STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 20, 2004

U.S. Army Corps of Engineers
Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

ATTENTION: Ms. Angie Pennock
NCDOT Coordinator

SUBJECT: **Nationwide Permit Application 14 (Road Crossings) and 33 (Temporary Construction Access and Dewatering)** and Section 401 Water Quality Certification for the proposed Upgrade of Existing Lovelady Road (SR1546), from Laurel Street (SR 1545) to Malcolm Boulevard (SR 1001) in Burke County; NCDOT Division 13. Federal Project No. STP-1546(8), State Project No. 8.2851501; TIP No. R-2824. $200.00 Debit work order 8.2851501, WBS Element 34510.1.1

Dear Ms. Pennock:

The North Carolina Department of Transportation (NCDOT) proposes to upgrade Lovelady Road (SR 1546) from Laurel Street (SR 1545) to Malcolm Boulevard (SR 1001) in Burke County. The length of the proposed project is approximately 3.0 kilometers (1.9 miles) (see Appendix 1, Site Map - Sheet 3 of 10). The project proposes to widen existing Lovelady Road to provide two 3.7 meter (12 foot) travel lanes and 1.2 meter (4 foot) paved shoulders within 2.4 meter (8 foot) usable shoulders. A combination of asymmetrical and symmetrical widening is proposed. Bridge No. 110, which carries Lovelady Road over Hoyle Creek, will be replaced with a new bridge. A temporary detour bridge will be constructed north of the existing bridge to maintain traffic on Lovelady Road during construction.

The purpose of the project is to improve safety on Lovelady Road between the towns of Valdese and Rutherford College in Burke County. The proposed project should reduce the potential for accidents since travel lanes will be wider, with paved shoulders and turning lanes at major intersections along Lovelady Road.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-733-3141
FAX: 919-733-9794
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

Summary of Impacts:

The existing bridge over Hoyle Creek is 15 meters (50 feet) long and will be replaced with a new bridge 24 meters (79 feet) long with a clear deck width of 12 meters (40 feet). The existing bridge consists of a timber and steel superstructure supported by vertical mount masonry. Removal of the existing bridge will not result in the placing of fill material in Hoyle Creek. In order to minimize disturbance to Hoyle Creek, a new single span steel girder bridge will be constructed and the new abutments will be offset at least 3 meters (10 feet) from the top of the stream banks. The replacement bridge will not have any headwalls or footings below the ordinary high water elevation. The replacement bridge begins at station number 20+60.881 and ends at 20+85.019 (see Appendix 1, Bridge Replacement and Detour Bridge, Sheet 4 of 10). In order to maintain traffic during construction, a temporary detour bridge will be constructed north of the existing bridge. This location avoids power and water lines located south of the existing bridge. The detour bridge will be 25 meters (82 feet) long and 7.8 meters (26 feet) wide. The interior bents of the detour bridge will be placed above the ordinary high water elevation to minimize disturbance to Hoyle Creek. The detour bridge will begin at station number 11+12.740 and end at 11+39.140. Construction of the replacement bridge and the detour bridge will result in 19.8 meters (66 feet) of temporary impacts to Hoyle Creek

To avoid future erosion, class 1 rip-rap will be placed on the banks of Hoyle Creek for the construction of three base ditches (see Appendix 1, Bridge Replacement and Detour Bridge, Sheet 4 of 10). The rip-rap coverage will total 27 feet at 3 locations on the banks of Hoyle Creek.

Summary of Mitigation:

The project crosses Hoyle Creek, a perennial surface water. Complete avoidance of Hoyle Creek is not possible for the project. The impacts to this stream will be minimal and will not have a significant impact upon the quality of jurisdictional "Waters of the United States"; therefore, compensatory mitigation is not offered.

NEPA DOCUMENT STATUS

An Environmental Assessment (EA) was prepared by NCDOT in compliance with the National Environmental Policy Act. The EA was approved on September 23, 2002. A Finding of No Significant Impact (FONSI) was approved by the Federal Highway Administration (FHWA) on January 19, 2003. The EA explains the purpose and need for the project; provides a complete description of the alternatives considered; and characterizes the social, economic, and environmental effects. After the EA was approved, it was circulated to federal and local agencies. Copies of the EA and FONSI were provided to regulatory review agencies involved in the approval process. Additional copies will be provided upon request.

The upgrade of existing Lovelady Road from Laurel Street to Malcolm Boulevard in Burke County, TIP No. R-2824, is in compliance with 23 CFR Part 771.111(f) which lists the FHWA characteristics of independent utility of a project:

1. The project connects logical termini and is of sufficient length to address environmental matters on a broad scope;
2. The project is usable and is a reasonable expenditure, even if no additional transportation improvements are made in the area;
3. The project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

RESOURCE STATUS

Wetland Delineations:

The presence of "Waters of the United States", in the form of wetlands and surface waters were investigated within the referenced project limits. Potential wetland communities were investigated pursuant to the 1987 *Corps of Engineers Wetland Delineation Manual.* All jurisdictional "Waters of the United States" were verified by Steve Chapin of the U.S. Army Corps of Engineers (see Appendix 2, United States Army Corps of Engineers [USACE] letter dated December 15, 1995; Action ID. 199600142). Based on the jurisdictional wetland delineation performed for the project, there are no jurisdictional wetlands within the project limits. Therefore, no impacts to jurisdictional wetlands will be incurred by the proposed project.

Surface Waters:

The project crosses one perennial surface water, Hoyle Creek (North Carolina Department of Environment and Natural Resources [NCDENR] – Division of Water Quality [DWQ] Index No. 11-45-[0.5]), which is in a water supply watershed protection area classified as WS-IV. The creek is located in the Catawba DWQ Subbasin 030831 of the Upper Catawba River Basin 03050101.

Riparian Buffers:

The North Carolina temporary buffer protection rule, 15A NCAC 2B .0243, is applicable to a 50-foot wide riparian buffer directly adjacent to surface waters along the Catawba River mainstem below Lake James and along mainstem lakes in the Catawba River Basin. The referenced project crosses Hoyle Creek and is not directly adjacent to surface waters along the Catawba River mainstem. Therefore, the temporary buffer protection rule 15A NCAC 2B .0243 does not apply to the referenced project.

Floodplain:

Burke County participates in the National Flood Insurance Regular Program. Hoyle Creek is in the 100-year floodplain and floodway at the point where the project crosses the creek (Bridge No. 110), but is not included in a detailed flood study. The proposed widening will not have any significant adverse effect on the existing floodplain areas or associated flood hazard areas.

Wild and Scenic Rivers:

There are no wild or scenic rivers within the project area. In addition, the project does not cross a stream designated as a "trout waters" by the North Carolina Wildlife Resources Commission (NCWRC).

THREATENED AND ENDANGERED SPECIES

Plants and animals with federal classification of Endangered, Threatened, Proposed Endangered, and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 29, 2003, the United States Fish and Wildlife Service (USFWS) listed six federally protected species for Burke County (see Table 1 below). Species characteristics, distribution, and habitat details along with survey and biological conclusion information were reported in the previously referenced EA.

Table 1. Federally Protected Species for Burke County

Scientific Name	Common Name	Status	Biological Conclusion
Vertebrate			
Haliaeetus leucocephalus	Bald eagle	T (PD)	No Effect
Vascular Plants			
Geum radiatum	Spreading avens	E	No Effect
Hexastylis naniflora	Dwarf-flowered heartleaf	T	May Affect – Not Likely to Adversely Affect
Hudsonia montana	Mountain-golden heather	T	No Effect
Isotria medeoloides	Small-whorled pogonia	T	No Effect
Liatris helleri	Heller's blazing star	T	No Effect

Notes:

T (PD) Threatened but proposed for delisting.

T Threatened denotes any native or once native species that is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range, or one that is designated as a Threatened species pursuant to the Endangered Species Act.

E Endangered denotes a species in danger of extinction throughout all or a significant portion of its range.

Previously for the preparation of the EA, surveys were conducted for the dwarf-flowered heartleaf and the small-whorled pogonia. A Biological Conclusion of **Not Likely to Adversely Affect** was reached for the dwarf-flowered heartleaf. Two populations of the dwarf-flowered heartleaf occur near the project limits. Both populations occur near the intersection of Lovelady Road and Kathy Drive. These populations fall outside the project construction limits. Measures such as fencing and signs will be implemented to keep construction crews out of these areas. A Biological Conclusion of **Conditional No Effect** was reached for the small-whorled pogonia. Based on the survey results, the small-whorled pogonia does not occur in the project area. It is concluded that project construction will not impact this species.

An updated field survey was conducted on June 8, 2004, by Buck Engineering biologists (Greg Price and George Buchholz) for the dwarf-flowered heartleaf and the small-

whorled pogonia. Surveys for these species were conducted within the proposed right-of-way. The following provides an updated Biological Conclusion for each species.

***Hexastylis naniflora* (Dwarf-flowered heartleaf)**
Federal Status: Threatened
Animal family: Aristolochiaceae
Federally Listed: April 19, 1989

Biological Conclusion: May Affect – Not Likely to Adversely Affect

Flowering for the dwarf-flowered heartleaf occurs from March through May. A survey for this species was conducted on June 8, 2004, by Buck Engineering biologists (Greg Price and George Buchholz) by walking through the project limits and examining the habitat within the proposed right-of-way. The forested areas within the project limits exhibit habitat characteristics that support dwarf-flowered heartleaf. The two populations of the dwarf-flowered heartleaf identified in previous surveys were located. No additional populations of dwarf-flowered heartleaf or other *Hexastylis* species were identified within project limits. Both identified populations occur near the project limits within proximity to the intersection of Lovelady Road and Kathy Drive. Field measurements indicate that the nearest individual dwarf-flowered heartleaf occurs outside the project limits. Therefore, no dwarf-flowered heartleaf specimens will be directly impacted as a result of project construction. In addition, it is not anticipated that the project will alter the existing land uses or increase accessibility to adjacent parcels since the improvements associated with the proposed project will not increase capacity, level of service, or change existing access patterns. Consequently, it is not likely that the dwarf-flowered heartleaf populations found along existing Lovelady Road will be indirectly impacted from development as a result of this project. Therefore, a Biological Conclusion of **May Affect – Not Likely to Adversely Affect** is rendered. NCDOT will implement a strategy of fencing and constructing signs along the project construction limits directly adjacent to the dwarf-flowered heartleaf populations to keep construction crews out of these areas.

***Isotria medeoloides* (Small-whorled pogonia)**
Federal Status: Threatened
Animal family: Orchidaceae
Federally Listed: September 10, 1982

Biological Conclusion: No Effect

Flowering for the small-whorled pogonia occurs from May through June. A survey for this species was conducted on June 8, 2004 by Buck Engineering biologists (Greg Price and George Buchholz) by walking through the project limits and examining the habitat within the proposed right-of-way. The forested areas within the project limits exhibit habitat characteristics that could support small-whorled pogonia. The results of the field survey conducted on June 8, 2004 indicate that no small-whorled pogonia species were observed within the project limits. Therefore, a Biological Conclusion of **No Effect** is rendered.

CULTURAL RESOURCES

Architectural Historic Resources

A survey of historic architectural resources located within the area of potential effect (APE) was conducted. There were 15 properties over 50 years of age that were identified in the survey. There are no properties listed on either the National Register of Historic Places or the State Study List located within the APE for this project. The Arthur T. Abernethy House and Study located on Malcolm Boulevard are considered eligible for the National Register. The FHWA and the State Historic Preservation Office (SHPO) concurred with these findings (see Appendix 2, North Carolina Department of Cultural Resources (NCDCR) letter dated April 29, 1998; 98-E-4220-0646). There will be no adverse effect on the subject property since construction activities will not occur within the boundaries of the historic property.

Archaeological Resources

One recorded archaeological site was identified during an archaeological survey conducted for the proposed project. The archaeological site was determined to be not eligible for the National Register. The FHWA and the SHPO concurred with these findings (see Appendix 2, North Carolina Department of Cultural Resources letter dated February 11, 1999; ER99-8083).

MITIGATION OPTIONS

The USACE has adopted, through the Council of Environmental Quality (CEQ), a wetland mitigation policy that embraces the concept of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological, and physical integrity of the "Waters of the United States." Mitigation of wetland and surface water impacts has been defined by the CEQ to include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time and compensating for impacts (40 CFR 1508.20). Executive Order 11990 (Protection of Wetlands) emphasize protection of the functions and values provided by wetlands. These directives require that new construction in wetlands be avoided as much as possible and that all-practicable measures be taken to minimize or mitigate impacts to wetlands.

Avoidance:

Complete avoidance of Hoyle Creek is not possible for the project. The construction of a new bridge over Hoyle Creek will have some temporary impacts to the stream. An on-site detour is proposed to the north of the existing bridge to maintain traffic during the construction of the new bridge. There will be no disturbances to aquatic life movements associated with project construction.

Minimization:

The construction of this project has minimized the extent of the built-upon area by using the existing alignment for the widening. The proposed replacement structure over Hoyle Creek will not have piers, bents, or footings in the stream and will not have deck drains. NCDOT will implement best management practices for the protection of surface waters in accordance with the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" during design and construction phases of the project. The contractor will be advised that wet concrete will not be allowed to come into contact with the stream during construction. Hazardous spill catch basins will be constructed as part of the project. A vegetated upland buffer for deck drainage is not possible due to the location of the hazardous spill catch basins. However, stormwater run-off from the bridge will drain into the hazardous spill catch basins before entering the creek. The contractor will be required to keep interior bents of the detour bridge above the normal water level of the stream to minimize disturbance to Hoyle Creek.

Compensation:

Due to the minimal impacts to Hoyle Creek associated with this project, compensatory mitigation is not offered.

FHWA STEP DOWN COMPLIANCE

All compensatory mitigation must be in compliance with 23 CFR Part 77.9 "Mitigation of Impacts" that describes the actions that should be followed to qualify for federal-aid highway funding. This process is known as the FHWA "Step Down" procedures:

1. Consideration must be given to mitigation within the right-of-way and should include the enhancement of existing wetlands and the creation of new wetlands in the highway median, borrow pit areas, interchange areas and along the roadside.
2. Where mitigation within the right-of-way does not fully offset wetland losses, compensatory mitigation may be conducted outside the right-of-way including enhancement, creation, and preservation.

Project impacts to Hoyle Creek have been deemed minimal and all practicable measures avoiding and minimizing impacts have been examined and/or implemented. Therefore, compensatory mitigation is not offered.

REGULATORY APPROVALS

Attached for your information is a copy of the Preconstruction Notification (PCN), roadway design plans, and permit drawings for the project. Application is hereby made for Department of Army Section 404 Nationwide Permit 14 (Road Crossings) and 33 (Temporary Construction Access and Dewatering) for the above described activities. In compliance with Section 143-215.3D (e) of the NCAC we will provide $200.00 to act as payment for processing the Section 401 permit application previously noted in this

application (see Subject line). We are providing seven copies of this application to the NCDENR - DWQ, for their review.

We also anticipate that comments from the North Carolina Wildlife Recourses Commission (NCWRC) will be required prior to authorization by the USACE. By copy of this letter and attachment, NCDOT hereby requests NCWRC review. NCDOT request that NCWRC forward their comments to the USACE.

Thank you for you assistance with this project. If you have any questions or need additional information, please contact Mr. Chris Manley at cdmanley@dot.state.nc.us or (919) 715-1487.

Sincerely,

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

cc:

W/attachment

Mr. John Hennessy, Division of Water Quality (7 copies)
Ms. Marella Buncick, USFWS
Ms. Marla Chambers, NCWRC
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. J.J. Swain, P.E. Division Engineer
Mr. Roger Bryan DEO

W/o attachment

Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Mark Staley, Roadside Environmental
Mr. David Franklin, USACE, Wilmington
Ms. Karen B. Taylor, PDEA Project Planning Engineer

Office Use Only: Form Version May 2002

USACE Action ID No. _____ **DWQ No.** _____

(If any particular item is not applicable to this project, please enter "Not Applicable" or "N/A".)

I. Processing

1. Check all of the approval(s) requested for this project:
   - ☒ Section 404 Permit
   - ☐ Section 10 Permit
   - ☒ 401 Water Quality Certification
   - ☐ Riparian or Watershed Buffer Rules
   - ☐ Isolated Wetland Permit from DWQ

2. Nationwide, Regional or General Permit Number(s) Requested: 14 (Road Crossings) & 33 (Temporary Constructon Access and Dewatering)

3. If this notification is solely a courtesy copy because written approval for the 401 Certification is not required, check here: ☐

4. If payment into the North Carolina Wetlands Restoration Program (NCWRP) is proposed for mitigation of impacts (verify availability with NCWRP prior to submittal of PCN), complete section VIII and check here: ☐

5. If your project is located in any of North Carolina's twenty coastal counties (listed on page 4), and the project is within a North Carolina Division of Coastal Management Area of Environmental Concern (see the top of page 2 for further details), check here: ☐

II. Applicant Information

1. Owner/Applicant Information
   Name: Mr. Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: North Carolina Department of Transportation,
   Project Development and Environmental Analysis Branch
   1548 Mail Service Center
   Raleigh, North Carolina 27699-1548

   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
   E-mail Address: gthorpe@dot.state.nc.us

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)
   Name: _____
   Company Affiliation: _____
   Mailing Address: _____

   Telephone Number: _____ Fax Number: _____

E-mail Address: _____

III. Project Information

Attach a **vicinity map** clearly showing the location of the property with respect to local landmarks such as towns, rivers, and roads. Also provide a detailed **site plan** showing property boundaries and development plans in relation to surrounding properties. Both the vicinity map and site plan must include a scale and north arrow. The specific footprints of all buildings, impervious surfaces, or other facilities must be included. If possible, the maps and plans should include the appropriate USGS Topographic Quad Map and NRCS Soil Survey with the property boundaries outlined. Plan drawings, or other maps may be included at the applicant's discretion, so long as the property is clearly defined. For administrative and distribution purposes, the USACE requires information to be submitted on sheets no larger than 11 by 17-inch format; however, DWQ may accept paperwork of any size. DWQ prefers full-size construction drawings rather than a sequential sheet version of the full-size plans. If full-size plans are reduced to a small scale such that the final version is illegible, the applicant will be informed that the project has been placed on hold until decipherable maps are provided.

1. Name of project: Upgrade of Existing Lovelady Road (SR1546), from Laurel Street (SR 1545) to Malcolm Boulevard (SR 1001) in Burke County

2. T.I.P. Project Number or State Project Number (NCDOT Only): R-2824

3. Property Identification Number (Tax PIN): _____

4. Location
   County: Burke Nearest Town: Valdese and Rutherford College
   Subdivision name (include phase/lot number): _____
   Directions to site (include road numbers, landmarks, etc.): (see Appendix 1, Vicinity Map - Sheet 1 of 10)

5. Site coordinates, if available (UTM or Lat/Long): Lat 35°45′42″; Long 81°32′58″
   (Note – If project is linear, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)

6. Property size (acres): 3.04 kilometers (1.86 miles) along existing Lovelady Road (SR1546)

7. Nearest body of water (stream/river/sound/ocean/lake): Hoyle Creek

8. River Basin: Catawba DWQ Subbasin 030831 of the Upper Catawba River Basin 03050101
   (Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at http://h2o.enr.state.nc.us/admin/maps/.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: The project is located in Burke County and is within the municipalities of Valdese and Rutherford College. Burke County is located in the western

North Carolina foothills of the Blue Ridge Mountains. According to the North Carolina Functional Classificaton System, Lovelady Road (SR 1546) functions as an urban collector. Lovelady Road is designated as a major thoroughfare in the Valdese-Rutherford College-Connelly Springs Thoroughfare Plan. Existing land uses along Lovelady Lady are primarily residential, consisting of single family homes.

10. Describe the overall project in detail, including the type of equipment to be used: The existing bridge over Hoyle Creek is 15 meters (50 feet) long and will be replaced with a new bridge 24 meters (79 feet) in length with a clear deck width of 12 meters (40 feet). The replacement bridge begins at station number 20+60.881 and ends at 20+85.019 (see Appendix 1, Bridge Replacement and Detour Bridge, Sheet 4 of 10). The existing bridge consists of a timber and steel superstructure supported by vertical mount masonry. A new single span steel girder bridge will be constructed and will be offset from the top of the stream banks. The detour bridge will be 25 meters (82 feet) long and 7.8 meters (26 feet) wide. The detour bridge will begin at station number 11+12.740 and end at 11+39.140. Three base ditches with Class 1 rip-rap curtains will be constructed and discharge into Hoyle Creek.

11. Explain the purpose of the proposed work: The purpose of the project is to improve safety on Lovelady Road between the towns of Valdese and Rutherford College in Burke County. The proposed project should reduce the potential for accidents since travel lanes will be wider, paved shoulders will be installed, and turning lanes will be provided at major intersections along Lovelady Road.

IV. Prior Project History

If jurisdictional determinations and/or permits have been requested and/or obtained for this project (including all prior phases of the same subdivision) in the past, please explain. Include the USACE Action ID Number, DWQ Project Number, application date, and date permits and certifications were issued or withdrawn. Provide photocopies of previously issued permits, certifications or other useful information. Describe previously approved wetland, stream and buffer impacts, along with associated mitigation (where applicable). If this is a NCDOT project, list and describe permits issued for prior segments of the same T.I.P. project, along with construction schedules.

As part of the referenced project's Natural Resource Technical Report (February 1999), in preparation of an Environmental Assessment (September, 2002) a jurisdictional determination was prepared by the US Army Corp of Engineers (Action ID Number 199600142; December 15, 1995).

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.

No future permit requests are anticipated for this project.

VI. Proposed Impacts to Waters of the United States/Waters of the State

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. The applicant must also provide justification for these impacts in Section VII below. All proposed impacts, permanent and temporary, must be listed herein, and must be clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) must be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts:
   Temporary Impacts: Removal of the existing bridge will not result in placing fill in Hoyle Creek. In order to minimize disturbance to Hoyle Creek, a new single-span steel girder bridge will be constructed and the new abutments will be offset at least 3 meters (10 feet) from the top of the stream banks. The new bridge will not have any headwalls or footings below the ordinary high water elevation. In order to maintain traffic during construction, a temporary detour bridge will be constructed north of the existing bridge to avoid power and water lines located south of the existing bridge. The interior bents of the detour bridge will be placed above the ordinary high water elevation to minimize disturbance to Hoyle Creek.
   Permanent Impacts: Class 1 rip-rap will be placed at the embankments of Hoyle Creek for the construction of three base ditches.

2. Individually list wetland impacts below: Not Applicable

Wetland Impact Site Number (indicate on map)	Type of Impact*	Area of Impact (acres)	Located within 100-year Floodplain** (yes/no)	Distance to Nearest Stream (linear feet)	Type of Wetland***

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

** 100-Year floodplains are identified through the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM), or FEMA-approved local floodplain maps. Maps are available through the FEMA Map Service Center at 1-800-358-9616, or online at http://www.fema.gov.

*** List a wetland type that best describes wetland to be impacted (e.g., freshwater/saltwater marsh, forested wetland, beaver pond, Carolina Bay, bog, etc.) Indicate if wetland is isolated (determination of isolation to be made by USACE only).

List the total acreage (estimated) of all existing wetlands on the property: Not Applicable
Total area of wetland impact proposed: Not Applicable

3. Individually list all intermittent and perennial stream impacts below:

Stream Impact Site Number (indicate on map)	Type of Impact*	Length of Impact (linear feet)	Stream Name**	Average Width of Stream Before Impact	Perennial or Intermittent? (please specify)
1 Station 20+60.881 to 20+85.019	Temporary – Bridge Replacement	12 meters (40 feet)	Hoyle Creek	7.5 meters (25 feet)	Perennial
2 Station 11+12.740 to 11+39.140	Temporary – Detour Bridge	7.8 meters (26 feet)	Hoyle Creek	7.5 meters (25 feet)	Perennial
3 Station 20+77.76 ±	Permanent – rip-rap	3.09 meters (10 feet)	Hoyle Creek	7.5 meters (25 feet)	Perennial
4 Station 20+64.43 ±	Permanent– rip-rap	3.2 meters (10 feet)	Hoyle Creek	7.5 meters (25 feet)	Perennial
5 Station 20+55.99 ±	Permanent– rip-rap	2.12 meters (7 feet)	Hoyle Creek	7.5 meters (25 feet)	Perennial

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: culverts and associated rip-rap, dams (separately list impacts due to both structure and flooding), relocation (include linear feet before and after, and net loss/gain), stabilization activities (cement wall, rip-rap, crib wall, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included.

** Stream names can be found on USGS topographic maps. If a stream has no name, list as UT (unnamed tributary) to the nearest downstream named stream into which it flows. USGS maps are available through the USGS at 1-800-358-9616, or online at www.usgs.gov. Several internet sites also allow direct download and printing of USGS maps (e.g., www.topozone.com, www.mapquest.com, etc.).

Cumulative impacts (linear distance in feet) to all streams on site:
19.8 meters (66 feet) Temporary Impacts, 9.2 meters (27 feet) Permanent Impacts

4. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.) below: Not Applicable

Open Water Impact Site Number (indicate on map)	Type of Impact*	Area of Impact (acres)	Name of Waterbody (if applicable)	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: fill, excavation, dredging, flooding, drainage, bulkheads, etc.

5. Pond Creation: Not Applicable
If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.
Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.):_____

Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.):_____
Size of watershed draining to pond:_____ Expected pond surface area:_____

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts.

Avoidance:

Complete avoidance of Hoyle Creek is not possible for the project. Construction of a new bridge over Hoyle Creek will have some temporary impacts to the stream. An on-site detour is proposed to the north of the existing bridge to maintain traffic during the construction of the new bridge. There will be no disturbances to aquatic life movements associated with project construction.

Minimization:

Utilizing the existing alignment for bridge replacement has minimized the extent of built-upon area. The contractor will be required to keep interior bents of the detour bridge above the normal water level of the stream to minimize disturbance to Hoyle Creek. The proposed replacement structure over Hoyle Creek will not have piers, bents, or footings in the stream and will not have deck drains, further minimizing impacts. NCDOT will implement best management practices for the protection of surface waters in accordance with the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" during design and construction phases of the project. The contractor will be advised that wet concrete will not be allowed to come into contact with the stream during construction. Hazardous spill catch basins will be constructed as part of the project. A vegetated upland buffer for deck drainage is not possible due to the location of the hazardous spill catch basins. However, stormwater run-off from the bridge will drain into the hazardous spill catch basins before entering the creek.

VIII. Mitigation

DWQ - In accordance with 15A NCAC 2H .0500, mitigation may be required by the NC Division of Water Quality for projects involving greater than or equal to one acre of impacts to freshwater wetlands or greater than or equal to 150 linear feet of total impacts to perennial streams.

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on March 9, 2000, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors

including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

If mitigation is required for this project, a copy of the mitigation plan must be attached in order for USACE or DWQ to consider the application complete for processing. Any application lacking a required mitigation plan or NCWRP concurrence shall be placed on hold as incomplete. An applicant may also choose to review the current guidelines for stream restoration in DWQ's Draft Technical Guide for Stream Work in North Carolina, available at http://h2o.enr.state.nc.us/ncwetlands/strmgide.html.

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.
   Project impacts to Hoyle Creek have been deemed minimal and all practicable measures avoiding and minimizing impacts have been examined and/or implemented. Therefore, compensatory mitigation is not offered.

2. Mitigation may also be made by payment into the North Carolina Wetlands Restoration Program (NCWRP). Please note it is the applicant's responsibility to contact the NCWRP at (919) 733-5208 to determine availability and to request written approval of mitigation prior to submittal of a PCN. For additional information regarding the application process for the NCWRP, check the NCWRP website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCWRP is proposed, please check the appropriate box on page three and provide the following information: Not Applicable

   Amount of stream mitigation requested (linear feet):_____
   Amount of buffer mitigation requested (square feet):_____
   Amount of Riparian wetland mitigation requested (acres):_____
   Amount of Non-riparian wetland mitigation requested (acres):_____
   Amount of Coastal wetland mitigation requested (acres):_____

IX. Environmental Documentation (required by DWQ)

Does the project involve an expenditure of public (federal/state) funds or the use of public (federal/state) land?

Yes ☒ No ☐

If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation.

Yes ☒ No ☐

If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter.

Yes ☒ No ☐

X. Proposed Impacts on Riparian and Watershed Buffers (required by DWQ)

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to required state and local buffers associated with the project. The applicant must also provide justification for these impacts in Section VII above. All proposed impacts must be listed herein, and must be clearly identifiable on the accompanying site plan. All buffers must be shown on a map, whether or not impacts are proposed to the buffers. Correspondence from the DWQ Regional Office may be included as appropriate. Photographs may also be included at the applicant's discretion.

Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)?

Yes ☐ No ☒ If you answered "yes", provide the following information:

Identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1		3	
2		1.5	
Total			

* Zone 1 extends out 30 feet perpendicular from near bank of channel; Zone 2 extends an additional 20 feet from the edge of Zone 1.

If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Conservation Easement, Riparian Buffer Restoration / Enhancement, Preservation or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0260.

XI. Stormwater (required by DWQ)

Describe impervious acreage (both existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property.

NCDOT will implement best management practices for the protection of surface waters in accordance with the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" during design and construction phases of the project. The contractor will be advised that wet concrete will not be allowed to come into contact with the stream during construction. The replacement bridge will not have deck drains. Hazardous spill catch basins will be constructed as part of the project. A vegetated upland buffer for deck drainage is not possible due to the location of the hazardous spill catch basins. However, stormwater run-off from the bridge will drain into the hazardous spill catch basins before entering the creek.

XII. Sewage Disposal (required by DWQ)

Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility.

Not Applicable

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?

Yes ☐ No ☒

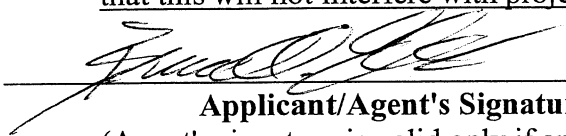
Is this an after-the-fact permit application?

Yes ☐ No ☒

XIV. Other Circumstances (Optional):

It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on work schedules (e.g., draw-down schedules for lakes, dates associated with Endangered and Threatened Species, accessibility problems, or other issues outside of the applicant's control).

NCDOT will implement a strategy of fencing and constructing signs along the project construction limits directly adjacent to the dwarf-flowered heartleaf (*Hexastylis naniflora*-Threatened) population to keep construction crews out of these areas. It is anticipated that this will not interfere with project work schedules.



