



Pre-Construction Notification (PCN) Form

For Nationwide Permits and Regional General Permits

(along with corresponding Water Quality Certifications)

June 28, 2017 Ver 1.8

*Please note: fields marked with a red asterisk * below are required. You will not be able to submit the form until all mandatory questions are answered.*

Below is a link to the DRAFT online help file.

<http://edocs.deq.nc.gov/WaterResources/0/doc/549884/Page1.aspx>

A. Processing Information

County (or Counties) where the project is located:*

Wake

Is this project a public transportation project?*

Yes No

Is this a NCDOT Project?*

Yes No

(NCDOT only) T.I.P. or state project number:

B-5130 Replace Bridge 318 over Lake Johnson on SR1321 (Avent Ferry Rd)

WBS #

42289.1.1

(for NCDOT use only)

1a. Type(s) of approval sought from the Corps:*

- Section 404 Permit (wetlands, streams and waters, Clean Water Act)
 Section 10 Permit (navigable waters, tidal waters, Rivers and Harbors Act)

1b. What type(s) of permit(s) do you wish to seek authorization?*

- Nationwide Permit (NWP)
 Regional General Permit (RGP)

Nationwide Permit (NWP) Number: 03 - Maintenance

Nationwide Permit (NWP) Number: 13 - Bank Stabilization

NWP Number Other:

List all NW numbers you are applying for not on the drop down list.

1c. Type(s) of approval sought from the DWR:*

check all that apply

- 401 Water Quality Certification - Regular
 Non-404 Jurisdictional General Permit

- 401 Water Quality Certification - Express
 Riparian Buffer Authorization

1d. Is this notification solely for the record because written approval is not required? *

For the record only for DWR 401 Certification: Yes No

For the record only for Corps Permit: Yes No

1e. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts?

If so, attach the acceptance letter from mitigation bank or in-lieu fee program.

Yes No

1f. Is the project located in any of NC's twenty coastal counties? *

Yes No

B. Applicant Information

1a. Who is the Primary Contact? *

Jason Dilday

1b. Primary Contact Email: *

jdilday@ncdot.gov

1c. Primary Contact Phone: *

(xxx)xxx-xxxx

(919)707-6111

1d. Who is applying for the permit?

Owner Applicant (other than owner) Agent/Consultant

(Check all that apply)

2. Owner Information

2a. Name(s) on recorded deed:

2b. Deed book and page no.:

2c. Responsible party:

(for Corporations)

2d. Address

Street Address

Address Line 2

City

State / Province / Region

Postal / Zip Code

Country

2e. Telephone Number:

(xxx)xxx-xxxx

2f. Fax Number:

(xxx)xxx-xxxx

2g. Email Address: *

pharris@ncdot.gov

C. Project Information and Prior Project History

1. Project Information

1a. Name of project:*

B-5130 Replace Bridge No.318 over Lake Johnson on SR 1321

1b. Subdivision name:

(if appropriate)

1c. Nearest municipality / town:*

Raleigh

1d. Driving directions*

If it is a new project and can not easily be found in a GPS mapping system. Please provide directions.

35.761426, -78.716893

2. Project Identification

2a. Property Identification Number:

(tax PIN or parcel ID)

2b. Property size:

(in acres)

2c. Project Address

Street Address

Address Line 2

City

State / Province / Region

Postal / Zip Code

Country

2d. Site coordinates in decimal degrees

Please collect site coordinates in decimal degrees. Use between 4-6 digits (unless you are using a survey-grade GPS device) after the decimal place as appropriate, based on how the location was determined. (For example, most mobile phones with GPS provide locational precision in decimal degrees to map coordinates to 5 or 6 digits after the decimal place.)

Latitude:*

35.761426

ex: 34.208504

Longitude:*

-78.716893

-77.796371

3. Surface Waters

3a. Name of the nearest body of water to proposed project:*

Lake Johnson

3b. Water Resources Classification of nearest receiving water:*

Class B, NSW

[Surface Water Lookup](#)

3c. What river basin(s) is your project located in?*

Neuse

4. Project Description

4a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application:*

City of Raleigh Park, predominately forested with minor development adjacent to residential development.

4b. Attach an 8 1/2 X 11 excerpt from the most recent version of the USGS topographic map indicating the location of the project site. (for DWR)

Click the upload button or drag and drop files here to attach document

File type must be pdf

4c. Attach an 8 1/2 X 11 excerpt from the most recent version of the published County NRCS Soil Survey map depicting the project site. (for DWR)

Click the upload button or drag and drop files here to attach document

File type must be pdf

4d. List the total estimated acreage of all existing wetlands on the property:

1.9 ac.

4e. List the total estimated linear feet of all existing streams on the property:

(intermittent and perennial)

0-all open water

4f. Explain the purpose of the proposed project:

To replace a functionally obsolete bridge.

4g. Describe the overall project in detail, including the type of equipment to be used:

The project involves replacing a 43-foot, single span bridge with a 100-foot, two span bridge on existing alignment using an off-site detour. Standard road building equipment, such as trucks, dozers, and cranes will be used.

4h. Please upload project drawings for the proposed project.

Click the upload button or drag and drop files here to attach document

B5130_Permit Package_20170831.pdf	3.7MB
B5130_utilities combined.pdf	1.9MB
B5130_roadway plans.pdf	3.69MB

File type must be pdf

5. Jurisdictional Determinations

5a. Have the wetlands or streams been delineated on the property or proposed impact areas?*

Yes

No

Unknown

Comments:

5b. If the Corps made a jurisdictional determination, what type of determination was made?*

Preliminary

Approved

Unknown

Corps AID Number:

Example: SAW-2017-99999

SAW-2009-01782

5c. If 5a is yes, who delineated the jurisdictional areas?

Name (if known):

James Pflaum

Agency/Consultant Company:

NCDOT

Other:

5d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.

Field determination 12/29/2009, signed PJD 3/2/10.

5d1. Jurisdictional determination upload

Click the upload button or drag and drop files here to attach document

B5130_PrelimJD_signed.pdf

6.8MB

File type must be PDF

6. Project History

6a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past? *

Yes

No

Unknown

7. Future Project Plans

7a. Is this a phased project? *

Yes

No

Are any other NWP(s), regional general permit(s), or individual permits(s) used, or intended to be used, to authorize any part of the proposed project or related activity? This includes other separate and distant crossing for linear projects that require Department of the Army authorization but don't require pre-construction notification.

D. Proposed Impacts Inventory

1. Impacts Summary

1a. Where are the impacts associated with your project? (check all that apply):

Wetlands

Streams-tributaries

Buffers

Open Waters

Pond Construction

2. Wetland Impacts

If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.

2a. Site # - Reason for impact	2b. Impact type *	2c. Type of wetland	2d. Wetland name	2e. Forested	2f. Jurisdiction type	2g. Impact area
#3-fill Map label (e.g. Road Crossing 1)	P Permanent (P) or Temporary (T)	Bottomland Hardwood Forest	WA	No	Corps (404, 10) or DWR (401, other)	0.010 (acres)
#3-excavation Map label (e.g. Road Crossing 1)	P Permanent (P) or Temporary (T)	Bottomland Hardwood Forest	WA	No	Corps (404, 10) or DWR (401, other)	0.010 (acres)
#3-mechanized clearing Map label (e.g. Road Crossing 1)	P Permanent (P) or Temporary (T)	Bottomland Hardwood Forest	WA	No	Corps (404, 10) or DWR (401, other)	0.010 (acres)

2g. Temporary Wetland Impact

0.000

2g. Permanent Wetland Impact

0.030

2g. Total Wetland Impact

0.030

2h. Comments:

#3- each impact is actually <0.01, however <0.01 cannot be entered.

3. Stream Impacts

If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.

** All Perennial or Intermittent streams must be verified by DWR or delegated local government.

4. Open Water Impacts

If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.

4a. Site # - Reason for impact	4b. Impact type	4c. Name of waterbody	4d. Activity type	4e. Waterbody type	4f. Impact area
#1-riprap pad for 24"RCP Map label (e.g. Road Crossing 1)	P Permanent (P) or Temporary (T)	Lake Johnson (if applicable)	Stabilization	Lake	0.01 (acres)
#1-riprap pad for 24"RCP Map label (e.g. Road Crossing 1)	T Permanent (P) or Temporary (T)	Lake Johnson (if applicable)	Stabilization	Lake	0.01 (acres)
#2-causeway widening Map label (e.g. Road Crossing 1)	P Permanent (P) or Temporary (T)	Lake Johnson (if applicable)	Fill	Lake	0.29 (acres)
#2-causeway widening Map label (e.g. Road Crossing 1)	T Permanent (P) or Temporary (T)	Lake Johnson (if applicable)	Fill	Lake	0.18 (acres)

4g. Total temporary open water Impacts:

0.19

4g. Total permanent open water impacts:

0.30

4g. Total open water impacts:

0.49

4h. Comments:

#1 riprap pad permanent and temporary impacts are less than 0.01 ac., however <0.01 cannot be entered

5. Pond or Lake Construction

If pond or lake construction is proposed, then complete the chart below.

6. Buffer Impacts (for DWR)

If project will impact a protected riparian buffer, then complete the chart below. Individually list all buffer impacts below.

6a. Project is in which protect basin(s)? *

Check all that apply.

Neuse

Catawba

Goose Creek

Other

Tar-Pamlico

Randleman

Jordan Lake

6b. Impact Type	6c. Per or Temp	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact	6g. Zone 2 impact
#1-Road Crossing, Allowable Location and Exempt, Allowable, allowable w/ mitigation	P Permanent (P) or Temporary (T)	Lake Johnson	No	1,617 (square feet)	925 (square feet)
#2-Road Crossing, Allowable Location and Exempt, Allowable, allowable w/ mitigation	P Permanent (P) or Temporary (T)	Lake Johnson	No	2,197 (square feet)	1,337 (square feet)
#3-Road Crossing, Allowable Location and Exempt, Allowable, allowable w/ mitigation	P Permanent (P) or Temporary (T)	Lake Johnson	No	327 (square feet)	335 (square feet)
#1-Utility waterline, Exempt Location and Exempt, Allowable, allowable w/ mitigation	P Permanent (P) or Temporary (T)	Lake Johnson	No	0 (square feet)	556 (square feet)

6h. Total buffer impacts:

	Zone 1	Zone 2
Temporary impacts:	0.00	0.00
Permanent impacts:	4,141.00	3,153.00
Total buffer impacts:	4,141.00	3,153.00

6i. Comments:

Buffer drawings were uploaded with the full permit drawings set above in 4h.

Supporting Documentation - i.e. Impact Maps, Plan Sheet, etc.

Click the upload button or drag and drop files here to attach document

File must be PDF

E. Impact Justification and Mitigation

1. Avoidance and Minimization

1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing the project: *

NCDOT Design Standards in Sensitive Watersheds will be employed. The bridge replacement and associated roadway improvements have been designed to minimize increases in impervious surface area and maintain existing drainage patterns. No deck drains are proposed for the replacement bridge. A retaining wall has been proposed from station 19+79 to Begin Bridge and from End Bridge to station 29+25 -L- RT to minimize fill impacts to Lake Johnson. Stormwater runoff from the travel lanes will flow across a 5.5-foot grass strip prior to flowing across the 10-foot multi-use path. Along the retaining wall, the stormwater runoff will sheet flow over the top of the wall after flowing through the 5.5-foot grass strip and across the multi-use path.

1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques: *

The new bridge will have no deck drains or direct discharge to Lake Johnson. Retaining walls will be constructed to minimize fill impacts to Lake Johnson. Temporary sheet piling will be used in areas along causeway to prevent temporary fill from pushing out into Lake Johnson. The lake will be drawn down approximately nine feet (el. 333 msl) so that work around the end bents and along causeway can be done "in the dry". Drawdown will occur for no longer than six months.

2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?

Yes No

2b. If this project DOES NOT require Compensatory Mitigation, explain why:

The permanent impacts are considered minimal and therefore compensatory mitigation is not proposed.

F. Stormwater Management and Diffuse Flow Plan (required by DWR)

1a. Does this project require a Stormwater Management Plan?

Yes No

1b. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan:

See attached Permit Drawings.

1c. What is the overall percent imperviousness of this project?

%

1d. Who will be responsible for the review of the Stormwater Management Plan? *

Certified Local Government

DEMLR Stormwater Review

DWR 401 & Buffer Permitting Branch

DWR Transportation Permitting Branch

2. Diffuse Flow Plan

2a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?

Yes No

2b. All buffer impacts and high ground impacts require diffuse flow or other form of stormwater treatment. Include a plan that fully documents how diffuse flow will be maintained.

If, due to site constraints, a BMP other than a level spreader is proposed, please provide a plan for stormwater treatment as outlined in Chapter 8 of the [NC Stormwater BMP Manual](#) and attach a BMP Supplement Form

What documentation are you providing?

Level Spreader

Other BMP

(check all that apply)

Diffused Flow Documentation

Click the upload button or drag and drop files here to attach document

File type must be PDF

5. DWR 401 Stormwater Review

5a. Is the Stormwater Management Plan (including BMP Supplemental Forms and Operation and Maintenance Agreements) attached?

Yes No

Stormwater Management Plan Upload

Click the upload button or drag and drop files here to attach document

file type must be pdf

G. Supplementary Information

1. Environmental Documentation

1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? *

Yes No

1b. If you answered “yes” to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)? *

Yes No

1c. If you answered “yes” to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) *

Yes No

NEPA or SEPA Final Approval Letter

Click the upload button or drag and drop files here to attach document

FILE TYPE MUST BE PDF

2. Violations (DWR Requirement)

2a. Is the site in violation of DWR Water Quality Certification Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), or DWR Surface Water or Wetland Standards or Riparian Buffer Rules (15A NCAC 2B .0200)? *

Yes No

2b. Is this an after-the-fact permit application? *

Yes No

2c. If you answered “yes” to one or both of the above questions, provide an explanation of the violation(s):

3. Cumulative Impacts (DWR Requirement)

3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? *

Yes No

3b. If you answered “no,” provide a short narrative description.

Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.

4. Sewage Disposal (DWR Requirement)

4a. Describe, in detail, the treatment methods and dispositions (non-discharge or discharge) of wastewater generated from the proposed project. If the wastewater will be treated at a treatment plant, list the capacity available at that plant.

5. Endangered Species and Designated Critical Habitat (Corps Requirement)

5a. Will this project occur in or near an area with federally protected species or habitat? *

Yes No

5b. Have you checked with the USFWS concerning Endangered Species Act impacts? *

Yes No

5c. If yes, indicate the USFWS Field Office you have contacted.

Raleigh

5d. Is this a DOT project located within Division's 1-8? *

Yes

No

5i. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? *

N.C. Natural Heritage Program database; USFWS-Raleigh Field Office website; biological surveys for protected species listed for Wake County, which include red-cockaded woodpecker (RCW), dwarf wedgemussel and Michaux's sumac. The species received biological conclusions of "No Effect". No habitat is present for RCW or dwarf wedgemussel. Habitat for Michaux's sumac exists, however no specimens were observed during a 9/22/2016 survey. There were no bald eagles or nest observed within 660 feet of the project area on 9/22/2016.

6. Essential Fish Habitat (Corps Requirement)

6a. Will this project occur in or near an area designated as an Essential Fish Habitat? *

Yes No

6b. What data sources did you use to determine whether your site would impact an Essential Fish Habitat? *

NMFS County Index

7. Historic or Prehistoric Cultural Resources (Corps Requirement)

Link to the State Historic Preservation Office Historic Properties Map (does not include archaeological data: <http://gis.ncdcr.gov/hpoweb/>)

7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)? *

Yes No

7b. What data sources did you use to determine whether your site would impact historic or archeological resources? *

NEPA Documentation

7c. Historic or Prehistoric Information Upload

Click the upload button or drag and drop files here to attach document

File must be PDF

8. Flood Zone Designation (Corps Requirement)

Link to the FEMA Floodplain Maps: <https://msc.fema.gov/portal/search>

8a. Will this project occur in a FEMA-designated 100-year floodplain? *

Yes No

8b. If yes, explain how project meets FEMA requirements:

NCDOT Hydraulics Unit coordination with FEMA

8c. What source(s) did you use to make the floodplain determination? *

FEMA Maps

Miscellaneous attachments not previously requested.

Click the upload button or drag and drop files here to attach document

File must be PDF

Signature

*

By checking the box and signing below, I certify that:

- I have given true, accurate, and complete information on this form;
- I agree that submission of this PCN form is a "transaction" subject to Chapter 66, Article 40 of the NC General Statutes (the "Uniform Electronic Transactions Act");
- I agree to conduct this transaction by electronic means pursuant to Chapter 66, Article 40 of the NC General Statutes (the "Uniform Electronic Transactions Act");
- I understand that an electronic signature has the same legal effect and can be enforced in the same way as a written signature; AND
- I intend to electronically sign and submit the PCN form.

Full Name: *

Colin Mellor

Signature

Colin Mellor



North Carolina Department of Transportation
 Highway Stormwater Program
 STORMWATER MANAGEMENT PLAN
 FOR NCDOT PROJECTS



(Version 2.07; Released October 2016)

WBS Element: 42289.1.1 TIP No.: B-5130 County(ies): Wake Page 1 of 1

General Project Information

WBS Element:	42289.1.1	TIP Number:	B-5130	Project Type:	Bridge Replacement	Date:	8/25/2017
NCDOT Contact:	Bill Elam, PE			Contractor / Designer:	Sungate Design Group, P.A.		
	Address:	1590 Mail Service Center 1020 Birch Ridge Road Raleigh, NC 27610		Address:	905 Jones Franklin Road Raleigh, NC 27606		
	Phone:	(919) 707-6718		Phone:	(919) 859-2243		
	Email:	belam@ncdot.gov		Email:	jdalton@sungatedesign.com		
City/Town:	Raleigh			County(ies):	Wake		
River Basin(s):	Neuse			CAMA County?	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	0.367 miles	Surrounding Land Use:	Lake Johnson - City of Raleigh Park					
	Proposed Project			Existing Site				
Project Built-Upon Area (ac.)	1.9	ac.	1.2	ac.				
Typical Cross Section Description:	Two 11' lanes with 5' paved shoulders and 5.5' grassed shoulders 10' multi-use path			Two 11' lanes with grassed shoulders				
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	11393	Year:	2037	Existing:	7543	Year:	2017

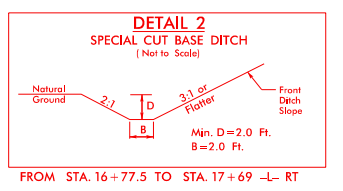
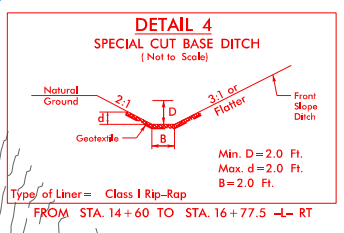
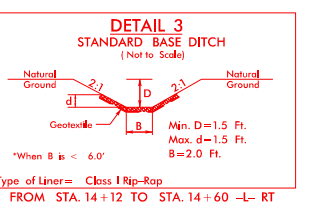
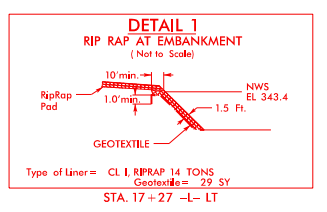
General Project Narrative:
 (Description of Minimization of Water Quality Impacts)

This project consists of replacing Bridge on SR (Avent Ferry Road) over Walnut Creek (Lake Johnson) in Wake County. The bridge replacement and associated roadway improvements have been designed to minimize increases in impervious surface area and maintain existing drainage patterns. No deck drains are proposed for the replacement bridge. A retaining wall has been proposed from station 19+79 to Begin Bridge and from End Bridge to station 29+25 -L- RT to minimize fill impacts to Lake Johnson. Stormwater runoff from the travel lanes will flow across a 5.5-foot grass strip prior to flowing across the 10-foot multi-use path. Along the retaining wall, the stormwater runoff will sheet flow over the top of the wall after flowing through the 5.5-foot grass strip and across the multi-use path.

