STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

March 13, 2013

MEMORANDUM TO: Mr. Louis Mitchell, PE
Division 10 Engineer

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

SUBJECT: Cabarrus County; George Liles Pkwy from SR 1304 to SR 1431; Federal Project No. STP-000S(46); WBS Element 34408.1.1; **TIP R-2246B.**

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

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

Cc: w/o attachment (see website for attachments):
Mr. Randy Garris, P.E. State Contract Officer
Mr. Larry Thompson, Division Environmental Officer
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Jay Bennett, P.E., Roadway Design Unit
Mr. Dewayne Sykes, P.E. Utilities Unit
Dr. Art McMillan, P.E., Hydraulics Unit
Mr. Tom Koch, P.E., Structure Design Unit
Mr. Mark Staley, Roadside Environmental Unit
Mr. Ron Hancock, P.E., State Roadway Construction Engineer
Mr. Mike Robinson, P.E., State Bridge Construction Engineer
Ms. Jennifer Harris, P.E., PDEA Western Region Unit Head
Mr. Clarence Coleman, FHWA
Ms. Beth Harmon, EEP
Mr. Phillip Ayscue, NCDOT External Audit Branch

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

TELEPHONE: 919-707-6100
FAX: 919-212-5785

WEBSITE: WWW.NCDOT.ORG

LOCATION:
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610-4328

PROJECT COMMITMENTS

T.I.P. Project No. R-2246B
George W. Liles Parkway
From SR 1304 (Roberta Road) to SR 1431 (Weddington Road)
Cabarrus County
Federal Aid Project STP-000S(46)
WBS Element No. 34408.1.1

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Project Development & Environmental Analysis Brach:
A preliminary noise abatement analysis was completed due to the change in control of access between Weddington Road and US 29. NCDOT will provide noise abatement for 32 residential receptors in the Sheffield Manor and Popular Green subdivisions. The noise wall will be 14 feet tall and approximately 3,703 feet long and adjacent to the northbound lanes.

Locations & surveys Unit:
The N.C. Geodetic Survey will be contacted by the contractor prior to construction regarding any relocation of existing markers along the project.

Hydraulics Unit (FEMA Coordination):
The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP), to determine status of project with regard to applicability of NCDOT'S Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

Division 10:
This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structure(s) and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

Roadway Design Unit/Program Management Office:
The Roadway Design Unit will continue to work with the Program Management Office to finalize the Municipal Agreement with the City of Concord to transfer ownership of the Multi-Use Path at the conclusion of the project.

COMMITMENTS FROM PERMITTING

Division 10 / NES On-site Mitigation Group / NES Engineering

404 Permit Condition v):
In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit authorization.
Additional onsite mitigation: The NCDOT will remove a 72" Corrugated metal pipe (CMP) which carries an unnamed tributary to Coddle Creek at permit site 2. Pipe removal results in 54 linear feet of daylighted stream channel. NC DOT will match the stream and floodplain grades with the existing upstream and downstream conditions per Detail KK submitted with the Monitoring Plan for R-2246 B site 2 (Plan). NC DOT will replant the affected area with native vegetation in accordance with the streambank reforestation sheets 1 and 2 of the Plan. NC DOT will visually monitor the site for a minimum of 3 years, but not more than 5 years, to ensure channel stability and that the site successfully re-vegetates after planting. An as-built channel survey to document dimension, pattern, and profile shall be submitted to the USACE post construction at site 2 and the NC DOT shall submit to the USACE photographic documentation, plant survival and channel stability data annually for 3 years.

Division 10

401 WQC Condition 9:
All portions of the proposed project draining to 303(d) listed watersheds that are impaired due to turbidity shall be designed, constructed, and operated with sediment and erosion control measures that meet *Design Standards in Sensitive Watersheds* [15A NCAC 4B.0124]. However, due to the size of the project, NCDOT shall not be required to meet 15A NCAC 4B.0124(a) regarding the maximum amount of uncovered acres.

All portions of the proposed project draining to 303(d) listed watersheds that are impaired due to biological criteria exceedances shall not discharge stormwater directly to surface waters. Stormwater shall be treated using appropriate best management practices (e.g. vegetated conveyances, constructed wetlands, detention ponds, etc.) prior to discharging to surface waters.

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
151 PATTON AVENUE
ROOM 208
ASHEVILLE, NORTH CAROLINA 28801-5006

REPLY TO
ATTENTION OF:

April 2, 2013

Regulatory Division

Action ID: SAW-2012-01175/SAW-2009-1452 TIP no. R-2246B

North Carolina Department of Transportation
Dr. Gregory J. Thorpe
1598 Mail Service Center
Raleigh, North Carolina 27699

Dear Dr. Thorpe:

Enclosed is a Department of the Army permit to discharge fill material into jurisdictional waters of the U.S. in association with the construction of an NC DOT road project known as George Liles Parkway (TIP no. R-2246B), from south of SR 1304 (Roberta Road) to SR 1341 (Weddington Road), in Cabarrus County, North Carolina. Permanent impacts include 1,377 linear feet of stream channel and 0.27 acre of wetlands. Temporary impacts total less than 0.03 acre of stream channel. Impacts to jurisdictional waters of the U.S. are associated with the construction and installation of culverts, pipes, wingwalls, roadway fill, low-flow bench construction, boardwalk construction for the multi-use path, mechanized land clearing and bank stabilization. The Corps is issuing this permit in response to your written request of October 18, 2012, and the ensuing administrative record.

Any deviation in the authorized work will likely require modification of this permit. If a change in the authorized work is necessary, you should promptly submit revised plans to the Corps showing the proposed changes. You may not undertake the proposed changes until the Corps notifies you that your permit has been modified.

Carefully read your permit. The general and special conditions are important. Your failure to comply with these conditions could result in a violation of Federal law. Certain significant conditions require that:

a. You must complete construction before December 31, 2018.

b. You must notify this office in advance as to when you intend to commence and complete work.

c. You must allow representatives from this office to make periodic visits to your worksite as deemed necessary to assure compliance with permit plans and conditions.

You should address all questions regarding this authorization to Ms. Liz Hair at the Asheville Regulatory Field Office, telephone (828) 271-7980 extension 225.

Sincerely,

M. Scott Jones

Scott Jones, PWS
Chief, Asheville Regulatory Field Office

Enclosures

Copy furnished (w/enclosures):

Chief, Source Data Unit
NOAA/National Ocean Service
1315 East-west Hwy., Rm 7316
Silver Spring, Maryland 20910-3282

Copies Furnished with DWQ 401, special conditions and plans:

U.S. Fish and Wildlife Service
Fish and Wildlife Enhancement
Post Office Box 33726
Raleigh, North Carolina 27636-3726

Mr. Ron Sechler
National Marine Fisheries Service
101 Pivers Island Road
Beaufort, North Carolina 28516

Ms. Jennifer Derby
Wetlands Protection Section – Region IV
Water Management Division
U.S. Environmental Protection Agency
61 Forsyth Street, SW
Atlanta, Georgia 30303

Mr. Doug Huggett
Division of Coastal Management
N.C. Department of Environment
and Natural Resources
400 Commerce Avenue
Morehead City, North Carolina 28557

Mr. Pace Wilber
National Marine Fisheries Service
219 Fort Johnson Road
Charleston, South Carolina 29412-9110

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: North Carolina Department of Transportation; Dr. Gregory J. Thorpe	File Number: **SAW-2012-01175/SAW-2009-1452**	Date: March 12, 2013

Attached is:	See Section below
☒ **INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)**	**A**
☐ PROFFERED PERMIT (Standard Permit or Letter of permission)	B
☐ PERMIT DENIAL	C
☐ APPROVED JURISDICTIONAL DETERMINATION	D
☐ PRELIMINARY JURISDICTIONAL DETERMINATION	E

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

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

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

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

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

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

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

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

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

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

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

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

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: **District Engineer, Wilmington Regulatory Division,** **Attn:** Liz Hair Project Mgr USACE 151 Patton Avenue, Room 208 Asheville, NC 28801	If you only have questions regarding the appeal process you may also contact: Mr. Jason Steele, Administrative Appeal Review Officer CESAD-PDO U.S. Army Corps of Engineers, South Atlantic Division 60 Forsyth Street, Room 10M15 Atlanta, Georgia 30303-8801 Phone: (404) 562-5137

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

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

For appeals on Initial Proffered Permits send this form to:

District Engineer, Wilmington Regulatory Division, Attn: Liz Hair Project Mgr,**6 9 Darlington Avenue, Wilmington, North Carolina 28403**

For Permit denials,Pro ffered Permits and approved Jurisdictional Determinations send this form to:

Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Jason Steele, Administrative Appeal Officer, CESAD-PDO, 60 Forsyth Street, Room 10M15, Atlanta, Georgia 30303-8801 Phone: (404) 562-5137

U.S. ARMY CORPS OF ENGINEERS
Wilmington District
Compensatory Mitigation Responsibility Transfer Form

Permittee: North Carolina Department of Transportation **Action ID:** SAW-2012-01175
Project Name: R-2246 B George Liles Parkway **County:** Cabarrus

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Ecosystem Enhancement Program (NCEEP), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that to the U.S. Army Corps of Engineers (USACE) Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate mitigation Sponsors.

Instructions to Sponsor: The Sponsor must verify that the mitigation requirements shown below are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether or not they have received payment from the Permittee. Once the form is signed, the Sponsor must update the appropriate ledger and provide a copy of the signed form to the Permittee and to the USACE Bank/In-Lieu Fee Program Manager. The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements:

Permitted Impacts Requiring Mitigation* **8-digit HUC and Basin:** 03040105, Yadkin River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-riverine	Non-Riparian	Coastal
1,285				0.27		

*If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements: **8-digit HUC and Basin:** 03040105, Yadkin River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-riverine	Non-Riparian	Coastal
2,570				0.54		

Mitigation Site Debited: NC EEP
(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCEEP, list NCEEP. If the NCEEP acceptance letter identifies a specific site, also list the specific site to be debited).

Section to be completed by the Mitigation Sponsor

Statement of Mitigation Liability Acceptance: I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document (see the table above), associated with the USACE Permittee and Action ID number shown. I also verify that released credits (and/or advance credits for NCEEP), as approved by the USACE, are currently available at the mitigation site identified above. Further, I understand that if the Sponsor fails to provide the required compensatory mitigation, the USACE Wilmington District Engineer may pursue measures against the Sponsor to ensure compliance associated with the mitigation requirements.

Mitigation Sponsor Name:_____

Name of Sponsor's Authorized Representative:_____

_____ _____
Signature of Sponsor's Authorized Representative **Date of Signature**

USACE Wilmington District
Compensatory Mitigation Responsibility Transfer Form, Page 2

Conditions for Transfer of Compensatory Mitigation Credit:

- Once this document has been signed by the Mitigation Sponsor and the USACE is in receipt of the signed form, the Permittee is no longer responsible for providing the mitigation identified in this form, though the Permittee remains responsible for any other mitigation requirements stated in the permit conditions.
- Construction within jurisdictional areas authorized by the permit identified on page one of this form can begin only after the USACE is in receipt of a copy of this document signed by the Sponsor, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein. For authorized impacts conducted by the North Carolina Department of Transportation (NCDOT), construction within jurisdictional areas may proceed upon permit issuance; however, a copy of this form signed by the Sponsor must be provided to the USACE within 30 days of permit issuance. NCDOT remains fully responsible for the mitigation until the USACE has received this form, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein.
- Signed copies of this document must be retained by the Permittee, Mitigation Sponsor, and in the USACE administrative records for both the permit and the Bank/ILF Instrument. It is the Permittee's responsibility to ensure that the USACE Project Manager (address below) is provided with a signed copy of this form.
- If changes are proposed to the type, amount, or location of mitigation after this form has been signed and returned to the USACE, the Sponsor must obtain case-by-case approval from the USACE Project Manager and/or North Carolina Interagency Review Team (NCIRT). If approved, higher mitigation ratios may be applied, as per current District guidance and a new version of this form must be completed and included in the USACE administrative records for both the permit and the Bank/ILF Instrument.

Comments/Additional Conditions:

This form is not valid unless signed by the mitigation Sponsor and USACE Project Manager. For questions regarding this form or any of the conditions of the permit authorization, contact the Project Manager at the address below.

USACE Project Manager: Liz Hair
USACE Field Office: Asheville Regulatory Field Office
US Army Corps of Engineers
151 Patton Avenue, Room 208
Asheville, North Carolina 28801-5006

Email:

HAIR.SARAH.EA.1054693512

Digitally signed by HAIR.SARAH.EA.1054693512
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=HAIR.SARAH.EA.1054693512
Date: 2013.03.06 11:58:04 -05'00'

USACE Project Manager Signature

March 6, 2013
Date of Signature

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at http://ribits.usace.army.mil.

DEPARTMENT OF THE ARMY PERMIT

Permittee **North Carolina Department of Transportation**

Permit No. **SAW-2012-01175**

Issuing Office **CESAW-RG-A**

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

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

Project Description: **In order to facilitate construction of George Liles Parkway TIP no. R-2246 B permanent impacts to jurisdictional streams, wetlands, and ponds will be the result of roadway fill, the installation and/or replacement of pipes and culverts, the creation of low-flow benches with associated bank stabilization at the inlet and outlets of culverts, and the placement of rip rap for bank stabilization. Total permanent impacts to jurisdictional waters of the U.S. are 1,377 linear feet of stream channels, 0.27 acre of wetlands, and 0.01 acre open water (pond). Temporary impacts include 209 linear feet of stream channel.**

Project Location: **Cabarrus County, North Carolina**

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2018.** If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit,

Special Conditions:

SEE ATTACHED SPECIAL CONDITIONS

Further Information:

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

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(**X**) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

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

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

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

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

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

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

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

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

E. L. Funk for Gregory J. Thorpe, PhD — Mar 18, 2013

(PERMITTEE) **NORTH CAROLINA DEPARTMENT OF TRANSPORTATION** *(DATE)*

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

H. Scott Jones for Col Steven A. Baker — 22 MAR 2013

(DISTRICT COMMANDER) **STEVEN A. BAKER COLONEL** *(DATE)*

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) *(DATE)*

*U.S. GOVERNMENT PRINTING OFFICE: 1986 - 717-425

SPECIAL CONDITIONS
Action ID: SAW-2012-01175/SAW-2009-1452

Work Limits

a) All work authorized by this permit must be performed in strict compliance with the attached plans, which are a part of this permit. Any modification to these plans must be approved by the US Army Corps of Engineers (USACE) prior to implementation.

b) The permittee shall schedule a preconstruction meeting between its representatives, the contractor's representatives, and the Corps of Engineers, Asheville Regulatory Field Office, NCDOT Regulatory Project Manager, prior to any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all of the terms and conditions contained within this Department of the Army Permit. The permittee shall provide the USACE, Asheville Regulatory Field Office, NCDOT Regulatory Project Manager, with a copy of the final plans at least two weeks prior to the preconstruction meeting along with a description of any changes that have been made to the project's design, construction methodology or construction timeframe. The permittee shall schedule the preconstruction meeting for a time when the USACE and North Carolina Division of Water Quality (NCDWQ) Project Managers can attend. The permittee shall invite the Corps and NCDWQ Project Managers a minimum of thirty (30) days in advance of the scheduled meeting in order to provide those individuals with ample opportunity to schedule and participate in the required meeting.

c) Except as authorized by this permit or any USACE approved modification to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.

d) Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters or wetlands.

Related Laws

e) The North Carolina Division of Water Quality has issued a conditioned Water Quality Certification (Number 3947) on January 3, 2013, for your project, the conditions of that certification are hereby incorporated as special conditions of this permit. For your convenience, a copy of the certification is attached as Exhibit A. These referenced conditions are hereby incorporated as special conditions of this permit.

f) All mechanized equipment will be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, the

permittee shall immediately report it to the N.C. Division of Water Quality at (919) 733-5083, Ext. 526 or (800) 662-7956 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act will be followed.

Project Maintenance

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

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

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

j) The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).

k) The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades in those areas, prior to project completion.

l) During the clearing phase of the project, heavy equipment must not be operated in surface waters or stream channels. Temporary stream crossings will be used to access the opposite sides of stream channels. All temporary diversion channels and stream crossings will be constructed of non-erodible materials. Grubbing of riparian vegetation will not occur until immediately before construction begins on a given segment of stream channel.

m) No fill or excavation for the purposes of sedimentation and erosion control shall occur within jurisdictional waters, including wetlands, unless it is included on the plan drawings and specifically authorized by this permit.

n) The permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.

Enforcement

o) Violations of these conditions or violations of Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act must be reported in writing to the Wilmington District U.S. Army Corps of Engineers within 24 hours of the permittee's discovery of the violation.

p) The permittee will ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Written verification shall be provided that the final construction drawings comply with the attached permit drawings prior to any active construction in waters of the United States, including wetlands. Any deviation in the construction design plans will be brought to the attention of the Corps of Engineers, Asheville Regulatory Field Office prior to any active construction in waters or wetlands.

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

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

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

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

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

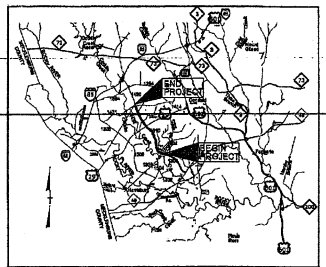
Mitigation

v) In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit authorization. Additional onsite mitigation: The NCDOT will remove a 72" Corrugated metal pipe (CMP) which carries an unnamed tributary to Coddle Creek at permit site 2. Pipe removal results in 54 linear feet of daylighted stream channel. NC DOT will match the stream and floodplain grades with the existing upstream and downstream conditions per Detail KK submitted with the Monitoring Plan for R-2246 B site 2 (Plan). NC DOT will replant the affected area with native vegetation in accordance with the streambank reforestation sheets 1 and 2 of the Plan. NC DOT will visually monitor the site for a minimum of 3 years, but not more than 5 years, to ensure channel stability and that the site successfully re-vegetates after planting. An as-built channel survey to document dimension, pattern, and profile shall be submitted to the USACE post construction at site 2 and the NC DOT shall submit to the USACE photographic documentation, plant survival and channel stability data annually for 3 years.

TIP PROJECT: R-2246B

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF CONCORD

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

LOCATION: GEORGE LILES PARKWAY FROM SOUTH OF SR 1304 (ROBERTA ROAD) TO SR 1431 (WEDDINGTON ROAD)

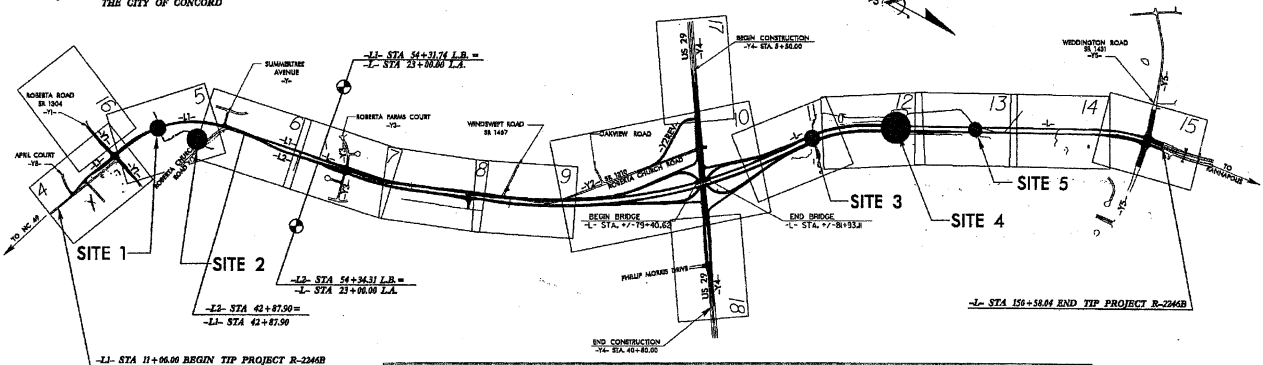
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, AND SIGNALS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2246B	1	

STATE FED./PROJ. NO.	R.O. FED./PROJ. NO.	DESCRIPTION
34408.1.1	STP-0005(46)	PE
34408.2.6	STP-0005(684)	R/W & UTIL

STATEWIDE TIER PROJECT

Permit Drawing Sheet 1 of 27



WETLAND AND SURFACE WATER IMPACTS PERMIT

NOTE: PART OF THIS PROJECT IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS AND THE OTHER PART IS A FULL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100 — PLANS

50 25 0 50 100 — PROFILE (HORIZONTAL)

10 5 0 10 20 — PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 =	22,852
ADT 2035 =	42,000
DHV =	55 %
D =	10 %
T =	5 % *
V =	60 MPH
* TTST 1%	DUAL 4%

FUNCTIONAL CLASSIFICATION
URBAN ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2246B = 3.189 MILES

LENGTH STRUCTURE TIP PROJECT R-2246B = 0.048 MILES

TOTAL LENGTH TIP PROJECT R-2246B = 3.237 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS
1999 Birch Ridge Dr., Raleigh NC, 27610

1996 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MARCH 18, 2011

LETTING DATE: APRIL 16, 2013

G.E. BREW, PE — PROJECT ENGINEER

I.T. YOUNIS — PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

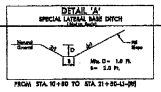
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-H
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 2 of 27

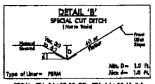
DRAINAGE DITCH DETAILS

DETAIL 'A'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 16+80 TO STA. 21+95-L1-[N]

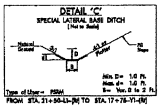
DETAIL 'B'
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= PSM
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.

FROM STA. 14+17.68 TO STA. 14+50-L1-[L]
FROM STA. 12+50 TO STA. 12+97.46-T9-[L]
FROM STA. 14+50 TO STA. 14+50-T5-[N]
FROM STA. 37+00 TO STA. 39+08-T4-[L]

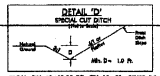
DETAIL 'C'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Type of Liner= PSM

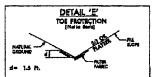
FROM STA. 31+50-L1-[N] TO STA. 17+78-T1-[N]

DETAIL 'D'
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 12+18.55 TO STA. 16+00 -SPUR3-[L]
FROM STA. 17+78 TO STA. 20+50 -T1-[L]
FROM STA. 17+78 TO STA. 20+71.95 -T1-[N]
FROM STA. 13+35.23 TO STA. 13+97.46 -T9-[L]
FROM STA. 50+61.46 TO STA. 55+00 -L1-[L]
FROM STA. 55+00 TO STA. 54+00 -L-[N]
FROM STA. 50+00 TO STA. 54+15.74 -L-[N]
FROM STA. 30+15 TO STA. 33+20 -T5-[N]
FROM STA. 44+50 TO STA. 46+00 -L1-[L]
FROM STA. 45+00 TO STA. 43+90 -L1-[L]

DETAIL 'E'
TOE PROTECTION
(Not to Scale)



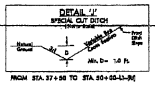
Type of Liner= Conc. Rip-Rap
d= 1.0 Ft.

FROM STA. 37+50 TO STA. 39+50-L1-[L]

DETAIL 'HH'
AREAS V DITCH
(Not to Scale)

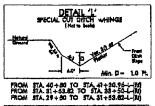
FROM STA. 51+50.00 TO STA. 52+50.0-(Area)
FROM STA. 46+90 TO STA. 48+50.0-(Area)

DETAIL 'J'
SPECIAL CUT DITCH
(Not to Scale)



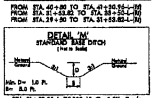
FROM STA. 37+50 TO STA. 50+50-L1-[N]

DETAIL 'L'
SPECIAL CUT DITCH w/HINGE
(Not to Scale)



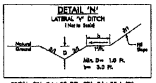
FROM STA. 40+80 TO STA. 41+34.55-L-[N]
FROM STA. 41+63.82 TO STA. 44+33-L-[N]
FROM STA. 39+50 TO STA. 51+53.83-L-[N]

DETAIL 'M'
STANDARD BASE DITCH
(Not to Scale)



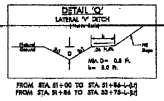
STA. 31+82.83-L-[N] 163 LF @ 0.8% Grade
FROM STA. 109+29.37 TO STA. 109+84.87-L-[L]
113 LF @ 0.26% grade

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



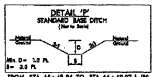
FROM STA. 24+03 TO STA. 26+80-L-[N]

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



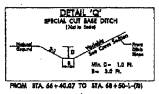
FROM STA. 21+00 TO STA. 21+84-L-[L]
FROM STA. 21+84 TO STA. 23+78-L-[L]

DETAIL 'P'
STANDARD BASE DITCH
(Not to Scale)



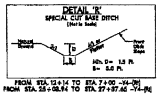
FROM STA. 66+45.94 TO STA. 66+40.07-L-[N]
172 LF @ .34% Grade

DETAIL 'Q'
SPECIAL CUT BASE DITCH
(Not to Scale)



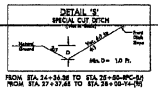
FROM STA. 66+40.07 TO STA. 68+50-L-[N]

DETAIL 'R'
SPECIAL CUT BASE DITCH
(Not to Scale)



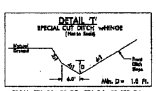
FROM STA. 12+14 TO STA. 7+00 -X4-[N]
FROM STA. 25+00.94 TO STA. 27+97.40 -Y4-[N]

DETAIL 'S'
SPECIAL CUT DITCH
(Not to Scale)



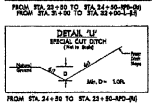
FROM STA. 24+36.38 TO STA. 25+80-RPC-[L]
FROM STA. 37+37.68 TO STA. 38+00-T4-[N]

DETAIL 'T'
SPECIAL CUT DITCH w/HINGE
(Not to Scale)



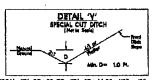
FROM STA. 25+50 TO STA. 24+50-RPC-[N]
FROM STA. 0+00 TO STA. 22+00-L-[L]

DETAIL 'U'
SPECIAL CUT DITCH
(Not to Scale)



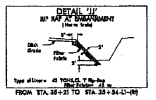
FROM STA. 24+50 TO STA. 23+50-RPC-[N]

DETAIL 'V'
SPECIAL CUT DITCH
(Not to Scale)



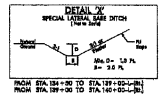
FROM STA. 37+00 TO STA. 37+46.50 -Y2Rev-[N]
FROM STA. 34+00 TO STA. 33+00 -Y2Rev-[L]
FROM STA. 34+00 TO STA. 33+00 -Y2Rev-[N]
FROM STA. 32+00 TO STA. 35+50 -Y5Rev-[N]
FROM STA. 13+00 TO STA. 16+00 -Y4-[N]
FROM STA. 6+50 TO STA. 4+98 -Y4-[L]
FROM STA. 11+50 TO STA. 14+98 -Y4-[L]
FROM STA. 19+16.54 TO STA. 17+31 -Y2-[L]
FROM STA. 13+87.13 TO STA. 14+93 -SPUR4-[N]

DETAIL 'W'
90° 3:1 SLOPE ENCROACHMENT
(Not to Scale)



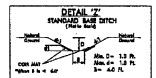
FROM STA. 36+31 TO STA. 33+54-L1-[N]

DETAIL 'X'
SPECIAL CUT DITCH w/HINGE
(Not to Scale)



FROM STA. 134+80 TO STA. 139+03-L-[N]
FROM STA. 139+00 TO STA. 140+03-L-[N]

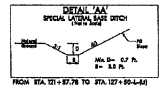
DETAIL 'Z'
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CORR MAT
Min. D= 1.3 Ft.
Min. d= 1.0 Ft.
b= 4.0 Ft.

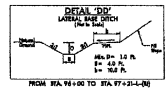
FROM STA. 121+14.59 TO STA. 121+92.13-L-[N]
44 LF @ 2.45% grade
FROM STA. 123+59.40 TO STA. 123+22.28-L-[N]
38 LF @ 4.14% grade

DETAIL 'AA'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 121+87.78 TO STA. 127+50-L-[L]

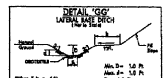
DETAIL 'BB'
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Cl Rip-Rap

FROM STA. 96+00 TO STA. 97+31-L-[N]

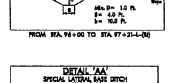
DETAIL 'CC'
LATERAL BASE DITCH
(Not to Scale)



*When b is < 4.0'
Type of Liner= Cl Rip-Rap

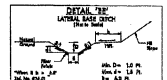
FROM STA. 98+00 TO STA. 98+86-L-[L]

DETAIL 'DD'
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 96+00 TO STA. 97+31-L-[N]

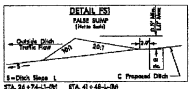
DETAIL 'EE'
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Cl Rip-Rap

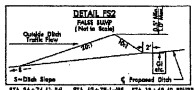
FROM STA. 97+31 TO STA. 98+84.56-L-[N]

DETAIL FS1
FALSE SUMP
(Not to Scale)



STA. 24+74-L1-[N]
STA. 27+74-L1-[N]
STA. 18+07-T1-[L]
STA. 49+50-L1-[L]
STA. 47+74-L1-[N]
STA. 49+74-L1-[N]
STA. 41+48-L-[N]
STA. 140+76-L-[L]
STA. 140+76-L-[N]

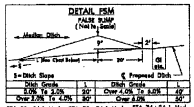
DETAIL FS2
FALSE SUMP
(Not to Scale)



STA. 26+74-L1-[L]
STA. 27+50-L1-[N]
STA. 40+26-L1-[N]
STA. 44+26-L1-[N]
STA. 24+26-L-[N]
STA. 42+75-L-[N]
STA. 44+67-T4-[N]
STA. 100+05-L-[N]
STA. 104+26-L-[N]
STA. 107+26-L-[N]
STA. 110+26-L-[N]
STA. 18+49.45 -SPUR3-[L]
STA. 18+26-SPUR3-[L]
STA. 140+76-L-[N]

STA. 21+74-Y2Rev-[N]

DETAIL FSM
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 3.0%	50'	Over 4.0% To 5.0%	60'
Over 3.0% To 4.0%	50'	Over 5.0%	50'

STA. 32+74-L-Med.
STA. 34+74-L-Med.
STA. 36+74-L-Med.
STA. 39+74-L-Med.
STA. 41+74-L-Med.
STA. 101+26-L-Med.
STA. 103+26-L-Med.
STA. 107+26-L-Med.
STA. 110+26-L-Med.
STA. 113+26-L-Med.
STA. 69+74-L-Med.
STA. 65+74-L-Med.
STA. 63+74-L-Med.
STA. 61+74-L-Med.
STA. 59+74-L-Med.
STA. 57+74-L-Med.
STA. 55+74-L-Med.
STA. 53+74-L-Med.
STA. 51+74-L-Med.
STA. 49+74-L-Med.
STA. 47+74-L-Med.
STA. 45+74-L-Med.
STA. 43+74-L-Med.
STA. 41+74-L-Med.
STA. 39+74-L-Med.
STA. 37+74-L-Med.
STA. 35+74-L-Med.
STA. 33+74-L-Med.
STA. 31+74-L-Med.
STA. 29+74-L-Med.
STA. 27+74-L-Med.
STA. 25+74-L-Med.
STA. 23+74-L-Med.
STA. 21+74-L-Med.
STA. 19+74-L-Med.
STA. 17+74-L-Med.
STA. 15+74-L-Med.
STA. 13+74-L-Med.
STA. 11+74-L-Med.
STA. 9+74-L-Med.
STA. 7+74-L-Med.
STA. 5+74-L-Med.
STA. 3+74-L-Med.
STA. 1+74-L-Med.
STA. 74+24-L-Med.
STA. 84+24-L-Med.
STA. 91+24-L-Med.
STA. 93+24-L-Med.
STA. 95+24-L-Med.
STA. 97+24-L-Med.
STA. 99+24-L-Med.
STA. 104+24-L-Med.
STA. 106+24-L-Med.
STA. 108+24-L-Med.
STA. 110+24-L-Med.
STA. 112+24-L-Med.
STA. 114+24-L-Med.
STA. 116+24-L-Med.
STA. 118+24-L-Med.
STA. 120+24-L-Med.
STA. 122+24-L-Med.
STA. 124+24-L-Med.
STA. 126+24-L-Med.
STA. 128+24-L-Med.
STA. 130+24-L-Med.
STA. 132+24-L-Med.
STA. 134+24-L-Med.
STA. 136+24-L-Med.
STA. 138+24-L-Med.
STA. 140+74-L-Med.

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

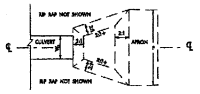
Permit Drawing
Sheet 3 of 29

SPECIAL DRAINAGE DETAILS

DETAIL 'II'
RIP-RAPPED ENERGY DISSIPATOR BASIN

DWL (ft)	RIP RAP BASIN # 1	2	3
A	2.0'	1	1
B	1.7'	1	1
C	2.0'	1	1
D	1.0'	1	1
E	10.0'	1	1
F	33.0'	1	1
G	20.0'	1	1

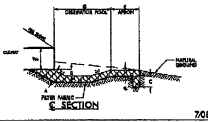
ALL DIMENSIONS APPROXIMATE



PLAN

BASIN #	LOCATION (AT OUTLET)
1	Rte. 33 + 94-11-(N) @
2	"
3	"

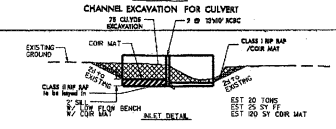
NOTE:
USE CLASS "I" RIP RAP FOR BASIN #1
APRON ELEVATION TO BE SET 0.5' ABOVE INVERT OF PIPE

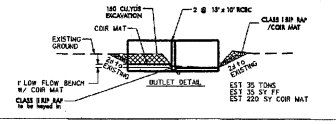


℄ SECTION

7/08

DETAIL 'LL'
CHANNEL EXCAVATION FOR CULVERT

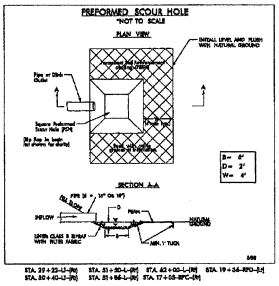




RCBC STA. 29+96-L-

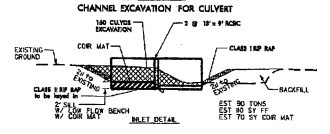
PREFORMED SCOUR HOLE
*NOT TO SCALE

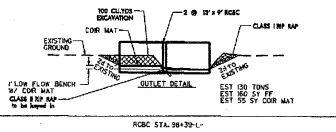
PLAN VIEW



STA. 20+23-L-(N) STA. 21+20-L-(N) STA. 63+00-L-(N) STA. 19+34-RPO-(L)
STA. 20+40-L-(N) STA. 21+86-L-(N) STA. 17+38-RPC-(N)

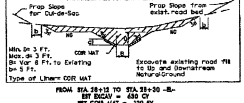
DETAIL 'MM'
CHANNEL EXCAVATION FOR CULVERT





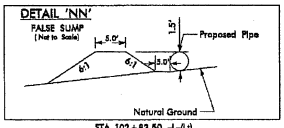
RCBC STA. 38+39-L-

DETAIL 'KK'
(NOT to Scale)
CHANNEL/FLOODPLAIN EXCAVATION



FROM STA. 28+13 TO STA. 29+30 -B-
EST EXCAV = 430 CY
EST COIR MAT = 130 SY

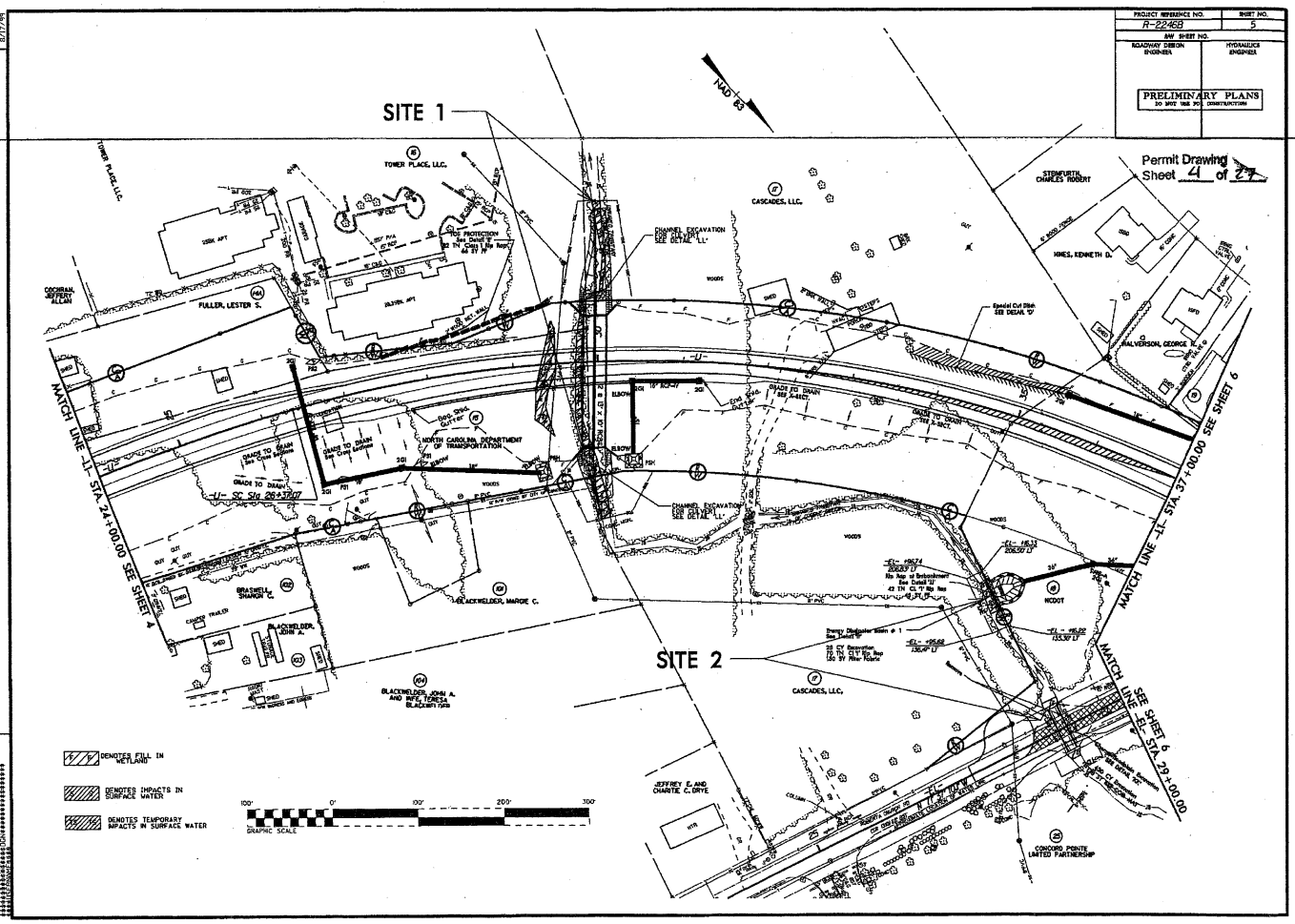
DETAIL 'NN'
FALSE SUMP
(Not to Scale)

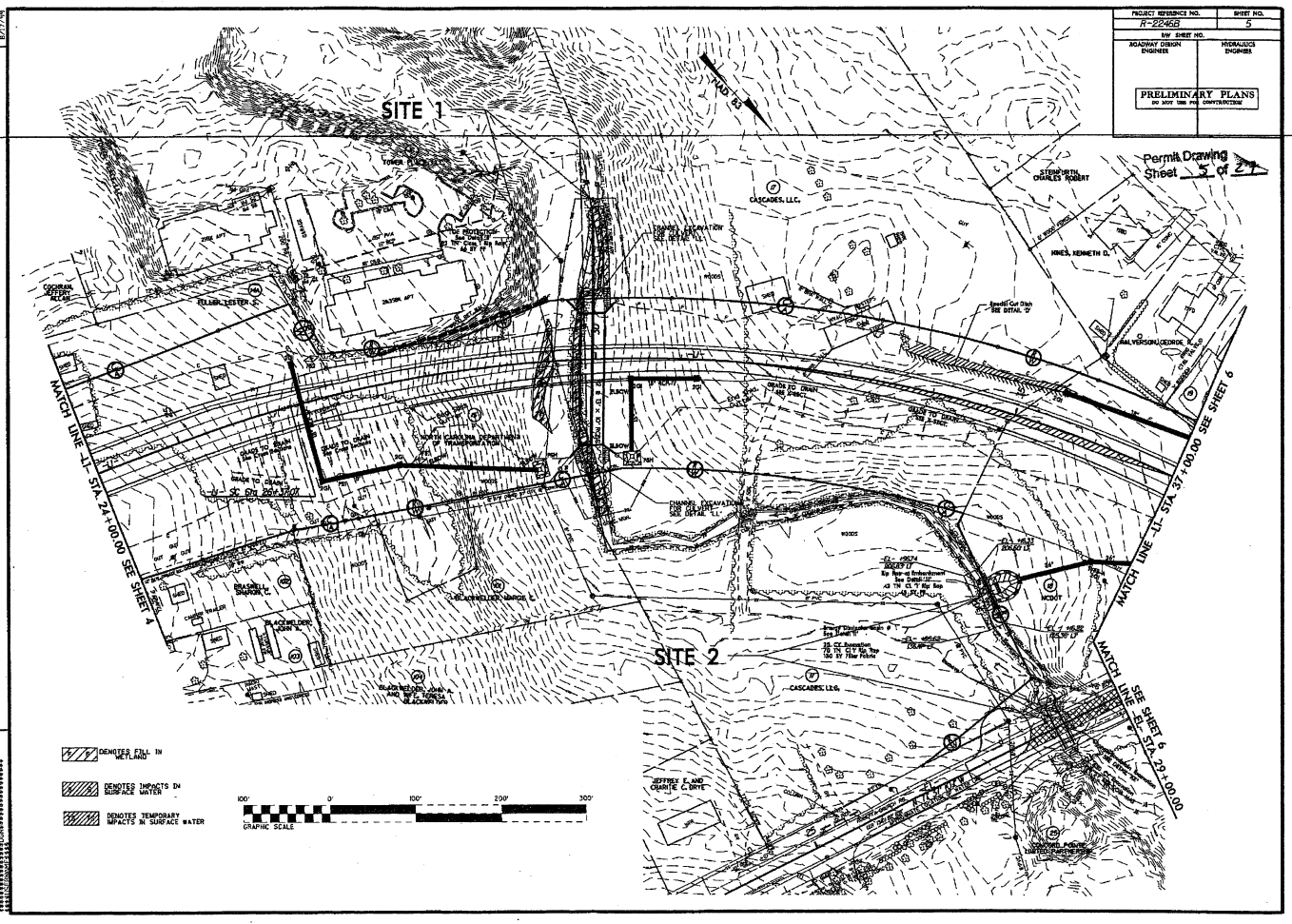


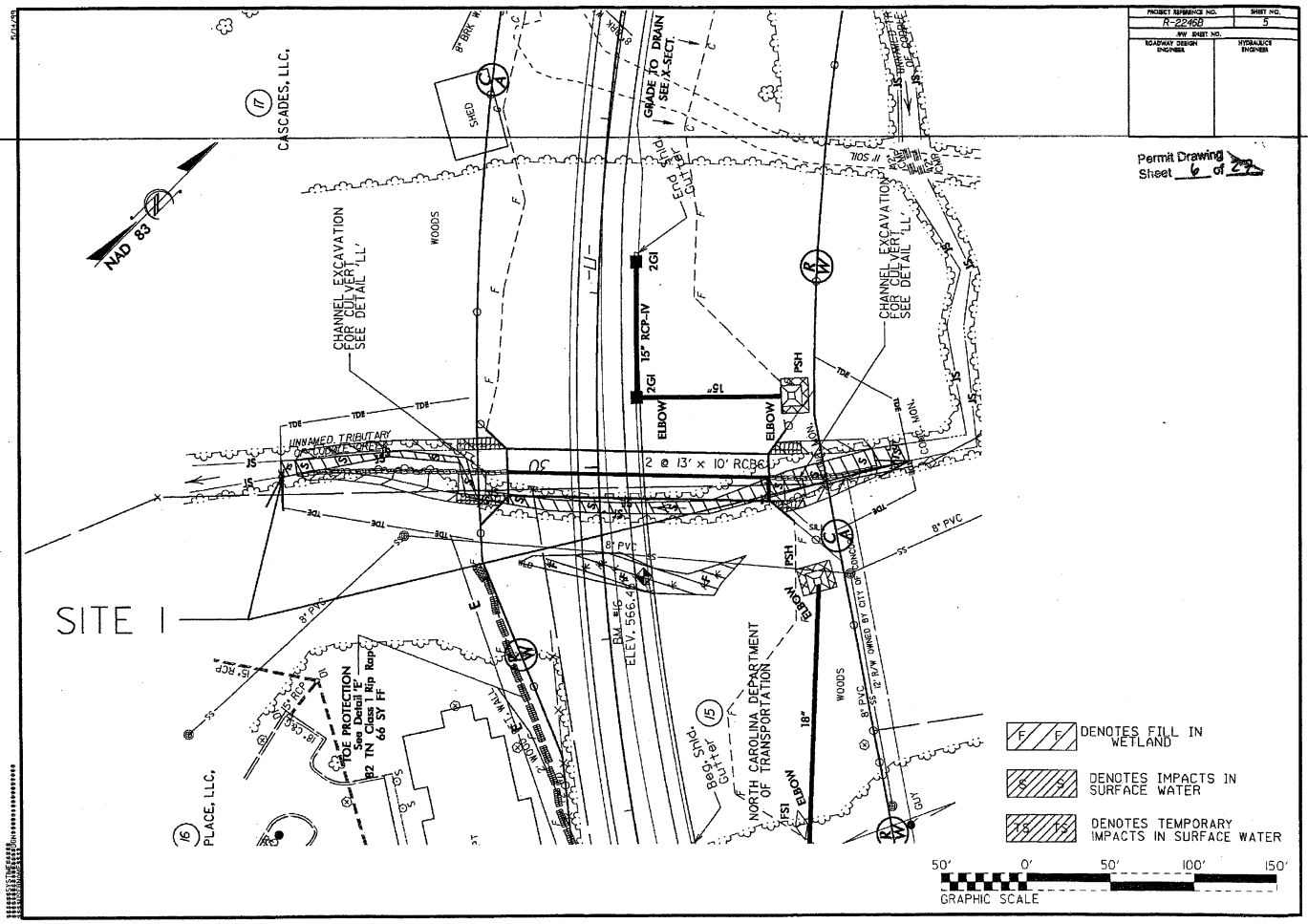
STA. 102+83.50 -L-(L)
STA. 114+83.50 -L-(L)
STA. 138+83.50-L-(L)

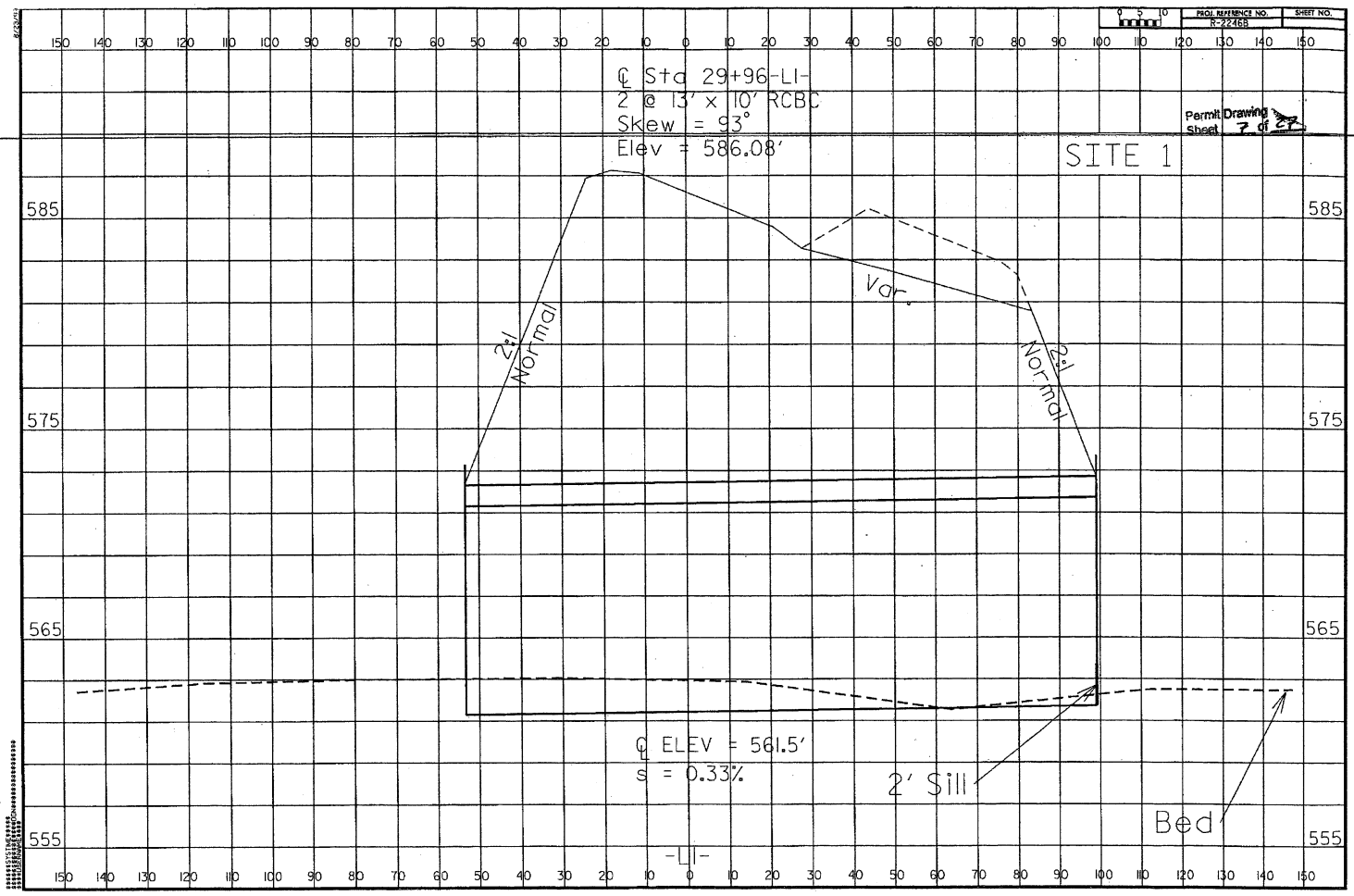
REVISIONS

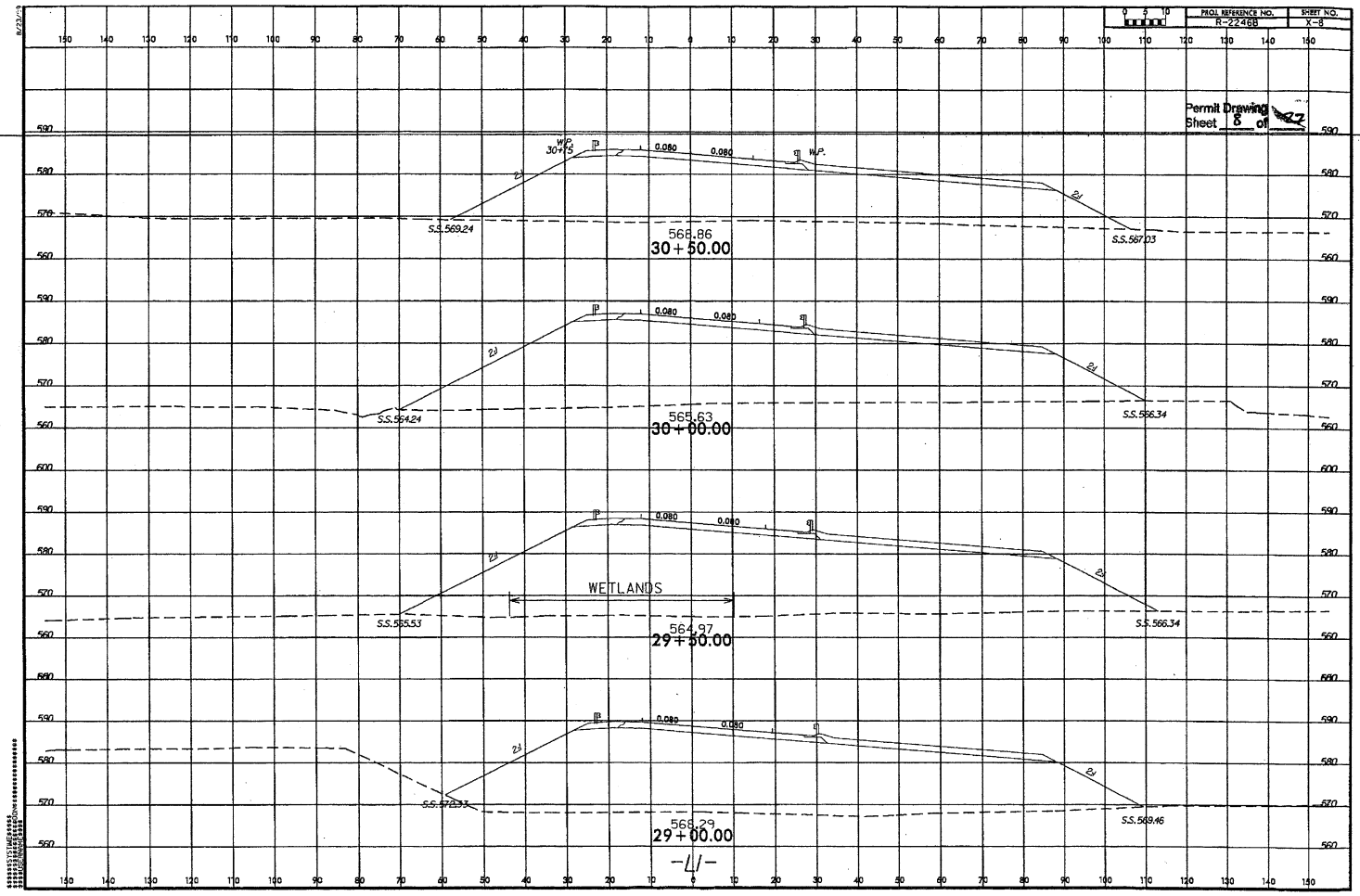
8/17/09

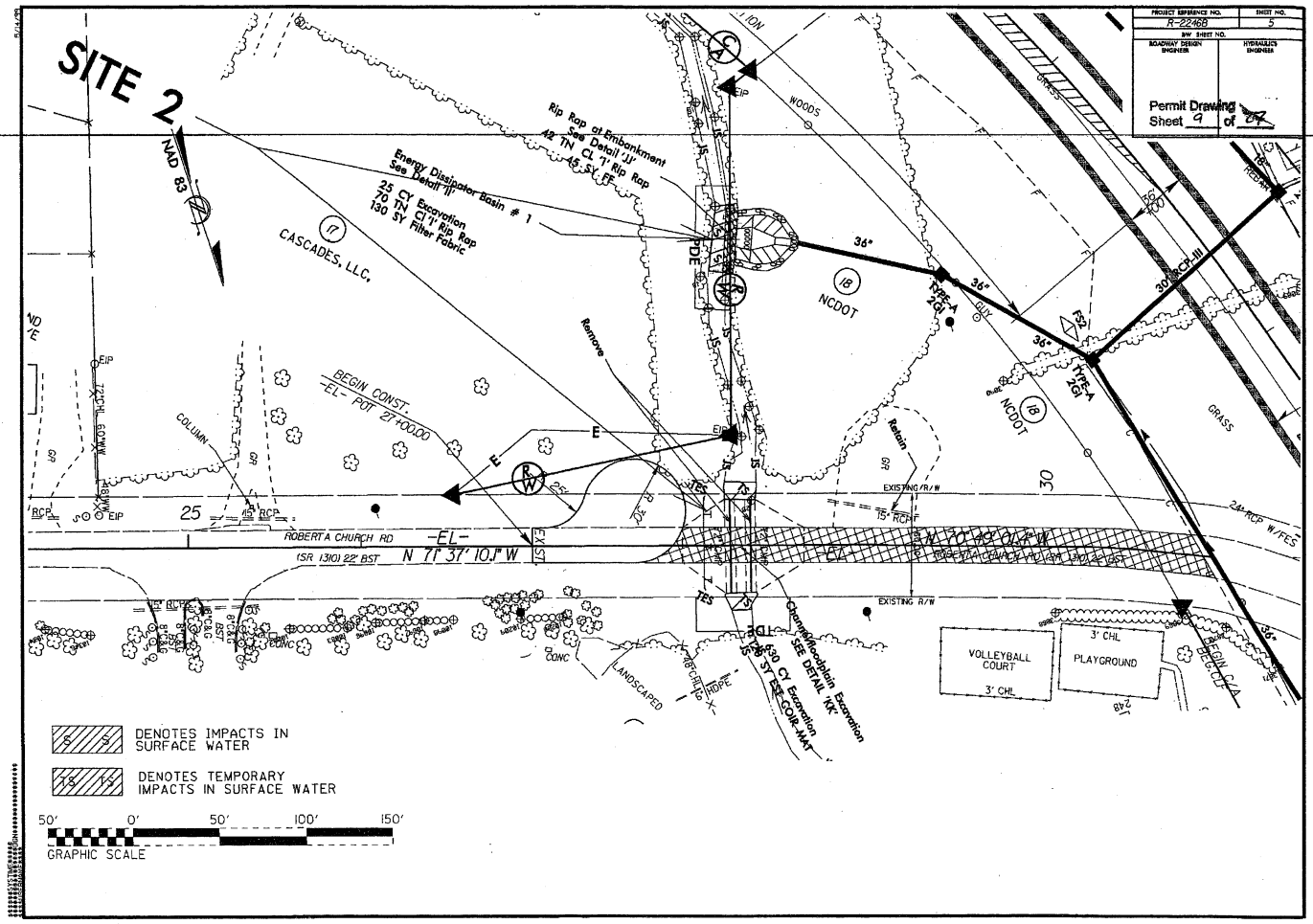

PROJECT REFERENCE NO.
R-2246B
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
SITE 1
SITE 2
Permit Drawing
Sheet 4 of 27
TOWER PLACE, LLC.
CASCADES, LLC.
STEINFURTH, CHARLES ROBERT
HINES, KENNETH D.
HALVERSON, GEORGE E.
FULLER, LESTER S.
COCHRAN, JEFFREY ALLAN
NORTH CAROLINA, DEPARTMENT OF TRANSPORTATION
BRASWELL, SHANON W.
BLACKWELDER, JOHN A.
BLACKWELDER, MARGIE C.
BLACKWELDER, JOHN A. AND WIFE, TERESA BLACKWELDER
JEFFREY E. AND CHARITIE C. DRYE
CONCORD POINTE LIMITED PARTNERSHIP
MCDOT
MATCH LINE -L1- STA. 24+00.00 SEE SHEET 4
MATCH LINE -L1- STA. 37+00.00 SEE SHEET 6
MATCH LINE -L1- STA. 29+00.00 SEE SHEET 6
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
GRAPHIC SCALE
100' 0' 100' 200' 300'


PROJECT REFERENCE NO.
R-2246B
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing Sheet 5 of 27
SITE 1
SITE 2
MATCH LINE -L1- STA. 24+00.00 SEE SHEET 4
MATCH LINE -L1- STA. 37+00.00 SEE SHEET 6
MATCH LINE -R1- STA. 29+00.00 SEE SHEET 6
CASCADES, LLC.
HINES, KENNETH D.
STENWORTH CHARLES ROBERT
MALVERSON, DEDRIK
COCHRAN JEFFERY
ELLISON, LESTER C.
BLACKWELDER, JAMES L.
BLACKWELDER, JOHN A.
JEFFREY E. AND CHARITE C. DRYE
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
100' 0' 100' 200' 300'
GRAPHIC SCALE


