STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

March 7, 2018

U.S. Army Corps of Engineers
Raleigh Regulatory Field Office
Attn: Mr. James Lastinger
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587

Subject: **Application for Section 404 Regional General Permit 198200031 and Section 401 Water Quality Certification** for Interstate 40 Pavement Rehabilitation and Construction of Additional Lanes from West of NC 801 to East of SR 1101 in Davie and Forsyth Counties, Federal Aid Project No. NHIMF-40-3(112)180; TIP Number I-0911A, Division 9.
Debit $570 from WBS Element 34147.3.4.

Dear Mr. Lastinger:

The North Carolina Department of Transportation (NCDOT), in accordance with the Federal Highway Administration (FHWA), proposes to widen I-40 from west of NC 801 in Davie County to east of SR 1101 (Harper Road) in Forsyth County. The proposed impacts to jurisdictional areas include 0.25 acre of permanent wetland impacts, 893 linear feet (lf) of permanent stream impacts, 19 lf of stream bank stabilization, and 1.03 acre (288 lf) of temporary stream impacts.

Please find enclosed copies of the Pre-Construction Notification (PCN), North Carolina Division of Mitigation Services (DMS) mitigation acceptance letter (dated March 1, 2018), permit drawing review meeting minutes (4B and 4C), Stormwater Management Plan, permit drawings, and design plans. The Environmental Assessment was completed June 2011. The Finding of No Significant Impact was completed June 2014. This document is available at the NCDOT website: https://xfer.services.ncdot.gov/pdea/EnvironmentalDocs/Documents/.

A Natural Resources Technical Report (NRTR) dated August 2013, and NRTR Addendum dated December 2017 was prepared for this project. A summary of the findings of this report are provided in Table 1.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL ANALYSIS UNIT
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-707-6000
FAX: 919-212-5785

WEBSITE: NCDOT.GOV

LOCATION:
CENTURY CENTER, BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC, 27610-4328

Table 1 – Federally protected species listed for Davie (D) and Forsyth (F) Counties

Scientific Name	Common Name	Federal Status[1]	Habitat Present	Biological Conclusion
Glyptemys muhlenbergii (F)	Bog turtle	T(S/A)	No	Not Required
Myotis septentrionalis (F, D)	Northern long-eared bat	T	Yes	2
Rhus michauxii (D)	Michaux's sumac	E	Yes	No Effect
Cardamine micranthera (F)	Small-anthered bittercress	E	No	No Effect

1 – T(S/A) – Threatened due to similarity of appearance, E – Endangered, T – Threatened,
2 – Northern long-eared bat is consistent with the 4(d) rule.

This project was analyzed in the 2011 EA and the 2014 FONSI for potential effects to archaeological and historic architectural resources with a determination of "no effect" for both.

Bridge Causeways

Causeways will be required to construct the project. As detailed in the accompanying permit drawings (Permit Drawings 15-24 of 33), causeway configurations will change during the various stages of construction. Turbidity curtains will be installed around the river edges of causeways. As part of the efforts to minimize surface water impacts, a series of 54" conveyance pipes will be placed under the causeways to maintain river flow. They will be placed on the river bottom in an attempt to keep them below the river surface to minimize risk to recreationists.

At no point will more than 49% of the river cross section be occupied by causeways. The times when the highest percentage of channel will be occupied is during the two stages of demolition (Permit Drawings 23 and 24 of 33). Each demolition stage is expected to take less than a month.

Permits Requested

Section 404: Application is hereby made for a Section 404 Regional General Permit No. 198200031 as required for the above-described activities.

Section 401: Application is hereby made for the associated 401 Water Quality Certification from the NC Division of Water Resources. In compliance with Section 143-215.3D (e) of the NCAC, we will provide $570.00 to act as payment for processing the Section 401 permit application.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Erin Cheely at either ekcheely@ncdot.gov or (919) 707-6108. 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,

Carla Dagnino

for Philip S. Harris, III, P.E., C.P.M.
Environmental Analysis Unit Head

cc: NCDOT Permit Application Standard Distribution List

Pre-Construction Notification (PCN) Form

For Nationwide Permits and Regional General Permits

(along with corresponding Water Quality Certifications)

January 31, 2018 Ver 2.3

*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.*

Also, if at any point you wish to print a copy of the E-PCN, all you need to do is right-click on the document and you can print a copy of the form.

Below is a link to the online help file.

https://edocs.deq.nc.gov/WaterResources/0/edoc/624704/PCN%20Help%20File%202018-1-30.pdf

A. Processing Information

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

Davie

Forsyth

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:

I-0911A

WBS #

34147.3.4

(for NCDOT use only)

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

- [x] 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)
- [x] Regional General Permit (RGP)

Regional General Permit (RGP) Number: **198200031 - NCDOT Bridges, Widening Projects 2015**

RGP Number Other:

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

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

check all that apply

- [x] 401 Water Quality Certification - Regular
- [ ] 401 Water Quality Certification - Express
- [ ] Non-404 Jurisdictional General Permit
- [ ] 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

Acceptance Letter Attachment

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

I-0911A Revised DMS Acceptance.pdf 67.6KB

FILE TYPE MUST BE PDF

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

○ Yes ◉ No

1h. Is the project located in a designated trout watershed? *

○ Yes ◉ No

Link to trout information: http://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Agency-Coordination/Trout.aspx

B. Applicant Information

1a. Who is the Primary Contact? *

NCDOT

1b. Primary Contact Email: *

ekcheely@ncdot.gov

1c. Primary Contact Phone: *

(xxx)xxx-xxxx

(919)707-6108

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: *

I-40 Pavement Rehabilitation and Widening from West of NC 801 to East of SR 1101 (Harper Rd)

1b. Subdivision name:

(if appropriate)

1c. Nearest municipality / town: *

Bermuda Run and Clemmons

1d. Driving directions *

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

https://www.google.com/maps/dir//Twins+Way,+Advance,+NC+27006/@36.0158864,-80.418802,17z/data=!4m8!4m7!1m0!1m5!1m1!1s0x8853b859fc0daaa1:0x9f2f6cccfa159232!2m2!1d-80.4198062!2d36.0162224

2. Project Identification

2a. Property Identification Number:

(tax PIN or parcel ID)

Multiple, see attached permit drawings

2b. Property size:

(in acres)

71.1

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: *

36.016479

ex: 34.208504

Longitude: *

-80.418436

-77.796371

3. Surface Waters

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

Yadkin River, Smith Creek; Johnson Creek

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

WS-IV (Yadkin, Johnson Creek), C (Smith Creek)

Surface Water Lookup

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

Yadkin-PeeDee

River Basin Lookup

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:*

The project study area is comprised of mostly maintained roadway with hardwood forest along the stream banks, nearby residential and commercial areas, and a soccer park. The study area is within the towns of Clemmons and Bermuda Run. In addition to the Yadkin River and Smith Creek, there are unnamed tributaries (UTs) to those streams and also wetlands in the project area. There are also several ponds.

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

I0911A_USGS_Topo.pdf 4.16MB

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

I0911A_Soils.pdf 1.67MB

File type must be pdf

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

1.05

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

(intermittent and perennial)

4,500

4f. Explain the purpose of the proposed project:*

The purpose of the proposed project is to increase the traffic carrying capacity and enhance transportation safety along I-40 within the project limits. Capacity analysis indicates that the existing 4-lane divided facility operated at Level of Service (LOS) D in 2009 and will operate at LOS F in 2035 under the no build conditions. The 2035 Build scenario capacity analysis results indicate that this segment of I-40 is expected to operate at a LOS E. In addition, as part of transportation safety requirements, the existing bridges over the Yadkin River were inspected and determined to be structurally deficient and must be replaced due to age and wear.

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

I-40 will be widened to a six-lane facility from west of NC 801 in Davie County to east of SR 1101 (Harper Road/Tanglewood Business Park Road) in Forsyth County for a project length of 3.78 miles. The project includes the replacement of Bridges No. 85 and 86, which will require in-water causeways and staged construction (see cover letter for causeway discussion and permit drawings for details). The road will remain open to traffic during construction. Erosion and sedimentation control measures will be installed. For in-water work other than the bridge replacements, water will be diverted around the construction area. Water will gravity flow through a 24" pipe around the work area during construction by installed impervious dikes upstream and downstream of existing pipes. Special stilling basins will be utilized on an as needed basis to pump water trapped between the impervious dikes if a storm event overtops the dikes. Typical equipment that will be used includes cranes, track hoes, dump trucks, paving equipment, pumps, various hand tools, and concrete buckets to place concrete.

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

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

I-0911A Final Permit Drawings.pdf 13.45MB

I-0911A Final Roadway Plans.pdf 7.69MB

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:

A JD package was submitted to the USACE (John Thomas) on June 13, 2008 and again on June 24, 2013 after a re-delineation. A site visit was conducted with Amy Euliss (when she was with NCDWR) on July 31, 2013. Additional reources were delineated in 2017 and this information was sent to the USACE (James Lastinger) and Dave Wanucha (NCDWR) on 11/27/17. Both determined a site visit would not be needed.

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

( ) Preliminary ( ) Approved ( ) Unknown (•) N/A

Corps AID Number:

Example: SAW-2017-99999

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

Name (if known): **Alexander Smith & Scott Davis / Erin Cheely & Michael Turchy**

Agency/Consultant Company: **Axiom Environmental / NCDOT**

Other:

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

5d1. Jurisdictional determination upload

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

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. Type of Jurisdicition *	2g. Impact area *
5 - Roadway Fill Map label (e.g. Road Crossing 1 - Culvert, dewatering, etc)	**P** Permanent (P) or Temporary (T)	**Headwater Forest**	**J**	**Yes**	**Corps** (404, 10) or DWR (401, other)	**0.010** (acres)
7A - Roadway Fill Map label (e.g. Road Crossing 1 - Culvert, dewatering, etc)	**P** Permanent (P) or Temporary (T)	**Seep**	**SP**	**Yes**	**Corps** (404, 10) or DWR (401, other)	**0.230** (acres)
9 - Roadway Fill Map label (e.g. Road Crossing 1 - Culvert, dewatering, etc)	**P** Permanent (P) or Temporary (T)	**Bottomland Hardwood Forest**	**A**	**Yes**	**Corps** (404, 10) or DWR (401, other)	**0.008** (acres)
10 - 60" WSP Installation Map label (e.g. Road Crossing 1 - Culvert, dewatering, etc)	**P** Permanent (P) or Temporary (T)	**Non-Tidal Freshwater Marsh**	**WAE**	**No**	**Corps** (404, 10) or DWR (401, other)	**0.008** (acres)

2g. Total Temporary Wetland Impact

0.000

2g. Total Permanent Wetland Impact

0.256

2g. Total Wetland Impact

0.256

2h. Comments:

Of the 0.25 acre of permanent wetland impacts, there will be <0.01 acre of mechanized clearing of wetlands at Site 9 and <0.01 acre of mechanized clearing of wetlands at Site 10.

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.

3a. Site # - Reason for impact *	3b.Impact type *	3c. Type of impact *	3d. Stream name *	3e. Stream Type *	3f. Type of Jurisdiction *	3g. Stream width *	3h. Impact length *
1 Map label (e.g. Road Crossing 1)	**P** Permanent (P) or Temporary (T)	**Fill**	**UT to Smith Creek (SC)**	**Intermittent** Perennial (PER) or intermittent (INT)	**Both**	**3** Average (feet)	**41** (linear feet)
2 Map label (e.g. Road Crossing 1)	**P** Permanent (P) or Temporary (T)	**Fill**	**UT to Yadkin River (CB)**	**Perennial** Perennial (PER) or intermittent (INT)	**Both**	**5** Average (feet)	**324** (linear feet)
2 Map label (e.g. Road Crossing 1)	**T** Permanent (P) or Temporary (T)	**Dewatering**	**UT to Yadkin River (CB)**	**Perennial** Perennial (PER) or intermittent (INT)	**Both**	**5** Average (feet)	**14** (linear feet)
2 Map label (e.g. Road Crossing 1)	**P** Permanent (P) or Temporary (T)	**Fill**	**UT to Yadkin River (CB)**	**Intermittent** Perennial (PER) or intermittent (INT)	**Both**	**4** Average (feet)	**50** (linear feet)
2 Map label (e.g. Road Crossing 1)	**T** Permanent (P) or Temporary (T)	**Dewatering**	**UT to Yadkin River (CB)**	**Intermittent** Perennial (PER) or intermittent (INT)	**Both**	**4** Average (feet)	**16** (linear feet)
3 Map label (e.g. Road Crossing 1)	**P** Permanent (P) or Temporary (T)	**Fill**	**UT to Yadkin River (CBZ)**	**Intermittent** Perennial (PER) or intermittent (INT)	**Both**	**3** Average (feet)	**84** (linear feet)
4 Map label (e.g. Road Crossing 1)	**P** Permanent (P) or Temporary (T)	**Fill**	**UT to Yadkin River (JS)**	**Intermittent** Perennial (PER) or intermittent (INT)	**Both**	**2** Average (feet)	**57** (linear feet)
5 Map label (e.g. Road Crossing 1)	**P** Permanent (P) or Temporary (T)	**Fill**	**UT to Yadkin River (SAA)**	**Intermittent** Perennial (PER) or intermittent (INT)	**Both**	**1** Average (feet)	**19** (linear feet)

3a. Site # - Reason for impact *	3b.Impact type *	3c. Type of impact *	3d. Stream name *	3e. Stream Type *	3f. Type of Jurisdiction *	3g. Stream width *	3h. Impact length *
6 Map label (e.g. Road Crossing 1)	P Permanent (P) or Temporary (T)	Fill	UT to Yadkin River (FH)	Intermittent Perennial (PER) or intermittent (INT)	Both	3 Average (feet)	57 (linear feet)
7A Map label (e.g. Road Crossing 1)	P Permanent (P) or Temporary (T)	Bank Stabilization	UT to Yadkin River (SP)	Perennial Perennial (PER) or intermittent (INT)	Both	6 Average (feet)	9 (linear feet)
7A Map label (e.g. Road Crossing 1)	T Permanent (P) or Temporary (T)	Dewatering	UT to Yadkin River (SP)	Perennial Perennial (PER) or intermittent (INT)	Both	6 Average (feet)	21 (linear feet)
7B Map label (e.g. Road Crossing 1)	P Permanent (P) or Temporary (T)	Bank Stabilization	UT to Yadkin River (SP)	Perennial Perennial (PER) or intermittent (INT)	Both	6 Average (feet)	6 (linear feet)
7B Map label (e.g. Road Crossing 1)	T Permanent (P) or Temporary (T)	Dewatering	UT to Yadkin River (SP)	Perennial Perennial (PER) or intermittent (INT)	Both	6 Average (feet)	21 (linear feet)
7C Map label (e.g. Road Crossing 1)	P Permanent (P) or Temporary (T)	Bank Stabilization	UT to Yadkin River (SP)	Perennial Perennial (PER) or intermittent (INT)	Both	6 Average (feet)	4 (linear feet)
7C Map label (e.g. Road Crossing 1)	T Permanent (P) or Temporary (T)	Dewatering	UT to Yadkin River (SP)	Perennial Perennial (PER) or intermittent (INT)	Both	6 Average (feet)	20 (linear feet)
8 Map label (e.g. Road Crossing 1)	T Permanent (P) or Temporary (T)	Workpad/Causeway	Yadkin River	Perennial Perennial (PER) or intermittent (INT)	Both	300 Average (feet)	144 (linear feet)
9 Map label (e.g. Road Crossing 1)	P Permanent (P) or Temporary (T)	Fill	UT to Yadkin River (A)	Perennial Perennial (PER) or intermittent (INT)	Both	5 Average (feet)	244 (linear feet)
9 Map label (e.g. Road Crossing 1)	T Permanent (P) or Temporary (T)	Dewatering	UT to Yadkin River (A)	Perennial Perennial (PER) or intermittent (INT)	Both	5 Average (feet)	31 (linear feet)
10 Map label (e.g. Road Crossing 1)	P Permanent (P) or Temporary (T)	Fill	UT to Johnon Creek (SAC)	Perennial Perennial (PER) or intermittent (INT)	Both	4 Average (feet)	17 (linear feet)
10 Map label (e.g. Road Crossing 1)	T Permanent (P) or Temporary (T)	Dewatering	UT to Johnson Creek (SAC)	Perennial Perennial (PER) or intermittent (INT)	Both	4 Average (feet)	21 (linear feet)

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

3i. Total jurisdictional ditch impact in square feet:

0

3i. Total permanent stream impacts:

912

3i. Total temporary stream impacts:

288

3i. Total stream and tributary impacts:

1200

3j. Comments:

Of the 912 linear feet of permanent impacts, 19 linear feet are from bank stabilization. Additionally, Site 8 has 14 proposed bridge piers with a diameter of 4.5' for a total area of 227.7 square feet.
For Permit Site 2, stream CB is intermittent on the south side of I-40 (upstream of RCP inlet and perennial on the north side (downstream of the RCP outlet).

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: *

The proposed project is to widen I-40 over 3.78 miles. As a result of this expansion, the bridge over the Yadkin River will be replaced, culverts will be extended, and some wetlands will be filled. Retaining walls will be utilized near the historic property near the project and have been moved closer to the travel lanes so as to require less of an easement on the historic property. Noise barriers will be utilized near residential areas. In order to minimize impacts to jurisdictional features, 2:1 fill slopes will be utilized near jurisdictional areas. Minimization measures for work causeways are detailed in the cover letter.

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

Erosion and sedimentation BMPs will be installed prior to construction. Water will be diverted around the work area to prevent sedimentation of downstream aquatic resources. Impacts will be minimized by strict enforcement of Best Management Practices for the protection of surface waters, restrictions against the staging of equipment in or adjacent to waters of the US and coordination (including a pre-construction meeting) with the Division Environmental Supervisor.

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

2c. If yes, mitigation is required by (check all that apply):

[x] DWR [x] Corps

2d. If yes, which mitigation option(s) will be used for this project?

[ ] Mitigation bank [x] Payment to in-lieu fee program [ ] Permittee Responsible Mitigation

4. Complete if Making a Payment to In-lieu Fee Program

4a. Approval letter from in-lieu fee program is attached.

[x] Yes

4b. Stream mitigation requested:

(linear feet)

893

4c. If using stream mitigation, what is the stream temperature:

warm

NC Stream Temperature Classification Maps can be found under the Mitigation Concepts tab on the Wilmington District's RIBITS website.

4d. Buffer mitigation requested (DWR only):

(square feet)

0

4e. Riparian wetland mitigation requested:

(acres)

0.25

4f. Non-riparian wetland mitigation requested:

(acres)

0

4g. Coastal (tidal) wetland mitigation requested:

(acres)

0

4h. Comments

The NCDOT does not propose mitigation for the 19 linear feet of bank stabilization or the <1.03 ac (288 linear feet) of temporary impacts. These impacts do not require permanent fill in the stream bed and, therefore, under Section 404 of the Clean Water Act, do not constitute Loss of Waters of the U.S. and are not subject to compensatory mitigation.

6. Buffer mitigation (State Regulated Riparian Buffer Rules) - required by DWR

6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation? If yes, you must fill out this entire form - please contact DWR for more information.

○ Yes ◉ No

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

*** Recent changes to the stormwater rules have required updates to this section .***

1. Diffuse Flow Plan

1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?

○ Yes ◉ No

For a list of options to meet the diffuse flow requirements, click here.

If no, explain why:

2. Stormwater Management Plan

2a. Is this a NCDOT project subject to compliance with NCDOT's Individual NPDES permit NCS000250? *

◉ Yes ○ No

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

I0911A_FONSI.pdf 86.1MB

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

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.

An Indirect and Cumulative Effects Assessment (ICE) was done for this project in the August 2013 EA and was updated in the June 2014 FONSI. This report details the potential ecological effects that may result from the proposed project and other past, present, and reasonably foreseeable future development activities in the region. Based upon the ICE analysis done in the EA, much of the project area is urban and suburban in character, and most of the area already has an established road network. The project's individual effects on land use and natural resources are minor. The potential indirect effect identified in the EA, including increased commercial and industrial development, are minor. As indirect and direct impacts associated with this project are avoided or mitigated per the NEPA process, the potential for adverse cumulative impacts to the human environment, such as increased noise levels, view changes, and impacts to historic resources is eliminated or lessened to levels not considered to be significant. Potential for adverse cumulative impacts to the natural environment, such as impacts to streams, wetlands, floodplains, threatened and endangered species, and degradation to water quality is eliminated or lessened as well. Within the region, there are watershed requirements in place for protecting water quality, and indirect and direct impacts associated with this project will be avoided or mitigated per the NEPA process.

4. Sewage Disposal (DWR Requirement)

4a. Is sewage disposal required by DWR for this project? *

○ Yes ◉ No ○ N/A

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.

Asheville

5d. Is another Federal agency involved? *

○ Yes ◉ No ○ Unknown

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

○ Yes ◉ No

5f. Will you cut any trees in order to conduct the work in waters of the U.S.? *

◉ Yes ○ No

5g. Does this project involve bridge maintenance or removal? *

◉ Yes ○ No

5g(1). If yes, have you inspected the bridge for signs of bat use such as staining, guano, bats, etc.? Representative photos of signs of bat use can be found in the NLEB SLOPES, Appendix F, pages 3-7.

○ Yes ◉ No

Link to the NLEB SLOPES document: http://saw-reg.usace.army.mil/NLEB/1-30-17-signed_NLEB-SLOPES&apps.pdf

If you answered "Yes" to 5g(1), did you discover any signs of bat use? *

○ Yes ○ No ◉ Unknown

***** If yes, please show the location of the bridge on the permit drawings/project plans.**

5h. Does this project involve the construction/installation of a wind turbine(s)?* *

○ Yes ◉ No

5i. Does this project involve (1) blasting, and/or (2) other percussive activities that will be conducted by machines, such as jackhammers, mechanized pile drivers, etc.? *

○ Yes ◉ No

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

The 2013 Environmental Assessment and the 2014 Finding of No Significant Impact covered the impacts to federally listed species. Updated surveys for Michaux's sumac were conducted in 2017, and no individuals of this species were identified within the project area. The northern long-eared bat is consistent with 4(d) requirements (a memo to this effect was forwarded to Marella Buncick of USFWS on April 26, 2017). No habitat exists for the remaining two listed species (bog turtle and small-anthered bittercress).

Percussive activities (including impact pile driving with crane and pile hammer, and existing bridge demolition with hydraulic hammers/hoe-rams) will only occur at the I-40 crossing of the Yadkin River and in the adjacent flood plain.

There will be 24.6 acres of tree clearing for the proposed project.

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? *

This project takes place in Davie and Forsyth Counties, which are not near any coastal or tidal habitat that would support EFH (i.e. salt marshes, oyster reefs, etc.).

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? *

The historical and cultural resources were discussed in the 2013 EA, and coordination with the respective agencies is currenty underway. The work under this permit will mimize impacts to historical and cultural resources. See documentation in FONSI provided for item G.1c.

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:

MOA

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

NC Floodplain Mapping Program

Miscellaneous

Miscellaneous attachments not previously requested.

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

I-0911A CP4B and CP4C Minutes.pdf	118.99KB
cover letter.pdf	1.69MB

File must be PDF or KMZ

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: *

Carla Dagnino

Signature

Carla Dagnino

Date

3/7/2018

Environmental Quality

ROY COOPER
Governor

March 1, 2018

Mr. Philip S. Harris, III, P.E., CPM
Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

Subject: Mitigation Acceptance Letter:

I-0911A, I-40 Widening and Rehabilitation from 0.30 miles West of NC 801 in Davie County to 0.30 miles West of SR 1101 (Harper Road / Tanglewood Park Business Road) in Forsyth County, Forsyth and Davie Counties

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 February 28, 2018, the impacts are located in CU 03040101 of the Yadkin River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Yadkin 03040101 CP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	893.0	0.25	0	0	0	0

*Some of the stream and/or 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 April 18, 2017. The impacts and associated mitigation needs were under projected by the NCDOT in the 2017 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. 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 DMS.

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

Sincerely,

James B. Stanfill
Credit Management Supervisor

cc: Mr. Monte Matthews, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: I-0911A Revised

I-0911A 4B Interagency Concurrence Point Meeting Minutes

Date: November 15, 2017
Location: NCDOT Structures Conference Room
Time: 1:00 PM
Minutes Authored By: Matthew Cook

Attendees: James Lastinger – USACE
Bill Elam – NCDOT Hydraulics
Craig Lee – NCDOT Hydraulics
Carla Dagnino – NCDOT EAU
Jason Mroz – Flatiron
Brent Huskey – RK&K
Matthew Cook – RK&K
Marla Chambers – NCWRC
Erin Cheely – NCDOT ECAP
Tim McFadden – NCDOT Design Build
Malcolm Watson – NCDOT Design Build
Nancy Scott – Three Oaks
Matt Lamy – RK&K

Via Telephone:
Amy Euliss – NCDOT Div.9
Marella Buncick – USFWS
Dave Wanucha - NCDWR
Janet Harris – NCDOT Div. 9

The 30% Hydraulic Review was held in order to reach agreement on concurrence point 4B for the I-0911A I-40 widening project in Davie and Forsyth Counties. The following items were discussed and conclusions reached:

Bill Elam began the meeting and introductions were made. He then turned the meeting over to the Design Build (DB) Team.

Matthew Cook introduced the DB Team for the project. RK&K is the prime designer. The project is being constructed by the Flatiron / Blythe Development Joint Venture. The DB Team was awarded the job in July 2017. The project is on I-40 approximately 14 miles west of Winston Salem. It runs one mile west of NC 801 to one half mile east of Harper Rd. It is 3.78 mi in length with 0.21 mi of bridge over the Yadkin River. The Yadkin River crossing is the only major hydraulic structure being affected by the project. A 4B meeting was previously held for this project May 2015. Due to the project going through the Design Build process two years later, another 4B meeting is needed to account for the design changes proposed by the DB Team and as mandated in the Design Build Request for Proposals.

Mr. Cook then began to go through the 4B planset.

Plan sheet 4 (Stream Smith Creek, wetland WAA): No impacts. There is an existing 8'x8' RCBC under I-40 that will not be affected by the project. Mr. Cook stated that –L- 10+00-14+50 was not included in the original environmental study corridor. Erin Cheely stated that she planned on visiting the project this Friday, November 17 to investigate. All appropriate measures will be taken to ensure the project is in compliance with environmental documentation.

Plan sheet 5 (Streams Smith Creek and SAB, wetlands WAB and WAC): No impacts. There is an existing 9'x9' RCBC under I-40 that will not be affected by the project. Marla Chambers asked how wide Smith Creek running through the RCBC was. Mr. Cook said it was using both barrels. Ms. Chambers asked if a sill could be added to one sill of the RCBC to restrict flow to one barrel (the upstream 8'x8' RCBC on plan sheet 4 only used one barrel). Mr. Cook said that they did not plan on working in the area of the stream or RCBC and that by adding a sill construction equipment would be needed in the area. This would potentially destroy the natural stream buffer. Dave Wanucha asked if there was a storm basin to the right of the RCBC entrance (-L- 35+00 LT). Mr. Cook said that that was a ditch to continue flow that was partially blocked by the proposed roadway fill slope. The equipment needed to install the ditch was minor compared to the equipment needed to install a concrete sill. Ms. Chambers asked if the ditch provided treatment for the stormwater prior to entering the RCBC. Mr. Cook said that the new ditch would not since it was riprap lined, not grass lined. Craig Lee pointed out that the portion of existing ditch between the new ditch and the RCBC could potentially provide treatment. Mr. Wanucha asked why the RCBC was extended in the plans at the May 2015 4B meeting but not extended now. Mr. Lee stated that the original design in 2015 extended a fill slope further out to the left requiring an RCBC extension. The DB Team's design did not require it.

Plan sheet 6 (Stream SC): Stream SC begins at the outlet to the existing 36" RCP at –L- 46+50 RT. It is impacted by the proposed fill slope. The existing pipe will be extended with a 66" RCP that will also include the drainage from the interchange. There is extensive scour that has occurred at the pipe outlet and along the roadside ditch that feeds the stream at the pipe outlet. Mr. Cook stated that a riprapped energy dissipator basin was designed at the outlet of the pipe to attenuate the flow and minimize the velocity before entering the existing stream downstream of the project. This will be Site 1. Amy Euliss asked if the agencies were OK with not burying the pipe since it is not jurisdictional upstream. Everyone was OK with not burying it. Ms. Euliss asked that the plans show a note on pipes that were on jurisdictional streams that we not buried. Mr. Cook stated they would add it. Ms. Euliss asked that the "on banks only" note be removed from the pipes outlet at –L- 37+50 RT since it was not jurisdictional. Mr. Cook stated they had already done so. He also stated that the additional riprap at that pipe outlet was due to the high velocity leaving the pipe. The New York method was used to determine the riprap required. Mr. Wanucha asked what the New York method was and if it was approved by NCDOT. Mr. Cook said it was a design method that helped determine additional riprap required given the stream and velocity at each site. Mr. Elam stated that NCDOT required additional outlet protection at sites that had velocities greater than 15 ft/s, and this was a good compromise between a standard riprap pad and a riprapped energy dissipator basin.

Mr. Cook said that the existing crosspipes that were to be retained on the project were recently videoed to determine their condition. NCDOT Division also recently gave recommendations at each of these locations concerning retaining the pipes, fixing them, or removing them in order to install new pipes. This location required cleaning out the existing 36" RCP and either lining it or replacing it. The 4C plans will reflect the design decision.

Plan sheet 7 (Streams CB and CBZ): Stream CB runs south to north through the project and is currently conveyed in a 42" RCP at –L- 68+00. It is impacted by the proposed fill slope. An additional 36" pipe will be installed parallel to the pipe. There is extensive scour that has occurred at the pipe outlet. Mr. Cook said that the outlet channel is more than 20' incised and unstable with three sections of 42" RCP broken off in the channel. He stated that a riprapped energy dissipator basin was designed at the outlet of the pipe to attenuate the flow and minimize the velocity before entering the existing stream downstream of the project. The pipe would also be extended using junction boxes to allow the stream to enter the downstream channel without a bend. This will be Site 2. Ms. Euliss recommended not burying the pipe which everyone agreed with since the pipe length would be very long with junction boxes and also since the upstream portion of CB is intermittent. Ms. Chambers asked if mitigation could be achieved at this site. Ms. Euliss said that it was unlikely given the fact it is along the toe of the I-40 slope. Mr. Elam said that there really wasn't much room here given the highway and the surrounding land use as well as the steep contours. Ms. Cheely added that there was no biology upstream in the initial investigations. Mr. Wanucha asked if this feeds a pond. Mr. Cook said that it does further downstream. Video inspection of the existing 42" RCP led NCDOT Division to ask that the existing 42" RCP be replaced. The 4C plans will reflect the design decision.

Stream CBZ runs parallel to I-40 at –L- 67+50 RT and ties to stream CB prior to entering the upstream end of the crosspipe. It is impacted by the proposed fill slope and will be a total take. This will be Site 3

Plan sheet 8 (Streams JS and SAA, wetland J): Stream JS runs south to north through the project and is currently conveyed in a 24" RCP at –L- 84+50. It is impacted by the proposed fill slope. It will be plugged and filled and a new 42" pipe installed. Junction boxes will be used to place the new pipe in line with the receiving pipe under Pinewood Ln. A new 42" pipe will installed to receive the 42" pipe under I-40 since the existing pipe under Pinewood Ln. is only a 24" RCP. This will be Site 4. Mr. Cook stated that although the current design showed a new 42" pipe extending to the pond, the DB Team is exploring the option to stop the pipe short of the pond and use a riprap lined ditch to take the drainage to the pond. This would limit impacts to the pond. The DB Team can also commit to not impacting the pond with temporary impacts either. Mr. Cook stated that this area at Pinewood Ln. is outside the study corridor and will be investigated by Ms. Cheely. The pond was located using survey equipment by RK&K August 2017. Ms. Euliss asked if the stream began at the point shown on the plans or continued beyond the study corridor. Ms. Cheely stated that the call was made to begin the JS inside the corridor. Ms. Euliss asked that the beginning of the jurisdictional call be noted on the plans. She also stated that this pipe would not need to be buried which everyone agreed to.

Stream SAA runs parallel to I-40 at –L- 84+50 RT and ties to the stream JS prior to entering the upstream end of the crosspipe. It is impacted by the proposed fill slope and will be a total take. Wetland J at –L- 84+5 RT is also impacted by the proposed fill slope and will be a total take. This will be Site 5.

Plan sheet 9 (Stream FH, wetland FH, Pond P2): Stream FH runs south to north through the project and is currently conveyed in a 42" RCP at –L- 99+50. The upstream end is not impacted by the project. The downstream end is impacted by the proposed fill slope and will be extended. An existing 24" RCP downstream of the 42" RCP will be removed. The DB Team also proposed shortening the proposed 42" RCP and conveying the drainage to the pond with a standard base ditch. This would limit impacts to the pond, and the DB Team can also commit to not impacting the pond with temporary impacts either. This will be site 6. Ms. Euliss asked that the linestyle around the pond be changed to jurisdictional. She also suggested not burying the pipe which was agreed upon. Video inspection of the existing 42" RCP led NCDOT Division to ask that it be replaced. The 4C plans will reflect the design decision. This will cause impacts to the upstream side of the crossing.

Plan sheet 10: No impacts and no jurisdictional features.

Plan sheet 11 (Streams SP and 1A, wetlands SP and AC): Wetland SP at –L- 119+50 – 123+50 RT will be impacted by the proposed fill slope. A small portion of the wetland could remain outside of the fill slope. The drainage downstation leaves a 36" RCP. The design currently takes that drainage in a ditch through wetland SP to tie to stream SP. The decision was made for the following reasons: 1) the outlet location for the proposed 36" RCP did not exhibit defined channel characteristics which could cause scour and instability; 2) the remaining functionality of the wetland would be compromised by losing the majority of its area due to the fill slope; 3) the drainage for the entire area would tie better to stream SP using a ditch. This will be Site 7. Ms. Euliss asked that bank stabilization be used on stream SP. Ms. Chambers asked if treatment could be achieved in the ditch. Mr. Cook said that as it is currently designed with riprap, it could not. However, the DB Team will investigate steepening the beginning of the ditch and flattening the end of the ditch to try to remove the riprap and provide a grass liner suitable for some treatment.

Stream 1A and wetland AC at –L- 123+50 RT will not be impacted.

Plan sheet 12 (Streams SP and Yadkin River): Stream SP at –L- 129+25 will be impacted at two locations due to ditch tie-ins from the proposed drainage. The ditches impacting stream SP were used in lieu of preformed scour holes due to stability concerns. Ms. Chambers asked if the ditches could be used for stormwater treatment. Mr. Cook said they could try to do so. Ms. Cheely suggested numbering the stream SP impacts on this sheet Site 7A since they are part of the same stream on the previous sheet. Mr. Cook said that stream SP will have crane mats placed over it during construction for project access, but they will not create stream impacts.

The Yadkin River will be Site 8. The 1104' new bridge will have 8 spans over the FEMA regulated river. Mr. Cook pointed out that the original project commitments stated that there would be "no impacts to the Yadkin River". Mr. Cook said this was impossible given the new bridge piers. Ms. Euliss said that this needed to be noted in the Construction Consultation while addressing the areas of the project outside the study corridor. Mr. Cook pointed out that the bridge will have deck drains due to hydraulic spread in to the travel lane. Deck drains will be present over the Yadkin River on the new bridge during construction but will be plugged once construction is completed. Mr. Elam pointed out that this is an improvement over the existing bridge since it currently has deck drains over the river. Ms. Euliss asked that this be included in the permit application. Marella Buncick asked if riprap would be placed on the ground under the deck drains. Mr. Cook said it would not be since the area is used for soccer fields / parking. Also, the height of the bridge above existing ground should allow the water to disperse through the air.

During construction of the bridge, the DB Team is proposing a phased construction sequence that will require causeways to be placed in the river at different times. Mr. Cook showed the phasing plan as well as the anticipated causeways that would be used during construction. The causeways would extend from both sides of the river out to the new bridge bents. 54" pipes will be installed in the causeways to help with river passage. Ms. Euliss asked if the causeways would extend to cover more than half the river width. Jason Mroz said that they might during the period of time that additional causeway length is needed to remove the existing piers. However that time frame should not be more than one week long and the weather would be checked prior to this operation to ensure no major storms. Ms. Buncick asked about the stability of the Yadkin River banks after the causeway removal. Mr. Cook said that they could leave the banks lined with riprap. He also showed a video of the Yadkin River crossing and its banks in its current state. Ms. Euliss said not to line the banks at this time. Ms. Buncick suggested maintaining construction access roads well during construction to prevent sediment loss. She also suggested using jersey barrier with sheeting on top as an alternative means for river passage under the causeway. She asked about slurry created during the dilled shaft pier construction. Mr. Mroz said they would take the slurry behind them away from the river to a stabilized area.

Plan sheet 13 (Streams A and UT-SA, wetlands A and WAD): Stream A runs north to south through the project and is conveyed in a 42" RCP at –L- 147+00 to be retained with an 54" pipe extension to accommodate the roadway system drainage. It is impacted by the proposed fill slope on the upstream end and by construction of a new drainage system on the downstream end. There is extensive scour that has occurred at the pipe outlet and along the roadside ditch that feeds the stream at the pipe outlet. Mr. Cook stated that a riprapped energy dissipator basin was designed at the outlet of the pipe to attenuate the flow and minimize the velocity before entering the existing stream downstream of the project. Wetland A will also be impacted by toe protection that will be installed along the fill slope. It should still receive overland flow. This will be Site 9. Ms. Chambers asked if the DB Team could angle the pipe more to prevent taking it through such a long length of pipe including junction boxes. Mr. Elam stated that NCDOT preferred not to have pipes skewed under the roadway facility at angles greater than 30 degrees. She said she was concerned about fish passage. Mr. Cook said that there is not any passage currently since the scour is so great at the outlet end that the pipe is perched a couple feet and portions of the pipe broken off in the stream. Ms. Chambers asked if we could gain stormwater treatment anywhere in this area. Mr. Cook stated that the contours were too steep. Video inspection of the existing 42" RCP led NCDOT Division to ask that it be replaced. The 4C plans will reflect the design decision. Everyone agreed that a new pipe would not need to be buried.

The system outletting at –L- 142+50 RT has been removed from the design. There will be no impacts to stream A where it was supposed to outlet. Wetland WAD has no impacts. Stream UT-SA has no impacts.

Plan sheet 14: No impacts and no jurisdictional features.

Plan sheet 15: No impacts and no jurisdictional features. The outlet at –L- 172+00 LT is outside the study corridor and will be reviewed by Ms. Cheely. –L- 195+00-196+00 is outside the study corridor and will also be reviewed.

Plan sheet 16: No impacts and no jurisdictional features. This sheet is outside the study corridor and will be reviewed by Ms. Cheely.

After completing the review of the plans, Mr. Cook asked if anyone was interested in a field visit to see the sites and project. No one felt it necessary to review the project in person.

The meeting adjourned.

I-0911A 4C Interagency Concurrence Point Meeting Minutes

Date: January 18, 2018
Location: NCDOT Structures Conference Room
Time: 3:00 PM
Minutes Authored By: Matthew Cook
Attendees: Bill Elam – NCDOT Hydraulics
Jason Mroz – Flatiron
Matthew Cook – RK&K
Craig Lee – NCDOT Hydraulics
Brandon McInnis – RK&K
Brent Huskey – RK&K

Via Telephone:
Monte Matthews – USACE
Amy Euliss – NCDOT Div.9
Tim McFadden – NCDOT Design Build
Marla Chambers – NCWRC
Tierre Peterson – NCDOT Structures
Nancy Scott – Three Oaks
Dave Wanucha - NCDWR
Carla Dagnino – NCDOT EAU
Malcolm Watson – NCDOT Design Build
Rodney Hatton – NCDOT Div. 9
Mike Wood – Three Oaks

An interagency concurrence point meeting was held in order to reach agreement on concurrence point 4C for the I-0911A I-40 widening project in Davie and Forsyth Counties. The following items were discussed and conclusions reached:

Bill Elam began the meeting and introductions were made. He then turned the meeting over to the Design Build (DB) Team.

Matthew Cook introduced the DB Team for the project. RK&K is the prime designer. The project is being constructed by the Flatiron / Blythe Development Joint Venture. The DB Team was awarded the job in July 2017. The project is on I-40 approximately 14 miles west of Winston Salem. It runs one mile west of NC 801 to one half mile east of Harper Rd. It is 3.78 mi in length with 0.21 mi of bridge over the Yadkin River. The Yadkin River crossing is the only major hydraulic structure being affected by the project. The 4B meeting was held for this project November 15, 2017.

Mr. Cook then began to go through the 4C Permit drawings.

Permit drawing 3 of 33
Site 1, Stream SC: Stream SC begins at the outlet to the existing 36" RCP at –L- 46+50 RT. It is impacted by the proposed fill slope. The existing pipe will be cleaned out, slip lined, and extended with a 66" RCP that will also include the drainage from the interchange. There is extensive scour that has occurred at the pipe outlet and along the roadside ditch that feeds the stream at the pipe outlet. Mr. Cook stated that a riprapped energy dissipator basin was designed at the outlet of the pipe to attenuate the flow and reduce the velocity (from V10 23.3ft/s to 5.9ft/s) before entering the existing stream downstream of the project. The proposed pipe extension will not be buried. The permanent stream impact will continue to the permanent drainage easement limit to allow for a smoother transition from the basin to the existing stream and also to allow for future NCDOT Division maintenance.

Permit drawing 5 of 33
Site 2, Streams CB: Stream CB runs south to north through the project and is currently conveyed in a 42" RCP at –L- 68+00. It is impacted by the proposed fill slope. A new 48" welded steel pipe will be installed by bore and jack methods parallel to the existing pipe. The existing pipe will be plugged and filled with flowable fill. There is extensive scour that has occurred at the pipe outlet. Mr. Cook said that the outlet channel is more than 20' incised and unstable with three sections of 42" RCP broken off in the channel. He stated that a riprapped energy dissipator basin was designed at the outlet of the pipe to attenuate the flow and reduce the velocity (from V10 19.0ft/s to 5.5ft/s) before entering the existing stream downstream of the project. The pipe would also be extended using junction boxes to allow the stream to enter the downstream channel without a bend. The proposed 48" pipe will not be buried. The permanent stream impact will continue to the ditch construction limit beyond the basin to allow for a smoother transition from the basin to the existing stream and also to allow for future NCDOT Division maintenance. Dave Wanucha asked that the steam's transition location from intermittent to perennial be listed in the permit application.

Site 3, Stream CBZ: Stream CBZ runs parallel to I-40 at –L- 67+50 RT and ties to stream CB prior to entering the upstream end of the crosspipe. It is impacted by the proposed fill slope and will be a total take.

Permit drawing 7 of 33

Site 4, Stream JS: Stream JS runs south to north through the project and is currently conveyed in a 24" RCP at –L- 84+50. It is impacted by the proposed fill slope. A new 48" welded steel pipe will be installed by bore and jack methods parallel to the existing pipe. The existing pipe will be plugged and filled with flowable fill. Junction boxes will be used to place the new pipe in line with the receiving pipe under Pinewood Ln. A new 48" RCP will be installed under Pinewood Ln. just downstream of the proposed 48" under I-40 since the existing pipe under Pinewood Ln. is only a 24" RCP. The 24" pipe under Pinewood Ln. will continue to receive drainage via catch basins on Pinewood Ln. but will no longer receive I-40 drainage. At the outlet of the proposed 48" RCP under Pinewood Ln., a ditch will be constructed to convey the drainage to the adjacent pond. There will be no jurisdictional impacts to the pond. Amy Euliss asked if we could extend the temporary drainage easement at the ditch / pond tie-in for a turbidity curtain to be used. Mr. Cook said they could add it. Marla Chambers asked if Stream JS continued between the existing 24" outlet pipe and the pond. Mr. Cook said that their files did not show a stream there. Carla Dagnino stated she would check in to whether there was a jurisdictional feature between the outlet pipe and pond. Monte Matthews asked if the pond was being listed as a stormwater device. Mr. Cook said it was not.

