STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

April 25, 2013

U. S. Army Corps of Engineers
Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587

ATTN: Mr. Andy Williams
NCDOT Coordinator

SUBJECT: **Application for Section 404 Individual Permit, Section 401 Individual Water Quality Certification, and Randleman Lake Buffer Authorization** for the proposed widening from SR 1003 (North Main Street) and SR 1820 (Skeet Club Road) to NC 68 in High Point, Guilford County; Division 7; TIP U-3615; Federal Aid Project No. STP-1820(2); WBS Element No. 34962.1.1

Debit $570.00 from WBS Element No. 34962.1.1

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to widen and improve Skeet Club Road to a multi-lane facility from SR 1003 (North Main Street) and SR 1820 (Skeet Club Road) between US 311 to NC 68 and reconfigure the intersection at North Main Street and Skeet Club Road in High Point.

In addition to this cover letter, the application package consists of an ENG Form 4345, the North Carolina Ecosystem Enhancement Program (NCEEP) acceptance letter, September 27, 2010 North Carolina State Historic Preservation Office (NCSHPO) Eligibility Memorandum, Mitigation Plan, Small whorled pogonia Survey Reports for Sections A and B, U-3615B Interagency Hydraulic Design Review Concurrence Points 4B and 4C meeting minutes, U-3615B Stormwater Management Plans, permit drawings, half-size roadway plan sheets and U-3615B Natural Stream Design Plans.

Project Schedule

For construction purposes this project has been divided into two sections: U-3615A – SR 1003 (North Main Street) and SR 1820 (Skeet Club Road) between US 311 and east of SR 1818 (Johnston Street) and U-3615B – SR 1820 (Skeet Club Road) from west of SR 1818 (Johnson Street) to NC 68 (East Chester Drive).

Permit drawings for the proposed project have been prepared based on final design for U-3615B and preliminary design for U-3615A. The NCDOT will apply for any relevant permit modifications for U-3615A when final design is complete for that section. Construction will not commence on

U-3615A until permit modifications have been received based on final designs.

The project has a review date of August 27, 2013 and a letting date of October 15, 2013 for U-3615B and post year date for U-3615A. However, letting of project may advance as funding becomes available.

Purpose and Need

The purpose of this project is to increase the traffic carrying capacity, reduce accident rates, and to relieve traffic congestion in the area surrounding Skeet Club Road.

NEPA DOCUMENT STATUS

An Environmental Assessment (EA) was approved in December 2002. A Finding of No Significant Impact (FONSI) was approved in May 2004. The EA and FONSI have been provided to regulatory review agencies. A Right of Way Consultation to update the EA and FONSI was completed in February 2009 (see attached). Additional copies will be provided upon request.

INDEPENDENT UTILITY

The subject project is in compliance with 23 CFR Part 771.111(f), which lists the Federal Highway Administration (FHWA) characteristics of independent utility of a project:

(1) The project connects logical termini and is of sufficient length to address environmental matters on a broad scope;
(2) The project is usable and a reasonable expenditure due to both sections being constructed at the same time;
(3) The project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

RESOURCE STATUS

Wetland delineations within the U-3615 construction footprint followed the field delineation method outlined in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987). Stream identification and classification followed the *Identification Methods for the Origins of Intermittent and Perennial Streams* (North Carolina Division of Water Quality [NCDWQ]).

Within the U-3615 construction footprint, sixteen streams, Oak Hollow Lake, and six wetlands sites were identified. Jurisdictional areas were originally verified by USACE Regulatory Specialist John Thomas and NCDWQ representative Sue Homewood. Jurisdictional features were re-verified by USACE Regulatory Specialist Andy Williams and conceded by NCDWQ representative Amy Euliss on September 17, 2008. Also, during this verification two wetlands (W3 and W4) previously determined to be isolated were deemed to be connected to a stream via a natural depression and were no longer considered isolated. No written Jurisdictional Determination (JD) was received from the USACE for the re-verification.

IMPACTS TO WATERS OF THE UNITED STATES

The project lies within the Piedmont Physiographic Province in the Cape Fear River Basin in Guilford County, HUC 03030003. Jurisdictional features within the construction footprint that will be impacted by this project include Oak Hollow Lake (NCDWQ Classification WSIV; CA; NCDWQ Index No. 17-3-(0.7) and ten unnamed tributaries (UTs) to West Fork of Deep River (NCDWQ Classification WS-IV; NCDWQ Index No.17-3-(0.3). There are three riparian wetlands located within the project area that will be impacted.

There are no designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply II (WS-II) waters within 1.0 mile of the project area. None of the streams within the project area are listed on the 2012 303(d) List of Impaired Waters of North Carolina. However, there is one water source within a mile of the project area that is listed on the 2012 303(d) List that is connected with waters in the project area: Rich Fork. Rich Fork is listed as impaired due to ecological/biological integrity for benthos and/or fish community.

Utility Impacts

There will be no impacts from utilities to jurisdictional sites on Section U-3615B. Utility impacts for Section U-3615A will be evaluated during the permit modification process.

Surface Waters

U-3615B

Total surface water impacts for U-3615B are 2,099 linear feet of permanent stream impacts and 117 linear feet of temporary stream impacts. There are also 0.04 acres of surface water impacts for the rock fill in Oak Hollow Lake and a pond along with 0.29 acres of temporary surface water impacts for bents of the bridge at Oak Hollow Lake. The jurisdictional stream impacts are summarized below in Table 1.

Table 1. U-3615B Surface Water Impacts (Final)

Site	Stream JD ID	Classification	Impact Type	Impact Length (lin. ft.)	Pond/Lake Impact Area (acres)	Proposed Mitigation Ratio	Proposed Mitigation Required (lin. ft.)	Temporary Impacts (lin. ft.)
1	UT 3-2/UT 4 W. Fork of Deep River	Perennial	2 x 66" RCP	119		2:1	238	16
2	UT 3-3 W. Fork of Deep River	Perennial	Relocate Channel	594		1:1	594	10
2A	Pond to W. Fork of Deep River	Perennial	Rockfill		0.02			
3	UT 3-3 W. Fork of Deep River	Perennial	Relocate Channel	699		1:1	699	10
3A	UT 5 W. Fork of Deep River	Perennial	2 X 54" RCP	38		2:1	76	10
3B	UT 6 W. Fork of Deep River	Perennial	48" RCP	109		2:1	218	4
			Bank Stabilization	10		0[2]	0	
3C	UT 15 W. Fork of Deep River	Intermittent	Natural Stream Design	63		1:1	63	
5	UT 12 W. Fork of Deep River	Intermittent	30" RCP	131		1:1	131	16
5A	S-7 (Oak Hollow Lake)	Perennial	Rockfill		0.02			
7	UT 9 W. Fork of Deep River	Intermittent	42" RCP	49		1:1	49	19
8	UT 8 W. Fork of Deep River	Perennial	8'X 8' RCBC	186		2:1	372	32
			Bank Stabilization	101		0[1]	0	
Total Impacts:				**2,099**	**0.04**		**2,440**	**117**

[1] Mitigation for bank stabilization not required by USACE and NCDWQ mitigation requirement met under the USACE 2:1 ratio for stream mitigation. [2] Does not meet mitigation threshold of <150 feet (NCDWQ).

* Note: There are 0.29 acres of temporary surface water impact for the bridge for Oak Hollow Lake. Impacts not included in surface water impact total.

U-3615A

Total preliminary surface water impacts for U-3615A are 439 linear feet of permanent stream impacts and 33 linear feet of temporary stream impacts. The jurisdictional stream impacts are summarized below in Table 2.

Table 2. U-3615A Surface Water Impacts (Preliminary)

Site	Stream JD ID	Classification	Impact Type	Impact Length (lin. ft.)	Proposed Mitigation Ratio	Temporary Impact Length (ft.)
2	UT 1 Hiatt Branch	Perennial	36" RCP	148	1:1[1]	10
3	UT 2 Hiatt Branch	Intermittent	48" RCP	132	1:1[1]	13
4	UT 14 W. Fork Deep River	Intermittent	24" RCP	159	0[2]	10
Total Impacts				**439**		**33**

[1]USACE on the field visit 4/9/02 determined mitigation ratio to be 1:1. [2]USACE on a field visit on 9/17/08 and NCDWQ on field visit on 7/20/05 determined UT 14 to be unimportant and no mitigation required.

Wetlands

U-3615B

There will be a total of 0.82 acres of permanent riparian wetland impacts associated with this section. These impacts will result from 0.14 acres of permanent fill, 0.67 of excavation, and 0.01 acres of mechanized clearing. Wetland impacts are summarized below in Table 3.

Table 3. U-3615B Wetland Impacts (Final)

Site	Wetland JD ID	Impact Type	Permanent Impacts (acres)
3C	Wetland WF	Excavation	0.67
4	Wetland 3	Excavation	<0.01
		Permanent Fill	0.13
5	Wetland B	Mechanized Clearing	0.01
		Permanent Fill	<0.01
6	Wetland D	Mechanized Clearing	<0.01
		Permanent Fill	<0.01
Total Impacts			**0.82***

*Total impacts due to rounding.

U-3615A

There are no wetland impacts for this section.

Randleman Lake Water Supply Watershed Buffers

This project impacts buffers in the Randleman Lake water supply watershed. Section U-3615B has final design impacts and Section U-3615A has preliminary impacts. Buffer impacts are summarized in Tables 4–5 for U-3615B and in Tables 6-7 for U-3615A below.

Table 4. U-3615B Randleman Lake Watershed Buffer Impacts (Final)

	Road Crossing	Road Crossing	Impacts Other Than Road Crossings (Parallel Impacts)	Other Impacts (Exceptions*)
Zone 1 Impact (sq. ft.)	31,767	13,765	90,736	2,437
Zone 2 Impact (sq. ft.)	19,572	7,825	64,268	1,947
Mitigation requirements	Allowable	Allowable with mitigation	Allowable with mitigation	Allowable

*No mitigation required if treatment is provided prior to buffers under new Randleman rules.

Table 5. U-3615B Total Buffer Impacts Requiring Mitigation (Final)

	Zone 1 Impacts (sq ft)	Zone 2 Impacts (sq ft)
Buffer Impacts requiring mitigation	104,501	72,093

Table 6. U-3615A Randleman Lake Watershed Buffer Impacts (Preliminary)

	Road Crossing	Road Crossing	Impacts Other Than Road Crossings (Parallel Impacts)
Zone 1 Impact (sq ft)	8,648	17,375	5,898
Zone 2 Impact (sq ft)	5,780	9,175	3,605
Mitigation requirements	Allowable	Allowable with mitigation	Allowable with mitigation

Table 7. U-3615A Total Buffer Impacts Requiring Mitigation (Preliminary)

	Zone 1 Impacts (sq ft)	Zone 2 Impacts (sq ft)
Buffer Impacts requiring mitigation	26,550	12,780

FEDERALLY PROTECTED SPECIES

Plants and animals with a Federal classification of Endangered (E) or Threatened (T) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act (ESA) of 1973, as amended. As of September 22, 2010, the U.S. Fish and Wildlife Service (USFWS) list one federally protected species for Guilford County: Small whorled pogonia (*Isotria medeoloides).* A species description and biological conclusion for the small whorled pogonia was not stated in either the EA or FONSI because the species was not added to the USFWS county list of protected species until after the documents were completed. The project area was later surveyed in May 2008 by NCDOT biologists for habitat for the small whorled pogonia. Section U-3615A does not have habitat for the small whorled pogonia, but section U-3615B does have habitat. A plant by plant survey in the areas

with habitat was done and no small whorled pogonia plants were found. Species survey reports were done for the small whorled pogonia for both sections of U-3615. A search of the North Carolina Natural Heritage Database on December 17, 2012 revealed no known occurrences of any federally protected species within 1.0 mile of the limits. A biological conclusion of "No Effect" was given for both sections. Copies of the survey reports are attached. Due to the last survey date of May 2008 for small whorled pogonia, NCDOT plans to do a re-survey on U-3615B in May 2013. If NCDOT finds a biological conclusion other than No Effect, we will request USFWS consultation.

Since the EA and FONSI the bald eagle has been delisted for Guilford County. The bald eagle has been delisted as of August 2007 and is not subject to Section 7 consultation and a biological conclusion is not required. However, the bald eagle remains protected by the Bald and Golden Eagle Protection Act. Habitat in the vicinity of U-3615B is limited to areas surrounding Oak Hollow Lake. Surveys conducted on February 23, 2007 found no nests within 660 feet of the project limits. No habitat exists for bald eagle in the vicinity of U-3615A.

MITIGATION OPTIONS

The USACE has adopted, through the Council on Environmental Quality (CEQ), a wetland mitigation policy that embraces the concept of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological, and physical integrity of the waters of the United States. CEQ has defined mitigation of wetland and surface water impacts to include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts (40 CFR 1508.20).

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning phase and minimization measures were incorporated as part of the project design. Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts.

Avoidance and Minimization

Avoidance and minimization has been employed in the project area to the maximum extent practicable. The following measures were implemented each section of the project:

U-3615B

- NCDOT's Best Management Practices (BMPs) for the Protection of Surface Waters will be enforced;
- Where possible, drainage systems were designed to outlet away from surface waters to allow time for infiltration in ditches or natural areas;
- Rip-rapped ditches and rip-rap along stream banks will be used where warranted to control erosion;
- Bank stabilization activities will not place rip-rap on the stream bottom;
- Best fit alignment has allowed wetland impacts to be reduced;
- Grass swales will be utilized where appropriate;
- Ten Hazardous Spill Basins: Stations 183+00 (RT), 202+00 (LT), 222+00 (LT), 234+50 (RT), 242+00 (RT), 267+00 (LT), 272+00 (RT), 306+00 (RT), 314+50 (RT), and 191+50 (LT) will be constructed. The project is located within 0.5 miles of the Oak Hollow Lake Critical Area;
- Pre-formed scour holes will be constructed at five locations: Stations Y30 17+98 (LT), 176+40 (LT), Y34 11+34 (LT), 242+81 (RT), and Y35 13+18 (LT);
- Five level spreaders will be utilized: Stations 202+00(LT), 222+00 (LT), 242+00 (RT), 267+00 (LT), and 272+00 (RT) and

- Side slopes of 2:1 and 1.5:1will be used in jurisdictional areas along the roadway.

For additional avoidance/minimization for U-3615B see attached Stormwater Management Plan. Despite these best efforts of NCDOT, stream impacts and wetland impacts for U-3615 did increase from the impacts reported in the FONSI. Stream impacts reported in document were 2,200 feet and wetland impacts were 0.03 acres. Total stream impacts for this application are 2,099 feet and total wetland impacts are 0.82 acres. ~~The increase of 101 feet of stream impacts is due to addition of "Y" line streams, bank stabilization, a stream relocation, and additional intermittent streams~~. The increase of 0.79 acres of wetland impacts is mainly due to a newly formed wetland delineated after natural stream design was completed. D.R.

Compensatory Mitigation

Compensatory mitigation requirements for U-3615B are summarized below in Table 8. Due to the status of Section U-3615A being currently unfunded and letting more than 5 years out, NCDOT is not proposing mitigation for Section U-3615A at this time. The U-3615B section will permanently impact a total of 2,099 feet of warm water streams. Of these 2,099 feet, there are 111 feet of bank stabilization that do not require mitigation by the USACE, resulting in 1,988 feet of stream impacts requiring USACE mitigation. The total buffer impacts will be 104,501 square feet (Zone 1) and 72,093 square feet (Zone 2).

Streams/Wetlands

The USACE is requiring 2:1 mitigation for 452 feet and requiring 1:1 mitigation for 1,536 feet of stream impacts. NCDOT is providing onsite mitigation of 760 feet of warm water stream by relocating a section of UT 3-3 at Site 3 (see attached Natural Stream Design Plans). The remaining mitigation requirements of 1,680 feet of permanent warm water stream impacts will be provided by the NCEEP for U-3615B (Table 8). NCEEP will also provide mitigation for the 0.82 acres (2:1 ratio) of permanent riparian wetland impacts resulting from roadway fill, excavation, and mechanized clearing.

Buffers

NCDOT is also providing onsite mitigation of 75,639 square feet (45,810 : Zone 1 and 29,829 : Zone 2) of buffers by relocating a section of UT 3-3 at Site 3 (see attached Natural Stream Design Plans). The remaining buffer mitigation requirements for the 58,691 square feet in Zone 1 and 42,264 square feet in Zone 2 impacts will be provided by the NCEEP for U-3615B.

Table 8. U-3515B USACE Required Compensatory Mitigation Summary

	Stream Impacts in Length (ft)	Riparian Wetland Impacts (ac)	Buffer Zone 1 Impacts (sq ft)	Buffer Zone 2 Impacts (sq ft)
Impacts Requiring Mitigation	1,988*	0.82	104,501	72,093
Onsite Mitigation Credits	760 @ 1:1		45,810	29,829
Total Mitigable Impacts Less Onsite Mitigation	1228	0.82	58,691	42,264
Required Mitigation	452 @ 2:1 776 @ 1:1	0.82 @ 2:1	58,691 @ 3:1	42,264 @ 1.5:1
Total Mitigation	**1,680**	**1.64**	**176,073**	**63,396**

*Does not include the 111 feet of bank stabilization. Total USACE stream mitigation requirements of 2,440 feet is greater than the NCDWQ stream requirements of 2,099 feet.

CULTURAL RESOURCES

The NCSHPO reviewed the project regarding the identification of archaeological sites. The NCSHPO stated in a memorandum dated December 8, 1999 that no archaeological investigation be conducted in connection with this project. See EA for memorandum mentioned above.

A concurrence form for assessment effects was signed by NCDOT, NCSHPO, and FHWA on July 22, 2003. The only identified property within the area of potential effect is the Mendenhall House and it is listed on the National Register of Historic Places (NRHP). However, it was concluded during a merger meeting on March 11, 2004 that this project will have no adverse effect on property with Alternate 1; 3:1 or flatter slopes will be used. See FONSI for memorandums mentioned above. An eligibility memorandum update was issued by NCSHPO in September 24, 2010 (see attached Memorandum). No change has occurred for identifying the property as historic.

FEMA COMPLIANCE

There are streams within the project limits that are within Federal Emergency Management Agency (FEMA)-designated flood zones. Coordination between the NCDOT Hydraulics Unit and FEMA will occur prior to Let to ensure that NCDOT is in full compliance with applicable floodplain ordinances.

INDIRECT AND CUMULATIVE EFFECTS

Although TIP U-3615 is only a widening of an existing facility, its location within a rapidly urbanizing area, the substantial amount of available land that is serviced by public water and sewer, its proximity to major urban centers, and numerous roadway construction projects that will be added to an already efficient transportation system (including Piedmont Triad International Airport), should allow it to accelerate already planned development and generate additional development pressure within the Growth Impact Study Area (GISA) upon its completion. In addition to TIP U-3615 the proposed improvements to Barrow Road, the Sandy Ridge Road feasibility study, and the Hartley Road extension could cumulatively impact residential and commercial growth within the GISA. However, with the water supply watershed regulations that are currently in place, as well as the fact that TIP U-3615 is consistent with all currently adopted plans and ordinances for affected jurisdictions, it is unlikely that growth resulting from the project will further degrade or impair the water resources within and surrounding the GISA."

Additionally, since the Indirect Cumulative Effects (ICE) Assessment was completed (November 2004), Guilford County has updated its Land Use Plan (adopted September, 2006). Davidson County has also adopted a new Zoning Ordinance (adopted June, 2011) and has amended its existing Land Development Plan. The Land Development Plan already contained specific water quality policies to address Abbotts Creek and High Rock Lake. The new amendments are based on the completed Rich Fork Creek Watershed Assessment but are to be implemented county-wide. Stormwater retrofits, riparian buffer restoration, land protection, improved site design, and improved rule enforcement are all covered in the new amendments

WILD AND SCENIC RIVERS

This project will not impact any designated Wild and Scenic Rivers or any rivers included in the list of study rivers (Public Law 90-542, as amended) or North Carolina Natural and Scenic Rivers.

ESSENTIAL FISH HABITAT

The project will not impact any essential fish habitat afforded protection under the Magnuson-Stevens Act of 1996 (16 U.S.C 1801 *et seq.*).

REGULATORY APPROVALS

Application is hereby made for a Department of the Army Section 404 Individual Permit as required for the above-described activities for the proposed T.I.P. Project U-3615 A and B. The NCDOT understands that a permit modification will be required for Section U-3615A after final design is complete and prior to construction.

We are also hereby requesting a Section 401 Individual Water Quality Certification and Randleman Lake Buffer Authorization from NCDWQ. In compliance with Section 143-215.3D (e) of the NCAC, we will provide $570.00 to act as payment for processing the Section 401 permit. We are providing two copies of this application to the North Carolina Department of Environment and Natural Resources (NCDENR), NCDWQ, for their review and approval.

A copy of this permit application and its distribution list will be posted on the NCDOT website at http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html. Thank you for your time and assistance with this project. Please contact Deanna Riffey at either driffey@ncdot.gov or (919) 707-6151 if you have any questions or need additional information.

Sincerely,

E. L. Lush

FCV

Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA

cc:
NCDOT Permit Application Standard Distribution List

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

OMB APPROVAL NO. 0710-0003
EXPIRES: 28 FEBRUARY 2013

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Gregory Middle - J. Last - Thorpe	First - Middle - Last -
Company - NC Department of Transportation - PDEA	Company -
E-mail Address -	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address- 1598 Mail Service Center	Address-
City - Raleigh State - NC Zip - 27699 Country - 1598	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business 919-707-6111 c. Fax 919-212-5785	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ _____
SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
U-3615

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Oak Hollow Lake and UTs to West Fork Deep River	Address
15. LOCATION OF PROJECT Latitude: °N 36.0393 Longitude: °W 80.0011	City - State- Zip-

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
State Tax Parcel ID Municipality
Section - Guilford County Township - High Point Range -

17. DIRECTIONS TO THE SITE
See attached vicinity map and cover letter.

18. Nature of Activity (Description of project, include all features)
The North Carolina Department of Transportation (NCDOT) proposes to widen and improve Skeet Club Road to a multi-lane facility from US 311 to NC 68 and reconfigure the intersection at North Main Street and Skeet Club Road in High Point.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)
The purpose of this project is to increase the traffic carrying capacity, reduce accident rates, and to relieve traffic congestion in the area surrounding Skeet Club Road.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge
Impacts will result from widening the roadway and shoulders, construction of roadway and bridge construction.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards

See attached cover letter & permit drawings.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres See attached cover letter and permit drawings.
or
Linear Feet See attached cover letter and permit drawings.

23. Description of Avoidance, Minimization, and Compensation (see instructions)
See attached cover letter.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- See attached property owners in permit drawing packet.

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

E.L. Lusk for Gregory J. Thorpe, PhD — Apr 25, 2013

SIGNATURE OF APPLICANT — DATE — SIGNATURE OF AGENT — DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

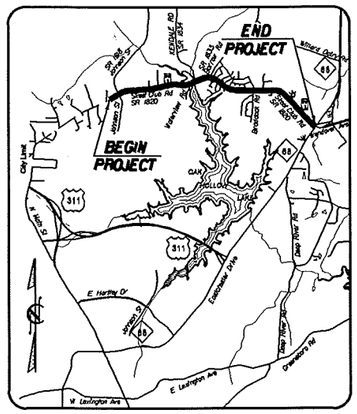
09/08/99

TIP PROJECT: U-3615B

CONTRACT:

$$$$$$$SYSTIME$$$$$$

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3615B	1	

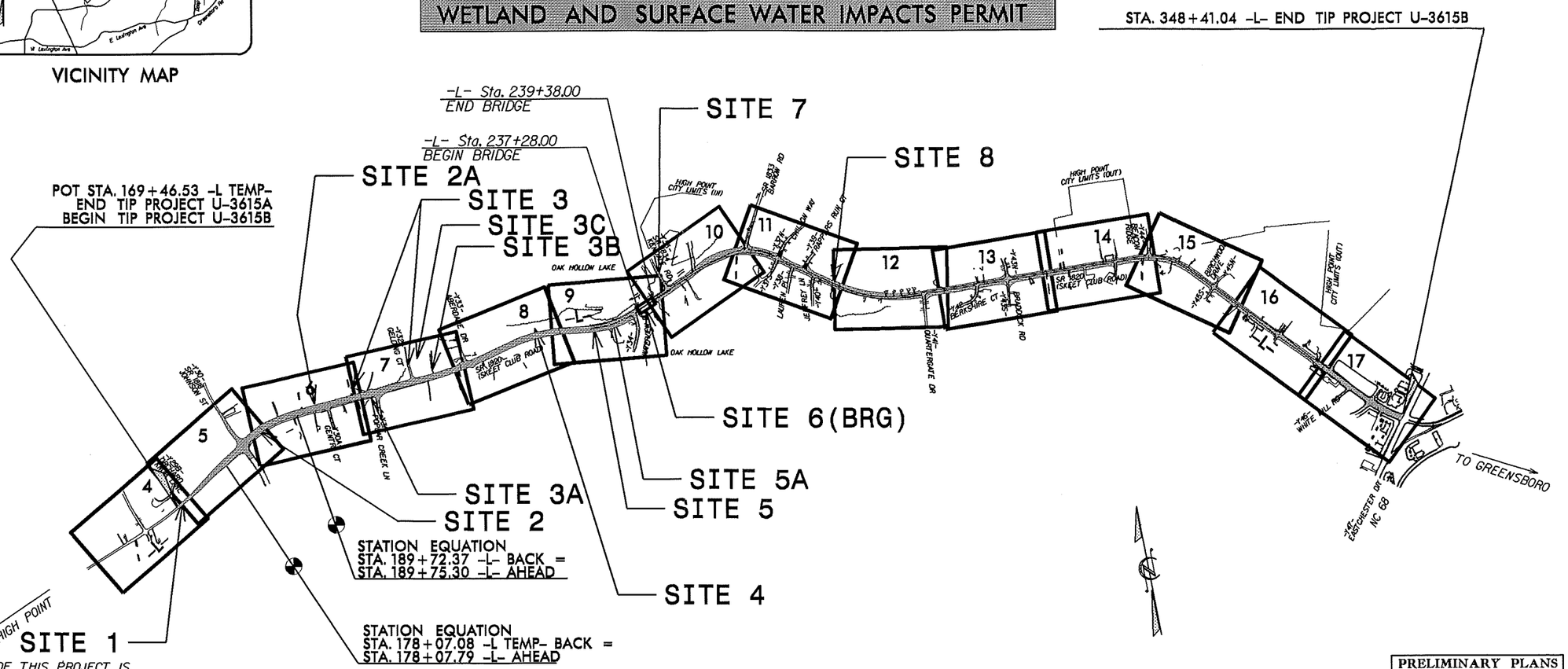
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34962.1.1	STP-1820(2)	P.E.
34962.2.3	STP-1820(2)	R/W, UTL.

Permit Drawing
Sheet 1 of 27

LOCATION: *SR 1820 (SKEET CLUB ROAD) FROM WEST OF SR 1818 (JOHNSON STREET) TO NC 68 (EASTCHESTER DRIVE).*

TYPE OF WORK: *PAVING, GRADING, DRAINAGE, CURB & GUTTER, STRUCTURE, CULVERT, SIGNING AND SIGNALS*

WETLAND AND SURFACE WATER IMPACTS PERMIT



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CITY OF HIGH POINT

"CLEARING ON THIS PROJECT SHALL BE ESTABLISHED BY METHOD III"

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2013 = 10860-23524
ADT 2035 = 17900-34700
DHV = 10 %
D = 60 %
T = 5 % *
V = 50 MPH
* TTST =2% DUAL 3%
FUNC CLASS =
URBAN MINOR ARTERIAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3615B = 3.349 MI
LENGTH STRUCTURE TIP PROJECT U-3615B = 0.040 MI
TOTAL LENGTH OF TIP PROJECT U-3615B = 3.389 MI

WETHERILL ENGINEERING
Prepared for the North Carolina Department of Transportation by the Office of:
539 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: APRIL 27, 2009

LETTING DATE: OCTOBER 15, 2013

NCDOT CONTACT: BRENDA L. MOORE, PE
ROADWAY DESIGN: ENGINEERING COORDINATION SECTION PROJECT ENGINEER

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

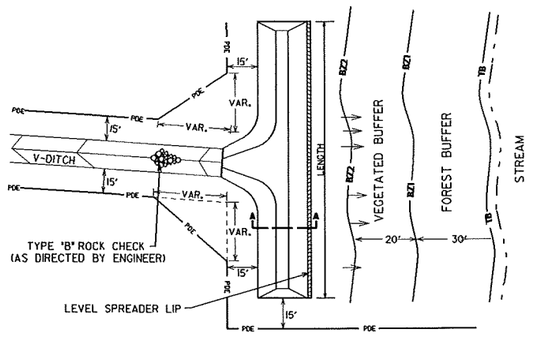
12/15/05

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	2-E

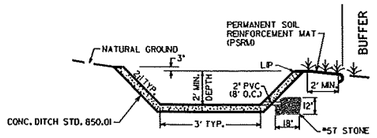
Permit Drawing
Sheet 2 of 27

LEVEL SPREADER

(NOT TO SCALE)



PLAN VIEW



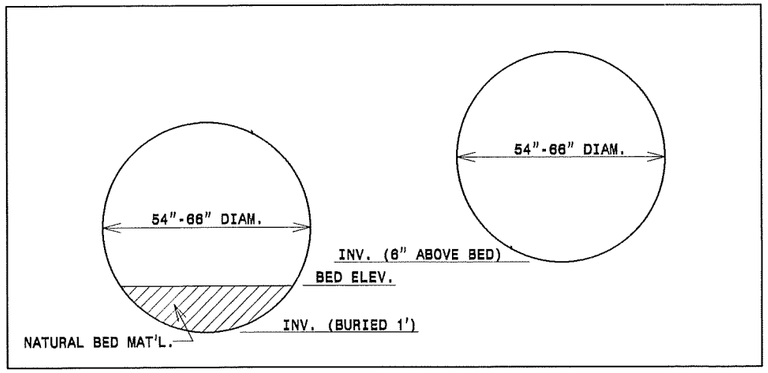
SECTION-AA

DIMENSIONS

BASIN NO.	PROJECT STATION (-L-)	LENGTH	DEPTH	LIP ELEV. (APPROX.)
2	202+00 (LT)	70'	2'	822.5
3	222+00 (LT)	65'	2'	809.0
5	242+00 (RT)	50'	2'	807.5
6	267+00 (LT)	75'	2'	813.0
7	272+00 (RT)	120'	2'	820.0

CONCRETE ENDWALL FOR DOUBLE PIPE CULVERTS

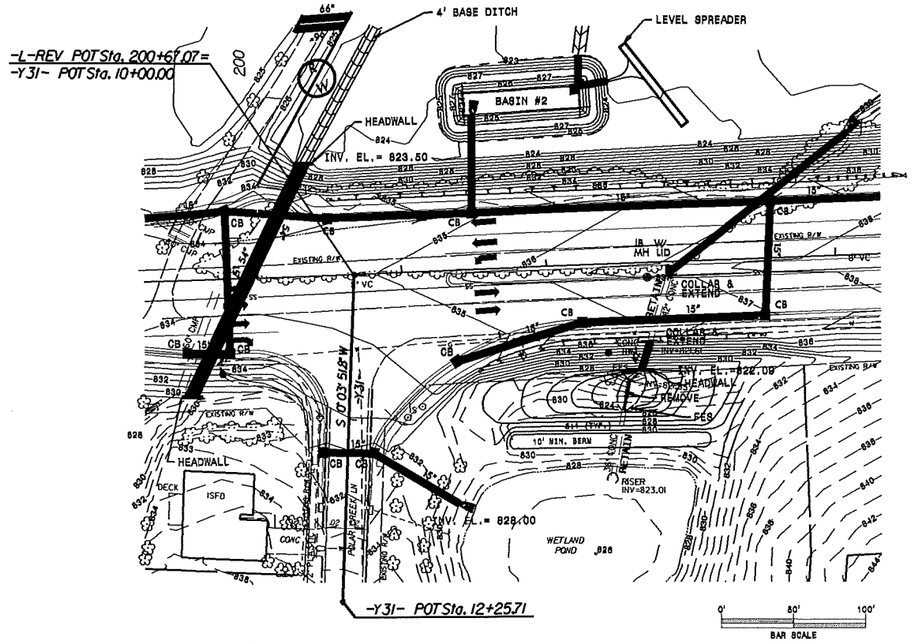
SEE NCDOT STANDARD DRAWINGS 838.22, 838.28 & 838.34 FOR STRUCTURAL DETAILS.



(NOT TO SCALE)

GRADING PLAN AT OUTLET OF WETLAND POND

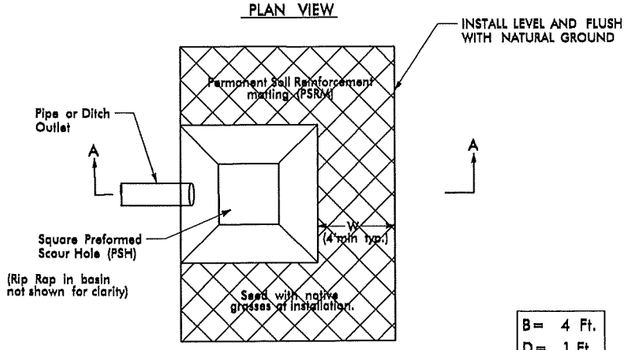
-L- STA. 202+50+/- (RT.)



PREFORMED SCOUR HOLE

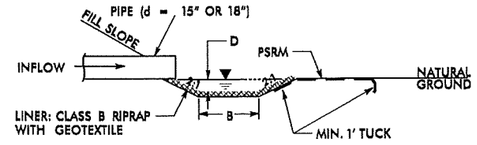
*NOT TO SCALE

PLAN VIEW



B= 4 Ft.
D= 1 Ft.
W= 4 Ft.

SECTION A-A

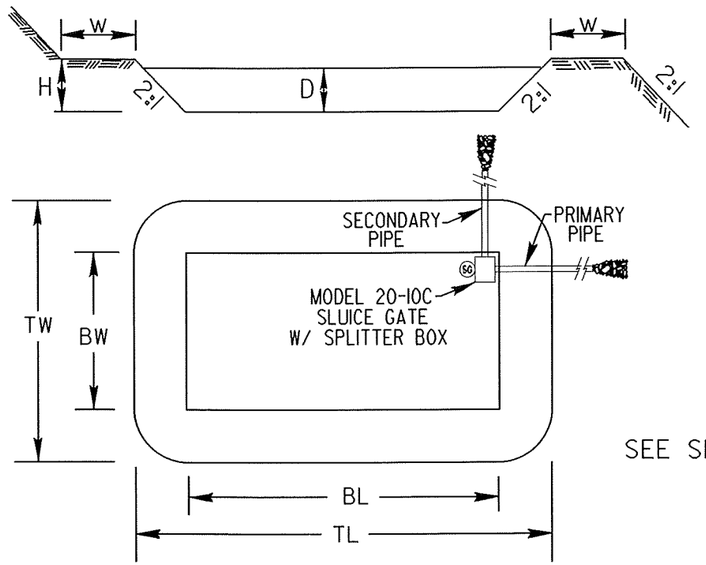


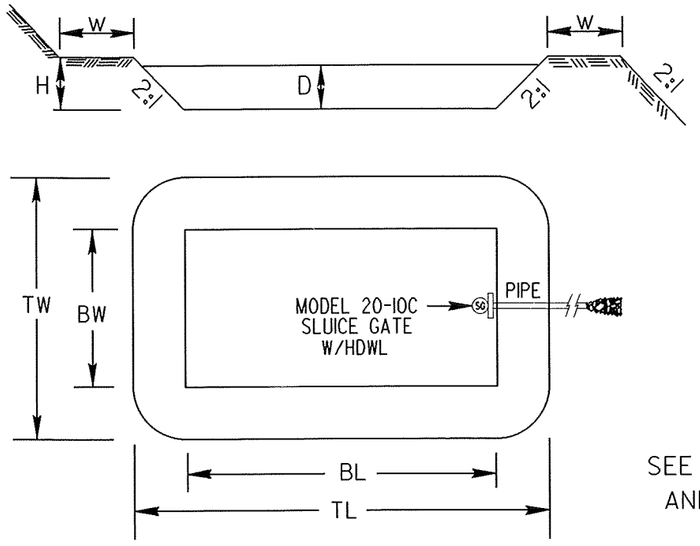
LOCATIONS:
-Y30- STA. 17+95 (LT.)
-L- STA. 176+40 (LT.)
-Y34- STA. 11+34 (LT.)
-L- STA. 242+81 (RT.)
-Y35- STA. 13+18 (LT.)

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

DETAILS

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





12/15/05

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	2-F

Permit Drawing
Sheet 3 of 27

DETAIL A
HAZARDOUS SPILL RETENTION BASIN
(WITH SLUICE GATE AND SPLITTER BOX)

SEE SPLITTER BOX DETAIL

DETAIL B
HAZARDOUS SPILL RETENTION BASIN
(WITH SLUICE GATE AND HEADWALL)

SEE CONCRETE ENDWALL AND SLUICE GATE DETAIL.

DIMENSIONS

BASIN NO.	PROJECT STATION (-L-)	DETAIL	CAPACITY REQUIRED (c.f.)	CAPACITY PROVIDED (c.f.)	DEPTH (D)	HEIGHT (H)	BERM WIDTH (W)	BOTTOM LENGTH (BL)	BOTTOM WIDTH (BW)	TOP LENGTH (TL)	TOP WIDTH (TW)	BOTTOM ELEV.	BERM ELEV.
1	183+00 (RT)	B	5120	7650	6.0'	4.5'	5'	90'	20'	131'	66'	838.96	844.96
2	202+00 (LT)	A	6560	6700	3.5'	4.5'	5'	80'	15'	98'	33'	823.5	828.0
3	222+00 (LT)	A	7240	7320	3.5'	4.5'	5'	88'	15'	106'	33'	810.0	814.5
4	234+50 (RT)	B	4000	4120	3.5'	4.5'	5'	40'	18'	58'	36'	814.5	819.0
5	242+00 (RT)	A	6910	7350	3.0'	4.0'	5'	70'	35'	82'	47'	808.5	812.5
6	267+00 (LT)	A	6500	6590	3.5'	4.5'	5'	50'	26'	68'	44'	814.9	819.4
7	272+00 (RT)	A	8060	8070	3.5'	4.5'	5'	65'	25'	83'	43'	825.5	830.0
8	306+00 (RT)	B	6530	6620	3.5'	4.5'	5'	52'	25'	70'	43'	861.0	865.5
9	314+50 (RT)	B	3380	3390	3.5'	4.5'	5'	35'	16'	53'	34'	863.5	868.0
10	191+50 (LT)	B	2293	2300	2.3'	3.0'	5'	100'	10'	121'	29'	832.0	835.0

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

HAZARDOUS SPILL
RETENTION BASIN
DETAILS

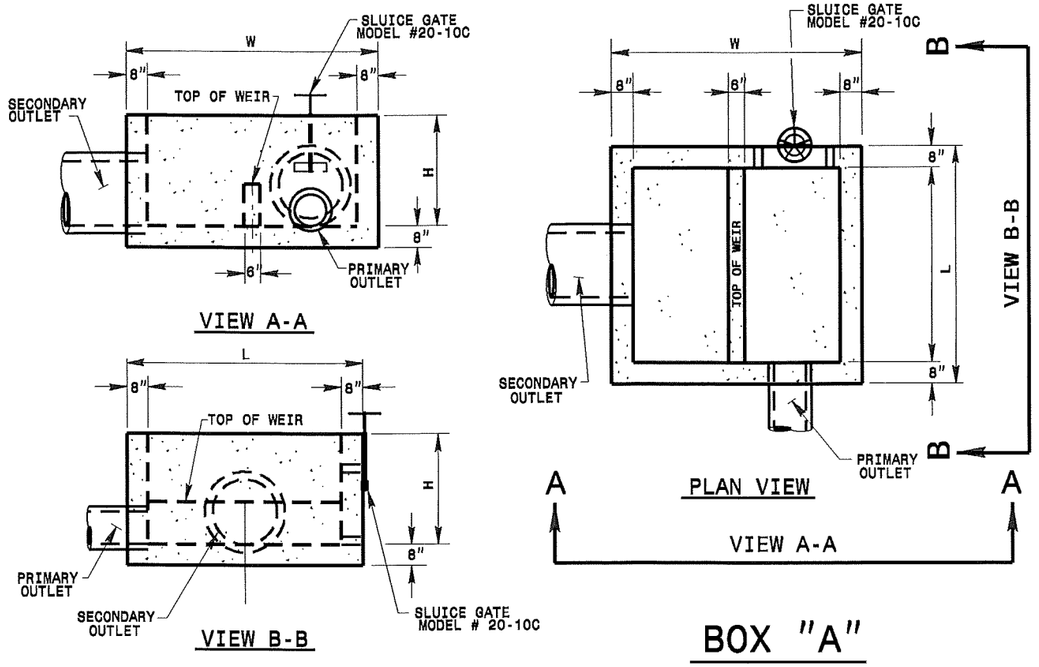
ORIGINAL BY:________ DATE:________
MODIFIED BY:________ DATE:________
CHECKED BY:________ DATE:________
FILE SPEC.:________

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

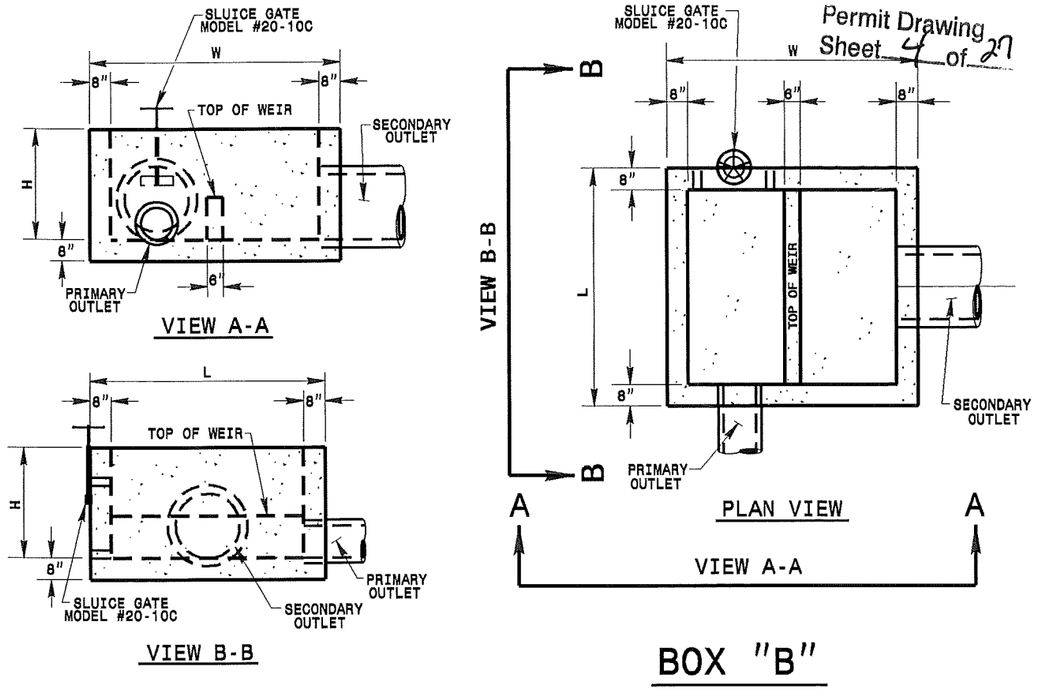
12/15/05

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	2-G

Permit Drawing
Sheet 4 of 27



BOX "A"



BOX "B"

DIMENSIONS

BASIN NO.	PROJECT STATION	BOX DETAIL	PRIMARY OUTLET	SECONDARY OUTLET	INLET DIAMETER	SLUICE GATE DIAMETER	WEIR WIDTH	WEIR HEIGHT	WEIR LENGTH	H	W	L
2	202+00 (LT)	B	12"	24"	24"	32"	0.5'	1.5'	6.0' min.	3.5'	8.0'	7.5'
3	222+00 (LT)	B	12"	30"	24"	32"	0.5'	1.5'	6.0' min.	3.5'	8.0'	7.5'
5	242+00 (RT)	A	12"	18"	24"	32"	0.5'	1.7'	6.0' min.	3.0'	7.5'	7.5'
6	267+00 (LT)	B	12"	24"	24"	32"	0.5'	1.5'	6.0' min.	3.5'	8.0'	7.5'
7	272+00 (RT)	B	15"	24"	30"	38¾"	0.5'	1.4'	6.0' min.	3.5'	9.0'	7.5'

NOTE: HEIGHT OF BOX LISTED IS INSIDE DIMENSION. LENGTH AND WIDTH ARE OUTSIDE DIMENSIONS.
BASE ELEVATION OF SPLITTER BOX EQUALS BOTTOM ELEVATION OF HAZARDOUS SPILL RETENTION BASIN (SEE DETAIL 2-F).

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

SPLITTER BOX DETAILS

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

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

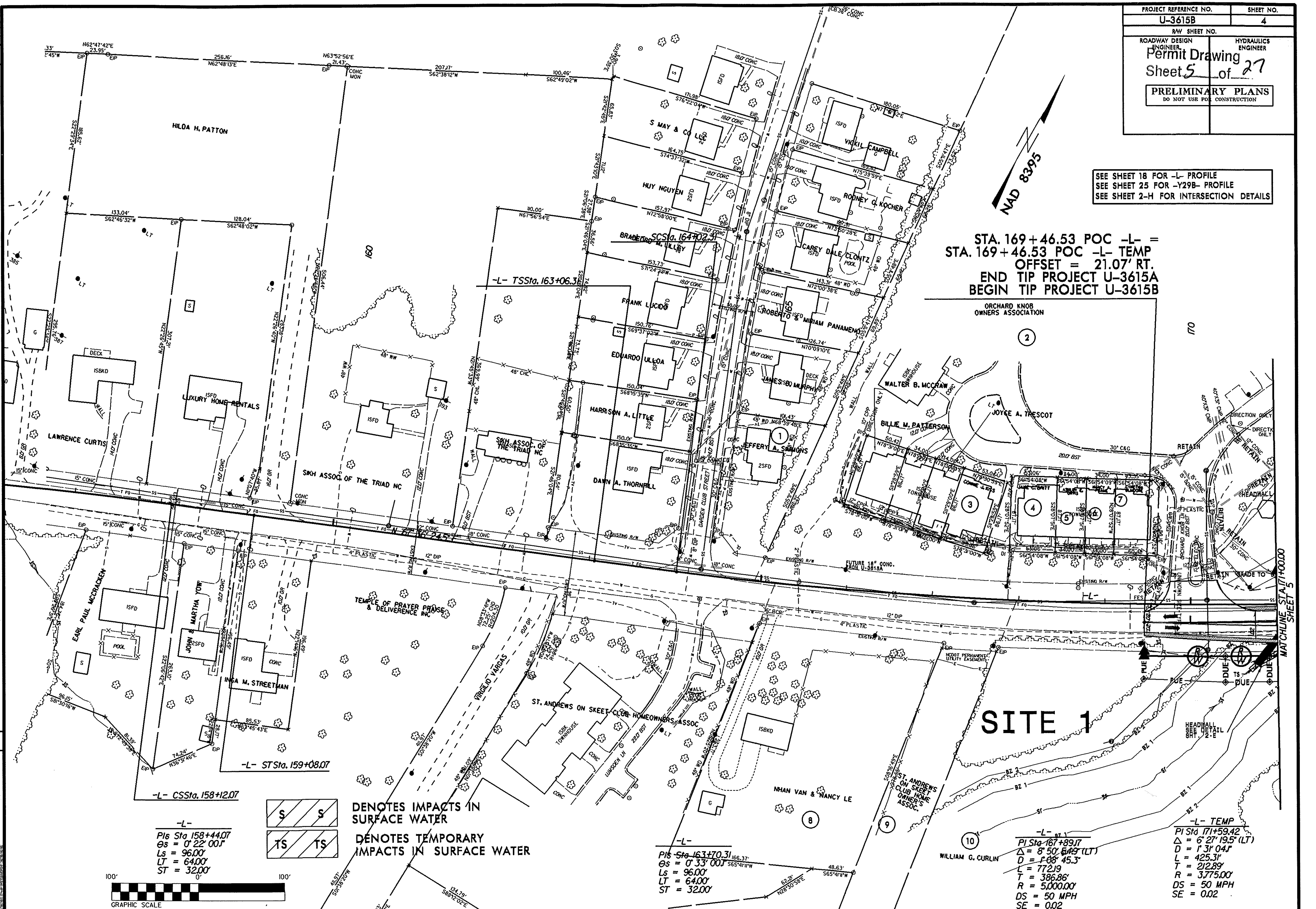
PROJECT REFERENCE NO.	SHEET NO.
U-3615B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing
Sheet 5 of 27

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 25 FOR -Y29B- PROFILE
SEE SHEET 2-H FOR INTERSECTION DETAILS

STA. 169+46.53 POC -L- =
STA. 169+46.53 POC -L- TEMP
OFFSET = 21.07' RT.
END TIP PROJECT U-3615A
BEGIN TIP PROJECT U-3615B



S	S	DENOTES IMPACTS IN SURFACE WATER
TS	TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

-L-
PI$_S$ Sta 158+44.07
Θ_s = 0° 22' 00.0"
Ls = 96.00'
LT = 64.00'
ST = 32.00'

-L-
PI$_S$ Sta 163+70.31
Θ_s = 0° 33' 00.0"
Ls = 96.00'
LT = 64.00'
ST = 32.00'

-L-
PI Sta 167+89.17
Δ = 8° 50' 54.9" (LT)
D = 1° 08' 45.3"
L = 772.19
T = 386.86'
R = 5,000.00'
DS = 50 MPH
SE = 0.02

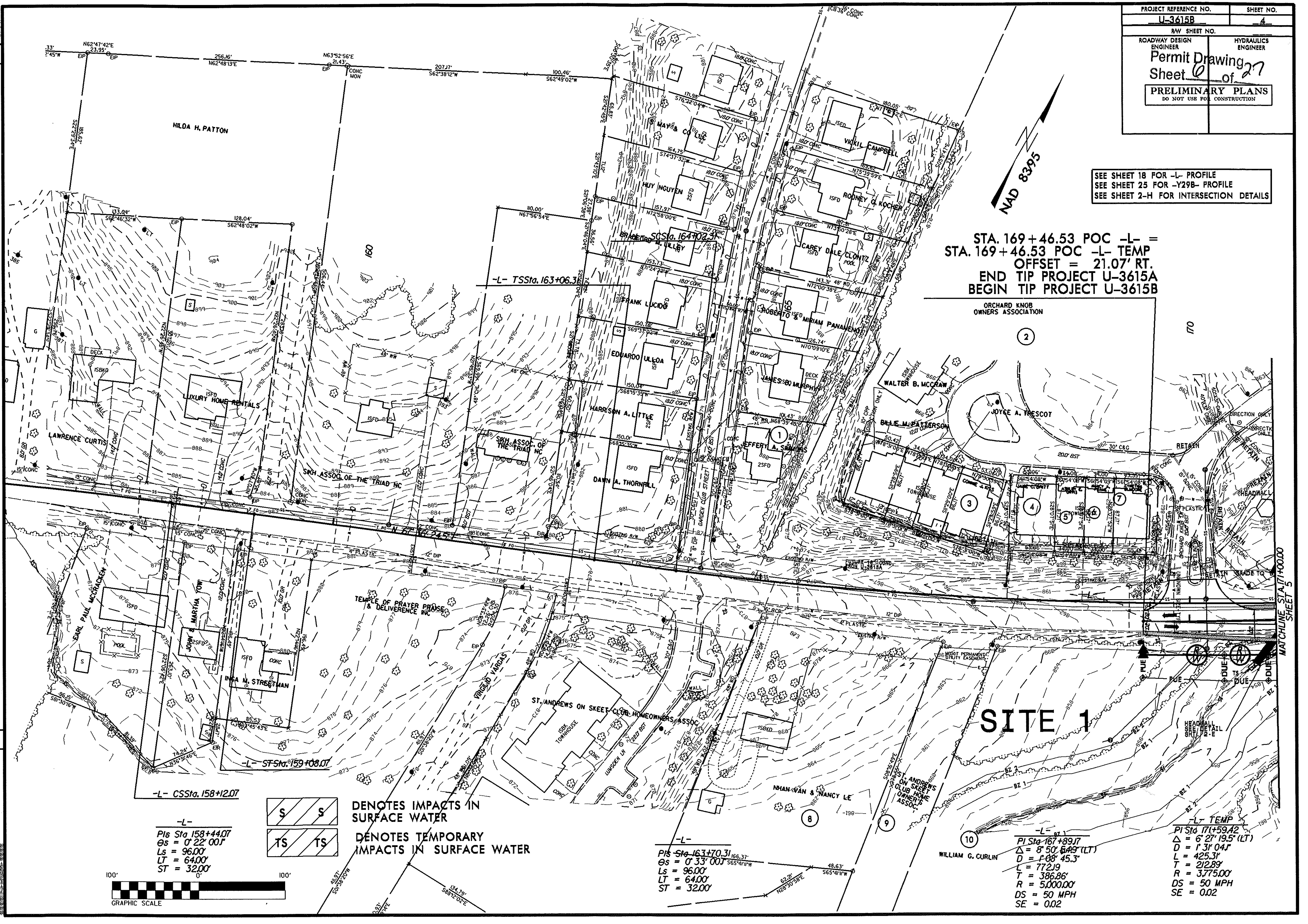
-L- TEMP
PI Sta 171+59.42
Δ = 6° 27' 19.5" (LT)
D = 1° 31' 04.1"
L = 425.31'
T = 212.89'
R = 3,775.00'
DS = 50 MPH
SE = 0.02

REVISIONS

9/29/09 R/W REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
2/28/12 R/W REVISION: ~~REMOVED RIGHT OF WAY AND EASEMENTS FROM PARCELS 3 - 8, REMOVED PERMANENT UTILITY EASEMENT & PERMANENT DRAINAGE EASEMENT FROM PARCEL 10~~ SLK
5/24/12 R/W REVISION: CHANGED NAME ON PARCEL 002 TO ORCHARD KNOB OWNERS ASSOCIATION SLK

REVISIONS

9/29/09 R/W REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
2/2/12 R/W REVISION: REMOVED RIGHT OF WAY AND EASEMENTS FROM PARCELS 3 - 8, REMOVED PERMANENT UTILITY EASEMENT & TEMPORARY DRAINAGE EASEMENT FROM PARCEL 10 - SLK
5/24/12 R/W REVISION: CHANGED NAME ON PARCEL 002 TO ORCHARD KNOB OWNERS ASSOCIATION - SLK



PROJECT REFERENCE NO. U-3615B
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Permit Drawing Sheet 6 of 27
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 25 FOR -Y29B- PROFILE
SEE SHEET 2-H FOR INTERSECTION DETAILS
NAD 83/95
STA. 169+46.53 POC -L- =
STA. 169+46.53 POC -L- TEMP
OFFSET = 21.07' RT.
END TIP PROJECT U-3615A
BEGIN TIP PROJECT U-3615B
ORCHARD KNOB OWNERS ASSOCIATION
HILDA H. PATTON
LUXURY HOME RENTALS
LAWRENCE CURTIS
SKH ASSOC. OF THE TRIAD INC
MAY & CO LLC
HUY NGUYEN
FRANK LUCIDO
EDUARDO ULLOA
HARRISON A. LITTLE
DAWN A. THORNHILL
VICKI L. CAMPBELL
RODNEY G. KOCHER
CAREY DALE CLONTZ
ROBERTO & MIRIAM PANAMENO
JAMES B. MURPHY
JEFFERY A. SIMMONS
WALTER B. MCCRAW
JOYCE A. PRESCOT
BILLIE M. PATTERSON
EARL PAUL MCCRACKEN
JOHN & MARTHA YOW
INGA N. STREETMAN
TEMPLE OF PRAYER PRAISE & DELIVERENCE INC
VIRGILIO VARGAS
ST. ANDREWS ON SKEET CLUB HOMEOWNERS ASSOC.
NHAN VAN & NANCY LE
ST. ANDREWS ON SKEET CLUB HOME OWNERS ASSOC.
WILLIAM G. CURLIN
GARDEN CLUB STREET
SITE 1
-L- TSSta. 163+06.31
-L- SCSta. 164+02.31
-L- STSta. 159+08.07
-L- CSSta. 158+12.07
MATCHLINE STA. 171+00.00 SHEET 5
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
-L-
PIs Sta 158+44.07
Θs = 0° 22' 00.1"
Ls = 96.00'
LT = 64.00'
ST = 32.00'
-L-
PIs Sta 163+70.31
Θs = 0° 33' 00.1"
Ls = 96.00'
LT = 64.00'
ST = 32.00'
-L-
PI Sta 167+89.17
Δ = 8° 50' 58.9" (LT)
D = 1° 08' 45.3"
L = 772.19
T = 386.86'
R = 5,000.00'
DS = 50 MPH
SE = 0.02
-L- TEMP
PI Sta 171+59.42
Δ = 6° 27' 19.5" (LT)
D = 1° 31' 04.1"
L = 425.31'
T = 212.89'
R = 3,775.00'
DS = 50 MPH
SE = 0.02
100' 0 100'
GRAPHIC SCALE

8/17/99

REVISIONS

RW REVISION: 9/29/12 REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.

