STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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February 19, 2004

United States Army Corps of Engineers
6508 Falls of the Neuse Road, Suite 120
Raleigh, NC 27615

Attn: Mr. Eric C. Alsmeyer
NCDOT Regulatory Coordinator

Dear Sir:

Subject: Application for Modification to Section 404 and Section 401 permits and Neuse Buffer Certificate for the Knightdale Bypass--US 64 from I-440 (Raleigh Beltline) to existing US 64 near SR 1003, I-440 from 0.83 mile south of US 64 to Poole Road and a portion of the East Wake Expressway from existing US 64 to the proposed US 64 Bypass in Wake County. State Project No. 8.142202, Federal Aid Project No. NHF-DPI-0199 (004), TIP No. R-2547 and R-2641, $200.00 Debit Work Order 8.142202, WBS Element 34455.1.7. NCDENR-DWQ Water Quality Certification Project No. 011689 and USACE Action ID 200220819.

The North Carolina Department of Transportation (NCDOT) proposes to construct a new controlled-access six-lane, divided highway to be known as the Knightdale Bypass. The new location of the project consists of the Bypass (R-2547), which would extend from I-440 (Raleigh Beltline) to existing US 64 near SR 1003, and a portion of the Eastern Wake Expressway (R-2641) from existing US 64 to the proposed Bypass. The project also includes the widening of I-440 from 0.83 miles south of US 64 to Poole Road. The North Carolina Department of Environment and Natural Resources, Division of Water Quality (NCDENR-DWQ) issued a Section 401 Water Quality Certificate and a certification under the Neuse River Buffer Rules on April 10, 2002. The United States Army Corps of Engineers (USACE) issued a Section 404 permit on April 25, 2002. The project has been let and construction has begun.

The purpose of this submittal is to request a modification to the Section 404 permit, Section 401 Water Quality Certificate and the Neuse Buffer Certification, specifically for section BB, C, and CC. Please note that many of the permit sites have been completed or are under construction and this submittal serves in these instances as an after the fact

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modification request. This document addresses two separate issues: (1) the discrepancies between current construction plans and permit drawings of record or construction plans which were submitted and approved as part of the original permit application, and (2) the permit violations associated with the construction of Site 4 (Poplar Branch) and Site 10 (Mark's Creek) in Section C.

The revised design does not compromise NCDOT's compliance with the existing permit conditions. The new impact sites have been evaluated for compliance with the avoidance/minimization criteria and are in compliance with all previous permit issues, including the following:

- Protected Species
- Aquatic Life passage
- FEMA compliance
- Cultural Resources

Summary of Impact Changes:

A summary of the revised impact quantities is included as Table 1. This table presents impacts from the original NCDOT permit application and impacts based on the revised design. Overall changes in impacts are summarized below.

Quantities due to necessary design changes:

- Fill and mechanized clearing in wetlands have been reduced by 0.28 acres.
- Buffer zone 1 impacts have been reduced by 0.88 acres.
- Buffer zone 2 impacts have been reduced by 0.60 acres.
- Jurisdictional stream impacts have increased by 59 feet.

Quantities due to permit violations at Site 4 and Site 10 of Section C[1]:

- Temporary fill in wetlands has been increased by 0.71 acres.
- Buffer zone 1 impacts have been increased by 0.53 acres.
- Buffer zone 2 impacts have been increased by 0.56 acres.

[1]Please note that a portion of these impacts in the riparian buffer (i.e. hand clearing) was previously permitted by the NCDENR-DWQ (NCDENR-DWQ permit modification dated March 21, 2003).

Table 1. Comparison of Impacts between Original Design and Revised Design

PROJECT SECTION	WETLAND IMPACTS				SURFACE WATER IMPACTS						BUFFER IMPACTS	
	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Relocated Channel (ft)	Enclosed Channel (ft)	Zone 1 (ac)	Zone 2 (ac)
R-2547 TOTAL IMPACTS FROM ORIGINAL APPLICATION												
SECTION BB	2.62	0.00	0.00	0.22	0.07	7.61	0.10	1037	0	482	3.61	1.95
SECTION C	5.15	0.00	0.05	0.72	0.20	2.43	0.00	3212	719	2057	7.24	4.41
SECTION CC	0.33	0.00	0.00	0.30	1.07	0.00	0.00	3635	919	2448	4.78	3.28
TOTAL	8.10	0.00	0.05	1.24	1.34	10.04	0.10	7884	1637	4987	15.63	9.64
R-2547 TOTAL IMPACTS BASED ON REVISED DESIGN												
SECTION BB	2.62	0.00	0.00	0.22	0.07	7.61	0.00	1037	0	482	3.62	1.95
SECTION C	5.14	0.71	0.05	0.72	0.20	2.43	0.00	3212	719	2057	7.15	4.55
SECTION CC	0.29	0.00	0.00	0.07	1.13	0.00	0.00	3694	948	2231	4.51	3.10
TOTAL	8.05	0.71	0.05	1.01	1.40	10.04	0.00	7943	1667	4770	15.28	9.60
DIFFERENCE IN TOTALS: acre/feet	-0.05	+ 0.71	0.00	-0.23	+ 0.06	0.00	-0.10	+ 59	+ 30	-217	-0.35	-0.04
(-) INDICATES A REDUCTION IN IMPACTS												
(+) INDICATES AN INCREASE IN IMPACTS												

Summary of Mitigation:

Every effort throughout the design process has been made to avoid and minimize the impacts to jurisdictional waters of the United States and riparian buffer zones. Detailed descriptions of these actions are presented elsewhere in this modification.

The new impact totals resulting from the discrepancies between current construction plans and permit drawings or construction plans submitted and approved as part of the original permit application and the violations at Sites 4 and 10 on Section C necessitate a reevaluation of compensatory mitigation. The new impact quantities, which affect mitigation, can be summarized as follows:

- Fill and mechanized clearing in wetlands has been reduced by 0.28 acres.
- Jurisdictional stream impacts increased by 59 feet. These impacts at the rate of $125 per linear foot result in $7,375 in additional costs.
- Buffer impacts have decreased in Zone 1 by 0.35 acres and in Zone 2 by 0.04 acres. This reduction is presented below:

Table 2. Summary of Neuse Buffer Impacts and Mitigation

Section	Zone 1 Impact Reduction (ac)	Zone 2 Impact Reduction (ac)		Zone 1 Mitigation Reduction*	Zone 2 Mitigation Reduction*	Total	Cost Reduction
				3:1	1.5:1		
R-2547BB	- 0.01	0		- 0.03	0	-0.03	-1,248.75
R-2547C & D	0.09	-0.14		0.27	-0.21	0.06	2,497.5
R-2547CC	0.27	0.18		0.81	0.27	1.08	44,955.00
TOTAL	0.35	0.04		1.05	0.06	1.11	$46,203.75

* Figures reflect total AFTER using multipliers ($41,625 per acre)

Construction of the project based on the revised design has resulted in an increase to stream impacts and a reduction to riparian buffer impacts. The NCDOT has previously made payment to the Wetland Restoration Program to offset construction impacts associated with this project. The NCDOT respectfully submits that the mitigation costs associated with the increased stream impacts is offset by the reduction in riparian buffer impacts. The cost reduction due to the revised impacts is $38,828.75. Therefore, the NCDOT does not propose to provide additional mitigation for the issues addressed in this submittal.

On October 14, 2003, NCDENR-DWQ personnel conducted an on-site inspection of this project. This agency was subsequently supplied with a preliminary list of potential discrepancies between the construction plans and the permit drawings. On October 20, 2003 personnel from the USACE conducted an on-site inspection of this project. The

NCDENR-DWQ issued a Notice of Violation (NOV) to the NCDOT on October 22, 2003. The NOV noted that there appeared to be significant alterations at a number of permitted sites. The NCDOT provided a final list of potential discrepancies on November 12, 2003 to the NCDENR-DWQ in our response to the NOV (see Appendix A).

Following is a list of those issues and others that have been identified since that time between the construction plans and permit drawings of record or construction plans submitted and approved as part of the original permit application with resolutions proposed for each issue. The construction status of each site is also provided. Each issue is referenced in bold and underlined by permit site number, project section designation (BB, C, or CC), most recent permit drawing sheet number and date in parenthesis, and the corresponding current construction plan sheet number.

Site 1 Section BB (Permit Drawing 5 of 30 dated 3/18/2002) and Construction Plan Sheet 4
Issue: The permit drawing does not depict any of the roadway drainage systems shown on the construction plans that are required for the project.
Status: Not constructed.
Resolution: The drainage has been added to the permit drawing and preformed scour holes, sized per NCDENR-DWQ current recommendations, have been added at the outlets to provide diffuse flow outside of the riparian buffer.
Regulatory Issue: Riparian buffer rule

No additional impacts occur at this site.

Site 1 Section BB (Permit Drawing 6 of 30 dated 3/18/2002) and Construction Plan Sheet 5
Issue: The permit drawing does not depict any of the roadway drainage systems. The ditch between the roadway and the railroad is depicted differently on the construction plans.
Status: Not constructed.
Resolution: The drainage has been added to the permit drawing and directed to a preformed scour hole, sized per NCDENR-DWQ current recommendations, to provide diffuse flow outside of the riparian buffer. The v-ditch between the railroad and roadway is now shown with contours and construction limits in lieu of flow arrows shown in the permit drawing. This ditch conveys stormwater from only the fill slope and not from impervious surfaces, since shoulder berm gutter is specified. The presence, location, and intent of the v-ditch remain unchanged.
Regulatory Issue: Riparian buffer rule

No additional impacts occur at this site.

Site 1 Section BB (Permit Drawing 5 of 30 and 6 of 30 dated 3/18/2002 and 8 of 30 and 9 of 30 dated 6/22/01) and Construction Plan Sheets 4 and 5

Issue: Construction work bridge locations have been modified resulting in less buffer and stream disturbance and removing the requirement for temporary fill in wetlands.
Status: The work-bridge was placed and is partially removed; only the section that crosses the Crabtree Creek remains at this time.
Resolution: Temporary fill in surface waters has been reduced by 0.040 hectares (0.10 acres) due to the reconfigured work bridges (see revised permit drawings 8 of 30 and 9 of 30 dated 12/11/03). Also, the magnitude of buffer and stream bank disturbance has been reduced due to the reconfigured work bridges. However, the buffer area quantities in the impact summary have not been reduced since the permanent buffer impacts from the proposed bridges have not changed.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

Temporary fill in surface waters has been reduced by 0.040 hectares (0.10 acres).

Site 2 Section BB (Permit Drawing 12 of 30 dated 6/22/01) and Construction Plan Sheet 5

Issue: The permit drawing depicts a lateral ditch that terminates at Zone 2 of the riparian buffer. Construction plan sheet 5 (submitted and approved as part of the original permit application) indicates that the lateral ditch flows through the buffer directly to the pond.
Status: Not constructed.
Resolution: The ditch has been removed and replaced with a preformed scour hole, sized per NCDENR-DWQ current recommendations, to provide diffuse flow outside of the riparian buffer.
Regulatory Issue: Riparian buffer rule

No additional impacts occur at this site.

Site 3 Section BB (Permit Drawing 13 of 30 dated 4/1/02) and Construction Plan Sheet 7

Issue: The drainage structure located in the median at Station 41+70 on the permit drawing has been shifted to Station 41+40 on the construction plans.
Status: Not constructed.
Resolution: The proposed bridge has been lengthened, thus moving the embankment farther from the riparian buffer. The median drainage structure has been moved due to the bridge lengthening and conflicts caused by the revision of guardrail attenuators. The drainage area served has not changed. The buffer impacts were not decreased even though the bridge was lengthened due to the impacts from the future greenway path to be constructed at a later time by others. (See permit drawing 15 of 30 for Section BB)
Regulatory Issue: Riparian buffer rule

No additional impacts occur at this site.

Site 3 Section BB (Permit Drawing 14 of 30 dated 4/1/02 and Construction Plan Sheets 7 and 8

Issue: Construction work bridge locations have been modified resulting in less buffer and stream disturbance.
Status: The work-bridge was placed and is partially removed; only the mainline sections remain in place at this time.
Resolution: The magnitude of buffer and stream bank disturbance has been reduced due to the reconfigured work bridges. However, the buffer area quantities in the impact summary have not been reduced since the permanent buffer impacts from the proposed bridges have not changed.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

No additional impacts occur at this site.

Site 3 Section BB (Permit Drawing 17 of 30 dated 3/18/02 and Construction Plan Sheet 8

Issue: There is a discrepancy between the permit drawing and the construction plans in the location of a 600 mm outlet pipe that drains the Type-A Basin and the associated PFSH near Station 45+50 Rt.
Status: A-basin is constructed; the PFSH is currently ON HOLD, per NCDOT direction.
Resolution: The outlet configuration shown in the permit drawing dated 3/18/2002 would not function due to field conditions. The elevation of the bottom of the basin (necessary to provide the required sediment storage volume) would have required an outlet ditch to be cut through the buffer to daylight. In the revised layout, the buffer impacts are avoided.
Regulatory Issue: Riparian buffer rule

No additional impacts occur at this site.

Site 6 Section BB (Permit Drawing 20 of 30 dated 6/22/01) and Construction Plan Sheets 11B and 11D

Issue: Current construction plan sheet 11D indicates an undercut of alluvial soils at the toe of fill slope that extends outside of the cut/fill limits near Y 10 Station 11+75 left. This activity is not depicted on the permit drawing or the construction plans submitted and approved as part of the original permit application.
Status: Constructed.
Resolution: The removal of the soils was required for slope stability concerns. The area has been regraded to natural ground and will be revegetated appropriately. The additional impacts have been added to the impact summary and result in an additional Zone 1 buffer impact of 0.006 hectares (0.015 acres).
Regulatory Issue: Riparian buffer rule

Issue: There is a discrepancy between the permit drawing and construction plan (submitted and approved as part of the original permit application) in reference to the actual cut/fill slope at Station 60+60 left.
Status: Constructed.

Resolution: The cut/fill slope changed slightly in this area due to field conditions. At this site, the pond is to be drained and retained as a permanent A-basin. The entire pond and buffers have been mitigated; therefore no additional impacts occur as a result.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

An additional Zone 1 buffer impact of 0.006 hectares (0.015 acres) has been added to the impact summary.

Site 7 Section BB (Permit Drawing 22 of 30 dated 6/22/01) and Construction Plan Sheet 14A
Issue: The permit drawing depicts a lateral ditch at Station 71+00 right that terminates at the outlet of a 400 mm drainage structure. Construction plan sheet 14 (submitted and approved as part of the original permit application) depicts this lateral ditch extending beyond the 400mm pipe outlet to Zone 2 of the riparian buffer, due to system invert grades required to establish positive flow.
Status: Drainage has been constructed; the ditch from 71+00 to 71+15 right and the proposed reforestation are ON HOLD.
Resolution: The lateral ditch extends to Zone 2 of the riparian buffer. The pond has been mitigated for and will be permanently drained. The new buffer zones will be 15 meters (50 feet) from the new channel banks (at the outlet of the 1500 mm structure), which results in the proposed ditch outlet being approximately 35 meters from the new buffer zone. No additional impact to the buffer occurs. Reforestation conducted near the outlet of the 1500 mm structure is pending based on a future meeting for R-2641.
Regulatory Issue: Riparian buffer rule

No additional impacts occur at this site. It should be noted that the 1500mm RCP at this site has been sized according to NCDOT guidelines and is the same size as shown on the original approved plans.

Site 8 Section BB (Permit Drawing 23 of 30 dated 6/6/00) and Construction Plan Sheet 14C
Issue: The special ditch located left of Station 75+30 in the construction plans submitted and approved as part of the original permit application has been shifted approximately 5 feet from the location shown on the current construction plans.
Status: Constructed.
Resolution: The 900mm pipes were shifted to better align with the existing channel and consequently the special ditch was shifted. This revision caused no additional impact, since this is in the area of the proposed interchange for I-540 and the entire area was considered a total take of the jurisdictional resources.
Regulatory Issue: Riparian buffer rule

Issue: The cut ditch limits left of station 75+00 on the construction plans submitted and approved as part of the original permit application do not match those on the current construction plans.
Status: Constructed.
Resolution: The limits of the ramp construction necessary to tie to the proposed I-540 (R-2641) were not shown correctly in the plan. The limits are now shown correctly and

therefore the cut ditch limits have changed. Riprap was added as a temporary measure to provide stability where the ditch ends until the proposed interchange is completed. This revision caused no additional impact, since this entire area was considered a total take of the jurisdictional resources.
Regulatory Issue: Riparian buffer rule

Issue: The two 900mm cross pipes are shown in a slightly different location on the construction plans submitted and approved as part of the original permit application than in the current construction plans.
Status: Constructed.
Resolution: The two cross pipes were moved to better align with the existing channel based on field surveys. This revision caused no additional impact as the pipes were not lengthened and this is in the area of the proposed I-540 interchange where the entire area was considered a total take of the jurisdictional resources.
Regulatory Issue: Section 404 permit, Section 401 certificate

No additional impacts occur at this site. Additional drainage changes will be included in a permit modification for R-2641 to be submitted at a later date.

Site 8 Section BB (Permit Drawing 24 of 30 dated 10/19/2001) and Construction Plan Sheet 14C
Issue: The two 900mm cross pipes are shown in a slightly different location on the construction plans submitted and approved as part of the original permit application than in the current construction plans.
Status: Constructed.
Resolution: The two cross pipes were moved to better align with the existing channel based on field surveys. This revision caused no additional impact as the pipes were not lengthened and this is in the area of the proposed I-540 interchange where the entire area was considered a total take of the jurisdictional resources.
Regulatory Issue: Section 404 permit, Section 401 certificate

No additional impacts occur at this site.

Site 9 Section BB (Permit Drawing 25 of 30 dated 3/18/02) and Construction Plan Sheet 15
Issue: The permit shows a 'rock vane' right of station 79+10. This rock vane is not depicted on construction plan sheet 15.
Status: Not constructed.
Resolution: The 'rock vane' was inadvertently left off the construction plans and will be added to match the approved permit. Accordingly, a revised permit drawing was not required.
Regulatory Issue: Section 404 permit, Section 401 certificate

No additional impacts occur at this site.

Site 3 Section C (Permit Drawing 11 of 34 dated 6/27/01) and Construction Plan Sheet 7

Issue: The 375mm median drainage pipe at Station 98+50 on the current construction plans is not shown on the permit drawing or the construction plan submitted and approved as part of the original permit application.
Status: Not constructed.
Resolution: An additional drainage inlet (structure #31A) was needed in the median due to a sump that was created from modifications to the guardrail placement. A portion of the drainage that was previously collected by structure #31 is now collected by the new structure. The added pipe conveys the stormwater between the structures. No additional drainage area or discharge is directed toward the PFSH. Therefore, no additional impacts have occurred. The impervious area draining to structure #31A is 0.25 acres, therefore 25 feet of grass swale is needed for treatment. There is 164 feet of grass swale available at this inlet. The impervious area draining to structure #31 is 0.32 acres, therefore 32 feet of grass swale is needed for treatment. There is 236 feet of grass swale available at this inlet.
Regulatory Issue: Riparian buffer rule

Issue: Dimensions for the PFSH at Station 98+80 right on current construction plan sheet 7 are not consistent with the permit drawing or the construction plan submitted and approved as part of the original permit application. The level spreader associated with the PFSH at Station 98+80 right shown on the permit drawing and the construction plan submitted and approved as part of the original permit application is absent from the current construction plan sheet.
Status: Not constructed.
Resolution: The dimensions for PFSH's were revised to match NCDENR-DWQ current recommendations for size. The original NCDOT PFSH detail was called "preformed scour hole with level spreader". In conjunction with DWQ and NCDOT, this detail was revised to remove the "with level spreader" label to reduce confusion. The confusion arose that this should be two separate structures; a PFSH and a level spreader, when the intent was for this to be one structure; a PFSH 'with' a level spreader apron. This was the intent in the original drainage design; therefore the labels on the plans were revised to match the current DWQ requirements and NCDOT approved detail. The design is consistent with the original intent. There is no change in impacts.
Regulatory Issue: Riparian buffer rule

No additional impacts occur at this site.

Site 4 Section C (Permit Drawing 12 of 34 dated 3/22/02) and Construction Plan Sheets 8 and 9

Issue: The dimensions shown on the construction plans for the PFSH at Station 103+30 left are not consistent with the permit drawing. The level spreader associated with the PFSH at Station 103+30 left shown on the permit drawing is absent from the construction plans.
Status: Not constructed.

Resolution: The dimensions for PFSH's were revised to match NCDENR-DWQ current recommendations for size. The original NCDOT PFSH detail was called "preformed scour hole with level spreader". In conjunction with DWQ and NCDOT, this detail was revised to remove the "with level spreader" label to reduce confusion. The confusion arose that this should be two separate structures; a PFSH and a level spreader, when the intent was for this to be one structure; a PFSH 'with' a level spreader apron. This was the intent in the original drainage design; therefore the labels on the plans were revised to match the current DWQ requirements and NCDOT approved detail. The design is consistent with the original intent. There is no change in impacts.
Regulatory Issue: Riparian buffer rule

Issue: The NCDOT permit application dated October 19, 2001 did not address impacts to jurisdictional sites associated with the construction of the bridge over Poplar Branch. The NCDOT submitted a permit modification to the NCDENR-DWQ on February 24, 2003 which quantified hand clearing only and temporary road/work bridge impacts for access at Poplar Branch. Please note that the temporary roads were to be constructed of timber crane mats. No mechanized clearing was to take place in the riparian buffer and there was to be no temporary or permanent placement of any fill in wetlands from this activity. A site inspection on October 9, 2003 revealed that grading, earthen fill and the construction of an earthen fill causeway road had occurred at this site. These activities were not authorized in the original Section 404 permit or in the modified Section 401 Water Quality Certificate and Neuse Buffer Authorization. In addition, the construction activities extended beyond the footprint authorized by the modified Section 401 Water Quality Certificate and Neuse Buffer Authorization. The actual construction impacts associated with this site include 0.0698 hectares (0.172 acres) in Zone 1, 0.0672 hectares (0.166 acres) in Zone 2 and 0.0121 hectares (0.030 acres) of temporary fill in wetlands. (See Appendix B)
Status: Constructed.
Resolution: The impacts that have occurred at the site will be restored to its preexisting condition. The restoration will require the Contractor to remove any unauthorized material that has been placed in jurisdictional areas. The sites will then be ripped to a depth sufficient to ensure that compaction from previous activities do not inhibit the function of the wetland and buffer zone. The areas will be seeded and mulched using riparian seed mixtures. The sites will then be reestablished where practical with wetland tree species. The Department proposes to use visual monitoring protocols for these areas beginning at the completion of the project and continuing for three years after the project is complete. An annual report will be provided to the NCDENR-DWQ and USACE.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

The additional impacts for this site include 0.0698 hectares (0.172 acres) in Zone 1, 0.0672 hectares (0.166 acres) in Zone 2 and 0.0121 hectares (0.030 acres) of temporary fill in wetlands.

Site 5A Section C (Permit Drawing 15 of 34 dated 9/11/01) and Construction Plan Sheets 10, 10A and 10B

Issue: The current construction plans show the length of structure at Station -RPCY16-2+90 to be approximately 2 to 3 meters longer than shown on the permit drawing or the construction plan submitted and approved as part of the original permit application.
Status: Constructed.
Resolution: The pipe length was revised to match field conditions. No additional impacts have occurred since the buffers were mitigated through the entire interchange. The stream was denoted as a non-perennial stream on the permit drawing (see permit drawing 16 of 34 dated 6/29/01) and was not mitigated. It is a non-jurisdictional stream according to the summary sheet on permit drawing 34 of 34 dated 3/22/02. During a site visit on 11/10/03, Steve Mitchell (NCDENR-DWQ) removed the buffer designation for the portions of this drainage way outside of the project construction limits.
Regulatory Issue: Riparian buffer rule

Issue: The toe limits in the gore area between 109+40 –L- right and -RPCY16- shown on the current construction plans do not match those shown on the permit drawing or the construction plan submitted and approved as part of the original permit application.
Status: Constructed.
Resolution: The actual toe limits were revised to match field conditions and to include guardrail revisions necessary for safety concerns. During a site visit on 11/10/03, Steve Mitchell (NCDENR-DWQ) removed the buffer designation for the portions of this drainage way outside of the project construction limits. This revision did not increase the impacts since the buffers were originally mitigated through the entire interchange. The permit drawing has been revised to show the buffers only under the areas that have already been filled; since it was our understanding that the buffers could not be removed for areas that were already under fill. The buffer area not under the fill has also been removed from the summary sheet.
Regulatory Issue: Riparian buffer rule

Issue: The toe limits in the area between –L- and -RPCY16- shown on the current construction plans do not match those on the permit drawing or the construction plan submitted and approved as part of the original permit application.
Status: Constructed.
Resolution: The actual toe limits are shown on the construction plans to depict the excavation for the detention basin. The slope stake lines in the permit drawings did not show this excavation. During a site visit on 11/10/03, Steve Mitchell (NCDENR-DWQ) removed the buffer designation for the portions of this drainage way outside of the project construction limits. The construction plan revision did not increase the impacts since the buffers were originally mitigated through the entire interchange. The permit drawing and summary have been revised to show the buffers only under the areas that have already been filled, since it was our understanding that the buffers could not be removed for areas that were already under fill.
Regulatory Issue: Riparian buffer rule

Issue: A special cut base ditch and toe protection have been specified at station 3+00 – RPCY16- left on the current construction plans, which are not shown on the permit drawing or the construction plan submitted and approved as part of the original permit application.
Status: Constructed.
Resolution: The special base ditch was added to convey the stormwater after it crests the berm from the detention basin. This revision did not increase the impacts since the buffers were mitigated through the entire interchange. During a site visit on 11/10/03, Steve Mitchell (NCDENR-DWQ) removed the buffer designation for the portions of this drainage way outside of the project construction limits.
Regulatory Issue: Riparian buffer rule

The removal of the buffer designation at this site reduced the Zone 1 impacts by 0.143 hectares (0.353 acres) and Zone 2 impacts by 0.092 hectares (0.227 acres).

Site 5A Section C (Permit Drawing 16 of 34 dated 6/29/01) and Construction Plan Sheet 10A & 10C
Issue: The pipe along the left shoulder (Station 112+00 to 113+00) on current construction plan sheet 10C is not depicted on the permit drawing or the construction plan submitted and approved as part of the original permit application. Also, the associated drainage system on the current construction plans has been reconfigured with an additional PFSH shown left of station 112+50.
Status: Not constructed.
Resolution: This pipe was previously routed along the median, but was moved to the shoulder to avoid a conflict with an added attenuator (guardrail). The associated drainage system had to be reconfigured so the pipe could be moved to the shoulder. An additional 20 meters (60 LF) of shoulder berm gutter has been added and an additional PFSH was added outside of the riparian buffer to better provide diffuse flow. Both PFSH's have been sized according to current DWQ requirements. During a site visit on 11/10/03, Steve Mitchell (NCDENR-DWQ) removed the buffer designation for the portions of this drainage way outside of the project construction limits. No additional impacts occur as a result of this change.
Regulatory Issue: Riparian buffer rule

Issue: The toe limits on the current construction plans do not match at the southwest bridge approach on the permit drawing or the construction plan submitted and approved as part of the original permit application.
Status: Constructed.
Resolution: The toe limits have been revised to correctly show the excavation for the detention basin. The roadway fill slope will extend continuously into the cut slope for the detention basin (see permit drawing 17 of 34 dated 6/29/01). No additional impacts occur as a result of this change.
Regulatory Issue: Riparian buffer rule

Issue: The dimensions for the PFSH's on the current construction plans at stations 113+00 –L- left, 3+50 –RPAY 16- left, and 3+00 –RPAY 16- right are not consistent with the permit drawing or the construction plan submitted and approved as part of the original permit application. The level spreaders associated with the PFSH's at stations 3+50 -RPAY 16- left and 3+00 –RPAY 16- right on the permit drawing and the construction plan submitted and approved as part of the original permit application are absent from the current construction plan sheet.
Status: Not constructed.
Resolution: The dimensions for PFSH's were revised to match NCDENR-DWQ current recommendations for size. The original NCDOT PFSH detail was called "preformed scour hole with level spreader". In conjunction with DWQ and NCDOT, this detail was revised to remove the "with level spreader" label to reduce confusion. The confusion arose that this should be two separate structures; a PFSH and a level spreader, when the intent was for this to be one structure; a PFSH 'with' a level spreader apron. This was the intent in the original drainage design; therefore the labels on the plans were revised to match the current DWQ requirements and NCDOT approved detail. The design is consistent with the original intent.
Regulatory Issue: Riparian buffer rule

The removal of the buffer designation at this site reduced the Zone 1 impacts by 0.112 hectares (0.277 acres) and Zone 2 impacts by 0.076 hectares (0.188 acres).

Site 6 Section C (Permit Drawing 18 of 34 dated 3/22/02) and Construction Plan Sheet 11 & 11A
Issue: There is a discrepancy in toe limits between the permit drawing and construction plan sheet 11 at Station 117+90 right. At Station 117+90, a 400mm CSP and a PFSH with level spreader apron are shown on the permit drawing but not on construction plan sheet 11. Drainage structures and a PFSH are depicted on construction plan sheet 11 at Station 117+40. These structures and the PFSH are not depicted on the permit drawing.
Status: Constructed, except PFSH.
Resolution: The fill slopes were revised from 4:1 slopes to 2:1 slopes. The 2:1 slopes required the addition of shoulder berm gutter and two drainage inlets. The drainage system was shifted so as to outlet outside of the riparian buffer to an appropriately sized PFSH. No additional impacts occur as a result of these changes. The buffers have been removed per Mr. John Hennessy (DWQ) from the drainage way crossing at station 117+60. A lateral base ditch at the outlet of the pipe has been added that conveys off-site drainage through the buffers. The fill slopes have been reduced due to the change in fill slopes, but the construction limits remain the same due to the addition of the lateral ditch.
Regulatory Issue: Riparian buffer rule

Issue: The dimensions on the construction plan for the PFSH at station 118+80 –L- left are not consistent with the permit drawing.
Status: Not constructed.
Resolution: The dimensions for the PFSH were revised to match NCDENR-DWQ current recommendations for size. No additional impacts result.
Regulatory Issue: Riparian buffer rule

Issue: There is a discrepancy in toe limits between the permit drawing and construction plan sheet 11A at Station 119+30 left.
Status: Constructed.
Resolution: The existing field conditions dictated the change in the fill limits. This slight change will reduce the wetland impacts from mechanized clearing by 0.001 hectares (0.003 acres). The buffer impacts for Zone 1 are reduced by 0.004 hectares (0.010 acres) and Zone 2 are reduced by 0.006 hectares (0.015 acres).
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

Wetland impacts from mechanized clearing were reduced by 0.001 hectares (0.003 acres). The buffer impacts for Zone 1 were reduced by 0.004 hectares (0.010 acres) and Zone 2 were reduced by 0.006 hectares (0.015 acres).

Site 7 Section C (Permit Drawings 19 & 20 of 34 dated 6/27/01) and Construction Plan Sheets 14 & 2G
Issue: The underdrain at Station 131+10 left on current construction plan sheet 14 that flows into the relocated channel is not shown on the permit drawing or the construction plan submitted and approved as part of the original permit application.
Status: Constructed.
Resolution: The area necessary to install the underdrain has been added to the impact summary sheet. The installation impacted an additional 0.007 hectares (0.017 acres) of Zone 1 and 0.003 hectares (0.007 acres) of Zone 2. This additional area has been added to the impact summary and the area outside of the grading limits will be planted to re-establish the buffer.
Regulatory Issue: Riparian buffer rule

Issue: There is a discrepancy in depiction of limits of relocated channel between current construction plan sheet 14 and the permit drawing and construction plan submitted and approved as part of the original permit application at Station 131+40 to 132+00 left.
Status: Not constructed.
Resolution: The natural stream design details have been modified to better match the morphological measurements for a B5 channel. Also, three cross vane structures have been specified as grade control and to provide a step-pool system. The root wads and low stage check dams have been removed from the details.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

Issue: The stream relocation located at Station 131+40 to 132+00 left calls for low stage check dams in the channel detail on construction plan sheet 2F submitted and approved as part of the original permit application. The low stage check dams are not shown on the permit drawing.
Status: Not constructed.

Resolution: The stream design details have been modified to better match the morphological measurements for a B5 channel. Also, three cross vane structures have been specified as grade control and to provide a step-pool system. The root wads and low stage check dams have been removed from the details.
Regulatory Issue: Section 404 permit, Section 401 certificate

Issue: There is a discrepancy in the toe limits between current construction plan sheet 14 and the permit drawing and construction plan submitted and approved as part of the original permit application at Station 132+50 right.
Status: Not fully constructed.
Resolution: The cut/fill lines shown on the current construction plans do not account for the construction of the future Eagle Rock and Taylor Road (-Y101-) interchange. The cut/fill lines shown in the construction plan submitted and approved as part of the original permit application are representative of the future interchange, which will not be constructed under this contract. The impacts have been reduced as a result of this interim stage without the future interchange. However, no impact reduction is claimed due to anticipated future interchange impacts.
Regulatory Issue: Riparian buffer rule

An additional 0.007 hectares (0.017 acres) of Zone 1 and 0.003 hectares (0.007 acres) of Zone 2 buffer impacts have been added to the impact summary.

Site 8 Section C (Permit Drawings 22 & 23 of 34 dated 6/27/01) and Construction Plan Sheets 15
Issue: The dimensions on the current construction plans for the PFSH's at stations 134+20 left, 135+40 left, and 135+06 right are not consistent with the permit drawing or the construction plan submitted and approved as part of the original permit application. The level spreader associated with the PFSH at station 135+06 right on the permit drawing and the construction plan submitted and approved as part of the original permit application is absent from the current construction plan sheet.
Status: Not constructed.
Resolution: The dimensions for PFSH's were revised to match NCDENR-DWQ current recommendations for size. The original NCDOT PFSH detail was called "preformed scour hole with level spreader". In conjunction with DWQ and NCDOT, this detail was revised to remove the "with level spreader" label to reduce confusion. The confusion arose that this should be two separate structures; a PFSH and a level spreader, when the intent was for this to be one structure; a PFSH 'with' a level spreader apron. This was the intent in the original drainage design; therefore the labels on the plans were revised to match the current DWQ requirements and NCDOT approved detail. The design is consistent with the original intent. There is no change in impacts.
Regulatory Issue: Riparian buffer rule

Issue: The drainage structure (#117A) located at Station 133+80 right on current construction plan sheet 15 is not present on the permit drawing or the construction plan submitted and approved as part of the original permit application.
Status: Constructed.

Resolution: Additional shoulder berm gutter was required due to additional guardrail necessary for safety concerns, making the drainage structure necessary. The additional discharge is directed toward a PFSH, sized per current NCDENR-DWQ recommendations, located outside of the riparian buffer to provide diffuse flow.

In addition, a Natural Rock Energy Dissipator Basin has been designed by NCDOT at the outlet of structure #123 (1500mm RCP) to dissipate energy and provide stability to the existing channel as a part of the mitigation site located downstream (see permit drawing 22A of 34 dated 1/30/04). The dissipater is not located within a jurisdictional stream, is not located within buffers, and is not located within wetlands.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

No additional impacts occur at this site.

Site 9 Section C (Permit Drawings 26 of 34 dated 6/27/01, 27 of 34 dated 3/22/02, 28 of 34 dated 7/13/01) and Construction Plan Sheets 16A, 23 and 2F
Issue: The special ditch and the lateral ditch along the southern fill slope on construction plan sheet 16A at Station 141+00 to 141+60 are not depicted on the permit drawing 27 of 34. Also, the cut/fill slopes shown on the construction plans do not match those depicted on the permit drawings or the current construction plans submitted and approved as part of the original permit application.
Status: Not constructed (PFSH); slopes have been constructed.
Resolution: The permit drawings and construction plans submitted and approved as part of the original permit application depict drainage and cut/fill slopes at the completion of the future Eagle Rock and Taylor Road (–Y101-) interchange. The drainage on the current construction plans is an interim situation until the completion of the future interchange, which will not be constructed under this contract. The drainage shown on the plans will not have any additional impacts, since the impacts for the entire future interchange were included in the previous impact summary. This site has been included in the modification request only as an interim condition. It should be noted that although NCDENR-DWQ may require a permit modification when the future interchange is constructed, the impacts for this area have already been mitigated. The impacts have been reduced as a result of this interim stage without the future interchange. However, no impact reduction is claimed due to anticipated future interchange impacts.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

Issue: Drainage structures #134A and #134B and the PFSH at Station 142+20 left on the current construction plans are not shown on permit drawing 27 of 34.
Status: Constructed, except PFSH.
Resolution: The fill slopes were changed from 4:1 to 2:1. This required the addition of shoulder berm gutter and the associated drainage system. The concentrated flow has been directed to a PFSH, sized per current NCDENR-DWQ recommendations, located outside of the riparian buffer to provide diffuse flow. The impacts have been reduced as a result of this interim stage without the future interchange. However, no impact reduction is claimed due to anticipated future interchange impacts.
Regulatory Issue: Riparian buffer rule

Issue: Drainage structure #134C at Station 142+60 right on the construction plans is not shown on permit drawing 27 of 34.
Status: Constructed, except PFSH.
Resolution: The fill slopes were changed from 4:1 to 2:1. The addition of shoulder berm gutter was required which made the associated drainage system necessary. The concentrated flow has been directed to a PFSH, sized per current NCDENR-DWQ recommendations, located outside of the riparian buffers to provide diffuse flow. No additional impacts occur as a result of this change.
Regulatory Issue: Riparian buffer rule

Issue: The lateral ditch cross-section depicted on permit drawing 28 of 34 and construction plan sheet 2F do not match.
Status: Not constructed.
Resolution: The detail for the lateral ditch on plan sheet 2F will be revised to match the permit drawing.
Regulatory Issue: Section 404 permit, Section 401 certificate

No additional impacts occur at this site.

Site 10 Section C (Permit Drawing 29 of 34 dated 3/22/02 and 30 of 34 dated 3/22/02) Site 1 and Site 2 Section CC (Permit Drawing 4 of 24 dated 3/22/02 and 5 of 24 dated 3/22/02) and Construction Plan Sheets 4 and 5 of Section CC
Issue: The permit drawing indicates a PFSH is located at Station 145+40 left. The construction plans indicate that this device has been shifted to Station 145+22 left.
Status: Not constructed.
Resolution: The bridge was revised to span the buffers in the permit drawing. The drainage shown in that permit drawing was not adjusted to match the revised length of bridge. The drainage system has been shifted back away from the buffers, but is the same basic configuration. No additional impacts have occurred as a result of this change.
Regulatory Issue: Riparian buffer rule

Issue: The construction plans depict an additional structure (#9A) and two additional pipes that originate from the end bents of each bridge that are not shown on the permit drawing.
Status: Not constructed.
Resolution: Due to the increased length of the Marks Creek bridges necessary to span the buffers, a drainage system was required on each bridge, but was not included in the permit. The pipes shown tie the bridge system so the roadway drainage can be directed to a PFSH, sized per current NCDENR-DWQ recommendations.
Regulatory Issue: Riparian buffer rule

Issue: The dimensions on the construction plan for the PFSH's at stations 145+22 left and 147+00 left are not consistent with the permit drawing. The level spreader associated with the PFSH at station 147+00 left on the permit drawing is absent from the construction plan sheet.

Status: Not constructed.
Resolution: The dimensions for PFSH's were revised to match NCDENR-DWQ current recommendations for size. The original NCDOT PFSH detail was called "preformed scour hole with level spreader". In conjunction with DWQ and NCDOT, this detail was revised to remove the "with level spreader" label to reduce confusion. The confusion arose that this should be two separate structures; a PFSH and a level spreader, when the intent was for this to be one structure; a PFSH 'with' a level spreader apron. This was the intent in the original drainage design; therefore the labels on the plans were revised to match the current DWQ requirements and NCDOT approved detail. The design is consistent with the original intent. There is no change in impacts.
Regulatory Issue: Riparian buffer rule

Issue: The permit drawing indicates a 1350 mm pipe that conveys a stream with the outlet of this pipe located outside of the wetland boundary. The construction plans indicate that the outlet of this pipe has been shifted and is now located inside the wetland boundary.
Status: Constructed.
Resolution: The location of the pipe outlet shown in the permit drawing was shown outside of the wetlands, but due to field conditions the pipe outlet was adjusted. The outlet location shown in the permit drawings was not suitable since the natural ground sloped from right to left on an eight percent grade. An additional wetland impact of 0.002 hectares (0.005 acres) has occurred as a result of this change. Mr. Eric Alsmeyer (USACE) reviewed the site on January 8th, 2004 and concurred that the pipe outlet is best situated inside of the wetland, which allows for conveyance of water into the jurisdictional system.
Regulatory Issue: Section 404 permit, Section 401 certificate

Issue: The construction plans indicate that a headwall is located at the inlet of the 1350 mm pipe. The permit drawing depicts the structure without a headwall.
Status: Constructed.
Resolution: The headwall does not impact any additional area.
Regulatory Issue: Not applicable

Issue: The construction plans depict an additional structure (#12A) in the median and a PFSH at station 147+60 right. These devices are not depicted on the permit drawing.
Status: Not constructed.
Resolution: The drainage structure was required due to revisions to the guardrail design that caused a false sump to be formed in the median ditch. The concentrated flow has been directed to a PFSH, sized per current NCDENR-DWQ recommendations, which is outside of the wetlands and riparian buffers. No additional impacts resulted.
Regulatory Issue: Riparian buffer rule

Issue: The permit drawings depict a PFSH at station 146+40 right. This device is not depicted on the construction plans.
Status: Deleted.

Resolution: The drainage structure was no longer required since the road slopes away (toward the median) from the inlet. Since the concentrated flow was removed, the drainage system and PFSH were no longer needed.
Regulatory Issue: Riparian buffer rule

Issue: The NCDOT permit application dated October 19, 2001 did not address impacts to jurisdictional sites associated with the construction of the bridge over Mark's Creek. The NCDOT submitted a permit modification to the NCDENR-DWQ on February 24, 2003, which quantified hand clearing only and temporary road/work bridge impacts for access at Mark's Creek. Please note that the temporary roads were to be constructed of timber crane mats. No mechanized clearing was to take place in the riparian buffer and there was to be no temporary or permanent placement of any fill in wetlands from this activity. A site inspection on October 9, 2003 revealed that grading, earthen fill and the construction of an earthen fill causeway road had occurred at this site. These activities were not authorized in the original Section 404 permit or in the modified Section 401 Water Quality Certificate and Neuse Buffer Authorization. In addition, the construction activities extended beyond the footprint authorized by the modified Section 401 Water Quality Certificate and Neuse Buffer Authorization. The actual construction impacts associated with this site include 0.144 hectares (0.356 acres) in Zone 1, 0.159 hectares (0.393 acres) in Zone 2, and 0.274 hectares (0.676 acres) of temporary fill in wetlands. (See Appendix C)
Status: Constructed.
Resolution: The impacts that have occurred at the site will be restored to its preexisting condition. The restoration will require the Contractor to remove any unauthorized material that has been placed in jurisdictional areas. The sites will then be ripped to a depth sufficient to ensure that compaction from previous activities do not inhibit the function of the wetland and buffer zone. The areas will be seeded and mulched using riparian seed mixtures. The sites will then be reestablished where practical with wetland tree species. The Department proposes to use visual monitoring protocols for these areas beginning at the completion of the project and continuing for three years after the project is complete. An annual report will be provided to the NCDENR-DWQ and USACE.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

Issue: Slope stakes for the entire site on the construction plans are slightly different than those shown on the permits.
Status: Constructed.
Resolution: Minor slope stake revisions were required due to field conditions. These revisions resulted in a reduction to fill in wetlands of 0.004 hectares, but also resulted in an increase of 0.004 hectares (0.010 acres) of Zone 1 impacts and 0.003 hectares (0.007 acres) of Zone 2 impacts.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

For the entire Site 10, 'Fill in Wetlands' has been reduced by 0.002 hectares (0.005 acres. Zone 1 buffer impact has been increased by 0.148 hectares (0.366 acres). Zone 2 buffer impact has been increased by 0.162 hectares (0.400 acres). Temporary fill in wetlands has increased by 0.274 hectares (0.676 acres).

Site 3 Section CC (Permit Drawings 6 of 24 dated 3/22/02 and 7 of 24 dated 4/8/02) and Construction Plan Sheet 5 and 6

Issue: The permit drawings indicate an 1800mm cross pipe without a headwall at inlet. The construction plan indicates this pipe has a headwall at the inlet.
Status: Constructed.
Resolution: The headwall does not impact any additional area. NCDOT has requested additional riprap to be placed on the banks at the inlet of the pipe for stabilization. This will impact an additional 4 meters (13 feet) of stream and has been added to the impact summary.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

Issue: The permit drawing indicates a level spreader on the east side of the roadway that is straight. The construction plan indicates a level spreader in this location that is rounded.
Status: Constructed.
Resolution: The rectangular level spreaders shown on the permit drawing are for illustrative purposes only and will be constructed along the contour of the existing land. No additional impacts occur.
Regulatory Issue: Riparian buffer rule

Issue: The cut/fill limits on the construction plans do not match those on the permit drawing at station 150+00 right.
Status: Constructed.
Resolution: As shown on the construction plans, the fill slopes tie to the headwall. Zone 1 impacts are reduced by 0.041 hectares (0.101 acres). Zone 2 impacts are reduced by 0.034 hectares (0.084 acres).
Regulatory Issue: Riparian buffer rule

Issue: The permit drawing shows a 450mm pipe from the median to the PFSH. The construction plans show a 600mm pipe.
Status: Not constructed.
Resolution: The increase in pipe size can be attributed due to the flat slope of the pipe. The PFSH has been sized appropriately to provide diffuse flow. No additional impacts resulted from the pipe size revision.
Regulatory Issue: Riparian buffer rule

Issue: The construction plan show a 'bridge toe drain' left of station 150+20 that is not shown on the permit drawings.
Status: Constructed.
Resolution: The under drain is added based on field conditions and is subsurface drainage. No additional impacts have resulted.
Regulatory Issue: Not Applicable

An additional 4 meters (13 feet) of 'Existing Channel Impacted' and 0.002 hectares (0.005 acres) of 'Fill in Surface Water' have been added to the impact summary.

Zone 1 impacts are reduced by 0.041 hectares (0.101 acres). Zone 2 impacts are reduced by 0.034 hectares (0.084 acres).

Site 4 and 5 Section CC (Permit Drawings 8 of 24 dated 1/7/03 and 9 of 24 dated 1/7/03) and Construction Plan Sheet 7

Issue: The permit drawings indicate a 1.5m (5 ft) base ditch that outfalls to a drainage pipe that is connected to the box culvert. The construction plans indicate toe protection along the eastern fill slope and a PFSH located approximately 30m away from the riparian buffer.
Status: Constructed.
Resolution: In the original drainage design, two low areas existed that would not drain properly. Two cross pipes were added to drain the low areas and collect off-site drainage. This revision was addressed in a previous modification with drawings referenced above. The ditch shown in the permit drawings would not work as shown. By adding the pipes, a ditch was no longer needed and toe protection could be used instead. The PFSH, sized per current NCDENR-DWQ recommendations, was added to provide diffuse flow for the drainage system from the roadway. This does not cause any additional impacts.
Regulatory Issue: Riparian buffer rule

Issue: The roadway drainage systems on the construction plan do not match those shown on the permit drawings.
Status: Not constructed.
Resolution: Drainage has been revised. Structures #31 and #27 have been shifted to reduce pipe lengths that were determined to be unnecessary. The drainage systems associated with these structures still collect stormwater from the same drainage area as in the previous design, so no additional area has been directed toward the level spreader or PFSH. No additional impacts have occurred.
Regulatory Issue: Riparian buffer rule

No additional impacts occur at this site.

Site 6 Section CC (Permit Drawings 12 of 24 dated 3/22/02 and 13 of 24 dated 4/8/02) and Construction Plan Sheet 8

Issue: The construction plan indicates placement of riprap for bank stabilization at the outlet of the box culvert. This riprap is not indicated on the permit drawings.
Status: Not constructed.
Resolution: The riprap was inadvertently omitted from the permit drawings and is necessary for bank stabilization. An additional 4 meters (13 feet) of stream impacts have occurred as a result of this change and have been added to the impact summary.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

Issue: The permit drawing depicts a lateral base ditch that originates at the railroad and terminates at the creek on the west side of the roadway. The construction plans indicate this lateral ditch has been removed and replaced with toe protection.
Status: Ditch is constructed, protection has not been placed.

Resolution: The 2GI that was located at station 159+30 left was found to be excessive and removed. The stormwater is collected by the 2GI located at station 158+60 left and directed to the level spreader. The ditch was found to be excessive and removed in lieu of toe protection. The same drainage area is directed toward the level spreader as from the previous design. No additional impacts have occurred.
Regulatory Issue: Riparian buffer rule

Issue: The level spreader shown on the permit drawing left of station 158+40 is located within the buffer zone and adjacent to the stream bank.
Status: Not constructed.
Resolution: During the site visit on 11/10/03 with Steve Mitchell (NCDENR-DWQ), it was determined that this level spreader should be moved back outside of the buffer zone and the ditch eliminated within the buffers. This has been depicted in the permit drawing and plans to match accordingly. This revision has reduced the buffer impacts to Zone 1 by 0.025 hectares (0.062 acres) and to Zone 2 by 0.007 hectares (0.017 acres).
Regulatory Issue: Riparian buffer rule

Issue: The permit drawing depicts a lateral base ditch that terminates at the creek on the eastern side of the roadway. The construction plan depicts a reconfigured lateral ditch that terminates at the edge of the riparian buffer at the level spreader. Toe protection is depicted along the fill slope within the riparian buffer.
Status: Ditch is constructed, protection has not been placed.
Resolution: The level spreader depicted on the permit drawing is ineffective. This area was redesigned to direct the ditch flow into the level spreader so that diffuse flow could be provided before the buffer. The ditch was eliminated in the buffers and replaced with toe protection. This revision reduced the buffer impacts to Zone 1 by 0.042 hectares (0.104 acres) and to Zone 2 by 0.034 hectares (0.084 acres).
Regulatory Issue: Riparian buffer rule

Issue: The structure at Station 159+40 right shown on the permit drawings has been removed from the construction plan. Structure #43 has been added to the construction plans in the median. This structure was not shown in the permit drawings.
Status: Not constructed.
Resolution: The structure located at 159+40 right was no longer needed and eliminated from the construction plans. Structure #43 was added due to revisions in the guardrail configuration that caused a false sump in the median. The same discharge is still directed toward the level spreader. No additional impacts have occurred as a result of this change.
Regulatory Issue: Riparian buffer rule

'Existing Channel Impacted' increased by 4 meters (13 feet). Zone 1 buffer impacts decreased by 0.067 hectares (0.166 acres) and Zone 2 impacts decreased by 0.041 hectares (0.101 acres).

Site 7 and 8 Section CC (Permit Drawings 14 of 24 dated 4/8/02 and 15 of 24 dated 4/8/02) and Construction Plan Sheets 10A and 10D

Issue: Construction plan sheet 10A and 10D indicates that the structures located at station 16+20 –RPBDY1- and station 13+95 –RPCY1- are 900 mm pipes. The permit drawing indicates that these structures are 1500 mm pipes.
Status: Constructed.
Resolution: The 1500 mm pipes were found to be excessive and were redesigned according to NCDOT guidelines to 900 mm pipes.
Regulatory Issue: Section 404 permit, Section 401 certificate

Issue: The permit drawings indicate a headwall at the inlet of a 1500mm pipe that captures a stream. Construction plan sheet 10A indicates a junction box and additional 750 mm and 400 mm pipes that flows into the junction box.
Status: Constructed.
Resolution: The stream at the inlet of the pipe is shown on the permit drawings as being filled by construction of –L-. A diversion was detected from the drainage design shown on the permit. To correct the diversion, it was necessary to add a cross pipe under –L-. Also, it was determined that there was not sufficient room between the fill slopes to have an open channel as shown on the permit drawing, so an open throat catch basin was specified to join the two pipes. The fill in the gore area between -Ramp BDY1- and -L- would have completely covered both ends of the pipes. No additional impacts occur, as this entire area was included in the original impact summary.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

Issue: Construction plan sheet 10A indicates toe protection along the eastern fill slope of the –L- line that is within the riparian buffer. This toe protection is not depicted on the permit drawing.
Status: Not constructed.
Resolution: Toe protection for Section CC will impact 0.6 meters (2 feet) outside of the fill slope. In this area, toe protection does not impact any additional area since the entire area was included in the original impact summary.
Regulatory Issue: Riparian buffer rule

Issue: The permit drawing indicates that a PFSH is located along –Ramp BDY1- at Station 16+00 left. The construction plan show the PFSH located at station 15+80 right.
Status: PFSH not constructed, pipes and structures are in place.
Resolution: Upon reviewing the permit drawing, it was determined that the PFSH was located in the gore area on the side of a 2:1 slope where the fill slopes from –Ramp BDY1- and –L- converge. This PFSH was moved to the opposite side of -Ramp BDY1- to a level area so that it can function appropriately.
Regulatory Issue: Riparian buffer rule

Issue: Between –Ramp BDY1- and –Ramp CY1-, the permit drawings indicates that two pipes are separated with approximately 2 meters of stream located between the pipes. Construction plan sheet 10D indicates the two pipes are joined by a junction box.
Status: Constructed.

Resolution: The drainage on the permit drawings will not function as shown because the fill slopes from the ramps converge to cover both pipe ends as shown in the permits. The open channel could not be maintained and this area was revised to add an open throat catch basin where the fill slopes converge. No additional impacts have occurred, as this entire area was included in the original impact summary.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

Issue: The permit drawing indicates that a PFSH is located along –Ramp CY1- at Station 14+30 right. This PFSH has been eliminated from the construction plans.
Status: Deleted.
Resolution: The drainage structure associated with this PFSH was found to be excessive and removed. The runoff that was collected by this structure is treated in a properly sized PFSH located at station 15+30 –Ramp CY1- right. No additional impacts occur.
Regulatory Issue: Riparian buffer rule

Issue: Construction plan sheet 10D indicates toe protection within the riparian buffer along both sides of the stream. The permit drawings depict toe protection within the buffer only south of the stream.
Status: Not constructed.
Resolution: Toe protection for Section CC will impact 0.6 meters (2 feet) outside of the fill slope. In this area, toe protection does not impact any additional area since the entire area was included in the original impact summary.
Regulatory Issue: Riparian buffer rule

No additional impacts occur at this site.

Site 9 and Site 10 Section CC (Permit Drawing 16 of 24 dated 4/8/02 and 17 of 24 dated 4/8/02) and Plan Sheets 10D and 11C
Issue: Construction plan sheet 10D indicates that riprap will be placed at the outlet of the 1350mm pipe where bank excavation has been conducted. The permit drawings do not depict the riprap and instead depict a cross vane at the outlet.
Status: Not constructed.
Resolution: The cross vane was inadvertently left off the drainage plans and will be added to the construction plans. The riprap on the channel banks should remain for stability. The riprap at the pipe outlet will not cause any additional impacts since it will be installed in the portion of channel required to tie to the existing stream.
Regulatory Issue: Section 404 permit, Section 401 certificate

Issue: Construction plan sheet 10D indicates toe protection within the buffer along the southern fill slope of –Ramp CY1-. This toe protection is not depicted on the permit drawings.
Status: Constructed.

Resolution: Toe protection for Section CC will impact 0.6 meters (2 feet) outside of the fill slope. In this area, toe protection does not impact any additional area since the fill slopes in this area were revised to 1.5:1 slopes, which reduced the buffer impacts. Impacts to Zone 1 have decreased by 0.003 hectares (0.007 acres).
Regulatory Issue: Riparian buffer rule

Issue: Construction plan sheet 10D depicts a PFSH at station 15+35 –Ramp CY1- right, outside of the riparian buffer. The permit drawings depict a 3-meter level spreader in this area. Additionally, drainage structures have been moved in this area within the riparian buffer.
Status: PFSH not constructed, drainage line is in place.
Resolution: Due to the contour of the existing land, a PFSH would function better in this area. Also, drainage structure #66 was moved from Station 14+60 to Station 15+00 - Ramp CY1- to eliminate an excessive length of pipe. The PFSH was sized per current NCDENR-DWQ guidelines to provide diffuse flow outside the riparian buffer. No additional impacts occur.
Regulatory Issue: Riparian buffer rule

Issue: Construction plan sheet 10D depicts a lateral base ditch along the northern slope of –Ramp CY1- in the buffer. The permit drawings do not depict this ditch.
Status: Constructed.
Resolution: An off-site drainage area was unaddressed in the previous permit drawing right of station 16+75 –Ramp CY1-. The drainage area required a cross pipe to be added to drain this area. With the addition of this pipe, a lateral ditch was required at the outlet to convey the discharge adequately. The drainage area that the ditch carries is too large to implement a level spreader or PFSH at the buffer limits. Almost all of the drainage is from off site. The small percentage of on-site runoff from impervious surfaces is entirely sheet-flow and travels through a minimum of fifty feet of grassed area before entering the ditch. The ditch is rock lined to address the design velocities and prevent erosion. It will not impact any additional buffers since this entire area was included in the original impact summary.
Regulatory Issue: Riparian buffer rule

Issue: Construction plan sheet 11C depicts toe protection within the riparian buffer along the northern and southern fill slopes of –Ramp BDY1- and –Ramp CY1-. The toe protection is not depicted on the permit drawings.
Status: Not constructed.
Resolution: The northern fill slope for –Ramp CY1- was revised to 2:1 and reduced the buffer impacts. Although toe protection for Section CC will impact 0.6 meters (2 feet) outside of the fill slope, the buffer impacts have been reduced by the revision to the fill slope. However, no impact reduction has been shown in the revised impact summary since the entire area was included in the original impact summary.
Regulatory Issue: Riparian buffer rule

Issue: The permit drawing depicts a level spreader located at Station 18+60 -Ramp BDY1- left. This level spreader is not shown on the construction plans.
Status: Construction not required.
Resolution: This level spreader was located at the outlet of a system that has been removed. The concentrated flow no longer exists, thus the level spreader was no longer necessary.
Regulatory Issue: Riparian buffer rule

Issue: The permit drawings indicate that the structure under –Ramp BDY1- is a 1350 mm pipe. Construction plan sheet 11C depicts the structure is a 1200 mm pipe.
Status: Constructed.
Resolution: The 1350 mm pipe was found to be excessive and was redesigned according to NCDOT guidelines to a 1200 mm pipe.
Regulatory Issue: Section 404 permit, Section 401 certificate

Issue: The permit drawing depicts the inlet of the structure under –Ramp BDY1- originating directly outside of the fill slope and not connecting to an existing pipe underneath existing US 64. Construction plan sheet 11C depicts the inlet of the structure directly connected by a junction box to the existing pipe under fill.
Status: Constructed.
Resolution: The fill slopes on the permit drawing have been revised to show the actual bridge approach fill, which covers this area completely. This change will impact an additional 10 meters (33 feet) of stream and has been added to the impact summary. Also, impacts to buffer Zone 1 increased by 0.003 hectares (0.007 acres) and to Zone 2 by 0.002 hectares (0.005 acres).
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

Issue: The permit drawing depicts drainage structures that flow to a level spreader at Station 17+60 –Ramp BDY1- right. These devices are not depicted on construction plan sheet 11C.
Status: Deleted.
Resolution: Several drainage structures were found to be excessive on –Ramp BDY1-. These devices were removed and the drainage system has been revised to a single inlet that directs the discharge to the opposite side of the ramp outside of the riparian buffers to a PFSH, sized per current NCDENR-DWQ recommendations. No additional impacts occur as a result of this change.
Regulatory Issue: Riparian buffer rule

Issue: The outlet of the 1200 mm pipe under –Ramp BDY1- (Structure #101) is perched approximately 0.6 meters (2 feet). The pipe was installed to the correct grade in the bed of the channel; the channel bed has degraded since the installation.
Status: Pipe has been constructed. Cross vanes have not been constructed.

Resolution: It is proposed to add two cross vanes between the two ramps to provide grade control and stabilize the channel from further degradation. The channel will be re-graded so that the upstream pipe will be buried 20 percent. These revisions will not cause any additional impacts as this entire area had been previously mitigated.
Regulatory Issue: Section 404 permit, Section 401 certificate

In addition, permit drawings 16 and 17 contradict each other and show two separate layouts for drainage. Permit drawing 16 shows several pipes that outlet directly into the stream.

At Site 9, an additional 10 meters (33 feet) of 'Existing Channel Impacted' and 0.001 hectares (0.003 acres) of 'Fill in Surface Waters' have occurred. Also, impacts to buffer Zone 1 increased by 0.003 hectares (0.007 acres) and to Zone 2 by 0.002 hectares (0.005 acres).

At Site 10, impacts to Zone 1 have decreased by 0.003 hectares (0.007 acres).

Site 11 and Site 12 Section CC (Permit drawing 18 of 22 dated 3/22/02) and Construction Plan Sheets 14 and 15
Issue: Construction plan sheet 15 depicts a PFSH inside the wetland limits located at the outlet of a pipe and an additional drainage inlet at Station 186+05 right. These features are not depicted on the permit drawing.
Status: PFSH not constructed, drainage pipe is in place.
Resolution: Shoulder berm gutter was added due to the addition of guardrail in this area. This required a drainage inlet to be added. A PFSH, sized per current NCDENR-DWQ recommendations, was added to diffuse the flow from the outlet pipe. The PFSH will impact an additional 0.002 hectares (0.006 acres) of wetlands.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

Overall at these sites, the impacts have been reduced by better delineation of the cut/fill slopes than were shown in the permit drawings. At Site 11, 'Fill in Wetlands' impact was reduced by 0.009 hectares (0.022 acres) and 'Mechanized Clearing' was reduced by 0.017 hectares (0.042 acres). At Site 12, 'Fill in Wetlands' was reduced by 0.008 hectares (0.020 acres) and 'Mechanized Clearing' was reduced by 0.074 hectares (0.183 acres).

Site 13 Section CC (Permit drawing 19 of 24 dated 3/22/02 and 20 of 24 dated 4/8/02) and Construction Plan Sheet 20
Issue: The permit drawings depict a lateral ditch that flows to a level spreader on the south side of –Y3-. The construction plan depict a reconfigured lateral ditch that conveys additional drainage from the north side of –Y3-.
Status: Constructed.
Resolution: The ditch on the south side of –Y3- was reconfigured based on existing field conditions and causes no additional impacts to the level spreader design. No additional drainage area has been added to the lateral ditch from the permit.
Regulatory Issue: Riparian buffer rule

Issue: The permit drawings depict a drainage pipe with a PFSH located at Station 12+20 RT -Y3-. The construction plan depicts the PFSH and drainage system located at Station 11+80 RT -Y3-
Status: Not constructed.
Resolution: Additional shoulder berm gutter was added which betters protects the buffers as runoff that previously flowed directly into the buffers is now collected and directed to a PFSH, sized per current NCDENR-DWQ recommendations, outside of the riparian buffer. No additional impacts occur as a result of this change.
Regulatory Issue: Riparian buffer rule

Issue: The construction plans depict a lateral ditch, toe protection, and an additional inlet (structure #202) on the north side of –Y3-. These features are not depicted on the permit drawing.
Status: Constructed.
Resolution: These revisions do not impact the buffer zones or jurisdictional streams since both do not begin until the south side of –Y3-.
Regulatory Issue: Riparian buffer rule

No additional impacts occur at this site.

Site 14 Section CC (Permit Drawing 21 of 24 dated 2/7/01 and 22 of 24 dated 2/7/01) and Construction Plan Sheet 13
Issue: The permit drawings depict fill in surface water at station 180+60 right, but do not depict a relocated channel for this fill. The construction plan submitted and approved as part of the original permit application depict the stream relocation as a riprap lined channel (including riprap in the bottom of the channel).
Status: Constructed.
Resolution: The stream relocation detail has been revised to show riprap only on the banks of the channel. No additional stream impacts have occurred as a result of this revision as the portion of the channel and the buffer impacts were accounted for in the original impact summary.
Regulatory Issue: Section 404 permit, Section 401 certificate

Issue: The construction plan submitted and approved as part of the original permit application depicts a lateral ditch and several structures along the southern fill slope of the roadway right of Station 180+00. This lateral ditch is not depicted on the permit drawings.
Status: Constructed.
Resolution: A lateral base ditch was retained and revised on the southern fill slope to convey off-site drainage. The design was further revised to make use of the existing 750mm pipe that runs laterally along the right side of the roadway that was originally believed to not be in place.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

Issue: The current construction plan depicts additional inlets (structures #205 and #206) right of stations 180+00 and 180+40. These inlets are not shown on the permit drawings or the construction plan submitted and approved as part of the original permit application.
Status: Constructed, except PFSH.
Resolution: Shoulder berm gutter was required due to the addition of guardrail, which required the additional inlets to provide adequate roadway surface drainage. The additional inlets will be directed to a PFSH, sized per current NCDENR-DWQ recommendations.
Regulatory Issue: Riparian buffer rule

Issue: The current construction plan depict an additional pipe (structure #145) right of station 180+40. This pipe is not shown on the permit drawings or the construction plan submitted and approved as part of the original permit application.
Status: Constructed.
Resolution: NCC encountered an existing pipe during construction that was not shown in the design. The pipe was extended as required and does not cause any additional impacts.
Regulatory Issue: Riparian buffer rule, Section 404 permit, Section 401 certificate

Issue: The current construction plan depicts a lateral ditch along the northern fill slope of the roadway left of –L- from 180+30 to 181+00. This ditch is not depicted on the permit drawings or the construction plan submitted and approved as part of the original permit application.
Status: Constructed.
Resolution: The jurisdictional stream and buffers do not begin until the southern side of the roadway right of –L-. Therefore, the ditch is not in a buffer zone and does not cause any impact. The ditch is necessary to convey off-site stormwater to the existing cross pipe. This ditch only replaces the existing ditch.
Regulatory Issue: Riparian buffer rule

No additional impacts occur at this site. The quantity included in the original impact summary under 'Enclosed Channel' was removed since there was an existing pipe under US 64 and no existing channel was enclosed.

REGULATORY APPROVALS

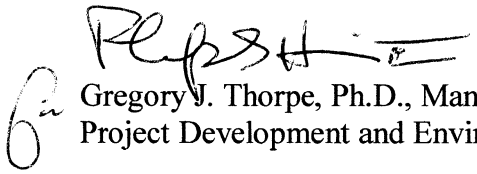
Application is hereby made for the modification of the Department of Army Individual 404 Permit as required for the above-described activities. We are also hereby requesting a modification of the 401 Water Quality Certification and Neuse Buffer Certification from the NCDENR-DWQ. R-2547 BB, C, and CC has been designed to comply with the Riparian Buffer Mitigation Program (15A NCAC 2B .0242) and the Neuse River Basin Riparian Buffer Rules (15A NCAC 2B .0233). Therefore, as part of the Modification request, we respectfully request that the NCDENR-DWQ issue an Authorization Certificate pursuant to 15A NCAC 2B .0233 for the proposed use. In compliance with Section 143-215.3D(e) of the NCAA we have provided a method of debiting $200, as noted in the subject line of this application, as payment for processing

the Section 401 Water Quality Certification modification application. We are providing seven copies of this application to NCDENR-DWQ, for their use.

This modification application contains revised permit application sheets 5, 6, 8, 9, 12, 13, 14, 15, 17, 20, 22, 23, 24, and 29 of 30 and new sheet 20A for Section BB; sheets 9, 11, 12, 14, 15, 16, 18, 19, 20, 21, 22, 23, 26, 27, 29, 30, 31, and 34 of 34 and new sheets 20A, 20B, 20C and 22A for Section C; sheets 6, 7, 8, 9, 12, 13, 14, 15, 16, 16A, 17, 18, 19, 20, 21, 22, and 23 of 24 for Section CC.

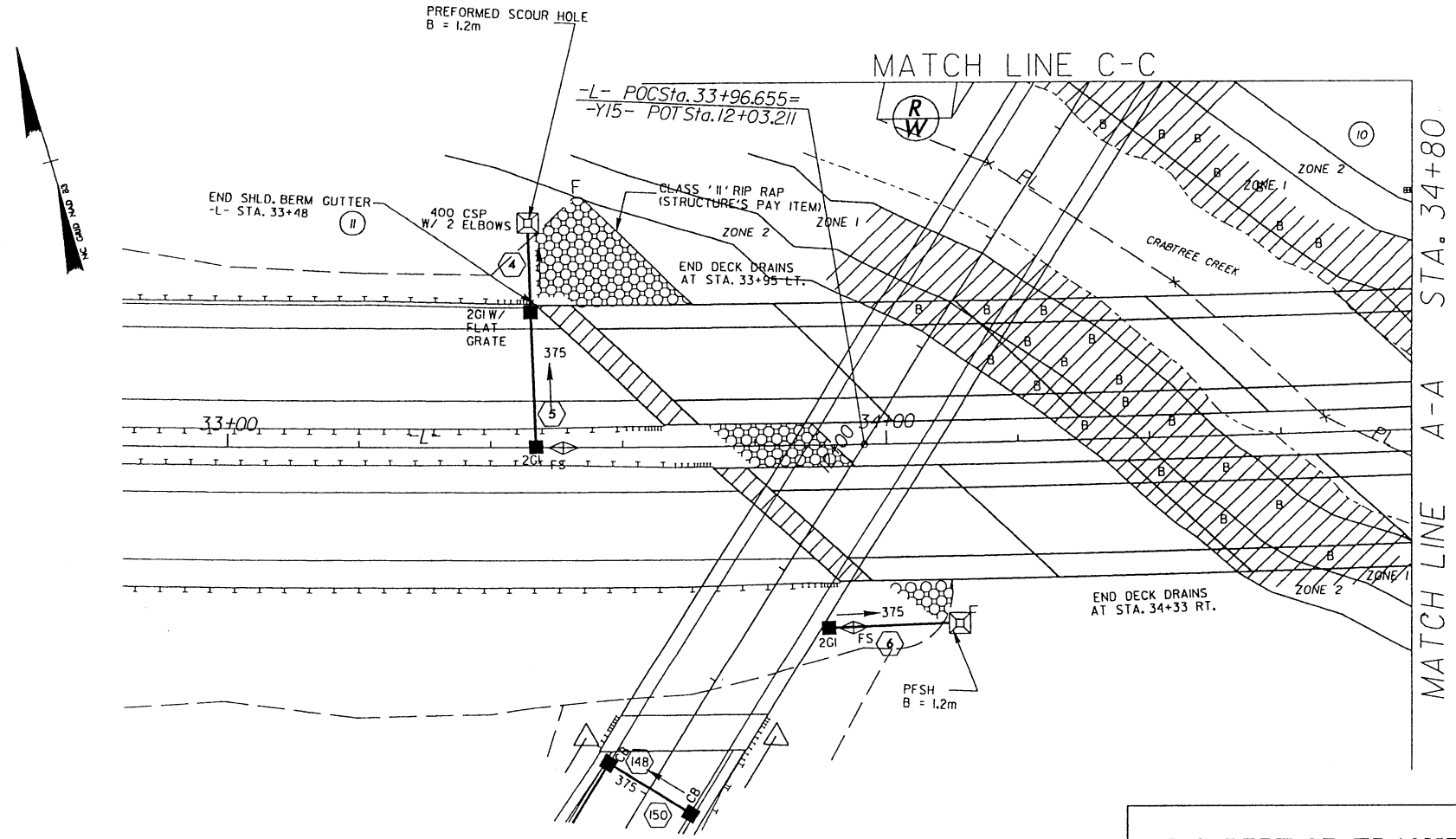
If you have any questions or need additional information, please call Ms. Alice N. Gordon at (919) 715-1421 or 715-1500.

Sincerely,



Gregory J. Thorpe, Ph.D., Manager
Project Development and Environmental Analysis Branch

cc: w/attachment
David Franklin, USACE, Wilmington Field Office
Travis Wilson, NCWRC
Garland Pardue, USFWS, Raleigh
John Sullivan III, P.E., FHWA
John Hennessy, NCDENR-DWQ
John G. Nance, P.E., Division 5 Engineer
Chris Murray, Division 5 DEO
Tracy Parrot, P.E., Division 5 Construction Engineer
Steve Leonard, Division 5 Resident Engineer
Paul Newman, North Carolina Constructors
Ing. Martijn Bolster, North Carolina Constructors
Alice N. Gordon, NCDOT Environmental Supervisor
w/out attachment
Calvin Leggett, P.E. Program Development Branch
Art McMillan, P.E., Highway Design Branch
David Chang, P.E., Hydraulics Unit
Greg Perfetti, P.E., Structure Design Unit
Jay Bennett, P.E., Roadway Design Unit
Steve Dewitt, P.E., Director of Construction
Ellis Powell, P.E., State Construction Engineer



PLAN VIEW
SITE 1

10m 0 20m

SCALE

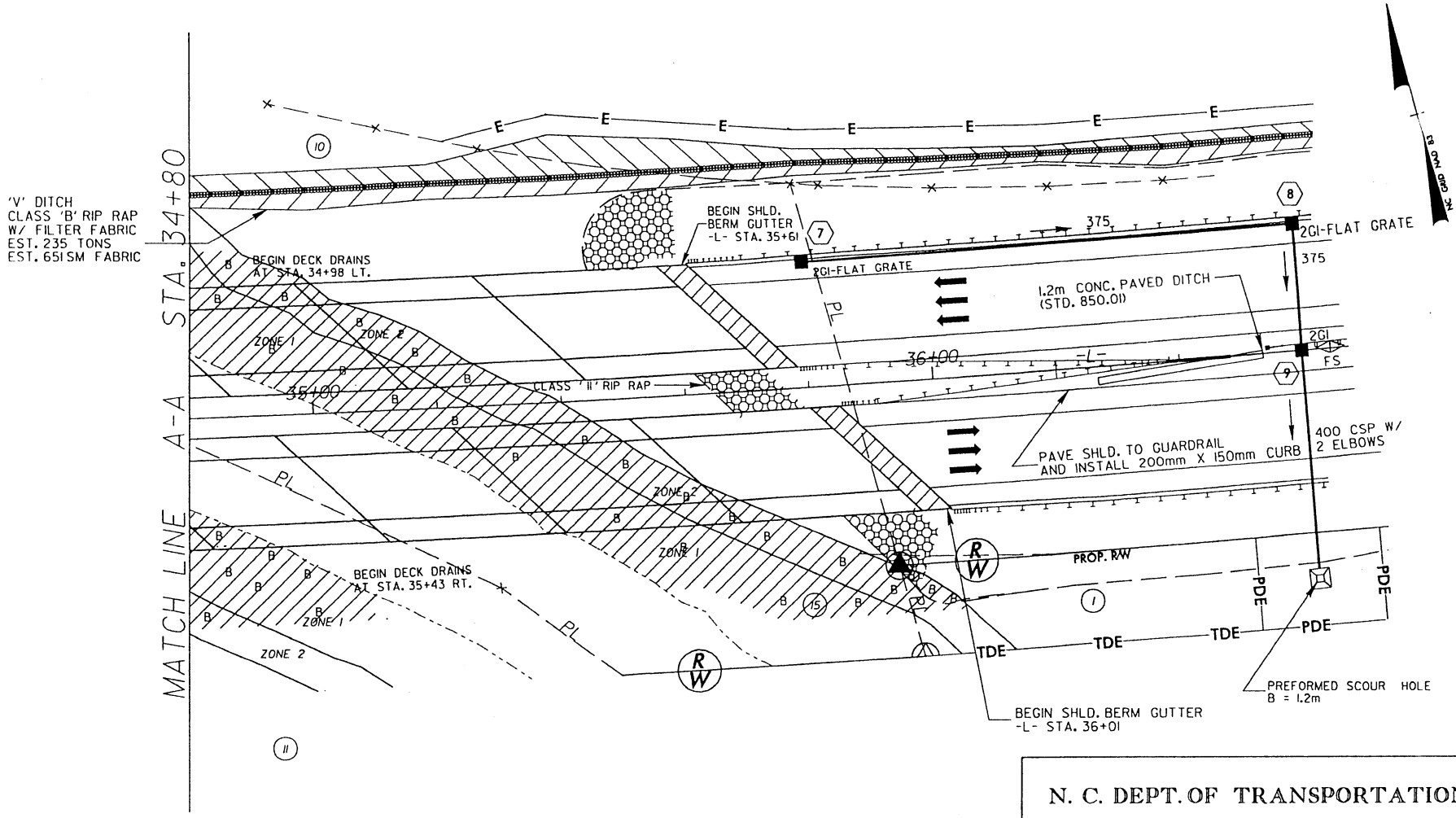
DENOTES IMPACTS TO BUFFER ZONES

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

PROJECT: 8.1402202 (R-2547BB)

US 64 BYPASS FROM NEW HOPE ROAD TO EAST OF SR 2601 CLIFTON ROAD

SHEET 5 OF 30 REV 12/11/03



PLAN VIEW

SITE 1

10m 0 20m

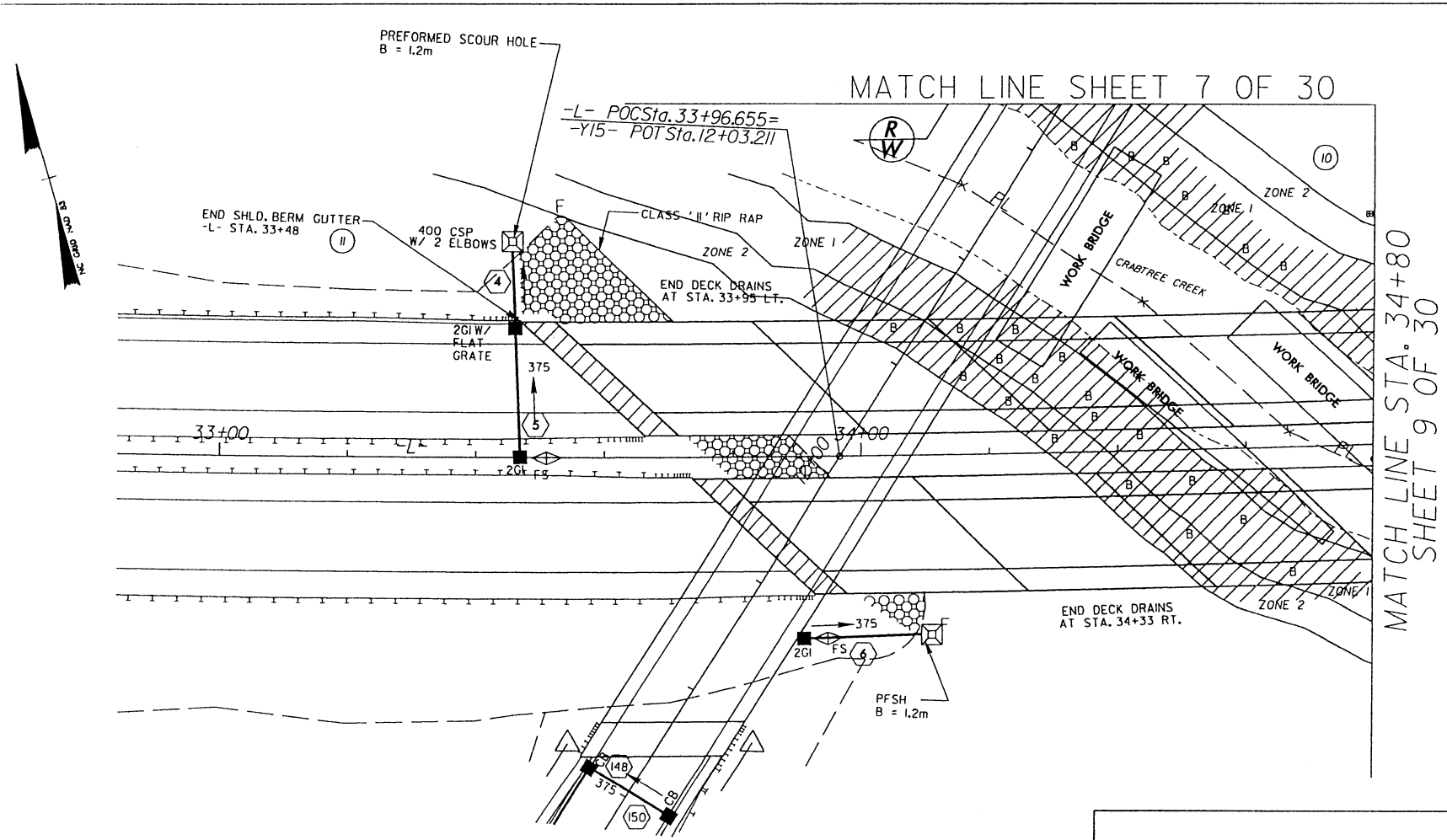
SCALE

DENOTES IMPACTS TO BUFFER ZONES

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 8.1402202 (R-2547BB)

US 64 BYPASS FROM NEW HOPE ROAD TO EAST OF SR 2601 CLIFTON ROAD

SHEET 6 OF 30 REV 12/11/03



PLAN VIEW FOR CONSTRUCTION OF BRIDGE SITE 1

10m 0 20m

SCALE

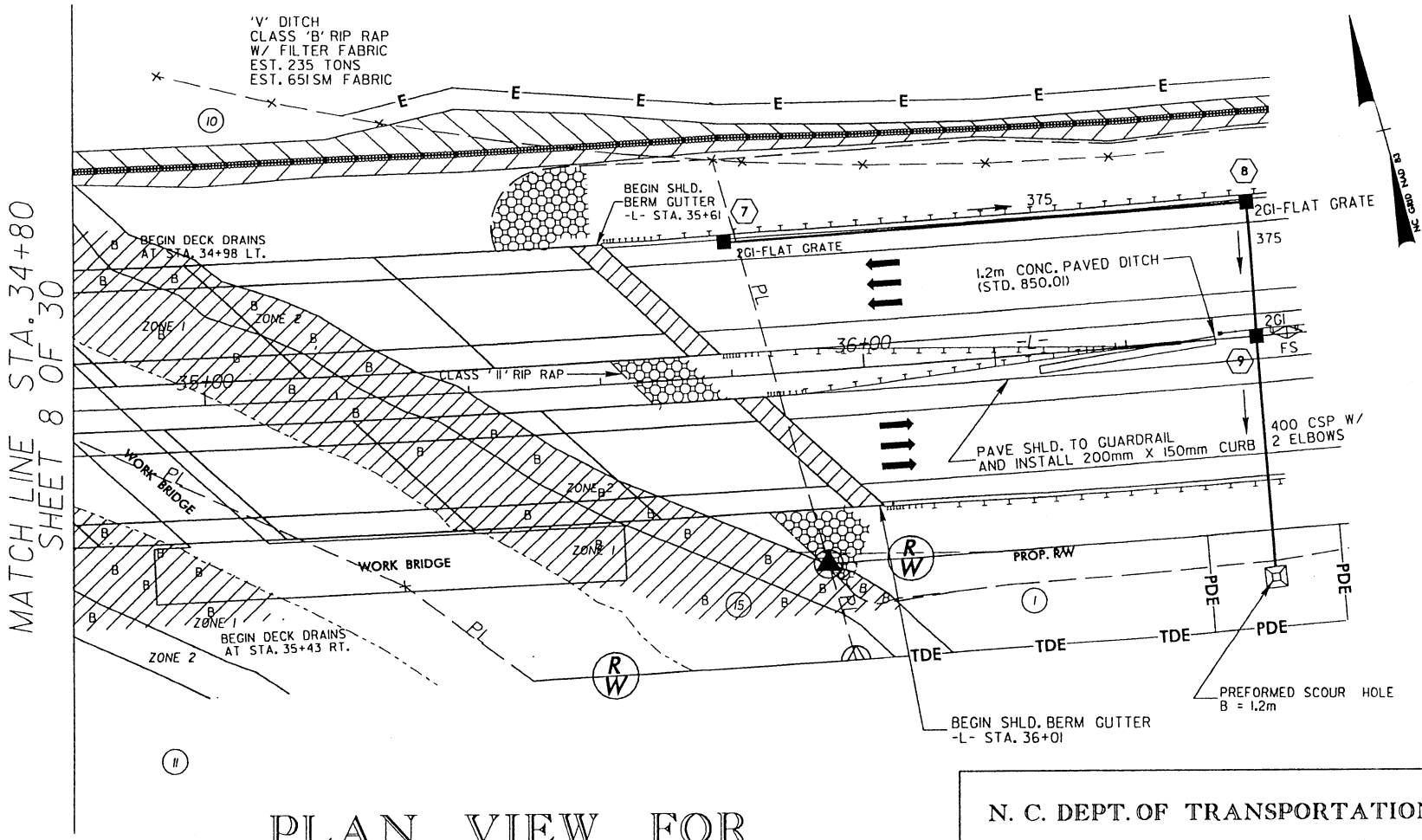
DENOTES TEMPORARY IMPACTS TO THE BUFFER ZONES

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

PROJECT: 8.1402202 (R-2547BB)

US 64 BYPASS FROM NEW HOPE ROAD TO EAST OF SR 2601 CLIFTON ROAD

SHEET 8 OF 30 REV 12/11/03



PLAN VIEW FOR CONSTRUCTION OF BRIDGE SITE 1

10m 0 20m

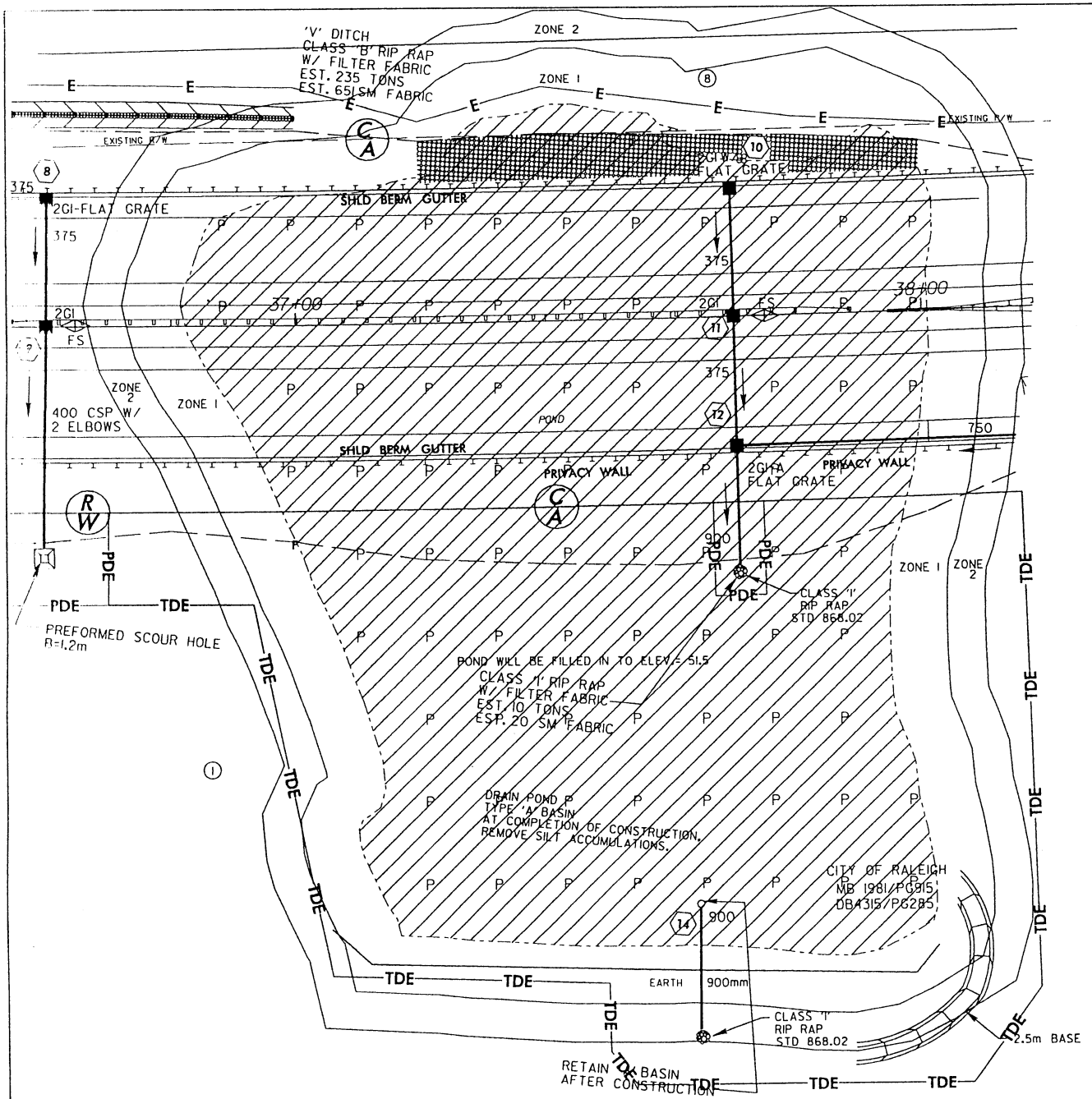
SCALE

B B B B DENOTES TEMPORARY IMPACTS TO THE BUFFER ZONES

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 8.1402202 (R-2547BB)

US 64 BYPASS FROM NEW HOPE ROAD TO EAST OF SR 2601 CLIFTON ROAD

SHEET 9 OF 30 REV 12/11/03



PLAN VIEW
SITE 2

P P P DENOTES FILL IN SURFACE WATERS (POND)

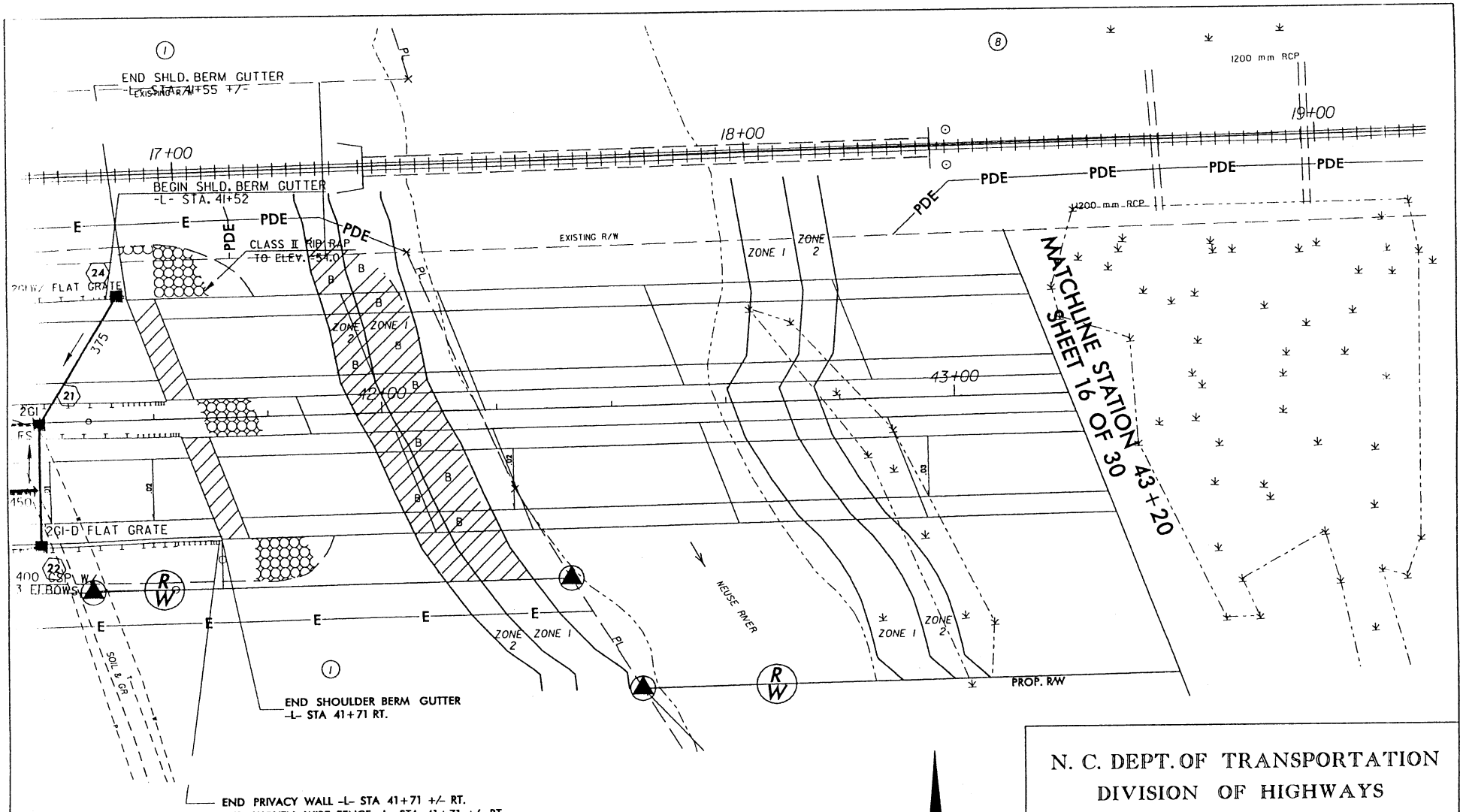
10m 0 20m SCALE

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

PROJECT: 8.1402202 (R-2547BB)

US 64 BYPASS FROM NEW HOPE ROAD TO EAST OF SR 2601 CLIFTON ROAD

SHEET 12 OF 30 REV 12/11/03



PLAN VIEW
SITE 3

10m 0 20m SCALE

DENOTES IMPACTS TO THE BUFFER ZONES

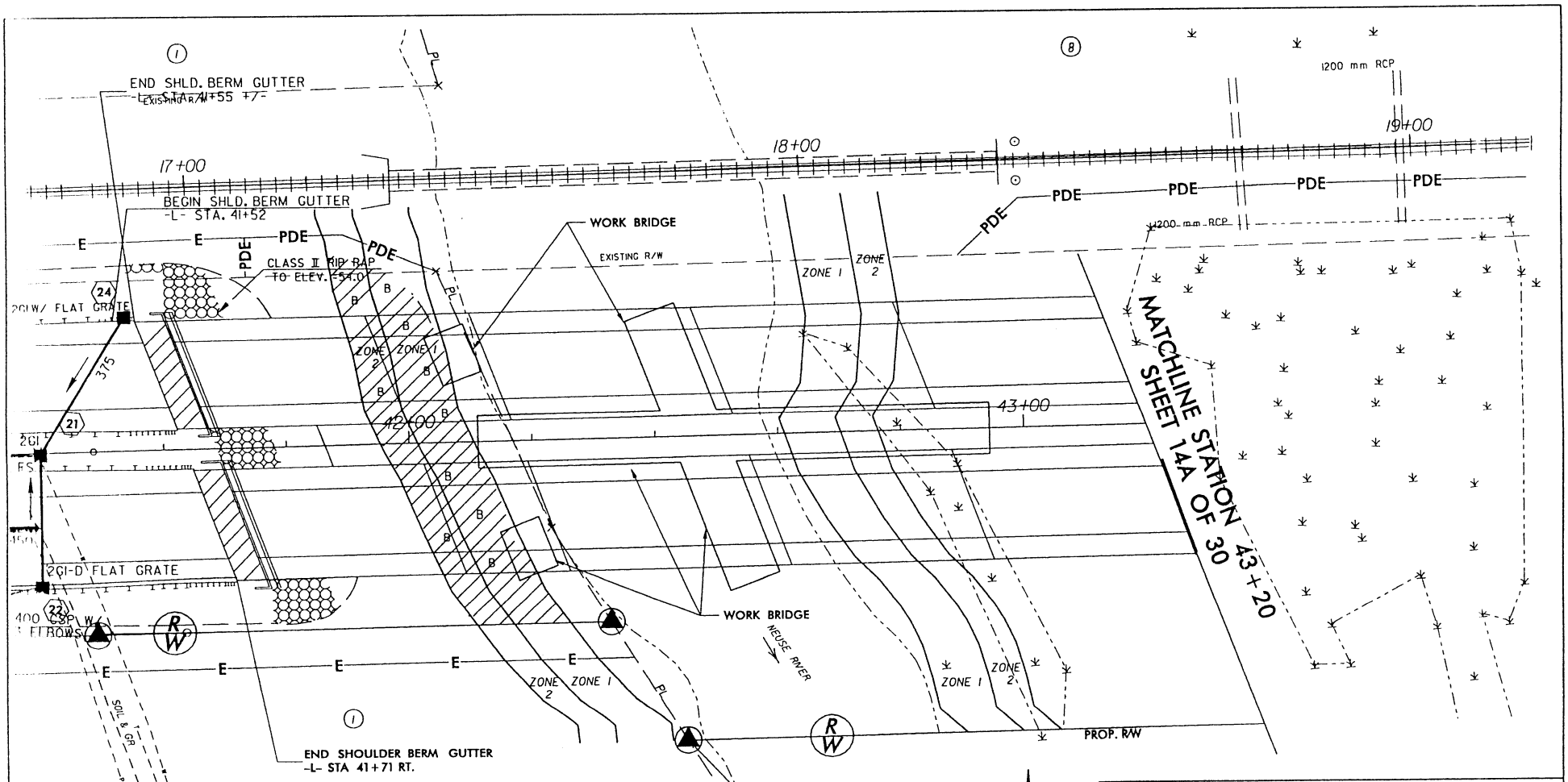
NC GRID NAD 83

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

PROJECT: 8.1402202 (R-2547BB)

US 64 BYPASS FROM NEW HOPE ROAD TO EAST OF SR 2601 CLIFTON ROAD

SHEET 13 OF 30 REV 12/11/03



PLAN VIEW FOR CONSTRUCTION OF BRIDGE SITE 3

DENOTES TEMPORARY FILL IN WETLANDS

DENOTES TEMPORARY IMPACTS TO THE BUFFER ZONES

10m 0 20m

SCALE

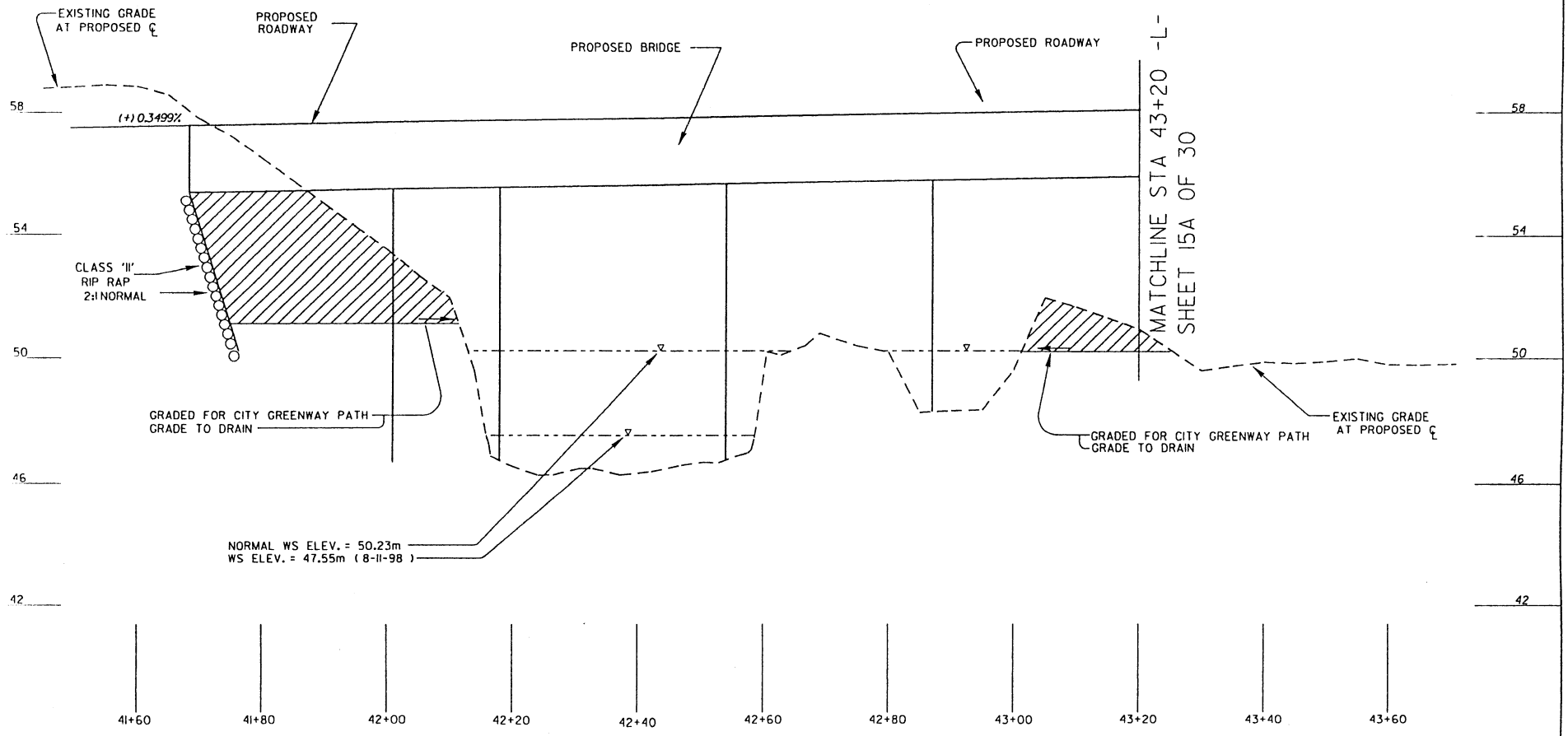
NC GRID NAD 83

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

PROJECT: 8.1402202 (R-2547BB)

US 64 BYPASS FROM NEW HOPE ROAD TO EAST OF SR 2601 CLIFTON ROAD

SHEET 14 OF 30 REV 12/11/03



PROFILE
SITE 3

5m 0 10m

HORIZONTAL SCALE

1m 0 2m

VERTICAL SCALE

DENOTES EXCAVATION

N. C. DEPT. OF TRANSPORTATION

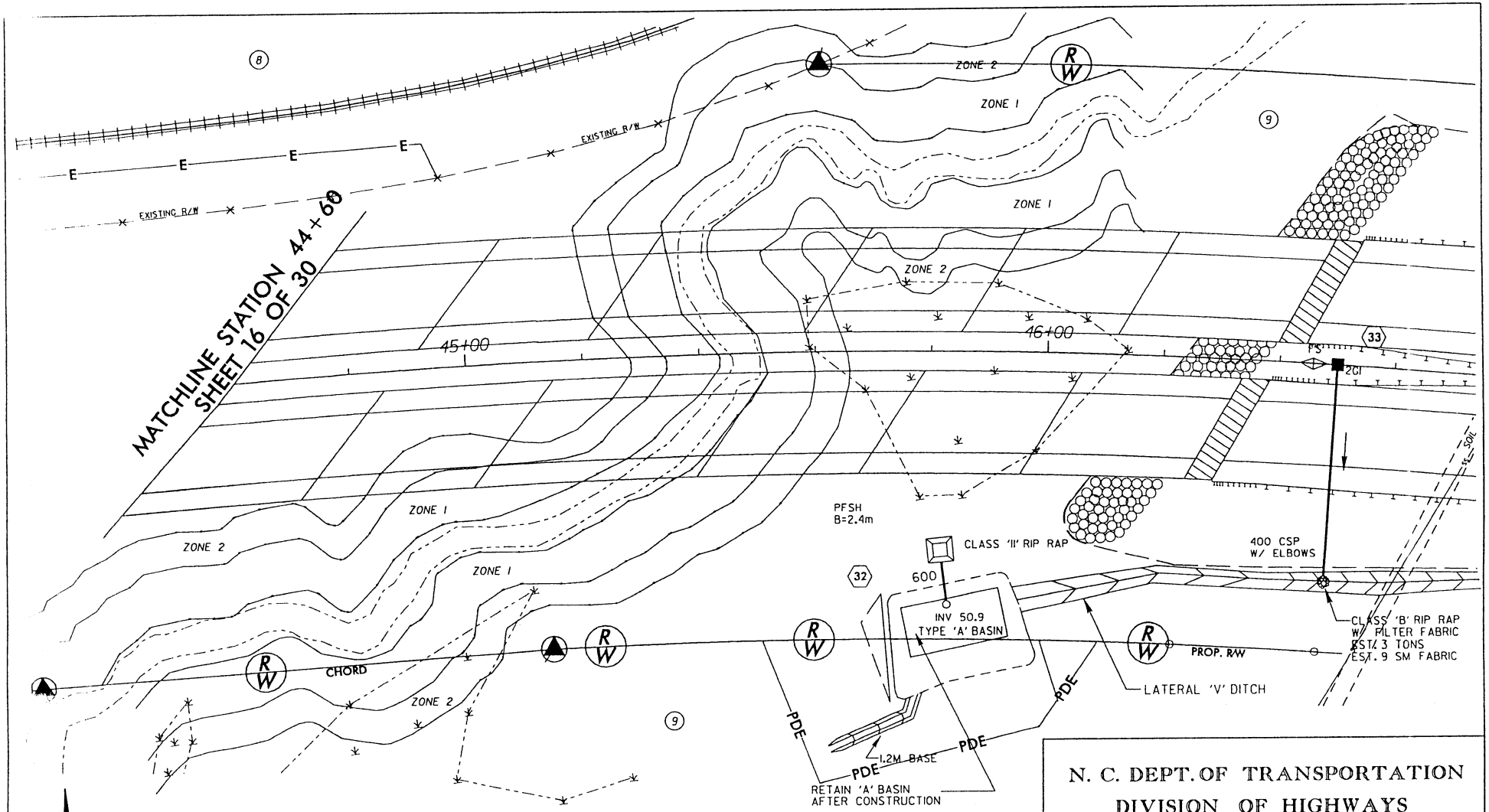
DIVISION OF HIGHWAYS

WAKE COUNTY

PROJECT: 8.1402202 (R-2547BB)

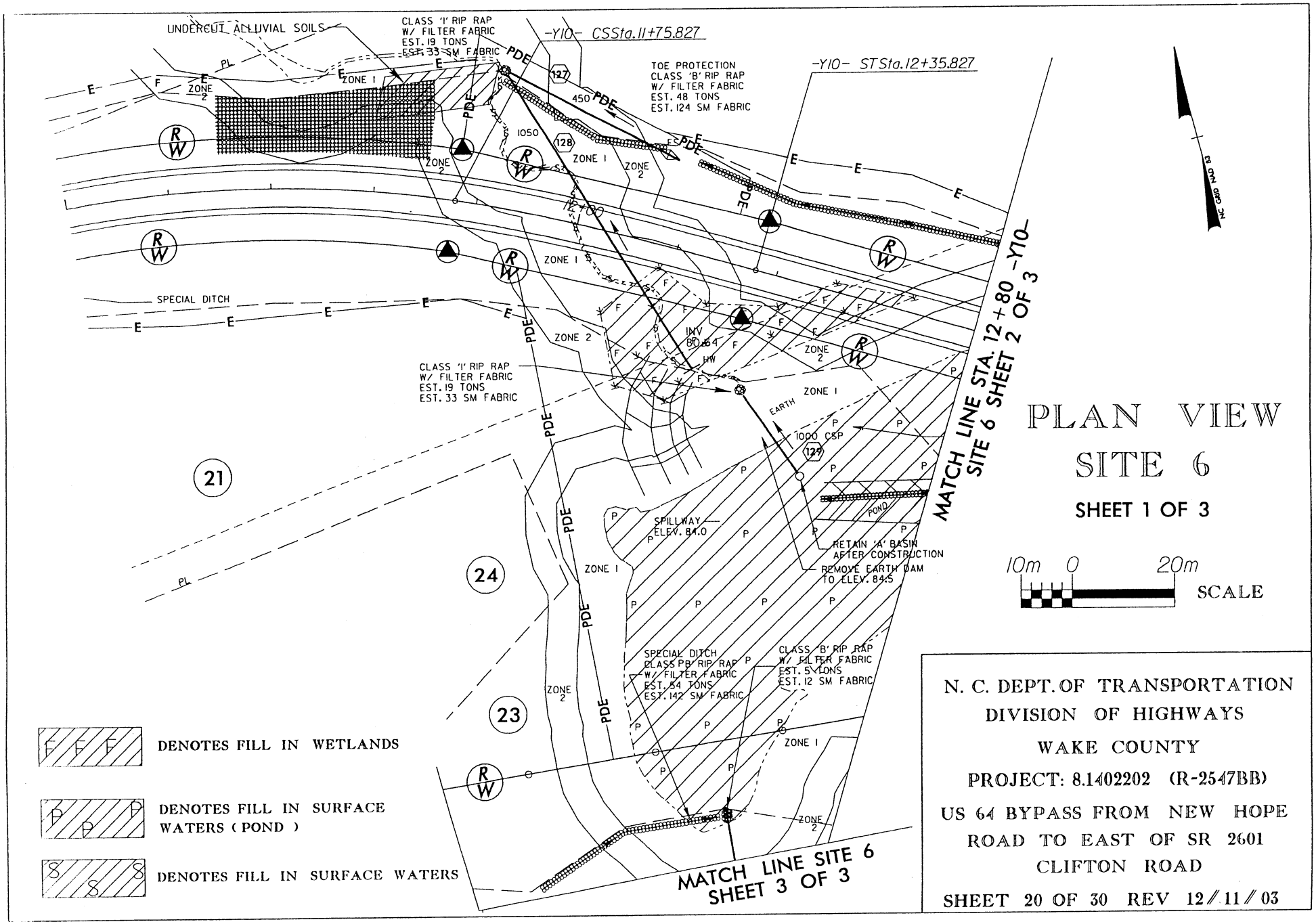
US 64 BYPASS FROM NEW HOPE ROAD TO EAST OF SR 2601 CLIFTON ROAD

SHEET 15 OF 30 REV 12/11/2003



PLAN VIEW
SITE 3

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 8.1402202 (R-2547BB)
US 64 BYPASS FROM NEW HOPE ROADTO EAST OF SR 2601 CLIFTON ROAD
SHEET 17 OF 30 REV 12/11/03



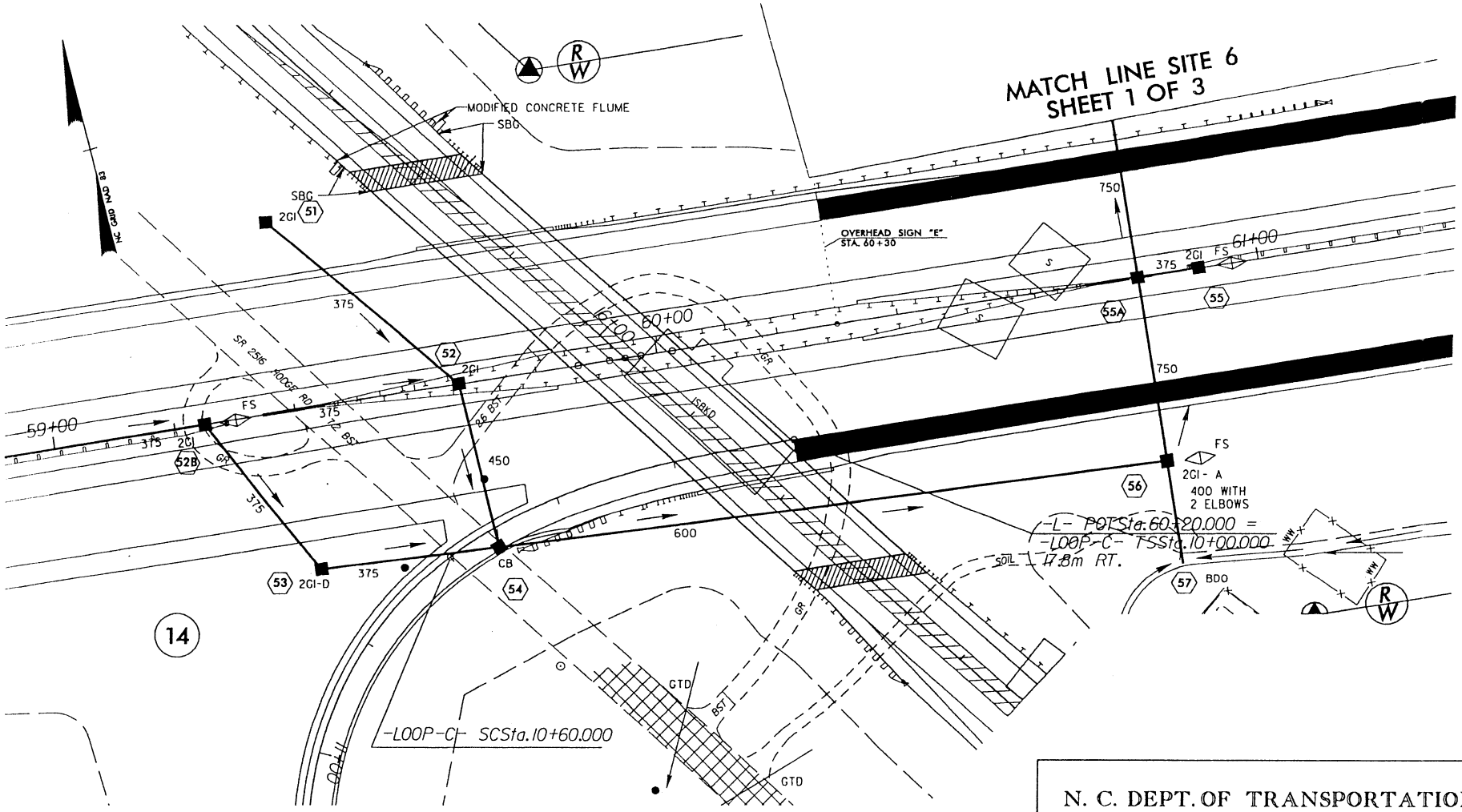
PLAN VIEW
SITE 6

SHEET 1 OF 3

10m 0 20m

SCALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 8.1402202 (R-2547BB)
US 64 BYPASS FROM NEW HOPE
ROAD TO EAST OF SR 2601
CLIFTON ROAD
SHEET 20 OF 30 REV 12/11/03



PLAN VIEW

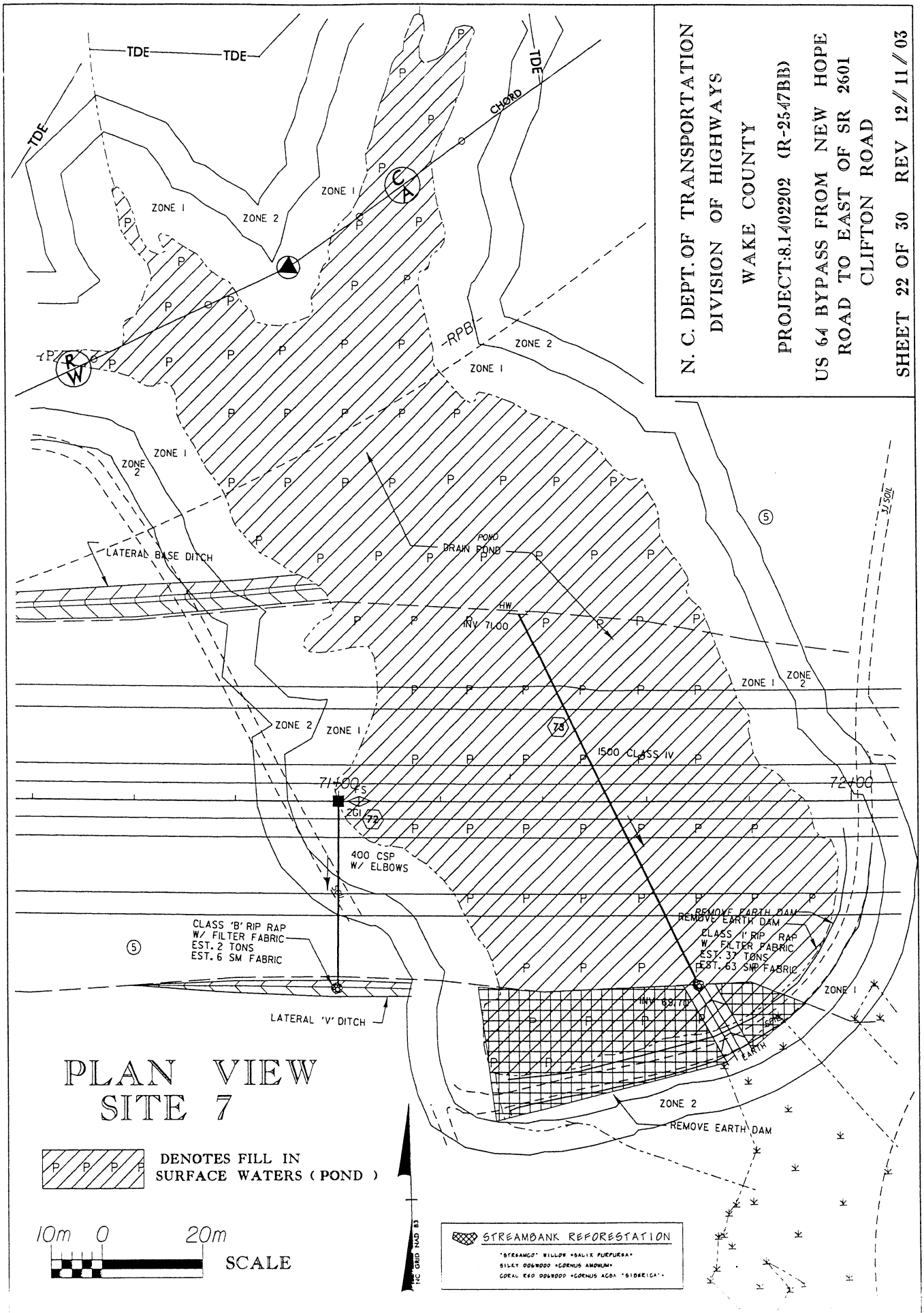
SITE 6

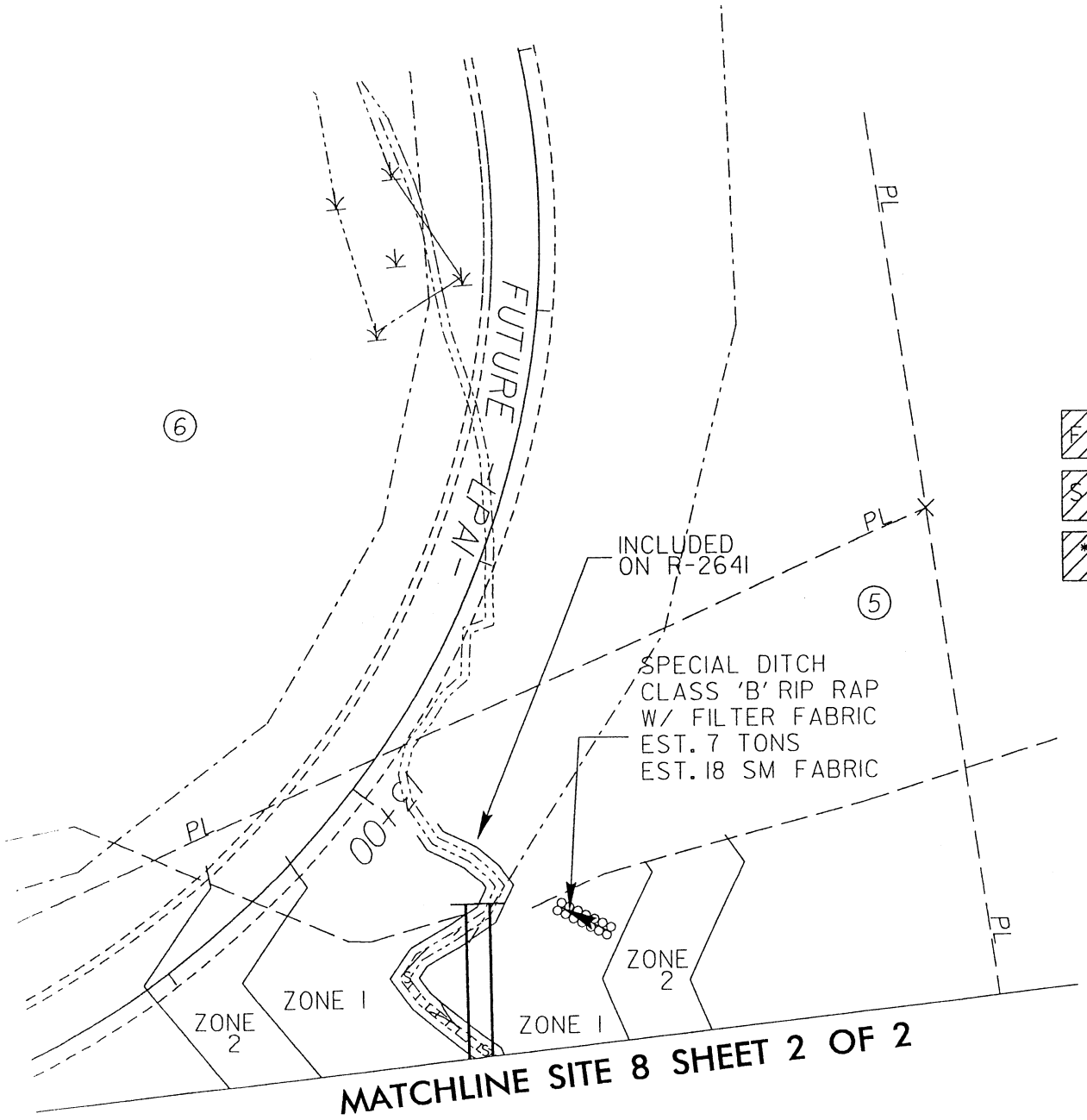
SHEET 3 OF 3

10m 0 20m

SCALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 8.1402202 (R-2547BB)
US 64 BYPASS FROM NEW HOPE ROAD TO EAST OF SR 2601 CLIFTON ROAD
SHEET 20A OF 30 12/11/03


N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT:8.1402202 (R-2547BB)
US 64 BYPASS FROM NEW HOPE
ROAD TO EAST OF SR 2601
CLIFTON ROAD
SHEET 22 OF 30 REV 12/11/03
TDE
CHORD
RPB
ZONE 1
ZONE 2
POND
BRAIN POND
LATERAL BASE DITCH
HW
INV 71.00
1500 CLASS IV
71+00
72+00
400 CSP
W/ ELBOWS
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST. 2 TONS
EST. 6 SM FABRIC
LATERAL 'V' DITCH
REMOVE EARTH DAM
CLASS 'I' RIP RAP
W/ FILTER FABRIC
EST. 37 TONS
EST. 63 SM FABRIC
INV 69.70
PLAN VIEW
SITE 7
DENOTES FILL IN
SURFACE WATERS (POND)
10m 0 20m
SCALE
STREAMBANK REFORESTATION
"SYRSANGO" WILLOW "SALIX PURPUREA"
SILKY DOGWOOD "CORNUS AMOMUM"
CORAL RED DOGWOOD "CORNUS AGDA "SIBERICA""



NC GRID NORTH

PLAN VIEW
SITE 8A

SHEET 1 OF 2

F F F DENOTES FILL IN WETLANDS

S S S DENOTES FILL IN SURFACE WATERS

DENOTES MECHANIZED CLEARING

5m 0 10m SCALE

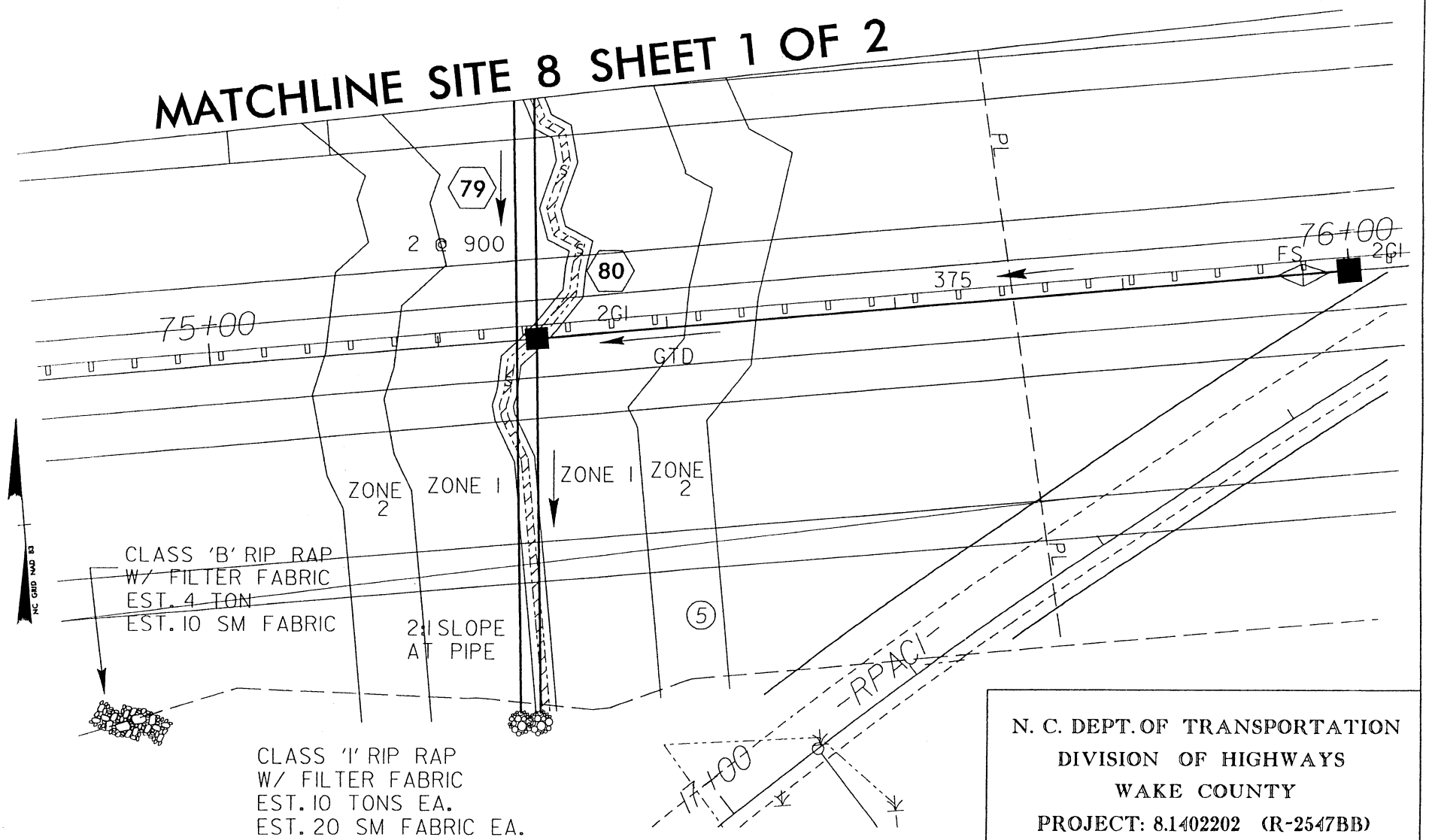
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 8.1402202 (R-2547BB)

US 64 BYPASS FROM NEW HOPE ROAD TO EAST OF SR 2601 CLIFTON ROAD

SHEET 23 OF 30 REV 12/11/03

MATCHLINE SITE 8 SHEET 1 OF 2



CLASS 'I' RIP RAP
W/ FILTER FABRIC
EST. 10 TONS EA.
EST. 20 SM FABRIC EA.

SITE 8

SHEET 2 OF 2

5m 0 10m

SCALE

DENOTES FILL IN SURFACE WATERS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 8.1402202 (R-2547BB)
US 64 BYPASS FROM NEW HOPE ROAD TO EAST OF SR 2601 CLIFTON ROAD

SHEET 24 OF 30 REV 12/11/03

IMPACT SUMMARY

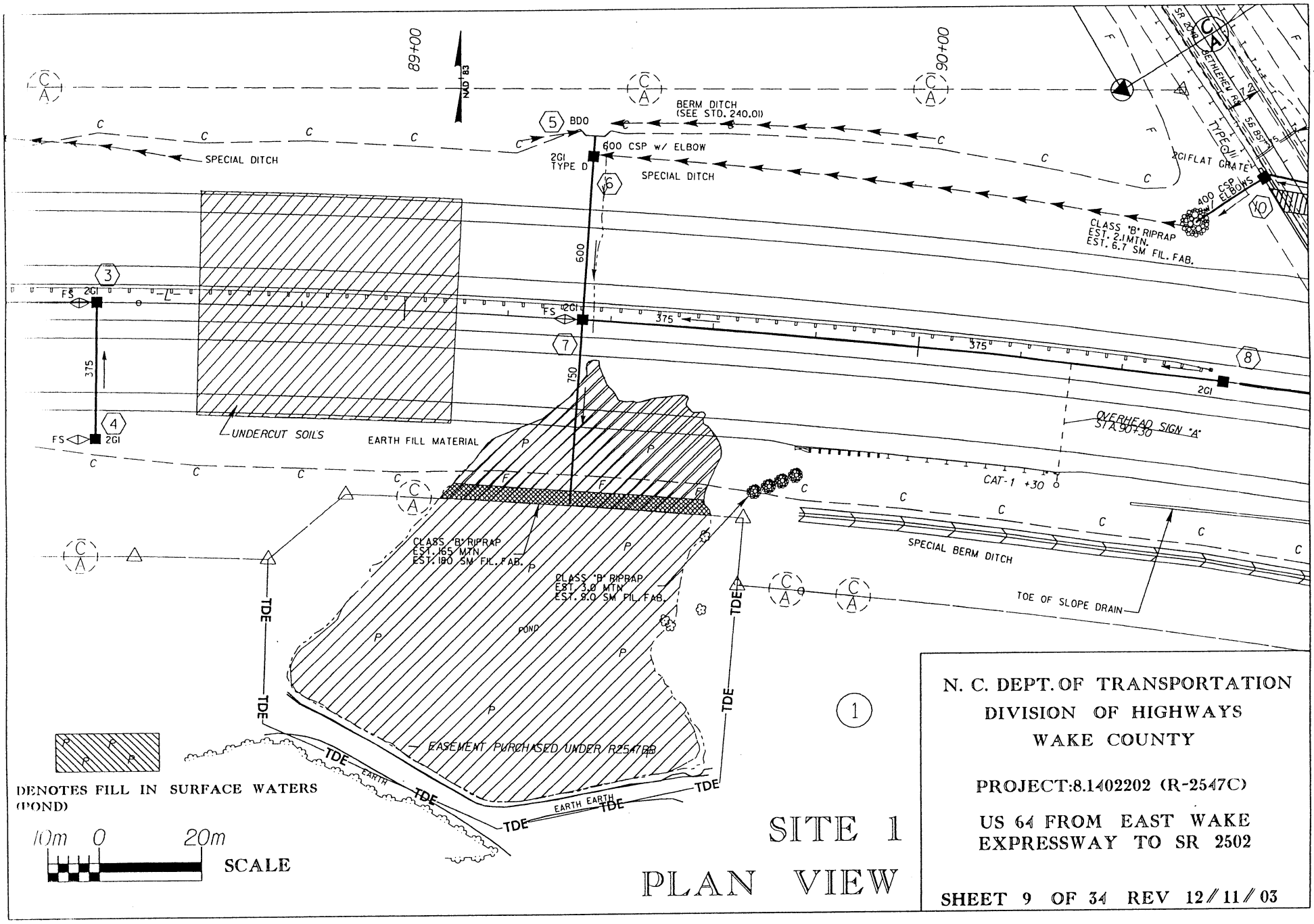
			WETLAND IMPACTS				SURFACE WATER IMPACTS						FILL IN BUFFER	
Site No.	Station (From/To)	Structure Size	Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Mechanized Clearing (Method III) (ha)	Fill In SW (Natural) (ha)	Fill In SW (Pond) (ha)	Temp. Fill In SW (ha)	Existing Channel Impacted (m)	Relocated Channel (m)	Enclosed Channel (m)	Zone 1 (ha)	Zone 2 (ha)
1	33+80-35+80	BRIDGE							0.02				0.241	0.002
	L													
	12+70 -Y15	BRIDGE							0.02				0.0005	
2	36+80-38+00							1.276					0.157	0.085
	L													
3	41+80-43+20	BRIDGE											0.043	0.035
	L													
4	43+20-43+80	---DELETED---BRIDGED												
	L													
5	44+60-46+40	--DELETED--PART OF 3												
	L													
6	11+80-14+40	1050	0.073				0.005	1.096		93			0.349	0.23
	Y10													
7	71+0072+00	1500 RCP						0.71					0.239	0.153
	L													
8	12+60-13+00		0.0005			0.003	0.004			136		63	0.107	0.07
	LPA1													
	75+20-75+40	2 @ 900 RCP												
	L													
9	79+20-79+60	1 @ 2.7m X 1.8m RCBC	0.565			0.047	0.017			87		84	0.327	0.217
	L													
10	11+60 TO		0.42			0.04								
	12+80 LPC1													
TOTALS:		ha/meters	1.06	0.00	0.00	0.09	0.03	3.08	0.04	316.00	0.00	147.00	1.46	0.79
		ac/feet	2.62	0.00	0.00	0.22	0.06	7.62	0.10	1037	0	482	3.62	1.96

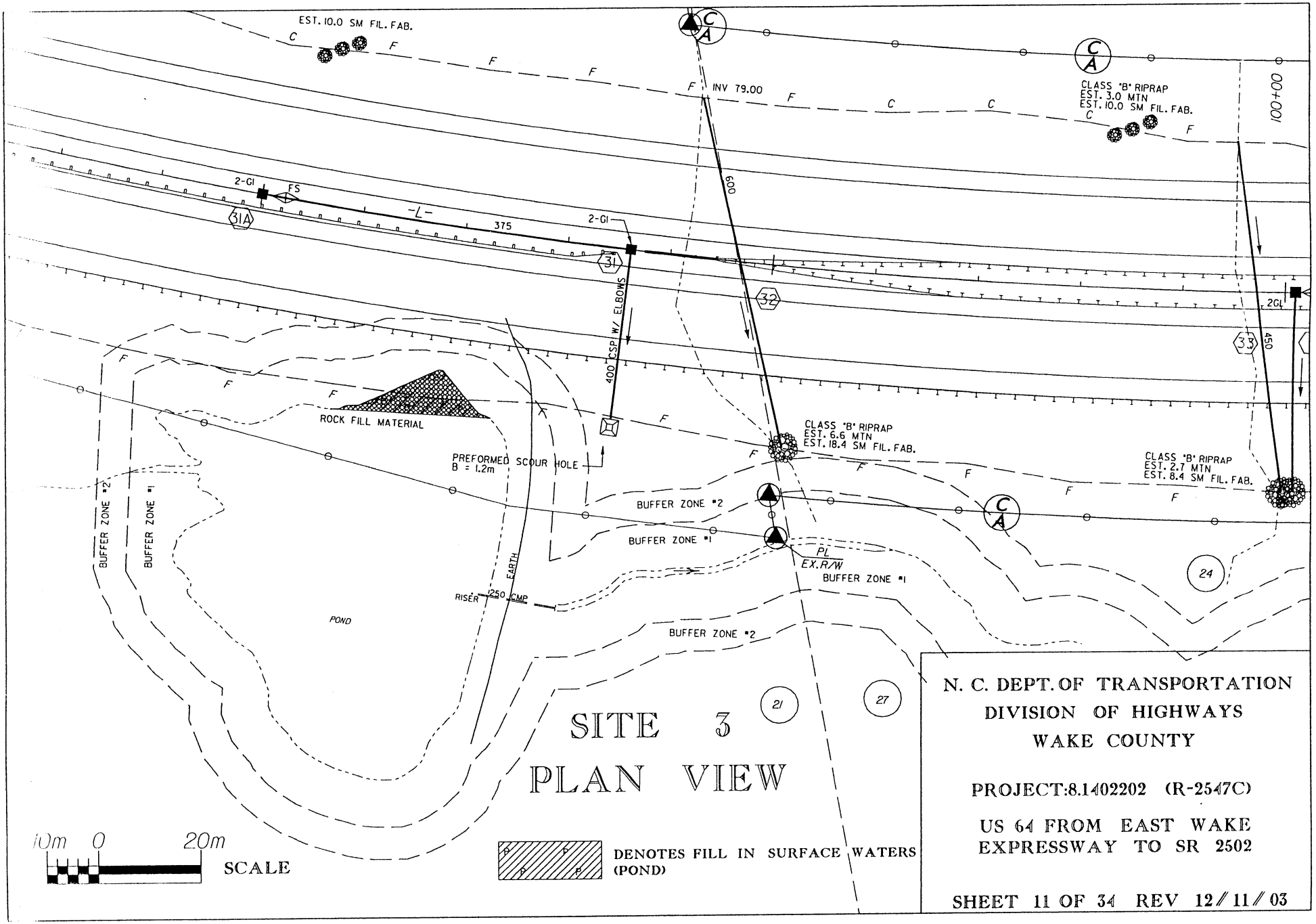
N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY

PROJEC 8.1402202 R-2547BB

REVISED 12/11/2003


89+00
90+00
NAD 83
BERM DITCH
(SEE STD. 240.01)
SPECIAL DITCH
BDO
600 CSP w/ ELBOW
2GI
TYPE D
SPECIAL DITCH
2GI FLAT GRATE
TYPE 'C'
400 CSP ELBOWS
CLASS 'B' RIPRAP
EST. 2.1 MTN.
EST. 6.7 SM FIL. FAB.
600
375
375
375
750
FS
2GI
UNDERCUT SOILS
EARTH FILL MATERIAL
OVERHEAD SIGN 'A'
STA 90+30
CAT-1 +30
SPECIAL BERM DITCH
TOE OF SLOPE DRAIN
CLASS 'B' RIPRAP
EST. 165 MTN
EST. 180 SM FIL. FAB.
CLASS 'B' RIPRAP
EST. 3.0 MTN
EST. 8.0 SM FIL. FAB.
POND
TDE
EARTH
EASEMENT PURCHASED UNDER R2547B
DENOTES FILL IN SURFACE WATERS
(POND)
10m 0 20m
SCALE
SITE 1
PLAN VIEW
1
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT:8.1402202 (R-2547C)
US 64 FROM EAST WAKE
EXPRESSWAY TO SR 2502
SHEET 9 OF 34 REV 12/11/03



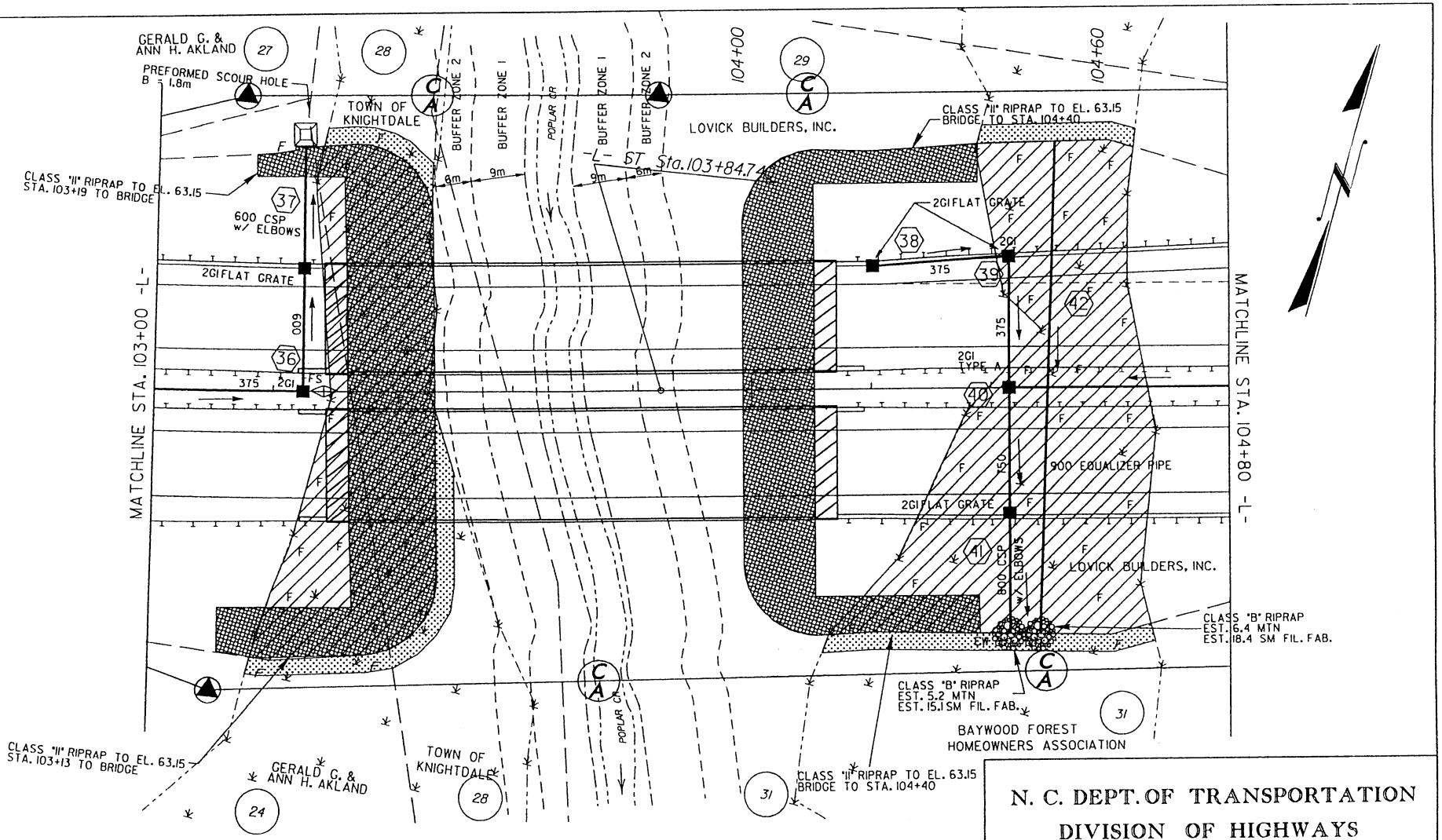
SITE 3
PLAN VIEW

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

PROJECT:8.1402202 (R-2547C)

US 64 FROM EAST WAKE
EXPRESSWAY TO SR 2502

SHEET 11 OF 34 REV 12/11/03



PLAN VIEW

SITE 4

10m 0 20m

SCALE

DENOTES TEMP. MECHANIZED CLEARING

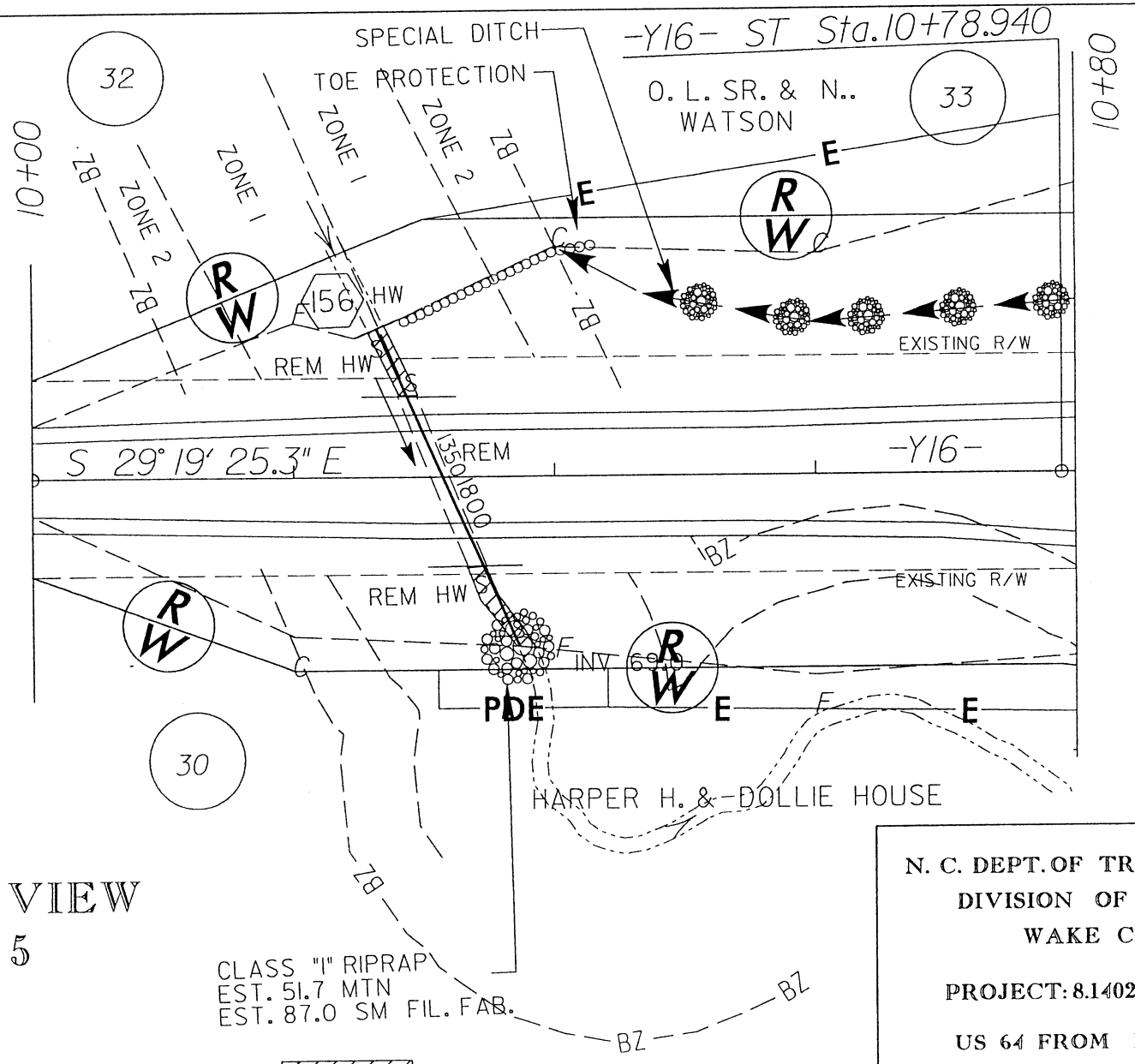
DENOTES FILL IN WETLANDS

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

PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

SHEET 12 OF 34 REV 12/11/03



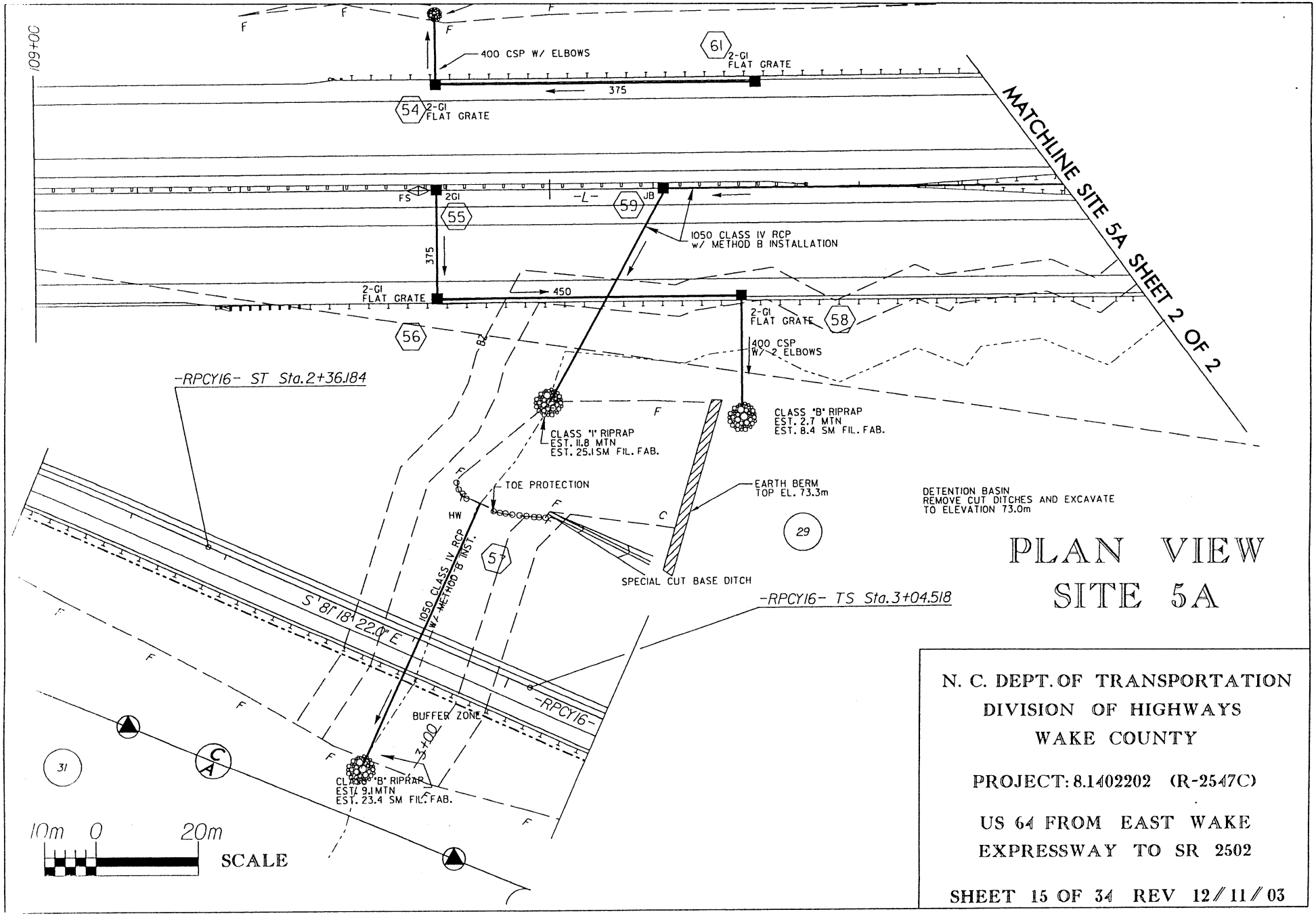
PLAN VIEW
SITE 5

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

PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

SHEET 14 OF 34 REV 12/11/03



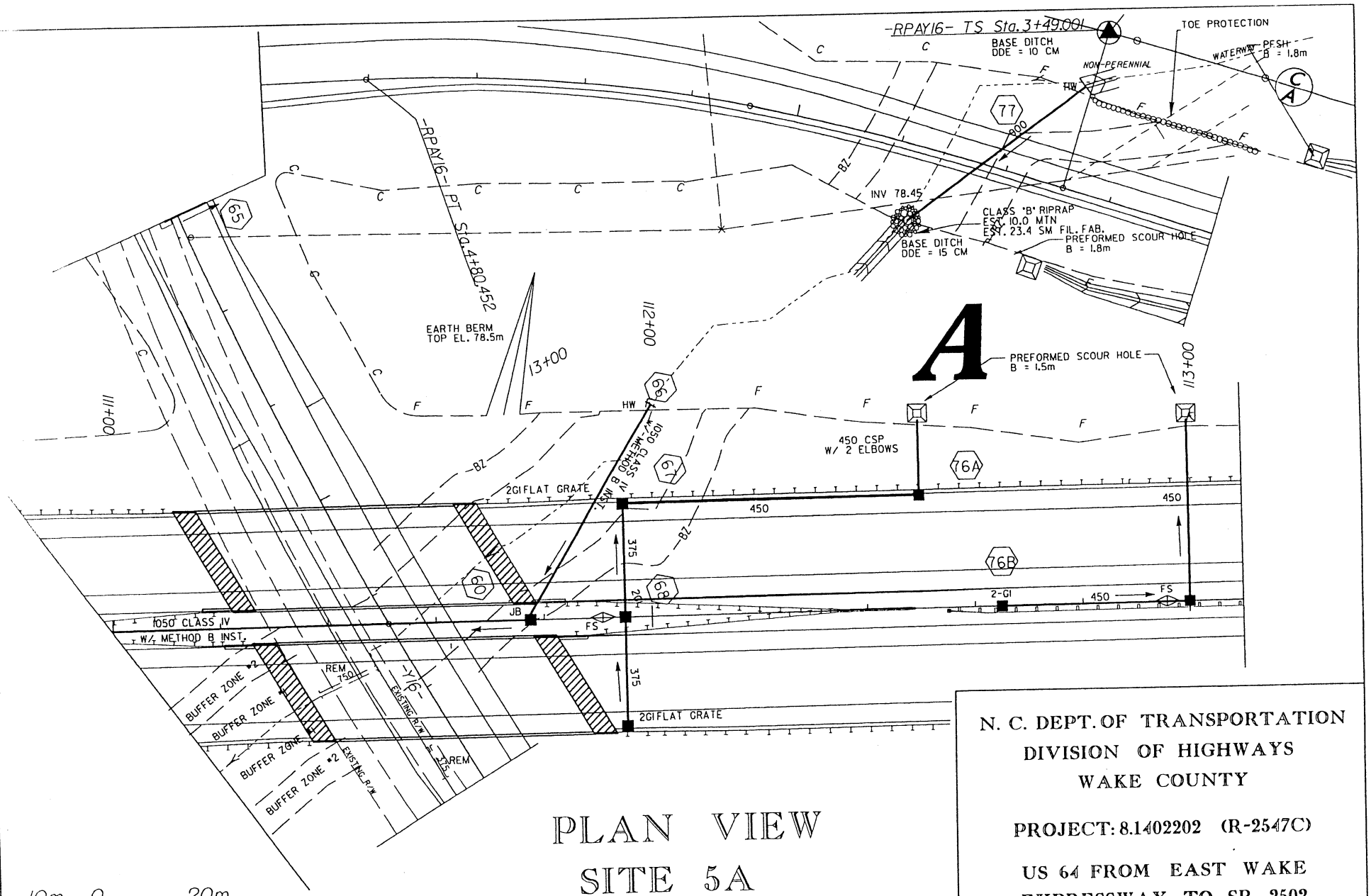
PLAN VIEW
SITE 5A

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

PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE
EXPRESSWAY TO SR 2502

SHEET 15 OF 34 REV 12/11/03



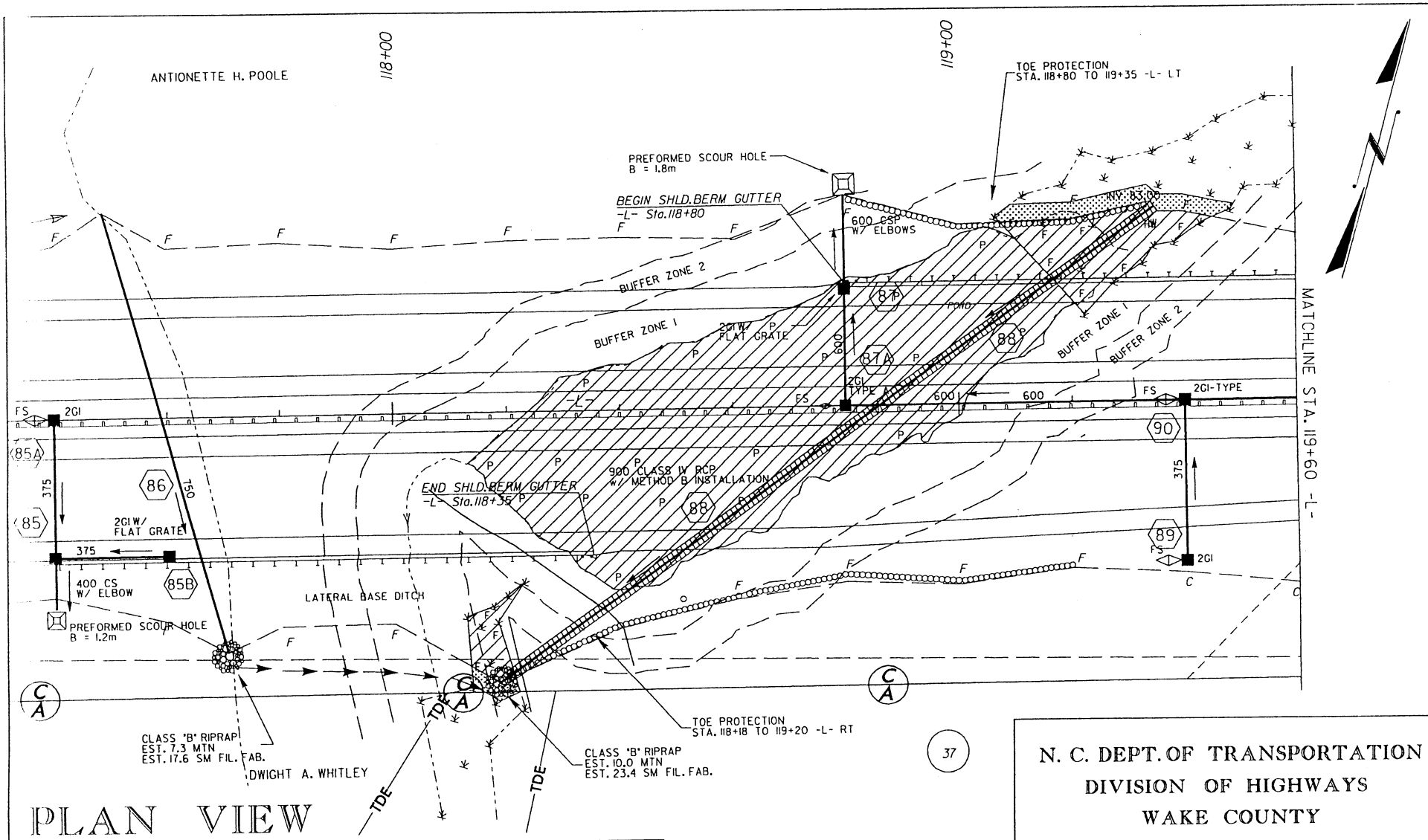
PLAN VIEW
SITE 5A
SHEET 2 OF 2

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

PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE
EXPRESSWAY TO SR 2502

SHEET 16 OF 34 REV 12/11/03



37

PLAN VIEW
SITE 6

10m 0 20m
SCALE

DENOTES TEMP. MECHANIZED CLEARING

DENOTES FILL IN SURFACE WATERS (POND)

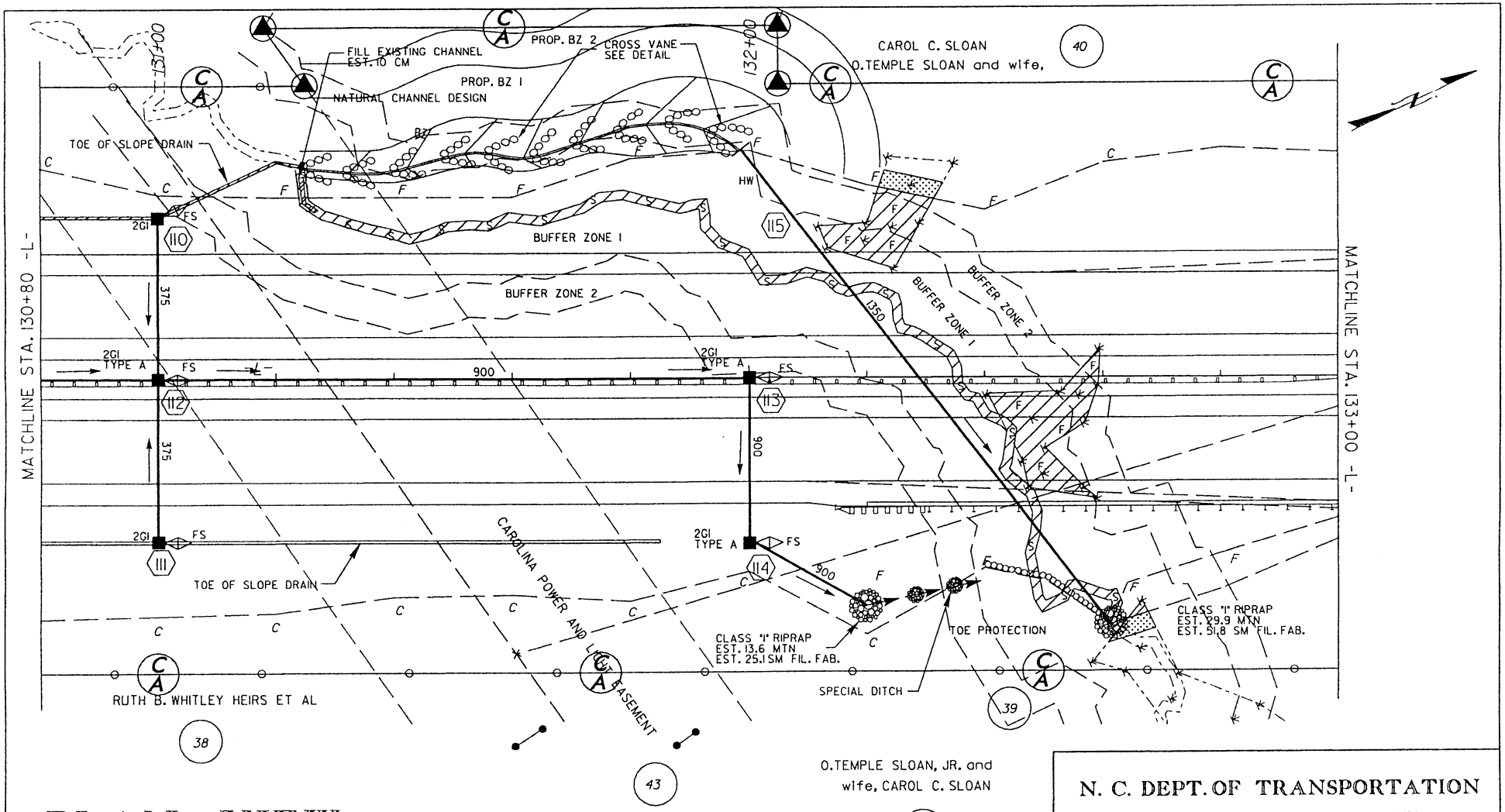
DENOTES FILL IN WETLANDS

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

PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

SHEET 18 OF 34 REV 12/11/03



PLAN VIEW
SITE 7

10m 0 20m
SCALE

DENOTES TEMP. MECHANIZED CLEARING

DENOTES TEMP. MECHANIZED CLEARING

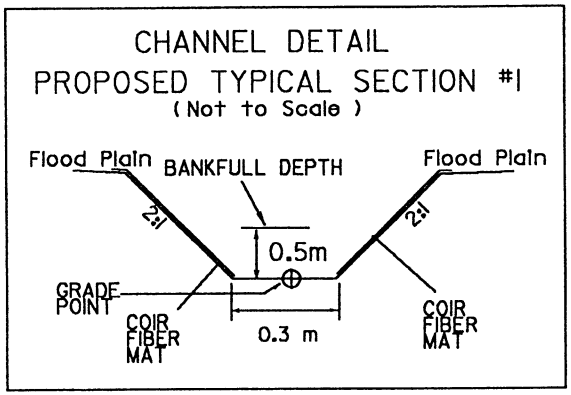
DENOTES FILL IN WETLANDS

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

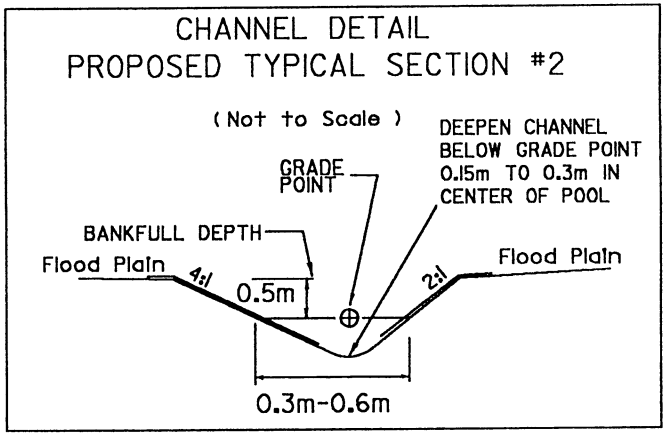
PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

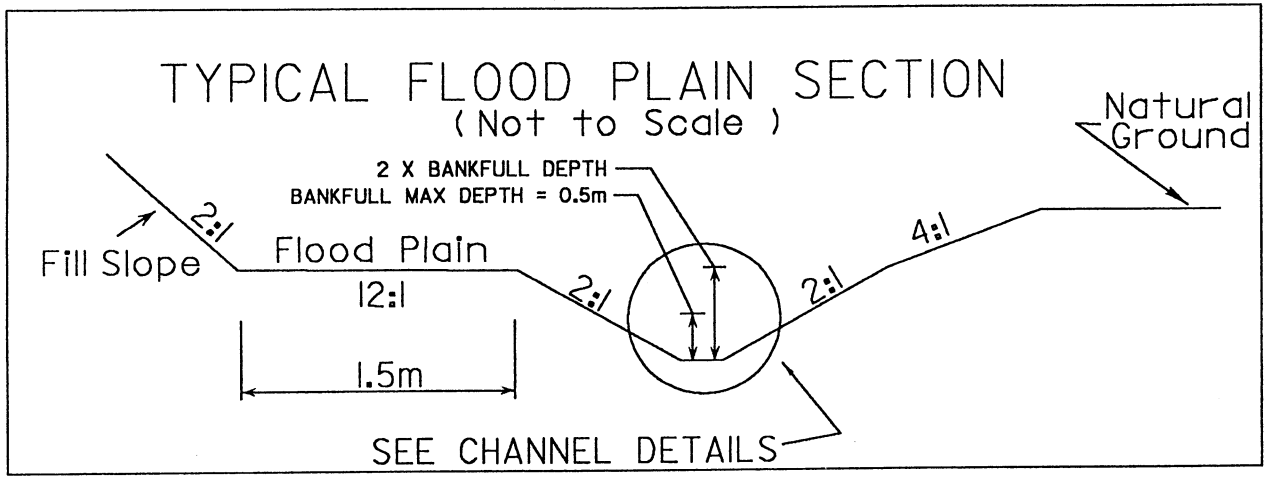
SHEET 19 OF 34 REV 1/30/04



TYPICAL RUN SECTION



TYPICAL POOL SECTION



NATURAL CHANNEL DESIGN TYPICALS
STATION 131+60 -L- LT.