Site 5, Stream SAA, Wetland J: Stream SAA runs parallel to I-40 at –L- 84+50 RT and ties to the stream JS prior to entering the upstream end of the crosspipe. It is impacted by the proposed fill slope and will be a total take. Wetland J at –L- 84+5 RT is also impacted by the proposed fill slope and will be a total take.

Permit drawing 10 of 33

Site 6, Stream FH: Stream FH runs south to north through the project and is currently conveyed in a 42" RCP at –L- 99+50. The upstream end is impacted by the proposed channel to redirect flow to the proposed pipe. The downstream end is impacted by the proposed fill slope. A new 54" welded steel pipe will be installed by bore and jack methods parallel to the existing pipe. The existing pipe will be plugged and filled with flowable fill. The proposed 54" pipe will not be buried. An existing 24" RCP downstream of the existing 42" RCP will be removed. A ditch will be constructed to convey the drainage from the proposed 54" pipe to the adjacent pond. There will be no jurisdictional impacts to the pond. Ms. Chambers asked if Stream FH continued between the existing 24" outlet pipe and the pond. Mr. Cook said that their files did not show a stream there.

Permit drawing 12 of 33

Site 7A, Stream SP, Wetlands SP: Wetland SP at –L- 119+50 – 123+50 RT will be impacted by the proposed fill slope and lateral base ditch. Mr. Cook said that the lateral base ditch was modified (versus the design shown at the 4B meeting) to achieve some swale filtration prior to entering stream SP. Stream SP is impacted by the lateral base ditch tie-in at -L- 123+50 LT. Mr. Cook stated that they would add a permanent stream impact as bank stabilization where the riprap transition occurred.

Permit drawing 15 of 33

Sites 7B and 7C, Stream SP: Stream SP at –L- 129+00 will be impacted at two locations (Site 7B LT and Site 7C RT) due to ditch tie-ins from the proposed drainage. The ditches impacting stream SP were used in lieu of preformed scour holes due to stability concerns. Bank stabilization will occur where lateral V ditches tie-in to stream SP. Mr. Cook said that stream SP will have crane mats placed over it during construction under the proposed bridge for project access, but they will not create stream impacts.

Site 8, Yadkin River:

The 1104' new bridge will have 8 spans over the FEMA regulated river. Mr. Cook pointed out that the original project commitments stated that there would be "no impacts to the Yadkin River". Mr. Cook said this was impossible given the new bridge piers, and will be noted in the permit application. Mr. Cook pointed out that the bridge will have deck drains due to hydraulic spread in to the travel lane. Deck drains will be present over the Yadkin River on the new bridge during construction but will be plugged once construction is completed which is an improvement over the existing bridge since it currently has deck drains over the river.

During construction of the bridge, the DB Team is proposing a phased construction sequence that will require causeways to be placed in the river at different times. Mr. Cook showed the phasing plan as well as the anticipated causeways that would be used during construction. The causeways would extend from both sides of the river to 10' beyond the new bridge bents and 40' beyond the outside of the proposed bridge LT and RT. The height of the causeways would be 2' above normal water surface and would extend to the river bottom with 1:1 slopes. 54" pipes will be installed in the causeways to help with river passage. Mr. Cook said that during construction the river would never be blocked more than 50% by causeways. Ms. Chambers asked that a note stating this be added to the permit impact summary. Ms. Chambers also asked how long the causeways will be in place. Jason Mroz stated approximately 8 – 10 months per phase for a total of 28 months. The existing pier removal causeways will be in place approximately 1 month each. Mr. Matthews asked that the downstream banks be monitored during construction for any issues that might occur due to the causeways. Ms. Euliss asked that turbidity curtains be included around the downstream ends of the causeways during their installation and removal. Mr. Cook said they could do this, and a note would be placed on the erosion control plans. He said they would not be advisable the entire time the causeways were in place because they would block the flow conveyed by the temporary 54" pipes.

Permit drawing 25 of 33

Site 9, Streams A, Wetland A: Stream A runs north to south through the project and is currently conveyed in a 42" RCP at –L- 147+00. It is impacted by the proposed fill slope upstream. A new 42" welded steel pipe will be installed by bore and jack methods parallel to the existing pipe. The existing pipe will be plugged and filled with flowable fill. There is extensive scour that has occurred at the pipe outlet and along the roadside ditch that feeds the stream at the pipe outlet. Mr. Cook stated that a riprapped energy dissipator basin was designed at the outlet of the pipe to attenuate the flow and reduce the velocity (from V10 22.0ft/s to 6.0ft/s) before entering the existing stream downstream of the project. The proposed 42"pipe will not be buried. The permanent stream impact will continue to the permanent drainage easement limit to allow for a smoother transition from the basin to the existing stream and also to allow for future NCDOT Division maintenance. A portion of stream A will also be impacted at -L- 143+60 RT due to plugging an existing 18" CMP and filling it with flowable fill. The temporary impact is to allow for construction to occur. Ms. Chambers asked that if concrete is used that it be isolated and measures used to prevent any surface water contamination.

Wetland A will also be impacted by mechanized clearing along the fill slope. Ms. Chambers asked if this should be a total take given the extent of the wetland impact. Mike Wood stated that this is a seep wetland and he expected the area would stay wet. He thought the partial impact was the best way to show the impact.

Permit drawing 28 and 30 of 33

Site 10: This stream and wetland at -L- 196+00 were added during Erin Cheely's (NCDOT ECAP) field visit for jurisdictional areas outside the corridor. The stream runs north to south through the project and is currently conveyed in a 60" RCP. A new 60" welded steel pipe will be installed by bore and jack methods parallel to the existing pipe. The existing pipe will be plugged and filled with flowable fill. The proposed 60" pipe will not be buried. Craig Lee asked that the proposed riprap pad at the proposed outlet be shown to scale.

Ms. Dagnino asked if the project would fit within the parameters of a GP-31. Mr. Matthews said he would check in to it. Mr. Wanucha said he did not have a preference.

The meeting adjourned.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

General Project Information

WBS Element:	34147.3.4	**TIP Number:**	I-0911A	**Project Type:**	Roadway Widening	**Date:**	1/4/2018
NCDOT Contact:	Craig Lee, PE			**Contractor / Designer:**	RK&K: Matt Cook, PE		
	Address: NC Department of Transportation 1020 Birch Ridge Dr Raleigh, NC 27610			**Address:**	900 Ridgefield Drive Suite 350 Raleigh, NC 27609		
	Phone: 919-707-6708			**Phone:**	919-878-9560		
	Email: cjlee@ncdot.gov			**Email:**	mcook@rkk.com		
City/Town:	Bermuda Run			**County(ies):**	Davie	Forsyth	
River Basin(s):	Yadkin-Pee Dee			**CAMA County?**	No	No	
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	3.78	**Surrounding Land Use:**	Residential and Commercial

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	67.0 ac.	58.0 ac.
Typical Cross Section Description:	6 lane dvided highway with a 26' median that contains median barrier: 11.5' paved median shoulders, (3) 12' travel lanes, 14' outside shoulders. 122' wide bridge that spans the Yadkin River.	4 lane divided highway with a grass median: 10' outside shoulders, (2) 12' travel lanes, 4' median shoulder. Dual bridges that spans the Yadkin River.
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 74,800 Year: 2037	Existing: 58,600 Year: 2017

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

This project is the widening of I-40 from 4 lanes to 6 lanes including pavement rehabilitation, safety improvements and the rehabilitation of the dual bridges over the Yadkin River. The project extends west of NC 801 in Davie County to east of SR 1101(Harper Rd) in Forsyth County. During the construction of the proposed bridge over the Yadkin River, temporary causeways will be put in place to get construction equipment out of the water. Drainage from bridge will discharge through deck drains into the Yadkin River only during the temporary condtion for traffic phasing but will not discharge into the river in the permanent condition. Concrete will be precasted offiste when possible to eliminate spilling concrete into the Yadkin River. The overalll bridge length is 1104' with 8 spans as follows: 1 span @ 155', 3 spans @ 150', 1 span @ 135', 1 span @ 155' and 2 spans @ 104.5' F.I.B. prestressed girders; sloped abutments with 3' x4.25' wide caps. Swales and Preformed Scour Holes are used as Best Management Practices on the project. There are four sites where there are proposed swales to provide some filtration and dissipation before water enters jurisdictional streams. There are three sites where there are proposed preformed scour holes to provide enegery dissipation and infiltration before the water enters the jurisdictional streams.

Waterbody Information

Surface Water Body (1):	Yadkin River		**NCDWR Stream Index No.:**	12-(86.7)	
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:	Yadkin River			**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	Yes				

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

WBS Element:	34147.3.4	TIP No.:	I-0911A	County(ies):	Davie Forsyth	Page	2	of	4

Additional Waterbody Information

Surface Water Body (2):	Smith Creek		**NCDWR Stream Index No.:**	12-93-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	Smith Creek			**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?	No					

Surface Water Body (3):	Johnson Creek		**NCDWR Stream Index No.:**	12-91		
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:	UT to Johnson Creek (not in NRTR)			**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?	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)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

WBS Element: 34147.3.4 **TIP No.:** I-0911A **County(ies):** Davie Forsyth

Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
7	-L- STA. 49+17 LT		4.0	3.0	3.0	4.9	493	372	1.98%	14.6	3.1	18.9	3.3	No	No
11	-L- STA. 123+50 LT		4.0	3.0	3.0	19.5	1945	199	1.20%	57.6	3.7	74.5	4.0	No	No
12	-L- STA. 128+97 LT		0.0	3.0	3.0	0.1	12	51	4.04%	0.4	1.7	0.5	1.9	No	No
12	-L- STA. 129+16 RT		0.0	3.0	3.0	0.4	36	207	5.29%	1.1	2.4	1.4	2.6	No	No

Additional Comments

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

WBS Element: **TIP No.:** I-0911A **County(ies):** Davie Forsyth

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)	BMP Associated w/ Buffer Rules?
4	-L- STA. 49+17 LT		PSH	Class 'B'	0.4	Pipe	15	2.2	0.5	No
11	-L- STA. 121+50 RT		PSH	Class 'B'	2.8	Pipe	18	9.5	1.0	No
12	-L- STA. 139+49 RT		PSH	Class 'B'	1.7	Pipe	18	8.2	0.9	No

Additional Comments

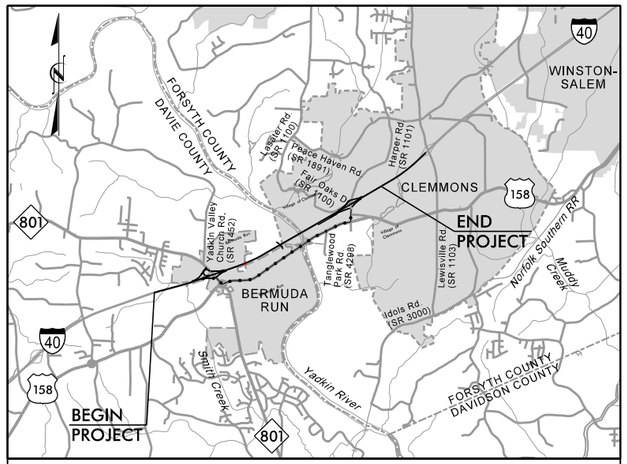
* Refer to the NCDOT Best Management Practices Toolbox (2014), NCDOT Standards, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

09/08/99

TIP PROJECT: I-0911A

CONTRACT: C203965

See Sheet 1-B For Symbology



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DAVIE & FORSYTH COUNTIES

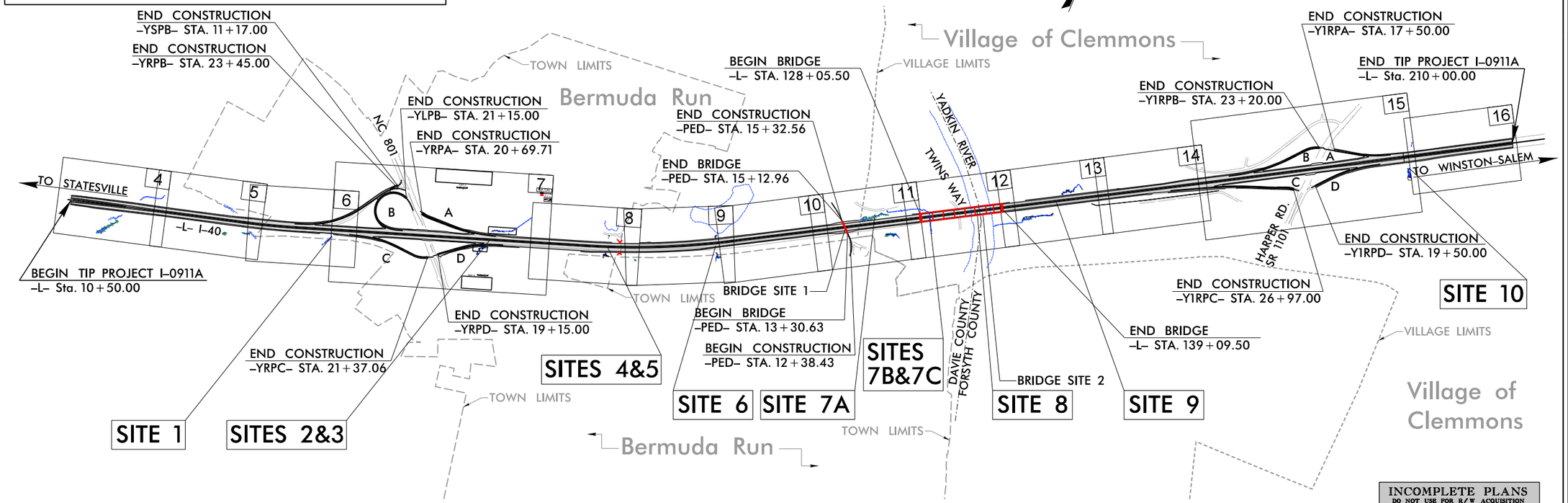
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-0911A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34147.3.4	NHIMF-40-3(112)180	PE	

LOCATION: *I-40 FROM WEST OF NC 801 IN DAVIE COUNTY TO EAST OF I-40/SR 1101 (HARPER RD.) IN FORSYTH COUNTY*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, SIGNING, STRUCTURES, ITS, LIGHTING & UTILITIES*

WETLAND AND STREAM IMPACTS

PERMIT DRAWING
SHEET 1 OF 33



INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2017 = 58,600
ADT 2037 = 74,800
DHV = 60%
D = 9%
T = 8% *
V = 70 MPH
FUNC CLASS = INTERSTATE
* (TTST 5% + DUAL 3%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-0911A..... 3.569 miles
LENGTH STRUCTURE TIP PROJECT I-0911A..... 0.209 miles
TOTAL LENGTH OF PROJECT I-0911A..... 3.778 miles

NCDOT CONTACT

K. Zak Hamidi, P.E.
PROJECT ENGINEER - DESIGN-BUILD UNIT

PLANS PREPARED BY:

RK&K — RUMMEL, KLEPPER & KAHL, LLP, 900 RIDGEFIELD DRIVE, SUITE 350, RALEIGH, NORTH CAROLINA 27609, NC LICENSE NO. F-0112

FLATIRON — a joint venture — Blythe

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

LETTING DATE: JULY 18, 2017

Brandon J. McInnis, P.E.
PROJECT ENGINEER

Mary E. Yahl, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

2/2/2018
R:\Hydraulics\PERMITS_Environmental\Drawings\I091IA_Hyd_prm_tsh.dgn
Fkeys

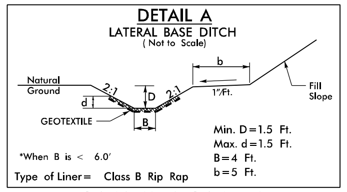
PROJECT REFERENCE NO.	SHEET NO.
I-0911A	2D-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

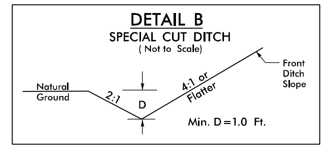
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 2 OF 33

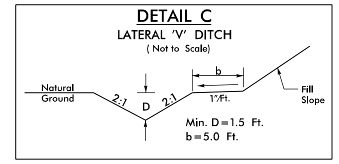
ENGLISH



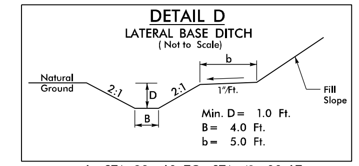
–L– STA. 34+00 TO STA. 35+50 LT
–L– STA. 39+00 TO STA. 39+60 LT
–L– STA. 48+50 TO STA. 49+17 LT
–L– STA. 69+50 TO STA. 71+00 RT
–L– STA. 71+50 TO STA. 74+00 LT
–L– STA. 80+50 TO STA. 84+50 LT
–L– STA. 84+50 TO STA. 84+80 LT; 2' BERM
–L– STA. 82+50 TO STA. 84+06 RT
–L– STA. 94+50 TO STA. 95+35 RT
–YRPA– STA. 11+00 TO STA. 15+70 RT
–YRPD– STA. 13+18 TO STA. 14+24 LT



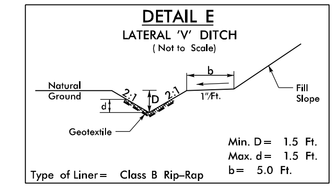
–L– STA. 10+46 TO STA. 11+00 RT
–L– STA. 10+48 TO STA. 11+00 LT
–L– STA. 41+00 TO STA. 43+50 LT
–L– STA. 49+00 TO STA. 49+50 RT
–L– STA. 55+50 TO STA. 59+00 RT
–L– STA. 61+00 TO STA. 64+00 RT
–L– STA. 143+00 TO STA. 143+50 LT
–L– STA. 156+00 TO STA. 158+00 LT
–L– STA. 156+50 TO STA. 157+50 RT
–L– STA. 162+00 TO STA. 163+50 LT
–L– STA. 168+00 TO STA. 169+50 LT
–L– STA. 170+00 TO STA. 178+50 RT
–Y1RPA– STA. 15+38 TO STA. 17+50 LT
–Y1RPD– STA. 14+21 TO STA. 15+08 LT
–YRPB– STA. 14+54 TO STA. 17+50 LT



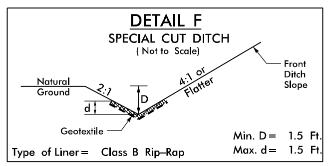
–L– STA. 38+00 TO STA. 39+74 RT
–L– STA. 45+79 TO STA. 46+50 RT
–L– STA. 55+50 TO STA. 57+50 LT
–L– STA. 60+00 TO STA. 62+00 LT
–L– STA. 87+28 TO STA. 90+00 RT
–L– STA. 127+09 TO STA. 129+16 RT; 3:1 SLOPES
–L– STA. 128+46 TO STA. 128+97 LT; 3:1 SLOPES
–L– STA. 138+67 TO STA. 140+50 LT
–L– STA. 141+50 TO STA. 143+00 LT
–L– STA. 143+50 TO STA. 144+55 LT
–Y1RPB– STA. 18+50 TO STA. 22+50 RT



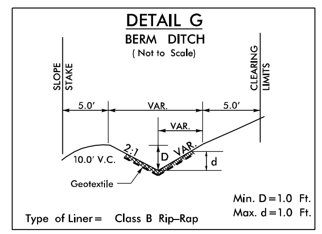
–L– STA. 39+60 TO STA. 41+00 LT
–L– STA. 49+17 TO STA. 52+89 LT; 3:1 SLOPES
–L– STA. 84+80 TO STA. 85+50 LT; 2' BERM
–L– STA. 85+50 TO STA. 87+00 LT
–L– STA. 84+06 TO STA. 87+28 RT
–L– STA. 88+33 TO STA. 89+00 LT
–L– STA. 94+00 TO STA. 96+66 LT
–L– STA. 95+35 TO STA. 97+50 RT
–L– STA. 100+50 TO STA. 102+46 LT



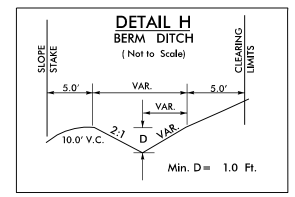
–L– STA. 145+50 TO STA. 148+00 LT
–YRPB– STA. 17+50 TO STA. 19+00 LT
–YRPB– STA. 19+50 TO STA. 20+78 LT
–Y1RPD– STA. 17+00 TO STA. 19+00 RT



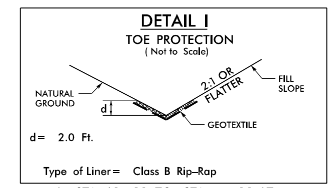
–YRPA– STA. 18+00 TO STA. 18+50 RT
–YRPB– STA. 19+00 TO STA. 19+50 LT
–Y1RPA– STA. 17+00 TO STA. 17+50 RT



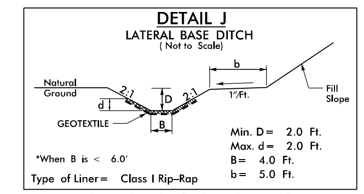
–YRPB– STA. 14+04 TO STA. 17+50 LT
–YRPB– STA. 17+50 TO STA. 18+00 LT; CLASS I
–YRPC– STA. 10+16 TO STA. 16+80 RT; VARYING V.C.



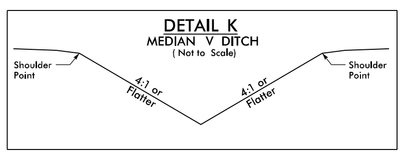
–L– STA. 74+00 TO STA. 82+50 RT
–L– STA. 157+00 TO STA. 165+00 LT



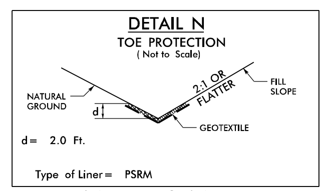
–L– STA. 68+33 TO STA. 71+28 LT
–L– STA. 140+50 TO STA. 141+50 LT
–L– STA. 148+00 TO STA. 149+50 LT; KEEP OUT OF WETLAND
–YRPD– STA. 10+77 TO STA. 13+06 LT



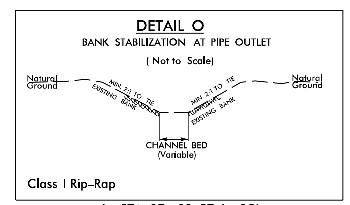
–L– STA. 118+50 TO STA. 121+51.09 LT



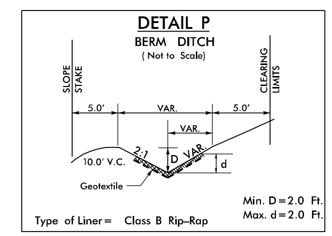
–L– STA. 9+38 TO STA. 11+50 CL



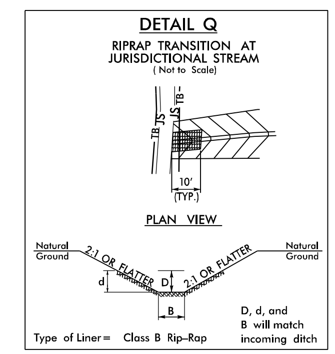
–Y1RPB– STA. 10+80 TO STA. 13+82 LT



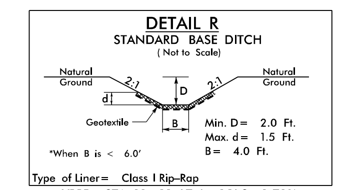
–L– STA. 37+32 RT, L=25'



–L– STA. 114+40 TO STA. 115+00 RT



–L– STA. 71+50 LT
–L– STA. 123+50 LT
–L– STA. 128+97 LT
–L– STA. 129+16 RT



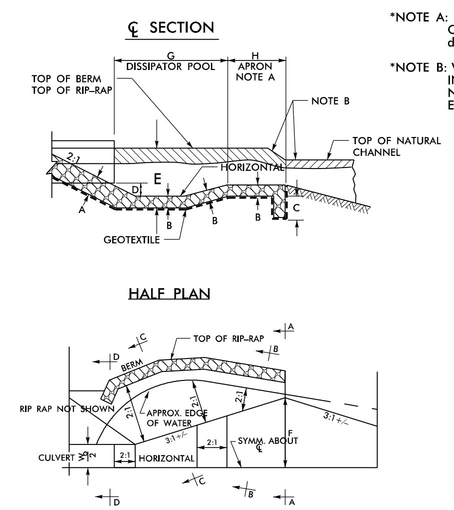
–YRPD– STA. 13+13 LT, L=29' S=3.72%,
BEG. ELEV=763.1, END ELEV=762.0

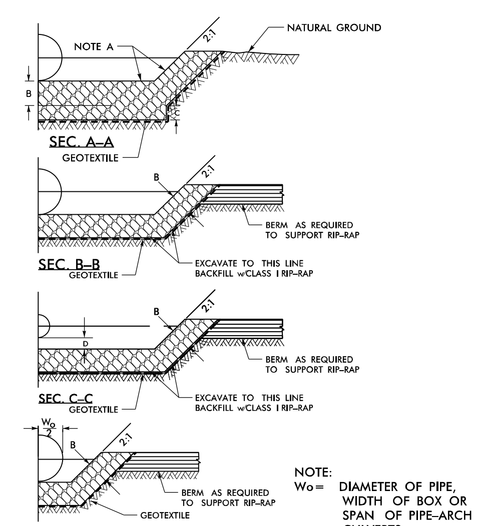
DETAIL L

RIP-RAPPED ENERGY DISSIPATOR BASIN

*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A SUCH THAT Q des(CROSS SECTION AREA AT SEC. A-A)= SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP-RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.





DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	3.0	3.0	3.0					
B	2.0	2.0	2.0					
C	3.0	3.0	3.0					
D	2.2	1.7	2.2					
E	10.4	7.0	10.4					
F	13.9	10.5	13.9					
G	22.3	16.5	22.3					
H	11.1	8.3	11.1					

BASIN #	LOCATION (AT OUTLET)
1	–L– 46+56 RT (#0614)
2	–L– 71+32 LT (#0710)
3	–L– 146+00 RT (#1314)
4	
5	
6	
7	
8	

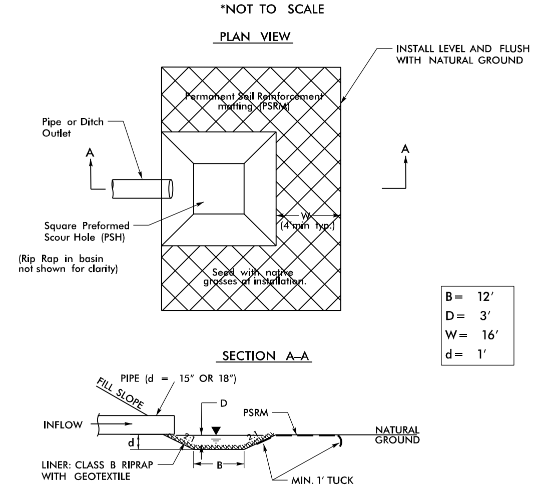
*ALL DIMENSIONS APPROXIMATE IN FT

NOTE:
W_o= DIAMETER OF PIPE, WIDTH OF BOX OR SPAN OF PIPE-ARCH CULVERTS

5/05

PREFORMED SCOUR HOLE DETAIL M

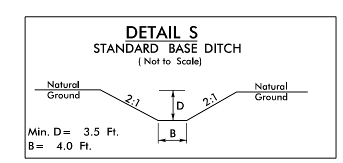
*NOT TO SCALE



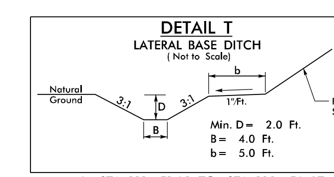
B= 12'
D= 3'
W= 16'
d= 1'

3/08

–L– STA. 22+50 LT
–L– STA. 121+50 RT
–L– STA. 139+49 RT



–L– STA. 84+85 LT, L=31', S=0.32%,
BEG ELEV=740.1, END ELEV=740.0
–L– STA. 99+36 LT, L=50', S=0.50%,
BEG ELEV=716.8, END ELEV=716.5
–L– STA. 99+38 RT, L=26', S=0.73%,
BEG ELEV=719.5, END ELEV=719.3
–L– STA. 195+66 RT, L=20', S=0.50%,
BEG ELEV=750.3, END ELEV=750.2



–L– STA. 121+51.09 TO STA. 123+50 LT

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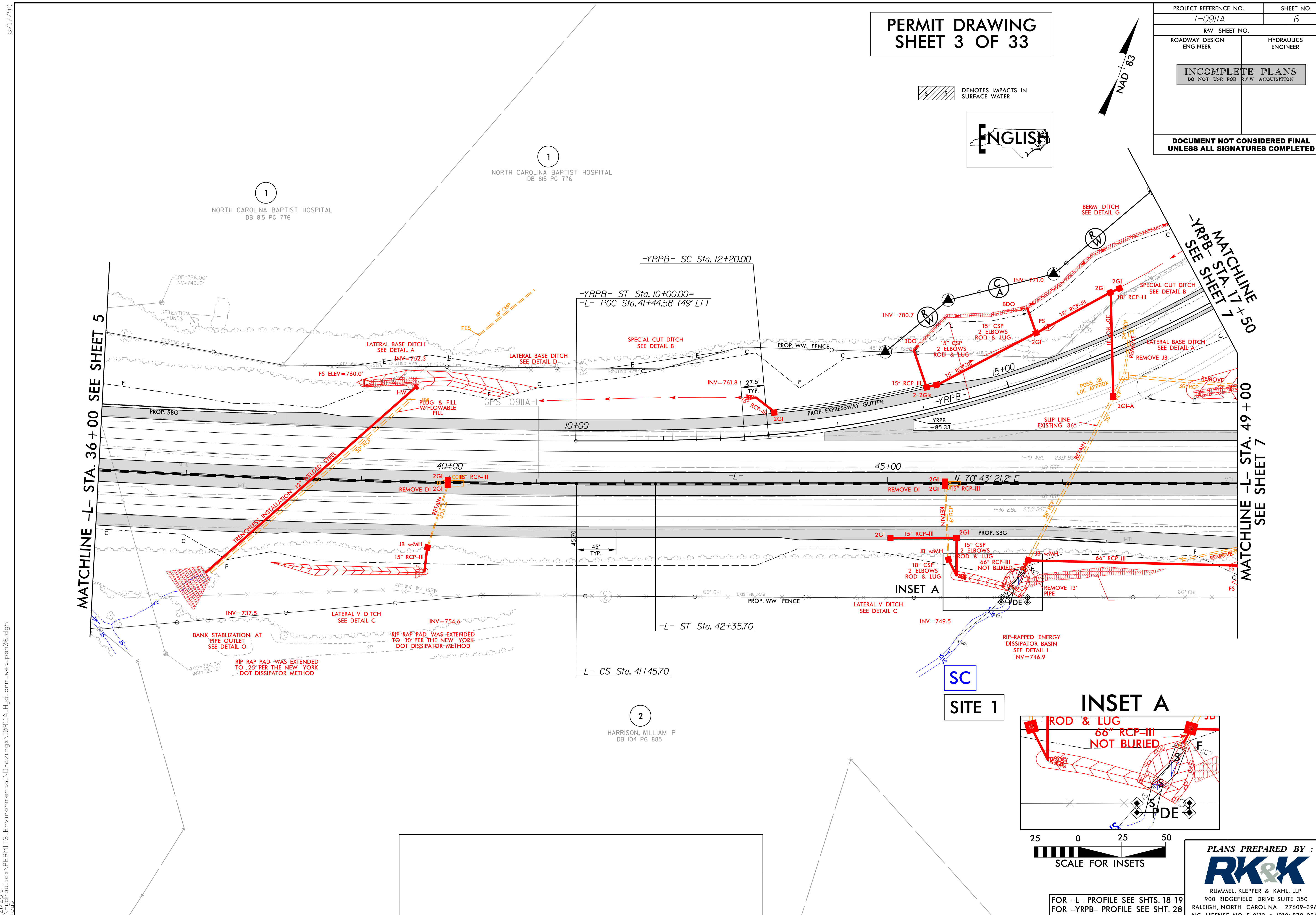
PERMIT DRAWING
SHEET 3 OF 33
PROJECT REFERENCE NO.
I-0911A
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
DENOTES IMPACTS IN SURFACE WATER
ENGLISH
NAD 83
NORTH CAROLINA BAPTIST HOSPITAL
DB 815 PG 776
HARRISON, WILLIAM P
DB 104 PG 885
MATCHLINE -L- STA. 36+00 SEE SHEET 5
MATCHLINE -L- STA. 49+00 SEE SHEET 7
MATCHLINE -YRPB- STA. 17+50 SEE SHEET 7
-YRPB- SC Sta. 12+20.00
-YRPB- ST Sta. 10+00.00=
-L- POC Sta. 41+44.58 (49' LT)
-L- ST Sta. 42+35.70
-L- CS Sta. 41+45.70
N 70° 43' 21.2" E
LATERAL BASE DITCH SEE DETAIL A
LATERAL BASE DITCH SEE DETAIL D
SPECIAL CUT DITCH SEE DETAIL B
BERM DITCH SEE DETAIL G
LATERAL V DITCH SEE DETAIL C
BANK STABILIZATION AT PIPE OUTLET SEE DETAIL O
RIP RAP PAD WAS EXTENDED TO 10' PER THE NEW YORK DOT DISSIPATOR METHOD
RIP RAP PAD WAS EXTENDED TO 25' PER THE NEW YORK DOT DISSIPATOR METHOD
RIP-RAPPED ENERGY DISSIPATOR BASIN SEE DETAIL L INV=746.9
PLUG & FILL W/FLOWABLE FILL
TRENCHLESS INSTALLATION 42" WELDED STEEL
PROP. WW FENCE
PROP. EXPRESSWAY GUTTER
PROP. SBG
SLIP LINE EXISTING 36"
REMOVE 13' PIPE
INSET A
SC
SITE 1
ROD & LUG
66" RCP-III NOT BURIED
PDE
SCALE FOR INSETS
25 0 25 50
FOR -L- PROFILE SEE SHTS. 18-19
FOR -YRPB- PROFILE SEE SHT. 28
FOR -YRPC- PROFILE SEE SHT. 29
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PROJECT REFERENCE NO.	SHEET NO.
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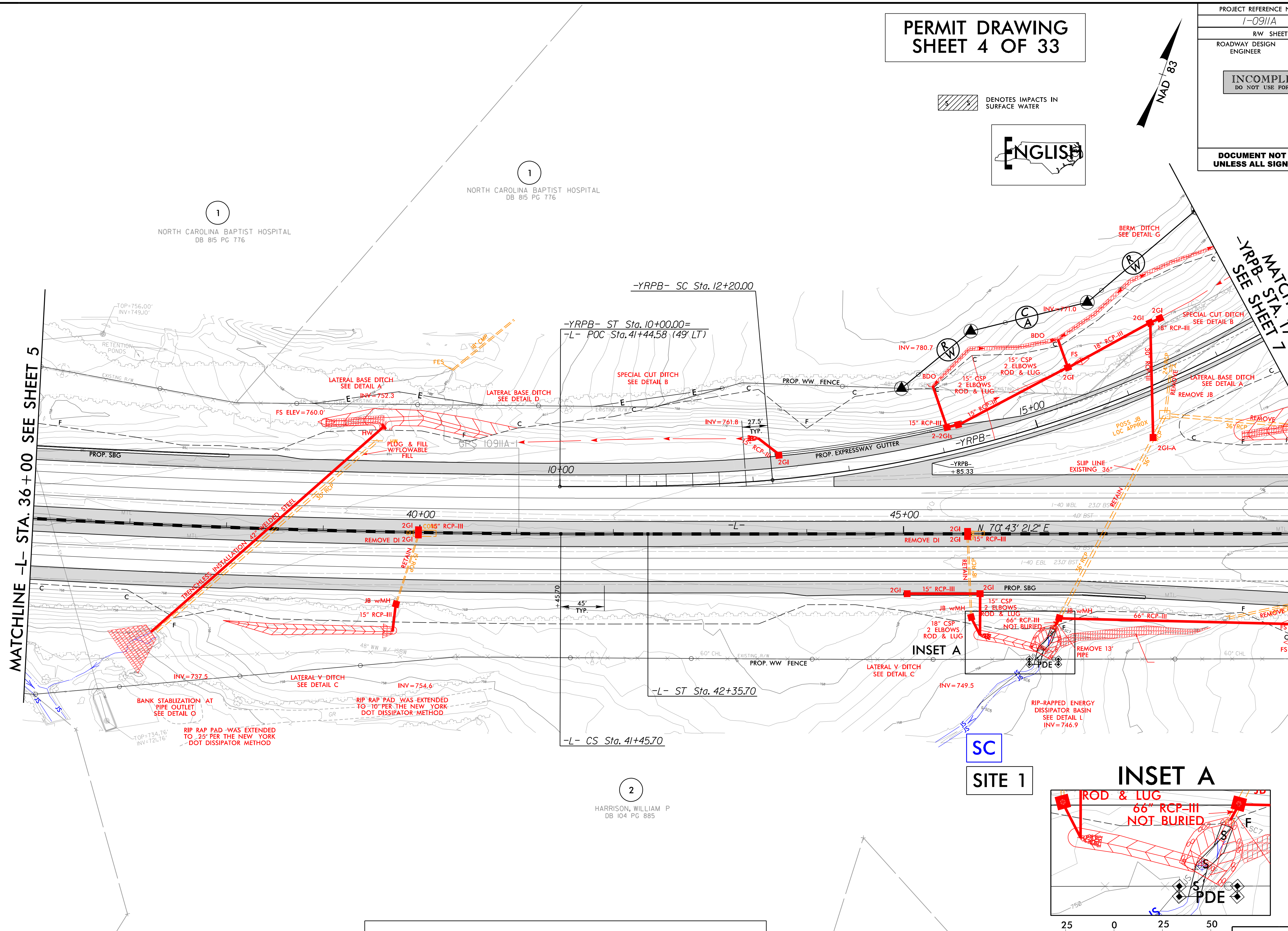

DENOTES IMPACTS IN SURFACE WATER
ENGLISH
NAD 83
NORTH CAROLINA BAPTIST HOSPITAL
DB 815 PG 776
HARRISON, WILLIAM P
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MATCHLINE -L- STA. 36+00 SEE SHEET 5
MATCHLINE -L- STA. 49+00 SEE SHEET 7
MATCHLINE -YRPB- STA. 17+50 SEE SHEET 7
-YRPB- SC Sta. 12+20.00
-YRPB- ST Sta. 10+00.00=
-L- POC Sta. 41+44.58 (49' LT)
-L- ST Sta. 42+35.70
-L- CS Sta. 41+45.70
N 70°43' 21.2" E
40+00
45+00
10+00
15+00
-YRPB-
-L-
PROP. SBG
PROP. WW FENCE
PROP. EXPRESSWAY GUTTER
LATERAL BASE DITCH SEE DETAIL A
LATERAL BASE DITCH SEE DETAIL D
SPECIAL CUT DITCH SEE DETAIL B
BERM DITCH SEE DETAIL G
LATERAL V DITCH SEE DETAIL C
FS ELEV=760.0'
INV=752.3
INV=761.8
INV=780.7
INV=771.0
INV=737.5
INV=754.6
INV=749.5
PLUG & FILL W/FLOWABLE FILL
TRENCHLESS INSTALLATION 42" WELDED STEEL
REMOVE DI
15" RCP-III
18" RCP-III
30" RCP-III
66" RCP-III NOT BURIED
15" CSP 2 ELBOWS ROD & LUG
18" CSP 2 ELBOWS ROD & LUG
JB w/MH
REMOVE JB
REMOVE 13' PIPE
POSS. JB LOC APPROX
SLIP LINE EXISTING 36"
BANK STABLIZATION AT PIPE OUTLET SEE DETAIL O
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RIP-RAPPED ENERGY DISSIPATOR BASIN SEE DETAIL L INV=746.9
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SC
SITE 1
PDE
ROD & LUG
66" RCP-III NOT BURIED
SCALE FOR INSETS
25 0 25 50

FOR -L- PROFILE SEE SHTS. 18-19
FOR -YRPB- PROFILE SEE SHT. 28
FOR -YRPC- PROFILE SEE SHT. 29

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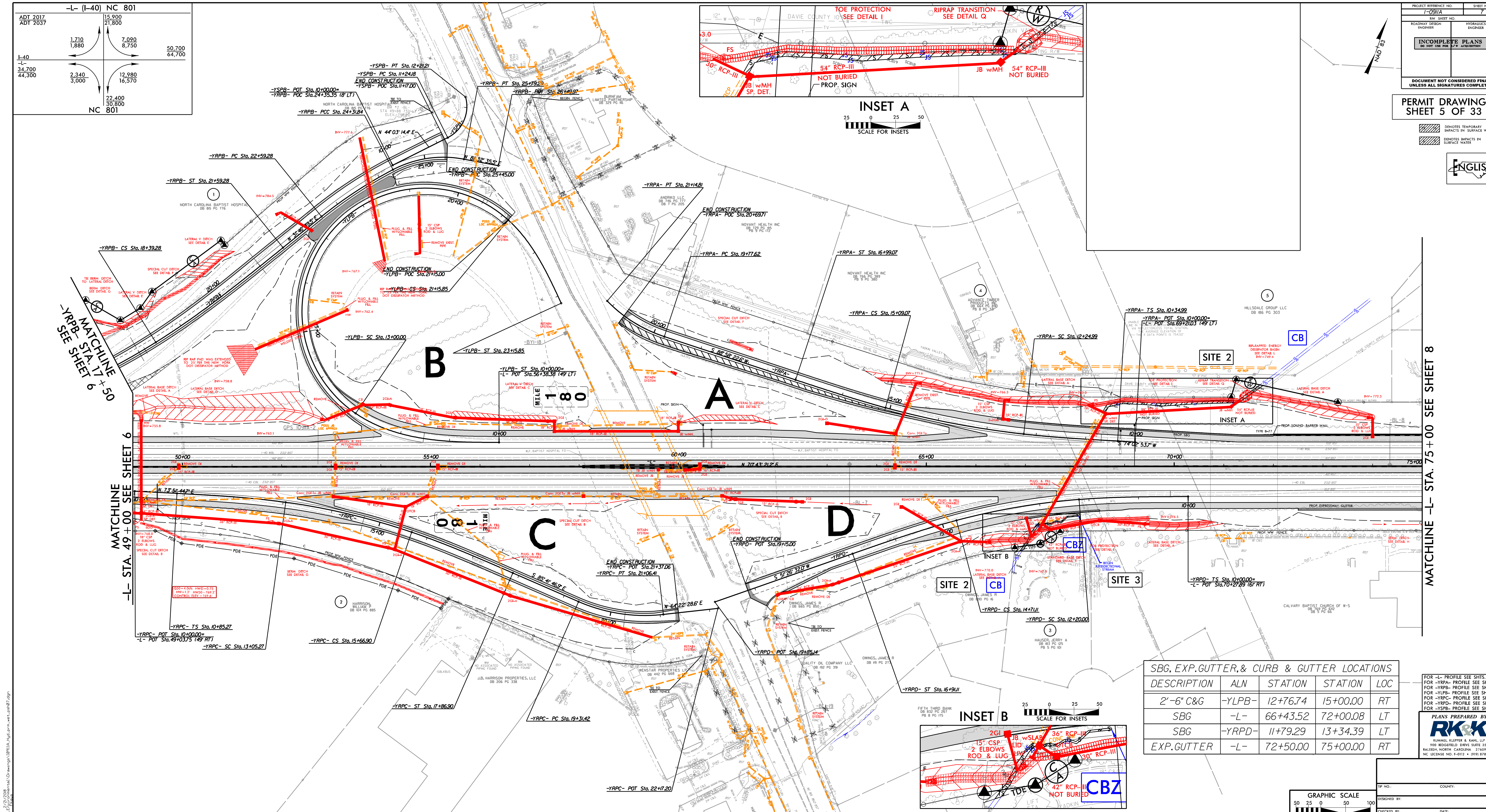