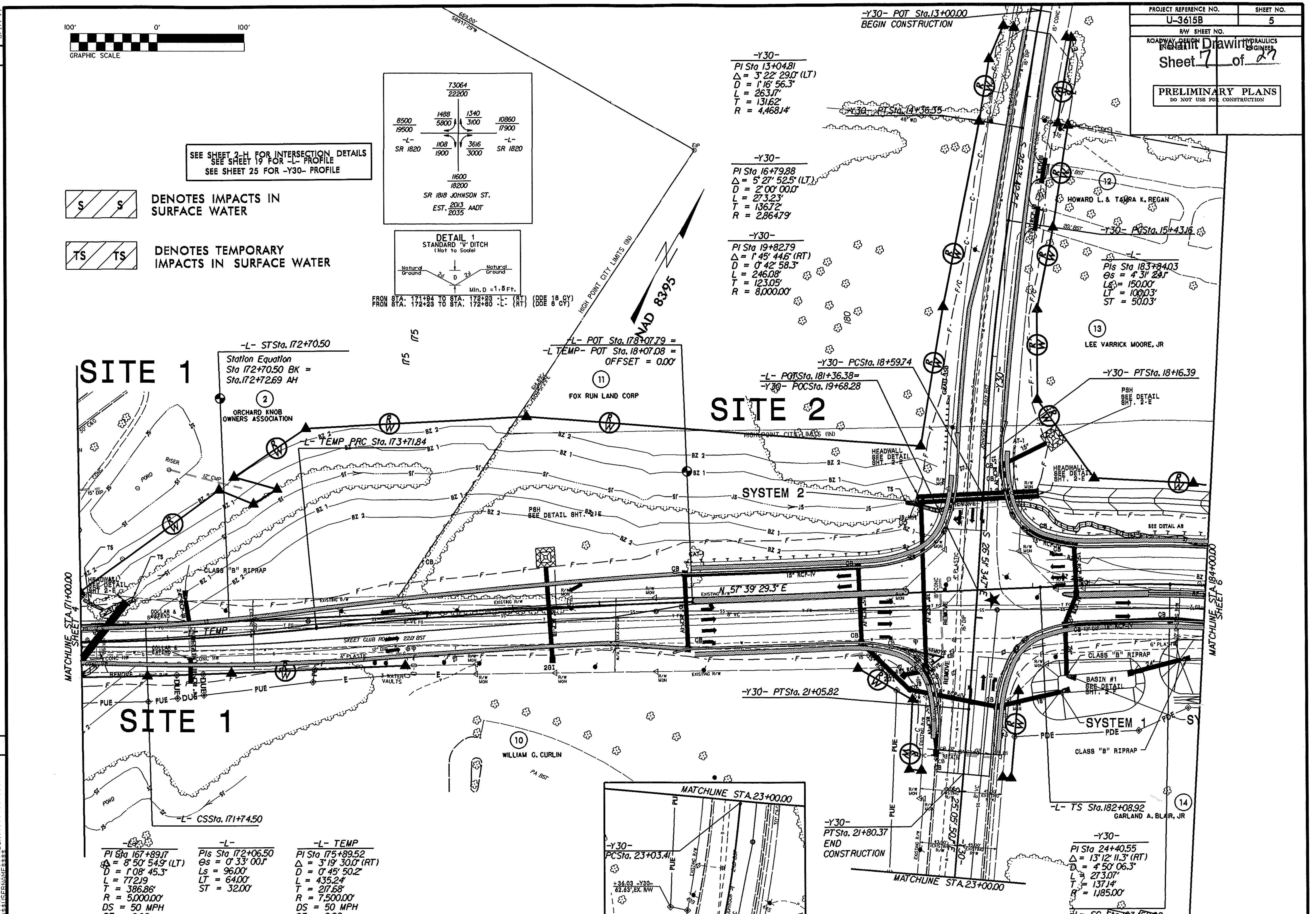
RW REVISION: 2/29/12: CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY ON PARCEL 7 AND 11; REMOVED PERMANENT DRAINAGE EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT AND ADDED DRAINAGE UTILITY EASEMENT ON PARCEL 10; REVISED TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 12; REMOVED PERMANENT UTILITY EASEMENT, PERMANENT DRAINAGE EASEMENT AND REVISED RIGHT OF WAY ON PARCEL 13. - SLK

5/24/12 RW REVISION: CHANGED NAME ON PARCEL 002 TO ORCHARD KNOB OWNERS ASSOCIATION - SLK

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing Sheet 7 of 27

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



100' 0' 100'
GRAPHIC SCALE
SEE SHEET 2-H FOR INTERSECTION DETAILS
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 25 FOR -Y30- PROFILE
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
73064 / 22200
8500 / 19500
1488 / 5800
1340 / 3100
10860 / 17900
-L- SR 1820
1108 / 1900
3616 / 3000
11600 / 18200
SR 1818 JOHNSON ST.
EST. 2013 / 2035 AADT
DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground
Min. D = 1.5 Ft.
FROM STA. 171+94 TO STA. 172+23 -L- (RT) (DDE 18 CY)
FROM STA. 172+23 TO STA. 172+60 -L- (RT) (DDE 6 CY)
NAD 83/95
HIGH POINT CITY LIMITS (IN)
-Y30- POT Sta. 13+00.00
BEGIN CONSTRUCTION
-Y30-
PI Sta 13+04.81
Δ = 3° 22' 29.0" (LT)
D = 1° 16' 56.3"
L = 263.17'
T = 131.62'
R = 4,468.14'
-Y30- PT Sta. 14+36.35
-Y30-
PI Sta 16+79.88
Δ = 5° 27' 52.5" (LT)
D = 2° 00' 00.0"
L = 273.23'
T = 136.72'
R = 2,864.79'
-Y30-
PI Sta 19+82.79
Δ = 1° 45' 44.6" (RT)
D = 0° 42' 58.3"
L = 246.08'
T = 123.05'
R = 8,000.00'
HOWARD L. & TAMRA K. REGAN
-Y30- PC Sta. 15+43.16
-L-
PIs Sta 183+84.03
Θs = 4° 31' 29.1"
Ls = 150.00'
LT = 100.03'
ST = 50.03'
LEE VARRICK MOORE, JR
-Y30- PT Sta. 18+16.39
-Y30- PC Sta. 18+59.74
-L- POT Sta. 181+36.38 =
-Y30- POC Sta. 19+68.28
-L- POT Sta. 178+07.79 =
-L TEMP- POT Sta. 18+07.08 =
OFFSET = 0.00'
FOX RUN LAND CORP
-L- ST Sta. 172+70.50
Station Equation
Sta 172+70.50 BK =
Sta. 172+72.69 AH
SITE 1
ORCHARD KNOB OWNERS ASSOCIATION
SITE 2
-L- TEMP PRC Sta. 173+71.84
SYSTEM 2
PSH SEE DETAIL SHT. 2-E
HEADWALL SEE DETAIL SHT. 2-E
N 57° 39' 29.3" E
S 26° 51' 34.7" E
MATCHLINE STA. 171+00.00 SHEET 4
MATCHLINE STA. 184+00.00 SHEET 6
SITE 1
-Y30- PT Sta. 21+05.82
SYSTEM 1
BASIN #1 SEE DETAIL SHT. 2-E
CLASS "B" RIPRAP
WILLIAM G. CURLIN
GARLAND A. BLAIR, JR
-L- TS Sta. 182+08.92
-L- CS Sta. 171+74.50
MATCHLINE STA. 23+00.00
-Y30- PC Sta. 23+03.41
-Y30- PT Sta. 21+80.37
END CONSTRUCTION
-L-
PI Sta 167+89.17
Δ = 8° 50' 54.9" (LT)
D = 1° 08' 45.3"
L = 772.19
T = 386.86'
R = 5,000.00'
DS = 50 MPH
SE = 0.02
-L-
PIs Sta 172+06.50
Θs = 0° 33' 00.0"
Ls = 96.00'
LT = 64.00'
ST = 32.00'
-L- TEMP
PI Sta 175+89.52
Δ = 3° 19' 30.0" (RT)
D = 0° 45' 50.2"
L = 435.24'
T = 217.68'
R = 7,500.00'
DS = 50 MPH
SE = 0.02
-Y30-
PI Sta 24+40.55
Δ = 13° 12' 11.3" (RT)
D = 4° 50' 06.3"
L = 273.07'
T = 137.14'
R = 1,185.00'
-L- SC Sta. 183+58.92

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing Sheet 8 of 27

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

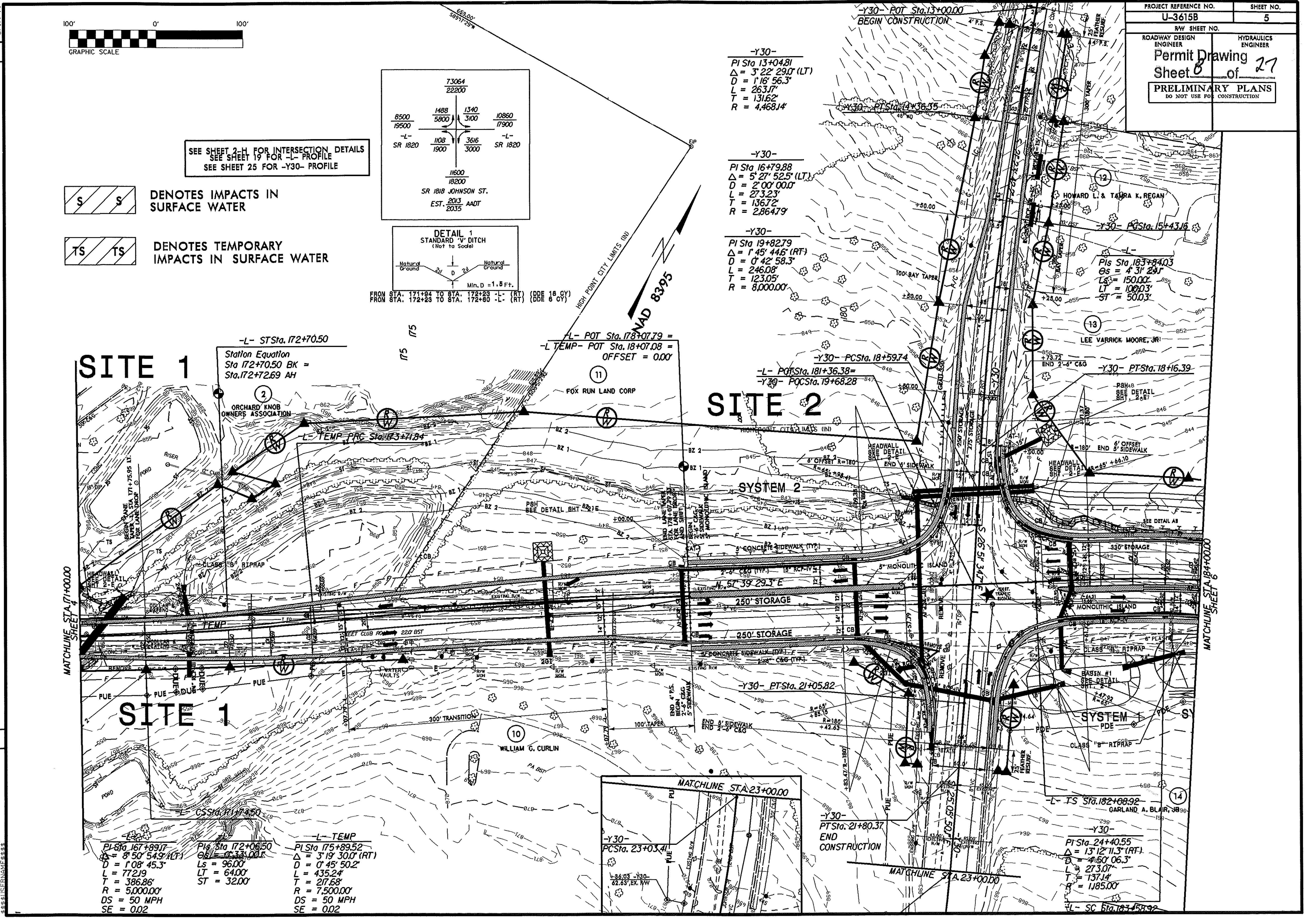
REVISIONS

RW REVISION: 9/29/12 REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.

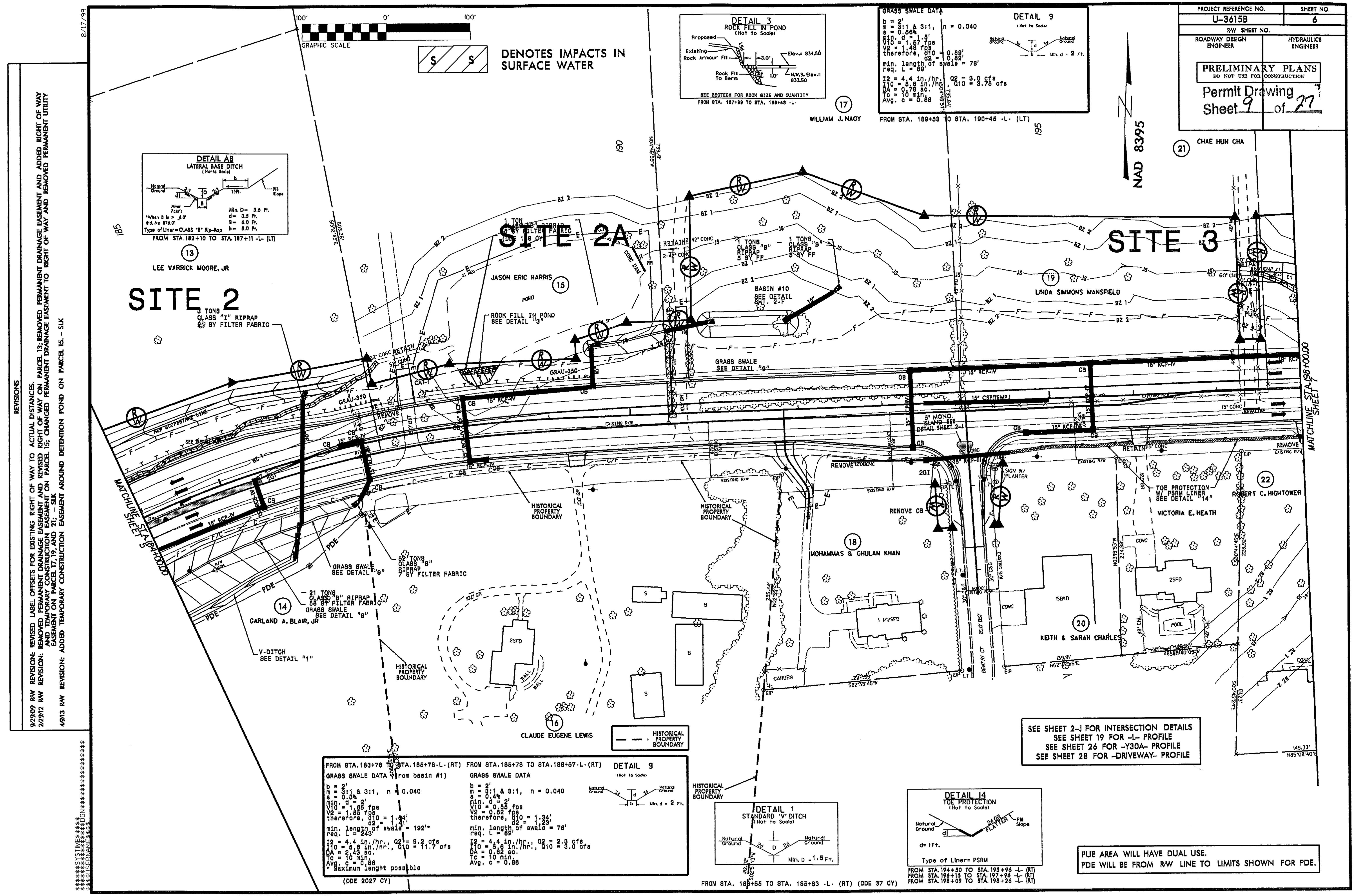
RW REVISION: 2/29/12: CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY ON PARCEL 7 AND 11; REMOVED PERMANENT DRAINAGE EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT AND ADDED DRAINAGE UTILITY EASEMENT ON PARCEL 10; REVISED TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 12; REMOVED PERMANENT UTILITY EASEMENT AND REVISED RIGHT OF WAY ON PARCEL 13. - SLK

5/24/12 RW REVISION: CHANGED NAME ON PARCEL 002 TO ORCHARD KNOB OWNERS ASSOCIATION - SLK

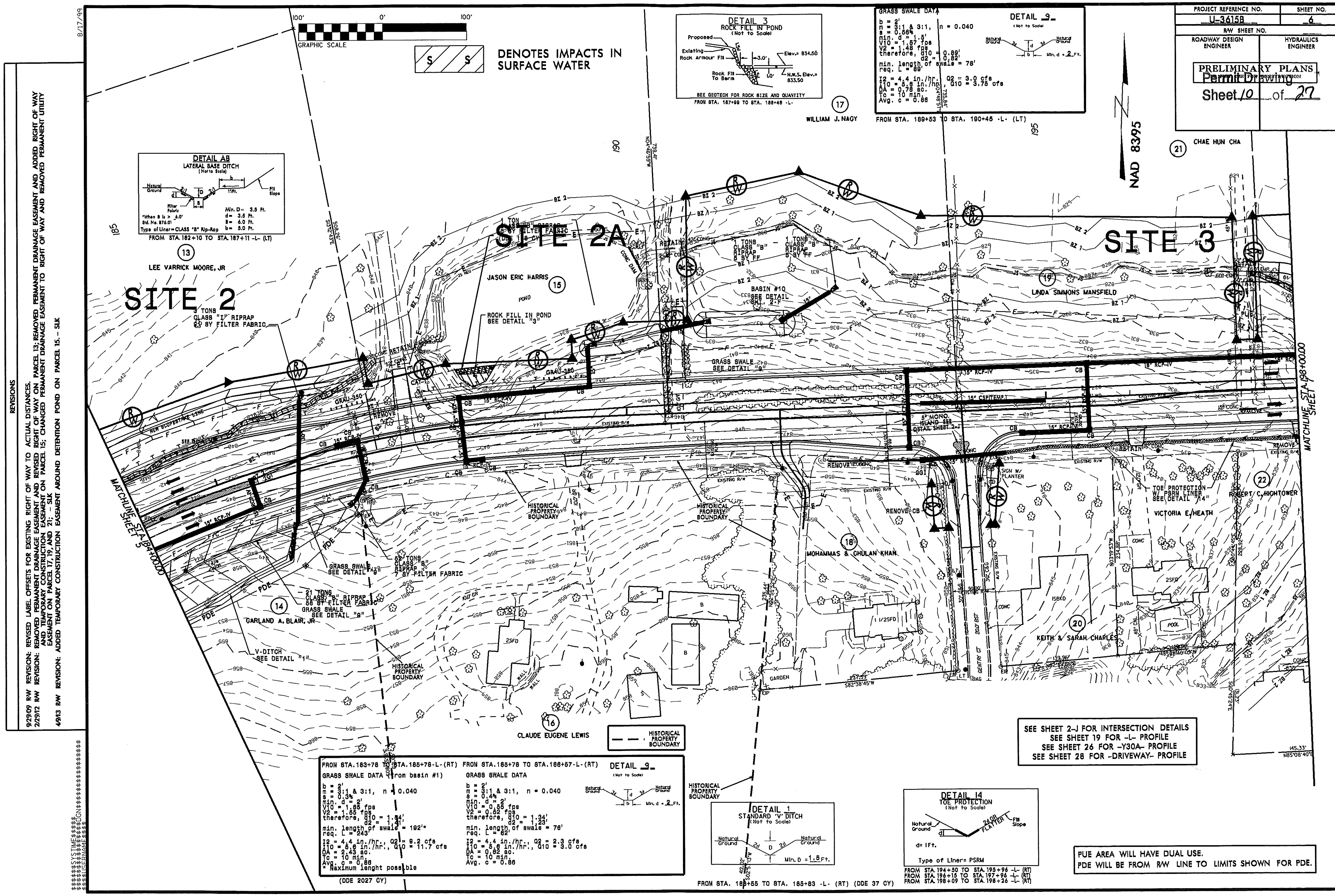
8/17/99



GRAPHIC SCALE
100' 0' 100'
SEE SHEET 2-H FOR INTERSECTION DETAILS
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 25 FOR -Y30- PROFILE
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
SR 1818 JOHNSON ST.
EST. 2013 / 2035 AADT
DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)
FROM STA. 171+94 TO STA. 172+23 -L- (RT) (DDE 18 CY)
FROM STA. 172+23 TO STA. 172+60 -L- (RT) (DDE 6 CY)
SITE 1
SITE 2
SYSTEM 1
SYSTEM 2
NAD 83/95
HIGH POINT CITY LIMITS (IN)
-Y30- POT Sta. 13+00.00 BEGIN CONSTRUCTION
-Y30- PI Sta 13+04.81 Δ = 3°22' 29.0" (LT) D = 1°16' 56.3" L = 263.17' T = 131.62' R = 4,468.14'
-Y30- PI Sta 16+79.88 Δ = 5°27' 52.5" (LT) D = 2°00' 00.0" L = 273.23' T = 136.72' R = 2,864.79'
-Y30- PI Sta 19+82.79 Δ = 1°45' 44.6" (RT) D = 0°42' 58.3" L = 246.08' T = 123.05' R = 8,000.00'
-L- STSta. 172+70.50
Station Equation Sta 172+70.50 BK = Sta.172+72.69 AH
-L- POT Sta. 178+07.79 = -L TEMP- POT Sta. 18+07.08 = OFFSET = 0.00'
-L- POTSta. 181+36.38 = -Y30- POCSta. 19+68.28
-Y30- PCSta. 18+59.74
-Y30- PTSta. 18+16.39
-Y30- PCSta. 15+43.16
-L- PIs Sta 183+84.03 Θs = 4°31' 29.1" Ls = 150.00' LT = 100.03' ST = 50.03'
HOWARD L. & TAMRA K. REGAN
LEE VARRICK MOORE, JR
FOX RUN LAND CORP
ORCHARD KNOB OWNERS ASSOCIATION
WILLIAM C. CURLIN
GARLAND A. BLAIR, JR
250' STORAGE
330' STORAGE
300' TRANSITION
MATCHLINE STA. 171+00.00 SHEET 4
MATCHLINE STA. 184+00.00 SHEET 6
MATCHLINE STA. 23+00.00
-Y30- PT Sta. 21+05.82
-Y30- PT Sta. 21+80.37 END CONSTRUCTION
-Y30- PCSta. 23+03.41
-L- TS Sta. 182+08.92
-L- CSSta. 171+74.50
-L- PI Sta 167+89.17 Δ = 8°50' 54.9" (LT) D = 1°08' 45.3" L = 772.19 T = 386.86' R = 5,000.00' DS = 50 MPH SE = 0.02
PIs Sta 172+06.50 Ls = 96.00' LT = 64.00' ST = 32.00'
-L- TEMP PI Sta 175+89.52 Δ = 3°19' 30.0" (RT) D = 0°45' 50.2" L = 435.24' T = 217.68' R = 7,500.00' DS = 50 MPH SE = 0.02
-Y30- PI Sta 24+40.55 Δ = 13°12' 11.3" (RT) D = 4°50' 06.3" L = 273.07' T = 137.14' R = 1,185.00'



REVISIONS
9/29/09 R/W REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
2/29/12 R/W REVISION: REMOVED PERMANENT DRAINAGE EASEMENT AND REVISED RIGHT OF WAY ON PARCEL 13; REMOVED PERMANENT DRAINAGE EASEMENT AND ADDED RIGHT OF WAY AND TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 15; CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY AND REMOVED PERMANENT UTILITY EASEMENT ON PARCEL 17, 19, AND 21. - SLK
4/9/13 R/W REVISION: ADDED TEMPORARY CONSTRUCTION EASEMENT AROUND DETENTION POND ON PARCEL 15. - SLK
8/17/99
PROJECT REFERENCE NO. U-3615B
SHEET NO. 6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing Sheet 9 of 27
GRAPHIC SCALE
100' 0' 100'
DENOTES IMPACTS IN SURFACE WATER
NAD 83/95
SITE 2
SITE 2A
SITE 3
DETAIL AB
LATERAL BASE DITCH
(Not to Scale)
Type of Liner=CLASS "B" Rip-Rap
FROM STA. 182+10 TO STA. 187+11 -L- (LT)
DETAIL 3
ROCK FILL IN POND
(Not to Scale)
SEE GEOTECH FOR ROCK SIZE AND QUANTITY
FROM STA. 187+99 TO STA. 188+48 -L-
DETAIL 9
GRASS SWALE DATA
FROM STA. 189+53 TO STA. 190+46 -L- (LT)
13 LEE VARRICK MOORE, JR
14 GARLAND A. BLAIR, JR
15 JASON ERIC HARRIS
16 CLAUDE EUGENE LEWIS
17 WILLIAM J. NAGY
18 MOHAMMAS & GHULAN KHAN
19 LINDA SIMMONS MANSFIELD
20 KEITH & SARAH CHARLES
21 CHAE HUN CHA
22 ROBERT C. HIGHTOWER
VICTORIA E. HEATH
3 TONS CLASS "I" RIPRAP 27 SY FILTER FABRIC
ROCK FILL IN POND SEE DETAIL "3"
BASIN #10
GRASS SWALE SEE DETAIL "9"
HISTORICAL PROPERTY BOUNDARY
V-DITCH SEE DETAIL "1"
21 TONS CLASS "B" RIPRAP 68 SY FILTER FABRIC
TOE PROTECTION W/ PSRM LINER SEE DETAIL "14"
MATCHLINE STA. 184+00.00 -L- SHEET 5
MATCHLINE STA. 198+00.00 -L- SHEET 7
SEE SHEET 2-J FOR INTERSECTION DETAILS
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 26 FOR -Y30A- PROFILE
SEE SHEET 28 FOR -DRIVEWAY- PROFILE
FROM STA. 183+78 TO STA. 185+78 -L- (RT)
GRASS SWALE DATA (from basin #1)
FROM STA. 185+78 TO STA. 186+57 -L- (RT)
GRASS SWALE DATA
DETAIL 9
(DDE 2027 CY)
DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)
FROM STA. 185+55 TO STA. 185+83 -L- (RT) (DDE 37 CY)
DETAIL 14
TOE PROTECTION
(Not to Scale)
Type of Liner= PSRM
FROM STA. 194+50 TO STA. 195+96 -L- (RT)
FROM STA. 196+15 TO STA. 197+96 -L- (RT)
FROM STA. 198+09 TO STA. 198+26 -L- (RT)
PUE AREA WILL HAVE DUAL USE.
PDE WILL BE FROM R/W LINE TO LIMITS SHOWN FOR PDE.



PROJECT REFERENCE NO. U-3615B
SHEET NO. 6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
Permit Drawing
Sheet 10 of 27
8/17/99
REVISIONS
9/29/09 R/W REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
2/29/12 R/W REVISION: REMOVED PERMANENT DRAINAGE EASEMENT AND RIGHT OF WAY ON PARCEL 13; REMOVED PERMANENT DRAINAGE EASEMENT AND ADDED RIGHT OF WAY AND TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 15; CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY AND REMOVED PERMANENT UTILITY EASEMENT ON PARCEL 17, 19, AND 21. - SLK
4/9/13 R/W REVISION: ADDED TEMPORARY CONSTRUCTION EASEMENT AROUND DETENTION POND ON PARCEL 15. - SLK
GRAPHIC SCALE
100' 0' 100'
DENOTES IMPACTS IN SURFACE WATER
NAD 83/95
SITE 2
SITE 2A
SITE 3
DETAIL AB
LATERAL BASE DITCH
(Not to Scale)
Min. D= 3.5 Ft.
d= 3.5 Ft.
B= 6.0 Ft.
b= 5.0 Ft.
Type of Liner = CLASS "B" Rip-Rap
FROM STA. 182+10 TO STA. 187+11 -L- (LT)
DETAIL 3
ROCK FILL IN POND
(Not to Scale)
SEE GEOTECH FOR ROCK SIZE AND QUANTITY
FROM STA. 187+99 TO STA. 188+46 -L-
GRASS SWALE DATA
b = 2'
m = 3:1 & 3:1, n = 0.040
s = 0.56%
min. d = 1.5'
V10 = 1.67 fps
V2 = 1.48 fps
therefore, d10 = 0.89'
d2 = 0.82'
min. length of swale = 78'
req. L = 89'
I2 = 4.4 in./hr., Q2 = 3.0 cfs
I10 = 5.8 in./hr., Q10 = 3.75 cfs
DA = 0.78 ac.
Tc = 10 min.
Avg. c = 0.88
FROM STA. 189+53 TO STA. 190+45 -L- (LT)
DETAIL 9
(Not to Scale)
13 LEE VARRICK MOORE, JR
14 GARLAND A. BLAIR, JR
15 JASON ERIC HARRIS
16 CLAUDE EUGENE LEWIS
17 WILLIAM J. NAGY
18 MOHAMMAS & CHULAN KHAN
19 LINDA SIMMONS MANSFIELD
20 KEITH & SARAH CHARLES
21 CHAE HUN CHA
22 ROBERT C. HIGHTOWER
VICTORIA E. HEATH
MATCHLINE STA. 184+00.00 SHEET 5
MATCHLINE STA. 198+00.00 SHEET 7
HISTORICAL PROPERTY BOUNDARY
SEE SHEET 2-J FOR INTERSECTION DETAILS
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 26 FOR -Y30A- PROFILE
SEE SHEET 28 FOR -DRIVEWAY- PROFILE
FROM STA. 183+78 TO STA. 185+76 -L- (RT)
GRASS SWALE DATA (from basin #1)
b = 2'
m = 3:1 & 3:1, n = 0.040
s = 0.3%
min. d = 2'
V10 = 1.65 fps
V2 = 1.55 fps
therefore, d10 = 1.34'
d2 = 1.31'
min. length of swale = 192'*
req. L = 243'
I2 = 4.4 in./hr., Q2 = 9.2 cfs
I10 = 5.8 in./hr., Q10 = 11.7 cfs
DA = 2.43 ac.
Tc = 10 min.
Avg. c = 0.88
* Maximum lenght possible
(DDE 2027 CY)
FROM STA. 185+76 TO STA. 186+57 -L- (RT)
GRASS SWALE DATA
b = 2'
m = 3:1 & 3:1, n = 0.040
s = 0.4%
min. d = 2'
V10 = 0.55 fps
V2 = 0.52 fps
therefore, d10 = 1.34'
d2 = 1.23'
min. length of swale = 78'
req. L = 62'
I2 = 4.4 in./hr., Q2 = 2.3 cfs
I10 = 5.8 in./hr., Q10 = 3.0 cfs
DA = 0.62 ac.
Tc = 10 min.
Avg. c = 0.88
DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)
Min. D = 1.5 Ft.
FROM STA. 184+55 TO STA. 185+83 -L- (RT) (DDE 37 CY)
DETAIL 14
TOE PROTECTION
(Not to Scale)
d= 1Ft.
Type of Liner= PSRM
FROM STA. 194+50 TO STA. 195+96 -L- (RT)
FROM STA. 196+15 TO STA. 197+96 -L- (RT)
FROM STA. 198+09 TO STA. 198+26 -L- (RT)
PUE AREA WILL HAVE DUAL USE.
PDE WILL BE FROM R/W LINE TO LIMITS SHOWN FOR PDE.

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing
Sheet 11 of 27

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

9/29/09 R/W REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
~~10/9/12 R/W REVISION: CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY AND REMOVED PERMANENT UTILITY EASEMENT ON PARCELS 21 AND 24, REVISED PERMANENT UTILITY EASEMENT AND ADDED TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 28. - SLK~~
5/14/12 R/W REVISION: CHANGED PERMANENT UTILITY EASEMENT/PERMANENT DRAINAGE EASEMENT OVERLAP TO DRAINAGE UTILITY EASEMENT ON PARCEL 27. - SLK
7/12/12 R/W REVISION: CHANGED PERMANENT UTILITY EASEMENT TO TEMPORARY CONSTRUCTION EASEMENT AND ADDED DRIVEWAY PIPE ON PARCEL 28. - SLK

-DRIVEWAY- STA.199+48.82 LT.
PI Sta 10+53.98
Δ = 50° 33' 42.6" (RT)
D = 57.2° 57' 28.1"
L = 8.82'
T = 4.72'
R = 10.00'

PI Sta 11+09.83
Δ = 15° 40' 55.5" (LT)
D = 190° 59' 09.4"
L = 8.21'
T = 4.13'
R = 30.00'

SEE SHEET 2-J FOR INTERSECTION DETAILS
SEE SHEET 20 FOR -L- PROFILE
SEE SHEET 26 FOR -Y31- & -Y32- PROFILES
SEE SHEET 28 FOR -DRIVEWAY- PROFILE

-L-
PIs Sta 207+71.41
es = 0° 26' 18.6"
Ls = 75.00'
LT = 50.00'
ST = 25.00'

-L-
PI Sta 211+98.99
Δ = 9° 23' 36.9" (LT)
D = 1° 10' 09.5"
L = 803.35'
T = 402.58'
R = 4,900.00'
DS = 50 MPH
SE = 0.02

-L- POT Sta.199+48.84=
-DRIVEWAY- POT Sta.10+00.00
PC Sta. 10+49.25
PT Sta. 10+58.08
PC Sta. 11+05.70
PT Sta. 11+13.91
POT Sta. 11+77.67

-Y32- POT Sta. 10+00.00
-Y32- PT Sta. 10+55.00
BEGIN CONSTRUCTION
-L- POT Sta. 205+75.82=
-Y32- POT Sta. 11+89.18
-L- POT Sta. 206+01.07
-Y31- POT Sta. 10+00.00

-L- TS Sta. 207+21.41
-L- SC Sta. 207+96.41

SITE 3C
SITE 3B
SITE 3A

NAD 83/95

21 CHAE HUN CHA
24 JAY & DAVONIA MICHAEL
27 LESLIE RIERSON SMITH
29 MARSHA & CURTIS INLOW
BARBARA MAE DERMER-BECKER
23 MICHAEL C. CLODFELTER
22 ROBERT C. HIGHTOWER
ALEXANDER M. CATHEY
ROBERT & WILLIAM PARKS
MATHEW W. TENHAEFF
PRECEPT CONSTRUCTION LLC
LILLIAN POPE ATCHISON
25 GABLES ON SKEET CLUB HOMEOWNERS ASSOC, INC
26 DAVID & JULIA GALLOWAY
28 VERNA H. HOUGHTALING
30 PATSY K. KIMSEY

MATCHLINE STA 198+00.00 SHEET 6
MATCHLINE STA 212+00.00 SHEET 8

E E DENOTES EXCAVATION IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100'
GRAPHIC SCALE

DETAIL 2
STANDARD 2' BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, 2:1, Natural Ground, B
Min. D = 2 Ft.
B = 2 Ft.
FROM STA. 202+27 TO STA. 202+40 -L- (LT) (DDE 27 CY)

DETAIL 4
STANDARD 4' BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, 2:1, Natural Ground, B
Min. D = 3.5 Ft.
B = 4 Ft.
FROM STA. 200+34 TO STA. 200+87 -L- (LT) (DDE 145 CY)

10948 / 17268 -L- SR 1820
50 / 50
300 / 300
11248 / 17568 -L- SR 1820
300 / 300
POPLAR CREEK LN.
EST. 2013 / 2033 AADT

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing
Sheet 12 of 27

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

9/2909 R/W REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
~~10/2912 R/W REVISION: CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY AND REMOVED PERMANENT UTILITY EASEMENT ON PARCELS 21 AND 24, REVISED PERMANENT UTILITY EASEMENT AND ADDED TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 28. - SJK~~
5/1412 R/W REVISION: CHANGED PERMANENT UTILITY EASEMENT/PERMANENT DRAINAGE EASEMENT OVERLAP TO DRAINAGE UTILITY EASEMENT ON PARCEL 27. - SJK
7/1912 R/W REVISION: CHANGED PERMANENT DRAINAGE EASEMENT AND ADDED DRIVEWAY PIPE ON PARCEL 28. - SJK

-DRIVEWAY- STA.199+48.82 LT.
PI Sta 10+53.98
Δ = 50° 33' 42.6" (RT)
D = 57° 57' 28.1"
L = 8.82'
T = 4.72'
R = 10.00'

PI Sta 11+09.83
Δ = 15° 40' 55.5" (LT)
D = 190° 59' 09.4"
L = 8.21'
T = 4.13'
R = 30.00'

SEE SHEET 2-J FOR INTERSECTION DETAILS
SEE SHEET 20 FOR -L- PROFILE
SEE SHEET 26 FOR -Y31- & -Y32- PROFILES
SEE SHEET 28 FOR -DRIVEWAY- PROFILE

-L-
PIs Sta 207+71.41
θs = 0° 26' 18.6"
Ls = 75.00'
LT = 50.00'
ST = 25.00'

-L-
PI Sta 211+98.99
Δ = 9° 23' 36.9" (LT)
D = 1° 10' 09.5"
L = 803.35'
T = 402.58'
R = 4,900.00'
DS = 50 MPH
SE = 0.02

21 CHAE HUN CHA

-L- POT Sta.199+48.84=
-DRIVEWAY- POT Sta.10+00.00
PC Sta. 10+49.25
PT Sta. 10+58.08
PC Sta. 11+05.70
PT Sta. 11+13.91
POT Sta. 11+77.67

24 JAY & DAVONIA MICHAEL

-Y32- POT Sta. 10+00.00
-Y32- PT Sta. 10+55.00
BEGIN CONSTRUCTION
-L- POT Sta. 205+75.82=
-Y32- POT Sta. 11+89.18
-L- POT Sta. 206+01.07
-Y31- POT Sta. 10+00.00

SITE 3C
SITE 3B
SITE 3A

27 LESLIE RIERSON SMITH
-L- TS Sta. 207+21.41
-L- SC Sta. 207+96.41

BARBARA MAE DERMER-BECKER
29 MARSHA & CURTIS INLOW
30 PATSY K. KIMSEY
28 VERNA H. HOUGHTALING
26 DAVID & JULIA GALLOWAY
25 CABLES ON SKEET CLUB HOMEOWNERS ASSOC. INC
23 MICHAEL T. CLODFELTER
22 ROBERT C. LIGHTOWER
ALEXANDER M. CATHEY
ROBERT & WILLIE PARKS
MATHEW W. TENHAEFF
LILLIAN POPE ATCHISON
PRECEPT CONSTRUCTION LLC

-Y31- POT Sta. 12+00.00
END CONSTRUCTION
-Y31- POT Sta. 12+25.71

MATCHLINE STA. 198+00.00 SHEET 6
MATCHLINE STA. 212+00.00 SHEET 8

SR 1820 SHEET CLUB ROAD 22ft BST

NAD 83/95

E E DENOTES EXCAVATION IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100'
GRAPHIC SCALE

10948 / 17268 -L- SR 1820 — 50/50 — 300/300 — 11248 / 17568 -L- SR 1820
300/300
POPLAR CREEK LN.
EST. 2013 / 2033 AADT

DETAIL 2
STANDARD 2' BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, 2:1, Natural Ground, B
Min. D = 2 Ft.
B = 2 Ft.
FROM STA. 202+27 TO STA. 202+40 -L- (LT) (DDE 27 CY)

DETAIL 4
STANDARD 4' BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, 2:1, Natural Ground, B
Min. D = 3.5 Ft.
B = 4 Ft.
FROM STA. 200+34 TO STA. 200+87 -L-(LT) (DDE 145 CY)

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

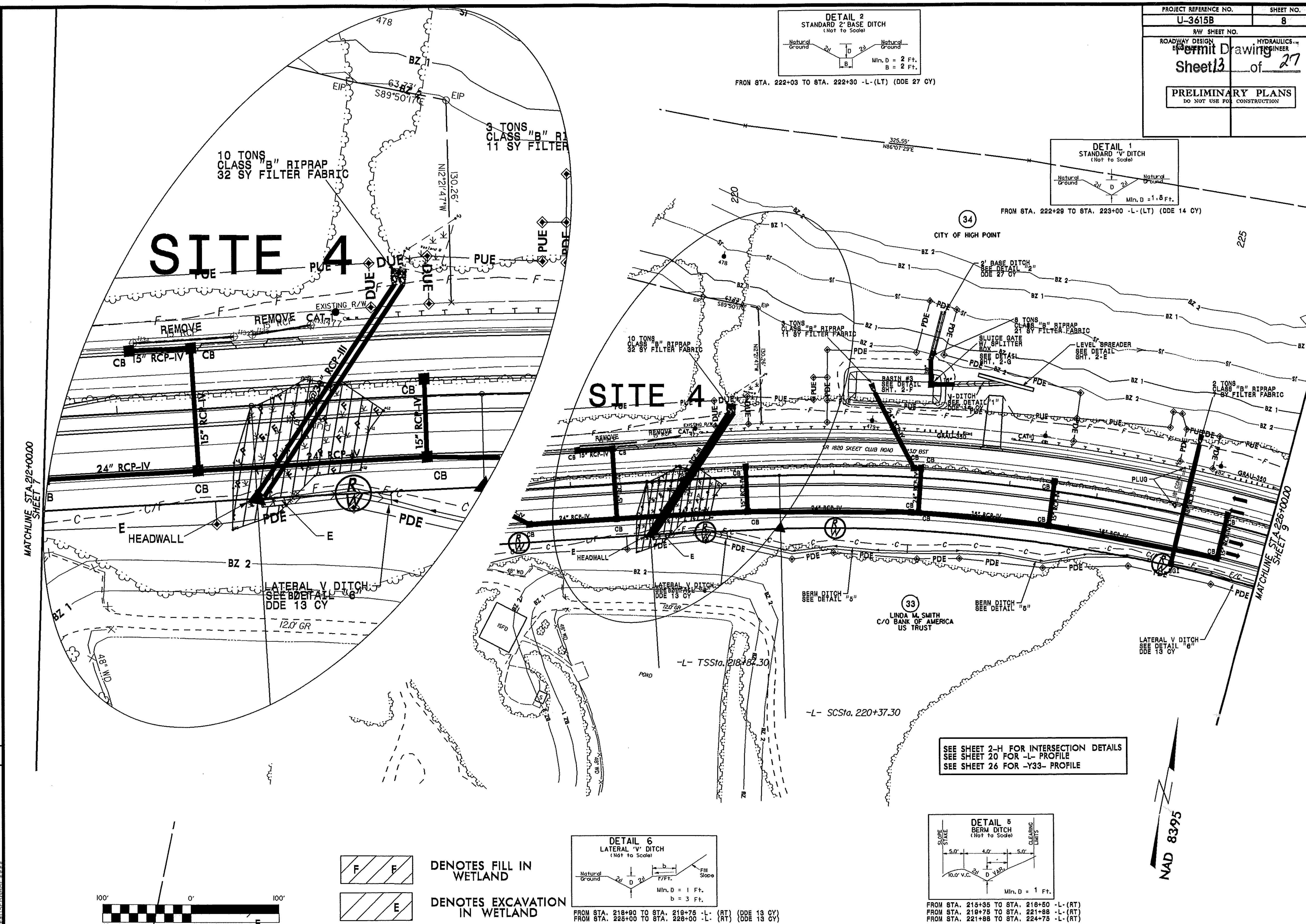
Permit Drawing Sheet 13 of 27

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

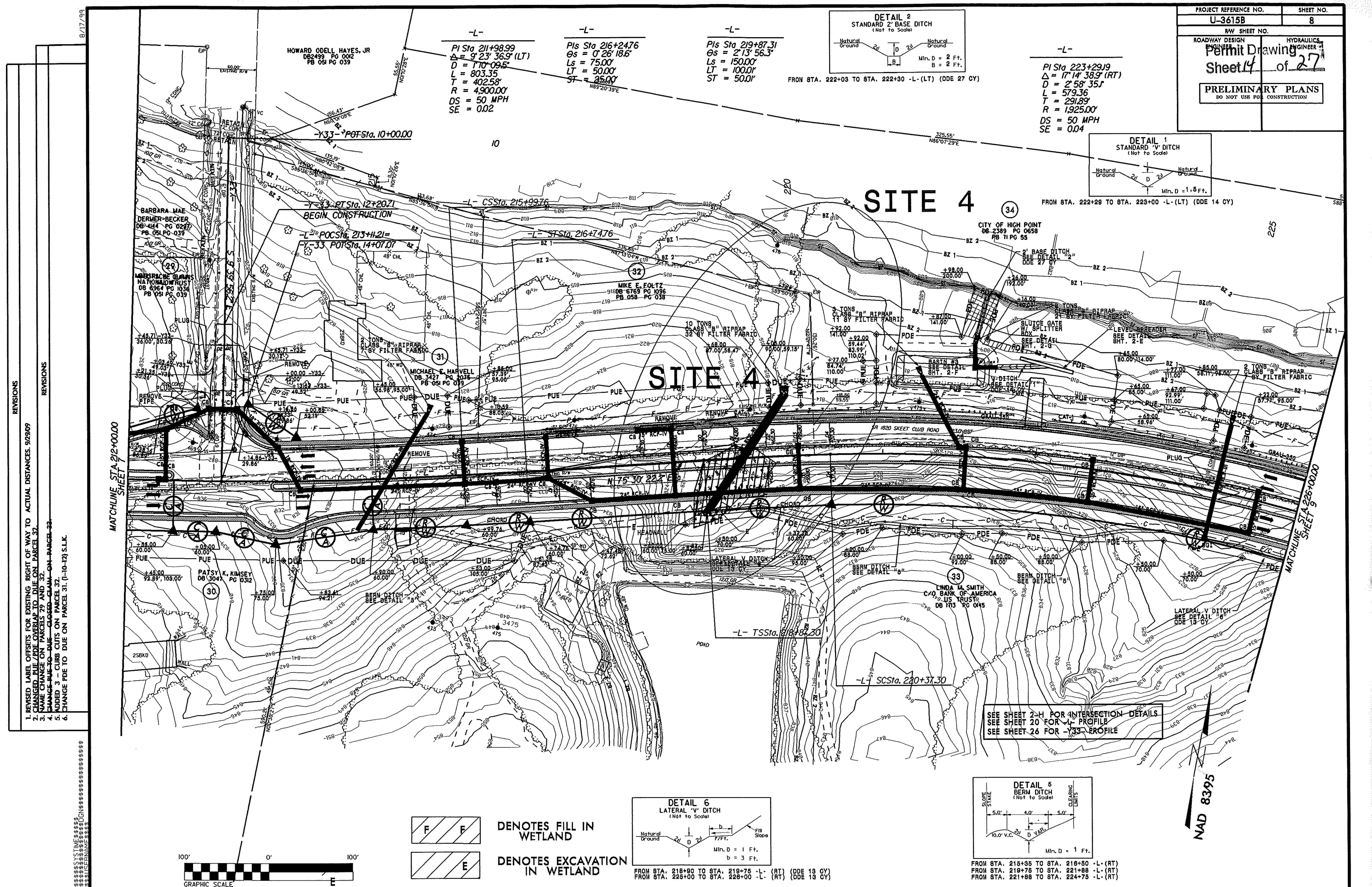
REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. CHANGED PUE/PDE OVERLAP TO DUE ON PARCEL 32.
3. NAME CHANGE ON PARCELS 29 AND 32.
4. CHANGE PUE TO DUE. CLOSED CLAIM ON PARCEL 33.
5. ADDED 3 - CURB CUTS ON PARCEL 32.
6. CHANGE PDE TO DUE ON PARCEL 31. (1-10-12) S.L.K.



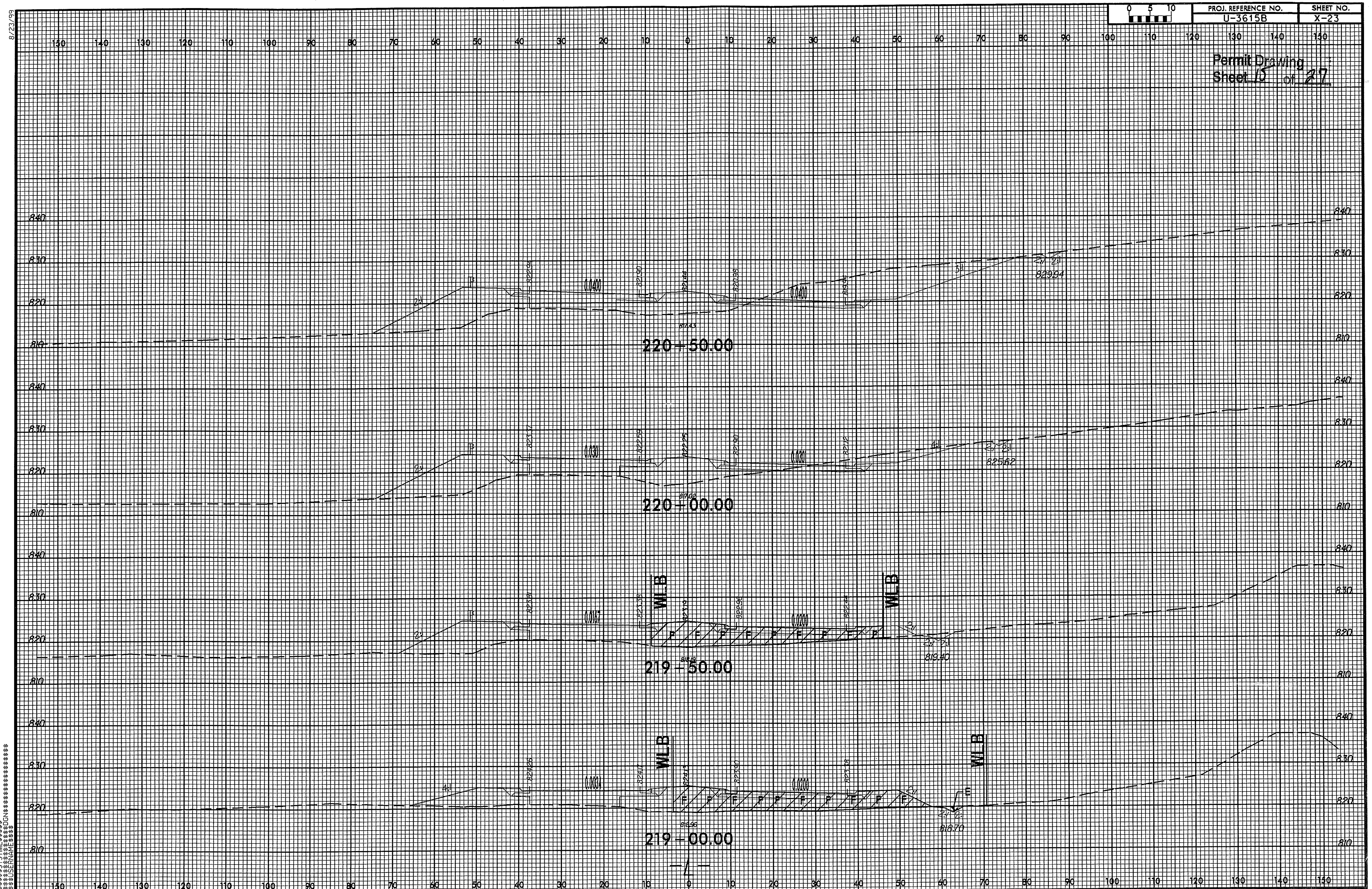
SITE 4
10 TONS CLASS "B" RIPRAP 32 SY FILTER FABRIC
3 TONS CLASS "B" RIPRAP 11 SY FILTER FABRIC
8 TONS CLASS "B" RIPRAP 27 SY FILTER FABRIC
2 TONS CLASS "B" RIPRAP 7 SY FILTER FABRIC
S89°50'17"E
N12°21'47"W
130.26'
325.55'
N86°07'29"E
EXISTING R/W
REMOVE
15" RCP-IV
24" RCP-IV
RCP-III
HEADWALL
CB
PUE
PDE
DUE
BZ 1
BZ 2
EIP
LATERAL V DITCH SEE DETAIL "6" DDE 13 CY
2' BASE DITCH SEE DETAIL "2" DDE 27 CY
SLUICE GATE W/ SPLITTER BOX SEE DETAIL SHT. 2-G
LEVEL SPREADER SEE DETAIL SHT. 2-E
BASIN #3 SEE DETAIL SHT. 2-F
V-DITCH SEE DETAIL "1" DDE 14 CY
BERM DITCH SEE DETAIL "5"
PLUG
SR 1820 SKEET CLUB ROAD
CITY OF HIGH POINT
LINDA M. SMITH C/O BANK OF AMERICA US TRUST
MATCHLINE STA. 212+00.00 SHEET 7
MATCHLINE STA. 226+00.00 SHEET 9
-L- TSSta. 218+84.30
-L- SCSta. 220+37.30
POND
48" WD
12.0' GR
NAD 83/95
DETAIL 2 STANDARD 2' BASE DITCH (Not to Scale)
Min. D = 2 Ft. B = 2 Ft.
FROM STA. 222+03 TO STA. 222+30 -L-(LT) (DDE 27 CY)
DETAIL 1 STANDARD 'V' DITCH (Not to Scale)
Min. D = 1.5 Ft.
FROM STA. 222+29 TO STA. 223+00 -L-(LT) (DDE 14 CY)
DETAIL 6 LATERAL 'V' DITCH (Not to Scale)
Min. D = 1 Ft. b = 3 Ft.
FROM STA. 218+90 TO STA. 219+75 -L- (RT) (DDE 13 CY)
FROM STA. 225+00 TO STA. 226+00 -L- (RT) (DDE 13 CY)
DETAIL 5 BERM DITCH (Not to Scale)
Min. D = 1 Ft.
FROM STA. 215+35 TO STA. 216+50 -L-(RT)
FROM STA. 219+75 TO STA. 221+88 -L-(RT)
FROM STA. 221+88 TO STA. 224+75 -L-(RT)
DENOTES FILL IN WETLAND
DENOTES EXCAVATION IN WETLAND
GRAPHIC SCALE
100' 0' 100'

SEE SHEET 2-H FOR INTERSECTION DETAILS
SEE SHEET 20 FOR -L- PROFILE
SEE SHEET 26 FOR -Y33- PROFILE


PROJECT REFERENCE NO. U-3615B
SHEET NO. 8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Permit Drawing Sheet 14 of 27
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SITE 4
-L- PI Sta 211+98.99 Δ = 9° 23' 36.9" (LT) D = 1°10' 09.5" L = 803.35 T = 402.58' R = 4,900.00' DS = 50 MPH SE = 0.02
-L- PIs Sta 216+24.76 θs = 0° 26' 18.6" Ls = 75.00' LT = 50.00' ST = 25.00'
-L- PIs Sta 219+87.31 θs = 2° 13' 56.3" Ls = 150.00' LT = 100.01' ST = 50.01'
-L- PI Sta 223+29.19 Δ = 17° 14' 38.9" (RT) D = 2° 58' 35.1" L = 579.36 T = 291.89' R = 1,925.00' DS = 50 MPH SE = 0.04
DETAIL 2 STANDARD 2' BASE DITCH (Not to Scale) Min. D = 2 Ft. B = 2 Ft.
FROM STA. 222+03 TO STA. 222+30 -L- (LT) (DDE 27 CY)
DETAIL 1 STANDARD 'V' DITCH (Not to Scale) Min. D = 1.5 Ft.
FROM STA. 222+29 TO STA. 223+00 -L- (LT) (DDE 14 CY)
DETAIL 6 LATERAL 'V' DITCH (Not to Scale) Min. D = 1 Ft. b = 3 Ft.
FROM STA. 218+90 TO STA. 219+75 -L- (RT) (DDE 13 CY)
FROM STA. 225+00 TO STA. 226+00 -L- (RT) (DDE 13 CY)
DETAIL 5 BERM DITCH (Not to Scale) Min. D = 1 Ft.
FROM STA. 215+35 TO STA. 216+50 -L- (RT)
FROM STA. 219+75 TO STA. 221+88 -L- (RT)
FROM STA. 221+88 TO STA. 224+75 -L- (RT)
MATCHLINE STA 212+00.00 SHEET 7
MATCHLINE STA 226+00.00 SHEET 9
SR 1820 SKEET CLUB ROAD
SEE SHEET 2-H FOR INTERSECTION DETAILS
SEE SHEET 20 FOR -L- PROFILE
SEE SHEET 26 FOR -Y33- PROFILE
DENOTES FILL IN WETLAND
DENOTES EXCAVATION IN WETLAND
GRAPHIC SCALE 100' 0' 100'
NAD 83/95
REVISIONS
1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. CHANGED PUE/PDE OVERLAP TO DUE ON PARCEL 32.
3. NAME CHANGE ON PARCELS 29 AND 32.
4. CHANGE PUE TO DUE ON PARCEL 32.
5. ADDED 3 - CURB CUTS ON PARCEL 32.
6. CHANGE PDE TO DUE ON PARCEL 31. (1-10-12) S.L.K.
8/17/99

PROJ. REFERENCE NO.	SHEET NO.
U-3615B	X-23

Permit Drawing
Sheet 15 of 27



PROJECT REFERENCE NO.	SHEET NO.
U-3615B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Permit Drawing
Sheet 16 of 27

NOTE:
NO DIRECT DISCHARGE INTO THE WATER FROM THE BRIDGE

REVISIONS
1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. NAME CHANGE ON PARCEL 35.
3. REVISED R/W TO PROPERTY LINE, ADDED TDE, ADDED NOTE TO PLANS FOR EXIST. FENCE, ADDED NOTE TO PLANS FOR POWER TRANSFORMER ON PARCEL 36.
5/14/12 R/W REVISION: NAME CHANGE TO ESTATE OF OLLIE MAE ALLRED ON PARCEL 35. – SLK

8/17/99

FROM STA. 229+75 TO STA. 231+00 -L- (RT)
DDE 19 CY

FROM STA. 226+00 TO STA. 227+60 -L- (RT)
FROM STA. 227+60 TO STA. 229+75 -L- (RT)

GRASS SWALE DATA (from basin #8)

b = 0'
m = 3:1
s = 0.54%
n = 0.040
min. d = 2'
V10 = 2.03 fps
V2 = 1.81 fps
therefore, d10 = 1.36'
d2 = 1.24'
length of swale = 323'*
req. L = 300'

I2 = 4.4 in./hr., Q2 = 8.8 cfs
I10 = 5.6 in./hr., Q10 = 11.2 cfs
DA = 3.0 ac.
Tc = 10 min.
Avg. c = 0.67

FROM STA. 234+68 TO STA. 231+98 -L- (RT)

SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 26 FOR -Y34- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

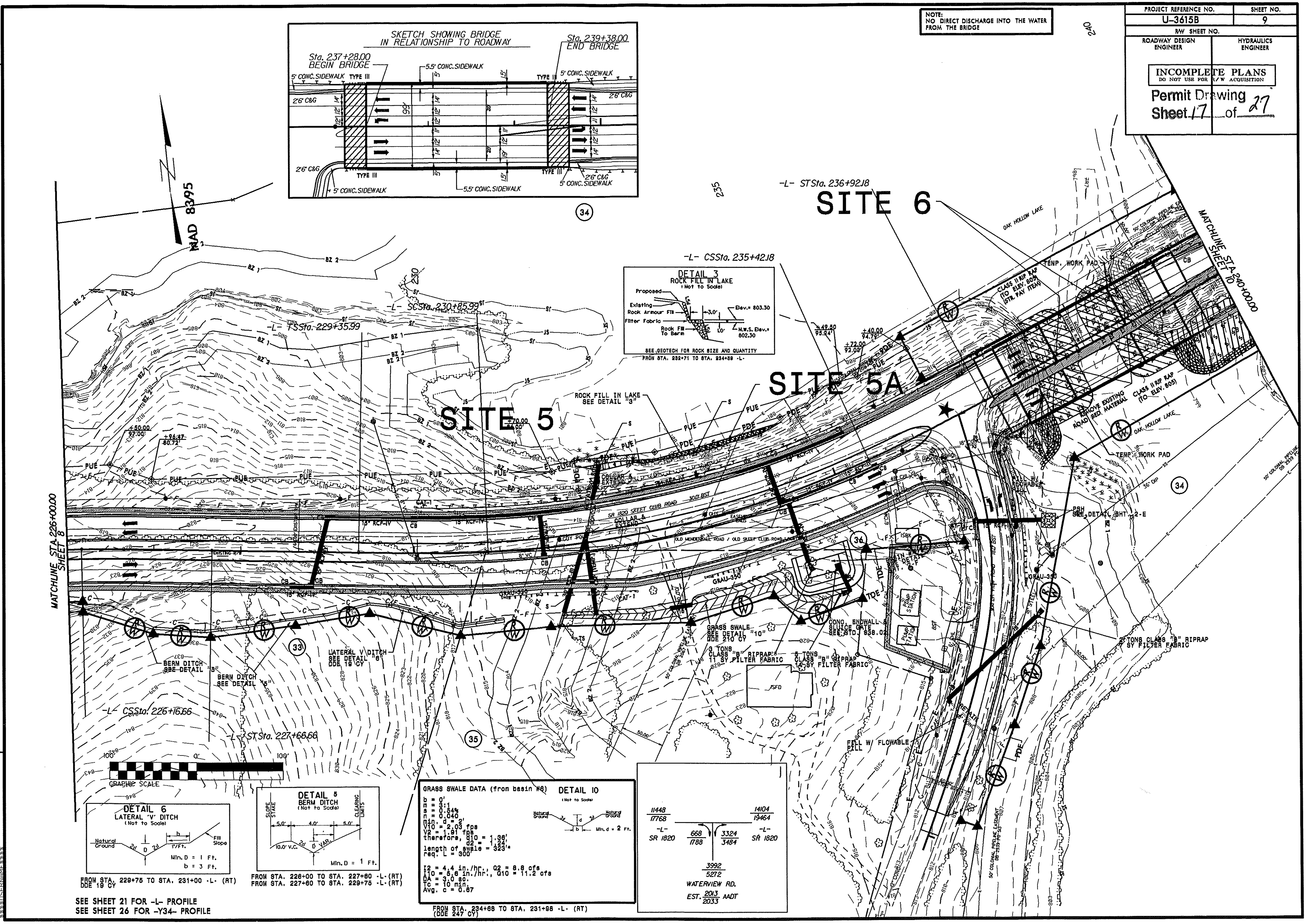
Permit Drawing
Sheet 17 of 27

NOTE:
NO DIRECT DISCHARGE INTO THE WATER FROM THE BRIDGE

8/17/99

REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. NAME CHANGE ON PARCEL 35.
3. REVISED R/W TO PROPERTY LINE, ADDED TDE, ADDED NOTE TO PLANS FOR EXIST. FENCE, ADDED NOTE TO PLANS FOR POWER TRANSFORMER ON PARCEL 36.
5/14/12 R/W REVISION: NAME CHANGE TO ESTATE OF OLLIE MAE ALLRED ON PARCEL 35. - SLK



SKETCH SHOWING BRIDGE IN RELATIONSHIP TO ROADWAY
Sta. 237+28.00 BEGIN BRIDGE
Sta. 239+38.00 END BRIDGE
5' CONC. SIDEWALK
5.5' CONC. SIDEWALK
2'6" C&G
TYPE III
NAD 83/95
SITE 5
SITE 5A
SITE 6
-L- ST Sta. 236+92.18
-L- CS Sta. 235+42.18
-L- SC Sta. 230+85.99
-L- TS Sta. 229+35.99
-L- CS Sta. 226+16.66
-L- ST Sta. 227+66.66
MATCHLINE STA. 226+00.00 SHEET 8
MATCHLINE STA. 240+00.00 SHEET 10
DETAIL 3
ROCK FILL IN LAKE
(Not to Scale)
SEE GEOTECH FOR ROCK SIZE AND QUANTITY
FROM STA. 232+71 TO STA. 234+89 -L-
ROCK FILL IN LAKE SEE DETAIL "3"
OAK HOLLOW LAKE
TEMP. WORK PAD
CLASS II RIP RAP (TO ELEV. 805)
REMOVE EXISTING ROAD BED MATERIAL
SR 1820 SKEET CLUB ROAD
OLD MENDENHALL ROAD / OLD SKEET CLUB ROAD
PSH SEE DETAIL SHT. 2-E
2 TONS CLASS "B" RIPRAP 2 SY FILTER FABRIC
GRASS SWALE SEE DETAIL "10" DDE 210 CY
CONC. ENDWALL SLUICE GATE SEE STD. 838.02
FILL W/ FLOWABLE FILL
LATERAL V DITCH SEE DETAIL "6" DDE 19 CY
BERM DITCH SEE DETAIL "5"
GRAPHIC SCALE
DETAIL 6
LATERAL 'V' DITCH
(Not to Scale)
Min. D = 1 Ft.
b = 3 Ft.
FROM STA. 229+75 TO STA. 231+00 -L- (RT)
DDE 19 CY
DETAIL 5
BERM DITCH
(Not to Scale)
Min. D = 1 Ft.
FROM STA. 226+00 TO STA. 227+60 -L- (RT)
FROM STA. 227+60 TO STA. 229+75 -L- (RT)
GRASS SWALE DATA (from basin #8)
DETAIL 10
(Not to Scale)
b = 0'
m = 3:1
s = 0.54%
n = 0.040
Min. d = 2'
V10 = 2.03 fps
V2 = 1.81 fps
length of swale = 323'±
req. L = 300'
I2 = 4.4 in./hr., Q2 = 8.8 cfs
I10 = 5.6 in./hr., Q10 = 11.2 cfs
DA = 3.0 ac.
Tc = 10 min.
Avg. c = 0.67
FROM STA. 234+68 TO STA. 231+98 -L- (RT)
(DDE 247 CY)
SR 1820
WATERVIEW RD.
EST. 2013/2033 AADT

SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 26 FOR -Y34- PROFILE

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-3615B	X-29

Permit Drawing
Sheet 18 of 27

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

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	10

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

Permit Drawing
Sheet 19 of 27

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

S — DENOTES IMPACTS IN SURFACE WATER

TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES 9/29/09
2. NAME CHANGE ON PARCEL 38 AND AND COMBINE WITH PARCEL 41.
3. ~~NAME CHANGE ON PARCEL 42.~~

REVISIONS

02/25/13 R/W REVISION: THE PDE WAS REVISED AROUND RELOCATED BASIN #5 ON PARCELS 34 AND 38 AND PDE WAS ADDED FROM -L- STA. 241+36.00 TO STA. 241+68.00 RT. ON PARCEL 34. – TEM

8/17/99

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

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	10

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

Permit Drawing
Sheet 20 of 27

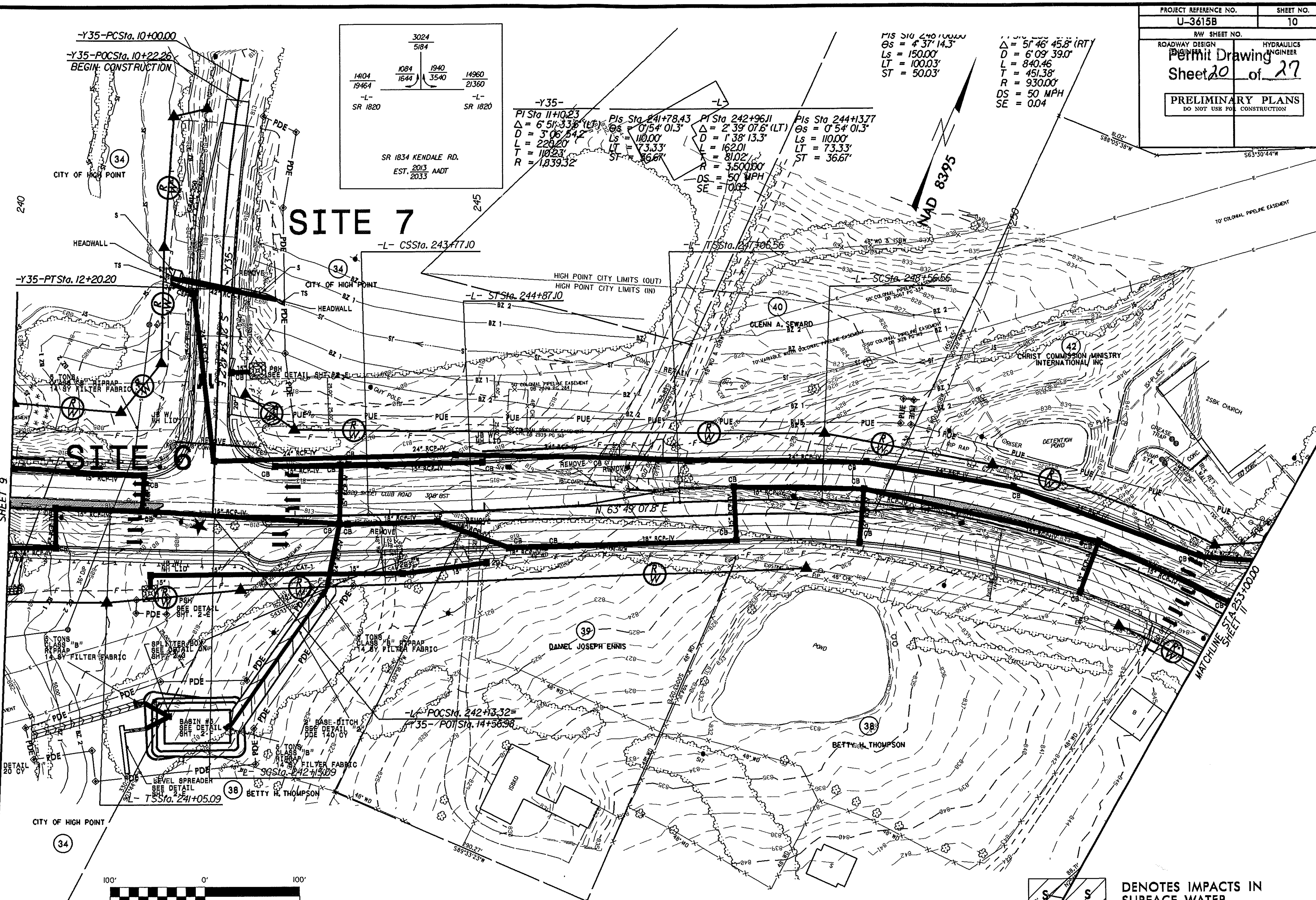
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES 9/29/09
2. NAME CHANGE ON PARCEL 38 AND COMBINE WITH PARCEL 41.
3. NAME CHANGE ON PARCEL 42.