SITE 7

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

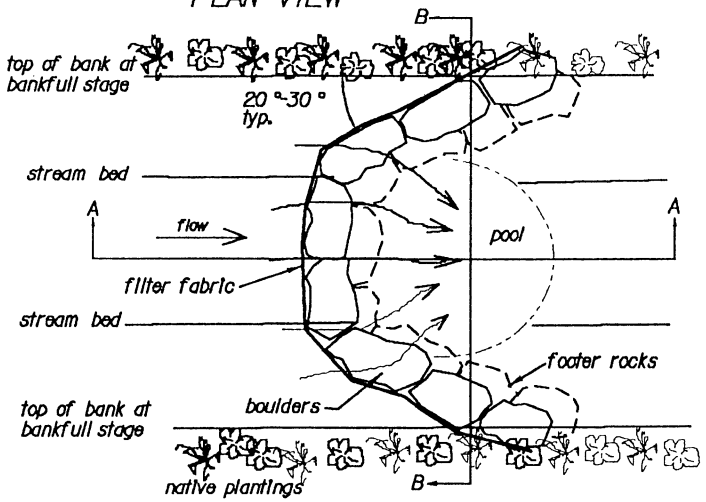
PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

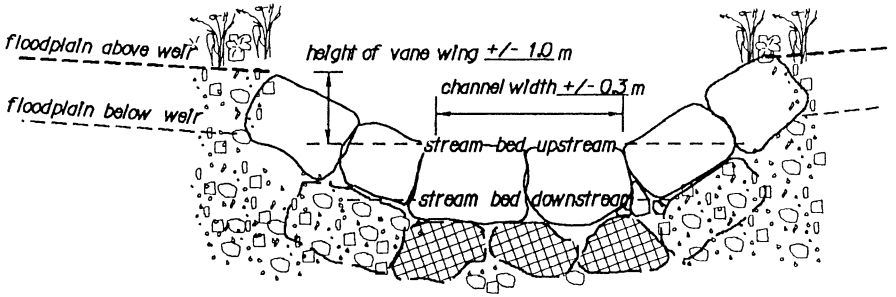
SHEET 20 OF 34 REVISED 1/30/04

CROSS VANE ROCK WEIR DETAIL

PLAN VIEW



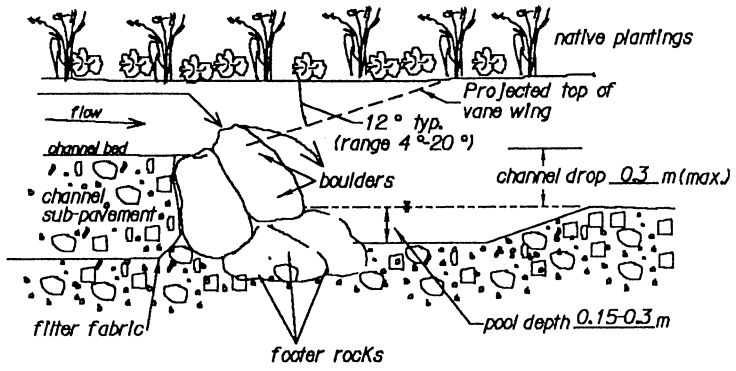
SECTION B-B



Note: Boulders should be native stone or shot rock, angular and oblong; minimum size: 0.6 m x 0.6 m.

Note: Rocks should fit tightly.
Trim filter fabric flush with ground.
When drop between upstream floodplain and downstream flood plain exceeds 0.3m, a boulder sill is recommended in the floodplain.

SECTION A-A



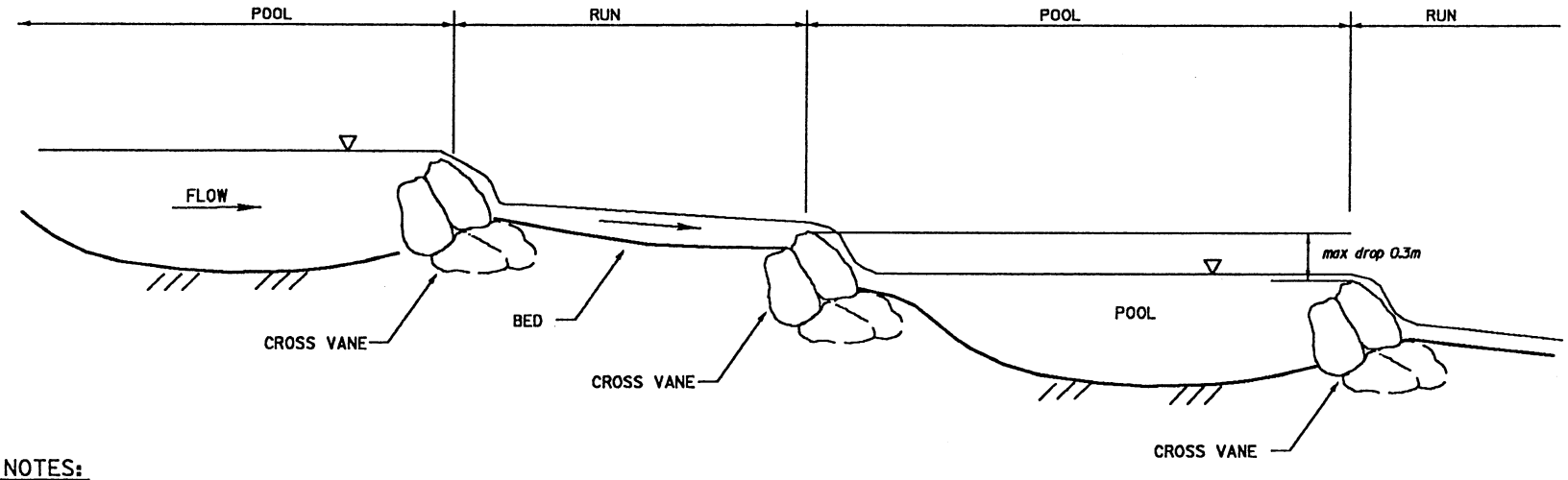
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

SHEET 20A OF 34 REVISED 1/30/04

TYPICAL STEP - POOL PROFILE
(NOT TO SCALE)



NOTES:

1. POOL AND RUN LENGTHS ARE DEPENDENT ON A MAXIMUM DROP OF 0.3m AT CROSS VANES.
2. CHANNEL BED TO PLACED ON BEDROCK TO THE EXTENT POSSIBLE.

NATURAL CHANNEL DESIGN TYPICALS
STATION 131+60 -L- LT.
SITE 7

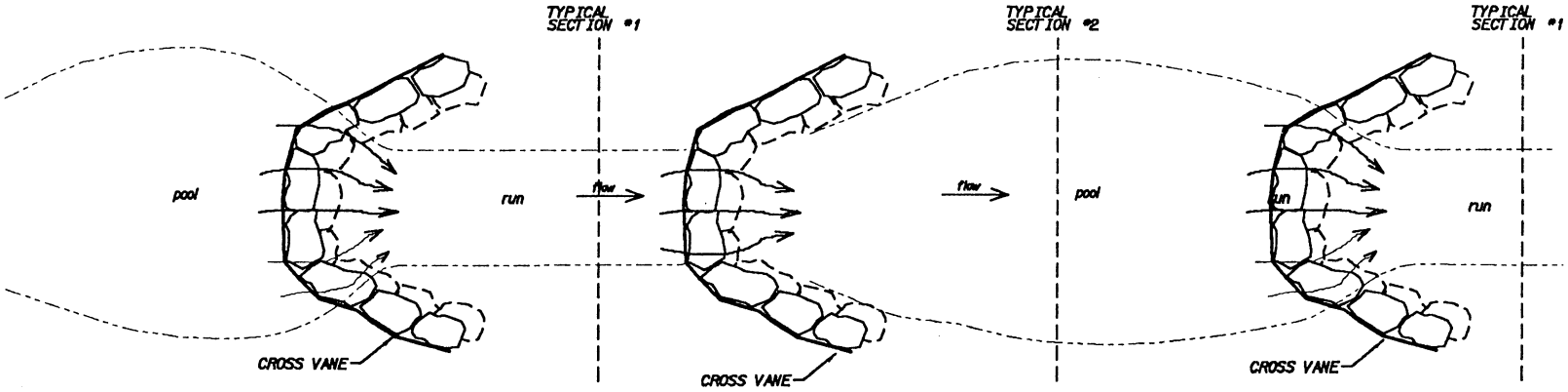
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

SHEET 20 B OF 34 REVISED 1/30/04

TYPICAL STEP - POOL
PLAN VIEW



NATURAL CHANNEL DESIGN TYPICALS
STATION 131+60 -L- LT.
SITE 7

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

PROJECT: 8.1402202 (R-2547C)

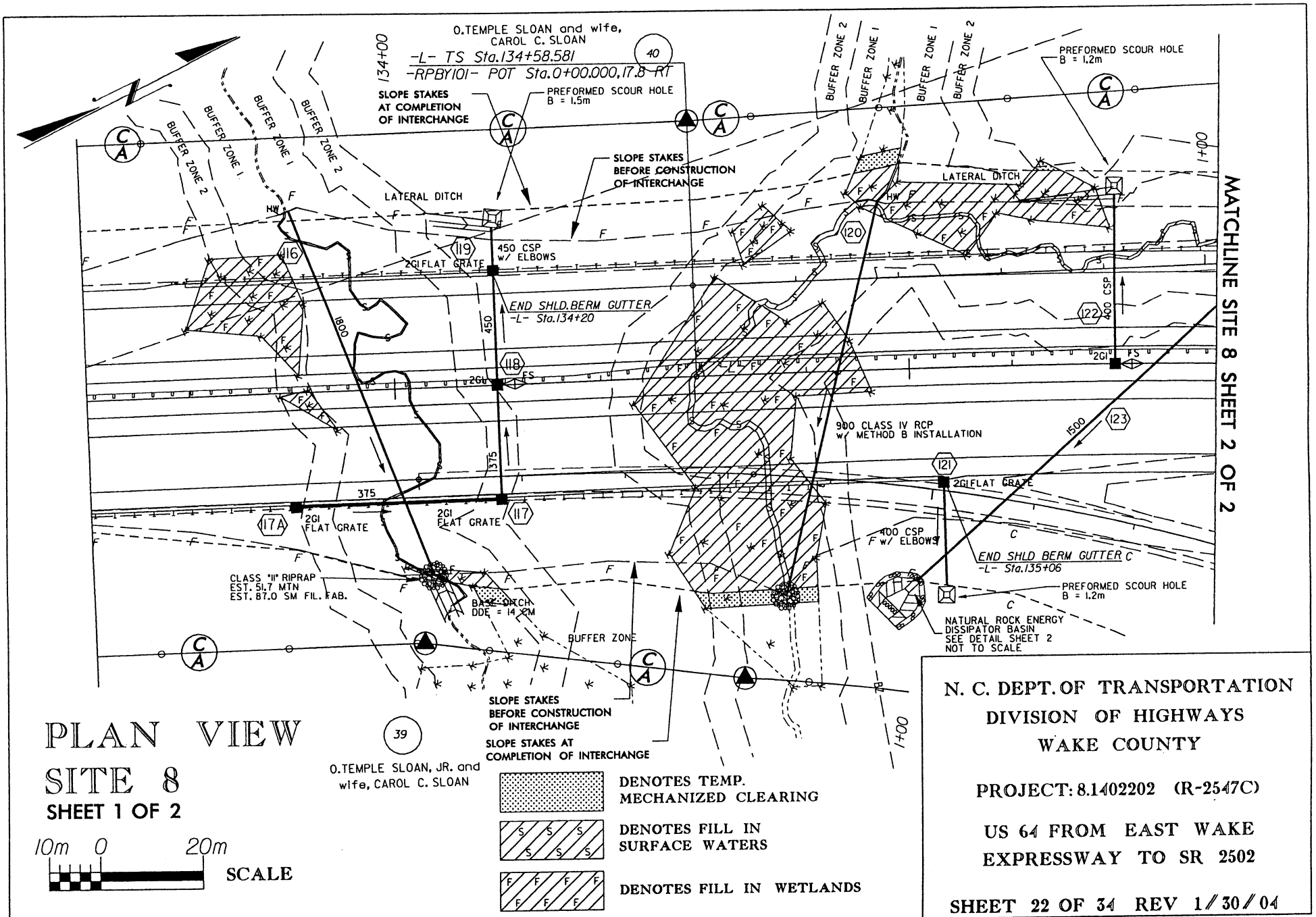
US 64 FROM EAST WAKE
EXPRESSWAY TO SR 2502

SHEET 20 C OF 34 REVISED 1/30/04

Morphological Measurement Table for R-2547C

Stream @ 131+60 -L- Lt.

Variables	Existing Channel	Proposed Reach	USGS Station	Reference Reach (NCSRI Reg. Curves)
1. Stream type(Rosgen Classification)	**B5a**	**A5/B5a Step-Pool**	na	**B**
2. Drainage area (HA)	31.6	31.6	na	31.6
3. Bankfull width (m)	2.3	2.3	na	2.2
4. Bankfull mean depth (m)	0.36	0.32	na	0.28
5. Width/depth ratio	6.4	7.5	na	7.9
6. Bankfull cross-sectional area (m^3)	0.42	0.65	na	0.26-1.30
7. Bankfull mean velocity (m/s)	1.41	1.37	na	0.81-1.70
8. Bankfull discharge, cms	0.57	0.57	na	0.21-2.2
9. Bankfull max depth (riffle)	0.5	0.5	na	0.48
10. Width of floodprone area (m)	4.2	4.3	na	na
11. Entrenchment ratio	1.8	1.8	na	na
12. Meander length (m)	11	10	na	14
13. Ratio of meander length to bankfull width	4.8	4.2	na	6.3
14. Radius of curvature (m)	7	12	na	5
15. Ratio of radius of curvature to bankfull width	3	5	na	2.3
16. Belt width (m)	1	1	na	1.5
17. Meander width ratio	0.43	0.43	na	0.68
18. Sinuosity (stream length/valley length)	1.07	1.0-1.08	na	na
19. Valley slope (m/m)	0.025-0.04	0.025-0.040	na	na
20. Average slope valley slope/sinuosity	0.023-0.04	0.023-0.04	na	na
21. Pool slope (m/m)	0.005	0.005	na	na
22. Ratio of pool slope to average slope	0.2	0.2	na	na
23. Maximum pool depth (m)	0.66	0.6 or bedrock	na	0.57
24. Ratio of pool depth to average bankfull depth	1.83	1.88	na	2.03
25. Pool width(m)	0.1-1.3	0.3-0.6	na	na
26. Ratio of pool width to bankfull width	0.04-0.13	0.13-0.26	na	na
27. Pool to pool spacing (m)	1.1-4.5	1.0-3.0	na	6.5
28. Ratio of pool to pool spacing to bankfull width	0.48-1.96	0.43-1.3	na	2.95



PLAN VIEW

SITE 8

SHEET 1 OF 2

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

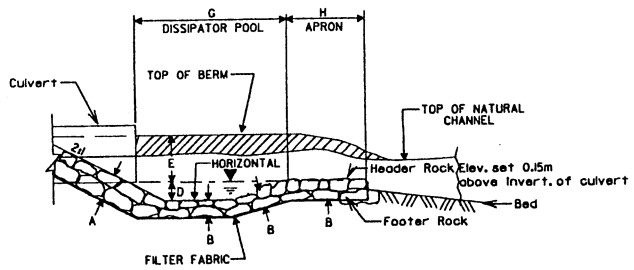
PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

SHEET 22 OF 34 REV 1/30/04

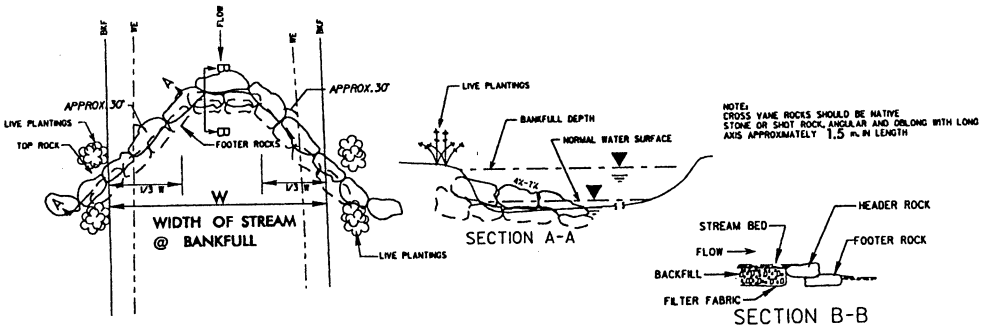
DISSIPATOR BASIN

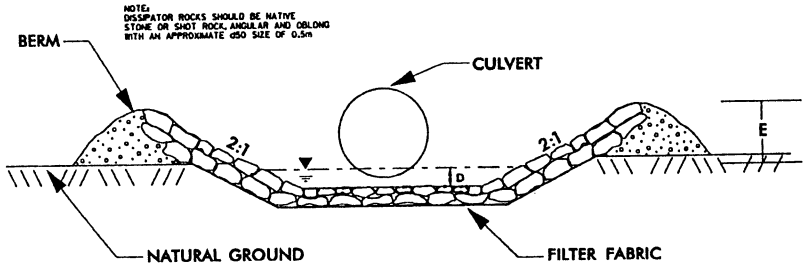
℄ SECTION



ROCK CROSS VANE

(NOT TO SCALE)

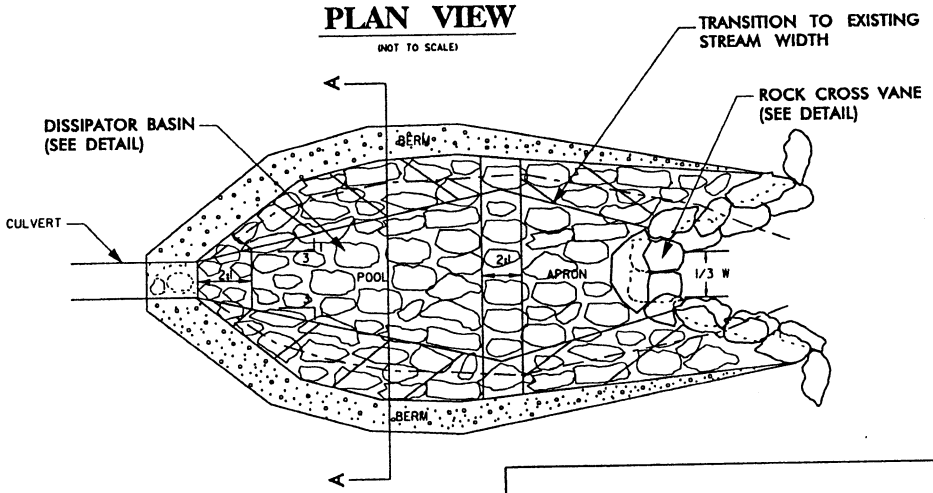




SECTION A-A

PLAN VIEW

(NOT TO SCALE)



DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	1.0							
B	1.0							
C	—							
D	1.0							
E	1.0							
F	—							
G	10.0							
H	3.0							

ALL DIMENSIONS APPROXIMATE IN m

BASIN #	LOCATION (AT OUTLET)
1	135+50 RT.
2	
3	
4	
5	
6	
7	
8	

(1500mm)

DETAIL OF NATURAL ROCK ENERGY DISSIPATOR BASIN

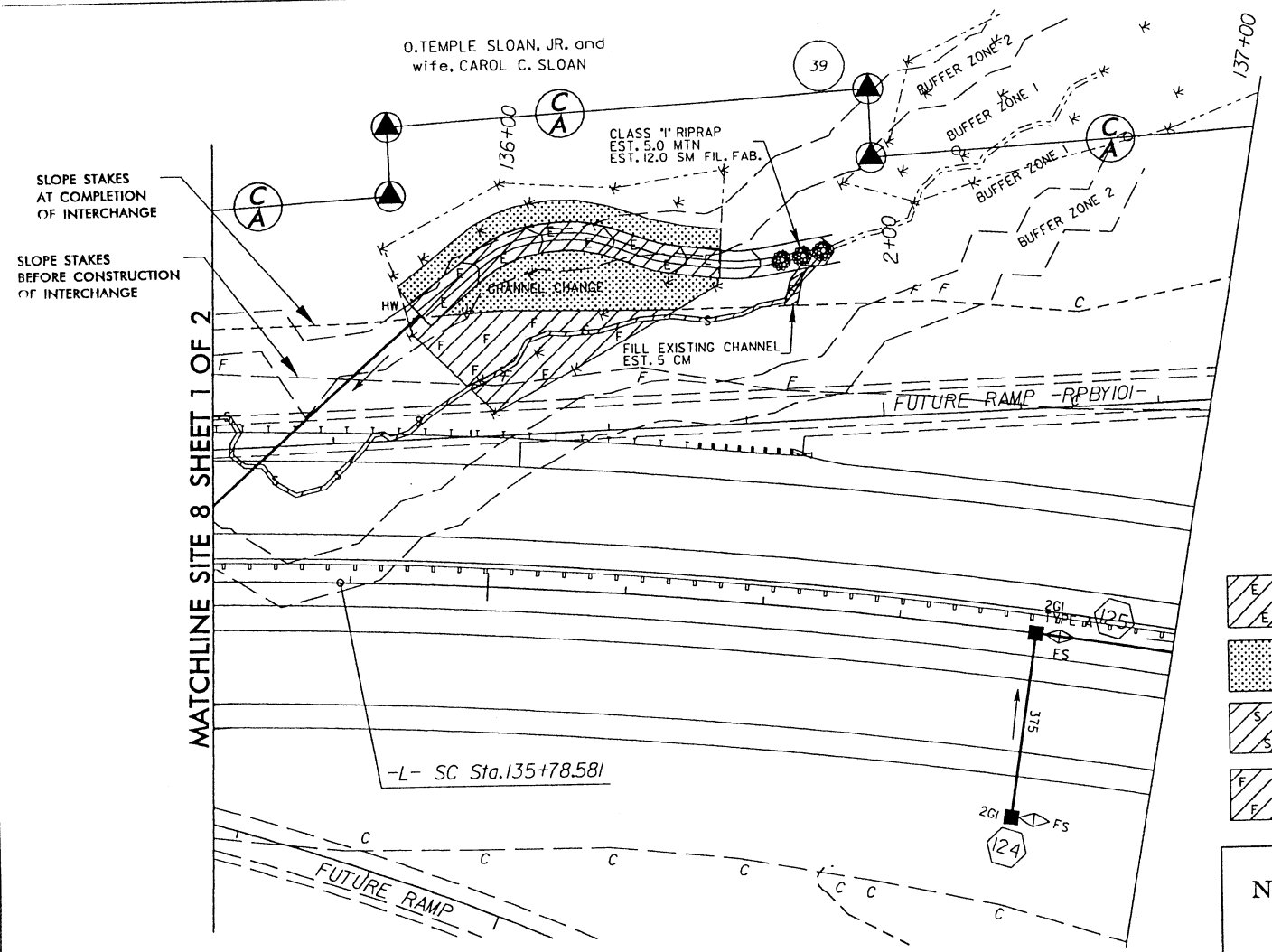
(NOT TO SCALE)

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

PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

SHEET 22A OF 34 REVISED 1/30/04



DENOTES EXCAVATION IN WETLANDS

DENOTES TEMP. MECHANIZED CLEARING

DENOTES FILL IN SURFACE WATERS

DENOTES FILL IN WETLANDS

PLAN VIEW
SITE 8
SHEET 2 OF 2

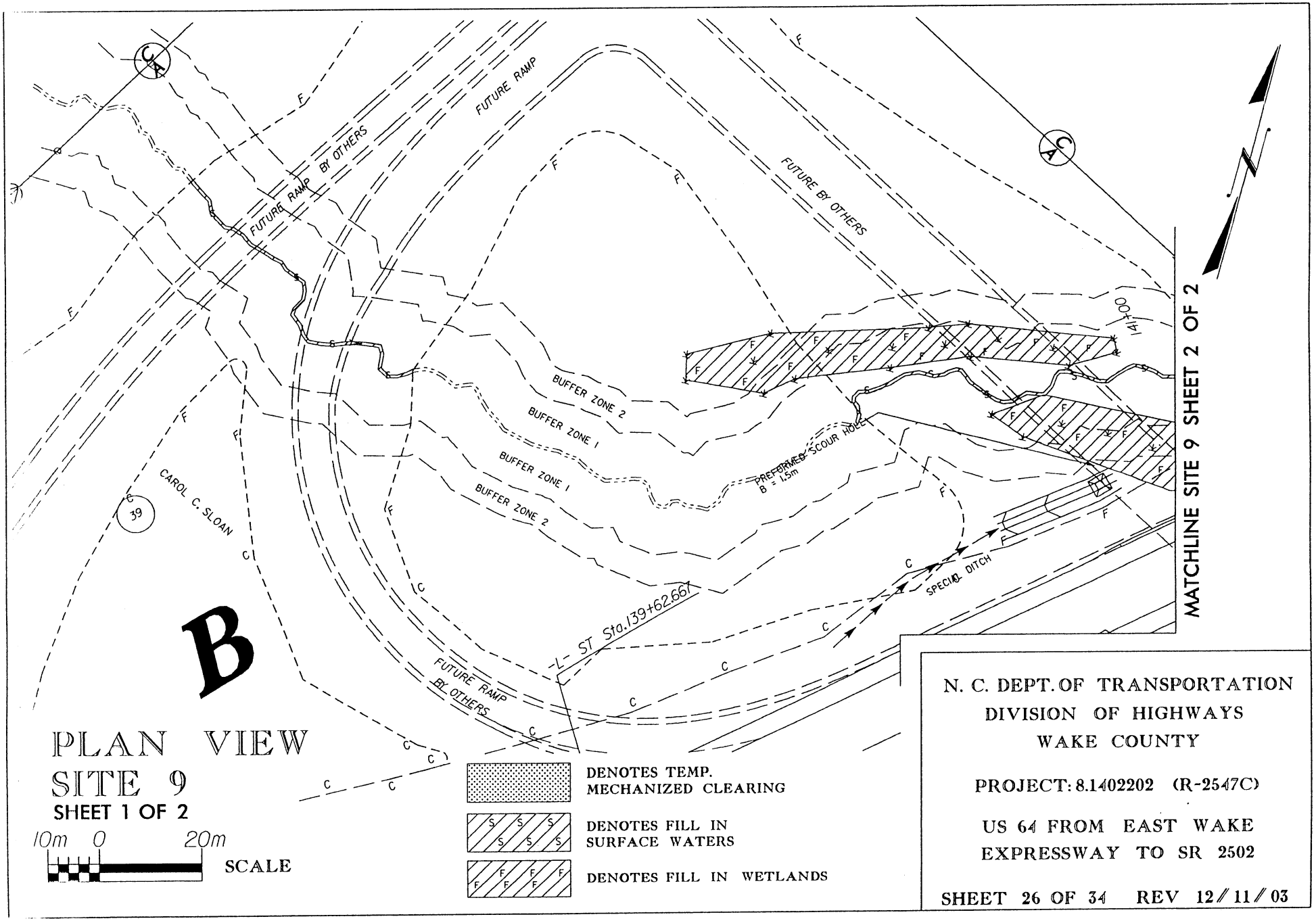
10m 0 20m
SCALE

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

PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE
EXPRESSWAY TO SR 2502

SHEET 23 OF 34 REV 12/11/03



PLAN VIEW
SITE 9
SHEET 1 OF 2

10m 0 20m
SCALE

DENOTES TEMP. MECHANIZED CLEARING

DENOTES FILL IN SURFACE WATERS

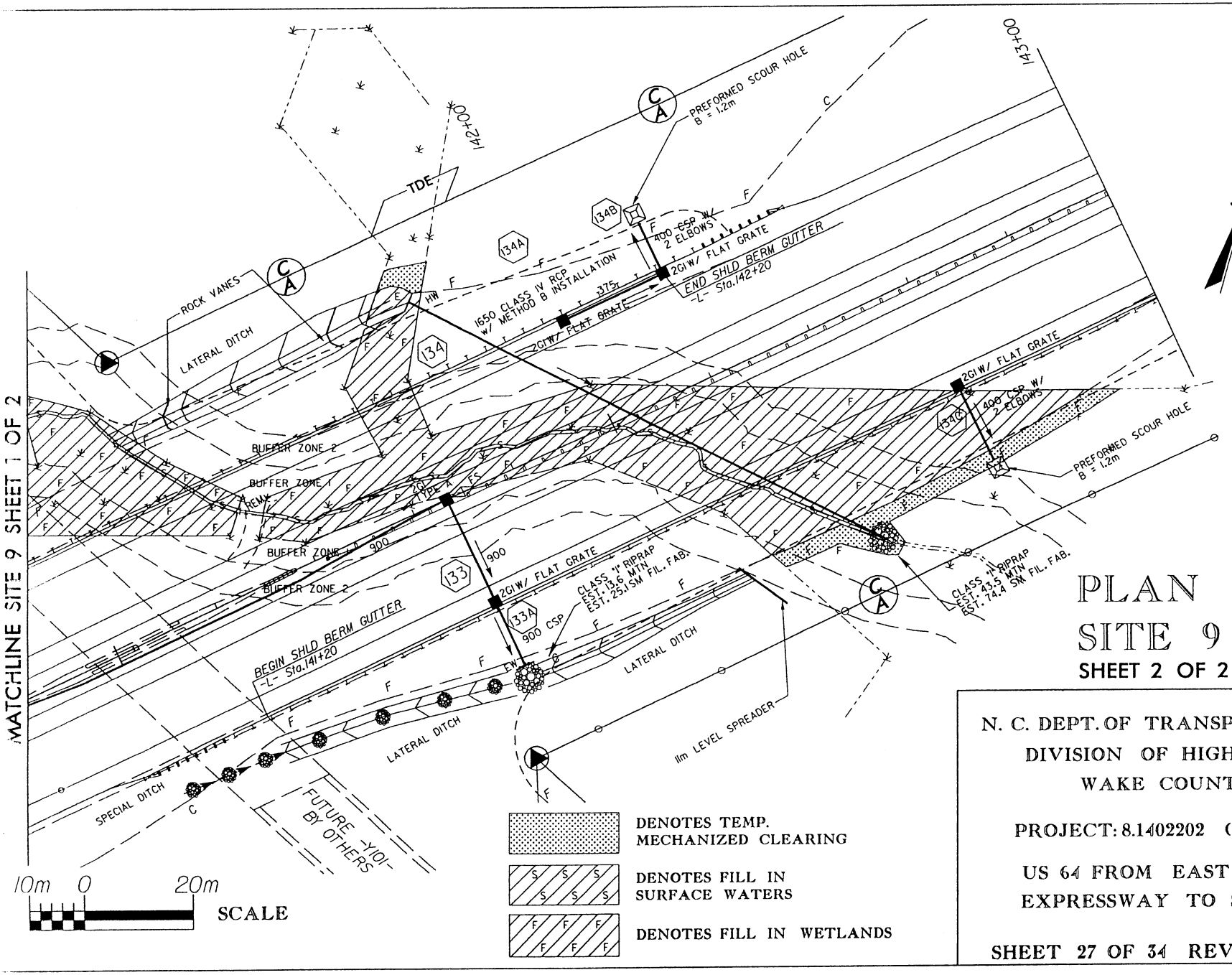
DENOTES FILL IN WETLANDS

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

PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

SHEET 26 OF 34 REV 12/11/03



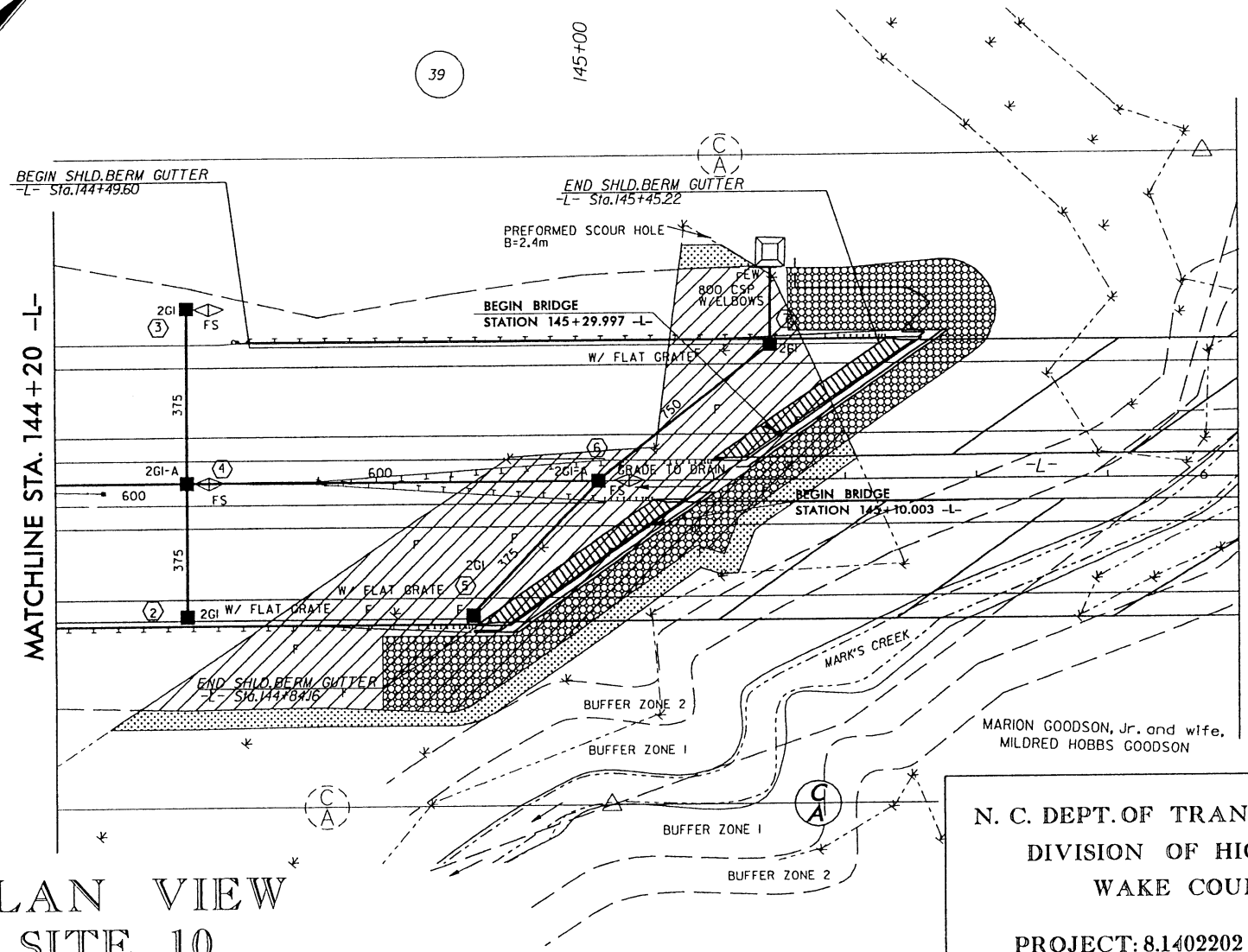
PLAN VIEW
SITE 9
SHEET 2 OF 2

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

PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

SHEET 27 OF 34 REV 12/11/03



PLAN VIEW
SITE 10

SHEET 1 OF 2

10m 0 20m

SCALE

DENOTES TEMP. MECHANIZED CLEARING

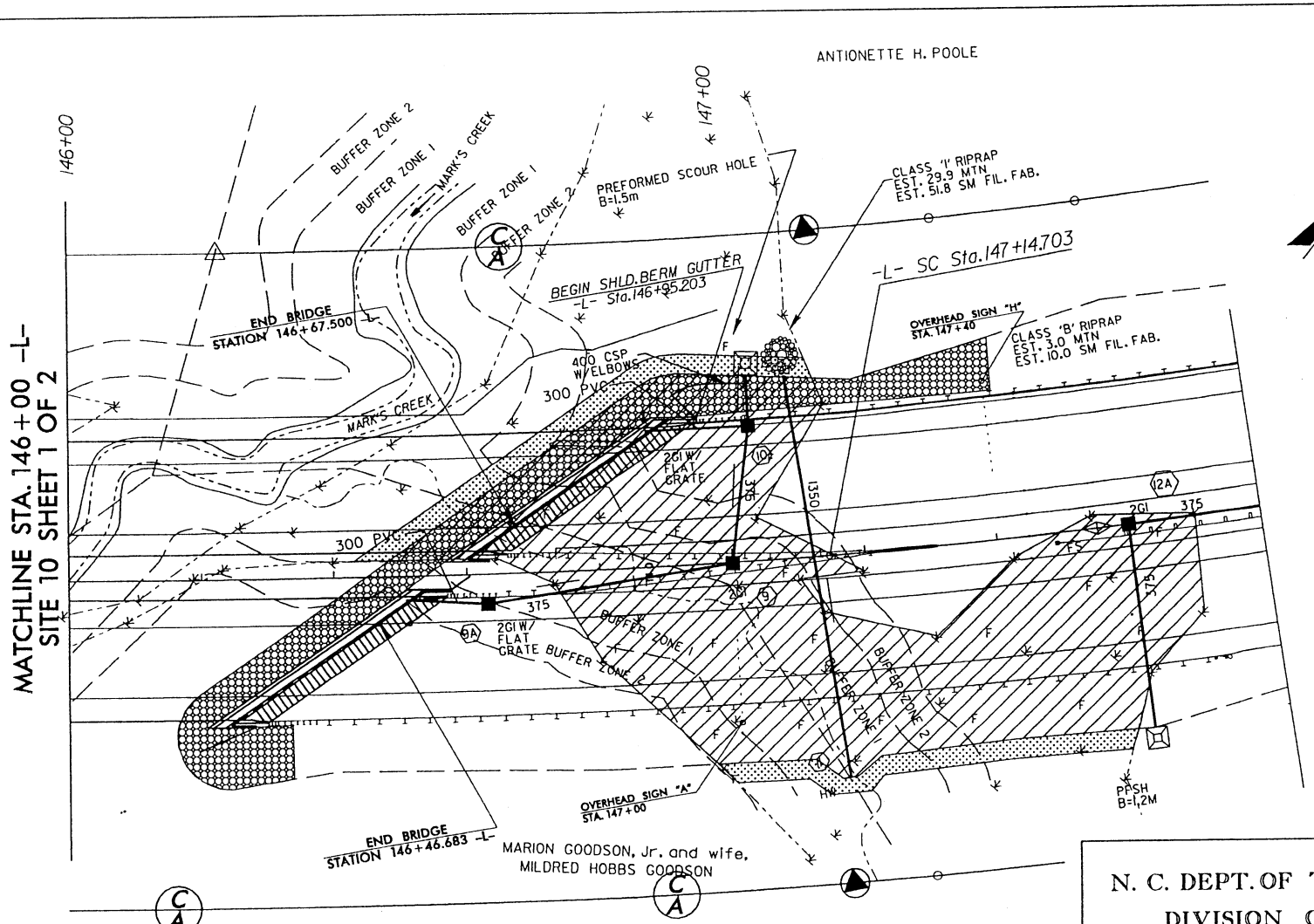
DENOTES FILL IN WETLANDS

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

PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

SHEET 29 OF 34 REV 12/11/03



PLAN VIEW

SITE 10

SHEET 2 OF 2

10m 0 20m

SCALE

DENOTES TEMP. MECHANIZED CLEARING

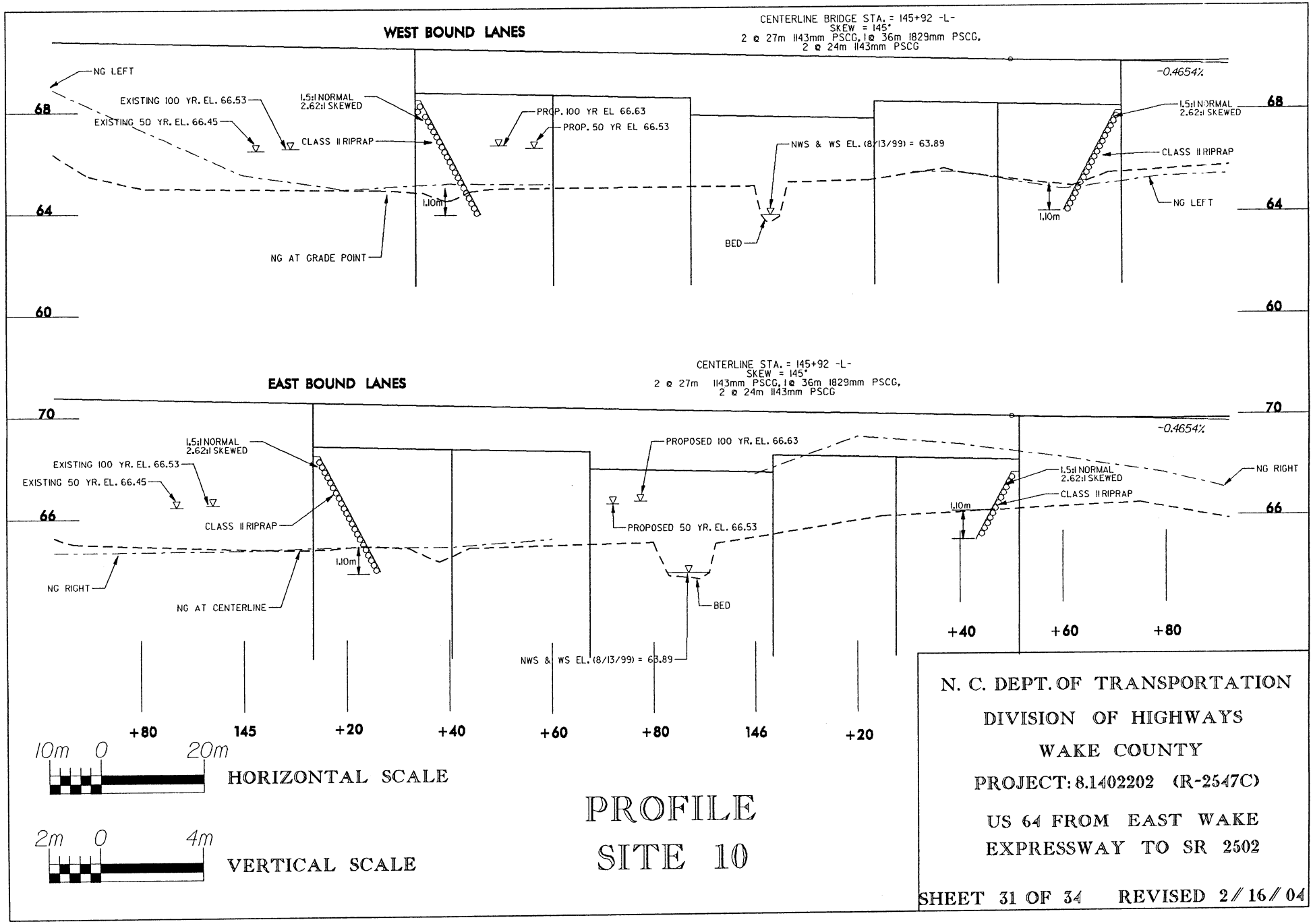
DENOTES FILL IN WETLANDS

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

PROJECT: 8.1402202 (R-2547C)

US 64 FROM EAST WAKE
EXPRESSWAY TO SR 2502

SHEET 30 OF 34 REV 12/11/03



PROFILE
SITE 10

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 8.1402202 (R-2547C)
US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

SHEET 31 OF 34 REVISED 2/16/04

IMPACT SUMMARY

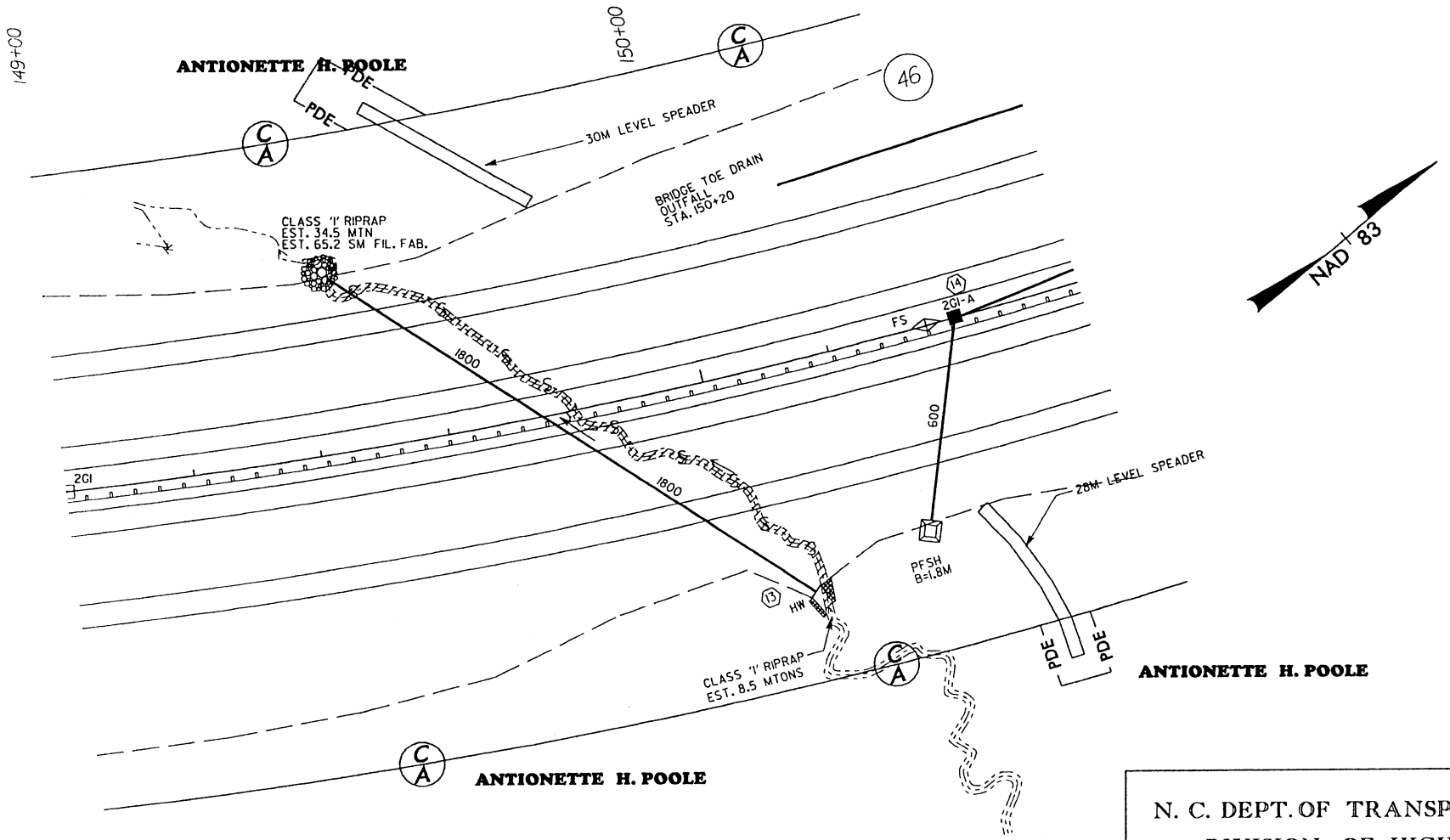
			WETLAND IMPACTS				SURFACE WATER IMPACTS						BUFFER IMPACTS	
Site No.	Station (From/To)	Structure Size	Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Mechanized Clearing (Method III) (ha)	Fill In SW (Natural) (ha)	Fill In SW (Pond) (ha)	Temp. Fill In SW (ha)	Existing Channel Impacted (m)	Relocated Channel (m)	Enclosed Channel (m)	Zone 1 (ha)	Zone 2 (ha)
1	89+08/89+63 -L	750 RCP						0.44						
2	95+95/96+62 -L	N/A						0.217					0.0275	0.054
3	98+20/98+50 -L	N/A						0.012					0.0698	0.0672
4	103/104+80-L-	3 @ 26m BRIDGE	0.427	0.0121		0.048							0.022	0.014
5	10+30 -Y16-	1800 RCP					0.002			13		13	0.471	0.292
5A	110/113 -L-	1050 RCP											0.308	0.148
6	118/119+60 -L-	900 RCP	0.040			0.015		0.315					0.387	0.23
7	131/133 -L-	1350 RCP	0.033			0.003	0.033			203	80	99	0.201	0.095
8A	134+00 -L-	1800 RCP	0.038			0.003	0.004			137	7	77	0.52	0.281
8B	134+40/137 -L-	1500 RCP, 900 RCP	0.225		0.019	0.059	0.023			316	76	204	0.575	0.368
9	140/143 -L-	1650 RCP	0.456		0.003	0.026	0.019			310	56	234	0.291	0.254
10	144/147+80 -L-	2@27m,1@36, 2@23.5m	0.61	0.274		0.079							0.022	0.039
11	17/18+40 -Y101	1 @ 24m, 2 @ 17m BRIDG	0.253			0.059								
TOTALS:		hectare/meter	2.082	0.2861	0.022	0.292	0.081	0.984	0	979	219	627	2.8943	1.842
		acre/feet	5.14	0.71	0.05	0.72	0.20	2.43	0.00	3212	719	2057	7.15	4.55

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY

PROJECT: 8.1402202 (R-2547C)

SHEET 34 OF 34 REV. 2/9/2004



SITE 3
PLAN VIEW

10m 0 20m
SCALE

DENOTES FILL IN SURFACE WATERS

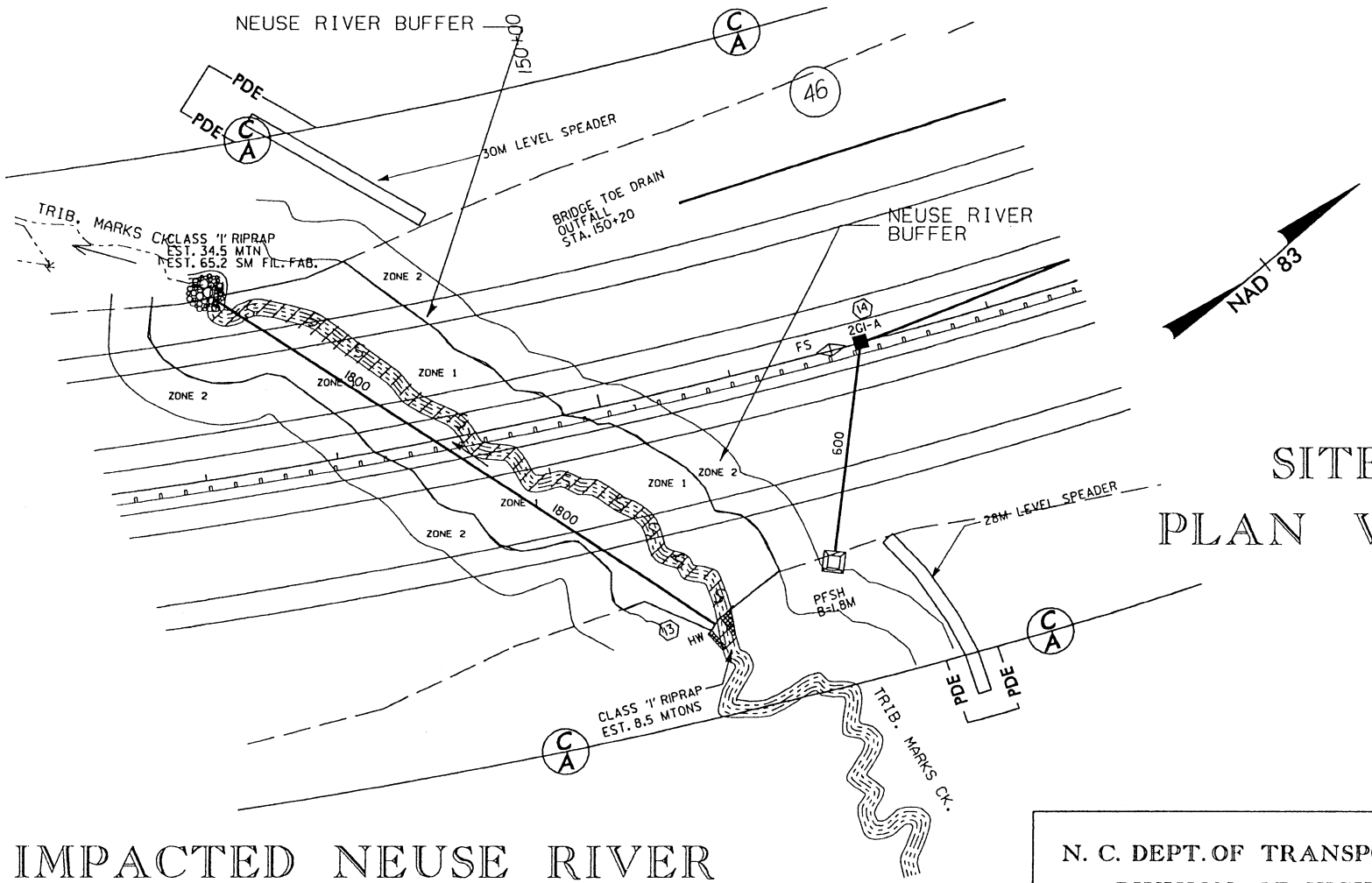
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY

PROJECT: 8.1402202 (R-2547CC)

US64 FROM SR2502 TO EXISTING US64 NEAR SR1003

SHEET 6 OF 24 REV 12/11/03



SITE 3
PLAN VIEW

IMPACTED NEUSE RIVER BUFFER ZONES AND STREAM IMPACTS

10m 0 20m

SCALE

DENOTES FILL IN SURFACE WATERS

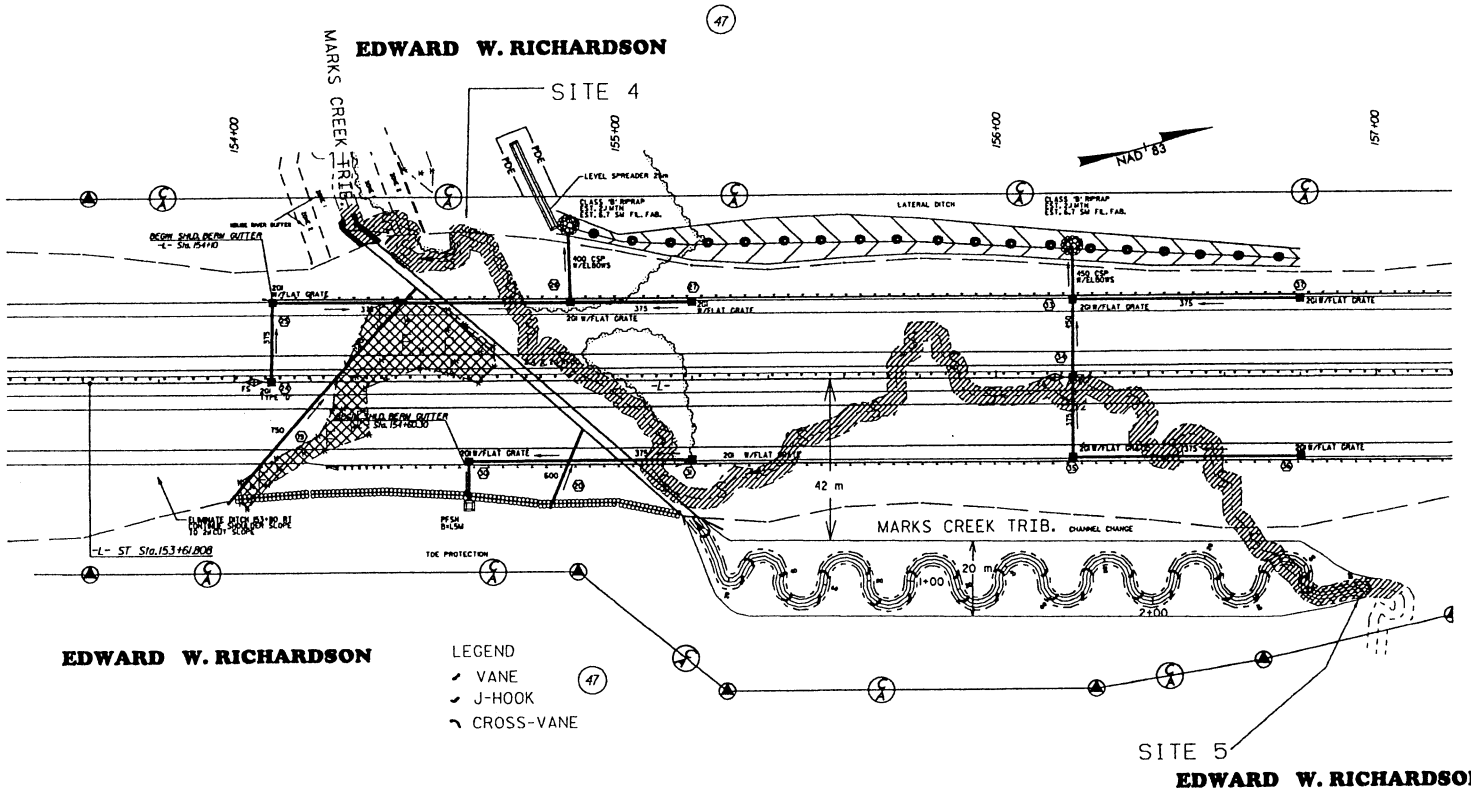
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY

PROJECT: 8.1402202 (R-2547CC)

US64 FROM SR2502 TO EXISTING US64 NEAR SR1003

SHEET 7 OF 24 REV 12/11/03



SITE 4 & SITE 5
PLAN VIEW

DENOTES FILL IN WETLANDS

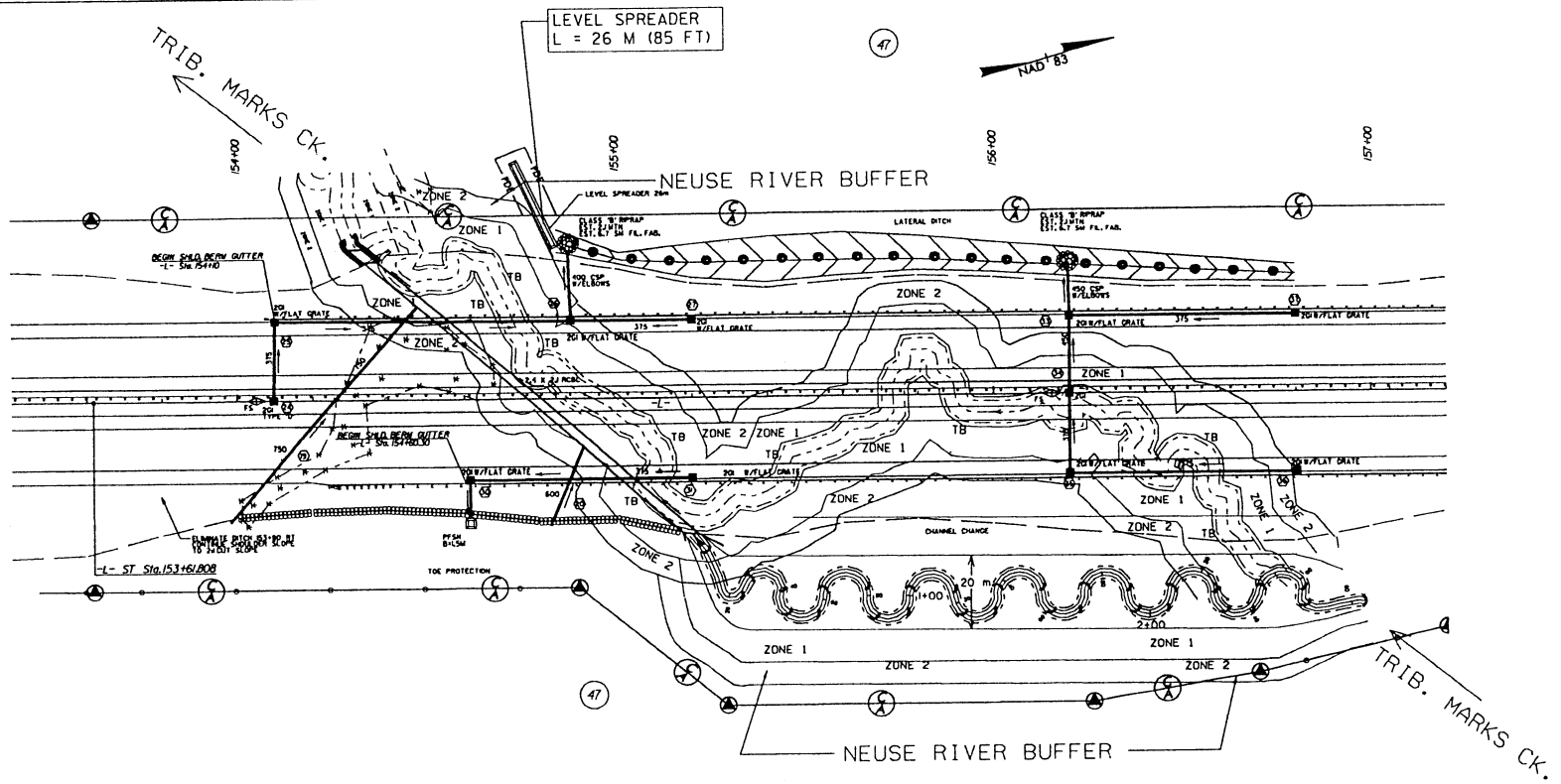
DENOTES FILL IN SURFACE WATERS

20m 0 40m
SCALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT:8.1402202 (R-2547CC)

US64 FROM SR2502 TO EXISTING
US64 NEAR SR1003

SHEET 8 OF 24 REV 12/11/03



IMPACTED NEUSE RIVER BUFFER ZONES PLAN VIEW SITE 4 & SITE 5

20m 0 40m

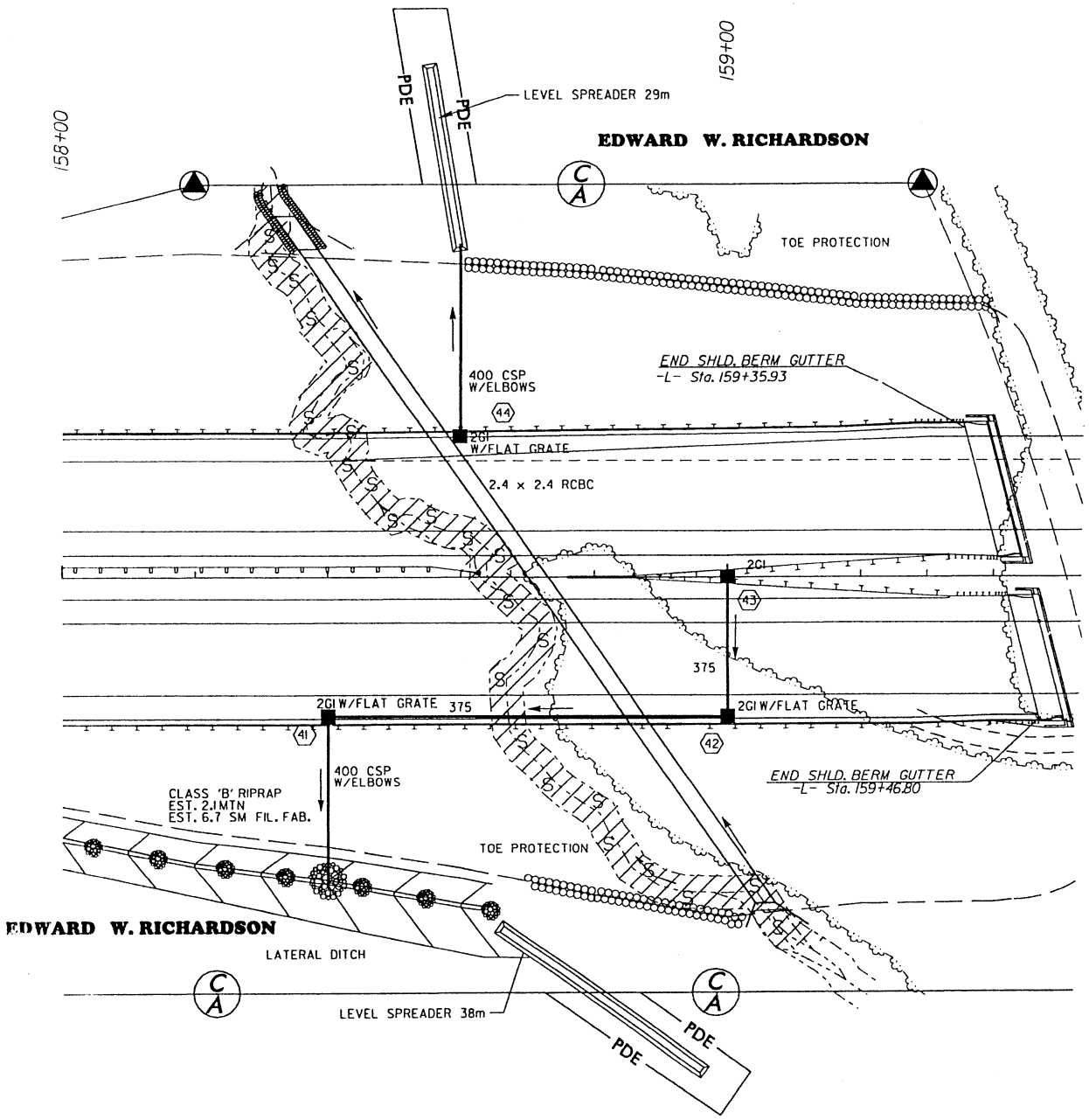
SCALE

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

PROJECT:8.1402202 (R-2547CC)

US64 FROM SR2502 TO EXISTING US64 NEAR SR1003

SHEET 9 OF 24 REV 12/11/03



NAD 83

PLAN VIEW
SITE 6

DENOTES FILL IN SURFACE WATERS

10m 0 20m

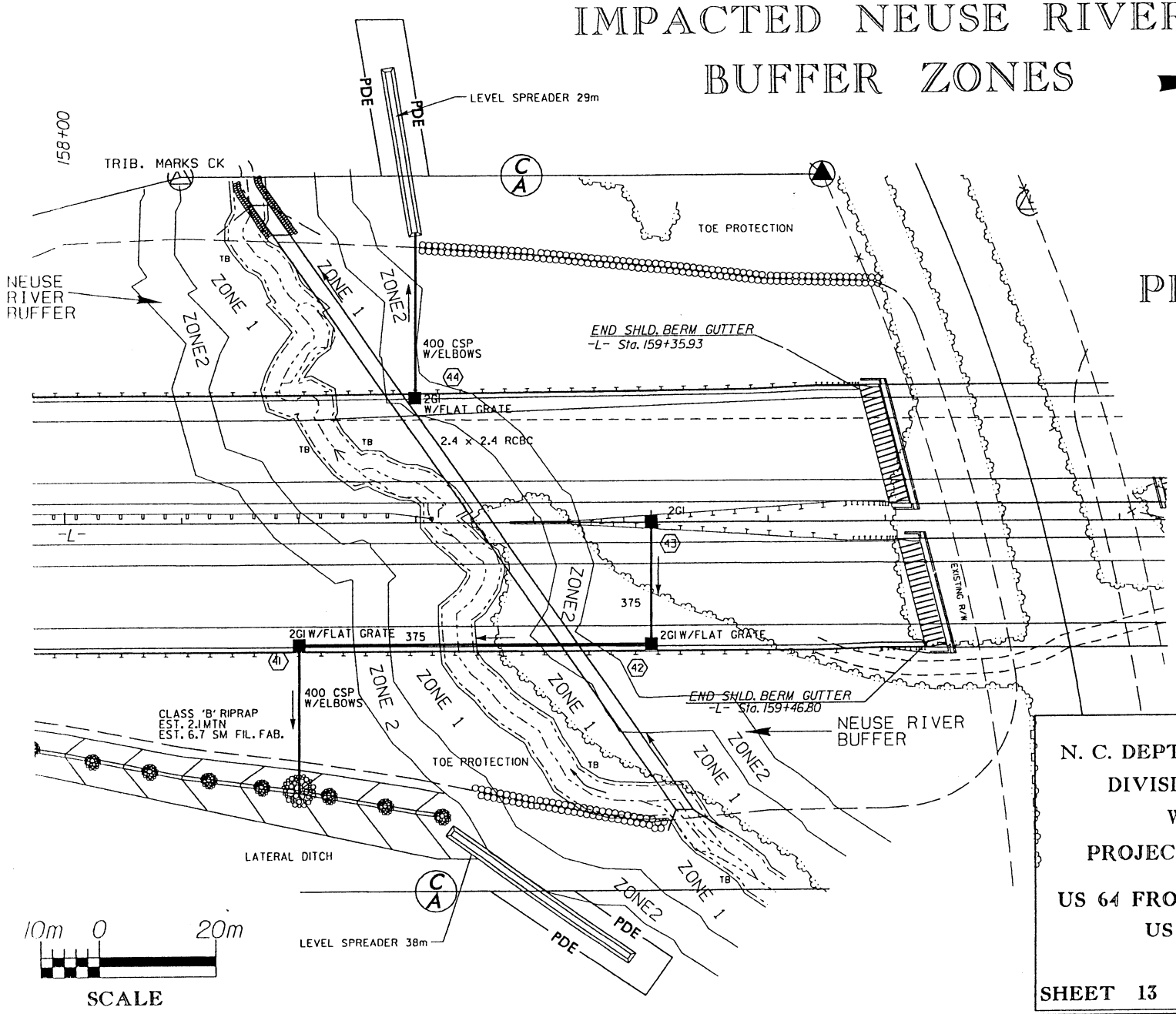
SCALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 8.1402202 (R-2547CC)

US 64 FROM SR2502 TO EXISTING
US 64 NEAR SR1003

SHEET 12 OF 24 REV 12/11/03

IMPACTED NEUSE RIVER BUFFER ZONES

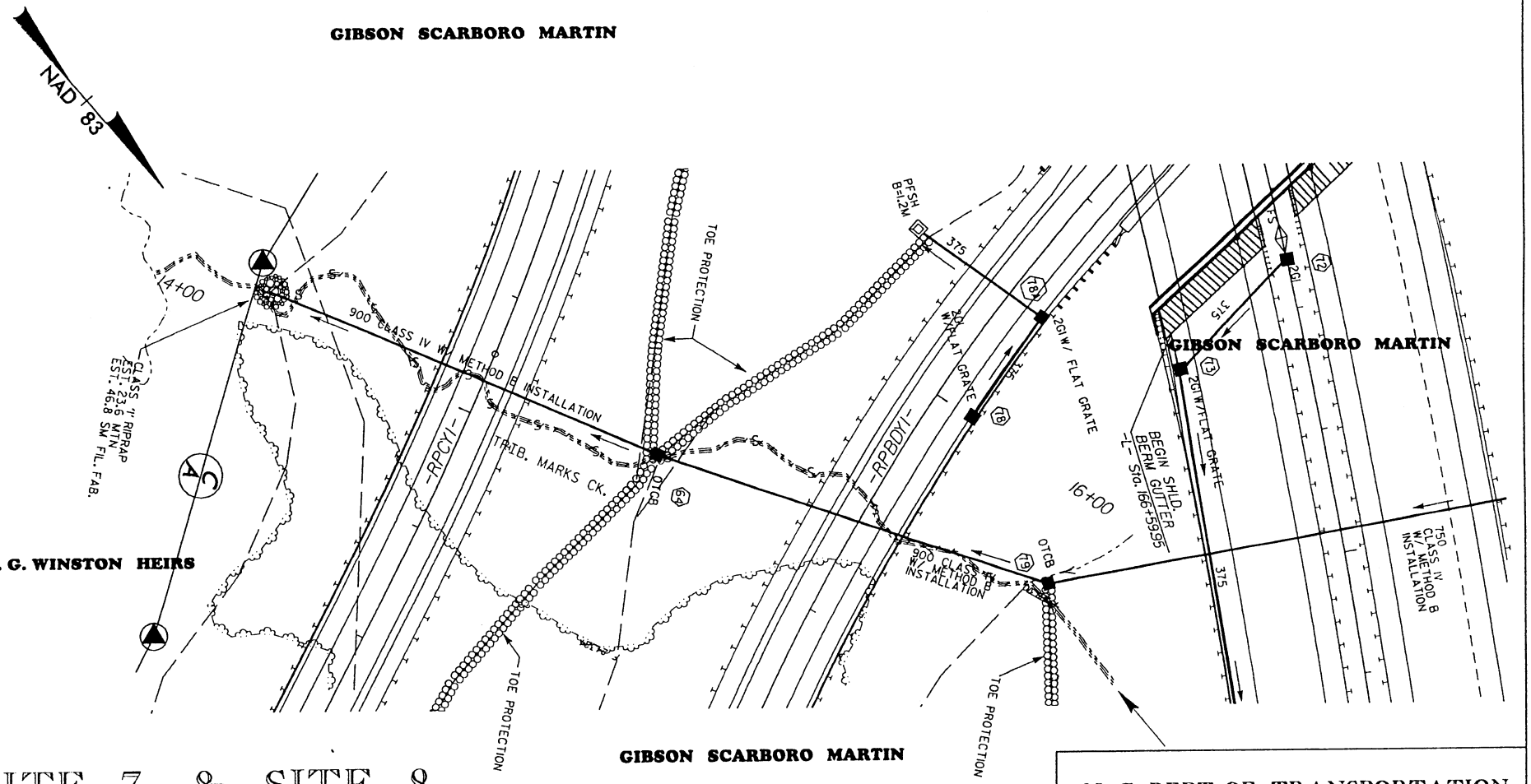


SITE 6 PLAN VIEW

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 8.1402202 (R-2547CC)

US 64 FROM SR2502 TO EXISTING US 64 NEAR SR1003

SHEET 13 OF 24 REV 12/11/03



SITE 7 & SITE 8
PLAN VIEW

DENOTES FILL IN SURFACE WATERS

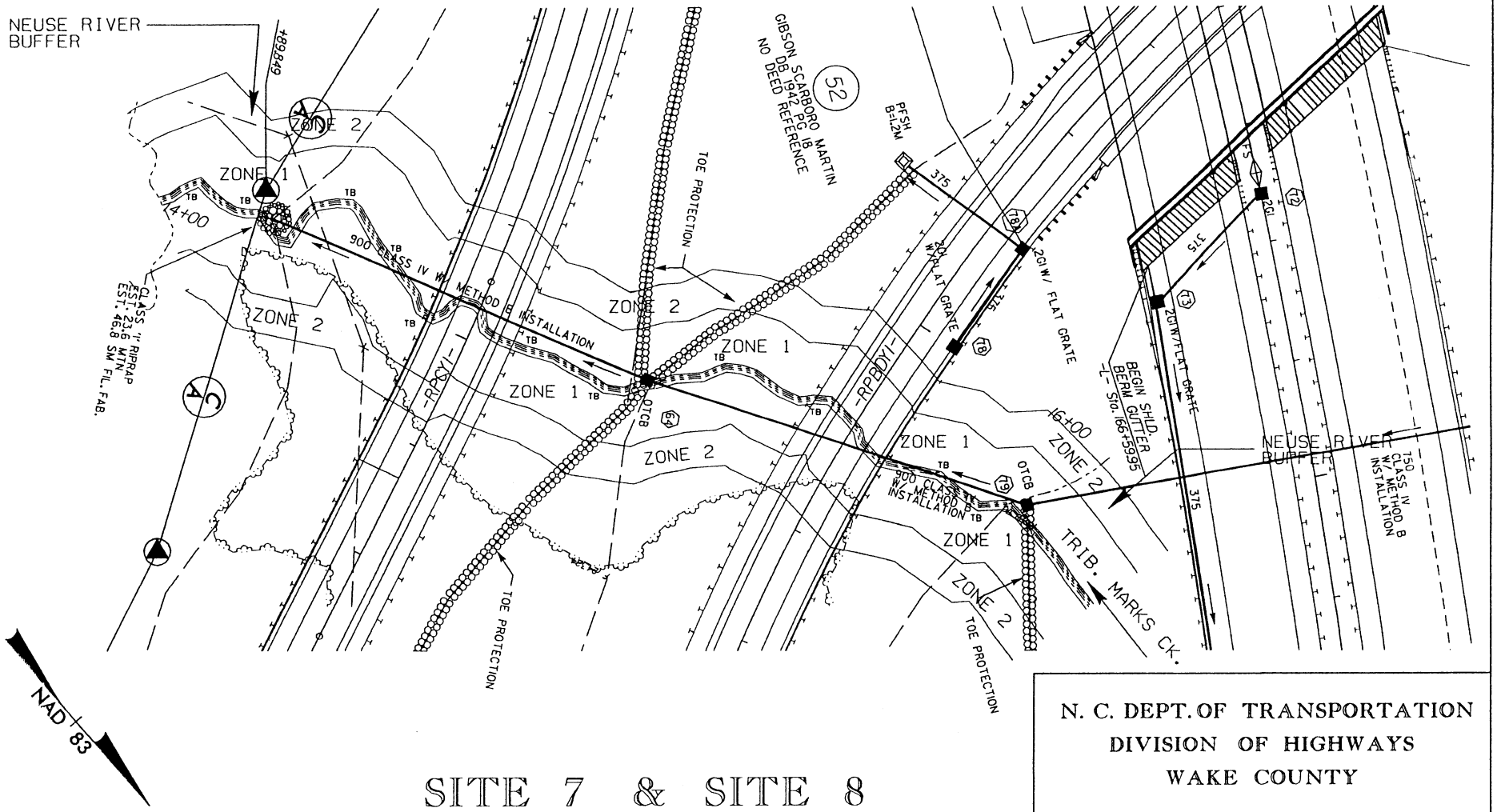
10m 0 20m
SCALE

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

PROJECT:8.1402202 (R-2547CC)

US 64 FROM SR2502 TO EXISTING US 64 NEAR SR1003

SHEET 14 OF 24 REV 12/11/03



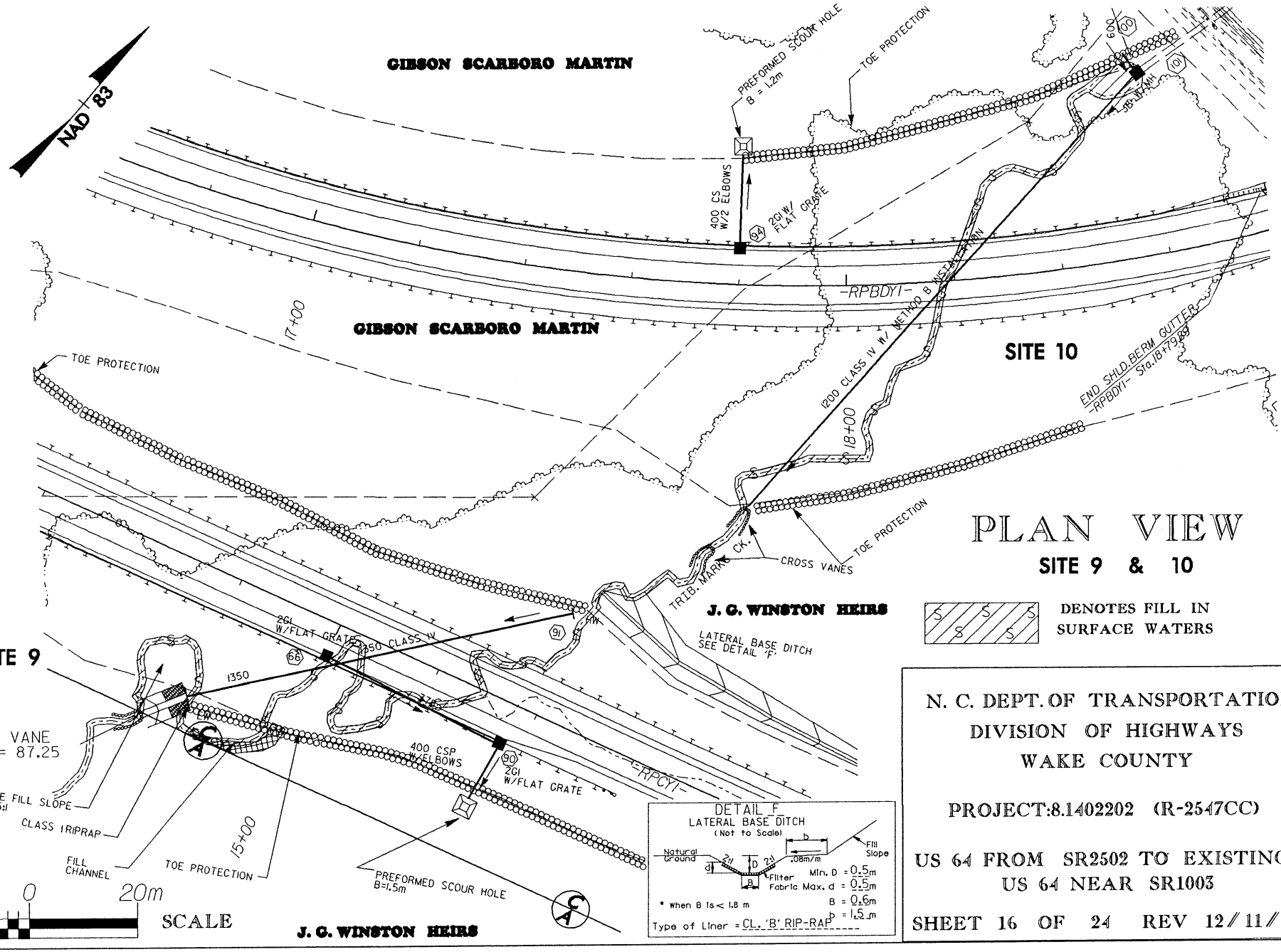
SITE 7 & SITE 8
PLAN VIEW
IMPACTED NEUSE RIVER BUFFER ZONES

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

PROJECT:8.1402202 (R-2547CC)

US 64 FROM SR2502 TO EXISTING US 64 NEAR SR1003

SHEET 15 OF 24 REV 12/11/03



PLAN VIEW

SITE 9 & 10

DENOTES FILL IN SURFACE WATERS

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

PROJECT:8.1402202 (R-2547CC)

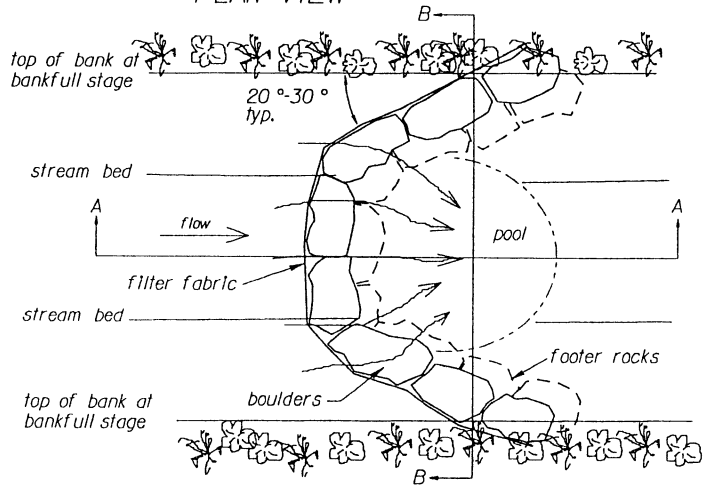
US 64 FROM SR2502 TO EXISTING US 64 NEAR SR1003

SHEET 16 OF 24 REV 12/11/03

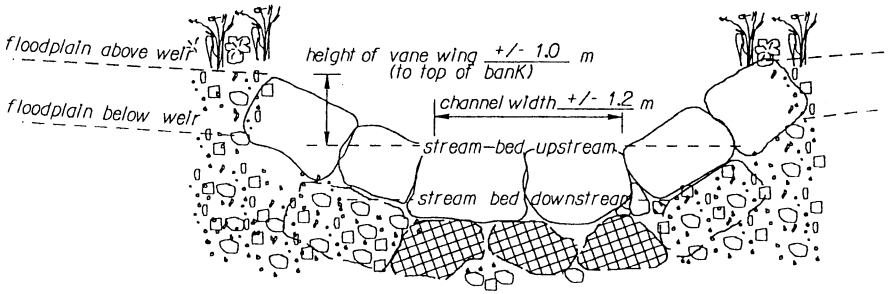
CROSS VANE ROCK WEIR DETAIL

SITE 9 & SITE 10

PLAN VIEW



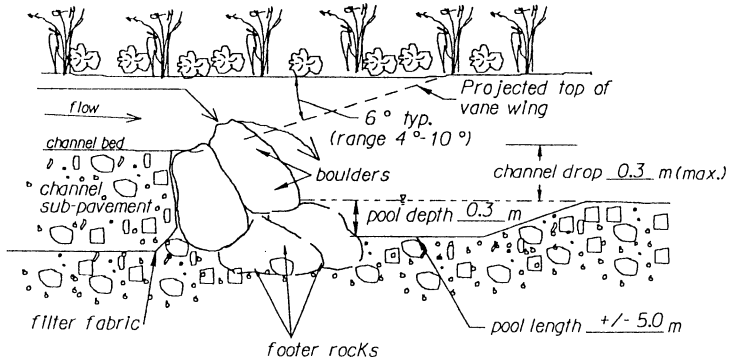
SECTION B-B



Note: Boulders should be native stone or shot rock, angular and oblong; minimum size: 0.9 m x 0.6 m.

Note: Rocks should fit tightly.
Trim filter fabric flush with ground.
When drop between upstream floodplain and downstream flood plain exceeds 0.3m, a boulder sill is recommended in the floodplain.

SECTION A-A

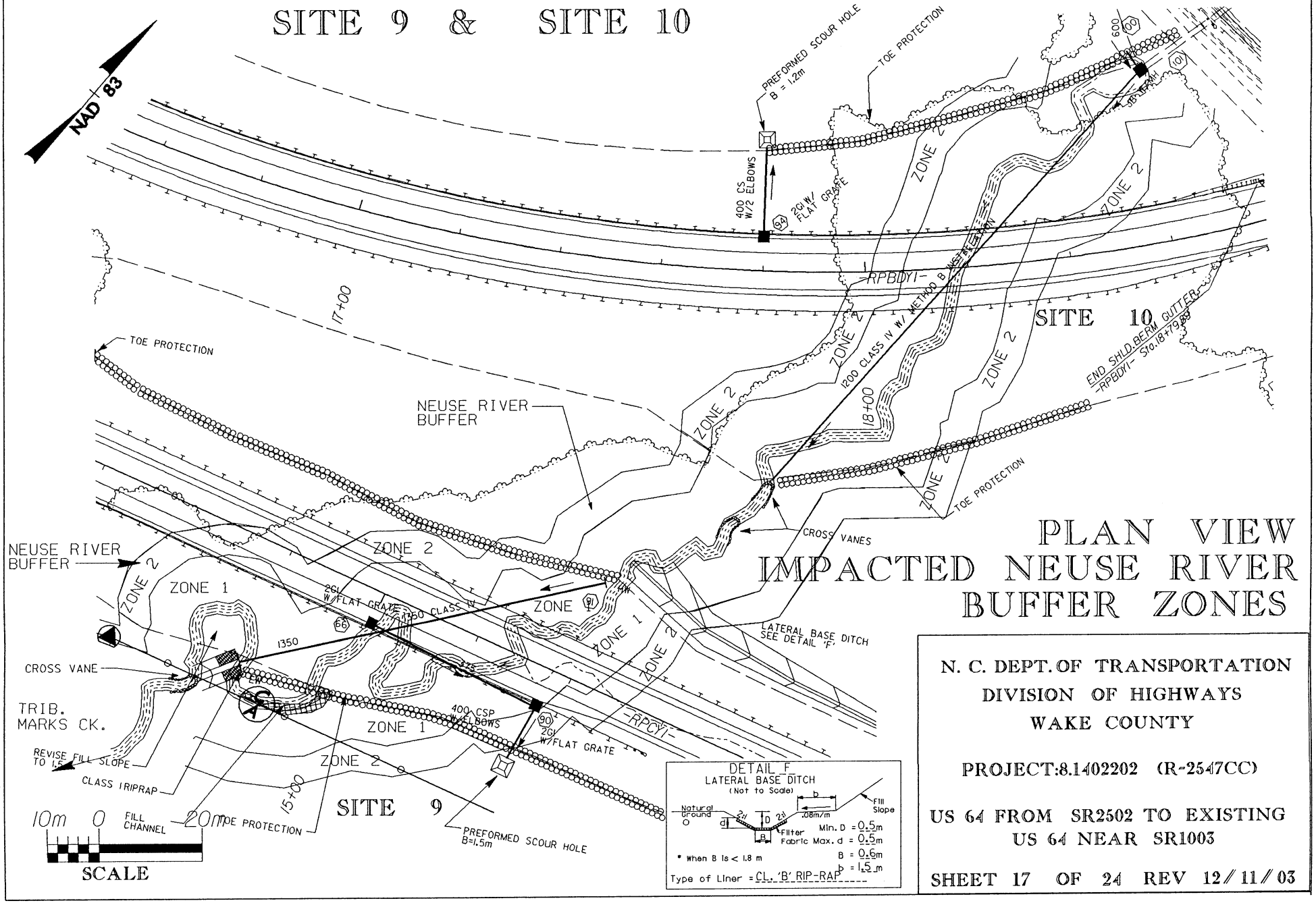


N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT:8.1402202 (R-2547CC)

US 64 FROM SR2502 TO EXISTING US 64 NEAR SR1003

SHEET 16A OF 24 REV 12/11/03



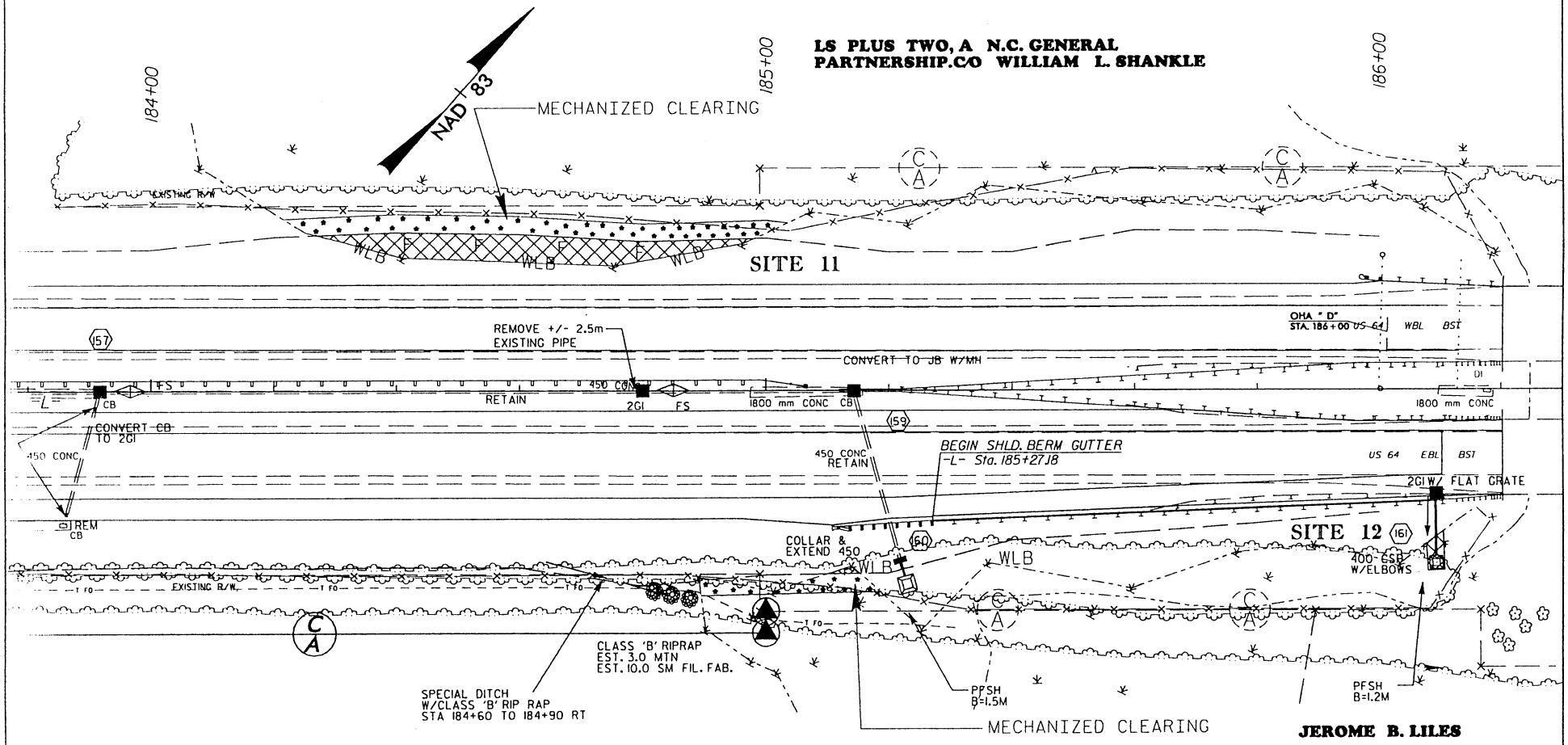
PLAN VIEW IMPACTED NEUSE RIVER BUFFER ZONES

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

PROJECT:8.1402202 (R-2547CC)

US 64 FROM SR2502 TO EXISTING US 64 NEAR SR1003

SHEET 17 OF 24 REV 12/11/03



SITE 11 & SITE 12
PLAN VIEW

W.W. HORTON HEIRS,ETAL GATTIS TRUETT HORTON AND WIFE MARY SUE HORTON

10m 0 20m
SCALE

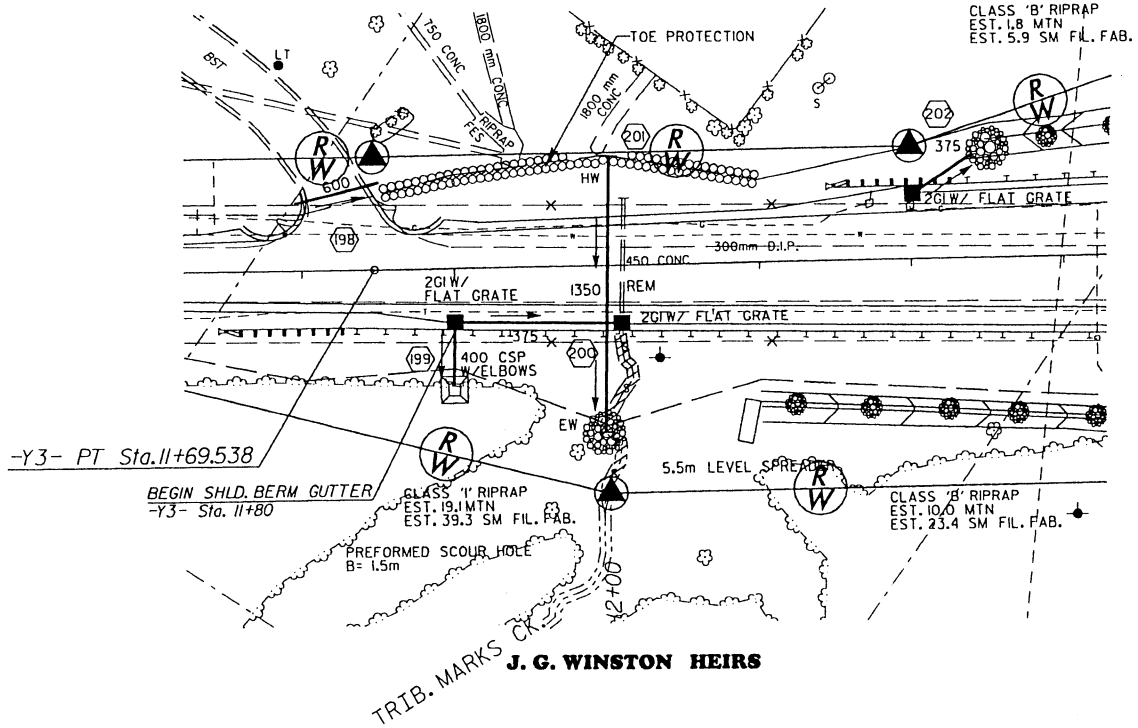
DENOTES FILL IN WETLANDS

DENOTES MECHANIZED CLEARING IN WETLANDS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 8.1402202 (R-2547CC)
US 64 FROM SR2502 TO EXISTING US 64 NEAR SR1003

SHEET 18 OF 24 REV 12/11/03

WAKE COUNTY BOARD OF EDUCATION



PLAN VIEW
SITE 13

10m 0 20m
SCALE

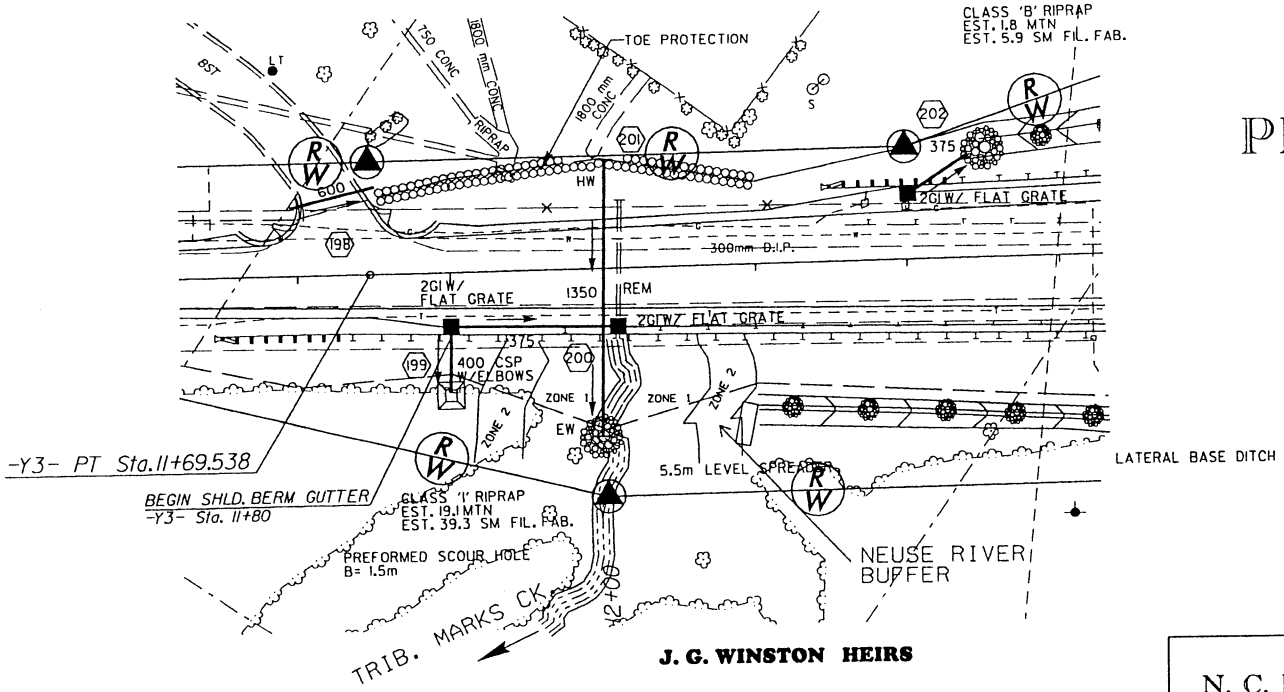
DENOTES FILL IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 8.1402202 (R-2547CC)
US64 FROM SR2502 TO EXISTING
US64 NEAR SR1003

SHEET 19 OF 24 REV 12/11/03

IMPACTED NEUSE RIVER BUFFER ZONES

WAKE COUNTY BOARD OF EDUCATION

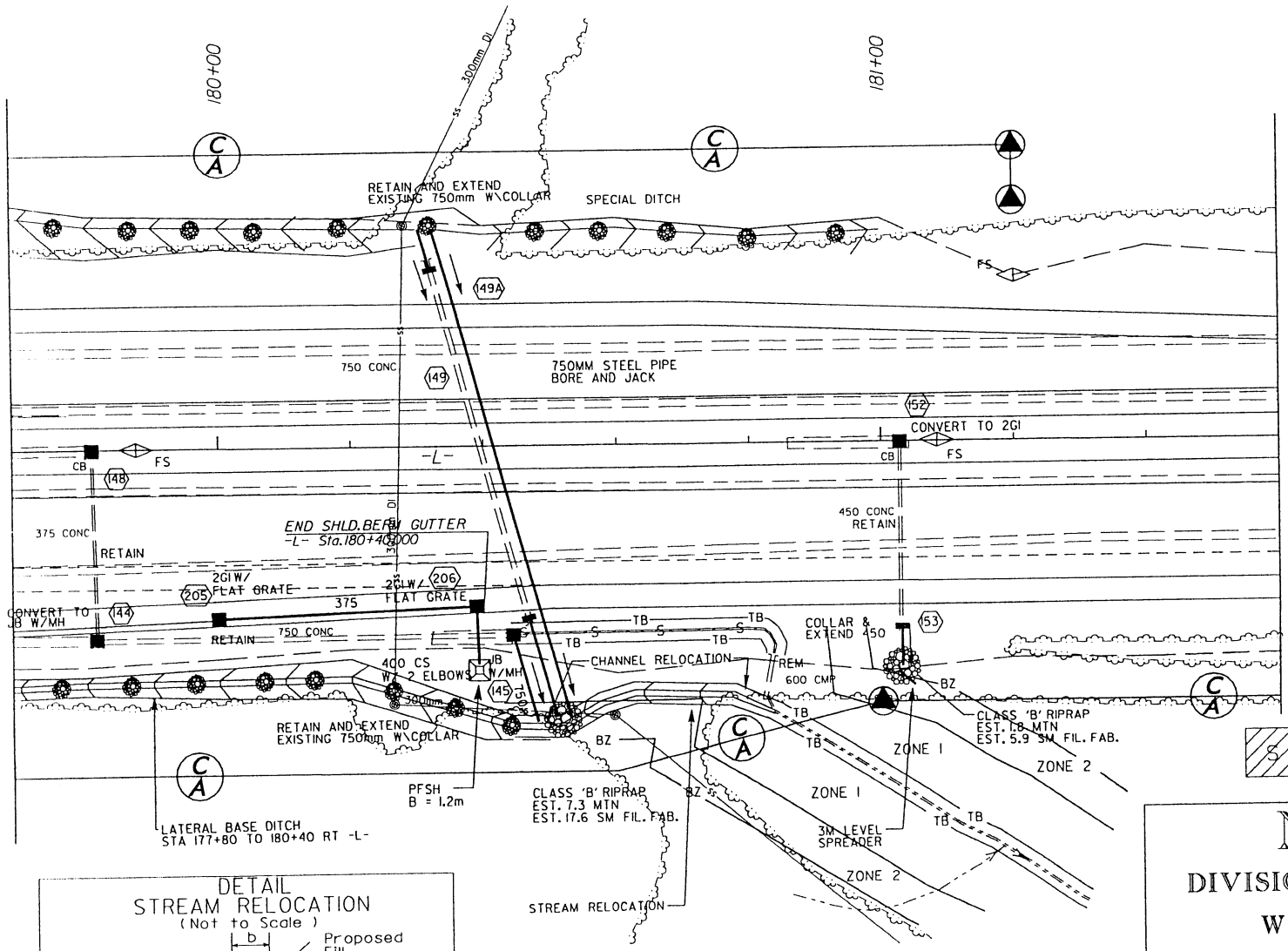


PLAN VIEW
SITE 13

10m 0 20m
SCALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 8.1402202 (R-2547CC)
US64 FROM SR2502 TO EXISTING US64 NEAR SR1003

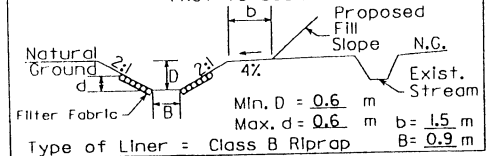
SHEET 20 OF 24 REV 12/11/03

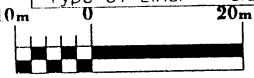


SITE 14 PLAN VIEW

DENOTES FILL IN SURFACE WATER

DETAIL
STREAM RELOCATION
(Not to Scale)





SCALE

IMPACTED NEUSE RIVER BUFFER ZONES AND STREAM IMPACTS

NCDOT

DIVISION OF HIGHWAYS

WAKE COUNTY

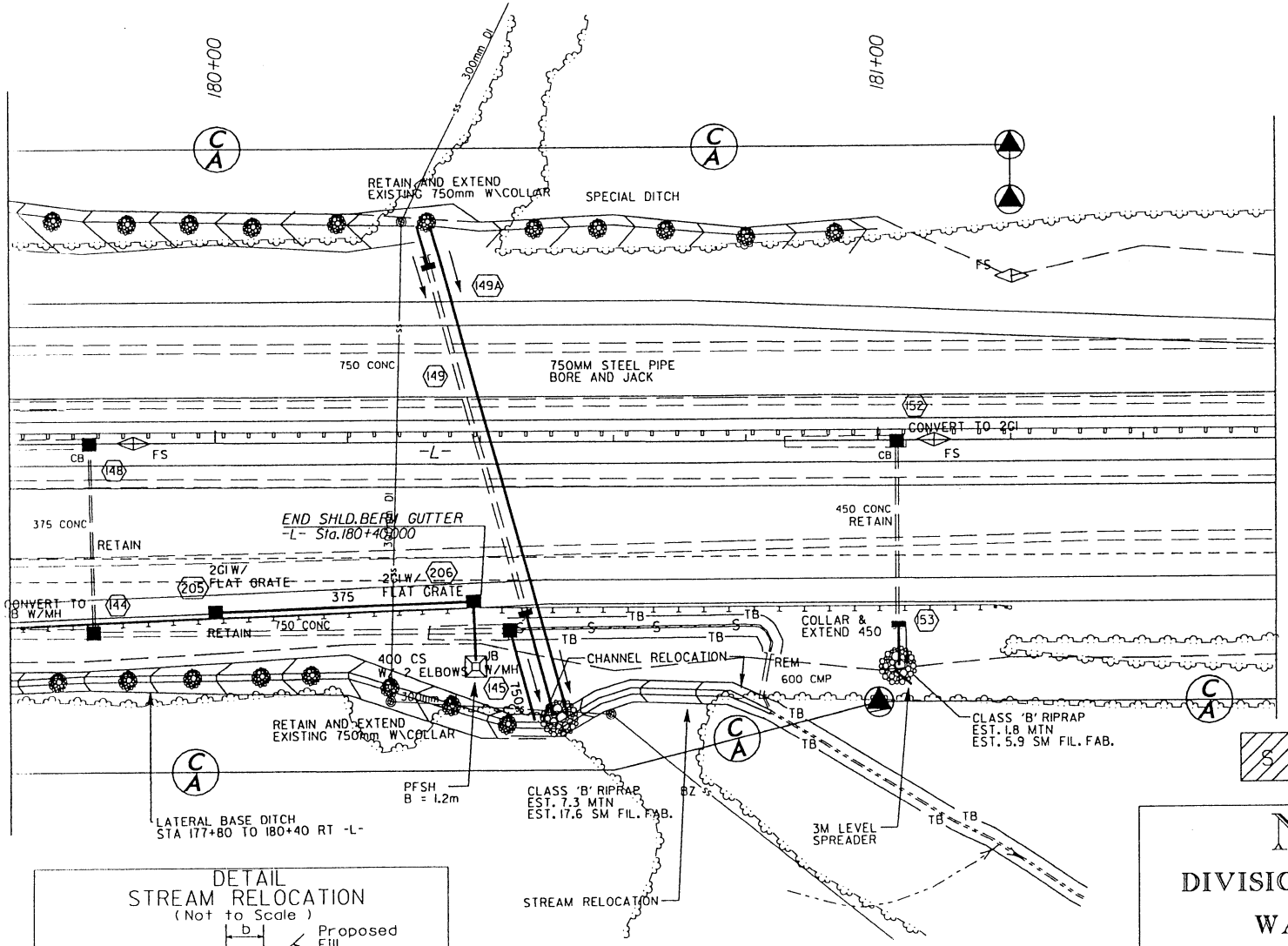
PROJECT: 8.1402202 (R-2547CC)

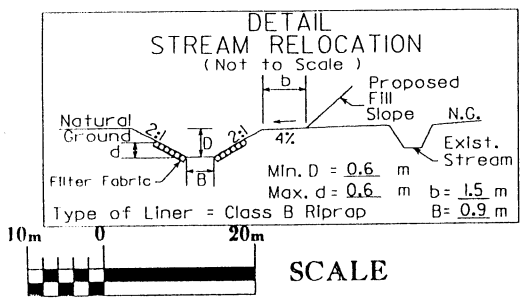
US 64 FROM SR 2502

TO EXISTING

US 64 NEAR SR 1003

SHEET 21 OF 24 REV 12/11/03





PLAN VIEW
SITE 14

NCDOT

DIVISION OF HIGHWAYS

WAKE COUNTY

PROJECT: 8.1402202 (R-2547CC)

US 64 FROM SR 2502

TO EXISTING

US 64 NEAR SR 1003

SHEET 22 OF 24 REV 12/11/03

IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size	WETLAND IMPACTS: Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Mechanized Clearing (Method III) (ha)	SURFACE WATER IMPACTS: Fill In SW (Natural) (ha)	Fill In SW (Pond) (ha)	Temp. Fill In SW (ha)	Existing Channel Impacted (m)	Relocated Channel (m)	Enclosed Channel (m)	BUFFER IMPACTS: Zone 1 (ha)	Zone 2 (ha)
1	SEE SITE 10 OF SECTION R-2547C FOR IMPACTS													
2	SEE SITE 10 OF SECTION R-2547C FOR IMPACTS													
3	149+79 -L-	1800mm RCP					0.13			99		85	0.159	0.111
4	154+78.5 -L-	1 @ 2.4m X 2.1m RCBC					0.19			390	240	117	0.51	0.39
5	154+60 -L-		0.092				0.002							
6	158+71.6 -L-	1 @ 2.4m X 2.4m RCBC					0.032			144		126	0.243	0.159
7 & 8	13+92 -RPCY1-	900 RCP					0.03			145		119	0.3	0.2
9	8+15-RPBDY1-	1200 RCP					0.021			130		108	0.24	0.145
10	15+10-RPCY1-	1350 RCP					0.024			150	9	82	0.28	0.15
11	184+60 -L-		0.024			0.023								
12	185+40 -L-		0.002			0.006								
13	12+00 -Y3-	1350 RCP					0.016			26		43	0.028	0.042
14	180+60 -L-	2 @ 750 PIPES					0.014			42	40		0.066	0.054
TOTALS:		hectare/meter	0.118	0	0	0.029	0.459	0	0	1126	289	680	1.826	1.251
		acre/feet	0.29	0.00	0.00	0.07	1.13	0.00	0.00	3694	948	2231	4.51	3.09

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY

PROJECT: 8.1402202 (R-2547CC)

SHEET 23 OF 24

REV. 12/11/2003

APPENDIX A

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

November 12, 2003

Ms. Coleen H. Sullins
Assistant Director
NCDENR/Division of Water Quality
1628 Mail Service Center
Raleigh, North Carolina 27699-1628

Dear Ms. Sullins:

On April 22, 2002 and April 10, 2002; respectively, the United States Army Corps of Engineers (USACE) 404 Individual Permit (**Action ID # 199300570**) and the North Carolina Division of Water Quality (DWQ) 401 Water Quality Certification (**WQC # 3344**) were issued for the subject project. These permits authorized construction of Transportation Improvement Program (TIP) Number R-2547, Sections BB, C, and CC. On October 22, 2003, the DWQ issued a Notice of Violation that cited violations and/or additional information requests. This letter, attachments, and references constitute our responses to the DWQ requests.

As requested, we are in the process of performing a "self-audit" of this project. This self-audit is being performed by our Construction and Roadside Environmental Units. The self-audit is being accomplished through investigations comprised of a series of meetings with the Department and Design-Build Team personnel. This process is being used to identify specific breakdowns in quality control and quality assurance as related to erosion and sediment control.

We have also initiated a statewide audit for erosion control and permit compliance to prevent similar problems from occurring on any of our projects. Furthermore, we are developing improvements to our erosion control and permit compliance processes. Attachment "A" is a list of items that are currently underway and/or under consideration to improve the Department's overall process related to erosion control and permit compliance efforts.

As requested, an investigation to determine specific locations and the extent of any off-site impacts has been completed. The following is a list of these efforts, along with any changes that have been made to prevent these violations from reoccurring:

> On September 29, 2003, construction operations were stopped on the Knightdale Bypass due to the violations to the Sedimentation Pollution Control Act (SPCA). After a 29-day work stoppage period, the project was determined to be in compliance with the SPCA. During this time period, the project was audited by multiple inspection teams with

MAILING ADDRESS:
STATE HIGHWAY ADMINISTRATOR
1536 MAIL SERVICE CENTER
RALEIGH NC 27699-1536

TELEPHONE: 919-733-7384
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WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH, NC

various corrective actions that included items such as maintenance of devices, installation of additional devices, as well as removal of accumulated sediment. The Contractor put forth a very large effort to correct the identified problems that were noted by Land Quality and NCDOT.

Three areas have been determined to need additional work to abate for the impacts resulting from the violation that occurred on the Knightdale Bypass. The Department will restore the areas adjacent to Poplar Creek, Marks Creek, and the Marks Creek Mitigation site. These three areas have had significant impacts that will require restoration efforts. The two stream sites will be restored to preexisting conditions and stream bank reforestation will occur when construction operations and growing season limitations permit. The Marks Creek Mitigation site will involve the removal of accumulated sediment from existing tributaries. Any established vegetation that is damaged during the restoration will be replaced.

The problems with inadequate Erosion Control plans have been corrected. Inspection forces are documenting deficiencies in the plans and ensuring corrective action is performed and recorded properly. The Contractor has allocated additional resources to maintain the existing devices and respond quickly to problems when they occur. These actions should prevent future occurrences from happening again on this project.

The additional information you requested is presented below indicating the comments raised followed by the Department's response.

Comment from DWQ: *Please provide additional information detailing the design changes that have occurred to the stormwater collection and discharge system. In addition, please identify any sites where they may have been constructed. The information provided shall include the original plans along with the current plans such that the collection and conveyance devices, and the out-fall structures and locations are clearly depicted.*

Response from the Department: Attachment "B" is a spreadsheet indicating where design changes have occurred in the stormwater collection design. The spreadsheet indicates the location of the changes and which changes have been installed to date. The spreadsheet further indicates the reason for the change. Enclosed, you will also find the original plans along with the current plans with collection and conveyance devices, out-fall structures and locations clearly depicted.

Comment from DWQ: *Please explain how and why changes to the vertical and horizontal placement of storm-water out-falls occurred. In addition, please detail a proposed plan for DOT to comply with Condition 13 of the 401 Water Quality Certification (and the Neuse Riparian Buffer Rules with respect to storm-water).*

Response from the Department: As stated above, the explanation of how and why changes occurred to the vertical and horizontal placement of storm-water out-falls is included in the Attachment "B" spreadsheet. NCDOT is currently preparing a request for permit modifications due to the apparent necessary changes in the storm-water design. This request for a permit modification will be submitted following your approval of our response to the Notice of Violation.

Comment from DWQ: *Please explain why an approximate 50 foot wide earthen causeway was substituted for the 28 foot wide timber matting authorized in the modified 401 Water Quality Certification dated March 21, 2003.*

Response from the Department: As you are aware, a permit modification was necessary to construct the bridges at Marks Creek and Poplar Creek. Once this had been realized, the Department directed the Contractor to prepare the necessary permit drawings. As requested, the Contractor submitted permit drawings to the Department for a permit modification. The Contractor's permit drawings indicated temporary work bridges across the streams with temporary roads constructed of either timber mats or earthen causeways as dictated by site conditions. These drawings were revised by the Department to eliminate the earthen causeway option prior to submitting the application for the permit modification.

Once the modification was approved, the Department failed to distribute the application along with the approval letter from DWQ. As a result, the Contractor and Department field forces were not aware the earthen causeway option had been eliminated. The improper distribution resulted in the Contractor and Department field forces working with the permit drawings originally submitted by the Contractor. This breakdown in communication resulted in the Contractor and Department field forces believing the placement of the timber mats or optional earthen causeway for the work areas had been approved. The earthen causeways were constructed due to the variable grade of the existing terrain.

Unfortunately, even with the miscommunication of the option available to the Contractor, the earthen causeways were constructed beyond the limits of the Contractor's drawings. The expansion of the width of the temporary road and associated mechanized clearing occurred incrementally and was not detected or appropriately regulated by Contractor, CEI or Department personnel. Physical delineation of buffers and allowable impact areas could have prevented this violation.

Comment from DWQ: *Please explain how impacts beyond those authorized to the riparian buffers occurred.*

Response from the Department: The Department concurs that impacts beyond those authorized occurred in the riparian buffer areas, and include the type and width of the temporary roads constructed, as well as disturbance beyond the authorized perimeter limits of impacts. As stated above, the extent of impacts in the buffer areas occurred incrementally over a period of time as construction progressed through various phases (i.e. drilled shafts, delivery of materials, construction of columns and caps, etc.). Again, project personnel failed to monitor and regulate the authorized limits of impact appropriately. The Department now recognizes that physically delineating the riparian buffers and authorized areas of impact could have prevented incremental growth of disturbed/impacted areas.

Comment from DWQ: *Please explain how NCDOT plans to restore the unauthorized wetland impacts. In your response, you should include a complete restoration plan, an implementation schedule with dates, and a three-year monitoring plan.*

Response from NCDOT: The Knightdale Bypass is currently 55% complete and scheduled to be finished in August 2005. Restoration work will begin as soon as possible following construction operations within the limits of the impacts. The impacts that have occurred to date will be restored to its preexisting condition. The restoration will require the Contractor to remove any unauthorized material that has been placed in jurisdictional areas. The sites will then be ripped to a depth sufficient to ensure that compaction from previous activities do not inhibit the function of the wetland. These areas will then be seeded and mulched using riparian seed mixtures. The sites will then be reestablished where practical with wetland tree species. The Department proposes to use visual monitoring protocols for these areas beginning at the completion of the project (8/5/03) and continuing for three years after the project is complete. An annual report will be provided to Water Quality for their review.

Comment from DWQ: *Please detail DOT's internal protocols for the oversight of project construction to ensure compliance with the 401 Water Quality Certification. Include in your discussion: 1) a discussion on the oversight protocols that DOT uses in reviewing, processing, and disseminating the 401 Water Quality Certification to DOT construction staff, including individuals that are required to read and review it, 2) a discussion that describes how the 401 Water Quality Certification and its conditions are incorporated into the construction plan, as well as the actual construction of the project, 3) the parties responsible for overseeing the project construction and ensuring compliance with the 401 Water Quality Certification, 4) the oversight protocols used in this project were consistent with DOT's standard operational procedures, and 5) the protocols used by DOT to ensure that impacts did not exceed those authorized.*

Response from the Department: The Project Development and Environmental Analysis (PDEA) Branch of the Department performs the reviewing and processing of the 401 Water Quality Certifications. The DWQ 401 Water Quality Certification for this project was incorporated into the contract for this project. A pre-construction meeting was held in the Division with the Contractor and various subcontractors.

The sensitive nature of this project warranted a separate environmental pre-construction meeting. Accordingly, this meeting was held at the Resident Engineer's office on July 22, 2002. The purpose of the environmental pre-construction meeting was to address the regulatory permits, permit conditions, and review permit drawings with the Contractor. Mr. Eric Alsmeyer addressed the USACE permit conditions and Mr. Chris Murray addressed the NCDENR-DWQ permit conditions. Ms. Alice Gordon provided additional information concerning the permits during the meeting. The Contractor was informed that although the project is characterized as "Design-Build," no design changes were allowed without a permit modification. The Contractor was informed that no changes to the alignment of outfall locations, culverts, bridges, grassed swales or ditches are allowed without a permit modification.

The permit modification for the Marks Creek and Poplar Creek bridge sites was also reviewed and processed by the PDEA Branch of the Department. Upon approval of the modification of the original certification, it is normally distributed to the Department construction staff. In this instance, there is no record of the approval being distributed to the Department construction staff. Usually, this information is distributed to the Division Engineer, Division Construction Engineer and Resident Engineer.

The design of the project should incorporate and comply with DWQ 401 Water Quality Certification and relevant conditions. This should include (but is not limited to) roadway and bridge design, hydraulic design and the erosion and sediment control plan. Department personnel responsible for these designs are fully aware of DWQ 401 Water Quality Certification and relevant conditions. Additionally, the construction of the project should be in compliance with the DWQ 401 Water Quality Certification and relevant conditions.

The parties responsible for construction oversight and compliance with the 401 Water Quality Certification include: North Carolina Constructors (Contractor/Lead Designer), Sungate Design (Hydraulic Designer), KCI Engineering (Construction Inspection), Mr. Chris Murray (NCDOT Division Environmental Officer), Mr. Steve Leonard (NCDOT Resident Engineer), Mr. Tracy Parrott (NCDOT Division Construction Engineer), Mr. Donald Pearson (NCDOT Roadway Environmental Field Operations Engineer), Ms. Christy Wright (NCDOT Assistant Resident Engineer). Mr. Doug Ramsey (NCDOT Lead Project Inspector), and Mr. Dennis Jernigan (Roadway Construction Engineer).

The oversight protocols for this project are basically the same as on any construction project. These protocols begin with the environmental meeting prior to construction to review the permit requirements and continue through inspection of the project for compliance by various personnel. These personnel include the Resident Engineer, Assistant Resident Engineer, construction technicians performing the inspection on a daily basis, a Roadside Environmental Engineer performing periodic reviews and a Bridge and Roadway Construction Engineer performing periodic reviews.

The oversight protocols in place prior to construction appeared adequate to ensure permit compliance. The actual project construction oversight on this project did not meet our standards. Department personnel, the Contractor, and the inspection team failed to adequately monitor construction of the project for permit compliance.

Comment from DWQ: *Clearly explain how DOT manages sediment and erosion control on projects of this size/scope.*

Response from the Department: The Department utilizes a four tier system of checks and balances. The first tier involves the Contractor who is responsible for implementing and maintaining the erosion and sediment control plan on the project. The second tier is comprised of the Resident Engineer and his inspectors, as well as the construction inspection firm charged with administering the contract. They ensure that the Contractor complies with all aspects of the SPCA. The majority of the corrective actions and inspections occur on the first two tiers of the system. The third tier consists of an oversight inspection performed by the Roadside Environmental Unit's Field Operations Engineer, as well as the Construction Unit's Roadway Construction Engineer. These individuals routinely inspect the project to ensure that all aspects of the Department's erosion and sediment control program are working correctly. The final tier involves the Land Quality Section staff reviewing the project when necessary. At any point in the construction of the project a violation to the SPCA is noted, then corrective actions occur. In the event the Contractor is negligent, then construction on the project stops until the project is deemed in compliance with the SPCA.

Comment from DWQ: *It is the understanding of DWQ that safe guards are in place to assure control measures are maintained to ensure compliance with the sediment and erosion control requirements of the state of North Carolina. Please detail the measures that were taken to ensure compliance with the Knightdale Bypass. It should be noted that the inspection report from the DLR describes significant deficiencies in design, construction, installation, and maintenance over an extended period of time. Please explain why the deficiencies were so severe and prolonged.*

Response from the Department: The Department of Transportation required the Contractor for the Knightdale Bypass to design the erosion and sedimentation control plan utilizing 2,400 cubic feet of storage per disturbed acre. The Contractor chose to submit the erosion control plan in two phases. The first phase covered the clearing and grubbing portion of the construction process. The second and final phase involved the mass grading phase of the project. These plans were submitted to the Roadside Environmental Unit office for review as required by the delegation agreement between the Department and DENR Land Quality Section. Corrections were noted on the plan and the Contractor addressed those concerns.

Grading operations began and the clearing and grubbing phase were installed. The project progressed to the mass grading phase, which began the implementation of the second phase of the erosion control plan. During the transition between the two phases, there was a failure to document which devices were installed on which plan. The two plans became disconnected and information about changes were not properly documented. Violations began to develop and the Roadside Environmental Unit's Field Operations Engineer, as well as Land Quality staff cited the Contractor for these occurrences. Corrective actions were initiated and completed by the Contractor. Further problems began to develop as heavy rainfall from an unusually wet summer impacted the project. Additional inspections were made noting areas that needed attention. The overall condition of the project began to decline. In order to keep the project on track, the Contractor began incorporating additional erosion and sediment devices. Unfortunately, these devices were not sized properly or located in the proper areas. Many of these devices were not documented or engineered to meet existing conditions.

On September 29, 2003, the Department determined that the Contractor needed to cease all operations until all violations that had been noted on previous reports were corrected. Due to the extensive list of unsatisfactory items, the Contractor was unable to correct the items before Land Quality visited the project.

Unfortunately, even with all of the emphasis we place on environmental stewardship, mistakes still occurred. I sincerely apologize for what has happened on this project.

We stand ready to provide you with any additional information you may require for your review of this issue. If you have any specific questions or require any additional information, please contact me at (919) 733-7384 or Mr. Steven D. DeWitt, Director of Construction, at (919) 733-2210.

Sincerely,

L. A. Sanderson, P.E. /ECP

L. A. Sanderson, PE
State Highway Administrator

LAS/ECP:ks

cc-
Lyndo Tippett, Secretary NCDOT
Roger Sheats, Deputy Secretary, NCDOT
Steve Varnedoe, PE, Chief Engineer – Operations
Steven D. DeWitt, PE, Director of Program Delivery
Jon Nance, PE, Division Five Engineer
Tracy Parrott, PE, Division Five Construction Engineer
Don Lee, PE, State Roadside Environmental Engineer
Steve Leonard, PE, Resident Engineer, Division Five
Gregory J. Thorpe, Ph.D., PE, Director of Environmental Management, PDEA
Division of Water Quality, Central Files
Division of Land Resources, Raleigh Regional Office
US Army Corps of Engineers – Wilmington Office
Danny Smith, Division of Water Quality
Wake County Environmental Services
Jeff Poupart, Non-Discharge Enforcement Unit

Enclosure

"ATTACHMENT A"

DRAFT

Suggested Improvements to Erosion Control and Permit Compliance Processes on Contract Construction Projects

1. Develop "Certified Professional in Erosion and Sediment Control" (CPESC) program to include Department, contractor, and private engineering firm employees.

2. Develop permit compliance process similar to Immediate Corrective Action (ICA) process. This would apply to all projects.

3. Conduct process review for all design-build and non-design-build projects to include both contract administration and design components. Review all pertinent contract and/or scoping requirements and strengthen/clarify as appropriate.

    - Review Department's Qa process including plan review protocol
    - Require contractor/DB team to submit Qc program plan with special attention to erosion and sediment control and permit compliance

4. Conduct awareness training to include:

    - Department employees to the lowest level
    - Distribute Best Management Practices Manuals to all employees
    - Conduct joint training with the contracting and private engineering industries
    - Conduct calibration training with the Department of Environmental and Natural Resources Divisions of Land Quality and Water Quality, Roadside Environmental, Central Construction Unit, and the Divisions

5. Re-emphasize and strengthen ICA process on all projects. Develop language to stop work on appropriate activities upon receipt of ICA. Require 72-hour compliance. Failure to comply will result in total project work stoppage.

6. Perform in-depth erosion control review on all design-build projects immediately and perform these inspections at least quarterly on all design-build projects and major design-bid-build projects.

7. Include contract requirement for all projects to stake all jurisdictional areas with designated markings (i.e. pink flags) and require field orientation prior to work in or around permitted areas.

8. Strengthen Incentive/Disincentive provisions for ICAs & NOVs. Current design-build projects have $5,000 per month incentive for no ICAs and/or NOVs. Propose $5,000 penalty for ICA, with disincentive of $1,000 per day until project brought into compliance. $10,000 for NOVs with $2,000 per day disincentive. The I/D provisions would be included in all design-build projects and select design-bid-build major grading projects.

9. Review pay item process for design-build. Review options of lump sum, reverse banking, retainage, etc.

10. Develop performance based prequalification process for sedimentation and erosion control and environmental permit compliance. This would apply to all prime contractors and subcontractors.

11. Provide/require mandatory training for design-build firms. Training to include contractors, design firms, CEI firms, and Department employees. Training to be held prior to beginning any work on projects.

12. Require biweekly/monthly certified document from erosion control designer on design-build projects to certify erosion control compliance with plans and details of actual construction.

Revised drainage design features
Knightdale Bypass Project Sections BB/C/CC

Date: 11/12/03

Item	Sec	NCC Plansheet	Permit sheet	Permit site #	Description	Str. #	Status	Line	Sta	Offset	Changed condition and explanation
38	CC	CC-13	CC 20 and 21 of 24	14	relocated channel in fill not in permit	channel relocate	BUILT	L	180+60	RT	The permit drawing depicts fill in surface water at Station 180+60 RT, but does not depict a relocated channel for the section that is filled. The plan sheet depicts the stream relocation, which will be conveyed by a riprap lined channel. No additional stream impacts have occured as a result of this revision as the portion of the channel and the buffer impacts were accounted for in the summary dated 2/7/01.
39	CC	CC-13	CC 20 and 21 of 24	14	channel ditch	ditch	BUILT	L	178+40	LT	The plan sheet depicts a lateral ditch along the northern fill slope of the roadway right of Station 180+00. This lateral ditch is not depicted on the permit drawing. The lateral ditch causes no additional impacts.
40	CC	CC-13	CC 21 of 24	14	added drainage structures	149a,205,206, 145,149 + ditch	BUILT	L	180+20	RT	The permit drawing depicts a drainage structure along the southern fill slope of the roadway. The plan sheet depicts a lateral base ditch along this fill slope. Additional drainage structures are depicted in this area on the plan sheet. An additional 750mm cross pipe was added to supplement the existing undersized cross pipe. A lateral ditch was added to convey off-site drainage to the stream. Also, the drainage design was revised to make use of the existing 750mm pipe that runs laterally along the right side of the roadway. No additional impacts occur as a result of these changes.
41	CC		CC 21 of 24	all	general comment						Please note that there are significant drainage revisions from the permit drawings. These have been investigated to determine any potential problems with riparian buffer regulations. Every effort has been made to address all buffer regulations for treatment of stormwater and to provide diffuse flow at buffer zones. Each structure has been investigated individually to ensure that any redesign did not cause unnecessary impacts. Any drainage that was revised was done so with the intent of improving the function of the systems and to provide a lesser impact to the environment.

Revised drainage design features
Knightdale Bypass Project Sections BB/C/CC

Date: 11/12/03

Item	Sec	NCC Plansheet	Permit sheet	Permit site #	Description	Str. #	Status	Line	Sta	Offset	Changed condition and explanation
28	CC	CC-10D/11C	CC 16 and 17 of 24	9 & 10	lateral ditch and toe prot not in permit	ditch + toe prot	HOLD	RPCY1	15+00	LT	Plan sheet 10D depicts toe protection and a lateral base ditch along the northern slope of this Y line in the buffer. The permit drawing does not depict either of these features in the buffer. An off-site drainage area was unaddressed in the previous permit drawing. To convey the discharge adequately, a ditch was required. Since this is off-site drainage, it is acceptable to ditch through the buffers. The ditch will impact an additional 0.013 hectares (0.032 acres) of buffer zone area.
29	CC	CC-10D/11C	CC 16 and 17 of 24	9 & 10	Level spreader in permit deleted	spreader	revised	RPBDY1	17+60	RT	The permit drawing depicts a level spreader located at Station 18+60 -Ramp BDY1- LT. This device was removed on plan sheet 11C since the drainage system associated with it has been removed eliminating the concentrated discharge. No additional impacts occur as a result of this change.
30	CC	CC-10D/11C	CC 16 and 17 of 24	9 & 10	str 100 pipe 1200mm i.s.o. 1350mm	100	BUILT	RPBDY1	18+20	LT/RT	The permit drawing indicates that the structure is a 1350mm pipe. Plan sheet 11C depicts the structure is a 1200mm pipe. The pipe size was found to be excessive. No additional impacts have occurred as a result of this change.
31	CC	CC-10D/11C	CC 16 and 17 of 24	9 & 10	str 100 connected to existing	100	BUILT	RPBDY1	18+20	LT	The permit drawing depicts the inlet of the structure originating directly outside of the fill slope and not connecting to a pipe underneath an adjacent road. Plan sheet 11C depicts the inlet of the structure directly connected to the pipe underneath the adjacent road by a junction box. The fill slopes on the permit drawing have been revised to show the bridge approach fill which covers this area completely. This change will impact an additional 10 meters (33 feet) of stream.
32	CC	CC-10D/11C	CC 16 and 17 of 24	9 & 10	drainage str in buffer deleted / modified	N/A	revised	RPBDY1	17+60	LT/RT	The permit drawing depicts a level spreader located at Station 17+60 -Ramp BDY1- RT. This device was removed on plan sheet 11C since the drainage system associated with it has been revised to a single inlet that directs the discharge to the opposite side of the ramp outside of the buffer zones. No additional impacts occur as a result of this change.
33	CC	CC-14/15	CC 18 of 24	11 & 12	riprap not shown in permit	riprap	BUILT	L	184+90	RT	Plan sheet 14 depicts the placement of Class B riprap within the wetland limits at Station 184+90 Rt. The permit drawing does not depict this riprap. The riprap was added to stabilize the transition from the ditch to the wetlands. The riprap will impact an additional 0.001 hectares (0.003 acres) of wetlands.
34	CC	CC-14/15	CC 18 of 24	11 & 12	PSH not in permit	PSH	BUILT	L	186+05	RT	Plan sheet 15 depicts a PFSH inside the wetland limits located at the outlet of a pipe and an additional drainage inlet at Station 186+05 Rt. These features are not depicted on the permit drawing. Shoulder berm gutter was added due to the addition of guardrail in this area. This required a drainage inlet to be added. A properly sized PFSH was added to diffuse the flow from the outlet pipe. The PFSH will impact an additional 0.002 hectares (0.006 acres) of wetlands.
35	CC	CC-20	CC 19 of 24	13	lateral ditch changed + ditch added	204, ditch	BUILT	Y3	13+00	LT	The permit drawing depicts a lateral ditch that flows to a level spreader on the south side of the roadway. The plan sheet depicts an additional reconfigured lateral ditch that conveys drainage from the north side of the road and outlets into the ditch and level spreader to the south side of the road. The ditch was reconfigured based on existing field conditions and causes no additional impacts to the level spreader design.
36	CC	CC-20	CC 18 and 19 of 24	13	PSH shown other side of str 199	199, 200, PSH	HOLD	Y3	12+00	RT	The permit drawing depicts a drainage pipe with a PFSH located at Station 12+00 RT -Y3-. The plan sheet depicts the PFSH and drainage system located at Station 11+80 RT -Y3-. Additional shoulder berm gutter was added which betters protects the buffers as runoff that previously flowed directly into the buffers is now collected and directed to a properly sized PFSH outside of the buffers. No additional impacts occur as a result of this change.
37	CC	CC-20	CC 18 and 19 of 24	13	lateral ditch and toe prot not in permit	toe protection	BUILT	Y3	12+00	LT	The plan sheet depicts a lateral ditch and toe protection on the north side of the roadway. These features are not depicted on the permit drawing. These revisions do not impact the buffer zones or jurisdictional streams.

Revised drainage design features
Knightdale Bypass Project Sections BB/C/CC

Date: 11/12/03

Item	Sec	NCC Plansheet	Permit sheet	Permit site #	Description	Str. #	Status	Line	Sta	Offset	Changed condition and explanation
19	CC	CC-10A/D	CC 14 and 15 of 24	7 & 8	str 79 i.s.o. str w. headwall	64	BUILT	RPBDY1	16+25	RT	Permit drawings indicate a headwall at the inlet of this pipe. The design of this site was revised to be a junction box joining the two pipes rather than a headwall on the end of one of the pipes, because the fill in the gore area between -Ramp BDY1- and -L- completely covers both ends of the pipes. A 750mm cross pipe has been added under -L- to eliminate a drainage diversion. No additional impacts occur as this entire area was included in the summary quantities dated 2/7/01.
20	CC	CC-10A/D	CC 14 and 15 of 24	7 & 8	str 79a + pipe added	79a	BUILT	L	167+00	LT/RT	Plan sheet 10A indicates a junction box and additional drainage structures that flow into this pipe. The design of this site was revised to be a junction box joining the two pipes rather than a headwall on the end of one of the pipes, because the fill in the gore area between -Ramp BDY1- and -L- completely covers both ends of the pipes. A 750mm cross pipe has been added under -L- to eliminate a drainage diversion. No additional impacts occue as this area was included in the summary quantities dated 2/7/01.
21	CC	CC-10A/D	CC 14 and 15 of 24	7 & 8	PSH moved to 15+80	78,78a	moved	RPBDY1	16+00	LT/RT	Permit drawing indicates that a PFSH is located along -Ramp BDY1- line at Station 16+00. The PFSH on the permit is shown on the side of a 2:1 fill slope. This drainage system was revised to direct the drainage system to the opposite side of the ramp to a level area with a properly sized PFSH. No additional impacts occur as a result of this change.
22	CC	CC-10A/D	CC 14 and 15 of 24	7 & 8	no stream between str 64	64	BUILT	RPBDY1	16+30	RT	Permit drawing indicates that the two structures are separated and 2m (6LF) of live stream is located between the pipes. Plan sheet 10D indicates that the two structures are joined by a junction box. The junction box was necessary since the fill slopes converged from the two ramps burying the channel and pipe ends. No additional impacts have occured as this area was included in the summary quantity dated 2/7/01.
23	CC	CC-10A/D	CC 14 and 15 of 24	7 & 8	64 pipe 900mm i.s.o. 1500mm permitted	64	BUILT	RPCY1	13+90	LT/RT	Plan sheet 10A indicates that the structure is a 900mm pipe. The permit drawing indicates that the structure is a 1500mm pipe. The pipe size was found to be excessive and redesigned according to NCDOT guidelines.
24	CC	CC-10A/D	CC 14 and 15 of 24	7 & 8	PSH deleted / moved to 15+30	N/A	HOLD	RPCY1	14+30	RT	Permit drawing indicates that a PFSH is located along -Ramp CY1- at Station 14+30. This PFSH has been eliminated from the plan sheet. The drainage area has been directed toward a properly sized PFSH located at Station 15+30 -Ramp CY1-. No additional impacts have occurred as a result of this change.
25	CC	CC-10D/11C	CC 16 and 17 of 24	9 & 10	riprap instead of cross vane	riprap	BUILT	RPCY1	14+90	LT	Plan sheet 10D indicates that riprap will be placed at the outlet of the structure where bank excavation has been conducted. The permit drawing does not depict the riprap and instead depicts a cross vane at the outlet. The cross vane was inadvertantly omitted from the plans and will be added. The riprap at the outlet of the pipe will not cause any additional stream impacts as it will be installed in a portion of the channel required to tie to the existing channel.
26	CC	CC-10D/11C	CC 16 and 17 of 24	9 & 10	PSH in stead of lvl sprdr	PSH	HOLD	RPCY1	15+30	LT	Plan sheet 10D depicts a PFSH along the southern fill slope directly outside of the riparian buffer. The permit drawings depict a level spreader in this area. Due to the contour of existing ground, a PFSH would function better in this location. No additional impacts have occured as a result of this change.
27	CC	CC-10D/11C	CC 16 and 17 of 24	9 & 10	drainage str in buffer deleted / modified	94, 100, 91	HOLD	RPBDY1	17+70	LT	Drainage structure #66 was moved to from Station 14+60 to Station 15+00 -Ramp CY1- to eliminate unnecessary pipe. Additional drainage was directed to the PFSH located at Station 15+30 RT and it was sized accordingly.

Revised drainage design features
Knightdale Bypass Project Sections BB/C/CC

Date: 11/12/03

Item	Sec	NCC Plansheet	Permit sheet	Permit site #	Description	Str. #	Status	Line	Sta	Offset	Changed condition and explanation
10	CC	CC-7	CC 8 and 9 of 24	4 & 5	toe prot in stead of ditch to lvl sprdr	ditch	HOLD	L	154+40	RT	Permit drawing depicts a 1.5m (5 LF) base ditch that outfalls to a drainage pipe that is connected to the box culvert. The plan sheet indicates toe protection along the eastern fill slope and a PFSH located approximately 30m (100LF) away from the riparian buffer. Lateral ditches were removed and replaced by toe protection. Runoff from the roadway is directed to a properly sized PFSH to provide diffuse flow. No additional impacts occur as a result of this change.
11	CC	CC-7	CC 8 and 9 of 24	4 & 5	PSH not in permit	30, 31, PSH	HOLD	L	154+20	RT	The PFSH located at Station 154+60 RT shown in plans is not shown in the permit drawing. The PFSH was added to provide diffuse flow for the drainage system from the roadway. No additional impacts occur as a result of this change.
12	CC	CC-7	CC 8 and 9 of 24	4 & 5	base ditch was redesigned to lateral	ditch	BUILT	L	155+00	LT	Permit drawing indicates a 0.9m (3LF) base ditch along the western side of the roadway that flows to a level spreader. This lateral ditch has been redesigned on the plan sheet to match field conditions. It outlets in the level spreader. No additional impacts have occurred as a result of this change.
13	CC	CC-8	CC 12 and 13 of 24	6	10m (30LF) of riprap at bc3 not permitted	riprap	HOLD	L	158+40	LT	Plan sheet indicates riprap for bank stabilization at the outlet of the structure. This riprap was inadvertantly omitted from the permit drawing. An additional 4 meters (13 feet) of stream impacts have occurred as a result of this change.
14	CC	CC-8	CC 12 of 24	6	base ditch changed + toe prot added	ditch + toe protection	HOLD	L	159+00	LT	Permit drawing depicts a lateral base ditch that originates at the railroad and terminates at the creek on the west side of the roadway. The plan sheet indicates that this lateral ditch has been decreased in length and reconfigured. The result of this change has further minimized jurisdictional impact. Toe protection was used in place of a portion of the riprap lined ditch along the western fill slope. The same discharge is directed toward the level spreader located at Station 158+40 LT. No additional impacts occured as a result of this change.
15	CC	CC-8	CC 12 and 13 of 24	6	lateral ditch changed + toe prot added	ditch + toe protection	HOLD	L	158+80	RT	Permit drawing depicts a lateral base ditch that terminates at the creek on the eastern side of the roadway. The plan sheet depicts a reconfigured lateral ditch that terminates at the edge of the riparian buffer. Toe protection is depicted along the fill slope within the riparian buffer. The drainage depicted on the permit drawing dated 4/8/02 renders the level spreader useless. This area was redesigned to direct the ditch flow into the level spreader so that diffuse flow could be provided before the buffer. The ditch was eliminated in the buffer and replaced with toe protection. This reduced the buffer impacts.
16	CC	CC-8	CC 12 and 13 of 24	6	str deleted	N/A	HOLD	L	159+40	LT	The structure at Station 159+30 LT shown on the permit drawings has been removed on the plans. This structure was no longer needed and eliminated from the plans. The same discharge is directed toward the level spreader. No additional impacts have occurred as a result of this change.
17	CC	CC-8	CC 12 and 13 of 24	6	str changed	42,43	HOLD	L	159+00	RT	The structure at Station 159+40 RT shown on the permit drawings has been removed on the plans. Structure #43 has been added to the plans in the median. This structure was no shown in the permit drawings. The structure located at 159+40 RT was no longer needed and eliminated from the plans. Structure #43 was added due to revisions in the guardrail configuration that caused a false sump in the median. The same discharge is still directed toward the level spreader. No additional impacts have occurred as a result of this change.
18	CC	CC-10A/D	CC 14 and 15 of 24	7 & 8	str 79 pipe 900mm i.s.o. 1500mm	79	BUILT	RPBDY 1	16+25	CL	Plan sheet 10A indicates that the structure is a 900mm pipe. The permit drawing indicates that the structure is a 1500mm pipe. The pipe size was found to be excessive and redesigned according to NCDOT guidelines. No additional impacts occur as a result of this change.

Revised drainage design features
Knightdale Bypass Project Sections BB/C/CC

Date: 11/12/03

Item	Sec	NCC Plansheet	Permit sheet	Permit site #	Description	Str. #	Status	Line	Sta	Offset	Changed condition and explanation
29	C	C-2F	C 28 of 34	9	X-sct of lateral ditch not per permit	ditches	partially BUILT	L	141+30	RT	There is a discrepancy between the lateral ditch cross section depicted on permit drawing 28 and plan sheet 2F. The detail on the permit drawing will be revised to coincide with plan sheet 2 F and will be submitted for a permit modification.
1	CC	CC-4	CC 5 of 24 & C 30 of 34	C 10, CC 2	PSH moved to avoid bridge	5,6,7, PSH	HOLD	L	145+20	LT/RT	The permit drawing indicates a PFSH is located at Station 145+40. The plan sheet indicates that this device has been shifted to Station 145+20. The bridge was revised to span the buffers in the permit drawing dated 3/22/2002. The drainage shown in that drawing was not adjusted to match the revised length of bridge. The drainage system has been shifted 20 meters (60LF) back away from the buffers, but is the same configuration. No additional impacts have occured as a result of this change.
2	CC	CC-5	CC 5 of 24 & C 30 of 34	C 10, CC 2	5m (15LF) level spreader missing from plans	N/A	revised	L	147+20	LT	Permit drawing indicates a level spreader that is 5m (15LF) long at station 147+20. This device is not depicted on the plan sheet. Site 10 of R-2547C (Sheets 29 and 30 of 34) and Sites 1 and 2 of R-2547CC (Sheets 4 and 5 of 24) show the same areas of the project. The note on Sites 1 and 2 of R-2547CC states 'See Site 10 on part R-2547C of the permits for drainage and diffusing devices.' This level spreader was omitted for because the field conditions for the level spreader were considered unacceptable since it was located on a slope greater than 10 percent. No additional impacts occur as a result of this change.
3	CC	CC-5	CC 5 of 24 & C 30 of 34	C 10, CC 2	added pipes into PSH	9A,9,10,PSH	available	L	147+20	LT	Plan sheets depict an additional cross pipe that originates from the end bent that outfalls into a PFSH. This additional pipe is from an enclosed drainage system on the bridge that was needed as a result of the lengthened bridge. The bridge drainage system collects stormwater from the bridge and conveys it to a properly sized PFSH. No additional discharge is directed to the PFSH and no additional impacts occur as a result of this change.
4	CC	CC-5	CC 5 of 24 & C 30 of 34	C 10, CC 2	1350mm pipe outlets in wetland	11, riprap	BUILT	L	147+20	LT/RT	Permit drawing indicates a 1350mm pipe that conveys a stream with the outlet of this pipe located outside of the wetland boundary. The plan sheet indicates that the outlet of this pipe has been shifted and is now located inside the wetland boundary. Due to field conditions, the pipe outlet was adjusted. An additional wetland impact of 0.003 hectares (0.0074 acres) has occured as a result of this change.
5	CC	CC-5	CC 5 of 24 & C 30 of 34	C 10, CC 2	1350mm pipe headwall	11	BUILT	L	147+20	LT	Plan sheet indicates that a headwall is located at the inlet of the 1350mm pipe. The permit drawing depicts the structure without a headwall. The headwall does not impact any additional area and no additional impacts have occurred as a result of this change.
6	CC	CC-5	CC 5 of 24 & C 30 of 34	C 10, CC 2	PSF not in final plans	N/A	revised	L	146+40	RT	Permit drawing depicts a PFSH at 146+40. This device is no longer depicted on the plan sheet. The drainage structure was no longer required since the road slopes away (toward the median) from the inlet. Since the concentrated flow was removed, the PFSH was no longer needed. No additional impacts occured as a result of this change.
7	CC	CC-6	CC 6 of 24	3	str 13 has headwall	13 headwall	BUILT	L	150+10	RT	Permit drawing indicates a 1800mm cross pipe w/o a headwall at inlet. Plan sheet indicates this pipe has a headwall at the inlet. The headwall causes no additional impacts.
8	CC	CC-6	CC 6 and 7 of 24	3	rounded in stead of straight lvl sprdr	spreader	BUILT	L	150+40	RT	Permit drawings indicates level spreader on the east side of the roadway that is straight. The plan sheet indicates a level spreader in this location that is rounded. The permit drawing shows a level spreader as a rectangular symbol for illlustrative purposes only. The actual level spreader should be constructed to match the contour of the existing ground so that the length of the structure will be level. No additional impacts occured as a result of this change.
9	CC	CC-6	CC 6 and 7 of 24	3	NCDOT NCDENR requests riprap at north bank outlet		HOLD	L	150+00	RT	NCDOT requests additional riprap for bank stabilization at north bank outlet.

