L- PROFILE SEE SHEET 61.

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I77_Fullsize_RDY.tbl

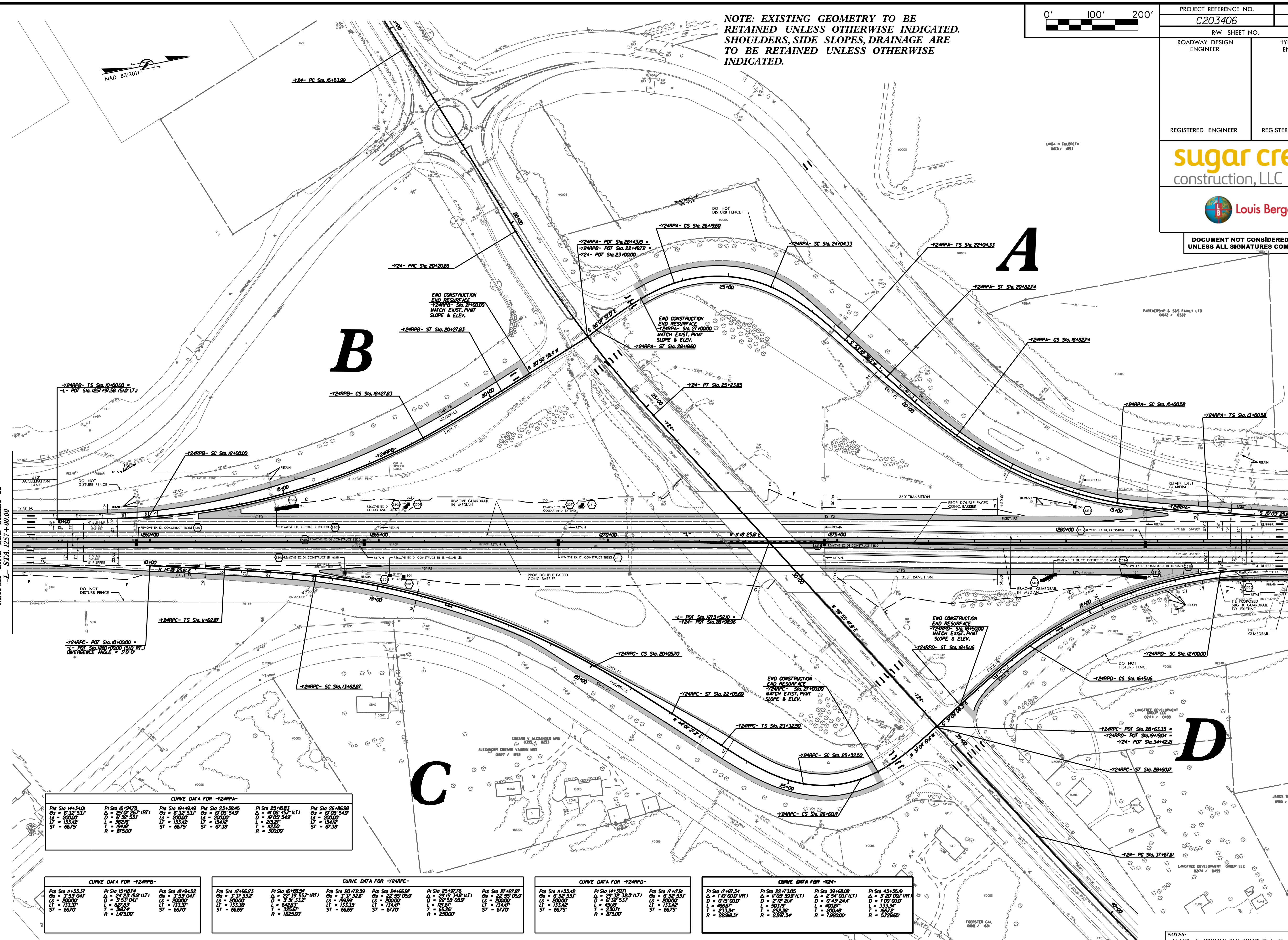
NOTE: EXISTING GEOMETRY TO BE RETAINED UNLESS OTHERWISE INDICATED. SHOULDERS, SIDE SLOPES, DRAINAGE ARE TO BE RETAINED UNLESS OTHERWISE INDICATED.

PROJECT REFERENCE NO.	SHEET NO.
C203406	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CURVE DATA FOR -Y24RPA-					
PIs Sta 14+34.01	PI Sta 16+94.76	PIs Sta 19+49.49	PIs Sta 23+38.45	PI Sta 25+16.83	PIs Sta 26+86.98
θs = 6° 32' 53.1"	Δ = 25° 01' 26.7" (RT)	θs = 6° 32' 53.1"	θs = 19° 05' 54.9"	Δ = 41° 06' 45.7" (LT)	θs = 19° 05' 54.9"
Ls = 200.00'	D = 6° 32' 53.1"	Ls = 200.00'	Ls = 200.00'	D = 19° 05' 54.9"	Ls = 200.00'
LT = 133.42'	L = 382.16'	LT = 133.42'	LT = 134.12'	L = 215.27'	LT = 134.12'
ST = 66.75'	T = 194.18'	ST = 66.75'	ST = 67.38'	T = 112.50'	ST = 67.38'
	R = 875.00'			R = 300.00'	

CURVE DATA FOR -Y24RPB-		
PIs Sta 11+33.37	PI Sta 15+18.74	PIs Sta 18+94.52
θs = 3° 53' 04.1"	Δ = 24° 23' 15.9" (LT)	θs = 3° 53' 04.1"
Ls = 200.00'	D = 3° 53' 04.1"	Ls = 200.00'
LT = 133.37'	L = 627.83'	LT = 133.37'
ST = 66.70'	T = 318.74'	ST = 66.70'
	R = 1,475.00'	

CURVE DATA FOR -Y24RPC-					
PIs Sta 12+96.23	PI Sta 16+88.54	PIs Sta 20+72.39	PIs Sta 24+66.97	PI Sta 25+97.76	PIs Sta 27+27.87
θs = 3° 31' 33.2"	Δ = 22° 39' 55.7" (RT)	θs = 3° 31' 32.6"	θs = 22° 55' 05.9"	Δ = 29° 15' 34.8" (LT)	θs = 22° 55' 05.9"
Ls = 200.00'	D = 3° 31' 33.2"	Ls = 199.99'	Ls = 200.00'	D = 22° 55' 05.9"	Ls = 200.00'
LT = 133.36'	L = 642.83'	LT = 133.35'	LT = 134.47'	L = 127.67'	LT = 134.47'
ST = 66.69'	T = 325.67'	ST = 66.69'	ST = 67.70'	T = 65.26'	ST = 67.70'
	R = 1,625.00'			R = 250.00'	

CURVE DATA FOR -Y24RPD-		
PIs Sta 11+33.42	PI Sta 14+30.71	PIs Sta 17+17.91
θs = 6° 32' 53.1"	Δ = 29° 32' 32.3" (LT)	θs = 6° 32' 53.1"
Ls = 200.00'	D = 6° 32' 53.1"	Ls = 200.00'
LT = 133.42'	L = 451.16'	LT = 133.42'
ST = 66.75'	T = 230.71'	ST = 66.75'
	R = 875.00'	

CURVE DATA FOR -Y24-			
PI Sta 17+87.34	PI Sta 22+73.05	PI Sta 39+68.08	PI Sta 43+35.19
Δ = 1° 10' 00.0" (RT)	Δ = 11° 05' 59.9" (LT)	Δ = 2° 54' 00.1" (LT)	Δ = 3° 20' 00.1" (RT)
D = 0° 15' 00.0"	D = 2° 12' 21.4"	D = 0° 43' 24.4"	D = 1° 00' 00.0"
L = 466.67'	L = 503.19'	L = 400.87'	L = 333.34'
T = 233.34'	T = 252.38'	T = 200.48'	T = 166.72'
R = 22,918.31'	R = 2,597.34'	R = 7,920.00'	R = 5,729.65'

NOTES:
1.) FOR -L- PROFILE SEE SHEET 62 & 63.
2.) FOR -Y24- RAMPS PROFILE SEE SHEET 88 & 89

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
I-5405	24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16003 ENGINEER BRIAN D. HATFIELD 3/16/2016

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032134 ENGINEERING ROBERT D. ROBERTS 3/16/2016

sugar creek construction, LLC

Louis Berger

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REVISIONS

NAD 83/2011

0' 50' 100'

MATCH LINE SEE SHEET 23 –L– STA. 1285+00.00

MATCH LINE SEE SHEET 25 –L– STA. 1299+00.00

LANGTREE PROPERTIES LLC
01829 / 1238

LANGTREE PROPERTIES LLC
01753 / 2303

HAMMONS JOHN O REVOCABLE TRUST
01753 / 1125

HAMMONS JOHN O REVOCABLE TRUST
01650 / 0497

MILE 3 2

-Y24RPA- POT Sta. 10+00.00 =
-L- POT Sta.1286+10.00 (46.0' LT)
DIVERGENCE ANGLE = 3°45'0"

S 15°03'25.6" W
-Y24RPA-

N 11°18'25.6" E

-Y24RPD- TS Sta. 10+00.00 =
-L- POT Sta.1285+36.75 (58.36' RT)

SEE NOTE 3 TITLE SHEET

640' BUFFER TRANSITION FROM 4' TO 12'
& MEDIAN TRANSITION FROM 10'-10" TO 3'-10"

500' BUFFER

840' LANE & BUFFER TRANS.

BEGIN PROP. -NW24-
-L- STA. 1297+30.00
(98' LT) FACE OF WALL

PROP. NOISE WALL -NW24-

RETAIN EXIST. GUARDRAIL

DO NOT DISTURB FENCE

PROP. SINGLE-FACED CONCRETE BARRIER

TIE PROP. FENCE TO NOISE WALL

REMOVE FENCE

RETAIN GRAU-350 TL-3

REMOVE DI CONSTRUCT 2GI

REMOVE DI CONSTRUCT TB 2GI

REMOVE DI & 10 +/- LF EX. 15" CMP

RELOCATE SIGN

JB wSlab Lid

REMOVE

REMOVE GUARDRAIL IN MEDIAN

GRAU-350 TL-3

REMOVE EXIST. GUARDRAIL

PROP. DOUBLE FACED CONC. BARRIER TYPE S-3

PROP. EXP. GUTTER

BEGIN EXP. GUTTER +00.00

END SBG +50.00

50' TRANS. SBG TO EXP. GUTTER

50' TRANS. EXP. GUTTER TO SBG

BEGIN SBG +50.00

END EXP. GUTTER +00.00

BEGIN EXP. GUTTER +25.00

END SBG +75.00

50' TRANS. SBG TO EXP. GUTTER

ROCK PLATING CLASS II RIP RAP

PROP. GUARDRAIL

RETAIN EX. RIP RAP. IF NECESSARY RESTORE AFTER CONSTRUCTION ACTIVITIES.)

SEE DETAIL A

SEE DETAIL B

CAT-1

10' PS

11'-8" PS

4' BUFFER

12' BUFFER

3'-10" (+60)

WOODS

BOULDERS

LANGTREE DEVELOPMENT GROUP LLC
02174 / 0499

LANGTREE DEVELOPMENT GROUP LLC
02174 / 0499

DETAIL A
BERM 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, RDWY, 2:1
Min. D= 1.0 Ft.
b= 3 Ft. (Min.)