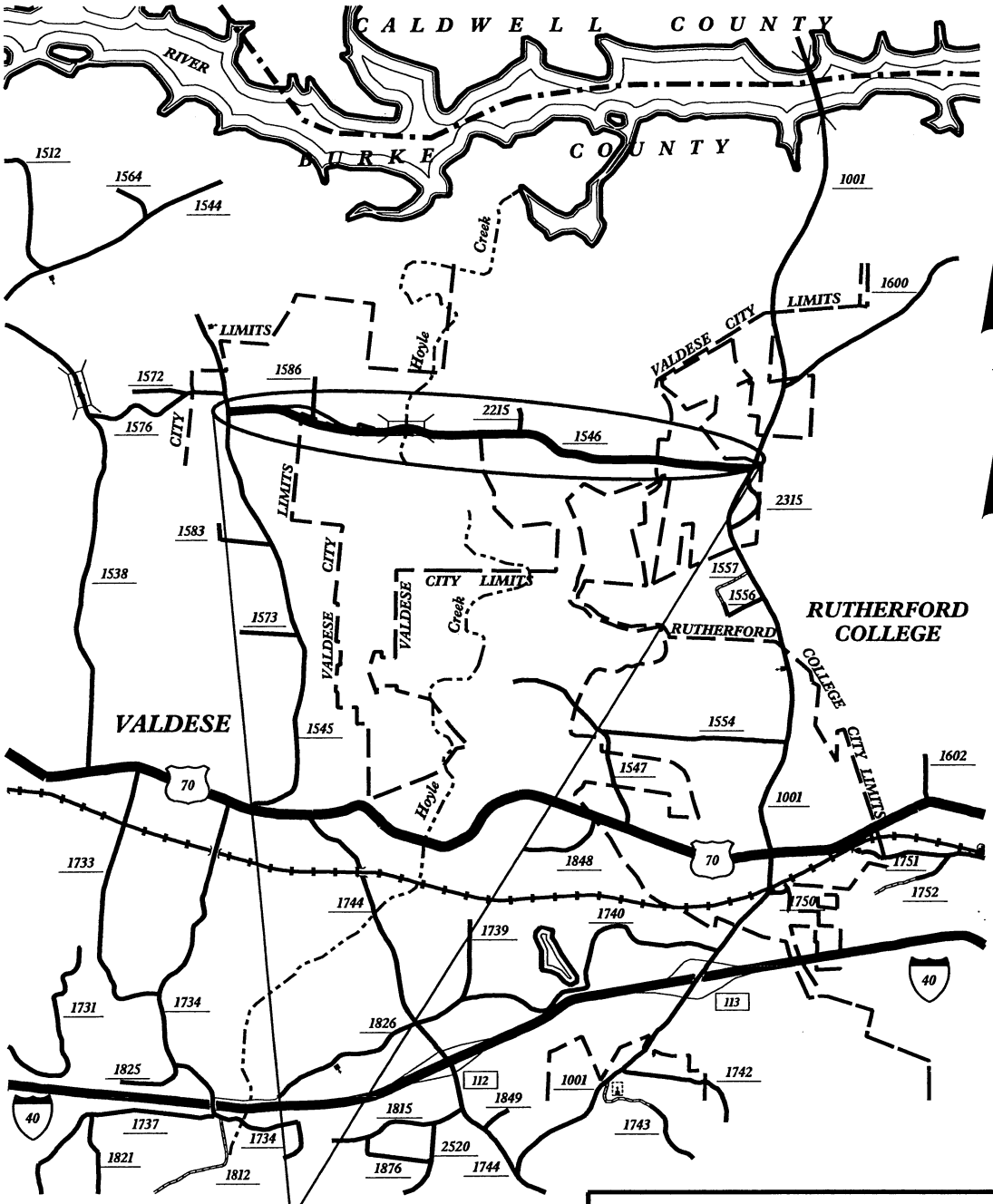
8/20/04

Applicant/Agent's Signature **Date**

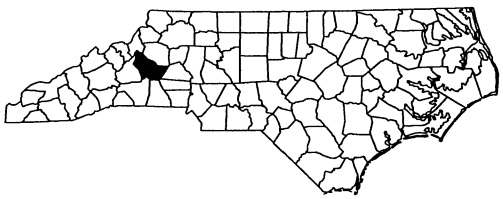
(Agent's signature is valid only if an authorization letter from the applicant is provided.)

APPENDIX 1
FIGURES

VICINITY MAP



PROJECT R-2824



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

METRIC

PROJECT: R-2824
BRIDGE NO. 110 OVER HOYLE CREEK
ON S.R. 1546 (LOVELADY ROAD)

SHEET 1 OF 10 **7/30/04**

LEGEND

WLB — WETLAND BOUNDARY

WETLAND

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

DENOTES TEMPORARY FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMP. DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

COIR FIBER ROLLS

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

VANE

RIP RAP

RIP RAP ENERGY DISSIPATOR BASIN

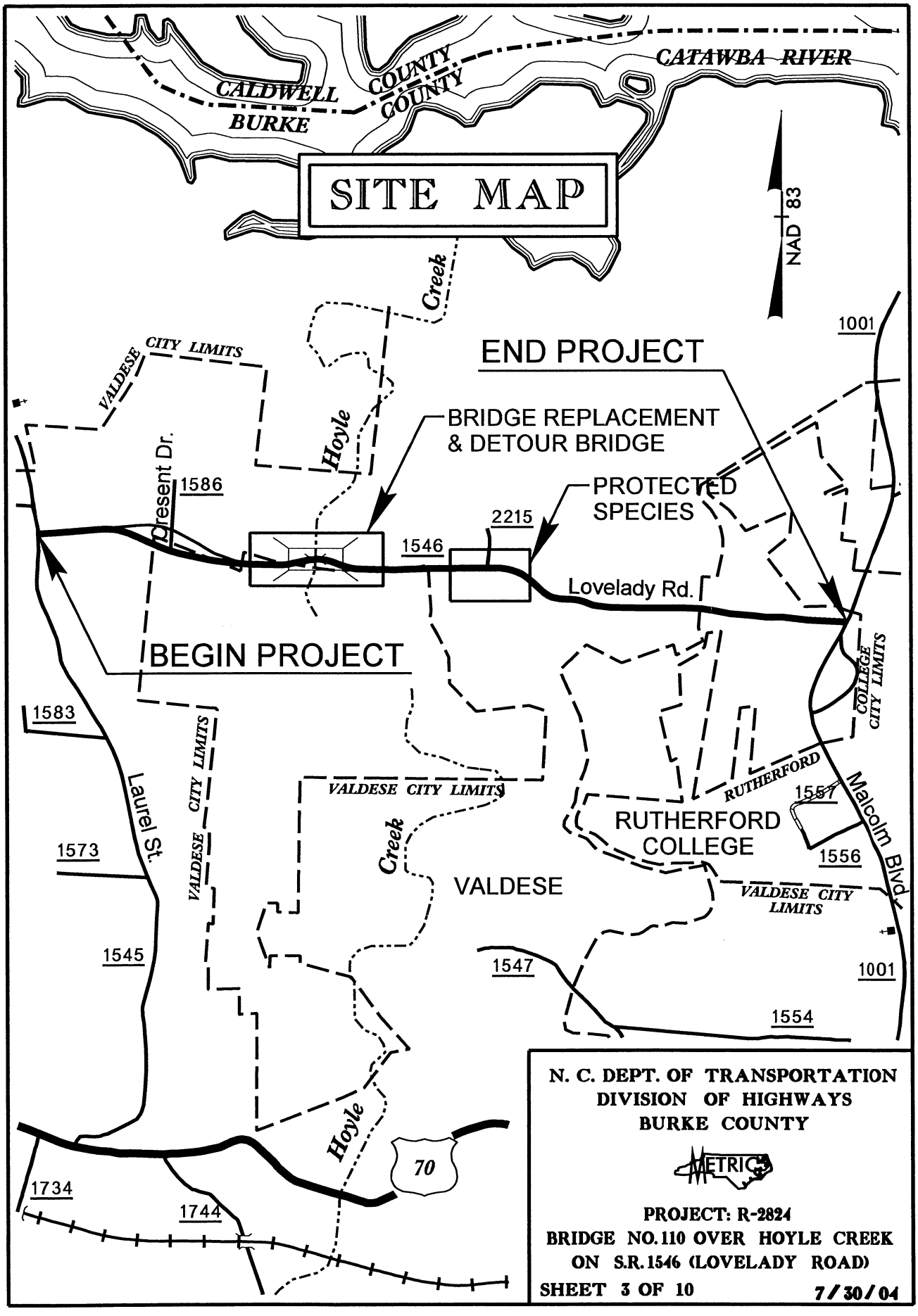
BUFFER ZONE — BUFFER ZONE

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

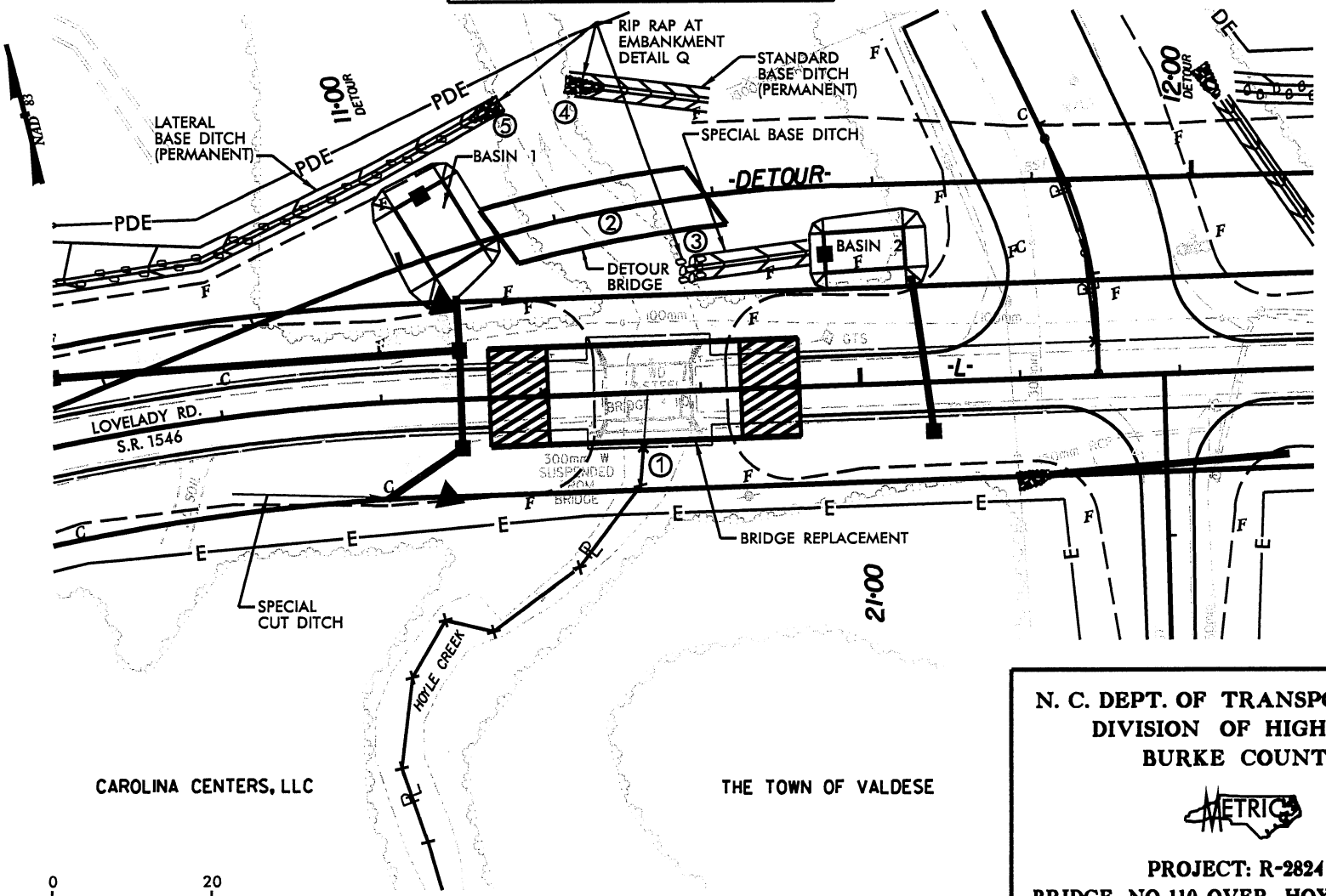
METRIC

PROJECT: R-2824
BRIDGE NO. 110 OVER HOYLE CREEK
ON S.R. 1546 (LOVELADY ROAD)

SHEET 2 OF 10 7/30/04


CATAWBA RIVER
CALDWELL COUNTY
BURKE COUNTY
SITE MAP
NAD 83
Creek
1001
END PROJECT
VALDESE CITY LIMITS
Hoyle
BRIDGE REPLACEMENT
& DETOUR BRIDGE
Present Dr.
1586
PROTECTED
SPECIES
2215
1546
Lovelady Rd.
BEGIN PROJECT
COLLEGE CITY LIMITS
1583
Laurel St.
VALDESE CITY LIMITS
VALDESE CITY LIMITS
RUTHERFORD
1557
Malcolm Blvd.
Creek
RUTHERFORD COLLEGE
1573
VALDESE
1556
VALDESE CITY LIMITS
1545
1547
1001
1554
Hoyle
70
1734
1744
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
BURKE COUNTY
METRIC
PROJECT: R-2824
BRIDGE NO.110 OVER HOYLE CREEK
ON S.R.1546 (LOVELADY ROAD)
SHEET 3 OF 10
7/30/04

BRIDGE REPLACEMENT & DETOUR BRIDGE

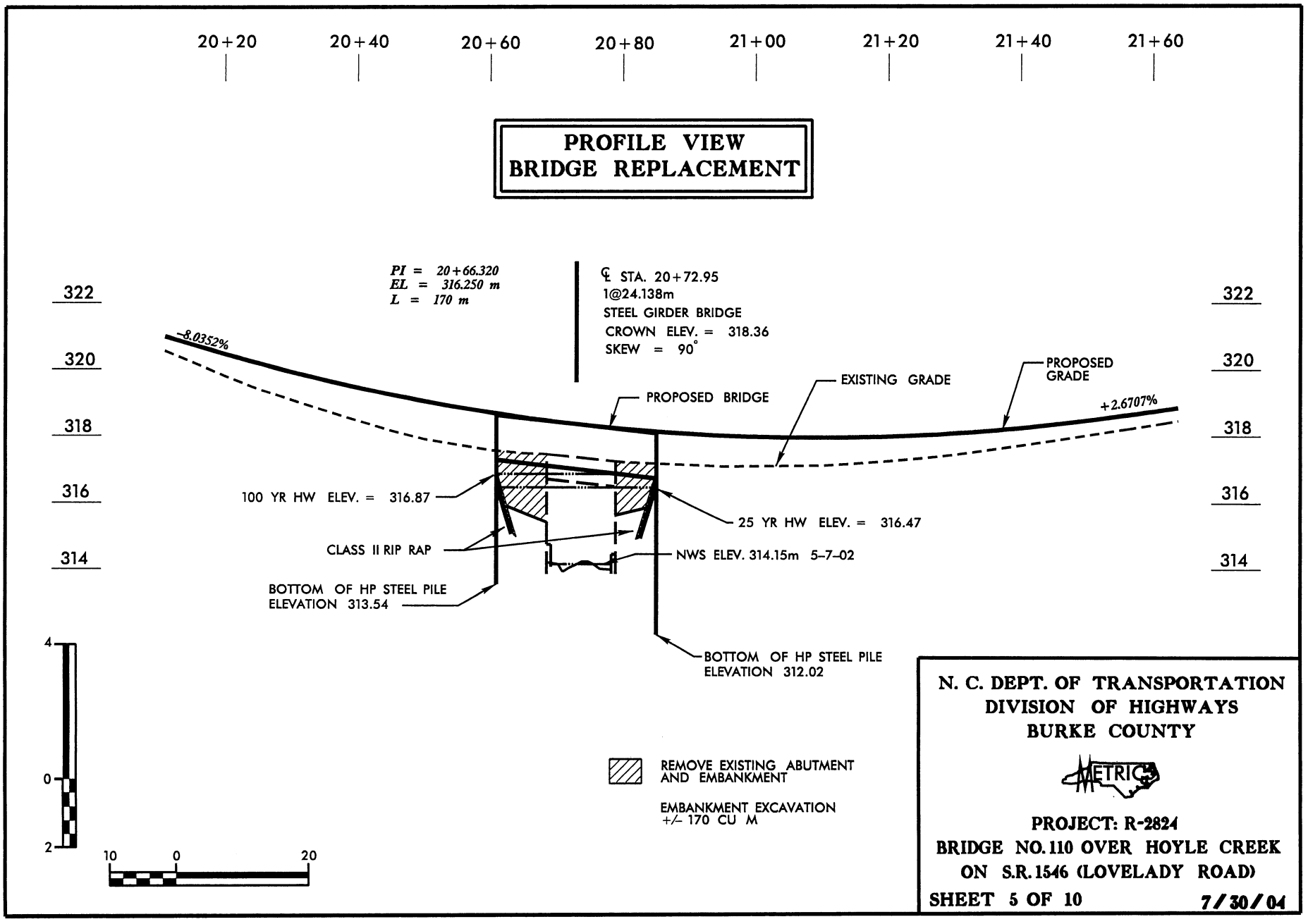


N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
BURKE COUNTY

METRIC

PROJECT: R-2824
BRIDGE NO. 110 OVER HOYLE CREEK
ON S.R. 1546 (LOVELADY ROAD)

SHEET 1 OF 10 7/30/04

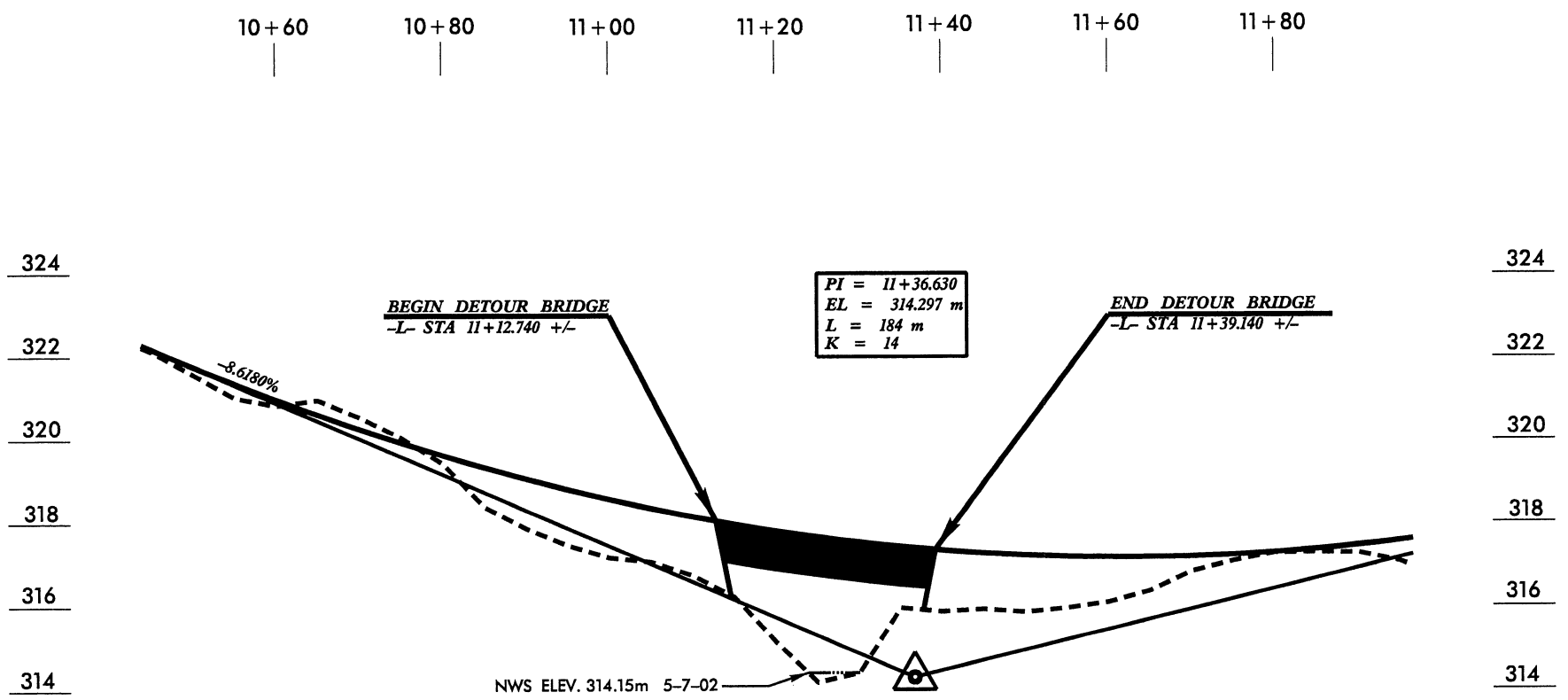


N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
BURKE COUNTY

METRIC

PROJECT: R-2824
BRIDGE NO. 110 OVER HOYLE CREEK
ON S.R. 1546 (LOVELADY ROAD)

SHEET 5 OF 10 7/30/04



4
0
2

10 0 20

PROFILE VIEW
DETOUR BRIDGE

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

METRIC

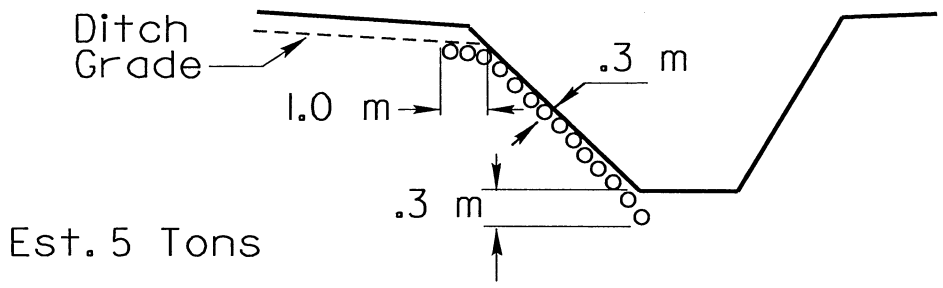
PROJECT: R-2824
BRIDGE NO. 110 OVER HOYLE CREEK
ON S.R. 1546 (LOVELADY ROAD)

SHEET 6 OF 10 **7/30/04**

DETAIL Q

RIP RAP AT EMBANKMENT

(Not to Scale)



Type of Liner = CLASS I RIP RAP

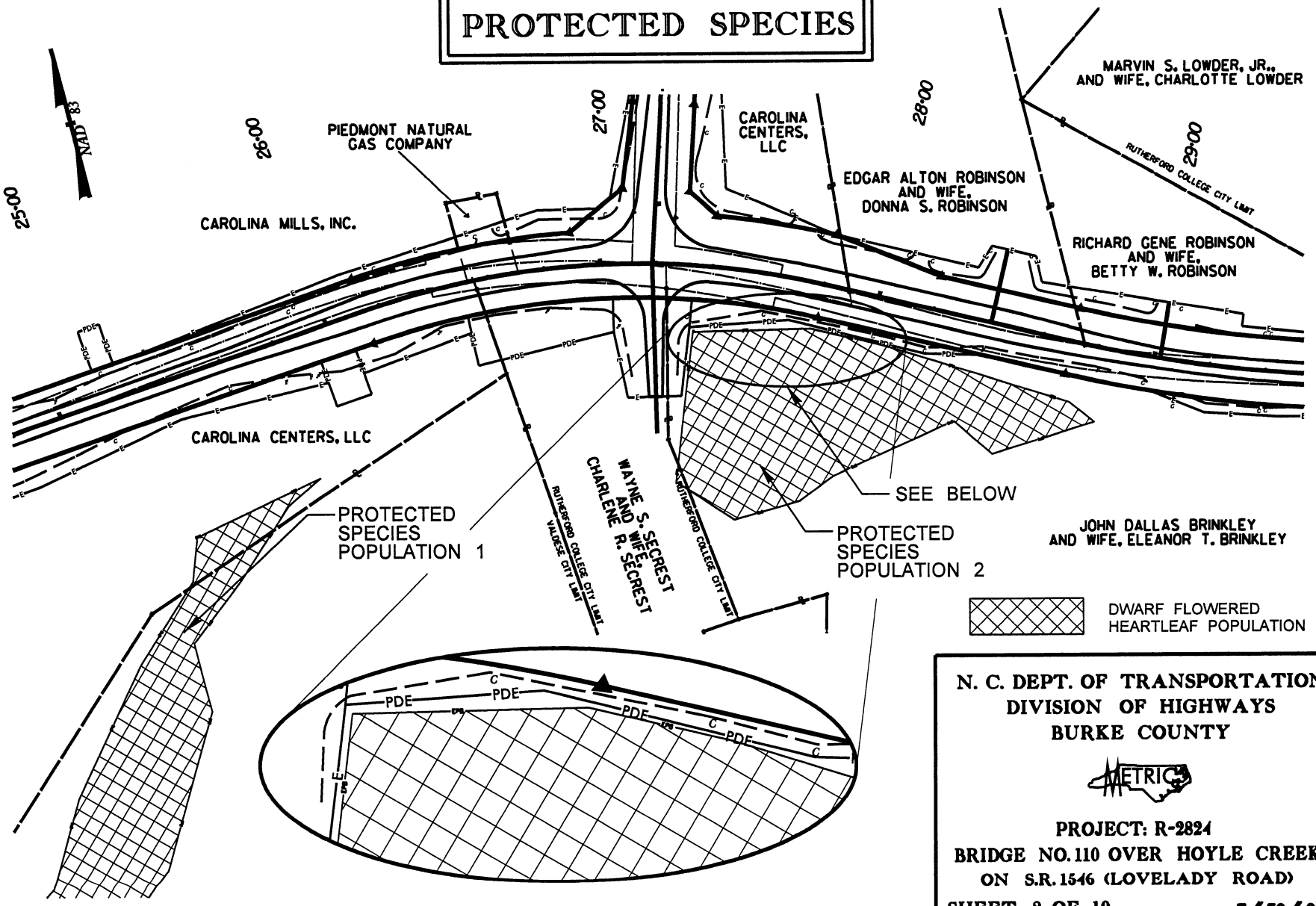
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
BURKE COUNTY

METRIC

PROJECT: R-2824
BRIDGE NO. 110 OVER HOYLE CREEK
ON S.R. 1546 (LOVELADY ROAD)

SHEET 7 OF 10 7/30/04

PROTECTED SPECIES



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

METRIC

PROJECT: R-2824
BRIDGE NO. 110 OVER HOYLE CREEK
ON S.R. 1546 (LOVELADY ROAD)

SHEET 8 OF 10 **7/30/04**

PROPERTY OWNER

NAME AND ADDRESS

OWNER'S NAME	ADDRESS
CAROLINA CENTERS, LLC	P.O. Box 1003 Charlotte, NC 28201
THE TOWN OF VALDESE	121 Faet Street SW P.O. Box 339 Valdese, NC 28690
CAROLINA MILLS, INC.	P.O. Box 157 Maiden, NC 28650
VALDESE WEAVERS, INC	P.O. Box 70 Valdese, NC 28690

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

METRIC

PROJECT: R-2824
BRIDGE NO. 110 OVER HOYLE CREEK
ON S.R. 1546 (LOVELADY ROAD)

SHEET 9 OF 10 7/30/04

IMPACT SUMMARY

			WETLAND IMPACTS				SURFACE WATER IMPACTS					
Site No.	Station (From/To)	Structure Size	Fill In Wetlands (hc/ac)	Temp Fill In Wetlands (hc/ac)	Excavation In Wetlands (hc/ac)	Mechanized Clearing (Method III) (hc/ac)	Fill in SW (Natural) (hc/ac)	Fill in SW (Pond) (hc/ac)	Temp. Impact in SW (hc/ac)	Exist. Channel Impacted (m/ft)	Relocated Channel (m/ft)	Enclosed Channel (m/ft)
①	20+60.881 - 20+85.019 -L-	Bridge Replacement 24 meters (79 ft) long, 12 meters (40 ft) wide							0.010 ha (0.02 ac)			
②	11+12.740 - 11+39.140 -DETOUR-	Detour Bridge 25 meters (82 ft) long, 7.8 meters (26 ft) wide							0.006 ha (0.01 ac)			
③	20+77.760 +/- -L-						0.0005 ha (0.001 ac)				3.09 meters (10 ft)	
④	20+64.430 +/- -L-						0.0005 ha (0.001 ac)				3.20 meters (10 ft)	
⑤	20+55.990 +/- -L-						0.0003 ha (0.0008 ac)				2.12 meters (7 ft)	

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

METRIC

PROJECT: R-2824
BRIDGE NO. 110 OVER HOYLE CREEK
ON S.R. 1546 (LOVELADY ROAD)

SHEET 10 OF 10 **7/30/04**

APENDIX 2
AGENCY COORDINATION LETTERS

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

REPLY TO ATTENTION OF

December 15, 1995

Regulatory Branch

Action ID. 199600142, Pre-Application; TIP No. R-2821

Mr. H. Franklin Vick
State of North Carolina
Department of Transportation
Planning and Environmental Branch
Post Office Box 25201
Raleigh, North Carolina 27611 5201

Dear Mr. Vick:

This is in reference to your request for comments on the proposed Lovelady Road (SR 1546) Extension from Laurel Street (SR 1545) to Shady Grove Road (SR 1608), north of Valdese, Rutherford College, and Connelly Springs, in Burke County, North Carolina. You are currently in the process of gathering information for the preparation of a federally funded Environmental Assessment.

It is NCDOT's recommendation that Lovelady Road be upgraded from it's west terminus at Laurel Street to where it presently terminates at Malcolm Boulevard (SR 1001) for a distance of 1.8 miles. The project then proposes to extend Lovelady Roadon new location from Malcolm Boulevard to Tomlinson Loop Road (SR 1613) for a distance of 1.2 miles. Also, it is NCDOT's recommendation that a 0.6 mile segment of Tomlinson Loop Road, from the west terminal of the proposed extension of Lovelady Road to Shady Grove Road, be widened and surfaced. The length of the entire project is approximately 3.6 miles.