PROJECT REFERENCE NO. I-0911A — SHEET NO. 7

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

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DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

ENGLISH

SBG, EXP. GUTTER, & CURB & GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-YLPB-	12+76.74	15+00.00	RT
SBG	-L-	66+43.52	72+00.08	LT
SBG	-YRPD-	11+79.29	13+34.39	LT
EXP.GUTTER	-L-	72+50.00	75+00.00	RT

FOR -L- PROFILE SEE SHTS. 19-21
FOR -YRPA- PROFILE SEE SHT. 28
FOR -YRPB- PROFILE SEE SHT. 28
FOR -YLPB- PROFILE SEE SHT. 29
FOR -YRPC- PROFILE SEE SHT. 29
FOR -YRPD- PROFILE SEE SHT. 30
FOR -YSPB- PROFILE SEE SHT. 30

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DESIGNED BY:
CHECKED BY: DATE:

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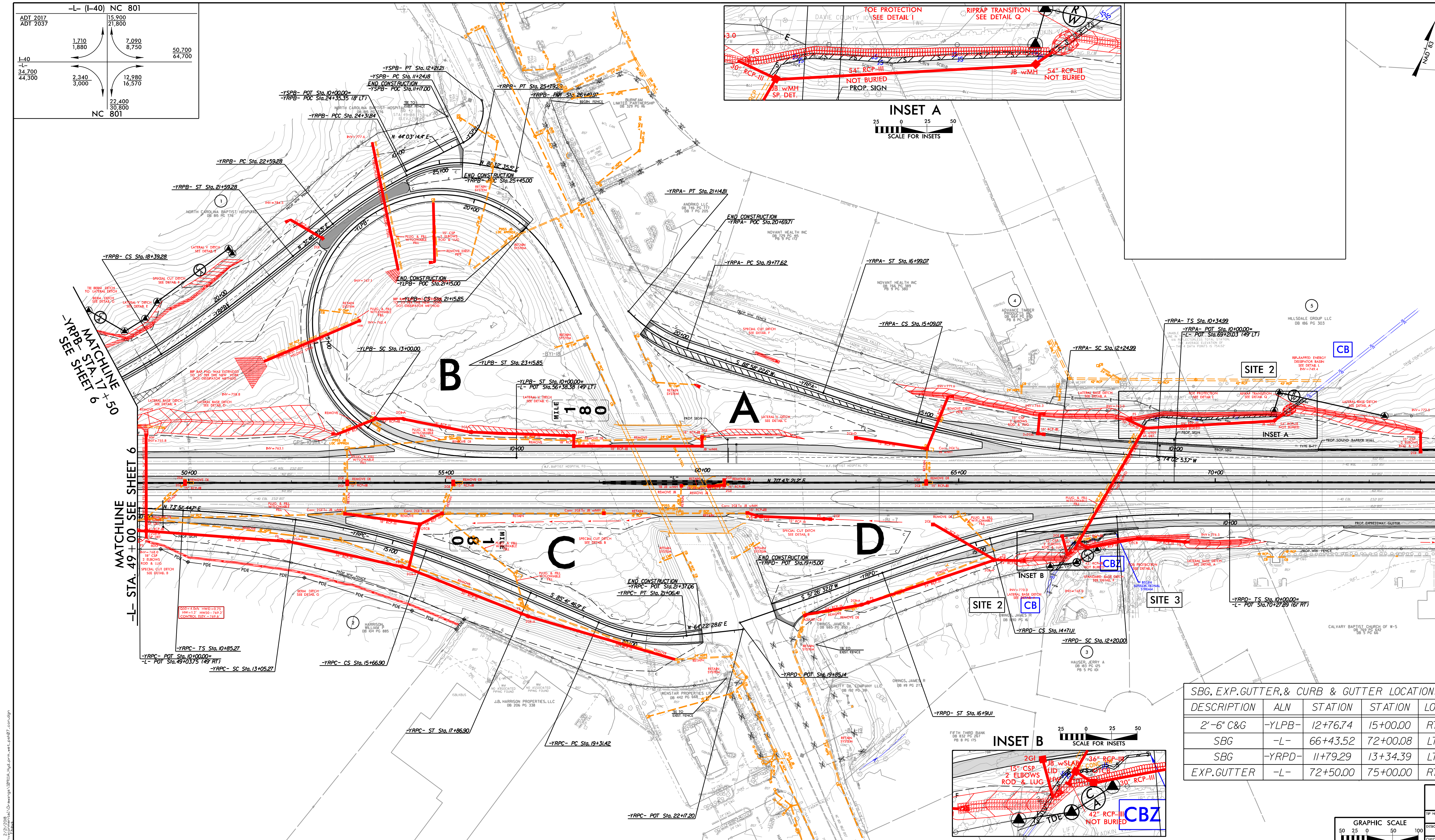

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	7

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PERMIT DRAWING SHEET 6 OF 33

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

ENGLISH

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DESCRIPTION	ALN	STATION	STATION	LOC
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FOR -L- PROFILE SEE SHTS. 19-21
FOR -YRPA- PROFILE SEE SHT. 28
FOR -YRPB- PROFILE SEE SHT. 28
FOR -YLPB- PROFILE SEE SHT. 29
FOR -YRPC- PROFILE SEE SHT. 29
FOR -YRPD- PROFILE SEE SHT. 30
FOR -YSPB- PROFILE SEE SHT. 30

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GRAPHIC SCALE
50 25 0 50 100
PLANS

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CHECKED BY: DATE:

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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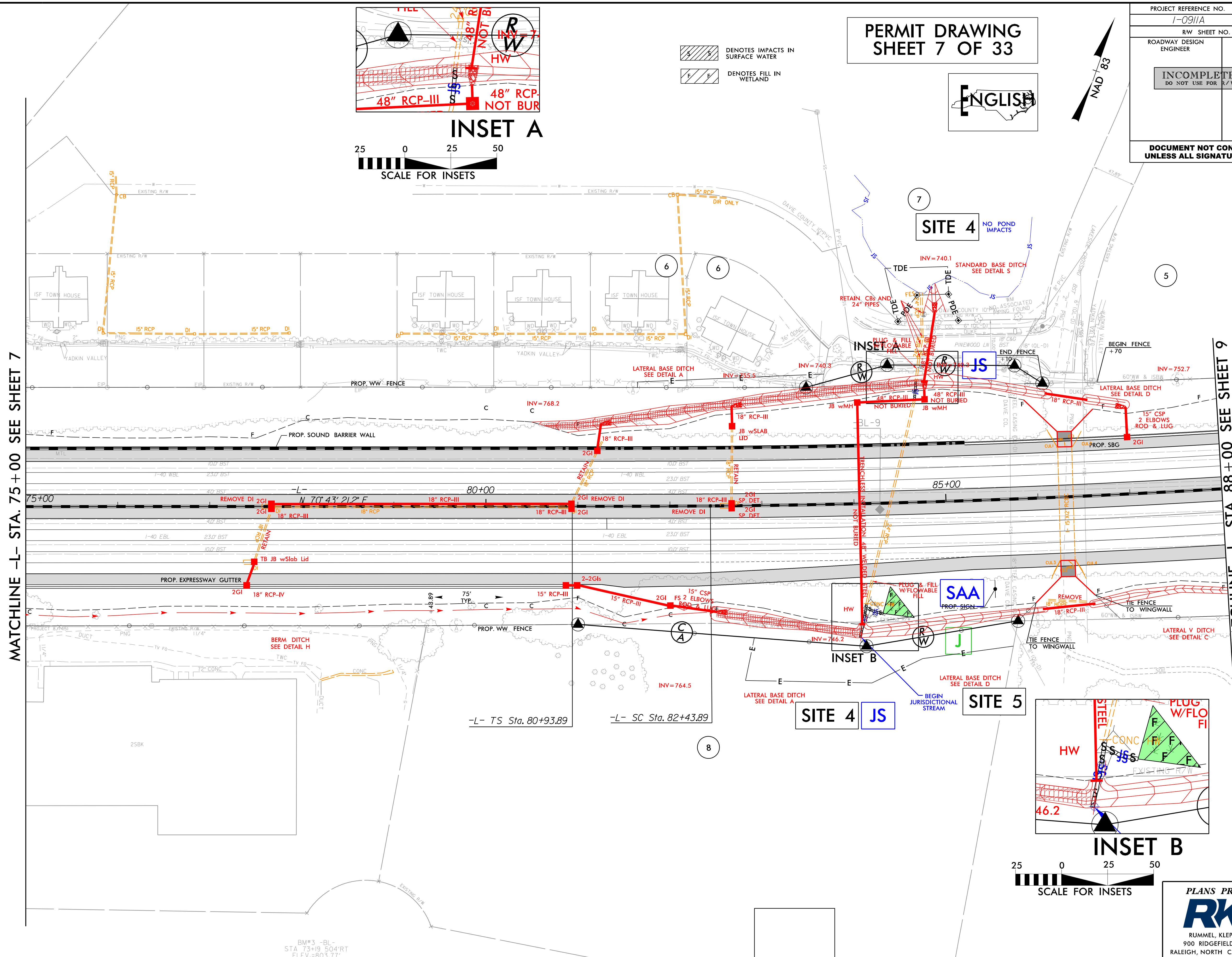
PERMIT DRAWING SHEET 7 OF 33

ENGLISH



FOR -L- PROFILE SEE SHTS. 21-22

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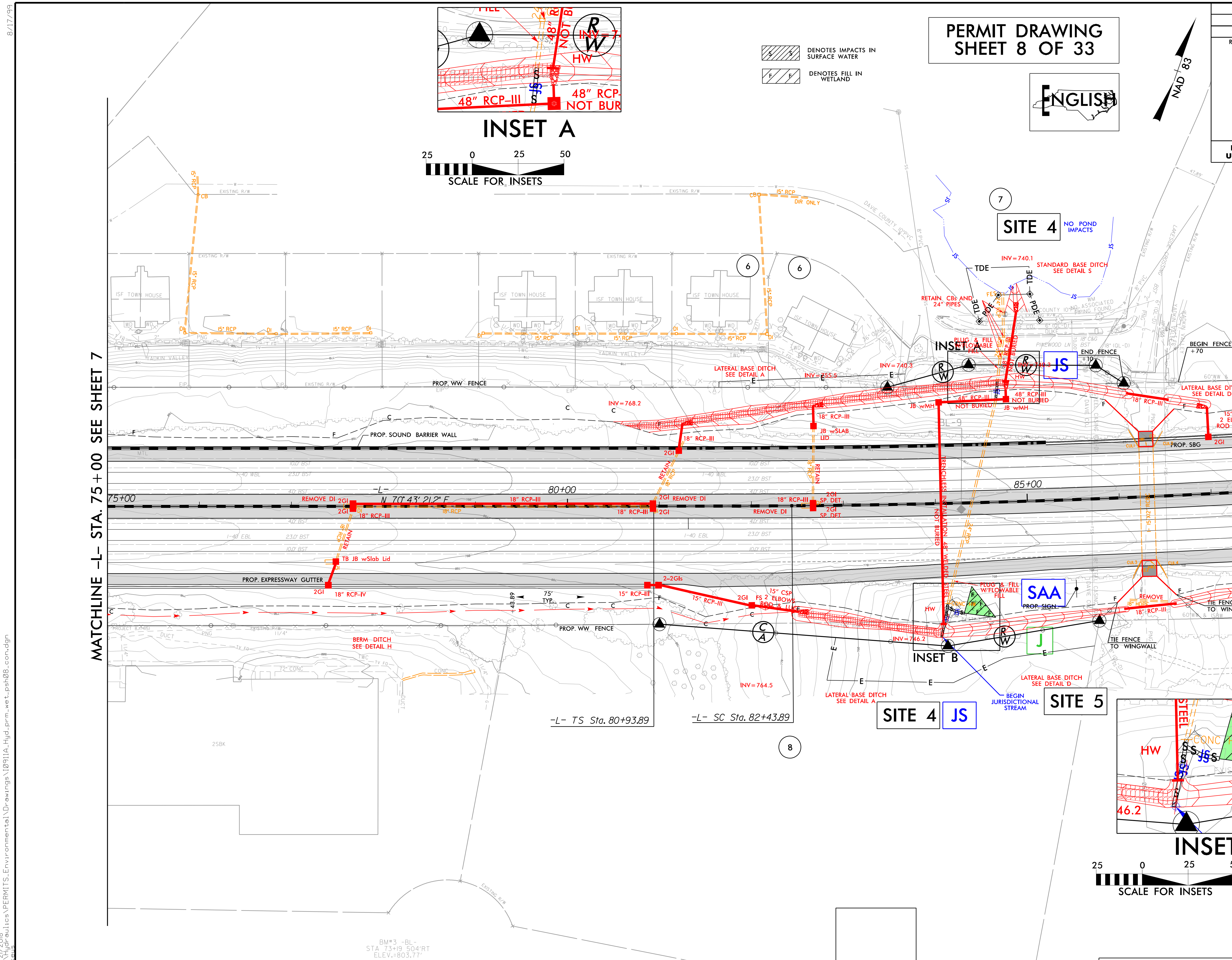
PERMIT DRAWING SHEET 8 OF 33

ENGLISH

NAD 83

DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND



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	I-0911A	X-43

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SHEET 9 OF 33

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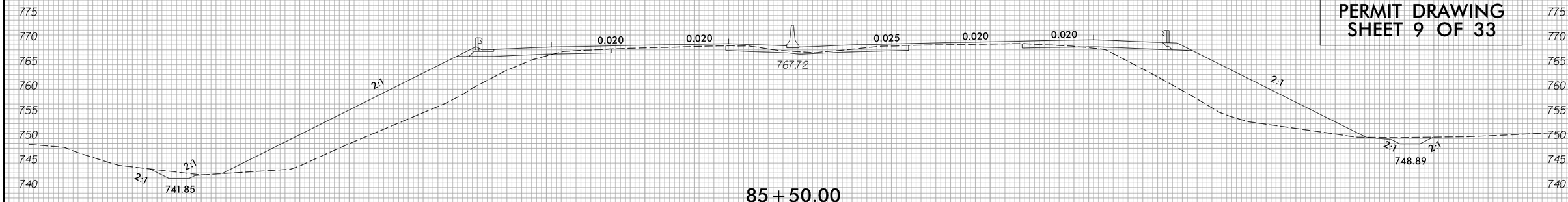
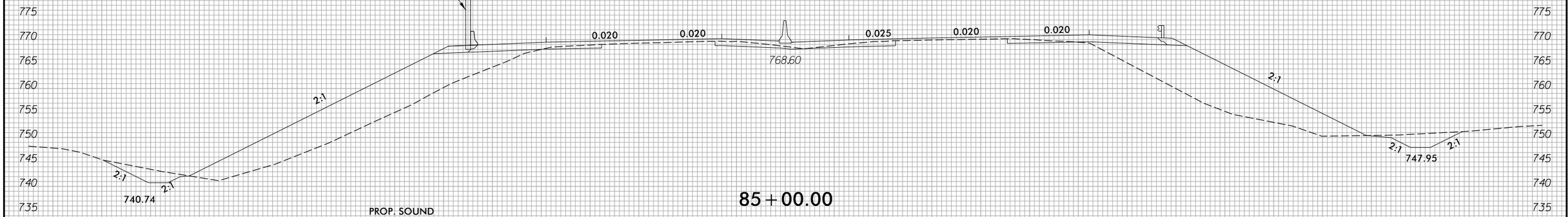


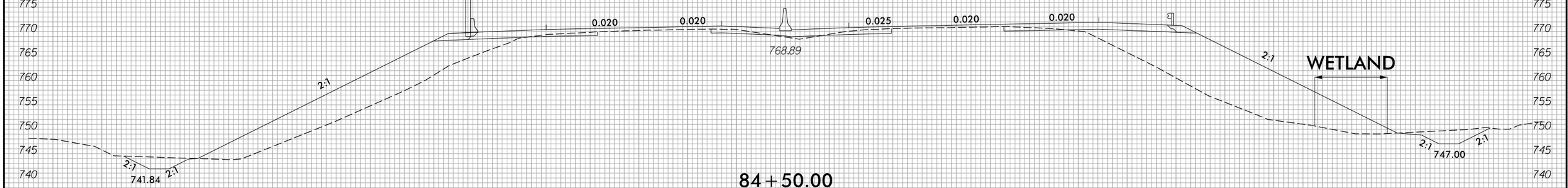
85+50.00

PROP. SOUND BARRIER WALL



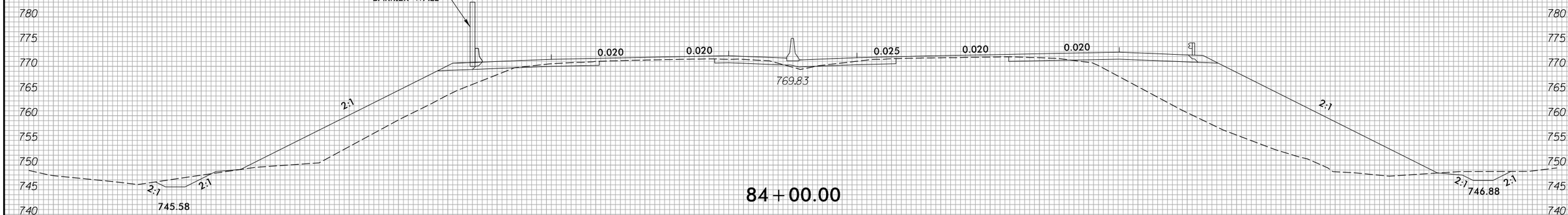
85+00.00

PROP. SOUND BARRIER WALL



84+50.00

PROP. SOUND BARRIER WALL



84+00.00

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SHEET 10 OF 33

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I-0911A	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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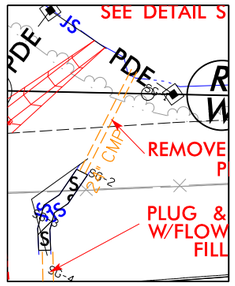
DENOTES IMPACTS IN SURFACE WATER

ENGLISH

NAD 83



INSET A

25 0 25 50

SCALE FOR INSETS

5
HILLSDALE GROUP LLC
DB 186 PG 303

P2

NO WORK TO BE DONE IN POND

SITE 6

-L- CS Sta. 100+73.84

MATCHLINE -L- STA. 88+00 SEE SHEET 8

MATCHLINE -L- STA. 101+00 SEE SHEET 10

RIP RAP PAD WAS EXTENDED TO 20' PER THE NEW YORK DOT DISSIPATOR METHOD

LATERAL BASE DITCH SEE DETAIL D

INV=744.9

INV=748.5

18" CSP
2 ELBOWS
ROD & LUG

RIP RAP PAD WAS EXTENDED TO 12' PER THE NEW YORK DOT DISSIPATOR METHOD

EXISTING R/W

PROP. WW FENCE

RIP RAP PAD WAS EXTENDED TO 16' PER THE NEW YORK DOT DISSIPATOR METHOD

INV=732.7

LATERAL BASE DITCH SEE DETAIL D

INV=716.8

INSET A

STANDARD BASE DITCH SEE DETAIL S

REMOVE EXISTING PIPE

PLUG & FILL W/FLOWABLE FILL

2-2GI

15" RCP-III

18" RCP-III

PROP. SBG

REMOVE DI

90+00

95+00

100+00

-L-

2GI

18" RCP

DIRECTION ONLY INLET/OUTLET NOT FOUND

TB JB w/SLAB LID

24" RCP-III

REMOVE DI

MTL

I-40 WBL 23.0' BST

I-40 EBL 23.0' BST

10.0' BST

5.0' BST

37.5'

TRENCHLESS INSTALLATION 30" WELDED STEEL CASING

PLUG & FILL W/ FLOWABLE FILL

HW
CONC HW

INV=748.7

JB w/MH

24" RCP-III

INV=746.8

FS ELEV=750.8'

-BL-10

LATERAL BASE DITCH SEE DETAIL A

LATERAL BASE DITCH SEE DETAIL D

60'WW & ISBW

EXISTING R/W

PROP. WW FENCE

LATERAL V DITCH SEE DETAIL C

BS

REMOVE 8' EXISTING PIPE

INV=719.3

STANDARD BASE DITCH SEE DETAIL S

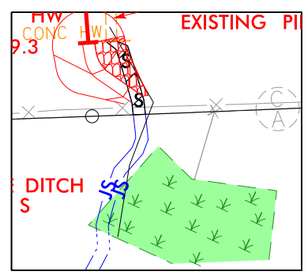
INSET B

FH

FH

HILLSDALE GROUP LLC
DB 186 PG 303
PB 10 PG 230

HILLSDALE GROUP LLC
DB 186 PG 303
PB 7 PG 66



INSET B

25 0 25 50

SCALE FOR INSETS

FOR -L- PROFILE SEE SHTS. 22-23

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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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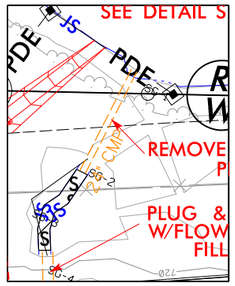
SHEET 11 OF 33

DENOTES IMPACTS IN SURFACE WATER

ENGLISH

NAD 83



INSET A

25 0 25 50

SCALE FOR INSETS

5

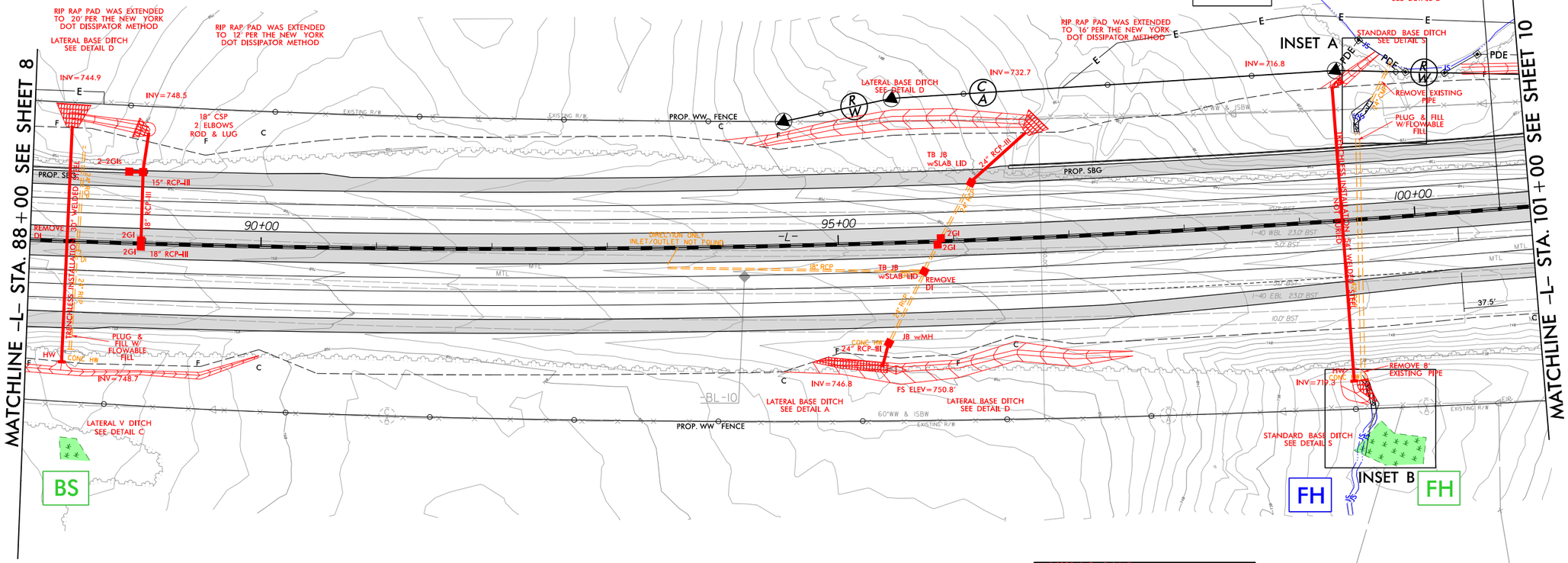
HILLSDALE GROUP LLC
DB 186 PG 303

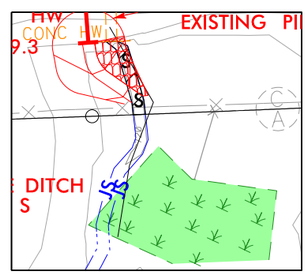
P2

NO WORK TO BE DONE IN POND

SITE 6

-L- CS Sta. 100+73.84





INSET B

25 0 25 50

SCALE FOR INSETS

HILLSDALE GROUP LLC
DB 186 PG 303
PB 10 PG 230

HILLSDALE GROUP LLC
DB 186 PG 303
PB 7 PG 66

FOR -L- PROFILE SEE SHTS. 22-23

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PROJECT REFERENCE NO.	SHEET NO.
I-0911A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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TWIN-CITY YOUTH SOCCER
DB 654 PG 364

NAD 83

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	119+50.00	127+00.00	LT

INSET A

25 0 25 50
SCALE FOR INSETS

SITE 7A

INSET A

MATCHLINE -L- STA. 114+00 SEE SHEET 10

MATCHLINE -L- STA. 127+00 SEE SHEET 12

-PED- PT Sta. 16+93.18
-PED- PC Sta. 15+29.09
END CONSTRUCTION
-PED- POT Sta. 15+20.11

HILLSDALE GROUP LLC
DB 186 PG 303

PROP. WW FENCE

INV=698.7
INV=695.0
INV=687.7

18" CSP
2 ELBOWS
ROD & LUG

15" RCP-III

PLUG & FILL W/FLOWABLE FILL

REMOVE EXIST. BRIDGE

REMOVE DI

115+00
120+00
125+00

24" RCP-III
36" RCP-III
30" CSP
2 ELBOWS
ROD & LUG

PIPE SYSTEM IS APPROXIMATE
DOES NOT MATCH 8.17415 PLANS

24" RCP

JB w/MH
GREU TL-3

GRADE TO DRAIN

INV=715.0 BDO

-BL-12

-PED- POT Sta.14+21.79=
-L- POT Sta.117+42.26

BERM DITCH
SEE DETAIL P

N 46° 35' 34.7" W

-PED- PT Sta. 12+48.23

BEGIN CONSTRUCTION
-PED- POT Sta.12+38.43

-PED- PC Sta. 10+41.99

-PED- POT Sta. 10+00.00

10.00
N 5° 07' 41.5" W

N 60° 07' 13.5" E

PREFORMED SCOUR HOLE
SEE DETAIL M
INV=700.0

LATERAL BASE DITCH
SEE DETAIL J

RIPRAP TRANSITION
SEE DETAIL Q

HISTORIC BOUNDARY LINE

BARN AGAIN, LLC
DB 846 PG 939
PB 10 PG 190

HILLSDALE GROUP LLC
DB 654 PG 381

AC

1A

-L- POT Sta.117+42.26 =
-PED- POT Sta.14+21.79
D = 73° 17' 11.9"

N 60° 07' 13.5" E

117+00

15+00

-PED-
N 46° 35' 34.7" W

BEGIN BRIDGE
-PED- POT STA.13+30.63

END BRIDGE
-PED- POT STA.15+12.96

PERMIT DRAWING
SHEET 12 OF 33

ENGLISH

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

FOR -L- PROFILE SEE SHT. 24
FOR -PED- PROFILE SEE SHT. 32

PLANS PREPARED BY :

RK&K

RUMMEL, KLEPPER & KAHL, LLP
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PROJECT REFERENCE NO.	SHEET NO.
I-0911A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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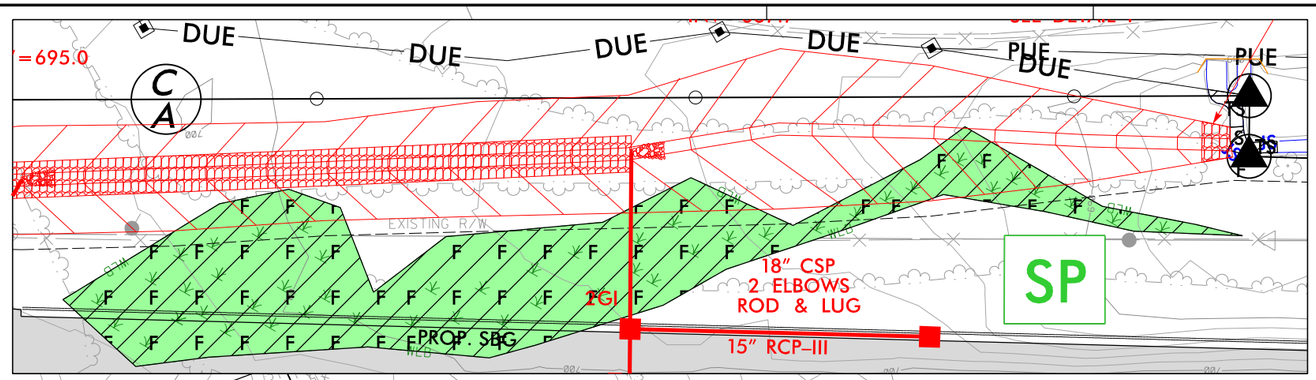
TWIN-CITY YOUTH SOCCER
DB 654 PG 364

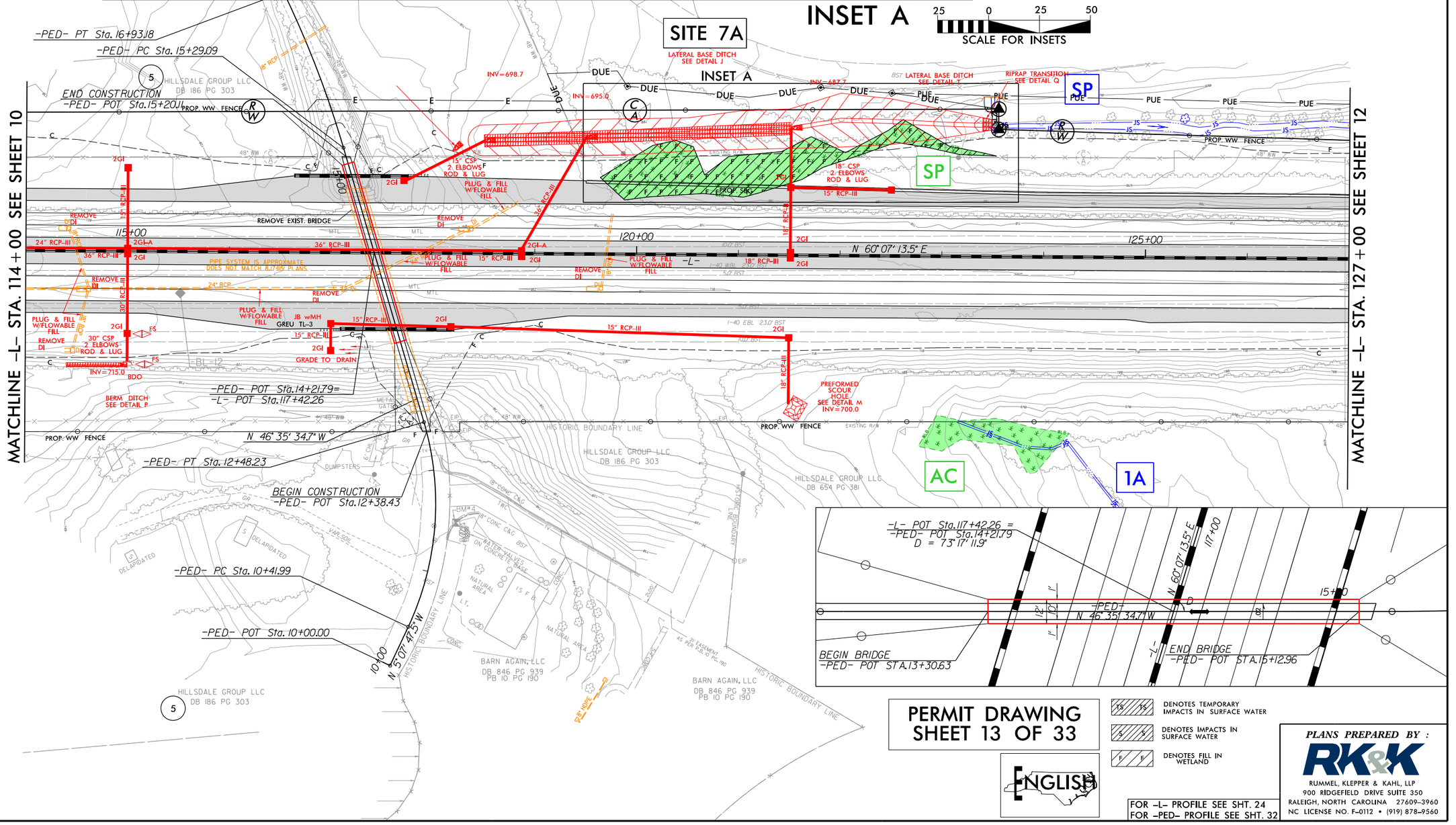
NAD 83

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	119+50.00	127+00.00	LT



INSET A

25 0 25 50
SCALE FOR INSETS



PERMIT DRAWING
SHEET 13 OF 33

ENGLISH

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

FOR -L- PROFILE SEE SHT. 24
FOR -PED- PROFILE SEE SHT. 32

PLANS PREPARED BY :
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6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-0911A	X-61

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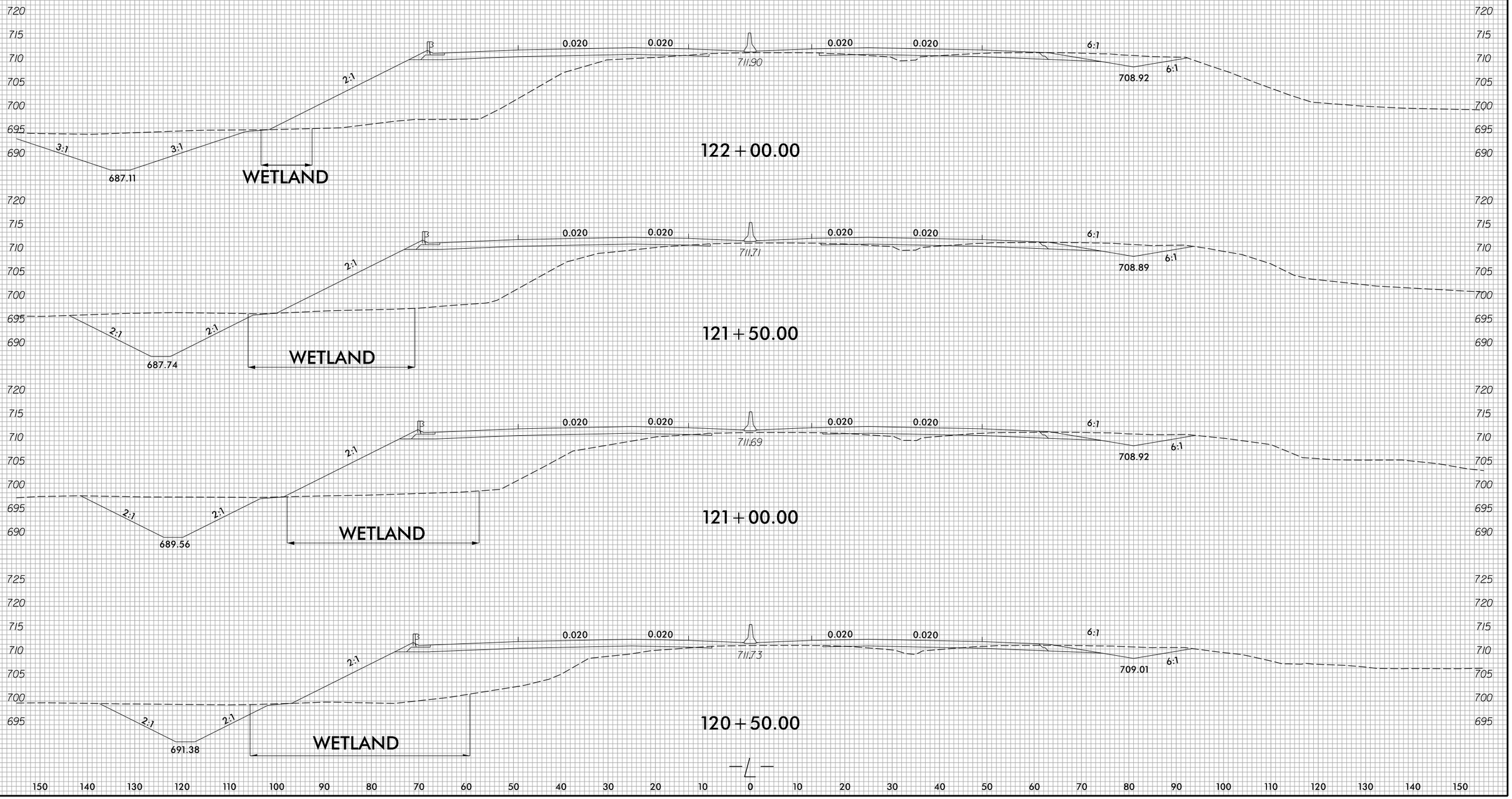
PERMIT DRAWING
SHEET 14 OF 33



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PERMIT DRAWING SHEET 15 OF 33

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83

ENGLISH

YADKIN RIVER

SITE 8

SITE 7B

SITE 7C

INSET A

INSET B

BEGIN APPROACH SLAB
-L- POT Sta.127+81.50

BEGIN BRIDGE
-L- POT Sta.128+05.50

TYPE B-77

-L- N 60° 07' 13.5" E

B-77

TWIN-CITY YOUTH SOCCER
DB 654 PG 364

TWIN-CITY YOUTH SOCCER
DB 654 PG 368

9

10

FAIR OAKS OF FORSYTH COUNTY
MASTER ASSOCIATION INC
DB 2811 PG 246
PB 54 PG 58

CITY OF WINSTON SALEM
DB 1703 PG 2130

FORSYTH COUNTY
DAVIE COUNTY

DAVIE COUNTY
FORSYTH COUNTY

25 0 25 50
SCALE FOR INSETS

MATCHLINE -L- STA. 127+00 SEE SHEET 11

MATCHLINE -L- STA. 140+00 SEE SHEET 13

PUE

15" CSP
2 ELBOWS
ROD & LUG

INV=682.5

RIPRAP TRANSITION
SEE DETAIL Q

LATERAL V DITCH
SEE DETAIL C

REMOVE PIPE & DI

PROP. SIGN TYPE B-77
TB 2GI

PROP. SBG

15" RCP III

2GI

130+00

-L- N 60° 07' 13.5" E

REMOVE EXIST. BRIDGES

CLASS II RIP RAP
PLACE TO ELEVATION
OF 699.0' (TYP.)

END FENCE
+91.83

PROP. WW FENCE

EXISTING R/W

ACCESS GRANTED AS PER
D.B. 734 PG. 736

INV=691.0
LATERAL V DITCH
SEE DETAIL C

TWINS WAY

48" WD RAIL

GR

EXISTING R/W

YADKIN VALLEY RD

WINSTON-SALEM/FORSYTH CO.