PROJECT REFERENCE NO.
R-2246B
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Permit Drawing
Sheet 6 of 29
NAD 83
CASCADES, LLC,
17
WOODS
SHED
8" BRK
GRADE TO DRAIN
SEE X-SECT.
CHANNEL EXCAVATION
FOR CULVERT
SEE DETAIL 'LL'
UNNAMED TRIBUTARY
2 @ 13' x 10' RCBC
15" RCP-IV
2GI
ELBOW
PSH
8" PVC
SITE 1
16
PLACE, LLC,
TOE PROTECTION
Sandbags 1' Deep
82 TN Class I Rip Rap
66 SY FF
BM #4
ELEV. 556.4
Bag Shld.
Gutter
15
NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
18"
PSI
ELBOW
12' R/W OWNED BY CITY OF CONCORD
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
50' 0' 50' 100' 150'
GRAPHIC SCALE


PROJ. REFERENCE NO.
R-2246B
SHEET NO.
Permit Drawing Sheet 7 of 27
℄ Sta 29+96-L1-
2 @ 13' x 10' RCBC
Skew = 93°
Elev = 586.08'
SITE 1
585
575
565
555
2:1 Normal
Var.
2:1 Normal
℄ ELEV = 561.5'
s = 0.33%
2' Sill
Bed
-L1-


PROJ. REFERENCE NO.
R-2246B
SHEET NO.
X-8
Permit Drawing
Sheet 8 of 27
W.P.
30+75
0.080
0.080
W.P.
2:1
S.S.569.24
566.86
30+50.00
S.S.567.03
S.S.564.24
565.63
30+00.00
S.S.566.34
WETLANDS
S.S.555.53
564.97
29+50.00
S.S.566.34
S.S.572.33
568.29
29+00.00
S.S.569.46
-41-


SITE 2
NAD 83
PROJECT REFERENCE NO.
R-2246B
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Permit Drawing
Sheet 9 of 67
Rip Rap at Embankment
See Detail "J"
42 TN CL "I" Rip Rap
45 SY FF
Energy Dissipater Basin # 1
See Detail "I"
25 CY Excavation
70 TN CL "I" Rip Rap
130 SY Filter Fabric
CASCADES, LLC.
NCDOT
WOODS
GRASS
36"
30" CP-III
TYPE-A
2GI
F52
Remove
Retain
BEGIN CONST.
-EL- POT 27+00.00
COLUMN
ROBERTA CHURCH RD
-EL-
(SR 1310) 22' BST
N 71° 37' 10.1" W
EXISTING R/W
15" RCP
24" RCP W/FES
Channel/Floodplain Excavation
SEE DETAIL "KK"
630 CY Excavation
SEE DETAIL "KK"
LANDSCAPED
CONC
VOLLEYBALL COURT
3' CHL
PLAYGROUND
BEGIN CL
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
50' 0' 50' 100' 150'
GRAPHIC SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2245B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

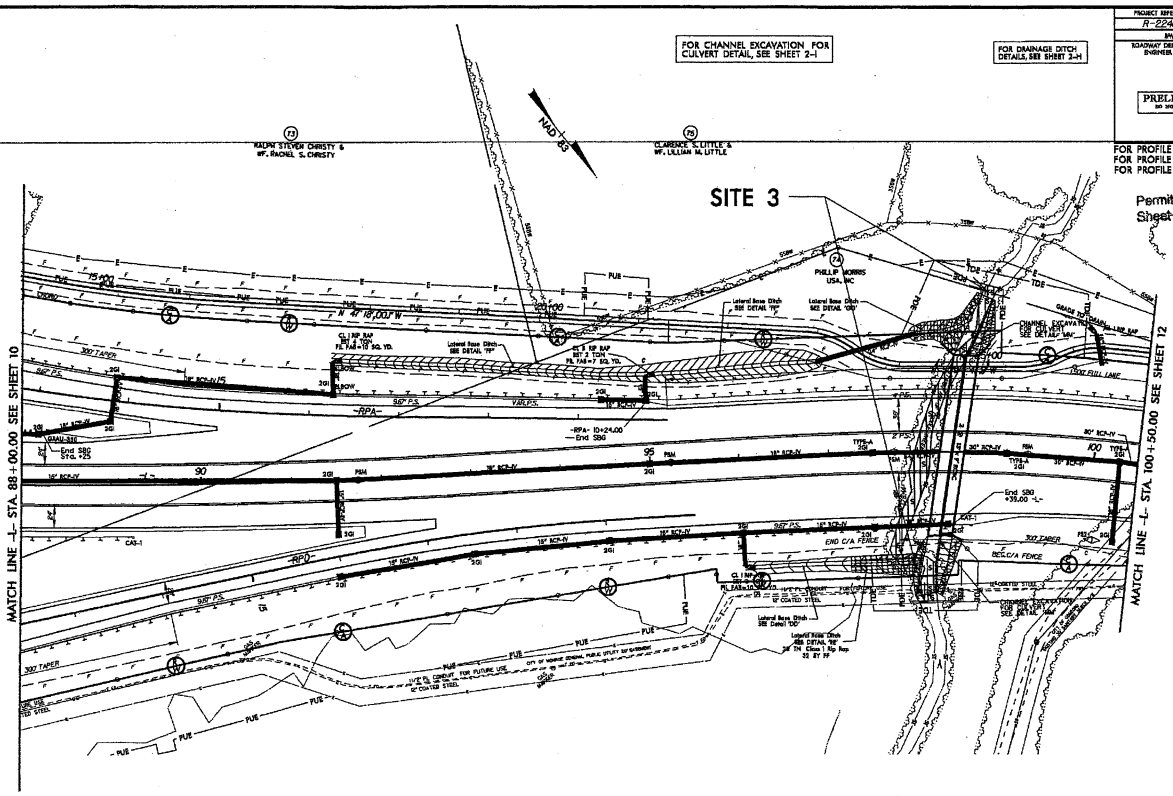
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR CHANNEL EXCAVATION FOR CULVERT DETAIL, SEE SHEET 2-I

FOR DRAINAGE DITCH DETAILS, SEE SHEET 2-H

FOR PROFILE OF -L- SEE SHEET 24
FOR PROFILE OF -RPA- SEE SHEET 31
FOR PROFILE OF -RPD- SEE SHEET 34

Permit Drawing
Sheet 10 of 27



REVISIONS

8/17/05

9/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

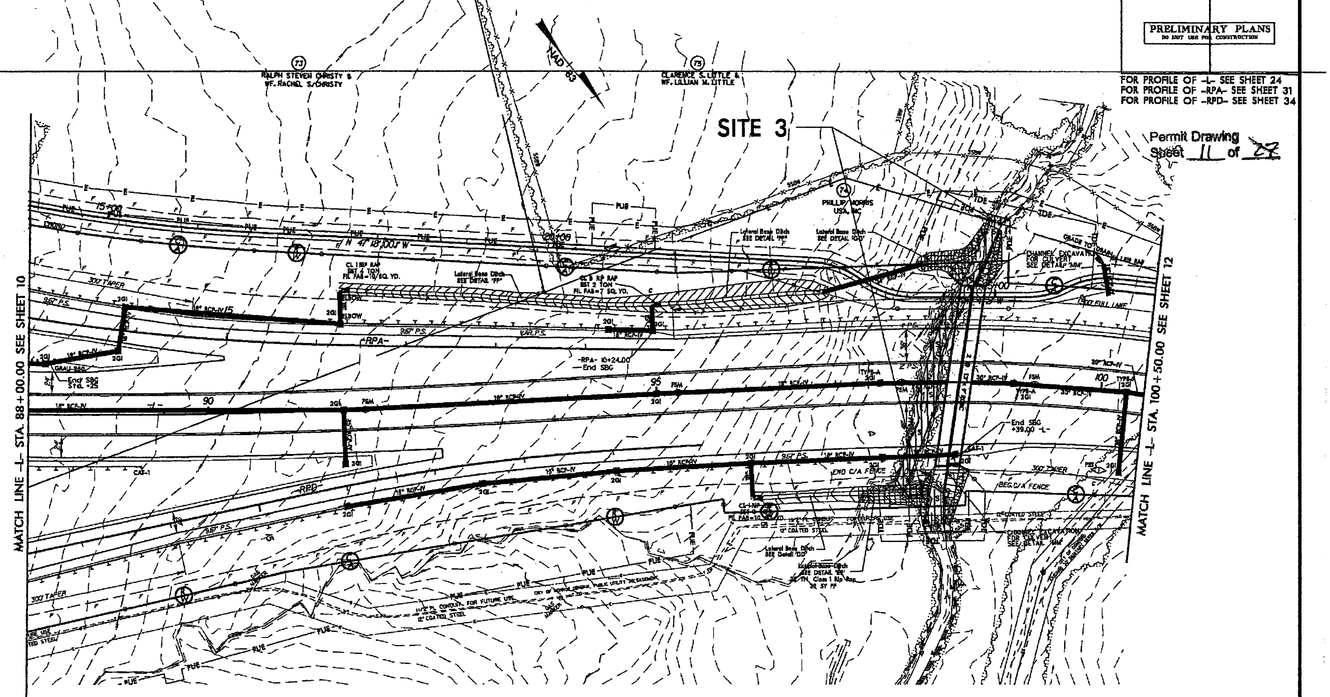
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR CHANNEL EXCAVATION FOR CULVERT DETAIL, SEE SHEET 2-I

FOR DRAINAGE DITCH DETAILS, SEE SHEET 2-H

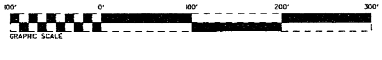
FOR PROFILE OF -L- SEE SHEET 24
FOR PROFILE OF -RPA- SEE SHEET 31
FOR PROFILE OF -RPD- SEE SHEET 34

Permit Drawing
Sheet 11 of 27

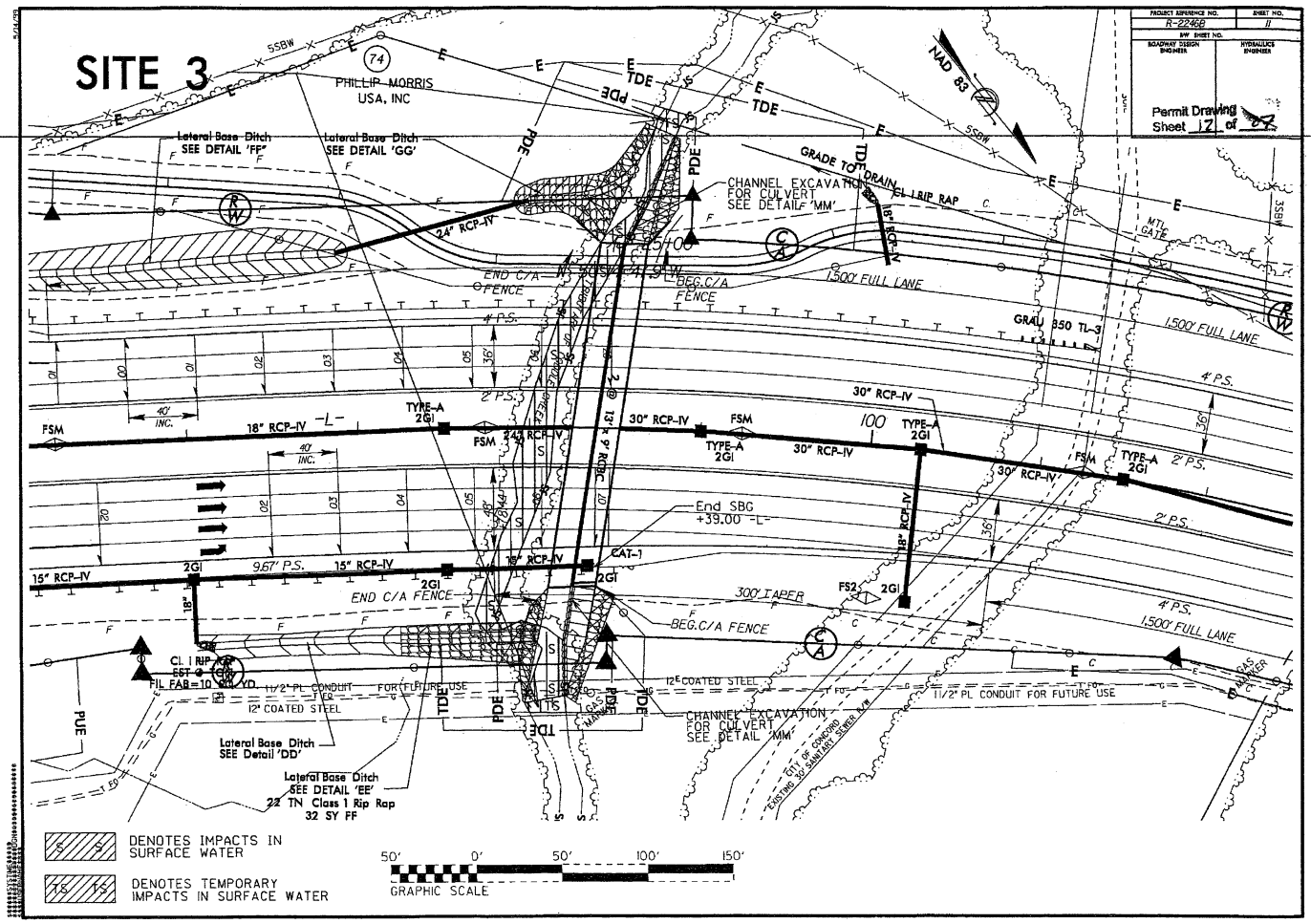


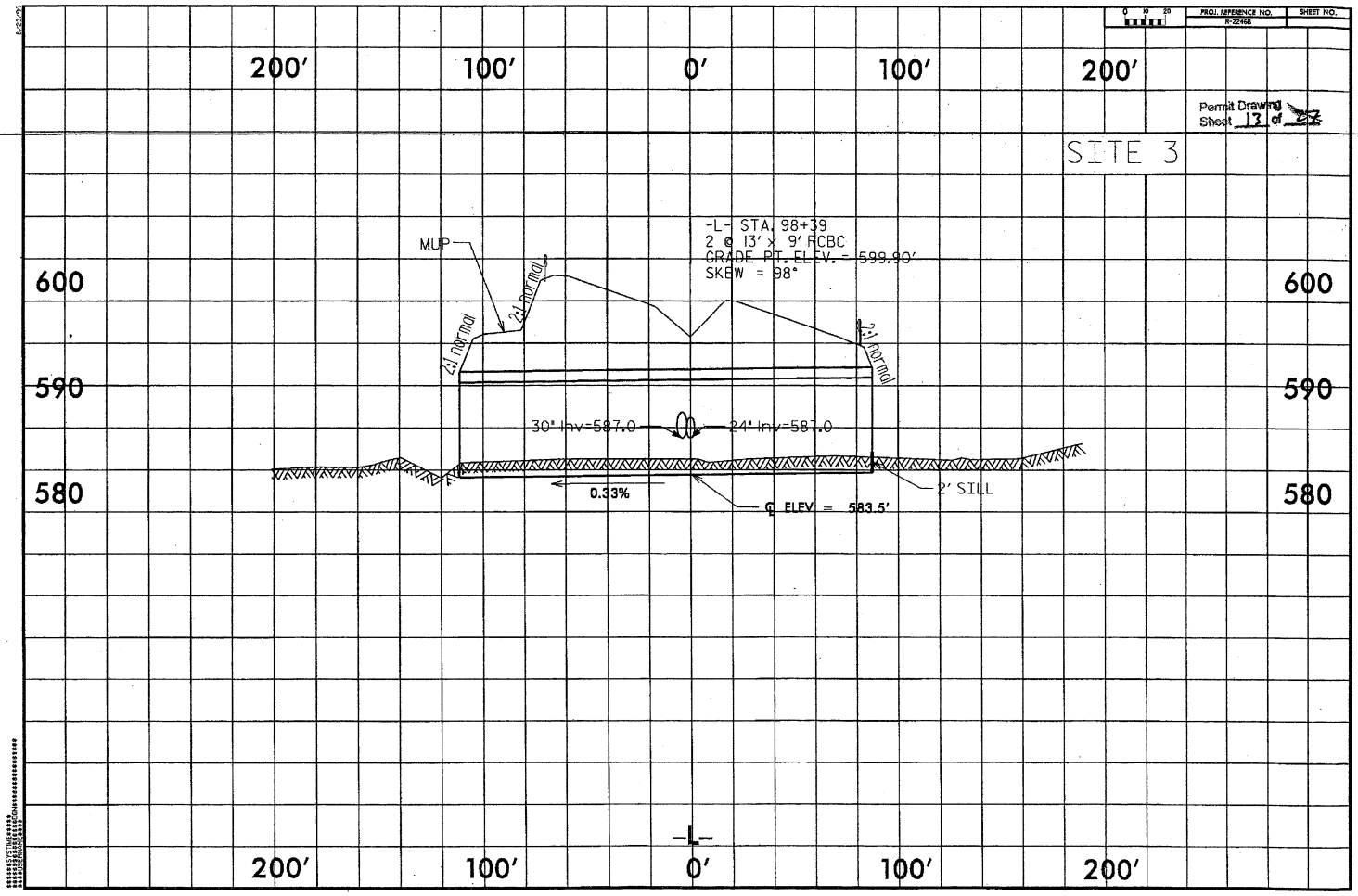
▨ DENOTES IMPACTS IN SURFACE WATER

▨ DENOTES TEMPORARY IMPACTS IN SURFACE WATER



GRAPHIC SCALE


SITE 3
PROJECT REFERENCE NO.
R-2246B
SHEET NO.
11
BW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Permit Drawing
Sheet 12 of 27
NAD 83
PHILLIP MORRIS
USA, INC
Lateral Base Ditch
SEE DETAIL 'FF'
Lateral Base Ditch
SEE DETAIL 'GG'
CHANNEL EXCAVATION
FOR CULVERT
SEE DETAIL 'MM'
GRADE TO DRAIN
CL I RIP RAP
24" RCP-IV
18" RCP-IV
END C/A
FENCE
BEG.C/A
FENCE
1,500' FULL LANE
4' P.S.
2' P.S.
30" RCP-IV
18" RCP-IV
15" RCP-IV
TYPE-A
2GI
FSM
End SBG
+39.00 -L-
CAT-1
FS2
300' TAPER
9.67' P.S.
Cl. I RIP RAP
EST @ 10 CU. YD.
FIL FAB=10 CU. YD.
1 1/2" PL CONDUIT FOR FUTURE USE
12" COATED STEEL
Lateral Base Ditch
SEE Detail 'DD'
Lateral Base Ditch
SEE DETAIL 'EE'
22 TN Class 1 Rip Rap
32 SY FF
CITY OF CONCORD
EXISTING 30" SANITARY SEWER R/W
PUE
TDE
PDE
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
50' 0' 50' 100' 150'
GRAPHIC SCALE


PROJ. REFERENCE NO.
R-2246B
SHEET NO.
Permit Drawing
Sheet 13 of 23
SITE 3
200'
100'
0'
100'
200'
600
590
580
-L- STA. 98+39
2 @ 13' x 9' RCBC
GRADE PT. ELEV. = 599.90'
SKEW = 98°
MUP
2:1 normal
2:1 normal
2:1 normal
30" Inv=587.0
24" Inv=587.0
0.33%
2' SILL
℄ ELEV = 583.5'
-L-

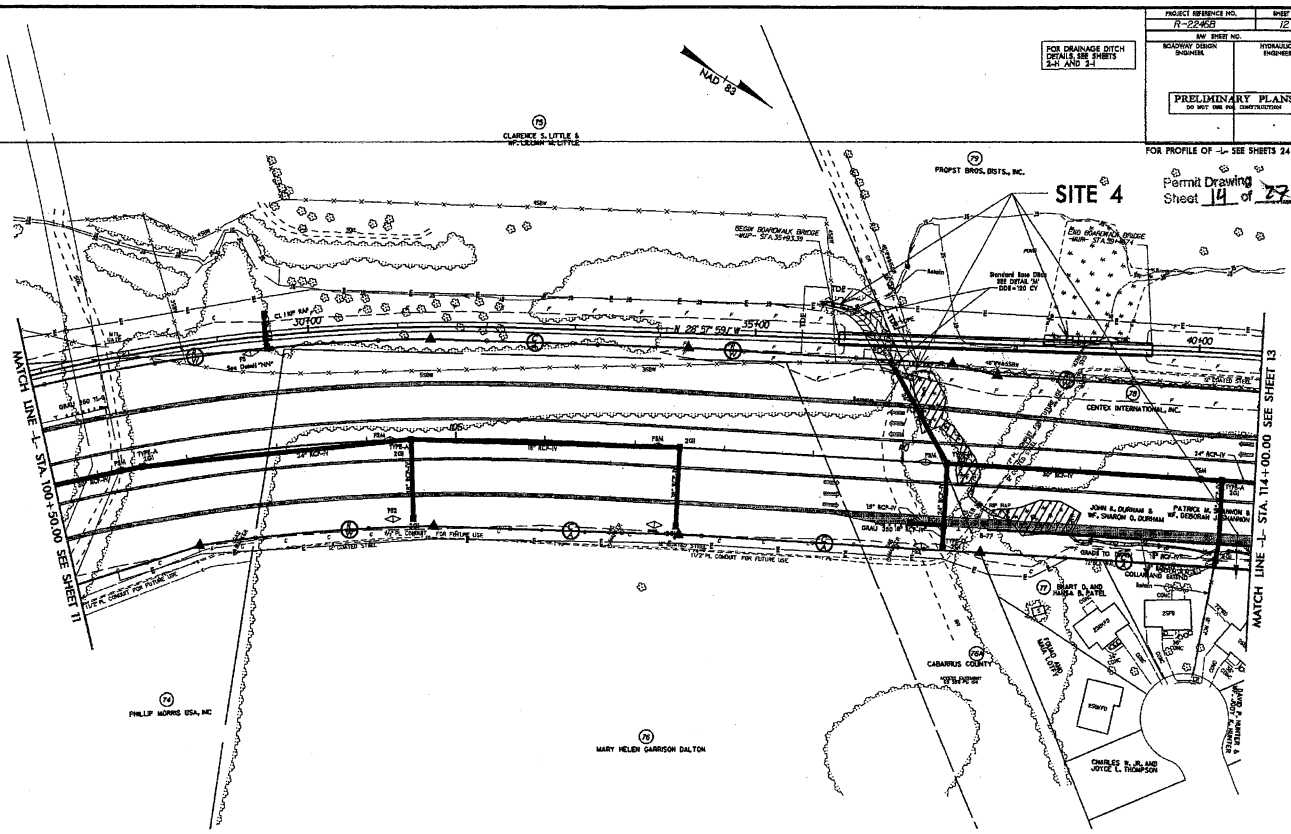
PROJECT REFERENCE NO.	SHEET NO.
R-2245B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I

FOR PROFILE OF -L- SEE SHEETS 24 & 25

Permit Drawing
Sheet 14 of 27



REVISIONS

8/17/99

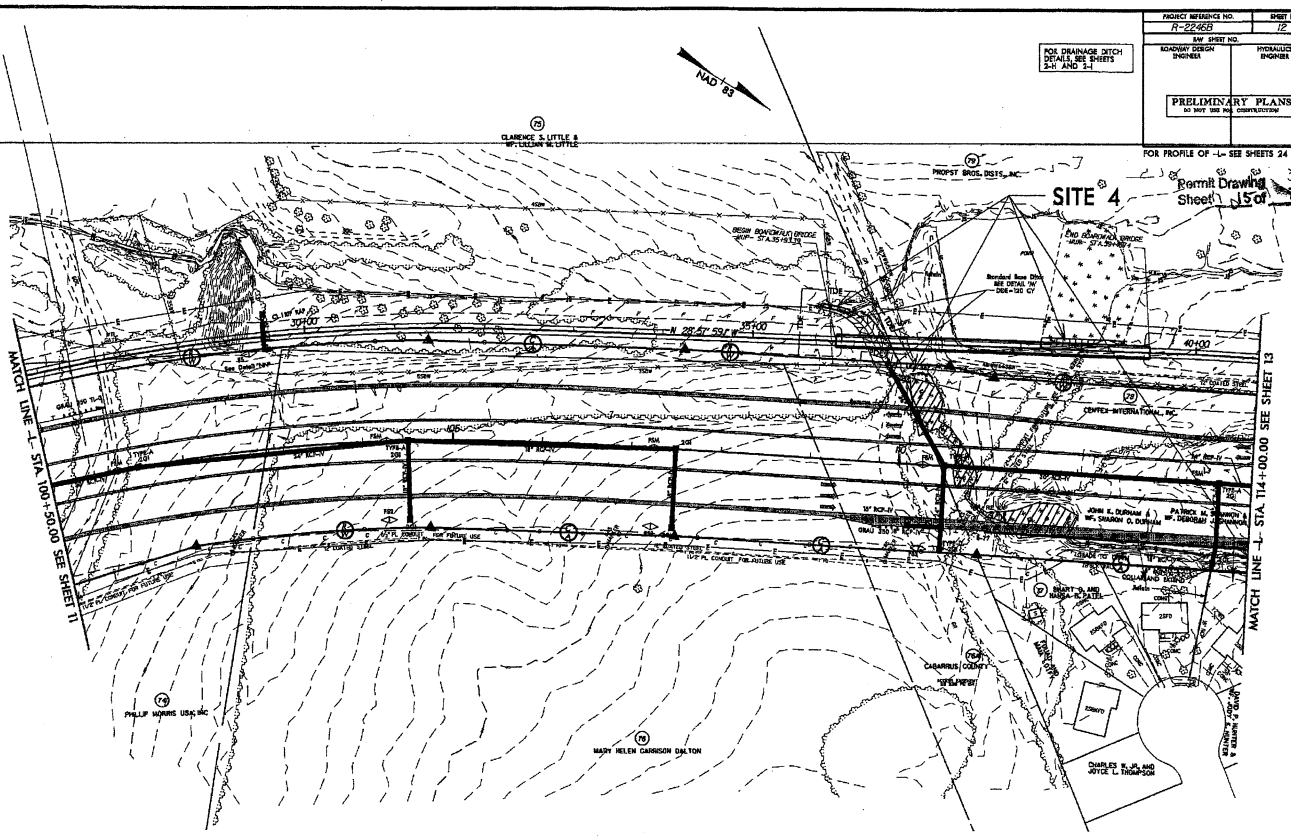
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

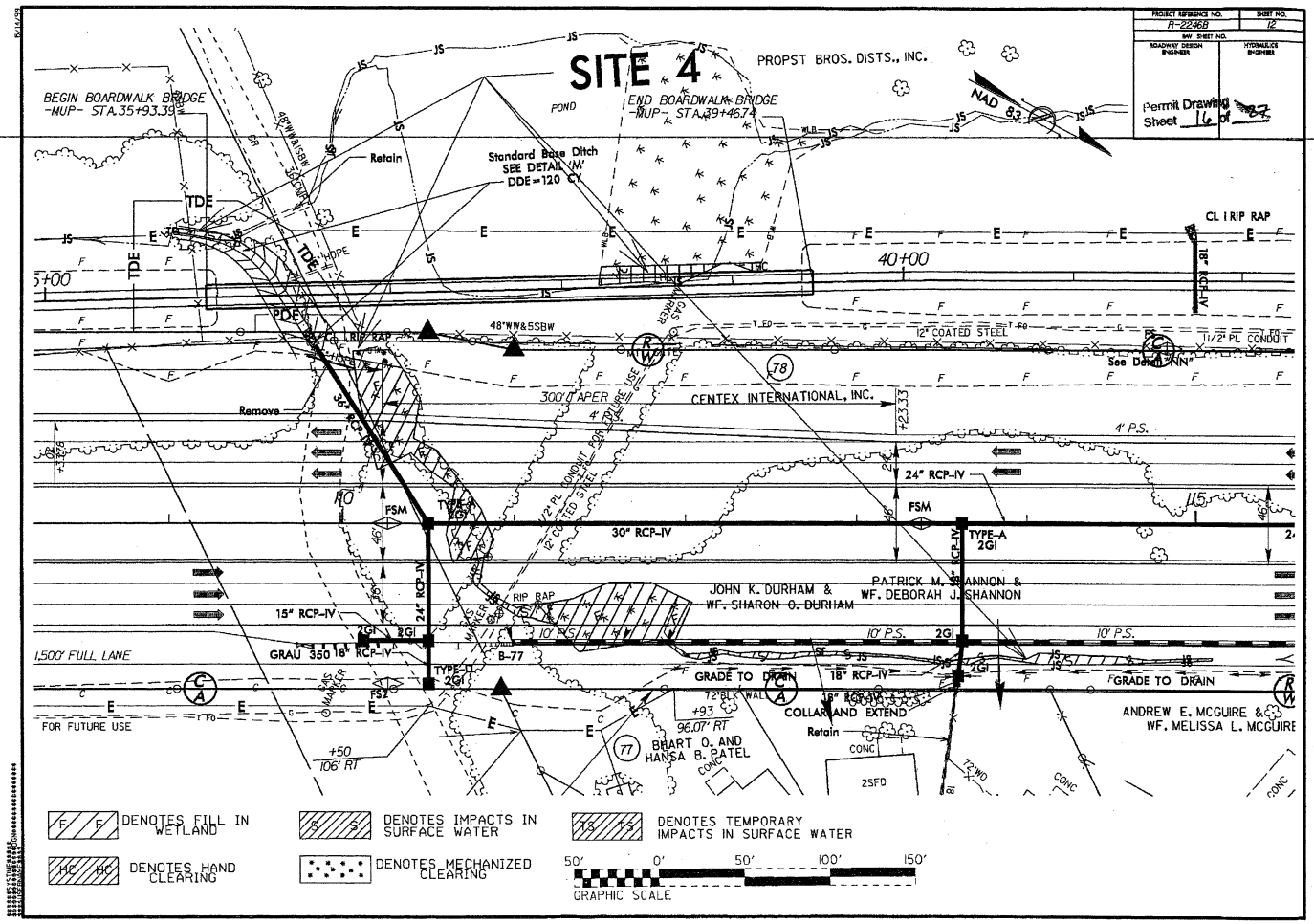
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

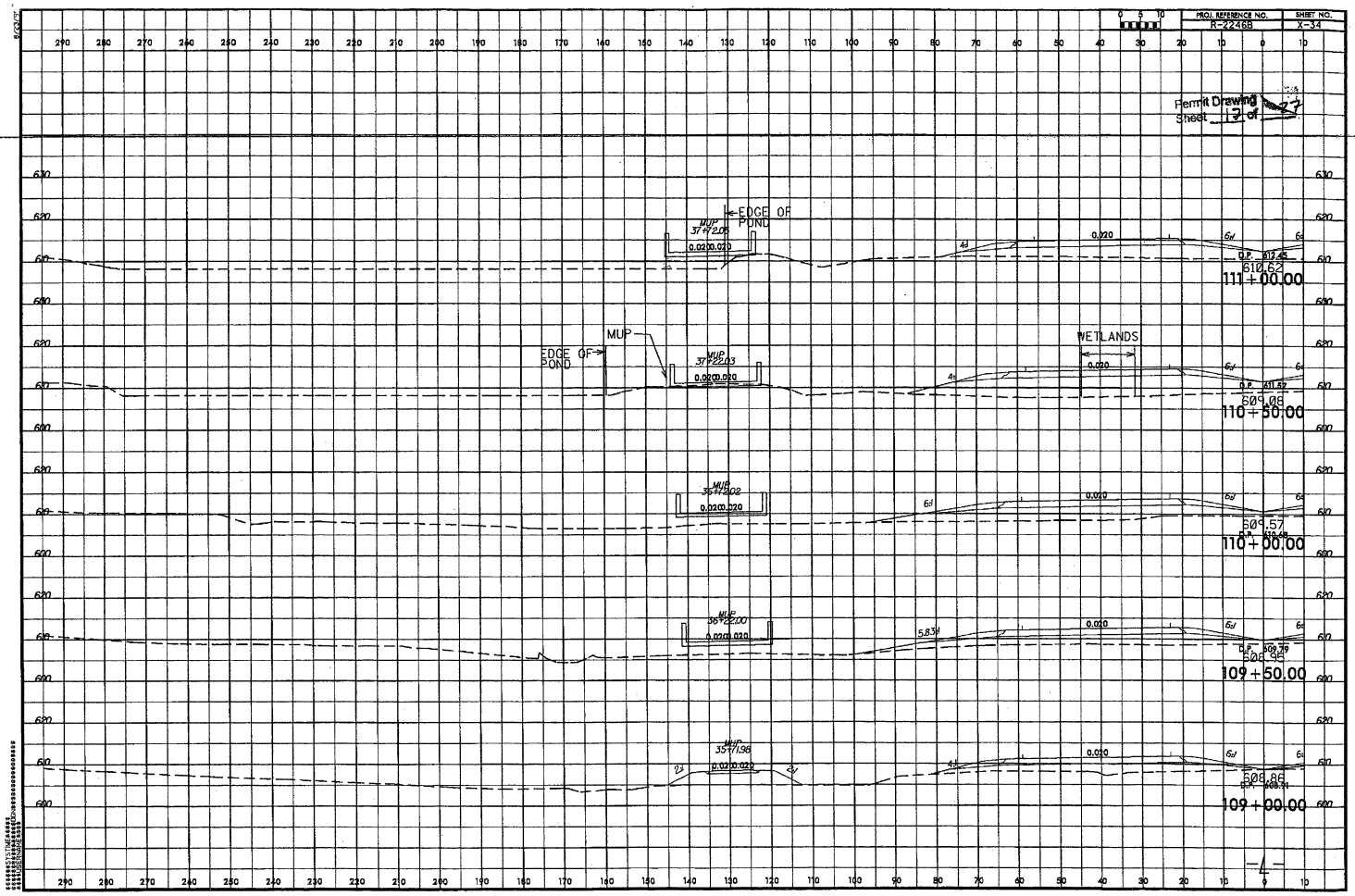
FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I

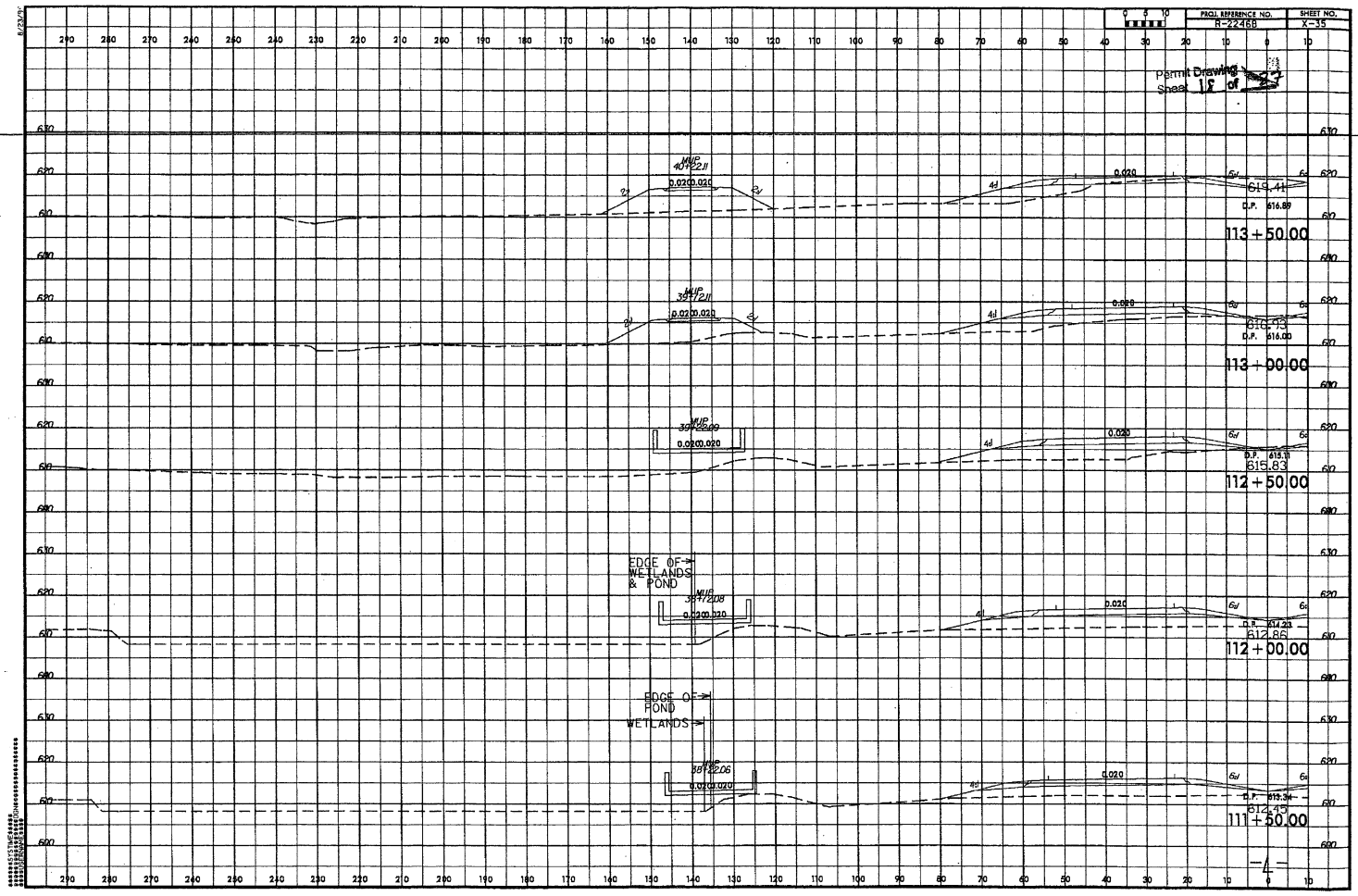
FOR PROFILE OF -L- SEE SHEETS 24 & 25

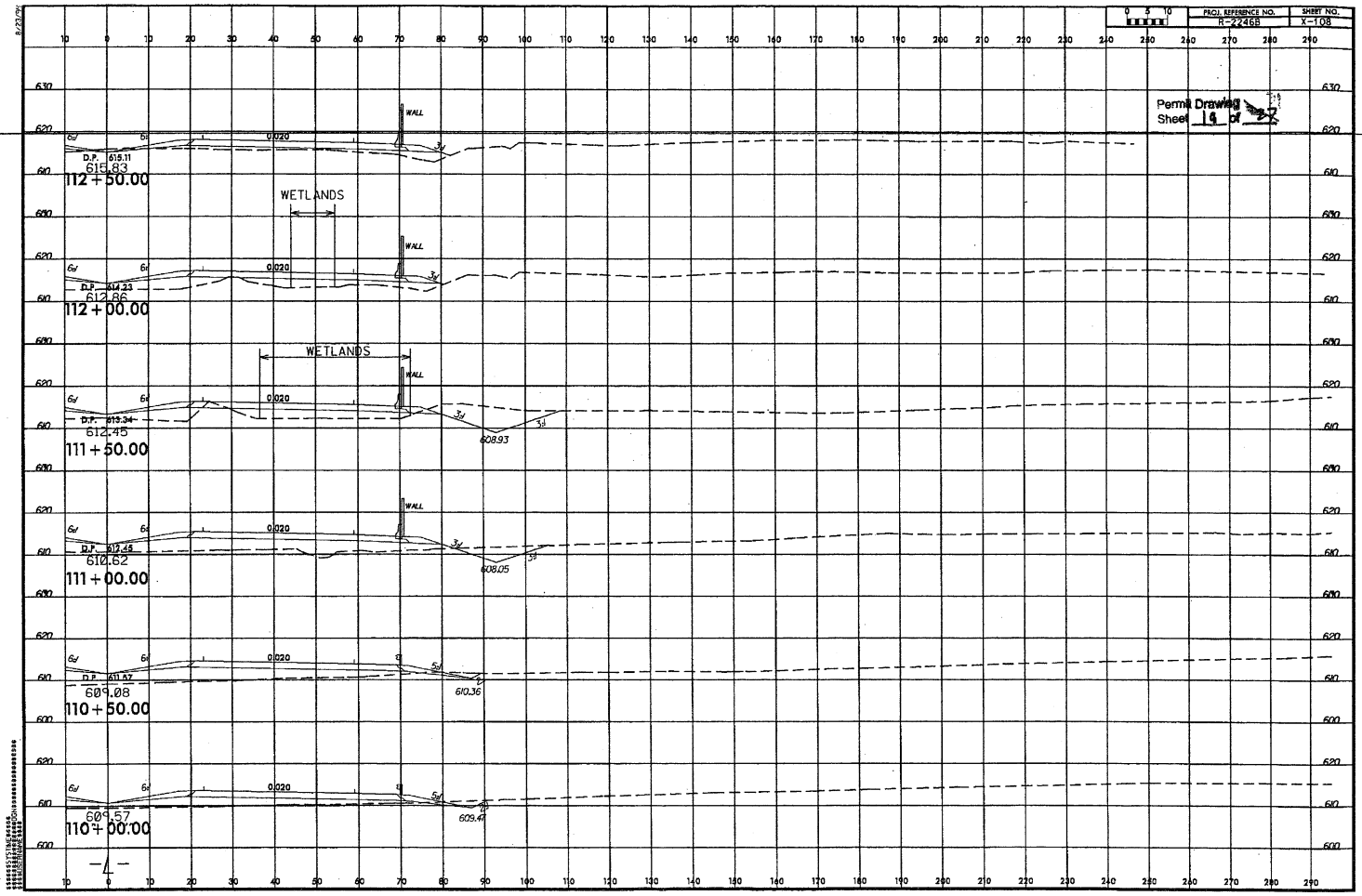
Permit Drawing Sheet 15 of 22




PROJECT REFERENCE NO.
R-2246B
SHEET NO.
12
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Permit Drawing
Sheet 16 of 87
SITE 4
PROPST BROS. DISTS., INC.
NAD 83
BEGIN BOARDWALK BRIDGE -MUP- STA.35+93.39
END BOARDWALK BRIDGE -MUP- STA.39+46.74
POND
Retain
Standard Base Ditch SEE DETAIL 'M' DDE=120 CY
TDE
PDE
CL I RIP RAP
40+00
48"WW&SSBW
12" COATED STEEL
1 1/2" PL CONDUIT
See Detail "NN"
Remove
300' TAPER SEE DETAIL
CENTEX INTERNATIONAL, INC.
4' P.S.
24" RCP-IV
30" RCP-IV
FSM
TYPE-A 2GI
JOHN K. DURHAM & WF. SHARON O. DURHAM
PATRICK M. SHANNON & WF. DEBORAH J. SHANNON
15" RCP-IV
GRAU 350 18" RCP-IV
B-77
1,500' FULL LANE
GRADE TO DRAIN
18" RCP-IV
COLLAR AND EXTEND
Retain
ANDREW E. MCGUIRE & WF. MELISSA L. MCGUIRE
FOR FUTURE USE
BHART O. AND HANSA B. PATEL
96.07' RT
106' RT
2SFD
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES HAND CLEARING
DENOTES MECHANIZED CLEARING
50' 0' 50' 100' 150'
GRAPHIC SCALE


PROJ. REFERENCE NO.
R-2246B
SHEET NO.
X-34
Permit Drawing
Sheet 12 of 27
EDGE OF POND
MUP
EDGE OF POND
WETLANDS
610.63
111+00.00
609.08
110+50.00
609.57
110+00.00
608.79
109+50.00
608.86
109+00.00
-4-


PROJ. REFERENCE NO.
R-2246B
SHEET NO.
X-35
Permit Drawing
Sheet 15 of 23
MUP 40+22.11
0.020 0.020
615.41
D.P. 616.89
113+50.00
MUP 39+22.11
0.020 0.020
616.93
D.P. 616.00
113+00.00
MUP 39+22.09
0.020 0.020
615.83
D.P. 615.11
112+50.00
EDGE OF WETLANDS & POND
MUP 39+22.08
0.020 0.020
612.86
D.P. 614.23
112+00.00
EDGE OF POND WETLANDS
MUP 39+22.06
0.020 0.020
612.45
D.P. 613.34
111+50.00
-L-

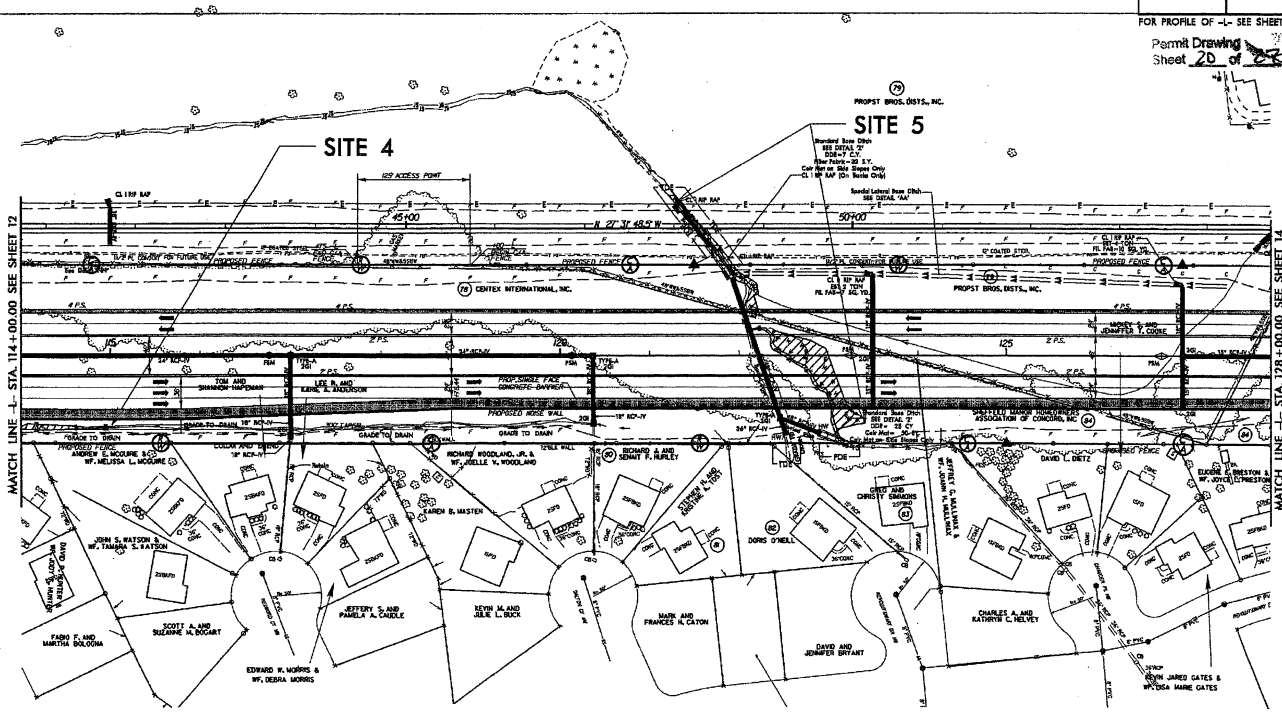

PROJ. REFERENCE NO.
R-2246B
SHEET NO.
X-108
Permit Drawing
Sheet 16 of 27
WALL
WETLANDS
D.P. 615.11
615.83
112 + 50.00
D.P. 614.23
612.86
112 + 00.00
D.P. 613.34
612.45
608.93
111 + 50.00
D.P. 612.45
610.62
608.05
111 + 00.00
D.P. 611.57
609.08
610.36
110 + 50.00
609.57
609.47
110 + 00.00
0.020

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -L- SEE SHEET 26

Permit Drawing
Sheet 2D of 2E

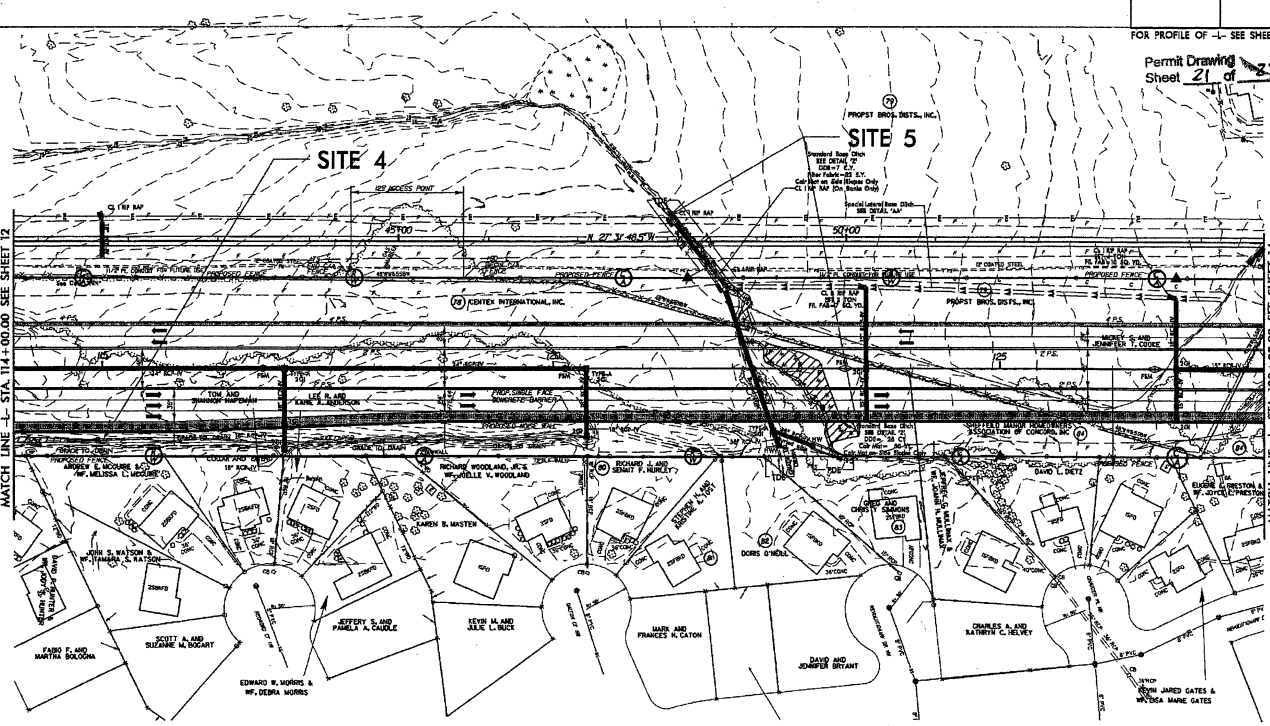


PROJECT REFERENCE NO.	SHEET NO.
R-2248B	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

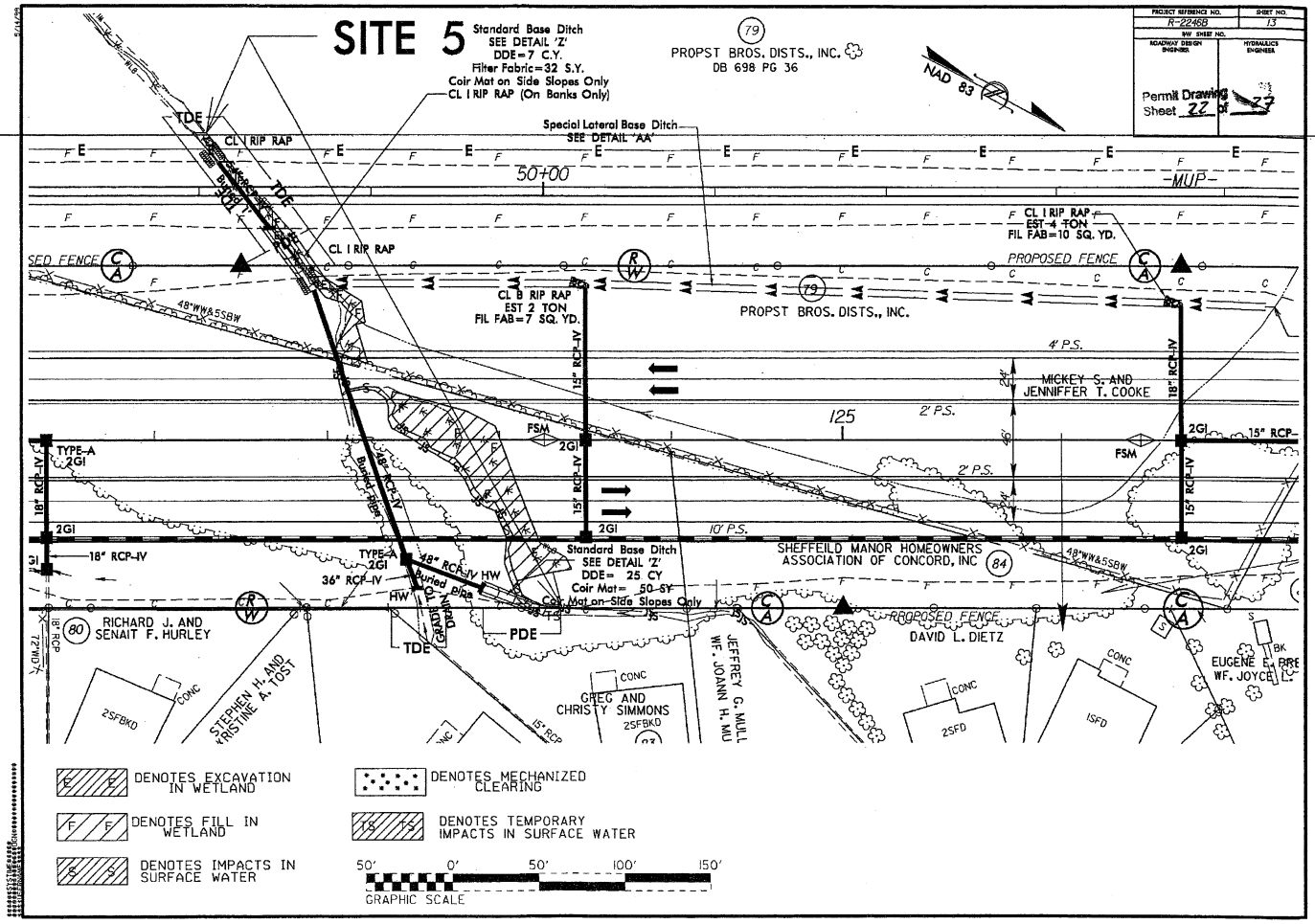
FOR PROFILE OF -L- SEE SHEET 25

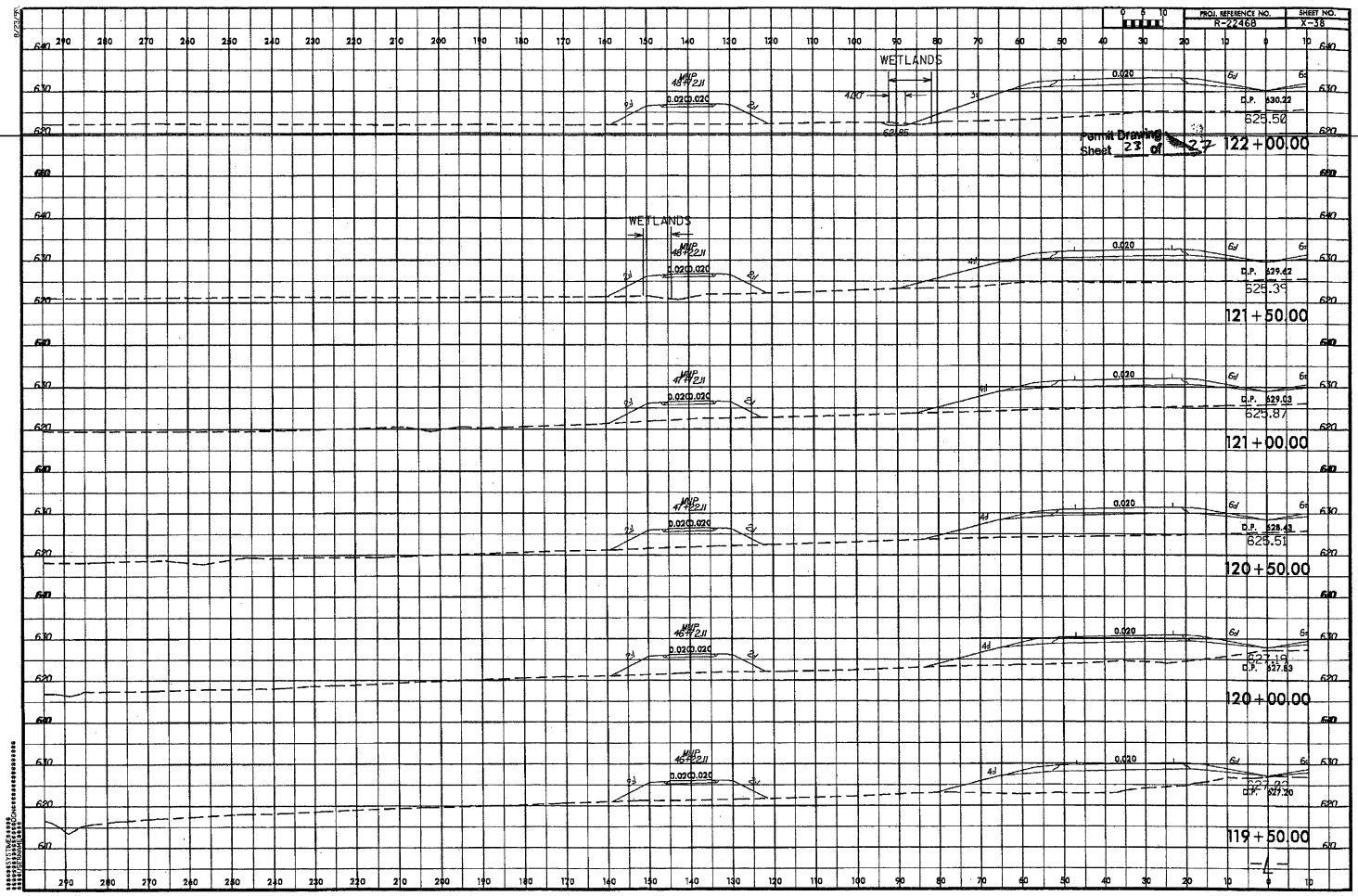
Permit Drawing
Sheet 21 of 27



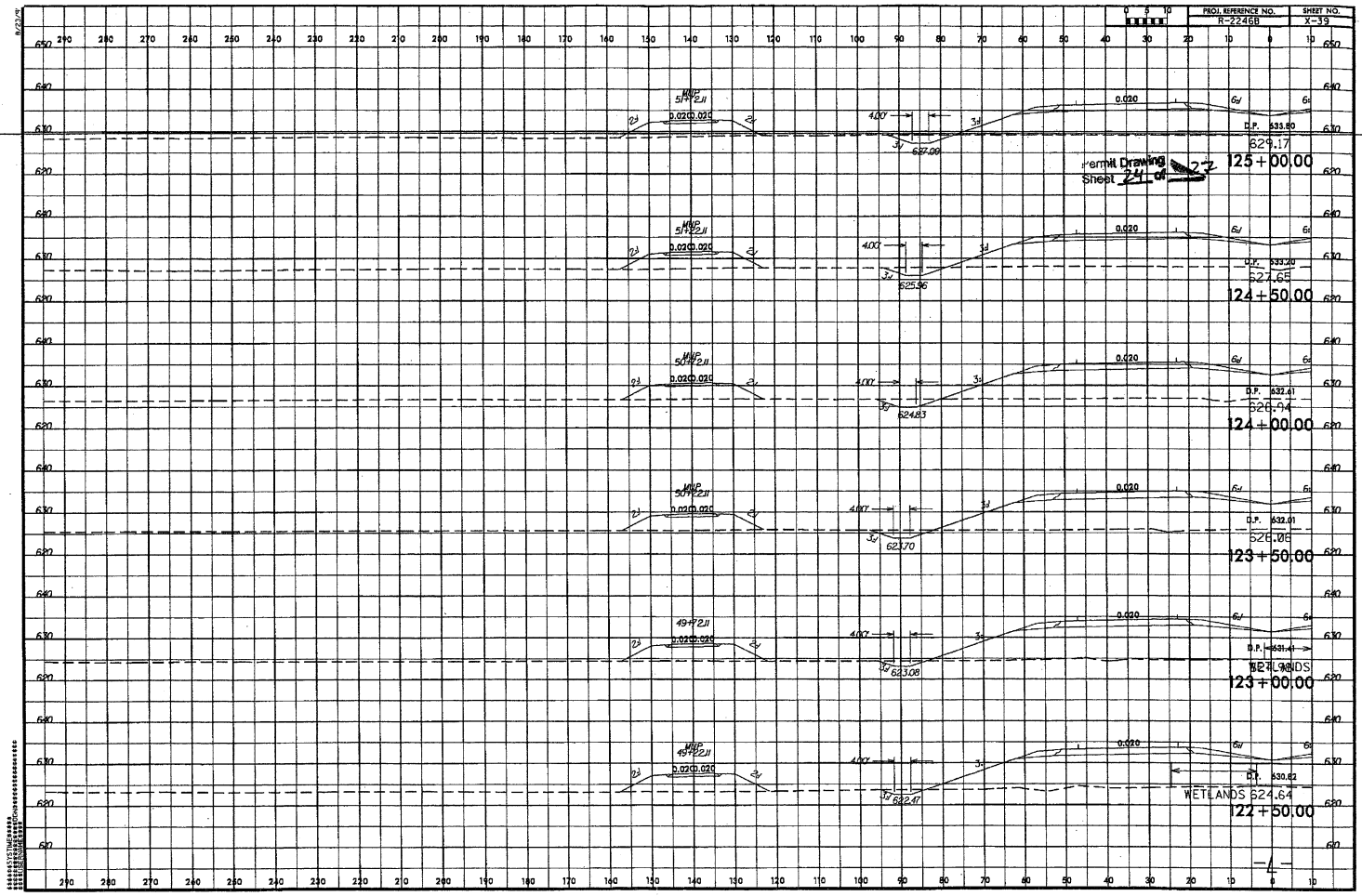
REVISIONS

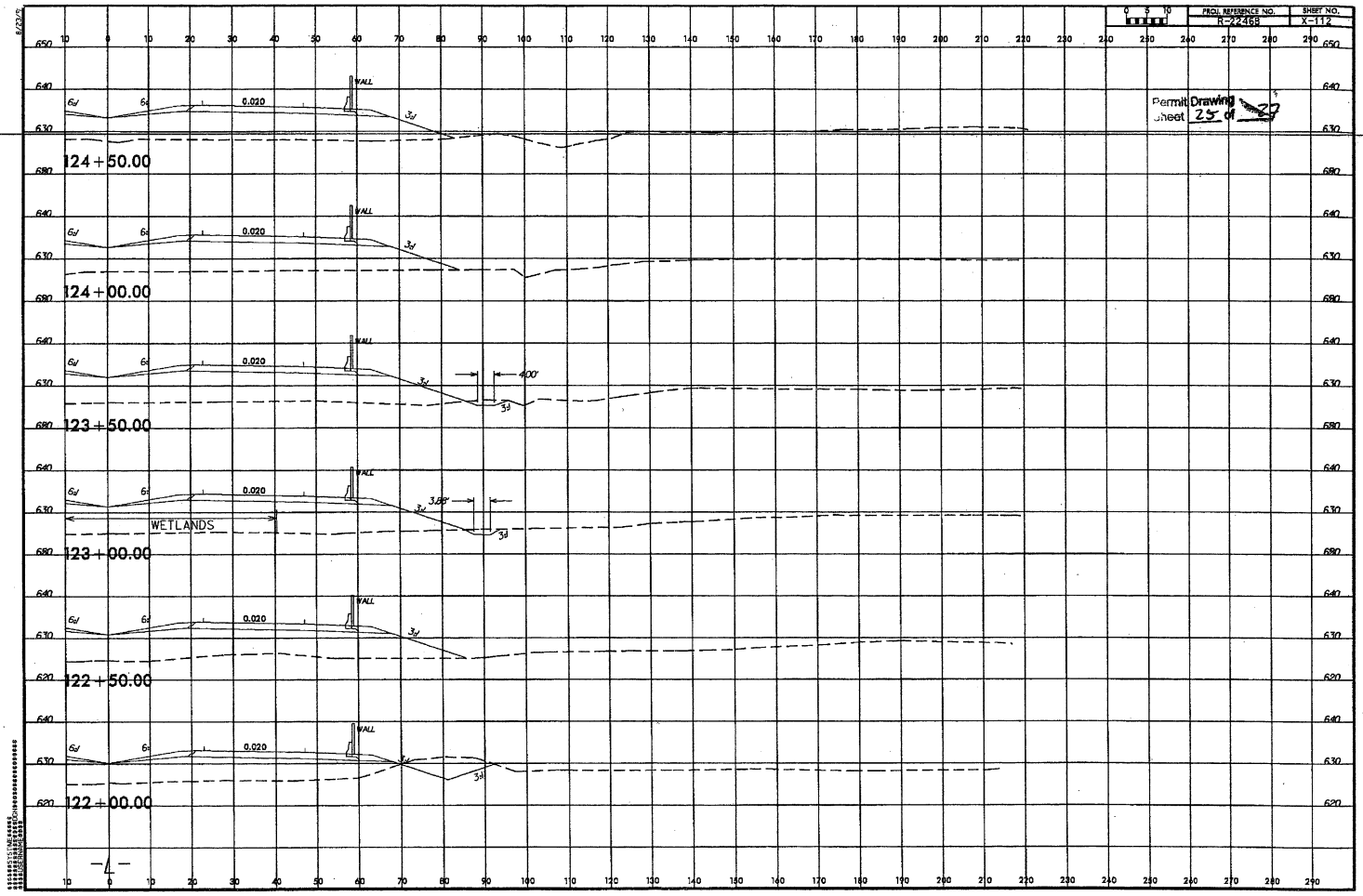
8/27/99


SITE 5
Standard Base Ditch
SEE DETAIL 'Z'
DDE=7 C.Y.
Filter Fabric=32 S.Y.
Coir Mat on Side Slopes Only
CL I RIP RAP (On Banks Only)
PROPST BROS. DISTS., INC.
DB 698 PG 36
NAD 83
PROJECT REFERENCE NO.
R-2246B
SHEET NO.
13
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Permit Drawing
Sheet 22 of 23
Special Lateral Base Ditch
SEE DETAIL "AA"
TDE
CL I RIP RAP
50+00
-MUP-
CL I RIP RAP
EST 4 TON
FIL FAB=10 SQ. YD.
SED FENCE
PROPOSED FENCE
48"WW&SSBW
CL B RIP RAP
EST 2 TON
FIL FAB=7 SQ. YD.
PROPST BROS. DISTS., INC.
4' P.S.
MICKEY S. AND
JENNIFFER T. COOKE
125
2' P.S.
FSM
2GI
15" RCP
TYPE-A
2GI
18" RCP-IV
15" RCP-IV
10' P.S.
18" RCP-IV
36" RCP-IV
48" RCP-IV
HW
Buried Pipe
Standard Base Ditch
SEE DETAIL 'Z'
DDE= 25 CY
Coir Mat= 50-SY
Coir Mat on Side Slopes Only
SHEFFEILD MANOR HOMEOWNERS
ASSOCIATION OF CONCORD, INC
RICHARD J. AND
SENAIT F. HURLEY
PDE
DAVID L. DIETZ
STEPHEN H. AND
KRISTINE A. TOST
GREG AND
CHRISTY SIMMONS
JEFFREY G. MULL
WF. JOANN H. MU
EUGENE E. BRE
WF. JOYCE
CONC
2SFBKD
2SFD
1SFD
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
50' 0' 50' 100' 150'
GRAPHIC SCALE