Revised drainage design features
Knightdale Bypass Project Sections BB/C/CC

Date: 11/12/03

Item	Sec	NCC Plansheet	Permit sheet	Permit site #	Description	Str. #	Status	Line	Sta	Offset	Changed condition and explanation
19	C	C-14	C 19 of 34	7	different toe limits at plunge pool	N/A	partially BUILT	L	132+60	RT	A plunge pool is currently being designed at the outlet of structure #115 to dissipate energy and provide stability to the existing channel as a part of the mitigation site located downstream. Additional stream impacts will result from the construction of the plunge pool and will be included as part of the mitigation site quantities.
20	C	C-2G	C 19 of 34	7	low stage check dams not in permit	channel	HOLD	L	131+40	LT	Stream relocation at Station 131+40 to 132+00 Lt calls for root wads and low stage check dams in the channel detail as shown on the plan sheet 2G. The low stage check dams are not shown on the permit drawing. The low stage check dams were inadvertantly left on the detail in the plans and will be removed so as to match the permit.
21	C	C-15	C 22 of 34	8	different toe limits	N/A	BUILT	L	133+00	LT/RT	Limits of cut/fill throughout most of this plan sheet do not match the permit drawings. The cut/fill lines shown on the plans do not account for the construction of the proposed interchange. The cut/fill lines shown in the permit drawing are representative of the proposed interchange. No additional impacts have occured..
22	C	C-15	C 22 of 34	8	Level spreader apron in permit not in plans	spreader apron	revised	L	135+00	RT	The level spreader associated with the PFSH's at Station 135+00 RT on permit drawings is absent from plan sheet. The label was revised to remove the "with level spreader" label to reduce confusion. The confusion arose that this should be two separate structures, a PFSH and a level spreader, when the intent was for this to be one structure, a PFSH 'with' a level spreader apron. This was the intent in the original drainage design; therefore the labels on the plans were revised to match the current DWQ requirements and NCDOT approved PFSH detail.
23	C	C-15	C 22 of 34	8	str not in permit	117A, 117	BUILT	L	134+00	RT	The drainage structure located at Station 134+00 Rt on plan sheet is not shown on the permit drawing. This drainage inlet was required due the addition of shoulder berm gutter necessary due to changes in the fill slope from 4:1 to 2:1. The additional discharge is directed toward a properly sized PFSH located outside of the buffer to provide diffuse flow. No additional impacts occur as a result of this change.
24	C	C-15	C 22 of 34	8	requested plunge pool not in permit	plunge pool	HOLD	L	134+05	RT	A plunge pool is currently being designed at the outlet of structure #116 to dissipate energy and provide stability to the existing channel as a part of the mitigation site located downstream. Additional stream impacts will result from the construction of the plunge pool and will be included as part of the mitigation site quantities.
25	C	C-16A	C 27 of 34	9	str not in permit	134A,134 B +PSH	BUILT	L	142+20	LT	Drainage structures #134A and #134B at Station 142+00 LT are not shown on the permit drawings. The fill slopes were changed from 4:1 to 2:1. This required the addition of shoulder berm gutter and the associated drainage system. The concentrated flow has been directed to a properly sized PFSH located outside of the buffer to provide diffuse flow. No additional impacts occur as a result of this change.
26	C	C-16A	C 27 of 34	9	str not in permit	134C + PSH	BUILT	L	142+70	RT	Drainage structure #134C at Station 142+60 RT is not shown on the permit drawings. The fill slopes were changed from 4:1 to 2:1. This required the addition of shoulder berm gutter and the associated drainage system. The concentrated flow has been directed to a properly sized PFSH located outside of the buffers to provide diffuse flow. No additional impacts occur as a result of this change.
27	C	C-16A	C 26 of 34	9	special ditch and PSH not in permit	ditch + PSH	HOLD	L	140+80	RT	Special ditch and associated PSH depicted on plan sheet 16A at Station 140+80 LT are not depicted on permit drawing 26. The plans show temporary measures until the -Y101- interchange is constructed. The temporary measures cause no additional impacts since the entire interchange was included in the summary dated 3/22/2002.
28	C	C-16A	C 26 of 34	9	special and lateral ditch not in permit	ditches	BUILT	L	141+30	RT	Special ditch and lateral ditch along the southern fill slope on plan sheet 16A at Station 141+00 to 141+60 are not depicted on permit drawing 27. The plans show temporary measures until the -Y101- interchange is constructed. The temporary measures cause no additional impacts since the entire interchange was included in the summary dated 3/22/2002.

Revised drainage design features
Knightdale Bypass Project Sections BB/C/CC

Date: 11/12/03

Item	Sec	NCC Plansheet	Permit sheet	Permit site #	Description	Str. #	Status	Line	Sta	Offset	Changed condition and explanation
9	C	C-10A	C 16 of 34	5A	pipe 67-76A not per permit	67,68, 69	HOLD	L	112+00	RT	The pipe along the left shoulder (Station 112+00 to 113+00) on plan sheet 10C is not depicted on the permit drawing. The pipe was previously routed along the median, but was moved to the shoulder to avoid a conflict with an additional attenuator (guardrail). An additional 20 meters (60 LF) of shoulder berm gutter has been added which will slightly increase the discharge directed to the PFSH. The PFSH has been sized according current DWQ requirements. No additional impacts occur as a result of this change.
10	C	C-10C	C 16 of 34	5A	median pipe not per permit	76B, 76, 76A	HOLD	L	112+80	CL	The median pipe size (Station 112+80) on plan sheet 10C differs from the size shown on the permit drawing. This system was redesigned due to conflicts with additional guardrail placement.
11	C	C-10A	C 16 of 34	5A	toe limits bridge not per permit	N/A	HOLD	L	111+20	CL	The toe limits do not match at the southwest bridge approach. The toe limits have been revised to correctly show the excavation for the detention basin as depicted in the permit drawing dated 6/29/01. No additional impacts occur as a result of this change.
12	C	C-10A	C 16 of 34	5A	Discrepency in drainage str	67,68,69	HOLD	L	111+90	LT/RT	There is a discrepancy in drainage structures at Station 111+90 between the permit drawing and plan sheet 10A. This area has been revised to avoid conflicts with the revised guardrail locations. See the previous item for additional explanation. No additional impacts occur as a result of these changes.
13	C	C-11	C 18 of 34	6	400mm CSP & PSH not on plans	N/A	HOLD	L	117+90	RT	At Station 117+90, a 400mm CSP and a PSH w/ level spreader apron are shown on the permit drawing but not on plan sheet 11. The fill slopes were revised from 4:1 slopes to 2:1 slopes. This required the addition of shoulder berm gutter and two drainage inlets. The drainage system was shifted so as to outlet outside of the buffer zone to an appropriately sized PFSH. No additional impacts occur as a result of these changes.
14	C	C-11	C 18 of 34	6	str & psh not per permit	85,85A,86, PSH	BUILT	L	117+40	LT	Drainage structures and a PSH w/ level spreader apron are depicted on plan sheet 11 at Station 117+40. These structures and the PSH are not depicted on the permit drawing. Dimensions for PFSH's were revised to match NCDENR-DWQ current recommendations for size dated October 10, 2001. The level spreader associated with the PFSH on permit drawing is absent from plan sheet. The label was revised to remove the "with level spreader" label to reduce confusion. The confusion arose that this should be two separate structures, a PFSH and a level spreader, when the intent was for this to be one structure, a PFSH 'with' a level spreader apron. This was the intent in the original drainage design; therefore the labels on the plans were revised to match the current DWQ requirements and NCDOT approved PFSH detail.
15	C	C-11	C 18 of 34	6	different toe limits	N/A	BUILT	L	117+90	RT	There is a discrepancy in toe limits between permit drawing and plan sheet 11 at Station 117+90 Rt. The fill slopes in this area were changed from 4:1 to 2:1. The impacts to this area are less than those shown on the permit drawing.
16	C	C-11A	C 18 of 34	6	different toe limits	N/A	BUILT	L	119+30	LT	There is a discrepancy in toe limits between permit drawing and plan sheet 11A at Station 119+30 LT. The current design requirements and existing field conditions dictated the change in the fill limits. This change will impact an additional 0.001 hectares (0.003 acres).
17	C	C-14	C 19 of 34	7	slope drain not in permit	toe drain channel	BUILT	L	131+10	LT	The slope drain at Station 131+10 Lt on plan sheet 14 that flows into the relocated channel is not shown on the permit drawing. The area necessary to install the slope drains has been added to the impact summary sheet. Revised permit drawings will be prepared and submitted in the modification application.
18	C	C-14	C 19 of 34	7	different limits channel	channel	HOLD	L	131+80	LT	There is a discrepancy in depiction of limits of relocated channel between plan sheet 14 and permit drawing at Station 131+80 LT. The plans are being revised to match the permit drawing and details.

ATTACHMENT B

Revised drainage design features
Knightdale Bypass Project Sections BB/C/CC

Date: 11/12/03

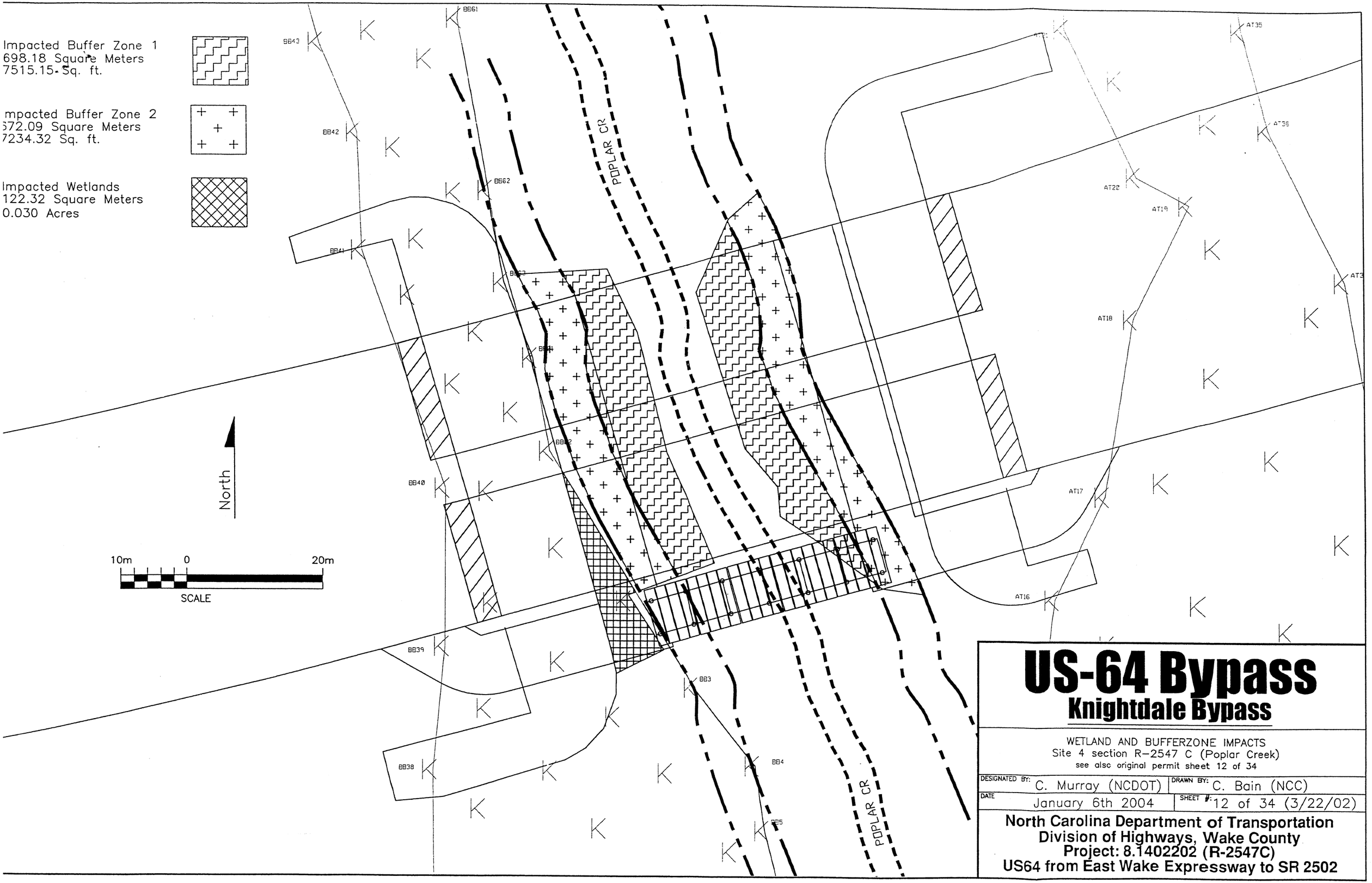
Item	Sec	NCC Plansheet	Permit sheet	Permit site #	Description	Str. #	Status	Line	Sta	Offset	Changed condition and explanation
1	BB	BB-5	BB 12 of 30	2	Lateral ditch end thru zone 2	N/A	HOLD	L	37+00	RT	The permit drawing depicts a lateral ditch that terminates at Zone 2 of the riparian buffer. Plan sheet 5 indicates that the lateral ditch flows through the buffer directly to the pond. The pipe will be raised so the ditch can outlet as indicated in the permit. At this site, the pond is to be drained and maintained permanently as an A-basin. As discussed with Mr. Hennessy and Mr. Mitchell (NCDENR), NCC will raise the pipe to build per the permitted design.
2	BB	BB-7	BB 13 of 30	3	Str + 400 CSP + riprap (in PDE) not in permit	24A	HOLD	L	41+70	LT	There have been minor changes in the drainage structures located at approximatley Station 41+70. Drainage structure #24 has been routed per permit drawing dated 4/1/2002. The median drainage structure has been moved due to conflicts caused by the addition of guardrail. No additional impacts have occured as a result of the changes. As discussed with Mr. Hennessy and Mr. Mitchell (NCDENR), NCC will omit the original design and re-design per the permit drawings.
3	BB	BB-8	BB 17 of 30	3	600mm pipe & PSH not per permit	32	BUILT (except for PSH -> this will be installed ASAP)	L	45+50	RT	There is a discrepancy in the location of a 600 mm pipe that drains the Class A Basin and the associated PSH near Station 45+50 Rt. The outlet configuration shown in the permit drawing dated 3/18/2002 would not function due to field conditions. The elevation of the bottom of the basin (necessary to provide the required sediment storage volume) would have required an outlet ditch to be cut through the buffer to daylight. In the revised layout, the buffer impacts are avoided. No additional impacts have occured as a result of the change. As discussed with Mr. Hennesy and Mr. Mitchell (NCDENR) NCC will expedite the construction of the PSH in this location.
4	BB	BB-11D	BB 20 of 30	6	Undercut alluvial soils for slope stability	N/A	BUILT	Y10	11+75	LT	Plan sheet 11D indicates an undercut of alluvial soils at toe of fill slope that extends outside of the cut/fill limits near Y 10 Station 11+75 Lt. The removal of the soils was required for slope stability concerns. The area will be regraded to natural ground and revegetated appropriately. The additional impacts will be added to the summary.
5	BB	BB-11B	BB 20 of 30	6	fill cut/fill slope	N/A	BUILT	L	60+60	LT	There is a discrepancy between the permit drawing and plan sheet 11B in reference to the fill cut/fill slope at Station 60+60 Lt. The cut/fill slope changed slightly in this area due to field conditions. At this site, the pond is to be drained and retained as a permanent A-basin. Impact has been reduced due to field conditions.
6	BB	BB-11B	BB 20 of 30	6	600 & 750mm pipe + 2GI, riprap	55 + ditch	BUILT	L	60+80	LT	Plan sheet 11B depicts a 750 mm drainage structure and rock slope protection along the northern fill slope in the riparian buffer at Station 60+80 Lt. The rock slope protection and the drainage structure are not depicted on the permit drawing. The pipe was inadvertantly omitted from the permit drawing. The pond and buffers were considered a total take and included in the summary as such, so there are no additional impacts. The ditch has been lined with class B riprap for stability.
7	BB	BB-14A	BB 22 of 30	7	ditch continues to zone 2 of filled pond (filled by R2641)	N/A	HOLD	L	71+00	RT	Permit drawing depicts a lateral ditch at Station 71+00 Rt that terminates at the outlet of a 400 mm drainage structure. The plan sheet depicts this lateral ditch extending to Zone 2 of the riparian buffer. The ditch terminates at the Zone 2 boundary and causes no additional impacts. As discussed with Mr. Hennessy and Mr. Mitchell (NCDENR), the bufferzones change because the pond is modified to a stream. Therefore there is no impact, however streambank re-forrestation is required 50lf from both stream banks.
8	BB	BB-14C	BB 24 of 30	8	structure deleted outside buffer	N/A	DELETED	L	75+00	RT	The permit drawing depicts a drainage structure outside of the riparian buffer at Station 75+00 Rt. This drainage structure is not depicted on the plan sheet. The drainage structure was part of a drainage system that has been removed. No additional discharge has been directed toward the buffer in this area and no additional impacts have occured.

Revised drainage design features
Knightdale Bypass Project Sections BB/C/CC

Date: 11/12/03

Item	Sec	NCC Plansheet	Permit sheet	Permit site #	Description	Str. #	Status	Line	Sta	Offset	Changed condition and explanation
1	C	C-4	C 9 of 34	1	limits of fill slopes at pond vary from permit	N/A	HOLD	L	89+00	LT/RT	Limits of fill are shown differently in plans and permit drawing. The limits of fill are different because the pond depth was unknown at the time of the design. The revised limits shown are estimated so that the rock fill could be quantified. No additional impacts occur since the pond was considered entirely impacted in the summary.
2	C	C-4	C 9 of 34	1	riprap at limits of pond not depicted in permit	N/A	HOLD	L	89+80	RT	Plans show rip-rap on fill slope within limits of pond while permit drawing shows rip-rap at pipe outlet only. The riprap at the pipe outlet has been removed from the plans. The riprap shown is on the fill slope to address slope stability concerns in the area where fill is in contact with the pond. No additional impact occurs since the pond was considered entirely impacted in the summary.
3	C	C-7	C 11 of 34	3	375mm pipe and str not shown in permit	31A, 31	HOLD	L	98+50	CL	The median drainage pipe at Station 98+50 on the plans is not shown on the permit drawing. An additional drainage inlet (structure #31A) was needed in the median due to a false sump that was created from modifications to the guardrail placement. A portion of the drainage that was previously collected by structure #31 is now collected by the new structure. The added pipe conveys the stormwater between the structures. No additional drainage area or discharge is directed toward the PFSH.
4	C	C-7	C 11 of 34	BB 3, C 3, 4, 5A, 6, 8 & 10 CC 3, 7, 8, 11, 12 &13	PSH dimensions inconsistent	ALL PSHs	HOLD	ALL PSHs	ALL PSHs		The dimensions for the PFSH at Station 98+80 RT are not consistent with the permit drawing. Dimensions for PFSH's were revised to match NCDENR-DWQ current recommendations for size dated October 10, 2001. As discussed with Mr. Hennesy and Mr. Mitchell (NCDENR), this design is allowable, if it is per NCDOT/NCDENR standards. However a permit modification is required.
5	C	C-7	C 11 of 34	BB 3, C 3, 4, 5A, 6, 8 & 10 CC 3, 7, 8, 11, 12 &13	Level spreader apron in permit not in plans	ALL spreader aprons	revised	ALL PSHs	ALL PSHs		The level spreader associated with the PFSH at Station 98+80 RT on permit drawing is absent from plan sheet. The label was revised to remove the "with level spreader" label to reduce confusion. The confusion arose that this should be two separate structures, a PFSH and a level spreader, when the intent was for this to be one structure, a PFSH 'with' a level spreader apron. This was the intent in the original drainage design; therefore the labels on the plans were revised to match the current DWQ requirements and NCDOT approved PFSH detail. As discussed with Mr. Hennesy and Mr. Mitchell (NCDENR), this design is allowable, if it is per NCDOT/NCDENR standards. However a permit modification is required.
6	C	C-21	C 14 of 34	5	toe limits do not match east of str 156	156	HOLD	Y16	10+40	LT/RT	The cut/fill limits on -Y16- left and right of Station 10+40 on the plans do not match those depicted on the permit drawings. The cut/fill slopes will be revised on the plans to match the permit drawing.
7	C	C-10	C 15 of 34	5A	different pipe length	57	BUILT	RPCY16	02+90	LT/RT	Discrepancy (approx. 2-3 m or 6 - 9 LF) in length of structure at Station RPCY16 2+90. Due to field conditions, it was necessary to extend the pipe. No additional impacts have occurred since the stream was considered 'filled' through the entire interchange and included in the summary as such.
8	C	C-10	C15 of 34	5A	different toe limits in gore	N/A	BUILT	L	110+00	RT	There is a discrepancy in the toe limits in the gore area between Y line and RPCY16 at Station 110+00. The toe limits have been revised to correctly depict the gore area. No additional impacts have occurred since the buffers for the entire interchange were included in the summary.

APPENDIX B



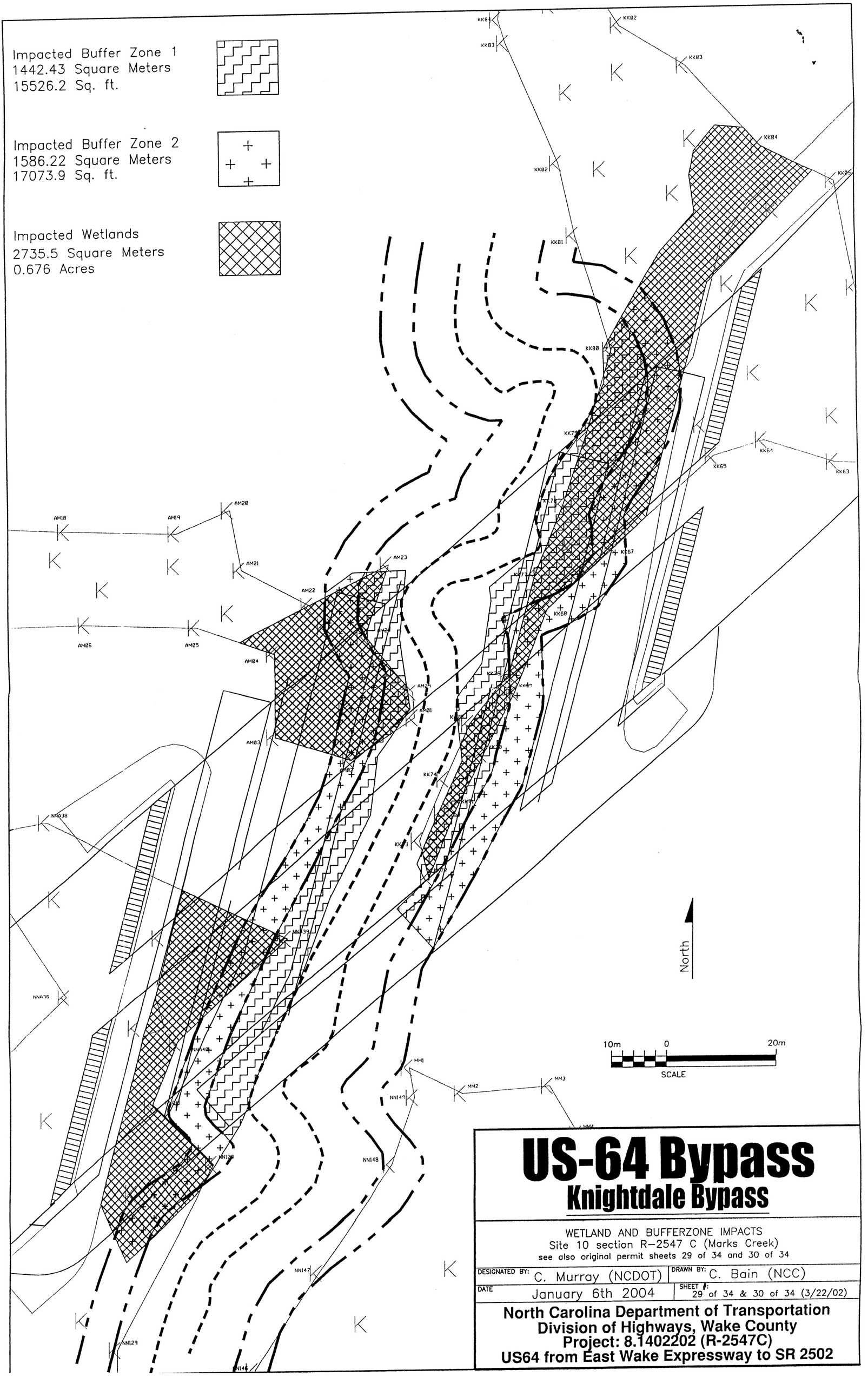
US-64 Bypass
Knightdale Bypass

WETLAND AND BUFFERZONE IMPACTS
Site 4 section R-2547 C (Poplar Creek)
see also original permit sheet 12 of 34

DESIGNATED BY: C. Murray (NCDOT)	DRAWN BY: C. Bain (NCC)
DATE: January 6th 2004	SHEET #: 12 of 34 (3/22/02)

North Carolina Department of Transportation
Division of Highways, Wake County
Project: 8.1402202 (R-2547C)
US64 from East Wake Expressway to SR 2502

APPENDIX C



US-64 Bypass
Knightdale Bypass

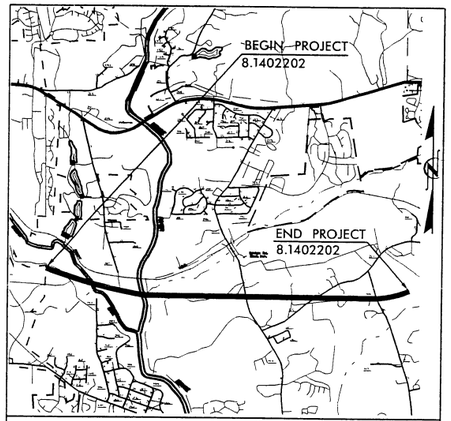
WETLAND AND BUFFERZONE IMPACTS
Site 10 section R-2547 C (Marks Creek)
see also original permit sheets 29 of 34 and 30 of 34

DESIGNATED BY: C. Murray (NCDOT)	DRAWN BY: C. Bain (NCC)
DATE: January 6th 2004	SHEET #: 29 of 34 & 30 of 34 (3/22/02)

North Carolina Department of Transportation
Division of Highways, Wake County
Project: 8.1402202 (R-2547C)
US64 from East Wake Expressway to SR 2502

PROJECT: 8.1402212 R-2547BB

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2547BB	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
8.1402202	DPI-0199(004)	PE
8.1402205	NHS-64(27)	R/W, UTILITIES
8.1402212	NHS-64(73)	CONSTRUCTION

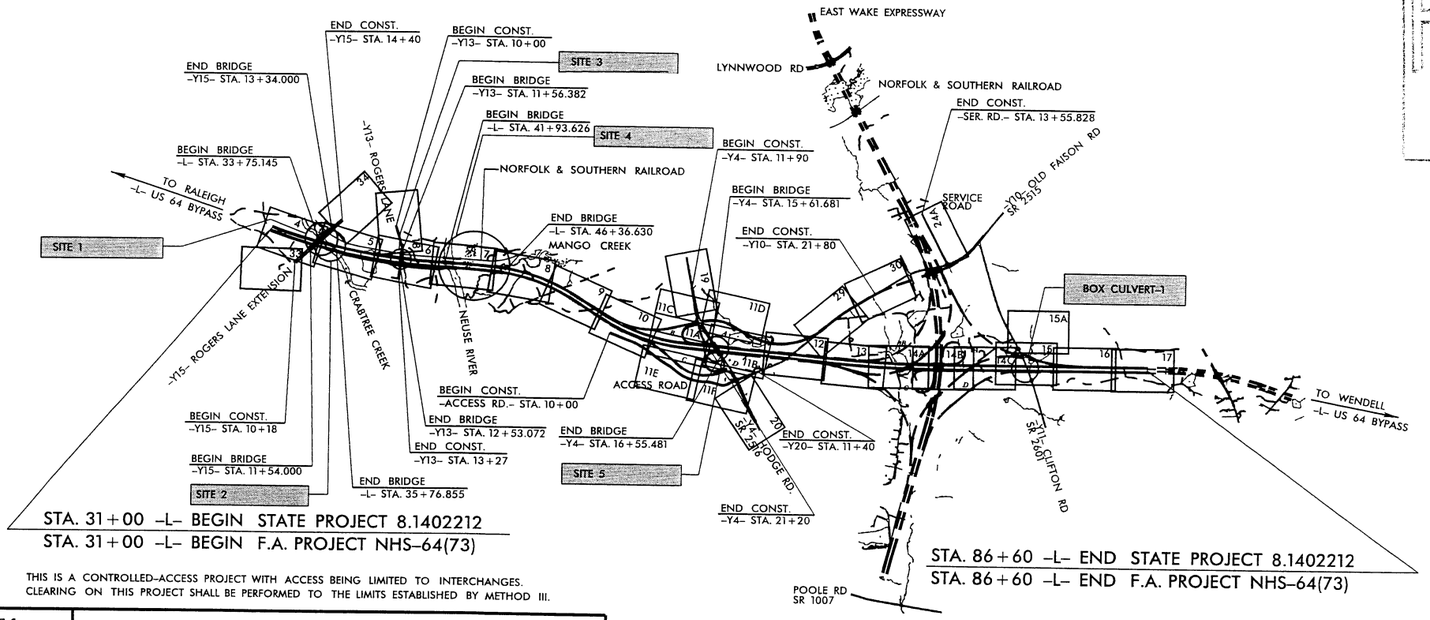
RELEASE FOR CONSTRUCTION
DATE: 7-22-03

LOCATION: *SECTION BB: – US 64 BYPASS FROM WEST OF CRABTREE CREEK TO EAST OF SR 2601 (CLIFTON RD)*

TYPE OF WORK: *FINAL PLANS*
GRADING, DRAINAGE, PAVING, STRUCTURES, SIGNALS, & SIGNING

RECEIVED
JUL 24 2003
RFC
ROADBB
R04095 NCC 269 SHEETS

NC GRID
NAD 83



STA. 31+00 –L– BEGIN STATE PROJECT 8.1402212
STA. 31+00 –L– BEGIN F.A. PROJECT NHS-64(73)

STA. 86+60 –L– END STATE PROJECT 8.1402212
STA. 86+60 –L– END F.A. PROJECT NHS-64(73)

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

GRAPHIC SCALES

5 0 10
PLANS

5 0 10
PROFILE (HORIZONTAL)

1 0 2
PROFILE (VERTICAL)

DESIGN DATA

ADT 2002 = 45,574
ADT 2022 = 82,640
DHV = 12 %
D = 60 %
T = 9 % *
V = 110 km/h

* TTST 3 % DUAL 6 %

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT DPI-0199(004) = 5.054 km
LENGTH STRUCTURES F.A. PROJECT DPI-0199(004) = 0.506 km
TOTAL LENGTH STATE PROJECT 8.1402212 = 5.560 km

LETTING DATE:
MAY 24, 2002

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 20853 ENGINEER HENRY S. DOUGLAS
7/22/03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
7/22/03
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : r2547bb.tsh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TITLE SHEET

09/09/99
21-JUL-2003 11:24
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METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-2547BB	REV_BB-1
	RELEASE FOR CONSTRUCTION	
	DATE: 2-12-04	

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
1	TITLE SHEET	7/22/2003								
REV_BB-1	INDEX OF SHEETS & REVISION SUMMARY	7/22/2003	11/12/2003	12/3/2003	12/16/2003	2/12/2004				
REV_BB-2	INDEX OF SHEETS & REVISION SUMMARY	7/22/2003	11/12/2003	12/16/2003	2/12/2004					
REV_BB-3	INDEX OF SHEETS & REVISION SUMMARY	7/22/2003	11/12/2003	12/16/2003	2/12/2004					
REV_BB-4	INDEX OF SHEETS & REVISION SUMMARY	7/22/2003	11/12/2003	12/3/2003	12/16/2003					
REV_BB-5	INDEX OF SHEETS & REVISION SUMMARY	7/22/2003	11/12/2003	12/3/2003	12/16/2003					
REV_BB-6	INDEX OF SHEETS & REVISION SUMMARY	7/22/2003	11/12/2003	12/3/2003	12/16/2003					
REV_BB-7	INDEX OF SHEETS & REVISION SUMMARY	7/22/2003	11/12/2003	12/3/2003	12/16/2003					R-2547 8 SHEETS
REV_BB-8	INDEX OF SHEETS & REVISION SUMMARY	7/22/2003	11/12/2003	12/3/2003	12/16/2003					
REV_BB-9	INDEX OF SHEETS & REVISION SUMMARY	7/22/2003	11/12/2003	12/16/2003						
REV_BB-10	INDEX OF SHEETS & REVISION SUMMARY	7/22/2003	11/12/2003	12/16/2003						
REV_BB-11	INDEX OF SHEETS & REVISION SUMMARY	7/22/2003	11/12/2003	12/16/2003						
REV_BB-12	INDEX OF SHEETS & REVISION SUMMARY	11/12/2003	12/16/2003							
1A	INDEX, GEN. NOTES, STDS	7/22/2003								
1B	INDEX, GEN. NOTES, STDS	7/22/2003								
1C	CONVENTIONAL SYMBOLS	7/22/2003								
2	TYPICAL SECTIONS	7/22/2003	12/16/2003	2/12/2004						
2A	TYPICAL SECTIONS	7/22/2003	2/12/2004							
2B	TYPICAL SECTIONS	7/22/2003								
2C	TYPICAL SECTIONS	7/22/2003								
2D	TYPICAL SECTIONS	7/22/2003								
2-E	DITCH DETAILS	7/22/2003	12/16/2003							
2-F	PREFORMED SCOUR HOLE DETAIL	7/22/2003								
2-G	CORRUGATED CONCRETE ISLAND	7/22/2003								
2-H	ROCK PLATING	7/22/2003								

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REVISIONS			
NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4	REB	2/12/04	REVISIONS
3	REB	12/16/03	REVISIONS
2	REB	12/3/03	REVISIONS
1	REB	11/12/03	REVISIONS
0	REB	7/22/03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS 2-12-04

ROADWAY DESIGN ENGINEER

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CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : rev_summary.sum

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INDEX OF SHEETS
AND
REVISION SUMMARY

12-FEB-2004 17:31
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PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	REV_BB-2

RELEASE FOR CONSTRUCTION

DATE: 2-12-04

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
2-I	MODIFIED FLUME DETAIL	7/22/2003								
2-J	GUARDRAIL PROTECTION ON DUAL BRIDGE APPROACH MEDIAN	11/12/2003								
2-K	DETAIL OF GUARDRAIL PROTECTION FOR MEDIAN OBSTRUCTIONS	11/12/2003								
2-L	ROCK VANE DETAIL	12/16/2003								
3A	GUARDRAIL SUMMARY	7/22/2003	11/12/2003	12/16/2003						
3B	GUIDERAIL SUMMARY	7/22/2003	11/12/2003							
4	PLAN SHEET	7/22/2003	11/12/2003	12/16/2003						
5	PLAN SHEET	7/22/2003	11/12/2003	12/16/2003	2/12/2004					
6	PLAN SHEET	7/22/2003	11/12/2003	12/16/2003						
7	PLAN SHEET	7/22/2003	11/12/2003							
8	PLAN SHEET	7/22/2003	11/12/2003							
9	PLAN SHEET	7/22/2003								
10	PLAN SHEET	7/22/2003	11/12/2003							
11A	PLAN SHEET	7/22/2003	11/12/2003							
11B	PLAN SHEET	7/22/2003	11/12/2003							
11C	PLAN SHEET	7/22/2003	11/12/2003							
11D	PLAN SHEET	7/22/2003	12/3/2003	12/16/2003						
11E	PLAN SHEET	7/22/2003								
11F	PLAN SHEET	7/22/2003								
11G	PLAN SHEET	7/22/2003								
12	PLAN SHEET	7/22/2003								
13	PLAN SHEET	7/22/2003								
14A	PLAN SHEET	7/22/2003	12/16/2003							
14B	PLAN SHEET	7/22/2003								
14C	PLAN SHEET	7/22/2003	12/16/2003							

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Raleigh, North Carolina 27609

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REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3	REB	2/12/04	REVISIONS
2	REB	12/16/03	REVISIONS
1	REB	11/12/03	REVISIONS
0	REB	7/22/03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS

2-12-04

ROADWAY DESIGN ENGINEER

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15 (DET)	CULVERT DETAIL CONSTRUCTION SEQUENCE	7/22/2003								
15A	PLAN SHEET	7/22/2003								
16	PLAN SHEET	7/22/2003								
17	PLAN SHEET	7/22/2003								
18	PLAN SHEET	7/22/2003								
19	PLAN SHEET	7/22/2003	11/12/2003							
20	PLAN SHEET	7/22/2003	11/12/2003							
24A	PLAN SHEET	7/22/2003								
29	PLAN SHEET	7/22/2003	11/12/2003	2/12/2004						
30	PLAN SHEET	7/22/2003	11/12/2003	2/12/2004						
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47	PROFILE	7/22/2003								
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65	CROSS SECTION INDEX	7/22/2003								
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X-2	CROSS SECTIONS	7/22/2003	12/3/2003							
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X-4	CROSS SECTIONS	7/22/2003	11/12/2003							
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X-6A	CROSS SECTIONS	11/12/2003								
X-7	CROSS SECTIONS	7/22/2003	11/12/2003							
X-7A	CROSS SECTIONS	11/12/2003								
X-7B	CROSS SECTIONS	11/12/2003								
X-8	CROSS SECTIONS	7/22/2003								
X-9	CROSS SECTIONS	7/22/2003	11/12/2003							
X-9A	CROSS SECTIONS	11/12/2003								
X-10	CROSS SECTIONS	7/22/2003	11/12/2003							
X-10A	CROSS SECTIONS	11/12/2003								
X-11	CROSS SECTIONS	7/22/2003	11/12/2003							
X-11A	CROSS SECTIONS	11/12/2003								
X-12	CROSS SECTIONS	7/22/2003								
X-13	CROSS SECTIONS	7/22/2003								
X-14	CROSS SECTIONS	7/22/2003	12/3/2003							
X-15	CROSS SECTIONS	7/22/2003	12/3/2003							
X-16	CROSS SECTIONS	7/22/2003	12/3/2003							
X-17	CROSS SECTIONS	7/22/2003	12/3/2003							
X-18	CROSS SECTIONS	7/22/2003	12/3/2003							
X-19	CROSS SECTIONS	7/22/2003	12/3/2003							
X-20	CROSS SECTIONS	7/22/2003	12/3/2003							
X-21	CROSS SECTIONS	7/22/2003	12/3/2003							
X-22	CROSS SECTIONS	7/22/2003	12/3/2003							
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X-24	CROSS SECTIONS	7/22/2003	11/12/2003							
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X-25	CROSS SECTIONS	7/22/2003								
X-26	CROSS SECTIONS	7/22/2003								
X-27	CROSS SECTIONS	7/22/2003								
X-28	CROSS SECTIONS	7/22/2003								
X-29	CROSS SECTIONS	7/22/2003								
X-30	CROSS SECTIONS	7/22/2003	11/12/2003	12/3/2003						
X-30A	CROSS SECTIONS	11/12/2003								
X-30B	CROSS SECTIONS	11/12/2003								
X-31	CROSS SECTIONS	7/22/2003	12/3/2003							
X-32	CROSS SECTIONS	7/22/2003								
X-33	CROSS SECTIONS	7/22/2003								
X-34	CROSS SECTIONS	7/22/2003								
X-35	CROSS SECTIONS	7/22/2003								
X-36	CROSS SECTIONS	7/22/2003								
X-37	CROSS SECTIONS	7/22/2003								
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X-39	CROSS SECTIONS	7/22/2003								
X-40	CROSS SECTIONS	7/22/2003								
X-41	CROSS SECTIONS	7/22/2003								
X-42	CROSS SECTIONS	7/22/2003								
X-43	CROSS SECTIONS	7/22/2003								
X-44	CROSS SECTIONS	7/22/2003	12/3/2003							
X-45	CROSS SECTIONS	7/22/2003	12/3/2003							
X-46	CROSS SECTIONS	7/22/2003	12/3/2003							

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X-48	CROSS SECTIONS	7/22/2003								
X-49	CROSS SECTIONS	7/22/2003								
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X-51	CROSS SECTIONS	7/22/2003	12/3/2003							
X-52	CROSS SECTIONS	7/22/2003	12/3/2003							
X-53	CROSS SECTIONS	7/22/2003	12/3/2003							
X-54	CROSS SECTIONS	7/22/2003	12/3/2003							
X-55	CROSS SECTIONS	7/22/2003	12/3/2003							
X-56	CROSS SECTIONS	7/22/2003								
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X-61	CROSS SECTIONS	7/22/2003	12/3/2003							
X-62	CROSS SECTIONS	7/22/2003	12/3/2003							
X-63	CROSS SECTIONS	7/22/2003								
X-64	CROSS SECTIONS	7/22/2003								
X-65	CROSS SECTIONS	7/22/2003								
X-66	CROSS SECTIONS	7/22/2003								
X-67	CROSS SECTIONS	7/22/2003	12/3/2003							
X-68	CROSS SECTIONS	7/22/2003	12/3/2003							
X-69	CROSS SECTIONS	7/22/2003	12/3/2003							
X-70	CROSS SECTIONS	7/22/2003	12/3/2003							
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X-72	CROSS SECTIONS	7/22/2003								
X-73	CROSS SECTIONS	7/22/2003								
X-74	CROSS SECTIONS	7/22/2003								
X-75	CROSS SECTIONS	7/22/2003								
X-76	CROSS SECTIONS	7/22/2003								
X-77	CROSS SECTIONS	7/22/2003								
X-78	CROSS SECTIONS	7/22/2003								
X-79	CROSS SECTIONS	7/22/2003								
X-80	CROSS SECTIONS	7/22/2003								
X-81	CROSS SECTIONS	7/22/2003								
X-82	CROSS SECTIONS	7/22/2003								
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X-86	CROSS SECTIONS	7/22/2003								
X-88	CROSS SECTIONS	7/22/2003								
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X-90	CROSS SECTIONS	7/22/2003								
X-91	CROSS SECTIONS	7/22/2003								
X-92	CROSS SECTIONS	7/22/2003								
X-93	CROSS SECTIONS	7/22/2003	12/3/2003							
X-94	CROSS SECTIONS	7/22/2003	12/3/2003							
X-95	CROSS SECTIONS	7/22/2003	12/3/2003							
X-96	CROSS SECTIONS	7/22/2003	12/3/2003							
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X-98	CROSS SECTIONS	7/22/2003								
X-99	CROSS SECTIONS	7/22/2003								
X-100	CROSS SECTIONS	7/22/2003								
X-101	CROSS SECTIONS	7/22/2003								
X-102	CROSS SECTIONS	7/22/2003								
X-103	CROSS SECTIONS	7/22/2003								
X-104	CROSS SECTIONS	7/22/2003								
X-105	CROSS SECTIONS	7/22/2003								
X-106	CROSS SECTIONS	7/22/2003								
X-107	CROSS SECTIONS	7/22/2003								
X-108	CROSS SECTIONS	7/22/2003								
X-109	CROSS SECTIONS	7/22/2003								
X-110	CROSS SECTIONS	7/22/2003								
X-111	CROSS SECTIONS	7/22/2003								
X-111	CROSS SECTIONS	7/22/2003								
X-112	CROSS SECTIONS	7/22/2003								
X-113	CROSS SECTIONS	7/22/2003								
X-114	CROSS SECTIONS	7/22/2003								
X-115	CROSS SECTIONS	7/22/2003								
X-116	CROSS SECTIONS	7/22/2003								
X-117	CROSS SECTIONS	7/22/2003								
X-118	CROSS SECTIONS	7/22/2003								
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X-122	CROSS SECTIONS	7/22/2003								
X-123	CROSS SECTIONS	7/22/2003								
X-124	CROSS SECTIONS	7/22/2003								
X-125	CROSS SECTIONS	7/22/2003								
X-126	CROSS SECTIONS	7/22/2003								
X-127	CROSS SECTIONS	7/22/2003	11/12/2003							
X-127A	CROSS SECTIONS	11/12/2003								
X-128	CROSS SECTIONS	7/22/2003	11/12/2003							
X-128A	CROSS SECTIONS	11/12/2003								
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X-131	CROSS SECTIONS	7/22/2003								
X-132	CROSS SECTIONS	7/22/2003								
X-133	CROSS SECTIONS	7/22/2003								
X-134	CROSS SECTIONS	7/22/2003								
X-135	CROSS SECTIONS	7/22/2003								
X-136	CROSS SECTIONS	7/22/2003								
X-137	CROSS SECTIONS	7/22/2003								
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X-145	CROSS SECTIONS	7/22/2003								
X-146	CROSS SECTIONS	7/22/2003								
X-147	CROSS SECTIONS	7/22/2003								
X-148	CROSS SECTIONS	7/22/2003								
X-149	CROSS SECTIONS	7/22/2003								
X-150	CROSS SECTIONS	7/22/2003								
X-151	CROSS SECTIONS	7/22/2003								
X-152	CROSS SECTIONS	7/22/2003								
X-153	CROSS SECTIONS	7/22/2003								
X-153A	CROSS SECTIONS	11/12/2003								
X-154	CROSS SECTIONS	7/22/2003	11/12/2003							
X-154A	CROSS SECTIONS	11/12/2003								
X-155	CROSS SECTIONS	7/22/2003								
X-156	CROSS SECTIONS	7/22/2003								
X-157	CROSS SECTIONS	7/22/2003	11/12/2003							
X-157A	CROSS SECTIONS	11/12/2003								
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X-159	CROSS SECTIONS	7/22/2003	11/12/2003							
X-159A	CROSS SECTIONS	11/12/2003								
X-160	CROSS SECTIONS	7/22/2003								
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X-166	CROSS SECTIONS	7/22/2003								
X-167	CROSS SECTIONS	7/22/2003								
X-168	CROSS SECTIONS	7/22/2003								
X-169	CROSS SECTIONS	7/22/2003								
X-170	CROSS SECTIONS	7/22/2003								
X-171	CROSS SECTIONS	7/22/2003								
X-172	CROSS SECTIONS	7/22/2003								
X-173	CROSS SECTIONS	7/22/2003								
X-174	CROSS SECTIONS	7/22/2003								
X-175	CROSS SECTIONS	7/22/2003								
X-176	CROSS SECTIONS	7/22/2003								
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NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS 12/17/03

ROADWAY DESIGN ENGINEER

DRAWN BY: ____ DATE: ____
CHECKED BY: ____ DATE: ____
Document Control Number :
Filename : rev_summary.sum

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INDEX OF SHEETS
AND
REVISION SUMMARY

GENERAL NOTES - METRIC

THIS PROJECT IS LOCATED IN AN "ENVIRONMENTALLY SENSITIVE AREA". THIS DESIGNATION REQUIRES SPECIAL PROCEDURES TO BE USED FOR CLEARING AND GRUBBING, TEMPORARY STREAM CROSSINGS, AND GRADING OPERATIONS WITHIN THE AREA IDENTIFIED ON THE PLANS. THIS ALSO REQUIRES SPECIAL PROCEDURES TO BE USED FOR SEEDING AND MULCHING AND STAGED SEEDING WITHIN THE PROJECT.

IN AREAS IDENTIFIED AS "ENVIRONMENTALLY SENSITIVE AREAS", THE DESIGN/BUILDER MAY PERFORM CLEARING OPERATIONS, BUT NOT GRUBBING OPERATIONS UNTIL IMMEDIATELY PRIOR TO BEGINNING GRADING OPERATIONS AS DESCRIBED IN SECTION 200, ARTICLE 200-1, IN THE STANDARD SPECIFICATIONS. THE "ENVIRONMENTALLY SENSITIVE AREA" SHALL BE DEFINED AS A 50 FOOT (16 METER) BUFFER ZONE ON BOTH SIDES OF THE STREAM (OR DEPRESSION), MEASURED FROM THE TOP OF STREAMBANK, (OR CENTER OF DEPRESSION)--AS SHOWN IN THE PERMIT DRAWINGS. ONLY CLEARING OPERATIONS (NOT GRUBBING) SHALL BE ALLOWED IN THIS BUFFER ZONE UNTIL IMMEDIATELY PRIOR TO BEGINNING GRADING OPERATIONS. EROSION CONTROL DEVICES SHALL BE INSTALLED IMMEDIATELY FOLLOWING THE CLEARING OPERATION.

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

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED OR FUTURE SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES IN ORDER TO SECURE A PROPER TIE-IN.

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION ON HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01 OR 560.02. THE ALGEBRAIC DIFFERENCE, OF FINISHED GRADE SHOULDER SLOPES AND SUBGRADE SHOULDER SLOPES ON NORMAL CROWN SECTIONS, SHALL BE MAINTAINED THROUGH SUPERELEVATED SECTIONS OF THE ROADWAY (THIS WILL MAKE SUPERELEVATED AND TANGENT PAVED SHOULDER DEPTHS CONSISTENT).

THE DESIGN/BUILDER WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT.

BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS.

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03.

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.02 USING 900mm RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS.

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON THE PLANS.

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION. THE DESIGN/BUILDER SHOULD CONSULT WITH THE ENGINEER PRIOR TO ADJUSTING GUARDRAIL.

THE DESIGN/BUILDER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APROACHING A BRIDGE.

STATIONS AND OFFSETS FOR PIPES ON THE DRAINAGE SUMMARY SHEETS ARE FROM EXISTING GROUND SURVEYS. DESIGN/BUILDER MAY NEED TO ADJUST LOCATIONS BASED EXISTING FIELD CONDITIONS.

MILLED RUMBLE STRIPS WILL BE REQUIRED ON THE OUTSIDE AND MEDIAN SIDE ASPHALT PAVED SHOULDERS OF -L- (STD. DWG. 665.01).
NO RUMBLE STRIPS SHOULD BE INCLUDED ON THE CONCRETE PAVED SHOULDERS

GENERAL NOTES - METRIC (CONT'D)

ROADWAY FOUNDATION RECOMMENDATIONS:

GENERAL--REVIEW THE ROADWAY FOUNDATION RECOMMENDATIONS FOR SPECIFIC RECOMMENDATIONS, INCLUDING THE FOLLOWING:

UNDERCUT OR STABILIZATION FABRIC SHOULD BE USED AT -Y10- STA. 11+60 TO 12+40.

UNDERCUT EXCAVATION IS EXPECTED ON -L- FROM STA. 67+89 TO 68+87.

SUBGRADE STABILIZATION IS REQUIRED THROUGHOUT THE PROJECT. SEE RECOMMENDATIONS FOR LOCATION OF LIME/CEMENT.

UNDERCUT ALONG CULVERT PIPES ACROSS EXISTING PONDS SHOULD BE CONDUCTED AS DIRECTED.

GROUNDWATER WAS IDENTIFIED ABOVE OR WITHIN 1.8 METERS OF THE DESIGN SUBGRADE AT THE LOCATIONS LISTED BELOW. UNDERDRAINS ARE EXPECTED TO BE PLACED AT THESE LOCATIONS.

LOCATIONS OF GROUNDWATER WITHIN 1.8 METERS OF SUBGRADE:

-L- STA. 38+60 TO 40+00
-L- STA. 56+20 TO 59+40
-L- STA. 65+00 TO 66+60
-LPC- STA. 11+20 TO 11+60
-RAMPC_REV- STA. 10+00 TO 12+60

BASED ON BORING RESULTS. UNDERCUTTING OF SOFT FOUNDATION SOILS WILL BE REQUIRED FROM APPROX. -L- STA. 40+00 TO 40+50. THE DEEPEST UNDERCUT WILL EXTEND TO ABOUT ELEVATION 54 METERS NEAR STA. 40+40 AND WILL TAPER FROM 40+40 TOWARD 40+00 AND 40+50. THE ACTUAL EXTENT OF UNDERCUT SHALL BE BASED ON FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

AT ROCK LOCATIONS:

THE LOCATIONS OF SOFT WEATHERED ROCK AND HARD ROCK SHOULD BE CONSTRUCTED AT A SLOPE OF 1.5(H):1(V). THE EARTH CUT ABOVE THE 1.5(H):1(V) ROCK CUTS SHOULD BE CONSTRUCTED AT A SLOPE OF 3(H):1(V).

THE GEOTECHNICAL ENGINEER SHOULD OBSERVE ALL ROCK CUTS TO CONFIRM ALL LOOSE ROCK IS ADEQUATELY REMOVED AND TO DETERMINE THE ALLOWABLE SLOPE TO BE USED.

THE ELEVATIONS FOR THE PIPE AT -L- STATION 71+50 ARE PRELIMINARY ONLY AND THE ACTUAL PIPE LENGTH AND ELEVATIONS WILL BE DETERMINED IN THE FIELD AFTER THE POND HAS BEEN DRAINED AND SURVEYED BY THE DESIGN/BUILDER. CONSTRUCTION OF THE PIPE WILL NOT BEGIN UNTIL THIS INFORMATION IS OBTAINED AND THE DESIGN IS REVISED.

SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 816.02 OR 816.03 AND DETAILS IN THE PLANS.

SHOULDER DRAINS:
(NOTE: 'SN'=STRUCTURE NUMBER)

EBL OUTSIDE SHOULDER DRAIN

FROM 41+20 TO 41+70 (BEGIN BRIDGE)
OUTLET AT 41+20 (SN22A)

FROM 46+32 TO 51+10
OUTLETS AT 46+32; 47+40; 48+60; 49+80 (SN36)

FROM 58+55 TO 59+40
OUTLETS AT 59+40 (SN53)

FROM 59+90 TO 86+60
OUTLETS AT 60+80 (SN56); 61+80 (SN59); 62+30 (SN62); 63+20; 64+20; 65+20 (SN66); 66+60 (SN69); 67+31; 68+20; 69+20; 70+20; 71+20; 72+30; 73+20; 74+35 (SN78); 75+00; 75+39+/-; 76+00; 76+90; 77+85; 78+85 (SN87); 80+00; 81+20 (SN92); 82+40; 83+30; 84+20; 85+40

EBL INSIDE SHOULDER DRAIN

FROM 31+00 TO 33+70 (BEGIN BRIDGE)
OUTLETS AT 32+20 (SN3); 33+47+/- (SN5); 33+70 (ADDITIONAL 2G1)

FROM 35+88 TO 41+25
OUTLETS AT 36+60 (SN9); 37+70 (SN11); 38+70+/- (SN16); 40+20 (SN20)

FROM 51+05 TO 57+90
OUTLETS AT 51+05 (ADDITIONAL 2G1); 52+30 (SN39); 53+40 (SN42); 54+92 (SN45); 56+64 (SN48)

SHOULDER DRAINS (CONT'D):

FROM 57+90 TO 59+00
OUTLETS AT 59+00 (SN52A)

WBL OUTSIDE SHOULDER DRAIN

FROM 31+00 TO 33+45 (BEGIN BRIDGE)
OUTLETS AT 32+20 (SN2); 33+45 (SN4)

FROM 35+65 TO 41+55 (BEGIN BRIDGE)
OUTLETS AT 36+60 (SN8); 37+70 (SN10); 38+69+/- (SN15); 40+40 (SN19)

FROM 51+05 TO 54+33
OUTLETS AT 51+05; 52+30 (SN38); 53+40 (SN41)

FROM 54+92 TO 57+88
OUTLETS AT 54+92 (SN44); 56+64 (SN47)

FROM 58+50 TO 69+78
OUTLETS AT 59+40 (SN51); 60+50; 61+30; 62+30 (SN60); 63+30; 64+20; 65+20 (SN64); 66+20; 67+10; 68+00; 69+00 (SN70); 69+78

FROM 69+78 TO 75+00
OUTLETS AT 70+80; 71+80; 72+80 (SN74); 74+35 (SN76); 75+00

FROM 75+02 TO 80+90
OUTLETS AT 75+39+/-; 76+00; 77+00; 78+00; 78+85 (SN85); 80+40

FROM 80+90 TO 86+60
OUTLETS AT 80+90; 81+20 (SN90); 82+40 (SN93); 83+60 (SN95); 84+60; 85+80 (SN98)

WBL INSIDE SHOULDER DRAIN

FROM 46+50 TO 51+10
OUTLETS AT 46+50 (SN33); 47+80 (SN34); 49+71 (SN35)

NOTES:
- IN CUT SECTIONS, OUTLET PIPE SHALL BE A 1% GRADE INSTEAD OF A 3% MIN. GRADE.
- STATION +/-: INDICATES VERTICAL SAGE WHICH HAS TWO OUTLETS.

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	1A

RELEASE FOR CONSTRUCTION
DATE: 11-12-03

INDEX OF SHEETS

ROADWAY METRIC STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N.C. Department of Transportation - Raleigh, N.C., Dated January 15, 2002 are applicable to this project and by reference hereby are considered a part of these plans:

NOTE: THE ENTIRE LIST OF THE "ROADWAY STANDARD DRAWINGS" IS BEING PROVIDED TO THE DESIGN/BUILDER.

SEE SHEET 1B

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
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2			
1	RR	11-12-03	ADDED 2I, 2J & 2K TO INDEX
0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS 11/24/03

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

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ROADWAY METRIC STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch – N. C. Department of Transportation – Raleigh, N.C., Dated January 15, 2002 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO. TITLE

DIVISION 2 – EARTHWORK

200.02 Method of Clearing – Method II
200.03 Method of Clearing – Method III
225.01 Guide for Grading Subgrade – Interstate and Freeway
225.02 Guide for Grading Subgrade – Secondary and Local
225.03 Deceleration and Acceleration Lanes
225.04 Method of Obtaining Superelevation – Two Lane Pavement
225.05 Method of Obtaining Superelevation – Divided Highways
225.06 Method of Grading Sight Distance at Intersections
225.07 Grading for False Cut at Grade Seperations
225.08 Earth Berm Median Pier Protection
225.09 Guide for Shoulder and Ditch Transition at Grade Seperations
240.01 Guide for Berm Ditch Construction

DIVISION 3 – PIPE CULVERTS

300.01 Method of Pipe Installation – Method 'A'
300.02 Method of Pipe Installation – Method 'B'
300.03 Method of Structural Plate Pipe and Pipe Arch Installation – Method 'A'
300.04 Method of Structural Plate Pipe and Pipe Arch Installation – Method 'B'
310.02 Parallel Pipe End Section – Precast Concrete Section for 375mm to 600mm Pipe
310.03 Cross Pipe End Section – Precast Concrete Section for 450mm to 750mm Pipe
310.04 Parallel Pipe End Section – Prefabricated Steel Section for 400mm to 600mm Pipe
310.05 Cross Pipe End Section – Prefabricated Steel Section for 450mm to 800mm Pipe
310.10 Driveway Pipe Construction

DIVISION 4 – MAJOR STRUCTURES

422.10 Reinforced Bridge Approach Fills

DIVISION 5 – SUBGRADE, BASES AND SHOULDERS

560.01 Method of Shoulder Construction – High Side of Superelevated Curve – Method I
560.02 Method of Shoulder Construction – High Side of Superelevated Curve – Method II

DIVISION 6 – ASPHALT, BASES AND PAVEMENTS

610.01 Guide for Paving Shoulders Under Bridges – Method I
610.02 Guide for Paving Shoulders Under Bridges – Method II
610.03 Guide for Paving Shoulders Under Bridges – Method III
610.04 Asphalt Wearing Surface on Approach Slab
654.01 Pavement Repairs
665.01 Milled Rumble Strips – Asphalt Pavements

DIVISION 7 – CONCRETE PAVEMENTS AND SHOULDERS

700.01 Concrete Pavement Joints – Construction and Construction Joints
700.02 Expansion Joint Layout – for Rigid Doweled Pavement at Bridges
700.03 Dowel Assembly
700.04 Concrete Pavement Header Board
700.05 Tying Proposed Pavement to Existing
710.01 Concrete Pavement – Station Marking
720.01 Concrete Shoulders

DIVISION 8 – INCIDENTALS

806.01 Concrete Right-of-Way Marker
806.02 Granite Right-of-Way Marker
815.03 Pipe Underdrain and Blind Drain
816.01 Concrete Pads – for Shoulder Drain Installation
816.02 Aggregate Shoulder Drain
816.03 Geocomposite Sholder Drain
816.04 Markers for Drainage Structure and Concrete Pad
820.01 Funnel and Funnel Drain – 300mm Metal Funnel
820.04 Drain Installation in Shoulder Berm Gutter
838.01 Concrete Endwall for Single and Double Pipe Culverts – 375mm thru 1200mm Pipe 90° Skew
838.02 Concrete Endwall and Sluice Gate – 375mm thru 900mm 90° Skew
838.04 Concrete Endwall for Single and Double Pipe Culvert – 432mm x 330mm thru 1803mm x 1194mm Arch 90° Skew
838.05 Concrete 'L' Endwall for Single Pipe Culverts – 375mm thru 1200mm Pipe
838.06 Concrete 'L' Endwall for Single Pipe Culvert – 432mm x 330mm thru 1803mm x 1194mm Pipe Arch
838.07 Concrete Endwall for Single and Double Pipe Culvert – 1016mm x 787mm thru 1676mm x 1295mm Arch 90° Skew
838.08 Concrete 'L' Endwall for Single Pipe Culvert – 1016mm x 787mm thru 1676mm x 1295mm Pipe Arch
838.10 Concrete Endwall for Outfall – 100mm, 150mm or 200mm Pipe
838.11 Brick Endwall for Single and Double Pipe Culverts – 375mm thru 1200mm Pipe 90° Skew
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838.16 Brick 'L' Endwall for Single Pipe Culverts – 432mm x 330mm thru 1803mm x 1194mm Pipe Arch
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838.58 Reinforced Brick Endwall – for Double and Triple 1500mm Pipe 90° Skew
838.63 Reinforced Brick Endwall – for Single 1650mm Pipe 90° Skew
838.64 Reinforced Brick Endwall – for Double and Triple 1650mm Pipe 90° Skew
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866.03 Woven Wire Fence – with Steel Post
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876.04 Drainage Ditches with Class 'B' Rip Rap

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	1B

RELEASE FOR CONSTRUCTION
DATE: 7-22-03

RECEIVED

THE LPA GROUP of North Carolina, p.a. 4904 Professional Court, Suite 201 Raleigh, North Carolina 27609 TRANSPORTATION CONSULTANTS

NCC North Carolina Constructors

REVISIONS

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23853 JEFFERY S. DOUGLAS

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
INDEX, GEN. NOTES, STDS

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	1C

RELEASE FOR CONSTRUCTION
DATE: 7-22-03

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

ROADS & RELATED ITEMS

- Edge of Pavement
- Curb
- Prop. Slope Stakes Cut
- Prop. Slope Stakes Fill
- Prop. Woven Wire Fence
- Prop. Chain Link Fence
- Prop. Barbed Wire Fence
- Prop. Wheelchair Ramp
- Curb Cut For Future Wheelchair Ramp
- Exist. Guardrail
- Prop. Guardrail
- Exist. Cable Guiderail
- Prop. Cable Guiderail
- Equality Symbol
- Pavement Removal

RIGHT OF WAY

- Baseline Control Point
- Existing Right of Way Marker
- Exist. Right of Way Line w/Marker
- Prop. Right of Way Line with Proposed R/W marker (Iron Pin & Cap)
- Prop. Right of Way Line with Proposed (Concrete or Granite) R/W Marker
- Exist. Control of Access Line
- Prop. Control of Access Line
- Exist. Easement Line
- Prop. Temp. Construction Easement Line
- Prop. Temp. Drainage Easement Line
- Prop. Perm. Drainage Easement Line

HYDROLOGY

- Stream or Body of Water
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Shoreline
- Falls, Rapids
- Prop Lateral, Tail, Head Ditches

STRUCTURES

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

MINOR
- Head & End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Boxes — CB
- Paved Ditch Gutter

UTILITIES

- Exist. Pole
- Exist. Power Pole
- Prop. Power Pole
- Exist. Telephone Pole
- Prop. Telephone Pole
- Exist. Joint Use Pole
- Prop. Joint Use Pole
- Telephone Pedestal
- Cable TV Pedestal
- Hydrant
- Satellite Dish
- Exist. Water Valve
- Sewer Clean Out
- Power Manhole
- Telephone Booth
- Water Manhole
- Light Pole
- H-Frame Pole
- Power Line Tower
- Pole with Base
- Gas Valve
- Gas Meter
- Telephone Manhole
- Power Transformer
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Tank; Water, Gas, Oil
- Water Tank With Legs
- Traffic Signal Junction Box
- Fiber Optic Splice Box
- Television or Radio Tower
- Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement — TS
- Recorded Water Line
- Designated Water Line (S.U.E.*)
- Sanitary Sewer — SS
- Recorded Sanitary Sewer Force Main — FSS
- Designated Sanitary Sewer Force Main(S.U.E.*) — FSS
- Recorded Gas Line — G
- Designated Gas Line (S.U.E.*) — G
- Storm Sewer — S
- Recorded Power Line — P
- Designated Power Line (S.U.E.*) — P
- Recorded Telephone Cable — T
- Designated Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Unknown Utility (S.U.E.*) — ?UTL
- Recorded Television Cable — TV
- Designated Television Cable (S.U.E.*) — TV
- Recorded Fiber Optics Cable — FO
- Designated Fiber Optics Cable (S.U.E.*) — FO
- Exist. Water Meter
- U/G Test Hole (S.U.E.*)
- Abandoned According to U/G Record — ATTUR
- End of Information — E.O.I.

BOUNDARIES & PROPERTIES

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Property Line Symbol — IP
- Exist. Iron Pin — EIP
- Property Corner
- Property Monument
- Property Number — 123
- Parcel Number — 6
- Fence Line — WW & ISBW
- Existing Wetland Boundaries — WLB
- Proposed Wetland Boundaries — WLB
- Existing Endangered Animal Boundaries — EAB
- Existing Endangered Plant Boundaries — EPB

BUILDINGS & OTHER CULTURE

- Buildings
- Foundations
- Area Outline
- Gate
- Gas Pump Vent or U/G Tank Cap
- Church
- School
- Park
- Cemetery
- Dam
- Sign
- Well
- Small Mine
- Swimming Pool

TOPOGRAPHY

- Loose Surface
- Hard Surface
- Change in Road Surface
- Curb
- Right of Way Symbol — R/W
- Guard Post — GP
- Paved Walk
- Bridge
- Box Culvert or Tunnel
- Ferry
- Culvert
- Footbridge
- Trail, Footpath
- Light House

VEGETATION

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — VINEYARD

RAILROADS

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH

revised 2/25/97

THE LPA GROUP — THE LPA GROUP of North Carolina, p.a. TRANSPORTATION CONSULTANTS 4904 Professional Court, Suite 201 Raleigh, North Carolina 27609

NCC North Carolina Constructors

NO.	BY:	DATE:	DESCRIPTION OF REVISION
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0	REB	7-22-03	RELEASE FOR CONSTRUCTION

REVISIONS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23853 JEFFRY S. DOUGLAS 7/22/03

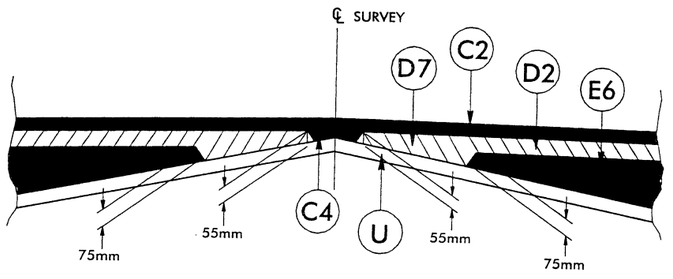
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

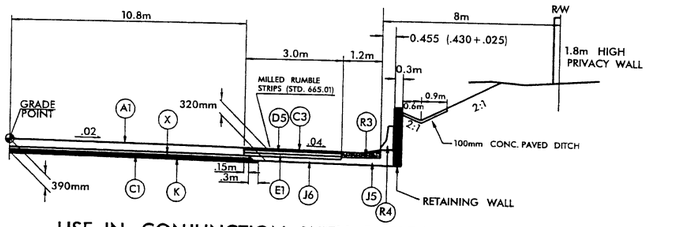
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547bb.tsh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
CONVENTIONAL SYMBOLS

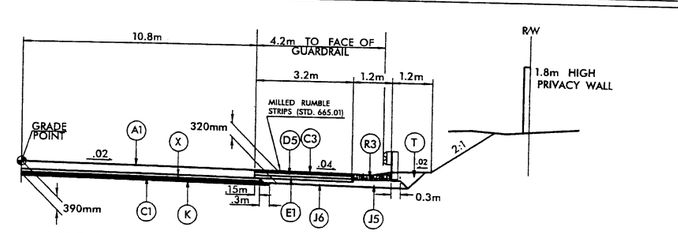


DETAIL SHOWING METHOD OF WEDGING



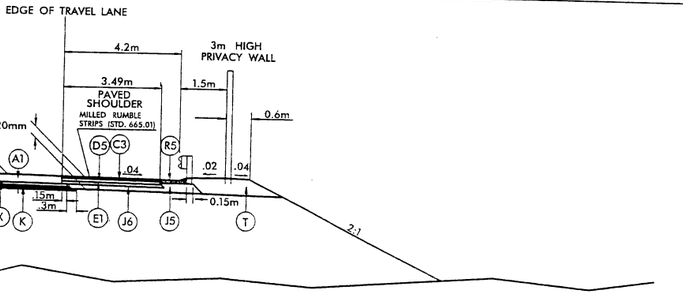
USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1

–L– STA. 38+90 TO STA. 41+20 RT.



USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1

–L– STA. 38+20 TO STA. 38+90 RT.



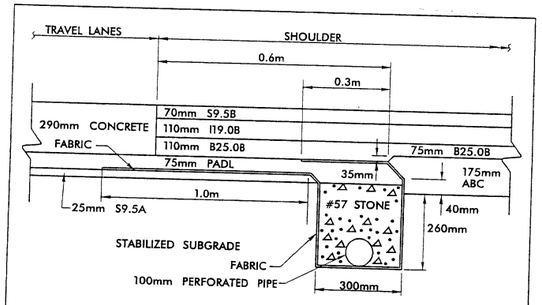
USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1

–L– STA. 36+00 TO STA. 38+17 RT.

PAVEMENT SCHEDULE

A1	290 mm JOINTED CONCRETE PAVEMENT WITH DOWELS
A2	290 mm JOINTED CONCRETE PAVEMENT; GORE AND MISC. AREAS (WITHOUT DOWELS)
C1	PROP. APPROX. 25 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5A, AT AN AVERAGE RATE OF 60 kg PER SQ. METER.
C2	PROP. APPROX. 60 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 72 kg PER SQ. METER IN EACH OF TWO LAYERS.
C3	PROP. APPROX. 70 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 84 kg PER SQ. METER IN EACH OF TWO LAYERS.
C4	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 2.40 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 30 mm IN DEPTH OR GREATER THAN 40 mm IN DEPTH.
D1	PROP. APPROX. 55 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 135 kg PER SQ. METER.
D2	PROP. APPROX. 60 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 147 kg PER SQ. METER.
D3	PROP. APPROX. 70 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 171.5 kg PER SQ. METER.
D5	PROP. APPROX. 110 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 270 kg PER SQ. METER
D6	PROP. APPROX. 120 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 147 kg PER SQ. METER IN EACH OF TWO LAYERS.
D7	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH; TO BE PLACED IN LAYERS NOT LESS THAN 55 mm OR GREATER THAN 110 mm IN DEPTH.
E1	PROP. APPROX. 75 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 196 kg PER SQ. METER.
E2	PROP. APPROX. 80 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 196 kg PER SQ. METER.
E3	PROP. APPROX. 90 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 220.5 kg PER SQ. METER.
E5	PROP. APPROX. 120 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 294 kg PER SQ. METER.
E6	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 75 mm IN DEPTH OR GREATER THAN 140 mm IN DEPTH.
J2	PROP. 150 mm AGGREGATE BASE COURSE.
J3	PROP. 200 mm AGGREGATE BASE COURSE
J5	PROP. VARIABLE DEPTH AGGREGATE BASE COURSE
J6	PROP. 175 mm AGGREGATE BASE COURSE.
K	SUBBASE TO BE TREATED WITH LIME TO A DEPTH OF 200mm, AT AN RATE OF 11 kg PER SQ. METER AS DIRECTED BY THE ENGINEER. -OR- SUBBASE TO BE TREATED WITH CEMENT TO A DEPTH OF 180mm, AT AN RATE OF 30 kg PER SQ. METER AS DIRECTED BY THE ENGINEER. -OR- SUBBASE TO BE TREATED WITH AGGREGATE AT A RATE OF 135 kg PER SQ. METER AND CEMENT AT A RATE OF 30 kg PER SQ. METER TO A DEPTH OF 180mm AS DIRECTED BY THE ENGINEER. (SEE SPECIAL PROVISIONS)
R1	750 mm CONCRETE CURB AND GUTTER.
R3	CONCRETE EXPRESSWAY GUTTER.
R4	SINGLE FACED CONCRETE BARRIER
R5	SHOULDER BERM GUTTER
S	100 mm CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE WEDGING DETAIL-THIS SHEET)
X	PROP. APPROX. 75 mm PERMEABLE ASPHALT DRAINAGE LAYER, TYPE P-57, AT AN AVERAGE RATE OF 1.90 kg PER MILLIMETER PER SQ. METER.

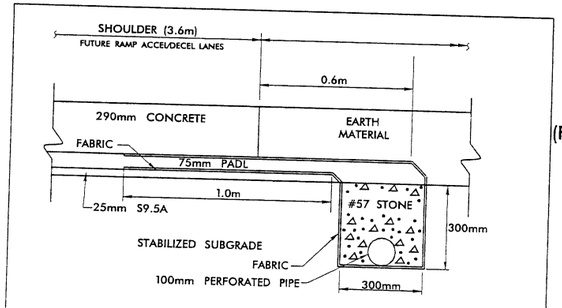
NOTE: ALL PAVEMENT SLOPES ARE 1:1 UNLESS OTHERWISE NOTED



DETAIL OF SHOULDER DRAIN—ASPHALT SHOULDER

SEE GENERAL NOTES FOR SHOULDER DRAIN LOCATIONS

NOTE THAT DETAILS FOR BOTH ASPHALT AND CONCRETE SHOULDERS HAVE BEEN PROVIDED ON THIS SHEET



DETAIL OF SHOULDER DRAIN–CONCRETE SHOULDER
FUTURE RAMP ACCEL/DECEL LANES

FUTURE RAMP LOCATIONS
(FOR USE WITH CONCRETE SHOULDERS)

EASTBOUND OUTSIDE LANE (–L– RT)

–L– STA. 60+20 TO 67+41
–L– STA. 72+33 TO 75+74
–L– STA. 77+75 TO 81+72

WESTBOUND OUTSIDE LANE (–L– LT)

–L– 60+30 TO 69+88
–L– 71+70 TO 75+12
–L– 80+81 TO 82+79

METRIC

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	2

RELEASE FOR CONSTRUCTION
DATE: 2-12-04

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
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2	REB	2/12/04	RFI 665
1	REB	12/16/03	REVISED RETAINING WALL DETAIL
0	REB	7/22/03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS 2-12-04

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

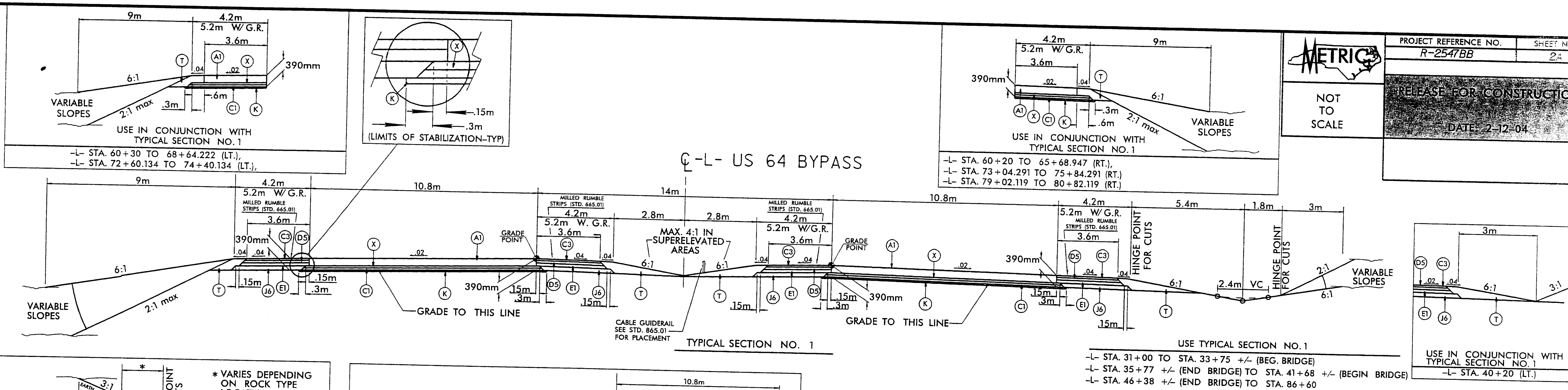
Document Control Number :

Filename : r2547bb.typ

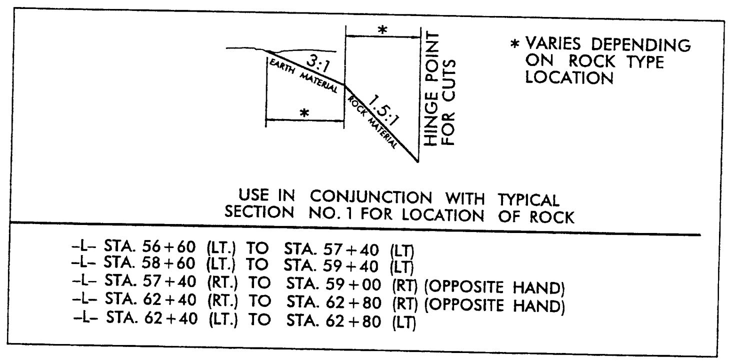
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

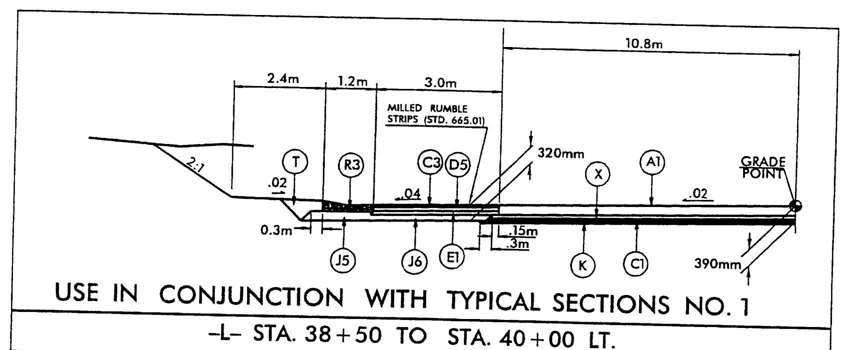
TYPICAL SECTIONS

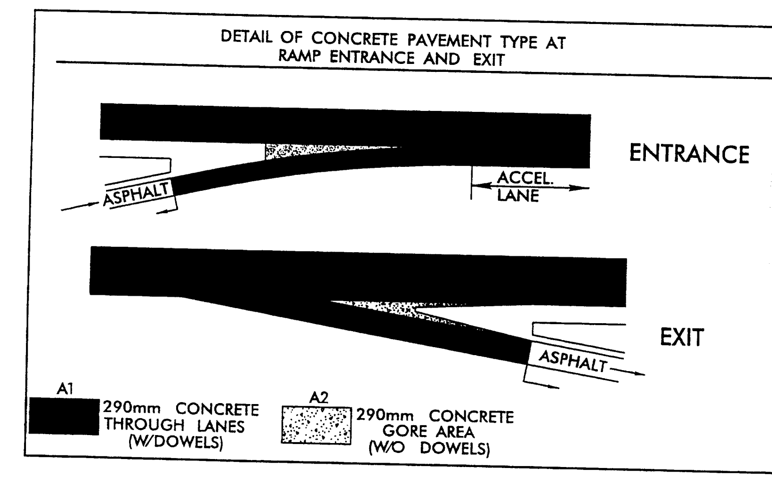


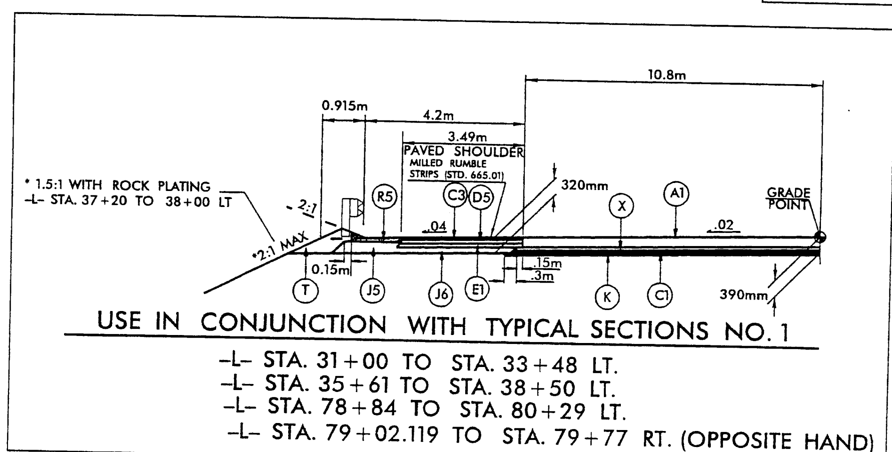
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1
-L- STA. 60+30 TO 68+64.222 (LT.),
-L- STA. 72+60.134 TO 74+40.134 (LT.),
(LIMITS OF STABILIZATION-TYP)
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1
-L- STA. 60+20 TO 65+68.947 (RT.),
-L- STA. 73+04.291 TO 75+84.291 (RT.)
-L- STA. 79+02.119 TO 80+82.119 (RT.)
℄ -L- US 64 BYPASS
VARIABLE SLOPES
GRADE TO THIS LINE
CABLE GUIDERAIL SEE STD. 865.01 FOR PLACEMENT
MAX. 4:1 IN SUPERELEVATED AREAS
MILLED RUMBLE STRIPS (STD. 665.01)
HINGE POINT FOR CUTS
GRADE POINT
TYPICAL SECTION NO. 1
USE TYPICAL SECTION NO. 1
-L- STA. 31+00 TO STA. 33+75 +/- (BEG. BRIDGE)
-L- STA. 35+77 +/- (END BRIDGE) TO STA. 41+68 +/- (BEGIN BRIDGE)
-L- STA. 46+38 +/- (END BRIDGE) TO STA. 86+60
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1
-L- STA. 40+20 (LT.)



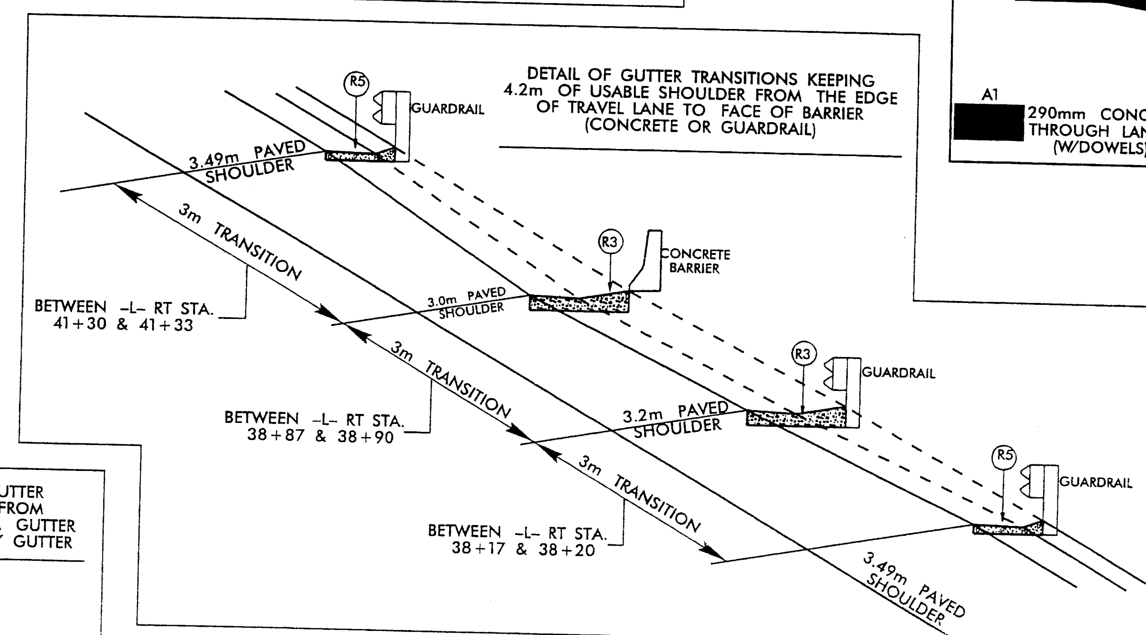
* VARIES DEPENDING ON ROCK TYPE LOCATION
HINGE POINT FOR CUTS
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1 FOR LOCATION OF ROCK
-L- STA. 56+60 (LT.) TO STA. 57+40 (LT)
-L- STA. 58+60 (LT.) TO STA. 59+40 (LT)
-L- STA. 57+40 (RT.) TO STA. 59+00 (RT) (OPPOSITE HAND)
-L- STA. 62+40 (RT.) TO STA. 62+80 (RT) (OPPOSITE HAND)
-L- STA. 62+40 (LT.) TO STA. 62+80 (LT)



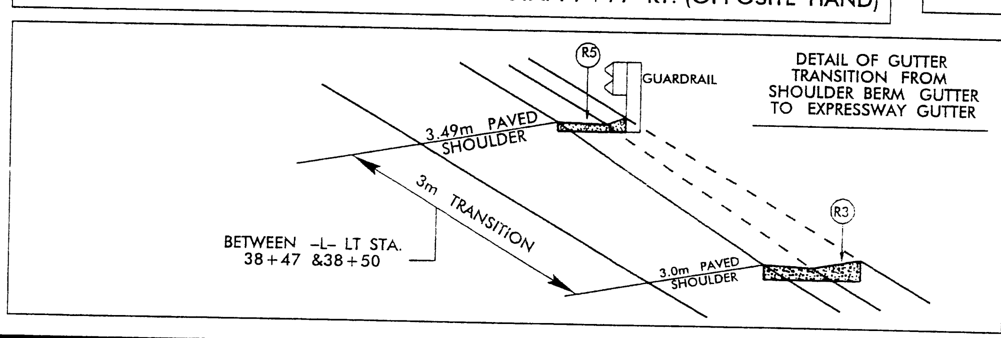




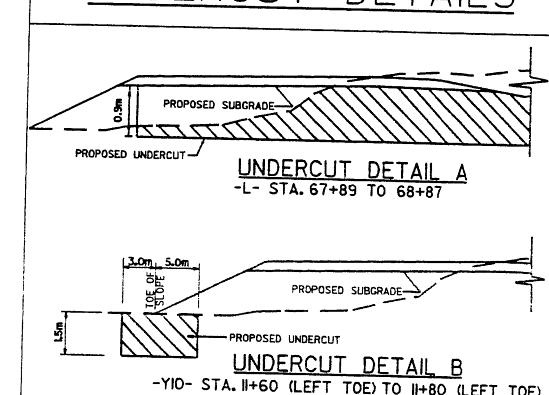
* 1.5:1 WITH ROCK PLATING -L- STA. 37+20 TO 38+00 LT
PAVED SHOULDER
MILLED RUMBLE STRIPS (STD. 665.01)
GRADE POINT
USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1
-L- STA. 31+00 TO STA. 33+48 LT.
-L- STA. 35+61 TO STA. 38+50 LT.
-L- STA. 78+84 TO STA. 80+29 LT.
-L- STA. 79+02.119 TO STA. 79+77 RT. (OPPOSITE HAND)



DETAIL OF GUTTER TRANSITIONS KEEPING 4.2m OF USABLE SHOULDER FROM THE EDGE OF TRAVEL LANE TO FACE OF BARRIER (CONCRETE OR GUARDRAIL)
GUARDRAIL
3.49m PAVED SHOULDER
3m TRANSITION
CONCRETE BARRIER
BETWEEN -L- RT STA. 41+30 & 41+33
3.0m PAVED SHOULDER
BETWEEN -L- RT STA. 38+87 & 38+90
3.2m PAVED SHOULDER
BETWEEN -L- RT STA. 38+17 & 38+20



UNDERCUT DETAILS



PAVEMENT SCHEDULE	
A1	290 mm CONC. W/ DOWELS
A2	290 mm CONC. W/O DOWELS
C1	25 mm, TYPE S9.5A
C3	70 mm, TYPE S9.5B
D5	110 mm, TYPE I19.0B
E1	75 mm, TYPE B25.0B
J6	175 mm ABC
J5	VAR. DEPTH ABC
K	TREATED SUBBASE
R3	EXPRESSWAY GUTTER
R5	SHOULDER BERM GUTTER
T	EARTH MATERIAL
X	75 mm PADL

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	2A

NOT TO SCALE

RELEASE FOR CONSTRUCTION
DATE: 2-12-04

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
THE LPA GROUP TRANSPORTATION CONSULTANTS

NCC North Carolina Constructors

REVISIONS			
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1	RED	2/12/04	RFI 665
0	RED	7/22/03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23853 JEFFERY S. DOUGLAS
2-12-04
ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

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CHECKED BY: ________ DATE: ________
Document Control Number :
Filename :
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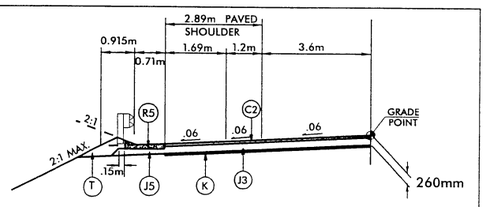
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
TYPICAL SECTIONS



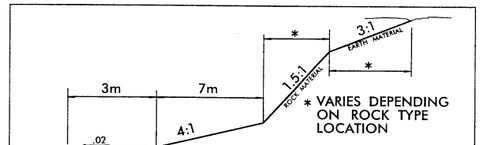
USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 2

–RAMP B– STA. 10+00 TO STA. 12+30 LT.

* VARIES DEPENDING ON ROCK TYPE LOCATION

USE IN CONJUNCTION WITH TYPICAL SECTION NOS. 2, 3 & 4 FOR LOCATION OF ROCK

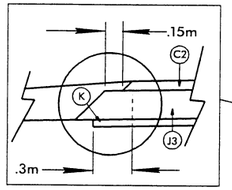
–RPB– STA. 13+00 (LT.) TO STA. 13+60 (LT)
–RPB– STA. 13+60 (LT.) TO STA. 14+20 (LT)
–RPB– STA. 13+60 (RT.) TO STA. 14+20 (RT) (OPPOSITE HAND)
–LPB– STA. 11+10 (LT.)
–RAMPC_REV– STA. 11+17 (RT.) TO STA. 12+60 (RT) (OPPOSITE HAND)
–RAMPC_REV– STA. 12+40 (LT.)
–Y4– STA. 13+40 (LT.)



* VARIES DEPENDING ON ROCK TYPE LOCATION

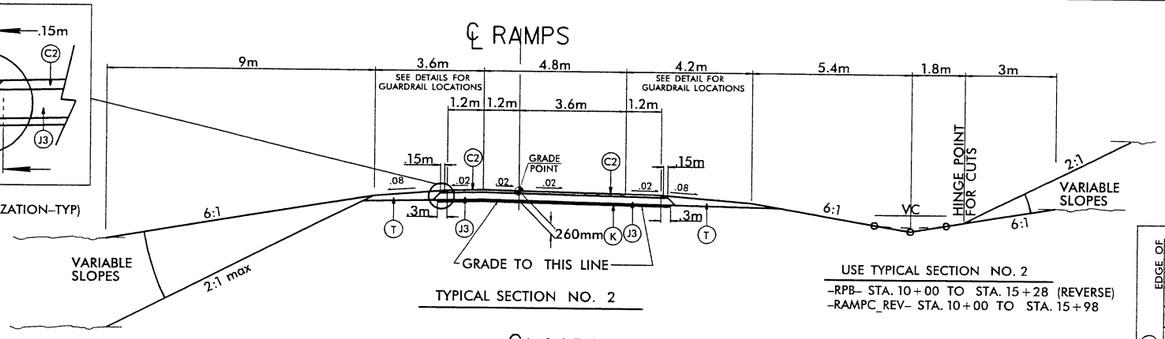
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 3 FOR LOCATION OF ROCK

–LPB– STA. 10+10 (RT.) TO STA. 10+90 (RT)
–LPB– STA. 11+10 (RT.) TO STA. 11+30 (RT)



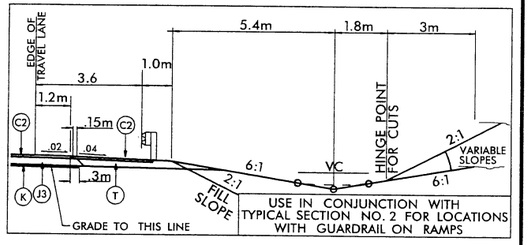
(LIMITS OF STABILIZATION–TYP)

℄ RAMPS



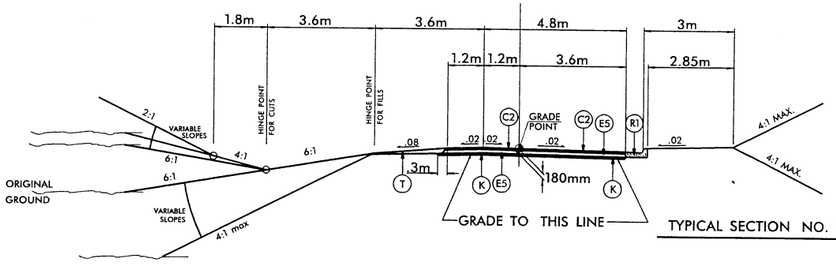
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
–RPB– STA. 10+00 TO STA. 15+28 (REVERSE)
–RAMPC_REV– STA. 10+00 TO STA. 15+98



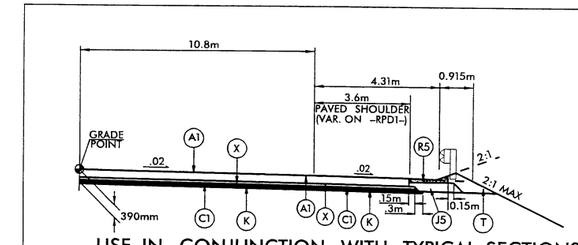
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2 FOR LOCATIONS WITH GUARDRAIL ON RAMPS

℄ LOOPS



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
–LPB– STA. 10+00 TO STA. 12+26
–LPC– STA. 10+00 TO STA. 12+74

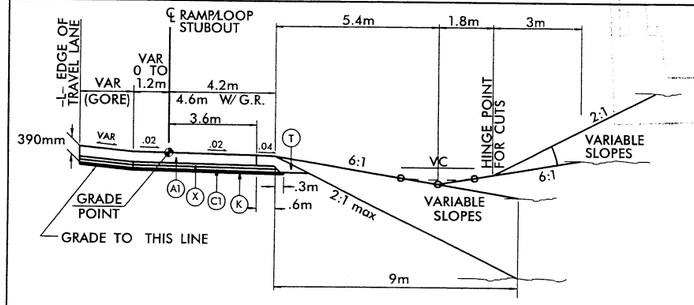


USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1

–L– STA. 79+02.119 TO STA. 79+77 RT
–RPD1– STA 17+80 TO 18+49.727

NOTE: ON –RPD1– THERE IS A GORE AREA. SEE CROSS SECTIONS

DETAIL FOR RAMP STUBOUTS

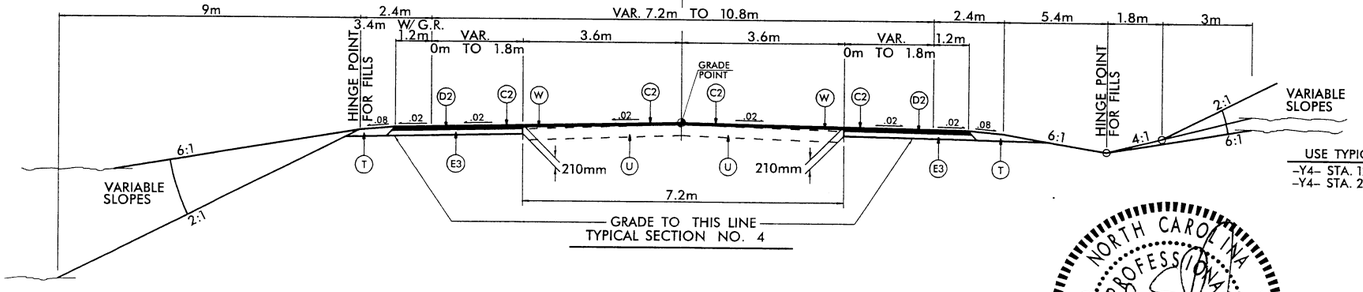


USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1

–RPCA1– STA. 10+00 TO 11+63 (RT OF –L–),
–RPB1 STA. 10+00 TO 11+14 (LT OF –L–)–OPPOSITE HAND
–LPC1– STA. 13+20.390 TO 13+80.868 (RT OF –L–)
–LPA1– STA. 13+25.817 TO 13+87.898 (LT OF –L–)–OPPOSITE HAND
–RPD1– STA. 17+32.988 TO 17+80 (RT OF –L–)
–RPAC1– STA. 10+00 TO 11+29.555 (LT OF –L–)–OPPOSITE HAND

NOTE: THE PAVEMENT TAPERS AT END OF THE ACCELERATION/DECELERATION LANES ON LOOPS –LPA1– & –LPC1– AND RAMPS –RPD1– & –RPAC1– HAVE 2% SLOPE ON CONCRETE PAVEMENT AND 4% SLOPE ON ASPHALT SHOULDER OUTSIDE OF THE TAPER (SEE CROSS SECTIONS)

℄ -Y4-



GRADE TO THIS LINE
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
–Y4– STA. 12+80 TO STA. 13+80
–Y4– STA. 20+20 TO STA. 21+20

PAVEMENT SCHEDULE	
A1	290 mm CONC. W/ DOWELS
C1	25 mm, TYPE S9.5A
C2	60 mm, S9.5B
D2	60 mm, TYPE I19.0B
E3	90 mm, TYPE B25.0B
E5	120 mm, TYPE B25.0B
J3	200 mm ABC
J5	VAR. DEPTH ABC
K	TREATED SUBBASE
R1	750 mm CURB AND GUTTER
R5	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING
X	75 mm PADL

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
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0	REB	7/22/03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
PAVEMENT DESIGN ENGINEER

12/19/03

100mm ABC does not apply
12/12/03

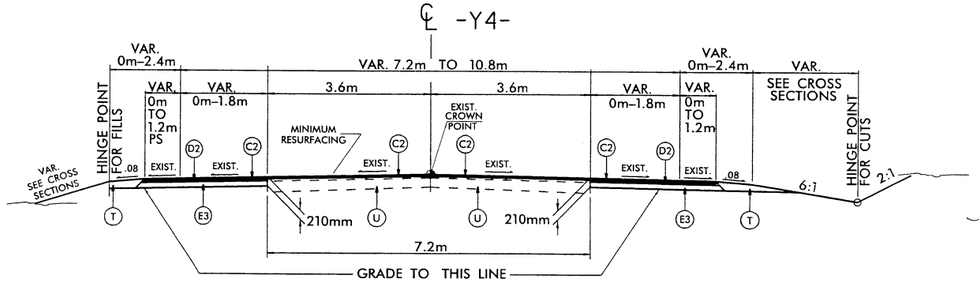
DRAWN BY: 12-29-03 DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547bb.typ

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

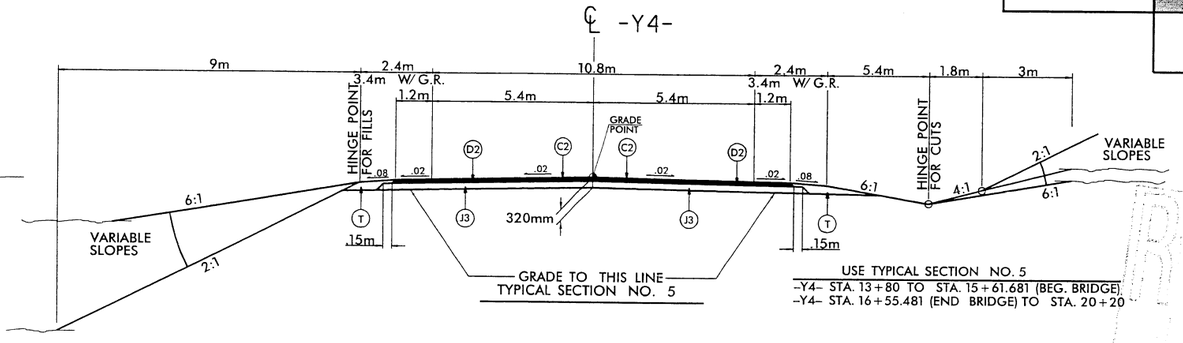
TYPICAL SECTIONS

METRIC	PROJECT REFERENCE NO.	SHEET NO.
NOT TO SCALE	R-2547BB	2C
	RELEASE FOR CONSTRUCTION DATE: 7-22-03	



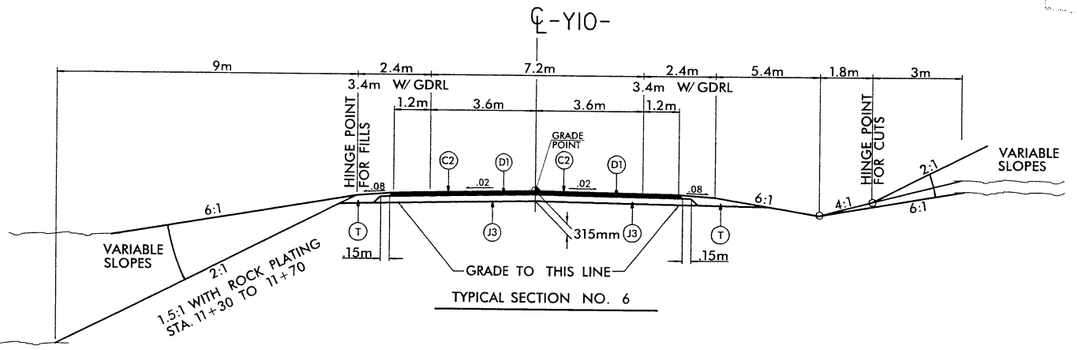
TYPICAL SECTION NO. 4A

USE TYPICAL SECTION NO. 4A
–Y4– STA. 11+90 TO STA. 12+80
(TRANSITIONING FROM EXISTING TO TS NO. 4)



TYPICAL SECTION NO. 5

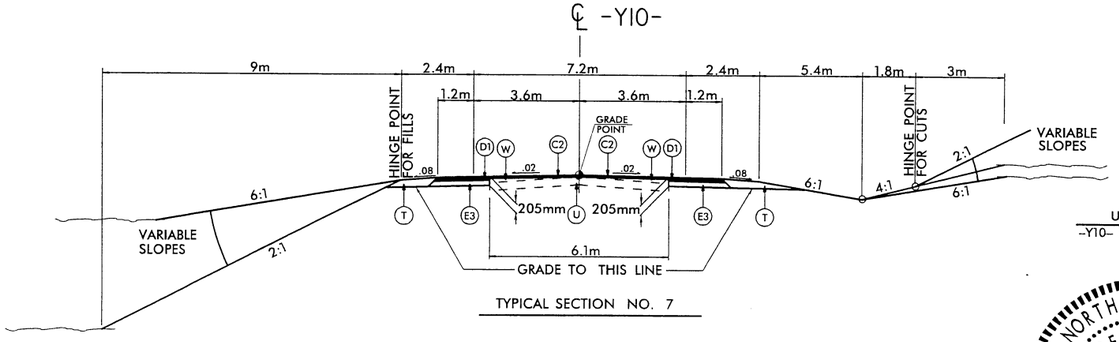
USE TYPICAL SECTION NO. 5
–Y4– STA. 13+80 TO STA. 15+61.681 (BEG. BRIDGE)
–Y4– STA. 16+55.481 (END BRIDGE) TO STA. 20+20



TYPICAL SECTION NO. 6

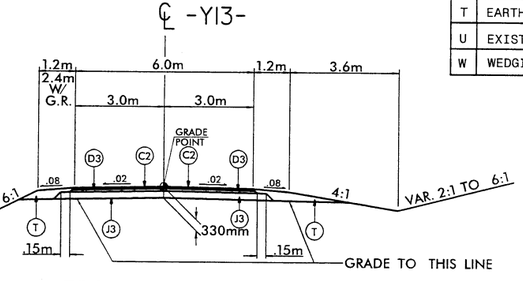
USE TYPICAL SECTION NO. 6
–Y10– STA. 10+28 TO STA. 18+40

PAVEMENT SCHEDULE	
C2	60 mm, S9.5B
D1	55 mm, TYPE I19.0B
D2	60 mm, TYPE I19.0B
D3	70 mm, TYPE I19.0B
E3	90 mm, TYPE B25.0B
J3	200 mm ABC
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7
–Y10– STA. 18+40 TO STA. 22+00



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8
–Y13– STA. 10+00 TO STA. 11+56.382 (BEG. BRIDGE)
–Y13– STA. 12+53.072 (END BRIDGE) TO STA. 13+20

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North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	REB	7/22/03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
7/24/03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
12/19/03
PAVEMENT DESIGN ENGINEER

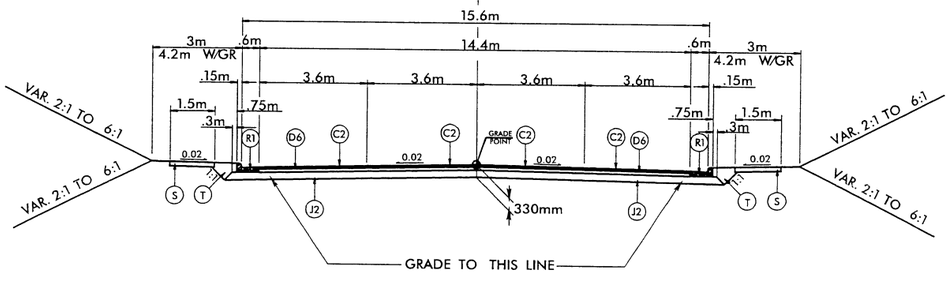
DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : r2547bb.typ

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
TYPICAL SECTIONS

METRIC	PROJECT REFERENCE NO.	SHEET NO.
NOT TO SCALE	R-2547BB	2D
	RELEASE FOR CONSTRUCTION	
	DATE: 7-22-03	

℄ -Y15-

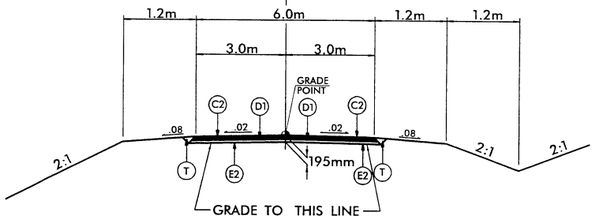


TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9
-Y15- STA. 10+18 TO STA. 11+52.500 (BEGIN BRIDGE)
-Y15- STA. 13+32.500 (END BRIDGE) TO STA. 14+40.000

RECEIVED

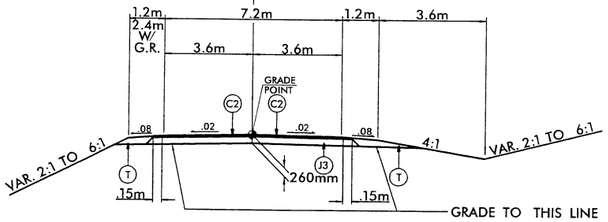
℄ SERVICE RD



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14
SERVICE RD. STA. 10+00 TO STA. 13+55.828

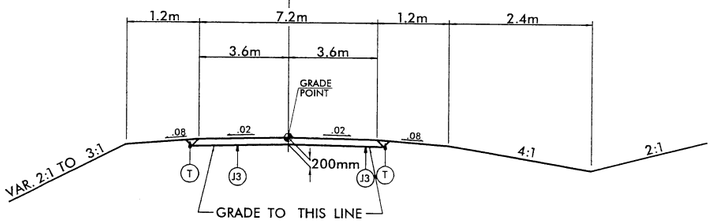
℄ -Y20-



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10
-Y20- STA. 10+22 TO STA. 11+40

℄ ACCESS RD.



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11
ACCESS RD. STA. 10+00 TO STA. 18+65.367

RECEIVED

PAVEMENT SCHEDULE	
C2	60 mm, S9.5B
D1	55 mm, TYPE I19.0B
D6	120 mm, TYPE I19.0B
E2	80 mm, TYPE B25.0B
J2	150 mm ABC
J3	200 mm ABC
R1	750 mm CURB AND GUTTER
S	100 mm CONCRETE SIDEWALK
T	EARTH MATERIAL

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Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	REB	7/22/03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JERRY S. DOUGLAS
7/22/03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
12/19/03
PAVEMENT DESIGN ENGINEER

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Document Control Number :
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

TYPICAL SECTIONS

DITCH DETAILS

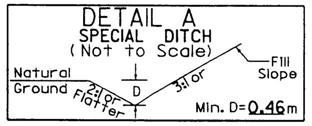
PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	2-E

METRIC

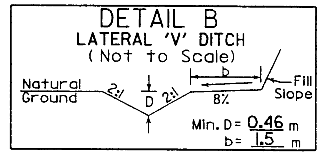
NOT TO SCALE

RELEASE FOR CONSTRUCTION

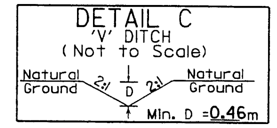
DATE: 12-16-03



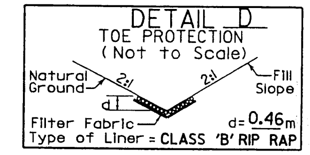
FROM STA 31+40 TO STA 32+60 -L- RT.
FROM STA. 47+00 TO STA. 47+80 -L- RT.
FROM STA. 84+40 TO STA. 85+40 -L- LT.
FROM STA. 13+60 TO STA. 14+50 -RAMPC_REV- LT.
FROM STA. 15+20 -RPB- LT. TO STA. 13+65 -Y4- RT.
FROM STA. 12+05 TO STA 13+60 -Y4- RT
FROM STA. 10+60 TO STA. 11+20 -Y10- RT.
FROM STA. 10+80 TO STA. 11+20 -Y20- LT.
FROM STA. 11+00 TO STA. 11+20 -Y20- RT.
FROM STA 10+20 TO 10+60 -SERVICERD- RT
FROM STA 10+80 TO 11+40 -SERVICERD- RT
FROM STA 11+80 TO 12+60 -SERVICERD- RT
FROM STA 12+80 TO 13+00 -Y13- LT
FROM STA. 17+40 TO STA. 18+60 -ACC_REV- RT.



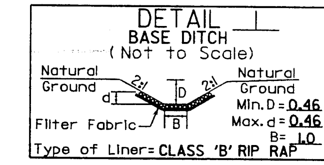
FROM STA 36+60 TO STA 37+00 -L- RT. DDE = 159m3
FROM STA. 70+60 TO STA 71+31 -L- RT. DDE = 61m3
FROM STA. 17+80 TO STA. 18+10 -Y4- LT. DDE = 44m3
FROM STA. 18+60 TO STA. 19+60 -Y4- LT. DDE = 75m3
FROM STA. 18+60 TO STA 19+20 -Y4- RT. DDE = 58m3
FROM STA 12+60 TO STA 12+80 -Y13- RT. DDE = 14m3
FROM STA. 10+20 TO STA. 10+80 -Y20- LT. DDE = 56m3
FROM STA. 10+20 TO STA. 11+00 -Y20- RT. DDE = 30m3



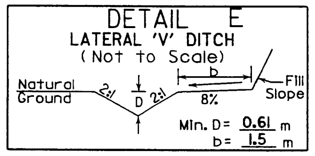
FROM STA 39+20 TO STA 39+50 -L- RT. DDE = 8m3



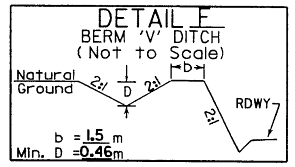
FROM STA. 52+30 TO STA. 53+20 -L- LT.
FROM STA. 53+40 TO STA. 54+00 -L- RT.
FROM STA. 82+50 TO STA. 82+70 -L- RT.
FROM STA. 14+50 TO STA. 15+00 -RAMPC_REV- LT.
FROM STA. 11+80 TO STA. 12+15 -Y10- LT.
FROM STA 16+40 TO STA 16+80 -Y10- LT.



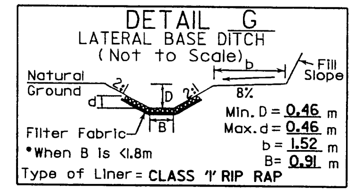
FROM STA. 12+60 TO STA. 13+70 -Y10- RT. DDE = 813m3



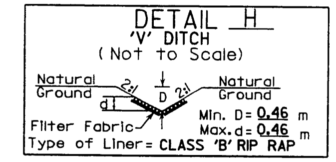
FROM STA. 46+05 TO STA. 47+00 -L- RT. DDE = 139m3



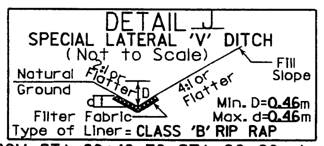
FROM STA. 47+60 TO STA. 51+10 -L- RT. DDE = 193m3
FROM STA. 17+00 -Y4- LT. TO STA. 62+30 -L- RT. DDE = 95m3
FROM STA. 65+20 TO STA. 66+00 -L- LT. DDE = 46m3
FROM STA. 72+90 TO STA. 74+50 -L- LT.



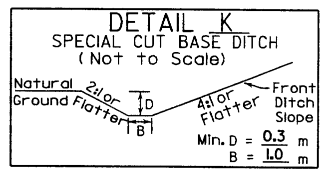
FROM STA. 52+60 TO STA. 53+40 -L- RT. DDE = 261m3



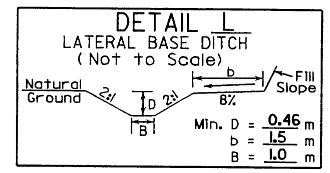
FROM STA. 62+15 TO STA. 62+30 -L- LT. DDE = 49m3
FROM STA. 13+70 TO STA. 13+80 -Y10- RT. DDE = 4m3



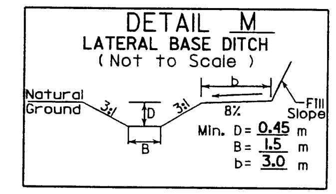
FROM STA. 60+40 TO STA. 60+80 -L- LT.
FROM STA. 72+06 TO STA. 72+70 -L- RT.
FROM STA. 75+33 TO STA. 75+40 -L- LT.
FROM STA. 83+60 TO STA. 84+20 -L- RT.
FROM STA. 12+20 TO STA. 13+00 -Y10- LT.
FROM STA. 10+00 TO STA. 10+60 -ACC_REV- RT.
FROM STA. 12+00 TO STA. 12+20 -ACC_REV- LT.
FROM STA. 14+40 TO STA. 16+40 -ACC_REV- LT.
FROM STA. 14+40 TO STA. 15+50 -ACC_REV- RT.
FROM STA. 16+00 TO STA. 16+60 -ACC_REV- RT.



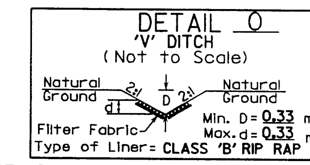
FROM STA. 69+20 TO STA. 69+60 -L- LT



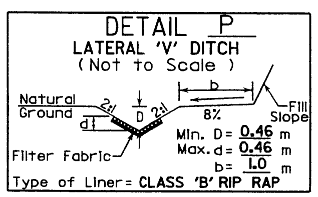
FROM STA. 69+60 TO STA. 70+96 -L- LT. DDE = 393m3

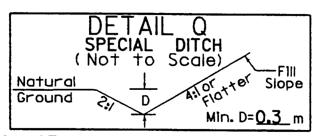


FROM STA. 78+20 TO STA. 78+80 -L- RT. DDE = 758m3

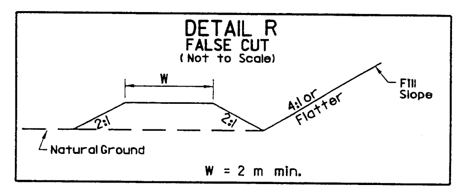


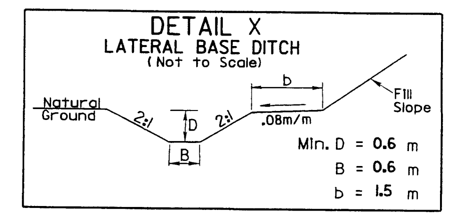
FROM STA. 34+80 TO STA. 37+00 -L- LT. DDE = 375m3



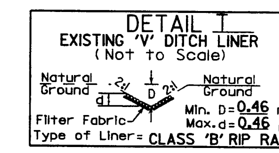


FROM STA. 19+80 TO STA. 20+60 -Y10- LT.
FROM STA 20+13 TO STA. 20+20 -Y10- RT.
FROM STA. 21+20 TO STA. 22+00 -Y10- LT.
FROM STA. 21+40 TO STA. 22+00 -Y10- RT.

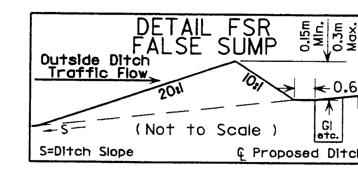


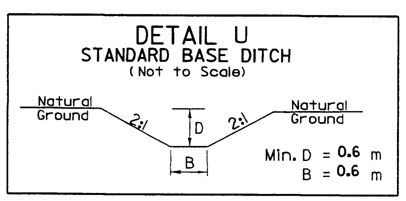


FROM STA 10+60 TO 11+35 -SERVICERD- LT

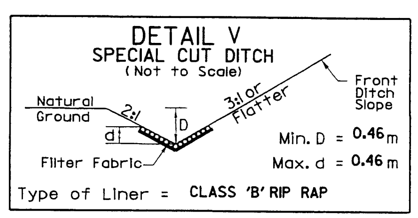


FROM OUTLET OF 750 FOR 22m STA. 14+25 -Y15- LT.

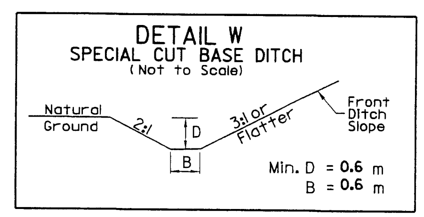




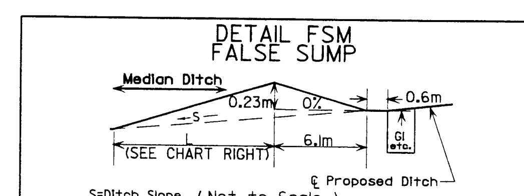
OUTLET = 10m MIN SLOPE = 0.003 m/m
OUTLET = 120m MIN SLOPE = 0.003 m/m



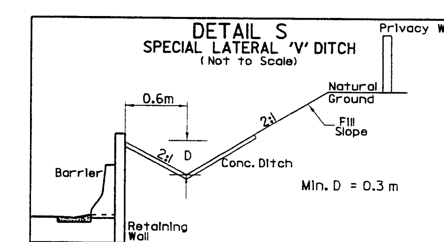
FROM STA 11+40 TO 11+80 -SERVICERD- RT



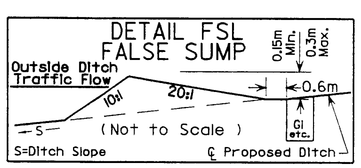
FROM STA 10+35 TO 10+60 -SERVICERD- LT

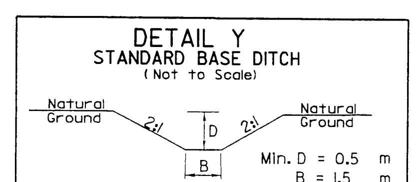


DITCH GRADE	L
0% TO 2%	6.1m
>2% TO 4%	9.1m
>4% TO 6%	12.2m
OVER 6%	15.2m



FROM STA. 39+00 TO STA. 41+20 -L- RT.





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REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2			
1	REB	12-16-03	ADDED "DETAIL Y"
0	REB	7-22-03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
12/17/03
HYDRAULICS ENGINEER

DRAWN BY: ____________ DATE: ______
CHECKED BY: ____________ DATE: ______

Document Control Number :

Filename :
DITCHDETAIL.DSN

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

DITCH DETAILS

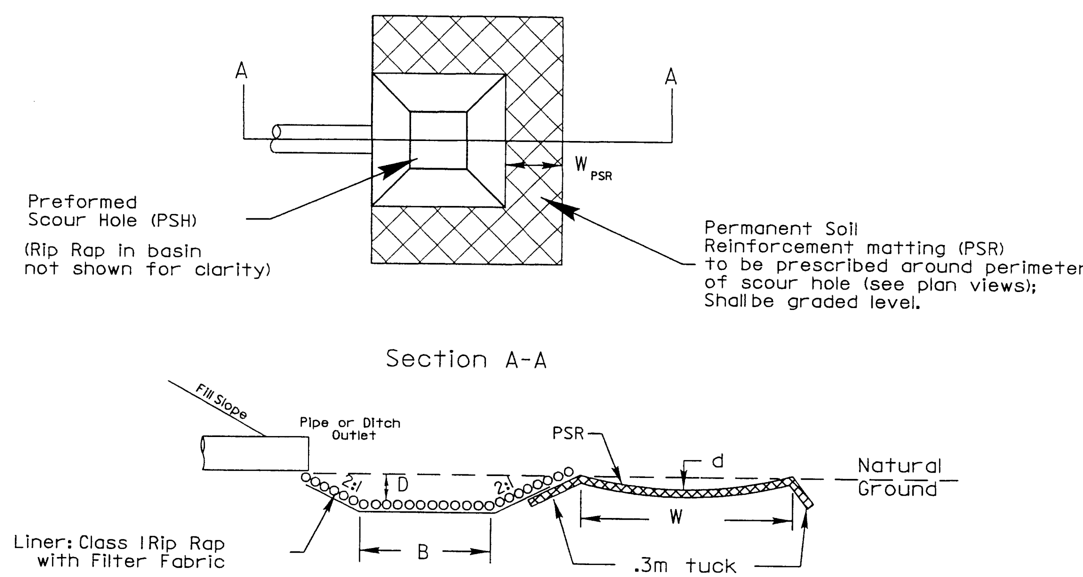
PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	2-F

RELEASE FOR CONSTRUCTION

DATE: 7-22-03

PREFORMED SCOUR HOLE

(NOT TO SCALE)



NOTE: 'B' denotes size of basin; For example: 1.5m x 1.5m PSH, B= 1.5

NOTE: The Permanent Soil Reinforcement matting (PSR) shall be seeded with native grasses at installation.

STATION	B M	D M	W_{PSR} M	d M	CLASS I RIP RAP MTONS	DDE M^3	FILTER FABRIC M^2	PSR M^2
45+75 -L-	1.8	0.5	1.2	0.3	23	18.4	45.2	35.6

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NCC North Carolina Constructors

NO.	BY:	DATE:	REVISIONS — DESCRIPTION OF REVISION
0	REB	7-22-03	RELEASE FOR CONSTRUCTION
1			
2			
3			
4			
5			

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 9334 W. HENRY WELLS, JR.
7/22/03
HYDRAULICS ENGINEER

DRAWN BY: ____ DATE: ____
CHECKED BY: ____ DATE: ____
Document Control Number :
Filename : r2547bbPFSH.dgn

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

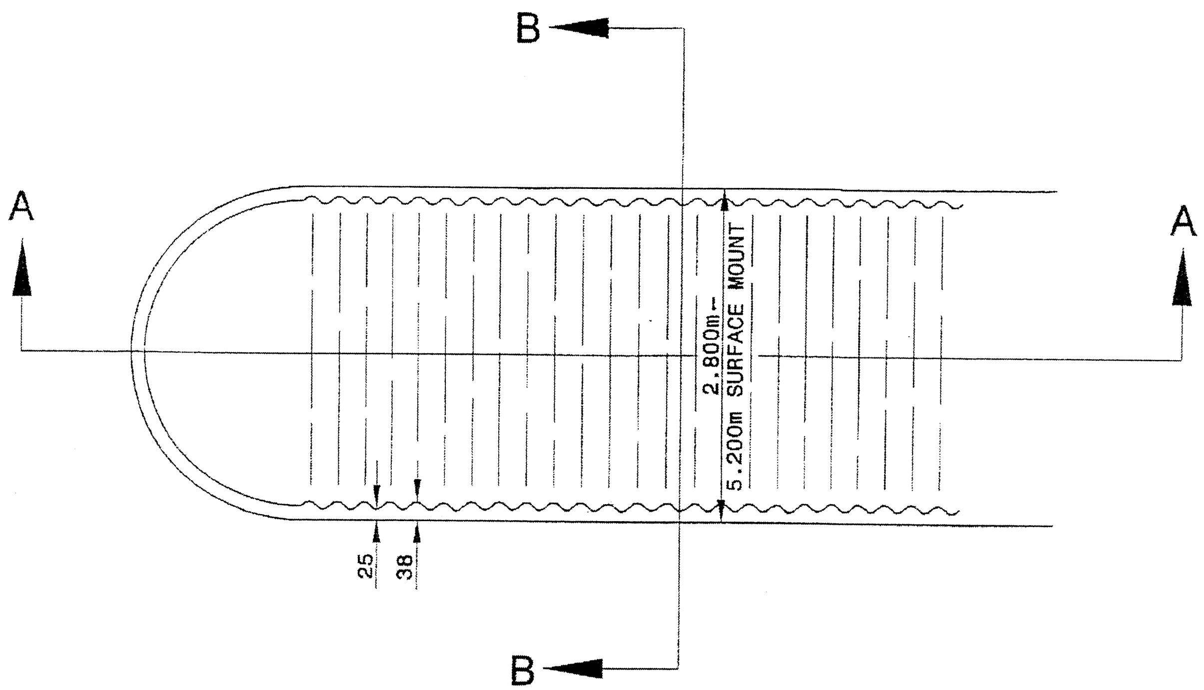
PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	2-G

METRIC

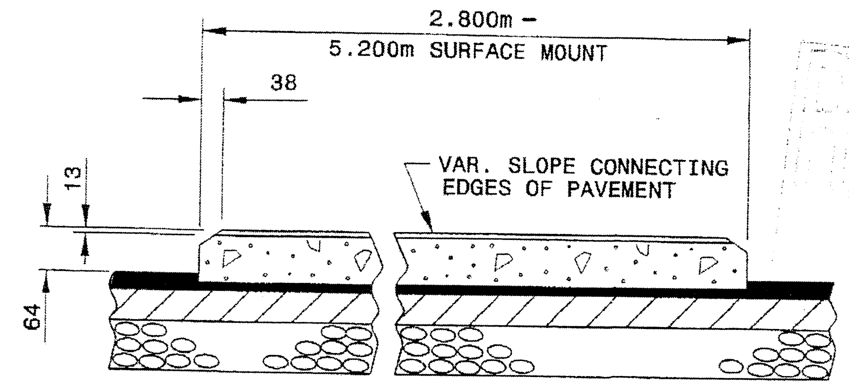
NOT TO SCALE

RELEASE FOR CONSTRUCTION

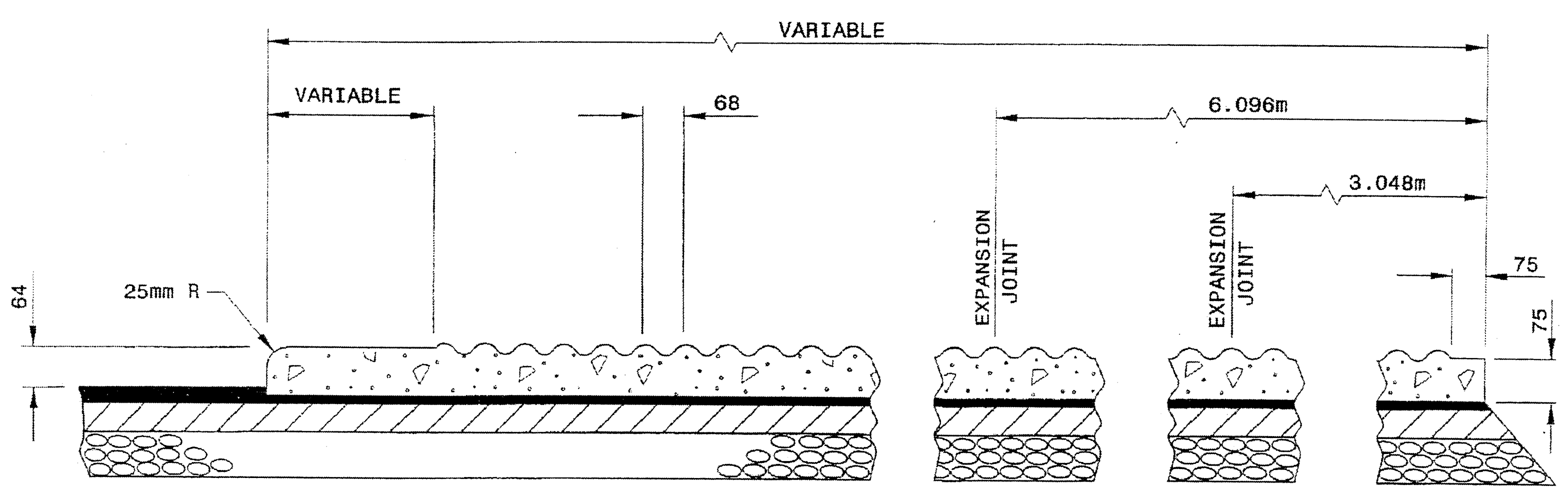
DATE: 7-22-03



TOP VIEW



SECTION B-B



SECTION A-A

NOTES: SURFACE OF 25mm CORRUGATED CONCRETE ISLAND CONFORMS WITH CORRUGATIONS OF A STANDARD 457mm CORRUGATED METAL PIPE.

IN THE 25mm CORRUGATED CONCRETE ISLANDS, PLACE 13mm EXPANSION JOINTS AT 3048mm INTERVALS. FILL AND SEAL THE TOP 13mm OF THE EXPANSION JOINTS WITH JOINT SEALER.

SEE ROADWAY PLANS FOR LENGTH AND WIDTH OF CORRUGATED ISLAND.

SEE ROADWAY PLANS FOR PAVEMENT DESIGN.

SEE STANDARD 852.01 FOR SURFACE MOUNT INSTALLATION.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23853 JERRY S. DOUGLAS

ROADWAY DESIGN ENGINEER

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

CORRUGATED CONCRETE ISLAND

TYPICAL ROCK PLATING CROSS SECTION

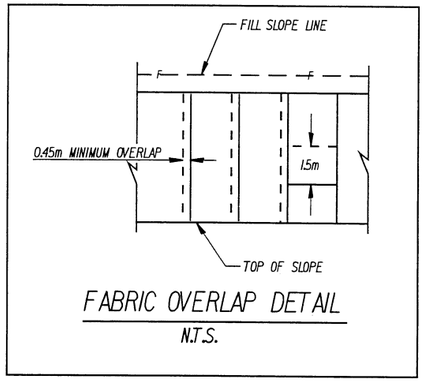
METRIC

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	2-H

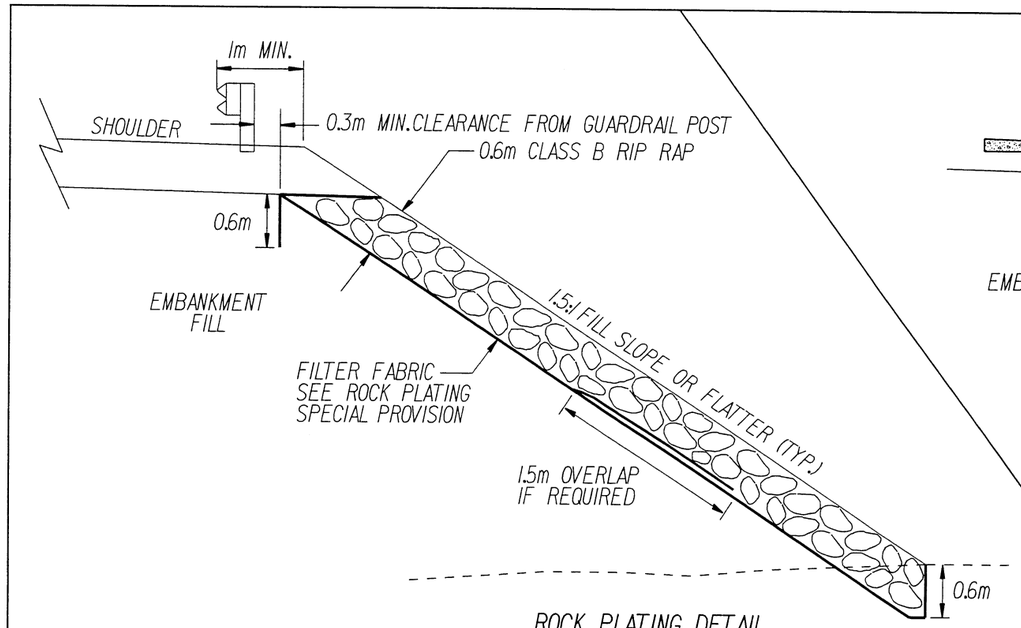
RELEASE FOR CONSTRUCTION

DATE: 7-22-03



FABRIC OVERLAP DETAIL

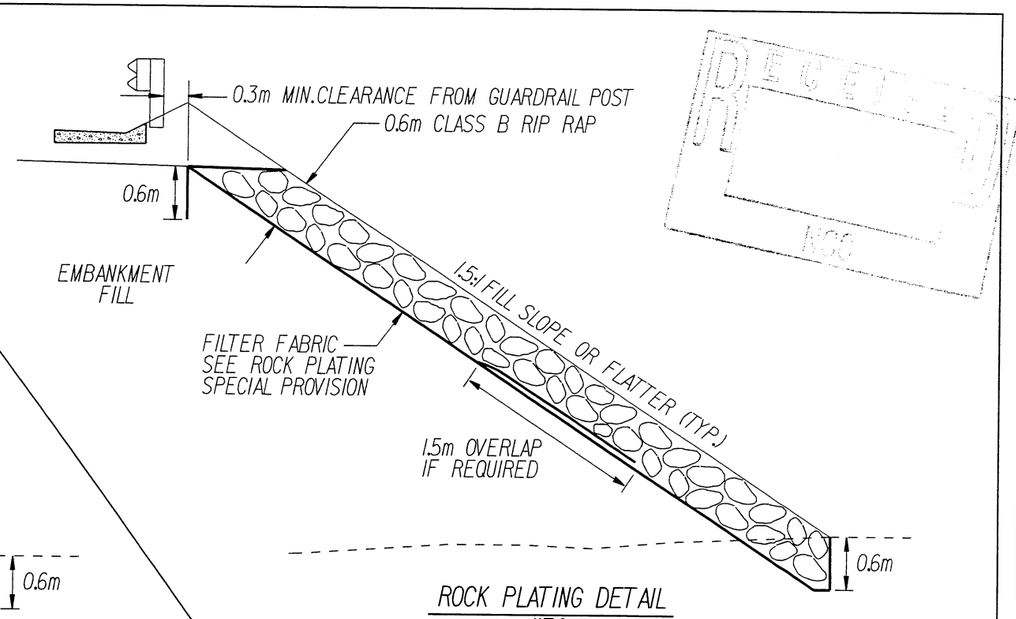
N.T.S.



ROCK PLATING DETAIL

N.T.S.

STATIONS 11+30 TO 11+70 -Y10-, LT



ROCK PLATING DETAIL

N.T.S.

STATIONS 37+20 TO 38+00 -L-, LT

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FINAL PLANS

ROCK PLATING

21-JUL-2003 17:28
\\Projects\NCDOT\R-2547\BB\Rdwy\rakpltg_pln.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	2-1

RELEASE FOR CONSTRUCTION

DATE: 7-22-03

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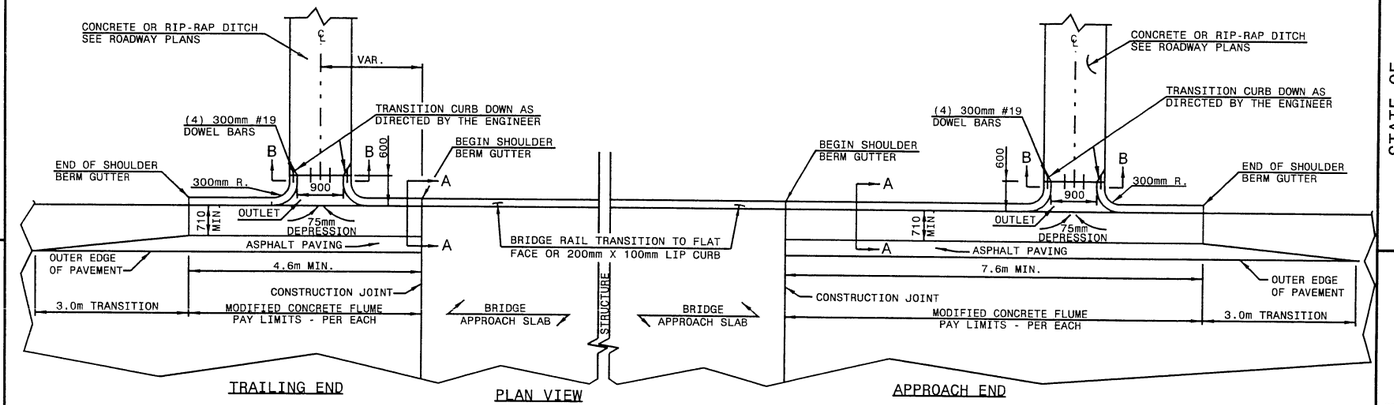
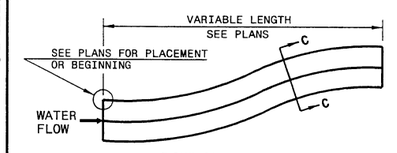
DIVISION OF HIGHWAYS
RALEIGH, N.C.

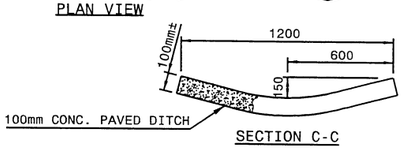
METRIC DETAIL DRAWING FOR

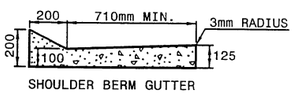
MODIFIED CONCRETE FLUME

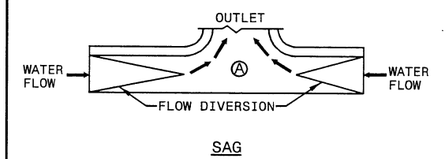
WITH CONCRETE OR RIP-RAP DITCH

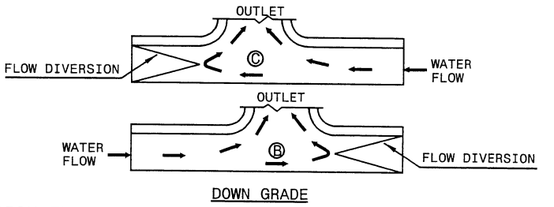


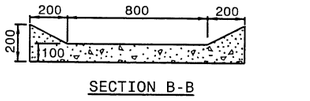


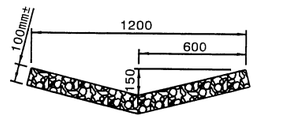












FLOW DIVERSION EXAMPLES

NOTES:

- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 450mm PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

SHEET 1 OF 1
MODFLMDTCH

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

METRIC DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

RECEIVED
JUL 24 2003
HYDRAULICS

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NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
7/22/03
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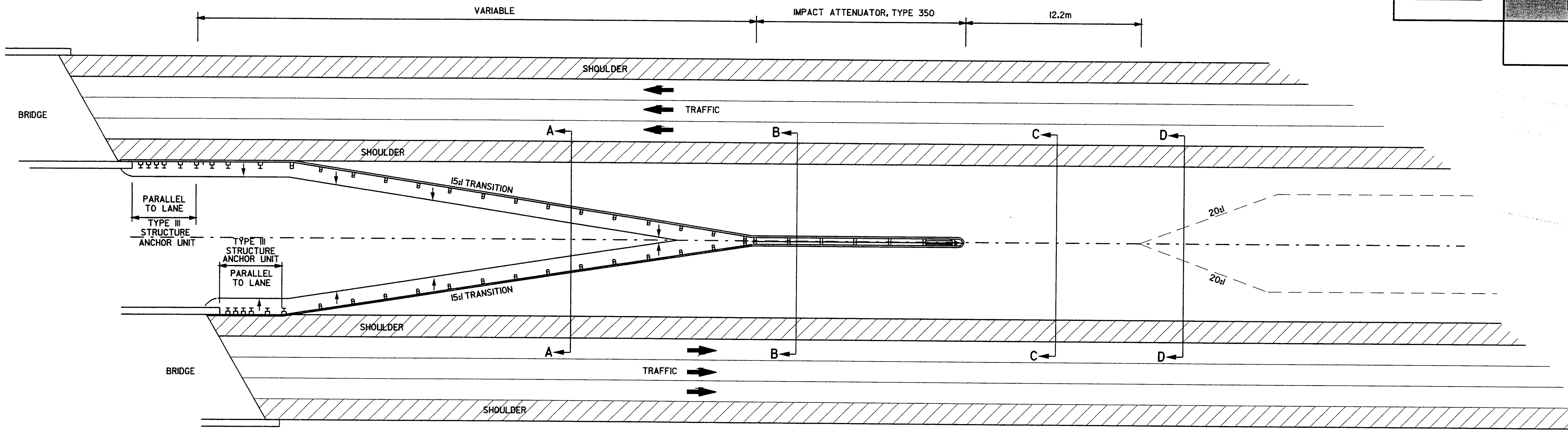
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

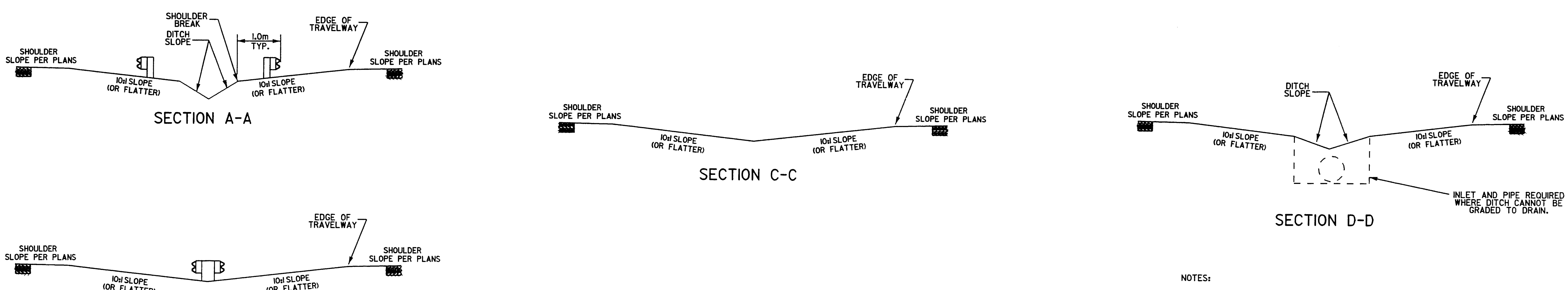
PROJECT REFERENCE NO.	SHEET NO.
R-2547	2J

RELEASE FOR CONSTRUCTION

DATE: 11-12-03



STEEL BEAM GUARDRAIL ON BRIDGE APPROACH IN 14m MEDIAN (ALL SPEEDS)



SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D

NOTES:

1. 10:1 OR FLATTER DITCH SLOPE TO EXTEND THROUGHOUT AND 12.2m BEYOND END OF THE IMPACT ATTENUATOR.
2. GUARDRAIL PROTECTION ON OUTSIDE SHOULDERS SHALL BE AS DETAILED ON ROADWAY STANDARD DRAWING 862.01, SHEET 2 OF 11.
3. DRAINAGE TO BE AS SHOWN ON THE PLANS OR AS DETERMINED BY THE ENGINEER.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23853 JEFFERY S. DOUGLAS

ROADWAY DESIGN ENGINEER

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CHECKED BY: ______ DATE: ______
Document Control Number :
Filename : dualbridge medain protection.dgn

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DETAIL OF GUARDRAIL PROTECTION ON DUAL BRIDGE APPROACH MEDIAN

NOTES:

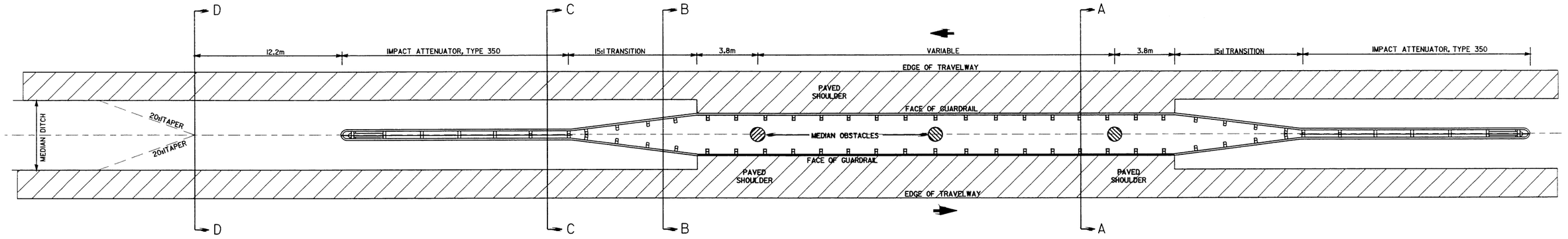
1. 10:1 OR FLATTER DITCH SLOPES TO EXTEND THROUGHOUT AND 12.2 M BEYOND EACH END OF IMPACT ATTENUATORS.
2. THE CRITICAL AREA BEHIND THE END TREATMENTS SHALL BE FREE OF FIXED OBSTACLES, AND HAVE A FILL SLOPE OF 10:1 OR FLATTER, OR A CUT SLOPE OF 10:1 OR FLATTER.
3. WHEN THE DISTANCE FROM FACE OF OBSTRUCTION TO FACE OF GUARDRAIL IS BETWEEN 1.1m AND 1.7m, BEGIN 0.953m POST SPACING AT A POINT 7.620M BEFORE REACHING THE OBSTRUCTION AND CARRY THROUGHOUT ITS LENGTH. IF THE OFFSET IS LESS THAN 1.1m USE CONCRETE BARRIER AS SHOWN ON ROADWAY STANDARD DRAWING 862.01, SHEET 1 OF 11.
4. DRAINAGE TO BE AS SHOWN ON THE PLANS OR AS DETERMINED BY THE ENGINEER.

METRIC

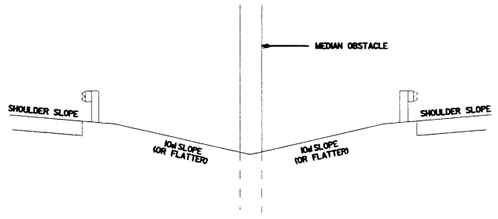
PROJECT REFERENCE NO.	SHEET NO.
R-2547	2K

RELEASE FOR CONSTRUCTION

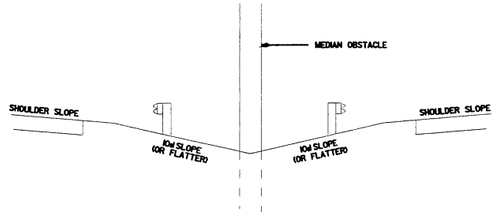
DATE: 11-12-03



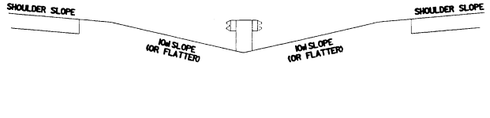
STEEL BEAM "W" GUARDRAIL FOR OBSTACLES IN 14m MEDIANS (ALL SPEEDS)



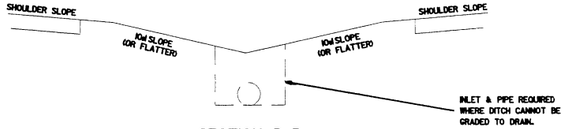
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

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NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS 11/12/03

ROADWAY DESIGN ENGINEER

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Document Control Number :

Filename : median obstruction protection.dgn

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DEPARTMENT OF TRANSPORTATION
RALEIGH

DETAIL OF GUARDRAIL PROTECTION FOR MEDIAN OBSTRUCTIONS

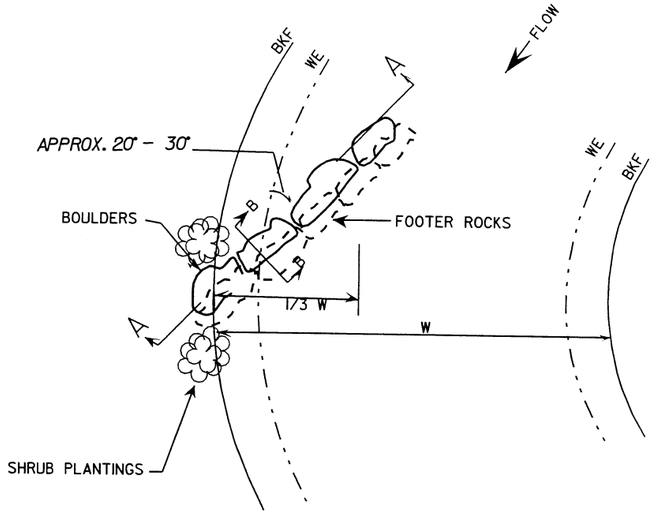
METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-2547BB	2-L

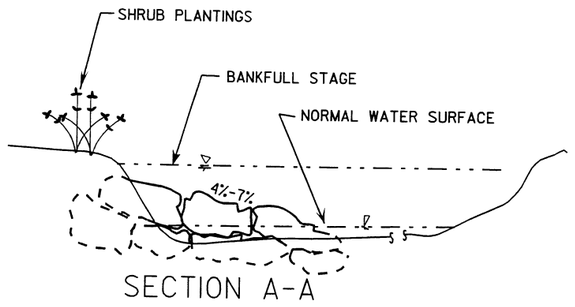
RELEASE FOR CONSTRUCTION

DATE: 12-16-03

ROCK VANE

(NOT TO SCALE)





SECTION A-A

SECTION B-B

NOTE:
BOULDERS SHOULD BE NATIVE STONE OR SHOT ROCK, ANGULAR AND OBLONG WITH AXIS APPROXIMATELY 0.9 m X 0.6 m. IN SIZE.

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"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	3A

RELEASE FOR CONSTRUCTION
DATE: 12-16-03

GUARDRAIL SUMMARY

	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS						IMPACT ATTENUATOR TYPE 350			SINGLE FACED PRECAST CONCRETE BARRIER STD. 857.01	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE III	GRAU 350	B-77	CAT-1	AT-1	M-350	EA	G	NG		
-L-	31+00.000	33+46.890	LT	246.890			33+46.890	CONT. IN BA	4.2	5.2					1										FILL SLOPE
-L-	31+45.330	33+66.310	LT	220.980			33+61.310	32+00	VAR.	4.2		39.888		2.565	1						1	1			MEDIAN SIGN
-L-	31+45.330	33+73.690	RT	228.360			32+00	33+73.690	VAR.	4.2	39.900		2.565		1										MEDIAN SIGN
-L-	31+22.192	33+92.702	RT	270.510			31+70	33+92.102	4.2	5.2	15.240		0.3		1	1									FILL SLOPE
-L-	35+61.262	38+50.822	LT	289.560			38+00	35+61.262	4.2	4.651	15.240		0.3		1	1									FILL SLOPE
-L-	35+78.427	36+49.529	LT	71.103				35+78.427	VAR.	4.2	47.012		2.565		1						1	1			BEGIN BRIDGE (MEDIAN)
-L-	35+84.760	36+49.529	RT	64.770			35+84.760		VAR.	4.2		48.037		2.565	1										END BRIDGE (MEDIAN)
-L-	36+01.594	38+90.000	RT	288.406			36+01.594	38+90.000	4.2	5.7					1		1							240.000 (38+90 – 41+30)	PRIVACY WALL
-L-	41+25.262	41+55.742	LT	30.480			41+55.742	41+45	3.6	4.6					1			1							DMS-3
-L-	37+92.724	41+62.294	LT	369.570			41+62.294	38+60	VAR.	5.2		34.593		2.565	1						1	1			MEDIAN SIGN & BRIDGE 3 COLUMNS
-L-	37+92.724	41+64.770	RT	372.046			38+60	41+64.770	VAR.	4.6 /5.2	51.710		2.565		1										MEDIAN SIGN & BRIDGE 3 COLUMNS
-L-	41+30.000	41+71.322	RT	41.322			41+30.000	41+71.322	4.2	5.471					1		1								BEGIN BRIDGE
-L-	46+52.997	51+63.537	LT	510.540			51+30	46+52.997	4.2	5.2	15.240		0.3		1	1									FILL SLOPE
-L-	46+44.458	47+13.038	LT	68.580				46+44.459	VAR.		11.430		2.565		1						1	1			BEGIN BRIDGE (MEDIAN)
-L-	46+38.442	47+13.038	RT	74.596			46+38.489		VAR.			11.430		2.565	1										END BRIDGE (MEDIAN)
-L-	46+29.235	47+13.055	RT	83.820			46+29.235	47+10	4.2	5.2					1			1							FILL SLOPE
-L-	51+55.000	53+83.600	RT	228.600			52+00	53+80	4.2	5.2	15.240		0.3			1		1							FILL SLOPE
-L-	54+52.560	55+59.240	LT	106.680				55+07	VAR.	5.2	38.510	38.058	2.565	2.565							1	1			MEDIAN SIGN
-L-	54+52.560	55+59.240	RT	106.680				55+07	VAR.	5.2	38.650	38.615	2.565	2.565							1	1			MEDIAN SIGN
-L-	59+34.753	60+83.343	LT	148.590			60+30	59+86.997	VAR.	5.2	38.560	38.560	2.565	2.565							1	1			MEDIAN SIGN & BRIDGE 5 COLUMNS
-L-	59+34.753	60+83.343	RT	148.590			59+86.997	60+30	VAR.	5.2	38.560	38.560	2.565	2.565							1	1			MEDIAN SIGN & BRIDGE 5 COLUMNS
-L-	59+86.576	61+16.116	LT	129.540				59+86.576	1.8	4.2	15.240		0.3			1	1							22.666 (59+63.910 – 59+86.576)	OVERHEAD SIGN & BARRIER @ BRIDGE 5 COLUMNS
-L-	69+80.000	71+43.830	LT	163.830			70+90	69+80	4.2	5.2	15.240		0.3			1		1							FILL SLOPE
-L-	70+14.280	72+42.880	RT	228.600			70+60	72+42	4.2	5.2	15.240		0.3			1		1							FILL SLOPE
-L-	77+67.760	78+74.440	RT	106.680			78+20		VAR.	5.2	38.560	38.560	2.565	2.565							1	1			MEDIAN SIGN
-L-	77+90.500	79+81.000	RT	198.120			78+20	79+80	4.2	5.2	15.240		0.3			1		1							FILL SLOPE
-L-	77+67.760	78+74.440	LT	106.680			78+20		VAR.	5.2	38.560	38.560	2.565	2.565							1	1			MEDIAN SIGN
-L-	78+80.000	80+47.640	LT	167.640			78+80	80+20	4.2	5.2	15.240		0.3			1		1							FILL SLOPE
-Y4-	15+40.771	15+67.441	LT	26.670			15+67.441		2.4	3.4		15.240		0.3	1	1									END BRIDGE
-Y4-	14+91.151	15+55.921	RT	64.770				15+55.921	2.4	3.4	15.240		0.3		1	1									BEGIN BRIDGE
-Y4-	16+61.241	17+29.821	LT	68.580			17+00	16+61.241	2.4	3.4	15.240		0.3		1	1									END BRIDGE
-Y4-	16+49.721	16+76.391	RT	26.670			16+49.721		2.4	3.4		15.240		0.3	1	1									FILL SLOPE
-Y4-	18+55.000	19+50.250	LT	95.250			19+20	18+60	2.4	3.4	15.240	15.240	0.3	0.3		2									FILL SLOPE
-Y4-	18+55.000	19+61.680	RT	106.680			18+60	19+30	2.4	3.4	15.240	15.240	0.3	0.3		2									FILL SLOPE
-Y10-	10+50.000	12+29.070	LT	179.070			12+00	10+60	2.4	3.4	15.240	15.240	0.3	0.3		2									FILL SLOPE
-Y10-	11+58.500	13+90.910	RT	232.410			11+90	13+60	2.4	3.4	15.240	15.240	0.3	0.3		2									FILL SLOPE
-Y13-	10+57.322	11+56.382	LT	99.060			11+56.382	10+80	1.2	2.2		15.240		0.3	1	1									FILL SLOPE
-Y13-	10+57.322	11+56.382	RT	99.060			10+80	11+56.382	1.2	2.2	15.240		0.3		1	1									FILL SLOPE
-Y13-	12+53.072	12+87.362	LT	34.290				12+53.072	1.2	2.2	15.240		0.3		1	1									BEGIN BRIDGE
-Y13-	12+53.072	12+79.742	RT	26.670			12+53.072		1.2	2.2		15.240		0.3	1	1									END BRIDGE
-Y15-	11+06.186	11+48.096	LT	41.910			11+48.096		4.2	4.8		15.240		0.3	1	1									END BRIDGE
-Y15-	10+83.704	11+59.904	RT	76.200				11+59.904	4.2	4.8	15.240		0.3		1	1									BEGIN BRIDGE
-Y15-	13+32.236	14+04.626	LT	72.390			13+80	13+36.236	4.2	4.8	15.240		0.3		1	1									BEGIN BRIDGE
-Y15-	13+35.764	13+77.674	RT	41.910			13+35.764		4.2	4.8		15.240		0.3	1	1									END BRIDGE
-RAMP_B-	-L- 52+78.056	12+91.736	LT	304.800			12+45	-L- 52+80	3.6	4.051	15.240		0.3			1		1							
-RAMPC_REV-	13+10.000	15+95.750	LT	285.750			13+40	15+90	3.6	4.6	15.240		0.3			1		1							FILL SLOPE
-LOOP_C-	10+17.209	10+47.689	RT	30.480				10+17.209	1.8	3.6	15.240		0.3			1	1							22.666 (60+03.016 – 60+25.682)	FILL SLOPE BARRIER @ BRIDGE 5 COLUMNS
			SUBTOTAL	6984.383			ANCHOR DEDUCTIONS		TYPE III	28 @ 5.715	-160.020														
			DEDUCTIONS	-834.219					GRAU-350	32 @ 15.240	-487.680														
			TOTAL	6150.164					B-77	4 @ 6.021	-24.084														
									CAT-1	9 @ 1.905	-17.145														
			SAY	6153.150	(1615 UNITS @ 3.81m/UNIT)				M-350	4 @ 11.430	-45.720														
									IAU-350	10 @ 9.957	-99.570														
										TOTAL	-834.219														
														TOTAL	28	32	4	9				10	10		285.332m	

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2	REB	12-16-03	UPDATED B-77 ANCHOR UNITS
1	REB	11-12-03	IAU-350 MEDIAN GUARDRAIL END TREATMENTS
0	REB	7-22-03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS 12/17/03

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : guardrail.sum

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
GUARDRAIL SUMMARY

15-DEC-2003 15:52
J:\projects\NCDOT\R-2547\BB\Rdwy\guardrail.sum

COMPUTED BY: REB DATE: 2-28-03
CHECKED BY: _____ DATE: _____

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	3B

RELEASE FOR CONSTRUCTION
DATE: 11-12-03

	BEG. STA.	END STA.	LENGTH	ANCHORS	REMARKS
-L-	31+00.000	31+39.230	39.230	1	
-L-	36+55.629	37+86.624	130.995	2	
-L-	47+19.138	54+46.460	727.322	4	
-L-	55+65.232	59+28.653	363.421	2	
-L-	60+89.443	77+61.660	1672.217	6	
-L-	78+80.540	86+60.000	779.460	3	
			SUBTOTAL 3712.645	18 8 MID-SPAN UNITS	
			LESS 76.000	10 END UNITS	
				TOTAL ANCHOR UNITS: (18 @ 7.6m) = 136.800m	
				LESS END UNITS: (10 @ 7.6m) = 76.0m	
			TOTAL 3636.645		

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1	REB	11-12-03	IAU-350 MEDIAN GUARDRAIL END TREATMENTS
0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS 11/12/03

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : guardrail.sum

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
GUIDERAIL SUMMARY

12-10-2003 11:53
u:\Projects\R2547\BB\Rdwy\guardrail.sum

-L-		
PIs Sta 30+72.191	PI Sta 35+93.091	PIs Sta 41+07.883
Θs = 0° 28' 29.5"	Δ = 15° 29' 31.4" (LT)	Θs = 0° 28' 29.5"
Ls = 61.0000	L = 995.0258	Ls = 61.000
LT = 40.6668	T = 500.5663	LT = 40.667
ST = 20.3335	R = 3,680.0000	ST = 20.333
	SE = .02	

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "WELL"

WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 227071.0770 (m) EASTING: 651671.5340 (m)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99990678

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "WELL" TO -L- STATION 31+00 IS N 33° 49' 09.41" E 2,851.089m

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NGVD '29

NOTE: R/W ON THE AMMONS EAST CORP. PARCEL IS TO BE ACQUIRED UNDER R-2547BA.