YADKIN RIVER

LIFT STATION

END FENCE

BEGIN FENCE

INV=682.8

18" RCP III

18" CSP
2 ELBOWS
ROD & LUG

TYPE B-77
TB 2GI

PROP. SBG
15" RCP III

2GI

140+00

REMOVE SYSTEM

PROP. SOUND BARRIER WALL

PROP. WW FENCE

INV=686.0

18" CMP

RIVER OAKS TWNHM
HOMEOWNERS ASSOC
DB 2048 PG 561
PB 41 PG 19

RIVER OAKS TWNHM
HOMEOWNERS ASSOC
DB 2029 PG 2732
PB 41 PG 19
PB 40 PG 101

END BRIDGE
-L- POT Sta.139+09.50

END APPROACH SLAB
-L- POT Sta.139+33.50

-L- 140+00 N 60° 07' 13.5" E

INSET B

25 0 25 50
SCALE FOR INSETS

FOR -L- PROFILE SEE SHTS. 24-25

PLANS PREPARED BY :
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PROJECT REFERENCE NO.	SHEET NO.
I-0911A	12

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
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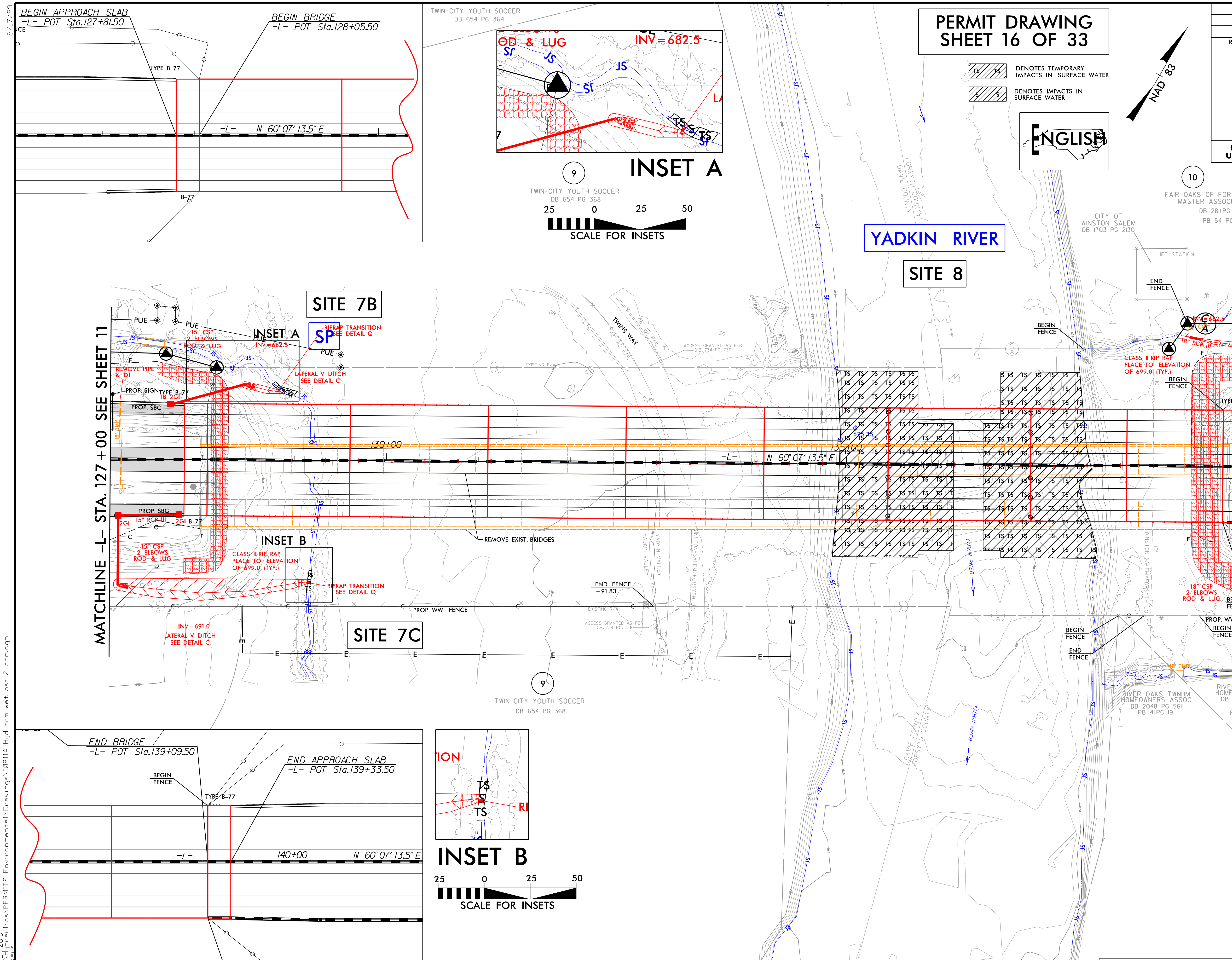

DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
NAD 83
ENGLISH
INSET A
SCALE FOR INSETS
25 0 25 50
INSET B
SITE 7B
SITE 7C
SITE 8
YADKIN RIVER
BEGIN APPROACH SLAB
-L- POT Sta.127+81.50
BEGIN BRIDGE
-L- POT Sta.128+05.50
END BRIDGE
-L- POT Sta.139+09.50
END APPROACH SLAB
-L- POT Sta.139+33.50
N 60° 07' 13.5" E
130+00
135+00
140+00
MATCHLINE -L- STA. 127+00 SEE SHEET 11
MATCHLINE -L- STA. 140+00 SEE SHEET 13
TWIN-CITY YOUTH SOCCER
DB 654 PG 364
DB 654 PG 368
FAIR OAKS OF FORSYTH COUNTY MASTER ASSOCIATION INC
DB 2811 PG 246
PB 54 PG 58
CITY OF WINSTON SALEM
DB 1703 PG 2130
RIVER OAKS TWNHM HOMEOWNERS ASSOC
DB 2048 PG 561
PB 41 PG 19
DB 2029 PG 2732
PB 40 PG 101
REMOVE EXIST. BRIDGES
CLASS II RIP RAP PLACE TO ELEVATION OF 699.0' (TYP.)
RIPRAP TRANSITION SEE DETAIL Q
LATERAL V DITCH SEE DETAIL C
15" CSP 2 ELBOWS ROD & LUG
18" CSP 2 ELBOWS ROD & LUG
INV=682.5
INV=682.8
INV=691.0
INV=686.0
PROP. SBG
PROP. WW FENCE
PROP. SOUND BARRIER WALL
REMOVE SYSTEM
REMOVE PIPE & DI
BEGIN FENCE
END FENCE
TWINS WAY

FOR -L- PROFILE SEE SHTS. 24-25

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-L-

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 17 OF 33

ENGLISH

770 760 750 740 730 720 710 700 690 680

108+00 109+00 110+00 111+00 112+00 113+00 114+00 115+00 116+00 117+00 118+00 119+00 120+00 121+00 122+00

SITE 1

-PED-

PROPOSED GRADE

EXISTING GROUND

PI = 118+30.00
EL = 711.77'
VC = 900'
K = 428
V > 80 mph

BM #4
-BL-STA. 112+79.00
226' RT O/S
-L- STA 118+24.36
264.78' RT O/S
ELEV. = 743.84'
CHISELED SQUARE IN THE TOP OF CONCRETE CURB. +/- 75' WEST OF THE NW CORNER OF THE LARGER OF THE BARNS IN BERMUDA RUN

(-)1.8000%

(+)0.3009%

BEGIN LAT. BASE DITCH LT
-L- STA. 118+50.00
EL = 698.65

END LAT. BASE DITCH LT
BEGIN LAT. BASE DITCH LT
-L- STA. 121+51.09
EL = 687.70

(-)13.6368%

(-)11.1965%

730 720 710 700 690 680 670 660 650 640

122+00 123+00 124+00 125+00 126+00 127+00 128+00 129+00 130+00 131+00 132+00 133+00 134+00 135+00 136+00

BEGIN BRIDGE
-L- Sta. 128+05.50

PI = 128+30.00
EL = 714.78'
VC = 210'
K = 629
V > 80 mph

PI = 131+80.00
EL = 717.00'
VC = 270'
K = 249
V = 70 mph

PROPOSED GRADE

EXISTING GROUND

(+)0.3009%

(+)0.6349%

(+)0.6349%

(-)0.4500%

SITE 2

TWINS WAY

100-YR WSE = 699.5'

50-YR WSE (DESIGN) = 697.9'

TEMP CONSTRUCTION CAUSEWAY 673.8'

TEMP PIER REMOVAL CAUSEWAY 673.8'

TEMP 54" PIPES

(-)11.1965%

END LAT. BASE DITCH LT
-L- STA. 123+50.00
EL = 685.32

BEGIN LAT. V DITCH RT
-L- STA. 127+09.00
EL = 691.00

(-)15.2899%

BEGIN LAT. V DITCH LT
-L- STA. 128+46.00
EL = 682.50

(-)4.0392%

END LAT. V DITCH RT
-L- STA. 129+16.00
EL = 680.05

END LAT. V DITCH LT
-L- STA. 128+97.00
EL = 680.44

BM #5
-BL-STA. 127+38.00
540' RT O/S
-L- STA 132+84.89
565.82' RT O/S
ELEV. = 690.68'
#5 REBAR WITH AN ALUMINUM CAP STAMPED "NCDOT BM5". LOCATED ON TWINS SOCCER COMPLEX. +/- 30' FROM EASTERN EDGE OF ROAD LEADING TO COMPLEX

FOR -L- PLAN SEE SHTS. 10-12

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SHEET 18 OF 33

-L-

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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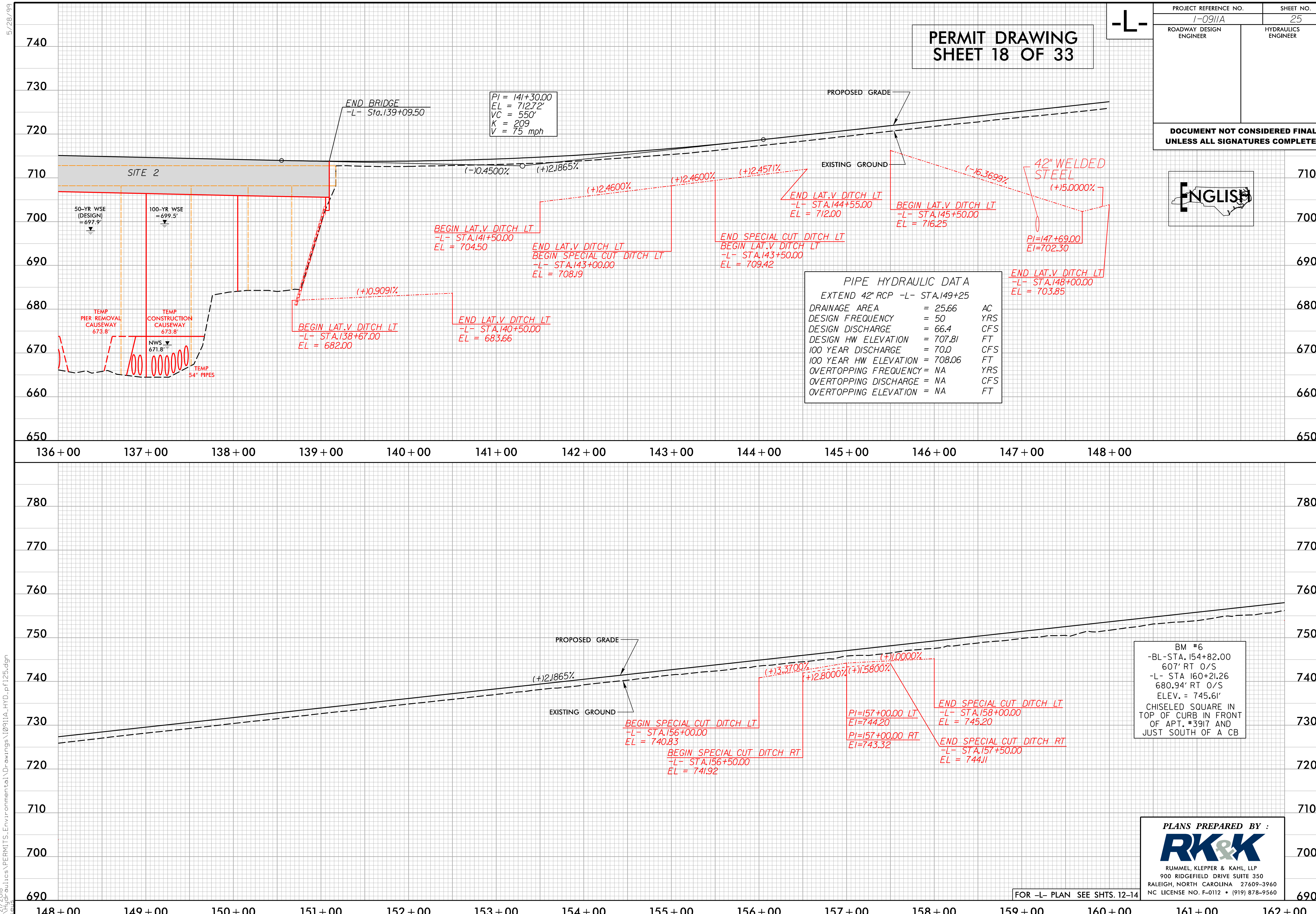
ENGLISH



PIPE HYDRAULIC DATA

EXTEND 42" RCP -L- STA.149+25

DRAINAGE AREA	= 25.66	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 66.4	CFS
DESIGN HW ELEVATION	= 707.81	FT
100 YEAR DISCHARGE	= 70.0	CFS
100 YEAR HW ELEVATION	= 708.06	FT
OVERTOPPING FREQUENCY	= NA	YRS
OVERTOPPING DISCHARGE	= NA	CFS
OVERTOPPING ELEVATION	= NA	FT

BM #6
-BL-STA. 154+82.00
607' RT O/S
-L- STA 160+21.26
680.94' RT O/S
ELEV. = 745.61'
CHISELED SQUARE IN TOP OF CURB IN FRONT OF APT. #3917 AND JUST SOUTH OF A CB

FOR -L- PLAN SEE SHTS. 12-14

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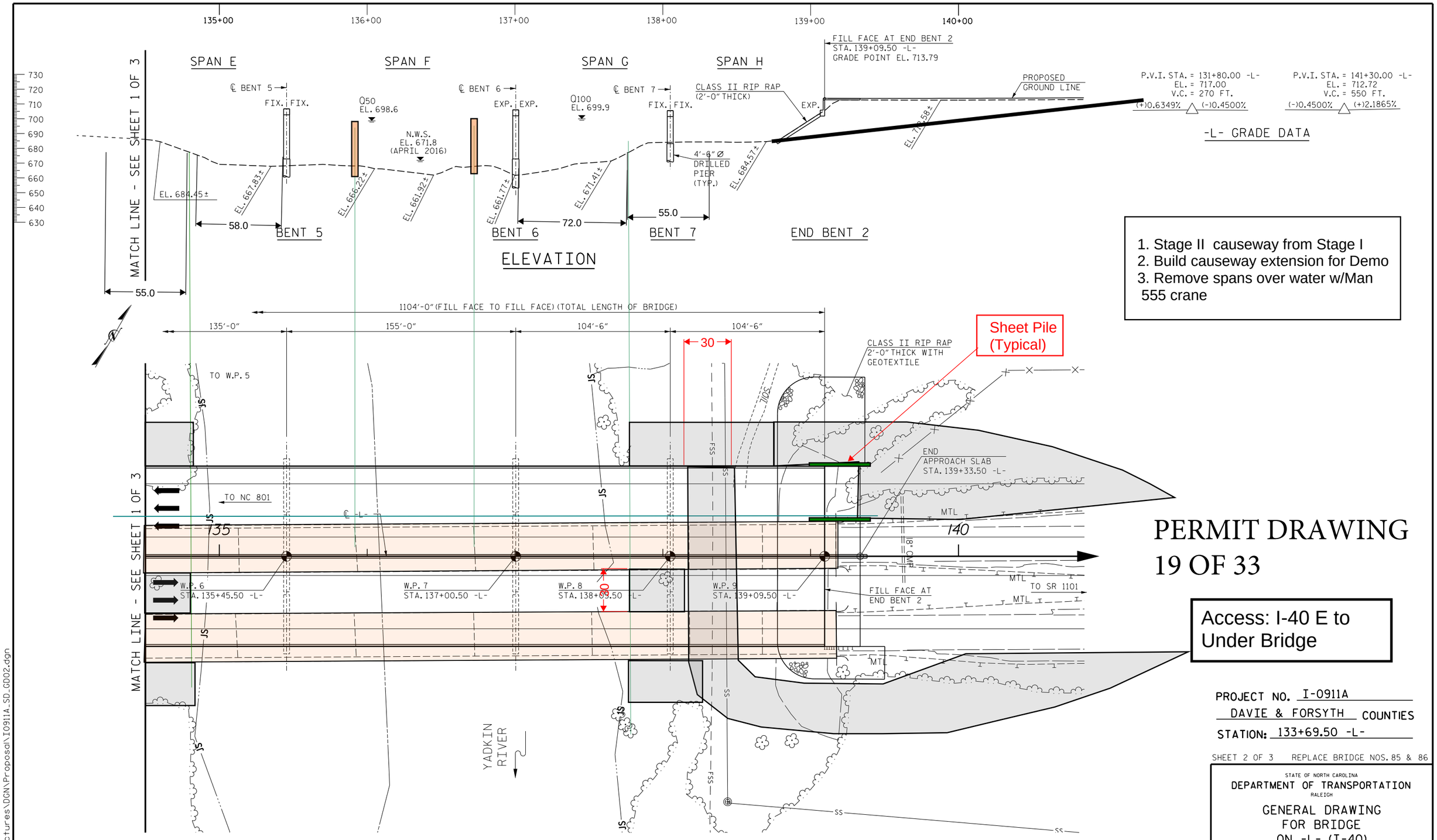

PLAN

(PILES NOT SHOWN FOR CLARITY)

PERMIT DRAWING
19 OF 33

Access: I-40 E to Under Bridge

PROJECT NO. I-0911A

DAVIE & FORSYTH COUNTIES

STATION: 133+69.50 -L-

SHEET 2 OF 3 REPLACE BRIDGE NOS. 85 & 86

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE
ON -L- (I-40)
OVER YADKIN RIVER
BETWEEN NC 801 AND SR 1101

DRAWN BY : B. A. HAAG DATE : JUN 2017
CHECKED BY : K. M. WING DATE : JUN 2017
DESIGN ENGINEER OF RECORD : K. M. WING DATE : JUN 2017

REVIEW PLANS
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FLATIRON
Blythe
a joint venture

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

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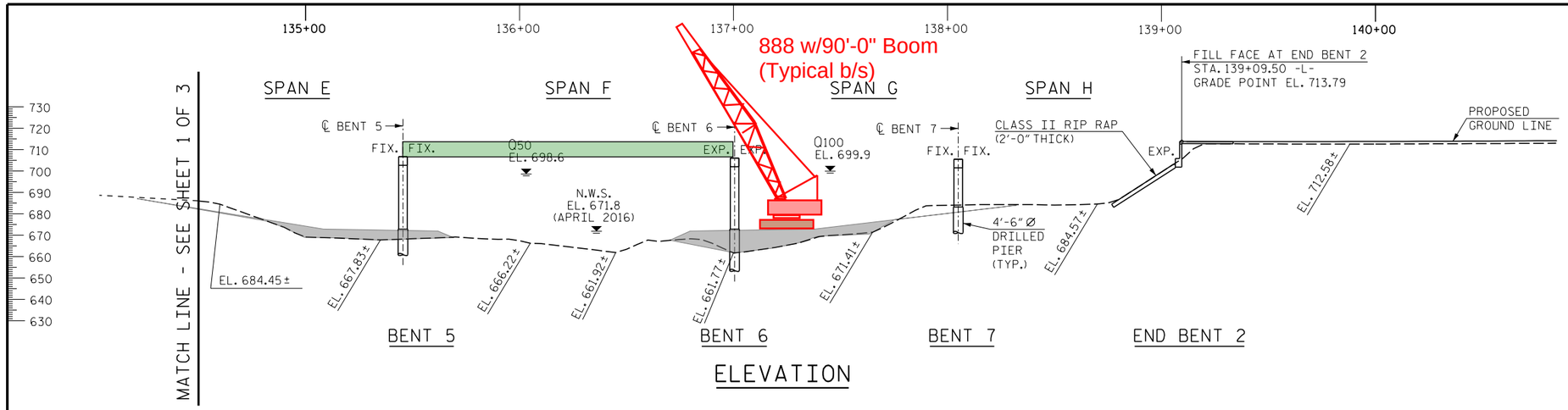
6/1/2017

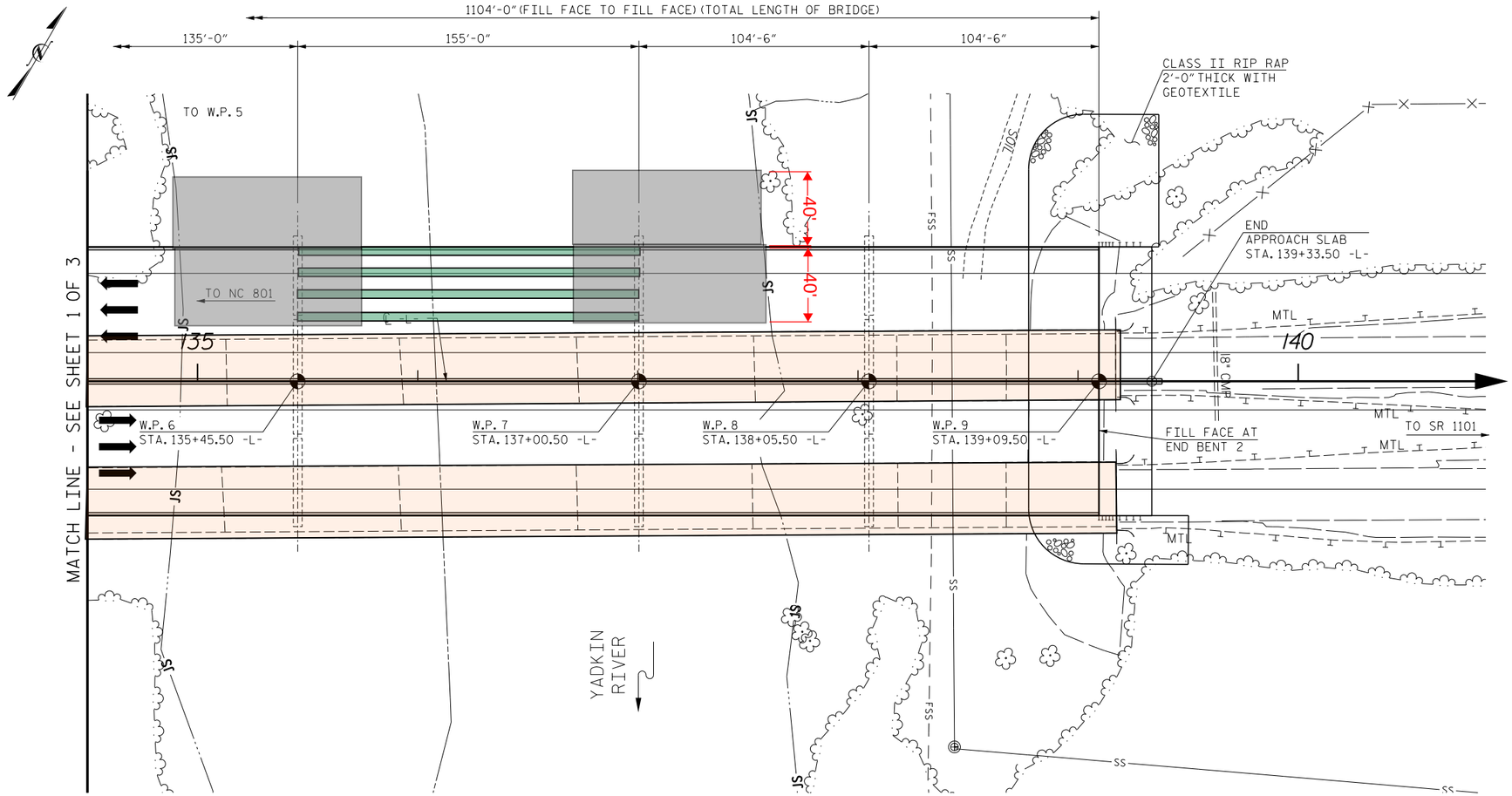


ELEVATION

P.V.I. STA. = 131+80.00 -L-
EL. = 717.00
V.C. = 270 FT.
(+)0.6349% (-)0.4500%

P.V.I. STA. = 141+30.00 -L-
EL. = 712.72
V.C. = 550 FT.
(-)0.4500% (+)2.1865%

-L- GRADE DATA



PLAN

(PILES NOT SHOWN FOR CLARITY)

PERMIT DRAWING
20 OF 33

Stage I
Construction

PROJECT NO. I-0911A
DAVIE & FORSYTH COUNTIES
STATION: 133+69.50 -L-

SHEET 2 OF 3 REPLACE BRIDGE NOS. 85 & 86

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE
ON -L- (I-40)
OVER YADKIN RIVER
BETWEEN NC 801 AND SR 1101

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

DRAWN BY : B. A. HAAG DATE : JUN 2017
CHECKED BY : K. M. WING DATE : JUN 2017
DESIGN ENGINEER OF RECORD : K. M. WING DATE : JUN 2017

REVIEW PLANS
DO NOT USE FOR CONSTRUCTION

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FLATIRON a joint venture

Blythe

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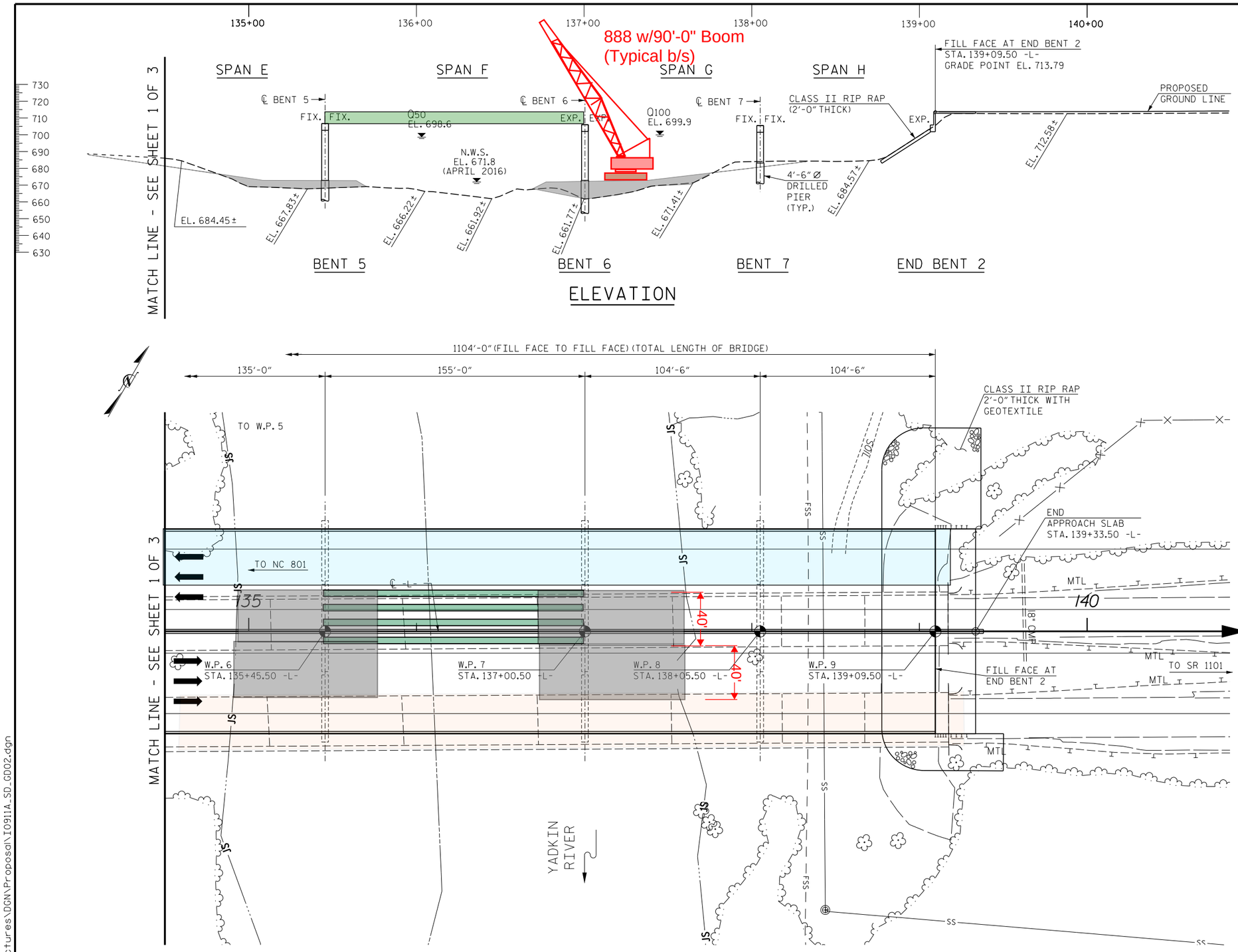

ELEVATION

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EL. = 717.00
V.C. = 270 FT.
(+)0.6349% (-)0.4500%

P.V.I. STA. = 141+30.00 -L-
EL. = 712.72
V.C. = 550 FT.
(-)0.4500% (+)2.1865%

-L- GRADE DATA

PLAN

(PILES NOT SHOWN FOR CLARITY)

PERMIT DRAWING
21 OF 33

Stage II Construction

PROJECT NO. I-0911A
DAVIE & FORSYTH COUNTIES
STATION: 133+69.50 -L-

SHEET 2 OF 3 REPLACE BRIDGE NOS. 85 & 86

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE
ON -L- (I-40)
OVER YADKIN RIVER
BETWEEN NC 801 AND SR 1101

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

DRAWN BY : B. A. HAAG DATE : JUN 2017
CHECKED BY : K. M. WING DATE : JUN 2017
DESIGN ENGINEER OF RECORD : K. M. WING DATE : JUN 2017

REVIEW PLANS
DO NOT USE FOR CONSTRUCTION

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FLATIRON
Blythe
a joint venture

bhaag
6/1/2017
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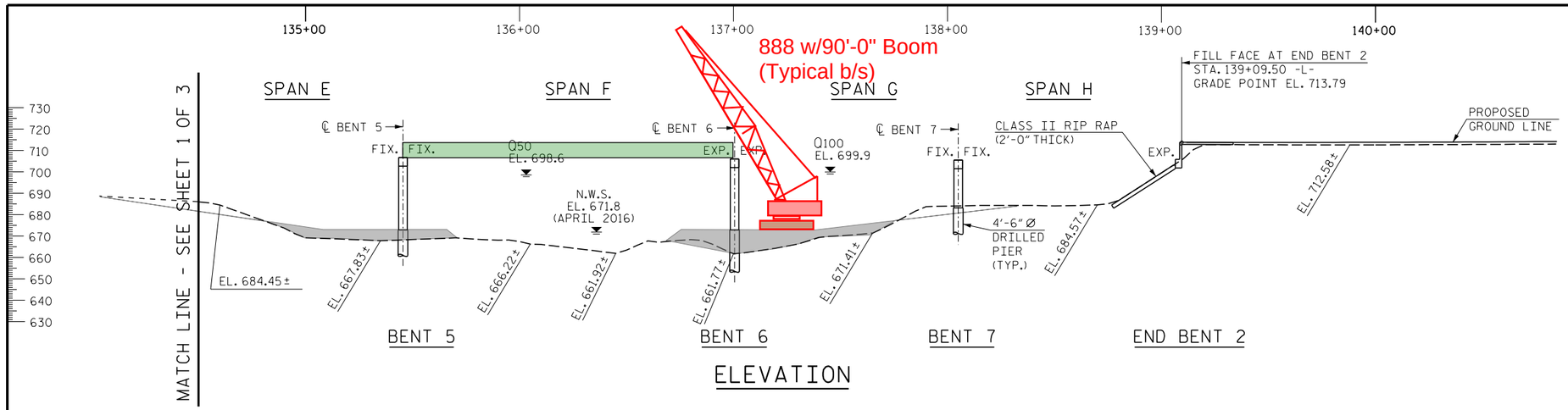
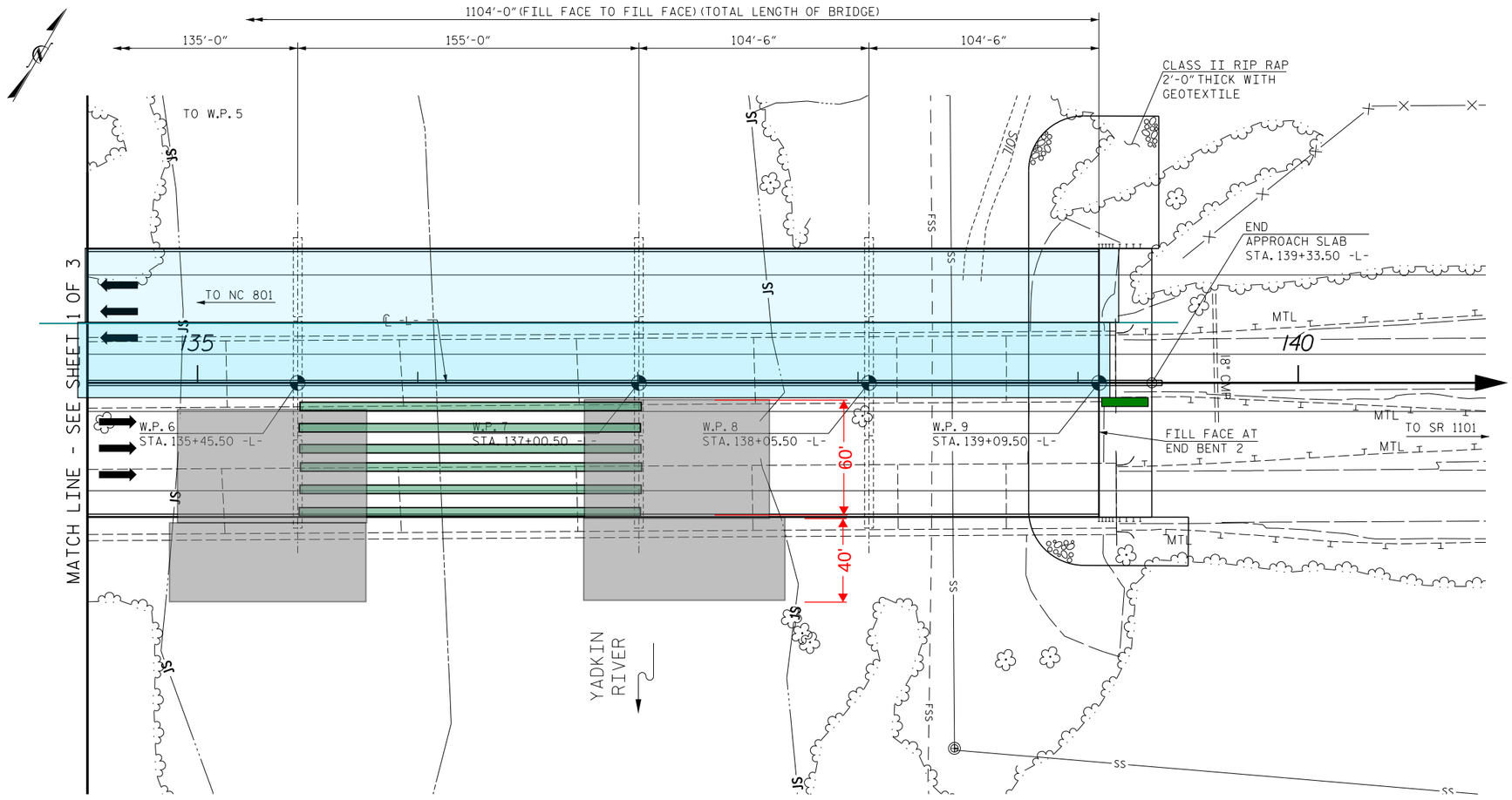


ELEVATION

P.V.I. STA. = 131+80.00 -L-
EL. = 717.00
V.C. = 270 FT.
(+)0.6349% (-)0.4500%

P.V.I. STA. = 141+30.00 -L-
EL. = 712.72
V.C. = 550 FT.
(-)0.4500% (+)2.1865%

-L- GRADE DATA



PLAN

(PILES NOT SHOWN FOR CLARITY)

PERMIT DRAWING
22 OF 33

Stage III Construction

PROJECT NO. I-0911A
DAVIE & FORSYTH COUNTIES
STATION: 133+69.50 -L-

SHEET 2 OF 3 REPLACE BRIDGE NOS. 85 & 86

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE
ON -L- (I-40)
OVER YADKIN RIVER
BETWEEN NC 801 AND SR 1101

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

DRAWN BY : B. A. HAAG DATE : JUN 2017
CHECKED BY : K. M. WING DATE : JUN 2017
DESIGN ENGINEER OF RECORD : K. M. WING DATE : JUN 2017

REVIEW PLANS
DO NOT USE FOR CONSTRUCTION

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

FLATIRON
Blythe
a joint venture

bhaag
6/1/2017
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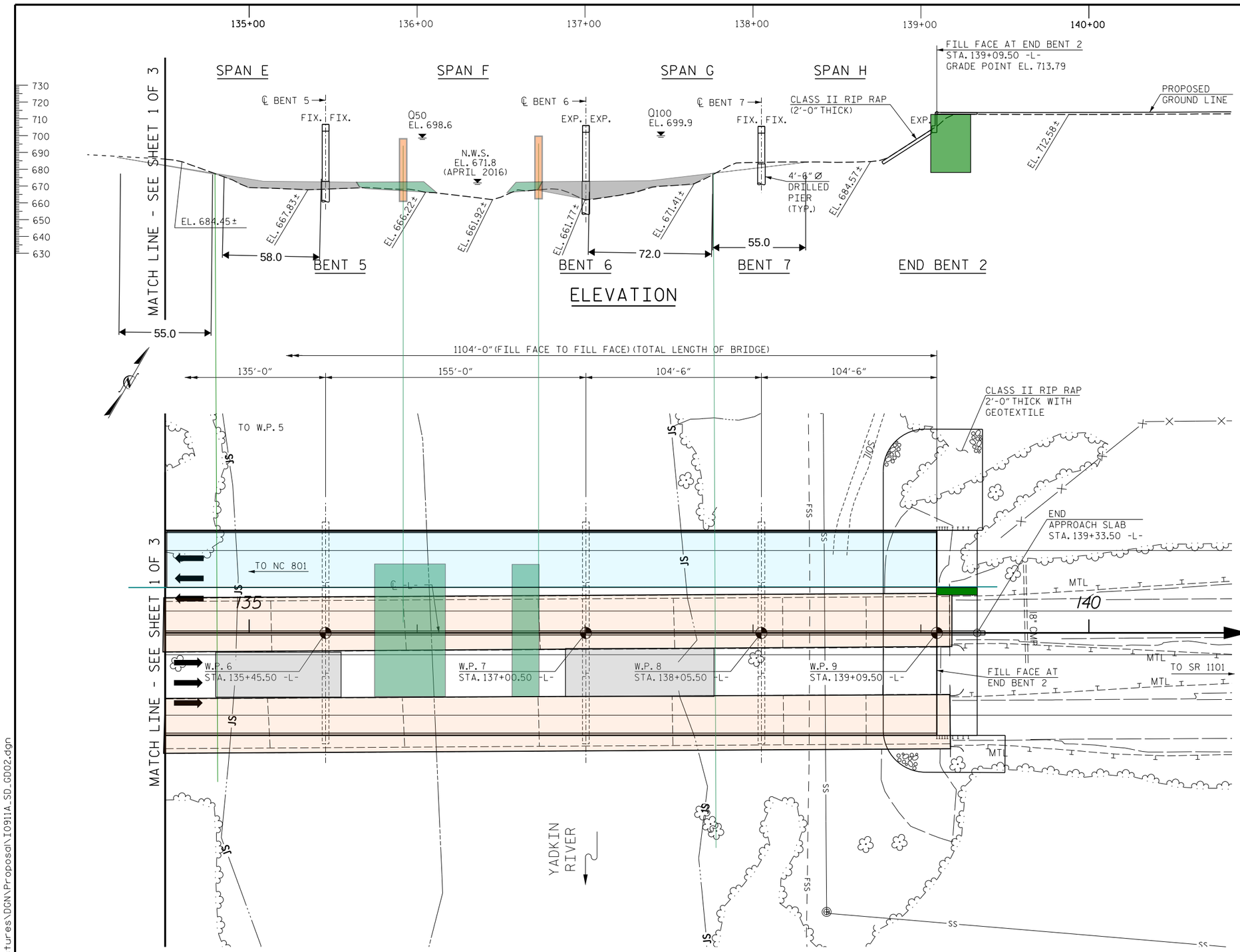

P.V.I. STA. = 131+80.00 -L-
EL. = 717.00
V.C. = 270 FT.
(+)0.6349% (-)0.4500%

P.V.I. STA. = 141+30.00 -L-
EL. = 712.72
V.C. = 550 FT.
(-)0.4500% (+)2.1865%

-L- GRADE DATA

1. Build Stage II causeway
2. Build causeway extension for Demo
3. Remove spans over water w/Man 555 crane

PERMIT DRAWING
23 OF 33

Stage I Demo

PROJECT NO. I-0911A
DAVIE & FORSYTH COUNTIES
STATION: 133+69.50 -L-

SHEET 2 OF 3 REPLACE BRIDGE NOS. 85 & 86

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE
ON -L- (I-40)
OVER YADKIN RIVER
BETWEEN NC 801 AND SR 1101

DRAWN BY : B. A. HAAG DATE : JUN 2017
CHECKED BY : K. M. WING DATE : JUN 2017
DESIGN ENGINEER OF RECORD : K. M. WING DATE : JUN 2017

REVIEW PLANS
DO NOT USE FOR CONSTRUCTION

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

FLATIRON a joint venture
Blythe

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

bhaag
6/1/2017
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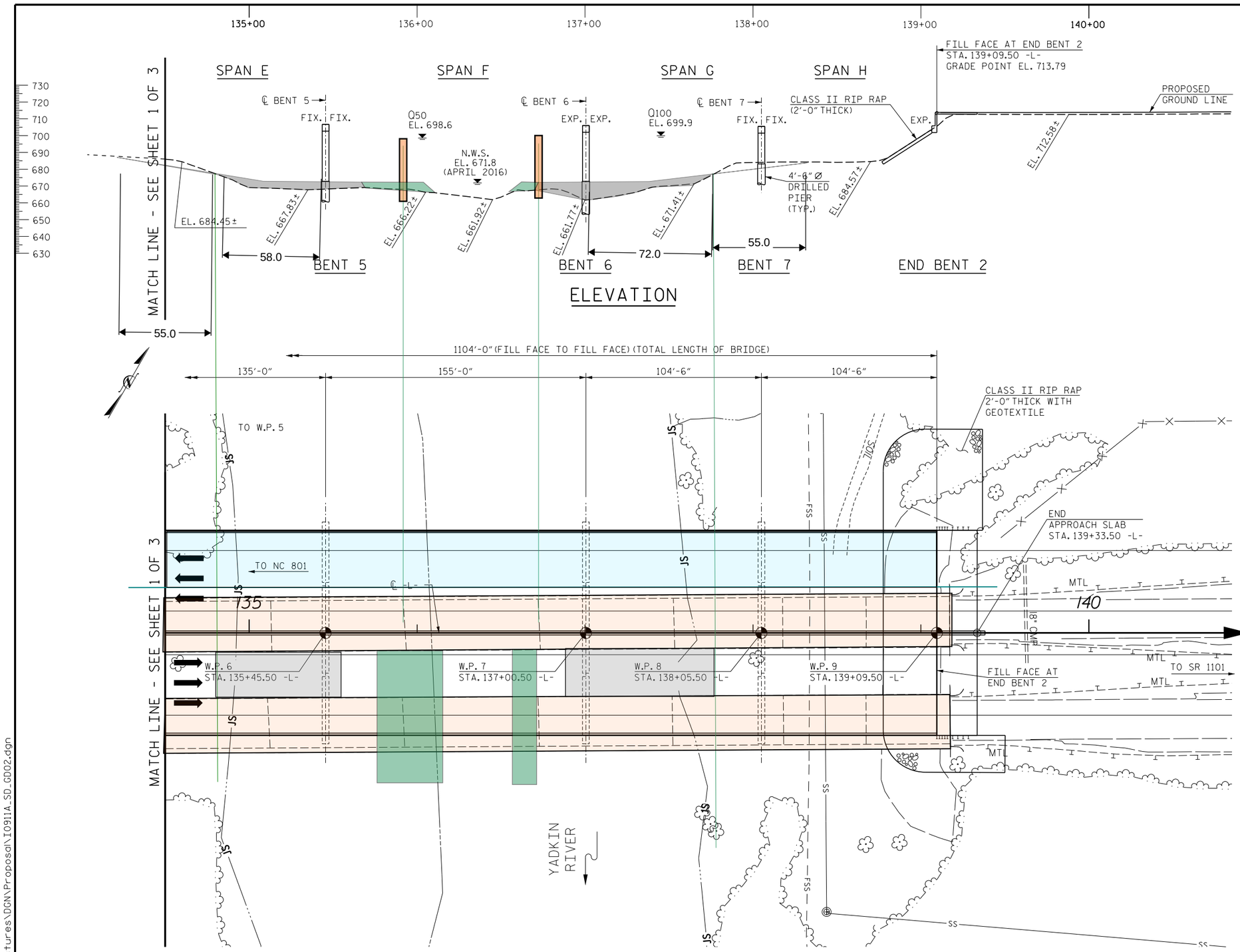

ELEVATION

P.V.I. STA. = 131+80.00 -L-
EL. = 717.00
V.C. = 270 FT.
(+)0.6349% (-)0.4500%

P.V.I. STA. = 141+30.00 -L-
EL. = 712.72
V.C. = 550 FT.
(-)0.4500% (+)2.1865%

-L- GRADE DATA

1. Stage II causeway from Stage I
2. Build causeway extension for Demo
3. Remove spans over water w/Man 555 crane

PLAN

(PILES NOT SHOWN FOR CLARITY)

PERMIT DRAWING
24 OF 33

Stage II Demo

PROJECT NO. I-0911A
DAVIE & FORSYTH COUNTIES
STATION: 133+69.50 -L-

SHEET 2 OF 3 REPLACE BRIDGE NOS. 85 & 86

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE
ON -L- (I-40)
OVER YADKIN RIVER
BETWEEN NC 801 AND SR 1101

DRAWN BY : B. A. HAAG DATE : JUN 2017
CHECKED BY : K. M. WING DATE : JUN 2017
DESIGN ENGINEER OF RECORD : K. M. WING DATE : JUN 2017

REVIEW PLANS
DO NOT USE FOR CONSTRUCTION

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

FLATIRON a joint venture

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

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bhaag
6/1/2017

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	13
R/W 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 25 OF 33