There are several stream crossings that would be associated with the proposed construction. The two main crossings involved in the project are at Island Creek and Hoyle Creek. These crossings are steep banked and mostly wooded and there are no wetlands present in the crossing areas. It is our recommendation that these wooded riparian areas be impacted as little as possible especially where woody vegetation is rooted into the streambanks. In addition, we recommend that adequate erosion control be planned for the crossing areas in order to prevent sedimentation from occurring.

If you have any questions regarding our comments, please contact Mr. Steve Chapin of our Asheville Field Office at (704) 271-4014.

Sincerely,

Robert W. Johnson
Office Manager
Asheville Regulatory Field Office

Copy Furnished:

✓Mrs. Stephanie Briggs
State of North Carolina
Department of Transportation
Planning and Environmental Branch
Post Office Box 25201
Raleigh, North Carolina 27611-5201

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801

June 23, 1998

Mr. Richard B. Davis, P.E., Assistant Manager
Planning and Environmental Branch
Division of Highways
North Carolina Department of Transportation
P.O. Box 25201
Raleigh, North Carolina 27611-5201

Dear Mr. Davis:

Subject: Proposed Upgrade and Extension of Lovelady Road (SR 1546) from Laurel Street (SR 1545) to Shady Grove Road (SR 1608), Burke County, North Carolina. TIP No. R-2824

In your letter of April 3, 1997, you requested our input on the subject project. The following comments are provided in accordance with the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e), and Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

According to the information provided in your letter, the project consists of the extension of Lovelady Road as a two-lane facility on a new location for approximately 2.9 kilometers (km) from its current terminus at Malcolm Boulevard to Tomlinson Loop Road. It is proposed to upgrade Lovelady Road from its terminus at Malcolm Boulevard west to Laurel Street. It is also proposed to upgrade 2.0 km of Tomlinson Loop Road from its west terminus to Shady Grove Road. The proposed project will be approximately 5.8 km in total length.

The Service is concerned about the potential impacts of the proposed project to endangered species, wetlands, and streams. We encourage consideration of these issues early in the planning stages so that proper sequencing is allowed. Results from field surveys for listed species, wetlands, and streams should be considered early in the design stage since important resources are present.

The Service has been to the site and reminds you that investigations by your biological staff identified the presence of listed species, wetlands and streams, and important natural communities.

The Service considers the population of the threatened dwarf-flowered heartleaf (*Hexastylis naniflora*) located by your staff at Island Creek as very important for the recovery and delisting of the species. Island Creek and its tributaries are nice streams. The natural communities present at the site represent intact examples of mesic mixed hardwood Piedmont forest types.

Since this project in its current design will directly impact a significant population of *Hexastylis naniflora*, the Federal agency involved must request consultation with our office. Requests for consultation must include: (1) a description of the action to be considered; (2) a description of the specific area that may be affected by the action (we now request that this include accurate latitude/longitude coordinates); (3) a description of any listed species or critical habitat that may be affected by the action; (4) a description of the manner in which the action may affect any listed species or critical habitat and an assessment of any cumulative effects; (5) reports, which should include any updates to the environmental assessment or biological assessment; and (6) any other relevant available information about this action, the affected listed species, or critical habitat.

Attention is also directed to Section 7(d) of the Act, which underscores the requirement that the Federal agency and/or the permit or license applicant shall not make any irreversible or irretrievable commitment of resources during the consultation period that, in effect, would deny the formulation or implementation of reasonable and prudent alternatives regarding their actions on any listed endangered or threatened species. The Service urges you to develop an alternative that would avoid or minimize impacts to *Hexastylis naniflora*. Alternate routes should be evaluated. Along the route identified, a long valley bridge would potentially minimize impacts to *Hexastylis naniflora* as well as impacts to Island Creek, its tributaries, and the forest communities.

The Service appreciates the assistance and cooperation of the North Carolina Department of Transportation in its efforts to protect significant populations of *Hexastylis naniflora*. Please keep us informed as to the progress of this project. If you have any questions about these comments, please contact Mr. Mark A. Cantrell of our staff at 828/258-3939 (Ext. 227). In any future correspondence concerning this matter, please reference our Log Number 4-2-95-063.

Sincerely,

Brian P. Cole
State Supervisor

cc:
Mr. Steve Lund, U.S. Army Corps of Engineers, Regulatory Field Office, 151 Patton Avenue, Room [illegible], Asheville, NC 28801-5006

North Carolina Department of Cultural Resources

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

April 29, 1998

MEMORANDUM

TO: H. Franklin Vick, P.E., Manager
Planning and Environmental Branch
Division of Highways
Department of Transportation

FROM: David Brook
Deputy State Historic Preservation Officer

SUBJECT: Lovelady Road Upgrade and Extension from SR 1545 to SR 1608, Burke County, R-2824, Federal Aid Project STP-1546(8), State Project 8.2851501, 98-E-4220-0646

We have received information concerning the above project from the State Clearinghouse.

In terms of historic architectural resources, the project's area of potential effect was surveyed in 1996 by Clay Griffith of the North Carolina Department of Transportation. We have concurred with the Federal Highway Administration's determinations of eligibility that resulted from the survey, and look forward to meeting to discuss the project's effects on the National Register-eligible Arthur T. Abernethy House and Study.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

DB:slw

cc: State Clearinghouse
N. Graf
B. Church

Federal Aid # STP-1546(5) TIP # R-2624 County BURKE

CONCURRENCE FORM
FOR
ASSESSMENT OF EFFECTS

Brief Project Description

SR 1546 (LOVELADY ROAD) UPGRADE AND EXTENSION FROM SR 1515 TO SR 1609

On July 16, 1998, representatives of the

- ✓ North Carolina Department of Transportation (NCDOT)
- ✓ Federal Highway Administration (FHWA)
- ✓ North Carolina State Historic Preservation Office (SHPO)
- ____ Other ____

reviewed the subject project and agreed

- ____ there are no effects on the National Register-listed property within the project's area of potential effect and listed on the reverse.
- ____ there are no effects on the National Register-eligible properties located within the project's area of potential effect and listed on the reverse.
- ____ there is an effect on the National Register-listed property/properties within the project's area of potential effect. The property-properties and the effect(s) are listed on the reverse.
- ____ there is an effect on the National Register-eligible property/properties within the project's area of potential effect. The property/properties and effect(s) are listed on the reverse.

Signed:

[signature] 7-16-98
Representative, NCDOT, Historic Architectural Resources Section — Date

[signature]
FHWA, for the Division Administrator, or other Federal Agency — Date

[signature] 7/16/98
Representative, SHPO — Date

[signature] 7/21/98
State Historic Preservation Officer — Date

(over)

Federal Aid # STP-1546(3) TIP # R-2624 County Burke

erties within area of potential effect for which there is no effect. Indicate if property is National Register-listed (NR) or determined eligible (DE).

Properties within area of potential effect for which there is an effect. Indicate property status (NR or DE) and describe effect.

A.T. Abernethy House (DE) - No Adverse Effect if all construction stays off the Historic property.

Reason(s) why effect is not adverse (if applicable).

Initialed: NCDOT [signature] FHWA [signature] SHPO [signature] 4/2015

North Carolina Department of Cultural Resources

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

February 11, 1999

Nicholas L. Graf
Division Administrator
Federal Highway Administration
Department of Transportation
310 New Bern Avenue
Raleigh, N.C. 27601-1442

Re: Lovelady Road (SR 1546) upgrade and extension, Federal Aid Project STP-1546(8), State Project 8.2851501, TIP R-2824, Burke County, ER 99-8083

Dear Mr. Graf:

Thank you for your letter of January 12, 1999, transmitting the archaeological survey report by Gerold Glover concerning the above project.

During the course of the survey one archaeological site was located within the project area. Dr. Glover has recommended that no further archaeological investigation be conducted in connection with this project. We concur with this recommendation since this project will not involve significant archaeological resources.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

Sincerely,

David Brook/sw

David Brook
Deputy State Historic Preservation Officer

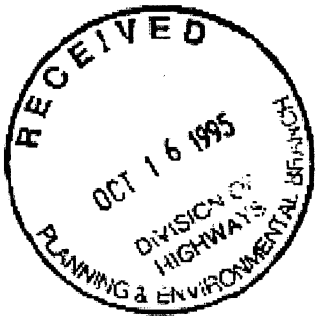
DB:slw

cc: W. D. Gilmore
T. Padgett

Hart

Federal Emergency Management Agency
Region IV
1371 Peachtree Street, NE. Suite 700
Atlanta, GA 30309

October 11, 1995



Mr. H. Franklin Vick, P.E., Manager
Planning and Environmental Branch
North Carolina Division of Highways
P.O. Box 25201
Raleigh, North Carolina 27611

Reference: Revised Scope
Burke County, North Carolina
Lovelady Road, State Road 1546

Dear Mr. Vick:

This is in response to the Revised Scope we received September 19, 1995, for the above-referenced project.

Burke County, North Carolina is participating in the Regular Phase of the National Flood Insurance Program (NFIP). If there are any waterways that are impacted, have regulatory floodways delineated, and 100-year floodplains, any encroachment into these areas must be in compliance with the NFIP regulations.

The Agency in charge must ensure compliance with the floodplain management measures enacted by the State of North Carolina. In this regard, it is imperative the Agency coordinate closely with the appropriate staff in the Floodplain Management Section of the Division of Emergency Management.

If we can be of further assistance, please contact Ms. Bel Marquez at (404) 853-4436.

Sincerely,

Robert E. McBeth
Acting Director
Mitigation Division

North Carolina
Department of Administration

James B. Hunt, Jr., Governor

Katie G. Dorsett, Secretary

April 3, 1998

Mr. Richard Davis
N.C. Deptartment of Transportation
Planning and Environmental Branch
Transportation Building
Raleigh NC 27611

Dear Mr. Davis:

Subject: Scoping - Proposed Improvements to Lovelady Road (SR 1546) - Upgrade and Extension from Laurel Street (SR 1545) to Shady Grove Road (SR 1608) in Burke County; TIP #R-2824

The N. C. State Clearinghouse has received the above project for intergovernmental review. This project has been assigned State Application Number 98-E-4220-0646. Please use this number with all inquiries or correspondence with this office.

Review of this project should be completed on or before 05/27/1998. Should you have any questions, please call (919)733-7232.

Sincerely,

Jeanette Furney

Ms. Jeanette Furney
Administrative Assistant

116 West Jones Street * Raleigh, North Carolina 27603-8003 * Telephone 919-733-7232
State Courier 51-01-00

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES

MEMORANDUM

TO: Chrys Baggett
State Clearinghouse

FROM: Melba McGee
Environmental Review Coordinator

RE: 98-0646 Upgrade of Lovelady Road to Shady Grove Road, Burke County

DATE: May 11, 1998

The Department of Environment and Natural Resources has reviewed the proposed information. The attached comments are for the applicant's information and consideratioin.

Thank you for the opportunity to review.

attachments

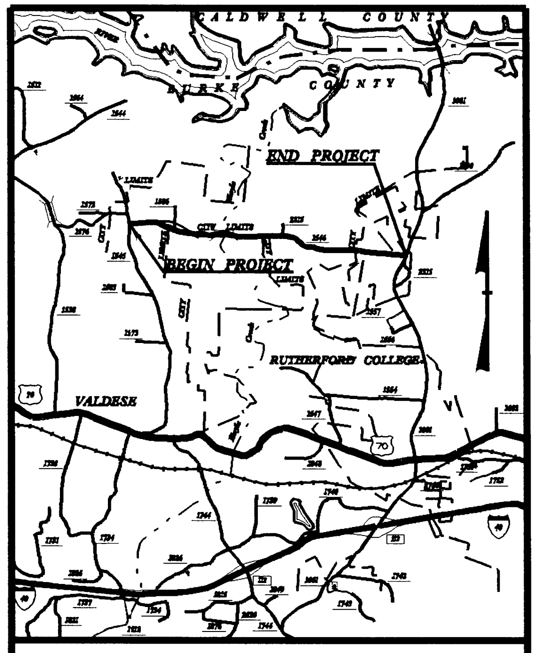
P.O. BOX 27687, RALEIGH NC 27611-7687 / 512 NORTH SALISBURY STREET, RALEIGH NC 27604
PHONE 919-733-4984 FAX 919-715-3060 WWW.ENR.STATE.NC.US/ENR/
AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER - 50% RECYCLED/10% POST-CONSUMER PAPER

9/09/99

TIP PROJECT: R-2824

CONTRACT:

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BURKE COUNTY

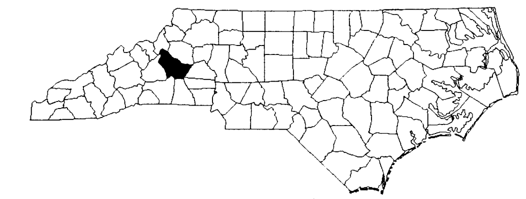
METRIC

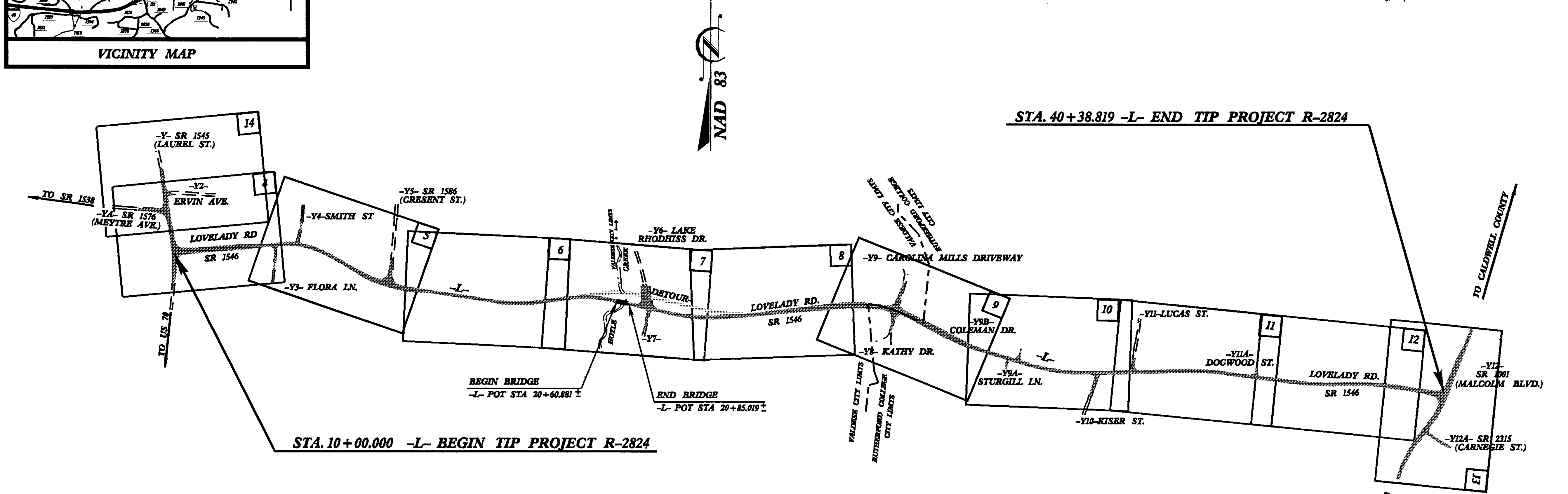
ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND OR MILLIMETERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2824	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34510.1.1	STP-1546(8)	P.E.
34510.3.1	STP-1546(8)	R/W & UTIL.

LOCATION: SR 1546 (LOVELADY ROAD) FROM SR 1545 (LAUREL ST.) TO SR 1001 (MALCOLM BLVD.)
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, AND SIGNAL





PORTIONS OF THIS PROJECT ARE WITHIN THE MUNICIPAL BOUNDARIES OF VALDESE AND RUTHERFORD COLLEGE.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
** DESIGN EXCEPTION FOR VERTICAL ALIGNMENT, STOPPING SIGHT DISTANCE AND MAXIMUM GRADE.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

5m 0 10m
PLANS

5m 0 10m
PROFILE (HORIZONTAL)

1m 0 2m
PROFILE (VERTICAL)

DESIGN DATA

ADT 2005 = 4638
ADT 2025 = 8100
DHV = 12 %
D = 60 %
* T = 4 %
** V = 65 km/h
*(TTST 2 % + DUAL 2 %)
FUNC. CLASS = URBAN COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2824 = 3.015 km
LENGTH STRUCTURE TIP PROJECT R-2824 = 0.024 km
TOTAL LENGTH OF TIP PROJECT R-2824 = 3.039 km

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 23, 2003

LETTING DATE: JUNE 21, 2005

GLENN W. MUMFORD, P.E.
PROJECT ENGINEER

JEFFREY L. TEAGUE, E.I.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

19-AUG-2004 14:29
R:\Proj\R2824\...

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJ. REFERENCE NO.	SHEET NO.
R-2824	1 – B

METRIC

*S.U.E = SUBSURFACE UTILITY ENGINEER

CONVENTIONAL SYMBOLS

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 (CCFR)
- 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 (C/A)
- Prop. Control of Access Line (C/A)
- Exist. Easement Line (E)
- Prop. Temp. Construction Easement Line (E)
- 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)
- 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 (PL)
- Exist. Iron Pin (EIP)
- Property Corner
- Property Monument (ECM)
- 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 (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

DETAIL OF ON-SITE DETOUR

PROJECT REFERENCE NO.	SHEET NO.
R-2824A	2-F
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

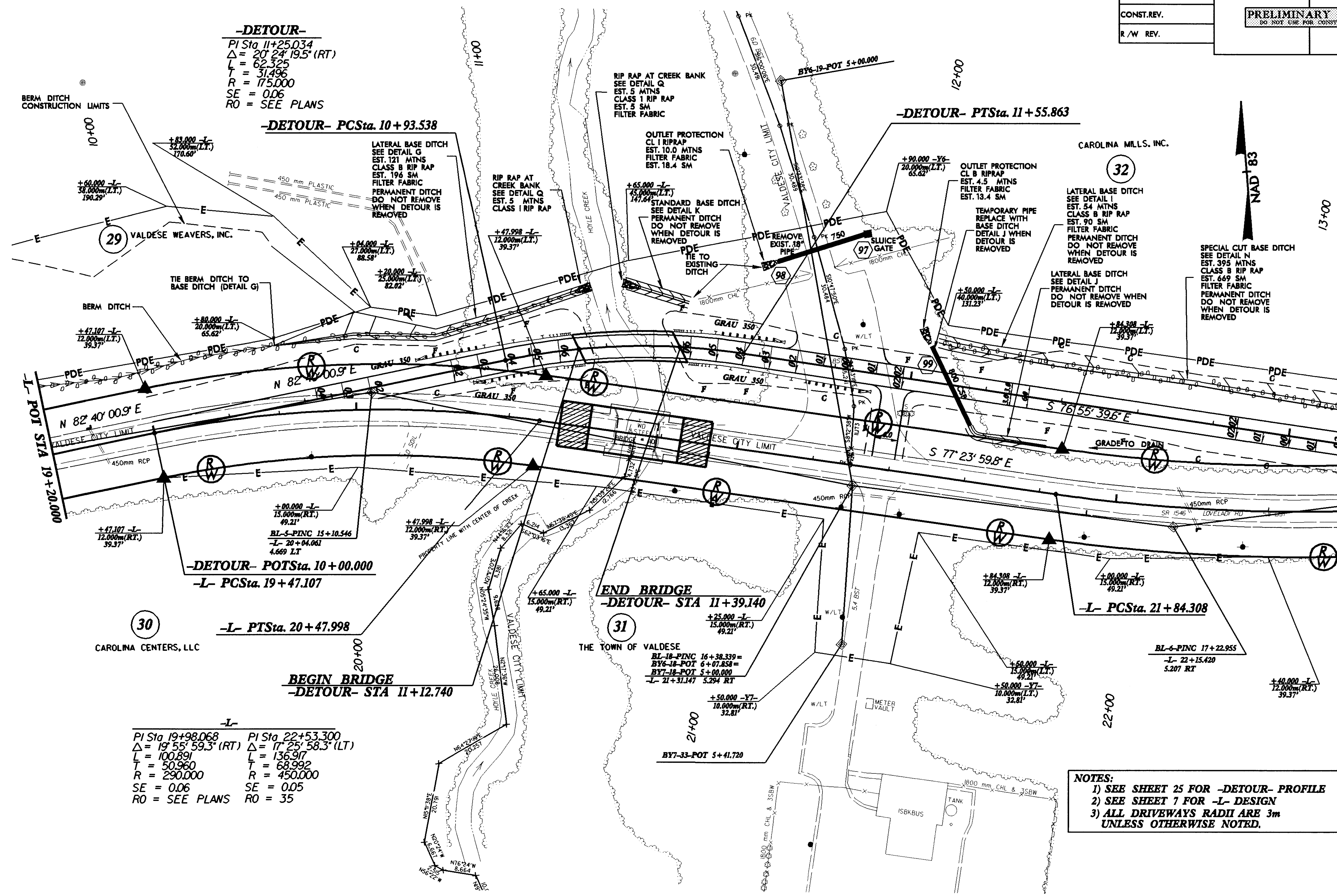
METRIC

CONST. REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-DETOUR-
PI Sta 11+25.034
Δ = 20° 24' 19.5" (RT)
L = 62.325
T = 31.496
R = 175.000
SE = 0.06
RO = SEE PLANS



-DETOUR- PCSta. 10+93.538
-DETOUR- PTSta. 11+55.863
-DETOUR- POTSta. 10+00.000
-L- PCSta. 19+47.107
-L- PTSta. 20+47.998
-L- PCSta. 21+84.308
BEGIN BRIDGE -DETOUR- STA 11+12.740
END BRIDGE -DETOUR- STA 11+39.140
-L- POT STA 19+20.000
MATCH TO SHEET 2-G -L- STA 22+60.000
VALDESE WEAVERS, INC.
CAROLINA MILLS, INC.
CAROLINA CENTERS, LLC
THE TOWN OF VALDESE
VALDESE CITY LIMIT
HOYLE CREEK
N 82° 40' 00.9" E
S 76° 55' 39.6" E
S 77° 23' 59.8" E
NAD 83
BERM DITCH CONSTRUCTION LIMITS
BERM DITCH
TIE BERM DITCH TO BASE DITCH (DETAIL G)
LATERAL BASE DITCH SEE DETAIL G EST. 121 MTNS CLASS B RIP RAP EST. 196 SM FILTER FABRIC PERMANENT DITCH DO NOT REMOVE WHEN DETOUR IS REMOVED
RIP RAP AT CREEK BANK SEE DETAIL Q EST. 5 MTNS CLASS I RIP RAP
RIP RAP AT CREEK BANK SEE DETAIL Q EST. 5 MTNS CLASS 1 RIP RAP EST. 5 SM FILTER FABRIC
OUTLET PROTECTION CL I RIPRAP EST. 10.0 MTNS FILTER FABRIC EST. 18.4 SM
STANDARD BASE DITCH SEE DETAIL K PERMANENT DITCH DO NOT REMOVE WHEN DETOUR IS REMOVED
REMOVE EXIST. 18" PIPE
TIE TO EXISTING DITCH
SLUICE GATE
OUTLET PROTECTION CL B RIPRAP EST. 4.5 MTNS FILTER FABRIC EST. 13.4 SM
TEMPORARY PIPE REPLACE WITH BASE DITCH DETAIL J WHEN DETOUR IS REMOVED
LATERAL BASE DITCH SEE DETAIL I EST. 54 MTNS CLASS B RIP RAP EST. 90 SM FILTER FABRIC PERMANENT DITCH DO NOT REMOVE WHEN DETOUR IS REMOVED
LATERAL BASE DITCH SEE DETAIL J PERMANENT DITCH DO NOT REMOVE WHEN DETOUR IS REMOVED
SPECIAL CUT BASE DITCH SEE DETAIL N EST. 395 MTNS CLASS B RIP RAP EST. 669 SM FILTER FABRIC PERMANENT DITCH DO NOT REMOVE WHEN DETOUR IS REMOVED
BY6-19-POT 5+00.000
BL-5-PINC 15+10.546 -L- 20+04.061 4.669 LT
BL-18-PINC 16+38.339= BY6-18-POT 6+07.858= BY7-18-POT 5+00.000 -L- 21+31.147 5.294 RT
BL-6-PINC 17+22.955 -L- 22+15.420 5.207 RT
BY7-33-POT 5+41.720
GRADE TO DRAIN
PROPERTY LINE WITH CENTER OF CREEK
SR 1546 LOVELADY RD
450 mm PLASTIC
450mm RCP
1800mm CHL
METER VAULT
TANK
ISBKBUS

-L-

PI Sta 19+98.068	PI Sta 22+53.300
Δ = 19° 55' 59.3" (RT)	Δ = 17° 25' 58.3" (LT)
L = 100.891	L = 136.917
T = 50.960	T = 68.992
R = 290.000	R = 450.000
SE = 0.06	SE = 0.05
RO = SEE PLANS	RO = 35

NOTES:
1) SEE SHEET 25 FOR -DETOUR- PROFILE
2) SEE SHEET 7 FOR -L- DESIGN
3) ALL DRIVEWAYS RADII ARE 3m UNLESS OTHERWISE NOTED.

DETAIL OF ON-SITE DETOUR

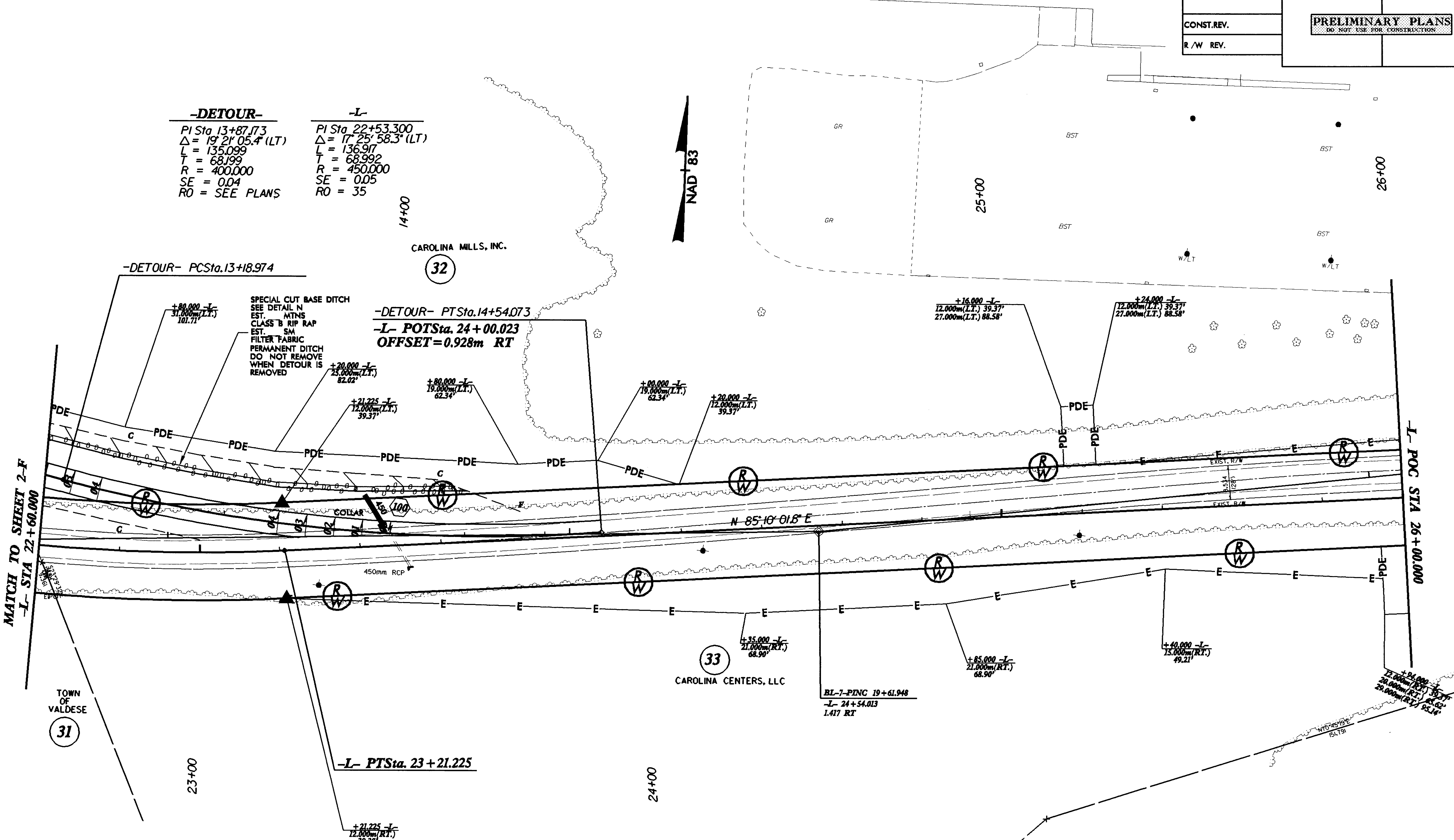
PROJECT REFERENCE NO.	SHEET NO.
R-2824A	2-G
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

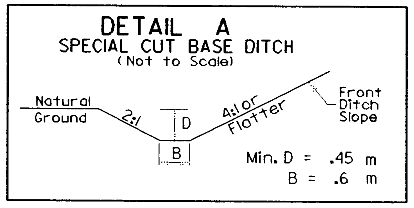


-DETOUR-
PI Sta 13+87.173
Δ = 19° 21' 05.4" (LT)
L = 135.099
T = 68.199
R = 400.000
SE = 0.04
RO = SEE PLANS
-L-
PI Sta 22+53.300
Δ = 17° 25' 58.3" (LT)
L = 136.917
T = 68.992
R = 450.000
SE = 0.05
RO = 35
NAD 83
CAROLINA MILLS, INC.
32
-DETOUR- PCSta.13+18.974
SPECIAL CUT BASE DITCH
SEE DETAIL N
EST. MTNS
CLASS B RIP RAP
EST. SM
FILTER FABRIC
PERMANENT DITCH
DO NOT REMOVE
WHEN DETOUR IS
REMOVED
-DETOUR- PTSta.14+54.073
-L- POTSta. 24+00.023
OFFSET=0.928m RT
N 85°10' 01.8" E
MATCH TO SHEET 2-F
-L- STA 22+60.000
-L- POC STA 26+00.000
450mm RCP
COLLAR
TOWN OF VALDESE
31
CAROLINA CENTERS, LLC
33
BL-7-PINC 19+61.948
-L- 24+54.013
1.417 RT
-L- PTSta. 23+21.225
+21.225 -L-
12.000m(RT.)
39.37'
23+00
24+00
25+00
26+00
14+00

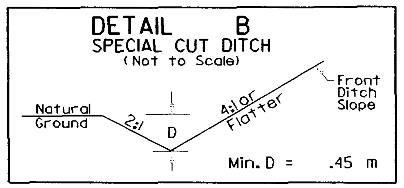
NOTES:
1) SEE SHEET 25 FOR -DETOUR- PROFILE
2) SEE SHEET 8 FOR -L- DESIGN
3) ALL DRIVEWAY RADII ARE 3m
UNLESS OTHERWISE NOTED.

METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-2824	2-H
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
CONST. REV.		
R/W REV.		

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

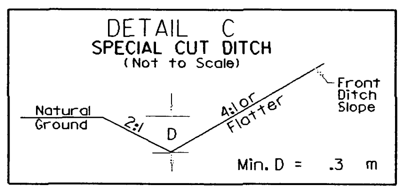


STA 12+60 TO STA 14+20 RT -L-

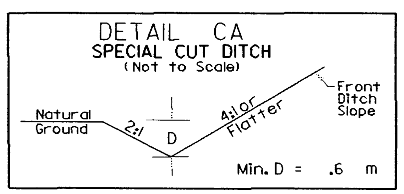


STA 11+73 TO STA 12+20 RT -L-
STA 15+60 TO 15+80 LT -L-
STA 20+20 TO 20+40 RT -L-
STA 22+00 TO 22+20 LT -L-
STA 29+20 TO 29+80 RT -L-
STA 10+20 TO 10+40 LT -Y10-
STA 32+80 TO 33+20 RT -L-

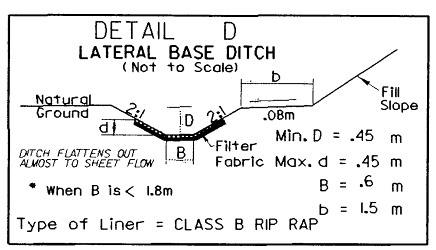
STA 34+00 TO 34+80 LT -L-
STA 11+40 TO 12+05 RT -Y12-
STA 12+80 TO 13+40 RT -Y12-
STA 39+60 TO 40+00 RT -L-
STA 10+20 TO 10+60 RT -Y12A-
STA 36+00 TO 37+00 LT -L-
STA 37+80 TO 38+40 LT -L-



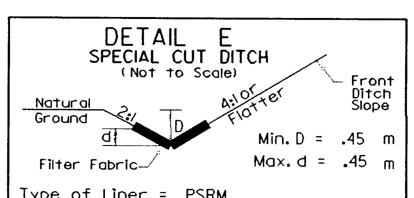
STA 10+50 TO STA 10+65 RT -L-



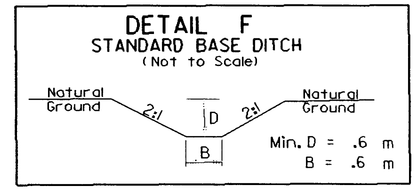
STA 10+40 TO STA 10+60 RT -Y-



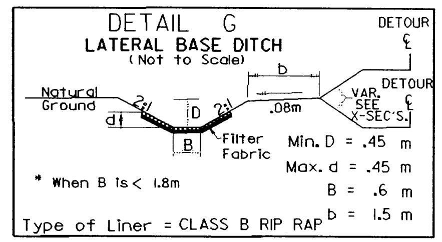
STA 10+25 TO STA 10+37 LT -DR1-



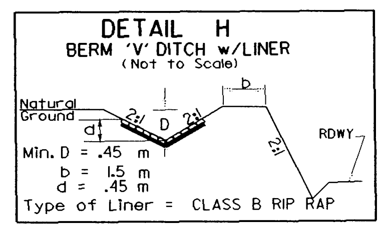
STA 10+05 TO 10+80 RT -Y3-
STA 10+05 TO 10+80 LT -Y3-
(NO CHANGE IN PROFILES)



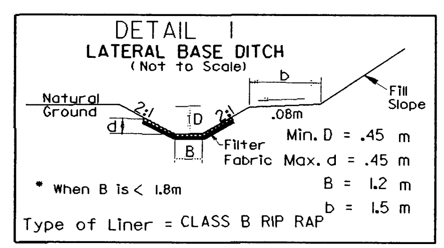
STA 12+55 RT -Y-
STA 16+90 RT -L-
STA 18+15 RT -L-
STA 20+80 TO STA 20+95 LT -L-



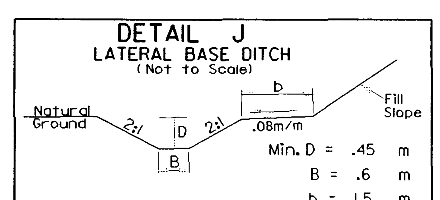
STA 10+40 TO STA 11+15 LT -DETOUR-



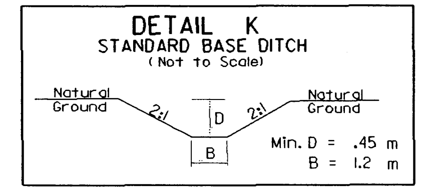
STA 17+60 TO STA 19+80 LT -L-



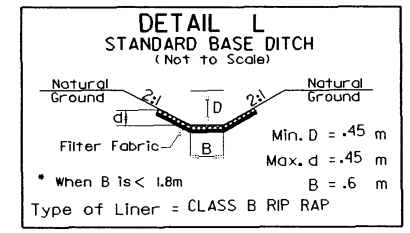
STA 11+98 TO STA 12+26 LT -DETOUR-



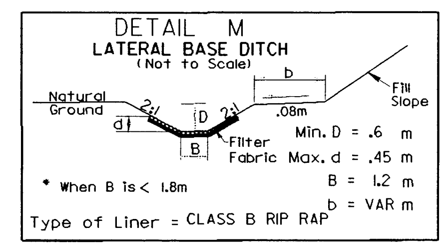
STA 11+25 LT -Y6- TO STA 21+80 LT -L-
STA 39+89 TO STA 40+25 LT -L-



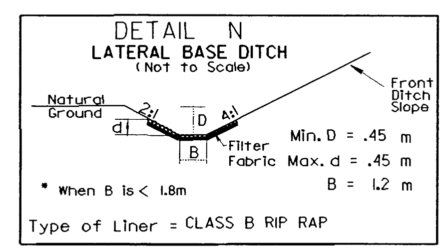
STA 11+28 TO STA 11+40 LT -DETOUR-



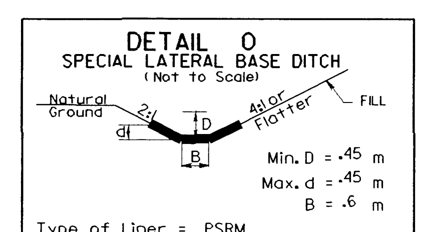
STA 26+00 RT -L-



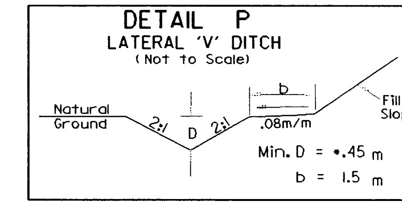
STA 26+56 TO STA 27+00 RT -L-



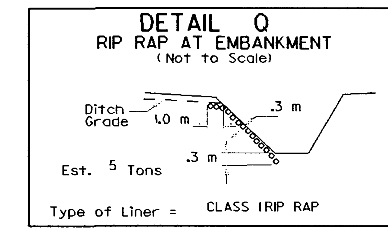
STA 12+26 TO STA 14+34 LT -DETOUR-

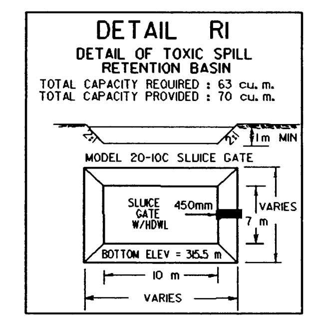


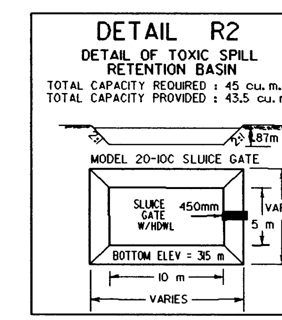
STA 27+44 TO 28+00 LT -L-

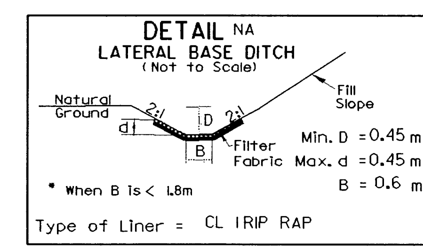


STA 33+80 TO 34+80 RT -L-
DITCH DEPTH = 0 @ STA 34+40 RT -L-

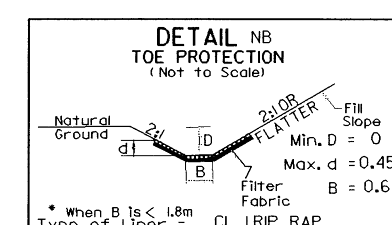








STA 27+40 -L- RT



STA. 27+60 TO STA 27+80 -L- RT

PROJECT REFERENCE NO.	SHEET NO.
R-2824	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.

R/W REV.

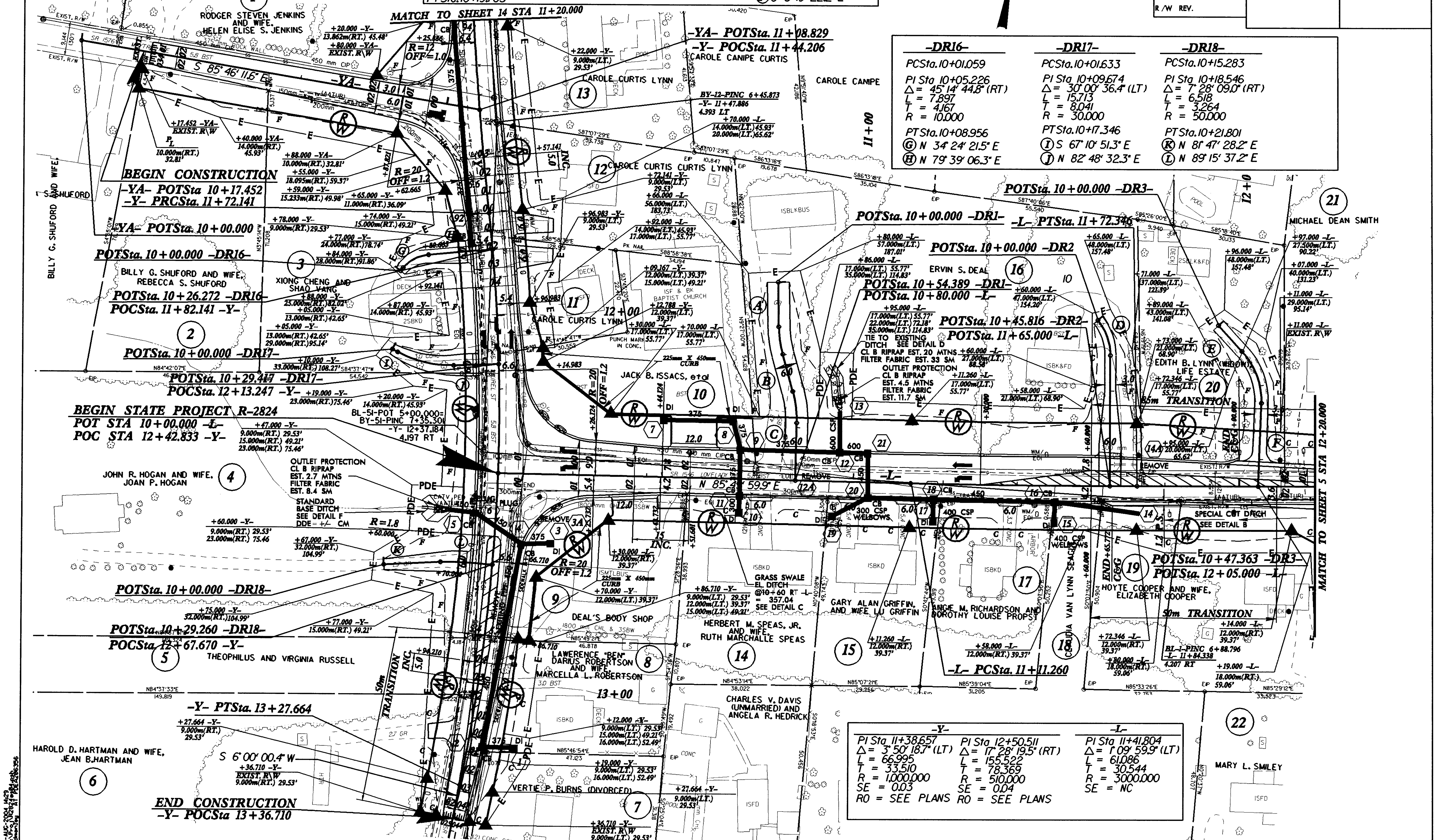
NOTES:
1) SEE SHEET 15 FOR -L- PROFILE
2) SEE SHEET 21 FOR -Y- PROFILE
3) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED.
4) SEE SHEET 2-H FOR DITCH DETAILS
5) SEE SHEET 21 FOR YA PROFILE
6) DESIGN EXCEPTION FOR VERTICAL ALIGNMENT, STOPPING SIGHT DISTANCE AND MAXIMUM GRADE.

ADT 2005 / 2025
-Y- 4146 / 7300; 2838 / 5300; -L- 4000 / 7000; 1162 / 1700; -Y- 2469 / 3700

-DR1-		-DR2-	-DR3-
(A) S 6° 14' 58.3" E	(C) S 4° 09' 59.1" E	PI Sta 10+05.382	PI Sta 10+17.484
(B) S 20° 40' 22.1" E		Δ = 39° 28' 38.8" (RT)	Δ = 44° 02' 01.1" (RT)
PI Sta 10+15.947	PI Sta 10+34.450	L = 10.335	L = 15.371
Δ = 14° 25' 23.8" (LT)	Δ = 16° 30' 23.0" (RT)	T = 5.382	T = 8.087
L = 7.552	L = 8.643	R = 15.000	R = 20.000
T = 3.796	T = 4.352	PCSta. 10+00.000	PCSta. 10+09.397
R = 30.000	R = 30.000	PTSta. 10+10.335	PTSta. 10+24.768
PCSta. 10+12.151	PCSta. 10+30.099	(D) S 5° 11' 37.5" E	(E) S 47° 21' 24.5" E
PTSta. 10+19.703	PTSta. 10+38.741		(F) S 3° 19' 22.2" E

-DR16-	-DR17-	-DR18-
PCSta. 10+01.059	PCSta. 10+01.633	PCSta. 10+15.283
PI Sta 10+05.226	PI Sta 10+09.674	PI Sta 10+18.546
Δ = 45° 14' 44.8" (RT)	Δ = 30° 00' 36.4" (LT)	Δ = 7° 28' 09.0" (RT)
L = 7.897	L = 15.713	L = 6.518
T = 4.167	T = 8.041	T = 3.264
R = 10.000	R = 30.000	R = 50.000
PTSta. 10+08.956	PTSta. 10+17.346	PTSta. 10+21.801
(G) N 34° 24' 21.5" E	(I) S 67° 10' 51.3" E	(K) N 81° 47' 28.2" E
(H) N 79° 39' 06.3" E	(J) N 82° 48' 32.3" E	(L) N 89° 15' 37.2" E

-Y-		-L-
PI Sta 11+38.657	PI Sta 12+50.511	PI Sta 11+41.804
Δ = 3° 50' 18.7" (LT)	Δ = 17° 28' 19.5" (RT)	Δ = 1° 09' 59.9" (LT)
L = 66.995	L = 155.522	L = 61.086
T = 33.510	T = 78.369	T = 30.544
R = 1,000.000	R = 510.000	R = 3000.000
SE = 0.03	SE = 0.04	SE = NC
RO = SEE PLANS	RO = SEE PLANS	



NAD 83
MATCH TO SHEET 14 STA 11+20.000
MATCH TO SHEET 5 STA 12+20.000
BEGIN CONSTRUCTION
-YA- POTSta 10+17.452
-Y- PRCSta. 11+72.141
-YA- POTSta. 10+00.000
POTSta. 10+00.000 -DR16-
POTSta. 10+26.272 -DR16-
POCSta. 11+82.141 -Y-
POTSta. 10+00.000 -DR17-
POTSta. 10+29.417 -DR17-
POCSta. 12+13.247 -Y-
BEGIN STATE PROJECT R-2824
POT STA 10+00.000 -L-
POC STA 12+42.833 -Y-
POTSta. 10+00.000 -DR18-
POTSta. 10+29.260 -DR18-
POCSta. 12+67.670 -Y-
-Y- PTSta. 13+27.664
END CONSTRUCTION
-Y- POCSta 13+36.710
-YA- POTSta. 11+08.829
-Y- POCSta. 11+44.206
POTSta. 10+00.000 -DR1-
POTSta. 10+54.389 -DR1-
POTSta. 10+80.000 -L-
POTSta. 10+00.000 -DR2
POTSta. 10+45.816 -DR2-
POTSta. 11+65.000 -L-
POTSta. 10+00.000 -DR3-
-L- PTSta. 11+72.346
POTSta. 10+47.363 -DR3-
POTSta. 12+05.000 -L-
-L- PCSta. 11+11.260
S 85° 46' 11.6" E
N 85° 44' 59.9" E
S 6° 00' 00.4" W
RODGER STEVEN JENKINS AND WIFE, HELEN ELISE S. JENKINS
BILLY G. SHUFORD AND WIFE, REBECCA S. SHUFORD
XIONG CHENG AND SHAO VANG
JOHN R. HOGAN AND WIFE, JOAN P. HOGAN
THEOPHILUS AND VIRGINIA RUSSELL
HAROLD D. HARTMAN AND WIFE, JEAN B. HARTMAN
VERTIE P. BURNS (DIVORCED)
LAWRENCE "BEN" DARIUS ROBERTSON AND WIFE MARCELLA L. ROBERTSON
DEAL'S BODY SHOP
JACK B. ISSACS, etal
CAROLE CURTIS LYNN
CAROLE CANIPE CURTIS
CAROLE CANIPE
HERBERT M. SPEAS, JR. AND WIFE, RUTH MARCHALLE SPEAS
CHARLES V. DAVIS (UNMARRIED) AND ANGELA R. HEDRICK
GARY ALAN GRIFFIN AND WIFE LU GRIFFIN
ANGIE M. RICHARDSON AND DOROTHY LOUISE PROPST
CLAUDIA VAN LYNN SEAGLE
ERVIN S. DEAL
EDITH B. LYNN (WIDOW) LIFE ESTATE
HOYTE COOPER AND WIFE, ELIZABETH COOPER
MICHAEL DEAN SMITH
MARY L. SMILEY
ISF & BK BAPTIST CHURCH
OUTLET PROTECTION CL B RIPRAP EST. 2.7 MTNS FILTER FABRIC EST. 8.4 SM
STANDARD BASE DITCH SEE DETAIL F
TIE TO EXISTING DITCH SEE DETAIL D
CL B RIPRAP EST. 20 MTNS FILTER FABRIC EST. 33 SM
OUTLET PROTECTION CL B RIPRAP EST. 4.5 MTNS FILTER FABRIC EST. 11.7 SM
GRASS SWALE EL DITCH SEE DETAIL C
SPECIAL CUT DITCH SEE DETAIL B
50m TRANSITION
35m TRANSITION
REMOVE

PROJECT REFERENCE NO.	SHEET NO.
R-2824	5
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R /W REV.

-Y4- POTSta. 10+00.000

-Y4- PCSta. 10+08.257

BEGIN CONSTRUCTION
-Y4- POCSta 10+40.000

-Y4- PTSta. 10+72.543

-Y3- POTSta. 10+00.000
-L- POTSta. 12+38.235

-L- PCCSta. 13+14.508

-Y4- POTSta. 10+94.402
-L- POCSta. 12+88.777

-L- PCSta. 12+53.072

-Y3- PCSta. 10+16.470

-Y3- PTSta. 10+48.933

END CONSTRUTION
-Y3- POTSta 10+87.630
-Y3- POTSta. 10+88.082

-Y5- POTSta. 10+00.000

-Y5- PCSta. 10+16.320

-L- PCSta. 14+39.262

-L- PTSta. 13+78.794

BEGIN CONSTRUCTION
-Y5- POTSta 11+00.000

-Y5- PTSta. 11+16.387

-L- PTSta. 15+71.615

-Y5- POTSta. 11+57.053
-L- POC Sta. 15+26.6079

MATCH TO SHEET 4 STA 12+20.000

MATCH TO SHEET 6 STA 15+80.000

JAMES ERVIN DEAL AND WIFE, BONNIE P. DEAL

DELORES DEAL (24)

MICHAEL DEAN SMITH (21)

WILLIAM EARL FRANKLIN (25)

WILLIAM REED ROBINSON AND WIFE, JANIE MELICIA J. ROBINSON (27)

CAROLINA CENTERS, LLC (28)

VALDESE WEAVERS, INC. (29)

CAROLINA CENTERS, LLC (30)

LISA B. COX AND HUSBAND, BILL J. COX (23)

MARY L. SMILEY (19)

LYNN M. WRIGHT AND JEREMY WRIGHT (22)

CORNERSTONE BAPTIST CHURCH (26)

-Y5-
PI Sta 10+66.356
Δ = 1° 26' 00.1" (LT)
L = 100.067
T = 50.036
R = 4,000.000
SE = SEE PLANS
RO = SEE PLANS
INC = 7

DITCH CLEANOUT
STA 10+50 TO 11+00 RT -Y5-
DDE +/- 110 CU M
Smin = .3%

DITCH CLEANOUT
STA 10+40 TO 11+00 LT -Y5-
DDE +/- 120 CU M
Smin = .3%

SPECIAL CUT DITCH
SEE DETAIL B

SPECIAL CUT BASE DITCH
SEE DETAIL A

SPECIAL CUT DITCH (LT. & RT.)
SEE DETAIL E
EST. 454 SM FIL. FAB. (LT. & RT.)

CLASS B RIP RAP +/- 10 TONS

REMOVE

-Y3-	-Y4-	-L-	-L-	-L-	-L-
PI Sta 10+32.709	PI Sta 10+40.496	PI Sta 12+84.150	PI Sta 13+46.816	PI Sta 15+06.239	
Δ = 4° 08' 00.0" (RT)	Δ = 10° 50' 00.0" (RT)	Δ = 21° 20' 01.1" (RT)	Δ = 14° 09' 59.6" (RT)	Δ = 21° 39' 59.4" (LT)	
L = 32.463	L = 64.286	L = 61.436	L = 64.286	L = 132.353	
T = 16.239	T = 32.239	T = 31.078	T = 32.308	T = 66.977	
R = 450.000	R = 340.000	R = 165.000	R = 260.000	R = 350.000	
SE = 0.02	SE = SEE PLANS	SE = 0.06	SE = 0.06	SE = 0.05	
RO = SEE PLANS	RO = SEE PLANS	RO = 42	RO = 42	RO = 35	

-Y5-
ADT 2005/2025
900/900
500/500
400/400
4000/7000
3900/6900
-L-

NOTES:
1) SEE SHEET 15 FOR -L- PROFILE
2) SEE SHEET 21 FOR -Y3- PROFILE
3) SEE SHEET 22 FOR -Y4- PROFILE
3) SEE SHEET 22 FOR -Y5- PROFILE
4) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED.
5) SEE SHEET 2-H FOR DITCH DETAILS

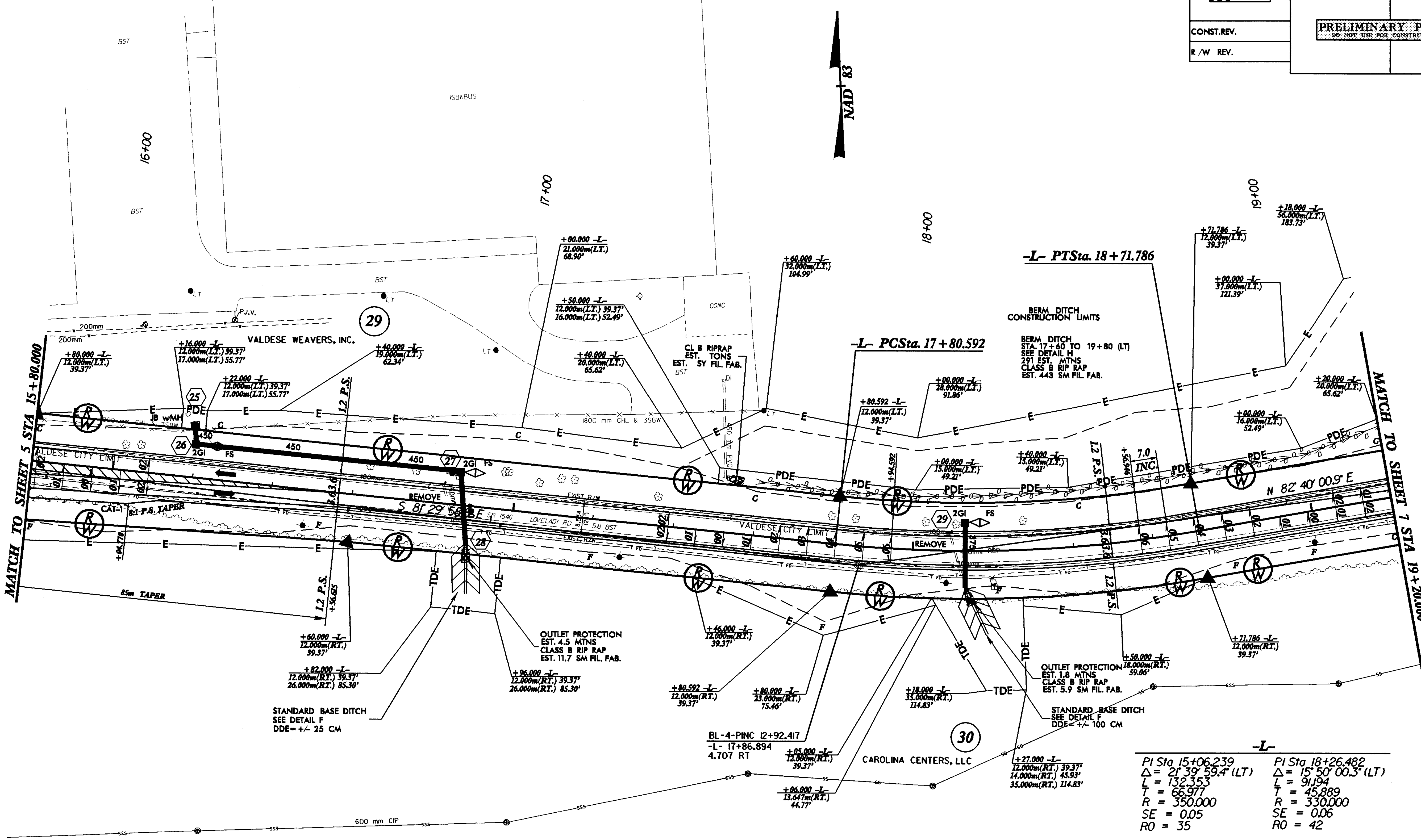
PROJECT REFERENCE NO.	SHEET NO.
R-2824	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

CONST.REV.

R/W REV.