Waterbody Information

Surface Water Body (1):	Walnut Creek (Lake Johnson)		NCDWR Stream Index No.:	27-34-(1.5)			
NCDWR Surface Water Classification for Water Body	Primary Classification:	Class B					
	Supplemental Classification:	Nutrient Sensitive Waters (NSW)					
Other Stream Classification:	None						
Impairments:	None						
Aquatic T&E Species?	No Comments:						
NRTR Stream ID:	No ID provided in NRTR.				Buffer Rules in Effect:	Neuse	
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?	No	(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)						

5/14/99
8/21/2017 Hyd.prm.wet.04.dgn
6/21/2017 Hyd.prm.wet.04.dgn

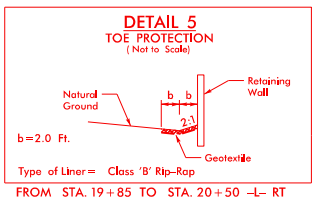
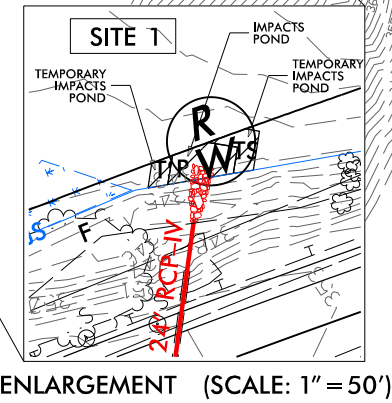
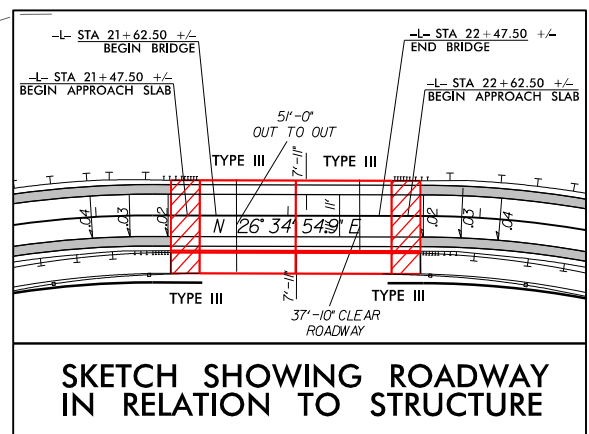
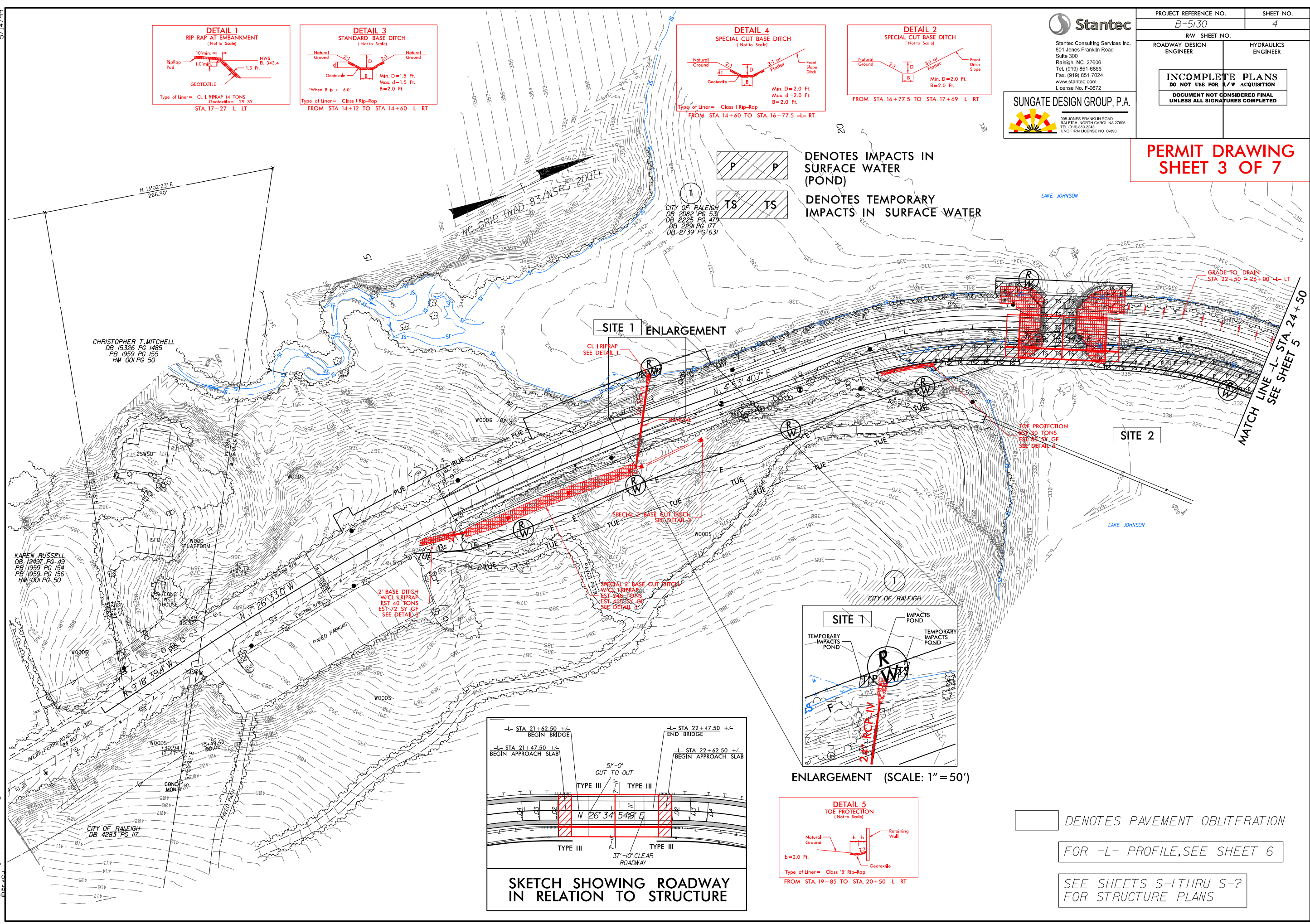


PROJECT REFERENCE NO. B-5130		SHEET NO. 4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

Stantec
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TEL (919) 859-2243
ENG FRM LICENSE NO. C-890

PERMIT DRAWING
SHEET 3 OF 7



□ DENOTES PAVEMENT OBLITERATION
FOR -L- PROFILE, SEE SHEET 6

SEE SHEETS S-1 THRU S-? FOR STRUCTURE PLANS

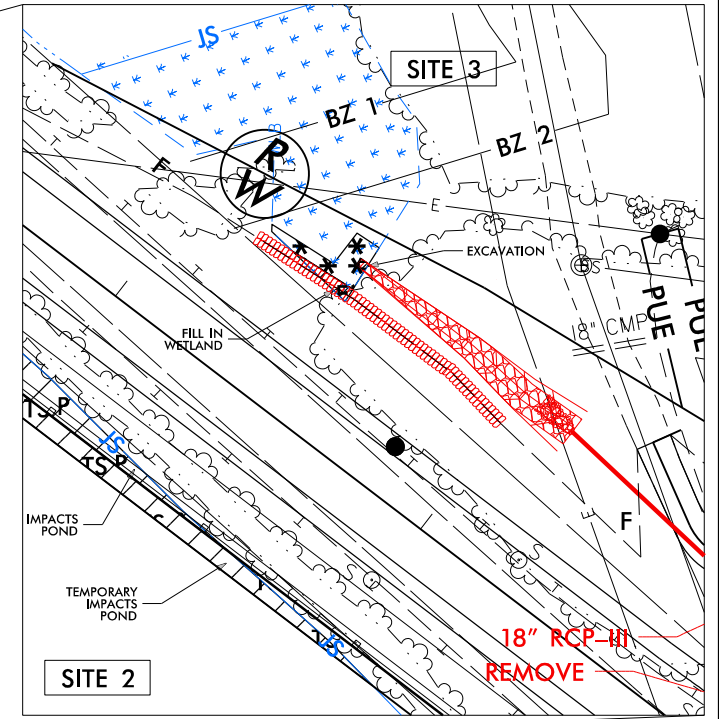
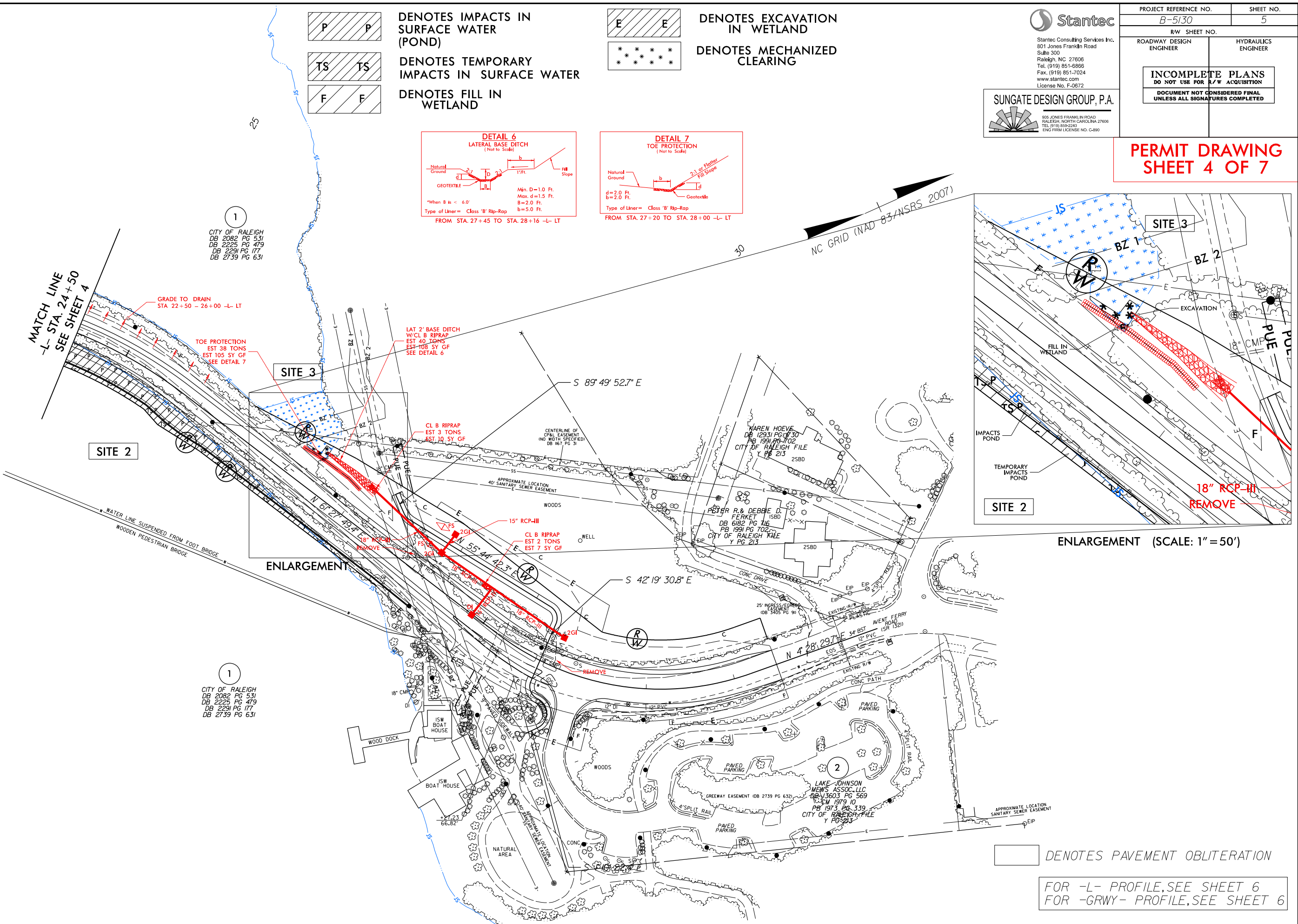
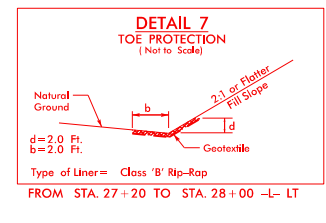
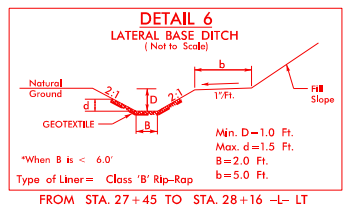
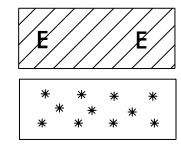
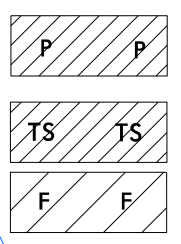
5/14/99

Stantec
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 801 Jones Franklin Road
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 Fax. (919) 851-7024
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 License No. F-0672

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 TEL (919) 859-2243
 ENG FRM LICENSE NO. C-890

PROJECT REFERENCE NO. B-5130	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

**PERMIT DRAWING
SHEET 4 OF 7**



MATCH LINE
-L- STA. 24+50
SEE SHEET 4

1
CITY OF RALEIGH
DB 2082 PG 531
DB 2225 PG 479
DB 2291 PG 177
DB 2739 PG 631

1
CITY OF RALEIGH
DB 2082 PG 531
DB 2225 PG 479
DB 2291 PG 177
DB 2739 PG 631

□ DENOTES PAVEMENT OBLITERATION

FOR -L- PROFILE, SEE SHEET 6
 FOR -GRWY- PROFILE, SEE SHEET 6

8/25/2007 Hyd.prm..wet_05.dgn

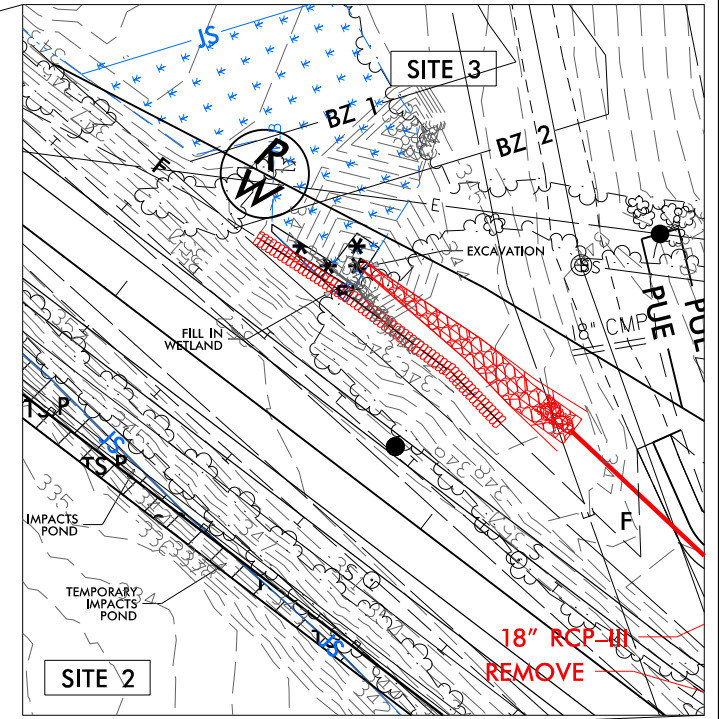
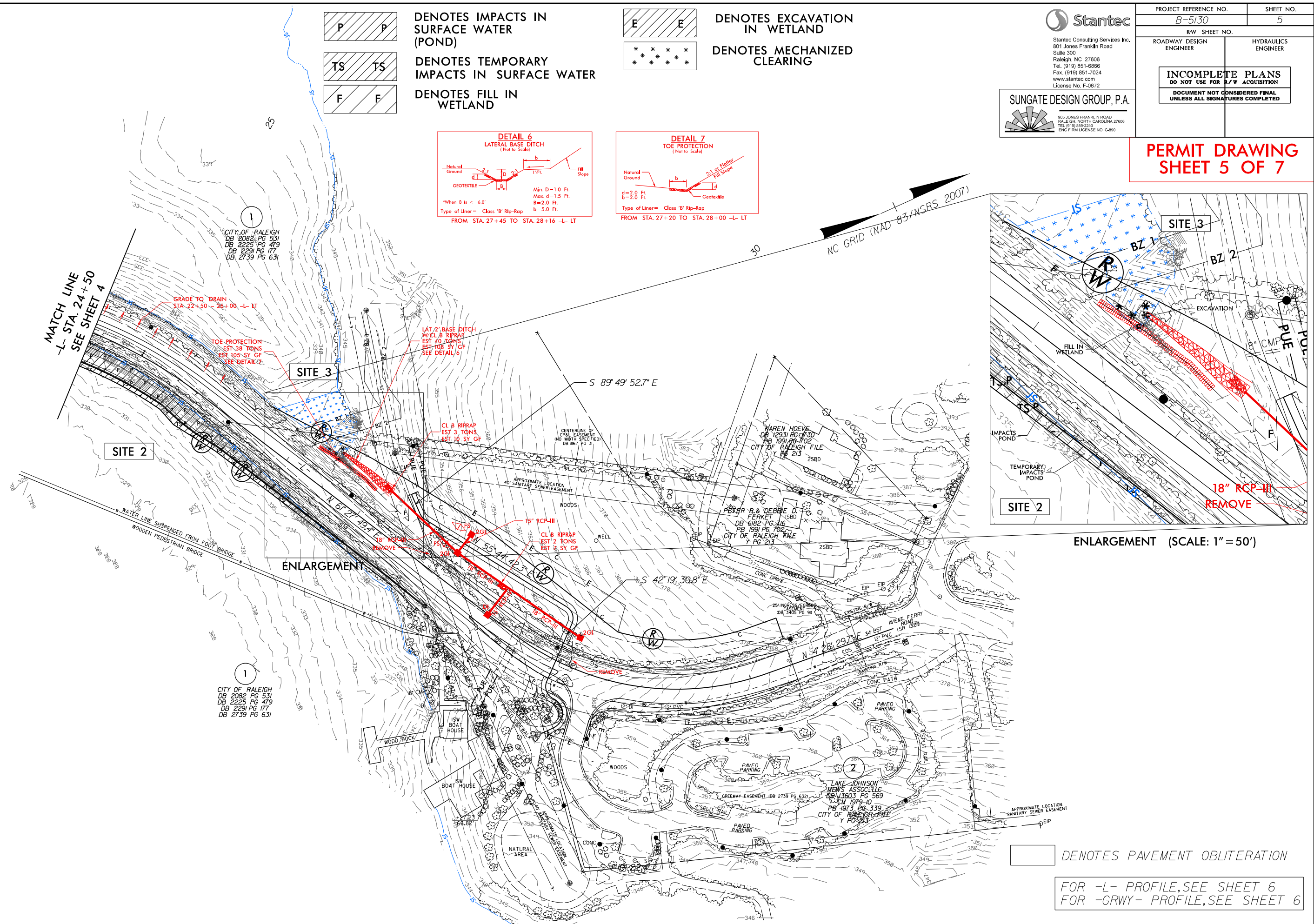
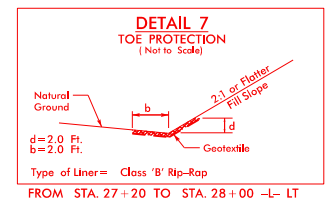
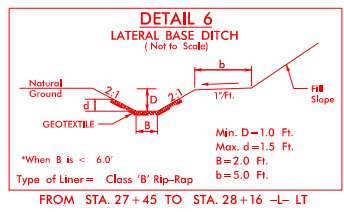
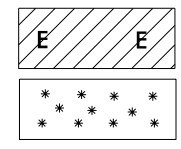
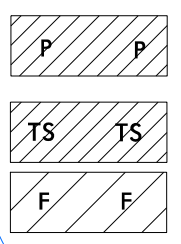
5/14/99