NAD 83

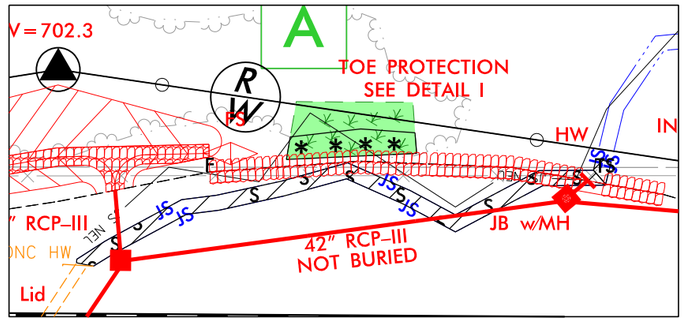
ENGLISH

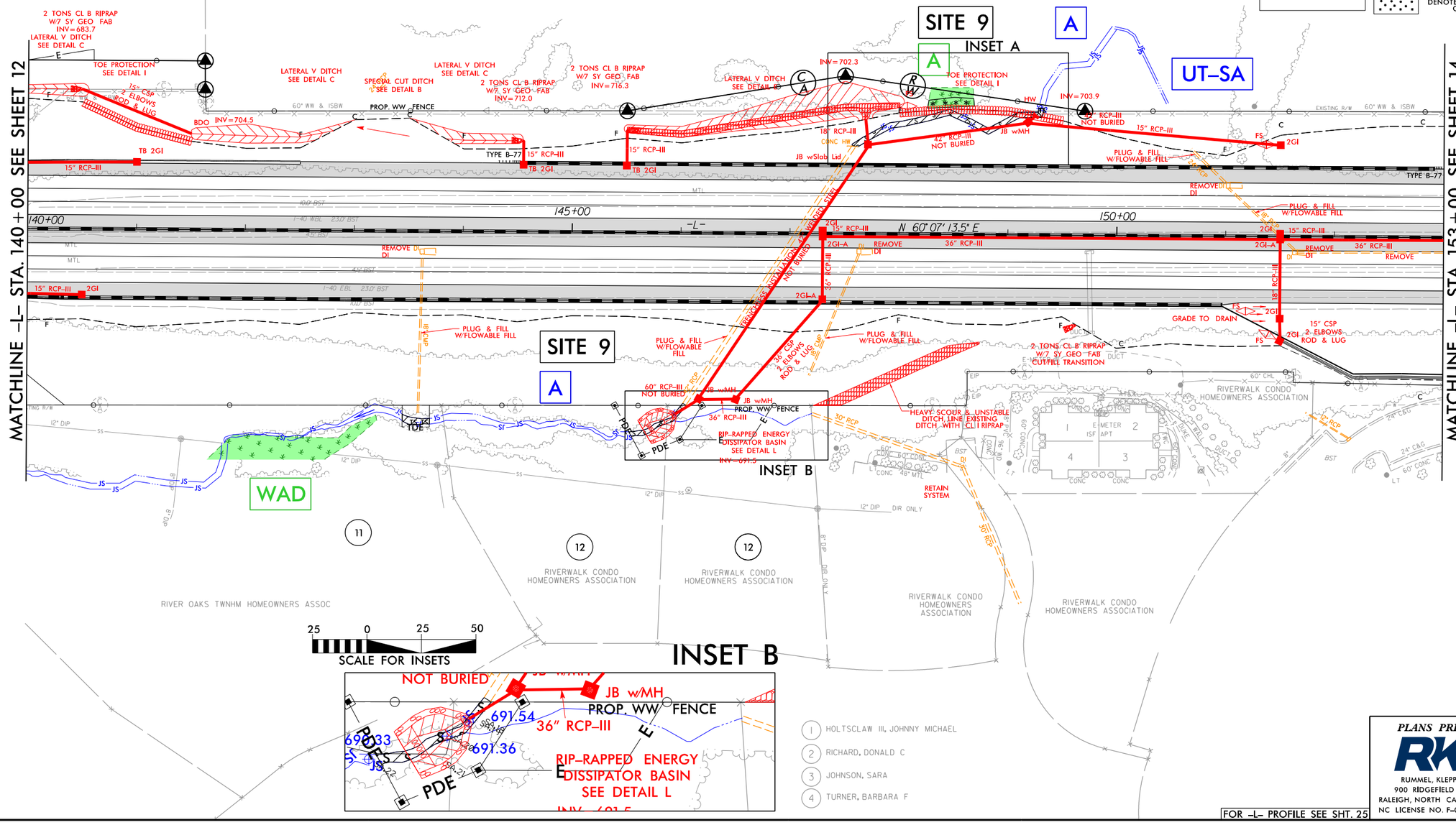
JS JS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

INSET A





INSET B

1 HOLTSCLAW III, JOHNNY MICHAEL
2 RICHARD, DONALD C
3 JOHNSON, SARA
4 TURNER, BARBARA F

FOR -L- PROFILE SEE SHT. 25

PLANS PREPARED BY :
RK&K
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900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

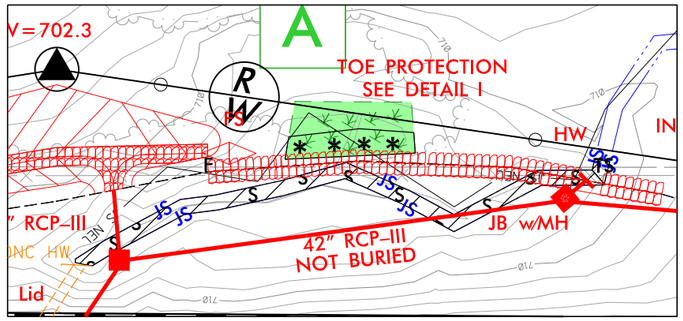
PERMIT DRAWING SHEET 26 OF 33

NAD 83

ENGLISH

- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES MECHANIZED CLEARING

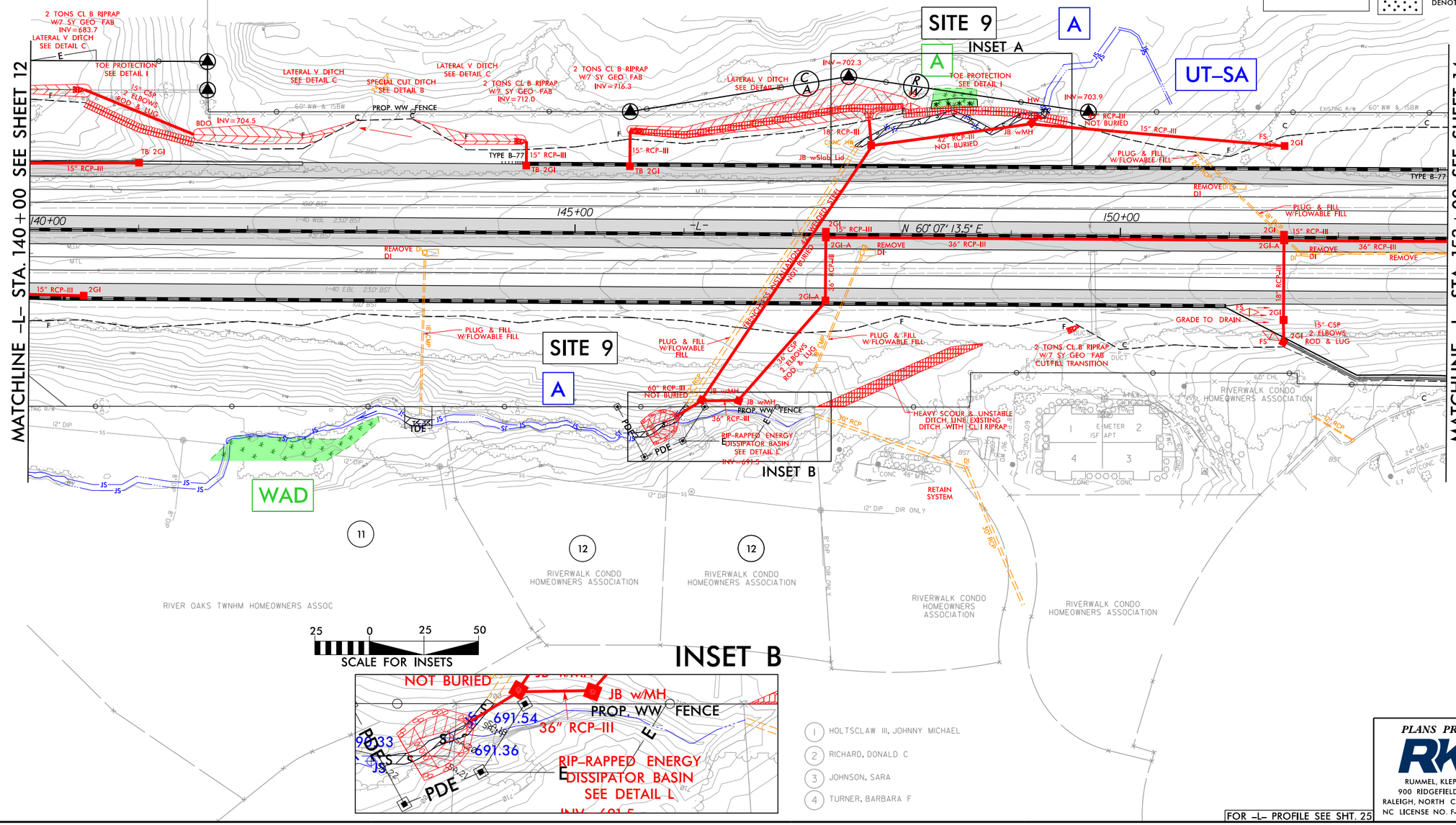
INSET A



CITY OF WINSTON SALEM

10

FAIR OAKS OF FORSYTH COUNTY MASTER ASSOCIATION INC



FOR -L- PROFILE SEE SHT. 25

PLANS PREPARED BY :
RK&K
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RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

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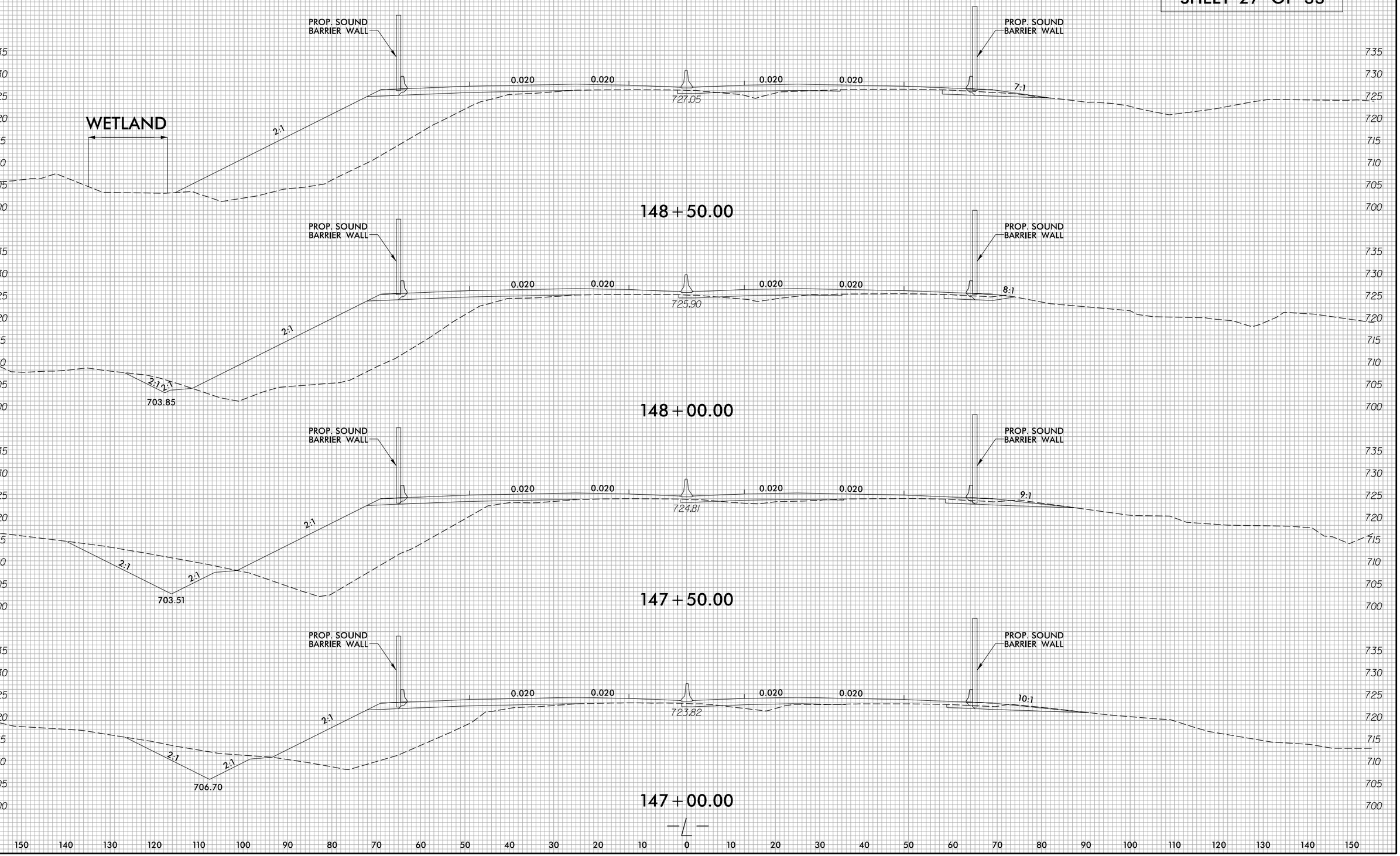
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-0911A	X-78

PERMIT DRAWING
SHEET 27 OF 33

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



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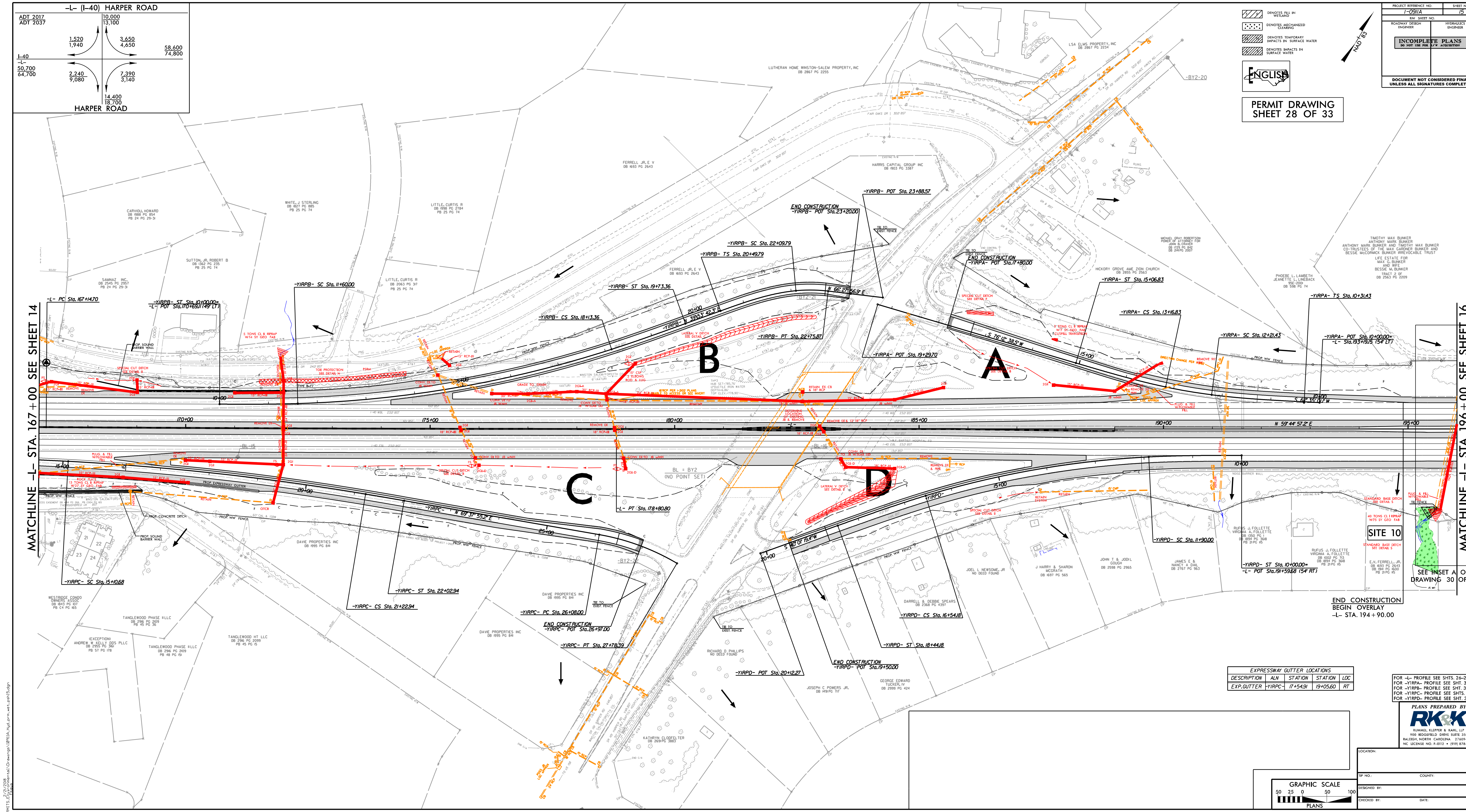
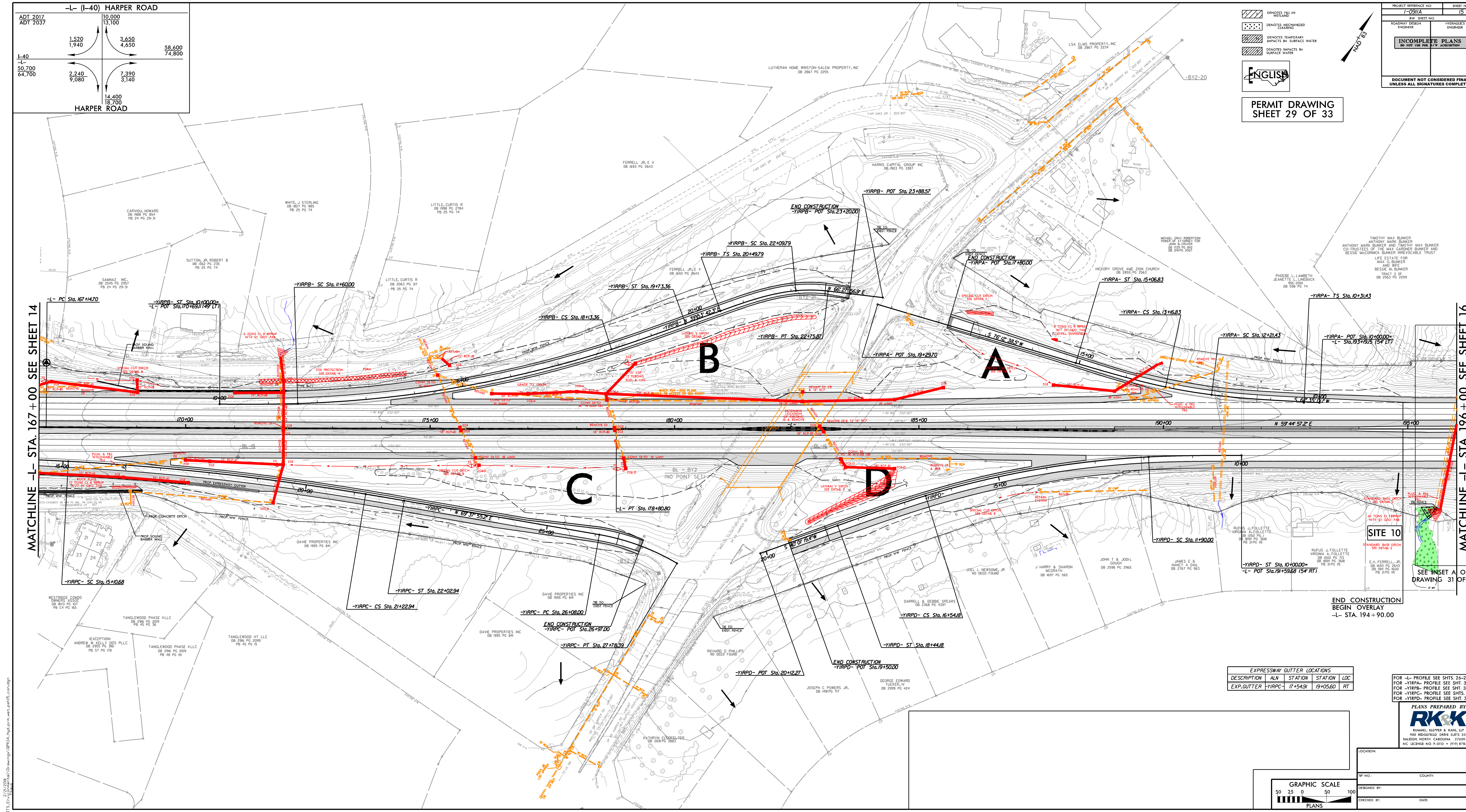


-L- (I-40) HARPER ROAD
ADT 2017
ADT 2037
10,000
13,100
1,520
1,940
3,650
4,650
58,600
74,800
I-40
-L-
50,700
64,700
2,240
9,080
7,390
3,140
14,400
18,700
HARPER ROAD
ENGLISH
PERMIT DRAWING
SHEET 28 OF 33
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
I-0911A
15
MATCHLINE -L- STA. 167+00 SEE SHEET 14
MATCHLINE -L- STA. 196+00 SEE SHEET 16
A
B
C
D
SITE 10
SEE INSET A ON DRAWING 30 OF 33
END CONSTRUCTION
BEGIN OVERLAY
-L- STA. 194+90.00
-YIRPB- SC Sta. 11+60.00
-YIRPB- POT Sta. 23+88.57
END CONSTRUCTION -YIRPB- POT Sta. 23+20.00
-YIRPB- SC Sta. 22+09.79
-YIRPB- TS Sta. 20+49.79
-YIRPB- ST Sta. 19+73.36
-YIRPB- CS Sta. 18+13.36
-YIRPB- PT Sta. 22+75.87
-YIRPA- POT Sta. 19+29.70
-YIRPA- ST Sta. 15+06.83
-YIRPA- CS Sta. 13+16.83
-YIRPA- SC Sta. 12+21.43
-YIRPA- TS Sta. 10+31.43
-L- PC Sta. 167+14.70
-YIRPC- SC Sta. 15+10.68
-YIRPC- CS Sta. 21+22.94
-YIRPC- ST Sta. 22+02.94
-YIRPC- PC Sta. 26+08.00
END CONSTRUCTION -YIRPC- POT Sta. 26+97.00
-YIRPC- PT Sta. 27+78.39
-L- PT Sta. 178+80.80
-YIRPD- POT Sta. 20+12.27
END CONSTRUCTION -YIRPD- POT Sta. 19+50.00
-YIRPD- ST Sta. 18+44.18
-YIRPD- CS Sta. 16+54.18
-YIRPD- SC Sta. 11+90.00
170+00
175+00
180+00
185+00
190+00
195+00
EXPRESSWAY GUTTER LOCATIONS
DESCRIPTION | ALN | STATION | STATION | LOC
EXP. GUTTER | -YIRPC- | 17+54.91 | 19+05.60 | RT
FOR -L- PROFILE SEE SHTS. 26-27
FOR -YIRPA- PROFILE SEE SHT. 30
FOR -YIRPB- PROFILE SEE SHT. 31
FOR -YIRPC- PROFILE SEE SHTS. 31-32
FOR -YIRPD- PROFILE SEE SHT. 32
PLANS PREPARED BY :
RK&K
GRAPHIC SCALE
50 25 0 50 100
PLANS

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



EXPRESSWAY GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
EXP.GUTTER	-Y1RPC-	17+54.91	19+05.60	RT

FOR -L- PROFILE SEE SHTS. 26-27
FOR -Y1RPA- PROFILE SEE SHT. 30
FOR -Y1RPB- PROFILE SEE SHT. 31
FOR -Y1RPC- PROFILE SEE SHTS. 31-32
FOR -Y1RPD- PROFILE SEE SHT. 32

PLANS PREPARED BY :
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900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

PROJECT REFERENCE NO. I-0911A | SHEET NO. 16

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

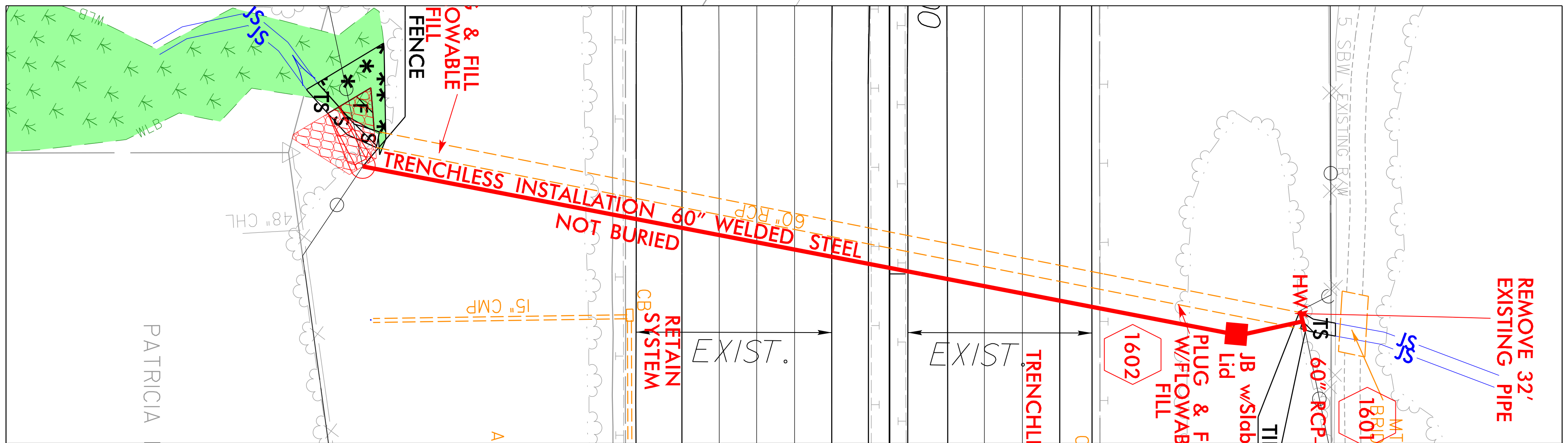
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER

NAD 83

ENGLISH

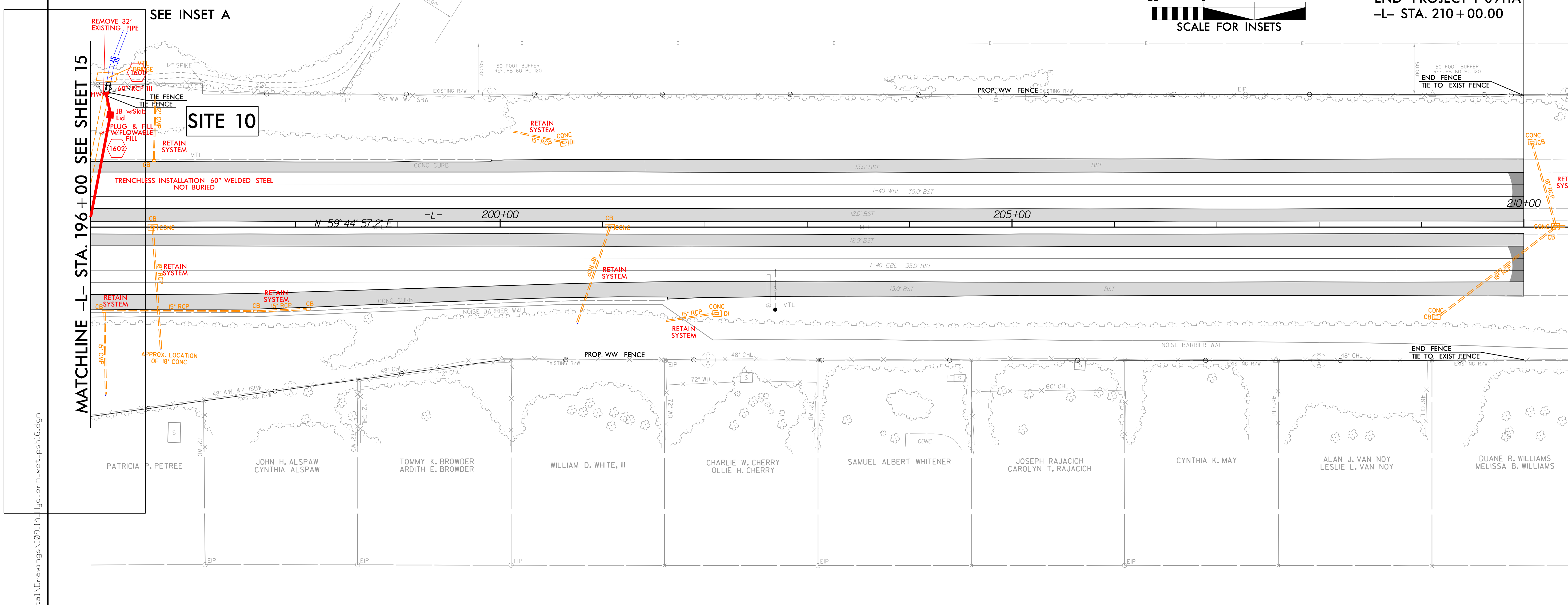
PERMIT DRAWING SHEET 30 OF 33



INSET A

SCALE FOR INSETS 25 0 25 50

END OVERLAY
END PROJECT I-0911A
-L- STA. 210+00.00



FOR -L- PROFILE SEE SHT. 27

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

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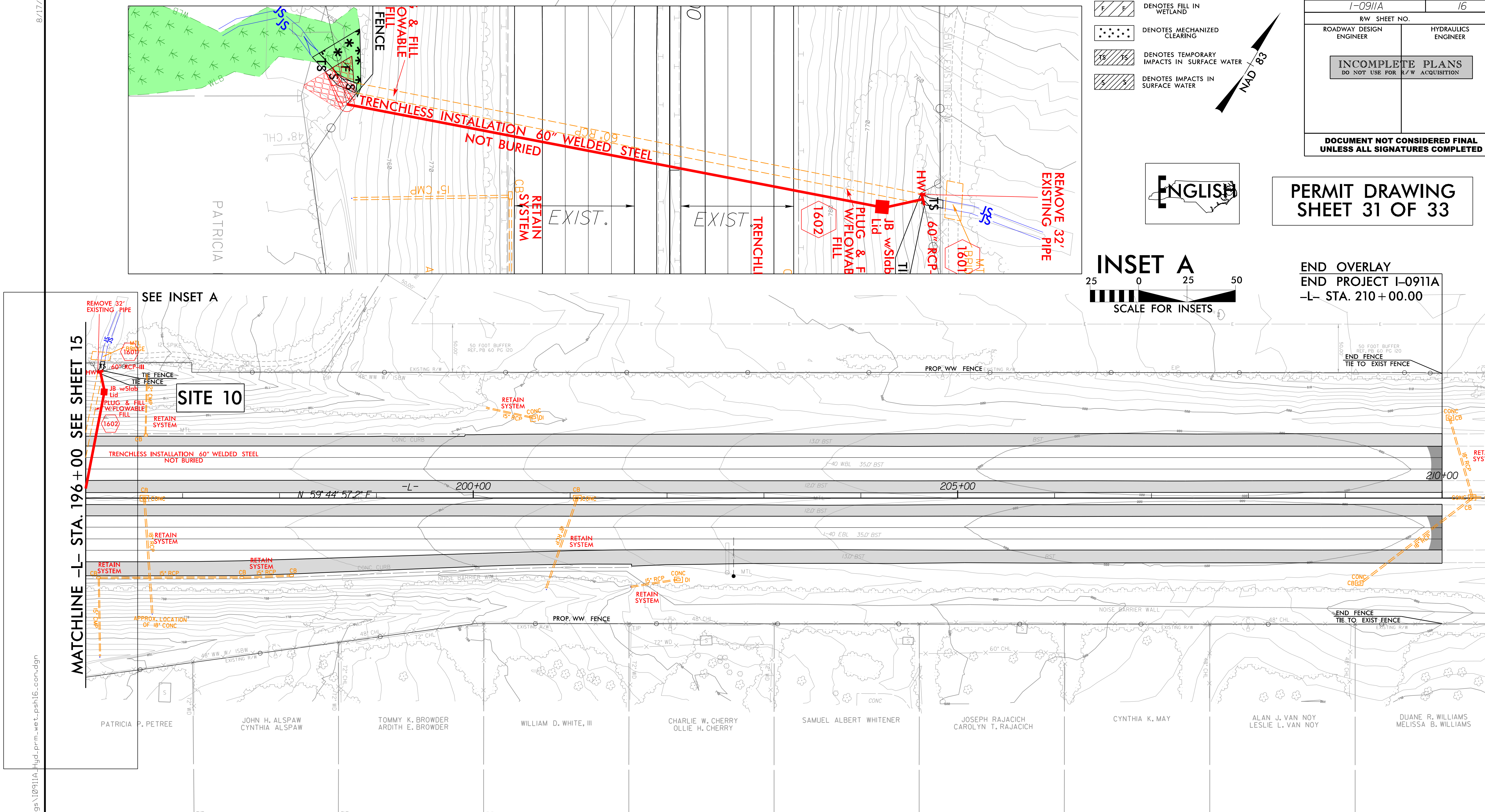

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	16

R/W 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 31 OF 33

FOR -L- PROFILE SEE SHT. 27

PLANS PREPARED BY :
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NC LICENSE NO. F-0112 • (919) 878-9560

8/17/99

2/21/2018
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5/14/99

PROJECT REFERENCE NO.	SHEET NO.

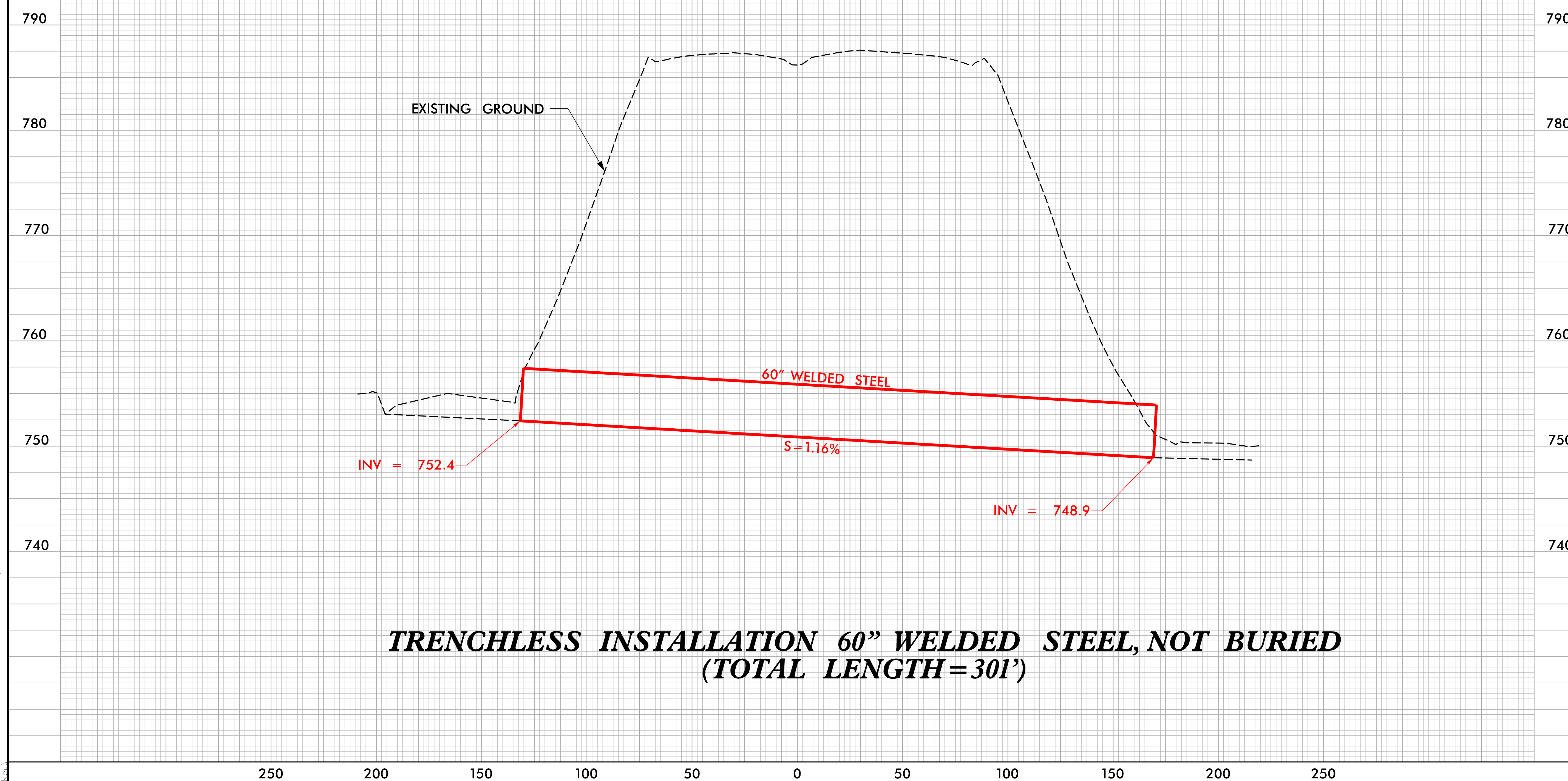
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 32 OF 33

SITE 10
-L- STA. 195+98



TRENCHLESS INSTALLATION 60" WELDED STEEL, NOT BURIED
(TOTAL LENGTH=301')

2/21/2018
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WETLAND AND SURACE WATER IMPACTS 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	-L- 46+35 TO 46+58 RT	ROADWAY FILL						< 0.01		41		
2	-L- 66+89 TO 71+75 LT & RT	ROADWAY FILL						0.04	< 0.01	374	30	
3	-L- 67+30 TO 68+07 RT	ROADWAY FILL						< 0.01		84		
4	-L- 84+03 TO 84+72 LT & RT	ROADWAY FILL						< 0.01		57		
5	-L- 84+11 TO 84+62 RT	ROADWAY FILL	0.01					< 0.01		19		
6	-L- 99+44 TO 99+71 LT & RT	ROADWAY FILL & DITCH						< 0.01		57		
7A	-L- 119+64 TO 123+66 LT	BANK STABILIZATION	0.23					< 0.01	< 0.01	9	21	
7B	-L- 128+75 TO 129+03 LT	BANK STABILIZATION						< 0.01	< 0.01	6	21	
7C	-L- 129+14 TO 129+20 RT	BANK STABILIZATION						< 0.01	< 0.01	4	20	
8	-L- 134+87 TO 137+72	BRIDGE							1.01		144	
9	-L- 145+53 TO 149+33 LT & RT	ROADWAY FILL				< 0.01		0.03	< 0.01	244	31	
10	-L- 195+27 TO 196+20 LT & RT	60" WS	< 0.01			< 0.01		< 0.01	< 0.01	17	21	
TOTALS*:			0.24			0.01		0.09	1.03	912	288	0

*Rounded totals are sum of actual impacts

NOTES:
Site 8 has 14 proposed bridge piers with a diameter of 4.5' for a total area of 222.7 sf
Yadkin River to never be blocked more that 50% at any time during construction.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
February 2018
DAVIE & FORSYTH
I-0911A

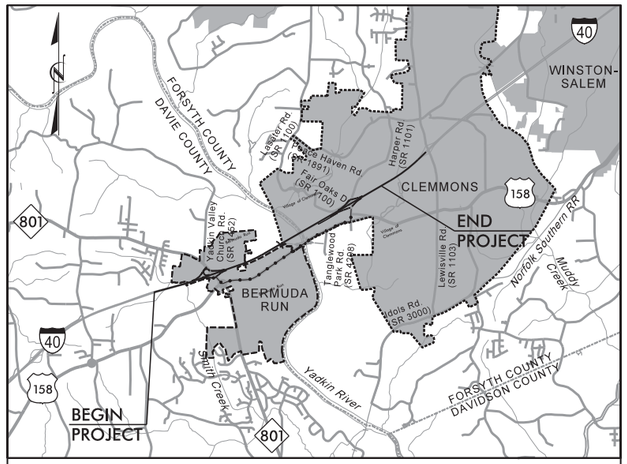
Revised 2016 09 09

09/08/99

TIP PROJECT: I-0911A

CONTRACT: C203965

See Sheet 1-B For Symbology



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

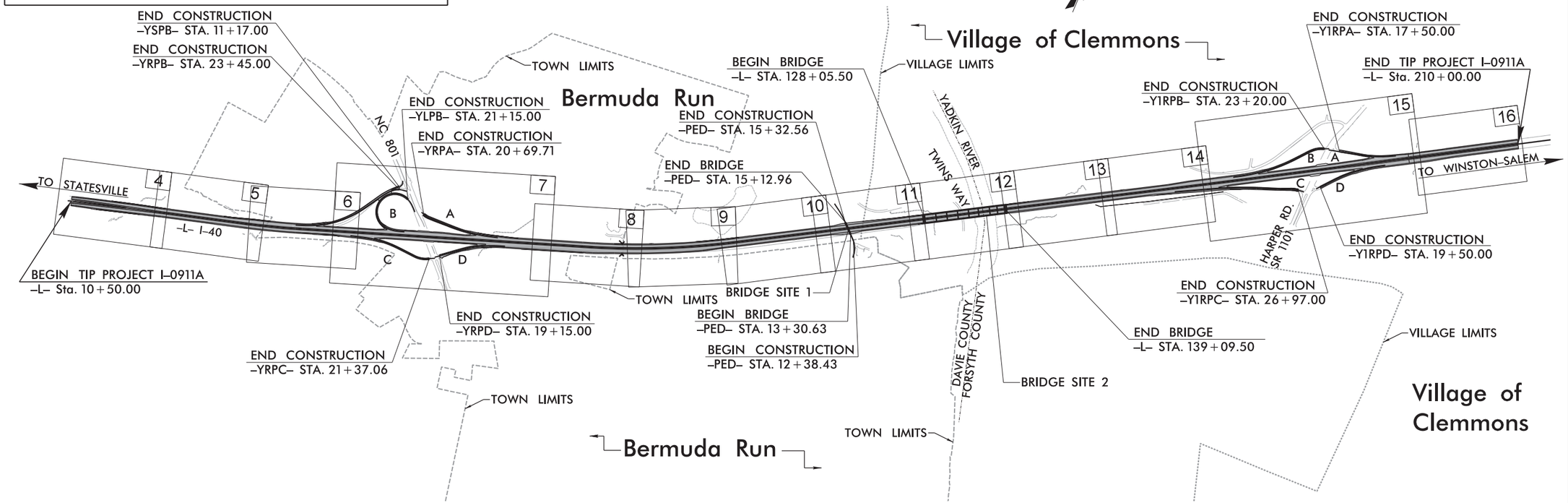
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-0911A	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
34147.3.4	NHIMF-40-3(112)180	PE	

DAVIE & FORSYTH COUNTIES

LOCATION: *I-40 FROM WEST OF NC 801 IN DAVIE COUNTY TO EAST OF I-40/SR 1101 (HARPER RD.) IN FORSYTH COUNTY*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, SIGNING, STRUCTURES, ITS, LIGHTING & UTILITIES*

FINAL ROADWAY PLANS
SUBMITTAL NO.: S-017
DATE: 02-19-18



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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2017 = 58,600
ADT 2037 = 74,800
DHV = 60%
D = 9%
T = 8% *
V = 70 MPH
FUNC CLASS = INTERSTATE
* (TTST 5% + DUAL 3%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-0911A..... 3.569 miles
LENGTH STRUCTURE TIP PROJECT I-0911A..... 0.209 miles
TOTAL LENGTH OF PROJECT I-0911A..... 3.778 miles

NCDOT CONTACT

K. Zak Hamidi, P.E.
PROJECT ENGINEER - DESIGN-BUILD UNIT

PLANS PREPARED BY:

RK&K — RUMMEL, KLEPPER & KAHL, LLP, 900 RIDGEFIELD DRIVE, SUITE 350, RALEIGH, NORTH CAROLINA 27609, NC LICENSE NO. F-0112

FLATIRON — a joint venture

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

LETTING DATE: JULY 18, 2017

Brandon J. McInnis, P.E.
PROJECT ENGINEER

Mary E. Yahl, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

2/19/2018
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myahl

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 23
- 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
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — 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
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (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
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?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 LOS A (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E4	PROP. APPROX. 3.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
C2	PROP. APPROX. 2″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.	E5	PROP. APPROX. 8.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	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.	E6	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 4.0″ IN DEPTH OR GREATER THAN 5.5″ IN DEPTH.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. PER 1.5″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH.	J1	PROP. 6″ AGGREGATE BASE COURSE
C5	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J2	PROP. 8″ AGGREGATE BASE COURSE
C6	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. PER 1.5″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH.	K1	BASE TO BE TREATED WITH LIME TO A DEPTH OF 8″ AT A RATE OF 36 LBS. PER SQ. YD.
D1	PROP. APPROX. 2.5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	K2	CLASS IV SUBGRADE STABILIZATION
D2	PROP. APPROX. 3″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	P	PRIME COAT
D3	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R1	2′-6″ CONCRETE CURB AND GUTTER
D4	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 2.5″ IN DEPTH OR GREATER THAN 4.0″ IN DEPTH.	R2	DOUBLE FACED CONCRETE BARRIER (TYPE T, T1, T2)
D5	PROP. APPROX. 3″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	R3	PRECAST SINGLE-FACED BARRIER
D6	PROP. APPROX. 5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	T	EARTH MATERIAL
D7	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ IN DEPTH OR GREATER THAN 4.0″ IN DEPTH.	U	EXISTING PAVEMENT
E1	PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	V	MILLING ASPHALT OFF OF EXISTING CONCRETE
E2	PROP. APPROX. 8.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	W	VARIABLE DEPTH ASHPALT PAVEMENT (SEE WEDGING DETAILS)
E3	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 LESS THAN 4.0″ IN DEPTH OR GREATER THAN 5.5″ IN DEPTH.		

