



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY PERDUE
GOVERNOR

EUGENE CONTI
SECRETARY

November 30, 2011

MEMORANDUM TO: Mr. Mike Mills, PE
Division 7 Engineer

FROM: Philip S. Harris, III, P.E., Unit Head *E. S. Jack*
Natural Environment Unit
Project Development and Environmental Analysis Branch

SUBJECT: Guilford County, Widening of US 220 from SR 2182 (Horsepen
Creek Rd) to north of SR 2313 (Winfree Rd) in Greensboro,
Federal Aid Project No. STP-220(5), State Project No. 8.1491504,
WBS No. 34418.1.4, **TIP R-2309AB**, and

Guilford and Rockingham Counties, Widening of US 220 south of
the Haw River to the Intersection of US 220 and existing NC 68,
State Project No. 6499008T, WBS No. 34429.1.1, **TIP R-2413C**.

Attached are the U.S. Army Corps of Engineers Section 404 Individual Permit and the N.C. Division of Water Quality Section 401 Water Quality Certification. All environmental permits have been received for the construction of this project.

A copy of this permit package will be posted on the NCDOT website at:
<http://www.ncdot.gov/doh/preconstruct/pe/neu/permit.html>

Cc:

| | |
|--|---|
| Mr. Randy Garris, P.E. State Contract Officer | Ms. Beth Harmon, EEP |
| Mr. Jerry Parker, Division Environ. Officer | Mr. Phillip Ayscue, NCDOT External Audit Branch |
| Mr. Majed Alghandour, P. E., Program. and TIP | Mr. Ahmad Al-Sharawneh, P.E., PDEA |
| Mr. Jay Bennett, P.E., Roadway Design | Mr. Michael Penney, P.E., PDEA |
| Dr. David Chang, P.E., Hydraulics | Mr. Eric Midkiff, P.E., PDEA Central Region Unit Head |
| Mr. Tom Koch, P.E., Structure Design | |
| Mr. Mark Staley, Roadside Environmental | |
| Mr. Ron Hancock, P.E., State Roadway Construction Engineer | |

PROJECT COMMITMENTS

T.I.P Project No. R-2309AB
US 220 widening from SR 2182 (Horse Pen Creek Road)
to 0.2mi North of SR 2313 (Winfree Road)
Guilford County
WBS No. 34418.1.4
Federal Aid No. STP-220(5)
State Project No. 8.1491504

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Project Development & Environmental Analysis (PDEA), Roadway Design Unit, Roadside Environmental Unit, Division 7 Construction

To minimize impacts to a perennial stream that parallels Hamburg Mill Road (SR 2135) to the east and located on Bur-Mil Park property, NCDOT will maintain a 50-foot undisturbed buffer requirement associated with the perennial stream.

The 50-foot undisturbed buffer requirement has been maintained on the plans.

The referenced stream and buffer is located outside the project construction limits, therefore this project commitment is no longer applicable to this project

PDEA, Roadway Design Unit, Roadside Environmental Unit, Project Service Unit, Division 7 Construction

SR 2337 (Owl's Roost Road), at its intersection with US 220, will be relocated to correct an existing skewed intersection. In order to preserve the historic entrance to the park at this intersection, NCDOT will preserve the stacked-rock pillars and re-install them following the construction of relocated Owl's Roost Road. NCDOT will also coordinate with park officials to design an enhanced entrance with landscaping on both sides of the relocated road.

Owl's Roost Road has been realigned on the plans and a note has been added to the plans to preserve and re-install the stacked-rock pillars.

This commitment was addressed during design and will be implemented during construction. SR 2337 (Owl's Roost Road) was realigned north, approximately 200 feet to create a 90 degree intersection with US 220. When the above project commitment was made two stacked-rock pillars existed, one on each side of the intersection. At some later date the northern pillar was knocked down during an automobile accident. The pillar was salvaged and is in storage at Bur-Mil Park. Prior to any work at the existing intersection the Contractor will remove the remaining pillar and coordinate its preservation and storage at Bur-Mill Park with the salvaged pillar. Once the realignment construction of the US

220/SR2337 intersection has been completed the Contractor will coordinate the Bur-Mill Park Manager regarding the re-install of both pillars. Contact the Park Manager, Ms. Tracy Pegram, at (336) 373-3813, regarding preservation, storage and re-install of the pillars. The Contractor will also coordinate with NCDOT Division 7 Construction Engineer and the Bur-Mill Park Manager regarding landscaping at the new/relocated US 220/SR 2337 intersection.

PDEA, Roadway Design Unit, Program Development Branch, Traffic Engineering Branch

As part of the proposed improvements to US 220, a pedestrian culvert is proposed to cross under US 220 just north of SR 2117 (Summerfield Road). The pedestrian culvert will provide a safe crossing of the proposed greenway along the abandoned railroad bed and will maintain connectivity for the Lake Brandt Greenway as it crosses US 220 near Summerfield Road. NCDOT will enter into a cost share agreement with the Town of Summerfield for the construction cost of the pedestrian culvert. The Town of Summerfield will be responsible for twenty percent (20%) and NCDOT for eighty percent (80%) of the construction cost of the pedestrian culvert. A municipal agreement between NCDOT, the Town of Summerfield, and Guilford County will be executed for maintenance and cost share responsibilities of the pedestrian culvert.

~~*A pedestrian culvert has been added to the project plans.*~~

This commitment was addressed during design and will be implemented during construction. A pedestrian culvert has been added to the project plans.

Due to grad constraints of the US 220 Improvements north of SR 2117 (Summerfield Road) a new location of the proposed pedestrian culvert was investigated. In coordination with the Town of Summerfield the location of the pedestrian culvert was moved south of SR 2117, at Station 168+56. The new location allows for the proposed greenway to be routed through the Vineyard at Summerfield.

The municipal agreement between NCDOT and the Town of Summerfield regarding the pedestrian culvert was drafted, reviewed and approved by the NCDOT Division Office, and forwarded to the Town of Summerfield for execution on April 28, 2011. The municipal agreement indicated that NCDOT will contract for the construction of a pedestrian culvert to cross under US 220 just south of SR 2117 and install conduit for lighting inside the pedestrian culvert. NCDOT shall provide an electrical conduit system embedded inside the pedestrian culvert wall with a number of junction boxes flush with the wall for light fixtures. The Town shall be responsible for all utility work including the cost of the luminaries, wiring, controls, service poles and utility company charges. Other requirements relating to costs, reimbursement of costs, right of way, maintenance and liability are also included in the municipal agreement.

Pedestrian crossings at the two existing NC 150/ US 220 intersections will be considered during final design due to the proximity of commercial development at these two intersections.

~~The NCDOT Bicycle and Pedestrian Division have been notified of this commitment. We are waiting for recommendations from them regarding the pedestrian crossings.~~

The reference intersections are US 220/SR 2204 (Auburn Road)/NC 150 and US 220/NC150 (Oak Ridge Road)/SR 1002 (Scalesville Road). Plans were forwarded to the NCDOT Bicycle and Pedestrian Division (Bike and Ped.) for recommendations at these two intersections. Though there are no existing sidewalks or multi-use paths at either intersection Bike and Ped. Recommendations are as follows:

*US 220/ SR 2204 (Auburn Road)/NC 150 – (in anticipation of the Town of Summerfield constructing a sidewalk or a multi-use path) design and install crosswalks at the intersection, and;
US 220/NC150 (Oak Ridge Road)/SR 1002 (Scalesville Road) – design to accommodate future crosswalks.*

Consensus reached in the Field Review Meeting between Division 7 staff and Roadway Design was to defer the installation of crosswalks at both locations until the Town of Summerfield has constructed a sidewalk or multi-use path.

Hydraulics Unit

Since a portion of the proposed project is located within a water supply watershed protected critical area, hazardous spill basins will be required to prevent accidental hazardous spills that are within 0.5 mile of the critical area. NCDOT will employ Best Management Practices (BMP's) as stated in the document "Best Management Practices for Protection of Surface Waters" (March 1997).

The commitment was implemented during design. Hazardous Spill Basins are included in the design where the project is within ½ mile of the Critical Area. Five Hazardous Spill Basins were added to the plans on US 220 at –L- Line station 57+00+/- Left (south bound), 112+50+/- Right (north bound), 118+50+/- Left (south bound), 121+70+/- Left (south bound) and 142+30+/-Left (south bound).

Roadway Design Unit, GeoEnvironmental Section, Right of Way

Nine (9) regulated facilities along the proposed project were found to have either had underground storage tank (UST) systems in the past or currently have UST systems in operation. The preferred alternative for sections A, B and C are expected to impact 6 of the 9 UST's surveyed. If further design studies indicate right of way from these properties needs to be acquired, preliminary site assessments for soil and groundwater contamination will need to be performed prior to right of way purchase.

~~If any acquisition of right of way on any of the sites mentioned in our report is necessary, the GeoEnvironmental Unit will investigate the sites further and provide right of way recommendations.~~

Right of way recommendations were submitted by the Geotechnical Unit for 4 of the 6 sites within the project area. Site Numbers 70, 79, 138, and 51. The GeoEnvironmental Section was not able to gain access on the remaining two sites, numbers 147 and 154, and deferred site investigations until the parcels were acquired by Right of Way. Right of Way acquired both parcels, numbers 147 and 154, through condemnation. The Department will work with the Attorney General's Office to investigate the recently condemned right of way at the former gas station on parcel 147 and the active gas station on parcel 154. The Department will also request that the right of way be condemned in permanent easement on both properties due to the possibility of underground fuel tanks in the right of way. The Department will remove any underground fuel tanks from the right of way prior to let and provide a project special provision to address any contamination that may be encountered during construction.

PDEA Branch, Roadway Design Unit, Program Development

NCDOT will continue to coordinate with the City of Greensboro regarding the provisions for bicycle and pedestrian accommodations from SR 2182 (Horse Pen Creek Road) to SR 2337 (Owl's Roost Road). NCDOT will share in the construction costs for sidewalks or a multi-use pathway on a 50/50 cost sharing basis with the City of Greensboro.

However, for a shoulder section facility, any additional right of way that will be needed to construct a multi-use path will need to be paid by the City.

The typical section for this portion of the project includes additional outside lane width for a shared bicycle lane and curb and gutter with sidewalks. Since sidewalks and bicycle lanes are being provided a multi-use path will not be included; therefore, the shoulder section does not need to be widened. A shoulder section is no longer being considered in this portion of the project; therefore, the City will not pay additional right of way costs associated with this improvement.

The City of Greensboro will be required to accept responsibility for the maintenance and liability of the sidewalks or multi-use path once they are constructed. A municipal agreement will need to be executed prior to the construction of the sidewalks outlining the cost sharing and maintenance responsibilities.

~~NCDOT continues working with the City of Greensboro to reach a municipal agreement that will need to be executed prior to the construction of the sidewalks outlining the cost sharing and maintenance responsibilities.~~

A municipal agreement with the City of Greensboro for sidewalks is pending approval as of and executed by all parties as of May 13, 2011.

This is a standard project commitment.

PDEA Branch, Division 7

Continued consultation with the U.S. Fish and Wildlife Service (USFWS) and the North Carolina Wildlife Resources Commission (WRC) will be necessary to assure the project does not affect the bald eagle nesting season during the construction phase of the project. A moratorium for the bald eagle will be in effect between November 15th and July 15th each year. Except for a small area in the vicinity of bridge number 307, no construction activities can take place within 1500 feet of the nest should the eagles choose to nest in this location. Continued surveys for bald eagle nests and nesting activities will need to be done before and during project construction. A 1500-foot radius showing the moratorium limit described above will be shown on the final plan sheets as appropriated.

~~*The bald eagle has been delisted as of August 2007 and is not subject to Section 7 consultation and a biological conclusion is not required. According to the USFWS guidance for bald eagles and correspondence with Gary Jordan (USFWS) on February 20, 2008, there is no need for a moratorium or any further action in regard to the bald eagle for this project. Therefore, there is no moratorium proposed for project R-2309AB. The prior commitment concerning construction moratorium for the bald eagle has been eliminated.*~~

The bald eagle has been delisted as of August 2007 and is not subject to Section 7 consultation and a biological conclusion is not required. However, the bald eagle remains protected by the Bald and Golden Eagle Protection Act. The USFWS has also issued guidance in the National Bald Eagle Management Guidelines. Under this guidance road projects fall under Category A. Category A is subdivided into whether or not the activity will be visible or not visible from the nest. If construction is visible from the nest, then a radius up to 660 feet from the project area is imposed when considering disturbance to the bald eagle. If construction activity is not visible from the nest due to a buffered area then a radius of up to 330 feet from the project area is imposed when considering disturbance to the bald eagle.

A bald eagle nest is located approximately 800 feet to the west of US 220 on the southern shore of Lake Brandt tailwater and approximately 530 feet north of Hamburg Mill Road. The 530 feet is a forested buffer between construction and the bald eagle nest. According to the USFWS guidance for bald eagles and correspondence with Gary Jordan (USFWS) on February 20, 2008, there is no need for a moratorium or any further action in regard to the bald eagle for this project. Therefore, there is no moratorium proposed for project R-2309AB. The prior commitment concerning construction moratorium for the bald eagle has been eliminated.

Roadway Design Unit, Division 7

The location of any median breaks will be discussed with the town of Summerfield in accordance with the Department's policy on median break spacing. DOT Division 7 staff

and Engineering Coordination staff will meet to determine where, if any, left-overs and median breaks will be placed prior to final design.

~~Meetings have been held with the Town of Summerfield and one median break has been added at US 220 "L sta. 195+00" as per their request. The town was also informed that any other locations would be investigated as requested.~~

Since November 2006 NCDOT and the Town of Summerfield have held several meetings to discuss additional median breaks. Based on those meeting three additional median breaks have been added to the project on Us 220 at -L- Line station 185+35+/-, 195+00+/-, and 209+55+/-.

The Department will connect Brass Cannon Court to US 220 and will restrict the access to emergency vehicles only. Details of this intersection design will be worked out during the development of right-of-way plans.

~~Access to Brass Cannon Court will be restricted to emergency vehicles only. The final details of what will be done will be discussed at the upcoming field inspection.~~

Since the Combined Public Hearing for the project on July 26, 2005, NCDOT has been informed that Brass Cannon Court has been incorporated into the City of Greensboro. Fire protection for Brass Cannon Court is provided by the City's Fire Department via Horsepen Creek Road. NCDOT has received a petition with greater than 400 signatures requesting no access from US 220 to brass Cannon Court. Based on this additional information NCDOT will not be provided a connection or access from US 220 to brass Cannon Court.

NCDOT Division 7 Construction, NCDOT PDEA-Human Environment Unit (HEU)

NCDOT will avoid impacting the Summerfield Historic District along US 220, by use of expressway gutter in front of the Ogburn property.

In order to provide adequate drainage, NCDOT proposes to install a 10 to 15 feet wide ditch outside the expressway gutter. The addition of the ditch has been coordinated with SHPO and FHWA. This design change will have "No Adverse Effect" on the historic property and will have a "de minimis" impact with regards to section 4(f).

NCDOT PDEA-Natural Environment Unite (NEU)

NCDOT will conduct a survey of the project study area for the Small whorled pogonia to determine whether habitat or individuals are present. The survey will be conducted during the flowering period. Once it is completed, a biological conclusion will be rendered.

A survey was done for the small whorled pogonia, after the consultation in April 2008, by NCDOT biologists in May 2008. Suitable habitat was present within the project area.

Habitat consisted of forested areas with north and east facing slopes with little to no understory with occasional breaks in the canopy allowing sunlight to reach the forest floor. However, south and west facing slopes were also surveyed if preferred habitat conditions were present. Small whorled pogonia was not found within in the project area and a biological conclusion of "No Effect" was given. A search of the North Carolina Natural Heritage Database (NCNHP; updated August 2011) revealed no known occurrences of the federally protected species within 1.0 mile of the limits of this project. Therefore, the biological conclusion of "No Effect" remains valid for the small whorled pogonia.

PDEA-HEU, Roadway Design Unit, Project Service Unit, Division 7 Construction

The original Traffic Noise Analysis for R-2309AB was prepared in June 2000 and updated on December 4, 2006. Neither of the previous noise analyses included recommendations for noise abatement. The Traffic Noise & Air Quality Group has completed a review of the 2006 report to determine whether changes in abatement criteria found in the 2011 NCDOT Traffic Noise Abatement Policy (hereinafter "the Policy") would lead to recommendations for noise barriers on the project. The Policy effective on July 31, 2011, requires a technical review of noise analyses prepared for projects with environmental documents signed on or before the above effective date, but for which letting will occur after this date.

Two areas along the project were tentatively identified as eligible for revised noise analysis.

These areas are as follows:

1. East Side of US 220, immediately north of SR 2444 (Joseph Hopkins Rd) for a distance of approximately 1600 feet, and;
2. West side of US 220, between intersections with SR 2125 (Rhondan Rd) to the south and SR 2219 (Myers Fork Rd) to the north.

The Roadway Design Unit is aware of these pending analyses. Upon completion of this work, any noise barriers found feasible and reasonable, as defined in the Policy, will be incorporated into the project plans to meet the schedule.

An updated Noise Analysis, per the 2011 NCDOT Traffic Noise Abatement Policy, was conducted for the project. Based on the detailed design noise analysis two noise walls will be required for the project at the following locations:

1. *East side of US 220 at SR 2444 (Joseph Hopkins Rd);*
 - i. *-L- Line station right (north bound side) 231+00+/- to 248+99+/- approximate, length of 1,800 feet, and;*
 - ii. *-L- Line station right (north bound side) 251+79+/- to 268+55+/-, approximate length of 1,714 feet.*

2. *West side of US 220, between intersections with SR 2125 (Rhondan Rd) and SR 2219 (Myers Fork Rd):*
 - i. *All residential units that may have been affected have been removed, thus there is not a need for any noise wall(s) in this location.*

The exact location, length and height of these noise walls will be determined through the final design, which has been initiated but is not anticipated until late 2011. To the fullest extent possible the noise wall design sheets will be included in the construction plans/documents.

COMMITMENTS DEVELOPED FROM PERMITTING

Roadside Environmental, Division 7 Construction

PDEA- NEU

404 condition f/ 401 condition 4 and 5

Compensatory mitigation for the unavoidable impacts to 3,943 linear feet of stream and 2.41 acres of riparian wetland impact associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated April 21, 2011 and November 17, 2011, from William D. Gilmore, EEP Director. Pursuant to the In-Lieu-Fee Instrument signed July 28, 2010, between the State of North Carolina, Ecosystem Enhancement Program and the US Army Corps of Engineers the EEP will provide 5,388 linear feet of restoration equivalent warm water stream channel in the Cape Fear River Basin (Cataloging Unit 03030002) and 1,060 linear feet of restoration equivalent warm water stream channel within the Roanoke River Basin (Cataloging Unit 03010103) in accordance with Section F of the Instrument. Pursuant to the In-Lieu-Fee Instrument signed July 28, 2010, between the State of North Carolina, Ecosystem Enhancement Program and the US Army Corps of Engineers the EEP will provide 4.56-acres of riparian wetland restoration equivalent in the Cape Fear River Basin (03030002) and 0.04- acre of riparian wetland restoration equivalent in the Roanoke River Basin (03010103) in accordance with Section F of the instrument. For wetlands, a minimum of 1:1 (impact to mitigation) must be in the form of wetland restoration.

401 condition 6

Any modifications to this 401 Water Quality Certification that propose additional stream impacts or increased impervious surface requiring additional stormwater management may be subject the Jordan Water Supply Nutrient Strategy [15A NCAC02B .0267]. NCDOT shall coordinate with NCDWQ prior to submitting a modification request to determine the applicability of the Jordan Water Supply Nutrient Strategy. This condition does not apply to major modifications for additional sections of the project that were covered under the Finding of No Significant Impact or approved in the Avoidance and Minimization stage of the project.

Roadside Environmental, Division 7 Construction, Hydraulics Unit

401 condition 2

Turbidity curtains shall be used to isolate all work areas from Lake Brandt, including pile or casement installation, placement of riprap, excavation or filling. Strict adherence to the Construction and Maintenance Best Management Practices will be required.

401 condition 3

NCDOT shall design, construct, and operate and maintain hazardous spill catch basins (HSCBs) at lake crossings within the WS CA watershed. The HSCBs shall be located at Station numbers -L- 57+13 LT, -L- 118+50 LT, -L-142+25 LT, -L-112+60 RT, and -L-121+70 LT.

401 condition 10

The permittee shall use /Design Standards in Sensitive Watersheds/[15A NCAC 4B.0124(a)-(e)] in areas draining to WSIV CA waters. However, due to the size of the project, NC DOT shall not be required to meet 15A NCAC 4B .0124(a) regarding the maximum amount of uncovered acres. Temporary cover (wheat, millet, or similar annual grain) or permanent herbaceous cover shall be planted on all bare soil within 15 business days of ground disturbing activities to provide erosion control.

PROJECT COMMITMENTS

T.I.P. Project No. R-2413C
US 220 widening south of the Haw River to the
Intersection of US 220 and existing NC 68
Guilford and Rockingham Counties
WBS Element No.34429.1.1
State Project No.6499008T

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Project Development and Environmental Analysis Branch, Roadway Design, and Program Development Branch

Best Management Practices will be employed.

NOTE: Standard Commitment.

NCDOT will coordinate with resource agencies (USCOE, USFWS, NCWRC and DEM) during the permitting phase of the project to develop a mutually agreeable mitigation plan.

Mitigation opportunities will be explored that will provide for wetland restoration, enhancement, and/or creation within the same drainage as the wetland loss.

The use of previously converted farmland will be explored for wetland restoration sites.

The donation of orphaned plots (uneconomic remnants) of farmland and forest to the county greenway and/or parks and recreation programs will be considered.

There will be continuing efforts for cooperation between NCDOT and the resource agencies with respect to the crossings of Reedy Fork Creek and the Haw River.

NCDOT will construct a hazardous spill catch basin (HSCB) at the Reedy Fork Creek Crossing, which lies within the Greensboro watershed. Additional HSCBs will be considered for other locations within the Greensboro Watershed during the development of preliminary and final design plans.

NOTE: Concurrence Point 2A/4A Commitment: At the Reedy Fork Creek crossing of the mainline, located between Bunch Road and Brookbank Road, the project plans to construct a bridge.

NCDOT will provide a self-contained bridge drainage system for the crossing of Reedy Fork Creek. The bridge drainage will be tied in with the hazardous spill

catch basin.

NCDOT will provide bridged crossings of Reedy Fork Creek and the Haw River that allow wildlife, pedestrian, and equestrian access along both sides of the waterway. The Reedy Fork Creek crossing will provide 10 feet of natural surface on one bank, and 10 feet of natural surface as well as 10 feet of stabilized trail on the other bank for passage beneath the bridge. The Haw River crossing will provide 10 feet of natural surface on each side of the channel for passage beneath the bridge.

Prior to construction, NCDOT will coordinate with the USACE and the NC Department of Cultural Resources (NCDRC) regarding the possible need for archaeological survey in the vicinity of 404 permit areas to assess the nature, extent, condition and significance of archaeological resources that might be damaged or destroyed by the proposed action.

NCDOT will attempt to salvage merchantable timber during the clearing of right-of-way for the project. NCDOT's general contract for right-of-way clearing provides opportunity for contractors to market saleable trees.

NOTE: This commitment is standard and general in NCDOT contracts

Based on preliminary noise studies, NCDOT will evaluate noise abatement measures at the following locations during final design:

- Golden Acres Subdivision south of Alcorn Road
- Trailer court at US 220 and NC 65
- Trailer court across US 220 from Spotswood Road
- Homes west of US 220 at Ogborn Mill Road (SR 1100)
- Homes east of US 220 at Ogborn Mill Road (SR 1100)

NOTE: Noise Barriers: For the updated traffic noise analysis prepared in April 2009, only one barrier was found to be reasonable and feasible. This barrier is located along Section C near Spotswood Road, north of the Connector/US 220 interchange from Station 34+80 to Station 39+60. This barrier is 19 feet high and 1,576 feet long and is located on the west side of US 220.

Greenways: The project will include pedestrian culverts at Brookbank Road and at the abandoned railroad grade. At Deboe Road, a 7.5-foot offset will be included on one side of the bridge for the accommodation of future sidewalks.

Recreation Facility: The NCDOT committed to altering their design plans for the southbound off-ramp at NC 150 to avoid direct impacts to the private recreation center for the Henson Forest subdivision. Note: This design change has been made.

Concurrence Point 2A/4A Commitment: At a crossing of an unnamed tributary to Reedy Fork Creek (Stream S22), the project plans originally showed a double 8-foot by 9-foot

culvert. NCDOT agreed to include equalizer pipes in the design for water flow between the wetland areas, and include sills in the culverts to prevent head cuts.

Concurrence Point 2A/4A Commitment: At a crossing of unnamed tributary to Haw River (Stream S-3A), the project will construct a single 7-foot by 8-foot culvert.

COMMITMENTS DEVELOPED FROM PERMITTING

Roadside Environmental, Division 7 Construction, Hydraulics Unit

404 condition f/ 401 condition 4 and 5

Compensatory mitigation for the unavoidable impacts to 3,943 linear feet of stream and 2.41 acres of riparian wetland impact associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated April 21, 2011 and November 17, 2011, from William D. Gilmore, EEP Director. Pursuant to the In-Lieu-Fee Instrument signed July 28, 2010, between the State of North Carolina, Ecosystem Enhancement Program and the US Army Corps of Engineers the EEP will provide 5,388 linear feet of restoration equivalent warm water stream channel in the Cape Fear River Basin (Cataloging Unit 03030002) and 1,060 linear feet of restoration equivalent warm water stream channel within the Roanoke River Basin (Cataloging Unit 03010103) in accordance with Section F of the Instrument. Pursuant to the In-Lieu-Fee Instrument signed July 28, 2010, between the State of North Carolina, Ecosystem Enhancement Program and the US Army Corps of Engineers the EEP will provide 4.56-acres of riparian wetland restoration equivalent in the Cape Fear River Basin (03030002) and 0.04- acre of riparian wetland restoration equivalent in the Roanoke River Basin (03010103) in accordance with Section F of the instrument. For wetlands, a minimum of 1:1 (impact to mitigation) must be in the form of wetland restoration.

Roadside Environmental, Division 7 Construction, Hydraulics Unit

401 condition 6

Any modifications to this 401 Water Quality Certification that propose additional stream impacts or increased impervious surface requiring additional stormwater management may be subject the Jordan Water Supply Nutrient Strategy [15A NCAC02B .0267]. NCDOT shall coordinate with NCDWQ prior to submitting a modification request to determine the applicability of the Jordan Water Supply Nutrient Strategy. This condition does not apply to major modifications for additional sections of the project that were covered under the Finding of No Significant Impact or approved in the Avoidance and Minimization stage of the project.



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

November 22, 2011

Regulatory Division

Action ID: SAW-2002-20447

Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA
NC Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Thorpe:

In accordance with the written request of April 19, 2011, including the revisions submitted on May 20, 2011 (purpose and need statement), June 30, 2011, July 27, 2011, and the ensuing administrative record, enclosed are two copies of a permit to authorize the following:

1) proposed permanent placement of fill material into 3,943 linear feet of jurisdictional stream channel, 2.41 acre of adjacent riparian wetlands and 1.78 acre of Lake Brandt and Lake Higgins open water areas and, 2) proposed temporary placement of fill material into 809 linear feet of jurisdictional stream channel and 0.42 acre of Lake Brandt and Lake Higgins open water areas. These impacts are associated with the widening and improvement project identified as R-2309AB/R-2413C. The project site is located along US 220, in and near Greensboro and Summerfield, in Guilford and Rockingham Counties, North Carolina, and extends from the existing SR 2182 (Horsepen Creek Road) and ends at the intersection of US 220 and existing NC 68.

You should acknowledge that you accept the terms and conditions of the enclosed permit by signing and dating each copy in the spaces provided ("Permittee" on page 3). Your signature, as permittee, indicates that, as consideration for the issuance of this permit, you voluntarily accept and agree to comply with all of the terms and conditions of this permit. All pages of both copies of the signed permit with drawings and exhibits should then be returned to this office for final authorization. A self-addressed envelope is enclosed for your convenience.

This correspondence contains a proffered permit for the above described project. If you object to this decision, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the District Commander, Wilmington District at the following address:

Col. Steven A. Baker, District Commander
U.S. Army Corps of Engineers, Wilmington District
69 Darlington Avenue
Wilmington, North Carolina 28403

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the District Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by January 20, 2012.

****It is not necessary to submit an RFA form to the District Office if you do not object to the decision in contained in this correspondence.****

After the permit is authorized in this office, the original copy will be returned to you and the duplicate copy will be permanently retained in this office. Should you have questions, please contact Mr. Andrew Williams, Raleigh Regulatory Field Office, at telephone (919) 554-4884, extension 26.

Sincerely,



 Jean B. Gibby
Chief, Raleigh Regulatory Field Office

Enclosures

Copy Furnished (with Special Conditions):

CESAW-R

DEPARTMENT OF THE ARMY PERMIT

Permittee: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION—ATTN: Mr. Gregory Thorpe

Permit No: SAW-2002-20447

Issuing Office: USAED, WILMINGTON

NOTE: The term “you” and its derivatives, as used in this permit, means the permittee or any future transferee. The term “this office” refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of the office acting under the authority of the commanding officer.

You are authorized to perform work in the accordance with the terms and conditions specified below.

Project Description: The project, identified as R-2309AB/R-2413C, consists of widening and improving a section of US220 from a two-lane facility to a four-lane facility. R-2309AB begins at SR 2182 (Horsepen Creek Road) and terminates at 0.2 miles north of SR 2313 (Winfree Road) in Greensboro and R-2413C begins south of the Haw River and ends at the intersection of US 220 and existing NC 68. Total permanent impacts for the construction of this project are 3,943 linear feet of stream channel, 2.41 acre of adjacent riparian wetlands, and 1.78 acre of open water within Lake Brandt and Lake Higgins. Total temporary impacts for construction of this project are 809 linear feet of stream channel, and 0.42 acre of open water within Lake Brandt and Lake Higgins. The applicant will mitigate for unavoidable impacts to streams by payment into the North Carolina Ecosystem Enhancement Program (NCEEP) in the amount necessary to perform the restoration of 5,388 linear feet of warm water streams and 4.56- acres of riparian wetland within the in the Cape Fear River Basin (HUC 03030002) and by payment to the NCEEP in the amount necessary to perform the restoration of 1,060 linear feet of warm water streams and 0.04- acre of riparian wetland within the Roanoke River Basin (03010103).

Project Location: The project, identified as R-2309AB/R-2413C is located along US 220, in and near Greensboro and Summerfield, in Guilford and Rockingham Counties, North Carolina. The project extends from the existing SR 2182 (Horsepen Creek Road) and ends at the intersection of US 220 and existing NC 68. Coordinates (in decimal degrees) for the site are 36.2285° N, -79.9139° W (NAD83/WGS84). The site contains a portion of the Haw River, six (6) unnamed tributaries to the Haw River, a portion of Troublesome Creek, two (2) unnamed tributaries to Troublesome Creek, four (4) unnamed tributaries to Mears Creek, two (2) unnamed tributaries to Lake Brandt and twenty-one (21) adjacent wetland areas, and two (2) open water areas in the Cape Fear River Basin (8-Digit Cataloging Unit 03030002). Additionally, the site contains three (3) unnamed tributaries to Jacobs Creek, and one (1) adjacent wetland in the Roanoke River Basin (8-Digit Cataloging Unit 03010103). Troublesome Creek and Mears Creek are tributaries to the Haw River which flows to Cape Fear River, a navigable water of the United States. Jacobs Creek is a tributary to the Dan River, which flows to the Roanoke River, a navigable water of the United States.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on December 31, 2016. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Conditions 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

*SEE ATTACHED SPECIAL CONDITIONS

Further Information:

1. **Congressional Authorities:** You have been authorized to undertake the activity described above pursuant to:

- () Section 10 of the Rivers and Harbors Act of 1899 (33 U.S. C. 403).
- (X) Section 404 of the clean Water Act (33 U.S.C. 1344).
- () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. **Limits of this authorization.**

- a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
- b. This permit does not grant any property rights or exclusive privileges.
- c. This permit does not authorize any injury to the property or rights of others.
- d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.**
- b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.**
- c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.**
- d. Design or construction deficiencies associated with the permitted work.**
- e. Damage claims associated with any future modification, suspension, or revocation of this permit.**

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

- a. You fail to comply with the terms and conditions of this permit.**
- b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).**
- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.**

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measure by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

| | | |
|---|------------------------------------|--------------------------------|
| Applicant: NCDOT- Mr. Gregory Thorpe | File Number: SAW 2002-20447 | Date: November 22, 2011 |
| Attached is: | | See Section below |
| <input checked="" type="checkbox"/> INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission) | | A |
| <input type="checkbox"/> PROFFERED PERMIT (Standard Permit or Letter of permission) | | B |
| <input type="checkbox"/> PERMIT DENIAL | | C |
| <input type="checkbox"/> APPROVED JURISDICTIONAL DETERMINATION | | D |
| <input type="checkbox"/> PRELIMINARY JURISDICTIONAL DETERMINATION | | E |

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <http://www.usace.army.mil/inet/functions/cw/cecwo/reg> or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the district engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

| | |
|---|---|
| If you have questions regarding this decision and/or the appeal process you may contact: Andrew Williams, Regulatory Project Manager Raleigh Regulatory Field Office U.S. Army Corps of Engineers 3331 Heritage Trade Drive, Suite 105 Wake Forest, North Carolina 27587 | If you only have questions regarding the appeal process you may also contact: Mr. Mike Bell, Administrative Appeal Review Officer CESAD-ET-CO-R U.S. Army Corps of Engineers, South Atlantic Division 60 Forsyth Street, Room 9M15 Atlanta, Georgia 30303-8801 |
|---|---|

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

| | | |
|----------------------------------|-------|-------------------|
| _____ | Date: | Telephone number: |
| Signature of appellant or agent. | | |

For appeals on Initial Proffered Permits and approved Jurisdictional Determinations send this form to:

District Engineer, Wilmington Regulatory Division, Attn: Andrew Williams, Project Manager, Raleigh Regulatory Field Office, 3331 Heritage Trade Drive, Suite 105, Wake Forest, North Carolina 27587

For Permit denials and Proffered Permits send this form to:

Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Mike Bell, Administrative Appeal Officer, CESAD-ET-CO-R, 60 Forsyth Street, Room 9M15, Atlanta, Georgia 30303-8801

SPECIAL CONDITIONS

Failure to institute and carry out the details of the following special conditions below (listed as a-w) will result in a directive to cease all ongoing and permitted work within waters of the United States, including wetlands, associated with the permitted project, or such other remedies and/or fines as the U.S. Army Corps of Engineers District Commander or his authorized representatives may seek.

- a) The North Carolina Division of Water Quality (DWQ) permit/certification number 3864 was issued for this project on November 19, 2011. Special conditions were issued associated with this water quality permit/certification and a copy of these conditions is attached as Exhibit B. These referenced conditions are hereby incorporated as special conditions of this permit.
- b) All work authorized by this permit must be performed in strict compliance with the attached plans which were received on April 19, 2011, including supplemental permit application information provided by letter dated July 27, 2011. These plans are a part of this permit and identified as Exhibit A. Any modification to these plans must be approved by the US Army Corps of Engineers (USACE) prior to implementation.
- c) The permittee shall schedule a preconstruction meeting between its representatives, the contractor's representatives, and the Corps of Engineers, Raleigh Regulatory Field Office, NCDOT Regulatory Project Manager, prior to any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all of the terms and conditions contained within this Department of the Army Permit. The permittee shall provide the USACE, Raleigh Regulatory Field Office, NCDOT Regulatory Project Manager, with a copy of the final plans at least two weeks prior to the preconstruction meeting along with a description of any changes that have been made to the project's design, construction methodology or construction timeframe. The permittee shall schedule the preconstruction meeting for a time when the USACE and North Carolina Division of Water Quality (NCDWQ) Project Managers can attend. The permittee shall invite the Corps and NCDWQ Project Managers a minimum of thirty (30) days in advance of the scheduled meeting in order to provide those individuals with ample opportunity to schedule and participate in the required meeting.
- d) Except as authorized by this permit or any USACE approved modification to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.
- e) Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or

SPECIAL CONDITIONS (Action ID. SAW-2002-20447; NC Department of Transportation/TIP R-2309AB/R-2413C)

maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters or wetlands.

f) Compensatory mitigation for the unavoidable impacts to 3,943 linear feet of stream and 2.41 acres of riparian wetland impact associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letters dated March 21 and November 17, 2011, from William D. Gilmore, EEP Director. Pursuant to the In-Lieu-Fee Instrument signed July 28, 2010, between the State of North Carolina, Ecosystem Enhancement Program and the US Army Corps of Engineers the EEP will provide 5,388 linear feet of restoration equivalent warm water stream channel in the Cape Fear River Basin (Cataloging Unit 03030002) and 1,060 linear feet of restoration equivalent warm water stream channel within the Roanoke River Basin (Cataloging Unit 03010103) in accordance with Section F of the Instrument. Pursuant to the In-Lieu-Fee Instrument signed July 28, 2010, between the State of North Carolina, Ecosystem Enhancement Program and the US Army Corps of Engineers the EEP will provide 4.56-acres of riparian wetland restoration equivalent in the Cape Fear River Basin (03030002) and 0.04-acre of riparian wetland restoration equivalent in the Roanoke River Basin (03010103) in accordance with Section F of the instrument. For wetlands, a minimum of 1:1 (impact to mitigation) must be in the form of wetland restoration.

g) All mechanized equipment will be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, the permittee shall immediately report it to the N.C. Division of Water Quality at 1 (800) 858-0368 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act will be followed.

h) The permittee shall advise the Corps in writing prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.

i) Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source and will be clean and free of any pollutants except in trace quantities. Metal products, organic materials (including debris from land clearing activities), or unsightly debris will not be used.

j) The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions, shall be available at the project site during construction and maintenance of this project.

SPECIAL CONDITIONS (Action ID. SAW-2002-20447; NC Department of Transportation/TIP R-2309AB/R-2413C)

- k) The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).
- l) The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades in those areas, prior to project completion.
- m) During the clearing phase of the project, heavy equipment must not be operated in surface waters or stream channels. Temporary stream crossings will be used to access the opposite sides of stream channels. All temporary diversion channels and stream crossings will be constructed of non-erodible materials. Grubbing of riparian vegetation will not occur until immediately before construction begins on a given segment of stream channel.
- n) No fill or excavation for the purposes of sedimentation and erosion control shall occur within jurisdictional waters, including wetlands, unless it is included on the plan drawings and specifically authorized by this permit.
- o) The permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.
- p) Violations of these conditions or violations of Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act must be reported in writing to the Wilmington District U.S. Army Corps of Engineers within 24 hours of the permittee's discovery of the violation.
- q) The permittee will ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Written verification shall be provided that the final construction drawings comply with the attached permit drawings prior to any active construction in waters of the United States, including wetlands. Any deviation in the construction design plans will be brought to the attention of the Corps of Engineers, Raleigh Regulatory Field Office prior to any active construction in waters or wetlands.

SPECIAL CONDITIONS (Action ID. SAW-2002-20447; NC Department of Transportation/TIP R-2309AB/R-2413C)

- r) Prior to commencing construction within jurisdictional waters of the United States for any portion of the proposed project, the permittee shall forward the latest version of project construction drawings to the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager. Half-size drawings will be acceptable.

- s) The permittee shall take measures to prevent live or fresh concrete from coming into contact with any surface waters until the concrete has hardened.

- t) Measures will be included in the construction/installation that will promote the safe passage of fish and other aquatic organisms. The dimension, pattern, and profile of the stream above and below a pipe or culvert should not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed opening should be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. Spring flow should be determined from gauge data, if available. In the absence of such data, bankfull flow can be used as a comparable level.

- u) Culverts greater than 48 inches in diameter will be buried at least one foot below the bed of the stream. Culverts 48 inches in diameter or less shall be buried or placed on the stream bed as practicable and appropriate to maintain aquatic passage, and every effort shall be made to maintain the existing channel slope. The bottom of the culvert must be placed at a depth below the natural stream bottom to provide for passage during drought or low flow conditions. Destabilizing the channel and head cutting upstream should be considered in the placement of the culvert. A waiver from the depth specifications in this condition may be requested in writing. The waiver will be issued if it can be demonstrated that the proposal would result in the least impacts to the aquatic environment.

- v) To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent wetlands and streams, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. The permittee shall provide the USACE with appropriate maps indicating the locations of proposed borrow or waste sites as soon as the permittee has that information. The permittee will coordinate with the USACE before approving any borrow or waste sites that are within 400 feet of any streams or wetlands.

- w) If the permittee discovers any previously unknown historic or archaeological sites while accomplishing the authorized work, he shall immediately stop work and notify the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager who will initiate the required State/Federal coordination.



North Carolina Department of Environment and Natural Resources

Division of Water Quality
Coleen H. Sullins
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

November 19, 2011

Dr. Greg Thorpe, PhD., Manager
Project Development and Environmental Analysis
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina, 27699-1548

Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with
ADDITIONAL CONDITIONS for:

Proposed improvements to US 220 from SR 2182 (Horsepen Creek Rd) to 0.2 miles north of SR 2313 (Winfree Rd) in Guilford County, Federal Aid Project No. STP-220(5), State Project No. 8.1491504, WBS Element No. 34418.1.4, R-2309AB, and proposed improvements to US 220 from south of the Haw River to the Intersection of US 220 and existing NC 68 in Guilford and Rockingham Counties, State Project No. 6499008T. WBS Element No. 34429.1.1, TIP No. R2413C. NCDWQ Project No. 20110392

Dear Dr. Thorpe:

Attached hereto is a copy of the reissued Certification No. 3864 issued to The North Carolina Department of Transportation (NCDOT) dated November 19, 2011. This replaces the Certification No. 3684 issued August 5, 2011 and correction letters issued August 15, 2011, August 29, 2011, and November 14, 2011.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Sullins", is written over a horizontal line. Below the signature, the name "Coleen H. Sullins" and the title "Director" are printed. A small "for" is written to the left of the signature.

Coleen H. Sullins
Director

Attachments

cc: Andy Williams, US Army Corps of Engineers, Raleigh Field Office
Mike Mills, PE, Division 7 Engineer
Jerry Parker, Division 7 Environmental Officer
Chris Militscher, Environmental Protection Agency (electronic copy only)
Travis Wilson, NC Wildlife Resources Commission (electronic copy only)
Beth Harmon, Ecosystem Enhancement Program
Wetlands/ 401 Transportation Permitting Unit
File Copy

**401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with
ADDITIONAL CONDITIONS**

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (NCDWQ) Regulations in 15 NCAC 2H .0500. This certification authorizes the NCDOT to impact 2.41 acres of jurisdictional wetlands, 4751 linear feet of jurisdictional streams, and 2.2 acres of open water in Guilford and Rockingham Counties. The project shall be constructed pursuant to the application dated received April 28, 2011 with additional information dated received May 26, 2011 and August 3, 2011. The authorized impacts are as described below:

Stream Impacts in the Cape Fear River Basin for R2309AB

| Site | Permanent Fill in Intermittent Stream (linear ft) | Temporary Fill in Intermittent Stream (linear ft) | Permanent Fill in Perennial Stream (linear ft) | Temporary Fill in Perennial Stream (linear ft) | Total Stream Impact (linear ft) | Stream Impacts Requiring Mitigation (linear ft) |
|--------------|---|---|--|--|---------------------------------|---|
| 1 | | | 280 | 162 | 280 | 280 |
| 6 | 3 | 0 | | | 0 | 0 |
| 7 | | | 172 | 18 | 190 | 172 |
| 8 | | | 40 | 34 | 74 | 0 |
| 9 | | | 240 | 122 | 362 | 240 |
| 10 | | | 412 | 16 | 428 | 412 |
| 11 | 85 | 20 | | | 105 | 0 |
| 12 | | | 200 | 22 | 222 | 200 |
| Total | 88 | 20 | 1344 | 374 | 1826 | 1304 |

Total Stream Impact for R2309 AB Project: 1826 linear feet

Stream Impacts in the Cape Fear River Basin for R2413C

| Site | Permanent Fill in Intermittent Stream (linear ft) | Temporary Fill in Intermittent Stream (linear ft) | Permanent Fill in Perennial Stream (linear ft) | Temporary Fill in Perennial Stream (linear ft) | Total Stream Impact (linear ft) | Stream Impacts Requiring Mitigation (linear ft) |
|--------------|---|---|--|--|---------------------------------|---|
| 1 | 42 | | | | 42 | 0 |
| 4 | | | 40 | 141 | 181 | 0 |
| 5 | | | 894 | | 894 | 894 |
| 6 | | | 36 | 16 | 52 | 0 |
| 7 | | | 220 | 19 | 239 | 220 |
| 8 | | | 142 | 48 | 190 | 0 |
| 9 | | | 348 | | 348 | 348 |
| 10 | | | 182 | 33 | 215 | 0 |
| Total | 42 | 0 | 1862 | 257 | 2161 | 1462 |

Total Stream Impact for R2413C Project in Cape Fear River Basin: 2161 linear feet

Stream Impacts in the Roanoke River Basin for R2413C

| Site | Permanent Fill in Intermittent Stream (linear ft) | Temporary Fill in Intermittent Stream (linear ft) | Permanent Fill in Perennial Stream (linear ft) | Temporary Fill in Perennial Stream (linear ft) | Total Stream Impact (linear ft) | Stream Impacts Requiring Mitigation (linear ft) |
|--------------|---|---|--|--|---------------------------------|---|
| 11 | | | 229 | 33 | 262 | 229 |
| 12 | | | 154 | 35 | 189 | 154 |
| 13 | | | 82 | 63 | 145 | |
| 14 | | | 142 | 26 | 168 | 142 |
| Total | | | 607 | 157 | 764 | 525 |

Total Stream Impact for R2413C Project in Roanoke River Basin: 764 linear feet

Open Water (Lakes) Impacts in the Cape Fear River Basin for R2309AB

| Site | Permanent Fill in Open Waters (ac) | Temporary Fill in Open Waters (ac) | Total Fill in Open Waters (ac) |
|--------------|------------------------------------|------------------------------------|--------------------------------|
| 3 | 0.36 | | 0.36 |
| 4 | 1.42 | 0.42 | 1.84 |
| Total | 1.78 | 0.42 | 2.2 |

Total Open Water Impact for R-2309AB Project in Cape Fear River Basin: 2.2 acres.

Wetland Impacts in the Cape Fear River Basin for R-2309AB

| Site | Fill (ac) | Fill (temporary) (ac) | Excavation (ac) | Mechanized Clearing (ac) | Hand Clearing (ac) | Area under Bridge (ac) | Total Wetland Impact (ac) |
|--------------|-------------|-----------------------|-----------------|--------------------------|--------------------|------------------------|---------------------------|
| 1 | 0.07 | | 0.06 | | | | 0.13 |
| 2 | | | | 0.04 | | | 0.04 |
| 3 | 0.31 | | | 0.04 | | | 0.35 |
| 4 | 0.21 | | | 0.02 | | | 0.23 |
| 5 | | | 0.01 | 0.01 | | | 0.02 |
| 10 | 0.02 | | | | | | 0.02 |
| Total | 0.61 | | 0.07 | 0.11 | | | 0.79 |

Total Wetland Impact for R-2309AB Project in Cape Fear River Basin: 0.79 acres.

Wetland Impacts in the Cape Fear River Basin For R-2413C

| Site | Fill (ac) | Fill (temporary) (ac) | Excavation (ac) | Mechanized Clearing (ac) | Hand Clearing (ac) | Area under Bridge (ac) | Total Wetland Impact (ac) |
|--------------|-------------|-----------------------|-----------------|--------------------------|--------------------|------------------------|---------------------------|
| 2 | 0.46 | | 0.09 | | | | 0.55 |
| 3 | 0.24 | | | 0.03 | | | 0.27 |
| Utility 1 | | | | | 0.01 | | 0.01 |
| 5 | 0.65 | | | 0.06 | | | 0.71 |
| 10 | 0.02 | | 0.04 | | | | 0.06 |
| Total | 1.37 | | 0.13 | 0.09 | 0.01 | | 1.6 |

Total Wetland Impact for R2413C Project in Cape Fear River Basin: 1.6 acres.

Wetland Impacts in the Roanoke River Basin for R-2413C

| Site | Fill (ac) | Fill (temporary) (ac) | Excavation (ac) | Mechanized Clearing (ac) | Hand Clearing (ac) | Area under Bridge (ac) | Total Wetland Impact (ac) |
|--------------|-------------|-----------------------|-----------------|--------------------------|--------------------|------------------------|---------------------------|
| 11 | 0.02 | | | | | | 0.02 |
| Total | 0.02 | | | | | | 0.02 |

Total Wetland Impact for R2413C Project in Roanoke River Basin: 0.02 acres.

The application provides adequate assurance that the discharge of fill material into the waters of the Cape Fear and Roanoke River Basins in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application dated received April 28, 2011 with additional information dated received May 26, 2011 and August 3, 2011. Should your project change, you are required to notify the NCDWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the

conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Condition(s) of Certification:

Project Specific Conditions

1. The NCDOT Division Environmental Officer or Environmental Assistant will conduct a pre-construction meeting with all appropriate staff to ensure that the project supervisor and essential staff understand the potential issues with stream and pipe alignment at the permitted site. NCDWQ staff shall be invited to the pre-construction meeting.
2. Turbidity curtains shall be used to isolate all work areas from Lake Brandt, including pile or casement installation, placement of riprap, excavation or filling. Strict adherence to the Construction and Maintenance Best Management Practices will be required.
3. NCDOT shall design, construct, and operate and maintain hazardous spill catch basins (HSCBs) at lake crossings within the WS CA watershed. The HSCBs shall be located at Station numbers -L- 57+13 LT, -L- 118+50 LT, -L-142+25 LT, -L-112+60 RT, and -L- 121+70 LT.
4. Compensatory mitigation for 1304 linear feet of impact to streams in the Cape Fear River Basin for R2309AB is required. Also, compensatory mitigation for 1462 linear feet of impact to streams in the Cape Fear River Basin and 525 linear feet in the Roanoke River Basin for R2413C is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in letters dated March 21, 2011 for the impacts associated with R-2309AB and November 17, 2011 for the impacts associated with R-2413C that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the North Carolina Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument signed July 28, 2010.
5. Compensatory mitigation for 0.79 acres of wetland in the Cape Fear River Basin for R2309AB is required. Also, compensatory mitigation for 1.59 acres of wetland in the Cape Fear River Basin and 0.02 acres of wetland in the Roanoke River Basin for R2413C is required. We understand that you have chosen to perform compensatory mitigation for impacts to the 0.79 acres of wetland in the Cape Fear Basin for R-2309AB, 1.59 acres of wetland impacts in the Cape Fear Basin for R-2413C, and 0.02 acres of wetland impacts in the Roanoke River Basin for R-2413C through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in letters dated March 21, 2011 the impacts associated with R-2309AB and November 17, 2011 for the impacts associated with R-2413C that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the North Carolina Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument signed July 28, 2010.
6. Any modifications to this 401 Water Quality Certification that propose additional stream impacts or increased impervious surface requiring additional stormwater management may be subject the Jordan Water Supply Nutrient Strategy [15A NCAC02B .0267]. NCDOT shall coordinate with NCDWQ prior to submitting a modification request to determine the applicability of the Jordan Water Supply Nutrient Strategy. This condition does not apply to major modifications for additional sections of the project that were covered under the Finding of No Significant Impact or approved in the Avoidance and Minimization stage of the project.
7. Two copies of the final construction drawings shall be furnished to NCDWQ Central Office prior to the pre-construction meeting. The permittee shall provide written verification that the final construction drawings comply with the permit drawings contained in the application dated April 28, 2011 with additional information May 26, 2011 and August 3, 2011. Any deviations from the approved drawings are not authorized unless approved by the NC Division of Water Quality.
8. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification.
9. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of

structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.

10. The permittee shall use /Design Standards in Sensitive Watersheds/[15A NCAC 4B.0124(a)-(e)] in areas draining to WSIV CA waters. However, due to the size of the project, NC DOT shall not be required to meet 15A NCAC 4B .0124(a) regarding the maximum amount of uncovered acres. Temporary cover (wheat, millet, or similar annual grain) or permanent herbaceous cover shall be planted on all bare soil within 15 business days of ground disturbing activities to provide erosion control.
11. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.
12. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Rather it shall be keyed into the stream bed in such a manner that low flow conditions allows water to pass over the rip rap. Bioengineering boulders or structures should be properly designed, sized and installed.
13. All temporary impacts to jurisdictional streams due to site dewatering activities, the site shall be graded to its preconstruction contours and revegetated with appropriate native species.

General Conditions

14. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage.
15. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.
16. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers.
17. The dimension, pattern and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions.
18. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval.
19. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water.
20. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream.
21. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.
22. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification.
23. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.
24. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If NCDWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, NCDWQ may reevaluate and modify this certification.
25. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.
26. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and

- federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.
27. The Permittee shall report any violations of this certification to the Division of Water Quality within 24 hours of discovery.
 28. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer shall complete and return the enclosed "Certification of Completion Form" to notify NCDWQ when all work included in the 401 Certification has been completed.
 29. Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction.
 30. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities.
 31. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:
 - a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
 - b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
 - c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
 - d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.
 32. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification.
 33. In accordance with commitments made in your application, all clearing of vegetation for purpose of relocating overhead power lines within jurisdictional wetlands shall be performed without the use of mechanized equipment.
 34. The post-construction removal of any temporary bridge structures must return the project site to its preconstruction contours and elevations. The impacted areas shall be revegetated with appropriate native species.
 35. Strict adherence to the most recent version of NCDOT's Best Management Practices For Bridge Demolition and Removal approved by the US Army Corps of Engineers is a condition of the 401 Water Quality Certification.
 36. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of *Stormwater Best Management Practices*.
 37. Bridge piles and bents shall be constructed using driven piles (hammer or vibratory) or drilled shaft construction methods. More specifically, jetting or other methods of pile driving are prohibited without prior written approval from NCDWQ first.
 38. No drill slurry or water that has been in contact with uncured concrete shall be allowed to enter surface waters. This water shall be captured, treated, and disposed of properly.
 39. All pile driving or drilling activities shall be enclosed in turbidity curtains unless otherwise approved by NCDWQ in this certification.
 40. All bridge construction shall be performed from the existing bridge, temporary work bridges, temporary causeways, or floating or sunken barges. If work conditions require barges, they shall be floated into position and then sunk. The barges shall not be sunk and then dragged into position. Under no circumstances should barges be dragged along the bottom of the surface water.
 41. All streams being impacted due to site dewatering activities shall be graded to its preconstruction contours and revegetated with appropriate native species.
 42. The stream channel shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining the stream bank stability. Any applicable riparian buffer impact for access to stream channel shall be temporary and be revegetated with native riparian species.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

If you wish to contest any statement in the attached Certification you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

The petition may be faxed-provided the original and one copy of the document is received by the Office of Administrative Hearings within five (5) business days following the faxed transmission.
The mailing address for the Office of Administrative Hearings is:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919)-733-2698, Facsimile: (919)-733-3478

A copy of the petition must also be served on DENR as follows:

Ms. Mary Penny Thompson, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center
Raleigh, NC 27699-1601

This the 19th day of November 2011

DIVISION OF WATER QUALITY



For Coleen H. Sullins
Director

WQC No. 3864

NCDWQ Project No.: _____ County: _____

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion

Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the 401 Transportation Permitting Unit, North Carolina Division of Water Quality, 1650 Mail Service Center, Raleigh, NC, 27699-1650. This form may be returned to NCDWQ by the applicant, the applicant's authorized agent, or the project engineer. It is not necessary to send certificates from all of these.