Permit Drawing
Sheet 23 of 27


PROJ. REFERENCE NO.
R-2246B
SHEET NO.
X-39
0 5 10
51+72.11
0.020 0.020
0.020
4.00'
3:1
2:1
6:1
627.09
D.P. 633.80
629.17
125+00.00
Permit Drawing
Sheet 24 of 22
50+72.11
625.96
D.P. 633.20
627.65
124+50.00
624.83
D.P. 632.41
626.94
124+00.00
623.70
D.P. 632.01
626.06
123+50.00
49+72.11
623.08
D.P. 631.41
WETLANDS
624.96
123+00.00
622.47
D.P. 630.82
WETLANDS 624.64
122+50.00
-L-


PROJ. REFERENCE NO.
R-2246B
SHEET NO.
X-112
Permit Drawing
Sheet 25 of 27
124+50.00
124+00.00
123+50.00
123+00.00
122+50.00
122+00.00
WALL
0.020
6:1
3:1
4.00'
3.88'
WETLANDS
-L-

PROPERTY OWNERS

NAMES AND ADDRESSES

SITE	PARCEL NO.	NAMES	ADDRESSES
1 & 2	15	NC DOT	
1	16	TOWER PLACE, LLC	1610 WAYBRIDGE LANE CHARLOTTE NC 28220
1 & 2	17	CASCADS, LLC	WAYBRIDGE LANE CHARLOTTE NC 28220
2	25	CONCORD POINTE LIMITED PARTNERSHIP	7800 EAST KAMPER ROAD CINCINNATI OH 45249
3	74	PHILLIP MORRIS USA, INC	PO BOX 26603 RICHMOND VA 23261
3 & 4	75	CLARENCE LITTLE	2555 CONCORD FARMS RD CONCORD NC 28027
4	76A	CABARRUS COUNTY	P.O. BOX 707 CONCORD NC 28026
4 & 5	78	CENTEX INTERNATIONAL	PO BOX 11231 CHARLOTTE NC 28220
4 & 5	79	PROPST BROS. DISTS. INC.	829 DAVIDSON DR CONCORD NC 28027
5	83	GREG & CHRISTY SIMMONS	1563 REVOLUTIONARY DR CONCORD NC 28027

NCDOT

DIVISION OF HIGHWAYS
CABARRUS COUNTY
PROJECT: 34408.1.1 (R-2246B)
CONCORD-KANNAPOLIS
GEORGE LILES PARKWAY FROM
SR 1304 TO SR 1431

SHEET OF 06/29/12

Permit Drawing
Sheet 27 of 77

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	29+40 -L-	Fill	0.04									
1	29+77 -L-	2@13x10 RCBC						0.03		156		
1	29+80 -L-	Stream Fill/						0.03	<.01	179	30	
		Channel Excavatiion										
2	35+30 -L-	Bank Stabilization						0.01		38		
2	28+20 -EL-	Remove Roadway							<.01		20	*54
3	98+39 -L-	2@13x9 RCBC						0.09		266		
3	98+39 -L-	Channel Excavation						0.03	0.01	113	24	
4	109+05 to 112+00-L-	Fill/36" RCP	0.12			<.01		0.03		384		
4	110+25 to 112+85-L-	MUP Boardwalk					0.02					
4	109+17-L-	Channel Excavation						<.01	<.01	32	5	
5	122+00 to 123+00-L-	Fill/48" RCP	0.08		<.01	<.01		0.01	<.01	209	13	
5	121+52-L-	MUP Fill/54" RCP	0.01		<.01	<.01						
TOTALS:			0.25		0.01	0.01	0.02	0.23	0.03	1377	92	*54

* Removal of existing pipe and roadway.

Site 4: 26 sets of 8"x8" MUP Boardwalk Piles = 12 SF of sw impacts (Pond)
Site 4: 12 sets of 8"x8" MUP Boardwalk Piles = 6 SF of wetland impacts

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

CABARRUS COUNTY
WBS - 34408.1.1 (R-2246B)

ATN Revised 3/31/05

SHEET 10/10/2012

Permit Drawing
Sheet 27 of 27

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality
Charles Wakild, P E
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

January 3, 2012

Dr Greg Thorpe, PhD , Manager
Project Development and Environmental Analysis
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina, 27699-1598

JAN 3 1 2013

Subject 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS for Proposed improvements to George Liles Parkway in Cabarrus County, TIP R-2246 B, NCDWQ Project No 12-0969

Dear Dr Thorpe

Attached hereto is a copy of Certification No 3947 issued to The North Carolina Department of Transportation (NCDOT) dated January 3, 2012 .

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

Sincerely,

Charles Wakild
Director

Attachments

cc Liz Hair, US Army Corps of Engineers, Asheville Field Office (electronic copy only)
Chris Militscher, Environmental Protection Agency (electronic copy only)
Marella Buncick, NC Wildlife Resources Commission (electronic copy only)
Jason Elliott, NCDOT, Roadside Environmental Unit
Kelly Williams, Ecosystem Enhancement Program
Alan Johnson, NCDWQ, MRO Regional Office
File Copy

Transportation and Permitting Unit
1650 Mail Service Center Raleigh North Carolina 27699 1617
Location 512 N Salisbury St Raleigh North Carolina 27604
Phone 919-807-6300 \ FAX 919-807-6488
Internet www.ncwaterquality.org

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

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (NCDWQ) Regulations in 15 NCAC 2H .0500 and This certification authorizes the NCDOT to impact 0.27 acres of jurisdictional wetlands, 0.01 acre of open water, 1,377 linear feet of jurisdictional streams in Cabarrus County. The project shall be constructed pursuant to the application dated October 18, 2012. The authorized impacts are as described below:

Stream Impacts in the Yadkin-Pee Dee River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (acre)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1			335	<0.01	335	335
2			38	<0.01	38	38
3			379	<0.01	339	339
4			416		416	416
5			209	<0.01	209	209
Total			**1377**	**0.03**	**1377**	**1377**

Total Stream Impact for Project: 1377 linear feet

Wetland Impacts in the Yadkin-Pee Dee River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
1 (riparian)	0.04						0.04
4 (riparian)	0.12			0.01			0.13
5 (riparian)	0.09		0.02	0.02			0.13
Total	**0.25**		**0.02**	**0.03**			**0.30**

Total Wetland Impact for Project: 0.30 acres.

Open Water Impacts in the Yadkin-Pee Dee River Basin

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
4	<< 0.01		<< 0.01
Total	**<< 0.01**		**<< 0.01**

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

This approval is only valid for the purpose and design that you submitted in your application dated October 18, 2012 Should your project change, you are required to notify the NCDWQ and submit a new application If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed the impacts outlined above, additional compensatory mitigation may be required as described in 15A NCAC 2H 0506 (h) (6) and (7) For this approval to remain valid, you are required to comply with all the conditions listed below In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit

Condition(s) of Certification.

1 Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of the above structures The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWQ If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required

2 Pipes and culverts used exclusively to maintain equilibrium in wetlands, where aquatic life passage is not a concern, shall not be buried These pipes shall be installed at natural ground elevation

3 The dimension, pattern and profile of the stream above and below the crossing shall not be modified Disturbed floodplains and streams shall be restored to natural geomorphic conditions

4 No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification

5 The use of rip-rap above the Normal High Water Mark shall be minimized Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage

6 Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction

7 Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited

8 All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3 1, unless otherwise authorized by this certification In addition, all diversion ditches and fill slopes (> 3 1) shall be matted to prevent erosion and loss of sediment to Waters of the State

9 All portions of the proposed project draining to 303(d) listed watersheds that are impaired due to turbidity shall be designed, constructed, and operated with sediment and erosion control measures that meet Design Standards in Sensitive Watersheds [15A NCAC 4B 0124] However, due to the size of the project, NC DOT shall not be required to meet 15A NCAC 4B 0124(a) regarding the maximum amount of uncovered acres

All portions of the proposed project draining to 303(d) listed watersheds that are impaired due to biological criteria exceedances shall not discharge stormwater directly to surface waters Stormwater shall be treated using appropriate best management practices (e g , vegetated conveyances, constructed wetlands, detention ponds, etc) prior to discharging to surface waters

10 Compensatory mitigation for impacts to 1377 linear feet of streams at a replacement ratio of 1 1 is required by NCDWQ Fifty-four (54) linear feet of compensatory mitigation for impacts to jurisdictional streams shall be provided by day lighting a stream at site #2 pursuant to the mitigation plan submitted in the application The remaining mitigation requirements are to be conducted through the North Carolina Ecosystem Enhancement Program (EEP), and EEP has agreed to implement the mitigation for the project EEP has indicated in a letter dated October 11, 2012 that they will assume responsibility for 1,339 linear of stream and 0 27 acres of wetland impacts satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the EEP Mitigation Banking Instrument signed July 28, 2010 and in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004

11 Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards

- The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*
- The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual* The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project

- For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*
- The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act

12 If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills

13 All work in or adjacent to stream waters shall be conducted in a dry work area Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water

14 During the construction of the project, no staging of equipment (or use of equipment) of any kind is permitted in waters of the U S , or protected riparian buffers In addition, all mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials

15 The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval

16 The Permittee shall report any violations of this certification to the Division of Water Quality within 24 hours of discovery

17 A copy of this Water Quality Certification shall be maintained on the construction site at all times In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager

18 Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer (or the authorized personnel) shall complete and return the enclosed "Certification of Completion Form" to notify NCDWQ when all work included in the 401 Certification has been completed

19 The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law If NCDWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, NCDWQ may reevaluate and modify this certification

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties This Certification shall become null and void unless the above

conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit This Certification shall expire upon the expiration of the 404 or CAMA permit

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

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

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone (919)431-3000, Facsimile (919)431-3100

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

Mr William Cary, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center

This the 3rd day of January 2012

DIVISION OF WATER QUALITY

Charles Wakild
Director

WQC No 3947

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality
Charles Wakild, P.E
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

January 3, 2012

Dr. Greg Thorpe, PhD., Manager
Project Development and Environmental Analysis
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina, 27699-1598

Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS for Proposed improvements to George Liles Parkway in Cabarrus County, TIP R-2246 B, NCDWQ Project No. 12-0969.

Dear Dr. Thorpe:

Attached hereto is a copy of Certification No. 3947 issued to The North Carolina Department of Transportation (NCDOT) dated January 3, 2012.

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

Sincerely,

Charles Wakild
Director

Attachments

cc: Liz Hair, US Army Corps of Engineers, Asheville Field Office (electronic copy only)
Chris Militscher, Environmental Protection Agency (electronic copy only)
Marella Buncick, NC Wildlife Resources Commission (electronic copy only)
Jason Elliott, NCDOT, Roadside Environmental Unit
Kelly Williams, Ecosystem Enhancement Program
Alan Johnson, NCDWQ, MRO Regional Office
File Copy

Transportation and Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6488
Internet: www.ncwaterquality.org

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

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (NCDWQ) Regulations in 15 NCAC 2H .0500 and This certification authorizes the NCDOT to impact 0.27 acres of jurisdictional wetlands, 0.01 acre of open water, 1,377 linear feet of jurisdictional streams in Cabarrus County. The project shall be constructed pursuant to the application dated October 18, 2012. The authorized impacts are as described below:

Stream Impacts in the Yadkin-Pee Dee River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (acre)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1			335	<0.01	335	335
2			38	<0.01	38	38
3			379	<0.01	339	339
4			416		416	416
5			209	<0.01	209	209
Total			**1377**	**0.03**	**1377**	**1377**

Total Stream Impact for Project: 1377 linear feet

Wetland Impacts in the Yadkin-Pee Dee River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
1 (riparian)	0.04						0.04
4 (riparian)	0.12			0.01			0.13
5 (riparian)	0.09		0.02	0.02			0.13
Total	**0.25**		**0.02**	**0.03**			**0.30**

Total Wetland Impact for Project: 0.30 acres.

Open Water Impacts in the Yadkin-Pee Dee River Basin

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
4	<< 0.01		<< 0.01
Total	**<< 0.01**		**<< 0.01**

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

This approval is only valid for the purpose and design that you submitted in your application dated October 18, 2012. Should your project change, you are required to notify the NCDWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed the impacts outlined above, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Condition(s) of Certification:

1. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.

2. Pipes and culverts used exclusively to maintain equilibrium in wetlands, where aquatic life passage is not a concern, shall not be buried. These pipes shall be installed at natural ground elevation.

3. The dimension, pattern and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions.

4. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification.
5. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage.

6. Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction.

7. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.

8. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification. In addition, all diversion ditches and fill slopes (> 3:1) shall be matted to prevent erosion and loss of sediment to Waters of the State.

9. All portions of the proposed project draining to 303(d) listed watersheds that are impaired due to turbidity shall be designed, constructed, and operated with sediment and erosion control measures that meet Design Standards in Sensitive Watersheds [15A NCAC 4B .0124]. However, due to the size of the project, NC DOT shall not be required to meet 15A NCAC 4B .0124(a) regarding the maximum amount of uncovered acres.

   All portions of the proposed project draining to 303(d) listed watersheds that are impaired due to biological criteria exceedances shall not discharge stormwater directly to surface waters. Stormwater shall be treated using appropriate best management practices (e.g., vegetated conveyances, constructed wetlands, detention ponds, etc.) prior to discharging to surface waters.

10. Compensatory mitigation for impacts to 1377 linear feet of streams at a replacement ratio of 1:1 is required by NCDWQ. Fifty-four (54) linear feet of compensatory mitigation for impacts to jurisdictional streams shall be provided by day lighting a stream at site #2 pursuant to the mitigation plan submitted in the application. The remaining mitigation requirements are to be conducted through the North Carolina Ecosystem Enhancement Program (EEP), and EEP has agreed to implement the mitigation for the project. EEP has indicated in a letter dated October 11, 2012 that they will assume responsibility for 1,339 linear of stream and 0.27 acres of wetland impacts satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the EEP Mitigation Banking Instrument signed July 28, 2010 and in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004.

11. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:

    - The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
    - The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.

- For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
- The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

12. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.

13. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water.

14. During the construction of the project, no staging of equipment (or use of equipment) of any kind is permitted in waters of the U.S., or protected riparian buffers. In addition, all mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.

15. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval.

16. The Permittee shall report any violations of this certification to the Division of Water Quality within 24 hours of discovery.

17. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.

18. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer (or the authorized personnel) shall complete and return the enclosed "Certification of Completion Form" to notify NCDWQ when all work included in the 401 Certification has been completed.

19. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If NCDWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, NCDWQ may reevaluate and modify this certification.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above

conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

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

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

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919)431-3000, Facsimile: (919)431-3100

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

Mr. William Cary, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center

This the 3rd day of January 2012

DIVISION OF WATER QUALITY

Charles Wakild
Director

WQC No.3947

North Carolina Department of Environment and Natural Resources
Division of Water Quality
Charles Wakild, P.E
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

NCDWQ Project No.: 12-0969 **County:** Cabarru s.

Applicant: NCDOT

Project Name: George Liles Parkway Extension, R2246B,

Date of Issuance of 401 Water Quality Certification: _____

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

Applicant's Certification

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

Signature: _____ Date: _____

Agent's Certification

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

Signature: _____ Date:_____

Engineer's Certification

_____ Partial _____ Final

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

Signature _____ Registration No. _____

Date _____

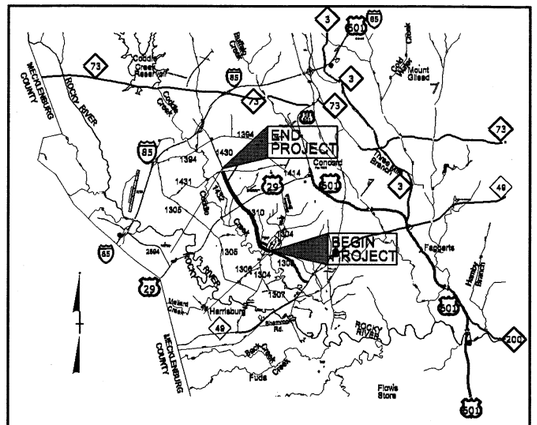
Transportation and Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6488
Internet: www.ncwaterquality.org

09/08/99

TIP PROJECT: R-2246B

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF CONCORD

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

LOCATION: GEORGE LILES PARKWAY FROM SOUTH OF SR 1304 (ROBERTA ROAD) TO SR 1431 (WEDDINGTON ROAD)

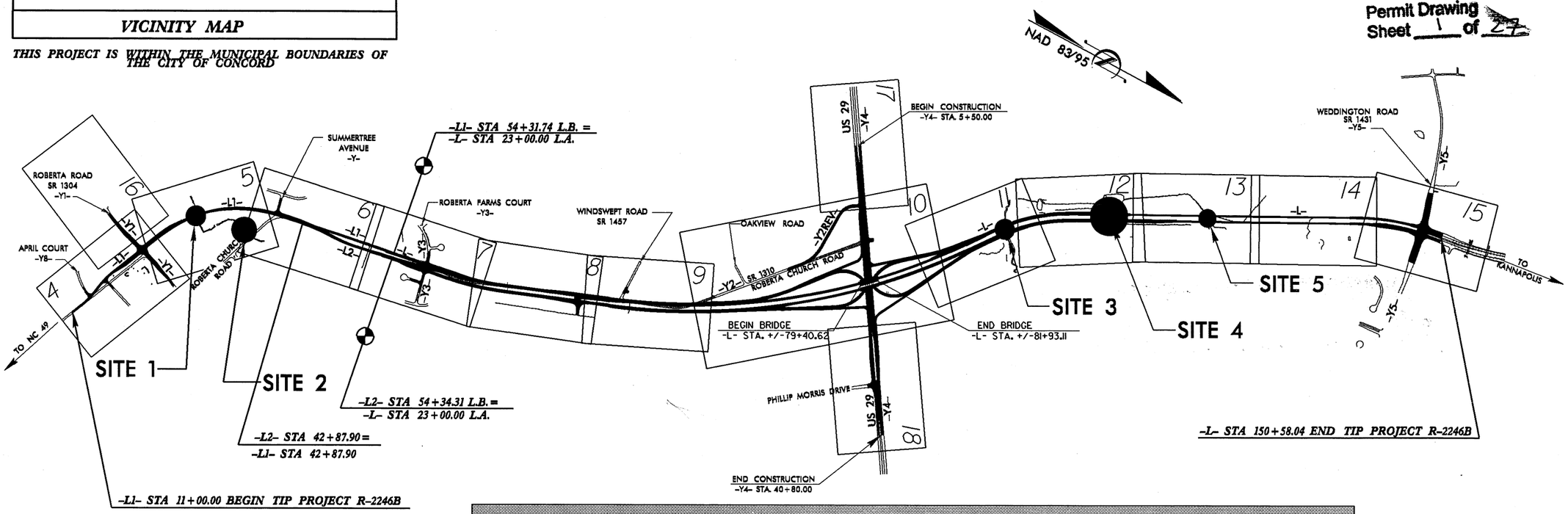
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, AND SIGNALS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2246B	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34408.1.1	STP-000S(46)	PE
34408.2.6	STP-000S(684)	R/W & UTIL

STATEWIDE TIER PROJECT

Permit Drawing Sheet 1 of 27



WETLAND AND SURFACE WATER IMPACTS PERMIT

NOTE: PART OF THIS PROJECT IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS AND THE OTHER PART IS A FULL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 22,852
ADT 2035 = 42,000
DHV = 55 %
D = 10 %
T = 5 % *
V = 60 MPH
* TTST 1% DUAL 4%

FUNCTIONAL CLASSIFICATION
URBAN ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2246B = 3.189 MILES

LENGTH STRUCTURE TIP PROJECT R-2246B = 0.048 MILES

TOTAL LENGTH TIP PROJECT R-2246B = 3.237 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 18, 2011

LETTING DATE:
APRIL 16, 2013

G.E. BREW, PE
PROJECT ENGINEER

I.T. YOUNIS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

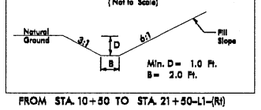
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-H
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 2 of 27

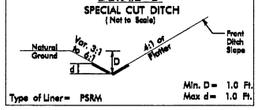
DRAINAGE DITCH DETAILS

DETAIL 'A'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 10+50 TO STA. 21+50-L1-(Rt)

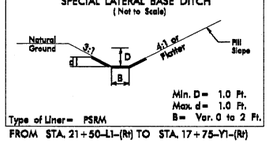
DETAIL 'B'
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 14+17.65 TO STA. 14+50-L1-(Lt)
FROM STA. 12+50 TO STA. 12+97.48-Y8-(Lt)
FROM STA. 14+50 TO STA. 16+50-Y5-(Rt)
FROM STA. 37+00 TO STA. 39+00-Y4-(Lt)

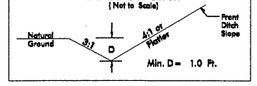
DETAIL 'C'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Type of Liner= PSRM

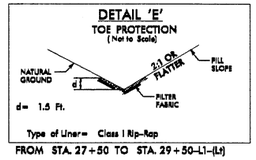
FROM STA. 21+50-L1-(Rt) TO STA. 17+75-Y1-(Rt)

DETAIL 'D'
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 12+18.55 TO STA. 15+00 -SPURB-(Lt)
FROM STA. 17+75 TO STA. 20+50 -Y1-(Lt)
FROM STA. 17+75 TO STA. 20+71.95 -Y1-(Rt)
FROM STA. 13+31.32 TO STA. 13+87.46 -Y1-(Lt)
FROM STA. 33+61.46 TO STA. 35+50 -L1-(Lt)
FROM STA. 23+00 TO STA. 24+00 -L-(Rt)
FROM STA. 50+00 TO STA. 54+31.74 -L1-(Rt)
FROM STA. 20+15 TO STA. 22+50 -Y5-(Rt)
FROM STA. 44+20 TO STA. 46+00 -L1-(Lt)
FROM STA. 40+00 TO STA. 43+90 -L1-(Lt)

DETAIL 'E'
TOE PROTECTION
(Not to Scale)

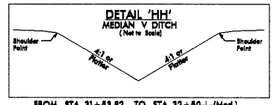


d= 1.5 Ft.

Type of Liner= Class I Rip-Rap

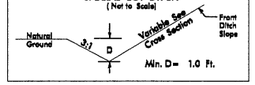
FROM STA. 27+50 TO STA. 29+50-L1-(Lt)

DETAIL 'HH'
MEDIAN V DITCH
(Not to Scale)



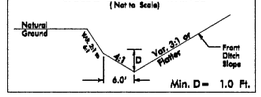
FROM STA. 31+53.82 TO STA. 32+50-L-(Med.)
FROM STA. 46+00 TO STA. 48+00-L1-(Med.)

DETAIL 'J'
SPECIAL CUT DITCH
(Not to Scale)



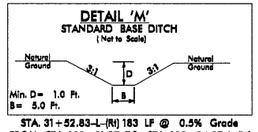
FROM STA. 37+50 TO STA. 50+00-L1-(Rt)

DETAIL 'L'
SPECIAL CUT DITCH wHINGE
(Not to Scale)



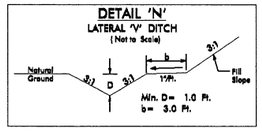
FROM STA. 40+50 TO STA. 41+30.96-L-(Rt)
FROM STA. 31+53.82 TO STA. 33+50-L-(Rt)
FROM STA. 29+50 TO STA. 31+53.82-L-(Rt)

DETAIL 'M'
STANDARD BASE DITCH
(Not to Scale)



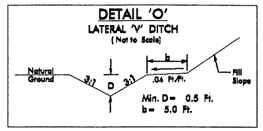
STA. 31+52.83-L-(Rt) 183 LF @ 0.5% Grade
FROM STA. 109+01.87 TO STA. 109+84.87-L-(Lt)
113 LF @ 0.50% grade

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



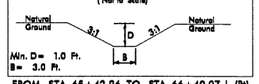
FROM STA. 24+00 TO STA. 26+50-L-(Rt)

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



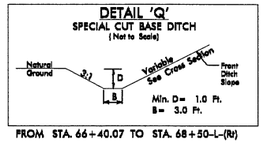
FROM STA. 51+00 TO STA. 51+86-L-(Lt)
FROM STA. 51+86 TO STA. 53+75-L-(Lt)

DETAIL 'P'
STANDARD BASE DITCH
(Not to Scale)



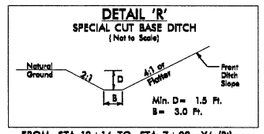
FROM STA. 65+42.96 TO STA. 66+40.07-L-(Rt)
172 LF @ .26% Grade

DETAIL 'Q'
SPECIAL CUT BASE DITCH
(Not to Scale)



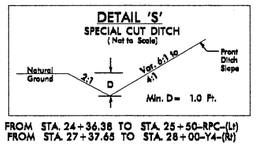
FROM STA. 66+40.07 TO STA. 68+50-L-(Rt)

DETAIL 'R'
SPECIAL CUT BASE DITCH
(Not to Scale)



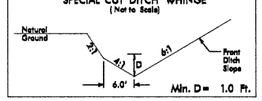
FROM STA. 12+14 TO STA. 7+00 -Y4-(Rt)
FROM STA. 25+03.94 TO STA. 27+37.65 -Y4-(Rt)

DETAIL 'S'
SPECIAL CUT DITCH
(Not to Scale)



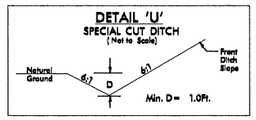
FROM STA. 24+36.38 TO STA. 25+50-RPC-(Lt)
FROM STA. 27+37.65 TO STA. 28+00-Y4-(Rt)

DETAIL 'T'
SPECIAL CUT DITCH wHINGE
(Not to Scale)



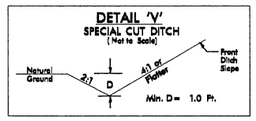
FROM STA. 23+50 TO STA. 24+50-RPS-(Rt)
FROM STA. 31+00 TO STA. 32+00-L-(Lt)

DETAIL 'U'
SPECIAL CUT DITCH
(Not to Scale)



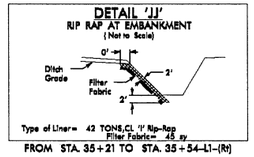
FROM STA. 24+50 TO STA. 23+50-RPD-(Rt)

DETAIL 'V'
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 37+00 TO STA. 37+66.53 -Y2Rev-(Rt)
FROM STA. 26+00 TO STA. 32+00 -Y2Rev-(Lt)
FROM STA. 26+50 TO STA. 31+50 -Y2Rev-(Rt)
FROM STA. 32+50 TO STA. 35+50 -Y2Rev-(Rt)
FROM STA. 13+00 TO STA. 18+00 -Y4-(Rt)
FROM STA. 5+50 TO STA. 6+95 -Y4-(Lt)
FROM STA. 11+50 TO STA. 6+95 -Y4-(Lt)
FROM STA. 19+16.94 TO STA. 17+21 -Y4-(Lt)
FROM STA. 13+87.13 TO STA. 13+52 -SPURA-(Rt)

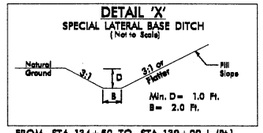
DETAIL 'JJ'
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 42 TONS,CL 'I' Rip-Rap
Filter Fabric= 45 sy

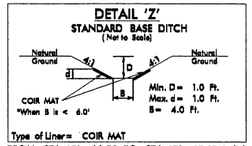
FROM STA. 35+21 TO STA. 35+54-L1-(Rt)

DETAIL 'X'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 134+50 TO STA. 139+00-L-(Rt.)
FROM STA. 139+00 TO STA. 140+00-L-(Rt.)

DETAIL 'Z'
STANDARD BASE DITCH
(Not to Scale)

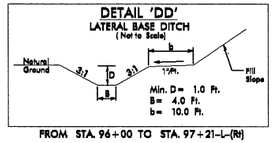


*When B is < 6.0'

Type of Liner= COIR MAT

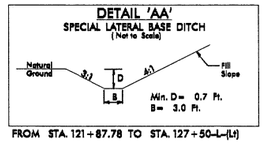
FROM STA. 121+66.58 TO STA. 121+92.13-L-(Lt)
44 LF @ 2.05% grade
FROM STA. 122+89.40 TO STA. 123+22.25-L-(Rt)
35 LF @ 4.14% grade

DETAIL 'DD'
LATERAL BASE DITCH
(Not to Scale)



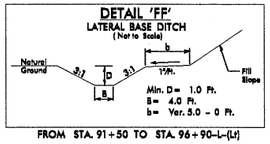
FROM STA. 96+00 TO STA. 97+21-L-(Rt)

DETAIL 'AA'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



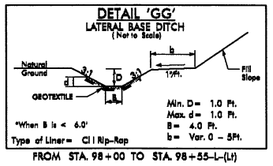
FROM STA. 121+87.78 TO STA. 127+50-L-(Lt)

DETAIL 'FF'
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 91+50 TO STA. 96+90-L-(Lt)

DETAIL 'GG'
LATERAL BASE DITCH
(Not to Scale)

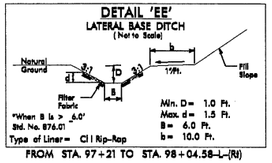


*When B is < 6.0'

Type of Liner= Cl I Rip-Rap

FROM STA. 98+00 TO STA. 98+55-L-(Lt)

DETAIL 'EE'
LATERAL BASE DITCH
(Not to Scale)

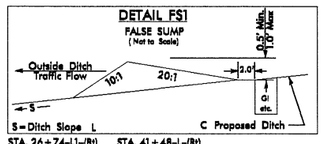


*When B is > 6.0'
Std. No. 876.01

Type of Liner= Cl I Rip-Rap

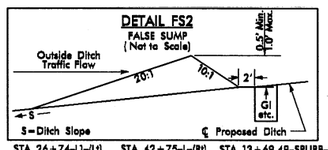
FROM STA. 97+21 TO STA. 98+04.58-L-(Rt)

DETAIL FS1
FALSE SUMP
(Not to Scale)



STA. 26+74-L1-(Rt)
STA. 27+74-L1-(Rt)
STA. 13+07-Y1-(Lt)
STA. 40+00-L1-(Lt)
STA. 47+74-L1-(Rt)
STA. 49+74-L1-(Rt)
STA. 41+48-L-(Rt)
STA. 140+76-L-(Lt)
STA. 146+74-L-(Rt)

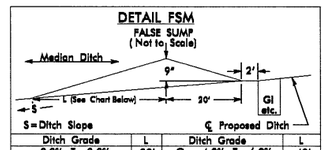
DETAIL FS2
FALSE SUMP
(Not to Scale)



STA. 26+74-L1-(Lt)
STA. 37+26-L1-(Rt)
STA. 40+26-L1-(Rt)
STA. 44+26-L1-(Rt)
STA. 24+26-L-(Rt)
STA. 42+75-L-(Rt)
STA. 6+67-Y4-(Rt)
STA. 100+05-L-(Rt)
STA. 104+26-L-(Rt)
STA. 107+26-L-(Rt)
STA. 110+26-L-(Rt)
STA. 13+69.49-SPURB-(Lt)
STA. 15+24-SPURB-(Lt)
STA. 140+76-L-(Rt)

STA. 31+74-Y2REV-(Rt)

DETAIL FSM
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

STA. 32+26-L-Med.
STA. 34+26-L-Med.
STA. 36+76-L-Med.
STA. 39+76-L-Med.
STA. 51+74-L-Med.
STA. 101+26-L-Med.
STA. 104+26-L-Med.
STA. 107+26-L-Med.
STA. 110+26-L-Med.
STA. 113+38-L-Med.
STA. 58+74-L-Med.
STA. 62+24-L-Med.
STA. 65+74-L-Med.
STA. 68+26-L-Med.
STA. 72+26-L-Med.
STA. 116+76-L-Med.
STA. 120+13-L-Med.
STA. 123+26-L-Med.
STA. 126+76-L-Med.
STA. 131+26-L-Med.
STA. 76+26-L-Med.
STA. 86+24-L-Med.
STA. 91+74-L-Med.
STA. 95+24-L-Med.
STA. 97+74-L-Med.
STA. 99+24-L-Med.
STA. 134+26-L-Med.
STA. 136+26-L-Med.
STA. 138+26-L-Med.
STA. 140+76-L-Med.

REVISIONS

8/17/99

$$$$SYSTIME$$$$
$$$$PDGN$$$$
$$$$FILENAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

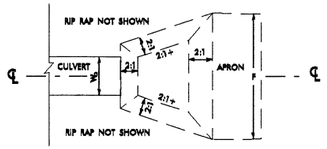
Permit Drawing
Sheet 3 of 27

SPECIAL DRAINAGE DETAILS

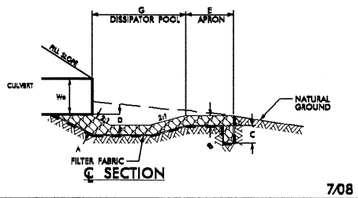
DETAIL 'II'
RIP-RAPPED ENERGY DISSIPATOR BASIN

DIM. (ft)	RIP RAP BASIN # 1	#	#
A	2.5'	#	#
B	1.7'	#	#
C	2.0'	#	#
D	1.5'	#	#
E	10.0'	#	#
F	33.0'	#	#
G	20.0'	#	#

ALL DIMENSIONS APPROXIMATE



PLAN



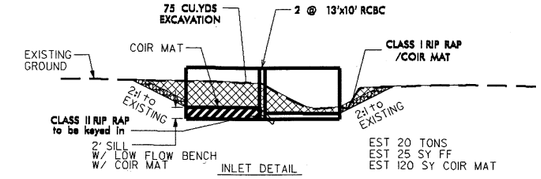
℄ SECTION

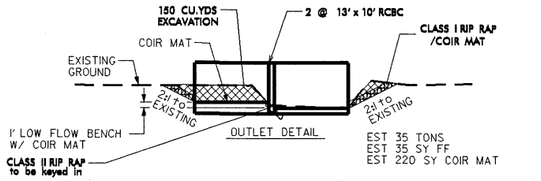
BASIN #	LOCATION (AT OUTLET)
1	Sta. 35+54-L1-(Rt) @
#	#
#	#

NOTE:
USE CLASS "I" RIP RAP FOR BASIN #1
APRON ELEVATION TO BE SET 0.5' ABOVE INVERT OF PIPE

7/08

DETAIL 'LL'
CHANNEL EXCAVATION FOR CULVERT

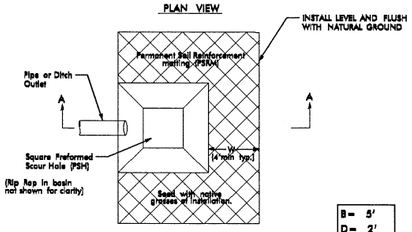




RCBC STA. 29+96-L1-

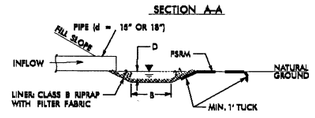
PREFORMED SCOUR HOLE
*NOT TO SCALE

PLAN VIEW



B= 5'
D= 2'
W= 4'

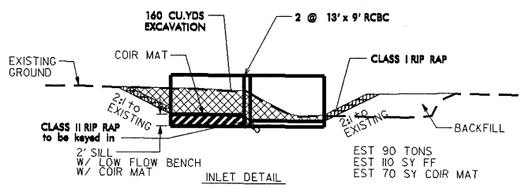
SECTION A-A

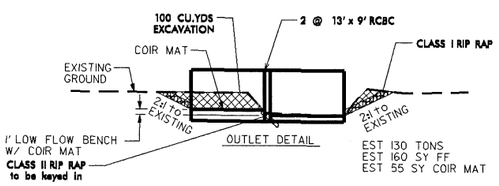


308

STA. 29+22-L1-(Rt) STA. 51+50-L-(Rt) STA. 62+00-L-(Rt) STA. 19+36-RPD-(Lt)
STA. 30+40-L1-(Rt) STA. 51+86-L-(Rt) STA. 17+05-RPC-(Rt)

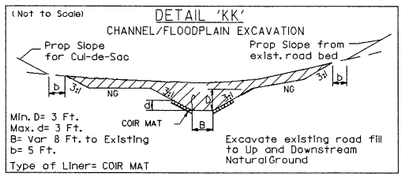
DETAIL 'MM'
CHANNEL EXCAVATION FOR CULVERT





RCBC STA. 98+39-L-

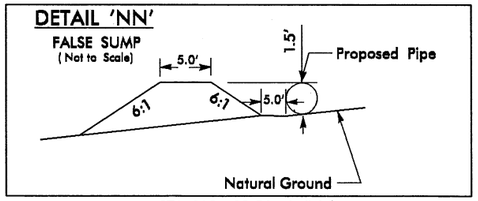
DETAIL 'KK'
(Not to Scale)
CHANNEL/FLOODPLAIN EXCAVATION



Min. D= 3 Ft.
Max. d= 3 Ft.
B= Var 8 Ft. to Existing
b= 5 Ft.
Type of Liner= COIR MAT

FROM STA. 28+12 TO STA. 28+30 -EL-
EST EXCAV = 630 CY
EST COIR MAT = 120 SY

DETAIL 'NN'
FALSE SUMP
(Not to Scale)



STA. 102+83.50 -L-(Lt)
STA. 114+83.50 -L-(Lt)
STA. 138+83.50-L-(Lt)

REVISIONS

8/17/99

$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$
$$$$$DGN$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 4 of 27

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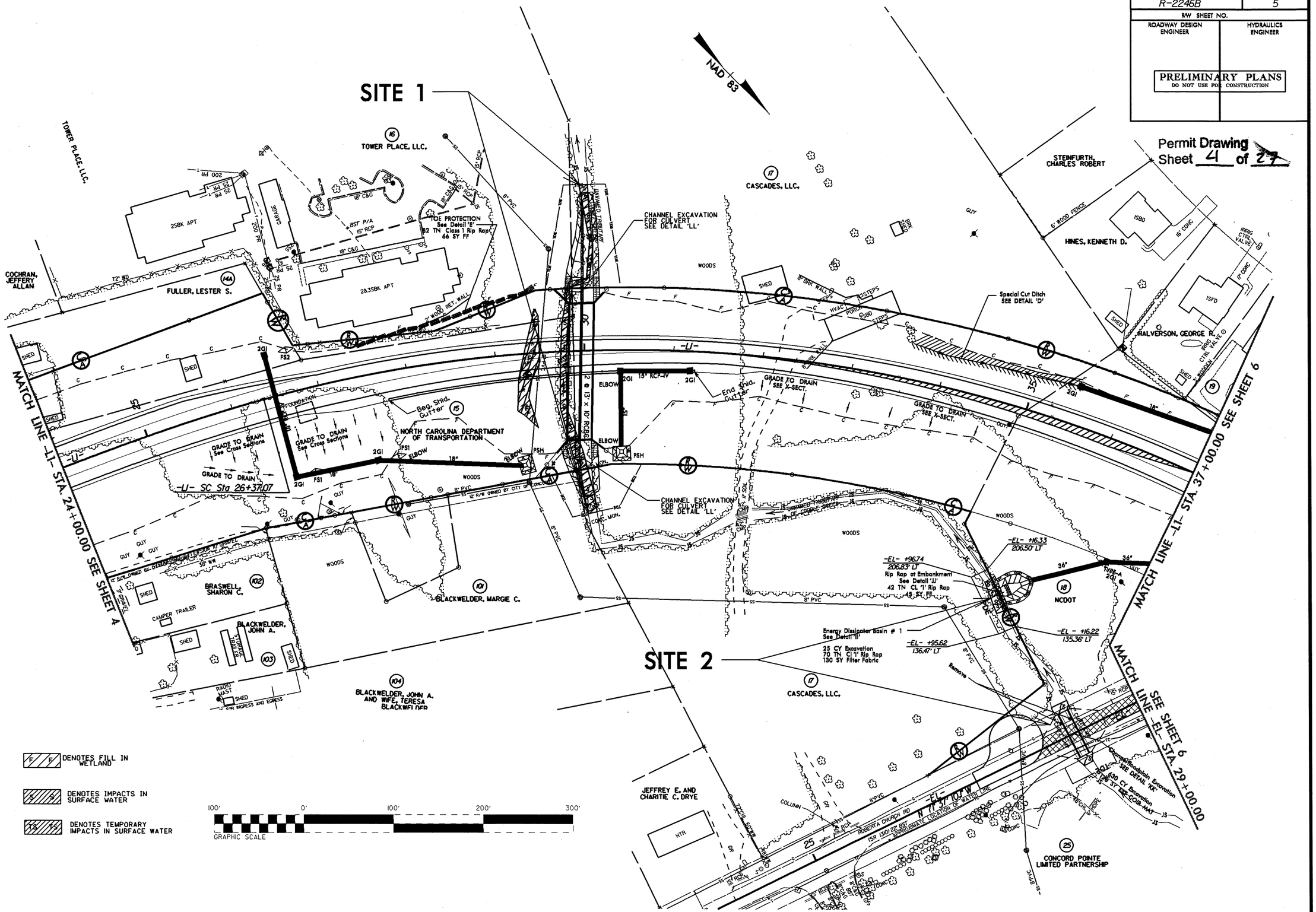
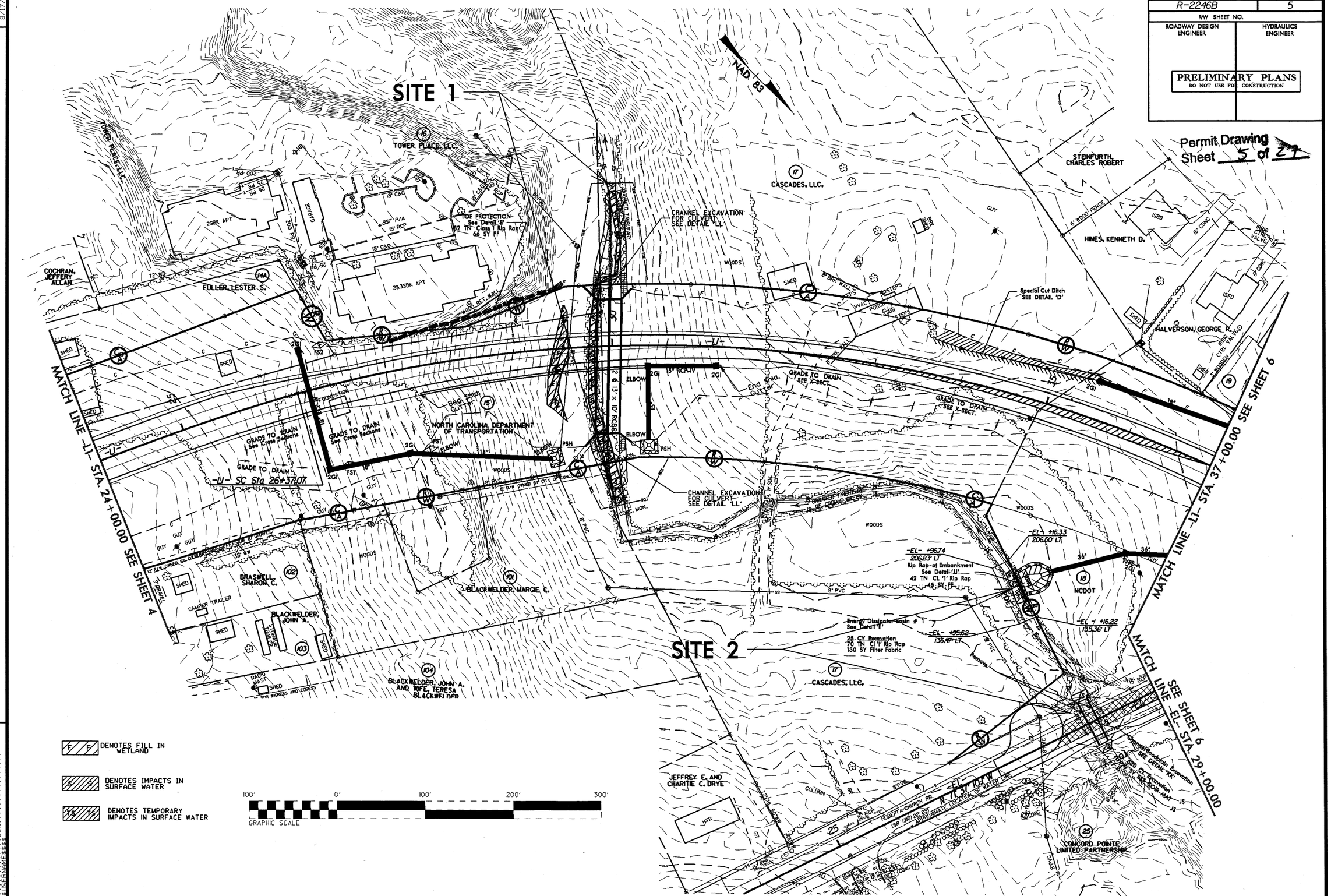
REVISIONS



PROJECT REFERENCE NO.	SHEET NO.
R-2246B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 5 of 27



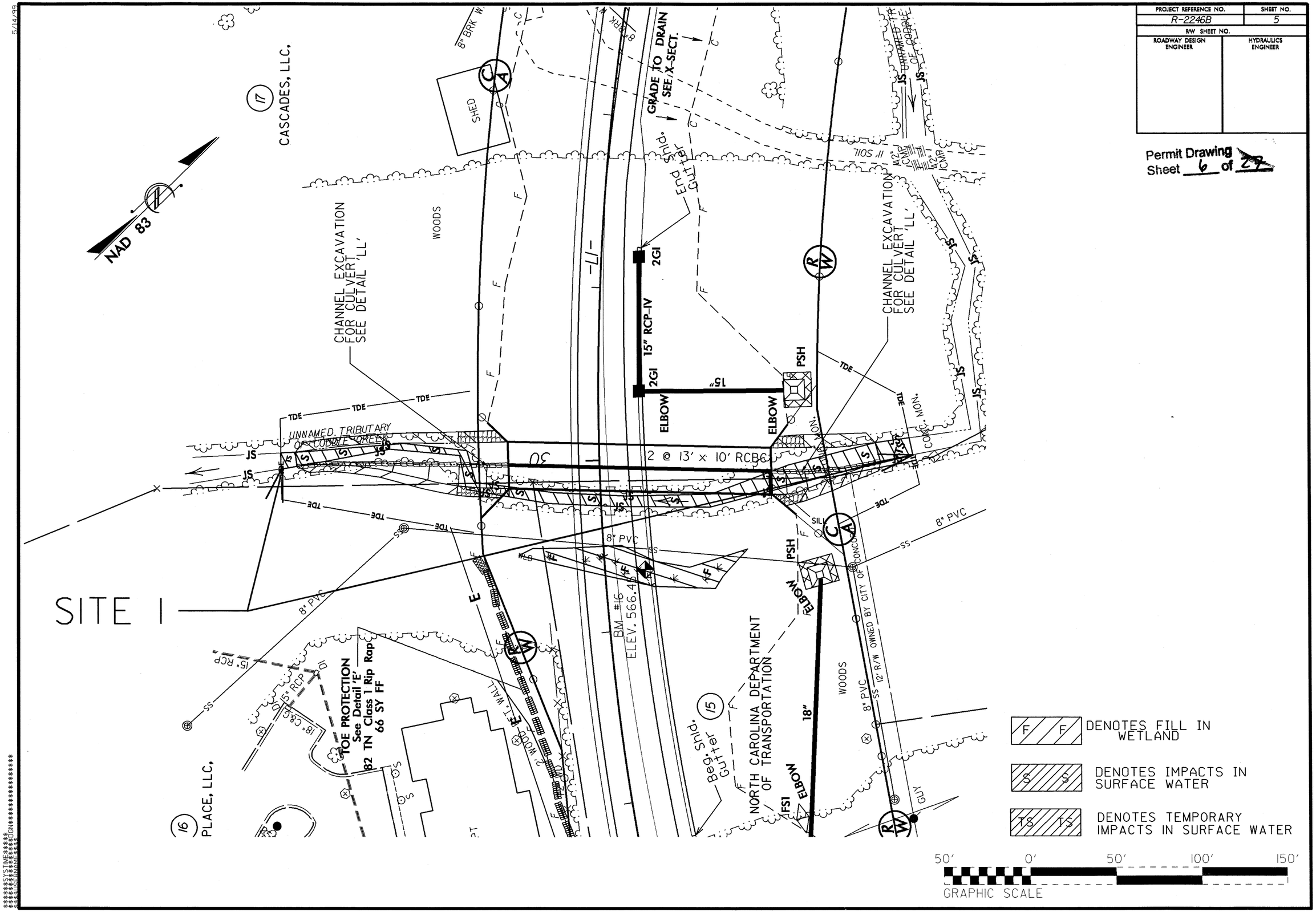
REVISIONS

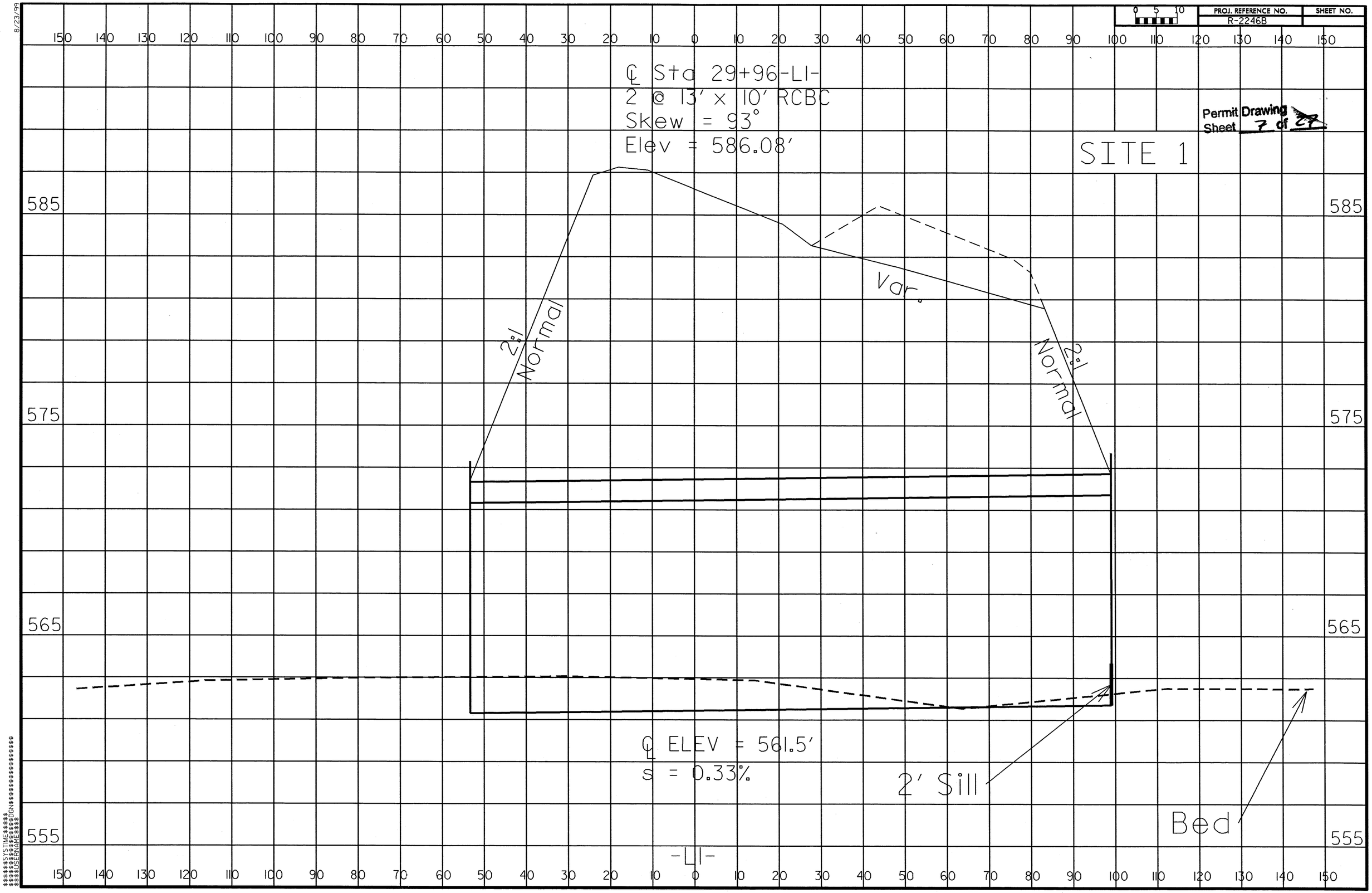
8/17/99

SYSTIME$$$$
CONFIG$$$$
FILENAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing
Sheet 6 of 27