FROM –L– STA. 1287+50 TO STA. 1289+50 RT

DETAIL B
BERM 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, d, RDWY, 2:1
Geotextile
Min. D= 1.0 Ft.
b= 3 Ft. (Min.)
Max. d= 1.0 Ft. Type of Liner= Cl. B Rip Rap

FROM –L– STA. 1289+50 TO STA. 1290+60 RT

NOTES:
DESIGN EXCEPTION FOR MEDIAN SHOULDER WIDTH FROM –L– STA. 1286+61NB TO 1528+75NB.
DESIGN EXCEPTION FOR MEDIAN SHOULDER WIDTH FROM –L– STA. 1287+10SB TO 1524+63SB.

NOTES:
1.) FOR –L– PROFILE SEE SHEET 64.

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PROJECT REFERENCE NO.	SHEET NO.
C203406	25
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0' 50' 100'

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

NAD 83/2011

REVISIONS

MATCH LINE SEE SHEET 24 –L– STA. 1299+00.00

MATCH LINE SEE SHEET 26 –L– STA. 1313+00.00

HAMMONS JOHN O REVOCABLE TRUST 01650 / 0497

KIPKA JAMES EDWARD JR 01628 / 2328

STEWART TRAVIS M & 01525 / 2126

TRAVIS M & STEWART 01524 / 2169

LANGTREE DEVELOPMENT GROUP LLC 02174 / 0499

TOWN OF MOORESVILLE 0335 / 1448

840' LANE & BUFFER TRANSITION

2000' SB INGRESS /EGRESS

2000' NB INGRESS /EGRESS

PROP. NOISE WALL –NW24–

REMOVE FENCE

RETAIN EXIST. GUARDRAIL

PROP. GUARDRAIL

PROP. DOUBLE FACED CONC. BARRIER

REMOVE GUARDRAIL IN MEDIAN

REMOVE EXIST. GUARDRAIL

DO NOT DISTURB FENCE

GRAU–350 TL–3

END EXP. GUTTER +50.00

50' TRANS. EXP. GUTTER TO SBG

BEGIN SBG +00.00

CLASS II RIP RAP

EST. 2 TONS CL B RIP RAP

EST. 7 SY GEO.

REMOVE EX. WWs EXTEND EX. RCBC

PROP. SBG

EXIST. PS

11'–8" PS

10' PS

1300+00

1305+00

1310+00

+00.00

+63.00

N 11° 18' 25.6" E

TOWN OF MOORESVILLE SANITARY SEWER EASEMENT DB 1061 PG 151

NOTES:

1.) FOR –L– PROFILE SEE SHEET 65.

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PROJECT REFERENCE NO.	SHEET NO.
C203406	26
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

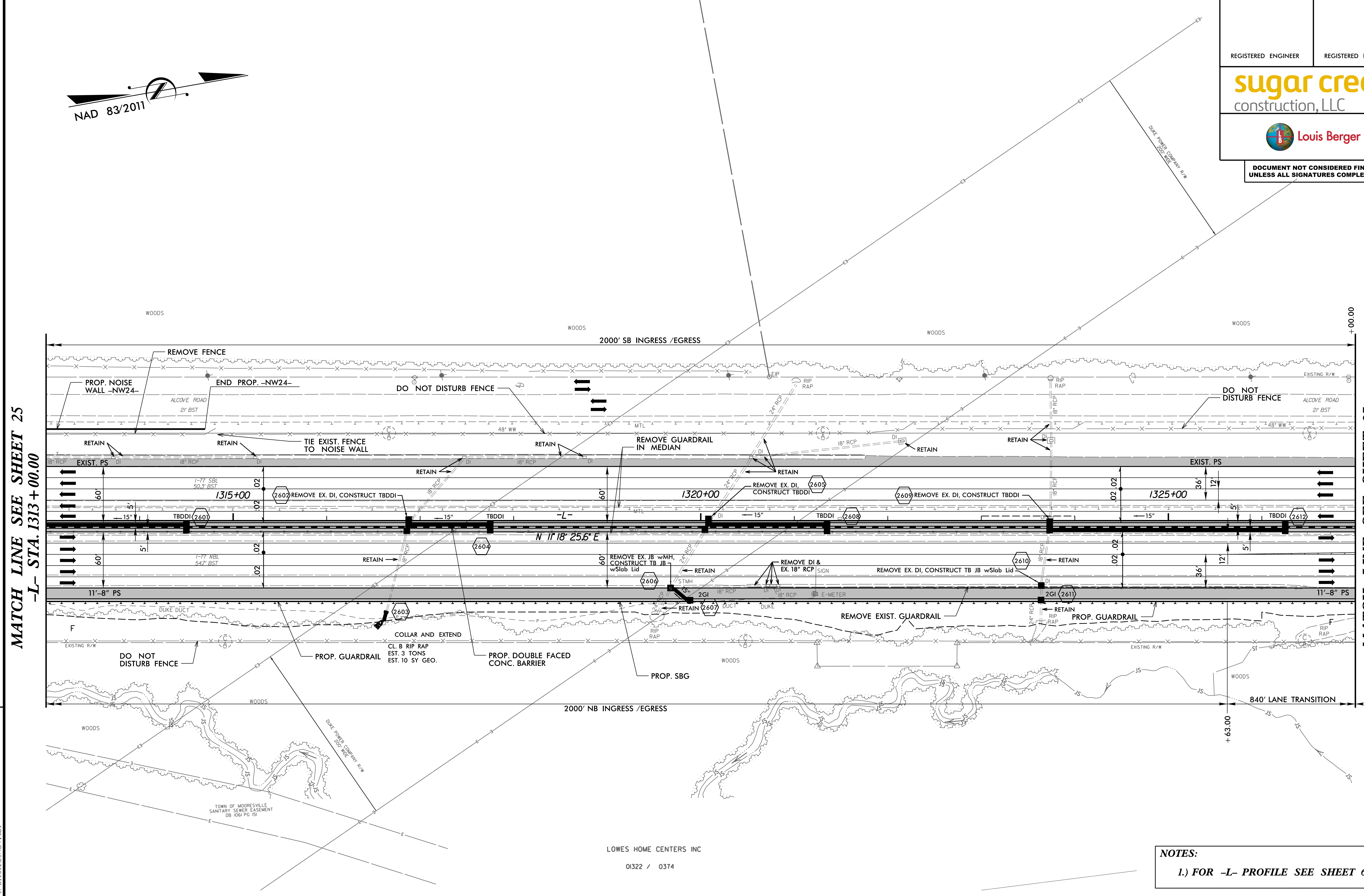
sugar creek construction, LLC

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.

REVISIONS



0' 50' 100'
NAD 83/2011
MATCH LINE SEE SHEET 25 -L- STA. 1313+00.00
MATCH LINE SEE SHEET 27 -L- STA. 1327+00.00
2000' SB INGRESS /EGRESS
2000' NB INGRESS /EGRESS
840' LANE TRANSITION
REMOVE FENCE
PROP. NOISE WALL -NW24-
END PROP. -NW24-
DO NOT DISTURB FENCE
TIE EXIST. FENCE TO NOISE WALL
REMOVE GUARDRAIL IN MEDIAN
RETAIN
EXIST. PS
11'-8" PS
1315+00
1320+00
1325+00
N 11° 18' 25.6" E
-L-
REMOVE EX. DI, CONSTRUCT TBDDI
REMOVE EX. DI, CONSTRUCT TBDDI
REMOVE EX. JB w/MH, CONSTRUCT TB JB w/Slab Lid
REMOVE DI & EX. 18" RCP
REMOVE EX. DI, CONSTRUCT TB JB w/Slab Lid
REMOVE EXIST. GUARDRAIL
PROP. GUARDRAIL
COLLAR AND EXTEND
CL. B RIP RAP EST. 3 TONS EST. 10 SY GEO.
PROP. DOUBLE FACED CONC. BARRIER
PROP. SBG
I-77 SBL 50.3' BST
I-77 NBL 54.7' BST
ALCOVE ROAD 21' BST
DUKE POWER COMPANY R/W
TOWN OF MOORESVILLE SANITARY SEWER EASEMENT DB 1061 PG 151
LOWES HOME CENTERS INC
01322 / 0374
WOODS

NOTES:

1.) FOR -L- PROFILE SEE SHEET 66.

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PROJECT REFERENCE NO.	SHEET NO.
C203406	27
R/W SHEET NO.	

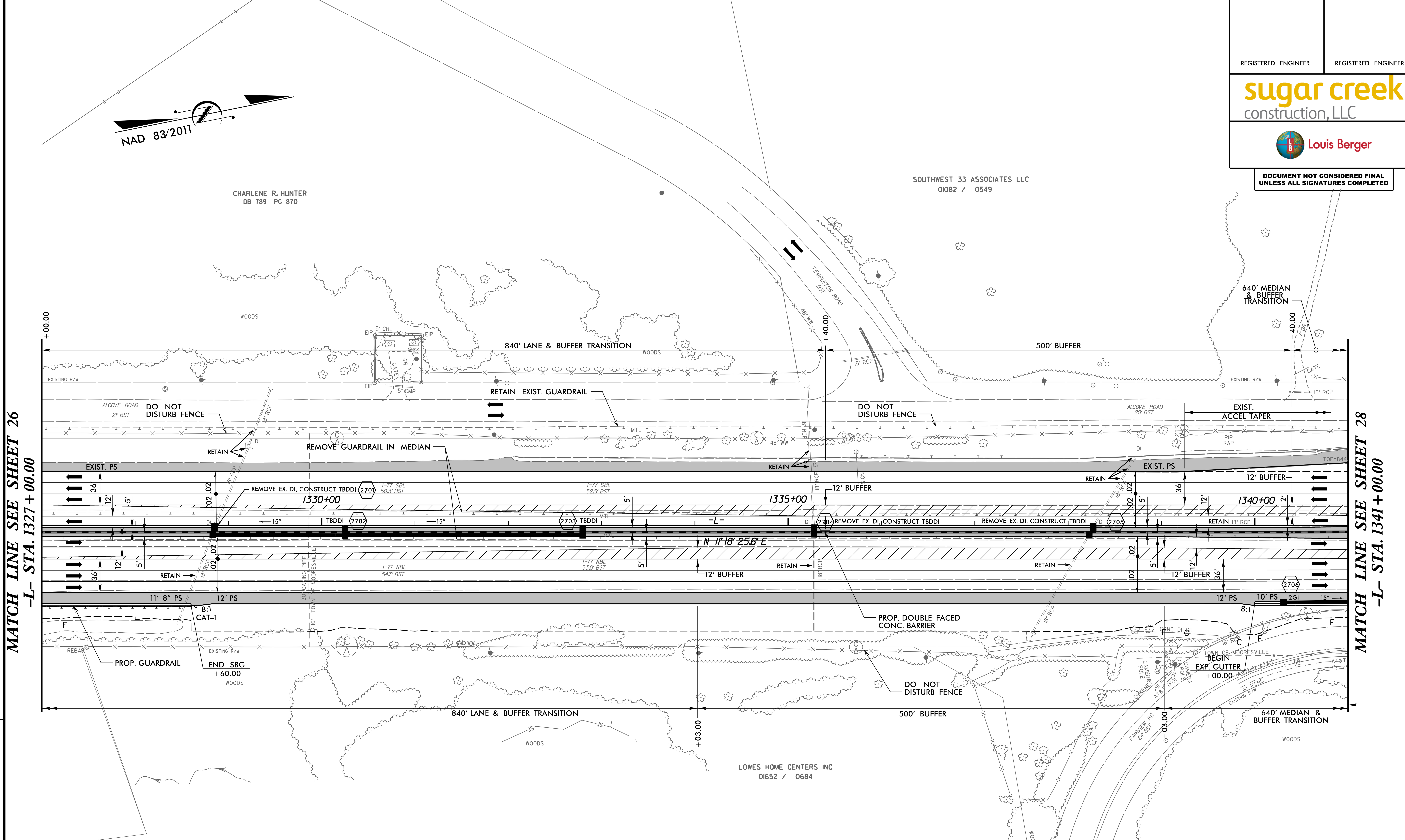
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

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.