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 Stantec Consulting Services Inc.
 801 Jones Franklin Road
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 Raleigh, NC 27606
 Tel. (919) 951-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

SUNGATE DESIGN GROUP, P.A.
 805 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27606
 TEL (919) 859-2243
 ENG FRM LICENSE NO. C-890

PROJECT REFERENCE NO. B-5130	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

**PERMIT DRAWING
SHEET 5 OF 7**



ENLARGEMENT (SCALE: 1" = 50')

□ DENOTES PAVEMENT OBLITERATION

FOR -L- PROFILE, SEE SHEET 6
 FOR -GRWY- PROFILE, SEE SHEET 6

8/25/2011 hyd.prm.wet.05a.dgn
 10:30:10

5/28/99

PIPE HYDRAULIC DATA
24" RCP-IV Sta. 17+04 -L-

DRAINAGE AREA	= 7.3	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 15	CFS
DESIGN HW ELEVATION	= 352.32	FT
100 YEAR DISCHARGE	= 17	CFS
100 YEAR HW ELEVATION	= 352.560	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 20	CFS
OVERTOPPING ELEVATION	= 352.9	FT

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 4050	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 347.7	FT
BASE DISCHARGE	= 6020	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 349.2	FT
OVERTOPPING DISCHARGE	= 8980	CFS
OVERTOPPING FREQUENCY	= 500+/-	YRS
OVERTOPPING ELEVATION	= 351.5	FT

-L-

BM 2
ELEV = 351.27'
BM NAIL IN 1" POLE
LQ5/

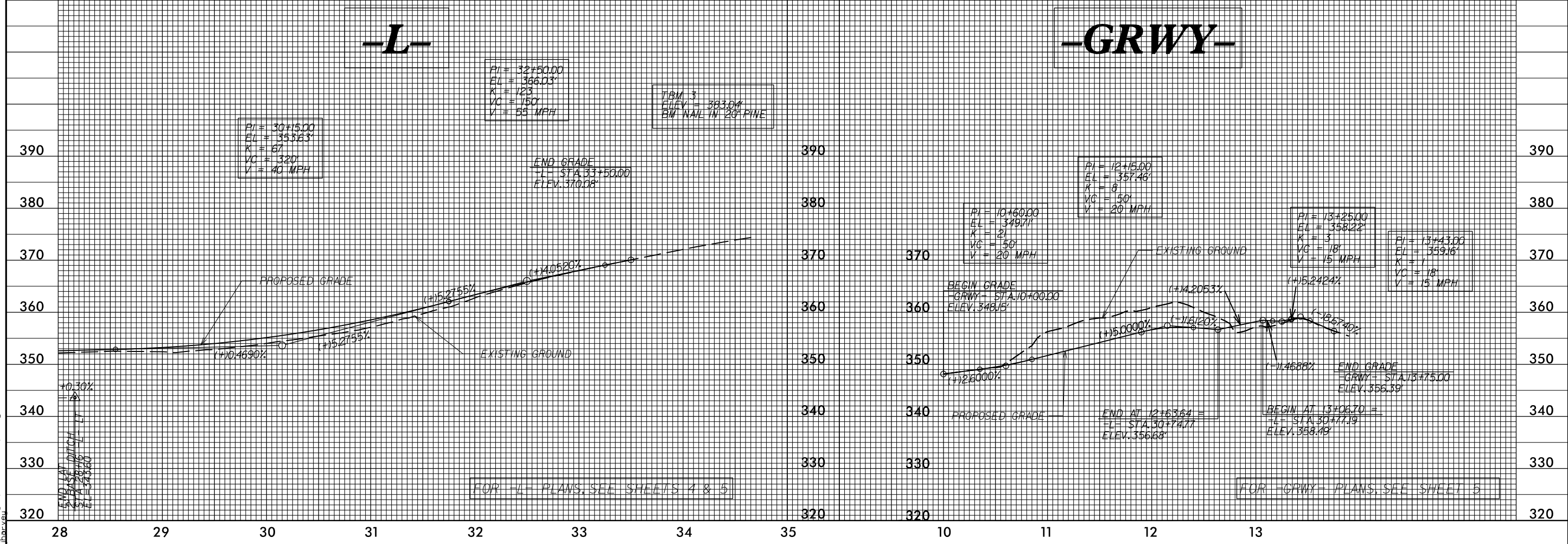
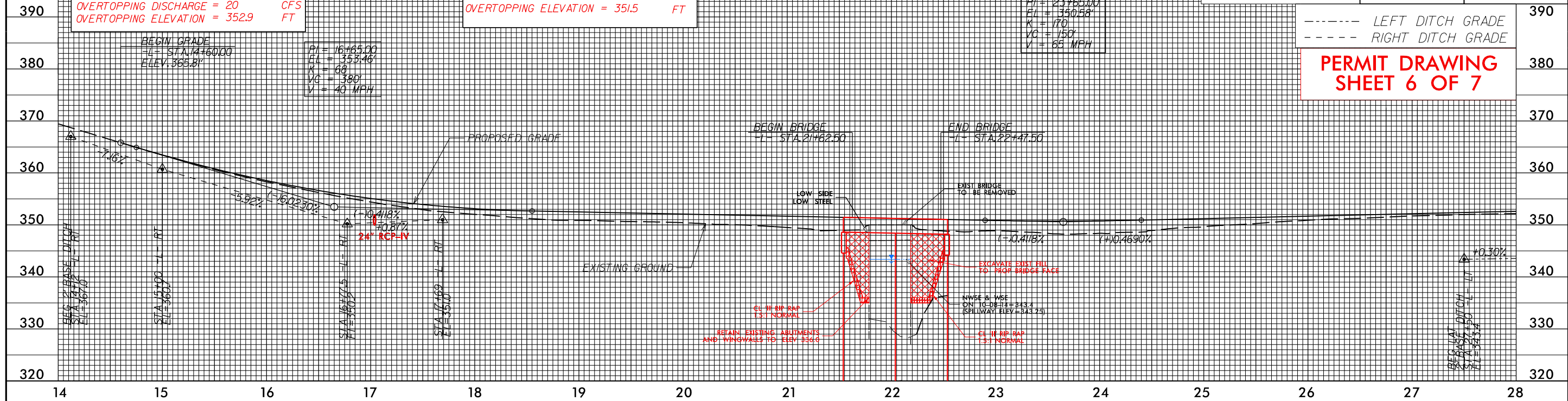
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RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FROM LICENSE NO. C-890

PROJECT REFERENCE NO.	B-5130	SHEET NO.	6
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

----- LEFT DITCH GRADE
----- RIGHT DITCH GRADE

PERMIT DRAWING SHEET 6 OF 7



8/18/2017 10:41:00 AM d:\p\m\ret_06.pfl.dgn

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	17+29 -L- LT	24" RCP						< 0.01	< 0.01			
2	20+11-27+68 -L-	RDWY/RET. WALL/BRIDGE						0.29	0.18			
3	27+22-28+15 -L- LT	DITCH	< 0.01		< 0.01	< 0.01						
TOTALS*:			< 0.01		< 0.01	< 0.01		0.29	0.18	0	0	0

*Rounded totals are sum of actual impacts

NOTES:
ALL SURFACE WATER AND TEMPORARY SURFACE WATER IMPACTS ARE FOR POND IMPACTS

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
8-31-17
WAKE COUNTY
B-5130
42289.2.FD1
SHEET 7 OF 7

5/14/99



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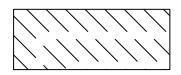


PROJECT REFERENCE NO. B-5130	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

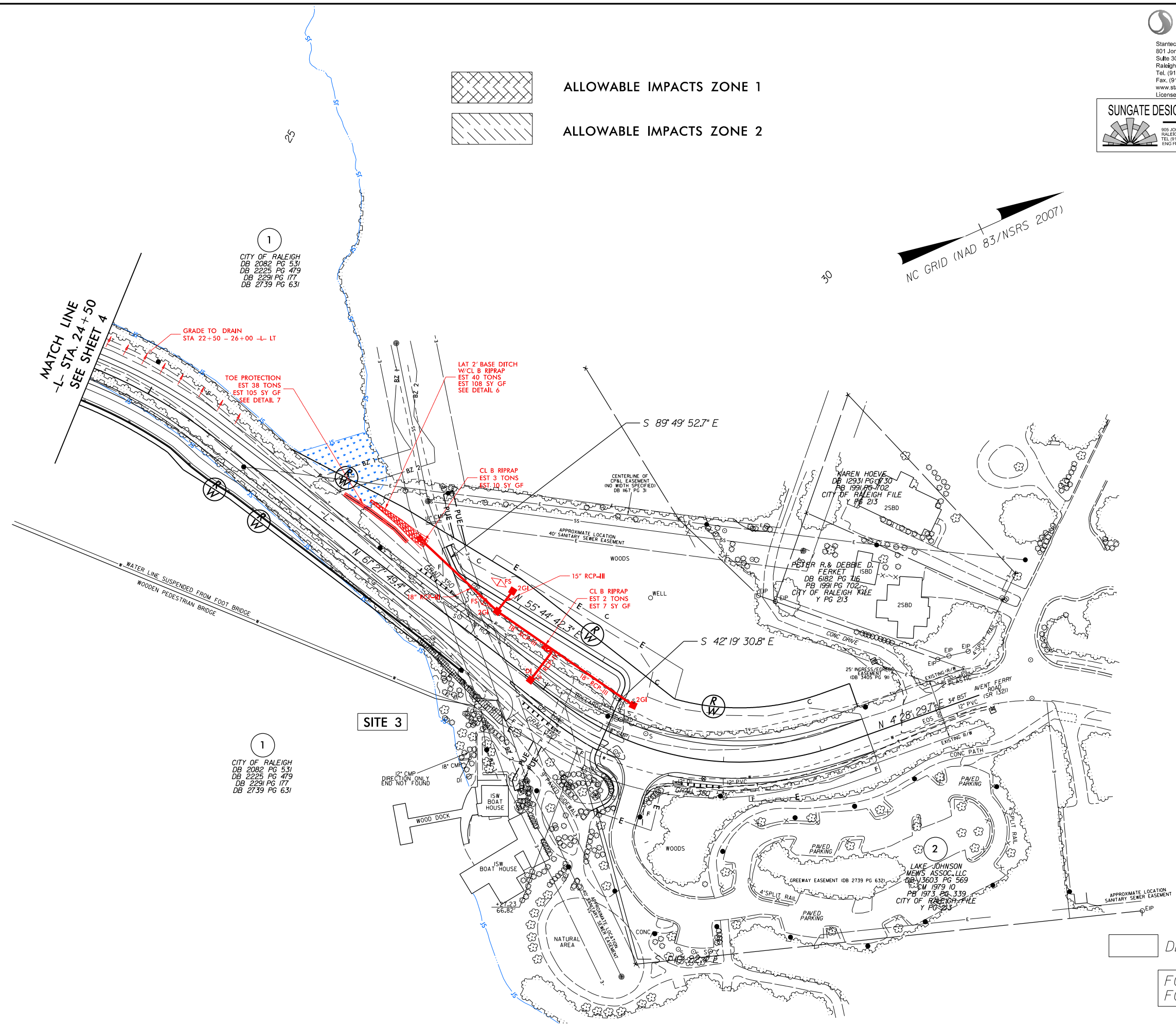
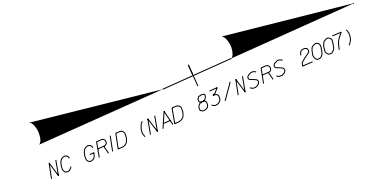
BUFFER DRAWING SHEET 3 OF 4



ALLOWABLE IMPACTS ZONE 1



ALLOWABLE IMPACTS ZONE 2



1
CITY OF RALEIGH
DB 2082 PG 531
DB 2225 PG 479
DB 2291 PG 177
DB 2739 PG 631

1
CITY OF RALEIGH
DB 2082 PG 531
DB 2225 PG 479
DB 2291 PG 177
DB 2739 PG 631

□ DENOTES PAVEMENT OBLITERATION

FOR -L- PROFILE, SEE SHEET 6
FOR -GRWY- PROFILE, SEE SHEET 6

8/25/2007 Hyd_prm_buf_005.dgn
10:11:00

RIPARIAN BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)		
1	ROADWAY	15+80-16+86-L-LT	X			1617	925	2542					
2	ROADWAY	19+58-20+76-L-RT	X			2197	1337	3534					
3	ROADWAY	28+68-29+90-L-RT	X			327	335	662					
TOTAL:						4141	2597	6738					

N.C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 B-5130
 WAKE COUNTY
 PROJECT: 42289.2.FD1

 DATE 08/25/17
 SHEET 4 OF 4

TIP PROJECT: B-5130

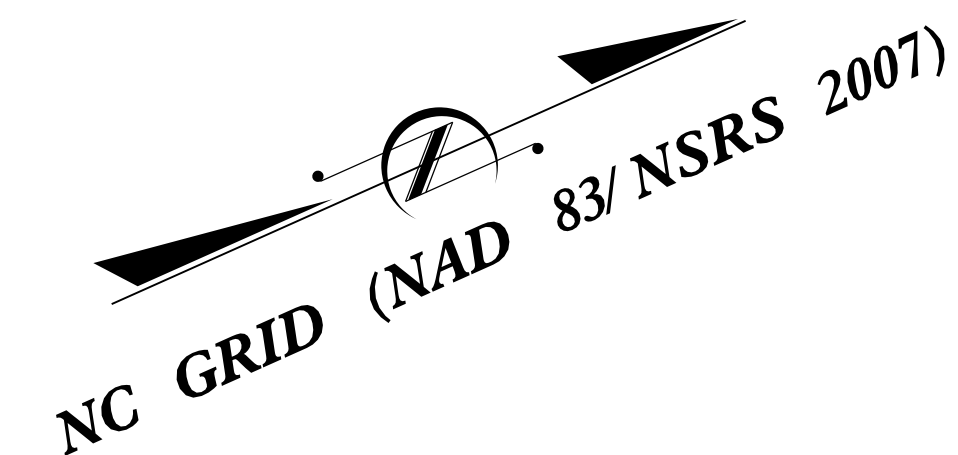
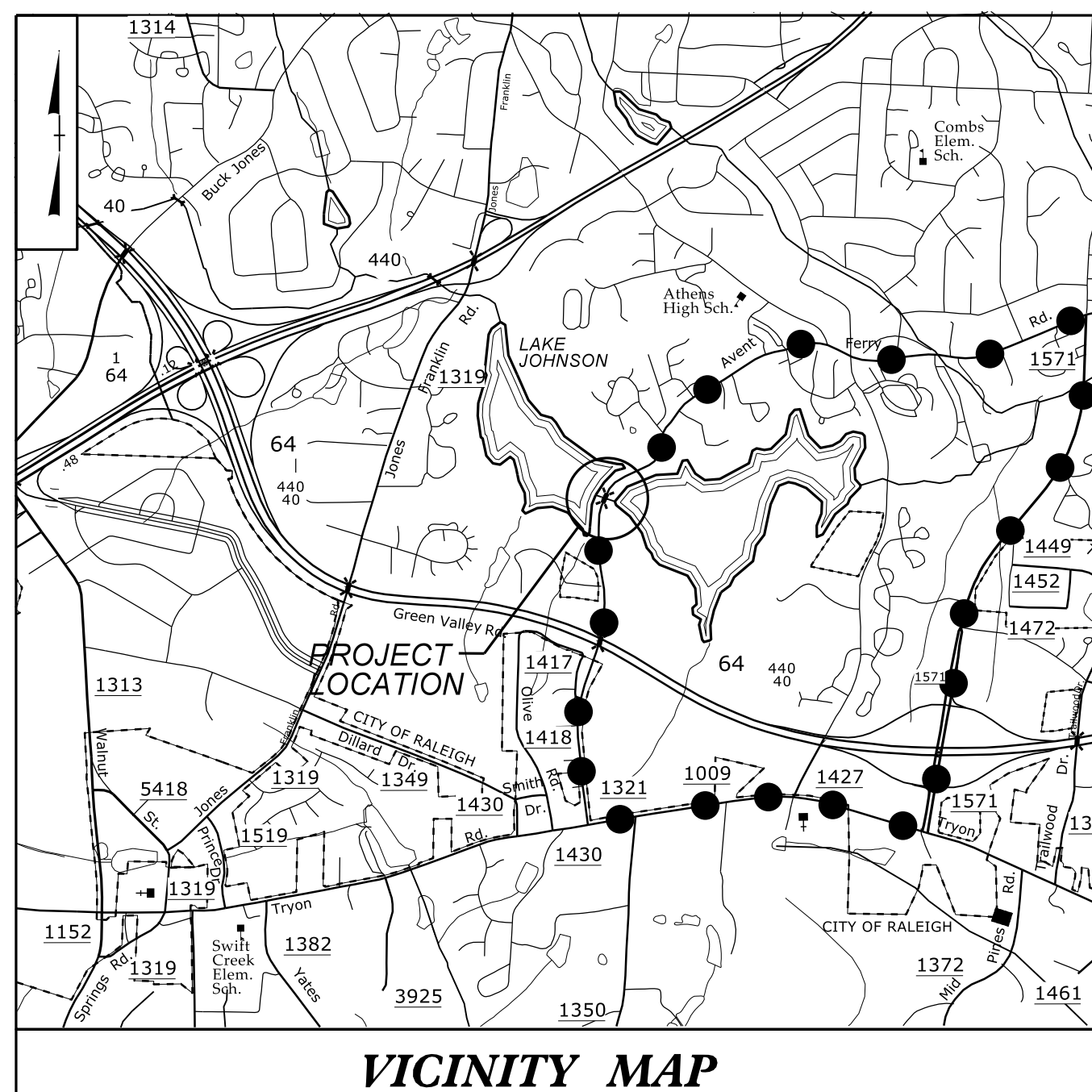
T.I.P. NO.	SHEET NO.
B-5130	UC-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