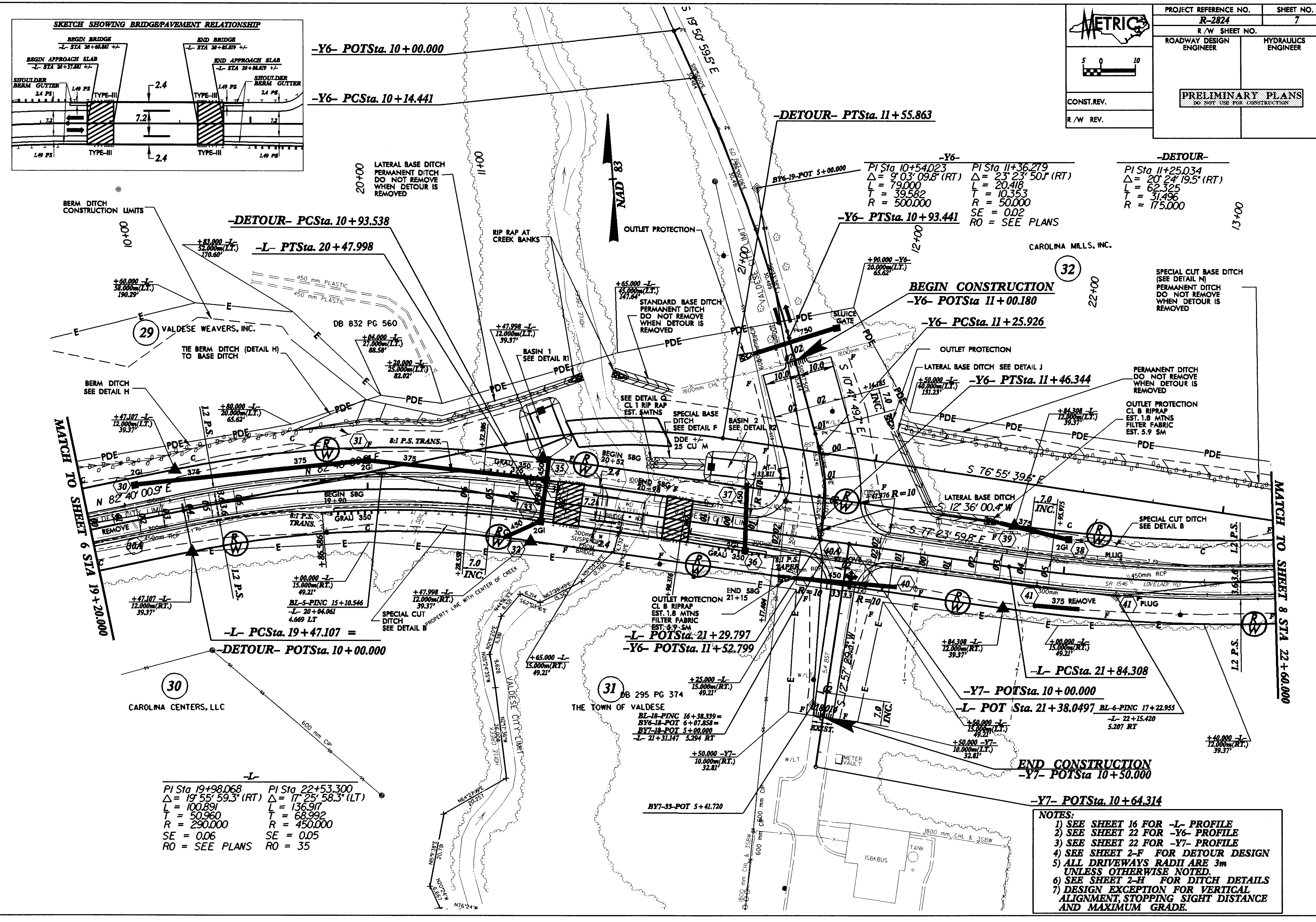
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L-

PI Sta 15+06.239	PI Sta 18+26.482
Δ = 21° 39' 59.4" (LT)	Δ = 15° 50' 00.3" (LT)
L = 132.353	L = 91.194
T = 66.977	T = 45.889
R = 350.000	R = 330.000
SE = 0.05	SE = 0.06
RO = 35	RO = 42

NOTE:
1) SEE SHEET 16 FOR -L- PROFILE
2) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED.
3) SEE SHEET 2-H FOR DITCH DETAILS


SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
BEGIN BRIDGE -L- STA 20+60.881 +/-
END BRIDGE -L- STA 20+85.219 +/-
BEGIN APPROACH SLAB -L- STA 20+37.881 +/-
END APPROACH SLAB -L- STA 20+88.819 +/-
SHOULDER BERM GUTTER
TYPE-III
-Y6- POTSta. 10+00.000
-Y6- PCSta. 10+14.441
-DETOUR- PTSta. 11+55.863
-DETOUR- PCSta. 10+93.538
-L- PTSta. 20+47.998
-Y6- PTSta. 10+93.441
BEGIN CONSTRUCTION -Y6- POTSta 11+00.180
-Y6- PCSta. 11+25.926
-Y6- PTSta. 11+46.344
NAD 83
VALDESE WEAVERS, INC.
DB 832 PG 560
CAROLINA MILLS, INC.
CAROLINA CENTERS, LLC
THE TOWN OF VALDESE
DB 295 PG 374
MATCH TO SHEET 6 STA 19+20.000
MATCH TO SHEET 8 STA 22+60.000
-L- PCSta. 19+47.107 =
-DETOUR- POTSta. 10+00.000
-L- POTSta. 21+29.797
-Y6- POTSta. 11+52.799
-L- PCSta. 21+84.308
-Y7- POTSta. 10+00.000
-L- POT Sta. 21+38.0497
END CONSTRUCTION -Y7- POTSta 10+50.000
-Y7- POTSta. 10+64.314
OUTLET PROTECTION
RIP RAP AT CREEK BANKS
LATERAL BASE DITCH PERMANENT DITCH DO NOT REMOVE WHEN DETOUR IS REMOVED
STANDARD BASE DITCH PERMANENT DITCH DO NOT REMOVE WHEN DETOUR IS REMOVED
SPECIAL CUT BASE DITCH (SEE DETAIL N) PERMANENT DITCH DO NOT REMOVE WHEN DETOUR IS REMOVED
BERM DITCH CONSTRUCTION LIMITS
TIE BERM DITCH (DETAIL H) TO BASE DITCH
BERM DITCH SEE DETAIL H
BASIN 1 SEE DETAIL R1
BASIN 2 SEE DETAIL R2
SEE DETAIL Q CL 1 RIP RAP EST. 5MTNS
SPECIAL BASE DITCH SEE DETAIL F
DDE +/- 25 CU M
OUTLET PROTECTION CL B RIPRAP EST. 1.8 MTNS FILTER FABRIC EST. 5.9 SM
OUTLET PROTECTION CL B RIPRAP EST. 1.8 MTNS FILTER FABRIC EST. 6.9 SM
SPECIAL CUT DITCH SEE DETAIL B
SPECIAL CUT DITCH SEE DETAIL B
LATERAL BASE DITCH SEE DETAIL J
PERMANENT DITCH DO NOT REMOVE WHEN DETOUR IS REMOVED
PROPERTY LINE WITH CENTER OF CREEK
VALDESE CITY LIMIT
HOYLE CREEK
SR 1546 LOVELADY RD
METER VAULT
ISBKBUS
TANK
BL-5-PINC 15+10.546
BL-6-PINC 17+22.955
BL-18-PINC 16+38.339 =
BY6-18-POT 6+07.858 =
BY7-18-POT 5+00.000
-L- 21+31.147 5.294 RT
BY7-33-POT 5+41.720
BY6-19-POT 5+00.000
S 19°50' 59.5" E
N 82°40' 00.9" E
S 76°55' 39.6" E
S 12°36' 00.4" W
S 77°23' 59.8" E
S 12°57' 26.3" W
S 10°47' 49.1" E

PROJECT REFERENCE NO.	SHEET NO.
R-2824	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y6-

PI Sta 10+54.023	PI Sta 11+36.279
Δ = 9° 03' 09.8" (RT)	Δ = 23° 23' 50.1" (RT)
L = 79.000	L = 20.418
T = 39.582	T = 10.353
R = 500.000	R = 50.000
	SE = 0.02
	RO = SEE PLANS

-DETOUR-

PI Sta 11+25.034
Δ = 20° 24' 19.5" (RT)
L = 62.325
T = 31.496
R = 175.000

-L-

PI Sta 19+98.068	PI Sta 22+53.300
Δ = 19° 55' 59.3" (RT)	Δ = 17° 25' 58.3" (LT)
L = 100.891	L = 136.917
T = 50.960	T = 68.992
R = 290.000	R = 450.000
SE = 0.06	SE = 0.05
RO = SEE PLANS	RO = 35

NOTES:

1) SEE SHEET 16 FOR -L- PROFILE
2) SEE SHEET 22 FOR -Y6- PROFILE
3) SEE SHEET 22 FOR -Y7- PROFILE
4) SEE SHEET 2-F FOR DETOUR DESIGN
5) ALL DRIVEWAYS RADII ARE 3m UNLESS OTHERWISE NOTED.
6) SEE SHEET 2-H FOR DITCH DETAILS
7) DESIGN EXCEPTION FOR VERTICAL ALIGNMENT, STOPPING SIGHT DISTANCE AND MAXIMUM GRADE.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

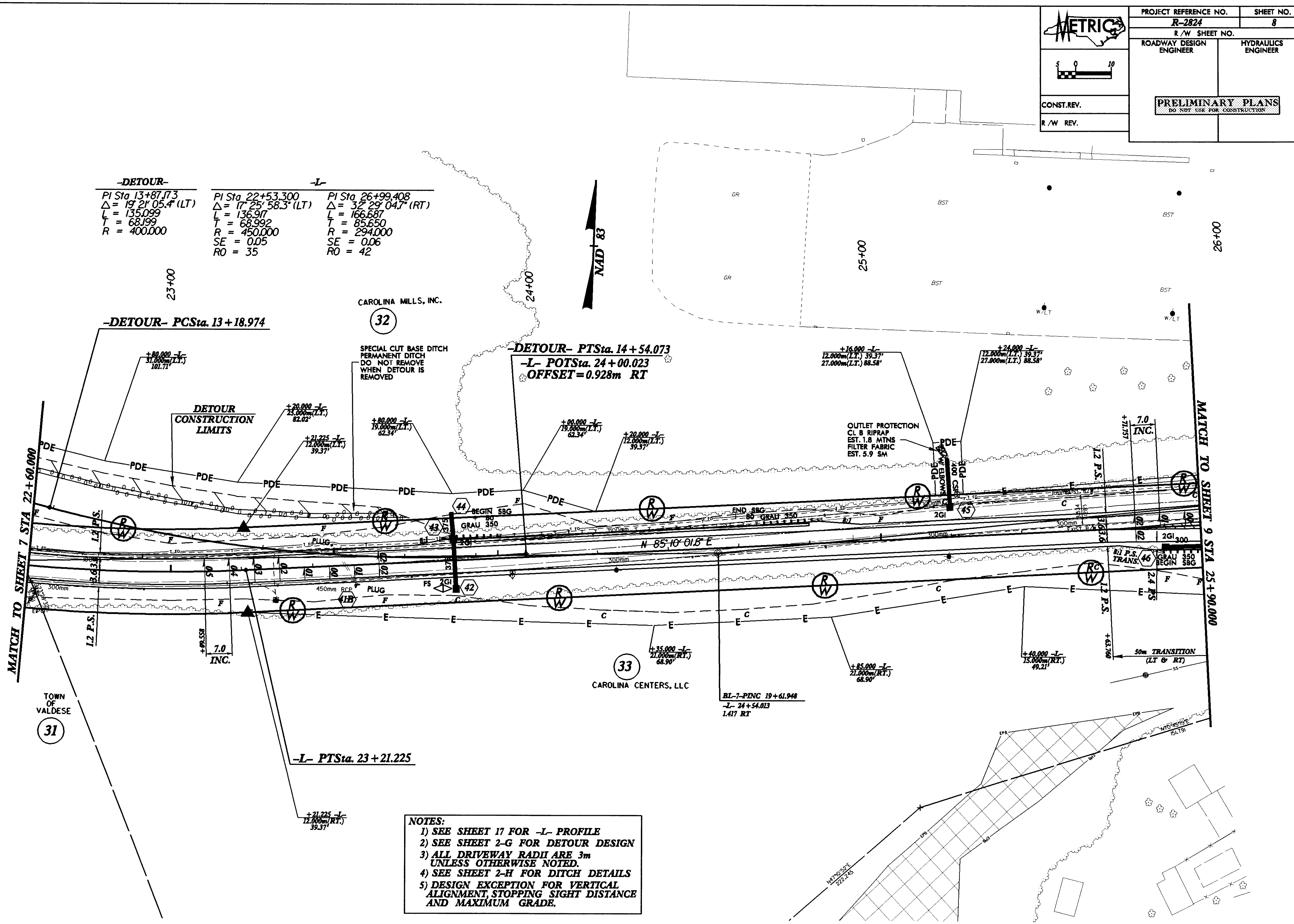
METRIC

CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

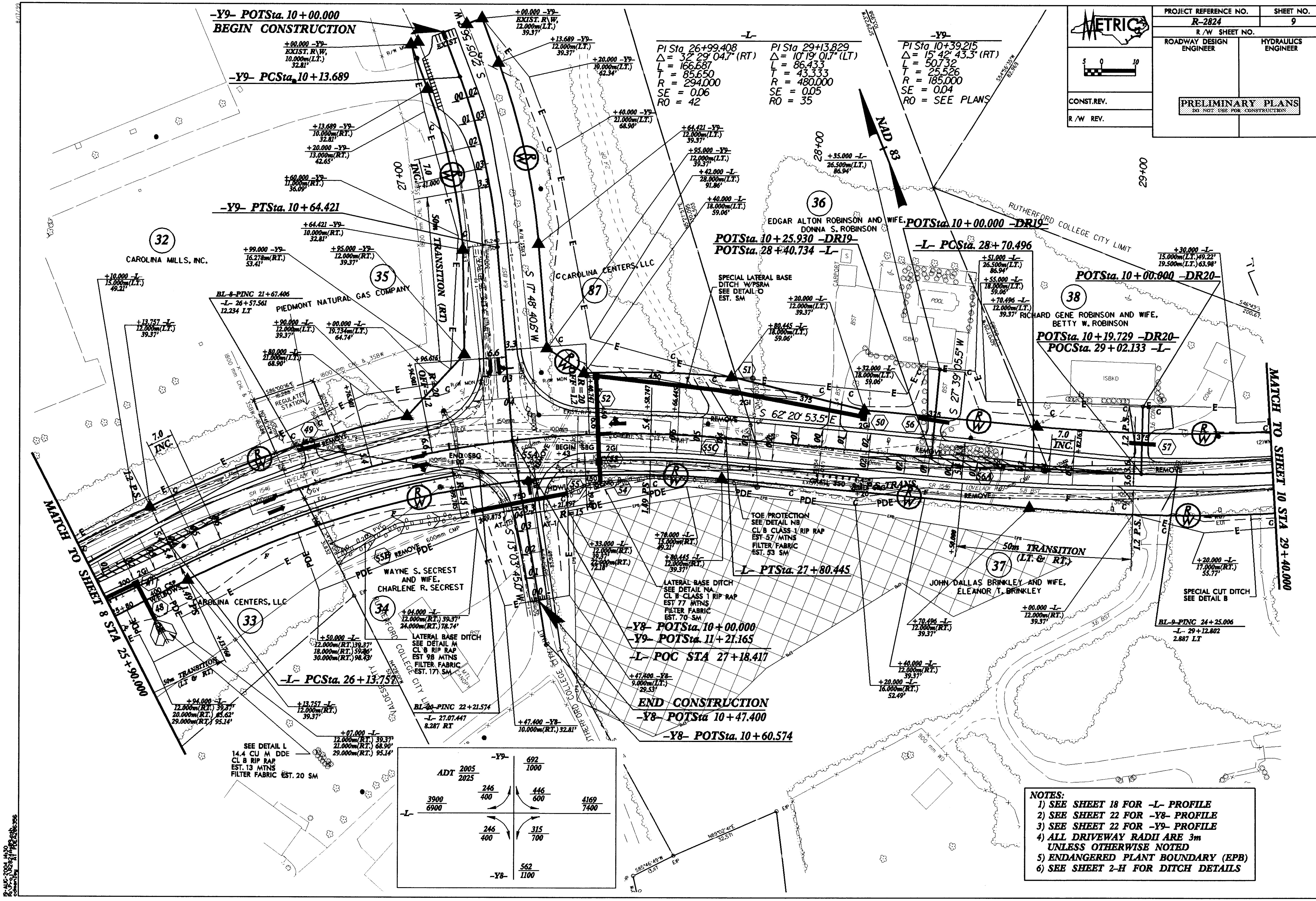
-DETOUR-	-L-	
PI Sta 13+87.173	PI Sta 22+53.300	PI Sta 26+99.408
Δ = 19° 21' 05.4" (LT)	Δ = 17° 25' 58.3" (LT)	Δ = 32° 29' 04.7" (RT)
L = 135.099	L = 136.917	L = 166.687
T = 68.199	T = 68.992	T = 85.650
R = 400.000	R = 450.000	R = 294.000
	SE = 0.05	SE = 0.06
	RO = 35	RO = 42



NAD 83
23+00
24+00
25+00
26+00
CAROLINA MILLS, INC.
32
-DETOUR- PCSta. 13+18.974
-DETOUR- PTSta. 14+54.073
-L- POTSta. 24+00.023
OFFSET=0.928m RT
SPECIAL CUT BASE DITCH PERMANENT DITCH DO NOT REMOVE WHEN DETOUR IS REMOVED
DETOUR CONSTRUCTION LIMITS
OUTLET PROTECTION CL B RIPRAP EST. 1.8 MTNS FILTER FABRIC EST. 5.9 SM
MATCH TO SHEET 7 STA 22+60.000
MATCH TO SHEET 9 STA 25+90.000
N 85°10' 01.8" E
BEGIN SBG
END SBG
GRAU 350
7.0 INC.
1.2 P.S.
2.4 P.S.
8:1 P.S. TRANS.
50m TRANSITION (LT & RT)
CAROLINA CENTERS, LLC
33
TOWN OF VALDESE
31
-L- PTSta. 23+21.225
BL-7-PINC 19+61.948
-L- 24+54.013
1.417 RT
450mm RCP
300mm
PLUG
2GI

NOTES:

1) SEE SHEET 17 FOR -L- PROFILE
2) SEE SHEET 2-G FOR DETOUR DESIGN
3) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED.
4) SEE SHEET 2-H FOR DITCH DETAILS
5) DESIGN EXCEPTION FOR VERTICAL ALIGNMENT, STOPPING SIGHT DISTANCE AND MAXIMUM GRADE.


METRIC
PROJECT REFERENCE NO. R-2824
SHEET NO. 9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
-L-
PI Sta 26+99.408
Δ = 32° 29' 04.7" (RT)
L = 166.687
T = 85.650
R = 294.000
SE = 0.06
RO = 42
PI Sta 29+13.829
Δ = 10° 19' 01.7" (LT)
L = 86.433
T = 43.333
R = 480.000
SE = 0.05
RO = 35
-Y9-
PI Sta 10+39.215
Δ = 15° 42' 43.3" (RT)
L = 50.732
T = 25.526
R = 185.000
SE = 0.04
RO = SEE PLANS
NAD 83
-Y9- POTSta. 10+00.000
BEGIN CONSTRUCTION
-Y9- PCSta. 10+13.689
-Y9- PTSta. 10+64.421
CAROLINA MILLS, INC.
PIEDMONT NATURAL GAS COMPANY
CAROLINA CENTERS, LLC
EDGAR ALTON ROBINSON AND WIFE, DONNA S. ROBINSON
POTSta. 10+00.000 -DR19-
POTSta. 10+25.930 -DR19-
POTSta. 28+40.734 -L-
-L- PCSta. 28+70.496
RUTHERFORD COLLEGE CITY LIMIT
POTSta. 10+00.000 -DR20-
RICHARD GENE ROBINSON AND WIFE, BETTY W. ROBINSON
POTSta. 10+19.729 -DR20-
POCSta. 29+02.133 -L-
MATCH TO SHEET 10 STA 29+40.000
MATCH TO SHEET 8 STA 25+90.000
50m TRANSITION (RT)
50m TRANSITION (LT & RT)
SPECIAL LATERAL BASE DITCH W/PSRM SEE DETAIL O EST. 5M
TOE PROTECTION SEE DETAIL NB CL B CLASS 1 RIP RAP EST 57 MTNS FILTER FABRIC EST. 53 SM
LATERAL BASE DITCH SEE DETAIL NA CL B CLASS 1 RIP RAP EST 77 MTNS FILTER FABRIC EST. 70 SM
-L- PTSta. 27+80.445
WAYNE S. SECREST AND WIFE, CHARLENE R. SECREST
LATERAL BASE DITCH SEE DETAIL M CL B RIP RAP EST 98 MTNS FILTER FABRIC EST. 171 SM
-Y8- POTSta. 10+00.000
-Y9- POTSta. 11+21.165
-L- POC STA 27+18.417
JOHN DALLAS BRINKLEY AND WIFE, ELEANOR T. BRINKLEY
SPECIAL CUT DITCH SEE DETAIL B
BL-9-PINC 24+25.006
-L- 29+12.802
2.887 LT
BL-8-PINC 21+67.406
-L- 26+57.561
12.234 LT
-L- PCSta. 26+13.757
BL-10-PINC 22+21.574
-L- 27.07.447
8.287 RT
END CONSTRUCTION
-Y8- POTSta 10+47.400
-Y8- POTSta. 10+60.574
SEE DETAIL L 14.4 CU M DDE CL B RIP RAP EST. 13 MTNS FILTER FABRIC EST. 20 SM
ADT 2005/2025
-Y9- 692/1000
246/400
446/600
-L- 3900/6900
4169/7400
246/400
315/700
-Y8- 562/1100
NOTES:
1) SEE SHEET 18 FOR -L- PROFILE
2) SEE SHEET 22 FOR -Y8- PROFILE
3) SEE SHEET 22 FOR -Y9- PROFILE
4) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED
5) ENDANGERED PLANT BOUNDARY (EPB)
6) SEE SHEET 2-H FOR DITCH DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-2824	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTES:

1) SEE SHEET 19 FOR -L- PROFILE
2) SEE SHEET 23 FOR -Y10- PROFILE
3) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED.
4) SEE SHEET 2-H FOR DITCH DETAILS
5) SEE SHEET 23 FOR -Y9A- PROFILE
6) SEE SHEET 23 FOR -Y9B- PROFILE

-L-

PI Sta 29+13.829	PI Sta 31+23.879
Δ = 10° 19' 01.7" (LT)	Δ = 18° 35' 44.3" (LT)
L = 86.433	L = 159.032
T = 43.333	T = 80.221
R = 480.000	R = 490.000
SE = 0.05	SE = 0.05
RO = 35	RO = 35

-Y9A-

PI Sta 10+14.943
Δ = 9° 59' 01.6" (RT)
L = 8.712
T = 4.367
R = 50.000

-DR4-

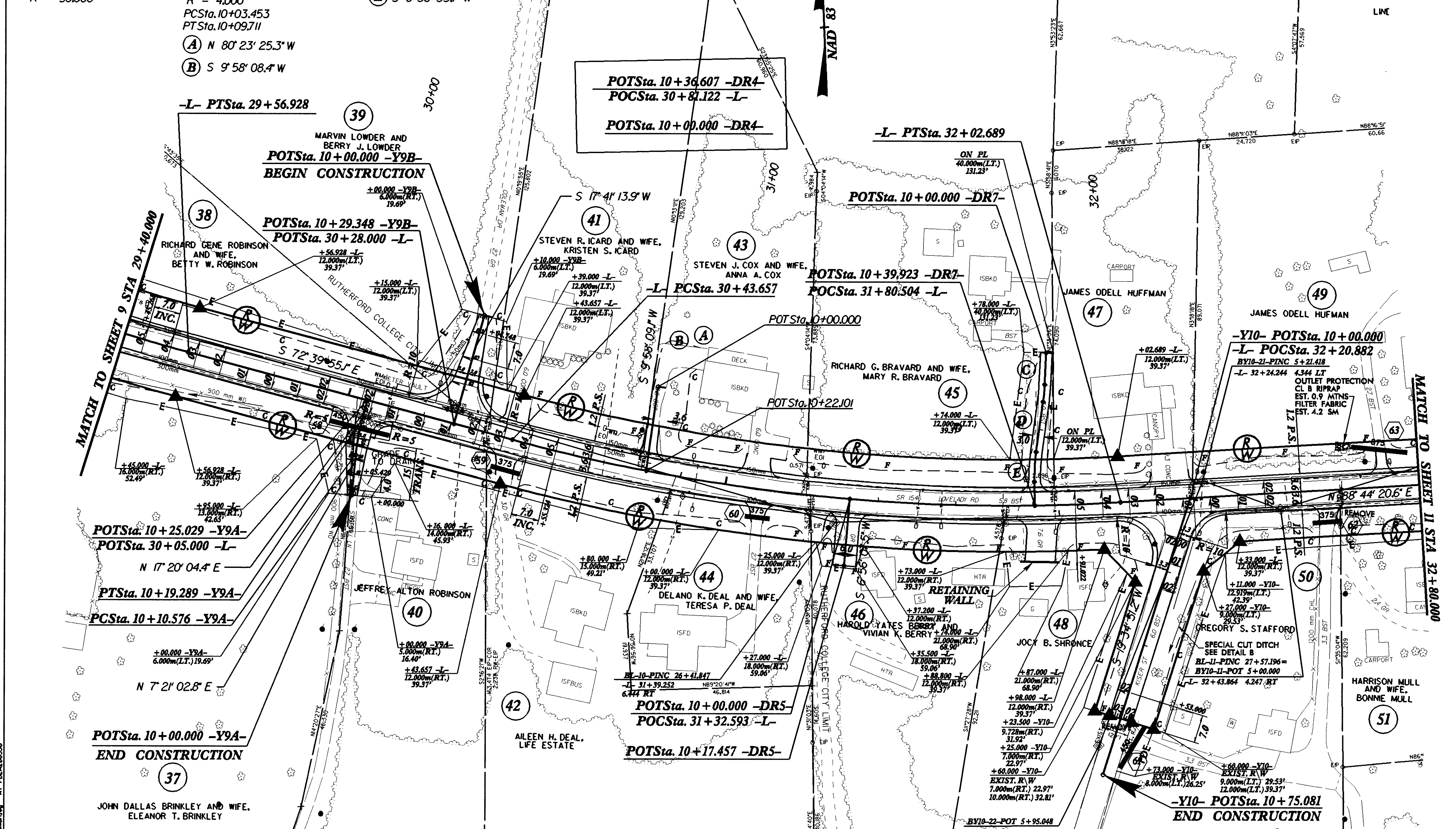
PI Sta 10+07.428
Δ = 89° 38' 26.3" (LT)
L = 6.258
T = 3.975
R = 4.000
PCSta. 10+03.453
PTSta. 10+09.711

(A) N 80° 23' 25.3" W
(B) S 9° 58' 08.4" W

-DR7-

PI Sta 10+10.544	PI Sta 10+29.829
Δ = 5° 12' 25.0" (RT)	Δ = 8° 57' 04.5" (LT)
L = 4.544	L = 7.811
T = 2.274	T = 3.914
R = 50.000	R = 50.000
PCSta. 10+08.271	PCSta. 10+25.916
PTSta. 10+12.815	PTSta. 10+33.727

(C) S 4° 43' 35.3" W
(D) S 9° 56' 00.3" W
(E) S 0° 58' 55.7" W



NAD 83
POTSta. 10+36.607 -DR4-
POCSta. 30+81.122 -L-
POTSta. 10+00.000 -DR4-
-L- PTSta. 29+56.928
-L- PTSta. 32+02.689
MATCH TO SHEET 9 STA 29+40.000
MATCH TO SHEET 11 STA 32+80.000
POTSta. 10+00.000 -Y9B-
BEGIN CONSTRUCTION
POTSta. 10+29.348 -Y9B-
POTSta. 30+28.000 -L-
S 17° 41' 13.9" W
-L- PCSta. 30+43.657
POTSta. 10+00.000 -DR7-
POTSta. 10+39.923 -DR7-
POCSta. 31+80.504 -L-
-Y10- POTSta. 10+00.000
-L- POCSta. 32+20.882
POTSta. 10+25.029 -Y9A-
POTSta. 30+05.000 -L-
N 17° 20' 04.4" E
PTSta. 10+19.289 -Y9A-
PCSta. 10+10.576 -Y9A-
N 7° 21' 02.8" E
POTSta. 10+00.000 -Y9A-
END CONSTRUCTION
POTSta. 10+00.000 -DR5-
POCSta. 31+32.593 -L-
POTSta. 10+17.457 -DR5-
-Y10- POTSta. 10+75.081
END CONSTRUCTION
S 72° 39' 55.1" E
N 88° 44' 20.6" E
RETAINING WALL
SR 1546 LOVELADY RD
RUTHERFORD COLLEGE CITY LIMIT
MARVIN LOWDER AND BERRY J. LOWDER
RICHARD GENE ROBINSON AND WIFE, BETTY W. ROBINSON
STEVEN R. ICARD AND WIFE, KRISTEN S. ICARD
STEVEN J. COX AND WIFE, ANNA A. COX
RICHARD G. BRAVARD AND WIFE, MARY R. BRAVARD
JAMES ODELL HUFFMAN
JAMES ODELL HUFMAN
JEFFREY ALTON ROBINSON
AILEEN H. DEAL, LIFE ESTATE
DELANO K. DEAL AND WIFE, TERESA P. DEAL
HAROLD YATES BERRY AND VIVIAN K. BERRY
JOCY B. SHRONCE
GREGORY S. STAFFORD
HARRISON MULL AND WIFE, BONNIE MULL
JOHN DALLAS BRINKLEY AND WIFE, ELEANOR T. BRINKLEY
SPECIAL CUT DITCH SEE DETAIL B
OUTLET PROTECTION CL B RIPRAP EST. 0.9 MTNS FILTER FABRIC EST. 4.2 SM
BY10-22-POT 5+95.048

PROJECT REFERENCE NO. R-2824 | SHEET NO. 11

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

METRIC

CONST. REV.

R/W REV.

RIGHT OF WAY REVISION: 3/29/04 BCF STEEPENED FILL SLOPES AND REDUCED THE TEMPORARY CONSTRUCTION BASEMENT ON PARCELS 60 AND 62.