Applicant's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Agent's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Engineer's Certification

_____ Partial _____ Final

I, _____, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project, for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

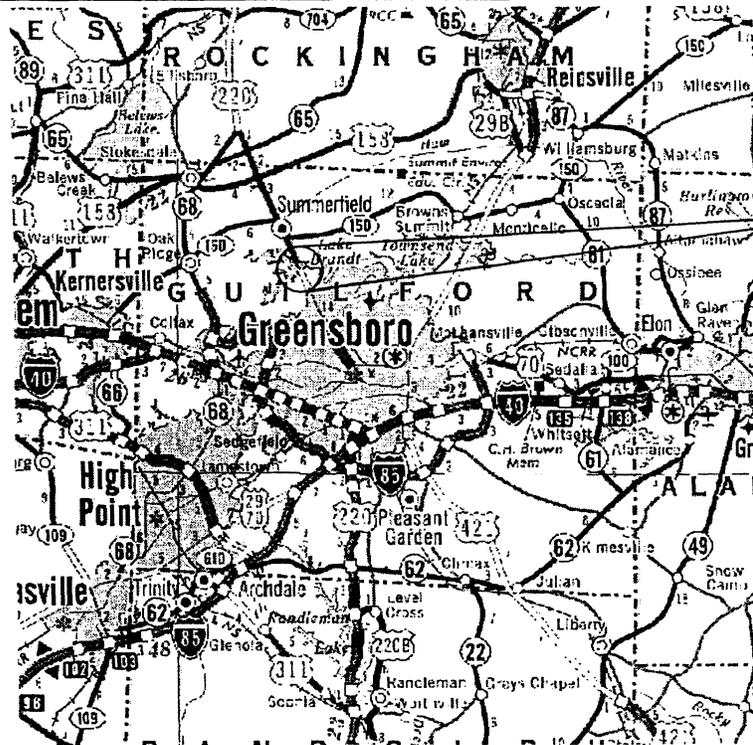
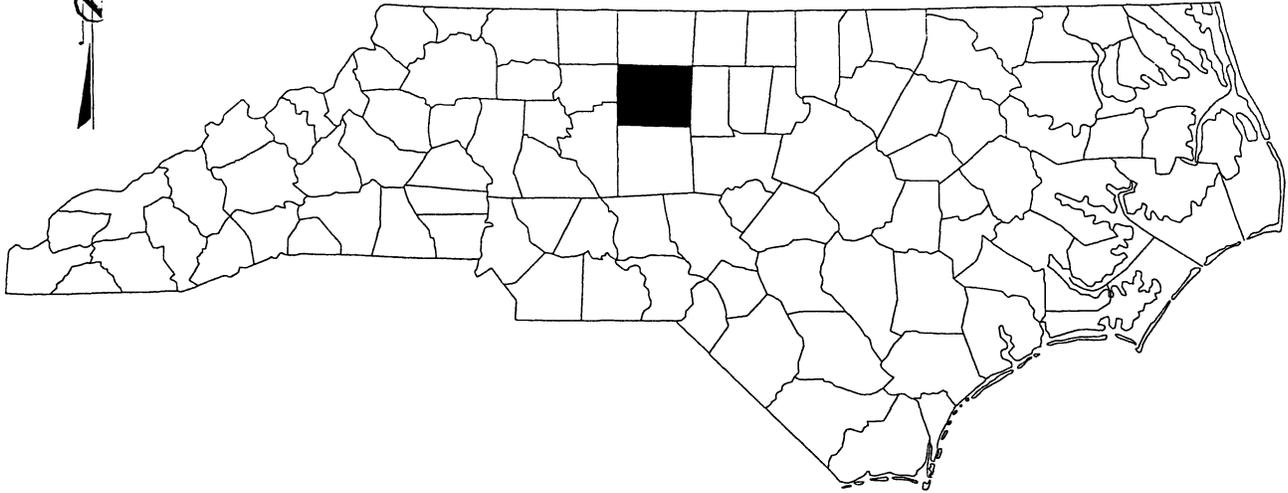
Signature _____ Registration No. _____

Date _____

APR 28 2011

Regulatory Branch

NORTH CAROLINA



SITE

VICINITY MAP

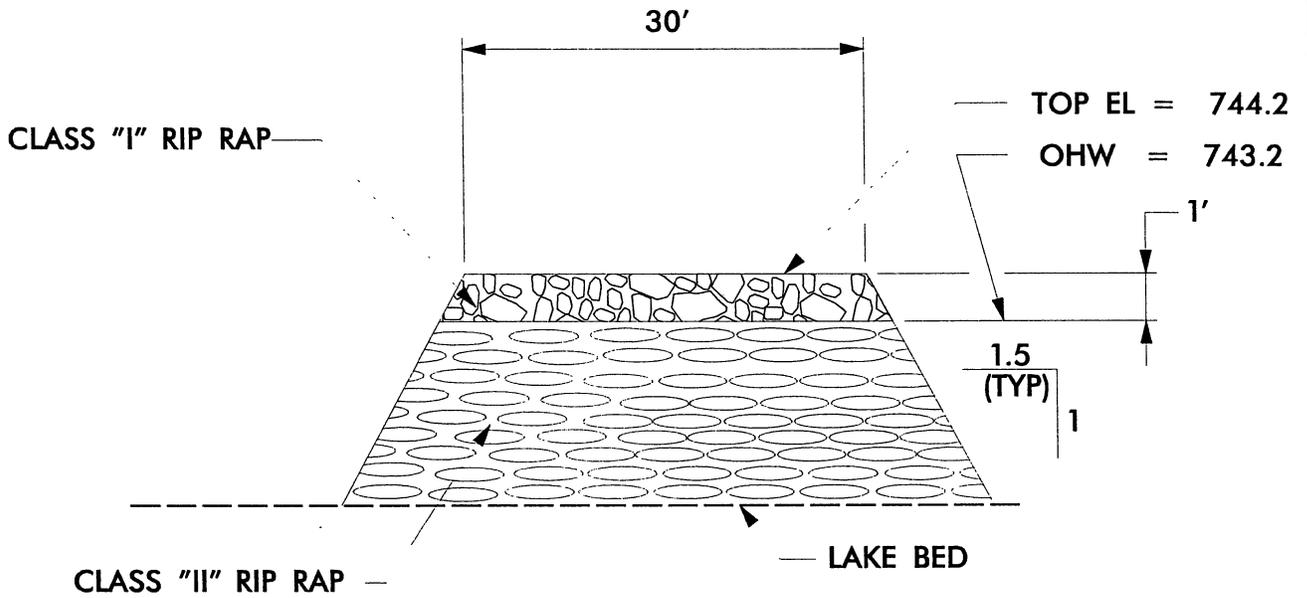
N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY

PROJECT: 34418.1.4 (R-2309AB)
 US 220 FROM SR 2182 (HORSEPEN
 CREEK RD.) TO 0.2 MILES
 NORTH OF SR 2313 (WINFREE RD.)

SHEET 1 OF 45

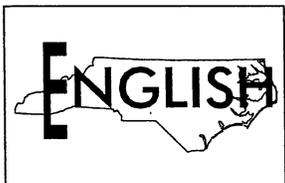
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DETAIL OF CAUSEWAY
 FOR PROPOSED BRIDGE
 -L- 154+00 TO 155+70



VOLUME OF CLASS "II" RIP RAP
 BELOW OHW:
 LEFT LANE = 2105 CY
 RIGHT LANE = 2145 CY

10/16/2009
 10:08:25 AM
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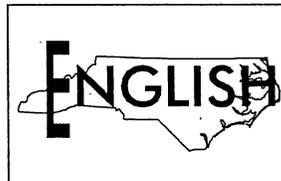
N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY

PROJECT: 34418.1.4 (R-2309AB)
 US 220 FROM SR 2182 (HORSEPEN
 CREEK RD.) TO 0.2 MILES
 NORTH OF SR 2313 (WINFREE RD.)

SHEET 2 OF 45

SUMMARY OF AFFECTED PROPERTY OWNERS

| TRACT NO. | PROPERTY OWNER | ADDRESS | SITE NO. |
|-----------|---|---|----------|
| (23) | ROGER HERMAN & JOYCE GIOLA | 4057 MAYNARD RD GREENSBORO NC, 27410 | 1 |
| (17) | GRANITE/ HORSE PEN CREEK, LLC | P.O. BOX 1928 MT. AIRY NC, 27030 | 2 |
| (48) | CITY OF GREENSBORO | P.O. BOX 3136 GREENSBORO NC, 27402 | 3,4 |
| (49) | CITY OF GREENSBORO | P.O. BOX 3136 GREENSBORO NC, 27402 | 3 |
| (51) | GUILFORD COUNTY AND CITY OF GREENSBORO | P.O. BOX 3427 GREENSBORO NC, 27402 | 5 |
| (75) | KOTIS PROPERTIES, INC | P.O. BOX 9296 GREENSBORO NC, 27429 | 6 |
| (96) | DONNIE M. MABE | 471 US 220 NORTH SUMMERFIELD NC, 27358 | 7 |
| (101) | NCDOT | P.O. BOX 14996 GREENSBORO NC, 27415 | 7 |
| (103) | DONALD M. & BARBARA L. REID | 7499 WEITZEL DRIVE SUMMERFIELD NC, 27358 | 7 |
| (105) | LENA H. FLINCHUM | 8520 STREAMVIEW DR APT L HUNTERVILLE NC, 28078 | 8 |
| (111) | CHUL H. & WHA JIN PARK | 7507 WEITZEL DRIVE SUMMERFIELD NC, 27358 | 9 |
| (112) | JERRY W. & WANDA C. | 5002 MYERS FORK ROAD SUMMERFIELD NC, 27358 | 9 |
| (115) | CHARLES R. & MARIA BETH SMITH | 7704 TANNERY RD SUMMERFIELD NC, 27358 | 9 |



**N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY**

**PROJECT: 34418.1.4 (R-2309AB)
US 220 FROM SR 2182 (HORSEPEN
CREEK RD.) TO 0.2 MILES
NORTH OF SR 2313 (WINFREE RD.)**

SHEET 3 OF 45

SUMMARY OF AFFECTED PROPERTY OWNERS

| TRACT NO. | PROPERTY OWNER | ADDRESS | SITE NO. |
|-----------|---------------------------------------|--|----------|
| (116) | PEGGY P. MOORE (WOODWARD) | 7708 TANNERY RD SUMMERFIELD NC, 27358 | 9 |
| (122) | SESSOMS DEVELOPMENT INC. | P.O. BOX 711 SUMMERFIELD NC, 27358 | 10 |
| (127) | COMMUNITY LUTHERAN CHURCH | 7708 TANNERY RD SUMMERFIELD NC, 27358 | 11 |
| (128) | CYNTHIA G. WELCH & JAMES E. GAMBLE | 113 MARYWOOD DR HIGH POINT NC, 27265 | 11 |
| (141) | ROSE FULTZ COOK | PO BOX 14462 GREENSBORO NC, 27415 | 12 |
| (142) | WILLIAM C. & NORMA JEAN MABERSON | 7904 SUMMERFIELD RD SUMMERFIELD NC, 27358 | 12 |
| (144) | JOHN C. JR. & MARGARET E. CHANDLER | 5108 US 220 N SUMMERFIELD NC, 27358 | 12 |
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N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY

PROJECT: 34418.1.4 (R-2309AB)
US 220 FROM SR 2182 (HORSEPEN CREEK RD.) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD.)

SHEET 4 OF 45

WETLAND PERMIT IMPACT SUMMARY

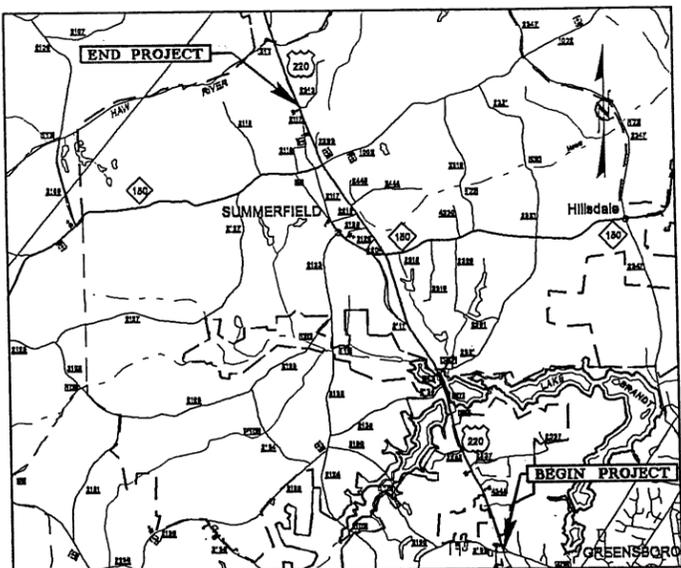
| Site No | Station (From/To) | Structure Size / Type | WETLAND IMPACTS | | | | | | SURFACE WATER IMPACTS | | | | |
|----------------|---------------------------|--|---------------------------------|----------------------------|-----------------------------|--------------------------------------|--------------------------------|---------------------------|-----------------------|---|------------------------------------|----------------------------|--|
| | | | Permanent Fill In Wetlands (ac) | Temp Fill In Wetlands (ac) | Excavation In Wetlands (ac) | Mechanized Clearing in Wetlands (ac) | Hand Clearing in Wetlands (ac) | Permanent SW Impacts (ac) | Temp SW Impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp (ft) | Natural Stream Design (ft) | |
| 1 | -L- 56+36 | 10'x11' RCBC | 0.07 | | 0.06 | | | | 0.03 | 0.02 | 244 | 162 | |
| 1 | -L- 56+36 | Bank Stabilization | | | | | | <0.01 | | 36 | | | |
| 2 | -L- 57+02 to 58+44 RT | Temporary Stilling Basin & Diversion Channel | | | | 0.04 | | | | | | | |
| 3 | -L- 116+00 to 125+00 | 72" CAP / Roadway Fill | 0.31 | | | 0.04 | | 0.36 | | | | | |
| 4 | -L- 126+50 to 141+00 | Dual Bridges* | 0.21 | | | 0.02 | | 1.42 | | | | | |
| 4 | -L- 134+00 to 135+70 RT | Temporary Causeway (RT) | | | | | | | 0.20 | | | | |
| 4 | -L- 134+00 to 135+70 LT | Temporary Causeway (LT) | | | | | | | 0.18 | | | | |
| 4 | -L- 134+00 to 134+60 LT | Temporary cofferdams (LT) | | | 0.01 | 0.01 | | | 0.04 | | | | |
| 5 | -Y6- 14+14 to 14+52 LT | Roadway Cut | | | | | | | | 3 | | | |
| 6 | -L- 201+22 | Extend 36" RCP | | | | | | <0.01 | | 98 | 18 | | |
| 7 | -L- 233+72 | 54" WSP & Extend 54" RCP | | | | | | 0.01 | <0.01 | 74 | | | |
| 7 | -L- 233+72 | Bank Stabilization | | | | | | 0.01 | <0.01 | | 34 | | |
| 8 | -L- 240+00 RT | 36" WSP | | | | | | <0.01 | | 40 | | | |
| 8 | -L- 240+00 RT | Bank Stabilization | | | | | | 0.02 | 0.01 | 171 | 122 | | |
| 9 | -L- 247+02 | 8'x8' RCBC | | | | | | 0.01 | | 69 | | | |
| 9 | -L- 247+02 | Bank Stabilization | | | | | | 0.02 | <0.01 | 354 | 16 | | |
| 10 | -L- 266+05 LT - 270+05 RT | Roadway Fill / 54" & 48" RCP | 0.02 | | | | | <0.01 | | 58 | 20 | | |
| 10 | -L- 266+05 LT / 270+00 RT | Bank Stabilization | | | | | | <0.01 | <0.01 | 73 | | | |
| 11 | -L- 277+16 | 42" WSP | | | | | | <0.01 | | 12 | | | |
| 11 | -L- 277+16 | Bank Stabilization | | | | | | 0.01 | <0.01 | 157 | 22 | | |
| 12 | -L- 295+38 | 36" WSP & Extend 36" RCP | | | | | | <0.01 | | 43 | | | |
| 12 | -L- 295+38 | Bank Stabilization | | | | | | | | | | | |
| TOTALS: | | | 0.61 | | 0.07 | 0.11 | | 1.99 | 0.45 | 1432 | 394 | | |

* Permanent SW impacts for proposed bents = 450 sq ft

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT - 34418 1 4 (R-2309AB)

CONTRACT: TIP PROJECT: R-2309AB

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

**LOCATION: US 220 FROM SR 2182 (HORSEPEN CREEK RD.)
TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD.) IN GREENSBORO**

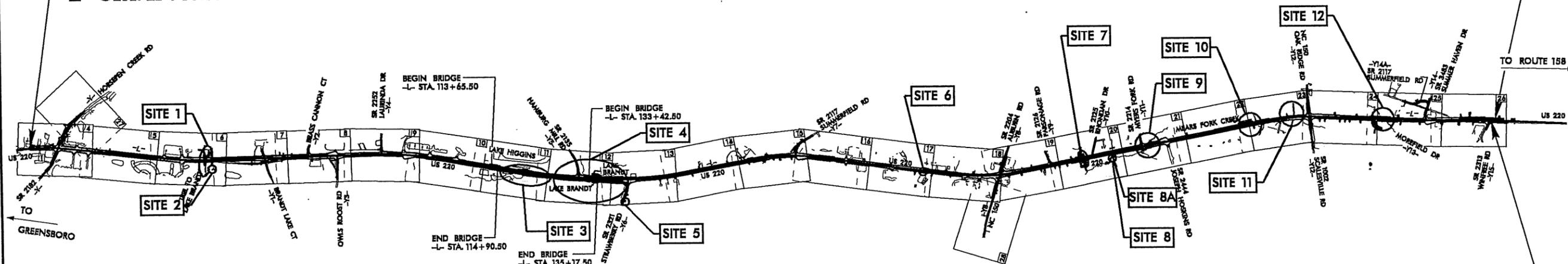
TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, AND STRUCTURES

WETLAND AND STREAM IMPACTS PLAN

RECEIVED
APR 24 2011
Regulatory Branch

| | | | |
|-----------------|-----------------------------|-------------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | R-2309AB | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 34418.1.4 | STP-220(5) | P.E. | |
| 34418.2.3 | STPNHS-0220(5) | R/W & UTIL. | |
| Permit Drawing | | | |
| Sheet 6 of 45 | | | |

**BEGIN TIP PROJECT R-2309AB
-L- STA. 21+50.00**



**END CONSTRUCTION
-L- PT STA. 317+51.85
(TIE TO TIP PROJECT R-2413C)**

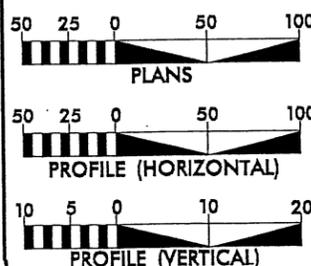
**END TIP PROJECT R-2309AB
-L- STA. 316+76.67 =
R-2413C -LREV1- STA. 13+50.00**

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF SUMMERFIELD AND THE CITY OF GREENSBORO. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III. THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS LIMITED TO POINTS AS SHOWN ON THE PLANS. NCDOT CONTACT: B. DOUG TAYLOR, P.E., PROJECT ENGINEER - ROADWAY DESIGN

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 34418.1.4 (R-2309AB)
US 220 FROM SR 2182 (HORSEPEN CREEK RD.) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD.)
SHEET OF

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2012 = 28,882
ADT 2032 = 42,810
DHV = 11 %
D = 65 %
T = 7 % *
V = 60 MPH (SHLDR.)
V = 50 MPH (C&G)
FUNC. CLASS = ARTERIAL
* TTST 4% + DUAL 3%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2309AB = 5.535 MI.
LENGTH STRUCTURES TIP PROJECT R-2309AB = 0.057 MI.
TOTAL LENGTH OF TIP PROJECT R-2309AB = 5.592 MI.

Prepared in the Office of:

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY,
SUITE 100
RALEIGH, N.C. 27607
(919) 851-6066

DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 17, 2008

LETTING DATE:
JANUARY, 2012

BRIAN A. WILES, P.E.
PROJECT ENGINEER

PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

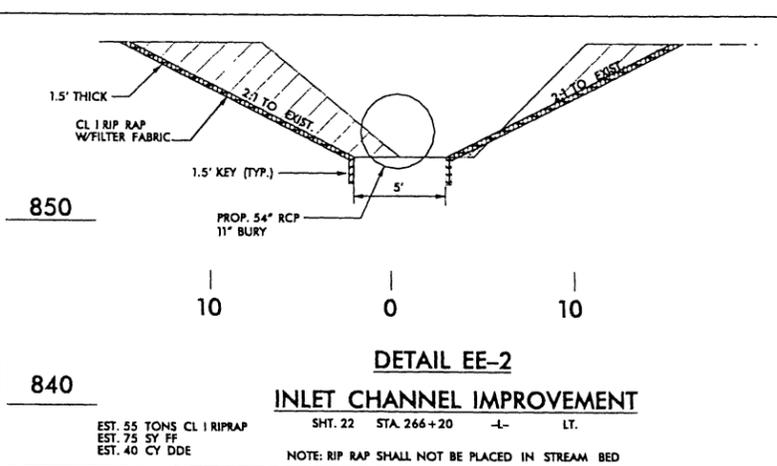
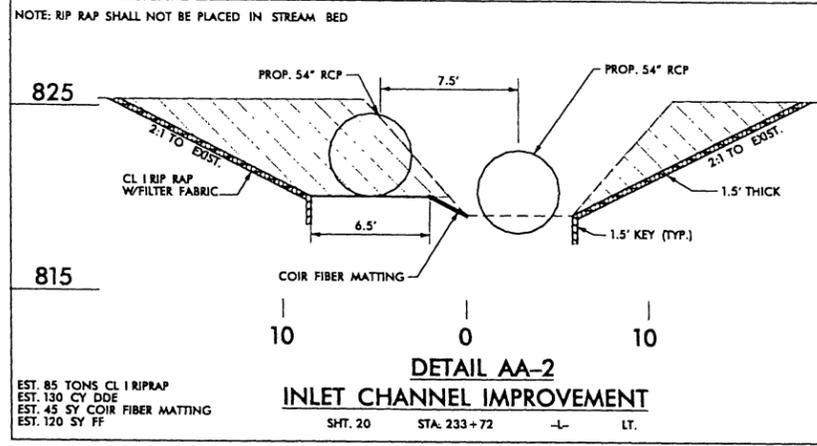
**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

STATE HIGHWAY DESIGN ENGINEER

10-FEB-2010 10:33 AM R:\highway\projects\PERMITS_Environmental\Drawings\R-2309ab_Hyd-prm_tsh.dgn

8/17/2008

H:\Projects\2008\Permits\2309AB\Fig1.dwg - jlp - pr.m - dt.ches.dgn

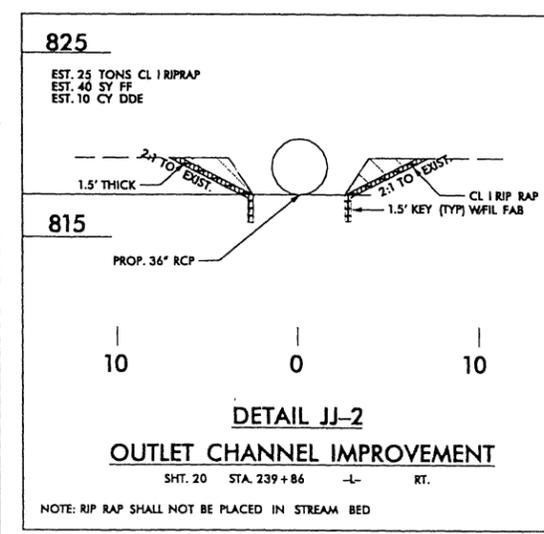
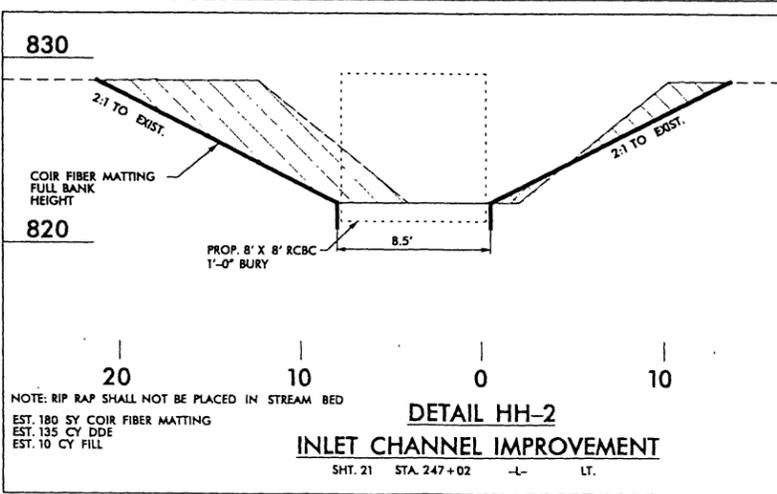
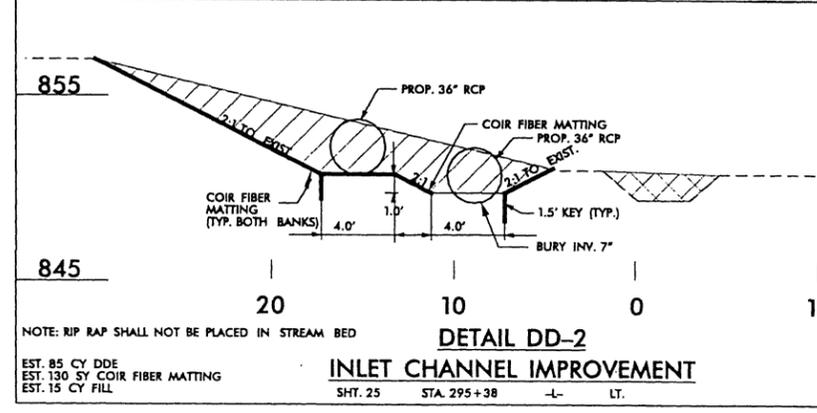
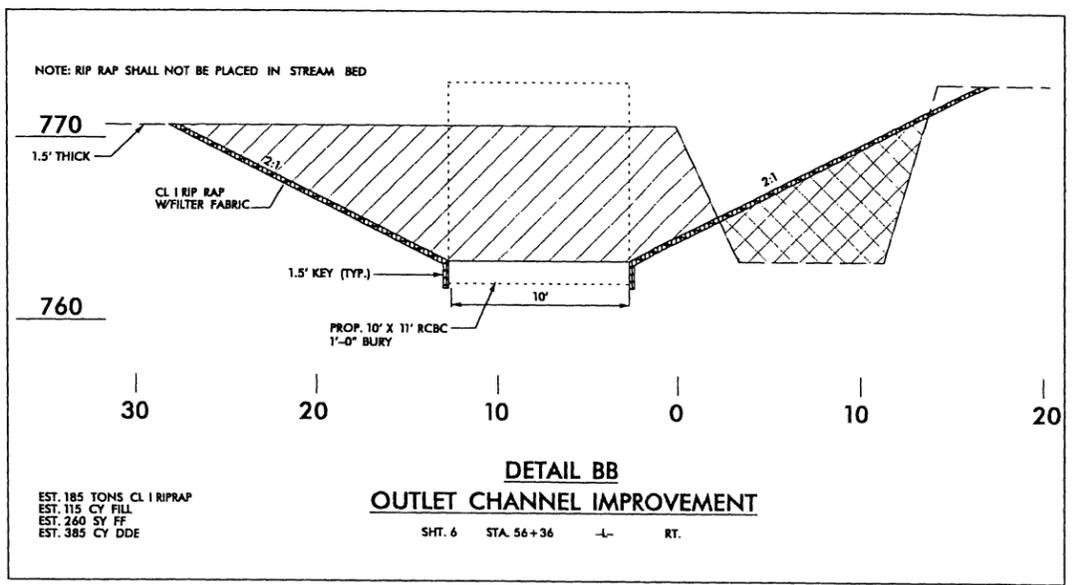
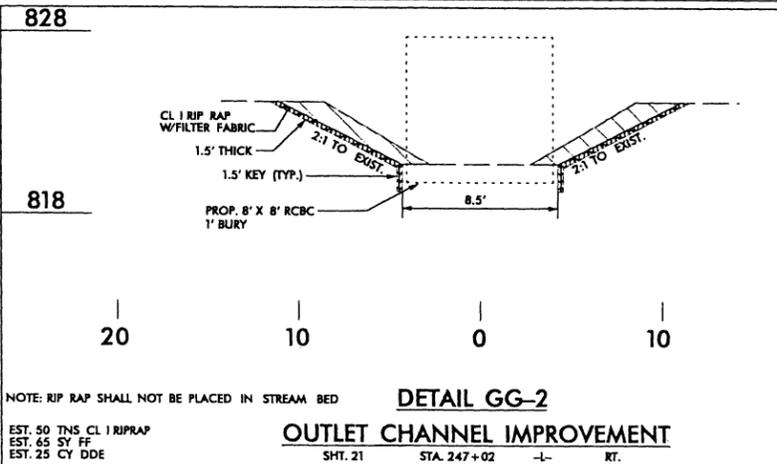
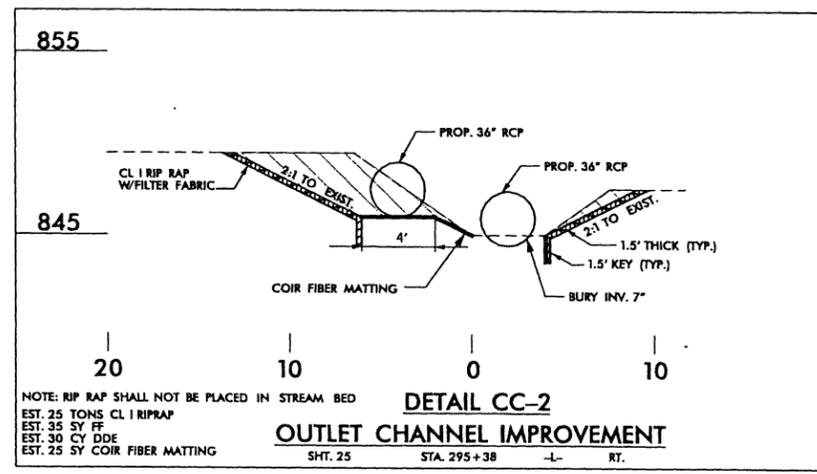
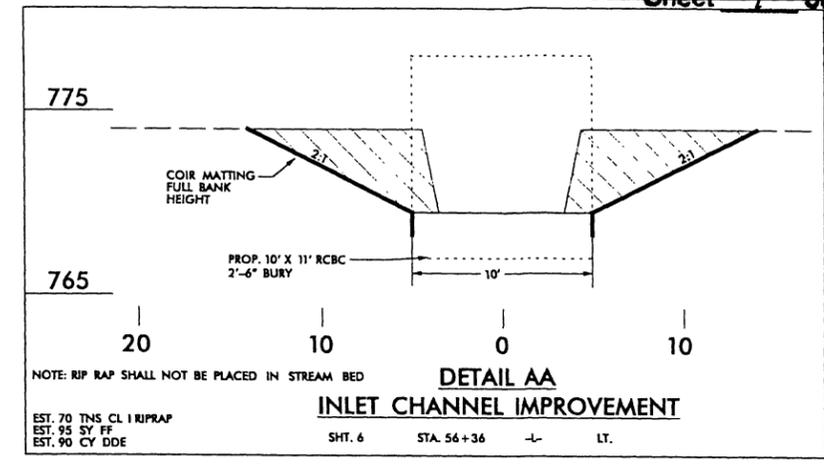
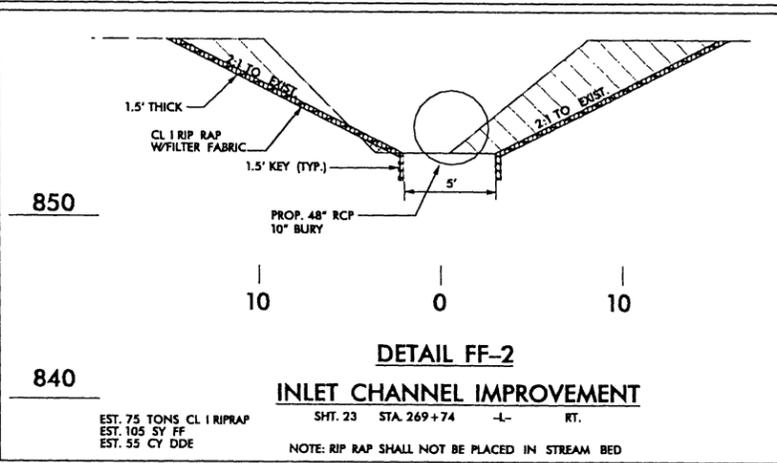
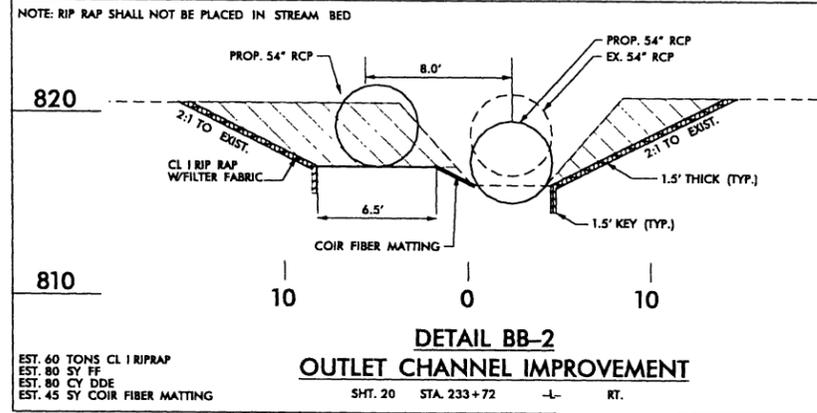


LEGEND

| | |
|--|------------|
| | EXCAVATION |
| | FILL |

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

| | |
|--|-------------------------|
| PROJECT REFERENCE NO. R-2309AB | SHEET NO. 2-N |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 7 of 45 | |

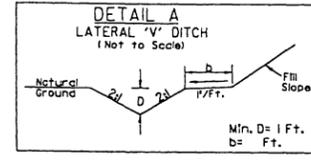


N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY

PROJECT: 84418.L4 (R-2309AB)
US 220 FROM SR 2182 (HORSEPEN CREEK RD) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD)

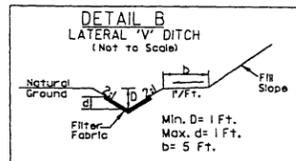
SHEET OF

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 81 of 45



SHEET RDWY STATION - STATION SIDE

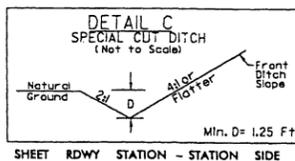
| | | | | | |
|----|-----|--------|----------|----|-----|
| 15 | -L- | 168+95 | - 169+20 | 5' | LT. |
| 27 | -Y- | 5+70 | - 6+00 | 2' | RT. |



Type of Liner= Class 'B' Rip-Rap

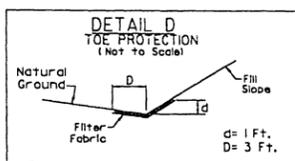
SHEET RDWY STATION - STATION SIDE

| | | | | |
|----|-----|--------|----------|-----|
| 15 | -L- | 169+15 | - 170+30 | RT. |
|----|-----|--------|----------|-----|



SHEET RDWY STATION - STATION SIDE

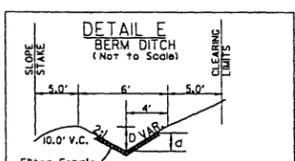
| | | | | |
|-------|--------|--------|----------|-----|
| 8,9 | -L- | 83+50 | - 88+00 | LT. |
| 8 | -Y3- | 11+75 | - 12+94 | LT. |
| 16 | -L- | 184+00 | - 185+00 | LT. |
| 18 | -L- | 206+00 | - 206+50 | LT. |
| 22 | -L- | 259+00 | - 260+00 | RT. |
| 22 | -L- | 261+50 | - 262+00 | RT. |
| 25,26 | -L- | 304+50 | - 307+00 | LT. |
| 25 | -Y14- | 11+00 | - 13+00 | RT. |
| 25 | -Y14- | 11+00 | - 13+00 | LT. |
| 25 | -Y14A- | 10+38 | - 13+00 | LT. |
| 25 | -Y14A- | 12+00 | - 15+00 | RT. |
| 26 | -L- | 309+80 | - 310+50 | RT. |
| 26 | -Y15- | 11+50 | - 12+00 | LT. |
| 27 | -Y- | 0+50 | - 3+10 | RT. |



Type of Liner= Class 'B' Rip-Rap

SHEET RDWY STATION - STATION SIDE

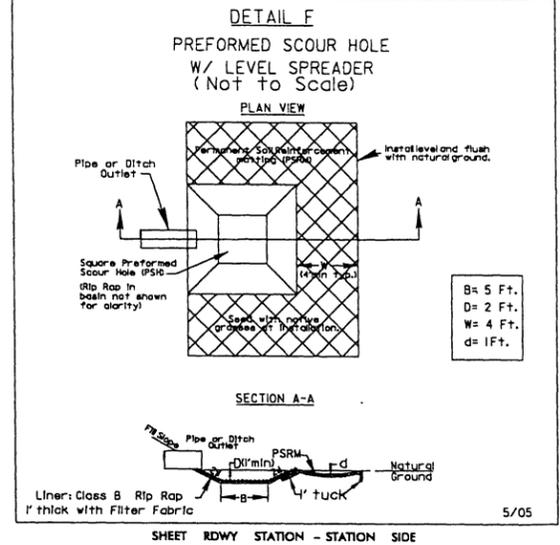
| | | | | |
|----|-----|--------|----------|-----|
| 6 | -L- | 52+40 | - 55+60 | RT. |
| 6 | -L- | 56+30 | - 57+65 | LT. |
| 10 | -L- | 101+00 | - 101+75 | RT. |
| 11 | -L- | 121+30 | - 121+65 | LT. |
| 15 | -L- | 165+75 | - 168+50 | RT. |
| 16 | -L- | 179+03 | - 182+50 | RT. |
| 17 | -L- | 200+05 | - 201+90 | LT. |
| 17 | -L- | 200+50 | - 201+03 | RT. |
| 20 | -L- | 229+00 | - 230+55 | RT. |
| 20 | -L- | 231+00 | - 231+66 | LT. |
| 20 | -L- | 234+00 | - 235+00 | RT. |
| 21 | -L- | 247+00 | - 247+70 | LT. |
| 22 | -L- | 266+39 | - 267+00 | LT. |
| 23 | -L- | 267+00 | - 269+30 | LT. |
| 23 | -L- | 269+06 | - 269+65 | RT. |
| 23 | -L- | 276+51 | - 277+28 | LT. |
| 24 | -L- | 286+50 | - 287+20 | LT. |
| 25 | -L- | 294+50 | - 297+50 | LT. |
| 25 | -L- | 294+00 | - 296+15 | RT. |



Type of Liner= Class 'B' Rip-Rap

SHEET RDWY STATION - STATION SIDE

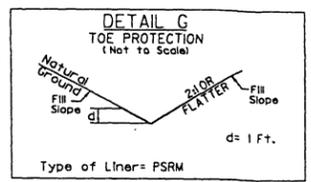
| | | | | |
|-------|-----|--------|----------|-----|
| 5,6 | -L- | 38+80 | - 47+60 | LT. |
| 14,15 | -L- | 158+50 | - 163+30 | RT. |



Liner: Class B Rip-Rap 1" thick with Filter Fabric

SHEET RDWY STATION - STATION SIDE

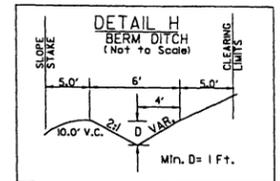
| | | | |
|----|-----|--------|-----|
| 14 | -L- | 154+10 | LT. |
| 18 | -L- | 209+43 | LT. |
| 21 | -L- | 242+92 | RT. |
| 21 | -L- | 248+88 | LT. |



Type of Liner= PSRM

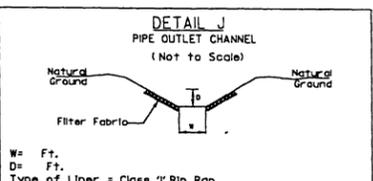
SHEET RDWY STATION - STATION SIDE

| | | | | |
|-----|-----|--------|----------|-----|
| 4 | -Y- | 6+00 | - 7+40 | RT. |
| 4 | -L- | 29+65 | - 30+08 | LT. |
| 5 | -L- | 34+88 | - 37+20 | LT. |
| 6 | -L- | 48+50 | - 51+65 | LT. |
| 7 | -L- | 68+90 | - 69+50 | RT. |
| 7,8 | -L- | 68+12 | - 72+70 | LT. |
| 8 | -L- | 76+00 | - 76+85 | LT. |
| 8 | -L- | 77+65 | - 78+20 | LT. |
| 8 | -L- | 83+20 | - 84+00 | RT. |
| 10 | -L- | 98+50 | - 100+90 | LT. |
| 10 | -L- | 102+00 | - 105+20 | LT. |
| 10 | -L- | 106+75 | - 108+50 | LT. |
| 11 | -L- | 115+05 | - 117+00 | LT. |
| 27 | -Y- | 2+80 | - 4+20 | RT. |



SHEET RDWY STATION - STATION SIDE

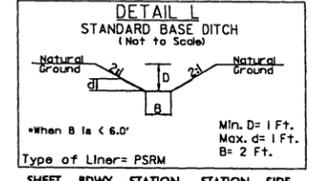
| | | | | |
|---|-----|-------|---------|-----|
| 5 | -L- | 37+60 | - 38+80 | LT. |
|---|-----|-------|---------|-----|



Type of Liner= Class 'I' Rip-Rap

SHEET RDWY STATION - STATION SIDE W D

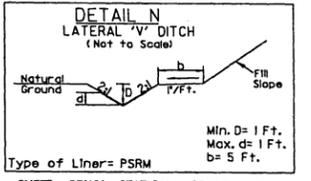
| | | | | | |
|----|-----|--------|-----|----|----|
| 6 | -L- | 56+20 | LT. | 6' | 5' |
| 23 | -L- | 276+80 | RT. | 7' | 5' |



Type of Liner= PSRM

SHEET RDWY STATION - STATION SIDE

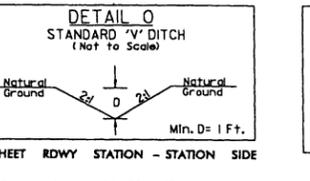
| | | | | |
|---|-----|-------|---------|-----|
| 8 | -L- | 75+70 | - 76+80 | RT. |
|---|-----|-------|---------|-----|



Type of Liner= PSRM

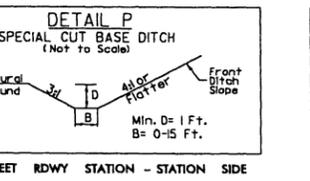
SHEET RDWY STATION - STATION SIDE

| | | | | |
|---|-----|-------|---------|-----|
| 9 | -L- | 88+00 | - 89+20 | LT. |
|---|-----|-------|---------|-----|



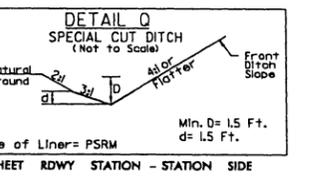
SHEET RDWY STATION - STATION SIDE

| | | | | |
|---|-----|-------|---------|-----|
| 7 | -L- | 64+30 | - 65+10 | RT. |
| 7 | -L- | 67+65 | - 67+85 | RT. |
| 9 | -L- | 95+60 | LT. | |



SHEET RDWY STATION - STATION SIDE

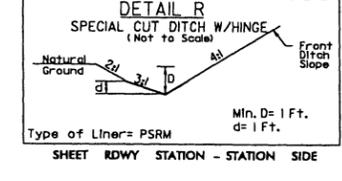
| | | | | |
|----|-----|--------|----------|-----|
| 11 | -L- | 122+00 | - 122+50 | LT. |
|----|-----|--------|----------|-----|



Type of Liner= PSRM

SHEET RDWY STATION - STATION SIDE

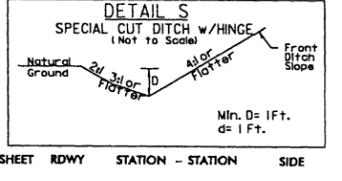
| | | | | |
|----|--------|--------|----------|-----|
| 10 | -L- | 108+50 | - 110+50 | LT. |
| 25 | -Y14A- | 12+00 | - 15+00 | RT. |



Type of Liner= PSRM

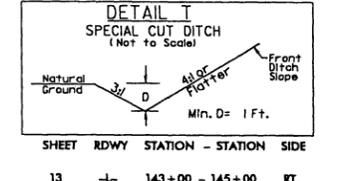
SHEET RDWY STATION - STATION SIDE

| | | | | |
|-------|-----|--------|----------|-----|
| 10,11 | -L- | 110+50 | - 113+20 | LT. |
|-------|-----|--------|----------|-----|



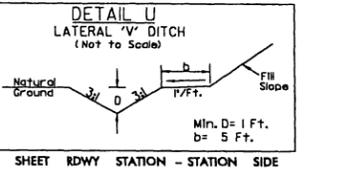
SHEET RDWY STATION - STATION SIDE

| | | | | |
|-------|------|--------|----------|-----|
| 11,12 | -L- | 122+50 | - 130+76 | LT. |
| 12 | -Y5- | 13+00 | - 13+95 | LT. |
| 20 | -L- | 234+57 | - 235+67 | LT. |
| 20,21 | -L- | 240+00 | - 242+35 | LT. |
| 21 | -L- | 242+35 | - 245+55 | LT. |
| 22 | -L- | 256+50 | - 260+00 | RT. |
| 22 | -L- | 261+50 | - 265+50 | RT. |
| 22,23 | -L- | 265+50 | - 268+65 | RT. |
| 25 | -L- | 282+50 | - 285+34 | LT. |
| 25 | -L- | 298+45 | - 300+32 | LT. |
| 25 | -L- | 303+50 | - 307+00 | RT. |
| 26 | -L- | 307+35 | - 309+50 | RT. |
| 19 | -Y8- | 8+27 | - 9+46 | RT. |
| 19 | -Y8- | 5+70 | - 6+50 | RT. |
| 28 | -Y8- | 14+00 | - 14+98 | LT. |



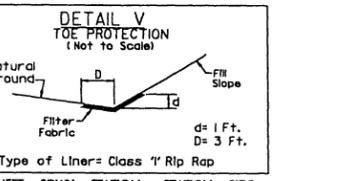
SHEET RDWY STATION - STATION SIDE

| | | | | |
|----|------|--------|----------|-----|
| 13 | -L- | 143+00 | - 145+00 | RT. |
| 13 | -Y6- | 13+15 | - 14+00 | LT. |



SHEET RDWY STATION - STATION SIDE

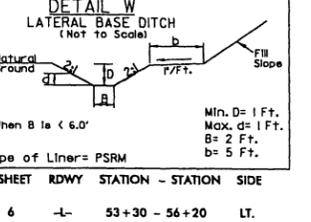
| | | | | |
|----|------|--------|----------|-----|
| 13 | -L- | 141+65 | - 143+00 | RT. |
| 13 | -Y6- | 11+11 | - 12+80 | LT. |



Type of Liner= Class 'I' Rip-Rap

SHEET RDWY STATION - STATION SIDE

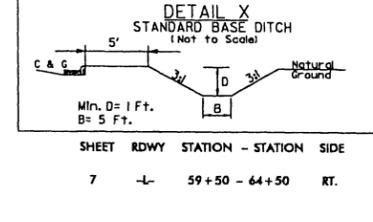
| | | | | |
|----|-----|--------|----------|-----|
| 15 | -L- | 167+10 | - 168+70 | LT. |
| 15 | -L- | 169+20 | - 170+25 | LT. |



Type of Liner= PSRM

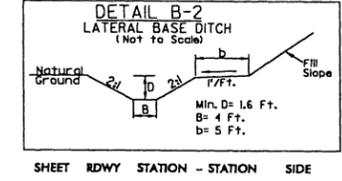
SHEET RDWY STATION - STATION SIDE

| | | | | |
|---|-----|-------|---------|-----|
| 6 | -L- | 53+30 | - 56+20 | LT. |
|---|-----|-------|---------|-----|



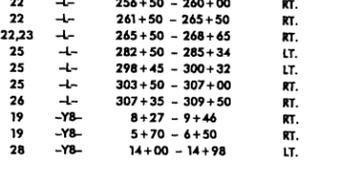
SHEET RDWY STATION - STATION SIDE

| | | | | |
|---|-----|-------|---------|-----|
| 7 | -L- | 59+50 | - 64+50 | RT. |
|---|-----|-------|---------|-----|



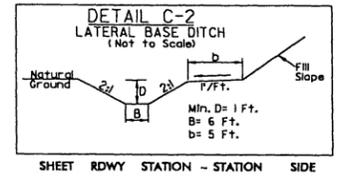
SHEET RDWY STATION - STATION SIDE

| | | | | |
|----|-----|--------|----------|------------|
| 26 | -L- | 307+50 | - 311+80 | LT. (B=2') |
| 26 | -L- | 311+80 | - 313+93 | LT. |
| 26 | -L- | 313+78 | - 315+50 | RT. (D=1') |



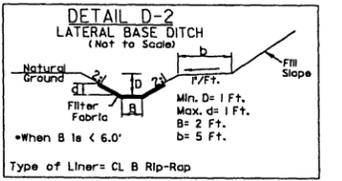
SHEET RDWY STATION - STATION SIDE

| | | | | |
|----|-----|--------|----------|-----|
| 22 | -L- | 260+00 | - 261+50 | RT. |
|----|-----|--------|----------|-----|



SHEET RDWY STATION - STATION SIDE

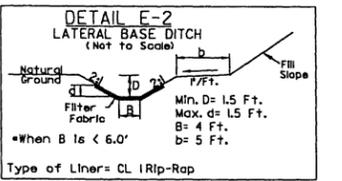
| | | | | |
|----|-----|--------|----------|-----|
| 18 | -L- | 209+42 | - 210+60 | LT. |
| 20 | -L- | 233+62 | - 233+95 | LT. |
| 26 | -L- | 315+50 | - 315+90 | RT. |



Type of Liner= CL B Rip-Rap

SHEET RDWY STATION - STATION SIDE

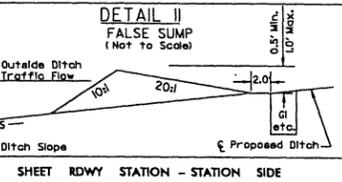
| | | | | |
|----|-----|--------|----------|------------|
| 16 | -L- | 176+85 | - 178+93 | LT. |
| 16 | -L- | 178+97 | - 179+60 | RT. (D=2') |
| 20 | -L- | 231+80 | - 233+80 | RT. |
| 21 | -L- | 245+85 | - 249+80 | RT. |



Type of Liner= CL I Rip-Rap

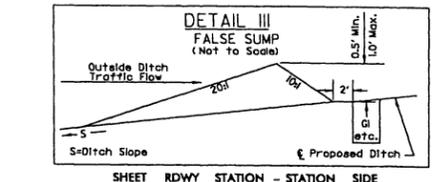
SHEET RDWY STATION - STATION SIDE

| | | | |
|----|-------|--------|-----|
| 7 | -L- | 64+75 | RT. |
| 10 | -L- | 98+50 | RT. |
| 10 | -L- | 100+60 | RT. |
| 12 | -L- | 130+85 | LT. |
| 27 | -Y- | 3+34 | RT. |
| 18 | -L- | 210+87 | LT. |
| 19 | -Y8- | 9+56 | RT. |
| 16 | -L- | 188+25 | LT. |
| 17 | -L- | 190+35 | RT. |
| 17 | -L- | 191+09 | RT. |
| 21 | -L- | 227+60 | LT. |
| 21 | -Y11- | 10+84 | RT. |
| 22 | -L- | 266+78 | RT. |
| 23 | -L- | 278+33 | LT. |
| 24 | -L- | 279+52 | LT. |
| 26 | -L- | 307+12 | LT. |



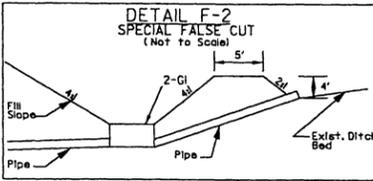
SHEET RDWY STATION - STATION SIDE

| | | | |
|----|-------|--------|-----|
| 7 | -L- | 64+75 | RT. |
| 10 | -L- | 98+50 | RT. |
| 10 | -L- | 100+60 | RT. |
| 12 | -L- | 130+85 | LT. |
| 27 | -Y- | 3+34 | RT. |
| 18 | -L- | 210+87 | LT. |
| 19 | -Y8- | 9+56 | RT. |
| 16 | -L- | 188+25 | LT. |
| 17 | -L- | 190+35 | RT. |
| 17 | -L- | 191+09 | RT. |
| 21 | -L- | 227+60 | LT. |
| 21 | -Y11- | 10+84 | RT. |
| 22 | -L- | 266+78 | RT. |
| 23 | -L- | 278+33 | LT. |
| 24 | -L- | 279+52 | LT. |
| 26 | -L- | 307+12 | LT. |



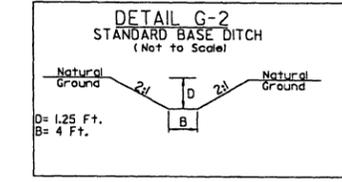
SHEET RDWY STATION - STATION SIDE

| | | | |
|----|-------|--------|-----|
| 10 | -L- | 105+30 | LT. |
| 11 | -L- | 113+25 | LT. |
| 13 | -L- | 146+60 | RT. |
| 14 | -L- | 158+05 | RT. |
| 16 | -L- | 176+50 | LT. |
| 16 | -L- | 183+77 | LT. |
| 16 | -L- | 188+25 | LT. |
| 17 | -L- | 190+35 | RT. |
| 17 | -L- | 191+09 | RT. |
| 20 | -L- | 229+36 | LT. |
| 20 | -Y10- | 11+07 | RT. |
| 21 | -L- | 246+55 | LT. |
| 21 | -L- | 252+85 | RT. |
| 21 | -L- | 250+38 | RT. |
| 23 | -L- | 269+84 | LT. |
| 23 | -L- | 271+87 | LT. |
| 23 | -L- | 273+33 | LT. |
| 24 | -Y12- | 9+09 | LT. |
| 24 | -Y12- | 10+86 | LT. |
| 24 | -L- | 291+93 | LT. |