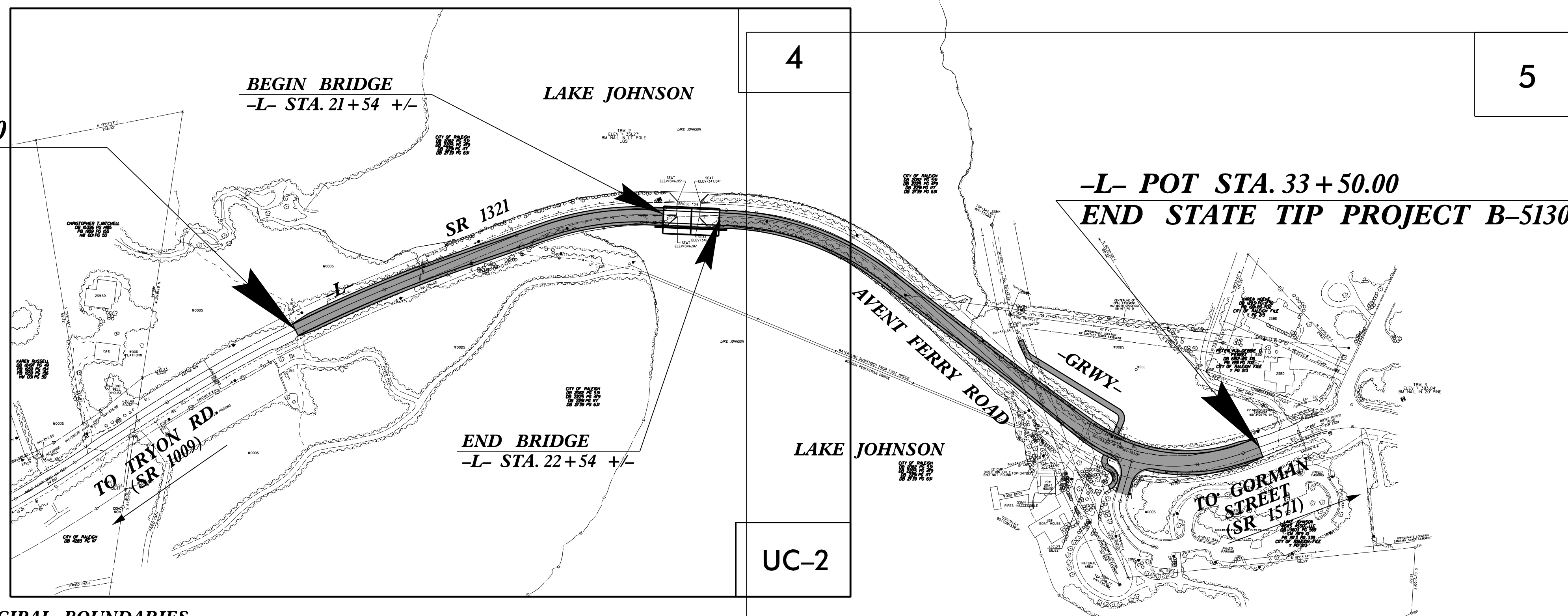
ENVIRONMENTAL PERMIT DRAWINGS
WAKE COUNTY

LOCATION: BRIDGE No. 318 OVER LAKE JOHNSON ON SR 1321
(AVENT FERRY ROAD)

TYPE OF WORK: UTILITY CONSTRUCTION



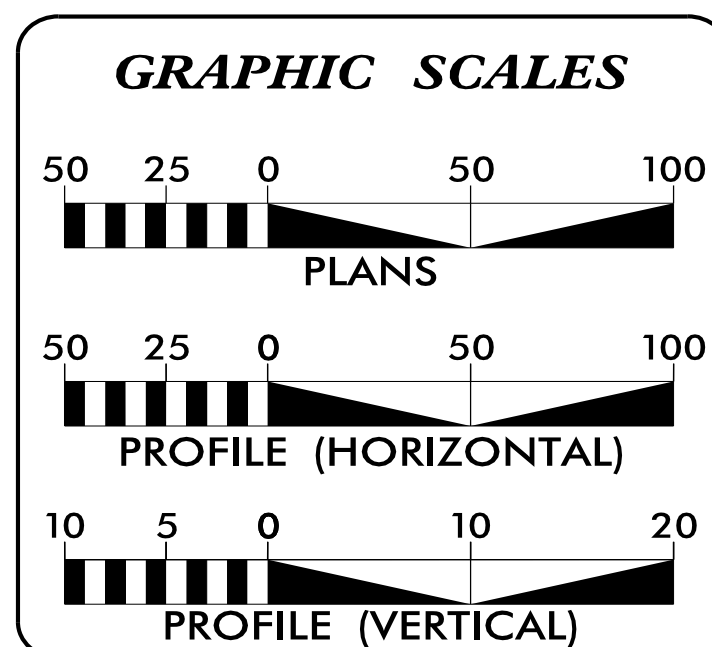
-L- POC STA. 14+10.00
BEGIN STATE TIP
PROJECT B-5130



-L- POT STA. 33+50.00
END STATE TIP PROJECT B-5130

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES
OF THE CITY OF RALEIGH.
CLEARING ON THIS PROJECT SHALL BE PERFORMED
TO THE LIMITS ESTABLISHED BY METHOD III.

DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES ARE COMPLETED

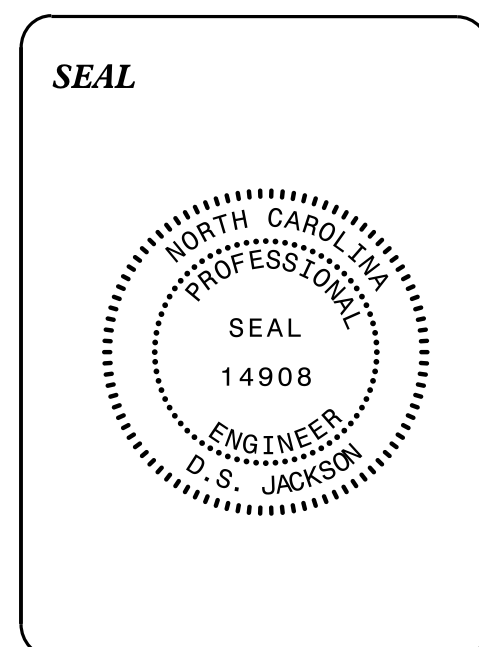



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	PLAN SHEET

WATER AND SEWER OWNERS ON PROJECT

(A) WATER - CITY OF RALEIGH

DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH, NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

<u>Donna S. Jackson, PE</u>	CENTRAL UTILITIES MANAGER
<u>Donald W. Proper</u>	UTILITIES PROJECT ENGINEER
<u>Ed Reams</u>	UTILITIES AREA COORDINATOR
<u>Tanga Sampson</u>	UTILITIES COORDINATOR

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)		
1	Water Line	19+86 to 20+41					556.3						
TOTALS:								556.3					

N.C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS

 WAKE COUNTY
 PROJECT: B-5130
 4/25/2017

 SHEET 1 OF 1

09.08/2017

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

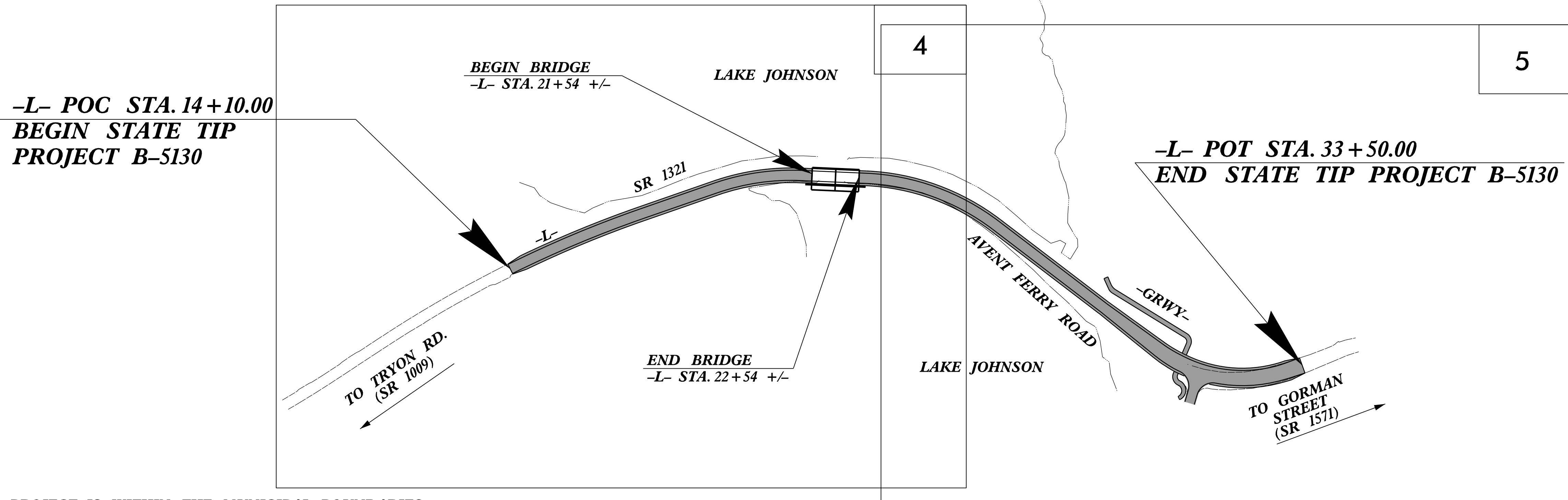
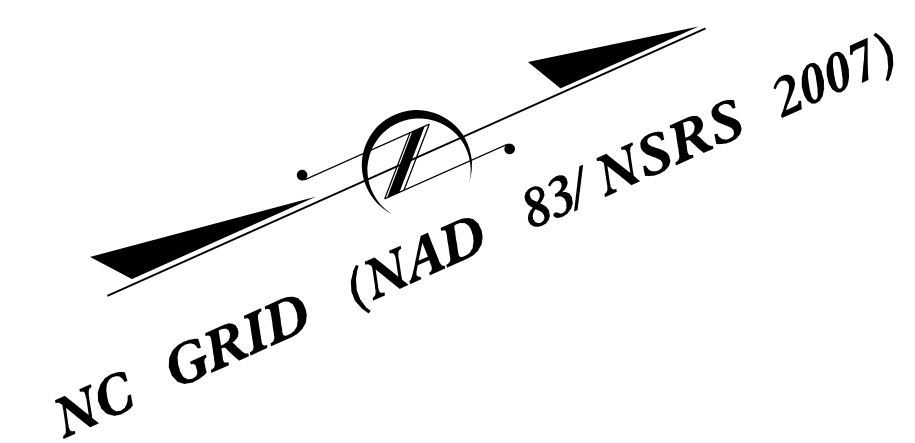
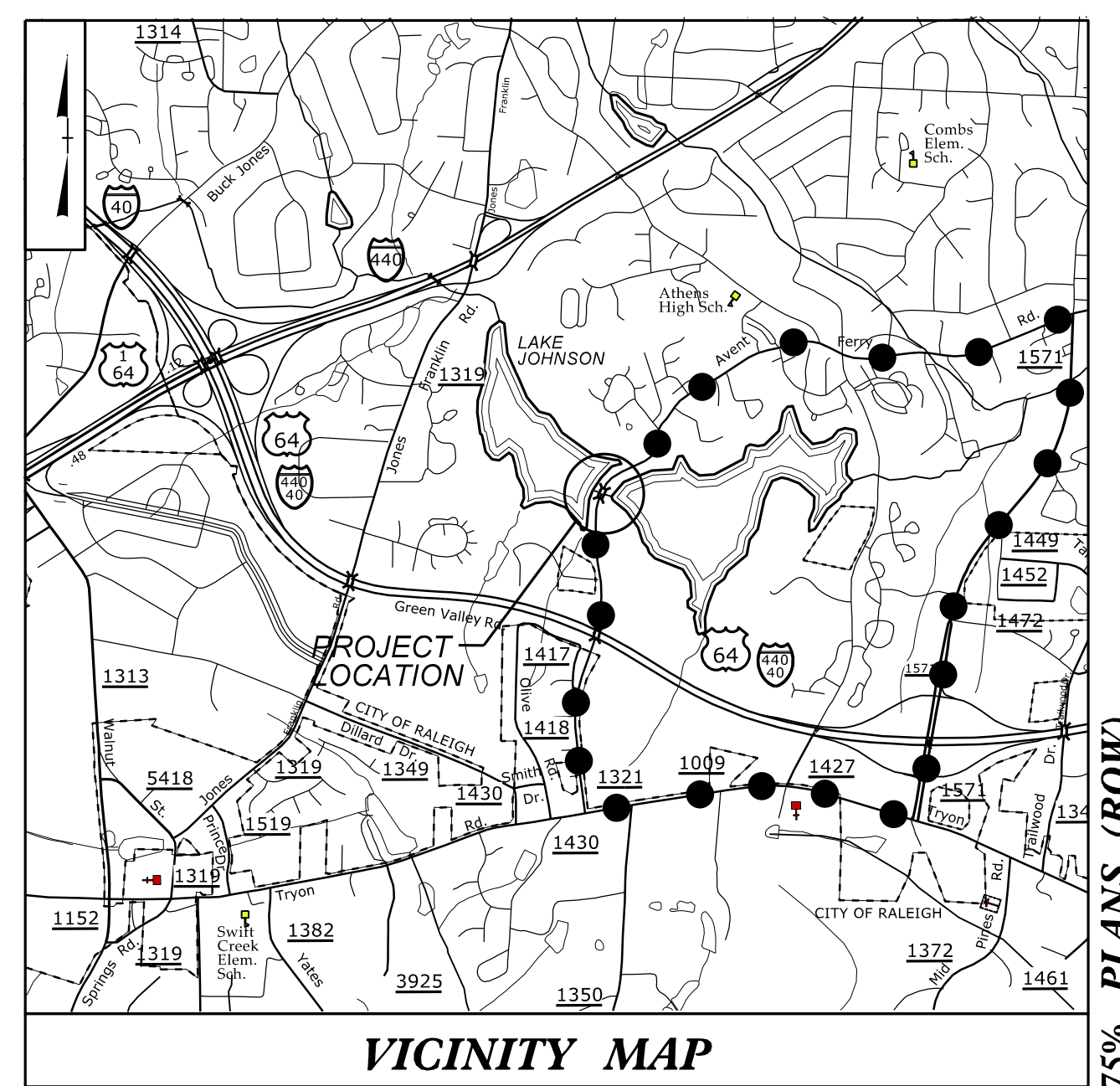
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5130	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
42289.1.1	BRZ-1321(4)	P.E.	
42289.2.FD1	BRZ-1321(4)	ROW., UTIL.	

WAKE COUNTY

LOCATION: BRIDGE NO. 318 OVER LAKE JOHNSON ON SR 1321
(AVENT FERRY ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, RETAINING WALLS AND STRUCTURE

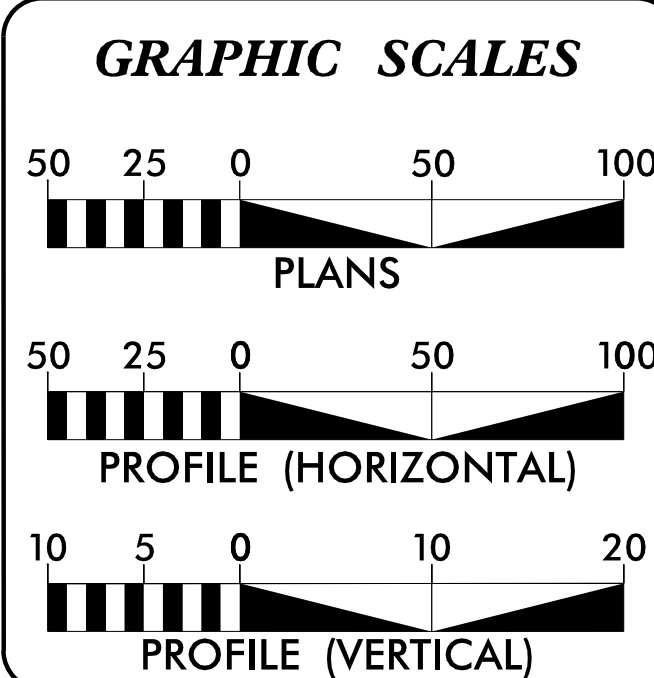
TIP PROJECT: B-5130



THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES
OF THE CITY OF RALEIGH.
CLEARING ON THIS PROJECT SHALL BE PERFORMED
TO THE LIMITS ESTABLISHED BY METHOD III.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT:



DESIGN DATA

ADT 2017	=	7543
ADT 2037	=	11393
K	=	11 %
D	=	70 %
T	=	3 % *
V	=	40 MPH
* (TTST = 1% DUAL 2%)		
FUNC CLASS	=	URBAN
COLLECTOR	=	STATEWIDE TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5130	=	0.348 MILES
LENGTH OF STRUCTURE TIP PROJECT B-5130	=	0.019 MILES
TOTAL LENGTH TIP PROJECT B-5130	=	0.367 MILES

Prepared in the Office of:

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL. (919) 855-2243 FAX (919) 855-6258
ENG. FIRM LICENSE NO. C-490

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for the North Carolina Department of Transportation

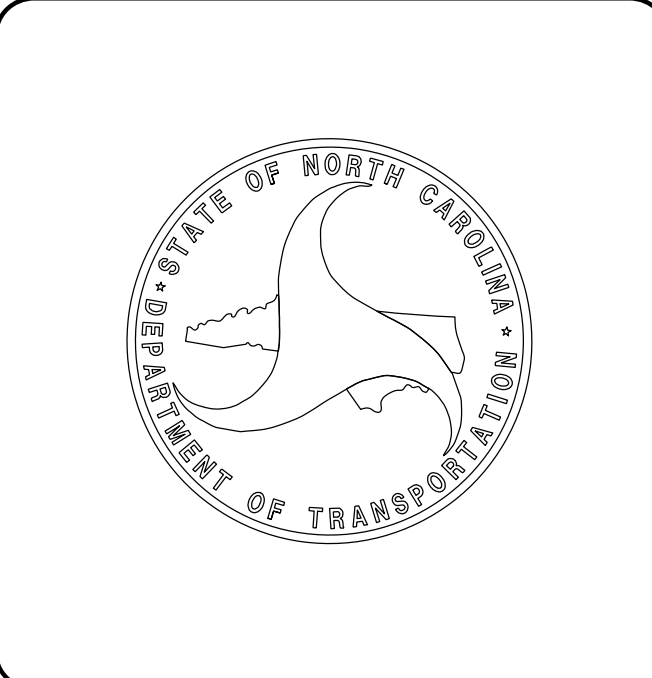
2012 STANDARD SPECIFICATIONS	STANTEC CONTACT
RIGHT OF WAY DATE:	STEVE SMALLWOOD, PE
JANUARY 25, 2017	PROJECT ENGINEER
LETTING DATE:	NC DOT CONTACT:
MAY 15, 2018	BRENDA MOORE, PE

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



7/26/2017 U:\Roadway\Proj\B5130_rdy_tsh.dgn stsmallwood

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

BOUNDARIES AND PROPERTY:

Table listing symbols for boundaries and property: State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin, Computed Property Corner, Property Monument, Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary, Existing Historic Property Boundary, Known Contamination Area: Soil, Potential Contamination Area: Soil, Known Contamination Area: Water, Potential Contamination Area: Water, Contaminated Site: Known or Potential.