-Y11-

PI Sta 10+29.942
Δ = 4° 32' 00.0" (RT)
L = 22.945
T = 11.479
R = 290.000

PI Sta 10+97.997
Δ = 10° 10' 00.0" (LT)
L = 48.796
T = 24.462
R = 275.000
SE = SEE PLANS

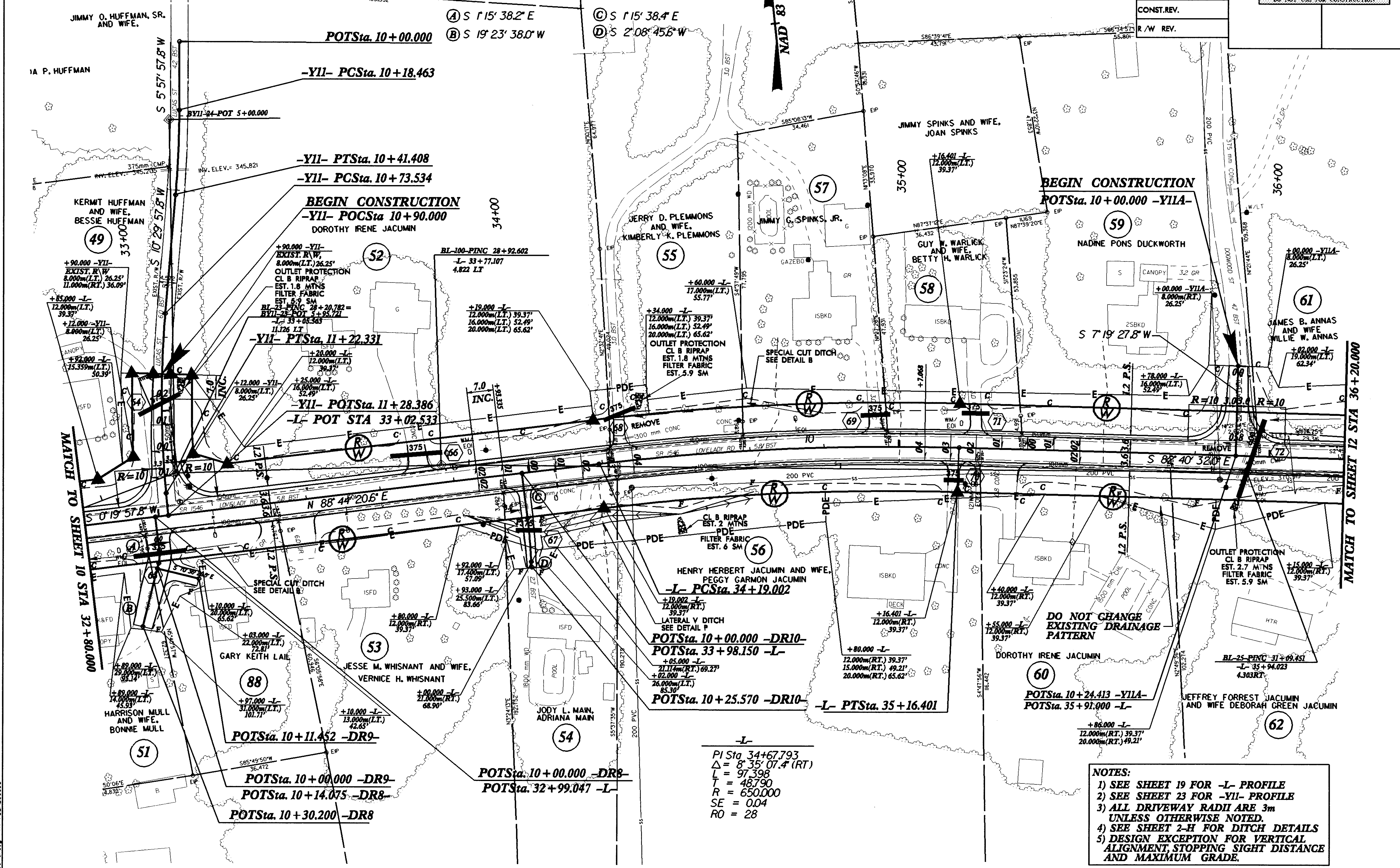
-DR8-

PI Sta 10+10.846
Δ = 20° 39' 16.2" (RT)
L = 3.605
T = 1.822
R = 10.000
PCSta. 10+09.024
PTSta. 10+12.629

-DR10-

PI Sta 10+18.179
Δ = 3° 24' 24.0" (RT)
L = 11.891
T = 5.947
R = 200.000
PCSta. 10+12.232
PTSta. 10+24.124

(A) S 1° 15' 38.2" E
(B) S 19° 23' 38.0" W
(C) S 1° 15' 38.4" E
(D) S 2° 08' 45.6" W



NAD 83
POTSta. 10+00.000
-Y11- PCSta. 10+18.463
-Y11- PTSta. 10+41.408
-Y11- PCSta. 10+73.534
BEGIN CONSTRUCTION
-Y11- POCSta 10+90.000
-Y11- PTSta. 11+22.331
-Y11- POTSta. 11+28.386
-L- POT STA 33+02.533
BEGIN CONSTRUCTION
POTSta. 10+00.000 -Y11A-
JIMMY O. HUFFMAN, SR. AND WIFE,
KERMIT HUFFMAN AND WIFE, BESSIE HUFFMAN
DOROTHY IRENE JACUMIN
JERRY D. PLEMMONS AND WIFE, KIMBERLY K. PLEMMONS
JIMMY C. SPINKS, JR.
JIMMY SPINKS AND WIFE, JOAN SPINKS
GUY W. WARLICK AND WIFE, BETTY H. WARLICK
NADINE PONS DUCKWORTH
JAMES B. ANNAS AND WIFE WILLIE W. ANNAS
HENRY HERBERT JACUMIN AND WIFE, PEGGY GARMON JACUMIN
GARY KEITH LAIL
JESSE M. WHISNANT AND WIFE, VERNICE H. WHISNANT
JODY L. MAIN, ADRIANA MAIN
HARRISON MULL AND WIFE, BONNIE MULL
DOROTHY IRENE JACUMIN
JEFFREY FORREST JACUMIN AND WIFE DEBORAH GREEN JACUMIN
MATCH TO SHEET 10 STA 32+80.000
MATCH TO SHEET 12 STA 36+20.000
-L- PCSta. 34+19.002
POTSta. 10+00.000 -DR10-
POTSta. 33+98.150 -L-
POTSta. 10+25.570 -DR10-
-L- PTSta. 35+16.401
POTSta. 10+24.413 -Y11A-
POTSta. 35+91.000 -L-
POTSta. 10+11.452 -DR9-
POTSta. 10+00.000 -DR9-
POTSta. 10+14.075 -DR8-
POTSta. 10+30.200 -DR8
POTSta. 10+00.000 -DR8-
POTSta. 32+99.047 -L-
DO NOT CHANGE EXISTING DRAINAGE PATTERN
S 82° 40' 32.0" E
N 88° 44' 20.6" E

-L-

PI Sta 34+67.793
Δ = 8° 35' 07.4" (RT)
L = 97.398
T = 48.790
R = 650.000
SE = 0.04
RO = 28

NOTES:
1) SEE SHEET 19 FOR -L- PROFILE
2) SEE SHEET 23 FOR -Y11- PROFILE
3) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED.
4) SEE SHEET 2-H FOR DITCH DETAILS
5) DESIGN EXCEPTION FOR VERTICAL ALIGNMENT, STOPPING SIGHT DISTANCE AND MAXIMUM GRADE.

RIGHT OF WAY REVISION: 32904 BGF.
EXISTING ROCK WALL WAS LOCATED AND SHOWN ON PARCEL 68.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

-L-
PI Sta 37+30.349
△ = 8° 28' 00.4" (LT)
L = 73.886
T = 37.011
R = 500.000
SE = 0.05
RO = 35

PI Sta 38+65.116
△ = 10° 10' 36.4" (RT)
L = 92.717
T = 46.481
R = 522.000
SE = 0.05
RO = 35

-DR14-
PI Sta 10+12.162
△ = 17° 07' 03.5" (LT)
L = 14.938
T = 7.525
R = 50.000
PCSta. 10+04.637
PTSta. 10+19.575
Ⓐ S 0° 21' 21.5" W
Ⓑ S 16° 45' 42.0" E

-DR15-
PI Sta 10+25.490
△ = 34° 02' 33.8" (LT)
L = 5.942
T = 3.061
R = 10.000
PCSta. 10+22.428
PTSta. 10+28.370
Ⓒ S 42° 55' 28.6" W
Ⓓ S 8° 52' 54.7" W

NAD 83

MATCH TO SHEET 11 STA 36+20.000

MATCH TO SHEET 13 STA 39+40.000

-L- PCSta. 36+93.339

-L- PTSta. 37+67.225

POTSta. 10+00.000 -DR15-

POTSta. 10+00.000 -DR14-
POCSta. 37+54.148 -L-
POTSta. 10+42.468 -DR14-
-L- PCSta. 38+18.635

POCSta. 39+09.962 -L-
POTSta. 10+38.699 -DR15-
-L- PTSta. 39+11.352

JAMES B. ANNAS AND WIFE WILLIE W. ANNAS (61)

JOSEPH F. DIBBLE, II (64)

JEFFREY FORREST JACUMIN AND WIFE DEBORAH GREEN JACUMIN (62)

DOROTHY IRENE JACUMIN (60)

G. ALAN GRIFFIN AND WIFE LU GRIFFIN (65)

TONY LEE FRANKLIN (66)

WALTER D. LINK (67)

N. RUDOLPH MAUNEY (68)

MIRIAM L. BROWN (69)

RAY E. ANNAS (70)

ALLEN EUGENE FRASSELL AND WIFE SARA FRASSELL (71)

NETTIE WOODS (72)

SPECIAL CUT DITCH SEE DETAIL B

REMOVE EXISTING 2GI AND 375 RCP

OUTLET PROTECTION CL B RIPRAP EST. 0.9 MTNS FILTER FABRIC EST. 4.2 SM

BL-200-PINC 32+20.383
-L- 37+04.8354
5.176 RT.

BL-34-POT 33+62.637
-L- 38+46.174
5.790 LT.

50m TRANSITION (LT. & RT.)

NOTE:
1) SEE SHEET 20 FOR -L- PROFILE
2) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED.
3) SEE SHEET 2-H FOR DITCH DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-2824	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

CONST.REV.

R/W REV.

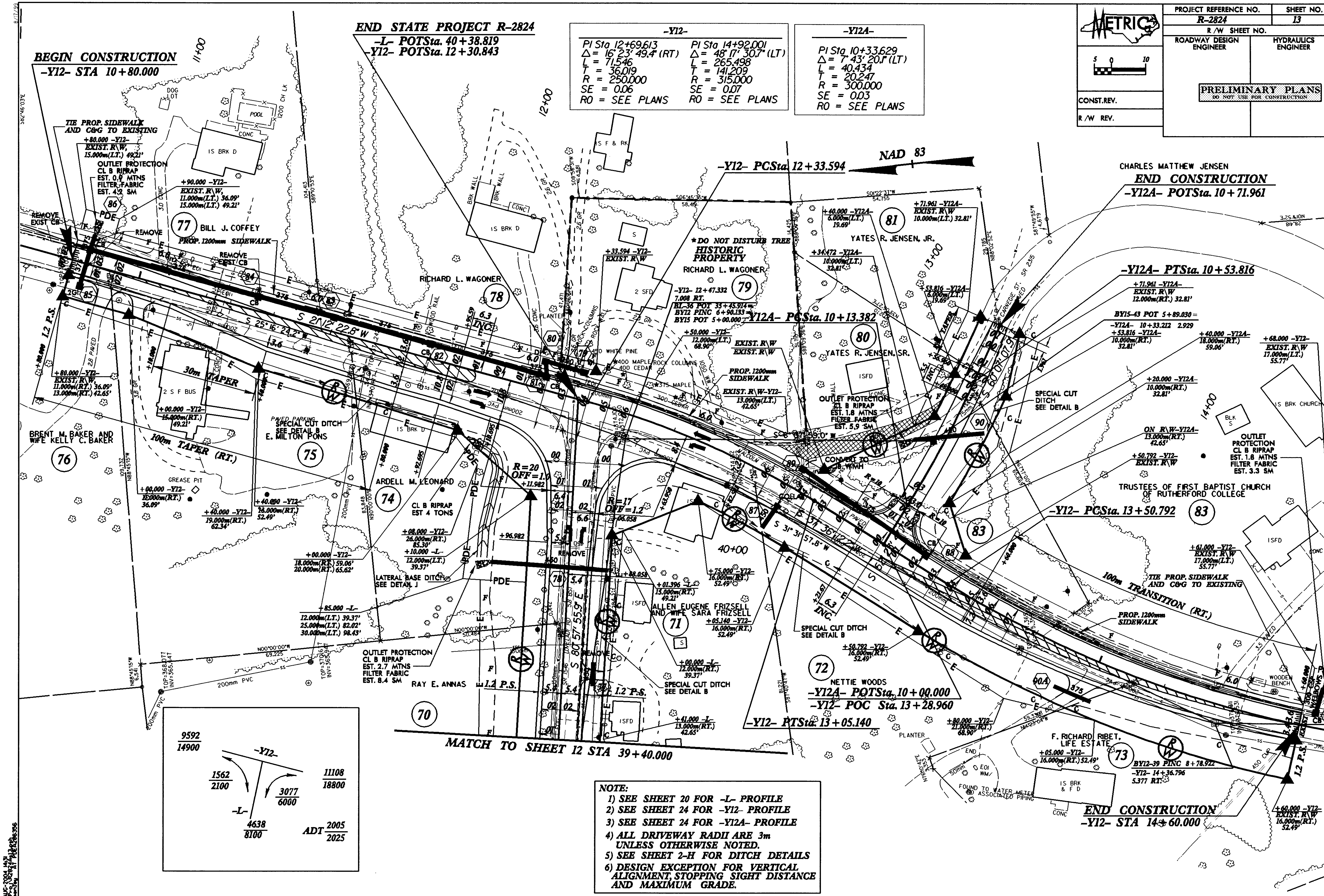
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y12-

PI Sta 12+69.613	PI Sta 14+92.001
Δ = 16° 23' 49.4" (RT)	Δ = 48° 17' 30.7" (LT)
L = 71.546	L = 265.498
T = 36.019	T = 141.209
R = 250.000	R = 315.000
SE = 0.06	SE = 0.07
RO = SEE PLANS	RO = SEE PLANS

-Y12A-

PI Sta 10+33.629
Δ = 7° 43' 20.1" (LT)
L = 40.434
T = 20.247
R = 300.000
SE = 0.03
RO = SEE PLANS



NOTE:

1) SEE SHEET 20 FOR -L- PROFILE
2) SEE SHEET 24 FOR -Y12- PROFILE
3) SEE SHEET 24 FOR -Y12A- PROFILE
4) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED.
5) SEE SHEET 2-H FOR DITCH DETAILS
6) DESIGN EXCEPTION FOR VERTICAL ALIGNMENT, STOPPING SIGHT DISTANCE AND MAXIMUM GRADE.

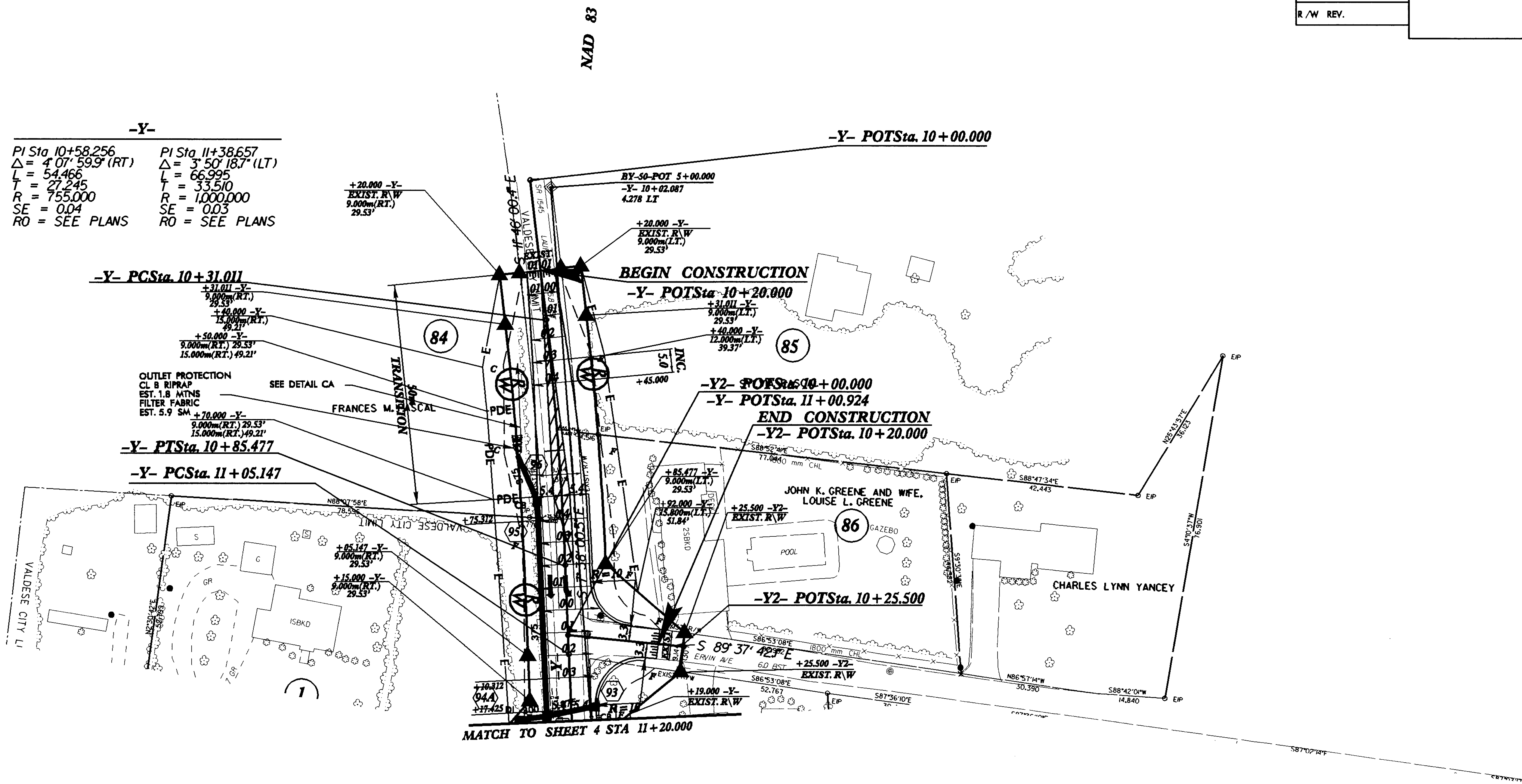
PROJECT REFERENCE NO.	SHEET NO.
R-2824	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

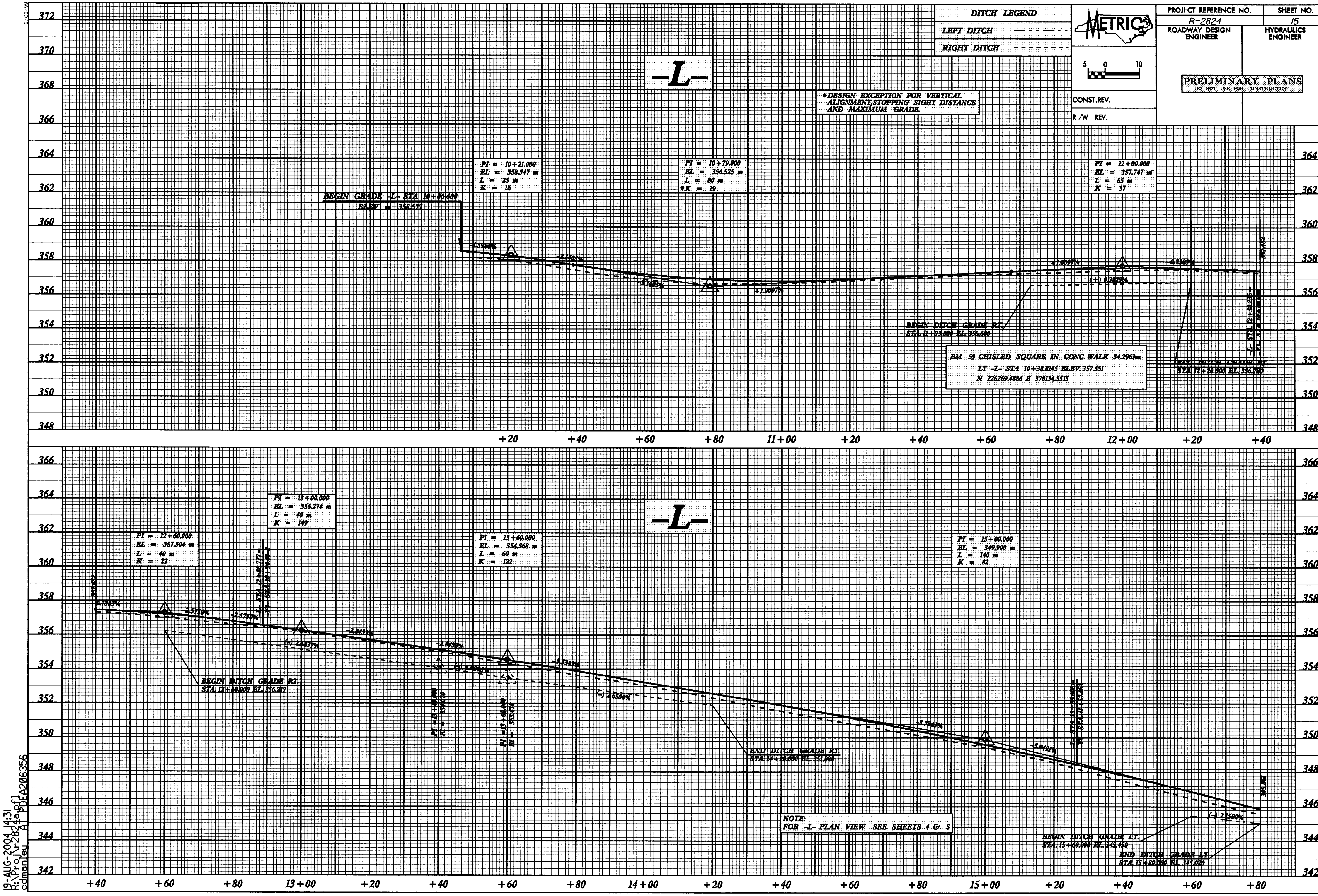
CONST.REV.

R/W REV.



NOTES:

1) SEE SHEET 21 FOR -Y- PROFILE
2) SEE SHEET 21 FOR -YA- PROFILE
3) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED.
4) SEE SHEET 2-H FOR DITCH DETAILS



DITCH LEGEND
LEFT DITCH
RIGHT DITCH
METRIC
PROJECT REFERENCE NO.
R-2824
SHEET NO.
15
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
-L-
•DESIGN EXCEPTION FOR VERTICAL ALIGNMENT, STOPPING SIGHT DISTANCE AND MAXIMUM GRADE.
BEGIN GRADE -L- STA 10+06.600
PI = 10+21.000
EL = 358.347 m
L = 25 m
K = 16
PI = 10+79.000
EL = 356.525 m
L = 80 m
•K = 19
PI = 12+00.000
EL = 357.747 m
L = 65 m
K = 37
BEGIN DITCH GRADE RT.
BM S9 CHISLED SQUARE IN CONC. WALK 34.2963m
LT -L- STA 10+38.8145 ELEV. 357.551
N 226269.4886 E 378134.5515
END DITCH GRADE RT.
STA 12+20.000 EL. 356.789
PI = 12+60.000
EL = 357.304 m
L = 40 m
K = 22
PI = 13+00.000
EL = 356.274 m
L = 40 m
K = 149
PI = 13+60.000
EL = 354.568 m
L = 60 m
K = 122
PI = 15+00.000
EL = 349.900 m
L = 140 m
K = 82
BEGIN DITCH GRADE RT.
END DITCH GRADE RT.
STA 14+20.000 EL. 351.800
NOTE:
FOR -L- PLAN VIEW SEE SHEETS 4 & 5
BEGIN DITCH GRADE LT.
STA. 15+60.000 EL. 345.450
END DITCH GRADE LT.
STA. 15+80.000 EL. 345.020
+20 +40 +60 +80 11+00 +20 +40 +60 +80 12+00 +20 +40
+40 +60 +80 13+00 +20 +40 +60 +80 14+00 +20 +40 +60 +80 15+00 +20 +40 +60 +80
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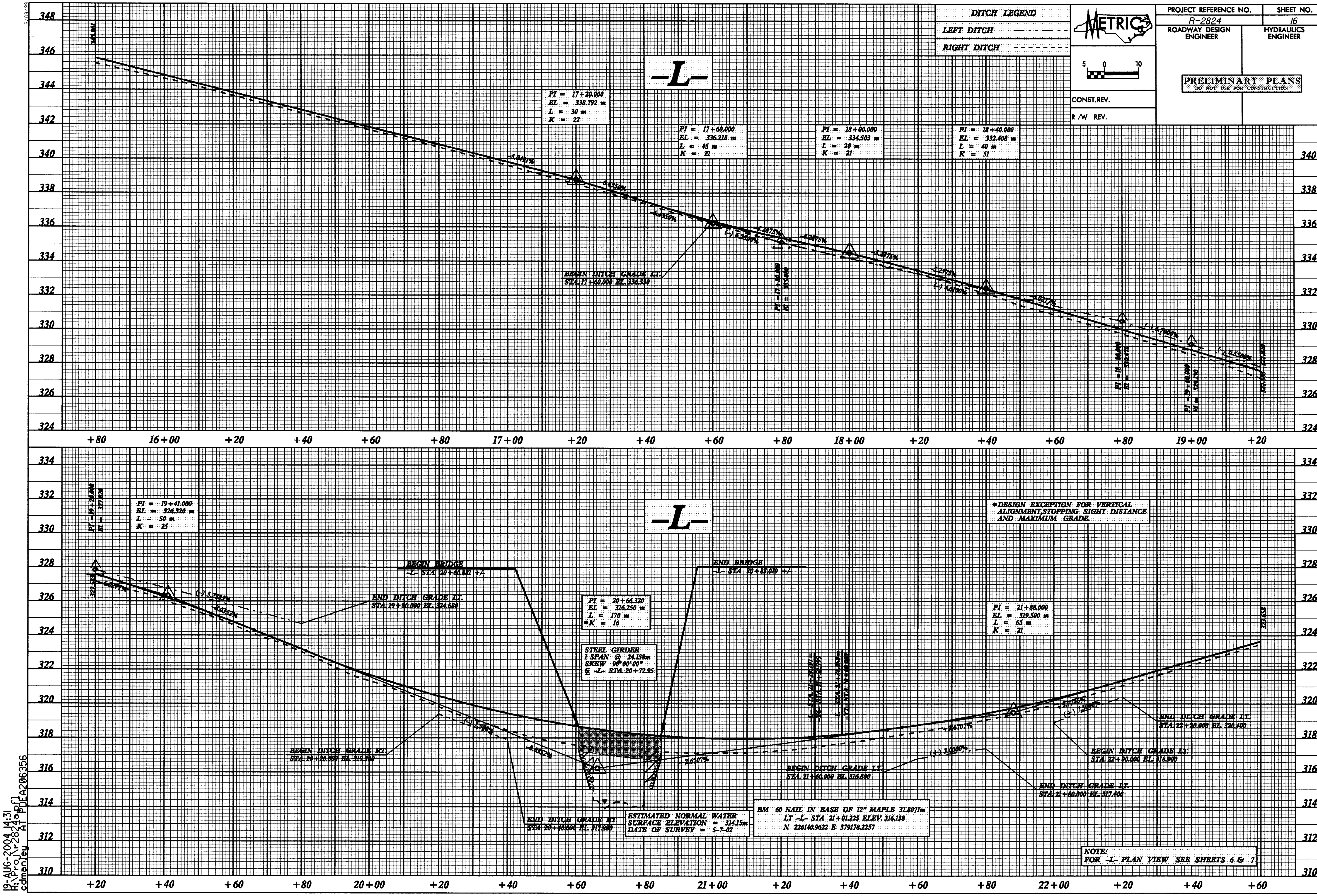
PROJECT REFERENCE NO.
R-2824
SHEET NO.
16
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
DITCH LEGEND
LEFT DITCH
RIGHT DITCH
-L-
PI = 17+20.000
EL = 338.792 m
L = 30 m
K = 22
PI = 17+60.000
EL = 336.218 m
L = 45 m
K = 21
PI = 18+00.000
EL = 334.503 m
L = 20 m
K = 21
PI = 18+40.000
EL = 332.408 m
L = 40 m
K = 51
BEGIN DITCH GRADE LT.
STA. 17+60.000 EL. 336.330
+80
16+00
+20
+40
+60
+80
17+00
+20
+40
+60
+80
18+00
+20
+40
+60
+80
19+00
+20
-L-
PI = 19+41.000
EL = 326.320 m
L = 50 m
K = 25
BEGIN BRIDGE
-L- STA. 20+60.881 +/-
END BRIDGE
-L- STA. 20+85.019 +/-
END DITCH GRADE LT.
STA. 19+80.000 EL. 324.680
PI = 20+66.320
EL = 316.250 m
L = 170 m
*K = 16
STEEL GIRDER
1 SPAN @ 24.138m
SKEW 90° 00' 00"
℄ -L- STA. 20+72.95
PI = 21+88.000
EL = 319.500 m
L = 65 m
K = 21
*DESIGN EXCEPTION FOR VERTICAL ALIGNMENT, STOPPING SIGHT DISTANCE AND MAXIMUM GRADE.
BEGIN DITCH GRADE RT.
STA. 20+20.000 EL. 319.300
END DITCH GRADE RT.
STA. 20+40.000 EL. 317.980
ESTIMATED NORMAL WATER SURFACE ELEVATION = 314.15m
DATE OF SURVEY = 5-7-02
BM 60 NAIL IN BASE OF 12" MAPLE 31.8071m
LT -L- STA 21+01.225 ELEV. 316.138
N 226140.9622 E 379178.2257
BEGIN DITCH GRADE LT.
STA. 21+60.000 EL. 316.800
END DITCH GRADE LT.
STA. 21+80.000 EL. 317.400
BEGIN DITCH GRADE LT.
STA. 22+00.000 EL. 318.900
END DITCH GRADE LT.
STA. 22+20.000 EL. 320.400
NOTE:
FOR -L- PLAN VIEW SEE SHEETS 6 & 7
+20
+40
+60
+80
20+00
+20
+40
+60
+80
21+00
+20
+40
+60
+80
22+00
+20
+40
+60
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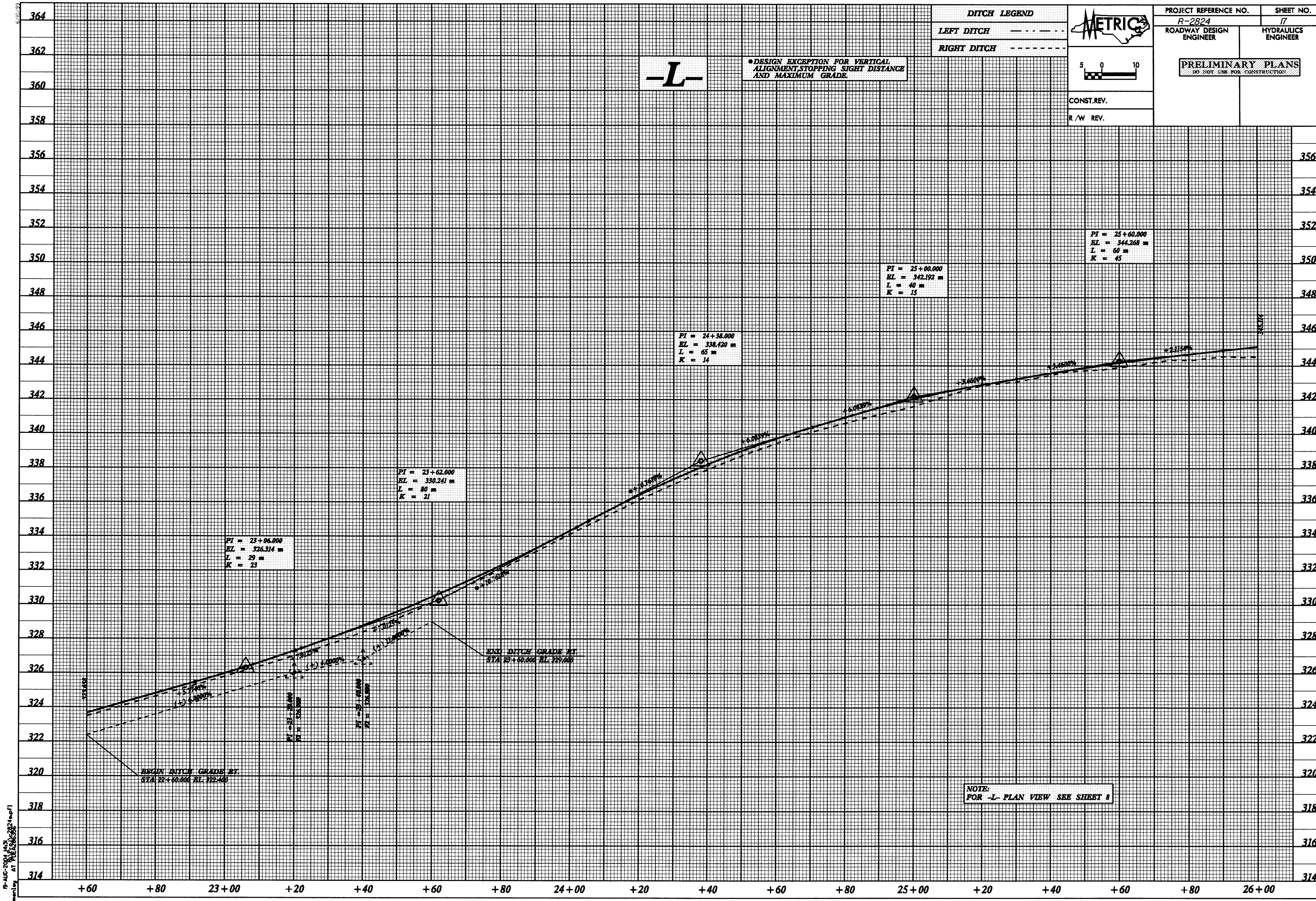
cdmanley