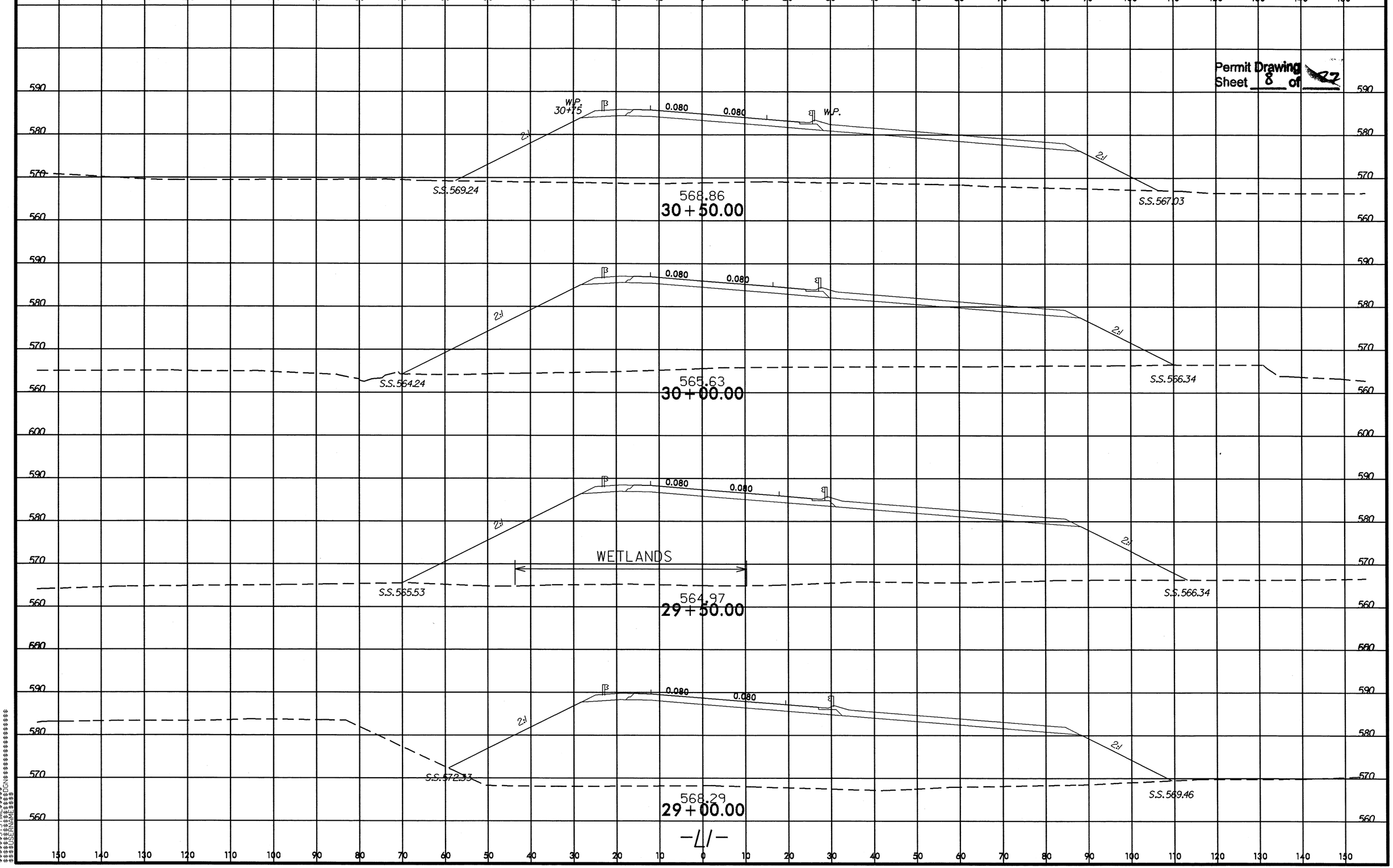


8/23/99

$$$$SYSTIME$$$$
$$$$USERNAME$$$$ $$$$DGN$$$$

PROJ. REFERENCE NO.	SHEET NO.
R-2246B	X-8

Permit Drawing
Sheet 8 of 22

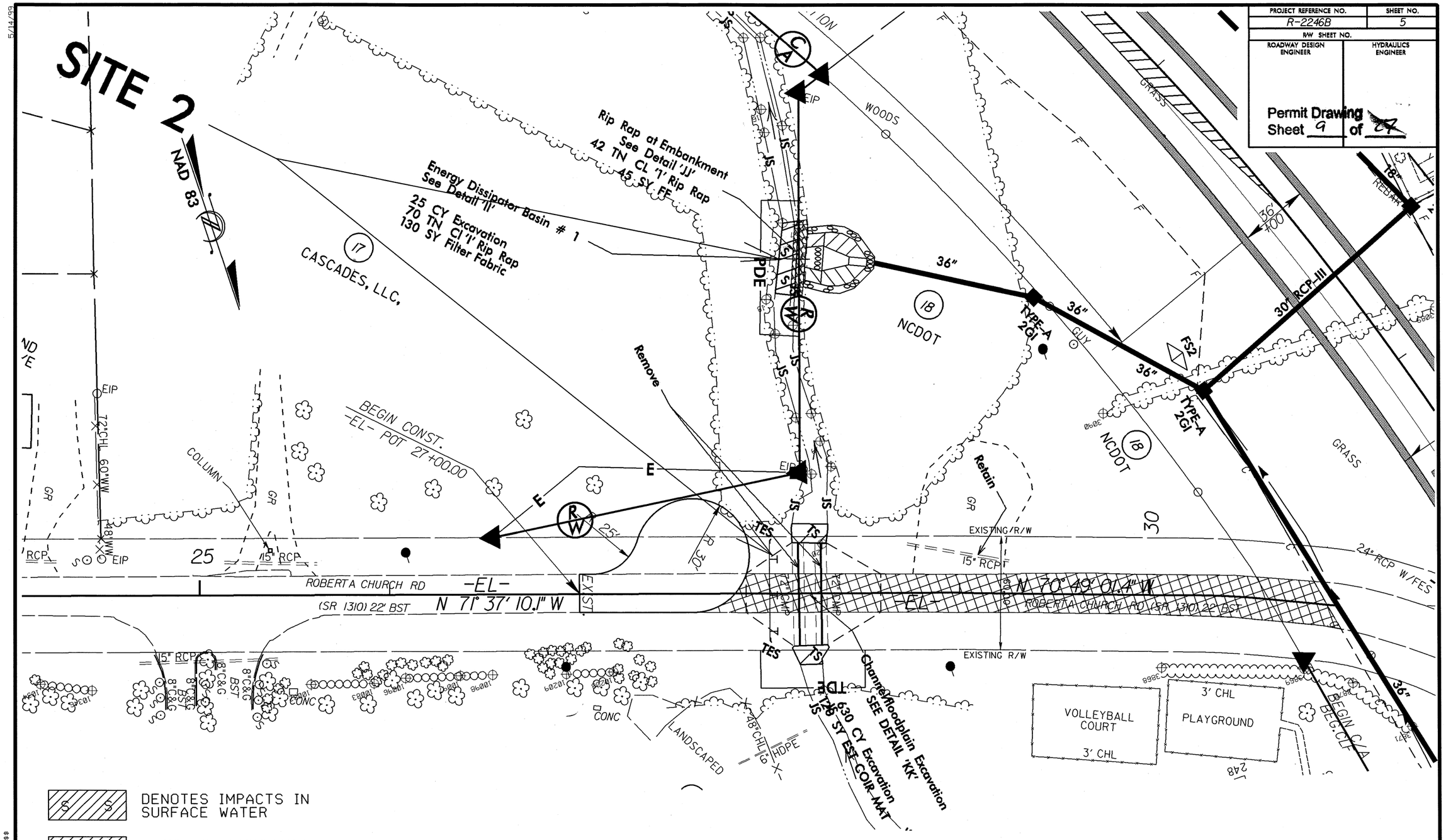


8/23/99

$$$$$SYSTIME$$$$$
$$$$$DGN$$$$$
$$$$$USERNAME$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing
Sheet 9 of 27



PROJECT REFERENCE NO.	SHEET NO.
R-2246B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

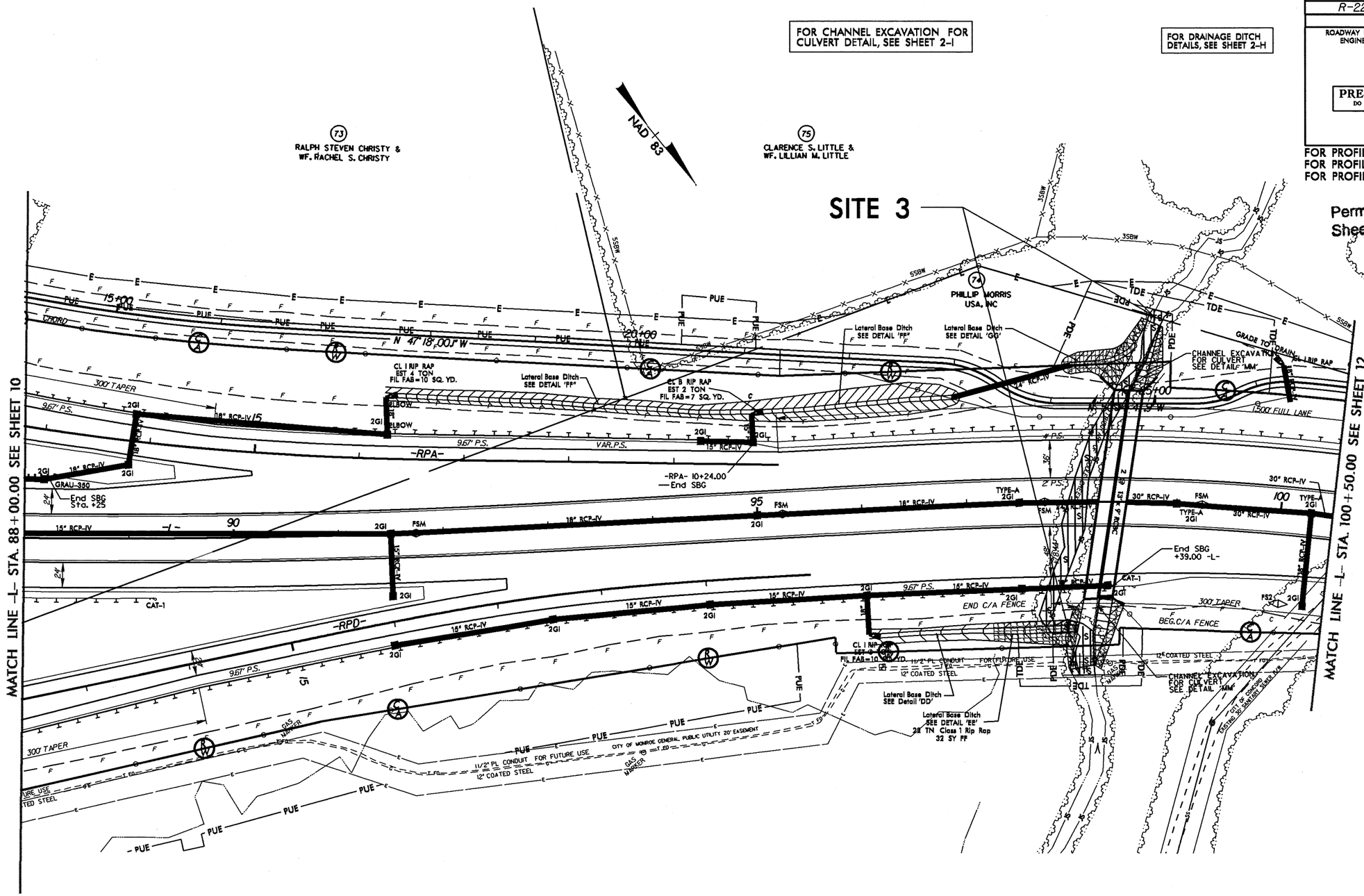
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -L- SEE SHEET 24
FOR PROFILE OF -RPA- SEE SHEET 31
FOR PROFILE OF -RPD- SEE SHEET 34

Permit Drawing
Sheet 10 of 27

FOR CHANNEL EXCAVATION FOR CULVERT DETAIL, SEE SHEET 2-I

FOR DRAINAGE DITCH DETAILS, SEE SHEET 2-H



DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100' 200' 300'
GRAPHIC SCALE

REVISIONS

8/17/99

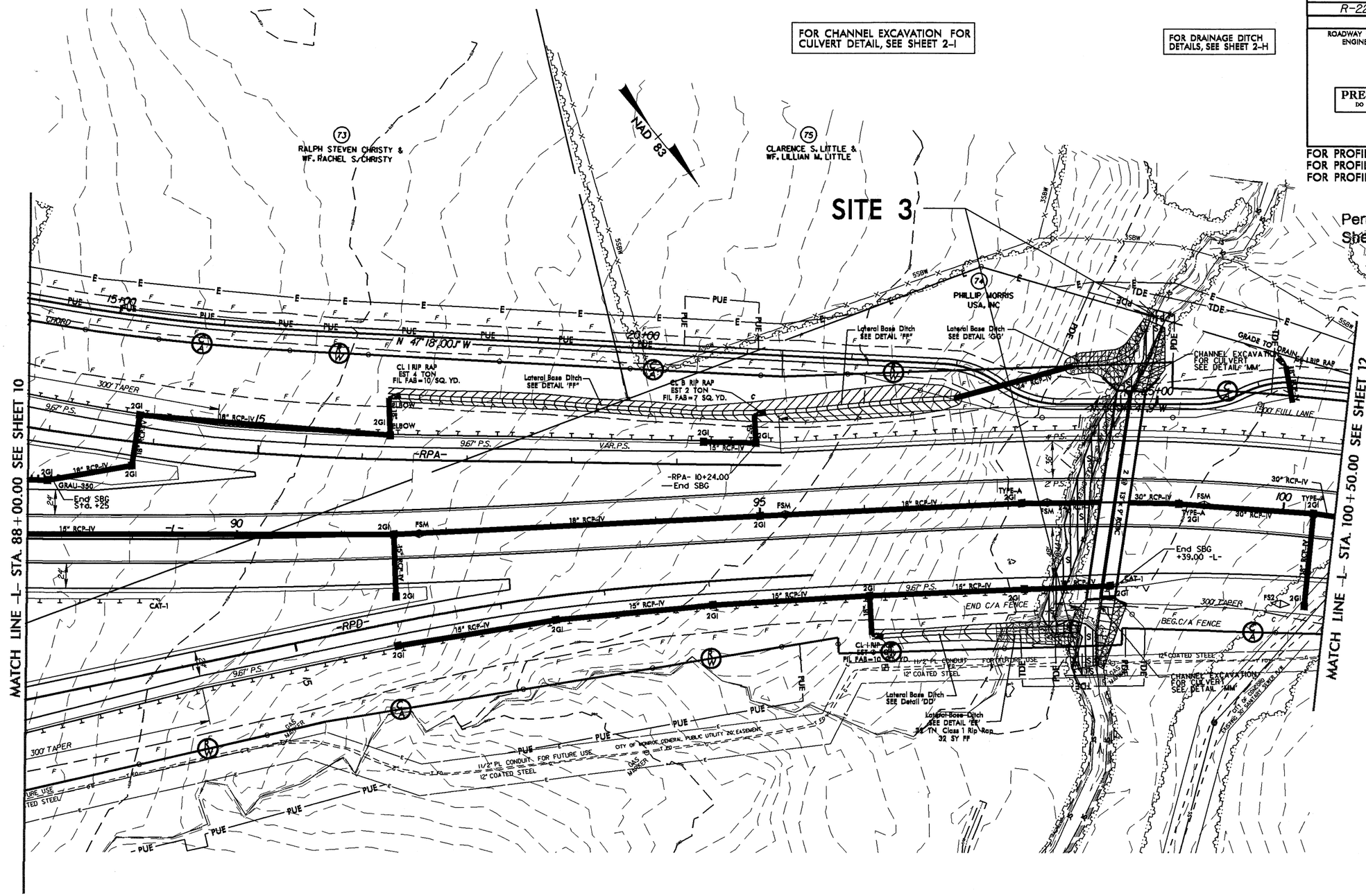
$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -L- SEE SHEET 24
FOR PROFILE OF -RPA- SEE SHEET 31
FOR PROFILE OF -RPD- SEE SHEET 34

Permit Drawing
Sheet 11 of 27



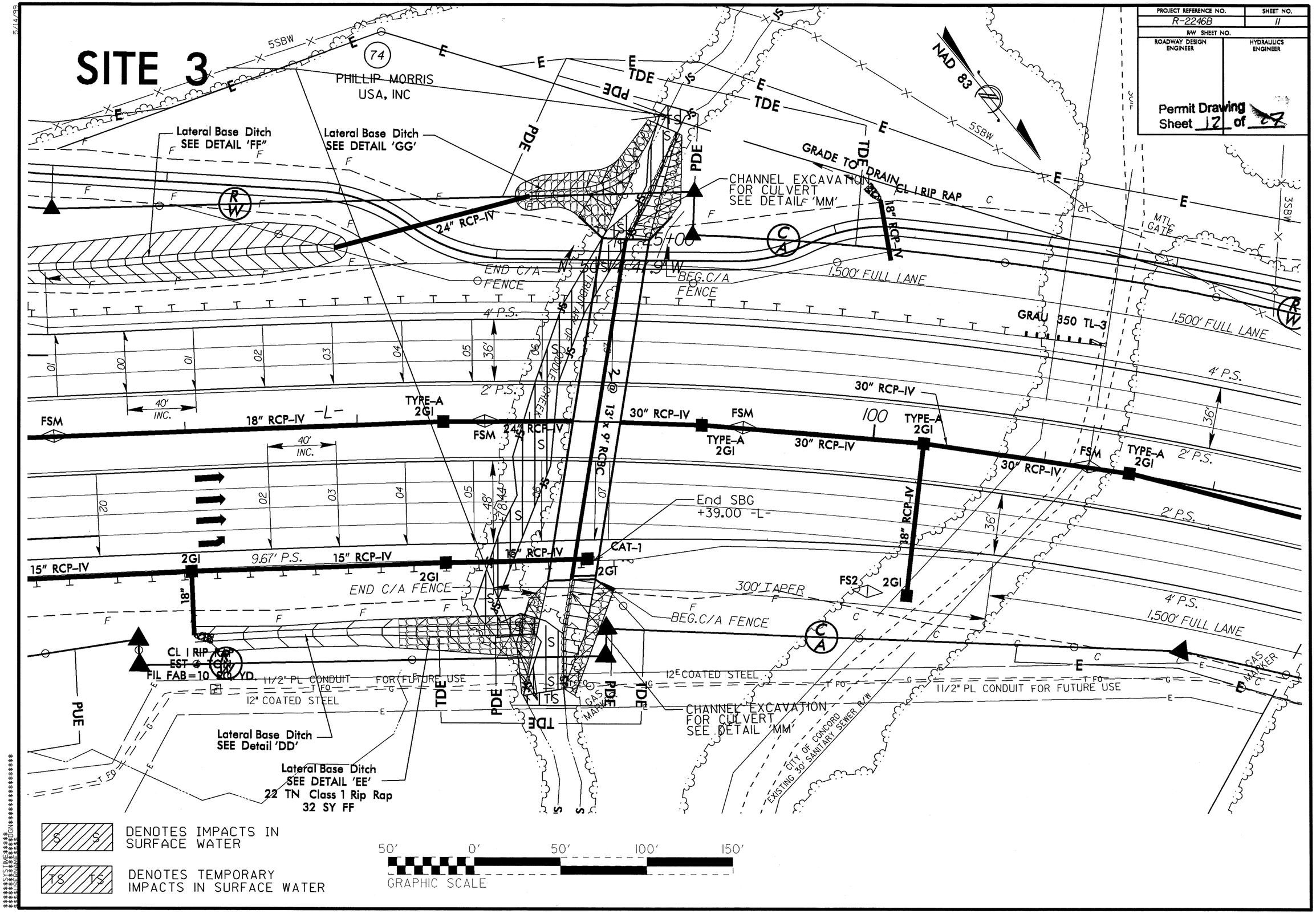
REVISIONS

8/17/99

$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$CONS$$$$$$$$$$$$$$$$$$$$
$$$$$$FILENAME$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing
Sheet 12 of 27



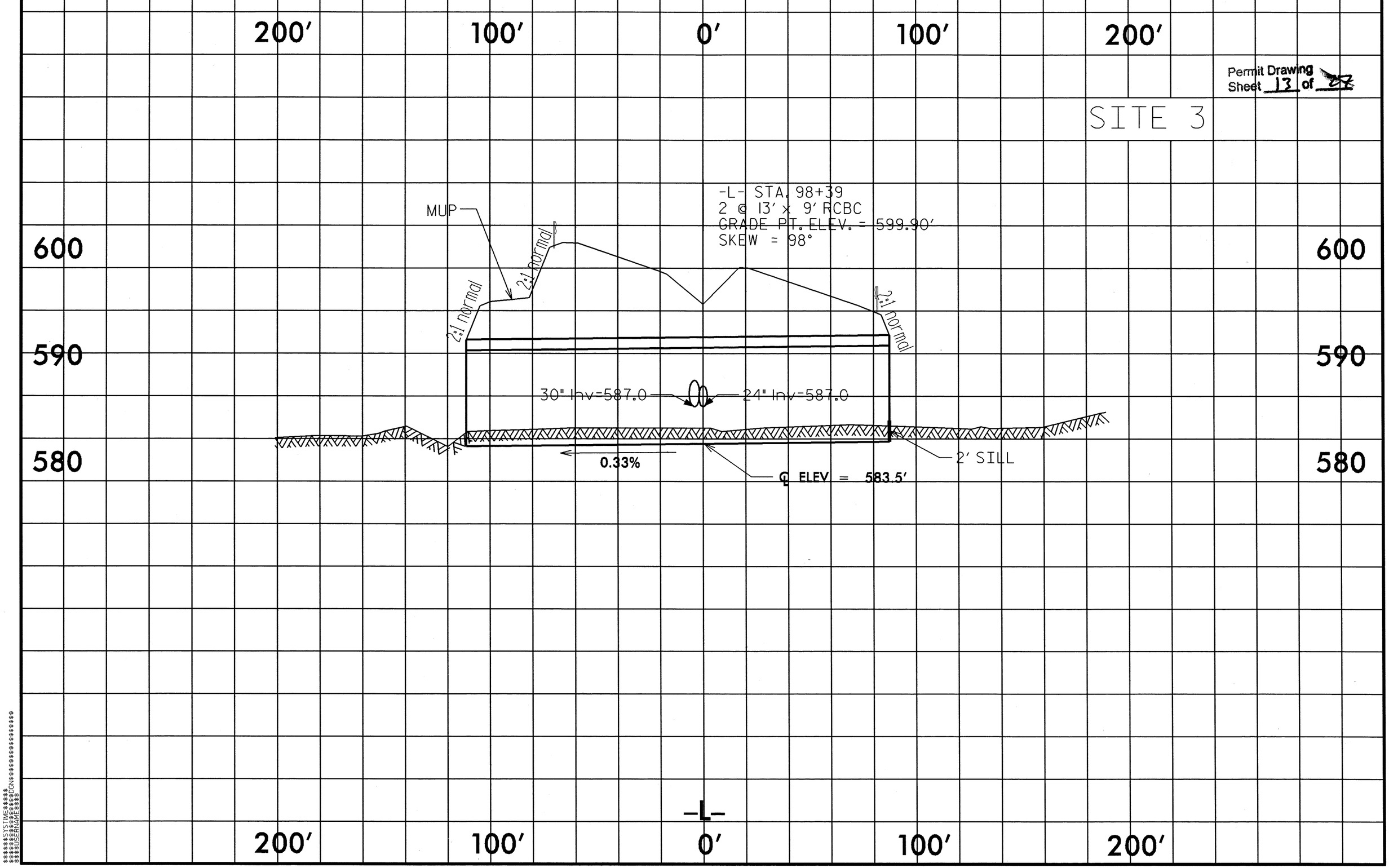
8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2246B	

0 10 20

Permit Drawing
Sheet 13 of 27

SITE 3



$$$$SYSTIME$$$$
$$$$SIZE$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

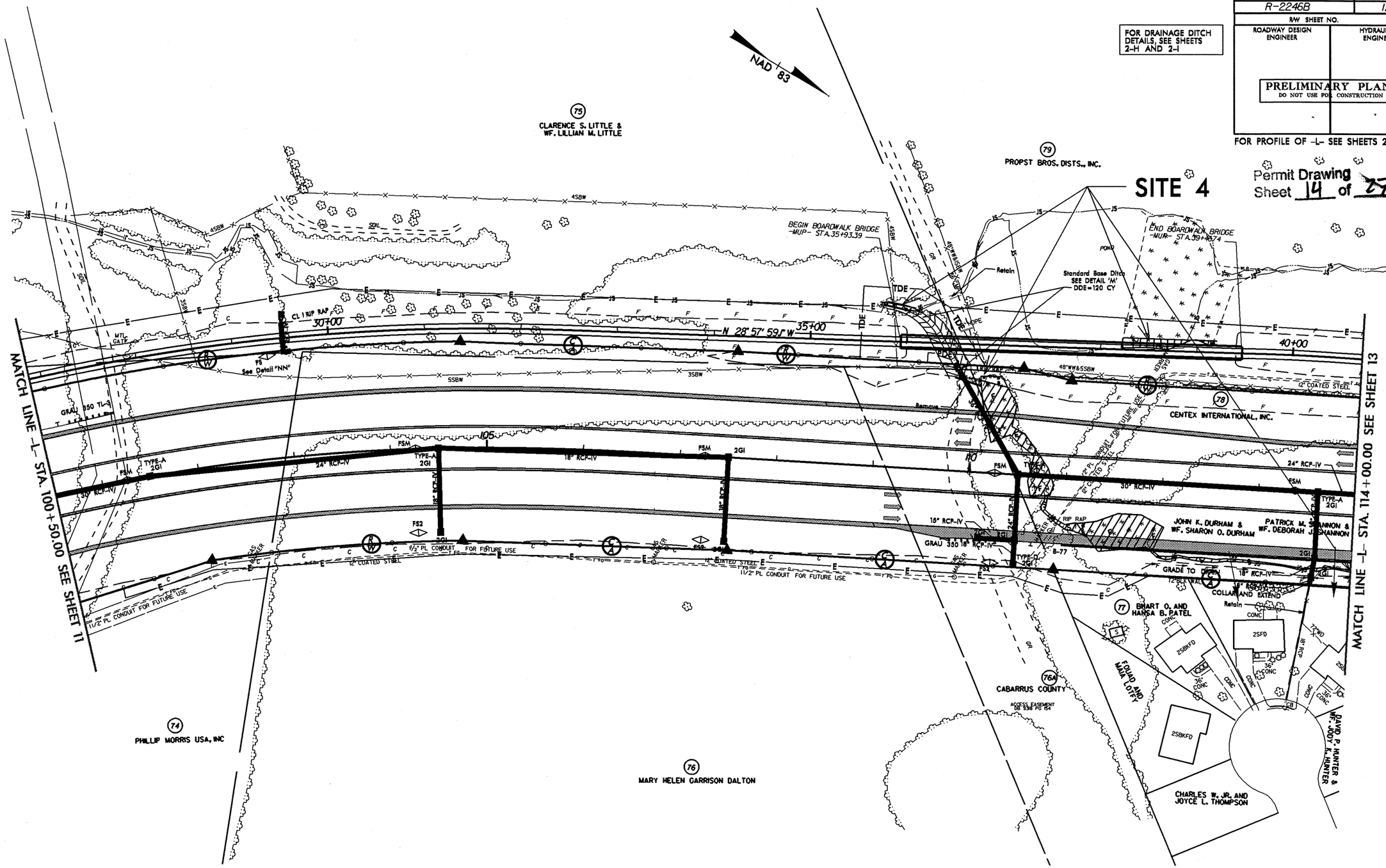
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I

FOR PROFILE OF -L- SEE SHEETS 24 & 25

Permit Drawing
Sheet 14 of 27



DENOTES FILL IN WETLAND

DENOTES HAND CLEARING

DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100' 200' 300'
GRAPHIC SCALE

REVISIONS

8/17/99

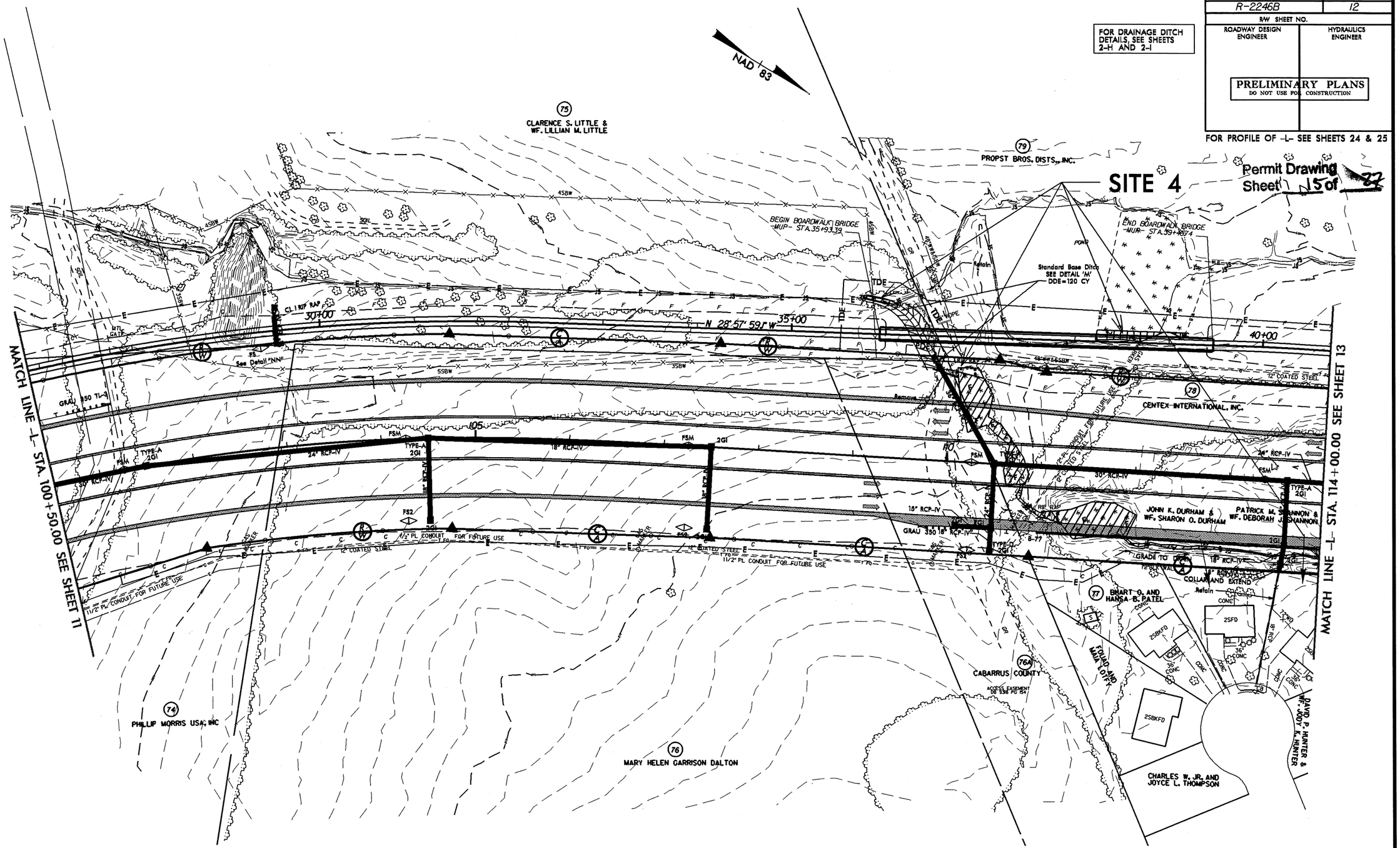
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I

FOR PROFILE OF -L- SEE SHEETS 24 & 25

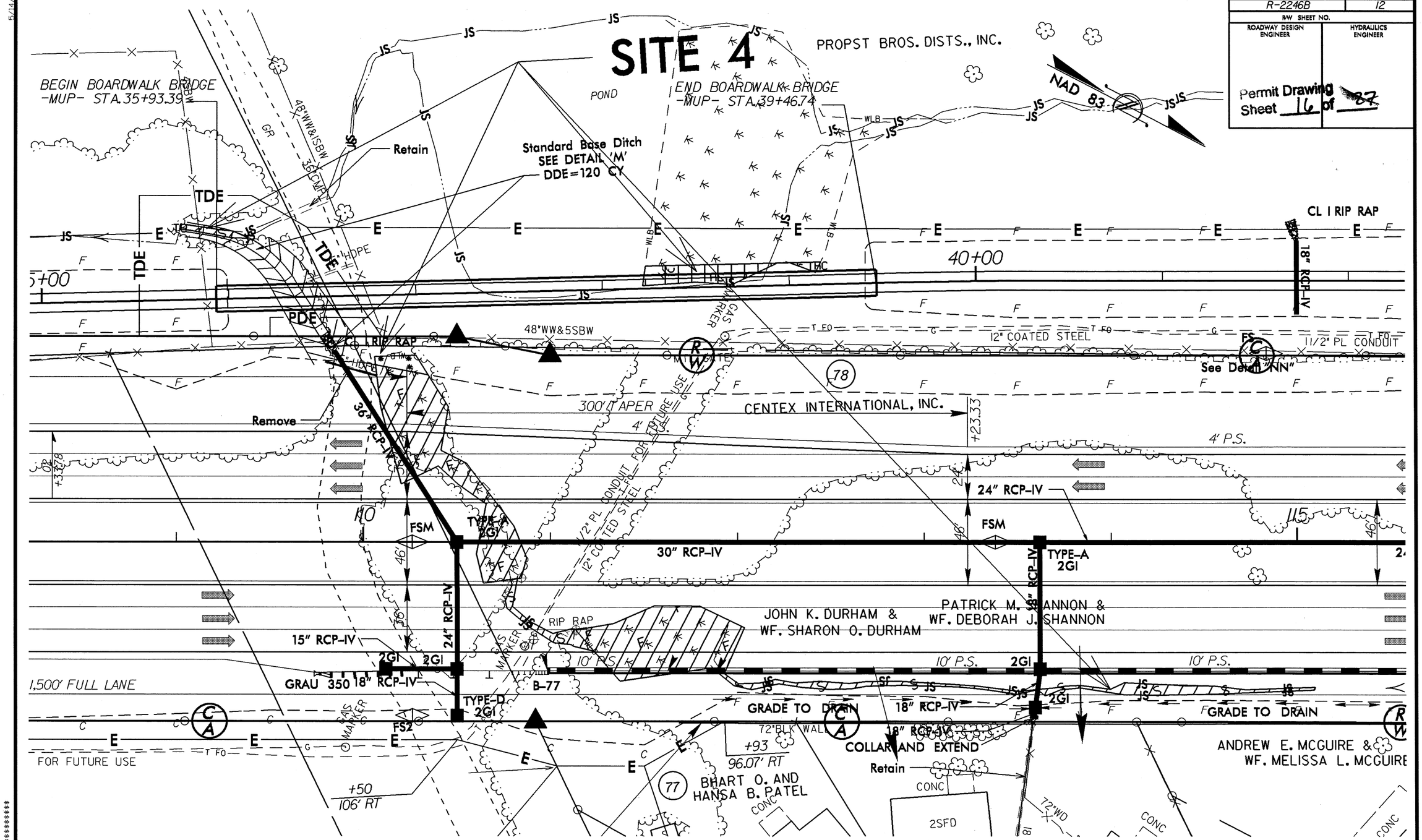
Permit Drawing Sheet 15 of 87



REVISIONS

8/17/99

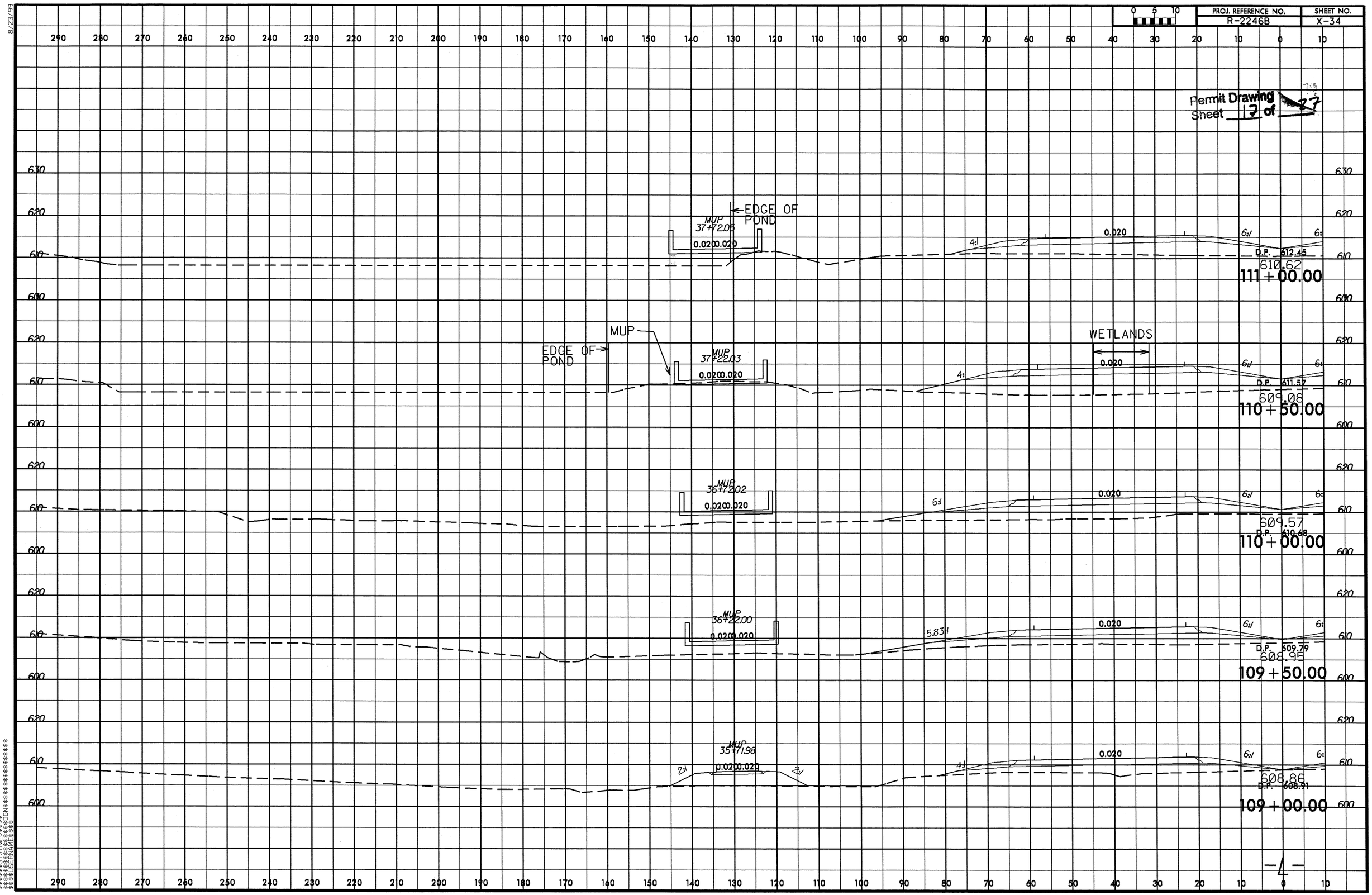
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Permit Drawing Sheet 16 of 87	



8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2246B	X-34

Permit Drawing
Sheet 17 of 27

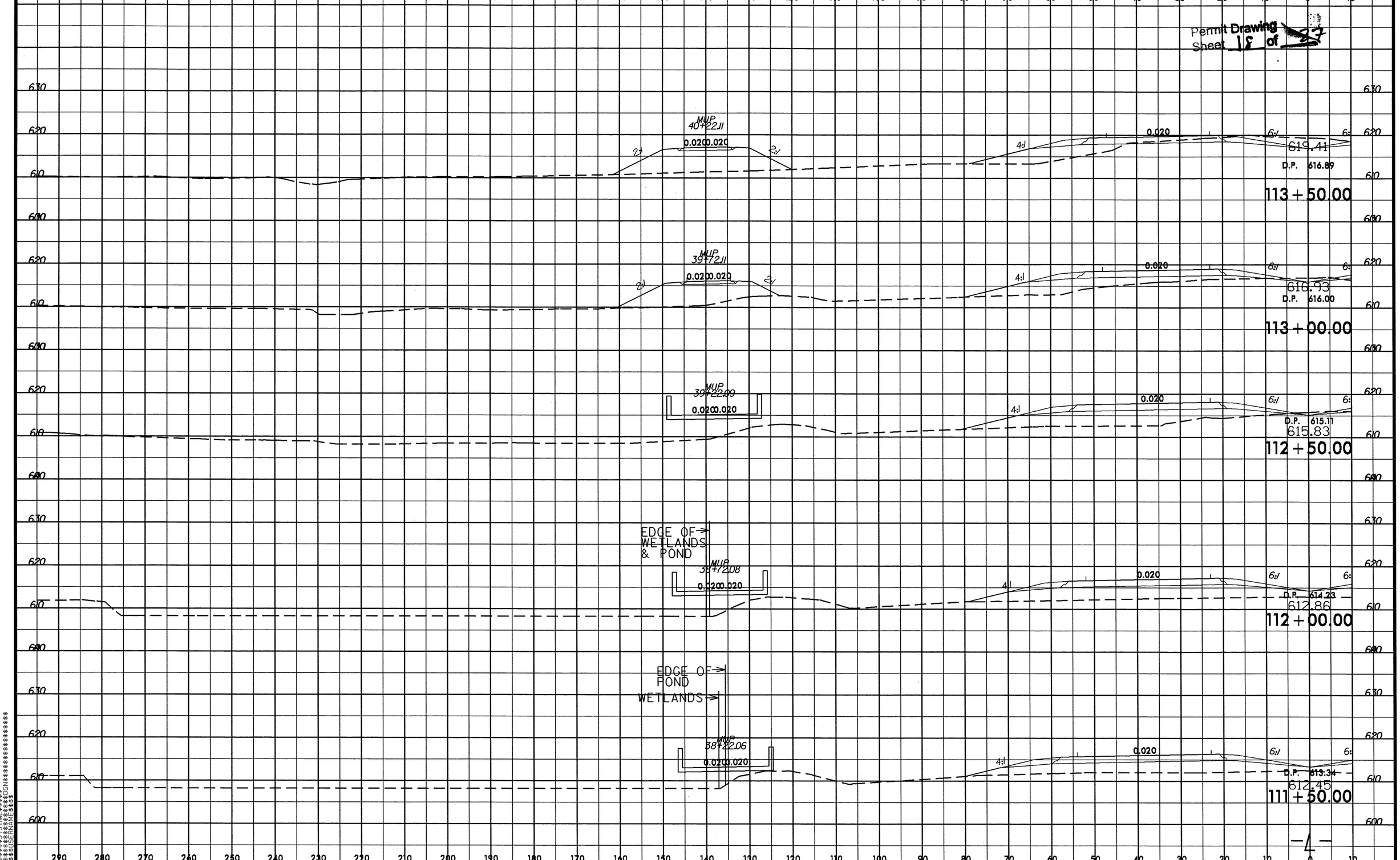


$$$$$$SYSTIME$$$$
$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2246B	X-35

Permit Drawing
Sheet 18 of 27



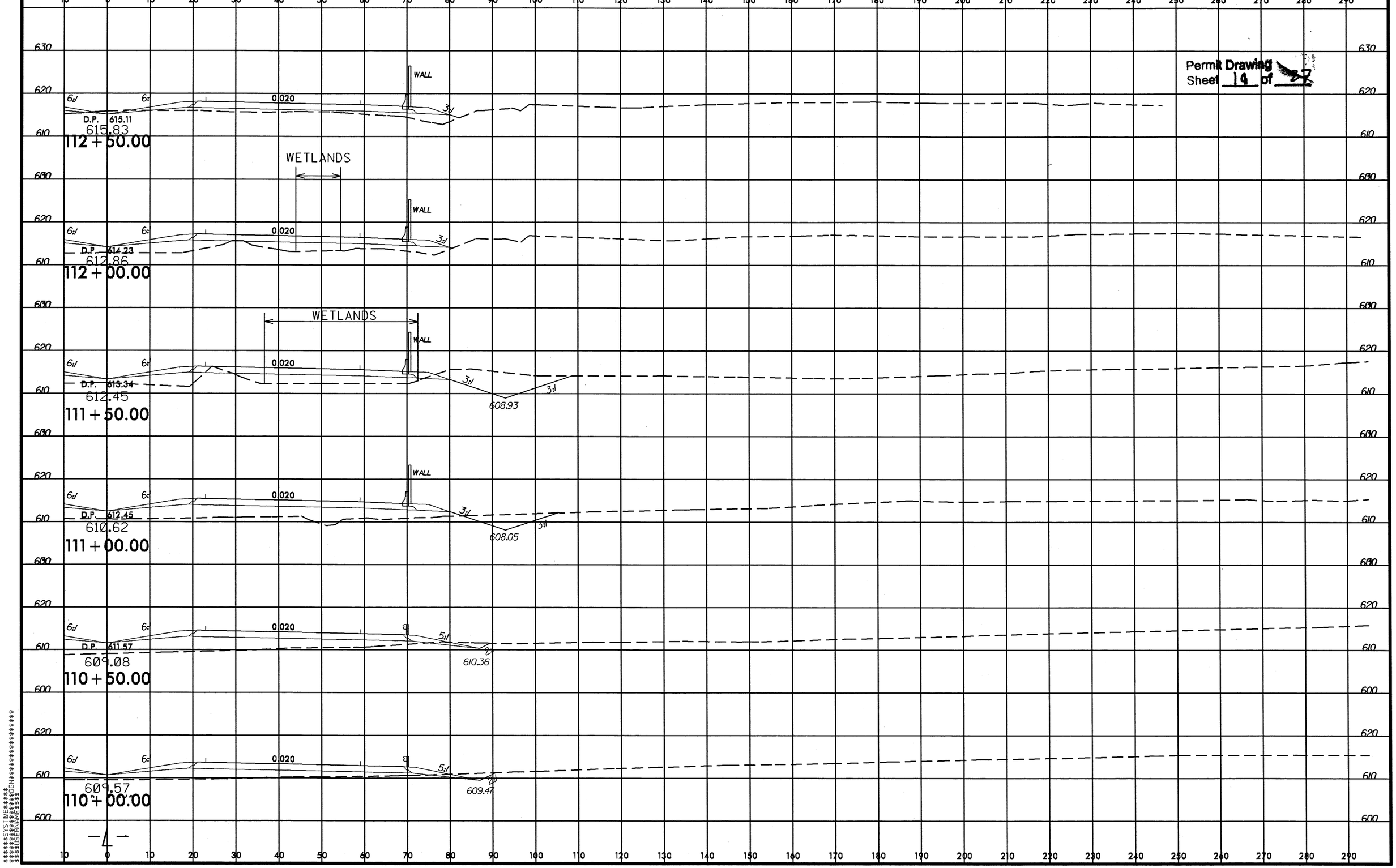
$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2246B	X-108

0 5 10

Permit Drawing
Sheet 14 of 27



-L-

$$$$SYSTIME$$$$
$$$$SIGN$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

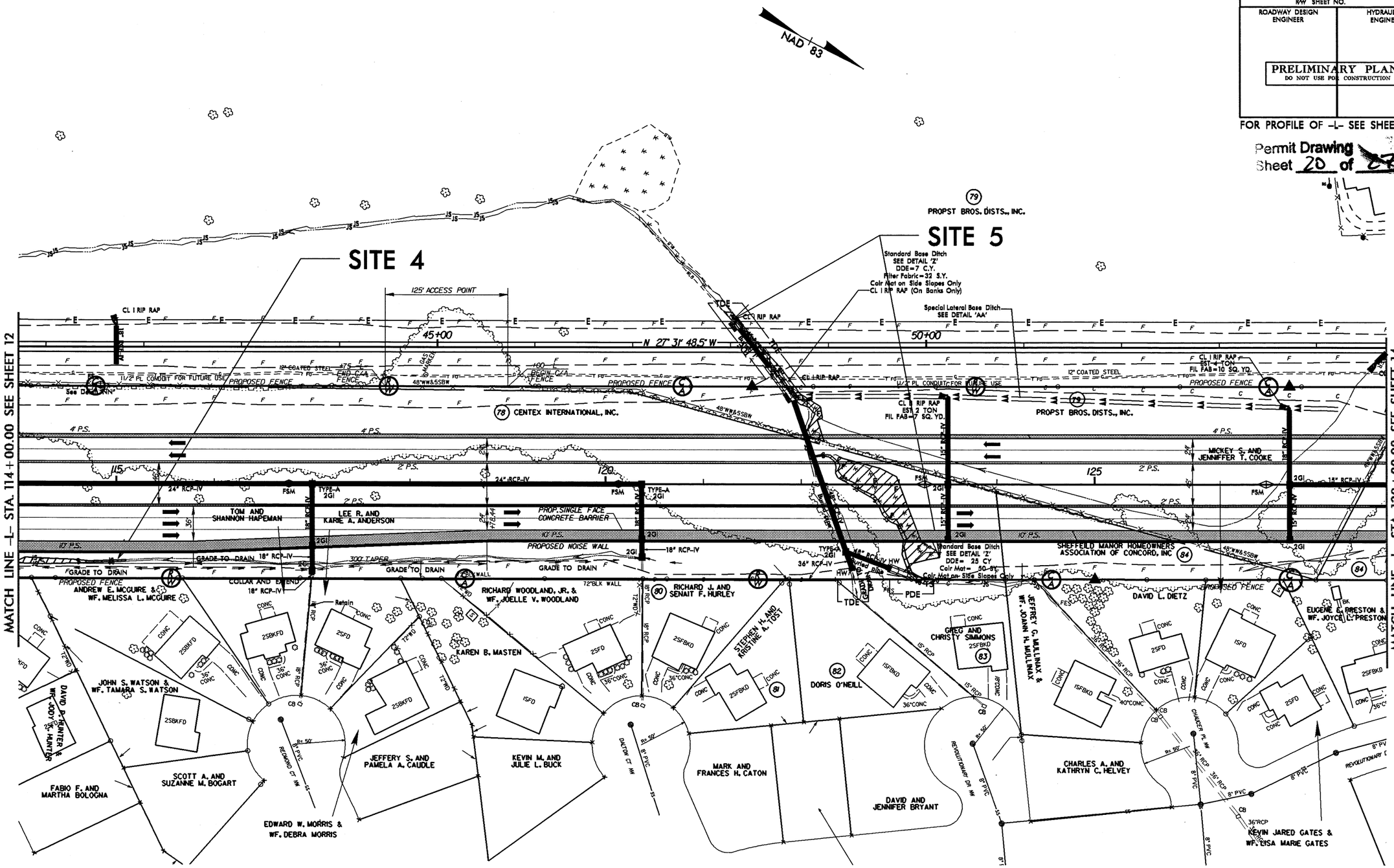
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -L- SEE SHEET 25

Permit Drawing
Sheet 20 of ~~27~~

8/17/99

REVISIONS



E E	DENOTES EXCAVATION IN WETLAND
F F	DENOTES FILL IN WETLAND
S S	DENOTES IMPACTS IN SURFACE WATER
⁙	DENOTES MECHANIZED CLEARING
TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100' 200' 300'
GRAPHIC SCALE

$$$$SYSTIME$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$
$$$$USERNAME$$$$

8/17/99

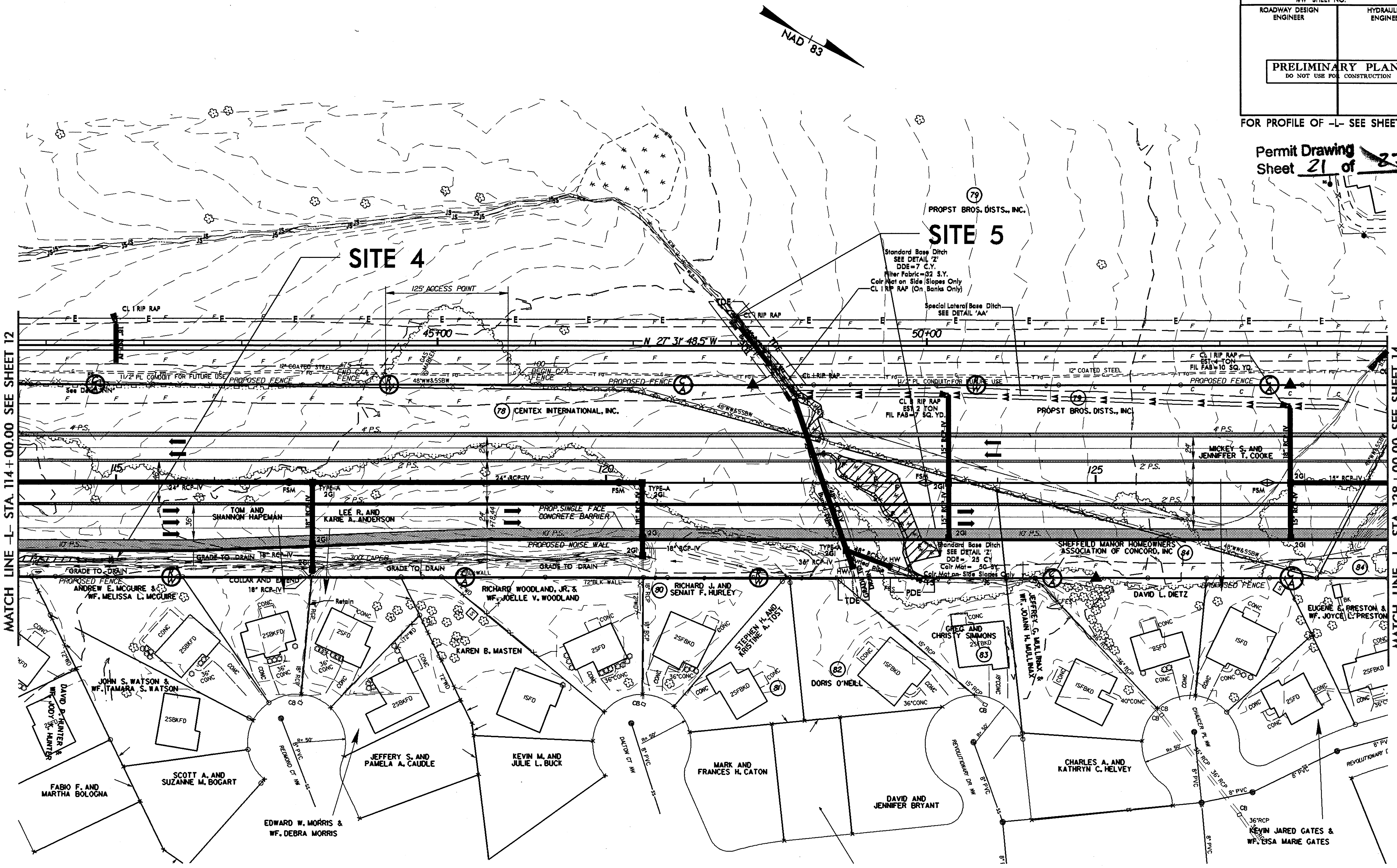
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -L- SEE SHEET 25

Permit Drawing
Sheet 21 of 27



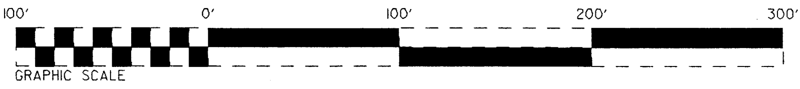
E DENOTES EXCAVATION IN WETLAND

F DENOTES FILL IN WETLAND

S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER



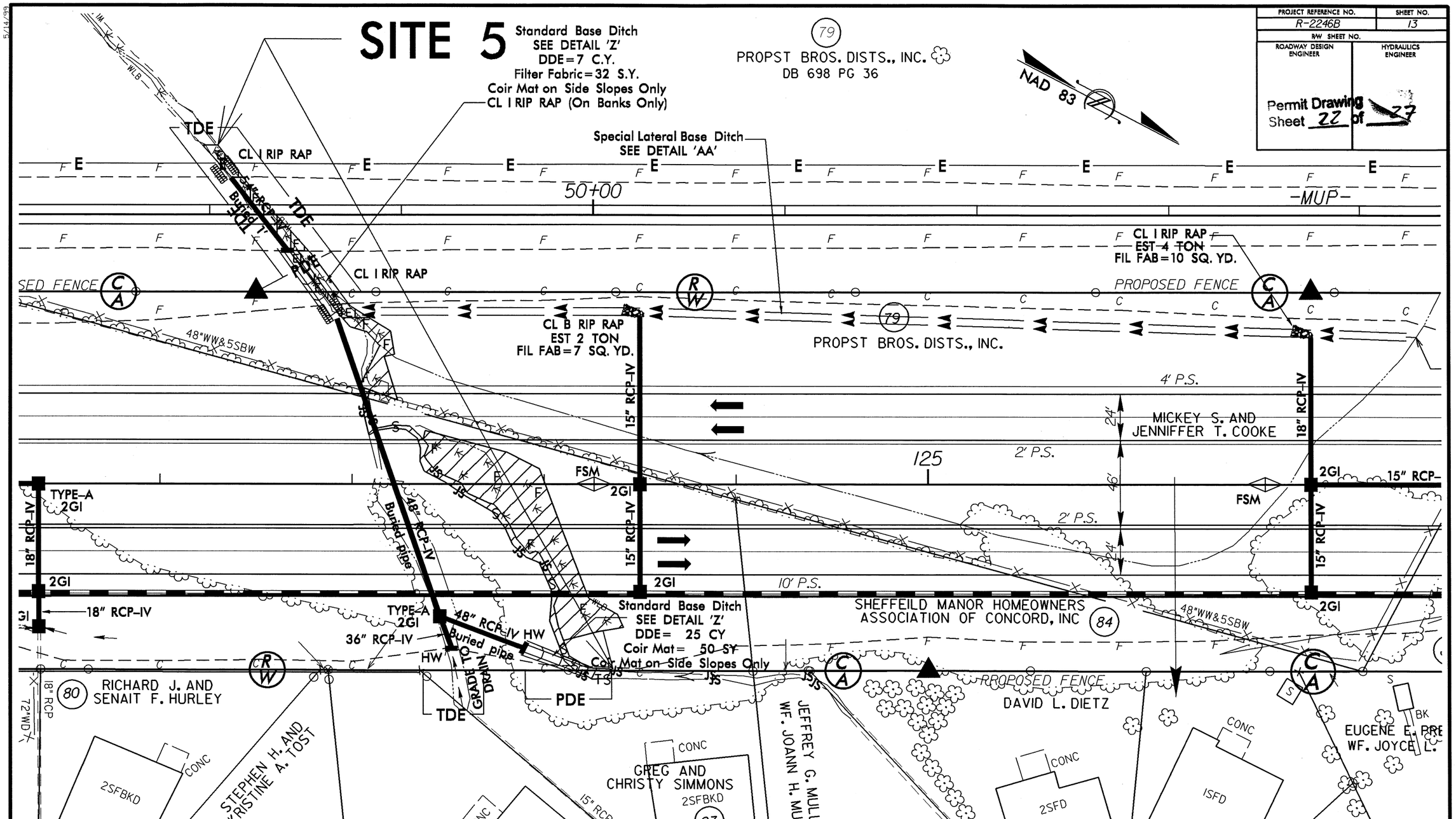
$$$$SYSTIME$$$$ $$$$DGN$$$$ $$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing
Sheet 22 of 27

SITE 5

Standard Base Ditch
SEE DETAIL 'Z'
DDE=7 C.Y.
Filter Fabric=32 S.Y.
Coir Mat on Side Slopes Only
CL I RIP RAP (On Banks Only)



DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

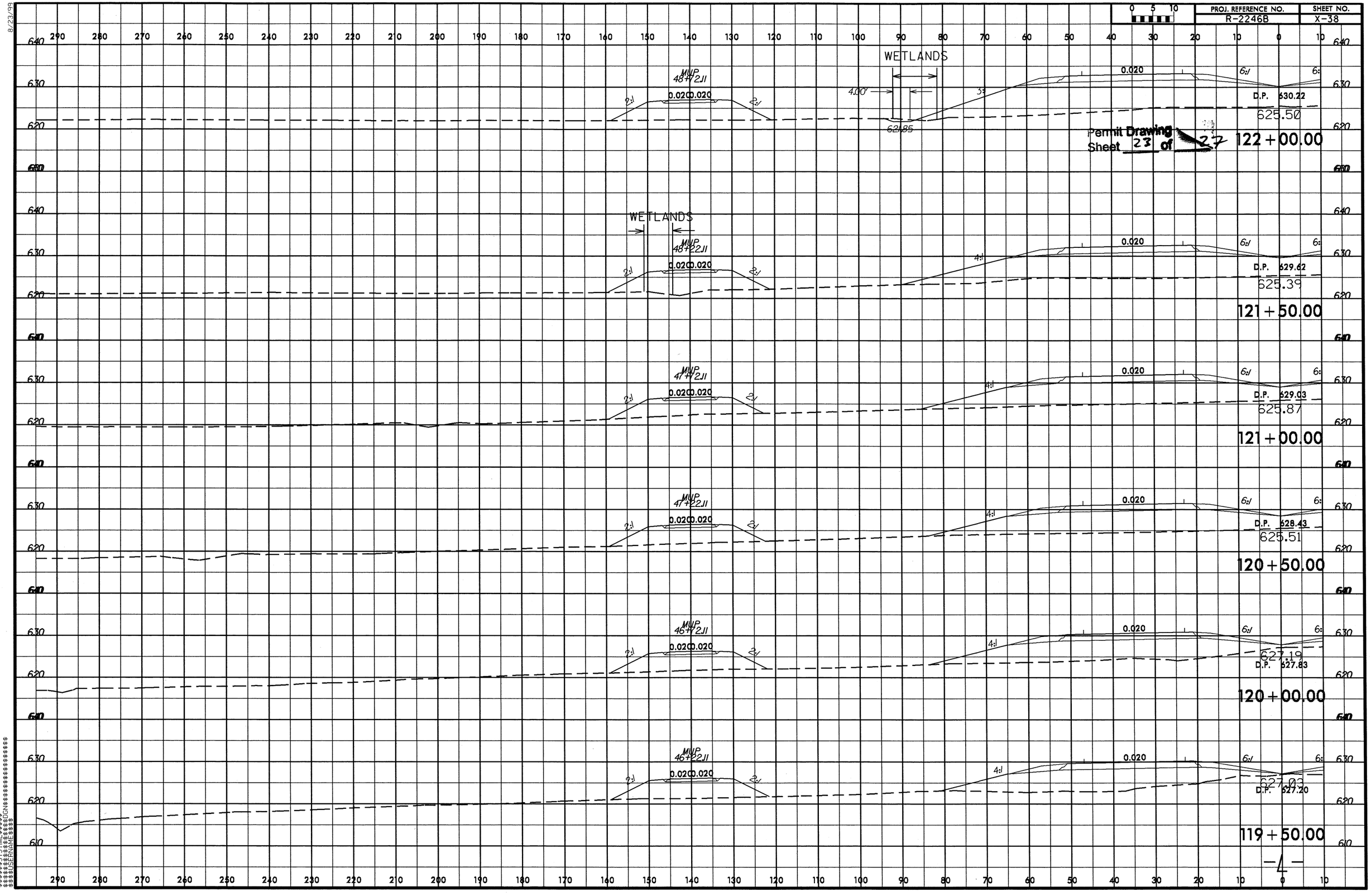
DENOTES MECHANIZED CLEARING

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50' 0' 50' 100' 150'
GRAPHIC SCALE

5/14/99

PROJ. REFERENCE NO.	SHEET NO.
R-2246B	X-38

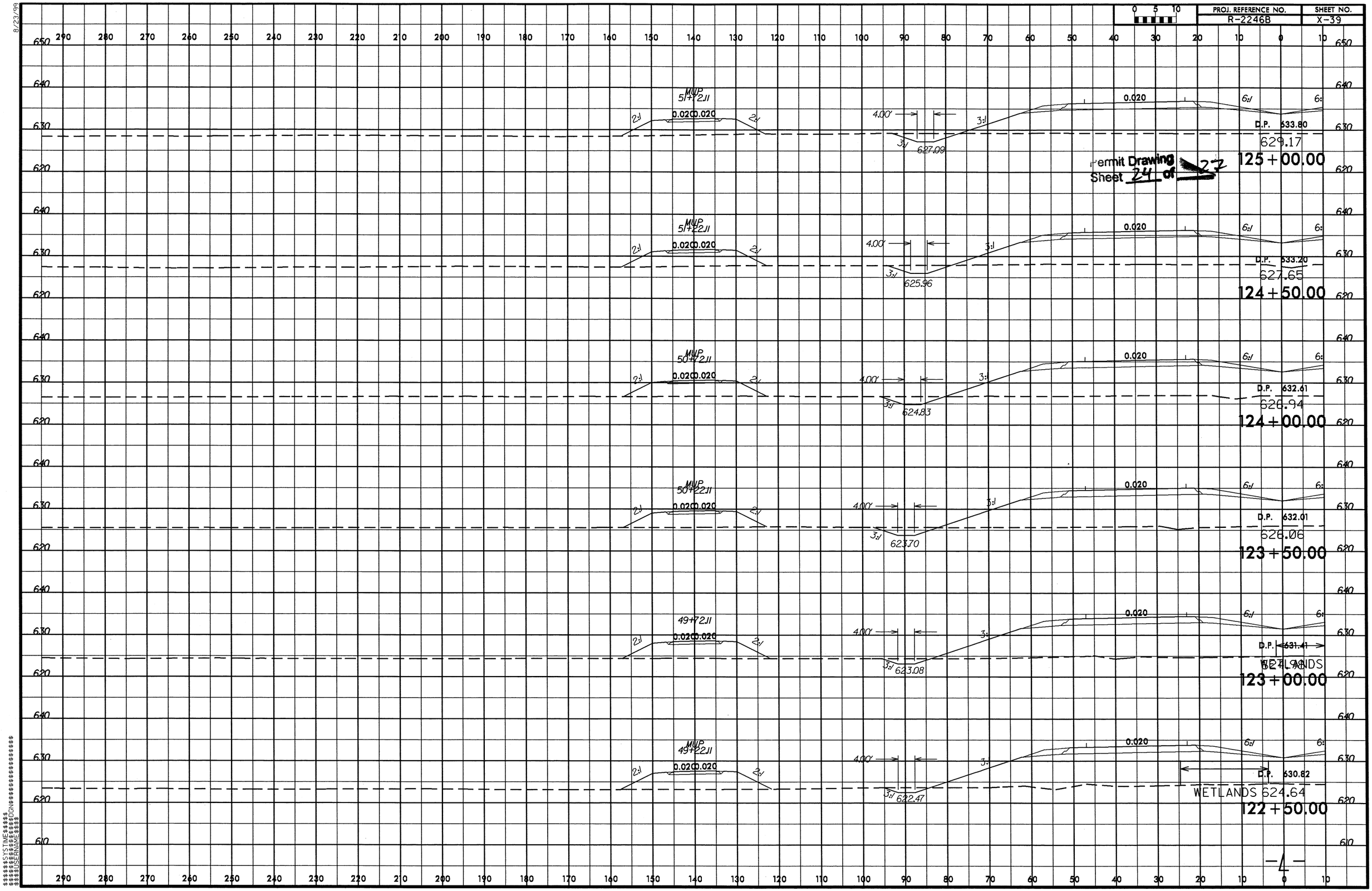


Permit Drawing Sheet 23 of 27

-4-

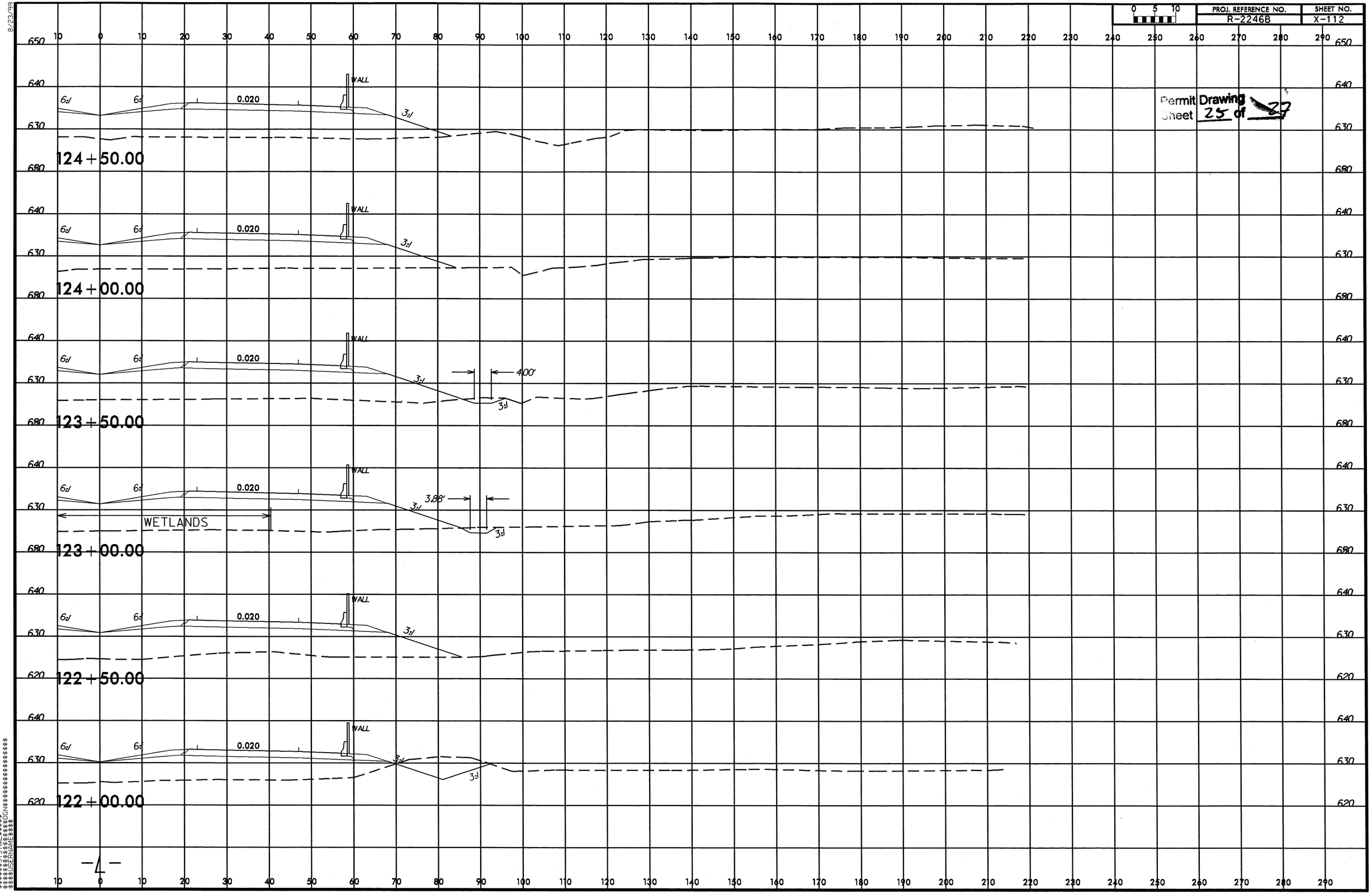
8/23/99

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$



PROJ. REFERENCE NO.	SHEET NO.
R-2246B	X-112

Permit Drawing
Sheet 25 of 27



PROPERTY OWNERS

NAMES AND ADDRESSES

SITE	PARCEL NO.	NAMES	ADDRESSES
1 & 2	15	NC DOT	
1	16	TOWER PLACE, LLC	1610 WAYBRIDGE LANE CHARLOTTE NC 28220
1 & 2	17	CASCADS, LLC	WAYBRIDGE LANE CHARLOTTE NC 28220
2	25	CONCORD POINTE LIMITED PARTNERSHIP	7800 EAST KAMPER ROAD CINCINNATI OH 45249
3	74	PHILLIP MORRIS USA, INC	PO BOX 26603 RICHMOND VA 23261
3 & 4	75	CLARENCE LITTLE	2555 CONCORD FARMS RD CONCORD NC 28027
4	76A	CABARRUS COUNTY	P.O. BOX 707 CONCORD NC 28026
4 & 5	78	CENTEX INTERNATIONAL	PO BOX 11231 CHARLOTTE NC 28220
4 & 5	79	PROPST BROS. DISTS. INC.	829 DAVIDSON DR CONCORD NC 28027
5	83	GREG & CHRISTY SIMMONS	1563 REVOLUTIONARY DR CONCORD NC 28027

NCDOT

DIVISION OF HIGHWAYS

CABARRUS COUNTY

PROJECT: 34408.1.1 (R-2246B)

CONCORD-KANNAPOLIS

GEORGE LILES PARKWAY FROM

SR 1304 TO SR 1431

SHEET OF 06/29/12

Permit Drawing
Sheet 24 of 27

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	29+40 -L-	Fill	0.04									
1	29+77 -L-	2@13x10 RCBC						0.03		156		
1	29+80 -L-	Stream Fill/						0.03	<.01	179	30	
		Channel Excavatiion										
2	35+30 -L-	Bank Stabilization						0.01		38		
2	28+20 -EL-	Remove Roadway							<.01		20	*54
3	98+39 -L-	2@13x9 RCBC						0.09		266		
3	98+39 -L-	Channel Excavation						0.03	0.01	113	24	
4	109+05 to 112+00-L-	Fill/36" RCP	0.12			<.01		0.03		384		
4	110+25 to 112+85-L-	MUP Boardwalk					0.02					
4	109+17-L-	Channel Excavation						<.01	<.01	32	5	
5	122+00 to 123+00-L-	Fill/48" RCP	0.08		<.01	<.01		0.01	<.01	209	13	
5	121+52-L-	MUP Fill/54" RCP	0.01		<.01	<.01						
TOTALS:			0.25		0.01	0.01	0.02	0.23	0.03	1377	92	*54

* Removal of existing pipe and roadway.

Site 4: 26 sets of 8"x8" MUP Boardwalk Piles = 12 SF of sw impacts (Pond)
Site 4: 12 sets of 8"x8" MUP Boardwalk Piles = 6 SF of wetland impacts

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

CABARRUS COUNTY
WBS - 34408.1.1 (R-2246B)

SHEET 10/10/2012

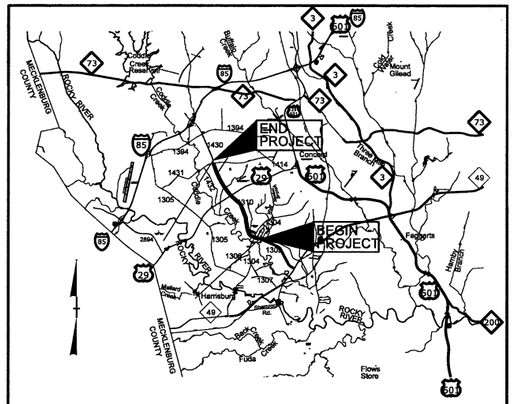
ATN Revised 3/31/05

Permit Drawing
Sheet 27 of 27

TIP PROJECT: R-2246B

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF CONCORD

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

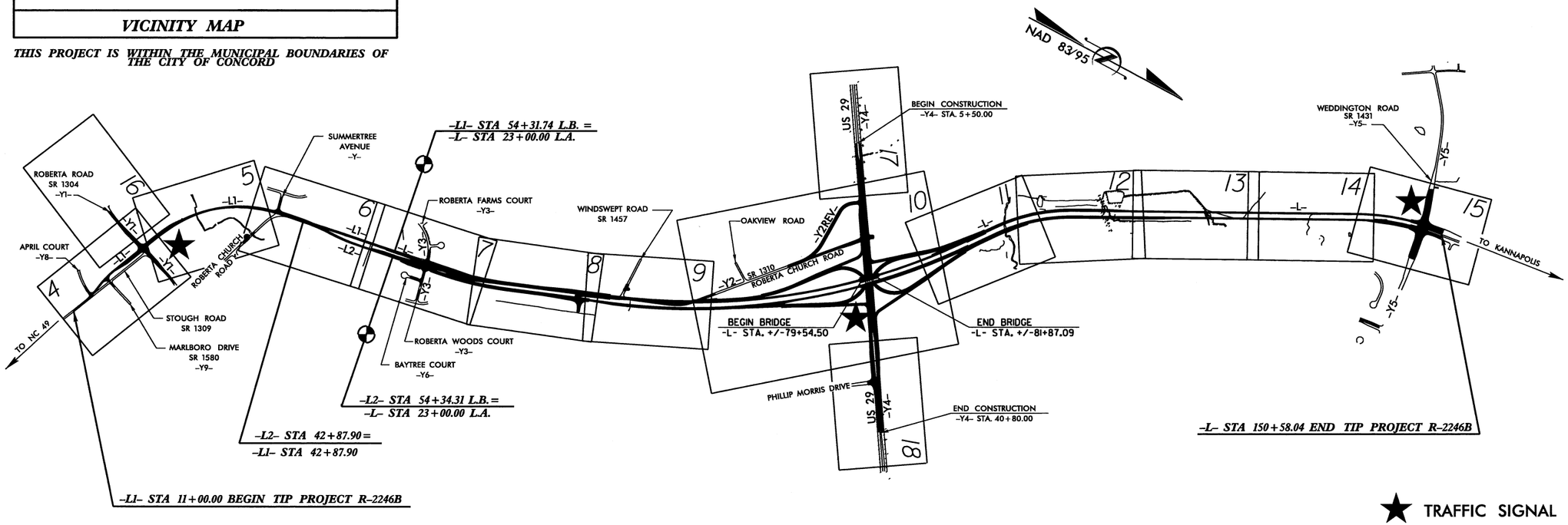
LOCATION: GEORGE LILES PARKWAY FROM SOUTH OF SR 1304 (ROBERTA ROAD) TO SR 1431 (WEDDINGTON ROAD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2246B	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34408.1.1	STP-(0005)46	PE

STATEWIDE TIER PROJECT



NOTE: PART OF THIS PROJECT IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS AND THE OTHER PART IS A FULL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2011 = 18,600
ADT 2035 = 42,000
DHV = 55 %
D = 10 %
T = 5 % *
V = 60 MPH
* TTST 1% DUAL 4%

FUNCTIONAL CLASSIFICATION
URBAN ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2246B = 3.193 MILES

LENGTH STRUCTURE TIP PROJECT R-2246B = 0.043 MILES

TOTAL LENGTH TIP PROJECT R-2246B = 3.237 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 18, 2011

LETTING DATE:
APRIL 16, 2013

G.E. BREW, PE
PROJECT ENGINEER

I.T. YOUNIS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

09/08/09

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	1-B

Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 23
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

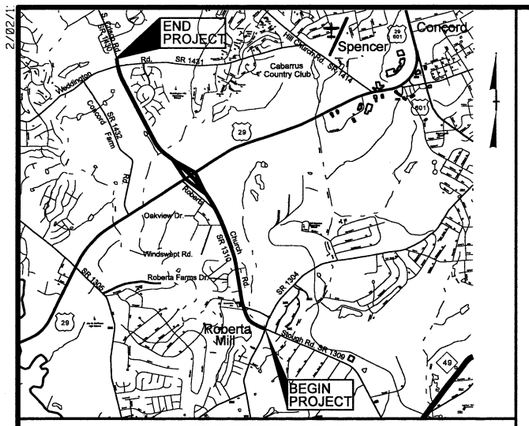
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	1 C
Location and Surveys	

SURVEY CONTROL SHEET



VICINITY MAP

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "WINDSOR"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 626437.435(ft) EASTING: 1510910.502(ft)
ELEVATION: (ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999849030
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "WINDSOR" TO -L1- STATION 11+00.00 IS
S 5°01'00.27" E 36,329.1943 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP:/WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2246B_LS_CONTROL.TXT
   R2246B_LS_LOCAL.TXT

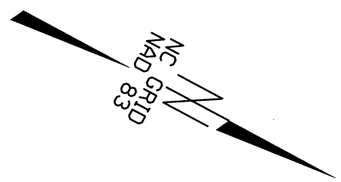
2. *SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION & SURVEYS UNIT.*

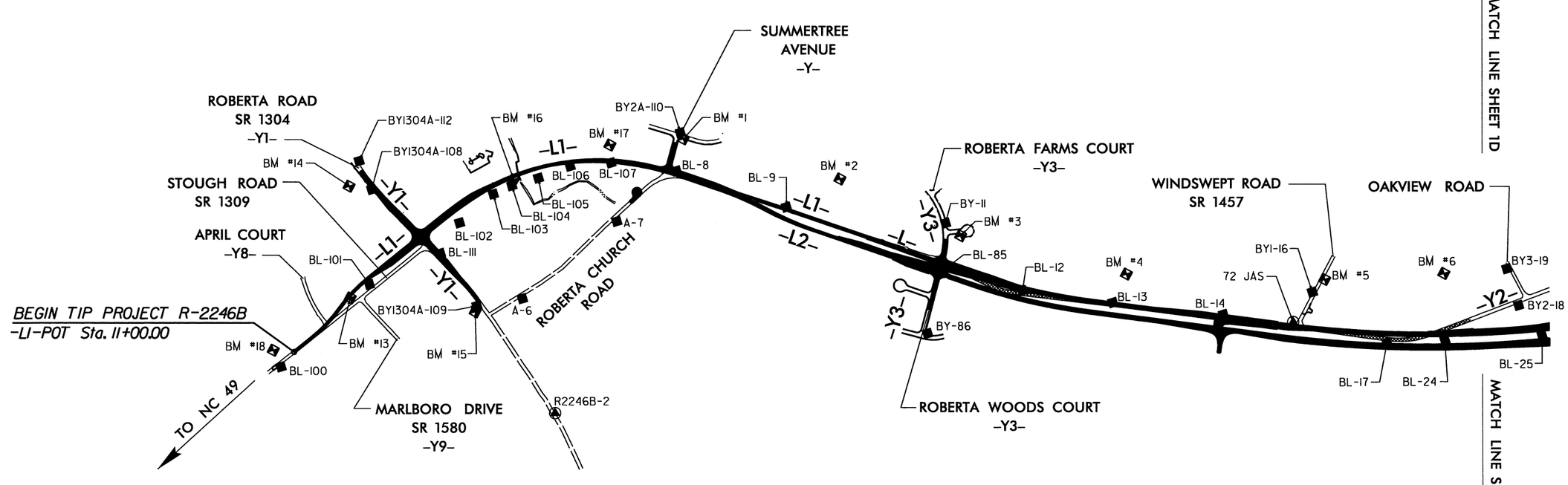
3. *PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING (NON-HARN) MONUMENTATION. SEE SURVEY CONTROL SHEET 1E FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.*

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL AND/OR VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION & SURVEYS UNIT.

INDICATES BASELINE TRAVERSE MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION & SURVEYS UNIT.

INDICATES BENCHMARKS USED OR SET FOR VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION & SURVEYS UNIT.

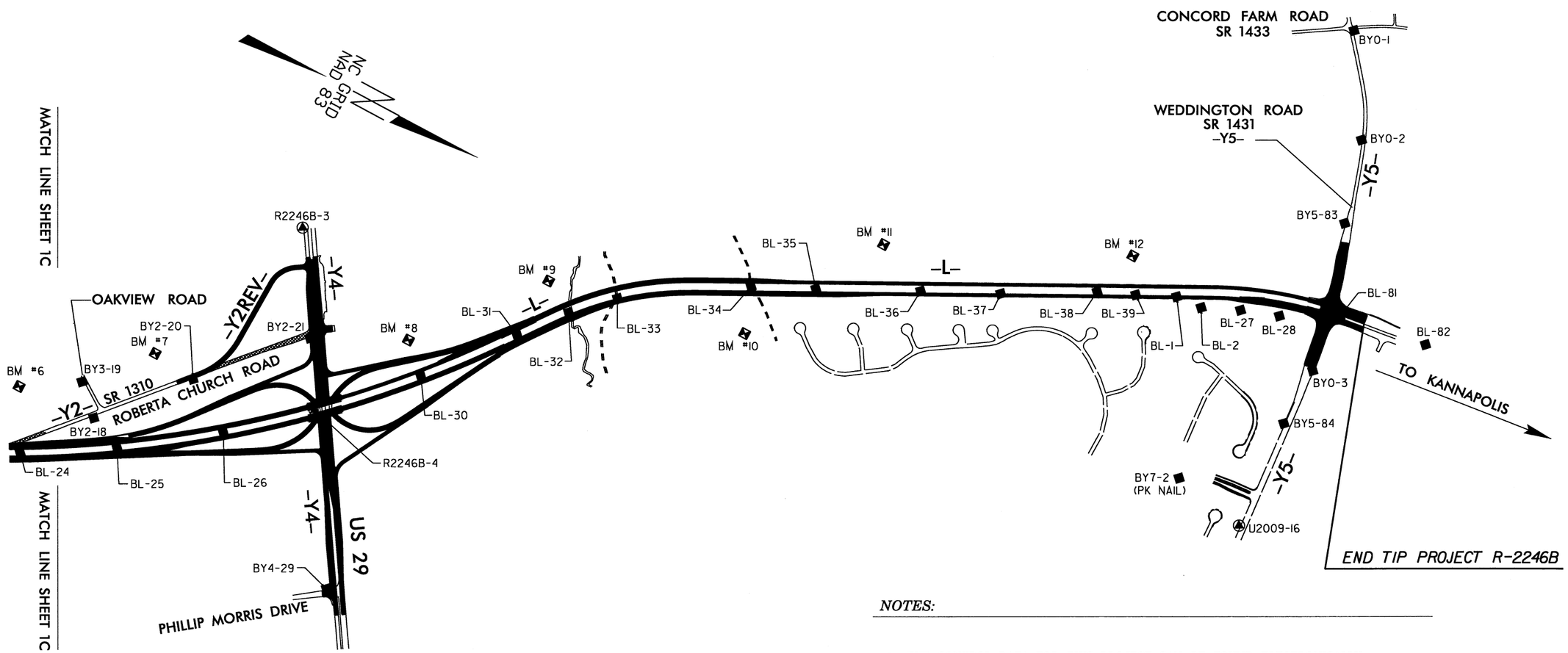




NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	1 D
Location and Surveys	

SURVEY CONTROL SHEET



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INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION & SURVEYS UNIT.

INDICATES BASELINE TRAVERSE MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION & SURVEYS UNIT.

INDICATES BENCHMARKS USED OR SET FOR VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION & SURVEYS UNIT.

NOTE: DRAWING NOT TO SCALE

SURVEY CONTROL SHEET

BM1 ELEVATION - 589.51
N 591828 E 1511675
Y STATION 10-15 45 LEFT
2" CHISELED SQUARE IN A BOX CULVERT ON
THE EAST SIDE OF CEDAR SPRINGS DRIVE

BM2 ELEVATION - 599.49
N 592850 E 1511423
L1 STATION 50-43 299 LEFT
RR SPIKE SET IN THE BASE OF A 12"
QUADRUPLE ELM

BM3 ELEVATION - 605.88
N 593714 E 1511377
Y3 STATION 10-83 100 LEFT
RR SPIKE SET IN THE BASE OF A 16" ELM

BM4 ELEVATION - 622.41
N 594780 E 1511087
L STATION 39-27 239 LEFT
RR SPIKE SET IN THE BASE OF A 16"
SWEETGUM

BM5 ELEVATION - 619.30
N 595932 E 1510511
L STATION 52-22 365 LEFT
1" CHISELED SQAURE ON THE EDGE OF A 12"
CONCRETE PIPE

BM6 ELEVATION - 621.67
N 596597 E 1510111
L STATION 60-37 435 LEFT
RR SPIKE SET IN THE BASE OF A 50" OAK

BM7 ELEVATION - 619.88
N 597281 E 1509497
Y2REV STATION 25-29 229 LEFT
RR SPIKE SET IN THE BASE OF A 26"
WILLOW OAK

BM8 ELEVATION - 618.91
N 598704 E 1508633
L STATION 87-39 250 LEFT
RR SPIKE SET IN THE BASE OF A 14" ASH

BM9 ELEVATION - 599.99
N 599331 E 1507857
L STATION 97-48 231 LEFT
RR SPIKE SET IN THE BASE OF A 48" OAK

BM10 ELEVATION - 617.04
N 600629 E 1507553
L STATION 109-72 306 RIGHT
RR SPIKE SET IN THE BASE OF A 30" OAK

BM11 ELEVATION - 619.03
N 601155 E 1506608
L STATION 118-75 289 LEFT
RR SPIKE SET IN THE BASE OF A 28" OAK

BM12 ELEVATION - 639.59
N 602632 E 1505901
L STATION 135-11 234 LEFT
RR SPIKE SET IN THE BASE OF A 44" OAK

BM13 ELEVATION - 584.77
N 590405 E 1513606
L1 STATION 16-00 12 RIGHT
RR SPIKE IN BASE OF 18" OAK

BM14 ELEVATION - 587.58
N 590058 E 1512971
Y1 STATION 10-86 120 RIGHT
RR SPIKE IN BASE OF 36" TRIPLE WILD
CHERRY

BM15 ELEVATION - 610.33
N 591164 E 1513301
Y1 STATION 22-14
S 83°56'12.59" E DIST 61.02
RR SPIKE IN BASE OF 24" OAK

BM16 ELEVATION - 566.45
N 590982 E 1512428
L1 STATION 29-35 23 RIGHT
RR SPIKE IN BASE OF 12" BOX ELDER

BM17 ELEVATION - 583.26
N 591428 E 1511935
L1 STATION 35-78 99 LEFT
RR SPIKE IN BASE OF 24" ELM

BM18 ELEVATION - 559.72
N 590123 E 1514141
L1 STATION 10-01 93 LEFT
RR SPIKE IN BASE OF 14" BIRCH

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L1 STATION	OFFSET
6	A-6	591393.9332	1513081.2802	617.39	25-11.20	727.71 RT
7	A-7	591699.4348	1512350.6215	577.77	36-67.45	391.47 RT
8	BL-8	591886.2055	1511879.7284	594.01	40-17.79	13.17 LT
9	BL-9	592628.4082	1511748.2585	612.70	47-71.24	14.02 LT

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
6	A-6	591393.9332	1513081.2802	617.39	OUTSIDE PROJECT LIMITS	
7	A-7	591699.4348	1512350.6215	577.77	OUTSIDE PROJECT LIMITS	
8	BL-8	591886.2055	1511879.7284	594.01	OUTSIDE PROJECT LIMITS	
9	BL-9	592628.4082	1511748.2585	612.70	OUTSIDE PROJECT LIMITS	
85	BL-85	593725.2140	1511617.1860	607.89	27-43.09	1.53 LT
12	BL-12	594236.1345	1511501.0431	608.98	32-68.12	19.86 LT
13	BL-13	594788.6347	1511291.4062	620.51	38-62.31	45.28 LT
14	BL-14	595457.7900	1511021.4010	639.25	45-83.73	60.42 LT
15	72 JAS	595882.6700	1510849.1140	626.79	50-43.00	70.19 LT
17	BL-17	596481.3475	1510680.0835	631.67	56-61.25	17.12 RT
24	BL-24	596804.3665	1510487.0078	624.78	60-36.67	4.68 LT
25	BL-25	597352.2977	1510161.2141	622.29	66-74.40	2.10 RT
26	BL-26	597922.4704	1509743.1564	630.25	73-81.40	3.70 RT
4	R2246B-4	598378.1800	1509329.3080	627.67	79-97.17	6.10 LT
30	BL-30	598888.1878	1508804.7313	615.06	87-29.28	1.23 RT
31	BL-31	599313.1476	1508265.9147	601.61	94-15.66	0.01 RT
32	BL-32	599544.0240	1507977.1245	589.04	97-85.63	10.73 RT
33	BL-33	599782.9995	1507744.7002	596.05	101-21.99	23.70 RT
34	BL-34	600520.3800	1507261.3905	609.76	110-10.00	2.97 LT
35	BL-35	600900.3766	1507074.3367	620.12	114-33.43	6.80 RT
36	BL-36	601513.5193	1506761.4839	626.54	121-21.75	12.77 RT
37	BL-37	601984.7116	1506529.2057	631.67	126-46.95	24.59 RT
38	BL-38	602536.4697	1506219.3951	655.14	132-79.43	4.89 RT
39	BL-39	602769.2987	1506116.6296	642.14	135-33.39	21.38 RT
61	BL-1 R2246C	603011.5925	1506000.9250	647.18	138-01.73	30.76 RT
62	BL-2 R2246C	603186.6480	1505988.4970	652.46	139-62.77	100.65 RT
27	BL-27 R2246C	603421.8040	1505881.7960	664.28	142-28.61	107.33 RT
28	BL-28 R2246C	603664.2454	1505795.3775	662.27	144-97.25	110.79 RT
81	BL-81	604016.6130	1505607.9310	651.19	148-92.32	8.11 RT
82	BL-82	604600.4690	1505508.2310	640.40	OUTSIDE PROJECT LIMITS	

BL1

POINT	DESC.	NORTH	EAST	ELEVATION	L1 STATION	OFFSET
100	BL-100	590217.6010	1514212.3430	557.72	9-73.49	22.40 RT
101	BL-101	590473.9848	1513470.6651	586.81	17-61.86	36.57 RT
111	BL-111	590786.9477	1513075.7459	608.77	22-48.64	169.42 RT
102	BL-102	590803.8269	1512841.2709	613.91	24-73.33	91.46 RT
103	BL-103	590908.7076	1512573.1446	588.13	27-70.90	53.37 RT
104	BL-104	590989.2145	1512468.0770	566.12	29-08.17	54.81 RT
105	BL-105	591118.0260	1512342.8402	571.69	30-94.97	63.89 RT
106	BL-106	591263.6015	1512177.7583	580.81	33-19.21	28.54 RT
107	BL-107	591487.1932	1512033.2709	577.62	35-89.36	15.61 RT
EQ08	BL-8	591886.2055	1511879.7284	594.01	40-17.79	13.17 LT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
110	BY2A-110	591792.1303	1511648.9592	589.20	OUTSIDE PROJECT LIMITS	
EQ8	BL-8	591886.2055	1511879.7284	594.01	12-28.07	54.95 LT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
112	BY1304A-112	590038.4124	1512796.0416	583.15	OUTSIDE PROJECT LIMITS	
108	BY1304A-108	590197.9955	1512920.1474	590.59	11-90.55	18.18 RT
EQ111	BL-111	590786.9477	1513075.7459	608.77	17-97.48	21.44 LT
109	BY1304A-109	591156.1360	1513262.6742	610.59	22-10.96	26.04 RT
2	R2246B-2	591929.6400	1513635.1390	0.00	OUTSIDE PROJECT LIMITS	

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2REV STATION	OFFSET
68	BL-17	596481.3475	1510680.0835	631.67	OUTSIDE PROJECT LIMITS	
18	BY2-18	597124.5660	1510061.3727	623.28	OUTSIDE PROJECT LIMITS	
20	BY2-20	597580.0515	1509528.4780	626.03	27-02.77	16.80 RT
21	BY2-21	598127.8538	1508927.1677	619.39	33-43.42	399.03 RT

BY2A

POINT	DESC.	NORTH	EAST	ELEVATION	Y2REV STATION	OFFSET
19	BY3-19	596944.3810	1509888.8729	617.52	OUTSIDE PROJECT LIMITS	
69	BY2-18	597124.5660	1510061.3727	623.28	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
11	BY-11	593588.5959	1511351.6443	684.20	OUTSIDE PROJECT LIMITS	
78	BL-85	593725.2140	1511617.1860	607.89	12-92.40	34.23 LT
86	BY-86	593821.6020	1512036.8350	590.36	OUTSIDE PROJECT LIMITS	

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
3	R2246B-3	597743.1940	1508310.9630	608.54	10-01.23	42.70 RT
70	BY2-21	598127.8538	1508927.1677	619.39	17-27.57	52.63 RT
74	R2246B-4	598378.1800	1509329.3080	627.67	22-01.21	59.70 RT
29	BY4-29	598999.5353	1510325.3431	633.26	33-75.05	76.09 RT

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
71	BY0-1 R2246C	603210.9392	1503913.1503	634.14	OUTSIDE PROJECT LIMITS	
72	BY0-2 R2246C	603594.6491	1504522.9949	639.26	OUTSIDE PROJECT LIMITS	
83	BY5-83	603755.7500	1505056.1520	635.48	12-72.62	35.49 RT
77	BL-81	604016.6130	1505607.9310	651.19	18-69.50	63.58 LT
84	BY5-84	604023.8938	1506402.6530	657.78	26-59.00	31.63 RT
63	U2009-16	604081.3607	1507131.8441	666.86	OUTSIDE PROJECT LIMITS	

BY1457

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
16	BY1-16	595901.1729	1510620.0347	622.15	51-48.01	275.83 LT
67	72 JAS	595882.6700	1510849.1140	626.79	50-43.00	70.19 LT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCGS FOR MONUMENT "WINDSOR"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 626437.435(ft) EASTING: 1510910.502(ft)
ELEVATION: (ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999849030
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"WINDSOR" TO -L1- STATION 11+00.00 IS
S 5°01'00.27" E 36.329.1943 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2246B_LS_CONTROL.TXT
   R2246B_LS_LOCAL.TXT

2. *SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION & SURVEYS UNIT.*

3. *PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING (NON-HARN) MONUMENTATION.*

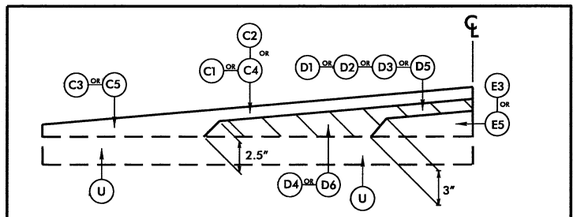
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PRELIMINARY PAVEMENT SCHEDULE

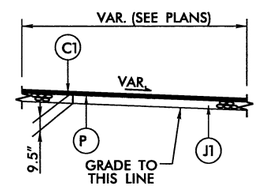
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E5	PROP. APPROX. 7" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E6	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	J1	PROP. 8" AGGREGATE BASE COURSE.
C4	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J2	PROP. 10" AGGREGATE BASE COURSE.
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	R1	2'-6" CONCRETE CURB AND GUTTER.
D2	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	R2	5" MONOLITHIC ISLAND.
D3	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R3	STD. CONCRETE BARRIER (SINGLE FACE).
D4	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R4	SHOULDER BERM GUTTER.
D5	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	R5	CONCRETE VALLEY GUTTER.
D6	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	S	PROP 4" CONCRETE SIDEWALK
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
E2	PROP. APPROX. 6" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	U	EXISTING PAVEMENT.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).
E4	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.		

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



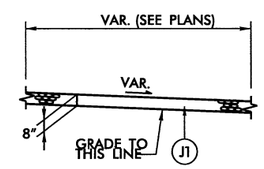
LINE	SURFACE C3	SURFACE C5	INTERMEDIATE			D4	D6		BASE E3	BASE E5
L1 (USE WITH T.S. 1 & 3)		X					X			X
L (USE WITH T.S. 4 & 6)		X					X			X
Y & Y3 (USE WITH T.S. 7)	X					X			X	
Y1, Y2REV, Y8 & Y9 (USE WITH T.S. 9, 10, 16)	X					X			X	
Y4 & Y5 (USE WITH T.S. 12 THRU 15)	X					X			X	

DETAIL SHOWING METHOD OF WEDGING



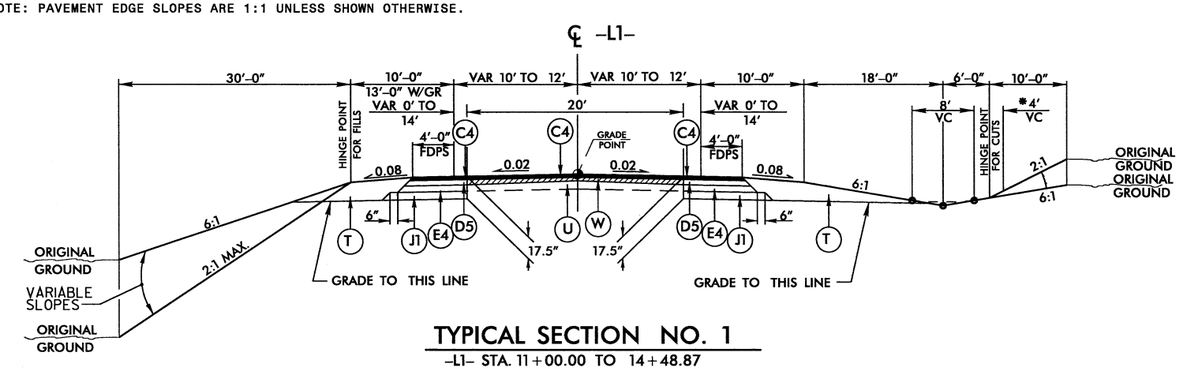
ROADWAY
MISC. PAVED PRIVATE DRIVES AND TURNAROUNDS

REMARKS
SEE PLANS FOR LOCATIONS



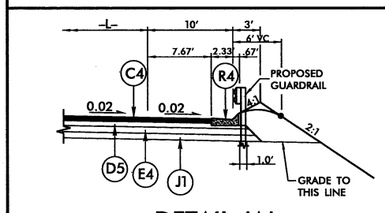
ROADWAY
MISC. UNPAVED PRIVATE DRIVES

REMARKS
SEE PLANS FOR LOCATIONS



TYPICAL SECTION NO. 1

-L1- STA. 11+00.00 TO 14+48.87
-L1- STA. 40+00.00 TO 42+87.90



DETAIL 'A'

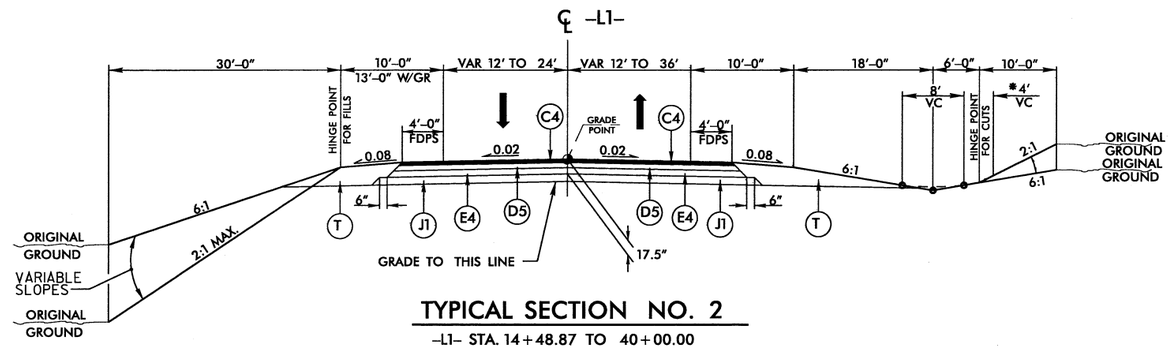
GUARDRAIL WHERE SHOULDER BERM GUTTER IS REQUIRED
(USE IN CONJUNCTION W/TS NO. 2, 4 & 5)

6/2/99

18-MAR-2011\29
f:\roadway\pro\r-2246b_rdy_typ.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

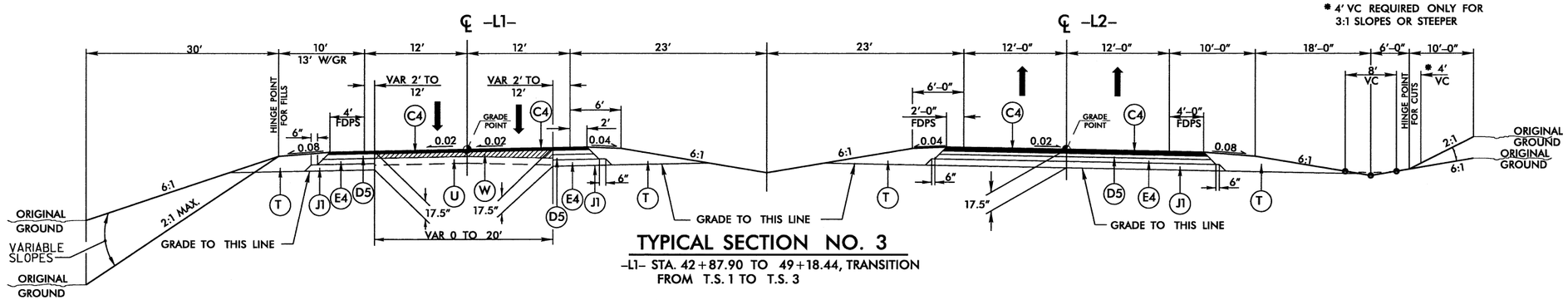
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 2

-L1- STA. 14+48.87 TO 40+00.00

* 4' VC REQUIRED ONLY FOR 3:1 SLOPES OR STEEPER

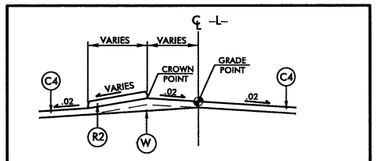


TYPICAL SECTION NO. 3

-L1- STA. 42+87.90 TO 49+18.44, TRANSITION FROM T.S. 1 TO T.S. 3

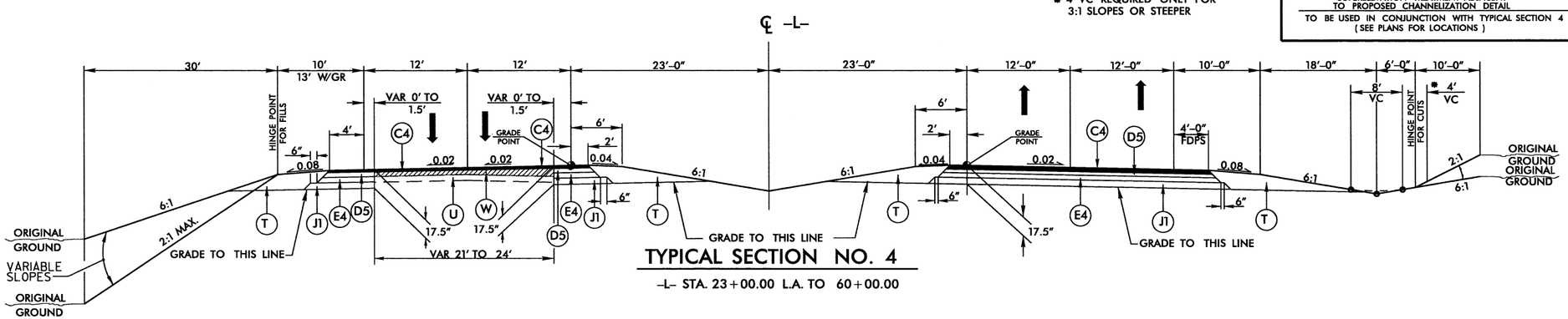
-L1- STA. 49+18.44 TO 54+31.74 L.B. &
-L2- STA. 49+21.02 TO 54+34.31 L.B.

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	3.5" I19.0B
D3	4.0" I19.0B
D4	VAR. I19.0B
D5	3.5" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	6.0" B25.0B
E3	VAR. B25.0B
E4	3.0" B25.0C
E5	7.0" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	10.0" ABC
P	PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



SUPERELEVATION TREATMENT ADJACENT TO PROPOSED CHANNELIZATION DETAIL
TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 4
(SEE PLANS FOR LOCATIONS)

* 4' VC REQUIRED ONLY FOR 3:1 SLOPES OR STEEPER



TYPICAL SECTION NO. 4

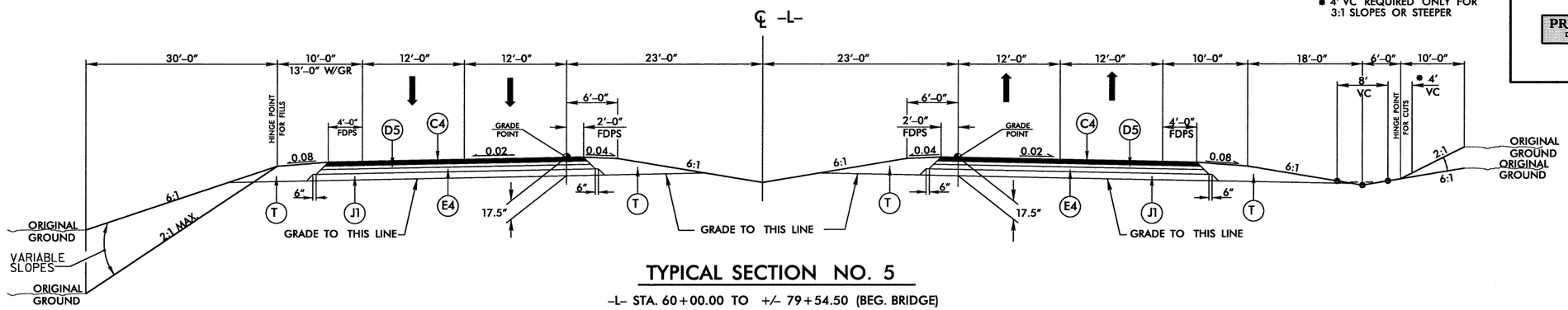
-L- STA. 23+00.00 L.A. TO 60+00.00

6/2/99

18-MAR-2011\29
r:\roadway\proj\r2246b_rdy_typ.dgn
$$$$USERNAME$$$$

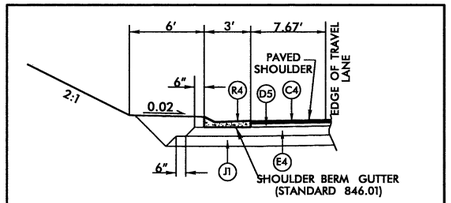
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

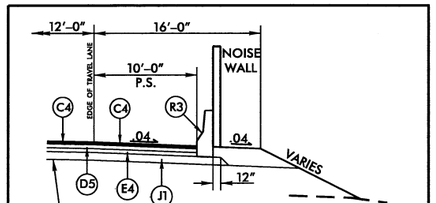


TYPICAL SECTION NO. 5

-L- STA. 60+00.00 TO +/- 79+54.50 (BEG. BRIDGE)
-L- STA. +/- 81+87.09 (END BRIDGE) TO 148+00.00

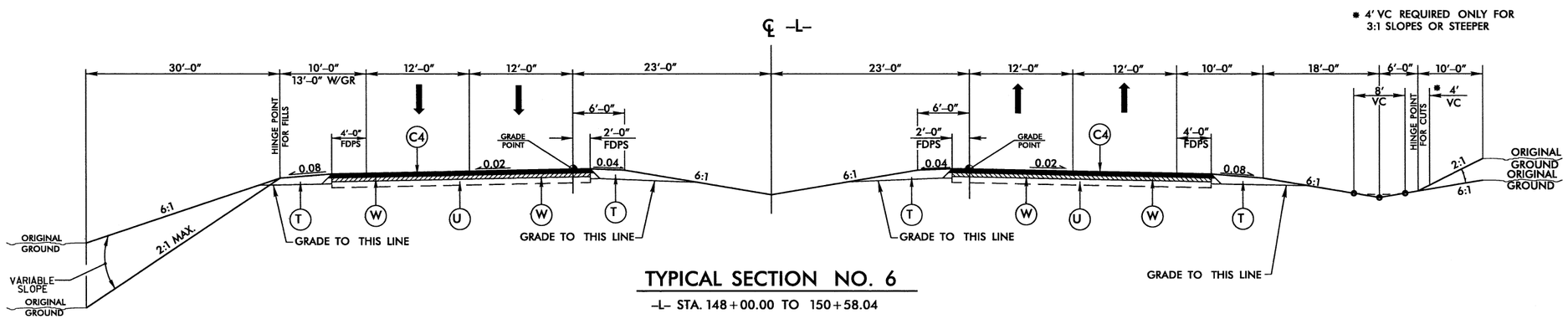


DETAIL SHOWING SHOULDER BERM GUTTER
USE WITH TYPICAL SECTION NO. 5
-L- STA. 141+00.00 TO 147+32.65 LEFT



NOISE WALL DETAIL
TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 5
-L- STA. 110+08.44 TO 139+58.23 RT.

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	3.5" I19.0B
D3	4.0" I19.0B
D4	VAR. I19.0B
D5	3.5" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	6.0" B25.0B
E3	VAR. B25.0B
E4	3.0" B25.0C
E5	7.0" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	10.0" ABC
P	PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 6

-L- STA. 148+00.00 TO 150+58.04

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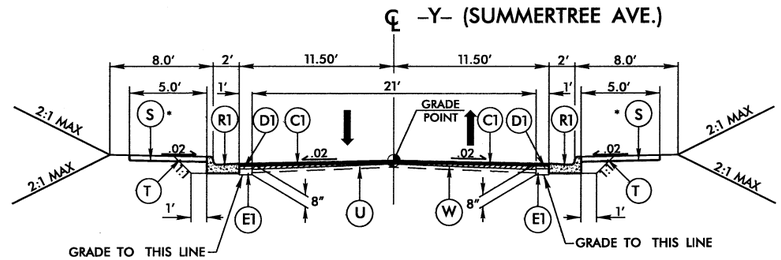
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

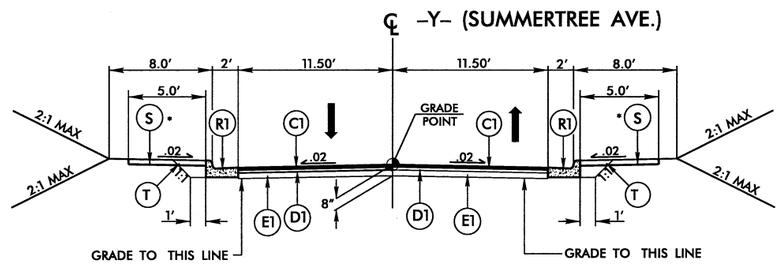
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



* SEE PLANS FOR LOCATION OF SIDEWALK

TYPICAL SECTION NO. 7

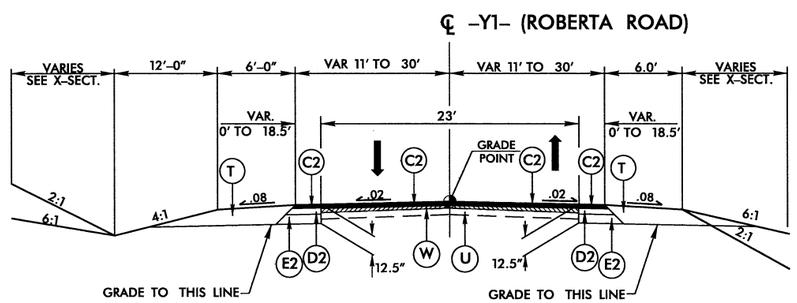
-Y- STA. 11+00.00 TO 12+00.00



* SEE PLANS FOR LOCATION OF SIDEWALK

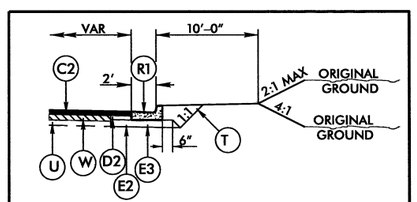
TYPICAL SECTION NO. 8

-Y- STA. 12+00.00 TO 12+50.00



TYPICAL SECTION NO. 9

-Y1- STA 10+50 TO 22+00



DETAIL 9A

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 9
-Y1- STA. 10+50.00 TO 12+60.00 RT.