-L- STA. 31+00 BEGIN STATE PROJECT 8.1402212
-L- STA. 31+00 BEGIN F.A. PROJECT NHS-64(73)

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	4

R/W SHEET NO.4

RELEASE FOR CONSTRUCTION

DATE: 12-16-03

AMMONS EAST CORP

AMERIMANN PARTNERS III LLC

ZONE 1 -Y15- +52.939 15.0m (49.21') (NOT SET) +99.277 -L- @ PL (NOT SET)

ZONE 2

CLASS 'I' RIP RAP W/ FILTER FABRIC EST. 10 TONS EST. 20 SM FABRIC

CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 2 TONS EST. 6 SM FABRIC

INV 51.82

450 CSP W/ 2 ELBOWS

2GI-FLAT GRATE

PREFORMED SCOUR HOLE B = 1.2m SEE DETAIL SHEET 2F

-L- POCSta.33+96.655= -Y15- POTSta.12+03.211

CLASS 'II' RIP RAP (STRUCTURE'S PAY ITEM)

END SHLD. BERM GUTTER -L- STA. 33+48 END WW FENCE

400 CSP W/ 2 ELBOWS

END DECK DRAINS AT STA. 33+95 -L-

BEGIN SHLD. BERM GUTTER -L- STA. 31+00

CONTINUE GUARDRAIL FROM R-2547 BA

400 CS W/ ELBOWS

BEGIN GUARDRAIL -L- 31+45.330 LT/RT

END GUIDERAIL 31+39.230 LT

4.2m PAVED SHLD

SHLD BERM GUTTER

3.6m PAVED SHLD

2GI FS

IAU-350

OVERHEAD SIGN "G" -L- 32+00

CONTINUE GUIDERAIL FROM R-2547 BA

BEGIN GUARDRAIL -L- 31+22.192 RT

GRAU-350

BEGIN APPR. SLAB WBL -L- STA. 33+62.984

BEGIN BRIDGE WBL -L- STA. 33+67.728

BEGIN APPR. SLAB EBL -L- STA. 33+77.790

BEGIN BRIDGE EBL -L- STA. 33+82.518

END WW FENCE -Y15- 11+60 +/- RT.

END WW FENCE -Y15- 11+48 +/- LT.

PFSH B = 1.2m SEE DETAIL SHEET 2F

PT. -BL38- -L- 30+85.337-12.284m RT.

PT. -BL39- -L- 31+31.420-11.726m RT.

PT. -BL40- -L- 32+53.440-7.527m RT.

PT. -BL41- -L- 33+36.891-6.126m RT.

PT. -BL42- -L- 33+86.182-4.228m RT.

+92.524 -L- 45.0m (147.64')

+44.000 -L- 45.0m (147.64')

+54.321 -L- 45.0m (147.64')

+95.000 -L- 45.0m (147.64')

+82.733 -L- 45.0m (147.64')

+80.000 -Y15- 18.5m (60.70')

+20.000 -Y15- 15.0m (49.21')

+40.000 -Y15- 22.0m (72.18')

+20.000 -Y15- 17.5m (57.42')

BEGIN BRIDGE -Y15- STA 11+52.500

BEGIN APPROACH SLAB -Y15- STA 11+47.681

BEGIN GUARDRAIL -Y15- 11+06.186 LT

BEGIN GUARDRAIL -Y15- 10+83.704 RT

SPECIAL DITCH SEE DETAIL A (SHEET 2-E)

SPECIAL DITCH SEE DETAIL A (SHEET 2-E)

AMMONS EAST CORP

PROPERTY MANAGEMENT GRP.

SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH

SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH

1.5m CONC. SIDEWALK

2.25m

14.4m

15.6m

-Y15-

18.0m F-F

Δ1 = 122° 23' 59.244"

MATCH-LINE -L- STA 34+20 SEE SHEET 5

MATCHLINE -Y15- STA 10+80 SEE SHEET 33

NOTE: R/W AND EASEMENTS ON THE AMMON EAST CORP. PARCEL IS TO BE ACQUIRED UNDER R-2547BA.

NOTE: SEE SHEET 35 FOR -L- PROFILE
SEE SHEET 59 FOR -Y15- PROFILE
SEE SHEETS S-1 THRU S- FOR STRUCTURE PLANS

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2	REB	12-16-03	PREFORMED SCOUR HOLE - STRUCTURES 4 & 6
1	REB/RR	11-12-03	IAU-350 MEDIAN GUARDRAIL END TREATMENT
0	REB	7-22-03	RELEASE FOR CONSTRUCTION

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER

DRAWN BY: DATE:
CHECKED BY: DATE:

Document Control Number :

Filename : r2547bbs4.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

-L- STA. 31+00 TO STA. 34+20
-Y15- STA. 10+80 TO STA. 12+40

15-DEC-2003 14:34
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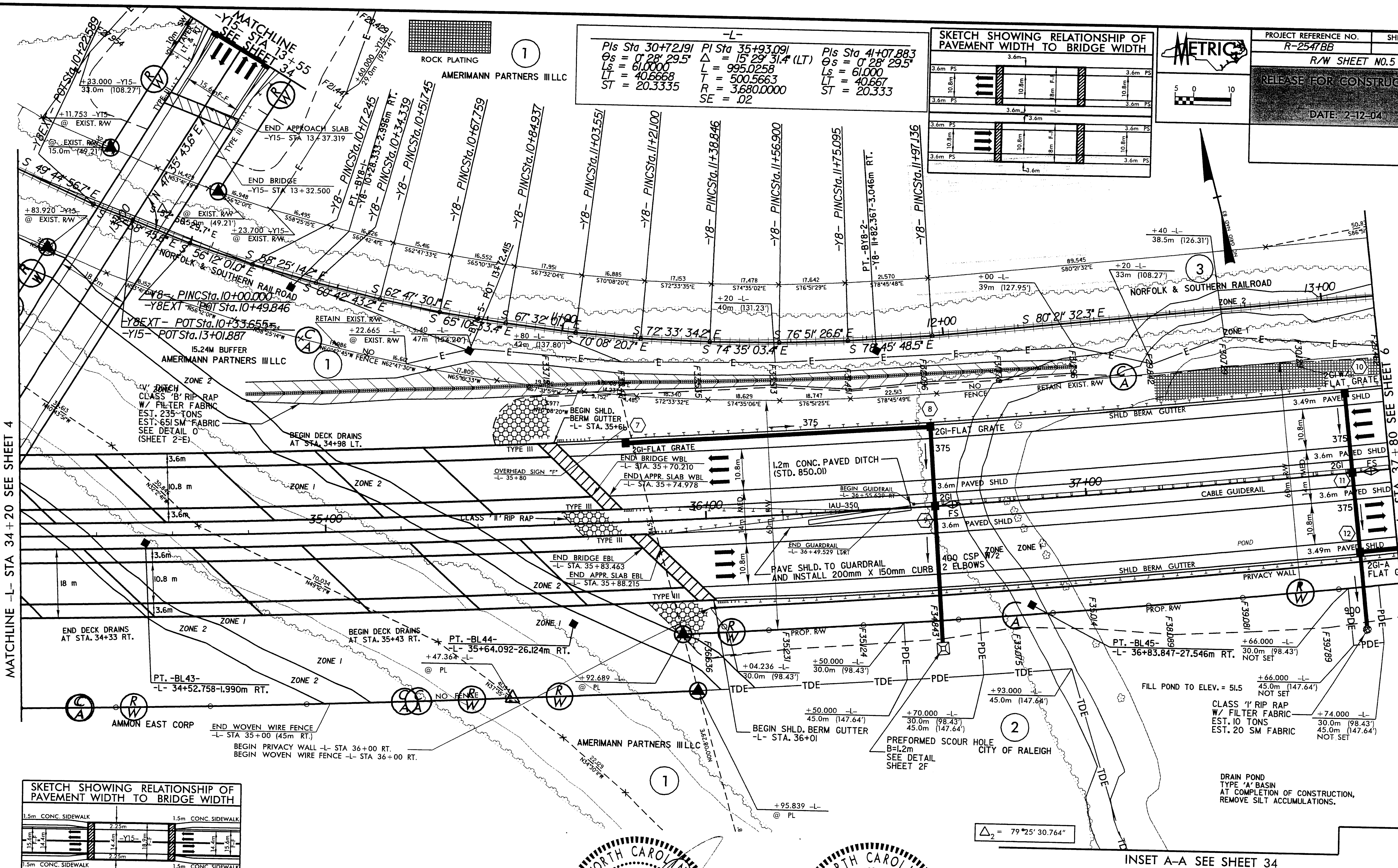

MATCHLINE -Y15- STA 13+55 SEE SHEET 34
ROCK PLATING
AMERIMANN PARTNERS III LLC
END APPROACH SLAB -Y15- STA 13+37.319
END BRIDGE -Y15- STA 13+32.500
NORFOLK & SOUTHERN RAILROAD
15.24M BUFFER
AMMON EAST CORP
CITY OF RALEIGH
MATCHLINE -L- STA 34+20 SEE SHEET 4
MATCHLINE -L- STA 37+80 SEE SHEET 6
BEGIN DECK DRAINS AT STA. 34+98 LT.
END DECK DRAINS AT STA. 34+33 RT.
BEGIN DECK DRAINS AT STA. 35+43 RT.
1.2m CONC. PAVED DITCH (STD. 850.01)
PAVE SHLD. TO GUARDRAIL AND INSTALL 200mm X 150mm CURB
CABLE GUIDERAIL
SHLD BERM GUTTER
PRIVACY WALL
END WOVEN WIRE FENCE -L- STA 35+00 (45m RT.)
BEGIN PRIVACY WALL -L- STA 36+00 RT.
BEGIN WOVEN WIRE FENCE -L- STA 36+00 RT.
PREFORMED SCOUR HOLE B=1.2m SEE DETAIL SHEET 2F
FILL POND TO ELEV. = 51.5
CLASS 'I' RIP RAP W/ FILTER FABRIC EST. 10 TONS EST. 20 SM FABRIC
'V' DITCH CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 235 TONS EST. 651 SM FABRIC SEE DETAIL O (SHEET 2-E)
DRAIN POND TYPE 'A' BASIN AT COMPLETION OF CONSTRUCTION, REMOVE SILT ACCUMULATIONS.
INSET A-A SEE SHEET 34

-L-

PIs Sta 30+72.191	PI Sta 35+93.091	PIs Sta 41+07.883
θs = 0° 28' 29.5"	Δ = 15° 29' 31.4" (LT)	θs = 0° 28' 29.5"
Ls = 61.0000	L = 995.0258	Ls = 61.000
LT = 40.6668	T = 500.5663	LT = 40.667
ST = 20.3335	R = 3,680.0000	ST = 20.333
	SE = .02	

SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH

SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH

Δ_2 = 79° 25' 30.764"

NOTE: R/W AND EASEMENTS ON THE AMMON EAST CORP. PARCEL IS TO BE ACQUIRED UNDER R-2547BA.

NOTE: SEE SHEET 35 FOR -L- PROFILE
SEE SHEET 59 FOR -Y15- PROFILE
SEE SHEETS S-1 THRU S-__ FOR STRUCTURE PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	5
R/W SHEET NO. 5	

METRIC

RELEASE FOR CONSTRUCTION
DATE: 2-12-04

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3	REB	2-12-04	UPDATED FILL POND NOTE
2	REB	12-16-03	PREFORMED SCOUR HOLE - STRUCTURE 9
1	REB/RR	11-12-03	IAU-350 MEDIAN GUARDRAIL END TREATMENT
0	REB	7-22-03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23853 JEFFERY S. DOUGLAS 2-12-04
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 9334 W. HENRY WELLS, JR. 2-12-04
HYDRAULICS ENGINEER

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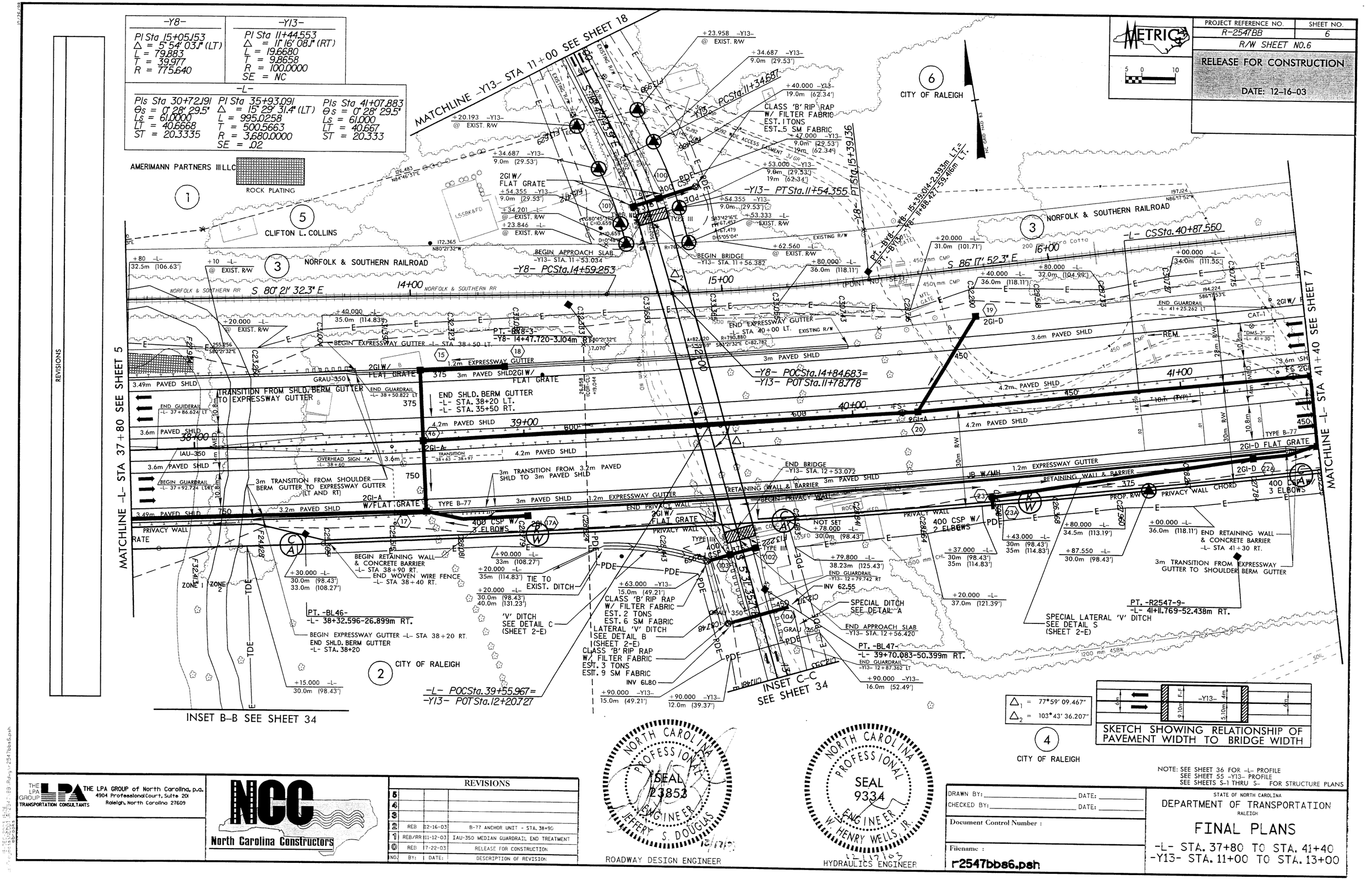
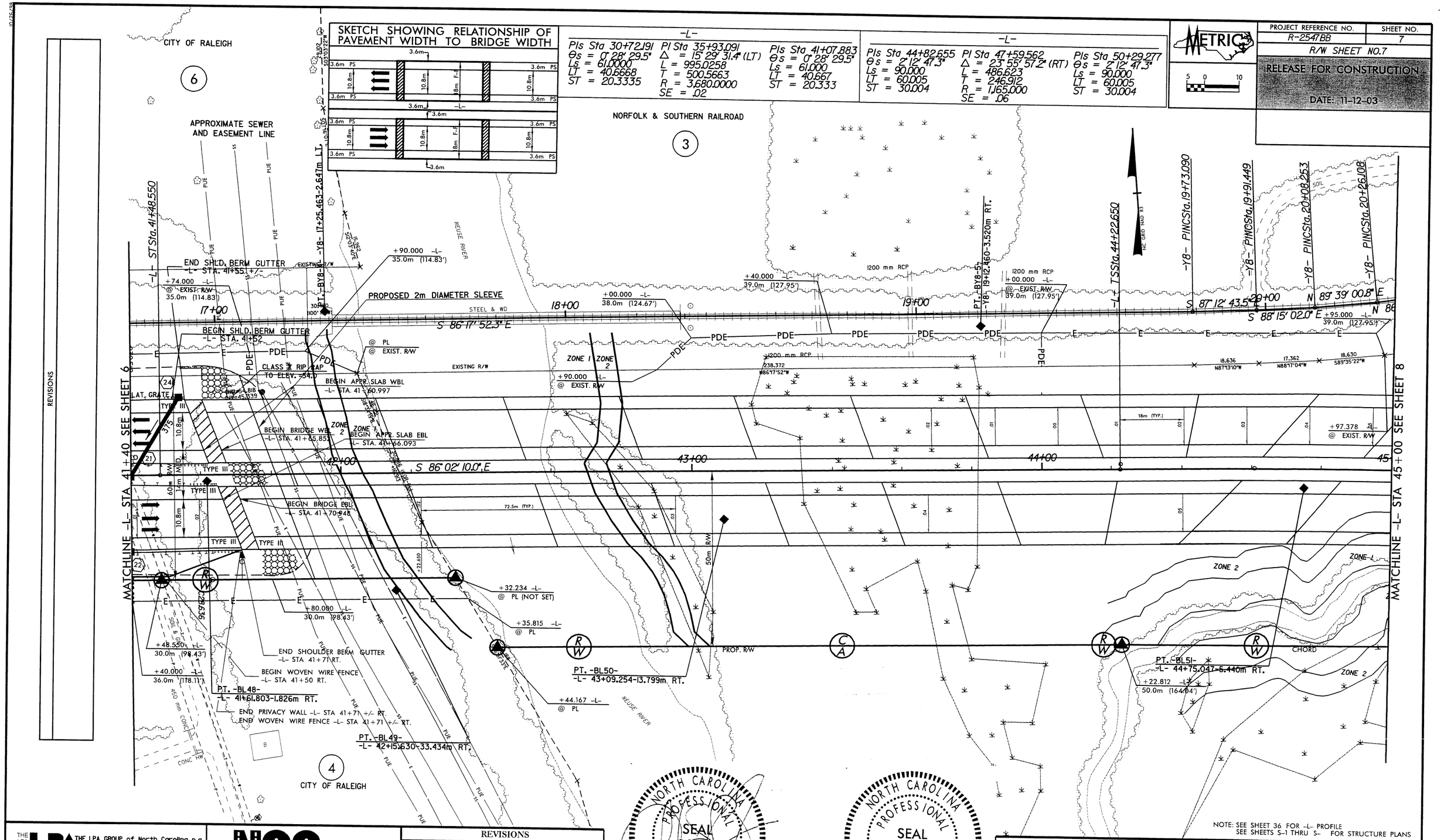
CHECKED BY: ________ DATE: ________
Document Control Number :
Filename : r2547bbs5.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
-L- STA. 34+20 TO STA. 37+80
-Y15- STA. 12+40 TO STA. 13+55

REVISIONS


-Y8-
PI Sta 15+05.153
Δ = 5° 54' 03.1" (LT)
L = 79.883
T = 39.977
R = 775.640
-Y13-
PI Sta 11+44.553
Δ = 11° 16' 08.1" (RT)
L = 19.6680
T = 9.8658
R = 100.0000
SE = NC
-L-
PIs Sta 30+72.191
Θs = 0° 28' 29.5"
Ls = 61.0000
LT = 40.6668
ST = 20.3335
PI Sta 35+93.091
Δ = 15° 29' 31.4" (LT)
L = 995.0258
T = 500.5663
R = 3,680.0000
SE = .02
PIs Sta 41+07.883
Θs = 0° 28' 29.5"
Ls = 61.000
LT = 40.667
ST = 20.333
METRIC
5 0 10
PROJECT REFERENCE NO. R-2547BB
SHEET NO. 6
R/W SHEET NO.6
RELEASE FOR CONSTRUCTION
DATE: 12-16-03
REVISIONS
MATCHLINE -Y13- STA 11+00 SEE SHEET 18
MATCHLINE -L- STA 37+80 SEE SHEET 5
MATCHLINE -L- STA 41+40 SEE SHEET 7
AMERIMANN PARTNERS III LLC
ROCK PLATING
CLIFTON L. COLLINS
NORFOLK & SOUTHERN RAILROAD
CITY OF RALEIGH
BEGIN APPROACH SLAB -Y13- STA. 11+53.034
-Y8- PCSta.14+59.253
BEGIN BRIDGE -Y13- STA. 11+56.382
-Y13- PTSta.11+54.355
-Y8- PTSta.15+39.136
-L- CSSta.40+87.550
-Y8- POCSta.14+84.683=
-Y13- POTSta.11+78.778
-Y8- 14+47.720-3.104m
PT. -BR8-3-
BEGIN EXPRESSWAY GUTTER -L- STA 38+50 LT.
END EXPRESSWAY GUTTER STA 40+00 LT.
END SHLD. BERM GUTTER -L- STA. 38+20 LT. -L- STA. 35+50 RT.
TRANSITION FROM SHLD. BERM GUTTER TO EXPRESSWAY GUTTER
3m TRANSITION FROM SHOULDER BERM GUTTER TO EXPRESSWAY GUTTER (LT AND RT)
3m TRANSITION FROM 3.2m PAVED SHLD TO 3m PAVED SHLD
END BRIDGE -Y13- STA. 12+53.072
BEGIN RETAINING WALL & CONCRETE BARRIER -L- STA 38+90 RT.
END WOVEN WIRE FENCE -L- STA 38+40 RT.
BEGIN EXPRESSWAY GUTTER -L- STA 38+20 RT.
END SHLD. BERM GUTTER -L- STA. 38+20
TIE TO EXIST. DITCH
'V' DITCH SEE DETAIL C (SHEET 2-E)
LATERAL 'V' DITCH SEE DETAIL B (SHEET 2-E)
CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 2 TONS EST. 6 SM FABRIC
CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 3 TONS EST. 9 SM FABRIC
INV 61.80
INV 62.55
SPECIAL DITCH SEE DETAIL A
END APPROACH SLAB -Y13- STA. 12+56.420
PT. -BL46- -L- 38+32.596-26.899m RT.
PT. -BL47- -L- 39+70.083-50.399m RT.
PT. -R2547-9- -L- 41+11.769-52.438m RT.
SPECIAL LATERAL 'V' DITCH SEE DETAIL S (SHEET 2-E)
-L- POCSta.39+55.967= -Y13- POTSta.12+20.727
END RETAINING WALL & CONCRETE BARRIER -L- STA 41+30 RT.
3m TRANSITION FROM EXPRESSWAY GUTTER TO SHOULDER BERM GUTTER
PRIVACY WALL CHORD
INSET B-B SEE SHEET 34
INSET C-C SEE SHEET 34
Δ1 = 77°59' 09.467"
Δ2 = 103°43' 36.207"
SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH
NOTE: SEE SHEET 36 FOR -L- PROFILE
SEE SHEET 55 -Y13- PROFILE
SEE SHEETS S-1 THRU S- FOR STRUCTURE PLANS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
North Carolina Constructors
REVISIONS
5 | | | |
4 | | | |
3 | | | |
2 | REB | 12-16-03 | B-77 ANCHOR UNIT - STA. 38+90
1 | REB/RR | 11-12-03 | IAU-350 MEDIAN GUARDRAIL END TREATMENT
0 | REB | 7-22-03 | RELEASE FOR CONSTRUCTION
NO. | BY: | DATE: | DESCRIPTION OF REVISION
NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547bbs6.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
-L- STA. 37+80 TO STA. 41+40
-Y13- STA. 11+00 TO STA. 13+00



REVISIONS

THE LPA GROUP LPA TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

NCC North Carolina Constructors

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2			
1	REB/RR	11-12-03	IAU-35D MEDIAN GUARDRAIL END TREATMENT
0	REB	7-22-03	RELEASE FOR CONSTRUCTION

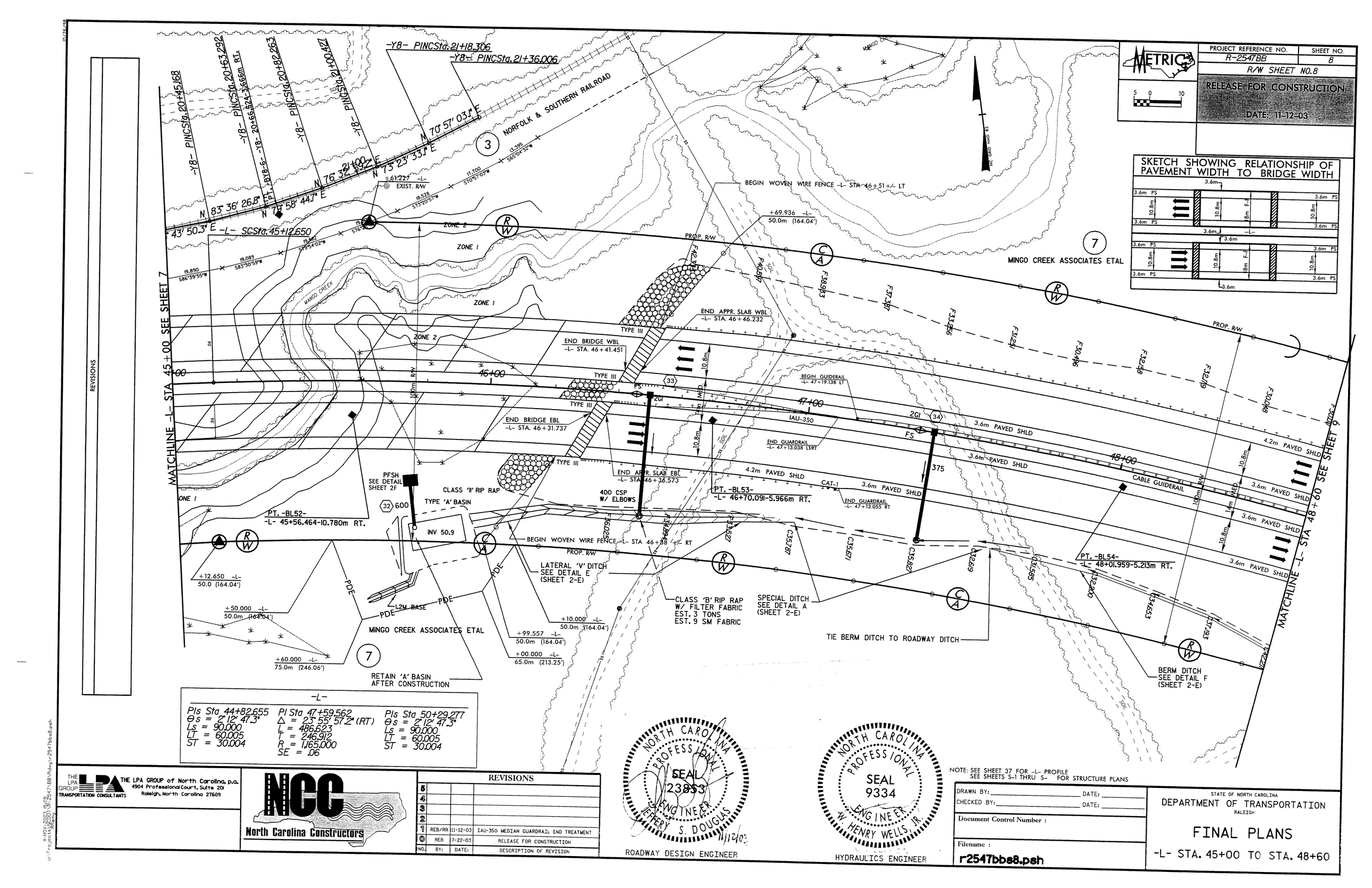
NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS 11/12/03
ROADWAY DESIGN ENGINEER

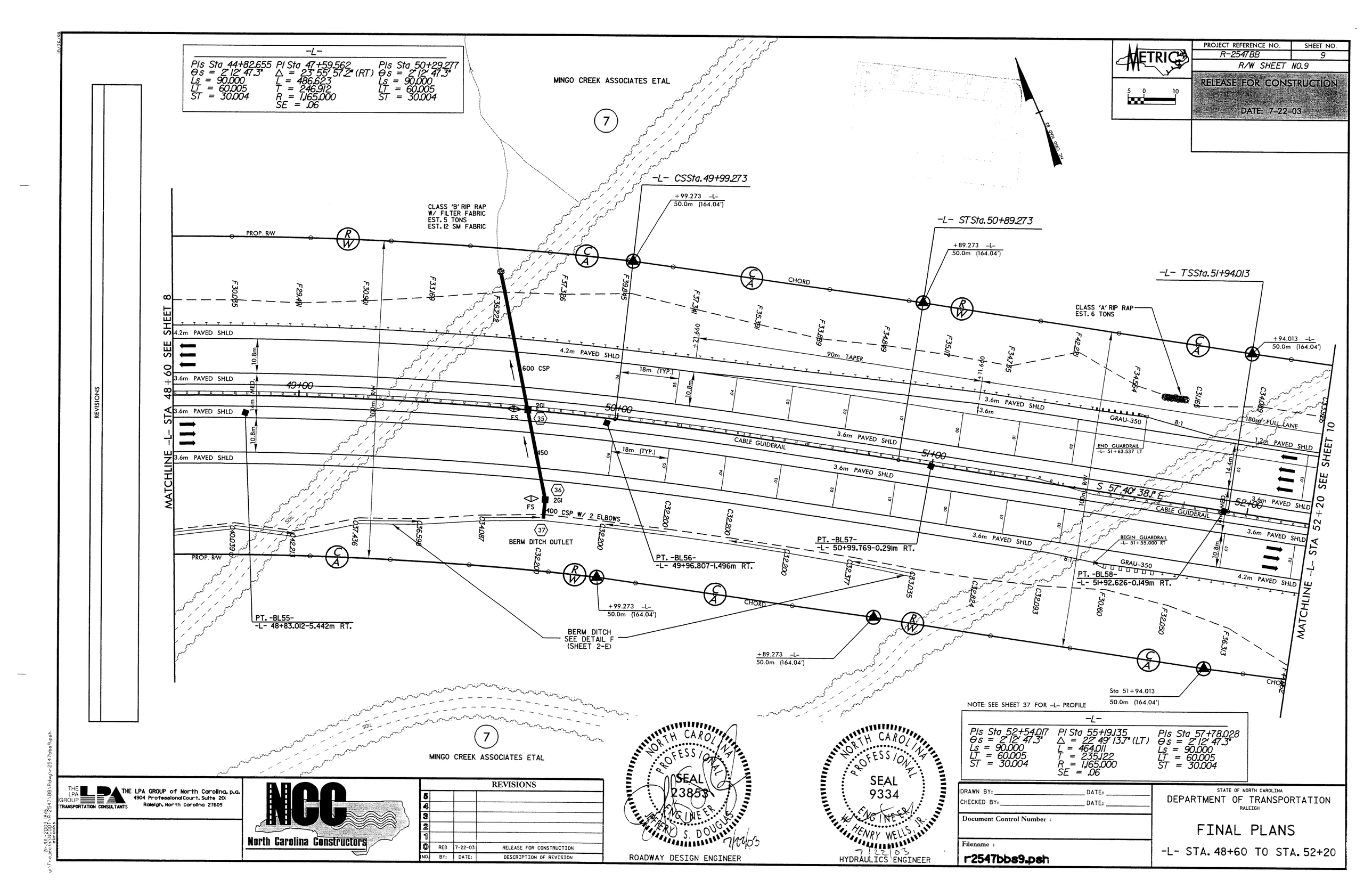
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER

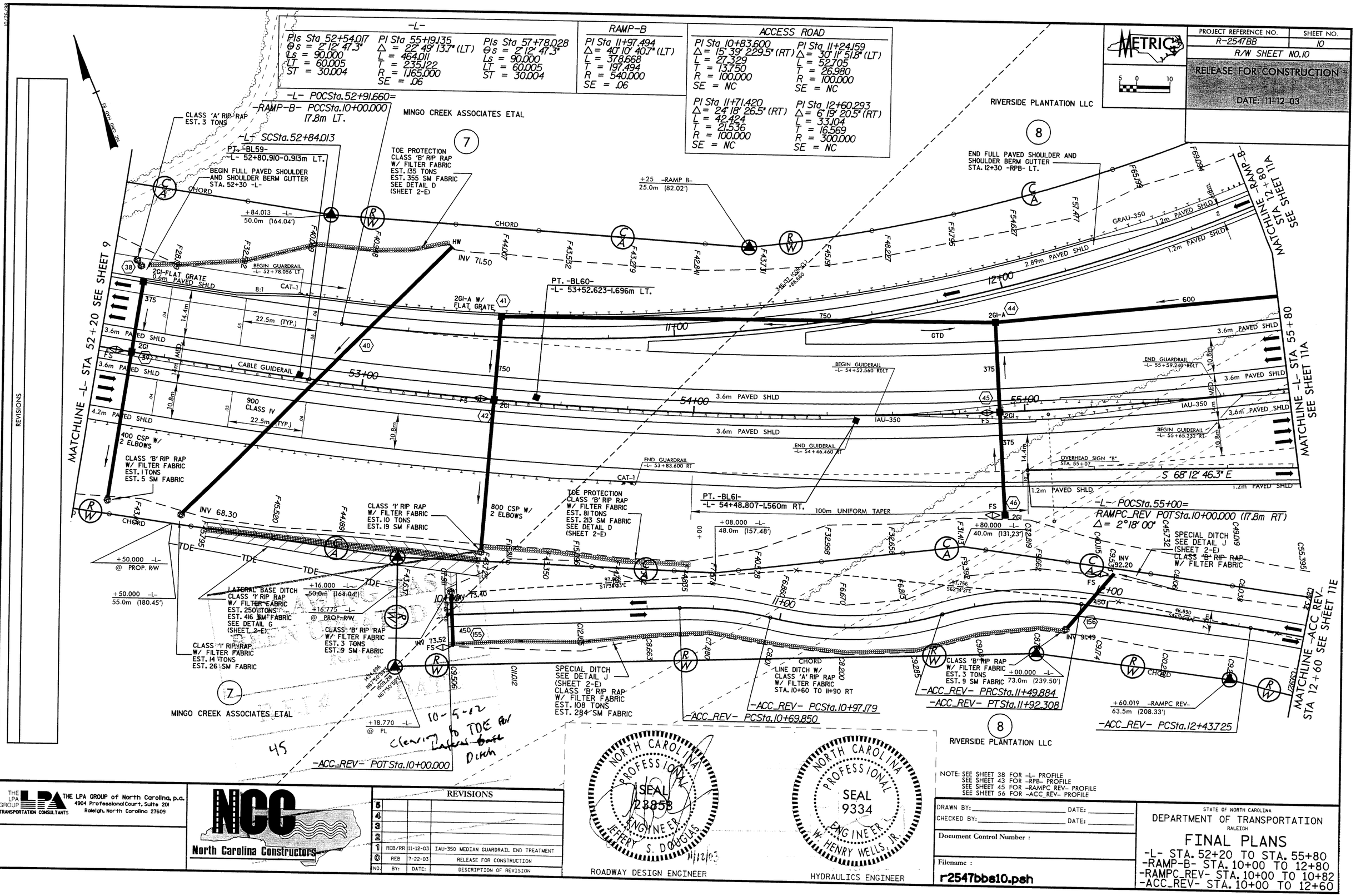
DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : r2547bbs7.psh

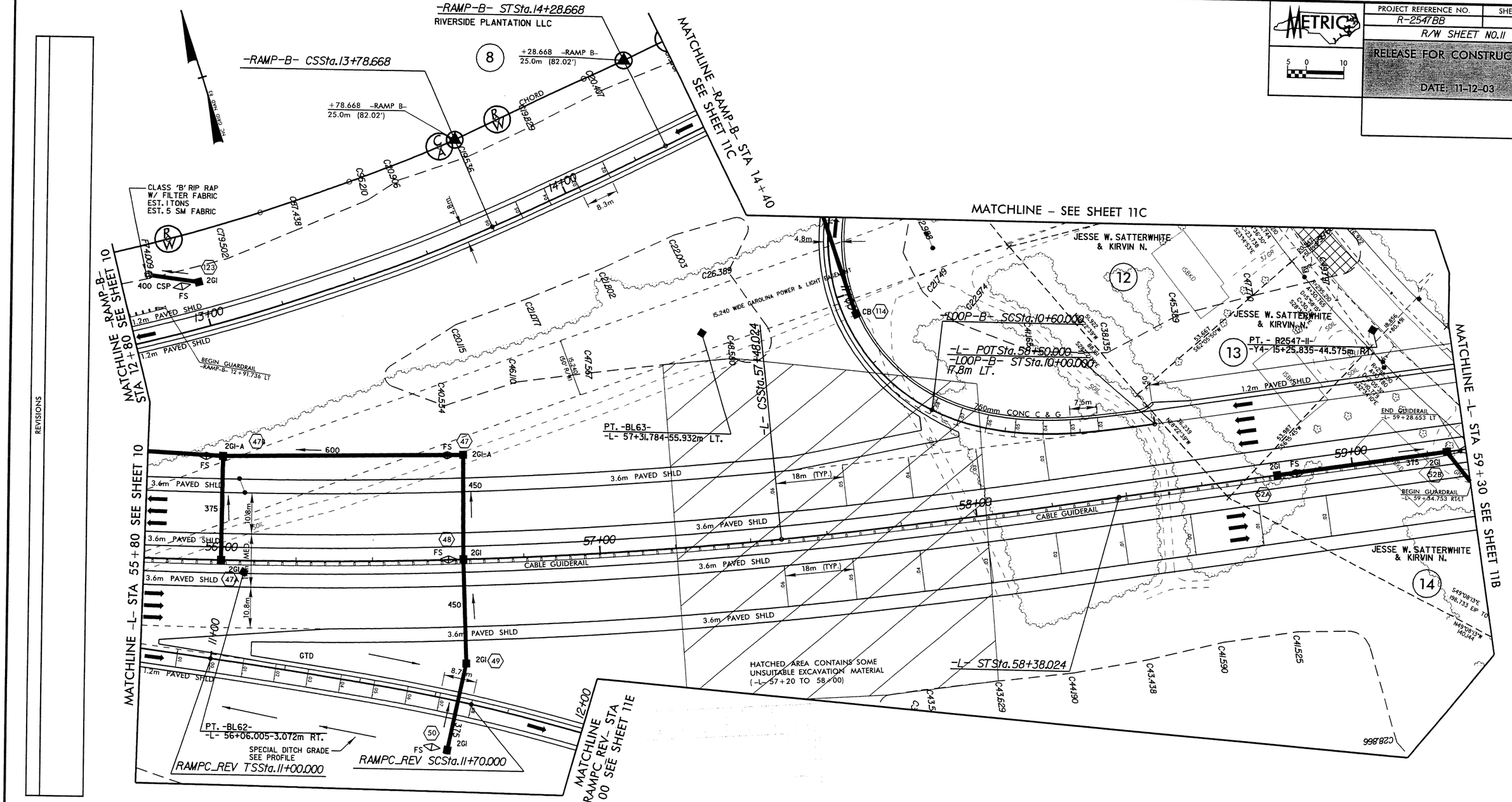
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
-L- STA. 41+40 TO STA. 45+00


METRIC
PROJECT REFERENCE NO. R-2547BB
SHEET NO. 8
R/W SHEET NO. 8
RELEASE FOR CONSTRUCTION
DATE: 11-12-03
SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH
REVISIONS
-Y8- PINCSta. 21+18.306
-Y8- PINCSta. 21+36.006
NORFOLK & SOUTHERN RAILROAD
N 70° 57' 03.1" E
N 73° 23' 33.1" E
N 76° 32' 21.2" E
N 78° 58' 44.7" E
N 83° 36' 26.8" E
S 43° 50.3" E -L- SCSta. 45+12.650
MATCHLINE -L- STA 45+00 SEE SHEET 7
MATCHLINE -L- STA 48+60 SEE SHEET 9
BEGIN WOVEN WIRE FENCE -L- STA 46+51+/- LT
END APPR. SLAB WBL -L- STA. 46+46.232
END BRIDGE WBL -L- STA. 46+41.451
END BRIDGE EBL -L- STA. 46+31.737
END APPR. SLAB EBL -L- STA. 46+36.573
BEGIN GUIDERAIL -L- 47+19.138 LT
END GUARDRAIL -L- 47+13.038 LT
END GUARDRAIL -L- 47+13.055 RT
CABLE GUIDERAIL
PT. -BL52- -L- 45+56.464-10.780m RT.
PT. -BL53- -L- 46+70.091-5.966m RT.
PT. -BL54- -L- 48+01.959-5.213m RT.
PFSH SEE DETAIL SHEET 2F
CLASS 'II' RIP RAP
TYPE 'A' BASIN
INV 50.9
400 CSP W/ ELBOWS
BEGIN WOVEN WIRE FENCE -L- STA 46+38.+/- RT
LATERAL 'V' DITCH SEE DETAIL E (SHEET 2-E)
CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 3 TONS EST. 9 SM FABRIC
SPECIAL DITCH SEE DETAIL A (SHEET 2-E)
TIE BERM DITCH TO ROADWAY DITCH
BERM DITCH SEE DETAIL F (SHEET 2-E)
RETAIN 'A' BASIN AFTER CONSTRUCTION
MINGO CREEK ASSOCIATES ETAL
PROP. R/W
TYPE III
ZONE 1
ZONE 2
IAU-350
3.6m PAVED SHLD
4.2m PAVED SHLD
CAT-1
-L-
Pls Sta 44+82.655 Θs = 2°12' 47.3" Ls = 90.000 LT = 60.005 ST = 30.004
Pl Sta 47+59.562 Δ = 23° 55' 57.2" (RT) L = 486.623 T = 246.912 R = 1165.000 SE = .06
Pls Sta 50+29.277 Θs = 2°12' 47.3" Ls = 90.000 LT = 60.005 ST = 30.004
THE LPA GROUP of North Carolina, p.a. 4904 Professional Court, Suite 201 Raleigh, North Carolina 27609
North Carolina Constructors
REVISIONS
1 REB/RR 11-12-03 IAU-350 MEDIAN GUARDRAIL END TREATMENT
0 REB 7-22-03 RELEASE FOR CONSTRUCTION
NO. BY: DATE: DESCRIPTION OF REVISION
NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS 11/12/03
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER
NOTE: SEE SHEET 37 FOR -L- PROFILE
SEE SHEETS S-1 THRU S- FOR STRUCTURE PLANS
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547bbs8.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
-L- STA. 45+00 TO STA. 48+60


-L-
Pls Sta 44+82.655
θs = 2°12'47.3"
Ls = 90.000
LT = 60.005
ST = 30.004
Pl Sta 47+59.562
Δ = 23°55'57.2" (RT)
L = 486.623
T = 246.912
R = 1165.000
SE = .06
Pls Sta 50+29.277
θs = 2°12'47.3"
Ls = 90.000
LT = 60.005
ST = 30.004
METRIC
5 0 10
PROJECT REFERENCE NO.
R-2547BB
SHEET NO.
9
R/W SHEET NO.9
RELEASE FOR CONSTRUCTION
DATE: 7-22-03
REVISIONS
MINGO CREEK ASSOCIATES ETAL
7
-L- CSSta. 49+99.273
+99.273 -L-
50.0m (164.04')
-L- STSta. 50+89.273
+89.273 -L-
50.0m (164.04')
-L- TSSta. 51+94.013
+94.013 -L-
50.0m (164.04')
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST. 5 TONS
EST. 12 SM FABRIC
CLASS 'A' RIP RAP
EST. 6 TONS
PROP. R/W
CHORD
4.2m PAVED SHLD
3.6m PAVED SHLD
10.8m
600 CSP
450
400 CSP W/ 2 ELBOWS
90m TAPER
18m (TYP.)
CABLE GUIDERAIL
GRAU-350
8:1
180m FULL LANE
1.2m PAVED SHLD
END GUARDRAIL
-L- 51+63.537 LT
BEGIN GUARDRAIL
-L- 51+55.000 RT
S 57° 40' 38.1" E
49+00
50+00
51+00
52+00
BERM DITCH OUTLET
BERM DITCH
SEE DETAIL F
(SHEET 2-E)
PT. -BL55-
-L- 48+83.012-5.442m RT.
PT. -BL56-
-L- 49+96.807-1.496m RT.
PT. -BL57-
-L- 50+99.769-0.29lm RT.
PT. -BL58-
-L- 51+92.626-0.149m RT.
MATCHLINE -L- STA 48+60 SEE SHEET 8
MATCHLINE -L- STA 52+20 SEE SHEET 10
NOTE: SEE SHEET 37 FOR -L- PROFILE
-L-
Pls Sta 52+54.017
θs = 2°12'47.3"
Ls = 90.000
LT = 60.005
ST = 30.004
Pl Sta 55+19.135
Δ = 22°49'13.7" (LT)
L = 464.011
T = 235.122
R = 1165.000
SE = .06
Pls Sta 57+78.028
θs = 2°12'47.3"
Ls = 90.000
LT = 60.005
ST = 30.004
Sta 51+94.013
50.0m (164.04')
REVISIONS
NO. BY: DATE: DESCRIPTION OF REVISION
0 REB 7-22-03 RELEASE FOR CONSTRUCTION
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
North Carolina Constructors
NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547bbs9.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
-L- STA. 48+60 TO STA. 52+20


-L-
Pls Sta 52+54.017
Θs = 2°12' 47.3"
Ls = 90.000
LT = 60.005
ST = 30.004
PI Sta 55+19.135
Δ = 22° 49' 13.7" (LT)
L = 464.011
T = 235.122
R = 1,165.000
SE = .06
PIs Sta 57+78.028
Θs = 2°12' 47.3"
Ls = 90.000
LT = 60.005
ST = 30.004
RAMP-B
PI Sta 11+97.494
Δ = 40°10' 40.7" (LT)
L = 378.668
T = 197.494
R = 540.000
SE = .06
ACCESS ROAD
PI Sta 10+83.600
Δ = 15° 39' 229.5" (RT)
L = 27.329
T = 13.750
R = 100.000
SE = NC
PI Sta 11+24.159
Δ = 30° 11' 51.8" (LT)
L = 52.705
T = 26.980
R = 100.000
SE = NC
PI Sta 11+71.420
Δ = 24° 18' 26.5" (RT)
L = 42.424
T = 21.536
R = 100.000
SE = NC
PI Sta 12+60.293
Δ = 6° 19' 20.5" (RT)
L = 33.104
T = 16.569
R = 300.000
SE = NC
METRIC
5 0 10
PROJECT REFERENCE NO. R-2547BB
SHEET NO. 10
R/W SHEET NO. 10
RELEASE FOR CONSTRUCTION
DATE: 11-12-03
-L- POCSta.52+91.660=
-RAMP-B- PCCSta.10+00.000
17.8m LT.
-L- SCSta.52+84.013
PT. -BL59-
-L- 52+80.910-0.913m LT.
CLASS 'A' RIP RAP
EST. 3 TONS
MINGO CREEK ASSOCIATES ETAL
RIVERSIDE PLANTATION LLC
TOE PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST. 135 TONS
EST. 355 SM FABRIC
SEE DETAIL D
(SHEET 2-E)
BEGIN FULL PAVED SHOULDER
AND SHOULDER BERM GUTTER
STA. 52+30 -L-
END FULL PAVED SHOULDER AND
SHOULDER BERM GUTTER
STA. 12+30 -RPB- LT.
MATCHLINE -RAMP-B-
STA 12+80
SEE SHEET 11A
MATCHLINE -L- STA 52+20 SEE SHEET 9
MATCHLINE -L- STA 55+80
SEE SHEET 11A
PT. -BL60-
-L- 53+52.623-1.696m LT.
PT. -BL61-
-L- 54+48.807-1.560m RT.
100m UNIFORM TAPER
-L- POCSta.55+00=
RAMPC_REV POTSta.10+00.000 (17.8m RT)
Δ = 2°18' 00"
S 68°12' 46.3" E
INV 71.50
INV 68.30
INV 73.40
INV 73.52
INV 92.20
INV 91.49
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST. 1 TONS
EST. 5 SM FABRIC
400 CSP W/
2 ELBOWS
800 CSP W/
2 ELBOWS
900
CLASS IV
22.5m (TYP.)
CABLE GUIDERAIL
2GI-FLAT GRATE
2GI-A W/
FLAT GRATE
2GI-A
2GI
IAU-350
GRAU-350
GTD
3.6m PAVED SHLD
4.2m PAVED SHLD
1.2m PAVED SHLD
2.89m PAVED SHLD
BEGIN GUARDRAIL
-L- 52+78.056 LT
END GUARDRAIL
-L- 53+83.600 RT
BEGIN GUIDERAIL
-L- 54+52.560 RT
END GUIDERAIL
-L- 54+46.460 RT
END GUARDRAIL
-L- 55+59.240 RT
BEGIN GUIDERAIL
-L- 55+65.232 RT
OVERHEAD SIGN "B"
STA. 55+07
SPECIAL DITCH
SEE DETAIL J
(SHEET 2-E)
CLASS 'B' RIP RAP
W/ FILTER FABRIC
LATERAL BASE DITCH
CLASS 'I' RIP RAP
W/ FILTER FABRIC
EST. 250 TONS
EST. 416 SM FABRIC
SEE DETAIL G
(SHEET 2-E)
CLASS 'I' RIP RAP
W/ FILTER FABRIC
EST. 14 TONS
EST. 26 SM FABRIC
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST. 3 TONS
EST. 9 SM FABRIC
SPECIAL DITCH
SEE DETAIL J
(SHEET 2-E)
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST. 108 TONS
EST. 284 SM FABRIC
LINE DITCH W/
CLASS 'A' RIP RAP
W/ FILTER FABRIC
STA. 10+60 TO 11+90 RT
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST. 3 TONS
EST. 9 SM FABRIC
-ACC_REV- PCSta.10+69.850
-ACC_REV- PCSta.10+97.179
-ACC_REV- PRCSta.11+49.884
-ACC_REV- PTSta.11+92.308
-ACC_REV- PCSta.12+43.725
-ACC_REV- POTSta.10+00.000
-ACC_REV-
MATCHLINE -ACC_REV-
STA 12+60 SEE SHEET 11E
+50.000 -L-
@ PROP. R/W
55.0m (180.45')
+16.000 -L-
50.0m (164.04')
+16.775 -L-
@ PROP. R/W
+18.770 -L-
@ PL
+84.013 -L-
50.0m (164.04')
+25 -RAMP B-
25.0m (82.02')
+08.000 -L-
48.0m (157.48')
+80.000 -L-
40.0m (131.23')
+00.000 -L-
73.0m (239.50')
+60.019 -RAMPC REV-
63.5m (208.33')
10-5-02
Clearing to TOE for Lateral Base Ditch
45
7
8
11+00
12+00
53+00
54+00
55+00
REVISIONS
5
4
3
2
1 REB/RR 11-12-03 IAU-350 MEDIAN GUARDRAIL END TREATMENT
0 REB 7-22-03 RELEASE FOR CONSTRUCTION
NO. BY: DATE: DESCRIPTION OF REVISION
NOTE: SEE SHEET 38 FOR -L- PROFILE
SEE SHEET 43 FOR -RPB- PROFILE
SEE SHEET 45 FOR -RAMPC_REV- PROFILE
SEE SHEET 56 FOR -ACC_REV- PROFILE
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547bbs10.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
-L- STA. 52+20 TO STA. 55+80
-RAMP-B- STA. 10+00 TO 12+80
-RAMPC_REV- STA. 10+00 TO 10+82
-ACC_REV- STA. 10+00 TO 12+60
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS
North Carolina Constructors
NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
HYDRAULICS ENGINEER



PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	IIA
R/W SHEET NO. 11	
RELEASE FOR CONSTRUCTION	
DATE: 11-12-03	

METRIC 5 0 10

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2			
1	REB/RR	11-12-03	ADDED DRAINAGE STRUCTURES 47A & 47B
0	REB	7-22-03	RELEASE FOR CONSTRUCTION

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS 11/17/03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER

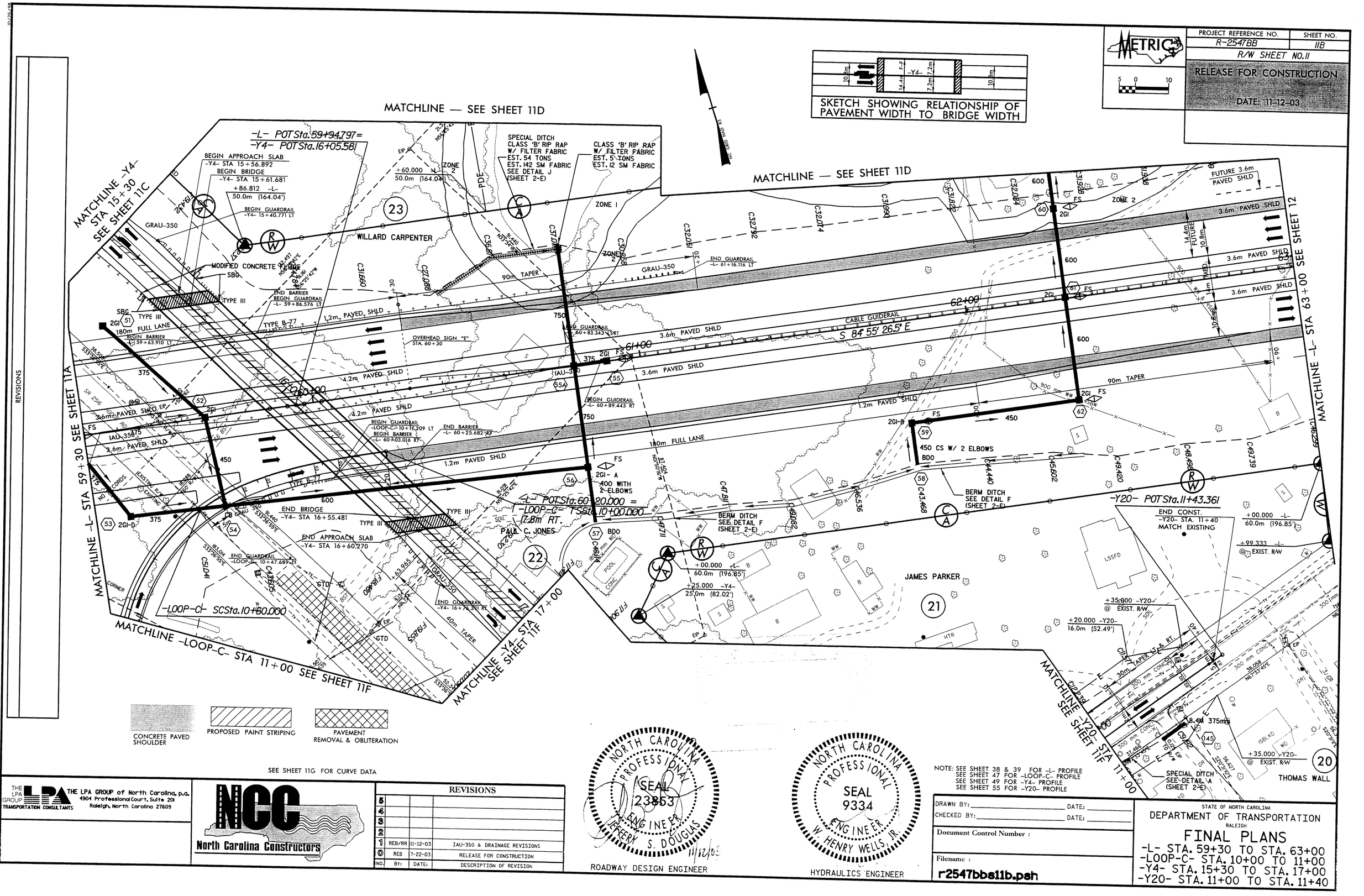
NOTE: SEE SHEET 38 FOR -L- PROFILE
SEE SHEET 43 & 44 FOR -RPB- PROFILE
SEE SHEET 45 FOR -RAMPC_REV- PROFILE
SEE SHEET 47 FOR -LOOP-B- PROFILE

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : r2547bbs11a.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

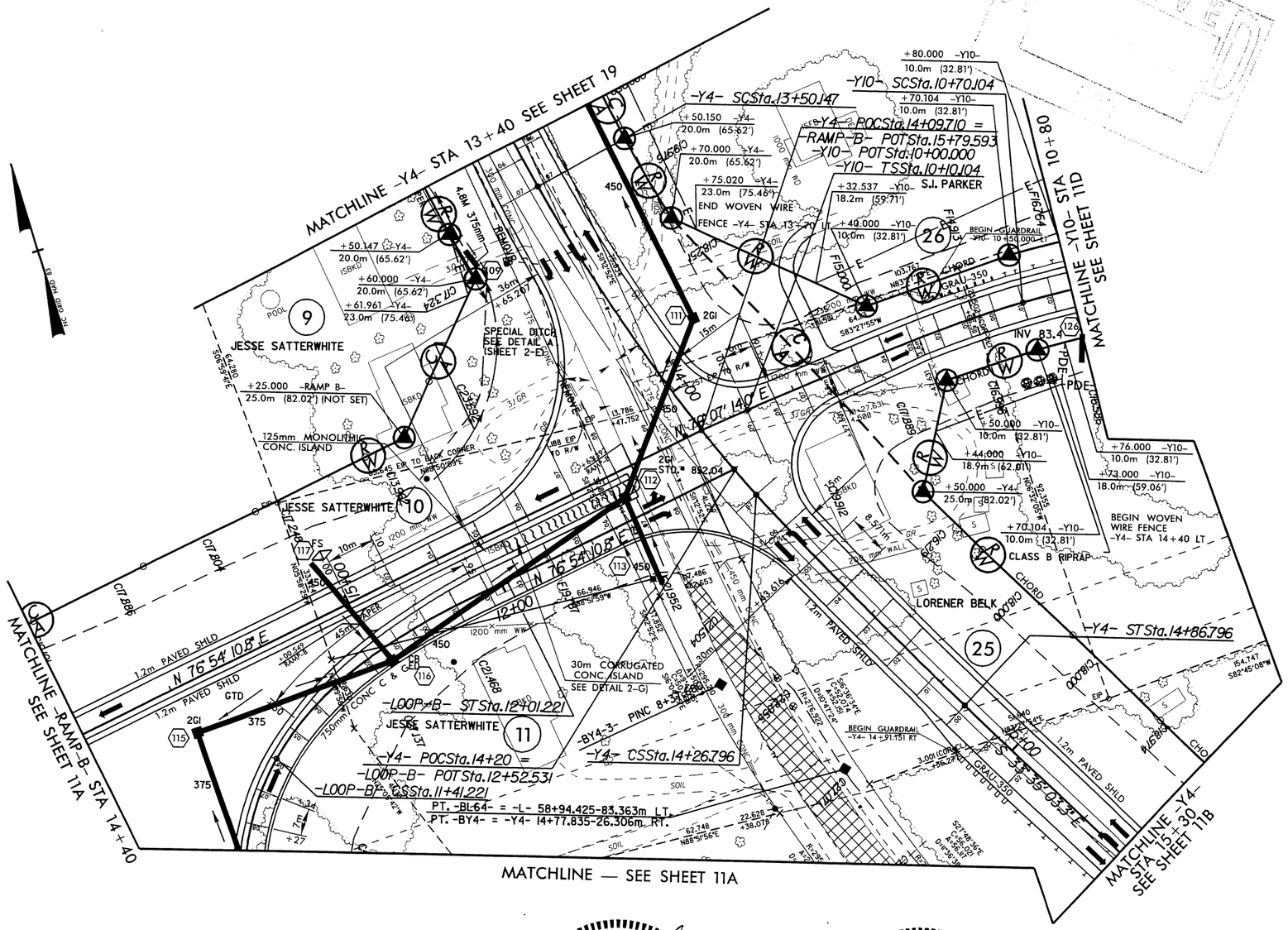
-L- STA. 55+80 TO STA. 59+30
-RAMP-B- STA. 12+80 TO 14+40
-RAMPC_REV- STA. 10+82 TO 12+00
-LOOP-B- STA. 10+00 TO 11+22


METRIC
5 0 10
PROJECT REFERENCE NO. R-2547BB
SHEET NO. IIB
R/W SHEET NO.11
RELEASE FOR CONSTRUCTION
DATE: 11-12-03
SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH
10.8m
14.4m F-F
-Y4-
7.2m
7.2m
10.8m
MATCHLINE — SEE SHEET 11D
MATCHLINE -Y4- STA 15+30 SEE SHEET 11C
MATCHLINE -L- STA 59+30 SEE SHEET 11A
MATCHLINE -L- STA 63+00 SEE SHEET 12
MATCHLINE -LOOP-C- STA 11+00 SEE SHEET 11F
MATCHLINE -Y4- STA 17+00 SEE SHEET 11F
MATCHLINE -Y20- STA 11+00 SEE SHEET 11E
-L- POT Sta. 59+94.797 =
-Y4- POT Sta. 16+05.581
-L- POT Sta. 60+20.000 =
-LOOP-C- TS Sta. 10+00.000
7.8m RT.
-LOOP-C- SC Sta. 10+60.000
-Y20- POT Sta. 11+43.361
BEGIN APPROACH SLAB
-Y4- STA 15+56.892
BEGIN BRIDGE
-Y4- STA 15+61.681
+86.812 -L-
50.0m (164.04')
BEGIN GUARDRAIL
-Y4- 15+40.771 LT
WILLARD CARPENTER
PAUL C. JONES
JAMES PARKER
THOMAS WALL
SPECIAL DITCH CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 54 TONS EST. 142 SM FABRIC SEE DETAIL J (SHEET 2-E)
CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 5 TONS EST. 12 SM FABRIC
MODIFIED CONCRETE TYPE SBG
TYPE III
TYPE B-77
180m FULL LANE
1.2m PAVED SHLD
3.6m PAVED SHLD
4.2m PAVED SHLD
90m TAPER
CABLE GUIDERAIL
S 84° 55' 26.5" E
62+00
61+00
END GUARDRAIL
-L- 61+16.116 LT
BEGIN GUARDRAIL
-L- 60+83.343 LT
BEGIN GUIDERAIL
-L- 60+89.443 RT
BEGIN BARRIER
-L- 59+63.910 LT
END BARRIER
-L- 59+86.576 LT
BEGIN GUARDRAIL
-LOOP-C- 10+72.209 LT
BEGIN BARRIER
-L- 60+03.016 RT
END BARRIER
-L- 60+25.682 RT
OVERHEAD SIGN "E" STA. 60+30
IAU-350
2GI
2GI-A
2GI-B
2GI-D
FS
BDO
450 CS W/ 2 ELBOWS BDO
450
600
750
375
2-600mm RCP
END BRIDGE
-Y4- STA 16+55.481
END APPROACH SLAB
-Y4- STA 16+60.270
END GUARDRAIL
-LOOP-C- 10+47.689 LT
END GUARDRAIL
-Y4- 16+74.391 RT
BERM DITCH SEE DETAIL F (SHEET 2-E)
+00.000 -L-
60.0m (196.85')
+25.000 -Y4-
25.0m (82.02')
+20.000 -Y20-
16.0m (52.49')
+35.000 -Y20-
@ EXIST. R/W
+99.333 -L-
@ EXIST. R/W
END CONST. -Y20- STA. 11+40 MATCH EXISTING
+00.000 -L-
60.0m (196.85')
+35.000 -Y20-
@ EXIST. R/W
30m TAPER
8.4M 375mm
SPECIAL DITCH SEE DETAIL A (SHEET 2-E)
FUTURE 3.6m PAVED SHLD
14.4m FUTURE 10.8m
CONCRETE PAVED SHOULDER
PROPOSED PAINT STRIPING
PAVEMENT REMOVAL & OBLITERATION
SEE SHEET 11G FOR CURVE DATA
NOTE: SEE SHEET 38 & 39 FOR -L- PROFILE
SEE SHEET 47 FOR -LOOP-C- PROFILE
SEE SHEET 49 FOR -Y4- PROFILE
SEE SHEET 55 FOR -Y20- PROFILE
REVISIONS
5
4
3
2
1 REB/RR 11-12-03 IAU-350 & DRAINAGE REVISIONS
0 REB 7-22-03 RELEASE FOR CONSTRUCTION
NO. BY: DATE: DESCRIPTION OF REVISION
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS
North Carolina Constructors
NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS 11/12/03
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547bbs11b.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
-L- STA. 59+30 TO STA. 63+00
-LOOP-C- STA. 10+00 TO 11+00
-Y4- STA. 15+30 TO STA. 17+00
-Y20- STA. 11+00 TO STA. 11+40

METRIC	PROJECT REFERENCE NO.	SHEET NO.
5 0 10	R-2547BB	11C
	R/W SHEET NO. 11	
	RELEASE FOR CONSTRUCTION	
	DATE: 11-12-03	

RECEIVED

REVISIONS



PAVEMENT REMOVAL & OBLITERATION

NOTE: SEE SHEET 44 FOR -RAMP-B- PROFILE
SEE SHEET 47 FOR -LOOP-B- PROFILE
SEE SHEET 48 & 49 FOR -Y4- PROFILE
SEE SHEET 52 FOR -Y10- PROFILE

SEE SHEET 11G FOR CURVE DATA

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1	REB/RR	11-12-03	RECONNECTED DRIVE TO PARCEL 26
0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

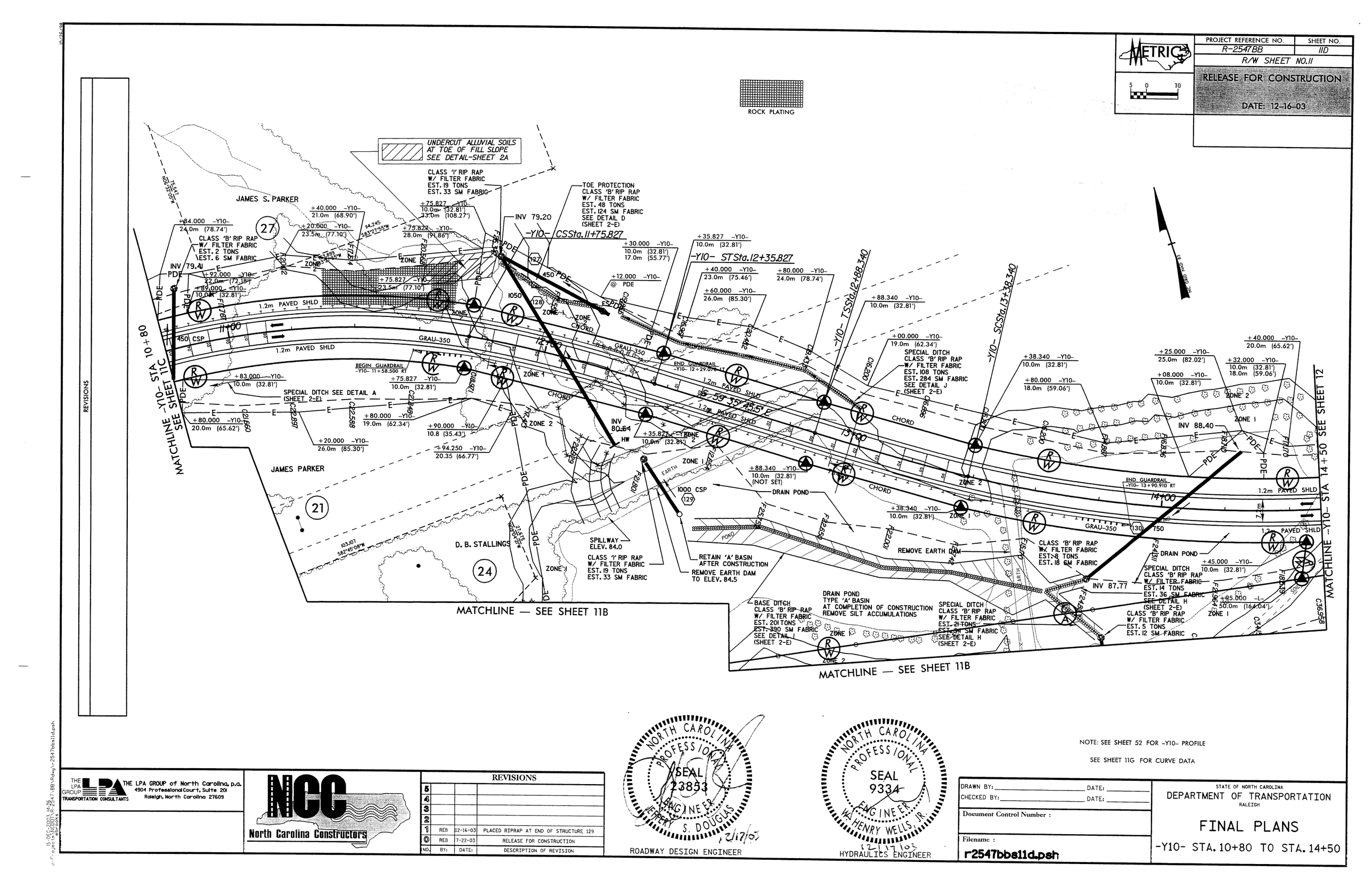
Document Control Number :

Filename : r2547bbs11c.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

-Y4- STA. 13+40 TO STA. 15+30
-RAMP-B- STA. 14+40 TO STA. 15+80
-LOOP-B- STA. 11+22 TO STA. 12+53
-Y10- STA. 10+00 TO STA. 10+80



THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1	REB	12-16-03	PLACED RIPRAP AT END OF STRUCTURE 129
0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS 12/17/03
ROADWAY DESIGN ENGINEER

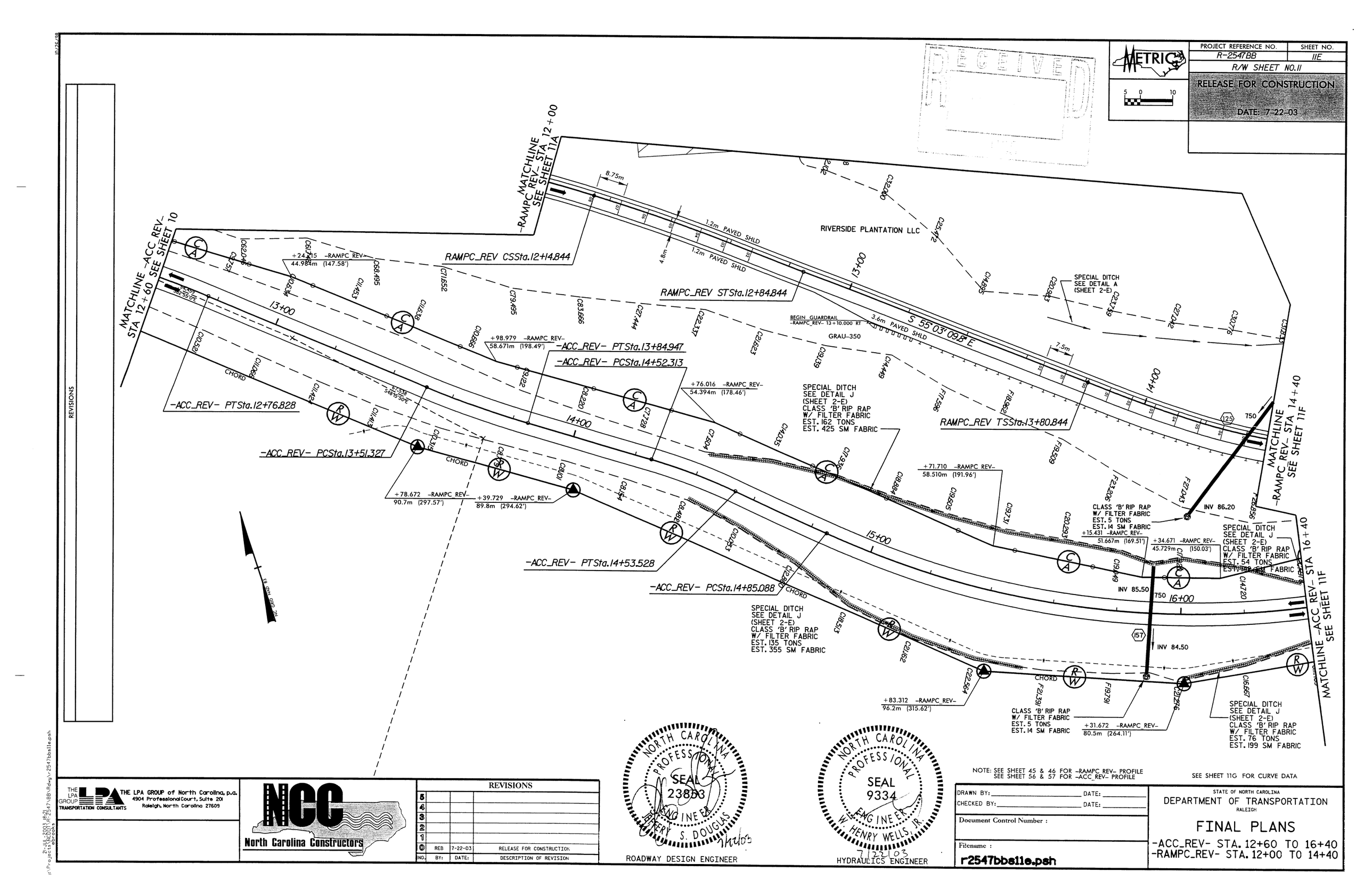
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR. 12/17/03
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : r2547bbs11d.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

-Y10- STA. 10+80 TO STA. 14+50

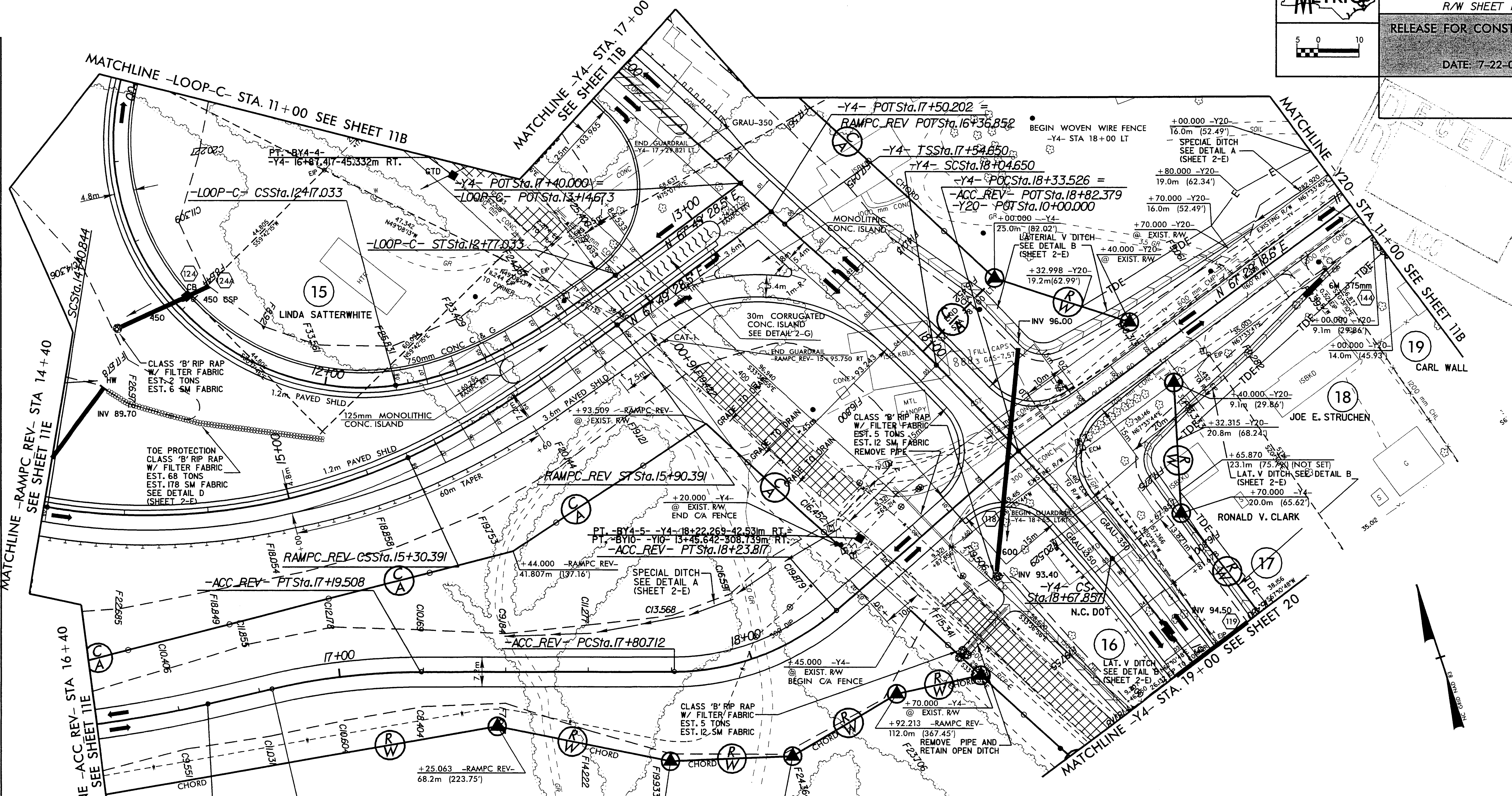

METRIC
5 0 10
PROJECT REFERENCE NO. R-2547BB
SHEET NO. 11E
R/W SHEET NO. 11
RELEASE FOR CONSTRUCTION
DATE: 7-22-03
RECEIVED
REVISIONS
MATCHLINE -ACC_REV- STA 12+60 SEE SHEET 10
MATCHLINE -RAMPC_REV- STA 12+00 SEE SHEET 11A
MATCHLINE -RAMPC_REV- STA 14+40 SEE SHEET 11F
MATCHLINE -ACC_REV- STA 16+40 SEE SHEET 11F
RIVERSIDE PLANTATION LLC
RAMPC_REV CSSta.12+14.844
RAMPC_REV STSta.12+84.844
RAMPC_REV TSSta.13+80.844
-ACC_REV- PTSta.12+76.828
-ACC_REV- PCSta.13+51.327
-ACC_REV- PTSta.13+84.947
-ACC_REV- PCSta.14+52.313
-ACC_REV- PTSta.14+53.528
-ACC_REV- PCSta.14+85.088
+24.115 -RAMPC_REV- 44.984m (147.58')
+98.979 -RAMPC_REV- 58.671m (198.49')
+76.016 -RAMPC_REV- 54.394m (178.46')
+78.672 -RAMPC_REV- 90.7m (297.57')
+39.729 -RAMPC_REV- 89.8m (294.62')
+71.710 -RAMPC_REV- 58.510m (191.96')
+15.431 -RAMPC_REV- 51.667m (169.51')
+34.671 -RAMPC_REV- 45.729m (150.03')
+83.312 -RAMPC_REV- 96.2m (315.62')
+31.672 -RAMPC_REV- 80.5m (264.11')
S 55°03'09.8" E
BEGIN GUARDRAIL -RAMPC_REV- 13+10.000 RT
GRAU-350
8.75m
4.8m
1.2m PAVED SHLD
3.6m PAVED SHLD
7.5m
SPECIAL DITCH SEE DETAIL A (SHEET 2-E)
SPECIAL DITCH SEE DETAIL J (SHEET 2-E) CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 162 TONS EST. 425 SM FABRIC
SPECIAL DITCH SEE DETAIL J (SHEET 2-E) CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 135 TONS EST. 355 SM FABRIC
CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 5 TONS EST. 14 SM FABRIC
SPECIAL DITCH SEE DETAIL J (SHEET 2-E) CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 54 TONS EST. 148 SM FABRIC
CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 5 TONS EST. 14 SM FABRIC
SPECIAL DITCH SEE DETAIL J (SHEET 2-E) CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 76 TONS EST. 199 SM FABRIC
INV 86.20
INV 85.50
INV 84.50
13+00
14+00
15+00
16+00
CHORD
NOTE: SEE SHEET 45 & 46 FOR -RAMPC_REV- PROFILE
SEE SHEET 56 & 57 FOR -ACC_REV- PROFILE
SEE SHEET 11G FOR CURVE DATA
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS
North Carolina Constructors
REVISIONS
NO. BY: DATE: DESCRIPTION OF REVISION
6 REB 7-22-03 RELEASE FOR CONSTRUCTION
NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER HENRY S. DOUGLAS
7/22/03
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
7/22/03
HYDRAULICS ENGINEER
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547bbs11e.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
-ACC_REV- STA. 12+60 TO 16+40
-RAMPC_REV- STA. 12+00 TO 14+40

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	11F
R/W SHEET NO.11	

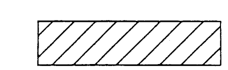
METRIC

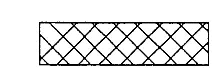
RELEASE FOR CONSTRUCTION

DATE: 7-22-03



MATCHLINE -LOOP-C- STA. 11+00 SEE SHEET 11B
MATCHLINE -Y4- STA. 17+00 SEE SHEET 11B
MATCHLINE -Y20- STA. 11+00 SEE SHEET 11B
MATCHLINE -Y4- STA. 19+00 SEE SHEET 20
MATCHLINE -RAMPC REV- STA 14+40 SEE SHEET 11E
MATCHLINE -ACC REV- STA 16+40 SEE SHEET 11E
-Y4- POTSta.17+50.202 =
RAMPC_REV POTSta.16+36.852
-Y4- TSSta.17+54.650
-Y4- SCSta.18+04.650
-Y4- POCSta.18+33.526 =
-ACC_REV- POTSta.18+82.379
-Y20- POTSta.10+00.000
-Y4- POTSta.17+40.000 =
-LOOP-C- POTSta.13+14.673
-LOOP-C- CSSta.12+17.033
-LOOP-C- STSta.12+77.033
PT. -BY4-4- -Y4- 16+87.417-45.332m RT.
LINDA SATTERWHITE
CARL WALL
JOE E. STRUCHEN
RONALD V. CLARK
N.C. DOT
BEGIN WOVEN WIRE FENCE -Y4- STA 18+00 LT
30m CORRUGATED CONC. ISLAND SEE DETAIL 2-G
MONOLITHIC CONC. ISLAND
125mm MONOLITHIC CONC. ISLAND
CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 2 TONS EST. 6 SM FABRIC
TOE PROTECTION CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 68 TONS EST. 178 SM FABRIC SEE DETAIL D (SHEET 2-E)
CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 5 TONS EST. 12 SM FABRIC REMOVE PIPE
CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 5 TONS EST. 12 SM FABRIC
REMOVE PIPE AND RETAIN OPEN DITCH
RAMPC_REV STSta.15+90.391
RAMPC_REV- CSSta.15+30.391
-ACC_REV- PTSta.17+19.508
-ACC_REV- PCSta.17+80.712
-ACC_REV- PTSta.18+23.817
PT. -BY4-5- -Y4- 18+22.269-42.531m RT. =
PT. -BY10- -Y10- 13+45.642-308.739m RT.
-Y4- CS Sta.18+67.857
-ACC_REV- PCSta.16+83.171
-ACC_REV- PTSta.16+67.138
SPECIAL DITCH SEE DETAIL A (SHEET 2-E)
LAT. V DITCH SEE DETAIL B (SHEET 2-E)
LATERAL V DITCH SEE DETAIL B (SHEET 2-E)
INV 89.70
INV 96.00
INV 93.40
INV 94.50


PROPOSED PAINT STRIPING


PAVEMENT REMOVAL & OBLITERATION

NOTE: SEE SHEET 46 FOR -RAMPC REV- PROFILE
SEE SHEET 47 FOR -LOOP-C- PROFILE
SEE SHEET 49 & 50 FOR -Y4- PROFILE
SEE SHEET 52 FOR -Y10- PROFILE
SEE SHEET 57 & 58 FOR -ACC_REV- PROFILE

SEE SHEET 11G FOR CURVE DATA

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2			
1			
0	REB	7-22-03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23853 JERRY S. DOUGLAS
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 9334 W. HENRY WELLS, JR.
HYDRAULICS ENGINEER

DRAWN BY: ____ DATE: ____
CHECKED BY: ____ DATE: ____
Document Control Number :
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
-Y4- STA. 17+00 TO STA. 19+00
-LOOP-C- STA. 11+00 TO 13+15
-RAMPC- REV- STA. 14+40 TO 16+37
-ACC_REV- STA. 16+40 TO 18+82
-Y20- STA. 10+00 TO STA. 11+00

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	11G

METRIC

5 0 10

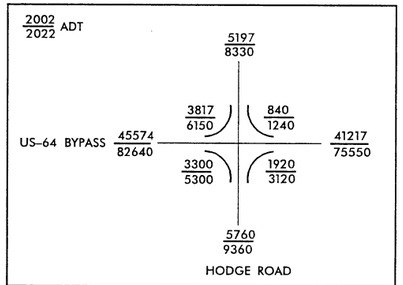
RELEASE FOR CONSTRUCTION

DATE: 7-22-03

RECEIVED

REVISIONS

2002 ADT
2022 ADT



-L-

PIs Sta 52+54.017	PI Sta 55+19.135	PIs Sta 57+78.028
Θs = 2° 12' 47.3"	Δ = 22° 49' 13.7" (LT)	Θs = 2° 12' 47.3"
Ls = 90.000	L = 464.011	Ls = 90.000
LT = 60.005	T = 235.122	LT = 60.005
ST = 30.004	R = 1,165.000	ST = 30.004
	SE = .06	

LOOP-B

PIs Sta 10+40.781	PI Sta 11+12.755	PIs Sta 11+61.933
Θs = 34° 22' 38.9"	Δ = 93° 04' 19.5" (RT)	Θs = 34° 22' 38.9"
Ls = 60.000	L = 81.221	Ls = 60.000
LT = 40.781	T = 52.755	LT = 40.781
ST = 20.712	R = 50.000	ST = 20.712
	SE = .08	

RAMP-B

PI Sta 11+97.494	PIs Sta 13+95.338
Δ = 40° 10' 40.7" (LT)	Θs = 2° 39' 09.3"
L = 378.668	Ls = 50.000
T = 197.494	LT = 33.337
R = 540.000	ST = 16.670
SE = .06	

LOOP-C

PIs Sta 10+40.537	PI Sta 12+83.577	PIs Sta 12+37.522
Θs = 28° 38' 52.4"	Δ = 149° 57' 20.2" (LT)	Θs = 28° 38' 52.4"
Ls = 60.000	L = 157.033	Ls = 60.000
LT = 40.537	T = 223.577	LT = 40.537
ST = 20.489	R = 60.000	ST = 20.489
	SE = .08	

RAMP C

PIs Sta 11+46.679	PI Sta 11+92.437	PIs Sta 12+38.188	PIs Sta 14+20.928	PI Sta 14+86.996	PIs Sta 15+50.467
Θs = 4° 00' 38.5"	Δ = 5° 08' 19.4" (RT)	Θs = 4° 00' 38.5"	Θs = 11° 27' 33.0"	Δ = 34° 12' 15.8" (LT)	Θs = 11° 27' 33.0"
Ls = 70.000	L = 44.844	Ls = 70.000	Ls = 60.000	L = 89.547	Ls = 60.000
LT = 46.679	T = 22.437	LT = 46.679	LT = 40.084	T = 46.152	LT = 40.084
ST = 23.344	R = 500.000	ST = 23.344	ST = 20.077	R = 150.000	ST = 20.077
	e = .08			e = .07	

-Y10-

PIs Sta 10+50.140	PI Sta 11+23.916	PIs Sta 11+95.859	PIs Sta 13+21.680	PI Sta 15+85.091	PIs Sta 17+97.203
Θs = 7° 28' 24.1"	Δ = 26° 20' 12.3" (RT)	Θs = 7° 28' 24.1"	Θs = 3° 34' 51.6"	Δ = 63° 20' 20.5" (LT)	Θs = 3° 34' 51.6"
Ls = 60.000	L = 105.723	Ls = 60.000	Ls = 50.000	L = 442.190	Ls = 50.000
LT = 40.036	T = 53.812	LT = 40.036	LT = 33.340	T = 246.751	LT = 33.340
ST = 20.032	R = 230.000	ST = 20.032	ST = 16.673	R = 400.000	ST = 16.673
	SE = .08			SE = .07	

-Y4-

PIs Sta 13+30.162	PI Sta 13+88.625	PIs Sta 14+46.810	PIs Sta 17+87.986	PI Sta 18+36.283	PIs Sta 18+84.526
Θs = 4° 54' 39.8"	Δ = 12° 32' 51.5" (LT)	Θs = 4° 54' 39.8"	Θs = 2° 23' 14.4"	Δ = 6° 02' 09.0" (RT)	Θs = 2° 23' 14.4"
Ls = 60.000	L = 76.649	Ls = 60.000	Ls = 50.000	L = 63.207	Ls = 50.000
LT = 40.015	T = 38.478	LT = 40.015	LT = 33.336	T = 31.633	LT = 33.336
ST = 20.014	R = 350.000	ST = 20.014	ST = 16.669	R = 600.000	ST = 16.669
	SE = .07			SE = .05	

ACCESS ROAD

PI Sta 12+59.080	PI Sta 13+66.941	PI Sta 14+38.133	PI Sta 15+78.247	PI Sta 17+00.204	PI Sta 18+02.029
Δ = 6° 19' 20.5" (RT)	Δ = 6° 25' 15.4" (LT)	Δ = 8° 08' 17.1" (RT)	Δ = 37° 15' 09.4" (LT)	Δ = 13° 00' 43.7" (RT)	Δ = 41° 09' 44.6" (LT)
L = 33.104	L = 33.620	L = 28.407	L = 182.051	L = 36.337	L = 43.105
T = 16.569	T = 16.828	T = 14.228	T = 94.374	T = 18.247	T = 22.530
R = 300.000	R = 300.000	R = 200.000	R = 280.000	R = 160.000	R = 60.000
SE = NC	SE = NC	SE = NC	SE = NC	SE = NC	SE = NC

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFREY S. DOUGLAS

ROADWAY DESIGN ENGINEER

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

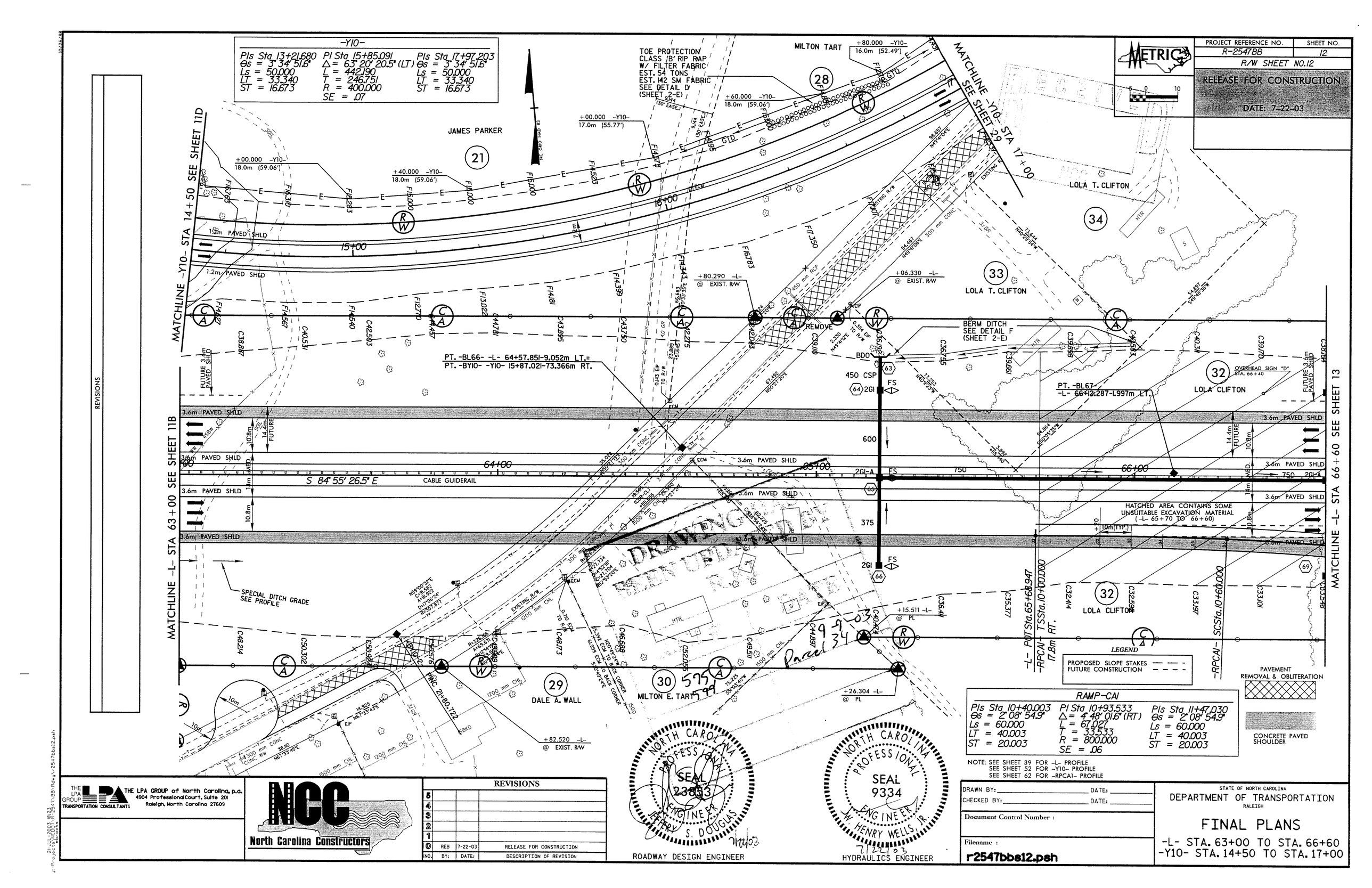
Document Control Number :

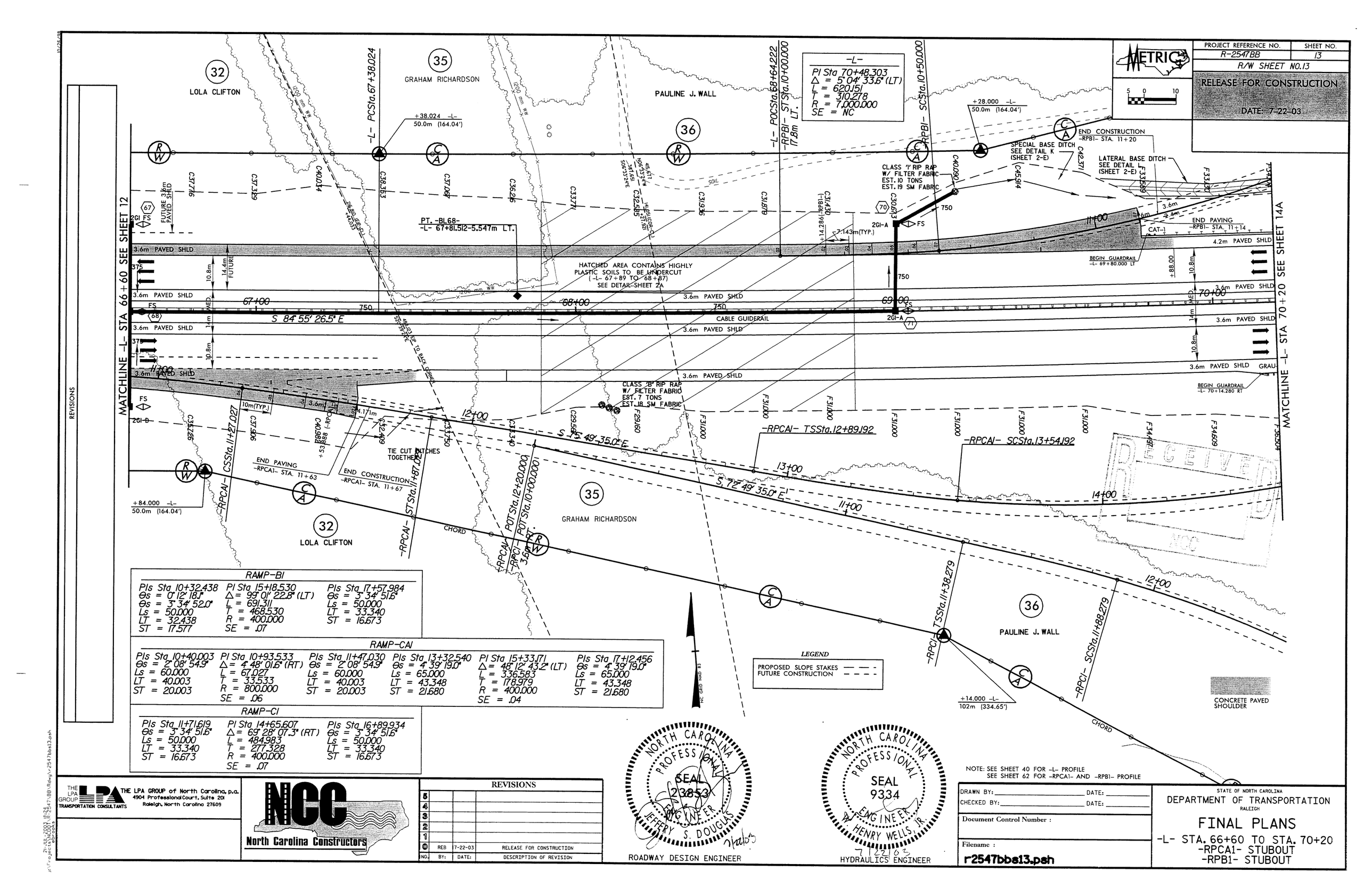
Filename : r2547bbs11g.psh

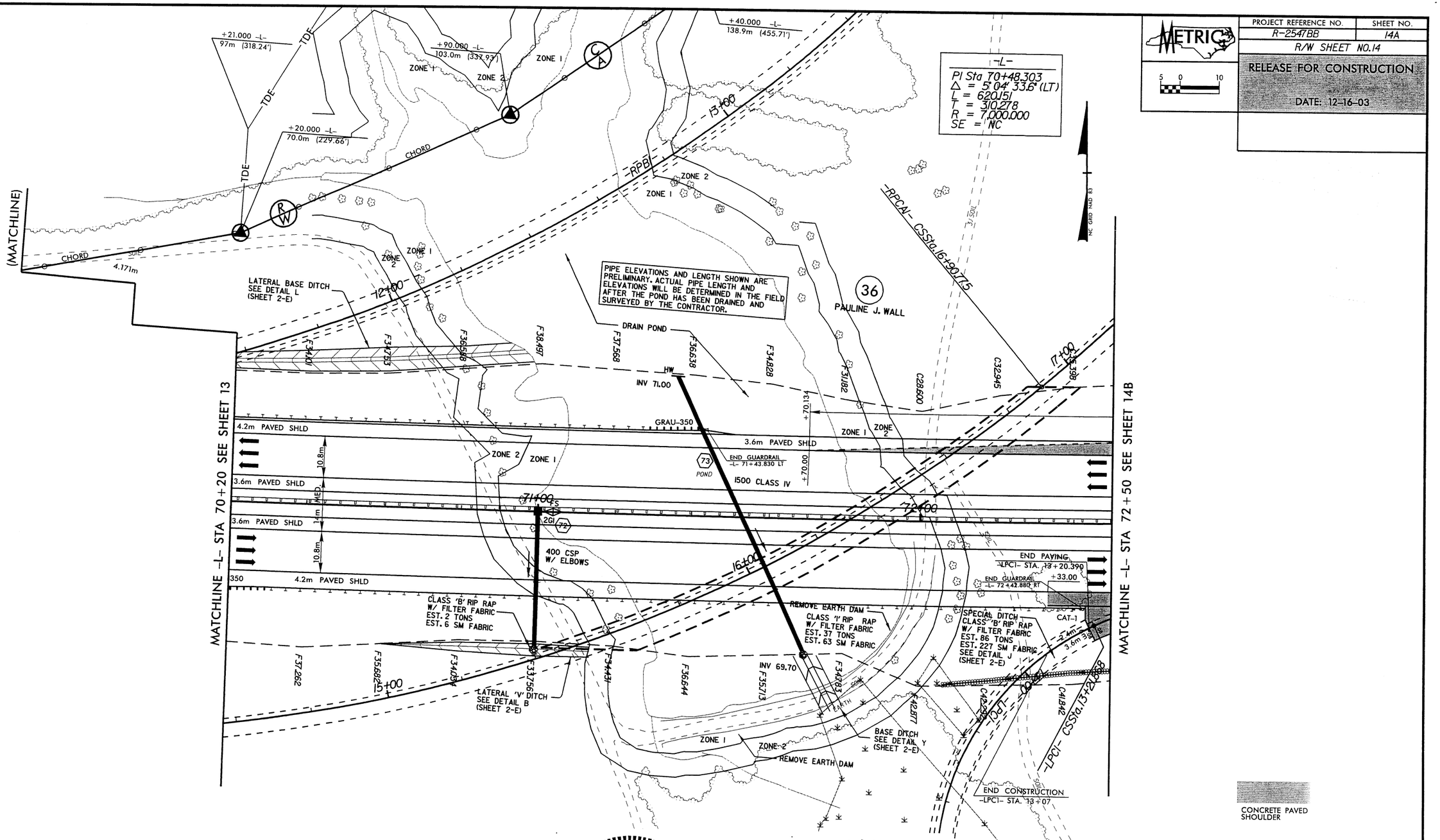
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

CURVE DATA FOR SHEETS 11A - 11F


-Y10-
Pls Sta 13+21.680
Øs = 3° 34' 51.6"
Ls = 50.000
LT = 33.340
ST = 16.673
Pl Sta 15+85.091
Δ = 63° 20' 20.5" (LT)
L = 442.190
T = 246.751
R = 400.000
SE = .07
Pls Sta 17+97.203
Øs = 3° 34' 51.6"
Ls = 50.000
LT = 33.340
ST = 16.673
PROJECT REFERENCE NO.
R-2547BB
SHEET NO.
12
R/W SHEET NO.12
RELEASE FOR CONSTRUCTION
DATE: 7-22-03
METRIC
REVISIONS
MATCHLINE -Y10- STA 14+50 SEE SHEET 11D
MATCHLINE -Y10- STA 17+00 SEE SHEET 29
MATCHLINE -L- STA 63+00 SEE SHEET 11B
MATCHLINE -L- STA 66+60 SEE SHEET 13
JAMES PARKER
MILTON TART
LOLA T. CLIFTON
LOLA CLIFTON
DALE A. WALL
MILTON E. TART
TOE PROTECTION CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 54 TONS EST. 142 SM FABRIC SEE DETAIL D (SHEET 2-E)
BERM DITCH SEE DETAIL F (SHEET 2-E)
PT. -BL66- -L- 64+57.851-9.052m LT.=
PT. -BY10- -Y10- 15+87.021-73.366m RT.
PT. -BL67- -L- 66+12.287-1.997m LT.
SPECIAL DITCH GRADE SEE PROFILE
CABLE GUIDERAIL
S 84° 55' 26.5" E
HATCHED AREA CONTAINS SOME UNSUITABLE EXCAVATION MATERIAL (-L- 65+70 TO 66+60)
OVERHEAD SIGN "D", STA. 66+40
-L- PI Sta 65+68.947
-RPCA- TSSta.10+00.000
17.8m RT.
-RPCA- SCSta.10+60.000
LEGEND
PROPOSED SLOPE STAKES
FUTURE CONSTRUCTION
PAVEMENT REMOVAL & OBLITERATION
CONCRETE PAVED SHOULDER
RAMP-CA1
Pls Sta 10+40.003
Øs = 2° 08' 54.9"
Ls = 60.000
LT = 40.003
ST = 20.003
Pl Sta 10+93.533
Δ = 4° 48' 01.6" (RT)
L = 67.027
T = 33.533
R = 800.000
SE = .06
Pls Sta 11+47.030
Øs = 2° 08' 54.9"
Ls = 60.000
LT = 40.003
ST = 20.003
NOTE: SEE SHEET 39 FOR -L- PROFILE
SEE SHEET 52 FOR -Y10- PROFILE
SEE SHEET 62 FOR -RPCA1- PROFILE
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
North Carolina Constructors
NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
HYDRAULICS ENGINEER
DRAWN BY:
CHECKED BY:
DATE:
Document Control Number :
Filename : r2547bbs12.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
-L- STA. 63+00 TO STA. 66+60
-Y10- STA. 14+50 TO STA. 17+00


METRIC
5 0 10
PROJECT REFERENCE NO. R-2547BB
SHEET NO. 13
R/W SHEET NO.13
RELEASE FOR CONSTRUCTION
DATE: 7-22-03
-L-
PI Sta 70+48.303
Δ = 5° 04' 33.6" (LT)
L = 620.151
T = 310.278
R = 7,000.000
SE = NC
-L- POCSta.68+64.222
-RPB1- STSta.10+00.000
17.8m LT.
-L- SCSta.10+50.000
-RPB1-
32 LOLA CLIFTON
35 GRAHAM RICHARDSON
PAULINE J. WALL
36
+38.024 -L-
50.0m (164.04')
+28.000 -L-
50.0m (164.04')
END CONSTRUCTION
-RPB1- STA. 11+20
SPECIAL BASE DITCH
SEE DETAIL K
(SHEET 2-E)
LATERAL BASE DITCH
SEE DETAIL
(SHEET 2-E)
CLASS 'I' RIP RAP
W/ FILTER FABRIC
EST. 10 TONS
EST. 19 SM FABRIC
PT. -BL68-
-L- 67+81.512-5.547m LT.
HATCHED AREA CONTAINS HIGHLY
PLASTIC SOILS TO BE UNDERCUT
(-L- 67+89 TO 68+87)
SEE DETAIL SHEET 2A
CABLE GUIDERAIL
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST. 7 TONS
EST. 18 SM FABRIC
END PAVING
-RPB1- STA. 11+14
BEGIN GUARDRAIL
-L- 69+80.000 LT
BEGIN GUARDRAIL
-L- 70+14.280 RT
MATCHLINE -L- STA 66+60 SEE SHEET 12
MATCHLINE -L- STA 70+20 SEE SHEET 14A
3.6m PAVED SHLD
4.2m PAVED SHLD
10.8m
14.4m FUTURE
S 84° 55' 26.5" E
S 72° 49' 35.0" E
-RPCA1- TSSta.12+89.192
-RPCA1- SCSta.13+54.192
-RPCA1- CSSta.11+27.027
-RPCA1- STSta.11+87.027
END PAVING
-RPCA1- STA. 11+63
END CONSTRUCTION
-RPCA1- STA. 11+67
TIE CUT DITCHES
TOGETHER
-RPC1- POTSta.12+20.000
-RPB1- POTSta.10+00.000
3.6m RT.
-RPC1- TSSta.11+38.279
-RPC1- SCSta.11+88.279
+84.000 -L-
50.0m (164.04')
+14.000 -L-
102m (334.65')
CHORD
RAMP-BI
PIs Sta 10+32.438
Θs = 0° 12' 18.1"
Θs = 3° 34' 52.0"
Ls = 50.000
LT = 32.438
ST = 17.577
PI Sta 15+18.530
Δ = 99° 01' 22.8" (LT)
L = 691.311
T = 468.530
R = 400.000
SE = .07
PIs Sta 17+57.984
Θs = 3° 34' 51.6"
Ls = 50.000
LT = 33.340
ST = 16.673
RAMP-CAI
PIs Sta 10+40.003
Θs = 2° 08' 54.9"
Ls = 60.000
LT = 40.003
ST = 20.003
PI Sta 10+93.533
Δ = 4° 48' 01.6" (RT)
L = 67.027
T = 33.533
R = 800.000
SE = .06
PIs Sta 11+47.030
Θs = 2° 08' 54.9"
Ls = 60.000
LT = 40.003
ST = 20.003
PIs Sta 13+32.540
Θs = 4° 39' 19.0"
Ls = 65.000
LT = 43.348
ST = 21.680
PI Sta 15+33.171
Δ = 48° 12' 43.2" (LT)
L = 336.583
T = 178.979
R = 400.000
SE = .04
PIs Sta 17+12.456
Θs = 4° 39' 19.0"
Ls = 65.000
LT = 43.348
ST = 21.680
RAMP-CI
PIs Sta 11+71.619
Θs = 3° 34' 51.6"
Ls = 50.000
LT = 33.340
ST = 16.673
PI Sta 14+65.607
Δ = 69° 28' 07.3" (RT)
L = 484.983
T = 277.328
R = 400.000
SE = .07
PIs Sta 16+89.934
Θs = 3° 34' 51.6"
Ls = 50.000
LT = 33.340
ST = 16.673
LEGEND
PROPOSED SLOPE STAKES
FUTURE CONSTRUCTION
CONCRETE PAVED SHOULDER
RECEIVED
NCC
NOTE: SEE SHEET 40 FOR -L- PROFILE
SEE SHEET 62 FOR -RPCA1- AND -RPB1- PROFILE
REVISIONS
NO. BY: DATE: DESCRIPTION OF REVISION
0 REB 7-22-03 RELEASE FOR CONSTRUCTION
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
North Carolina Constructors
NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547bbs13.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
-L- STA. 66+60 TO STA. 70+20
-RPCA1- STUBOUT
-RPB1- STUBOUT



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Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1	REB	12-16-03	ADDED OUTLET BASE DITCH - STA. 71+70 RT.
0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

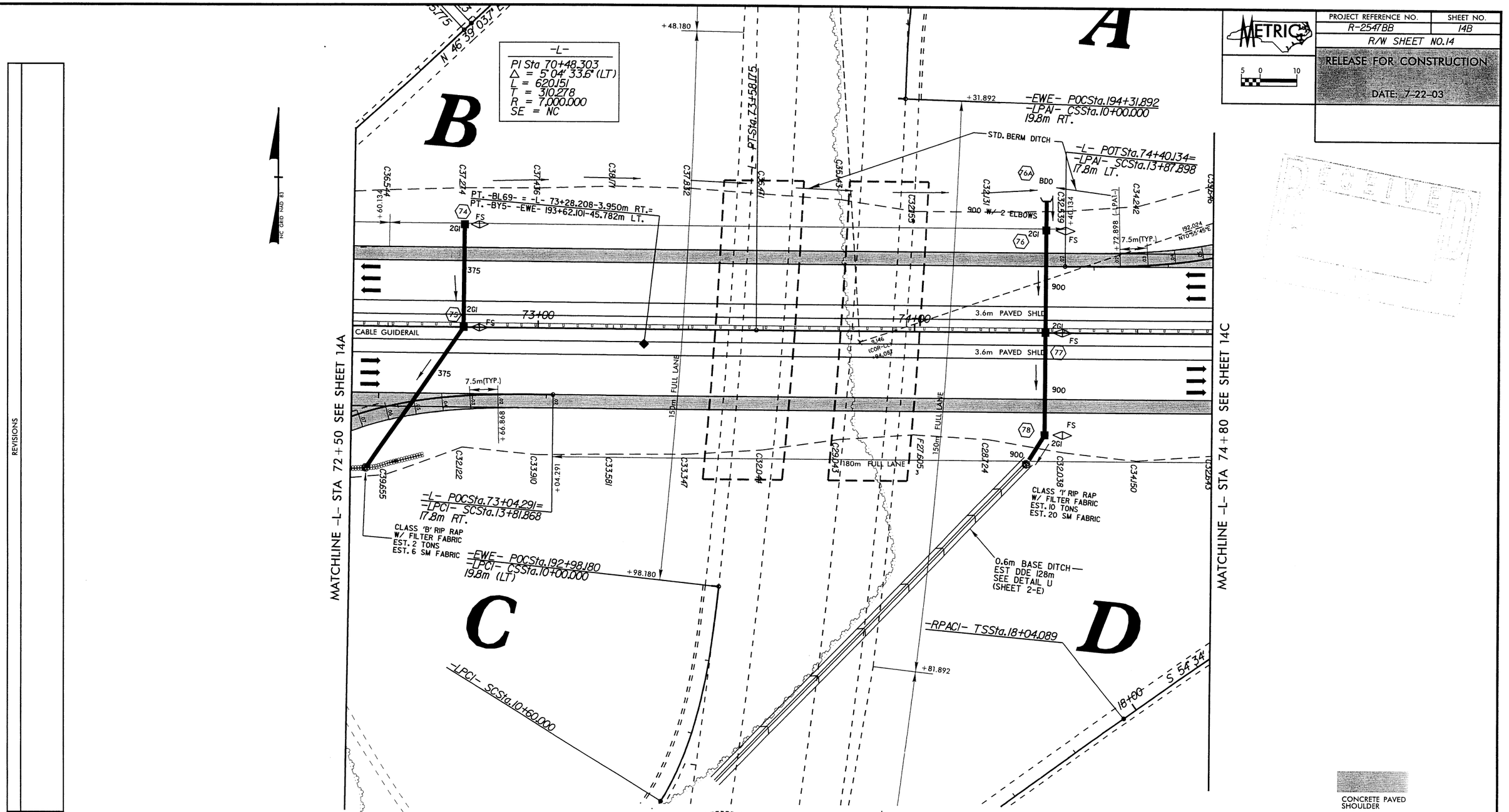
NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFREY S. DOUGLAS
12/17/03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
12/17/03
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : r2547bbs14A.PSH

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
-L- STA. 70+20 TO STA. 72+50
-LPC1- STUBOUT



METRIC

5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	14B

R/W SHEET NO.14

RELEASE FOR CONSTRUCTION

DATE: 7-22-03

RECEIVED

CONCRETE PAVED SHOULDER

NOTE: SEE SHEET 40 & 41 FOR -L- PROFILE
SEE SHEET 63 FOR -LPC1- PROFILE
SEE SHEET 63 FOR -LPA1- PROFILE

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
NO.	BY:	DATE:	DESCRIPTION OF REVISION
1	REB	7-22-03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 23858 ENGINEER JEFFERY S. DOUGLAS 7/22/03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : r2547bbs14B.PSH

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

-L- STA. 72+50 TO STA. 74+80
-LPC1- STUBOUT
-LPA1- STUBOUT

Z:\BLL_2003\R-2547BB\Hdwy\r2547bbs14B.PSH
I:\Projects\NCDOT\R-2547BB\Hdwy\r2547bbs14B.PSH

EAST WAKE EXPRESSWAY		
PIs Sta 190+20.823	PI Sta 196+98.569	PIs Sta 203+23.971
Gs = 1 57' 51.9"	Δ = 40° 02' 47.1" (LT)	Gs = 1 57' 51.9"
Ls = 120.000	L = 1,223.148	Ls = 120.000
LT = 80.005	T = 637.751	LT = 80.005
ST = 40.004	R = 1,750.000	ST = 40.004
	SE = .04	

METRIC

5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	14C
R/W SHEET NO.14	

RELEASE FOR CONSTRUCTION

DATE: 12-16-03

REVISIONS

A

NC GRID ROAD 83

MATCHLINE -L- STA 74+80 SEE SHEET 14B

MATCHLINE -L- STA 77+40 SEE SHEET 15

-LPA1- CSSta.13+27.896

END CONSTRUCTION -LPA1- STA. 13+10

END PAVING -LPA1- STA. 13+25.817

CLASS 'B' RIP RAP EST. 4 TON EST. 10 SM FABRIC

SPECIAL DITCH CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 7 TONS EST. 18 SM FABRIC SEE DETAIL J (SHEET 2-E)

LOLA T. CLIFTON

ISFD

RUINS

SOIL

38

HW

GTD

CABLE GUIDERAIL

N 89° 59' 59.9" E

3.6m PAVED SHLD

10.8m

600

ZONE 1 ZONE 2 ZONE 1 ZONE 2

2% SLOPE AT PIPE

90m TAPER

PT. -BL70- -L- 74+83.763-16.906m RT.

PT. -BL71- -L- 76+34.684-15.928m RT.

CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 4 TON EST. 10 SM FABRIC

CLASS 'I' RIP RAP W/ FILTER FABRIC EST. 10 TONS EA. EST. 20 SM FABRIC EA.

CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 3 TONS EST. 10 SM FABRIC

INV 72.50

INV 69.8

-RPAC1- CSSta.16+90.744

-RPAC1- STSta.17+50.744

42.5° W

CONCRETE PAVED SHOULDER

NOTE: SEE SHEET 41 FOR -L- PROFILE
SEE SHEET 63 FOR -LPA1- PROFILE

+00.000 -L- 87m (285.43')

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Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
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1	REB	12-16-03	ADJUSTED LOCATION OF STRUCTURES 79 & 80
0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.

HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

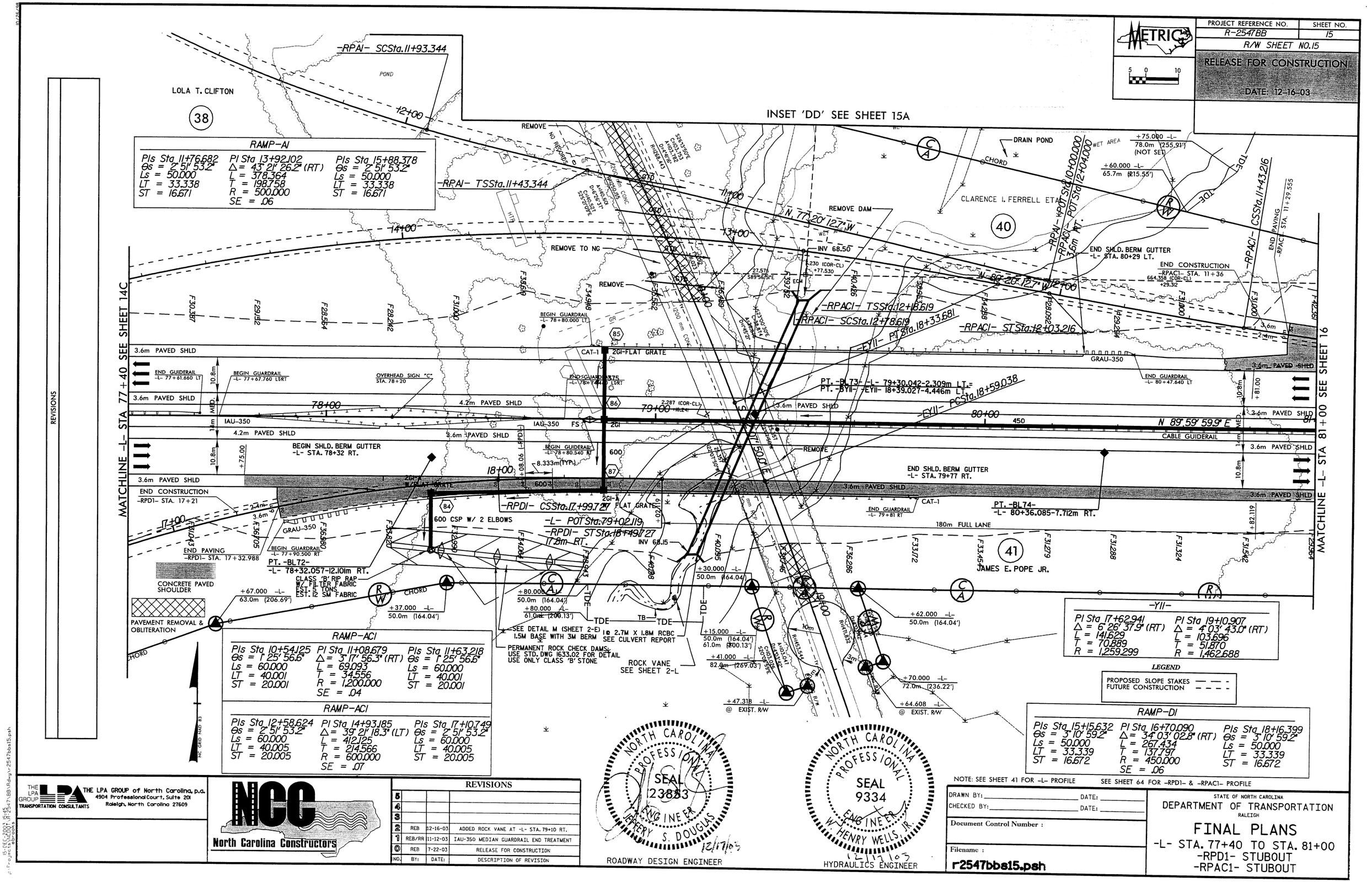
Document Control Number :

Filename : r2547bbs14C.PSH

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

-L- STA. 74+80 TO STA. 77+40
-LPA1- STUBOUT


METRIC
5 0 10
PROJECT REFERENCE NO. R-2547BB
SHEET NO. 15
R/W SHEET NO.15
RELEASE FOR CONSTRUCTION
DATE: 12-16-03
INSET 'DD' SEE SHEET 15A
MATCHLINE -L- STA 77+40 SEE SHEET 14C
MATCHLINE -L- STA 81+00 SEE SHEET 16
LOLA T. CLIFTON
CLARENCE I. FERRELL ETAL
JAMES E. POPE JR.
RAMP-A1
Pls Sta 11+76.682 Θs = 2° 51' 53.2" Ls = 50.000 LT = 33.338 ST = 16.671
Pl Sta 13+92.102 Δ = 43° 21' 26.2" (RT) L = 378.364 T = 198.758 R = 500.000 SE = .06
Pls Sta 15+88.378 Θs = 2° 51' 53.2" Ls = 50.000 LT = 33.338 ST = 16.671
RAMP-A1
Pls Sta 10+54.125 Θs = 1° 25' 56.6" Ls = 60.000 LT = 40.001 ST = 20.001
Pl Sta 11+08.679 Δ = 3° 17' 56.3" (RT) L = 69.093 T = 34.556 R = 1,200.000 SE = .04
Pls Sta 11+63.218 Θs = 1° 25' 56.6" Ls = 60.000 LT = 40.001 ST = 20.001
RAMP-A1
Pls Sta 12+58.624 Θs = 2° 51' 53.2" Ls = 60.000 LT = 40.005 ST = 20.005
Pl Sta 14+93.185 Δ = 39° 21' 18.3" (LT) L = 412.125 T = 214.566 R = 600.000 SE = .07
Pls Sta 17+10.749 Θs = 2° 51' 53.2" Ls = 60.000 LT = 40.005 ST = 20.005
-Y11-
Pl Sta 17+62.941 Δ = 6° 26' 37.9" (RT) L = 141.629 T = 70.889 R = 1,259.299
Pl Sta 19+10.907 Δ = 4° 03' 43.0" (RT) L = 103.696 T = 51.870 R = 1,462.688
RAMP-D1
Pls Sta 15+15.632 Θs = 3° 10' 59.2" Ls = 50.000 LT = 33.339 ST = 16.672
Pl Sta 16+70.090 Δ = 34° 03' 02.8" (RT) L = 267.434 T = 137.797 R = 450.000 SE = .06
Pls Sta 18+16.399 Θs = 3° 10' 59.2" Ls = 50.000 LT = 33.339 ST = 16.672
-RPAI- SCSta.11+93.344
-RPAI- TSSta.11+43.344
-RPAI- KPOTSta.10+00.000
-RPAI- POTSta.12+04.000
-RPAI- CSSta.11+43.216
-RPAC1- STA. 11+29.555
-RPAC1- STA. 11+36
-RPAC1- TSSta.12+18.619
-RPAC1- SCSta.12+78.619
-RPAC1- STSta.12+03.216
-Y11- PISta.18+33.681
-Y11- PCSta.18+59.038
PT. -BL73- -L- 79+30.042-2.309m LT.=
PT. -BY11- -Y11- 18+39.027-4.446m LT.
PT. -BL74- -L- 80+36.085-7.712m RT.
-RPD1- CSSta.17+99.727
-L- POTSta.79+02.119
-RPD1- STSta.18+49.727
17.5m RT.
PT. -BL72- -L- 78+32.057-12.101m RT.
N 77° 20' 27.7" W
N 89° 59' 59.9" E
600 CSP W/ 2 ELBOWS
PERMANENT ROCK CHECK DAMS, USE STD. DWG 1633.02 FOR DETAIL USE ONLY CLASS 'B' STONE
SEE DETAIL M (SHEET 2-E) 1@ 2.7M X 1.8M RCBC 1.5M BASE WITH 3M BERM SEE CULVERT REPORT
ROCK VANE SEE SHEET 2-L
REMOVE DAM
REMOVE TO NG
REMOVE
DRAIN POND
WET AREA
CHORD
TDE
TB
BEGIN GUARDRAIL -L- 78+80.000 LT
END GUARDRAIL -L- 77+67.760 LRT
BEGIN GUARDRAIL -L- 77+67.760 LRT
END GUARDRAIL -L- 78+44.000 LRT
BEGIN GUIDERAIL -L- 78+80.540 RT
END GUARDRAIL -L- 79+81 RT
END GUARDRAIL -L- 80+47.640 LT
OVERHEAD SIGN "C" STA. 78+20
BEGIN SHLD. BERM GUTTER -L- STA. 78+32 RT.
END SHLD. BERM GUTTER -L- STA. 79+77 RT.
END SHLD. BERM GUTTER -L- STA. 80+29 LT.
END CONSTRUCTION -RPD1- STA. 17+21
END PAVING -RPD1- STA. 17+32.988
END CONSTRUCTION -RPAC1- STA. 11+36
END PAVING -RPAC1- STA. 11+29.555
3.6m PAVED SHLD
4.2m PAVED SHLD
IAU-350
IAU-350 FS
2GI-FLAT GRATE
2GI-A W/ FLAT GRATE
CAT-1
GRAU-350
CABLE GUIDERAIL
180m FULL LANE
CONCRETE PAVED SHOULDER
PAVEMENT REMOVAL & OBLITERATION
CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 5 TONS EST. 12 SM FABRIC
LEGEND
PROPOSED SLOPE STAKES
FUTURE CONSTRUCTION
NOTE: SEE SHEET 41 FOR -L- PROFILE
SEE SHEET 64 FOR -RPD1- & -RPAC1- PROFILE
REVISIONS
5
4
3
2 REB 12-16-03 ADDED ROCK VANE AT -L- STA. 79+10 RT.
1 REB/RR 11-12-03 IAU-350 MEDIAN GUARDRAIL END TREATMENT
0 REB 7-22-03 RELEASE FOR CONSTRUCTION
NO. BY: DATE: DESCRIPTION OF REVISION
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 200
Raleigh, North Carolina 27609
North Carolina Constructors
NORTH CAROLINA PROFESSIONAL SEAL 23883 ENGINEER THERRY S. DOUGLAS
12/7/03
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
12/15/03
HYDRAULICS ENGINEER
DRAWN BY:
CHECKED BY:
DATE:
Document Control Number :
Filename : r2547bbs15.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
-L- STA. 77+40 TO STA. 81+00
-RPD1- STUBOUT
-RPAC1- STUBOUT

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	15 (DET)

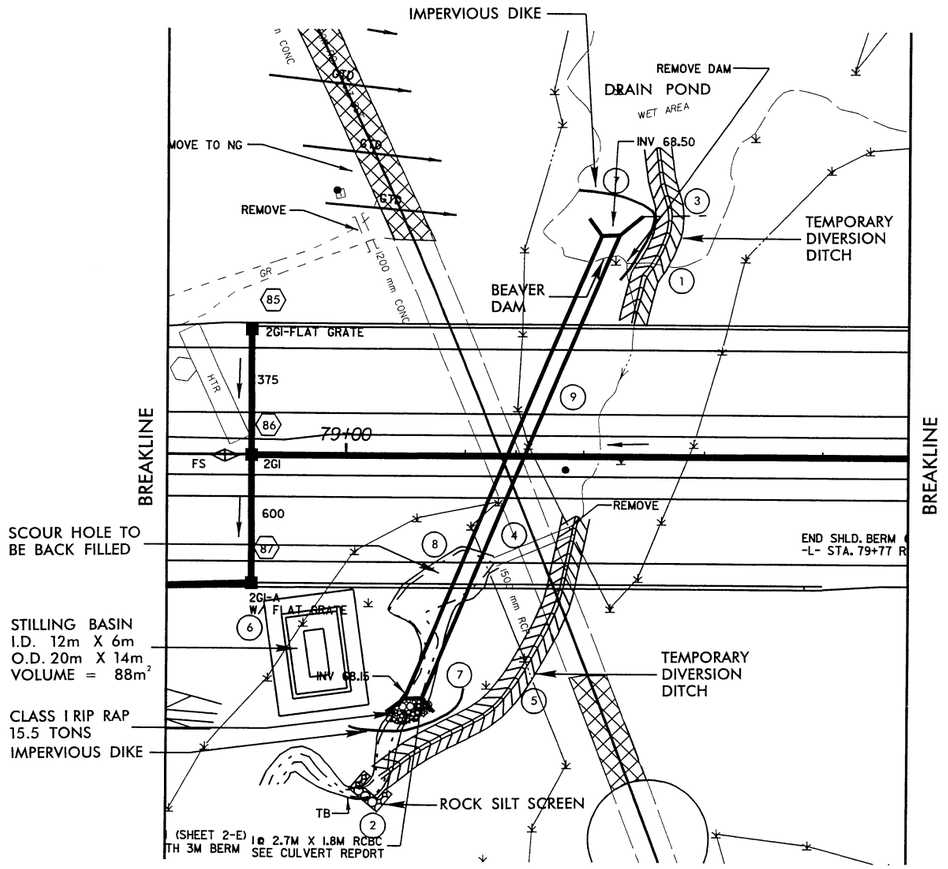
METRIC

5 0 10

RELEASE FOR CONSTRUCTION

DATE: 7-22-03

CONSTRUCTION SEQUENCE FOR 1 @ 2.7m X 1.8m RCBC



1. REMOVE BEAVER DAM
2. INSTALL STONE SILT SCREEN
3. CONSTRUCT TEMPORARY DIVERSION DITCH AT INLET
4. REMOVE EXISTING CROSS PIPE
5. CONSTRUCT TEMPORARY DITCH AT OUTLET
6. CONSTRUCT STILLING BASIN 20m X 14m
   OUTSIDE DIMENSIONS: 12m X 6m
   INSIDE DIMENSIONS: 1.5m MAX DEPTH,
   VOLUME = 88 CUBIC METERS
7. INSTALL TEMPORARY IMPERVIOUS DIKES AT INLET AND OUTLET
8. BACKFILL EXISITNG SCOUR HOLE WITH SUITABLE FILL MATERIAL
9. EXCAVATE AND CONSTRUCT 1 @ 2.7m X 1.8m RCBC
10. REMOVE TEMPORARY IMPERVIOUS DIKES
11. REMOVE TEMPORARY DIVERSION DITCHES
12. REMOVE ALL EROSION CONTROL DEVICES

REVISIONS

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

North Carolina Constructors

REVISIONS			
5			
4			
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0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER

NOTE: SEE SHEET 41 FOR -L- PROFILE

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : $FILE$

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

CULVERT DETAIL
CONSTRUCTION SEQUENCE

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	15A
R/W SHEET NO.15	

RELEASE FOR CONSTRUCTION

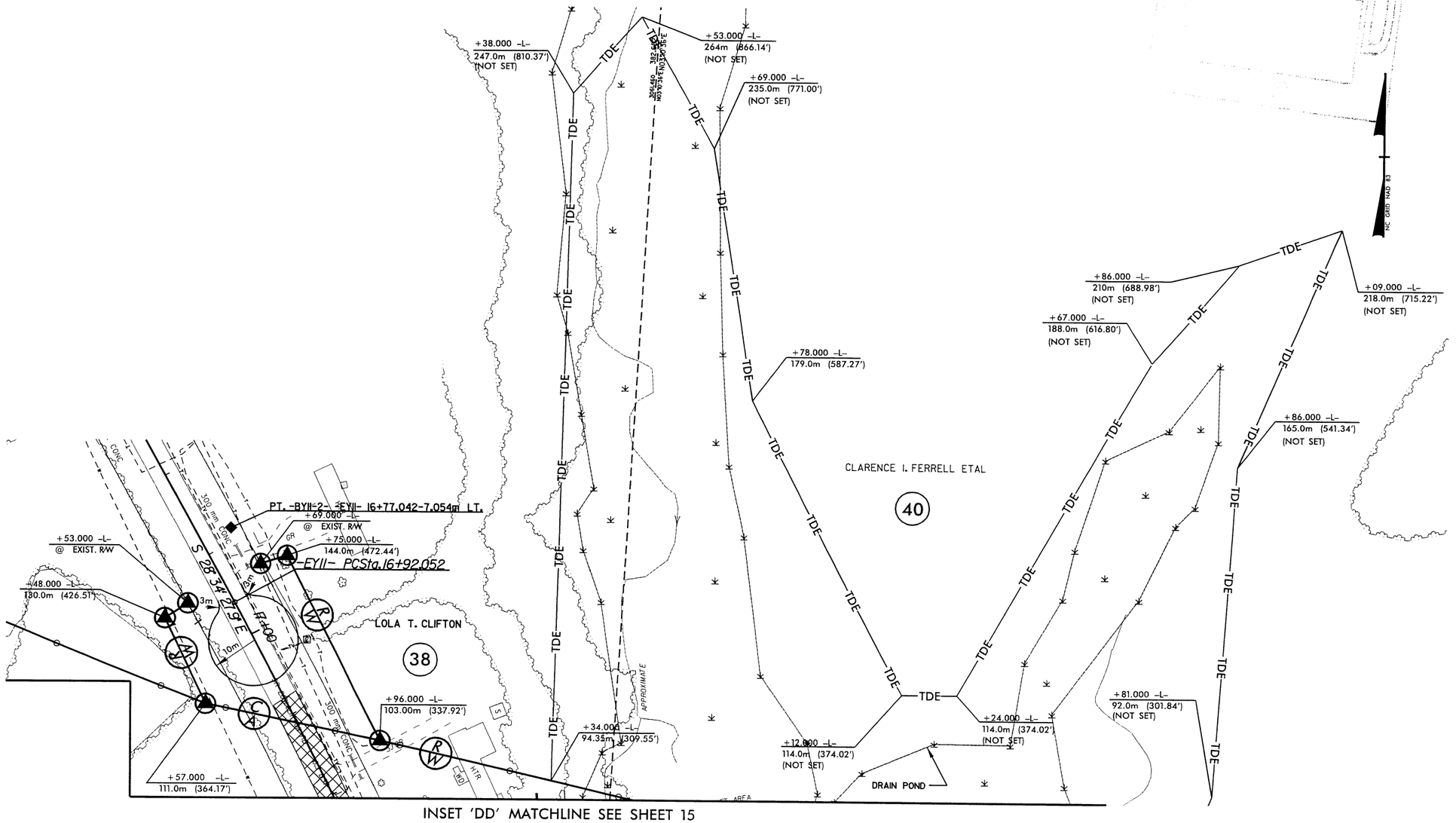
DATE: 7-22-03

METRIC

5 0 10

RECEIVED

REVISIONS



INSET 'DD' MATCHLINE SEE SHEET 15

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
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NO.	BY:	DATE:	DESCRIPTION OF REVISION
0	REB	7-22-03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
7/22/03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
7/22/03
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : r2547bbs15a.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

CLIFTON ROAD
CUL-DE-SAC

RAMP-ACI		
PIs Sta. 10+54.125	PI Sta. 11+08.679	PIs Sta. 11+63.218
Θs = 1° 25' 56.6"	Δ = 3° 17' 56.3" (RT)	Θs = 1° 25' 56.6"
Ls = 60.000	L = 69.093	Ls = 60.000
LT = 40.001	T = 34.556	LT = 40.001
ST = 20.001	R = 1,200.000	ST = 20.001
	SE = .04	

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	16
R/W SHEET NO. 16	

RELEASE FOR CONSTRUCTION

DATE: 7-22-03

METRIC 5 0 10

RECEIVED

REVISIONS

-RPACI- SCSta.10+74.23

-RPACI- TSSta.10+14.23

-RPACI- POTSta.82+20.342

-RPACI- POTSta.10+00.000

+52.557 -L- @ PL

CHORD

CLARENCE I. FERRELL ETAL
DB 8222/PG 2632
40

CLARENCE I. FERRELL ETAL
40

712.430
S89°56'51"E

RETAIN EXISTING BERM DITCH

SPECIAL DITCH SEE DETAIL A (SHEET 2-E)

MATCHLINE -L- STA 81+00 SEE SHEET 15

MATCHLINE -L- STA 84+60 SEE SHEET 17

3.6m PAVED SHLD

2GI-D

2GI

FS

15m(TYP.)

N 86° 30' 02.2" W
Δ = 3° 29' 57.1"

N 89° 59' 59.9" E

82+00

83+00

84+00

CABLE GUIDERAIL

10.8m

1.4m MED.

450

375

600

90m TAPER

50m R/W

+72.00

+72.119

CLASS 'B' RIP RAP W/ FILTER FABRIC
EST. 1 TONS
EST. 5 SM FABRIC

TOE PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST. 27 TONS
EST. 71 SM FABRIC
SEE DETAIL D
(SHEET 2-E)

CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST. 3 TONS
EST. 10 SM FABRIC

SPECIAL DITCH
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST. 81 TONS
EST. 213 SM FABRIC
SEE DETAIL J
(SHEET 2-E)

PT. -BL75-
-L- 81+73.168-83.466m RT.