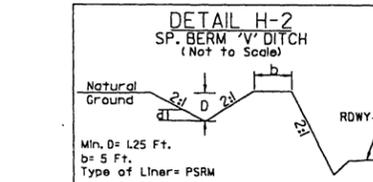
SHEET RDWY STATION - STATION SIDE

| | | | | |
|----|-----|--------|----------|-----|
| 20 | -L- | 239+50 | - 240+50 | LT. |
|----|-----|--------|----------|-----|



SHEET RDWY STATION - STATION SIDE

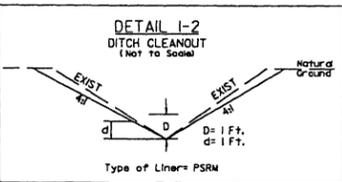
| | | | |
|----|-----|--------|-----|
| 22 | -L- | 260+90 | LT. |
|----|-----|--------|-----|



Type of Liner= PSRM

SHEET RDWY STATION - STATION SIDE

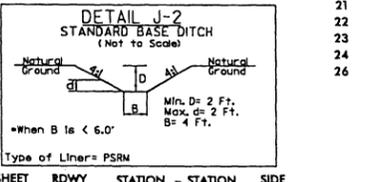
| | | | | |
|----|-----|--------|----------|-----|
| 23 | -L- | 269+75 | - 272+00 | LT. |
|----|-----|--------|----------|-----|



Type of Liner= PSRM

SHEET RDWY STATION - STATION SIDE

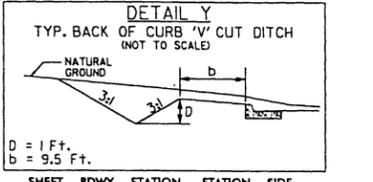
| | | | | |
|----|-----|--------|----------|-----|
| 18 | -L- | 202+50 | - 205+64 | LT. |
|----|-----|--------|----------|-----|



Type of Liner= PSRM

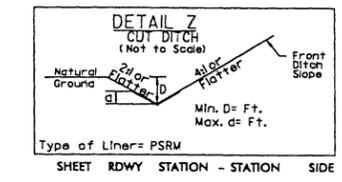
SHEET RDWY STATION - STATION SIDE

| | | | |
|----|-----|--------|-----|
| 26 | -L- | 313+93 | LT. |
|----|-----|--------|-----|



SHEET RDWY STATION - STATION SIDE

| | | | | |
|----|-----|------|--------|-----|
| 27 | -Y- | 1+50 | - 2+50 | RT. |
| 27 | -Y- | 4+20 | - 5+15 | RT. |



Type of Liner= PSRM

SHEET RDWY STATION - STATION SIDE

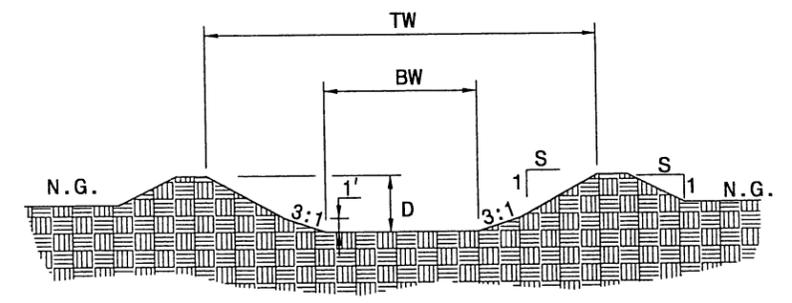
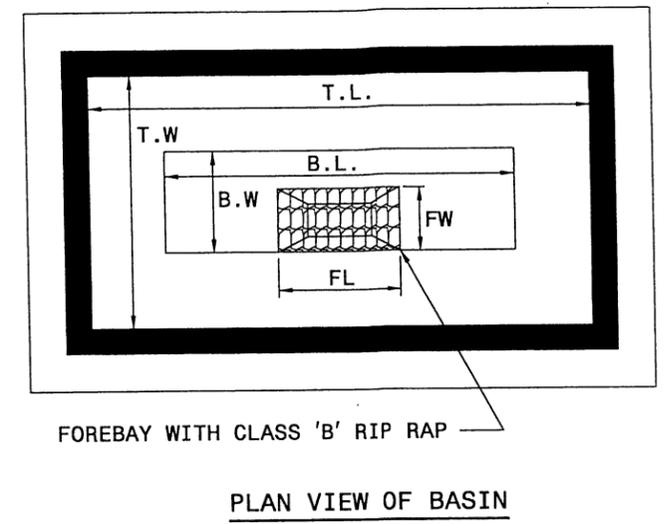
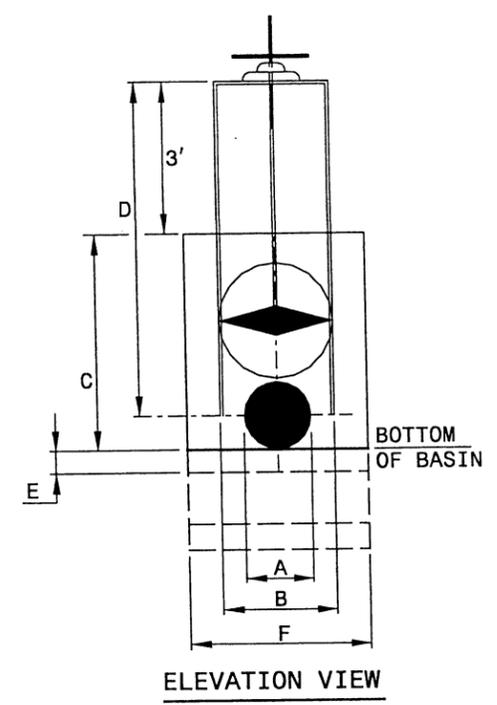
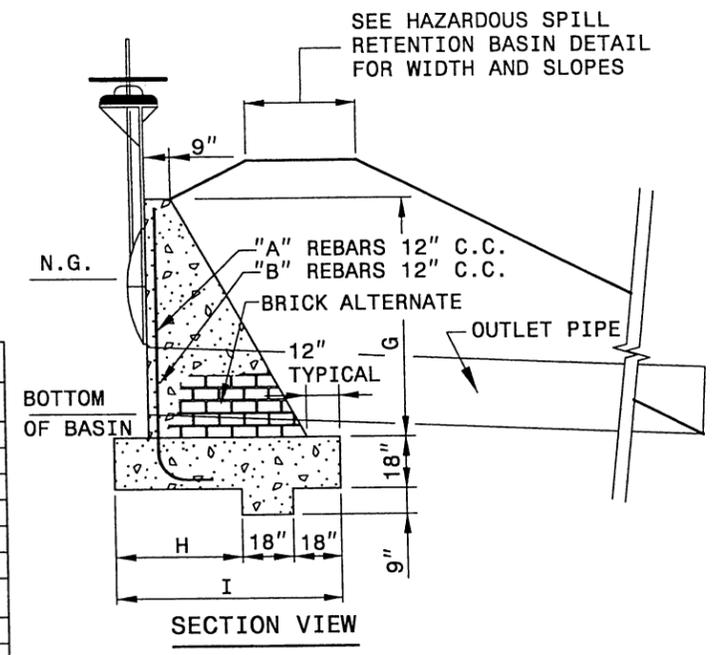
| | | | | |
|---|------|-------|---------|-----|
| 7 | -Y1- | 11+00 | - 12+70 | LT. |
|---|------|-------|---------|-----|

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY
 PROJECT: 34418.14 (R-2309AB)
 US 220 FROM SR 2182 HORSEBPN
 CREEK RD. TO 0.2 MILES
 NORTH OF SR 2313 (WINFREE RD.)
 SHEET OF

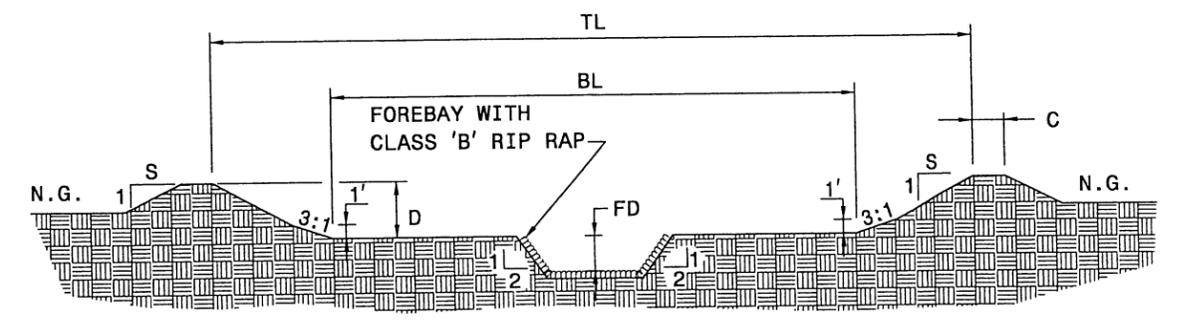
Permit Drawing Sheet 9 of 45

- GENERAL NOTES:
- 1- REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO THE HEADWALL AND SHALL BE PAID FOR ON YD³ BASIS.
 - 2- CONCRETE SHALL BE CLASS "B" THROUGHOUT STRUCTURE.
 - 3- DELETE REINFORCING STEEL WHEN BRICK ALTERNATE IS USED.

| BASIN # | | 1 | 2 | 3 | 4 | 5 |
|------------------------|---|----------------------------------|----------------------------------|------|----------------------------------|------|
| SLUICE GATE DIMENSIONS | | | | | | |
| PIPE DIAMETER | A | 30" | 30" | 18" | 30" | 18" |
| GATE DIAMETER | B | 38 ³ / ₄ " | 38 ³ / ₄ " | 25" | 38 ³ / ₄ " | 25" |
| HEADWALL HT. | C | 6'3" | 6'3" | 3'9" | 6'3" | 3'9" |
| FRAME HEIGHT | D | 60" | 60" | 36" | 60" | 36" |
| INVERT HEIGHT | E | 10" | 10" | 10" | 10" | 10" |
| HEADWALL WIDTH | F | 9'2" | 9'2" | 6'4" | 9'2" | 6'4" |
| HEADWALL DIMENSIONS | | | | | | |
| PIPE DIAMETER | A | 30" | 30" | 18" | 30" | 18" |
| HEADWALL HT. | G | 7'1" | 7'1" | 4'7" | 7'1" | 4'7" |
| FOOTING DEPTH | H | 2'6" | 2'6" | 18" | 2'6" | 18" |
| HEADWALL DEP. | I | 5'6" | 5'6" | 4'6" | 5'6" | 4'6" |



CROSS SECTION VIEW OF BASIN



CROSS SECTION VIEW OF BASIN

| HAZARDOUS SPILL RETENTION BASIN | | | | | | | | | | | | | FOREBAY DIMENSION | | | |
|---------------------------------|-----------|-----------|-------------|-----------|-----------|--------|-----------|-----------|---|--------|---------|--------------------|-------------------|---------|---------|---------|
| BASIN # | PIPE SIZE | TOP ELEV. | BOTTOM ELEV | T.W. (ft) | B.W. (ft) | D (ft) | T.L. (ft) | B.L. (ft) | S | C (ft) | *G (CY) | CAPACITY (cu. ft.) | STATION | FL (ft) | FW (ft) | FD (ft) |
| 1 | 30" | 779 | 774 | 97 | 75 | 5 | 72-97 | 50-75 | 2 | 2 | 100 | 30800 | -L- 57+13 LT. | 40 | 20 | 3 |
| 2 | 30" | 760 | 753.5 | 58 | 30 | 6.5 | 78 | 50 | 2 | 5 | 110 | 17600 | -L- 112+60 RT. | 30 | 15 | 3 |
| 3 | 18" | 746.5 | N/A | N/A | N/A | N/A | N/A | N/A | 2 | 2 | 0 | 6500 | -L- 118+50 LT. | N/A | N/A | N/A |
| 4 | 30" | 748 | 744 | 33 | 15 | 4 | 58 | 48 | 2 | 2 | 180 | 16000 | -L- 121+70 LT. | N/A | N/A | N/A |
| 5 | 18" | 750.8 | 745.8 | 42 | 20 | 5 | 62 | 40 | 2 | 2 | 160 | 7500 | -L- 142+25 LT. | 20 | 12 | 3 |

*G DENOTES EXCAVATION AMOUNT.
NOTE: SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH SLUICE GATE.

** Provided at new and/or improved roadway sections to aid in containment and clean up of accidental spills by truck traffic. Basins are provided in particular locations including areas in proximity to sensitive waters and water supplies.

**DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN**
Office 919-250-4128 FAX 919-250-4119

**HAZARDOUS SPILL
RETENTION BASIN**

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY

PROJECT: 34418.1.4 (R-2309AB)
US 220 FROM SR 2182 (HORSEPEN CREEK RD) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD)

SHEET OF

5/14/99
12/7/2009
K:\Hydraulics\Permits\2309ab_Hyd-prm-hazspile.dgn
K & Associates, P.C.

8/17/99
 MATCH LINE SEE SHEET NO.5 -L- STA.46+00
 MATCH LINE SEE SHEET NO.7 -L- STA.59+00
 11/17/2009
 I:\hydro\public\adgn\Permits\2309ab_Hyd-prm-psh06.dgn
 KO & ASSOCIATES, P.C.

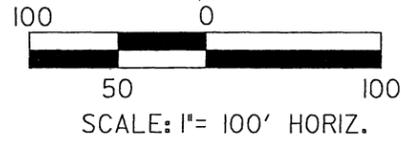
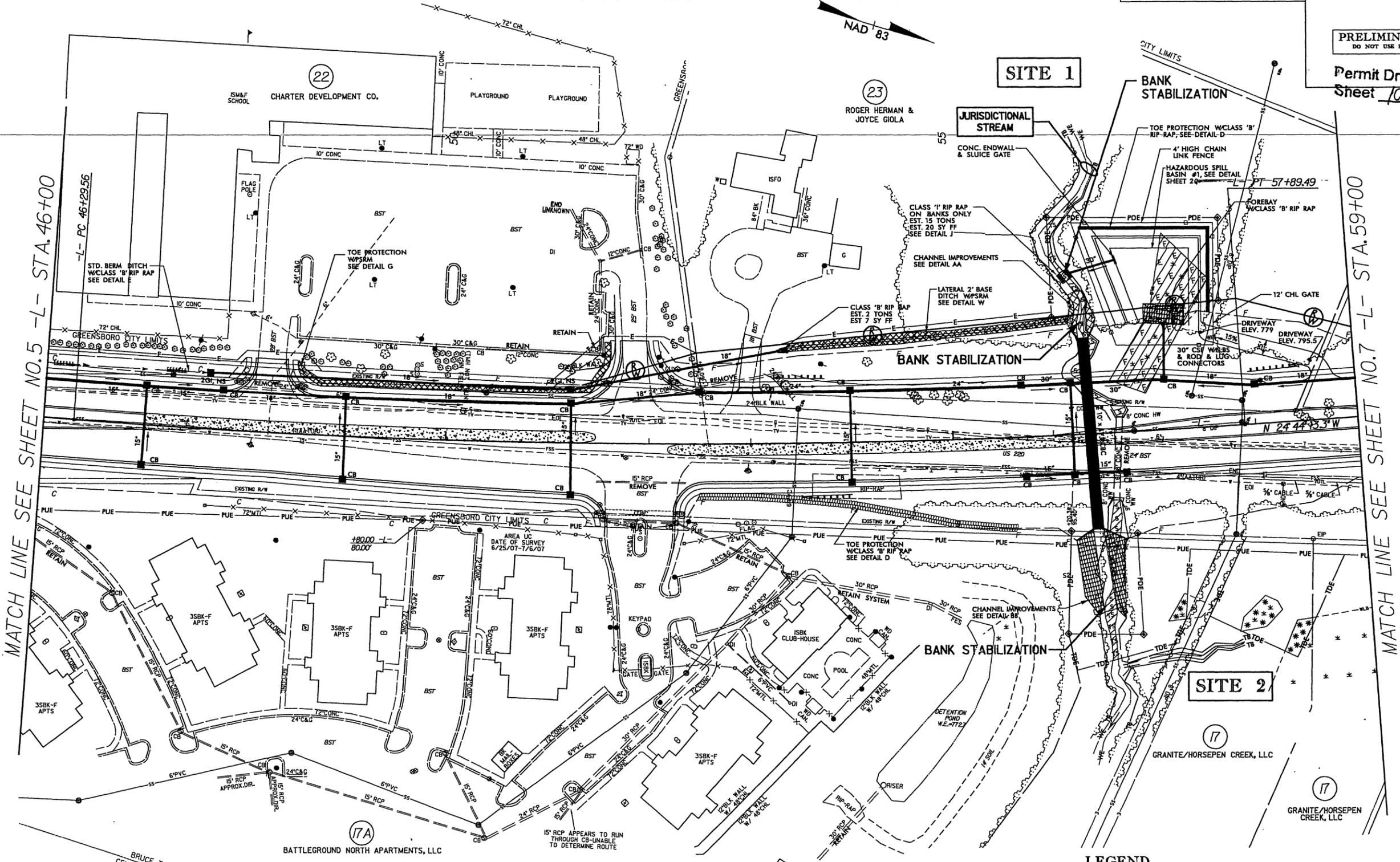
NW QUADRANT IS SELECTED FOR HAZARDOUS SPILL BASIN BECAUSE:
 SW QUADRANT: WELL DEVELOPED PROPERTY AND LATERAL DITCH FOR OFF SITE RUNOFF
 SE QUADRANT: DETENTION POND
 NE QUADRANT: SEWER LINE AND JURISDICTIONAL STREAM

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Florence & Hutcheson, Inc. Company
 5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
 (919) 851-6066

| | |
|--|-----------------------|
| PROJECT REFERENCE NO. R-2309AB | SHEET NO. 6 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

Permit Drawing
 Sheet **10** of **45**



SITE 1 AND 2
PLAN VIEW

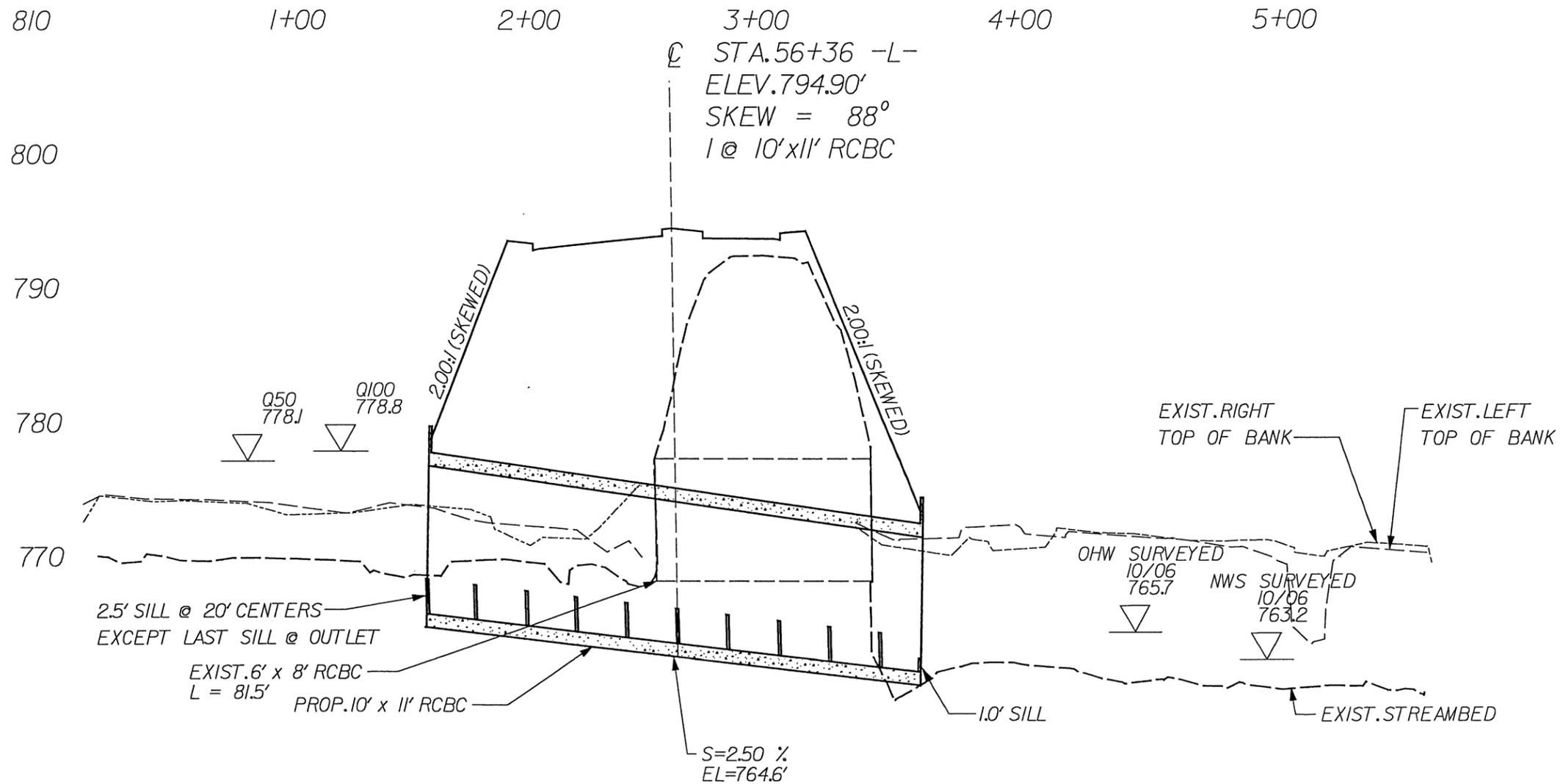
LEGEND

| | | | |
|---------|--|--|-------------------------------|
| — WLB — | WETLAND BOUNDARY | | DENOTES FILL IN WETLAND |
| | DENOTES TEMPORARY IMPACTS IN SURFACE WATER | | DENOTES EXCAVATION IN WETLAND |
| | DENOTES IMPACTS IN SURFACE WATER | | DENOTES MECHANIZED CLEARING |

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 4418L1 (R-2309AB)
 US 220 FROM SR 2182 (HORSEPEN CREEK RD) TO 0.2 MILES
 NORTH OF SR 2313
 SHEET OF



5/28/09



SCALE:
 1" = 50' HORIZONTAL
 1" = 10' VERTICAL

SITE 1
PROFILE ALONG STRUCTURE
STA. 56 + 36 -L-



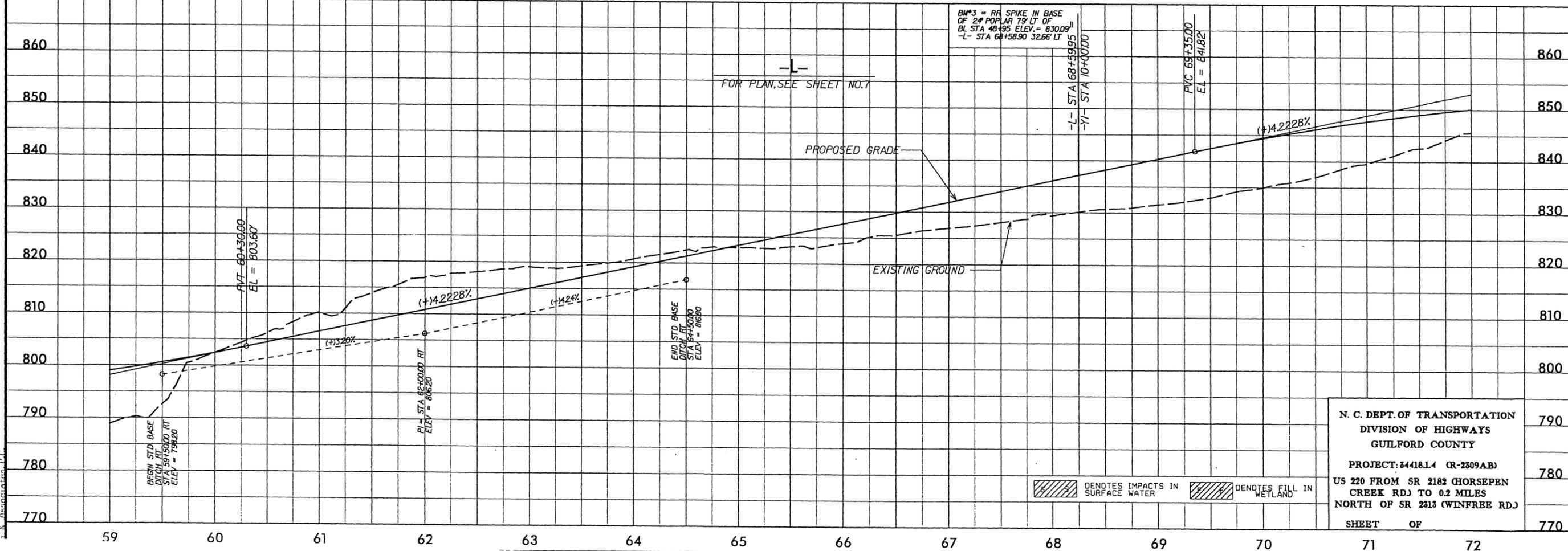
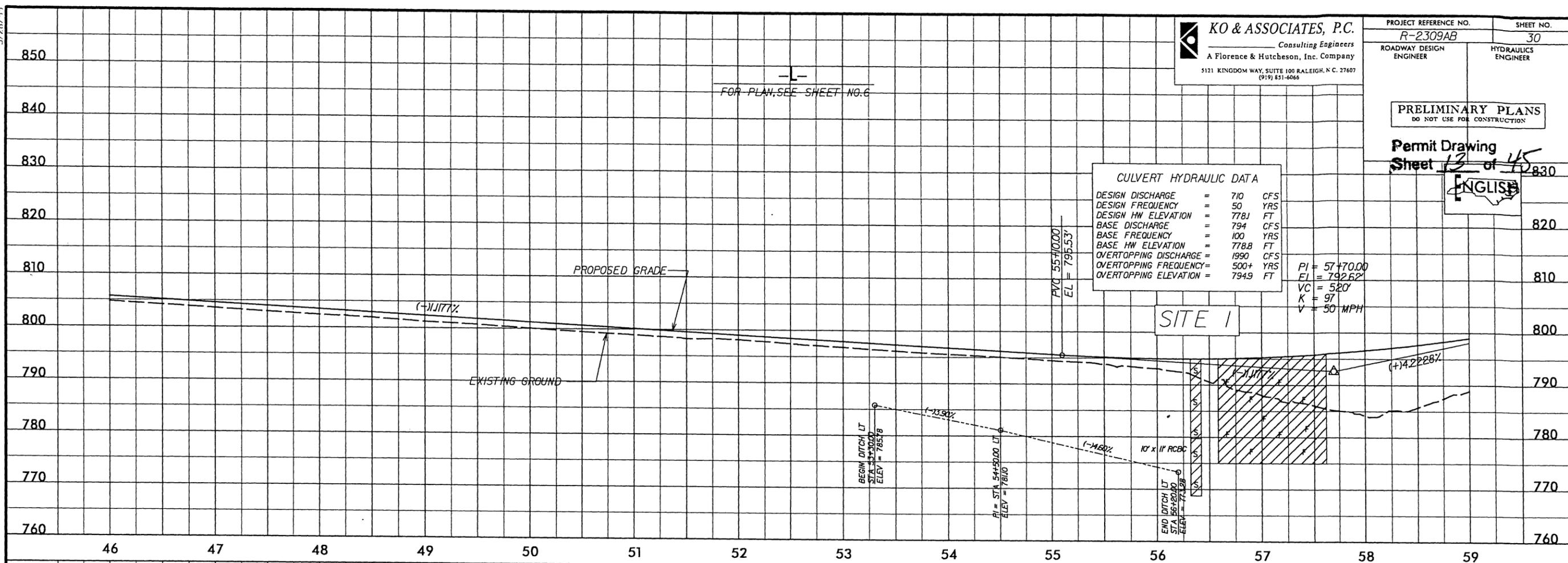
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5/28/99
 I:\projects\2309AB\Perms\2309AB_Hydr.prm.plt.dgn
 KO & ASSOCIATES, P.C.

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Florence & Hutcheson, Inc. Company
 5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
 (919) 851-6066

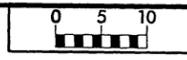
PROJECT REFERENCE NO. **R-2309AB**
 SHEET NO. **30**
 ROADWAY DESIGN ENGINEER
 HYDRAULICS ENGINEER

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION
Permit Drawing
 Sheet **13** of **45**
ENGLISH

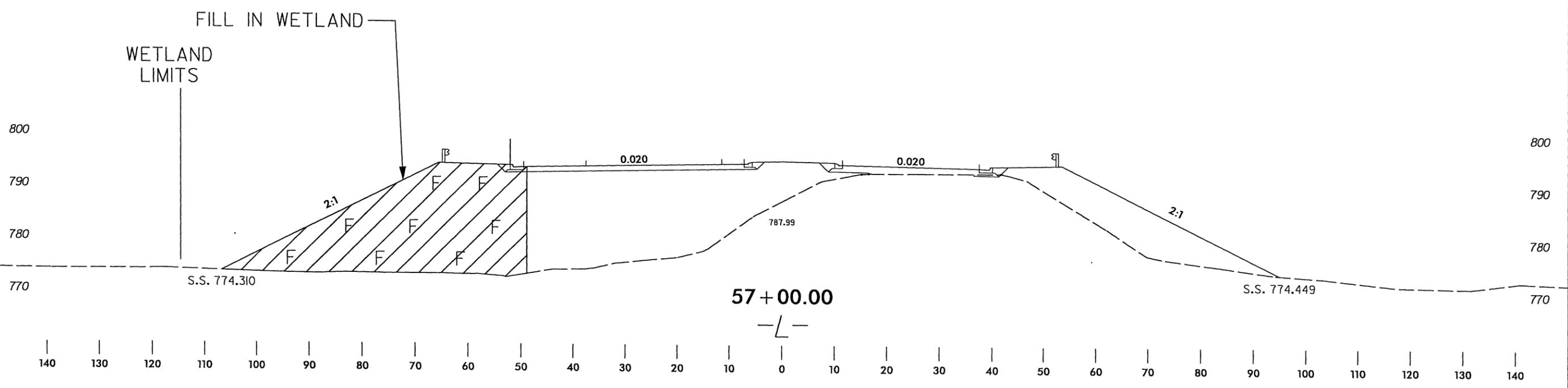


N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.14 (R-2309AB)
 US 220 FROM SR 2182 HORSEPEN
 CREEK RD TO 0.2 MILES
 NORTH OF SR 2513 (WINFREE RD)
 SHEET OF

DENOTES IMPACTS IN SURFACE WATER
 DENOTES FILL IN WETLAND



| | |
|--|-------------------------|
| PROJ. REFERENCE NO. R-2309AB | SHEET NO. XSC SITE 1 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet <u>14</u> of <u>45</u> | |



SITE I
X-SECTION

| LEGEND | |
|--------|-------------------------|
| | DENOTES FILL IN WETLAND |

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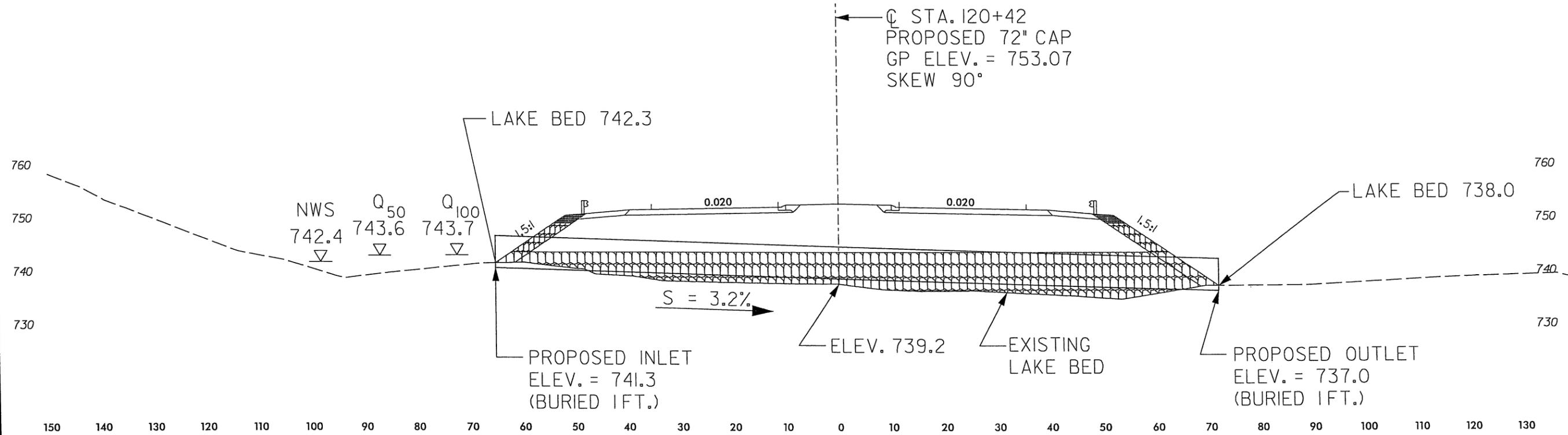
N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 4418.14 (R-2309AB)
 US 220 FROM SR 2182 (HORSEPEN CREEK RD.) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD.)
 SHEET OF

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| | |
|--|---------------------|
| PROJ. REFERENCE NO. R-2309AB | SHEET NO. PAS-53 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet <u>17</u> of <u>45</u> | |



SITE 3
PROFILE ALONG STRUCTURE
STA. 120 + 42 -L-

R:\Hydraulics\Sign\Permits\R2309AB_hyd_wat_pos_53.dgn
1/24/2009

SCALE:
1" = 20' HORIZONTAL
1" = 20' VERTICAL

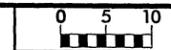


N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY

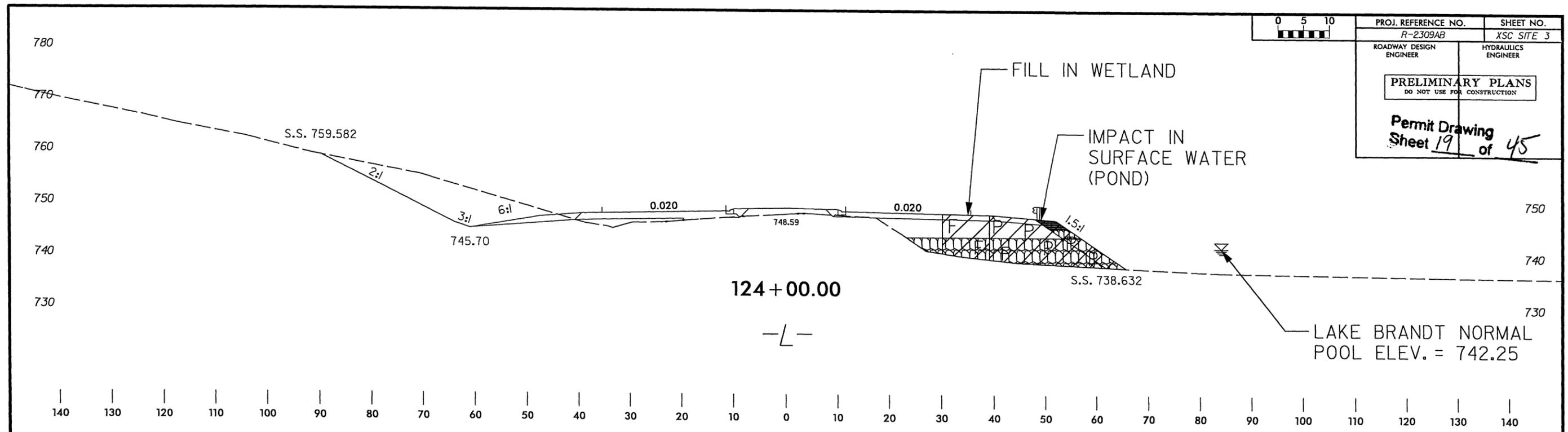
PROJECT: 34418.1.4 (R-2309AB)
US 220 FROM SR 2182 HORSEPEN
CREEK RDJ TO 0.2 MILES
NORTH OF SR 2313

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Consulting Engineers
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(919) 851-6056

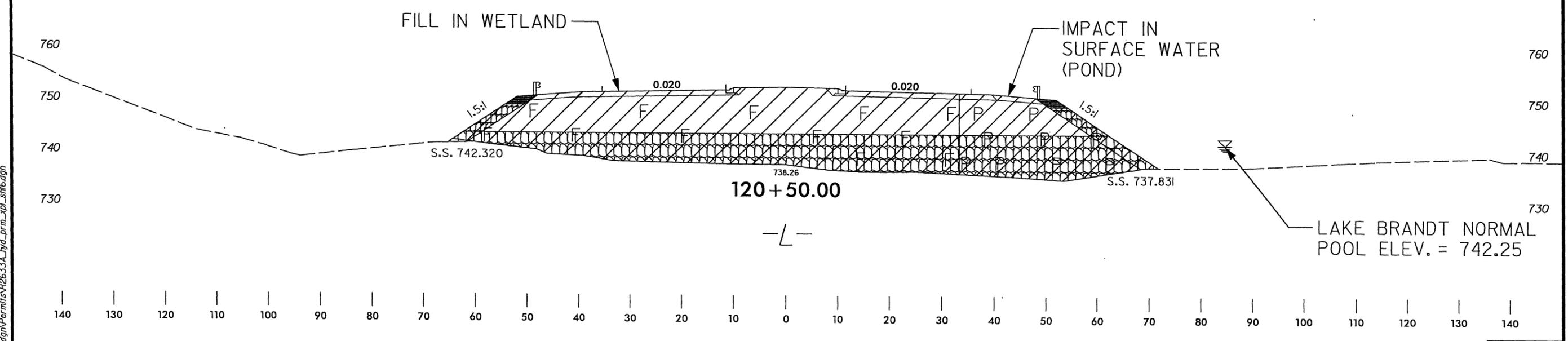
SHEET OF **Page 5 of 37**



| | |
|--|-------------------------|
| PROJ. REFERENCE NO. R-2309AB | SHEET NO. XSC SITE 3 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 19 of 45 | |



SITE 3
X-SECTION



SITE 3
X-SECTION

| LEGEND | |
|--------|---|
| | DENOTES IMPACTS IN SURFACE WATER (POND) |
| | DENOTES FILL IN WETLAND |

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N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.14 (R-2309AB)
 US 220 FROM SR 2182 HORSEPEN CREEK RDJ TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD)
 SHEET OF

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 1/10/2009

ENGLISH

8/17/99

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(919) 851-6666

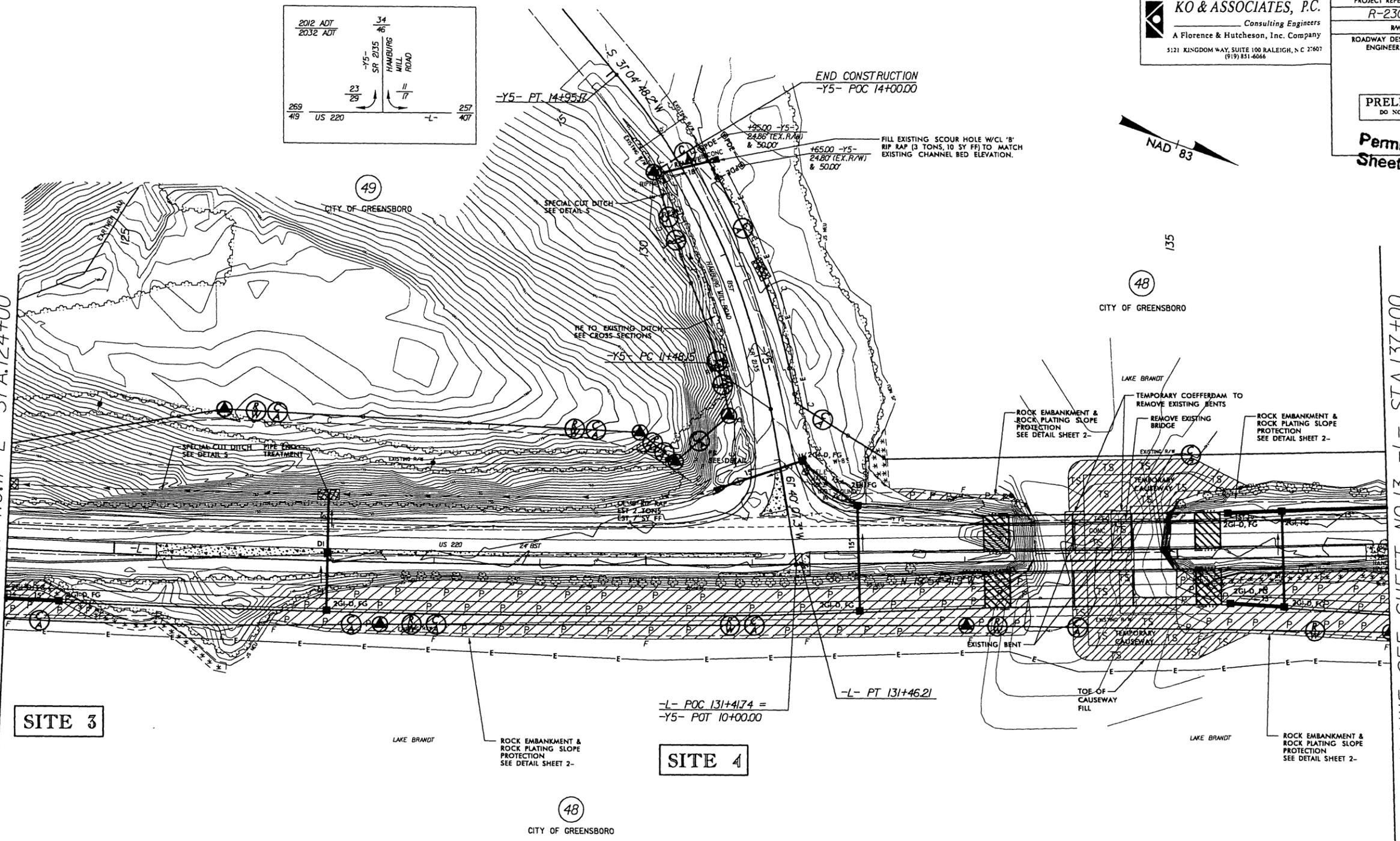
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|--|---------------------|
| PROJECT REFERENCE NO. R-2309AB | SHEET NO. 12 |
| R/W SHEET NO. ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 21 of 45

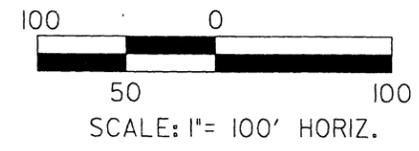
MATCH LINE SEE SHEET NO. 11 - L - STA. 124+00

MATCH LINE SEE SHEET NO. 13 - L - STA. 137+00



SITE 3

SITE 4



SITE 3 AND 4 PLAN VIEW

LEGEND

- WLB — WETLAND BOUNDARY
- DENOTES IMPACTS IN SURFACE WATER (POND)
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 4418.1.4 (R-2309AB)
US 220 FROM SR 2182 HORSEPEN
CREEK RD.) TO 0.2 MILES
NORTH OF SR 2313 (WINFREE RD.)
SHEET OF

5/28/99
 P:\B\2009\Hydraulic\Amp\Ncr.mts\R2309AB_Hydr.prm.plt.33.dgn

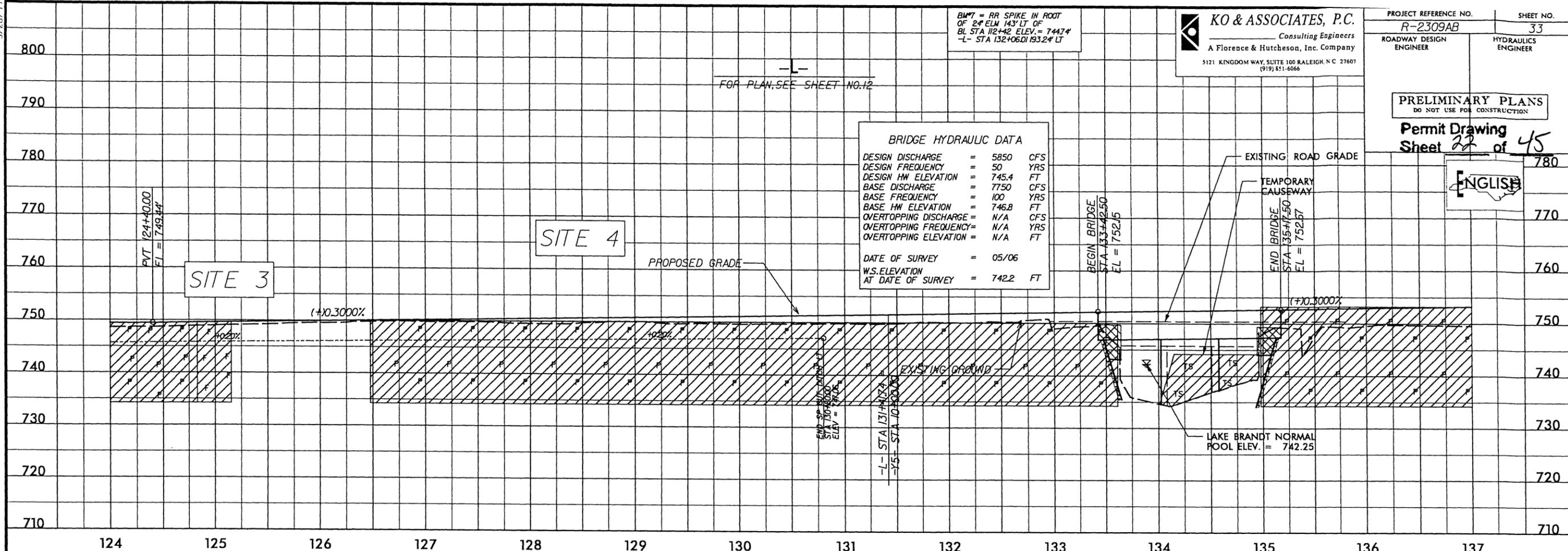
BM7 = RR SPIKE IN FOOT OF 2" ELM 143' LT OF BL STA 112+42 ELEV. = 7447' -L- STA 132+06.01 193.2' LT

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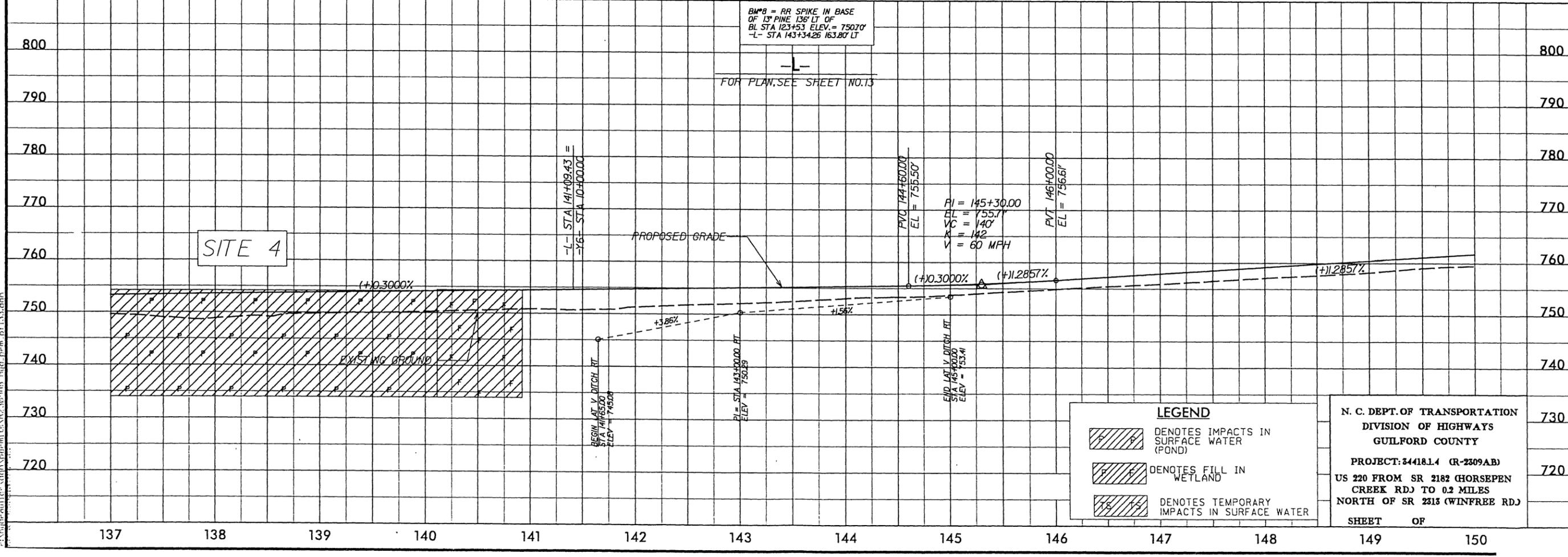
PROJECT REFERENCE NO. **R-2309AB** SHEET NO. **33**
 ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION
Permit Drawing
 Sheet **22** of **45**

ENGLISH

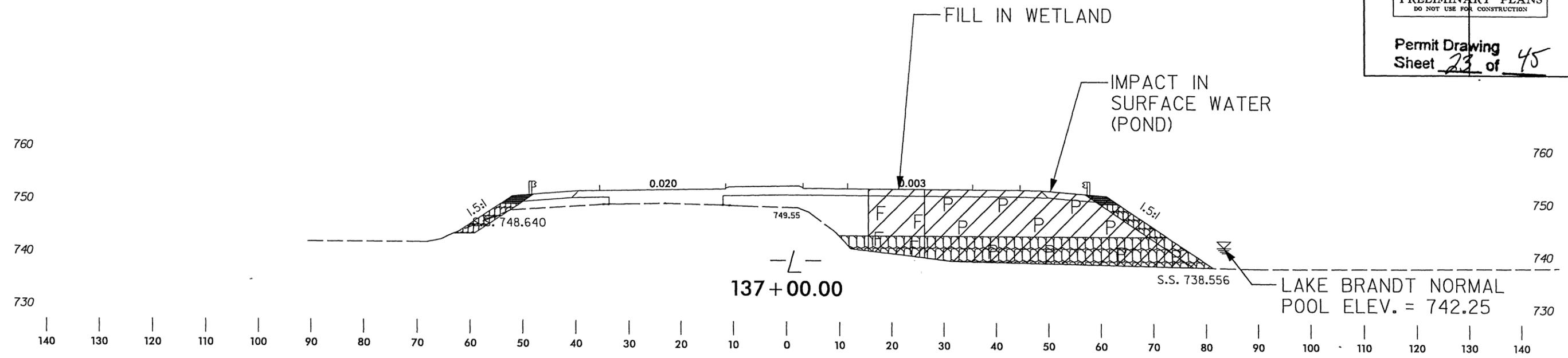


BM8 = RR SPIKE IN BASE OF 13" PINE 136' LT OF BL STA 123+53 ELEV. = 75070' -L- STA 143+34.26 163.80' LT

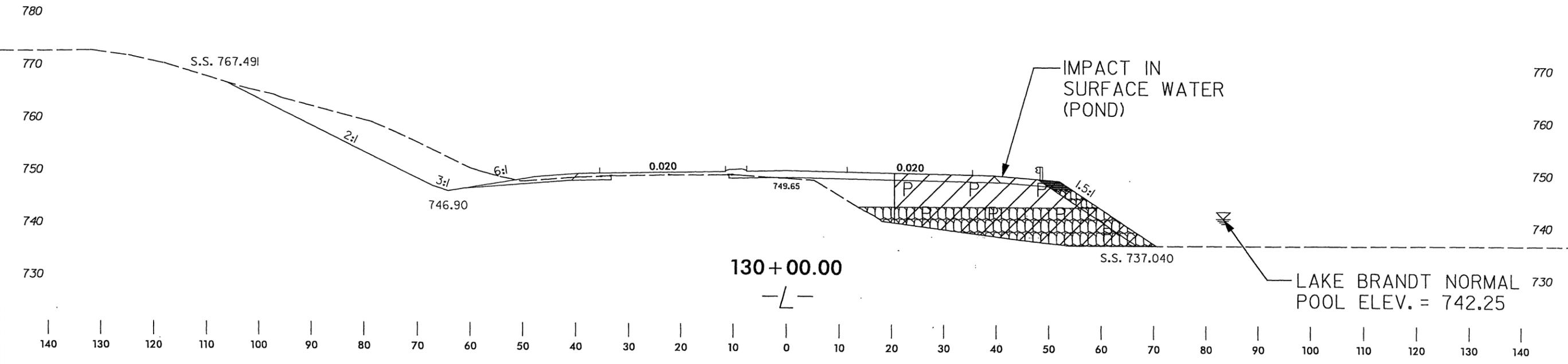


N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.1.4 (R-2309AB)
 US 220 FROM SR 2182 HORSEPEN CREEK RD. TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD.)
 SHEET OF

| | | | |
|--|--|---------------------------------|-------------------------|
| 0 5 10 | | PROJ. REFERENCE NO. R-2309AB | SHEET NO. XSC SITE 4 |
| | | ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | | | |
| Permit Drawing Sheet <u>23</u> of <u>45</u> | | | |



SITE 4
X-SECTION



SITE 4
X-SECTION

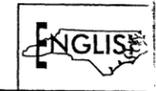
LEGEND

| | |
|--------------------|---|
| [Hatched Area 'P'] | DENOTES IMPACTS IN SURFACE WATER (POND) |
| [Hatched Area 'F'] | DENOTES FILL IN WETLAND |

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N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.14 (R-2309AB)
 US 220 FROM SR 2182 HORSEPEN CREEK RD. TO 0.2 MILES NORTH OF SR 2513 (WINFREE RD.)
 SHEET OF

R:\Hydraulics\vdgn\Permits\2633A_hyd_prm_xpl_sht6.dgn 1/10/2009



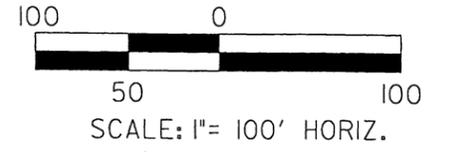
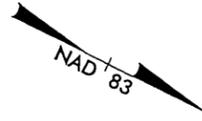
8/17/99

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(919) 851-6066

| | |
|-----------------------------------|---------------------|
| PROJECT REFERENCE NO. R-2309AB | SHEET NO. 13 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

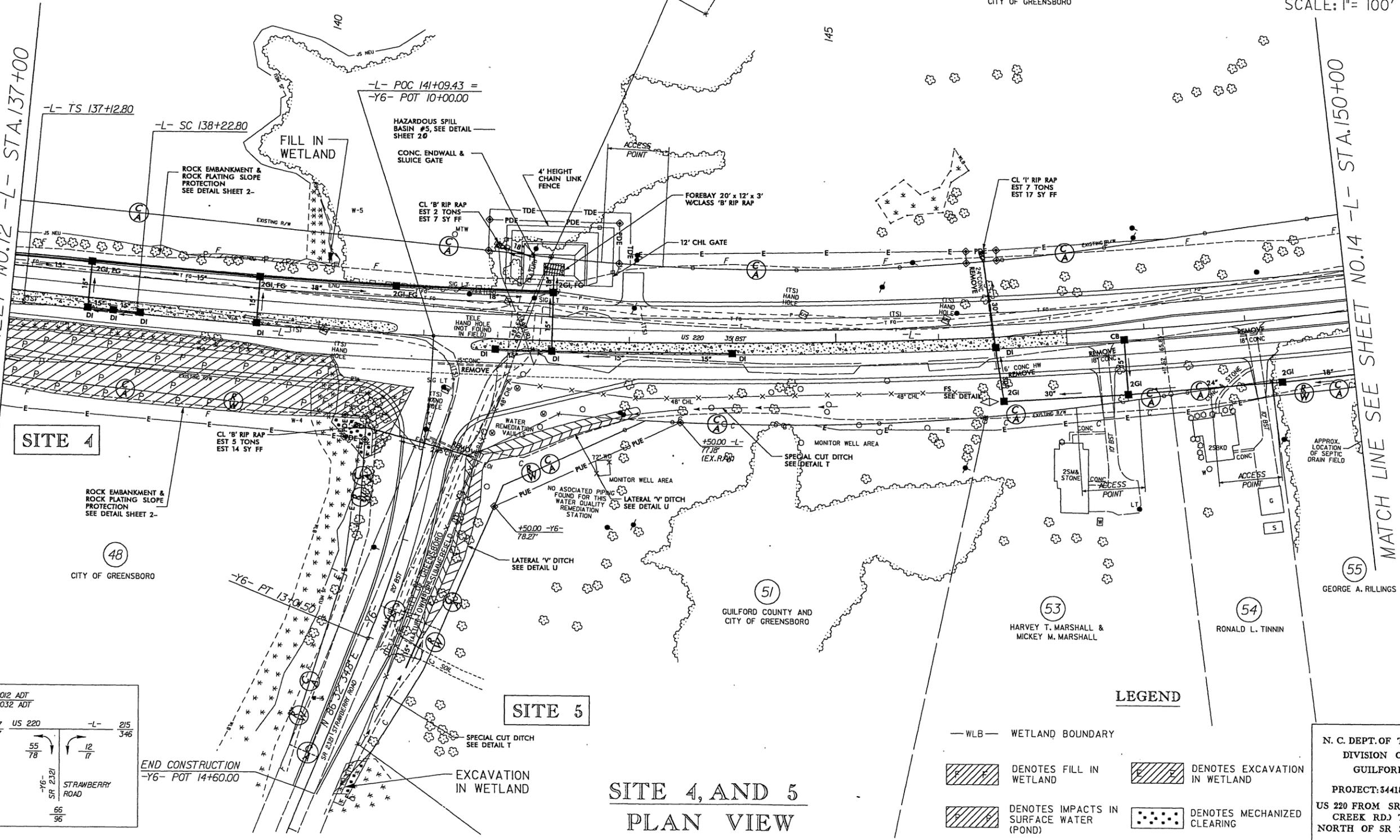
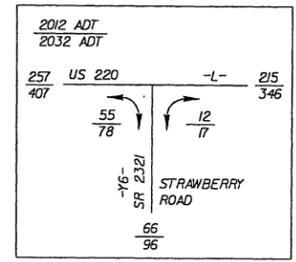
Permit Drawing
Sheet **24** of **45**



MATCH LINE SEE SHEET NO.12 -L- STA.137+00

MATCH LINE SEE SHEET NO.14 -L- STA.150+00

\\2010\Hydro\autocad\pdm\Permi\us\2309\sub_Hydr\prj\m\psh13.dgn
KO & ASSOCIATES, P.C.