BUILDINGS AND OTHER CULTURE:

Table listing symbols for buildings and other culture: Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam.

HYDROLOGY:

Table listing symbols for hydrology: Stream or Body of Water, Hydro, Pool or Reservoir, Jurisdictional Stream, Buffer Zone 1, Buffer Zone 2, Flow Arrow, Disappearing Stream, Spring, Wetland, Proposed Lateral, Tail, Head Ditch, False Sump.

RAILROADS:

Table listing symbols for railroads: Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY & PROJECT CONTROL:

Table listing symbols for right of way and project control: Secondary Horiz and Vert Control Point, Primary Horiz Control Point, Primary Horiz and Vert Control Point, Exist Permanent Easement Pin and Cap, New Permanent Easement Pin and Cap, Vertical Benchmark, Existing Right of Way Marker, Existing Right of Way Line, New Right of Way Line, New Right of Way Line with Pin and Cap, New Right of Way Line with Concrete or Granite R/W Marker, New Control of Access Line with Concrete C/A Marker, Existing Control of Access, New Control of Access, Existing Easement Line, New Temporary Construction Easement, New Temporary Drainage Easement, New Permanent Drainage Easement, New Permanent Drainage / Utility Easement, New Permanent Utility Easement, New Temporary Utility Easement, New Aerial Utility Easement.

ROADS AND RELATED FEATURES:

Table listing symbols for roads and related features: Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Curb Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal.

VEGETATION:

Table listing symbols for vegetation: Single Tree, Single Shrub.

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

Table listing symbols for existing structures: Hedge, Woods Line, Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing symbols for existing structures: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall, Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer.

UTILITIES:

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

TELEPHONE:

Table listing symbols for telephone: Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, U/G Telephone Cable LOS B (S.U.E.*), U/G Telephone Cable LOS C (S.U.E.*), U/G Telephone Cable LOS D (S.U.E.*), U/G Telephone Conduit LOS B (S.U.E.*), U/G Telephone Conduit LOS C (S.U.E.*), U/G Telephone Conduit LOS D (S.U.E.*), U/G Fiber Optics Cable LOS B (S.U.E.*), U/G Fiber Optics Cable LOS C (S.U.E.*), U/G Fiber Optics Cable LOS D (S.U.E.*).

WATER:

Table listing symbols for water: Water Manhole, Water Meter, Water Valve, Water Hydrant, U/G Water Line LOS B (S.U.E.*), U/G Water Line LOS C (S.U.E.*), U/G Water Line LOS D (S.U.E.*), Above Ground Water Line.

TV:

Table listing symbols for TV: TV Pedestal, TV Tower, U/G TV Cable Hand Hole, U/G TV Cable LOS B (S.U.E.*), U/G TV Cable LOS C (S.U.E.*), U/G TV Cable LOS D (S.U.E.*), U/G Fiber Optic Cable LOS B (S.U.E.*), U/G Fiber Optic Cable LOS C (S.U.E.*), U/G Fiber Optic Cable LOS D (S.U.E.*).

GAS:

Table listing symbols for gas: Gas Valve, Gas Meter, U/G Gas Line LOS B (S.U.E.*), U/G Gas Line LOS C (S.U.E.*), U/G Gas Line LOS D (S.U.E.*), Above Ground Gas Line.

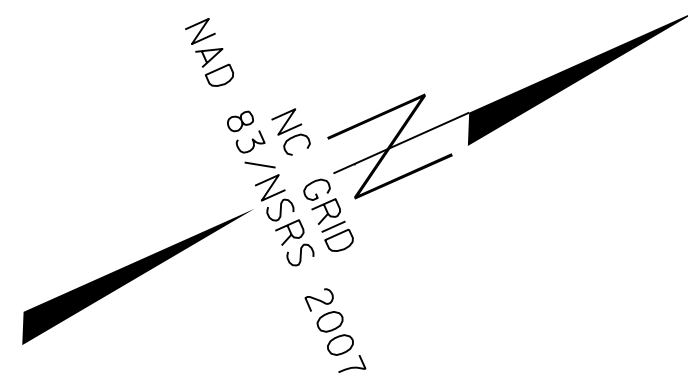
SANITARY SEWER:

Table listing symbols for sanitary sewer: Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, SS Forced Main Line LOS B (S.U.E.*), SS Forced Main Line LOS C (S.U.E.*), SS Forced Main Line LOS D (S.U.E.*).

MISCELLANEOUS:

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

5/26/2016



SURVEY CONTROL SHEET B-5130

WAKE COUNTY

LOCATION: BRIDGE NO. 318 OVER LAKE JOHNSON ON SR 1321
(AVENT FERRY ROAD)

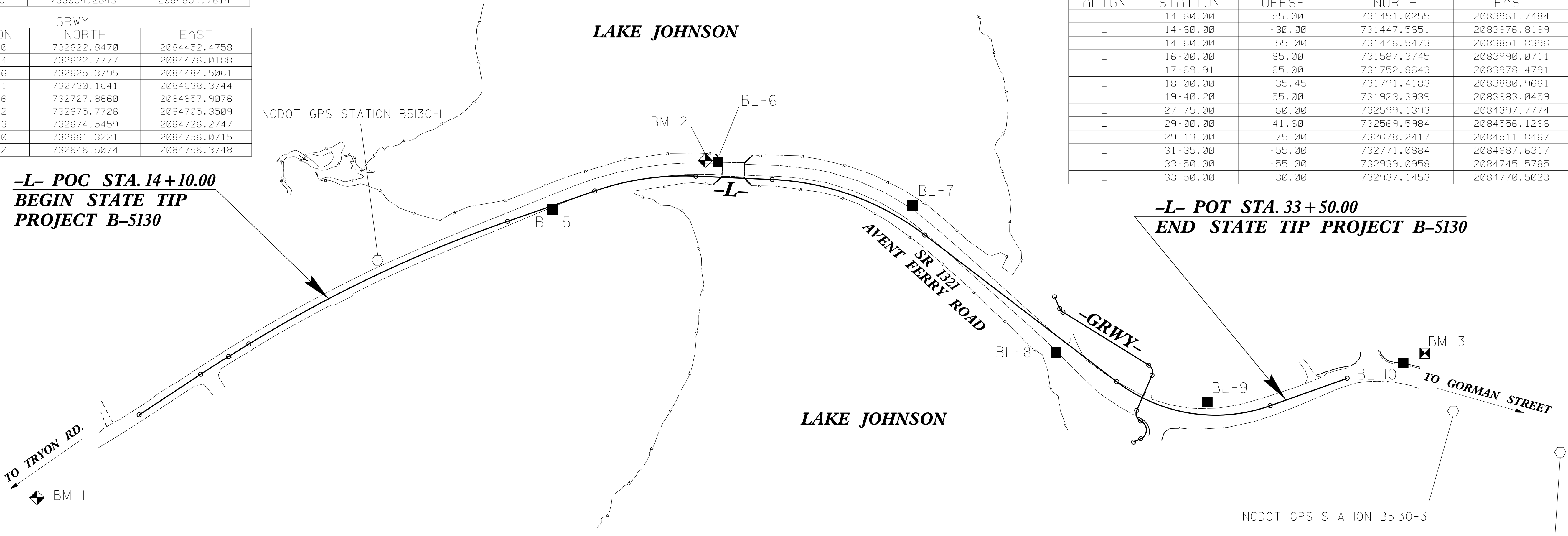
PROJECT REFERENCE NO.	SHEET NO.
B-5130	1C-1
Location and Surveys	

TYPE	STATION	NORTH	EAST
POT	10+00.00	730992.4708	2083962.0348
PC	11+35.87	731126.5464	2083940.0528
PT	11+97.19	731187.2130	2083931.1196
PC	12+40.93	731230.5834	2083925.4540
PT	17+69.91	731758.4103	2083913.7161
PC	19+40.20	731928.0867	2083928.2465
PT	21+29.46	732109.1634	2083979.2754
PC	22+70.56	732235.3488	2084042.4146
PT	25+74.96	732450.8678	2084250.7048
PC	30+20.62	732663.7654	2084642.2222
PT	33+19.01	732903.9131	2084797.9932
POT	34+69.85	733054.2843	2084809.7614

TYPE	STATION	GRWY NORTH	GRWY EAST
POT	10+00.00	732622.8470	2084452.4758
PC	10+23.54	732622.7777	2084476.0188
PT	10+32.56	732625.3795	2084484.5061
PC	12+18.71	732730.1641	2084638.3744
PT	12+40.16	732727.8660	2084657.9076
PC	13+10.62	732675.7726	2084705.3509
PRC	13+33.83	732674.5459	2084726.2747
PT	13+74.60	732661.3221	2084756.0715
POT	13+89.42	732646.5074	2084756.3748

ROW MARKER IRON PIN AND CAP-E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	14+00.00	30.00	731390.8249	2083939.9048
L	17+69.91	-55.00	731763.1031	2083858.9167
L	18+00.00	-55.00	731793.0866	2083861.4843
L	21+29.46	55.00	732084.5522	2084028.4617
L	22+70.56	55.00	732210.7376	2084091.6008
L	25+74.96	55.00	732402.5495	2084276.9791
L	26+50.00	-38.10	732520.1883	2084298.4235
L	29+00.00	55.00	732557.8245	2084562.5290

ROW MARKER CONCRETE OR GRANITE-E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	14+60.00	55.00	731451.0255	2083961.7484
L	14+60.00	-30.00	731447.5651	2083876.8189
L	14+60.00	-55.00	731446.5473	2083851.8396
L	16+00.00	85.00	731587.3745	2083990.0711
L	17+69.91	65.00	731752.8643	2083978.4791
L	18+00.00	-35.45	731791.4183	2083880.9661
L	19+40.20	55.00	731923.3939	2083983.0459
L	27+75.00	-60.00	732599.1393	2084397.7774
L	29+00.00	41.60	732569.5984	2084556.1266
L	29+13.00	-75.00	732678.2417	2084511.8467
L	31+35.00	-55.00	732771.0884	2084687.6317
L	33+50.00	-55.00	732939.0958	2084745.5785
L	33+50.00	-30.00	732937.1453	2084770.5023



BASELINE POINT	DESC.	NORTH	EAST	ELEV	L STATION	OFFSET
1	B5130-1	731510.3210	2083881.3770	361.43	15+21.93	23.68 LT
5	BL-5	731843.0718	2083927.3230	350.84	18+55.42	6.33 RT
6	BL-6	732157.5059	2083971.7140	349.43	21+69.31	28.39 LT
7	BL-7	732451.6575	2084192.1220	350.70	25+26.80	31.14 LT
8	BL-8	732583.1843	2084546.8860	352.70	28+98.37	25.25 RT
9	BL-9	732801.0120	2084744.3720	364.51	31+99.87	23.94 LT
10	BL-10	733160.3712	2084825.9440	378.92		OUTSIDE PROJECT LIMITS
11	BL-11	733564.5488	2085187.5450	369.95		OUTSIDE PROJECT LIMITS
12	BL-12	733751.1445	2085499.8900	381.63		OUTSIDE PROJECT LIMITS
3	B5130-3	733933.2210	2085770.8520	402.38		OUTSIDE PROJECT LIMITS
4	B5130-4	734335.3280	2086532.7570	399.98		OUTSIDE PROJECT LIMITS

BENCHMARK DATA

BM 1 ELEVATION = 402.58'	BM 2 ELEVATION = 351.27'	BM 3 ELEVATION = 383.04'
N 730758 E 2084025	N 732137 E 2083960	N 733204 E 2084827
L STATION 10+00	L STATION 21+46 30 LEFT	L STATION 10+00
S 14°56'9" E DIST 243'	BM NAIL IN LIGHT POLE (L051)	N 21°21'6" E DIST 2374.74'
BM NAIL IN 16" POPLAR		BM NAIL IN 20" PINE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5130-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 731510.321(ft) EASTING: 2083881.377(ft) ELEVATION: 361.43(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989846

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5130-1" TO -L- STATION 14+10.00 IS S 14°04'53.4" E 114.92'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING NCDOT PROJECT CONTROL DATA AT: [HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location/) THE FILES TO BE FOUND ARE AS FOLLOWS: B5130_ls_control.txt
 - SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

GEOID 03
NOTE: DRAWING NOT TO SCALE

T:\26\2016\Drawings\Proj\B5130_1s_1c.dgn

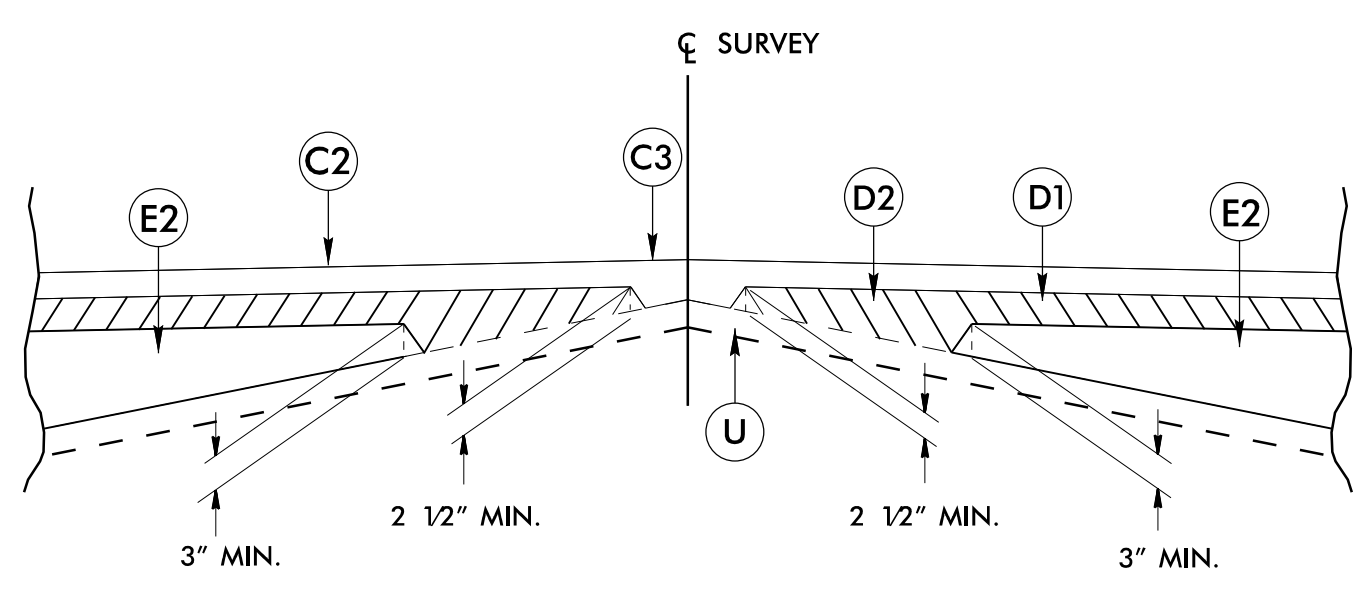
5/14/99

Stantec
 Stantec Consulting Services Inc.
 801 Jones Franklin Road
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 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

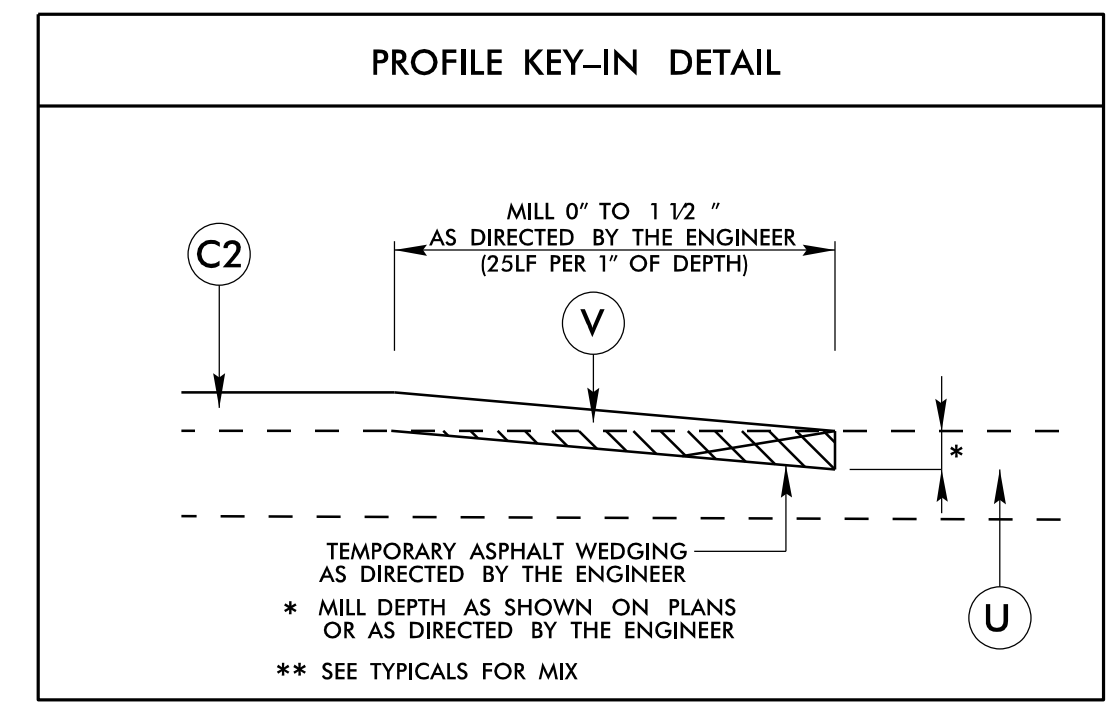
PROJECT REFERENCE NO. B-5130	SHEET NO. 2A-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2 OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
J	6" AGGREGATE BASE COURSE.
R1	5" MONOLITHIC CONC. ISLAND (KEYED IN).
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	VARIABLE MILLING 0" TO 1 1/2".
W	WEDGING (SEE DETAIL SHOWING METHOD OF WEDGING).