02/25/13 R/W REVISION: THE PDE WAS REVISED AROUND RELOCATED BASIN #5 ON PARCELS 34 AND 38 AND PDE WAS ADDED FROM -L- STA. 241+36.00 TO STA. 241+68.00 RT. ON PARCEL 34.- TEM

8/17/99



GRAPHIC SCALE 100' 0' 100'

DETAIL
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground — 2:1 — D — 2:1 — Natural Ground
Min. D = 1.5 Ft.
FROM STA. 240+25 TO STA. 241+42 -L- (RT) (DDE 20 CY)

DETAIL 2
STANDARD BASE DITCH
(Not to Scale)
Natural Ground — 2:1 — D — 2:1 — Natural Ground
Min. D=1.5 Ft.
B= 2 Ft.
FROM STA. 242+35 TO STA. 243+33 -L- (RT) (EST. 140 CY EXC.)

SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 26 FOR -Y35- PROFILE

S — DENOTES IMPACTS IN SURFACE WATER

TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	11

R/W SHEET NO.

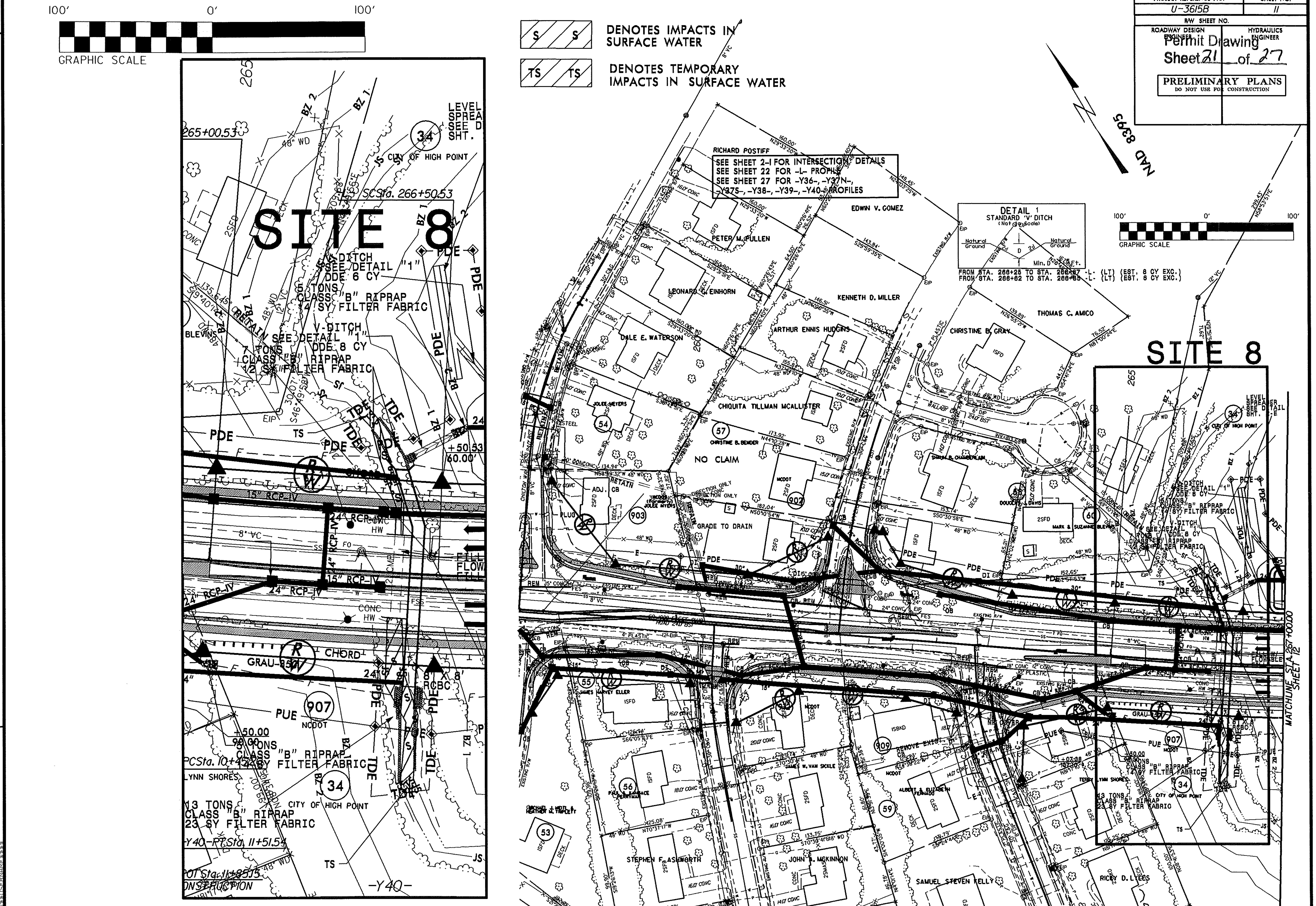
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

Permit Drawing
Sheet 21 of 27

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

S S — DENOTES IMPACTS IN SURFACE WATER

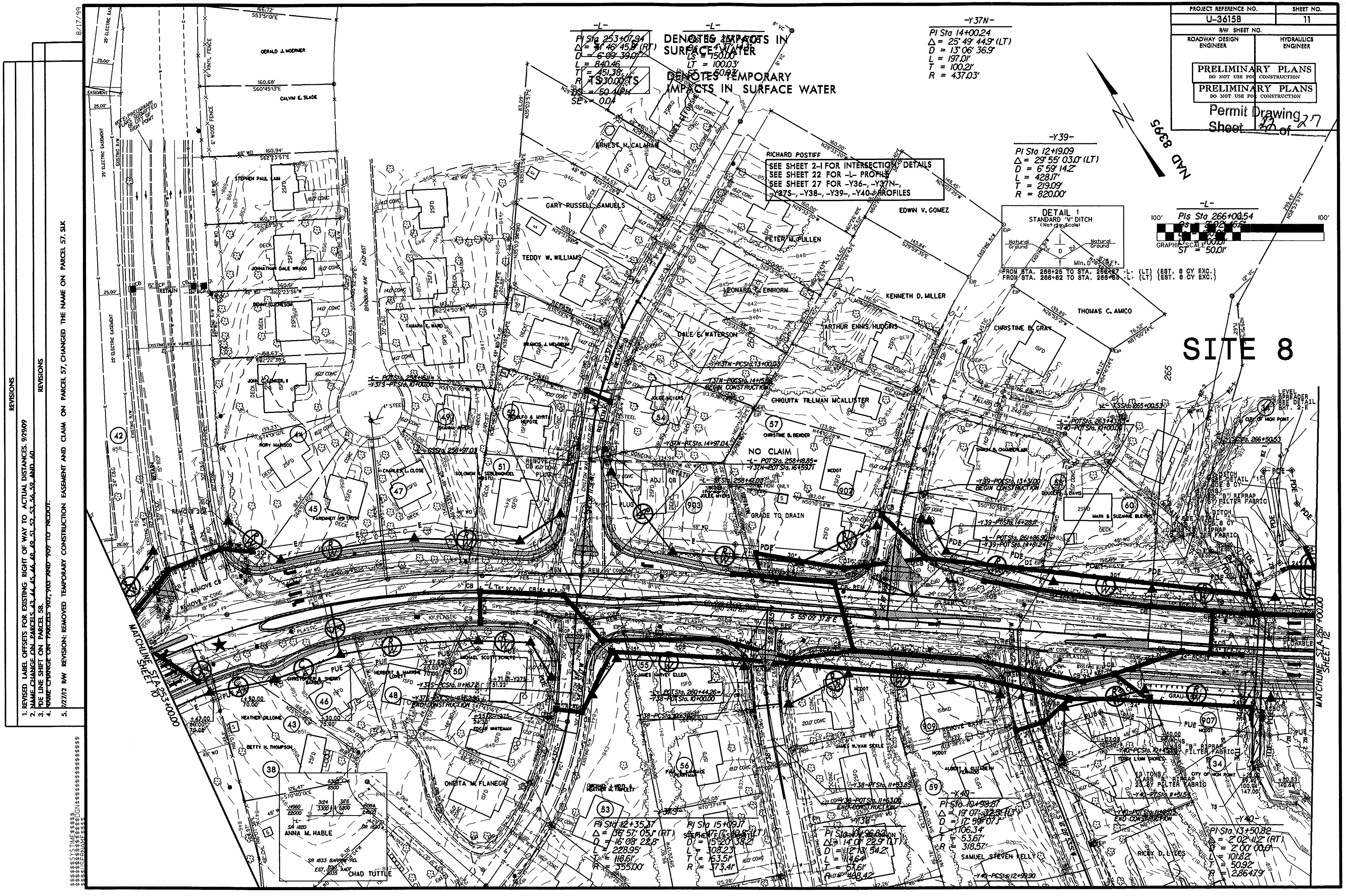
TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

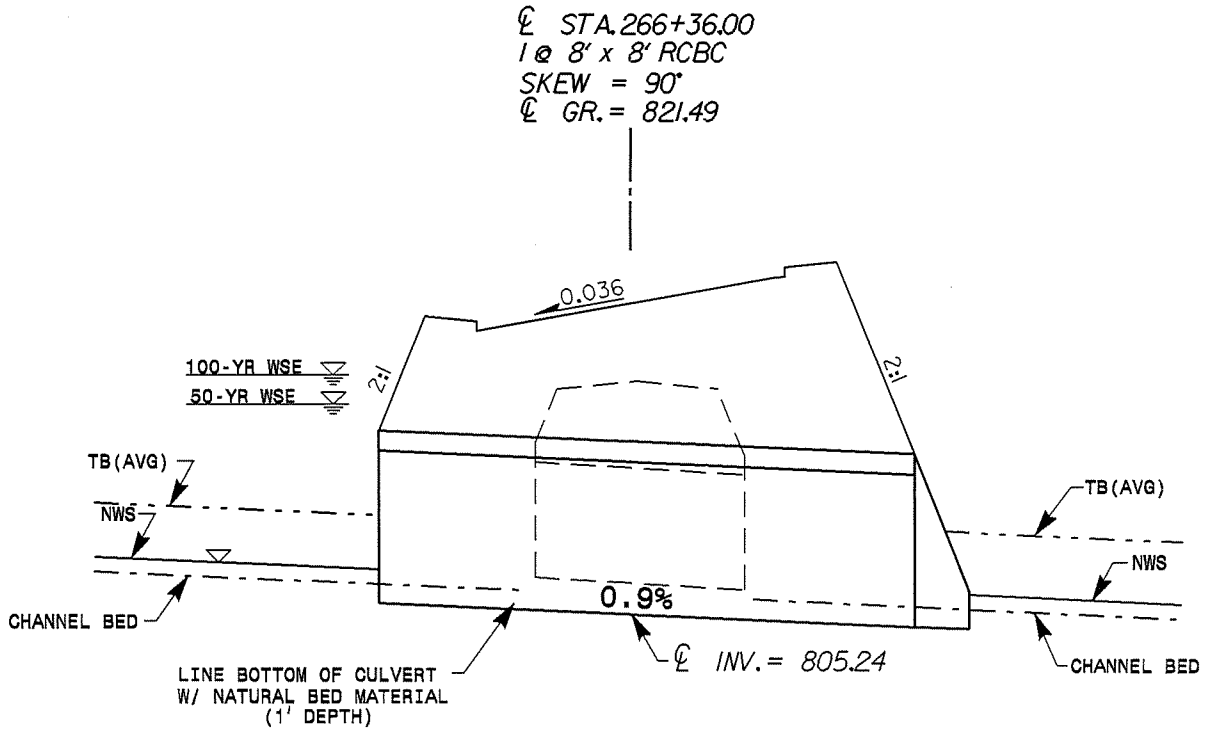


100' 0' 100'
GRAPHIC SCALE
SITE 8
V-DITCH SEE DETAIL "1" DDE 6 CY
5 TONS CLASS "B" RIPRAP 14 SY FILTER FABRIC
V-DITCH SEE DETAIL "1" DDE 8 CY
7 TONS CLASS "B" RIPRAP 12 SY FILTER FABRIC
LEVEL SPREADER SEE DETAIL SHT.
CITY OF HIGH POINT
13 TONS CLASS "B" RIPRAP 23 SY FILTER FABRIC
96 TONS CLASS "B" RIPRAP 142 SY FILTER FABRIC
SEE SHEET 2-I FOR INTERSECTION DETAILS
SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 27 FOR -Y36-, -Y37N-, -Y37S-, -Y38-, -Y39-, -Y40- PROFILES
DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground
Natural Ground
FROM STA. 266+25 TO STA. 266+87 -L- (LT) (EST. 6 CY EXC.)
FROM STA. 266+62 TO STA. 266+85 -L- (LT) (EST. 8 CY EXC.)
NAD 83
MATCHLINE STA. 267+00.00 SHEET 12
RICHARD POSTIFF
EDWIN V. GOMEZ
PETER M. PULLEN
LEONARD G. EINHORN
KENNETH D. MILLER
THOMAS C. AMICO
ARTHUR ENNIS HUDGINS
CHRISTINE B. GRAY
DALE E. WATERSON
CHIQUITA TILLMAN MCALLISTER
NO CLAIM
JAMES HARVEY ELLER
STEPHEN F. ASHWORTH
JOHN L. MCKINNON
SAMUEL STEVEN KELLY
RICKY D. LYLES

8/17/99

REVISIONS


PROJECT REFERENCE NO. U-3615B
SHEET NO. 11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
Permit Drawing Sheet 22 of 27
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
SEE SHEET 2-I FOR INTERSECTION DETAILS
SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 27 FOR -Y36-, -Y37N-, -Y37S-, -Y38-, -Y39-, -Y40- PROFILES
-Y37N-
PI Sta 14+00.24
Δ = 25° 49' 44.9" (LT)
D = 13° 06' 36.9"
L = 197.01'
T = 100.21'
R = 437.03'
-Y39-
PI Sta 12+19.09
Δ = 29° 55' 03.0" (LT)
D = 6° 59' 14.2"
L = 428.17'
T = 219.09'
R = 820.00'
DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground
Natural Ground
FROM STA. 266+25 TO STA. 266+87 -L- (LT) (EST. 8 CY EXC.)
FROM STA. 266+62 TO STA. 266+85 -L- (LT) (EST. 8 CY EXC.)
NAD 83/95
GRAPHIC SCALE
SITE 8
NO CLAIM
GRADE TO DRAIN
MATCHLINE STA 253+00.00 SHEET 10
MATCHLINE STA 267+00.00 SHEET 12
GERALD J. HOERNER
CALVIN E. SLADE
STEPHEN PAUL LAIN
ERNEST H. CALAHAN
GARY RUSSELL SAMUELS
TEDDY W. WILLIAMS
RICHARD POSTIFF
PETER M. PULLEN
EDWIN V. GOMEZ
KENNETH D. MILLER
LEONARD G. EINHORN
DALE E. WATERSON
ARTHUR ENNIS HUDGINS
CHRISTINE B. GRAY
THOMAS C. AMICO
CHIQUITA TILLMAN MCALLISTER
CHRISTINE B. BENDER
RORY MANGOO
HEATHER DILLONE
BETTY H. THOMPSON
ANNA M. HABLE
CHAD TUTTLE
ONEITA M. FLANEGIN
SAMUEL STEVEN KELLY
RICKY D. LYLES
TERRY LYNN SHORES
PI Sta 12+35.37
Δ = 36° 57' 05.1" (RT)
D = 16° 08' 22.8"
L = 228.95'
T = 118.61'
R = 355.00'
PI Sta 15+09.17
D = 15° 20' 38.2"
L = 308.23'
T = 163.51'
R = 373.41'
PI Sta 10+99.87
L = 106.34'
T = 53.67'
R = 318.57'
-Y40-
PI Sta 13+50.82
Δ = 2° 02' 11.2" (RT)
D = 2° 00' 00.0"
L = 101.82'
T = 50.92'
R = 2,864.79'
REVISIONS
1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. NAME CHANGE ON PARCELS 43, 44, 45, 48, 49, 51, 52, 53, 56, 59 AND 60
3. PDE LINE SHIFT ON PARCEL 58.
4. PDE CHANGE ON PARCELS 902, 903 AND 909 TO NCDOT.
5. 7/27/12 R/W REVISION: REMOVED TEMPORARY CONSTRUCTION EASEMENT AND CLAIM ON PARCEL 57, CHANGED THE NAME ON PARCEL 57. SLK
8/17/99



PROFILE

NCDOT

DIVISION OF HIGHWAYS
GUILFORD COUNTY
WBS: 34962.1.1 (U-3615B)
WIDEN SR 1003-1008 (SKEET CLUB RD.) EAST OF SR 1818 (JOHNSON ST.) TO WEST OF NC 68 (EASTCHESTER DRIVE)

PROPERTY OWNERS

Site	Last Name	First Name	Address	City/Town	State	Zip Code
1	CURLIN	WILLIAM G.	PO Box 10	Wilson	NC	27894-0010
1	ORCHARDS KNOB OWNERS ASSOCIATION		UNKNOWN			
2	FOX RUN LAND CORP		4144 Johnson Street	High Point	NC	27265
2	LEE VARRICK MOORE, JR.		4302 Johnson Street	High Point	NC	27265
2 & 2A	HARRIS	JASON E.	P.O. Box 1550	Jamestown	NC	27282
3	MANSFIELD	LINDA S.	1121 Skeet Club Road	High Point	NC	27265
3	BRODD	RANDALL & ELIZABETH	UNKNOWN			
3 & 3A	CHA HUN CHAE		1127 Skeet Club Road	High Point	NC	27265
3B	SMITH	LESLIE R.	4302 Gelding Court	High Point	NC	27265
4	SMITH	LINDA M.	380 Knollwood St, Ste 201	Winston Salem	NC	27103

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
WBS - 34962.1.1 (U-3615B)

PROPERTY OWNERS

Site	Last Name	First Name	Address	City/Town	State	Zip Code
5	ALLRED	W.G.	1256 Skeet Club Road	High Point	NC	27265
5 & 5A	CITY OF HIGH POINT		P.O. Box 230	High Point	NC	27261
6 & 6A	CITY OF HIGH POINT		P.O. Box 230	High Point	NC	27261
7	CITY OF HIGH POINT		P.O. Box 230	High Point	NC	27261
8	CITY OF HIGH POINT		P.O. Box 230	High Point	NC	27261
8A	HORNE	DAVID S.	1426 Skeet Club Road	High Point	NC	27265
8A & 9	SHERWOOD HOA INC.		P.O. Box 24961	Winston Salem	NC	27114

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
1	170+67 -L-	2@66" RCP						0.01	<0.01	119	16	
2	180+59/188+46 -L-	RELOCATE CHANNEL						2.20		594	10	
2A	187+99/188+46-L-	ROCK FILL IN POND						0.02				
3	197+50/204+26-L-	NAT. STREAM DESIGN								699	10	760
3A	199+27/199+95 -L-	2@54" RCP						<0.01	<0.01	38	10	
3B	208+63 -L-	48" RCP						<0.01	<0.01	109	4	
		BANK STABILIZATION								10		
3C	201+27/204+76 -L-	NAT. STREAM DESIGN			0.67			<0.01		63		
4	218+72/219+72 -L-	2@30" RCP	0.13		<0.01							
5	231+60/232+27-L-	30" RCP	<0.01			0.01		<0.01		131	16	
5A	232+87/236+40 -L-	ROCK FILL IN LAKE						0.02				
6	237+28/239+38 -L-	BRIDGE	<0.01			<0.01		0.20	0.29			
SUBTOTALS:			0.14		0.67	0.01		2.47	0.30	1763	66	760

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILDFORD COUNTY

WBS 34962.1.1 (U-3615B)

SHEET 26 of 27 4/9/2013

ATN Revised 3/31/05

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
7	12+20 -Y35-	42" RCP						<0.01	<0.01	49	19	
8	266+36 -L-	8'X8' RCBC						0.03	<0.01	186	32	
		BANK STABILIZATION								101		
	SHEET 1	SUBTOTALS:	0.14		0.67	0.01		2.47	0.30	1763	66	760
SHEET 2 SUBTOTALS:								0.03	<0.01	336	51	
TOTALS:			**0.14**		**0.67**	**0.01**		**2.50**	**0.31**	**2099**	**117**	**760**

BRIDGE SURFACE WATER TEMPORARY IMPACTS = 0.29 a.c. (Work Pads)

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILDFORD COUNTY

WBS - 34962.1.1 (U-3615B)

SHEET 27 of 27

4/9/2013

ATN Revised 3/31/05

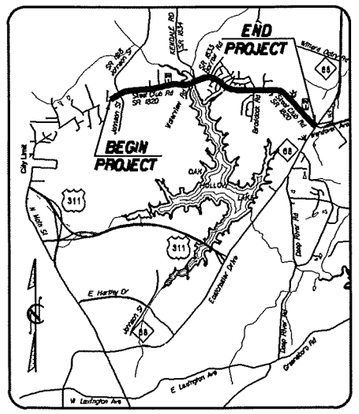
09/08/99

TIP PROJECT: U-3615B

CONTRACT:

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

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3615B	1	

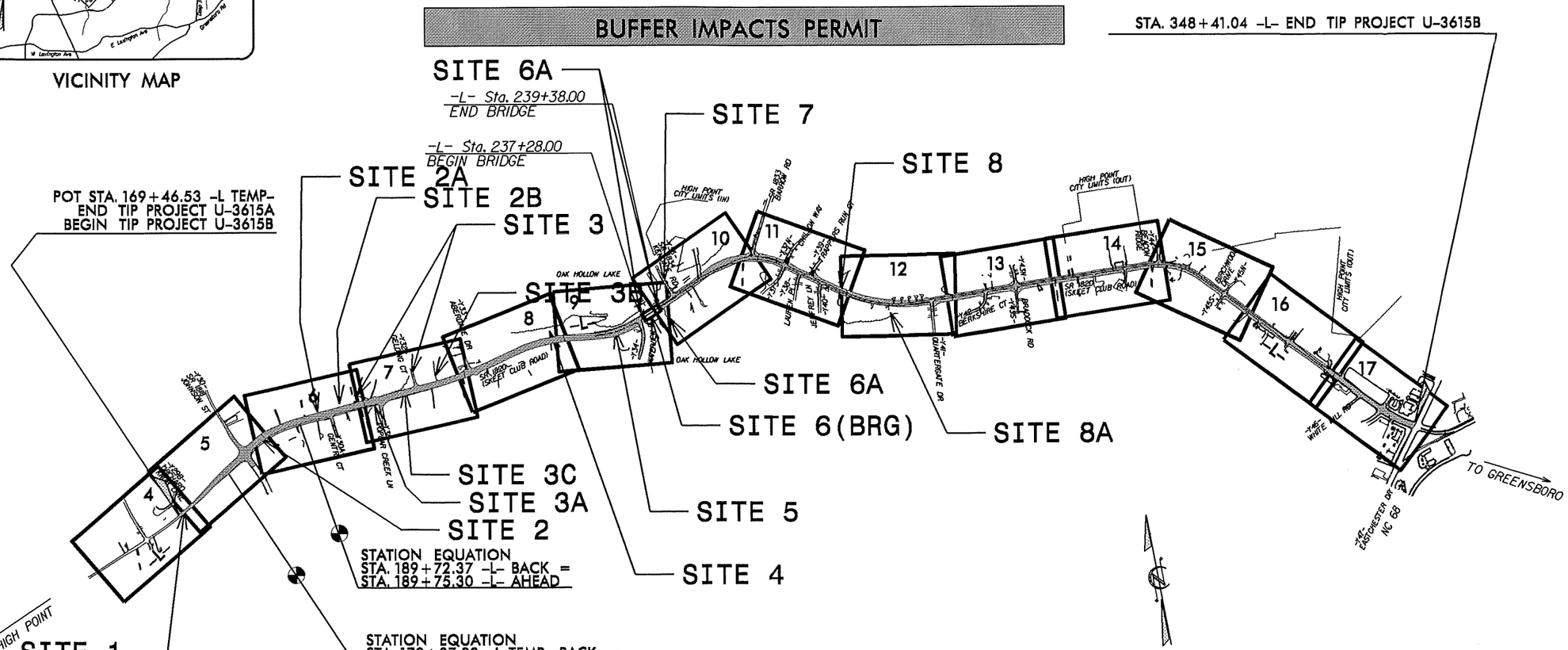
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34962.1.1	STP-1820(2)	P.E.
34962.2.3	STP-1820(2)	R/W, UTL.

Buffer Drawing
Sheet 1 of 13

LOCATION: ***SR 1820 (SKEET CLUB ROAD) FROM WEST OF SR 1818 (JOHNSON STREET) TO NC 68 (EASTCHESTER DRIVE).***

TYPE OF WORK: PAVING, GRADING, DRAINAGE, CURB & GUTTER, STRUCTURE, CULVERT, SIGNING AND SIGNALS

BUFFER IMPACTS PERMIT



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CITY OF HIGH POINT

*"CLEARING ON THIS PROJECT SHALL BE ESTABLISHED BY METHOD III"

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS 50 25 0 50 100
PROFILE (HORIZONTAL) 50 25 0 50 100
PROFILE (VERTICAL) 10 5 0 10 20

DESIGN DATA

ADT 2013 = 10860-23524
ADT 2035 = 17900-34700
DHV = 10 %
D = 60 %
T = 5 % *
V = 50 MPH
* TTST =2% DUAL 3%
FUNC CLASS =
URBAN MINOR ARTERIAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3615B = 3.349 MI
LENGTH STRUCTURE TIP PROJECT U-3615B = 0.040 MI
TOTAL LENGTH OF TIP PROJECT U-3615B = 3.389 MI

Prepared for the North Carolina Department of Transportation by the Office of:
WETHERILL ENGINEERING
859 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
License No. P-0377
Tel: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: APRIL 27, 2009

LETTING DATE: OCTOBER 15, 2013

NCDOT CONTACT: BRENDA L. MOORE, PE
ROADWAY DESIGN: ENGINEERING COORDINATION SECTION PROJECT ENGINEER

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Buffer Drawing
Sheet 2 of 13

-L-
PIs Sta 158+44.07
θs = 0° 22' 00.1"
Ls = 96.00'
LT = 64.00'
ST = 32.00'

-L-
PIs Sta 163+70.31
θs = 0° 33' 00.1"
Ls = 96.00'
LT = 64.00'
ST = 32.00'

-L-
PI Sta 167+89.17
Δ = 8° 50' 54.9" (LT)
D = 1° 08' 45.3"
L = 772.19
T = 386.86'
R = 5,000.00'
DS = 50 MPH
SE = 0.02

-L- TEMP
PI Sta 171+59.42
Δ = 6° 27' 19.5" (LT)
D = 1° 31' 04.1"
L = 425.31'
T = 212.89'
R = 3,775.00'
DS = 50 MPH
SE = 0.02

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Buffer Drawing
Sheet 3 of 13

REVISIONS

8/17/99

RW REVISION: 9/29/12 REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.

RW REVISION: 7/29/11Z: CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY ON PARCEL 7 AND 11; REMOVED PERMANENT DRAINAGE EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT AND ADDED DRAINAGE UTILITY EASEMENT ON PARCEL 10; REVISED TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 12; REMOVED PERMANENT UTILITY EASEMENT, PERMANENT DRAINAGE EASEMENT AND REVISED RIGHT OF WAY ON PARCEL 13. - SLK

5/24/12 RW REVISION: CHANGED NAME ON PARCEL 002 TO ORCHARD KNOB OWNERS ASSOCIATION - SLK

GRAPHIC SCALE 100' 0' 100'

SEE SHEET 2-H FOR INTERSECTION DETAILS
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 25 FOR -Y30- PROFILE

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

ALLOWABLE IMPACTS ZONE 1

73064 / 22200
8500 / 19500 -L- SR 1820
1488 / 5800
1340 / 3100
1108 / 1900
3616 / 3000
10860 / 17900 -L- SR 1820
11600 / 18200
SR 1818 JOHNSON ST.
EST. 2013 / 2035 AADT

DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground, 2d, D, 2d, Natural Ground
Min. D = 1.5 Ft.

FROM STA. 171+94 TO STA. 172+23 -L- (RT) (DDE 18 CY)
FROM STA. 172+23 TO STA. 172+60 -L- (RT) (DDE 8 CY)

SITE 1

-L- ST Sta. 172+70.50
Station Equation
Sta 172+70.50 BK =
Sta. 172+72.69 AH

(2) JOHN W. & JANE B. RIERSON

-L- TEMP PRC Sta. 173+71.84

(11) FOX RUN LAND CORP

-L- POT Sta. 178+07.79 =
-L TEMP- POT Sta. 18+07.08 =
OFFSET = 0.00'

-Y30- POT Sta. 13+00.00
BEGIN CONSTRUCTION

-Y30-
PI Sta 13+04.81
Δ = 3° 22' 29.0" (LT)
D = 1° 16' 56.3"
L = 263.17'
T = 131.62'
R = 4,468.14'

-Y30- PT Sta. 14+36.35

-Y30-
PI Sta 16+79.88
Δ = 5° 27' 52.5" (LT)
D = 2° 00' 00.0"
L = 273.23'
T = 136.72'
R = 2,864.79'

-Y30- PC Sta. 15+43.16

-Y30-
PI Sta 19+82.79
Δ = 1° 45' 44.6" (RT)
D = 0° 42' 58.3"
L = 246.08'
T = 123.05'
R = 8,000.00'

SITE 2

-L-
PIs Sta 183+84.03
Θs = 4° 31' 29.5"
Ls = 150.00'
LT = 100.03'
ST = 50.03'

ZONE 2 ALLOWABLE

ZONE 1 ALLOWABLE

-Y30- PC Sta. 18+59.74

-L- POT Sta. 181+36.36 =
-Y30- POC Sta. 19+68.28

ZONE 1 MITIGABLE

(12) HOWARD L. & TAMRA K. REGAN

(13) LEE VARRICK MOORE, JR

ZONE 2 ALLOWABLE

-Y30- PI Sta. 18+16.39

PBH SEE DETAIL SHT. 2-E

ZONE 1 ALLOWABLE

SYSTEM 2

HEADWALL SEE DETAIL SHT. 2-E

MATCHLINE STA. 171+00.00 SHEET 4

MATCHLINE STA. 184+00.00 SHEET 6

SKEET CLUB ROAD SR 1818

ZONE 2 ALLOWABLE

ZONE 1 ALLOWABLE

ZONE 2 ALLOWABLE

CLASS "B" RIPRAP

-L- CS Sta. 171+74.50

N 57° 39' 29.3" E

-Y30- PT Sta. 21+05.82

ZONE 2 MITIGABLE

ZONE 2 ALLOWABLE

ZONE 1 ALLOWABLE

(10) WILLIAM G. CURLIN

MATCHLINE STA. 23+00.00

ZONE 2 ALLOWABLE

-Y30- PT Sta. 21+80.37
END CONSTRUCTION

PUE MATCHLINE STA. 23+00.00

SYSTEM 1

ZONE 1 MITIGABLE

(14) GARLAND A. BLAIR, JR

-L- TS Sta. 182+08.92

ZONE 2 MITIGABLE

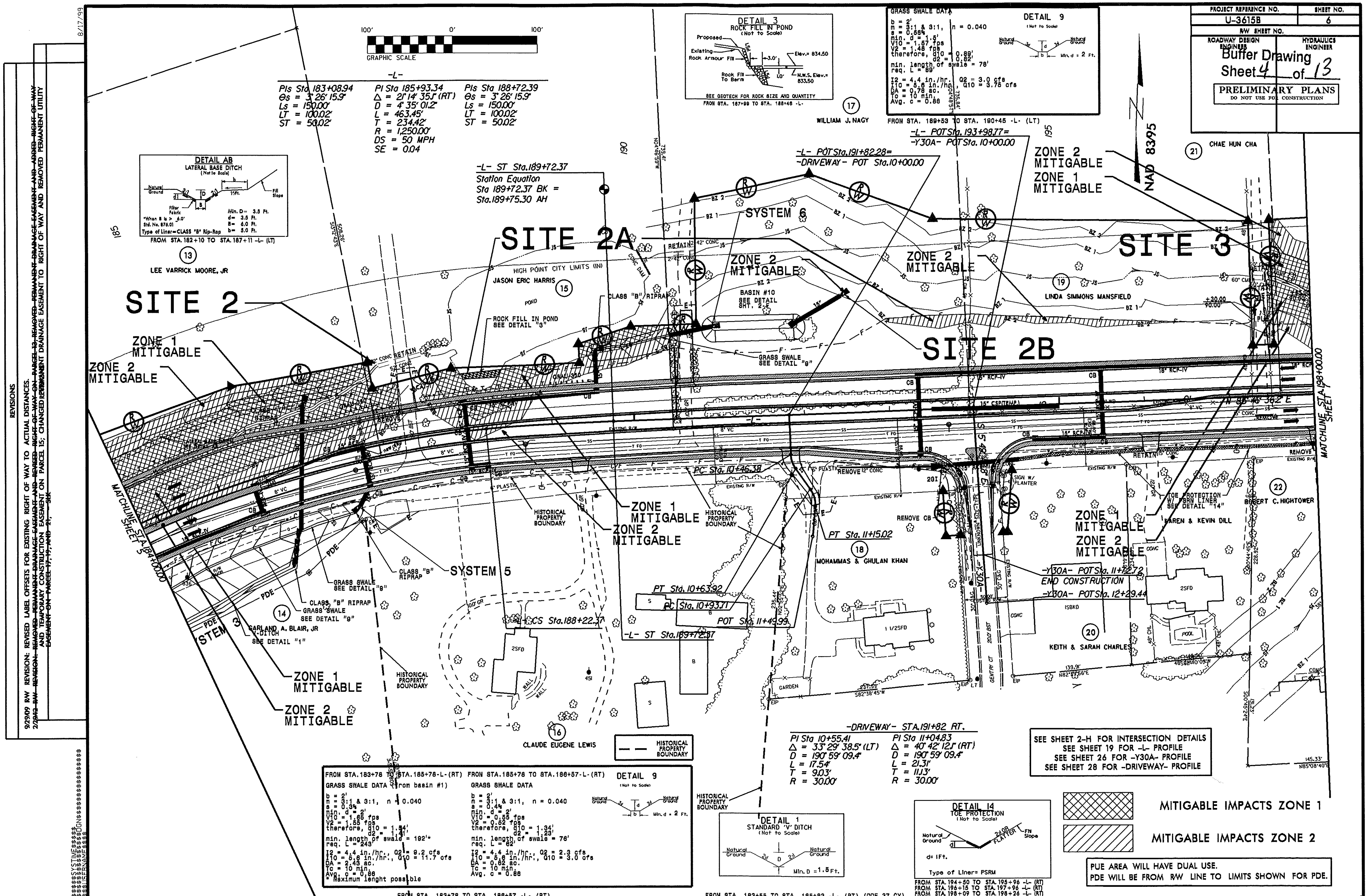
-Y30-
PI Sta 24+40.55
Δ = 13° 12' 11.3" (RT)
D = 4° 50' 06.3"
L = 273.07'
T = 137.14'
R = 1,185.00'

-L- SC Sta. 183+58.92

-L-
PI Sta 167+89.17
Δ = 8° 50' 54.9" (LT)
D = 1° 08' 45.3"
L = 772.19
T = 386.86'
R = 5,000.00'
DS = 50 MPH
SE = 0.02

-L-
PIs Sta 172+06.50
Θs = 0° 33' 00.1"
Ls = 96.00'
LT = 64.00'
ST = 32.00'

-L- TEMP
PI Sta 175+89.52
Δ = 3° 19' 30.0" (RT)
D = 0° 45' 50.2"
L = 435.24'
T = 217.68'
R = 7,500.00'
DS = 50 MPH
SE = 0.02



PROJECT REFERENCE NO. U-3615B
SHEET NO. 6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Buffer Drawing Sheet 4 of 13
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
GRAPHIC SCALE
100' 0' 100'
-L-
PIs Sta 183+08.94
Θs = 3°26'15.9"
Ls = 150.00'
LT = 100.02'
ST = 50.02'
PI Sta 185+93.34
Δ = 21°14'35.1" (RT)
D = 4°35'01.2"
L = 463.45'
T = 234.42'
R = 1,250.00'
DS = 50 MPH
SE = 0.04
PIs Sta 188+72.39
Θs = 3°26'15.9"
Ls = 150.00'
LT = 100.02'
ST = 50.02'
-L- ST Sta. 189+72.37
Station Equation
Sta 189+72.37 BK = Sta. 189+75.30 AH
DETAIL AB
LATERAL BASE DITCH
(Not to Scale)
Type of Liner= CLASS "B" Rip-Rap
FROM STA. 182+10 TO STA. 187+11 -L- (LT)
DETAIL 3
ROCK FILL IN POND
(Not to Scale)
SEE GEOTECH FOR ROCK SIZE AND QUANTITY
FROM STA. 187+99 TO STA. 188+45 -L-
DETAIL 9
FROM STA. 189+53 TO STA. 190+45 -L- (LT)
-L- POT Sta. 193+98.77 =
-Y30A- POT Sta. 10+00.00
-L- POT Sta. 191+82.28 =
-DRIVEWAY- POT Sta. 10+00.00
SITE 2
SITE 2A
SITE 2B
SITE 3
SYSTEM 5
SYSTEM 6
ZONE 1 MITIGABLE
ZONE 2 MITIGABLE
NAD 83/95
LEE VARRICK MOORE, JR
JASON ERIC HARRIS
WILLIAM J. NAGY
CHAE HUN CHA
LINDA SIMMONS MANSFIELD
ROBERT C. HIGHTOWER
KAREN & KEVIN DILL
KEITH & SARAH CHARLES
MOHAMMAS & GHULAN KHAN
CLAUDE EUGENE LEWIS
GARLAND A. BLAIR, JR
HIGH POINT CITY LIMITS (IN)
BASIN #10 SEE DETAIL SHT. 2-E
HISTORICAL PROPERTY BOUNDARY
MATCHLINE STA. 184+00.00 SHEET 5
MATCHLINE STA. 198+00.00 SHEET 7
PC Sta. 10+46.38
PT Sta. 11+15.02
PT Sta. 10+63.92
PC Sta. 10+93.71
POT Sta. 11+49.99
CS Sta. 188+22.37
-L- ST Sta. 189+72.37
-Y30A- POT Sta. 11+72.72
END CONSTRUCTION
-Y30A- POT Sta. 12+29.44
-DRIVEWAY- STA. 191+82 RT.
PI Sta 10+55.41
Δ = 33°29'38.5" (LT)
D = 190°59'09.4"
L = 17.54'
T = 9.03'
R = 30.00'
PI Sta 11+04.83
Δ = 40°42'12.1" (RT)
D = 190°59'09.4"
L = 21.31'
T = 11.13'
R = 30.00'
SEE SHEET 2-H FOR INTERSECTION DETAILS
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 26 FOR -Y30A- PROFILE
SEE SHEET 28 FOR -DRIVEWAY- PROFILE
FROM STA. 183+78 TO STA. 185+78 -L- (RT) GRASS SWALE DATA (from basin #1)
FROM STA. 185+78 TO STA. 186+57 -L- (RT) GRASS SWALE DATA
DETAIL 9
FROM STA. 183+78 TO STA. 186+57 -L- (RT)
DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)
FROM STA. 183+55 TO STA. 185+83 -L- (RT) (DDE 37 CY)
DETAIL 14
TOE PROTECTION
(Not to Scale)
Type of Liner= PSRM
FROM STA. 194+50 TO STA. 195+96 -L- (RT)
FROM STA. 196+15 TO STA. 197+96 -L- (RT)
FROM STA. 198+09 TO STA. 198+26 -L- (RT)
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
PUE AREA WILL HAVE DUAL USE.
PDE WILL BE FROM R/W LINE TO LIMITS SHOWN FOR PDE.
REVISIONS
9/29/09 R/W REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	6
NW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Buffer Drawing Sheet 5 of 13

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

9/29/09 RW REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
2/29/12 RW REVISION: REMOVED PERMANENT DRAINAGE EASEMENT AND REVISED RIGHT OF WAY AND TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 15; CHANGED REMOVED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY AND REMOVED PERMANENT UTILITY EASEMENT ON PARCEL 17,19, AND 21; SJK
4/9/13 RW REVISION: ADDED TEMPORARY CONSTRUCTION EASEMENT AROUND DETENTION POND ON PARCEL 15. - SJK

8/17/99

100' 0' 100'
GRAPHIC SCALE

DETAIL 3
ROCK FILL IN POND
(Not to Scale)

Proposed
Existing Rock Armour Fill
3.0'
Elev.= 834.50
Rock Fill To Berm
N.W.S. Elev.= 833.50

SEE GEOTECH FOR ROCK SIZE AND QUANTITY
FROM STA. 187+99 TO STA. 188+48 -L-

GRASS SWALE DATA
b = 2'
m = 3:1 & 3:1, n = 0.040
s = 0.56%
Q10, d = 1.5'
V10 = 1.57 fps
V2 = 1.48 fps
therefore, Q10 = 0.89'
Q2 = 0.82'
min. length of swale = 78'
req. L = 89'
I2 = 4.4 in./hr., Q2 = 3.0 cfs
I10 = 6.8 in./hr., Q10 = 3.75 cfs
DA = 0.78 ac.
Tc = 10 min.
Avg. c = 0.86

DETAIL 9
(Not to Scale)
Natural Ground, 3:1, d, b, 3:1, Natural Ground
Min. d = 2 Ft.

FROM STA. 188+53 TO STA. 190+45 -L- (LT)

DETAIL AB
LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 2:1, d, D, 2:1, b, 10Ft., Fill Slope, Filter Fabric, B

Min. D= 3.5 Ft.
d= 3.0 Ft.
B= 6.0 Ft.
b= 5.0 Ft.

*When B is > 6.0'
Std. No. 876.01
Type of Liner= CLASS "B" Rip-Rap

FROM STA. 182+10 TO STA. 187+11 -L- (LT)

(13) LEE VARRICK MOORE, JR

-L- ST Sta.189+72.37

(17) WILLIAM J. NAGY

(21) CHAE HUN CHA

ZONE 2 MITIGABLE
ZONE 1 MITIGABLE

NAD 83'95

SITE 2A

SITE 3

SITE 2

SITE 2B

SYSTEM 6

HIGH POINT CITY LIMITS (IN)

(15) JASON ERIC HARRIS

POND

ROCK FILL IN POND SEE DETAIL "3"

1 TON CLASS "B" RIPRAP 5 SY FILTER FABRIC

3 TONS CLASS "1" RIPRAP 23 SY FILTER FABRIC

RETAIN 42" CONC

2-42" CMP

BASIN #10 SEE DETAIL SHT. 2-F

GRASS SWALE SEE DETAIL "9"

(19) LINDA SIMMONS MANSFIELD

(22) ROBERT C. HIGHTOWER

TOE PROTECTION W/ FABRIC LINER SEE DETAIL "14"

KAREN & KEVIN DILL

4" MONO. ISLAND SEE DETAIL SHEET 2-J

SIGN W/ PLANTER

REMOVE CB

PC Sta. 10+46.38

PT Sta. 11+15.02

(18) MOHAMMAS & GHULAN KHAN

PT Sta. 10+63.92

PC Sta. 10+93.71

POT Sta. 11+49.99

-L- ST Sta.189+72.37

-L- CCS Sta.188+22.37

SYSTEM 5

21 TONS CLASS "B" RIPRAP 56 SY FILTER FABRIC

GRASS SWALE SEE DETAIL "9"

(14) GARLAND A. BLAIR, JR

V-DITCH SEE DETAIL "1"

HISTORICAL PROPERTY BOUNDARY

(16) CLAUDE EUGENE LEWIS

(20) KEITH & SARAH CHARLES

MATCHLINE STA 184+00.00 SHEET 5

MATCHLINE STA 198+00.00 SHEET 7

FROM STA.183+78 TO STA.185+78-L-(RT)
GRASS SWALE DATA (from basin #1)
b = 2'
m = 3:1 & 3:1, n = 0.040
s = 0.3%
min. d = 2'
V10 = 1.55 fps
V2 = 1.55 fps
therefore, Q10 = 1.34'
Q2 = 1.41'
min. length of swale = 192'*
req. L = 243'
I2 = 4.4 in./hr., Q2 = 9.2 cfs
I10 = 6.8 in./hr., Q10 = 11.7 cfs
DA = 2.43 ac.
Tc = 10 min.
Avg. c = 0.88
* Maximum lenght possible

(DDE 2027 CY)

FROM STA.185+78 TO STA.186+57-L-(RT)
GRASS SWALE DATA
b = 2'
m = 3:1 & 3:1, n = 0.040
s = 0.4%
min. d = 2'
V10 = 0.56 fps
V2 = 0.62 fps
therefore, Q10 = 1.34'
Q2 = .23'
min. length of swale = 78'
req. L = 82'
I2 = 4.4 in./hr., Q2 = 2.3 cfs
I10 = 5.8 in./hr., Q10 = 3.0 cfs
DA = 0.62 ac.
Tc = 10 min.
Avg. c = 0.86

DETAIL 9
(Not to Scale)
Natural Ground, 3:1, d, b, 3:1, Natural Ground
Min. d = 2 Ft.

HISTORICAL PROPERTY BOUNDARY

DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground, 2d, D, 2d, Natural Ground
Min. D = 1.5 Ft.

FROM STA. 183+55 TO STA. 185+83 -L- (RT) (DDE 37 CY)

DETAIL 14
TOE PROTECTION
(Not to Scale)
Natural Ground, d, 24.0Ø FLATTER, Fill Slope
d= 1Ft.
Type of Liner= PSRM

FROM STA. 194+50 TO STA. 196+96 -L- (RT)
FROM STA. 196+15 TO STA. 197+96 -L- (RT)
FROM STA. 198+09 TO STA. 198+26 -L- (RT)

SEE SHEET 2-J FOR INTERSECTION DETAILS
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 26 FOR -Y30A- PROFILE
SEE SHEET 28 FOR -DRIVEWAY- PROFILE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PUE AREA WILL HAVE DUAL USE.
PDE WILL BE FROM R/W LINE TO LIMITS SHOWN FOR PDE.

8/17/99

REVISIONS

9/29/09 R/W REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
~~2/29/12 R/W REVISION: CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY AND REMOVED PERMANENT UTILITY EASEMENT ON PARCELS 21 AND 24, REVISED PERMANENT~~
UTILITY EASEMENT AND ADDED TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 28. - SLK
5/14/12 R/W REVISION: CHANGED PERMANENT UTILITY EASEMENT/PERMANENT DRAINAGE EASEMENT OVERLAP TO DRAINAGE UTILITY EASEMENT ON PARCEL 27. - SLK
7/12/12 R/W REVISION: CHANGED PERMANENT UTILITY EASEMENT TO TEMPORARY CONSTRUCTION EASEMENT AND ADDED DRIVEWAY PIPE ON PARCEL 28. - SLK

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

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	7
R/W SHEET NO.	

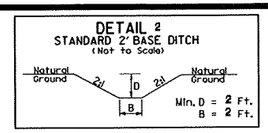
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

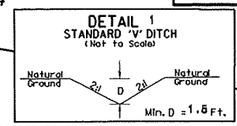
Buffer Drawing
Sheet 6 of 13

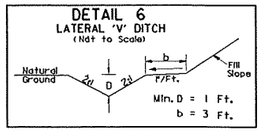
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

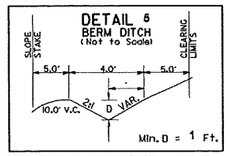
SEE SHEET 2-J FOR INTERSECTION DETAILS
SEE SHEET 20 FOR -L- PROFILE
SEE SHEET 26 FOR -Y31- & -Y32- PROFILES
SEE SHEET 28 FOR -DRIVEWAY- PROFILE

▨	ALLOWABLE IMPACTS ZONE 1
▩	MITIGABLE IMPACTS ZONE 1
▧	ALLOWABLE IMPACTS ZONE 2
▨	MITIGABLE IMPACTS ZONE 2









PROJECT REFERENCE NO.	SHEET NO.
U-3615B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Buffer Drawing
Sheet 7 of 13

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 2-H FOR INTERSECTION DETAILS
SEE SHEET 20 FOR -L- PROFILE
SEE SHEET 26 FOR -Y33- PROFILE

▨ MITIGABLE IMPACTS ZONE 1

▨ MITIGABLE IMPACTS ZONE 2

FROM STA. 218+90 TO STA. 219+75 -L- (RT) (DDE 13 CY)
FROM STA. 225+00 TO STA. 226+00 -L- (RT) (DDE 13 CY)

FROM STA. 215+35 TO STA. 216+50 -L- (RT)
FROM STA. 219+75 TO STA. 221+88 -L- (RT)
FROM STA. 221+88 TO STA. 224+75 -L- (RT)

REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. CHANGED PUE/PDE OVERLAP TO DUE ON PARCEL 32.
3. NAME CHANGE ON PARCELS 29 AND 32.
4. ~~CHANGE PUE TO DUE CLOSED CLAIM ON PARCEL 32.~~
5. ADDED 3 - CURB CUTS ON PARCEL 32.
6. CHANGE PDE TO DUE ON PARCEL 31. (1-10-12) S.L.K.

REVISIONS

8/17/99

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

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Buffer Drawing
Sheet 8 of 13

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTE:
NO DIRECT DISCHARGE INTO THE WATER FROM THE BRIDGE

-L-
Pls Sta 226+66.67
Θs = 2° 13' 56.3"
Ls = 150.00'
LT = 100.01'
ST = 50.01'

-L-
Pls Sta 230+36.01
Θs = 3° 34' 51.6"
Ls = 150.00'
LT = 100.02'
ST = 50.02'

-L-
PI Sta 233+16.87
Δ = 21° 46' 52.5" (LT)
D = 4° 46' 28.7"
L = 456.19
T = 230.88'
R = 1,200.00'
DS = 50 MPH
SE = 0.04

-L-
Pls Sta 235+92.19
Θs = 3° 34' 51.6"
Ls = 150.00'
LT = 100.02'
ST = 50.02'

DETAIL 3
ROCK FILL IN LAKE
(Not to Scale)

Proposed
Existing
Rock Armour Fill
Filter Fabric
Rock Fill To Berm
3.0'
1.0'
Elev.= 803.30
N.W.S. Elev.= 802.30

SEE GEOTECH FOR ROCK SIZE AND QUANTITY

FROM STA. 232+71 TO STA. 234+59 -L-

DETAIL 6
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground
2:1
D
2:1
b
1"/Ft.
Fill Slope
Min. D = 1 Ft.
b = 3 Ft.

FROM STA. 229+75 TO STA. 231+00 -L- (RT)
DDE 19 CY

DETAIL 5
BERM DITCH
(Not to Scale)

SLOPE STAKE
CLEARING LIMITS
5.0'
4.0'
5.0'
10.0' V.C.
2:1
D
VAR.
Min. D = 1 Ft.

FROM STA. 226+00 TO STA. 227+60 -L- (RT)
FROM STA. 227+60 TO STA. 229+75 -L- (RT)

GRASS SWALE DATA (from basin #6)

b = 0'
m = 3:1
s = 0.54%
n = 0.040
min. d = 2'
V10 = 2.03 fps
V2 = 1.91 fps
therefore, d10 = 1.36'
d2 = 1.24'
length of swale = 323'±
req. L = 300'

I2 = 4.4 in./hr., Q2 = 8.8 cfs
I10 = 5.6 in./hr., Q10 = 11.2 cfs
DA = 3.0 ac.
Tc = 10 min.
Avg. c = 0.67

DETAIL 10
(Not to Scale)

Natural Ground
3:1
d
b
Min. d = 2 Ft.