SITE 4, AND 5 PLAN VIEW

- LEGEND**
- WLB — WETLAND BOUNDARY
 - DENOTES FILL IN WETLAND
 - DENOTES EXCAVATION IN WETLAND
 - DENOTES IMPACTS IN SURFACE WATER (POND)
 - DENOTES MECHANIZED CLEARING

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY

PROJECT: 34418.1.4 (R-2309AB)
US 220 FROM SR 2182 (HORSEPEN CREEK RD) TO 0.2 MILES NORTH OF SR 231

SHEET OF



5/28/09

KO & ASSOCIATES, P.C.
Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, NC 27607
(919) 851-6065

PROJECT REFERENCE NO.
R-2309AB
SHEET NO.
42
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

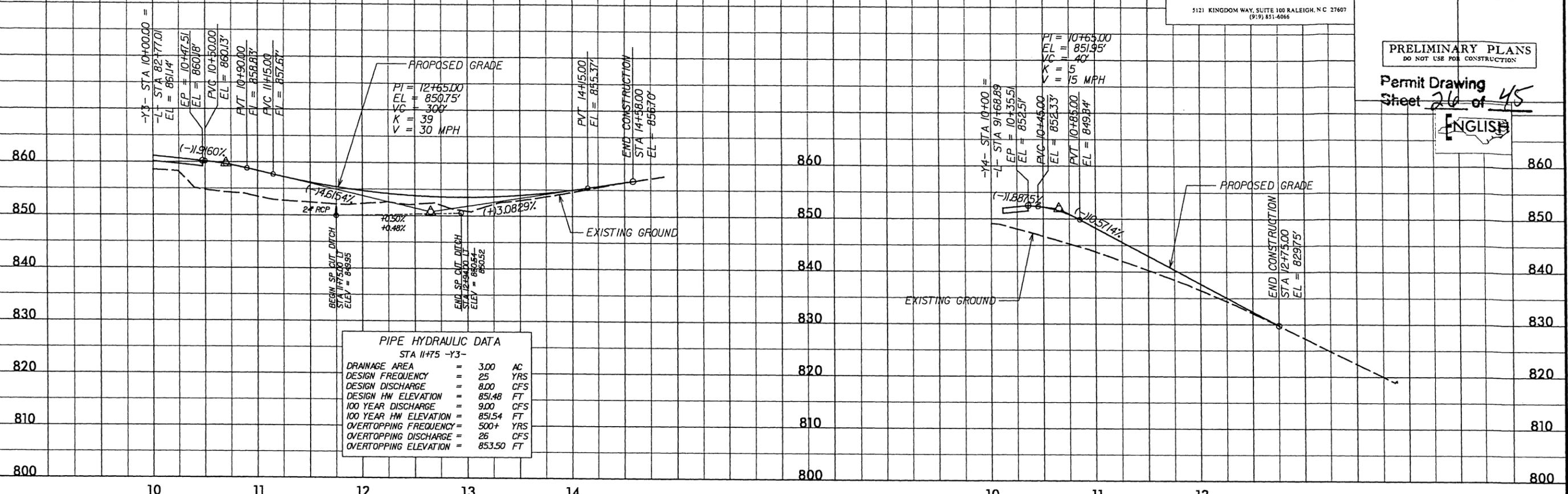
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet **26** of **45**

ENGLISH

-Y3-
FOR PLAN, SEE SHEET NO.8

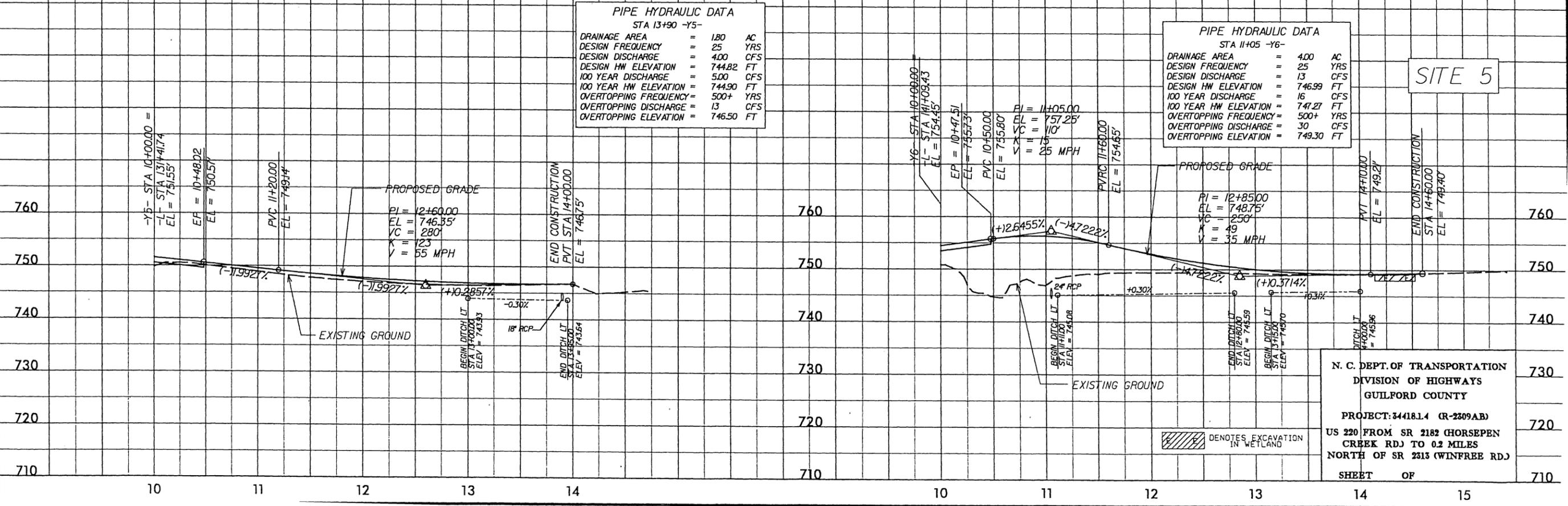
-Y4-
FOR PLAN, SEE SHEET NO.9



| PIPE HYDRAULIC DATA | |
|-----------------------|-------------|
| STA 11+75 -Y3- | |
| DRAINAGE AREA | = 3.00 AC |
| DESIGN FREQUENCY | = 25 YRS |
| DESIGN DISCHARGE | = 8.00 CFS |
| DESIGN HW ELEVATION | = 851.48 FT |
| 100 YEAR DISCHARGE | = 9.00 CFS |
| 100 YEAR HW ELEVATION | = 851.54 FT |
| OVERTOPPING FREQUENCY | = 500+ YRS |
| OVERTOPPING DISCHARGE | = 26 CFS |
| OVERTOPPING ELEVATION | = 853.50 FT |

-Y5-
FOR PLAN, SEE SHEET NO.12

-Y6-
FOR PLAN, SEE SHEET NO.13

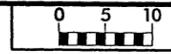


SITE 5

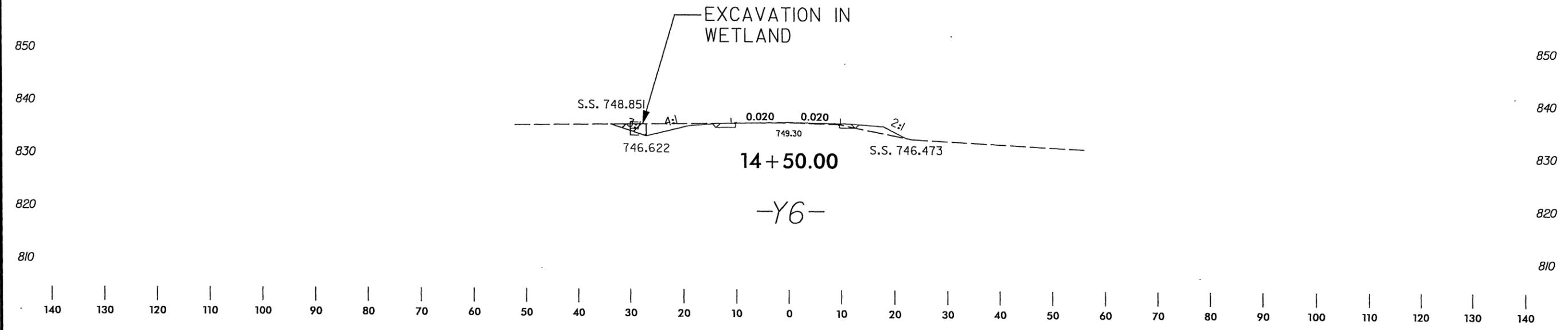
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 34418.1.4 (R-2309AB)
US 220 FROM SR 2182 HORSEPEN
CRIBK RD TO 0.2 MILES
NORTH OF SR 2313 (WINFREE RD)
SHEET OF 15

DENOTES EXCAVATION
IN WETLAND

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| | |
|---|-------------------------|
| PROJ. REFERENCE NO. R-2309AB | SHEET NO. XSC SITE 5 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet <u>27</u> of <u>45</u> | |



SITE 5
X-SECTION

| LEGEND | |
|--------|---|
| | DENOTES IMPACTS IN SURFACE WATER (POND) |
| | DENOTES EXCAVATION IN WETLAND |
| | DENOTES FILL IN WETLAND |

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10/2009



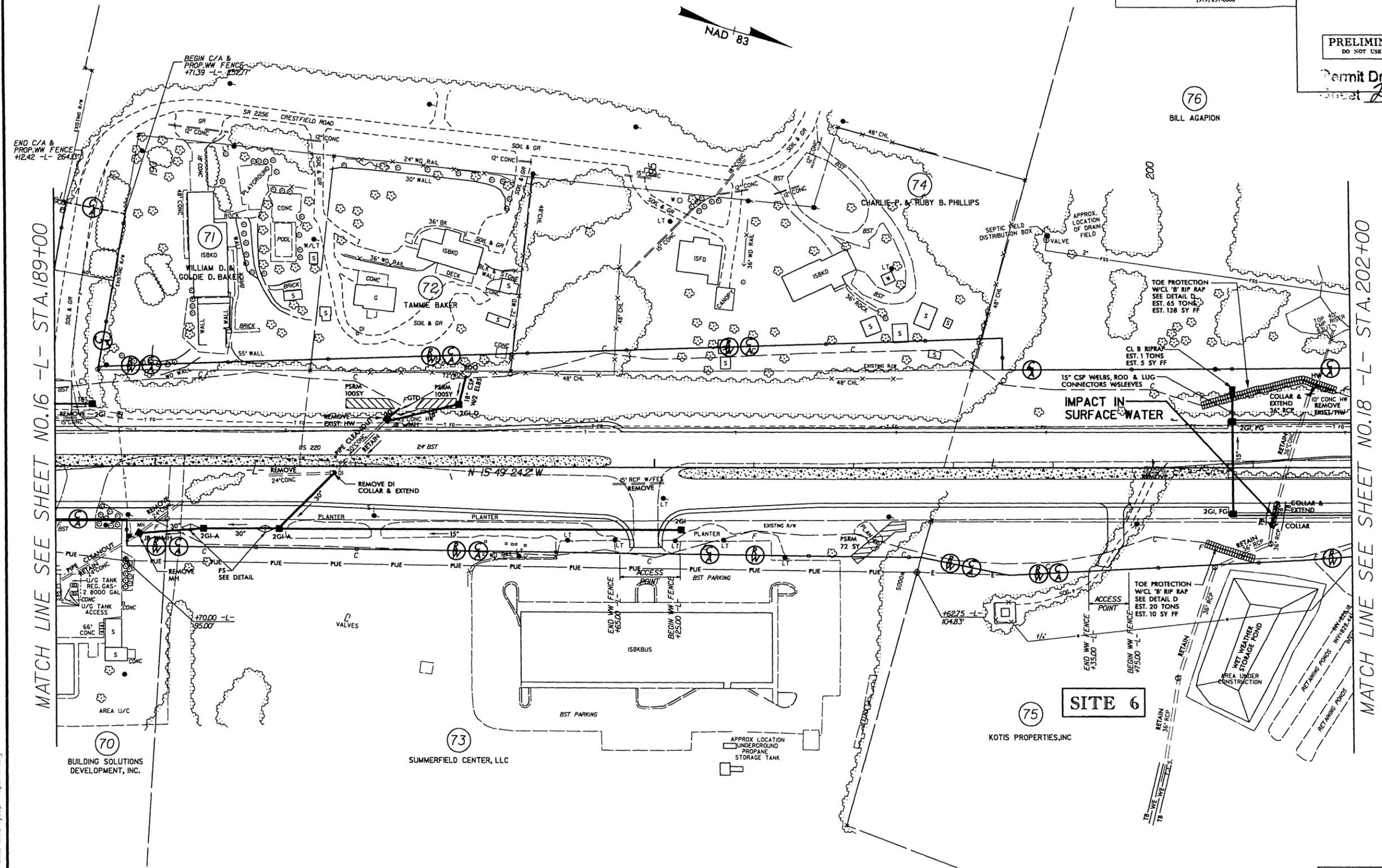
KO & ASSOCIATES, P.C.
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 5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
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N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.1.4 (R-2309AB)
 US 220 FROM SR 2182 (HORSEPEN CREEK RD) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD)
 SHEET OF

B.17/291

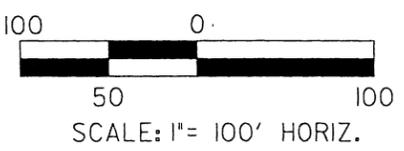
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 Consulting Engineers
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 5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
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| | |
|---|---------------------|
| PROJECT REFERENCE NO. R-2309AB | SHEET NO. 17 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 28 of 45 | |



MATCH LINE SEE SHEET NO.16 -L- STA.189+00

MATCH LINE SEE SHEET NO.18 -L- STA.202+00



SITE 6
PLAN VIEW

LEGEND

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY

PROJECT: 4418L4 (R-2309AB)
 US 220 FROM SR 2182 HORSEPEN CREEK RD.) TO 0.2 MILES NORTH OF SR 2215 (WINFREE RD.)

SHEET OF

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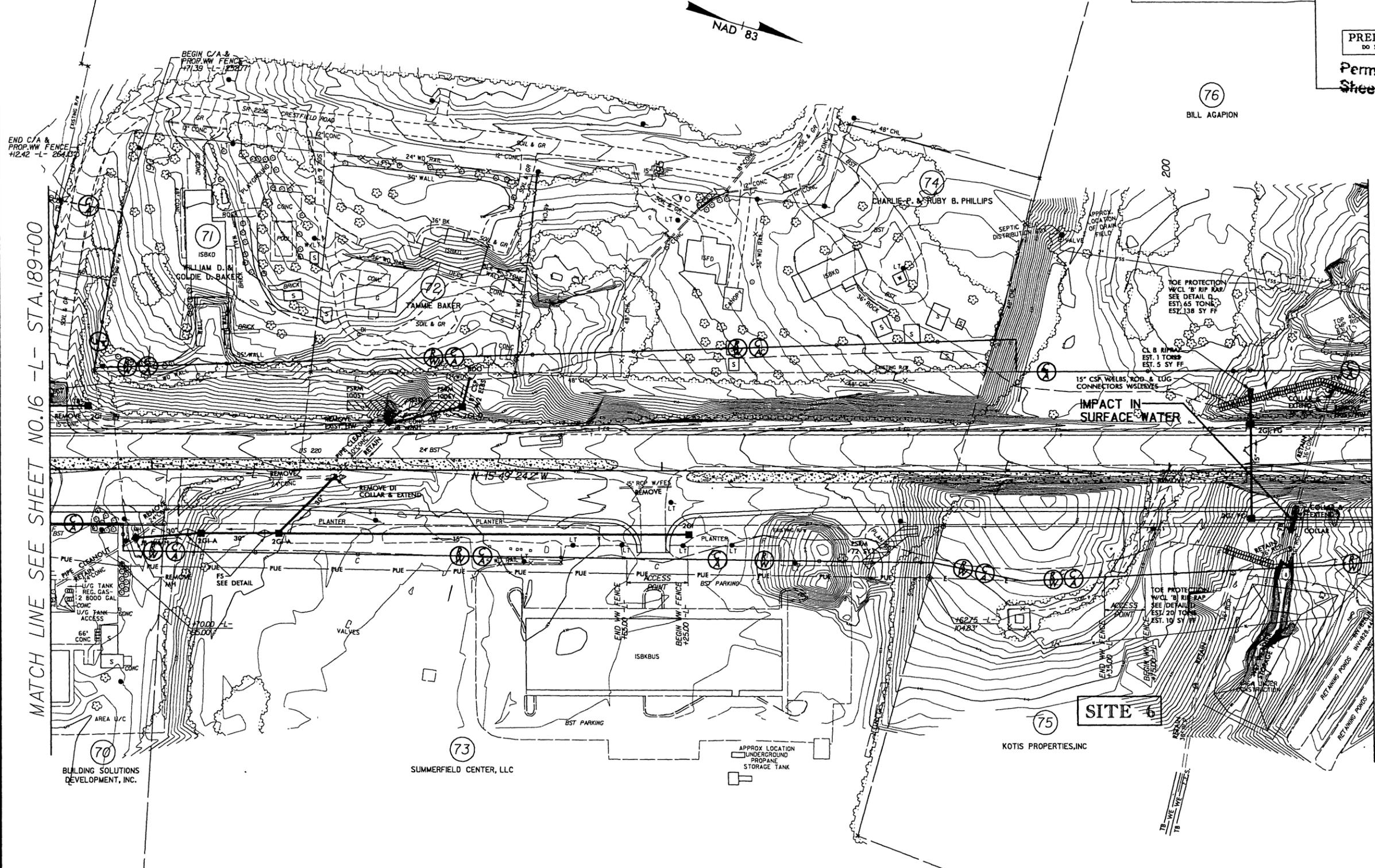
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8/17/2003
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A Florence & Hutcheson, Inc. Company
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(919) 851-6066

| | |
|--|------------------------|
| PROJECT REFERENCE NO. R-2309AB | SHEET NO. 17 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

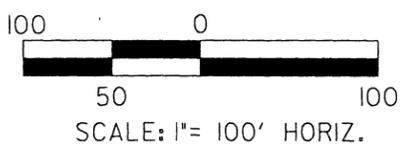
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet **29** of **45**



MATCH LINE SEE SHEET NO.16 -L- STA.189+00

MATCH LINE SEE SHEET NO.18 -L- STA.202+00



SITE 6 PLAN VIEW

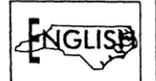
LEGEND

 DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY

PROJECT: 34418.1.4 (R-2309AB)
US 220 FROM SR 2182 HORSEPEN CREEK RD) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD)

SHEET OF



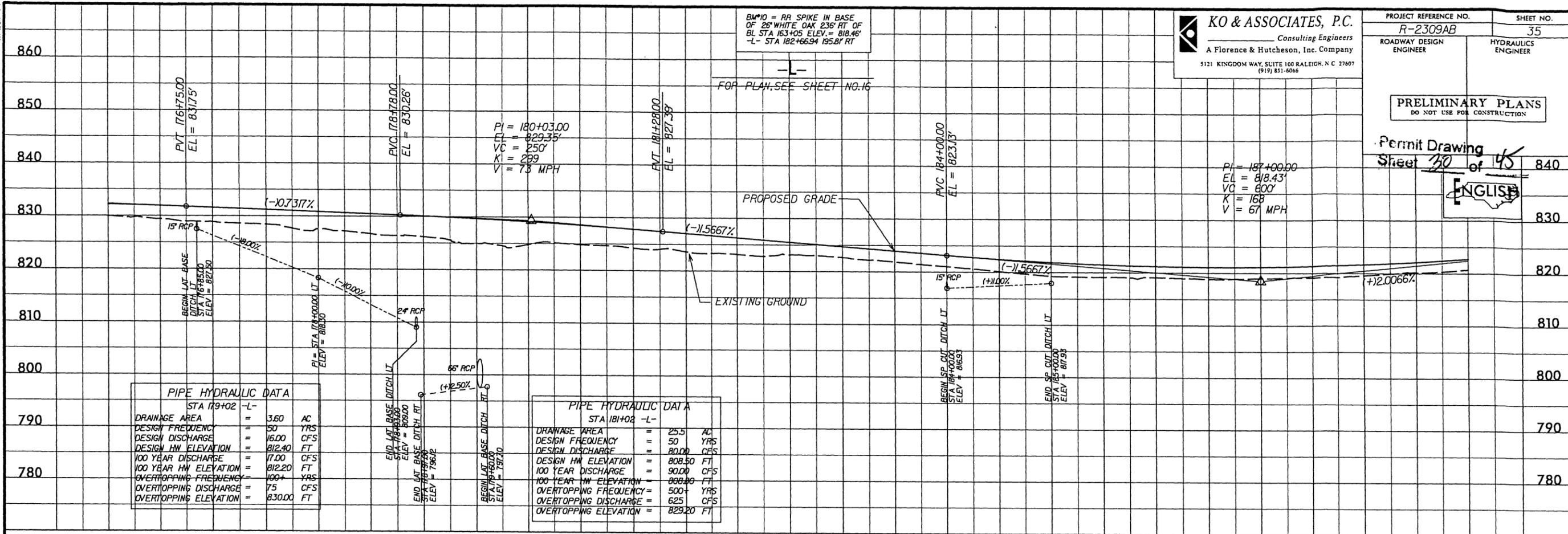
5/28/2009

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Consulting Engineers
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5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

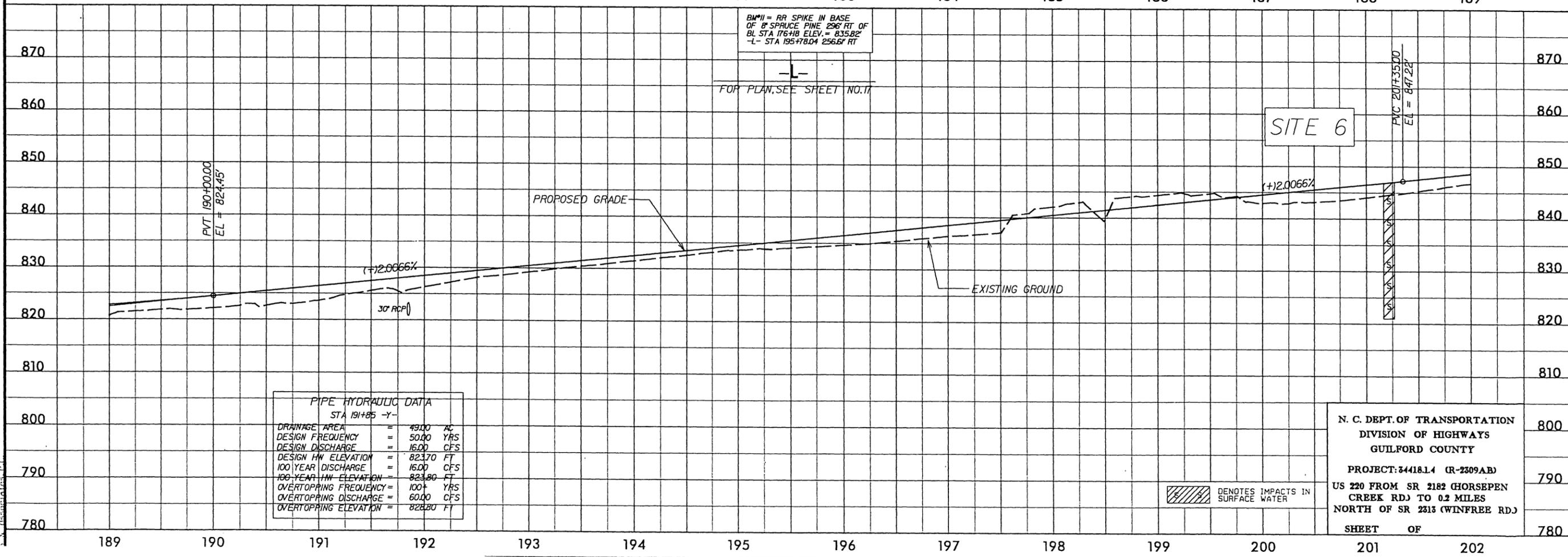
PROJECT REFERENCE NO. **R-2309AB**
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SHEET NO. **35**
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet **30** of **45**
ENGLISH



| PIPE HYDRAULIC DATA | |
|-----------------------|-------------|
| STA 179+02 -L- | |
| DRAINAGE AREA | = 3.60 AC |
| DESIGN FREQUENCY | = 50 YRS |
| DESIGN DISCHARGE | = 16.00 CFS |
| DESIGN HW ELEVATION | = 812.40 FT |
| 100 YEAR DISCHARGE | = 17.00 CFS |
| 100 YEAR HW ELEVATION | = 812.20 FT |
| OVERTOPPING FREQUENCY | = 100+ YRS |
| OVERTOPPING DISCHARGE | = 75 CFS |
| OVERTOPPING ELEVATION | = 830.00 FT |

| PIPE HYDRAULIC DATA | |
|-----------------------|-------------|
| STA 181+02 -L- | |
| DRAINAGE AREA | = 25.5 AC |
| DESIGN FREQUENCY | = 50 YRS |
| DESIGN DISCHARGE | = 80.00 CFS |
| DESIGN HW ELEVATION | = 808.50 FT |
| 100 YEAR DISCHARGE | = 90.00 CFS |
| 100 YEAR HW ELEVATION | = 808.80 FT |
| OVERTOPPING FREQUENCY | = 500+ YRS |
| OVERTOPPING DISCHARGE | = 625 CFS |
| OVERTOPPING ELEVATION | = 829.20 FT |



| PIPE HYDRAULIC DATA | |
|-----------------------|-------------|
| STA 191+85 -Y- | |
| DRAINAGE AREA | = 49.00 AC |
| DESIGN FREQUENCY | = 50.00 YRS |
| DESIGN DISCHARGE | = 16.00 CFS |
| DESIGN HW ELEVATION | = 823.70 FT |
| 100 YEAR DISCHARGE | = 16.00 CFS |
| 100 YEAR HW ELEVATION | = 823.80 FT |
| OVERTOPPING FREQUENCY | = 100+ YRS |
| OVERTOPPING DISCHARGE | = 60.00 CFS |
| OVERTOPPING ELEVATION | = 828.80 FT |

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 34418.14 (R-2309AB)
US 220 FROM SR 2182 HORSEPEN
CREEK RDJ TO 0.2 MILES
NORTH OF SR 2313 (WINFREE RDJ)
SHEET OF

/// DENOTES IMPACTS IN SURFACE WATER

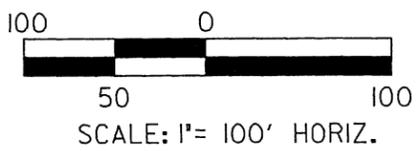
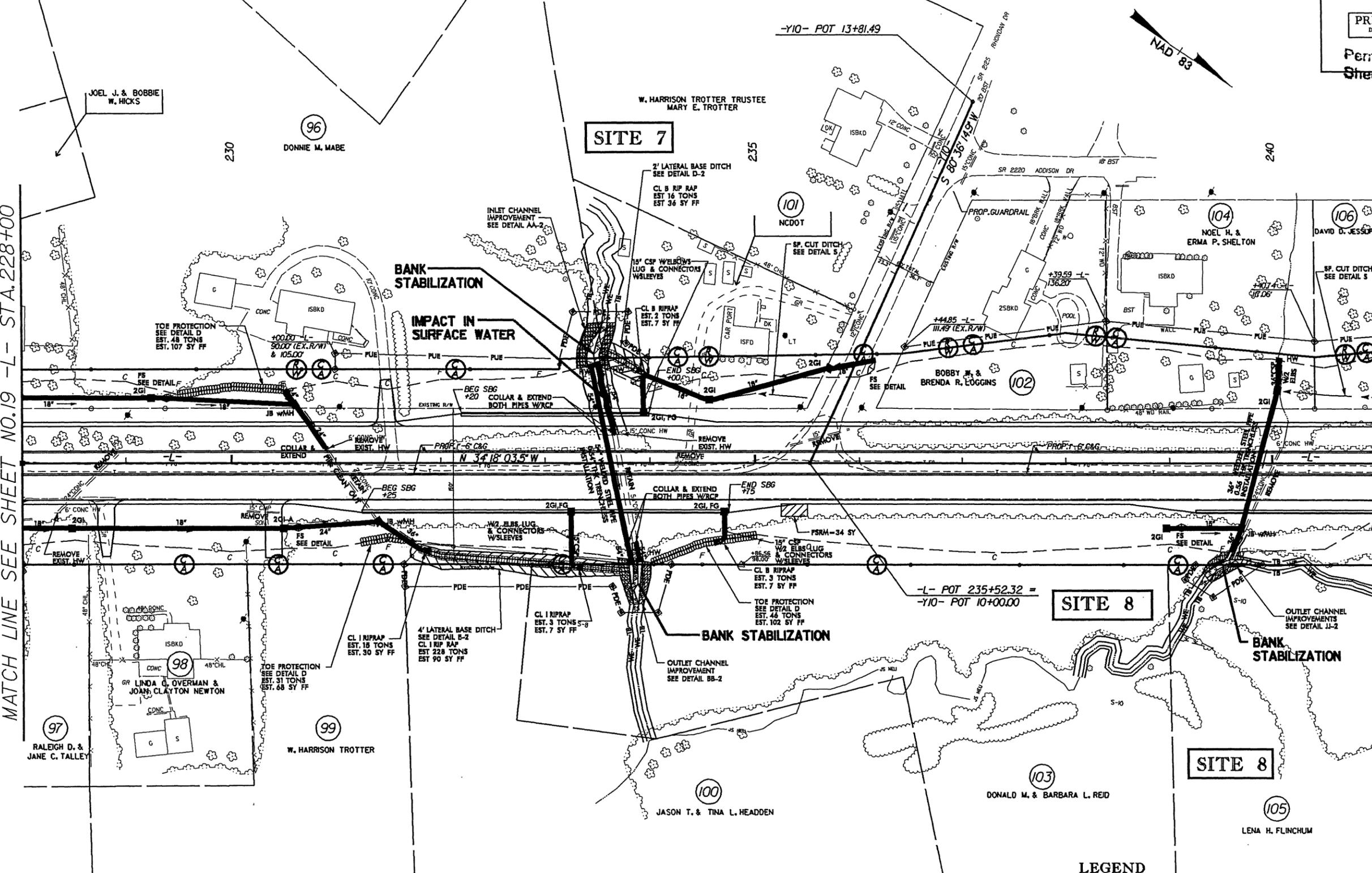
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 9121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
 (919) 851-4066

| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2309AB | SHEET NO. 20 |
| R/W SHEET NO. | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER | |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 31 of 45 | |

MATCH LINE SEE SHEET NO.19 -L- STA.228+00

MATCH LINE SEE SHEET NO.21 -L- STA.241+00



**SITE 7, AND 8
PLAN VIEW**

- LEGEND**
- WLB- WETLAND BOUNDARY
 - DENOTES TEMPORARY IMPACTS IN SURFACE WATER
 - DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.14 (R-2309AB)
 US 230 FROM SR 2182 (HORSEPEN CREEK RD.) TO 0.3 MILES NORTH OF SR 2312 (WINFRER RD.)
 SHEET OF Page 10 of 31

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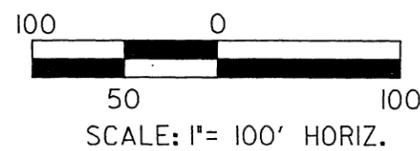
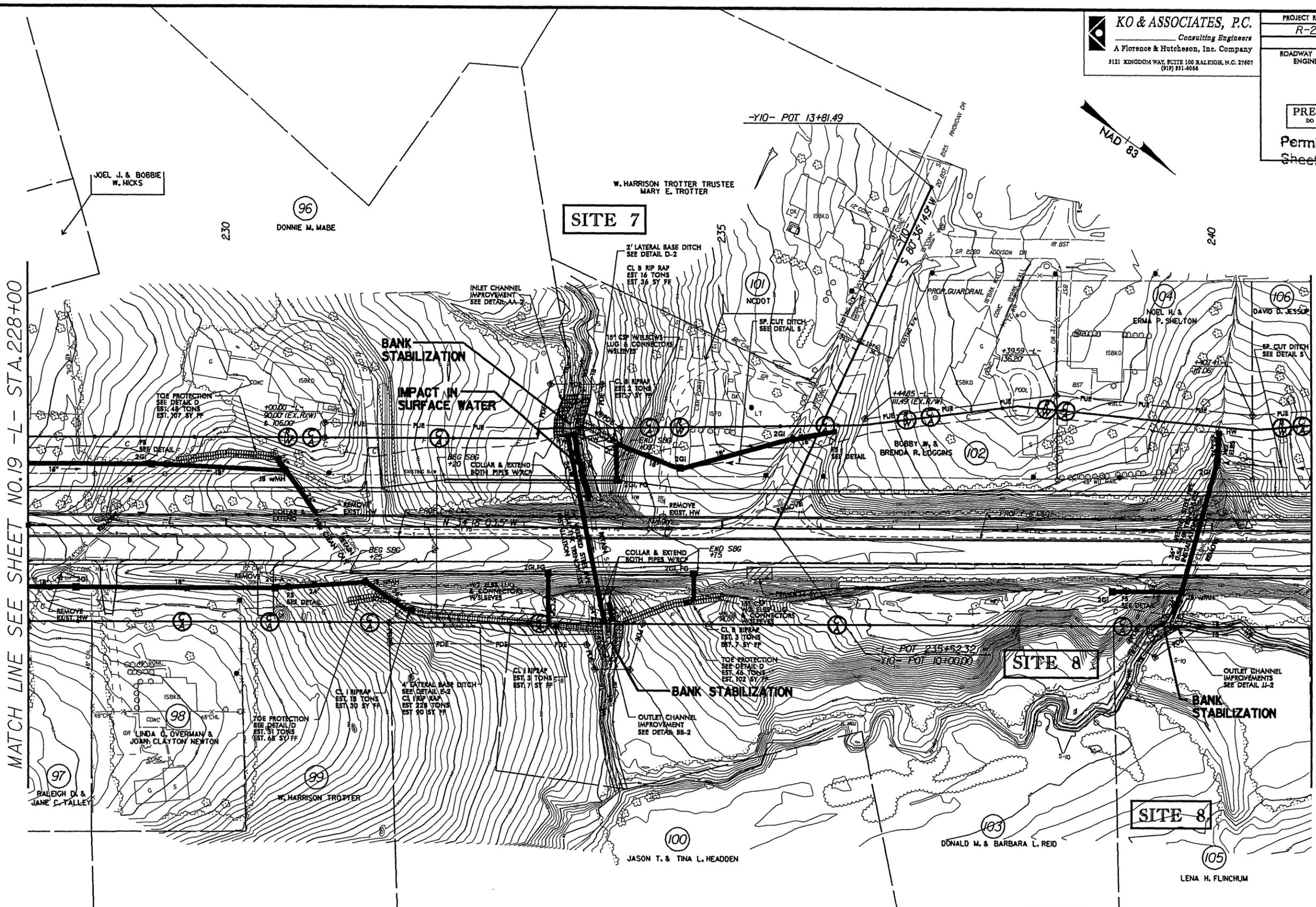
8/17/95

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| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2309AB | SHEET NO. 20 |
| NW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 22 of 45 | |

MATCH LINE SEE SHEET NO.19 -L- STA.228+00

MATCH LINE SEE SHEET NO.21 -L- STA.241+00



SITE 7, AND 8 PLAN VIEW

- LEGEND**
- WLB — WETLAND BOUNDARY
 - DENOTES TEMPORARY IMPACTS IN SURFACE WATER
 - DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY

PROJECT: 34418.14 (R-2309AB)
 US 220 FROM SR 2182 (HORSEPEN CREEK RD) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD.)

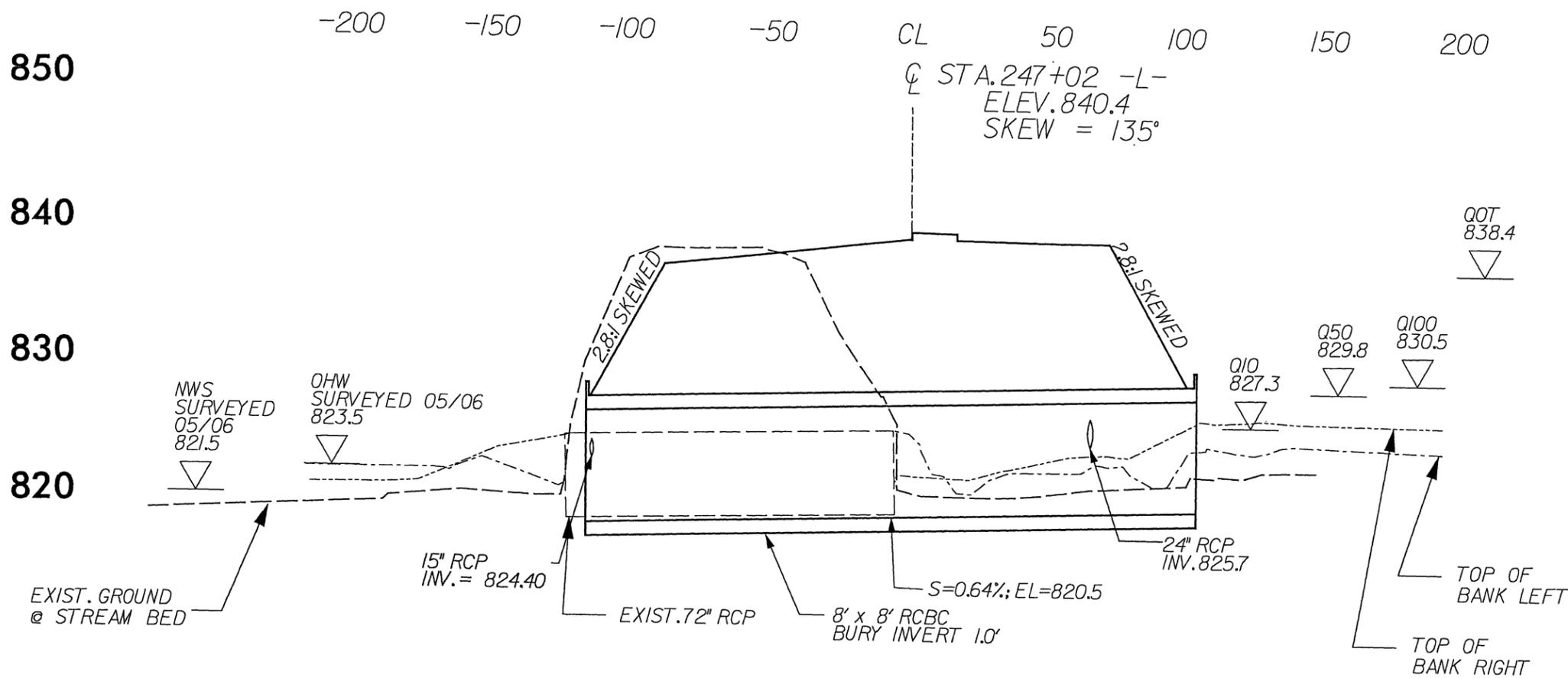
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5/28/94

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Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2309AB | SHEET NO. PAS-S9 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 35 of 45 | |



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SCALE:
1" = 50' HORIZONTAL
1" = 10' VERTICAL

SITE 9
PROFILE ALONG STRUCTURE
STA. 247 + 02



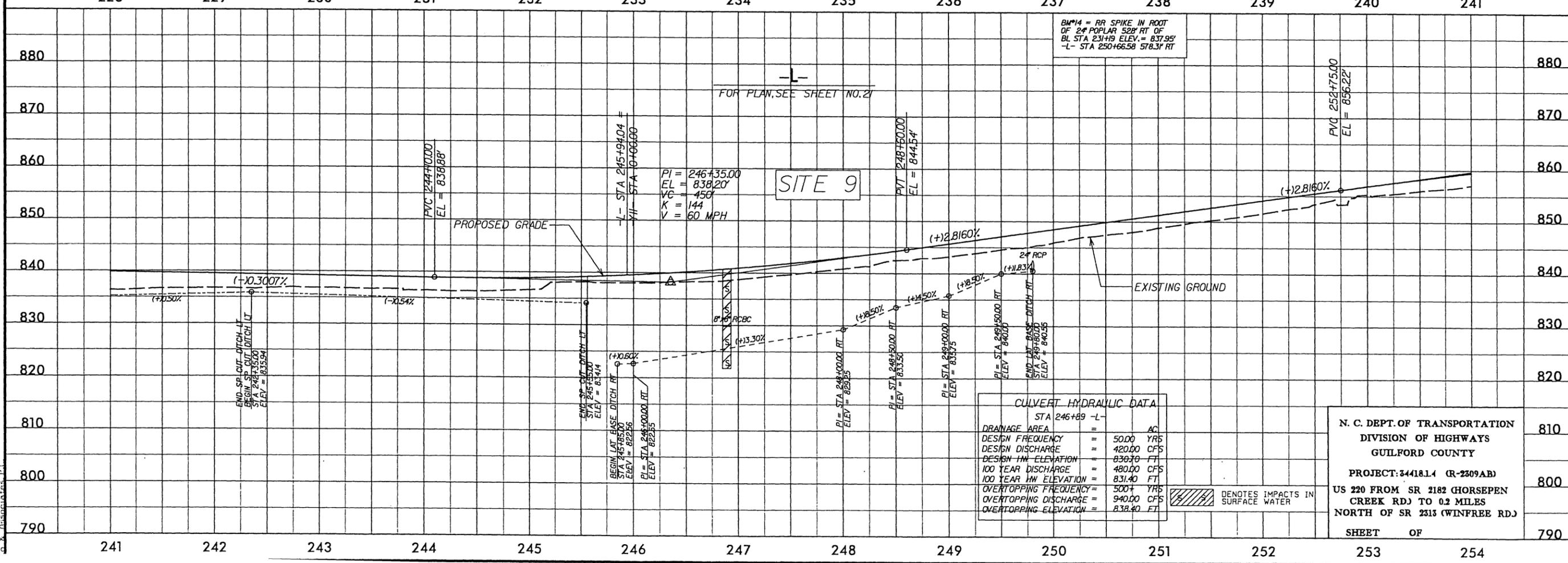
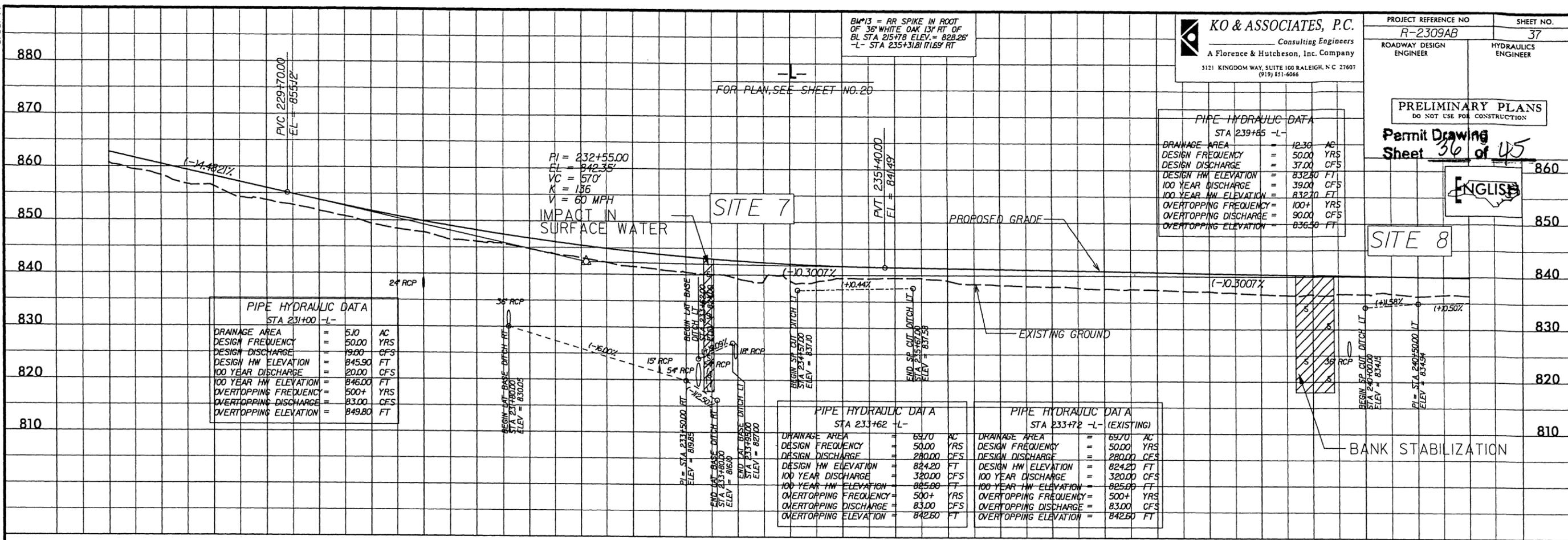
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GULFORD COUNTY
PROJECT: 34418.14 (R-2309AB)
US 220 FROM SR 2182 (HORSEPEN
CREEK RD) TO 0.2 MILES
NORTH OF SR 2313 (WINFREE RD)
SHEET OF Page 12 of 12

5/28/99

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PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

Permit Drawing
 Sheet **36** of **45**



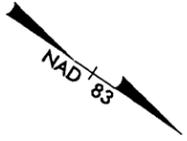
N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.14 (R-2309AB)
 US 220 FROM SR 2182 HORSEPEN
 CREEK RD TO 0.2 MILES
 NORTH OF SR 2313 (WINFREE RD)
 SHEET OF 254

/// DENOTES IMPACTS IN
 SURFACE WATER

B/17/99

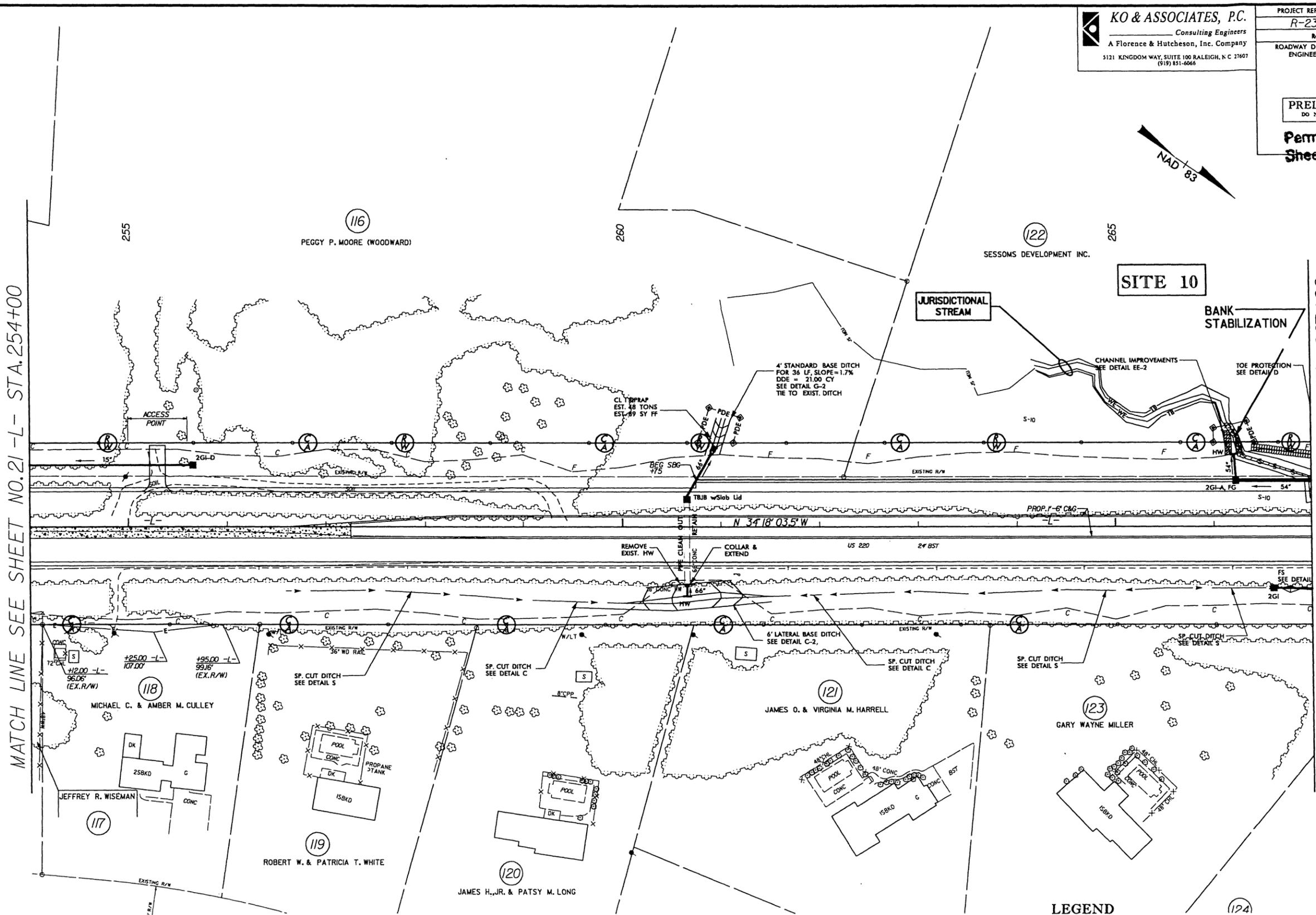
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 5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
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| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2309AB | SHEET NO. 22 |
| R/W SHEET NO. ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 37 of 45 | |

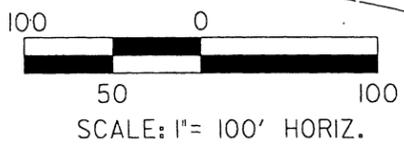


MATCH LINE SEE SHEET NO. 21 - L - STA. 254+00

MATCH LINE SEE SHEET NO. 23 - L - STA. 267+00



**SITE 10
PLAN VIEW**



- LEGEND**
- WLB — WETLAND BOUNDARY
 - DENOTES TEMPORARY IMPACTS IN SURFACE WATER
 - DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.1.4 (R-2309AB)
 US 220 FROM SR 2182 (HORSEPEN CREEK RD.) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD.)
 SHEET OF