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.
FOR CROSSOVER AREAS, SEE PLANS.

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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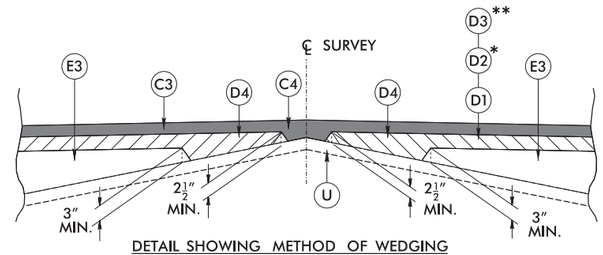
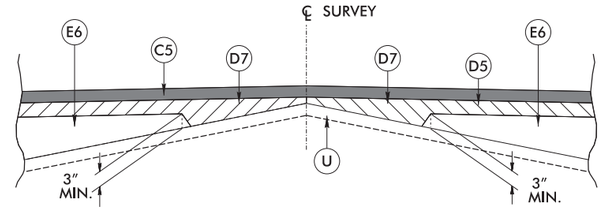
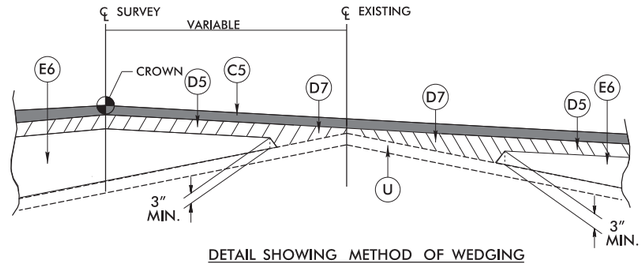


DETAIL SHOWING METHOD OF WEDGING
FOR –Y1RPB–, –Y1RPC–, –YRPA–*, –YRPB–*, –YRPC–*, –YRPD–*, –YLPB–**, –Y1RPA–, –Y1RPB–



DETAIL SHOWING METHOD OF WEDGING
FOR –L–



DETAIL SHOWING METHOD OF WEDGING
FOR –L–

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609–3960
NC LICENSE NO. F–0112 • (919) 878–9560

PAVEMENT SCHEDULE	
C5	3″ S9.5C
D5	3″ I19.0C
D6	5″ I19.0C
E4	3″ B25.0C
J2	8″ ABC
K1	LIME SUB. STAB.
K2	CLASS IV STAB.
R2	CONCRETE BARRIER
R3	PRECAST BARRIER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	2A-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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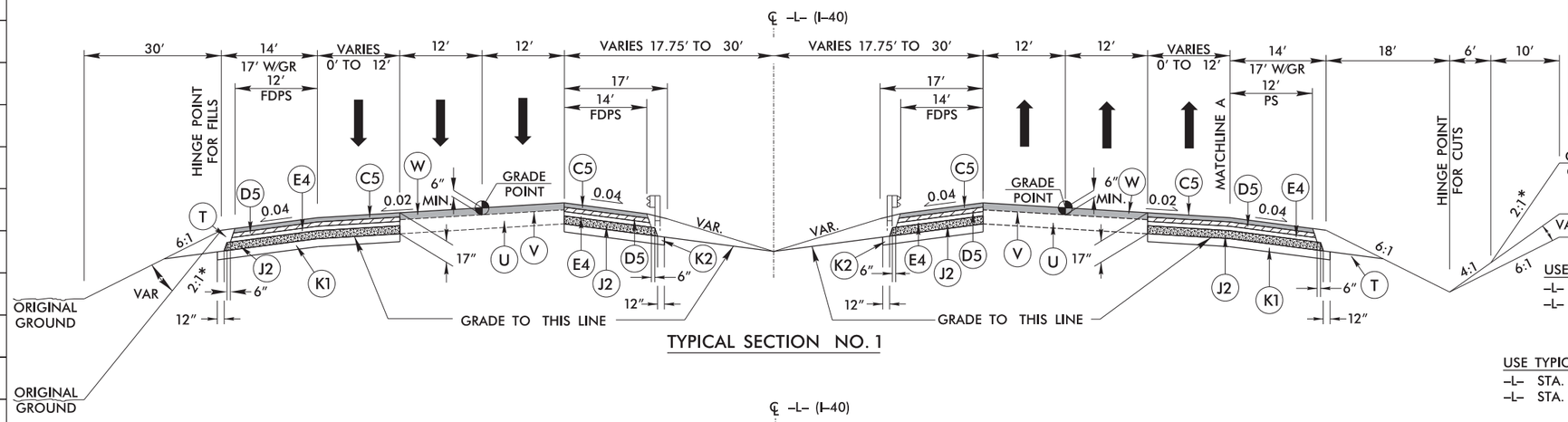
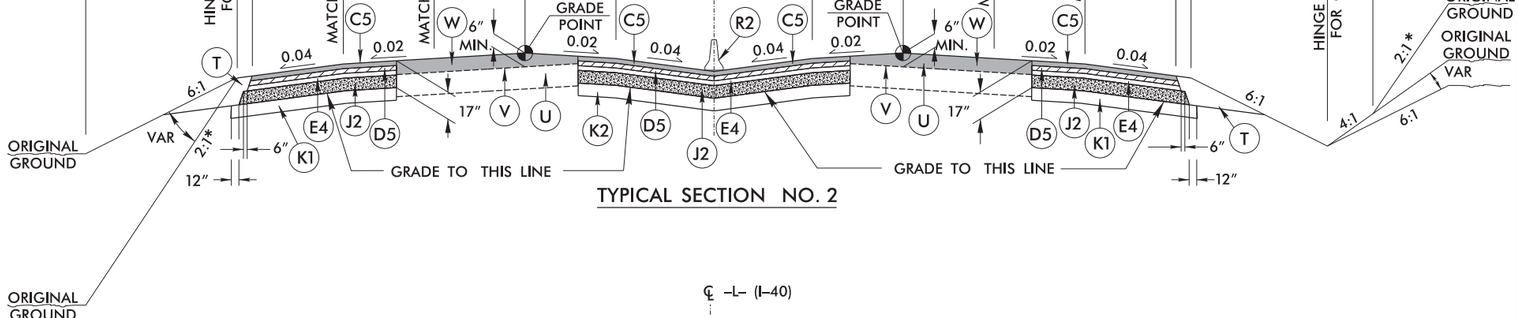


TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
–L– STA. 11+00.00 TO STA. 19+64.68
–L– STA. 188+32.50 TO STA. 194+90.00

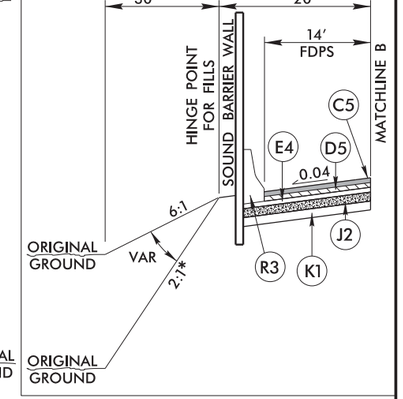
USE TYPICAL SECTION NO. 2
–L– STA. 23+00.00 TO STA. 97+63.50
–L– STA. 140+54.61 TO STA. 185+00.00

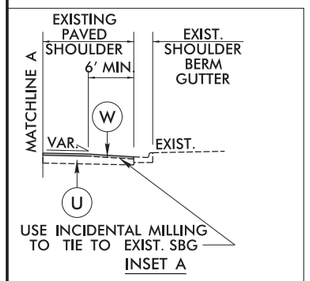
NOTE: TRANSITION FROM TYPICAL SECTION NO. 1 TO TYPICAL SECTION NO. 2 IN THE FOLLOWING LOCATIONS:
–L– STA. 19+64.68 TO 23+00.00
–L– STA. 185+00.00 TO STA. 188+52.50



TYPICAL SECTION NO. 2

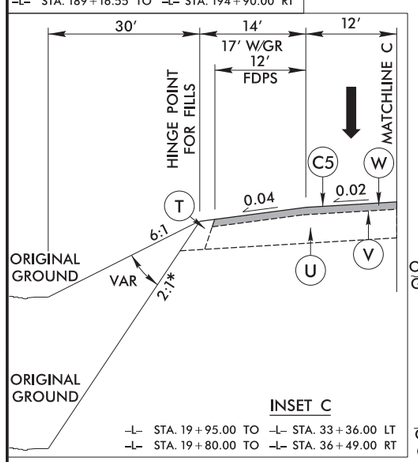
INSET B
–L– STA. 72+00.08 TO STA. 85+22.21 LT
–L– STA. 144+51.48 TO STA. 152+91.48 LT
–L– STA. 139+42.30 TO STA. 150+97.29 RT
–L– STA. 169+05.53 TO STA. 172+05.66 LT



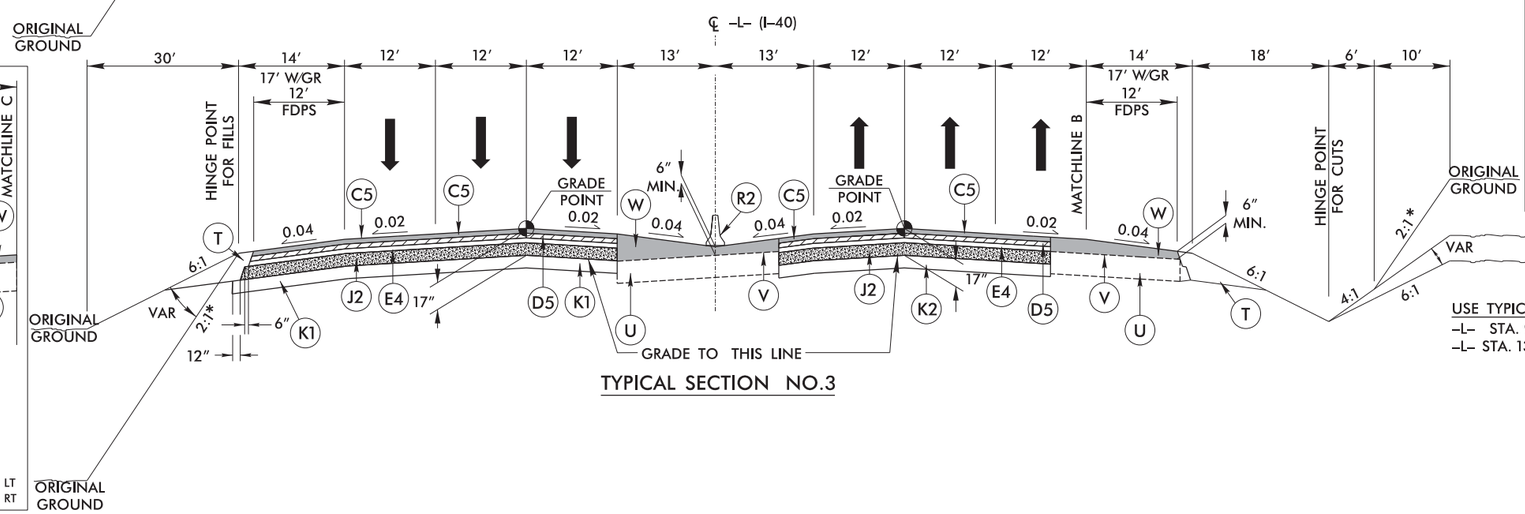


USE INCIDENTAL MILLING TO TIE TO EXIST. SBG

INSET A
–L– STA. 189+16.55 TO –L– STA. 194+90.00 RT



INSET C
–L– STA. 19+95.00 TO –L– STA. 33+36.00 LT
–L– STA. 19+80.00 TO –L– STA. 36+49.00 RT



TYPICAL SECTION NO.3

USE TYPICAL SECTION NO. 3
–L– STA. 97+63.50 TO STA. 128+05.50 (BEGIN BRIDGE)
–L– STA. 139+09.50 (END BRIDGE) TO STA. 140+54.61

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

2/19/2018
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mahl

PAVEMENT SCHEDULE	
C3	3″ S9.5B
D2	3″ I19.0B
E2	8″ B25.0B
J2	8″ ABC
K2	CLASS IV STAB.
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	2A-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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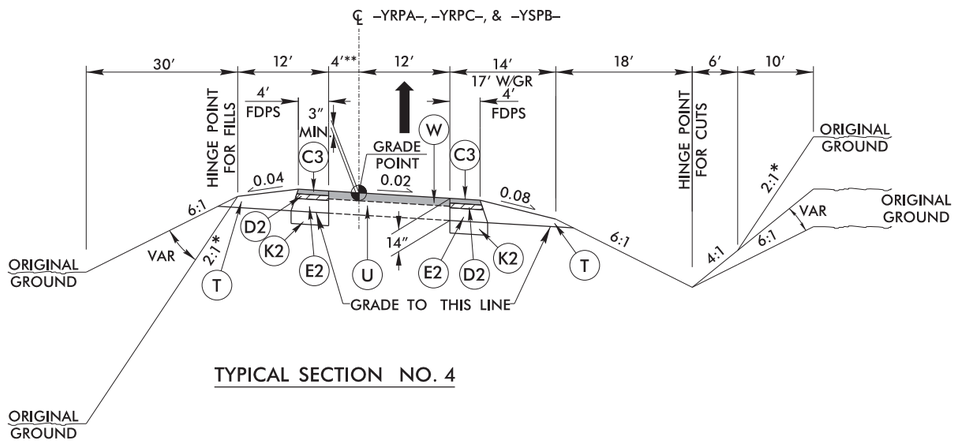


TYPICAL SECTION NO. 4

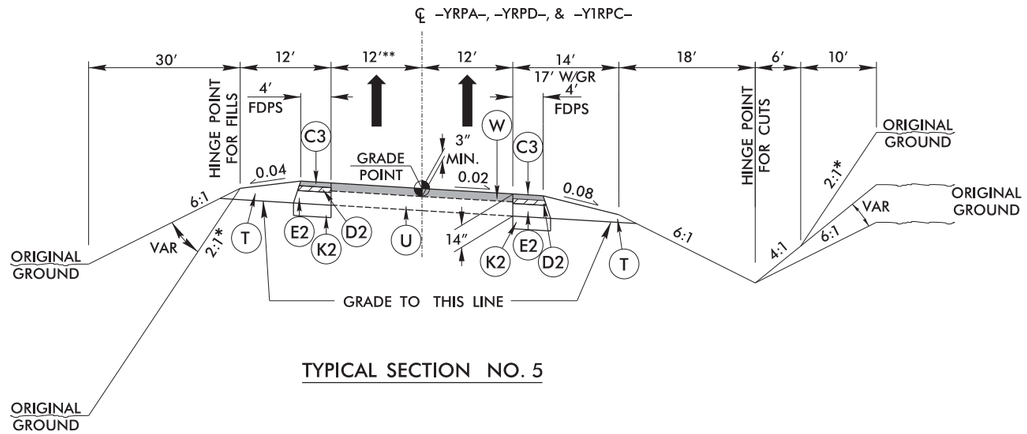
USE TYPICAL SECTION NO. 4

–YRPA– STA. 10+00.00 TO STA. 14+45.00
–YRPC– STA. 10+00.00 TO STA. 20+87.06
–YSPB– STA. 10+00.00 TO STA. 11+17.00

NOTE: USE –L– PAVEMENT TO BACK OF GORE

REVERSE LANE TYPICAL & LANE DIRECTION FOR –YSPB–

** USE 0′ FOR –YSPB–



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

–YRPA– STA. 16+60.00 TO STA. 20+10.00
–YRPD– STA. 12+13.12 TO STA. 21+30.00
–Y1RPC– STA. 26+10.00 TO STA. 26+47.00

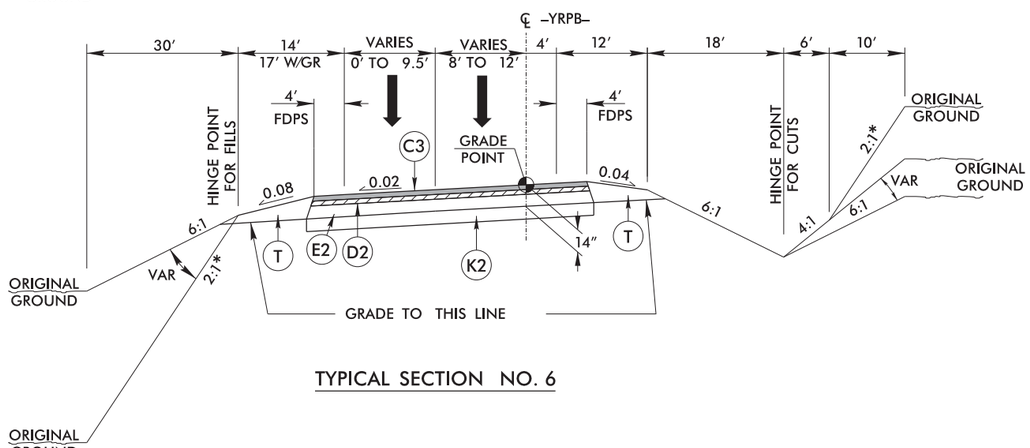
NOTES: TRANSITION FROM TYPICAL SECTIONS NO. 4 TO NO. 5 IN THE FOLLOWING LOCATIONS:
–YRPA– STA. 14+35.00 TO STA. 16+60.00

TRANSITION FROM TYPICAL SECTIONS NO. 8 TO NO. 5 IN THE FOLLOWING LOCATIONS:
–Y1RPC– STA. 24+60.00 TO STA. 26+10.00

REVERSE TYPICAL & LANE DIRECTION FOR –YRPD–.

USE –L– PAVEMENT TO BACK OF GORE.

**INSIDE LANE ALONG –YRPA– IS STRIPED OUT



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

–YRPB– STA. 10+00.00 TO STA. 19+76.45

NOTE: USE –L– PAVEMENT TO BACK OF GORE.

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

2/19/2018
R:\Roadway\Proj\I0911A_Rdy_typ.dgn
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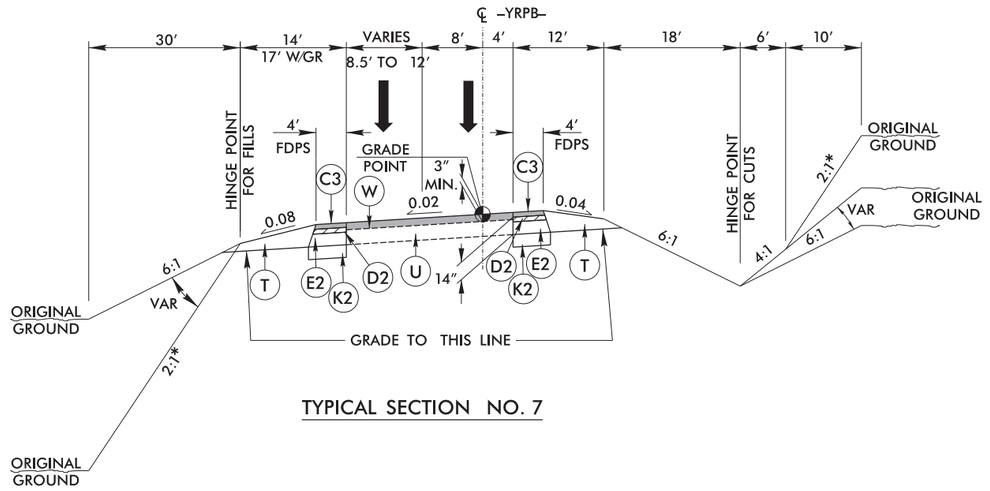
PLANS PREPARED BY :

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609–3960
NC LICENSE NO. F–0112 • (919) 878–9560

PAVEMENT SCHEDULE	
C3	3″ S9.5B
D1	2.5″ I19.0B
D2	3″ I19.0B
D3	4″ I19.0B
E2	8″ B25.0B
J2	8″ ABC
K2	CLASS IV STAB.
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

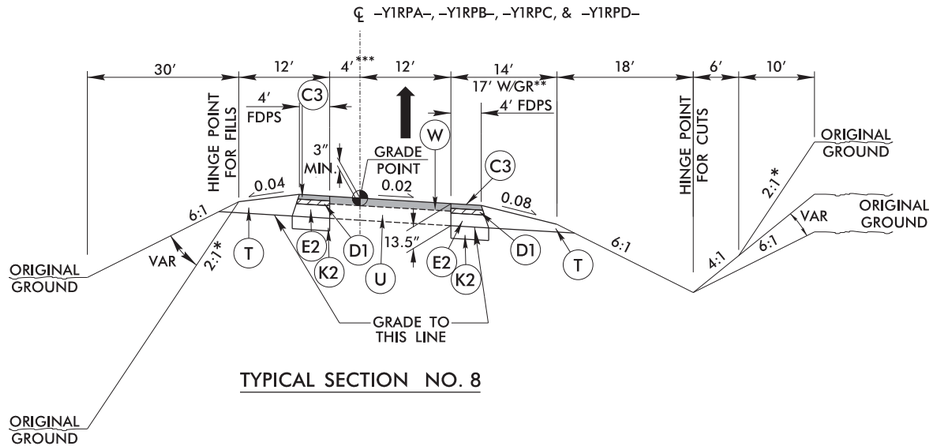
PROJECT REFERENCE NO.	SHEET NO.
I-0911A	2A-4
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7
–YRPB– STA. 19+76.45 TO STA. 25+45.00



TYPICAL SECTION NO. 8

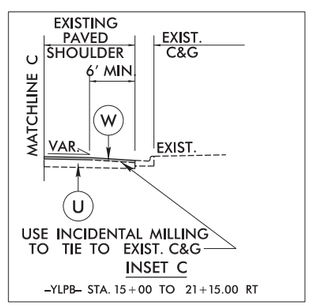
USE TYPICAL SECTION NO. 8
–Y1RPA– STA. 10+00.00 TO STA. 17+30.00
–Y1RPB– STA. 10+00.00 TO STA. 22+70.00
–Y1RPC– STA. 10+00.00 TO STA. 24+60.00
–Y1RPD– STA. 10+00.00 TO STA. 19+00.00

NOTE: REVERSE TYPICAL & LANE DIRECTION FOR –Y1RPB– and –Y1RPD–.

NOTE: USE –L– PAVEMENT TO BACK OF GORE.

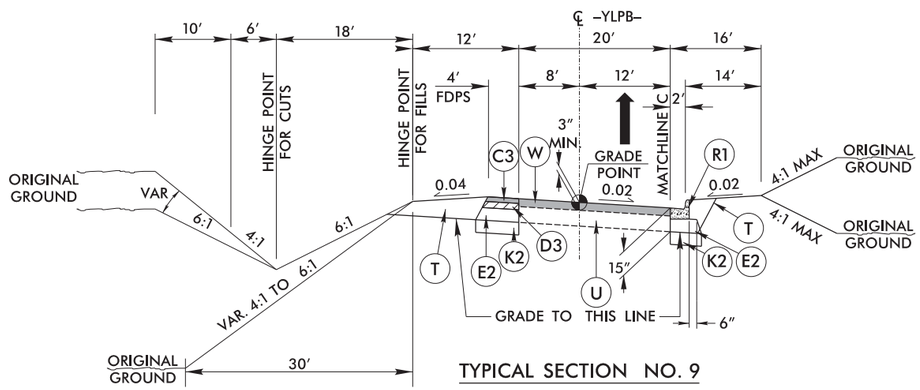
** USE 11′ W/GR FOR –Y1RPA– IN THE FOLLOWING LOCATION:
–Y1RPA– STA. 10+00 TO 13+60.00 RT

*** USE 6′ FOR –YRPB–



INSET C

–YLPB– STA. 15+00 TO 21+15.00 RT



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9
–YLPB– STA. 10+00.00 TO STA. 21+15.00

NOTE: USE –L– PAVEMENT TO BACK OF GORE.

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
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PLANS PREPARED BY :
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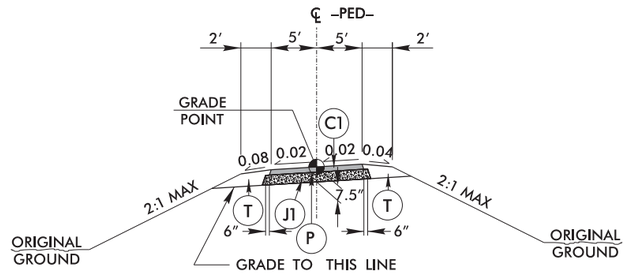
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609–3960
NC LICENSE NO. F–0112 • (919) 878–9560

2/19/2018
K:\Roadway\Proj\I0911A_Rdy_typ.dgn
mwhite

PAVEMENT SCHEDULE	
C3	3″ S9.5B
C5	3″ S9.5C
D1	2.5″ I19.0B
D2	3″ I19.0B
D5	3″ I19.0C
E4	3″ B25.0C
E6	VAR. B25.0C
J1	6″ ABC
J2	8″ ABC
K1	LIME SUB. SLAB
K2	CLASS IV STAB.
P	PRIME COAT
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	2A-5
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

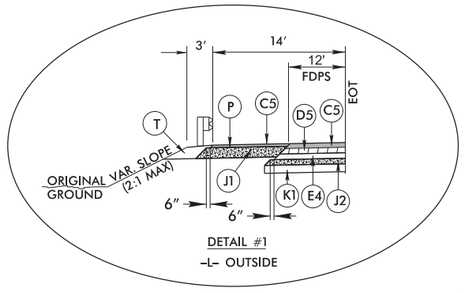
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



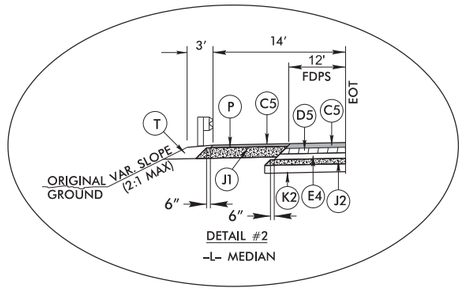
TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10
–PED– STA. 12+38.43 TO STA. 13+30.63 (BEGIN BRIDGE)
–PED– STA. 15+12.96 (END BRIDGE) TO STA. 15+20.11

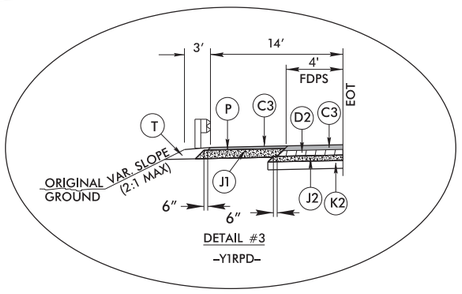
GUARDRAIL WIDENING DETAILS



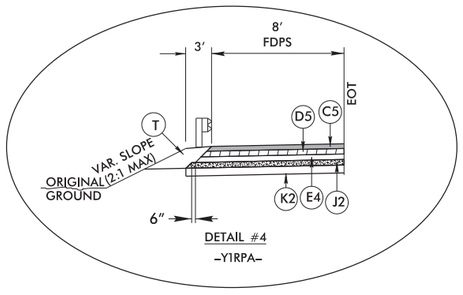
DETAIL #1
–L– OUTSIDE



DETAIL #2
–L– MEDIAN

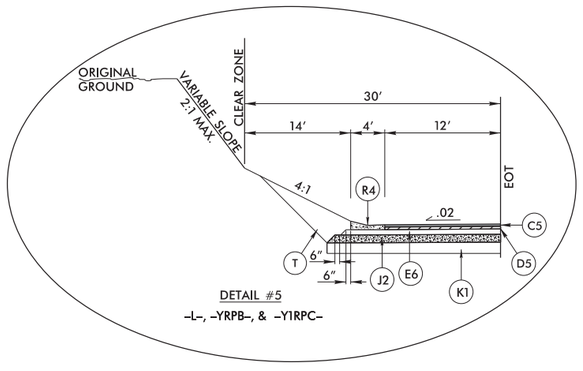


DETAIL #3
–Y1RPD–



DETAIL #4
–Y1RPA–

EXPRESSWAY GUTTER DETAILS



DETAIL #5
–L–, –YRPB–, & –Y1RPC–

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

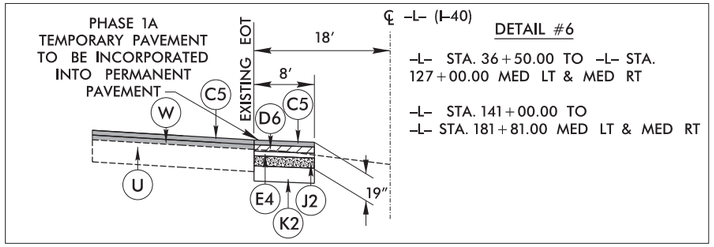
2/19/2018
R:\Roadway\Proj\I0911A_Rdy_typ.dgn
mahdi

PLANS PREPARED BY :

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609–3960
NC LICENSE NO. F–0112 • (919) 878–9560

PAVEMENT SCHEDULE	
C2	2″ S9.5B
C5	3″ S9.5C
D3	4″ I19.0B
D5	3″ I19.0C
D6	5″ I19.0C
E1	5.5″ B25.0B
E4	3″ B25.0C
J2	8″ ABC
K2	CLASS IV STAB.
R2	CONCRETE BARRIER
R3	PRECAST BARRIER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

TEMPORARY PAVEMENT DETAILS



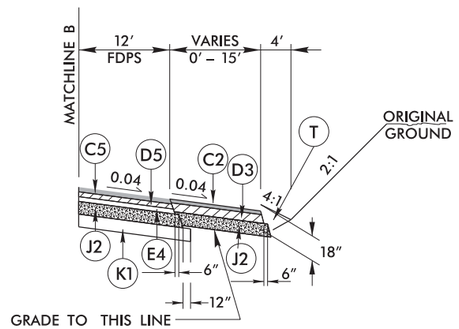
DETAIL #6

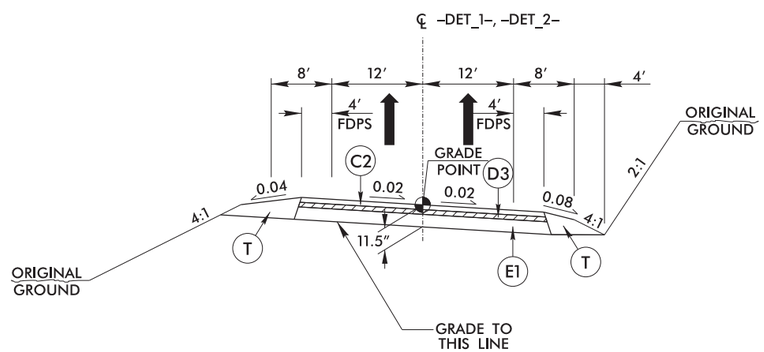
–L– STA. 36+50.00 TO –L– STA. 127+00.00 MED LT & MED RT

–L– STA. 141+00.00 TO –L– STA. 181+81.00 MED LT & MED RT

DETAIL #7

–L– STA. 139+75.00 TO –L– STA. 159+00.00 RT





TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11
–DET_1– STA. 14+91.38 TO STA. 17+07.26
–DET_2– STA. 16+64.34 TO STA. 19+52.62

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	2A-6
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

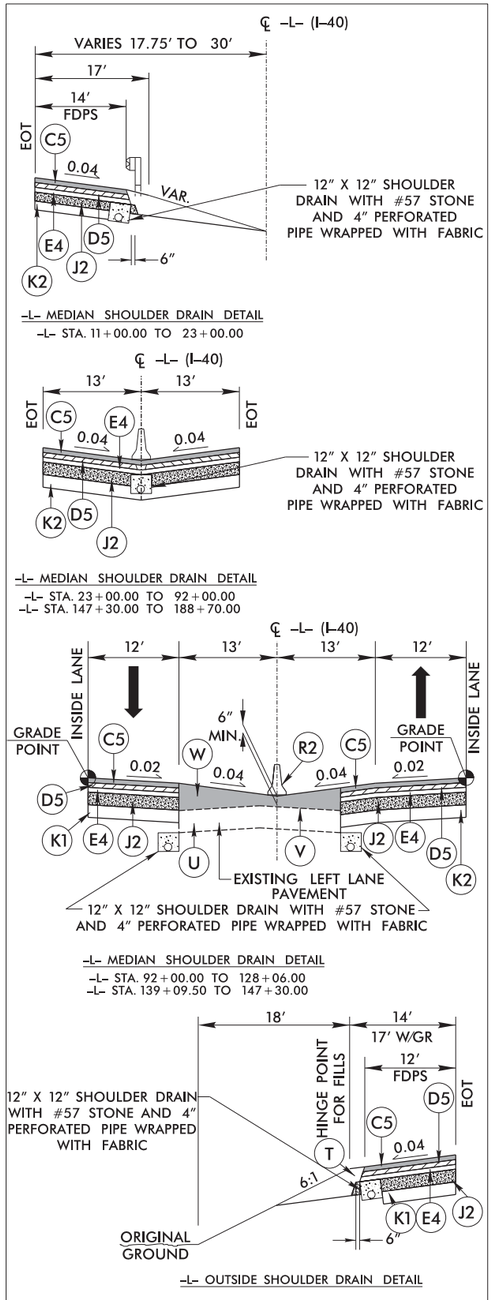
PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

C5	3" S9.5C	K1	LIME SUB. STAB.	U	EXIST. PAVEMENT
D5	3" I19.0C	K2	CLASS IV STAB.	V	MILLING
E4	3" B25.0C	R2	CONCRETE BARRIER	W	WEDGING
J2	8" ABC	T	EARTH MATERIAL		

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	2A-7
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SHOULDER DRAIN DETAILS



Line	Begin Station	End Station	Location	Outlet Station	Drainage Structure
-L-	10+50	128+06	LT	11+86.16	0401
				14+60.00	CP
				16+50.00	0411
				19+90.00	0412
				22+50.00	0414
				23+43.21	0511
				26+00.00	CP
				29+00.00	CP
				32+00.00	CP
				34+85.01	0507
				37+90.00	CP
				40+90.00	CP
				43+71.18	0615
				46+70.00	CP
				49+70.00	CP
				52+70.00	CP
				55+50.00	0745
				57+70.00	0743
				60+00.00	0742
				63+00.00	0726
				66+50.00	0717
				68+61.57	0708
				71+14.43	0709
				74+00.00	0763
				77+00.00	CP
				79+00.00	CP
				81+20.00	0807
				84+06.00	0821
				87+00.00	0817
				88+96.00	0903
				91+95.00	CP
				94+95.00	CP
				97+95.00	CP
				100+95.00	CP
				102+46.00	1006
				105+46.00	CP
				108+50.00	1013
				111+50.00	CP
				115+00.00	1105
				117+70.00	1116
				121+50.00	1120
				124+50.00	CP
				127+65.00	1206
-L-	10+50.00	128+06.00	RT	12+13.49	0405
				15+15.00	CP
				18+15.00	CP
				19+95.00	0407
				23+00.00	CP
				26+00.00	EX. DI
				32+00.00	CP
				34+97.00	CP
				37+00.00	CP

Line	Begin Station	End Station	Location	Outlet Station	Drainage Structure
-L-	10+50.00	128+06.00	RT	39+75.00	0603
				42+75.00	CP
				45+79.06	0620
				49+17.00	0755
				51+95.00	0753
				54+95.00	0740
				58+08.57	0737
				61+15.09	0762
				64+50.51	0722
				67+34.00	0707
				70+30.00	CP
				74+99.00	CP
				77+40.00	0801
				80+99.09	0809
				84+00.00	CP
				87+00.00	CP
				90+00.00	CP
				93+00.00	CP
				95+41.29	0910
				99+00.00	CP
				102+39.09	1001
				105+40.00	CP
				108+52.09	1009
				111+50.00	CP
				115+00.00	1102
				118+18.01	1112
				121+50.00	1114
				124+60.00	CP
				127+75.91	1204
-L-	10+50.00	95+89.00	MED	11+99.22	0403
				16+50.00	0410
				23+48.84	0502
				28+99.00	0504
				34+85.09	0509
				39+98.50	0601
				45+66.35	0607
				49+92.54	0701
				55+15.51	0738
				60+43.22	0730
				64+36.74	0725
				77+67.00	0804
				82+67.00	0813
				88+95.64	0902
				95+89.00	0913
-L-	95+89.00	128+06.00	EX. MED LT	102+40.00	1004
				108+63.54	1012
				115+00.00	1104
				118+86.91	1108
				121+51.00	1118
-L-	139+09.50	194+90.00	LT	139+48.36	1213
				141+00.00	1323
				144+55.00	1317

Line	Begin Station	End Station	Location	Outlet Station	Drainage Structure
-L-	139+09.50	194+90.00	LT	145+51.00	1315
				147+69.00	1312
				149+17.00	1309
				151+48.00	1308
				154+00.00	CP
				157+00.00	1411
				160+00.00	CP
				162+65.00	1401
				165+66.00	CP
				169+00.00	1551
				172+00.00	1539
				175+40.00	1530
				178+60.00	1521
				181+60.00	CP
				184+50.00	1514
				187+74.91	1505
				192+00.00	CP
				194+90.00	CP
-L-	139+09.50	194+90.00	RT	139+48.78	1215
				140+50.00	1325
				144+00.00	CP
				147+30.00	1307
				151+50.00	1303
				154+50.00	CP
				157+00.00	1409
				160+00.00	1425
				162+87.00	1406
				165+12.00	1422
				167+00.00	1421
				170+00.00	1535
				172+00.00	1534
				176+00.00	1526
				179+00.00	1517
				180+50.00	CP
				183+50.00	1509
				184+50.00	1508
				187+50.00	EX. DI
				191+01.00	EX. CB
				194+90.00	CP
-L-	139+09.50	147+30.00	MED LT EXIST	139+74.91	1210
-L-	139+09.50	147+30.00	MED RT EXIST	139+74.91	1210
-L-	147+30.00	188+70.00	MED	147+28.00	1305
				151+50.00	1301
				156+65.00	1414
				159+50.00	1429
				162+40.00	1407
				166+75.00	1418
				172+00.00	1537
				175+61.00	1529
				178+80.00	1520
				183+00.00	1511

NOTE: (CP) CONCRETE PAD OUTLET

PLANS PREPARED BY :

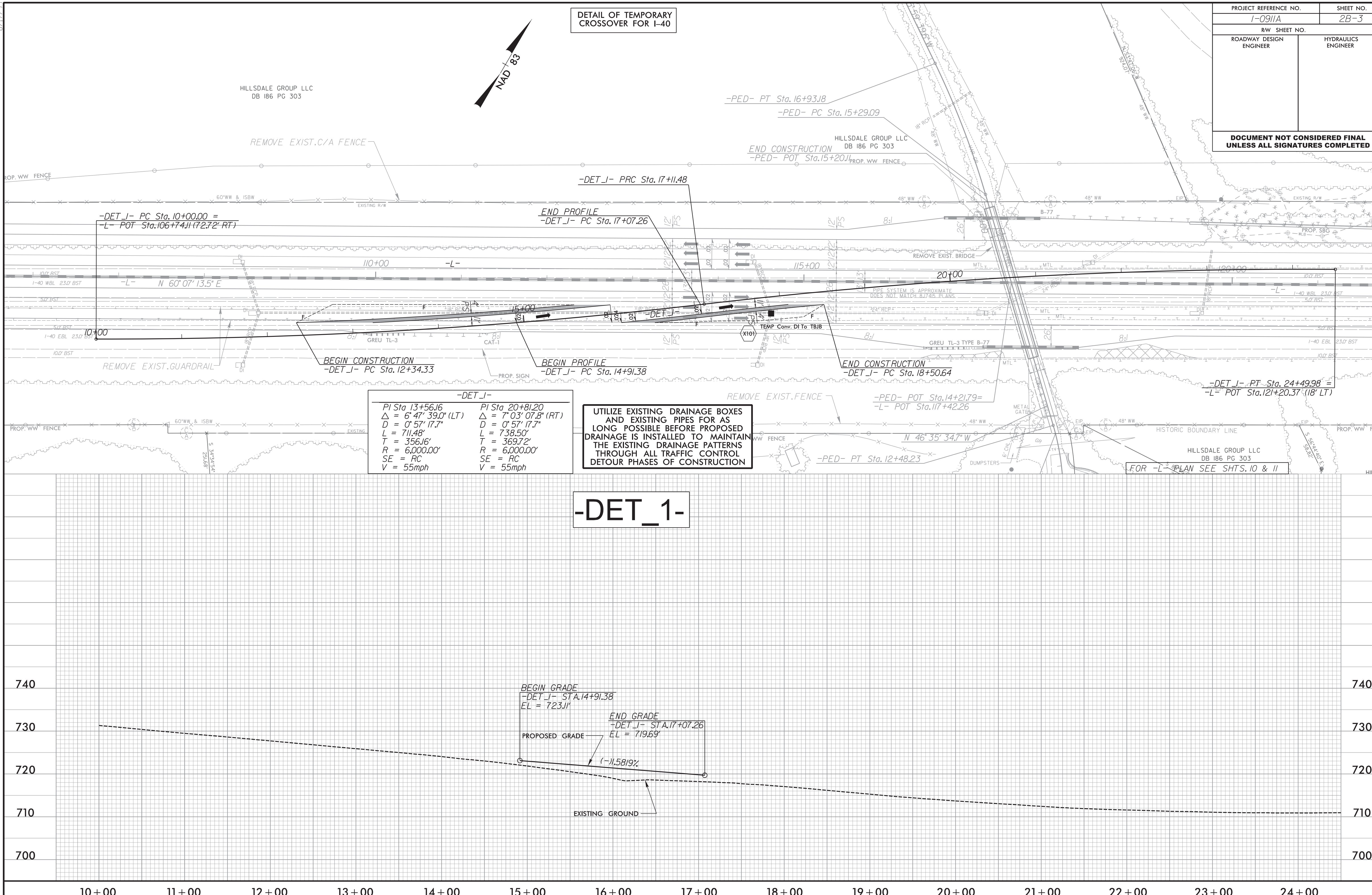
RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	2B-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL OF TEMPORARY CROSSOVER FOR I-40