FROM STA. 234+88 TO STA. 231+98 -L- (RT)
(DDE 247 CY)

11448/17768
-L-
SR 1820

14104/19464
-L-
SR 1820

668/1788
3324/3484
3992/5272
WATERVIEW RD.
EST. 2013/2033 AADT

-Y34-

PI Sta 11+75.13
Δ = 29° 31' 00.4" (RT)
D = 14° 30' 00.0"
L = 203.56'
T = 104.09'
R = 395.14'

PI Sta 13+58.45
Δ = 6° 57' 11.2" (RT)
D = 4° 09' 04.0"
L = 167.50'
T = 83.85'
R = 1,380.25'

SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 26 FOR -Y34- PROFILE

REVISIONS

REVISIONS

1. ~~REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES 9/29/09~~
2. NAME CHANGE ON PARCEL 35.
3. ~~REVISED R/W TO PROPERTY LINE, ADDED TDE, ADDED NOTE TO PLANS FOR EXIST. FENCE, ADDED NOTE TO PLANS FOR POWER TRANSFORMER ON PARCEL 36.~~

5/1/12 R/W REVISION: NAME CHANGE TO ESTATE OF OLLIE MAE ALLRED ON PARCEL 35. – SLK

8/17/99

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

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	10

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Buffer Drawing
Sheet 9 of 13

REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES 9/29/09
2. NAME CHANGE ON PARCEL 38 AND AND COMBINE WITH PARCEL 41.
3. ~~NAME CHANGE ON PARCEL 42.~~

02/25/13 R/W REVISION: THE PDE WAS REVISED AROUND RELOCATED BASIN #5 ON PARCELS 34 AND 38 AND PDE WAS ADDED FROM -L- STA. 241+36.00 TO STA. 241+68.00 RT. ON PARCEL 34. - TEM

8/17/99

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

8/17/99

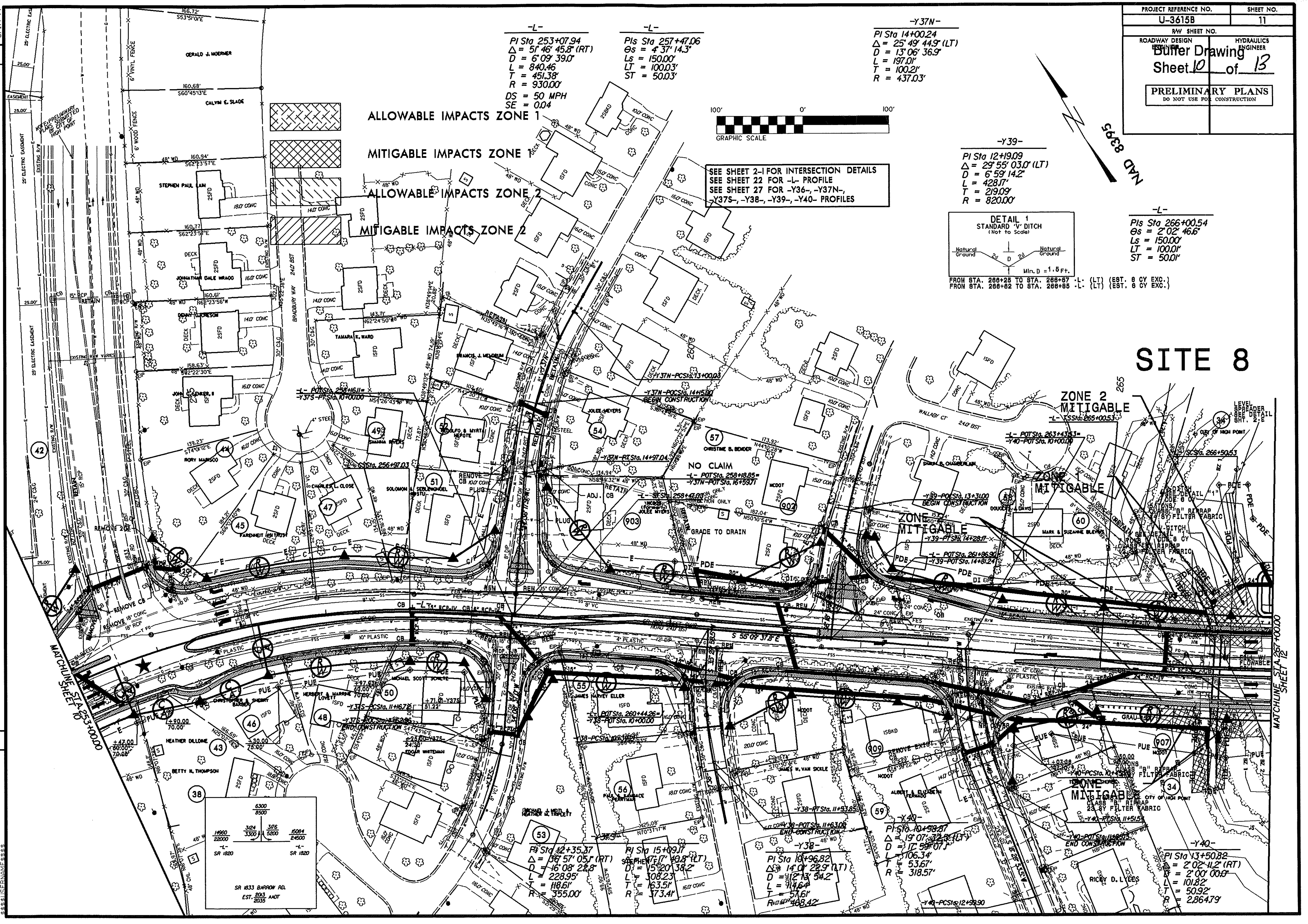
REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. NAME CHANGE ON PARCELS 43, 44, 45, 46, 48, 49, 51, 52, 53, 54, 59 AND 60
3. PDE LINE SHIFT ON PARCEL 58.
4. NAME CHANGE ON PARCELS 902, 903 AND 909 TO NCDOT.
5. 7/27/12 R/W REVISION: REMOVED TEMPORARY CONSTRUCTION EASEMENT AND CLAIM ON PARCEL 57, CHANGED THE NAME ON PARCEL 57. SLK

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Buffer Drawing Sheet 10 of 13

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



ALLOWABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
MITIGABLE IMPACTS ZONE 2
-L-
PI Sta 253+07.94
Δ = 5° 46' 45.8" (RT)
D = 6° 09' 39.0"
L = 840.46
T = 451.38'
R = 930.00'
DS = 50 MPH
SE = 0.04
-L-
PIs Sta 257+47.06
θs = 4° 37' 14.3"
Ls = 150.00'
LT = 100.03'
ST = 50.03'
-Y37N-
PI Sta 14+00.24
Δ = 25° 49' 44.9" (LT)
D = 13° 06' 36.9"
L = 197.01'
T = 100.21'
R = 437.03'
GRAPHIC SCALE
100' 0' 100'
NAD 83/95
SEE SHEET 2-I FOR INTERSECTION DETAILS
SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 27 FOR -Y36-, -Y37N-, -Y37S-, -Y38-, -Y39-, -Y40- PROFILES
-Y39-
PI Sta 12+19.09
Δ = 29° 55' 03.0" (LT)
D = 6° 59' 14.2"
L = 428.17'
T = 219.09'
R = 820.00'
DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground
Min. D = 1.5 Ft.
FROM STA. 266+25 TO STA. 266+87 -L- (LT) (EST. 8 CY EXC.)
FROM STA. 266+62 TO STA. 266+85 -L- (LT) (EST. 8 CY EXC.)
-L-
PIs Sta 266+00.54
θs = 2° 02' 46.6"
Ls = 150.00'
LT = 100.01'
ST = 50.01'
SITE 8
ZONE 2 MITIGABLE
ZONE 1 MITIGABLE
ZONE MITIGABLE
NO CLAIM
MATCHLINE STA 253+00.00 SHEET 10
MATCHLINE STA 267+00.00 SHEET 12
SR 1833 BARROW RD.
EST. 2013 / 2035 AADT
-L- SR 1820
PI Sta 12+35.37
Δ = 36° 57' 05.1" (RT)
D = 16° 08' 22.8"
L = 228.95'
T = 118.61'
R = 355.00'
PI Sta 15+09.17
Δ = 47° 17' 40.8" (LT)
D = 15° 20' 38.2"
L = 308.23'
T = 163.51'
R = 373.41'
-Y38-
PI Sta 10+96.82
Δ = 14° 01' 22.9" (LT)
D = 12° 13' 54.2"
L = 114.64'
T = 57.61'
R = 468.42'
-Y40-
PI Sta 10+98.87
Δ = 19° 07' 32.3" (LT)
D = 17° 59' 07"
L = 106.34'
T = 53.67'
R = 318.57'
-Y40-
PI Sta 13+50.82
Δ = 2° 02' 11.2" (RT)
D = 2° 00' 00.0"
L = 101.82'
T = 50.92'
R = 2,864.79'

REVISIONS

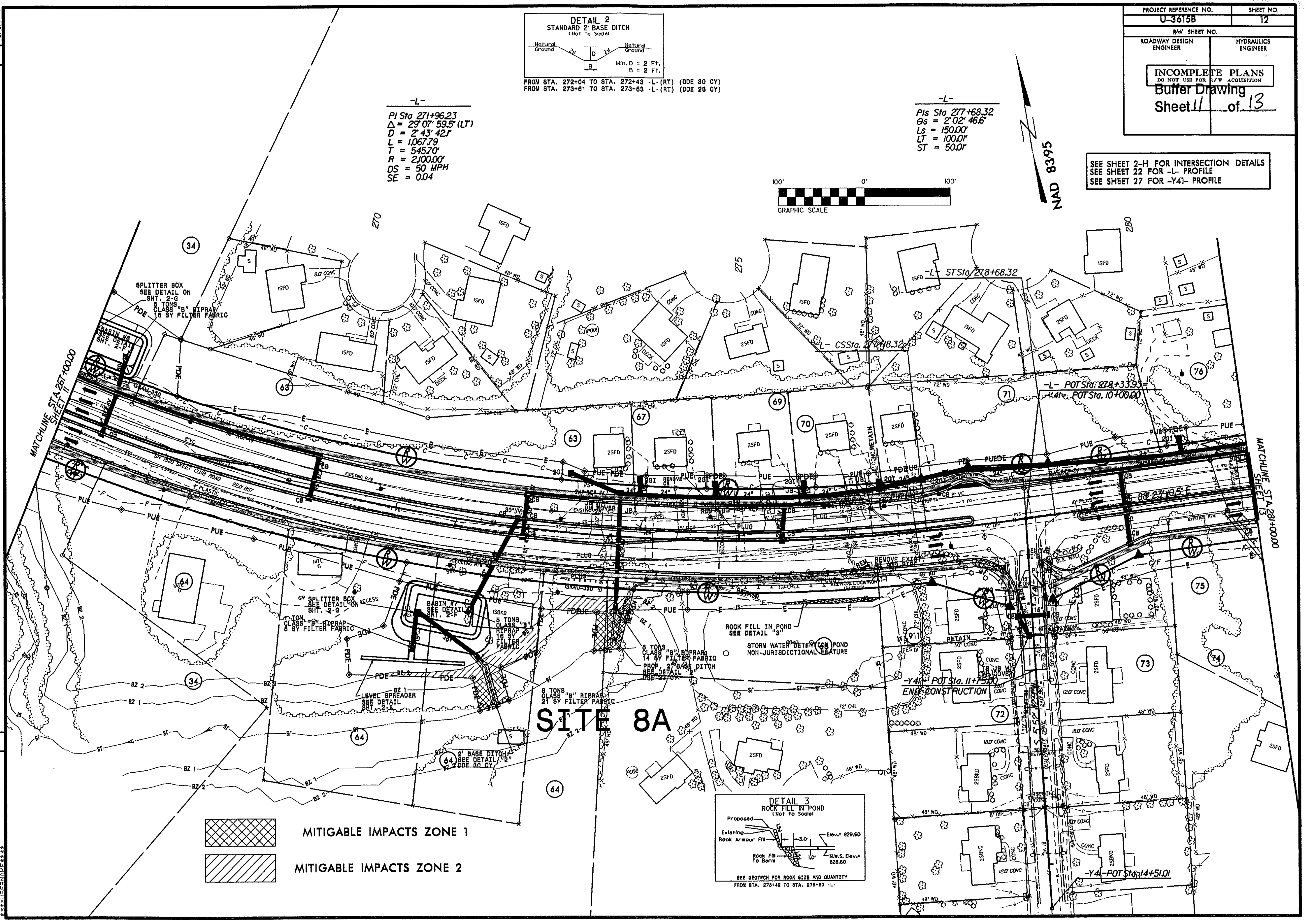
1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. NAME CHANGE ON PARCELS 63, 67, 69, 70, 71, 74 AND 75
3. KEEP EXISTING DRIVE OPEN ON PARCEL 65.
4. NAME CHANGE ON PARCELS 76 AND DRIVE ENTRANCE CHANGE.
5. NAME CHANGE ON PARCEL 911 TO NCDOT.
5/24/12 R/W REVISION: COMBINED PARCELS 064, 065, AND 066 INTO ONE PARCEL AS 064 - SLK

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Buffer Drawing
Sheet 11 of 13



DETAIL 2
STANDARD 2' BASE DITCH
(Not to Scale)
Natural Ground
Min. D = 2 Ft.
B = 2 Ft.
FROM STA. 272+04 TO STA. 272+43 -L-(RT) (DDE 30 CY)
FROM STA. 273+81 TO STA. 273+83 -L-(RT) (DDE 23 CY)
-L-
PI Sta 271+96.23
Δ = 29°07' 59.5" (LT)
D = 2°43' 42.1"
L = 1,067.79
T = 545.70'
R = 2,100.00'
DS = 50 MPH
SE = 0.04
-L-
PIs Sta 277+68.32
θs = 2°02' 46.6"
Ls = 150.00'
LT = 100.01'
ST = 50.01'
NAD 83/95
GRAPHIC SCALE
SEE SHEET 2-H FOR INTERSECTION DETAILS
SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 27 FOR -Y41- PROFILE
MATCHLINE STA 267+00.00 SHEET 11
MATCHLINE STA 281+00.00 SHEET 13
SPLITTER BOX SEE DETAIL ON SHT. 2-G
BASIN #7 SEE DETAIL ON SHT. 2-F
ROCK FILL IN POND SEE DETAIL "3"
STORM WATER DETENTION POND NON-JURISDICTIONAL FEATURE
LEVEL SPREADER SEE DETAIL SHT. 2-E
-Y41- POT Sta. 11+75.00 END CONSTRUCTION
-L- POT Sta. 278+33.95 = -Y41- POT Sta. 10+00.00
-Y41- POT Sta. 14+51.01
SITE 8A
DETAIL 3
ROCK FILL IN POND
(Not to Scale)
SEE GEOTECH FOR ROCK SIZE AND QUANTITY
FROM STA. 275+42 TO STA. 275+80 -L-
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STATION (FROM/TO)	STRUCTURE SIZE / TYPE	ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	170+06/172+39 -L-	2@66" RCP	X			3854	1931						
2	177+99/187+30 -L-(LT)	RELOCATE CHANNEL	X		X	4787	2292		36705	22604			
2A	187+45/196+55-L-(LT)	ROCK FILL IN POND			X				1369	9662			
2B	192+48 -L-(LT)	RIPRAP PAD			X								
3	197+50/205+22-L-(LT)	NAT. STREAM DESIGN			X				52487	31125		45810	29829
3A	198+75/200+23 -L-(RT)	2@54" RCP	X			2216	623						
3B	208+02/209+14 -L-(LT)	48" RCP	X			6967	4638						
3C	202+96-L-(LT)	LEVEL SPREADER			X		64						
4	221+87 /223+01-L-(LT)	2' BASE DITCH(BYPASS)			X	1166	998						
5	230+94/232+87-L-(LT&RT)	30" RCP	X		X	8784	5141		175	877			
SUBTOTALS=:						27774	15687		90736	64268		45810	29829

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 34962.1.1 (U-3615B)

4/9/2013

Rev. May 2006

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STATION (FROM/TO)	STRUCTURE SIZE / TYPE	ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
6	237+28 /239+38-L-	BRIDGE APPROACH	X						3478	1674			
6A	240+18/240+81 -L-(RT)	"V" DITCH (BYPASS)			X	1271	834						
7	11+52/12+86-L-(LT&RT)	42" RCP	X			3933	2411						
8	265+24/266+91-L-(LT&RT)	8'X8' RCBC	X						8902	4658			
8A	271+16/273+92 -L-(RT)	30" & 24" RCP				1226	2536		1385	1493			
SUBTOTALS=:	THIS SHEET					6430	5781		13765	7825			
SUBTOTALS=:	SHEET 1					27774	15687		90736	64268		45810	29829
TOTALS=:						**34204**	**21468**		**104501**	**72093**		**45810**	**29829**

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 34962.1.1 (U-3615B)

4/9/2013

SHEET 13 OF 13

Rev. May 2006

09/08/99

TIP: U-3615B

CONTRACT:

19-SEP-2012 16:53
R:\Roadway\Proj\u3615b_rdy_tsh.dgn
$$$$USERNAME$$$$

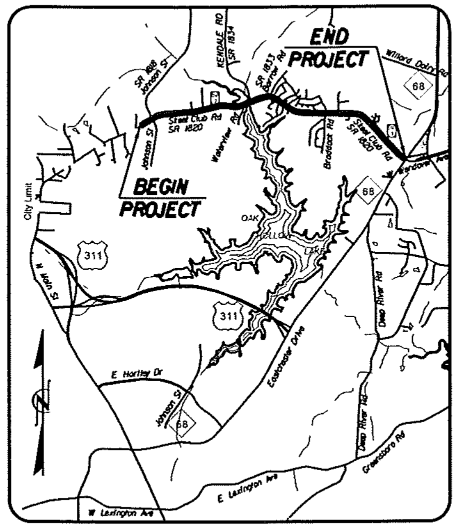
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3615B	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34962.1.1	STP-1820(2)	P.E.
34962.2.3	STP-1820(5)	R/W, UTIL.

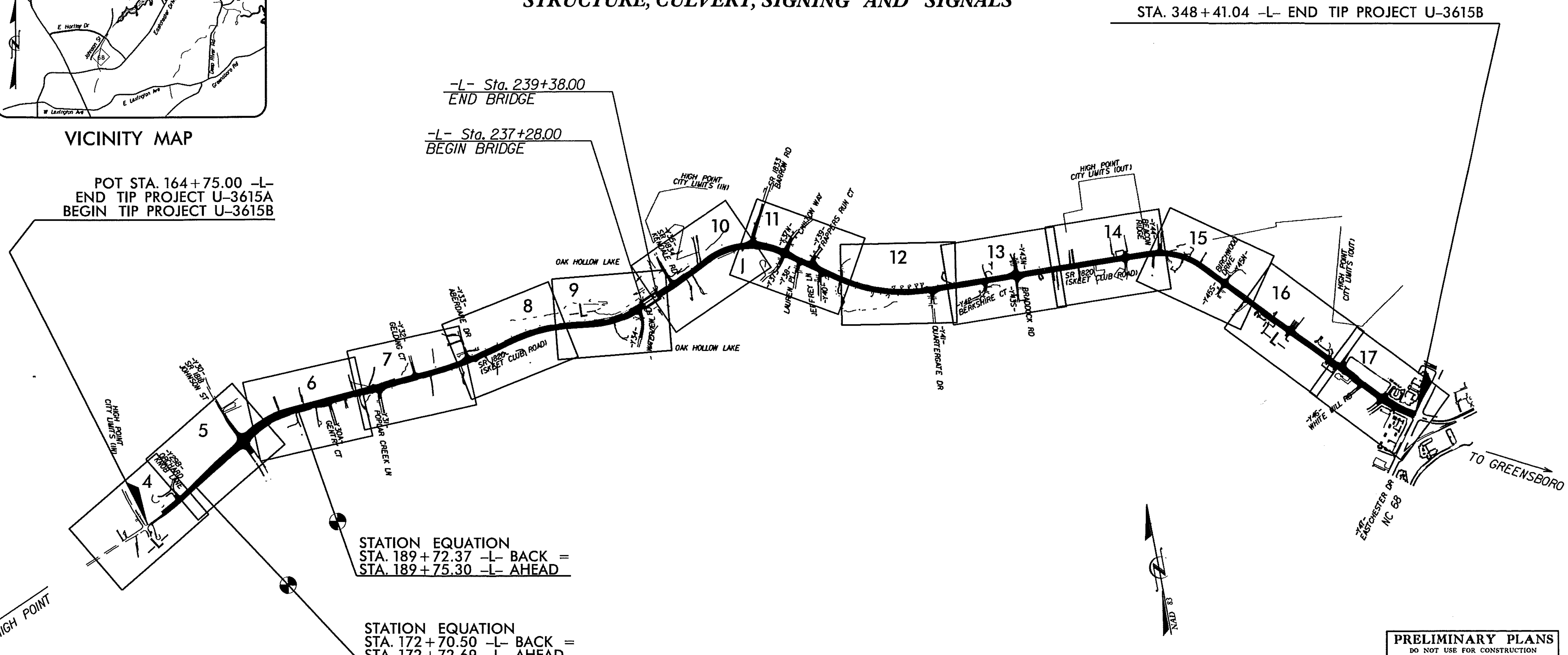
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

***LOCATION:** SR 1820 (SKEET CLUB ROAD) FROM WEST OF SR 1818 (JOHNSON STREET) TO NC 68 (EASTCHESTER DRIVE).*

***TYPE OF WORK:** PAVING, GRADING, DRAINAGE, CURB & GUTTER, STRUCTURE, CULVERT, SIGNING AND SIGNALS*



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CITY OF HIGH POINT

NCDOT CONTACT: B.Doug Taylor, P.E., PROJECT ENGINEER - ROADWAY DESIGN UNIT

"CLEARING ON THIS PROJECT SHALL BE ESTABLISHED BY METHOD III"

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 2008 = 9600–23400
ADT 2030 = 18100–40400
DHV = 10 %
D = 60 %
T = 5 %
V = 50 MPH
TTST 2% DUAL 3%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3615B = 3.438 MI
LENGTH STRUCTURE TIP PROJECT U-3615B = 0.040 MI
TOTAL LENGTH OF TIP PROJECT U-3615B = 3.478 MI

Prepared In the Office of:
WANG ENGINEERING COMPANY, INC.
CARY, N.C.
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
APRIL 27, 2009

LETTING DATE:
OCTOBER 15, 2013

CLIFTON T. REGISTER, PE
PROJECT ENGINEER

SCOTT L. KENNEDY
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	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
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite Marker
- 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 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 WW

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — 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

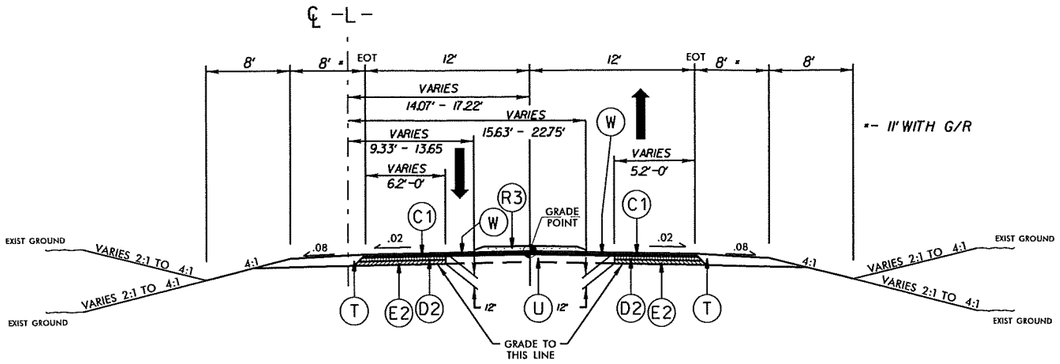
MISCELLANEOUS:

- 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.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

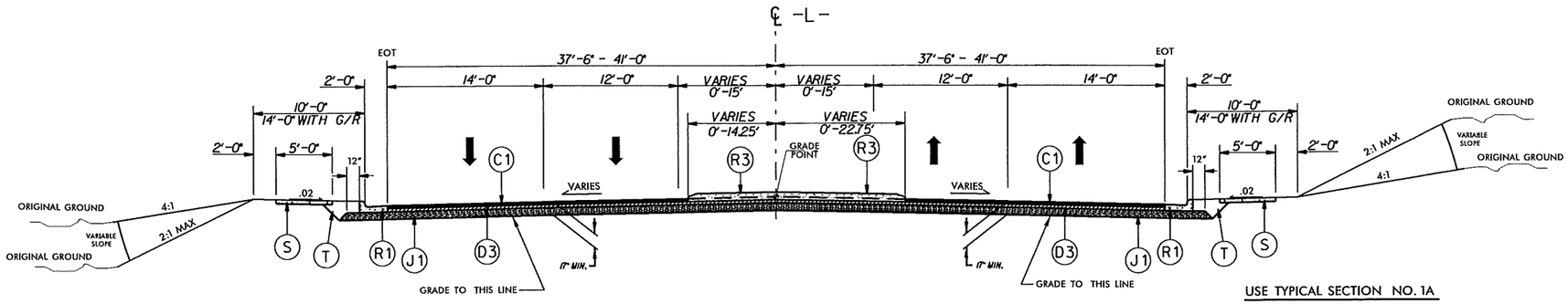
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO.1

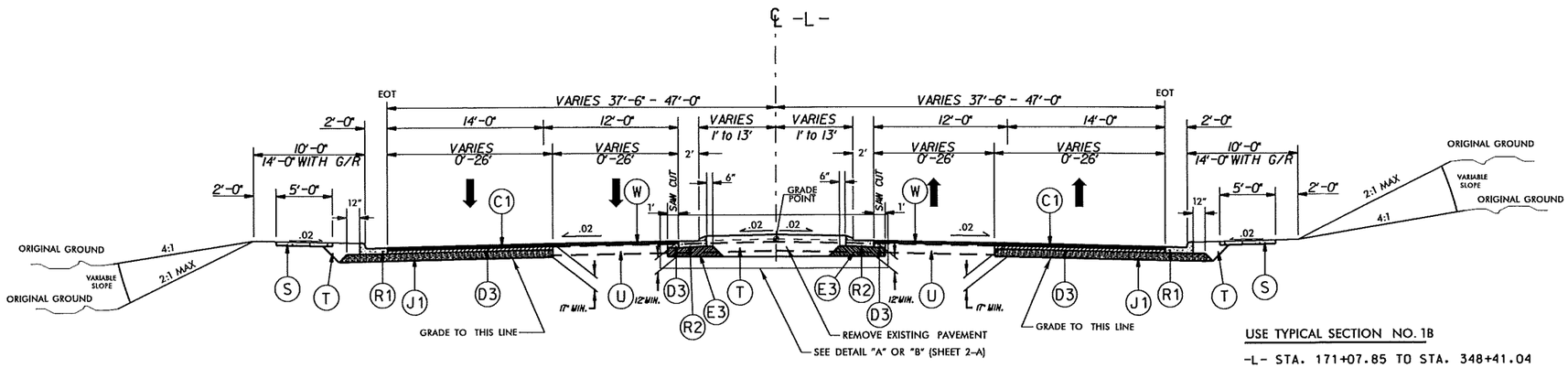
-L- STA. 164+75.00 TO STA. 167+12.23



TYPICAL SECTION NO. 1A

USE TYPICAL SECTION NO. 1A

-L- STA. 167+12.23 TO STA. 171+07.85



TYPICAL SECTION NO. 1B

USE TYPICAL SECTION NO. 1B

-L- STA. 171+07.85 TO STA. 348+41.04

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.25" OR GREATER THAN 1.5" IN DEPTH.
D1	PROP. APPROX. 2.5" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 140 LBS PER SQ. YD. IN EACH OF TWO LAYERS
D2	PROP. APPROX. 3" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS PER SQ. YD.
D3	PROP. APPROX. 4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
D4	PROP. VAR. DEPTH ASPHALT CONC. 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 2.25" OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
E2	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS PER SQ. YD.
E3	PROP. VAR. DEPTH ASPHALT CONC. 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" OR GREATER THAN 5.5" IN DEPTH.
J1	10" AGGREGATE BASE COURSE
R1	2'-6" CONCRETE CURB AND GUTTER
R2	2'-9" CONCRETE CURB AND GUTTER
R3	5" MON. CONCRETE ISLAND (KEY IN)
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE DETAIL)

NOTE: ALL SLOPES 1:1 UNLESS OTHERWISE SPECIFIED
EOT = EDGE OF TRAVEL LANE

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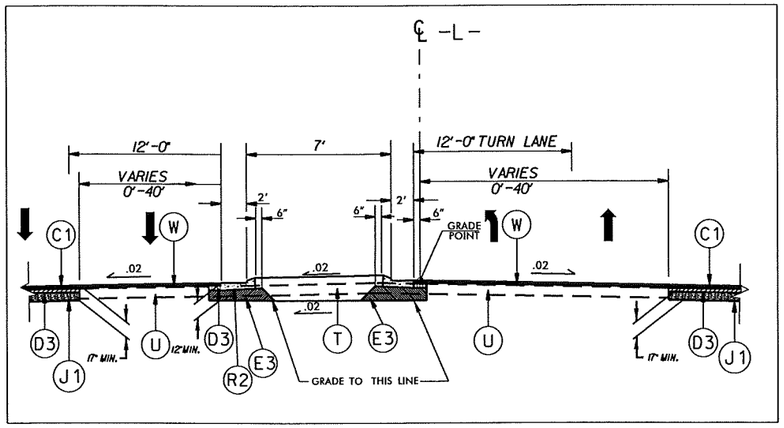
6/2/98

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

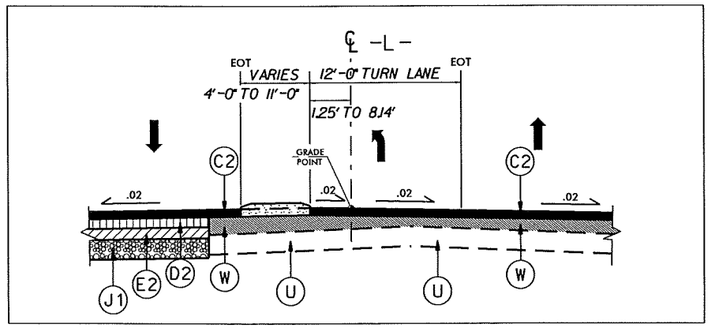
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION DETAIL "A"

USE TYPICAL SECTION DETAIL "A"

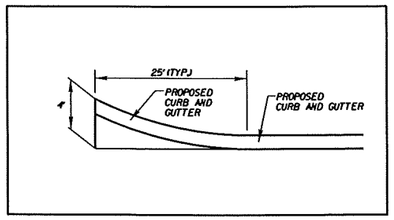
-L- STA. 195+83.37 TO STA. 199+13.03
-L- STA. 202+30.40 TO STA. 205+60.40 (REVERSE)
-L- STA. 208+25.16 TO STA. 211+55.16
-L- STA. 214+88.24 TO STA. 218+18.24 (REVERSE)
-L- STA. 259+58.80 TO STA. 261+73.08
-L- STA. 265+00.96 TO STA. 268+30.96 (REVERSE)
-L- STA. 273+44.04TO STA. 276+74.04
-L- STA. 279+93.87 TO STA. 283+23.86 (REVERSE)
-L- STA. 284+75.24 TO STA. 288+05.26
-L- STA. 291+13.41 TO STA. 294+43.41 (REVERSE)
-L- STA. 299+34.87 TO STA. 303+64.89
-L- STA. 305+50.57 TO STA. 308+80.57 (REVERSE)
-L- STA. 313+39.07 TO STA. 317+69.06
-L- STA. 319+69.93 TO STA. 323+04.77 (REVERSE)



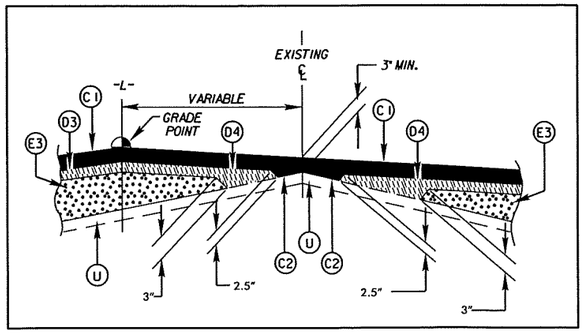
TYPICAL SECTION DETAIL "B"

USE TYPICAL SECTION DETAIL "B"

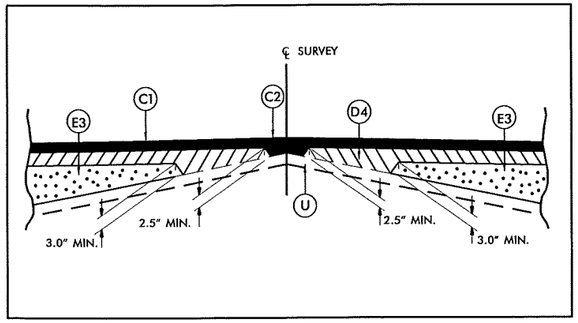
-L- STA. 199+13.30 TO STA. 200+13.37
-L- STA. 201+30.40 TO STA. 202+30.40 (REVERSE)
-L- STA. 211+55.16 TO STA. 212+55.16
-L- STA. 213+88.24 TO STA. 214+88.24 (REVERSE)
-L- STA. 236+73.36 TO STA. 241+81.10
-L- STA. 261+73.08 TO STA. 262+73.08
-L- STA. 264+00.96 TO STA. 265+00.96 (REVERSE)
-L- STA. 276+74.04 TO STA. 277+74.04
-L- STA. 278+93.87 TO STA. 279+93.87 (REVERSE)
-L- STA. 288+05.26 TO STA. 289+05.26
-L- STA. 290+13.41 TO STA. 291+13.41 (REVERSE)
-L- STA. 302+64.89 TO STA. 303+64.89
-L- STA. 304+50.57 TO STA. 305+50.57 (REVERSE)
-L- STA. 316+69.06 TO STA. 317+69.06
-L- STA. 318+69.93 TO STA. 319+69.93 (REVERSE)
-L- STA. 332+15.11 TO STA. 336+45.11
-L- STA. 337+60.19 TO STA. 348+31.91



DETAIL SHOWING FLARE OF CURB AND GUTTER



DETAIL SHOWING METHOD OF WEDGING



DETAIL SHOWING METHOD OF WEDGING
USE ON ALL Y LINES

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.25" OR GREATER THAN 1.5" IN DEPTH.
D1	PROP. APPROX. 2.5" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 140 LBS PER SQ. YD. IN EACH OF TWO LAYERS
D2	PROP. APPROX. 3" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS PER SQ. YD.
D3	PROP. APPROX. 4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
D4	PROP. VAR. DEPTH ASPHALT CONC. 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" OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
E2	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS PER SQ. YD.
E3	PROP. VAR. DEPTH ASPHALT CONC. 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" OR GREATER THAN 5.5" IN DEPTH.
J1	10" AGGREGATE BASE COURSE
R1	2'-6" CONCRETE CURB AND GUTTER
R2	2'-9" CONCRETE CURB AND GUTTER
R3	5" MON. CONCRETE ISLAND (KEY IN)
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE DETAIL)

NOTE: ALL SLOPES 1:1 UNLESS OTHERWISE SPECIFIED
EOT = EDGE OF TRAVEL LANE

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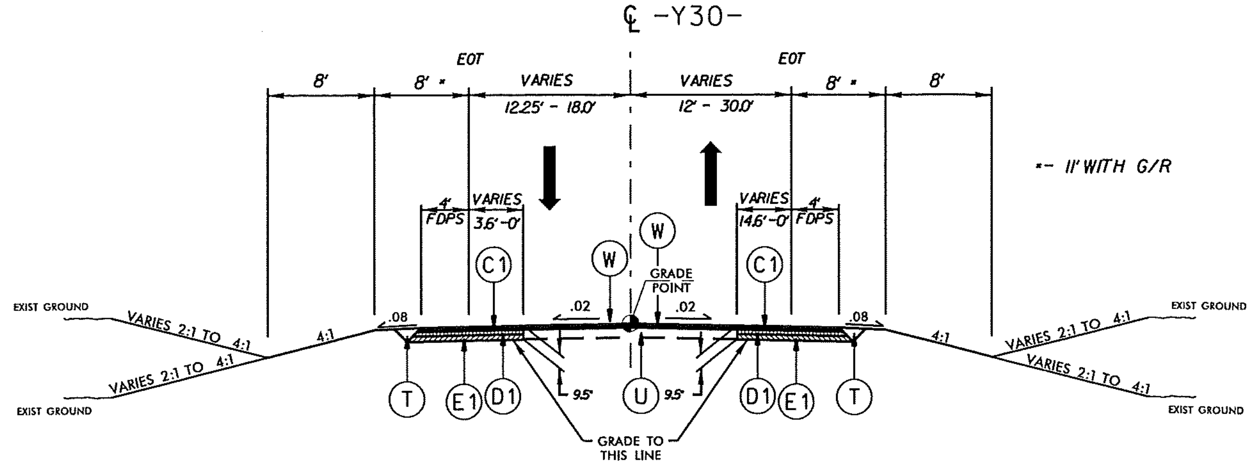
PROJECT REFERENCE NO.	SHEET NO.
U-3615B	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

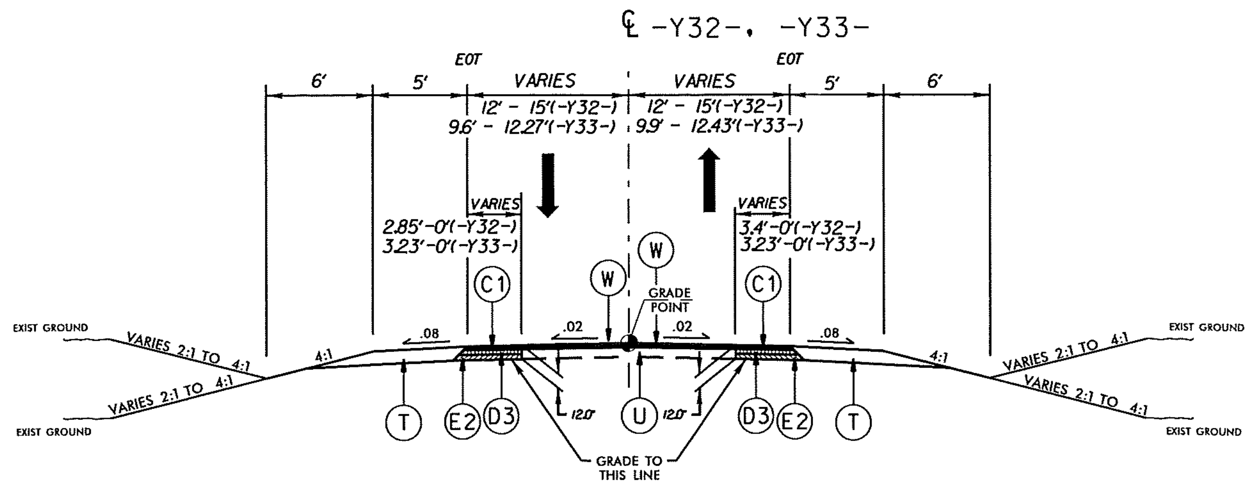
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO.2

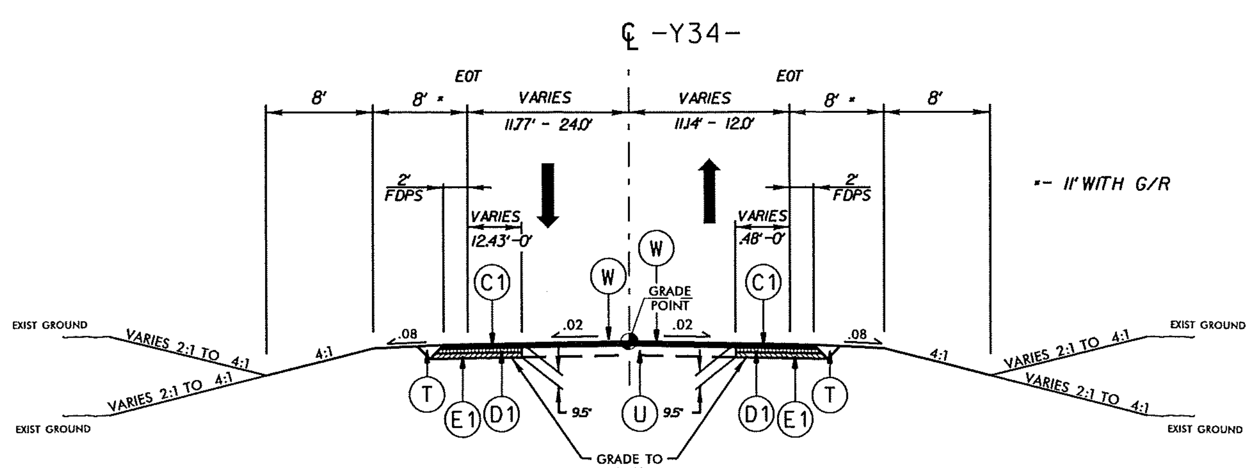
-Y30- STA. 13+25.00 TO STA. 17+73.72



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO.3

-Y32- STA. 10+80.00 TO STA. 12+03.48
-Y33- STA. 12+45.71 TO STA. 12+79.32



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO.4

-Y34- STA. 11+44.53 TO STA. 14+71.04

PAVEMENT SCHEDULE (*)

C1	3" A.C.S.C. TYPE S9.5B
C2	VAR. DEPTH A.C.S.C. TYPE S9.5B
D1	2.5" A.C.I.C. TYPE I19.0B
D2	3" A.C.I.C. TYPE I19.0B
D3	4" A.C.I.C. TYPE I19.0B
D4	VAR. DEPTH A.C.I.C. TYPE I19.0B
E1	4" A.C.B.C. TYPE B25.0B
E2	5" A.C.B.C. TYPE B25.0B
E3	VAR. DEPTH A.C.B.C. TYPE B25.0B
R1	2'-6" CONC. CURB & GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

(*) = REFER TO SHEET No 2 FOR FULL DESCRIPTIONS.

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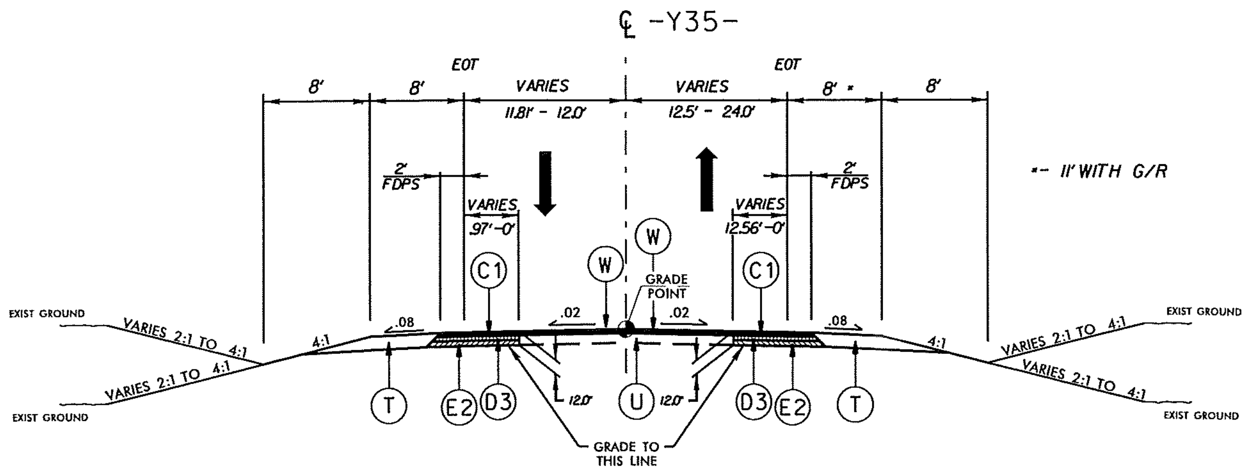
PROJECT REFERENCE NO.	SHEET NO.
U-3615B	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

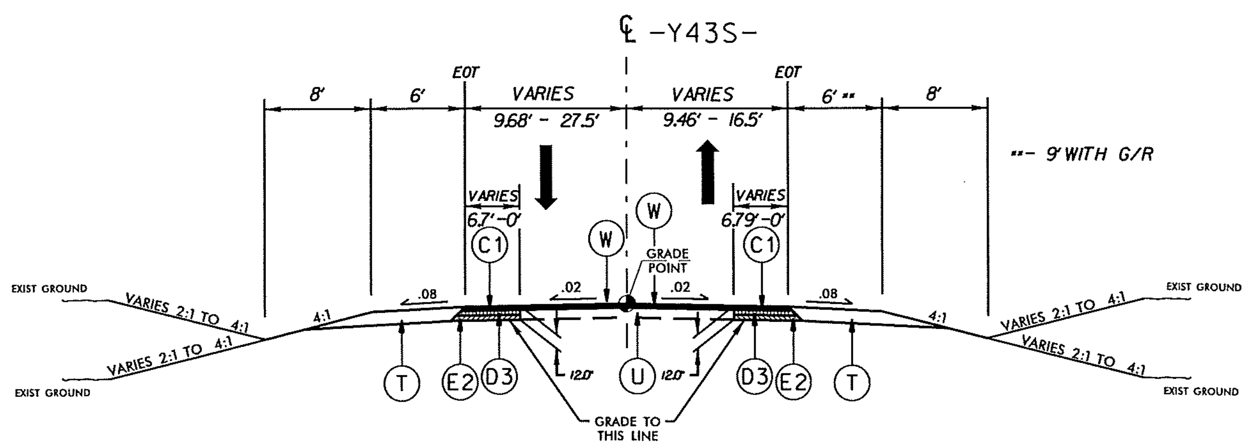
6/2/99



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO.5

-Y35- STA. 10+47.26 TO STA. 13+27.78



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO.6

-Y43S- STA. 11+15.89 TO STA. 13+02.62

PAVEMENT SCHEDULE (*)

C1	3" A.C.S.C. TYPE S9.5B
C2	VAR. DEPTH A.C.S.C. TYPE S9.5B
D1	2.5" A.C.I.C. TYPE I19.0B
D2	3" A.C.I.C. TYPE I19.0B
D3	4" A.C.I.C. TYPE I19.0B
D4	VAR. DEPTH A.C.I.C. TYPE I19.0B
E1	4" A.C.B.C. TYPE B25.0B
E2	5" A.C.B.C. TYPE B25.0B
E3	VAR. DEPTH A.C.B.C. TYPE B25.0B
R1	2'-6" CONC. CURB & GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

(*) = REFER TO SHEET No 2 FOR FULL DESCRIPTIONS.

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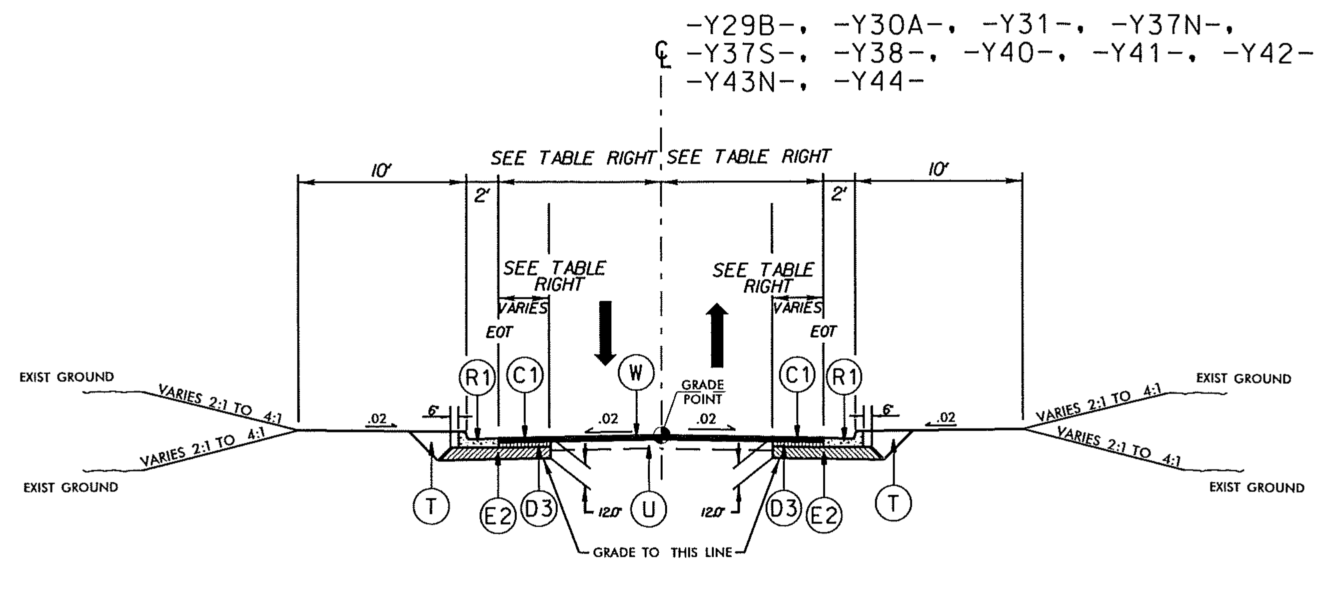
PROJECT REFERENCE NO.	SHEET NO.
U-3615B	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

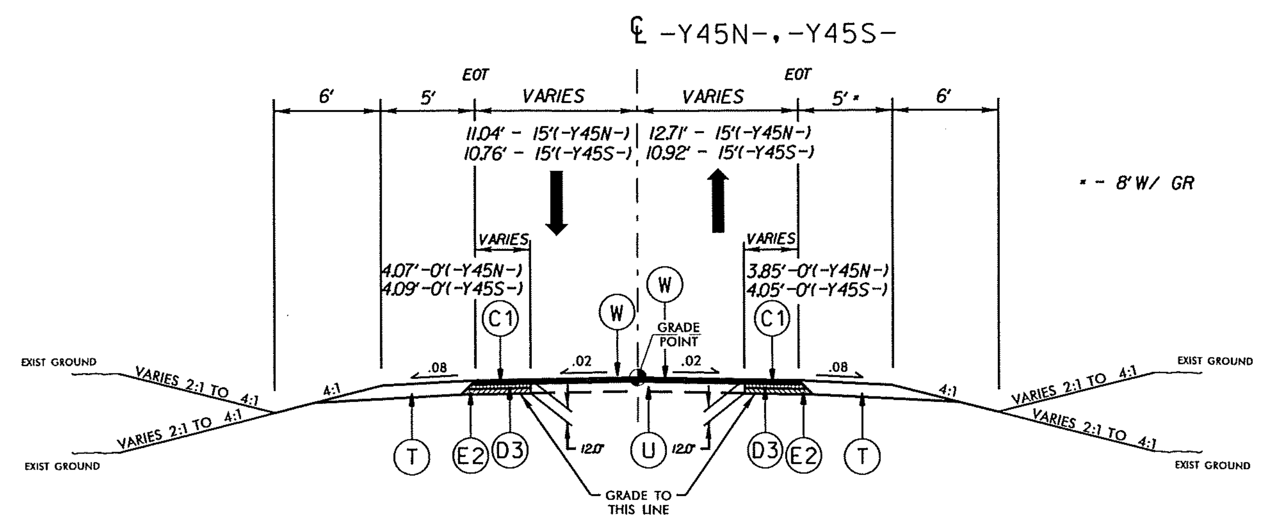


TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO.7

-Y29B- STA. 10+25.00 TO STA. 10+65.11
-Y30A- STA. 10+97.72 TO STA. 11+47.72
-Y31- STA. 11+31.63 TO STA. 11+75.00
-Y37N- STA. 14+50.00 TO STA. 15+64.78
-Y37S- STA. 10+88.26 TO STA. 11+37.96
-Y38- STA. 10+97.36 TO STA. 11+38.00
-Y40- STA. 11+35.15 TO STA. 11+60.15
-Y41- STA. 11+10.79 TO STA. 11+50.00
-Y42- STA. 11+25.45 TO STA. 11+49.45
-Y43N- STA. 10+76.64 TO STA. 11+81.44
-Y44- STA. 12+25.00 TO STA. 12+94.55

LINE	WIDTH LT.	WIDTH RT.	WIDENING LT.	WIDENING RT.
-Y29B-	18'-21.10'	18'-20.67'	0'	0'
-Y30A-	11.07'-15.0'	11.06'-15.0'	0'-3.82'	0'-3.95'
-Y31-	13.12'-15.0'	12.95'-15.0'	0'-1.86'	0'-2.07'
-Y37N-	14.06'-19.96'	12.8'-20.6'	0'	0'
-Y37S-	13.35'-15.00'	14.29'-15.0'	0'-1.19'	0'-1.0'
-Y38-	13.97'-15.0'	13.64'-15.0'	0'-1.24'	0'-1.28'
-Y40-	13.98'-15.0'	13.95'-15.0'	0'-1.06'	0'-1.04'
-Y41-	12.90'-15.0'	12.96'-15.0'	0'-2.09'	0'-2.00'
-Y42-	12.0'-15.0'	12.0'-15.0'	0'-3.10'	0'-3.01'
-Y43N-	14.19'-16.50'	13.64'-16.50'	0'-2.52'	0'-1.93'
-Y44-	15.49'-16.19'	16.48'-17.06'	0'	0'



* - 8' W/ GR

TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO.8

-Y45N- STA. 12+22.82 TO STA. 12+48.87
-Y45S- STA. 10+91.74 TO STA. 11+41.74

PAVEMENT SCHEDULE (*)

C1	3" A.C.S.C. TYPE S9.5B
C2	VAR. DEPTH A.C.S.C. TYPE S9.5B
D1	2.5" A.C.I.C. TYPE I19.0B
D2	3" A.C.I.C. TYPE I19.0B
D3	4" A.C.I.C. TYPE I19.0B
D4	VAR. DEPTH A.C.I.C. TYPE I19.0B
E1	4" A.C.B.C. TYPE B25.0B
E2	5" A.C.B.C. TYPE B25.0B
E3	VAR. DEPTH A.C.B.C. TYPE B25.0B
R1	2'-6" CONC. CURB & GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

(*) = REFER TO SHEET No 2 FOR FULL DESCRIPTIONS.

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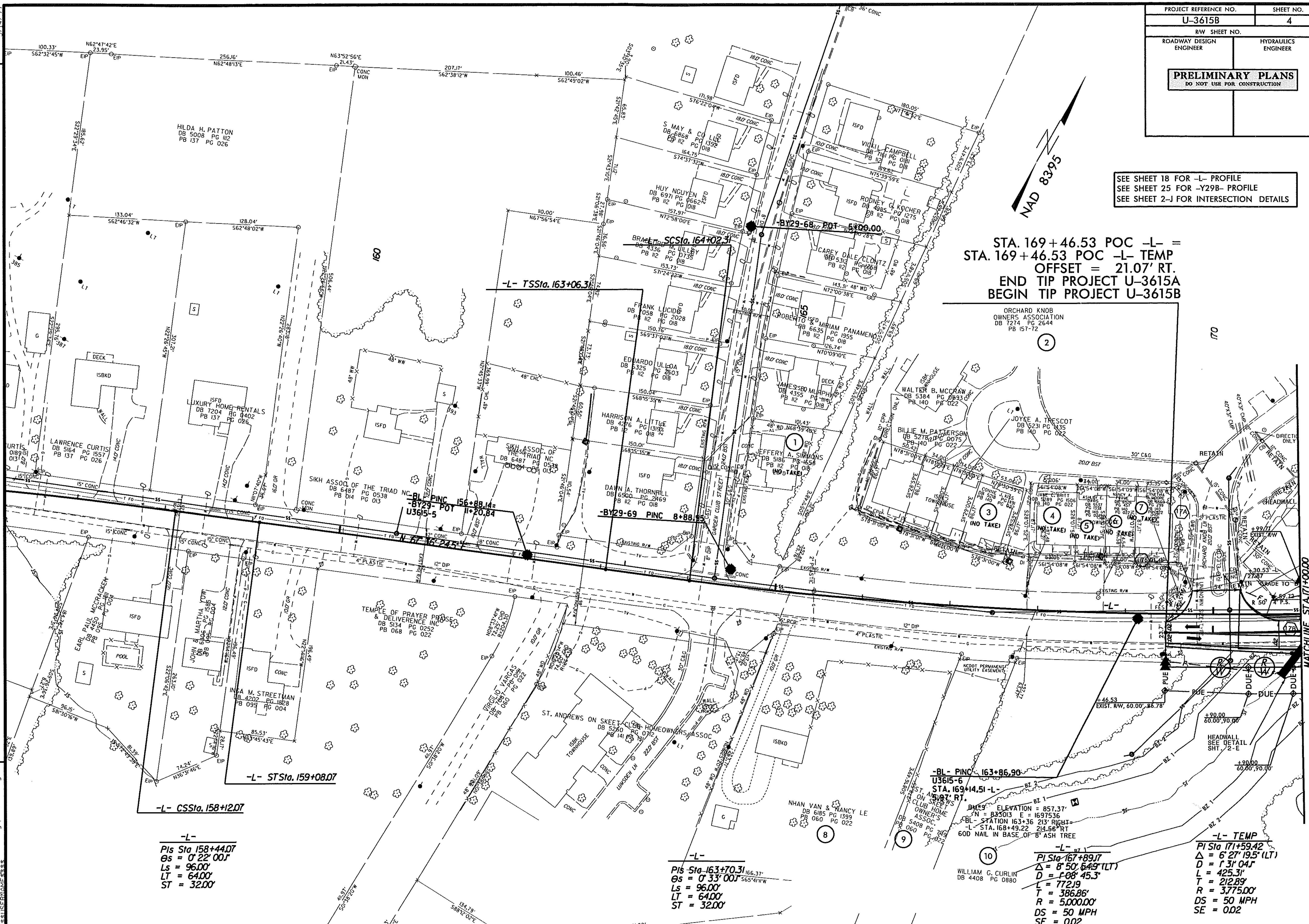
REVISIONS

9/29/09 R/W REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
2/29/12 R/W REVISION: REMOVED RIGHT OF WAY AND EASEMENTS FROM PARCELS 3 - 8; REMOVED PERMANENT UTILITY EASEMENT & PERMANENT DRAINAGE EASEMENT FROM PARCEL 10 - SLK
5/14/12 R/W REVISION: NAME CHANGE TO ORCHARD KNOB OWNERS ASSOCIATION ON PARCEL 2 - SLK



PROJECT REFERENCE NO. U-3615B
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 25 FOR -Y29B- PROFILE
SEE SHEET 2-J FOR INTERSECTION DETAILS
NAD 83/95
STA. 169+46.53 POC -L- =
STA. 169+46.53 POC -L- TEMP
OFFSET = 21.07' RT.
END TIP PROJECT U-3615A
BEGIN TIP PROJECT U-3615B
ORCHARD KNOB OWNERS ASSOCIATION
DB 7274 PG 2644
PB 157-72
HILDA H. PATTON
DB 5008 PG 1112
PB 137 PG 026
LUXURY HOME RENTALS
DB 7204 PG 0402
PB 137 PG 086
LAWRENCE CURTIS
DB 5164 PG 1557
PB 137 PG 026
SIKH ASSOC. OF THE TRIAD NC
DB 6487 PG 0538
PB 014 PG 013
TEMPLE OF PRAYER PRAISE & DELIVERENCE INC
DB 5134 PG 0252
PB 068 PG 022
EARL PAUL MCCRACKEN
JOHN & MARTHA YOW
INGA M. STREETMAN
DB 4202 PG 1828
PB 095 PG 004
VIRGILIO VARGAS
ST. ANDREWS ON SKEET CLUB HOMEOWNERS ASSOC
NHAN VAN & NANCY LE
DB 6185 PG 1399
PB 060 PG 022
WILLIAM G. CURLIN
DB 4408 PG 0880
-L- TSSta. 163+06.31
-L- SCSta. 164+02.31
-L- STSta. 159+08.07
-L- CSSta. 158+12.07
-BL- PINC 156+88.14=
-BY29- POT 11+20.84
U3615-5
-BY29-69 PINC 8+88.85
-BY29-68 POT 5+00.00
-BL- PINC 163+86.90
U3615-6
STA. 169+14.51 -L-
5.87' RT.
BM#3 ELEVATION = 857.37'
N = 833013 E = 1697536
-BL- STATION 163+36 213' RIGHT
-L- STA. 168+49.22 214.56' RT
60D NAIL IN BASE OF 8" ASH TREE
HEADWALL SEE DETAIL SHT. 2-E
MATCHLINE STA. 171+00.00 SHEET 5
-L-
PIs Sta 158+44.07
θs = 0° 22' 00.0"
Ls = 96.00'
LT = 64.00'
ST = 32.00'
-L-
PIs Sta 163+70.31
θs = 0° 33' 00.0"
Ls = 96.00'
LT = 64.00'
ST = 32.00'
-L-
PI Sta 167+89.17
Δ = 8° 50' 54.9" (LT)
D = 1° 08' 45.3"
L = 772.19
T = 386.86'
R = 5,000.00'
DS = 50 MPH
SE = 0.02
-L- TEMP
PI Sta 171+59.42
Δ = 6° 27' 19.5" (LT)
D = 1° 31' 04.1"
L = 425.31'
T = 212.89'
R = 3,775.00'
DS = 50 MPH
SE = 0.02

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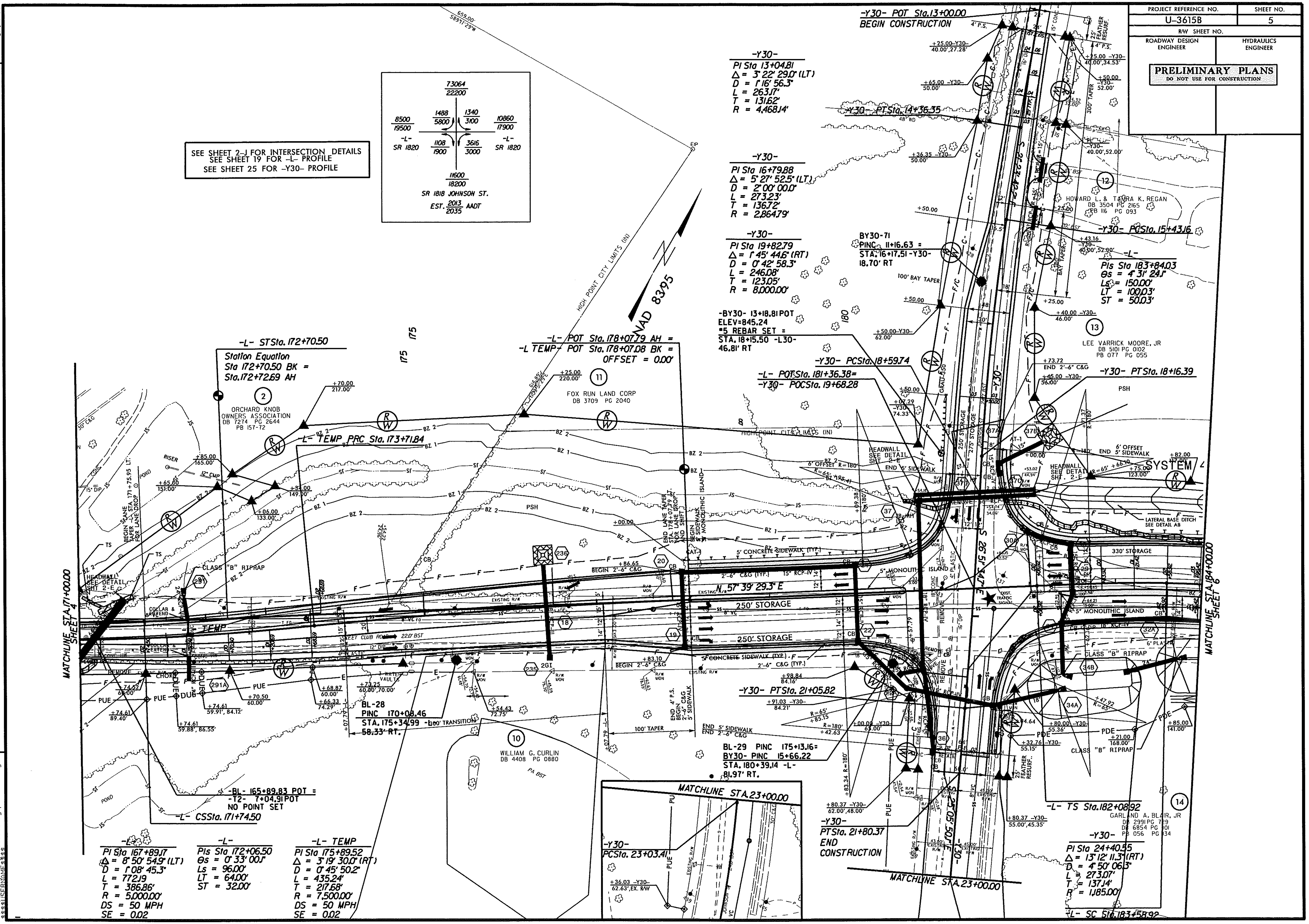
REVISIONS

RW REVISION: 9/2/12 REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.