12/8/2009
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 jwiles

8/17/99

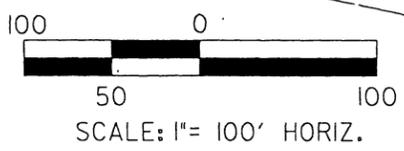
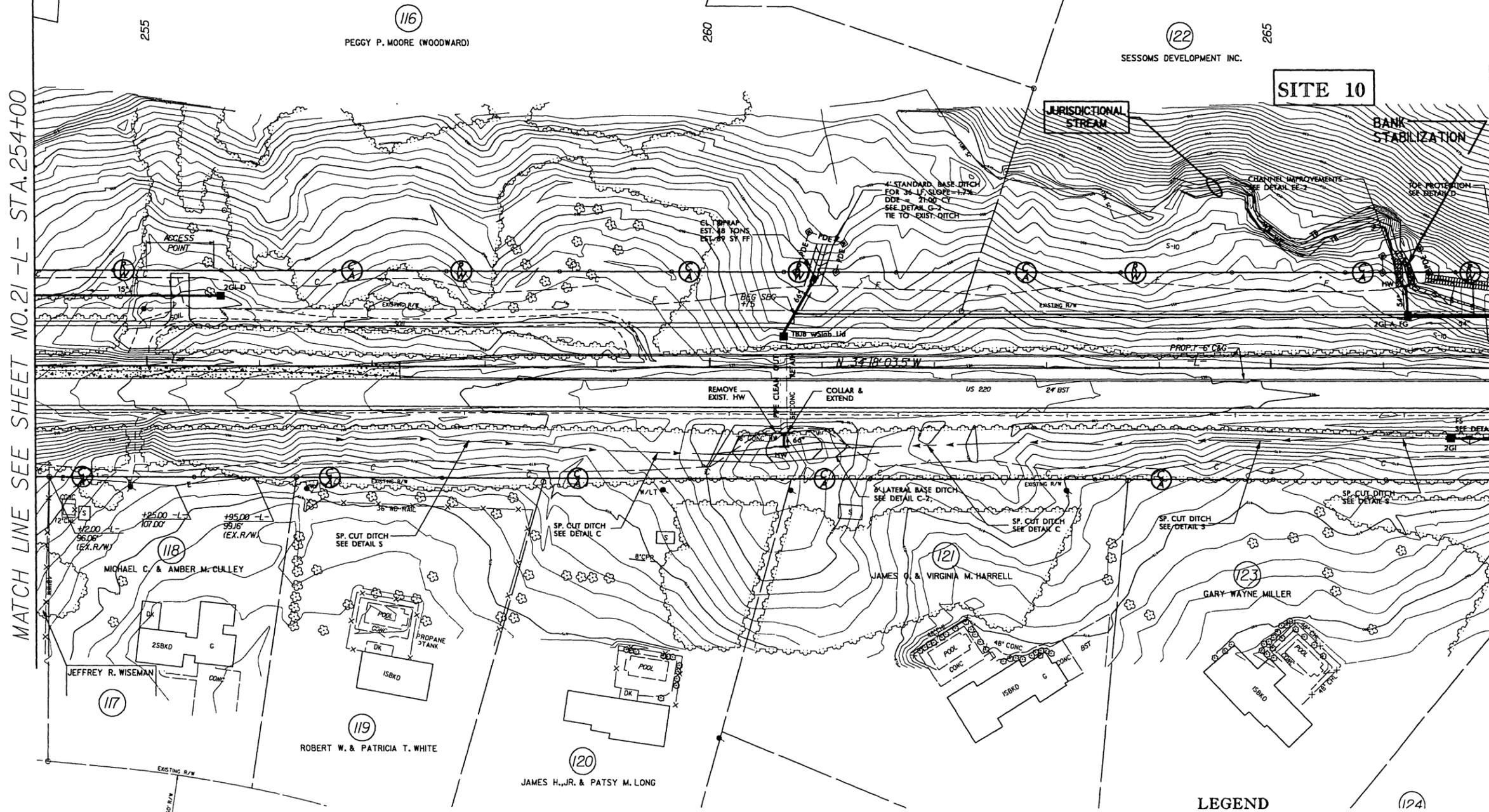
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 Consulting Engineers
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 (919) 851-6666

| | |
|---|------------------------|
| PROJECT REFERENCE NO. R-2309AB | SHEET NO. 22 |
| Roadway Design Engineer | Hydraulics Engineer |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 38 of 45 | |



MATCH LINE SEE SHEET NO. 21 - L - STA. 254+00

MATCH LINE SEE SHEET NO. 23 - L - STA. 267+00



SITE 10
PLAN VIEW

- LEGEND**
- WLB — WETLAND BOUNDARY
 - DENOTES TEMPORARY IMPACTS IN SURFACE WATER
 - DENOTES IMPACTS IN SURFACE WATER

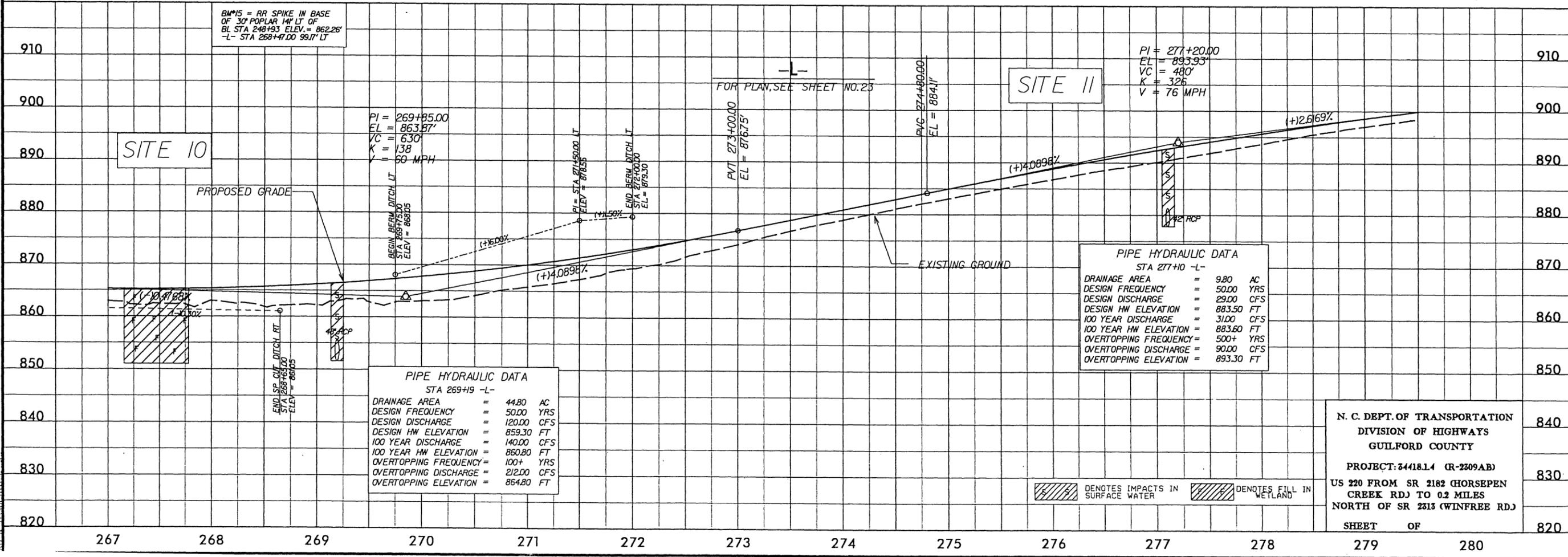
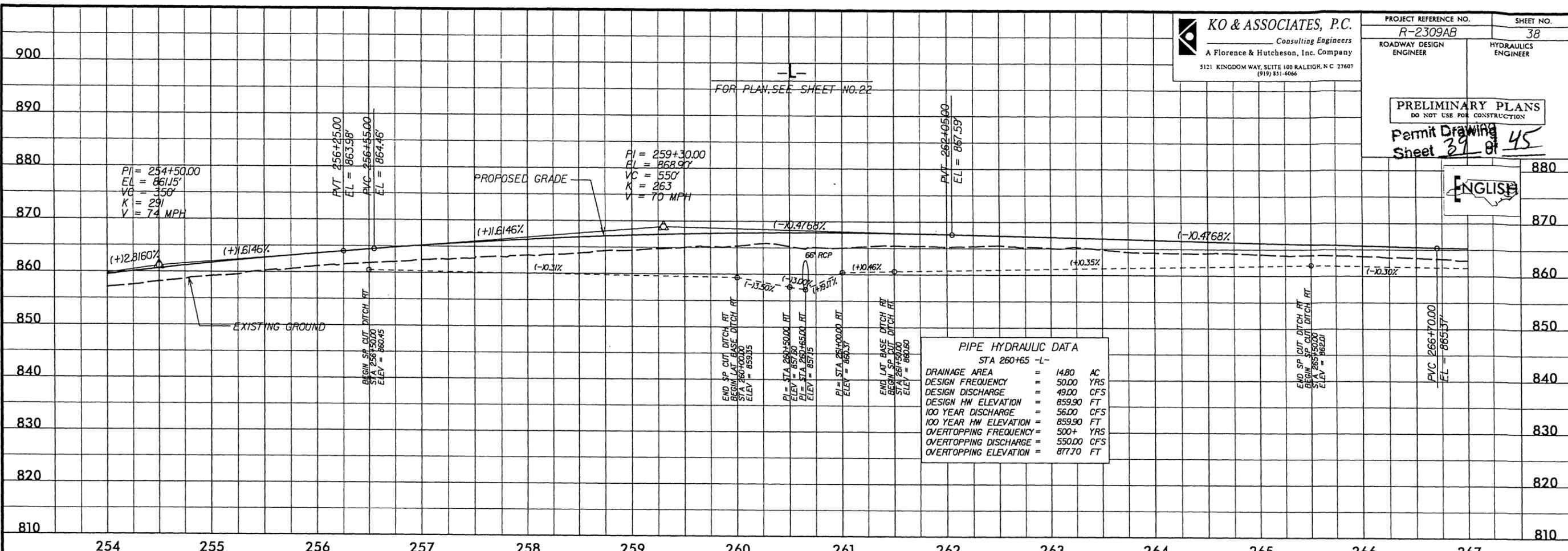
N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.1.4 (R-2309AB)
 US 220 FROM SR 2182 (HORSEPEN CREEK RD.) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD.)
 SHEET OF

8/17/2009
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5/28/99

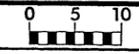
PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

Permit Drawing
 Sheet **39** of **45**



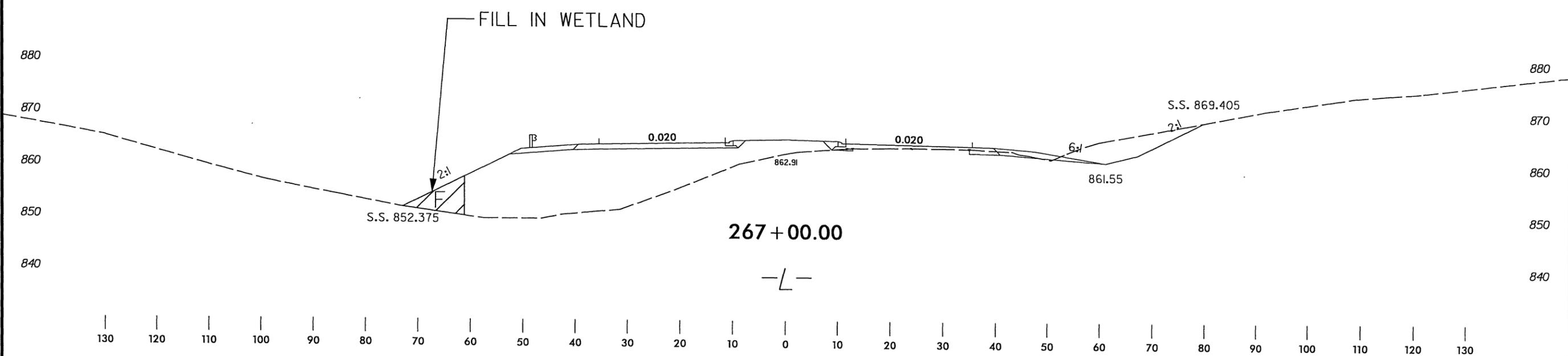
N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.14 (R-2309AB)
 US 220 FROM SR 2182 HORSEPEN
 CREEK RDJ TO 0.2 MILES
 NORTH OF SR 2313 (WINFREE RD.)
 SHEET OF 280

12/18/2009
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 KO & ASSOCIATES, P.C.



| | |
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| PROJ. REFERENCE NO. R-2309AB | SHEET NO. XSC SITE 10 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet <u>40</u> of <u>45</u> | |

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267+00.00
-L-

| LEGEND | |
|--------|-------------------------|
| | DENOTES FILL IN WETLAND |

11/10/2009

SITE 10
X-SECTION

ENGLISH

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Consulting Engineers
A Florence & Hutcheson, Inc. Company
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
(919) 851-6066

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 34418.14 (R-2309AB)
US 220 FROM SR 2182 (HORSEPEN CREEK RD) TO 0.2 MILES NORTH OF SR 2613 (WINFREE RD)
SHEET OF

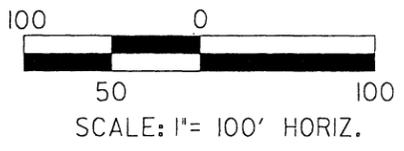
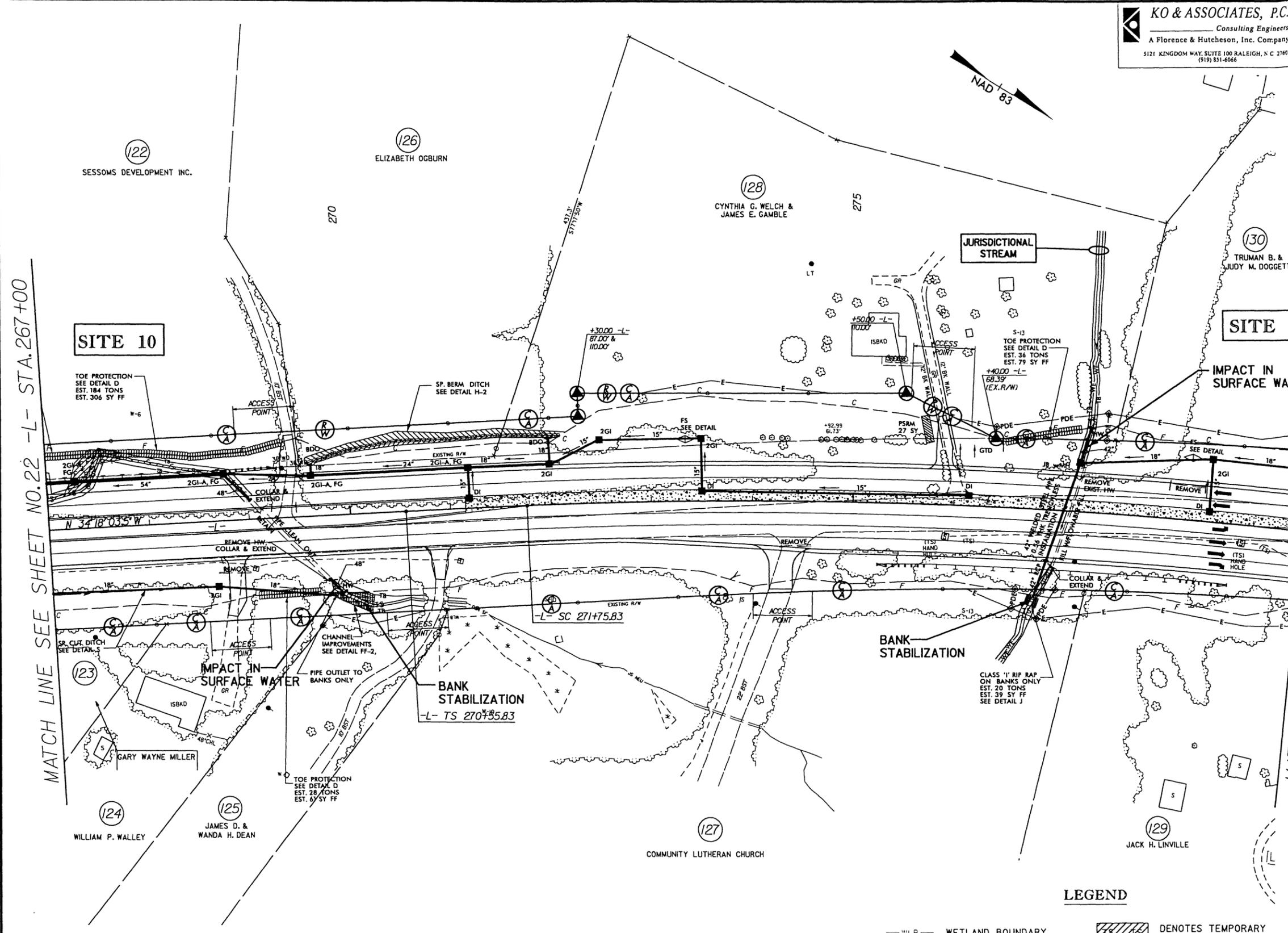
8/17/95

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Florence & Hutcheson, Inc. Company
 5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
 (919) 851-6566

| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2309AB | SHEET NO. 23 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet <u>44</u> of <u>45</u> | |

MATCH LINE SEE SHEET NO.22 -L- STA.267+00

MATCH LINE SEE SHEET NO.24 -L- STA.279+50



**SITE 10 AND 11
 PLAN VIEW**

LEGEND

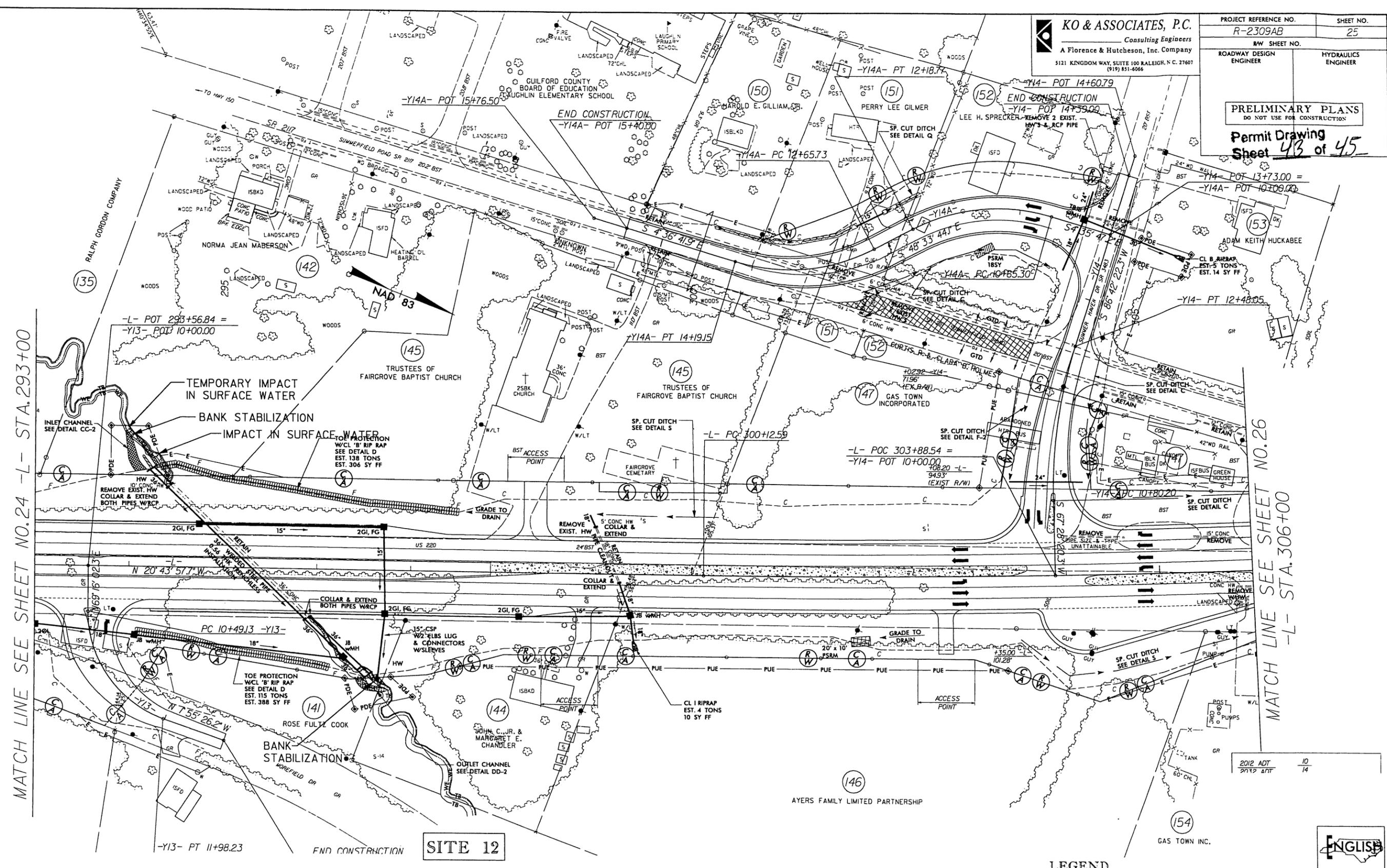
- WLB — WETLAND BOUNDARY
- [Hatched Box] DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- [Hatched Box] DENOTES FILL IN WETLAND
- [Hatched Box] DENOTES IMPACTS IN SURFACE WATER



N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.1.4 (R-2309AB)
 US 220 FROM SR 2182 HORSEPEN
 CREEK RD. TO 0.2 MILES
 NORTH OF SR 2213 (WINFREE RD.)
 SHEET OF

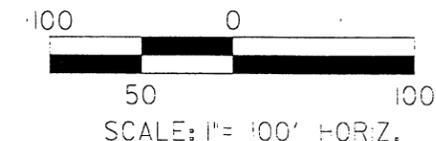
12/10/2004
 I:\projects\2309AB\permits\ts\2309ab_1\ldg_prm_psh23.dgn
 KO & ASSOCIATES, P.C.

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION
Permit Drawing
 Sheet **43** of **45**



MATCH LINE SEE SHEET NO.24 -L- STA.293+00

MATCH LINE SEE SHEET NO.26 -L- STA.306+00



SITE 12
PLAN VIEW

- LEGEND**
- #L#- WETLAND BOUNDARY
 - DENOTES TEMPORARY IMPACTS IN SURFACE WATER
 - DENOTES IMPACTS IN SURFACE WATER

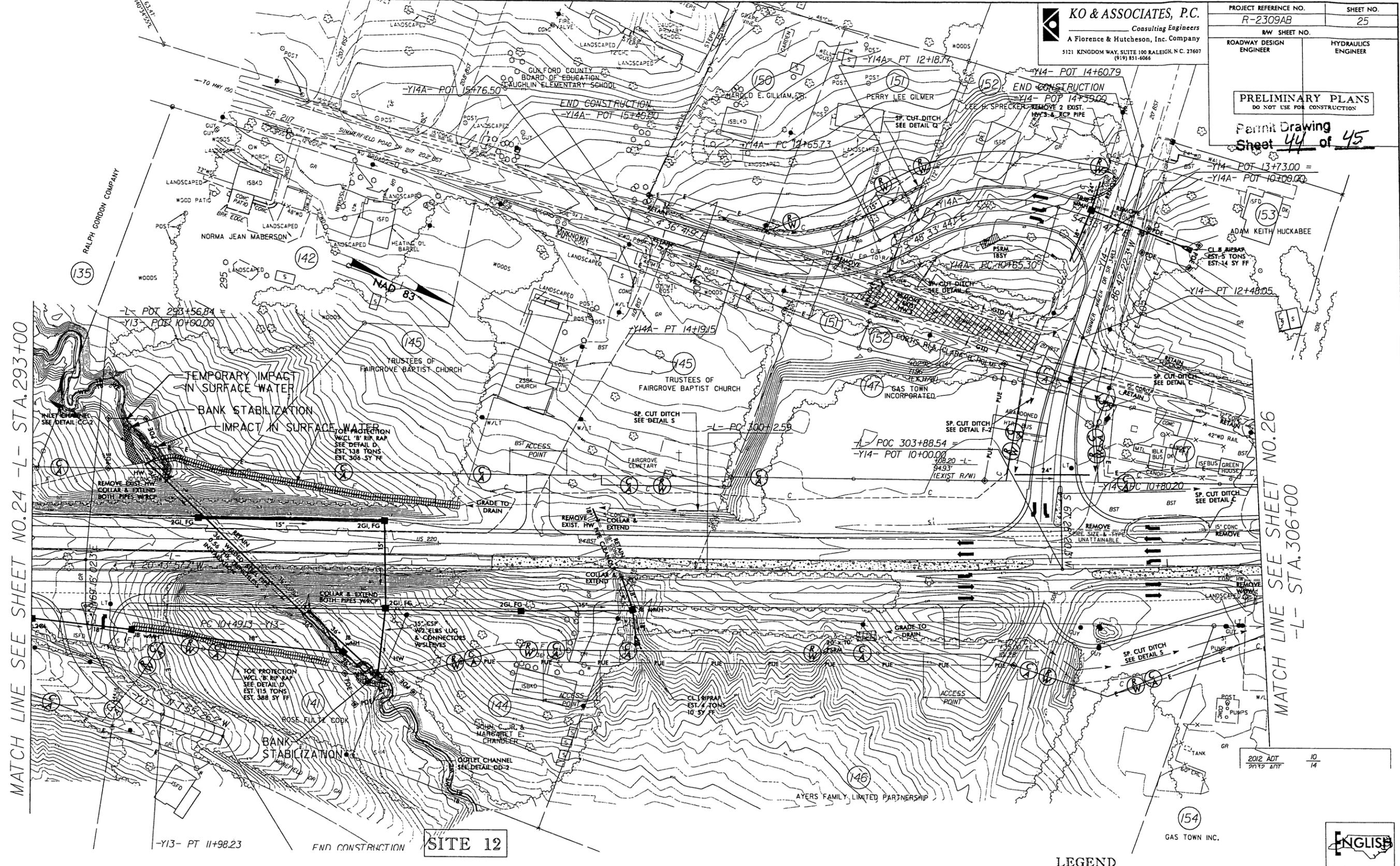
N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.14 (R-2309AB)
 US 220 FROM SR 2182 (HORSEPEN CREEK RD.) TO 0.2 MILES NORTH OF SR 2513 (WINFREE RD.)
 SHEET OF



8/17/19
 8/2/2010
 KO & ASSOCIATES, P.C.
 5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27607
 (919) 851-6066
 PLOT: 25

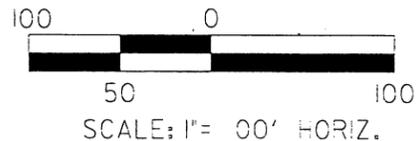
PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

Permit Drawing
 Sheet 44 of 45



MATCH LINE SEE SHEET NO. 24 -L- STA. 293+00

MATCH LINE SEE SHEET NO. 26 -L- STA. 306+00



**SITE 12
 PLAN VIEW**

LEGEND

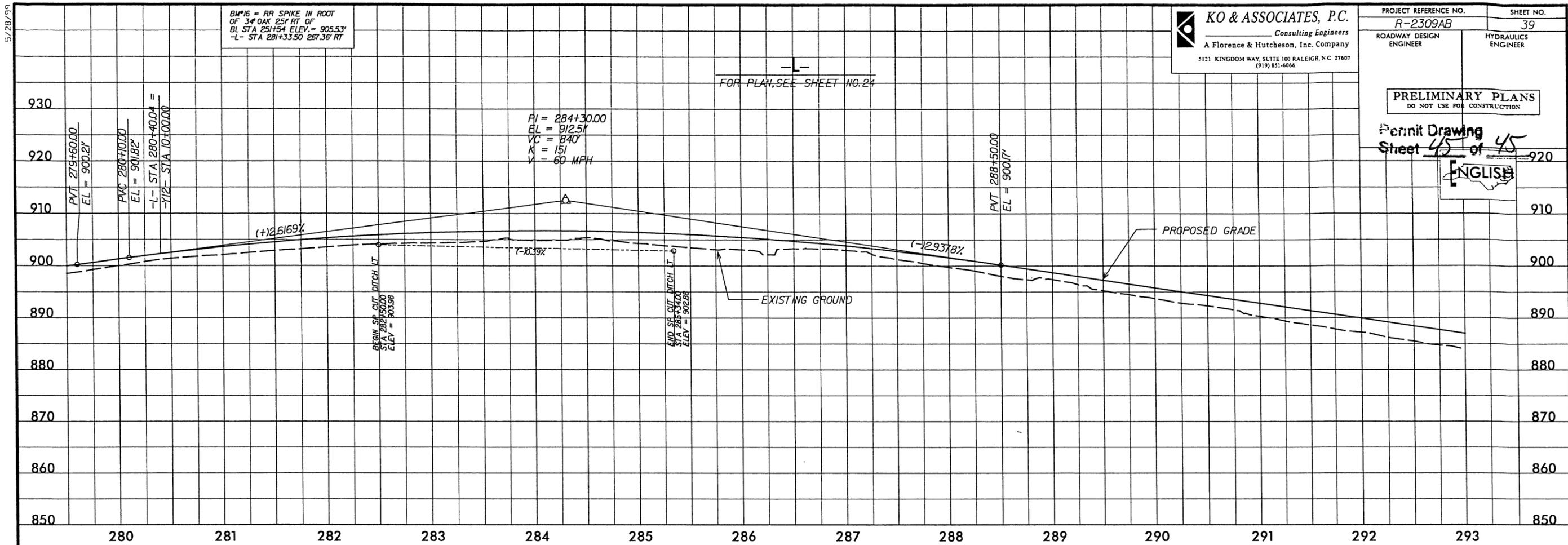
- WLB — WETLAND BOUNDARY
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.1.4 (R-2309AB)
 US 220 FROM SR 2182 (HORSEPEN CREEK RD) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD.)
 SHEET OF



B717/499
 2/6/2010
 4:51 PM
 C:\Users\mab25\Documents\Projects\2309AB_Hyd\p01.mxd
 KO & ASSOCIATES, P.C.

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION
 Permit Drawing **45** of **45**
ENGLISH

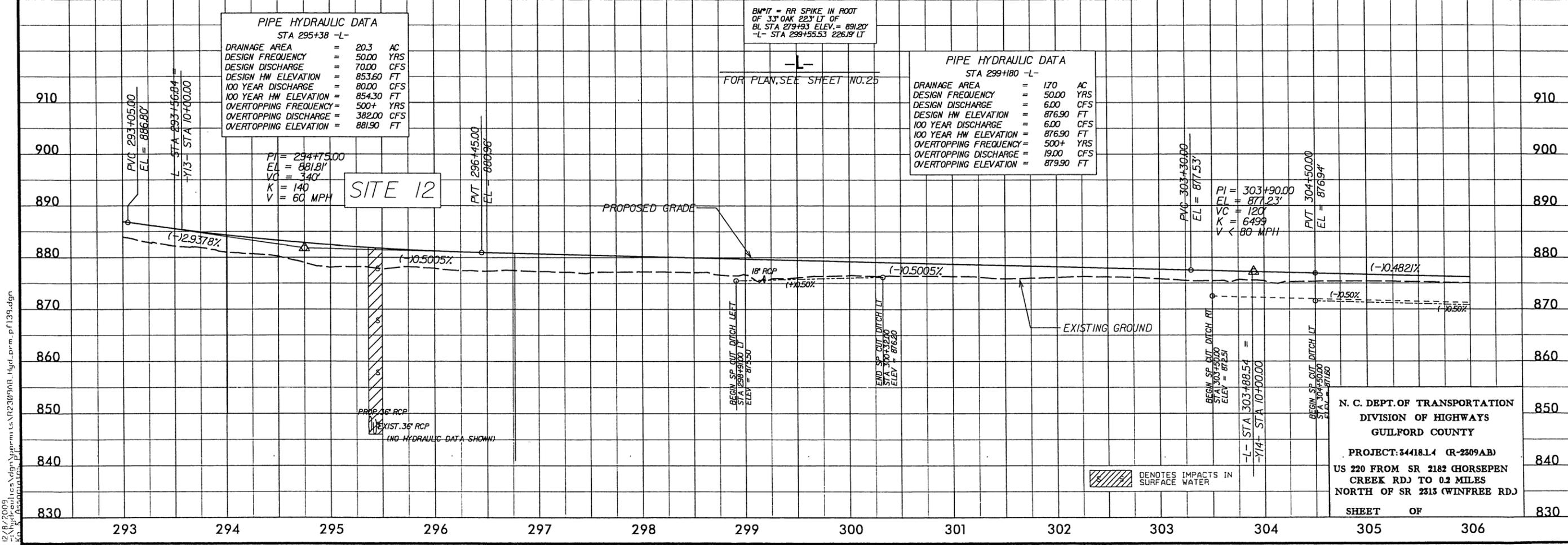


PIPE HYDRAULIC DATA
 STA 295+38 -L-

| | | | |
|-----------------------|---|--------|-----|
| DRAINAGE AREA | = | 20.3 | AC |
| DESIGN FREQUENCY | = | 50.00 | YRS |
| DESIGN DISCHARGE | = | 70.00 | CFS |
| DESIGN HW ELEVATION | = | 853.60 | FT |
| 100 YEAR DISCHARGE | = | 80.00 | CFS |
| 100 YEAR HW ELEVATION | = | 854.30 | FT |
| OVERTOPPING FREQUENCY | = | 500+ | YRS |
| OVERTOPPING DISCHARGE | = | 382.00 | CFS |
| OVERTOPPING ELEVATION | = | 881.90 | FT |

PIPE HYDRAULIC DATA
 STA 299+80 -L-

| | | | |
|-----------------------|---|--------|-----|
| DRAINAGE AREA | = | 170 | AC |
| DESIGN FREQUENCY | = | 50.00 | YRS |
| DESIGN DISCHARGE | = | 6.00 | CFS |
| DESIGN HW ELEVATION | = | 876.90 | FT |
| 100 YEAR DISCHARGE | = | 6.00 | CFS |
| 100 YEAR HW ELEVATION | = | 876.90 | FT |
| OVERTOPPING FREQUENCY | = | 500+ | YRS |
| OVERTOPPING DISCHARGE | = | 19.00 | CFS |
| OVERTOPPING ELEVATION | = | 879.90 | FT |

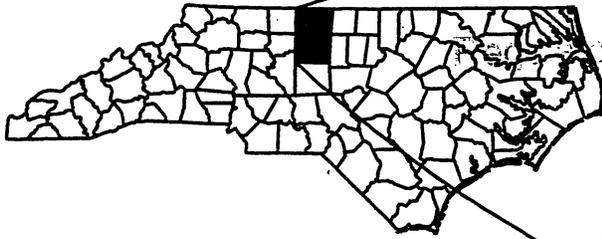


N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 34418.L4 (R-2309AB)
 US 220 FROM SR 2182 (HORSEPEN CREEK RD) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD)
 SHEET OF

12/18/2009
 C:\Hyd\coul\ca\edgn\p\pre\m\ts\122309AB_Hyd.prm.pl139.dgn
 KO & Associates, P.C.

EXHIBIT A

APR 28 2011



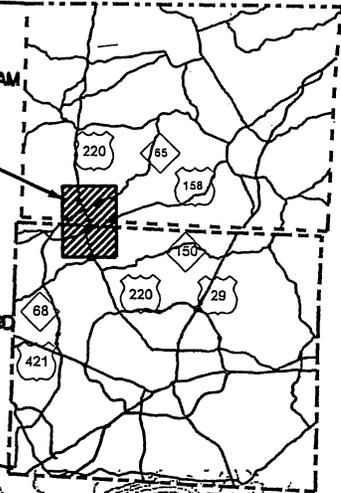
Rocky Branch

SITE

ROCKINGHAM

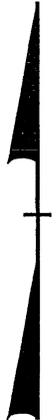
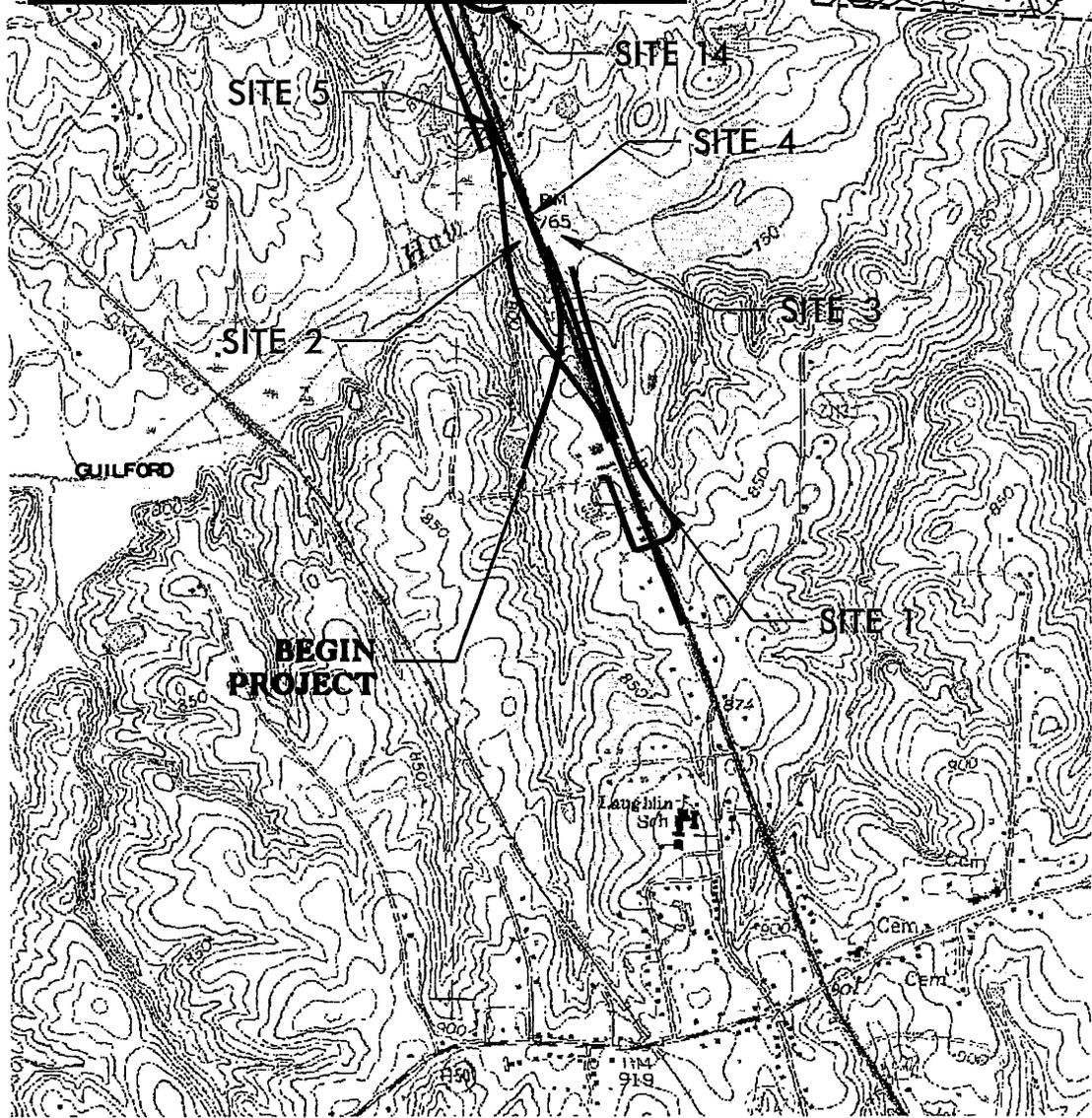
GUILFORD

SEE INSET BELOW



SEE SHEET 2 OF 3

GUILFORD-ROCKINGHAM



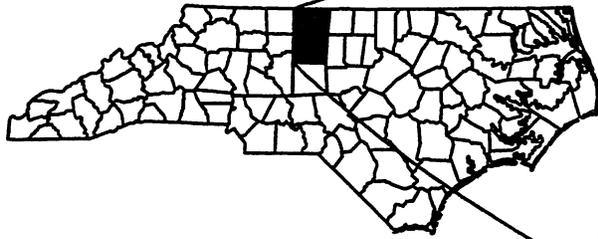
WETLAND/STREAM
IMPACTS
(1 OF 3)

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD-ROCKINGHAM COUNTY

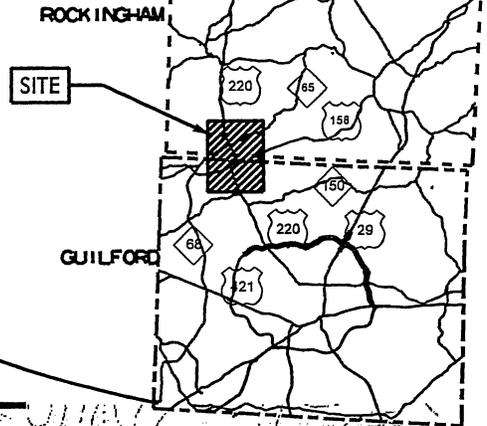
PROJECT: 6.499002T (R-2413C)
US 220 SOUTH OF HAW RIVER
TO THE INTERSECTION OF US 220
AND EXISTING NC 68

SHEET 1 OF 40

8-14-09

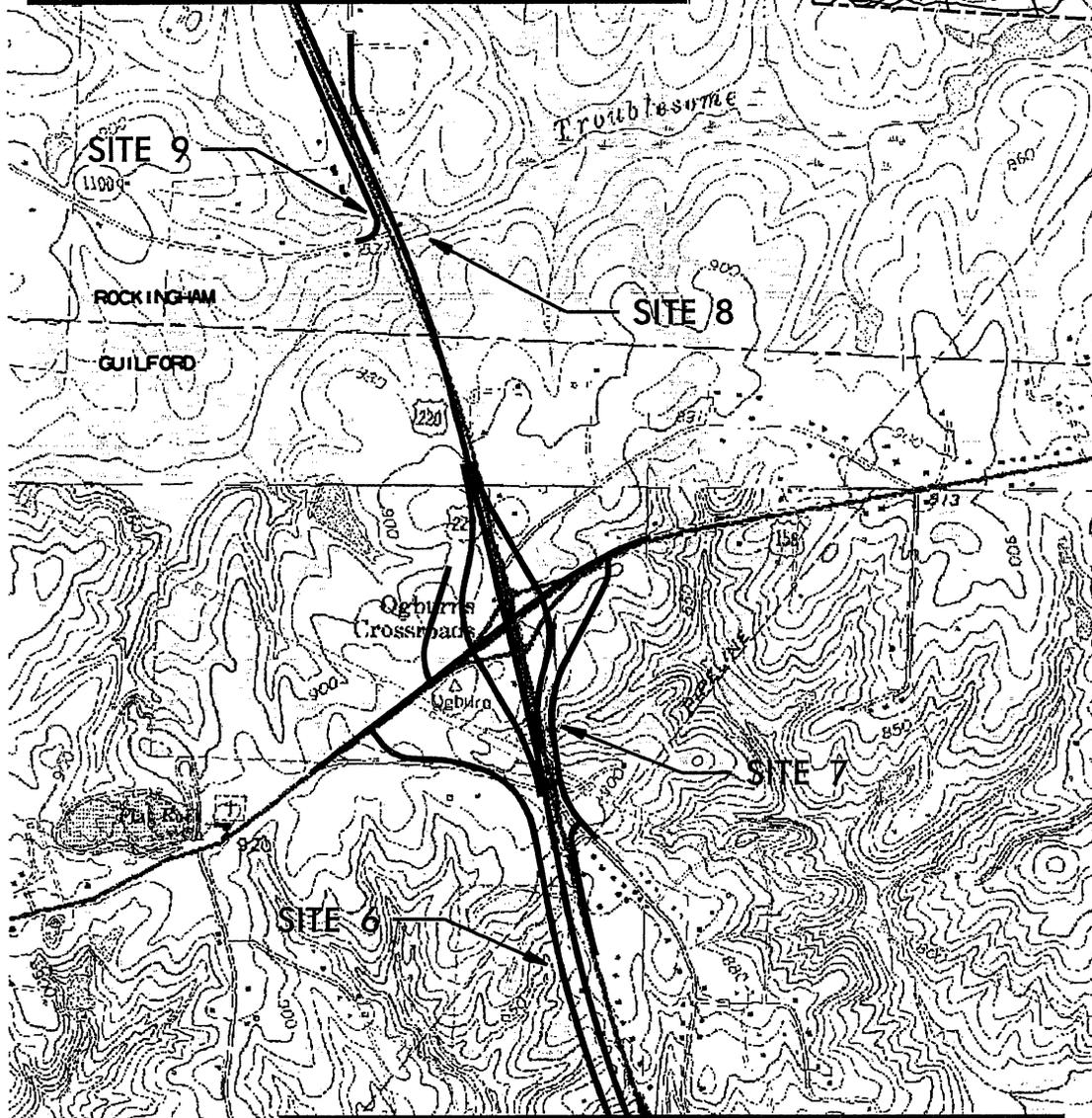


SEE INSET BELOW



SEE SHEET 3 OF 3

GUILFORD-ROCKINGHAM



SEE SHEET 1 OF 3

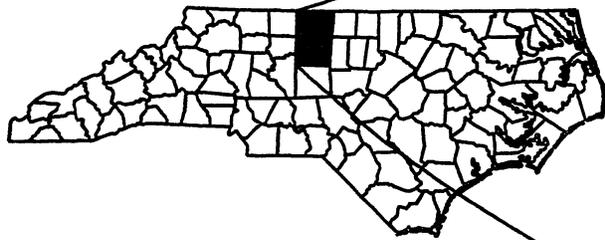
WETLAND/STREAM
IMPACTS
(2 OF 3)

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD-ROCKINGHAM COUNTY

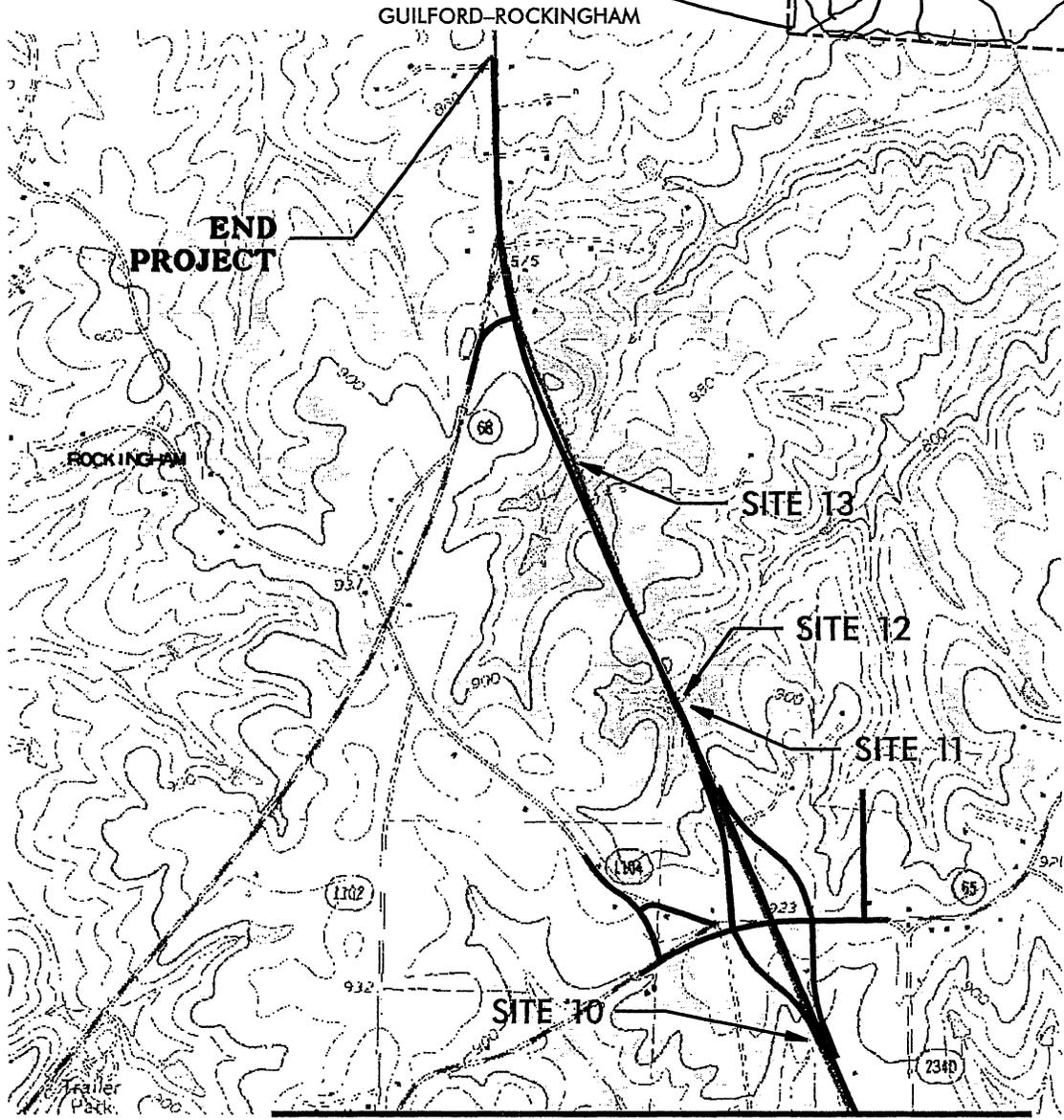
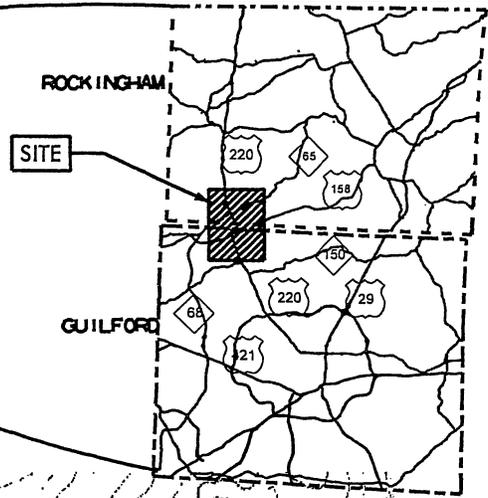
PROJECT: 6.499002T (R-2413C)
US 220 SOUTH OF HAW RIVER
TO THE INTERSECTION OF US 220
AND EXISTING NC 68

SHEET 2 OF 40

8-14-09



SEE INSET BELOW



SEE SHEET 2 OF 3

WETLAND/STREAM
IMPACTS
(3 OF 3)

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD-ROCKINGHAM COUNTY

PROJECT: 6.499002T (R-2413C)
US 220 SOUTH OF HAW RIVER
TO THE INTERSECTION OF US 220
AND EXISTING NC 68

SHEET 3 OF 40

8-14-09

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.

NAMES

ADDRESSES

**ALL AFFECTED AREAS ARE PROPERTY OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION, WHICH MAY NOT BE
REFLECTED ON PLANS**

WETLAND/STREAM IMPACTS

NCDOT

**DIVISION OF HIGHWAYS
GUILFORD-ROCKINGHAM COUNTY
PROJECT: 6.499002T (R-2413C)**

**US 220 SOUTH OF HAW RIVER
TO THE INTERSECTION OF US 220
AND EXISTING NC 68**

SHEET 4 OF 40

10/16/09

WETLAND PERMIT IMPACT SUMMARY

| Site No. | Station (From/To) | Structure Size / Type | WETLAND IMPACTS | | | | | | SURFACE WATER IMPACTS | | | | | | | |
|----------------|---------------------|-----------------------|---------------------------------|-----------------------------|-----------------------------|--------------------------------------|--------------------------------|---------------------------|-----------------------|---|-------------------------------------|----------------------------|--|------|--------|--|
| | | | Permanent Fill In Wetlands (ac) | Temp. Fill In Wetlands (ac) | Excavation in Wetlands (ac) | Mechanized Clearing in Wetlands (ac) | Hand Clearing in Wetlands (ac) | Permanent SW impacts (ac) | Temp. SW impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp. (ft) | Natural Stream Design (ft) | | | | |
| 1 | 9+36/10+57 Y23 | 30" CSP | | | | | | | | | 0.00 | | | 42 | | |
| 2 | 23+23/24+15 LREV LT | Roadway Fill | 0.46 | | 0.09 | | | | | | | | | | | |
| 3 | 22+45/23+61 LREV RT | Roadway Fill | 0.24 | | | 0.03 | | | | | | | | | | |
| 4 | 23+91/24+83 LREV | Work Bridge/Riprap | | | | | | | | | | 0.02 | | | 141 | |
| 5 | 25+07/28+62 LREV | 54" RCP | 0.65 | | | 0.06 | | | | | 0.07 | | | 894 | | |
| 6 | 35+59/35+71 LREV LT | Rip Rap | | | | | | | | | 0.00 | 0.00 | | 36 | 16 | |
| 7 | 41+93/42+32 LREV RT | 42" RCP | | | | | | | | | 0.01 | 0.00 | | 220 | 19 | |
| 8 | 56+47/56+61 LREV | 2-12' X 10' RCBC | | | | | | | | | 0.07 | 0.02 | | 141 | 48 | |
| 9 | 57+19/57+80 LREV | 1-20' X 7' Bottomles | | | | | | | | | 0.09 | | | 347 | | |
| 10 | 66+24/66+74 LREV | 36" RCP | 0.02 | | 0.04 | | | | | | 0.01 | 0.00 | | 182 | 33 | |
| 11 | 75+98/77+07 LREV | 54" RCP | 0.01 | | | | | | | | 0.02 | 0.00 | | 228 | 33 | |
| 12 | 77+09/77+15 LREV | 36" RCP | | | | | | | | | 0.01 | 0.00 | | 154 | 35 | |
| 13 | 84+09/85+07 LREV | 2 - 48" CSP | | | | | | | | | 0.00 | 0.00 | | 62 | 63 | |
| | | Bank Stabilization | | | | | | | | | 0.00 | | | 46 | | |
| 14 | 11+70 Y27 | 48" RCP | | | | | | | | | 0.01 | 0.002 | | 142 | 25.591 | |
| TOTALS: | | | 1.38 | | 0.13 | 0.09 | | | | | 0.29 | 0.06 | | 2495 | 415 | |

ENGLISH IMPACTS

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD-ROCKINGHAM COUNTY
 WBS - 6.499002T (R-2413C)

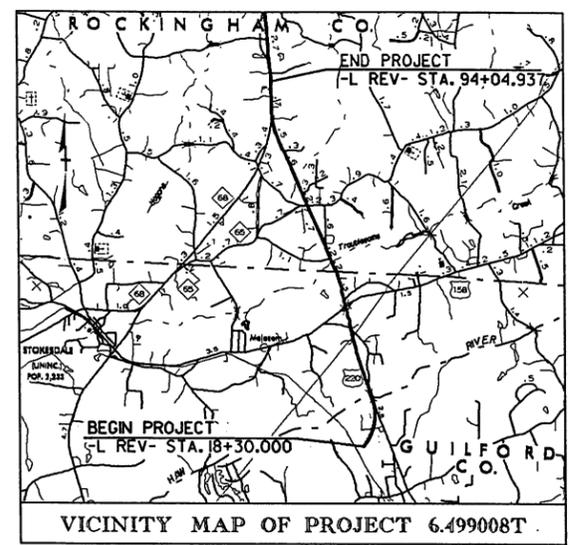
SHEET **5 of 40** 7/20/2011

Revised

TIP PROJECT: R-2413C

CONTRACT: 6.499008T

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



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS Regulatory Branch

RECEIVED
APR 28 2011



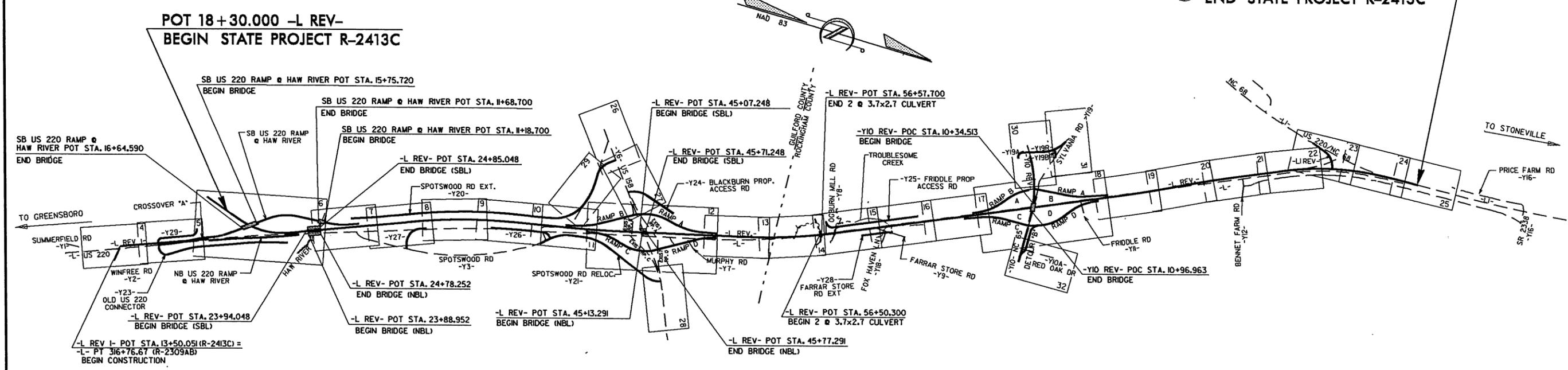
| | | | |
|-----------------|-----------------------------|--------------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | R-2413C | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 6.499002T | | P. E., R / W | |
| 6.499008T | | UTIL. CONST. | |

Permit Drawing
Sheet 6 of 40

GUILFORD-ROCKINGHAM COUNTIES

LOCATION: US 220 FROM SOUTH OF HAW RIVER TO THE INTERSECTION OF US 220 AND EXISTING NC 68
TYPE OF WORK: GRADING, DRAINAGE, STRUCTURES, CULVERTS, PAVING, LONG-LIFE PAVEMENT MARKINGS, SNOWPLOWABLE PAVEMENT MARKERS, SIGNING & SIGNALS

POT 94+04.937 -L REV- =
ST 23+08.747 -L1-
END STATE PROJECT R-2413C



NCDOT CONTACT: B. DOUG TAYLOR, P.E., PROJECT ENGINEER
MALCOLM WATSON, P.E., PROJECT DESIGN ENGINEER

NOTE: THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS LIMITED TO INTERCHANGES

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC RATIO

PLANS
1:1000

PROFILE (HORIZONTAL)
1:1000

PROFILE (VERTICAL)
1:1000

DESIGN DATA

ADT 2012 = 37400
ADT 2032 = 64000

DHV = 11 %
D = 65 %
T = 15 %
(10% TTST + 5% DUALS)
V = 110 km/h

FUNC. CLASS.: INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY PROJECT 7.413 KM.
LENGTH STRUCTURES PROJECT 0.162 KM.
TOTAL LENGTH STATE PROJECT 6.499008T 7.575 KM.