0' 50' 100'
NAD 83/2011
CHARLENE R. HUNTER
DB 789 PG 870
SOUTHWEST 33 ASSOCIATES LLC
01082 / 0549
LOWES HOME CENTERS INC
01652 / 0684
MATCH LINE SEE SHEET 26
-L- STA. 1327+00.00
MATCH LINE SEE SHEET 28
-L- STA. 1341+00.00
840' LANE & BUFFER TRANSITION
500' BUFFER
640' MEDIAN & BUFFER TRANSITION
RETAIN EXIST. GUARDRAIL
DO NOT DISTURB FENCE
REMOVE GUARDRAIL IN MEDIAN
EXIST. PS
EXIST. ACCEL TAPER
REMOVE EX. DI, CONSTRUCT TBDDI
12' BUFFER
N 11° 18' 25.6" E
1330+00
1335+00
1340+00
PROP. DOUBLE FACED CONC. BARRIER
PROP. GUARDRAIL
END SBG +60.00
11'-8" PS
12' PS
10' PS
8:1 CAT-1
BEGIN EXP. GUTTER +00.00
TEMPLETON ROAD
ALCOVE ROAD
FAIRVIEW RD
WOODS
RETAIN

NOTES:

1.) FOR -L- PROFILE SEE SHEET 67.

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
C203406	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

sugar creek construction, LLC

Louis Berger

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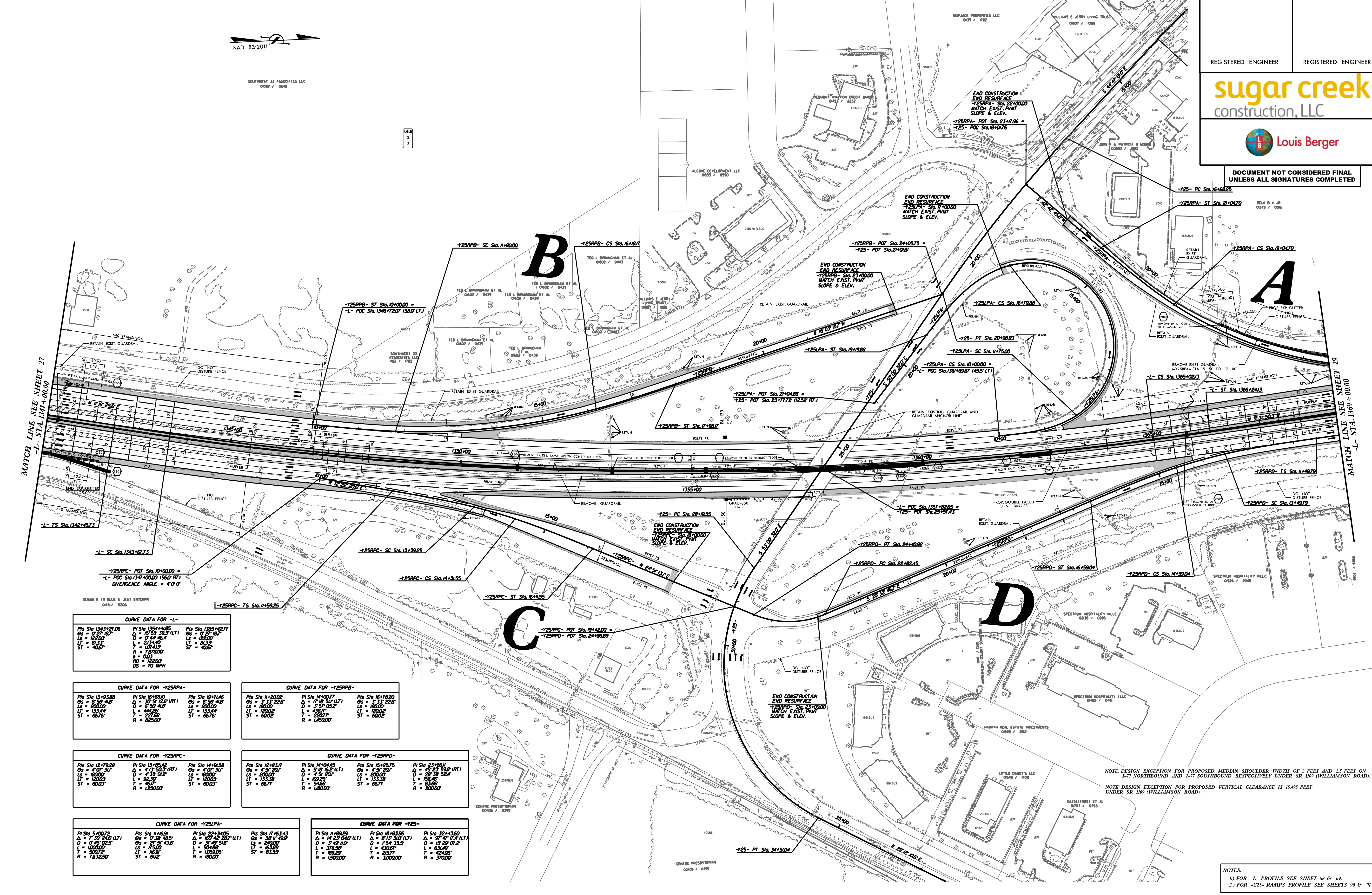
REVISIONS

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



CURVE DATA FOR -L-		
PIs Sta 1343+27.06 θs = 0°27' 18.7" Ls = 122.00' LT = 81.33' ST = 40.67'	PI Sta 1354+41.85 Δ = 15°55' 39.3" (LT) D = 0°44' 46.4" L = 2,134.40' T = 1,074.13' R = 7,678.00' e = 0.03 RO = 122.00' DS = 70 MPH	PIs Sta 1365+42.77 θs = 0°27' 18.7" Ls = 122.00' LT = 81.33' ST = 40.67'

CURVE DATA FOR -Y25RPA-		
PIs Sta 13+93.88 θs = 6°56' 41.8" Ls = 200.00' LT = 133.44' ST = 66.76'	PI Sta 16+88.10 Δ = 30°51' 12.6" (RT) D = 6°56' 41.8" L = 444.26' T = 227.66' R = 825.00'	PIs Sta 19+71.46 θs = 6°56' 41.8" Ls = 200.00' LT = 133.44' ST = 66.76'

CURVE DATA FOR -Y25RPB-		
PIs Sta 11+20.02 θs = 3°33' 22.6" Ls = 180.00' LT = 120.02' ST = 60.02'	PI Sta 14+00.77 Δ = 17°18' 51.1" (LT) D = 3°57' 05.2" L = 438.17' T = 220.77' R = 1,450.00'	PIs Sta 16+78.20 θs = 3°33' 22.6" Ls = 180.00' LT = 120.02' ST = 60.02'

CURVE DATA FOR -Y25RPC-		
PIs Sta 12+79.28 θs = 4°07' 31.1" Ls = 180.00' LT = 120.03' ST = 60.03'	PI Sta 13+85.42 Δ = 4°13' 50.3" (RT) D = 4°35' 01.2" L = 92.30' T = 46.17' R = 1,250.00'	PIs Sta 14+91.58 θs = 4°07' 31.1" Ls = 180.00' LT = 120.03' ST = 60.03'

CURVE DATA FOR -Y25RPD-			
PIs Sta 12+83.17 θs = 4°51' 20.1" Ls = 200.00' LT = 133.38' ST = 66.71'	PI Sta 14+04.45 Δ = 5°18' 16.2" (LT) D = 4°51' 20.1" L = 109.25' T = 54.66' R = 1,180.00'	PIs Sta 15+25.75 θs = 4°51' 20.1" Ls = 200.00' LT = 133.38' ST = 66.71'	PI Sta 23+66.11 Δ = 45°23' 59.8" (RT) D = 28°38' 52.4" L = 158.48' T = 83.66' R = 200.00'

CURVE DATA FOR -Y25LPA-			
PI Sta 5+00.72 Δ = 7°30' 24.6" (LT) D = 0°45' 02.5" L = 1,000.00' T = 500.72' R = 7,632.50'	PIs Sta 11+16.91 θs = 0°38' 48.5" θs = 27°51' 43.6" Ls = 175.00' LT = 116.91' ST = 61.12'	PI Sta 22+34.05 Δ = 160°42' 28.7" (LT) D = 31°49' 51.6" L = 504.88' T = 1,059.05' R = 180.00'	PIs Sta 17+63.43 θs = 38°11' 49.9" Ls = 240.00' LT = 163.89' ST = 83.55'

CURVE DATA FOR -Y25-		
PI Sta 11+89.29 Δ = 14°23' 04.0" (LT) D = 3°49' 11.0" L = 376.58' T = 189.29' R = 1,500.00'	PI Sta 18+83.96 Δ = 8°13' 31.0" (LT) D = 1°54' 35.5" L = 430.67' T = 215.71' R = 3,000.00'	PI Sta 32+43.60 Δ = 97°47' 17.4" (LT) D = 15°29' 07.2" L = 631.49' T = 424.05' R = 370.00'

NOTE: DESIGN EXCEPTION FOR PROPOSED MEDIAN SHOULDER WIDTH OF 3 FEET AND 2.5 FEET ON I–77 NORTHBOUND AND I–77 SOUTHBOUND RESPECTIVELY UNDER SR 1109 (WILLIAMSON ROAD).

NOTE: DESIGN EXCEPTION FOR PROPOSED VERTICAL CLEARANCE IS 15.495 FEET UNDER SR 1109 (WILLIAMSON ROAD).

NOTES:

1.) FOR –L– PROFILE SEE SHEET 68 & 69.
2.) FOR –Y25– RAMPS PROFILE SEE SHEETS 90 & 91.

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PROJECT REFERENCE NO.	SHEET NO.
C203406	29
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0' 50' 100'

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

NAD 83/2011

REVISIONS

MATCH LINE SEE SHEET 28 -L- STA. 1369+00.00

MATCH LINE SEE SHEET 30 -L- STA. 1383+00.00

WATERMARK SHOPPING CENTER LLC
01203 / 2165

BELK B V JR
01123 / 0925

AQUA NORTH CAROLINA INC
02007 / 0327

DOUGLAS P EHMANN
01561 / 0059

HOWELL MICHAEL LEEVON
01217 / 0319

-Y25RPA- SC Sta. 14+60.45

-Y25RPA- TS Sta. 12+60.45

-Y25RPA- POT Sta. 10+00.00 =
-L- POT Sta.1374+40.00 (56.0' LT)
DIVERGENCE ANGLE = 3° 30' 0"

BEGIN PROP. -NW25-

DO NOT DISTURB FENCE

250' RAMP TRANSITION

840' TRANSITION

PROP. EXP. GUTTER

REMOVE EX. DI, COLLAR AND EXTEND 18" RCP

REMOVE DI, CONC. DITCH, & 18" RCP

REMOVE EX. DI, CONST. JB w/MH

REMOVE EX. JB, CONSTRUCT JB w/MH

REMOVE DI & CONC. DITCH, CONSTRUCT TBDDI

REMOVE EX. DI & CONC. APRON, CONSTRUCT TBDDI

REMOVE EX. DI, CONSTRUCT TBDDI

REMOVE EX. DI, CONSTRUCT 2GI

REMOVE EX. DI

REMOVE EX. DI & CONC. DITCH, CONSTRUCT TBDDI

REMOVE AND RESET EXIST. GUARDRAIL

REMOVE GUARDRAIL IN MEDIAN

REMOVE AND RESET EXIST. GUARDRAIL

DO NOT DISTURB FENCE

EXIST. ACCEL LANE

300' ACCEL LANE TAPER

-Y25RPD- POT Sta. 10+00.00 =
-L- POT Sta. 1370+00.00 (46.0' RT)

-L- TS Sta. 1381+44.65

S 2° 01' 50.3" E

N. 5° 31' 50.3" W

S 5° 31' 50.3" E

10+00

1370+00

1375+00

1380+00

-L-

12' PS

4' PS

10' PS

4' BUFFER

EXIST. PS

RETAIN

40.00' (TYP.)