RW REVISION: 2/29/12: CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY ON PARCEL 2 AND 11; REMOVED PERMANENT DRAINAGE EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT AND ADDED DRAINAGE UTILITY EASEMENT ON PARCEL 10; REVISED TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 12; REMOVED PERMANENT UTILITY EASEMENT, PERMANENT DRAINAGE EASEMENT AND REVISED RIGHT OF WAY ON PARCEL 13. - SLK

5/4/12 RW REVISION: NAME CHANGE TO ORCHARD KNOB OWNERS ASSOCIATION ON PARCEL 2 - SLK

8/17/99



PROJECT REFERENCE NO. U-3615B
SHEET NO. 5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SEE SHEET 2-J FOR INTERSECTION DETAILS
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 25 FOR -Y30- PROFILE
SR 1818 JOHNSON ST.
EST. 2013/2035 AADT
-Y30- POT Sta. 13+00.00
BEGIN CONSTRUCTION
-Y30- PI Sta 13+04.81
-Y30- PT Sta. 14+36.35
-Y30- PI Sta 16+79.88
-Y30- PI Sta 19+82.79
HOWARD L. & TANRA K. REGAN
LEE VARRICK MOORE, JR
FOX RUN LAND CORP
ORCHARD KNOB OWNERS ASSOCIATION
WILLIAM G. CURLIN
GARLAND A. BLAIR, JR
-L- ST Sta. 172+70.50
Station Equation
Sta 172+70.50 BK = Sta. 172+72.69 AH
-L- POT Sta. 178+07.79 AH = -L TEMP- POT Sta. 178+07.08 BK = OFFSET = 0.00'
-L- TEMP PRC Sta. 173+71.84
-L- POT Sta. 181+36.38 = -Y30- POC Sta. 19+68.28
-Y30- PC Sta. 18+59.74
-Y30- PT Sta. 18+16.39
-Y30- PT Sta. 21+05.82
-Y30- PT Sta. 21+80.37
END CONSTRUCTION
-L- TS Sta. 182+08.92
-L- SC Sta. 183+58.92
-Y30- PC Sta. 23+03.41
MATCHLINE STA. 23+00.00
MATCHLINE STA. 171+00.00 SHEET 4
MATCHLINE STA. 184+00.00 SHEET 6
250' STORAGE
330' STORAGE
N 57° 39' 29.3" E
NAD 83/95
HIGH POINT CITY LIMITS (IN)
-L- CS Sta. 171+74.50
-BL- 165+89.83 POT = -T2- 7+04.91 POT
NO POINT SET
BL-28 PINC 170+08.46
BL-29 PINC 175+13.16 = BY30- PINC 15+66.22
-L- PI Sta 167+89.17
-L- PIs Sta 172+06.50
-L- TEMP PI Sta 175+89.52
-Y30- PI Sta 24+40.55
-L- PIs Sta 183+84.03

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	6

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

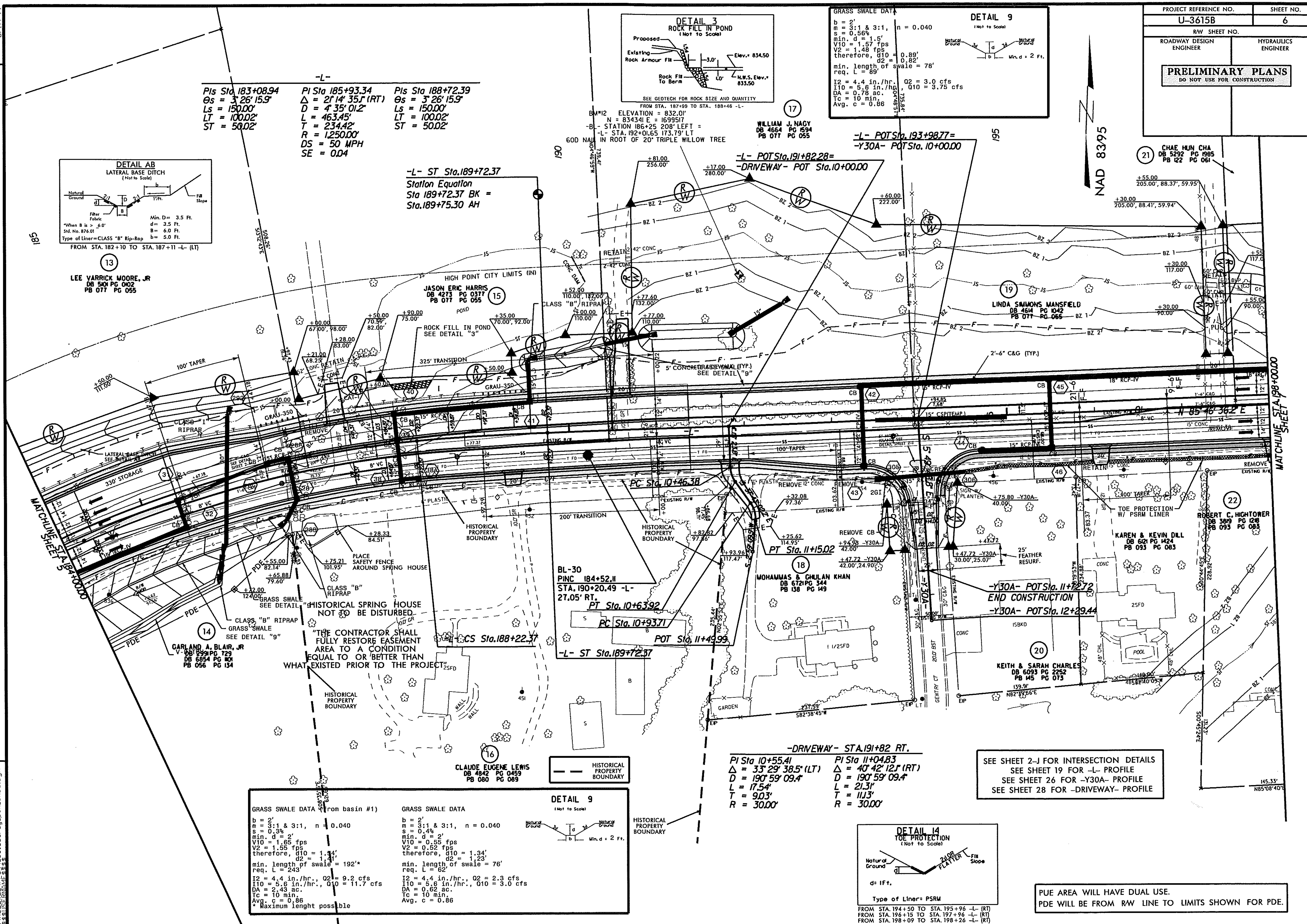
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

2. R/W LINE SHIFT PER HYDRO ON PARCELS 13, 15, 17, 19 AND 21.
3. NAME CHANGE ON PARCELS 14, 18, AND 20.
4. DELETION OF PARCEL 22.
5. REVISE FILL SLOPE TO 3:1 ON PARCEL 22 TO ELIMINATE EASEMENT.

9/29/09 R/W REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
2/29/12 R/W REVISION: REMOVED PERMANENT DRAINAGE EASEMENT AND REVISED RIGHT OF WAY ON PARCEL 13; REMOVED PERMANENT DRAINAGE EASEMENT AND ADDED RIGHT OF WAY AND TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 15; CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY AND REMOVED PERMANENT UTILITY EASEMENT ON PARCEL 17, 19, AND 21; - SLK

8/17/99



DETAIL 9

GRASS SWALE DATA (from basin #1)	GRASS SWALE DATA
b = 2'	b = 2'
m = 3:1 & 3:1, n = 0.040	m = 3:1 & 3:1, n = 0.040
s = 0.3%	s = 0.4%
min. d = 2'	min. d = 2'
V10 = 1.65 fps	V10 = 0.55 fps
V2 = 1.55 fps	V2 = 0.52 fps
therefore, d10 = 1.34', d2 = 1.41'	therefore, d10 = 1.34', d2 = 1.23'
min. length of swale = 192'*	min. length of swale = 76'
req. L = 243'	req. L = 62'
I2 = 4.4 in./hr., Q2 = 9.2 cfs	I2 = 4.4 in./hr., Q2 = 2.3 cfs
I10 = 5.6 in./hr., Q10 = 11.7 cfs	I10 = 5.6 in./hr., Q10 = 3.0 cfs
DA = 2.43 ac.	DA = 0.62 ac.
Tc = 10 min.	Tc = 10 min.
Avg. c = 0.86	Avg. c = 0.86

* Maximum lenght possible

DETAIL 9 (GRASS SWALE DATA)

b = 2'
m = 3:1 & 3:1, n = 0.040
s = 0.56%
min. d = 1.5'
V10 = 1.57 fps
V2 = 1.48 fps
therefore, d10 = 0.89', d2 = 0.82'
min. length of swale = 78'
req. L = 89'
I2 = 4.4 in./hr., Q2 = 3.0 cfs
I10 = 5.6 in./hr., Q10 = 3.75 cfs
DA = 0.78 ac.
Tc = 10 min.
Avg. c = 0.86

DETAIL 14
TOE PROTECTION (Not to Scale)

d= 1 Ft.
Type of Liner= PSRM

FROM STA. 194+50 TO STA. 195+96 -L- (RT)
FROM STA. 196+15 TO STA. 197+96 -L- (RT)
FROM STA. 198+09 TO STA. 198+26 -L- (RT)

SEE SHEET 2-J FOR INTERSECTION DETAILS
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 26 FOR -Y30A- PROFILE
SEE SHEET 28 FOR -DRIVEWAY- PROFILE

PUE AREA WILL HAVE DUAL USE.
PDE WILL BE FROM R/W LINE TO LIMITS SHOWN FOR PDE.

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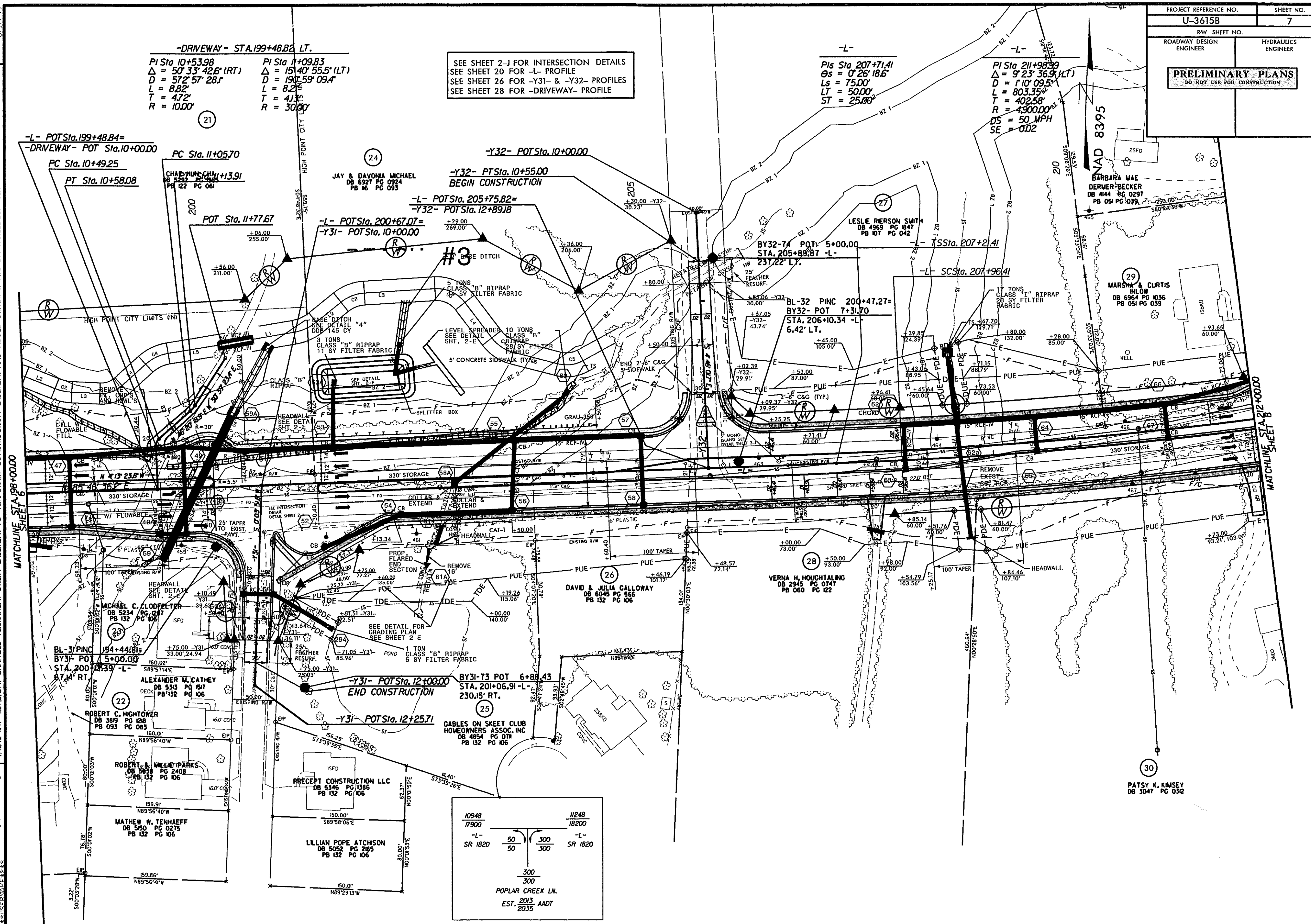
PROJECT REFERENCE NO.	SHEET NO.
U-3615B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SEE SHEET 2-J FOR INTERSECTION DETAILS
SEE SHEET 20 FOR -L- PROFILE
SEE SHEET 26 FOR -Y31- & -Y32- PROFILES
SEE SHEET 28 FOR -DRIVEWAY- PROFILE
-DRIVEWAY- STA.199+48.82 LT.
PI Sta 10+53.98
Δ = 50° 33' 42.6" (RT)
D = 572° 57' 28.1"
L = 8.82'
T = 4.72'
R = 10.00'
PI Sta 11+09.83
Δ = 15° 40' 55.5" (LT)
D = 190° 59' 09.4"
L = 8.21'
T = 4.13'
R = 30.00'
-L-
PIs Sta 207+71.41
θs = 0° 26' 18.6"
Ls = 75.00'
LT = 50.00'
ST = 25.00'
-L-
PI Sta 211+98.99
Δ = 9° 23' 36.9" (LT)
D = 1° 10' 09.5"
L = 803.35'
T = 402.58'
R = 4,900.00'
DS = 50 MPH
SE = 0.02
NAD 83/95
-L- POT Sta. 199+48.84 = -DRIVEWAY- POT Sta. 10+00.00
PC Sta. 10+49.25
PT Sta. 10+58.08
PC Sta. 11+05.70
POT Sta. 11+77.67
-Y32- POT Sta. 10+00.00
-Y32- PT Sta. 10+55.00
BEGIN CONSTRUCTION
-L- POT Sta. 205+75.82 = -Y32- POT Sta. 12+89.18
-L- POT Sta. 200+67.07 = -Y31- POT Sta. 10+00.00
BY32-74 POT 5+00.00
STA. 205+89.87 -L-
237.22' LT.
-L- TS Sta. 207+21.41
-L- SC Sta. 207+96.41
BL-32 PINC 200+47.27 =
BY32- POT 7+31.70
STA. 206+10.34 -L-
6.42' LT.
BL-31 PINC 194+44.81 =
BY31- POT 5+00.00
STA. 200+12.39 -L-
67.14' RT.
-Y31- POT Sta. 12+00.00
END CONSTRUCTION
-Y31- POT Sta. 12+25.71
BY31-73 POT 6+88.43
STA. 201+06.91 -L-
230.15' RT.
MATCHLINE STA. 198+00.00 SHEET 6
MATCHLINE STA. 212+00.00 SHEET 8
HIGH POINT CITY LIMITS (IN)
330' STORAGE
JAY & DAVONNA MICHAEL
DB 6927 PG 0924
PB 86 PG 093
LESLIE RIERSON SMITH
DB 4969 PG 1847
PB 107 PG 042
BARBARA MAE DERMER-BECKER
DB 4144 PG 0297
PB 051 PG 039
MARSHA & CURTIS INLOW
DB 6964 PG 1036
PB 051 PG 039
DAVID & JULIA GALLOWAY
DB 6045 PG 566
PB 132 PG 106
VERNA H. HOUGHTALING
DB 2945 PG 0747
PB 060 PG 122
MICHAEL C. CLODFELTER
DB 5234 PG 1287
PB 132 PG 106
ALEXANDER M. CATHEY
DB 5313 PG 1517
PB 132 PG 106
ROBERT C. HIGHTOWER
DB 3819 PG 1218
PB 093 PG 083
ROBERT & MILLIE PARKS
DB 5838 PG 2408
PB 132 PG 106
MATHEW W. TENHAEFF
DB 5150 PG 0275
PB 132 PG 106
PRECEPT CONSTRUCTION LLC
DB 5346 PG 1386
PB 132 PG 106
LILLIAN POPE ATCHISON
DB 5052 PG 2185
PB 132 PG 106
GABLES ON SKEET CLUB HOMEOWNERS ASSOC. INC
DB 4854 PG 0711
PB 132 PG 106
PATSY K. KINSEY
DB 3047 PG 0312
-L- SR 1820
POPLAR CREEK LN.
EST. 2013/2035 AADT

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REVISIONS

2. RW LINE SHIFT PER HYDRO ON PARCEL 21.
3. NAME CHANGE ON PARCELS 24, 26 AND 29.
4. DELETION OF PARCEL 22.
5. REVISE FILL SLOPE TO 3:1 ON PARCEL 22 TO ELIMINATE EASEMENT.

9/29/09 RW REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
2/29/12 RW REVISION: CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY AND REMOVED PERMANENT UTILITY EASEMENT ON PARCELS 21 AND 24; REVISED PERMANENT UTILITY EASEMENT AND ADDED TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 28. - SLK
5/14/12 RW REVISION: CHANGED PERMANENT UTILITY EASEMENT/PERMANENT DRAINAGE EASEMENT OVERLAP TO DRAINAGE UTILITY EASEMENT ON PARCEL 27. - SLK
7/12/12 RW REVISION: CHANGED PERMANENT UTILITY EASEMENT TO TEMPORARY CONSTRUCTION EASEMENT AND ADDED DRIVEWAY PIPE ON PARCEL 28. - SLK

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/2909
2. CHANGED PUE/PDE OVERLAP TO DUE ON PARCEL 32.
3. NAME CHANGE ON PARCELS 29 AND 32.
4. CHANGE PUE TO DUE - CLOSED CLAIM ON PARCEL 33.
5. ADDED 3 CURB CUTS ON PARCEL 32.
6. CHANGE PDE TO DUE ON PARCEL 31. (1-10-12) S.L.K.

-L-
PI Sta 211+98.99
Δ = 9° 23' 36.9" (LT)
D = 1° 10' 09.5"
L = 803.35'
T = 402.58'
R = 4,900.00'
DS = 50 MPH
SE = 0.02

-L-
PIs Sta 216+24.76
Θs = 0° 26' 18.6"
Ls = 75.00'
LT = 50.00'
ST = 25.00'

-L-
PIs Sta 219+87.31
Θs = 2° 13' 56.3"
Ls = 150.00'
LT = 100.01'
ST = 50.01'

-L-
PI Sta 223+29.19
Δ = 17° 14' 38.9" (RT)
D = 2° 58' 35.5"
L = 579.36'
T = 291.89'
R = 1,925.00'
DS = 50 MPH
SE = 0.04

BY33-75 POT 5+00.00 = STA. 10+00.57 -Y33- 12.67' LT.

-Y33- POT Sta. 10+00.00

-Y33- PT Sta. 12+20.71
BEGIN CONSTRUCTION

-L- POC Sta. 213+11.21 = -Y33 POT Sta. 14+07.07

-L- CS Sta. 215+99.76

-L- ST Sta. 216+74.76

BL-33 PINC 207+46.54 = BY33- POT 9+08.88 STA. 213+10.17 -L- 0.65' RT.

BL-34 PINC 217+50.22 STA. 223+02.34 -L- 73.13' LT.

HOWARD ODELL HAYES, JR
DB2499 PG 0012
PB 051 PG 039

BARBARA MAE DERMER-BECKER
DB 4144 PG 029
PB 051 PG 039

MARSHA & CURTIS INLOW
DB 6964 PG 1036
PB 051 PG 039

PATSY K. KIMSEY
DB 3047 PG 0312

MICHAEL E. HARVELL
DB 3427 PG 1075
PB 051 PG 039

MIKE E. FOLTZ
DB 6769 PG 1096
PB 058 PG 038

CITY OF HIGH POINT
DB 2389 PG 0658
PB 71 PG 55

LINDA M. SMITH
C/O BANK OF AMERICA
US TRUST
DB 1713 PG 0145

BM#13 ELEVATION = 839.11'
N = 834222 E = 1701685
-BL- STATION 207+62 19|| RIGHT =
-L- STA. 213+39.31 14|| 64' RT
60D NAIL IN ROOT OF 20" WHITE OAK TREE

2 TONS CLASS "B" RIPRAP 7 SY FILTER FABRIC

10 TONS CLASS "B" RIPRAP 32 SY FILTER FABRIC

3 TONS CLASS "B" RIPRAP 11 SY FILTER FABRIC

8 TONS CLASS "B" RIPRAP 21 SY FILTER FABRIC

5' CONCRETE SIDEWALK (TYP.)

2' BASE DITCH

SLUICE GATE W/ SPLITTER BOX SEE DETAIL SHT. 2-G

LEVEL SPREADER SEE DETAIL SHT. 2-E

Y-DITCH

LATERAL V DITCH

BERM DITCH

HEADWALL

POND

-L- TS Sta. 218+87.30

-L- SC Sta. 220+37.30

SR 1820 SKEET CLUB ROAD

N 75° 30' 22.2" E

MATCHLINE STA. 212+00.00 SHEET 7

MATCHLINE STA. 226+00.00 SHEET 9

SEE SHEET 2-J FOR INTERSECTION DETAILS
SEE SHEET 20 FOR -L- PROFILE
SEE SHEET 26 FOR -Y33- PROFILE

NAD 83'95

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PROJECT REFERENCE NO.	SHEET NO.
U-3615B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

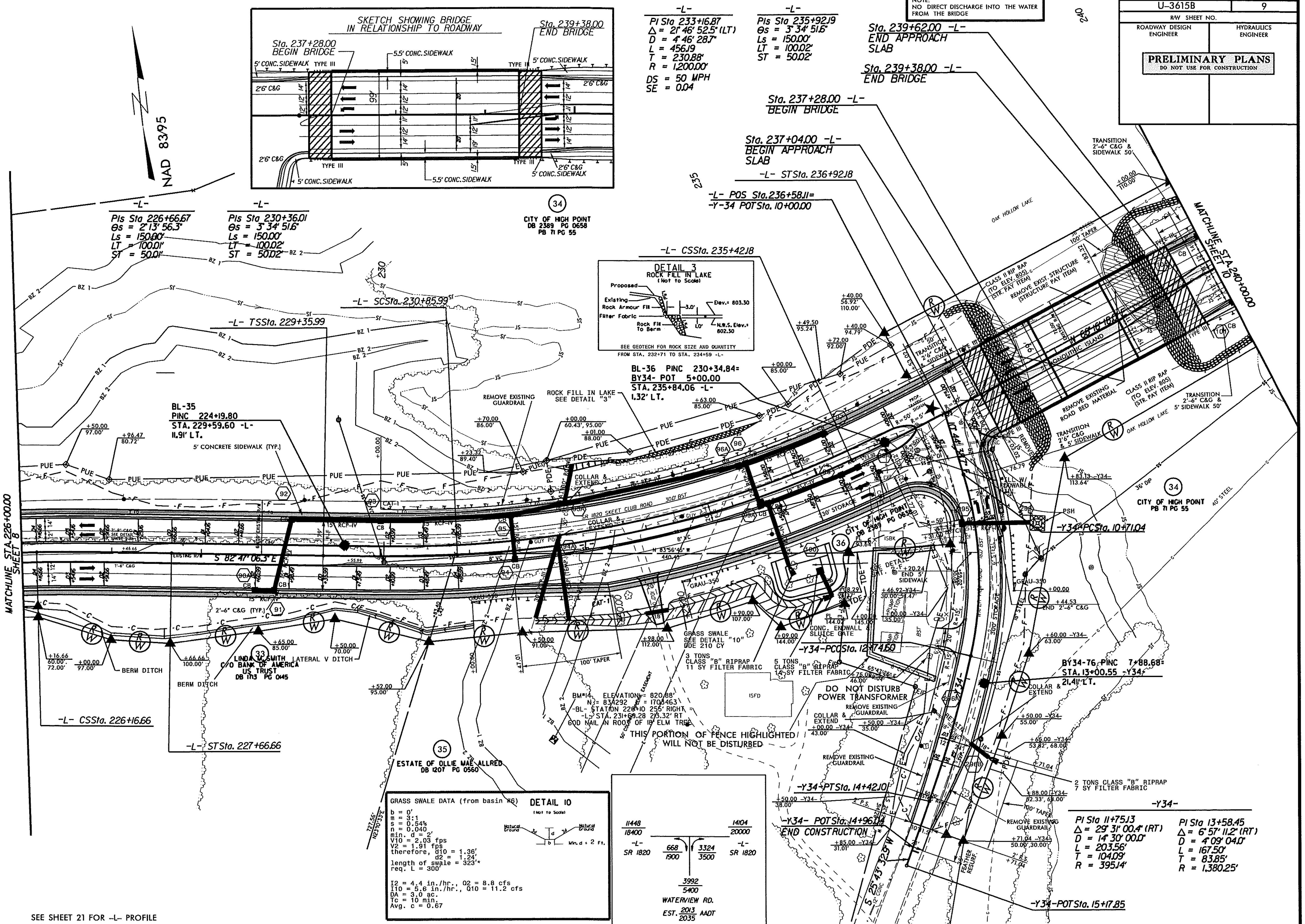
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. NAME CHANGE ON PARCEL 35.
3. REVISED R/W TO PROPERTY LINE, ADDED TDE, ADDED NOTE TO PLANS FOR EXIST. FENCE, ADDED NOTE TO PLANS FOR POWER TRANSFORMER ON PARCEL 36.

5/14/12 R/W REVISION: NAME CHANGE TO ESTATE OF OLLIE MAE ALLRED ON PARCEL 35. - SLK



SKETCH SHOWING BRIDGE IN RELATIONSHIP TO ROADWAY
Sta. 237+28.00 BEGIN BRIDGE
Sta. 239+38.00 END BRIDGE
5' CONC. SIDEWALK
5.5' CONC. SIDEWALK
2'6" C&G
TYPE III
NAD 83/95
NOTE: NO DIRECT DISCHARGE INTO THE WATER FROM THE BRIDGE
-L-
PI Sta 233+16.87
Δ = 2° 46' 52.5" (LT)
D = 4° 46' 28.7"
L = 456.19
T = 230.88'
R = 1,200.00'
DS = 50 MPH
SE = 0.04
-L-
PIs Sta 235+92.19
θs = 3° 34' 51.6"
Ls = 150.00'
LT = 100.02'
ST = 50.02'
Sta. 239+62.00 -L- END APPROACH SLAB
Sta. 239+38.00 -L- END BRIDGE
Sta. 237+28.00 -L- BEGIN BRIDGE
Sta. 237+04.00 -L- BEGIN APPROACH SLAB
-L- STSta. 236+92.18
-L- POS Sta. 236+58.11=
-Y-34 POT Sta. 10+00.00
-L-
PIs Sta 226+66.67
θs = 2° 13' 56.3"
Ls = 150.00'
LT = 100.01'
ST = 50.01'
-L-
PIs Sta 230+36.01
θs = 3° 34' 51.6"
Ls = 150.00'
LT = 100.02'
ST = 50.02'
CITY OF HIGH POINT DB 2389 PG 0658 PB 71 PG 55
-L- CSSta. 235+42.18
DETAIL 3 ROCK FILL IN LAKE (Not to Scale)
SEE GEOTECH FOR ROCK SIZE AND QUANTITY
FROM STA. 232+71 TO STA. 234+59 -L-
-L- SCSta. 230+85.99
-L- TSSta. 229+35.99
BL-36 PINC 230+34.84= BY34- POT 5+00.00 STA. 235+84.06 -L- 1.32' LT.
BL-35 PINC 224+19.80 STA. 229+59.60 -L- 11.91' LT.
REMOVE EXISTING GUARDRAIL
ROCK FILL IN LAKE SEE DETAIL "3"
OAK HOLLOW LAKE
MATCHLINE STA. 240+00.00 SHEET 10
MATCHLINE STA. 226+00.00 SHEET 8
SR 1820 SKEET CLUB ROAD
S 82° 41' 06.3" E
CITY OF HIGH POINT PB 71 PG 55
-Y34- PCSta. 10+71.04
BY34-76 PINC 7+88.68= STA. 13+00.55 -Y34- 21.41' LT.
LINDA V. SMITH C/O BANK OF AMERICA US TRUST DB 1713 PG 0445
BERM DITCH
LATERAL V DITCH
-L- CSSta. 226+16.66
-L- STSta. 227+66.66
ESTATE OF OLLIE MAE ALLRED DB 1207 PG 0560
GRASS SWALE SEE DETAIL "10" DDE 210 CY
3 TONS CLASS "B" RIPRAP 11 SY FILTER FABRIC
5 TONS CLASS "B" RIPRAP 14 SY FILTER FABRIC
-Y34- PCCSta. 12+74.60
DO NOT DISTURB POWER TRANSFORMER
THIS PORTION OF FENCE HIGHLIGHTED WILL NOT BE DISTURBED
BM#14 ELEVATION = 820.88' N = 834292 E = 1703463 -BL- STATION 226+10 25.6' RIGHT -L- STA. 231+69.28 23.32' RT 60D NAIL IN ROOT OF 18" ELM TREE
-Y34- PTSta. 14+42.10
-Y34- POTSta. 14+96.14 END CONSTRUCTION
-Y34- POTSta. 15+17.85
2 TONS CLASS "B" RIPRAP 7 SY FILTER FABRIC
-Y34-
PI Sta 11+75.13
Δ = 29° 31' 00.4" (RT)
D = 14° 30' 00.0"
L = 203.56'
T = 104.09'
R = 395.14'
PI Sta 13+58.45
Δ = 6° 57' 11.2" (RT)
D = 4° 09' 04.0"
L = 167.50'
T = 83.85'
R = 1,380.25'
GRASS SWALE DATA (from basin #6)
b = 0'
m = 3:1
s = 0.54%
n = 0.040
min. d = 2'
V10 = 2.03 fps
V2 = 1.91 fps
therefore, d10 = 1.36'
d2 = 1.24'
length of swale = 323'*
req. L = 300'
I2 = 4.4 in./hr., Q2 = 8.8 cfs
I10 = 5.6 in./hr., Q10 = 11.2 cfs
DA = 3.0 ac.
Tc = 10 min.
Avg. c = 0.67
DETAIL 10 (Not to Scale)
-L- SR 1820
11448 / 18400
14104 / 20000
668 / 1900
3324 / 3500
3992 / 5400
WATERVIEW RD.
EST. 2013 / 2035 AADT

SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 26 FOR -Y34- PROFILE

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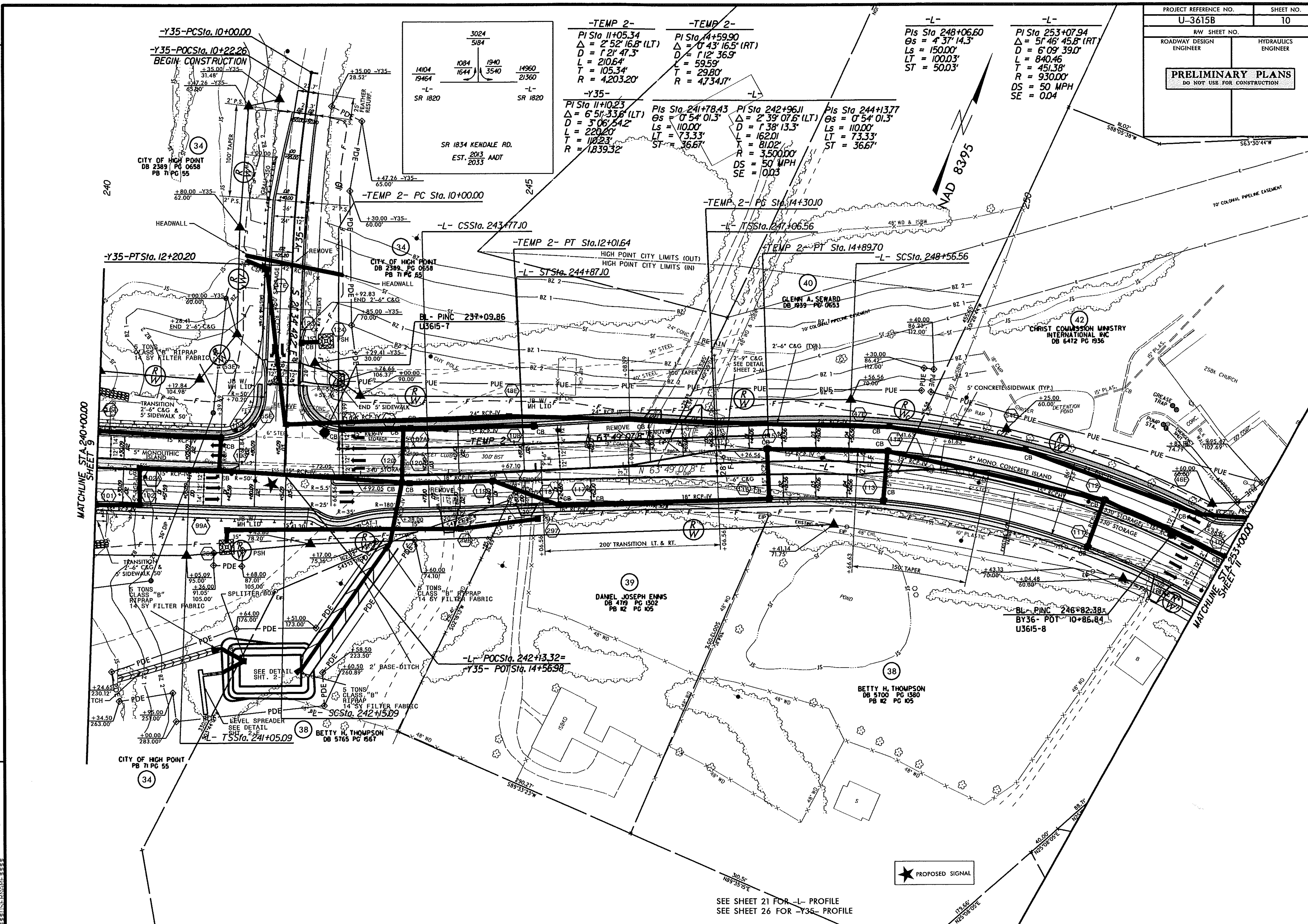
PROJECT REFERENCE NO.	SHEET NO.
U-3615B	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-Y35-PCSta. 10+00.00
-Y35-POCSta. 10+22.26
BEGIN CONSTRUCTION
SR 1834 KENDALE RD.
EST. 2013/2033 AADT
-TEMP 2-
PI Sta 11+05.34
Δ = 2° 52' 16.8" (LT)
D = 1° 21' 47.3"
L = 210.64'
T = 105.34'
R = 4,203.20'
-TEMP 2-
PI Sta 14+59.90
Δ = 0° 43' 16.5" (RT)
D = 1° 12' 36.9"
L = 59.59'
T = 29.80'
R = 4,734.17'
-Y35-
PI Sta 11+10.23
Δ = 6° 51' 33.6" (LT)
D = 3° 06' 54.2"
L = 220.20'
T = 110.23'
R = 1,839.32'
-L-
Pls Sta 241+78.43
θs = 0° 54' 01.3"
Ls = 110.00'
LT = 73.33'
ST = 36.67'
PI Sta 242+96.11
Δ = 2° 39' 07.6" (LT)
D = 1° 38' 13.3"
L = 162.01
R = 3,500.00'
DS = 50 MPH
SE = 0.03
Pls Sta 244+13.77
θs = 0° 54' 01.3"
Ls = 110.00'
LT = 73.33'
ST = 36.67'
-L-
Pls Sta 248+06.60
θs = 4° 37' 14.3"
Ls = 150.00'
LT = 100.03'
ST = 50.03'
-L-
PI Sta 253+07.94
Δ = 51° 46' 45.8" (RT)
D = 6° 09' 39.0"
L = 840.46
T = 451.38'
R = 930.00'
DS = 50 MPH
SE = 0.04
NAD 83/95
CITY OF HIGH POINT
DB 2389 PG 0658
PB 71 PG 55
-Y35-PTSta. 12+20.20
-TEMP 2- PC Sta. 10+00.00
-L- CSSta. 243+77.10
-TEMP 2- PT Sta.12+01.64
-L- STSta. 244+87.10
-TEMP 2- PC Sta. 14+30.10
-L- TSSta. 247+06.56
-TEMP 2- PT Sta. 14+89.70
-L- SCSta. 248+56.56
HIGH POINT CITY LIMITS (OUT)
HIGH POINT CITY LIMITS (IN)
GLENN A. SEWARD
DB 1939 PG 0653
CHRIST COMMISSION MINISTRY
INTERNATIONAL INC
DB 6472 PG 1936
BL- PINC 237+09.86
U3615-7
MATCHLINE STA. 240+00.00 SHEET 9
MATCHLINE STA. 253+00.00 SHEET 11
DANIEL JOSEPH ENNIS
DB 4719 PG 1302
PB 112 PG 105
BETTY H. THOMPSON
DB 5700 PG 1380
PB 112 PG 105
BL- PINC 246+82.38-
BY36- POT 10+86.84
U3615-8
-L- POCSta. 242+13.32=
-Y35- POTSta. 14+56.98
-L- SCSta. 242+15.09
-L- TSSta. 241+05.09
BETTY H. THOMPSON
DB 5765 PG 1567
CITY OF HIGH POINT
PB 71 PG 55
SEE DETAIL SHT. 2-
LEVEL SPREADER SEE DETAIL
PROPOSED SIGNAL
SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 26 FOR -Y35- PROFILE

REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. NAME CHANGE ON PARCEL 38 AND AND COMBINE WITH PARCEL 41.
3. NAME CHANGE ON PARCEL 42.

02/2013 R/W REVISION: THE PDE WAS REVISED AROUND RELOCATED BASIN #5 ON PARCELS 34 AND 38 AND PDE WAS ADDED FROM -L- STA. 241+36.00 TO STA. 241+68.00 RT. ON PARCEL 34. - TEM

8/17/99

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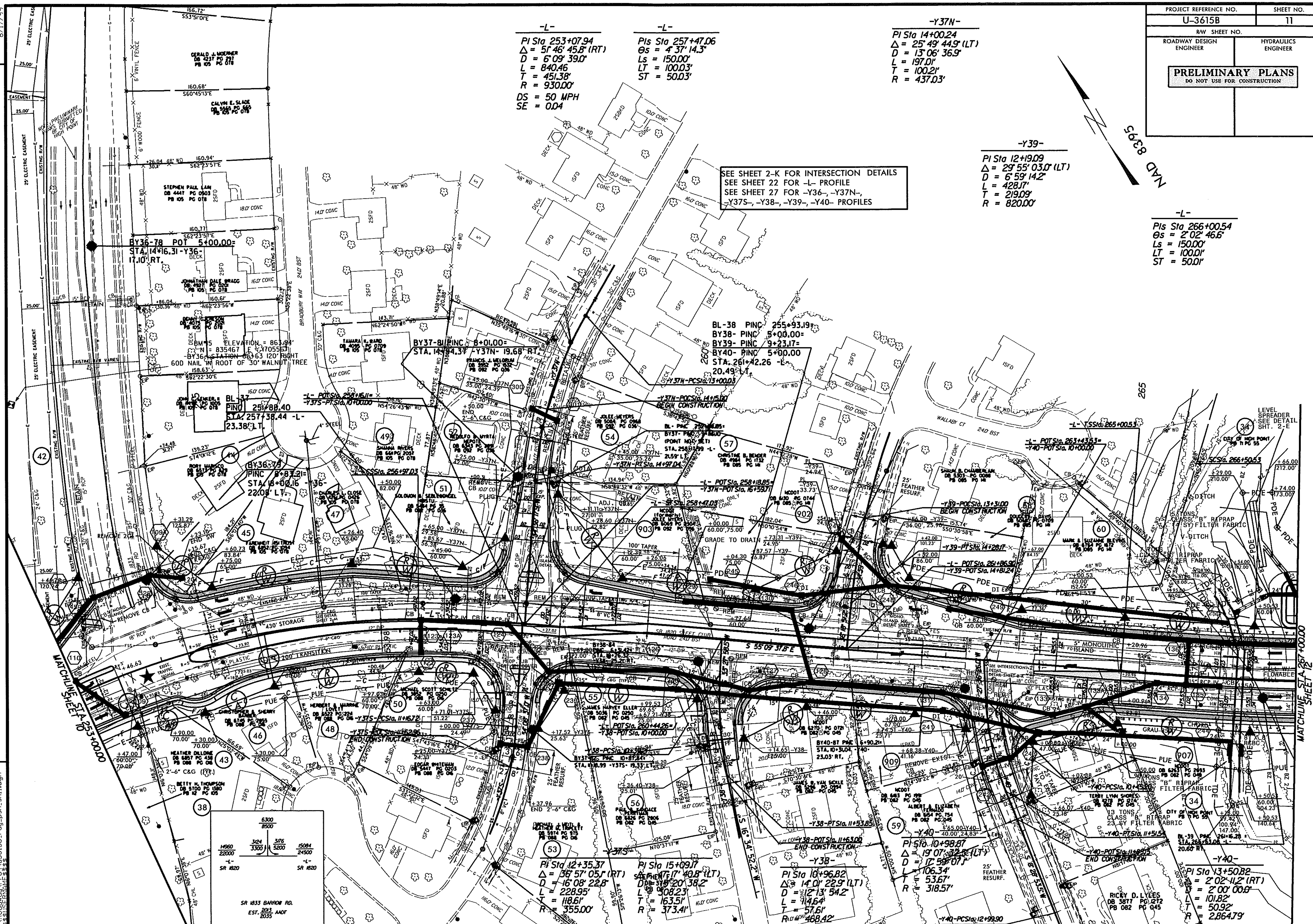
8/17/99

REVISIONS

2. NAME CHANGE ON PARCEL 45 TO FARENHEIT 451.

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. NAME CHANGE ON PARCELS 43, 44, 45, 46, 48, 49, 51, 52, 53, 56, 59, AND 60.
3. PDE LINE SHIFT ON PARCEL 58.
4. NAME CHANGE ON PARCELS 902, 903 AND 909 TO NCDOT.
5. 7/23/12 RW REVISION: REVISED CONSTRUCTION EASEMENT AND LABELS; PROPOSED CATCH BASIN SHIFTED AND NAME CHANGE ON PARCEL 57. SLK

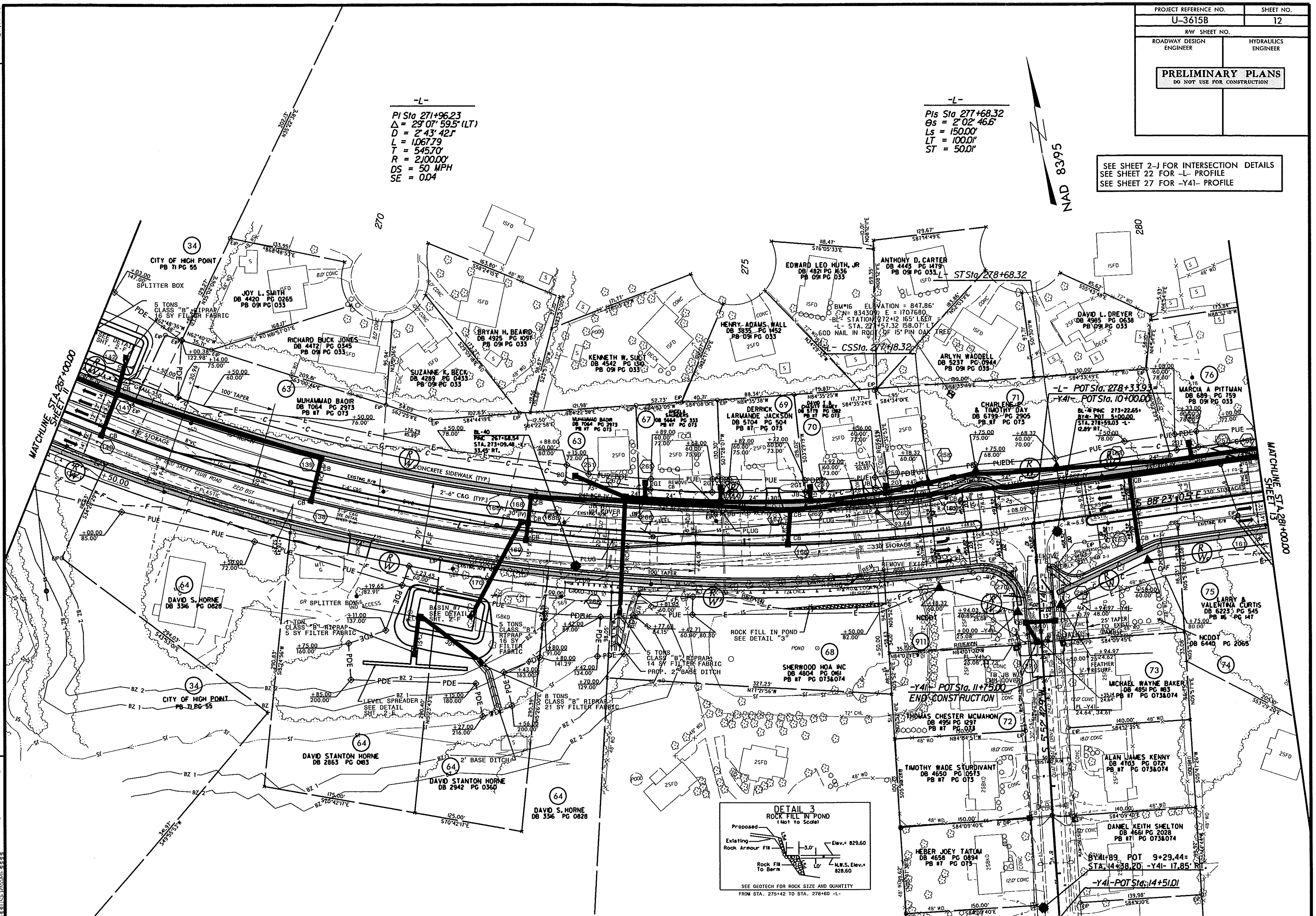

PROJECT REFERENCE NO. U-3615B
SHEET NO. 11
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83/95
-L-
PI Sta 253+07.94
Δ = 51° 46' 45.8" (RT)
D = 6°09' 39.0"
L = 840.46
T = 451.38'
R = 930.00'
DS = 50 MPH
SE = 0.04
-L-
PIs Sta 257+47.06
θs = 4° 37' 14.3"
Ls = 150.00'
LT = 100.03'
ST = 50.03'
-Y37N-
PI Sta 14+00.24
Δ = 25° 49' 44.9" (LT)
D = 13° 06' 36.9"
L = 197.01'
T = 100.21'
R = 437.03'
-Y39-
PI Sta 12+19.09
Δ = 29° 55' 03.0" (LT)
D = 6° 59' 14.2"
L = 428.17'
T = 219.09'
R = 820.00'
-L-
PIs Sta 266+00.54
θs = 2° 02' 46.6"
Ls = 150.00'
LT = 100.01'
ST = 50.01'
SEE SHEET 2-K FOR INTERSECTION DETAILS
SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 27 FOR -Y36-, -Y37N-, -Y37S-, -Y38-, -Y39-, -Y40- PROFILES
BY36-78 POT 5+00.00= STA. 14+16.31 -Y36- 17.10' RT.
BM#5 ELEVATION = 863.94' N = 835467 E = 1470551 BY36 STATION 18+63 120' RIGHT 600 NAIL IN ROOT OF 30' WALNUT TREE
BL-37 PINC 251+88.40 STA. 257+38.44 -L- 23.38' LT.
BY37-81 PINC 8+01.00= STA. 14+94.37 -Y37N- 19.68' RT.
BL-38 PINC 255+93.19= BY38- PINC 5+00.00= BY39- PINC 9+23.17= BY40- PINC 5+00.00 STA. 261+42.26 -L- 20.49' LT.
MATCHLINE STA. 253+00.00 SHEET 10
MATCHLINE STA. 267+00.00 SHEET 12
S 55°09' 31.8" E
-Y37S-
PI Sta 12+35.37
Δ = 36° 57' 05.1" (RT)
D = 16° 08' 22.8"
L = 228.95'
T = 118.61'
R = 355.00'
-Y37S-
PI Sta 15+09.17
Δ = 47° 17' 40.8" (LT)
D = 18° 20' 38.2"
L = 308.23'
T = 163.51'
R = 373.41'
-Y38-
PI Sta 10+96.82
Δ = 14° 01' 22.9" (LT)
D = 12° 13' 54.2"
L = 114.64'
T = 57.61'
R = 468.42'
-Y40-
PI Sta 10+98.87
Δ = 19° 07' 32.8" (LT)
D = 17° 59' 07.1"
L = 106.34'
T = 53.67'
R = 318.57'
-Y40-
PI Sta 13+50.82
Δ = 2° 02' 11.2" (RT)
D = 2° 00' 00.0"
L = 101.82'
T = 50.92'
R = 2,864.79'
SR 1833 BARROW RD.
EST. 2035 AADT
SR 1820

17-DEC-2012 10:51
R:\Roadway\Proj\u3615b_rdy_psh_sh11.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 2-J FOR INTERSECTION DETAILS
SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 27 FOR -Y41- PROFILE



-L-
PI Sta 271+96.23
Δ = 29° 07' 59.5" (LT)
D = 2° 43' 42.1"
L = 1,067.79
T = 545.70'
R = 2,100.00'
DS = 50 MPH
SE = 0.04
-L-
PIs Sta 277+68.32
θs = 2° 02' 46.6"
Ls = 150.00'
LT = 100.01'
ST = 50.01'
NAD 83/95
MATCHLINE STA. 267+00.00 SHEET 11
MATCHLINE STA. 281+00.00 SHEET 13
CITY OF HIGH POINT
PB 71 PG 55
JOY L. SMITH
DB 4420 PG 0265
PB 091 PG 033
RICHARD BUCK JONES
DB 4472 PG 0345
PB 091 PG 033
SUZANNE K. BECK
DB 4289 PG 0433
PB 091 PG 033
BRYAN H. BEARD
DB 4925 PG 1097
PB 091 PG 033
KENNETH W. SULT
DB 4542 PG 1340
PB 091 PG 033
HENRY ADAMS WALL
DB 3835 PG 1452
PB 091 PG 033
EDWARD LEO HUTH, JR
DB 4821 PG 1636
PB 091 PG 033
ANTHONY D. CARTER
DB 4443 PG 1479
PB 091 PG 033
ARLYN WADDELL
DB 5237 PG 0944
PB 091 PG 033
DAVID L. DREYER
DB 4985 PG 0638
PB 091 PG 033
MARCIA A PITTMAN
DB 689 PG 759
PB 091 PG 033
MUHAMMAD BAOIR
DB 7064 PG 2973
PB 87 PG 073
DERRICK LARMANDE JACKSON
DB 5704 PG 504
PB 87 PG 073
CHARLENE & TIMOTHY DAY
DB 6799 PG 2905
PB 87 PG 073
DAVID S. HORNE
DB 3316 PG 0828
DAVID STANTON HORNE
DB 2863 PG 0083
DAVID STANTON HORNE
DB 2942 PG 0360
SHERWOOD HOA INC
DB 4804 PG 0161
PB 87 PG 073&074
LARRY & VALENTINA CURTIS
DB 6223 PG 545
PB 86 PG 147
NCDOT
DB 6440 PG 2065
MICHAEL WAYNE BAKER
DB 4851 PG 883
PB 87 PG 073&074
THOMAS CHESTER MCMAHON
DB 4951 PG 1297
PB 87 PG 073
TIMOTHY WADE STURDIVANT
DB 4650 PG 0573
PB 87 PG 073
ALAN JAMES KENNY
DB 4703 PG 0721
PB 87 PG 073&074
DANIEL KEITH SHELTON
DB 4661 PG 2028
PB 87 PG 073&074
HEBER JOEY TATUM
DB 4658 PG 0894
PB 87 PG 073
-L- POT Sta. 278+33.93= -Y41- POT Sta. 10+00.00
-Y41- POT Sta. 11+75.00
END CONSTRUCTION
-Y41- POT Sta. 14+51.01
-L- ST Sta. 278+68.32
-L- CS Sta. 277+18.32
BM#16 ELEVATION = 847.86'
N= 834309 E = 1707680
-BL- STATION 272+12 165' LEFT
-L- STA. 272+57.32 158.07' LT
60D NAIL IN ROOT OF 15" PIN OAK TREE
S 88° 23' 10.5" E
CONCRETE SIDEWALK (TYP.)
2'-6" C&G (TYP.)
330' STORAGE
430' STORAGE
100' TAPER
SPLITTER BOX
5 TONS CLASS "B" RIPRAP 16 SY FILTER FABRIC
4 TON CLASS "B" RIPRAP 5 SY FILTER FABRIC
8 TONS CLASS "B" RIPRAP 21 SY FILTER FABRIC
5 TONS CLASS "B" RIPRAP 14 SY FILTER FABRIC
PROP. 2' BASE DITCH
LEVEL SPREADER 1 SEE DETAIL SHT. 2-E
BASIN #1 SEE DETAIL SHT. 2-F
ROCK FILL IN POND SEE DETAIL "3"
DETAIL 3
ROCK FILL IN POND
(Not to Scale)
Proposed
Existing
Rock Armour Fill
Rock Fill To Berm
Elev.= 829.60
N.W.S. Elev.= 828.60
SEE GEOTECH FOR ROCK SIZE AND QUANTITY
FROM STA. 275+42 TO STA. 276+60 -L-

REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/2/09
2. NAME CHANGE ON PARCELS 63, 67, 69, 70, 71, 74 AND 75.
3. KEEP EXISTING DRIVE OPEN ON PARCEL 65.
4. NAME CHANGE ON PARCELS 76 AND DRIVE ENTRANCE CHANGE.
5. NAME CHANGE ON PARCEL 911 TO NCDOT.