CONCRETE PAVED SHOULDER

LEGEND

PROPOSED SLOPE STAKES ——-——
FUTURE CONSTRUCTION - - - - -

41
JAMES E. POPE JR.

NOTE: SEE SHEET 42 FOR -L- PROFILE
SEE SHEET 64 FOR -RPACI- PROFILE

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
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0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEREMY S. DOUGLAS 7/22/03
ROADWAY DESIGN ENGINEER

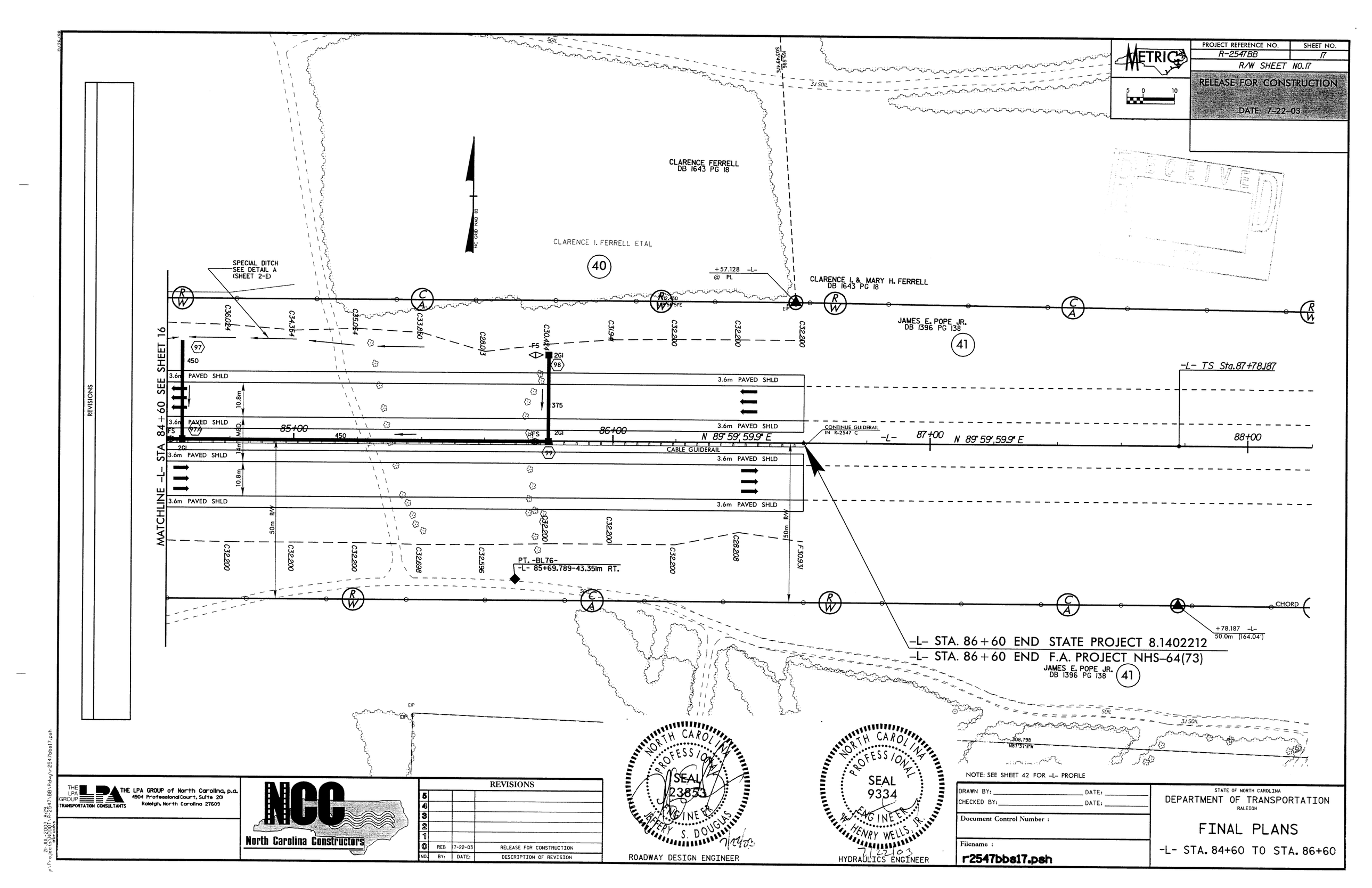
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR. 7/22/03
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : r2547bbs16.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

-L- STA. 81+00 TO STA. 84+60
-RPACI- STUBOUT

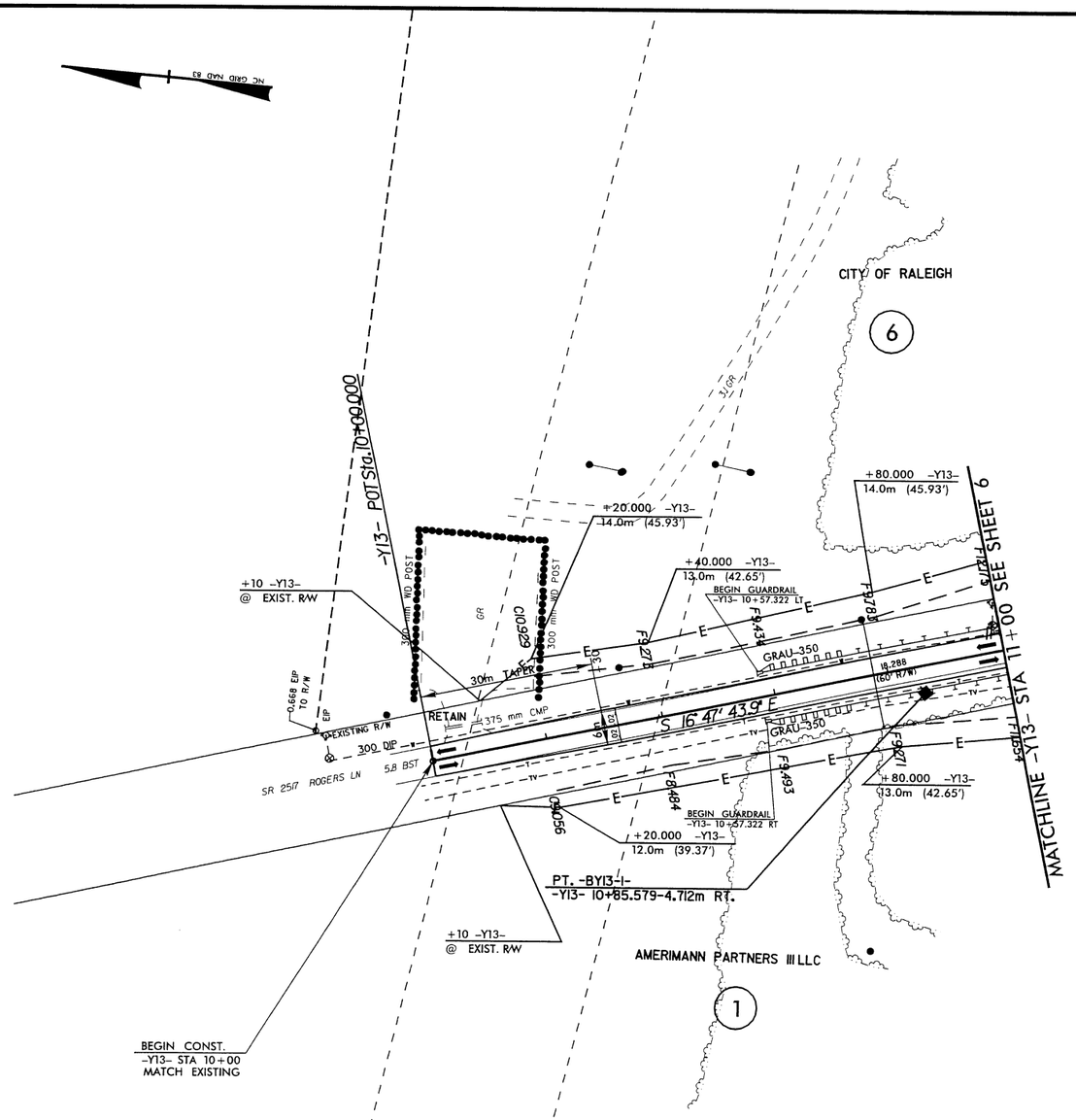

METRIC
5 0 10
PROJECT REFERENCE NO.
R-2547BB
SHEET NO.
17
R/W SHEET NO.17
RELEASE FOR CONSTRUCTION
DATE: 7-22-03
RECEIVED
REVISIONS
CLARENCE FERRELL
DB 1643 PG 18
CLARENCE I. FERRELL ETAL
40
SPECIAL DITCH
SEE DETAIL A
(SHEET 2-E)
+57.128 -L-
@ PL
CLARENCE I. & MARY H. FERRELL
DB 1643 PG 18
JAMES E. POPE JR.
DB 1396 PG 138
41
MATCHLINE -L- STA 84+60 SEE SHEET 16
-L- TS Sta.87+78.187
3.6m PAVED SHLD
10.8m
1.4m MED.
2GI
CABLE GUIDERAIL
85+00
86+00
87+00
88+00
N 89°59'59.9" E
CONTINUE GUIDERAIL
IN R-2547 C
50m R/W
PT. -BL76-
-L- 85+69.789-43.35m RT.
-L- STA. 86+60 END STATE PROJECT 8.1402212
-L- STA. 86+60 END F.A. PROJECT NHS-64(73)
JAMES E. POPE JR.
DB 1396 PG 138
41
CHORD
+78.187 -L-
50.0m (164.04')
EIP
SOIL
3J SOIL
308.798
N87°37'14"W
NOTE: SEE SHEET 42 FOR -L- PROFILE
REVISIONS
5
4
3
2
1
0 REB 7-22-03 RELEASE FOR CONSTRUCTION
NO. BY: DATE: DESCRIPTION OF REVISION
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
North Carolina Constructors
NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547bbs17.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
-L- STA. 84+60 TO STA. 86+60

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	18
R/W SHEET NO. 18	
RELEASE FOR CONSTRUCTION	
DATE: 7-22-03	

METRIC

5 0 10

REVISIONS



RECEIVED

NOTE: SEE SHEET 55 FOR -Y13- PROFILE

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
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0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

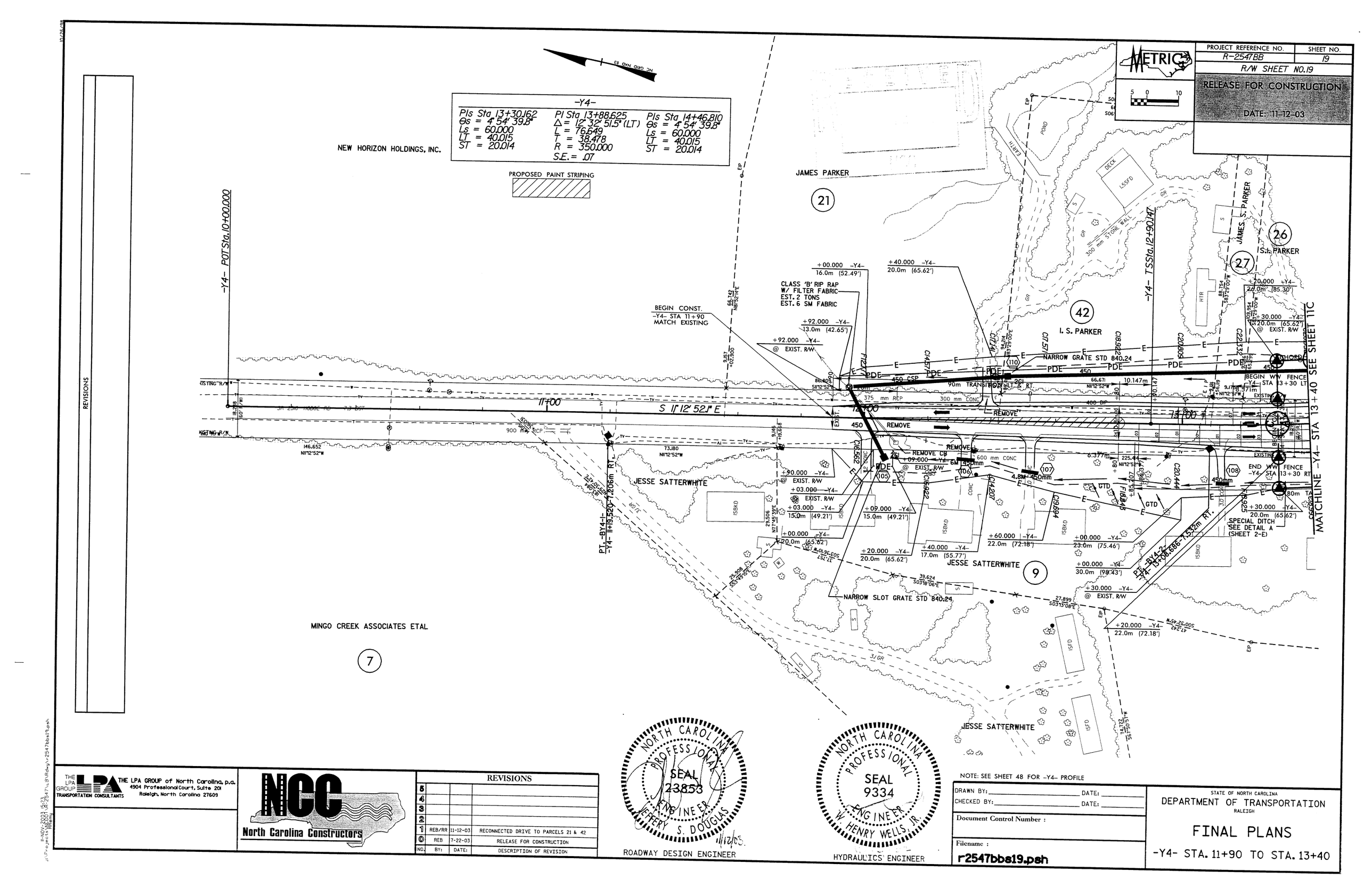
Filename : r2547bbs18.psh

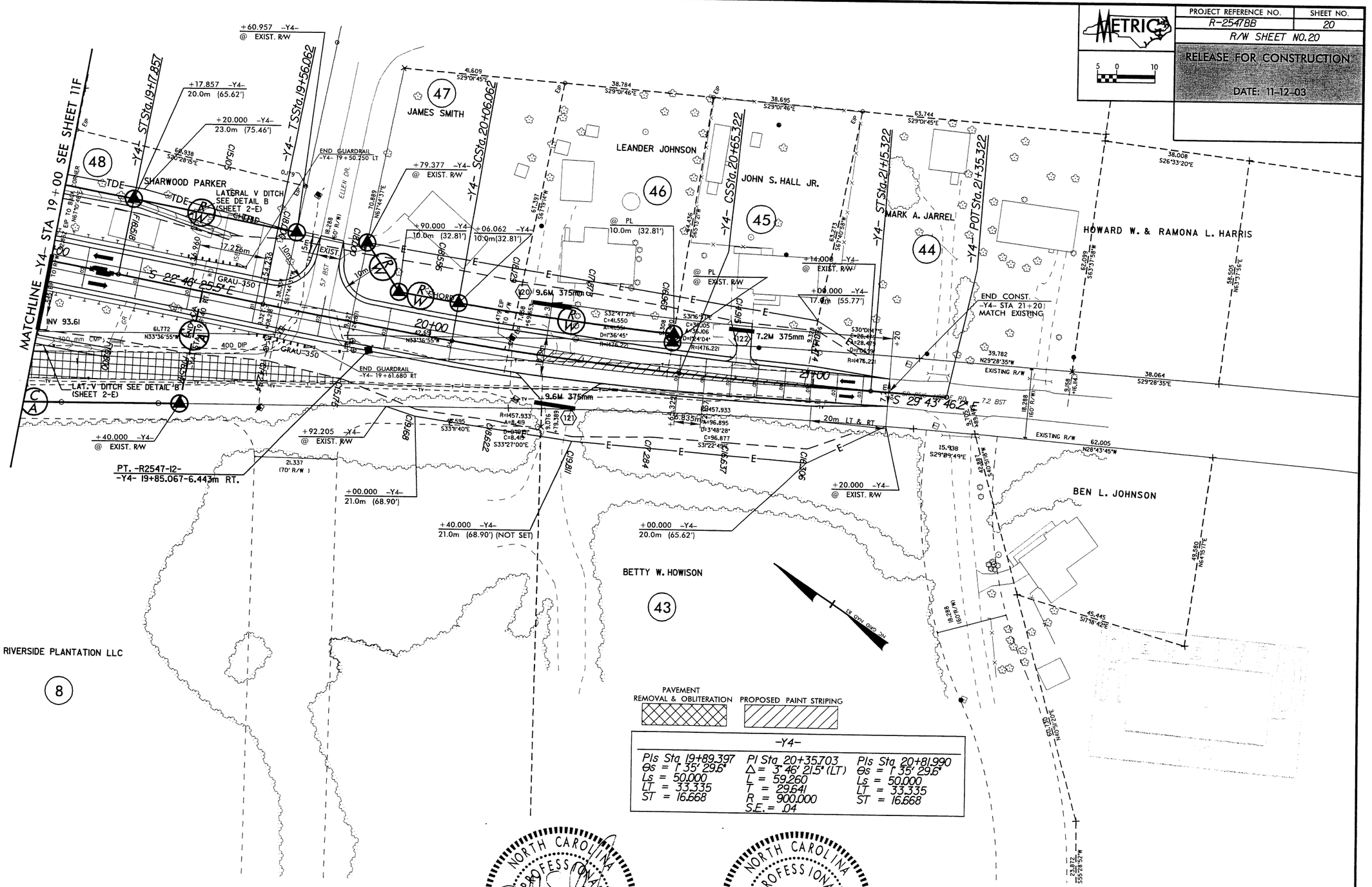
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

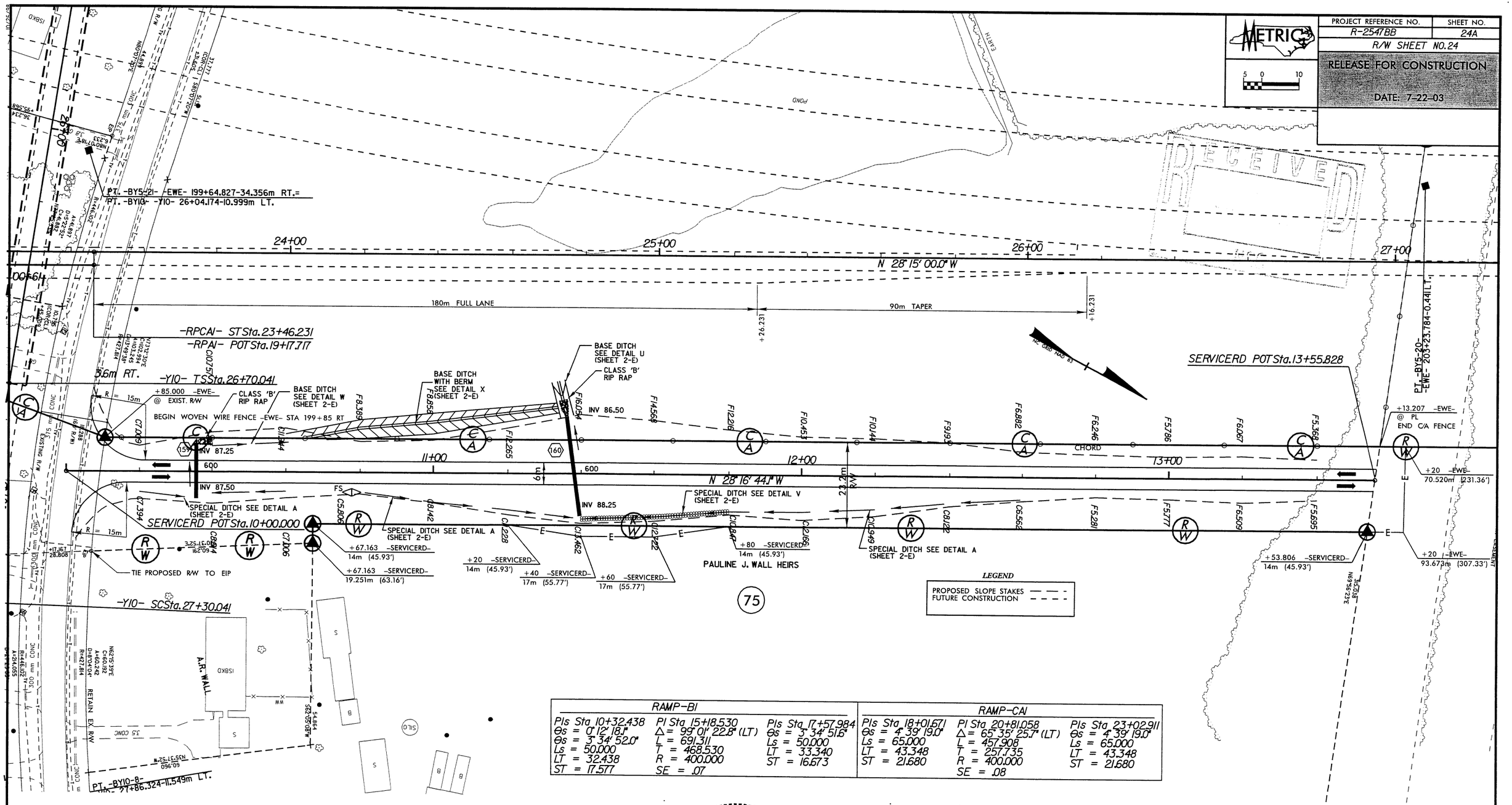
-Y13- STA. 10+00 TO STA. 11+00

21-JUL-2003 8:32
J:\P-projects\NCDOT\R-2547\BB\Roadway\r2547bbs18.psh


-Y4-
Pls Sta 13+30.162
Øs = 4°54' 39.8"
Ls = 60.000
LT = 40.015
ST = 20.014
Pl Sta 13+88.625
Δ = 12° 32' 51.5" (LT)
L = 76.649
T = 38.478
R = 350.000
S.E. = .07
Pls Sta 14+46.810
Øs = 4°54' 39.8"
Ls = 60.000
LT = 40.015
ST = 20.014
NC GRID MAD 83
PROPOSED PAINT STRIPING
NEW HORIZON HOLDINGS, INC.
JAMES PARKER
21
-Y4- POT Sta.10+00.000
BEGIN CONST. -Y4- STA 11+90 MATCH EXISTING
CLASS 'B' RIP RAP W/ FILTER FABRIC EST. 2 TONS EST. 6 SM FABRIC
+00.000 -Y4- 16.0m (52.49')
+40.000 -Y4- 20.0m (65.62')
+92.000 -Y4- 13.0m (42.65')
+92.000 -Y4- @ EXIST. R/W
42
I. S. PARKER
NARROW GRATE STD 840.24
90m TRANSITION
450 CSP
375 mm RCP
300 mm CONC
400 DIP
REMOVE
REMOVE CB
600 mm CONC
450mm
END W/W FENCE -Y4- STA 13+30 RT.
BEGIN W/W FENCE -Y4- STA 13+30 LT.
EXISTING R/W
-Y4- TS Sta.12+90.147
JAMES S. PARKER
26
I.S.h. PARKER
27
+20.000 -Y4- 20.0m (65.62') @ EXIST. R/W
+20.000 -Y4- 20.0m (85.30')
MATCHLINE -Y4- STA 13+40 SEE SHEET 11C
11+00
S 11°12'52" E
146.652 N11°12'52"W
73.180 N11°12'52"W
900 mm RCP
JESSE SATTERWHITE
+90.000 -Y4- @ EXIST. R/W
+03.000 -Y4- EXIST. R/W
+03.000 -Y4- 15.0m (49.21')
+09.000 -Y4- 15.0m (49.21')
+00.000 -Y4- 20.0m (65.62')
PT -BY4+- -Y4- 1+19.520-7.206m RT.
+20.000 -Y4- 20.0m (65.62')
+40.000 -Y4- 17.0m (55.77')
+60.000 -Y4- 22.0m (72.18')
+00.000 -Y4- 23.0m (75.46')
+00.000 -Y4- 30.0m (98.43')
+30.000 -Y4- @ EXIST. R/W
+30.000 -Y4- 20.0m (65.62')
SPECIAL DITCH SEE DETAIL A (SHEET 2-E)
PT -BY4+- -Y4- 13+08.686-7.532m RT.
NARROW SLOT GRATE STD 840.24
JESSE SATTERWHITE
9
+20.000 -Y4- 22.0m (72.18')
JESSE SATTERWHITE
MINGO CREEK ASSOCIATES ETAL
7
REVISIONS
METRIC
5 0 10
PROJECT REFERENCE NO. R-2547BB
SHEET NO. 19
R/W SHEET NO.19
RELEASE FOR CONSTRUCTION
DATE: 11-12-03
NOTE: SEE SHEET 48 FOR -Y4- PROFILE
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS
North Carolina Constructors
REVISIONS
5
4
3
2
1 REB/RR 11-12-03 RECONNECTED DRIVE TO PARCELS 21 & 42
0 REB 7-22-03 RELEASE FOR CONSTRUCTION
NO. BY: DATE: DESCRIPTION OF REVISION
NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
11/12/03
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
HYDRAULICS ENGINEER
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547bbs19.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
-Y4- STA. 11+90 TO STA. 13+40



NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2			
1	REB/RR	11-12-03	RECONNECTED DRIVE TO PARCEL 45
0	REB	7-22-03	RELEASE FOR CONSTRUCTION



RAMP-BI		
Pls Sta 10+32.438	Pl Sta 15+18.530	Pls Sta 17+57.984
Es = 0° 12' 18"	Δ = 99° 01' 22.8" (LT)	Es = 3° 34' 51.6"
Es = 3° 34' 52.0"	L = 691.311	Ls = 50.000
Ls = 50.000	T = 468.530	LT = 33.340
LT = 32.438	R = 400.000	ST = 16.673
ST = 17.577	SE = .07	

RAMP-CA1		
Pls Sta 18+01.671	Pl Sta 20+81.058	Pls Sta 23+02.911
Es = 4° 39' 19.0"	Δ = 65° 35' 25.7" (LT)	Es = 4° 39' 19.0"
Ls = 65.000	L = 457.908	Ls = 65.000
LT = 43.348	T = 257.735	LT = 43.348
ST = 21.680	R = 400.000	ST = 21.680
	SE = .08	

NOTE: SEE SHEET 61 FOR -SERVICERD- PROFILE

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23858 ENGINEER JEFFERY S. DOUGLAS
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER

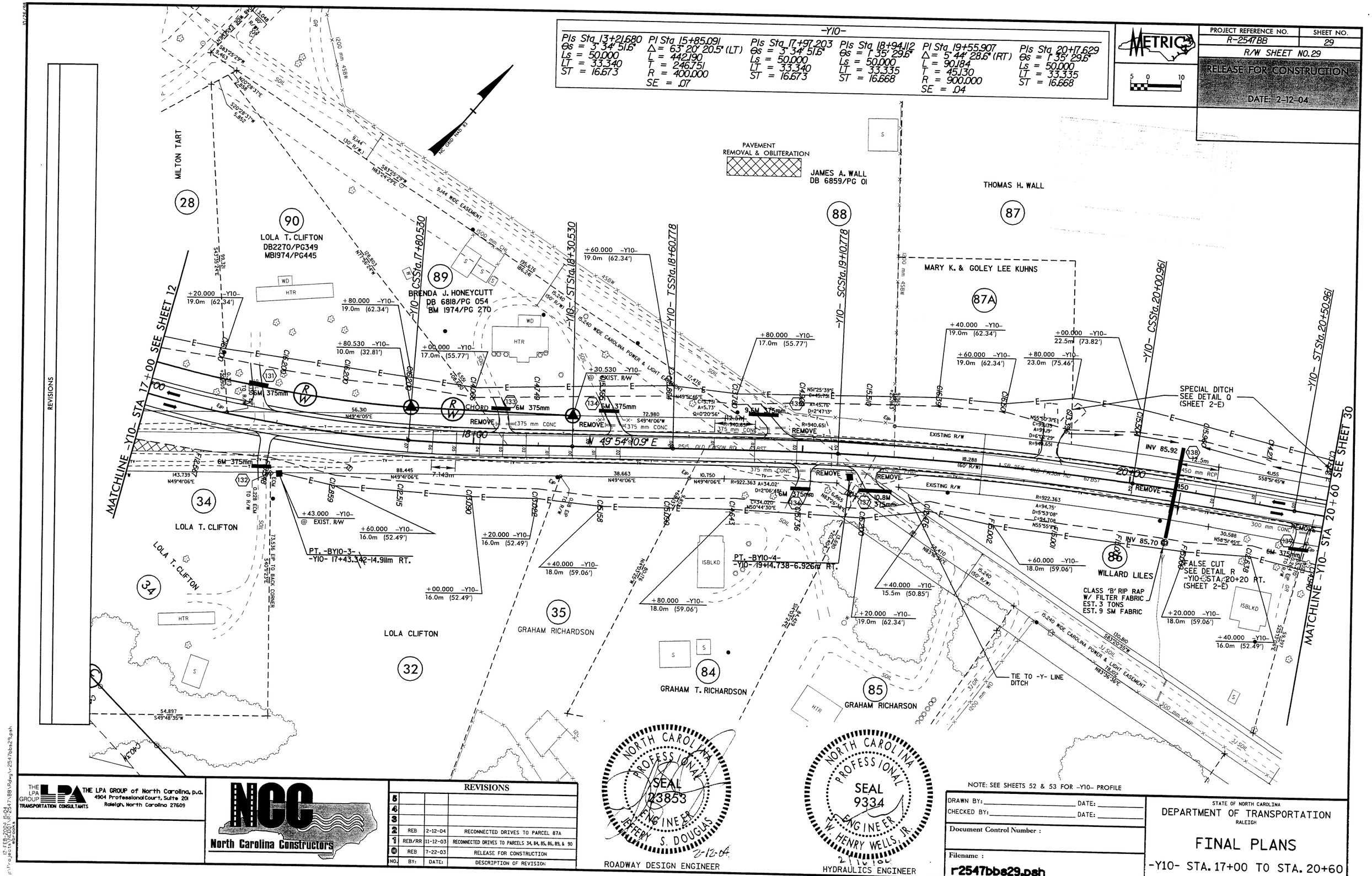
DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : r2547bbs24a.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

-SERVICERD- STA. 10+00 TO 13+56

2-JUL-2003 18:32
:\Projects\R2547\BB\dgn\r2547bbs24a.psh



REVISIONS			
5			
4			
3			
2	REB	2-12-04	RECONNECTED DRIVES TO PARCEL 87A
1	REB/RR	11-12-03	RECONNECTED DRIVES TO PARCELS 34, 84, 85, 86, 89, & 90
0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

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Raleigh, North Carolina 27609

North Carolina Constructors

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFERY S. DOUGLAS
2-12-04
ROADWAY DESIGN ENGINEER

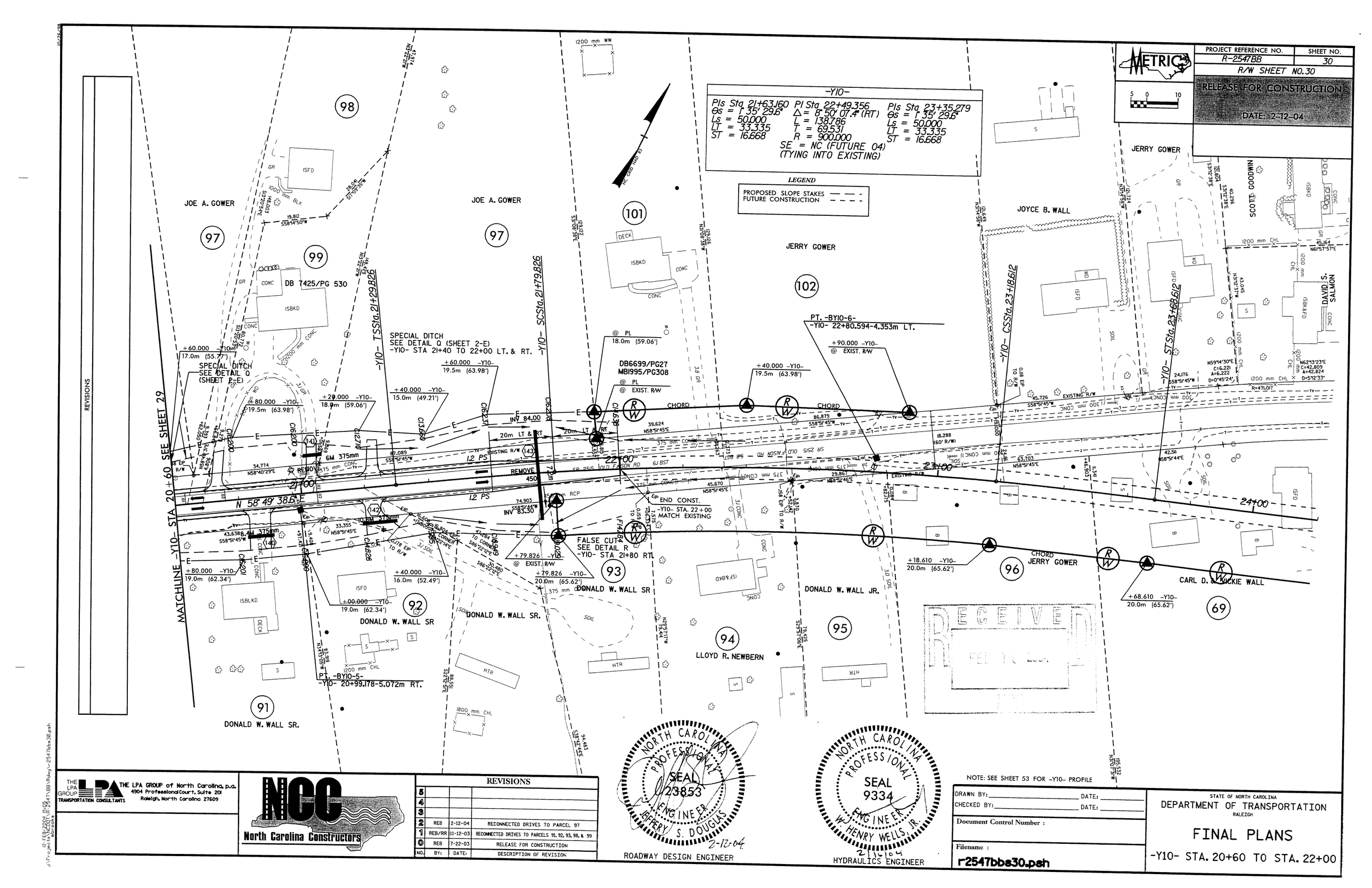
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
2-16-04
HYDRAULICS ENGINEER

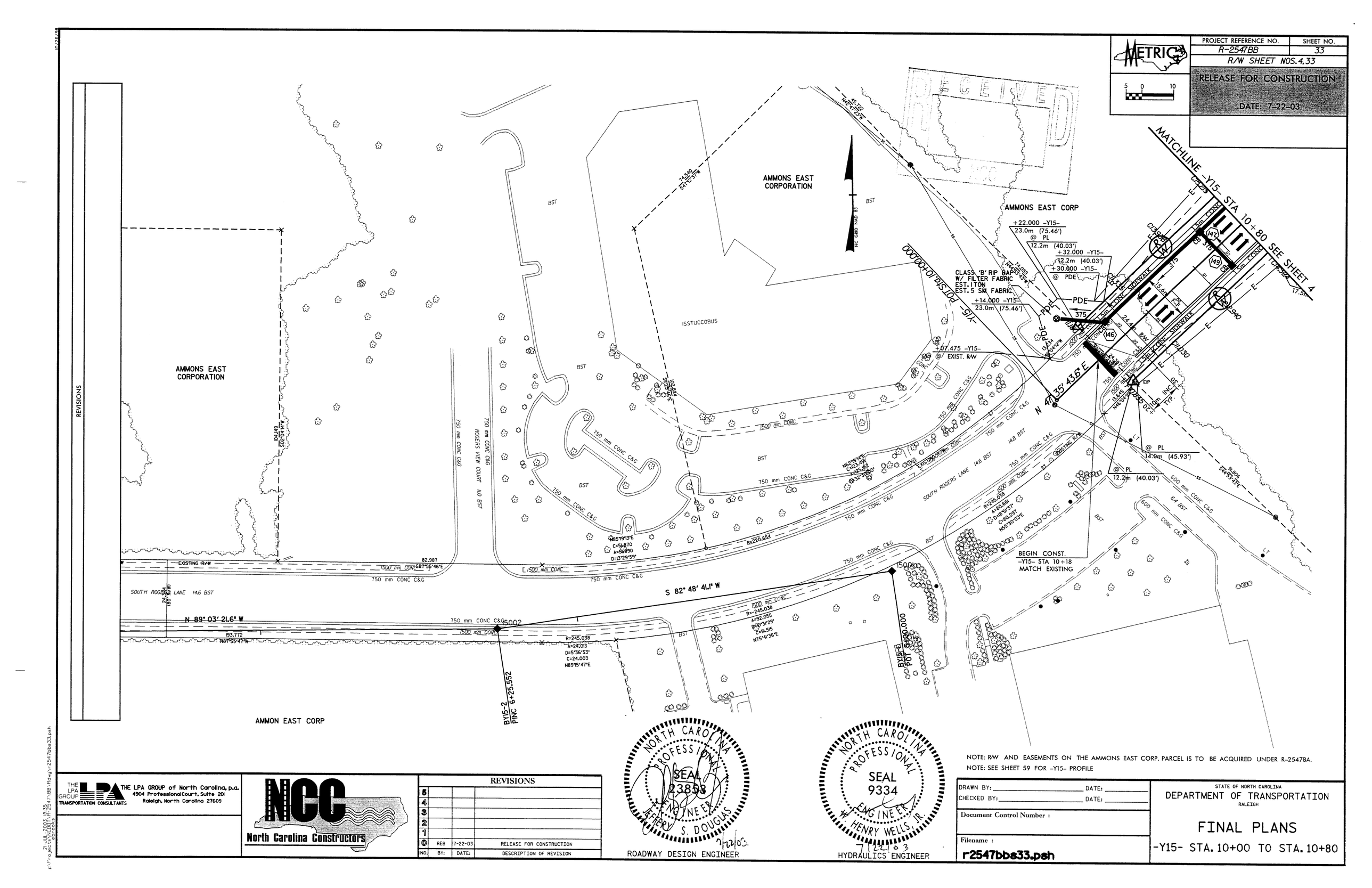
DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : r2547bbs29.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

-Y10- STA. 17+00 TO STA. 20+60


METRIC
PROJECT REFERENCE NO. R-2547BB
SHEET NO. 30
R/W SHEET NO. 30
RELEASE FOR CONSTRUCTION
DATE: 2-12-04
-Y10-
Pls Sta 21+63.160
Gs = T 35' 29.6"
Ls = 50.000
LT = 33.335
ST = 16.668
Pl Sta 22+49.356
Δ = 8° 50' 07.4" (RT)
T = 69.531
R = 900.000
SE = NC (FUTURE 04)
(TYING INTO EXISTING)
Pls Sta 23+35.279
Gs = T 35' 29.6"
Ls = 50.000
LT = 33.335
ST = 16.668
LEGEND
PROPOSED SLOPE STAKES
FUTURE CONSTRUCTION
JOE A. GOWER
JOE A. GOWER
JERRY GOWER
JOYCE B. WALL
SCOTT GOODWIN
DAVID S. SALMON
DB 7425/PG 530
SPECIAL DITCH
SEE DETAIL Q
(SHEET 2-E)
SPECIAL DITCH
SEE DETAIL Q (SHEET 2-E)
-Y10- STA 21+40 TO 22+00 LT. & RT.
-Y10- TSSta.21+29.826
-Y10- SCSta.21+79.826
-Y10- CSSta.23+18.612
-Y10- STSta.23+68.612
DB6699/PG27
MBI995/PG308
PT. -BY10-6-
-Y10- 22+80.594-4.353m LT.
MATCHLINE -Y10- STA 20+60 SEE SHEET 29
N 58 49 38.6 E
REMOVE 450
6M 375mm
12 PS
20m LT & RT
INV 84.00
INV 83.30
END CONST.
-Y10- STA. 22+00
MATCH EXISTING
FALSE CUT
SEE DETAIL R
-Y10- STA 21+80 RT.
PT. -BY10-5-
-Y10- 20+99.178-5.072m RT.
DONALD W. WALL SR.
DONALD W. WALL JR.
LLOYD R. NEWBERN
CARL D. & MICKIE WALL
CHORD
JERRY GOWER
EXISTING R/W
RECEIVED
FEB 17 2004
REVISIONS
NO. BY: DATE: DESCRIPTION OF REVISION
2 REB 2-12-04 RECONNECTED DRIVES TO PARCEL 97
1 REB/RR 11-12-03 RECONNECTED DRIVES TO PARCELS 91, 92, 93, 98, & 99
0 REB 7-22-03 RELEASE FOR CONSTRUCTION
NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEFFREY S. DOUGLAS
2-12-04
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
2/12/04
HYDRAULICS ENGINEER
NOTE: SEE SHEET 53 FOR -Y10- PROFILE
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
North Carolina Constructors
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547bbs30.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
-Y10- STA. 20+60 TO STA. 22+00



THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : r2547bbs33.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

-Y15- STA. 10+00 TO STA. 10+80

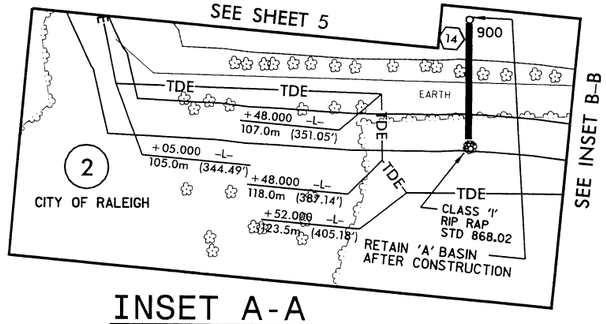
21-JUL-2003 (R-35)
r:\Projects\R-2547BB (Raleigh)\r2547bbs33.psh

PROJECT REFERENCE NO.	SHEET NO.
R-2547BB	34
R/W SHEET NOS. 6, 34	

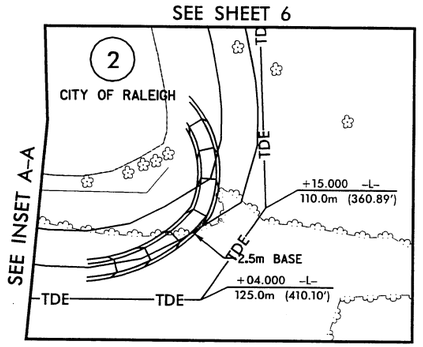
RELEASE FOR CONSTRUCTION

DATE: 12-16-03

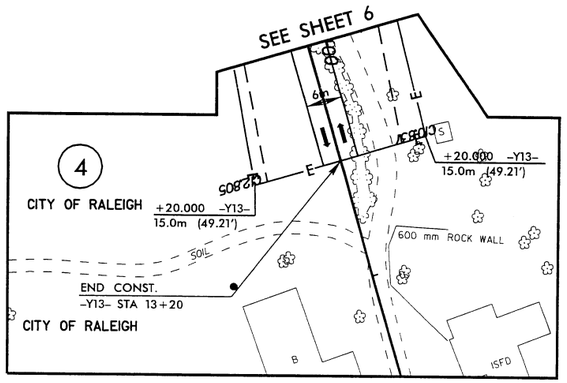
REVISIONS



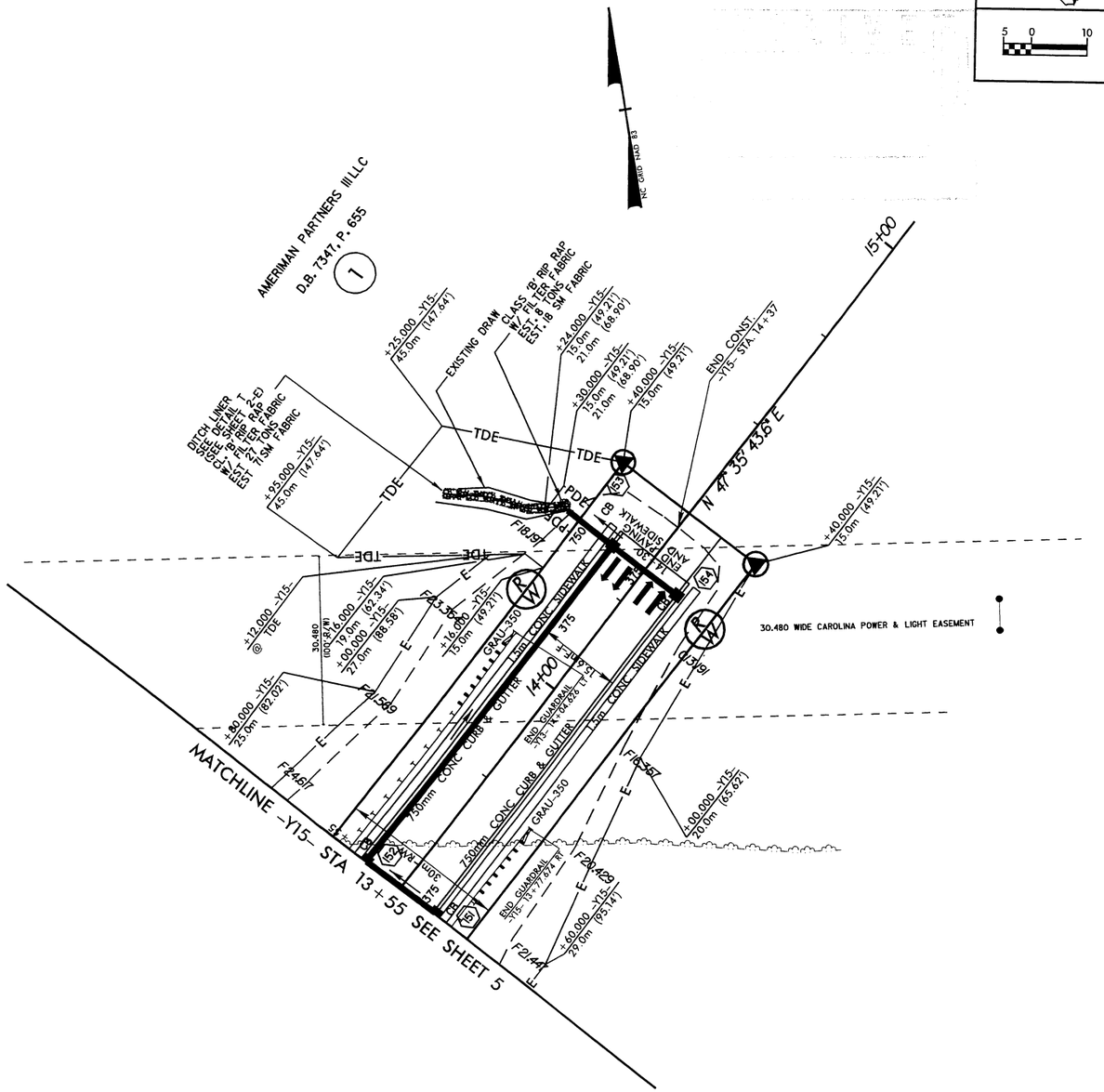
INSET A-A



INSET B-B



INSET C-C



SEE SHEETS 59 & 60 FOR -Y15- PROFILE

DRAWN BY:	DATE:
CHECKED BY:	DATE:

Document Control Number :

Filename : r2547bbs34.psh

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Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1	REB	12-16-03	PLACED RIPRAP AT THE END OF STRUCTURE 14
0	REB	7-22-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 023853 ENGINEER HENRY S. DOUGHTS
12/17/03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
12/17/03
HYDRAULICS ENGINEER

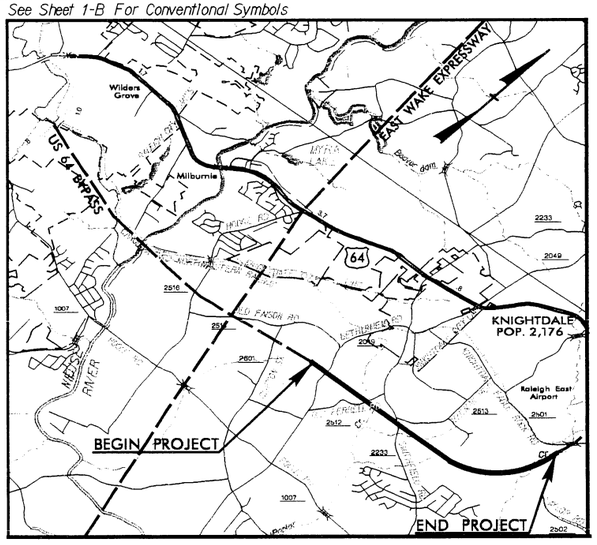
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

-Y15- STA. 13+55 TO STA. 14+40
INSETS A-A, B-B, & C-C

PROJECT: 8.1402212 R-2547C

See Sheet 1-B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

LOCATION: US 64 FROM EAST WAKE EXPRESSWAY TO SR 2502

TYPE OF WORK: FINAL PLANS
GRADING, DRAINAGE, PAVING, STRUCTURES, SIGNALS, & SIGNING

METRIC

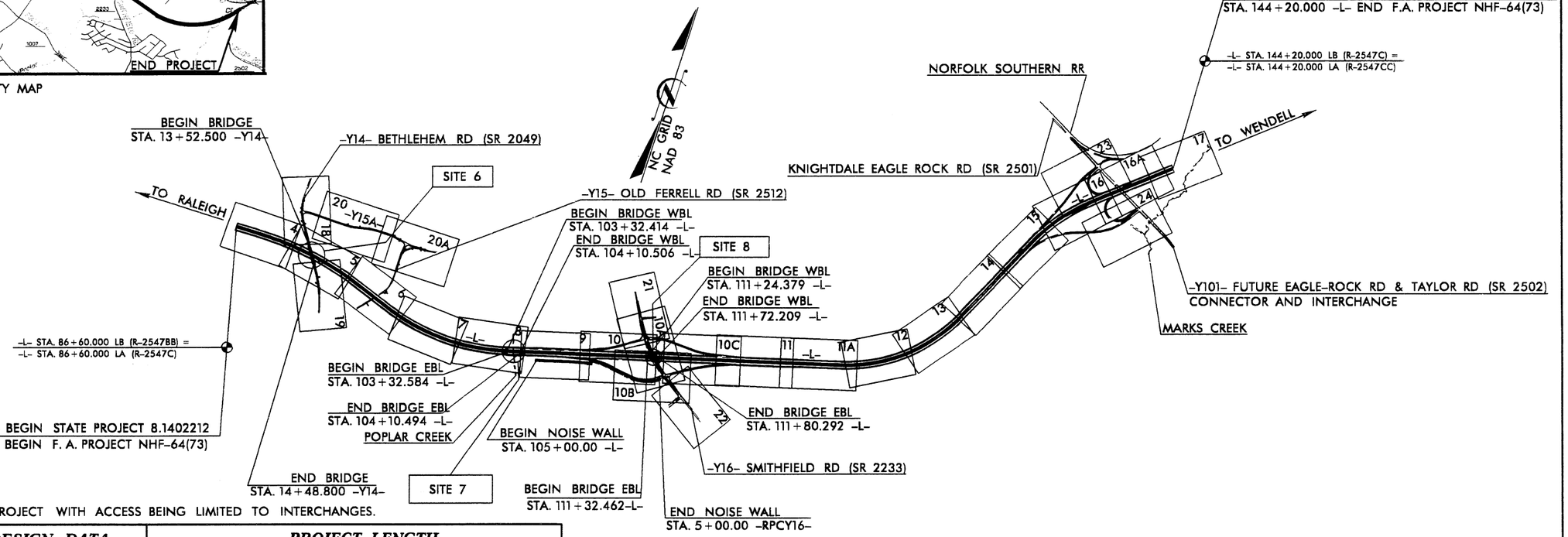
ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2547C	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
8.1402202	DPI-0199(004)	PE
8.1402207	NHS-64(34)	RW, UTL
8.1402212	NHF-64(73)	CONSTRUCTION

RECEIVED
RFC
JUL 14 2003
ROAD C
R04019 NCC 228 TOTAL SHEETS

RELEASE FOR CONSTRUCTION
DATE: 7-09-03



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

GRAPHIC SCALE

5 0 10
PLANS
5 0 10
PROFILE (HORIZONTAL)
1 0 2
PROFILE (VERTICAL)

DESIGN DATA

ADT 2002 = 45,574
ADT 2022 = 88,200
DHV = 12 %
D = 60 %
T = 9 % *
V = 110 km/h
* TTST 3% DUAL 6%

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT NHF-64(73) =	5.634 km
LENGTH STRUCTURES* F.A. PROJECT NHF-64(73) =	0.126 km
TOTAL LENGTH STATE PROJECT 8.1402212 =	5.760 km

* LENGTH BASED ON EBL BRIDGES

NOTE: DOES NOT INCLUDE -Y14-BRIDGE (0.096 km)

LETTING DATE:
MAY 24, 2002

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-9-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER H. HERRY WELLS, JR.
7/11/03
HYDRAULICS ENGINEER

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : n:\proj\2951\ustation\rdwy\final paving\r2547c.tsh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TITLE SHEET

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	REV_C-1

RELEASE FOR CONSTRUCTION

DATE: 02-09-04

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
1	TITLE SHEET	07-09-03								
REV_C-1	INDEX OF SHEETS & REVISION SUMMARY	07-09-03	07-17-03	08-18-03	08-28-03	10-23-03	11-26-03	12-12-03	02-09-04	
REV_C-2	INDEX OF SHEETS & REVISION SUMMARY	07-09-03	07-17-03	08-18-03	08-28-03	10-23-03	11-26-03	12-12-03	02-09-04	
REV_C-3	INDEX OF SHEETS & REVISION SUMMARY	07-09-03	07-17-03	08-28-03	10-23-03	11-26-03				
REV_C-4	INDEX OF SHEETS & REVISION SUMMARY	07-09-03	07-17-03	08-28-03	11-26-03					
REV_C-5	INDEX OF SHEETS & REVISION SUMMARY	07-09-03	07-17-03	08-18-03	08-28-03	10-23-03				
REV_C-6	INDEX OF SHEETS & REVISION SUMMARY	07-09-03	07-17-03	11-26-03						
REV_C-7	INDEX OF SHEETS & REVISION SUMMARY	07-09-03	11-26-03	12-12-03						
REV_C-8	INDEX OF SHEETS & REVISION SUMMARY	07-09-03	07-17-03							
REV_C-9	INDEX OF SHEETS & REVISION SUMMARY	07-09-03	07-17-03							
1A	INDEX, GENERAL NOTES	07-09-03	07-17-03	08-28-03						
1B	STANDARDS	07-09-03								
1C	CONVENTIONAL SYMBOLS	07-09-03								
2	TYPICAL SECTIONS	07-09-03	02-09-04							
2A	TYPICAL SECTIONS	07-09-03	08-18-03	02-09-04						
2B	TYPICAL SECTIONS	07-09-03	02-09-04							
2C	TYPICAL SECTIONS	07-09-03								
2D	TYPICAL SECTIONS	07-09-03								
2E	TYPICAL SECTIONS	07-09-03								
2F	DRAINAGE DETAILS	07-09-03	10-23-03	12-12-03						
2G	CHANNEL RELOCATION DETAILS	07-09-03	08-28-03	12-12-03	02-09-04					
2H	CHANNEL RELOCATION DETAILS	07-09-03	08-28-03	12-12-03						
2I	PREFORMED SCOUR HOLE & LEVEL SPREADER DETAILS	07-09-03	08-18-03	12-12-03						
~~2J~~	~~Y14 SHEAR POINT DIAGRAM~~	07-09-03	08-28-03							NOT INCLUDED IN 7-09-03 RELEASE FOR CONSTRUCTION
~~2K~~	~~Y16 SHEAR POINT DIAGRAM~~	07-09-03	08-28-03							NOT INCLUDED IN 7-09-03 RELEASE FOR CONSTRUCTION
~~2L~~	~~Y101 SHEAR POINT DIAGRAM~~	07-09-03	08-28-03							NOT INCLUDED IN 7-09-03 RELEASE FOR CONSTRUCTION

REVISED

RESET 10 SHEETS

THE LPA GROUP of North Carolina, p.a.
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Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
7	JAF	02-09-04	REVISED REV. SUM SHTS & SHT 2, 2A, 2B, 2G
6	CTH	12-12-03	REVISED REV. SUM SHTS & SHTS 2F,2G,2H,2I
5	CTH	11-26-03	REVISED REV. SUMM.
4	CTH	10-23-03	REVISED SHTS. 2F, REV. SUMM.
3	CTH	8-28-03	REVISED SHTS. 1A,2G, 2H, REMOVED SHTS. 2J,2K,2L FROM REV. SUMM.
2	CTH	8-18-03	REVISED SHEETS 2A, 2I, & REV. SUMM.
1		7-17-03	REVISED SHEETS 1A & REV. SUMM.
0	RR	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON

ROADWAY DESIGN ENGINEER

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename :

n:\PROJ*2951*ustation*rdwy*Final Paving*rev_summary.sum

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INDEX OF SHEETS
AND
REVISION SUMMARY

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	REV_C-2

RELEASE FOR CONSTRUCTION

DATE: 02-09-04

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
2M	DETAIL OF GUARDRAIL PROTECTION ON DUAL BRIDGE APPROACH MEDIAN		08-28-03							
2N	DETAIL OF GUARDRAIL PROTECTION FOR MEDIAN OBSTRUCTIONS		08-28-03							
20	DETAIL OF ROCK ENERGY DISSIPATOR	02-09-04								
3	GUARDRAIL SUMMARY	07-09-03	08-28-03							
3A	GUARDRAIL & GUIDERAIL SUMMARY	07-09-03	08-28-03	02-09-04						
4	PLAN SHEET	07-09-03								
5	PLAN SHEET	07-09-03	07-17-03	08-28-03	11-26-03					
6	PLAN SHEET	07-09-03								
7	PLAN SHEET	07-09-03	08-28-03	12-12-03						
8	PLAN SHEET	07-09-03	08-28-03	11-26-03	12-12-03					
9	PLAN SHEET	07-09-03	08-28-03	11-26-03						
10	PLAN SHEET	07-09-03	08-28-03							
10A	PLAN SHEET	07-09-03	08-18-03	08-28-03	11-26-03	12-12-03				
10B	PLAN SHEET	07-09-03								
10C	PLAN SHEET	07-09-03	08-18-03	11-26-03	12-12-03					
11	PLAN SHEET	07-09-03	08-18-03	08-28-03	10-23-03	11-26-03	12-12-03			
11A	PLAN SHEET	07-09-03								
12	PLAN SHEET	07-09-03								
13	PLAN SHEET	07-09-03	07-17-03	08-28-03						
14	PLAN SHEET	07-09-03	07-17-03	08-28-03	12-12-03	02-09-04				
15	PLAN SHEET	07-09-03	12-12-03	02-09-04						
16	PLAN SHEET	07-09-03								
16A	PLAN SHEET	07-09-03	12-12-03							
17	PLAN SHEET	07-09-03								
18	PLAN SHEET	07-09-03								
19	PLAN SHEET	07-09-03								
20	PLAN SHEET	07-09-03								

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REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
7	JAF	02-09-04	REVISED SHEET 2 0, 3A, 14, 15, & REV. SUMM.
6	CTH	12-12-03	REVISED SHEET 14, 16A, & REV. SUMM.
5	CTH	11-26-03	REVISED SHEET 5, 8, 9, 10A, 10C, 11 & REV. SUMM.
4	CTH	10-23-03	REVISED SHEETS 11 & REV. SUMM.
3	CTH	8-28-03	ADDED SHTS. 2M & 2N, REV. SHTS. 3, 3A, 5, 7, 8, 9, 10, 10A, 11, 13, 14, REV. SUMM.
2	CTH	8-18-03	REVISED SHEETS 10A, 10C, & 11
1		7-17-03	REVISED SHEETS 5, 13, & 14
0	RR	7-09-03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22115 JOHN N. JOHNSON

ROADWAY DESIGN ENGINEER

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DEPARTMENT OF TRANSPORTATION
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PROJECT REFERENCE NO.	SHEET NO.
R-2547C	REV C-3

RELEASE FOR CONSTRUCTION

DATE: 11-26-03

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
20A	PLAN SHEET	07-09-03								
21	PLAN SHEET	07-09-03	11-26-03							
22	PLAN SHEET	07-09-03								
23	PLAN SHEET	07-09-03								
24	PLAN SHEET	07-09-03								
25	PLAN SHEET	07-09-03								
26	PLAN SHEET	07-09-03								
27	PLAN SHEET	07-09-03								
28	PLAN SHEET	07-09-03								
29	PLAN SHEET	07-09-03	10-23-03							
30	PLAN SHEET	07-09-03								
31	PLAN SHEET	07-09-03								
32	PLAN SHEET	07-09-03								
33	PLAN SHEET	07-09-03								
34	PLAN SHEET	07-09-03								
35	PLAN SHEET	07-09-03								
36	PLAN SHEET	07-09-03								
37	PLAN SHEET	07-09-03								
38	PLAN SHEET	07-09-03								
39	PLAN SHEET	07-09-03								
40	PLAN SHEET	07-09-03								
41	CROSS SECTION INDEX	07-09-03	07-17-03	08-28-03						
X-1	CROSS SECTIONS	07-09-03								
X-2	CROSS SECTIONS	07-09-03								
X-3	CROSS SECTIONS	07-09-03								

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NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4	CTH	11-26-03	REVISED SHEET 21
3	CTH	10-23-03	REVISED SHEET 29
2	CTH	8-28-03	REVISED SHEET 41
1		7-17-03	REVISED SHEET 41
0	RR	7-09-03	RELEASE FOR CONSTRUCTION

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PROJECT REFERENCE NO.	SHEET NO.
R-2547C	REV.C-4

RELEASE FOR CONSTRUCTION

DATE: 12-12-03

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
X-4	CROSS SECTIONS	07-09-03								
X-5	CROSS SECTIONS	07-09-03								
X-6	CROSS SECTIONS	07-09-03	08-28-03							
X-7	CROSS SECTIONS	07-09-03	07-17-03	08-28-03	11-26-03					
X-8	CROSS SECTIONS	07-09-03	07-17-03	08-28-03	11-26-03					
X-9	CROSS SECTIONS	07-09-03	08-28-03	11-26-03						
X-10	CROSS SECTIONS	07-09-03	08-28-03							
X-11	CROSS SECTIONS	07-09-03								
X-12	CROSS SECTIONS	07-09-03								
X-13	CROSS SECTIONS	07-09-03								
X-14	CROSS SECTIONS	07-09-03								
X-15	CROSS SECTIONS	07-09-03								
X-16	CROSS SECTIONS	07-09-03								
X-17	CROSS SECTIONS	07-09-03								
X-18	CROSS SECTIONS	07-09-03								
X-19	CROSS SECTIONS	07-09-03	08-28-03							
X-20	CROSS SECTIONS	07-09-03	08-28-03							
X-21	CROSS SECTIONS	07-09-03	08-28-03	12-12-03						
X-22	CROSS SECTIONS	07-09-03								
X-23	CROSS SECTIONS	07-09-03								
X-24	CROSS SECTIONS	07-09-03								
X-25	CROSS SECTIONS	07-09-03								
X-26	CROSS SECTIONS	07-09-03								
X-27	CROSS SECTIONS	07-09-03								
X-28	CROSS SECTIONS	07-09-03								
X-28A	CROSS SECTIONS	11-26-03								
X-28B	CROSS SECTIONS	11-26-03								

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NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4	DSP	12-12-03	REV. SHEET X-21
3	CTH	11-26-03	REV. SHTS. X-7 & X-8, ADDED X-28A & X-28B
2	CTH	8-28-03	REV. SHTS. X-6 THRU X-10, & X-19 THRU X-21
1		7-17-03	REVISED SHEETS X-7 & X-8
0	RR	7-09-03	RELEASE FOR CONSTRUCTION

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R-2547C	REV_C-5

RELEASE FOR CONSTRUCTION

DATE: 11-26-03

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SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
X-29	CROSS SECTIONS	07-09-03	11-26-03							
X-29A	CROSS SECTIONS	11-26-03								
X-30	CROSS SECTIONS	07-09-03								
X-31	CROSS SECTIONS	07-09-03								
X-32	CROSS SECTIONS	07-09-03	08-28-03							
X-33	CROSS SECTIONS	07-09-03	08-28-03							
X-34	CROSS SECTIONS	07-09-03	08-28-03							
X-35	CROSS SECTIONS	07-09-03								
X-36	CROSS SECTIONS	07-09-03								
X-37	CROSS SECTIONS	07-09-03								
X-38	CROSS SECTIONS	07-09-03	08-28-03							
X-39	CROSS SECTIONS	07-09-03	08-28-03							
X-40	CROSS SECTIONS	07-09-03	08-28-03	11-26-03						
X-40A	CROSS SECTIONS	11-26-03								
X-40B	CROSS SECTIONS	11-26-03								
X-40C	CROSS SECTIONS	11-26-03								
X-41	CROSS SECTIONS	07-09-03	08-18-03	11-26-03						
X-41A	CROSS SECTIONS	11-26-03								
X-42	CROSS SECTIONS	07-09-03	08-18-03							
X-43	CROSS SECTIONS	07-09-03	08-18-03							
X-44	CROSS SECTIONS	07-09-03								
X-45	CROSS SECTIONS	07-09-03	08-28-03							
X-46	CROSS SECTIONS	07-09-03	08-28-03							
X-47	CROSS SECTIONS	07-09-03	08-28-03	10-23-03						
X-48	CROSS SECTIONS	07-09-03	08-28-03	10-23-03						
X-49	CROSS SECTIONS	07-09-03	08-28-03	10-23-03						
X-50	CROSS SECTIONS	07-09-03		10-23-03						

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NO.	BY:	DATE:	DESCRIPTION OF REVISION
5	CTH	11-26-03	ADDED X-29A, X-40A, X-40B, X-40C, X-41A REV. X-29, X-40, X-41 REV. SUM. SHT.
4	CTH	10-23-03	REV. SHTS. X-47 THRU X-50
3	CTH	8-28-03	REV. SHTS. X-32 THRU X-34, X-38 THRU X-40 REV. SHTS. X-45 THRU X-49
2	CTH	8-18-03	REV. SHTS. X-41 THRU X-43
1		7-17-03	UPDATE SEAL
0	RR	7-09-03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON 11-26-03

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PROJECT REFERENCE NO.	SHEET NO.
R-2547C	REV_C-6

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DATE: 11-26-03

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
X-51	CROSS SECTIONS	07-09-03								
X-52	CROSS SECTIONS	07-09-03								
X-53	CROSS SECTIONS	07-09-03								
X-54	CROSS SECTIONS	07-09-03								
X-55	CROSS SECTIONS	07-09-03								
X-56	CROSS SECTIONS	07-09-03								
X-57	CROSS SECTIONS	07-09-03								
X-58	CROSS SECTIONS	07-09-03								
X-59	CROSS SECTIONS	07-09-03								
X-60	CROSS SECTIONS	07-09-03								
X-61	CROSS SECTIONS	07-09-03								
X-62	CROSS SECTIONS	07-09-03	07-17-03							
X-63	CROSS SECTIONS	07-09-03	07-17-03							
X-64	CROSS SECTIONS	07-09-03	07-17-03							
X-65	CROSS SECTIONS	07-09-03	07-17-03							
X-66	CROSS SECTIONS	07-09-03	07-17-03							
X-67	CROSS SECTIONS	07-09-03	07-17-03							
X-68	CROSS SECTIONS	07-09-03	07-17-03							
X-69	CROSS SECTIONS	07-09-03	07-17-03							
X-70	CROSS SECTIONS	07-09-03	07-17-03							
X-71	CROSS SECTIONS	07-09-03	07-17-03							
X-72	CROSS SECTIONS	07-09-03	07-17-03							
X-73	CROSS SECTIONS	07-09-03								
X-74	CROSS SECTIONS	07-09-03								
X-75	CROSS SECTIONS	07-09-03								
X-76	CROSS SECTIONS	07-09-03								
X-77	CROSS SECTIONS	07-09-03								
X-78	CROSS SECTIONS	07-09-03								

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REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2	CTH	11-26-03	REVISED SUMMARY SHEET
1		7-17-03	REVISED SHEETS X-62 THRU X-72
0	RR	7-09-03	RELEASE FOR CONSTRUCTION

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11-26-03

ROADWAY DESIGN ENGINEER

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PROJECT REFERENCE NO.	SHEET NO.
R-2547C	REV_C-7

RELEASE FOR CONSTRUCTION

DATE: 12-12-03

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
X-79	CROSS SECTIONS	07-09-03								
X-80	CROSS SECTIONS	07-09-03								
X-81	CROSS SECTIONS	07-09-03								
X-82	CROSS SECTIONS	07-09-03								
X-83	CROSS SECTIONS	07-09-03								
X-84	CROSS SECTIONS	07-09-03								
X-85	CROSS SECTIONS	07-09-03								
X-86	CROSS SECTIONS	07-09-03	12-12-03							
X-87	CROSS SECTIONS	07-09-03	12-12-03							
X-88	CROSS SECTIONS	07-09-03								
X-89	CROSS SECTIONS	07-09-03								
X-90	CROSS SECTIONS	07-09-03								
X-91	CROSS SECTIONS	07-09-03								
X-92	CROSS SECTIONS	07-09-03								
X-93	CROSS SECTIONS	07-09-03								
X-94	CROSS SECTIONS	07-09-03								
X-95	CROSS SECTIONS	07-09-03								
X-96	CROSS SECTIONS	07-09-03								
X-97	CROSS SECTIONS	07-09-03	11-26-03							
X-97A	CROSS SECTIONS	11-26-03								
X-97B	CROSS SECTIONS	11-26-03								
X-98	CROSS SECTIONS	07-09-03	11-26-03							
X-99	CROSS SECTIONS	07-09-03								
X-100	CROSS SECTIONS	07-09-03								
X-101	CROSS SECTIONS	07-09-03								
X-102	CROSS SECTIONS	07-09-03								
X-103	CROSS SECTIONS	07-09-03								

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5			
4			
3			
2	CTH	12-12-03	REVISED SHEET X-86, X-87
1	CTH	11-26-03	ADDED X-97A, X-97B, REV X-97, X-98
0	RR	7-09-03	RELEASE FOR CONSTRUCTION
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R-2547C	REV_C-8

RELEASE FOR CONSTRUCTION

DATE: 7-17-03

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SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
X-104	CROSS SECTIONS	07-09-03								
X-105	CROSS SECTIONS	07-09-03								
X-106	CROSS SECTIONS	07-09-03								
X-107	CROSS SECTIONS	07-09-03								
X-108	CROSS SECTIONS	07-09-03								
X-109	CROSS SECTIONS	07-09-03								
X-110	CROSS SECTIONS	07-09-03								
X-111	CROSS SECTIONS	07-09-03								
X-112	CROSS SECTIONS	07-09-03								
X-113	CROSS SECTIONS	07-09-03								
X-114	CROSS SECTIONS	07-09-03								
X-115	CROSS SECTIONS	07-09-03								
X-116	CROSS SECTIONS	07-09-03								
X-117	CROSS SECTIONS	07-09-03								
X-118	CROSS SECTIONS	07-09-03								
X-119	CROSS SECTIONS	07-09-03								
X-120	CROSS SECTIONS	07-09-03								
X-121	CROSS SECTIONS	07-09-03								
X-122	CROSS SECTIONS	07-09-03								
X-123	CROSS SECTIONS	07-09-03								
X-124	CROSS SECTIONS	07-09-03								
X-125	CROSS SECTIONS	07-09-03								
X-126	CROSS SECTIONS	07-09-03								
X-127	CROSS SECTIONS	07-09-03								
X-128	CROSS SECTIONS	07-09-03								

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5			
4			
3			
2			
1		7/17/03	UPDATE SEAL
0	RR	7-09-03	RELEASE FOR CONSTRUCTION
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NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
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	DATE: 7-17-03	

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SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
X-129	CROSS SECTIONS	07-09-03								
X-130	CROSS SECTIONS	07-09-03								
X-131	CROSS SECTIONS	07-09-03								
X-132	CROSS SECTIONS	07-09-03								
X-133	CROSS SECTIONS	07-09-03								
X-134	CROSS SECTIONS	07-09-03								
X-135	CROSS SECTIONS	07-09-03								
X-136	CROSS SECTIONS	07-09-03								
X-137	CROSS SECTIONS	07-09-03								
X-138	CROSS SECTIONS	07-09-03								
X-139	CROSS SECTIONS	07-09-03								
X-140	CROSS SECTIONS	07-09-03								
X-141	CROSS SECTIONS	07-09-03								
X-142	CROSS SECTIONS	07-09-03								
X-143	CROSS SECTIONS	07-09-03								
X-144	CROSS SECTIONS	07-09-03								
X-145	CROSS SECTIONS	07-09-03								
X-146	CROSS SECTIONS	07-09-03								
X-147	CROSS SECTIONS	07-09-03								
X-148	CROSS SECTIONS	07-09-03								
X-149	CROSS SECTIONS	07-09-03								

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1		7/7/03	UPDATE SEAL
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PROJECT REFERENCE NO.	SHEET NO.
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METRIC

RELEASE FOR CONSTRUCTION -

DATE: 8-28-03

GENERAL NOTES - METRIC

THIS PROJECT IS LOCATED IN AN "ENVIRONMENTALLY SENSITIVE AREA". THIS DESIGNATION REQUIRES SPECIAL PROCEDURES TO BE USED FOR CLEARING AND GRUBBING, TEMPORARY STREAM CROSSINGS, AND GRADING OPERATIONS WITHIN THE AREA IDENTIFIED ON THE PLANS. THIS ALSO REQUIRES SPECIAL PROCEDURES TO BE USED FOR SEEDING AND MULCHING AND STAGED SEEDING WITHIN THE PROJECT.

IN AREAS IDENTIFIED AS "ENVIRONMENTALLY SENSITIVE AREAS", THE DESIGN/BUILDER MAY PERFORM CLEARING OPERATIONS, BUT NOT GRUBBING OPERATIONS UNTIL IMMEDIATELY PRIOR TO BEGINNING GRADING OPERATIONS AS DESCRIBED IN SECTION 200, ARTICLE 200-1, IN THE STANDARD SPECIFICATIONS. THE "ENVIRONMENTALLY SENSITIVE AREA" SHALL BE DEFINED AS A 50 FOOT (16 METER) BUFFER ZONE ON BOTH SIDES OF THE STREAM (OR DEPRESSION), MEASURED FROM THE TOP OF STREAMBANK, (OR CENTER OF DEPRESSION)--AS SHOWN IN THE PERMIT DRAWINGS. ONLY CLEARING OPERATIONS (NOT GRUBBING) SHALL BE ALLOWED IN THIS BUFFER ZONE UNTIL IMMEDIATELY PRIOR TO BEGINNING GRADING OPERATIONS. EROSION CONTROL DEVICES SHALL BE INSTALLED IMMEDIATELY FOLLOWING THE CLEARING OPERATION.

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

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED OR FUTURE SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES IN ORDER TO SECURE A PROPER TIE-IN.

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION ON HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01 OR 560.02. THE ALGEBRAIC DIFFERENCE, OF FINISHED GRADE SHOULDER SLOPES AND SUBGRADE SHOULDER SLOPES ON NORMAL CROWN SECTIONS, SHALL BE MAINTAINED THROUGH SUPERELEVATED SECTIONS OF THE ROADWAY (THIS WILL MAKE SUPERELEVATED AND TANGENT PAVED SHOULDER DEPTHS CONSISTENT).

THE DESIGN/BUILDER WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT.

BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS.

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03.

SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 816.02 OR 816.03 AND DETAILS IN THE PLANS.

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.02 USING 900mm RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS.

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON THE PLANS.

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION. THE DESIGN/BUILDER SHOULD CONSULT WITH THE ENGINEER PRIOR TO ADJUSTING THE GUARDRAIL LOCATIONS.

THE DESIGN/BUILDER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APROACHING A BRIDGE.

GENERAL NOTES - METRIC (CONT'D)

ROADWAY FOUNDATION RECOMMENDATIONS:

GENERAL--REVIEW THE ROADWAY FOUNDATION RECOMMENDATIONS FOR SPECIFIC RECOMMENDATIONS, INCLUDING THE FOLLOWING:
UNDERCUT/STABILIZATION FABRIC FOR SLOPE/EMBANKMENT STABILITY IS EXPECTED FROM STA. 131+20 TO 132+00 (ONE METER BELOW EXISTING GROUND). SIMILAR TOE OF SLOPE UNDERCUT MAY BE REQUIRED WHERE EMBANKMENTS EXTEND INTO PONDS (THAT WILL BE DRAINED). DRAINAGE FEATURES OR LOW-LYING AREAS.

UNDERCUT EXCAVATION FOR SUBGRADE STABILITY IS EXPECTED AT THE FOLLOWING LOCATIONS: -L- STA. 88+60 TO 89+10
-RPBY16- STA. 2+50 TO 4+20
-RPCY16- STA. 4+40 TO 5+30

SUBGRADE STABILIZATION IS REQUIRED THROUGHOUT THE PROJECT.

SEE RECOMMENDATIONS FOR LOCATION OF LIME/CEMENT. UNDERCUT ALONG CULVERT PIPES ACROSS EXISTING PONDS SHOULD BE CONDUCTED AS DIRECTED.

GROUNDWATER WAS IDENTIFIED ABOVE OR WITHIN 1.8 METERS OF THE DESIGN SUBGRADE AT THE LOCATIONS LISTED BELOW. UNDERDRAINS ARE EXPECTED TO BE PLACED AT THESE LOCATIONS.
LOCATIONS OF GROUNDWATER WITHIN 1.8 METERS OF SUBGRADE:
-L- STA. 90+45 TO 91+15
-L- STA. 95+00 TO 96+00
-L- STA. 125+80 TO 131+85
-L- STA. 139+80 TO 140+30

UNDERDRAINS ARE RECOMMENDED AT LEAST AT THE TOE OF CUT SLOPES AT THE FOLLOWING LOCATIONS FOR SLOPE STABILITY. USE OF UNDERDRAINS IN OTHER LOCATIONS SHOULD BE CONSTRUCTED AS DIRECTED.
-L- STA. 90+45 TO 91+15
-L- STA. 126+20 TO 131+85

AT ROCK LOCATIONS:

THE LOCATIONS OF SOFT WEATHERED ROCK AND HARD ROCK SHOULD BE CONSTRUCTED AT A SLOPE OF 1.5(H):1(V). THE EARTH CUT ABOVE THE 1.5(H):1(V) ROCK CUTS SHOULD BE CONSTRUCTED AT VARIBLE SLOPES AS SHOWN ON THE CROSS SECTIONS.

THE GEOTECHNICAL ENGINEER SHOULD OBSERVE ALL ROCK CUTS TO CONFIRM ALL LOOSE ROCK IS ADEQUATELY REMOVED AND TO DETERMINE THE ALLOWABLE SLOPE TO BE USED. SEE RECOMMENDATIONS FOR ANTICIPATED LOCATIONS.
UNSUITABLE EXCAVATION MATERIAL IS PRESENT AT THE FOLLOWING LOCATIONS.
-L- STA. 88+60 TO 89+10
-L- STA. 121+00 TO 122+00
-RPBY16- STA. 2+50 TO 4+20
-RPCY16- STA. 4+40 TO 5+30

SHOULDER DRAINS (NOTE: 'SN'=STRUCTURE NUMBER)

EBL OUTSIDE SHOULDER DRAIN

FROM 86+60 TO 89+67
OUTLETS AT 86+60; 87+50; 88+40 (SN4); 89+20;
FROM 89+67 TO 95+90
OUTLETS AT 91+40; 92+40 (SN15); 93+10 (SN18); 93+73 (SN20); 94+70; 95+90 (SN25)
FROM 104+15 TO 108+15
OUTLETS AT 104+43+/- (SN41); 105+30 (SN45); 106+65 (SN48); 107+20 (SN49)
FROM 108+45 TO 111+34
OUTLETS AT 108+45; 109+78 (SN56); 110+38 (SN58)
FROM 111+95 TO 115+15
OUTLETS AT 111+95 (SN69); 113+00; 114+00

GENERAL NOTES - METRIC (CONT'D)

EBL OUTSIDE SHOULDER DRAINS CONT'D.

FROM 115+15 TO 121+40
OUTLETS AT 115+15; 115+90; 116+60; 117+60 (SN85B); 118+50; 119+40 (SN89); 120+70 (SN93)
FROM 130+10 TO 144+20
OUTLETS AT 131+00(SN11); 132+00 (SN114); 133+00; 133+80 (SN117A); 134+20 (SN117); 135+06 (SN121); 135+80; 136+80 (SN124); 137+50; 138+40 (SN127); 139+60 (SN130); 140+60; 141+66 (SN133A)

EBL INSIDE SHOULDER DRAINS

FROM 95+88 TO 103+25
OUTLET AT 97+43 (SN29); 98+80 (SN31); 100+02 (SN34); 101+57 (SN35); 103+25 (SN36)
FROM 120+70 TO 122+00
OUTLETS AT 120+70 (SN91)
FROM 122+00 TO 131+00
OUTLETS AT 124+15 (SN97); 125+60 (SN100); 127+00 (SN103); 128+40 (SN106); 129+80 (SN109); 131+00 (SN112)

WBL OUTSIDE SHOULDER DRAINS

FROM 86+60 TO 87+80
OUTLETS AT 86+60
FROM 94+28 TO 103+25
OUTLETS AT 95+00; 95+90 (SN24); 97+33 (SN28); 98+20; 99+00; 100+00; 101+20; 102+10; 103+25 (SN37)
FROM 104+15 TO 108+43
OUTLETS AT 104+43+/- (SN39); 105+30 (SN44); 106+70 (SN46); 107+65 (SN52);
FROM 108+70 TO 111+12
OUTLETS AT 108+70; 109+78 (SN54); 110+40 (SN61)
FROM 111+70 TO 114+65
OUTLETS AT 111+70; 111+82 (SN67); 112+90; 113+80
FROM 114+80 TO 122+00
OUTLETS AT 114+80 (SN79); 116+15 (SN83); 117+30; 118+00; 118+80 (SN87); 119+80; 120+70 (SN92)
FROM 122+00 TO 134+60
OUTLETS AT 123+00; 124+05 (SN96); 125+60 (SN98); 127+00 (SN101); 128+40 (SN104); 129+80 (SN107); 131+00 (SN110); 131+70; 132+40; 133+50; 134+20 (SN119); 134+60
FROM 139+62 TO 144+20
OUTLETS AT 140+70; 142+00 (SN134A); 142+80; 143+80 (SN135); 144+20

WBL INSIDE SHOULDER DRAINS

FROM 87+47 TO 89+67
OUTLETS AT 87+47 (SN2); 88+40 (SN3); 89+35 (SN7)
FROM 89+67 TO 95+90
OUTLETS AT 90+64 (SN8); 92+40 (SN14); 93+73 (SN19); 95+90 (SN27)
FROM 134+58 TO 139+60
OUTLETS AT 135+40 (SN122); 136+80 (SN125); 138+40 (SN128); 139+60 (SN131)

NOTES: -IN CUT SECTIONS, OUTLET PIPES SHALL BE A 1% GRADE INSTEAD OF A 3% MIN GRADE
-STATION +/- INDICATES VERTICAL SAG WHICH HAS TWO OUTLETS (EX. 104+43 +/-)

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INDEX OF SHEETS

ROADWAY METRIC STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N.C. Department of Transportation - Raleigh, N.C., Dated January 15, 2002 are applicable to this project and by reference hereby are considered a part of these plans:

NOTE 1: THE ENTIRE LIST OF THE "ROADWAY STANDARD DRAWINGS" IS BEING PROVIDED TO THE CONTRACTOR.

SEE SHEET 1B

THE LPA GROUP of North Carolina, p.a.
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North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2	CTH	8-28-03	REVISED INDEX OF SHEETS TO INCLUDE 2M, 2N
1	JLS	7-17-03	REVISED INDEX OF SHEETS
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON

8-28-03

ROADWAY DESIGN ENGINEER

DRAWN BY: _____ DATE: _____
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
INDEX, GEN. NOTES

ROADWAY METRIC STANARD DRAWINGS

EFF. 01-15-02
REV.06-17-02

The following Roadway Standards appear in "Roadway Standard Drawings" Highway Design Branch—N.C. Department of Transportation—Raleigh, N.C. Dated January 15, 2002 are applicable to this project by reference hereby are considered a part of these plans:

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METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	1B

RELEASE FOR CONSTRUCTION –

DATE: 7-09-03

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
THE LPA GROUP TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
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3			
2			
1			
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON

7-9-03

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
STANDARDS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	1C

RELEASE FOR CONSTRUCTION -
DATE: 7-17-03

RECEIVED
JUL 21 2003
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METRIC

ROADS & RELATED ITEMS

- Edge of Pavement
- Curb
- Prop. Slope Stakes Cut — C —
- Prop. Slope Stakes Fill — F —
- Prop. Woven Wire Fence
- Prop. Chain Link Fence
- Prop. Barbed Wire Fence
- Prop. Wheelchair Ramp — WCR
- Curb Cut For Future Wheelchair Ramp — WCFR
- Exist. Guardrail
- Prop. Guardrail
- Exist. Cable Guiderail
- Prop. Cable Guiderail
- Equality Symbol
- Pavement Removal

RIGHT OF WAY

- Baseline Control Point
- Existing Right of Way Marker
- Exist. Right of Way Line w/Marker
- Prop. Right of Way Line with Proposed R/W marker (Iron Pin & Cap)
- Prop. Right of Way Line with Proposed (Concrete or Granite) R/w Marker
- Exist. Control of Access Line
- Prop. Control of Access Line
- Exist. Easement Line — E —
- Prop. Temp. Construction Easement Line — TCE —
- Prop. Temp. Drainage Easement Line — TDE —
- Prop. Perm. Drainage Easement Line — PDE —

HYDROLOGY

- Stream or Body of Water
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Shoreline
- Falls, Rapids
- Prop Lateral, Tail, Head Ditches — FLOW

STRUCTURES

MAJOR

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

MINOR

- Head & End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Boxes — CB
- Paved Ditch Gutter

UTILITIES

- Exist. Pole
- Exist. Power Pole
- Prop. Power Pole
- Exist. Telephone Pole
- Prop. Telephone Pole
- Exist. Joint Use Pole
- Prop. Joint Use Pole
- Telephone Pedestal — T
- Cable TV Pedestal — C
- Hydrant
- Satellite Dish
- Exist. Water Valve
- Sewer Clean Out
- Power Manhole — P
- Telephone Booth
- Water Manhole — W
- Light Pole
- H-Frame Pole
- Power Line Tower
- Pole with Base
- Gas Valve
- Gas Meter
- Telephone Manhole — T
- Power Transformer
- Sanitary Sewer Manhole
- Storm Sewer Manhole — S
- Tank; Water, Gas, Oil
- Water Tank With Legs
- Traffic Signal Junction Box — S
- Fiber Optic Splice Box — F
- Television or Radio Tower
- Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement — TS — TS

- Recorded Water Line — W — W —
- Designated Water Line (S.U.E.*) — W — W —
- Sanitary Sewer — SS — SS —
- Recorded Sanitary Sewer Force Main — FSS — FSS —
- Designated Sanitary Sewer Force Main(S.U.E.*) — FSS — FSS —
- Recorded Gas Line — G — G —
- Designated Gas Line (S.U.E.*) — G — G —
- Storm Sewer — S — S —
- Recorded Power Line — P — P —
- Designated Power Line (S.U.E.*) — P — P —
- Recorded Telephone Cable — T — T —
- Designated Telephone Cable (S.U.E.*) — T — T —
- Recorded U/G Telephone Conduit — TC — TC —
- Designated U/G Telephone Conduit (S.U.E.*) — TC — TC —
- Unknown Utility (S.U.E.*) — UTL — UTL —
- Recorded Television Cable — TV — TV —
- Designated Television Cable (S.U.E.*) — TV — TV —
- Recorded Fiber Optics Cable — FO — FO —
- Designated Fiber Optics Cable (S.U.E.*) — FO — FO —
- Exist. Water Meter
- U/G Test Hole (S.U.E.*)
- Abandoned According to U/G Record — ATTUR
- End of Information — E.O.I.

BOUNDARIES & PROPERTIES

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Property Line Symbol — PL
- Exist. Iron Pin — EIP
- Property Corner
- Property Monument — EPM
- Property Number — 123
- Parcel Number — 6
- Fence Line — WW & ISBW
- Existing Wetland Boundaries — NLB —
- Proposed Wetland Boundaries — NLB —
- Existing Endangered Animal Boundaries — EAB —
- Existing Endangered Plant Boundaries — EPB —

BUILDINGS & OTHER CULTURE

- Buildings
- Foundations
- Area Outline
- Gate
- Gas Pump Vent or U/G Tank Cap
- Church
- School
- Park
- Cemetery
- Dam
- Sign — S
- Well — W
- Small Mine
- Swimming Pool

TOPOGRAPHY

- Loose Surface
- Hard Surface
- Change in Road Surface
- Curb
- Right of Way Symbol — R/W
- Guard Post — GP
- Paved Walk
- Bridge
- Box Culvert or Tunnel
- Ferry
- Culvert
- Footbridge
- Trail, Footpath
- Light House

VEGETATION

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — VINEYARD

RAILROADS

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH

revised 2/25/97

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-17-03
ROADWAY DESIGN ENGINEER

REVISIONS			
5			
4			
3			
2			
1	JLS	7-17-03	REVISED SEAL
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : r2547c.tsh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
CONVENTIONAL SYMBOLS

PAVEMENT SCHEDULE

A1	290 mm JOINTED CONCRETE PAVEMENT WITH DOWELS	E3	PROP. APPROX. 90 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 220.50 kg PER SQ. METER.
A2	290 mm JOINTED CONCRETE PAVEMENT; GORE AND MISC. AREAS (WITHOUT DOWELS) NOT APPLICABLE TO THIS SECTION	E4	PROP. APPROX. 110 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B AT AN AVERAGE RATE OF 269.5 kg PER SQ. METER.
C1	PROP. APPROX. 25 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5A, AT AN AVERAGE RATE OF 60 kg PER SQ. METER.	E5	PROP. APPROX. 120 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B AT AN AVERAGE RATE OF 294 kg PER SQ. METER. NOT APPLICABLE TO THIS SECTION
C2	PROP. APPROX. 60 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 72 kg PER SQ. METER IN EACH OF TWO LAYERS.	E6	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 75 mm IN DEPTH OR GREATER THAN 140 mm IN DEPTH.
C3	PROP. APPROX. 70 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 84 kg PER SQ. METER IN EACH OF TWO LAYERS.	E7	PROP. APPROX. 180 mm ASPHALT CONC. BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 220.5 kg PER SQ. METER. IN EACH OF TWO LAYERS. NOT APPLICABLE TO THIS SECTION
C4	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 2.40 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 30 mm IN DEPTH OR GREATER THAN 40 mm IN DEPTH.	E8	PROP. APPROX. 270 mm ASPHALT CONC. BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 330.75 kg PER SQ. METER. IN EACH OF TWO LAYERS. NOT APPLICABLE TO THIS SECTION
C5	PROP. APPROX. 60 mm ASPHALT CONC. SURFACE COURSE. TYPE S9.5C AT AN AVERAGE RATE OF 72 kg PER SQ. METER IN EACH OF TWO LAYERS NOT APPLICABLE TO THIS SECTION	E9	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 75 mm IN DEPTH OR GREATER THAN 140 mm IN DEPTH. NOT APPLICABLE TO THIS SECTION
C6	PROP. APPROX. 70 mm ASPHALT CONC. SURFACE COURSE, TYPE S12.5C. AT AN AVERAGE RATE OF 84 kg PER SQ. METER IN EACH OF TWO LAYERS NOT APPLICABLE TO THIS SECTION	J1	PROP. 100 mm AGGREGATE BASE COURSE.
C7	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE 12.5C AT AN AVERAGE RATE OF 2.40 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 35 mm IN DEPTH OR GREATER THAN 60 mm IN DEPTH NOT APPLICABLE TO THIS SECTION	J2	PROP. 150 mm AGGREGATE BASE COURSE.
D1	PROP. APPROX. 55 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B AT AN AVERAGE RATE OF 135 kg PER SQ. METER.	J3	PROP. 200 mm AGGREGATE BASE COURSE.
D2	PROP. APPROX. 60 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B AT AN AVERAGE RATE OF 147 kg PER SQ. METER. NOT APPLICABLE TO THIS SECTION		
D3	PROP. APPROX. 70 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B AT AN AVERAGE RATE OF 171.5 kg PER SQ. METER. NOT APPLICABLE TO THIS SECTION		
D4	PROP. APPROX. 75 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B AT AN AVERAGE RATE OF 183.75 kg PER SQ. METER.		
D5	PROP. APPROX. 110 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B AT AN AVERAGE RATE OF 270 kg PER SQ. METER.		
D6	PROP. APPROX. 120 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B AT AN AVERAGE RATE OF 147 kg PER SQ. METER IN EACH OF TWO LAYERS. NOT APPLICABLE TO THIS SECTION		
D7	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 55 mm OR GREATER THAN 110 mm IN DEPTH.		
D8	PROP. APPROX. 80 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 196 kg PER SQ. METER. NOT APPLICABLE TO THIS SECTION		
D9	PROP. APPROX. 60 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 147 kg PER SQ. METER. NOT APPLICABLE TO THIS SECTION		
D10	PROP. APPROX. 110 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 270 kg PER SQ. METER. NOT APPLICABLE TO THIS SECTION		
D11	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 55 mm IN DEPTH OR GREATER THAN 110 mm IN DEPTH. NOT APPLICABLE TO THIS SECTION		
E1	PROP. APPROX. 75 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 183.75 kg PER SQ. METER. NOT APPLICABLE TO THIS SECTION		
E2	PROP. APPROX. 80 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 196 kg PER SQ. METER. NOT APPLICABLE TO THIS SECTION		

J4	PROP. 250 mm AGGREGATE BASE COURSE. NOT APPLICABLE TO THIS SECTION		
J5	PROP. VAR. DEPTH AGGREGATE BASE COURSE.		
J6	PROP. 175 mm DEPTH AGGREGATE BASE COURSE.		
K	SUBBASE TO BE TREATED WITH LIME TO A DEPTH OF 200mm, AT A RATE OF 11kg PER SQ. METER AS DIRECTED BY THE ENGINEER. -OR- SUBBASE TO BE TREATED WITH CEMENT TO A DEPTH OF 180mm, AT A RATE OF 30kg PER SQ. METER AS DIRECTED BY THE ENGINEER. -OR- SUBBASE TO BE TREATED WITH AGGREGATE AT A RATE OF 135 kg PER SQ. METER AND CEMENT AT A RATE OF 30 kg PER SQ. METER TO A DEPTH OF 180mm AS DIRECTED BY THE ENGINEER. (SEE SPECIAL PROVISIONS)		
P	PRIME COAT		
R1	750 mm CONCRETE CURB AND GUTTER NOT APPLICABLE TO THIS SECTION		
R2	450 mm CONCRETE CURB AND GUTTER NOT APPLICABLE TO THIS SECTION		
R3	CONCRETE EXPRESSWAY GUTTER NOT APPLICABLE TO THIS SECTION		
R4	SINGLE FACE CONCRETE BARRIER. NOT APPLICABLE TO THIS SECTION		

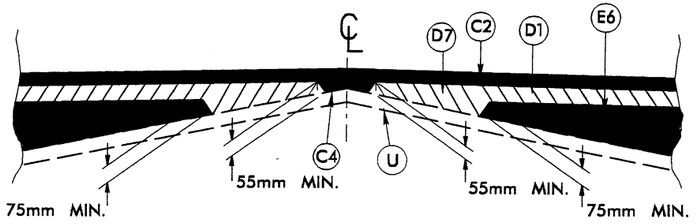
R5	SHOULDER BERM GUTTER
RS	RUMBLE STRIP
S	100 mm SIDEWALK NOT APPLICABLE TO THIS SECTION
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE STANDARD WEDGING DETAIL - THIS SHEET)
X	PROP. APPROX. 75 mm PERMEABLE ASPHALT DRAINAGE LAYER, TYPE P-57, AT AN AVERAGE RATE OF 1.90 kg PER MILLIMETER PER SQ. METER.

RECEIVED
FEB 16 2004

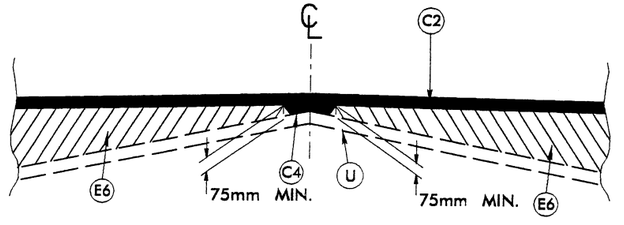
METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	2

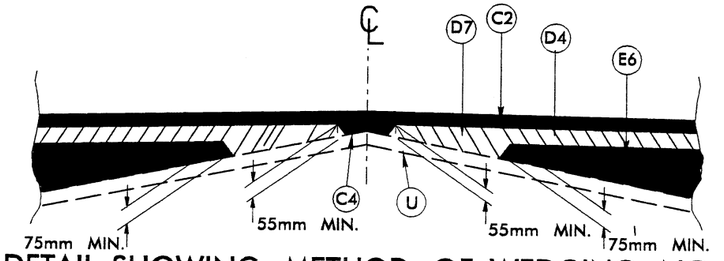
RELEASE FOR CONSTRUCTION
DATE: 2-09-04



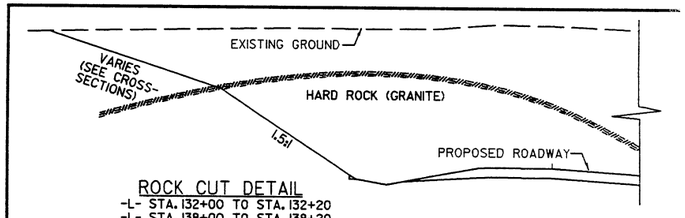
DETAIL SHOWING METHOD OF WEDGING NO. 1
TO BE USED IN CONJUNCTION WITH BETHLEHEM RD. (-Y14-)



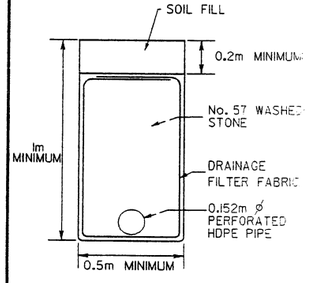
DETAIL SHOWING METHOD OF WEDGING NO. 2
TO BE USED IN CONJUNCTION WITH -Y15A- & -Y15-



DETAIL SHOWING METHOD OF WEDGING NO. 3
TO BE USED IN CONJUNCTION WITH -Y16-



ROCK CUT DETAIL
-L- STA. 132+00 TO STA. 132+20
-L- STA. 138+00 TO STA. 138+20
-L- STA. 143+00 TO STA. 143+80



TOE OF SLOPE DRAIN
-L- STA. 90+45 TO STA. 91+15 RT
-L- STA. 126+20 TO STA. 131+85 RT
-L- STA. 126+20 TO STA. 131+23 LT

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1	JAF	12-09-04	RFI 665
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : n:\proj\2951\USTATION\RDWY\Final Paving\r2547c.typ

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

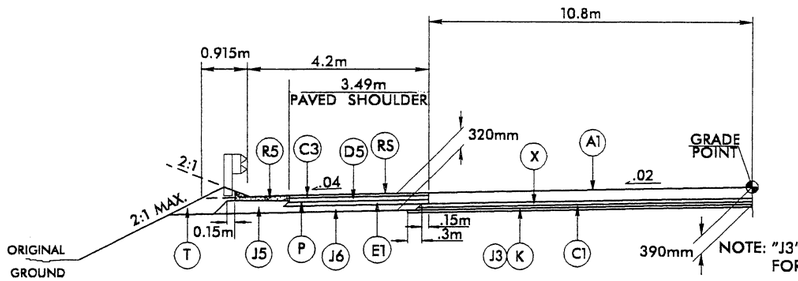
PAVEMENT SCHEDULE
UNDERCUT DETAIL
WEDGING DETAIL
ROCK CUT DETAIL
SHOULDER DRAIN DETAIL
TOE OF SLOPE DRAIN DETAIL

10/26/98

METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-2547C	2A

RELEASE FOR CONSTRUCTION

DATE: 2-09-04

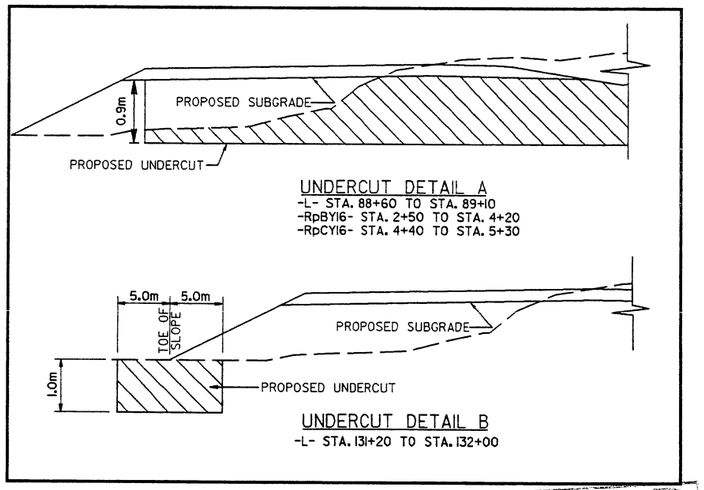


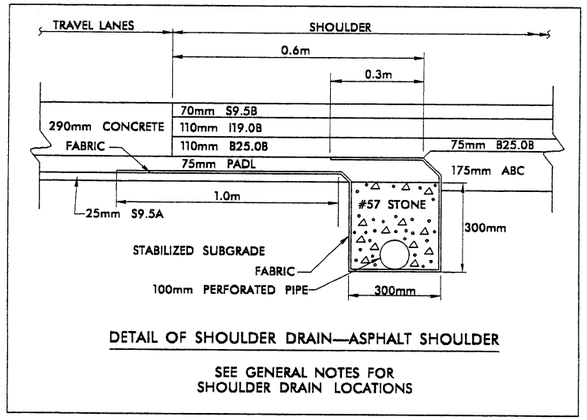
NOTE: "J3" MAY BE USED IN LEIU OF "K" FOR SUBGRADE STABILIZATION.

DETAIL SHOWING METHOD OF SHOULDER BERM GUTTER PLACEMENT

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1 AT:

-L- STA. 102+20 TO STA. 103+28 LT.
-L- STA. 104+14 TO STA. 105+00 LT.
-L- STA. 104+14 TO STA. 104+90 RT.
-L- STA. 109+77 TO STA.112+70 RT.
-L- STA. 109+78 TO STA. 113+20 LT.
-L- STA. 117+40 TO STA. 118+35 RT.
-L- STA. 118+80 TO STA. 119+60 LT.
-L- STA. 133+60 TO STA. 134+20 LT.
-L- STA. 132+20 TO STA. 135+06 RT.
-L- STA. 140+80 TO STA. 142+20 LT.
-L- STA. 141+20 TO STA. 144+20 RT.



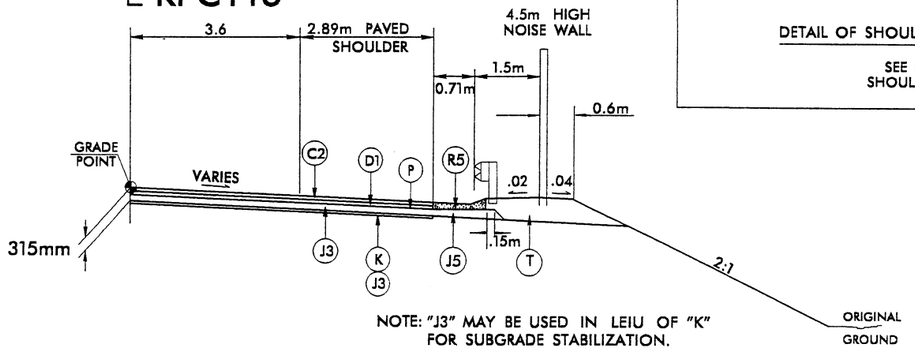


DETAIL OF SHOULDER DRAIN—ASPHALT SHOULDER

SEE GENERAL NOTES FOR SHOULDER DRAIN LOCATIONS

A1	290 mm CONC. W/ DOWELS
C1	25 mm TYPE S9.5A
C2	60 mm TYPE S9.5B
C3	70 mm TYPE S9.5B
D1	55 mm I19.0B
D5	110 mm I19.0B
E1	75 mm TYPE B25.0B
J6	175 mm ABC
J3	200 mm ABC
J5	VAR. DEPTH ABC
K	TREATED SUBBASE
P	PRIME COAT
R5	SHOULDER BERM GUTTER
RS	RUMBLE STRIP
T	EARTH MATERIAL.
X	75 mm PADL

℄ RPCY16



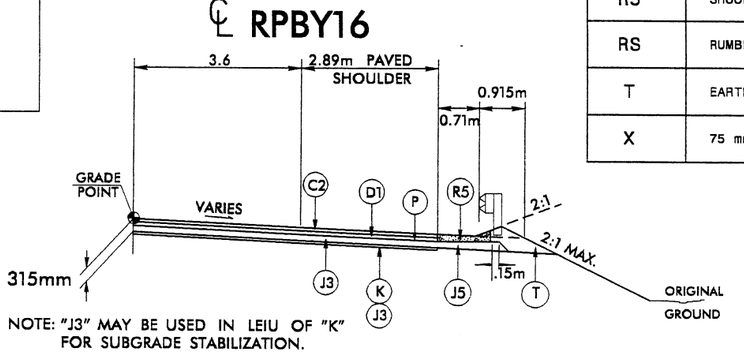
NOTE: "J3" MAY BE USED IN LEIU OF "K" FOR SUBGRADE STABILIZATION.

DETAIL SHOWING METHOD OF SHOULDER BERM GUTTER PLACEMENT

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2 AT:

-RPCY16- STA. 1+00 TO -RPCY16- STA. 5+00 RT.
-L- STA.106+64 RT. TO -RPCY16- STA. 1+00 RT.

℄ RPBY16



NOTE: "J3" MAY BE USED IN LEIU OF "K" FOR SUBGRADE STABILIZATION.

DETAIL SHOWING METHOD OF SHOULDER BERM GUTTER PLACEMENT

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2 AT:

-L- STA. 106+70 LT. TO -RPBY16- STA. 1+60 LT.

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
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Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS			
5			
4			
3			
2	JAF	2-09-04	RFI 665
1	CTH	8-18-03	EXTEND SHOULDER BERM GUTTER -L- STA 112+80 LT TO 113+20 LT
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

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CHECKED BY: _____ DATE: _____

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
TYPICAL SECTIONS

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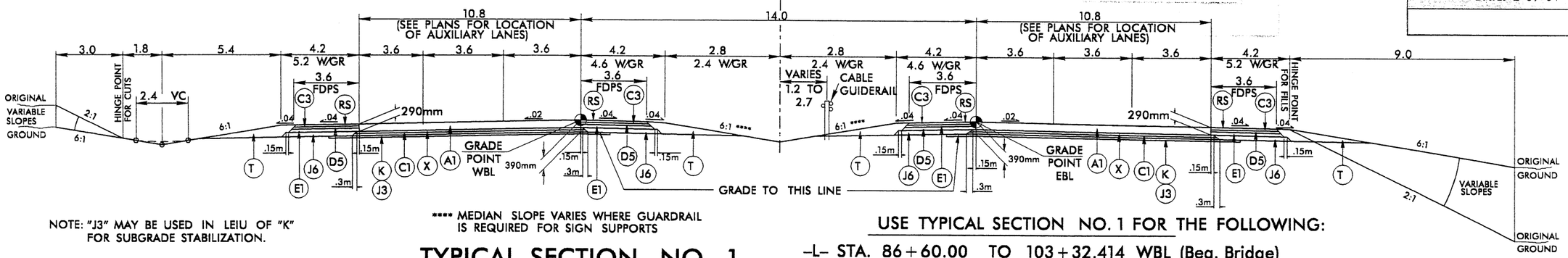
PROJECT REFERENCE NO.	SHEET NO.
R-2547C	2B

RELEASE FOR CONSTRUCTION

DATE: 2-09-04

–L– (64 BYPASS)



NOTE: "J3" MAY BE USED IN LEIU OF "K" FOR SUBGRADE STABILIZATION.

**** MEDIAN SLOPE VARIES WHERE GUARDRAIL IS REQUIRED FOR SIGN SUPPORTS

TYPICAL SECTION NO. 1

SEE SHEET 2A FOR SHOULDER BERM GUTTER DETAILS

USE TYPICAL SECTION NO. 1 FOR THE FOLLOWING:

–L– STA. 86+60.00 TO 103+32.414 WBL (Beg. Bridge)
–L– STA. 104+14.166 (End Bridge) TO 111+24.379 WBL (Beg. Bridge)
–L– STA. 111+72.209 (End Bridge) TO 144+20.000 WBL

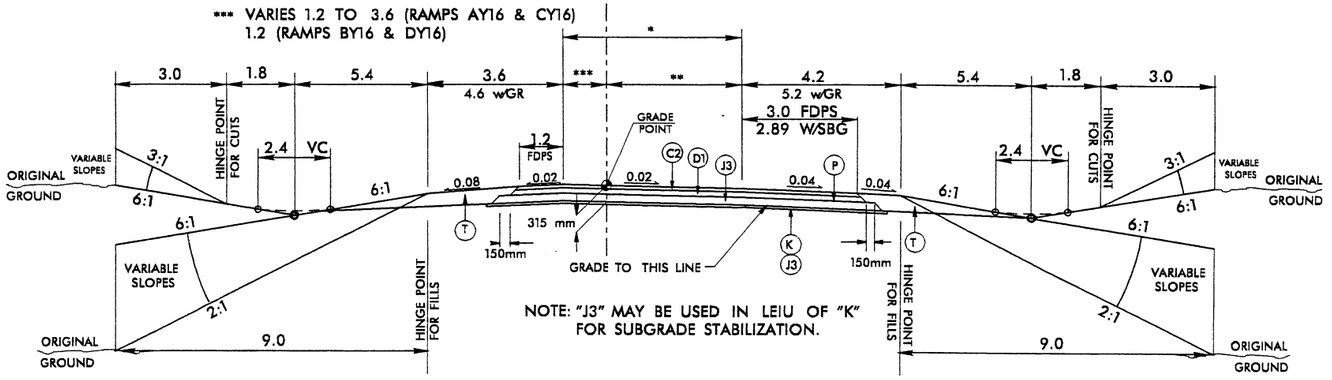
–L– STA. 86+60.00 TO 103+32.584 EBL (Beg. Bridge)
–L– STA. 104+14.494 (End Bridge) TO 111+32.462 EBL (Beg. Bridge)
–L– STA. 111+80.292 (End Bridge) TO 144+20.000 EBL

* VARIES 4.8 TO 10.8 (RAMPS AY16 & CY16)
4.8 (RAMPS BY16 & DY16)

** VARIES 3.6 TO 7.2 (RAMPS AY16 & CY16)
3.6 (RAMPS BY16 & DY16)

*** VARIES 1.2 TO 3.6 (RAMPS AY16 & CY16)
1.2 (RAMPS BY16 & DY16)

℄ RPAY16, RPBY16, RPCY16, & RPDY16



NOTE: "J3" MAY BE USED IN LEIU OF "K" FOR SUBGRADE STABILIZATION.

TYPICAL SECTION NO. 2

SEE SHEET 2A FOR SHOULDER BERM GUTTER DETAILS

USE TYPICAL SECTION NO. 2 FOR THE FOLLOWING:

–RPAY16– STA. 0+00.000 TO 5+05.443
–RPBY16– STA. 0+00.000 TO 3+77.665
–RPCY16– STA. 0+00.000 TO 5+13.143
–RPDY16– STA. 0+00.000 TO 4+46.966

A1	290 mm CONC. W/ DOWELS
C1	25 mm TYPE S9.5A
C2	60 mm TYPE S9.5B
C3	70 mm TYPE S9.5B
D1	55 mm I19.0B
D5	110 mm I19.0B
E1	75 mm TYPE B25.0B
J6	175 mm ABC
J3	200 mm ABC
K	TREATED SUBBASE
P	PRIME COAT
RS	RUMBLE STRIP
T	EARTH MATERIAL.
X	75 mm PADL

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

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

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P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1	JAF	2-09-04	RFI 665
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

DRAWN BY: _____ DATE: _____
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Filename : n:\PROJ\2951\ustation\rdwy\Final Paving\r2547c.tyc

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
TYPICAL SECTIONS

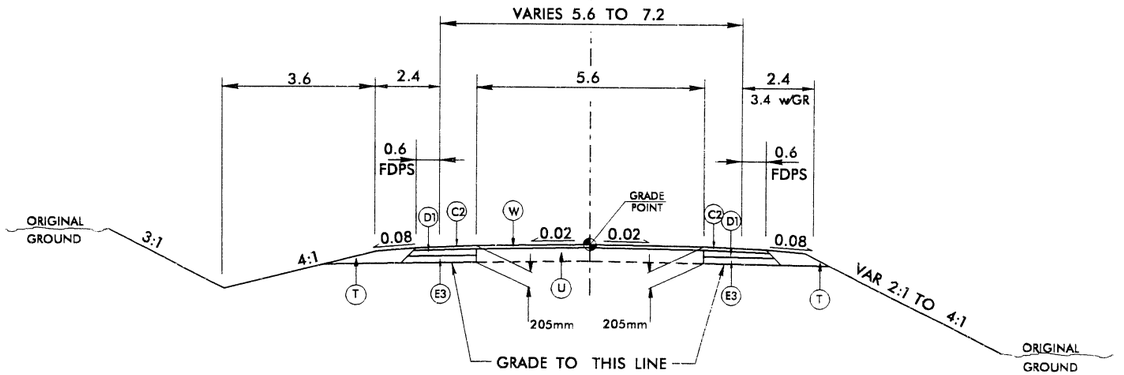
10/25/04
07/07/2004 n:\PROJ\2951\ustation\rdwy\Final Paving\r2547c.typ

METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-2547C	2C

RELEASE FOR CONSTRUCTION

DATE: 7-09-03

℄ –Y14– (BETHLEHEM ROAD)

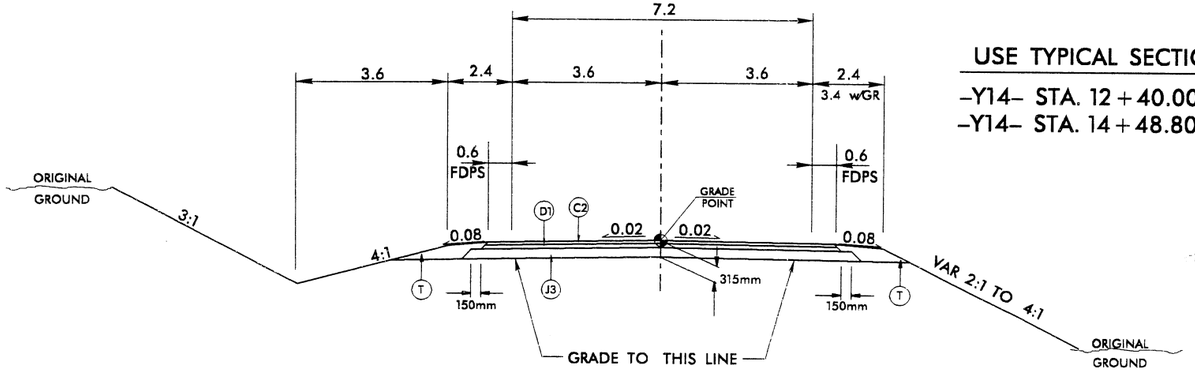


TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 FOR THE FOLLOWING:

–Y14– STA. 10+65.143 TO 12+40.000
–Y14– STA. 15+60.000 TO 16+20.000

℄ –Y14– (BETHLEHEM ROAD)



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 FOR THE FOLLOWING:

–Y14– STA. 12+40.000 TO STA. 13+52.500 (Beg. Bridge)
–Y14– STA. 14+48.800 (End Bridge) TO STA. 15+60.000

C2	60 mm TYPE S9.5B
D1	55 mm I19.0B
E3	90 mm TYPE B25.0B
J3	200 mm ABC
T	EARTH MATERIAL.
U	EXISTING PAVEMENT
W	WEDGING (SEE SHEET 2, DETAIL NO. 1)

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

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-9-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
12/19/03
PAVEMENT DESIGN ENGINEER

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : n:\proj\2951\ustation\rdwy\final paving\r2547c.typ

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

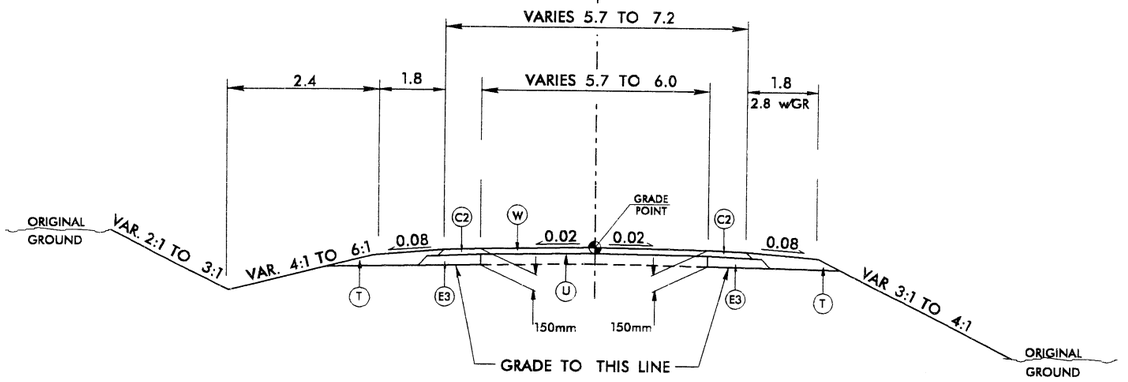
FINAL PLANS
TYPICAL SECTIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	2D

RELEASE FOR CONSTRUCTION

DATE: 7-09-03

℄ –Y15A– & –Y15–

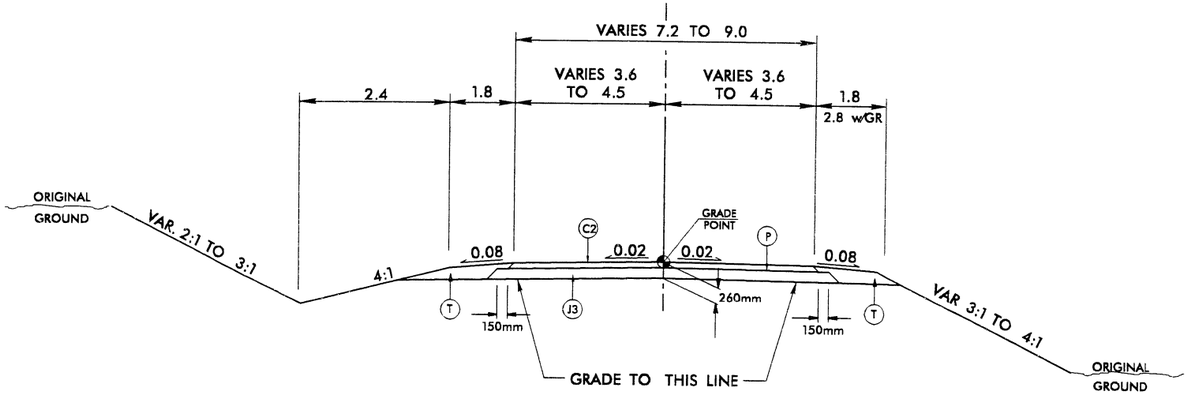


TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 FOR THE FOLLOWING:

–Y15– STA. 10+80.000 TO 11+70.000
–Y15A– STA. 17+00.000 TO 17+30.000

℄ –Y15A– & –Y15–



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 FOR THE FOLLOWING:

–Y15– STA. 10+03.600 TO 10+80.000
–Y15A– STA. 10+03.600 TO 17+00.000

C2	60 mm TYPE S9.5B
E3	90 mm TYPE B25.0B
J3	200 mm ABC
P	PRIME COAT
T	EARTH MATERIAL.
U	EXISTING PAVEMENT
W	WEDGING (SEE SHEET 2, DETAIL NO. 2)

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

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-9-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
12/19/03
PAVEMENT DESIGN ENGINEER

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
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3			
2			
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0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : n:\proj\2951\ustation\rowy\final paving\r2547c.typ

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

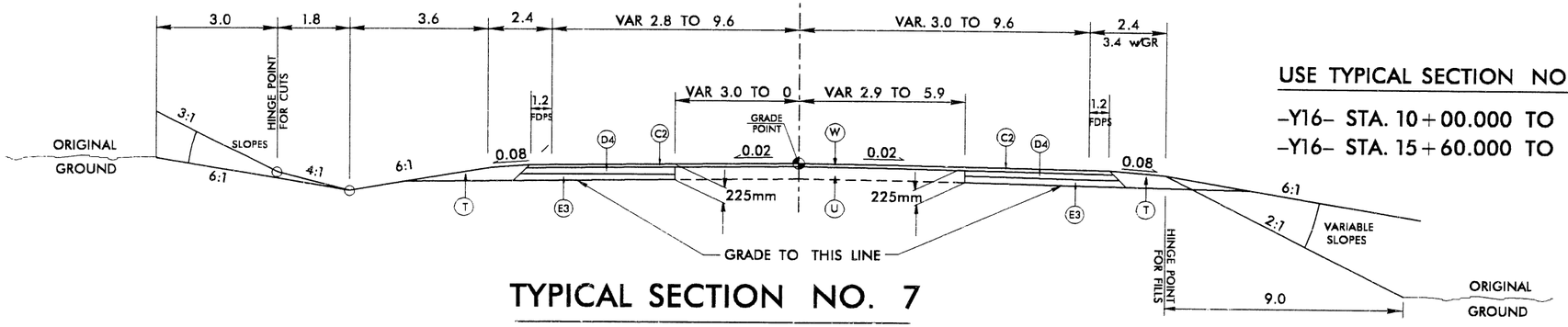
FINAL PLANS
TYPICAL SECTIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	2E

RELEASE FOR CONSTRUCTION

DATE: 7-09-03

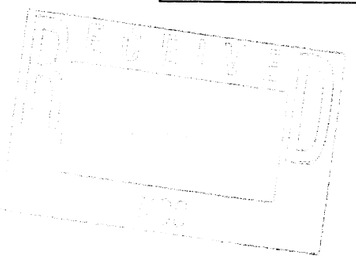
-Y16- (SMITHFIELD ROAD)



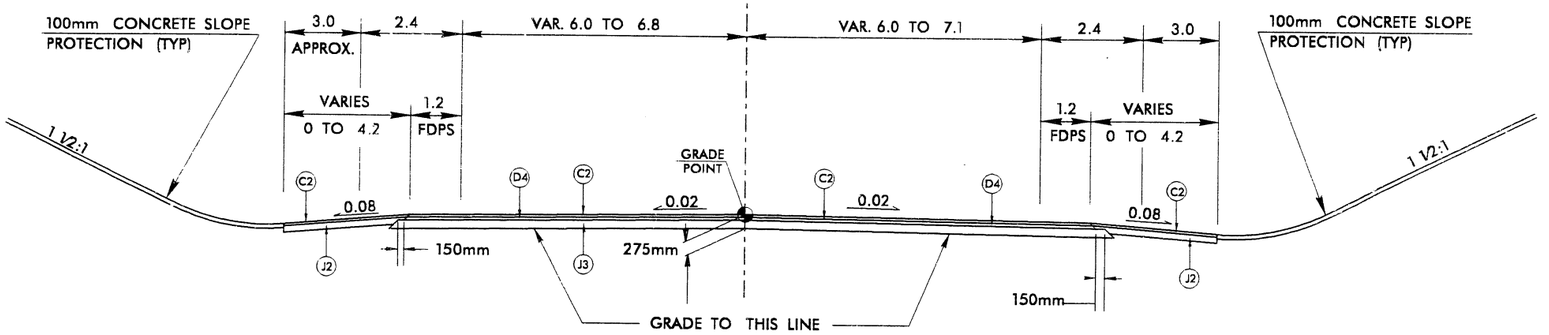
TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7 FOR THE FOLLOWING:

-Y16- STA. 10+00.000 TO 12+20.000
-Y16- STA. 15+60.000 TO 16+90.000



-Y16- (SMITHFIELD ROAD)

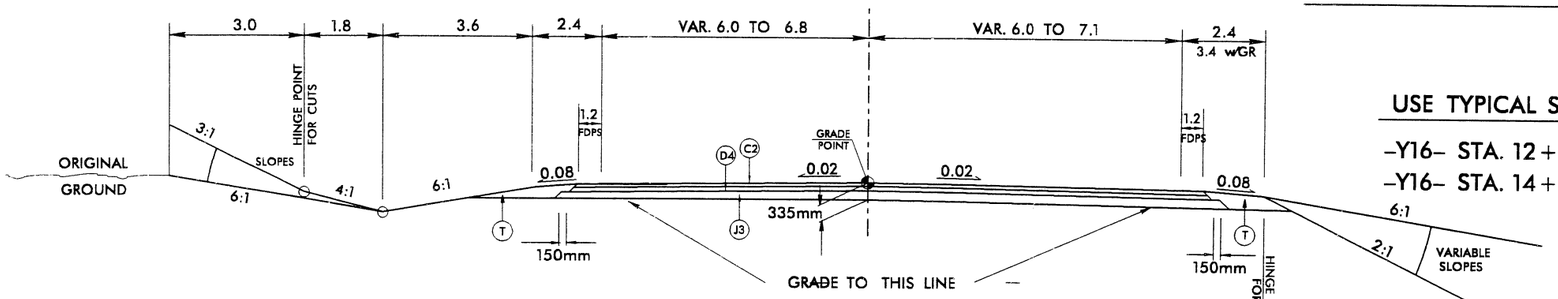


TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8 FOR THE FOLLOWING:

-Y16- STA. 12+48.500 TO 14+17.450

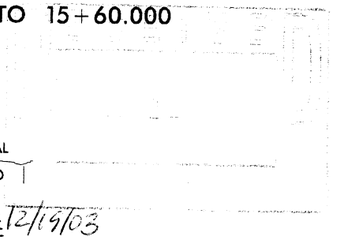
-Y16- (SMITHFIELD ROAD)



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9 FOR THE FOLLOWING:

-Y16- STA. 12+20.000 TO 12+48.500
-Y16- STA. 14+17.450 TO 15+60.000



C2	60 mm TYPE S9.5B
D4	75 mm I19.0B
E3	90 mm TYPE B25.0B
J2	150 mm ABC
J3	200 mm ABC
T	EARTH MATERIAL.
W	WEDGING (SEE SHEET 2, DETAIL NO. 3)

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

THE LPA GROUP of North Carolina, p.a.
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Raleigh, North Carolina 27609

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CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-9-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
12/19/03
PAVEMENT DESIGN ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
TYPICAL SECTIONS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
DRAINAGE DETAILS

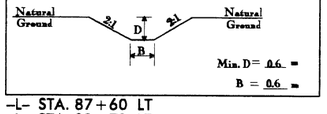
METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	2F

RELEASE FOR CONSTRUCTION

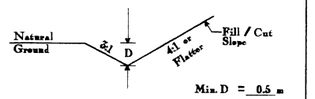
DATE: 12-12-03

DETAIL 1
BASE DITCH
(Not to Scale)



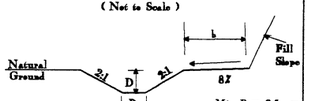
-L- STA. 87+60 LT
-L- STA. 93+73 LT
-RPAY16- STA. 3+75 LT
-Y15A- STA. 15+00 LT
-Y15A- STA. 15+07 RT
-Y15A- STA. 16+05 RT

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



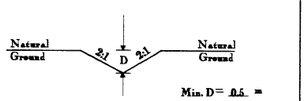
-L- STA. 88+20 - 88+60 LT
-L- STA. 89+35 - 90+50 LT
-L- STA. 93+60 - 93+74 RT
-L- STA. 138+40 - 140+00 RT
-L- STA. 140+20 - 140+60 LT
-Y14- STA. 11+57 - 11+70 RT
-Y14- STA. 15+20 - 16+04 RT
-Y15A- STA. 10+80 - 11+00 RT
-Y16- STA. 11+80 - 12+00 LT
-Y16- STA. 13+87 - 14+38 LT
-Y16- STA. 13+87 - 14+30 RT
-Y16- STA. 15+40 - 16+42 LT
-RPAY16- STA. 4+99 - 5+14 RT
-RPBY16- STA. 3+88 - 4+05 RT
-RPDY16- STA. 4+56 - 4+80 RT

DETAIL 3
LATERAL BASE DITCH
(Not to Scale)



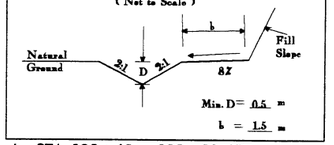
-L- STA. 87+62 - 88+20 LT
-Y14- STA. 14+45 - 15+20 RT
-Y15A- STA. 11+00 - 11+40 RT
-RPBY16- STA. 1+75 - 2+68 LT
-RPAY16- STA. 2+59 - 3+59 LT

DETAIL 4
'V' DITCH
(Not to Scale)



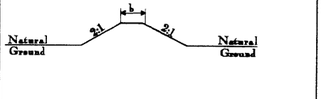
-L- STA. 141+73 LT
-RPCY16- STA. 0+15 RT
-RPDY16- STA. 2+37 RT

DETAIL 5
LATERAL 'V' DITCH
(Not to Scale)



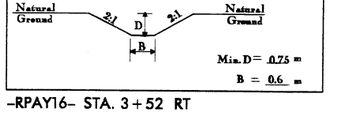
-L- STA. 109+60 - 109+80 LT
-L- STA. 135+19 - 135+40 LT
-RPAY16- STA. 2+59 - 3+16 RT

DETAIL 6
EARTH BERM
(Not to Scale)



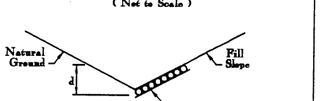
-L- STA. 111+73 LT
-L- STA. 110+22 - 110+32 RT

DETAIL 7
BASE DITCH
(Not to Scale)



-RPAY16- STA. 3+52 RT

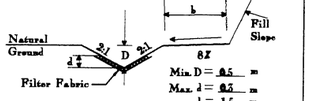
DETAIL 8
TOE PROTECTION
(Not to Scale)



Type of Liner = CLASS B RIP RAP

-L- STA. 118+80 - 119+35 LT
-L- STA. 132+32 - 132+60 RT
-Y16- STA. 10+28 - 10+42 LT
-RPAY16- STA. 3+16 - 3+53 RT
-RPCY16- STA. 2+81 - 2+97 LT

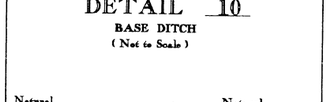
DETAIL 9
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = CLASS B RIP RAP

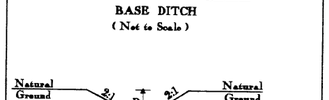
-L- STA. 123+80 - 124+27 RT
-L- STA. 134+08 - 134+20 LT
-L- STA. 141+20 - 141+66 RT

DETAIL 10
BASE DITCH
(Not to Scale)



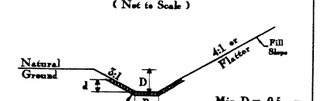
-L- STA. 135+00 RT

DETAIL 11
BASE DITCH
(Not to Scale)



-L- STA. 134+07 RT

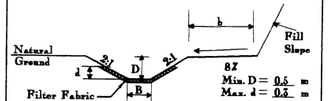
DETAIL 12
SPECIAL CUT BASE DITCH
(Not to Scale)



Type of Liner = CLASS 'I' RIP RAP

-L- STA. 132+20 - 132+32 RT

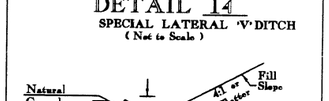
DETAIL 13
LATERAL BASE DITCH
(Not to Scale)



*When 'B' is <1.8m
Type of Liner = CLASS B RIP RAP

-L- STA. 117+70 - 118+17 RT

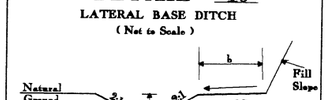
DETAIL 14
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = CLASS B RIP RAP

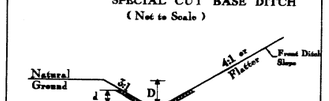
-L- STA. 117+20 - 117+48 RT
-L- STA. 141+00 - 141+20 RT

DETAIL 15
LATERAL BASE DITCH
(Not to Scale)



-L- STA. 141+66 - 142+18 RT

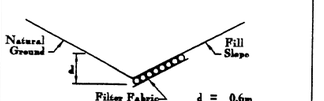
DETAIL 17
SPECIAL CUT BASE DITCH
(Not to Scale)



Type of Liner = CLASS B RIP RAP

-Y16- STA. 10+40 - 10+90 LT
-RPCY16- STA. 2+97 - 3+14 LT

DETAIL 20
TOE PROTECTION
(Not to Scale)



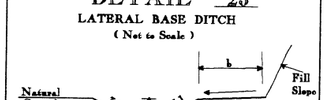
Type of Liner = CLASS 'I' RIP RAP

-L- STA. 118+18 - 119+20 RT

DETAIL 21
SPECIAL BERM BASE DITCH
(Not to Scale)

-L- STA. 89+60 - 91+20 RT

DETAIL 23
LATERAL BASE DITCH
(Not to Scale)

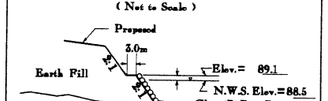


-L- STA. 140+60 - 140+82 LT
-L- STA. 141+16 - 141+72 LT

DETAIL 24
ROCK FILL
(Not to Scale)

-L- STA. 98+20 - 98+50 RT

DETAIL 25
FILL IN POND
(Not to Scale)



-L- STA. 89+10 - 89+60 RT

DETAIL FS-L
FALSE SUMP

DETAIL FS-M
FALSE SUMP

DETAIL FS-R
FALSE SUMP

NORTH CAROLINA PROFESSIONAL SEAL 9534 ENGINEER W. HENRY WELLS, JR.

12/17/03
HYDRAULICS ENGINEER

REVISIONS			
5			
4			
3			
2	CTH	12-12-03	REVISED DET. 23
1	CTH	10-23-03	REVISED STA. LIMITS FOR DETAILS 13 AND 14
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

DRAWN BY: _____ DATE: _____
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Document Control Number :

Filename : $FILES

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
DRAINAGE DETAILS

NATURAL STREAM DESIGN
DETAIL SHEET
STATION 131 + 60 -L- LT

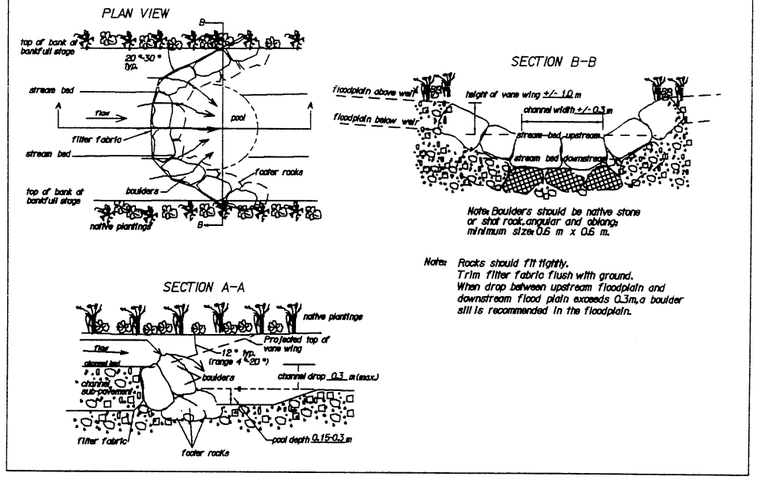
PROJECT REFERENCE NO.	SHEET NO.
R-2547C	2G

METRIC

RELEASE FOR CONSTRUCTION

DATE: 02-09-04

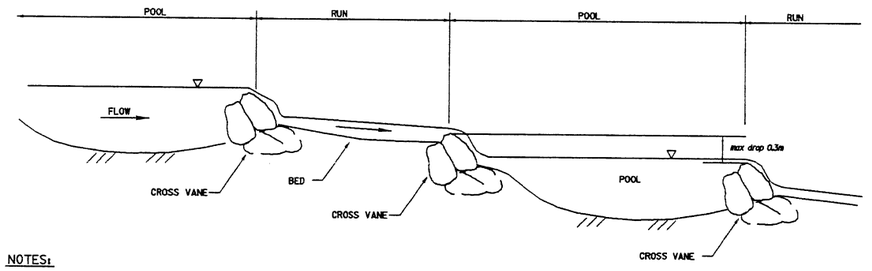
CROSS VANE ROCK WEIR DETAIL



Note: Boulders should be native stone or shot rock, angular and oblong minimum size 0.6 m x 0.6 m.

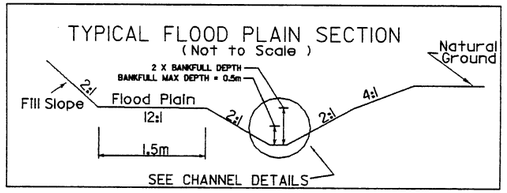
Notes: Rocks should fit tightly.
Trim filter fabric flush with ground.
When drop between upstream floodplain and downstream flood plain exceeds 0.3m,a boulder sill is recommended in the floodplain.

TYPICAL STEP - POOL PROFILE (NOT TO SCALE)

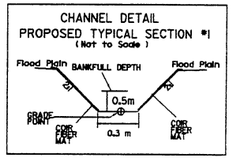


NOTES:
1. POOL AND RUN LENGTHS ARE DEPENDENT ON A MAXIMUM DROP OF 0.3m AT CROSS VANES.
2. CHANNEL BED TO PLACED ON BEDROCK TO THE EXTENT POSSIBLE.

TYPICAL FLOOD PLAIN SECTION (Not to Scale)

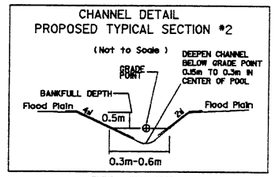


CHANNEL DETAIL PROPOSED TYPICAL SECTION #1 (Not to Scale)



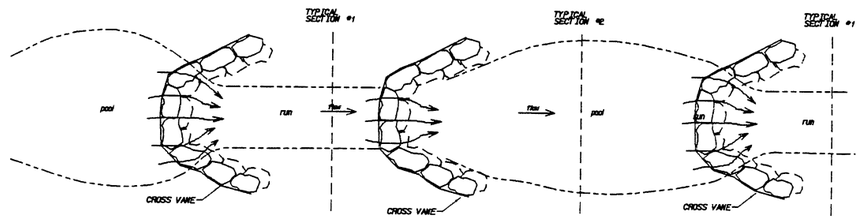
TYPICAL RUN SECTION

CHANNEL DETAIL PROPOSED TYPICAL SECTION #2 (Not to Scale)



TYPICAL POOL SECTION

TYPICAL STEP - POOL PLAN VIEW



NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER M. HENRY WELLS

HYDRAULICS ENGINEER

REVISIONS			
5			
4			
3			
2	JAF	02-09-04	REVISED DETAILS
1	CTH	10-28-03	REVISED DETAILS
0	DSP	07-09-03	RELEASE FOR CONSTRUCTION
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THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

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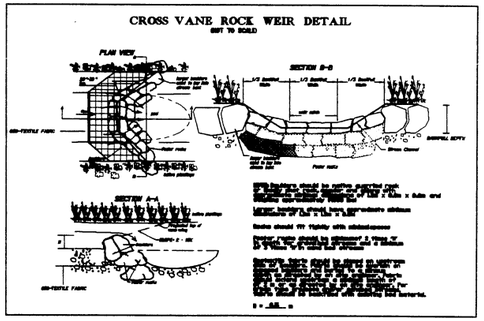
Filename : n:\proj\2951\LUSTATION\RDWY\Final Paving\r2547c.tpp

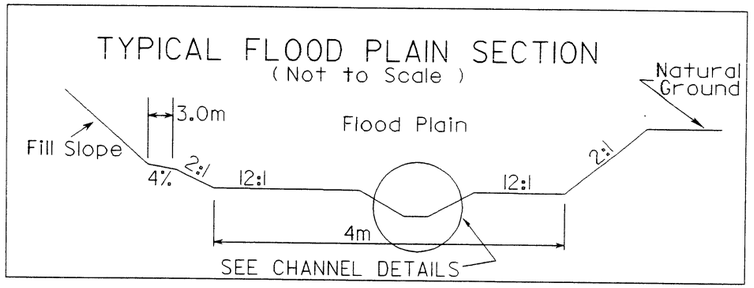
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

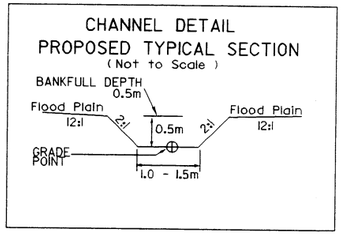
FINAL PLANS
CHANNEL RELOCATION DETAILS

METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-2547C	2H
	RELEASE FOR CONSTRUCTION	
	DATE: 12-12-03	

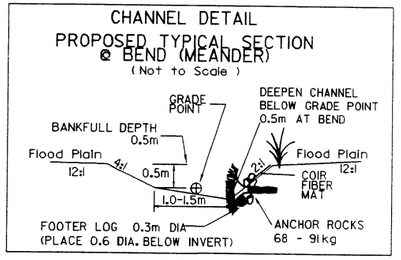
NATURAL CHANNEL DESIGN TYPICALS
STATION 136+00 -L- LT



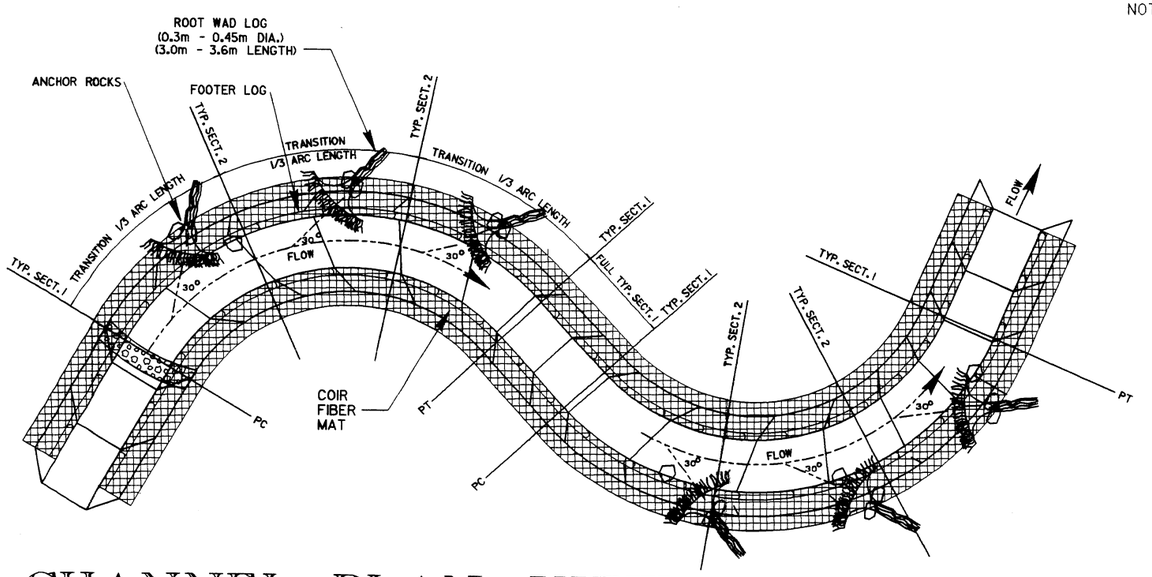




TYPICAL SECTION 1 BETWEEN BENDS



TYPICAL SECTION 2 AT BENDS



CHANNEL PLAN VIEW

NOTES:

NUMBER OF ROOTWADS INSTALLED TO BE DETERMINED ON SITE

NUMBER OF LOW STAGE CHECK DAMS TO BE DETERMINED ON SITE

ROOTWADS TO BE SPACED 4x DIAMETER OF ROOT BASE

FOOTER LOG ANCHOR ROCK TO BE PLACED ON THE DOWNSTREAM END OF EACH FOOTER LOG SO THAT IT IS LEANING AGAINST THE LOG ON THE SIDE AWAY FROM THE CHANNEL.

WHEN BACKFILLING OVER AND AROUND FOOTER LOGS, ROOTWAD LOGS AND ANCHOR ROCKS FIRMLY SECURE ALL COMPONENTS INCLUDING JOINTS, CONNECTIONS AND GAPS.

PLANTINGS SHOULD BE PLACED ABOVE BANKFULL DEPTH

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REVISIONS			
NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
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3			
2	CTH	12-12-03	REVISED DETAILS
1	CTH	8-28-03	REVISED DETAILS
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
12/17/03
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
CHANNEL RELOCATION DETAILS

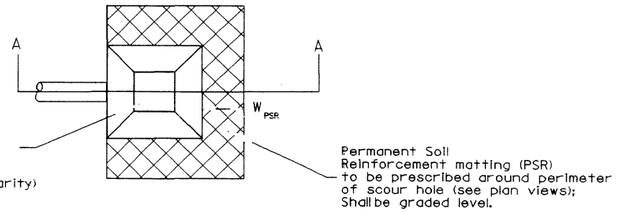
PROJECT REFERENCE NO.	SHEET NO.
R-2547C	21

RELEASE FOR CONSTRUCTION

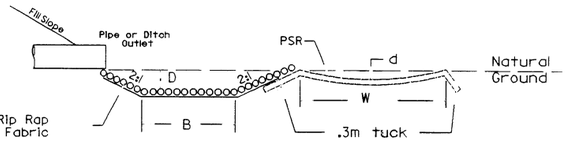
DATE: 12-12-03

PREFORMED SCOUR HOLE

(NOT TO SCALE)



Section A-A



NOTE: "B" denotes size of basin; For example: 1.5m x 1.5m PSH, B= 1.5

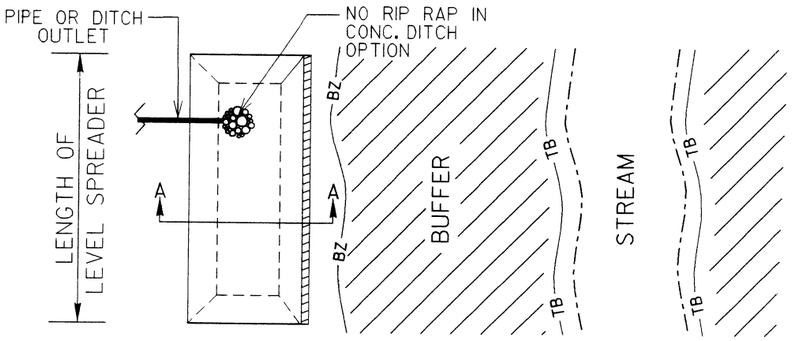
NOTE: The Permanent Soil Reinforcement matting (PSR) shall be seeded with native grasses at installation.

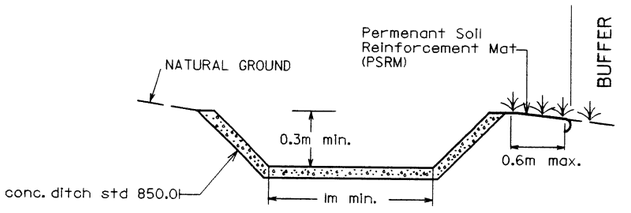
STATION	B M	D M	W_{PSR} M	d M	CLASS I RIP RAP MTONS	DDE M^3	FILTER FABRIC M^2	PSR M^2
98+80 -L-	1.2	0.5	1.2	0.3	18	14.3	39.3	32.4
103+25 -L-	1.8	0.5	1.2	0.3	23	18.4	45.2	35.6
112+50 -L-	1.5	0.5	1.2	0.3	20	16.3	35.7	34.0
113+00 -L-	1.5	0.5	1.2	0.3	20	16.3	35.7	34.0
117+40 -L-	1.2	0.5	1.2	0.3	18	14.3	32.2	32.4
118+80 -L-	1.8	0.5	1.2	0.3	23	18.4	39.3	35.6
134+20 -L-	1.5	0.5	1.2	0.3	20	16.3	35.7	34.0
135+06 -L-	1.2	0.5	1.2	0.3	18	14.3	32.2	32.4
135+40 -L-	1.2	0.5	1.2	0.3	18	14.3	32.2	32.4
140+82 -L-	1.5	0.5	1.2	0.3	20	16.3	35.7	34.0
142+20 -L-	1.2	0.5	1.2	0.3	18	14.3	32.2	32.4
142+60 -L-	1.2	0.5	1.2	0.3	18	14.3	32.2	32.4
3+05 -RPAY16-	1.8	0.5	1.2	0.3	23	18.4	39.3	35.6
3+50 -RPAY16-	1.8	0.5	1.2	0.3	23	18.4	39.3	35.6

LEVEL SPREADER DETAIL

(NOT TO SCALE)

PLAN VIEW





SECTION-AA CONCRETE PAVED DITCH LEVEL SPREADER

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North Carolina Constructors

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5			
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3			
2	CTH	12-12-03	REVISED PREFORMED SCOUR HOLE DETAIL
1	CTH	8-18-03	REVISED LEVEL SPREADER DETAIL
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
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ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELL JR.

12/17/03

HYDRAULICS ENGINEER

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DEPARTMENT OF TRANSPORTATION
RALEIGH

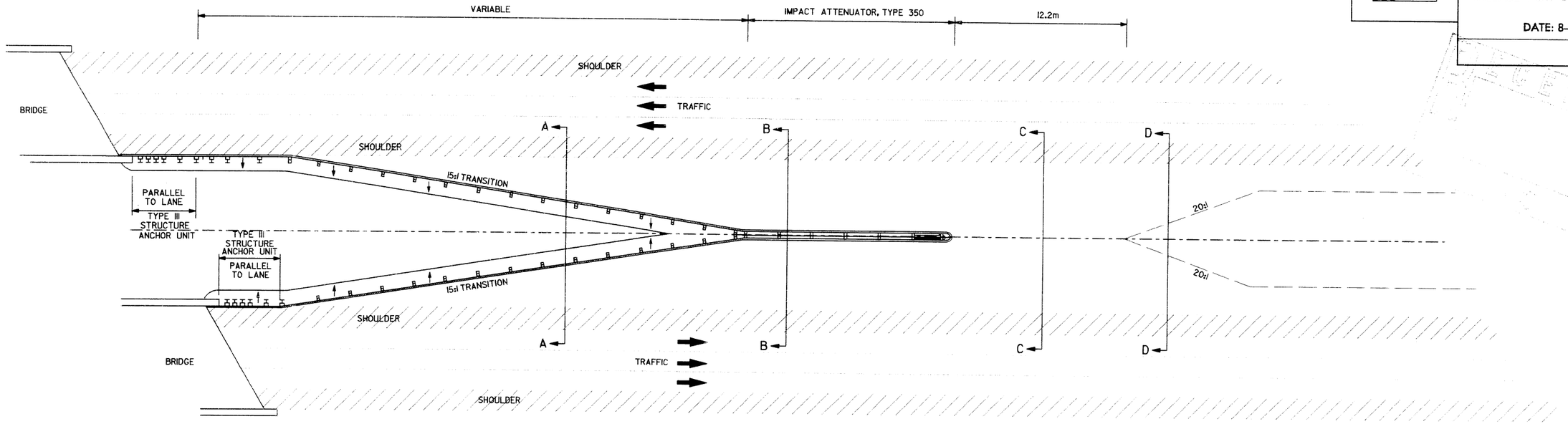
FINAL PLANS
DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	2M

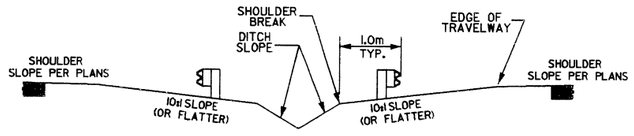
METRIC

RELEASE FOR CONSTRUCTION

DATE: 8-28-03

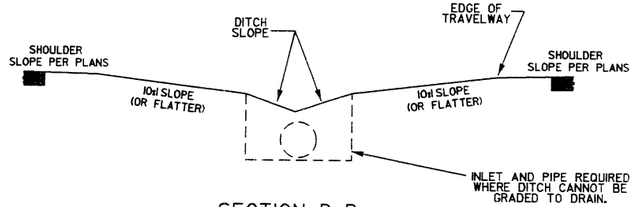


STEEL BEAM GUARDRAIL ON BRIDGE APPROACH
IN 14m MEDIAN (ALL SPEEDS)

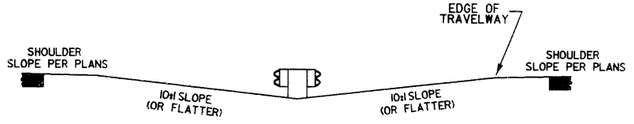


SECTION A-A

SECTION C-C



SECTION D-D



SECTION B-B

NOTES:

1. 10:1 OR FLATTER DITCH SLOPE TO EXTEND THROUGHOUT AND 12.2m BEYOND END OF THE IMPACT ATTENUATOR.
2. GUARDRAIL PROTECTION ON OUTSIDE SHOULDERS SHALL BE AS DETAILED ON ROADWAY STANDARD DRAWING 862.01, SHEET 2 OF 11.
3. DRAINAGE TO BE AS SHOWN ON THE PLANS OR AS DETERMINED BY THE ENGINEER.

THE LPA GROUP TRANSPORTATION CONSULTANTS
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3			
2			
1			
NO.	BY:	DATE:	DESCRIPTION OF REVISION
0	CTH	8-28-03	ADDED SHEET

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON

8-28-03

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER HENRY WELLS

9/22/03

HYDRAULICS ENGINEER

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DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
DETAIL OF GUARDRAIL PROTECTION ON DUAL BRIDGE APPROACH MEDIAN

NOTES:

1. 10:1 OR FLATTER DITCH SLOPES TO EXTEND THROUGHOUT AND 12.2 M BEYOND EACH END OF IMPACT ATTENUATORS.
2. THE CRITICAL AREA BEHIND THE END TREATMENTS SHALL BE FREE OF FIXED OBSTACLES, AND HAVE A FILL SLOPE OF 10:1 OR FLATTER, OR A CUT SLOPE OF 10:1 OR FLATTER.
3. WHEN THE DISTANCE FROM FACE OF OBSTRUCTION TO FACE OF GUARDRAIL IS BETWEEN 1.1m AND 1.7m, BEGIN 0.953m POST SPACING AT A POINT 7.620M BEFORE REACHING THE OBSTRUCTION AND CARRY THROUGHOUT ITS LENGTH. IF THE OFFSET IS LESS THAN 1.1m USE CONCRETE BARRIER AS SHOWN ON ROADWAY STANDARD DRAWING 862.01, SHEET 1 OF 11.
4. DRAINAGE TO BE AS SHOWN ON THE PLANS OR AS DETERMINED BY THE ENGINEER.

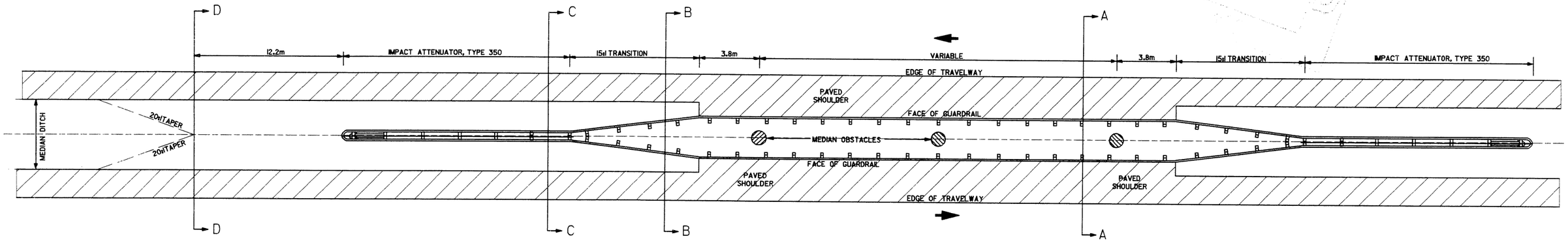
METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	2N

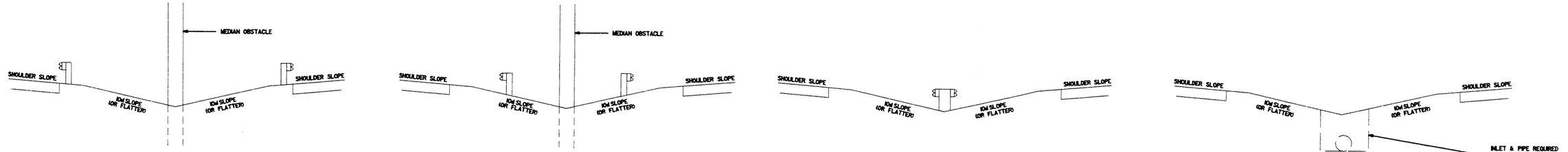
RELEASE FOR CONSTRUCTION

DATE: 8-28-03

RECEIVED



STEEL BEAM "W" GUARDRAIL FOR OBSTACLES IN 14m MEDIANS (ALL SPEEDS)



SECTION A-A SECTION B-B SECTION C-C SECTION D-D

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THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

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P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS			
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NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
8-28-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
9/22/03
HYDRAULICS ENGINEER

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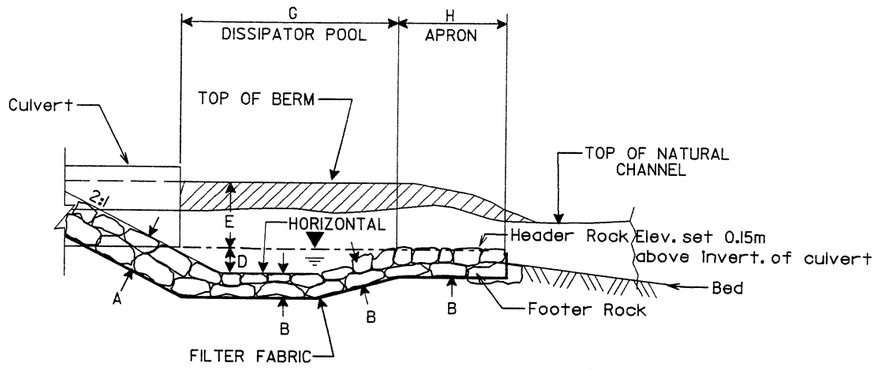
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

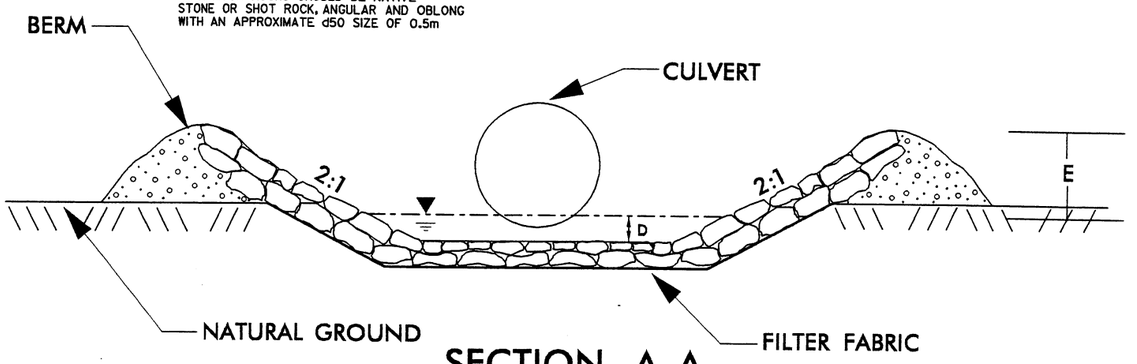
FINAL PLANS
DETAIL OF GUARDRAIL PROTECTION FOR MEDIAN OBSTRUCTIONS

DISSIPATOR BASIN

℄ SECTION



NOTE:
DISSIPATOR ROCKS SHOULD BE NATIVE STONE OR SHOT ROCK, ANGULAR AND OBLONG WITH AN APPROXIMATE d50 SIZE OF 0.5m



SECTION A–A

DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	1.0							
B	1.0							
C	—							
D	1.0							
E	1.0							
F	—							
G	10.0							
H	3.0							

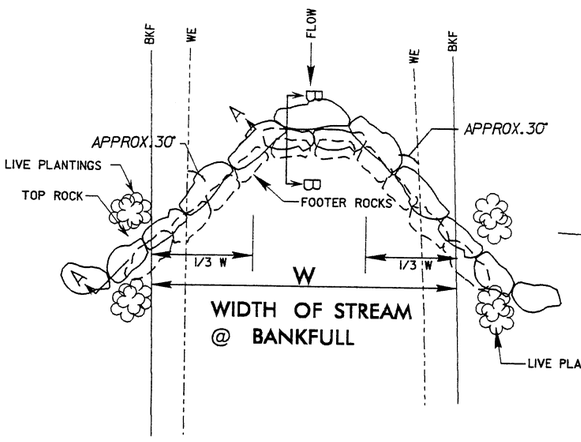
ALL DIMENSIONS APPROXIMATE IN m

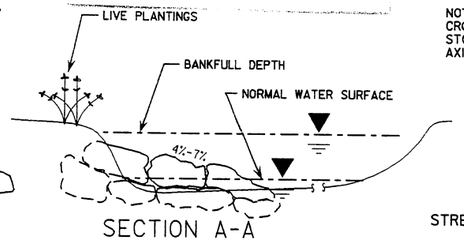
BASIN #	LOCATION (AT OUTLET)
1	135+50 RT.
2	
3	
4	
5	
6	
7	
8	

(1500mm)

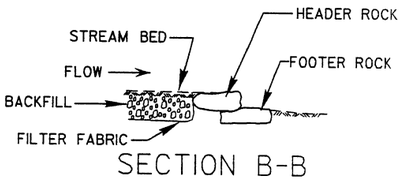
ROCK CROSS VANE

(NOT TO SCALE)



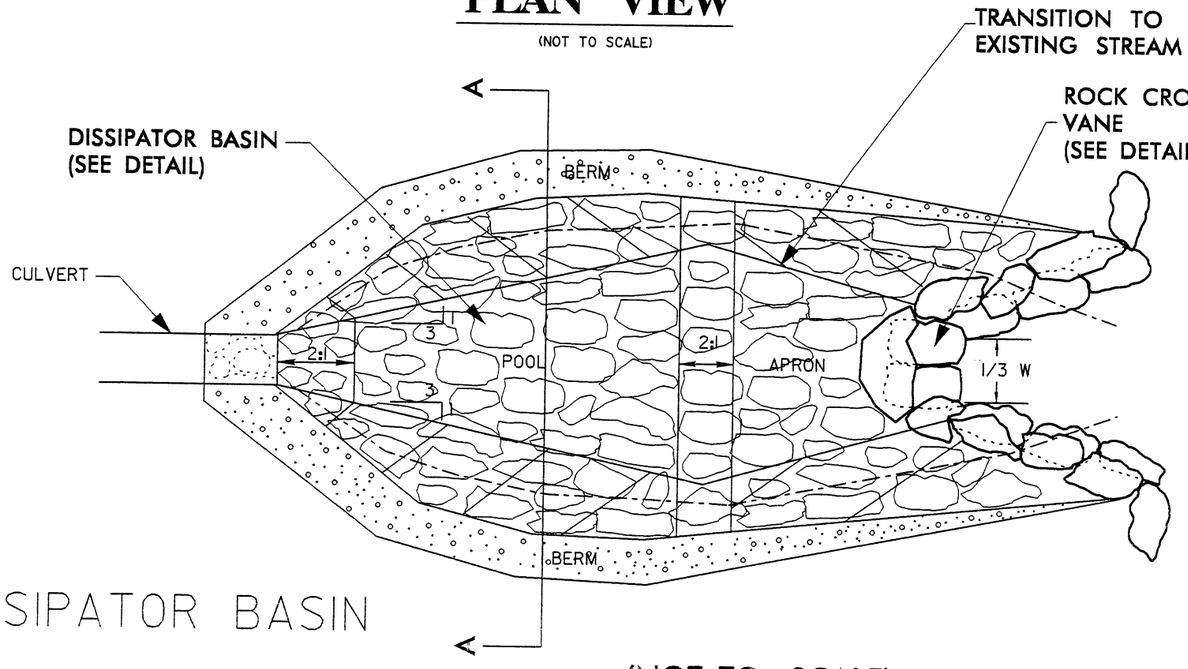


NOTE:
CROSS VANE ROCKS SHOULD BE NATIVE STONE OR SHOT ROCK, ANGULAR AND OBLONG WITH LONG AXIS APPROXIMATELY 1.5 m. IN LENGTH



PLAN VIEW

(NOT TO SCALE)



(NOT TO SCALE)

DETAIL OF NATURAL ROCK ENERGY DISSIPATOR BASIN

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

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	20

RELEASE FOR CONSTRUCTION

DATE: 02-09-04

THE LPA GROUP LPA TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

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5			
4			
3			
2			
1			
0	JAF	2-09-04	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

HYDRAULICS ENGINEER

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CHECKED BY: _____ DATE: _____

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
ROCK ENERGY DISSIPATOR DETAIL

COMPUTED BY: JBL DATE: 05/15/03
CHECKED BY: DATE:

RALPH WHITEHEAD ASSOCIATES CONSULTING ENGINEERS P.O. BOX 35 CHARLOTTE, NORTH CAROLINA

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	3

METRIC

RELEASE FOR CONSTRUCTION

DATE: 8-28-03

GUARDRAIL SUMMARY

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM EOL	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS GRAU-350	ANCHORS M-350	ANCHORS CAT-1	ANCHORS TYPE III	ANCHORS XI MOD	ANCHORS B-77	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED PRECAST CONCRETE BARRIER STD. 857.01	REMARKS
- L -	89+76.661	90+30.000	RT EBL	53.339				90+30.000	4.6	5.2	15.239		0.3		1		1								SIGN
- L -	90+63.257	91+29.697	LT EBL	40.996		3.81	90+95.344		4.655	7.0	12.30	12.30	1.05	1.05						2	1	1		16.038	BRIDGE PIER (MEDIAN)
- L -	90+77.024	91+43.464	RT WBL	40.996		3.81		91+11.377	4.655	7.0	12.30	12.30	1.05	1.05						2	1	1		16.038	BRIDGE PIER (MEDIAN)
- L -	96+52.846	103+29.12	RT EBL	676.274			96+52.846	103+29.120	4.6	5.2	15.239		0.3		1			1							BRIDGE
- L -	98+74.958	103+29.12	LT EBL	450.352		3.81	99+40.00	103+29.120	3.6	4.6	47.475		3.4					1			1	1			SIGN (MEDIAN), BRIDGE (MEDIAN)
- L -	98+88.725	103+29.12	RT WBL	440.395			103+29.120	99+40.00	3.6	4.6		47.475		3.4				1							BRIDGE (MEDIAN), SIGN (MEDIAN)
- L -	100+82.851	101+40.000	RT EBL	57.149				101+40.000	3.6	4.6	15.239		0.3		1		1								SIGN (MEDIAN)
- L -	101+40.000	101+97.149	LT WBL	57.149				101+40.000	3.6	4.6	15.239		0.3		1		1								SIGN (MEDIAN)
- L -	102+16.095	103+28.49	LT WBL	112.395			103+28.490	102+16.095	4.2	5.115	BR						1	1							BRIDGE
- L -	104+14.210	104+92.315	RT EBL	78.105			104+14.210	104+90.000	4.6	5.2	BR							1							BRIDGE
- L -	104+14.210	105+26.604	LT WBL	112.395			105+26.000	104+14.210	4.6	5.2	15.239		0.3		1			1							BRIDGE
- L -	104+14.210	107+05.042	LT EBL	277.075		3.81	104+14.210	106+40.000	3.6	4.6	47.475		3.4					1			1	1			BRIDGE (MEDIAN), SIGN (MEDIAN)
- L -	104+14.210	106+91.275	RT WBL	277.065			106+40.000	104+14.210	3.6	4.6		47.475		3.4				1							BRIDGE (MEDIAN), SIGN (MEDIAN)
- L -																									
- L -																									
- L -																									
- L -	105+87.801	107+05.910	RT EBL	118.109			105+87.801	107+05.910	4.6 3.6	5.2 4.6	15.239		0.3		1										WALL
- RPCY16 -	0+00.000	5+01.015	RT	501.105			0+00.000	5+01.015	3.6	4.515							1								WALL
- L -																									
- L -	106+56.906	106+91.196	LT WBL	34.290			106+91.196	106+56.906	3.6	4.6							1								
- RPBY16 -	0+00.000	2+55.269	LT	255.269			0+00.000	2+55.269	3.6	4.515 4.600	15.239		0.3		1										
- L -	109+34.621	111+36.550	RT EBL	201.929			109+34.621	111+36.550	4.6	5.2	15.239		0.3		1			1							BRIDGE
- L -	109+57.535	111+11.840	LT WBL	154.305			111+11.840	109+57.535	4.6	5.2	0		0.0				1	1							BRIDGE
- L -	110+55.728	111+25.886	LT EBL	56.391		3.81		111+25.886	3.6	4.6	47.475		3.4					1			1	1			BRIDGE (MEDIAN)
- L -	110+69.495	111+22.387	RT WBL	52.892			111+22.387		3.6	4.6		47.475		3.4				1							BRIDGE (MEDIAN)
- L -	111+68.120	113+26.234	LT WBL	158.114			113+26.234	111+68.120	4.6	5.2	15.239		0.3		1			1							BRIDGE
- L -	111+82.284	112+35.315	LT EBL	53.031			111+82.284		3.6	4.6	47.475		3.4					1							BRIDGE (MEDIAN)
- L -	111+78.669	112+49.082	RT WBL	56.646		3.81		111+78.669	3.6	4.6		47.475		3.4				1			1	1			BRIDGE (MEDIAN)
- L -	111+92.830	112+70.935	RT EBL	78.105			111+92.830	112.70.935	4.6	5.2	0						1	1							BRIDGE
- L -	115+37.958	116+54.275	LT EBL	102.550		3.81	116+03.000		4.2	7.0	47.475	47.475	3.4	3.4							1	1			BRIDGE (MEDIAN)
- L -	115+51.725	116+68.042	RT WBL	102.550		3.81		116+03.000	4.2	7.0	47.475	47.475	3.4	3.4							1	1			BRIDGE (MEDIAN)
- L -	117+15.000	118+35.014	RT EBL	120.014			117+15.000	118+35.014	4.6	5.2	15.239		0.3		1		1								
- L -	118+79.271	120+05.000	LT WBL	125.729			120+05.000	118+79.271	4.6	5.2	15.239		0.3		1		1								

678
Sheet To be Revised
1-15-04

RALPH WHITEHEAD ASSOCIATES
CONSULTING ENGINEERS
P.O. BOX 35...
CHARLOTTE, NORTH CAROLINA 282..

COMPUTED BY: JBL DATE: 05/15/03
CHECKED BY: DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	3A

METRIC

RELEASE FOR CONSTRUCTION

DATE: 02-09-04

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.