+64.65

+00.00

MOORESVILLE HOTEL PARTNERS LLC
01760 / 1661

JIMISH QUICKEL LLC
01276 / 2044

MOORESVILLE GATEWAY PROPERTY
01213 / 0249

SPECTRUM HOSPITALITY WLLC

CURVE DATA FOR -Y25RPA-		
PIs Sta 13+93.88	PI Sta 16+88.10	PIs Sta 19+71.46
Θs = 6° 56' 41.8"	Δ = 30° 51' 12.6" (RT)	Θs = 6° 56' 41.8"
Ls = 200.00'	D = 6° 56' 41.8"	Ls = 200.00'
LT = 133.44'	L = 444.26'	LT = 133.44'
ST = 66.76'	T = 227.66'	ST = 66.76'
	R = 825.00'	

CURVE DATA FOR -L-
PIs Sta 1382+51.32
Θs = 0° 48' 30.3"
Ls = 160.00'
LT = 106.67'
ST = 53.33'

NOTES:

1.) FOR -L- PROFILE SEE SHEET 70.

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PROJECT REFERENCE NO.	SHEET NO.
C203406	30

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — REGISTERED ENGINEER

HYDRAULICS ENGINEER — REGISTERED ENGINEER

sugar creek construction, LLC

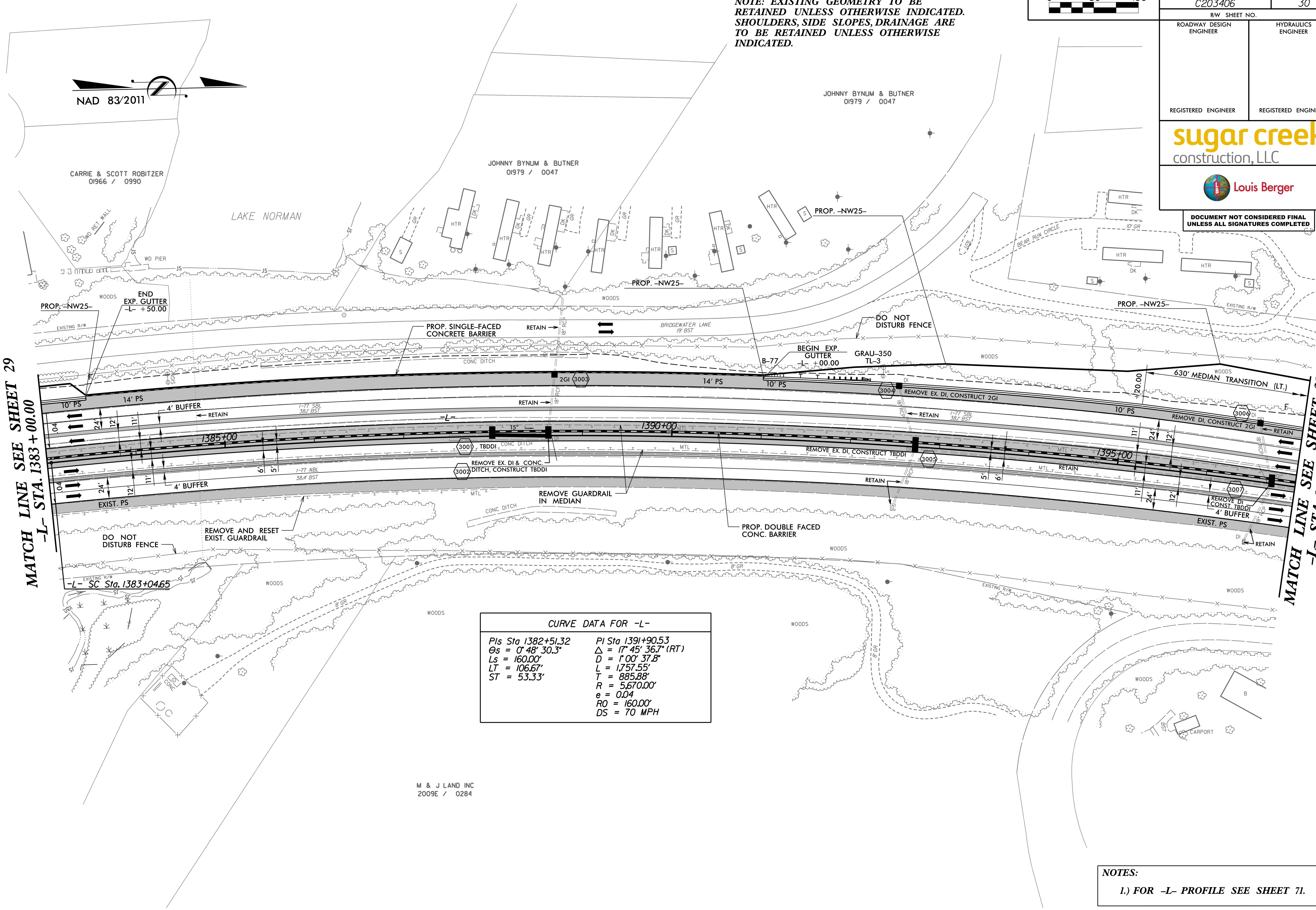
Louis Berger

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.

0' 50' 100'

REVISIONS



NAD 83/2011
CARRIE & SCOTT ROBITZER
01966 / 0990
JOHNNY BYNUM & BUTNER
01979 / 0047
LAKE NORMAN
PROP. -NW25-
END EXP. GUTTER -L- +50.00
PROP. SINGLE-FACED CONCRETE BARRIER
RETAIN
BRIDGEWATER LANE
DO NOT DISTURB FENCE
BEGIN EXP. GUTTER -L- +00.00
GRAU-350 TL-3
B-77
630' MEDIAN TRANSITION (LT.)
14' PS
10' PS
4' BUFFER
I-77 SBL
1385+00
1390+00
1395+00
TBDDI
REMOVE EX. DI & CONC. DITCH, CONSTRUCT TBDDI
REMOVE EX. DI, CONSTRUCT TBDDI
REMOVE EX. DI, CONSTRUCT 2GI
REMOVE DI, CONSTRUCT 2GI
REMOVE DI CONST. TBDDI
I-77 NBL
EXIST. PS
REMOVE GUARDRAIL IN MEDIAN
REMOVE AND RESET EXIST. GUARDRAIL
PROP. DOUBLE FACED CONC. BARRIER
DO NOT DISTURB FENCE
-L- SC Sta. 1383+04.65
WOODS
M & J LAND INC
2009E / 0284
CARPORT
MATCH LINE SEE SHEET 29 -L- STA. 1383+00.00
MATCH LINE SEE SHEET 31 -L- STA. 1397+00.00

CURVE DATA FOR -L-	
PIs Sta 1382+51.32	PI Sta 1391+90.53
Θs = 0° 48' 30.3"	Δ = 17° 45' 36.7" (RT)
Ls = 160.00'	D = 1° 00' 37.8"
LT = 106.67'	L = 1,757.55'
ST = 53.33'	T = 885.88'
	R = 5,670.00'
	e = 0.04
	RO = 160.00'
	DS = 70 MPH

NOTES:

1.) FOR -L- PROFILE SEE SHEET 71.

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PROJECT REFERENCE NO.	SHEET NO.
I-5405	31
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 16003 ENGINEER DEAN D. HAIFIELD 3/16/2016

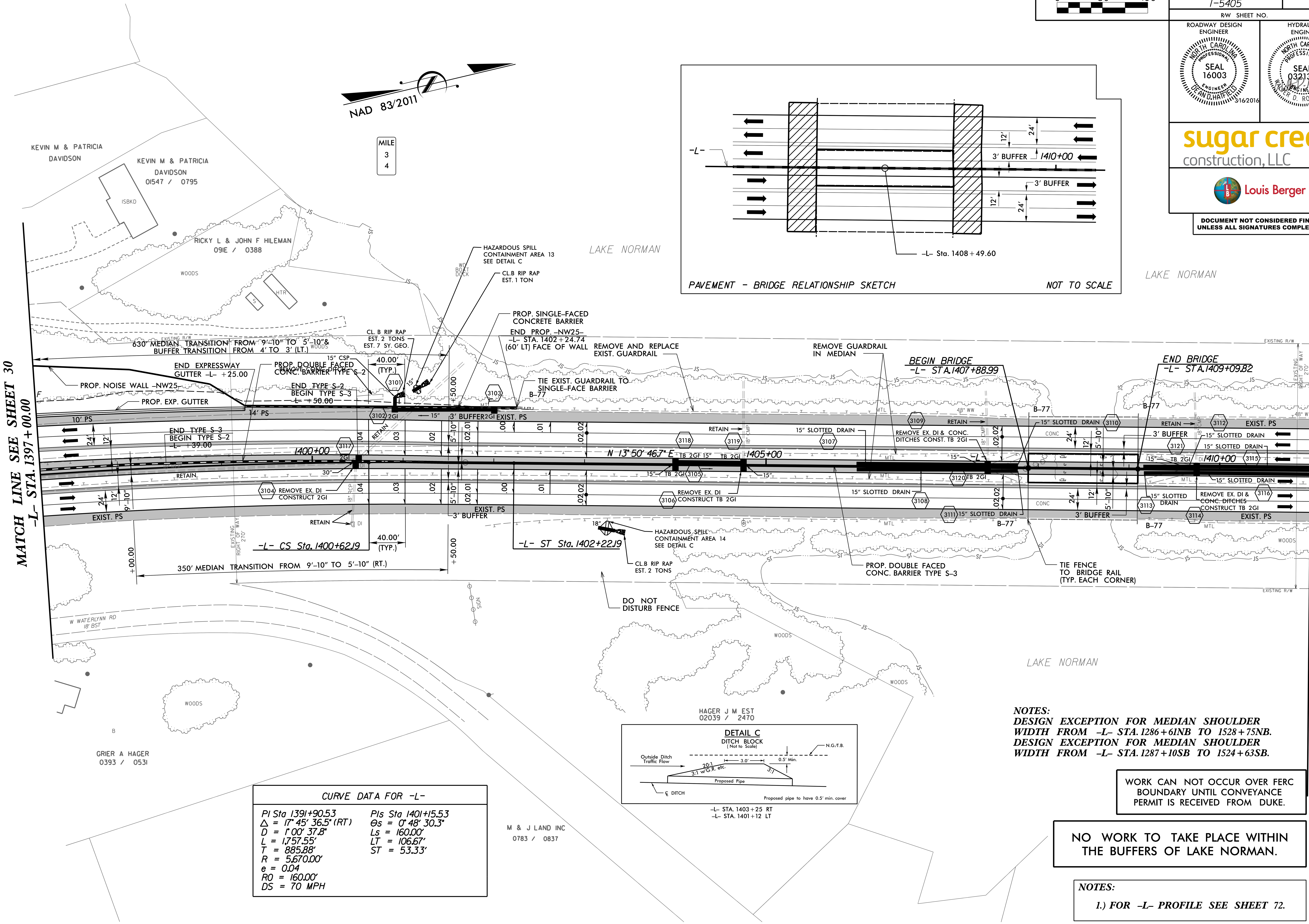
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032134 ENGINEER WALTER D. ROBERTS 3/16/2016