5/1/12 R/W REVISION: COMBINED PARCELS 64, 65 & 66 INTO PARCEL 64. - SLK

8/17/99

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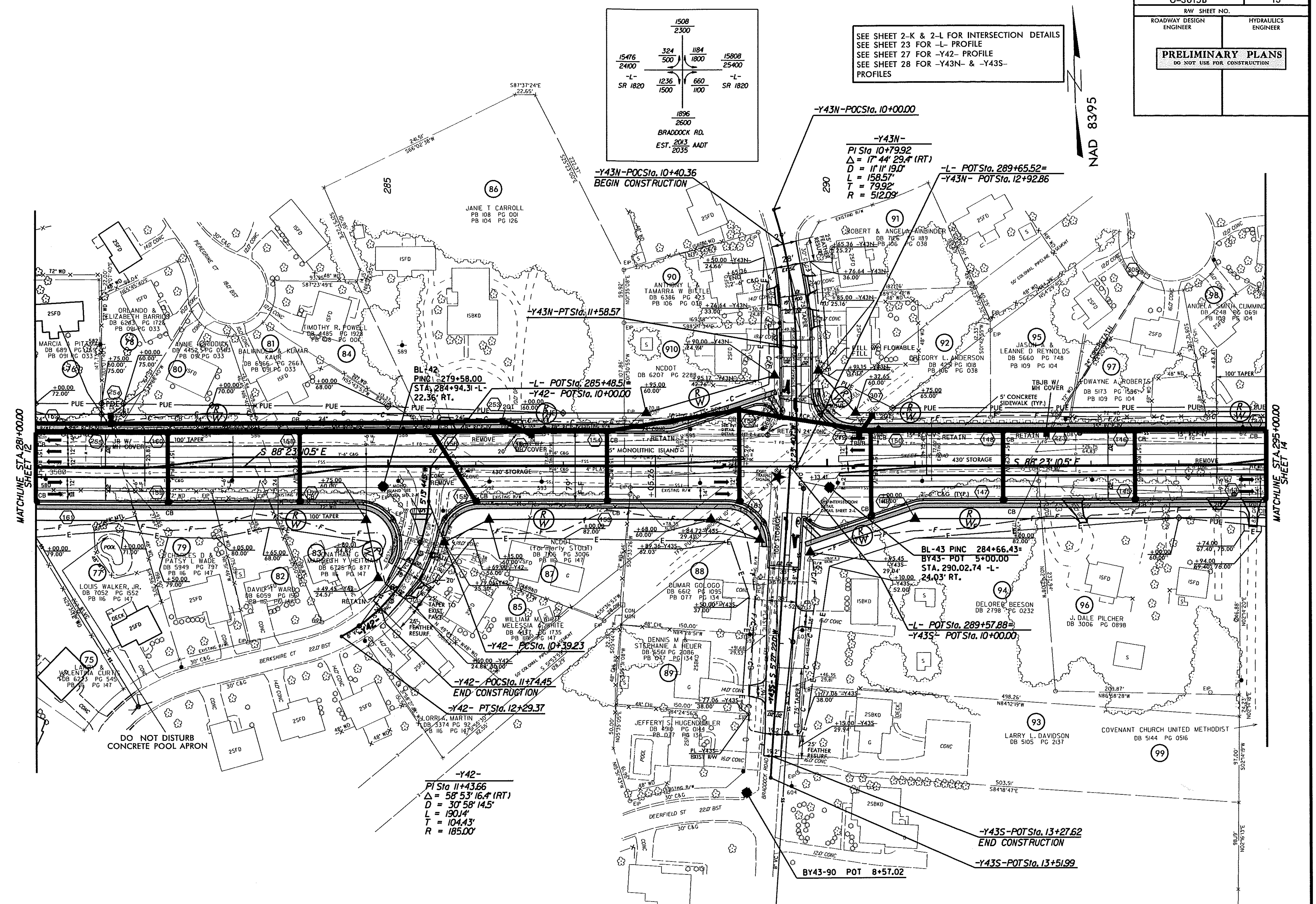
PROJECT REFERENCE NO.	SHEET NO.
U-3615B	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 2-K & 2-L FOR INTERSECTION DETAILS
SEE SHEET 23 FOR -L- PROFILE
SEE SHEET 27 FOR -Y42- PROFILE
SEE SHEET 28 FOR -Y43N- & -Y43S- PROFILES



NAD 83/95
BRADDOCK RD.
EST. 2013 / 2035 AADT
-L- SR 1820
-Y43N-POCSta. 10+00.00
-Y43N-POCSta. 10+40.36 BEGIN CONSTRUCTION
-Y43N- PI Sta 10+79.92 Δ = 17° 44' 29.4" (RT) D = 11° 11' 19.0" L = 158.57' T = 79.92' R = 512.09'
-L- POTSta. 289+65.52= -Y43N- POTSta. 12+92.86
-Y43N-PTSta. 11+58.57
-L- POTSta. 285+48.51= -Y42- POTSta. 10+00.00
BL-42 PINC 279+58.00 STA. 284+94.31 -L- 22.36' RT.
MATCHLINE STA. 281+00.00 SHEET 12
MATCHLINE STA. 295+00.00 SHEET 14
S 88° 23' 10.5" E
BL-43 PINC 284+66.43= BY43- POT 5+00.00 STA. 290+02.74 -L- 24.03' RT.
-L- POTSta. 289+57.88= -Y43S- POTSta. 10+00.00
-Y42- PCSta. 10+39.23
-Y42- POCSta. 11+74.45 END CONSTRUCTION
-Y42- PTSta. 12+29.37
-Y42- PI Sta 11+43.66 Δ = 58° 53' 16.4" (RT) D = 30° 58' 14.5' L = 190.14' T = 104.43' R = 185.00'
DO NOT DISTURB CONCRETE POOL APRON
-Y43S-POTSta. 13+27.62 END CONSTRUCTION
-Y43S-POTSta. 13+51.99
BY43-90 POT 8+57.02
JANIE T CARROLL PB 108 PG 001 PB 104 PG 126
COVENANT CHURCH UNITED METHODIST DB 5144 PG 0516
LARRY L. DAVIDSON DB 5105 PG 2137
J. DALE PILCHER DB 3006 PG 0898
BERKSHIRE CT
DEERFIELD ST
PEREGRINE CT

REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. ADDED NOTE FOR POOL AND FLATTEN FILL SLOPE ON PARCEL 77
3. NAME CHANGE ON PARCELS 78, 79, 81, 82, 83, 86, 87, 88, 89, 94, 95 AND 97.
4. NAME CHANGE ON PARCEL 910 TO NCDOT.
5. REVISED EASEMENT ON PARCEL 87.

8/17/99

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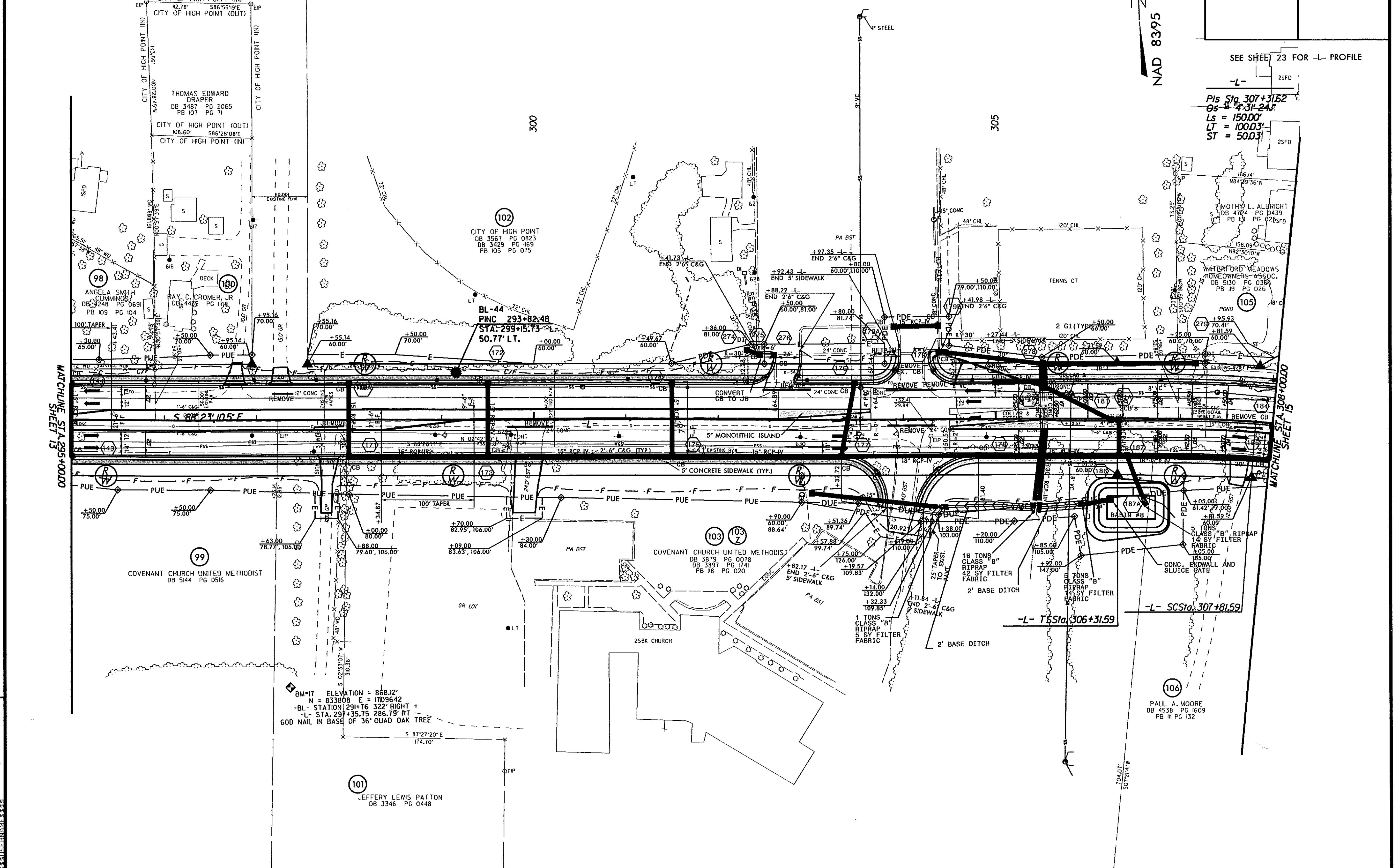
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 23 FOR -L- PROFILE



NAD 83/95
-L-
PIs Sta. 307+31.62
Θs = 4°31'24.1"
Ls = 150.00'
LT = 100.03'
ST = 50.03'
MATCHLINE STA. 295+00.00 SHEET 15
MATCHLINE STA. 308+00.00 SHEET 15
300
305
CITY OF HIGH POINT
DB 3567 PG 0823
DB 3429 PG 1169
PB 105 PG 075
THOMAS EDWARD DRAPER
DB 3487 PG 2065
PB 107 PG 71
ANGELA SMITH CUMMINGS
RAY C. CROMER, JR
COVENANT CHURCH UNITED METHODIST
DB 5144 PG 0516
COVENANT CHURCH UNITED METHODIST
DB 3879 PG 0078
DB 3897 PG 1741
PB 118 PG 020
TIMOTHY L. ALBRIGHT
WATERFORD MEADOWS HOMEOWNERS ASSOC.
DB 5130 PG 0368
PB 119 PG 026
PAUL A. MOORE
DB 4538 PG 1609
PB 111 PG 132
JEFFERY LEWIS PATTON
DB 3346 PG 0448
BL-44
PINC 293+82.48
STA. 299+15.73 -L-
50.77' LT.
BM#17 ELEVATION = 868.12'
N = 833808 E = 1709642
-BL- STATION 291+76 322' RIGHT
-L- STA. 297+35.75 286.79' RT
60D NAIL IN BASE OF 36" QUAD OAK TREE
5' MONOLITHIC ISLAND
5' CONCRETE SIDEWALK (TYP.)
CONVERT CB TO JB
BASIN #8
CONC. ENDWALL AND SLUICE GATE
2' BASE DITCH
-L- TSSta. 306+31.59
-L- SCSta. 307+81.59
TENNIS CT
258K CHURCH

REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. PROPERTY LINE CHANGE (ALREADY SENT IN) ON PARCEL 103. COMBINE WITH PARCEL 104 AND CHANGE PORTION OF PUE TO DUE.
3. CHANGE PORTION OF PUE TO DUE ON PARCEL 106.

12/18/12 – R/W REVISIONS; CHANGED PUE TO DUE FROM -L- STA. 302+90.00 TO STA. 307+05.00 RIGHT ON PARCEL 103; ADDED PDE FROM -L- STA. 302+90.00 TO STA. 305+20.00 RIGHT CREATING PARCEL 103Z; THE NEW PDE REPLACES TCE FROM -L- STATION 303+51.36 TO 304+38.00 RIGHT.

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-3615B	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 2-K FOR INTERSECTION DETAILS
SEE SHEET 24 FOR -L- PROFILE
SEE SHEET 28 FOR -Y44-, -Y45N-, &
-Y45S- PROFILES

REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. NAME CHANGE ON PARCELS 107, 108, 109, 110, 112, 115, 118, 119 AND 121.
3. CHANGE PUE TO DUE ON PARCEL 115.
4. NAME CHANGE ON PARCEL 908 TO NCDOT.

5/4/12 R/W REVISION: CHANGED TEMPORARY CONSTRUCTION EASEMENT TO R/W AND MOVE R/W LINE TO ACCOUNT FOR STRIPE OF LAND LEFT BETWEEN PROPERTY LINE AND TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 112. - SLK

8/17/99

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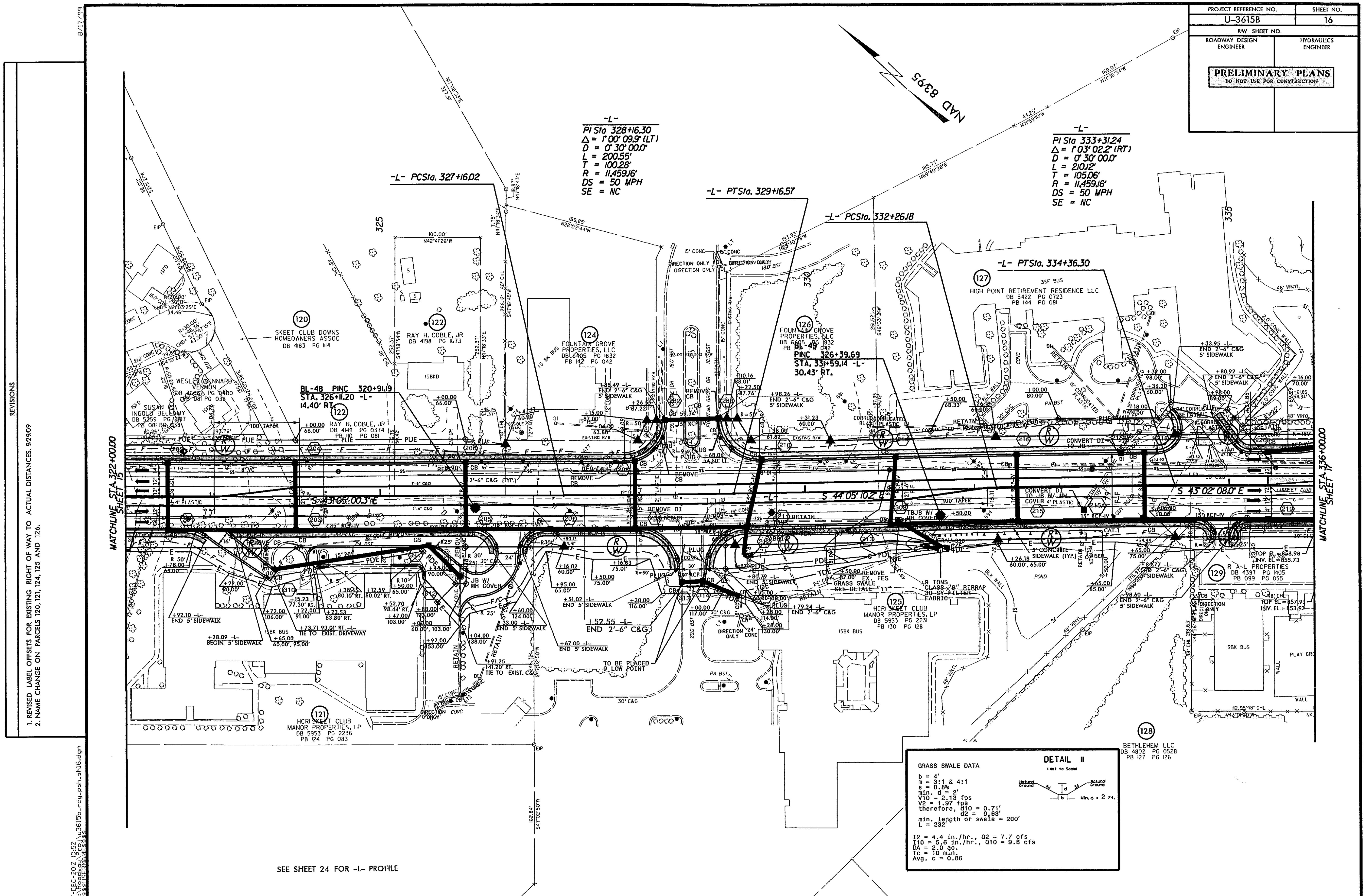

PROJECT REFERENCE NO. U-3615B
SHEET NO. 16
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83/95
-L-
PI Sta 328+16.30
Δ = 1°00' 09.9" (LT)
D = 0°30' 00.0"
L = 200.55'
T = 100.28'
R = 11,459.16'
DS = 50 MPH
SE = NC
-L- PCSta. 327+16.02
-L- PTSta. 329+16.57
-L-
PI Sta 333+31.24
Δ = 1°03' 02.2" (RT)
D = 0°30' 00.0"
L = 210.12'
T = 105.06'
R = 11,459.16'
DS = 50 MPH
SE = NC
-L- PCSta. 332+26.18
-L- PTSta. 334+36.30
SKEET CLUB DOWNS HOMEOWNERS ASSOC DB 4183 PG 1114
RAY H. COBLE, JR DB 4198 PG 1673
FOUNTAIN GROVE PROPERTIES, LLC DB 6405 PG 1832 PB 142 PG 042
HIGH POINT RETIREMENT RESIDENCE LLC DB 5422 PG 0723 PB 144 PG 081
BL-4B PINC 320+91.19
STA. 326+11.20 -L-
14.40' RT.
BL-4B PINC 326+39.69
STA. 331+59.14 -L-
30.43' RT.
S 43°05'00.3" E
S 44°05'10.2" E
S 43°02'08.0" E
MATCHLINE STA. 322+00.00 SHEET 15
MATCHLINE STA. 336+00.00 SHEET 17
HCRI SKEET CLUB MANOR PROPERTIES, LP DB 5953 PG 2236 PB 124 PG 083
HCRI SKEET CLUB MANOR PROPERTIES, LP DB 5953 PG 2231 PB 130 PG 128
R A L PROPERTIES DB 4397 PG 1405 PB 099 PG 055
BETHLEHEM LLC DB 4802 PG 0528 PB 127 PG 126
+52.55 -L- END 2'-6" C&G
TO BE PLACED @ LOW POINT
9 TONS CLASS "B" RIPRAP 30 SY FILTER FABRIC
GRASS SWALE SEE DETAIL "II"
SEE SHEET 24 FOR -L- PROFILE
DETAIL II
(Not to Scale)
GRASS SWALE DATA
b = 4'
m = 3:1 & 4:1
s = 0.8%
min. d = 2'
V10 = 2.13 fps
V2 = 1.97 fps
therefore, d10 = 0.71'
d2 = 0.63'
min. length of swale = 200'
L = 232'
I2 = 4.4 in./hr., Q2 = 7.7 cfs
I10 = 5.6 in./hr., Q10 = 9.8 cfs
DA = 2.0 ac.
Tc = 10 min.
Avg. c = 0.86
REVISIONS
1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. NAME CHANGE ON PARCELS 120, 121, 124, 125 AND 126.
8/17/99
17-DEC-2012 10:52
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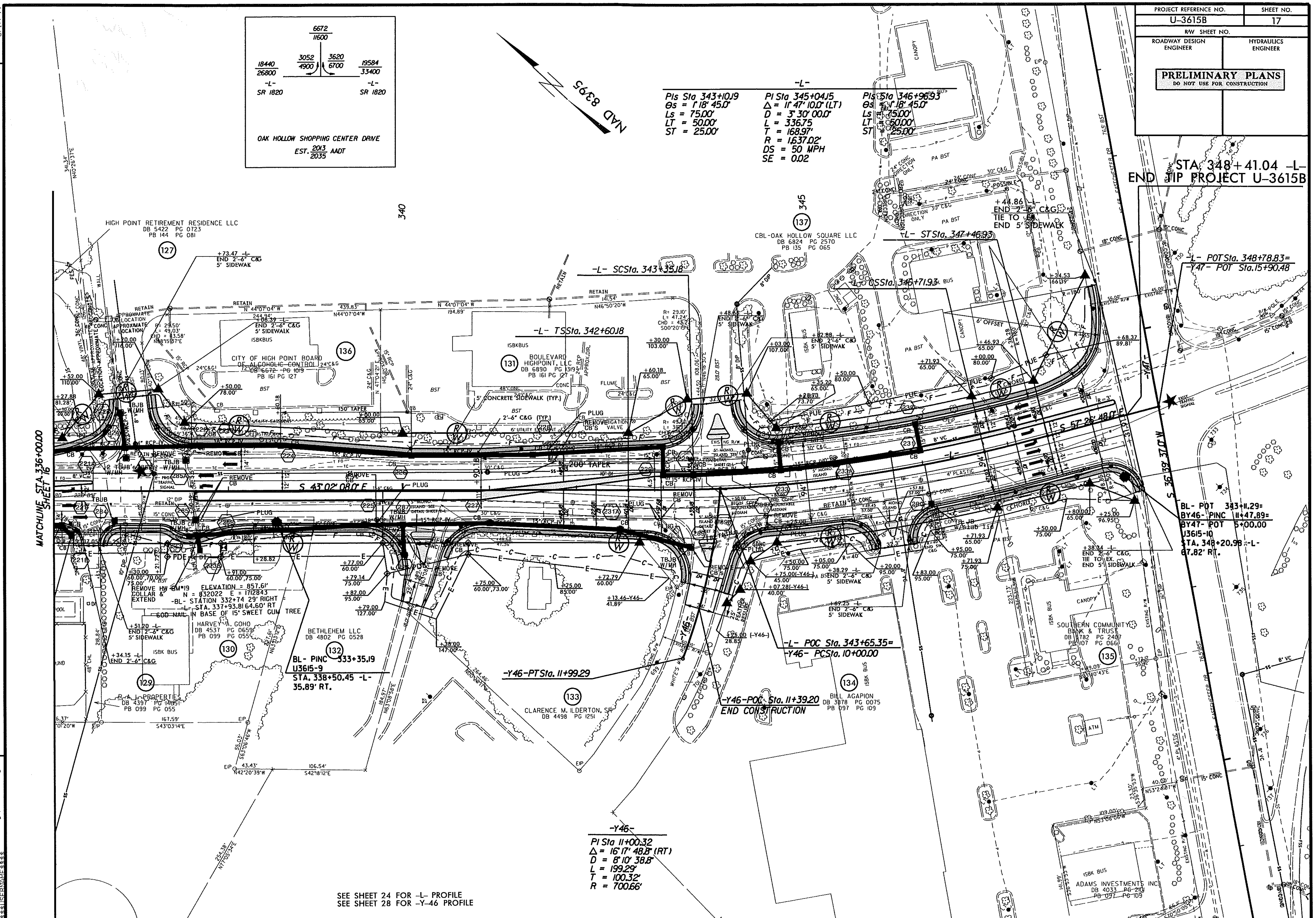
PROJECT REFERENCE NO.	SHEET NO.
U-3615B	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



6672
11600
3052
4900
3620
6700
18440
26800
19584
33400
-L-
SR 1820
OAK HOLLOW SHOPPING CENTER DRIVE
EST. 2013 / 2035 AADT
NAD 83/95
-L-
PI Sta 343+10.19
θs = 1° 18' 45.0"
Ls = 75.00'
LT = 50.00'
ST = 25.00'
PI Sta 345+04.15
Δ = 11° 47' 10.0" (LT)
D = 3° 30' 00.0"
L = 336.75
T = 168.97'
R = 1,637.02'
DS = 50 MPH
SE = 0.02
STA. 348+41.04 -L-
END TIP PROJECT U-3615B
HIGH POINT RETIREMENT RESIDENCE LLC
DB 5422 PG 0723
PB 144 PG 081
CBL-OAK HOLLOW SQUARE LLC
DB 6824 PG 2570
PB 135 PG 065
CITY OF HIGH POINT BOARD OF ALCOHOLIC CONTROL
DB 6672 PG 1019
PB 161 PG 127
BOULEVARD HIGHPOINT, LLC
DB 6890 PG 1319
PB 161 PG 127
-L- SCSta. 343+35.18
-L- TSSta. 342+60.18
-L- CSSta. 346+71.93
-L- STSta. 347+46.93
-L- POTSta. 348+78.83=
-Y47- POT Sta.15+90.48
S 43° 02' 08.0" E
S 57° 26' 48.0" E
200' TAPER
150' TAPER
MATCHLINE STA. 336+00.00 SHEET 16
BL- POT 343+11.29=
BY46- PINC 11+47.89=
BY47- POT 5+00.00
U3615-10
STA. 348+20.98 -L-
67.82' RT.
BL- PINC 333+35.19
U3615-9
STA. 338+50.45 -L-
35.89' RT.
REMOVE HW BM#19
ELEVATION = 857.61'
N = 832022 E = 1712843
-BL- STATION 332+74 29' RIGHT
-L- STA. 337+93.81 64.60' RT
60D NAIL IN BASE OF 15' SWEET GUM TREE
HARVEY A. GOHO
DB 4537 PG 0659
PB 099 PG 0055
BETHLEHEM LLC
DB 4802 PG 0528
PROPERTIES
DB 4397 PG 1405
PB 099 PG 055
CLARENCE M. ILDERTON, SR.
DB 4498 PG 1251
BILL AGAPION
DB 3878 PG 0075
PB 097 PG 109
SOUTHERN COMMUNITY BANK & TRUST
DB 3782 PG 2407
PB 107 PG 0661
ADAMS INVESTMENTS INC
DB 4033 PG 218
PB 057 PG 109
-L- POC Sta. 343+65.35=
-Y46- PCSta. 10+00.00
-Y46-PTSta. 11+99.29
-Y46-POC Sta. 11+39.20
END CONSTRUCTION
-Y46-
PI Sta 11+00.32
Δ = 16° 17' 48.8" (RT)
D = 8° 10' 38.8"
L = 199.29'
T = 100.32'
R = 700.66'
SEE SHEET 24 FOR -L- PROFILE
SEE SHEET 28 FOR -Y-46 PROFILE

REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
2. REVISED PDE TO TCE PARCEL 132.
3. PROPERTY LINES, NAMES AND PARCEL NUMBERS CHANGED ON PARCEL 131.
4. NUMBER CHANGE ON PARCEL 124 TO 127.
5. NUMBER CHANGE ON PARCELS 127 TO 137.
6. NAME CHANGE ON PARCEL 135.
7. REDUCED SIDEWALK TO WITHIN PDE LIMITS ON PARCEL 132. (1-10-12) S.L.K.

8/17/99

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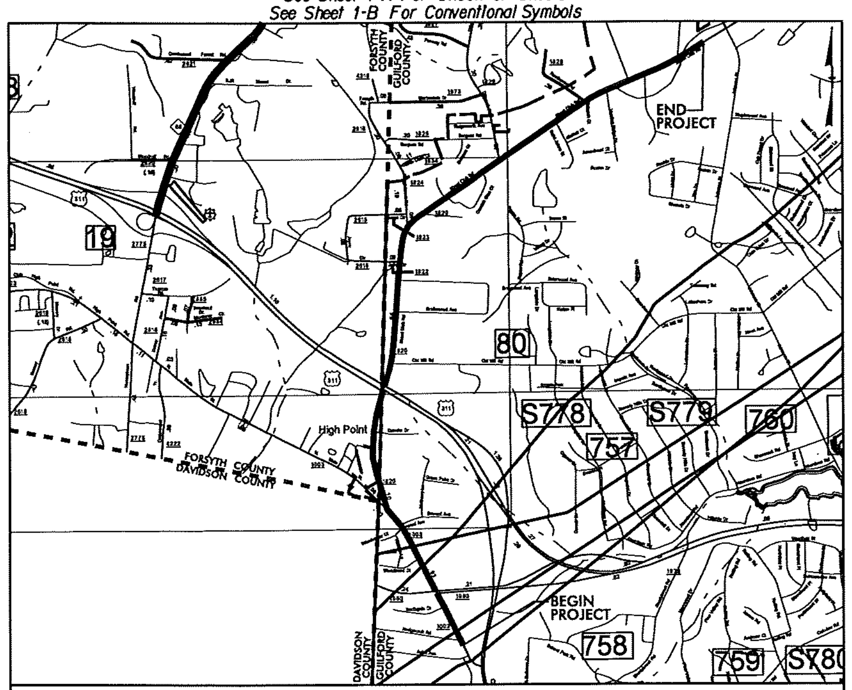
TIP: U-3615A

CONTRACT:

9/09/99

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



VICINITY MAP

Not To Scale

R/W PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

LOCATION: SR 1003 (NORTH MAIN STREET) AND SR 1820 (SKEET CLUB ROAD) BETWEEN US 311 AND SR 1818 (JOHNSON STREET).

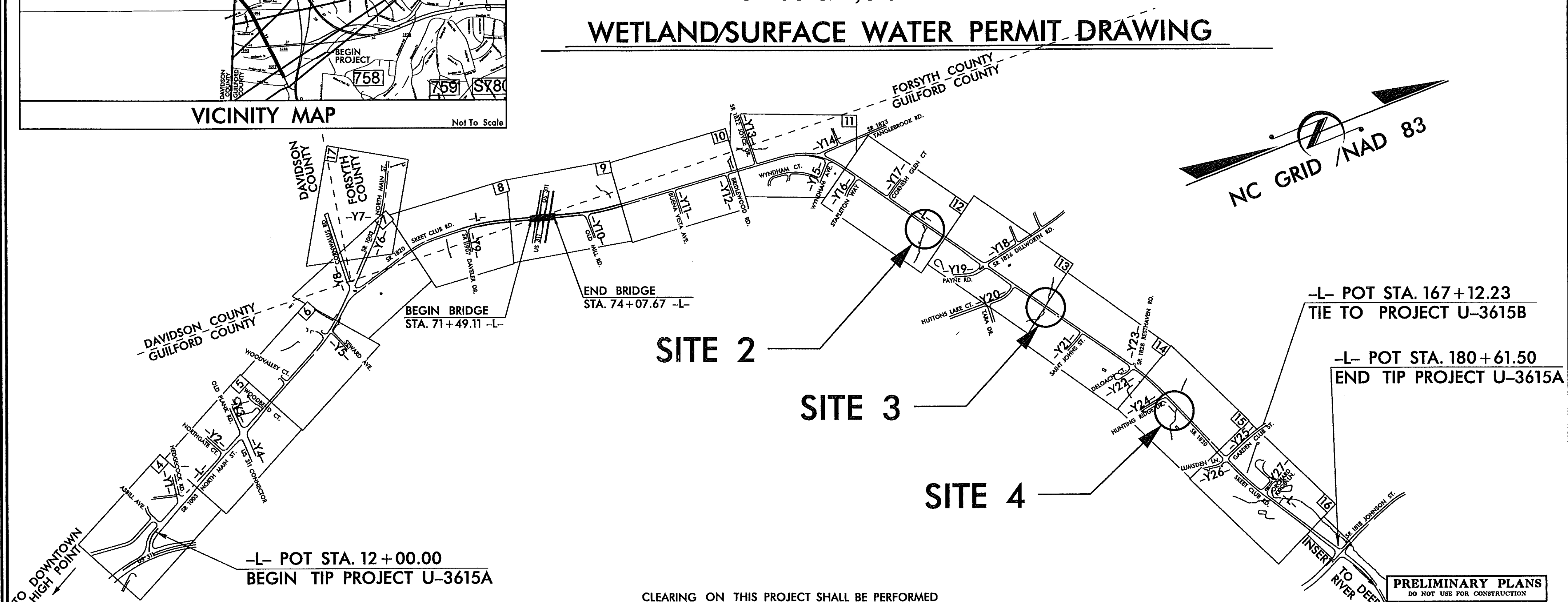
TYPE OF WORK: GRADING, PAVING, DRAINAGE, GUARDRAIL, STRUCTURE, SIGNING AND SIGNALS

WETLAND/SURFACE WATER PERMIT DRAWING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3615A	1	

WBS NO.	F.A. PROJ. NO.	DESCRIPTION
34962.1.1	STP-1820(2)	P.E.
34962.2.2	STP-1820(4)	R/W & UTILITIES

Permit Drawing
Sheet 1 of 14



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

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 2015 = 18,100
ADT 2035 = 29,800
DHV = 10 %
D = 55 %
T = 3 % *
V = 50 MPH
* TTST 1 % DUAL 2 %
FUNCTIONAL CLASS: MINOR ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3615A = 3.144mi.
LENGTH STRUCTURE TIP PROJECT U-3615A = 0.049mi.
TOTAL LENGTH TIP PROJECT U-3615A = 3.193mi.

NCDOT CONTACT: CATHY HOUSER, PE
PROJECT ENGINEER, ROADWAY DESIGN UNIT

Prepared in the Office of: STEWART ENGINEERING, INC.
FOR: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCT 18, 2013

LETTING DATE: OCT 20, 2015

DAVID RUGGLES, PE
PROJECT ENGINEER

DREW BAIRD, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

PROJECT REFERENCE NO.	SHEET NO.
U-3615A	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing Sheet 2 of 14

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL
203 TOWN HALL DR., STE C, MORRISVILLE, NC 27560
TEL 919.303.6950 FAX 919.303.6951

8/17/99

REVISIONS

WETLAND/SURFACE WATER PERMIT DWG.

ENGLISH

GRAPHIC SCALE 100' 0' 100'

MATCHLINE -L- STA. 109+00 SEE SHEET NO. 11

MATCHLINE -L- STA. 123+00 SEE SHEET NO. 13

DALE H. GUTHRIE

ALEX W. STOUT

(66) ELTON D. MILLER

(69) JAMES E. HARRIS

(70) ROBERT LEE SKIDMORE

(72) BRENDA W. NEALY

(73) G. LARRY GUY

(74) EDWARD D. GIBSON

(75) ANNIE WELBORN ESTATE

(76)

(67) NCDOT (formerly DAKOTA CONSULTANTS)

(68) NCDOT (formerly NANCY C. JOYCE)

(71) GEORGE C. MCNATT, JR

(78) THANG CAO NGUYEN, DB 6458 PG 879, LOT 20 PB 52 PG 013

CHRISTOPHER & CHRISTIAN HOLT

PERLEY A. THOMAS, JR

STAPLETON WAY

CORNWALL GLEN CT

SITE 2
(SEE ENLARGEMENT)

IMPACTS IN SURFACE WATER

TEMP. IMPACTS IN SURFACE WATER

CONC. FLUME EXTEND TO BOTTOM OF DITCH

CLASS "B" RIP RAP

SPECIAL BACK OF CURB BASE DITCH SEE DETAIL "R"

SPECIAL BACK OF CURB BASE DITCH SEE DETAIL "T"

LATERAL BASE DITCH (GRASS SWALE) SEE DETAIL "V"

REMOVE EXIST. DI & PIPE

REMOVE DI & PIPE

2GI TYPE 'A' W/O APRON

JB W/ MH

REMOVE EXIST. DI

CROSS TIES

STONE WALK

LANDSCAPED AREA

BASKETBALL GOAL

DOG PEN

DENOTES MONOLITHIC CONCRETE ISLAND

DETAIL "R"
SPECIAL BACK OF CURB BASE DITCH
(NOT TO SCALE)

NATURAL GROUND

Min. D= 1.0 Ft.
B= 8.0 Ft.

FROM STA.112+46 TO STA.119+00 -L-(RT)

DETAIL "T"
SPECIAL BACK OF CURB BASE DITCH
(NOT TO SCALE)

NATURAL GROUND

Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.

Type of Liner= PSRM

FROM STA.120+84 TO STA.124+00-L-(LT)

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DETAIL "V"
LATERAL BASE DITCH
(Not To Scale)

Natural Ground

Min. D= 1.0 Ft.
Max. d= 2.0 Ft.
B= 2.0 Ft.
D= 5.0 Ft.

*When B Is < 6.0'

Type of Liner= PSRM

FROM STA.120+69.80 TO STA.122+80-L-(RT)

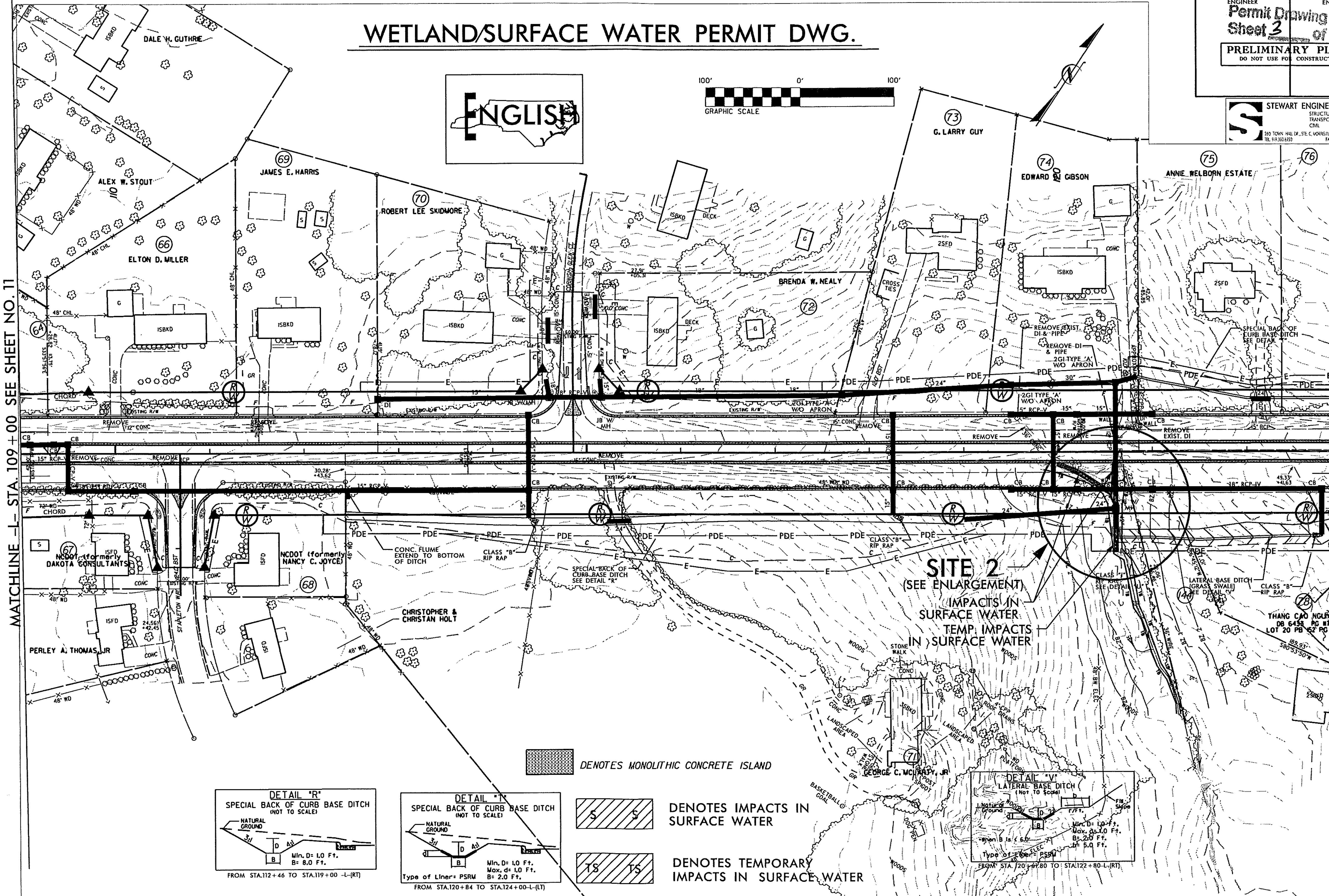
WETLAND/SURFACE WATER PERMIT DWG.

PROJECT REFERENCE NO.	SHEET NO.
U-3615A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing Sheet 3 of 14

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL TRANSPORTATION CIVIL



ENGLISH
100' 0' 100'
GRAPHIC SCALE
MATCHLINE -L- STA. 109+00 SEE SHEET NO. 11
MATCHLINE -L- STA. 123+00 SEE SHEET NO. 13
DALE H. GUTHRIE
ALEX W. STOUT
JAMES E. HARRIS
ROBERT LEE SKIDMORE
ELTON D. MILLER
BRENDA W. NEALY
G. LARRY GUY
EDWARD GIBSON
ANNIE WELBORN ESTATE
NCDOT (formerly DAKOTA CONSULTANTS)
NCDOT (formerly NANCY C. JOYCE)
PERLEY A. THOMAS, JR
CHRISTOPHER & CHRISTAN HOLT
GEORGE C. MCKNATY, JR
THANG CAO NGUYEN
SITE 2
(SEE ENLARGEMENT)
IMPACTS IN SURFACE WATER
TEMP. IMPACTS IN SURFACE WATER
DENOTES MONOLITHIC CONCRETE ISLAND
DETAIL "R"
SPECIAL BACK OF CURB BASE DITCH
(NOT TO SCALE)
Min. D= 1.0 Ft.
B= 8.0 Ft.
FROM STA.112+46 TO STA.119+00 -L-(RT)
DETAIL "T"
SPECIAL BACK OF CURB BASE DITCH
(NOT TO SCALE)
Type of Liner= PSRM
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
FROM STA.120+84 TO STA.124+00-L-(LT)
DETAIL "V"
LATERAL BASE DITCH
(Not TO Scale)
FROM STA.120+69.80 TO STA.122+80-L-(RT)

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

8/17/99

REVISIONS

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3615A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing Sheet 4 of 14

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL

WETLAND/SURFACE WATER PERMIT DWG.

ENGLISH

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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

PROJECT REFERENCE NO.	SHEET NO.
U-3615A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing
Sheet 5 of 14

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL
203 TOWN HALL DR., STE. C, MORRISVILLE, NC 27560
TEL 919.380.8850 FAX 919.380.8752

WETLAND/SURFACE WATER PERMIT DWG.

ENGLISH

100' 0' 100'
GRAPHIC SCALE

DETAIL "W"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
FROM STA.124+00 TO STA.127+50-L-(LT)

DETAIL "X"
SPECIAL BACK OF CURB BASE DITCH
(NOT TO SCALE)
FROM STA.127+50-L-(LT) TO STA.128+00-L-(LT)

DETAIL "T"
SPECIAL BACK OF CURB BASE DITCH
(NOT TO SCALE)
Min. D= 1.0 Ft.
Max. D= 1.0 Ft.
B= 2.0 Ft.
Type of Liner= PSRM
FROM STA.120+84 TO STA.124+00-L-(LT)

DETAIL "Y"
LATERAL 'V' DITCH
(Not To Scale)
Min. D= 1.0 Ft.
B= 3.0 Ft.
FROM STA.136+10 TO STA.134+94.12-L-(LT)
FROM STA.136+94.12 TO STA.138+00-L-(LT)
FROM STA.135+75 TO STA.132+08.50-L-(RT)

TEMP. IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER

SITE 3
(SEE ENLARGEMENT)

MATCHLINE -L- STA. 123+00 SEE SHEET NO. 12

MATCHLINE -L- STA. 137+00 SEE SHEET NO. 14

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

8/17/99

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

PROJECT REFERENCE NO.	SHEET NO.
U-3615A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing Sheet 6 of 14

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL
369 TOWN HALL DR., STE. C, WAYNESVILLE, NC 28786
TEL 828.452.8550 FAX 828.452.8753

WETLAND/SURFACE WATER PERMIT DWG.

ENGLISH

DENOTES MONOLITHIC CONCRETE ISLAND

100' 0' 100'
GRAPHIC SCALE

MATCHLINE -L- STA. 137+00 SEE SHEET NO. 13

MATCHLINE -L- STA. 151+00 SEE SHEET NO. 14

MATCHLINE -L- STA. 151+00 SEE SHEET NO. 15

SHUGART ENTERPRISES LLC

SHUGART MANAGEMENT INC

CALVIN C. QUINN (101)

(100) GERARD B. EING

(102) HERMAN & GWENDOLYN MOORE

(103) SAMANT PROPERTIES LLC

WILLIAM R. SHAMBURG

(104) SHUGART MANAGEMENT INC

(105) SHUGART ENTERPRISES LLC

SHUGART MANAGEMENT INC

(106) HOMER GLENN HALL, III

(107) JOHN K. LINDSAY

(108) RAYMOND WILLIAMS JR. et al

(109) BOBBY D. CURTIS

(110) WANDA SEAGRAVES CAYLOR

(111) NCDOT (formerly THOMAS C. GALLIMORE)

(112) NCDOT (formerly GARY W. ADAMS)

(113) JOSEPH M. DIFAOLA

JOHN EDWARDS RACZENSKI

DELORES N. DUREN

(114) MIRIAM FOSTER KINDLE

(115) GLORIA FOSTER BASS

(116) GLORIA FOSTER BASS

LAWRENCE CURTIS (117)

(119)

SITE 3
(SEE ENLARGEMENT)

IMPACTS IN SURFACE WATER

TEMP. IMPACTS IN SURFACE WATER

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL "CC"

LATERAL "Y" DITCH SEE DETAIL "Y"

GLASS "B" RIP RAP

RIB & LUG CONNECTORS W/SLEEVE GASKETS & 2 ELBOWS

CLASS "I" RIP RAP SEE DETAIL "AA"

STANDARD GRASS SWALE SEE DETAIL "BB"

CLASS "B" RIP RAP

STANDARD BASE DITCH SEE DETAIL "DD"

DETAIL "Y"
LATERAL "Y" DITCH
(Not To Scale)

Min. D= 1.0 Ft.
b= 3.0 Ft.

FROM STA.136+10 TO STA. 136+94.12-L-(LT)
FROM STA.136+94.12 TO STA. 138+00-L-(LT)

DETAIL "CC"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)

FROM STA. 138+00 TO STA. 142+85 -L-(LT)
FROM STA. 143+00 TO STA. 146+50 -L-(LT)
FROM STA. 148+00 TO STA. 148+50 -L-(LT)
FROM STA. 149+50 TO STA. 152+27 -L-(LT)
FROM STA. 156+00 TO STA. 160+50 -L-(LT)

DETAIL "BB"
STANDARD GRASSED SWALE
(Not To Scale)

Min. D= 1.5 Ft.
B= 2.0 Ft.

STA. 138+00-L-(RT), DDE=2.50 CY
L=85 FT, SLOPE = 0.59% & L=150 FT, SLOPE =3.89%

DETAIL "DD"
STANDARD BASE DITCH
(Not To Scale)

Min. D= 1.0 Ft.
B= 2.0 Ft.

STA. 150+79 RT. DDE=17.0 CY

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

8/17/99

$$$$$$SYSTIME$$$$$$
$$$$$$SYSMODE$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3615A	14
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

Permit Drawing
Sheet 7 of 14

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL
203 TOWN HALL DR., STE C, MORRISVILLE, NC 27560
TEL 919.380.8753 FAX 919.380.8753

WETLAND/SURFACE WATER PERMIT DWG.

GRAPHIC SCALE 100' 0' 100'

DENOTES MONOLITHIC CONCRETE ISLAND

MATCHLINE -L- STA. 137+00 SEE SHEET NO. 13

MATCHLINE -L- STA. 151+00 SEE SHEET NO. 15

SHUGART ENTERPRISES LLC

SHUGART MANAGEMENT INC

CALVIN C. QUINN (101)

(100)

(104) SHUGART MANAGEMENT INC

(105) SHUGART ENTERPRISES LLC

(108) RAYMOND WILLIAMS JR. et al

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(116) GLORIA FOSTER BASS

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(107) JOHN K. LINDSAY

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(112) NCDOT (formerly GARY W. ADAMS)

(113) JOSEPH M. DRAOLA

(119)

JOHN EDWARDS RACZENSKI

DELORES N. DUREN

SITE 3
(SEE ENLARGEMENT)

IMPACTS IN SURFACE WATER

TEMP. IMPACTS IN SURFACE WATER

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL "CC"

LATERAL 'V' DITCH SEE DETAIL 'Y'

GLASS "B" RIP RAP

Rob & LUG CONNECTORS W/SLEEVE GASKETS & 2 ELBOWS

CLASS "I" RIP RAP SEE DETAIL "AA"

STANDARD GRASS SWALE SEE DETAIL "BB"

STANDARD BASE DITCH SEE DETAIL "DD"

DETAIL "Y"
LATERAL 'V' DITCH
(Not To Scale)

Natural Ground, 3:1, D, 3:1, b, F/F, Fill Slope

Min. D= 1.0 Ft.
b= 3.0 Ft.

FROM STA.136+10 TO STA. 136+94.12-L-(LT)
FROM STA.136+94.12 TO STA. 138+00-L-(LT)

DETAIL "CC"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)

NATURAL GROUND, 4:1, 4:1, PAVED

FROM STA. 138+00 TO STA. 142+85 -L-(LT)
FROM STA. 143+00 TO STA. 146+50 -L-(LT)
FROM STA. 148+00 TO STA. 148+50 -L-(LT)
FROM STA. 149+50 TO STA. 152+27 -L-(LT)
FROM STA. 156+00 TO STA. 160+50 -L-(LT)

DETAIL "BB"
STANDARD GRASSED SWALE
(Not To Scale)

Natural Ground, 3:1, D, 3:1, Natural Ground, B

Min. D= 1.5 Ft.
B= 2.0 Ft.

STA. 138+00-L-(RT), DDE=250 CY
L=85 FT, SLOPE = 0.59% & L=150 FT, SLOPE =3.89%

DETAIL "DD"
STANDARD BASE DITCH
(Not To Scale)

Natural Ground, 4:1, D, 4:1, Natural Ground, B

Min. D= 1.0 Ft.
B= 2.0 Ft.

STA. 150+79 RT. DDE=17.0 CY

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

8/17/99

$$$$SYSTIMES$$$$
$$$$ELEVATION$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3615A	15

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

Permit Drawing
Sheet 8 of 14

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL
260 TOWN HALL DR., STE. C, MORRISVILLE, NC 27560
TEL 919.380.8750 FAX 919.380.8752

8/17/99

REVISIONS

WETLAND/SURFACE WATER PERMIT DWG.

SITE 4
(SEE ENLARGEMENT)

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DETAIL "CC"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
NATURAL GROUND
4:1
4:1

FROM STA.143+00 TO STA.146+50 -L-(LT)
FROM STA. 148+00 TO STA. 148+50 -L-(LT)
FROM STA. 149+50 TO STA. 152+27 -L-(LT)
FROM STA. 156+00 TO STA. 160+60 -L-(LT)

DETAIL "GG"
STANDARD BASE DITCH
(Not TO Scale)
Natural Ground
3:1
D
3:1
Natural Ground
B
Min. D= 2.0 Ft.
B= 2.0 Ft.
Proposed Slope=2.0%

STA. 154+60 RT. (OUTLET FOR INLET 259 & 290)
DDE=160 CY

DETAIL "EE"
SPECIAL CUT DITCH
(Not TO Scale)
Natural Ground
6:1
D
4:1 or Flatter
Front Ditch Slope
Min. D= 3.0 Ft.

FROM STA. 11+00 TO STA. 11+50 Y-24 RT.

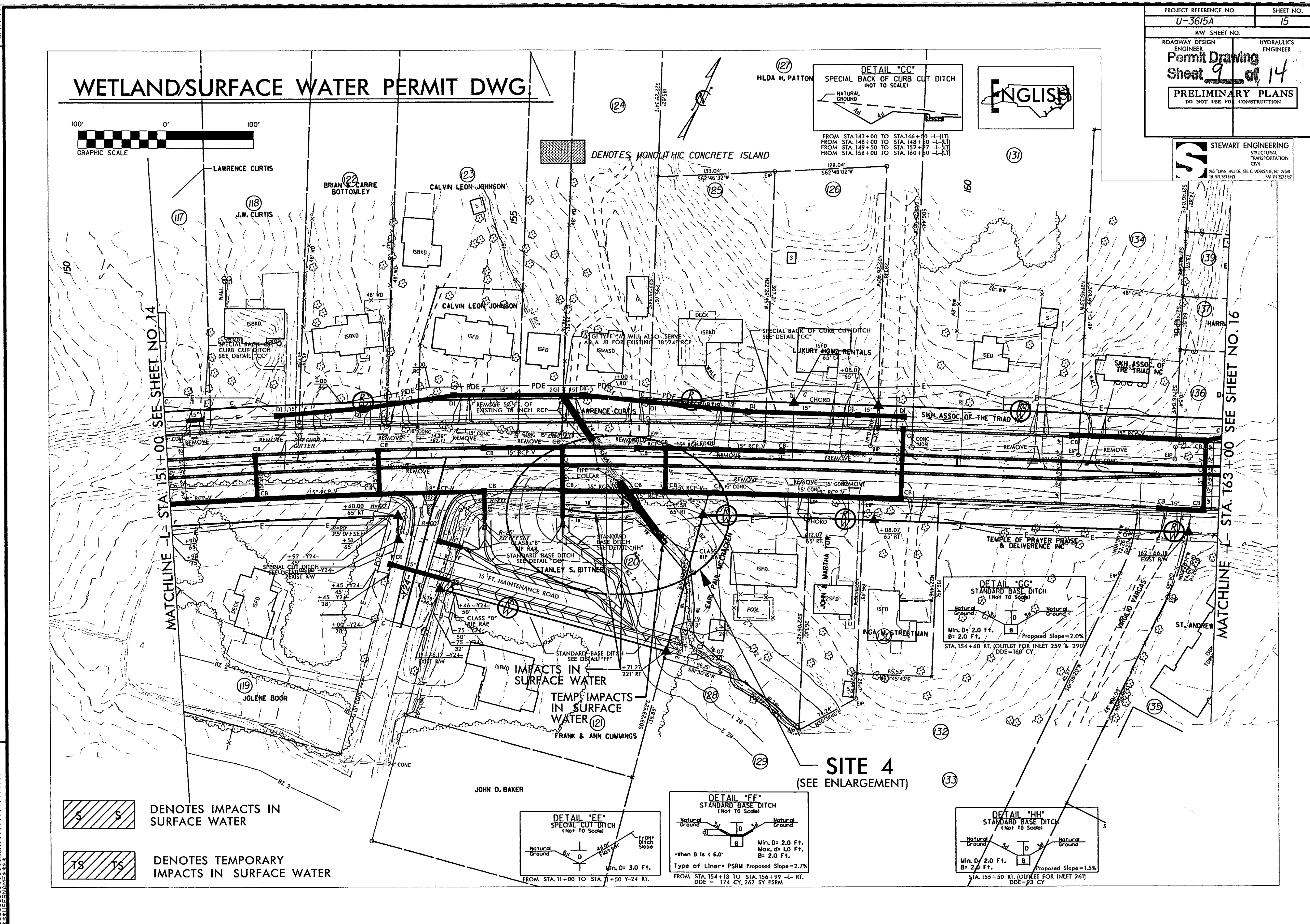
DETAIL "FF"
STANDARD BASE DITCH
(Not TO Scale)
Natural Ground
3:1
d
D
3:1
Natural Ground
B
Min. D= 2.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
•When B is < 6.0'
Type of Liner= PSRM Proposed Slope=2.7%

FROM STA. 154+13 TO STA. 156+99 -L- RT.
DDE = 174 CY, 262 SY PSRM

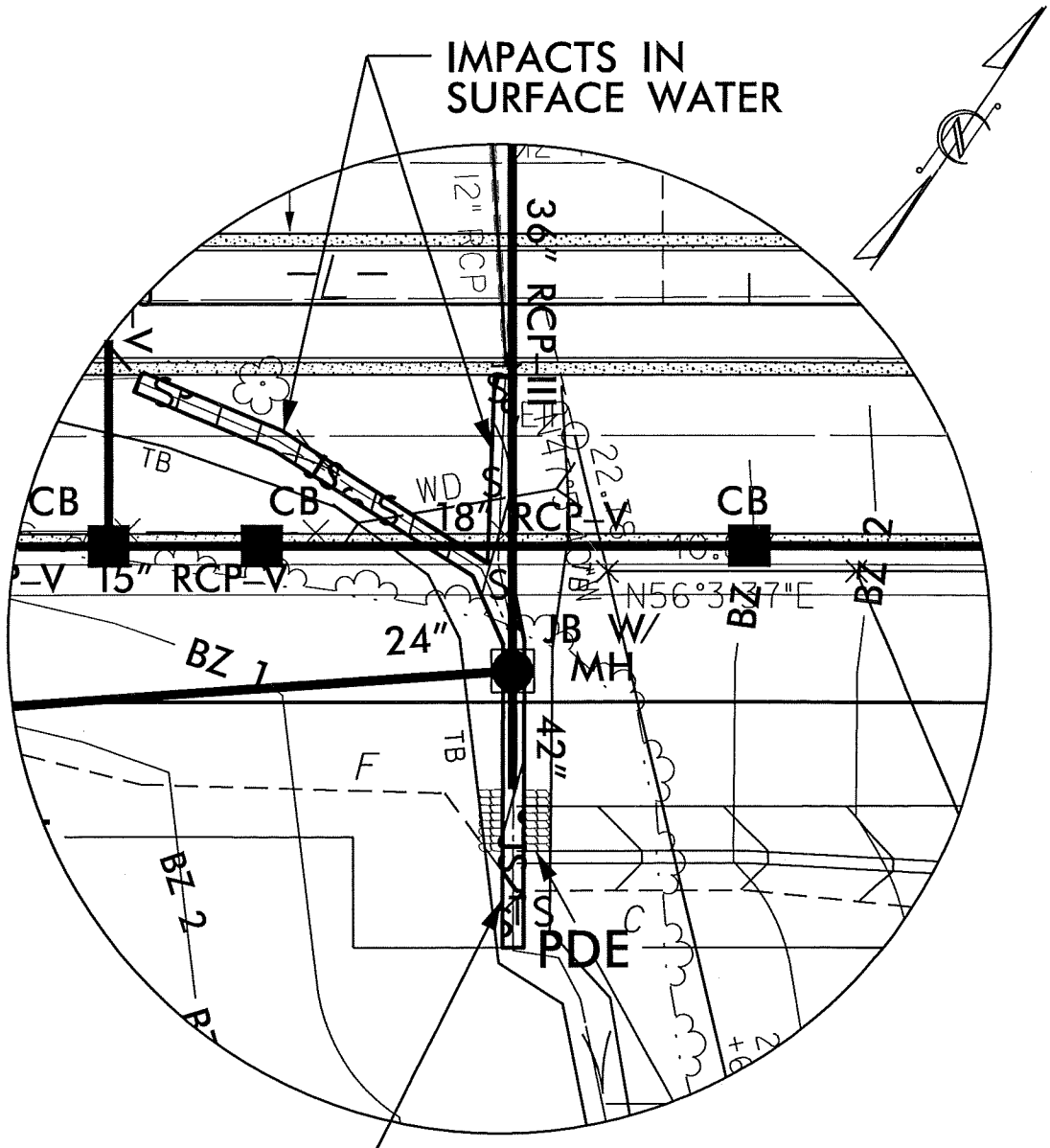
DETAIL "HH"
STANDARD BASE DITCH
(Not TO Scale)
Natural Ground
3:1
D
3:1
Natural Ground
B
Min. D= 2.0 Ft.
B= 2.0 Ft.
Proposed Slope=1.5%

STA. 155+50 RT. (OUTLET FOR INLET 261)
DDE=93 CY

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



PROJECT REFERENCE NO. U-3615A
SHEET NO. 15
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Permit Drawing Sheet 9 of 14
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL
WETLAND/SURFACE WATER PERMIT DWG.
GRAPHIC SCALE
DENOTES MONOLITHIC CONCRETE ISLAND
ENGLISH
DETAIL "CC"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
FROM STA.143+00 TO STA.146+50 -L-(LT)
FROM STA. 148+00 TO STA. 148+50 -L-(LT)
FROM STA. 149+50 TO STA. 152+27 -L-(LT)
FROM STA. 156+00 TO STA. 160+50 -L-(LT)
MATCHLINE -L- STA. 151+00 SEE SHEET NO.14
MATCHLINE -L- STA. 163+00 SEE SHEET NO. 16
LAWRENCE CURTIS
J.W. CURTIS
BRIAN & CARRIE BOTTOMLEY
CALVIN LEON JOHNSON
HILDA H. PATTON
LUXURY HOME RENTALS
SIKH ASSOC. OF THE TRIAD NC
TEMPLE OF PRAYER PRAISE & DELIVERENCE INC.
STANLEY S. BITTNER
EARL PAUL MCCRACKEN
JOHN & MARTHA TOY
INGA M. STREETMAN
VIRGILIO VARGAS
JOLENE BOOR
FRANK & ANN CUMMINGS
JOHN D. BAKER
15 FT. MAINTENANCE ROAD
IMPACTS IN SURFACE WATER
TEMP. IMPACTS IN SURFACE WATER
SITE 4
(SEE ENLARGEMENT)
DETAIL "GG"
STANDARD BASE DITCH
(Not To Scale)
Min. D= 2.0 Ft.
B= 2.0 Ft.
Proposed Slope=2.0%
STA. 154+60 RT. (OUTLET FOR INLET 259 & 290)
DDE=160 CY
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DETAIL "EE"
SPECIAL CUT DITCH
(Not To Scale)
Min. D= 3.0 Ft.
FROM STA. 11+00 TO STA. 11+50 Y-24 RT.
DETAIL "FF"
STANDARD BASE DITCH
(Not To Scale)
Min. D= 2.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
Type of Liner= PSRM Proposed Slope=2.7%
FROM STA. 154+13 TO STA. 156+99 -L- RT.
DDE = 174 CY, 262 SY PSRM
DETAIL "HH"
STANDARD BASE DITCH
(Not To Scale)
Min. D= 2.0 Ft.
B= 2.0 Ft.
Proposed Slope=1.5%
STA. 155+50 RT. (OUTLET FOR INLET 261)
DDE=93 CY