DITCH LEGEND
LEFT DITCH
RIGHT DITCH
METRIC
5 0 10
CONST.REV.
R /W REV.
PROJECT REFERENCE NO.
R-2824
SHEET NO.
17
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
●DESIGN EXCEPTION FOR VERTICAL ALIGNMENT,STOPPING SIGHT DISTANCE AND MAXIMUM GRADE.
PI = 23+06.000
EL = 326.314 m
L = 29 m
K = 23
PI = 23+62.000
EL = 330.241 m
L = 80 m
K = 21
PI = 24+38.000
EL = 338.420 m
L = 65 m
K = 14
PI = 25+00.000
EL = 342.192 m
L = 40 m
K = 15
PI = 25+60.000
EL = 344.268 m
L = 60 m
K = 45
END DITCH GRADE RT.
STA 23+60.000 EL. 329.000
BEGIN DITCH GRADE RT.
STA 22+60.000 EL. 322.400
NOTE:
FOR -L- PLAN VIEW SEE SHEET 8
+60 +80 23+00 +20 +40 +60 +80 24+00 +20 +40 +60 +80 25+00 +20 +40 +60 +80 26+00
364 362 360 358 356 354 352 350 348 346 344 342 340 338 336 334 332 330 328 326 324 322 320 318 316 314

PROJECT REFERENCE NO.	SHEET NO.
R-2824	18

ROADWAY DESIGN ENGINEER

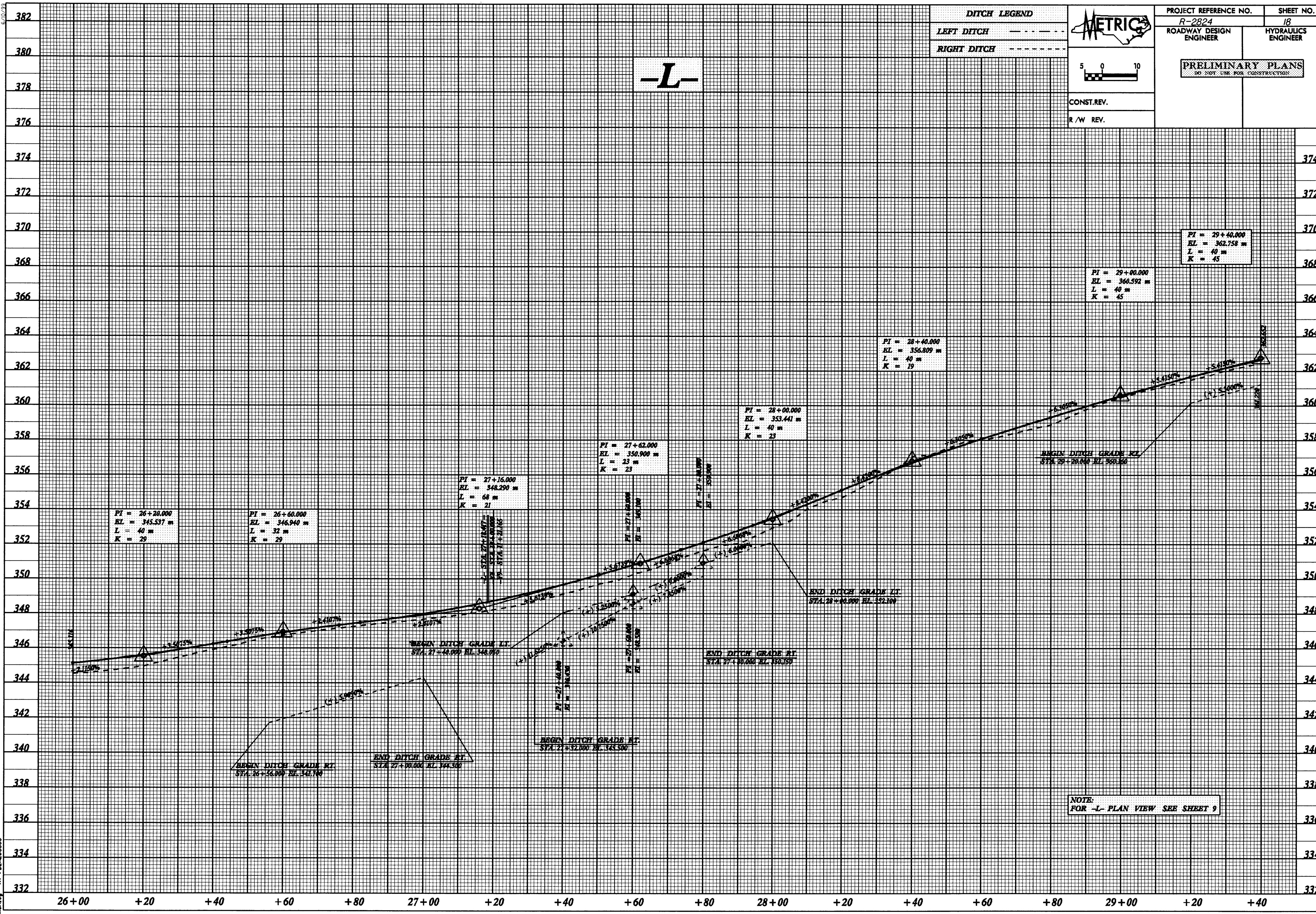
HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

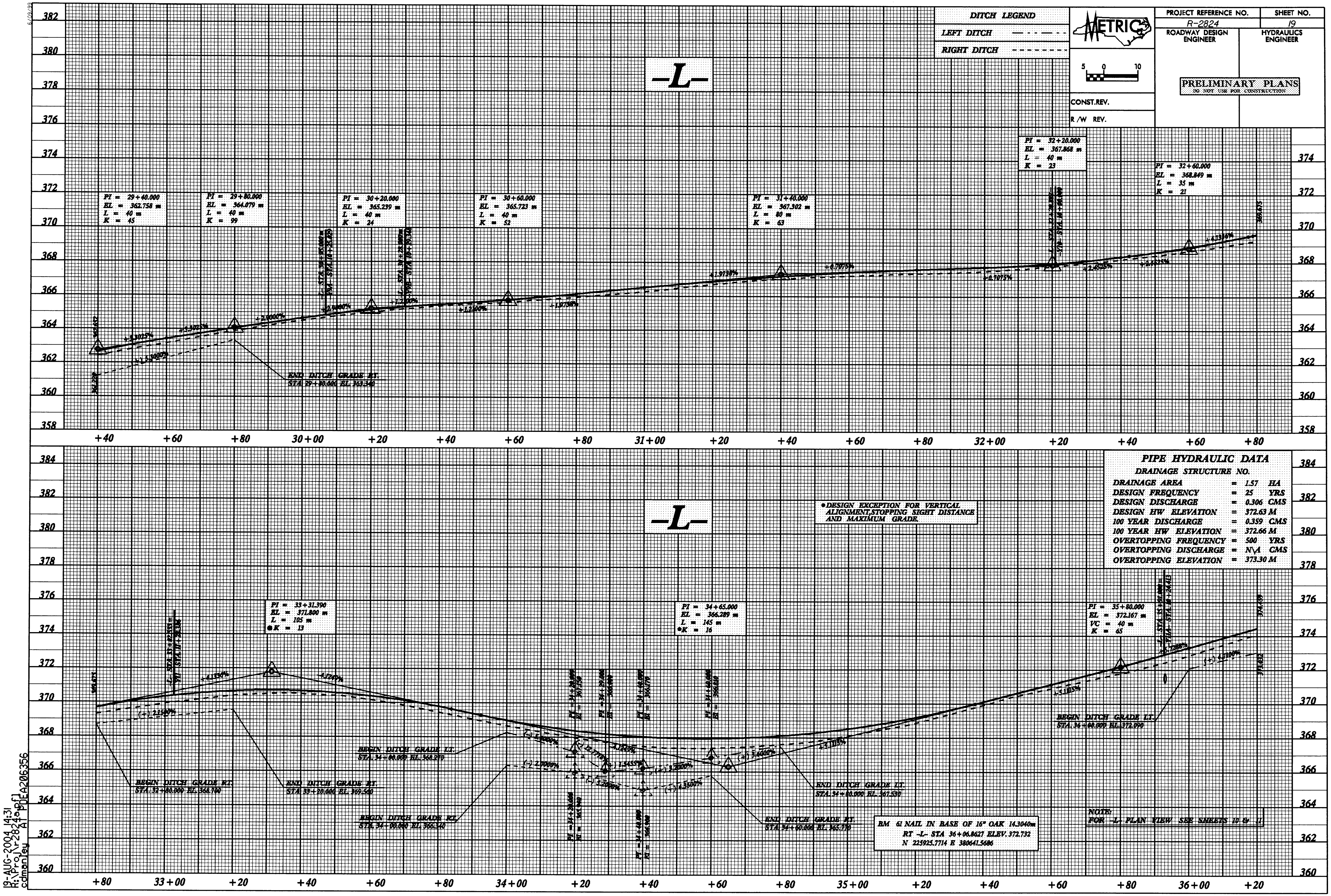
CONST.REV.

R /W REV.

-L-



DITCH LEGEND
LEFT DITCH
RIGHT DITCH
5 0 10
PI = 26+20.000
EL = 345.537 m
L = 40 m
K = 29
PI = 26+60.000
EL = 346.940 m
L = 32 m
K = 29
PI = 27+16.000
EL = 348.290 m
L = 68 m
K = 21
PI = 27+62.000
EL = 350.900 m
L = 23 m
K = 23
PI = 28+00.000
EL = 353.441 m
L = 40 m
K = 23
PI = 28+40.000
EL = 356.809 m
L = 40 m
K = 19
PI = 29+00.000
EL = 360.592 m
L = 40 m
K = 45
PI = 29+40.000
EL = 362.758 m
L = 40 m
K = 45
BEGIN DITCH GRADE RT.
STA. 26+56.000 EL. 341.700
END DITCH GRADE RT.
STA. 27+00.000 EL. 344.300
BEGIN DITCH GRADE LT.
STA. 27+40.000 EL. 348.950
BEGIN DITCH GRADE RT.
STA. 27+32.000 EL. 345.500
END DITCH GRADE RT.
STA. 27+80.000 EL. 350.150
END DITCH GRADE LT.
STA. 28+00.000 EL. 352.100
BEGIN DITCH GRADE RT.
STA. 29+20.000 EL. 360.160
+8.4200%
+6.3050%
+5.4150%
(+) 5.5000%
NOTE:
FOR -L- PLAN VIEW SEE SHEET 9
26+00
+20
+40
+60
+80
27+00
+20
+40
+60
+80
28+00
+20
+40
+60
+80
29+00
+20
+40



PROJECT REFERENCE NO. R-2824
SHEET NO. 19
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
DITCH LEGEND
LEFT DITCH
RIGHT DITCH
-L-
PI = 29+40.000 EL = 362.758 m L = 40 m K = 45
PI = 29+80.000 EL = 364.079 m L = 40 m K = 99
PI = 30+20.000 EL = 365.239 m L = 40 m K = 24
PI = 30+60.000 EL = 365.723 m L = 40 m K = 52
PI = 31+40.000 EL = 367.302 m L = 80 m K = 63
PI = 32+20.000 EL = 367.868 m L = 40 m K = 23
PI = 32+60.000 EL = 368.849 m L = 35 m K = 21
END DITCH GRADE RT. STA. 29+80.000 EL. 363.340
-L-
PI = 33+31.390 EL = 371.800 m L = 105 m ●K = 13
PI = 34+65.000 EL = 366.289 m L = 145 m ●K = 16
PI = 35+80.000 EL = 372.167 m VC = 40 m K = 65
●DESIGN EXCEPTION FOR VERTICAL ALIGNMENT,STOPPING SIGHT DISTANCE AND MAXIMUM GRADE.
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.
DRAINAGE AREA = 1.57 HA
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 0.306 CMS
DESIGN HW ELEVATION = 372.63 M
100 YEAR DISCHARGE = 0.359 CMS
100 YEAR HW ELEVATION = 372.66 M
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING DISCHARGE = N/A CMS
OVERTOPPING ELEVATION = 373.30 M
BEGIN DITCH GRADE RT. STA. 32+80.000 EL. 368.700
END DITCH GRADE RT. STA. 33+20.000 EL. 369.540
BEGIN DITCH GRADE LT. STA. 34+00.000 EL. 368.270
BEGIN DITCH GRADE RT. STA. 34+00.000 EL. 366.340
END DITCH GRADE LT. STA. 34+80.000 EL. 367.530
END DITCH GRADE RT. STA. 34+60.000 EL. 365.770
BEGIN DITCH GRADE LT. STA. 36+00.000 EL. 372.990
BM 61 NAIL IN BASE OF 16" OAK 14.3040m RT -L- STA 36+06.8627 ELEV. 372.732 N 225925.7714 E 380641.5686
NOTE: FOR -L- PLAN VIEW SEE SHEETS 10 & 11
19-AUG-2004 14:31
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PROJECT REFERENCE NO.	SHEET NO.
R-2824	20

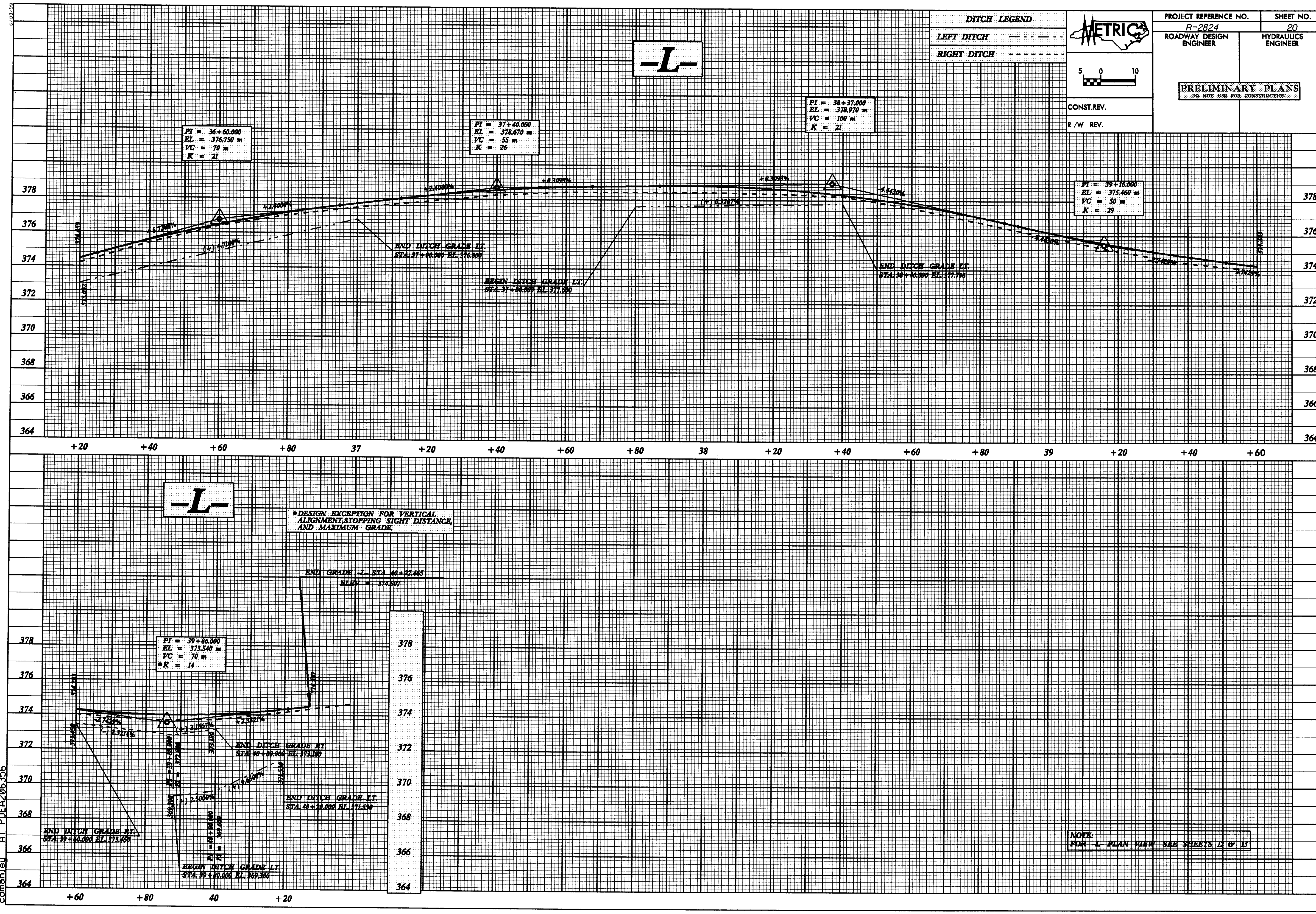
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R /W REV.


DITCH LEGEND
LEFT DITCH
RIGHT DITCH
METRIC
5 0 10
-L-
PI = 36+60.000
EL = 376.750 m
VC = 70 m
K = 21
PI = 37+40.000
EL = 378.670 m
VC = 55 m
K = 26
PI = 38+37.000
EL = 378.970 m
VC = 100 m
K = 21
PI = 39+16.000
EL = 375.460 m
VC = 50 m
K = 29
+2.4000%
+0.3093%
-4.4430%
-2.7429%
(+) 0.3287%
END DITCH GRADE LT.
STA. 37+00.000 EL. 376.800
BEGIN DITCH GRADE LT.
STA. 37+80.000 EL. 377.600
END DITCH GRADE LT.
STA. 38+40.000 EL. 377.796
373.032
374.223
378
376
374
372
370
368
366
364
+20
+40
+60
+80
37
38
39
-L-
•DESIGN EXCEPTION FOR VERTICAL ALIGNMENT,STOPPING SIGHT DISTANCE, AND MAXIMUM GRADE.
END GRADE -L- STA 40+27.465
ELEV = 374.507
PI = 39+86.000
EL = 373.540 m
VC = 70 m
•K = 14
-2.7429%
(-) 2.3214%
(+) 3.1667%
+2.3321%
(+) 2.5000%
END DITCH GRADE RT.
STA. 40+00.000 EL. 373.180
END DITCH GRADE LT.
STA. 40+20.000 EL. 371.530
END DITCH GRADE RT.
STA. 39+60.000 EL. 373.450
BEGIN DITCH GRADE LT.
STA. 39+80.000 EL. 369.300
374.223
373.450
373.180
374.507
369.300
371.530
40
NOTE:
FOR -L- PLAN VIEW SEE SHEETS 12 & 13

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PROJECT REFERENCE NO.	SHEET NO.
R-2824	21

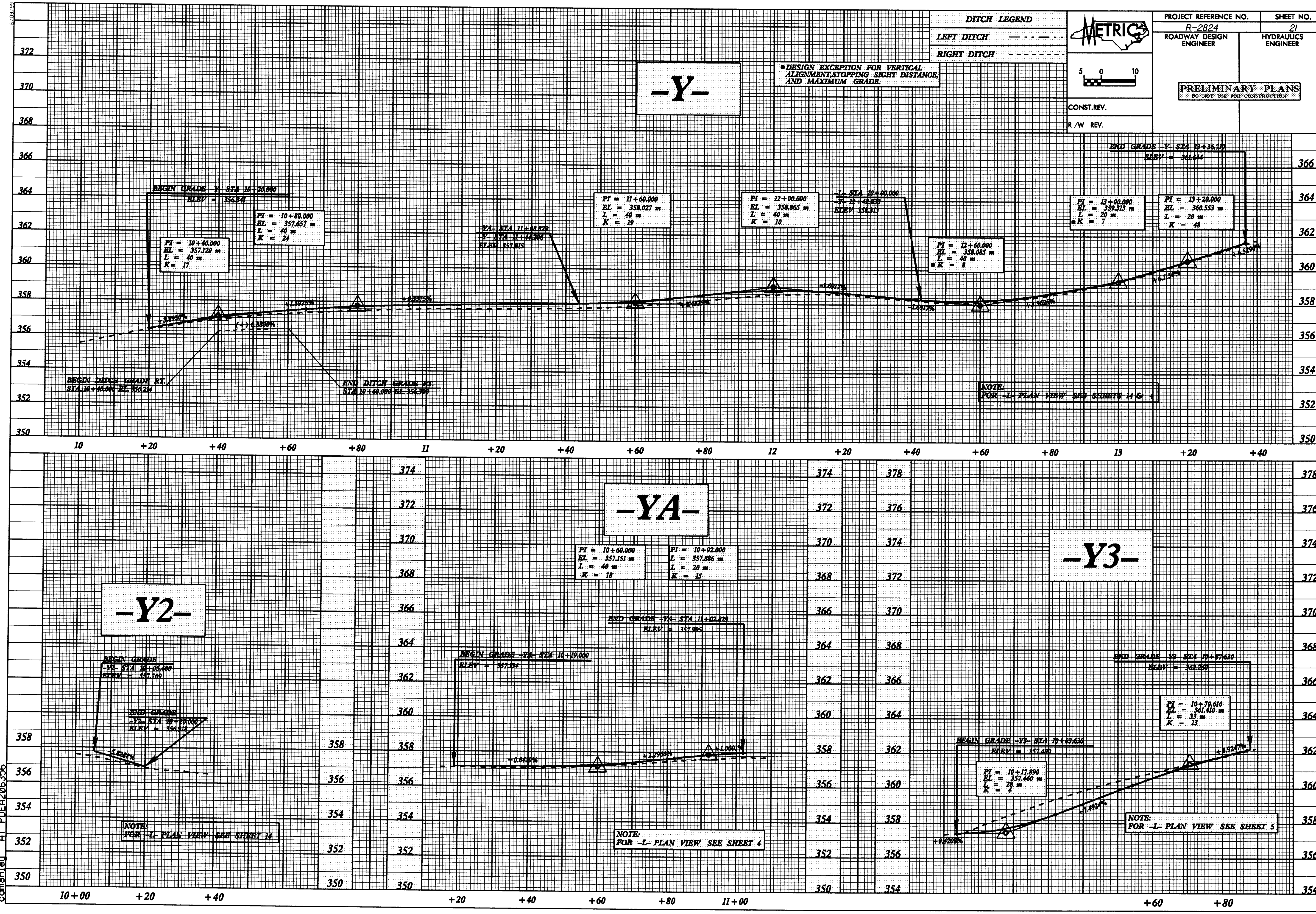
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R /W REV.



DITCH LEGEND
LEFT DITCH
RIGHT DITCH
METRIC
5 0 10
•DESIGN EXCEPTION FOR VERTICAL ALIGNMENT,STOPPING SIGHT DISTANCE, AND MAXIMUM GRADE.
-Y-
BEGIN GRADE -Y- STA 10+20.000
ELEV = 356.341
PI = 10+40.000
EL = 357.120 m
L = 40 m
K= 17
PI = 10+80.000
EL = 357.657 m
L = 40 m
K = 24
+3.8950%
(+) 0.8800%
+1.5925%
+0.3375%
BEGIN DITCH GRADE RT.
STA. 10+40.000 EL. 356.214
END DITCH GRADE RT.
STA 10+60.000 EL. 356.390
PI = 11+60.000
EL = 358.027 m
L = 40 m
K = 19
PI = 12+00.000
EL = 358.865 m
L = 40 m
K = 10
-1.6917%
PI = 12+60.000
EL = 358.085 m
L = 40 m
• K = 8
+3.9625%
PI = 13+00.000
EL = 359.313 m
L = 20 m
• K = 7
+6.1150%
PI = 13+20.000
EL = 360.553 m
L = 20 m
K = 48
+6.5290%
END GRADE -Y- STA 13+36.720
ELEV = 361.644
NOTE:
FOR -L- PLAN VIEW SEE SHEETS 14 & 4
10
+20
+40
+60
+80
11
+20
+40
+60
+80
12
+20
+40
+60
+80
13
+20
+40
-Y2-
BEGIN GRADE
-Y2- STA 10+05.400
END GRADE
-Y2- STA 10+20.000
NOTE:
FOR -L- PLAN VIEW SEE SHEET 14
-YA-
PI = 10+60.000
EL = 357.151 m
L = 40 m
K = 18
PI = 10+92.000
L = 357.886 m
L = 20 m
K = 15
BEGIN GRADE -YA- STA 10+19.000
ELEV = 357.334
END GRADE -YA- STA 11+02.829
ELEV = 357.995
NOTE:
FOR -L- PLAN VIEW SEE SHEET 4
-Y3-
BEGIN GRADE -Y3- STA 10+03.630
ELEV = 357.400
PI = 10+17.890
EL = 357.460 m
L = 28 m
K = 4
PI = 10+70.610
EL = 361.410 m
L = 33 m
K = 13
END GRADE -Y3- STA 10+87.630
ELEV = 362.260
NOTE:
FOR -L- PLAN VIEW SEE SHEET 5
10+00
+20
+40
+20
+40
+60
+80
11+00
+60
+80

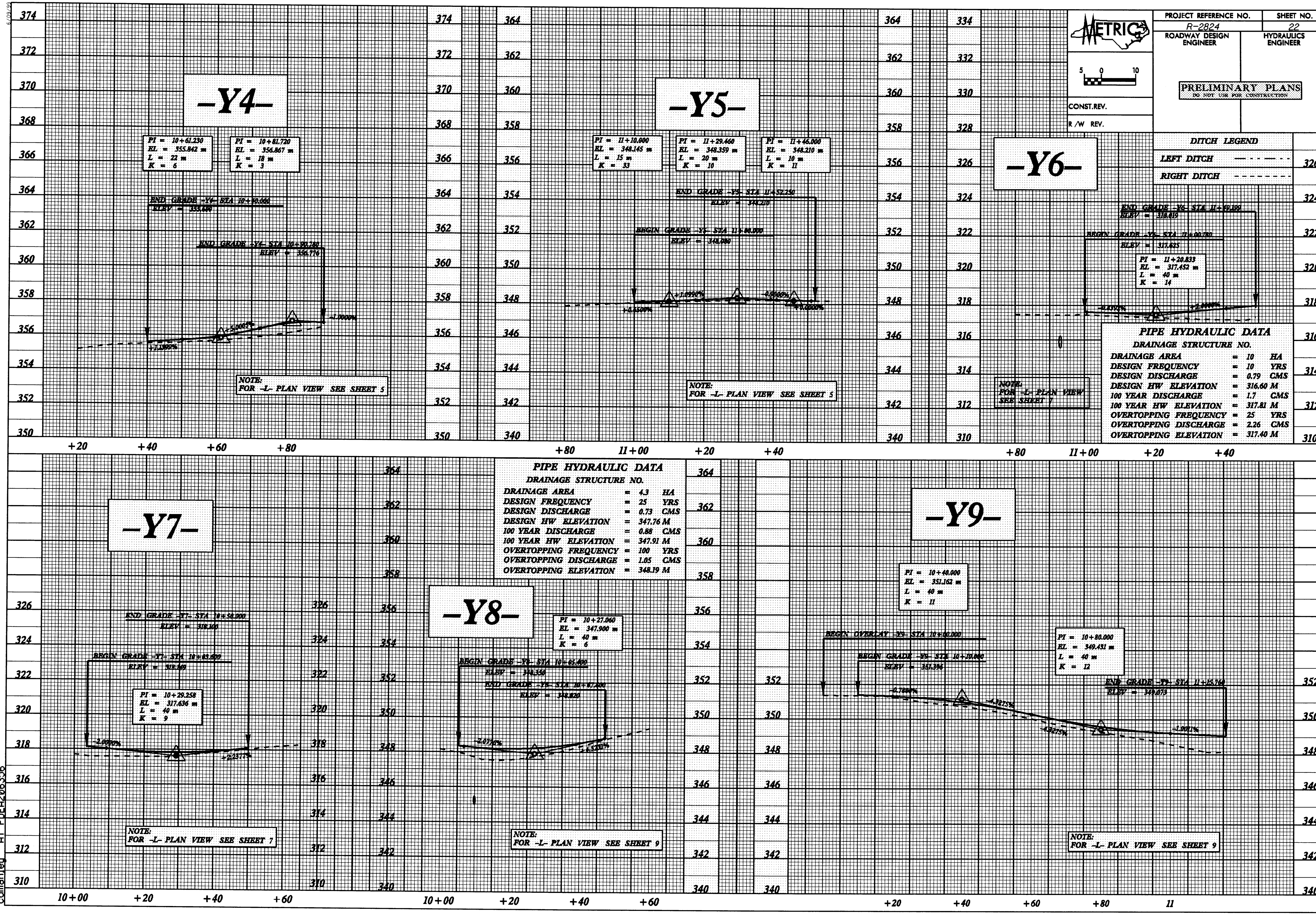
PROJECT REFERENCE NO.	SHEET NO.
R-2824	22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	=	10	HA
DESIGN FREQUENCY	=	10	YRS
DESIGN DISCHARGE	=	0.79	CMS
DESIGN HW ELEVATION	=	316.60	M
100 YEAR DISCHARGE	=	1.7	CMS
100 YEAR HW ELEVATION	=	317.81	M
OVERTOPPING FREQUENCY	=	25	YRS
OVERTOPPING DISCHARGE	=	2.26	CMS
OVERTOPPING ELEVATION	=	317.40	M