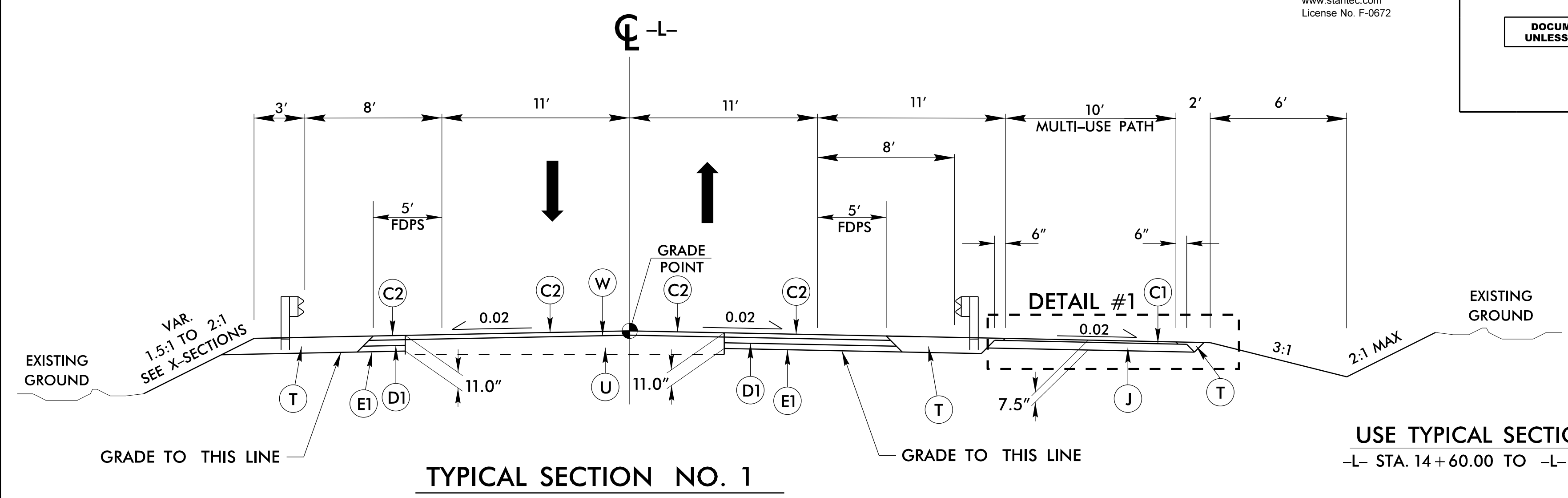
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



DETAILS SHOWING METHOD OF WEDGING

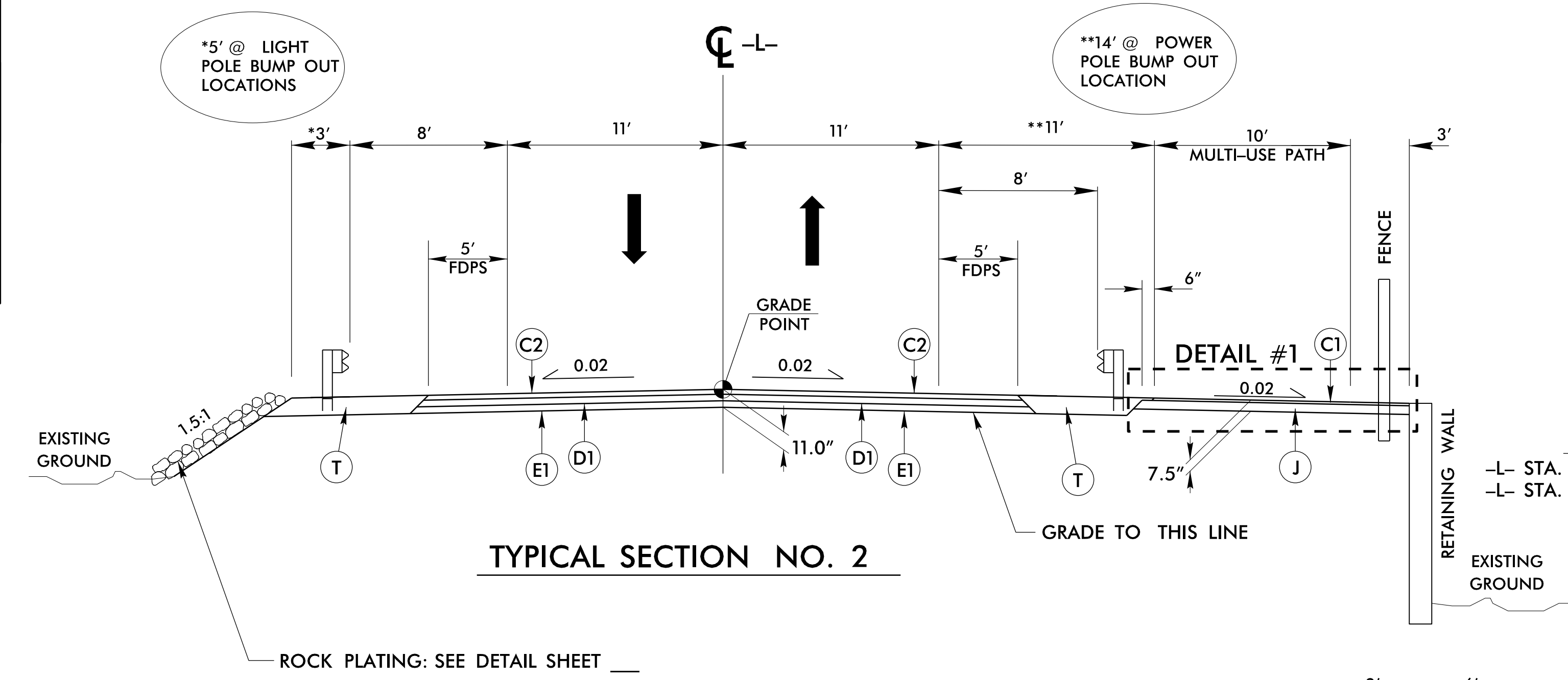


TEMPORARY ASPHALT WEDGING AS DIRECTED BY THE ENGINEER
 * MILL DEPTH AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER
 ** SEE TYPICALS FOR MIX



TYPICAL SECTION NO. 1

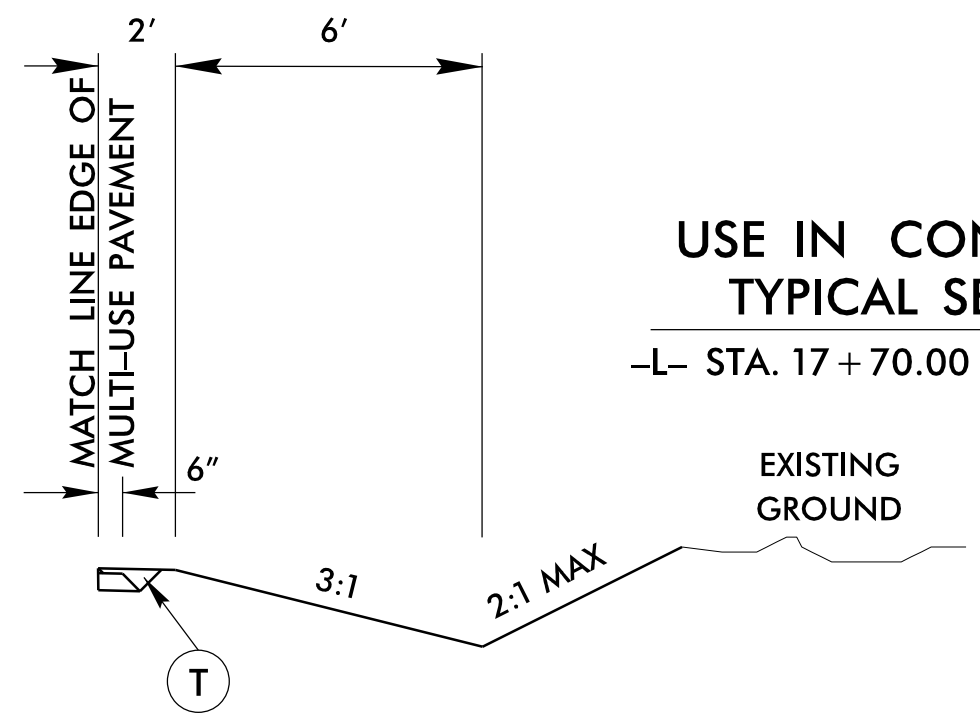
USE TYPICAL SECTION NO. 1
 -L- STA. 14+60.00 TO -L- STA. 17+70.00



TYPICAL SECTION NO. 2

DETAIL 1:
 SEE DETAIL #1 ON SHEET NO. 4
 -L- STA. 15+00 TO 19+69 RT

USE TYPICAL SECTION NO. 2
 -L- STA. 17+70.00 TO -L- STA. 21+54 +/- (BEGIN BRIDGE)
 -L- STA. 22+54 +/- (END BRIDGE) TO -L- STA. 25+65.00



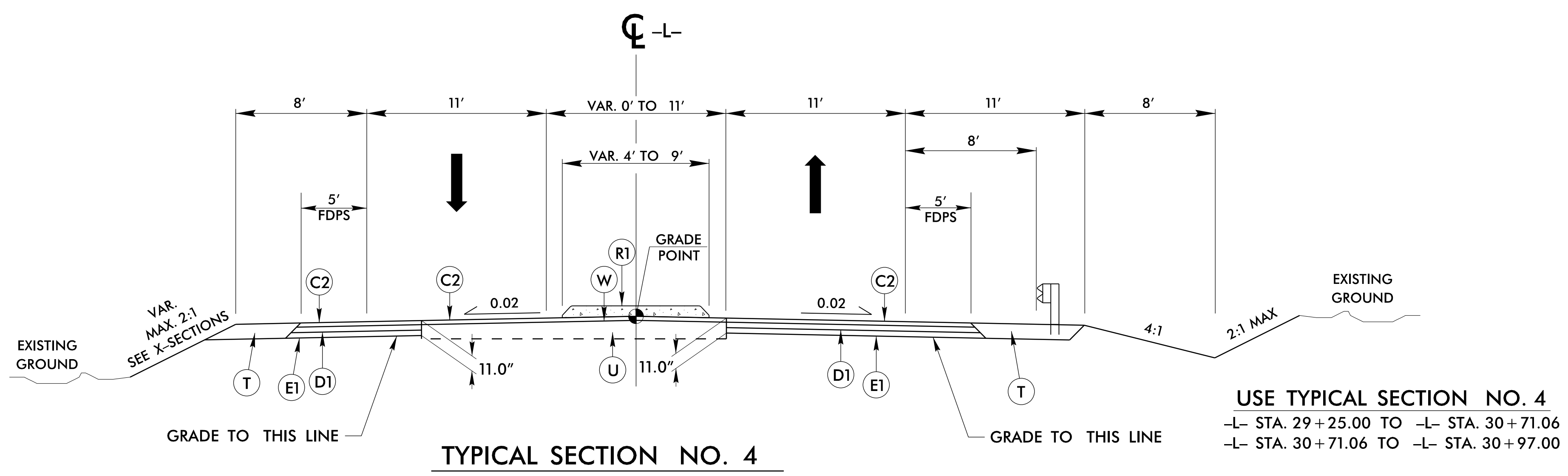
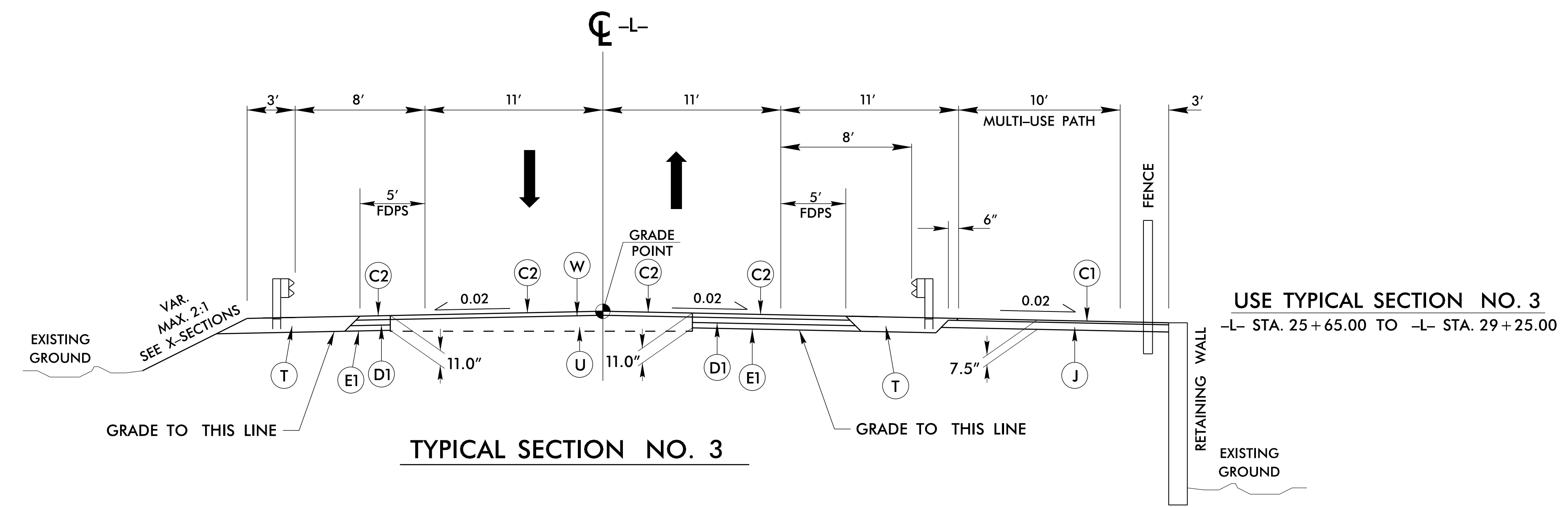
PARTIAL TYPICAL SECTION NO. 2A

USE IN CONJUNCTION WITH
 TYPICAL SECTION NO. 2
 -L- STA. 17+70.00 TO -L- STA. 19+79.00

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 7/26/2017
 U:\Projects\2017\Projects\B5130_rdy_tjpr.dgn
 stam

PROJECT REFERENCE NO. B-5130	SHEET NO. 2A-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

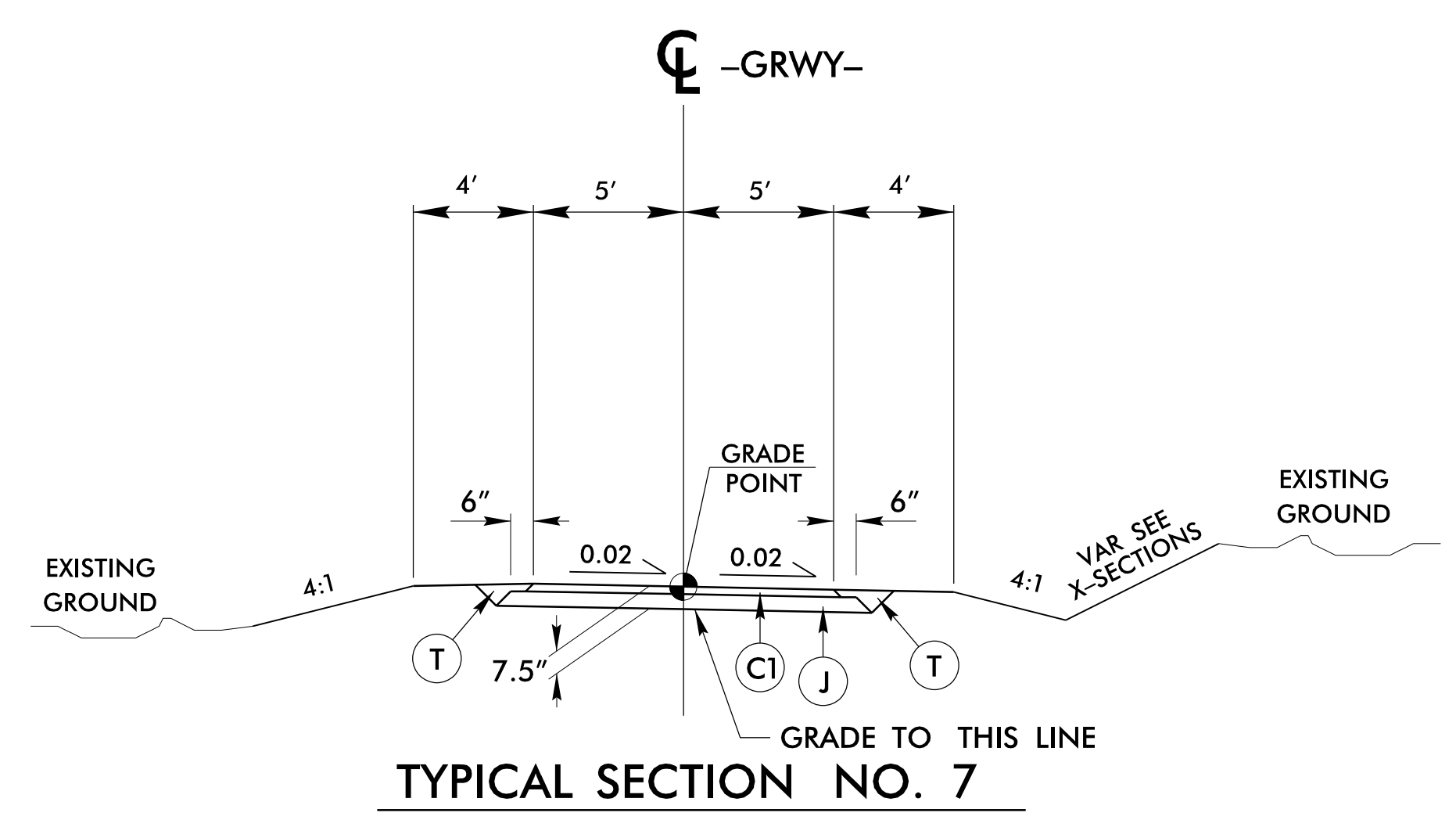
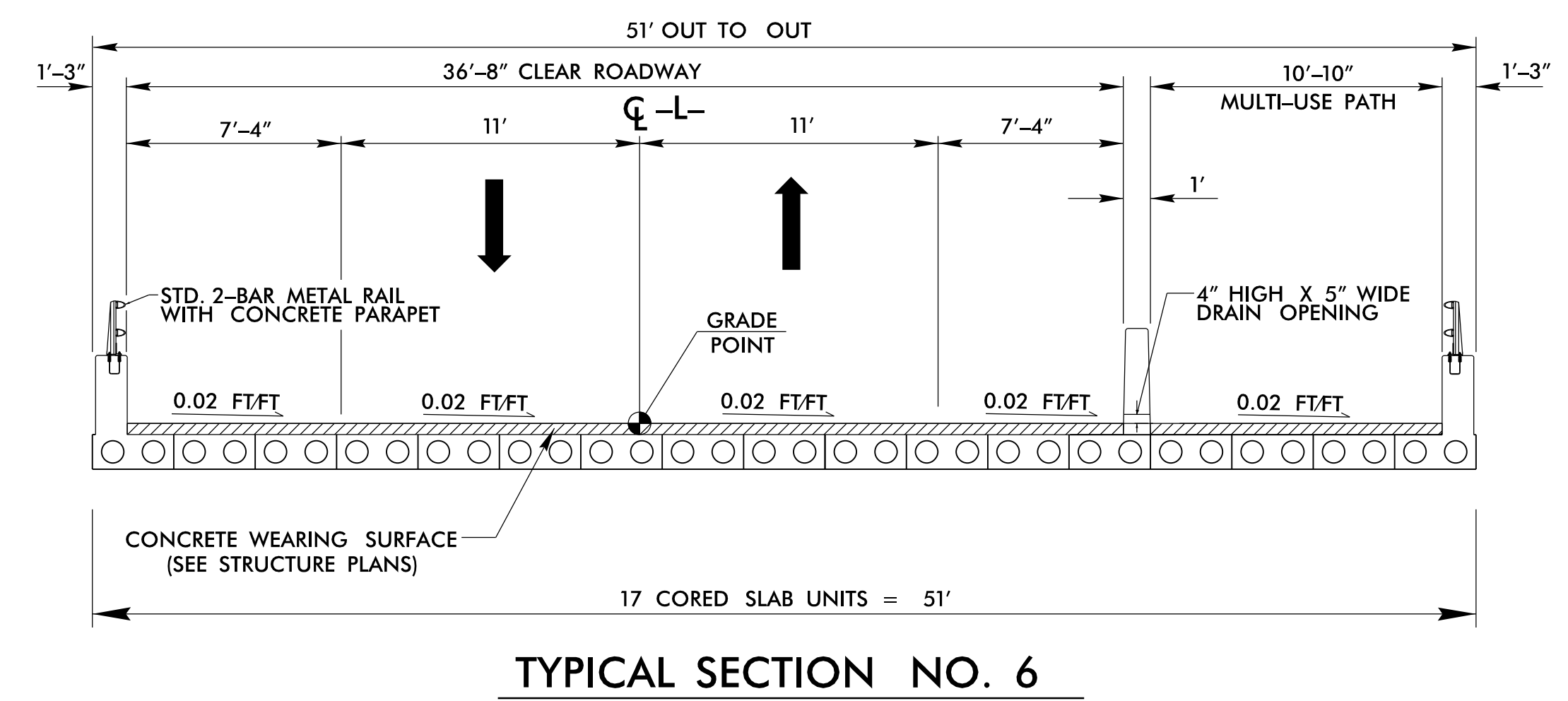
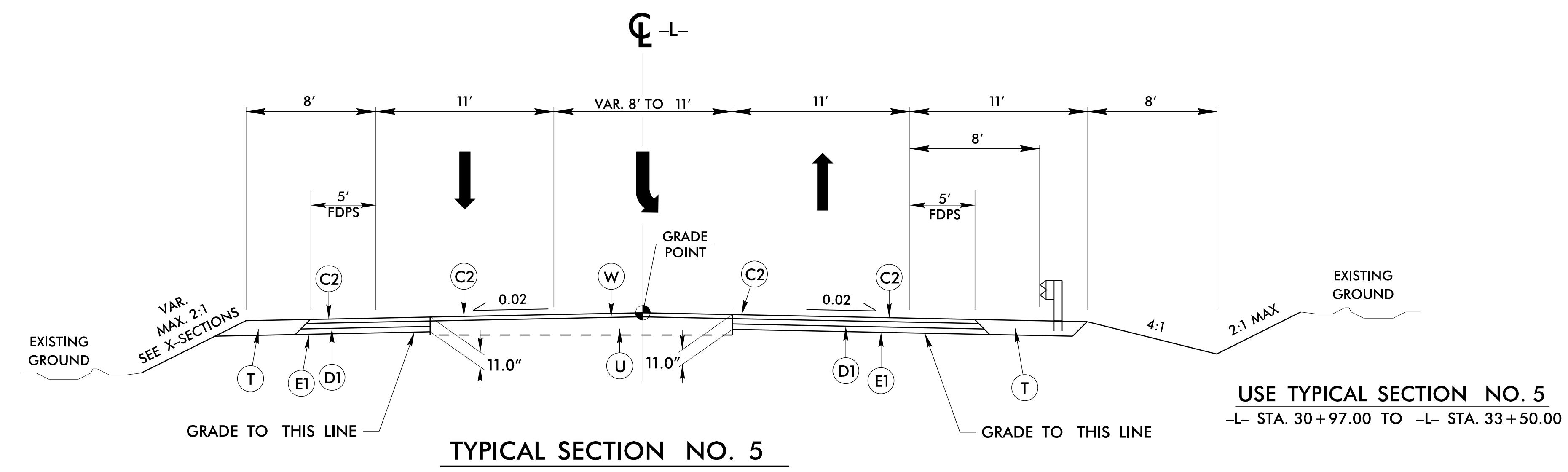