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	3.5" I19.0B
D3	4.0" I19.0B
D4	VAR. I19.0B
D5	3.5" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	6.0" B25.0B
E3	VAR. B25.0B
E4	3.0" B25.0C
E5	7.0" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	10.0" ABC
P	PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

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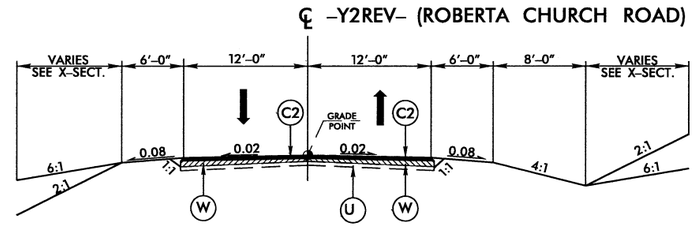
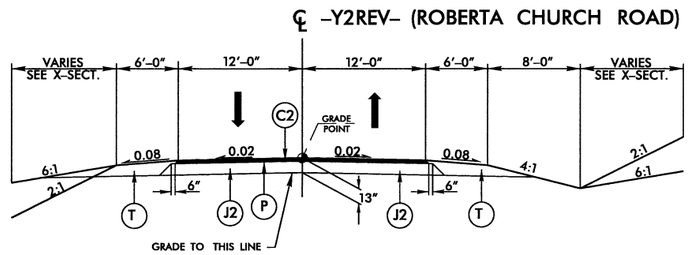
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 10

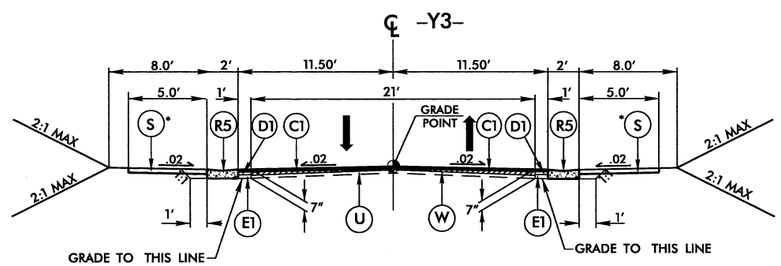
-Y2REV- STA. 26+00.00 TO 27+53.09



TYPICAL SECTION NO. 11

-Y2REV- STA. 27+53.09 TO 29+00, TRANSITION FROM T.S. 10 TO T.S. 11

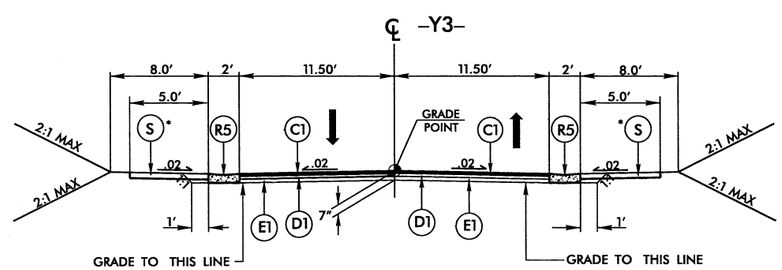
-Y2REV- STA. 29+00.00 TO 37+75.48



* SEE PLANS FOR LOCATION OF SIDEWALK

TYPICAL SECTION NO. 12

-Y3- STA. 11+00.00 TO 12+00.00
-Y3- STA. 15+25.00 TO 16+00.00



* SEE PLANS FOR LOCATION OF SIDEWALK

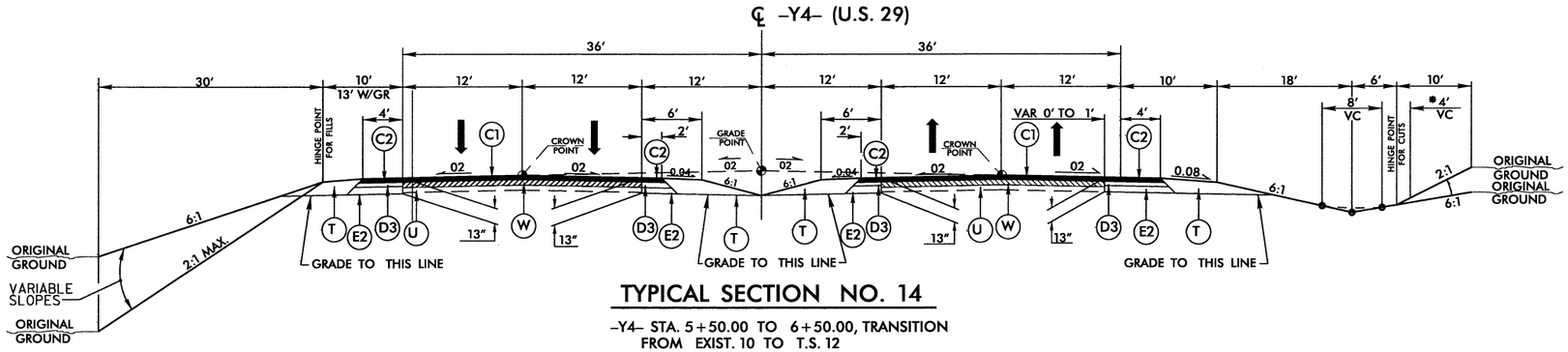
TYPICAL SECTION NO. 13

-Y3- STA. 14+00.00 TO 15+25.00

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	3.5" I19.0B
D3	4.0" I19.0B
D4	VAR. I19.0B
D5	3.5" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	6.0" B25.0B
E3	VAR. B25.0B
E4	3.0" B25.0C
E5	7.0" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	10.0" ABC
P	PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-E
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

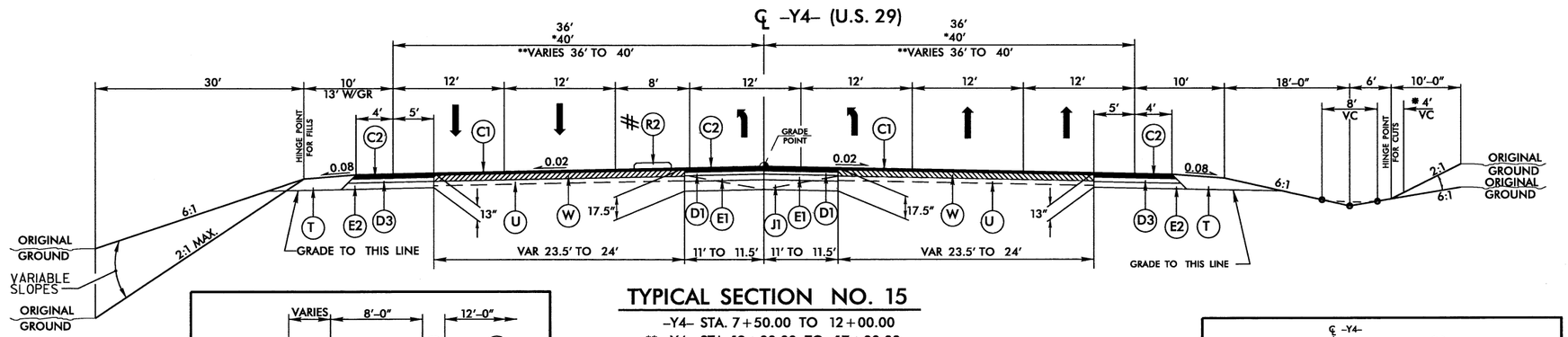
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 14

-Y4- STA. 5+50.00 TO 6+50.00, TRANSITION FROM EXIST. 10 TO T.S. 12

-Y4- STA. 6+50.00 TO 7+50.00, TRANSITION FROM T.S. 12 TO T.S. 13



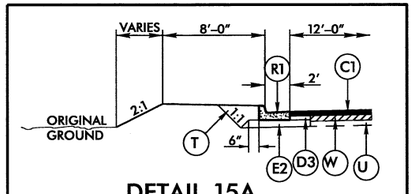
TYPICAL SECTION NO. 15

-Y4- STA. 7+50.00 TO 12+00.00

** -Y4- STA. 12+00.00 TO 17+00.00

*-Y4- STA. 17+00.00 TO 26+74.29

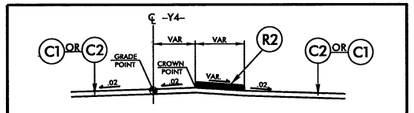
SEE PLANS FOR ISLAND LOCATION



DETAIL 15A

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 13

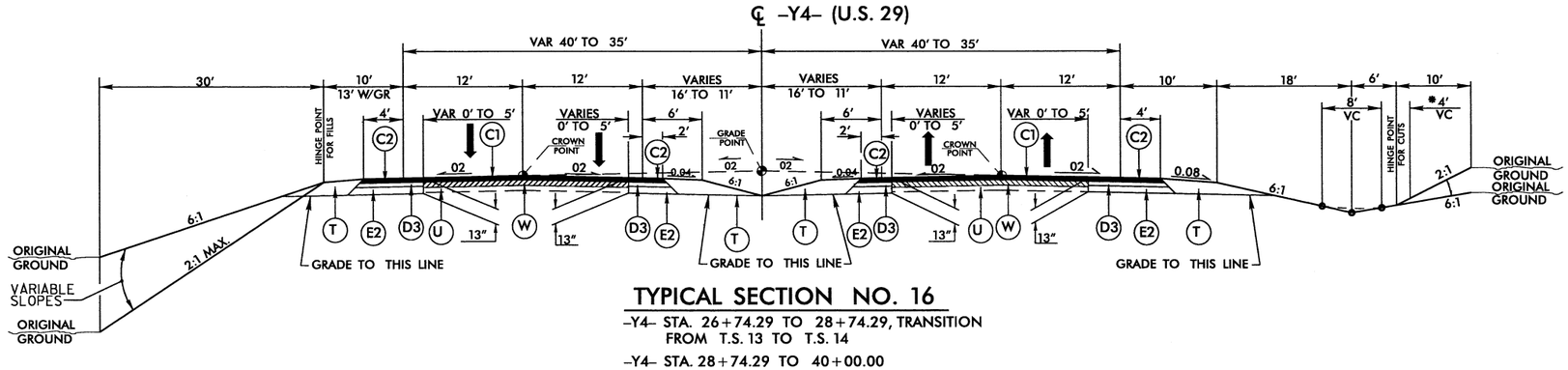
-Y4- STA. 11+85.00 TO 16+00.00 LT.



DETAIL 15B

SUPERELEVATION TREATMENT ADJACENT TO PROPOSED CHANNELIZATION

TO BE USED IN CONJUNCTION WITH TYPICAL SECTIONS 13
(SEE PLANS FOR LOCATIONS)



TYPICAL SECTION NO. 16

-Y4- STA. 26+74.29 TO 28+74.29, TRANSITION FROM T.S. 13 TO T.S. 14

-Y4- STA. 28+74.29 TO 40+00.00

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	3.5" I19.0B
D3	4.0" I19.0B
D4	VAR. I19.0B
D5	3.5" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	6.0" B25.0B
E3	VAR. B25.0B
E4	3.0" B25.0C
E5	7.0" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	10.0" ABC
P	PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

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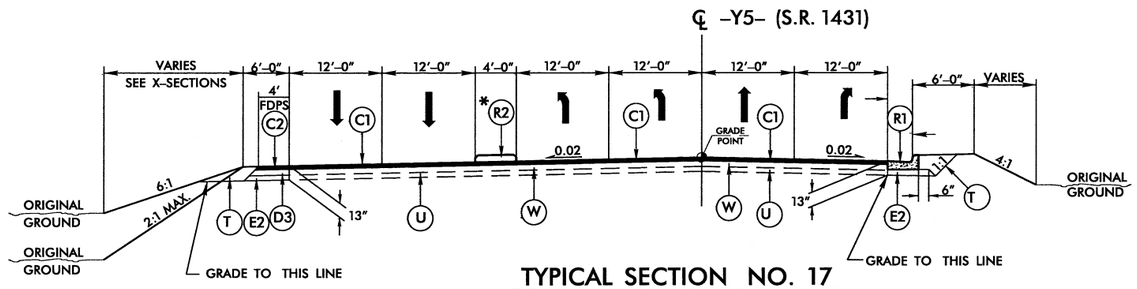
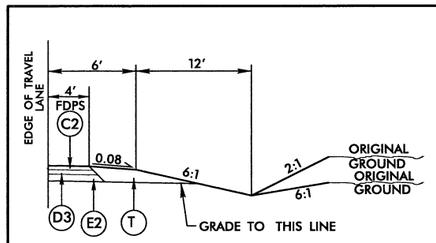
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-F
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



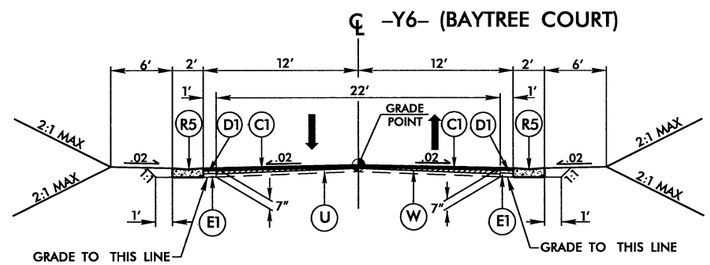
TYPICAL SECTION NO. 17

-Y5- STA. 15+00.00 TO 25+00.00
* SEE PLANS FOR ISLAND LOCATION



DETAIL 17A

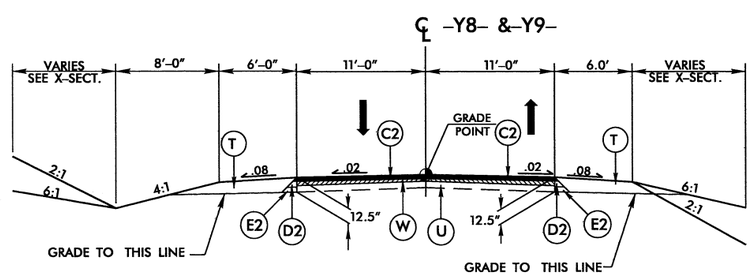
TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 15
-Y5- STA. 14+00.00 TO 15+00.00 RT.



TYPICAL SECTION NO. 18

-Y6- STA. 10+46.76 TO 11+50.00

* SEE PLANS FOR LOCATION OF SIDEWALK



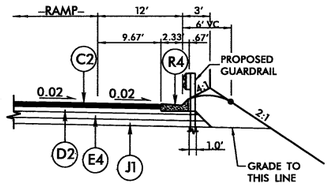
TYPICAL SECTION NO. 19

-Y8- STA. 11+50.00 TO 13+32.68
-Y9- STA. 10+12.02 TO 11+50.00

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	3.5" I19.0B
D3	4.0" I19.0B
D4	VAR. I19.0B
D5	3.5" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	6.0" B25.0B
E3	VAR. B25.0B
E4	3.0" B25.0C
E5	7.0" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	10.0" ABC
P	PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

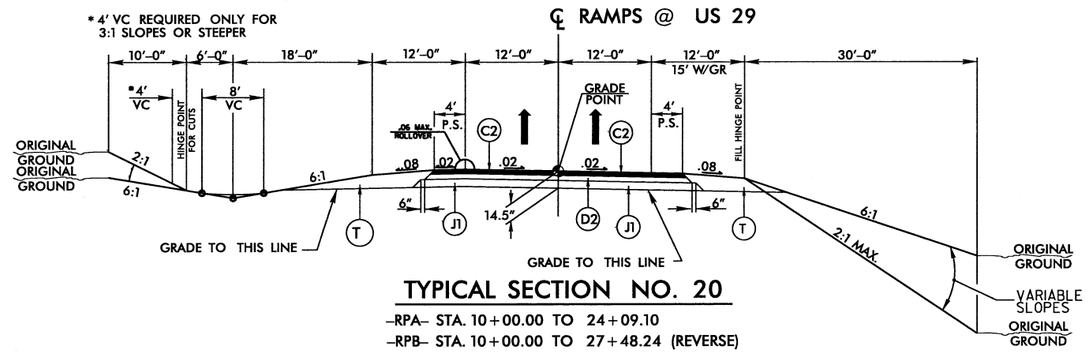
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-G
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



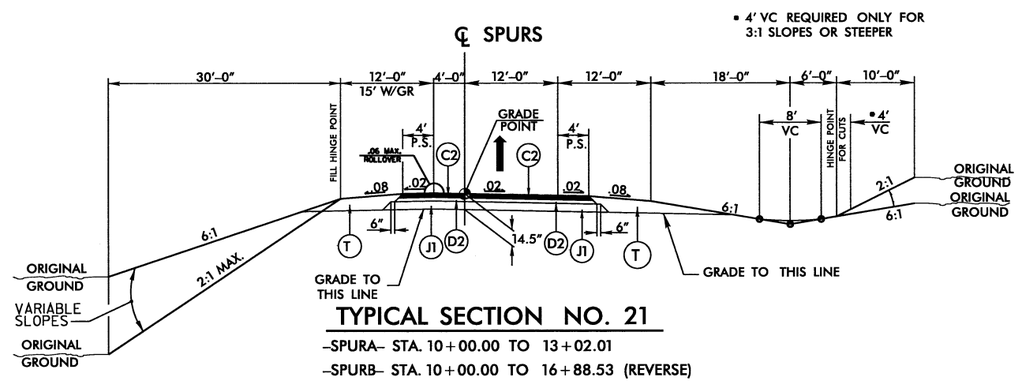
DETAIL 20A

GUARDRAIL WHERE SHOULDER BERM GUTTER IS REQUIRED (USE IN CONJUNCTION W/TS NO. 17)



TYPICAL SECTION NO. 20

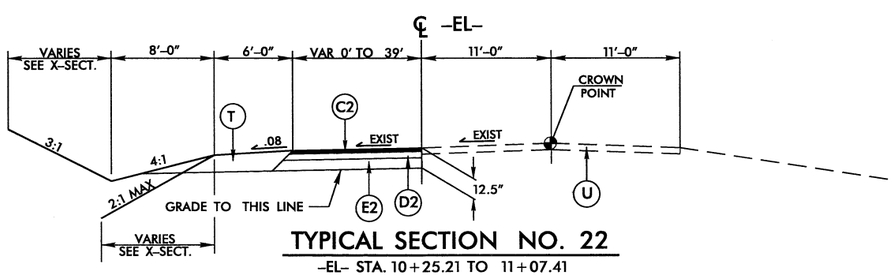
-RPA- STA. 10+00.00 TO 24+09.10
-RPB- STA. 10+00.00 TO 27+48.24 (REVERSE)
-RPC- STA. 10+00.00 TO 22+89.76
-RPD- STA. 10+00.00 TO 25+54.64 (REVERSE)



TYPICAL SECTION NO. 21

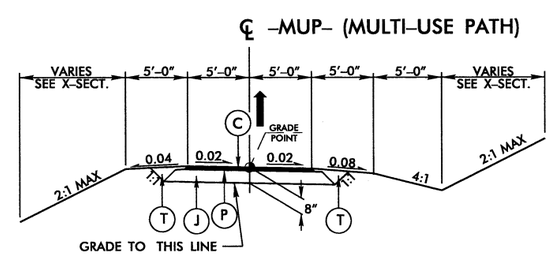
-SPURA- STA. 10+00.00 TO 13+02.01
-SPURB- STA. 10+00.00 TO 16+88.53 (REVERSE)
-SPURC- STA. 10+00.00 TO 13+80.74
-SPURD- STA. 10+00.00 TO 15+42.87 (REVERSE)

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	3.5" I19.0B
D3	4.0" I19.0B
D4	VAR. I19.0B
D5	3.5" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	6.0" B25.0B
E3	VAR. B25.0B
E4	3.0" B25.0C
E5	7.0" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	10.0" ABC
P	PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 22

-EL- STA. 10+25.21 TO 11+07.41



TYPICAL SECTION NO. 23

-MUP- STA. 10+00.00 TO 74+54.49

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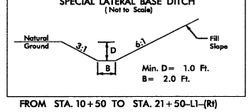
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-H
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

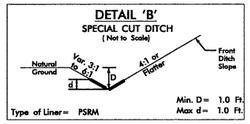
DRAINAGE DITCH DETAILS

DETAIL 'A'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



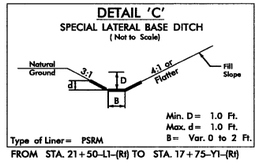
FROM STA. 10+50 TO STA. 21+50-L1-(Rt)

DETAIL 'B'
SPECIAL CUT DITCH
(Not to Scale)



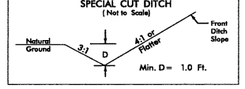
FROM STA. 14+17.65 TO STA. 14+50-L1-(Lt)
FROM STA. 12+50 TO STA. 12+97.48-Y8-(Lt)
FROM STA. 14+50 TO STA. 16+50-Y5-(Rt)
FROM STA. 37+00 TO STA. 39+00-Y4-(Lt)

DETAIL 'C'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



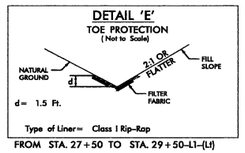
FROM STA. 21+50-L1-(Rt) TO STA. 17+75-Y1-(Rt)

DETAIL 'D'
SPECIAL CUT DITCH
(Not to Scale)



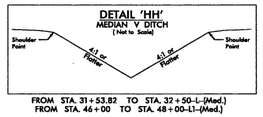
FROM STA. 12+18.55 TO STA. 15+00 -SPURB-(Lt)
FROM STA. 17+75 TO STA. 20+50 -Y1-(Lt)
FROM STA. 17+75 TO STA. 20+71.95 -Y1-(Rt)
FROM STA. 13+31.32 TO STA. 13+87.46 -Y1-(Lt)
FROM STA. 33+61.46 TO STA. 35+50 -L1-(Lt)
FROM STA. 23+00 TO STA. 24+00 -L-(Rt)
FROM STA. 50+00 TO STA. 54+31.74 -L1-(Rt)
FROM STA. 20+15 TO STA. 22+50 -Y5-(Rt)
FROM STA. 44+20 TO STA. 46+00 -L1-(Lt)
FROM STA. 40+00 TO STA. 43+90 -L1-(Lt)

DETAIL 'E'
TOE PROTECTION
(Not to Scale)



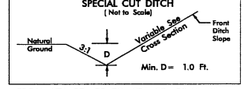
FROM STA. 27+50 TO STA. 29+50-L1-(Lt)

DETAIL 'HH'
MEDIAN V DITCH
(Not to Scale)



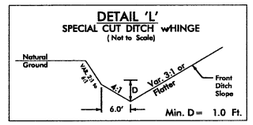
FROM STA. 31+53.82 TO STA. 32+50-L-(Med.)
FROM STA. 46+00 TO STA. 48+00-L1-(Med.)

DETAIL 'J'
SPECIAL CUT DITCH
(Not to Scale)



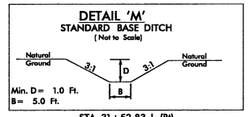
FROM STA. 37+50 TO STA. 50+00-L1-(Rt)

DETAIL 'L'
SPECIAL CUT DITCH wHINGE
(Not to Scale)



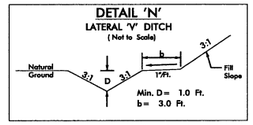
FROM STA. 40+50 TO STA. 41+30.96-L-(Rt)
FROM STA. 31+53.82 TO STA. 33+50-L-(Rt)
FROM STA. 29+50 TO STA. 31+53.82-L-(Rt)

DETAIL 'M'
STANDARD BASE DITCH
(Not to Scale)



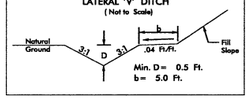
STA. 31+52.83-L-(Rt)
183 LF @ 0.5% Grade
FROM STA. 109+05.38 TO STA. 109+84.87-L-(Lt)
112 LF @ 0.4% grade

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



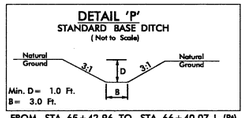
FROM STA. 24+00 TO STA. 26+50-L-(Rt)

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



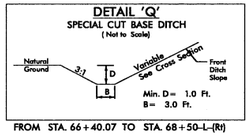
FROM STA. 51+00 TO STA. 51+86-L-(Lt)
FROM STA. 51+86 TO STA. 53+75-L-(Lt)

DETAIL 'P'
STANDARD BASE DITCH
(Not to Scale)



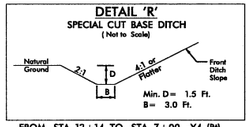
FROM STA. 65+42.96 TO STA. 66+40.07-L-(Rt)
172 LF @ .26% Grade

DETAIL 'Q'
SPECIAL CUT BASE DITCH
(Not to Scale)



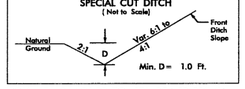
FROM STA. 66+40.07 TO STA. 68+50-L-(Rt)

DETAIL 'R'
SPECIAL CUT BASE DITCH
(Not to Scale)



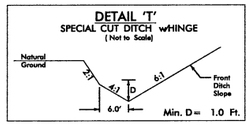
FROM STA. 12+14 TO STA. 7+00 -Y4-(Rt)
FROM STA. 25+03.94 TO STA. 27+37.65 -Y4-(Rt)

DETAIL 'S'
SPECIAL CUT DITCH
(Not to Scale)



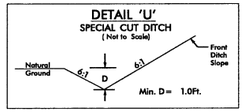
FROM STA. 24+36.38 TO STA. 25+50-RPC-(Lt)
FROM STA. 27+37.65 TO STA. 28+00-Y4-(Rt)

DETAIL 'T'
SPECIAL CUT DITCH wHINGE
(Not to Scale)



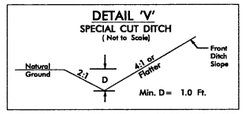
FROM STA. 23+50 TO STA. 24+50-RPB-(Rt)
FROM STA. 31+00 TO STA. 32+00-L-(Lt)

DETAIL 'U'
SPECIAL CUT DITCH
(Not to Scale)



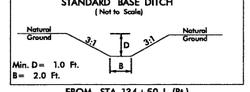
FROM STA. 24+50 TO STA. 23+50-RPD-(Rt)

DETAIL 'V'
SPECIAL CUT DITCH
(Not to Scale)



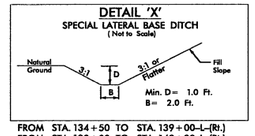
FROM STA. 37+00 TO STA. 37+66.53 -Y2Rev-(Rt)
FROM STA. 26+00 TO STA. 32+00 -Y2Rev-(Lt)
FROM STA. 26+50 TO STA. 31+50 -Y2Rev-(Rt)
FROM STA. 32+50 TO STA. 35+50 -Y2Rev-(Rt)
FROM STA. 13+00 TO STA. 18+00 -Y4-(Rt)
FROM STA. 5+50 TO STA. 6+95 -Y4-(Lt)
FROM STA. 11+50 TO STA. 6+95 -Y4-(Lt)
FROM STA. 19+16.94 TO STA. 17+21 -Y4-(Lt)
FROM STA. 13+87.13 TO STA. 13+52 -SPURA-(Rt)

DETAIL 'W'
STANDARD BASE DITCH
(Not to Scale)



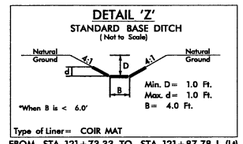
FROM STA. 134+50-L-(Rt.)
52 LF @ 2.61% grade

DETAIL 'X'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



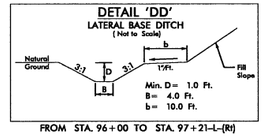
FROM STA. 134+50 TO STA. 139+00-L-(Rt.)
FROM STA. 139+00 TO STA. 140+00-L-(Rt.)

DETAIL 'Z'
STANDARD BASE DITCH
(Not to Scale)



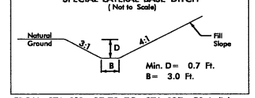
FROM STA. 121+73.33 TO STA. 121+87.78-L-(Lt)
23 LF @ 1.42% grade
FROM STA. 122+89.40 TO STA. 123+22.25-L-(Rt)
35 LF @ 4.14% grade

DETAIL 'DD'
LATERAL BASE DITCH
(Not to Scale)



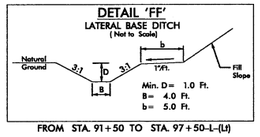
FROM STA. 96+00 TO STA. 97+21-L-(Rt)

DETAIL 'AA'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



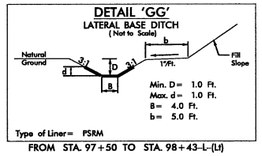
FROM STA. 121+87.78 TO STA. 127+50-L-(Lt)

DETAIL 'FF'
LATERAL BASE DITCH
(Not to Scale)



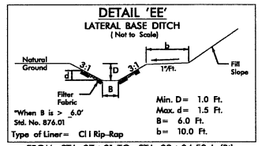
FROM STA. 91+50 TO STA. 97+50-L-(Lt)

DETAIL 'GG'
LATERAL BASE DITCH
(Not to Scale)



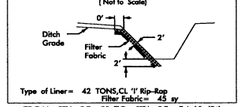
FROM STA. 97+50 TO STA. 98+43-L-(Lt)

DETAIL 'EE'
LATERAL BASE DITCH
(Not to Scale)



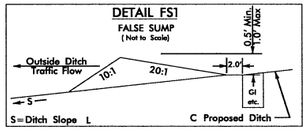
FROM STA. 97+21 TO STA. 98+04.58-L-(Rt)

DETAIL 'JJ'
RIP RAP AT EMBANKMENT
(Not to Scale)



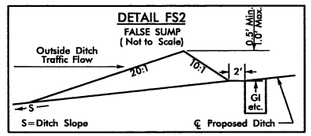
FROM STA. 35+21 TO STA. 35+54-L1-(Rt)

DETAIL FS1
FALSE SUMP
(Not to Scale)



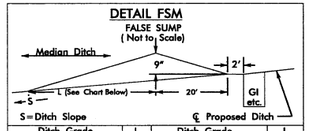
STA. 26+74-L1-(Rt)
STA. 27+74-L1-(Rt)
STA. 13+07-Y1-(Lt)
STA. 40+00-L1-(Lt)
STA. 47+74-L1-(Rt)
STA. 49+74-L1-(Rt)
STA. 41+48-L-(Rt)
STA. 140+76-L-(Lt)
STA. 146+74-L-(Rt)

DETAIL FS2
FALSE SUMP
(Not to Scale)



STA. 26+74-L1-(Lt)
STA. 37+26-L1-(Rt)
STA. 40+26-L1-(Rt)
STA. 44+26-L1-(Rt)
STA. 24+26-L-(Rt)
STA. 42+75-L-(Rt)
STA. 6+67-Y4-(Rt)
STA. 100+05-L-(Rt)
STA. 104+26-L-(Rt)
STA. 107+26-L-(Rt)
STA. 110+26-L-(Rt)
STA. 13+69.49-SPURB-(Lt)
STA. 15+24-SPURB-(Lt)
STA. 140+76-L-(Rt)
STA. 31+74-Y2REV-(Rt)

DETAIL FSM
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

STA. 32+26-L-Med.
STA. 34+26-L-Med.
STA. 36+76-L-Med.
STA. 39+76-L-Med.
STA. 51+74-L-Med.
STA. 101+26-L-Med.
STA. 104+26-L-Med.
STA. 107+26-L-Med.
STA. 110+26-L-Med.
STA. 113+38-L-Med.
STA. 58+74-L-Med.
STA. 62+24-L-Med.
STA. 65+74-L-Med.
STA. 68+26-L-Med.
STA. 72+26-L-Med.
STA. 116+76-L-Med.
STA. 120+13-L-Med.
STA. 123+26-L-Med.
STA. 126+76-L-Med.
STA. 131+26-L-Med.
STA. 76+26-L-Med.
STA. 86+24-L-Med.
STA. 91+74-L-Med.
STA. 95+24-L-Med.
STA. 97+74-L-Med.
STA. 99+24-L-Med.
STA. 134+26-L-Med.
STA. 136+26-L-Med.
STA. 138+26-L-Med.
STA. 140+76-L-Med.

8/17/99

REVISIONS

JB MAR-20-W-29
R:\Hydraulics\R2246B_Hyd_DETIR.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

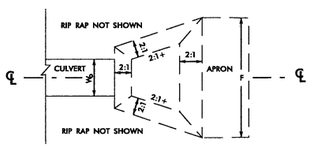
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SPECIAL DRAINAGE DETAILS

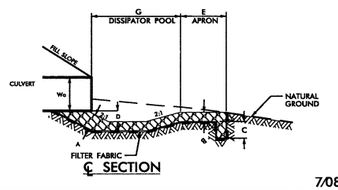
DETAIL 'II'
RIP-RAPPED ENERGY DISSIPATOR BASIN

DIM. (ft)	RIP RAP BASIN # 1	?	?
A	2.5'	?	?
B	1.7'	?	?
C	2.0'	?	?
D	1.5'	?	?
E	10.0'	?	?
F	33.0'	?	?
G	20.0'	?	?

ALL DIMENSIONS APPROXIMATE



PLAN



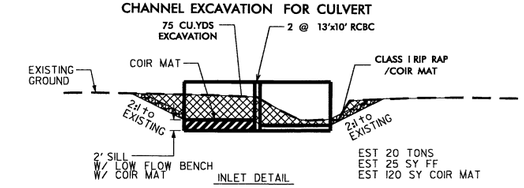
℄ SECTION

BASIN #	LOCATION (AT OUTLET)
1	Sta. 35+54-L1-(Rt) @
?	?
?	?

NOTE:
USE CLASS "I" RIP RAP FOR BASIN #1
APRON ELEVATION TO BE SET 0.5' ABOVE INVERT OF PIPE

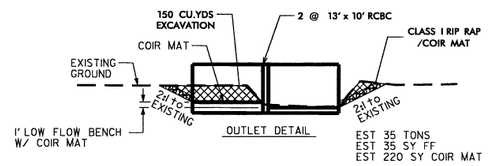
7/08

DETAIL 'LL'
CHANNEL EXCAVATION FOR CULVERT



INLET DETAIL

EST 20 TONS
EST 25 SY FF
EST 120 SY COIR MAT



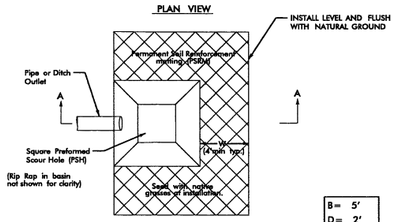
OUTLET DETAIL

EST 35 TONS
EST 35 SY FF
EST 220 SY COIR MAT

RCBC STA. 29+96-L1-

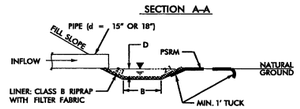
PREFORMED SCOUR HOLE
*NOT TO SCALE

PLAN VIEW



B= 5'
D= 2'
W= 4'

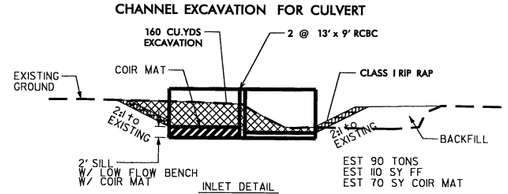
SECTION A-A



3/08

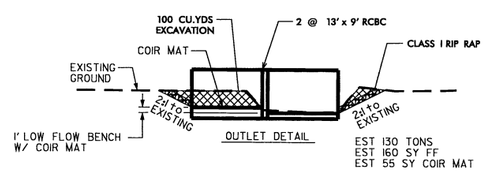
STA. 29+22-L1-(Rt) STA. 51+50-L-(Rt) STA. 62+00-L-(Rt) STA. 19+36-RPD-(Lt)
STA. 30+40-L1-(Rt) STA. 51+86-L-(Rt) STA. 17+05-RPC-(Rt)

DETAIL 'MM'
CHANNEL EXCAVATION FOR CULVERT



INLET DETAIL

EST 90 TONS
EST 110 SY FF
EST 70 SY COIR MAT



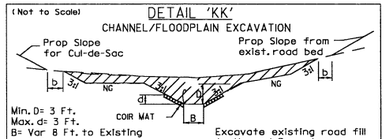
OUTLET DETAIL

EST 130 TONS
EST 160 SY FF
EST 55 SY COIR MAT

RCBC STA. 98+39-L-

(Not to Scale)

DETAIL 'KK'
CHANNEL/FLOODPLAIN EXCAVATION



FROM STA. 36+70 TO STA. 37+26 -L1- RT
EST EXCAV = 630 CY
EST COIR MAT = 120 SY

REVISIONS

8/17/99

18-MAR-2011 h28
R:\Hydro\R2246B_Hyd_DET2.dgn
$$$$TCFRAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

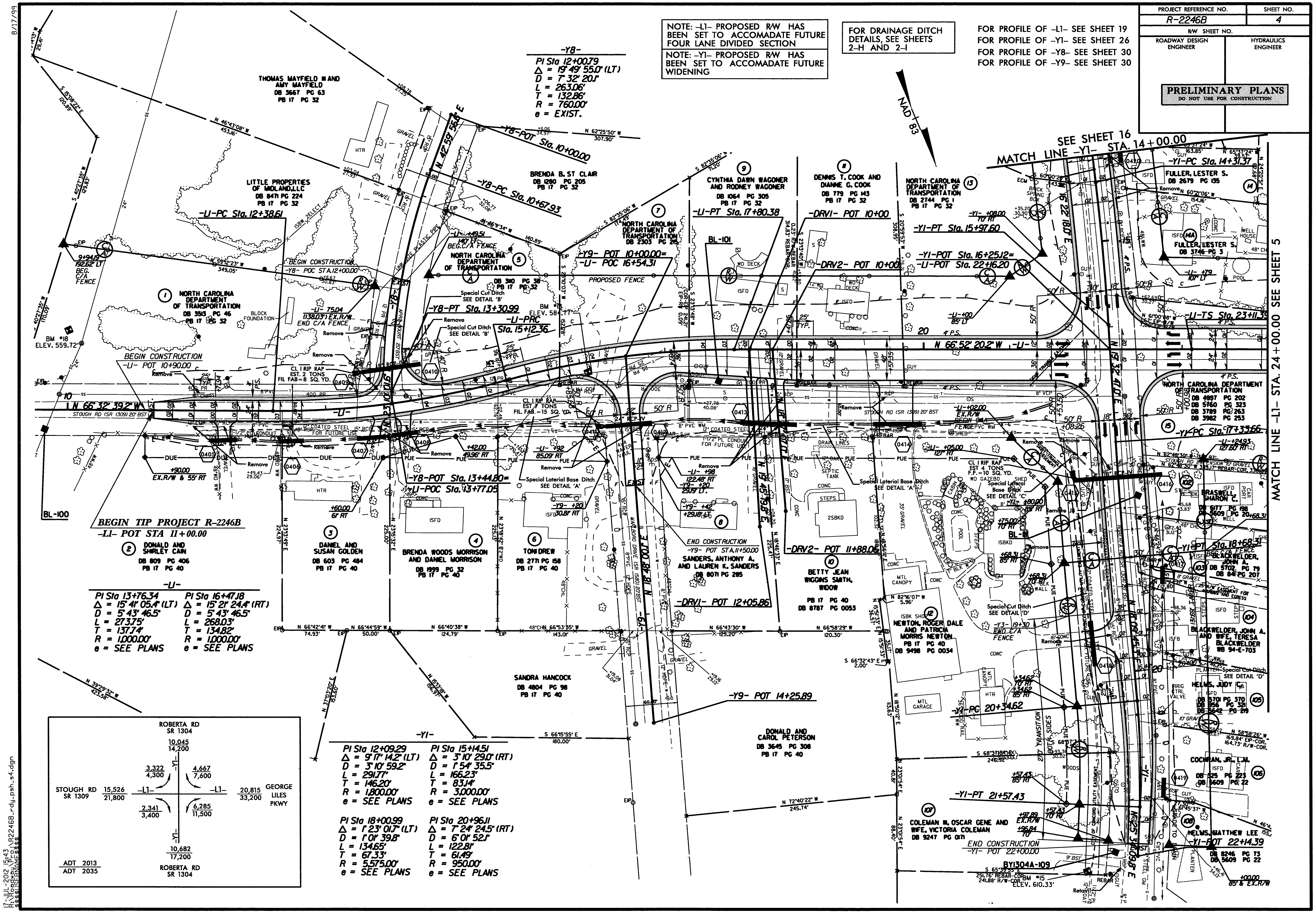
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTE: -L1- PROPOSED R/W HAS BEEN SET TO ACCOMADATE FUTURE FOUR LANE DIVIDED SECTION

NOTE: -Y1- PROPOSED R/W HAS BEEN SET TO ACCOMADATE FUTURE WIDENING

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I

FOR PROFILE OF -L1- SEE SHEET 19
FOR PROFILE OF -Y1- SEE SHEET 26
FOR PROFILE OF -Y8- SEE SHEET 30
FOR PROFILE OF -Y9- SEE SHEET 30



-Y8-
PI Sta 12+00.79
Δ = 19°49'55.0" (LT)
D = 7°32'20.5"
L = 263.06'
T = 132.86'
R = 760.00'
e = EXIST.

-L1-

PI Sta 13+76.34	PI Sta 16+47.18
Δ = 15°41'05.4" (LT)	Δ = 15°21'24.4" (RT)
D = 5°43'46.5"	D = 5°43'46.5"
L = 273.75'	L = 268.03'
T = 137.74'	T = 134.82'
R = 1,000.00'	R = 1,000.00'
e = SEE PLANS	e = SEE PLANS

-Y1-

PI Sta 12+09.29	PI Sta 15+14.51
Δ = 9°17'14.2" (LT)	Δ = 3°10'29.0" (RT)
D = 3°10'59.2"	D = 1°54'35.5"
L = 291.77'	L = 166.23'
T = 146.20'	T = 83.14'
R = 1,800.00'	R = 3,000.00'
e = SEE PLANS	e = SEE PLANS

PI Sta 18+00.99	PI Sta 20+96.11
Δ = 1°23'01.7" (LT)	Δ = 7°24'24.5" (RT)
D = 1°01'39.8"	D = 6°01'52.1"
L = 134.65'	L = 122.81'
T = 67.33'	T = 61.49'
R = 5,575.00'	R = 950.00'
e = SEE PLANS	e = SEE PLANS

8/17/99

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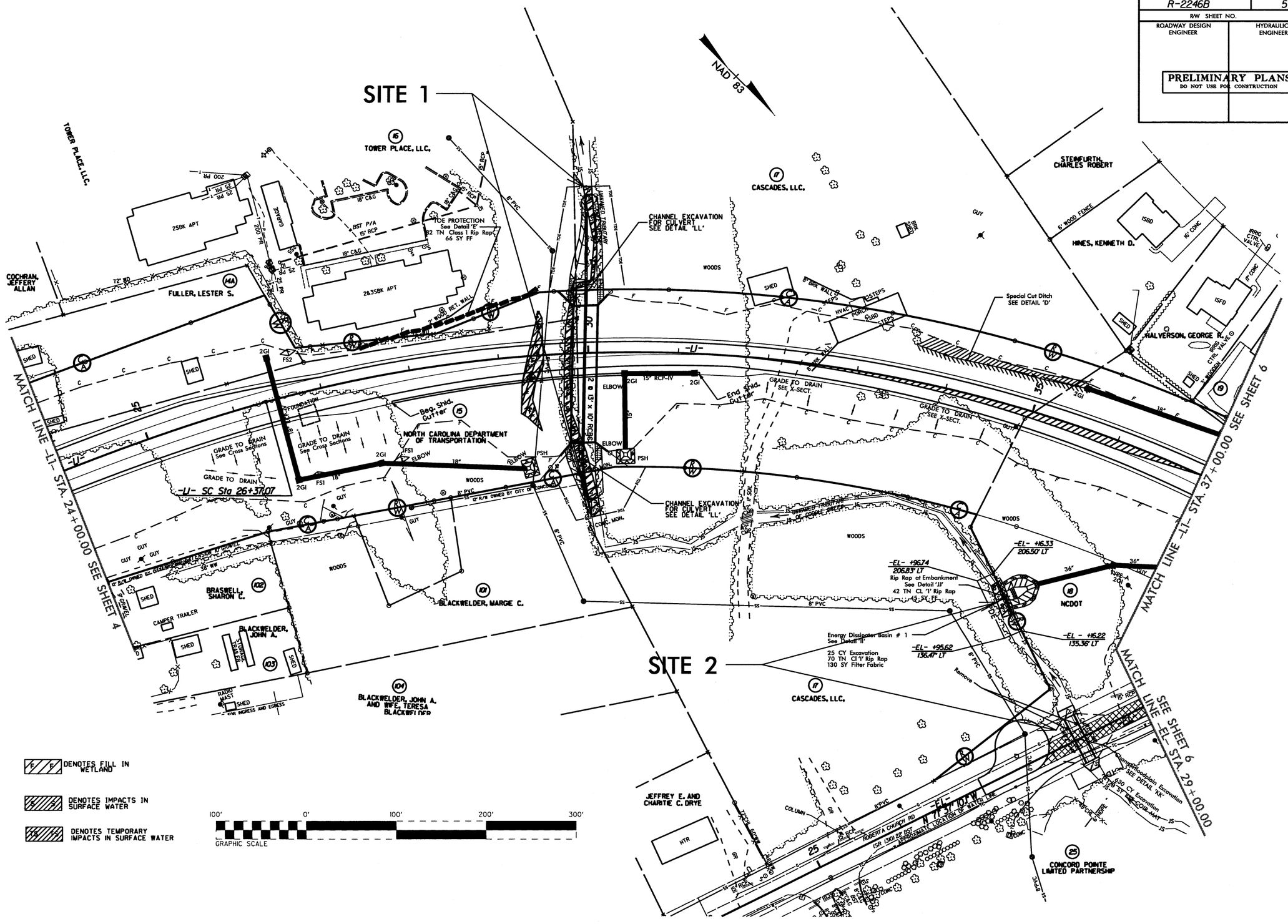
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



REVISIONS

8/17/99

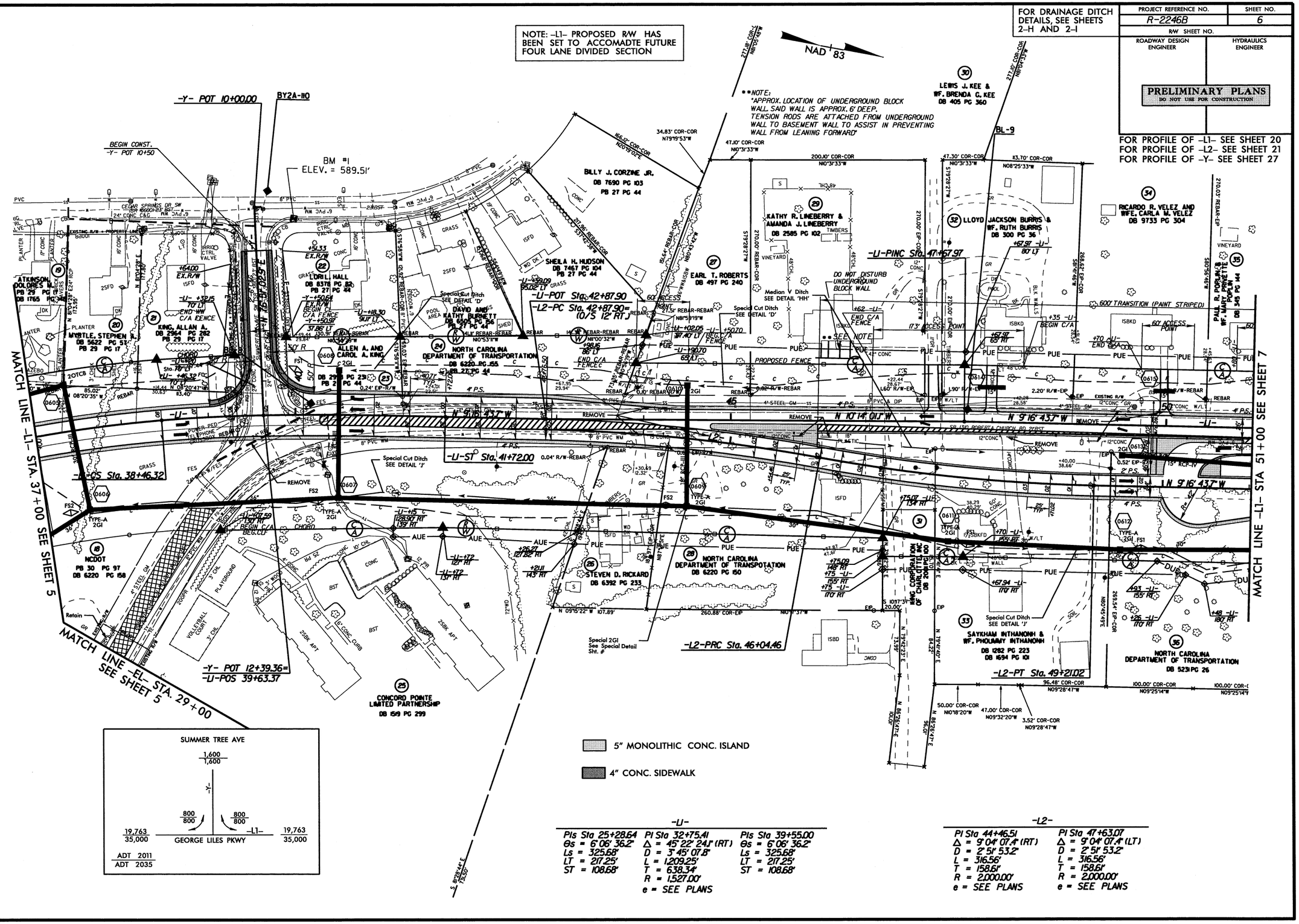
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I

FOR PROFILE OF -L1- SEE SHEET 20
FOR PROFILE OF -L2- SEE SHEET 21
FOR PROFILE OF -Y- SEE SHEET 27

NOTE: -L1- PROPOSED R/W HAS BEEN SET TO ACCOMADTE FUTURE FOUR LANE DIVIDED SECTION



-L1-

PIs Sta 25+28.64	PI Sta 32+75.41	PIs Sta 39+55.00
Θs = 6°06' 36.2"	Δ = 45°22' 24.1" (RT)	Θs = 6°06' 36.2"
Ls = 325.68'	D = 3°45' 07.8"	Ls = 325.68'
LT = 217.25'	L = 1,209.25'	LT = 217.25'
ST = 108.68'	T = 638.34'	ST = 108.68'
	R = 1,527.00'	
	e = SEE PLANS	

-L2-

PI Sta 44+46.51	PI Sta 47+63.07
Δ = 9°04' 07.4" (RT)	Δ = 9°04' 07.4" (LT)
D = 2°51' 53.2"	D = 2°51' 53.2"
L = 316.56'	L = 316.56'
T = 158.61'	T = 158.61'
R = 2,000.00'	R = 2,000.00'
e = SEE PLANS	e = SEE PLANS

8/17/99

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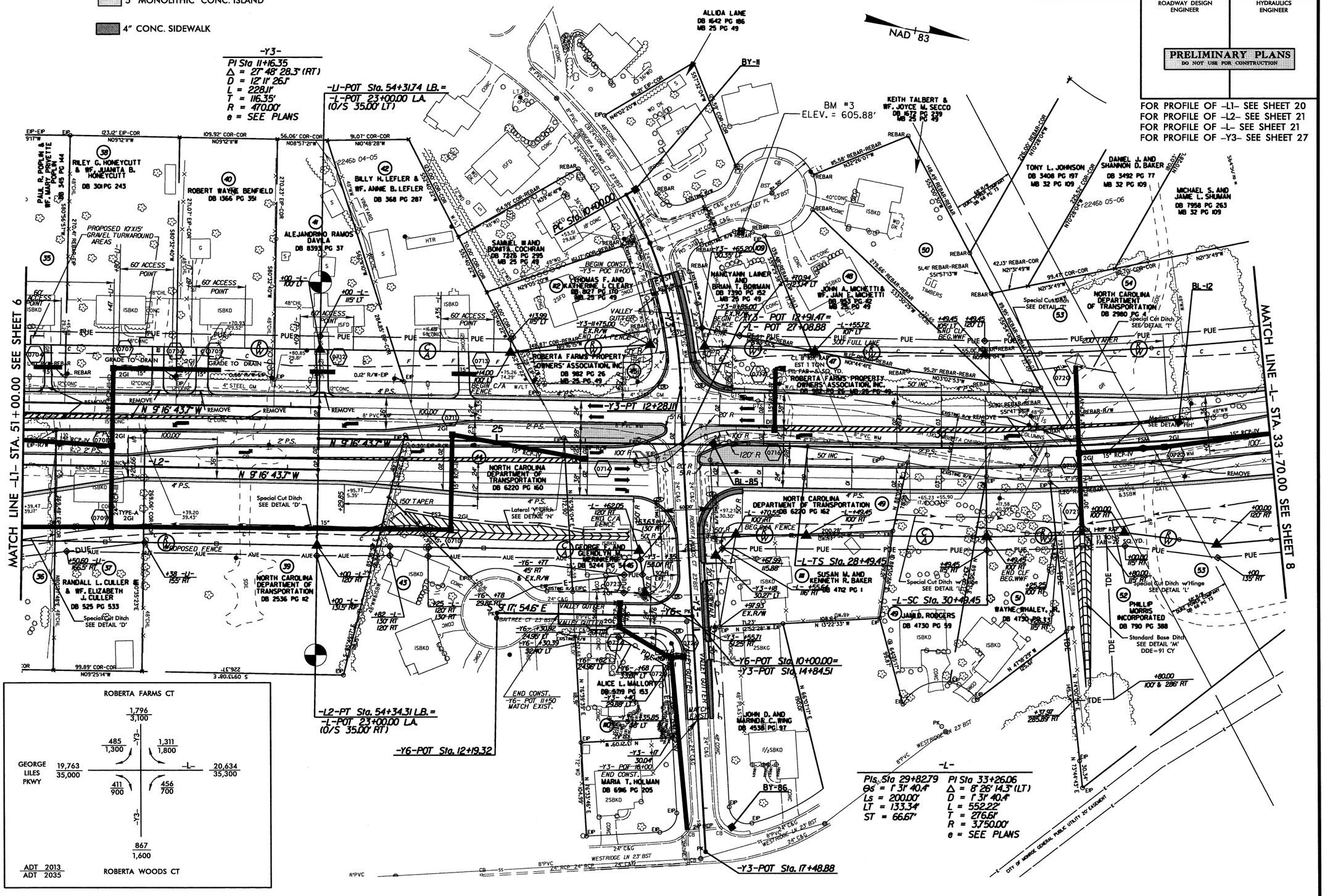
8/17/99

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I	PROJECT REFERENCE NO.	SHEET NO.
	R-2246B	7
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

FOR PROFILE OF -L1- SEE SHEET 20
FOR PROFILE OF -L2- SEE SHEET 21
FOR PROFILE OF -L- SEE SHEET 21
FOR PROFILE OF -Y3- SEE SHEET 27



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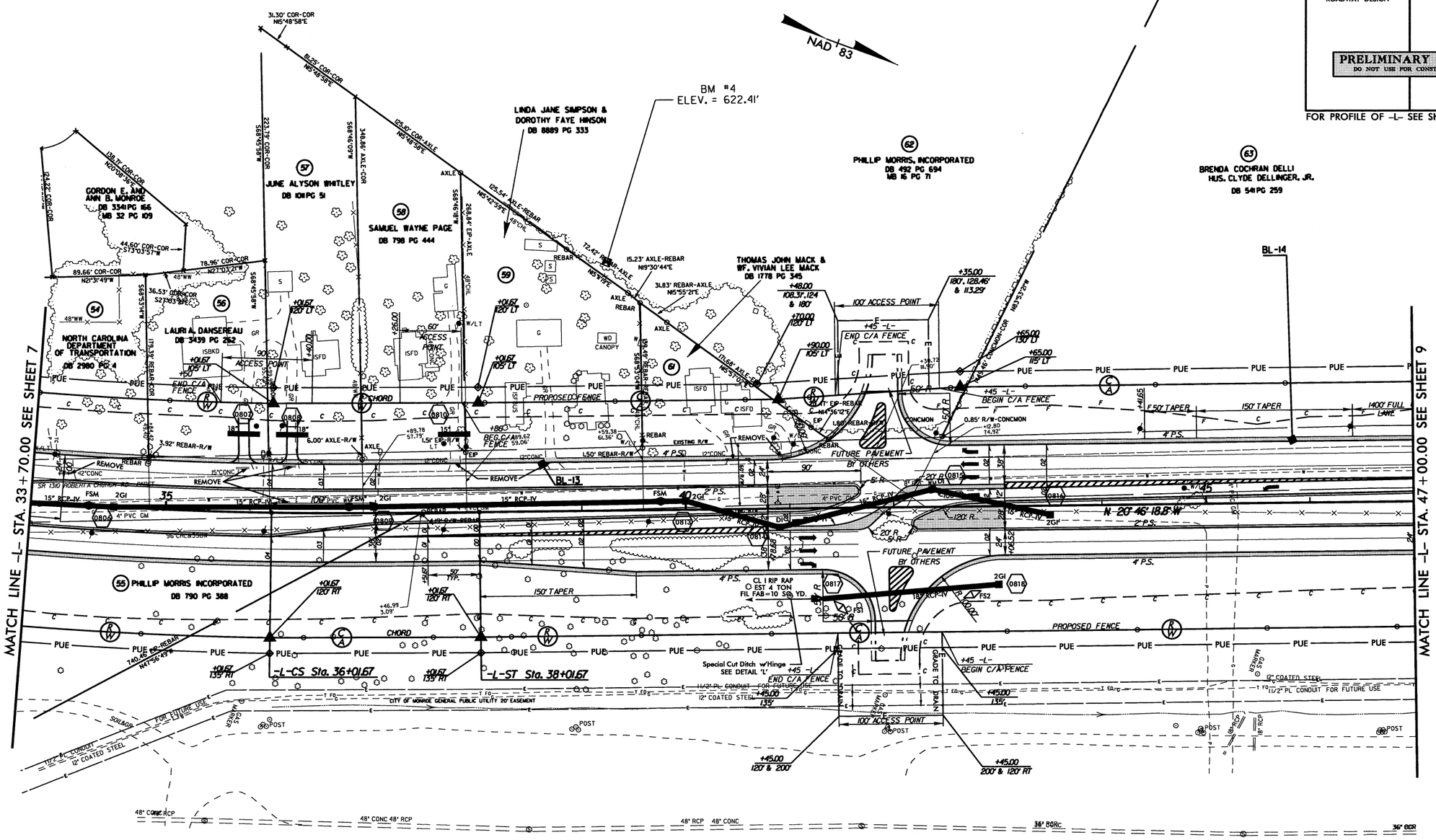
FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I	PROJECT REFERENCE NO.	SHEET NO.
	R-2246B	8
	R/W SHEET NO.	
	ROADWAY DESIGN	HYDRAULICS ENGINEER
	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

FOR PROFILE OF -L- SEE SHEETS 21 & 22



-L-	
PI Sta 33+26.06	PIs Sta 36+68.34
Δ = 8° 26' 14.3" (LT)	Θs = 1° 31' 40.4"
D = 1° 31' 40.4"	Ls = 200.00'
L = 552.22'	LT = 133.34'
T = 276.61'	ST = 66.61'
R = 3,750.00'	
e = SEE PLANS	

PHILLIP MORRIS USA, INC
DB 493 PG 26
DB 538 PG 81
DB 538 PG 79
MB 16 PG 71

5" MONOLITHIC CONC. ISLAND

8/17/99

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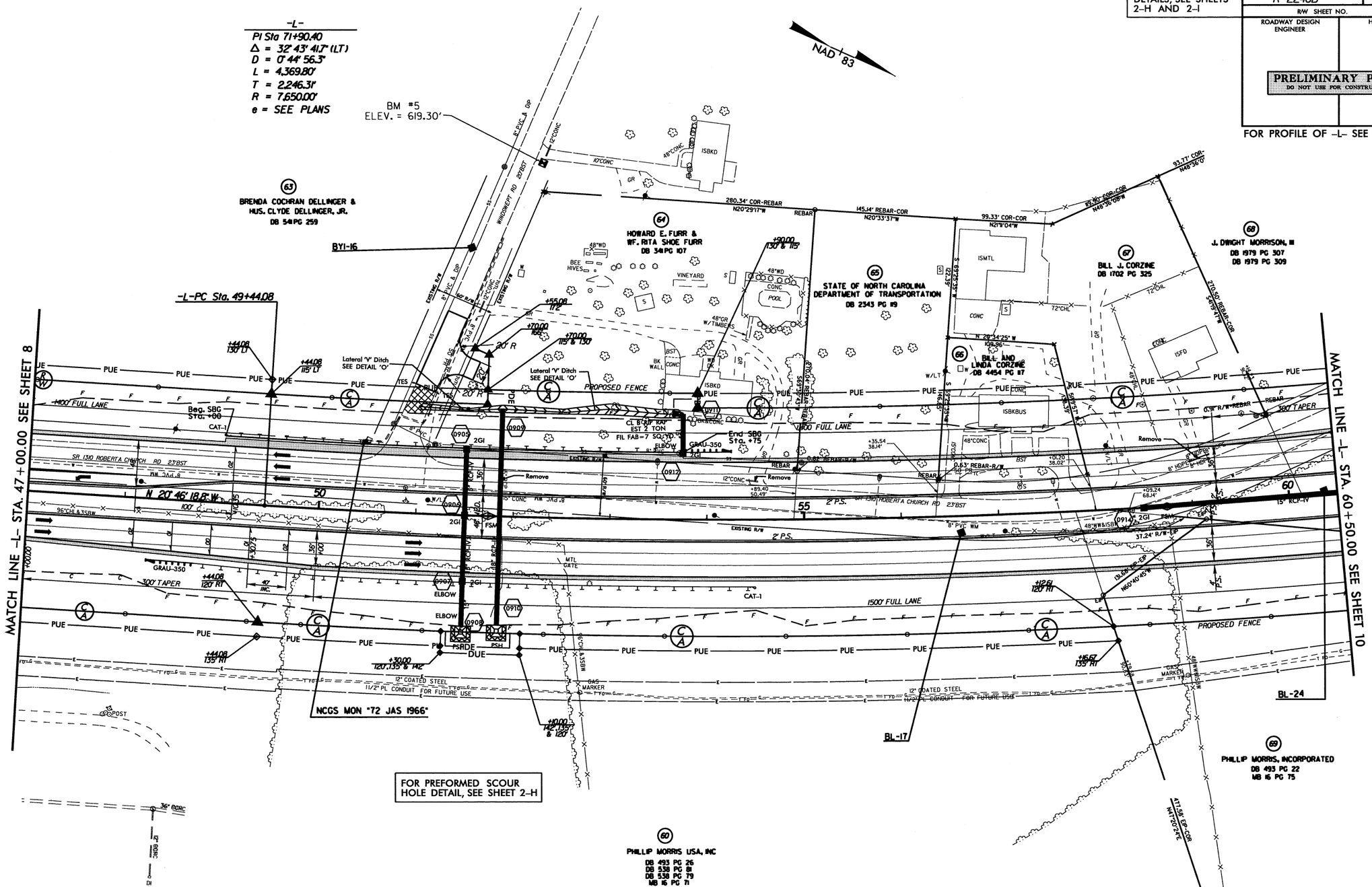
FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I	PROJECT REFERENCE NO. R-2246B	SHEET NO. 9
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -L- SEE SHEET 22