GUARDRAIL SUMMARY (CONTINUED)

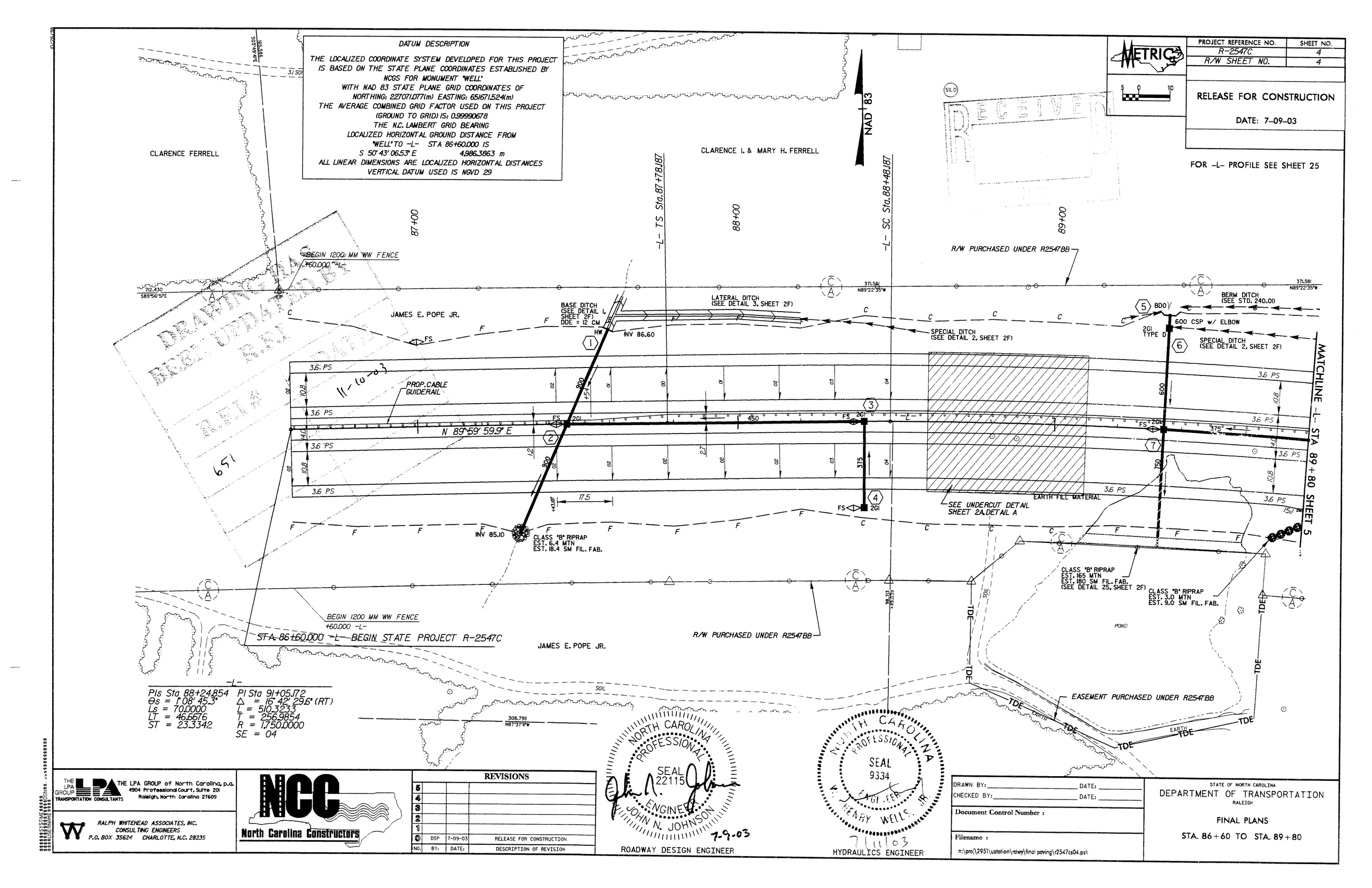
SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM EOL	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS						IMPACT ATTENUATOR TYPE 350			SINGLE FACED PRECAST CONCRETE BARRIER STD. 857.01	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU-350	M-350	CAT-1	TYPE III	XI MOD	TERMINAL END SECTION	EA	G	NG		
- L -	121+66.661	122+20.000	RT EBL	53.339				122+20.000	4.6	5.2	15.239		0.3		1		1								SIGN
- L -	124+75.000	125+28.339	LT WBL	53.339				124+75.000	4.6	5.2	15.239		0.3		1		1								SIGN
- L -	132+13.396	134+82.000	RT EBL	268.604			132+13.396	134+82.000	4.2	5.114 5.200	15.239		0.3		1		1								
- L -	133+59.251	136+45.000	LT WBL	285.749			136+45.000	133+59.251	4.2	5.115	15.239		0.3		1		1								
- L -	140+80.000	142+45.734	LT WBL	165.734			142+45.734	140+80.000	4.2	5.115	15.239		0.3		1		1								TIES INTO SECTION C-C
- L -	140+95.000	144+20.754	RT EBL	325.754			140+95.000	144+20.754	4.2	5.115	15.239		0.3		1										
- Y14 -	12+59.921	13+51.360	LT	91.439			12+59.921	13+51.360	2.4	3.4		15.239		0.3	1			1							BRIDGE 2 LANE /2 WAY
- Y14 -	14+58.110	15+19.069	LT	60.959			15+19.069	14+58.110	2.4	3.4	15.239		0.3		1			1							BRIDGE 2 LANE /2 WAY
- Y14 -	12+59.461	13+43.280	RT	83.819			12+59.461	13+43.280	2.4	3.4	15.239		0.3		1			1							BRIDGE 2 LANE /2 WAY
- Y14 -	14+49.85	15+20.334	RT	70.484			14+49.850	15+20.334	2.4	3.4		15.239		0.3	1			1							BRIDGE 2 LANE /2 WAY
SUBTOTAL				5255.956											29	8	23	20							
							TOTAL								29	8	23	20							

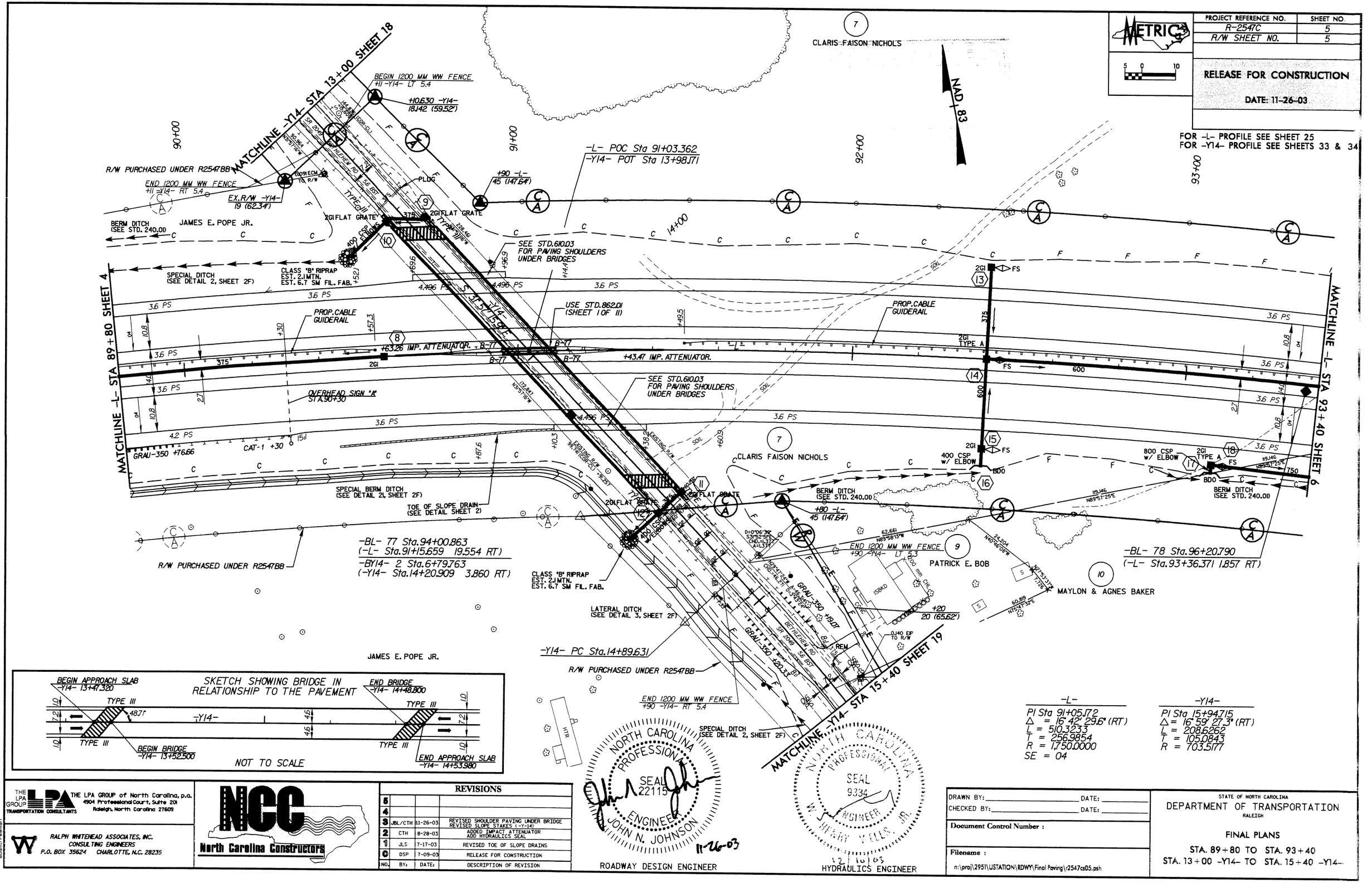
	LESS ANCHOR DEDUCTIONS:		
GRAU-350	29@15.24=		-441.960
M-350	8@11.430=		-91.440
CAT-1	23@1.905=		-43.815
TYPEIII	20@5.715=		-114.300
TERMINAL END SECTION	4@0.699=		-2.796
		TOTAL	4561.645
		SAY	4581.525 M

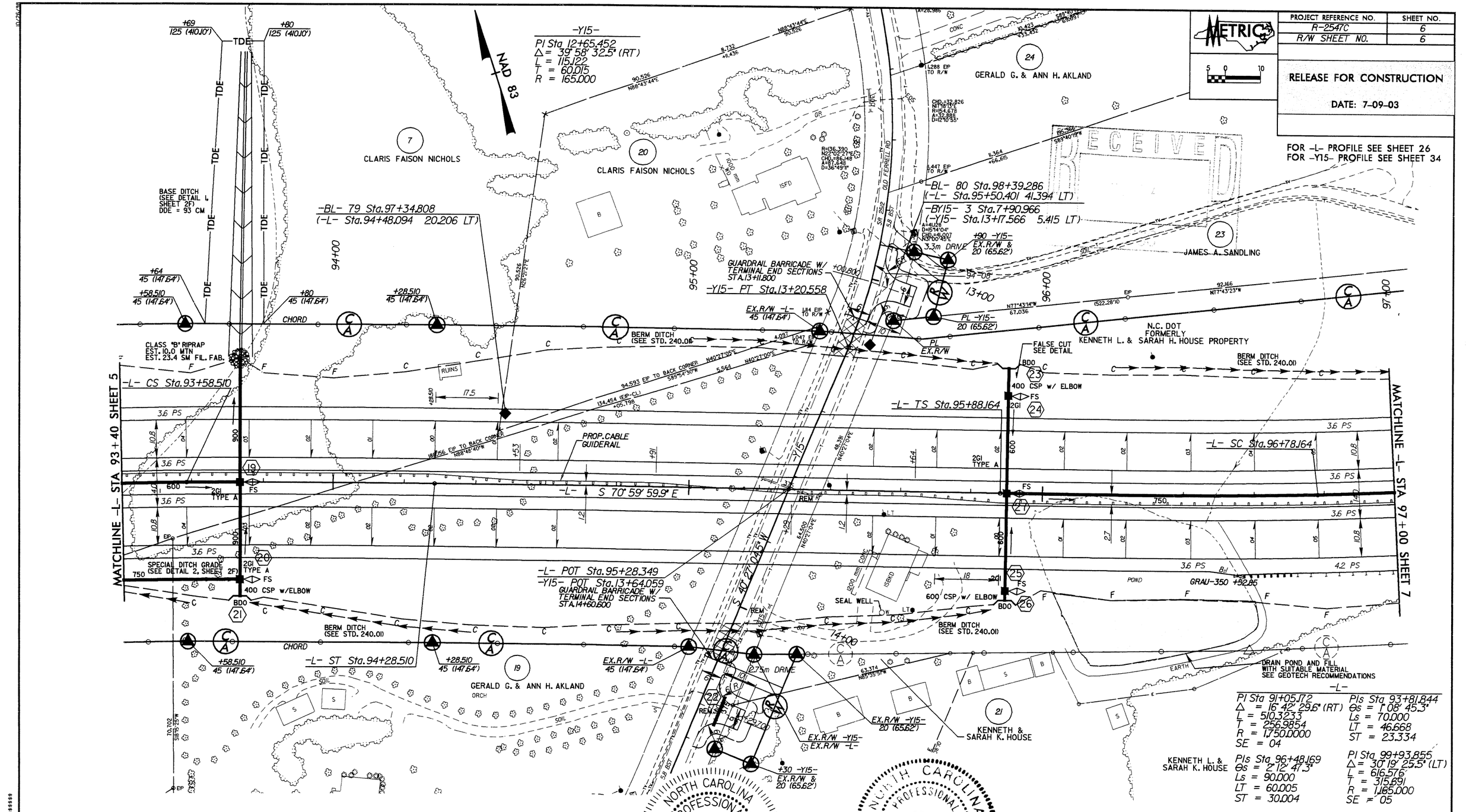
CABLE GUIDERAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LENGTH	ANCHORS	REMARKS
- L -	86+60.000	90+57.000	397.000	2	MEDIAN - STD 865.01 & DETAIL 865.D01
- L -	91+49.000	98+69.000	720.000	4	
- L -	106+96.000	110+50.000	354.000	2	
- L -	112+55.000	115+32.000	277.000	2	
- L -	116+74.000	140+65.000	2391.000	8	
- L -	141+42.000	144+20.000	278.000	2	
		TOTAL	4417.000		
	LESS ANCHOR DEDUCTIONS:				
		20@7.600=	-152.000		
		TOTAL	4265.000	20	

J:Paving\r2547cgr.sum
02/09/2004 ...


DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "WELL" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 227071.077(m) EASTING: 651671.524(m)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99990678
THE N.C. LAMBERT GRID BEARING LOCALIZED HORIZONTAL GROUND DISTANCE FROM "WELL" TO -L- STA 86+60.000 IS S 50° 43' 06.53" E 4,986.3863 m
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29
NAD 83
METRIC
5 0 10
PROJECT REFERENCE NO. R-2547C
SHEET NO. 4
R/W SHEET NO. 4
RELEASE FOR CONSTRUCTION
DATE: 7-09-03
FOR -L- PROFILE SEE SHEET 25
CLARENCE FERRELL
CLARENCE I. & MARY H. FERRELL
JAMES E. POPE JR.
-L- TS Sta. 87+78.87
-L- SC Sta. 88+48.87
87+00
88+00
89+00
BEGIN 1200 MM WW FENCE +60.000 -L-
R/W PURCHASED UNDER R2547BB
BASE DITCH (SEE DETAIL 1, SHEET 2F) DDE = 12 CM
LATERAL DITCH (SEE DETAIL 3, SHEET 2F)
SPECIAL DITCH (SEE DETAIL 2, SHEET 2F)
BERM DITCH (SEE STD. 240.01)
600 CSP w/ ELBOW
2GI TYPE D
INV 86.60
PROP. CABLE GUIDERAIL
N 89°59' 59.9" E
INV 85.10
CLASS "B" RIPRAP EST. 6.4 MTN EST. 18.4 SM FIL. FAB.
SEE UNDERCUT DETAIL SHEET 2A, DETAIL A
EARTH FILL MATERIAL
CLASS "B" RIPRAP EST. 16.5 MTN EST. 18.0 SM FIL. FAB. (SEE DETAIL 25, SHEET 2F)
CLASS "B" RIPRAP EST. 3.0 MTN EST. 9.0 SM FIL. FAB.
POND
EASEMENT PURCHASED UNDER R2547BB
BEGIN 1200 MM WW FENCE +60.000 -L-
STA. 86+60.000 -L- BEGIN STATE PROJECT R-2547C
JAMES E. POPE JR.
R/W PURCHASED UNDER R2547BB
MATCHLINE -L- STA 89+80 SHEET 5
-L-
PIs Sta 88+24.854
Θs = 1°08' 45.3"
Ls = 70.0000
LT = 46.6676
ST = 23.3342
PI Sta 91+05.172
Δ = 16° 42' 29.6" (RT)
L = 510.3233
T = 256.9854
R = 1,750.0000
SE = 04
NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-9-03
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER HENRY WELLS, JR.
7/11/03
HYDRAULICS ENGINEER
THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235
NCC North Carolina Constructors
REVISIONS
NO. BY: DATE: DESCRIPTION OF REVISION
0 DSP 7-09-03 RELEASE FOR CONSTRUCTION
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : n:\proj\2951\ustation\rdwy\final paving\r2547cs04.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 86+60 TO STA. 89+80


METRIC
5 0 10
PROJECT REFERENCE NO. R-2547C
SHEET NO. 5
R/W SHEET NO. 5
RELEASE FOR CONSTRUCTION
DATE: 11-26-03
FOR -L- PROFILE SEE SHEET 25
FOR -Y14- PROFILE SEE SHEETS 33 & 34
NAD 83
MATCHLINE -Y14- STA 13+00 SHEET 18
MATCHLINE -L- STA 89+80 SHEET 4
MATCHLINE -L- STA 93+40 SHEET 6
MATCHLINE -Y14- STA 15+40 SHEET 19
CLARIS FAISON NICHOLS
JAMES E. POPE JR.
PATRICK E. BOB
MAYLON & AGNES BAKER
BEGIN 1200 MM WW FENCE +11 -Y14- LT 5.4
+10.630 -Y14- 18.142 (59.52')
END 1200 MM WW FENCE +11 -Y14- RT 5.4
EX. R/W -Y14- 19 (62.34')
R/W PURCHASED UNDER R2547BB
-L- POC Sta 91+03.362
-Y14- POT Sta 13+98.171
+90 -L- 45 (147.64')
+80 -L- 45 (147.64')
BERM DITCH (SEE STD. 240.01)
SPECIAL DITCH (SEE DETAIL 2, SHEET 2F)
CLASS "B" RIPRAP EST. 2.1 MTN. EST. 6.7 SM FIL. FAB.
SEE STD. 610.03 FOR PAVING SHOULDERS UNDER BRIDGES
USE STD. 862.01 (SHEET 1 OF 11)
PROP. CABLE GUIDERAIL
+63.26 IMP. ATTENUATOR
+43.47 IMP. ATTENUATOR
OVERHEAD SIGN "A" STA 90+30
GRAU-350 +76.66
CAT-1 +30
TOE OF SLOPE DRAIN (SEE DETAIL SHEET 2)
-BL- 77 Sta. 94+00.863
(-L- Sta. 91+15.659 19.554 RT)
-BY14- 2 Sta. 6+79.763
(-Y14- Sta. 14+20.909 3.860 RT)
-BL- 78 Sta. 96+20.790
(-L- Sta. 93+36.371 1.857 RT)
-Y14- PC Sta. 14+89.631
LATERAL DITCH (SEE DETAIL 3, SHEET 2F)
END 1200 MM WW FENCE +90 -Y14- RT 5.4
END 1200 MM WW FENCE +90 -Y14- LT 5.3
SPECIAL BERM DITCH (SEE DETAIL 2, SHEET 2F)
BETHLEHEM RD SR 2048
SR 2048 36' BST
2GI FLAT GRATE
2GI TYPE A
400 CSP w/ ELBOW
800 CSP w/ ELBOW
SKETCH SHOWING BRIDGE IN RELATIONSHIP TO THE PAVEMENT
BEGIN APPROACH SLAB -Y14- 13+41.320
BEGIN BRIDGE -Y14- 13+52.500
END BRIDGE -Y14- 14+48.800
END APPROACH SLAB -Y14- 14+53.980
TYPE III
-Y14-
NOT TO SCALE
-L-
PI Sta 91+05.172
Δ = 16° 42' 29.6" (RT)
L = 510.3233
T = 256.9854
R = 1,750.0000
SE = 04
-Y14-
PI Sta 15+94.715
Δ = 16° 59' 27.3" (RT)
L = 208.6262
T = 105.0843
R = 703.5177
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235
North Carolina Constructors
REVISIONS
5
4
3 JBL/CTH 11-26-03 REVISED SHOULDER PAVING UNDER BRIDGE REVISED SLOPE STAKES (-Y-14)
2 CTH 8-28-03 ADDED IMPACT ATTENUATOR ADD HYDRAULICS SEAL
1 JLS 7-17-03 REVISED TOE OF SLOPE DRAINS
0 DSP 7-09-03 RELEASE FOR CONSTRUCTION
NO. BY: DATE: DESCRIPTION OF REVISION
NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
11-26-03
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY MILLS, JR.
12/10/03
HYDRAULICS ENGINEER
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : n:\proj\2951\USTATION\RDWY\Final Paving\v2547ca05.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 89+80 TO STA. 93+40
STA. 13+00 -Y14- TO STA. 15+40 -Y14-



REVISIONS			
5			
4			
3			
2			
1			
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

THE LPA GROUP LPA TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-9-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
7/10/03
HYDRAULICS ENGINEER

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CHECKED BY: _____ DATE: _____
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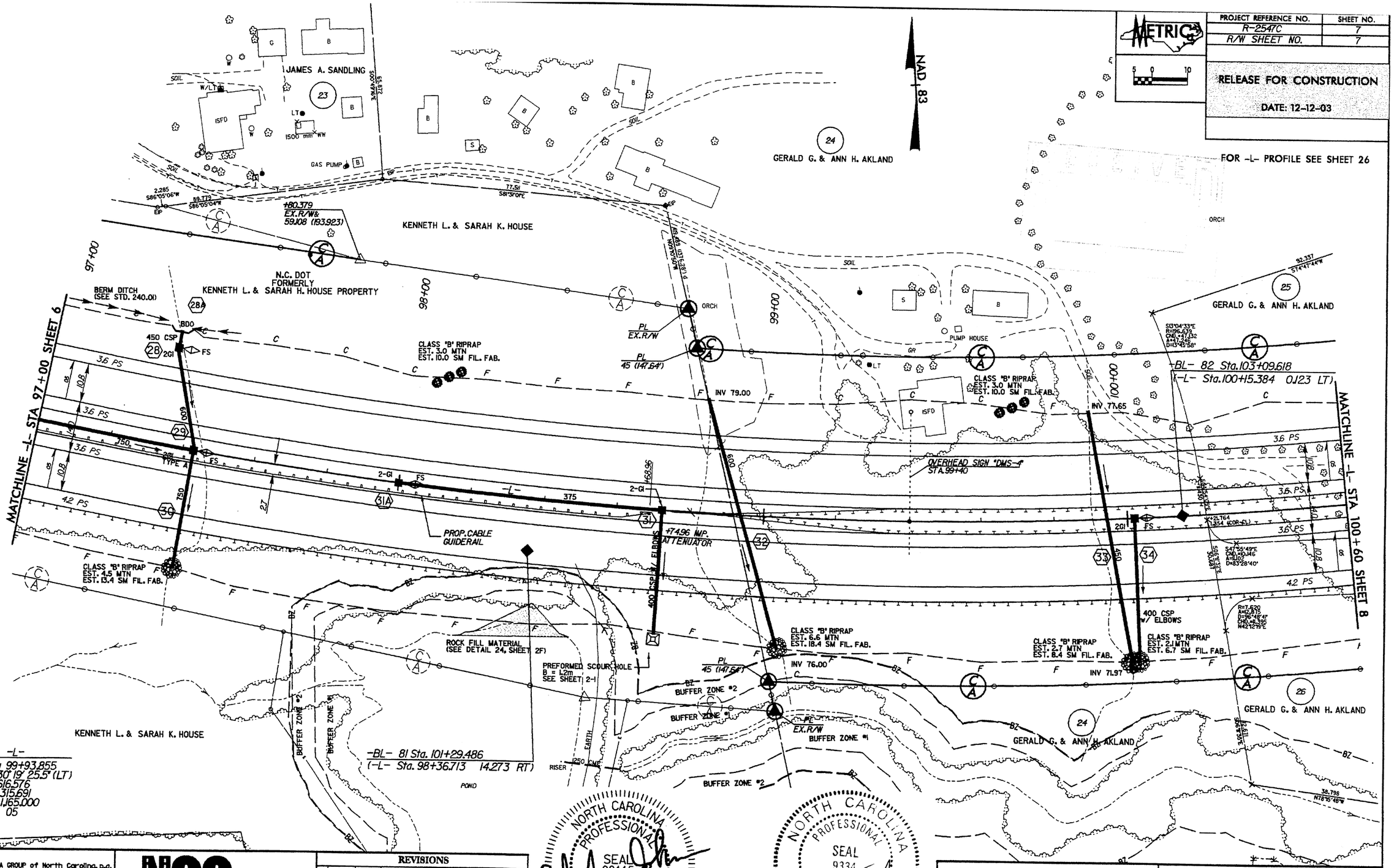
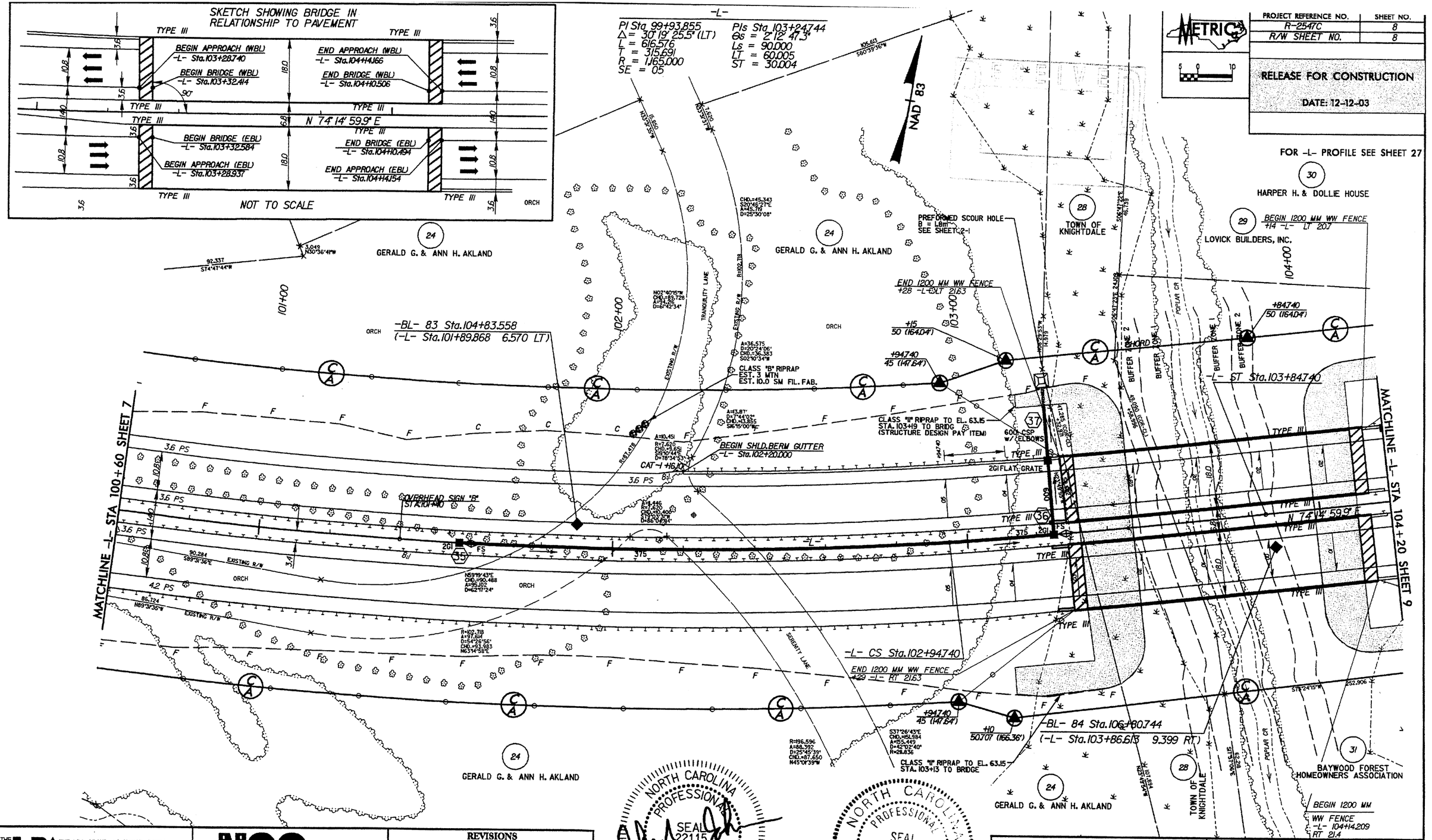
Filename : n:\proj\2951\ustation\rdwy\final paving\r2547cs06.psn

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
STA. 93+40 TO STA. 97+00


METRIC
5 0 10
PROJECT REFERENCE NO. R-2547C
SHEET NO. 7
R/W SHEET NO. 7
RELEASE FOR CONSTRUCTION
DATE: 12-12-03
NAD 83
FOR -L- PROFILE SEE SHEET 26
JAMES A. SANDLING
GERALD G. & ANN H. AKLAND
KENNETH L. & SARAH K. HOUSE
N.C. DOT FORMERLY KENNETH L. & SARAH H. HOUSE PROPERTY
BERM DITCH (SEE STD. 240.01)
MATCHLINE -L- STA 97+00 SHEET 6
MATCHLINE -L- STA 100+60 SHEET 8
CLASS "B" RIPRAP EST. 3.0 MTN EST. 10.0 SM FIL. FAB.
CLASS "B" RIPRAP EST. 4.5 MTN EST. 13.4 SM FIL. FAB.
CLASS "B" RIPRAP EST. 6.6 MTN EST. 18.4 SM FIL. FAB.
CLASS "B" RIPRAP EST. 2.1 MTN EST. 6.7 SM FIL. FAB.
CLASS "B" RIPRAP EST. 2.7 MTN EST. 8.4 SM FIL. FAB.
PROP. CABLE GUIDERAIL
+74.96 IMP. ATTENUATOR
OVERHEAD SIGN "DMS-4" STA.99+40
ROCK FILL MATERIAL (SEE DETAIL 24, SHEET 2F)
PREFORMED SCOUR HOLE B = 12m SEE SHEET 2-I
400 CSP W/ ELBOWS
450 CSP
BUFFER ZONE #1
BUFFER ZONE #2
EARTH
RISER
POND
-BL- 81 Sta. 101+29.486
(-L- Sta. 98+36.713 14.273 RT)
-BL- 82 Sta.103+09.618
(-L- Sta.100+15.384 0.123 LT)
-L-
PI Sta. 99+93.855
Δ = 30°19'25.5" (LT)
L = 616.576
T = 315.691
R = 1,165.000
SE = 05
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235
North Carolina Constructors
REVISIONS
6
4
3
2 DSP 12-12-03 MODIFIED PFSH
1 CTH 8-28-03 ADD IMPACT ATTENUATOR
0 DSP 7-09-03 RELEASE FOR CONSTRUCTION
NO. BY: DATE: DESCRIPTION OF REVISION
NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
12-12-03
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
12/17/03
HYDRAULICS ENGINEER
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : n:\proj\2951\sustation\rdwy\final paving\v2547cs07.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 97+00 TO STA. 100+60



PROJECT REFERENCE NO.	SHEET NO.
R-2547C	8
R/W SHEET NO.	8

RELEASE FOR CONSTRUCTION

DATE: 12-12-03

REVISIONS			
5			
4			
3	DSP	12-12-03	MODIFIED PFSH
2	CTH	11-26-03	REVISED SLOPE STAKES
1	CTH	8-28-03	ADD IMPACT ATTENUATOR
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
12-12-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER

DRAWN BY: DATE:
CHECKED BY: DATE:

Document Control Number :

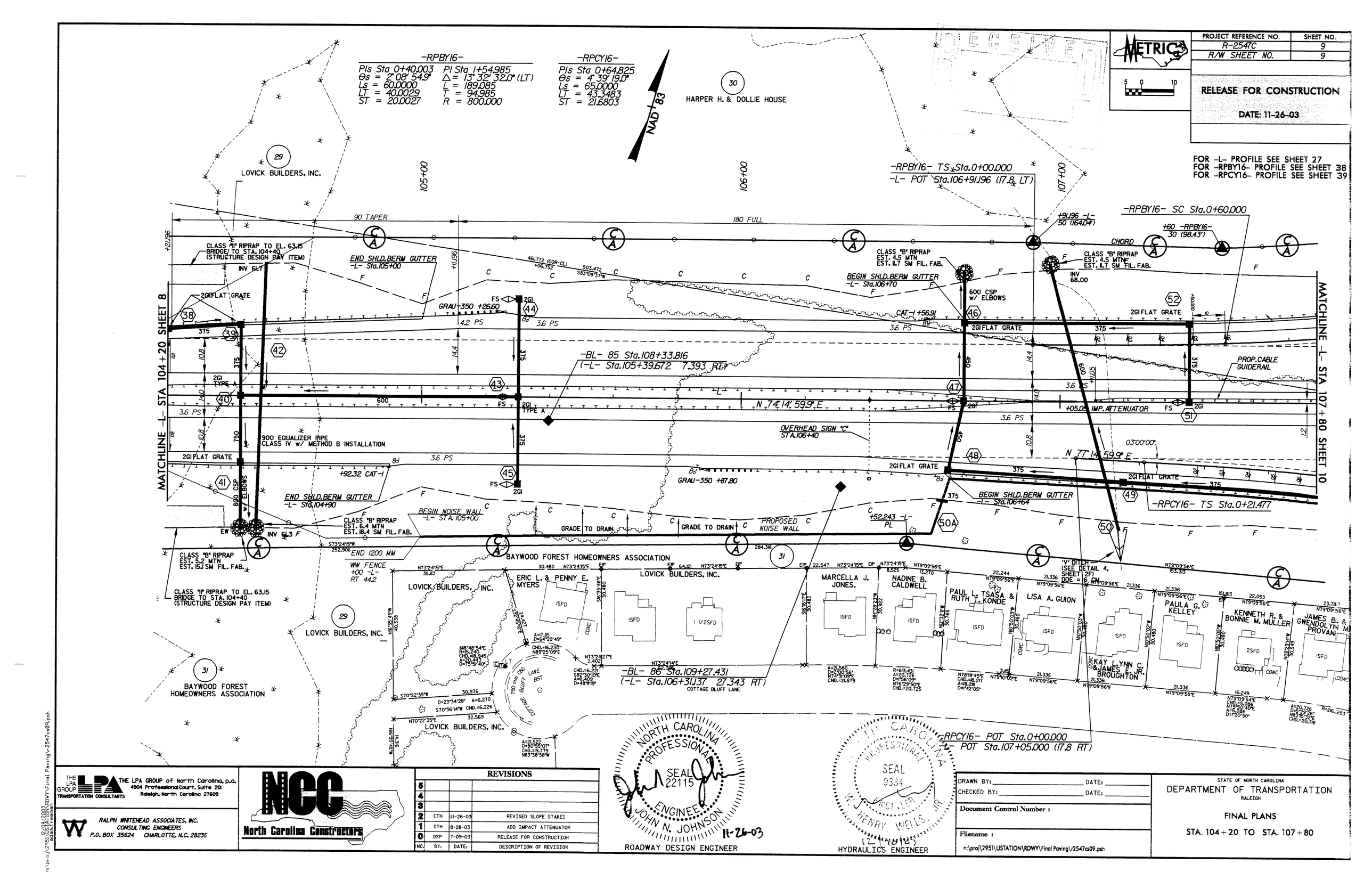
Filename : n:\proj\2951\ustation\rdwy\final paving\r2547cs08.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 100+60 TO STA. 104+20

n:\proj\2951\ustation\rdwy\final paving\r2547cs08.psh 12/16/2003 davidpshaw



PROJECT REFERENCE NO.	SHEET NO.
R-2547C	9
R/W SHEET NO.	9

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
6			
4			
3			
2	CTH	11-26-03	REVISED SLOPE STAKES
1	CTH	8-28-03	ADD IMPACT ATTENUATOR
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON 11-26-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER HENRY WELLS, JR.
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : n:\proj\2951\USTATION\RDWY\Final Paving\r2547cs09.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 104+20 TO STA. 107+80

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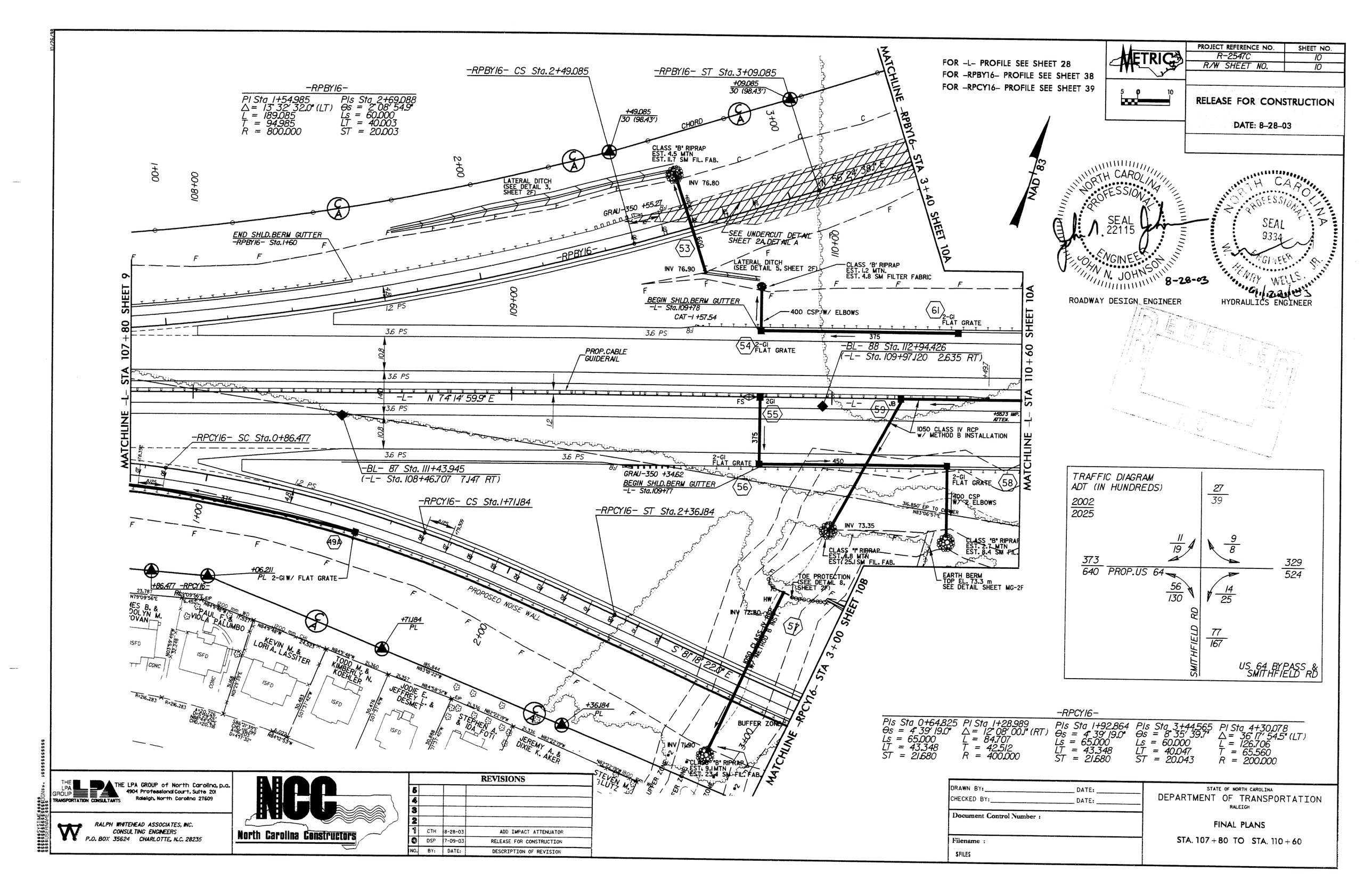
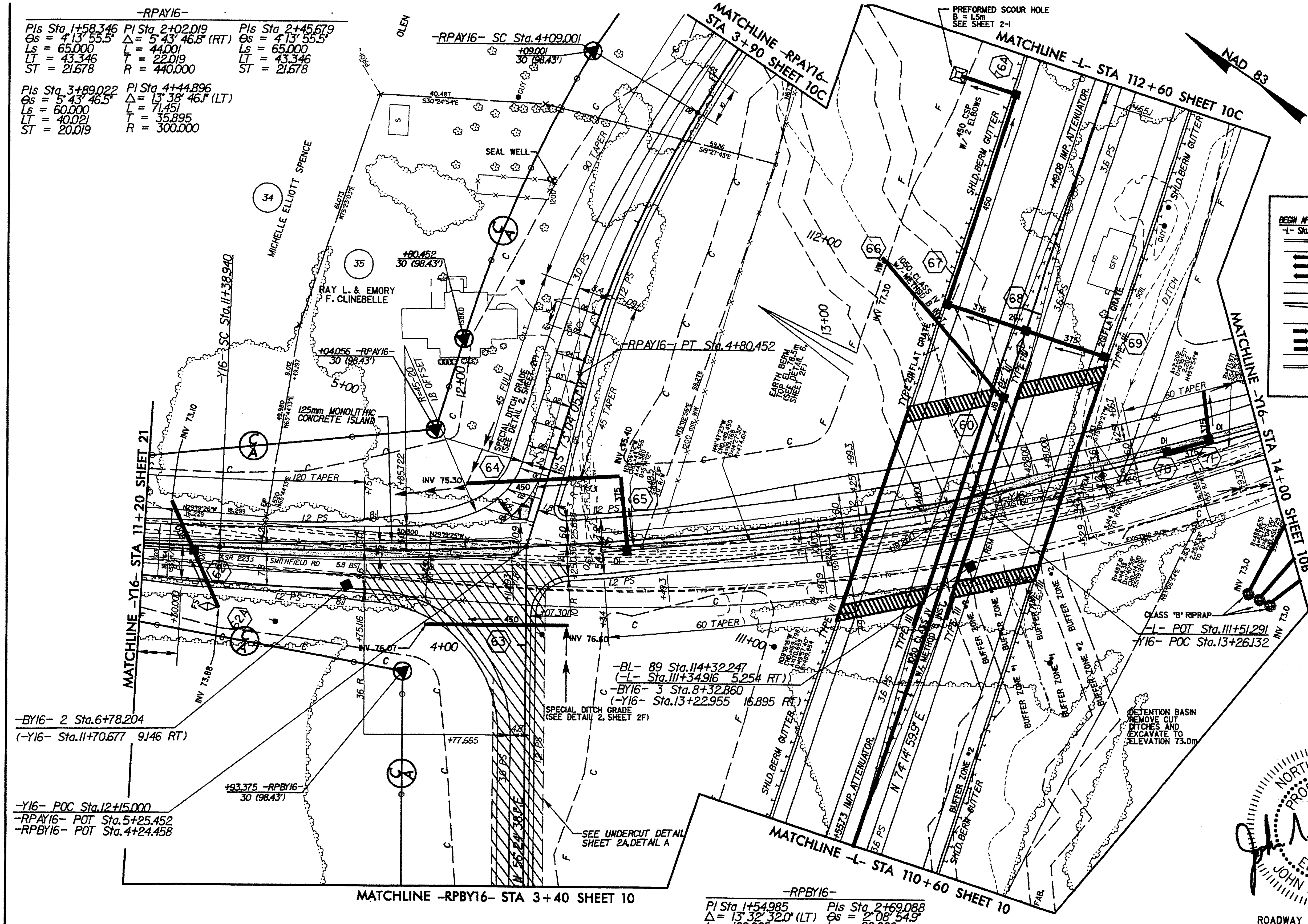

-RPBY16-
PI Sta 1+54.985
Δ = 13° 32' 32.0" (LT)
L = 189.085
T = 94.985
R = 800.000
PIs Sta 2+69.088
Θs = 2° 08' 54.9"
Ls = 60.000
LT = 40.003
ST = 20.003
-RPBY16- CS Sta.2+49.085
-RPBY16- ST Sta.3+09.085
MATCHLINE -RPBY16- STA 3+40 SHEET 10A
FOR -L- PROFILE SEE SHEET 28
FOR -RPBY16- PROFILE SEE SHEET 38
FOR -RPCY16- PROFILE SEE SHEET 39
METRIC
PROJECT REFERENCE NO. R-2547C SHEET NO. 10
R/W SHEET NO. 10
RELEASE FOR CONSTRUCTION
DATE: 8-28-03
NAD 83
NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON 8-28-03
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER
RECEIVED
MATCHLINE -L- STA 107+80 SHEET 9
MATCHLINE -L- STA 110+60 SHEET 10A
END SHLD.BERM GUTTER -RPBY16- Sta.1+60
LATERAL DITCH (SEE DETAIL 3, SHEET 2F)
CLASS 'B' RIPRAP EST. 4.5 MTN. EST. 11.7 SM FIL. FAB.
INV 76.80
GRAU-350 +55.07
SEE UNDERCUT DETAIL SHEET 2A, DETAIL A
LATERAL DITCH (SEE DETAIL 5, SHEET 2F)
CLASS 'B' RIPRAP EST. 12 MTN. EST. 4.8 SM FILTER FABRIC
INV 76.90
BEGIN SHLD.BERM GUTTER -L- Sta.109+78
CAT-1 +57.54
400 CSP W/ ELBOWS
2-GI FLAT GRATE
PROP.CABLE GUIDERAIL
-L- N 74° 14' 59.9" E
-BL- 88 Sta. 112+94.426
(-L- Sta. 109+97.120 2.635 RT)
-RPCY16- SC Sta.0+86.477
-BL- 87 Sta. 111+43.945
(-L- Sta. 108+46.707 7.147 RT)
GRAU-350 +34.62
BEGIN SHLD.BERM GUTTER -L- Sta.109+77
1050 CLASS IV RCP W/ METHOD B INSTALLATION
-RPCY16- CS Sta.1+71.84
-RPCY16- ST Sta.2+36.184
+06.211 PL 2-GI W/ FLAT GRATE
PROPOSED NOISE WALL
+71.84 PL
+36.184 PL
INV 73.35
INV 72.80
INV 71.80
CLASS 'I' RIPRAP EST. 6.8 MTN EST. 25.1 SM FIL. FAB.
CLASS 'B' RIPRAP EST. 2.7 MTN. EST. 8.4 SM FIL.
EARTH BERM TOP EL. 73.3 m SEE DETAIL SHEET MG-2F
TOE PROTECTION (SEE DETAIL 8, SHEET 2F)
1050 CLASS IV RCP W/ METHOD B INSTALL.
BUFFER ZONE
CLASS 'B' RIPRAP EST. 9.1 MTN EST. 23.4 SM FIL. FAB.
MATCHLINE -RPCY16- STA 3+00 SHEET 10B
S 81° 18' 22.0" E
TRAFFIC DIAGRAM
ADT (IN HUNDREDS)
2002
2025
27/39
11/19
9/8
373/640
PROP.US 64
329/524
56/130
14/25
77/167
SMITHFIELD RD
US 64 BYPASS & SMITHFIELD RD
-RPCY16-
PIs Sta 0+64.825
Θs = 4° 39' 19.0"
Ls = 65.000
LT = 43.348
ST = 21.680
PI Sta 1+28.989
Δ = 12° 08' 00.1" (RT)
L = 84.707
T = 42.512
R = 400.000
PIs Sta 1+92.864
Θs = 4° 39' 19.0"
Ls = 65.000
LT = 43.348
ST = 21.680
PIs Sta 3+44.565
Θs = 8° 35' 39.7"
Ls = 60.000
LT = 40.047
ST = 20.043
PI Sta 4+30.078
Δ = 36° 17' 54.5" (LT)
L = 126.706
T = 65.560
R = 200.000
THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a. 4904 Professional Court, Suite 201 Raleigh, North Carolina 27609
RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235
NCC North Carolina Constructors
REVISIONS
5
4
3
2
1 CTH 8-28-03 ADD IMPACT ATTENUATOR
0 DSP 7-09-03 RELEASE FOR CONSTRUCTION
NO. BY: DATE: DESCRIPTION OF REVISION
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : $FILES
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 107+80 TO STA. 110+60

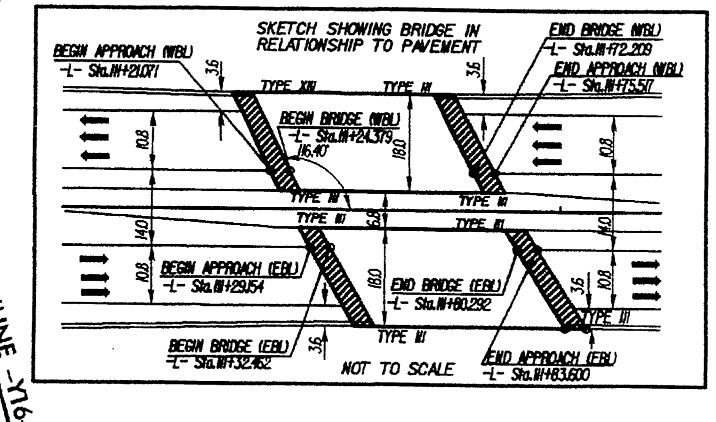
-RPAY16-

Pls Sta 1+58.346 PI Sta 2+02.019 Pls Sta 2+45.679
Θs = 4° 13' 55.5" Δ = 5° 43' 46.8" (RT) Θs = 4° 13' 55.5"
Ls = 65.000 L = 44.001 Ls = 65.000
LT = 43.346 T = 22.019 LT = 43.346
ST = 21.678 R = 440.000 ST = 21.678

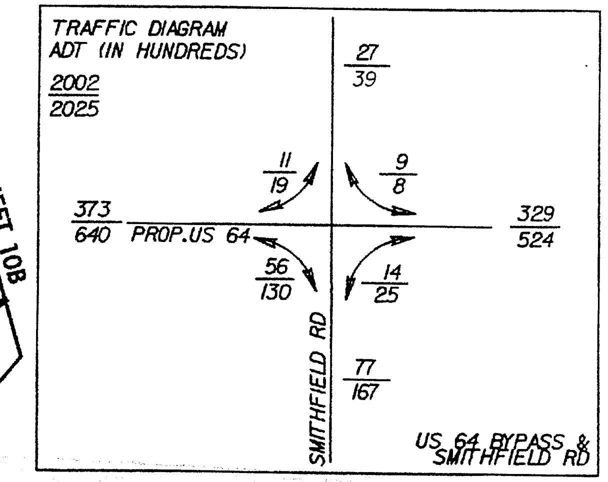
Pls Sta 3+89.022 PI Sta 4+44.896
Θs = 5° 43' 46.5" Δ = 13° 38' 46.1" (LT)
Ls = 60.000 L = 71.451
LT = 40.021 T = 35.895
ST = 20.019 R = 300.000



MATCHLINE -RPAY16- STA 3+90 SHEET 10C
MATCHLINE -L- STA 112+60 SHEET 10C
MATCHLINE -Y16- STA 11+20 SHEET 21
MATCHLINE -Y16- STA 14+00 SHEET 10B
MATCHLINE -L- STA 110+60 SHEET 10
MATCHLINE -RPBY16- STA 3+40 SHEET 10
NAD 83
PREFORMED SCOUR HOLE
B = 1.5m
SEE SHEET 2-I
-RPAY16- SC Sta.4+09.001
-RPAY16- PT Sta.4+80.452
-Y16- SC Sta.11+38.940
MICHELLE ELLIOTT SPENCE
RAY L. & EMORY F. CLINEBELLE
SEAL WELL
125mm MONOLITHIC CONCRETE ISLAND
SPECIAL DITCH GRADE (SEE DETAIL 2, SHEET 2F)
EARTH BERM (SEE DETAIL 6, SHEET 2F)
-BL- 89 Sta.114+32.247
(-L- Sta.111+34.916 5.254 RT)
-BY16- 3 Sta.8+32.860
(-Y16- Sta.13+22.955 16.895 RT)
-BY16- 2 Sta.6+78.204
(-Y16- Sta.11+70.677 9.146 RT)
-Y16- POC Sta.12+15.000
-RPAY16- POT Sta.5+25.452
-RPBY16- POT Sta.4+24.458
SEE UNDERCUT DETAIL SHEET 2A,DETAIL A
CLASS 'B' RIPRAP
-L- POT Sta.111+51.291
-Y16- POC Sta.13+26.132
DETENTION BASIN REMOVE CUT DITCHES AND EXCAVATE TO ELEVATION 73.0m
N 74° 14' 59.9" E
SHLD.BERM GUTTER
IMP. ATTENUATOR
BUFFER ZONE
SMITHFIELD RD



SKETCH SHOWING BRIDGE IN RELATIONSHIP TO PAVEMENT
BEGIN APPROACH (WBL) -L- Sta.111+21.071
END BRIDGE (WBL) -L- Sta.111+72.209
END APPROACH (WBL) -L- Sta.111+75.511
BEGIN BRIDGE (WBL) -L- Sta.111+24.379
BEGIN APPROACH (EBL) -L- Sta.111+29.154
END BRIDGE (EBL) -L- Sta.111+80.292
BEGIN BRIDGE (EBL) -L- Sta.111+32.462
END APPROACH (EBL) -L- Sta.111+83.600
NOT TO SCALE



PROJECT REFERENCE NO.	SHEET NO.
R-2547C	10A
R/W SHEET NO.	10

METRIC

RELEASE FOR CONSTRUCTION

DATE: 12-12-03

FOR -L- PROFILE SEE SHEET 28
FOR -RPAY16- PROFILE SEE SHEET 37
FOR -RPBY16- PROFILE SEE SHEET 38
FOR -Y16- PROFILE SEE SHEET 36

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22115 JOHN N. JOHNSON
12-12-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 9334 W. HENRY WELLS, JR.
12/17/03
HYDRAULICS ENGINEER

-RPBY16-

PI Sta 1+54.985 Pls Sta 2+69.088
Δ = 13° 32' 32.0" (LT) Θs = 2° 08' 54.9"
L = 189.085 Ls = 60.000
T = 94.985 LT = 40.003
R = 800.000 ST = 20.003

-Y16-

Pls Sta 11+18.943 PI Sta 13+14.772 Pls Sta 15+05.423
Θs = 2° 05' 00.5" Δ = 24° 03' 46.2" (LT) Θs = 2° 05' 00.5"
Ls = 60.000 L = 346.480 Ls = 60.000
LT = 40.003 T = 175.832 LT = 40.003
ST = 20.003 R = 825.000 ST = 20.003

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4	DSP	12-12-03	MODIFIED PFSH
3	CTH	11-26-03	REVISED IN ACCORDANCE WITH RFI655
2	CTH	8-28-03	ADD IMPACT ATTENUATOR
1	CTH	8-18-03	ADD IMPACT ATTENUATOR
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION

DRAWN BY: ______ DATE: ______
CHECKED BY: ______ DATE: ______

Document Control Number :

Filename :
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 110+60 TO STA. 112+60
STA. 11+20 -Y16- TO STA. 14+00 -Y16-
STA. 3+40 -RPBY16- TO STA. 3+90 -RPAY16-

12/16/2003
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PROJECT REFERENCE NO.	SHEET NO.
R-2547C	10B
R/W SHEET NO.	10

RELEASE FOR CONSTRUCTION

DATE: 7-09-03

FOR -RPCY16- PROFILE SEE SHEET 39
FOR -RPDY16- PROFILE SEE SHEET 40
FOR -Y16- PROFILE SEE SHEET 36

TRAFFIC DIAGRAM
ADT (IN HUNDREDS)
2002 / 2025

373 / 640 PROP. US 64 329 / 524
11/19 9/8 56/130 14/25
27/39 77/167
SMITHFIELD RD
US 64 BYPASS & SMITHFIELD RD

NAD 83

MATCHLINE -RPCY16- STA 3+00 SHEET 10

MATCHLINE -Y16- STA 14+00 SHEET 10A

MATCHLINE -RPDY16- STA 3+80 SHEET 10C

MATCHLINE -Y16- STA 15+60 SHEET 22

-Y16- POC Sta.14+45.000
-RPCY16- POT Sta.5+33.843
-RPDY16- POT Sta.4+91.027

-RPCY16- TS Sta.3+04.518

-RPCY16- SC Sta.3+64.518

-RPCY16- PT Sta.4+91.223

-BY16- 4 Sta.9+31.903
(-Y16- Sta.14+19.968 18.420 RT)

-RPDY16- ST Sta.4+16.778

-Y16- CS Sta.14+85.420

-Y16- ST Sta.15+45.420

EARTH BERM
TOP EL. 73.3m
SEE DETAIL SHEET MG-2F

LOVICK BUILDERS, INC.

SPECIAL CUT BASE DITCH
(SEE DETAIL 17, SHEET 2F)

SHOULDER BERM GUTTER
STA. 106+64 -L- RT TO STA. 5+00 -RPCY16- RT

DETENTION BASIN
REMOVE CUT DITCHES AND EXCAVATE
TO ELEVATION 73.0m

SPECIAL DITCH
(SEE DETAIL 2, SHEET 2F)
2-GI W/ FLAT GRATE

SEE UNDERCUT DETAIL
SHEET 2A, DETAIL A

PROPOSED NOISE WALL

END NOISE WALL
STA 5+00
-RPCY16-

BEGIN 1200MM WW FENCE
+00 -RPCY16- RT 120

CLASS B RIPRAP

125mm MONOLITHIC CONCRETE ISLAND

INV 76.00
INV 76.50
INV 76.60
INV 77.50

12 PS
3.0 PS
45 TAPER
90 TAPER
120 TAPER
60 TAPER

FOREST ASSOCIATION

MELVIN W. & BEVERLY A. POWELL

GARRY M. & CASSANDRA H. MITCHELL

ANTWAN L. CARR
CARLA L. GOINS

WANDA -

BAYWOOD FOREST HOMEOWNERS ASSOC., INC.

PAUL R. & ISA M. DAVIS

ROBERT A. & DEBORAH S. FERRY

JOHN W. & WENDY P. FARLEY

ALPHONZA C. & SANDY J. MERRITT

RALPH E. & SALLY P. MOORE

KATIE R. STATON

DARRYL D. & PATRICE M. RODGERS

ANNA L. WILLIAMS

-Y16-

PIs Sta 11+18.943	PI Sta 13+14.772	PIs Sta 15+05.423
Θs = 2° 05' 00.5"	Δ = 24° 03' 46.2" (LT)	Θs = 2° 05' 00.5"
Ls = 60.000	L = 346.480	Ls = 60.000
LT = 40.003	T = 175.832	LT = 40.003
ST = 20.003	R = 825.000	ST = 20.003

-RPCY16-

PIs Sta 0+64.825	PI Sta 1+28.989	PIs Sta 1+92.864	PIs Sta 3+44.565	PI Sta 4+30.078
Θs = 4° 39' 19.0"	Δ = 12° 08' 00.1" (RT)	Θs = 4° 39' 19.0"	Θs = 8° 35' 39.7"	Δ = 36° 17' 54.5" (LT)
Ls = 65.000	L = 84.707	Ls = 65.000	Ls = 60.000	L = 126.706
LT = 43.348	T = 42.512	LT = 43.348	LT = 40.047	T = 65.560
ST = 21.680	R = 400.000	ST = 21.680	ST = 20.043	R = 200.000

-RPDY16-

PI Sta 2+09.075	PIs Sta 3+73.446
Δ = 13° 41' 33.5" (LT)	Θs = 1° 33' 06.3"
L = 286.778	Ls = 65.000
T = 144.075	LT = 43.335
R = 1,200.000	ST = 21.668

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-9-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER H. HERRY WELLS, JR.
7/11/03
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : n:\proj\2951\ustation\rdwy\Final Paving\r2547cs10b.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 3+00 -RPCY16- TO STA. 3+80 -RPDY16-
STA. 14+00 -Y16- TO STA. 15+60 -Y16-

10/26/2003
07/09/2003
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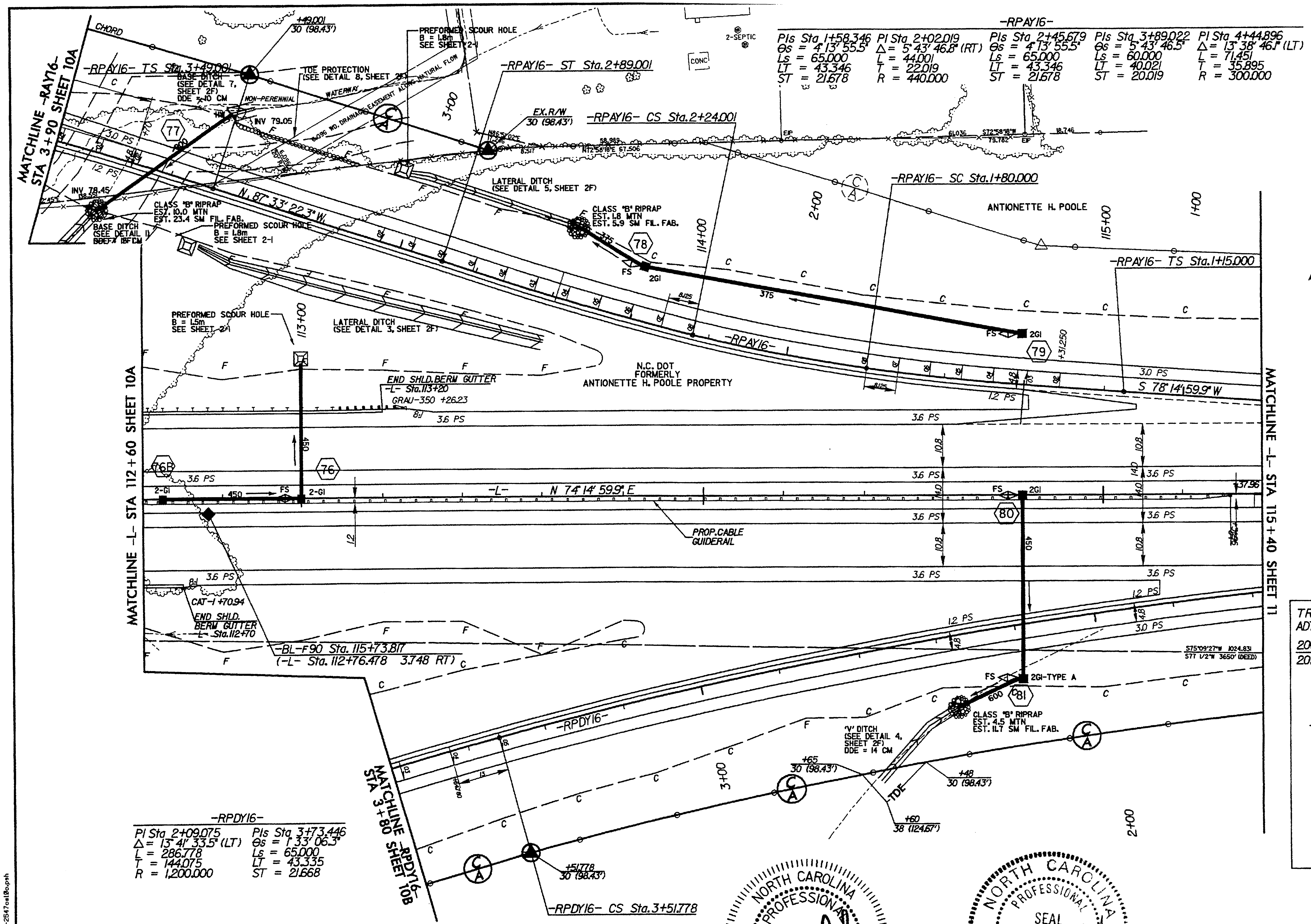
R-2547C	10C
R/W SHEET NO.	10 & 11

METRIC

RELEASE FOR CONSTRUCTION

DATE: 12-12-03

FOR -L- PROFILE SEE SHEETS 28
FOR -RPAY16- PROFILE SEE SHEET 37
FOR -RPDY16- PROFILE SEE SHEET 40



-RPAY16-
PIs Sta 1+58.346 Θs = 4°13' 55.5" Ls = 65.000 LT = 43.346 ST = 21.678
PI Sta 2+02.019 Δ = 5° 43' 46.8" (RT) L = 44.001 T = 22.019 R = 440.000
PIs Sta 2+45.679 Θs = 4°13' 55.5" Ls = 65.000 LT = 43.346 ST = 21.678
PIs Sta 3+89.022 Θs = 5° 43' 46.5" Ls = 60.000 LT = 40.021 ST = 20.019
PI Sta 4+44.896 Δ = 13° 38' 46.1" (LT) L = 71.451 T = 35.895 R = 300.000
MATCHLINE -RAY16- STA 3+90 SHEET 10A
MATCHLINE -L- STA 112+60 SHEET 10A
MATCHLINE -L- STA 115+40 SHEET 11
MATCHLINE -RPDY16- STA 3+80 SHEET 10B
-RPAY16- ST Sta. 2+89.001
-RPAY16- CS Sta. 2+24.001
-RPAY16- SC Sta. 1+80.000
-RPAY16- TS Sta. 1+15.000
-RPAY16- TS Sta. 3+49.001
-RPDY16- CS Sta. 3+51.778
N 74° 14' 59.9" E
N 87° 33' 22.3" W
S 78° 14' 59.9" W
ANTIONETTE H. POOLE
N.C. DOT FORMERLY ANTIONETTE H. POOLE PROPERTY
PROP. CABLE GUIDERAIL
-BL-F90 Sta. 115+73.817
(-L- Sta. 112+76.478 3.748 RT)
NAD 83
-RPDY16-
PI Sta 2+09.075
Δ = 13° 41' 33.5" (LT)
L = 286.778
T = 144.075
R = 1,200.000
PIs Sta 3+73.446
Θs = 1° 33' 06.3"
Ls = 65.000
LT = 43.335
ST = 21.668
TRAFFIC DIAGRAM
ADT (IN HUNDREDS)
2002
2025
PROP. US 64
SMITHFIELD RD
US 64 BYPASS & SMITHFIELD RD

			REVISIONS
5			
4			
3	DSP	12-12-03	MODIFIED PFSH
2	CTH	11-26-03	REVISED IN ACCORDANCE WITH RFI655
1	CTH	8-18-03	ADD IMPACT ATTENUATOR AND EXTENDED SHOULDER BERM GUTTER FROM 112+80 TO 113+20
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22115 JOHN N. JOHNSON — 12-12-03
ROADWAY DESIGN ENGINEER

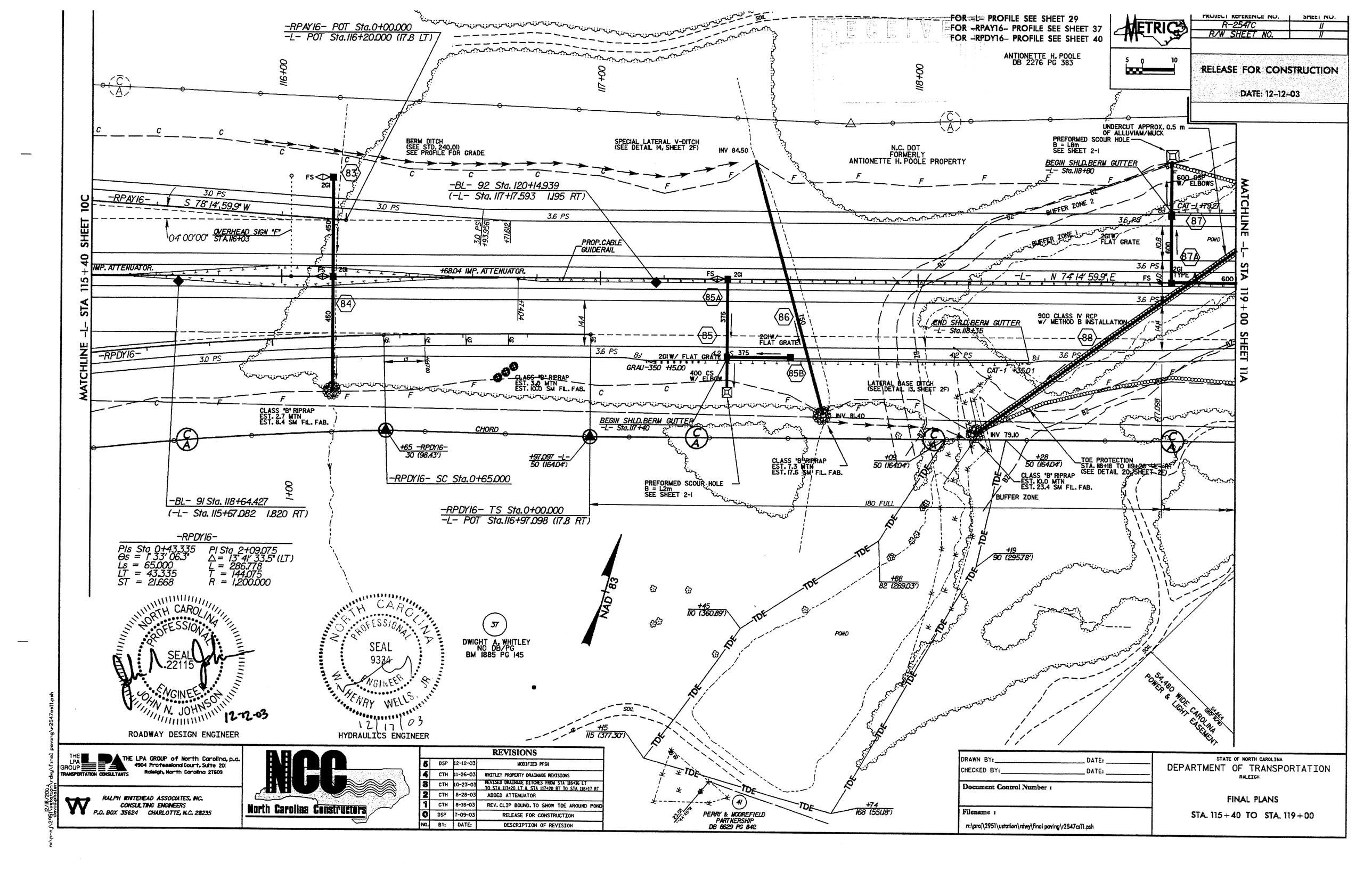
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 9334 W. HENRY WELLS, JR. — 12/17/05
HYDRAULICS ENGINEER

DRAWN BY: ______ DATE: ______
CHECKED BY: ______ DATE: ______
Document Control Number :
Filename : n:\proj\2951\ustation\rdwy\final paving\r2547cal0c.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 112+60 TO STA. 115+40



THE LPA GROUP TRANSPORTATION CONSULTANTS
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RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

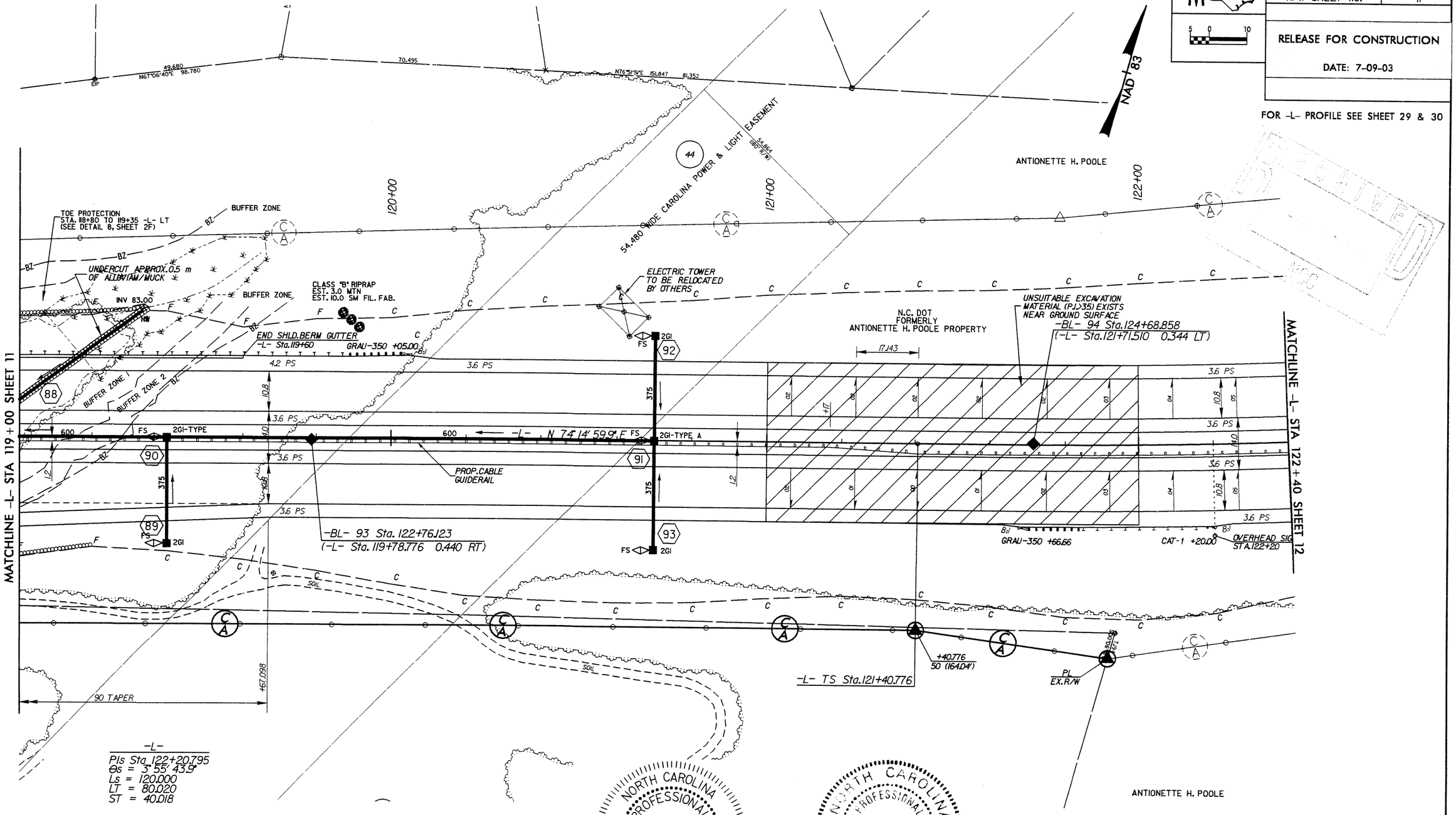
REVISIONS			
NO.	BY:	DATE:	DESCRIPTION OF REVISION
5	DSP	12-12-03	MODIFIED PFSH
4	CTH	11-26-03	WHITLEY PROPERTY DRAINAGE REVISIONS
3	CTH	10-23-03	REVISED DRAINAGE DITCHES FROM STA 116+16 LT TO STA 117+20 LT & STA 117+20 RT TO STA 118+17 RT
2	CTH	8-28-03	ADDED ATTENUATOR
1	CTH	8-18-03	REV. CLIP BOUND. TO SHOW TDE AROUND POND
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : n:\proj\2951\ustation\rdwy\final paving\r2547cs11.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
STA. 115+40 TO STA. 119+00

n:\proj\2951\ustation\rdwy\final paving\r2547cs11.psh
12/16/2003

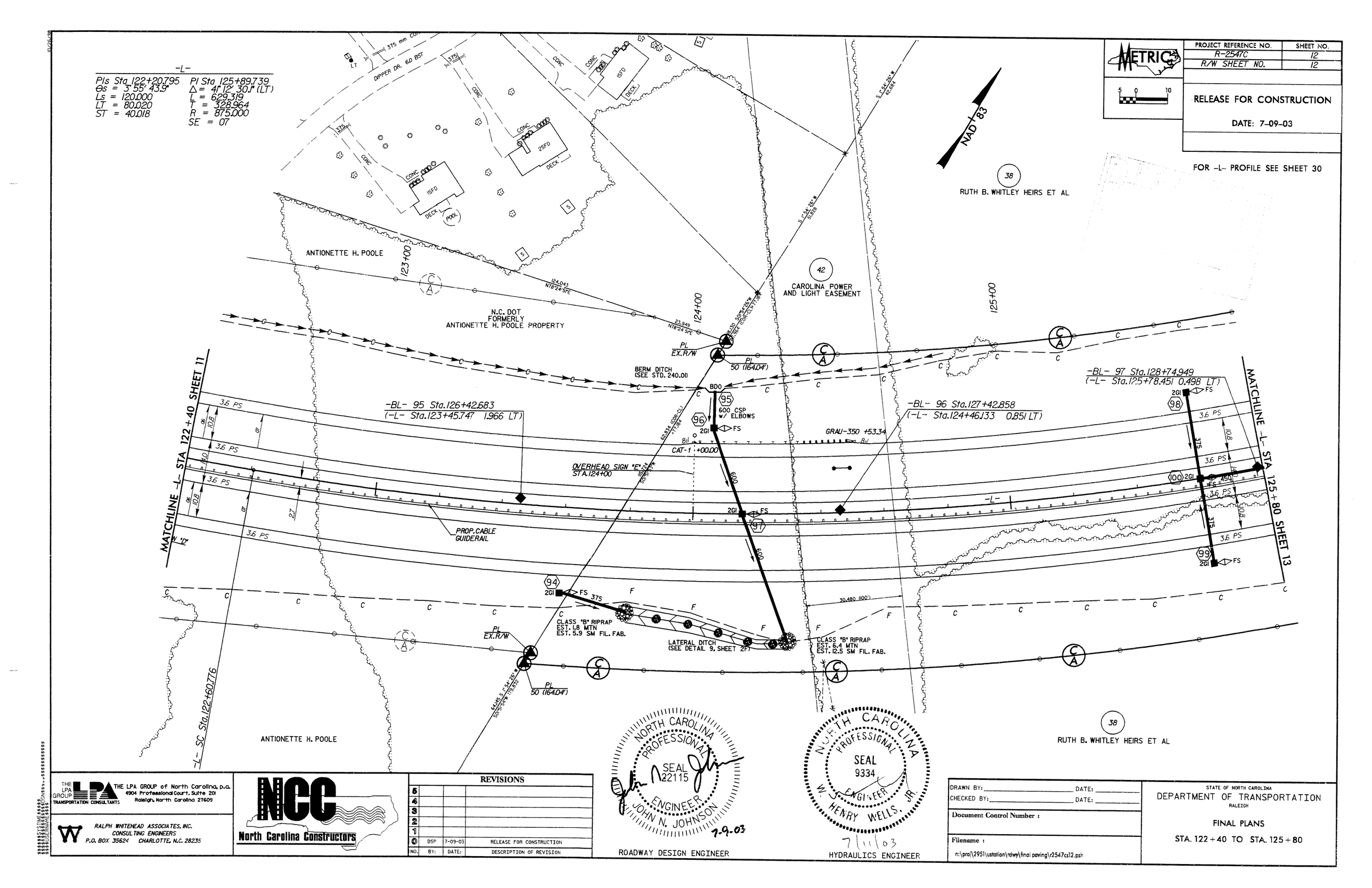


THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235
North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : n:\proj\2951\ustation\rdwy\final paving\r2547cs11a.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 119+00 TO STA. 122+40



THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-9-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
7/11/03
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : n:\proj\2951\ustation\rdwy\final paving\r2547cs12.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 122+40 TO STA. 125+80

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	13
R/W SHEET NO.	13

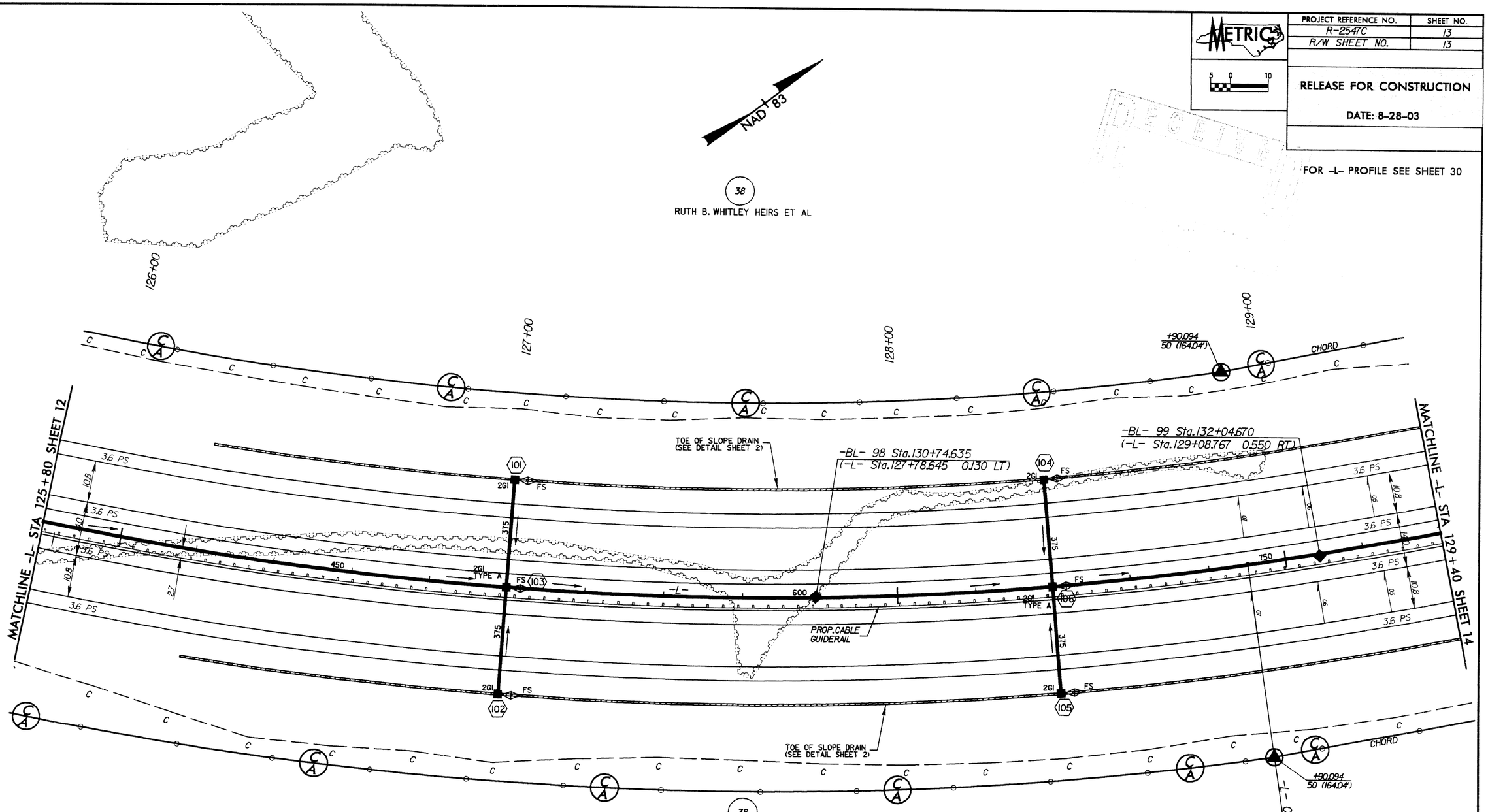
METRIC

5 0 10

RELEASE FOR CONSTRUCTION

DATE: 8-28-03

FOR -L- PROFILE SEE SHEET 30



-L-

PI Sta 125+89.739
Δ = 41° 12' 30.1" (LT)
L = 629.319
T = 328.964
R = 875.000
SE = 07

PIs Sta 129+30.112
Θs = 3° 55' 43.9"
Ls = 120.000
LT = 80.020
ST = 40.018

38
RUTH B. WHITLEY HEIRS ET AL

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
8-28-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
9/22/03
HYDRAULICS ENGINEER

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS			
5			
4			
3			
2	CTH	8-28-03	ADD HYDRAULICS SEAL
1	JLS	7-17-03	REVISED TOE OF SLOPE DRAINS
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : $FILES

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 125+80 TO STA. 129+40

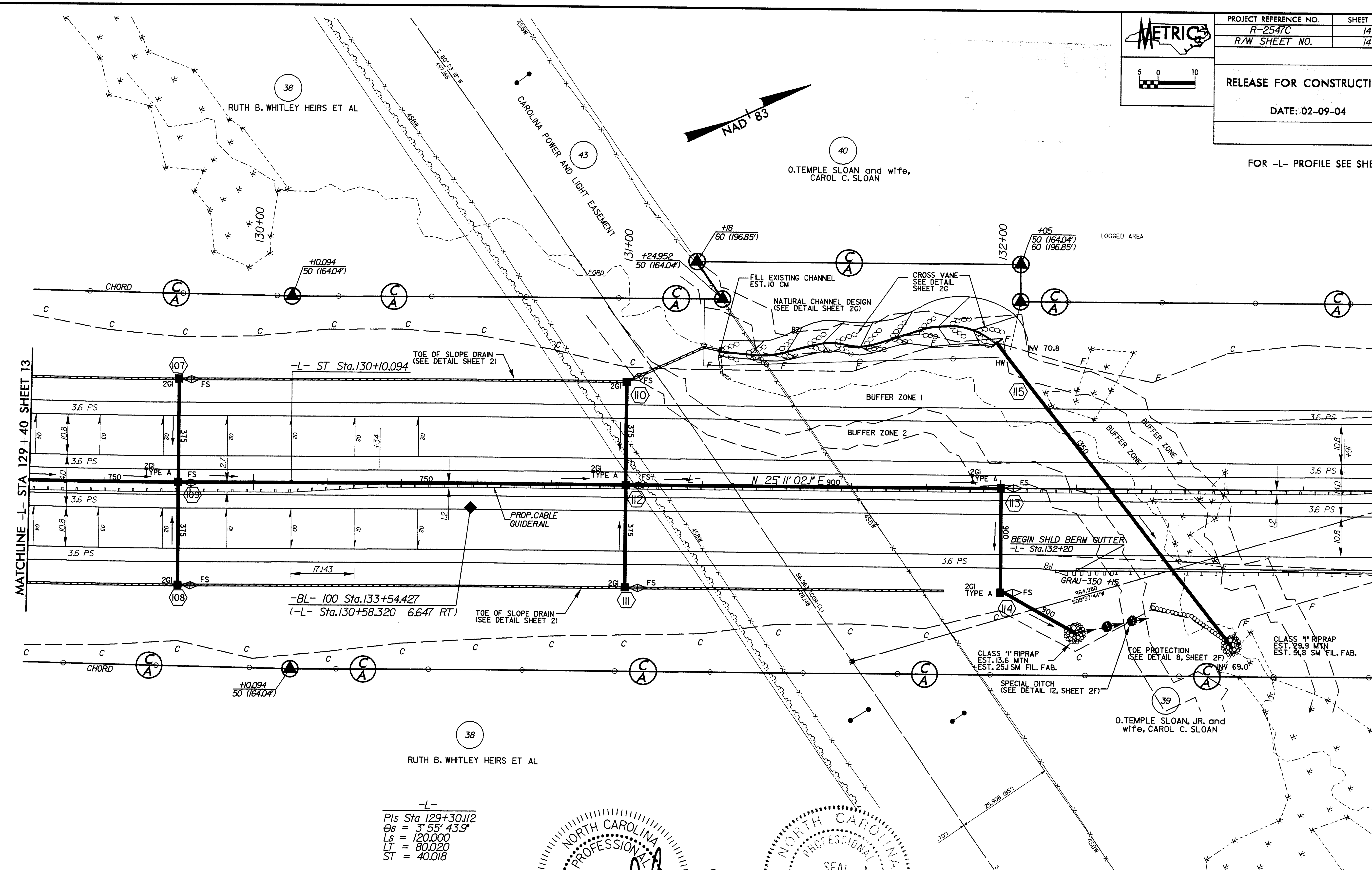
PROJECT REFERENCE NO.	SHEET NO.
R-2547C	14
R/W SHEET NO.	14

METRIC

RELEASE FOR CONSTRUCTION

DATE: 02-09-04

FOR -L- PROFILE SEE SHEET 31



RUTH B. WHITLEY HEIRS ET AL
CAROLINA POWER AND LIGHT EASEMENT
NAD 83
O.TEMPLE SLOAN and wife, CAROL C. SLOAN
LOGGED AREA
130+00
131+00
132+00
CHORD
FILL EXISTING CHANNEL EST. 10 CM
CROSS VANE SEE DETAIL SHEET 2G
NATURAL CHANNEL DESIGN (SEE DETAIL SHEET 2G)
INV 70.8
TOE OF SLOPE DRAIN (SEE DETAIL SHEET 2)
-L- ST Sta.130+10.094
BUFFER ZONE 1
BUFFER ZONE 2
MATCHLINE -L- STA 129+40 SHEET 13
MATCHLINE -L- STA 133+00 SHEET 15
N 25° 11' 02.1" E
PROP.CABLE GUIDERAIL
BEGIN SHLD BERM GUTTER -L- Sta.132+20
GRAU-350 +15
-BL- 100 Sta.133+54.427
(-L- Sta.130+58.320 6.647 RT)
CLASS "I" RIPRAP EST. 13.6 MTN EST. 25.1 SM FIL. FAB.
TOE PROTECTION (SEE DETAIL 8, SHEET 2F)
CLASS "I" RIPRAP EST. 29.9 MTN EST. 51.8 SM FIL. FAB.
INV 69.0
SPECIAL DITCH (SEE DETAIL 12, SHEET 2F)
O.TEMPLE SLOAN, JR. and wife, CAROL C. SLOAN

-L-
PIs Sta 129+30.112
Θs = 3° 55' 43.9"
Ls = 120.000
LT = 80.020
ST = 40.018

THE LPA GROUP of North Carolina, p.a.
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Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4	JAF	02-09-04	REVISED CHANNEL DESIGN
3	CTH	12-12-03	REVISED TOE PROTECTION SYMBOLOGY
2	CTH	8-28-03	ADD HYDRAULICS SEAL
1	JLS	7-17-03	REVISED TOE OF SLOPE DRAINS
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
2/16/04
HYDRAULICS ENGINEER

DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : n:\proj\2951\USTATION\RDWY\Final Paving\r2547cs14.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
STA. 129+40 TO STA. 133+00

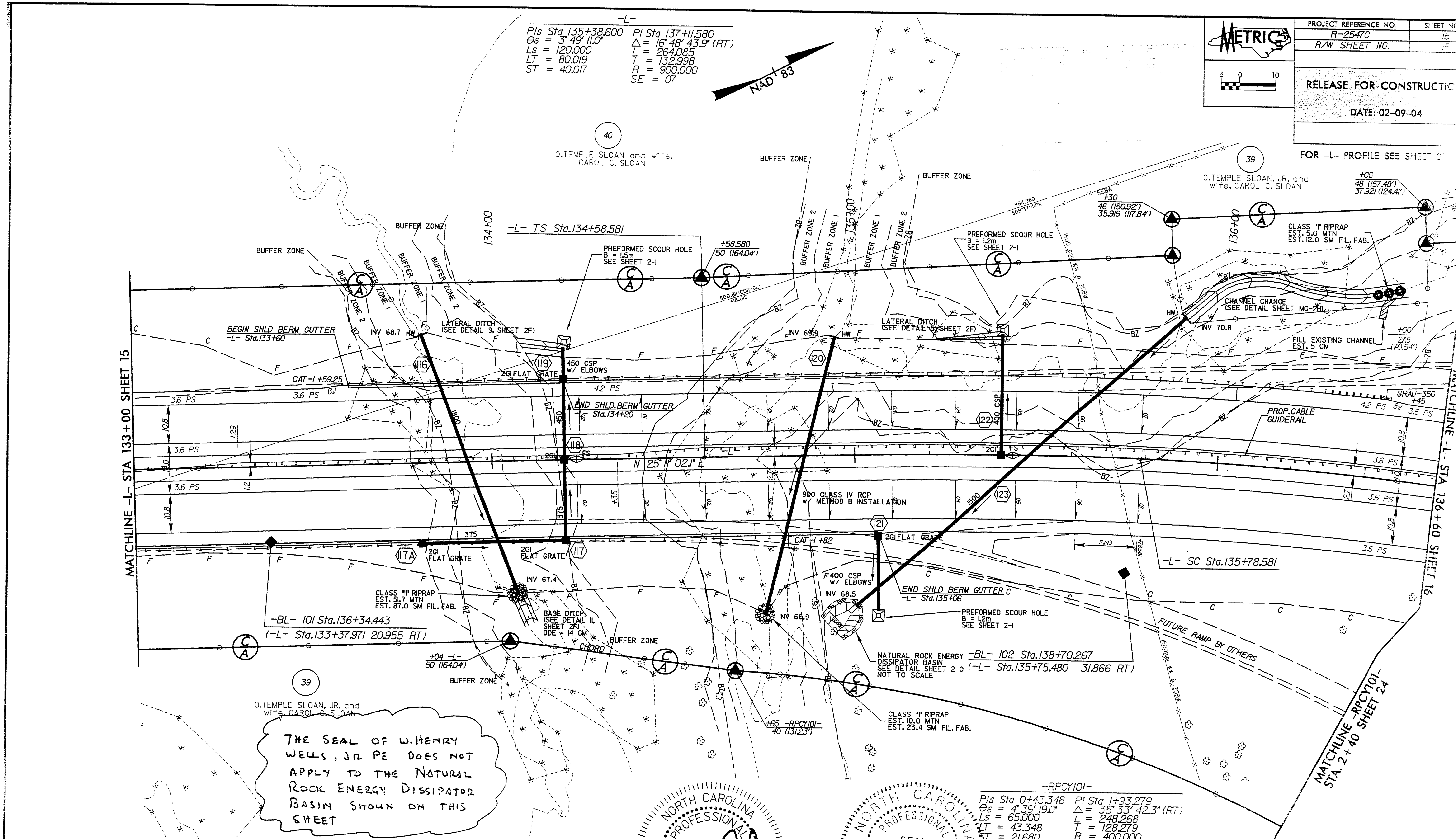
PROJECT REFERENCE NO.	SHEET NO.
R-2547C	15
R/W SHEET NO.	15

METRIC

RELEASE FOR CONSTRUCTION

DATE: 02-09-04

FOR -L- PROFILE SEE SHEET



-L-
PIs Sta 135+38.600 PI Sta 137+11.580
Θs = 3° 49' 11.0" Δ = 16° 48' 43.9" (RT)
Ls = 120.000 L = 264.085
LT = 80.019 T = 132.998
ST = 40.017 R = 900.000
SE = 07
NAD 83
O.TEMPLE SLOAN and wife, CAROL C. SLOAN
O.TEMPLE SLOAN, JR. and wife, CAROL C. SLOAN
BUFFER ZONE
-L- TS Sta.134+58.581
PREFORMED SCOUR HOLE B = 1.5m SEE SHEET 2-1
+58.580 50 (164.04')
PREFORMED SCOUR HOLE B = 1.2m SEE SHEET 2-1
CLASS "I" RIPRAP EST. 5.0 MTN EST. 12.0 SM FIL. FAB.
CHANNEL CHANGE (SEE DETAIL SHEET MG-2H)
FILL EXISTING CHANNEL EST. 5 CM
BEGIN SHLD BERM GUTTER -L- Sta.133+60
LATERAL DITCH (SEE DETAIL 9, SHEET 2F)
450 CSP w/ ELBOWS
2GI FLAT GRATE
CAT-1 +59.25
END SHLD.BERM GUTTER -L- Sta.134+20
N 25° 11' 02.1" E
900 CLASS IV RCP w/ METHOD B INSTALLATION
PROP.CABLE GUIDERAIL
GRAU-350 +45
-L- SC Sta.135+78.581
CLASS "II" RIPRAP EST. 51.7 MTN EST. 87.0 SM FIL. FAB.
BASE DITCH (SEE DETAIL II, SHEET 2F) DDE = 14 CM
-BL- 101 Sta.136+34.443 (-L- Sta.133+37.971 20.955 RT)
+04 -L- 50 (164.04')
F400 CSP w/ ELBOWS
END SHLD BERM GUTTER C -L- Sta.135+06
NATURAL ROCK ENERGY DISSIPATOR BASIN SEE DETAIL SHEET 2 O NOT TO SCALE
-BL- 102 Sta.138+70.267 (-L- Sta.135+75.480 31.866 RT)
FUTURE RAMP BY OTHERS
CLASS "I" RIPRAP EST. 10.0 MTN EST. 23.4 SM FIL. FAB.
+65 -RPCY101- 40 (131.23')
MATCHLINE -L- STA 133+00 SHEET 15
MATCHLINE -L- STA 136+60 SHEET 16
MATCHLINE -RPCY101- STA. 2+40 SHEET 24
THE SEAL OF W. HENRY WELLS, JR PE DOES NOT APPLY TO THE NATURAL ROCK ENERGY DISSIPATOR BASIN SHOWN ON THIS SHEET
-RPCY101-
PIs Sta 0+43.348 PI Sta 1+93.279
Θs = 4° 39' 19.0" Δ = 35° 33' 42.3" (RT)
Ls = 65.000 L = 248.268
LT = 43.348 T = 128.279
ST = 21.680 R = 400.000

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P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2	JAF	02-09-04	ADDED DISSIPATOR
1	DSP	12-12-03	MODIFIED PFSH
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION

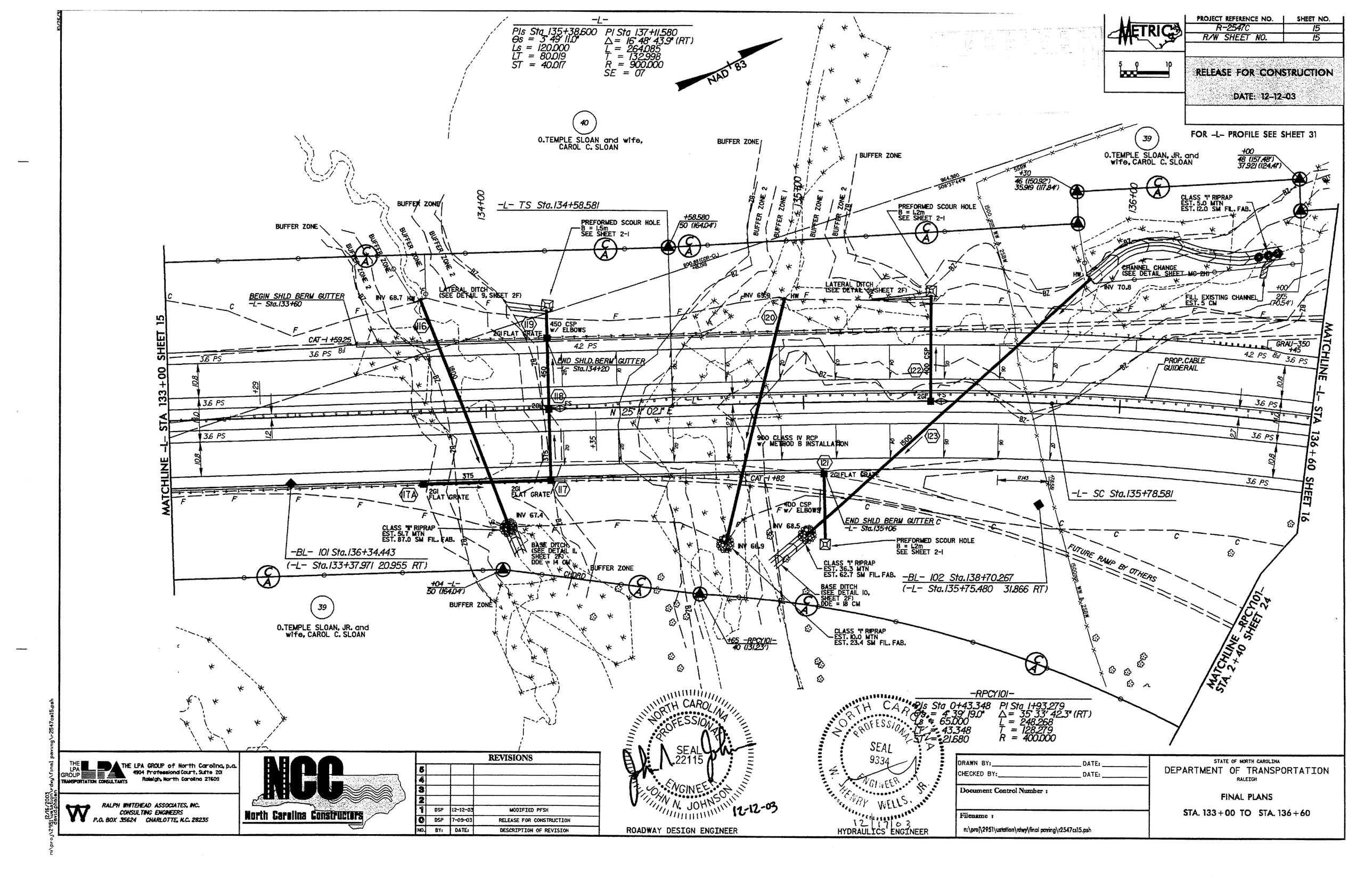
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22115 JOHN N. JOHNSON
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 9334 W. HENRY WELLS, JR.
HYDRAULICS ENGINEER

DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : m:\proj\2951\USTATION\RDWY\Final Paving\r2547cs15.dsn

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
STA. 133-00 TO STA. 136+60



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TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
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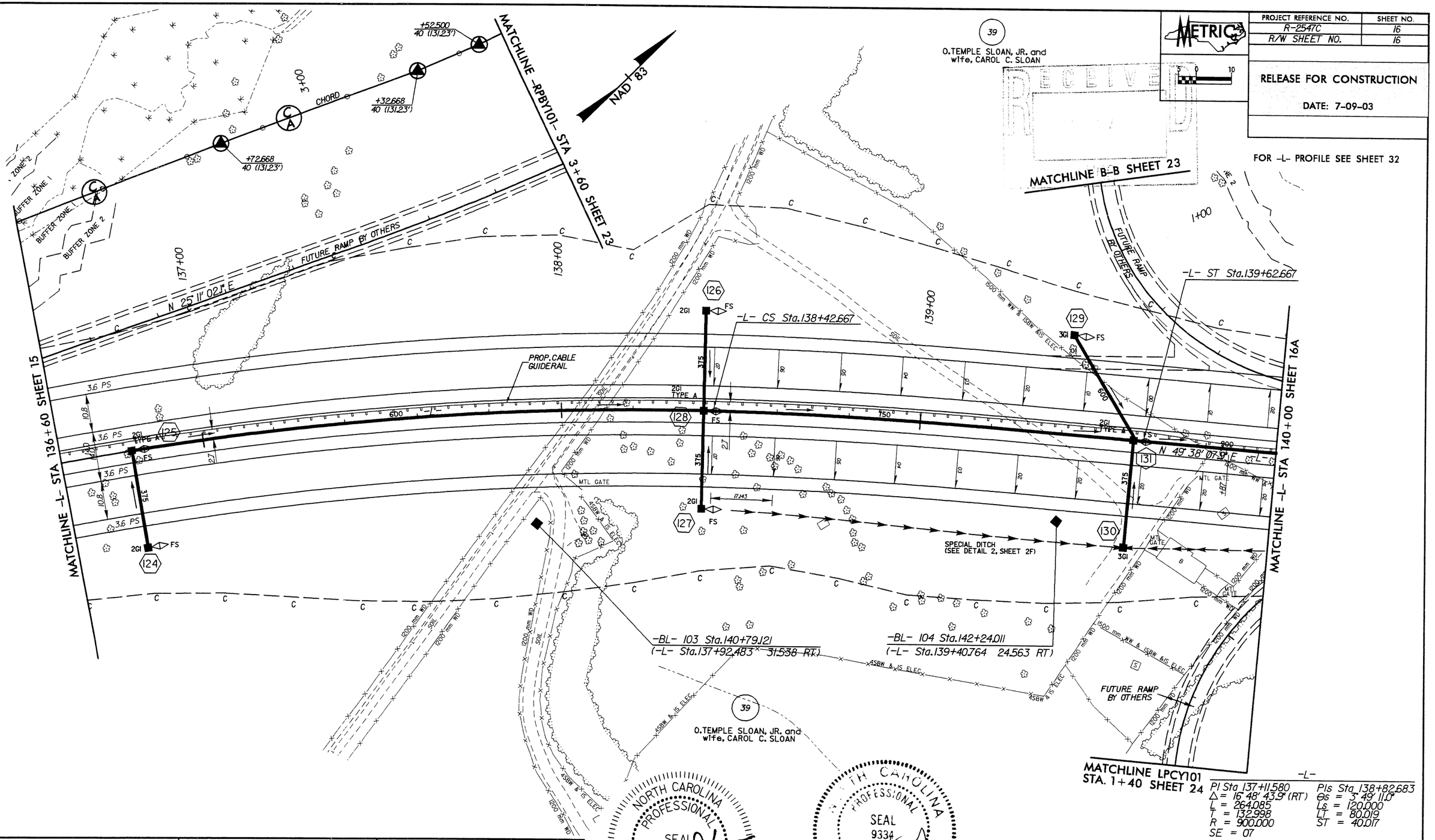
2			
1	DSP	12-12-03	MODIFIED PFSH
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : n:\proj\2951\station\rdwy\final paving\r2547cs15.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
STA. 133+00 TO STA. 136+60

12/16/2003
n:\proj\2951\station\rdwy\final paving\r2547cs15.psh



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THE LPA GROUP of North Carolina, p.a.
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Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
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0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-9-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
7/11/03
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : n:\proj\2951\ustation\rdwy\final paving\r2547cs16.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 136+60 TO 140+00

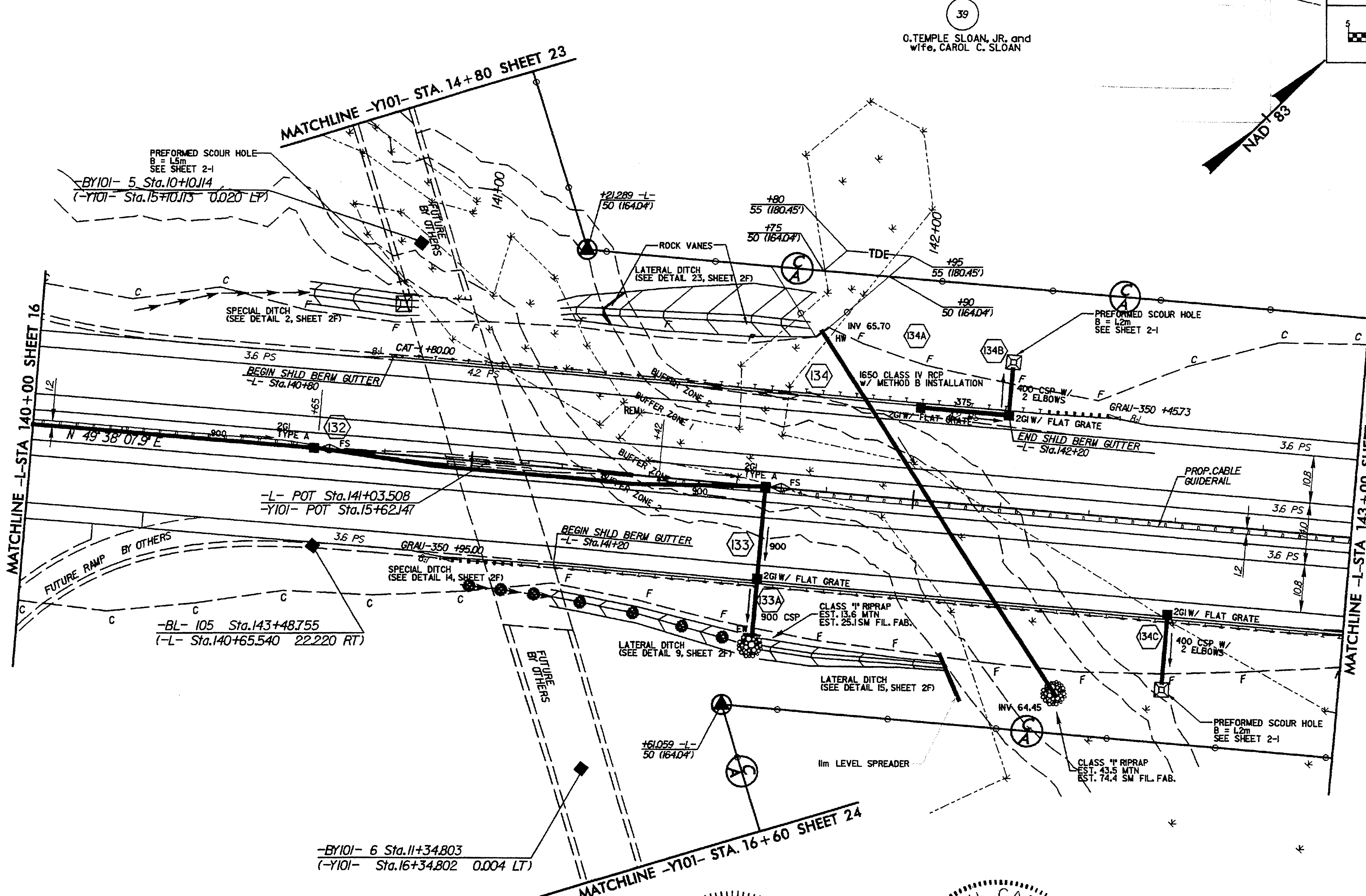
PROJECT REFERENCE NO.	SHEET NO.
R-2547C	16A
R/W SHEET NO.	16

METRIC

RELEASE FOR CONSTRUCTION

DATE: 12-12-03

FOR -L- PROFILE SEE SHEET 32



39
O.TEMPLE SLOAN, JR. and wife, CAROL C. SLOAN
NAD 83
MATCHLINE -Y101- STA. 14+80 SHEET 23
MATCHLINE -Y101- STA. 16+60 SHEET 24
MATCHLINE -L- STA 140+00 SHEET 16
MATCHLINE -L- STA 143+00 SHEET 17
PREFORMED SCOUR HOLE B = L5m SEE SHEET 2-1
-BY101- 5 Sta.10+10.114
(-Y101- Sta.15+10.113 0.020 LT)
ROCK VANES
LATERAL DITCH (SEE DETAIL 23, SHEET 2F)
SPECIAL DITCH (SEE DETAIL 2, SHEET 2F)
BEGIN SHLD BERM GUTTER -L- Sta.140+80
N 49 38' 07.9" E
-L- POT Sta.141+03.508
-Y101- POT Sta.15+62.147
FUTURE RAMP BY OTHERS
GRAU-350 +95.00
SPECIAL DITCH (SEE DETAIL 14, SHEET 2F)
BEGIN SHLD BERM GUTTER -L- Sta.141+20
-BL- 105 Sta.143+48.755
(-L- Sta.140+65.540 22.220 RT)
LATERAL DITCH (SEE DETAIL 9, SHEET 2F)
CLASS "I" RIPRAP EST. 13.6 MTN EST. 25.1 SM FIL. FAB.
900 CSP
2GI W/ FLAT GRATE
LATERAL DITCH (SEE DETAIL 15, SHEET 2F)
1m LEVEL SPREADER
+61.059 -L- 50 (164.04')
-BY101- 6 Sta.11+34.803
(-Y101- Sta.16+34.802 0.004 LT)
FUTURE BY OTHERS
+21.289 -L- 50 (164.04')
+80 55 (180.45')
+75 50 (164.04')
TDE
+95 55 (180.45')
+90 50 (164.04')
INV 65.70
1650 CLASS IV RCP w/ METHOD B INSTALLATION
400 CSP W/ 2 ELBOWS
GRAU-350 +45.73
END SHLD BERM GUTTER -L- Sta.142+20
PROP. CABLE GUIDERAIL
PREFORMED SCOUR HOLE B = L2m SEE SHEET 2-1
INV 64.45
CLASS "I" RIPRAP EST. 43.5 MTN EST. 74.4 SM FIL. FAB.
BUFFER ZONE 1
BUFFER ZONE 2
CAT +80.00
3.6 PS
4.2 PS
141+00
142+00

THE LPA GROUP of North Carolina, p.a. 4904 Professional Court, Suite 201 Raleigh, North Carolina 27609 TRANSPORTATION CONSULTANTS
RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
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2			
1	DSP	12-12-03	REVISED DITCH AT 141+40 LT. MODIFIED PFSH
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22115 JOHN N. JOHNSON 12-12-03

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 9334 W. HENRY WELLS, JR. 12/17/03

HYDRAULICS ENGINEER

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CHECKED BY: ____ DATE: ____

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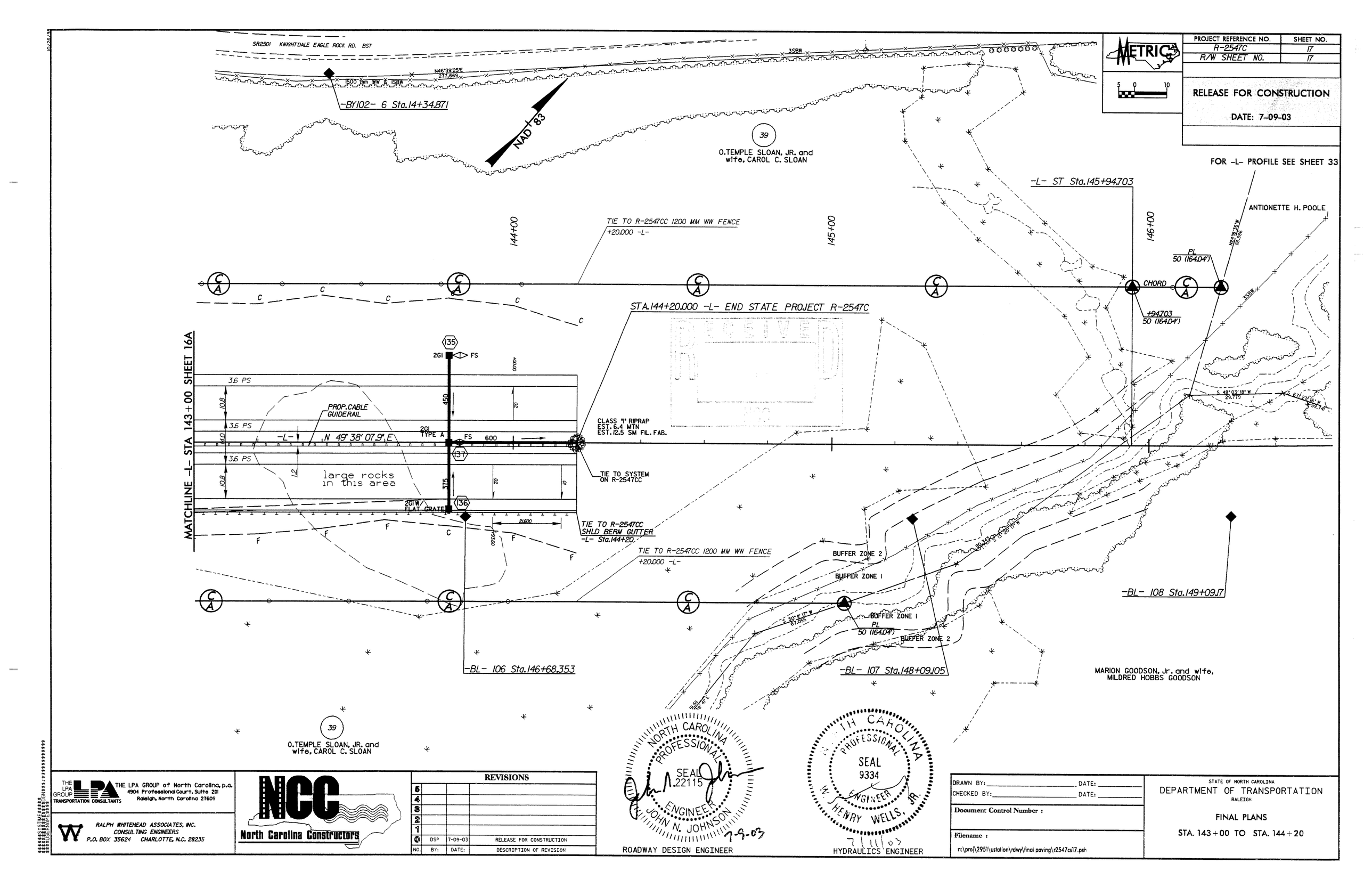
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 140+00 TO STA. 143+00



METRIC

5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	17
R/W SHEET NO.	17

RELEASE FOR CONSTRUCTION

DATE: 7-09-03

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON 7-9-03

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER HENRY WELLS, JR. 7/11/03

HYDRAULICS ENGINEER

THE LPA GROUP of North Carolina, p.a.
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Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
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0	DSP	7-09-03	RELEASE FOR CONSTRUCTION

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename :

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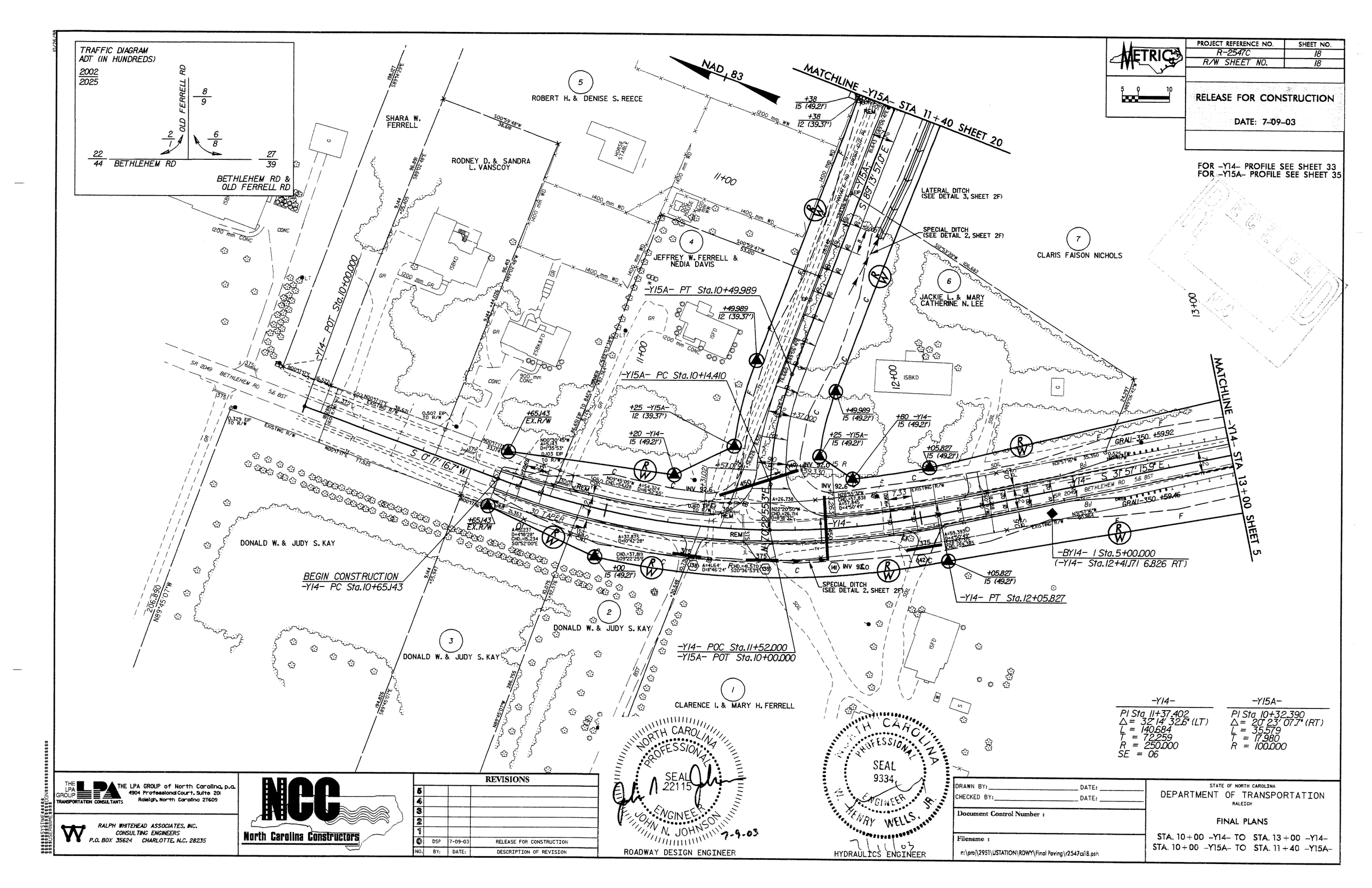
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 143+00 TO STA. 144+20


TRAFFIC DIAGRAM
ADT (IN HUNDREDS)
2002
2025
OLD FERRELL RD
BETHLEHEM RD
BETHLEHEM RD & OLD FERRELL RD
METRIC
PROJECT REFERENCE NO. R-2547C
SHEET NO. 18
R/W SHEET NO. 18
RELEASE FOR CONSTRUCTION
DATE: 7-09-03
FOR -Y14- PROFILE SEE SHEET 33
FOR -Y15A- PROFILE SEE SHEET 35
NAD 83
MATCHLINE -Y15A- STA 11+40 SHEET 20
MATCHLINE -Y14- STA 13+00 SHEET 5
ROBERT H. & DENISE S. REECE
SHARA W. FERRELL
RODNEY D. & SANDRA L. VANSCOY
JEFFREY W. FERRELL & NEDIA DAVIS
CLARIS FAISON NICHOLS
JACKIE L. & MARY CATHERINE N. LEE
DONALD W. & JUDY S. KAY
CLARENCE I. & MARY H. FERRELL
-Y14- POT Sta.10+00.000
-Y15A- PT Sta.10+49.989
-Y15A- PC Sta.10+14.410
BEGIN CONSTRUCTION
-Y14- PC Sta.10+65.143
-Y14- POC Sta.11+52.000
-Y15A- POT Sta.10+00.000
-Y14- PT Sta.12+05.827
-BY14- 1 Sta.5+00.000
(-Y14- Sta.12+41.171 6.826 RT)
SPECIAL DITCH (SEE DETAIL 2, SHEET 2F)
LATERAL DITCH (SEE DETAIL 3, SHEET 2F)
S 0°17'16.7" W
S 89°13'57.0" E
S 3°57'15.9" E
N 70°28'55.3" E
N 89°45'07" W 206.880
30 TAPER
SR 2049 BETHLEHEM RD
EXISTING R/W
EX.R/W
REM
-Y14-
PI Sta 11+37.402
Δ = 32° 14' 32.6" (LT)
L = 140.684
T = 72.259
R = 250.000
SE = 06
-Y15A-
PI Sta 10+32.390
Δ = 20° 23' 07.7" (RT)
L = 35.579
T = 17.980
R = 100.000
NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-9-03
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER HENRY WELLS, JR.
HYDRAULICS ENGINEER
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235
North Carolina Constructors
REVISIONS
NO. BY: DATE: DESCRIPTION OF REVISION
0 DSP 7-09-03 RELEASE FOR CONSTRUCTION
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : n:\proj\2951\USTATION\RDWY\Final Paving\r2547ca18.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 10+00 -Y14- TO STA. 13+00 -Y14-
STA. 10+00 -Y15A- TO STA. 11+40 -Y15A-

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	19
R/W SHEET NO.	19

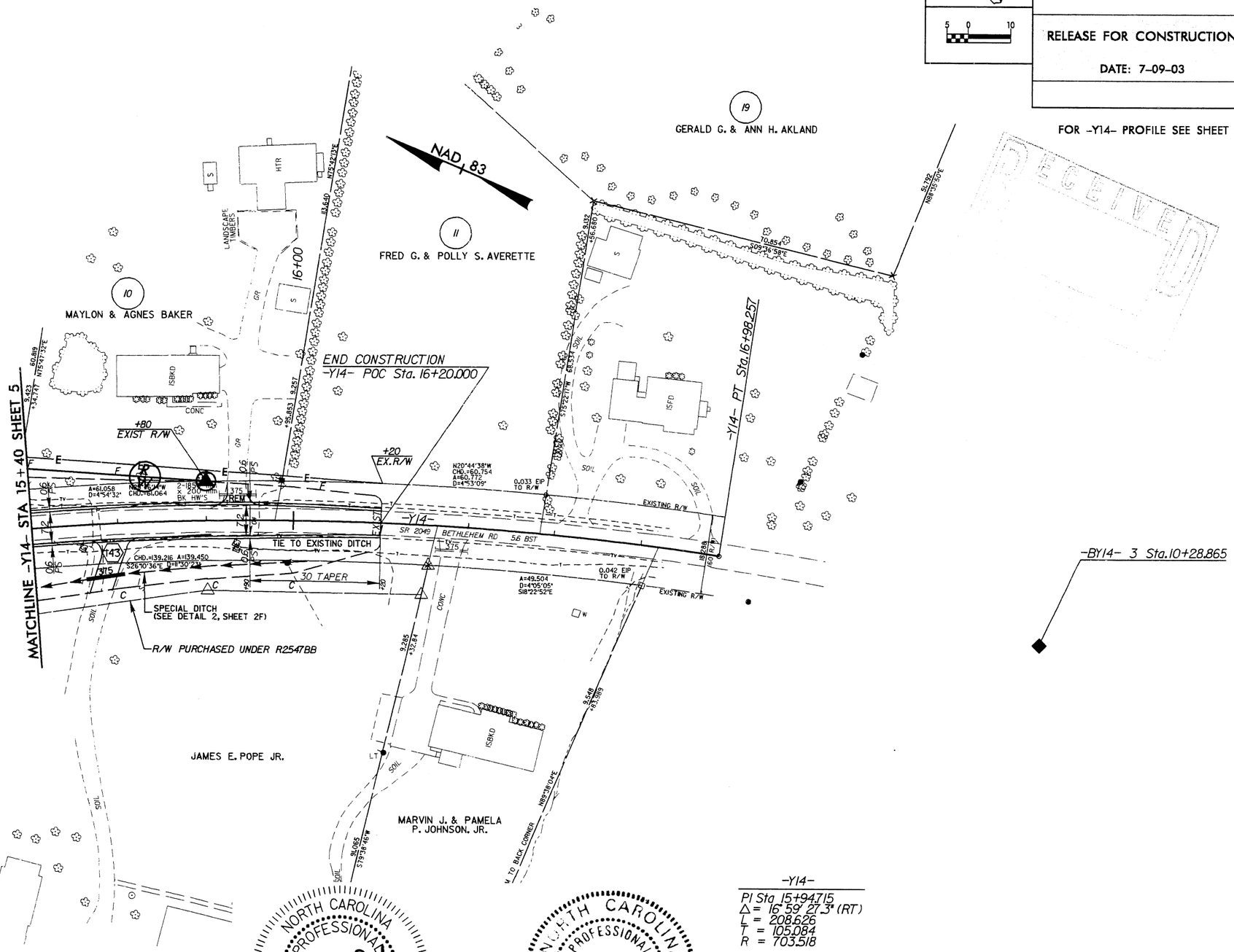
METRIC

5 0 10

RELEASE FOR CONSTRUCTION

DATE: 7-09-03

FOR -Y14- PROFILE SEE SHEET 34



THE LPA GROUP of North Carolina, p.a.
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Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-9-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

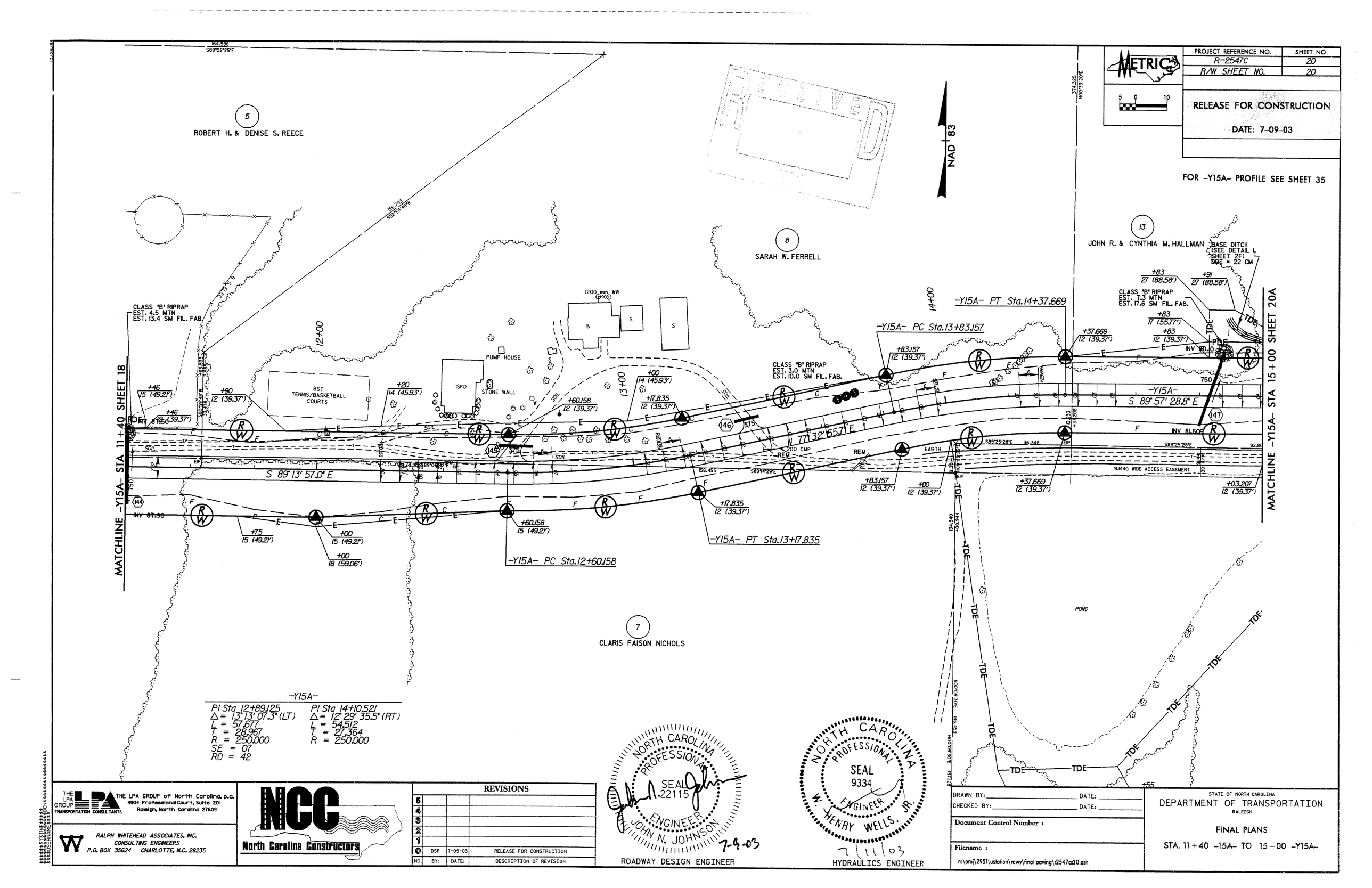
Document Control Number :

Filename : n:\proj\2951\ustation\rdwy\final paving\r2547cs19.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 15+40 -Y14- TO 16+20 -Y14-



REVISIONS			
5			
4			
3			
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1			
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-9-03
ROADWAY DESIGN ENGINEER

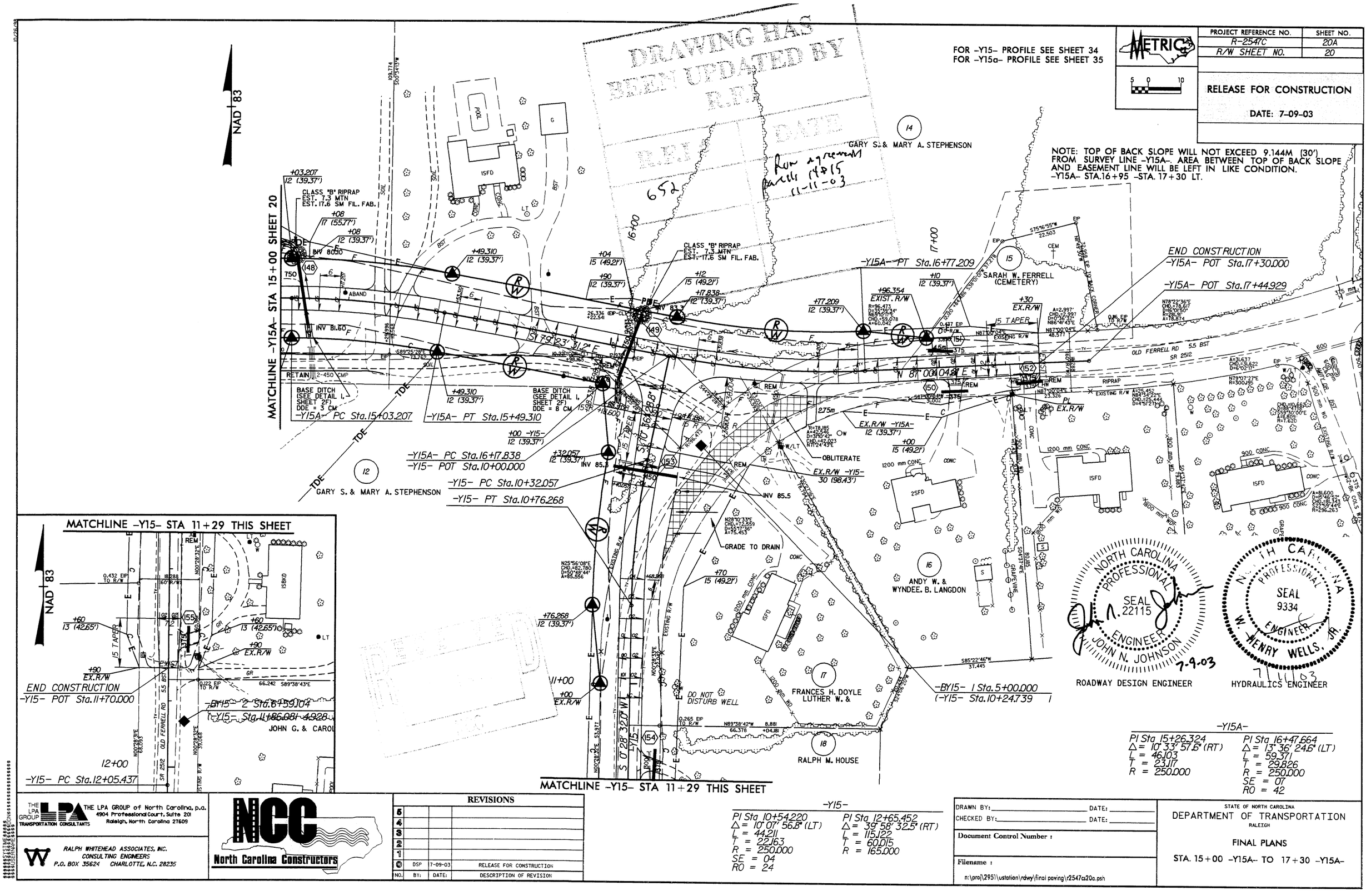
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
7/11/03
HYDRAULICS ENGINEER

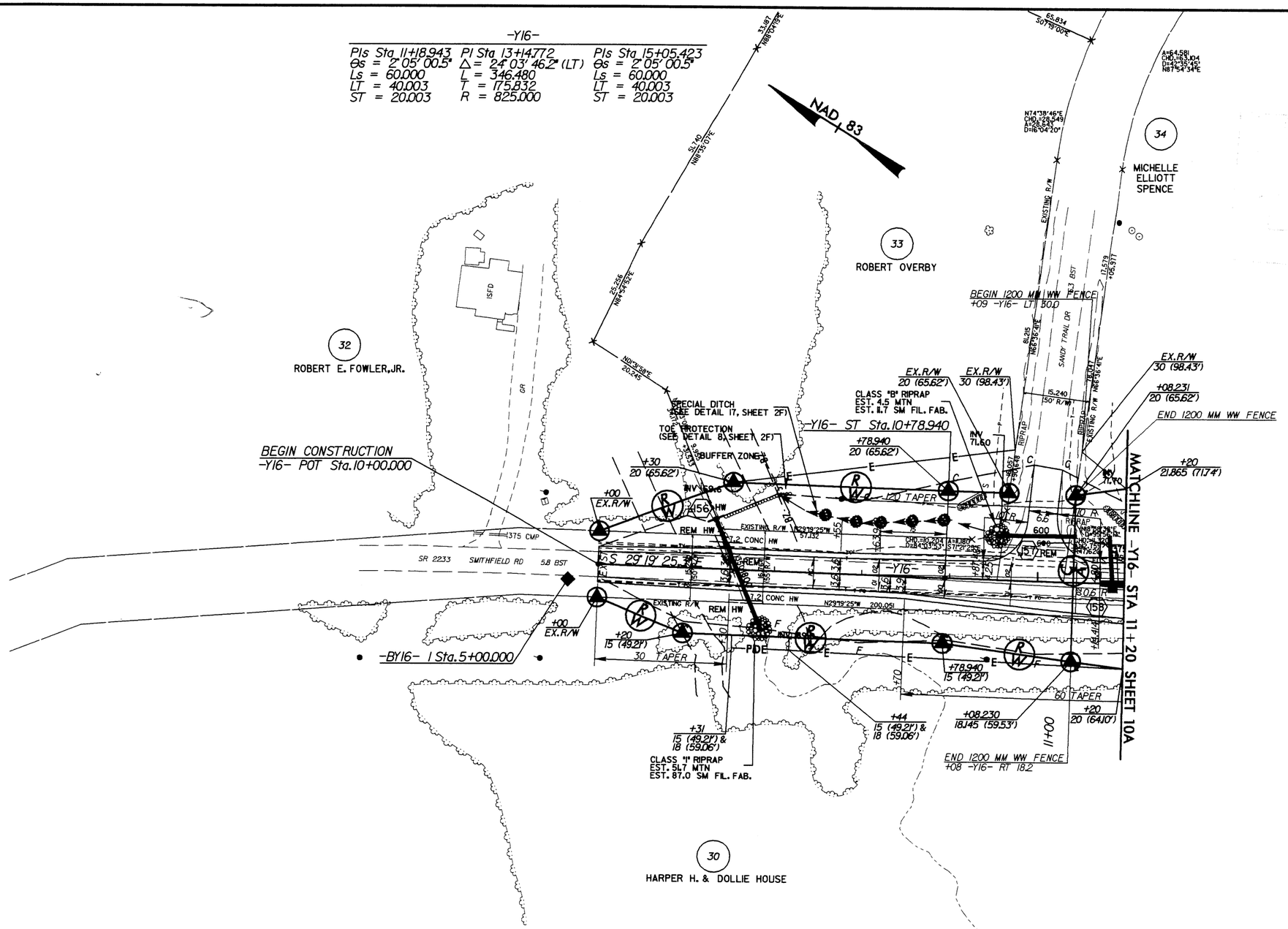
DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : n:\proj\2951\ustation\rdwy\final paving\r2547cs20.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 11+40 -15A- TO 15+00 -Y15A-


DRAWING HAS BEEN UPDATED BY R.H.E.
DATE
R.H.E.
Row agreement parcels 14 & 15 11-11-03
652
NAD 83
METRIC
5 0 10
PROJECT REFERENCE NO.
R-2547C
SHEET NO.
20A
R/W SHEET NO.
20
RELEASE FOR CONSTRUCTION
DATE: 7-09-03
FOR -Y15- PROFILE SEE SHEET 34
FOR -Y15a- PROFILE SEE SHEET 35
NOTE: TOP OF BACK SLOPE WILL NOT EXCEED 9.144M (30') FROM SURVEY LINE -Y15A-. AREA BETWEEN TOP OF BACK SLOPE AND EASEMENT LINE WILL BE LEFT IN LIKE CONDITION. -Y15A- STA.16+95 -STA. 17+30 LT.
MATCHLINE -Y15A- STA 15+00 SHEET 20
GARY S. & MARY A. STEPHENSON
SARAH W. FERRELL (CEMETERY)
ANDY W. & WYNDEE B. LANGDON
FRANCES H. DOYLE LUTHER W. &
RALPH M. HOUSE
JOHN G. & CAROL
-Y15A- PC Sta.15+03.207
-Y15A- PT Sta.15+49.310
-Y15A- PC Sta.16+17.838
-Y15- POT Sta.10+00.000
-Y15- PC Sta.10+32.057
-Y15- PT Sta.10+76.268
-Y15A- PT Sta.16+77.209
END CONSTRUCTION -Y15A- POT Sta.17+30.000
-Y15A- POT Sta.17+44.929
-BY15- 1 Sta.5+00.000 (-Y15- Sta.10+24.739)
-BY15- 2 Sta.6+39.104 (-Y15- Sta.11+86.081)
END CONSTRUCTION -Y15- POT Sta.11+70.000
-Y15- PC Sta.12+05.437
MATCHLINE -Y15- STA 11+29 THIS SHEET
MATCHLINE -Y15- STA 11+29 THIS SHEET
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
-Y15A-
PI Sta 15+26.324
Δ = 10° 33' 57.6" (RT)
L = 46.103
T = 23.117
R = 250.000
PI Sta 16+47.664
Δ = 13° 36' 24.6" (LT)
L = 59.371
T = 29.826
R = 250.000
SE = 07
RO = 42
-Y15-
PI Sta 10+54.220
Δ = 10° 07' 56.8" (LT)
L = 44.211
T = 22.163
R = 250.000
SE = 04
RO = 24
PI Sta 12+65.452
Δ = 39° 58' 32.5" (RT)
L = 115.122
T = 60.015
R = 165.000
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235
North Carolina Constructors
REVISIONS
0 DSP 7-09-03 RELEASE FOR CONSTRUCTION
NO. BY: DATE: DESCRIPTION OF REVISION
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : n:\proj\295\\ustation\rdwy\final paving\r2547ca20a.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 15+00 -Y15A- TO 17+30 -Y15A-



PROJECT REFERENCE NO.	SHEET NO.
R-2547C	21
R/W SHEET NO.	21

RELEASE FOR CONSTRUCTION

DATE: 11-26-03

FOR -Y16- PROFILE SEE SHEET 36

THE LPA GROUP of North Carolina, p.a.
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Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1	CTH	11-26-03	REV. SS AT STA. 10+50 -Y16-
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL -22115 ENGINEER JOHN N. JOHNSON
11-26-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER HENRY WELLS, III
12/10/03
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : n:\proj\2951\LSTATION\RDWY\Final Paving\r2547ca21.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 10+00 -Y16- TO 11+20 -Y16-

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12/04/2003
8:26:11 PM
Preston

PROJECT REFERENCE NO.	SHEET NO.
R-2547C	22
R/W SHEET NO.	22

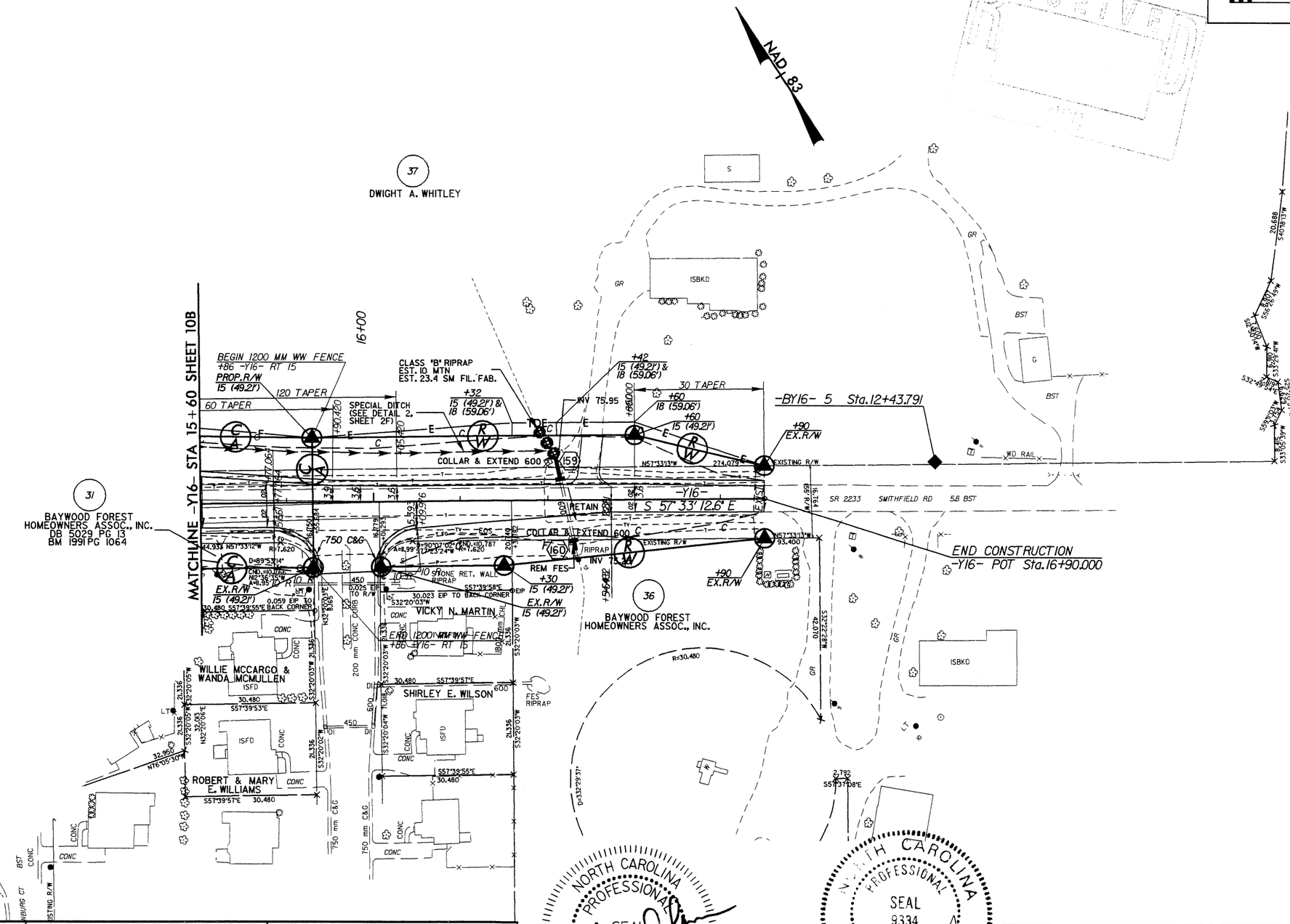
METRIC

5 0 10

RELEASE FOR CONSTRUCTION

DATE: 7-09-03

FOR -Y16- PROFILE SEE SHEET 36



REVISIONS			
5			
4			
3			
2			
1			
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

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CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON 7-9-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER HENRY WELLS, JR. 7/11/03
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

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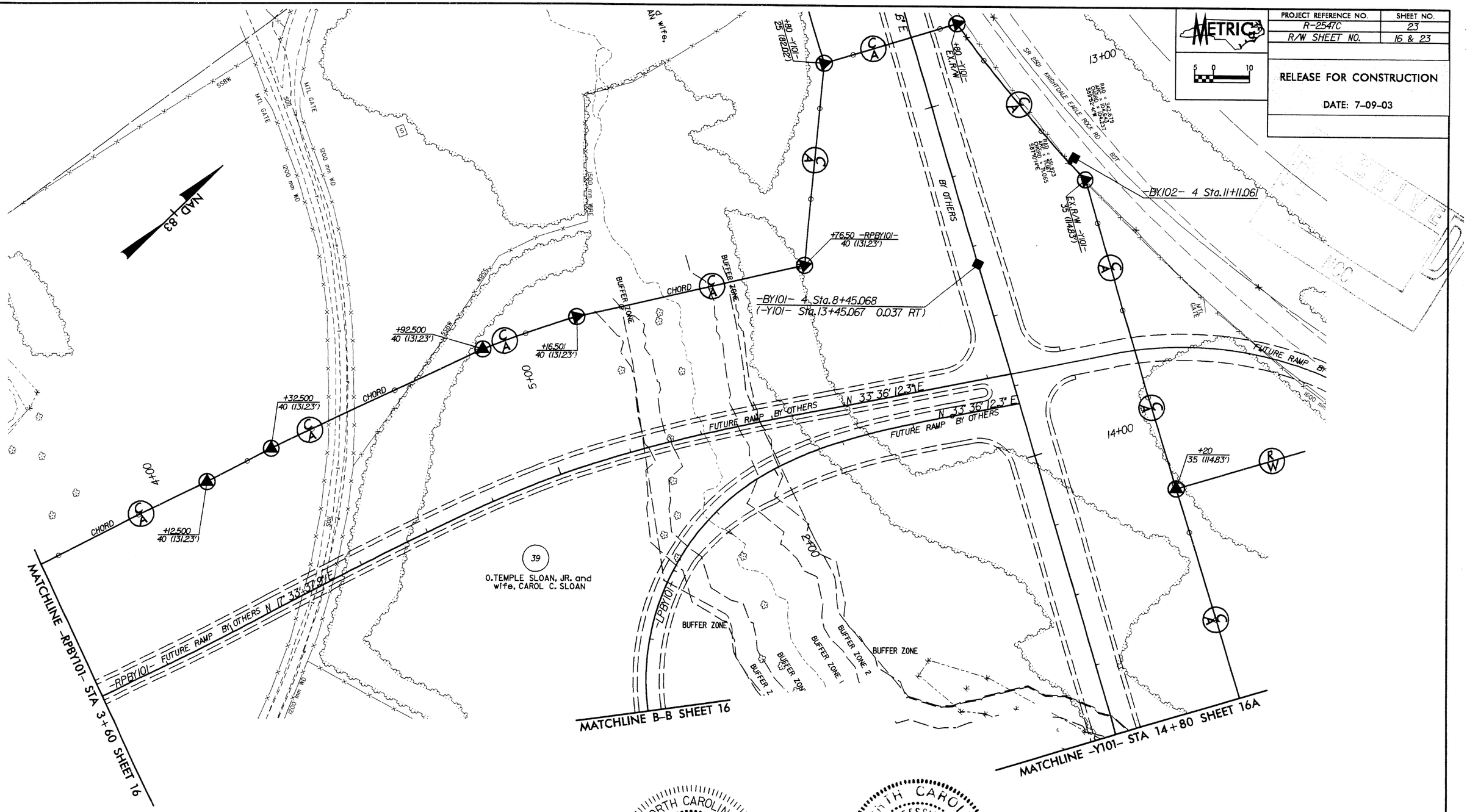
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 15+60 -Y16- TO STA. 16+90 -Y16-



REVISIONS			
5			
4			
3			
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0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON
7-9-03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
7/11/03
HYDRAULICS ENGINEER

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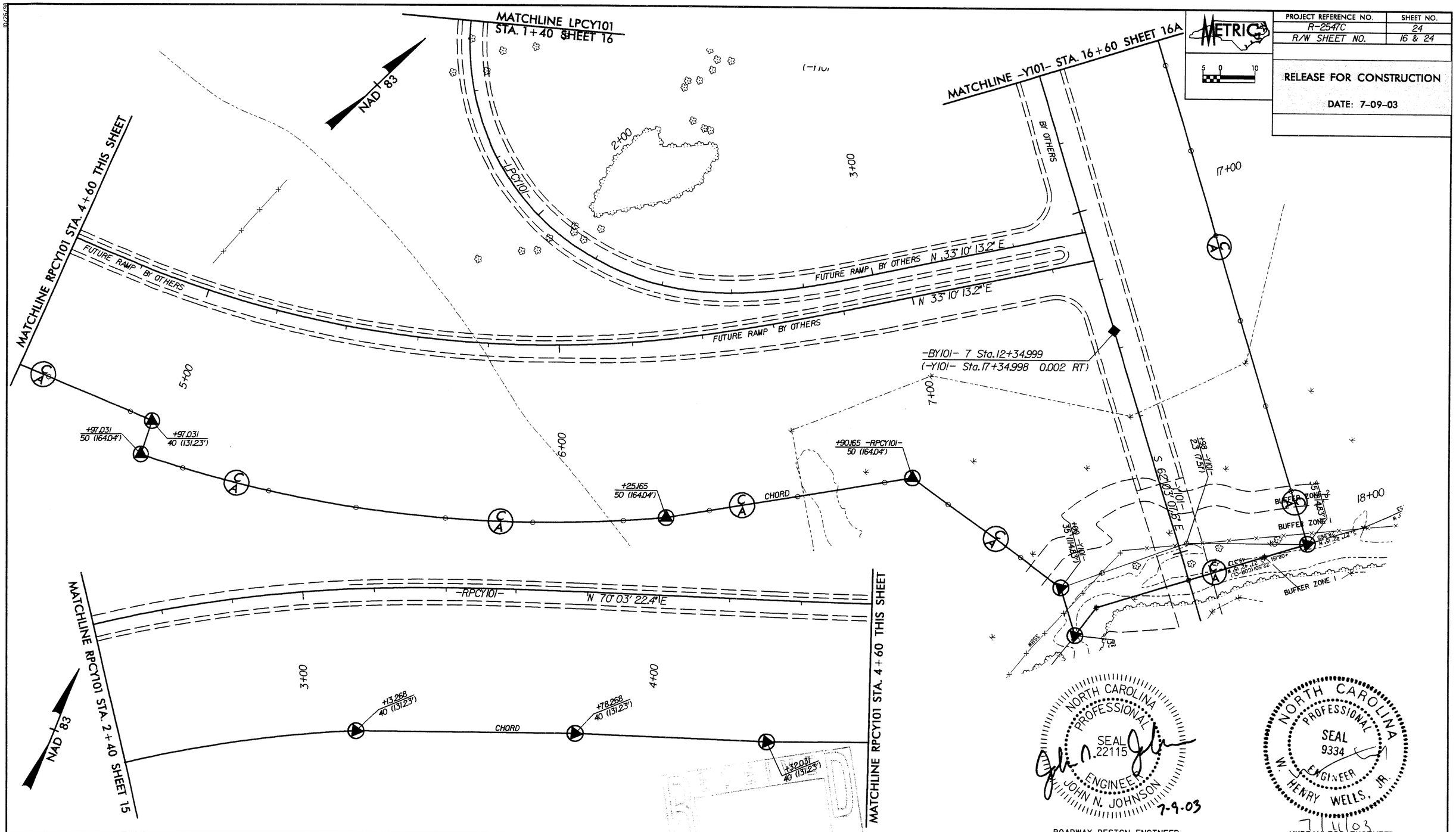
North Carolina Constructors

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : n:\proj\2951\ustation\rdwy\final paving\r2547cs23.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH



PROJECT REFERENCE NO.	SHEET NO.
R-2547C	24
R/W SHEET NO.	16 & 24

RELEASE FOR CONSTRUCTION

DATE: 7-09-03

NORTH CAROLINA PROFESSIONAL SEAL 22115 ENGINEER JOHN N. JOHNSON

7-9-03

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.