NOTE: SB LANE BRIDGE STATIONING USED TO DETERMINE LENGTH OF ROADWAY & STRUCTURES

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
5121 KINGDOM WAY, SUITE 100
RALEIGH, NC 27607

1995 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 16, 1997

LETTING DATE:
JANUARY 17, 2012

DENNIS MORY, P.E.
PROJECT ENGINEER

HENRY BARE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN

SIGNATURE: _____ P.E.

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

STATE HIGHWAY ENGINEER - DESIGN

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED FOR
DIVISION ADMINISTRATOR _____ DATE _____

FILE: R:\Projects\2413C\2413C_pln_01.dgn
DATE: 2/4/2011 11:45:00 AM
PLOT DRIVER: SPENTRIBS
PEN TABLE: SPENTRIBS

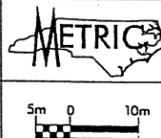
RECEIVED

JUN 30

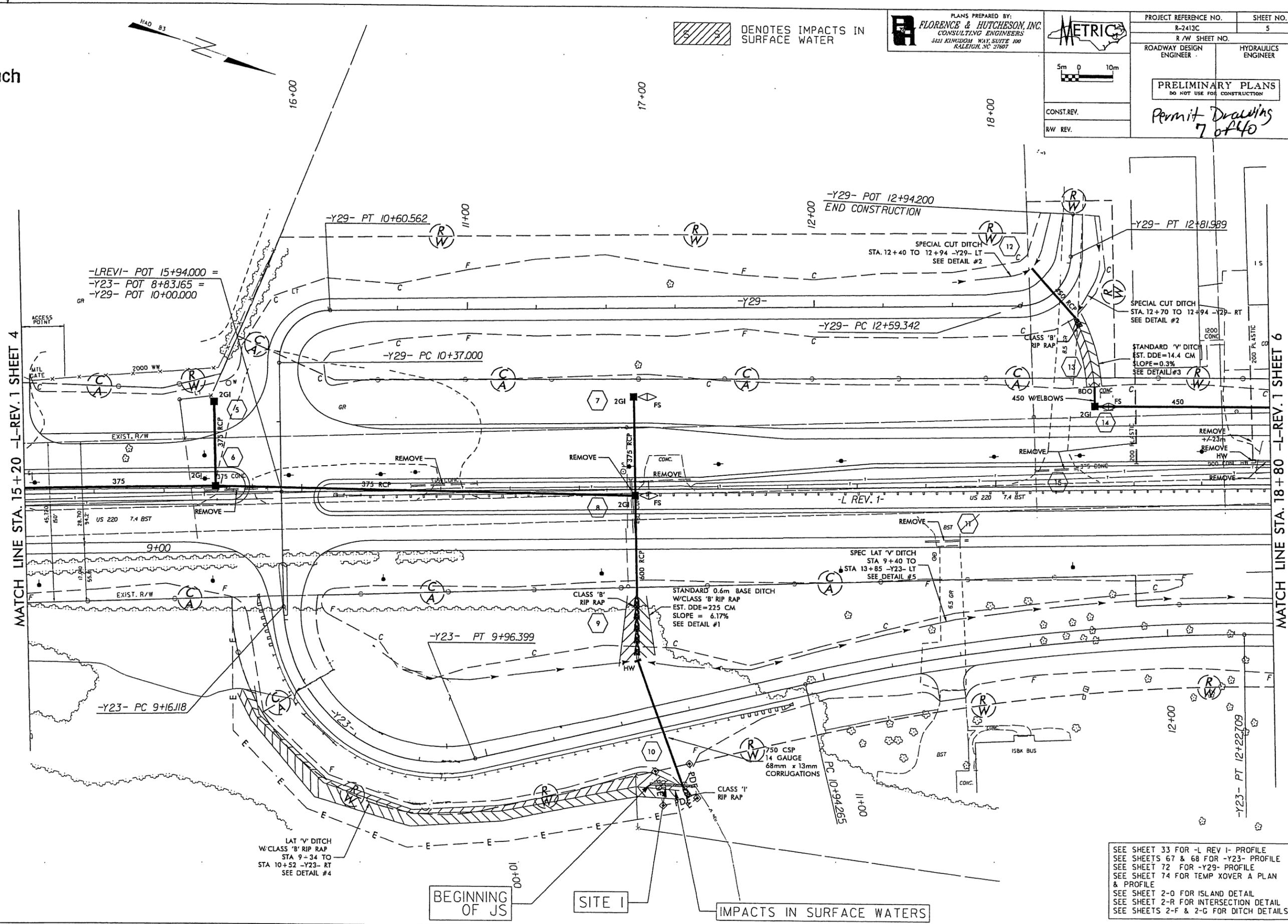
Regulatory Branch

DENOTES IMPACTS IN SURFACE WATER

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
3121 KINGDOM WAY, SUITE 100
RALEIGH, NC 27607



| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 5 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawings 7 of 40 | |



-LREVI- POT 15+94.000 =
-Y23- POT 8+83.165 =
-Y29- POT 10+00.000

-Y29- POT 12+94.200
END CONSTRUCTION

SPECIAL CUT DITCH
STA. 12+70 TO 12+94 -Y29- RT
SEE DETAIL #2

-Y29- PC 12+59.342

-Y29- PC 10+37.000

STANDARD 'V' DITCH
EST. DDE=14.4 CM
SLOPE=0.3%
SEE DETAIL#3

MATCH LINE STA. 15+20 -L-REV. 1 SHEET 4

MATCH LINE STA. 18+80 -L-REV. 1 SHEET 6

STANDARD 0.6m BASE DITCH
W/CLASS 'B' RIP RAP
EST. DDE=225 CM
SLOPE = 6.17%
SEE DETAIL #1

SPEC LAT 'V' DITCH
STA 9+40 TO
STA 13+85 -Y23- LT
SEE DETAIL #5

-Y23- PT 9+96.399

-Y23- PC 9+16.118

LAT 'V' DITCH
W/CLASS 'B' RIP RAP
STA 9-34 TO
STA 10+52 -Y23- RT
SEE DETAIL #4

BEGINNING OF JS

SITE I

IMPACTS IN SURFACE WATERS

SEE SHEET 33 FOR -L REV I- PROFILE
SEE SHEETS 67 & 68 FOR -Y23- PROFILE
SEE SHEET 72 FOR -Y29- PROFILE
SEE SHEET 74 FOR TEMP COVER A PLAN & PROFILE
SEE SHEET 2-0 FOR ISLAND DETAIL
SEE SHEET 2-R FOR INTERSECTION DETAIL
SEE SHEETS 2-F & 2-G FOR DITCH DETAILS

01/08/09 - PARCELS 2 & 4 ADDED PARTIAL CONTROL OF ACCESS
09/02/09 - PARCEL 2 REVISED DRIVEWAY ACCESS
09/08/09 - ADDED PARCEL 2Z
10/16/09 - PARCEL 6 ADDED DRIVEWAY -Y23- 11+40 RT
FILE: SFILES
DATE: 08/25/09
DRAWN: JFD/AVS
REV: 1/1/09

12/16/09 - PARCELS 4 & 6 REVISED CONTROL OF ACCESS & FENCE

01/08/09 - PARCELS 2 & 4 ADDED PARTIAL CONTROL OF ACCESS

09/07/09 - PARCEL 2 REVISED DRIVEWAY ACCESS

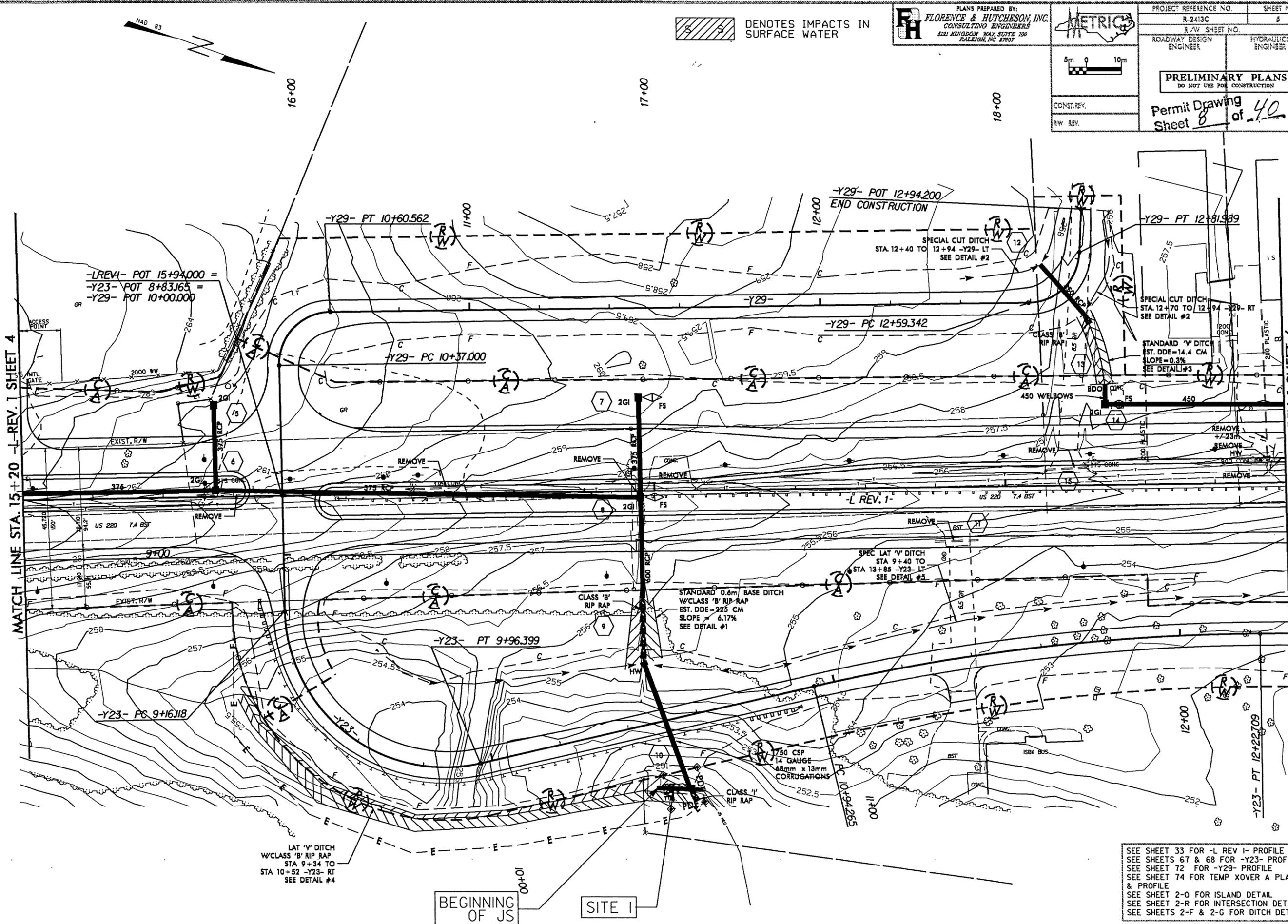
09/08/09 - ADDED PARCEL 2Z

10/16/09 - PARCEL 6 ADDED DRIVEWAY -Y23- 11+40 RT

FILE: STREETS
DATE: 08/15/09
DRAWN: JMS
CHECKED: JMS
SCALE: AS SHOWN

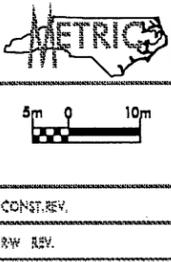
MATCH LINE STA. 15+20 -L-REV. 1 SHEET 4

MATCH LINE STA. 18+80 -L-REV. 1 SHEET 6



DENOTES IMPACTS IN SURFACE WATER

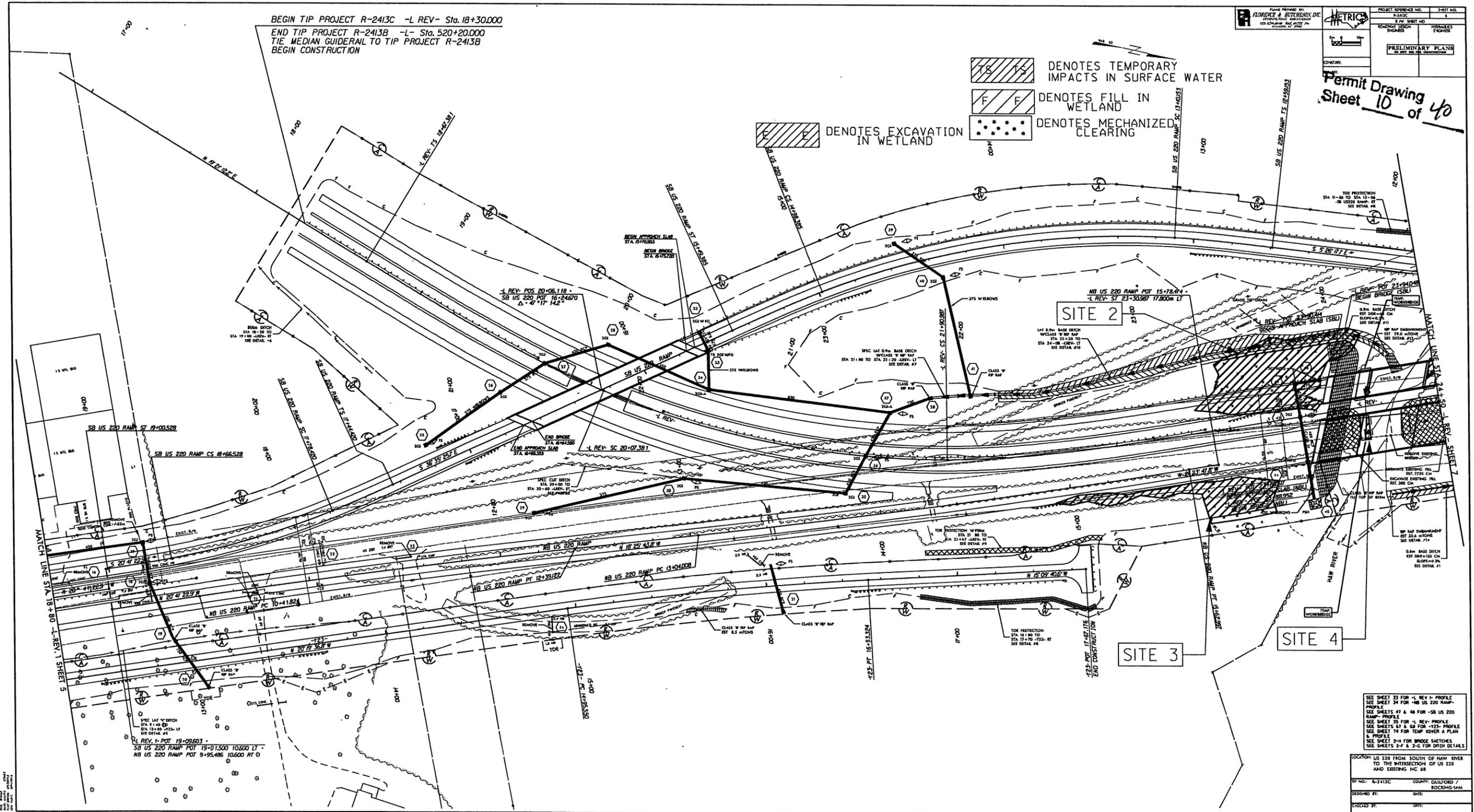
PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
521 KAYDOCK WAY, SUITE 200
RALEIGH, NC 27607



| | |
|---|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 5 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 8 of 40 | |
| CONST. REV. | |
| RAW REV. | |

SEE SHEET 33 FOR -L REV 1- PROFILE
 SEE SHEETS 67 & 68 FOR -Y23- PROFILE
 SEE SHEET 72 FOR -Y29- PROFILE
 SEE SHEET 74 FOR TEMP COVER A PLAN & PROFILE
 SEE SHEET 2-0 FOR ISLAND DETAIL
 SEE SHEET 2-R FOR INTERSECTION DETAIL
 SEE SHEETS 2-F & 2-G FOR DITCH DETAILS

101609 - PARCEL 6 PROPERTY NAME UPDATED
 110309 - PARCEL 10 ADDED TEMPORARY CONSTRUCTION EASEMENT



| | |
|------------------------|---------|
| PROJECT REFERENCE NO. | 4-1111 |
| DATE | 4-11-11 |
| PROJECT NO. | 4-1111 |
| SHEET NO. | 10 |
| TOTAL SHEETS | 40 |
| DESIGNED BY | |
| CHECKED BY | |
| DATE | |
| SCALE | |
| CONTRACT NO. | |
| CONTRACT DATE | |
| CONTRACT VALUE | |
| CONTRACT LOCATION | |
| CONTRACT DESCRIPTION | |
| CONTRACT OWNER | |
| CONTRACT ENGINEER | |
| CONTRACT ARCHITECT | |
| CONTRACT CONTRACTOR | |
| CONTRACT SUBCONTRACTOR | |
| CONTRACT SCHEDULE | |
| CONTRACT BIDDING | |
| CONTRACT AWARD | |
| CONTRACT START | |
| CONTRACT END | |
| CONTRACT STATUS | |
| CONTRACT NOTES | |
| CONTRACT COMMENTS | |
| CONTRACT REVISIONS | |
| CONTRACT APPROVALS | |
| CONTRACT SIGNATURES | |
| CONTRACT STAMPS | |
| CONTRACT RECORDS | |
| CONTRACT ARCHIVES | |
| CONTRACT BACKUP | |
| CONTRACT RESTORE | |
| CONTRACT DELETE | |
| CONTRACT MOVE | |
| CONTRACT COPY | |
| CONTRACT PASTE | |
| CONTRACT PRINT | |
| CONTRACT EXPORT | |
| CONTRACT IMPORT | |
| CONTRACT HELP | |

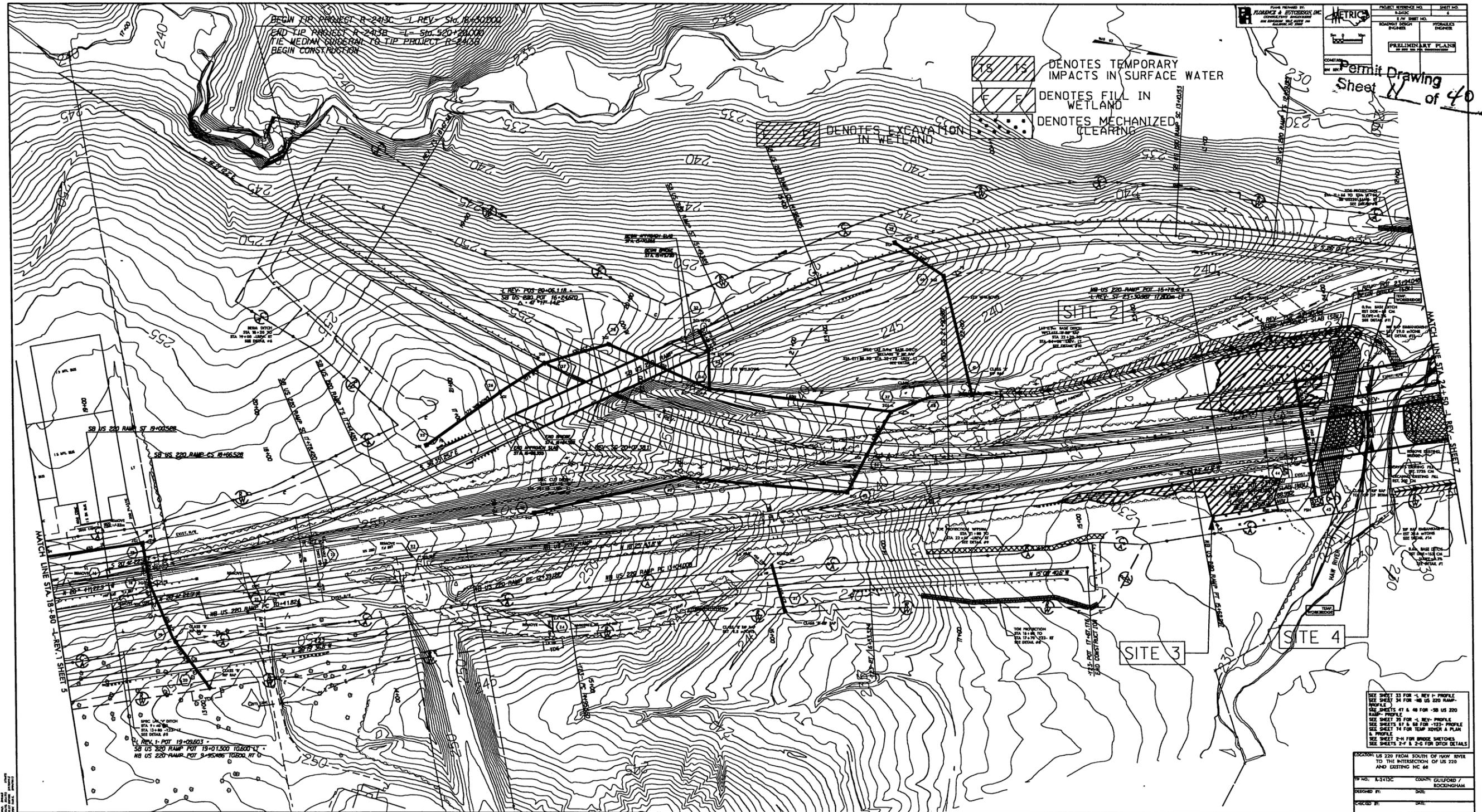
Permit Drawing
 Sheet 10 of 40

SEE SHEET 33 FOR -L REV 1- PROFILE
 SEE SHEET 34 FOR -NB US 220 RAMP- PROFILE
 SEE SHEETS 47 & 48 FOR -SB US 220 RAMP- PROFILE
 SEE SHEET 35 FOR -L REV- PROFILE
 SEE SHEETS 51 & 52 FOR -1225- PROFILE
 SEE SHEET 74 FOR TEMP COVER A PLAN & PROFILE
 SEE SHEET 2-H FOR BRIDGE SKETCHES
 SEE SHEETS 2-H & 2-G FOR DITCH DETAILS

LOCATION: US 220 FROM SOUTH OF HAW RIVER TO THE INTERSECTION OF US 220 AND EXISTING I-68

PROJECT NO.: R-2413C COUNTY: GUILFORD / ROCKINGHAM
 DESIGNED BY: DATE:
 CHECKED BY: UNIT:

101609 - PARCEL 6 PROPERTY NAME UPDATED
110309 - PARCEL 10 ADDED TEMPORARY CONSTRUCTION EASEMENT

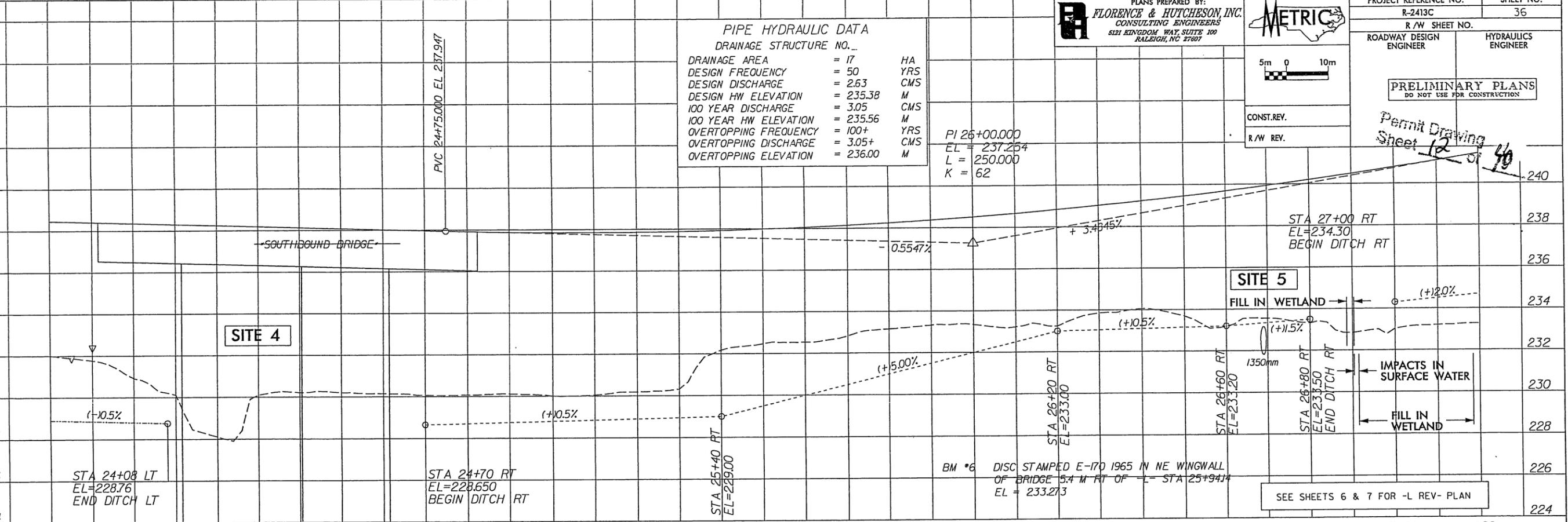


SEE SHEET 33 FOR -1 REV 1- PROFILE
SEE SHEET 34 FOR -10 US 220 RAMP- PROFILE
SEE SHEETS 41 & 48 FOR -50 US 220 RAMP- PROFILE
SEE SHEET 35 FOR -4 REV- PROFILE
SEE SHEETS 11 & 68 FOR -133- PROFILE
SEE SHEET 74 FOR TEMP COVER A PLAN & PROFILE
SEE SHEET 2-H FOR BRIDGE SKETCHES
SEE SHEETS 2-F & 2-G FOR DITCH DETAILS

LOCATION: US 220 FROM SOUTH OF HAW RIVER TO THE INTERSECTION OF US 220 AND EXISTING NC 66
PROJECT NO: R-2413C COUNTY: GUILFORD / ROCKINGHAM
DESIGNED BY: DATE:
CHECKED BY: DATE:

5/09/20

248
246
244
242
240
238
236
234
232
230
228
226
224



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. ...

| | | |
|-----------------------|----------|-----|
| DRAINAGE AREA | = 17 | HA |
| DESIGN FREQUENCY | = 50 | YRS |
| DESIGN DISCHARGE | = 2.63 | CMS |
| DESIGN HW ELEVATION | = 235.38 | M |
| 100 YEAR DISCHARGE | = 3.05 | CMS |
| 100 YEAR HW ELEVATION | = 235.56 | M |
| OVERTOPPING FREQUENCY | = 100+ | YRS |
| OVERTOPPING DISCHARGE | = 3.05+ | CMS |
| OVERTOPPING ELEVATION | = 236.00 | M |

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
5121 KINGDOM WAY, SUITE 100
RALEIGH, NC 27607

| | | | |
|-------------------------|---------|---------------------|----|
| PROJECT REFERENCE NO. | R-2413C | SHEET NO. | 36 |
| R/W SHEET NO. | | | |
| ROADWAY DESIGN ENGINEER | | HYDRAULICS ENGINEER | |

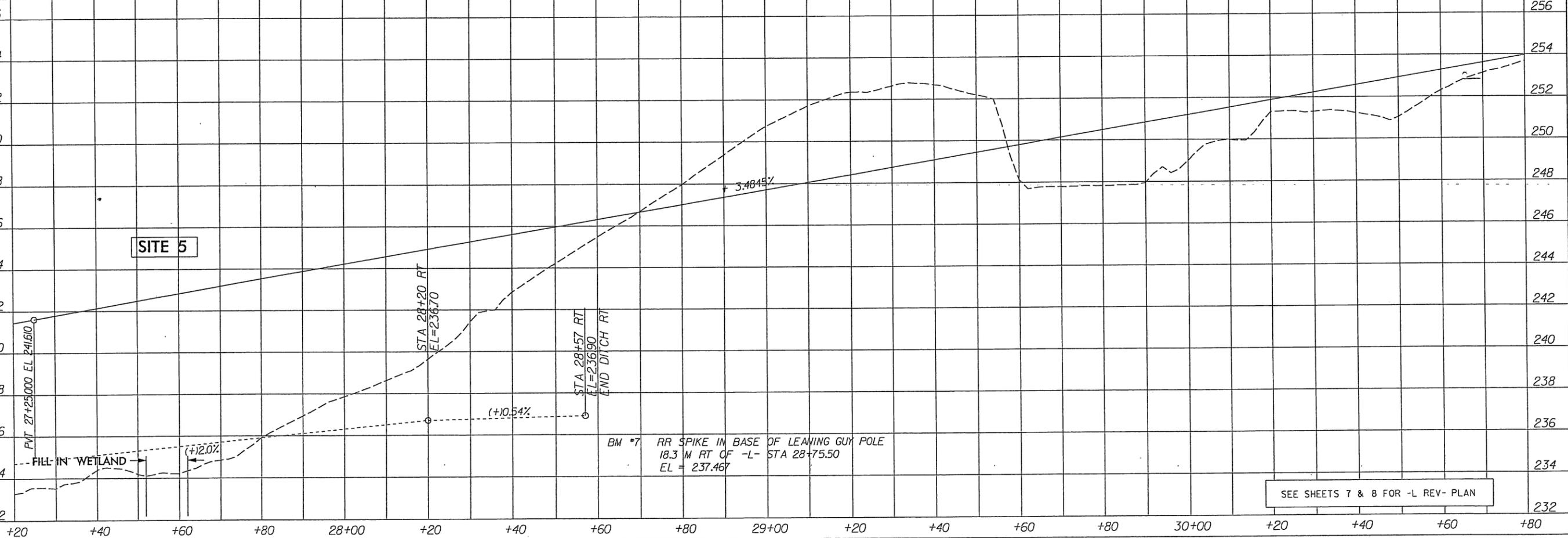
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.
R/W REV.

Permit Drawing
Sheet 12 of 40

+80 24+00 +20 +40 +60 +80 25+00 +20 +40 +60 +80 26+00 +20 +40 +60 +80 27+00 +20

256
254
252
250
248
246
244
242
240
238
236
234
232



BM *7 RR SPIKE IN BASE OF LEANING GUY POLE
18.3 M RT OF -L- STA 28+75.50
EL = 237.467

SEE SHEETS 7 & 8 FOR -L REV- PLAN

+20 +40 +60 +80 28+00 +20 +40 +60 +80 29+00 +20 +40 +60 +80 30+00 +20 +40 +60 +80

FILE: SITES
DATE: 5/9/20
DRAWN: JMM
CHECKED: JMM
PLOT DATE: 5/9/20
REV: 001

-L REV-

6/09/09

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
521 KINGDOM WAY SUITE 100
RALEIGH, NC 27607

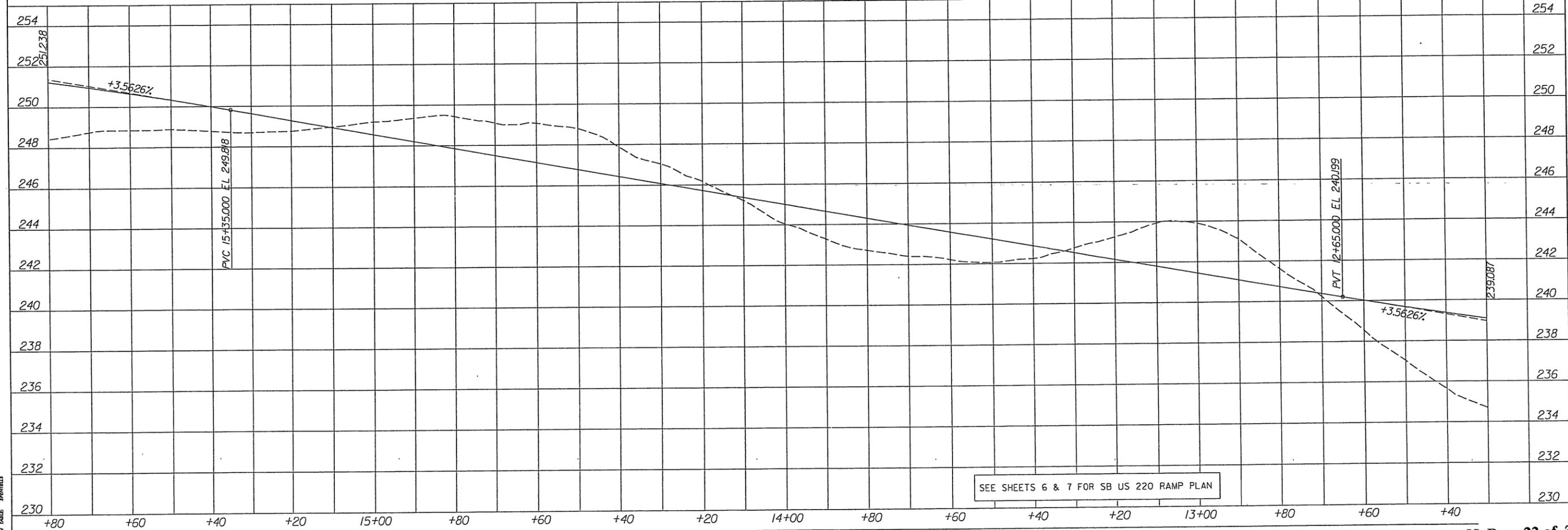
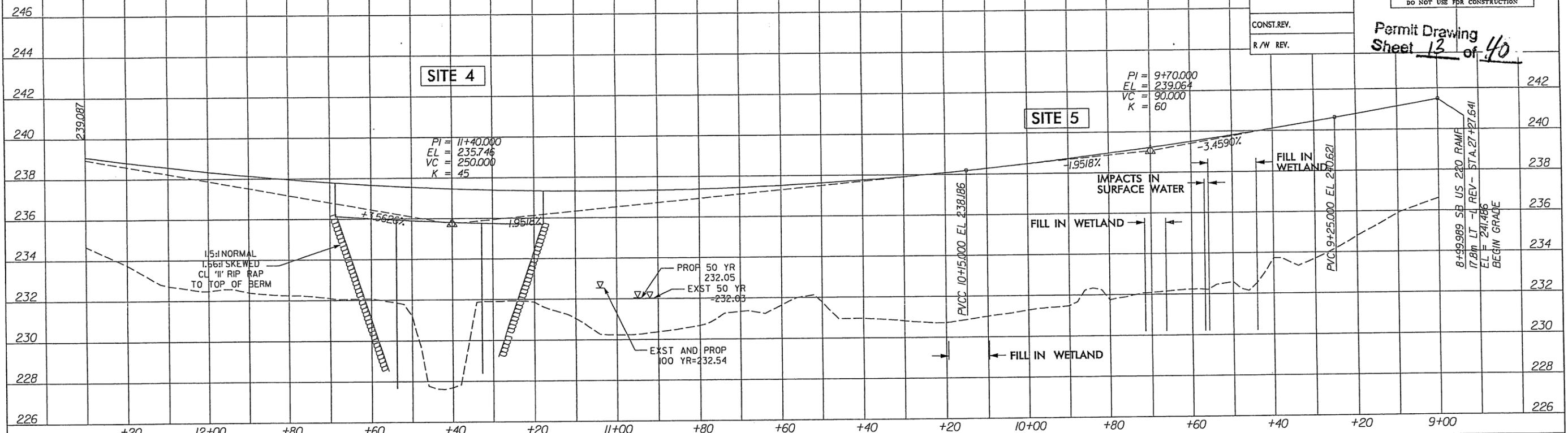


PROJECT REFERENCE NO. R-2413C
SHEET NO. 47
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



CONST. REV.
R/W REV.

Permit Drawing
Sheet 13 of 40



SEE SHEETS 6 & 7 FOR SB US 220 RAMP PLAN

FILE: 090913.DWG
DATE: 09/09/09
DRAWN BY: J. SPAIN
CHECKED BY: J. SPAIN
PLOT DATE: 09/09/09

RECEIVED

JUL 28 2011

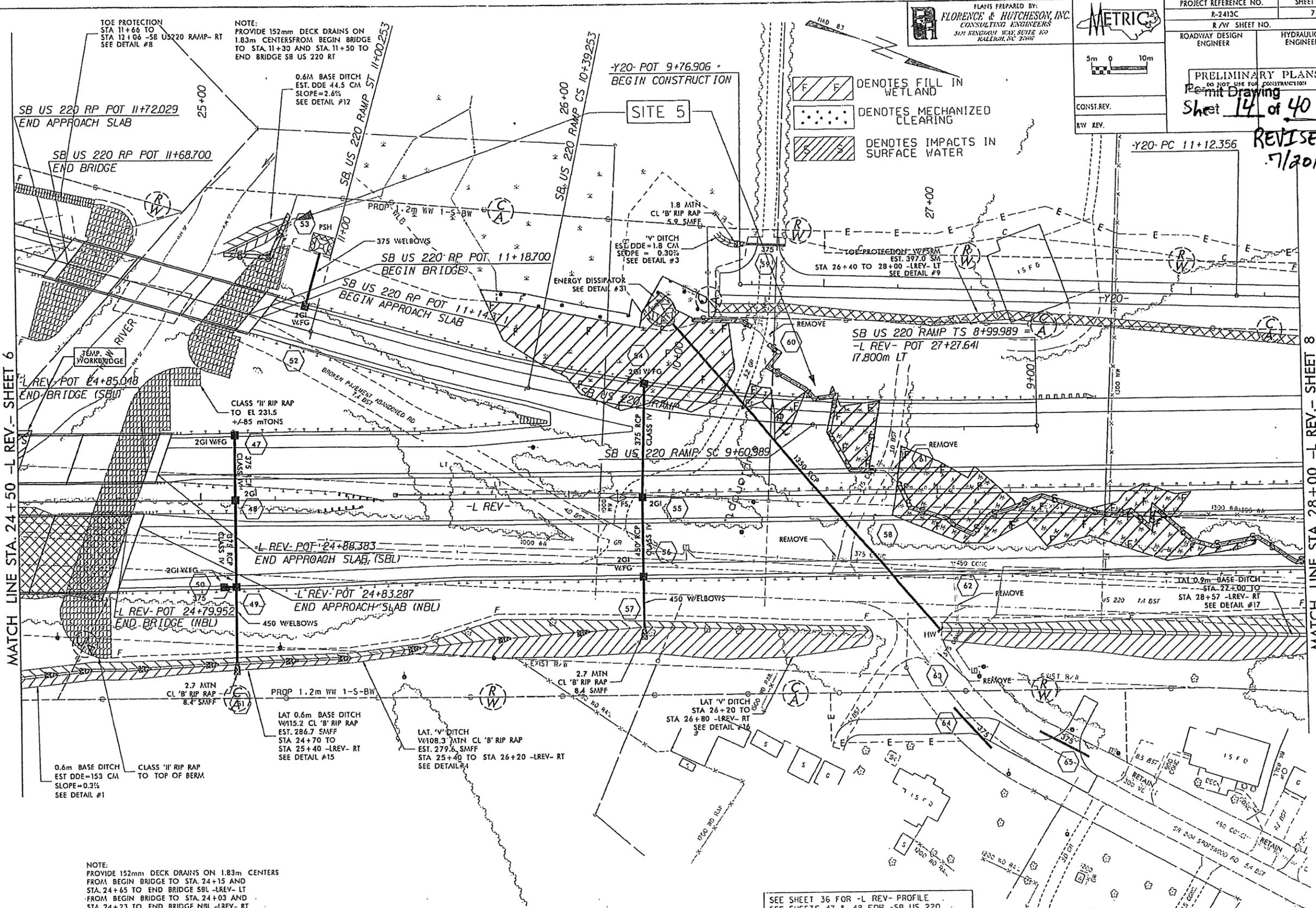
Regulatory Branch

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
812 KINGDOM WAY, SUITE 100
RALEIGH, NC 27607



PROJECT REFERENCE NO. R-2413C
SHEET NO. 7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 14 of 40
REVISED
7/20/11



MATCH LINE STA. 24+50 -L REV.- SHEET 6

MATCH LINE STA. 28+00 -L REV.- SHEET 8

TOE PROTECTION
STA 11+66 TO
STA 12+06 -SB US220 RAMP- RT
SEE DETAIL #8

NOTE:
PROVIDE 152mm DECK DRAINS ON
1.83m CENTERS FROM BEGIN BRIDGE
TO STA. 11+30 AND STA. 11+50 TO
END BRIDGE SB US 220 RT

0.6M BASE DITCH
EST. DDE 44.5 CM
SLOPE=2.6%
SEE DETAIL #12

-Y20- POT 9+76.906 -
BEGIN CONSTRUCTION

- [Hatched pattern] DENOTES FILL IN WETLAND
- [Dotted pattern] DENOTES MECHANIZED CLEARING
- [Diagonal lines] DENOTES IMPACTS IN SURFACE WATER



CONST. REV.
RW REV.

SB US 220 RP POT 11+72.029
END APPROACH SLAB

SB US 220 RP POT 11+68.700
END BRIDGE

SB US 220 RP POT 11+18.700
BEGIN BRIDGE

SB US 220 RP POT 11+14.500
BEGIN APPROACH SLAB

SB US 220 RAMP TS 8+99.989 = A
-L REV- POT 27+27.641
17.800m LT

CLASS 'II' RIP RAP
TO EL 231.5
+/-85 mTONS

-L REV- POT 24+88.383
END APPROACH SLAB (SBL)

-L REV- POT 24+83.287
END APPROACH SLAB (NBL)

-L REV- POT 24+79.952
END BRIDGE (NBL)

2.7 MTN
CL 'B' RIP RAP
8.4 SMFF

PROP 1.2m WW 1-S-BW

LAT 0.6m BASE DITCH
W/15.2 CL 'B' RIP RAP
EST. 286.7 SMFF
STA 24+70 TO
STA 25+40 -LREV- RT
SEE DETAIL #15

LAT 'V' DITCH
W/108.3 MTN CL 'B' RIP RAP
EST. 279.6 SMFF
STA 25+40 TO STA 26+20 -LREV- RT
SEE DETAIL #16

0.6m BASE DITCH
EST DDE=153 CM
SLOPE=0.3%
SEE DETAIL #1

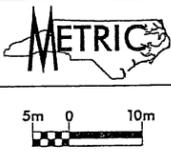
CLASS 'II' RIP RAP
TO TOP OF BERM

NOTE:
PROVIDE 152mm DECK DRAINS ON 1.83m CENTERS
FROM BEGIN BRIDGE TO STA. 24+15 AND
STA. 24+65 TO END BRIDGE SBL -LREV- LT
FROM BEGIN BRIDGE TO STA. 24+03 AND
STA. 24+23 TO END BRIDGE NBL -LREV- RT

SEE SHEET 36 FOR -L REV- PROFILE
SEE SHEETS 47 & 48 FOR -SB US 220
RAMP- PROFILE
SEE SHEETS 62, 63 & 64 FOR -Y20 REV- &
-Y20- PROFILE
SEE SHEET 2-H FOR BRIDGE SKETCHES
SEE SHEETS S-1 THRU S-... FOR BRIDGE PLANS
SEE SHEETS 2-F & 2-G FOR DITCH DETAILS

FILED: STILES
DATE: 2011
BY: DRIVER: SP/DRIVE
REV. TABLE: ST/REV/LS

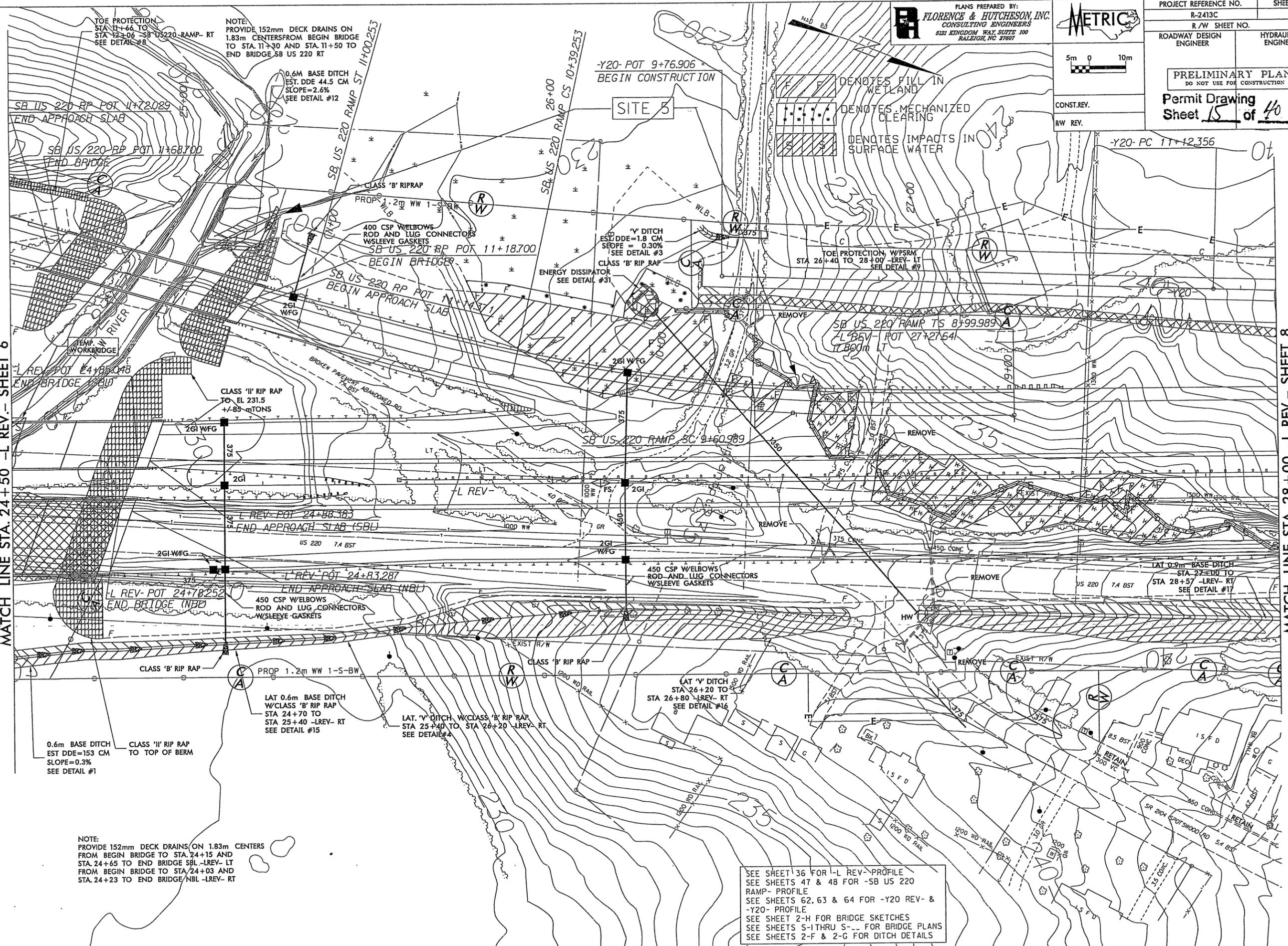
PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
 CONSULTING ENGINEERS
 5121 KINGDOM WAY, SUITE 100
 RALEIGH, NC 27607



| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 7 |
| R/W SHEET NO. | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER | |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 15 of 40 | |

MATCH LINE STA. 24+50 -L REV.- SHEET 6

MATCH LINE STA. 28+00 -L REV.- SHEET 8



TOE PROTECTION
 STA 11+66 TO
 STA 12+04 -SB US 220 RAMP- RT
 SEE DETAIL #8

NOTE:
 PROVIDE 152mm DECK DRAINS ON
 1.83m CENTERS FROM BEGIN BRIDGE
 TO STA. 11+30 AND STA. 11+50 TO
 END BRIDGE SB US 220 RT

0.6M BASE DITCH
 EST. DDE=44.5 CM
 SLOPE=2.6%
 SEE DETAIL #12

-Y20- POT 9+76.906
 BEGIN CONSTRUCTION

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

CONST. REV.
 RW REV.