8/17/99

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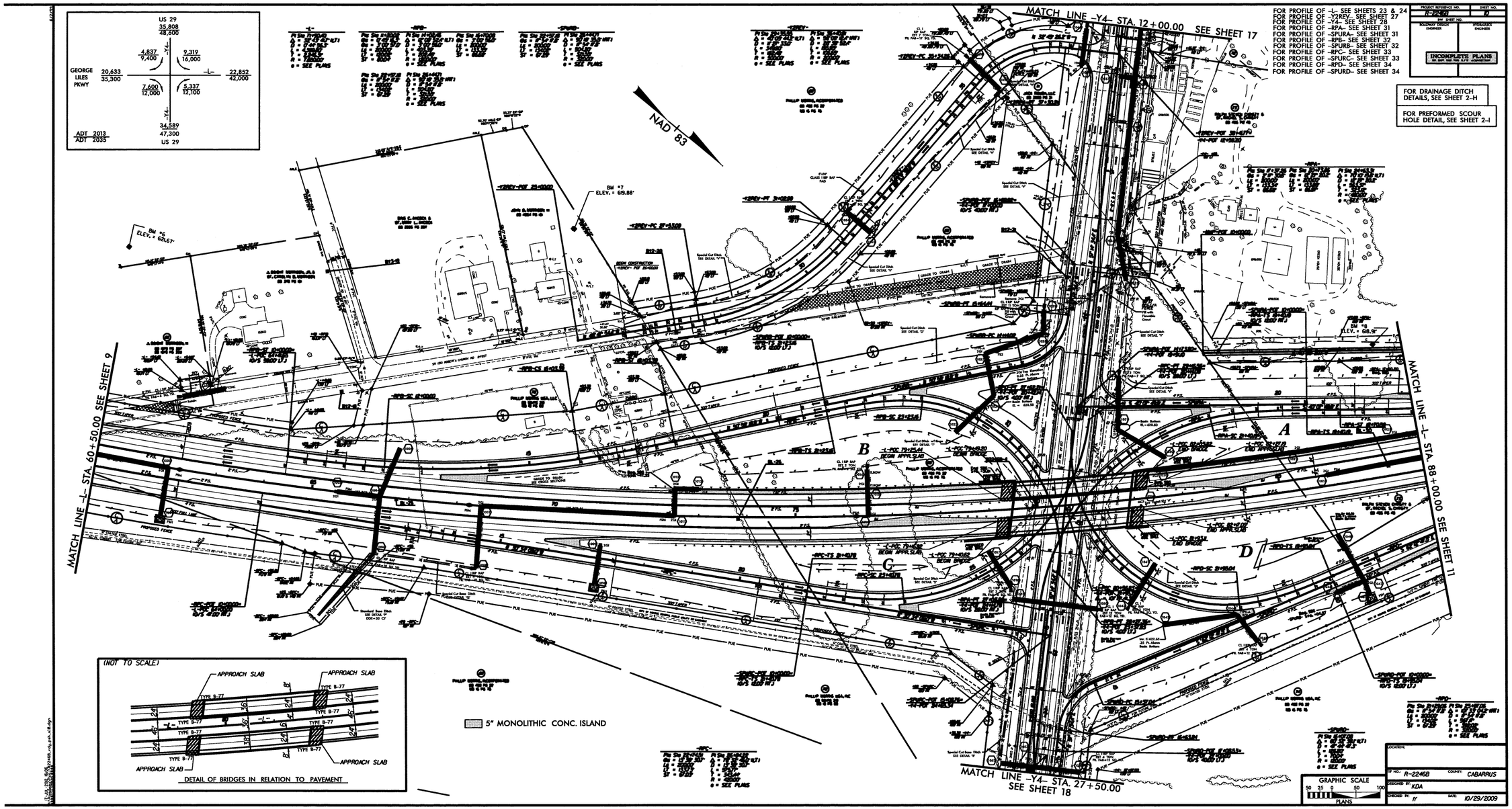

US 29
35,808
48,600
GEORGE LILES PKWY
20,633
35,300
22,852
42,000
4,837
9,400
9,319
16,000
7,600
12,000
5,337
12,100
34,589
47,300
US 29
ADT 2013
ADT 2035
NAD 83
MATCH LINE -Y4- STA. 12+00.00 SEE SHEET 17
MATCH LINE -L- STA. 60+50.00 SEE SHEET 9
MATCH LINE -L- STA. 88+00.00 SEE SHEET 11
MATCH LINE -Y4- STA. 27+50.00 SEE SHEET 18
FOR PROFILE OF -L- SEE SHEETS 23 & 24
FOR PROFILE OF -Y2REV- SEE SHEET 27
FOR PROFILE OF -Y4- SEE SHEET 28
FOR PROFILE OF -RPA- SEE SHEET 31
FOR PROFILE OF -SPURA- SEE SHEET 31
FOR PROFILE OF -RPB- SEE SHEET 32
FOR PROFILE OF -SPURB- SEE SHEET 32
FOR PROFILE OF -RPC- SEE SHEET 33
FOR PROFILE OF -SPURC- SEE SHEET 33
FOR PROFILE OF -RPD- SEE SHEET 34
FOR PROFILE OF -SPURD- SEE SHEET 34
FOR DRAINAGE DITCH DETAILS, SEE SHEET 2-H
FOR PREFORMED SCOUR HOLE DETAIL, SEE SHEET 2-I
INCOMPLETE PLANS
BM #7 ELEV. = 69.88'
BM #8 ELEV. = 68.9'
BM #5 ELEV. = 62.67'
A
B
C
D
5" MONOLITHIC CONC. ISLAND
(NOT TO SCALE)
APPROACH SLAB
TYPE B-77
DETAIL OF BRIDGES IN RELATION TO PAVEMENT
GRAPHIC SCALE
50 25 0 50 100
PLANS
R-2246B
CABARRUS
KDA
10/29/2009

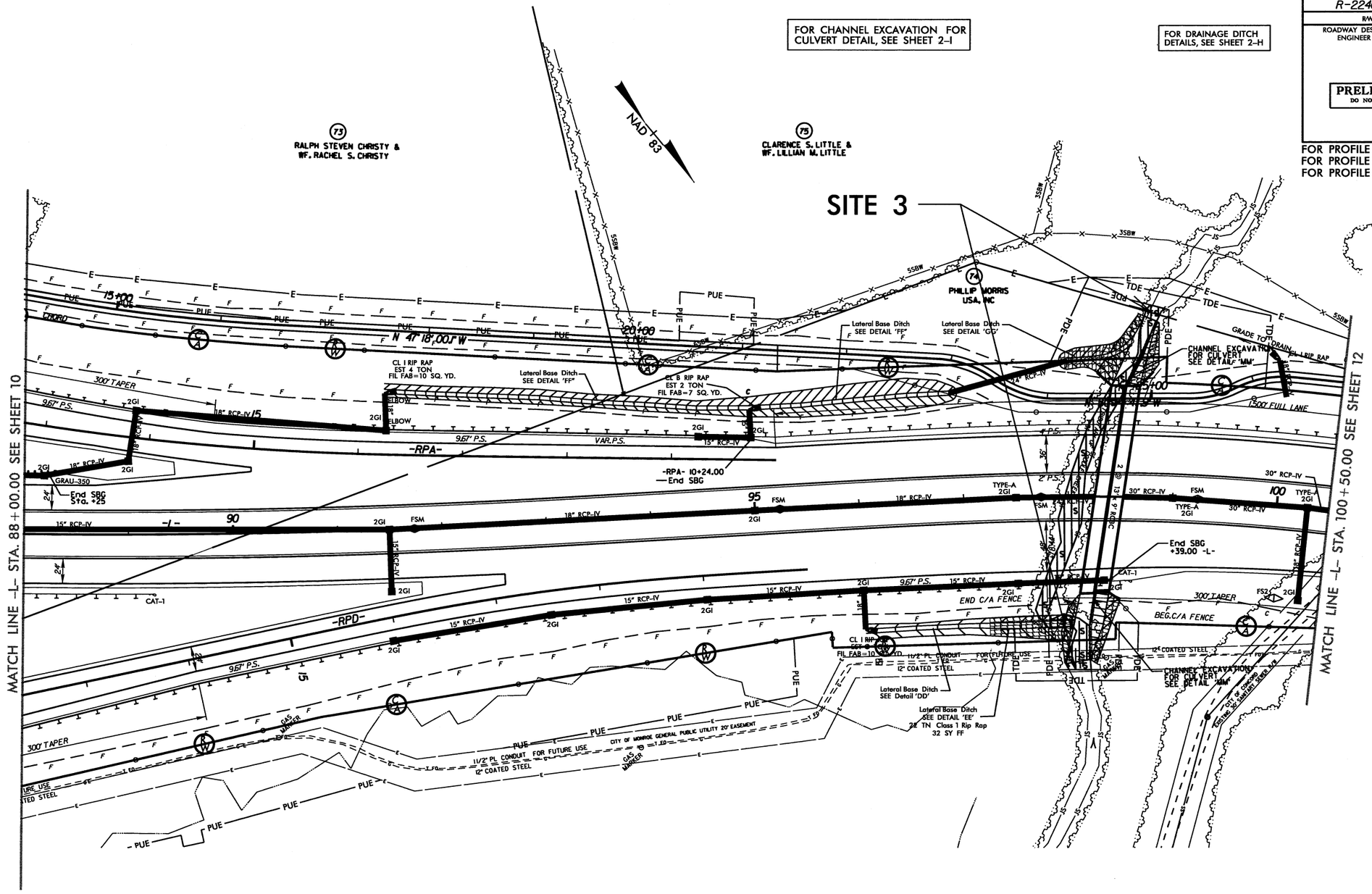
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -L- SEE SHEET 24
FOR PROFILE OF -RPA- SEE SHEET 31
FOR PROFILE OF -RPD- SEE SHEET 34

FOR CHANNEL EXCAVATION FOR CULVERT DETAIL, SEE SHEET 2-I

FOR DRAINAGE DITCH DETAILS, SEE SHEET 2-H



REVISIONS

8/17/99

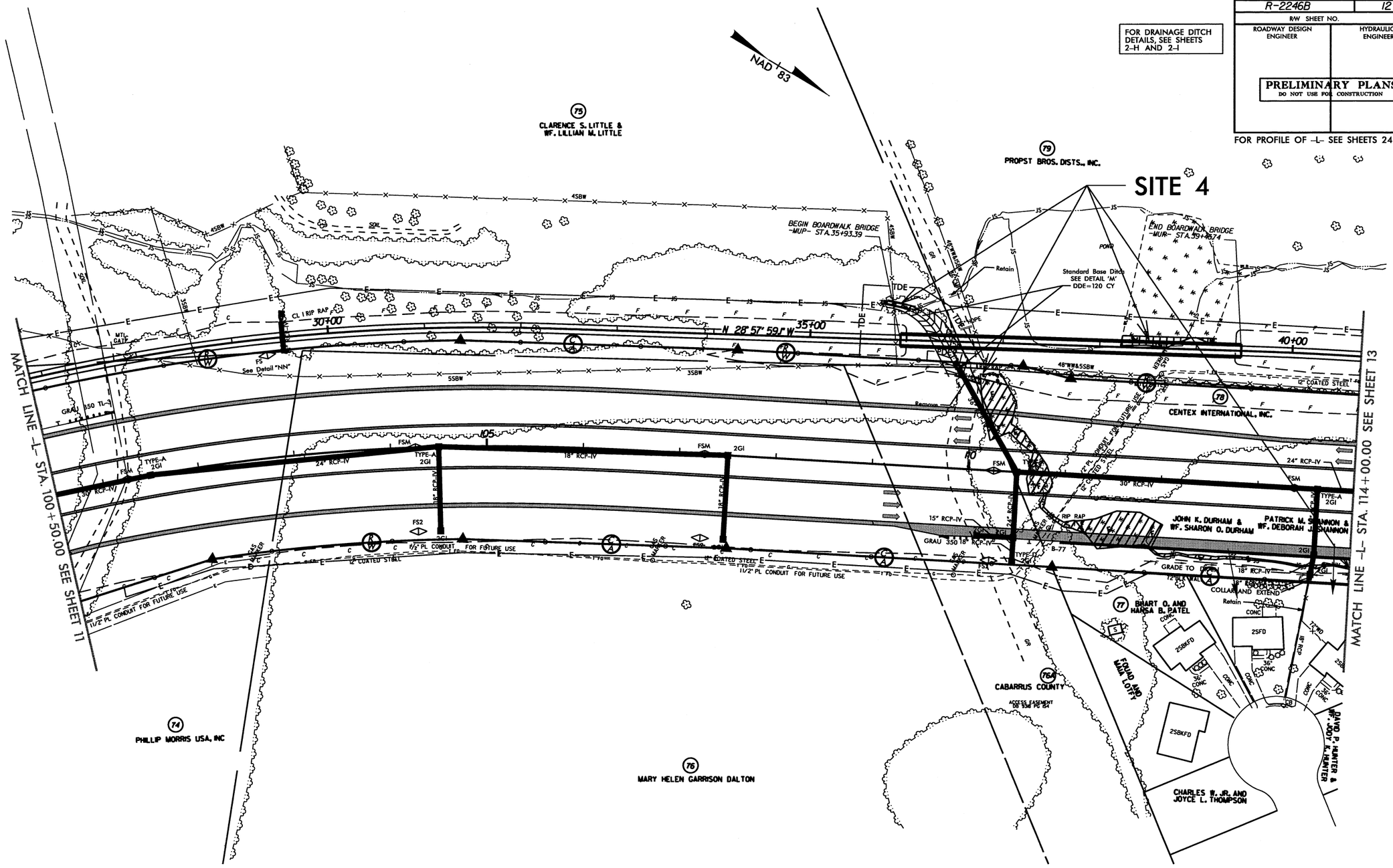
$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I

FOR PROFILE OF -L- SEE SHEETS 24 & 25



REVISIONS

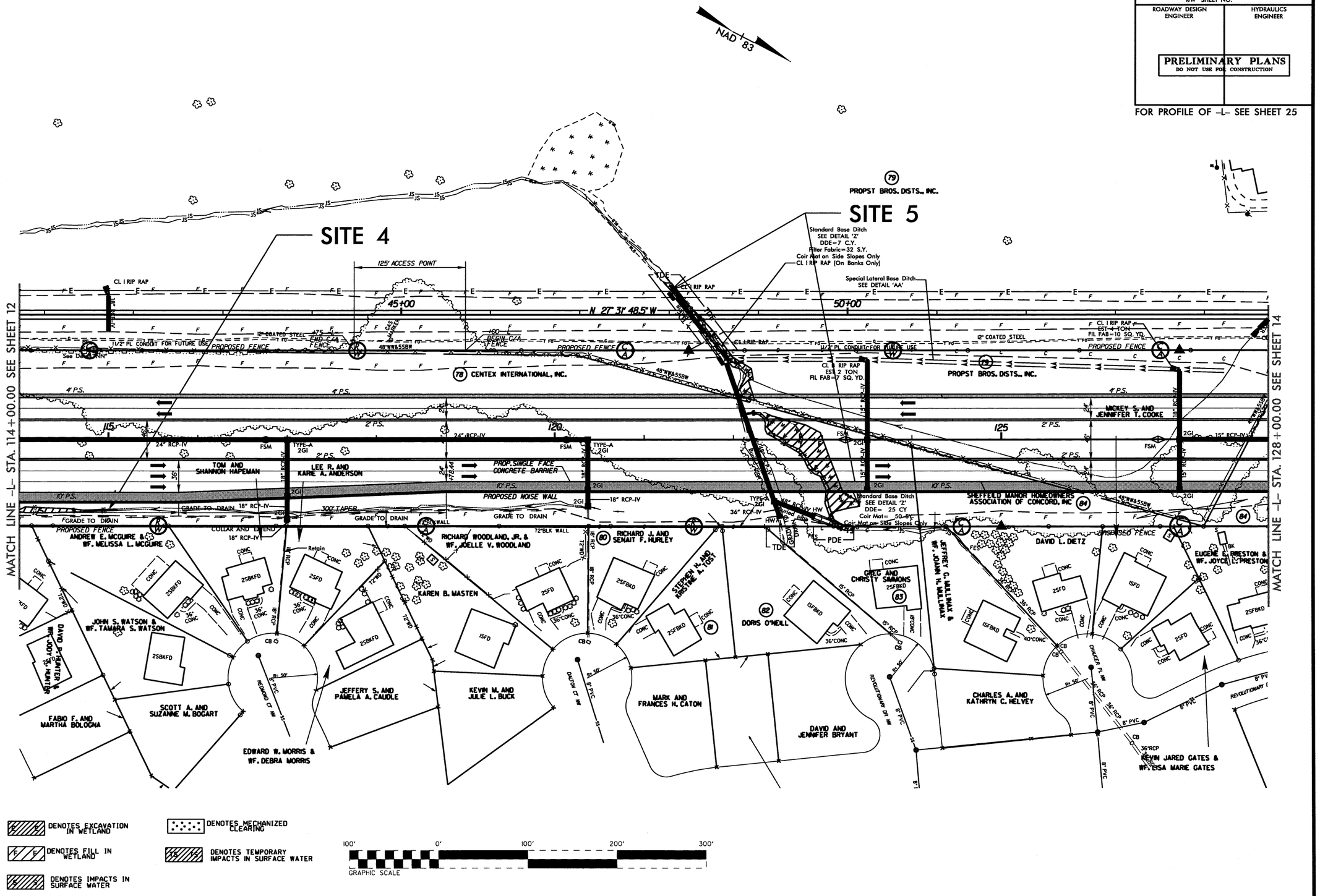
8/17/99

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$RICEBNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -L- SEE SHEET 25



REVISIONS

8/17/99

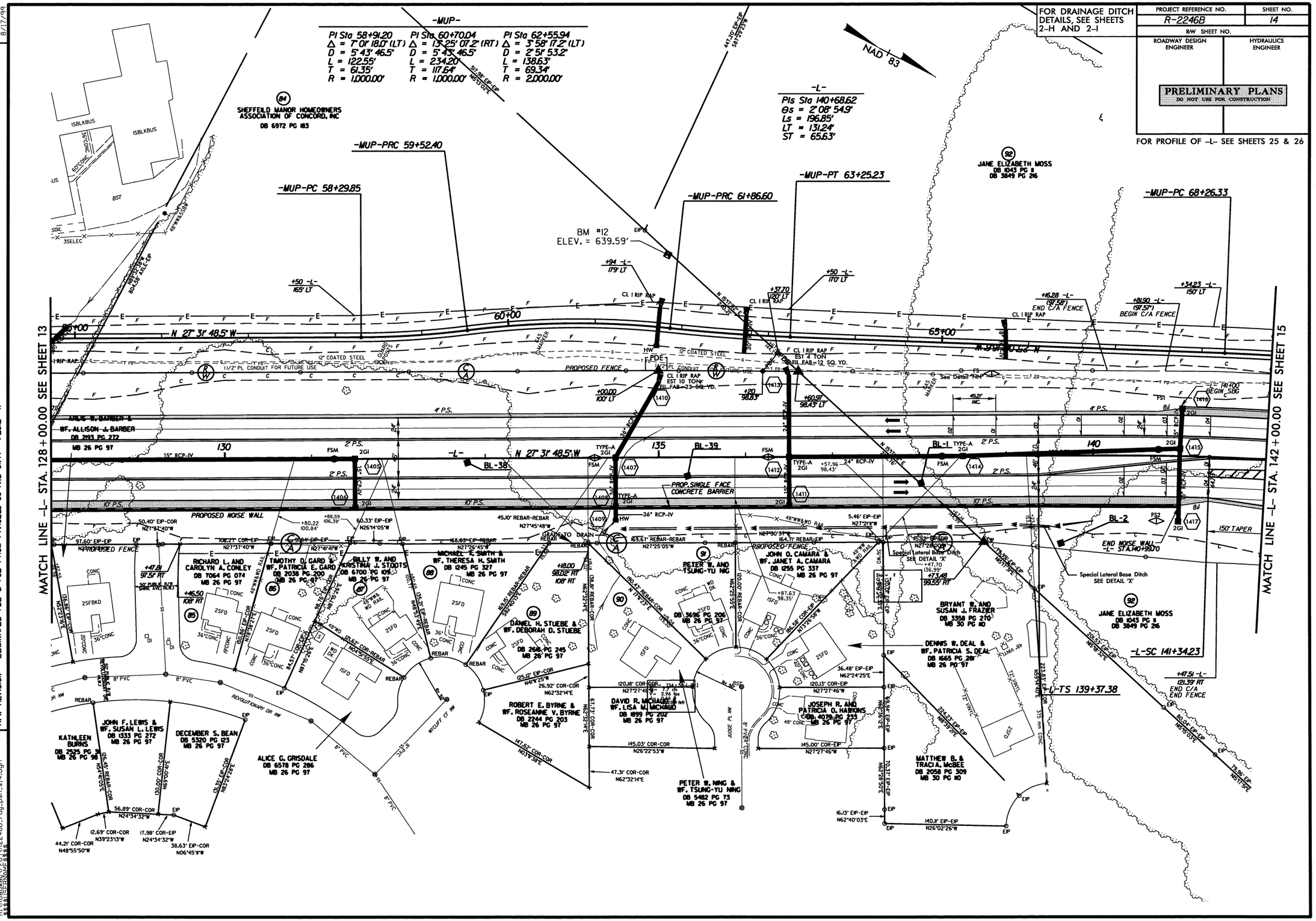
$$$$$$SYSTIME$$$$$
$$$$$$USERNAME$$$$$ DGN

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -L- SEE SHEETS 25 & 26



REVISIONS
R/W REVISION 3-06-2012.tr - ELIMIATED PROPOSED R/W FROM PARCELS 85,86,87,88,89,90 & 91.
R/W REVISION - ADDED ACCESS POINT ON PARCEL 92 BETWEEN -L- STA.141+47.51 TO 142+13.13 RT. 3/30/2012- tr
R/W REVISION - ELIMINATED TDE & TCE FROM PARCELS 90 AND 91. 7/ /2012- tr
R/W REVISION 9-9-2011.tr - REVISED R/W AND ADDED PDE ON PARCEL 84 NEAR -L- STA 135+00 AND 136+60.97 & ELIMIATED ACCESS POINT ON PARCEL 84.

8/17/99

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -L- SEE SHEET 26
FOR PROFILE OF -Y5- SEE SHEET 29

5" MONOLITHIC CONC. ISLAND

NAD 83

-L-

PIs Sta 140+68.62	PI Sta 145+00.05	PIs Sta 149+26.82
Θs = 2°08' 54.9"	Δ = 15°52' 10.2" (RT)	Θs = 2°08' 54.9"
Ls = 196.85'	D = 2°10' 58.7"	Ls = 196.85'
LT = 131.24'	L = 726.97'	LT = 131.24'
ST = 65.63'	T = 365.83'	ST = 65.63'
	R = 2,624.67'	
	e = SEE PLANS	

-Y5-

PI Sta 17+05.99
Δ = 10°11' 23.2" (RT)
D = 4°03' 48.7"
L = 250.76'
T = 125.71'
R = 1,410.00'
e = SEE PLANS

-MUP-

PI Sta 70+66.31	PI Sta 73+38.05
Δ = 10°00' 51.0" (RT)	Δ = 18°43' 30.4" (RT)
D = 2°05' 30.4"	D = 28°38' 52.4"
L = 478.74'	L = 65.36'
T = 239.98'	T = 32.98'
R = 2,739.10'	R = 200.00'

-L-

PIs Sta 153+62.09	PI Sta 157+01.70
Θs = 2°08' 54.9"	Δ = 11°55' 11.2" (LT)
Ls = 196.85'	D = 2°10' 58.7"
LT = 131.24'	L = 546.03'
ST = 65.63'	T = 274.01'
	R = 2,624.67'

-Y5- POT STA 14+00
BEGIN CONSTRUCTION

MATCH EXIST.

BEGIN C&G
-Y5- STA.15+00.00 RT.

Special Cut Ditch
SEE DETAIL 'B'
CL B RIP RAP
EST 2 TON
FIL FAB=7 SQ. YD.

+63.77 -Y5-
END FENCE

-Y5-PC 15+80.28

DO NOT DISTURB
POWER POLE

-MUP-PT 73+70.44

-MUP-PCC 73+05.07

+11.69 -L-
150' LT

-MUP-POT 74+72.38

-Y5-PT 18+31.04

-L-CS 148+61.19

END TIP PROJECT R-2246B
-L- STA. 150+58.04

-L-SC 154+27.70

-Y5- POT 18+62.40=
-L- POC 148+28.77

REMOVE EXIST. GUARDRAIL

REMOVE EXIST. 2GI
REMOVE 8.0" EXIST. PIPE
RC CLASS III PIPE

BL-81

BL-82

BL-28

BL-27

MATCH LINE -L- STA. 142+00.00 SEE SHEET 14

+13.13 -L-
121.39' RT
BEGIN C/A
BEGIN FENCE

21+54.33 -Y5-
END FENCE,
END C/A

-Y5-PC 22+56.15

-Y5- POT STA.22+50.00
END PAVING

-Y5- POC STA.23+70.00
END CONSTRUCTION

-L- POC STA 155+50.00
END CONSTRUCTION

-L-ST 150+58.04

-L-POT 152+30.85

-Y5-

PI Sta 24+18.52
Δ = 4°01' 13.0" (RT)
D = 1°14' 18.8"
L = 324.59'
T = 162.36'
R = 4,625.98'
e = SEE PLANS

MHRA, LLC
DB 6688 PG 302

JANE ELIZABETH MOSS
DB 1043 PG 8
DB 3849 PG 216

JOHN D. MORRISON III
DB 2290 PG 107

COBLE FAMILY FARM LTD
DB 1777 PG 273

JOWAC, LLC
DB 3964 PG 19

JOWAC
DB 396

COBLE FAMILY FARM LTD
DB 3029 PG 174

JMS POPLAR, LLC
DB 7987 PG 46

	WEDDINGTON RD SR 1431			
	12,614 / 20,000			
	3,744 / 7,900 -Y5-	2,900 / 5,100		
GEORGE LILES PKWY	22,852 / 42,000	-L-	22,815 / 44,000	
	2,741 / 3,800 -Y5-	3,548 / 8,600		
	12,259 / 20,000			
ADT 2013 / ADT 2035	WEDDINGTON RD SR 1431			

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8/17/99

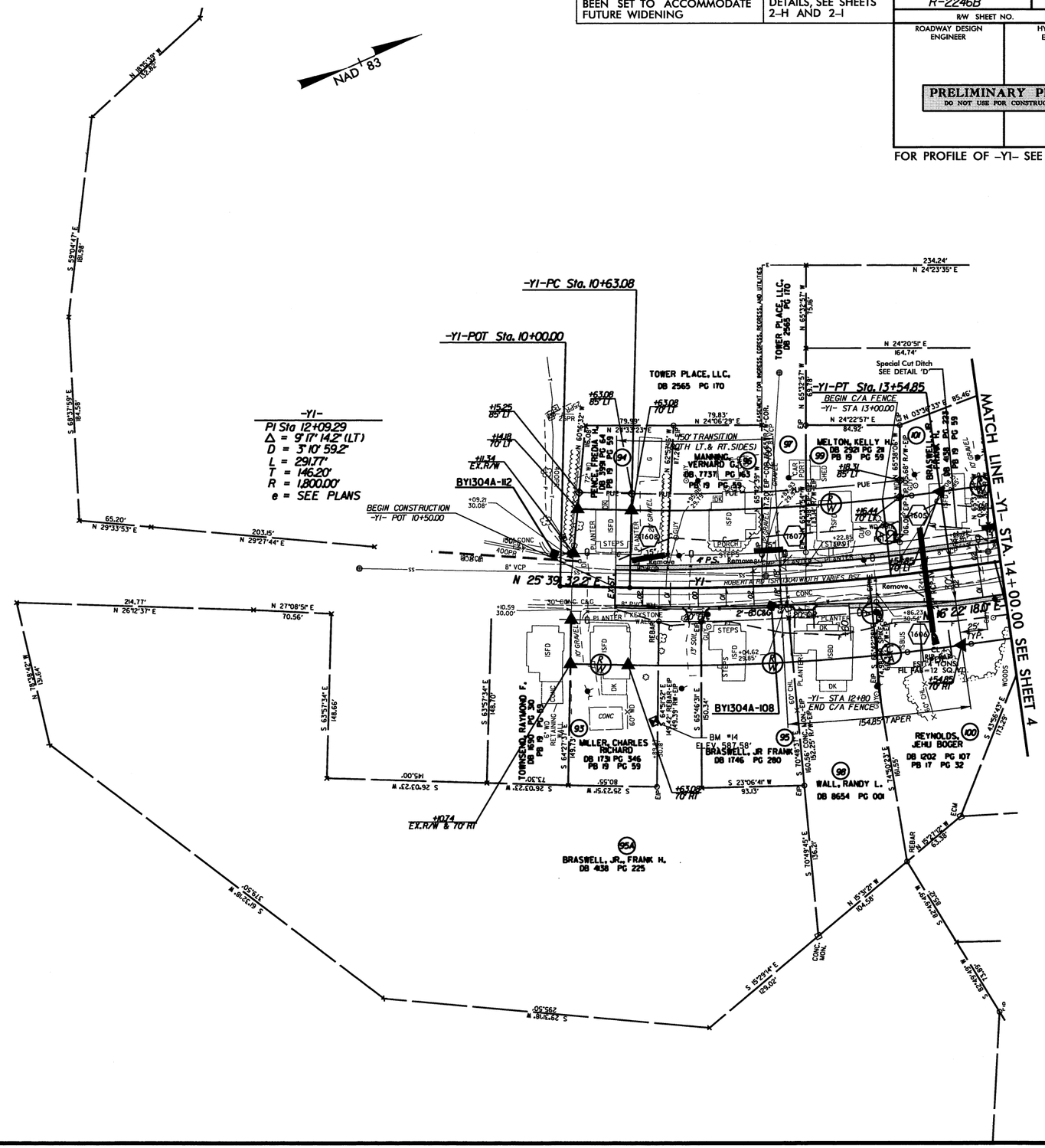
NOTE: -Y1- PROPOSED R/W HAS BEEN SET TO ACCOMMODATE FUTURE WIDENING

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -Y1- SEE SHEET 26



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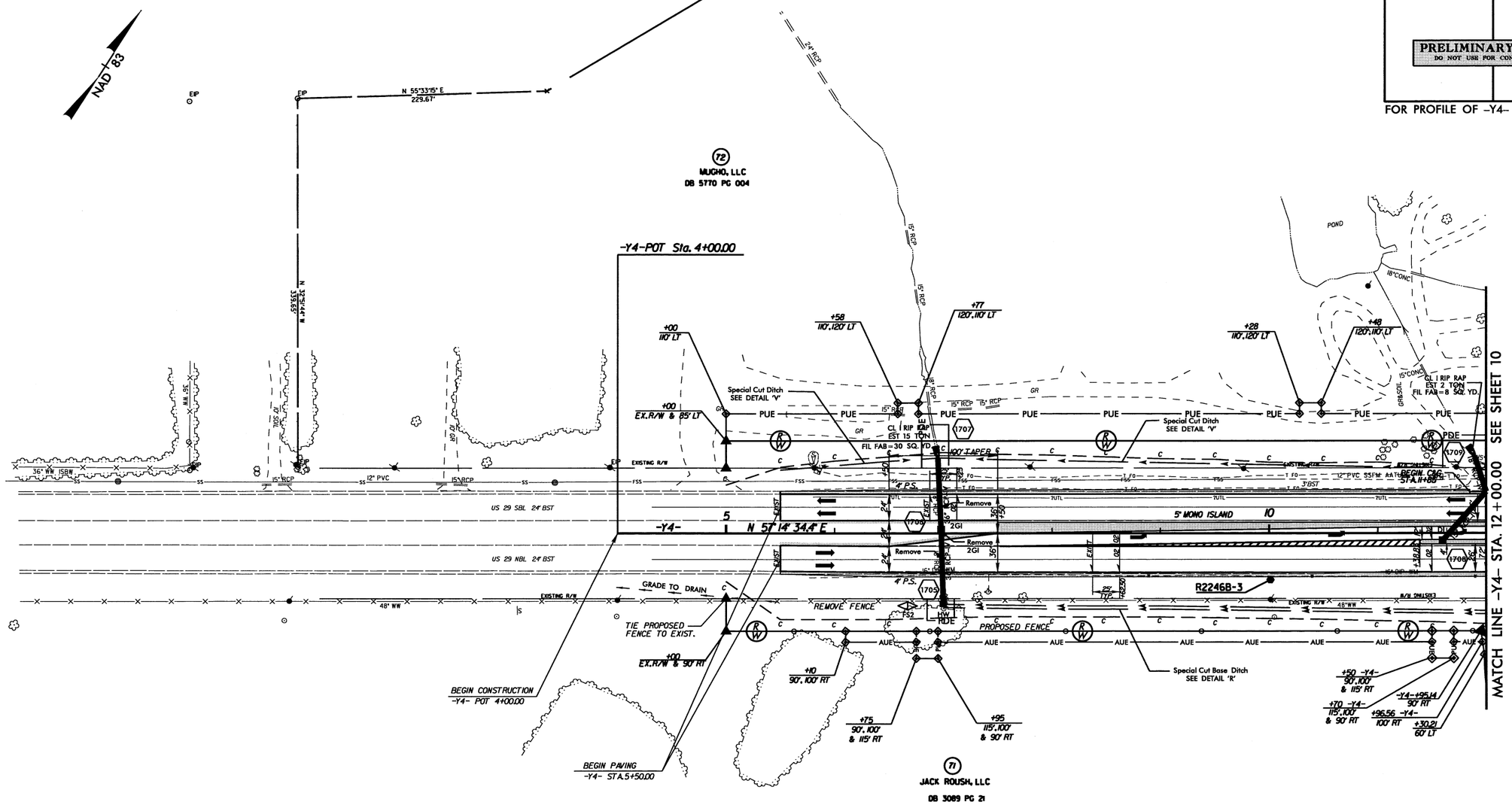
8/17/99

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -Y4- SEE SHEET 28



5" MONOLITHIC CONC. ISLAND

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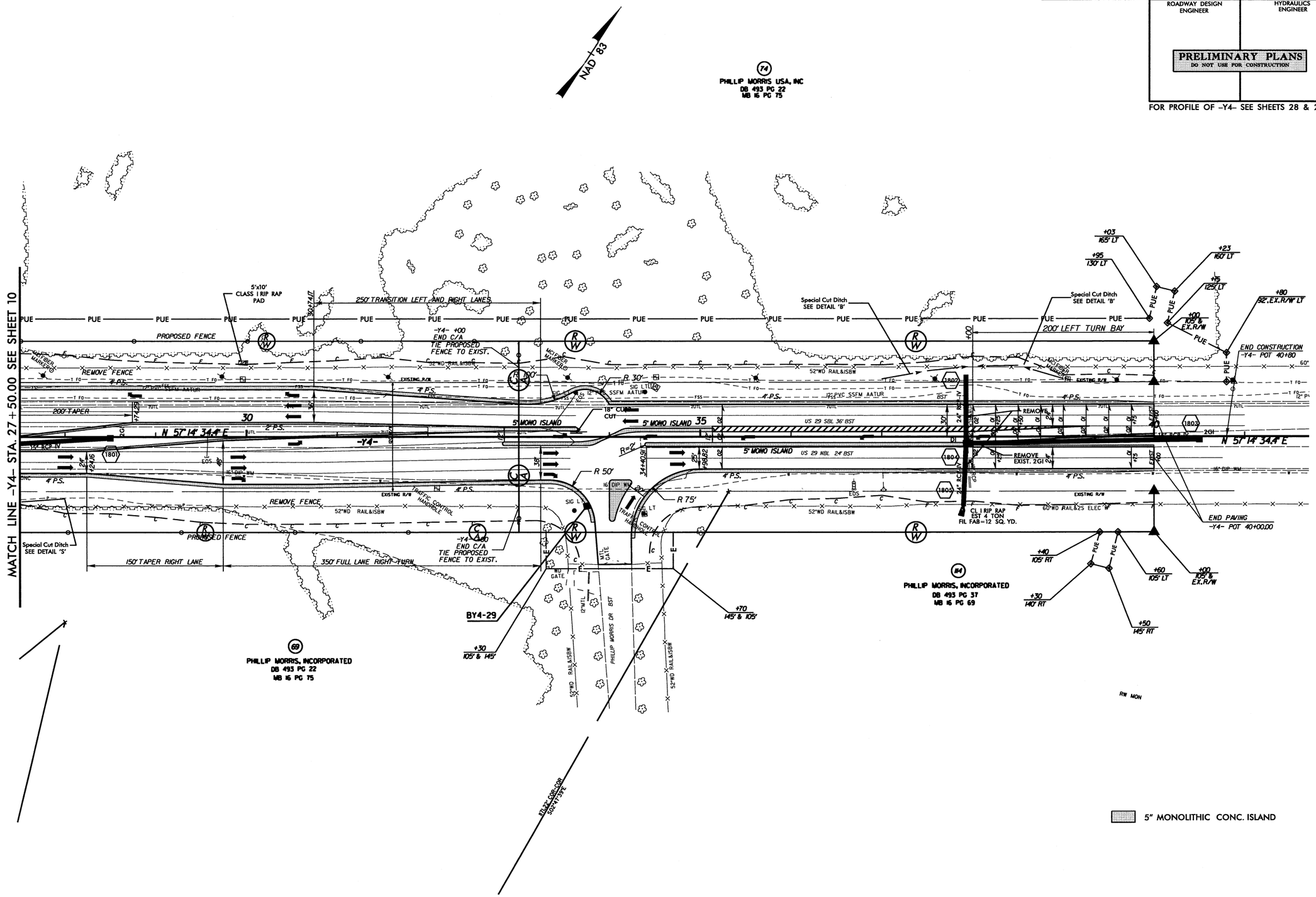
8/17/99

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-H AND 2-I	PROJECT REFERENCE NO.	SHEET NO.
	R-2246B	18
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -Y4- SEE SHEETS 28 & 29



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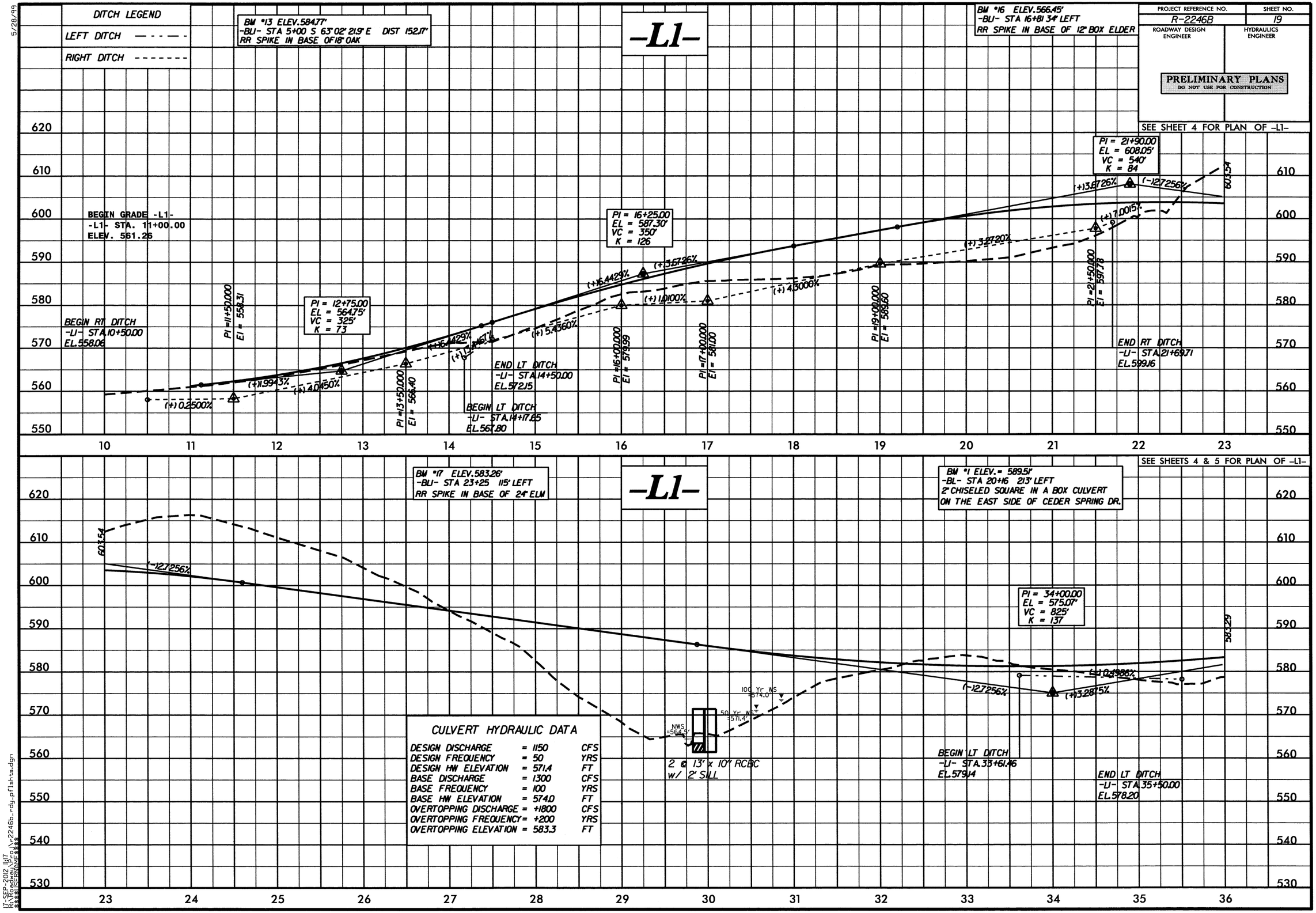
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1150	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 571.4	FT
BASE DISCHARGE	= 1300	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 574.0	FT
OVERTOPPING DISCHARGE	= +1800	CFS
OVERTOPPING FREQUENCY	= +200	YRS
OVERTOPPING ELEVATION	= 583.3	FT

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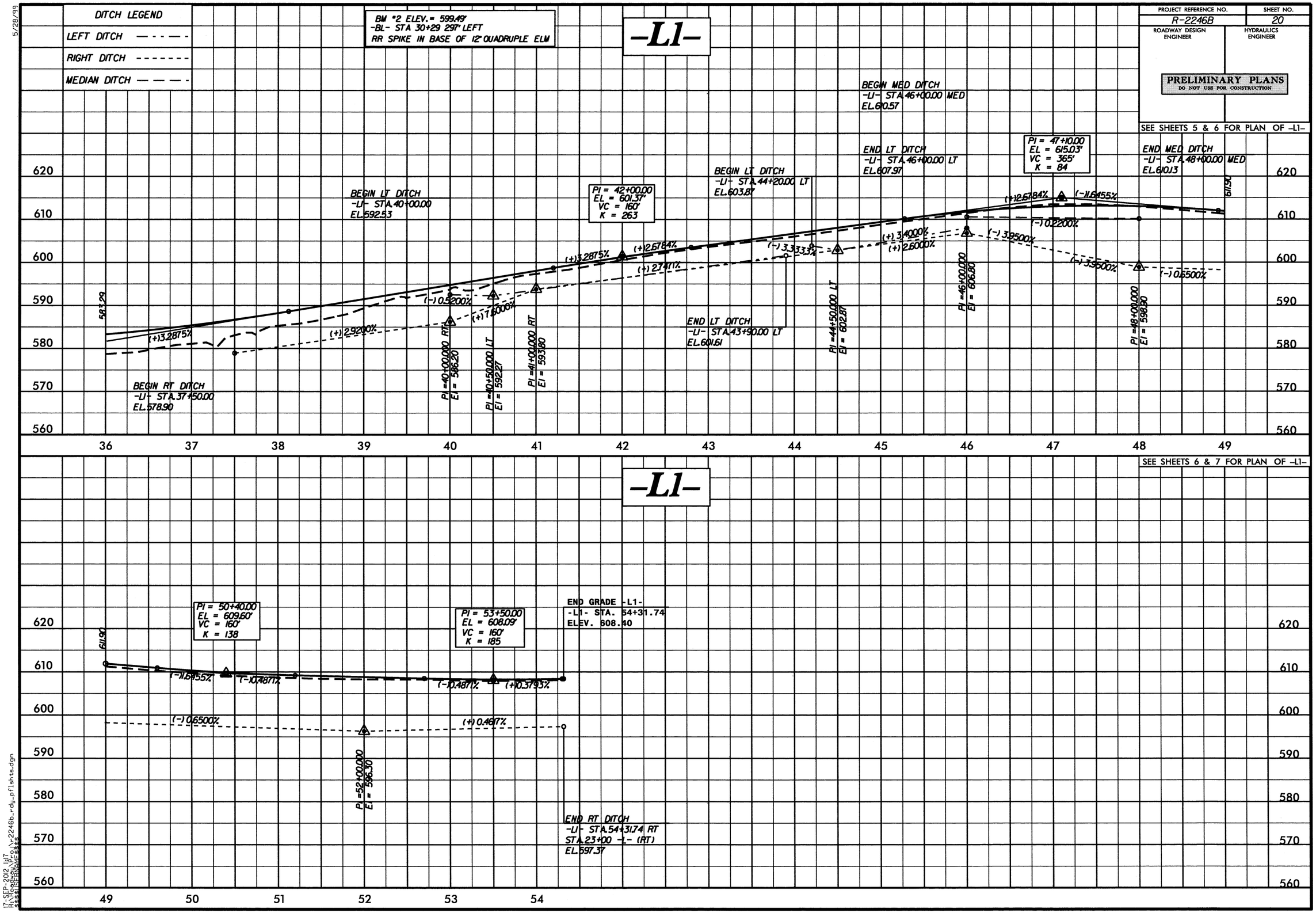
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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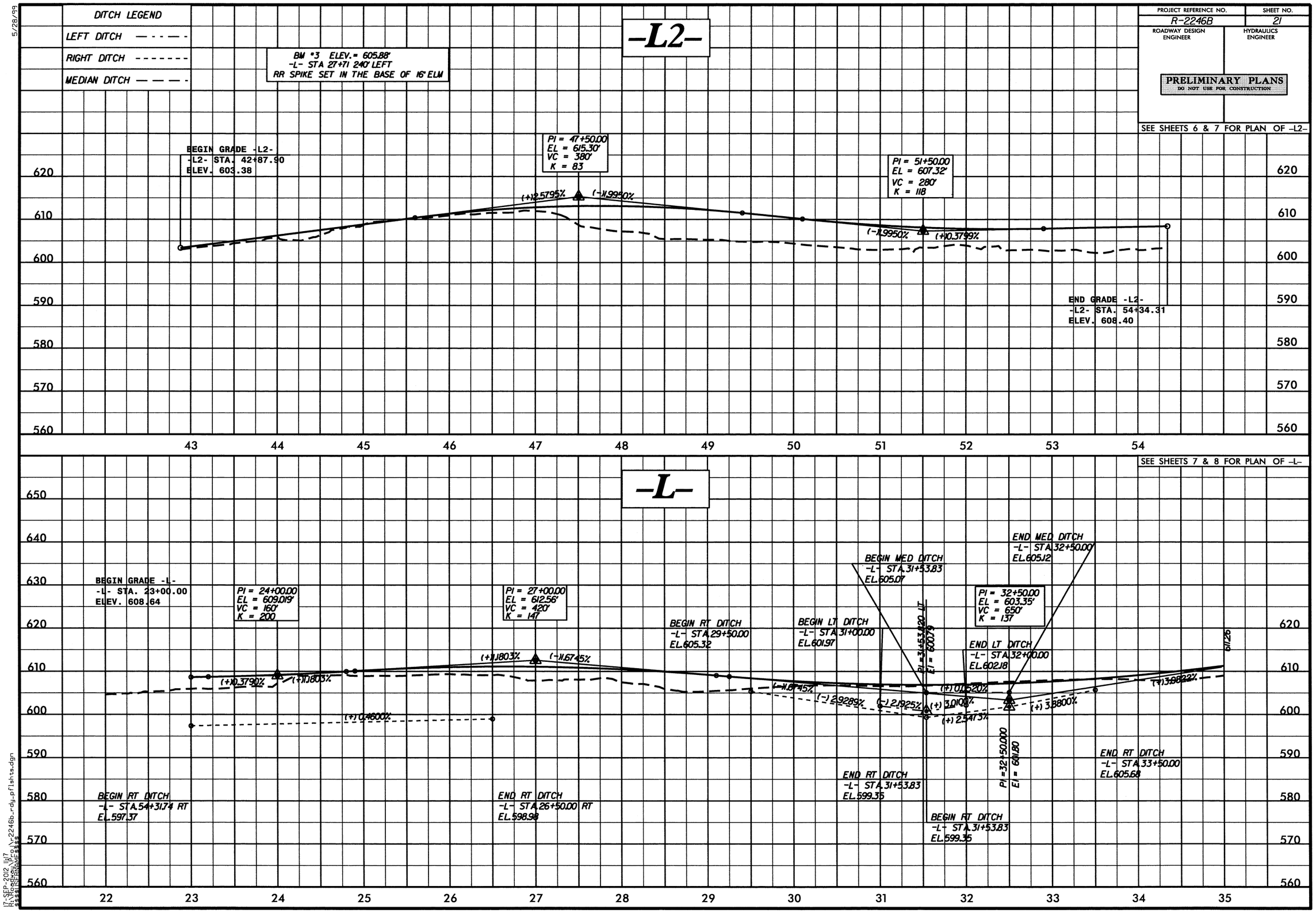
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	21
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

BM #3 ELEV.= 605.88'
-L- STA 27+71 240' LEFT
RR SPIKE SET IN THE BASE OF 16" ELM



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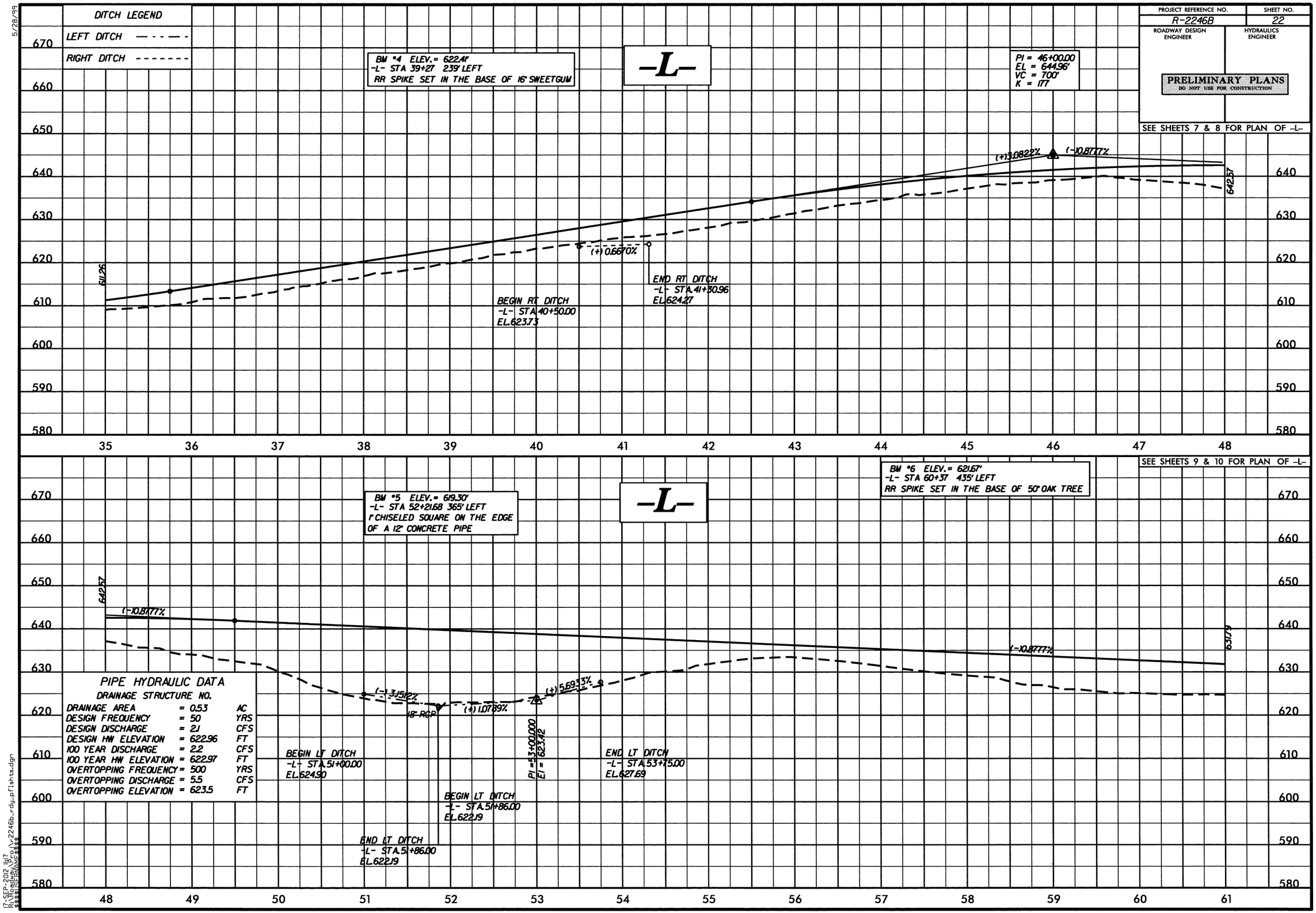
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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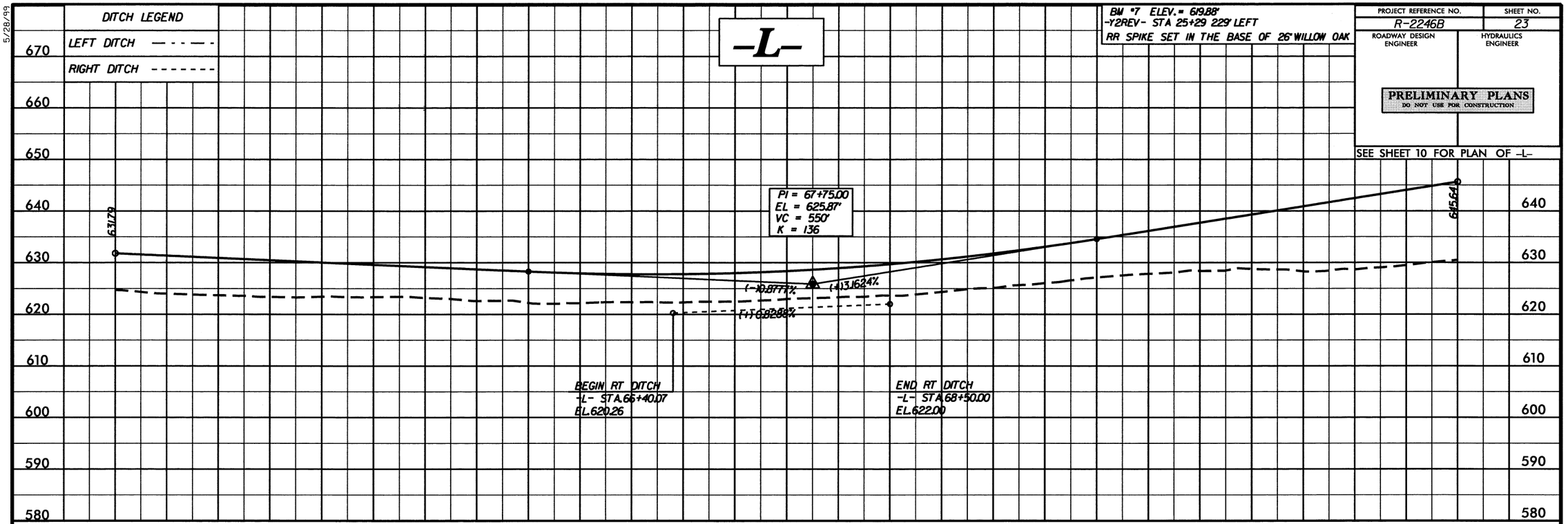
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

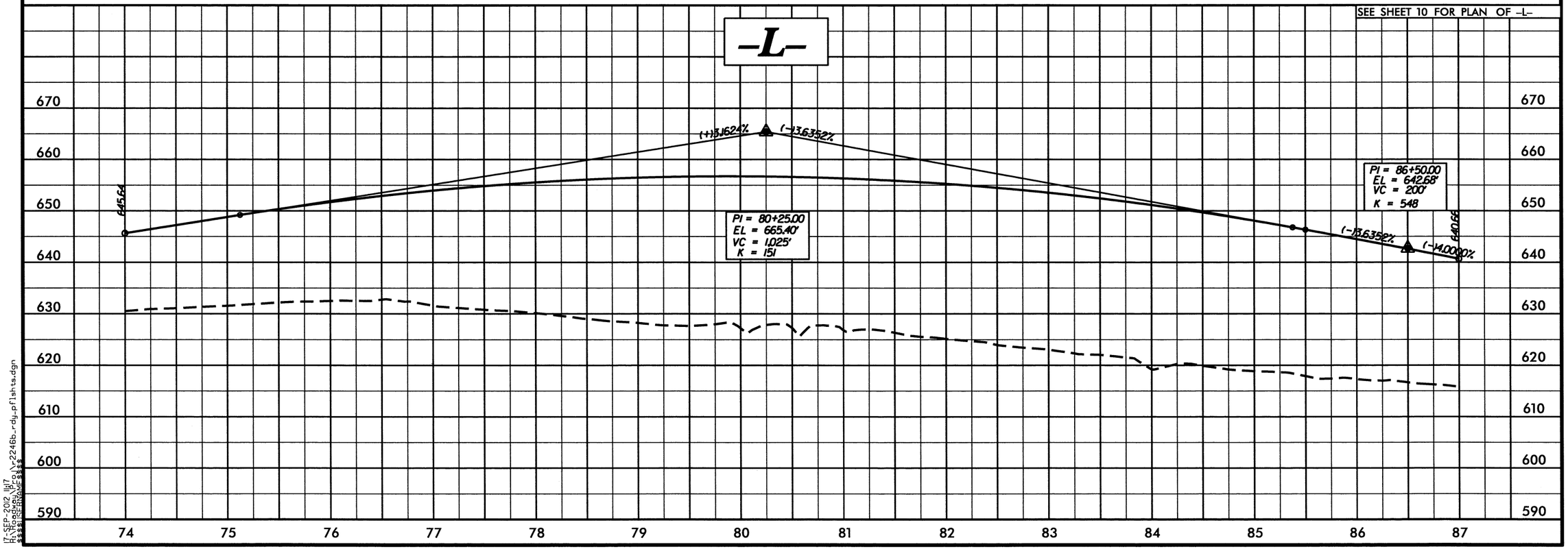
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #7 ELEV. = 619.88'
-Y2REV- STA 25+29 229' LEFT
RR SPIKE SET IN THE BASE OF 26" WILLOW OAK

SEE SHEET 10 FOR PLAN OF -L-



SEE SHEET 10 FOR PLAN OF -L-



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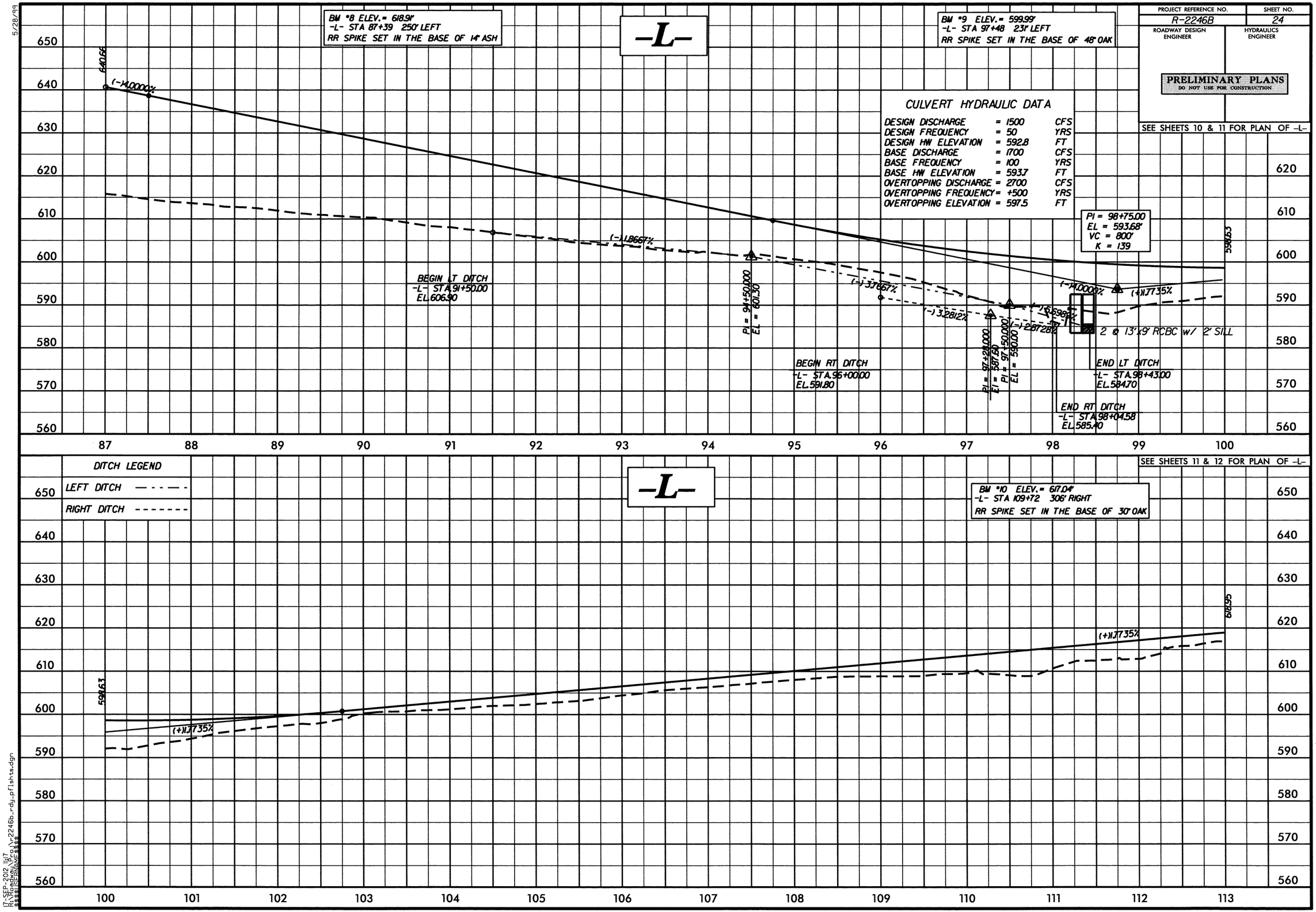
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 10 & 11 FOR PLAN OF -L-