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS



0' 50' 100'
NAD 83/2011
MILE 3 4
KEVIN M & PATRICIA DAVIDSON
KEVIN M & PATRICIA DAVIDSON 01547 / 0795
RICKY L & JOHN F HILEMAN 091E / 0388
LAKE NORMAN
PAVEMENT - BRIDGE RELATIONSHIP SKETCH
NOT TO SCALE
-L- Sta. 1408+49.60
3' BUFFER
1410+00
HAZARDOUS SPILL CONTAINMENT AREA 13 SEE DETAIL C
CL.B RIP RAP EST. 1 TON
PROP. SINGLE-FACED CONCRETE BARRIER
END PROP. -NW25- -L- STA. 1402+24.74 (60' LT) FACE OF WALL
REMOVE AND REPLACE EXIST. GUARDRAIL
REMOVE GUARDRAIL IN MEDIAN
BEGIN BRIDGE -L- STA.1407+88.99
END BRIDGE -L- STA.1409+09.82
630' MEDIAN TRANSITION FROM 9'-10" TO 5'-10" & BUFFER TRANSITION FROM 4' TO 3' (LT.)
CL. B RIP RAP EST. 2 TONS EST. 7 SY. GEO.
END EXPRESSWAY GUTTER -L- +25.00
PROP. DOUBLE FACED CONC. BARRIER TYPE S-2
END TYPE S-2 BEGIN TYPE S-3 -L- +50.00
TIE EXIST. GUARDRAIL TO SINGLE-FACE BARRIER
PROP. NOISE WALL -NW25-
PROP. EXP. GUTTER
END TYPE S-3 BEGIN TYPE S-2 -L- +39.00
1400+00
N 13° 50' 46.7" E
1405+00
REMOVE EX. DI CONSTRUCT 2GI
-L- CS Sta. 1400+62.19
-L- ST Sta. 1402+22.19
350' MEDIAN TRANSITION FROM 9'-10" TO 5'-10" (RT.)
HAZARDOUS SPILL CONTAINMENT AREA 14 SEE DETAIL C
CL.B RIP RAP EST. 2 TONS
DO NOT DISTURB FENCE
PROP. DOUBLE FACED CONC. BARRIER TYPE S-3
TIE FENCE TO BRIDGE RAIL (TYP. EACH CORNER)
15" SLOTTED DRAIN
REMOVE EX. DI & CONC. DITCHES CONST. TB 2GI
MATCH LINE SEE SHEET 30 -L- STA. 1397+00.00
MATCH LINE SEE SHEET 32 -L- STA. 1411+00.00
W WATERLYNN RD 18' BST
WOODS
GRIER A HAGER 0393 / 0531
HAGER J M EST 02039 / 2470
M & J LAND INC 0783 / 0837
DETAIL C
DITCH BLOCK (Not to Scale)
-L- STA. 1403+25 RT
-L- STA. 1401+12 LT

CURVE DATA FOR -L-	
PI Sta 1391+90.53	PIs Sta 1401+15.53
Δ = 17° 45' 36.5" (RT)	Θs = 0° 48' 30.3"
D = 1° 00' 37.8"	Ls = 160.00'
L = 1,757.55'	LT = 106.67'
T = 885.88'	ST = 53.33'
R = 5,670.00'	
e = 0.04	
RO = 160.00'	
DS = 70 MPH	

NOTES:
DESIGN EXCEPTION FOR MEDIAN SHOULDER WIDTH FROM -L- STA. 1286+61NB TO 1528+75NB.
DESIGN EXCEPTION FOR MEDIAN SHOULDER WIDTH FROM -L- STA. 1287+10SB TO 1524+63SB.

WORK CAN NOT OCCUR OVER FERC BOUNDARY UNTIL CONVEYANCE PERMIT IS RECEIVED FROM DUKE.

NO WORK TO TAKE PLACE WITHIN THE BUFFERS OF LAKE NORMAN.

NOTES:
1.) FOR -L- PROFILE SEE SHEET 72.

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PROJECT REFERENCE NO.	SHEET NO.
C203406	32
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0' 50' 100'

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

NAD 83/2011

REVISIONS

MATCH LINE SEE SHEET 31 –L– STA. 1411+00.00

MATCH LINE SEE SHEET 33 –L– STA. 1425+00.00

KIM A & BASS
01500 / 1672

SARA MARLENE MCCRAW
1090 / 1712

GIBBS COVE OWNERS ASSOCIATION
01365 / 0677

DEXTER C DURLIN
01168 / 1938

JEFFREY F & THERESA J DEROOS
01574 / 1476

JAMES & NANCY MURRAY
01568 / 1752

FISHER CHARLOTTE
01270 / 0465

BEGIN PROP. –NW27– –L– STA. 1412+55.00 (58' LT) FACE OF WALL

PROP. –NW27– –L– STA. 1423+50.00 (120' LT) FACE OF WALL

PROP. –NW27– –L– STA. 1422+75.00 (58' LT) FACE OF WALL

PROP. NOISE WALL –NW27– 4,020 LF

REMOVE EXIST. GUARDRAIL

RECONSTRUCT FENCE

TIE EXIST. GUARDRAIL TO SF CONCRETE BARRIER RAIL

PROP. SINGLE-FACED CONCRETE BARRIER

BEGIN EXP GUTTER +00.00

280' MEDIAN & BUFFER TRANSITION

GRAU-350 TL-3

3' BUFFER

10' EXIST. PS

EXIST. PS

15" SLOTTED DRAIN

REMOVE EX. DI, CONSTRUCT TBDDI

REMOVE EX. DI & CONC. DITCH, CONSTRUCT TBDDI

REMOVE EX. DI & CONC. DITCH, CONST. TBDDI

PROP. DOUBLE FACED CONC. BARRIER

REMOVE GUARDRAIL IN MEDIAN

DO NOT DISTURB FENCE

REMOVE AND RESET EXIST. GUARDRAIL

1415+00 –L– N 13° 50' 46.7" E 1420+00

LAKE NORMAN

M & J LAND INC
0783 / 0837

NOTES:

1.) FOR –L– PROFILE SEE SHEET 73.

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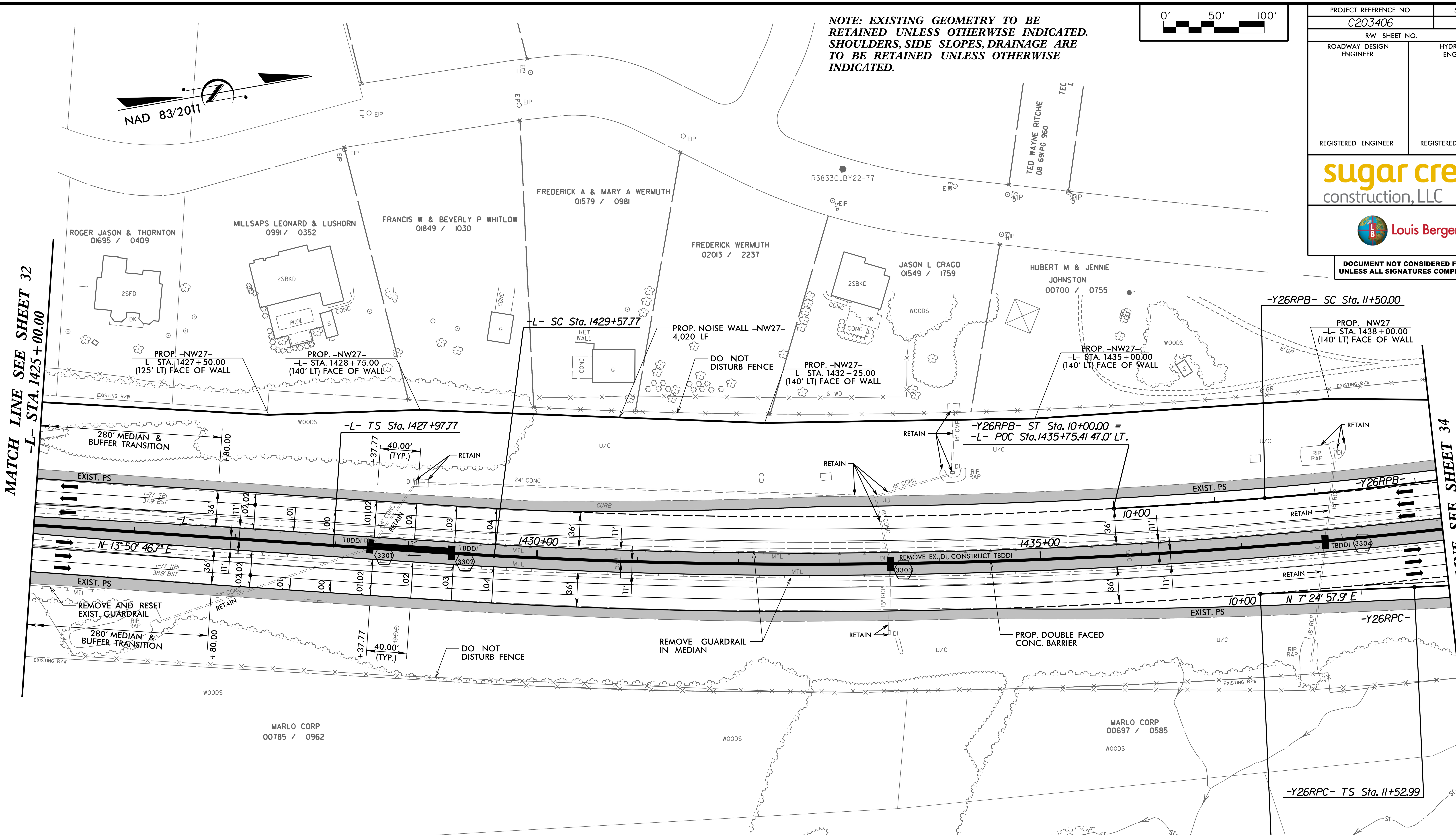
PROJECT REFERENCE NO.	SHEET NO.
C203406	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

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.



0' 50' 100'
NAD 83/2011
MATCH LINE SEE SHEET 32 -L- STA. 1425+00.00
MATCH LINE SEE SHEET 34 -L- STA. 1439+00.00
ROGER JASON & THORNTON 01695 / 0409
MILLSAPS LEONARD & LUSHORN 0991 / 0352
FRANCIS W & BEVERLY P WHITLOW 01849 / 1030
FREDERICK A & MARY A WERMUTH 01579 / 0981
FREDERICK WERMUTH 02013 / 2237
JASON L CRAGO 01549 / 1759
HUBERT M & JENNIE JOHNSTON 00700 / 0755
TED WAYNE RITCHIE DB 691 PG 960
R3833C_BY22-77
MARLO CORP 00785 / 0962
MARLO CORP 00697 / 0585
PROP. -NW27- -L- STA. 1427+50.00 (125' LT) FACE OF WALL
PROP. -NW27- -L- STA. 1428+75.00 (140' LT) FACE OF WALL
PROP. -NW27- -L- STA. 1432+25.00 (140' LT) FACE OF WALL
PROP. -NW27- -L- STA. 1435+00.00 (140' LT) FACE OF WALL
PROP. -NW27- -L- STA. 1438+00.00 (140' LT) FACE OF WALL
-L- SC Sta. 1429+57.77
-L- TS Sta. 1427+97.77
PROP. NOISE WALL -NW27- 4,020 LF
DO NOT DISTURB FENCE
-Y26RPB- SC Sta. 11+50.00
-Y26RPB- ST Sta. 10+00.00 = -L- POC Sta. 1435+75.41 47.0' LT.
-Y26RPC- TS Sta. 11+52.99
-Y26RPC- POT Sta. 10+00.00 = -L- POC Sta. 1437+14.67 47.0' RT.
DIVERGENCE ANGLE = 3° 0' 0"
280' MEDIAN & BUFFER TRANSITION
REMOVE AND RESET EXIST. GUARDRAIL
REMOVE GUARDRAIL IN MEDIAN
REMOVE EX. DI, CONSTRUCT TBDDI
PROP. DOUBLE FACED CONC. BARRIER
N 13° 50' 46.7" E
N 7° 24' 57.9" E
1430+00
1435+00
I-77 SBL 37.9' BST
I-77 NBL 38.9' BST
EXIST. PS
RETAIN
TBDDI
40.00' (TYP.)
WOODS

NOTES:

1.) FOR -L- PROFILE SEE SHEET 74.