7/11/03

HYDRAULICS ENGINEER

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0	DSP	7-09-03	RELEASE FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename :

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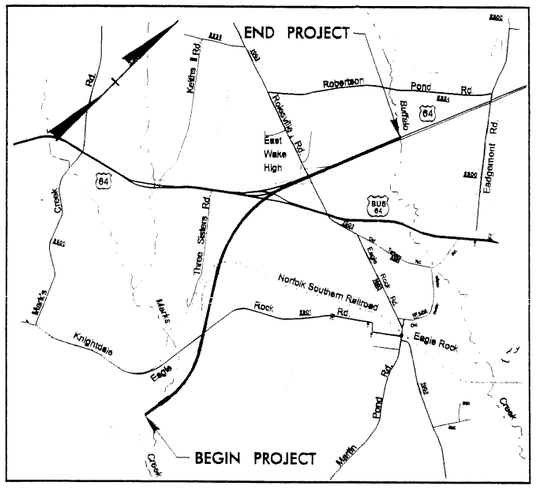
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

PROJECT: 8.1402212 R-2547CC

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

METRIC

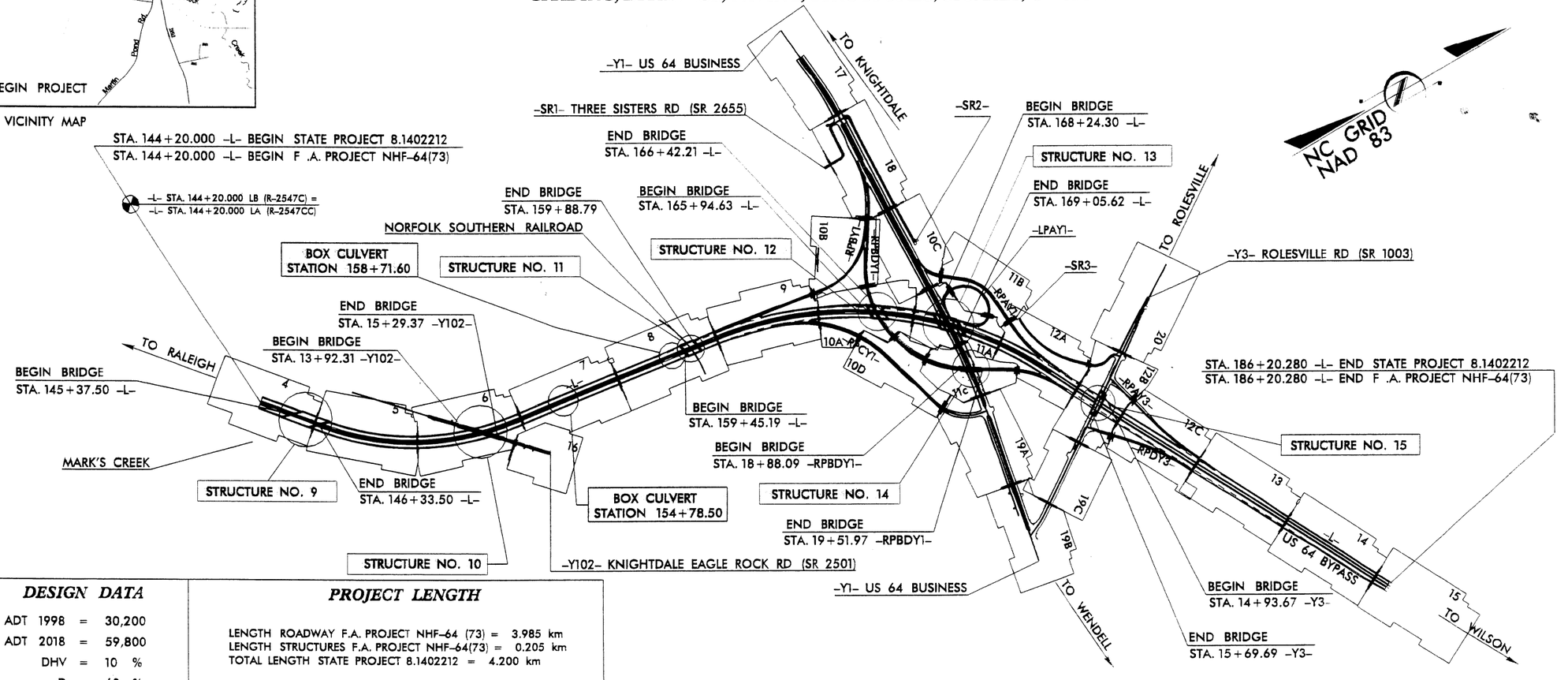
ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2547CC	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
8.1402202	DPI-0199(004)	PE
8.1402205	NHS-64(34)	R/W, UTILITIES
8.1402212	NHF-64(73)	CONSTRUCTION

RELEASE FOR CONSTRUCTION
8-15-2003

LOCATION: *US 64 FROM SR 2502 TO EXISTING US 64 NEAR SR 1003*
TYPE OF WORK: *FINAL PLANS GRADING, DRAINAGE, PAVING, STRUCTURES, SIGNALS, & SIGNING*



GRAPHIC SCALES

5 0 10
PLANS

5 0 10
PROFILE (HORIZONTAL)

1 0 2
PROFILE (VERTICAL)

DESIGN DATA

ADT 1998	=	30,200
ADT 2018	=	59,800
DHV	=	10 %
D	=	60 %
T	=	10 % *
V	=	110 km/h

* TTST 6 % DUAL 4 %

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT NHF-64 (73) = 3.985 km
LENGTH STRUCTURES F.A. PROJECT NHF-64(73) = 0.205 km
TOTAL LENGTH STATE PROJECT 8.1402212 = 4.200 km

LETTING DATE:

MAY 24, 2002

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS			
6			
5			
4			
3			
2			
1			
0	8-15-03		RELEASED FOR CONSTRUCTION.
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KIRKLIGHTER III
ROADWAY DESIGN ENGINEER 8/15/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER HENRY WELLS JR.
HYDRAULICS ENGINEER 8/18/03

DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547cc.tsh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TITLE SHEET

METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-2547CC	REV_CC-1

RELEASE FOR CONSTRUCTION

DATE: 02-10-2004

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
1	TITLE SHEET	08-15-03								
REV_CC-1	INDEX OF SHEETS & REVISION SUMMARY	08-15-03	08-25-03	10-01-03	11-14-03	12-1-03	12-16-03	02-10-04		
REV_CC-2	INDEX OF SHEETS & REVISION SUMMARY	08-15-03	08-25-03	9-10-03	10-01-03	11-14-03	12-1-03	12-16-03	02-10-04	
REV_CC-3	INDEX OF SHEETS & REVISION SUMMARY	08-15-03	08-25-03	10-01-03	11-14-03	12-16-03				
REV_CC-4	INDEX OF SHEETS & REVISION SUMMARY	08-15-03	08-25-03	10-01-03	11-14-03					
REV_CC-5	INDEX OF SHEETS & REVISION SUMMARY	08-15-03	11-14-03		~~11-14-03~~					
REV_CC-6	INDEX OF SHEETS & REVISION SUMMARY	08-15-03	08-25-03	9-10-03	10-01-03	11-14-03				
REV_CC-7	INDEX OF SHEETS & REVISION SUMMARY	08-15-03	10-01-03	11-14-03						R-2547 4 SHEETS
REV_CC-8	INDEX OF SHEETS & REVISION SUMMARY	08-15-03								
REV_CC-9	INDEX OF SHEETS & REVISION SUMMARY	08-15-03	10-01-03	11-14-03						
REV_CC-10	INDEX OF SHEETS & REVISION SUMMARY	08-15-03	10-01-03	11-14-03						
REV_CC-11	INDEX OF SHEETS & REVISION SUMMARY	08-15-03	10-01-03							
1A	INDEX, GEN. NOTES, STDS	08-15-03								
1B	INDEX, GEN. NOTES, STDS	08-15-03								
1C	INDEX, GEN. NOTES, STDS	08-15-03								
1D	CONVENTIONAL SYMBOLS	08-15-03								
2	TYPICALS	08-15-03	08-25-03	11-14-03	02-10-04					
2A	TYPICALS	08-15-03	08-25-03	11-14-03	12-01-03	02-10-04				
2B	TYPICALS	08-15-03	08-25-03	11-14-03	12-01-03	02-10-04				
2C	TYPICALS	08-15-03	08-25-03	02-10-04						
2D	TYPICALS	08-15-03	08-25-03	10-01-03	11-14-03	12-01-03				
2E	TYPICALS	08-15-03	08-25-03	12-01-03	02-10-04					
2F	TYPICALS	08-15-03	08-25-03							
2G	TYPICALS	08-15-03	08-25-03							
2H	TYPICALS	08-15-03	08-25-03							

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Raleigh, North Carolina 27609

North Carolina Constructors

NO.	BY:	DATE:	REVISIONS
6		02-10-03	ADDED REVISION DATES
5		12-16-03	ADDED REVISION DATES
4		12-01-03	ADDED REVISION DATES
3		11-14-03	ADDED REVISION DATES
2		10-01-03	ADDED REVISION DATES
1		8-25-03	ADDED REVISION DATES
0		8-15-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER 2/10/04

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : y:\Projects\NCDOT\r-2547\cc\dwg\rev_summary.sum

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INDEX OF SHEETS
AND
REVISION SUMMARY

02-FEB-2004 14:46
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METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-2547CC	REV_CC-2

RELEASE FOR CONSTRUCTION
DATE: 02-10-2004

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
2I	-Y102 DETOUR- PLAN SHEET	08-15-03	08-25-03							
2J	-Y102 DETOUR- PLAN SHEET	08-15-03	08-25-03							
2K	NATURAL STREAM DESIGN	08-15-03	08-25-03							
2L	NATURAL STREAM DESIGN	08-15-03	08-25-03							
2M	PREFORMED SCOUR HOLE & LEVEL SPREADER DETAIL	08-15-03	08-25-03	10-01-03	12-16-03					
2N	MODIFIED CONCRETE FLUME DETAIL	08-15-03	08-25-03							
2O	GUARDRAIL PROTECTION FOR DUAL BRIDGE APPROACH DETAIL	08-15-03								
2P	GUARDRAIL PROTECTION FOR MEDIAN OBSTRUCTIONS DETAIL	08-15-03								
3	DITCH DETAILS	08-15-03	12-16-03							
3H	GUARDRAIL SUMMARY	08-15-03								
3I	GUARDRAIL SUMMARY	08-15-03	10-01-03							
3J	GUIDERAIL SUMMARY	08-15-03								
4	PLAN SHEET	08-15-03	08-25-03	11-14-03	12-16-03					
5	PLAN SHEET	08-15-03	08-25-03	11-14-03	12-1-03	12-16-03				
6	PLAN SHEET	08-15-03	08-25-03	12-1-03	12-16-03					
7	PLAN SHEET	08-15-03	08-25-03	12-16-03						
7 (DET)	CULVERT DETAIL CONSTRUCTION SEQUENCE	08-15-03	08-25-03	12-16-03						
8	PLAN SHEET	08-15-03	08-25-03	11-14-03	12-1-03					
8 (DET)	CULVERT DETAIL CONSTRUCTION SEQUENCE	08-15-03	08-25-03	12-16-03						
9	PLAN SHEET	08-15-03	08-25-03	09-10-03						
10A	PLAN SHEET	08-15-03	08-25-03	10-01-03	11-14-03	12-16-03				
10B	PLAN SHEET	08-15-03	08-25-03							
10C	PLAN SHEET	08-15-03	08-25-03							
10D	PLAN SHEET	08-15-03	08-25-03	12-16-03	02-10-04					
10E	PLAN SHEET	08-15-03	08-25-03	12-16-03						
11A	PLAN SHEET	08-15-03	08-25-03	10-01-03	11-14-03	02-10-04				
11B	PLAN SHEET	08-15-03	08-25-03	12-16-03						
11C	PLAN SHEET	08-15-03	08-25-03	10-01-03	12-16-03					

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North Carolina Constructors

REVISIONS			
7		02-10-04	ADDED REVISION DATES
6		12-16-03	ADDED REVISION DATES
5		12-1-03	ADDED REVISION DATES
4		11-14-03	ADDED REVISION DATES
3		10-01-03	ADDED REVISION DATES
2		9-10-03	ADDED REVISION DATE (SHEET 9)
1		8-25-03	ADDED REVISION DATES
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

Thomas F. Kicklighter III 2/10/04
ROADWAY DESIGN ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : y:\Projects\NCDOT\r-2547cc\rdwy\rev_summary.sum

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INDEX OF SHEETS
AND
REVISION SUMMARY

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PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	REV_CC-3

RELEASE FOR CONSTRUCTION

DATE: 12-16-2003

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
12A	PLAN SHEET	08-15-03	08-25-03							
12B	PLAN SHEET	08-15-03	08-25-03	10-01-03	11-14-03					
12C	PLAN SHEET	08-15-03	08-25-03							
13	PLAN SHEET	08-15-03	08-25-03	12-16-03						
14	PLAN SHEET	08-15-03	08-25-03	12-16-03						
15	PLAN SHEET	08-15-03	08-25-03	12-16-03						
16	PLAN SHEET	08-15-03	08-25-03							
17	PLAN SHEET	08-15-03	08-25-03							
18	PLAN SHEET	08-15-03	08-25-03							
19A	PLAN SHEET	08-15-03	08-25-03	11-14-03						
19B	PLAN SHEET	08-15-03	08-25-03							
19C	PLAN SHEET	08-15-03	08-25-03	11-14-03						
20	PLAN SHEET	08-15-03	08-25-03							
21	PROFILE	08-15-03	08-25-03							
22	PROFILE	08-15-03	08-25-03							
23	PROFILE	08-15-03	08-25-03							
23A	PROFILE	08-15-03	08-25-03							
24	PROFILE	08-15-03	08-25-03							
24A	PROFILE	08-15-03	08-25-03							
25	PROFILE	08-15-03	08-25-03							
26	PROFILE	08-15-03	08-25-03							
27	PROFILE	08-15-03	08-25-03							
28	PROFILE	08-15-03	08-25-03							
29	PROFILE	08-15-03	08-25-03							
30	PROFILE	08-15-03	08-25-03							

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North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION:
5			
4		12-16-03	ADDED REVISION DATES
3		11-14-03	ADDED REVISION DATES
2		10-01-03	ADDED REVISION DATES
1		8-25-03	ADDED REVISION DATES
0		8-15-03	RELEASED FOR CONSTRUCTION:

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER 12/16/03

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename :

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INDEX OF SHEETS
AND
REVISION SUMMARY

15-DEC-2003 15:50
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PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	REV_CC-4

RELEASE FOR CONSTRUCTION

DATE: 11-14-2003

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
31	PROFILE	08-15-03	08-25-03							
32	PROFILE	08-15-03	08-25-03							
33	PROFILE	08-15-03	08-25-03							
34	PROFILE	08-15-03	08-25-03							
35	PROFILE	08-15-03	08-25-03							
36	PROFILE	08-15-03	08-25-03							
36A	PROFILE	08-15-03	08-25-03							
37	PROFILE	08-15-03	08-25-03							
38	PROFILE	08-15-03	08-25-03							
39	PROFILE	08-15-03	08-25-03							
40	PROFILE	08-15-03	08-25-03							
41	PROFILE	08-15-03	08-25-03							
42	PROFILE	08-15-03	08-25-03							
43	PROFILE	08-15-03	08-25-03							
44	PROFILE	08-15-03	08-25-03							
45	CROSS SECTION INDEX	08-15-03								
X-1	CROSS SECTIONS	08-15-03								
X-2	CROSS SECTIONS	08-15-03	11-14-03							
X-2A	CROSS SECTIONS	11-14-03								
X-2B	CROSS SECTIONS	11-14-03								
X-2C	CROSS SECTIONS	11-14-03								
X-3	CROSS SECTIONS	08-15-03								
X-4	CROSS SECTIONS	08-15-03	08-25-03							
X-5	CROSS SECTIONS	08-15-03								
X-6	CROSS SECTIONS	08-15-03								
X-7	CROSS SECTIONS	08-15-03								
X-8	CROSS SECTIONS	08-15-03								
X-9	CROSS SECTIONS	08-15-03	10-01-03							

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REVISIONS			
NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3		11-14-03	REVISED X-2 / ADDED X-2A,X-2B,X-2C
2		10-01-03	ADDED REVISION DATES
1		8-25-03	ADDED REVISION DATES
0		8-15-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER

11/14/03

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : Y:\Projects\NCDOT\V-2547\cc\dwg\rev_summary.sum

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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14-NOV-2003 13:02
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PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	REV_CC-5

RELEASE FOR CONSTRUCTION

DATE: 11-14-2003

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
X-10	CROSS SECTIONS	08-15-03								
X-11	CROSS SECTIONS	08-15-03								
X-12	CROSS SECTIONS	08-15-03								
X-13	CROSS SECTIONS	08-15-03								
X-14	CROSS SECTIONS	08-15-03								
X-15	CROSS SECTIONS	08-15-03								
X-16	CROSS SECTIONS	08-15-03								
X-17	CROSS SECTIONS	08-15-03								
X-18	CROSS SECTIONS	08-15-03								
X-19	CROSS SECTIONS	08-15-03								
X-20	CROSS SECTIONS	08-15-03								
X-21	CROSS SECTIONS	08-15-03								
X-22	CROSS SECTIONS	08-15-03								
X-23	CROSS SECTIONS	08-15-03								
X-23A	CROSS SECTIONS	11-14-03								
X-23B	CROSS SECTIONS	11-14-03								
X-23C	CROSS SECTIONS	11-14-03								
X-23D	CROSS SECTIONS	11-14-03								
X-23E	CROSS SECTIONS	11-14-03								
X-24	CROSS SECTIONS	08-15-03	11-14-03							
X-25	CROSS SECTIONS	08-15-03								
X-26	CROSS SECTIONS	08-15-03								
X-27	CROSS SECTIONS	08-15-03								
X-28	CROSS SECTIONS	08-15-03								
X-29	CROSS SECTIONS	08-15-03								
X-30	CROSS SECTIONS	08-15-03								
X-31	CROSS SECTIONS	08-15-03								
X-32	CROSS SECTIONS	08-15-03								
X-33	CROSS SECTIONS	08-15-03								
X-34	CROSS SECTIONS	08-15-03								

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North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1		11-14-03	REVISED SUM. ADDED X-23A,X-23B,X-23C,X-23D,X-23E
0		08-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS E. KISLIGER III

ROADWAY DESIGN ENGINEER

11/14/03

DRAWN By: _____ DATE: _____

CHECKED By: _____ DATE: _____

Document Control Number :

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Project: Y:\Projects\NCDOT\r-2547cc\rev\rev_summary.sum

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7
X-35	CROSS SECTIONS	08-15-03	08-25-03						
X-35A	CROSS SECTIONS	11-14-03							
X-35B	CROSS SECTIONS	11-14-03							
X-35C	CROSS SECTIONS	11-14-03							
X-36	CROSS SECTIONS	08-15-03	08-25-03	11-14-03					
X-37	CROSS SECTIONS	08-15-03	09-10-03						
X-38	CROSS SECTIONS	08-15-03							
X-39	CROSS SECTIONS	08-15-03							
X-39A	CROSS SECTIONS	11-14-03							
X-39B	CROSS SECTIONS	11-14-03							
X-39C	CROSS SECTIONS	11-14-03							
X-39D	CROSS SECTIONS	11-14-03							
X-39E	CROSS SECTIONS	11-14-03							
X-40	CROSS SECTIONS	08-15-03	11-14-03						
X-41	CROSS SECTIONS	08-15-03							
X-42	CROSS SECTIONS	08-15-03							
X-43	CROSS SECTIONS	08-15-03							
X-44	CROSS SECTIONS	08-15-03							
X-45	CROSS SECTIONS	08-15-03							
X-46	CROSS SECTIONS	08-15-03							
X-47	CROSS SECTIONS	08-15-03							
X-48	CROSS SECTIONS	08-15-03							
X-49	CROSS SECTIONS	08-15-03	10-01-03						
X-50	CROSS SECTIONS	08-15-03							
X-51	CROSS SECTIONS	08-15-03							
X-52	CROSS SECTIONS	08-15-03							
X-53	CROSS SECTIONS	08-15-03							
X-54	CROSS SECTIONS	08-15-03							
X-55	CROSS SECTIONS	08-15-03							
X-56	CROSS SECTIONS	08-15-03							
X-57	CROSS SECTIONS	08-15-03							
X-58	CROSS SECTIONS	08-15-03							
X-59	CROSS SECTIONS	08-15-03							

METRIC

R-2547CC | REV_CC-6

RELEASE FOR CONSTRUCTION

DATE: 11-14-2003

COMMENTS

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NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4		11-14-03	REVISED X-36 AND X-40 ADDED X-35ATHRU X-35C AND X-39ATHRUX-39E
3		10-01-03	ADDED REVISION DATES (X-49)
2		9-10-03	ADDED REVISION DATES (X-37)
1		8-25-03	ADDED REVISION DATES
0		8-15-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS FRANKLIGHTER III

ROADWAY DESIGN ENGINEER 11/14/03

DRAWN BY: _____ DATE: _____
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DEPARTMENT OF TRANSPORTATION
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PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	REV_CC-7

RELEASE FOR CONSTRUCTION

DATE: 11-14-2003

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
X-60	CROSS SECTIONS	08-15-03								
X-61	CROSS SECTIONS	08-15-03								
X-62	CROSS SECTIONS	08-15-03								
X-63	CROSS SECTIONS	08-15-03								
X-63A	CROSS SECTIONS	11-14-03								
X-63B	CROSS SECTIONS	11-14-03								
X-63C	CROSS SECTIONS	11-14-03								
X-64	CROSS SECTIONS	08-15-03								
X-65	CROSS SECTIONS	08-15-03								
X-66	CROSS SECTIONS	08-15-03								
X-67	CROSS SECTIONS	08-15-03								
X-68	CROSS SECTIONS	08-15-03								
X-69	CROSS SECTIONS	08-15-03								
X-70	CROSS SECTIONS	08-15-03								
X-71	CROSS SECTIONS	08-15-03								
X-72	CROSS SECTIONS	08-15-03								
X-73	CROSS SECTIONS	08-15-03								
X-74	CROSS SECTIONS	08-15-03								
X-75	CROSS SECTIONS	08-15-03								
X-76	CROSS SECTIONS	08-15-03								
X-77	CROSS SECTIONS	08-15-03								
X-78	CROSS SECTIONS	08-15-03								
X-79	CROSS SECTIONS	08-15-03								
X-80	CROSS SECTIONS	08-15-03	10-01-03							
X-81	CROSS SECTIONS	08-15-03	10-01-03							
X-82	CROSS SECTIONS	08-15-03	10-01-03							
X-83	CROSS SECTIONS	08-15-03	10-01-03	11-14-03						
X-84	CROSS SECTIONS	08-15-03								

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REVISIONS			
5			
4			
3			
2		11-14-03	ADDED X-63A, X-63B X-63C & REV. X-83
1		10-01-03	ADDED REVISION DATES
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION:

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER 11/24/03

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CHECKED BY: _____ DATE: _____

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METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	REV_CC-8

RELEASE FOR CONSTRUCTION

DATE: 8-15-2003

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
X-85	CROSS SECTIONS	08-15-03								
X-86	CROSS SECTIONS	08-15-03								
X-87	CROSS SECTIONS	08-15-03								
X-88	CROSS SECTIONS	08-15-03								
X-89	CROSS SECTIONS	08-15-03								
X-90	CROSS SECTIONS	08-15-03								
X-91	CROSS SECTIONS	08-15-03								
X-92	CROSS SECTIONS	08-15-03								
X-93	CROSS SECTIONS	08-15-03								
X-94	CROSS SECTIONS	08-15-03								
X-95	CROSS SECTIONS	08-15-03								
X-96	CROSS SECTIONS	08-15-03								
X-97	CROSS SECTIONS	08-15-03								
X-98	CROSS SECTIONS	08-15-03								
X-99	CROSS SECTIONS	08-15-03								
X-100	CROSS SECTIONS	08-15-03								
X-101	CROSS SECTIONS	08-15-03								
X-102	CROSS SECTIONS	08-15-03								
X-103	CROSS SECTIONS	08-15-03								
X-104	CROSS SECTIONS	08-15-03								
X-105	CROSS SECTIONS	08-15-03								
X-105(A)	CROSS SECTIONS	08-15-03								
X-105(B)	CROSS SECTIONS	08-15-03								
X-105(C)	CROSS SECTIONS	08-15-03								
X-106	CROSS SECTIONS	08-15-03								

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NCC North Carolina Constructors

REVISIONS			
6			
5			
4			
3			
2			
1			
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION:

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS E. KICKLIGHTER III

ROADWAY DESIGN ENGINEER

8/05/03

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename :
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DEPARTMENT OF TRANSPORTATION
RALEIGH

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METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-2547CC	REV_CC-9
	RELEASE FOR CONSTRUCTION	
	DATE: 12-01-2003	

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
X-107	CROSS SECTIONS	08-15-03								
X-108	CROSS SECTIONS	08-15-03								
X-109	CROSS SECTIONS	08-15-03								
X-110	CROSS SECTIONS	08-15-03								
X-111	CROSS SECTIONS	08-15-03								
X-112	CROSS SECTIONS	08-15-03								
X-113	CROSS SECTIONS	08-15-03								
X-114	CROSS SECTIONS	08-15-03								
X-115	CROSS SECTIONS	08-15-03								
X-116	CROSS SECTIONS	08-15-03								
X-117	CROSS SECTIONS	08-15-03	12-01-03							
X-118	CROSS SECTIONS	08-15-03								
X-119	CROSS SECTIONS	08-15-03								
X-120	CROSS SECTIONS	08-15-03								
X-121	CROSS SECTIONS	08-15-03	10-01-03							
X-122	CROSS SECTIONS	08-15-03	10-01-03							
X-123	CROSS SECTIONS	08-15-03								
X-124	CROSS SECTIONS	08-15-03								
X-125	CROSS SECTIONS	08-15-03								
X-126	CROSS SECTIONS	08-15-03								
X-127	CROSS SECTIONS	08-15-03								
X-128	CROSS SECTIONS	08-15-03								
X-128A	CROSS SECTIONS	11-14-03								
X-128B	CROSS SECTIONS	11-14-03								
X-129	CROSS SECTIONS	08-15-03	11-14-03							
X-130	CROSS SECTIONS	08-15-03								
X-131	CROSS SECTIONS	08-15-03								

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REVISIONS			
5			
4			
3		12-01-03	REVISED SHEET X-117
2		11-14-03	ADDED X-128A AND X-128B
1		10-01-03	ADDED REVISION DATES
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION:

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

Thomas F. Kicklighter III 12/1/03

ROADWAY DESIGN ENGINEER

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename :

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REVISION SUMMARY

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	REV_CC-10

RELEASE FOR CONSTRUCTION

DATE: 11-14-2003

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
X-135	CROSS SECTIONS	08-15-03								
X-134	CROSS SECTIONS	08-15-03								
X-133	CROSS SECTIONS	08-15-03								
X-132	CROSS SECTIONS	08-15-03								
X-133	CROSS SECTIONS	08-15-03								
X-134	CROSS SECTIONS	08-15-03								
X-135	CROSS SECTIONS	08-15-03								
X-136	CROSS SECTIONS	08-15-03								
X-136A	CROSS SECTIONS	11-14-03								
X-136B	CROSS SECTIONS	11-14-03								
X-137	CROSS SECTIONS	08-15-03								
X-138	CROSS SECTIONS	08-15-03								
X-139	CROSS SECTIONS	08-15-03								
X-140	CROSS SECTIONS	08-15-03								
X-141	CROSS SECTIONS	08-15-03								
X-142	CROSS SECTIONS	08-15-03								
X-143	CROSS SECTIONS	08-15-03								
X-144	CROSS SECTIONS	08-15-03								
X-145	CROSS SECTIONS	08-15-03								
X-146	CROSS SECTIONS	08-15-03								
X-147	CROSS SECTIONS	08-15-03								
X-148	CROSS SECTIONS	08-15-03								
X-149	CROSS SECTIONS	08-15-03								
X-150	CROSS SECTIONS	08-15-03								
X-151	CROSS SECTIONS	08-15-03								
X-152	CROSS SECTIONS	08-15-03								
X-153	CROSS SECTIONS	08-15-03								
X-154	CROSS SECTIONS	08-15-03								
X-155	CROSS SECTIONS	08-15-03								
X-156	CROSS SECTIONS	08-15-03								

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North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1	11-14-03		ADDED X-136A AND X-136B
0	08-15-03		RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER

11/14/03

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CHECKED BY: _____ DATE: _____

Document Control Number :

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DEPARTMENT OF TRANSPORTATION
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PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	REV_CC-11

RELEASE FOR CONSTRUCTION

DATE: 10-01-2003

REVISION SUMMARY

SHEET NO.	SHEET TITLE	RFC DATE	REVISION 1	REVISION 2	REVISION 3	REVISION 4	REVISION 5	REVISION 6	REVISION 7	COMMENTS
X-157	CROSS SECTIONS	08-15-03								
X-158	CROSS SECTIONS	08-15-03								
X-159	CROSS SECTIONS	08-15-03								
X-160	CROSS SECTIONS	08-15-03								
X-161	CROSS SECTIONS	08-15-03								
X-162	CROSS SECTIONS	08-15-03								
X-163	CROSS SECTIONS	08-15-03								

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REVISIONS			
5			
4			
3			
2			
1		10-01-03	REVISED ORDER AND DELETED X-156
0		8-15-03	RELEASED FOR CONSTRUCTION.
NO.	BY:	DATE:	DESCRIPTION OF REVISION:

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER 10/1/03

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : Y:\Projects\NCDOT\r-2547cc\rdwy\rev_summary.sum

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	1A

RELEASE FOR CONSTRUCTION
CONSTRUCTION
8-15-2003

GENERAL NOTES - METRIC

THE WORD ENGINEER SHALL MEAN NCDOT REPRESENTATIVE

THIS PROJECT IS LOCATED IN AN "ENVIRONMENTALLY SENSITIVE AREA". THIS DESIGNATION REQUIRES SPECIAL PROCEDURES TO BE USED FOR CLEARING AND GRUBBING, TEMPORARY STREAM CROSSINGS, AND GRADING OPERATIONS WITHIN THE AREA IDENTIFIED ON THE PLANS. THIS ALSO REQUIRES SPECIAL PROCEDURES TO BE USED FOR SEEDING AND MULCHING AND STAGED SEEDING WITHIN THE PROJECT.

IN AREAS IDENTIFIED AS "ENVIRONMENTALLY SENSITIVE AREAS", THE DESIGN-BUILDER MAY PERFORM CLEARING OPERATIONS, BUT NOT GRUBBING OPERATIONS UNTIL IMMEDIATELY PRIOR TO BEGINNING GRADING OPERATIONS AS DESCRIBED IN SECTION 200, ARTICLE 200-1, IN THE STANDARD SPECIFICATIONS. THE "ENVIRONMENTALLY SENSITIVE AREA" SHALL BE DEFINED AS A 50 FOOT (16 METER) BUFFER ZONE ON BOTH SIDES OF THE STREAM (OR DEPRESSION), MEASURED FROM THE TOP OF STREAMBANK. (OR CENTER OF DEPRESSION)--AS SHOWN IN THE PERMIT DRAWINGS. ONLY CLEARING OPERATIONS (NOT GRUBBING) SHALL BE ALLOWED IN THIS BUFFER ZONE UNTIL IMMEDIATELY PRIOR TO BEGINNING GRADING OPERATIONS. EROSION CONTROL DEVICES SHALL BE INSTALLED IMMEDIATELY FOLLOWING THE CLEARING OPERATION.

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

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED OR FUTURE SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES IN ORDER TO SECURE A PROPER TIE-IN.

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION ON HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01 OR 560.02. THE ALGEBRAIC DIFFERENCE OF FINISHED GRADE SHOULDER SLOPES AND SUBGRADE SHOULDER SLOPES ON NORMAL CROWN SECTIONS, SHALL BE MAINTAINED THROUGH SUPERELEVATED SECTIONS OF THE ROADWAY (THIS WILL MAKE SUPERELEVATED AND TANGENT PAVED SHOULDER DEPTHS CONSISTENT).

THE DESIGN-BUILDER WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT.

BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS.

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03.

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.02 USING 900mm RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS.

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON THE PLANS.

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION WITH APPROVAL BY THE ENGINEER PRIOR TO ADJUSTMENTS.

THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS SECTIONS SHALL BE CHECKED PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APROACHING A BRIDGE.

STATIONS AND OFFSETS FOR PIPES ON THE DRAINAGE SUMMARY SHEETS ARE FROM EXISTING GROUND SURVEYS. EXACT PIPE LOCATIONS MAY NEED TO BE ADJUSTED BASED ON EXISTING FIELD CONDITIONS.

UTILITIES SHOWN ON PLANS ARE NOT GUARANTEED TO BE ACCURATE LOCATIONS.

GENERAL NOTES - METRIC (CONT'D)

ROADWAY FOUNDATION RECOMMENDATIONS:

GENERAL--REVIEW THE ROADWAY FOUNDATION RECOMMENDATIONS FOR SPECIFIC RECOMMENDATIONS, INCLUDING THE FOLLOWING:

UNDERCUT OR STABILIZATION FABRIC SHOULD BE USED AT -L- STA. 144+70 TO STA. 145+60

UNDERCUT EXCAVATION IS EXPECTED IN THE FOLLOWING AREAS:

-RPAY1- STA. 14+90 TO 15+40
-LPAY1- STA. 11+90 TO 12+10
-SR3- STA. 10+00 TO 13+10
-RPAY3- STA. 11+00 TO 12+20

SUBGRADE STABILIZATION IS REQUIRED THROUGHOUT THE PROJECT. SEE RECOMMENDATIONS FOR LOCATION OF LIME/CEMENT.

UNDERCUT ALONG CULVERT PIPES ACROSS EXISTING PONDS SHOULD BE CONDUCTED AS DIRECTED.

GROUNDWATER WAS IDENTIFIED ABOVE OR WITHIN 1.8 METERS OF THE DESIGN SUBGRADE AT THE LOCATIONS LISTED BELOW. UNDERDRAINS ARE EXPECTED TO BE PLACED AT THESE LOCATIONS.

LOCATIONS OF GROUNDWATER WITHIN 1.8 METERS OF SUBGRADE:

-L- STA. 147+70 TO 149+20 -RPBY1- STA. 10+70 TO 12+50
-L- STA. 150+70 TO 153+10 -RPBDY1- STA. 12+70 TO 13+90

UNDERDRAINS WILL BE REQUIRED AT THE TOE OF THE CUT SLOPES ON -L- STA. 151+10 TO 152+80

AT ROCK LOCATIONS:

THE LOCATIONS OF SOFT WEATHERED ROCK AND HARD ROCK SHOULD BE CONSTRUCTED AT A SLOPE OF 1.5(H):1(V).

THE GEOTECHNICAL ENGINEER SHOULD OBSERVE ALL ROCK CUTS TO CONFIRM ALL LOOSE ROCK IS ADEQUATELY REMOVED AND TO DETERMINE THE ALLOWABLE SLOPE TO BE USED.

SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 816.02 OR 816.03 AND DETAILS IN THE PLANS.

SHOULDER DRAINS:
(NOTE: 'SN' = STRUCTURE NUMBER)

EBL OUTSIDE SHOULDER DRAIN

FROM STA. 144+20 TO STA. 144+89 (BEGIN BRIDGE)
OUTLET AT STA. 144+83

FROM STA. 153+62 TO STA. 159+50 (BEGIN BRIDGE)
OUTLET AT STA. 153+62; STA. 154+60 (SN 30); STA. 155+60; STA. 156+80 (SN 36); STA. 157+60 (SN 40); STA. 158+40 (SN 41)

FROM STA. 159+94 (END BRIDGE) TO STA. 163+70
OUTLET AT STA. 160+00 (SN 48); STA. 160+80 (SN 50); STA. 161+70 (SN 54); STA. 162+70

FROM STA. 164+00 TO STA. 166+07 (BEGIN BRIDGE)
OUTLET AT STA. 164+20; STA. 165+00 (SN 71)

FROM STA. 166+55 (END BRIDGE) TO STA. 168+43 (BEGIN BRIDGE)
OUTLET AT STA. 166+66 (SN 73); STA. 167+40 (SN 74)

FROM STA. 169+28 (END BRIDGE) TO STA. 172+24
OUTLET AT STA. 170+00 (SN 121); STA. 171+00 (SN 133B); STA. 172+00

EBL INSIDE SHOULDER DRAIN

FROM STA. 146+52 (END BRIDGE) TO STA. 153+62 OUTLET AT STA. 147+05 (SN 9); STA. 147+60 (SN 12A); STA. 149+00 (SN 12); STA. 150+40 (SN 14); STA. 151+40; STA. 152+42 (SN 15)

SHOULDER DRAINS (CONT'D):

WBL OUTSIDE SHOULDER DRAIN

FROM STA. 144+20 TO STA. 145+50 (BEGIN BRIDGE)
OUTLET AT STA. 145+22 (SN 7)

FROM STA. 146+90 (END BRIDGE) TO STA. 159+39 (BEGIN BRIDGE)
OUTLET AT STA. 147+00 (SN 10); STA. 148+00; STA. 149+00; STA. 150+00; STA. 151+00; STA. 152+00; STA. 153+00; STA. 154+10 (SN 25); STA. 155+20 (SN 27); STA. 156+20 (SN 33); STA. 157+20; STA. 158+20

FROM STA. 159+83 (END BRIDGE) TO STA. 160+20 OUTLET AT STA. 159+90 (SN 46)

WBL INSIDE SHOULDER DRAIN

FROM STA. 159+88 (END BRIDGE) TO STA. 165+93 (BEGIN BRIDGE) OUTLET AT STA. 159+94 (SN 47); STA. 160+80 (SN 51); STA. 161+70 (SN 52); STA. 162+70; STA. 163+20 (SN 59); STA. 164+20; STA. 164+80 (SN 67)

FROM STA. 166+41 (END BRIDGE) TO STA. 168+22 (BEGIN BRIDGE) OUTLET AT STA. 166+52 (SN 72); STA. 167+40 (SN 75)

FROM STA. 169+02 (END BRIDGE) TO STA. 172+20 OUTLET AT STA. 170+10; STA. 171+00 (SN 133A); STA. 172+20 (SN 133)

INDEX OF SHEETS

ROADWAY METRIC STANDARD DRAWINGS

The following Roadway Standards as they appear in "Roadway Standard Drawings" Highway Design Branch - N.C. Department of Transportation - Raleigh, N.C., Dated January 15, 2002 are applicable to this project and by reference hereby are considered a part of these plans:

NOTE: THE ENTIRE LIST OF THE "ROADWAY STANDARD DRAWINGS" IS BEING PROVIDED TO THE CONTRACTOR.

SEE SHEET 1B THRU 1C

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NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER

ROADWAY DESIGN ENGINEER 8/15/03

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ROADWAY METRIC STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch – N. C. Department of Transportation – Raleigh, N. C., Dated Janurary 15, 2002 are applicable to this project and by reference hereby are considered a part of these plans:

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	1B

RELEASE FOR CONSTRUCTION FOR REVIEW

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ROADWAY DESIGN ENGINEER 8/15/13

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ROADWAY METRIC STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch – N. C. Department of Transportation – Raleigh, N. C., Dated Janurary 15, 2002 are applicable to this project and by reference hereby are considered a part of these plans:

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8-15-2003

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RELEASE FOR CONSTRUCTION

8-15-2003

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

ROADS & RELATED ITEMS

- Edge of Pavement
- Curb
- Prop. Slope Stakes Cut
- Prop. Slope Stakes Fill
- Prop. Woven Wire Fence
- Prop. Chain Link Fence
- Prop. Barbed Wire Fence
- Prop. Wheelchair Ramp
- Curb Cut For Future Wheelchair Ramp
- Exist. Guardrail
- Prop. Guardrail
- Exist. Cable Guiderail
- Prop. Cable Guiderail
- Equality Symbol
- Pavement Removal

RIGHT OF WAY

- Baseline Control Point
- Existing Right of Way Marker
- Exist. Right of Way Line w/Marker
- Prop. Right of Way Line with Proposed R/W marker (Iron Pin & Cap)
- Prop. Right of Way Line with Proposed (Concrete or Granite) R/w Marker
- Exist. Control of Access Line
- Prop. Control of Access Line
- Exist. Easement Line
- Prop. Temp. Construction Easement Line
- Prop. Temp. Drainage Easement Line
- Prop. Perm. Drainage Easement Line

HYDROLOGY

- Stream or Body of Water
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Shoreline
- Falls, Rapids
- Prop Lateral, Tail, Head Ditches

STRUCTURES

MAJOR

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

MINOR

- Head & End Wall
- Pipe Culvert
- Footbridge
- Drainage Boxes
- Paved Ditch Gutter

UTILITIES

- Exist. Pole
- Exist. Power Pole
- Prop. Power Pole
- Exist. Telephone Pole
- Prop. Telephone Pole
- Exist. Joint Use Pole
- Prop. Joint Use Pole
- Telephone Pedestal
- Cable TV Pedestal
- Hydrant
- Satellite Dish
- Exist. Water Valve
- Sewer Clean Out
- Power Manhole
- Telephone Booth
- Water Manhole
- Light Pole
- H-Frame Pole
- Power Line Tower
- Pole with Base
- Gas Valve
- Gas Meter
- Telephone Manhole
- Power Transformer
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Tank; Water, Gas, Oil
- Water Tank With Legs
- Traffic Signal Junction Box
- Fiber Optic Splice Box
- Television or Radio Tower
- Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement
- Recorded Water Line
- Designated Water Line (S.U.E.*)
- Sanitary Sewer
- Recorded Sanitary Sewer Force Main
- Designated Sanitary Sewer Force Main(S.U.E.*)
- Recorded Gas Line
- Designated Gas Line (S.U.E.*)
- Storm Sewer
- Recorded Power Line
- Designated Power Line (S.U.E.*)
- Recorded Telephone Cable
- Designated Telephone Cable (S.U.E.*)
- Recorded U/G Telephone Conduit
- Designated U/G Telephone Conduit (S.U.E.*)
- Unknown Utility (S.U.E.*)
- Recorded Television Cable
- Designated Television Cable (S.U.E.*)
- Recorded Fiber Optics Cable
- Designated Fiber Optics Cable (S.U.E.*)
- Exist. Water Meter
- U/G Test Hole (S.U.E.*)
- Abandoned According to U/G Record
- End of Information

BOUNDARIES & PROPERTIES

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Property Line Symbol
- Exist. Iron Pin
- Property Corner
- Property Monument
- Property Number
- Parcel Number
- Fence Line
- Existing Wetland Boundaries
- Proposed Wetland Boundaries
- Existing Endangered Animal Boundaries
- Existing Endangered Plant Boundaries

BUILDINGS & OTHER CULTURE

- Buildings
- Foundations
- Area Outline
- Gate
- Gas Pump Vent or U/G Tank Cap
- Church
- School
- Park
- Cemetery
- Dam
- Sign
- Well
- Small Mine
- Swimming Pool

TOPOGRAPHY

- Loose Surface
- Hard Surface
- Change in Road Surface
- Curb
- Right of Way Symbol
- Guard Post
- Paved Walk
- Bridge
- Box Culvert or Tunnel
- Ferry
- Culvert
- Footbridge
- Trail, Footpath
- Light House

VEGETATION

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard

RAILROADS

- Standard Gauge
- RR Signal Milepost
- Switch

revised 2/25/97

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2			
1			
0		8-15-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21210 THOMAS F. KICKLIGHTER III

Thomas F. Kicklighter III 8/15/03

ROADWAY DESIGN ENGINEER

DRAWN BY: ______ DATE: ______
CHECKED BY: ______ DATE: ______

Document Control Number :

Filename : r2547cc1D.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONVENTIONAL SYMBOLS

PAVEMENT SCHEDULE

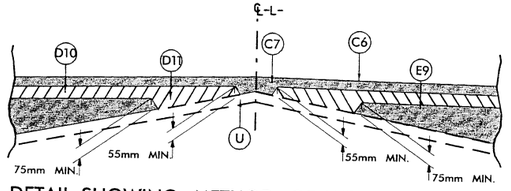
A1	290 mm Jointed Concrete Pavement with Dowels	E1	Prop. Approx. 75 mm Asphalt Conc. Base Course, Type B25.0B, at an Average Rate of 183.75 kg per sq. meter	R5	Shoulder Berm Gutter
A2	290 mm Jointed Concrete Pavement; Gore and Misc Areas (without Dowels) NOT APPLICABLE TO THIS SECTION	E2	Prop. Approx. 80 mm Asphalt Conc. Base Course, Type B25.0B, at an Average Rate of 196 kg per sq. meter NOT APPLICABLE TO THIS SECTION	R S	Rumble Strip
C1	Prop. Approx. 25 mm Asphalt Conc. Surface Course, Type S9.5A, at an Average Rate of 60 kg per sq. meter	E3	Prop. Approx. 90 mm Asphalt Conc. Base Course, Type B25.0B, at an Average Rate of 220.5 kg per sq. meter	S	100 mm Concrete Sidewalk
C2	Prop. Approx. 60 mm Asphalt Conc. Surface Course, Type S9.5B, at an Average Rate of 72 kg per sq. meter in each of two layers	E4	Prop. Approx. 110 mm Asphalt Conc. Base Course, Type B25.0B, at an Average Rate of 269.5 kg per sq. meter	T	Earth Material
C3	Prop. Approx. 70 mm Asphalt Conc. Surface Course, Type S9.5B, at an Average Rate of 84 kg per sq. meter in each of two layers	E5	Prop. Approx. 120 mm Asphalt Conc. Base Course, Type B25.0B, at an Average Rate of 294 kg per sq. meter	U	Existing Pavement
C4	Prop. Var. Depth Asphalt Conc. Surface Course, Type S9.5B, at an Average Rate of 2.40 kg per sq. meter per 1 mm depth, to be placed in layers not less than 30 mm in depth or greater than 40 mm in depth	E6	Prop. Var. Depth Asphalt Conc. Base Course, Type B25.0B, at an Average Rate of 2.45 kg per sq. meter per 1 mm depth, to be placed in layers not less than 75 mm in depth or greater than 140 mm in depth	W	Variable Depth Asphalt Pavement. (See Wedging Detail - this Sheet)
C5	Prop. Approx. 60 mm Asphalt Conc. Surface Course, Type S9.5C, at an Average Rate of 72 kg per sq. meter in each of two layers	E7	Prop. Approx. 180 mm Asphalt Conc. Base Course, Type B25.0C, at an Average Rate of 220.5 kg per sq. meter in each of two Layers	X	Prop. Approx. 75mm Permeable Asphalt Drainage Layer, Type P-57 at an Average Rate of 1.90 kg per mm per sq. meter
C5A	Prop. Var. Depth Asphalt Conc. Surface Course, Type S9.5C, at an Average Rate of 2.40 kg per sq. meter per 1 mm depth, to be placed in layers not less than 30 mm in depth or greater than 40 mm in depth	E8	Prop. Approx. 270 mm Asphalt Conc. Base Course, Type B25.0C, at an Average Rate of 330.75 kg per sq. meter in each of two Layers		
C6	Prop. Approx. 70 mm Asphalt Conc. Surface Course, Type S12.5C, at an Average Rate of 84 kg per sq. meter in each of two layers				
C7	Prop. Var. Depth Asphalt Conc. Surface Course, Type S12.5C, at an Average Rate of 2.40 kg per sq. meter per 1 mm depth, to be placed in layers not less than 35 mm in depth or greater than 60 mm in depth	E9	Prop. Var. Depth Asphalt Conc. Base Course, Type B25.0C, at an Average Rate of 2.45 kg per sq. meter per 1 mm depth, to be placed in layers not less than 75 mm in depth or greater than 140 mm in depth		
D1	Prop. Approx. 55 mm Asphalt Conc. Intermediate Course, Type I19.0B, at an Average Rate of 135 kg per sq. meter	J1	Prop. 100 mm Aggregate Base Course		
D2	Prop. Approx. 60 mm Asphalt Conc. Intermediate Course, Type I19.0B, at an Average Rate of 147 kg per sq. meter NOT APPLICABLE TO THIS SECTION	J2	Prop. 150 mm Aggregate Base Course		
D3	Prop. Approx. 70 mm Asphalt Conc. Intermediate Course, Type I19.0B, at an Average Rate of 171.5 kg per sq. meter NOT APPLICABLE TO THIS SECTION	J3	Prop. 200 mm Aggregate Base Course		
D4	Prop. Approx. 75 mm Asphalt Conc. Intermediate Course, Type I19.0B, at an Average Rate of 183.75 kg per sq. meter NOT APPLICABLE TO THIS SECTION	J4	Prop. 250 mm Aggregate Base Course		
D5	Prop. Approx. 110 mm Asphalt Conc. Intermediate Course, Type I19.0B, at an Average Rate of 270 kg per sq. meter	J5	Prop. Variable Depth Aggregate Base Course		
		J6	Prop. 175 mm Aggregate Base Course		
D6	Prop. Approx. 120 mm Asphalt Conc. Intermediate Course, Type I19.0B, at an Average Rate of 147 kg per sq. meter in each of two layers	K	Subbase to Treated with Lime to a Depth off 200 mm at a Rate of 11 kg per sq. meter as directed by the Engineer OR Subbase to be Treated with Cement to a Depth of 180 mm at a Rate of 30 kg per sq. meter as Directed by the Engineer OR Subbase to be Treated		
D7	Prop. Var. Depth Asphalt Conc. Intermediate Course, Type I19.0B, at an Average Rate of 2.45 kg per sq. meter per 1 mm depth, to be placed in layers not less than 55 mm in depth or greater than 110 mm in depth	P	Prime Coat		
D8	Prop. Approx. 80 mm Asphalt Conc. Intermediate Course, Type I19.0C, at an Average Rate of 196 kg per sq. meter	R1	750 mm Concrete Curb and Gutter		
D9	Prop. Approx. 60 mm Asphalt Conc. Intermediate Course, Type I19.0C, at an Average Rate of 147 kg per sq. meter	R2	450 mm Concrete Curb and Gutter		
D10	Prop. Approx. 110 mm Asphalt Conc. Intermediate Course, Type I19.0C, at an Average Rate of 270 kg per sq. meter	R3	Concrete Expressway Gutter		
D11	Prop. Var. Depth Asphalt Conc. Intermediate Course, Type I19.0C, at an Average Rate of 2.45 kg per sq. meter per 1 mm depth, to be placed in layers not less than 55 mm in depth or greater than 110 mm in depth	R4	Single Faced Concrete Barrier NOT APPLICABLE TO THIS SECTION		

METRIC

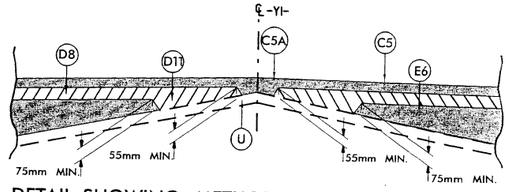
PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	2

RELEASE FOR CONSTRUCTION

DATE: 02-10-2004



DETAIL SHOWING METHOD OF WEDGING NO. 1



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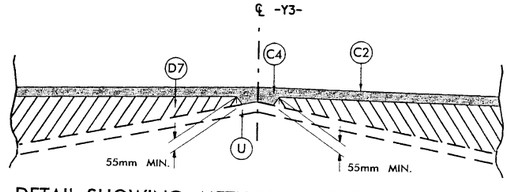
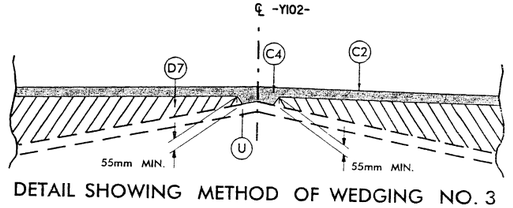


DETAIL SHOWING METHOD OF WEDGING NO. 2



DETAIL SHOWING METHOD OF WEDGING NO. 3

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
3	02-10-04	RFI 665/NCDOT COMMENTS	
2	11-14-03	ADDED R5 SHOULDER BERM GUTTER	
1	10-25-03	REVISED TITLE BLOCK	
0	10-15-03	RELEASED FOR CONSTRUCTION	
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23853 ENGINEER JEREMY C. DOUGLAS

2-10-04

ROADWAY DESIGN ENGINEER

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : r2547cc.typ

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

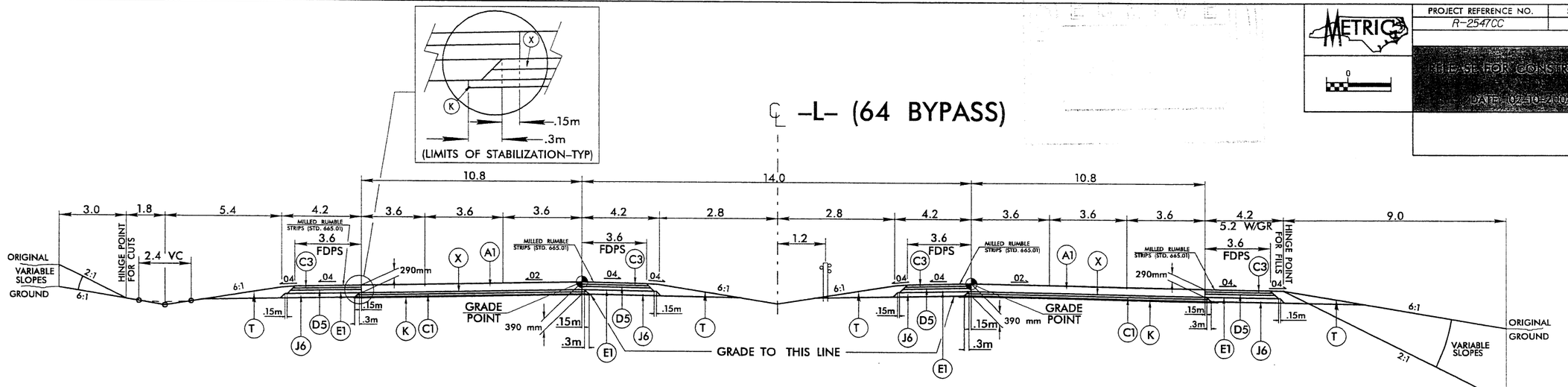
TYPICAL SECTIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	2A

METRIC

0

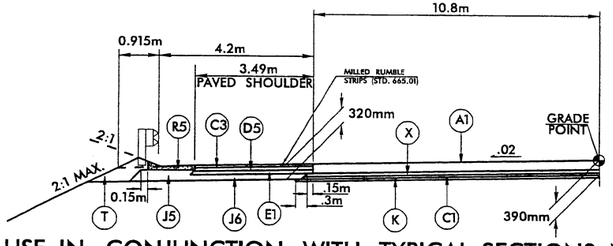
RELEASED FOR CONSTRUCTION
DATE: 02-10-2004



TYPICAL SECTION NO. 1

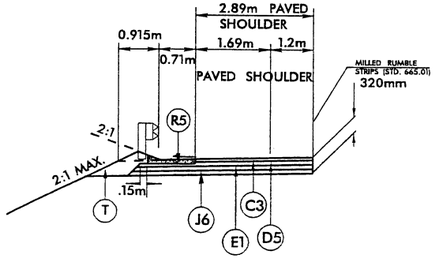
USE TYPICAL SECTION NO. 1 FOR THE FOLLOWING:

–L– STA. 144+20.000 TO 145+20.00 (BEGIN BRIDGE)
–L– STA. 146+57.00 (END BRIDGE) TO 159+45.012 (BEGIN BRIDGE)
–L– STA. 159+88.84 (END BRIDGE) TO 165+94.599 (BEGIN BRIDGE)
–L– STA. 166+42.30 (END BRIDGE) TO 168+24.30 (BEGIN BRIDGE)



USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1

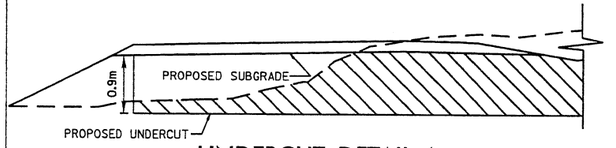
–L– STA. 144+49.600 TO STA. 145+44.600 LT.
–L– STA. 146+92.834 TO STA. 147+91.220 LT.
–L– STA. 154+10.000 TO STA. 159+35.930 LT.
–L– STA. 168+94.000 TO STA. 169+05.599 LT.



USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1

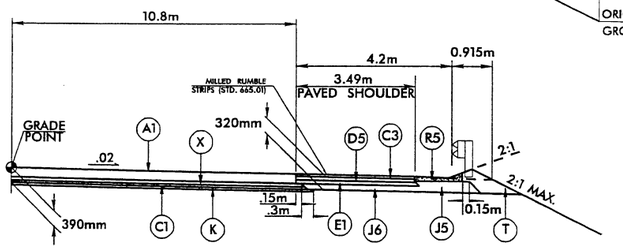
–L– STA. 159+86.849 TO STA. 160+36.000 LT.

UNDERCUT DETAILS



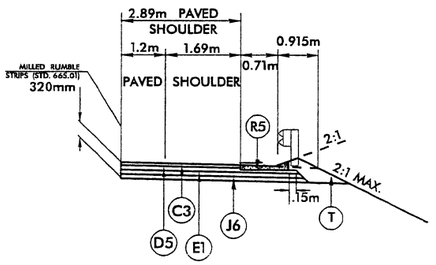
UNDERCUT DETAIL A

–RPAY1– STA. 14+90 TO 15+40
–LPAY1– STA. 11+90 TO 12+10
–SR3– STA. 10+00 TO 13+10



USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1

–L– STA. 144+20.000 TO STA. 144+86.010 RT.
–L– STA. 154+60.300 TO STA. 159+46.800 RT.
–L– STA. 165+15.390 TO STA. 166+01.227 RT.
–L– STA. 166+59.950 TO STA. 168+38.900 RT.



USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1

–L– STA. 159+97.500 TO STA. 162+54.000 RT.

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4		02-10-04	RFI 665
3		12-01-03	REVISED BERM GUTTER DETAIL
2		11-14-03	CHANGED J4 TO J5
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : y:\Projects\NCDOT\r-2547\cc\rdwy\r2547cc.typ

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
TYPICAL SECTIONS

10-FEB-2004 10:20
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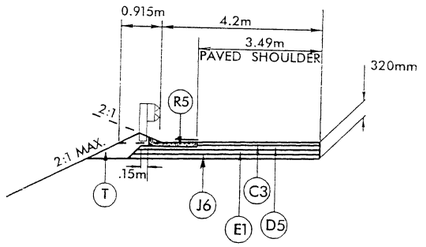
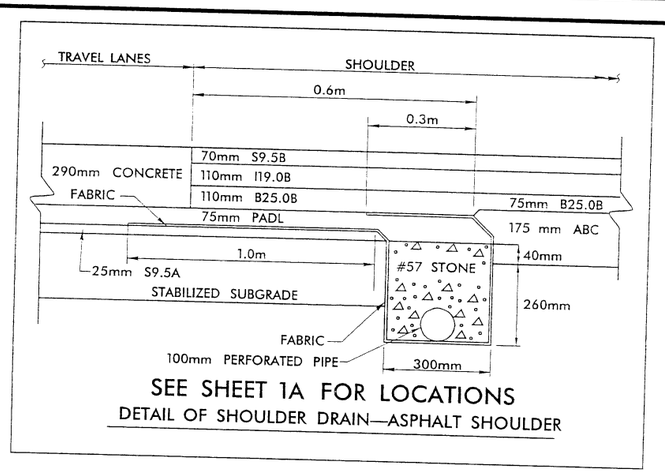
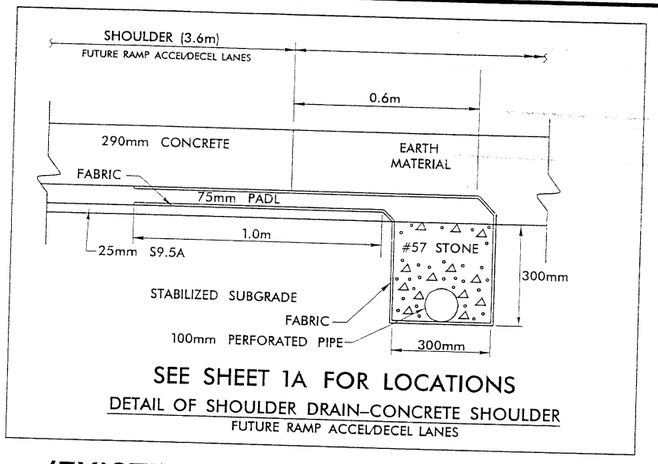




SEE SHEET 1A FOR LOCATIONS

DETAIL OF SHOULDER DRAIN—ASPHALT SHOULDER



SEE SHEET 1A FOR LOCATIONS

DETAIL OF SHOULDER DRAIN–CONCRETE SHOULDER

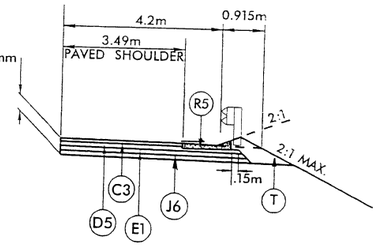
FUTURE RAMP ACCEL/DECEL LANES

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	2B

RELEASE FOR CONSTRUCTION

DATE: 02-10-2004



SHOULDER BERM WITH GUARDRAIL TO BE USED

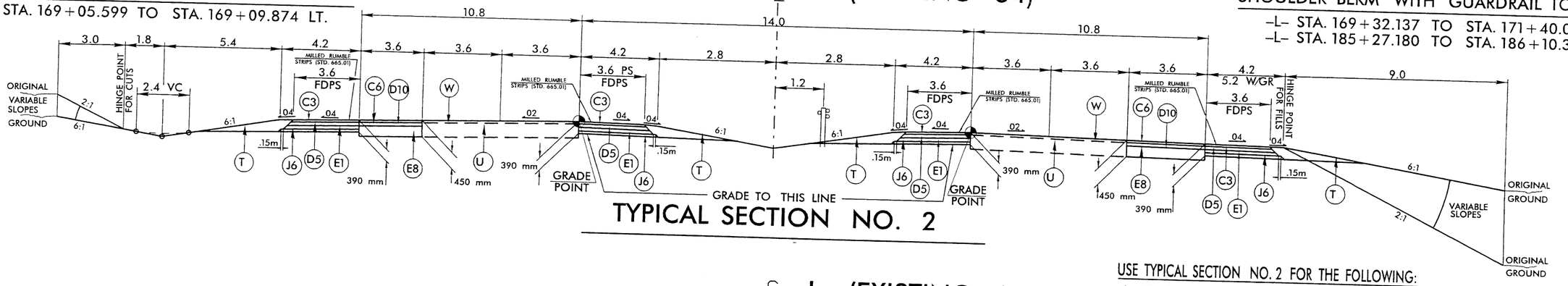
–L– STA. 169+05.599 TO STA. 169+09.874 LT.

℄ –L– (EXISTING 64)

SHOULDER BERM WITH GUARDRAIL TO BE USED

–L– STA. 169+32.137 TO STA. 171+40.000 RT.

–L– STA. 185+27.180 TO STA. 186+10.360 RT.

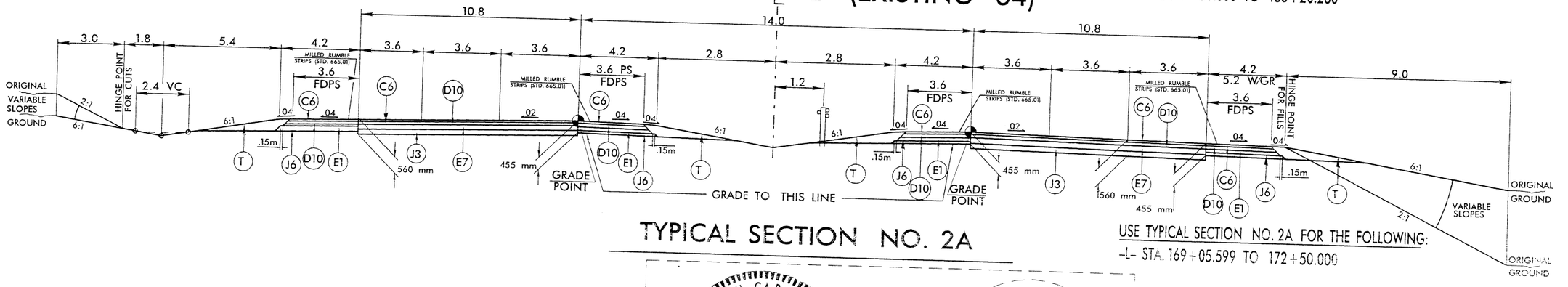


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 FOR THE FOLLOWING:

–L– STA. 172+50.000 TO 186+20.280

℄ –L– (EXISTING 64)



TYPICAL SECTION NO. 2A

USE TYPICAL SECTION NO. 2A FOR THE FOLLOWING:

–L– STA. 169+05.599 TO 172+50.000

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4	D2-10-04	RFI 665	RFI 68
3	D2-01-03	CHANGED D7 TO D10	
2	11-14-03	EXTENDED D5,E1, AND J6 1.5M UNDER BERM GUTTER	
1	8-25-03	REVISED TITLE BLOCK	
NO.	12-15-03	REVISED TITLE BLOCK	
ING	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 23858 ENGINEER JEFFERY S. DOUGLAS

2-10-04

ROADWAY DESIGN ENGINEER

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : r2547cc.typ

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

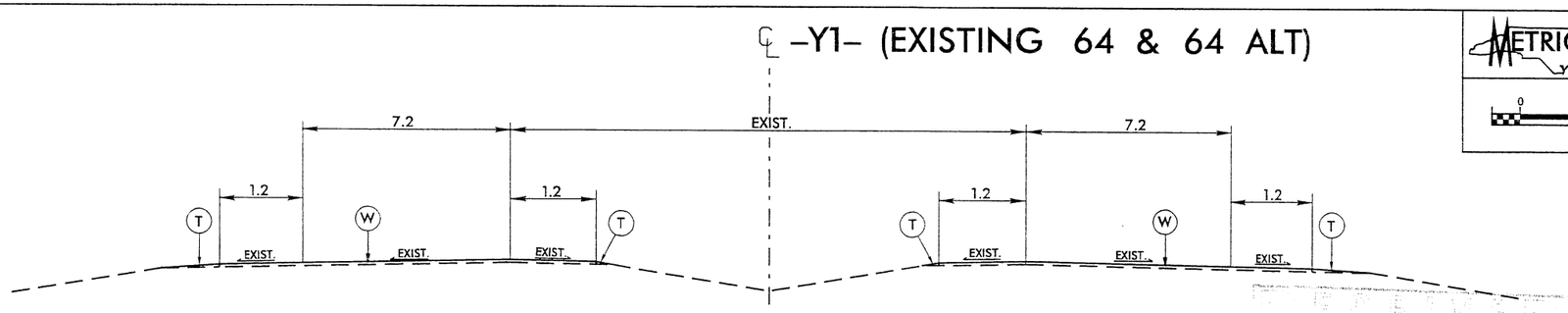
FINAL PLANS

TYPICAL SECTIONS

METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-2547CC	2C

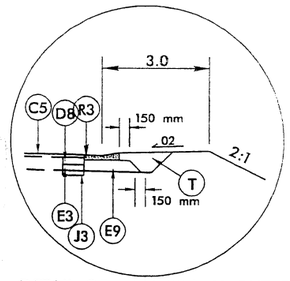
RELEASE FOR CONSTRUCTION
DATE: 02/10/2004

TYPICAL SECTION NO. 3



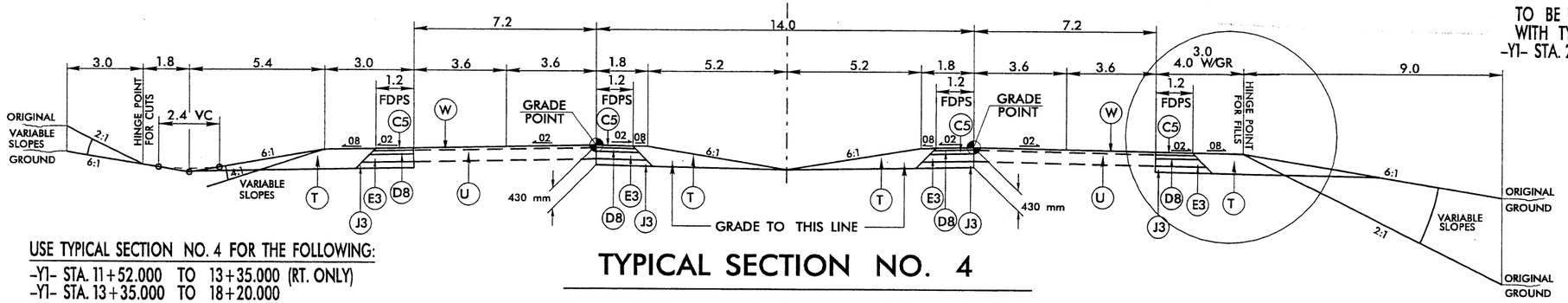
USE TYPICAL SECTION NO. 3 FOR THE FOLLOWING:

–Y1– STA. 11+00.000 TO 11+52.000 (RT. ONLY)
–Y1– STA. 28+99.000 TO 29+33.789



DETAIL OF EXPRESSWAY GUTTER
TO BE USED IN CONJUNCTION
WITH TYPICAL SECTION NO. 4
–Y1– STA. 26+00.000 TO 26+40.000

TYPICAL SECTION NO. 4

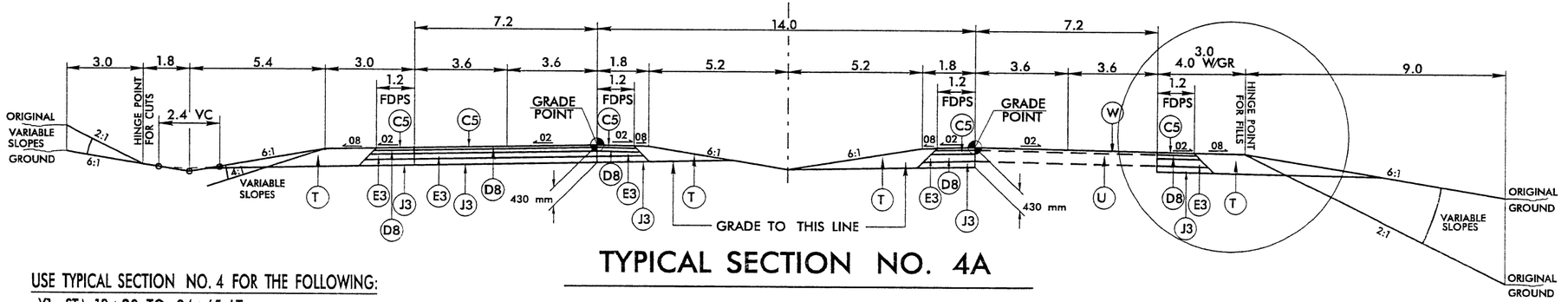


USE TYPICAL SECTION NO. 4 FOR THE FOLLOWING:

–Y1– STA. 11+52.000 TO 13+35.000 (RT. ONLY)
–Y1– STA. 13+35.000 TO 18+20.000
–Y1– STA. 24+65.000 TO 28+99.000

NOTE: SEE SHEET 2 FOR WEDGING DETAILS

TYPICAL SECTION NO. 4A



USE TYPICAL SECTION NO. 4 FOR THE FOLLOWING:

–Y1– STA. 18+20 TO 24+65 LT

PAVEMENT FOR LEFT TURN LANE FROM STA. 11+52.036 TO 15+68.021 SHALL BE THE SAME AS MAINLINE –Y1–

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER
THOMAS F. KICKLIGHTER III
ROADWAY DESIGN ENGINEER
2/10/04

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
3			
2	02-10-04		RFI 676
1	08-25-03		REVISED TITLE BLOCK
C	08-15-03		RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : yw:\Projects\NCDOT\Y-2547\cc\rdwy\Y2547cc.typ

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

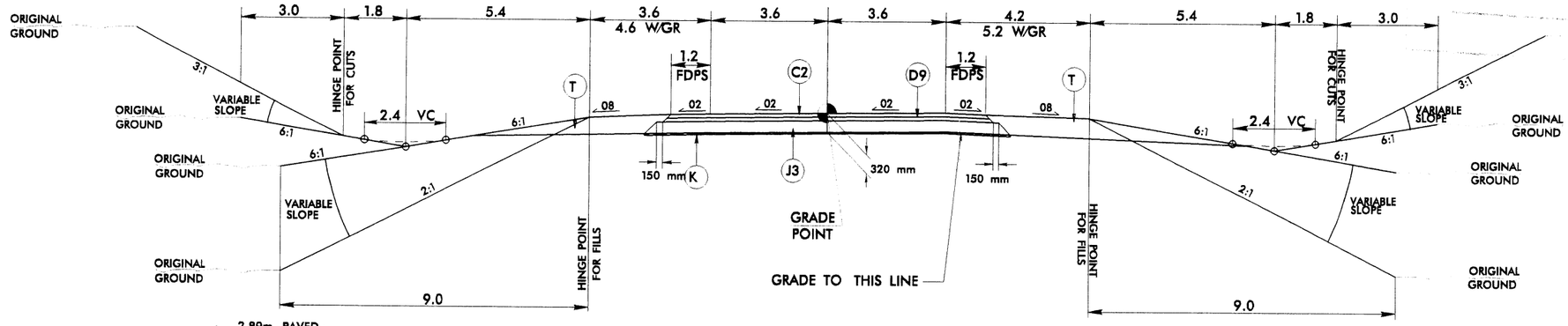
FINAL PLANS
TYPICAL SECTIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	2D

RELEASE FOR CONSTRUCTION

DATE: 12-01-2003

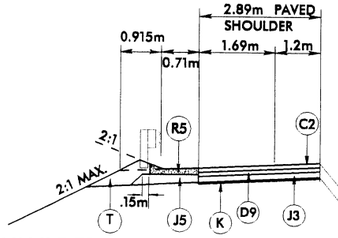
–RPAY1–, –RPBDY1– & –RPCY1–



TYPICAL SECTION NO. 5

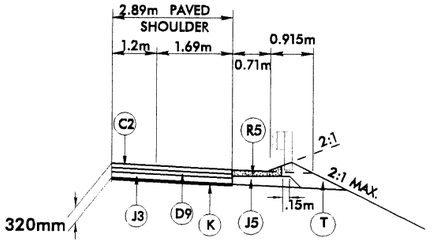
USE TYPICAL SECTION NO. 5 FOR THE FOLLOWING:

–RPAY1– STA. 10+00.000 TO 17+04.092
–RPBDY1– STA. 10+00.000 TO 18+88.903 (BEGIN BRIDGE)
–RPBDY1– STA. 19+52.900 (END BRIDGE) TO 22+68.008
–RPCY1– STA. 10+00.000 TO 18+24.333



SHOULDER BERM WITH GUARDRAIL TO BE USED

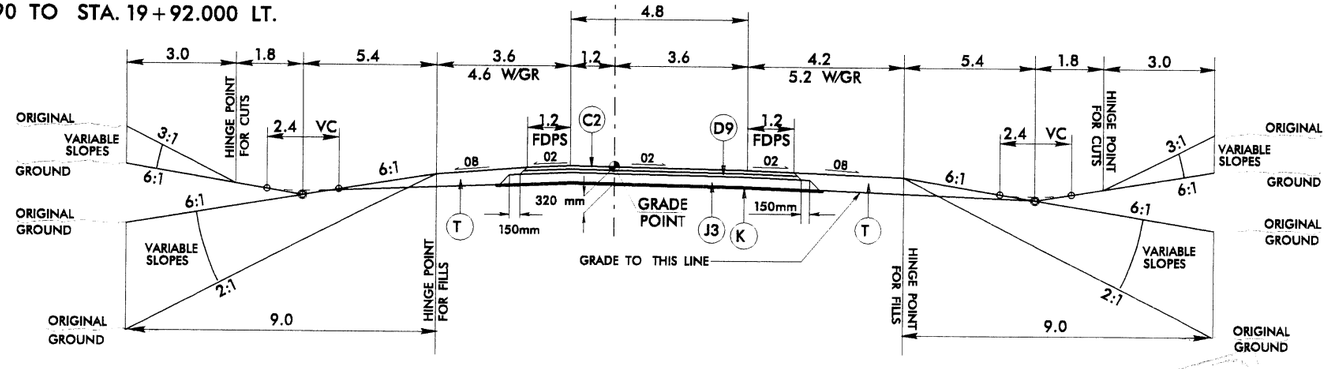
–RPBDY1– STA. 15+80.000 TO STA. 18+79.890 LT.
–RPBDY1– STA. 19+56.190 TO STA. 19+92.000 LT.



SHOULDER BERM WITH GUARDRAIL TO BE USED

–RPCY1– STA. 10+00.000 TO STA. 15+36.000 RT.
–RPBDY1– STA. 19+60.620 TO STA. 20+80.000 RT.

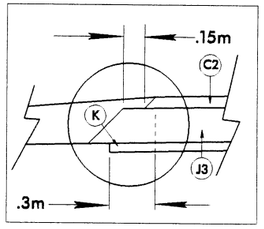
–RPBY1–



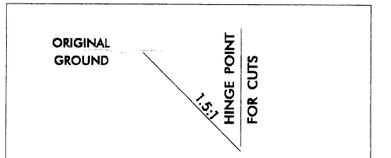
TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 FOR THE FOLLOWING:

–RPBY1– STA. 10+00.000 TO 16+94.950



(LIMITS OF STABILIZATION–TYP)



USE IN CONJUNCTION WITH TYPICAL SECTION NO. 6 FOR LOCATION OF ROCK

–RPBY1– STA. 11+45 TO STA. 12+40

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS K. HEIGHTER III

Thomas K. Heighter III 12/1/03

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK E. MORRISON

12/1/03

REVISIONS			
5			
4		12-01-03	REVISED BERM GUTTER DETAIL
3		11-14-03	CHANGED J4 TO J5
2		10-01-03	DELETED DUPLICATE STATIONS BER GUTTER RT.
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

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Document Control Number :

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

TYPICAL SECTIONS

28-DEC-2003 15:23
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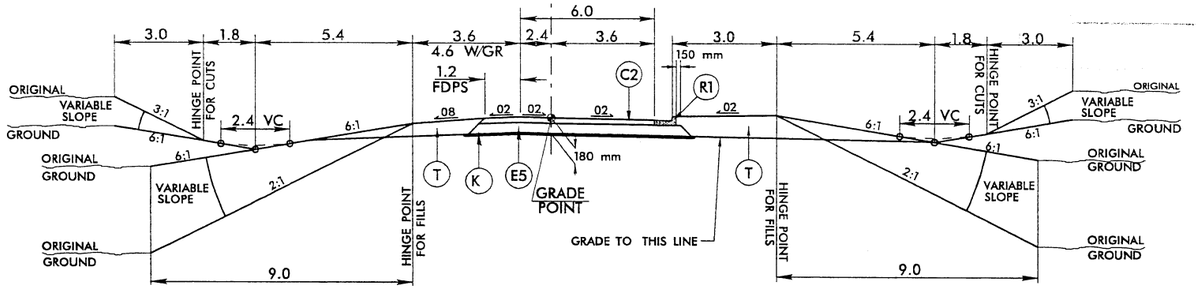
PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	2E

METRIC

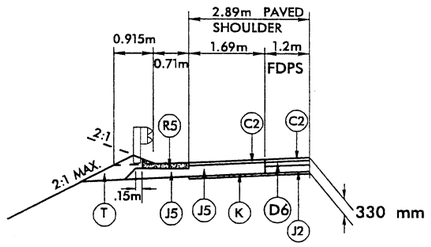
RELEASED FOR CONSTRUCTION

DATE

-LPAY1-

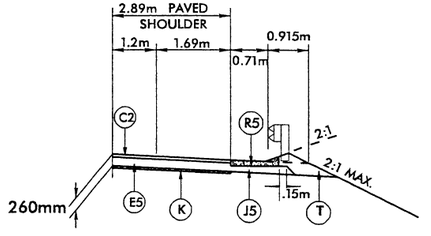


TYPICAL SECTION NO. 7



USE TYPICAL SECTION NO. 7 FOR THE FOLLOWING:

-LPAY1- STA. 10+00.000 TO 14+05.892



SHOULDER BERM WITH GUARDRAIL TO BE USED

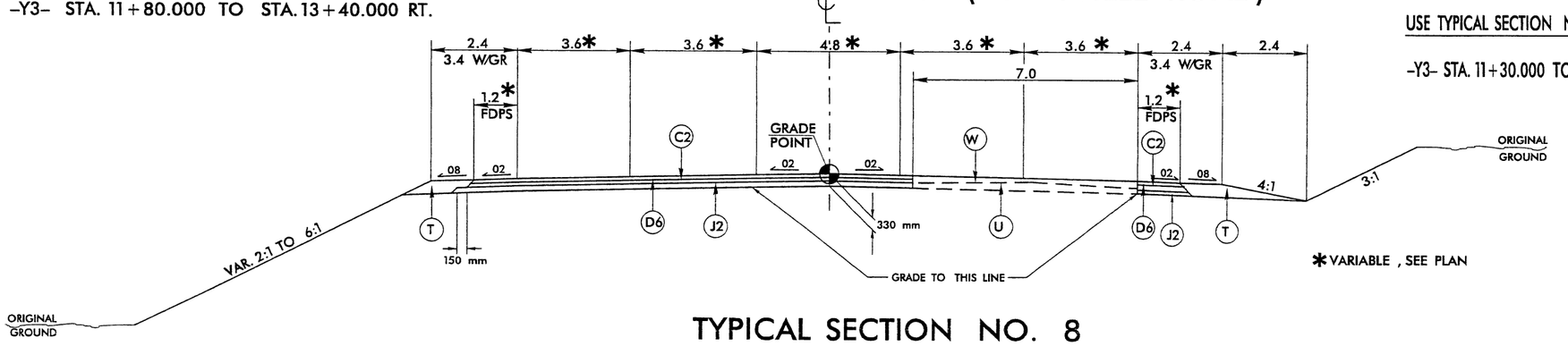
-LPAY1- STA. 13+40.074 TO STA. 14+05.892 RT.

SHOULDER BERM WITH GUARDRAIL TO BE USED

-Y3- STA. 12+40.000 TO STA. 13+40.000 LT.

-Y3- STA. 11+80.000 TO STA. 13+40.000 RT.

-Y3- (ROLESVILLE ROAD)



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8 FOR THE FOLLOWING:

-Y3- STA. 11+30.000 TO 14+53.000

REVISIONS			
5			
4			
3	02-10-04		REVISED PER/NCDOT COMMENTS
2	12-01-03		REVISED BERM GUTTER DETAIL
1	08-25-03		REVISED TITLE BLOCK
0	08-15-03		RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER 2/10/04

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CHECKED BY: _____ DATE: _____

Document Control Number :

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

TYPICAL SECTIONS

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
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North Carolina Constructors

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	2F

RELEASE FOR CONSTRUCTION

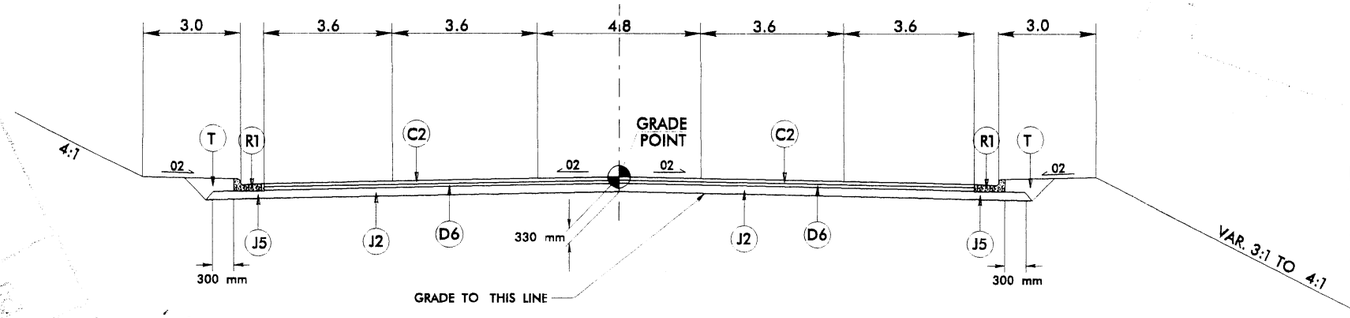
DATE: 8-25-2003

RECEIVED

DRAWING HAS BEEN UPDATED AFT DATE

R.E.'s 4bb does not apply 5-29-03 Bridge 15 phase 2 from NCC 12/12/03

℄ –Y3– (ROLESVILLE ROAD)

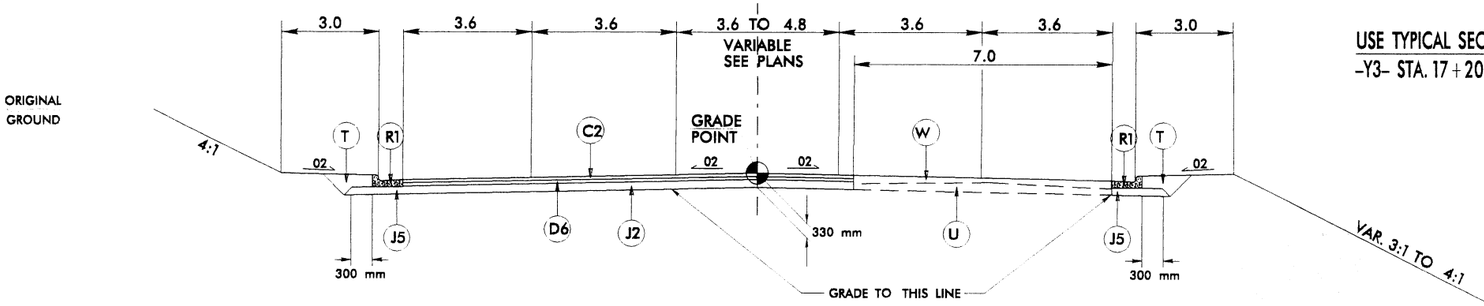


USE TYPICAL SECTION NO. 9 FOR THE FOLLOWING:

–Y3– STA. 13+90.000 TO 14+93.707 (BEGIN BRIDGE) RT.
–Y3– STA. 14+53.000 TO 14+93.707 (BEGIN BRIDGE) LT.
–Y3– STA. 15+69.687 (END BRIDGE) TO 17+20.000

TYPICAL SECTION NO. 9

℄ –Y3– (ROLESVILLE ROAD)



USE TYPICAL SECTION NO. 10 FOR THE FOLLOWING:

–Y3– STA. 17+20.000 TO 20+21.003

TYPICAL SECTION NO. 10

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North Carolina Constructors

REVISIONS			
5			
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1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER 5/25/03

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

12/19/03

PAVEMENT DESIGN ENGINEER

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

TYPICAL SECTIONS

12-AUG-2003 14:25
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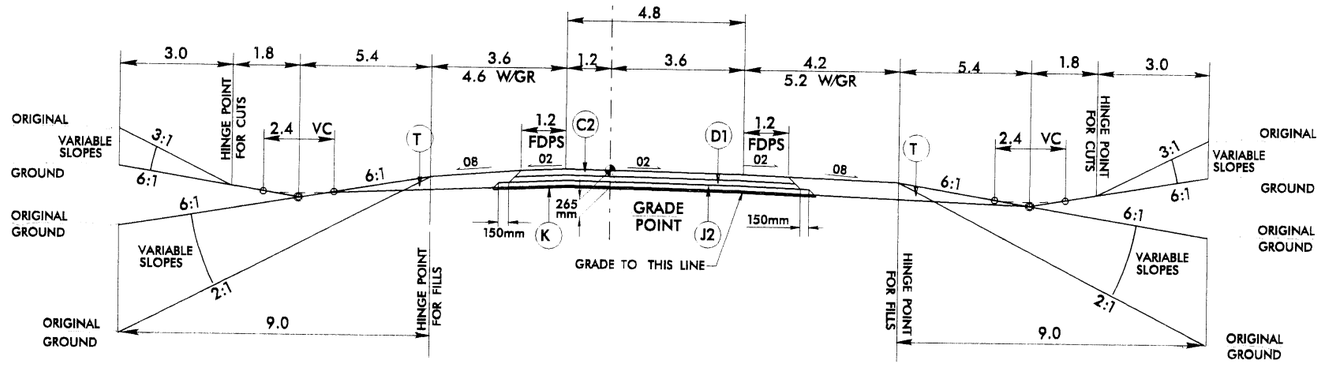
PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	2G

RELEASE FOR CONSTRUCTION

DATE: 8-25-2003

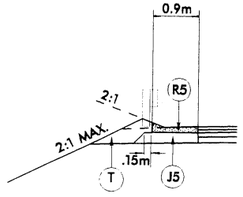
–RPAY3– & –RPDY3–



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11 FOR THE FOLLOWING:

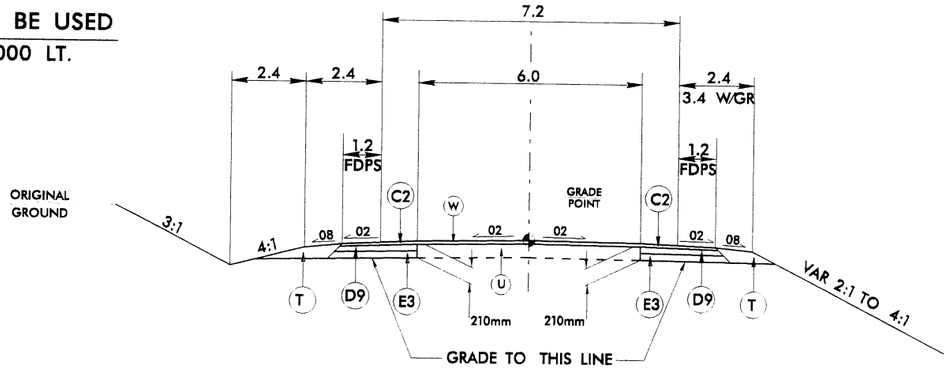
–RPAY3– STA. 10+00.000 TO 14+59.390
–RPDY3– STA. 10+00.000 TO 13+81.520



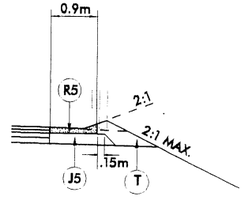
SHOULDER BERM WITH GUARDRAIL TO BE USED

–Y102– STA. 13+72.000 TO STA. 13+94.000 LT.

–Y102– (KNIGHTDALE–EAGLE ROCK RD.)



TYPICAL SECTION NO. 12



SHOULDER BERM WITH GUARDRAIL TO BE USED

–Y102– STA. 13+72.000 TO STA. 13+80.000 RT.

USE TYPICAL SECTION NO. 12 FOR THE FOLLOWING:

–Y102– STA. 12+75.000 TO 13+92.308 (BEGIN BRIDGE)
–Y102– STA. 15+29.368 (END BRIDGE) TO 17+08.000

DRAWING HAS BEEN UPDATED BY RTI

606 200mm ABC 9-16-03

12/19/03

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION:

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER 8/25/03

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

PAVEMENT DESIGN ENGINEER

DRAWN BY: DATE:
CHECKED BY: DATE:

Document Control Number :

Filename : Y:\Projects\NCDOT\r-2547cc\rdwy\r2547cctyp

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

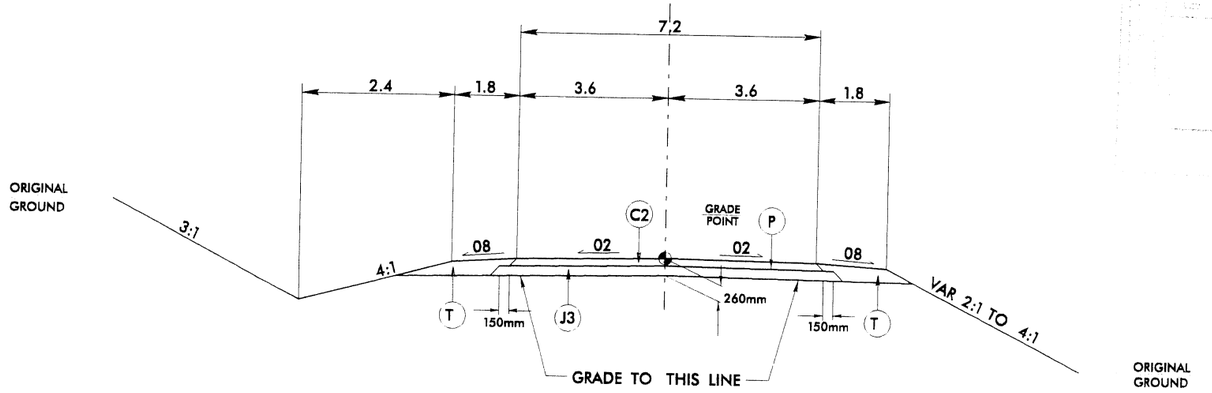
TYPICAL SECTIONS

METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-2547CC	2H

RELEASE FOR CONSTRUCTION

DATE: 8-25-2003

–SR1–, –SR2–, & –SR3–



TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13 FOR THE FOLLOWING:
-SR1- STA. 10+14.200 TO 12+24.769
-SR2- STA. 10+14.200 TO 15+10.250
-SR3- STA. 10+09.905 TO 14+24.202

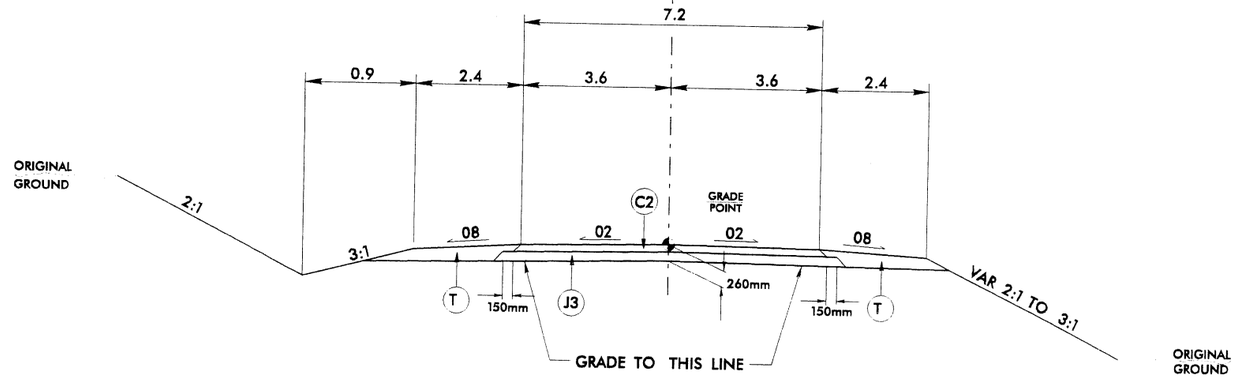
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

Pavement Design for SR1, SR2 & SR3 only

12/19/03

Clark S Morrison

–DETOUR–



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14 FOR THE FOLLOWING:
-DETOUR- STA. 12+30.000 TO 17+06.804

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS E. KICKLIGHTER

5/25/03

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS			
NO.	BY:	DATE:	DESCRIPTION OF REVISION:
5			
4			
3			
2			
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : Y:\Projects\NCDOT\r-2547cc\rdwy\r2547cctyp

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

TYPICAL SECTIONS

DETOUR DESIGN

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	21

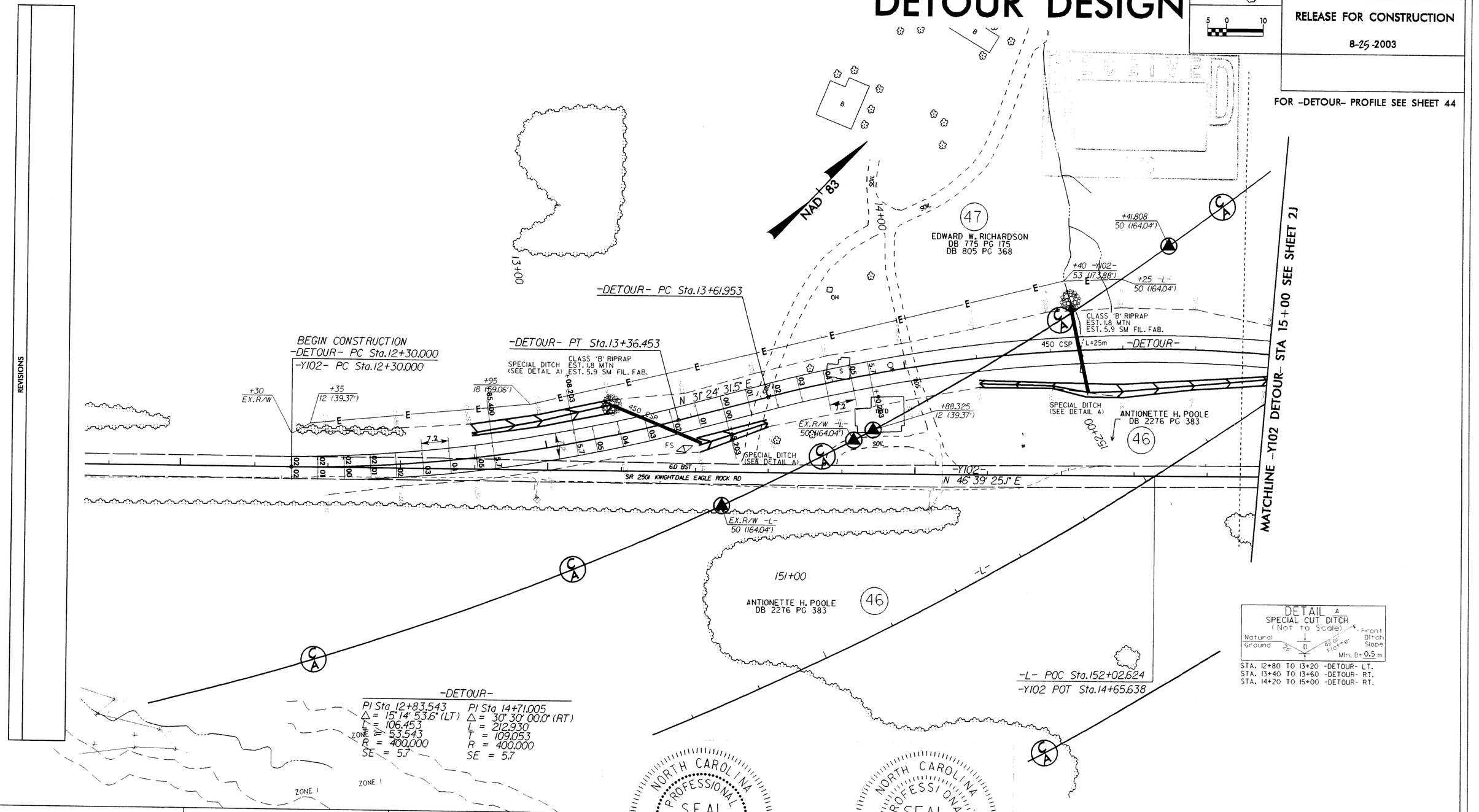
METRIC

5 0 10

RELEASE FOR CONSTRUCTION

8-25-2003

FOR –DETOUR– PROFILE SEE SHEET 44



-DETOUR-

PI Sta 12+83.543	PI Sta 14+71.005
Δ = 15°14'53.6" (LT)	Δ = 30°30'00.0" (RT)
L = 106.453	L = 212.930
T = 53.543	T = 109.053
R = 400.000	R = 400.000
SE = 5.7	SE = 5.7

-L- POC Sta.152+02.624
-Y102 POT Sta.14+65.638

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)

STA. 12+80 TO 13+20 -DETOUR- LT.
STA. 13+40 TO 13+60 -DETOUR- RT.
STA. 14+20 TO 15+00 -DETOUR- RT.

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER
THOMAS KIRKLAND CARTER III
ROADWAY DESIGN ENGINEER
5/25/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER
HENRY WELLS JR.
HYDRAULICS ENGINEER
5/16/03

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, P.A.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS			
6			
5			
4			
3			
2			
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : Y:\Projects\NCDOT\r-2547\cc\rdwy\r2547ccs02I.PSH

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 12+30 TO STA. 15+00 -DETOUR-

DETOUR DESIGN

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	21

METRIC

5 0 10

RELEASE FOR CONSTRUCTION

8-25-2003

FOR -DETOUR- PROFILE SEE SHEET 44

REVISIONS

MATCHLINE -Y102 DETOUR- STA 15+00 SEE SHEET 21

NAD '83

15+00 153+00 16+00 17+00

-DETOUR- PT Sta.15+74.883

-DETOUR- PC Sta.16+00.327

CHORD

+89.010 -Y102- 29 (95.14')

+80 -Y102- 21.37 (71.32')

+61.808 50 (164.04')

+05 21.838 (71.65')

+45 22 (72.18')

+64.442 15 (49.21')

+00 13 (42.65')

+80 EX.R/W

+09.912 EX.R/W

END CONSTRUCTION -DETOUR- PT Sta.17+06.804 -Y102- POT Sta.17+00.000

-Y102- POT Sta.17+09.912

N 61° 54' 31.5" E

N 46° 39' 25" E

-DETOUR-

-Y102-

EX.R/W -L- 50 (164.04')

SR 2501 KNIGHTDALE EAGLE ROCK RD

CLASS 'B' RIP RAP EST. 1.2 MTN EST. 4.8 SM FF

GRADE TO DRAIN

375 CONC

300 CONC

660 BK HW

680 BK HW

960 mm CONC

+41.808 50 (164.04')

+45 -Y102- 14 (45.93')

W/LT

ISBKD

DECK

SOIL

47 EDWARD W. RICHARDSON DB 775 PG 175 DB 805 PG 368

51 CRYSTAL LOLITA MITCHELL DB 6865 PG 249

48 JAMES H. POOLE, JR. DB 2391 PG 893

49 BERNARD PITTS and wife, ALICE PITTS DB 2343 PG 476

46 ANTIONETTE H. POOLE DB 2276 PG 383

50 RANDOLPH NEAL and wife, SARA BRIDGES NEAL DB 1872 PG 658

ANTIONETTE H. POOLE DB 2276 PG 383

MABLE A. MCLEOD and husband, HERMAN G. MCLEOD DB 2272 PG 303

CHARLIE HEZEKIAH WINSTON and wife, CRISTINE M. WINSTON DB 1764 PG 330

-DETOUR-
PI Sta 16+53.882
Δ = 15°15'06.4" (LT)
L = 106.478
T = 53.555
R = 400.000
SE = 5.7

THE LPA GROUP TRANSPORTATION CONSULTANTS

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
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CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS			
NO.	BY:	DATE:	DESCRIPTION OF REVISION
1		8-25-03	REVISED TITLE BLOCK
0		8-19-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS FRANKLIN KLIGHTER III

ROADWAY DESIGN ENGINEER 8/25/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.

HYDRAULICS ENGINEER

DRAWN BY: DATE:

CHECKED BY: DATE:

Document Control Number :

Filename : Y:\Projects\NCDOT\r-2547\cc\rdwy\r2547ccs02d.dsh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 15+00 TO STA. 17+06.804 -DETOUR-

NATURAL STREAM DESIGN
DETAIL SHEET

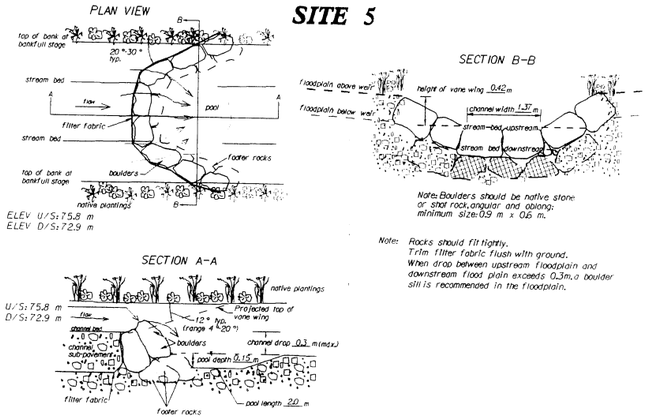
PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	2K

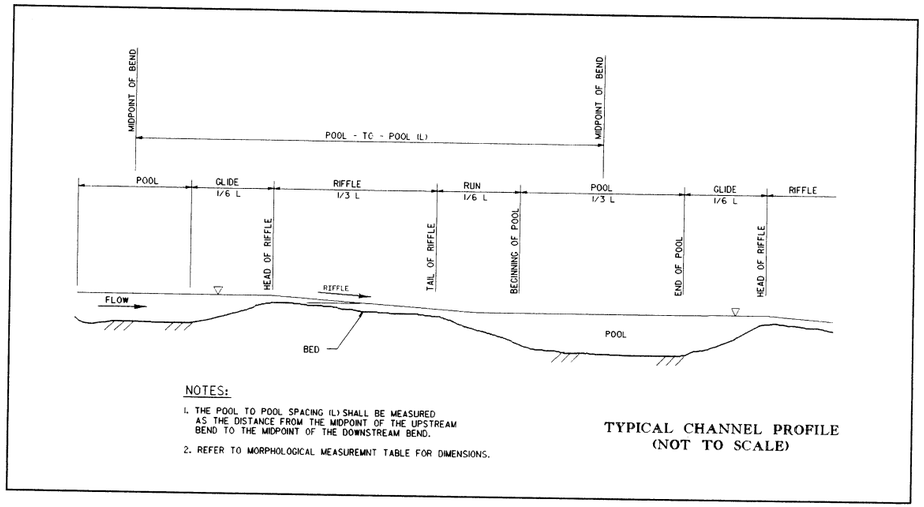
RELEASE FOR CONSTRUCTION

DATE: 8-25-2003

NOTE: THE STREAM RESTORATION AND ASSOCIATED DETAILS WERE DESIGNED AND PROVIDED BY NCDOT.

CROSS VANE ROCK WEIR DETAIL SITE 5



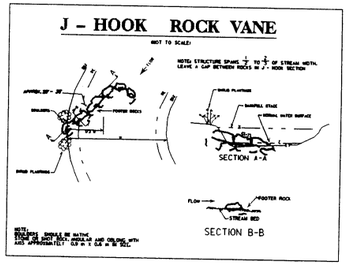


NOTES:

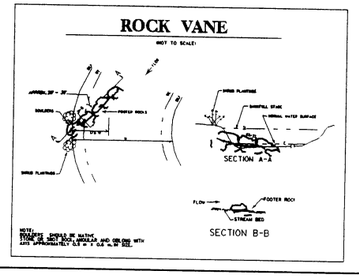
1. THE POOL TO POOL SPACING (L) SHALL BE MEASURED AS THE DISTANCE FROM THE MIDPOINT OF THE UPSTREAM BEND TO THE MIDPOINT OF THE DOWNSTREAM BEND.
2. REFER TO MORPHOLOGICAL MEASUREMNT TABLE FOR DIMENSIONS.

TYPICAL CHANNEL PROFILE (NOT TO SCALE)

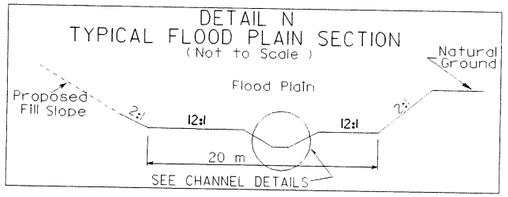
J - HOOK ROCK VANE



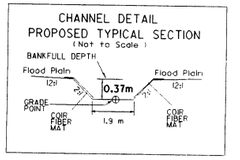
ROCK VANE



DETAIL N
TYPICAL FLOOD PLAIN SECTION
(Not to Scale)

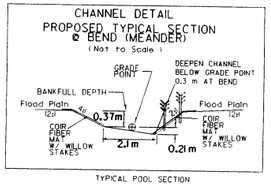


CHANNEL DETAIL
PROPOSED TYPICAL SECTION
(Not to Scale)

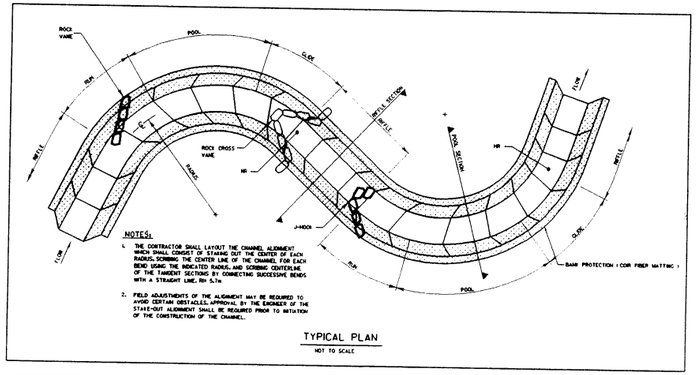


TYPICAL RIFFLE SECTION

CHANNEL DETAIL
PROPOSED TYPICAL SECTION
@ BEND (MEANDER)
(Not to Scale)



TYPICAL POOL SECTION



NOTES:

1. THE CONTRACTOR SHALL LAYOUT THE CHANNEL ALIGNMENT WHICH SHALL CONSIST OF STAKING OUT THE CENTER OF EACH RADIUS, SCRIBING THE CENTER LINE OF THE CHANNEL FOR EACH BEND USING THE INDICATED RADIUS, AND SCRIBING CENTERLINE OF THE TANGENT SECTIONS BY CONNECTING SUCCESSIVE BENDS WITH A STRAIGHT LINE, R= 0.1m
2. FIELD ADJUSTMENTS OF THE ALIGNMENT MAY BE REQUIRED TO AVOID CERTAIN OBSTACLES, APPROVAL BY THE ENGINEER OF THE STAKE-OUT ALIGNMENT SHALL BE REQUIRED PRIOR TO INITIATION OF THE CONSTRUCTION OF THE CHANNEL.

TYPICAL PLAN
NOT TO SCALE

NOTES:

PLANTINGS SHOULD BE PLACED ABOVE BANKFULL DEPTH.
LIVE STAKES TO BE PLACED ON OUTSIDE OF ALL MEANDER BENDS.

CROSS VANES SHALL BE PLACED AT THE HEAD OF EVERY RIFFLE.

J-HOOKS AND VANES WILL BE PLACED ALTERNATELY AT THE TOE OF EVERY OTHER RIFFLE.

FOR DETAILS OF CROSS VANES, J-HOOKS, AND ROCK VANES SEE SHEETS 10A,10B,AND 10C.

SEE SHEET 10D FOR TYPICAL CHANNEL PROFILE.

THE LPA GROUP — TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION:
5			
4			
3			
2			
1		8-25-03	REVISED TITLE BLOCK
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

NATURAL STREAM DETAIL SHEET

22-AUG-2003 12:19
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PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	2L

METRIC

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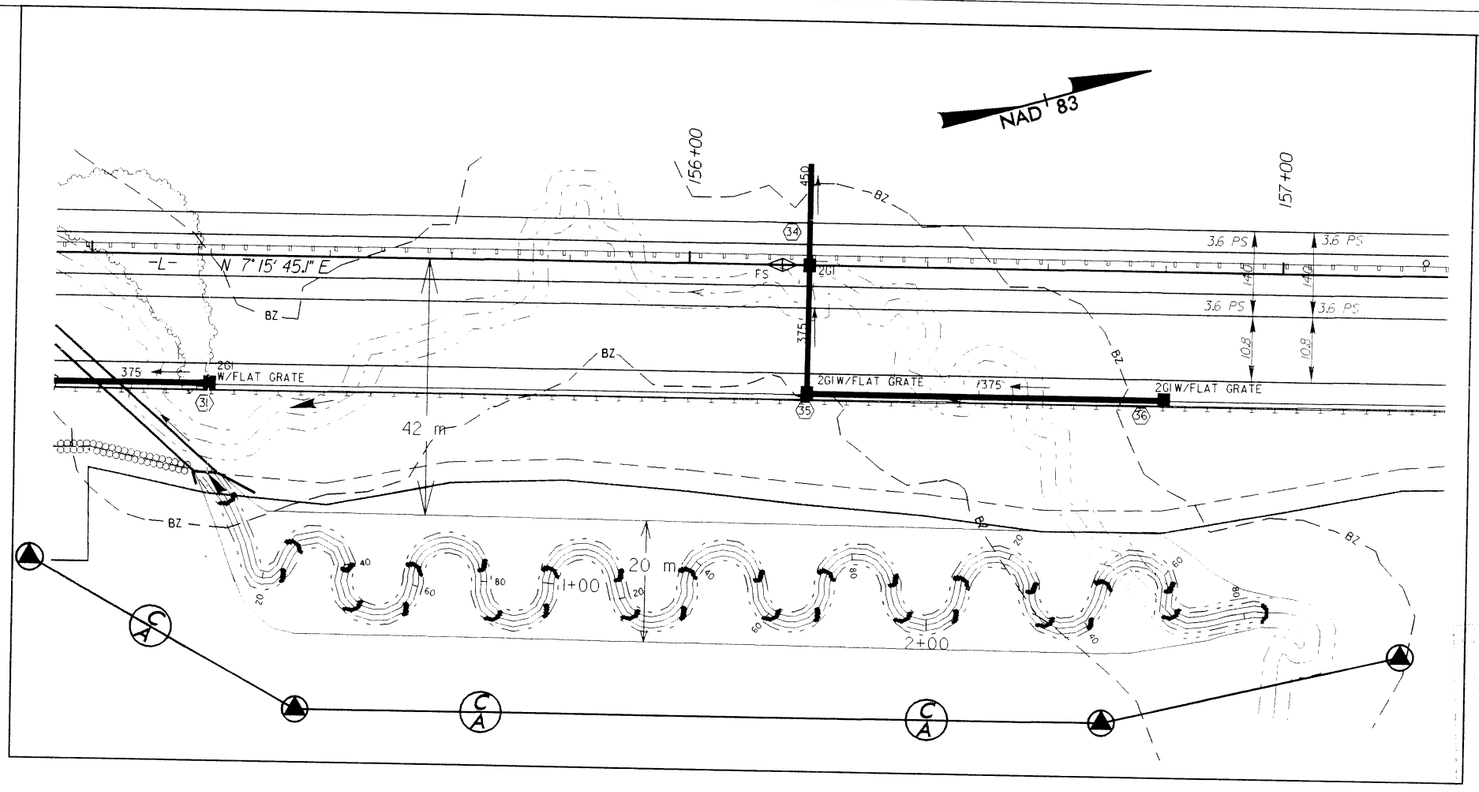
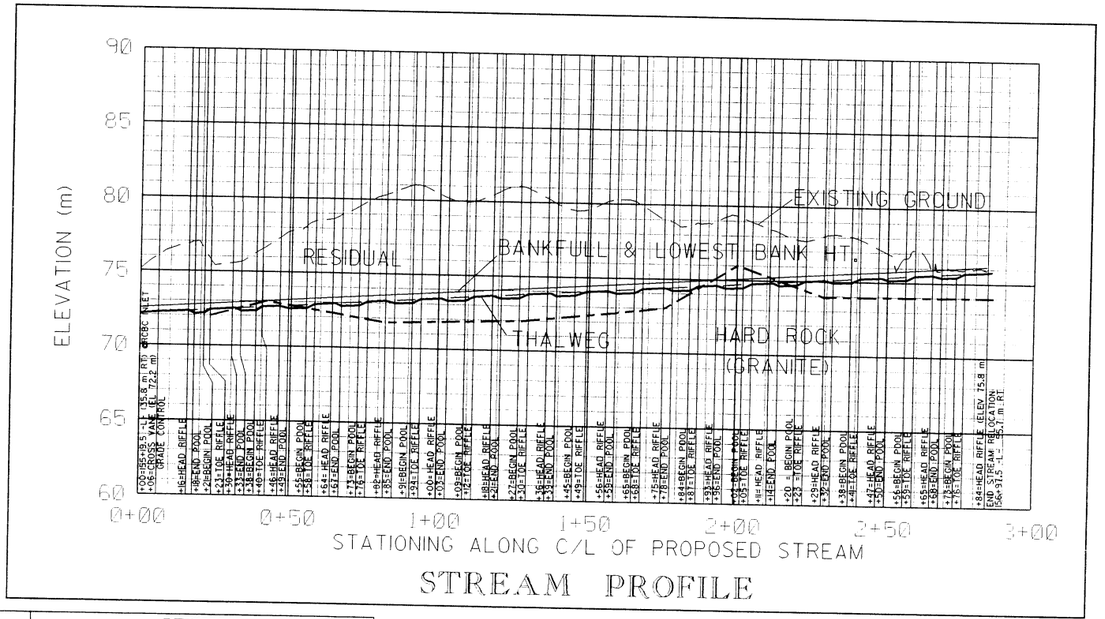
RELEASE FOR CONSTRUCTION

DATE: 8-25-2003

NOTE: THE STREAM RESTORATION AND ASSOCIATED DETAILS WERE DESIGNED AND PROVIDED BY NCDOT.



LEGEND
- VANE
- J-HOOK
- CROSS-VANE



STREAM PROFILE

NATURAL STREAM DESIGN

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

NATURAL STREAM DETAIL SHEET

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	2M

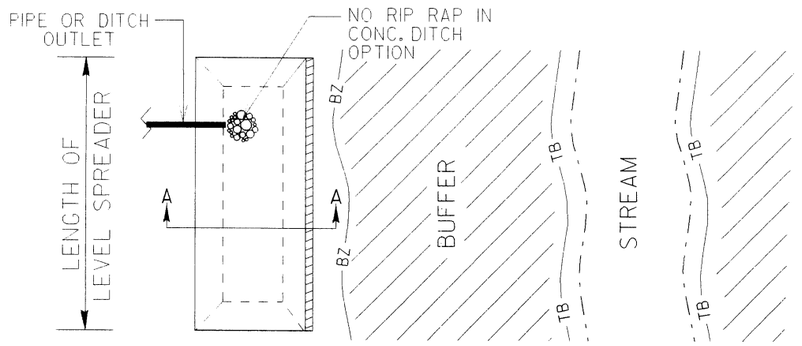
RELEASE FOR CONSTRUCTION

DATE: 12-16-2003

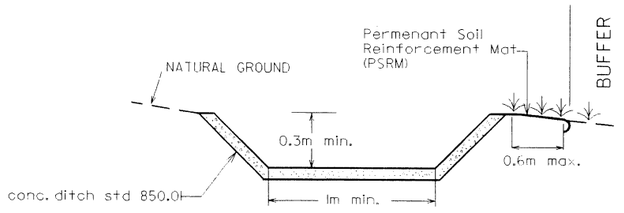
LEVEL SPREADER DETAIL

(NOT TO SCALE)

PLAN VIEW



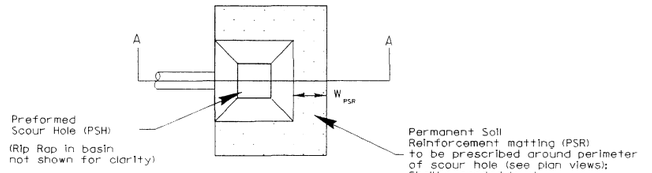
SECTION-AA CONCRETE PAVED DITCH LEVEL SPREADER



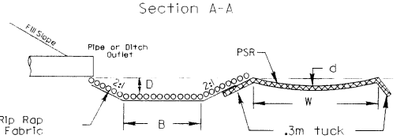
APPROXIMATE STA. 150+00 -L- LT & RT.
APPROXIMATE STA. 154+80 -L- LT.
APPROXIMATE STA. 158+45 -L- LT.
APPROXIMATE STA. 158+70 -L- RT.
APPROXIMATE STA. 181+00 -L- RT.
APPROXIMATE STA. 12+20 -Y3- RT.

PREFORMED SCOUR HOLE

(NOT TO SCALE)



Section A-A

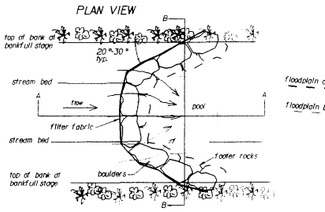


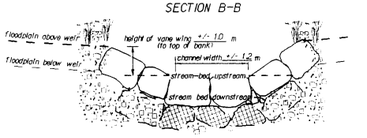
NOTE: "B" denotes size of basin; For example: 1.5m x 1.5m PSH, B= 1.5

NOTE: The Permanent Soil Reinforcement matting (PSR) shall be seeded with native grasses at installation.

STATION	B M	D M	W_{PSR} M	d M	CLASS I RIP RAP MTONS	DDE M^3	FILTER FABRIC M^2	PSR M^2
145+29 -L-	2.4	0.5	1.2	0.3	38	28.6	54.8	41.0
147+00 -L-	1.5	0.5	1.2	0.3	20	16.3	35.7	34.0
147+60 -L-	1.2	0.5	1.2	0.3	18	14.3	32.2	32.4
150+28 -L-	1.8	0.5	1.2	0.3	23	18.4	39.3	35.6
154+60 -L-	1.5	0.5	1.2	0.3	20	16.3	35.7	34.0
154+83 -L-	1.8	0.5	1.2	0.3	23	18.4	45.2	35.6
158+49 -L-	1.8	0.5	1.2	0.3	23	18.4	45.2	35.6
158+69 -L-	1.8	0.5	1.2	0.3	23	18.4	45.2	35.6
180+39 -L-	1.2	0.5	1.2	0.3	18	14.3	32.2	32.4
185+23 -L-	1.5	0.5	1.2	0.3	20	16.3	35.7	34.0
186+09 -L-	1.2	0.5	1.2	0.3	18	14.3	32.2	32.4
15+35 -RPCYI-	1.5	0.5	1.2	0.3	20	16.3	35.7	34.0
15+80 -RPBDYI-	1.2	0.5	1.2	0.3	18	14.3	32.2	32.4

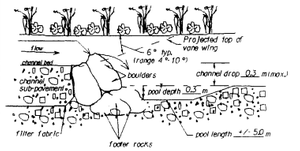
CROSS VANE ROCK WEIR DETAIL





Note: Boulders should be native stone or shot rock, angular and oblong; minimum size: 0.9 m x 0.6 m.

Note: Rocks should fit tightly. Trim filter fabric flush with ground. When drop between upstream floodplain and downstream flood plain exceeds 0.3m, a boulder sill is recommended in the floodplain.



STATION	OFFSET
14+73 -RPCYI-	30.4M RT
17+83.5 -RPBDYI-	41.6M RT
17+77 -RPBDYI-	48.8M RT

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THE LPA GROUP of North Carolina, p.a.
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Raleigh, North Carolina 27609

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CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

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REVISIONS			
5			
4			
3		12-16-03	ADDED CROSS VANE DETAIL
2		10-01-03	REVISED STATIONS FOR PSH
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION
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NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
12/17/03
HYDRAULICS ENGINEER

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

PREFORMED SCOUR HOLE AND LEVEL SPREADER DETAIL

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PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	2N

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RELEASE FOR CONSTRUCTION

DATE: 8-25-2003

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

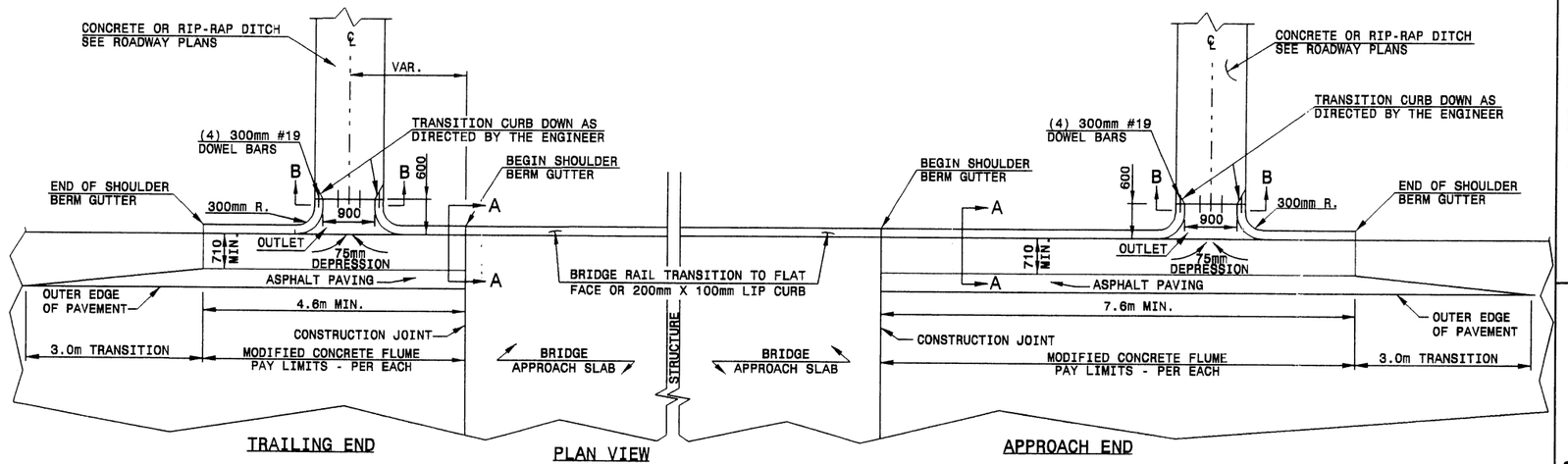
METRIC DETAIL DRAWING FOR

MODIFIED CONCRETE FLUME

WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1

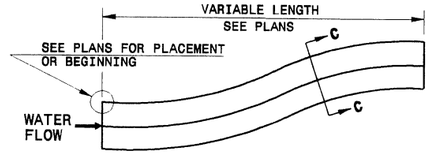
MODFLMDTCH



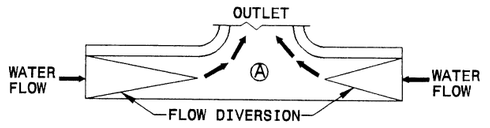
TRAILING END

PLAN VIEW

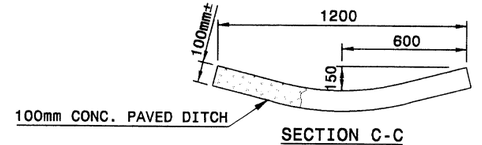
APPROACH END



DOWNGRADE OR SAG



SAG



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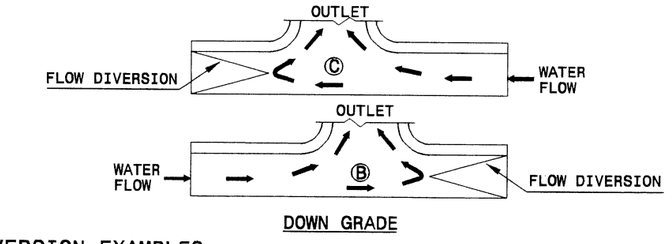
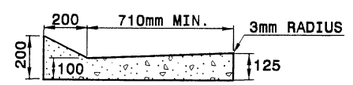


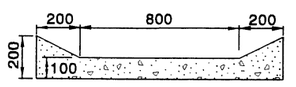
DOWN GRADE

FLOW DIVERSION EXAMPLES

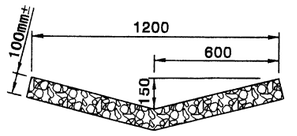


SHOULDER BERM GUTTER

SECTION A-A



SECTION B-B



RIP-RAP LINED DITCH

NOTES:

- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 450mm PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

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

METRIC DETAIL DRAWING FOR

MODIFIED CONCRETE FLUME

WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1

MODFLMDTCH

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
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North Carolina Constructors

REVISIONS			
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1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR. 8-15-03 HYDRAULICS ENGINEER

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

MODIFIED CONCRETE FLUME DETAIL

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R-2547CC	20

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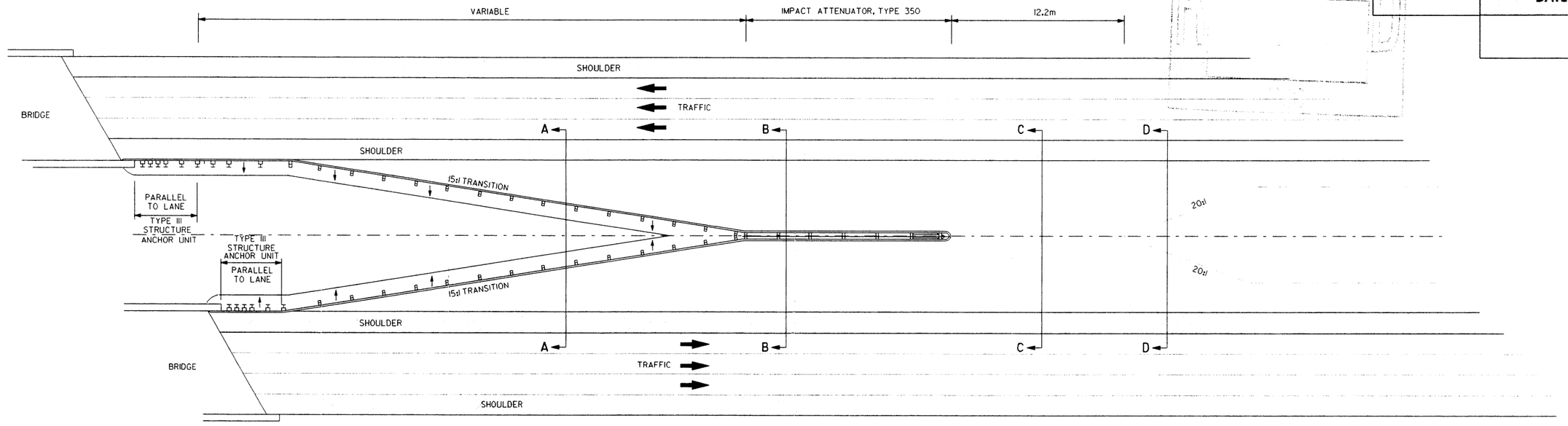
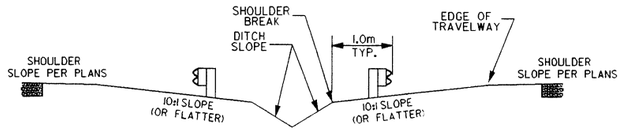
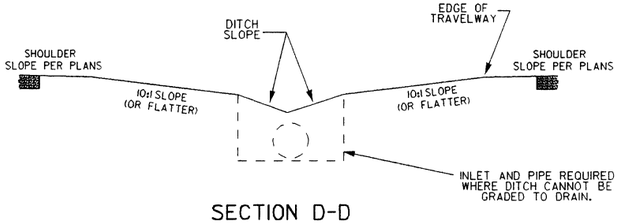


STEEL BEAM GUARDRAIL ON BRIDGE APPROACH
IN 14m MEDIAN (ALL SPEEDS)

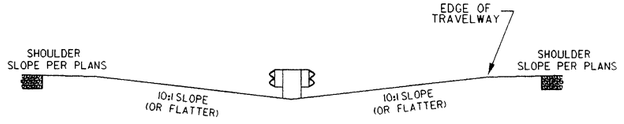


SECTION A-A

SECTION C-C



SECTION D-D



SECTION B-B

NOTES:

1. 10:1 OR FLATTER DITCH SLOPE TO EXTEND THROUGHOUT AND 12.2m BEYOND END OF THE IMPACT ATTENUATOR.
2. GUARDRAIL PROTECTION ON OUTSIDE SHOULDERS SHALL BE AS DETAILED ON ROADWAY STANDARD DRAWING 862.01, SHEET 2 OF 11.
3. DRAINAGE TO BE AS SHOWN ON THE PLANS OR AS DETERMINED BY THE ENGINEER.

THE LPA GROUP
TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
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Raleigh, North Carolina 27609

North Carolina Constructors

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1			
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NORTH CAROLINA PROFESSIONAL SEAL 23883 ENGINEER JEFFERY S. DOUGLAS

8/15/03

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DETAIL OF GUARDRAIL PROTECTION ON DUAL BRIDGE APPROACH MEDIAN

14-AUG-2003 08:38
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NOTES:

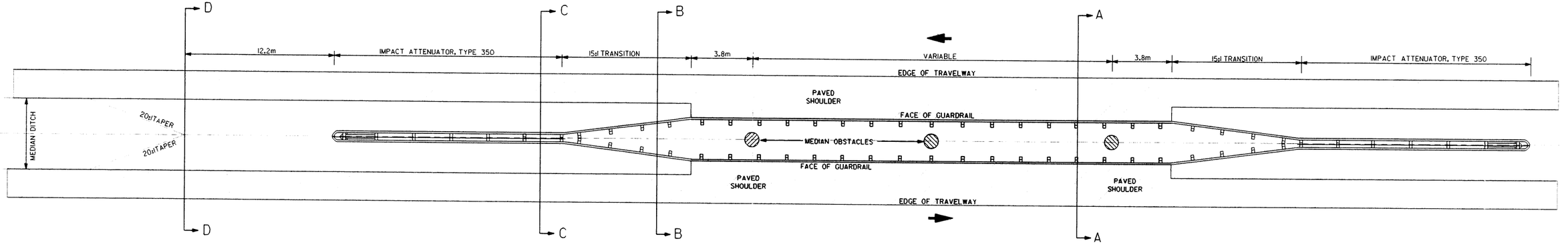
1. 10:1 OR FLATTER DITCH SLOPES TO EXTEND THROUGHOUT AND 12.2 M BEYOND EACH END OF IMPACT ATTENUATORS.
2. THE CRITICAL AREA BEHIND THE END TREATMENTS SHALL BE FREE OF FIXED OBSTACLES, AND HAVE A FILL SLOPE OF 10:1 OR FLATTER, OR A CUT SLOPE OF 10:1 OR FLATTER.
3. WHEN THE DISTANCE FROM FACE OF OBSTRUCTION TO FACE OF GUARDRAIL IS BETWEEN 1.1m AND 1.7m, BEGIN 0.953m POST SPACING AT A POINT 7.620M BEFORE REACHING THE OBSTRUCTION AND CARRY THROUGHOUT ITS LENGTH. IF THE OFFSET IS LESS THAN 1.1m USE CONCRETE BARRIER AS SHOWN ON ROADWAY STANDARD DRAWING 862.01, SHEET 1 OF 11.
4. DRAINAGE TO BE AS SHOWN ON THE PLANS OR AS DETERMINED BY THE ENGINEER.

METRIC

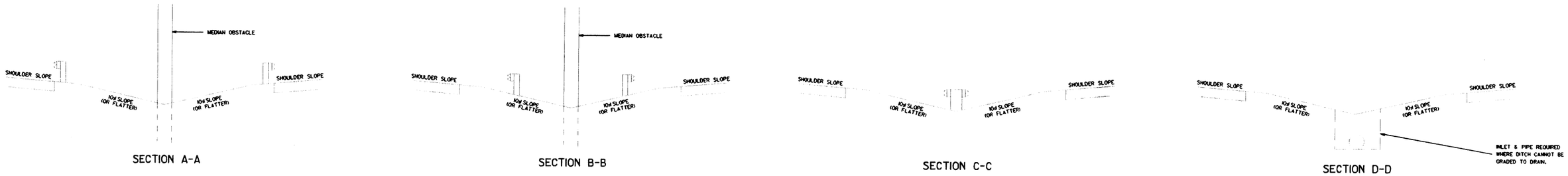
PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	2P

RELEASE FOR CONSTRUCTION

DATE 8-15-2003



STEEL BEAM 'W' GUARDRAIL FOR OBSTACLES IN 14m MEDIANS (ALL SPEEDS)



SECTION A-A SECTION B-B SECTION C-C SECTION D-D

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 28033 ENGINEER JEFFREY S. DOUGLAS
8/15/03

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : Y:\Projects\NCDOT\r-2547\ccrdwy\r2547cc2P.PSH

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DETAIL OF GUARDRAIL PROTECTION FOR MEDIAN OBSTRUCTIONS

14-AUG-2003 08:39
Y:\Projects\NCDOT\r-2547\ccrdwy\r2547cc2P.PSH

DITCH DETAILS

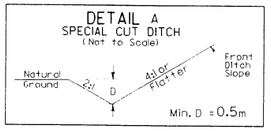
PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	3

METRIC 5 0 10

RELEASE FOR CONSTRUCTION

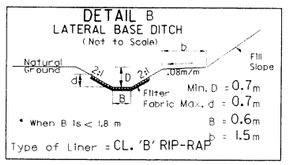
DATE: 12-16-2003

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



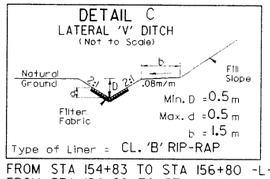
FROM STA 12+80 TO STA 13+20 -RPBYI- LT.
FROM STA 11+40 TO STA 12+00 -RPBDYI- LT.
FROM STA 12+00 TO STA 13+20 -YI- RT.
FROM STA 22+60 TO STA 23+00 -YI- LT.
FROM STA 23+63 TO STA 23+95 -YI- LT.
FROM STA 13+70 TO STA 13+90 -YI- RT.
FROM STA 178+20 TO STA 181+00 -L- LT.
FROM STA 10+27 TO STA 11+00 -SRI- RT.
FROM STA 10+23 TO STA 10+80 -SRI- LT.
FROM STA 15+60 TO STA 16+40 -RPAYI- RT.
FROM STA 13+00 TO STA 14+20 -SR3- RT.
FROM STA 12+20 TO STA 14+20 -SR3- LT.
FROM STA 12+80 TO STA 13+20 -DETOUR- LT.
FROM STA 13+40 TO STA 13+60 -DETOUR- RT.
FROM STA 14+20 TO STA 15+00 -DETOUR- RT.
FROM STA 15+40 TO STA 17+00 -YI02- RT.
FROM STA 12+20 TO STA 13+60 -RPDY3- LT.

DETAIL B
LATERAL BASE DITCH
(Not to Scale)



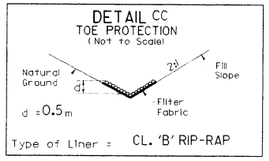
FROM STA 166+96 TO STA 167+80 -L- LT.

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



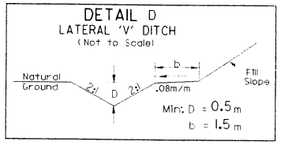
FROM STA 154+83 TO STA 156+80 -L- LT.
FROM STA 184+60 TO STA 184+90 -L- RT.
FROM STA 12+40 TO STA 13+40 -Y3- LT.

DETAIL CC
TOE PROTECTION
(Not to Scale)



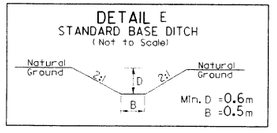
FROM STA 154+00 TO STA 155+18 -L- RT.
FROM STA 158+60 TO STA 159+40 -L- LT.
FROM STA 158+70 TO STA 159+00 -L- RT.
FROM STA 159+70 TO STA 160+60 -L- LT.
FROM STA 166+98 TO STA 167+80 -L- RT.
FROM STA 12+80 TO STA 15+40 -RPCYI- LT.
FROM STA 14+80 TO STA 15+80 -RPCYI- RT.
FROM STA 17+80 TO STA 18+40 -RPBDYI- RT.
FROM STA 17+80 TO STA 18+65 -RPBDYI- LT.
FROM STA 20+35 TO STA 21+00 -RPBDYI- RT.
FROM STA 13+00 TO STA 13+80 -RPBYI- RT.
FROM STA 11+71 TO STA 12+20 -Y3- LT.

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

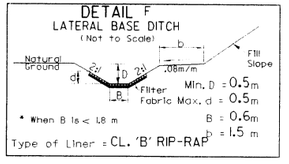


FROM STA 166+30 TO STA 166+96 -L- LT.
FROM STA 169+80 TO STA 171+40 -L- RT.
FROM STA 13+00 TO STA 13+40 -Y3- RT.
FROM STA 13+68 TO STA 14+20 -Y3- LT.

DETAIL E
STANDARD BASE DITCH
(Not to Scale)

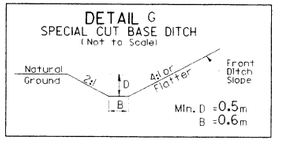


DETAIL F
LATERAL BASE DITCH
(Not to Scale)



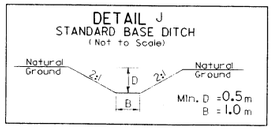
FROM STA 157+60 TO STA 158+70 -L- RT.
FROM STA 159+90 TO STA 163+20 -L- RT.
FROM STA 15+40 TO STA 16+60 -RPCYI- LT.
FROM STA 12+18 TO STA 13+00 -Y3- RT.

DETAIL G
SPECIAL CUT BASE DITCH
(Not to Scale)

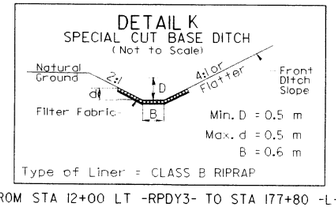


FROM STA 16+77 TO STA 18+00 -RPCYI- RT.
FROM STA 10+74 TO STA 11+59 -RPBYI- RT.

DETAIL J
STANDARD BASE DITCH
(Not to Scale)

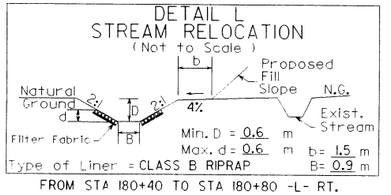


DETAIL K
SPECIAL CUT BASE DITCH
(Not to Scale)



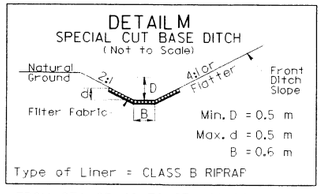
FROM STA 12+00 LT -RPDY3- TO STA 177+80 -L- RT.

DETAIL L
STREAM RELOCATION
(Not to Scale)



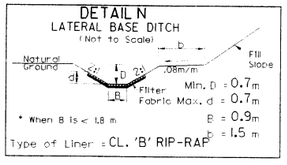
FROM STA 180+40 TO STA 180+80 -L- RT.

DETAIL M
SPECIAL CUT BASE DITCH
(Not to Scale)



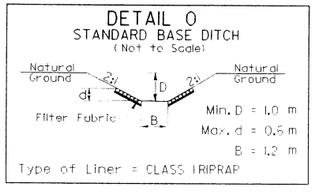
FROM STA 27+40 TO STA 28+60 -YI- LT.

DETAIL N
LATERAL BASE DITCH
(Not to Scale)



FROM STA 177+80 TO STA 180+40 -L- RT.

DETAIL O
STANDARD BASE DITCH
(Not to Scale)



THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION:
5			
4			
3			
2			
1		12-16-03	REV. DETAIL "L" ADDED DETAIL "M"
0		9-15-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
12-17-03
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : y:\Projects\NCDOT\r-2547\cc\rdwy\r2547ccs03.dsh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DITCH DETAILS

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COMPUTED BY: DJP DATE: 4-26-03
CHECKED BY: ______ DATE: ______

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	3H

RELEASE FOR CONSTRUCTION

8-15-2003

GUARDRAIL SUMMARY

	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS							IMPACT ATTENUATOR TYPE 350			SINGLE FACED PRECAST CONCRETE BARRIER STD. 857.01	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE III	GRAU 350	XI- MOD	CAT-1	AT-1	M-350	TYPE B-77	EA	G	NG		
-L-	144+46.926	145+46.171	LT	99.245			145+46.171	144+46	4.2	5.2					1			1								FILL SLOPE
-L-	144+49.534	145+20.208	LT	60.819			144+57.252	145+20.208	3.9	5.2	15.240		0.3		1											BEGIN BRIDGE (MEDIAN)
-L-	144+49.534	145+11.339	RT	61.800			144+49.632	145+11.339	3.8	5.2	15.240		0.3		1							1	1			BEGIN BRIDGE (MEDIAN)
-L-	144+20.000	144+84.606	RT	64.696			144+20.448	144+84.606	3.8	5.2					1											BEGIN BRIDGE
-L-	146+94.218	148+08.126	LT	113.908			146+94.218	148+00	4.2	5.2	15.240		0.3		1	1										BEGIN BRIDGE
-L-	146+65.816	147+30.992	LT	55.326			147+02	147+30.992	4.0		11.430		1.52		1							1	1			BEGIN BRIDGE (MEDIAN)
-L-	146+57.035	147+30.992	RT	73.957			146+75	147+30.992	3.8			11.430		1.22	1											END BRIDGE (MEDIAN)
-L-	146+29.839	147+72.591	RT	142.752			146+29.839	147+40	4.2	5.2					1			1								OH SIGN "A"147+40 RT
-L-	151+28.519	152+17.804	RT	89.285			151+28.519	152+17.804	5.4	6.4	15.240		0.3			1					1					BARRIER @ BRIDGE
-L-	151+69.596	151+92.712	LT	13.266			151+69.596	151+92.712	6.0	6.0											1	1	1			BEGIN BRIDGE (MEDIAN)
-L-	151+69.596	151+92.712	RT	23.116			151+69.596	151+92.712	6.0	6.0											1					END BRIDGE (MEDIAN)
-L-	151+86.024	152+79.972	LT	93.948			152+79.972	151+86.024	5.4	6.4			0.3			1					1	~~1~~	~~1~~			BARRIER @ BRIDGE
-L-	152+12.537	152+35.662	LT	13.275			152+12.537	152+35.662													1	1	1			END BRIDGE (MEDIAN)
-L-	152+12.537	152+35.662	RT	23.125			152+12.537	152+35.662													1	1	1			END BRIDGE (MEDIAN)
-L-	154+07.328	159+35.632	LT	528.304			154+07.328	159+35.632	4.2 /VAR.	5.2 /VAR.		15.240			1			1								BEGIN BRIDGE
-L-	154+24.082	159+47.172	RT	523.090			154+24.082	159+47.172	4.2	5.2 /VAR.	15.240		0.3		1	1										BEGIN BRIDGE
-L-	158+75.960	159+41.013	LT	55.203			158+75.960	159+41.013								1						1	1			BEGIN BRIDGE (MEDIAN)
-L-	158+75.960	159+42.544	RT	66.584			158+75.960	159+42.544							1											BEGIN BRIDGE (MEDIAN)
-L-	159+91.128	160+60.037	LT	68.909			159+91.128	160+60.037	3.6 /VAR.						1											END BRIDGE/FILL SLOPE TIE TO -RPBY1-
-L-	159+91.628	160+54.010	LT	52.532			159+91.628	160+54.010			11.430		1.52		1							1	1			BEGIN BRIDGE (MEDIAN)
-L-	159+92.860	160+54.010	RT	61.150			159+92.860	160+54.010				11.430		1.22	1											END BRIDGE (MEDIAN)
-L-	159+96.872	162+54.000	RT	257.128			159+96.872	162+54.000	4.2	5.2					1											~~MEDIAN SIGN OH SIGN "B"STA.162+54~~
-L-	162+01.315	163+06.551	LT	95.386			161+89.603	162+60.699	4.2	4.2												1	1			MEDIAN SIGN OH SIGN "B"STA.162+54
-L-	162+01.315	163+06.551	LT	95.386			162+52.246	163+21.003	4.2	4.6	15.240		0.3									1	1			MEDIAN SIGN
-L-	164+28.884	166+07.370	RT	178.486			164+28.884	166+07.370	3.6	4.6	15.240		0.3		1	1										BEGIN BRIDGE
-L-	165+28.170	165+96.425	RT	68.255			165+28.170	165+96.425	4.2	5.2	15.240		0.3		1							1	1			BEGIN BRIDGE (MEDIAN)
-L-	163+79.592	165+81.581	LT	201.989			163+79.592	165+81.581	3.6	5.2	15.240		0.3		1			1								BEGIN BRIDGE
-L-	165+28.170	165+93.436	LT	55.416			165+28.170	165+93.436	1.8	4.2	15.240		0.3		1											END AND BEGIN BRIDGE
-L-	166+32.261	167+98.000	LT	165.739			166+32.261	167+98.000	3.6	5.2	15.240		0.3		2											END AND BEGIN BRIDGE
-L-	166+43.691	168+16.513	LT	172.822			166+43.691	168+16.513	3.6	5.2	15.240		0.3		2											END AND BEGIN BRIDGE
-L-	166+48.868	168+22.569	RT	173.701			166+48.868	168+22.569	3.6	5.2	15.240		0.3		2											END AND BEGIN BRIDGE
-L-	166+59.318	168+38.903	RT	179.585			166+59.318	168+38.903	4.2	5.2	11.430		1.52		2					1						END BRIDGE
-LPAY1-	13+20.286	168+80.000 -L-	RT	115.48			168+80.919	169+09.874	4.2	5.2	15.240		0.3		1	1										END BRIDGE
-L-	169+02.189	169+82.681	LT	70.642			169+02.189	169+82.681	4.2	5.2	15.240		0.3		1							1	1			END BRIDGE
-L-	169+09.171	169+82.681	RT	73.510			169+09.171	169+82.681	4.2	5.2		15.240		0.3	1											END BRIDGE
-L-	169+28.243	171+42.675	RT	214.432			169+28.243	171+42.675	4.2	5.2	15.240		0.3		1			1								BRIDGE PIER (MEDIAN)AND OVERHEAD SIGN
-L-	173+86.954	175+44.512	LT & RT	305.266			173+86.954	175+31.980	4.2	5.2	15.240		0.3									2	2			OVERHEAD SIGN
-L-	174+72.000	175+21.910	LT	49.910			174+72.000	175+21.910	4.2	5.2		15.240		0.3		1		1								BRIDGE PIER (MEDIAN)AND OVERHEAD SIGN
-L-	177+63.564	181+20.000	RT	356.436			178+40.000	181+20.000	4.2	5.2	15.240	15.240	0.3	0.3		1		1								FILL SLOPE
-L-	178+47.704	179+52.158	LT & RT	199.058			178+47.704	179+52.158	4.2	5.2	15.240	15.240	0.3	0.3								2	2			OVERHEAD SIGN
-L-	185+96.677	186+20.275	LT	23.598			185+96.677	186+20.275	3.6	4.2		15.240		0.3	1			1								END BRIDGE
-L-	185+11.949	186+20.284	LT & RT	206.836			185+54.496	186+20.284	3.6	4.2	15.240		0.3		2							1	1			BRIDGE PIER (MEDIAN)AND OVERHEAD SIGN
-L-	185+10.760	186+20.270	RT	109.510			185+10.760	186+20.270	3.6	4.2	15.240				1	1										BEGIN BRIDGE
-Y102-	13+58.129	14+01.069	LT	42.94			13+58.129	14+01.069	3.0/VAR.	4.2		15.240		0.3	1	1										END AND BEGIN BRIDGE
-Y102-	12+91.073	13+79.667	RT	88.594			12+91.073	13+79.667			15.240		0.3		1	1										END AND BEGIN BRIDGE
-Y102-	15+41.447	15+65.904	LT	24.457			15+41.447	15+65.904				15.240		0.3	1	1										END AND BEGIN BRIDGE
-Y102-	15+25.911	15+50.060	RT	24.149			15+25.911	15+50.060			15.240		0.3		1	1										END AND BEGIN BRIDGE
-Y1-	12+61.702	13+47.566	RT	85.864			12+61.702	13+47.566	3.0/VAR.	4.2/VAR.	11.430		1.52			1		1								FILL SLOPE
-Y1-	13+68.757	14+24.345	LT	55.588			13+68.757	14+24.345	3.0	4.0	11.430	15.240	1.52	0.3		1		1								FILL SLOPE
-Y1-	21+89.048	22+60.546	RT	71.498			21+89.048	22+60.546	3.0	4.2/VAR.	11.430	15.240	1.52	0.3		1		1								FILL SLOPE
-Y1-	20+79.592	21+06.726	LT & RT	17.284			20+79.592	21+06.726	VAR.	7.0			1.52	0.3							2	1	1			FILL SLOPE
-Y1-	21+72.807	21+99.952	LT & RT	17.295			21+72.807	21+99.952	VAR.	1.2/VAR.			1.52	0.3							2	1	1			FILL SLOPE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21210 THOMAS KLIGHER III

ROADWAY DESIGN ENGINEER 8/15/03

HYDRAULICS ENGINEER

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2			
1			
0		8-15-03	RELEASED FOR CONSTRUCTION

THE LPA GROUP THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

DRAWN BY: ______ DATE: ______
CHECKED BY: ______ DATE: ______
Document Control Number :
Filename : guardrail.sum

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
GUARDRAIL SUMMARY

COMPUTED BY: DJP DATE: 4-26-03
CHECKED BY: DATE:

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	31

RELEASE FOR CONSTRUCTION

10-01-2003

GUARDRAIL SUMMARY

	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS						IMPACT ATTENUATOR TYPE 350			SINGLE FACED PRECAST CONCRETE BARRIER STD. 857.01	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE III	GRAU 350	XI- MOD	CAT-1	AT-1	M-350	TYPE B-77	EA	G	NG		
-Y1-	22+76.446	23+03.601	LT & RT	17.305			22+76.446	23+03.601	6.0VAR.	1.2VAR.			1.52	0.3							2	1	1			FILL SLOPE
-Y1-	23+19.698	23+46.850	LT & RT	27.202																	2	1	1			END BRIDGE (MEDIAN)
-RPBY1-	12+79.215	16+94.950	LT	415.735			12+79.215	16+94.950	4.2	4.8	15.240		0.3			1										FILL SLOPE
-RPCY1-	12+05.070	16+39.320	LT	434.255			12+05.070	15+59.746	3.6	3.6		15.240		0.3		1		1								FILL SLOPE
-RPCY1-	10+00.000	15+59.746	RT	559.746			10+00.000	15+96.746	3.6	3.8		15.240		0.3				1								FILL SLOPE
-RPAY1-	10+73.296	13+99.795	RT	326.499			10+73.296	13+99.795	4.2	5.2		15.240		0.3		1		1								FILL SLOPE
-Y3-	11+48.959	13+35.943	RT	186.984			11+48.959	13+35.943	3.4	3.6VAR.	11.430		1.52			1										FILL SLOPE
-Y3-	13+55.943	13+51.078	RT		18.418		13+55.943	13+51.078	3.4	3.0VAR.									1							FILL SLOPE
-Y3-	12+28.948	13+40.019	LT	111.071			12+28.948	13+40.019	3.4	3.0VAR.	11.430		1.52			1										FILL SLOPE
-Y3-	13+40.019	13+46.820	LT		10.706		13+40.019	13+46.820	3.4	3.6VAR.									1							FILL SLOPE
-Y3-	13+62.019	13+70.000	LT		11.940		13+62.019	13+70.000	3.2	3.4VAR.									1							FILL SLOPE
-Y3-	13+70.000	14+07.720	LT	37.720			13+70.000	14+07.720	2.4	8.4VAR.																FILL SLOPE
-Y3-	14+07.720	-RPAY3-14+43.917	-Y3-(LT)-RPAY3-(RT)		30.534		14+07.720	-RPAY3-14+43.917	3.6VAR.	4.2VAR.																FILL SLOPE
-RPAY3-	14+27.566	14+43.917	RT	16.357			14+27.566	14+43.917	3.6VAR.	4.2VAR.	11.430		1.52			1										FILL SLOPE
-Y3-	14+24.991	14+91.665	RT	66.674			14+24.991	14+91.665	1.5VAR.	2.85VAR.	11.430		1.52		1	1										FILL SLOPE
-Y3-	15+70.877	16+05.169	LT	34.292			15+70.877	16+05.169	2.1	VAR.					1											BEGIN BRIDGE&FILL SLOPE
-Y3-	16+05.169	-RPDY3-13+63.247	LT		13.806		16+05.169	-RPDY3-13+63.247	2.1	VAR.									1							END BRIDGE&FILL SLOPE
-Y3-	14+67.940	14+93.707	LT	25.767			14+67.940	14+93.707	2.1	VAR.					1				1							FILL SLOPE
-Y3-	15+69.687	15+91.470	RT	21.783			15+69.987	15+91.470	2.1	VAR.					1				1							FILL SLOPE
-RPBDY1-	15+45.000	18+79.615	LT	334.615			15+45.000	18+79.615	2.1	VAR.					1	1										BEGIN BRIDGE&FILL SLOPE
-RPBDY1-	15+60.000	18+86.643	RT	329.643			15+60.000	18+86.643	2.1	VAR.					1	1										END BRIDGE
									TYPE B-77	14 @ 8.198																-114.772
									IAU-350	20 @ 9.85																-197.00
			SUBTOTAL	8967.815	85.404		ANCHOR DEDUCTIONS		TYPE III	43 @ 5.715																-245.745
			SUBTOTAL	8882.411					GRAU-350	26 @ 15.240																-396.24
			DEDUCTIONS	-1018.527					AT-1	6 @ 1.905																-11.43
			TOTAL	7863.884					CAT-1	14 @ 1.905																-26.670
			SAY	7863.84	(2064 UNITS @ 3.81m/UNIT)				M-350	1 @ 11.430																-11.430
										TOTAL				TOTAL	43	27	0	14	4	4	8	15				-1018.527

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2			
1		10-01-03	REVISED STATIONS FOR -RPBDY1-
0		8-15-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER 10/1/03 HYDRAULICS ENGINEER

DRAWN BY: DATE:
CHECKED BY: DATE:

Document Control Number :

Filename : guardrail.sum

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

GUARDRAIL SUMMARY

09-OCT-2003 8:52
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COMPUTED BY: DJP DATE: 4-28-03
CHECKED BY: _____ DATE: _____

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	3J

RELEASE FOR CONSTRUCTION

8-15-2003

	BEG. STA.	END STA.	LENGTH	ANCHORS		REMARKS
-L-	144+02.500	144+27.653	25.153	1		
-L-	147+35.150	151+59.569	424.419	2		
-L-	152+47.420	158+83.904	636.484	3		
-L-	160+60.446	161+97.407	136.961	2		
-L-	163+07.467	165+16.538	209.071	2		
-L-	169+95.231	173+80.561	385.330	2		
-L-	175+58.049	178+93.856	335.807	2		
-L-	179+60.000	185+06.833	546.833	3		
			SUBTOTAL 2700.058	17	2 MID-SPAN UNITS	
			LESS 114.00		15 END UNITS	
				TOTAL ANCHOR UNITS: (17 @ 7.6m) = 129.200m		
				LESS END UNITS: (15 @ 7.6m) = 114.000m		
			TOTAL 2586.058			

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NCC North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1			
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS J. KLUGER III

ROADWAY DESIGN ENGINEER 8/15/03 HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : guardrail.sum

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

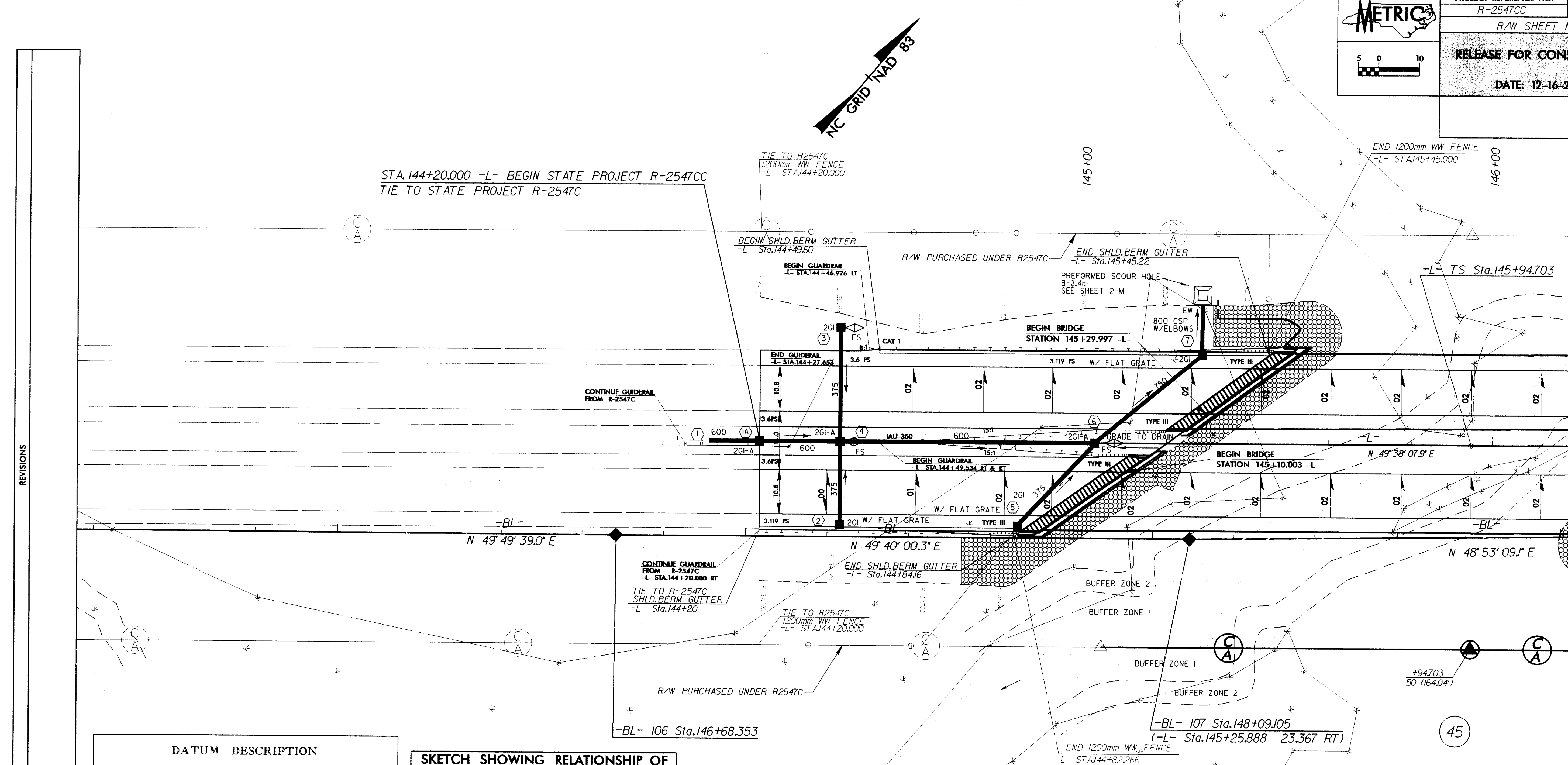
FINAL PLANS
GUIDERAIL SUMMARY

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	4
R/W SHEET NO.4	

METRIC

RELEASE FOR CONSTRUCTION

DATE: 12-16-2003



NC GRID NAD 83
STA.144+20.000 -L- BEGIN STATE PROJECT R-2547CC
TIE TO STATE PROJECT R-2547C
145+00
146+00
END 1200mm WW FENCE -L- STA.145+45.000
BEGIN SHLD.BERM GUTTER -L- Sta.144+49.60
BEGIN GUARDRAIL -L- STA.144+46.926 LT
R/W PURCHASED UNDER R2547C
END SHLD.BERM GUTTER -L- Sta.145+45.22
PREFORMED SCOUR HOLE B=2.4m SEE SHEET 2-M
-L- TS Sta.145+94.703
BEGIN BRIDGE STATION 145+29.997 -L-
800 CSP W/ELBOWS
END GUIDERAIL -L- STA.144+27.653
CONTINUE GUIDERAIL FROM R-2547C
BEGIN BRIDGE STATION 145+10.003 -L-
BEGIN GUARDRAIL -L- STA.144+49.534 LT & RT
GRADE TO DRAIN
N 49° 38' 07.9" E
N 49° 49' 39.0" E
N 49° 40' 00.3" E
N 48° 53' 09.1" E
MATCHLINE -L- STA 146+20 SEE SHEET 5
CONTINUE GUARDRAIL FROM R-2547C -L- STA.144+20.000 RT
TIE TO R-2547C SHLD.BERM GUTTER -L- Sta.144+20
END SHLD.BERM GUTTER -L- Sta.144+84.16
TIE TO R2547C 1200mm WW FENCE -L- STA.144+20.000
BUFFER ZONE 1
BUFFER ZONE 2
-BL- 106 Sta.146+68.353
-BL- 107 Sta.148+09.105
(-L- Sta.145+25.888 23.367 RT)
END 1200mm WW FENCE -L- STA.144+82.266
+94.703 50 (164.04')
45
REVISIONS

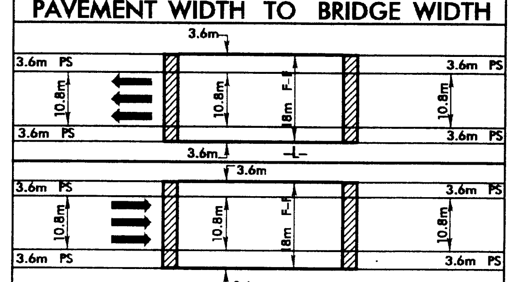
DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "WELL" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 227071.077(m) EASTING: 651671.524(m) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99990678 THE N.C. LAMBERT GRID BEARING LOCALIZED HORIZONTAL GROUND DISTANCE FROM "WELL" TO -L- STATION 144+20.000 IS S 81 49' 27.233" E 8,777.3820 m

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NGVD 29

SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH



WEST BOUND BRIDGE DECK DRAINAGE:
USE STD 150MM DECK DRAINS ON 3.6M CENTERS FROM BEGIN BRIDGE TO STA.145+87 -L-
BEGIN ENCLOSED SYSTEM WITH STD. 150MM DECK DRAINS ON 3.6M CENTERS STA.146+45.3 -L- TO END BRIDGE WITH SUSPENDED 300MM PVC.
EAST BOUND BRIDGE DECK DRAINAGE:
USE STD 150MM DECK DRAINS ON 3.6M CENTERS FROM BEGIN BRIDGE TO STA.145+47 -L-
BEGIN ENCLOSED SYSTEM WITH STD. 150MM DECK DRAINS ON 3.6M CENTERS STA.146+08.7 -L- TO END BRIDGE WITH SUSPENDED 300MM PVC.