C1	PROP. APPROX. 1½", TYPE SF9.5A.
C2	PROP. APPROX. 3", TYPE S9.5B.
C3	PROP. VAR. DEPTH, TYPE S9.5B.
D1	PROP. APPROX. 4", TYPE I19.0B.
D2	PROP. VAR. DEPTH, TYPE I19.0B.
E1	PROP. APPROX. 4", TYPE B25.0B.
E2	PROP. VAR. DEPTH, TYPE B25.0B.
J	6" AGGREGATE BASE COURSE.
R1	5" MONOLITHIC CONC. ISLAND (KEYED IN).
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	VARIABLE MILLING 0" TO 1½".
W	WEDGING.

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

5/14/99

PROJECT REFERENCE NO. <i>B-5130</i>	SHEET NO. <i>2A-3</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



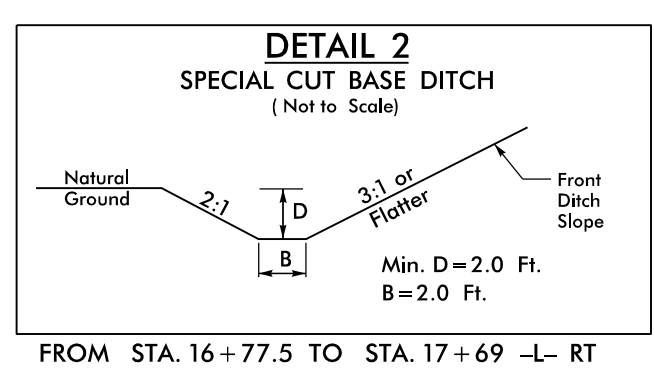
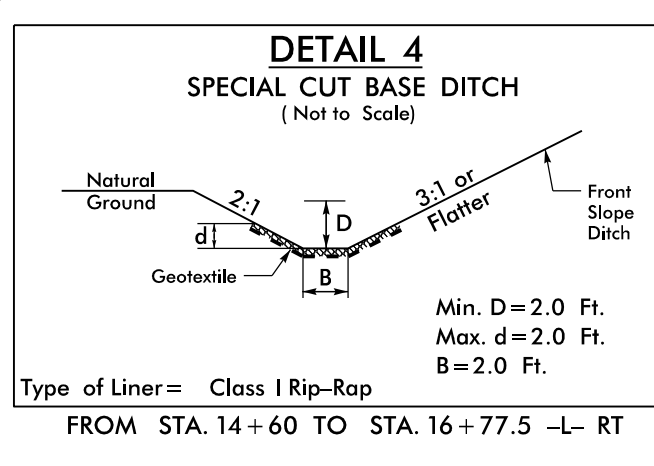
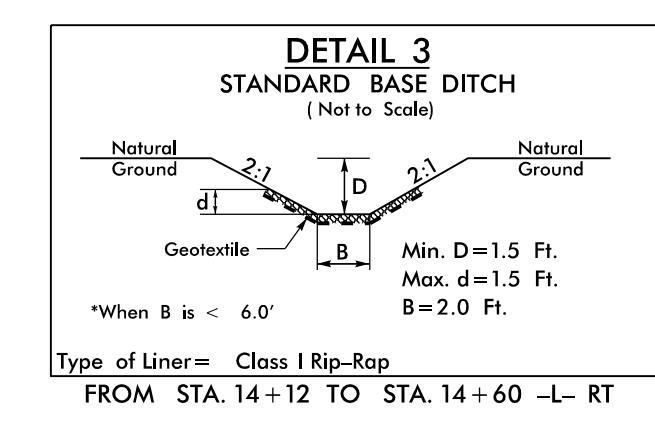
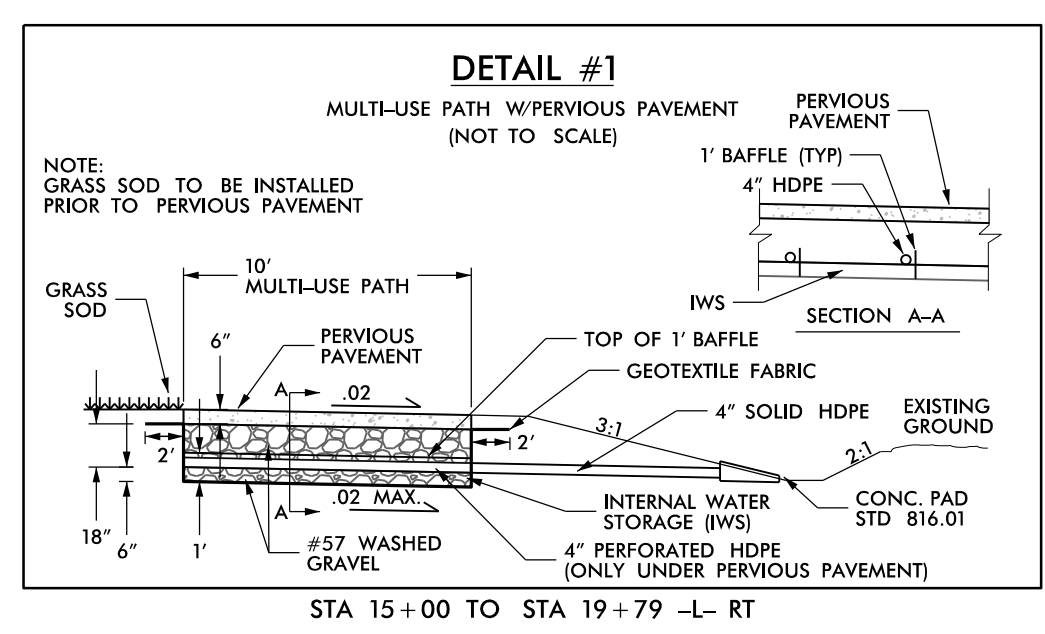
C1	PROP. APPROX. 1½", TYPE SF9.5A.
C2	PROP. APPROX. 3", TYPE S9.5B.
C3	PROP. VAR. DEPTH, TYPE S9.5B.
D1	PROP. APPROX. 4", TYPE I19.0B.
D2	PROP. VAR. DEPTH, TYPE I19.0B.
E1	PROP. APPROX. 4", TYPE B25.0B.
E2	PROP. VAR. DEPTH, TYPE B25.0B.
J	6" AGGREGATE BASE COURSE.
R1	5" MONOLITHIC CONC. ISLAND (KEYED IN).
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	VARIABLE MILLING 0" TO 1½".
W	WEDGING.

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

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 stampwood

ROW REV. #1-April 3, 2017 REVISED TCE AND TUE ON PARCEL 1. (SS)

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 5/14/99

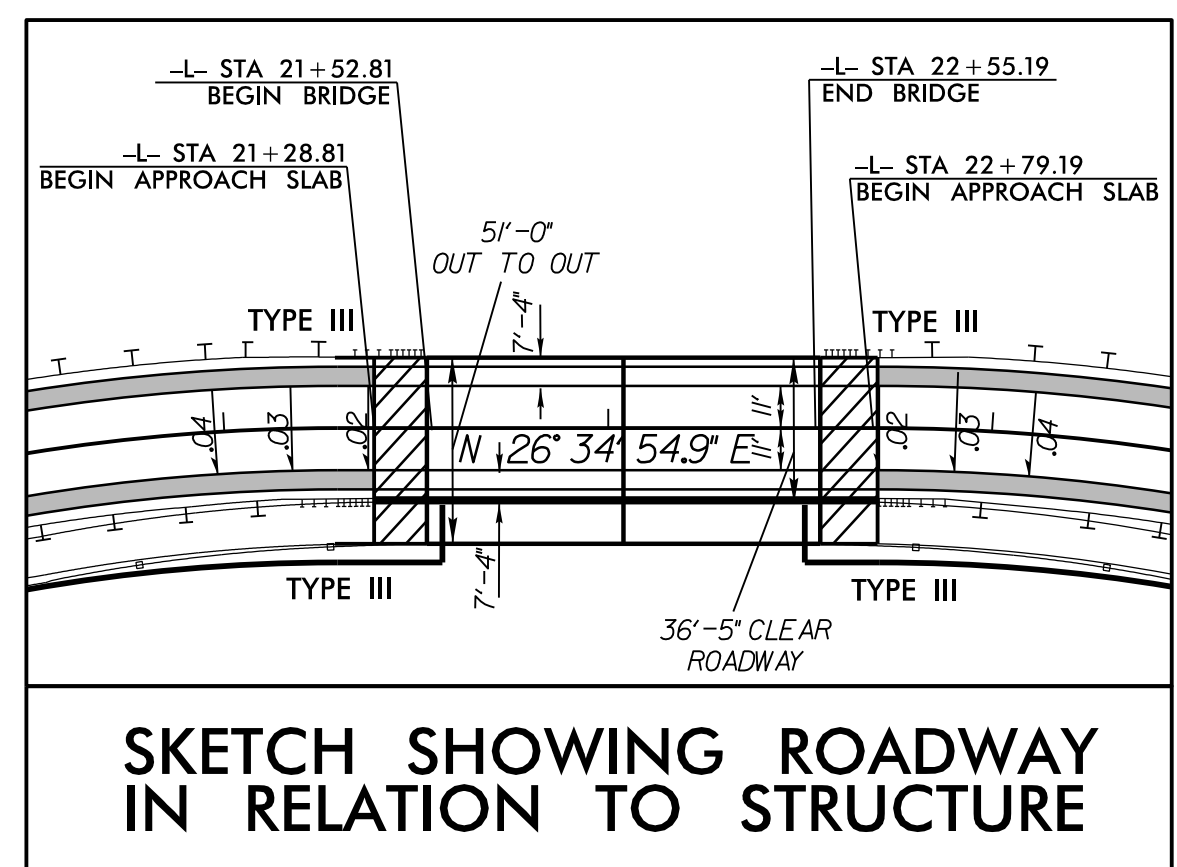
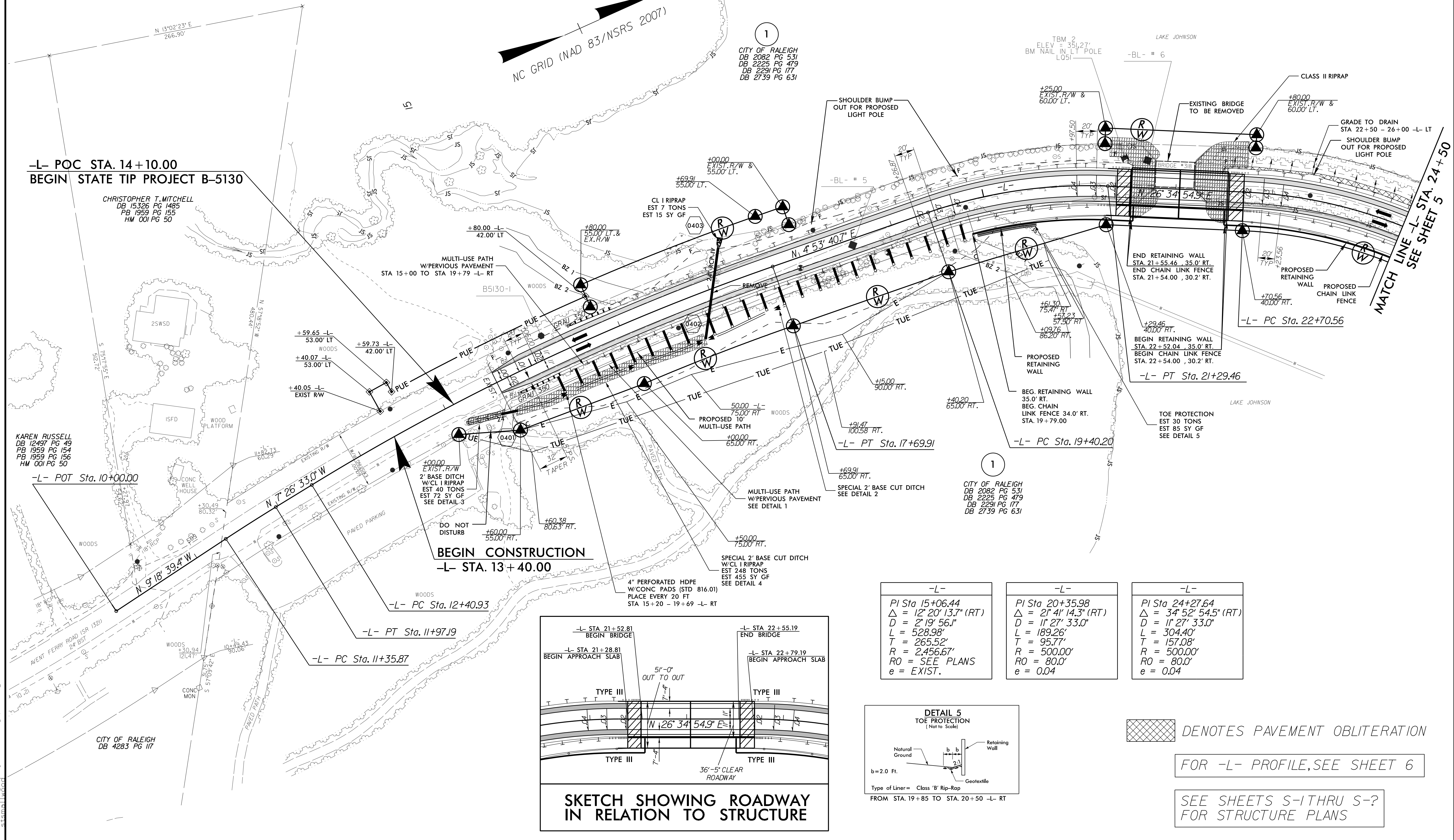


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 www.stantec.com
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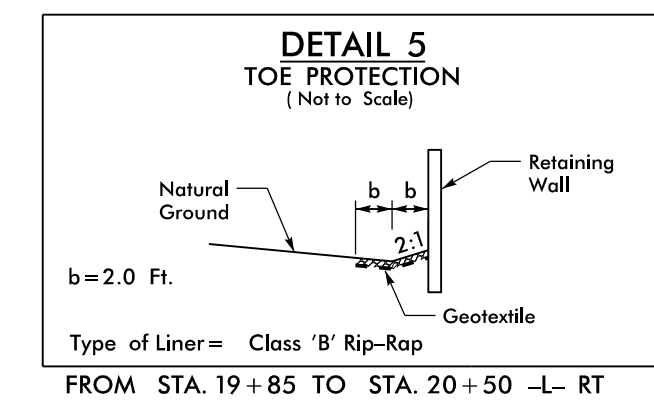
SUNGATE DESIGN GROUP, P.A.
 815 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27606
 TEL: (919) 859-2243 FAX: (919) 859-6258
 ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO. B-5130	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-L-	-L-	-L-
PI Sta 15+06.44 Δ = 12° 20' 13.7" (RT) D = 2' 19' 56.1" L = 528.98' T = 265.52' R = 2,456.67' RO = SEE PLANS e = EXIST.	PI Sta 20+35.98 Δ = 2° 41' 14.3" (RT) D = 1' 27' 33.0" L = 189.26' T = 95.77' R = 500.00' RO = 80.0' e = 0.04	PI Sta 24+27.64 Δ = 3° 52' 54.5" (RT) D = 1' 27' 33.0" L = 304.40' T = 157.08' R = 500.00' RO = 80.0' e = 0.04