CURVE DATA FOR -Y26RPC-

PIs Sta 12+06.33	PI Sta 15+25.21	PIs Sta 18+43.06
Θs = 0° 34' 22.6"	Δ = 8° 21' 23.7" (LT)	Θs = 0° 34' 22.6"
Ls = 80.00'	D = 1° 25' 56.6"	Ls = 80.00'
LT = 53.33'	L = 583.40'	LT = 53.33'
ST = 26.67'	T = 292.22'	ST = 26.67'
	R = 4,000.00'	

CURVE DATA FOR -L-

PIs Sta 1429+04.44	PI Sta 1441+43.20
Θs = 0° 47' 59.8"	Δ = 23° 22' 37.4" (LT)
Ls = 160.00'	D = 0° 59' 59.7"
LT = 106.67'	L = 2,337.88'
ST = 53.33'	T = 1,185.43'
	R = 5,730.00'
	e = 0.04
	RO = 160.00'
	DS = 75 MPH

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
C203406	34
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0' 50' 100'

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

NAD 83/2011

REVISIONS

MATCH LINE SEE SHEET 33 -L- STA 1459+00.00

MATCH LINE SEE SHEET 35 -L- STA 1467+00.00

A

END CONSTRUCTION END RESURFACE -Y26RPA- POT Sta. 24+00.00 MATCH EXIST. PVMT SLOPE & ELEV.

-Y26RPA- POT Sta. 28+52.87 = -Y26- POT Sta.27+49.61

-Y26- PT Sta. 20+48.38

-Y26RPA-

B

END CONSTRUCTION END RESURFACE -Y26RPB- POT Sta. 27+00.00 MATCH EXIST. PVMT SLOPE & ELEV.

-L- ST Sta. 1454+55.65

-L- CS Sta. 1452+95.65

-Y26RPB- ST Sta. 25+71.22

-Y26RPB- CS Sta. 24+22.22

-Y26RPB-

C

-Y26RPC- SC Sta. 12+32.99

-Y26RPC- CS Sta. 18+16.39

-Y26RPC- ST Sta. 18+96.39

-Y26RPC-

END CONSTRUCTION END RESURFACE -Y26RPC- POT Sta. 25+00.00 MATCH EXIST. PVMT SLOPE & ELEV.

-Y26- PC Sta. 32+17.78

-Y26RPC- POT Sta. 27+89.39 = -Y26- POT Sta.30+69.31

D

END CONSTRUCTION END RESURFACE -Y26RPD- POT Sta. 23+00.00 MATCH EXIST. PVMT SLOPE & ELEV.

-L- POT Sta. 1455+07.77 = -Y26- POT Sta. 28+93.25

-Y26- PT Sta. 37+39.54

ST Sta. 14+95.58

PROP. NOISE WALL -NW27- 1,020 LF

PROP. -NW27- -L- STA. 1439+75.00 (120' LT) FACE OF WALL

PROP. -NW27- -L- STA. 1444+50.00 (120' LT) FACE OF WALL

END PROP. -NW27- -L- STA. 1452+80.00 (120' LT) FACE OF WALL

DO NOT DISTURB FENCE

PROP. DOUBLE FACED CONC. BARRIER

RETAIN EXIST. GUARDRAIL

REMOVE EXIST. GUARDRAIL IN MEDIAN

REMOVE EX. DI, CONSTRUCT TBODI

REMOVE EX. DI & CONC. PATCH, CONSTRUCT TBODI

RESURFACE

EXIST. PS

EXIST. 10' PS

CURVE DATA FOR -L-	
PI Sta 1446+43.20	PI Sta 1453+37.23
Δ = 23°22' 31.4" (LT)	Δs = 0°41' 59.8"
D = 1°59' 59.2"	Ls = 1160.00'
L = 2,337.88'	LT = 1156.67'
T = 1,185.43'	ST = 53.33'
R = 2,730.00'	
e = 0.04	
RC = 4600.00'	
DS = 75 MPH	

CURVE DATA FOR -Y26RPB-		
PI Sta 11+00.00	PI Sta 17+19.02	PI Sta 24+71.22
Δs = 1°04' 27.5"	Δ = 18°16' 32.2" (LT)	Δs = 1°04' 27.5"
Ls = 150.00'	D = 1°25' 56.8"	Ls = 150.00'
LT = 100.00'	L = 1,671.22'	LT = 100.00'
ST = 50.00'	T = 844.05'	ST = 50.00'
	R = 4,000.00'	

CURVE DATA FOR -Y26RPC-		
PI Sta 12+06.33	PI Sta 15+25.21	PI Sta 18+41.06
Δs = 0°34' 22.6"	Δ = 8°21' 23.3" (LT)	Δs = 0°34' 22.6"
Ls = 60.00'	D = 1°29' 56.8"	Ls = 60.00'
LT = 53.33'	L = 583.40'	LT = 53.33'
ST = 26.67'	T = 292.52'	ST = 26.67'
	R = 4,000.00'	

CURVE DATA FOR -Y26RPD-		
PI Sta 14+15.59	PI Sta 12+49.92	PI Sta 10+84.19
Δs = 0°41' 15.0"	Δ = 5°36' 31.1" (LT)	Δs = 0°41' 15.2"
Ls = 119.99'	D = 1°08' 45.3"	Ls = 120.00'
LT = 79.99'	L = 274.40'	LT = 80.00'
ST = 40.00'	T = 137.31'	ST = 40.00'
	R = 5,000.00'	

CURVE DATA FOR -Y26-	
PI Sta 15+42.13	PI Sta 35+10.78
Δ = 46° 37' 27.4" (LT)	Δ = 18° 53' 52.5" (RT)
D = 4° 46' 28.7"	D = 4° 05' 13.2"
L = 1,088.38'	L = 462.16'
T = 577.13'	T = 233.00'
R = 1,200.00'	R = 1,400.00'

NOTE: DESIGN EXCEPTION FOR PROPOSED MEDIAN SHOULDER WIDTH OF 8 FEET UNDER BRIDGE AT SR 1100 (BRAWLEY SCHOOL ROAD).

NOTES:
1.) FOR -L- PROFILE SEE SHEET 75 & 76.
2.) FOR -Y26- RAMP PROFILES SEE SHEETS 92, 93, 94, & 95

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PROJECT REFERENCE NO.	SHEET NO.
C203406	35
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0' 50' 100'

REVISIONS

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

AMEX PROPERTIES, LLC
DB 955 PG 495
PB 20 PG 95

IRYD LLC
01991 / 0626

NAD 83/2011

-Y26RPA- POT Sta. 10+00.00 =
-L- POT Sta.1473+86.30, 47.0' LT.
DIVERGENCE ANGLE = 2° 54' 18"

MATCH LINE SEE SHEET 34
-L- STA. 1467+00.00

MATCH LINE SEE SHEET 36
-L- STA. 1481+00.00

DO NOT DISTURB FENCE

RETAIN EXIST. GUARDRAIL

15+00
S 8° 13' 48.3" E
-Y26RPA-
10+00

1470+00 -L- 1475+00 N 11° 07' 50.1" W 1480+00

-Y26RPD-
15+00
10+00
S 11° 07' 50.1" E

REMOVE EX. DI & CONC. DITCH, CONSTRUCT TBDDI
REMOVE EX. DI, CONSTRUCT TBDDI
REMOVE DI
REMOVE EX. DI, CONST. TBDDI
TBDDI

EXIST. PS

PROP. DOUBLE FACED CONC. BARRIER

REMOVE GUARDRAIL IN MEDIAN

CS Sta. 13+75.59

SC Sta. 11+24.19

-Y26RPD- POT Sta. 10+00.00 =
-L- POT Sta.1471+67.80 (47.0' RT.)

TS Sta. 10+04.19

DENNIS A. CALDWELL
DB 1372 PG 1680

CURVE DATA FOR -Y26RPD-		
PIs Sta 14+15.59	PI Sta 12+49.92	PIs Sta 10+84.19
Θs = 0° 41' 15.0"	Δ = 2° 52' 51.1" (LT)	Θs = 0° 41' 15.2"
Ls = 119.99'	D = 1° 08' 45.3"	Ls = 120.00'
LT = 79.99'	L = 251.40'	LT = 80.00'
ST = 40.00'	T = 125.73'	ST = 40.00'
	R = 5,000.00'	

NOTES:

1.) FOR -L- PROFILE SEE SHEET 77.

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PROJECT REFERENCE NO.	SHEET NO.
C203406	36
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

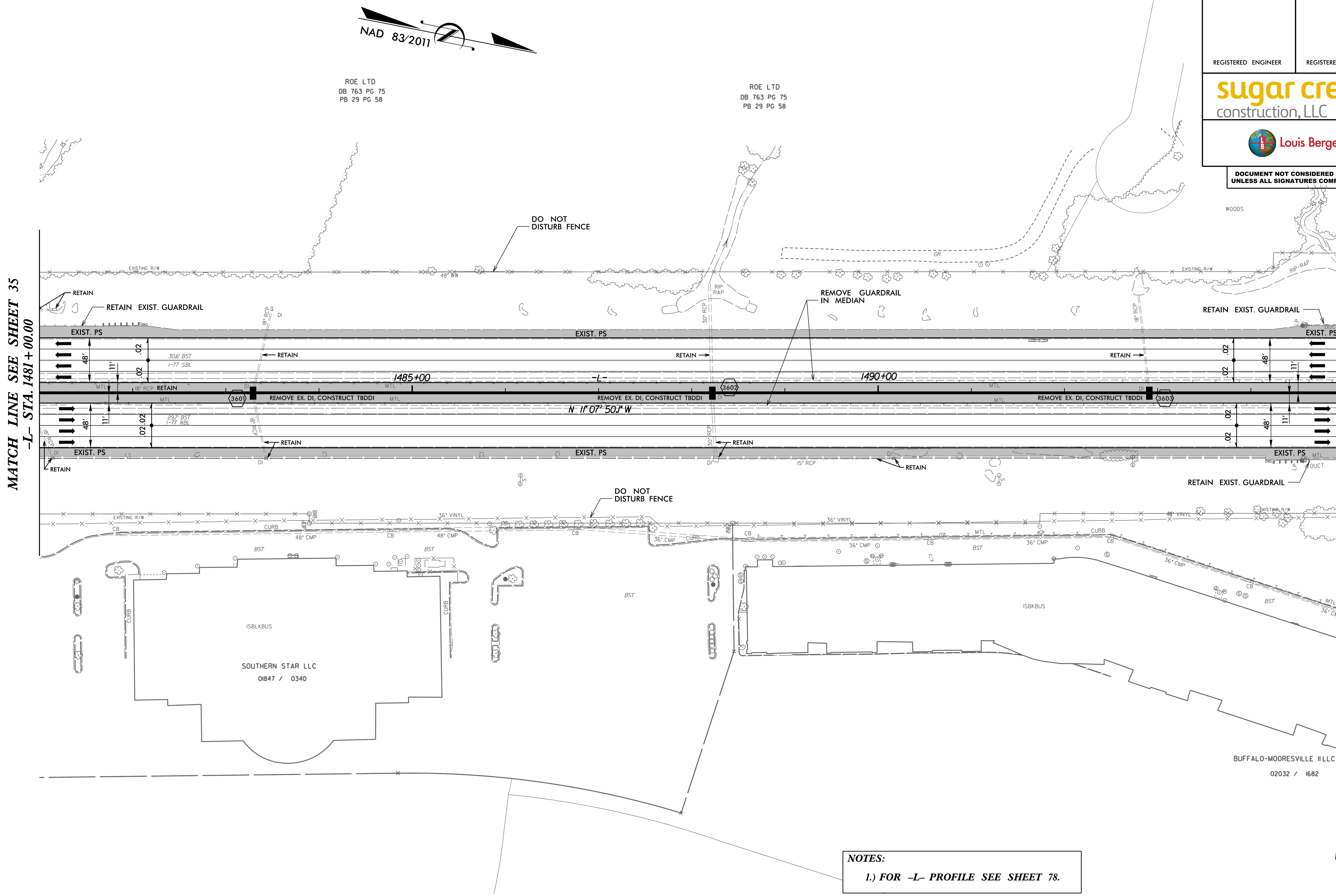
sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0' 50' 100'