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	=	4.3	HA
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	0.73	CMS
DESIGN HW ELEVATION	=	347.76	M
100 YEAR DISCHARGE	=	0.88	CMS
100 YEAR HW ELEVATION	=	347.91	M
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	1.05	CMS
OVERTOPPING ELEVATION	=	348.19	M

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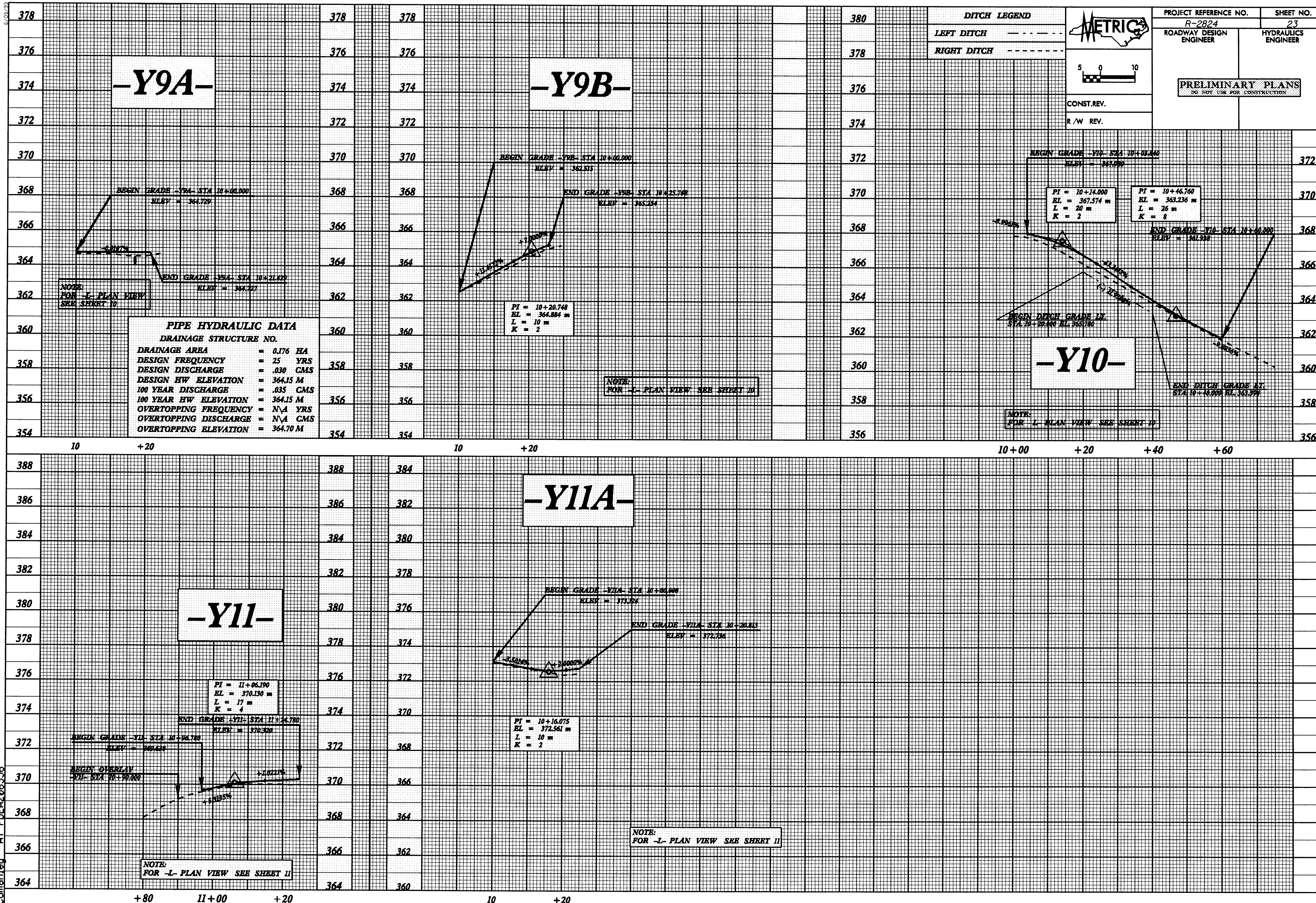
PROJECT REFERENCE NO. R-2824
SHEET NO. 23
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

METRIC

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.
R /W REV.

DITCH LEGEND	
LEFT DITCH	— - - —
RIGHT DITCH	- - - - - -


-Y9A-
BEGIN GRADE -Y9A- STA 10+00.000
ELEV = 364.729
-0.0107%
END GRADE -Y9A- STA 10+21.429
ELEV = 364.727
NOTE:
FOR -L- PLAN VIEW
SEE SHEET 10
-Y9B-
BEGIN GRADE -Y9B- STA 10+00.000
ELEV = 362.515
END GRADE -Y9B- STA 10+25.748
ELEV = 365.234
+7.0000%
PI = 10+20.748
EL = 364.884 m
L = 10 m
K = 2
NOTE:
FOR -L- PLAN VIEW SEE SHEET 10
-Y10-
BEGIN GRADE -Y10- STA 10+03.840
ELEV = 367.980
PI = 10+14.000
EL = 367.574 m
L = 20 m
K = 2
PI = 10+46.760
EL = 363.236 m
L = 26 m
K = 8
END GRADE -Y10- STA 10+60.000
ELEV = 361.928
-3.9961%
BEGIN DITCH GRADE LT.
STA. 10+20.000 EL. 365.780
END DITCH GRADE LT.
STA. 10+40.000 EL. 363.394
NOTE:
FOR L- PLAN VIEW SEE SHEET 10
10+00
+20
+40
+60
-Y11-
PI = 11+06.190
EL = 370.130 m
L = 17 m
K = 4
END GRADE -Y11- STA 11+24.780
ELEV = 370.320
BEGIN GRADE -Y11- STA 10+96.780
ELEV = 369.620
BEGIN OVERLAY
-Y11- STA 10+90.000
+1.0221%
+5.3135%
NOTE:
FOR -L- PLAN VIEW SEE SHEET 11
+80
11+00
+20
-Y11A-
BEGIN GRADE -Y11A- STA 10+00.000
ELEV = 373.124
END GRADE -Y11A- STA 10+20.813
ELEV = 372.736
-3.5014%
+2.0000%
PI = 10+16.075
EL = 372.561 m
L = 10 m
K = 2
NOTE:
FOR -L- PLAN VIEW SEE SHEET 11
10
+20

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	=	0.176 HA
DESIGN FREQUENCY	=	25 YRS
DESIGN DISCHARGE	=	.030 CMS
DESIGN HW ELEVATION	=	364.15 M
100 YEAR DISCHARGE	=	.035 CMS
100 YEAR HW ELEVATION	=	364.15 M
OVERTOPPING FREQUENCY	=	N\A YRS
OVERTOPPING DISCHARGE	=	N\A CMS
OVERTOPPING ELEVATION	=	364.70 M

PROJECT REFERENCE NO.	SHEET NO.
R-2824	24

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

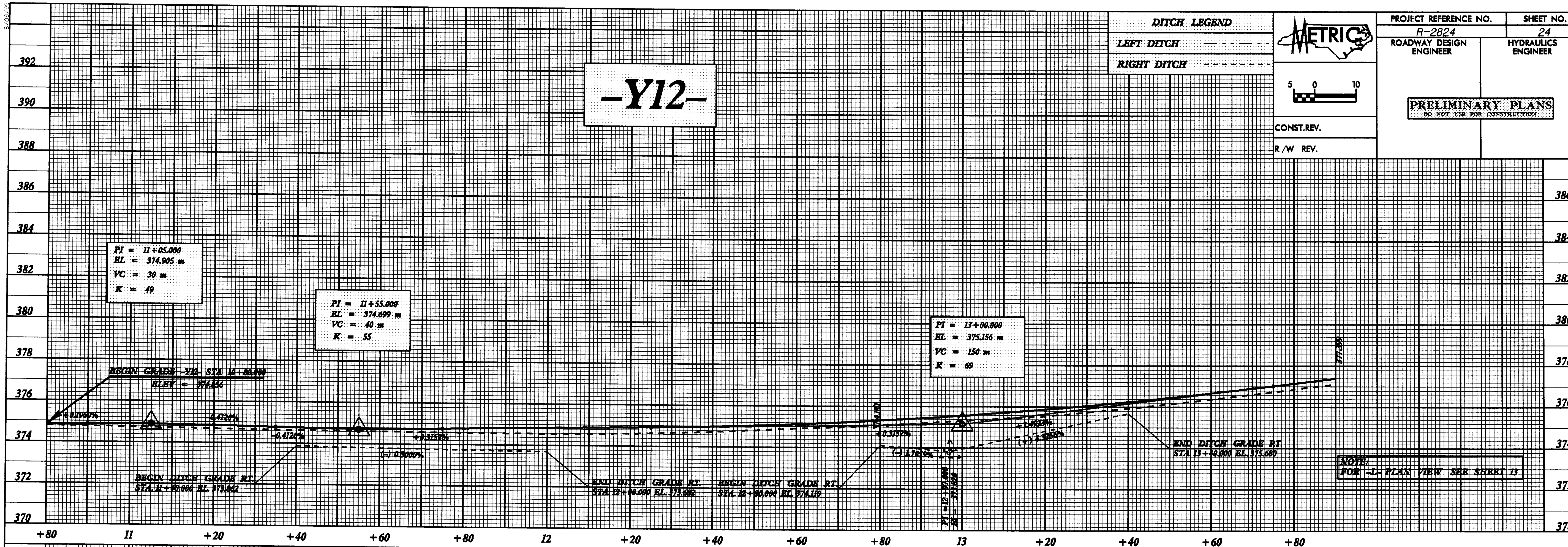
R /W REV.

METRIC

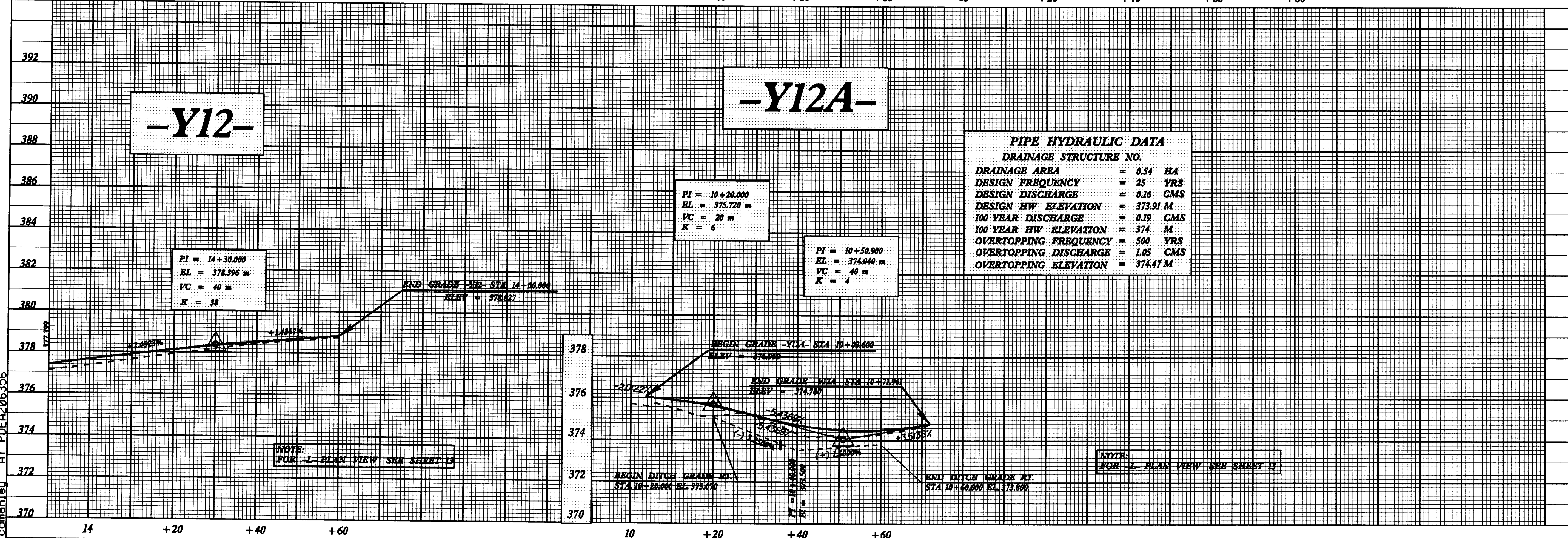
DITCH LEGEND

LEFT DITCH — - - — - -

RIGHT DITCH - - - - - - - -



-Y12-
PI = 11+05.000
EL = 374.905 m
VC = 30 m
K = 49
PI = 11+55.000
EL = 374.699 m
VC = 40 m
K = 55
PI = 13+00.000
EL = 375.156 m
VC = 150 m
K = 69
BEGIN GRADE -Y12- STA 10+80.000
ELEV = 374.856
BEGIN DITCH GRADE RT.
STA. 11+40.000 EL. 373.862
END DITCH GRADE RT.
STA. 12+00.000 EL. 373.562
BEGIN DITCH GRADE RT.
STA. 12+80.000 EL. 374.110
END DITCH GRADE RT.
STA. 13+40.000 EL. 375.680
NOTE:
FOR -L- PLAN VIEW SEE SHEET 13
+80
11
+20
+40
+60
+80
12
+20
+40
+60
+80
13
+20
+40
+60
+80
392
390
388
386
384
382
380
378
376
374
372
370



-Y12-
-Y12A-
PI = 14+30.000
EL = 378.396 m
VC = 40 m
K = 38
END GRADE -Y12- STA 14+60.000
PI = 10+20.000
EL = 375.720 m
VC = 20 m
K = 6
PI = 10+50.900
EL = 374.040 m
VC = 40 m
K = 4
BEGIN GRADE -Y12A- STA 10+03.600
END GRADE -Y12A- STA 10+71.961
BEGIN DITCH GRADE RT.
STA. 10+20.000 EL. 375.070
END DITCH GRADE RT.
STA. 10+60.000 EL. 373.800
NOTE:
FOR -L- PLAN VIEW SEE SHEET 13
14
+20
+40
+60
10
+20
+40
+60
392
390
388
386
384
382
380
378
376
374
372
370

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	=	0.54	HA
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	0.16	CMS
DESIGN HW ELEVATION	=	373.91	M
100 YEAR DISCHARGE	=	0.19	CMS
100 YEAR HW ELEVATION	=	374	M
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	1.05	CMS
OVERTOPPING ELEVATION	=	374.47	M

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-DETOUR-

DITCH LEGEND
LEFT DITCH
RIGHT DITCH

METRIC
5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2824	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.
R /W REV.

BEGIN GRADE -DETOUR- STA 10+65.90
ELEV = 323.759

BEGIN DITCH GRADE LT.
STA.10+60.000 EL. 324.665

BEGIN DETOUR BRIDGE
-L- STA 11+12.740 +/-

PI = 11+36.630
EL = 314.297 m
L = 184 m
K = 14

END DETOUR BRIDGE
-L- STA 11+39.240 +/-

BEGIN DITCH GRADE LT.
STA.11+90.000 EL. 315.899

END DITCH GRADE LT.
STA.11+21.000 EL. 315.699

NOTE:
FOR -L- PLAN VIEW SEE SHEETS 2F & 2G

-DETOUR-

END GRADE -DETOUR- STA 14+01.620
ELEV = 329.030

PI = 13+49.620
EL = 324.650 m
L = 90 m
K = 25

END DITCH GRADE LT.
STA.14+34.000 EL. 325.810

NOTE:
FOR -L- PLAN VIEW SEE SHEET 2G

-DR1-

PI = 10+16.172
EL = 354.789 m
L = 10 m
K = 3

PI = 10+41.439
EL = 356.811 m

END GRADE -DR1- STA 10+42.939
ELEV = 356.871

END DITCH GRADE LT.
STA.10+37.000 EL. 352.764

BEGIN DITCH GRADE LT.
STA.10+25.000 EL. 351.456

BEGIN GRADE -DR1- STA 10+00.000
ELEV = 354.032

NOTE:
FOR -DR1- PLAN VIEW SEE SHEET 4

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-DR2-

PI = 10+07.924
EL = 353.585 m
L = 10
K = 1

PI = 10+32.196
EL = 357.226 m

PI = 10+39.696
EL = 357.346 m

+2.2465% +5.0000% +10.0000% +2.0000%

END GRADE -DR2- STA 10+36.196
ELEV = 357.376

BEGIN GRADE -DR2- STA 10+00.000
ELEV = 355.401

NOTE:
FOR -DR2- PLAN VIEW SEE SHEET 4

-DR3-

PI = 10+08.542
EL = 355.117 m
L = 17 m
K = 3

PI = 10+31.653
EL = 356.889 m
L = 20 m
K = 12

+1.1139% +7.6478% +6.6478%

END GRADE -DR3- STA 10+48.780
ELEV = 357.697

BEGIN GRADE -DR3- STA 10+00.000
ELEV = 355.924

NOTE:
FOR -DR3- PLAN VIEW SEE SHEET 4

-DR4-

PI = 10+12.477
EL = 362.957 m
L = 10 m
K = 1

PI = 10+26.761
EL = 365.519 m
L = 10 m
K = 1

-0.2404% +7.9302% +17.0021%

END GRADE -DR4- STA 10+38.063
ELEV = 365.956

BEGIN GRADE -DR4- STA 10+00.000
ELEV = 362.987

NOTE:
FOR -DR4- PLAN VIEW SEE SHEET 10

-DR5-

PI = 10+06.109
EL = 367.277 m
L = 5 m
K = .5

PI = 10+14.824
EL = 365.979 m
L = 5 m
K = .5

+0.9964% +6.9964% +2.0020%

END GRADE -DR5- STA 10+17.457
ELEV = 365.926

BEGIN GRADE -DR5- STA 10+03.600
ELEV = 367.252

NOTE:
FOR -DR5- PLAN VIEW SEE SHEET 10

-DR7-

PI = 10+05.905
EL = 362.752 m
L = 10 m
K = 5

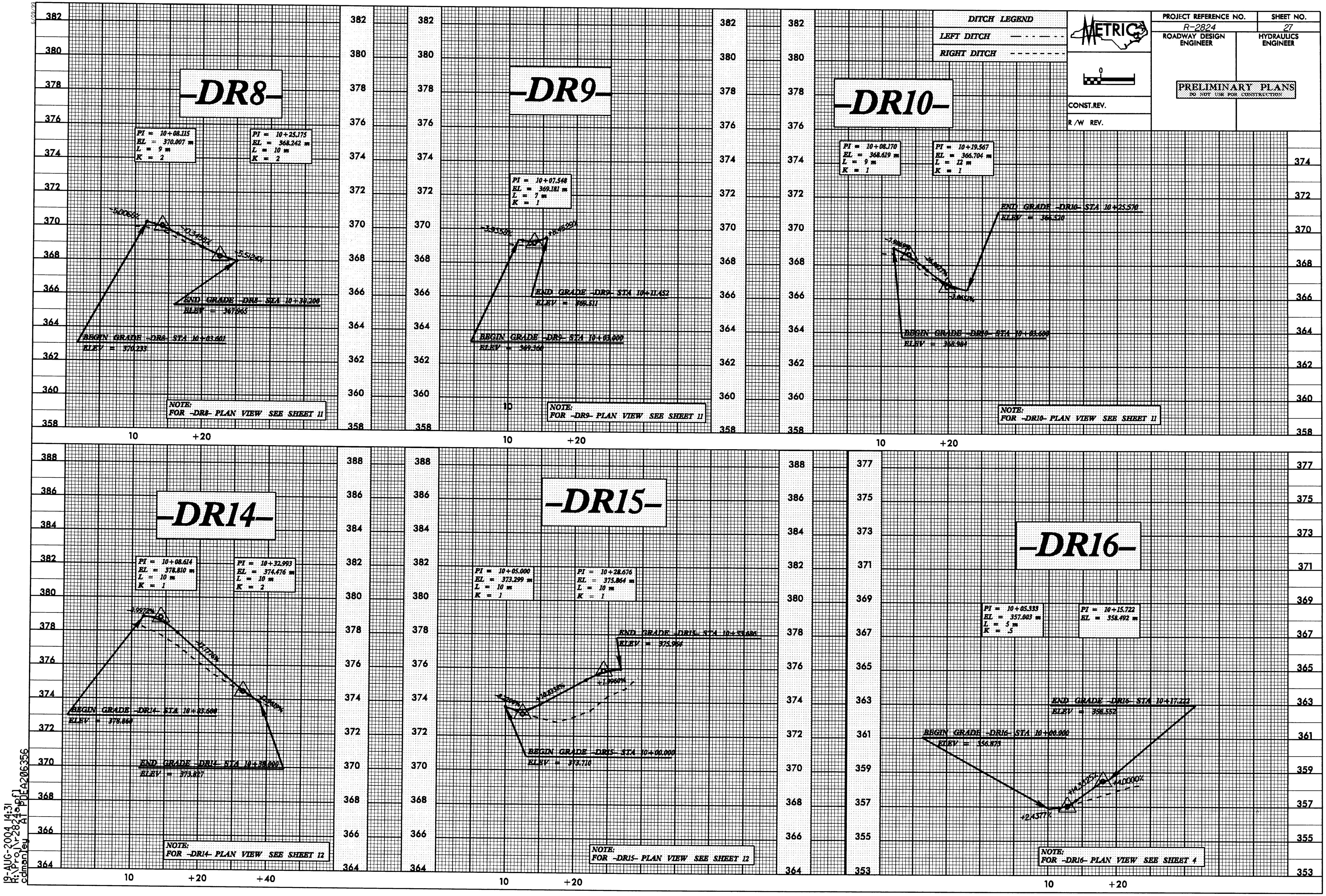
PI = 10+29.797
EL = 366.887 m
L = 10 m
K = 1

+4.0027% +8.8788% +15.0000%

END GRADE -DR7- STA 10+36.725
ELEV = 367.409

BEGIN GRADE -DR7- STA 10+00.000
ELEV = 362.611

NOTE:
FOR -DR7- PLAN VIEW SEE SHEET 10



PROJECT REFERENCE NO. R-2824
SHEET NO. 27
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
METRIC
CONST.REV.
R/W REV.
DITCH LEGEND
LEFT DITCH
RIGHT DITCH
-DR8-
PI = 10+08.115
EL = 370.007 m
L = 9 m
K = 2
PI = 10+25.175
EL = 368.242 m
L = 10 m
K = 2
BEGIN GRADE -DR8- STA 10+03.601
ELEV = 370.233
END GRADE -DR8- STA 10+30.200
ELEV = 367.965
NOTE:
FOR -DR8- PLAN VIEW SEE SHEET 11
-DR9-
PI = 10+07.548
EL = 369.181 m
L = 7 m
K = 1
BEGIN GRADE -DR9- STA 10+03.000
ELEV = 369.360
END GRADE -DR9- STA 10+11.452
ELEV = 369.511
NOTE:
FOR -DR9- PLAN VIEW SEE SHEET 11
-DR10-
PI = 10+08.170
EL = 368.619 m
L = 9 m
K = 1
PI = 10+19.567
EL = 366.704 m
L = 12 m
K = 1
BEGIN GRADE -DR10- STA 10+03.600
ELEV = 368.984
END GRADE -DR10- STA 10+25.570
ELEV = 366.520
NOTE:
FOR -DR10- PLAN VIEW SEE SHEET 11
-DR14-
PI = 10+08.614
EL = 378.810 m
L = 10 m
K = 1
PI = 10+32.993
EL = 374.476 m
L = 10 m
K = 2
BEGIN GRADE -DR14- STA 10+03.600
ELEV = 378.060
END GRADE -DR14- STA 10+38.000
ELEV = 373.827
NOTE:
FOR -DR14- PLAN VIEW SEE SHEET 12
-DR15-
PI = 10+05.000
EL = 373.299 m
L = 10 m
K = 1
PI = 10+28.676
EL = 375.864 m
L = 10 m
K = 1
BEGIN GRADE -DR15- STA 10+00.000
ELEV = 373.710
END GRADE -DR15- STA 10+33.686
ELEV = 375.964
NOTE:
FOR -DR15- PLAN VIEW SEE SHEET 12
-DR16-
PI = 10+05.333
EL = 357.003 m
L = 5 m
K = 5
PI = 10+15.722
EL = 358.492 m
BEGIN GRADE -DR16- STA 10+00.000
ELEV = 356.873
END GRADE -DR16- STA 10+17.222
ELEV = 358.552
NOTE:
FOR -DR16- PLAN VIEW SEE SHEET 4
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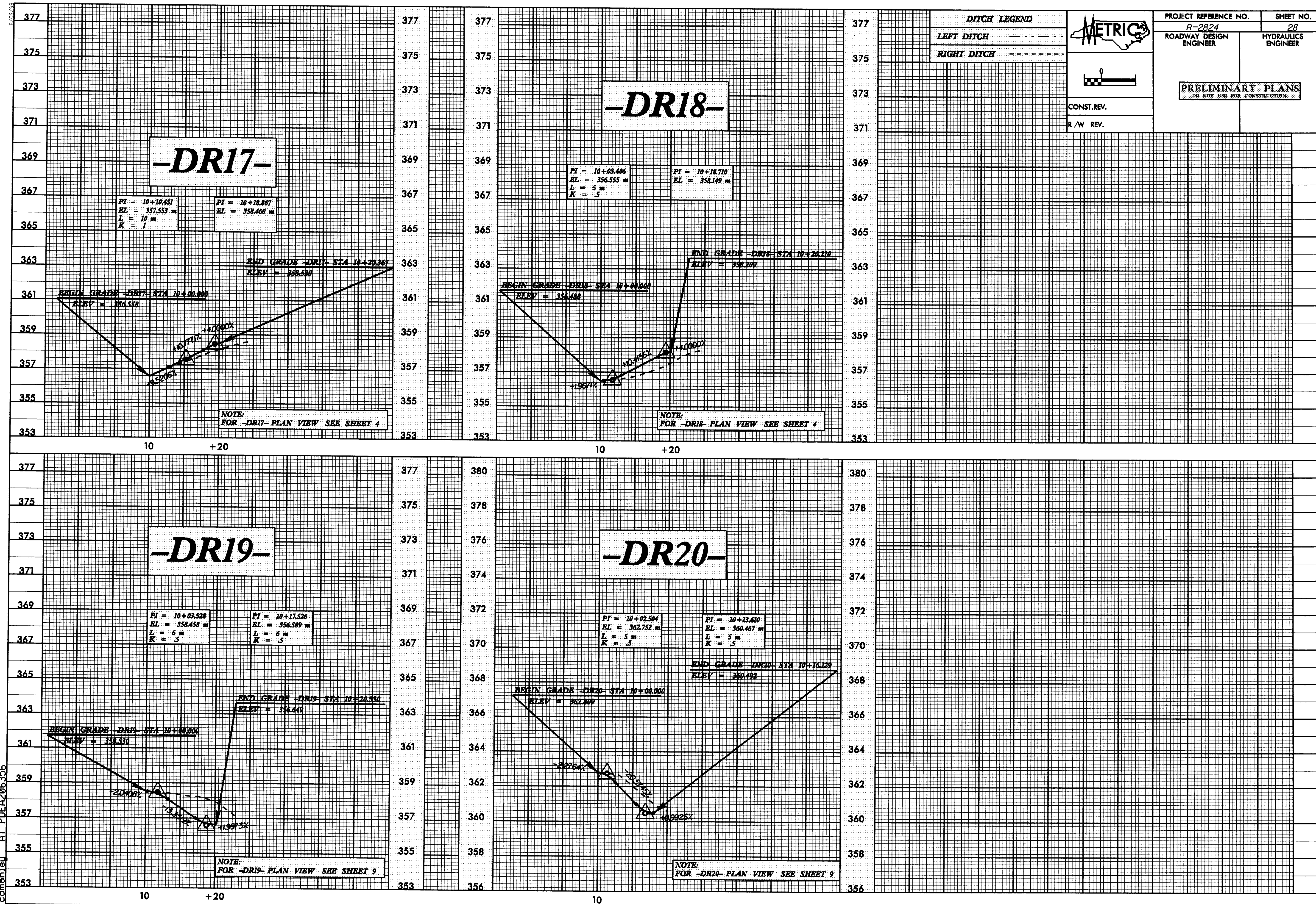
DITCH LEGEND
LEFT DITCH
RIGHT DITCH
METRIC
PROJECT REFERENCE NO. R-2824
SHEET NO. 28
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
-DR17-
PI = 10+10.451
EL = 357.553 m
L = 10 m
K = 1
PI = 10+18.867
EL = 358.460 m
BEGIN GRADE -DR17- STA 10+00.000
ELEV = 356.558
END GRADE -DR17- STA 10+20.367
ELEV = 358.520
NOTE:
FOR -DR17- PLAN VIEW SEE SHEET 4
-DR18-
PI = 10+03.406
EL = 356.555 m
L = 5 m
K = .5
PI = 10+18.710
EL = 358.149 m
BEGIN GRADE -DR18- STA 10+00.000
ELEV = 356.488
END GRADE -DR18- STA 10+20.210
ELEV = 358.209
NOTE:
FOR -DR18- PLAN VIEW SEE SHEET 4
-DR19-
PI = 10+03.528
EL = 358.458 m
L = 6 m
K = .5
PI = 10+17.526
EL = 356.589 m
L = 6 m
K = .5
BEGIN GRADE -DR19- STA 10+00.000
ELEV = 358.530
END GRADE -DR19- STA 10+20.550
ELEV = 356.649
NOTE:
FOR -DR19- PLAN VIEW SEE SHEET 9
-DR20-
PI = 10+02.504
EL = 362.752 m
L = 5 m
K = .5
PI = 10+13.610
EL = 360.467 m
L = 5 m
K = .5
BEGIN GRADE -DR20- STA 10+00.000
ELEV = 362.809
END GRADE -DR20- STA 10+16.129
ELEV = 360.492
NOTE:
FOR -DR20- PLAN VIEW SEE SHEET 9
10
+20