SITE 2 ENLARGEMENT

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

30′ 0′ 30′

GRAPHIC SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD COUNTY

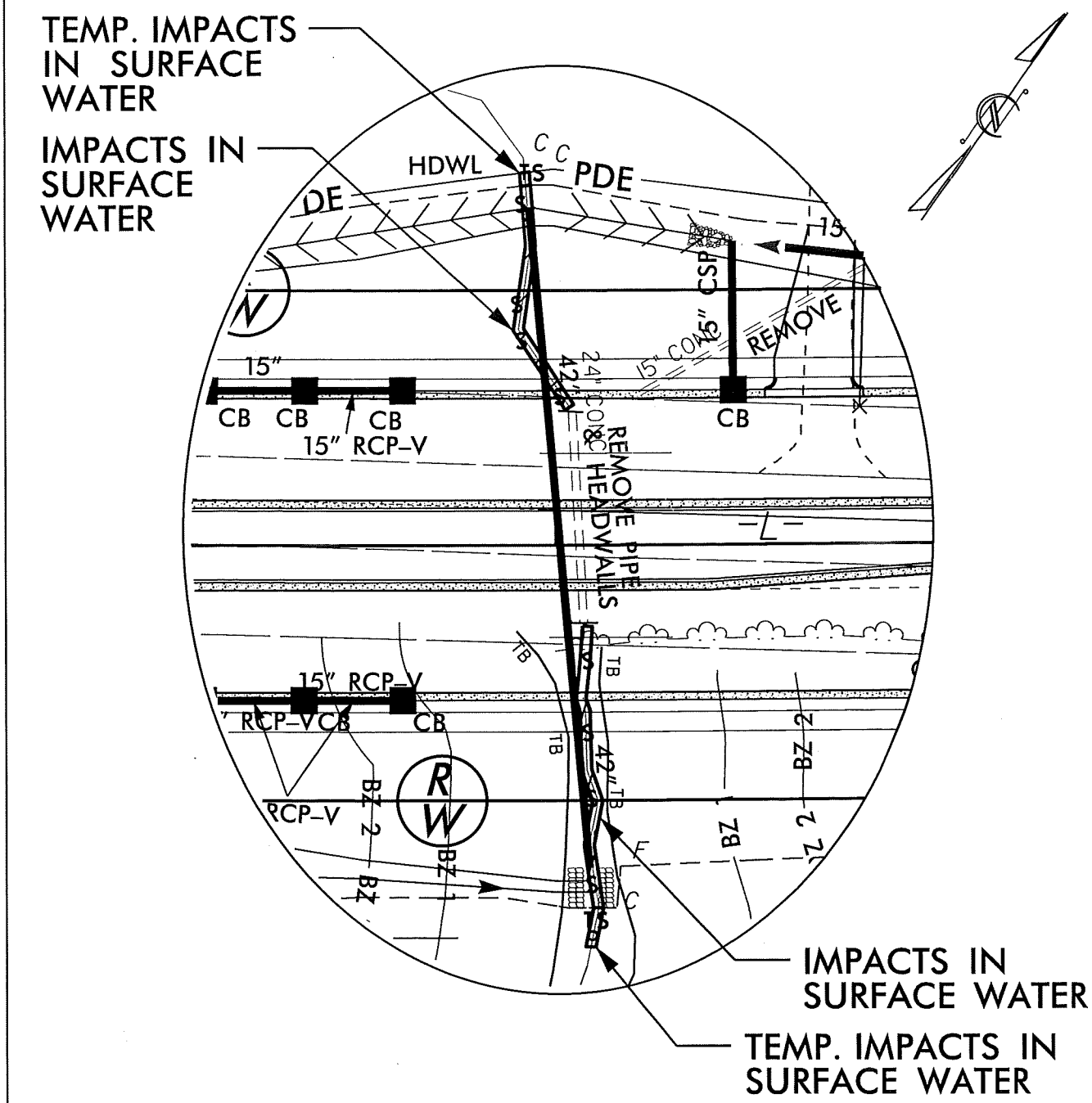
PROJECT: 8.2494701 (U-3615A)

SR 1003 (NORTH MAIN STREET)

AND SR 1820 (SKEET CLUB ROAD)

BETWEEN US 311 AND

SR 1818 (JOHNSON STREET)



SITE 3 ENLARGEMENT

S S DENOTES IMPACTS IN SURFACE WATER

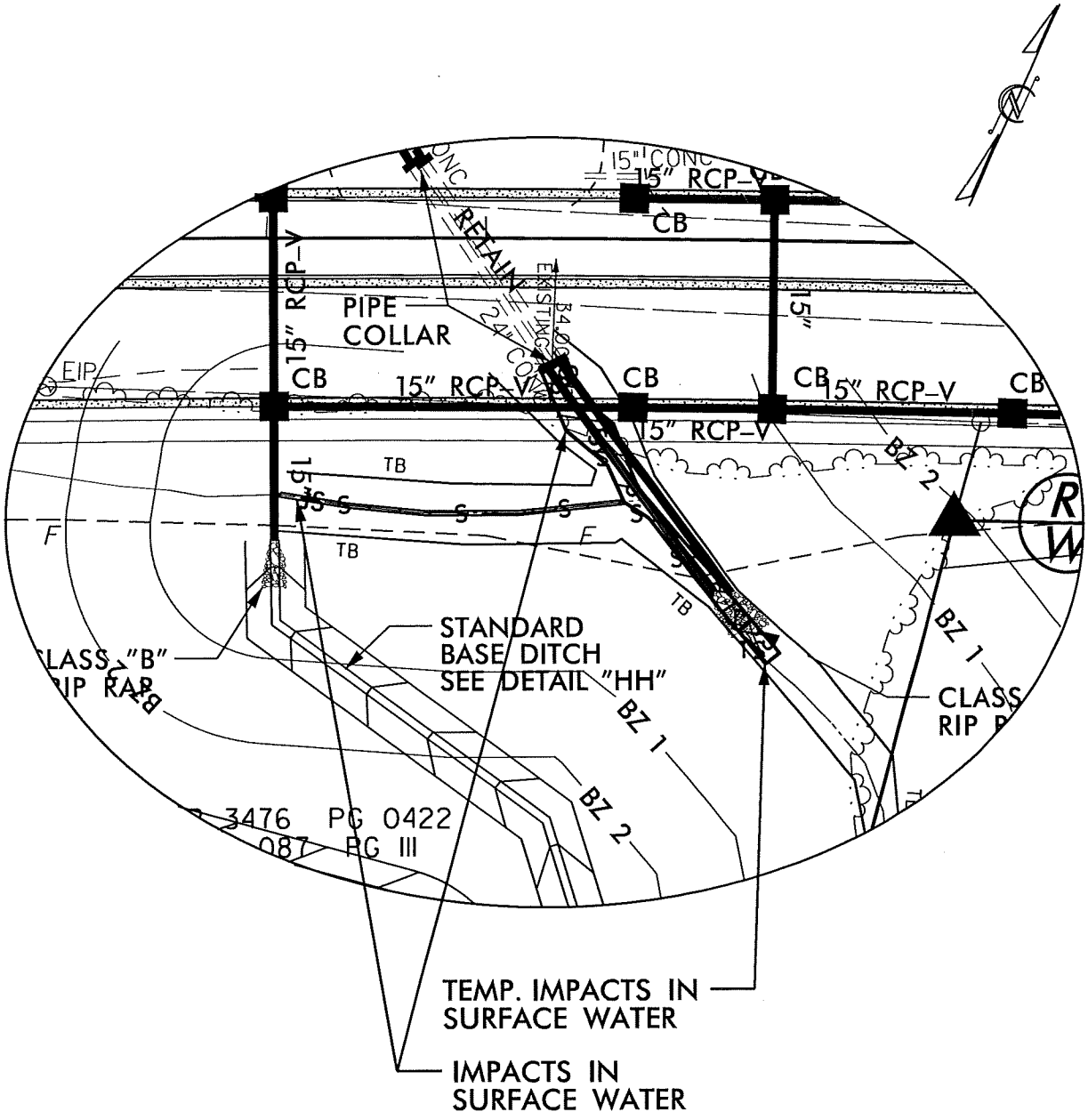
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

40' 0' 40'

GRAPHIC SCALE

NCDOT

DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 8.2494701 (U-3615A)
SR 1003 (NORTH MAIN STREET)
AND SR 1820 (SKEET CLUB ROAD)
BETWEEN US 311 AND
SR 1818 (JOHNSON STREET)



SITE 4 ENLARGEMENT

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

40' 0' 40'

GRAPHIC SCALE

NCDOT

DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 8.2494701 (U-3615A)
SR 1003 (NORTH MAIN STREET)
AND SR 1820 (SKEET CLUB ROAD)
BETWEEN US 311 AND
SR 1818 (JOHNSON STREET)

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
71	McLarty, George C., Jr.	716 Skeet Club Rd., High Point, NC 27265
99	Einig, Gerard B.	3817 Langdale Dr., High Point, NC 27265
100	Boykin, Judy G.	3311 Hillside Dr., High Point, NC 27265
120	Bittner, Stanley S.	3612 Huntingridge Dr., High Point, NC 27265

WETLAND PERMIT DRAWING

NCDOT

DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 8.2494701 (U-3615A)
SR 1003 (NORTH MAIN STREET)
AND SR 1820 (SKEET CLUB ROAD)
BETWEEN US 311 AND
SR 1818 (JOHNSON STREET)

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
2	-L- STA. 120+50 RT.	36" RCP						0.01	<0.01	148	10	
3	-L- STA. 137+00 LT & RT.	48" RCP						0.01	<0.01	132	13	
4	-L- STA. 156+00 RT.	24" RCP						0.01	<0.01	159	10	
TOTALS:			0.00	0.00	0.00	0.00	0.00	0.03	<0.01	439	33	0.00

N.C.D.O.T.
DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 8.2494701 (U-3615A)
SR 1003 (NORTH MAIN STREET)
AND SR 1820 (SKEET CLUB ROAD)
BETWEEN US 311 AND
SR 1818 (JOHNSON STREET)
SHEET 14 OF 14 (9/19/2012)

ATN Revised 3/31/05

9/09/99

TIP: U-3615A

CONTRACT:

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

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

VICINITY MAP

Not To Scale

R/W PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

LOCATION: SR 1003 (NORTH MAIN STREET) AND SR 1820 (SKEET CLUB ROAD) BETWEEN US 311 AND SR 1818 (JOHNSON STREET).

TYPE OF WORK: GRADING, PAVING, DRAINAGE, GUARDRAIL, STRUCTURE, SIGNING AND SIGNALS

BUFFER PERMIT DRAWING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3615A	1	

WBS NO.	F. A. PROJ. NO.	DESCRIPTION
34962.1.1	STP-1820(2)	P.E.
34962.2.2	STP-1820(4)	R/W & UTILITIES

Buffer Drawing
Sheet 1 of 9

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 2015 = 18,100
ADT 2035 = 29,800
DHV = 10 %
D = 55 %
T = 3 % *
V = 50 MPH
* TTST 1 % DUAL 2 %
FUNCTIONAL CLASS:
MINOR ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3615A = 3.144 mi.
LENGTH STRUCTURE TIP PROJECT U-3615A = 0.049 mi.
TOTAL LENGTH TIP PROJECT U-3615A = 3.193 mi.

NCDOT CONTACT: CATHY HOUSER, PE
PROJECT ENGINEER, ROADWAY DESIGN UNIT

Prepared In the Office of: STEWART ENGINEERING, INC.
STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL
250 TOWN HALL DR, STE C, MORRISVILLE, NC 27560
TEL 919.380.8750 FAX 919.380.8752
FOR: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCT 18, 2013

LETTING DATE:
OCT 20, 2015

DAVID RUGGLES, PE
PROJECT ENGINEER

DREW BAIRD, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

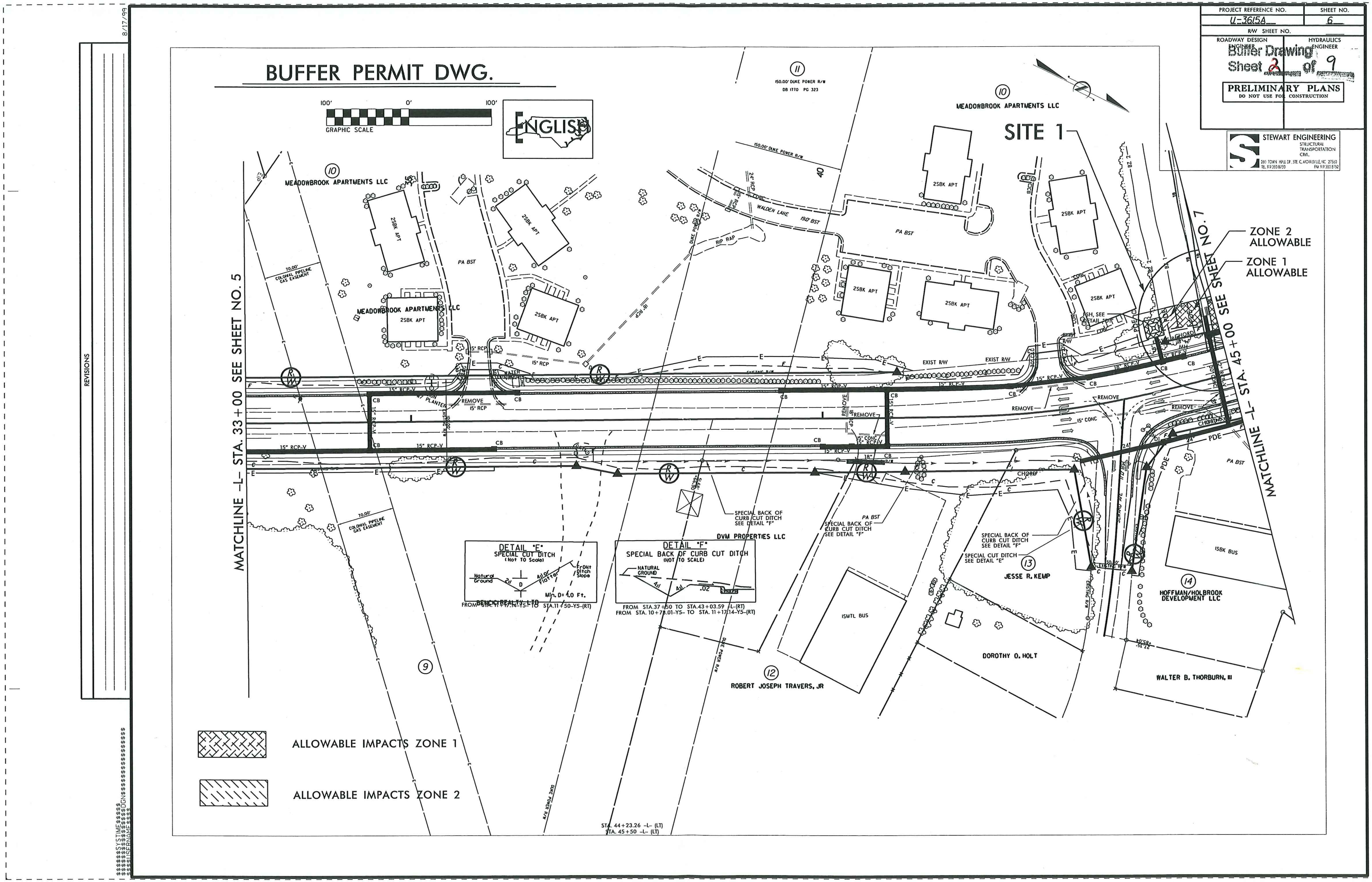
P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*



BUFFER PERMIT DWG.
GRAPHIC SCALE
100' 0' 100'
ENGLISH
PROJECT REFERENCE NO. U-3615A
SHEET NO. 6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Buffer Drawing Sheet 2 of 9
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
STEWART ENGINEERING
STRUCTURAL TRANSPORTATION CIVIL
SITE 1
ZONE 2 ALLOWABLE
ZONE 1 ALLOWABLE
MATCHLINE -L- STA. 33+00 SEE SHEET NO. 5
MATCHLINE -L- STA. 45+00 SEE SHEET NO. 7
MEADOWBROOK APARTMENTS LLC
150.00' DUKE POWER R/W
DB 1770 PG 323
25BK APT
PA BST
WALDEN LANE
RIP RAP
EXIST R/W
REMOVE
15" RCP-V
15" CONC
CB
PDE
CHORD
70.00' COLONIAL PIPELINE GAS EASEMENT
DETAIL "E"
SPECIAL CUT DITCH
(Not To Scale)
Natural Ground
4:1 or Flatter
Front Ditch Slope
Min. D= 1.0 Ft.
DETAIL "F"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
NATURAL GROUND
FROM STA. 37+50 TO STA. 43+03.59 -L- (RT)
FROM STA. 10+78.01 -Y5- TO STA. 11+17.14 -Y5- (RT)
DVM PROPERTIES LLC
SPECIAL BACK OF CURB CUT DITCH SEE DETAIL "F"
SPECIAL CUT DITCH SEE DETAIL "E"
JESSE R. KEMP
HOFFMAN/HOLBROOK DEVELOPMENT LLC
1SBK BUS
1SMTL BUS
DOROTHY O. HOLT
WALTER B. THORBURN, III
ROBERT JOSEPH TRAVERS, JR
STA. 44+23.26 -L- (LT)
STA. 45+50 -L- (LT)
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
REVISIONS
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-3615A	1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Buffer Drawing
Sheet 1 of 9

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL
560 TOWN HALL DR. STE C, MCCRARY VILLE, NC 27560
TEL 919 580 8750 FAX 919 580 8752

8/17/99

REVISIONS

BUFFER PERMIT DWG.

ENGLISH

100' 0' 100'
GRAPHIC SCALE

SITE 1

MATCHLINE -Y8- STA. 15+00 SEE SHEET NO. 17

MATCHLINE -Y6- STA. 18+00 SEE SHEET NO. 17

MATCHLINE -L- STA. 45+00 SEE SHEET NO. 6

MATCHLINE -L- STA. 57+00 SEE SHEET NO. 8

ZONE 1 ALLOWABLE

ZONE 2 ALLOWABLE

(17) JOAN REYNOLDS HUGGINS

(16) JOAN REYNOLDS HUGGINS

(15) BRENDA WHITE SMITH

(19) BILLY CHARLES WARREN

HUGGINS TIRE SALES, INC.

(22) KENNEDY OIL CO INC.

ISMAS CHURCH

(10)

(14) HOFFMAN/HOLBROOK DEVELOPMENT LLC

(18) ST. MICHAELS LUTHERAN CHURCH

(20) JIMMY ROY GARNER

(21) RANDY & GINA MACDONALD

(23) ROGER LEE DAVIS

(28) ROBERT WAYNE DAVIS

(27) B. R. DAVIS HEIRS

ISBK BUS

ISBK CHURCH

ISBKD

ISFD

WELL HOUSE

POOL

CANOPY

SPECIAL LATERAL "V" DITCH SEE DETAIL "G"

STANDARD "V" DITCH SEE DETAIL "G2"

LATERAL BASE DITCH SEE DETAIL "H"

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL "I"

SPECIAL BACK OF CURB BASE DITCH SEE DETAIL "I2"

REMOVE EXIST. DI

REMOVE EXIST. DI & PIPE

CONC. FLUME EXTEND TO BOTTOM OF DITCH

FORSYTH COUNTY / GUILFORD COUNTY LINE

HIGH POINT CITY LIMITS (IN)

HIGH POINT CITY LIMITS

EXISTING R/W

PROPOSED R/W

PDE

DETAIL "G"
SPECIAL LATERAL "V" DITCH
(Not To Scale)

Natural Ground, 4:1, D, Ditch Flatter, Fill Slope

Min. D= 1.0 Ft.

FROM STA. 19+50 TO STA. 20+39 -Y6-(LT)
FROM STA. 19+00 TO STA. 20+39 -Y6-(RT)

DETAIL "H"
LATERAL BASE DITCH
(Not To Scale)

Natural Ground, d, 4:1, D, B, b, F/F, Fill Slope

*When B is ≥ 6.0'
Std. No. 876.01

Min. D = 1.5 Ft.
Max. d= 1.5 Ft.
B= 3.0 Ft.
b= 3.0 Ft.

Type of Liner = RSRM

FROM STA.48+00 TO STA.51+49.7-L-(LT)
FROM STA. 21+00 TO 20+39 -Y6-(RT)

DETAIL "I"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)

NATURAL GROUND, 4:1, 4:1, Liners

FROM STA.47+00 TO STA.58+00 -L-(RT)

DETAIL "I2"
SPECIAL BACK OF CURB BASE DITCH
(NOT TO SCALE)

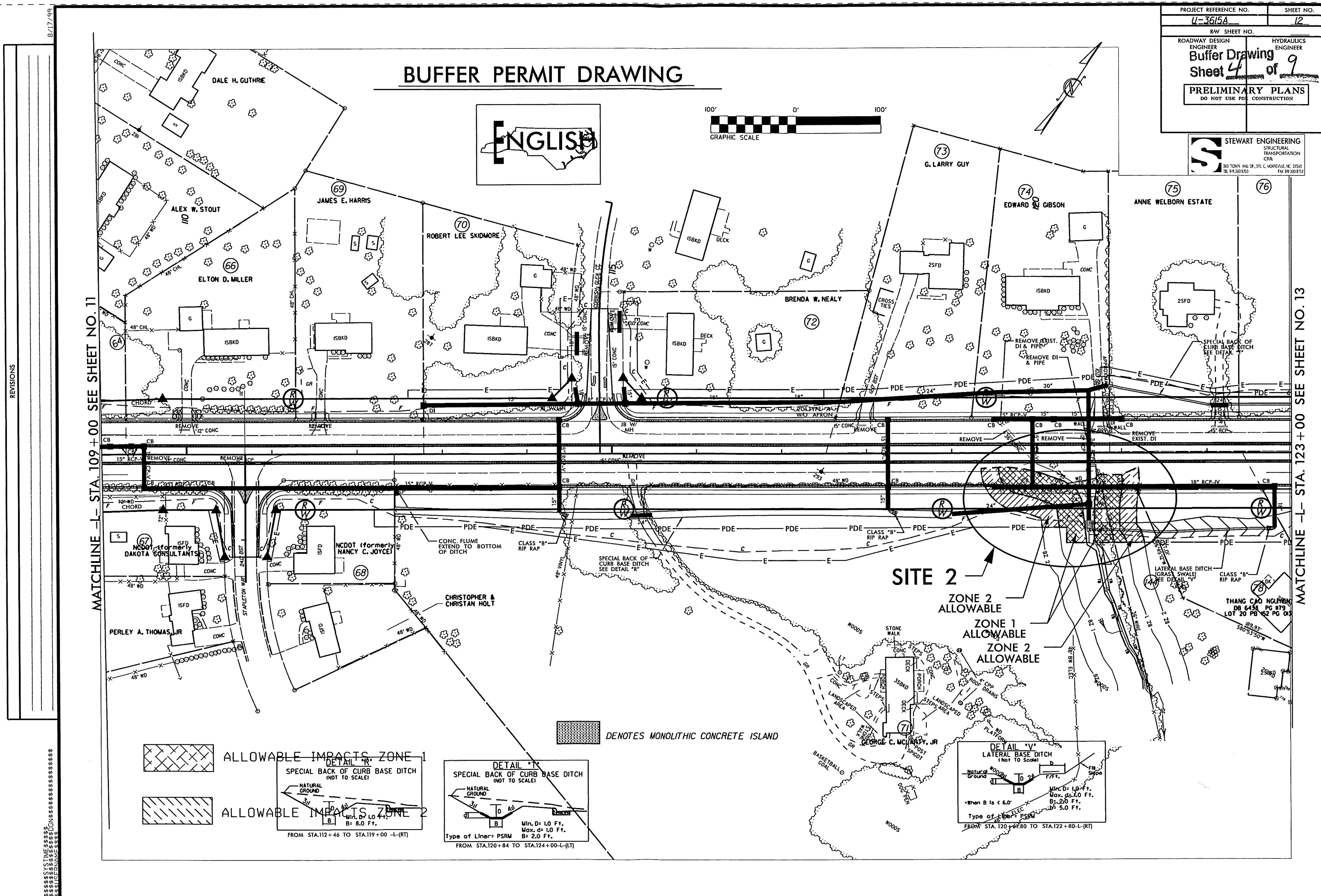
NATURAL GROUND, 3:1, D, 4:1, B

Min. D= 1.0 Ft.
B= 3.0 Ft.

FROM STA.52+46 TO STA.56+00-L-(LT)
FROM STA. 20+39 TO 21+00 -Y6-(LT)

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2


PROJECT REFERENCE NO.
U-3615A
SHEET NO.
12
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Buffer Drawing Sheet 4 of 9
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
STEWART ENGINEERING
STRUCTURAL TRANSPORTATION CIVIL
BUFFER PERMIT DRAWING
ENGLISH
100'
0'
100'
GRAPHIC SCALE
DALE H. GUTHRIE
ALEX W. STOUT
ELTON D. MILLER
JAMES E. HARRIS
ROBERT LEE SKIDMORE
BRENDA W. NEALY
G. LARRY GUY
EDWARD GIBSON
ANNIE WELBORN ESTATE
NCDOT (formerly DAKOTA CONSULTANTS)
NCDOT (formerly NANCY C. JOYCE)
PERLEY A. THOMAS, JR
CHRISTOPHER & CHRISTAN HOLT
GEORGE C. MCNATY, JR
THANG CAO NGUYEN
MATCHLINE -L- STA. 109+00 SEE SHEET NO. 11
MATCHLINE -L- STA. 123+00 SEE SHEET NO. 13
SITE 2
ZONE 2 ALLOWABLE
ZONE 1 ALLOWABLE
ZONE 2 ALLOWABLE
CONC. FLUME EXTEND TO BOTTOM OF DITCH
CLASS "B" RIP RAP
SPECIAL BACK OF CURB BASE DITCH SEE DETAIL "R"
LATERAL BASE DITCH (GRASS SWALE) SEE DETAIL "V"
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
DENOTES MONOLITHIC CONCRETE ISLAND
DETAIL "R"
SPECIAL BACK OF CURB BASE DITCH
(NOT TO SCALE)
Min. D= 1.0 Ft.
B= 8.0 Ft.
FROM STA.112+46 TO STA.119+00 -L-(RT)
DETAIL "T"
SPECIAL BACK OF CURB BASE DITCH
(NOT TO SCALE)
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
Type of Liner= PSRM
FROM STA.120+84 TO STA.124+00-L-(LT)
DETAIL "V"
LATERAL BASE DITCH
(Not TO Scale)
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
b= 5.0 Ft.
FROM STA. 120+69.80 TO STA.122+80-L-(RT)
REVISIONS
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-3615A	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Buffer Drawing Sheet 5 of 9

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL
260 TOWNE HALL DR., STE. C, MORRISVILLE, NC 27560
TEL 919.380.8750 FAX 919.380.8752

BUFFER PERMIT DRAWING

ENGLISH

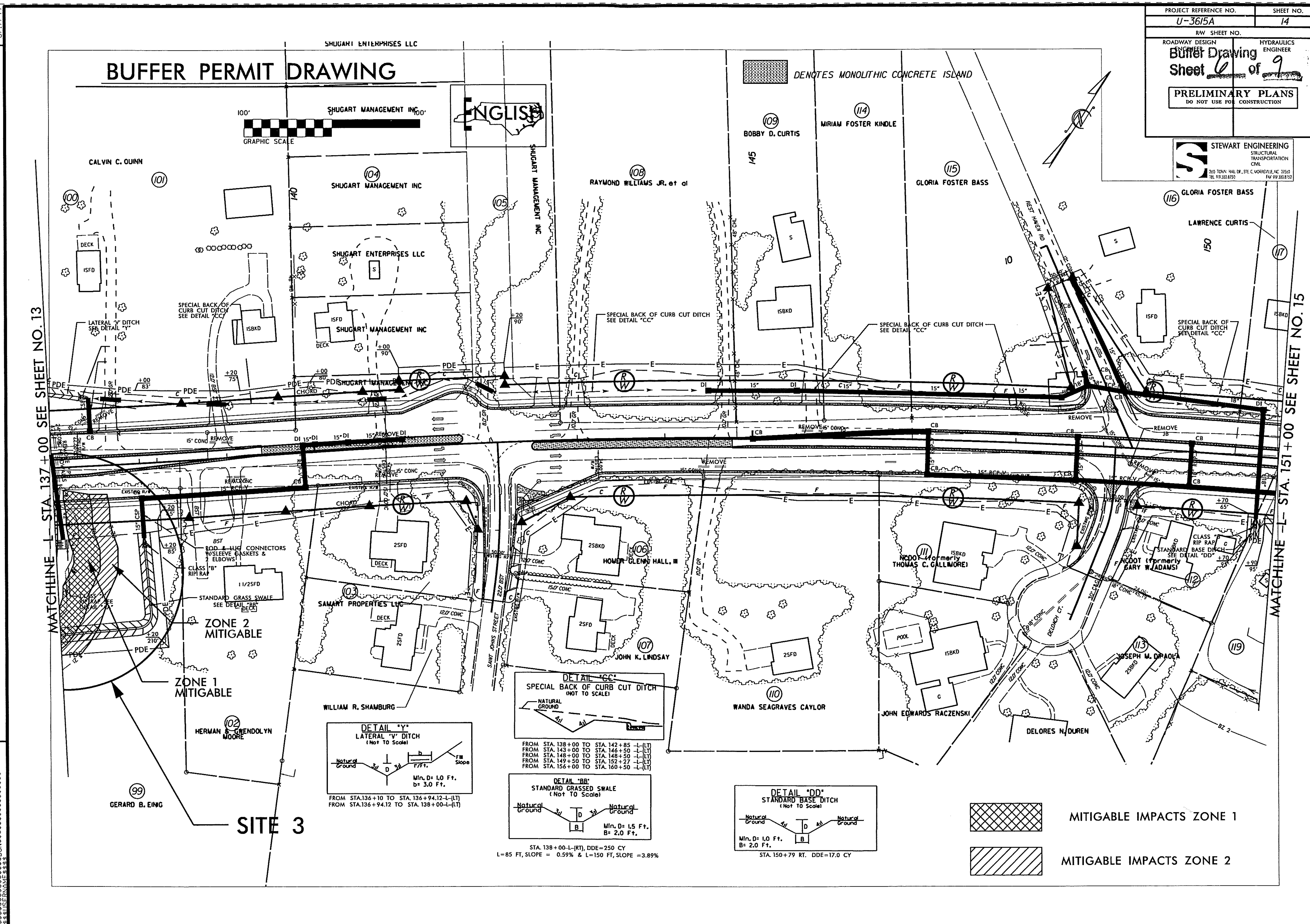
▩ MITIGABLE IMPACTS ZONE 1

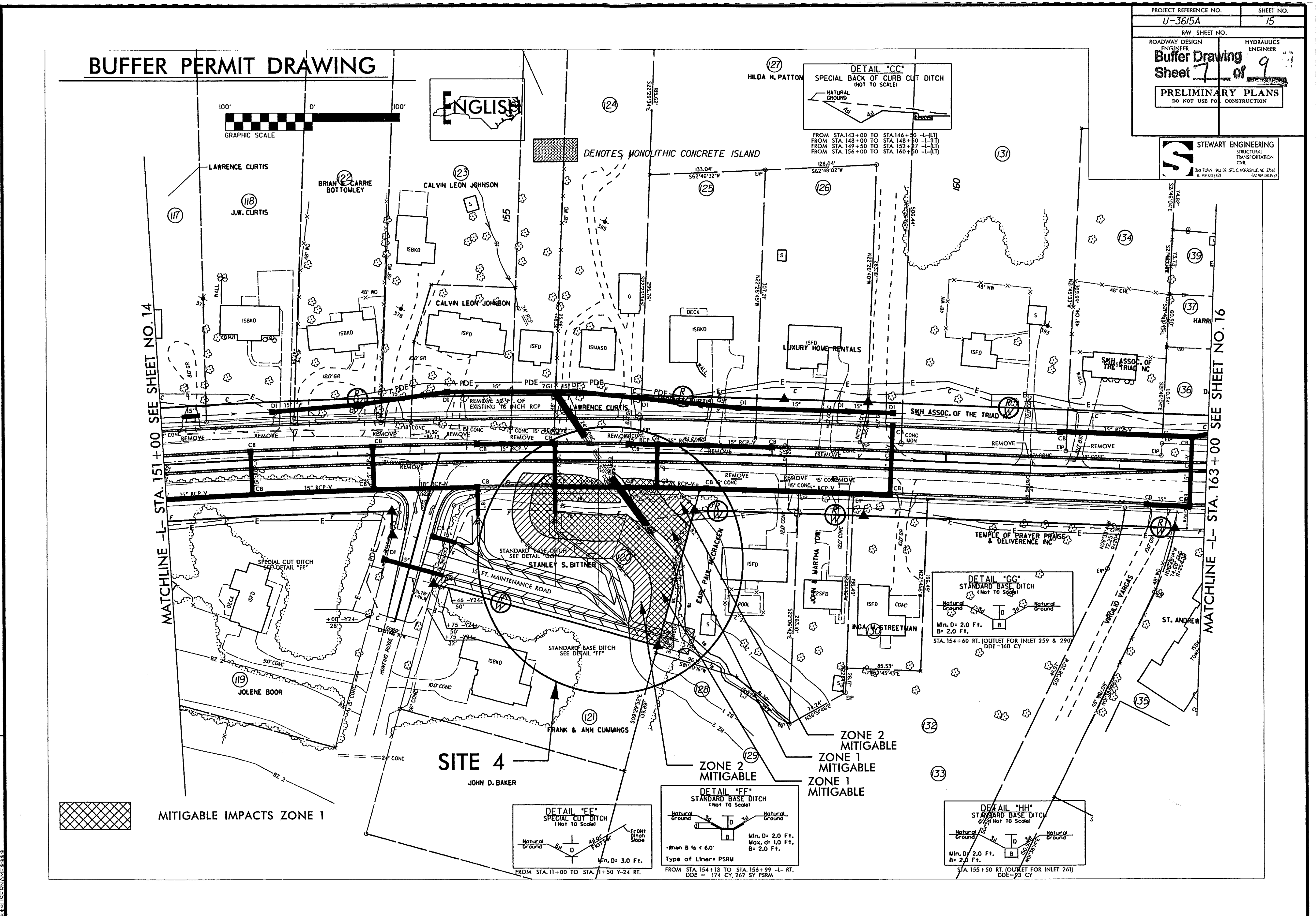
▨ MITIGABLE IMPACTS ZONE 2

REVISIONS

8/17/99

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


PROJECT REFERENCE NO.
U-3615A
SHEET NO.
14
BUFFER PERMIT DRAWING
Buffer Drawing Sheet 6 of 9
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
STEWART ENGINEERING
ENGLISH
DENOTES MONOLITHIC CONCRETE ISLAND
MATCHLINE -L- STA. 137+00 SEE SHEET NO. 13
MATCHLINE -L- STA. 151+00 SEE SHEET NO. 15
ZONE 2 MITIGABLE
ZONE 1 MITIGABLE
SITE 3
DETAIL "Y"
LATERAL "V" DITCH
(Not To Scale)
Min. D= 1.0 Ft.
b= 3.0 Ft.
FROM STA.136+10 TO STA. 136+94.12-L-(LT)
FROM STA.136+94.12 TO STA. 138+00-L-(LT)
DETAIL "CC"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
FROM STA. 138+00 TO STA. 142+85 -L-(LT)
FROM STA. 143+00 TO STA. 146+50 -L-(LT)
FROM STA. 148+00 TO STA. 148+50 -L-(LT)
FROM STA. 149+50 TO STA. 152+27 -L-(LT)
FROM STA. 156+00 TO STA. 160+50 -L-(LT)
DETAIL "BB"
STANDARD GRASSED SWALE
(Not To Scale)
Min. D= 1.5 Ft.
B= 2.0 Ft.
STA. 138+00-L-(RT), DDE=250 CY
L=85 FT, SLOPE = 0.59% & L=150 FT, SLOPE =3.89%
DETAIL "DD"
STANDARD BASE DITCH
(Not To Scale)
Min. D= 1.0 Ft.
B= 2.0 Ft.
STA. 150+79 RT. DDE=17.0 CY
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
CALVIN C. QUINN
SHUGART ENTERPRISES LLC
SHUGART MANAGEMENT INC
RAYMOND WILLIAMS JR. et al
BOBBY D. CURTIS
MIRIAM FOSTER KINDLE
GLORIA FOSTER BASS
LAWRENCE CURTIS
SAMART PROPERTIES LLC
WILLIAM R. SHAMBURG
HERMAN & GWENDOLYN MOORE
GERARD B. EING
HOMER GLENN HALL, III
JOHN K. LINDSAY
WANDA SEAGRAVES CAYLOR
NCDOT (formerly THOMAS C. GALLIMORE)
NCDOT (formerly GARY W. ADAMS)
JOHN EDWARDS RACZENSKI
DELORES N. DUREN
JOSEPH M. DIPAOLA
SAINT JOHNS STREET
DELOACH CT.
REST HAVEN RD
GRAPHIC SCALE
REVISIONS
8/17/99


BUFFER PERMIT DRAWING
PROJECT REFERENCE NO. U-3615A
SHEET NO. 15
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Buffer Drawing Sheet 7 of 9
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
STEWART ENGINEERING
STRUCTURAL TRANSPORTATION CIVIL
ENGLISH
GRAPHIC SCALE
100' 0' 100'
DENOTES MONOLITHIC CONCRETE ISLAND
DETAIL "CC"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
NATURAL GROUND
FROM STA. 143+00 TO STA. 146+50 -L-(LT)
FROM STA. 148+00 TO STA. 148+50 -L-(LT)
FROM STA. 149+50 TO STA. 152+27 -L-(LT)
FROM STA. 156+00 TO STA. 160+50 -L-(LT)
HILDA H. PATTON
LAWRENCE CURTIS
J.W. CURTIS
BRIAN & CARRIE BOTTOMLEY
CALVIN LEON JOHNSON
LUXURY HOME RENTALS
SIKH ASSOC. OF THE TRIAD NC
TEMPLE OF PRAYER PRAISE & DELIVERENCE INC
STANLEY S. BITTNER
EARL PAUL MCCRACKEN
JOHN & MARTHA YORK
INGA M. STREETMAN
VIRGILIO VARGAS
ST. ANDREW
JOLENE BOOR
FRANK & ANN CUMMINGS
JOHN D. BAKER
15 FT. MAINTENANCE ROAD
HUNTING RIDGE
SPECIAL CUT DITCH SEE DETAIL "EE"
STANDARD BASE DITCH SEE DETAIL "GG"
STANDARD BASE DITCH SEE DETAIL "FF"
MATCHLINE -L- STA. 151+00 SEE SHEET NO. 14
MATCHLINE -L- STA. 163+00 SEE SHEET NO. 16
SITE 4
ZONE 2 MITIGABLE
ZONE 1 MITIGABLE
ZONE 2 MITIGABLE
ZONE 1 MITIGABLE
MITIGABLE IMPACTS ZONE 1
DETAIL "GG"
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Min. D= 2.0 Ft.
B= 2.0 Ft.
STA. 154+60 RT. (OUTLET FOR INLET 259 & 290)
DDE=160 CY
DETAIL "EE"
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
Min. D= 3.0 Ft.
FROM STA. 11+00 TO STA. 11+50 Y-24 RT.
DETAIL "FF"
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Min. D= 2.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
*When B is < 6.0'
Type of Liner= PSRM
FROM STA. 154+13 TO STA. 156+99 -L- RT.
DDE = 174 CY, 262 SY PSRM
DETAIL "HH"
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Min. D= 2.0 Ft.
B= 2.0 Ft.
STA. 155+50 RT. (OUTLET FOR INLET 261)
DDE=93 CY
REVISIONS
8/17/99

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
10	Meadowbrook Apt.'s LLC	338 N Elm St., Ste 108, Greensboro, NC 27401
71	McLarty, George C. Jr.	716 Skeet Club Rd., High Point, NC 27265
78	Nguyen, Thang Cao	587 Camden Park Ct., High Point, NC 27265
99	Einig, Gerard B.	3817 Langdale Dr., High Point, NC 27265
120	Bittner, Stanley S.	3612 Huntingridge Dr., High Point, NC 27265
128	McCracken, Earl Paul	920 Skeet Club Rd., High Point, NC 27265
144	Britt Development Co of Archdale LLC	PO Box 4587, High Point, NC 27263

BUFFER PERMIT DRAWING

NCDOT

DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 8.2494701 (U-3615A)
SR 1003 (NORTH MAIN STREET)
AND SR 1820 (SKEET CLUB ROAD)
BETWEEN US 311 AND
SR 1818 (JOHNSON STREET)

9/24/12

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	48" RCP	-L- STA. 45+00 LT.	X			2370	1792	4162					
2	42" RCP	-L- STA. 120+50 RT.	X			6278	3988	10266					
3	42" RCP	-L- STA. 137+00 RT.	X						10201	5639	15840		
4	2 @ 24" RCP	-L- STA. 156+00 RT.	X						7174	3536	10710		
4	2 @ 24" RCP	-L- STA. 156+00 RT.			X				5898	3605	9503		
TOTAL:						8648	5780	14428	23273	12780	36053		

N.C.D.O.T.
DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 8.2494701 (U-3615A)
SR 1003 (NORTH MAIN STREET)
AND SR 1820 (SKEET CLUB ROAD)
BETWEEN US 311 AND
SR 1818 (JOHNSON STREET)

SHEET 9 OF 9 (9/19/2012)

Rev. May 2006

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3615A	1	

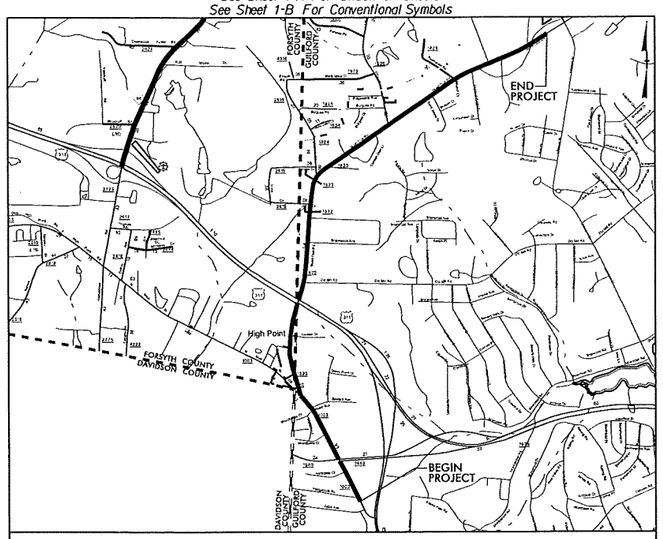
WBS NO.	F.A. PROJ. NO.	DESCRIPTION
34962.1.1	STP-1820(2)	P.E.
34962.2.2	STP-1820(4)	R/W & UTILITIES

TIP: U-3615A

CONTRACT:

R/W PLANS

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



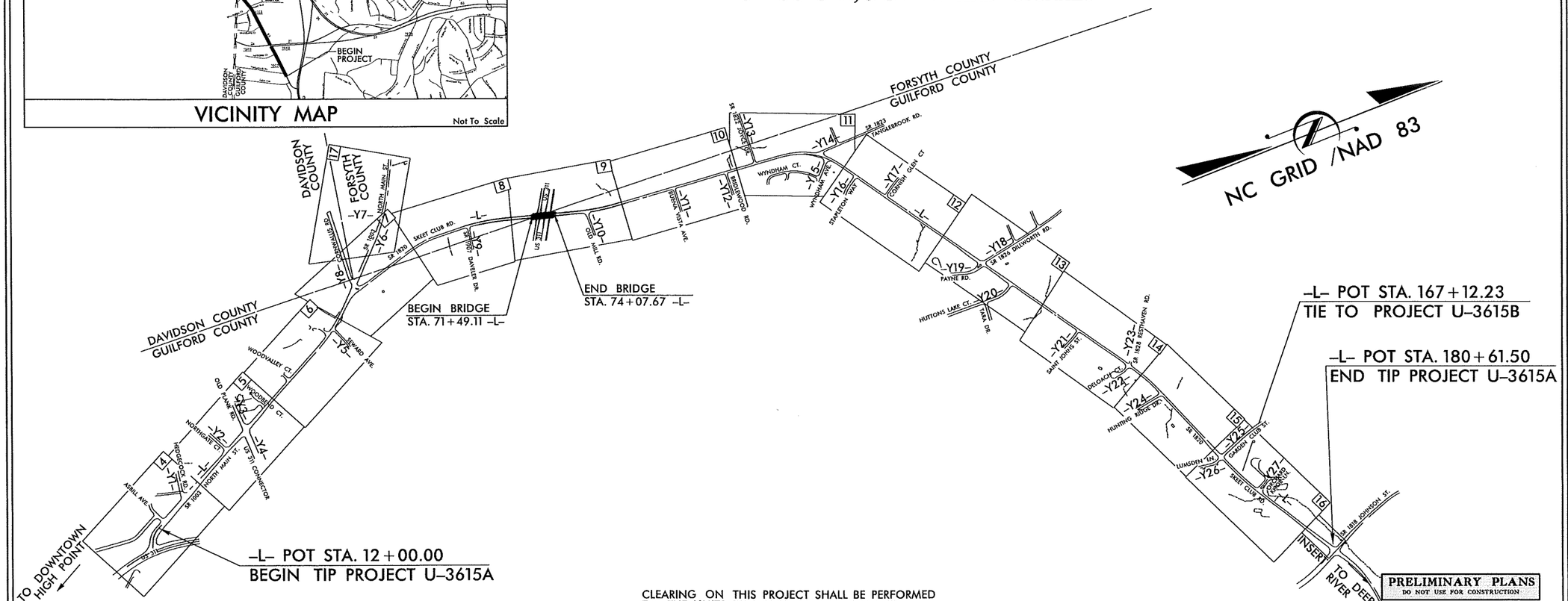
VICINITY MAP Not To Scale

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

LOCATION: SR 1003 (NORTH MAIN STREET) AND SR 1820 (SKEET CLUB ROAD) BETWEEN US 311 AND SR 1818 (JOHNSON STREET).

TYPE OF WORK: GRADING, PAVING, DRAINAGE, GUARDRAIL, STRUCTURE, SIGNING AND SIGNALS



NC GRID /NAD 83

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS 50 25 0 50 100

PROFILE (HORIZONTAL) 50 25 0 50 100

PROFILE (VERTICAL) 10 5 0 10 20

DESIGN DATA

ADT 2015 = 18,100
ADT 2035 = 29,800
DHV = 10 %
D = 55 %
T = 3 % *
V = 50 MPH
* TTST 1 % DUAL 2 %

FUNCTIONAL CLASS: MINOR ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3615A = 3.144mi.
LENGTH STRUCTURE TIP PROJECT U-3615A = 0.049mi.
TOTAL LENGTH TIP PROJECT U-3615A = 3.193mi.

NCDOT CONTACT: CATHY HOUSER, PE
PROJECT ENGINEER, ROADWAY DESIGN UNIT

Prepared In the Office of: STEWART ENGINEERING, INC.
STEWART ENGINEERING
STRUCTURAL TRANSPORTATION CIVIL
260 JOHN HALE DR., STE C, MORRISVILLE, NC 27560
TEL 919 380 8750 FAX 919 380 8752
FOR: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCT 18, 2013

LETTING DATE: OCT 20, 2015

DAVID RUGGLES, PE
PROJECT ENGINEER

DREW BAIRD, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

07-OCT-2012 12:34
R:\Roadway\Proj\U3615A_rdy_tsh.dgn
$$$$USERNAME$$$$

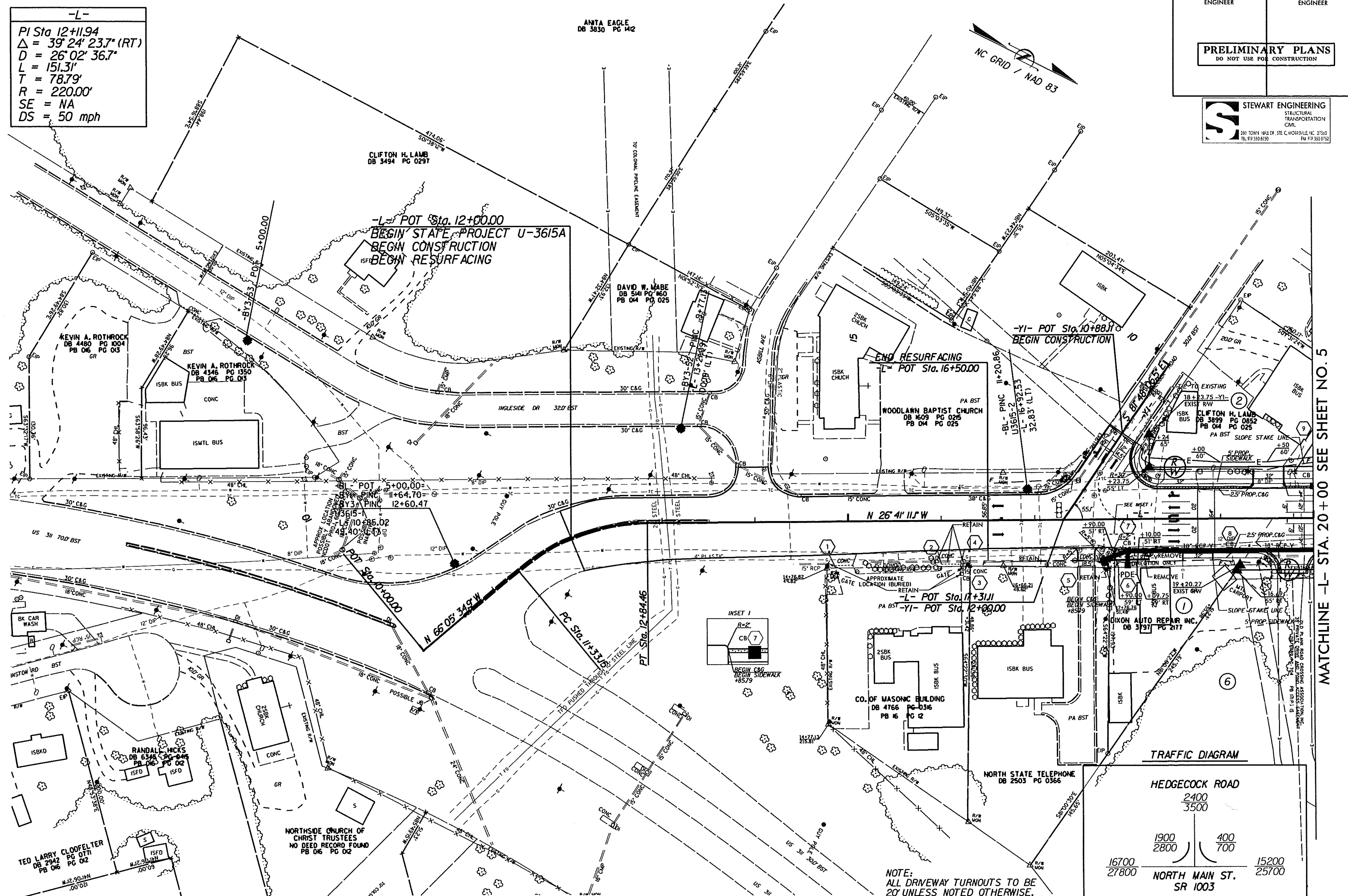
9/09/99

PROJECT REFERENCE NO.	SHEET NO.
U-3615A	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL

-L-
PI Sta 12+11.94
Δ = 39° 24' 23.7" (RT)
D = 26° 02' 36.7"
L = 151.31'
T = 78.79'
R = 220.00'
SE = NA
DS = 50 mph



NC GRID / NAD 83
ANITA EAGLE
DB 3830 PG 1412
CLIFTON H. LAMB
DB 3494 PG 0297
-L- POT Sta. 12+00.00
BEGIN STATE PROJECT U-3615A
BEGIN CONSTRUCTION
BEGIN RESURFACING
KEVIN A. ROTHROCK
DB 4480 PG 1004
PB 016 PG 013
KEVIN A. ROTHROCK
DB 4346 PG 1350
PB 016 PG 013
DAVID W. MABE
DB 5141 PG 160
PB 014 PG 025
INGLESIDE DR 32' BST
WOODLAWN BAPTIST CHURCH
DB 1609 PG 0215
PB 014 PG 025
END RESURFACING
-L- POT Sta. 16+50.00
-Y1- POT Sta. 10+88.11
BEGIN CONSTRUCTION
CLIFTON H. LAMB
DB 3899 PG 0852
PB 014 PG 025
N 26° 41' 11.5" W
N 65° 05' 34.9" W
US 311 70' BST
PC Sta. 11+33.15
PT Sta. 12+84.46
-L- POT Sta. 11+31.11
-Y1- POT Sta. 12+00.00
INSET 1
BEGIN C&G
BEGIN SIDEWALK
DIXON AUTO REPAIR INC.
DB 3797 PG 2177
CO. OF MASONIC BUILDING
DB 4766 PG 0316
PB 16 PG 12
NORTH STATE TELEPHONE
DB 2503 PG 0366
RANDALL HICKS
NORTHSIDE CHURCH OF CHRIST TRUSTEES
NO DEED RECORD FOUND
PB 016 PG 012
TED LARRY CLOOFELTER
DB 2942 PG 0771
PB 016 PG 012
MATCHLINE -L- STA. 20+00 SEE SHEET NO. 5

SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 24 FOR -Y1- PROFILE

NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE.
PROPOSED R/W WIDTH FOR -L- LINE IS 110' UNLESS OTHERWISE NOTED

TRAFFIC DIAGRAM

HEDGECOCK ROAD
2400/3500
1900/2800 400/700
16700/27800 15200/25700
NORTH MAIN ST.
SR 1003
2015/2035 ADT

REVISIONS

8/17/99

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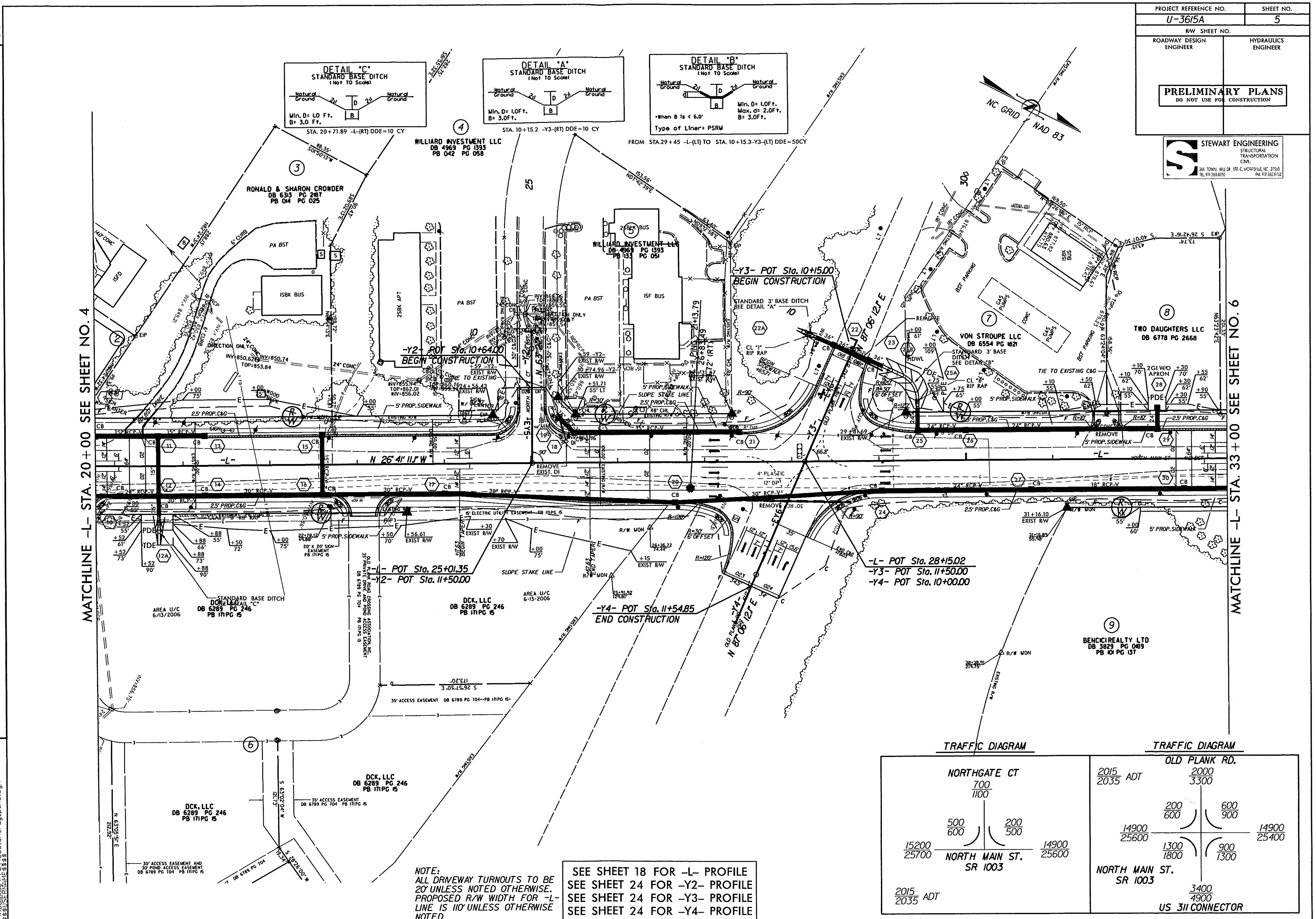

PROJECT REFERENCE NO.	SHEET NO.
U-3615A	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL TRANSPORTATION CIVIL

TRAFFIC DIAGRAM

NORTHGATE CT 700/1100; 500/600; 200/500; 15200/25700; 14900/25600; NORTH MAIN ST. SR 1003; 2015/2035 ADT

TRAFFIC DIAGRAM

OLD PLANK RD. 2000/3300; 2015/2035 ADT; 200/600; 600/900; 14900/25600; 14900/25400; 1300/1800; 900/1300; NORTH MAIN ST. SR 1003; 3400/4900; US 311 CONNECTOR

NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE.
PROPOSED R/W WIDTH FOR -L- LINE IS 110' UNLESS OTHERWISE NOTED

SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 24 FOR -Y2- PROFILE
SEE SHEET 24 FOR -Y3- PROFILE
SEE SHEET 24 FOR -Y4- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
U-3615A	6

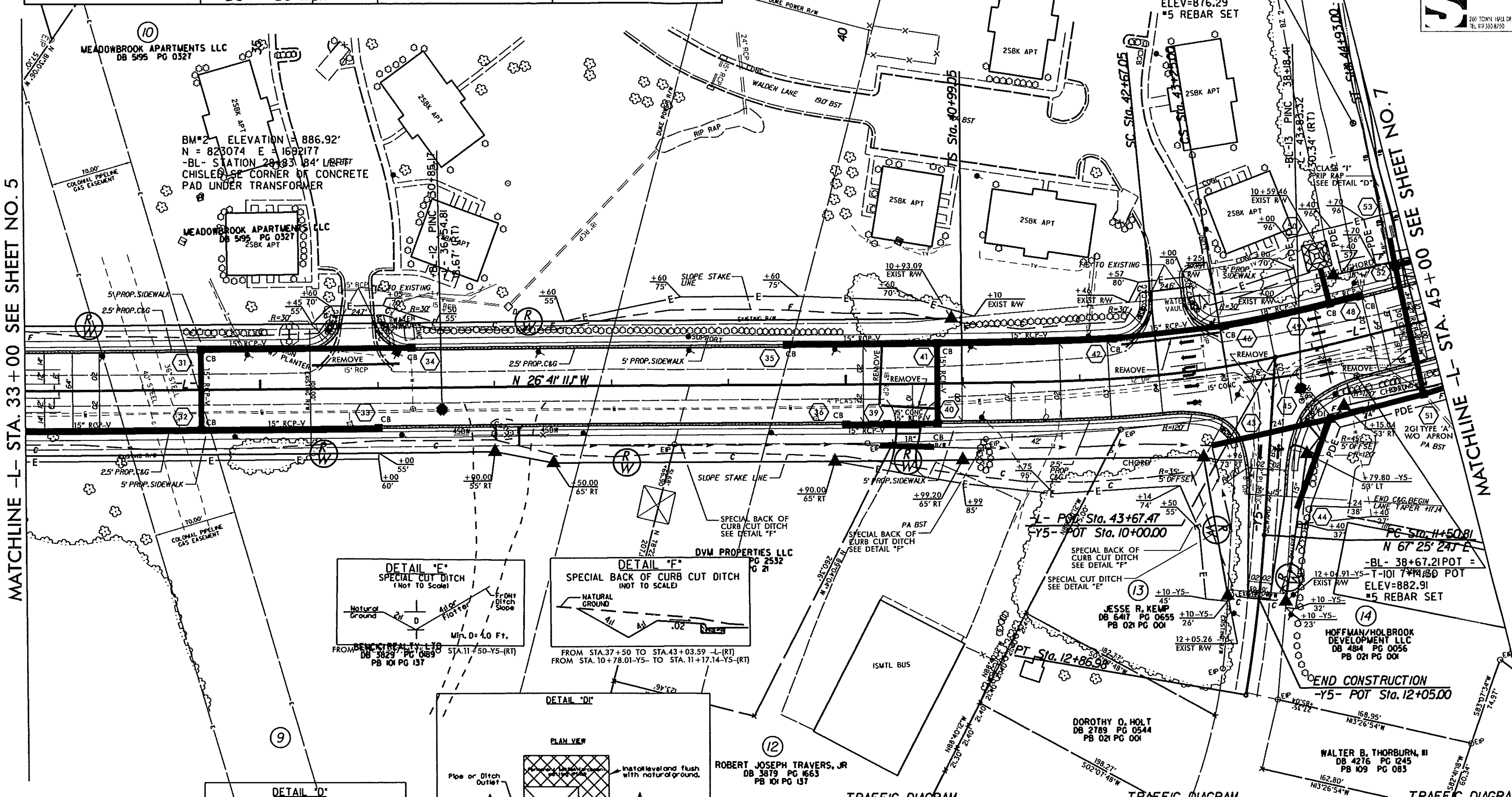
R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL TRANSPORTATION CIVIL

-L-			-Y5-
PIs Sta 42+11.10	PI Sta 42+96.03	PIs Sta 43+81.04	PI Sta 12+18.96
Θs = 5°10' 30.4"	Δ = 3°34' 12.5" (LT)	Θs = 5°10' 30.4"	Δ = 6°00' 05.1" (RT)
Ls = 168.00'	D = 6°09' 39.0"	Ls = 168.00'	D = 4°24' 26.5"
LT = 112.05'	L = 57.95	LT = 112.05'	L = 136.17'
ST = 56.04'	T = 28.98'	ST = 56.04'	T = 68.15'
	R = 930.00'		R = 1,300.00'
	SE = 0.040		
	DS = 50 mph		



NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE.
PROPOSED R/W WIDTH FOR -L- LINE IS 110' UNLESS OTHERWISE NOTED

SEE SHEETS 18 & 19 FOR -L- PROFILE
SEE SHEET 25 FOR -Y5- PROFILE

TRAFFIC DIAGRAM

WOODBEND CT. 100/300; 100/200; 0/100; 14900/25400; 14800/25300; NORTH MAIN ST. SR 1003; 2015/2035 ADT

TRAFFIC DIAGRAM

WOODVALLEY CT. 100/300; 100/200; 0/100; 14800/25300; 14700/25200; NORTH MAIN ST. SR 1003; 2015/2035 ADT

TRAFFIC DIAGRAM

2015/2035 ADT; NORTH MAIN ST. SR 1003; 14700/25200; 14500/25000; 300/300; 100/100; 400/400; SEWARD AVE.