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



NAD 83/2011
ROE LTD
DB 763 PG 75
PB 29 PG 58
ROE LTD
DB 763 PG 75
PB 29 PG 58
DO NOT DISTURB FENCE
MATCH LINE SEE SHEET 35
-L- STA. 1481+00.00
MATCH LINE SEE SHEET 37
-L- STA. 1495+00.00
RETAIN EXIST. GUARDRAIL
EXIST. PS
RETAIN
REMOVE GUARDRAIL IN MEDIAN
1485+00
1490+00
-L-
N 11° 07' 50.1" W
REMOVE EX. DI, CONSTRUCT TBDDI
3601
3602
3603
30.6' BST I-77 SBL
29.7' BST I-77 NBL
48'
11'
.02
WOODS
RIP-RAP
SOUTHERN STAR LLC
01847 / 0340
ISBLKBUS
BUFFALO-MOORESVILLE II LLC
02032 / 1682

REVISIONS

NOTES:

1.) FOR -L- PROFILE SEE SHEET 78.

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PROJECT REFERENCE NO.	SHEET NO.
C203406	37
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

REGISTERED ENGINEER

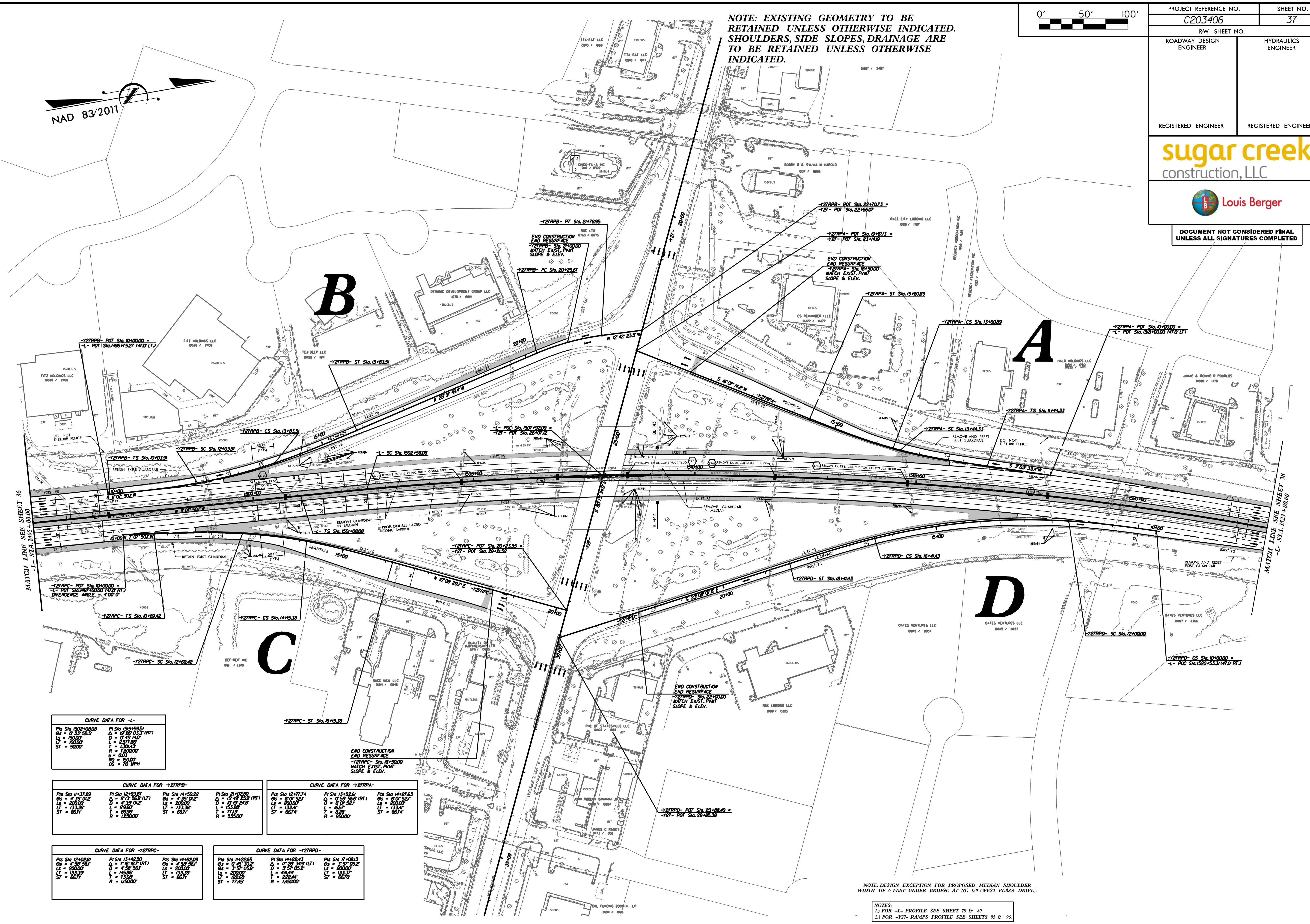
REGISTERED ENGINEER

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.



CURVE DATA FOR -L-	
PIs Sta 1502+08.08	PI Sta 1515+59.51
Θs = 0° 33' 55.5"	Δ = 19° 26' 03.3" (RT)
Ls = 150.00'	D = 0° 45' 14.0"
LT = 100.00'	L = 2,577.86'
ST = 50.00'	T = 1,301.43'
	R = 7,600.00'
	e = 0.03
	RO = 150.00'
	DS = 70 MPH

CURVE DATA FOR -Y27RPB-			
PIs Sta 11+37.29	PI Sta 12+93.87	PIs Sta 14+50.22	PI Sta 21+02.80
Θs = 4° 35' 01.2"	Δ = 8° 13' 56.9" (LT)	Θs = 4° 35' 01.2"	Δ = 15° 49' 25.9" (RT)
Ls = 200.00'	D = 4° 35' 01.2"	Ls = 200.00'	D = 10° 19' 24.8"
LT = 133.38'	L = 179.60'	LT = 133.38'	L = 153.28'
ST = 66.71'	T = 89.96'	ST = 66.71'	T = 77.13'
	R = 1,250.00'		R = 555.00'

CURVE DATA FOR -Y27RPA-		
PIs Sta 12+77.74	PI Sta 13+52.61	PIs Sta 14+27.63
Θs = 6° 01' 52.1"	Δ = 0° 59' 56.6" (RT)	Θs = 6° 01' 52.1"
Ls = 200.00'	D = 6° 01' 52.1"	Ls = 200.00'
LT = 133.41'	L = 16.57'	LT = 133.41'
ST = 66.74'	T = 8.28'	ST = 66.74'
	R = 950.00'	

CURVE DATA FOR -Y27RPC-		
PIs Sta 12+02.81	PI Sta 13+42.50	PIs Sta 14+82.09
Θs = 4° 58' 56.1"	Δ = 7° 16' 18.7" (RT)	Θs = 4° 58' 56.1"
Ls = 200.00'	D = 4° 58' 56.1"	Ls = 200.00'
LT = 133.39'	L = 145.96'	LT = 133.39'
ST = 66.71'	T = 73.08'	ST = 66.71'
	R = 1,150.00'	

CURVE DATA FOR -Y27RPD-		
PIs Sta 11+22.65	PI Sta 14+22.43	PIs Sta 17+08.13
Θs = 0° 45' 30.2"	Δ = 17° 26' 34.9" (LT)	Θs = 3° 57' 05.2"
Θs = 3° 57' 05.9"	D = 3° 57' 05.2"	Ls = 200.00'
Ls = 200.00'	L = 441.44'	LT = 133.37'
LT = 122.65'	T = 222.44'	ST = 66.70'
ST = 77.45'	R = 1,450.00'	

NOTE: DESIGN EXCEPTION FOR PROPOSED MEDIAN SHOULDER WIDTH OF 6 FEET UNDER BRIDGE AT NC 150 (WEST PLAZA DRIVE).

NOTES:
1.) FOR –L– PROFILE SEE SHEET 79 & 80.
2.) FOR –Y27– RAMPS PROFILE SEE SHEETS 95 & 96.