SEE SHEETS 11 & 12 FOR PLAN OF -L-

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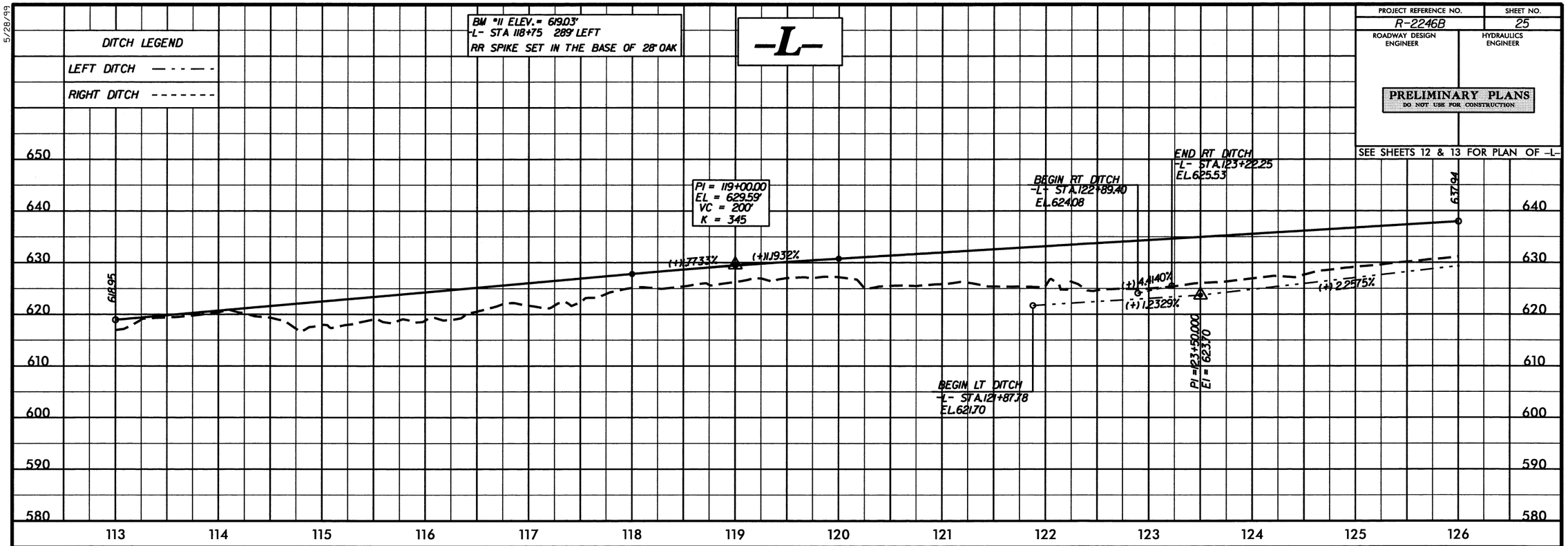
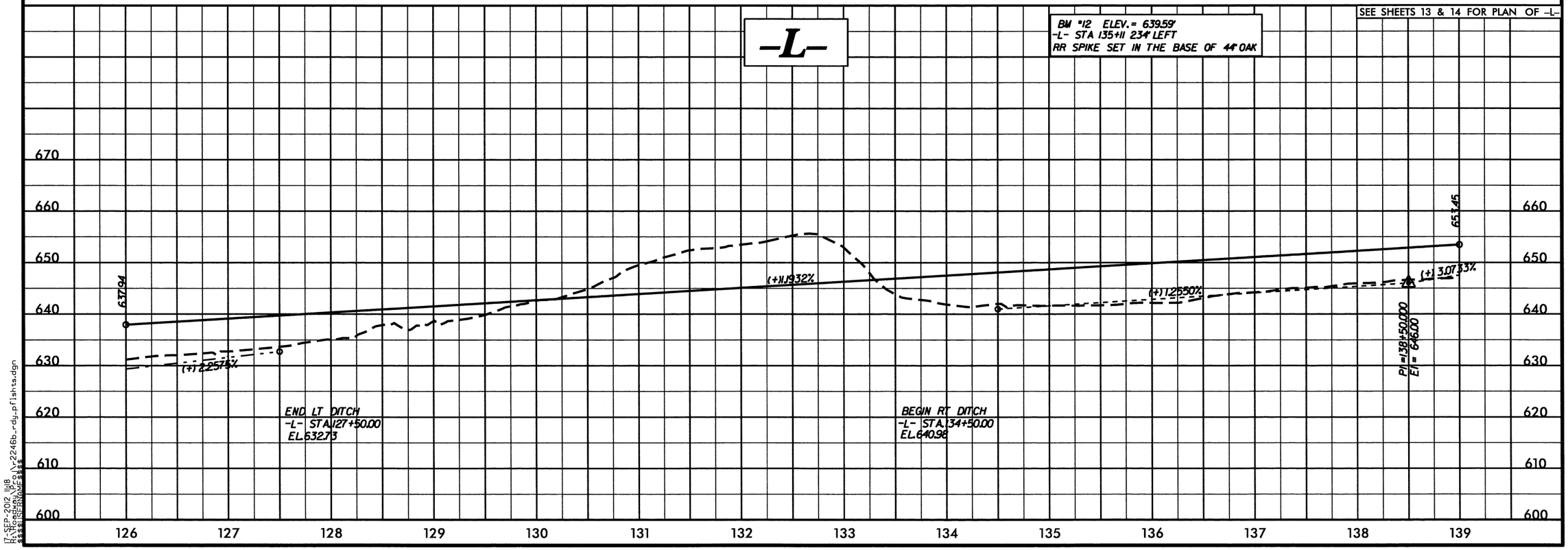
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 12 & 13 FOR PLAN OF -L-



SEE SHEETS 13 & 14 FOR PLAN OF -L-



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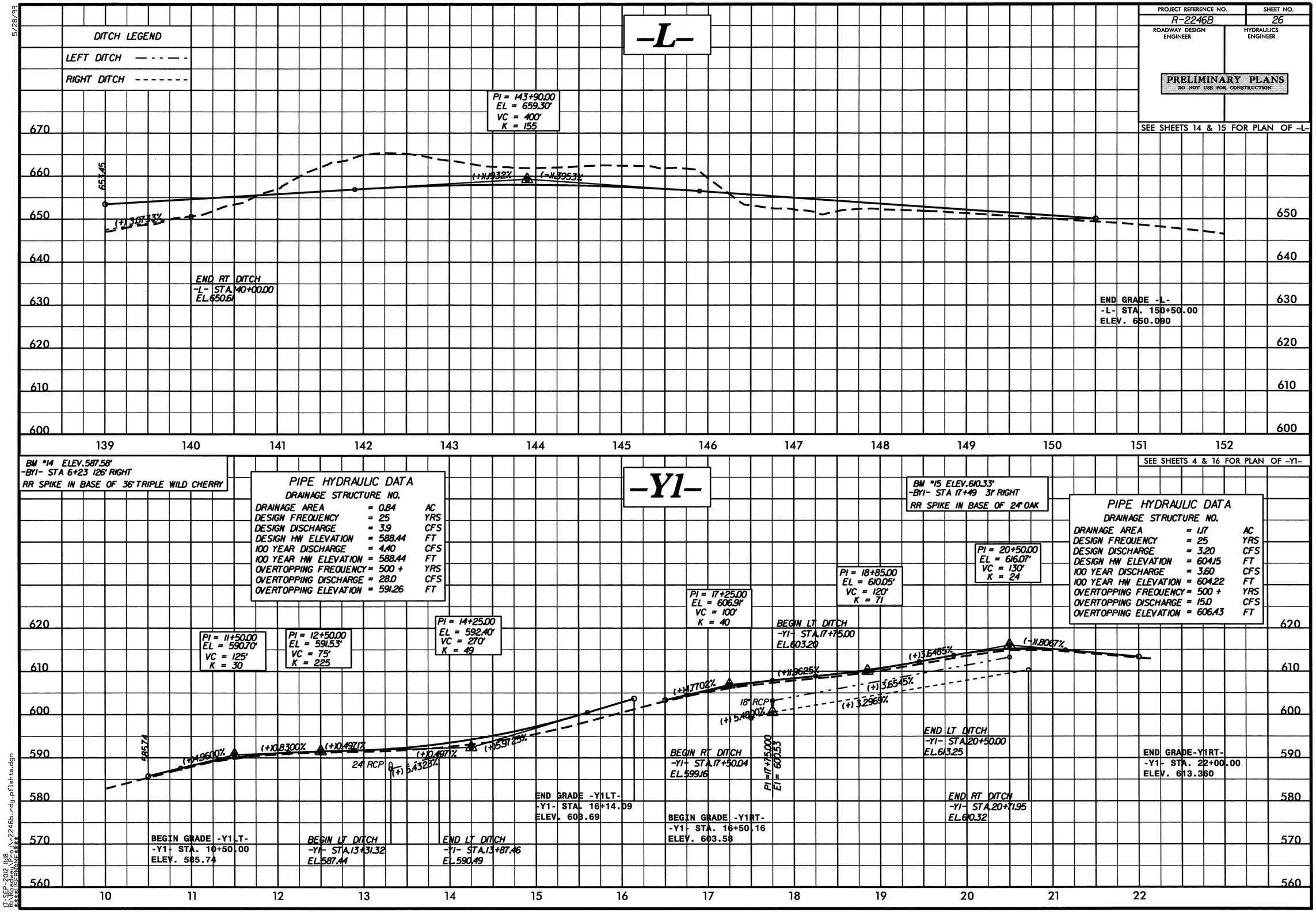
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 14 & 15 FOR PLAN OF -L-



SEE SHEETS 4 & 16 FOR PLAN OF -Y1-

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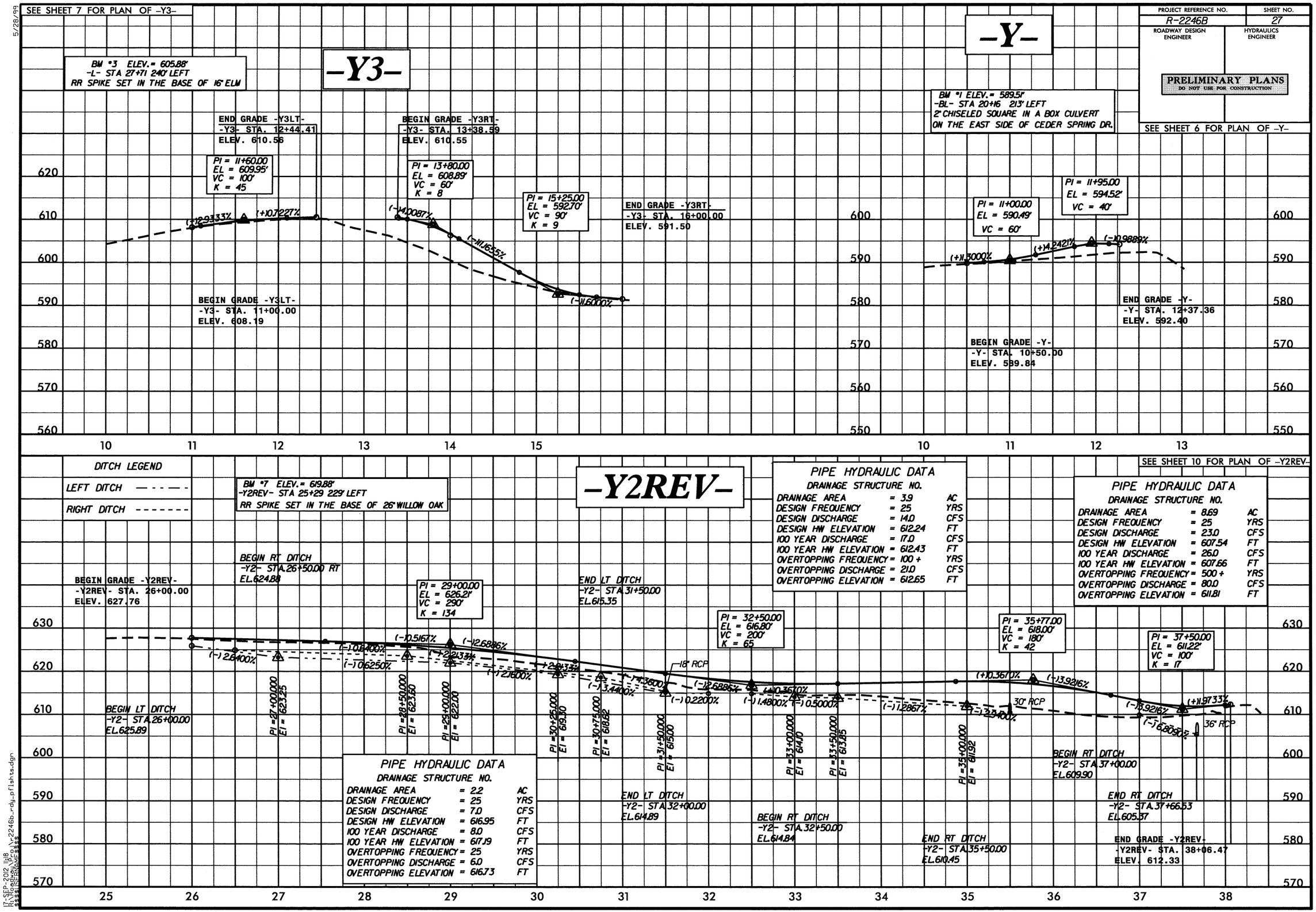
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 7 FOR PLAN OF -Y3-

SEE SHEET 6 FOR PLAN OF -Y-



SEE SHEET 10 FOR PLAN OF -Y2REV-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 3.9	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 14.0	CFS
DESIGN HW ELEVATION	= 612.24	FT
100 YEAR DISCHARGE	= 17.0	CFS
100 YEAR HW ELEVATION	= 612.43	FT
OVERTOPPING FREQUENCY	= 100 +	YRS
OVERTOPPING DISCHARGE	= 21.0	CFS
OVERTOPPING ELEVATION	= 612.65	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 8.69	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 23.0	CFS
DESIGN HW ELEVATION	= 607.54	FT
100 YEAR DISCHARGE	= 26.0	CFS
100 YEAR HW ELEVATION	= 607.66	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 80.0	CFS
OVERTOPPING ELEVATION	= 611.81	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 2.2	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 7.0	CFS
DESIGN HW ELEVATION	= 616.95	FT
100 YEAR DISCHARGE	= 8.0	CFS
100 YEAR HW ELEVATION	= 617.19	FT
OVERTOPPING FREQUENCY	= 25	YRS
OVERTOPPING DISCHARGE	= 6.0	CFS
OVERTOPPING ELEVATION	= 616.73	FT

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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 17 & 10 FOR PLAN OF -Y4-

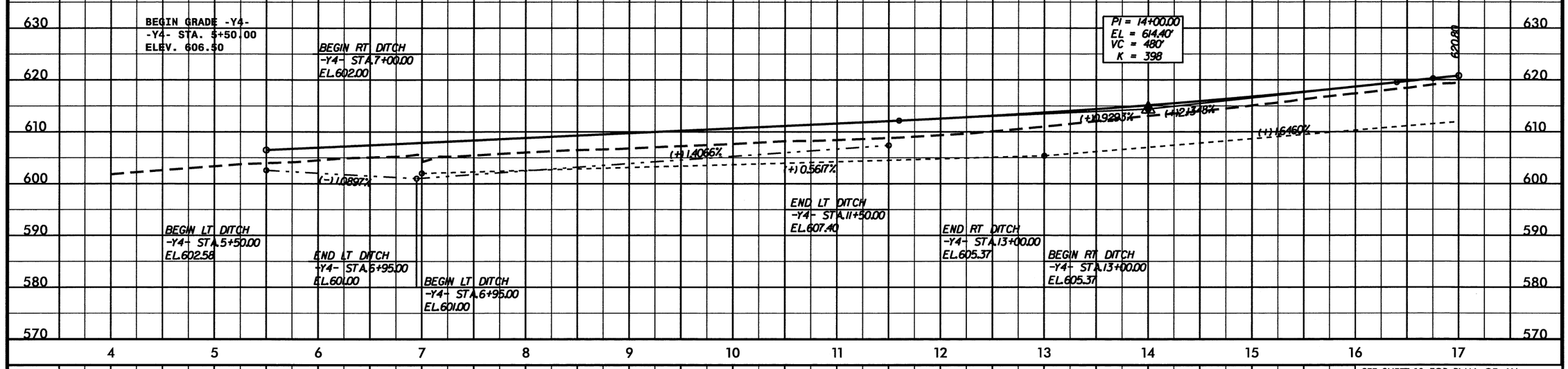
DITCH LEGEND

LEFT DITCH — - - — -

RIGHT DITCH - - - - - - -

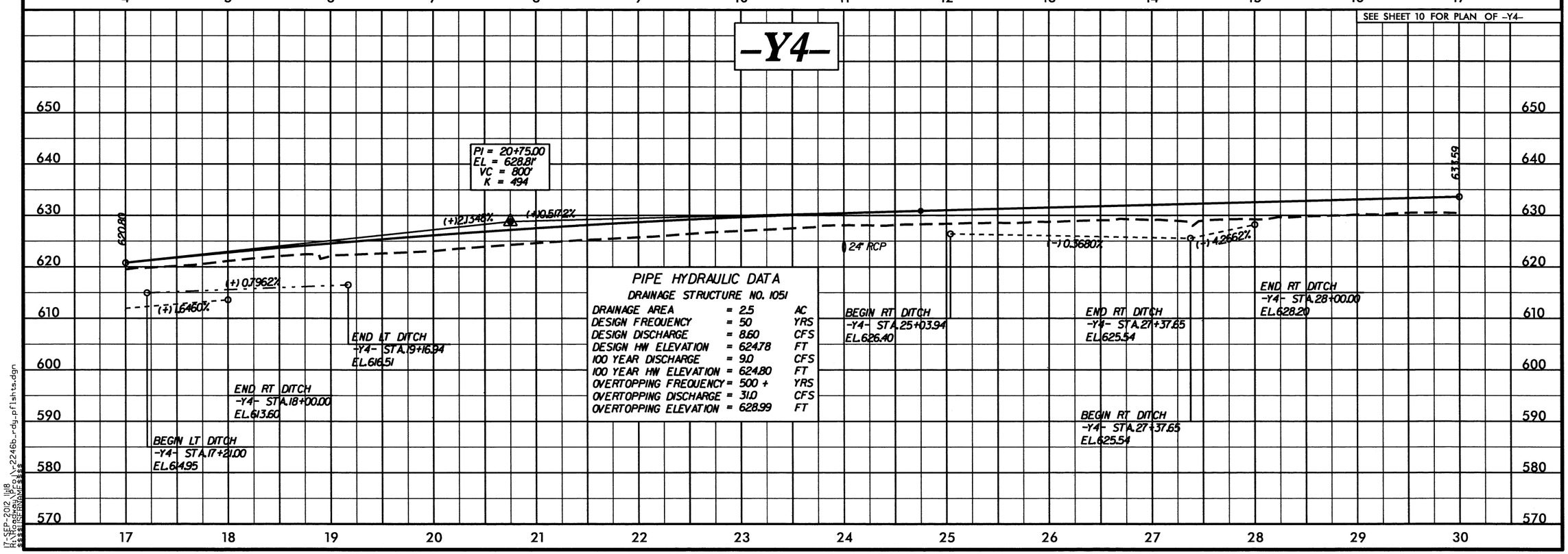
-Y4-

BM #8 ELEV.= 618.91'
-L- STA 87+39 250' LEFT
RR SPIKE SET IN THE BASE OF 14" ASH



SEE SHEET 10 FOR PLAN OF -Y4-

-Y4-



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 1051

DRAINAGE AREA	= 2.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 8.60	CFS
DESIGN HW ELEVATION	= 624.78	FT
100 YEAR DISCHARGE	= 9.0	CFS
100 YEAR HW ELEVATION	= 624.80	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 31.0	CFS
OVERTOPPING ELEVATION	= 628.99	FT

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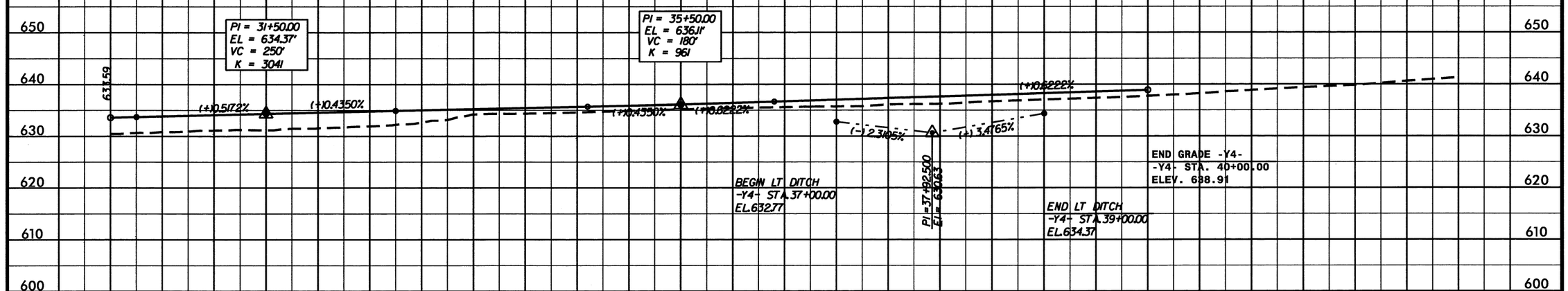
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 18 FOR PLAN OF -Y4-

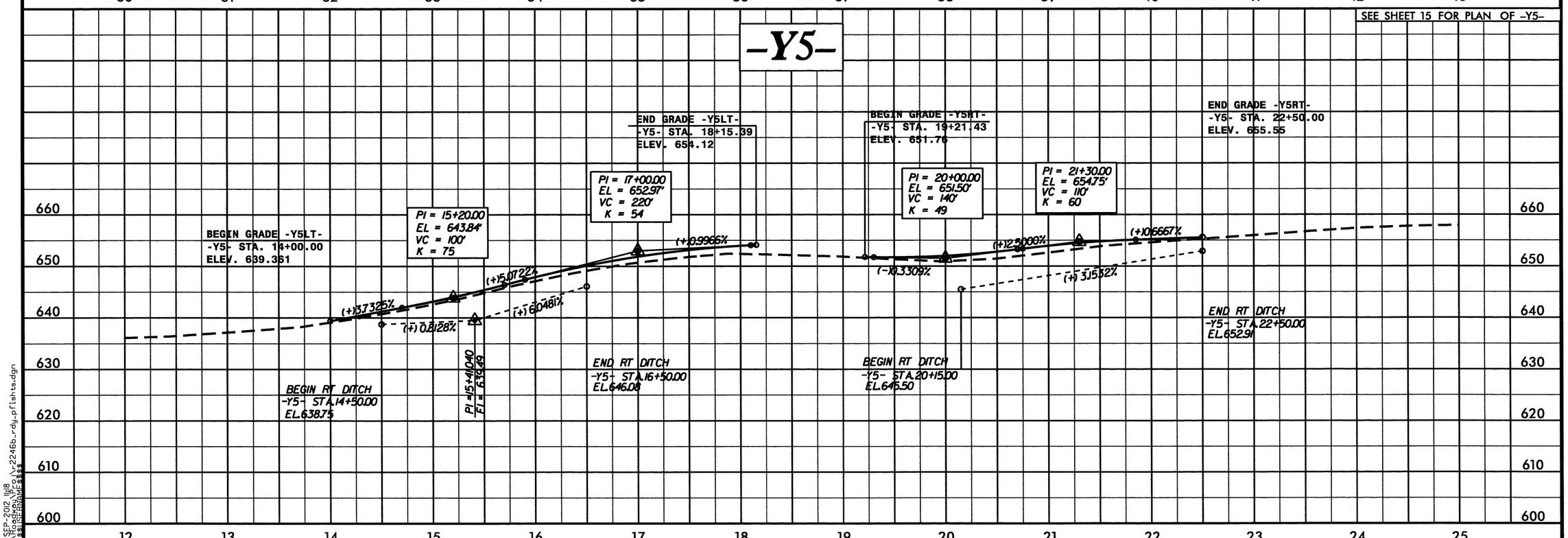
DITCH LEGEND
LEFT DITCH — - - — -
RIGHT DITCH - - - - - - -

-Y4-



SEE SHEET 15 FOR PLAN OF -Y5-

-Y5-



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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 7 FOR PLAN OF -Y6-

SEE SHEET 4 FOR PLAN OF -Y8-

SEE SHEET 4 FOR PLAN OF -Y9-

DITCH LEGEND

LEFT DITCH — - - — -

-Y6-

BEGIN GRADE
-Y6- STA. 10+11.53
ELEV. 597.09

END GRADE
-Y6- STA. 11+50
ELEV. 595.95

PI = 10+60.00
EL = 594.99'
VC = 70'
K = 13

(-)3.3286% (+)11.0561%

-Y8-

BEGIN GRADE
-Y8- STA. 12+00.00
ELEV. 572.27

(-)10.8140%

(-)3.3487%

18" RCP

BEGIN LT DITCH
-Y8- STA. 12+50.00
EL. 569.40

END LT DITCH
-Y8- STA. 12+97.78
EL. 567.80

END GRADE
-Y8- STA. 13+32.68
ELEV. 571.19

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 0410

DRAINAGE AREA	= 0.88	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 2.90	CFS
DESIGN HW ELEVATION	= 568.61	FT
100 YEAR DISCHARGE	= 3.20	CFS
100 YEAR HW ELEVATION	= 568.66	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 16.0	CFS
OVERTOPPING ELEVATION	= 571.55	FT

-Y9-

BEGIN GRADE
-Y9- STA. 10+12.02
ELEV. 587.03

PI = 10+85.00
EL = 584.43'
VC = 120'
K = 30

(-)3.5626% (+)0.4923%

24" RCP

END GRADE
-Y9- STA. 11+50.00
ELEV. 584.75

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 0412

DRAINAGE AREA	= 4.10	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 11.0	CFS
DESIGN HW ELEVATION	= 582.46	FT
100 YEAR DISCHARGE	= 13.0	CFS
100 YEAR HW ELEVATION	= 582.66	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 28.0	CFS
OVERTOPPING ELEVATION	= 584.56	FT

SEE SHEET 4 FOR PLAN OF -DRV1- & -DRV2-

SEE SHEET 10 FOR PLAN OF -LDET-

-DRV1-

PI = 10+50.00
EL = 592.73'
VC = 25'

PI = 11+45.00
EL = 589.83'
VC = 25'

(-)1.9707% (-)13.0526% (+)12.2000%

BEGIN GRADE -DRV1-
-DRV1- STA. 10+32.24
ELEV. 593.08

END GRADE -DRV1-
-DRV1- STA. 11+75.00
ELEV. 590.49

-DRV2-

PI = 10+50.00
EL = 593.74'
VC = 25'

PI = 11+50.00
EL = 590.18'
VC = 25'

(-)2.0151% (-)13.5600% (+)1.7904%

BEGIN GRADE -DRV2-
-DRV2- STA. 10+34.12
ELEV. 594.06

END GRADE -DRV2-
-DRV2- STA. 11+70.00
ELEV. 590.538

-LDET-

(-)10.8528%

BEGIN GRADE -LDET-
-LDET- STA. 11+13.49
ELEV. 630.89

END GRADE -LDET-
-LDET- STA. 12+71.32
ELEV. 629.57

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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

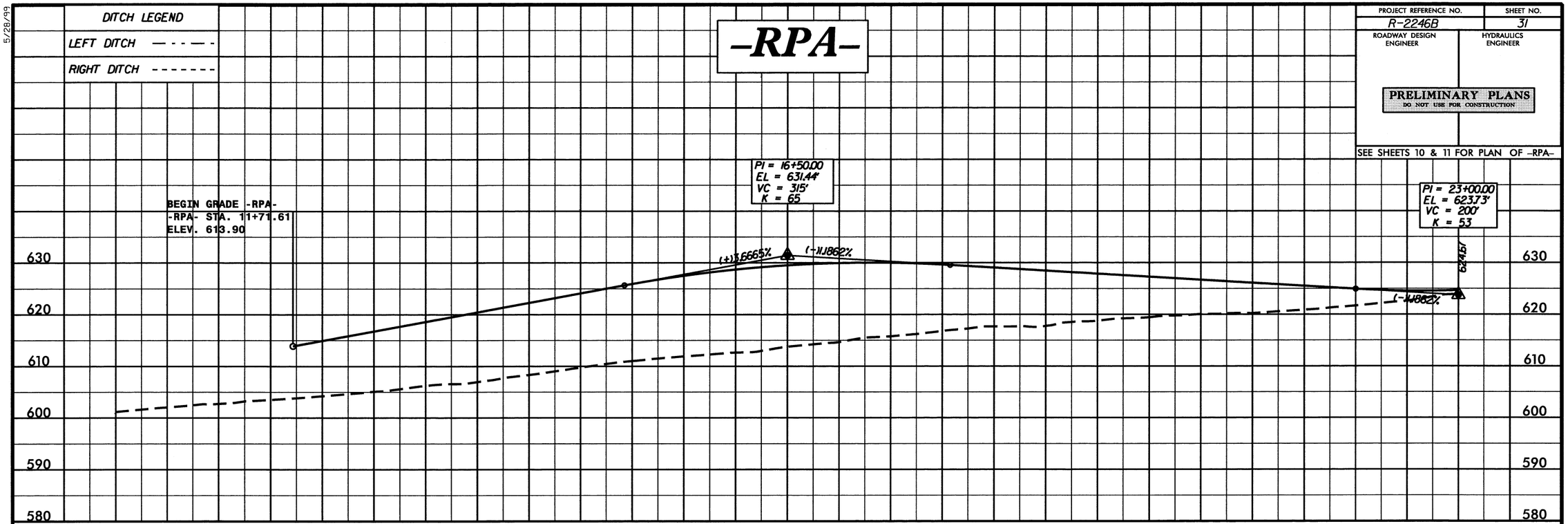
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 10 & 11 FOR PLAN OF -RPA-

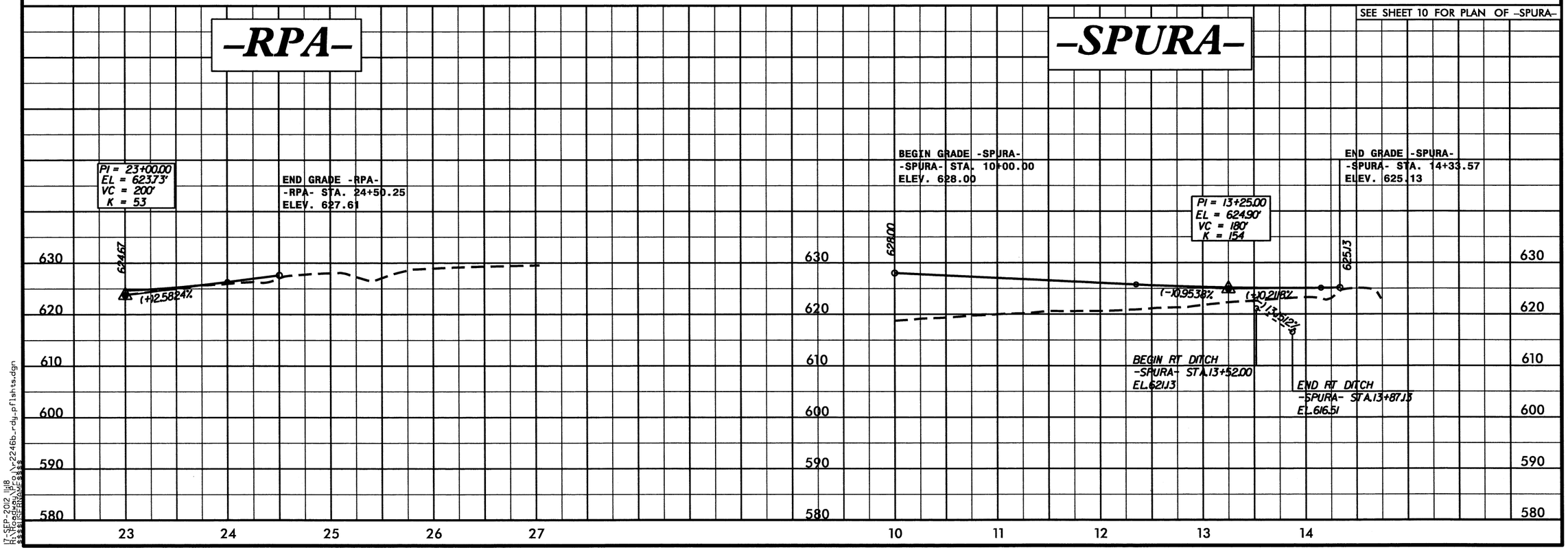
DITCH LEGEND

LEFT DITCH — - - — -

RIGHT DITCH - - - - - - -



SEE SHEET 10 FOR PLAN OF -SPURA-



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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

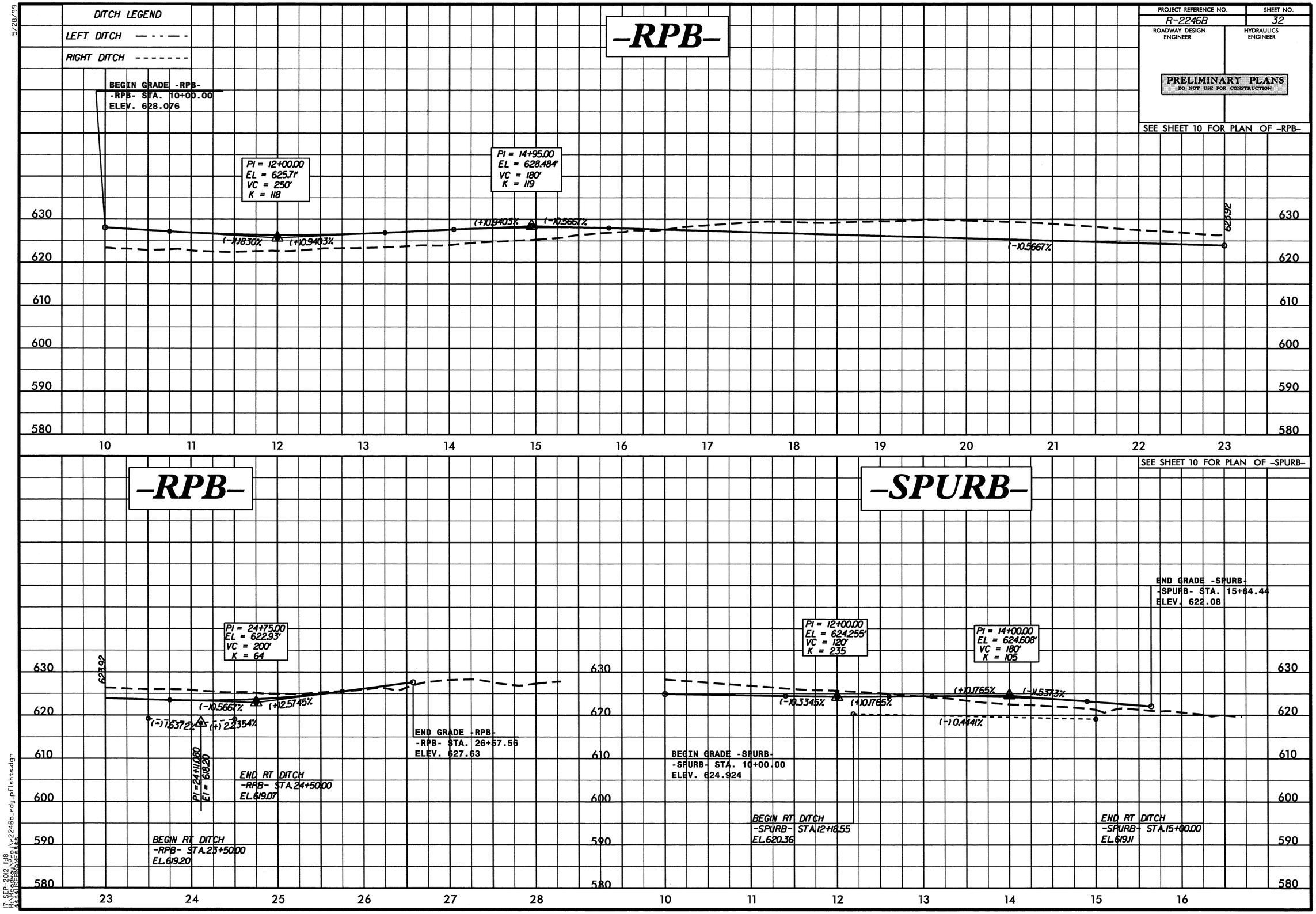
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 10 FOR PLAN OF -RPB-

DITCH LEGEND

LEFT DITCH — - - — -

RIGHT DITCH - - - - - - -



SEE SHEET 10 FOR PLAN OF -SPURB-

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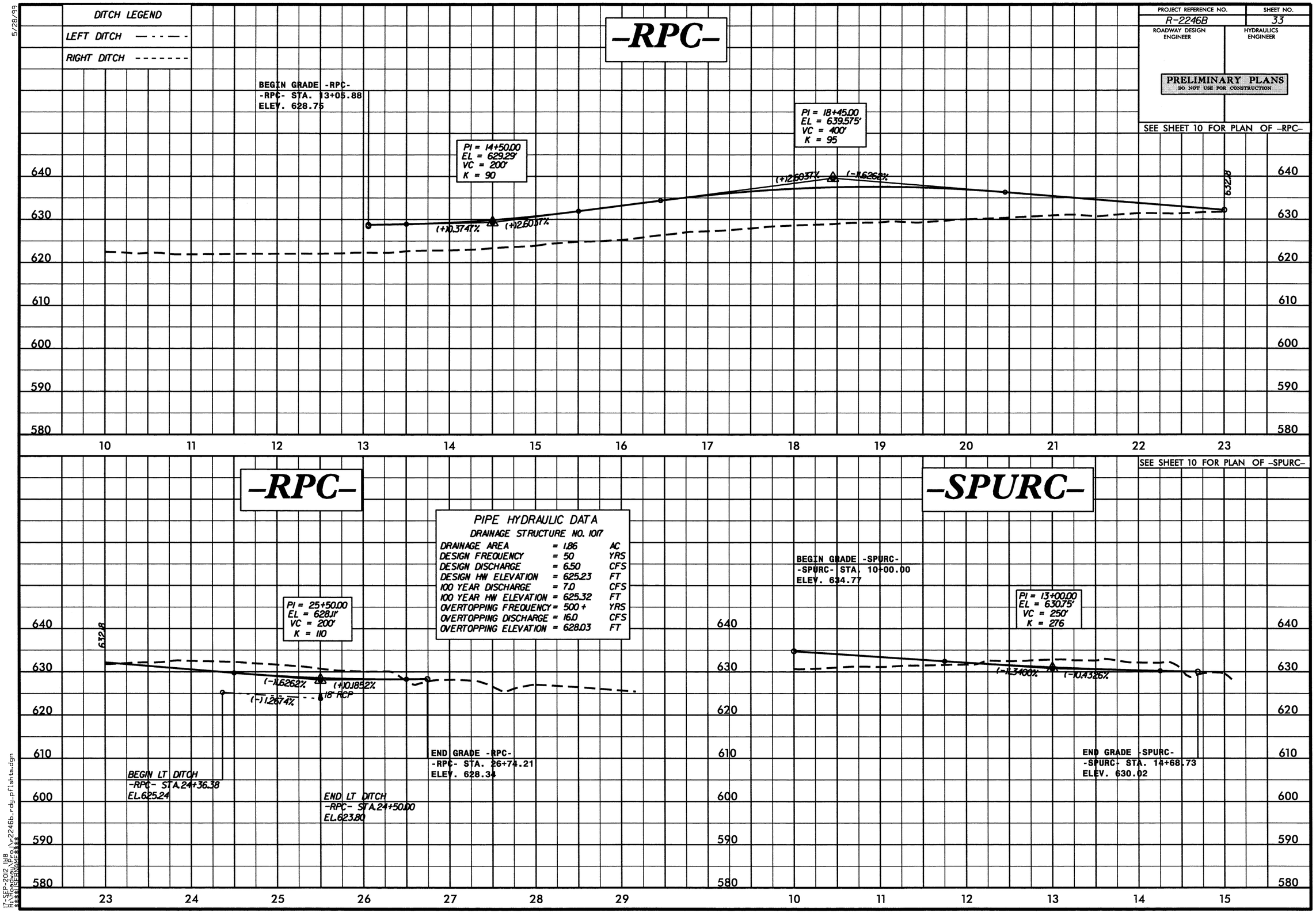
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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



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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

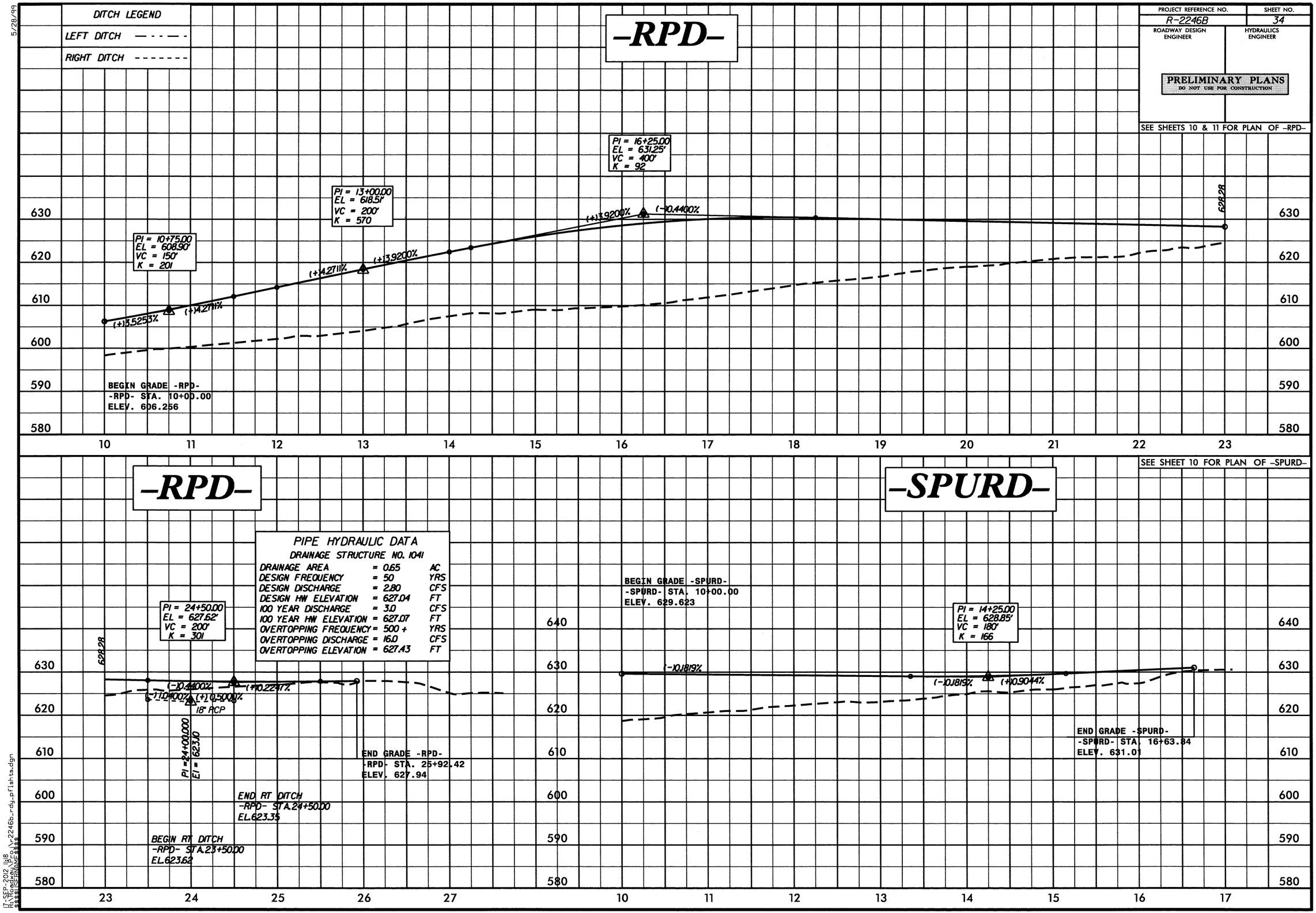
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 10 & 11 FOR PLAN OF -RPD-

DITCH LEGEND

LEFT DITCH — - - — -

RIGHT DITCH - - - - - - -



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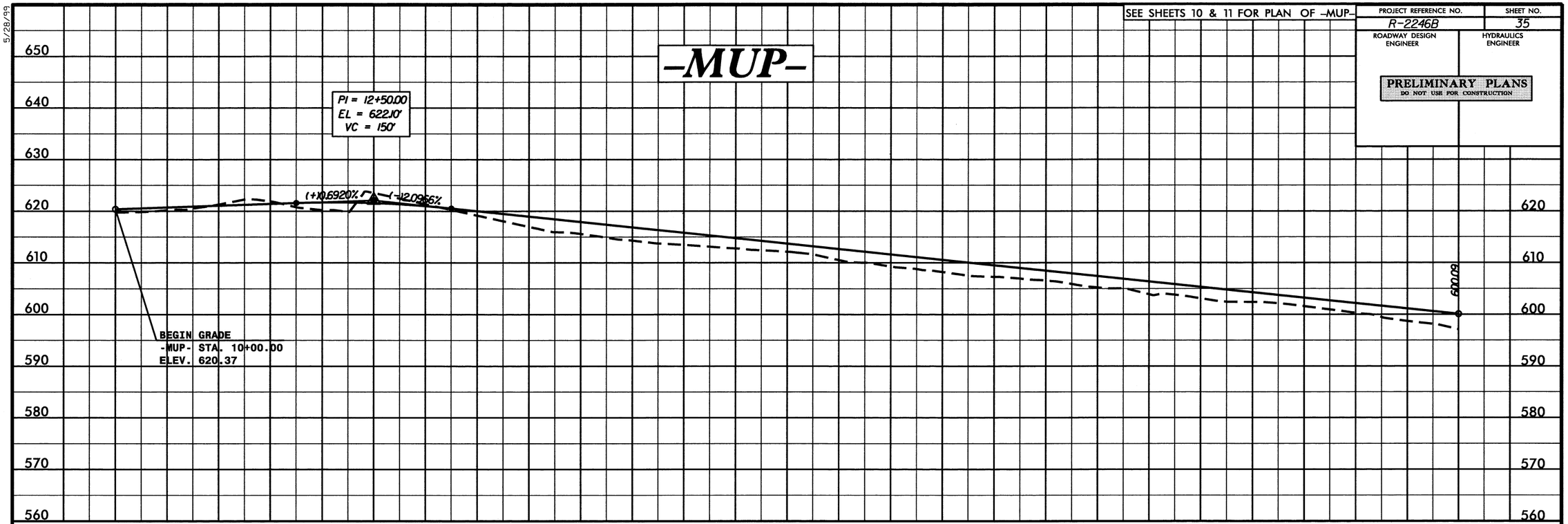
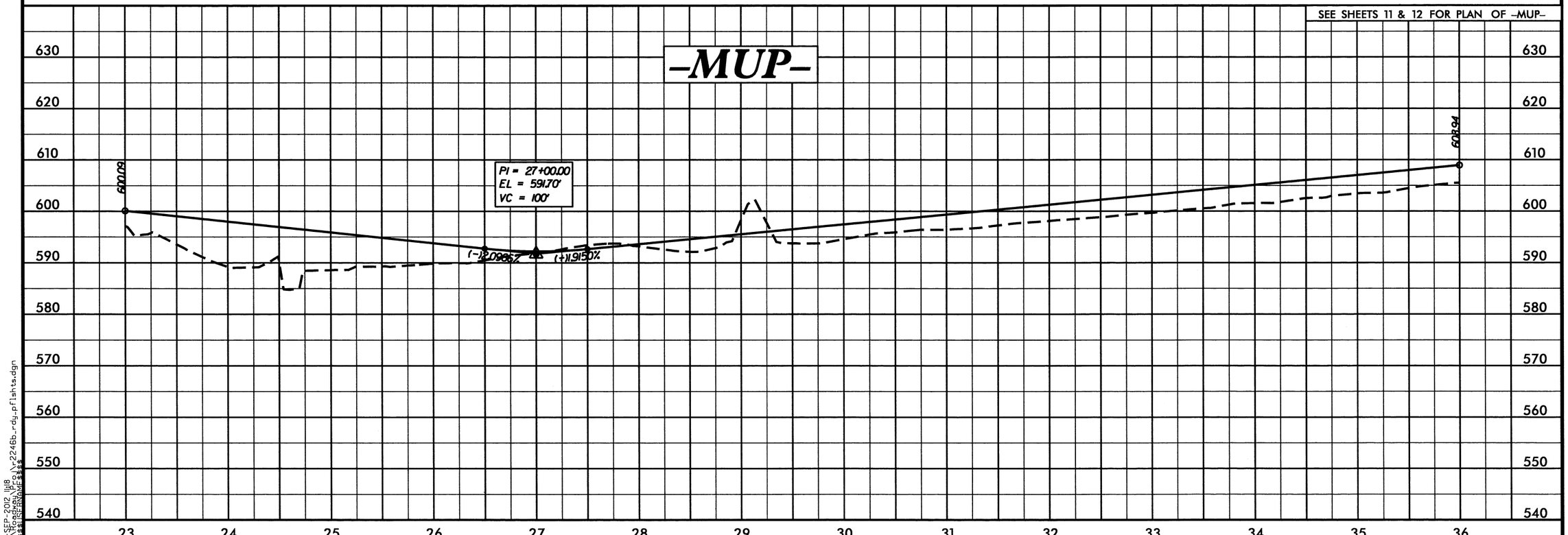
SEE SHEETS 10 & 11 FOR PLAN OF -MUP-

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SEE SHEETS 11 & 12 FOR PLAN OF -MUP-



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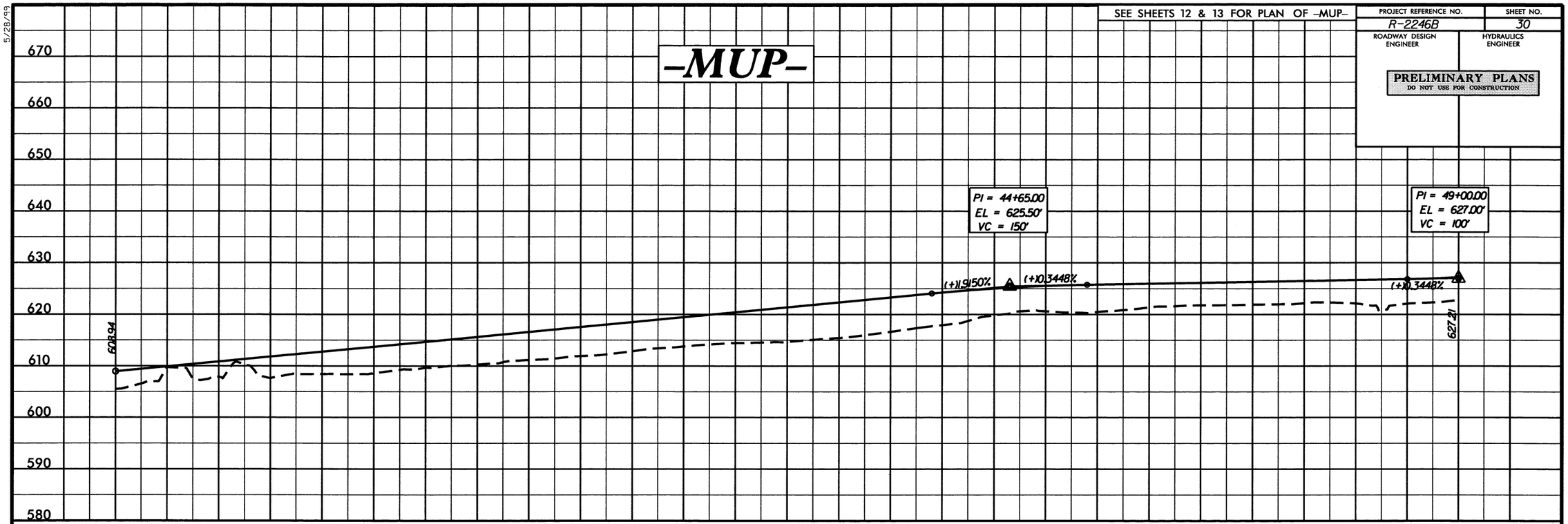
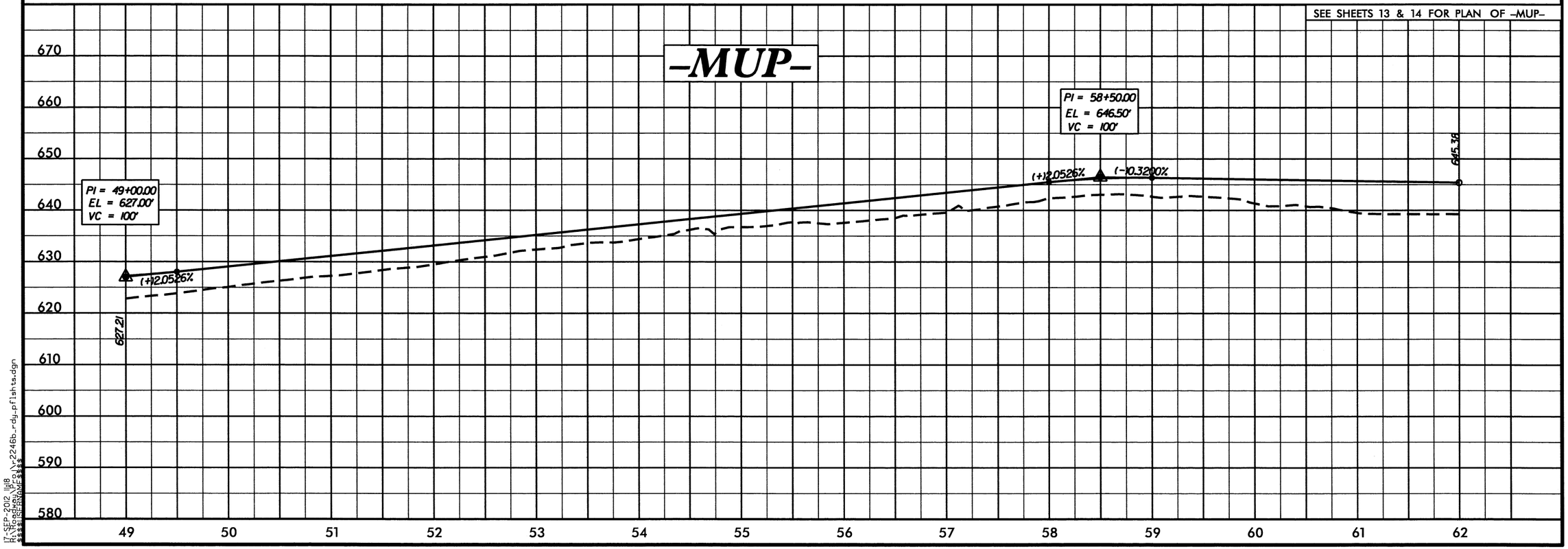
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 12 & 13 FOR PLAN OF -MUP-



SEE SHEETS 13 & 14 FOR PLAN OF -MUP-



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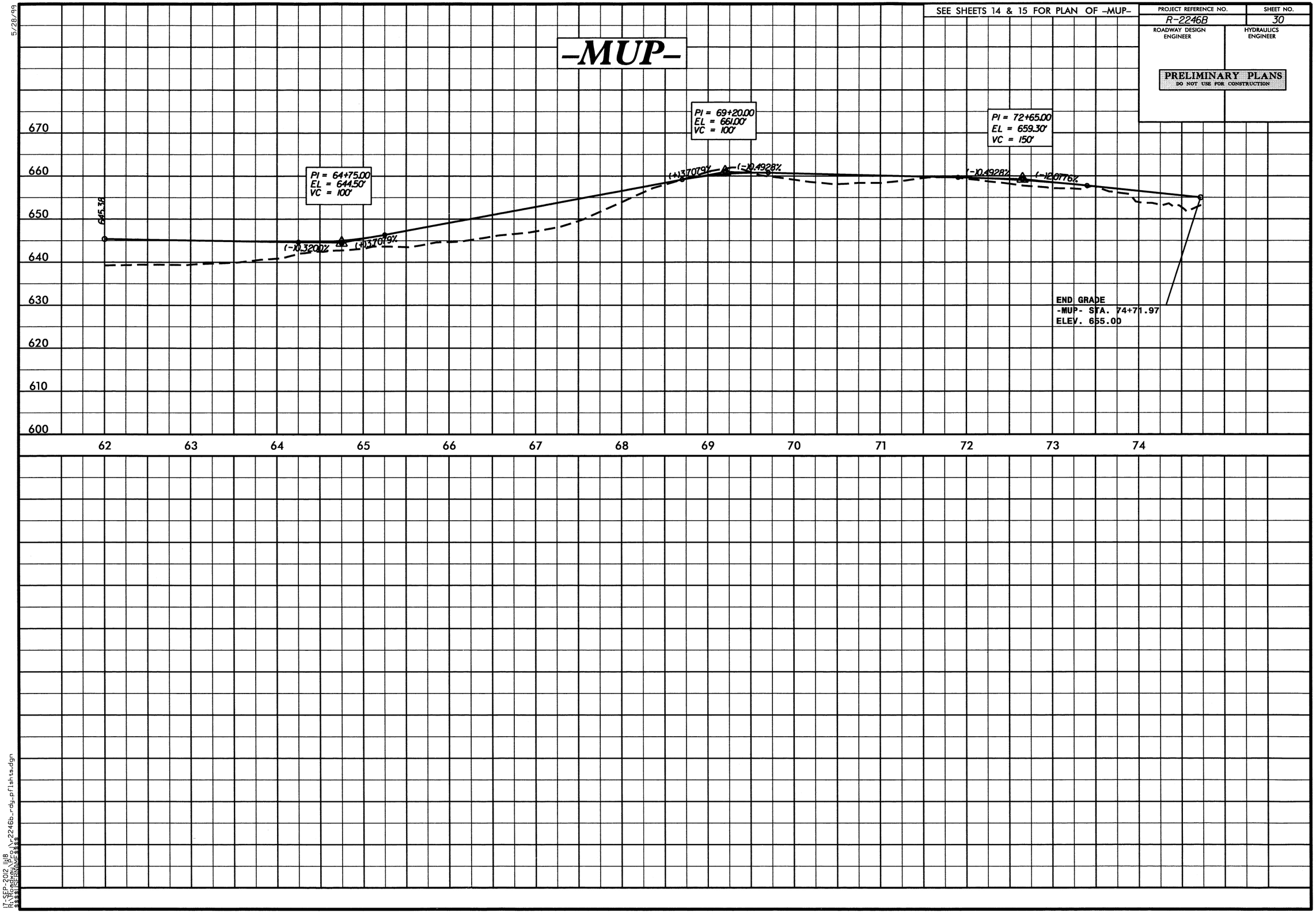
SEE SHEETS 14 & 15 FOR PLAN OF -MUP-

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-MUP-



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