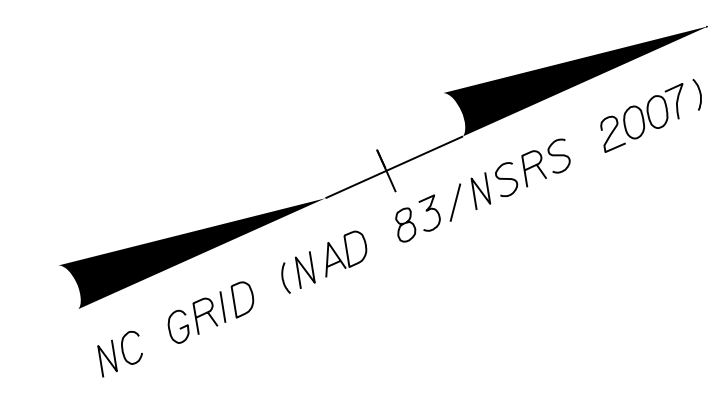
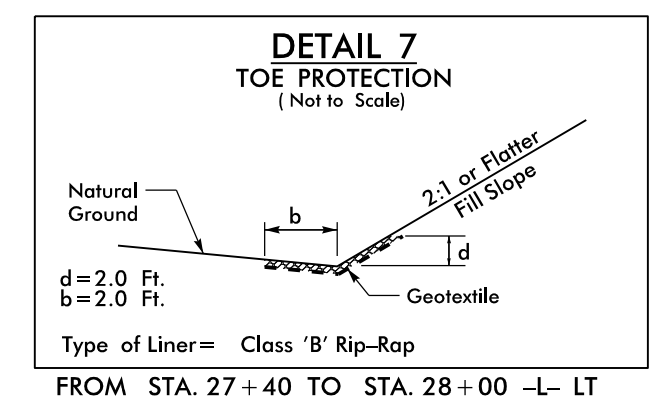
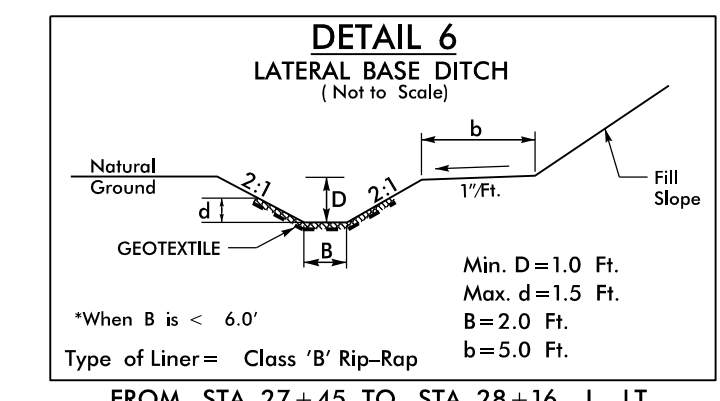
DENOTES PAVEMENT OBLITERATION

FOR -L- PROFILE, SEE SHEET 6

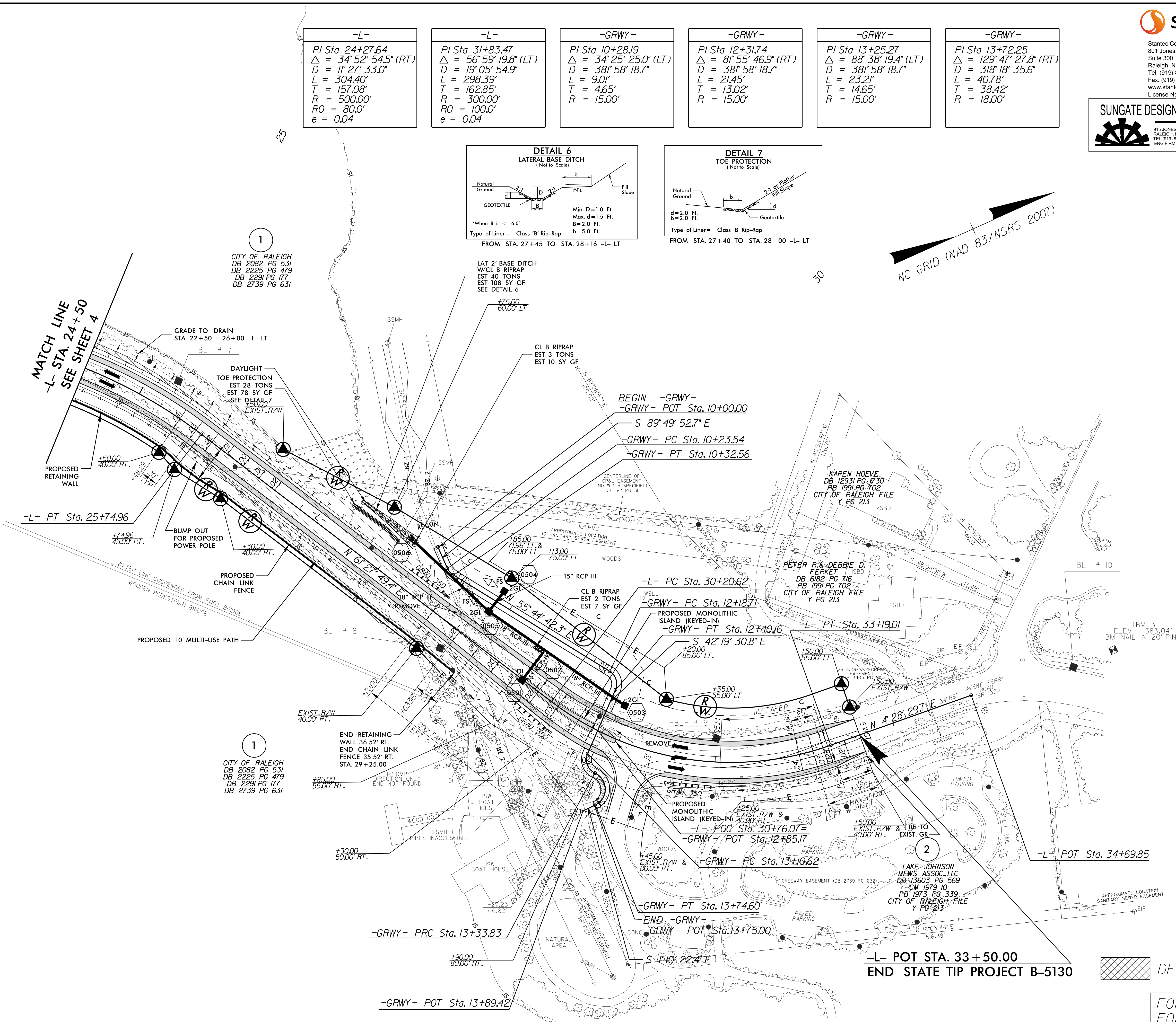
SEE SHEETS S-1 THRU S-? FOR STRUCTURE PLANS

PROJECT REFERENCE NO. B-5130	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-L-	-L-	-GRWY-	-GRWY-	-GRWY-	-GRWY-
PI Sta 24+27.64 Δ = 34° 52' 54.5" (RT) D = 11' 27' 33.0" L = 304.40' T = 157.08' R = 500.00' RO = 80.0' e = 0.04	PI Sta 31+83.47 Δ = 56° 59' 19.8" (LT) D = 19' 05' 54.9" L = 298.39' T = 162.85' R = 300.00' RO = 100.0' e = 0.04	PI Sta 10+28.19 Δ = 34° 25' 25.0" (LT) D = 38' 58' 18.7" L = 9.01' T = 4.65' R = 15.00'	PI Sta 12+31.74 Δ = 81° 55' 46.9" (RT) D = 38' 58' 18.7" L = 21.45' T = 13.02' R = 15.00'	PI Sta 13+25.27 Δ = 88° 38' 19.4" (LT) D = 38' 58' 18.7" L = 23.21' T = 14.65' R = 15.00'	PI Sta 13+72.25 Δ = 129° 47' 27.8" (RT) D = 318' 18' 35.6" L = 40.78' T = 38.42' R = 18.00'

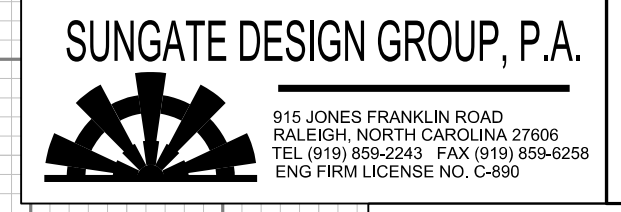


ROW REV. #1-April 3, 2017 REVISED TCE AND PUE ON PARCEL 1. (SS)
ROW REV. #2-April 19, 2017 ELIMINATED PUE ON PARCEL 1. (SS)



7/26/2017
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5/28/99



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PIPE HYDRAULIC DATA
24" RCP-IV Sta. 17+04 -L-

DRAINAGE AREA	= 7.3	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 15	CFS
DESIGN HW ELEVATION	= 352.32	FT
100 YEAR DISCHARGE	= 17	CFS
100 YEAR HW ELEVATION	= 352.50	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 20	CFS
OVERTOPPING ELEVATION	= 352.9	FT

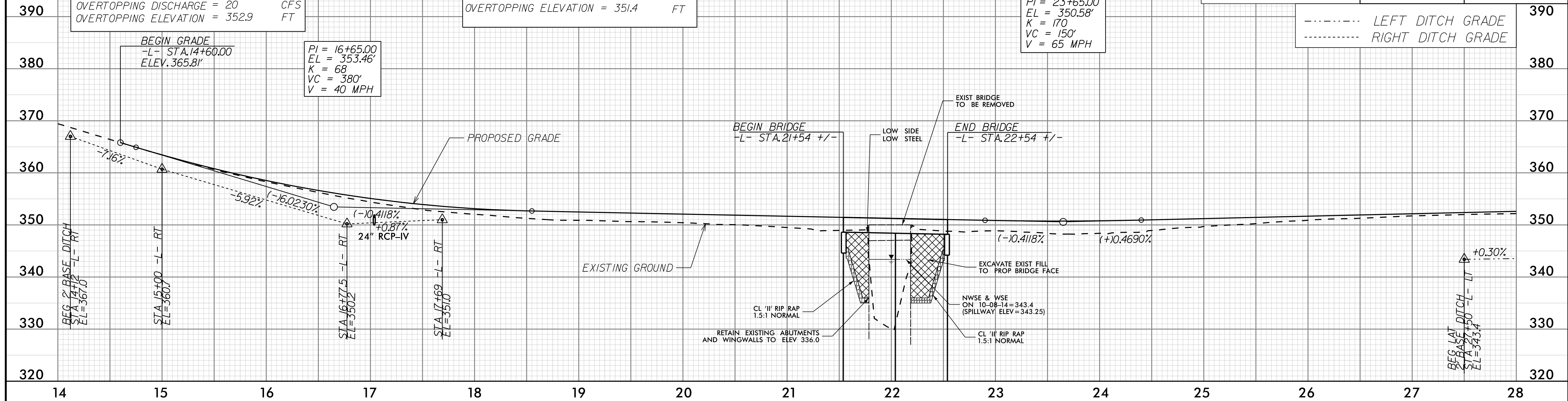
STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 4050	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 347.8	FT
BASE DISCHARGE	= 6020	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 349.52	FT
OVERTOPPING DISCHARGE	= 8980	CFS
OVERTOPPING FREQUENCY	= 500+/-	YRS
OVERTOPPING ELEVATION	= 351.4	FT

-L-

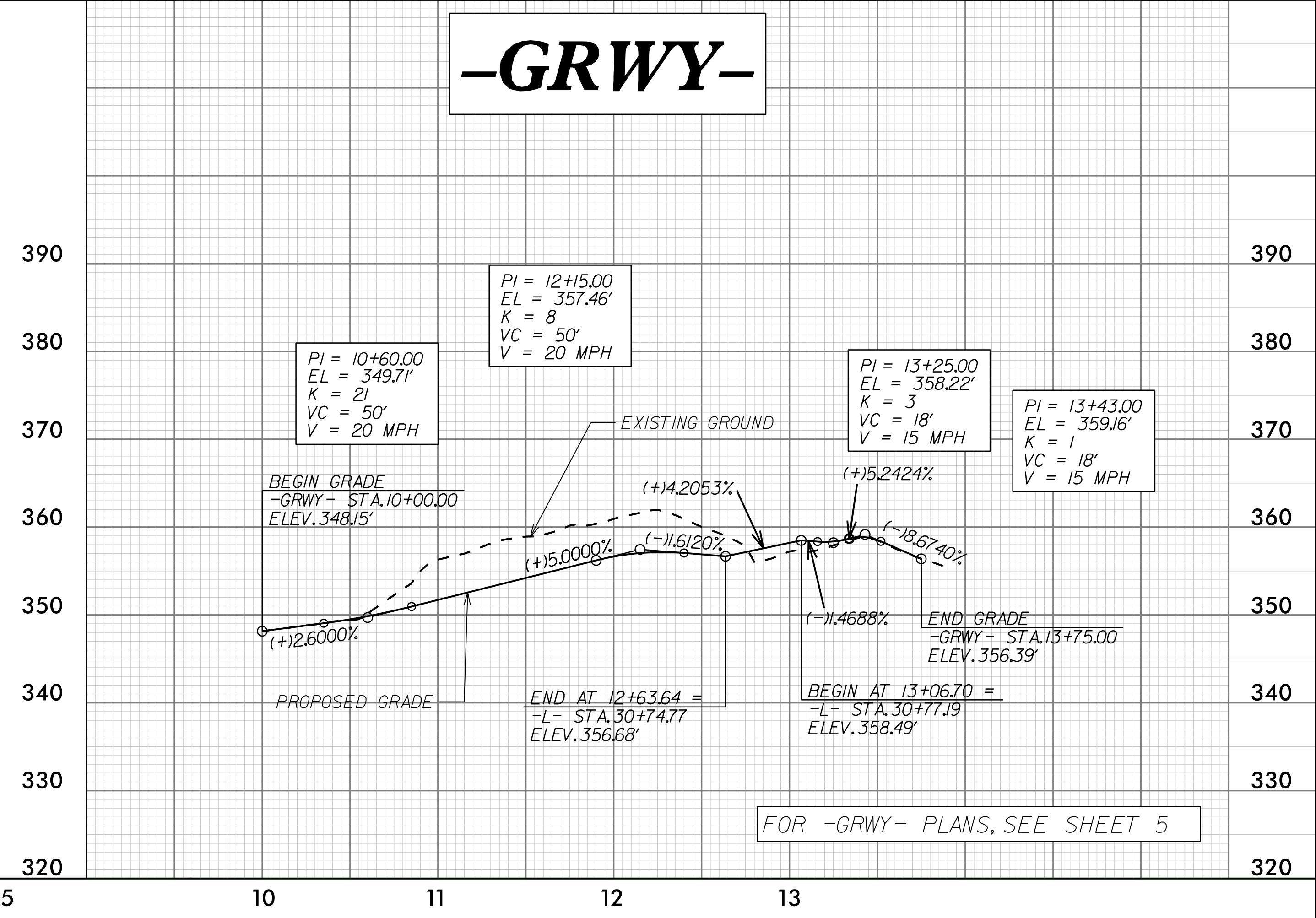
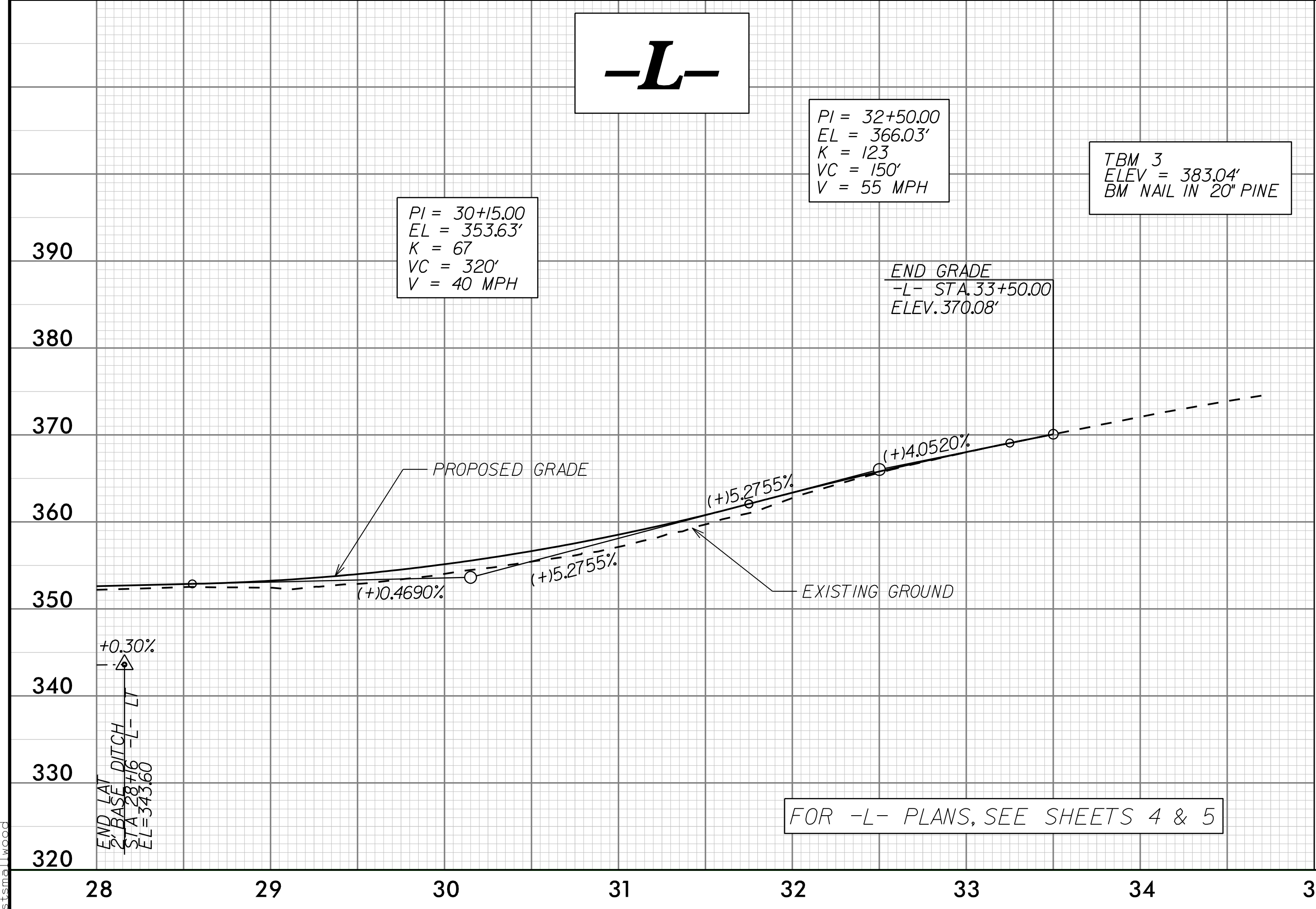
TBM 2
ELEV = 351.27'
BM NAIL IN LT POLE
LQ51

PI = 23+65.00
EL = 350.58'
K = 170
VC = 150'
V = 65 MPH



-L-

-GRWY-



FOR -L- PLANS, SEE SHEETS 4 & 5

FOR -GRWY- PLANS, SEE SHEET 5

7/26/2017
L:\Projects\B5130\Drawings\Profile\B5130_rdy.plt_6.dgn
stano111