-DET_1-	
PI Sta 13+56.16	PI Sta 20+81.20
Δ = 6° 47' 39.0" (LT)	Δ = 7° 03' 07.8" (RT)
D = 0° 57' 17.7"	D = 0° 57' 17.7"
L = 711.48'	L = 738.50'
T = 356.16'	T = 369.72'
R = 6,000.00'	R = 6,000.00'
SE = RC	SE = RC
V = 55mph	V = 55mph

UTILIZE EXISTING DRAINAGE BOXES AND EXISTING PIPES FOR AS LONG POSSIBLE BEFORE PROPOSED DRAINAGE IS INSTALLED TO MAINTAIN THE EXISTING DRAINAGE PATTERNS THROUGH ALL TRAFFIC CONTROL DETOUR PHASES OF CONSTRUCTION

8/17/99

2/19/2018
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PROJECT REFERENCE NO.	SHEET NO.
I-0911A	2B-4

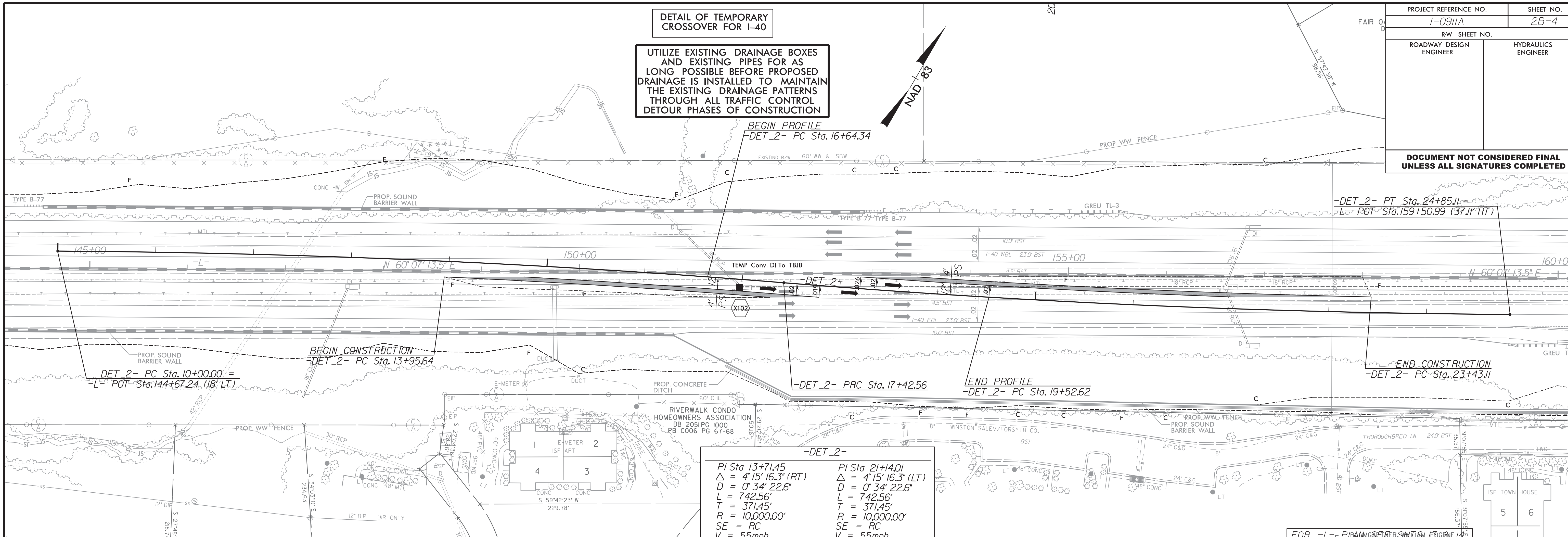
R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

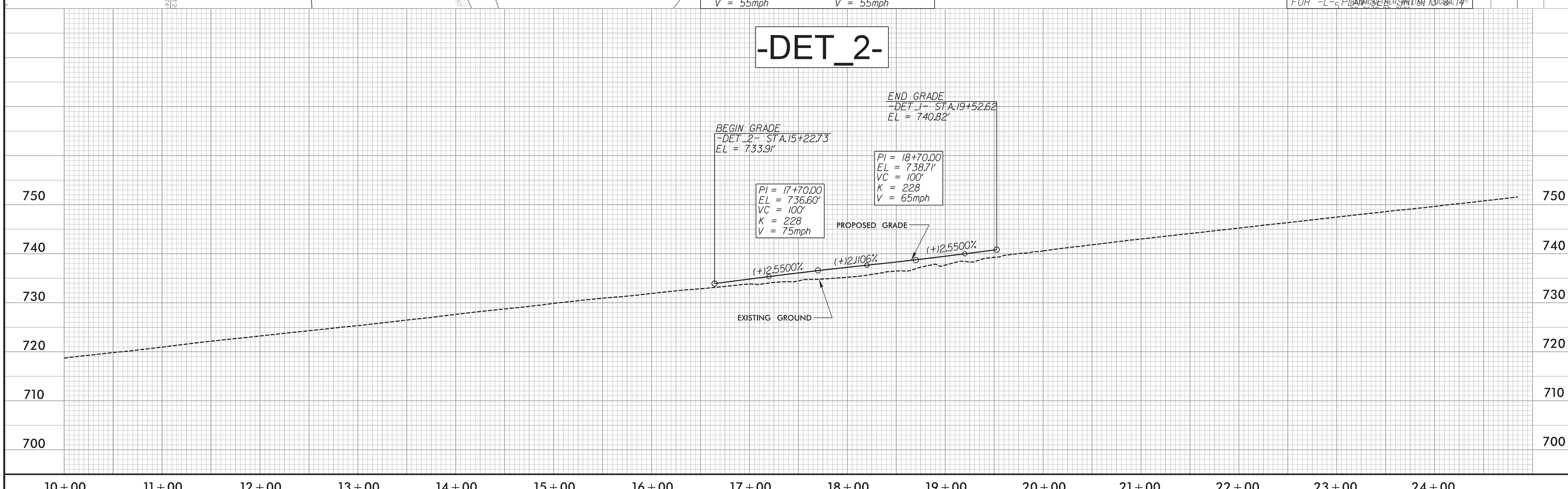
DETAIL OF TEMPORARY CROSSOVER FOR I-40

UTILIZE EXISTING DRAINAGE BOXES AND EXISTING PIPES FOR AS LONG POSSIBLE BEFORE PROPOSED DRAINAGE IS INSTALLED TO MAINTAIN THE EXISTING DRAINAGE PATTERNS THROUGH ALL TRAFFIC CONTROL DETOUR PHASES OF CONSTRUCTION



-DET_2-	
PI Sta 13+71.45	PI Sta 21+14.01
Δ = 4°15' 16.3" (RT)	Δ = 4°15' 16.3" (LT)
D = 0°34' 22.6"	D = 0°34' 22.6"
L = 742.56'	L = 742.56'
T = 371.45'	T = 371.45'
R = 10,000.00'	R = 10,000.00'
SE = RC	SE = RC
V = 55mph	V = 55mph

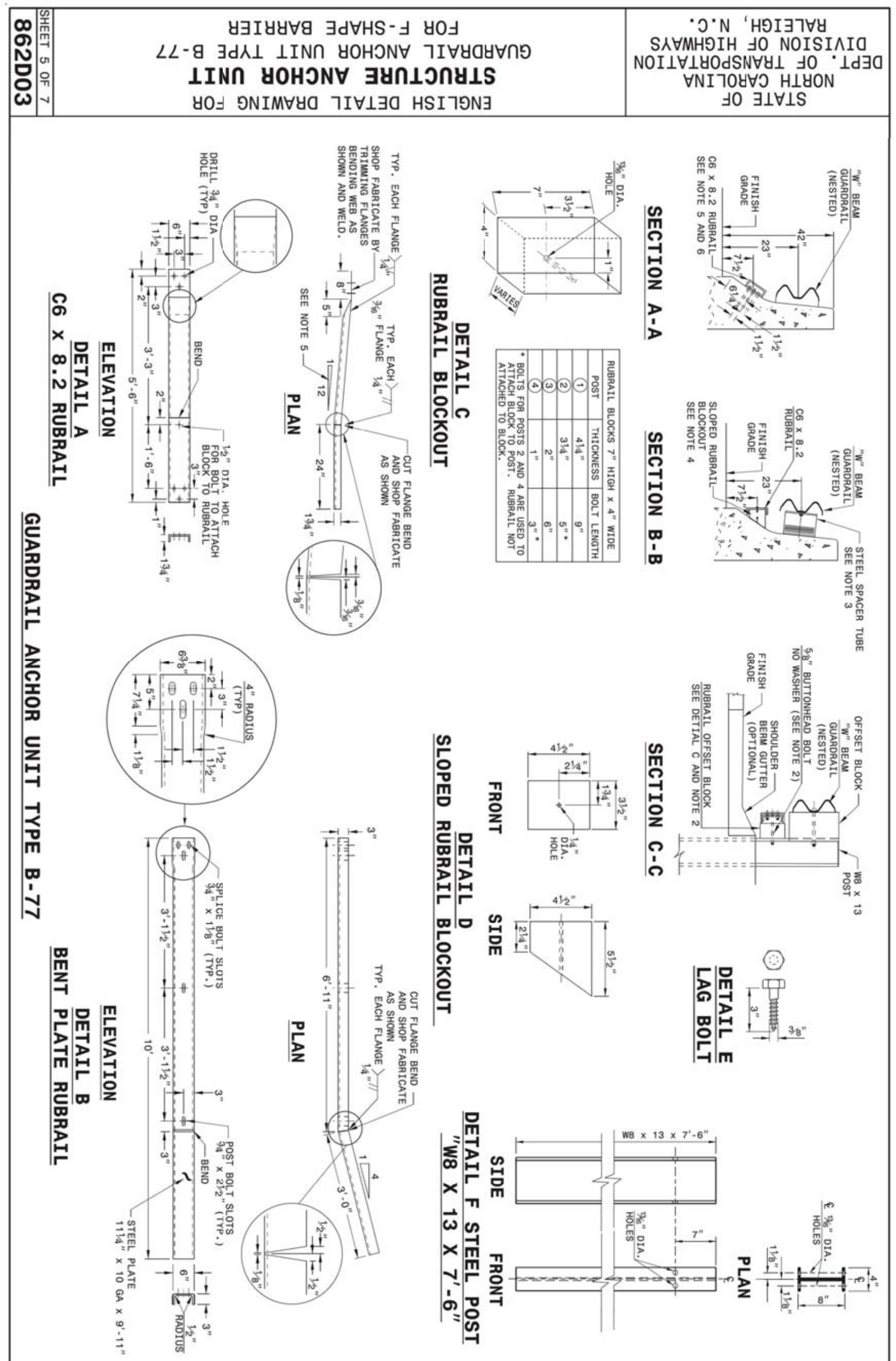
-DET_2-



8/17/99

2/19/2018 R:\Roadway\Proj\I0911A_Rdy_psh02B_4.dgn myahl

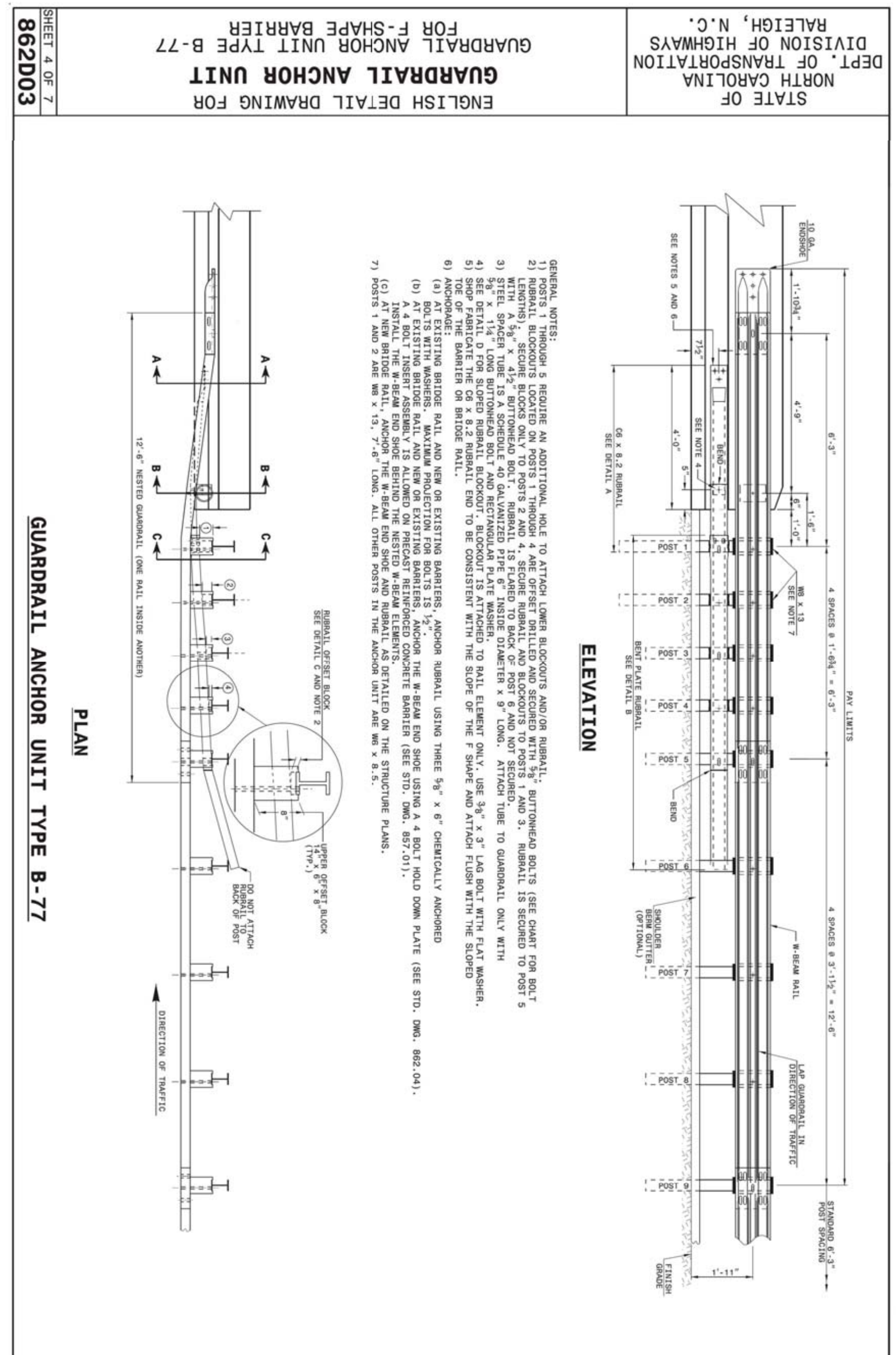
PROJECT REFERENCE NO.	SHEET NO.
I-0911A	2C-1



SHEET 5 OF 7
862D03

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.



SHEET 4 OF 7
862D03

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

5/28/99

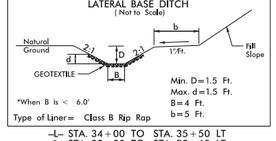
2/19/2018
R:\Roadway\Proj\I0911A_Rdy_psh02C_1.dgn

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	2D-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

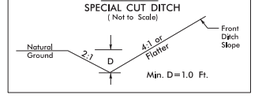
DETAIL A
LATERAL BASE DITCH
(Not to Scale)



Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=4 Ft.
b=5 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip Rap

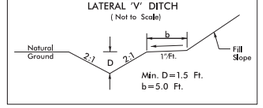
–L– STA. 34+00 TO STA. 35+50 LT
–L– STA. 39+00 TO STA. 39+60 LT
–L– STA. 48+50 TO STA. 49+17 LT
–L– STA. 69+50 TO STA. 71+00 RT
–L– STA. 71+50 TO STA. 74+00 LT
–L– STA. 80+50 TO STA. 84+50 LT
–L– STA. 84+50 TO STA. 84+80 LT; 2' BERM
–L– STA. 82+50 TO STA. 84+06 RT
–L– STA. 94+50 TO STA. 95+35 RT
–YRPA– STA. 11+00 TO STA. 15+70 RT
–YRPD– STA. 13+18 TO STA. 14+24 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



–L– STA. 10+46 TO STA. 11+00 RT
–L– STA. 10+48 TO STA. 11+00 LT
–L– STA. 41+00 TO STA. 43+50 LT
–L– STA. 49+00 TO STA. 49+50 RT
–L– STA. 55+50 TO STA. 59+00 RT
–L– STA. 61+00 TO STA. 64+00 RT
–L– STA. 143+00 TO STA. 143+50 LT
–L– STA. 156+00 TO STA. 158+00 LT
–L– STA. 156+50 TO STA. 157+50 RT
–L– STA. 162+00 TO STA. 163+50 LT
–L– STA. 168+00 TO STA. 169+50 LT
–L– STA. 170+00 TO STA. 178+50 RT
–Y1RPA– STA. 15+38 TO STA. 17+50 LT
–Y1RPD– STA. 14+21 TO STA. 15+08 LT
–YRPB– STA. 14+54 TO STA. 17+50 LT

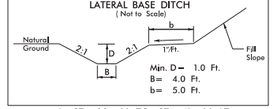
DETAIL C
LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.
b=5.0 Ft.

–L– STA. 38+00 TO STA. 39+74 RT
–L– STA. 45+79 TO STA. 46+50 RT
–L– STA. 55+50 TO STA. 57+50 LT
–L– STA. 60+00 TO STA. 62+00 LT
–L– STA. 87+28 TO STA. 90+00 RT
–L– STA. 127+09 TO STA. 129+16 RT; 3:1 SLOPES
–L– STA. 128+46 TO STA. 128+97 LT; 3:1 SLOPES
–L– STA. 138+67 TO STA. 140+50 LT
–L– STA. 141+50 TO STA. 143+00 LT
–L– STA. 143+50 TO STA. 144+55 LT
–Y1RPB– STA. 18+50 TO STA. 22+50 RT

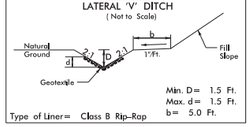
DETAIL D
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 4.0 Ft.
b= 5.0 Ft.

–L– STA. 39+60 TO STA. 41+00 LT
–L– STA. 49+17 TO STA. 52+89 LT; 3:1 SLOPES
–L– STA. 84+80 TO STA. 85+50 LT; 2' BERM
–L– STA. 85+50 TO STA. 87+00 LT
–L– STA. 84+06 TO STA. 87+28 RT
–L– STA. 88+33 TO STA. 89+00 LT
–L– STA. 94+00 TO STA. 96+66 LT
–L– STA. 95+35 TO STA. 97+50 RT
–L– STA. 100+50 TO STA. 102+46 LT

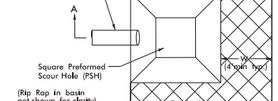
DETAIL E
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
b= 5.0 Ft.
Type of Liner= Class B Rip-Rap

–L– STA. 145+50 TO STA. 148+00 LT
–YRPB– STA. 17+50 TO STA. 19+00 LT
–YRPB– STA. 19+50 TO STA. 20+78 LT
–Y1RPD– STA. 17+00 TO STA. 19+00 RT

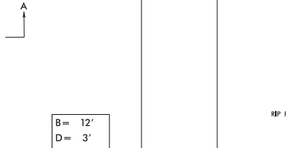
DETAIL F
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
Type of Liner= Class B Rip-Rap

–YRPA– STA. 18+00 TO STA. 18+50 RT
–YRPB– STA. 19+00 TO STA. 19+50 LT
–Y1RPA– STA. 17+00 TO STA. 17+50 RT

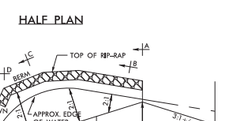
DETAIL G
BERM DITCH
(Not to Scale)



Min. D=1.0 Ft.
Max. d=1.0 Ft.
Type of Liner= Class B Rip-Rap

–YRPB– STA. 14+04 TO STA. 17+50 LT
–YRPB– STA. 17+50 TO STA. 18+00 LT; CLASS I
–YRPC– STA. 10+16 TO STA. 16+80 RT; VARYING V.C.

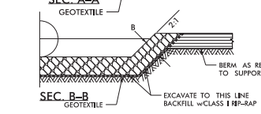
DETAIL H
BERM DITCH
(Not to Scale)



Min. D= 1.0 Ft.

–L– STA. 74+00 TO STA. 82+50 RT
–L– STA. 157+00 TO STA. 165+00 LT

DETAIL I
TOE PROTECTION
(Not to Scale)



d= 2.0 Ft.
Type of Liner= Class B Rip-Rap

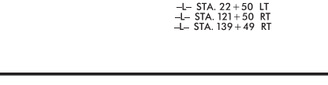
–L– STA. 68+33 TO STA. 71+28 LT
–L– STA. 140+50 TO STA. 141+50 LT
–L– STA. 148+00 TO STA. 149+50 LT; KEEP OUT OF WETLAND
–YRPD– STA. 10+77 TO STA. 13+06 LT

DETAIL J
LATERAL BASE DITCH
(Not to Scale)

Min. D= 2.0 Ft.
Max. d= 2.0 Ft.
B= 4.0 Ft.
b= 5.0 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

–L– STA. 118+50 TO STA. 121+51.09 LT

DETAIL K
MEDIAN V DITCH
(Not to Scale)



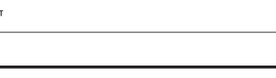
–L– STA. 9+38 TO STA. 11+50 CL

DETAIL N
TOE PROTECTION
(Not to Scale)

d= 2.0 Ft.
Type of Liner= PSRM

–Y1RPB– STA. 10+80 TO STA. 13+82 LT

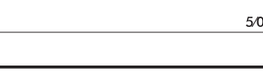
DETAIL O
BANK STABILIZATION AT PIPE OUTLET
(Not to Scale)



Class I Rip-Rap

–L– STA. 37+32 RT, L=25'

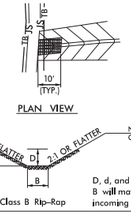
DETAIL P
BERM DITCH
(Not to Scale)



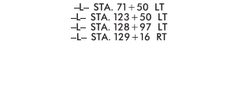
Min. D=2.0 Ft.
Max. d=2.0 Ft.
Type of Liner= Class B Rip-Rap

–L– STA. 114+40 TO STA. 115+00 RT

DETAIL Q
RIPRAP TRANSITION AT JURISDICTIONAL STREAM
(Not to Scale)



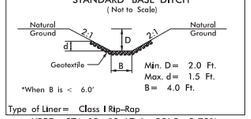
PLAN VIEW



D, d, and B will match incoming ditch
Type of Liner= Class B Rip-Rap

–L– STA. 71+50 LT
–L– STA. 123+50 LT
–L– STA. 128+97 LT
–L– STA. 129+16 RT

DETAIL R
STANDARD BASE DITCH
(Not to Scale)



Min. D= 2.0 Ft.
Max. d= 1.5 Ft.
B= 4.0 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

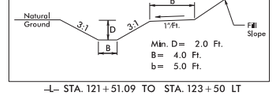
–YRPD– STA. 13+13 LT, L=29' S=3.72%,
BEG. ELEV=763.1, END ELEV=762.0

DETAIL S
STANDARD BASE DITCH
(Not to Scale)

Min. D= 3.5 Ft.
B= 4.0 Ft.

–L– STA. 84+85 LT, L=31', S=0.32%,
BEG ELEV=740.1, END ELEV=740.0
–L– STA. 99+36 LT, L=50', S=0.50%,
BEG ELEV=716.8, END ELEV=716.5
–L– STA. 99+38 RT, L=26', S=0.73%,
BEG ELEV=719.5, END ELEV=719.3
–L– STA. 195+66 RT, L=20', S=0.50%,
BEG ELEV=750.3, END ELEV=750.2

DETAIL T
LATERAL BASE DITCH
(Not to Scale)



Min. D= 2.0 Ft.
B= 4.0 Ft.
b= 5.0 Ft.

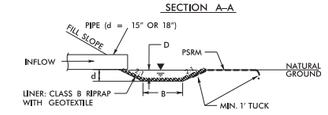
–L– STA. 121+51.09 TO STA. 123+50 LT

PREFORMED SCOUR HOLE DETAIL M
*NOT TO SCALE

PLAN VIEW

B=	12'
D=	3'
W=	16'
d=	1'

SECTION A–A



308

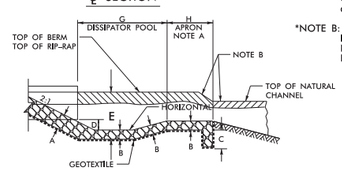
–L– STA. 22+50 LT
–L– STA. 121+50 RT
–L– STA. 139+49 RT

DETAIL L
RIP–RAPPED ENERGY DISSIPATOR BASIN

*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A)= SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP–RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

℄ SECTION



HALF PLAN

DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	3.0	3.0	3.0					
B	2.0	2.0	2.0					
C	3.0	3.0	3.0					
D	2.2	1.7	2.2					
E	10.4	7.0	10.4					
F	13.9	10.5	13.9					
G	22.3	16.5	22.3					
H	11.1	8.3	11.1					

*ALL DIMENSIONS APPROXIMATE IN FT

BASIN #	LOCATION (AT OUTLET)
1	–L– 46+56 RT (#0614)
2	–L– 71+32 LT (#0710)
3	–L– 146+00 RT (#1314)
4	
5	
6	
7	
8	

NOTE:
Wo= DIAMETER OF PIPE, WIDTH OF BOX OR SPAN OF PIPE–ARCH CULVERTS

5/05

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mwh

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PROJECT REFERENCE NO.	SHEET NO.
I-0911A	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

N 75°02'17" E 290.88'

S 14°57'43" E 71.50'

S 89°56'23" E 195.47'

N 08°24'53" E 139.63'

N 75°02'17" E 91.56'

N 75°02'17" E 75.68'

N 75°12'45" E 432.74'

DWIGHT T. AYERS
CHERYL E. AYERS
DB 854 PG 99

DWIGHT T. AYERS
CHERYL E. AYERS
DB 854 PG 99

N 41°02'00" W 152.82'

N 71°01'43" E 90.02'

N 07°12'53" W 173.98'

N 41°02'00" W 198.81'

EIP

EIP TO R/W 0.60'

RONALD LEWIS BRIGHT
MARY ANN BRIGHT
DB 917 PG 308

TIE TO EXIST. FENCE

REMOVE EXIST.C/A FENCE

PROP. WW FENCE 48" WW W/ ISBW

EXISTING R/W

840' LANE DROP

-L- POT Sta. 10+00.00

SPECIAL CUT DITCH SEE DETAIL B

50' TAPER TO EXIST.

REMOVE EXISTING CONCRETE DITCH

2 TONS CL B RIPRAP W/7 SY GEO FAB CUT/FILL TRANSITION

REMOVE EXIST.GUARDRAIL

RETAIN CONCRETE DITCH

REMOVE 30' OF EXISTING CONCRETE DITCH

11 TONS CL B RIPRAP W/28 SY GEO FAB

18" CSP 2 ELBOWS ROD & LUG

PREFORMED SCOUR HOLE SEE DETAIL M

15" CSP 2 ELBOWS ROD & LUG

SMITH CREEK

-BL-27

-BL-28

12' PS

2GI

18" RCP-III

Conv. 2GI To JB w/MH

45' TYP.

CAT-1

8:1

PROP. SBG

18" RCP-III

15" RCP-III

TO STATESVILLE

I-40 WBL 24.0' BST

I-40 EBL 24.0' BST

10.0' BST

MEDIAN V DITCH SEE DETAIL K

10+00

15+00

20+00

N 73° 18' 23.0" E

N 74° 40' 00.0" E

CAT-1 REMOVE EXISTING CONCRETE DITCH

ADJUST 2GI

REMOVE EXIST.GUIDERAIL

GREU TL-3

TIE TO EXIST. GUIDERAIL

RETAIN

PLUG & FILL W/FLOWABLE FILL

TYPE B-77

50:1

REMOVE DI

RETAIN CULVERT

CONC

Conv. 2GI To JB w/MH

30" RCP-III

2GI-A

REMOVE

8 TONS CL B RIPRAP W/21 SY GEO FAB

RETAIN EXISTING SYSTEM

ROCK PLATE 23 TONS CL B RIPRAP W/51 SY GEO FAB

TIE FENCE TO WINGWALL

2 TONS CL B RIPRAP W/7 SY GEO FAB

RETAIN CONCRETE DITCH

PROP. SIGN

REMOVE EXIST.GUARDRAIL

300' LANE ADDITION

-L- PT Sta. 15+40.44

1200' MEDIAN TRANSITION

BEGIN PROJECT I-0911A
-L- STA. 10+50.00

50' TAPER TO EXIST.

TIE TO EXIST. FENCE

DAVID EUGENE ROBERTSON
JANET A. ROBERTSON
2004E0276
DB 845 PG 617

KEISER ENTERPRISES, LLC
DB 755 PG 921
DB 568 PG 600

REMOVE EXIST.C/A FENCE

PROP. WW FENCE

N 25°47'46" E 320.04'

-L- PC Sta. 10+65.62

MATCHLINE -L- STA. 23+00 SEE SHEET 5

SEE SHEET 5

-L-
PI Sta 13+03.04
Δ = 1° 21' 37.0" (RT)
D = 0° 17' 11.3"
L = 474.82'
T = 237.42'
R = 20,000.00'
SE = NC
V = 70mph

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	16+00.00	23+00.00	LT
SBG	-L-	14+00.00	20+00.00	RT

FOR -L- PROFILE SEE SHT. 17

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mwhitley

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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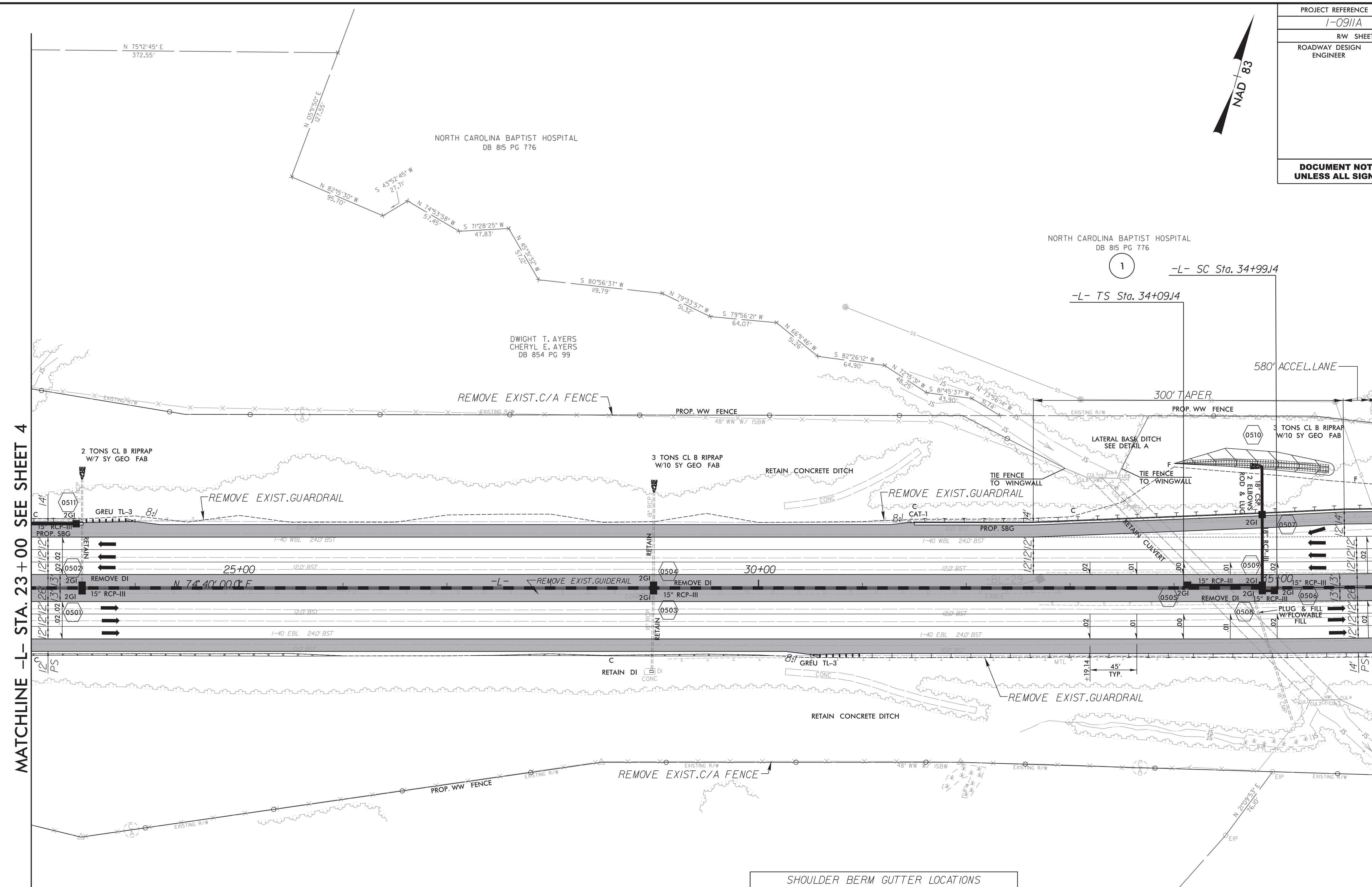

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	31+50.00	36+00.00	LT
SBG	-L-	23+00.00	23+50.00	LT

-L-
PIs Sta 34+69.14
Θs = 0°14' 27.5"
Ls = 90.00'
LT = 60.00'
ST = 30.00'

FOR -L- PROFILE SEE SHTS. 17-18

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PROJECT REFERENCE NO.	SHEET NO.
I-0911A	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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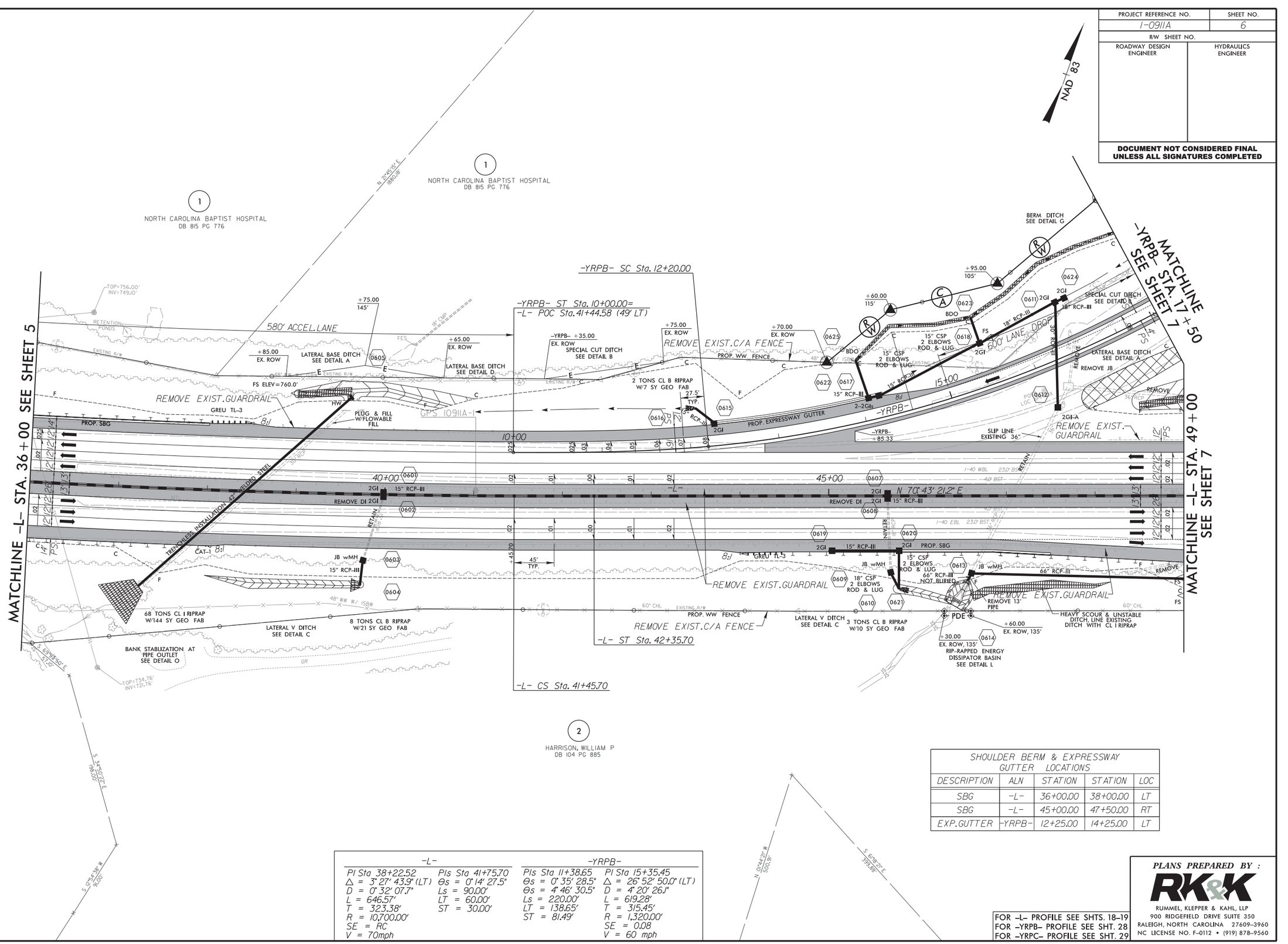

SHOULDER BERM & EXPRESSWAY GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	36+00.00	38+00.00	LT
SBG	-L-	45+00.00	47+50.00	RT
EXP.GUTTER	-YRPB-	12+25.00	14+25.00	LT

FOR -L- PROFILE SEE SHTS. 18-19
FOR -YRPB- PROFILE SEE SHT. 28
FOR -YRPC- PROFILE SEE SHT. 29

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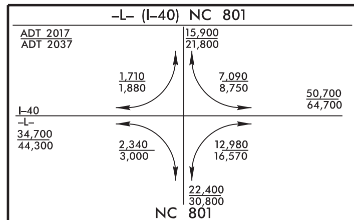

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	7

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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-YRPA-

PIs Sta 11+61.68	PI Sta 13+67.32	PIs Sta 15+72.42	PI Sta 20+47.57
Θs = 2° 59′ 26.6″	Δ = 8° 56′ 35.8″ (RT)	Θs = 2° 59′ 26.6″	Δ = 27° 34′ 47.0″ (RT)
Ls = 190.00′	D = 3° 08′ 53.2″	Ls = 190.00′	D = 20° 06′ 13.6″
LT = 126.68′	L = 284.08′	LT = 126.68′	L = 137.19′
ST = 63.35′	T = 142.33′	ST = 63.35′	T = 69.95′
	R = 1,820.00′		R = 285.00′
	SE = 0.07		SE = 0.07
	V = 60 mph		V = 30 mph

-YRPB-

PI Sta 15+35.45	PIs Sta 19+46.10	PI Sta 23+45.85	PI Sta 25+08.46
Δ = 26° 52′ 50.0″ (LT)	Θs = 6° 56′ 41.8″	Δ = 11° 21′ 51.6″ (RT)	Δ = 38° 24′ 04.5″ (RT)
D = 4° 20′ 26.1″	Ls = 320.00′	D = 6° 35′ 08.6″	D = 26° 02′ 36.7″
L = 619.28′	LT = 213.50′	L = 172.56′	L = 147.45′
T = 315.45′	ST = 106.82′	T = 86.56′	T = 76.61′
R = 1,320.00′		R = 870.00′	R = 220.00′
SE = 0.08		SE = 0.07	SE = 0.07
V = 60 mph		V = 40 mph	V = 30 mph

-YLPB-

PIs Sta 12+03.94	PI Sta 49+85.56	PIs Sta 21+83.56
Θs = 34° 30′ 55.9″	Δ = 187° 43′ 48.6″ (RT)	Θs = 23° 00′ 37.3″
Ls = 300.00′	D = 23° 00′ 37.3″	Ls = 200.00′
LT = 203.94′	L = 815.85′	LT = 134.48′
ST = 103.59′	T = 3,685.56′	ST = 67.71′
	R = 249.00′	
	SE = 0.08	
	V = 30 mph	

-YSPB-

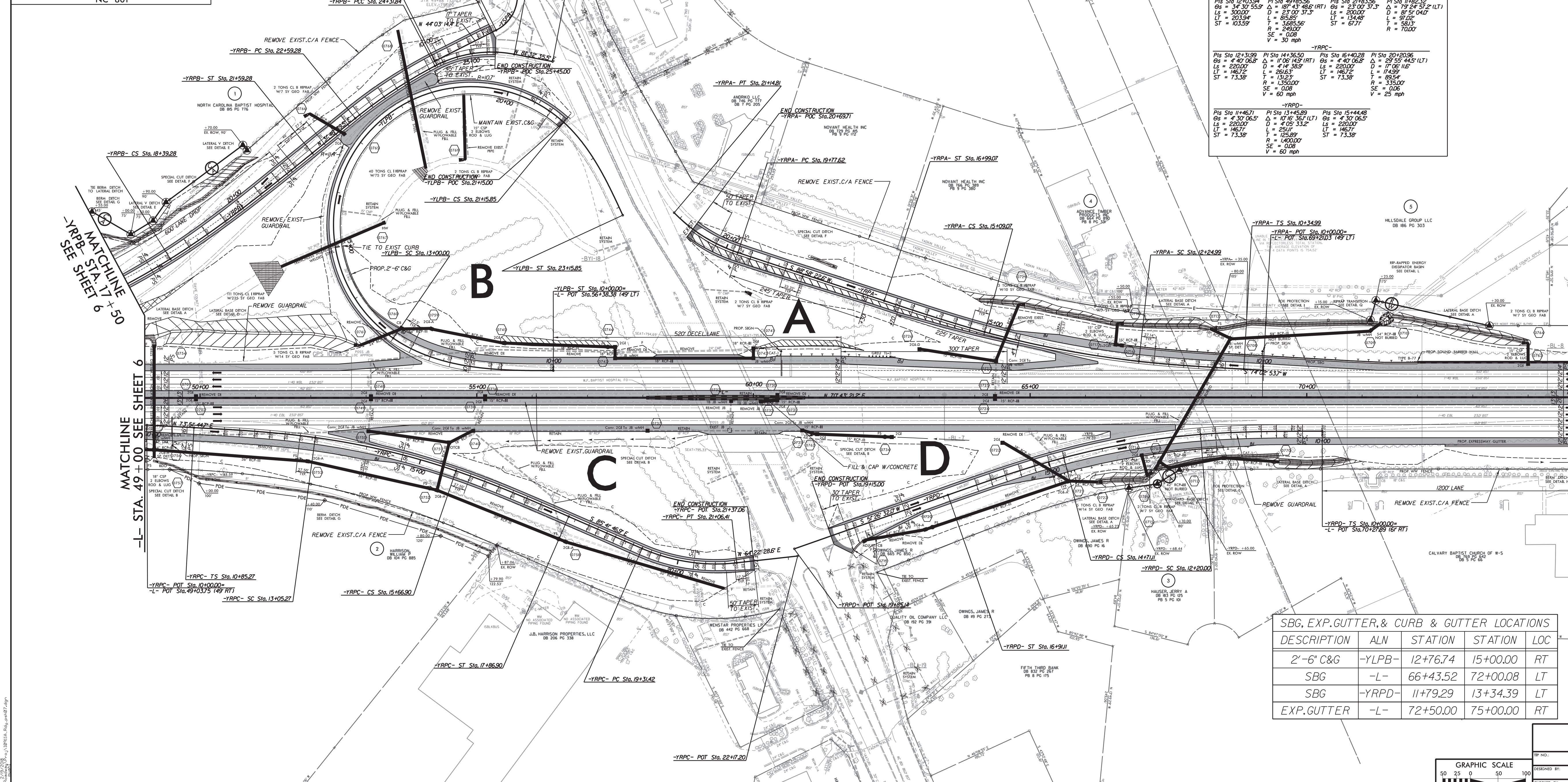
PI Sta 11+82.32
Δ = 79° 24′ 57.2″ (LT)
D = 81° 51′ 04.0″
L = 97.02′
T = 58.13′
R = 70.00′