-L-	
PIs Sta.146+74.723	PI Sta 149+86.526
Θs = 3° 55' 43.9"	Δ = 34° 30' 55.1" (LT)
Ls = 120.000	L = 527.105
LT = 80.020	T = 271.823
ST = 40.018	R = 875.000
	SE = 07

BEGIN APPROACH SLAB 7m LEFT -L- Sta. 145+42.849
BEGIN BRIDGE 7m LEFT -L- Sta. 145+47.497
BEGIN APPROACH SLAB 7m RIGHT -L- Sta. 145+22.855
BEGIN BRIDGE 7m RIGHT -L- Sta. 145+27.503

FOR -L- PROFILE SEE SHEET 21

THE LPA GROUP of North Carolina, p.a.
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TRANSPORTATION CONSULTANTS

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P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3		12-16-03	REVISED STRUCTURE #7 AND PFSH.
2		11-14-03	REVISED SLOPE STAKE LIMITS
1		8-25-03	REVISED DRAINAGE AND TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS E. KICKLIGHTER III
12/16/03
ROADWAY DESIGN ENGINEER

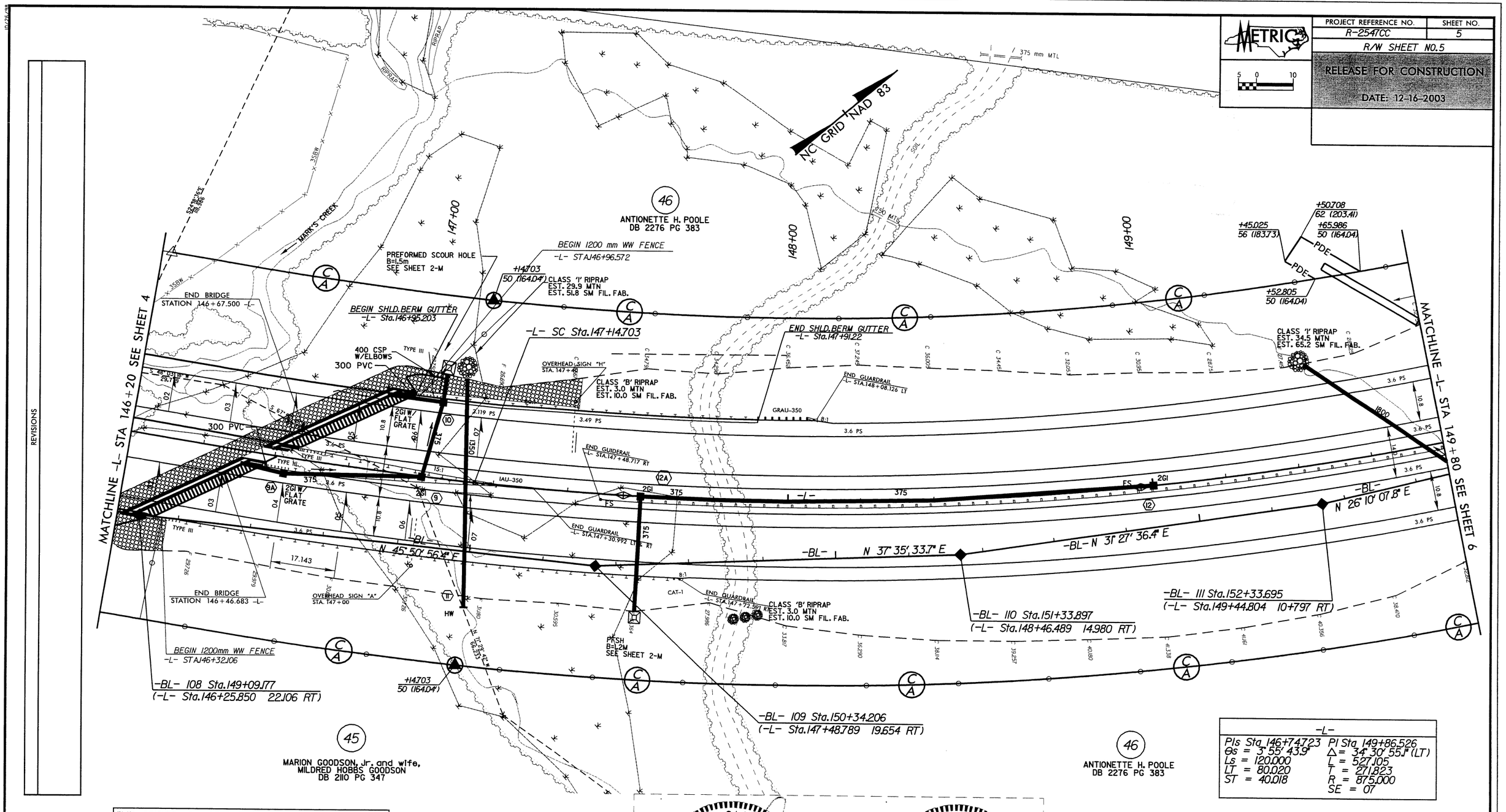
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
12-17-03
HYDRAULICS ENGINEER

DRAWN BY: ________ DATE: ________
CHECKED BY: ________ DATE: ________
Document Control Number :
Filename : y:\Projects\NCDOT\r-2547\cc\rdwy\r2547ccs04.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA.144+20 TO STA.146+20 -L-



FOR -L- PROFILE SEE SHEET 21

THE LPA GROUP of North Carolina, p.a.
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TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4		12-16-03	MODIFIED DISPLAY FOR PFSH
3		12-01-03	REVISED TEXT FOR LEVEL SPREADER
2		11-04-03	REVISED ROCK PLATING AT BRIDGE (SITE 9)
1		8-25-03	REVISED DRAINAGE AND TITLE BLOCK
0		8-15-03	RELEASE FOR CONSTRUCTION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : r2547oos05.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 146+20 TO STA. 149+80 -L-

17-DEC-2003 16:31
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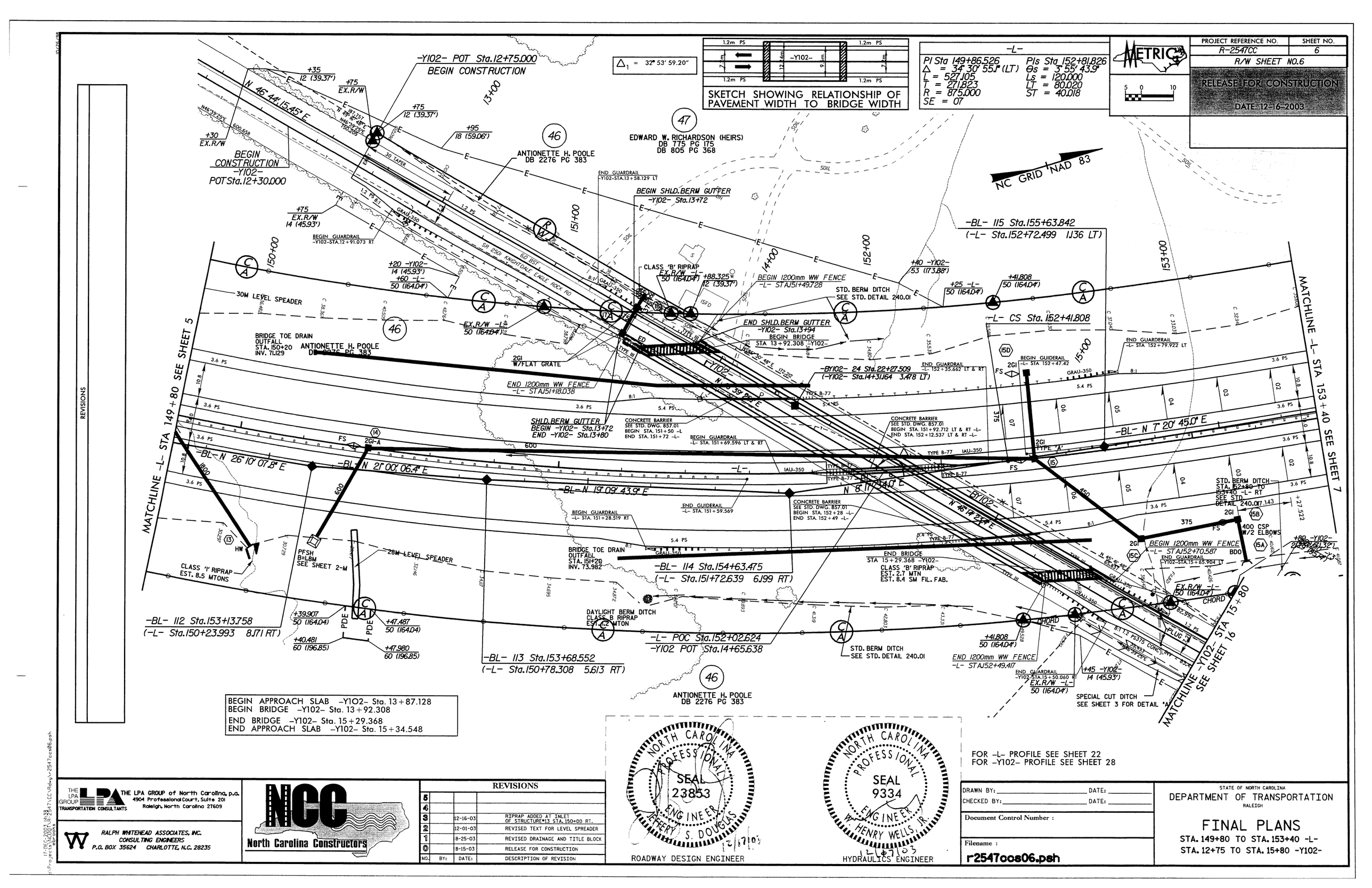
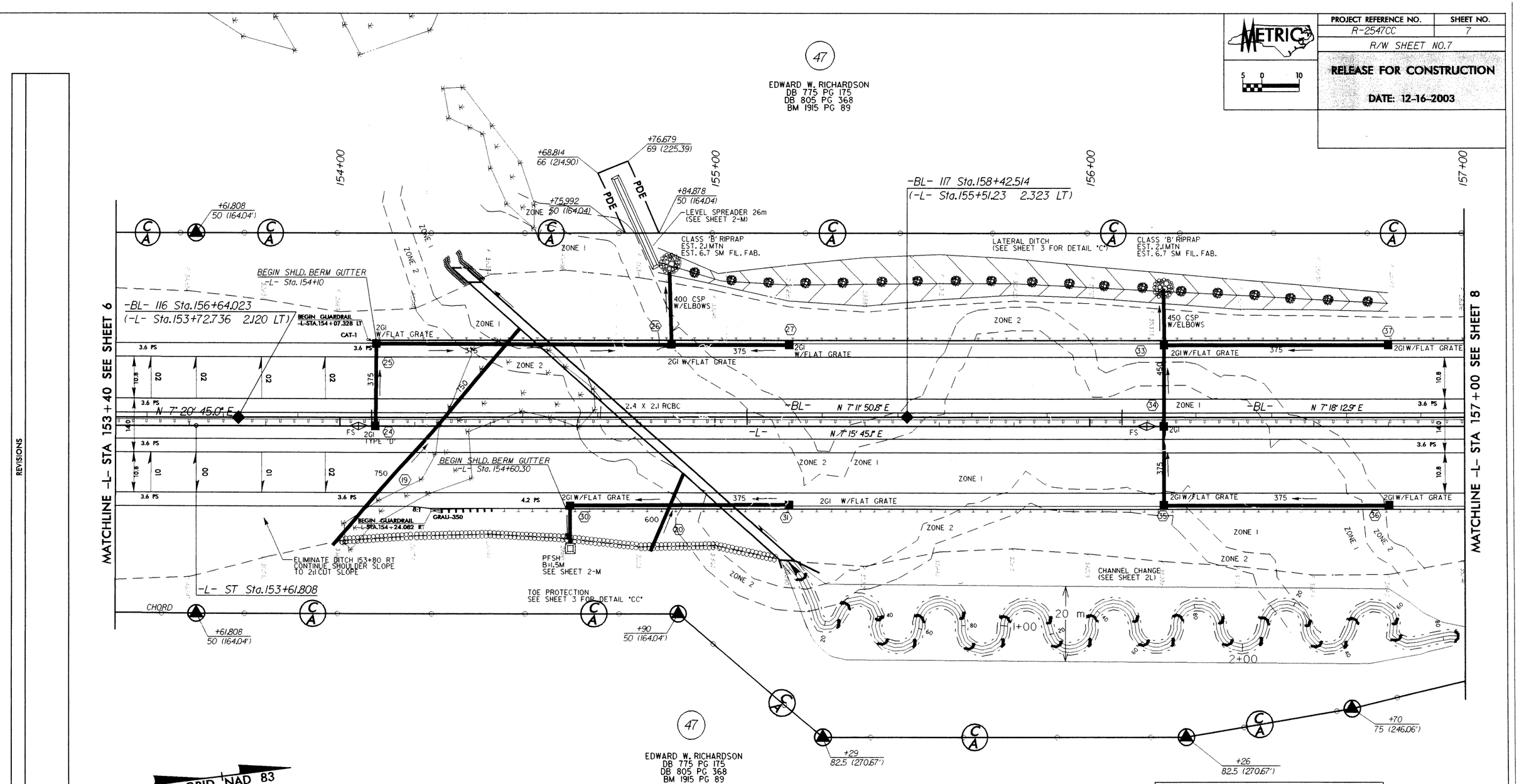

-Y102- POT Sta.12+75.000
BEGIN CONSTRUCTION
N 46° 44' 15.45" E
BEGIN CONSTRUCTION -Y102- POT Sta.12+30.000
ANTIONETTE H. POOLE DB 2276 PG 383
EDWARD W. RICHARDSON (HEIRS) DB 775 PG 175 DB 805 PG 368
SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH
-L- PI Sta 149+86.526 Δ = 34° 30' 55.1" (LT) L = 527.105 T = 271.823 R = 875.000 SE = 07
PIs Sta 152+81.826 Θs = 3° 55' 43.9" Ls = 120.000 LT = 80.020 ST = 40.018
METRIC
PROJECT REFERENCE NO. R-2547CC
SHEET NO. 6
R/W SHEET NO.6
RELEASE FOR CONSTRUCTION
DATE: 12-16-2003
NC GRID NAD 83
BEGIN SHLD.BERM GUTTER -Y102- Sta.13+72
END SHLD.BERM GUTTER -Y102- Sta.13+94
BEGIN BRIDGE STA 13+92.308 -Y102-
END BRIDGE STA 15+29.368 -Y102-
BEGIN 1200mm WW FENCE -L- STA 151+49.728
END 1200mm WW FENCE -L- STA 151+18.038
BEGIN 1200mm WW FENCE -L- STA 152+70.587 BDO
END 1200mm WW FENCE -L- STA 152+49.417
-BL- 115 Sta.155+63.842 (-L- Sta.152+72.499 11.36 LT)
-BL- 114 Sta.154+63.475 (-L- Sta.151+72.639 6.99 RT)
-BL- 113 Sta.153+68.552 (-L- Sta.150+78.308 5.613 RT)
-BL- 112 Sta.153+13.758 (-L- Sta.150+23.993 8.171 RT)
-L- CS Sta.152+41.808
-BY102- 24 Sta.22+27.509 (-Y102- Sta.14+31.164 3.478 LT)
-L- POC Sta.152+02.624 -Y102 POT Sta.14+65.638
MATCHLINE -L- STA 149+80 SEE SHEET 5
MATCHLINE -L- STA 153+40 SEE SHEET 7
MATCHLINE -Y102- STA 15+80 SEE SHEET 16
-BL- N 26° 10' 07.8" E
-BL- N 21° 00' 06.4" E
-BL- N 19° 09' 43.9" E
-BL- N 7° 20' 45.0" E
-BL- N 8° 11' 34.0" E
-BY102- N 46° 14' 24.4" E
-Y102- N 1° 39' 00.0" E
BRIDGE TOE DRAIN OUTFALL STA. 150+20 INV. 71.129
BRIDGE TOE DRAIN OUTFALL STA. 151+20 INV. 73.982
CLASS 'I' RIPRAP EST. 8.5 MTONS
CLASS 'B' RIPRAP EST. 8.4 SM FIL. FAB.
CLASS 'B' RIPRAP EST. 2.7 MTN
DAYLIGHT BERM DITCH CLASS B RIPRAP EST. 2.2 MTON
STD. BERM DITCH SEE STD. DETAIL 240.01
SPECIAL CUT DITCH SEE SHEET 3 FOR DETAIL 'A'
PFSH B=1.8M SEE SHEET 2-M
28M LEVEL SPEADER
30M LEVEL SPEADER
400 CSP W/2 ELBOWS
PLUG 'A'
BEGIN APPROACH SLAB -Y102- Sta. 13+87.128
BEGIN BRIDGE -Y102- Sta. 13+92.308
END BRIDGE -Y102- Sta. 15+29.368
END APPROACH SLAB -Y102- Sta. 15+34.548
FOR -L- PROFILE SEE SHEET 22
FOR -Y102- PROFILE SEE SHEET 28
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
REVISIONS
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : r2547ccs06.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 149+80 TO STA. 153+40 -L-
STA. 12+75 TO STA. 15+80 -Y102-
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235
North Carolina Constructors



THE LPA GROUP of North Carolina, p.a.
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THE LPA GROUP TRANSPORTATION CONSULTANTS

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CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS			
NO.	BY:	DATE:	DESCRIPTION OF REVISION:
5			
4			
3			
2		12-16-03	MODIFIED PFSH DISPLAY
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : y:\Projects\NCDOT\r-2547cc\dwg\r2547ccs07.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

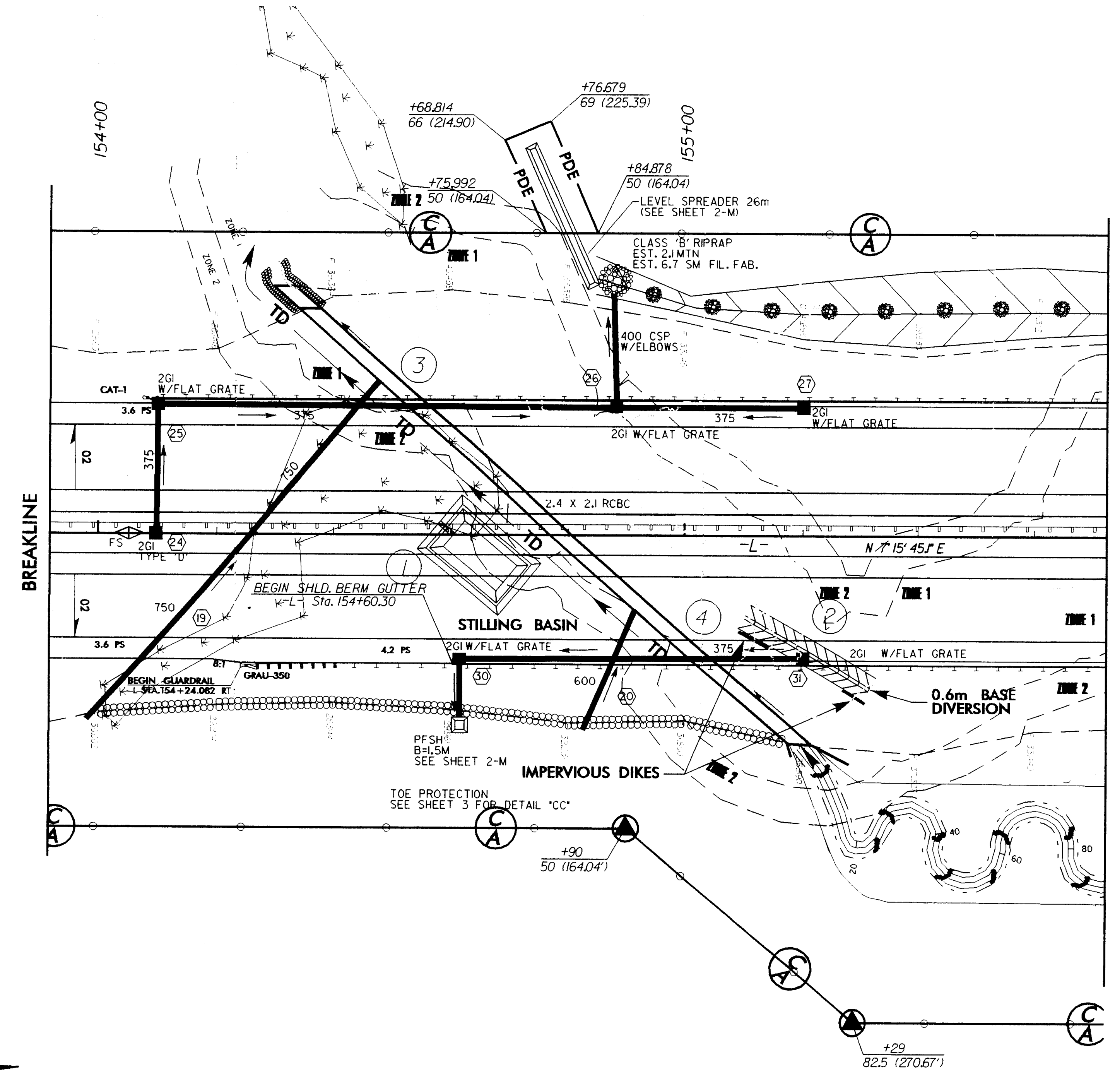
FINAL PLANS

STA. 153+40 TO STA. 157+00 -L-

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	7 (DET)

RELEASE FOR CONSTRUCTION

DATE: 12-16-2003



METRIC
5 0 10
154+00
155+00
+68.814
66 (214.90)
+76.679
69 (225.39)
+75.992
50 (164.04)
+84.878
50 (164.04)
LEVEL SPREADER 26m
(SEE SHEET 2-M)
PDE
CLASS 'B' RIPRAP
EST. 2.1 MTN
EST. 6.7 SM FIL. FAB.
400 CSP
W/ELBOWS
2GI W/FLAT GRATE
CAT-1
3.6 PS
375
750
2.4 X 2.1 RCBC
-L-
N 7° 15' 45.1" E
BREAKLINE
FS 2GI
TYPE 'D'
BEGIN SHLD. BERM GUTTER
-L- Sta. 154+60.30
STILLING BASIN
4.2 PS
600
GRAU-350
BEGIN GUARDRAIL
-L- STA. 154+24.082 RT
0.6m BASE
DIVERSION
PFSH
B=1.5M
SEE SHEET 2-M
IMPERVIOUS DIKES
TOE PROTECTION
SEE SHEET 3 FOR DETAIL "CC"
+90
50 (164.04')
+29
82.5 (270.67')
NAD 83

CONSTRUCTION SEQUENCE:

1. INSTALL STILLING BASIN (VOLUME: 64 CUBIC METERS).
2. CONSTRUCT TEMPORARY DIVERSION CHANNELS AND IMPERVIOUS DIKES.
3. CONSTRUCT CULVERT AND PLACE RIP-RAP.
4. REMOVE EROSION CONTROL DEVICES AFTER FILL SLOPES AND CHANNEL BANKS ARE STABILIZED.

NOTE: THE STREAM RESTORATION AND ASSOCIATED DETAILS WERE DESIGNED AND PROVIDED BY NCDOT. THE SEAL OF W. HENRY WELLS, JR., P.E. DOES NOT APPLY TO THE STREAM RESTORATION.

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS KIRKLIGHTER III — 12/16/03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR. — 12/17/03
HYDRAULICS ENGINEER

NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2		12-16-03	MODIFIED PFSH DISPLAY
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

DRAWN BY: ______ DATE: ______
CHECKED BY: ______ DATE: ______

Document Control Number :

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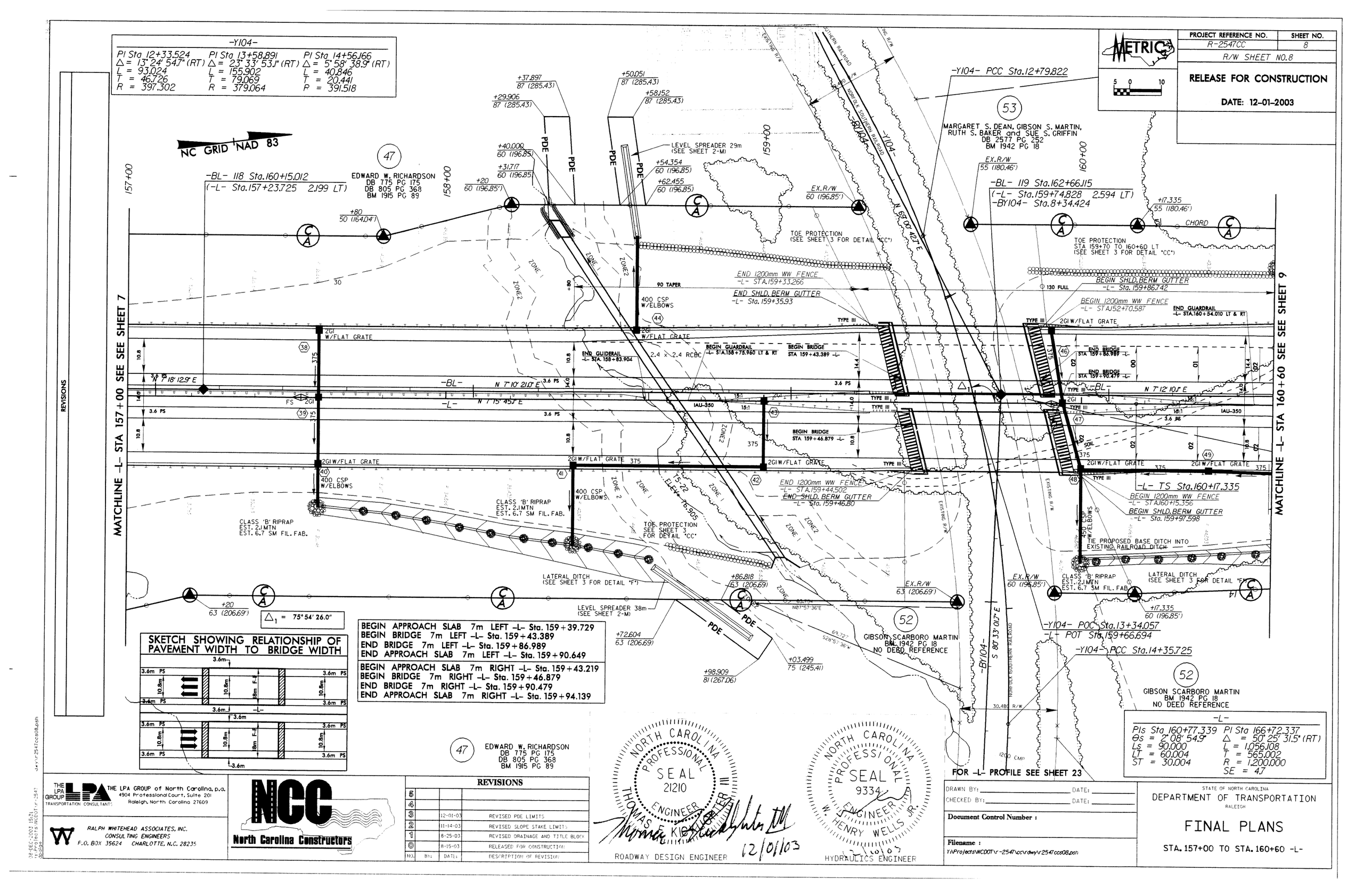
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

CULVERT DETAIL
CONSTRUCTION SEQUENCE

REVISIONS


-Y104-
PI Sta 12+33.524
Δ = 13° 24' 54.7" (RT)
L = 93.024
T = 46.726
R = 397.302
PI Sta 13+58.891
Δ = 23° 33' 53.1" (RT)
L = 155.902
T = 79.069
R = 379.064
PI Sta 14+56.166
Δ = 5° 58' 38.9" (RT)
L = 40.846
T = 20.441
R = 391.518
NC GRID NAD 83
-BL- 118 Sta.160+15.012
(-L- Sta.157+23.725 2.199 LT)
EDWARD W. RICHARDSON
DB 775 PG 175
DB 805 PG 368
BM 1915 PG 89
MARGARET S. DEAN, GIBSON S. MARTIN, RUTH S. BAKER and SUE S. GRIFFIN
DB 2577 PG 252
BM 1942 PG 18
-BL- 119 Sta.162+66.115
(-L- Sta.159+74.828 2.594 LT)
-BY104- Sta.8+34.424
GIBSON SCARBORO MARTIN
BM 1942 PG 18
NO DEED REFERENCE
MATCHLINE -L- STA 157+00 SEE SHEET 7
MATCHLINE -L- STA 160+60 SEE SHEET 9
-Y104- PCC Sta.12+79.822
-Y104- POC Sta.13+34.057
-L- POT Sta.159+66.694
-Y104- PCC Sta.14+35.725
-L- TS Sta.160+17.335
-L-
PIs Sta 160+77.339
Θs = 2° 08' 54.9"
Ls = 90.000
LT = 60.004
ST = 30.004
PI Sta 166+72.337
Δ = 50° 25' 31.5" (RT)
L = 1,056.108
T = 565.002
R = 1,200.000
SE = 4.7
Δ1 = 75° 54' 26.0"
BEGIN APPROACH SLAB 7m LEFT -L- Sta. 159+39.729
BEGIN BRIDGE 7m LEFT -L- Sta. 159+43.389
END BRIDGE 7m LEFT -L- Sta. 159+86.989
END APPROACH SLAB 7m LEFT -L- Sta. 159+90.649
BEGIN APPROACH SLAB 7m RIGHT -L- Sta. 159+43.219
BEGIN BRIDGE 7m RIGHT -L- Sta. 159+46.879
END BRIDGE 7m RIGHT -L- Sta. 159+90.479
END APPROACH SLAB 7m RIGHT -L- Sta. 159+94.139
SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH
FOR -L- PROFILE SEE SHEET 23
REVISIONS
5
4
3 12-01-03 REVISED PDE LIMITS
2 11-14-03 REVISED SLOPE STAKE LIMITS
1 8-25-03 REVISED DRAINAGE AND TITLE BLOCK
0 8-15-03 RELEASED FOR CONSTRUCTION
NO. BY: DATE: DESCRIPTION OF REVISION
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
F.O. BOX 35624 CHARLOTTE, N.C. 28235
North Carolina Constructors
NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS K. KISTLER III
ROADWAY DESIGN ENGINEER
12/01/03
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
HYDRAULICS ENGINEER
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : t:\Projects\NCDOT\r-2547cc\rdwy\r2547ccs08.dgn
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 157+00 TO STA. 160+60 -L-
PROJECT REFERENCE NO. R-2547CC
SHEET NO. 8
R/W SHEET NO.8
RELEASE FOR CONSTRUCTION
DATE: 12-01-2003
METRIC
5 0 10

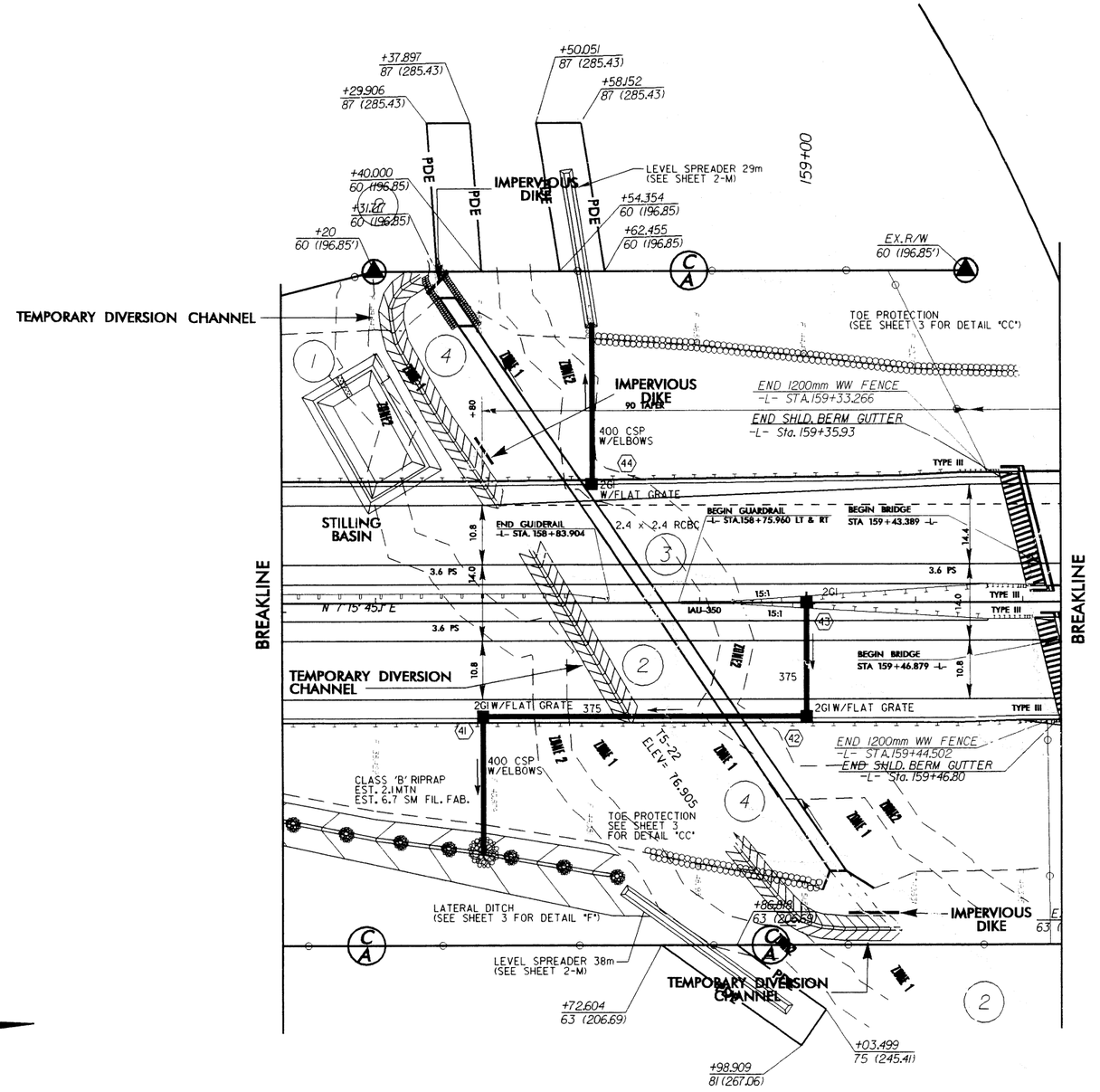
PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	8 (DET)

METRIC 5 0 10

RELEASE FOR CONSTRUCTION

DATE: 12-16-2003

REVISIONS



CONSTRUCTION SEQUENCE:

1. INSTALL STILLING BASIN (VOLUME: 64 CUBIC METERS).
2. CONSTRUCT TEMPORARY DIVERSION CHANNELS AND IMPERVIOUS DIKES.
3. CONSTRUCT CULVERT AND PLACE RIP-RAP.
4. REMOVE EROSION CONTROL DEVICES AFTER SLOPES AND CHANNEL BANKS ARE STABILIZED.

-L-

PIs Sta 160+77.339 PI Sta 166+72.337
Δs = 2° 08' 54.9" Δ = 50° 25' 31.5" (RT)
Ls = 90.000 L = 1,056.108
LT = 60.004 T = 565.002
ST = 30.004 R = 1,200.000
SE = 05

FOR -L- PROFILE SEE SEE SEE SHEET 23

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KIRKPATRICK III

ROADWAY DESIGN ENGINEER 12/16/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.

HYDRAULICS ENGINEER 12/17/03

North Carolina Constructors

REVISIONS			
5			
4			
3			
2		12-16-03	REVISED PDE LIMITS
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : y:\Projects\NCDOT\r-2547\cc\rdwy\r2547ccs08_mgculv_detl.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS
CULVERT DETAIL CONSTRUCTION SEQUENCE

10 DEC 2003 15:51
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PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	9

R/W SHEET NO.9

RELEASE FOR CONSTRUCTION

DATE: 9-10-2003

METRIC

5 0 10

RECEIVED
SEP 15 2003
NCC

-RPCY1-	
PIs Sta 10+43.348	PI Sta 12+36.983
θs = 4° 39' 19.0"	Δ = 46° 31' 52.4" (RT)
Ls = 65.000	L = 324.849
LT = 43.348	T = 171.983
ST = 21.680	R = 400.000
	SE = 6.6

-L-	
PIs Sta 160+77.339	PI Sta 166+72.337
θs = 2° 08' 54.9"	Δ = 50° 25' 31.5" (RT)
Ls = 90.000	L = 1,056.108
LT = 60.004	T = 565.002
ST = 30.004	R = 1,200.000
	SE = 4.7

(53) MARGARET S. DEAN, GIBSON S. MARTIN, RUTH S. BAKER and SUE S. GRIFFIN
DB 2577 PG 252
BM 1942 PG 18

(52) GIBSON SCARBORO MARTIN
BM 1942 PG 18
NO DEED REFERENCE

NC GRID NAD 83

MATCHLINE -L- STA 160+60 SEE SHEET 8

MATCHLINE -L- STA 164+20 SEE SHEET 10A

MATCHLINE -RPBY1- STA 13+35 SEE SHEET 10B

-RPBY1- POT Sta.16+94.950
-L- POS Sta.160+60.000 (17.8 LT)

-BL- 120 Sta.165+40.891
(-L- Sta.162+47.627 17.649 LT)

-RPCY1- PT Sta.10+00.000
-L- POC Sta.162+54.000 (17.8 RT)

-RPCY1- SC Sta.10+65.000

-L- SC Sta.161+07.335

CLASS 'B' RIPRAP
EST. 2.7 MTN
EST. 8.4
SM FIL. FAB.

CHORD

S 7° 44' 43.4" W

-BL-
N 7° 12' 10.1" E

-BL-
N 15° 20' 16.6" E

CAT

TOE PROTECTION
SEE SHEET 3 FOR DETAIL "CC"

BEGIN GUARDRAIL
-L- STA.160+60.446

END GUIDERAIL
-L- STA.161+97.467

BEGIN GUARDRAIL
-L- STA.162+01.315 LT & RT

OVERHEAD SIGN "B"
-L- 162+54

BEGIN GUIDERAIL
-L- STA.163+07.467

END GUARDRAIL
-L- STA.163+06.551 LT & RT

BEGIN GUARDRAIL
-L- STA.163+79.592 LT

400 CSP W/2 ELBOWS

105 FULL

90 TAPER

LATERAL DITCH
(SEE SHEET 3 FOR DETAIL "F4")

450 CSP W/ELBOWS

CLASS 'B' RIPRAP
EST. 2.7 MTN
EST. 8.4 SM FIL. FAB.

2GI W/FLAT GRATE

IAU-350

FS

3.6 PS

1.2 PS

+07.335 -L-
55 (180.45')

+00 -RPBY1-
30 (98.43')

+00 -RPCY1-
30 (98.43')

+54 -L-
55 (180.45')

FOR -L- PROFILE SEE SHEET 23A
FOR -RPBY1- PROFILE SEE SHEETS 34
FOR -RPCY1- PROFILE SEE SHEET 35

REVISIONS			
8			
4			
3			
2		9-10-03	REVISED DRAINAGE AT BOX 59
1		8-25-03	REVISED DRAINAGE AND TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION:
NO.	BY:	DATE:	DESCRIPTION OF REVISION:

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. HEWELCHEL III

ROADWAY DESIGN ENGINEER 9/10/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.

HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

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THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 160+60 TO STA. 164+20 -L-
STA. 13+35 TO STA.16+94.95 -RPBY1-
STA. 10+00 TO STA. 11+64.017 -RPCY1-

10-SEP-2003 15:08
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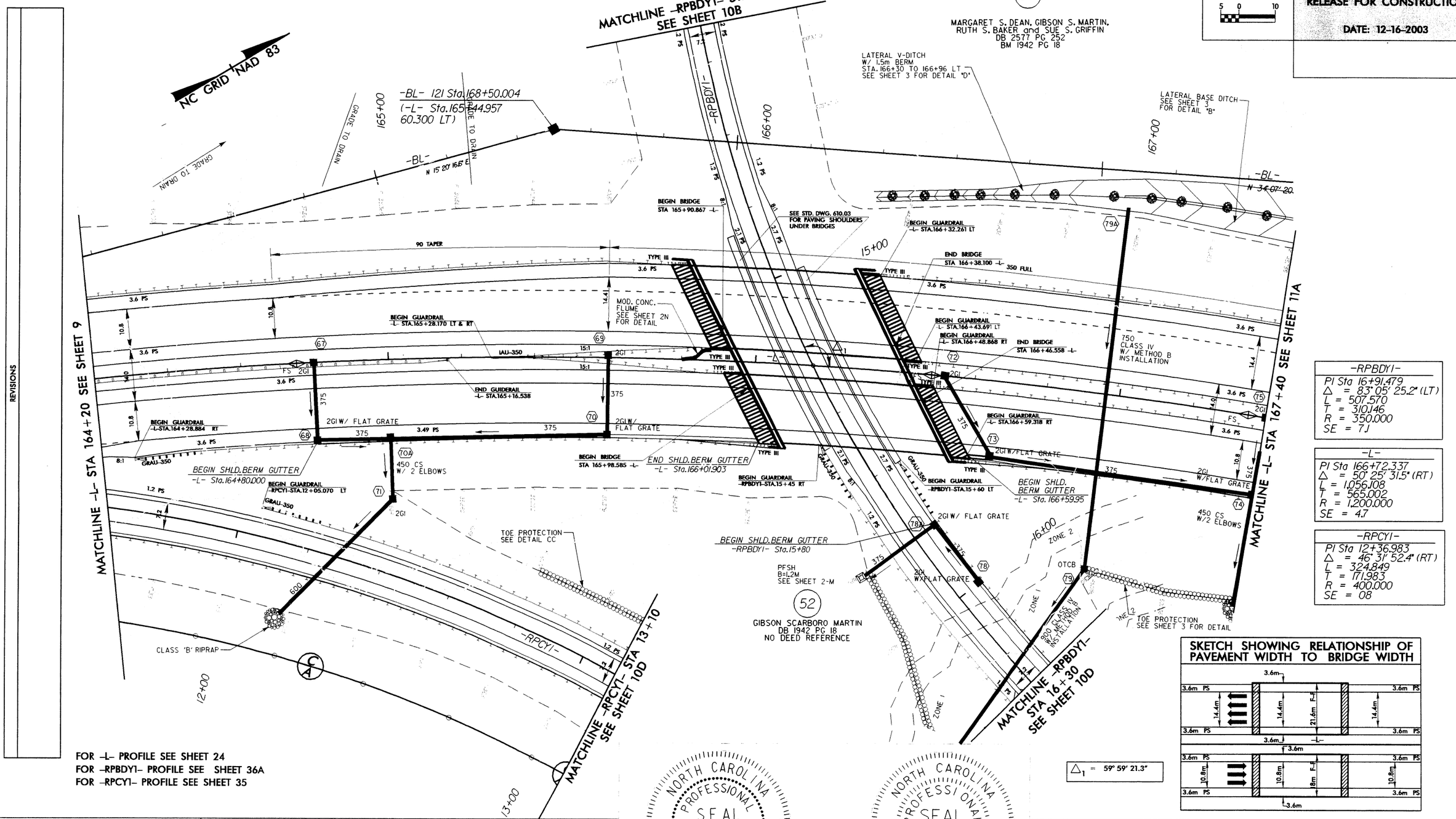

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	10A
R/W SHEET NO.10	

METRIC 5 0 10

RELEASE FOR CONSTRUCTION

DATE: 12-16-2003

-RPBDY1-
PI Sta 16+91.479
Δ = 83° 05' 25.2" (LT)
L = 507.570
T = 310.146
R = 350.000
SE = 7.1

-L-
PI Sta 166+72.337
Δ = 50° 25' 31.5" (RT)
L = 1,056.108
T = 565.002
R = 1,200.000
SE = 4.7

-RPCY1-
PI Sta 12+36.983
Δ = 46° 31' 52.4" (RT)
L = 324.849
T = 171.983
R = 400.000
SE = 08

Δ_1 = 59° 59' 21.3"

SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH

FOR -L- PROFILE SEE SHEET 24
FOR -RPBDY1- PROFILE SEE SHEET 36A
FOR -RPCY1- PROFILE SEE SHEET 35

THE LPA GROUP LPA TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4		12-16-03	MODIFIED DISPLAY OF PFSH
3		11-14-03	REVISED SLOPE STAKE LIMITS
2		10-01-03	REVISED GUARDRAIL AND SLOPE PROTECTION
1		8-25-03	REVISED DRAINAGE AND TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KECKLEY III

ROADWAY DESIGN ENGINEER 12/16/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.

HYDRAULICS ENGINEER 12/17/03

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename :
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 164+20 TO STA. 167+40 -L-
STA. 14+30 TO STA.16+30 -RPBDY1-
STA. 11+64.017 TO STA. 13+10 -RPCY1-

16-DEC-2003 14:35
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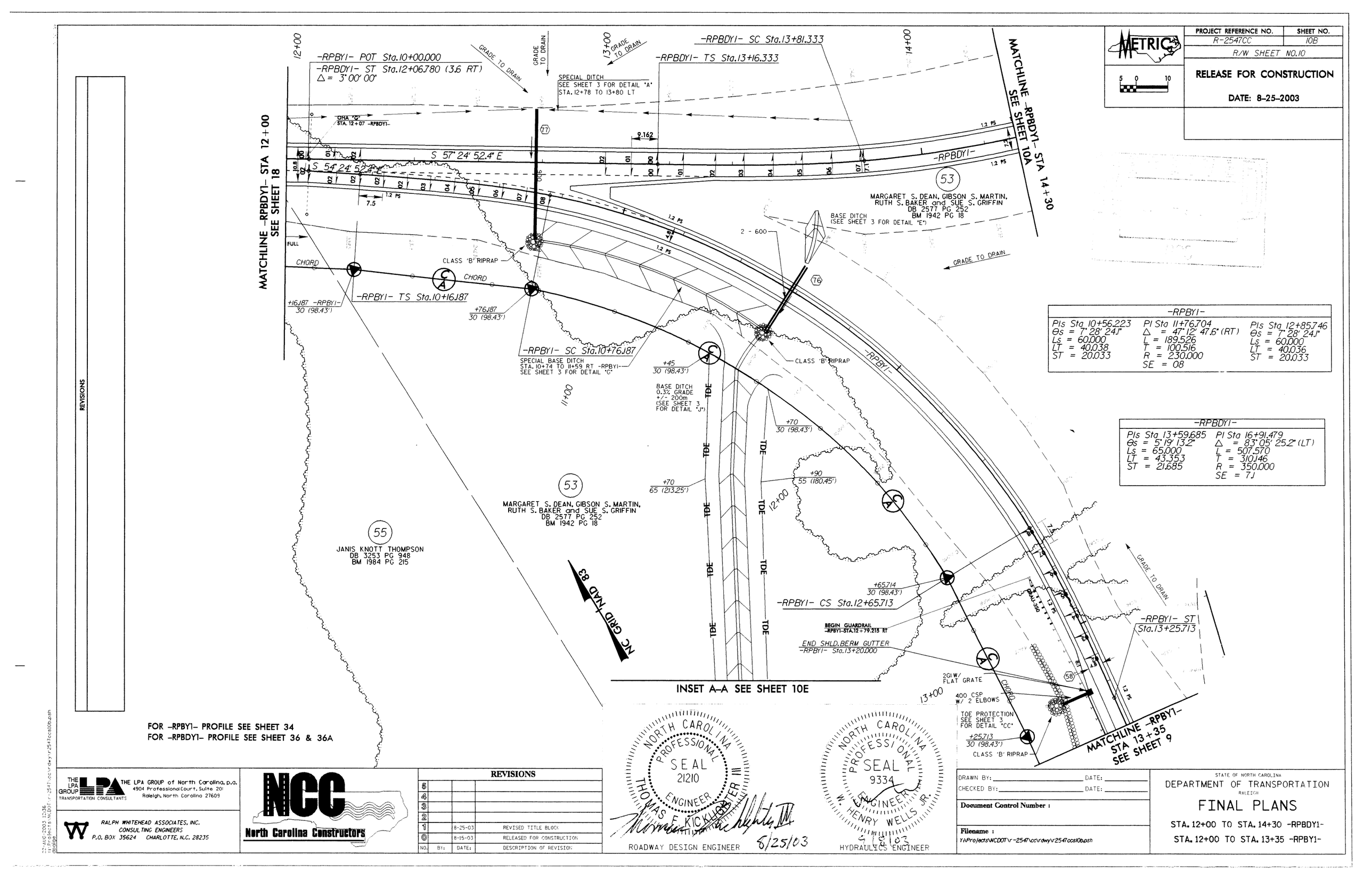

-RPBY1-		
Pls Sta. 10+56.223	Pl Sta 11+76.704	Pls Sta. 12+85.746
Θs = 7° 28' 24.1"	△ = 47° 12' 47.6" (RT)	Θs = 7° 28' 24.1"
Ls = 60.000	L = 189.526	Ls = 60.000
LT = 40.038	T = 100.516	LT = 40.036
ST = 20.033	R = 230.000	ST = 20.033
	SE = 08	

-RPBDY1-	
Pls Sta. 13+59.685	Pl Sta 16+91.479
Θs = 5° 19' 13.2"	△ = 83° 05' 25.2" (LT)
Ls = 65.000	L = 507.570
LT = 43.353	T = 310.146
ST = 21.685	R = 350.000
	SE = 7J

FOR -RPBY1- PROFILE SEE SHEET 34
FOR -RPBDY1- PROFILE SEE SHEET 36 & 36A

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION:
6			
5			
4			
3			
2			
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	10B
R/W SHEET NO.10	

RELEASE FOR CONSTRUCTION

DATE: 8-25-2003

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER 8/25/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.

HYDRAULICS ENGINEER 8/25/03

DRAWN BY: DATE:
CHECKED BY: DATE:

Document Control Number :

Filename : Y:\Projects\NCDOT\r-2547cc\rdwy\r2547ccsht10e.dgn

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 12+00 TO STA. 14+30 -RPBDY1-

STA. 12+00 TO STA. 13+35 -RPBY1-

22-AUG-2003 12:36
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dbolding

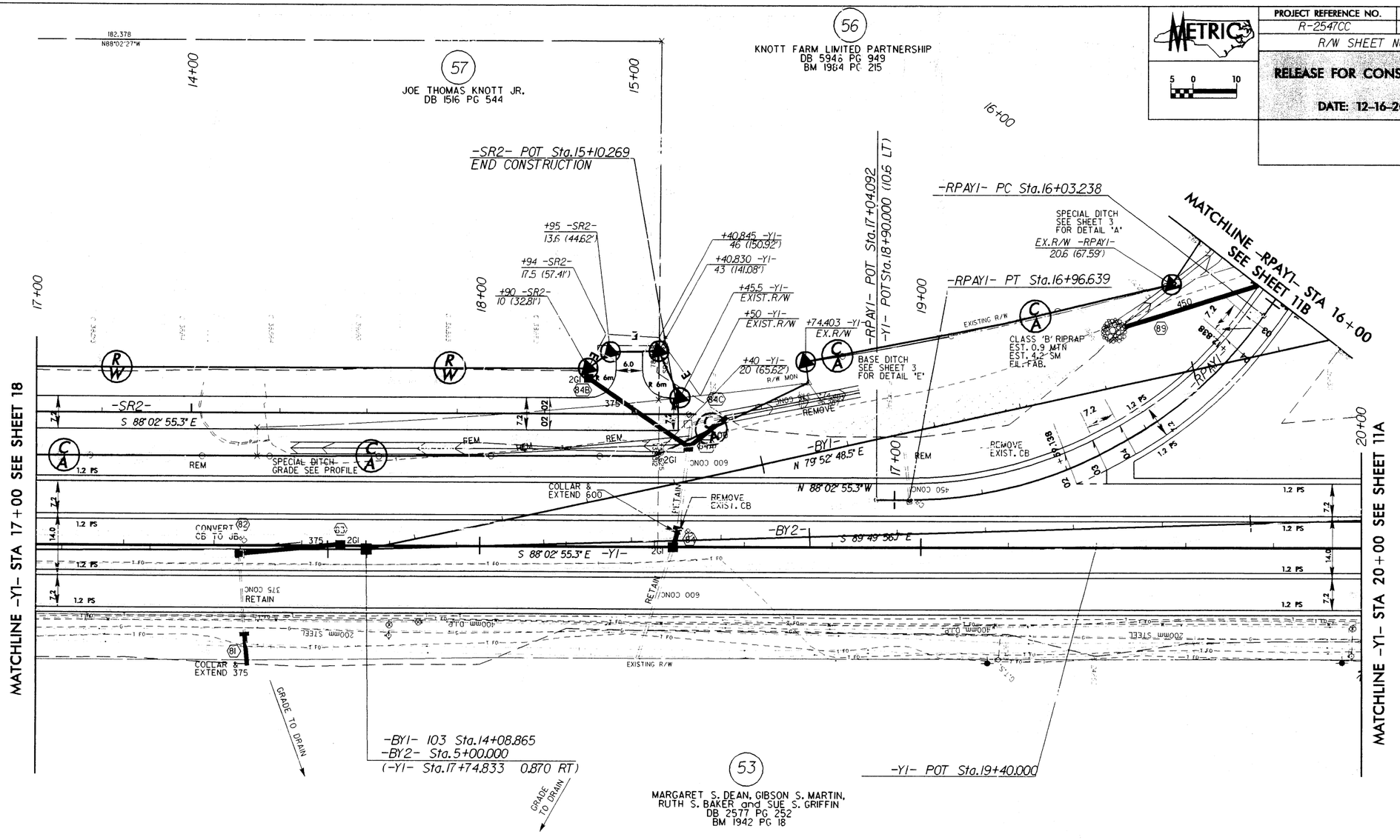
PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	10C

R/W SHEET NO.10

RELEASE FOR CONSTRUCTION

DATE: 12-16-2003

METRIC 5 0 10



-RPAY1-
PI Sta 16+53.659
Δ = 53° 30' 53.8" (RT)
L = 93.401
T = 50.421
R = 100.000
SE = 04

FOR -RPAY1- PROFILE SEE SHEET 33
FOR -SR2- PROFILE SEE SHEET 42
FOR -Y1- PROFILE SEE SHEET 39 & 30

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
3			
2		12-16-03	REV. STR. #89 RFI #660
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS E. KICKLIGHTER III

ROADWAY DESIGN ENGINEER 12/16/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.

HYDRAULICS ENGINEER 12/12/03

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : y:\Projects\NCDOT\r-2547\ccr\dwg\r2547ccs10c.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 17+00 TO STA. 20+00 -Y1-
STA. 16+00 TO STA.17+04.092 -Y1-

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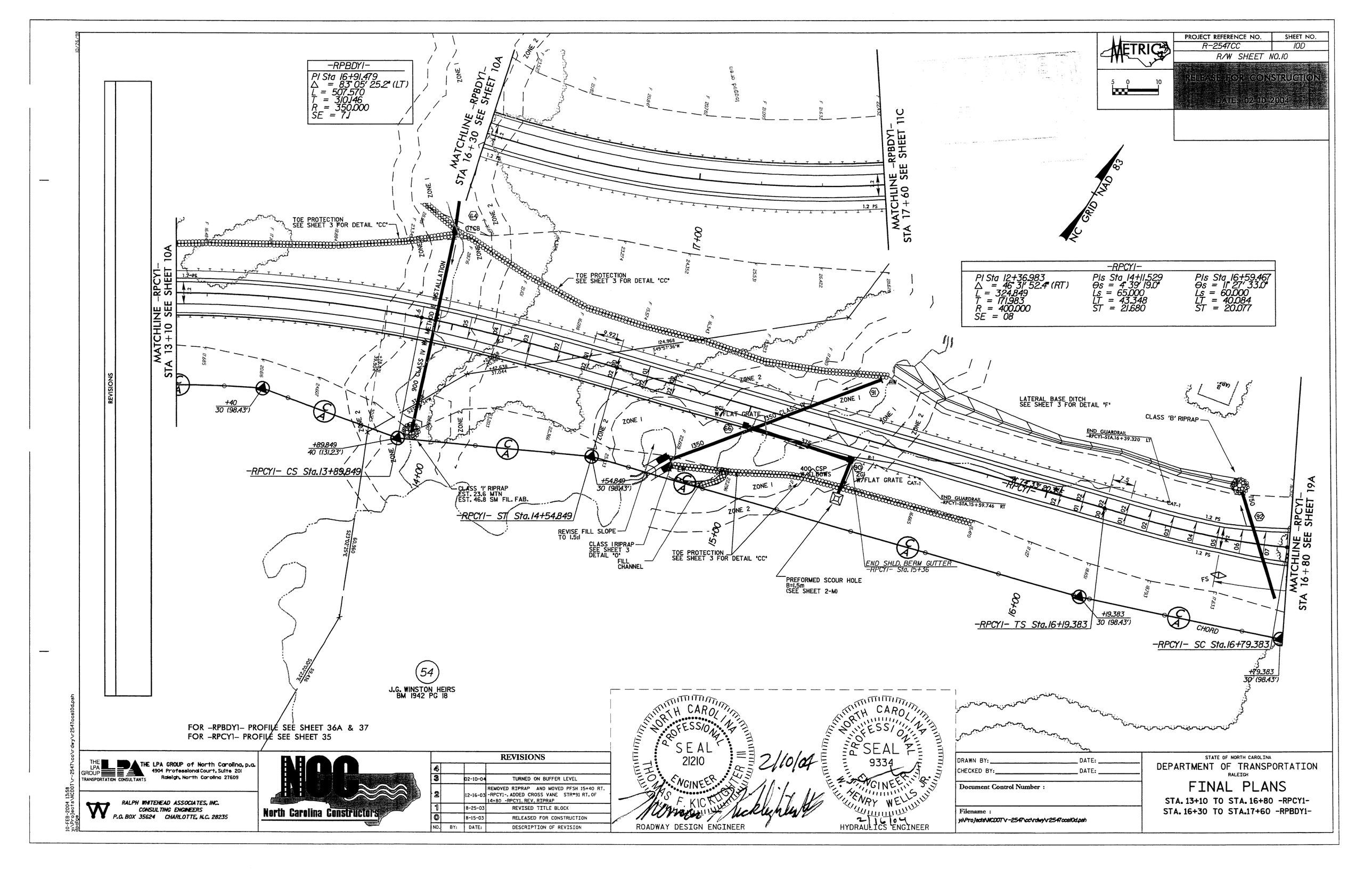

REVISIONS			
4			
3		02-10-04	TURNED ON BUFFER LEVEL
2		12-16-03	REMOVED RIPRAP AND MOVED PFSH 15+40 RT. -RPCY1-, ADDED CROSS VANE STR#91 RT. OF 14+80 -RPCY1, REV. RIPRAP
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III
2/10/04
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
2/10/04
HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename :
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 13+10 TO STA. 16+80 -RPCY1-
STA. 16+30 TO STA.17+60 -RPBDY1-

10-FEB-2004 13:58
y:\projects\NCDOT\r-2547\cc\rdwy\r2547ccst10d.pah
jdaigle

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	10E
R/W SHEET NO. 10,18	

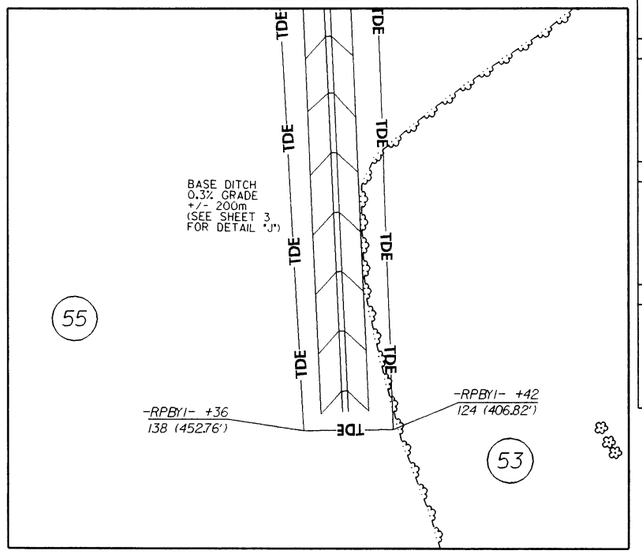
METRIC 5 0 10

RELEASE FOR CONSTRUCTION

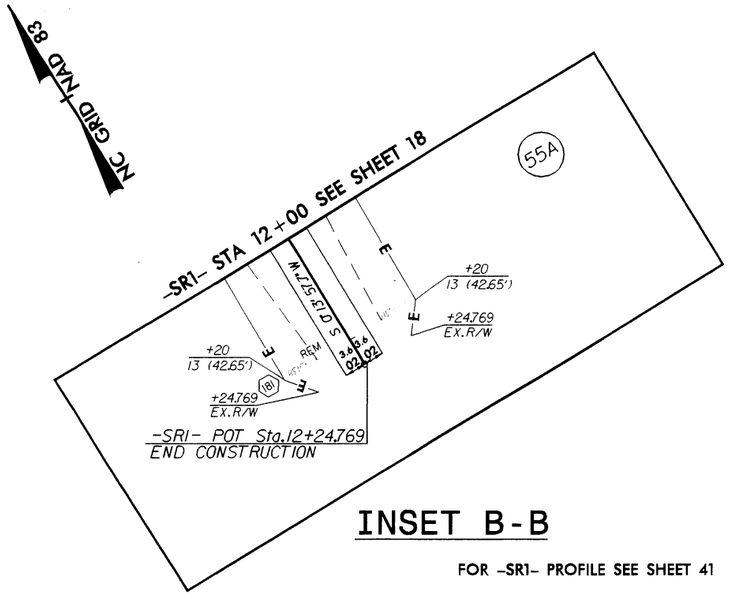
DATE: 8-25-2003

REVISIONS

SEE SHEET 10B



INSET A-A



INSET B-B

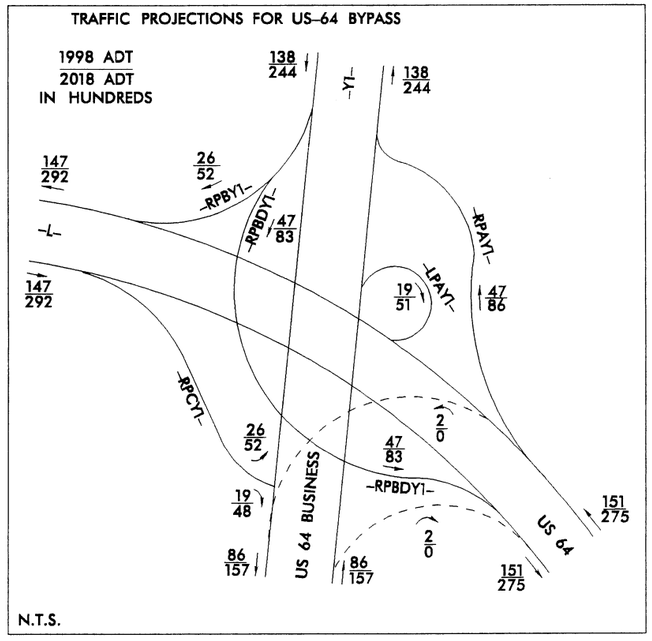
FOR -SR1- PROFILE SEE SHEET 41

RPBY1			-L-
PIs Sta 10+56.223 Θs = 7° 28' 24.1" Ls = 60.000 LT = 40.036 ST = 20.032	PI Sta 11+76.704 Δ = 47° 12' 47.6" (RT) L = 189.526 T = 100.516 R = 230.000 SE = 08	PIs Sta 12+85.746 Θs = 7° 28' 24.1" Ls = 60.000 LT = 40.036 ST = 20.032	PI Sta 166+72.337 Δ = 50° 25' 31.5" (RT) L = 1,056.108 T = 565.002 R = 1,200.000 SE = 4.7

LPAY1				
PIs Sta 10+40.973 Θs = 38° 11' 49.9" Ls = 60.000 LT = 40.973 ST = 20.887	PI Sta 10+76.667 Δ = 40° 38' 52.6" (RT) L = 31.925 T = 16.667 R = 45.000 SE = 08	PI Sta 13+26.757 Δ = 140° 12' 12.5" (RT) L = 207.996 T = 234.832 R = 85.000 SE = 08	PI Sta 13+25.139 Δ = 58° 31' 56.7" (RT) L = 45.971 T = 25.218 R = 45.000 SE = 08	PIs Sta 13+66.779 Θs = 38° 11' 49.9" Ls = 60.000 LT = 40.973 ST = 20.887

RPCY1					RPAY1			
PIs Sta 10+43.348 Θs = 4° 39' 19.0" Ls = 65.000 LT = 43.348 ST = 21.680	PI Sta 12+36.983 Δ = 46° 31' 52.4" (RT) L = 324.849 T = 171.983 R = 400.000 SE = 6.6	PIs Sta 14+11.529 Θs = 4° 39' 19.0" Ls = 65.000 LT = 43.348 ST = 21.680	PIs Sta 16+59.467 Θs = 11° 27' 33.0" Ls = 60.000 LT = 40.084 ST = 20.077	PI Sta 17+54.418 Δ = 53° 09' 05.0" (LT) L = 139.150 T = 75.035 R = 150.000 SE = 08	PIs Sta 11+46.093 Θs = 4° 39' 19.0" Ls = 65.000 LT = 43.348 ST = 21.680	PI Sta 12+19.613 Δ = 14° 46' 35.9" (RT) L = 103.160 T = 51.868 R = 400.000 SE = 6.6	PI Sta 14+62.976 Δ = 46° 58' 52.4" (LT) L = 143.496 T = 76.058 R = 175.000 SE = 08	PI Sta 16+53.659 Δ = 53° 30' 53.8" (RT) L = 93.401 T = 50.421 R = 100.000 SE = 04

RPBDY1								
PIs Sta 10+43.359 Θs = 6° 06' 19.0" Ls = 65.000 LT = 43.359 ST = 21.690	PI Sta 11+03.594 Δ = 14° 25' 24.8" (RT) L = 76.780 T = 38.594 R = 305.000 SE = 7.6	PIs Sta 11+63.470 Θs = 6° 06' 19.0" Ls = 65.000 LT = 43.359 ST = 21.690	PIs Sta 13+59.685 Θs = 5° 19' 13.2" Ls = 65.000 LT = 43.353 ST = 21.684	PI Sta 16+91.479 Δ = 83° 05' 25.2" (LT) L = 507.570 T = 310.146 R = 350.000 SE = 7.1	PIs Sta 19+10.587 Θs = 5° 19' 13.2" Ls = 65.000 LT = 43.353 ST = 21.684	PIs Sta 20+43.977 Θs = 5° 19' 13.2" Ls = 65.000 LT = 43.353 ST = 21.684	PI Sta 21+35.211 Δ = 22° 29' 24.1" (RT) L = 137.384 T = 69.588 R = 350.000 SE = 7.1	PIs Sta 22+24.692 Θs = 5° 19' 13.2" Ls = 65.000 LT = 43.353 ST = 21.684



BEGIN APPROACH SLAB 7m LEFT -L- Sta. 165+87.567
BEGIN BRIDGE 7m LEFT -L- Sta. 165+90.867
END BRIDGE 7m LEFT -L- Sta. 166+38.100
END APPROACH SLAB 7m LEFT -L- Sta. 166+41.400
BEGIN APPROACH SLAB 7m RIGHT -L- Sta. 165+95.254
BEGIN BRIDGE 7m RIGHT -L- Sta. 165+98.585
END BRIDGE 7m RIGHT -L- Sta. 166+46.558
END APPROACH SLAB 7m RIGHT -L- Sta. 166+49.880

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, P.A.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
6			
5			
4			
3			
2		8-25-03	REVISED TITLE BLOCK
1		8-15-03	RELEASED FOR CONSTRUCTION.
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. RICKTERER III

ROADWAY DESIGN ENGINEER 8/25/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.

HYDRAULICS ENGINEER

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename : Y:\Projects\NCDOT\r-2547\ccv\dwy\r2547ccs10aPSH

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

INSET A-A FOR SHEET 10B
INSET B-B FOR SHEET 18
TRAFFIC PROJECTIONS FOR US-64 BYPASS
GEOMETRIC CURVE DATA

22-AUG-2003 12:36
Y:\Projects\NCDOT\r-2547\ccv\dwy\r2547ccs10aPSH
design

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	11A
R/W SHEET NO. 11	

RELEASE FOR CONSTRUCTION
DATE: 02-10-2004

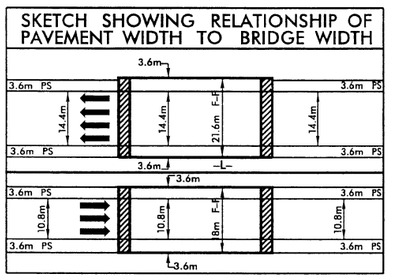
METRIC
5 0 10

-Y1-	
PIs Sta 21+83.199	PI Sta 23+00.601
Θs = 0° 56' 30.7"	Δ = 6° 06' 36.3" (RT)
Ls = 60.000	L = 194.620
LT = 40.001	T = 97.402
ST = 20.001	R = 1,825.000
	SE = 03

-L-
PI Sta 166+72.337
Δ = 50° 25' 31.5" (RT)
L = 1,056.108
T = 565.002
R = 1,200.000
SE = 4.7

-LPAY1-
PIs Sta 10+40.973
Θs = 38° 11' 49.9"
Ls = 60.000
LT = 40.973
ST = 20.887
PI Sta 10+76.667
Δ = 40° 38' 52.6" (RT)
L = 31.925
T = 16.667
R = 45.000
SE = 08
PI Sta 13+25.139
Δ = 58° 31' 56.7" (RT)
L = 45.971
T = 25.218
R = 45.000
SE = 08
PIs Sta 13+66.779
Θs = 38° 11' 49.9"
Ls = 60.000
LT = 40.973
ST = 20.887

SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH



Δ_1 = 46°27' 28.5"

FOR -L- PROFILE SEE SHEETS 24 & 24A
FOR -LPAY1- PROFILE SEE SHEET 32
FOR -Y1- PROFILE SEE SHEET 30

REVISIONS			
5			
4	02-10-04		RFI 664
3	11-14-03		REVISED SLOPE STAKE LIMITS
2	10-01-03		REVISED SLOPE PAVEMENT RFI 594 RFI 419
1	8-25-03		REVISED DRAINAGE AND TITLE BLOCK
0	8-15-03		RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KOCHENDERFER III
ROADWAY DESIGN ENGINEER 2/10/04

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
HYDRAULICS ENGINEER 2/10/04

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : y:\Projects\NCDOT\r-2547cc\rdwy\r2547ccsilla.pah

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 167+40 TO STA. 170+50 -L-
STA. 20+00 TO STA. 22+20 -Y1-
STA. 10+22 TO STA. 11+00 -LPAY1-
STA. 13+00 TO STA. 14+05.892 -LPAY1-

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

10/26/03
10-FEB-2004 13:05
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jcollege

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	11B
R/W SHEET NO. 11	

METRIC 5 0 10

RELEASE FOR CONSTRUCTION

DATE: 12-16-2003

56

KNOTT FARM LIMITED PARTNERSHIP
DB 5946 PG 949
BM 1984 PG 215

64

E. W. RICHARDSON HEIRS
c/o MARTHA DERBYSHIRE
WILL
H. A. RICHARDSON
DB 644 PG 400

NC GRID NAD 83

-RPAY1- PT Sta.15+30.414

UNDERCUT RPAY1
Sta.14+90.000 TO Sta.15+40.000

-RPAY1- PC Sta.13+86.918

END GUARDRAIL
-RPAY1-STA.13+99.795 RT

SPECIAL DITCH
SEE SHEET 3
FOR DETAIL 'A'

UNDERCUT LPAY1
Sta.11+90.000 TO Sta.12+10.000

CLASS 'B' RIPRAP
EST. 0.9 MTN
EST. 4.2 SM FIL. FAB.

-LPAY1-
PCC Sta.12+99.921

MATCHLINE -RPAY1- STA 16+00
SEE SHEET 10C

MATCHLINE -LPAY1-
STA 11+00 SEE SHEET 11A

MATCHLINE -LPAY1-
STA 13+00 SEE SHEET 11A

MATCHLINE -RPAY1-
STA 13+00 SEE SHEET 12A

-RPAY1-	-LPAY1-
PI Sta 14+62.976	PI Sta 13+26.757
Δ = 46° 58' 52.4" (LT)	Δ = 140° 12' 12.5" (RT)
L = 143.496	L = 207.996
T = 76.058	T = 234.832
R = 175.000	R = 85.000
SE = 08	SE = 08

FOR -LPAY1- PROFILE SEE SHEET 32
FOR -RPAY1- PROFILE SEE SHEET 33

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
5			
4			
3			
2		12-16-03	REV. STR* 89 RFI *660
1		8-25-03	REVISED DRAINAGE AND TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER 12/16/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.

HYDRAULICS ENGINEER 12/12/03

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

Document Control Number :

Filename :
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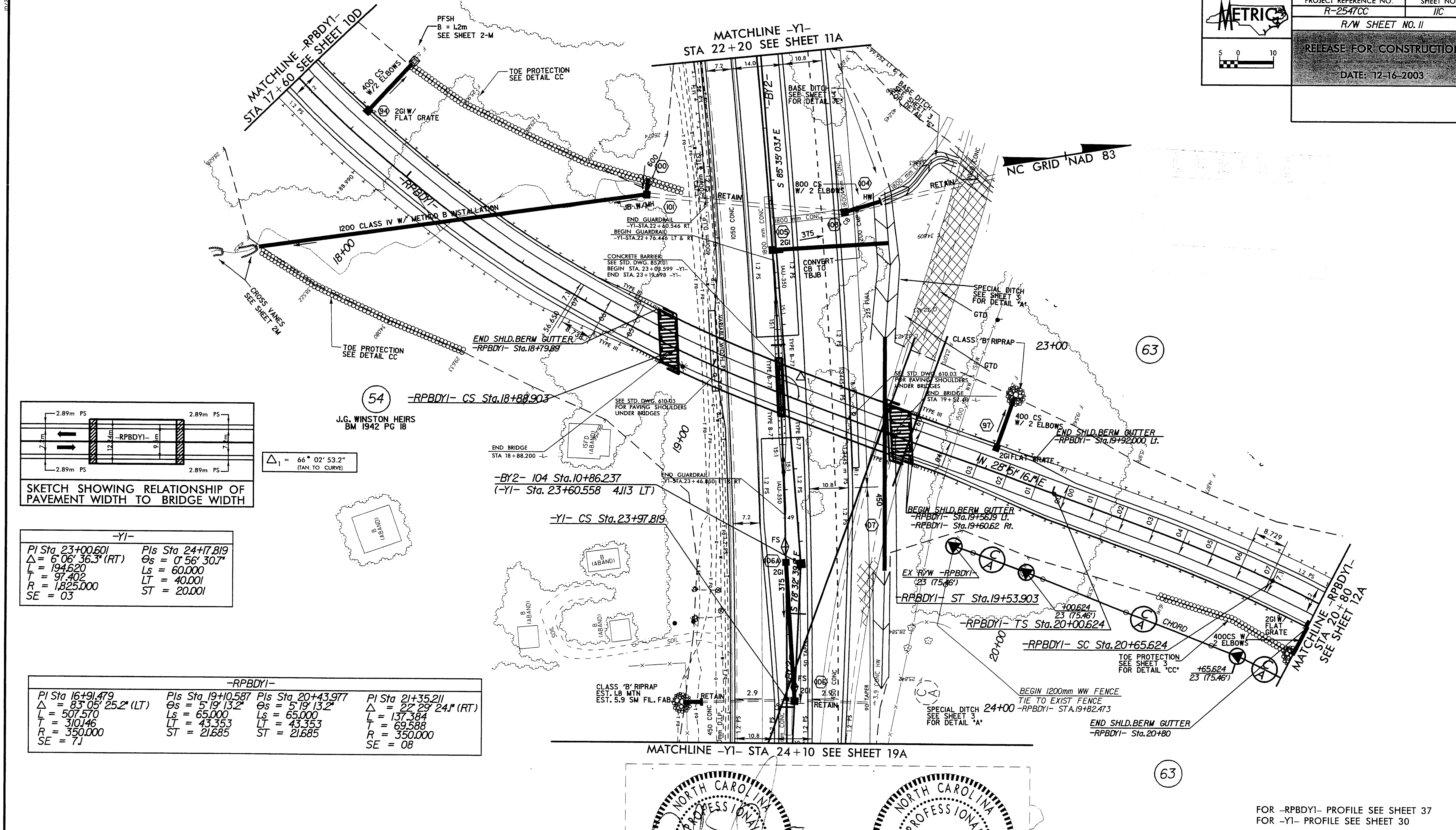
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 13+00 TO STA. 16+00 -RPAY1-
STA. 11+00 TO STA. 13+00 -LPAY1-

16-DEC-2003 14:16
r:\Projects\NCDOT\r-2547cc\rdwy\r2547ccs11b.psh
dbolye


MATCHLINE -RPBDY1- STA 17+60 SEE SHEET 10D
MATCHLINE -Y1- STA 22+20 SEE SHEET 11A
MATCHLINE -Y1- STA 24+10 SEE SHEET 19A
MATCHLINE -RPBDY1- STA 20+80 SEE SHEET 12A
PFSH B = 1.2m SEE SHEET 2-M
TOE PROTECTION SEE DETAIL CC
400 CS W/2 ELBOWS
2GI W/ FLAT GRATE
NC GRID NAD 83
1200 CLASS IV W/ METHOD B INSTALLATION
CROSS VANES SEE SHEET 2M
END SHLD.BERM GUTTER -RPBDY1- Sta.18+79.89
-RPBDY1- CS Sta.18+88.903
J.G. WINSTON HEIRS BM 1942 PG 18
END BRIDGE STA 18+88.200 -L-
-BY2- 104 Sta.10+86.237
(-Y1- Sta. 23+60.558 41.13 LT)
-Y1- CS Sta.23+97.819
END GUARDRAIL -Y1-STA.22+60.546 RT
BEGIN GUARDRAIL -Y1-STA.22+76.446 LT & RT
CONCRETE BARRIER SEE STD. DWG. 857.01 BEGIN STA. 23+03.599 -Y1- END STA. 23+19.698 -Y1-
SEE STD. DWG. 610.03 FOR PAVING SHOULDERS UNDER BRIDGES
CONVERT CB TO TBJB I
SPECIAL DITCH SEE SHEET 3 FOR DETAIL 'A'
CLASS 'B' RIPRAP
23+00
END BRIDGE STA 19+52.40 -L-
400 CS W/ 2 ELBOWS
END SHLD.BERM GUTTER -RPBDY1- Sta.19+92.000 Lt.
2GI FLAT GRATE
N 28°51'16.1" E
BEGIN SHLD.BERM GUTTER -RPBDY1- Sta.19+56.19 Lt. -RPBDY1- Sta.19+60.62 Rt.
EX R/W -RPBDY1- 23 (75.46')
-RPBDY1- ST Sta.19+53.903
+00.624 23 (75.46')
-RPBDY1- TS Sta.20+00.624
-RPBDY1- SC Sta.20+65.624
TOE PROTECTION SEE SHEET 3 FOR DETAIL "CC"
+65.624 23 (75.46')
400CS W/ 2 ELBOWS
BEGIN 1200mm WW FENCE TIE TO EXIST FENCE 24+00 -RPBDY1- STA.19+82.473
SPECIAL DITCH SEE SHEET 3 FOR DETAIL 'A'
END SHLD.BERM GUTTER -RPBDY1- Sta.20+80
CLASS 'B' RIPRAP EST. 1.8 MTN EST. 5.9 SM FIL. FAB.
S 85°35'03.1" E
S 78°32'39.9" E
800 CS W/ 2 ELBOWS
BASE DITCH SEE SHEET 3 FOR DETAIL 'E'
63
54
63
SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH
2.89m PS
-RPBDY1-
△1 = 66° 02' 53.2" (TAN. TO CURVE)
-Y1-
PI Sta 23+00.601
△ = 6°06' 36.3" (RT)
L = 194.620
T = 97.402
R = 1,825.000
SE = 03
PIs Sta 24+17.819
θs = 0°56' 30.7"
Ls = 60.000
LT = 40.001
ST = 20.001
-RPBDY1-
PI Sta 16+91.479
△ = 83°05' 25.2" (LT)
L = 507.570
T = 310.146
R = 350.000
SE = 7.1
PIs Sta 19+10.587
θs = 5°19' 13.2"
Ls = 65.000
LT = 43.353
ST = 21.685
PIs Sta 20+43.977
θs = 5°19' 13.2"
Ls = 65.000
LT = 43.353
ST = 21.685
PI Sta 21+35.211
△ = 22°29' 24.1" (RT)
L = 137.384
T = 69.588
R = 350.000
SE = 08
FOR -RPBDY1- PROFILE SEE SHEET 37
FOR -Y1- PROFILE SEE SHEET 30

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	11C

R/W SHEET NO. 11

METRIC

RELEASE FOR CONSTRUCTION
DATE: 12-16-2003

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3		12-16-03	REV. RIP RAP STR#91/#101 ADDED CROSS VANES BETWEEN STR. #91 / #101
2		10-01-03	REVISED SLOPE PAVEMENT RFI 419
1		8-25-03	REVISED DRAINAGE AND TITLE BLOCK
0		8-15-03	RELEASE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23853 JEFFERY S. DOUGLAS
12/17/03
ROADWAY DESIGN ENGINEER

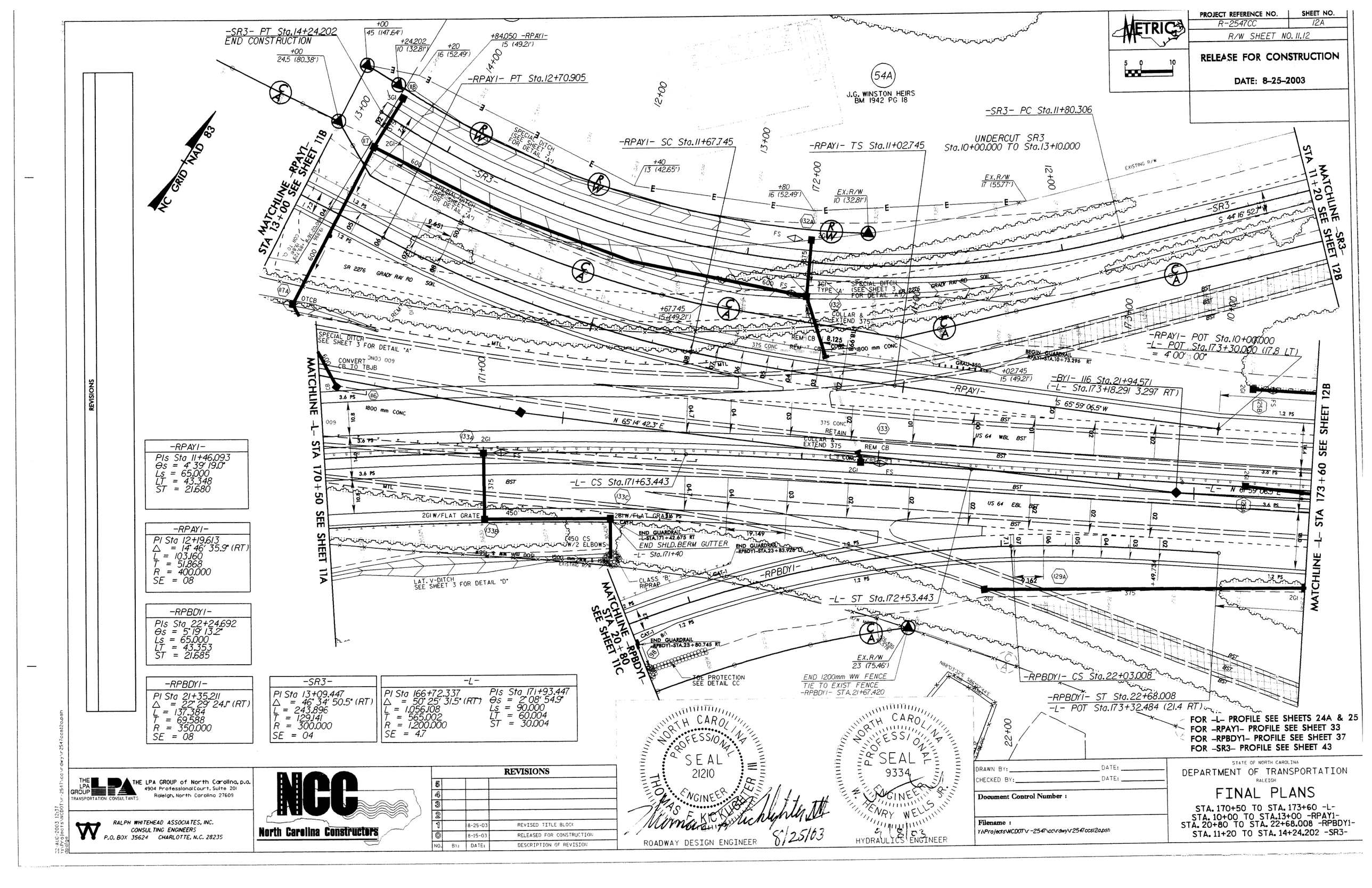
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 9334 W. HENRY WELLS, JR.
12/17/03
HYDRAULICS ENGINEER

DRAWN BY: ______ DATE: ______
CHECKED BY: ______ DATE: ______
Document Control Number :
Filename :
r2547cc_s11c.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 22+20 TO STA. 24+10 -Y1-
STA. 17+60 TO STA. 20+80 -RPBY1-



-RPAY1-
PIs Sta 11+46.093
Θs = 4° 39' 19.0"
Ls = 65.000
LT = 43.348
ST = 21.680

-RPAY1-
PI Sta 12+19.613
Δ = 14° 46' 35.9" (RT)
L = 103.160
T = 51.868
R = 400.000
SE = 08

-RPBDY1-
PIs Sta 22+24.692
Θs = 5° 19' 13.2"
Ls = 65.000
LT = 43.353
ST = 21.685

-RPBDY1-
PI Sta 21+35.211
Δ = 22° 29' 24.1" (RT)
L = 137.384
T = 69.588
R = 350.000
SE = 08

-SR3-
PI Sta 13+09.447
Δ = 46° 34' 50.5" (RT)
L = 243.896
T = 129.141
R = 300.000
SE = 04

-L-	
PI Sta 166+72.337	PIs Sta 171+93.447
Δ = 50° 25' 31.5" (RT)	Θs = 2° 08' 54.9"
L = 1,056.108	Ls = 90.000
T = 565.002	LT = 60.004
R = 1,200.000	ST = 30.004
SE = 4.7	

REVISIONS			
NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2			
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	12A
R/W SHEET NO. 11,12	

RELEASE FOR CONSTRUCTION

DATE: 8-25-2003

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER 8/25/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.

HYDRAULICS ENGINEER 8/25/03

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CHECKED BY: _____ DATE: _____

Document Control Number :

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 170+50 TO STA. 173+60 -L-
STA. 10+00 TO STA.13+00 -RPAY1-
STA. 20+80 TO STA. 22+68.008 -RPBDY1-
STA. 11+20 TO STA. 14+24.202 -SR3-

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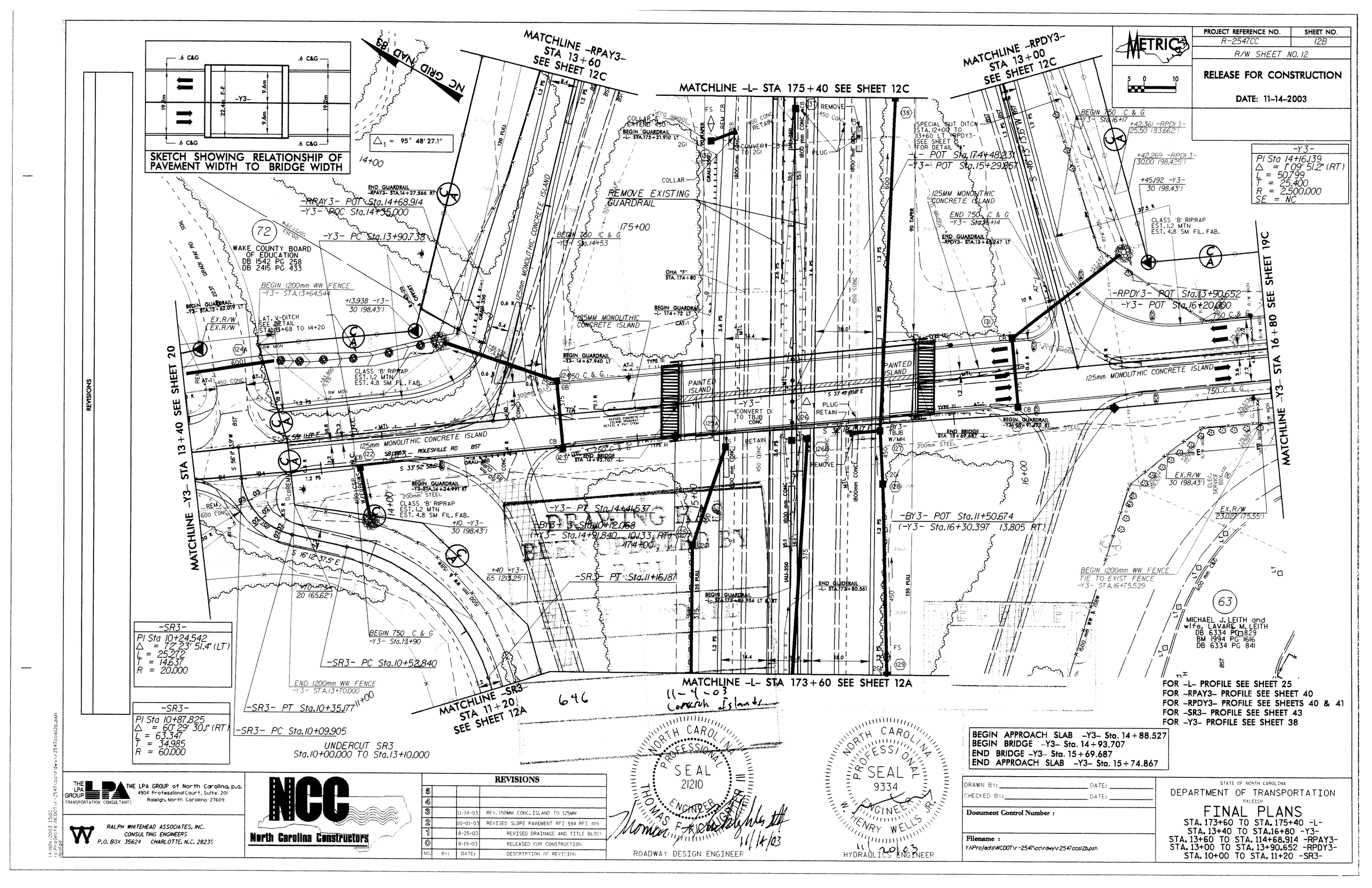
y:\Projects\NCDOT\r-2547\cc\rdwy\r2547ccsi2a.psn
design


METRIC
5 0 10
PROJECT REFERENCE NO. R-2547CC
SHEET NO. 12B
R/W SHEET NO. 12
RELEASE FOR CONSTRUCTION
DATE: 11-14-2003
SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH
.6 C&G
19.2m
9.6m
22.4m E-F
-Y3-
NC GRID NAD 83
MATCHLINE -RPAY3- STA 13+60 SEE SHEET 12C
MATCHLINE -L- STA 175+40 SEE SHEET 12C
MATCHLINE -RPDY3- STA 13+00 SEE SHEET 12C
MATCHLINE -Y3- STA 13+40 SEE SHEET 20
MATCHLINE -Y3- STA 16+80 SEE SHEET 19C
MATCHLINE -SR3- STA 11+20 SEE SHEET 12A
MATCHLINE -L- STA 173+60 SEE SHEET 12A
Δ1 = 95° 48' 27.1"
-Y3-
PI Sta 14+16.139
Δ = 1°09' 51.2" (RT)
L = 50.799
T = 25.400
R = 2,500.000
SE = NC
-RPAY3- POT Sta.14+68.914
-Y3- POC Sta.14+55.000
-Y3- PC Sta.13+90.738
-RPDY3- POT Sta.13+90.652
-Y3- POT Sta.16+20.000
-L- POT Sta.174+48.331
-Y3- POT Sta.15+29.867
-BY3- POT Sta.11+50.674
(-Y3- Sta.16+30.397 13.805 RT)
-BY3- Sta.10+12.068
(-Y3- Sta.14+81.840 10.133 RT)
-SR3- PT Sta.11+16.187
-Y3- PT Sta.14+41.537
-SR3- PC Sta.10+52.840
-SR3- PT Sta.10+35.177
-SR3- PC Sta.10+09.905
-SR3-
PI Sta 10+24.542
Δ = 72°23' 51.4" (LT)
L = 25.212
T = 14.637
R = 20.000
-SR3-
PI Sta 10+87.825
Δ = 60°29' 30.1" (RT)
L = 63.347
T = 34.985
R = 60.000
UNDERCUT SR3
Sta.10+00.000 TO Sta.13+10.000
72
WAKE COUNTY BOARD OF EDUCATION
DB 1542 PG 258
DB 2415 PG 433
63
MICHAEL J. LEITH and wife, LAVARE M. LEITH
DB 6334 PG 829
BM 1994 PG 1616
DB 6334 PG 841
WIDEN GRADE
BEGIN 1200mm WW FENCE -Y3- STA.13+64.544
BEGIN 750 C & G -Y3- Sta.13+90
BEGIN 750 C & G -Y3- Sta.14+53
BEGIN 750 C & G -Y3- Sta.16+17
END 750 C & G -Y3- Sta.16+14
END 1200mm WW FENCE -Y3- STA.13+70.000
BEGIN 1200mm WW FENCE TIE TO EXIST FENCE -Y3- STA.16+75.529
END GUARDRAIL -RPAY3- STA.14+27.566 RT
BEGIN GUARDRAIL -Y3- STA.13+62.019 LT
BEGIN GUARDRAIL -L- STA.175+21.910 LT
BEGIN GUARDRAIL -L- 174+72 LT
BEGIN GUARDRAIL -Y3- 14+67.940 LT
BEGIN GUARDRAIL -Y3-STA.14+24.991 RT
END GUARDRAIL -RPDY3- STA.13+83.247 LT
END GUARDRAIL -L- STA.173+80.561
BEGIN GUARDRAIL -L- STA.172+85.984 LT & RT
BEGIN GUARDRAIL -Y3- 16+91.470 RT
END BRIDGE STA 14+93.707
END BRIDGE STA 15+69.687
+13.938 -Y3- 30 (98.43')
+10 -Y3- 30 (98.43')
+40 -Y3- 65 (213.25')
+20 -Y3- 20 (65.62')
+42.361 -RPDY3- 25.50 (83.662')
+42.269 -RPDY3- 30.00 (98.425')
+45.92 -Y3- 30 (98.43')
LAT. V-DITCH SEE DETAIL STA.13+68 TO 14+20
CLASS 'B' RIPRAP EST. 1.2 MTN EST. 4.8 SM FIL. FAB.
SPECIAL DIT DITCH STA.12+00 TO 13+60 LT -RPDY3- SEE SHEET 6 FOR DETAIL
125mm MONOLITHIC CONCRETE ISLAND
PAINTED ISLAND
REMOVE EXISTING GUARDRAIL
REMOVE 450 CONC
CONVERT CB TO 2GI
CONVERT DI TO TBJB CONC
PLUG
RETAIN
OHA 'F' STA. 174+80
SR 1127 ROLESVILLE RD
GRADY HAY RD
EX.R/W 30 (98.43')
EX.R/W 23.02' (75.55')
ELEC. SERVICE BOX
FOR -L- PROFILE SEE SHEET 25
FOR -RPAY3- PROFILE SEE SHEET 40
FOR -RPDY3- PROFILE SEE SHEETS 40 & 41
FOR -SR3- PROFILE SEE SHEET 43
FOR -Y3- PROFILE SEE SHEET 38
BEGIN APPROACH SLAB -Y3- Sta. 14+88.527
BEGIN BRIDGE -Y3- Sta. 14+93.707
END BRIDGE -Y3- Sta. 15+69.687
END APPROACH SLAB -Y3- Sta. 15+74.867
REVISIONS
NO. BY: DATE: DESCRIPTION OF REVISION
5 11-14-03 REV. 150MM CONC. ISLAND TO 125MM
4 10-01-03 REVISED SLOPE PAVEMENT RFI 594 RFI 419
3 8-25-03 REVISED DRAINAGE AND TITLE BLOCK
2 8-15-03 RELEASED FOR CONSTRUCTION
1
NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KOCHENOUR
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER HENRY WELLS JR.
HYDRAULICS ENGINEER
THE LPA GROUP of North Carolina, P.A. 4904 Professional Court, Suite 201 Raleigh, North Carolina 27609
RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235
North Carolina Constructors
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : Y:\Projects\WCDOT\v-2547\ccv\dwy\v2547ccsl2b.dgn
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 173+60 TO STA. 175+40 -L-
STA. 13+40 TO STA.16+80 -Y3-
STA. 13+60 TO STA. 114+68.914 -RPAY3-
STA. 13+00 TO STA. 13+90.652 -RPDY3-
STA. 10+00 TO STA. 11+20 -SR3-

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	12C
R/W SHEET NO. 12	

METRIC

RELEASE FOR CONSTRUCTION

DATE: 8-25-2003

-RPAY3-
PIs Sta 11+55.005 Θs = 2° 51' 53.2" Ls = 60.000 LT = 40.005 ST = 20.005

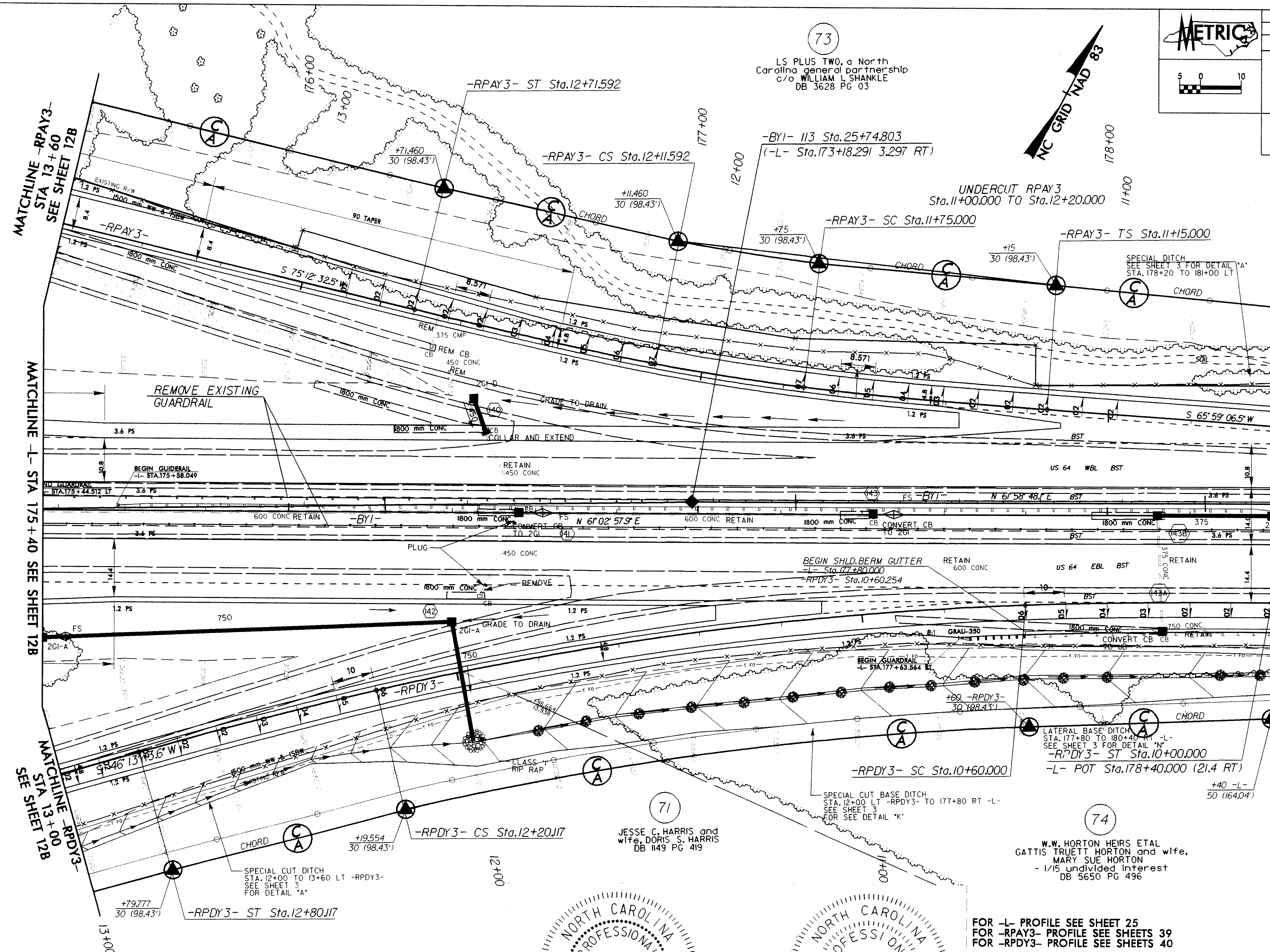
-RPAY3-
PI Sta 11+93.302 Δ = 3° 29' 39.5" (RT) L = 36.592 T = 18.302 R = 600.000 SE = 07

-RPAY3-
PIs Sta 12+31.597 Θs = 2° 51' 53.2" Ls = 60.000 LT = 40.005 ST = 20.005

-RPDY3-
PIs Sta 10+40.003 Θs = 2° 08' 54.9" Ls = 60.000 LT = 40.003 ST = 20.003

-RPDY3-
PI Sta 11+40.327 Δ = 11° 28' 03.0" (LT) L = 160.117 T = 80.327 R = 800.000 SE = 06

-RPDY3-
PIs Sta 12+40.119 Θs = 2° 08' 54.9" Ls = 60.000 LT = 40.003 ST = 20.003



NC GRID NAD 83
(73) LS PLUS TWO, a North Carolina general partnership c/o WILLIAM L. SHANKLE DB 3628 PG 03
-RPAY3- ST Sta.12+71.592
-BY1- 113 Sta.25+74.803
(-L- Sta.173+18.291 3.297 RT)
-RPAY3- CS Sta.12+11.592
UNDERCUT RPAY3
Sta.11+00.000 TO Sta.12+20.000
-RPAY3- SC Sta.11+75.000
-RPAY3- TS Sta.11+115.000
SPECIAL DITCH SEE SHEET 3 FOR DETAIL "A" STA. 178+20 TO 181+00 LT
MATCHLINE -RPAY3- STA 13+60 SEE SHEET 12B
MATCHLINE -L- STA 175+40 SEE SHEET 12B
MATCHLINE -L- STA 178+40 SEE SHEET 13
MATCHLINE -RPDY3- STA 13+00 SEE SHEET 12B
REMOVE EXISTING GUARDRAIL
COLLAR AND EXTEND
GRADE TO DRAIN
BEGIN GUIDERAIL -L- STA.175+58.049
US 64 WBL BST
US 64 EBL BST
N 61°58' 48.1" E
N 61°02' 57.9" E
S 75°12' 32.5" W
S 65°59' 06.5" W
BEGIN SHLD.BERM GUTTER -L- Sta.177+80.000 -RPDY3- Sta.10+60.254
BEGIN GUARDRAIL -L- STA.177+63.564 LT
LATERAL BASE DITCH STA.177+80 TO 180+40 RT -L- SEE SHEET 3 FOR DETAIL "N"
-RPDY3- ST Sta.10+00.000
-L- POT Sta.178+40.000 (21.4 RT)
-RPDY3- SC Sta.10+60.000
SPECIAL CUT BASE DITCH STA.12+00 LT -RPDY3- TO 177+80 RT -L- SEE SHEET 3 FOR SEE DETAIL "K"
(71) JESSE C. HARRIS and wife, DORIS S. HARRIS DB 1149 PG 419
(74) W.W. HORTON HEIRS ETAL GATTIS TRUETT HORTON and wife, MARY SUE HORTON - 1/15 undivided interest DB 5650 PG 496
-RPDY3- CS Sta.12+20.117
SPECIAL CUT DITCH STA.12+00 TO 13+60 LT -RPDY3- SEE SHEET 3 FOR DETAIL "A"
-RPDY3- ST Sta.12+80.117
CLASS "I" RIP RAP

FOR -L- PROFILE SEE SHEET 25
FOR -RPAY3- PROFILE SEE SHEETS 39
FOR -RPDY3- PROFILE SEE SHEETS 40

THE LPA GROUP of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609
TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2			
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS E. KICKLIGHTER III

8/25/03

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.

HYDRAULICS ENGINEER

DRAWN BY: ________ DATE: ______
CHECKED BY: ________ DATE: ______

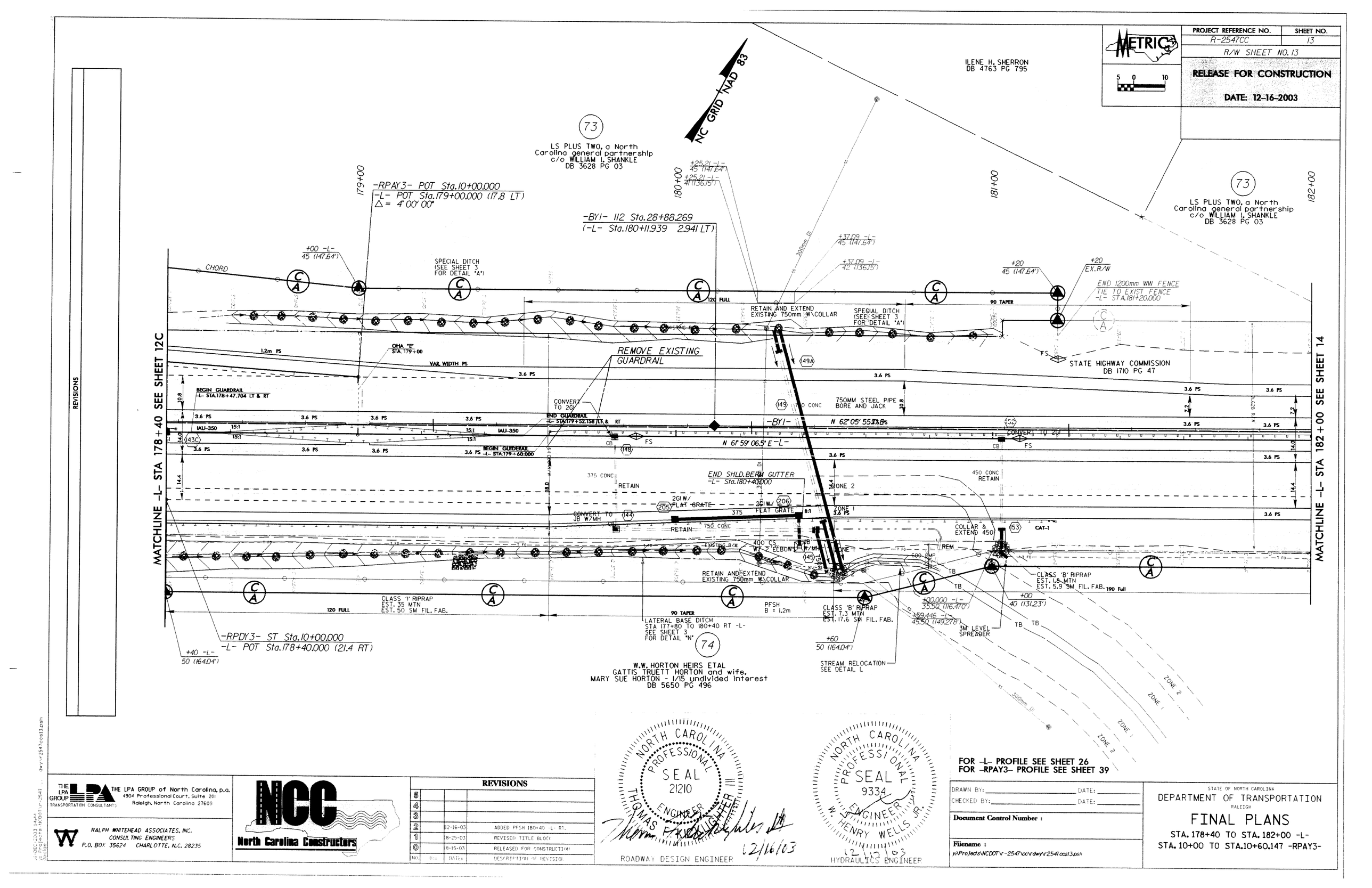
Document Control Number :

Filename : Y:\Projects\NCDOT\r-2547\cc\rdwy\r2547ccs12c.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 175+40 TO STA. 178+40 -L-
STA. 10+60.147 TO STA.13+60 -RPAY3-
STA. 10+00 TO STA. 13+00 -RPDY3-



FOR -L- PROFILE SEE SHEET 26
FOR -RPAY3- PROFILE SEE SHEET 39

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North Carolina Constructors

NO.	BY	DATE	REVISIONS
5			
4			
3			
2		12-16-03	ADDED PFSH (80+40 -L- RT.
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS FULLER SHEFFIELD III
ROADWAY DESIGN ENGINEER 12/16/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER HENRY WELLS JR
HYDRAULICS ENGINEER 12/12/03

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : y:\Projects\NCDOT\r-2547cc\rdwy\r2547ccsl3.pdsh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 178+40 TO STA. 182+00 -L-
STA. 10+00 TO STA.10+60.147 -RPAY3-

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	14

R/W SHEET NO. 14

RELEASE FOR CONSTRUCTION

DATE: 12-16-2003

METRIC

5 0 10

REVISIONS

182+00 183+00 184+00 185+00

NC GRID NAD 83

73

LS PLUS TWO, a North Carolina general partnership
c/o WILLIAM L. SHANKLE
DB 3628 PG 03

-BY1- 111 Sta. 31+75.395
(-L- Sta. 182+99.064 2.371 LT)

REMOVE EXISTING GUARDRAIL

EXISTING R/W

COLLAR & EXTEND 450 2GI FS (54)

CB REM CB

RETAIN 450 CONC

CONVERT CB TO 2GI

-BY1- N 62° 10' 27.0" E

N 61° 59' 06.5" E

-L-

PLUG 450 CONC

REM CB

BEGIN GUARDRAIL -L- STA.185+11.949 LT & RT

END GUARDRAIL -L- STA.185+06.833

CONVERT TO JB W/MH

GRAU-350

BEGIN GUARDRAIL -L- STA.185+10.760 RT

BEGIN SHLD. BERM GUTTER -L- Sta. 185+27.18

+00.000 -L- 35.50 (116.470')

GRAU-350 COLLAR & EXTEND 450 (60)

CLASS 'B' RIPRAP EST. 3.0 MTN EST. 10.0 SM FIL. FAB.

+00 EX.R/W

+00 40 (131.23')

END 1200mm WW FENCE TIE TO EXIST FENCE -L- STA.185+00.000

PFSH B=1.5M SEE SHEET 2-M

SPECIAL DITCH W/CLASS 'B' RIP RAP SEE SHEET 3 FOR DETAIL 'C' STA 184+60 TO 184+90 RT

190 Full 90 TAPER 190 Full 90 TAPER

MATCHLINE -L- STA 182+00 SEE SHEET 13

MATCHLINE -L- STA 185+60 SEE SHEET 15

74

W.W. HORTON HEIRS ETAL
GATTIS TRUETT HORTON and wife,
MARY SUE HORTON - 1/15 undivided interest
DB 5650 PG 496

FOR -L- PROFILE SEE SHEET 26

THE LPA GROUP of North Carolina, p.a.
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North Carolina Constructors

REVISIONS			
5			
4			
3			
2		12-16-03	REMOVED RIPRAP WITHIN WETALNDS 184+80 RT.
1		8-25-03	REVISED DRAINAGE AND TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III

ROADWAY DESIGN ENGINEER 12/16/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.

HYDRAULICS ENGINEER 12/17/03

DRAWN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

Document Control Number :

Filename :
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 182+60 TO STA. 185+60 -L-

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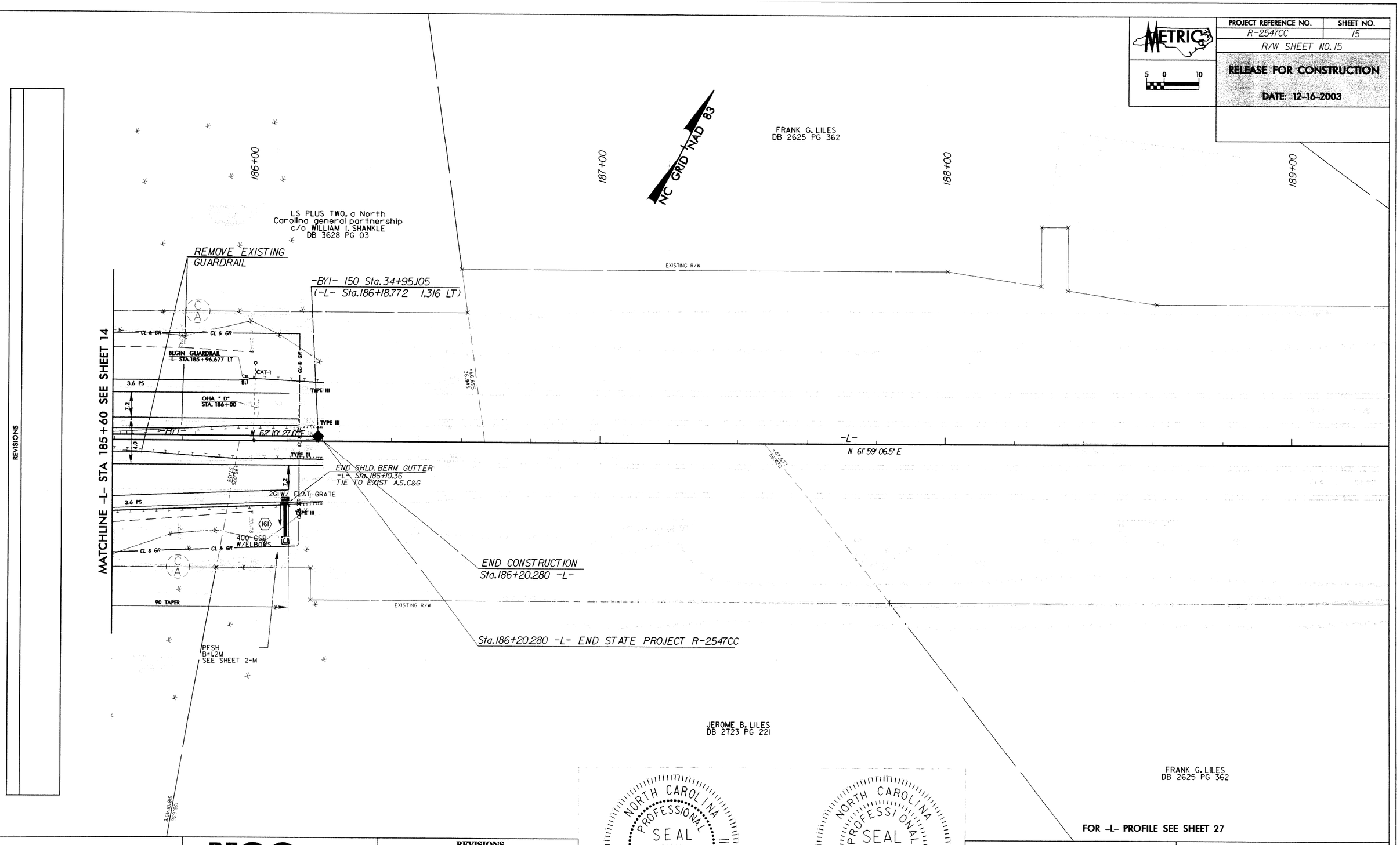
5-DEC-2003 14:48
J:\Projects\NCDOT\r-2547\cc\dwy\r2547ccs14.pdh



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Raleigh, North Carolina 27609
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CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS			
NO.	BY:	DATE:	DESCRIPTION OF REVISION:
6			
4			
3			
2		12-16-03	MODIFIED DISPLAY OF PFSH
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KINCHEN III
ROADWAY DESIGN ENGINEER 12/16/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
HYDRAULICS ENGINEER 12/17/03

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : y:\Projects\NCDOT\r-2547cc\draw\r2547ccsl5.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

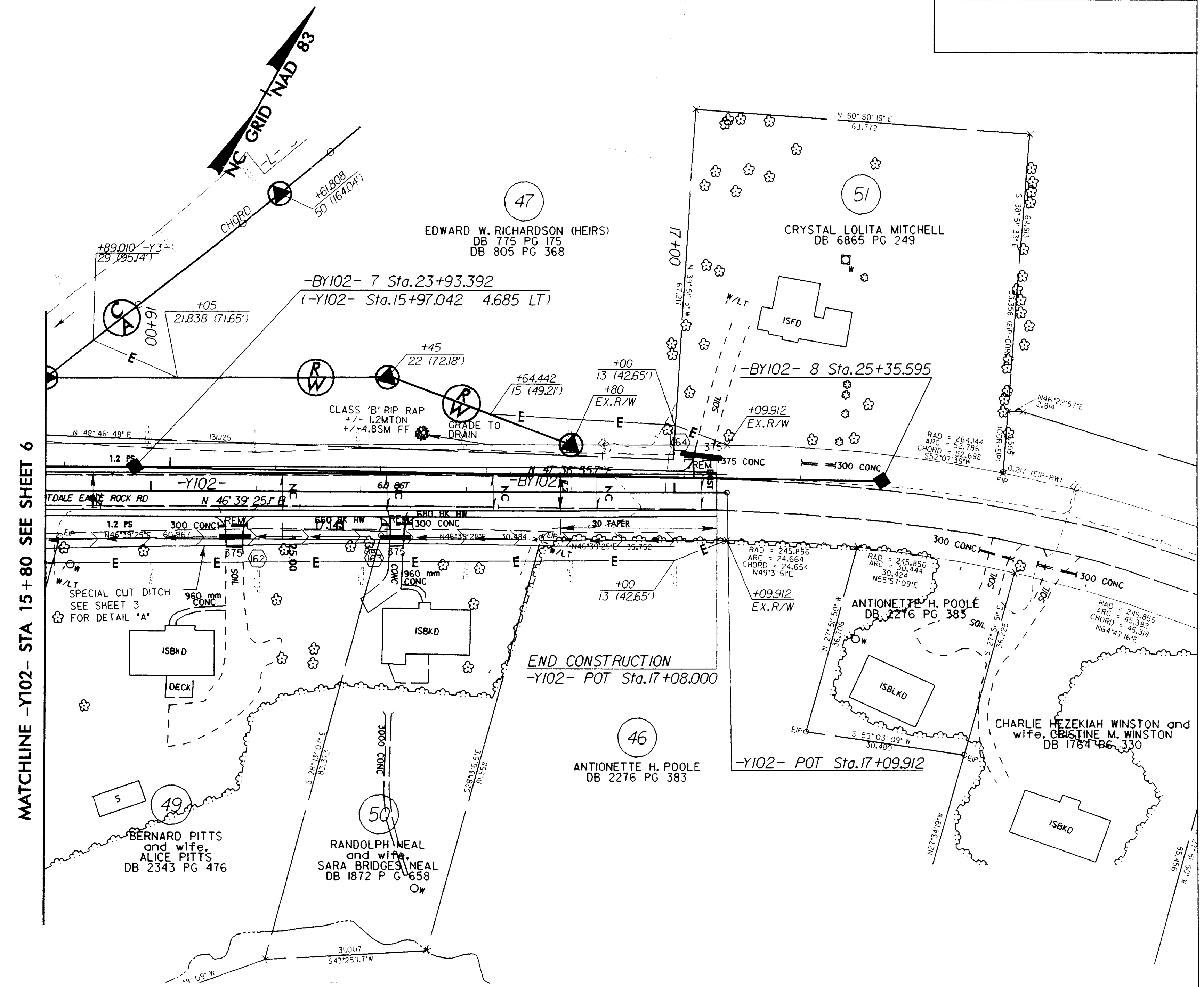
FINAL PLANS

STA. 185+60 TO STA. 186+20.280 -L-

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	16
R/W SHEET NO. 16	

RELEASE FOR CONSTRUCTION

DATE: 8-25-2003



NC GRID NAD 83
MATCHLINE -Y102- STA 15+80 SEE SHEET 6
EDWARD W. RICHARDSON (HEIRS)
DB 775 PG 175
DB 805 PG 368
CRYSTAL LOLITA MITCHELL
DB 6865 PG 249
-BY102- 7 Sta.23+93.392
(-Y102- Sta.15+97.042 4.685 LT)
-BY102- 8 Sta.25+35.595
CLASS 'B' RIP RAP
GRADE TO DRAIN
SPECIAL CUT DITCH
SEE SHEET 3
FOR DETAIL "A"
END CONSTRUCTION
-Y102- POT Sta.17+08.000
-Y102- POT Sta.17+09.912
ANTIONETTE H. POOLE
DB 2276 PG 383
CHARLIE HEZEKIAH WINSTON and
wife, CRISTINE M. WINSTON
DB 1764 PG 330
BERNARD PITTS
and wife,
ALICE PITTS
DB 2343 PG 476
RANDOLPH NEAL
and wife,
SARA BRIDGES NEAL
DB 1872 PG 658
REVISIONS

FOR -Y102- PROFILE SEE SHEET 28

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKLIGHTER III — ROADWAY DESIGN ENGINEER — 8/25/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR. — HYDRAULICS ENGINEER — 8/25/03

DRAWN BY: ______ DATE: ______
CHECKED BY: ______ DATE: ______

Document Control Number :

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 15+80 TO STA. 17+09.912 -Y102-

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CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2			
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

12-AUG-2003 12:37
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PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	17
R/W SHEET NO. 17	

METRIC

5 0 10

RELEASE FOR CONSTRUCTION

DATE: 8-25-2003

REVISIONS

NC GRID NAD 83

J. T. KNOTT JR
NO DEED REFERENCE

EDWIN S. PRESTON, Jr. and wife DOROTHY K. PRESTON
DB 1408 PG 59
BM 1960 PG 3

61
DOROTHY KNOTT PRESTON
DB 3253 PG 944
BM 1984 PG 215

62
KNOTT AIRPORT LIMITED PARTNERSHIP
BM 1915 PG 89
DB 5946 PG 951
DB 5946 PG 951

RALEIGH EAST AIRPORT

-Y1- Sta.10+00.000

-BY1- 100 Sta.7+51.729
(-Y1- Sta.11+17.271 4.403 LT)

-Y1- TS Sta.11+79.602

-Y1- SC Sta.12+39.602

-Y1- CS Sta.13+30.723

+30.723 -Y1-
EX.R/W

MATCHLINE -Y1- STA 13+40 SEE SHEET 18

PERMANENT SOIL REINFORCEMENT MATTING
STA. 11+40 TO 13+20 -Y1-

N 83° 45' 15.0" E

N 83° 35' 07.9" E -Y1-

N 89° 10' 56.9" E

-BY1-

BEGIN CONSTRUCTION
-Y1- POC Sta.11+00.00

POND

CLASS B RIPRAP
EST. 4.5 MTONS
EST. 11.7 SM FIL. FAB.

JAMES ERVIN RIGSBEE
DB 2225 PG 652

PARALLEL PIPE END SECTION

JB W/MH

BEGIN GUARDRAIL
-Y1- STA.12+61.702 RT

+80 -Y1-
EXIST. R/W

SPECIAL DITCH
STA. 12+00 TO 13+20 RT
SEE SHEET 3 FOR DETAIL 'A'

CLASS B RIPRAP
EST. 4.5 MTONS
EST. 11.7 SM FIL. FAB.

+20 -Y1-
32 (104.99')

+30.723 -Y1-
EXIST. R/W
-#35 -Y1-
PROP. R/W
29.596 (97.10')

CONVERT TO TBJB W/ MH

COLLAR (MED.)

-Y1-		
PIs Sta 12+19.604	PI Sta 12+85.192	PIs Sta 13+50.725
θs = 1° 39' 38.7"	Δ = 5° 02' 39.4" (RT)	θs = 1° 39' 38.7"
Ls = 60.000	L = 91.121	Ls = 60.000
LT = 40.002	T = 45.590	LT = 40.002
ST = 20.002	R = 1,035.000	ST = 20.002
	SE = 4.7	

FOR -Y1- PROFILE SEE SHEET 29

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CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC
North Carolina Constructors

REVISIONS			
NO.	BY:	DATE:	DESCRIPTION OF REVISION
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER
THOMAS F. KICKLIGHTER III
ROADWAY DESIGN ENGINEER
8/25/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER
W. HENRY WELLS JR.
HYDRAULICS ENGINEER
8/25/03

DRAWN BY: DATE:
CHECKED BY: DATE:

Document Control Number :

Filename :
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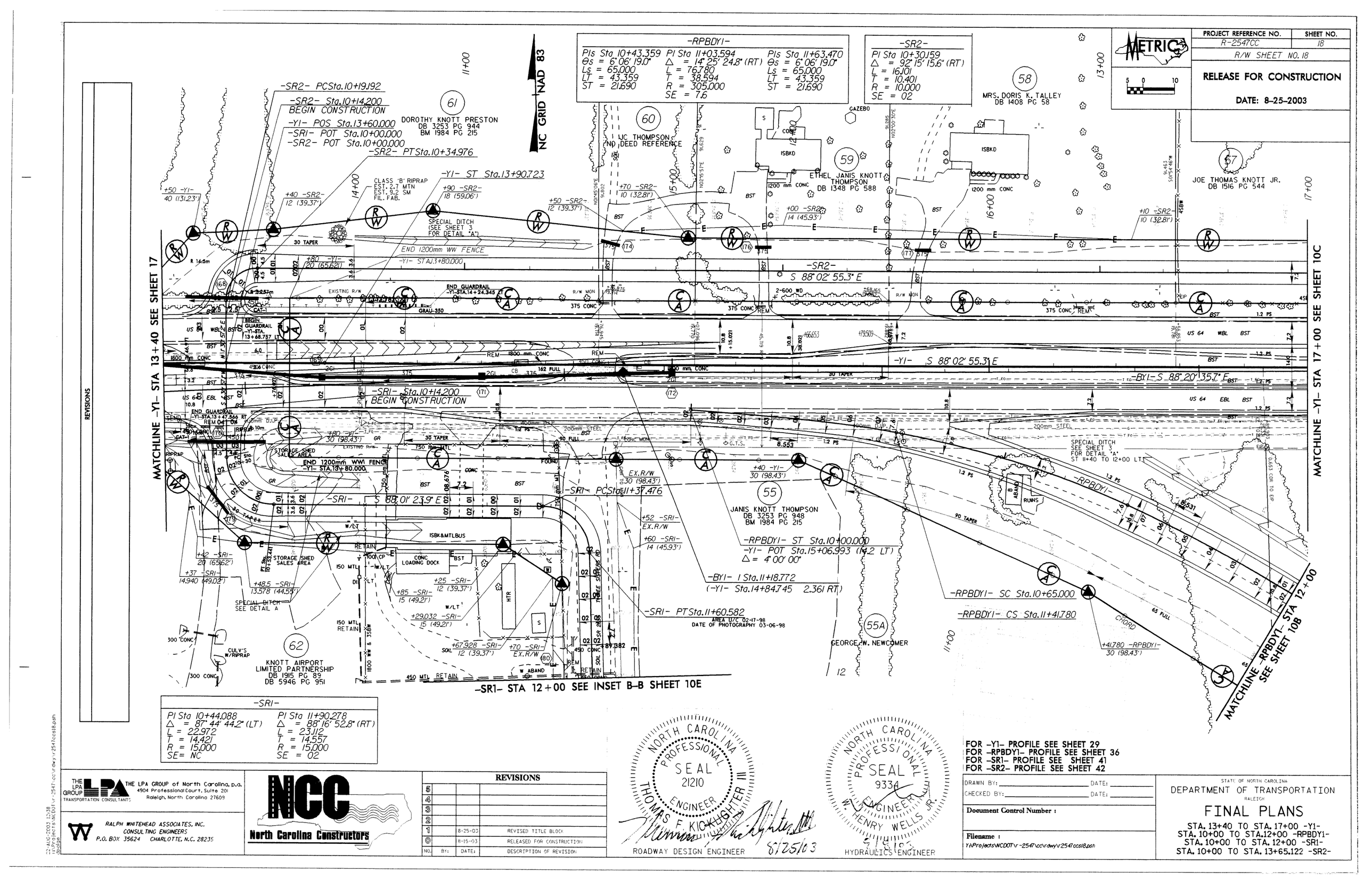
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 11+00 TO STA. 13+40 -Y1-

22-AUG-2003 13:28
I:\Projects\NCDOT\r-2547\cc\rdwy\r2547ccsl7.psh
dbolge


PROJECT REFERENCE NO. R-2547CC
SHEET NO. 18
R/W SHEET NO. 18
RELEASE FOR CONSTRUCTION
DATE: 8-25-2003
METRIC
5 0 10
NC GRID NAD 83
-RPBDY1-
PIs Sta 10+43.359 Θs = 6°06'19.0" Ls = 65.000 LT = 43.359 ST = 21.690
PI Sta 11+03.594 Δ = 14°25'24.8" (RT) L = 76.780 T = 38.594 R = 305.000 SE = 7.6
PIs Sta 11+63.470 Θs = 6°06'19.0" Ls = 65.000 LT = 43.359 ST = 21.690
-SR2-
PI Sta 10+30.159 Δ = 92°15'15.6" (RT) L = 16.101 T = 10.401 R = 10.000 SE = 02
-SR2- PCSta.10+19.192
-SR2- Sta.10+14.200 BEGIN CONSTRUCTION
-Y1- POS Sta.13+60.000
-SRI- POT Sta.10+00.000
-SR2- POT Sta.10+00.000
-SR2- PTSta.10+34.976
-Y1- ST Sta.13+90.723
DOROTHY KNOTT PRESTON DB 3253 PG 944 BM 1984 PG 215
UC THOMPSON NO DEED REFERENCE
ETHEL JANIS KNOTT THOMPSON DB 1348 PG 588
MRS. DORIS K. TALLEY DB 1408 PG 58
JOE THOMAS KNOTT JR. DB 1516 PG 544
JANIS KNOTT THOMPSON DB 3253 PG 948 BM 1984 PG 215
KNOTT AIRPORT LIMITED PARTNERSHIP DB 1915 PG 89 DB 5946 PG 951
GEORGE W. NEWCOMER
MATCHLINE -Y1- STA 13+40 SEE SHEET 17
MATCHLINE -Y1- STA 17+00 SEE SHEET 10C
-SR1- STA 12+00 SEE INSET B-B SHEET 10E
MATCHLINE -RPBDY1- STA 12+00 SEE SHEET 10B
-SRI- Sta.10+14.200 BEGIN CONSTRUCTION
-SRI- PCSta.11+37.476
-SRI- PTSta.11+60.582
-BY1- I Sta.11+18.772 (-Y1- Sta.14+84.745 2.361 RT)
-RPBDY1- ST Sta.10+00.000
-Y1- POT Sta.15+06.993 (14.2 LT)
Δ = 4°00'00"
-RPBDY1- SC Sta.10+65.000
-RPBDY1- CS Sta.11+41.780
-SRI-
PI Sta 10+44.088 Δ = 87°44'44.2" (LT) L = 22.972 T = 14.421 R = 15.000 SE = NC
PI Sta 11+90.278 Δ = 88°16'52.8" (RT) L = 23.112 T = 14.557 R = 15.000 SE = 02
FOR -Y1- PROFILE SEE SHEET 29
FOR -RPBDY1- PROFILE SEE SHEET 36
FOR -SR1- PROFILE SEE SHEET 41
FOR -SR2- PROFILE SEE SHEET 42
REVISIONS
8 7 6 5 4 3 2 1 0
1 8-25-03 REVISED TITLE BLOCK
0 8-15-03 RELEASED FOR CONSTRUCTION
NO. BY: DATE: DESCRIPTION OF REVISION
NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KICKHIGHTER III
ROADWAY DESIGN ENGINEER 8/25/03
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER HENRY WELLS JR.
HYDRAULICS ENGINEER
THE LPA GROUP of North Carolina, p.a. 4904 Professional Court, Suite 201 Raleigh, North Carolina 27609
RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS P.O. BOX 35624 CHARLOTTE, N.C. 28235
NCC North Carolina Constructors
DRAWN BY: DATE:
CHECKED BY: DATE:
Document Control Number :
Filename : YAProjects\NCDOT\r-2547cc\rdwy\r2547ccsi8.psh
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
FINAL PLANS
STA. 13+40 TO STA. 17+00 -Y1-
STA. 10+00 TO STA.12+00 -RPBDY1-
STA. 10+00 TO STA. 12+00 -SR1-
STA. 10+00 TO STA. 13+65.122 -SR2-
23-AUG-2003 12:38
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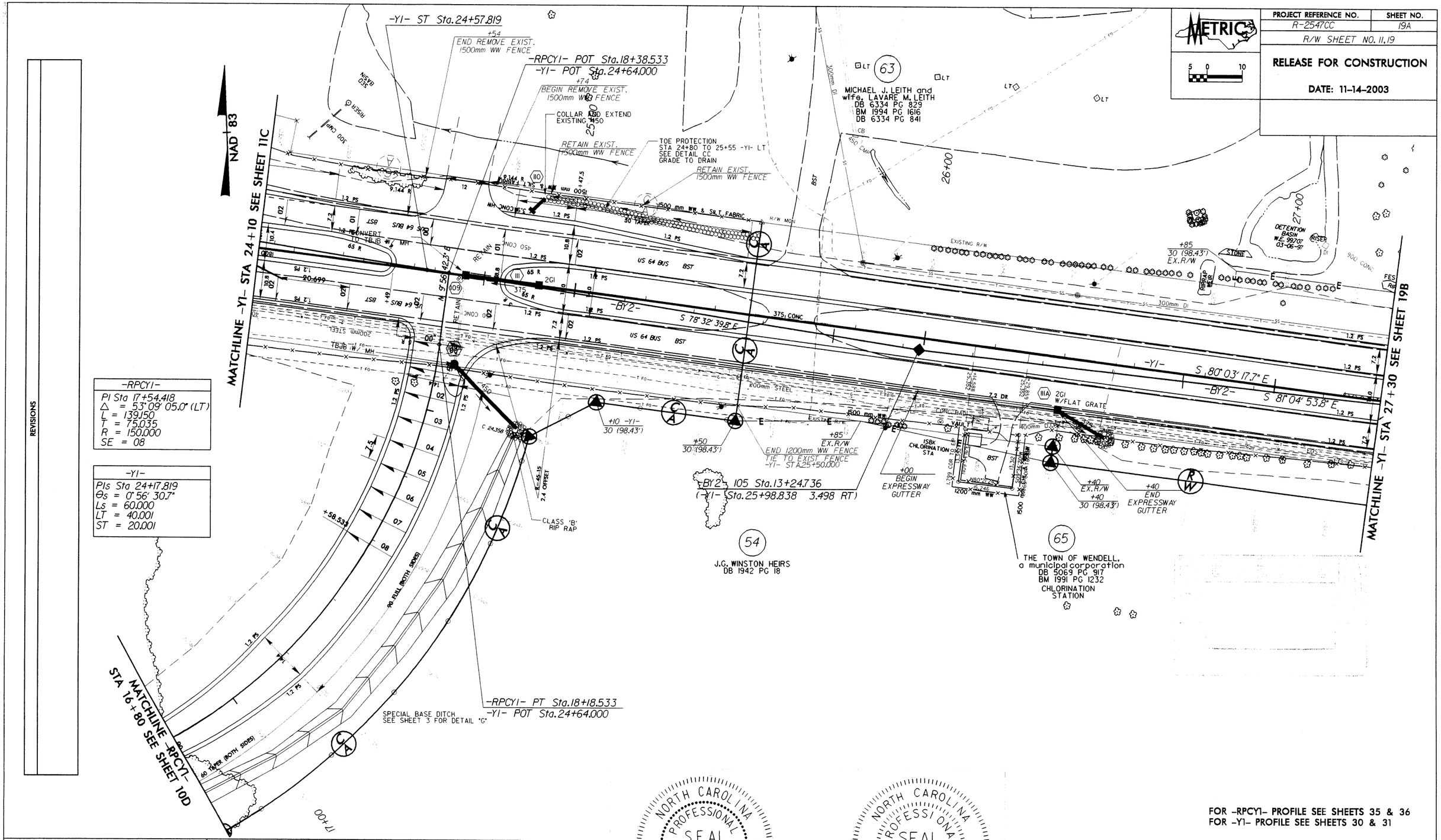
design



FOR -RPCY1- PROFILE SEE SHEETS 35 & 36
FOR -Y1- PROFILE SEE SHEETS 30 & 31

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Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
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North Carolina Constructors

NO.	BY:	DATE:	REVISIONS
5			
4			
3			
2		11-14-03	REV. DRIVEWAY ENT. STA. 24+64+/- LT -Y1-
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. HICKLINGER III
ROADWAY DESIGN ENGINEER 6/14/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
HYDRAULICS ENGINEER 11/20/03

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
Document Control Number :
Filename : Y:\Projects\NCDOT\r-2547\ccr\dwy\r2547ccsi19a.psh

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 24+10 TO STA. 27+30 -Y1-
STA. 16+80 TO STA. 18+38.533 -RPCY1-

11-20-2003 13:02
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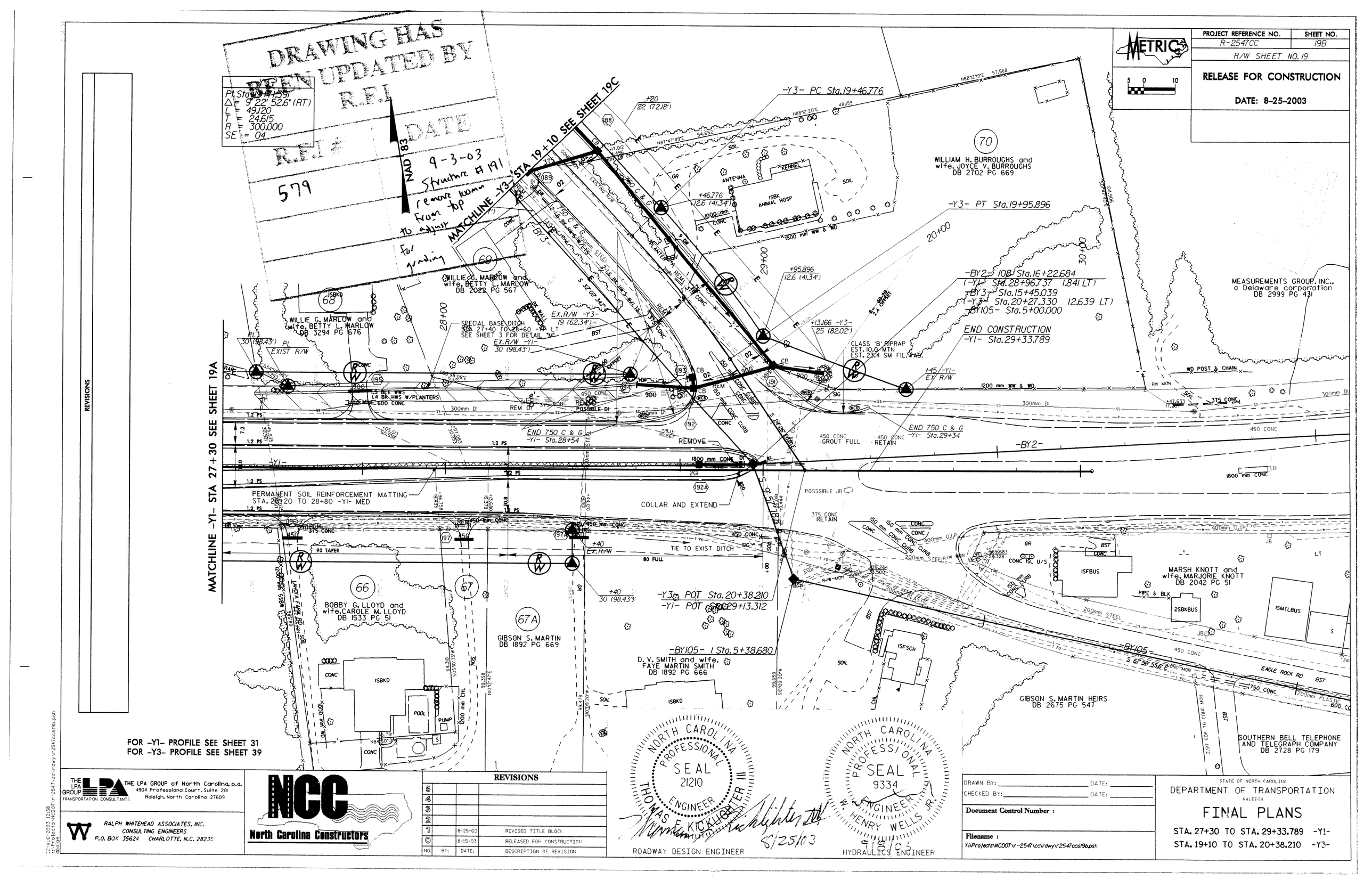

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	19B

R/W SHEET NO. 19

RELEASE FOR CONSTRUCTION

DATE: 8-25-2003

REVISIONS

NO.	BY:	DATE:	DESCRIPTION OF REVISION
5			
4			
3			
2			
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION

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TRANSPORTATION CONSULTANTS

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

North Carolina Constructors

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS E. KICKLIGHTER III
ROADWAY DESIGN ENGINEER 8/25/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
HYDRAULICS ENGINEER 8/25/03

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Document Control Number :

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 27+30 TO STA. 29+33.789 -Y1-
STA. 19+10 TO STA. 20+38.210 -Y3-

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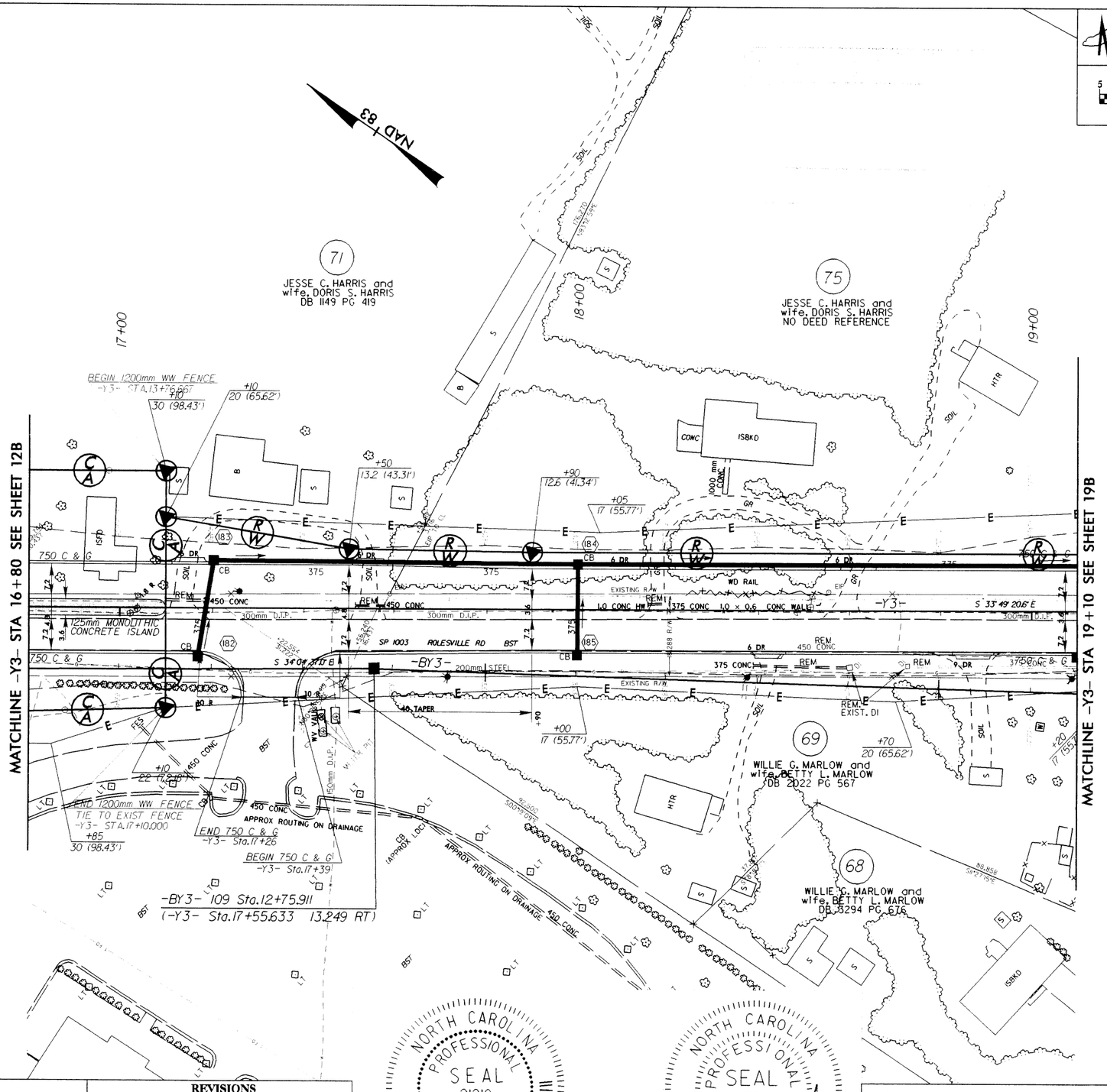

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2547CC	19C
R/W SHEET NO. 19	

METRIC 5 0 10

RELEASE FOR CONSTRUCTION

DATE: 11-14-2003

FOR -Y3- PROFILE SEE SHEETS 38 & 39

THE LPA GROUP TRANSPORTATION CONSULTANTS
THE LPA Group of North Carolina, p.a.
4904 Professional Court, Suite 201
Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS			
5			
4			
3			
2		11-14-03	REV. 150MM CONC. ISLAND TO 125MM
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS F. KOHLHEIER III
ROADWAY DESIGN ENGINEER 11/14/03

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER HENRY WELLS JR.
HYDRAULICS ENGINEER

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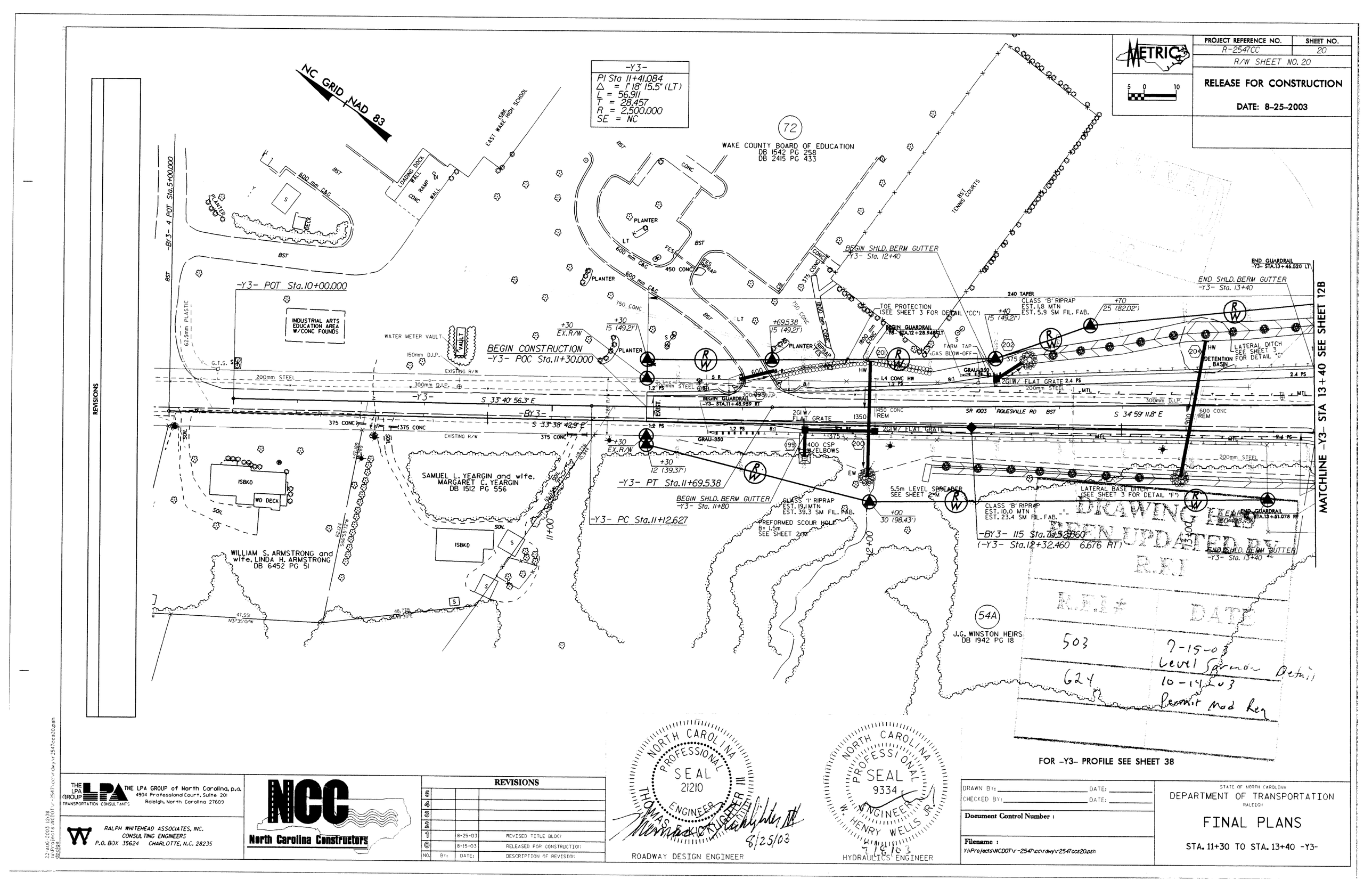
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 16+80 TO STA. 19+10 -Y3-



THE LPA GROUP LPA TRANSPORTATION CONSULTANTS
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Raleigh, North Carolina 27609

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 35624 CHARLOTTE, N.C. 28235

NCC North Carolina Constructors

REVISIONS			
5			
4			
3			
2			
1		8-25-03	REVISED TITLE BLOCK
0		8-15-03	RELEASED FOR CONSTRUCTION
NO.	BY:	DATE:	DESCRIPTION OF REVISION

NORTH CAROLINA PROFESSIONAL SEAL 21210 ENGINEER THOMAS MCKNIGHT LANGLEY III
8/25/03
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS JR.
7/16/03
HYDRAULICS ENGINEER

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FINAL PLANS

STA. 11+30 TO STA. 13+40 -Y3-

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