REVISIONS

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I77_Halfsize_RDY

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

REGISTERED ENGINEER | REGISTERED ENGINEER

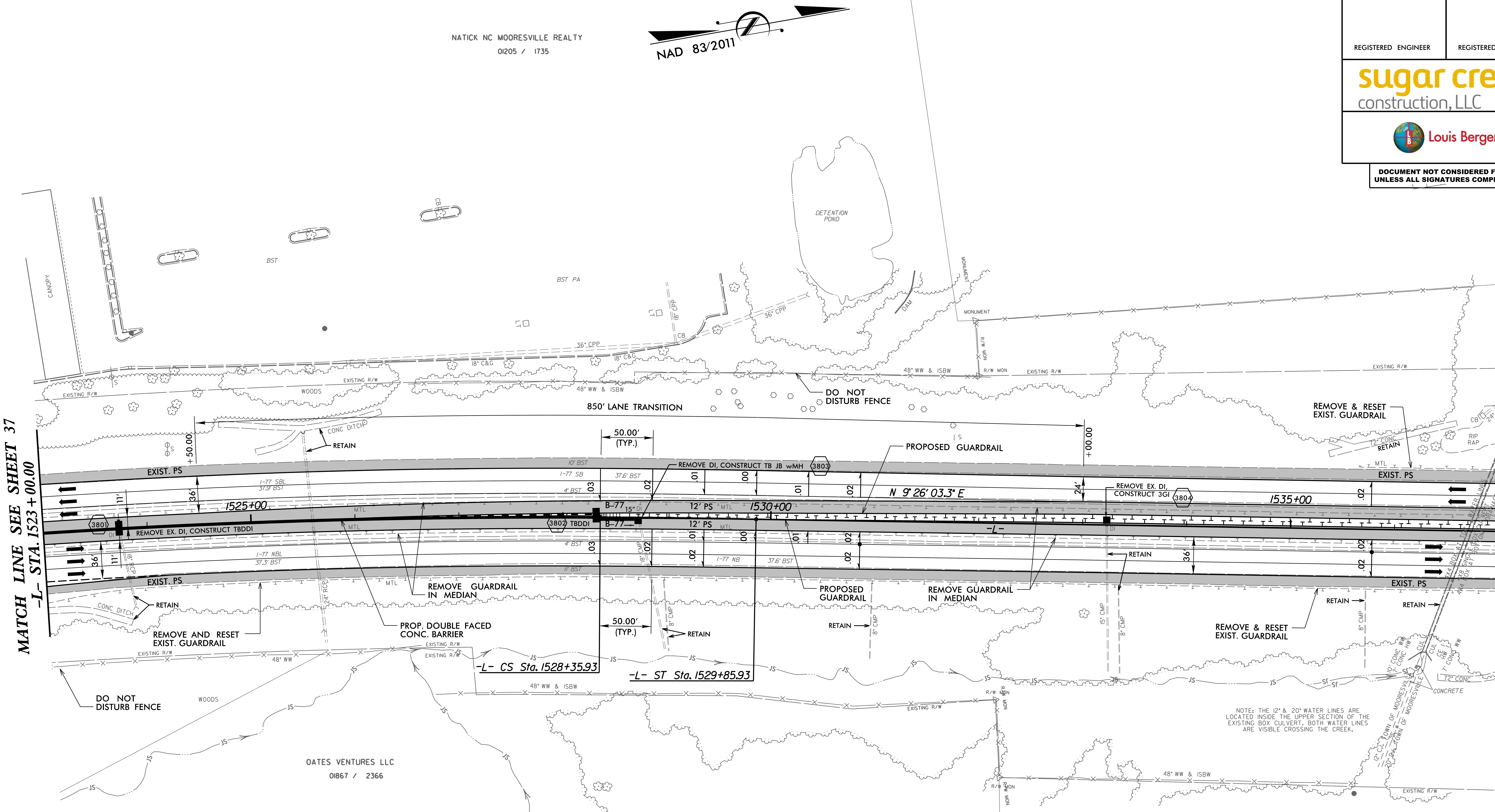
sugar creek construction, LLC

Louis Berger

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0′ 50′ 100′

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


NATICK NC MOORESVILLE REALTY
01205 / 1735
NAD 83/2011
DETENTION POND
CANOPY
BST
BST PA
36″ CPP
18″ C&G
48″ WW & ISBW
EXISTING R/W
WOODS
MONUMENT
DO NOT DISTURB FENCE
850′ LANE TRANSITION
CONC DITCH
RETAIN
50.00′ (TYP.)
REMOVE DI, CONSTRUCT TB JB wMH 3803
PROPOSED GUARDRAIL
REMOVE & RESET EXIST. GUARDRAIL
EXIST. PS
I-77 SBL 37.9′ BST
1525+00
1530+00
1535+00
N 9° 26′ 03.3″ E
REMOVE EX. DI, CONSTRUCT 3GI 3804
3801 REMOVE EX. DI, CONSTRUCT TBDDI
3802 TBDDI
B-77
12′ PS
-L-
I-77 NBL 37.3′ BST
REMOVE GUARDRAIL IN MEDIAN
PROP. DOUBLE FACED CONC. BARRIER
PROPOSED GUARDRAIL
-L- CS Sta. 1528+35.93
-L- ST Sta. 1529+85.93
MATCH LINE SEE SHEET 37 -L- STA. 1523+00.00
MATCH LINE SEE SHEET 39 -L- STA. 1537+00.00
OATES VENTURES LLC
01867 / 2366
RIP RAP
CONCRETE
NOTE: THE 12″ & 20″ WATER LINES ARE LOCATED INSIDE THE UPPER SECTION OF THE EXISTING BOX CULVERT. BOTH WATER LINES ARE VISIBLE CROSSING THE CREEK.

CURVE DATA FOR -L-	
PI Sta 1515+59.51	PIs Sta 1528+85.91
Δ = 19° 26′ 03.3″ (RT)	Θs = 0° 33′ 55.5″
D = 0° 45′ 14.0″	Ls = 150.00′
L = 2,577.86′	LT = 100.00′
T = 1,301.43′	ST = 50.00′
R = 7,600.00′	
e = 0.03	
RO = 150.00′	
DS = 70 MPH	

AUTOMOTIVE COLLISION EXPERTS

NOTES:

1.) FOR -L- PROFILE SEE SHEET 81.

REVISIONS

1/20/2016 4:47:29 PM
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PROJECT REFERENCE NO.	SHEET NO.
C203406	39
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

sugar creek construction, LLC

Louis Berger

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0' 50' 100'

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

REVISIONS

MATCH LINE SEE SHEET 38 –L– STA. 1537+00.00

MATCH LINE SEE SHEET 40 –L– STA. 1551+00.00

REALTICORP/MOORESVILLE LLC

NAD 83/2011

CONCRETE

8' CONC WW
7' CONC HW
14' CONC WW

MONUMENT

EXISTING R/W

JS

SS

REMOVE GUARDRAIL IN MEDIAN

15" CMP

RIP RAP

EXIST. PS

RETAIN

I-77 SB

37.6' BST

1540+00

-L-

1545+00

N 9° 26' 03.3" E

1550+00

12' PS

MTL

DI

REMOVE EX. DI, CONSTRUCT 3GI (3901)

I-77 NB

3' BST

10' BST

4' BST

(3902) REMOVE EX. DI, CONSTRUCT 3GI

REMOVE & RESET EXIST. GUARDRAIL

48" WW & ISBW

OUT OF LIMITS

10" CLAY

INV=773.17'
TOP=779.52'

INV=773.39'

INV=776.61'
TOP=785.19'
INV=777.28'

10" DIP

(3903) REMOVE EX. DI & CONC. DITCH, CONSTRUCT 3GI

12" CONC

18" RCP

MH

72" CONC

CONC HW

72" CMP

+85.00

840' TRANSITION

DO NOT DISTURB FENCE

REMOVE AND RESET EXIST. GUARDRAIL

TOP=790.85'

INV=783.93'

INV=785.15'

8" DIP

INV=761.04'

TOP=779.52'

8" DIP

OTHER END UNKNOWN

INV=761.27'

AUTOMOTIVE COLLISION EXPERTS

TALBERT POINTE FAMILY INVEST-

NOTES:

1.) FOR –L– PROFILE SEE SHEET 82.

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PROJECT REFERENCE NO.	SHEET NO.
C203406	40
R/W SHEET NO.	

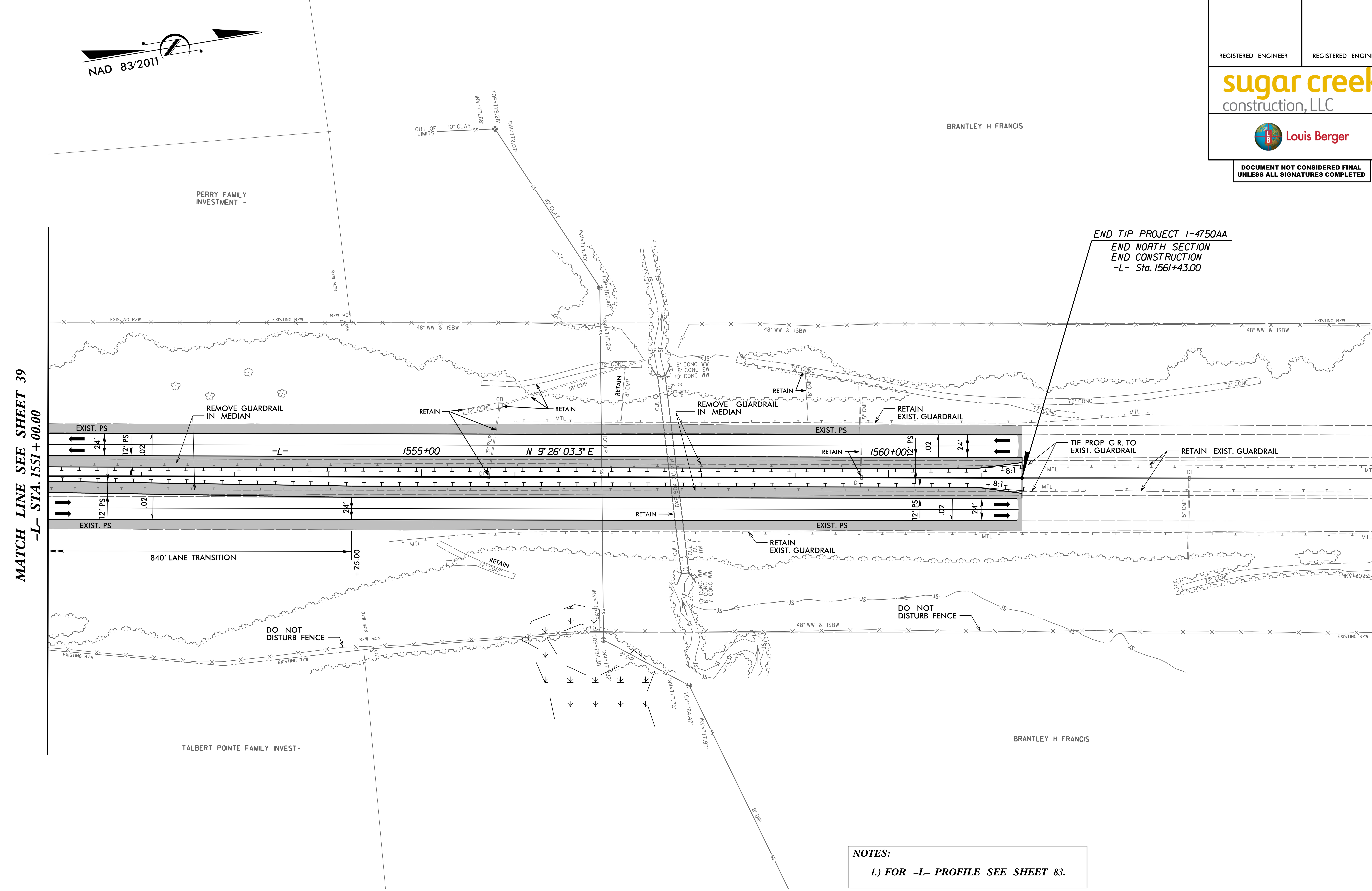
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REGISTERED ENGINEER	REGISTERED ENGINEER

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.



0' 50' 100'
NAD 83/2011
PERRY FAMILY INVESTMENT -
BRANTLEY H FRANCIS
OUT OF LIMITS
10" CLAY
TOP=179.28'
INV=171.88'
INV=172.07'
END TIP PROJECT I-4750AA
END NORTH SECTION
END CONSTRUCTION
-L- Sta. 1561+43.00
EXISTING R/W
R/W MON
48" WW & ISBW
72" CONC
18" CMP
RETAIN
REMOVE GUARDRAIL IN MEDIAN
RETAIN EXIST. GUARDRAIL
EXIST. PS
-L-
1555+00
N 9° 26' 03.3" E
1560+00
TIE PROP. G.R. TO EXIST. GUARDRAIL
RETAIN EXIST. GUARDRAIL
MATCH LINE SEE SHEET 39
-L- STA. 1551+00.00
840' LANE TRANSITION
+25.00
DO NOT DISTURB FENCE
TALBERT POINTE FAMILY INVEST-
8" DIP
MTL
8:1

NOTES:

1.) FOR -L- PROFILE SEE SHEET 83.

REVISIONS

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