-YRPC-

PIs Sta 12+31.99	PI Sta 14+36.50	PIs Sta 16+40.28	PI Sta 20+20.96
Θs = 4° 40′ 06.8″	Δ = 11° 06′ 14.9″ (RT)	Θs = 4° 40′ 06.8″	Δ = 29° 55′ 44.5″ (LT)
Ls = 220.00′	D = 4° 14′ 38.9″	Ls = 220.00′	D = 17° 06′ 11.6″
LT = 146.72′	L = 261.63′	LT = 146.72′	L = 174.99′
ST = 73.38′	T = 131.23′	ST = 73.38′	T = 89.54′
	R = 1,350.00′		R = 335.00′
	SE = 0.08		SE = 0.06
	V = 60 mph		V = 25 mph

-YRPD-

PIs Sta 11+46.71	PI Sta 13+45.89	PIs Sta 15+44.48
Θs = 4° 30′ 06.5″	Δ = 10° 16′ 36.1″ (LT)	Θs = 4° 30′ 06.5″
Ls = 220.00′	D = 4° 05′ 33.2″	Ls = 220.00′
LT = 146.71′	L = 251.11′	LT = 146.71′
ST = 73.38′	T = 125.89′	ST = 73.38′
	R = 1,400.00′	
	SE = 0.08	
	V = 60 mph	



SBG, EXP.GUTTER, & CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
2′-6″ C&G	-YLPB-	12+76.74	15+00.00	RT
SBG	-L-	66+43.52	72+00.08	LT
SBG	-YRPD-	11+79.29	13+34.39	LT
EXP.GUTTER	-L-	72+50.00	75+00.00	RT

FOR -L- PROFILE SEE SHTS. 19-21
FOR -YRPA- PROFILE SEE SHT. 28
FOR -YRPB- PROFILE SEE SHT. 28
FOR -YLPB- PROFILE SEE SHT. 29
FOR -YRPC- PROFILE SEE SHT. 29
FOR -YRPD- PROFILE SEE SHT. 30
FOR -YSPB- PROFILE SEE SHT. 30

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TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

GRAPHIC SCALE
50 25 0 50 100
PLANS

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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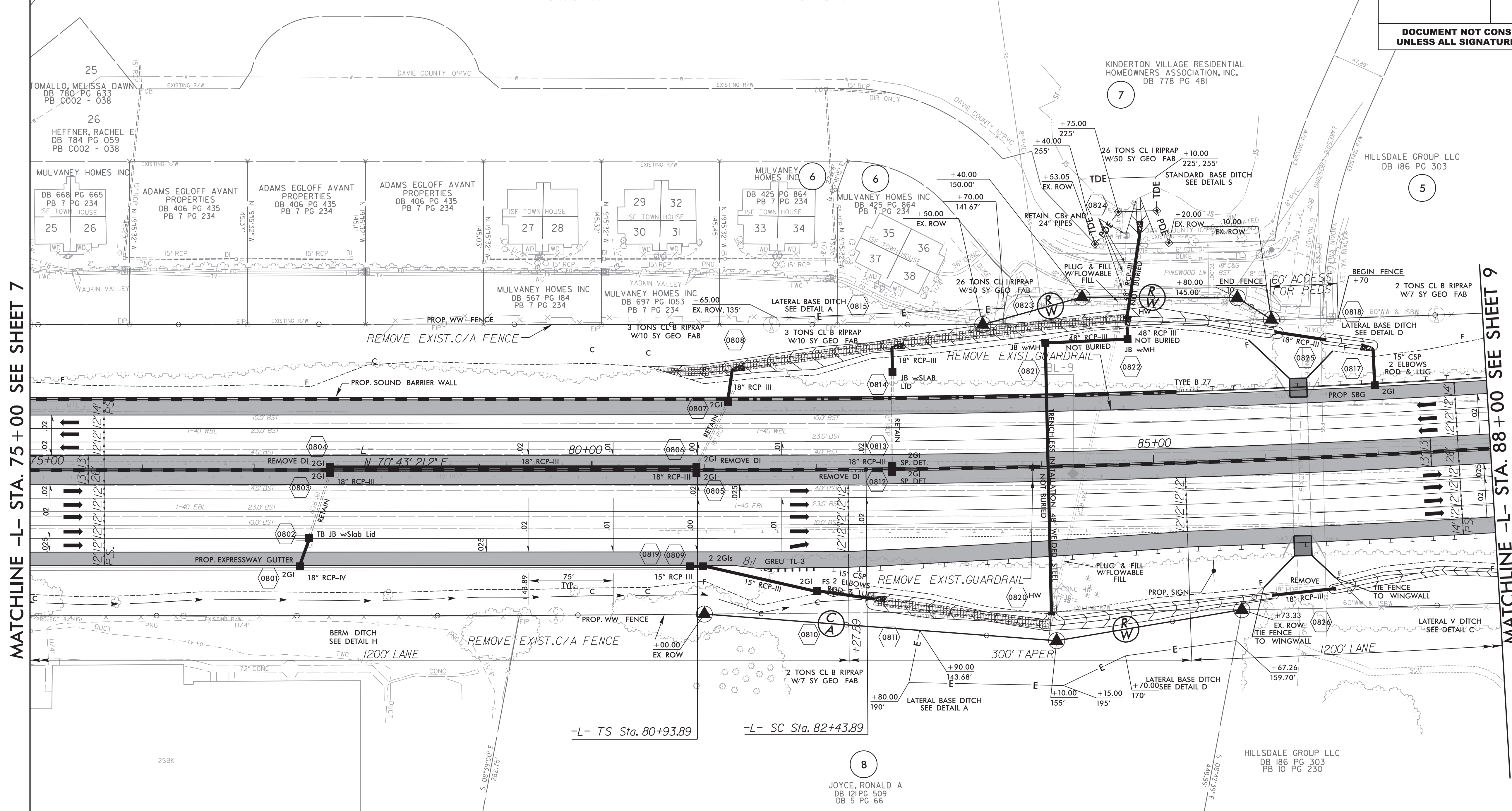
27 STEIL, ROSEMARY DB 693 PG 482 PB C002 - 019
28 WEDDLE, EMORY L DB 642 PG 173 PB C002 - 019
29 MASSENGILL, CAMILLA DAWN DB 697 PG 1058 PB C002 - 015
30 KEESBURY, SYBIL A DB 584 PG 692 PB C002 - 015
31 HARMON, TERRY E DB 738 PG 897 PB C002 - 015
32 SHUPP, PAULA C DB 812 PG 869 PB C002 - 015
33 BRANDON KELLY N DB 553 PG 587 PB C002 - 010
34 PROPST, JOHN B DB 603 PG 278 PB C002 - 010
35 VESTAL, SR DONNIE E DB 827 PG 102 PB C002 - 004
36 EASY STREET PROPERTIES LLC DB 716 PG 260 PB C002 - 004
37 STANFIELD, DAVID M DB 506 PG 082 PB C002 - 004
38 INGRAM, KIM R DB 504 PG 372 PB C002 - 004



SHOULDER BERM & EXPRESSWAY GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
EXP. GUTTER	-L-	75+00.00	81+00.00	RT
SBG	-L-	85+22.22	88+00.00	LT

-L-
PIs Sta 81+93.89
Θs = 0° 24' 05.8"
Ls = 150.00'
LT = 100.00'
ST = 50.00'

FOR -L- PROFILE SEE SHTS. 21-22

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RK&K
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900 RIDGEFIELD DRIVE SUITE 350
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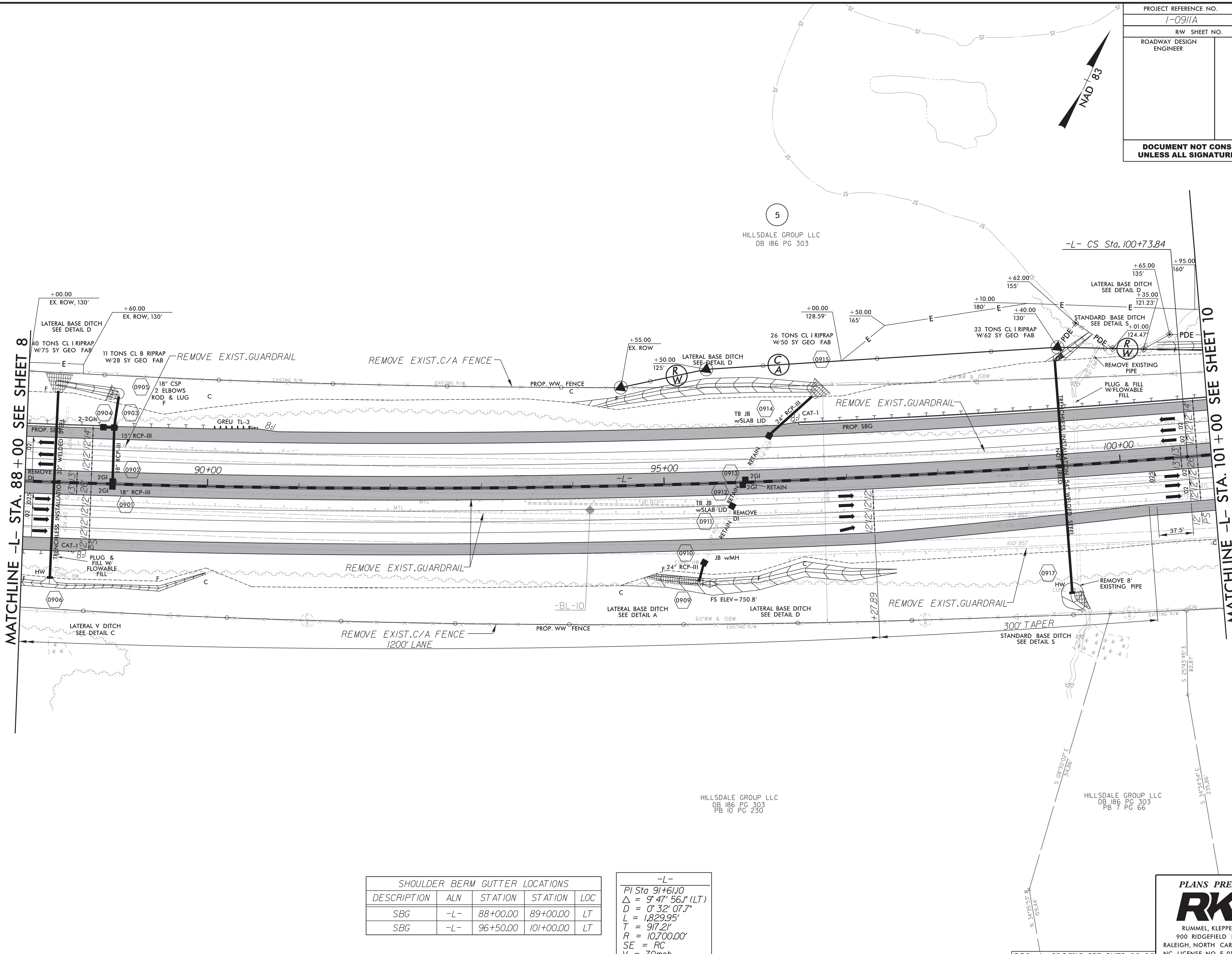
PROJECT REFERENCE NO.	SHEET NO.
I-0911A	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED


NAD 83
HILLSDALE GROUP LLC
DB 186 PG 303
MATCHLINE -L- STA. 88+00 SEE SHEET 8
MATCHLINE -L- STA. 101+00 SEE SHEET 10
-L- CS Sta. 100+73.84
REMOVE EXIST.GUARDRAIL
REMOVE EXIST.C/A FENCE
PROP. WW FENCE
LATERAL BASE DITCH SEE DETAIL D
LATERAL BASE DITCH SEE DETAIL A
LATERAL V DITCH SEE DETAIL C
STANDARD BASE DITCH SEE DETAIL S
40 TONS CL I RIPRAP W/75 SY GEO FAB
11 TONS CL B RIPRAP W/28 SY GEO FAB
26 TONS CL I RIPRAP W/50 SY GEO FAB
33 TONS CL I RIPRAP W/62 SY GEO FAB
18" CSP 2 ELBOWS ROD & LUG
TRENCHLESS INSTALLATION 30" WELDED STEEL
TRENCHLESS INSTALLATION 54" WELDED STEEL
PLUG & FILL W/FLOWABLE FILL
REMOVE EXISTING PIPE
REMOVE 8' EXISTING PIPE
FS ELEV=750.8'
1200' LANE
300' TAPER
-BL-10
HILLSDALE GROUP LLC
DB 186 PG 303
PB 10 PG 230
HILLSDALE GROUP LLC
DB 186 PG 303
PB 7 PG 66

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	88+00.00	89+00.00	LT
SBG	-L-	96+50.00	101+00.00	LT

-L-
PI Sta 91+61.10
Δ = 9° 47' 56.1" (LT)
D = 0° 32' 07.7"
L = 1,829.95'
T = 917.21'
R = 10,700.00'
SE = RC
V = 70mph

FOR -L- PROFILE SEE SHTS. 22-23

PLANS PREPARED BY :
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

MATCHLINE -L- STA. 101+00 SEE SHEET 9

MATCHLINE -L- STA. 114+00 SEE SHEET 11

-L- ST Sta. 102+23.84

+00.00
121.67', 145'
LATERAL BASE DITCH/
SEE DETAIL D

+65.00
97.06', 115

11 TONS CL B RIPRAP
W/28 SY GEO FAB

+30.00
90'

+10.00
130'

REMOVE EXIST.C/A FENCE

PROP. WW FENCE

60"WW & ISBW

EXISTING R/W

PROP. SBG

REMOVE 25" PIPE

18" CSP
2 ELBOWS
ROD. & LUG

15" RCP-III

18" RCP-III

24" RCP-III

15" RCP-III

105+00

110+00

-L- N 60° 07' 13.5" E

PLUG & FILL W/FLOWABLE FILL

REMOVE DI

TB JB w/SLAB LID

RETAIN

-BL-II

I-40 EBL 23.0' BST

I-40 WBL 23.0' BST

10.0' BST

5.0' BST

GREU TL-3

CAT-1

PROP. SIGN

REMOVE DI & 20' PIPE

REMOVE EXIST.GUARDRAIL

75' TYP.

+73.84

EIP

S 34°14'54" E
251.68'

HILLSDALE GROUP LLC
DB 186 PG 303
PB 7 PG 66

HILLSDALE GROUP LLC
DB 186 PG 303

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	101+00.00	102+50.00	LT

-L-
PIs Sta 101+23.84
Θs = 0° 24' 05.8"
Ls = 150.00'
LT = 100.00'
ST = 50.00'

FOR -L- PROFILE SEE SHTS. 23-24

PLANS PREPARED BY :

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mwh

8/17/99

-PED-	
PI Sta 11+49.86	PI Sta 16+11.32
Δ = 41° 27' 47.2" (LT)	Δ = 9° 24' 05.0" (LT)
D = 20° 06' 13.6"	D = 5° 43' 46.5"
L = 206.25'	L = 164.08'
T = 107.87'	T = 82.23'
R = 285.00'	R = 1,000.00'

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TWIN-CITY YOUTH SOCCER
DB 654 PG 364

NAD 83

9
TWIN-CITY YOUTH SOCCER
DB 654 PG 368

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	119+50.00	127+00.00	LT

MATCHLINE -L- STA. 114+00 SEE SHEET 10

MATCHLINE -L- STA. 127+00 SEE SHEET 12

-PED- POT Sta. 18+08.21

N 55° 59' 39.6" W

-PED- PT Sta. 16+93.18

-PED- PC Sta. 15+29.09

END CONSTRUCTION
-PED- POT Sta. 15+20.11

5 HILLSDALE GROUP LLC
DB 186 PG 303

PROP. WW FENCE

2 TONS CL B RIPRAP W/7 SY GEO FAB CUT/FILL TRANSITION

2 TONS CL B RIPRAP W/7 SY GEO FAB

15 TONS CL I RIPRAP W/30 SY GEO FAB

3 TONS CL B RIPRAP W/10 SY GEO FAB

LATERAL BASE DITCH SEE DETAIL J

LATERAL BASE DITCH SEE DETAIL T

RIPRAP TRANSITION SEE DETAIL Q

REMOVE EXIST.C/A FENCE

REMOVE EXIST.GUARDRAIL

REMOVE EXIST. BRIDGE

15" CSP 2 ELBOWS ROD & LUG

18" CSP 2 ELBOWS ROD & LUG

30" CSP 2 ELBOWS ROD & LUG

PLUG & FILL W/FLOWABLE FILL

GRADE TO DRAIN

PREFORMED SCOUR HOLE SEE DETAIL M

BERM DITCH SEE DETAIL P

REMOVE EXIST.FENCE

-PED- POT Sta.14+21.79=
-L- POT Sta.117+42.26

N 46° 35' 34.7" W

-PED- PT Sta. 12+48.23

BEGIN CONSTRUCTION
-PED- POT Sta.12+38.43

-PED- PC Sta. 10+41.99

-PED- POT Sta. 10+00.00

10+00

N 5° 07' 47.5" W

HISTORIC BOUNDARY LINE

HILLSDALE GROUP LLC
DB 186 PG 303

HILLSDALE GROUP LLC
DB 654 PG 381

BARN AGAIN, LLC
DB 846 PG 939
PB 10 PG 190

HISTORIC BOUNDARY LINE

S 86°36'00" W 269.07'

S 86°36'00" W 13.44'

S 24°42'58" E 84.36'

N 24°42'15" W 84.37'

S 55°44'40" E 58.82'

N 89°30'25" W 156.07'

S 39°45'23" E 26.02'

S 57°57'16" E 23.90'

S 44°00'36" E 20.58'

S 27°48'51" E 26.81'

S 10°49'01" E 21.82'

S 04°15'21" W 23.65'

S 20°05'06" W

N 44°54'18" E 38.60'

S 89°24'34" E 104.35'

N 47°45'52" E 380.63'

-L- POT Sta.117+42.26 =
-PED- POT Sta.14+21.79
D = 73° 17' 11.9"

117+00

N 60° 07' 13.5" E

15+00

-PED-
N 46° 35' 34.7" W

BEGIN BRIDGE
-PED- POT STA.13+30.63

-L- END BRIDGE
-PED- POT STA.15+12.96

N 60° 07' 13.5" E

120+00

125+00

N 60° 07' 13.5" E

FOR -L- PROFILE SEE SHT. 24
FOR -PED- PROFILE SEE SHT. 32

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mwhitley

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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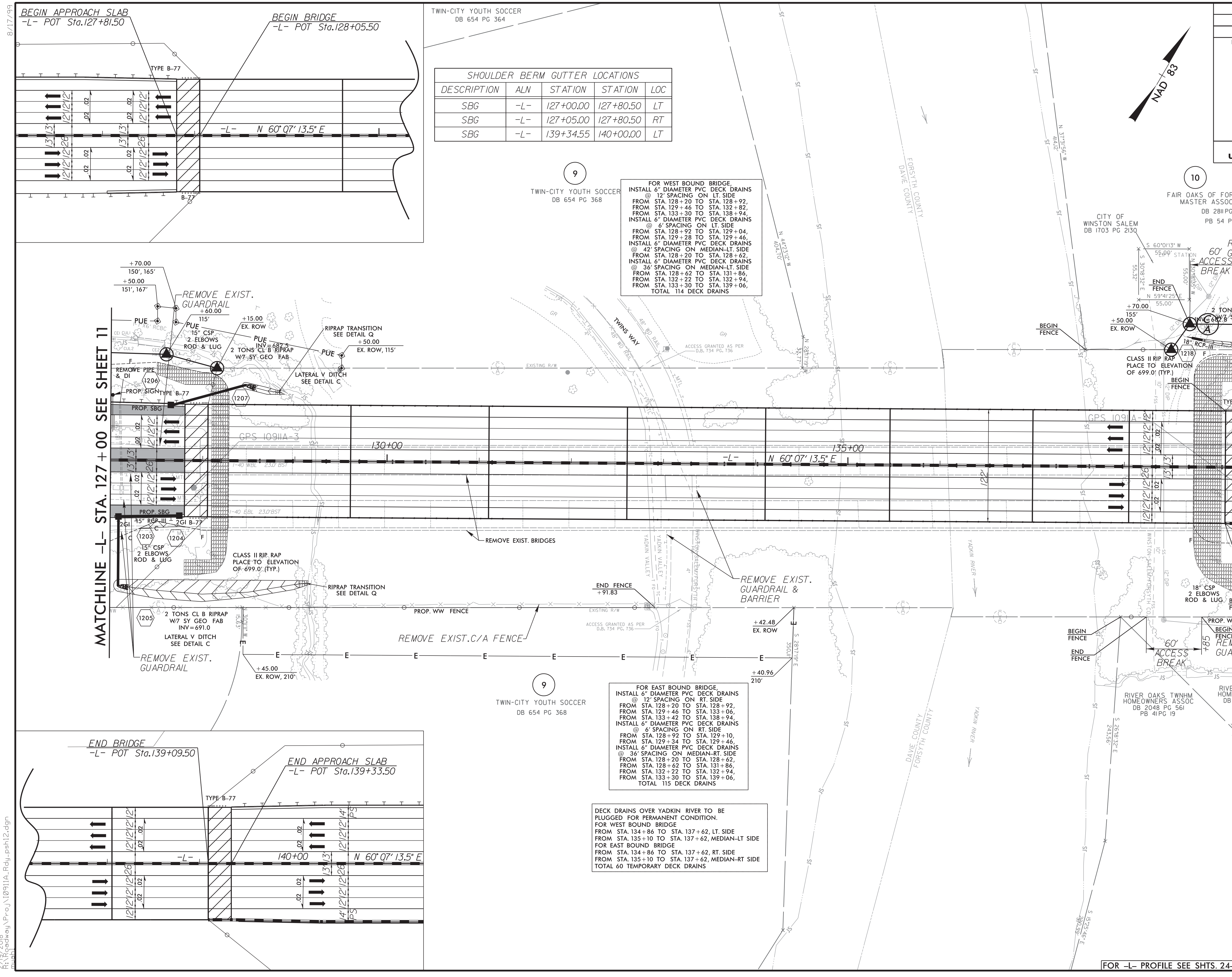
SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	127+00.00	127+80.50	LT
SBG	-L-	127+05.00	127+80.50	RT
SBG	-L-	139+34.55	140+00.00	LT



FOR WEST BOUND BRIDGE,
INSTALL 6" DIAMETER PVC DECK DRAINS
@ 12' SPACING ON LT. SIDE
FROM STA. 128+20 TO STA. 128+92,
FROM STA. 129+46 TO STA. 132+82,
FROM STA. 133+30 TO STA. 138+94,
INSTALL 6" DIAMETER PVC DECK DRAINS
@ 6' SPACING ON LT. SIDE
FROM STA. 128+92 TO STA. 129+04,
FROM STA. 129+28 TO STA. 129+46,
INSTALL 6" DIAMETER PVC DECK DRAINS
@ 42' SPACING ON MEDIAN–LT. SIDE
FROM STA. 128+20 TO STA. 128+62,
INSTALL 6" DIAMETER PVC DECK DRAINS
@ 36' SPACING ON MEDIAN–LT. SIDE
FROM STA. 128+62 TO STA. 131+86,
FROM STA. 132+22 TO STA. 132+94,
FROM STA. 133+30 TO STA. 139+06,
TOTAL 114 DECK DRAINS

FOR EAST BOUND BRIDGE,
INSTALL 6" DIAMETER PVC DECK DRAINS
@ 12' SPACING ON RT. SIDE
FROM STA. 128+20 TO STA. 128+92,
FROM STA. 129+46 TO STA. 133+06,
FROM STA. 133+42 TO STA. 138+94,
INSTALL 6" DIAMETER PVC DECK DRAINS
@ 6' SPACING ON RT. SIDE
FROM STA. 128+92 TO STA. 129+10,
FROM STA. 129+34 TO STA. 129+46,
INSTALL 6" DIAMETER PVC DECK DRAINS
@ 36' SPACING ON MEDIAN–RT. SIDE
FROM STA. 128+20 TO STA. 128+62,
FROM STA. 128+62 TO STA. 131+86,
FROM STA. 132+22 TO STA. 132+94,
FROM STA. 133+30 TO STA. 139+06,
TOTAL 115 DECK DRAINS

DECK DRAINS OVER YADKIN RIVER TO BE
PLUGGED FOR PERMANENT CONDITION.
FOR WEST BOUND BRIDGE
FROM STA. 134+86 TO STA. 137+62, LT. SIDE
FROM STA. 135+10 TO STA. 137+62, MEDIAN–LT SIDE
FOR EAST BOUND BRIDGE
FROM STA. 134+86 TO STA. 137+62, RT. SIDE
FROM STA. 135+10 TO STA. 137+62, MEDIAN–RT SIDE
TOTAL 60 TEMPORARY DECK DRAINS

FOR -L- PROFILE SEE SHTS. 24-25

PLANS PREPARED BY :
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PROJECT REFERENCE NO.	SHEET NO.
I-0911A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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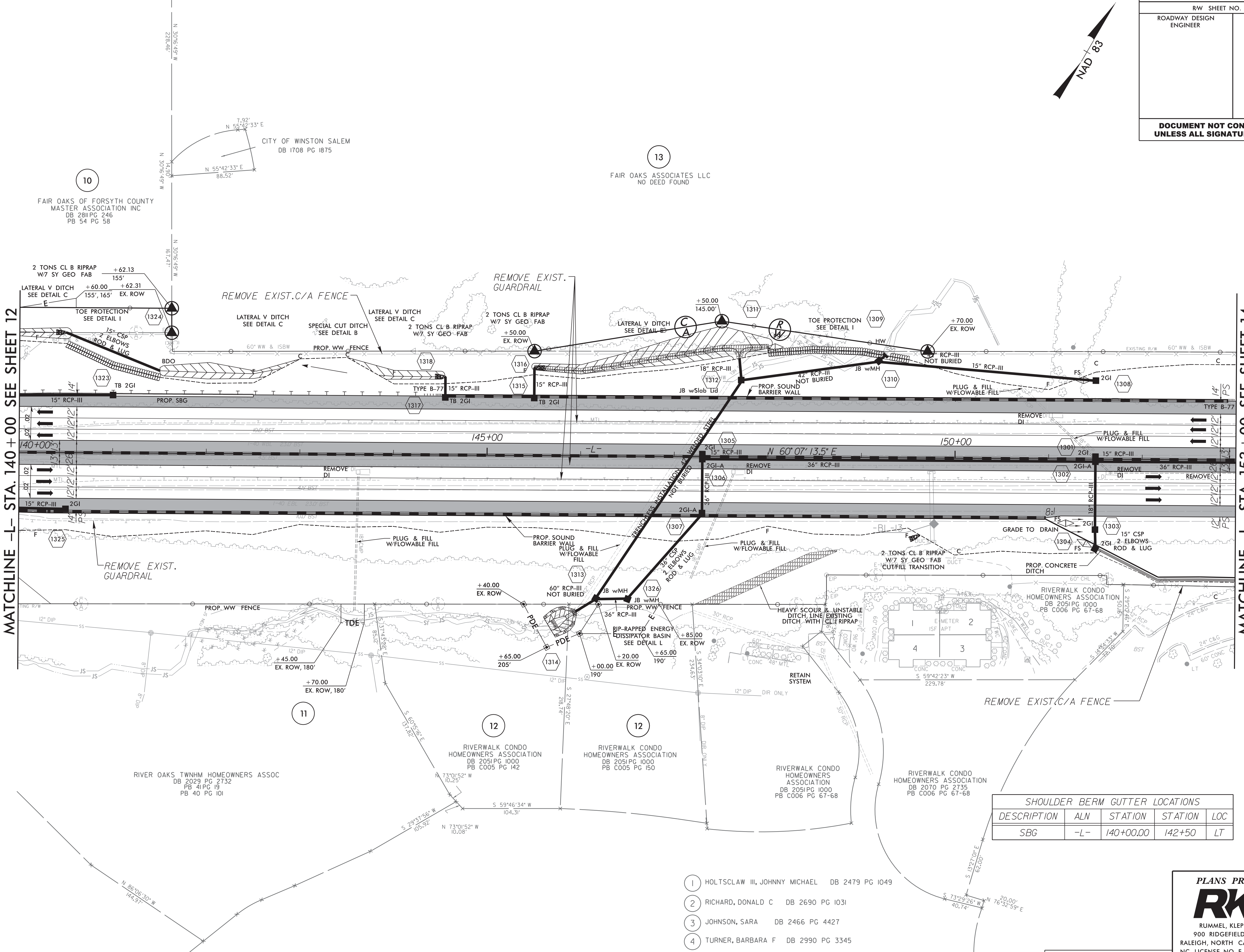

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	140+00.00	142+50	LT

1. HOLTSCLAW III, JOHNNY MICHAEL DB 2479 PG 1049
2. RICHARD, DONALD C DB 2690 PG 1031
3. JOHNSON, SARA DB 2466 PG 4427
4. TURNER, BARBARA F DB 2990 PG 3345

FOR -L- PROFILE SEE SHT. 25

PLANS PREPARED BY :
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PROJECT REFERENCE NO.	SHEET NO.
I-0911A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

MATCHLINE -L- STA. 153+00 SEE SHEET 13

MATCHLINE -L- STA. 167+00 SEE SHEET 15

FAIR OAKS ASSOCIATES LLC
DB 2539 PG 514
PB 20 PG 14

FAIR OAKS ASSOCIATES LLC
PB 20 PG 14

SCHULZ, LEO
DB 1612 PG 1304
PB 24 PG 29-31

TATE, WALTER G
DB 1760 PG 3439
PB 24 PG 29-31

CRANFILL, LAWRENCE V
DB 3001PG 2909
PB 24 PG 29-31

NCDOT
NO DEED FOUND

REMOVE EXIST.C/A FENCE

PROP WW FENCE

BERM DITCH
SEE DETAIL H

SPECIAL CUT DITCH
SEE DETAIL B

15" CSP
2 ELBOWS
ROD & LUG

300' TAPER

600' DECEL LANE

REMOVE EXIST.
GUARDRAIL

PROP. SOUND
BARRIER WALL

PROP. EXPRESSWAY GUTTER

2 TONS CL B RIPRAP
W/7 SY GEO FAB

PROP. SIGN

-YIRPC- N 62°25'13.5"E

-YIRPC- POT Sta. 10+00.00=
-L- POT Sta. 162+50.00 (49' RT)

-YIRPC- TS Sta. 14+30.68

EXPRESSWAY GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
EXP. GUTTER	-L-	160+00.00	162+11.61	RT

5 BAUMGAETNER, WILLIAM EUGENE
DB 2639 PG 3586

6 STONESTREET, HELEN LEE
DB 1974 PG 1604

7 JOHNSON, NINA A
DB 2978 PG 907

8 MORILLO, SOFIA
DB 2769 PG 3435

9 BOSWELL, MARY E
DB 1725 PG 2950

10 BALL, PHILIP H
DB 2016 PG 454

11 HICKMAN, JACK H
DB 1789 PG 2278

12 CARPENTER, RICHARD
DB 2852 PG 2844

13 BRALLEY, CAROL G
DB 2248 PG 472

14 HARRIS, JENNIFER A
DB 2957 PG 1352

15 DOTSON, HAZEL M
DB 2996 PG 2379

16 BUTTERFIELD, SCOT C
DB 2315 PG 1411

17 JOLLY, ROBERT
DB 2786 PG 3709

18 DOTSON, SAMUEL GWYN
DB 2745 PG 3611

19 MILLER, SR LOY MILTON
DB 2089 PG 3893

20 PHILLIPS, RICHARD J
DB 2893 PG 3696

21 WIGGINS, LISA C
DB 2095 PG 1153

22 BRAMMER, JAMES M
DB 1854 PG 4134

23 BYER, MURIEL LOUISE
DB 2579 PG 120

24 KIMEL, CARLA ANN
DB 2883 PG 3211

TANGLEWOOD FARM HOMEOWNERS ASSOC
NO DEED FOUND
PB C002 PG 126
PB C003 PG 6
PB C003 PG 9
PB C003 PG 17

WESTRIDGE CONDO OWNERS ASSOC
DB 1695 PG 1754
PB C004 PG 77

WESTRIDGE CONDO OWNERS ASSOC
DB 1704 PG 3857
PB C004 PG 109-112

WESTRIDGE CONDO OWNERS ASSOC
DB 1724 PG 230
PB C004 PG 109

WESTRIDGE CONDO OWNERS ASSOC
DB 1843 PG 107
PB C4 PG 165

FOR -L- PROFILE SEE SHTS. 25-26

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mwahl

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	15

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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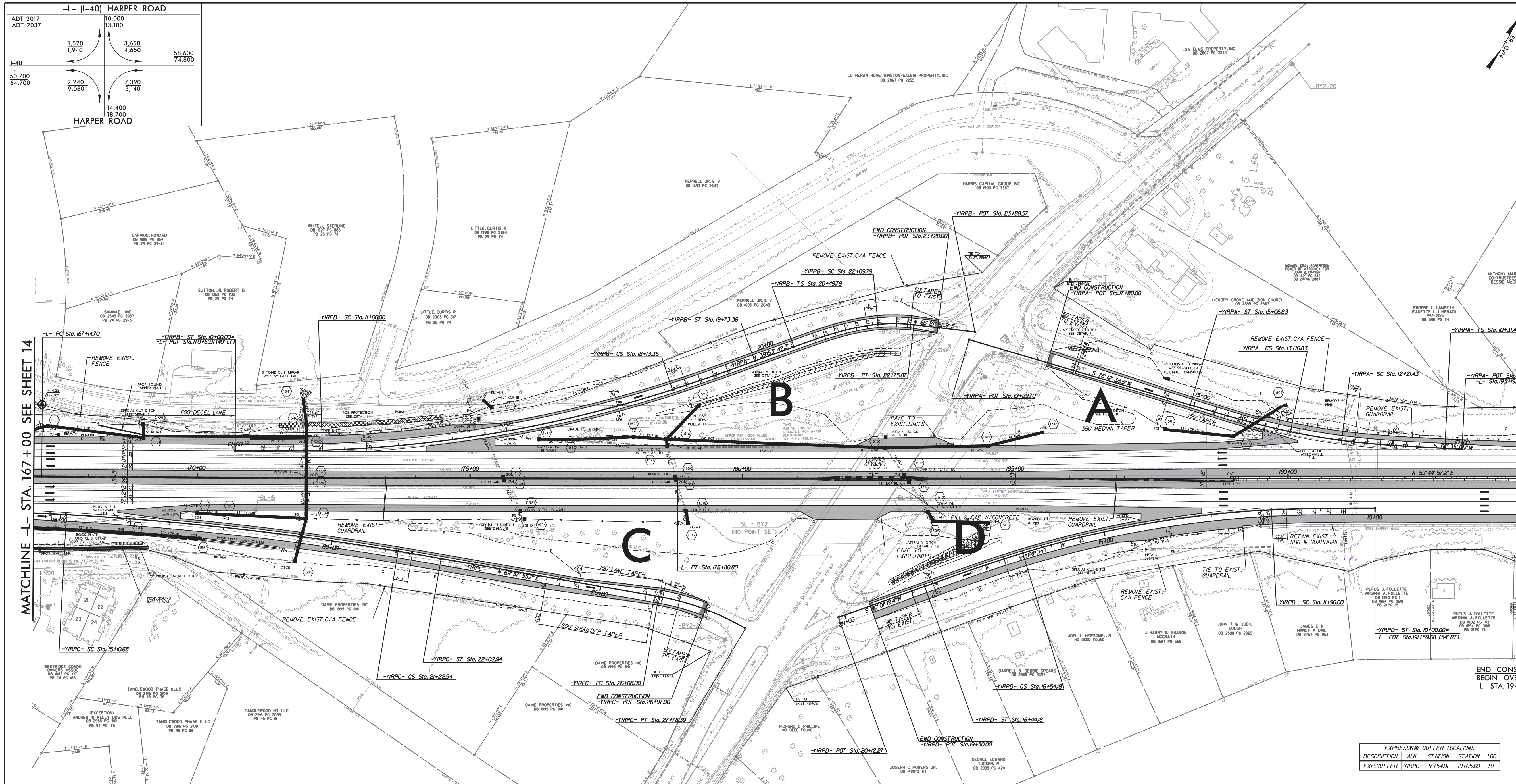

EXPRESSWAY GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
EXP.GUTTER	-YIRPC-	17+54.91	19+05.60	RT

FOR -L- PROFILE SEE SHTS. 26-27
FOR -Y1RPA- PROFILE SEE SHT. 30
FOR -Y1RPB- PROFILE SEE SHT. 31
FOR -Y1RPC- PROFILE SEE SHTS. 31-32
FOR -Y1RPD- PROFILE SEE SHT. 32

-L-

PI Sta 172+97.75
Δ = 0° 22' 16.3" (LT)
D = 0° 01' 54.6"
L = 1,166.10'
T = 583.05'
R = 180,000.00'
SE = NC
V = 70mph

-YIRPA-

PIs Sta 13+80.20	PI Sta 12+69.15	PIs Sta 11+58.13
Θs = 4° 32' 09.3"	Δ = 4° 33' 18.8" (RT)	Θs = 4° 32' 09.3"
Ls = 190.00'	D = 4° 46' 28.7"	Ls = 190.00'
LT = 126.71'	L = 95.40'	LT = 126.71'
ST = 63.37'	T = 47.73'	ST = 63.37'
	R = 1,200.00'	
	SE = 0.08	
	V = 60mph	

-YIRPB-

PIs Sta 11+05.99	PI Sta 14+88.85	PIs Sta 18+66.70	PIs Sta 21+56.82	PI Sta 22+42.96
Θs = 0° 01' 31.7"	Δ = 16° 08' 08.1" (LT)	Θs = 1° 58' 32.6"	Θs = 14° 33' 04.7"	Δ = 12° 01' 09.8" (RT)
Θs = 1° 58' 32.6"	D = 2° 28' 10.7"	Ls = 160.00'	Ls = 160.00'	D = 18° 11' 20.9"
Ls = 160.00'	L = 653.36'	LT = 106.67'	LT = 107.03'	L = 66.08'
LT = 105.99'	T = 328.85'	ST = 53.34'	ST = 53.66'	T = 33.16'
ST = 54.02'	R = 2,320.00'			R = 315.00'
	SE = 0.06			SE = 0.04
	V = 60mph			V = 35mph

-YIRPC-

PIs Sta 14+84.01	PI Sta 18+17.13	PIs Sta 21+49.61	PI Sta 26+94.14
Θs = 0° 25' 00.1"	Δ = 6° 22' 41.5" (RT)	Θs = 0° 25' 00.1"	Δ = 20° 46' 18.4" (RT)
Ls = 80.00'	D = 1° 02' 30.3"	Ls = 80.00'	D = 12° 11' 26.1"
LT = 53.33'	L = 612.26'	LT = 53.33'	L = 170.39'
ST = 26.67'	T = 306.45'	ST = 26.67'	T = 86.14'
	R = 5,500.00'		R = 470.00'
	SE = 0.03		
	V = 60mph		

-YIRPD-

PIs Sta 17+17.53	PI Sta 14+23.25	PIs Sta 11+26.68
Θs = 2° 51' 53.2"	Δ = 13° 59' 51.4" (LT)	Θs = 2° 51' 53.2"
Ls = 190.00'	D = 3° 00' 56.0"	Ls = 190.00'
LT = 126.68'	L = 464.18'	LT = 126.68'
ST = 63.35'	T = 233.25'	ST = 63.35'
	R = 1,900.00'	
	SE = 0.07	
	V = 60mph	

GRAPHIC SCALE
50 25 0 50 100
PLANS

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-0911A	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

MATCHLINE –L– STA. 196+00 SEE SHEET 15

TIMOTHY MAX BUNKER
ANTHONY MARK BUNKER
ANTHONY MARK BUNKER AND TIMOTHY MAX BUNKER
CO-TRUSTEES OF THE MAX GARDNER BUNKER AND
BESSIE McCORMICK BUNKER IRREVOCABLE TRUST

LIFE ESTATE FOR
MAX G. BUNKER
AND WIFE
BESSIE M. BUNKER
TRACT 2 OF
DB 2563 PG 2209

NOVANT HEALTH, INC.
DB 2821 PG 3700
DB 2907 PG 4428
PB 57 PG 65-66
PB 60 PG 120
TRACT 4

END OVERLAY
END PROJECT I-0911A
–L– STA. 210+00.00

REMOVE 32' EXISTING PIPE

60" RCP-III

TIE FENCE

TIE FENCE

JB w/Slab Lid

PLUG & FILL W/FLOWABLE FILL

RETAIN SYSTEM

TRENCHLESS INSTALLATION 60" WELDED STEEL NOT BURIED

EXIST.

N 59°44'57.2" E

–L–

200+00

205+00

210+00

REMOVE EXIST.C/A FENCE

RETAIN EXIST. GUARDRAIL

PROP. WW FENCE

END FENCE
TIE TO EXIST FENCE

50 FOOT BUFFER REF. PB 60 PG 120

GPS 1091IA-6

I-40 WBL 35.0' BST

I-40 EBL 35.0' BST

NOISE BARRIER WALL

APPROX. LOCATION OF 18" CONC

REMOVE EXIST.C/A FENCE

PATRICIA P. PETREE
DB 3074 PG 708
DB 1895 PG 1354
PB 21 PG 115

JOHN H. ALSPAW
CYNTHIA ALSPAW
DB 2827 PG 3152
DB 1906 PG 551
PB 21 PG 115

TOMMY K. BROWDER
ARDITH E. BROWDER
DB 1282 PG 193
DB 1907 PG 2624
PB 22 PG 40

WILLIAM D. WHITE, III
DB 3030 PG 238
PB 22 PG 40

CHARLIE W. CHERRY
OLLIE H. CHERRY
DB 1109 PG 114
PB 22 PG 40

SAMUEL ALBERT WHITENER
DB 2174 PG 420
PB 22 PG 140

JOSEPH RAJACICH
CAROLYN T. RAJACICH
DB 955 PG 450
PB 22 PG 140

CYNTHIA K. MAY
DB 2870 PG 4005
PB 22 PG 140

ALAN J. VAN NOY
LESLIE L. VAN NOY
DB 2101 PG 3505
PB 22 PG 140

DUANE R. WILLIAMS
MELISSA B. WILLIAMS
DB 2061 PG 2232
PB 23 PG 28

FOR –L– PROFILE SEE SHT. 27

PLANS PREPARED BY :
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