-Y20- PC 11+12.356

CLASS 'II' RIP RAP
 TO EL 231.5
 +/-85 TONS

450 CSP WELBOWS
 ROD AND LUG CONNECTORS
 W/SLEEVE GASKETS

0.6m BASE DITCH
 EST DDE=153 CM
 SLOPE=0.3%
 SEE DETAIL #1

LAT 0.6m BASE DITCH
 W/CLASS 'B' RIP RAP
 STA 24+70 TO
 STA 25+40 -LREV- RT
 SEE DETAIL #15

LAT. 'V' DITCH W/CLASS 'B' RIP RAP
 STA 25+40 TO STA 26+20 -LREV- RT
 SEE DETAIL #4

LAT 'V' DITCH
 STA 26+20 TO
 STA 26+80 -LREV- RT
 SEE DETAIL #16

LAT 0.9m BASE DITCH
 STA 27+00 TO
 STA 28+50 -LREV- RT
 SEE DETAIL #17

NOTE:
 PROVIDE 152mm DECK DRAINS ON 1.83m CENTERS
 FROM BEGIN BRIDGE TO STA. 24+15 AND
 STA. 24+65 TO END BRIDGE SBL -LREV- LT
 FROM BEGIN BRIDGE TO STA. 24+03 AND
 STA. 24+23 TO END BRIDGE NBL -LREV- RT

SEE SHEET 36 FOR I-L REV-PROFILE
 SEE SHEETS 47 & 48 FOR -SB US 220
 RAMP- PROFILE
 SEE SHEETS 62, 63 & 64 FOR -Y20 REV- &
 -Y20- PROFILE
 SEE SHEET 2-H FOR BRIDGE SKETCHES
 SEE SHEETS S-1 THRU S-... FOR BRIDGE PLANS
 SEE SHEETS 2-F & 2-G FOR DITCH DETAILS

E. FILES
 76. NOTES
 37. DRIVER-SPINDRIVALS
 V. TABLE: SPINDRIVALS

61770 -- ELIMINATED PARCEL 21Z REVISED DRAINAGE
 21510 -- PARCEL 18Z ADDED TEMPORARY DRAINAGE EASEMENT
 21510 -- PARCEL 19Z ADDED PERMANENT DRAINAGE EASEMENT
 21510 -- PARCEL 20Z REVISED PERMANENT DRAINAGE EASEMENT

FILE STATUS
 DATE ISSUED
 DATE CHECKED
 PROJECT NUMBER
 PLAN NUMBER

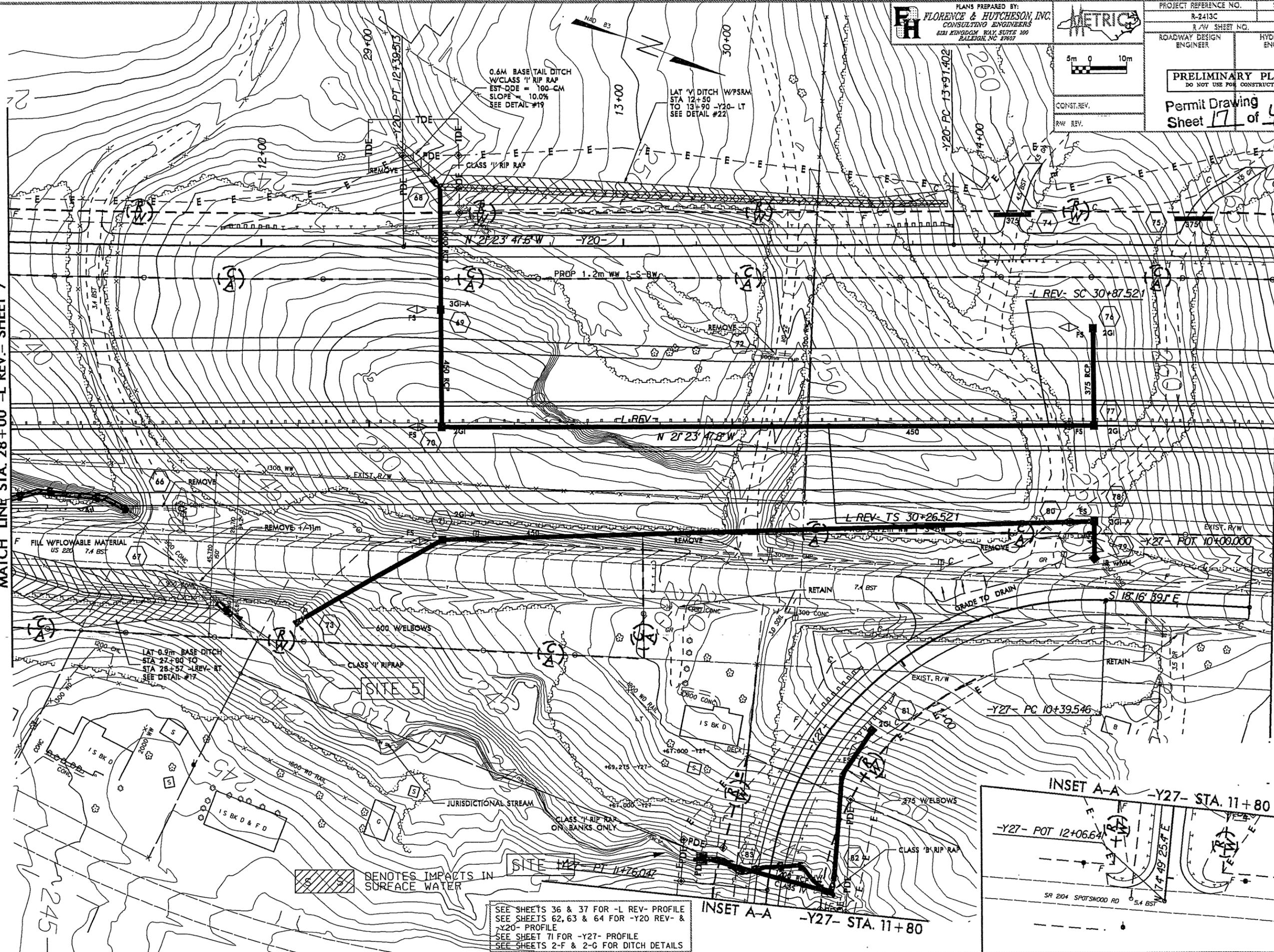
PLANS PREPARED BY:
FH FLORENCE & HUTCHESON, INC.
 CONSULTING ENGINEERS
 601 KINGDOM WAY, SUITE 100
 RALEIGH, NC 27607



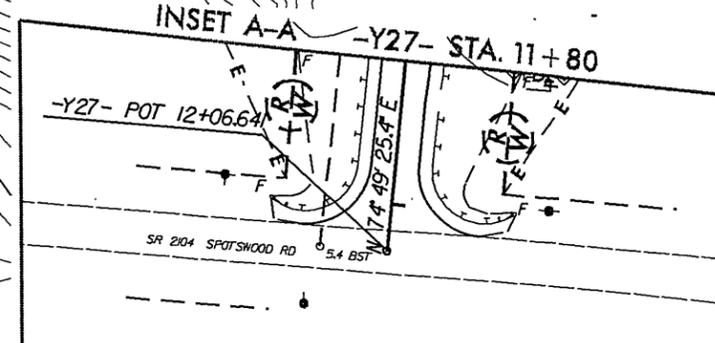
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|---|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 8 |
| R/W SHEET NO. | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER | |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 17 of 40 | |

MATCH LINE STA. 28+00 -L REV.- SHEET 7

MATCH LINE STA. 31+50 -L REV.- SHEET 9



SEE SHEETS 36 & 37 FOR -L REV- PROFILE
 SEE SHEETS 62, 63 & 64 FOR -Y20 REV- & -Y20- PROFILE
 SEE SHEET 71 FOR -Y27- PROFILE
 SEE SHEETS 2-F & 2-G FOR DITCH DETAILS



DIAGONAL HATCHING DENOTES IMPACTS IN SURFACE WATER

SITE 5

SITE 117

INSET A-A -Y27- STA. 11+80

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JUL 28 2011

Regulatory Branch

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
411 KINGDOM WAY, SUITE 102
RALEIGH, NC 27607



PROJECT REFERENCE NO. R-2413C SHEET NO. 10

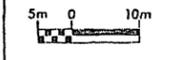
R/W SHEET NO. ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

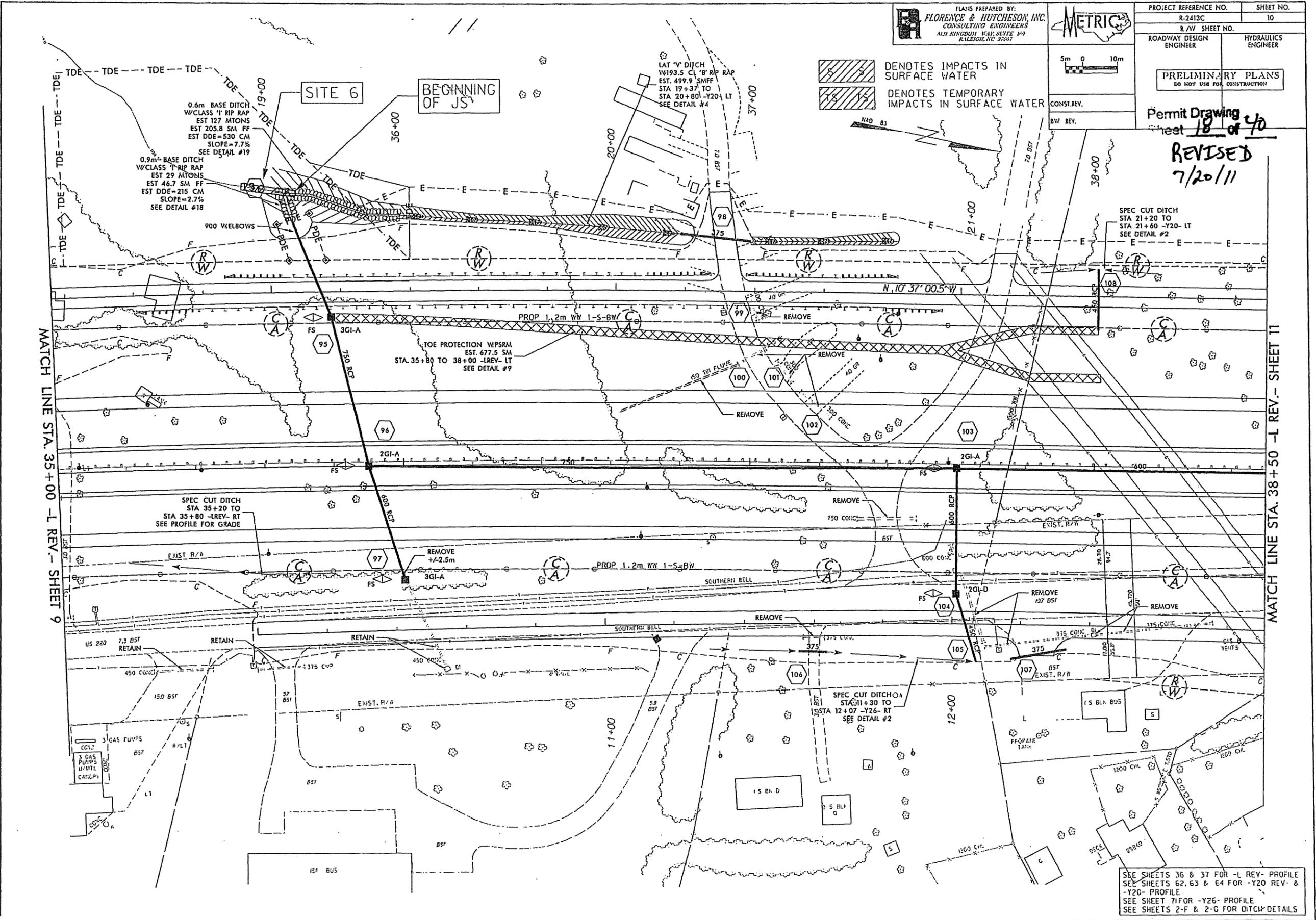
Permit Drawing
Sheet 18 of 40

REVISED
7/20/11

DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER



CONST. REV.
RW REV.



110309 - PARCEL 26 REVISED TEMPORARY DRAINAGE EASEMENT

1/8" SPACES
ALL DIMENSIONS
UNLESS OTHERWISE
NOTED

SEE SHEETS 36 & 37 FOR -L REV- PROFILE
SEE SHEETS 62, 63 & 64 FOR -Y20 REV- & -Y20- PROFILE
SEE SHEET 71 FOR -Y26- PROFILE
SEE SHEETS 2-F & 2-G FOR DITCH DETAILS

110309 - PARCEL 30 REVISED TEMPORARY CONSTRUCTION EASEMENT
 110309 - PARCEL 31 REVISED TEMPORARY CONSTRUCTION EASEMENT
 110309 - PARCEL 33 REVISED PERMANENT DRAINAGE EASEMENT

1: SERIES
 2: SCALES
 3: DRIVE: SPOT-DRAWLS
 4: TABLE: SPENTILLS

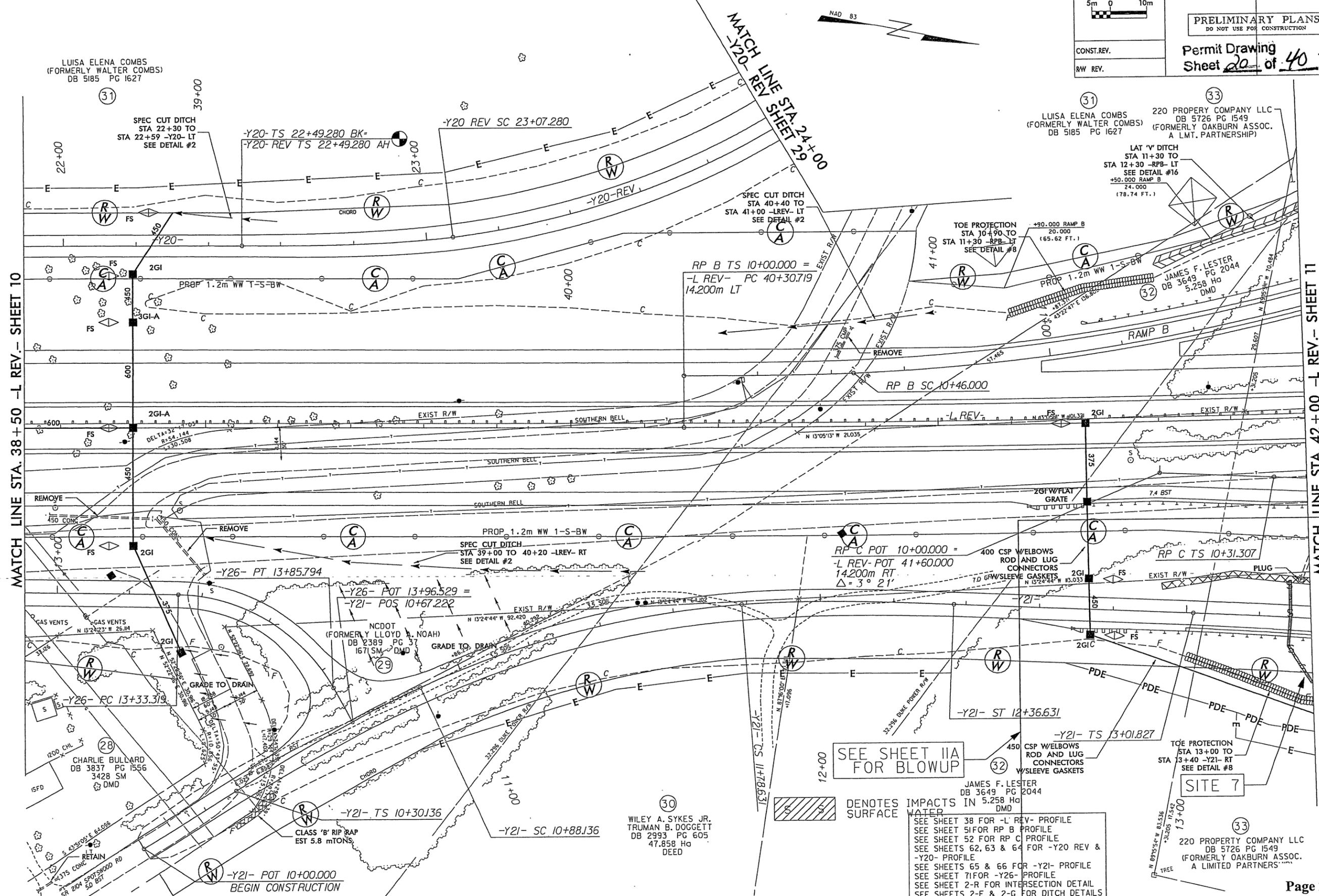
PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
 CONSULTING ENGINEERS
 5121 KINGDOM WAY, SUITE 100
 RALEIGH, NC 27607

METRIC

5m 0 10m

CONST. REV.
 RW REV.

| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 11 |
| R/W SHEET NO. ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet <u>20</u> of <u>40</u> | |



SEE SHEET IIA
FOR BLOWUP

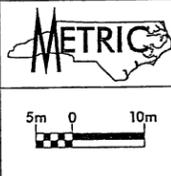
DENOTES IMPACTS IN SURFACE WATER

SEE SHEET 38 FOR -L REV- PROFILE
 SEE SHEET 51 FOR RP B PROFILE
 SEE SHEET 52 FOR RP C PROFILE
 SEE SHEETS 62, 63 & 64 FOR -Y20 REV & -Y20- PROFILE
 SEE SHEETS 65 & 66 FOR -Y21- PROFILE
 SEE SHEET 71 FOR -Y26- PROFILE
 SEE SHEET 2-R FOR INTERSECTION DETAIL
 SEE SHEETS 2-F & 2-G FOR DITCH DETAILS

110309 - PARCEL 30 REVISED TEMPORARY CONSTRUCTION EASEMENT
 110309 - PARCEL 31 REVISED TEMPORARY CONSTRUCTION EASEMENT
 110309 - PARCEL 33 REVISED PERMANENT DRAINAGE EASEMENT

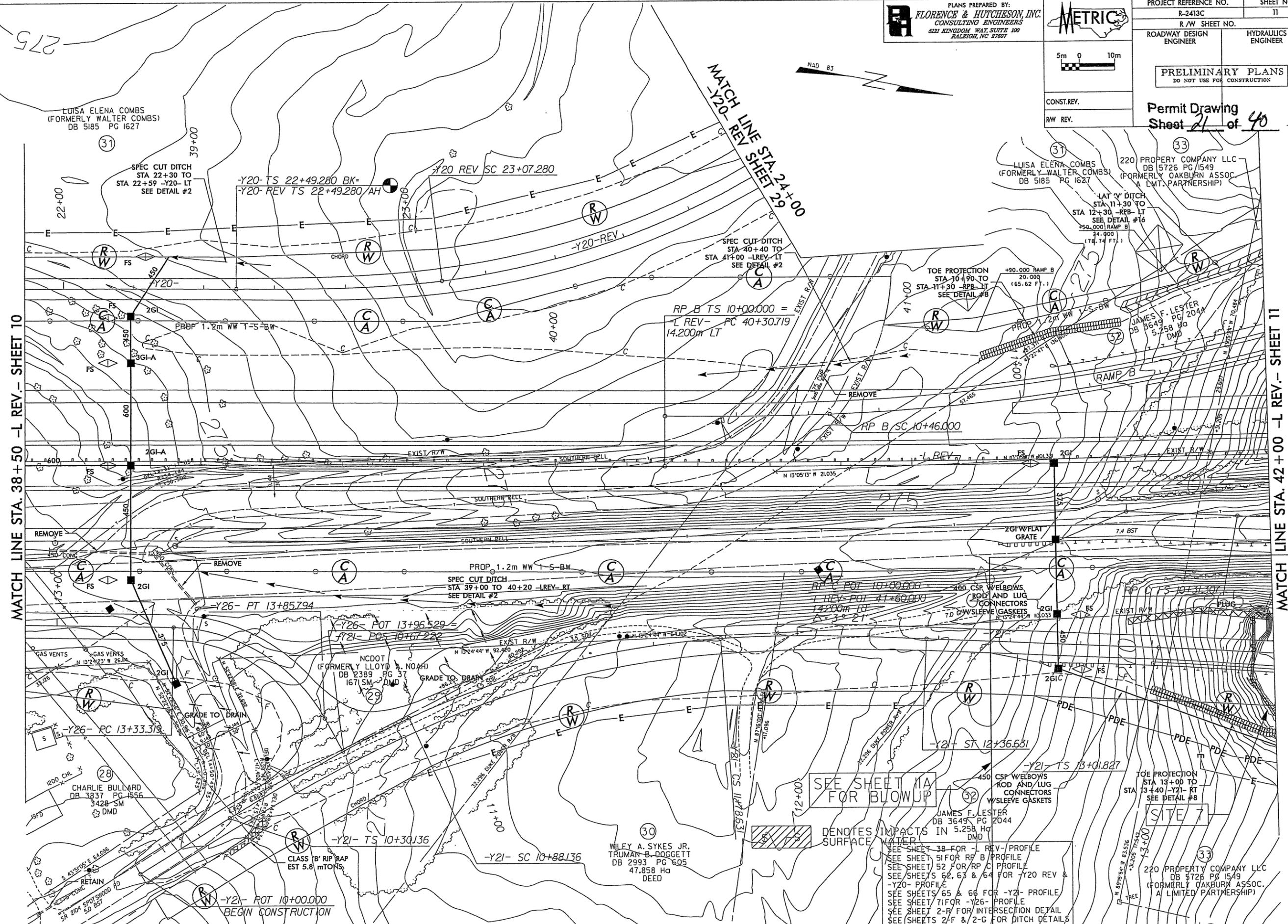
SCALES
 STAKES
 TABLE SPENTRILLS

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
 CONSULTING ENGINEERS
 5211 KINGDOM WAY, SUITE 100
 RALEIGH, NC 27607



| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 11 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |

Permit Drawing
 Sheet 21 of 40



SEE SHEET 1A FOR BLOWUP

DENOTES IMPACTS IN SURFACE WATER

SEE SHEET 38 FOR -L REV- PROFILE
 SEE SHEET 51 FOR RP B PROFILE
 SEE SHEET 52 FOR RP C PROFILE
 SEE SHEETS 62, 63 & 64 FOR -Y20 REV & -Y20- PROFILE
 SEE SHEETS 65 & 66 FOR -Y21- PROFILE
 SEE SHEET 71 FOR -Y26- PROFILE
 SEE SHEET 2-R FOR INTERSECTION DETAIL
 SEE SHEETS 2-F & 2-G FOR DITCH DETAILS

TOE PROTECTION STA 13+00 TO STA 13+40 -Y21- RT SEE DETAIL #8

SITE 7

220 PROPERTY COMPANY LLC DB 5726 PG 1549 (FORMERLY OAKBURN ASSOC. A LIMITED PARTNERSHIP)

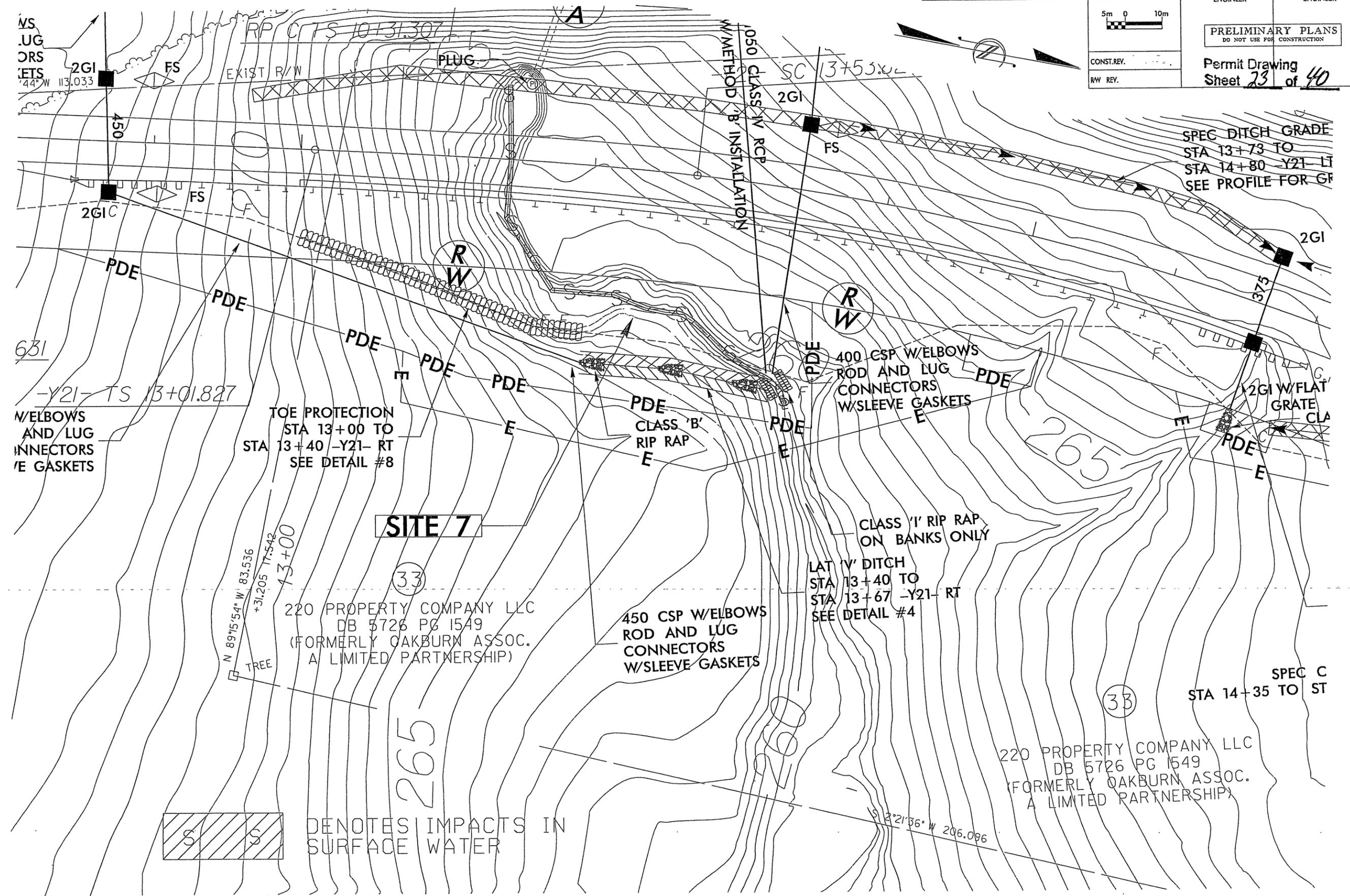
PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
 CONSULTING ENGINEERS
 5121 KINGDOM WAY, SUITE 100
 RALEIGH, NC 27607

METRIC

5m 0 10m

CONST. REV. _____
 RW REV. _____

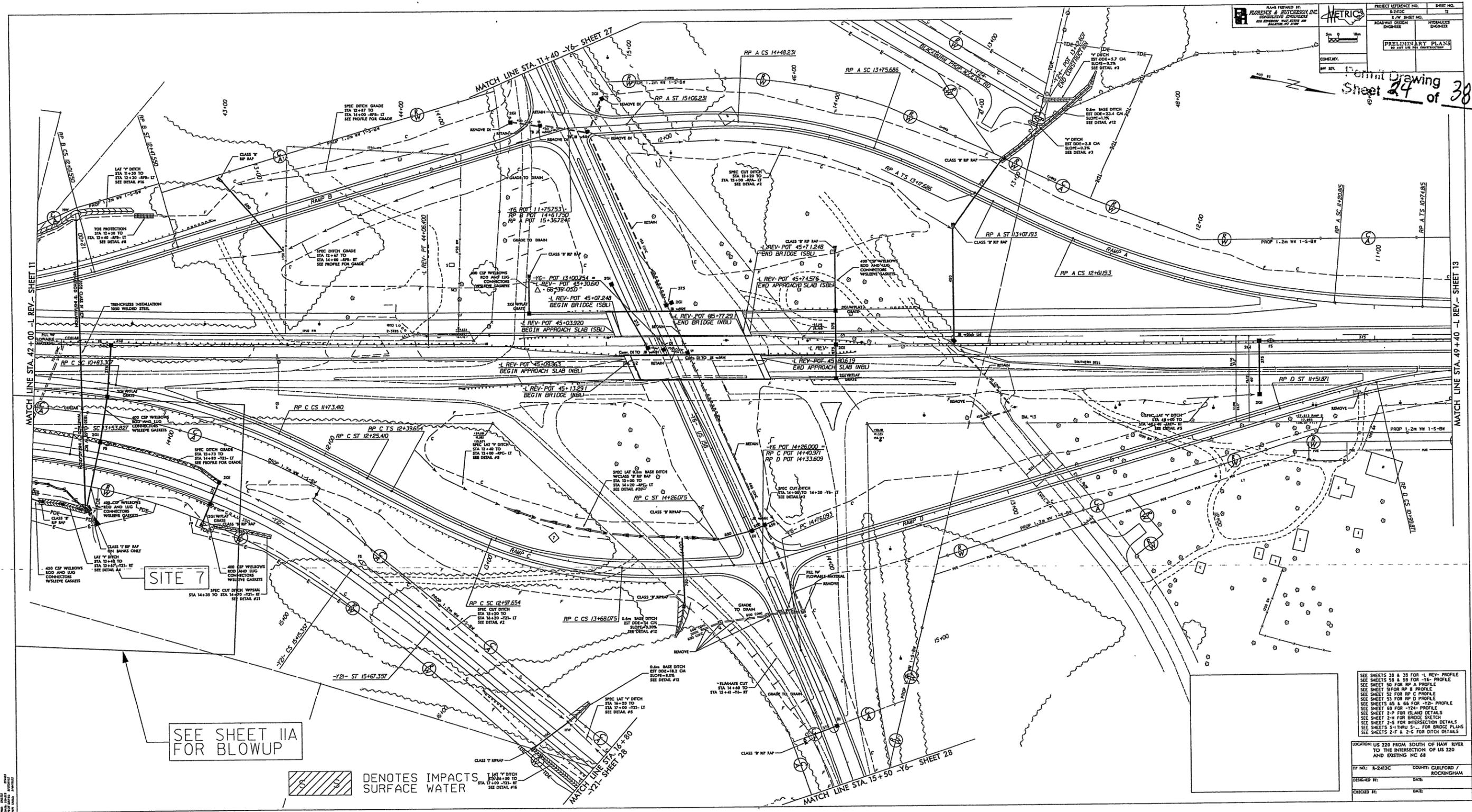
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| PROJECT REFERENCE NO. R-2413C | SHEET NO. 11A |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 23 of 40 | |



DENOTES IMPACTS IN SURFACE WATER

E. SPILLES
 LITE: SDATES
 OF DRIVER: SPITRIVLS
 N TABLE: SPENTRILLS

03/23/09 - ADDED PARCEL NO. 35Z DESIGNATION TO PUE
 1103009 - PARCEL NO. 33 REVISED PERMANENT DRAINAGE EASEMENT
 REVISED TEMPORARY CONSTRUCTION EASEMENT
 REVISED TEMPORARY DRAINAGE EASEMENT



PLANS PREPARED BY: FLORENCE & BUTTS/STEVENS INC.
 ROADWAY DESIGN ENGINEER

PROJECT REFERENCE NO. SHEET NO.
 E/S/2008 11
 HYDRAULICS ENGINEER

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

Sheet 24 of 38

SEE SHEET IIA
 FOR BLOWUP

DENOTES IMPACTS
 SURFACE WATER

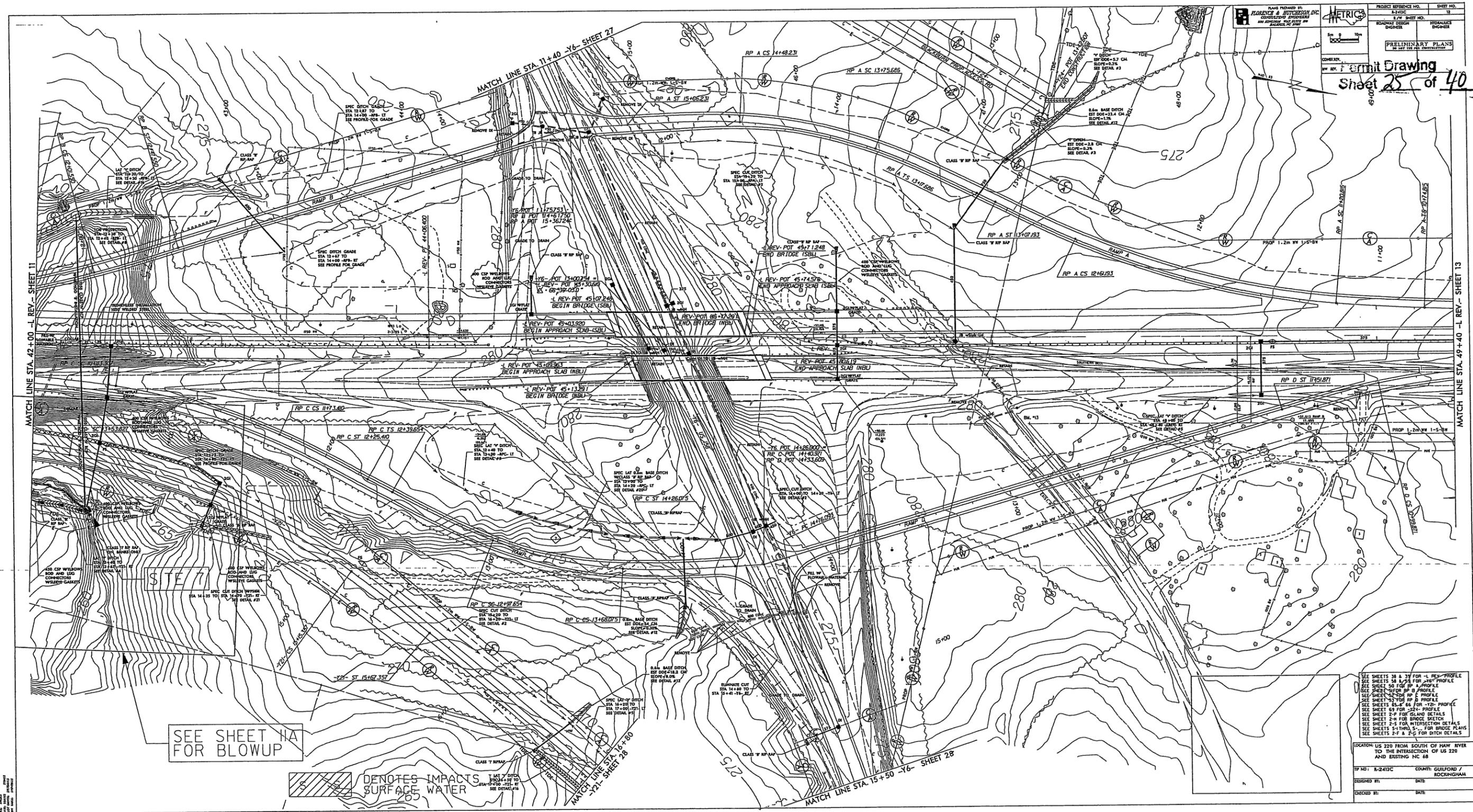
SEE SHEETS 38 & 39 FOR -L REV- PROFILE
 SEE SHEETS 38 & 39 FOR -T6- PROFILE
 SEE SHEET 50 FOR RP A PROFILE
 SEE SHEET 51 FOR RP B PROFILE
 SEE SHEET 52 FOR RP C PROFILE
 SEE SHEET 53 FOR RP D PROFILE
 SEE SHEETS 45 & 46 FOR -T2- PROFILE
 SEE SHEET 69 FOR -T24- PROFILE
 SEE SHEET 5-P FOR ISLAND DETAILS
 SEE SHEET 2-H FOR BRIDGE SKETCH
 SEE SHEET 2-S FOR INTERSECTION DETAILS
 SEE SHEETS 2-T/2-U/2-V FOR BRIDGE PLANS
 SEE SHEETS 2-F & 2-G FOR DITCH DETAILS

LOCATION: US 220 FROM SOUTH OF HAW RIVER
 TO THE INTERSECTION OF US 220
 AND EXISTING NC 68

BY NO: 8-2413C COUNTY: GUILFORD /
 ROCKINGHAM

DESIGNED BY: DATE:
 CHECKED BY: DATE:

03/23/09 - ADDED PARCEL NO. 35Z DESIGNATION TO PUE
 1/03/09 - PARCEL NO. 33 REVISED PERMANENT DRAINAGE EASEMENT
 REVISED TEMPORARY CONSTRUCTION EASEMENT
 REVISED TEMPORARY DRAINAGE EASEMENT



SEE SHEET NA
FOR BLOWUP

 DENOTES IMPACTS SURFACE WATER

SEE SHEETS 38 & 39 FOR -1- REV. PROFILE
 SEE SHEETS 58 & 59 FOR -2- REV. PROFILE
 SEE SHEET 60 FOR -3- REV. PROFILE
 SEE SHEET 61 FOR -4- REV. PROFILE
 SEE SHEET 62 FOR -5- REV. PROFILE
 SEE SHEETS 63-66 FOR -10- PROFILE
 SEE SHEET 67 FOR -15- PROFILE
 SEE SHEET 2-P FOR ISLAND DETAILS
 SEE SHEETS 3-THRU 5-C FOR BRIDGE PLANS
 SEE SHEETS 2-F & 2-G FOR DITCH DETAILS

LOCATION: US 220 FROM SOUTH OF HAWK RIVER
 TO THE INTERSECTION OF US 220
 AND EXISTING NC 68

TP NO: E-2413C COUNTY: GUILFORD /
 ROCKINGHAM

DESIGNED BY: DATE: _____
 CHECKED BY: DATE: _____

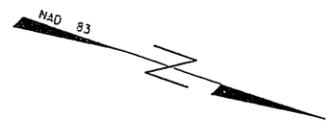
PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
 CONSULTING ENGINEERS
 5121 KINGDOM WAY, SUITE 100
 RALEIGH, NC 27607

METRIC

5m 0 10m

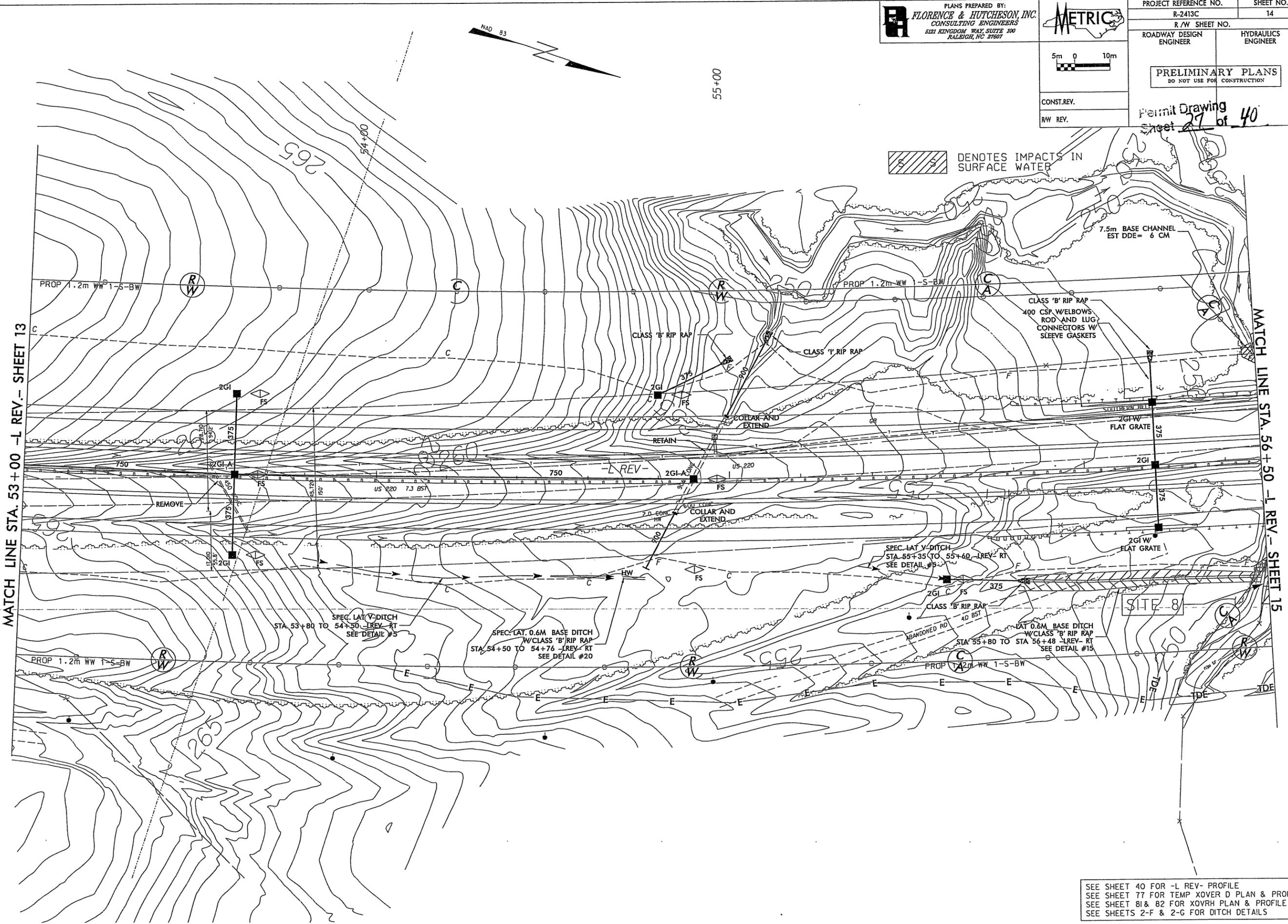
CONST. REV.
 RW REV.

| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 14 |
| R/W SHEET NO. | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet <u>27</u> of <u>40</u> | |



MATCH LINE STA. 53+00 -L REV.- SHEET 13

MATCH LINE STA. 56+50 -L REV.- SHEET 15



DENOTES IMPACTS IN SURFACE WATER

FILES
 STAKES
 SURVEY
 TABLE
 SPENTRILLS

SEE SHEET 40 FOR -L REV- PROFILE
 SEE SHEET 77 FOR TEMP XOVER D PLAN & PROFILE
 SEE SHEET 81 & 82 FOR XOVERH PLAN & PROFILE
 SEE SHEETS 2-F & 2-G FOR DITCH DETAILS

RECEIVED

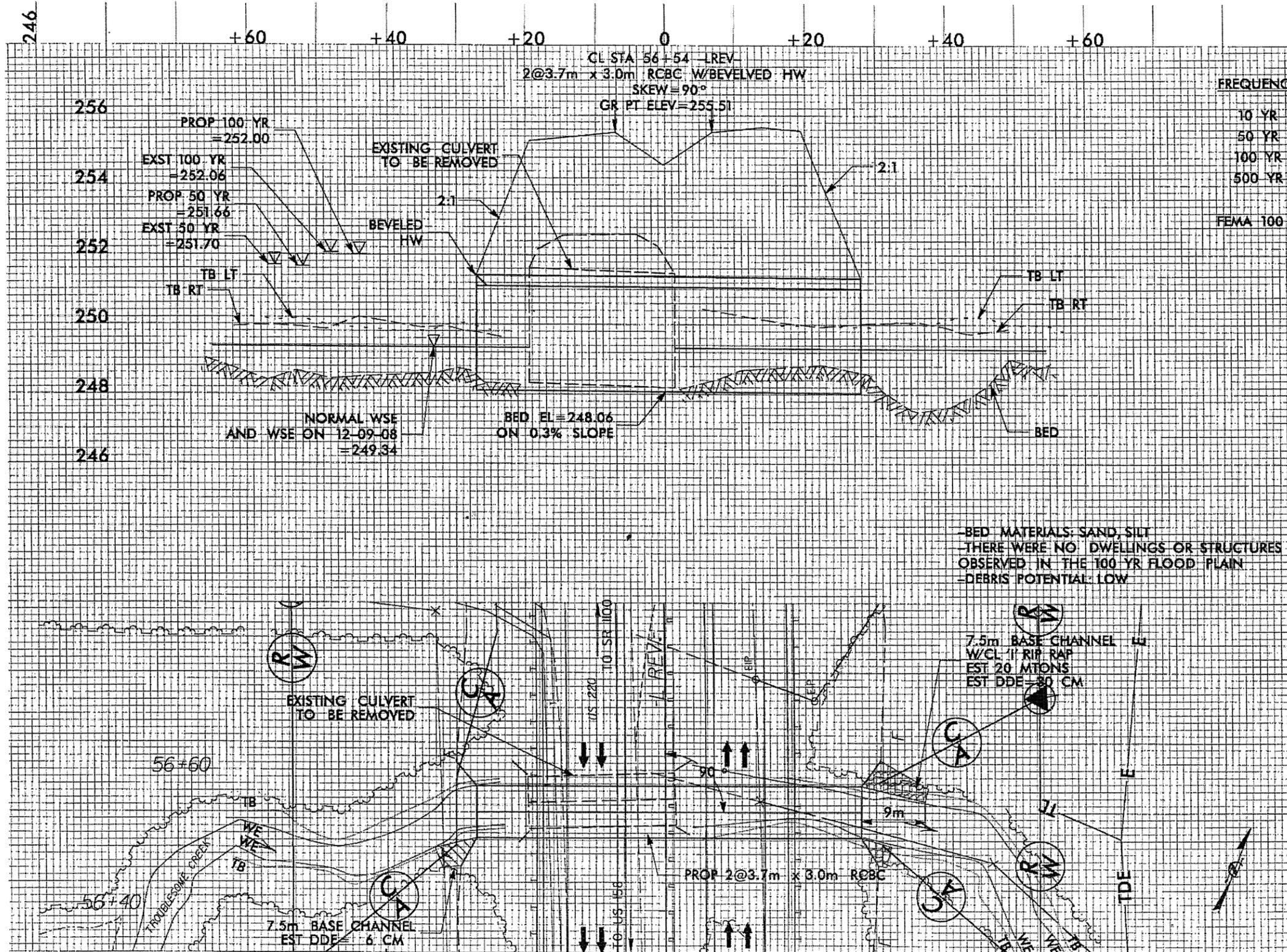
JUL 28 2011

Regulatory Branch

SITE 0

Permit
Drawing

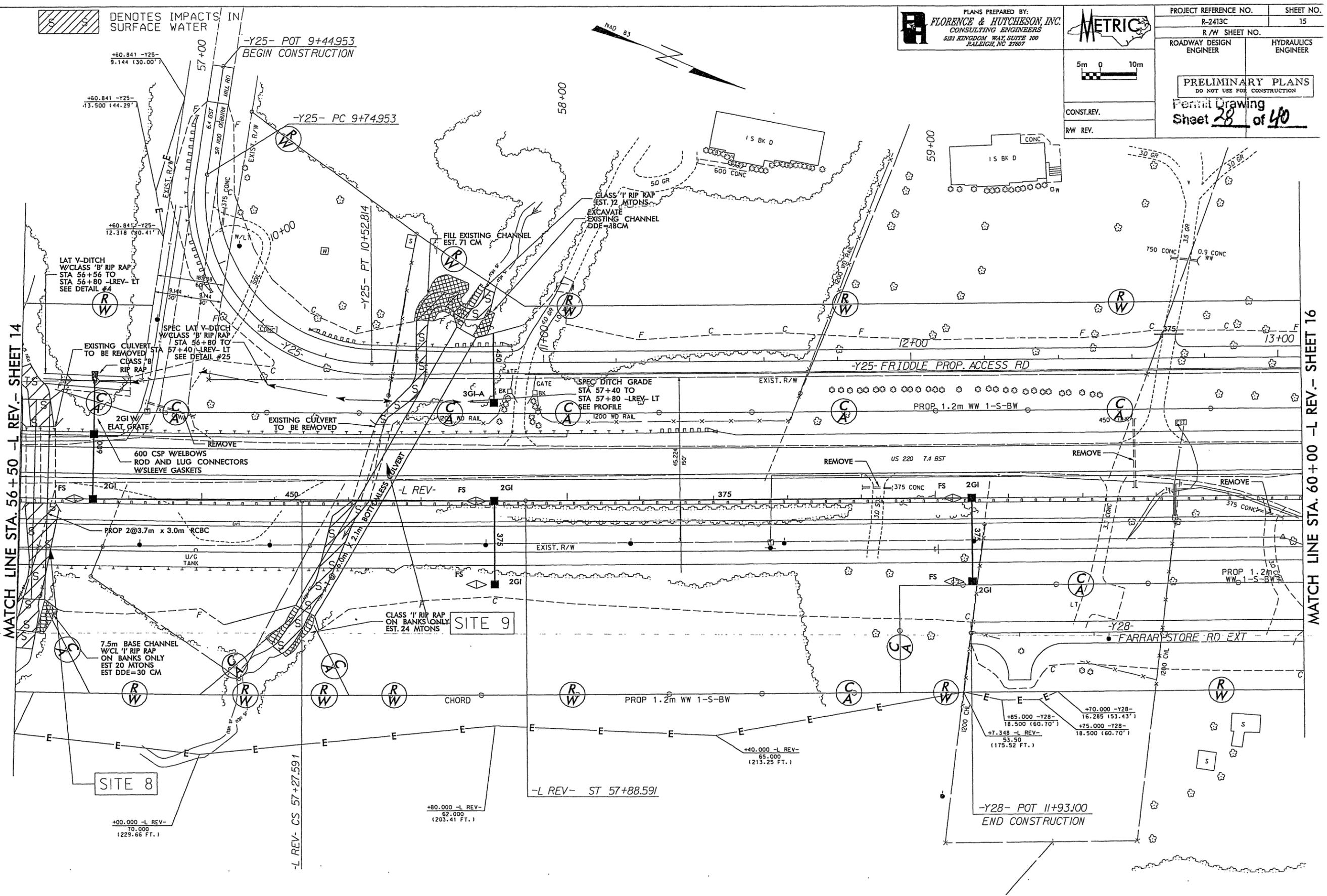
Sheet 27A
of 40



R-2413C
7/27/11

- PARCEL 35 ADDED TEMPORARY CONSTRUCTION EASEMENT
 9 - PARCEL 42 ADDED TEMPORARY CONSTRUCTION EASEMENT

SPILES
 E: SOAKS
 T: DRIVER SPINDRIVES
 TABLE: SPINTELLS



PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
 CONSULTING ENGINEERS
 521 KINGDOM WAY, SUITE 100
 RALEIGH, NC 27607

METRIC

5m 0 10m

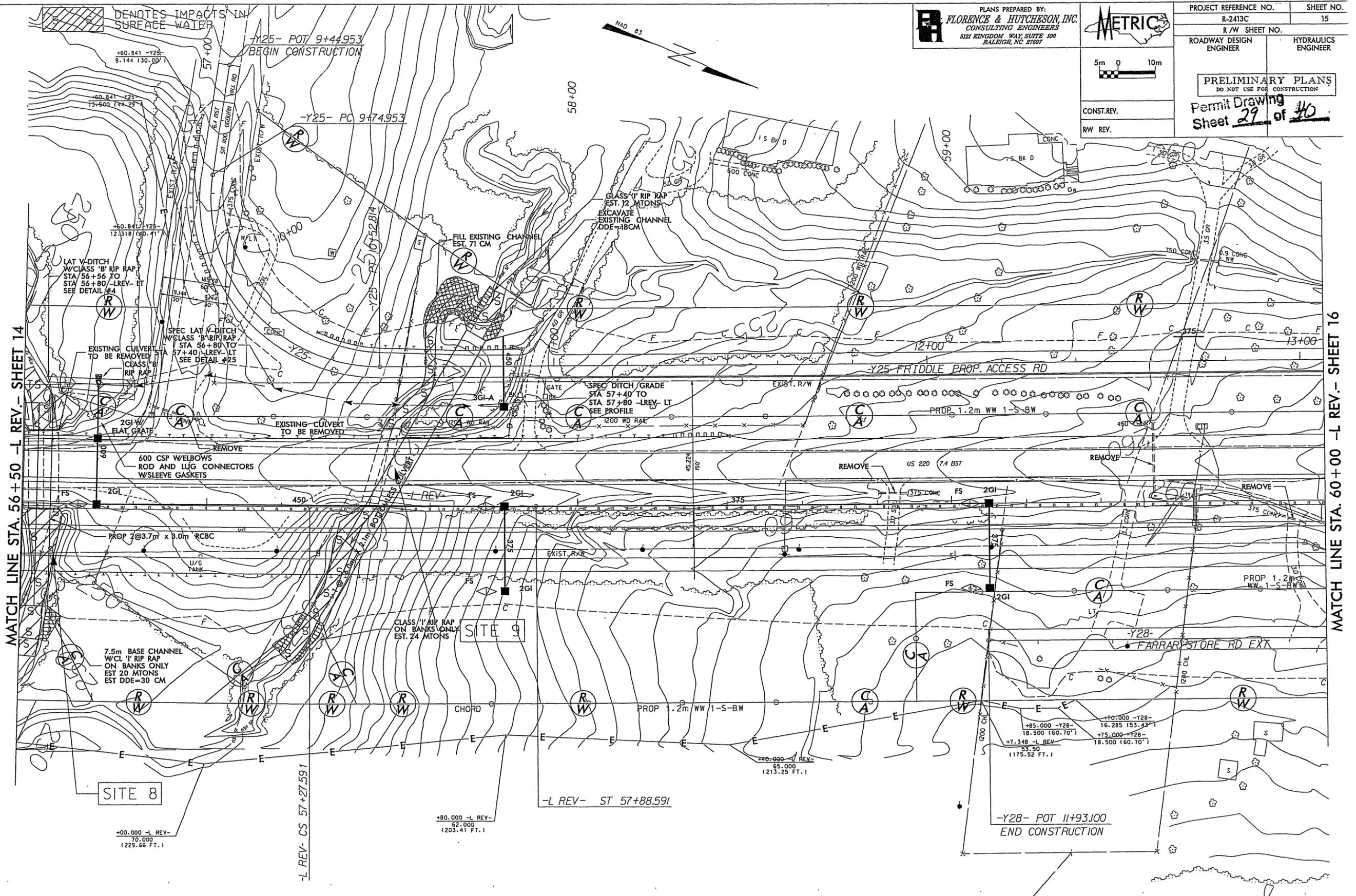
CONST. REV.
 RW REV.

| | |
|---|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 15 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 28 of 40 | |

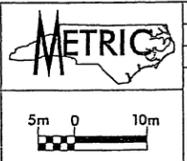
SEE SHEETS 40 & 41 FOR -L REV- PROFILE
 SEE SHEET 70 FOR -Y25- PROFILE
 SEE SHEET 69 FOR -Y28- PROFILE
 SEE SHEET 82 FOR XOVRRH PLAN & PROFILE
 SEE SHEETS 2-F & 2-G FOR DITCH DETAILS

110309 - PARCEL 35 ADDED TEMPORARY CONSTRUCTION EASEMENT
 110309 - PARCEL 42 ADDED TEMPORARY CONSTRUCTION EASEMENT

FILES
 STIMES
 DRIVER: SPIDRIVUS
 TABLE: #PRINTLLE



PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
 CONSULTING ENGINEERS
 521 KINGDOM WAY, SUITE 100
 RALEIGH, NC 27607

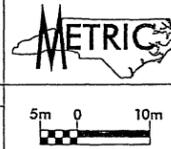


| | |
|---|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 15 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet <u>29</u> of <u>40</u> | |
| CONST. REV. | |
| R/W REV. | |

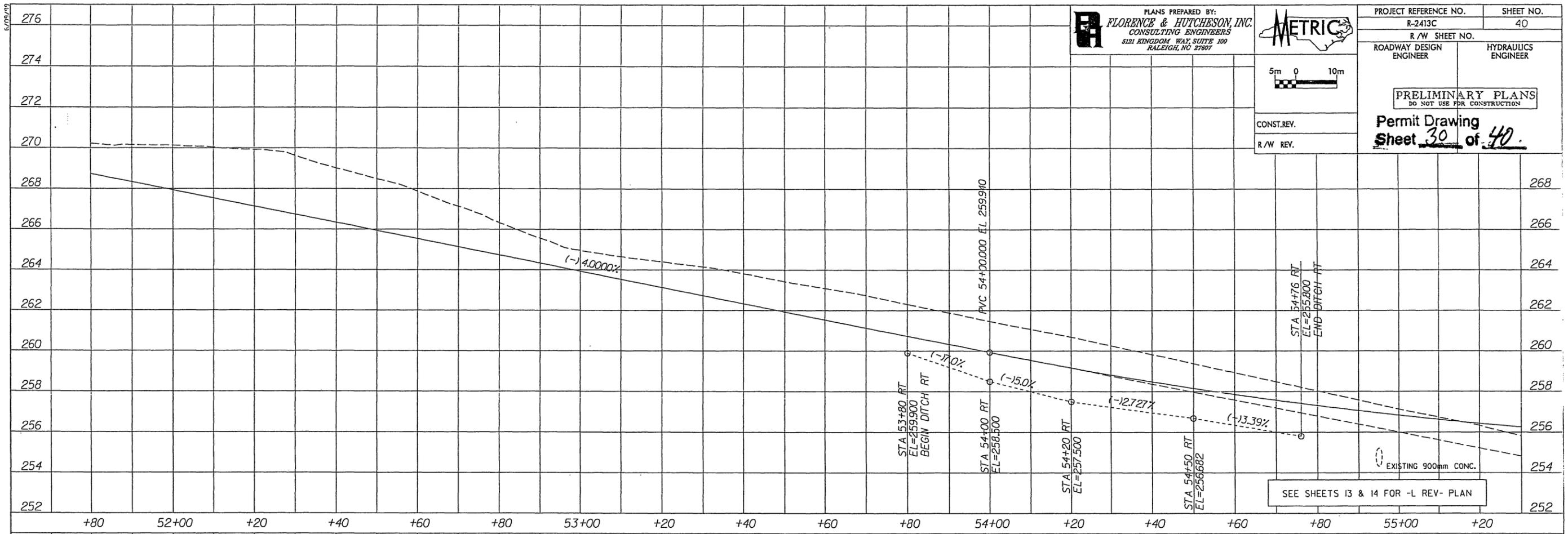
MATCH LINE STA. 56+50 -L REV- SHEET 14

MATCH LINE STA. 60+00 -L REV- SHEET 16

SEE SHEETS 40 & 41 FOR -L REV- PROFILE
 SEE SHEET 70 FOR -Y25- PROFILE
 SEE SHEET 69 FOR -Y28- PROFILE
 SEE SHEET 82 FOR XOVRRH PLAN & PROFILE
 SEE SHEETS 2-F & 2-G FOR DITCH DETAILS



CONST. REV.
 R/W REV.



BM #15 RR SPIKE IN BASE OF 610 MM OAK
 13.0 M RT OF -L- STA 56+63.60
 EL = 256.945

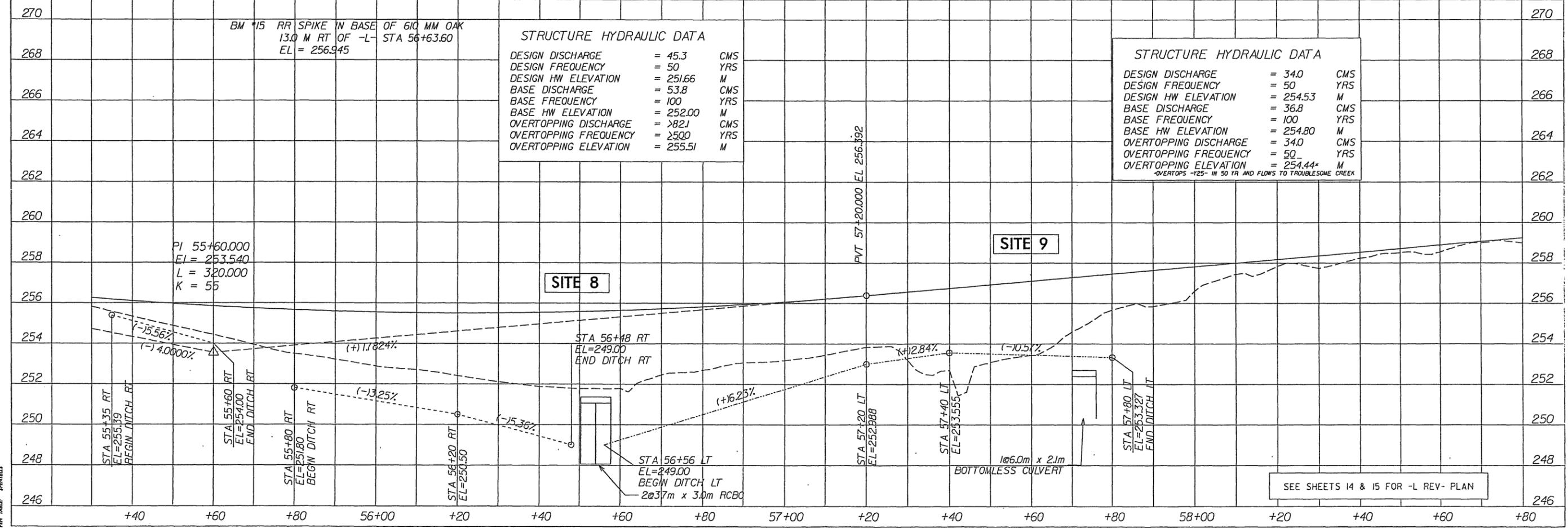
STRUCTURE HYDRAULIC DATA

| | | |
|-----------------------|----------|-----|
| DESIGN DISCHARGE | = 45.3 | CMS |
| DESIGN FREQUENCY | = 50 | YRS |
| DESIGN HW ELEVATION | = 251.66 | M |
| BASE DISCHARGE | = 53.8 | CMS |
| BASE FREQUENCY | = 100 | YRS |
| BASE HW ELEVATION | = 252.00 | M |
| OVERTOPPING DISCHARGE | = >82.1 | CMS |
| OVERTOPPING FREQUENCY | = >500 | YRS |
| OVERTOPPING ELEVATION | = 255.51 | M |

STRUCTURE HYDRAULIC DATA

| | | |
|-----------------------|-----------|-----|
| DESIGN DISCHARGE | = 34.0 | CMS |
| DESIGN FREQUENCY | = 50 | YRS |
| DESIGN HW ELEVATION | = 254.53 | M |
| BASE DISCHARGE | = 36.8 | CMS |
| BASE FREQUENCY | = 100 | YRS |
| BASE HW ELEVATION | = 254.80 | M |
| OVERTOPPING DISCHARGE | = 34.0 | CMS |
| OVERTOPPING FREQUENCY | = 50 | YRS |
| OVERTOPPING ELEVATION | = 254.44* | M |

*OVERTOPS -125" IN 50 YR AND FLOWS TO TROUBLESOME CREEK



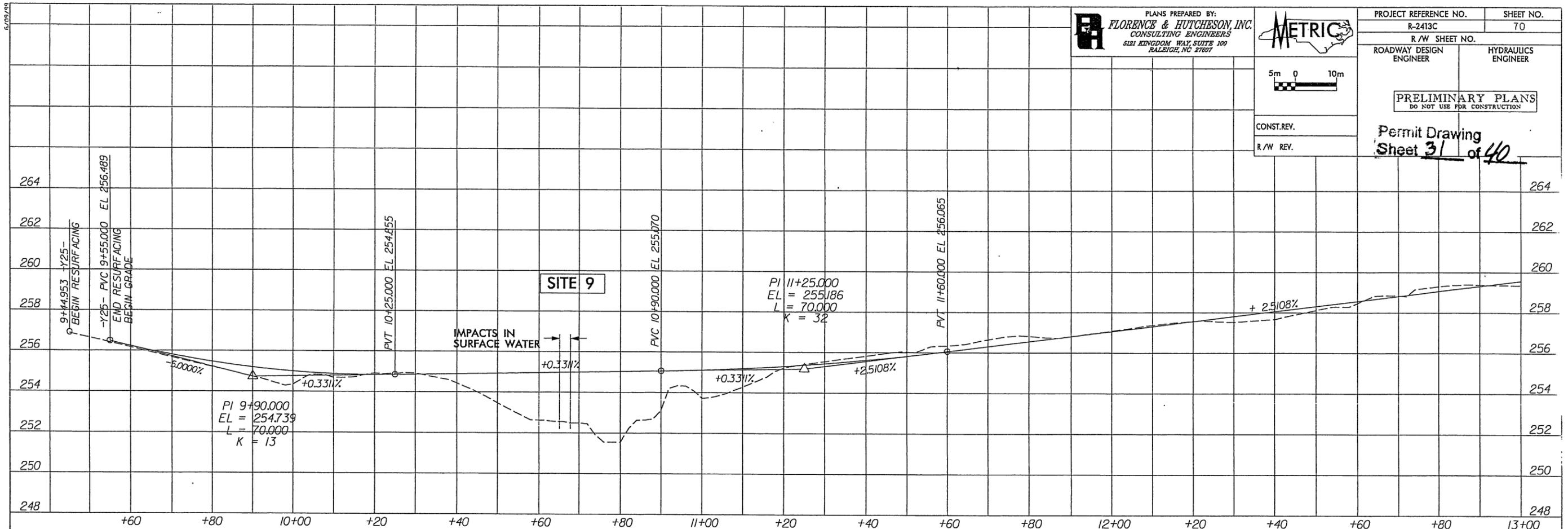
FILE: SFILES
 PRINT: 1/11/07
 PLOT: 1/11/07
 PEN: 1/11/07



CONST. REV.
R/W REV.

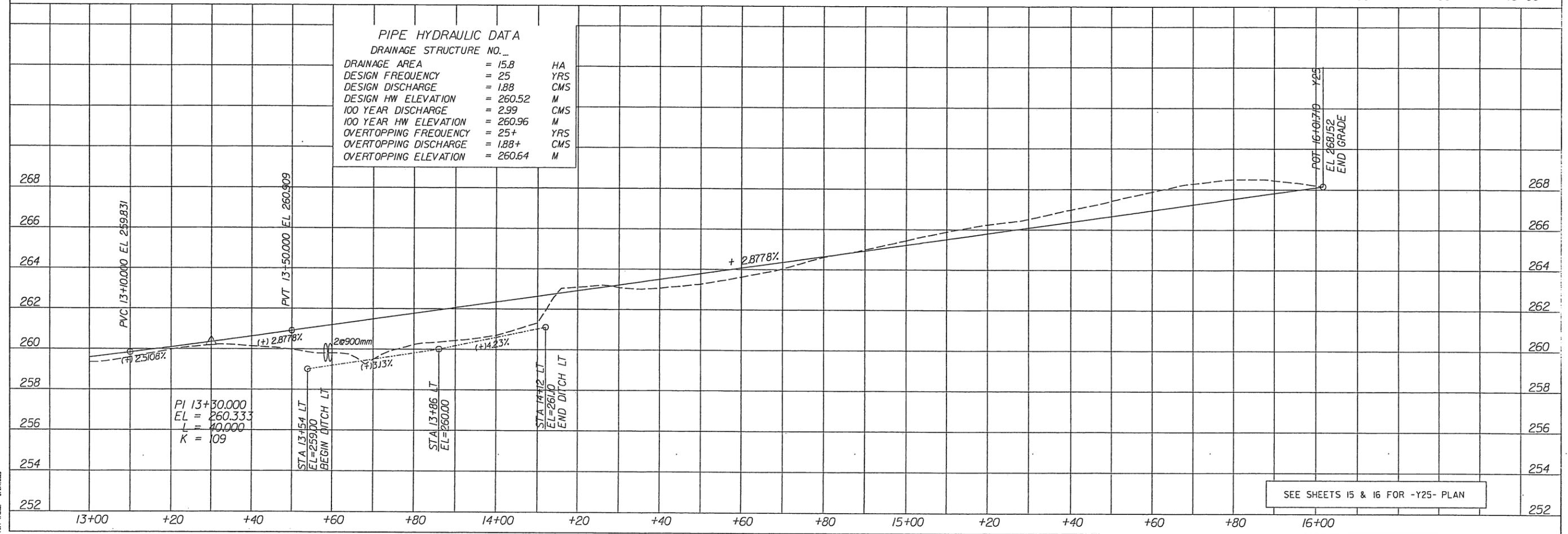
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 31 of 40



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. ...

| | | |
|-----------------------|----------|-----|
| DRAINAGE AREA | = 15.8 | HA |
| DESIGN FREQUENCY | = 25 | YRS |
| DESIGN DISCHARGE | = 1.88 | CMS |
| DESIGN HW ELEVATION | = 260.52 | M |
| 100 YEAR DISCHARGE | = 2.99 | CMS |
| 100 YEAR HW ELEVATION | = 260.96 | M |
| OVERTOPPING FREQUENCY | = 25+ | YRS |
| OVERTOPPING DISCHARGE | = 1.88+ | CMS |
| OVERTOPPING ELEVATION | = 260.64 | M |



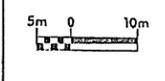
FILE: 151115.DWG
 DATE: 11/11/15
 DRAWN: J. SPENTHALL
 CHECKED: J. SPENTHALL

RECEIVED
 JUL 28 2011
 Regulatory Branch

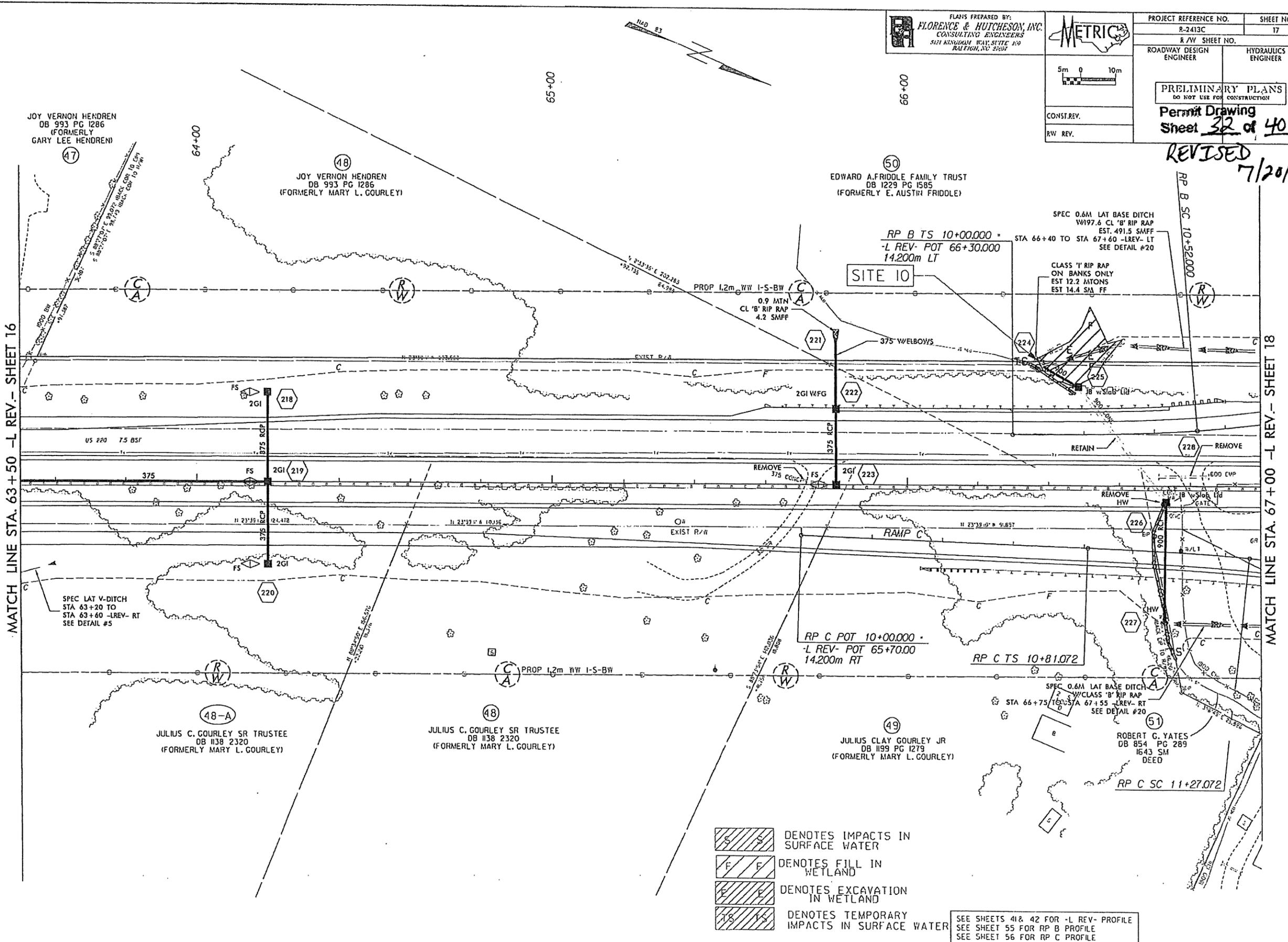
PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
 CONSULTING ENGINEERS
 5121 KENNEDY WAY, SUITE 100
 RALEIGH, NC 27607



| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 17 |
| R/W SHEET NO. | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER | |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet <u>32</u> of <u>40</u> | |
| CONST. REV. | |
| R/W REV. | |



REVISED
 7/20/11



MATCH LINE STA. 63+50 -L REV.- SHEET 16

MATCH LINE STA. 67+00 -L REV.- SHEET 18

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

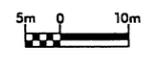
SEE SHEETS 41 & 42 FOR -L REV- PROFILE
 SEE SHEET 55 FOR RP B PROFILE
 SEE SHEET 56 FOR RP C PROFILE

FILE: 20110728
 DATE: 07/28/11
 PLOT DRIVER: SPENTON/MS
 PEN TABLE: SPENTON/MS

PLANS PREPARED BY:
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 521 KINGDOM WAY, SUITE 100
 RALEIGH, NC 27607



| | |
|----------------------------------|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 17 |
| R/W SHEET NO. | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER | |



PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

Permit Drawing
 Sheet 33 of 40

JOY VERNON HENDREN
 DB 993 PG 1286
 (FORMERLY GARY LEE HENDREN)

JOY VERNON HENDREN
 DB 993 PG 1286
 (FORMERLY MARY L. GOURLEY)

EDWARD A. FRIDDLE FAMILY TRUST
 DB 1229 PG 1585
 (FORMERLY E. AUSTIN FRIDDLE)

JULIUS C. GOURLEY SR TRUSTEE
 DB 1138 2320
 (FORMERLY MARY L. GOURLEY)

JULIUS C. GOURLEY SR TRUSTEE
 DB 1138 2320
 (FORMERLY MARY L. GOURLEY)

JULIUS CLAY GOURLEY JR
 DB 1199 PG 1279
 (FORMERLY MARY L. GOURLEY)

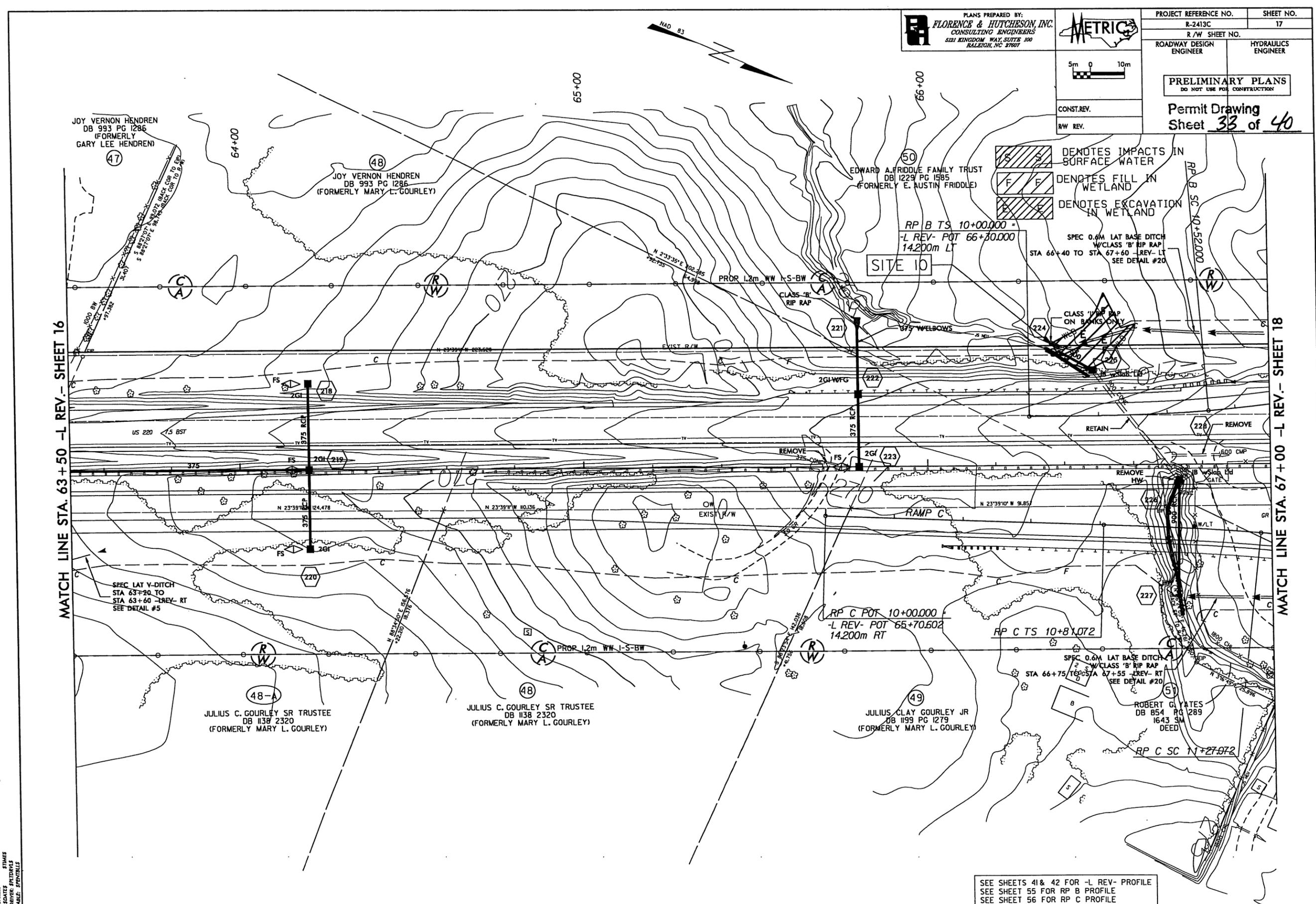
ROBERT G. YATES
 DB 854 PG 289
 1643 SM DEED

SEE SHEETS 41 & 42 FOR -L REV- PROFILE
 SEE SHEET 55 FOR RP B PROFILE
 SEE SHEET 56 FOR RP C PROFILE

FILE: SHEETS
 STIMMER
 PLOT DRIVERS: FRITZDRAWS
 PEN TABLE: SPENDBLBS

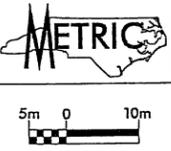
MATCH LINE STA. 63+50 -L REV- SHEET 16

MATCH LINE STA. 67+00 -L REV- SHEET 18

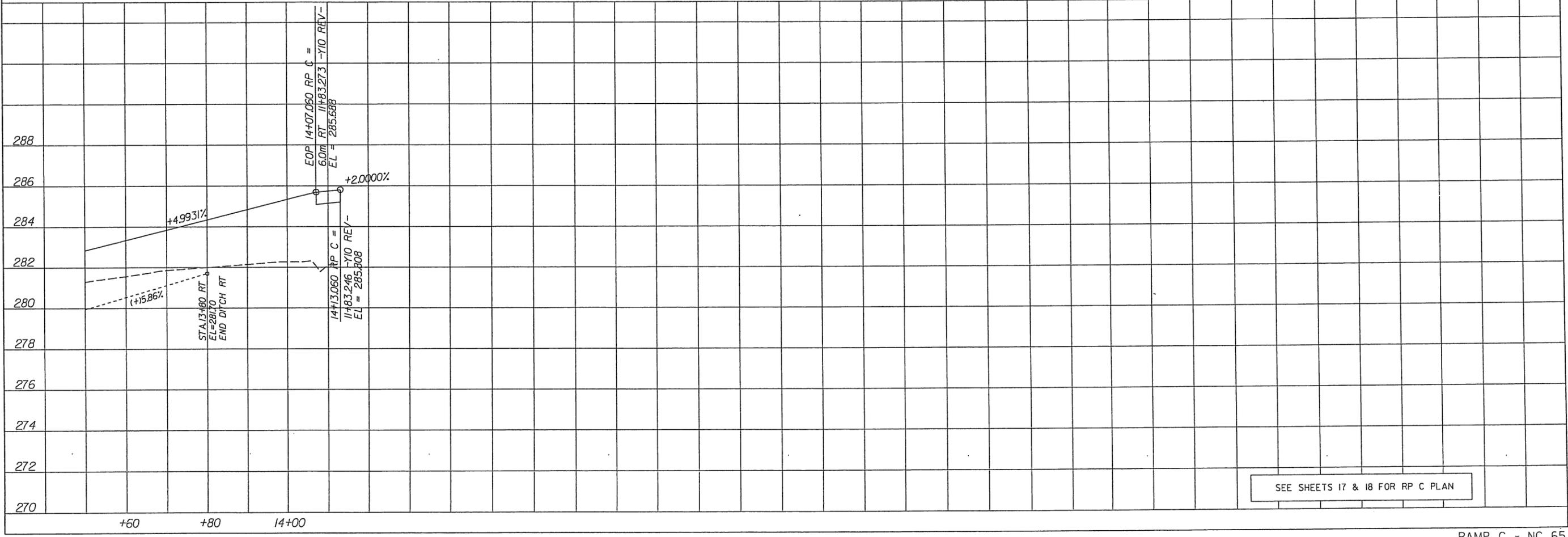
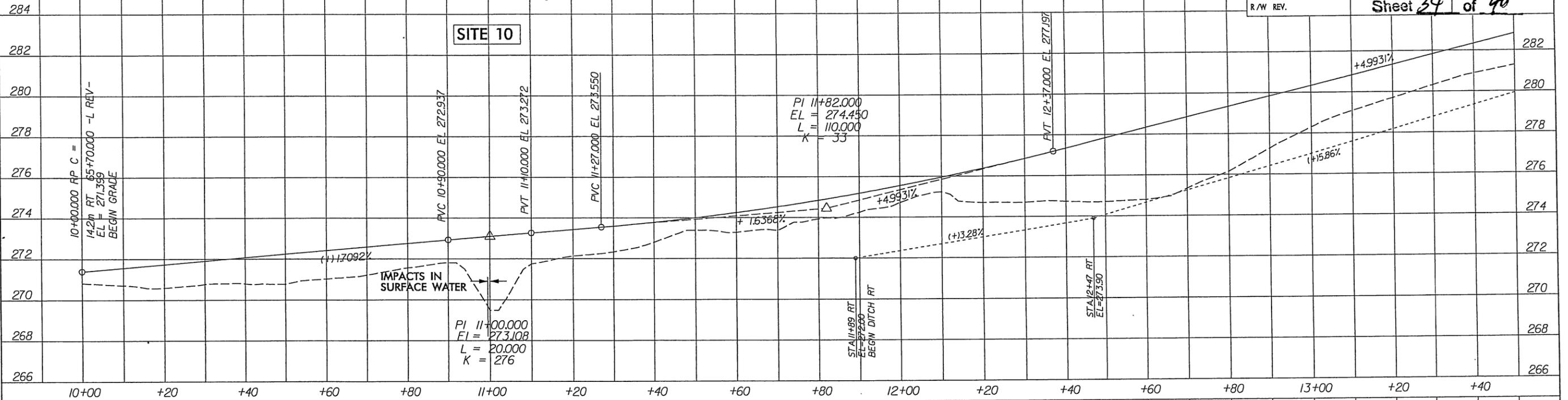


6/09/99

PLANS PREPARED BY:
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CONSULTING ENGINEERS
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RALEIGH, NC 27607



| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 56 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 34 of 40 | |
| CONST. REV. | |
| R/W REV. | |



SEE SHEETS 17 & 18 FOR RP C PLAN

FILE SPELX
DATE SOURCE
NOT FOR
FOR DATE

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Regulatory Branch

RECEIVED

JUL 28 2011

Regulatory Branch

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CONSULTING ENGINEERS
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RALEIGH, NC 27607

METRIC

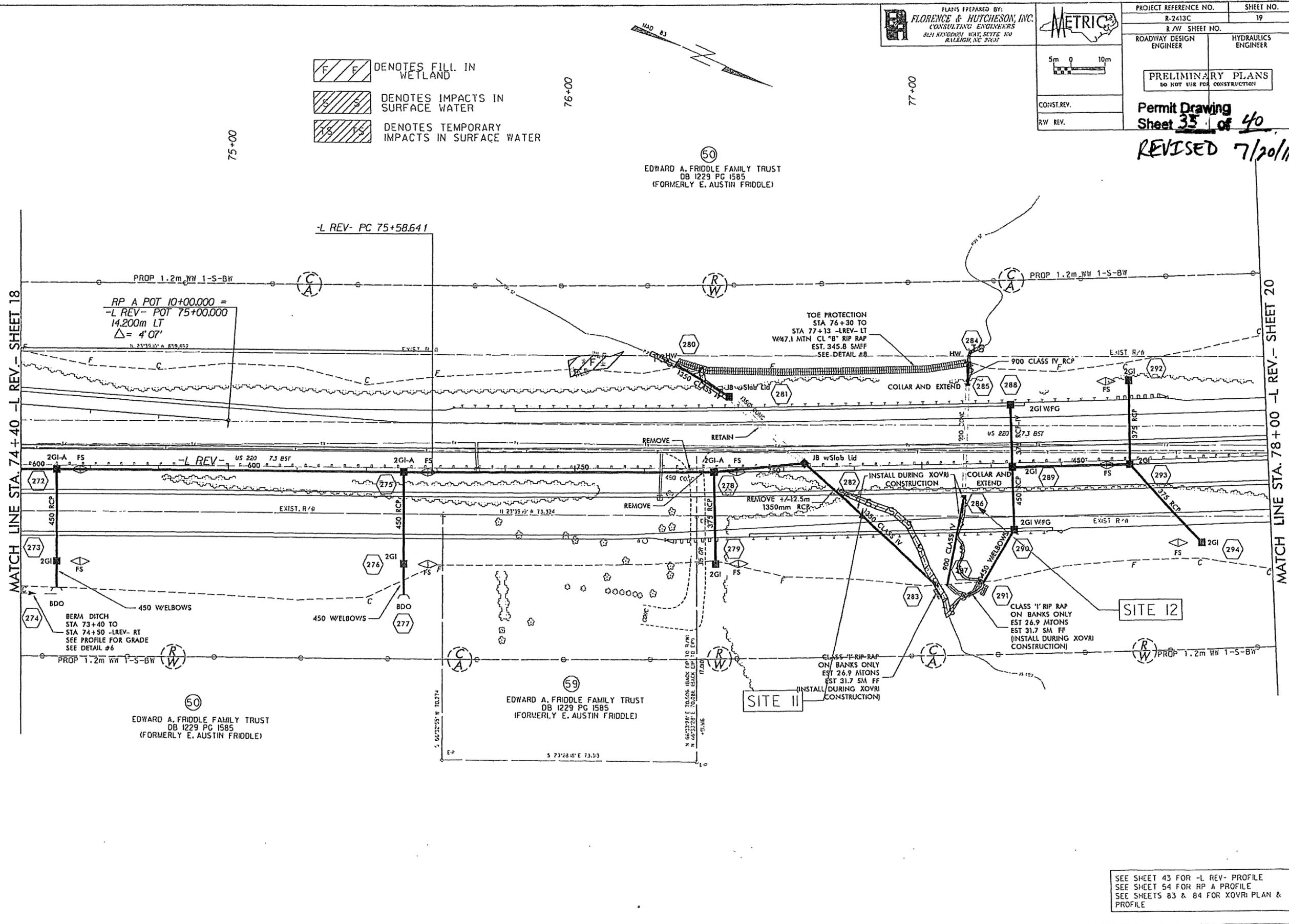
5m 0 10m

CONST. REV.
RW REV.

| | |
|---|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 19 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION! | |
| Permit Drawing Sheet 35 of 40 | |

REVISED 7/20/11

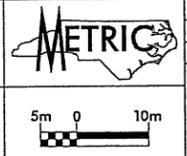
- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



FILE: STUBS
DATE: 5/24/11
PLOT DRIVER: BK/TOMAS
PEN TABLE: SPRINGFIELD

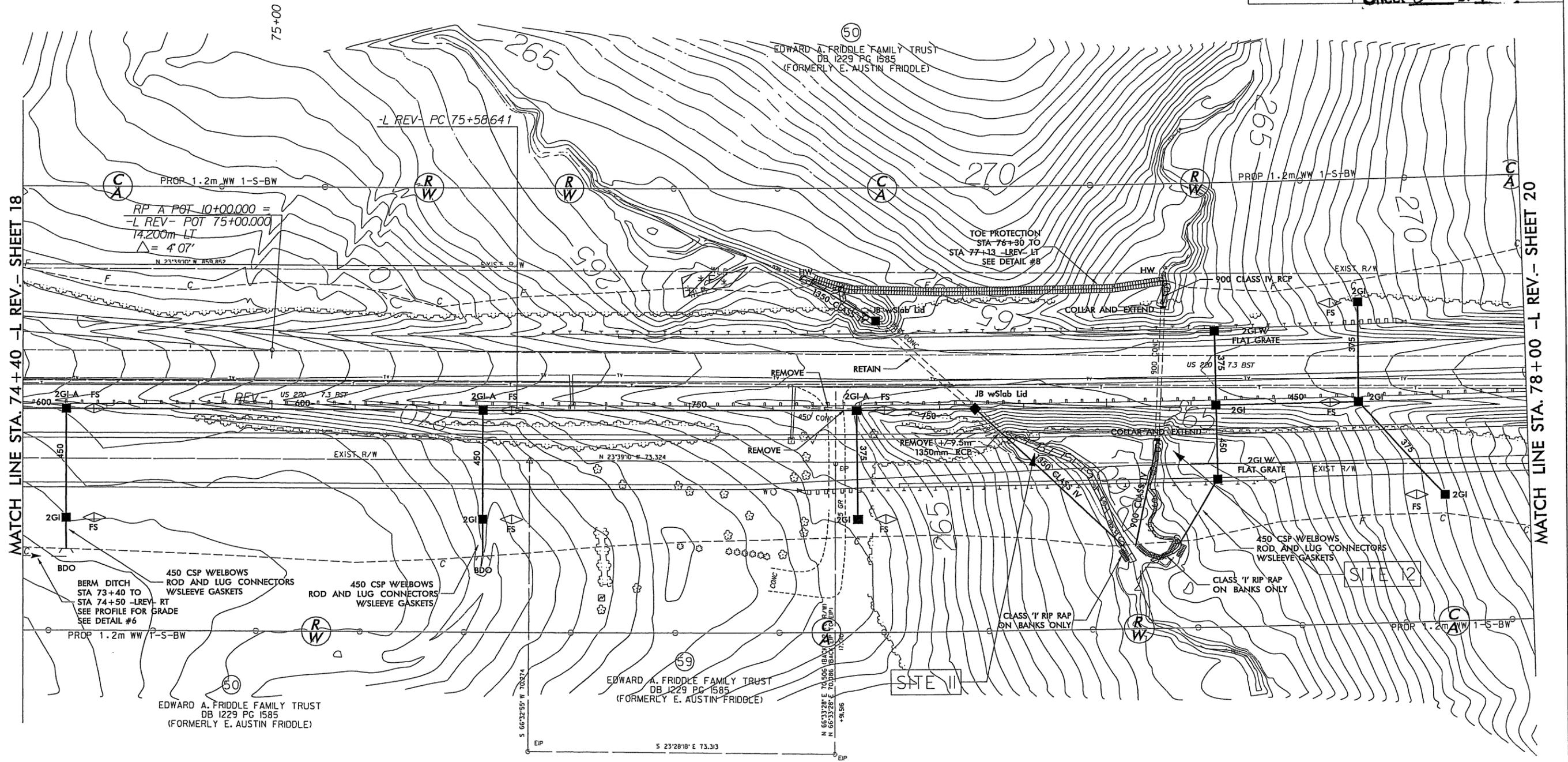
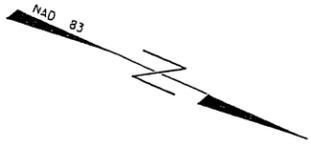
SEE SHEET 43 FOR -L REV- PROFILE
SEE SHEET 54 FOR RP A PROFILE
SEE SHEETS 83 & 84 FOR XOVRI PLAN & PROFILE

PLANS PREPARED BY:
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 CONSULTING ENGINEERS
 5121 KINGDOM WAY, SUITE 100
 RALEIGH, NC 27607



| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 19 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet 36 of 40 | |
| CONST. REV. | |
| R/W REV. | |

DENOTES FILL IN WETLAND
 DENOTES IMPACTS IN SURFACE WATER



MATCH LINE STA. 74+40 -L REV- SHEET 18

MATCH LINE STA. 78+00 -L REV- SHEET 20

E. FILES
 DE. SOINGS, EIT/PAVS
 M. TABLE, SP/ENTRALS

SEE SHEET 43 FOR -L REV- PROFILE
 SEE SHEET 54 FOR RP A PROFILE
 SEE SHEETS 83 & 84 FOR XOVRI PLAN & PROFILE

RECEIVED

JUL 28 2011

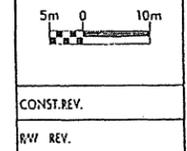
Regulatory Branch

5/5 DENOTES IMPACTS IN SURFACE WATER
1/5 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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521 KINGDOM WAY, SUITE 101
RALEIGH, NC 27607



| | |
|--|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 21 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Permit Drawing Sheet <u>37</u> of <u>40</u> | |
| REVISED 7/20/11 | |



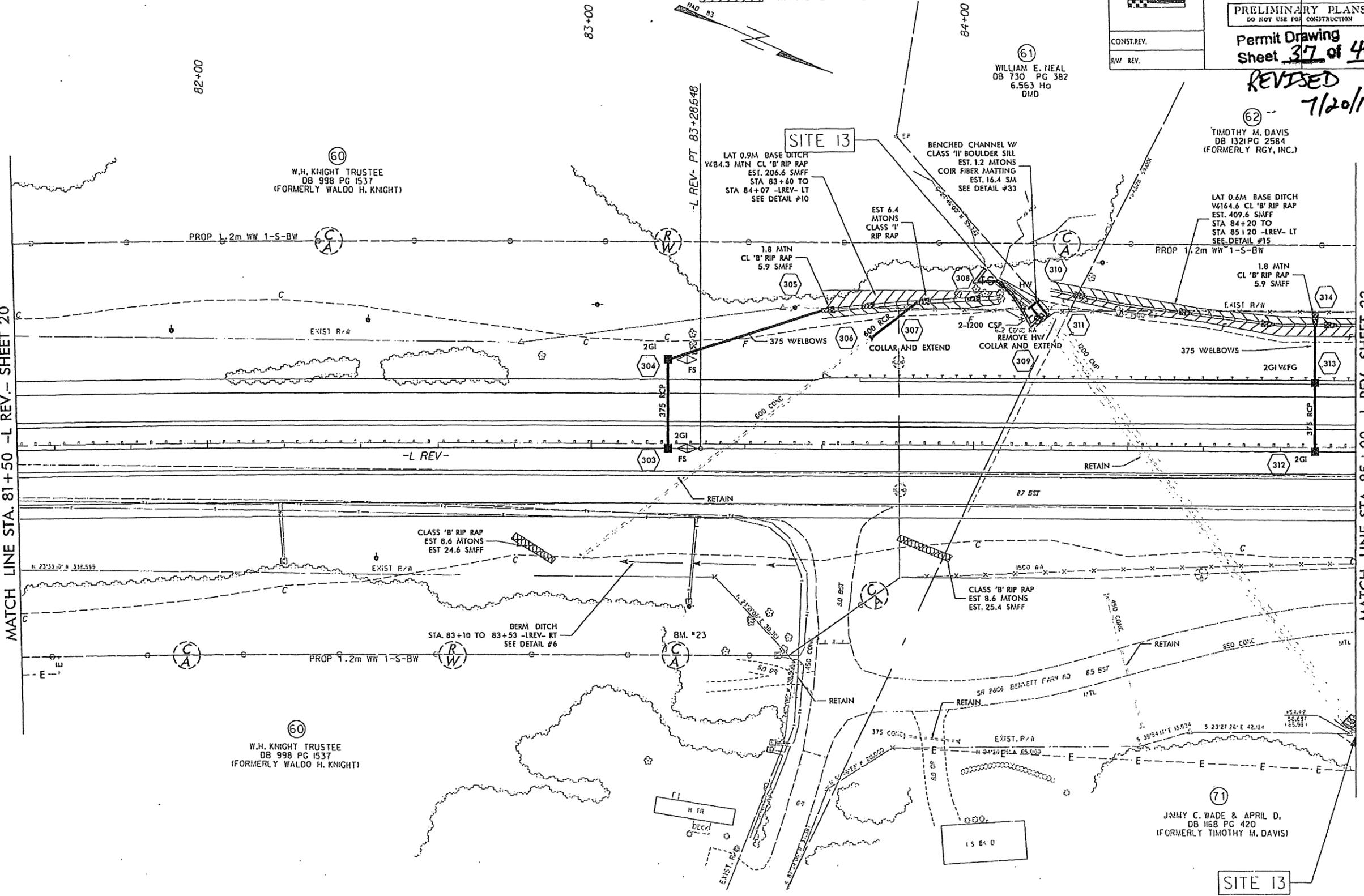
CONST. REV.
RW. REV.

61
WILLIAM E. NEAL
DB 730 PG 382
6.563 Ho
DMD

62
TIMOTHY M. DAVIS
DB 1321 PG 2584
(FORMERLY RGY, INC.)

MATCH LINE STA. 81+50 -L REV.- SHEET 20

MATCH LINE STA. 85+00 -L REV.- SHEET 22



60
W.H. KNIGHT TRUSTEE
DB 998 PG 1537
(FORMERLY WALDO H. KNIGHT)

60
W.H. KNIGHT TRUSTEE
DB 998 PG 1537
(FORMERLY WALDO H. KNIGHT)

71
JIMMY C. WADE & APRIL D.
DB 168 PG 420
(FORMERLY TIMOTHY M. DAVIS)

SITE 13

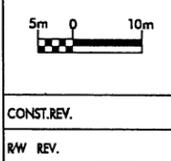
SEE SHEETS 43 & 44 FOR -L REV- PROFILE
SEE SHEET 85 FOR XOVRI PLAN & PROFILE

FILE: SFILES
DATE: 5/24/11
PLOT DRIVER: PLOTDRIVER
PEN TABLE: JPC001

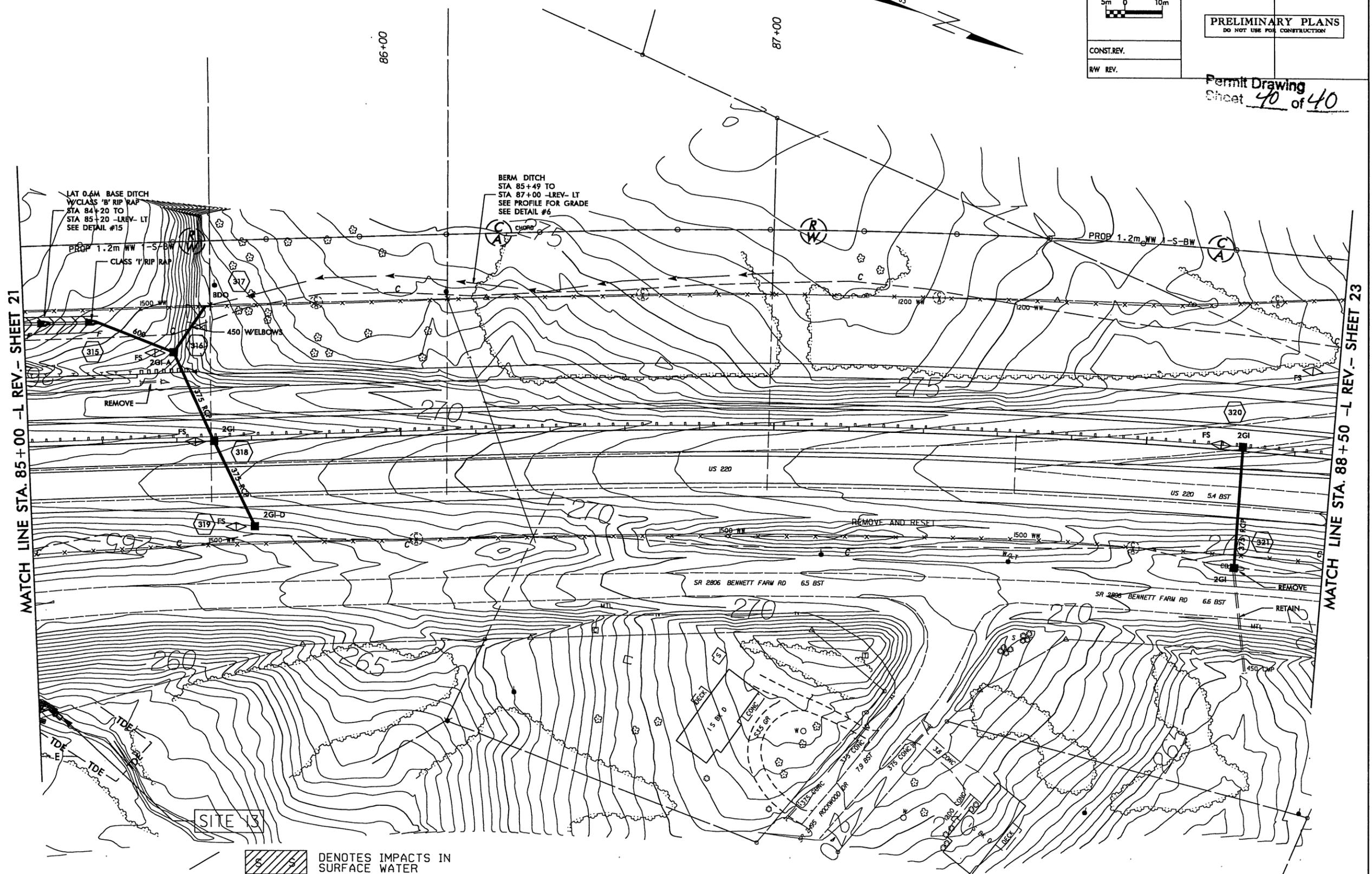
PLANS PREPARED BY:
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 CONSULTING ENGINEERS
 501 KINGDOM WAY, SUITE 100
 RALEIGH, NC 27607



| | |
|---|---------------------|
| PROJECT REFERENCE NO. R-2413C | SHEET NO. 22 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |



Permit Drawing
 Sheet 40 of 40



DENOTES IMPACTS IN SURFACE WATER

SEE SHEETS 44 & 45 FOR -L REV- PROFILE

FILE, STILES
 PLOT DRIVE, SPIDWAYS
 PEN TABLE, SPIDWAYS

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS



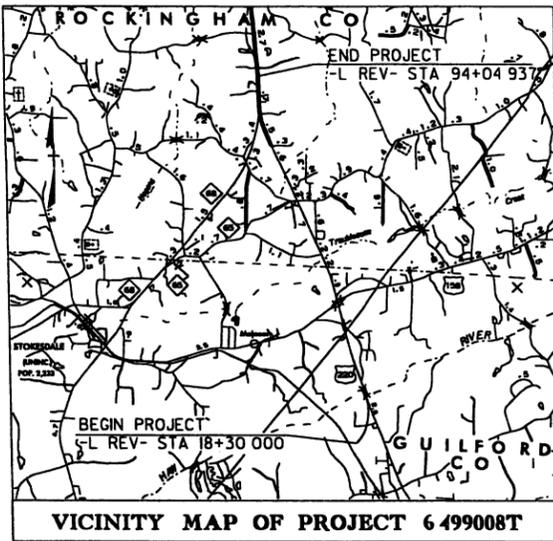
| | |
|---------|----------|
| TIP NO | SHEET NO |
| R-2413C | PO-1 |

Utility Permit Drawings

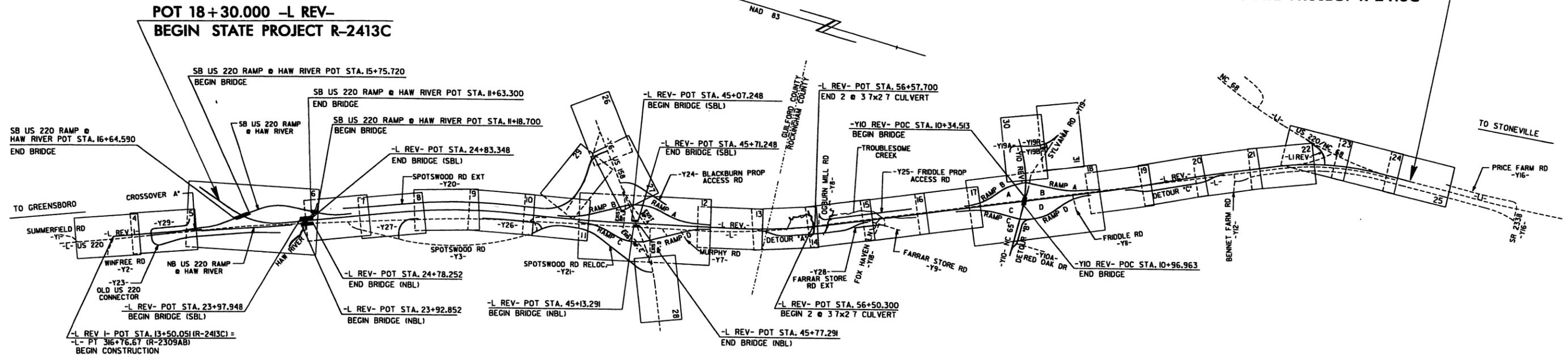
Permit Drawing
Sheet 1 of 3

PERMIT DRAWINGS
GUILFORD-ROCKINGHAM
COUNTIES

LOCATION: US 220 FROM SOUTH FO HAW RIVER TO THE INTERSECTION OF US 220 AND EXISTING NC 68
TYPE OF WORK: PDEA PERMIT



POT 94+04.937 -L REV- =
ST 23+08.747 -L1-
END STATE PROJECT R-2413C

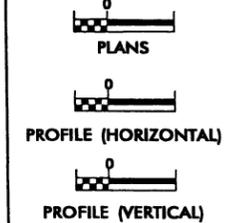


NCDOT CONTACT: B. DOUG TAYLOR, P.E., PROJECT ENGINEER
MALCOLM WATSON, P.E., PROJECT DESIGN ENGINEER

NOTE: THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS LIMITED TO INTERCHANGES

TIP PROJECT: R-2413C

GRAPHIC SCALES



INDEX OF SHEETS

| SHEET NO. | DESCRIPTION |
|-----------|----------------|
| PO-1 | TITLE SHEET |
| PO-2 | PERMIT DRAWING |

WATER AND SEWER OWNERS ON PROJECT

- (1) DUKE ENERGY
- (2) AT&T
- (3) BELLSOUTH
- (4) CATV



PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES ENGINEERING
SECTION

1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

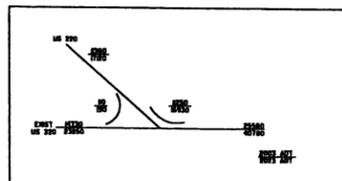
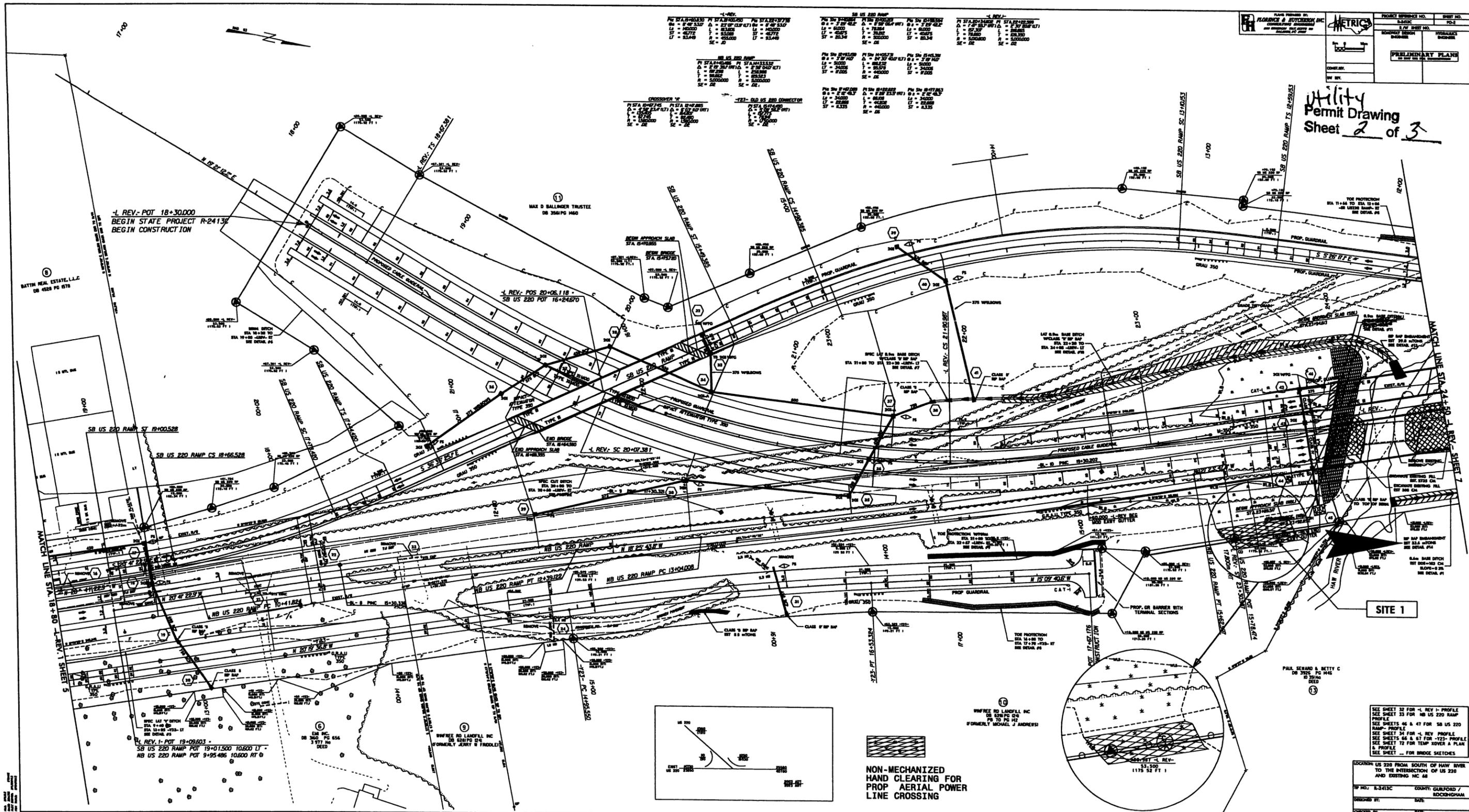
Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Steve McKee, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
Johgre Hinton UTILITIES PROJECT DESIGNER

UTILITIES PERMIT PLAN SHEET

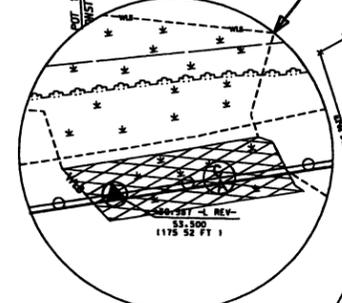
| | | |
|--------------|-----------------------|--------------------|
| | PROJECT REFERENCE NO. | SHEET NO. |
| | DATE | NO. |
| | ROADWAY DESIGN | HYDRAULIC ENGINEER |
| | PRELIMINARY PLANS | |
| CONTRACT NO. | | |
| BY DATE | | |

Utility Permit Drawing Sheet 2 of 3

| -1-REV- | | -1-REV- | | -1-REV- | |
|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| PC STA 18+00.00 | PT STA 18+00.00 | PC STA 18+00.00 | PT STA 18+00.00 | PC STA 18+00.00 | PT STA 18+00.00 |
| Δ = 27° 00' 00" (L) |
| L = 40.00 |
| ST = 31.49 |
| SE = 0.00 |



NON-MECHANIZED HAND CLEARING FOR PROP AERIAL POWER LINE CROSSING



SEE SHEET 32 FOR -1- REV 1- PROFILE
SEE SHEET 33 FOR NB US 220 RAMP PROFILE
SEE SHEETS 46 & 47 FOR SB US 220 RAMP PROFILE
SEE SHEET 54 FOR -1- REV PROFILE
SEE SHEETS 55 & 57 FOR -122- PROFILE
SEE SHEET 72 FOR TEMP COVER A PLAN & PROFILE
SEE SHEET ... FOR BRIDGE SKETCHES

LOCATION US 220 FROM SOUTH OF HAW RIVER TO THE INTERSECTION OF US 220 AND EXISTING NC 48
 PROJECT NO. 8-2413C
 COUNTY: GUILFORD / ROCKINGHAM
 DESIGNED BY: DATE:
 CHECKED BY: DATE:

UTILITIES IMPACT SUMMARY SHEET

| WETLAND PERMIT IMPACT SUMMARY | | | | | | | | | | | | | | | | |
|-------------------------------|-------------------|-----------------------|---------------------------------|----------------------------|-----------------------------|--------------------------------------|--------------------------------|---------------------------|----------------------|---|------------------------------------|----------------------------|--|--|--|--|
| Site No | Station (From/To) | Structure Size / Type | WETLAND IMPACTS | | | | SURFACE WATER IMPACTS | | | | | | | | | |
| | | | Permanent Fill In Wetlands (ac) | Temp Fill In Wetlands (ac) | Excavation in Wetlands (ac) | Mechanized Clearing in Wetlands (ac) | Hand Clearing in Wetlands (ac) | Permanent SW impacts (ac) | Temp SW impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp (ft) | Natural Stream Design (ft) | | | | |
| 1 | 24+10/26+23 -L- | UTILITIES | | | | | | 0.011 | | | | | | | | |
| | | | | | | | | | | | | | | | | |
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| TOTALS: | | | | | | | | 0.011 | | | | | | | | |

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILDFORD-ROCKINGHAM COUNTIES
 WBS - 34429 1 1 (R-2413C)
Utility 3 of 3
 SHEET