REVISIONS

8/17/99

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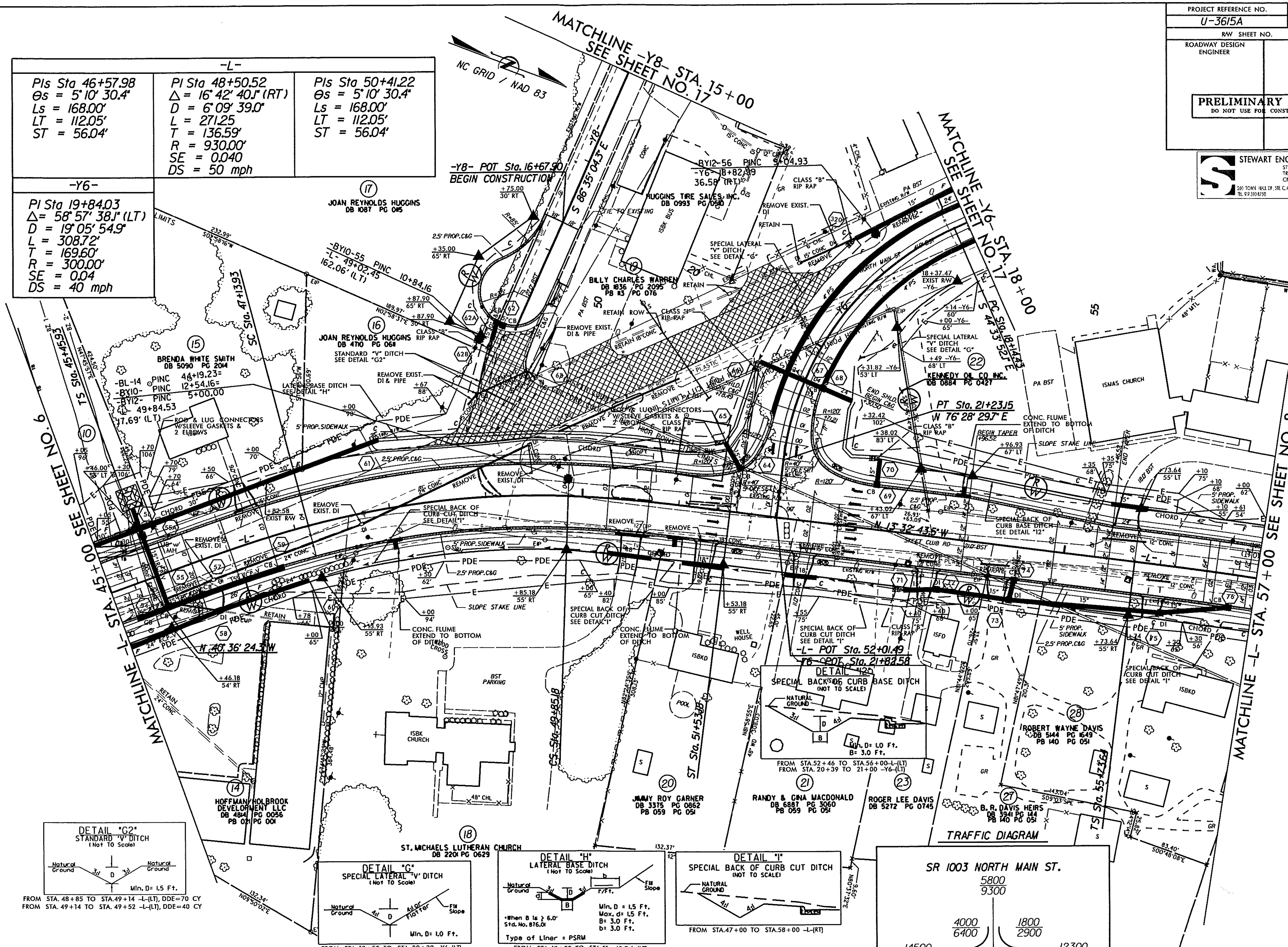
PROJECT REFERENCE NO.	SHEET NO.
U-3615A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL

-L-		
PIs Sta 46+57.98 Θs = 5° 10' 30.4" Ls = 168.00' LT = 112.05' ST = 56.04'	PI Sta 48+50.52 Δ = 16° 42' 40.1" (RT) D = 6° 09' 39.0" L = 271.25 T = 136.59' R = 930.00' SE = 0.040 DS = 50 mph	PIs Sta 50+41.22 Θs = 5° 10' 30.4" Ls = 168.00' LT = 112.05' ST = 56.04'

-Y6-
PI Sta 19+84.03 Δ = 58° 57' 38.1" (LT) D = 19° 05' 54.9" L = 308.72' T = 169.60' R = 300.00' SE = 0.04 DS = 40 mph



DETAIL "G2"
STANDARD "V" DITCH
(Not To Scale)
Natural Ground — D — Natural Ground
Min. D = 1.5 Ft.
FROM STA. 48+85 TO STA. 49+14 -L-(LT), DDE=70 CY
FROM STA. 49+14 TO STA. 49+52 -L-(LT), DDE=40 CY

DETAIL "G"
SPECIAL LATERAL "V" DITCH
(Not To Scale)
Natural Ground — D — 4:1 or Flatter — Fill Slope
Min. D = 1.0 Ft.
FROM STA. 19+50 TO STA. 20+39 -Y6-(LT)
FROM STA. 19+00 TO STA. 20+39 -Y6-(RT)

DETAIL "H"
LATERAL BASE DITCH
(Not To Scale)
Natural Ground — B — Fill Slope
Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
B = 3.0 Ft.
b = 3.0 Ft.
*When B is ≥ 6.0' Std. No. 876.01
Type of Liner = PSRM
FROM STA. 48+00 TO STA. 51+49.7 -L-(LT)
FROM STA. 21+00 TO 20+39 -Y6-(RT)

DETAIL "I"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
NATURAL GROUND
FROM STA. 47+00 TO STA. 58+00 -L-(RT)

DETAIL "12"
SPECIAL BACK OF CURB BASE DITCH
(NOT TO SCALE)
NATURAL GROUND
Min. D = 1.0 Ft.
B = 3.0 Ft.
FROM STA. 52+46 TO STA. 56+00 -L-(LT)
FROM STA. 20+39 TO 21+00 -Y6-(LT)

PAVEMENT REMOVAL

NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE.
PROPOSED R/W WIDTH FOR -L- LINE IS 110' UNLESS OTHERWISE NOTED

SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 25 FOR -Y6- PROFILE

TRAFFIC DIAGRAM

SR 1003 NORTH MAIN ST.
5800 / 9300
4000 / 6400
1800 / 2900
14500 / 25000
12300 / 21500
SKEET CLUB ROAD
SR 1820
2015 / 2035 ADT

REVISIONS

8/17/99

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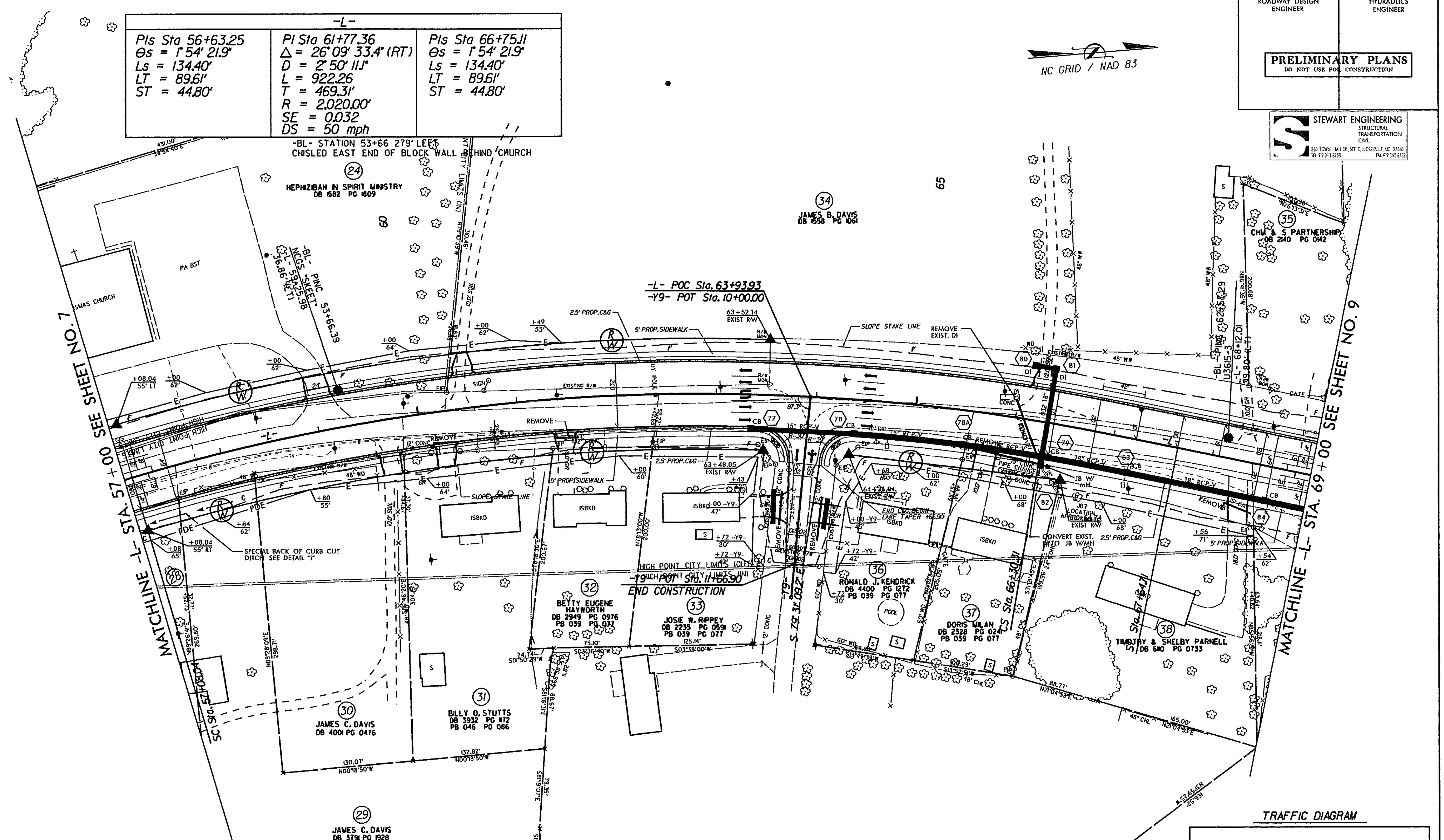
PROJECT REFERENCE NO.	SHEET NO.
U-3615A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

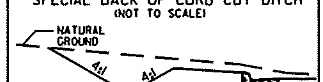
STEWART ENGINEERING
STRUCTURAL · TRANSPORTATION · CIVIL

-L-		
PIs Sta 56+63.25	PI Sta 61+77.36	PIs Sta 66+75.11
θs = 1°54' 21.9"	Δ = 26°09' 33.4" (RT)	θs = 1°54' 21.9"
Ls = 134.40'	D = 2°50' 11.1"	Ls = 134.40'
LT = 89.61'	L = 922.26	LT = 89.61'
ST = 44.80'	T = 469.31'	ST = 44.80'
	R = 2,020.00'	
	SE = 0.032	
	DS = 50 mph	



NC GRID / NAD 83
-BL- STATION 53+66 279' LEFT
CHISLED EAST END OF BLOCK WALL BEHIND CHURCH
HEPHZIBAH IN SPIRIT MINISTRY
DB 1582 PG 1809
JAMES B. DAVIS
DB 1558 PG 1061
CHM & S PARTNERSHIP
DB 2140 PG 0142
-L- POC Sta. 63+93.93
-Y9- POT Sta. 10+00.00
SLOPE STAKE LINE
REMOVE EXIST. DI
2.5' PROP. C&G
5' PROP. SIDEWALK
MATCHLINE -L- STA. 57+00 SEE SHEET NO. 7
MATCHLINE -L- STA. 69+00 SEE SHEET NO. 9
SPECIAL BACK OF CURB CUT DITCH SEE DETAIL "I"
HIGH POINT CITY LIMITS (OUT)
HIGH POINT CITY LIMITS (IN)
-Y9- POT Sta. 11+66.90
END CONSTRUCTION
BETTY EUGENE HAYWORTH
DB 2949 PG 0976
PB 039 PG 077
JOSIE W. RIPPEY
DB 2235 PG 0591
PB 039 PG 077
RONALD J. KENDRICK
DB 4400 PG 1272
PB 039 PG 077
DORIS MILAN
DB 2328 PG 0241
PB 039 PG 077
TIMOTHY & SHELBY PARNELL
DB 610 PG 0733
JAMES C. DAVIS
DB 4001 PG 0476
BILLY O. STUTTS
DB 3932 PG 872
PB 046 PG 086
JAMES C. DAVIS
DB 3791 PG 1928
DB 3941 PG 0139
PB 140 PG 051

DETAIL "I"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)

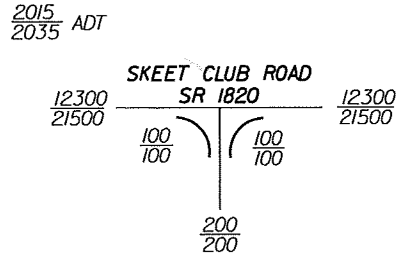


FROM STA. 47+00 TO STA. 58+00 -L- (RT)

SEE SHEETS 19 & 20 FOR -L- PROFILE
SEE SHEET 26 FOR -Y9- PROFILE

NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE.
PROPOSED R/W WIDTH FOR -L- LINE IS 110' UNLESS OTHERWISE NOTED

TRAFFIC DIAGRAM



REVISIONS

8/17/99

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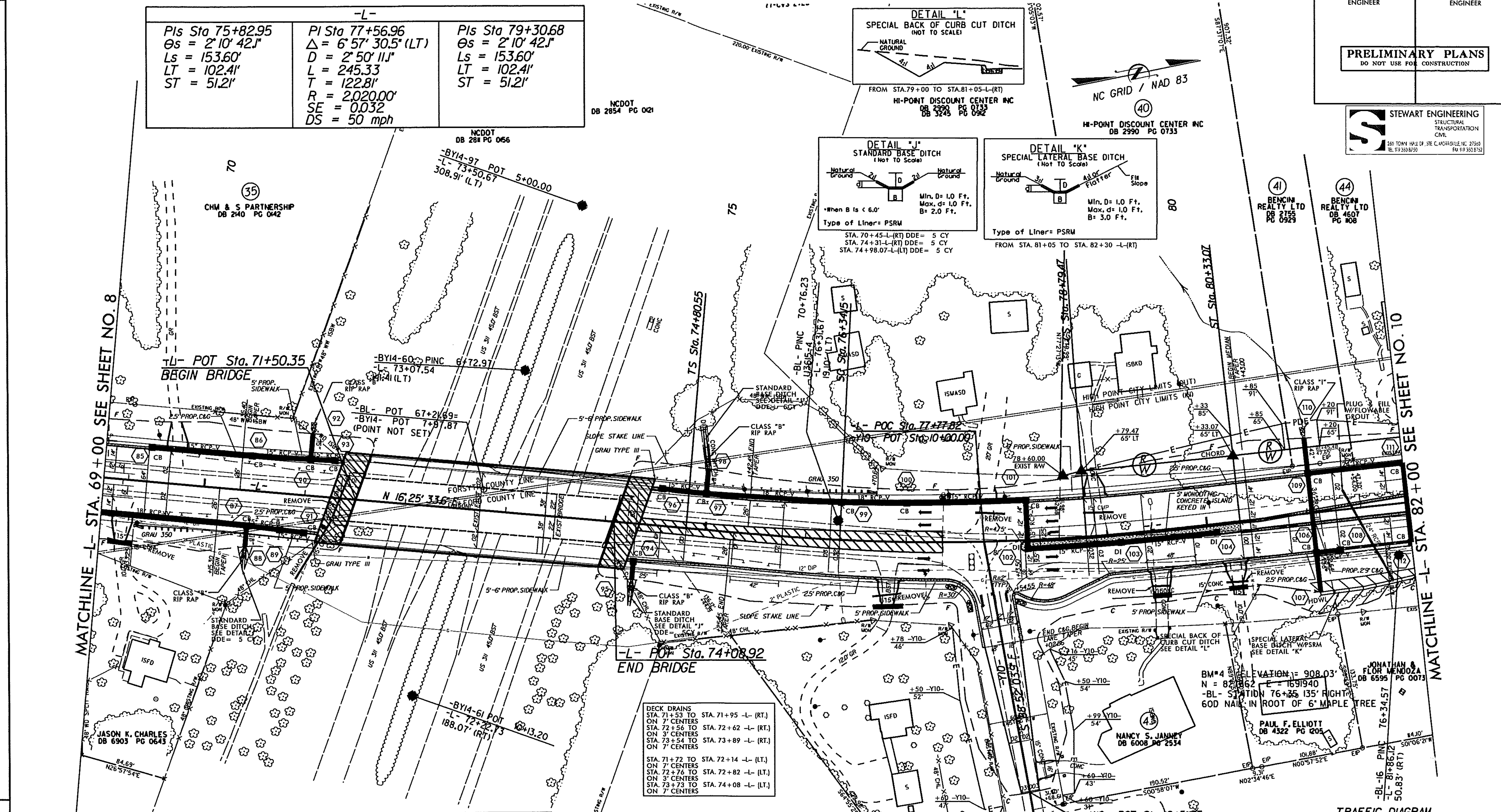
PROJECT REFERENCE NO.	SHEET NO.
U-3615A	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL

-L-		
PIs Sta 75+82.95	PI Sta 77+56.96	PIs Sta 79+30.68
θs = 2° 10' 42.1"	Δ = 6° 57' 30.5" (LT)	θs = 2° 10' 42.1"
Ls = 153.60'	D = 2° 50' 11.1"	Ls = 153.60'
LT = 102.41'	L = 245.33	LT = 102.41'
ST = 51.21'	T = 122.81'	ST = 51.21'
	R = 2,020.00'	
	SE = 0.032	
	DS = 50 mph	

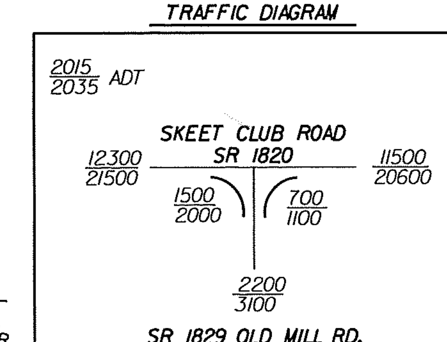


DECK DRAINS	
STA. 71+53 TO ON 7' CENTERS	STA. 71+95 -L- (RT.)
STA. 72+56 TO ON 3' CENTERS	STA. 72+62 -L- (RT.)
STA. 73+54 TO ON 7' CENTERS	STA. 73+89 -L- (RT.)
STA. 71+72 TO ON 7' CENTERS	STA. 72+14 -L- (LT.)
STA. 72+76 TO ON 3' CENTERS	STA. 72+82 -L- (LT.)
STA. 73+73 TO ON 7' CENTERS	STA. 74+08 -L- (LT.)

SEE SHEET 20 FOR -L- PROFILE
SEE SHEET 26 FOR -Y10- PROFILE

NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE. PROPOSED R/W WIDTH FOR -L- LINE IS 110' UPTO US 311 BRIDGE. R/W TRANSITIONS TO 130' AFTER US 311 BRIDGE.

TRAFFIC DIAGRAM



REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-3615A	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL

REVISIONS

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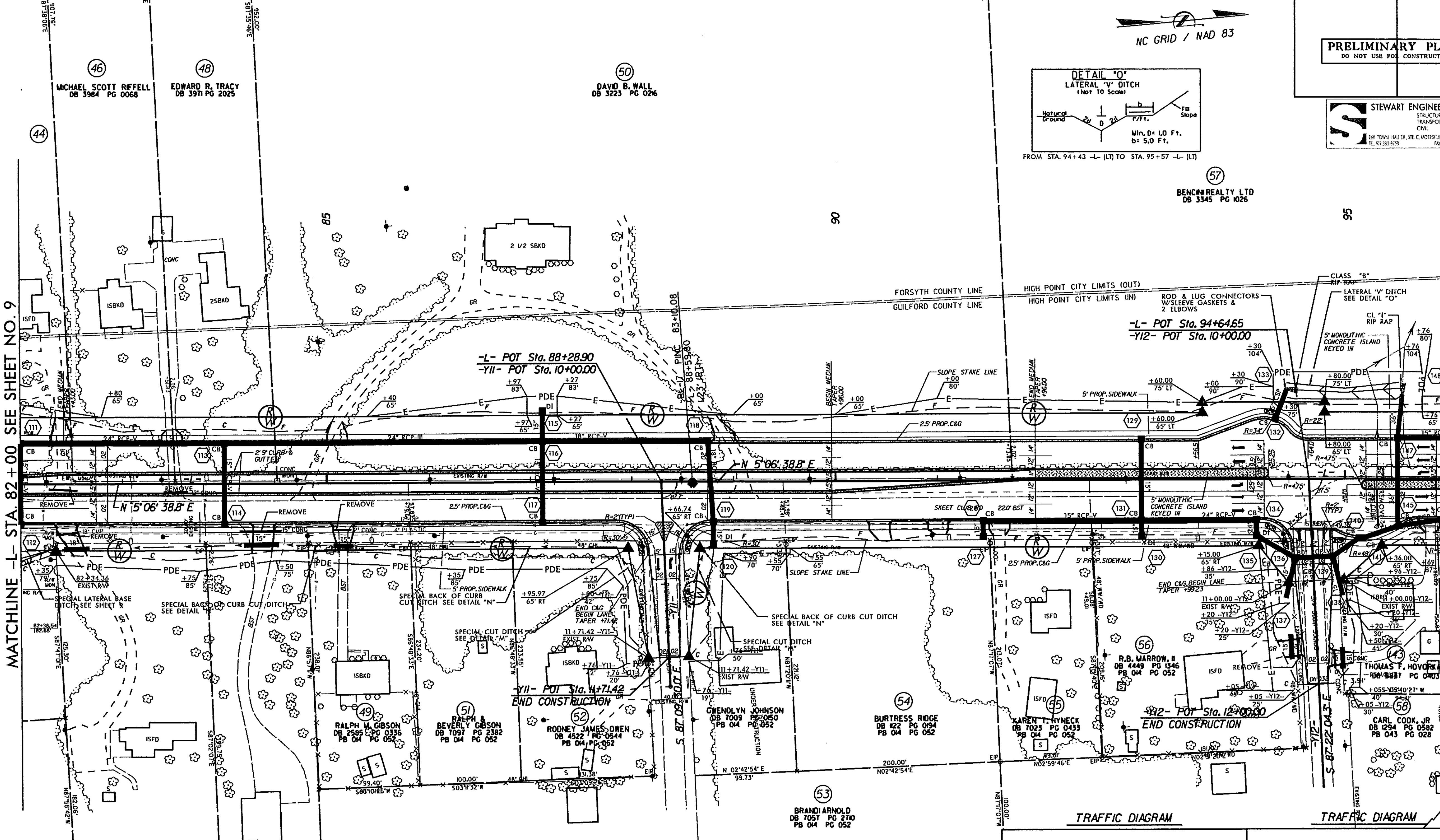
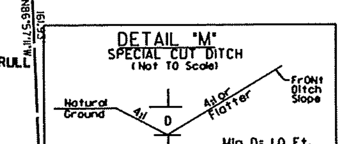
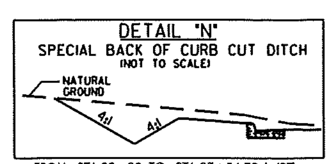


NC GRID / NAD 83
DETAIL "O"
LATERAL "V" DITCH
(Not To Scale)
Natural Ground
Fill Slope
Min. D= 1.0 Ft.
b= 5.0 Ft.
FROM STA. 94+43 -L- (LT) TO STA. 95+57 -L- (LT)
MICHAEL SCOTT RIFFELL
DB 3984 PG 0068
EDWARD R. TRACY
DB 3971 PG 2025
DAVID B. WALL
DB 3223 PG 0216
BENCH REALTY LTD
DB 3345 PG 1026
FORSYTH COUNTY LINE
GUILFORD COUNTY LINE
HIGH POINT CITY LIMITS (OUT)
HIGH POINT CITY LIMITS (IN)
ROD & LUG CONNECTORS W/SLEEVE GASKETS & 2 ELBOWS
CLASS "B" RIP RAP
LATERAL 'V' DITCH SEE DETAIL "O"
-L- POT Sta. 88+28.90
-Y11- POT Sta. 10+00.00
-L- POT Sta. 94+64.65
-Y12- POT Sta. 10+00.00
N 5°06'38.8" E
MATCHLINE -L- STA. 82+00 SEE SHEET NO. 9
MATCHLINE -L- STA. 96+00 SEE SHEET NO. 11
-Y11- POT Sta. 11+71.42
END CONSTRUCTION
-Y12- POT Sta. 12+00.00
END CONSTRUCTION
SPECIAL LATERAL BASE DITCH SEE SHEET 8
SPECIAL BACK OF CURB CUT DITCH SEE DETAIL "N"
SPECIAL CUT DITCH SEE DETAIL "M"
5' MONOLITHIC CONCRETE ISLAND KEYED IN
CHARLES MICHAEL JOYNER
DB 2759 PG 0727
JOHN & NANCY SCHRULL
DB 658 PG 153
RALPH M. GIBSON
DB 2585 PG 0336
PB 014 PG 052
RALPH & BEVERLY GIBSON
DB 7097 PG 2382
PB 014 PG 052
RODNEY JAMES OWEN
DB 4522 PG 0544
PB 014 PG 052
GWENDOLYN JOHNSON
DB T009 PG 2050
PB 014 PG 052
BURTRESS RIDGE
DB 1122 PG 0194
PB 014 PG 052
BRANDI ARNOLD
DB 7057 PG 2110
PB 014 PG 052
KAREN T. HYNECK
DB 7023 PG 0433
PB 014 PG 052
R.B. MARROW, II
DB 4449 PG 1346
PB 014 PG 052
THOMAS F. HOVORKA
CARL COOK, JR
DB 1294 PG 0582
PB 043 PG 028





DENOTES MONOLITHIC CONCRETE ISLAND

NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE.
PROPOSED R/W WIDTH FOR -L- LINE IS 130' UNLESS OTHERWISE NOTED

SEE SHEETS 20 & 21 FOR -L- PROFILE
SEE SHEET 26 FOR -Y11- PROFILE
SEE SHEET 27 FOR -Y12- PROFILE

TRAFFIC DIAGRAM

2015/2035 ADT
SKEET CLUB ROAD SR 1820
11500/20600 — 11400/20500
200/200 — 100/100
300/300
BUENA VISTA AVE.

TRAFFIC DIAGRAM

2015/2035 ADT
SKEET CLUB ROAD SR 1820
11400/20500 — 11400/20500
100/100 — 100/100
200/200
BRIDLEWOOD AVE.

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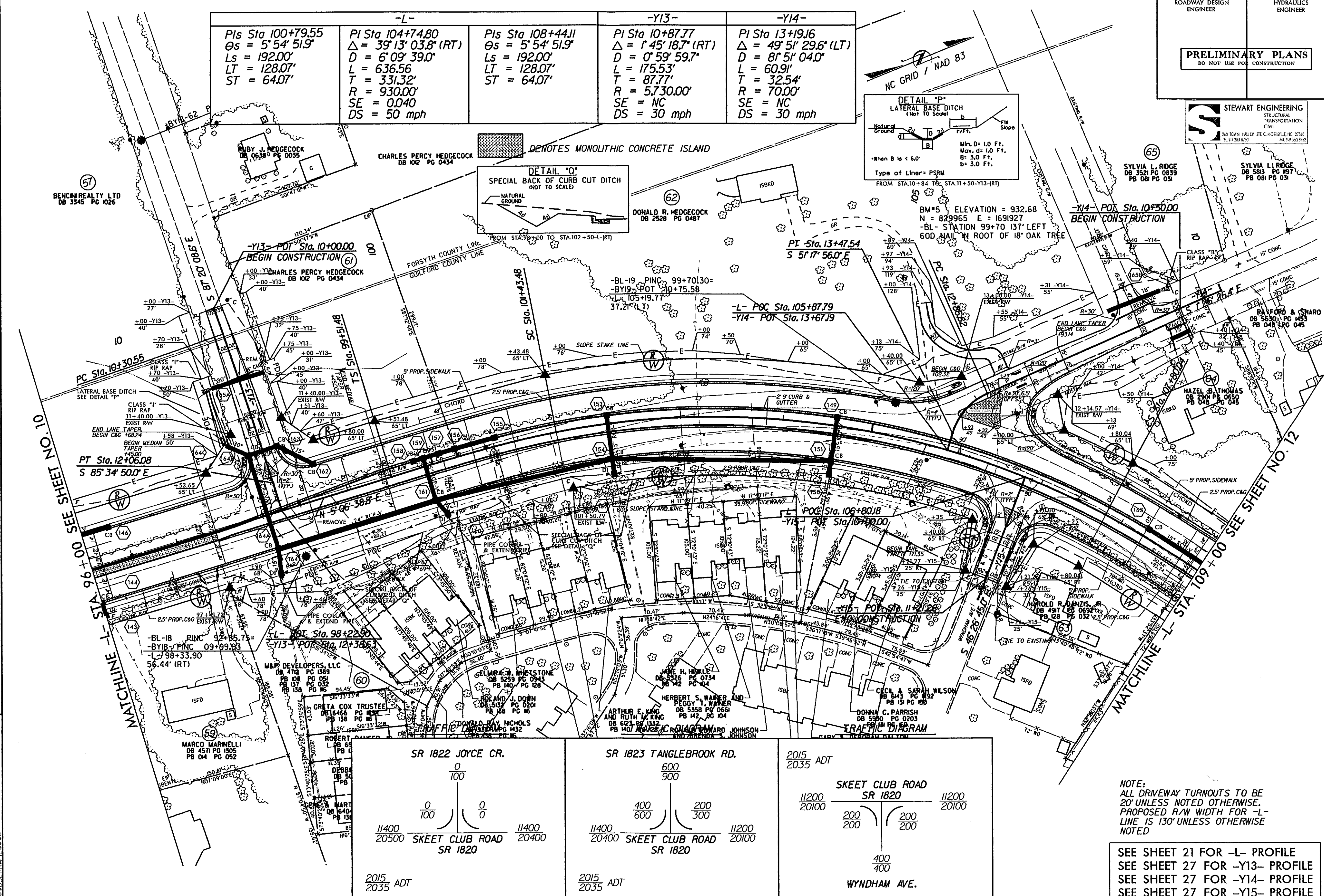
PROJECT REFERENCE NO.	SHEET NO.
U-3615A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL TRANSPORTATION CIVIL

-L-			-Y13-	-Y14-
PIs Sta 100+79.55 Θs = 5° 54' 51.9" Ls = 192.00' LT = 128.07' ST = 64.07'	PI Sta 104+74.80 Δ = 39° 13' 03.8" (RT) D = 6° 09' 39.0" L = 636.56 T = 331.32' R = 930.00' SE = 0.040 DS = 50 mph	PIs Sta 108+44.11 Θs = 5° 54' 51.9" Ls = 192.00' LT = 128.07' ST = 64.07'	PI Sta 10+87.77 Δ = 1° 45' 18.7" (RT) D = 0° 59' 59.7" L = 175.53' T = 87.77' R = 5,730.00' SE = NC DS = 30 mph	PI Sta 13+19.16 Δ = 49° 51' 29.6" (LT) D = 81° 51' 04.0" L = 60.91' T = 32.54' R = 70.00' SE = NC DS = 30 mph



DENOTES MONOLITHIC CONCRETE ISLAND
DETAIL "Q"
SPECIAL BACK OF CURB CUT DITCH (NOT TO SCALE)
FROM STA.98+00 TO STA.102+50-L-(RT)
DETAIL "P"
LATERAL BASE DITCH (Not To Scale)
Type of Liner= PSRM
FROM STA.10+84 TO STA.11+50-Y13-(RT)
NC GRID / NAD 83
BM#5 ELEVATION = 932.68
N = 829965 E = 1691927
-BL- STATION 99+70 137' LEFT
60D NAIL IN ROOT OF 18" OAK TREE
MATCHLINE -L- STA. 96+00 SEE SHEET NO. 10
MATCHLINE -L- STA. 109+00 SEE SHEET NO. 12
-Y13- POT Sta. 10+00.00 BEGIN CONSTRUCTION
-Y14- POT Sta. 10+50.00 BEGIN CONSTRUCTION
-Y15- POT Sta. 11+21.28 END CONSTRUCTION
-L- POC Sta. 105+87.79
-Y14- POT Sta. 13+67.19
-L- POC Sta. 106+80.18
-Y15- POT Sta. 10+00.00
-L- POT Sta. 98+22.90
-Y13- POT Sta. 12+38.63
PC Sta. 10+30.55
PT Sta. 12+06.08
S 85° 34' 50.0" E
PT Sta. 13+47.54
S 51° 17' 56.0" E
CHARLES PERCY HEDGECOCK DB 1012 PG 0434
RUBY J. HEDGECOCK
BENCINI REALTY LTD DB 3345 PG 1026
DONALD R. HEDGECOCK DB 2528 PG 0487
SYLVIA L. RIDGE DB 3521 PG 0839 PB 081 PG 031
HAZEL B. THOMAS DB 2901 PG 0650 PB 048 PG 045
HAROLD R. DANZIS, JR.
M&P DEVELOPERS, LLC DB 4712 PG 1389
GRETA COX TRUSTEE
MARCO MARINELLI DB 4571 PG 1305 PB 014 PG 052
ELMIRA H. WHETSTONE DB 5259 PG 0943 PB 140 PG 128
CECIL & SARAH WILSON
DONNA C. PARRISH DB 5950 PG 0203
FORSYTH COUNTY LINE
GUILFORD COUNTY LINE

TRAFFIC DIAGRAM

SR 1822 JOYCE CR.	SR 1823 TANGLEBROOK RD.	SKEET CLUB ROAD SR 1820 / WYNDHAM AVE.
0/100; left 0/100, right 0/0; SKEET CLUB ROAD SR 1820: 11400/20500 (W), 11400/20400 (E)	600/900; left 400/600, right 200/300; SKEET CLUB ROAD SR 1820: 11400/20400 (W), 11200/20100 (E)	11200/20100 (W), 11200/20100 (E); 200/200, 200/200; WYNDHAM AVE. 400/400
2015 / 2035 ADT	2015 / 2035 ADT	2015 / 2035 ADT

NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE.
PROPOSED R/W WIDTH FOR -L- LINE IS 130' UNLESS OTHERWISE NOTED

SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 27 FOR -Y13- PROFILE
SEE SHEET 27 FOR -Y14- PROFILE
SEE SHEET 27 FOR -Y15- PROFILE

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-3615A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

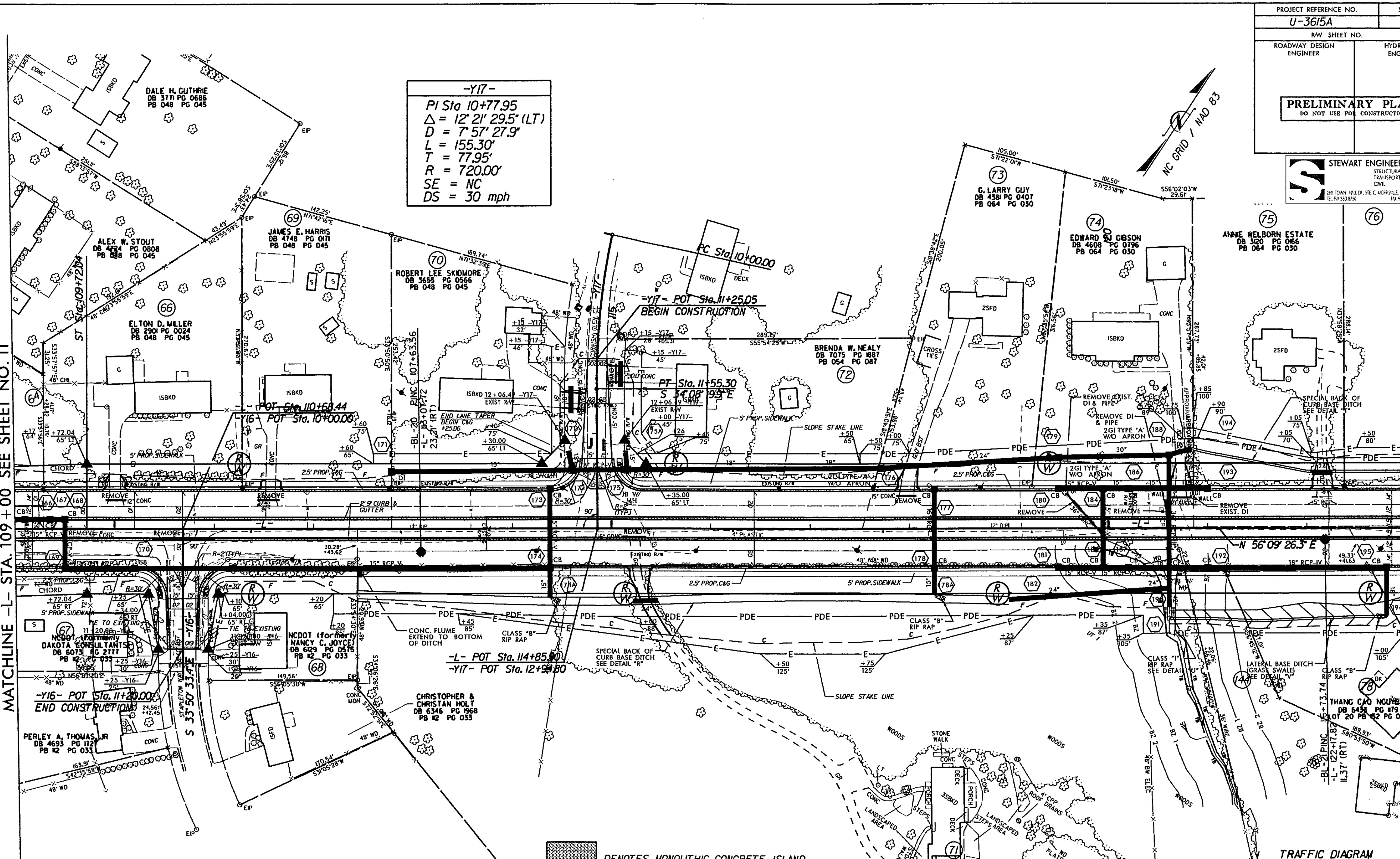
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL

8/17/99

REVISIONS

-Y17-
PI Sta 10+77.95
Δ = 12° 21' 29.5" (LT)
D = 7° 57' 27.9"
L = 155.30'
T = 77.95'
R = 720.00'
SE = NC
DS = 30 mph



DENOTES MONOLITHIC CONCRETE ISLAND

DETAIL "R"
SPECIAL BACK OF CURB BASE DITCH
(NOT TO SCALE)
Min. D= 1.0 Ft.
B= 8.0 Ft.
FROM STA.112+46 TO STA.119+00 -L-(RT)

DETAIL "T"
SPECIAL BACK OF CURB BASE DITCH
(NOT TO SCALE)
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
Type of Liner= PSRM
FROM STA.120+84 TO STA.124+00-L-(LT)

DETAIL "U"
PIPE OUTLET CHANNEL
(Not To Scale)
Length= 20 Ft.
D= 2.0 Ft.
Est.= 7 TONs of Class 'I' Rip-Rap
STA. 137+08.5 -L-(RT)

DETAIL "V"
LATERAL BASE DITCH
(Not To Scale)
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
b= 5.0 Ft.
Type of Liner= PSRM
FROM STA. 120+69.80 TO STA.122+80-L-(RT)

SEE SHEETS 21 & 22 FOR -L- PROFILE
SEE SHEET 28 FOR -Y16- PROFILE
SEE SHEET 28 FOR -Y17- PROFILE

NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE.
PROPOSED R/W WIDTH FOR -L- LINE IS 130' UNLESS OTHERWISE NOTED

TRAFFIC DIAGRAM

2015 / 2035 ADT

SKEET CLUB ROAD
SR 1820

11200 / 20100 — 11400 / 20300

100 / 100 — 300 / 300

400 / 400

STAPLETON WAY

07-OCT-2012 12:06
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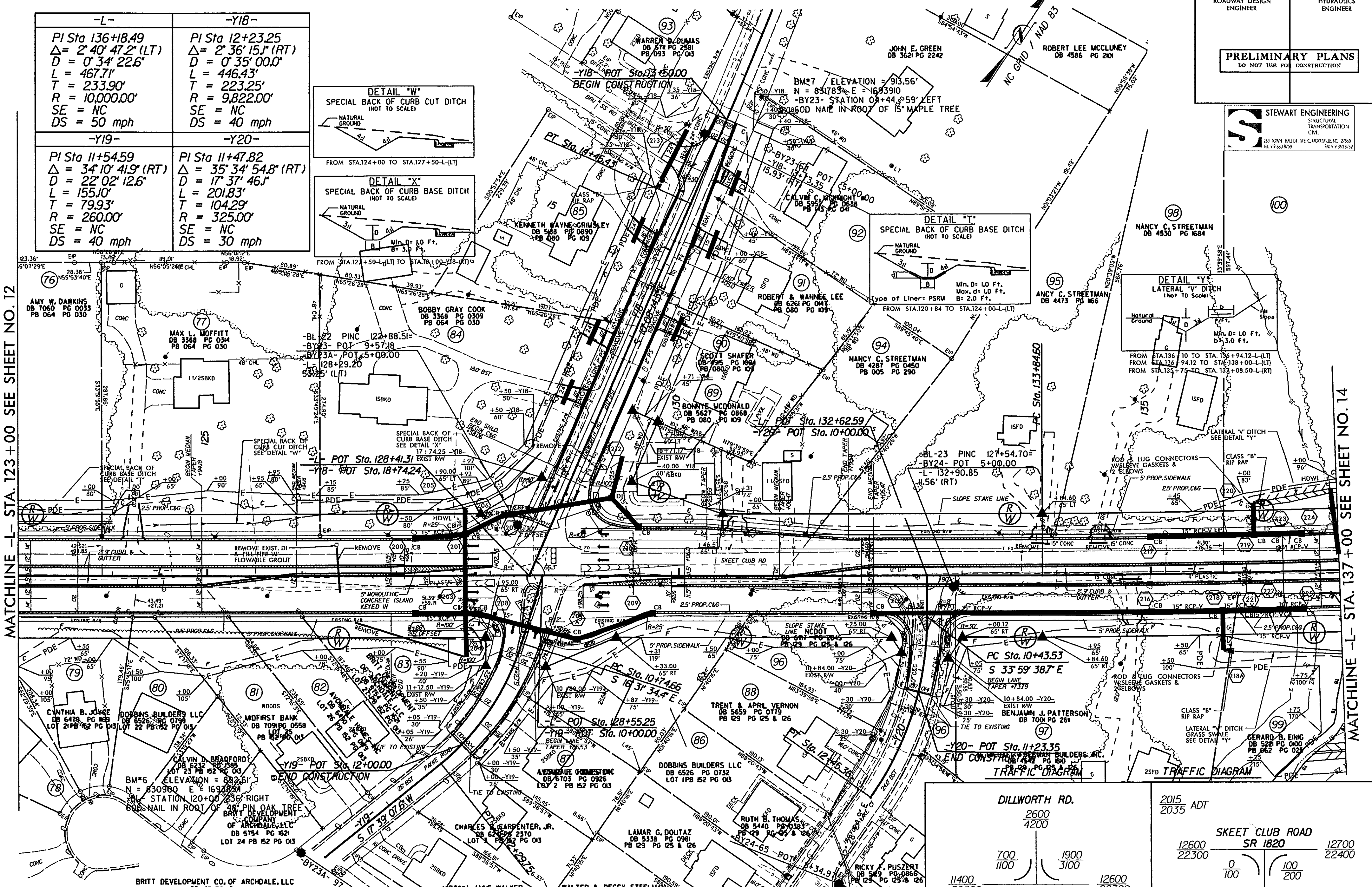
PROJECT REFERENCE NO.	SHEET NO.
U-3615A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL

-L-	-Y18-
PI Sta 136+18.49	PI Sta 12+23.25
Δ= 2° 40' 47.2" (LT)	Δ= 2° 36' 15.1" (RT)
D = 0° 34' 22.6"	D = 0° 35' 00.0"
L = 467.71'	L = 446.43'
T = 233.90'	T = 223.25'
R = 10,000.00'	R = 9,822.00'
SE = NC	SE = NC
DS = 50 mph	DS = 40 mph
-Y19-	**-Y20-**
PI Sta 11+54.59	PI Sta 11+47.82
Δ = 34° 10' 41.9" (RT)	Δ = 35° 34' 54.8" (RT)
D = 22° 02' 12.6"	D = 17° 37' 46.1"
L = 155.10'	L = 201.83'
T = 79.93'	T = 104.29'
R = 260.00'	R = 325.00'
SE = NC	SE = NC
DS = 40 mph	DS = 30 mph



SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 28 FOR -Y18- PROFILE
SEE SHEET 29 FOR -Y19- PROFILE
SEE SHEET 29 FOR -Y20- PROFILE

NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE.
PROPOSED R/W WIDTH FOR -L- LINE IS 130' UNLESS OTHERWISE NOTED

DENOTES MONOLITHIC CONCRETE ISLAND

REVISIONS

8/17/99

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8/17/99

REVISIONS

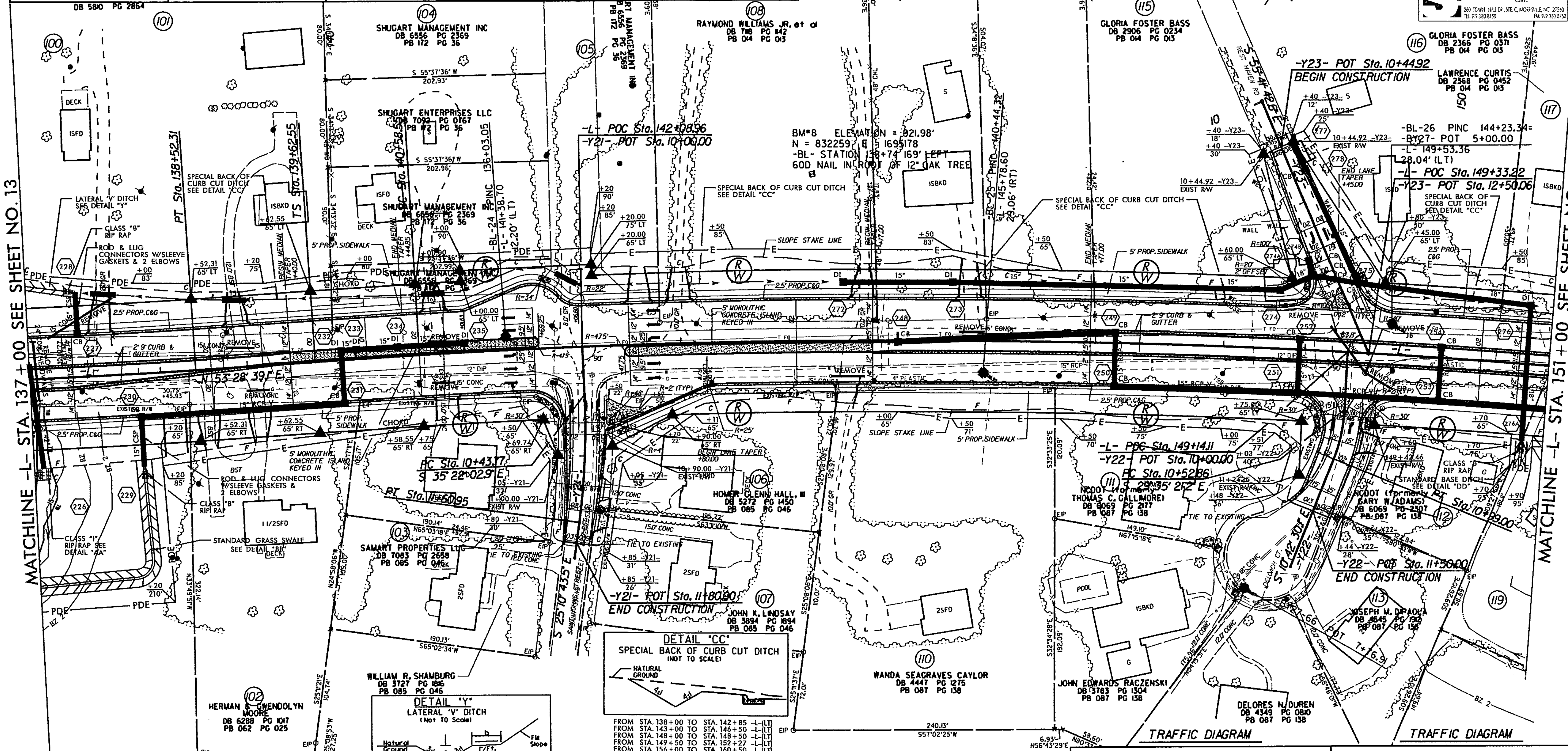
PROJECT REFERENCE NO.	SHEET NO.
U-3615A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL

-L-			-Y21-	-Y22-
PIs Sta 140+26.55	PI Sta 149+39.32	PIs Sta 158+44.07	PI Sta 11+02.51	PI Sta 10+76.81
θs = 0° 22' 00.1"	Δ = 13° 23' 45.2" (RT)	θs = 0° 22' 00.1"	Δ = 10° 11' 19.4" (RT)	Δ = 18° 52' 51.1" (RT)
Ls = 96.00'	D = 0° 45' 50.2"	Ls = 96.00'	D = 8° 41' 39.7"	D = 39° 47' 19.4"
LT = 64.00'	L = 1,753.52	LT = 64.00'	L = 117.19'	L = 47.45'
ST = 32.00'	T = 880.77'	ST = 32.00'	T = 58.75'	T = 23.94'
	R = 7,500.00'		R = 659.00'	R = 144.00'
	SE = 0.020		SE = NC	SE = NC
	DS = 50 mph		DS = 30 mph	DS = 30 mph

DENOTES MONOLITHIC CONCRETE ISLAND



MATCHLINE -L- STA. 137+00 SEE SHEET NO. 13
MATCHLINE -L- STA. 151+00 SEE SHEET NO. 15
NC GRID / NAD 83
SHUGART MANAGEMENT INC
DB 6556 PG 2369
PB 172 PG 36
SHUGART ENTERPRISES LLC
RAYMOND WILLIAMS JR. et al
BOBBY D. CURTIS
MIRIAM FOSTER KINDLE
GLORIA FOSTER BASS
LAWRENCE CURTIS
-Y23- POT Sta. 10+44.92
BEGIN CONSTRUCTION
-L- POC Sta. 142+08.96
-Y21- POT Sta. 10+00.00
BM#8 ELEVATION = 821.98'
N = 832259 E = 1695178
-BL- STATION 138+74 169' LEFT
60D NAIL IN ROOT OF 12" OAK TREE
-BL-26 PINC 144+23.34
-BY27- POT 5+00.00
-L- 149+53.36
28.04' (LT)
-L- POC Sta. 149+33.22
-Y23- POT Sta. 12+50.06
PT Sta. 138+52.31
TS Sta. 139+62.55
-BL-24 PINC
-L- 141+38.70
22.20' (LT)
N 53° 28' 39.1" E
PC Sta. 10+43.77
S 35° 22' 02.9" E
PT Sta. 11+60.95
-Y21- POT Sta. 11+80.90
END CONSTRUCTION
-L- POC Sta. 149+14.11
-Y22- POT Sta. 10+00.00
PC Sta. 10+52.86
S 25° 35' 25.2" E
PT Sta. 10+99.00
-Y22- POT Sta. 11+50.00
END CONSTRUCTION
SAMART PROPERTIES LLC
HOMER GLENN HALL, III
JOHN K. LINDSAY
WILLIAM R. SHAMBURG
HERMAN & GWENDOLYN MOORE
GERARD B. EWING
WANDA SEAGRAVES CAYLOR
JOHN EDWARDS RACZENSKI
DELORES N. DUREN
NCDOT (formerly THOMAS C. GALLIMORE)
NCDOT (formerly GARY W. ADAMS)
JOSEPH M. DIPAOLA
SPECIAL BACK OF CURB CUT DITCH SEE DETAIL "CC"
LATERAL 'V' DITCH SEE DETAIL "Y"
CLASS "B" RIP RAP
ROD & LUG CONNECTORS W/SLEEVE GASKETS & 2 ELBOWS
CLASS "I" RIP RAP SEE DETAIL "AA"
STANDARD GRASS SWALE SEE DETAIL "BB"
STANDARD BASE DITCH SEE DETAIL "DD"
5' MONOLITHIC CONCRETE ISLAND KEYED IN
5' PROP. SIDEWALK
2'-6" CURB & GUTTER
SLOPE STAKE LINE
TIE TO EXISTING

DETAIL "CC"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)

FROM STA. 138+00 TO STA. 142+85 -L-(LT)
FROM STA. 143+00 TO STA. 146+50 -L-(LT)
FROM STA. 148+00 TO STA. 148+50 -L-(LT)
FROM STA. 149+50 TO STA. 152+27 -L-(LT)
FROM STA. 156+00 TO STA. 160+50 -L-(LT)

DETAIL "Y"
LATERAL 'V' DITCH
(Not To Scale)

Min. D= 1.0 Ft.
b= 3.0 Ft.

FROM STA.136+10 TO STA. 136+94.12-L-(LT)
FROM STA.136+94.12 TO STA. 138+00-L-(LT)

DETAIL "AA"
PIPE OUTLET CHANNEL
(Not To Scale)

d= 1.5'
Length= 20 Ft.
D= 2.0 Ft.
Est.= 7 TONs of Class 'I' Rip-Rap

STA. 137+08.5 -L-(RT)

DETAIL "BB"
STANDARD GRASSED SWALE
(Not To Scale)

Min. D= 1.5 Ft.
B= 2.0 Ft.

STA. 138+00-L-(RT), DDE=250 CY
L=85 FT, SLOPE = 0.59% & L=150 FT, SLOPE =3.89%

DETAIL "DD"
STANDARD BASE DITCH
(Not To Scale)

Min. D= 1.0 Ft.
B= 2.0 Ft.

STA. 150+79 RT. DDE=17.0 CY

NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE.
PROPOSED R/W WIDTH FOR -L- LINE IS 130' UNLESS OTHERWISE NOTED

SEE SHEETS 22 & 23 FOR -L- PROFILE
SEE SHEET 29 FOR -Y21- PROFILE
SEE SHEET 29 FOR -Y22- PROFILE
SEE SHEET 30 FOR -Y23- PROFILE

TRAFFIC DIAGRAM

2015/2035 ADT

SKEET CLUB ROAD SR 1820: 12700/22400; 12900/22600; 200/200; 400/400
SAINT JOHNS ST.: 600/600

TRAFFIC DIAGRAM

SR 1828 RESTHAVEN RD.: 100/200; 50/100; 50/100
SKEET CLUB ROAD SR 1820: 12900/22600; 12900/22600

2015/2035 ADT

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PROJECT REFERENCE NO.	SHEET NO.
U-3615A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL
260 TOWN HALL DR., STE C, MORRISVILLE, NC 27560
TEL 919.380.8750 FAX 919.380.8752

REVISIONS

8/17/99

-L-

PIs Sta 140+26.55	PI Sta 149+39.32	PIs Sta 158+44.07
θs = 0° 22' 00J"	Δ = 13° 23' 45.2" (RT)	θs = 0° 22' 00J"
Ls = 96.00'	D = 0° 45' 50.2"	Ls = 96.00'
LT = 64.00'	L = 1,753.52	LT = 64.00'
ST = 32.00'	T = 880.77'	ST = 32.00'
	R = 7,500.00'	
	SE = 0.020	
	DS = 50 mph	

▨ DENOTES MONOLITHIC CONCRETE ISLAND

DETAIL "EE"
SPECIAL CUT DITCH
(Not TO Scale)

Min. D= 3.0 Ft.

FROM STA. 11+00 TO STA. 11+50 Y-24 RT.

DETAIL "FF"
STANDARD BASE DITCH
(Not TO Scale)

*When B Is < 6.0'

Min. D= 2.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.

Type of Liner= PSRM Proposed Slope=2.7%

FROM STA. 154+13 TO STA. 156+99 -L- RT.
DDE = 174 CY, 262 SY PSRM

DETAIL "HH"
STANDARD BASE DITCH
(Not TO Scale)

Min. D= 2.0 Ft.
B= 2.0 Ft.

Proposed Slope=1.5%

STA. 155+50 RT. (OUTLET FOR INLET 261)
DDE=93 CY

TRAFFIC DIAGRAM

NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE.
PROPOSED R/W WIDTH FOR -L- LINE IS 130' UNLESS OTHERWISE NOTED

SEE SHEET 23 FOR -L- PROFILE
SEE SHEET 30 FOR -Y24- PROFILE

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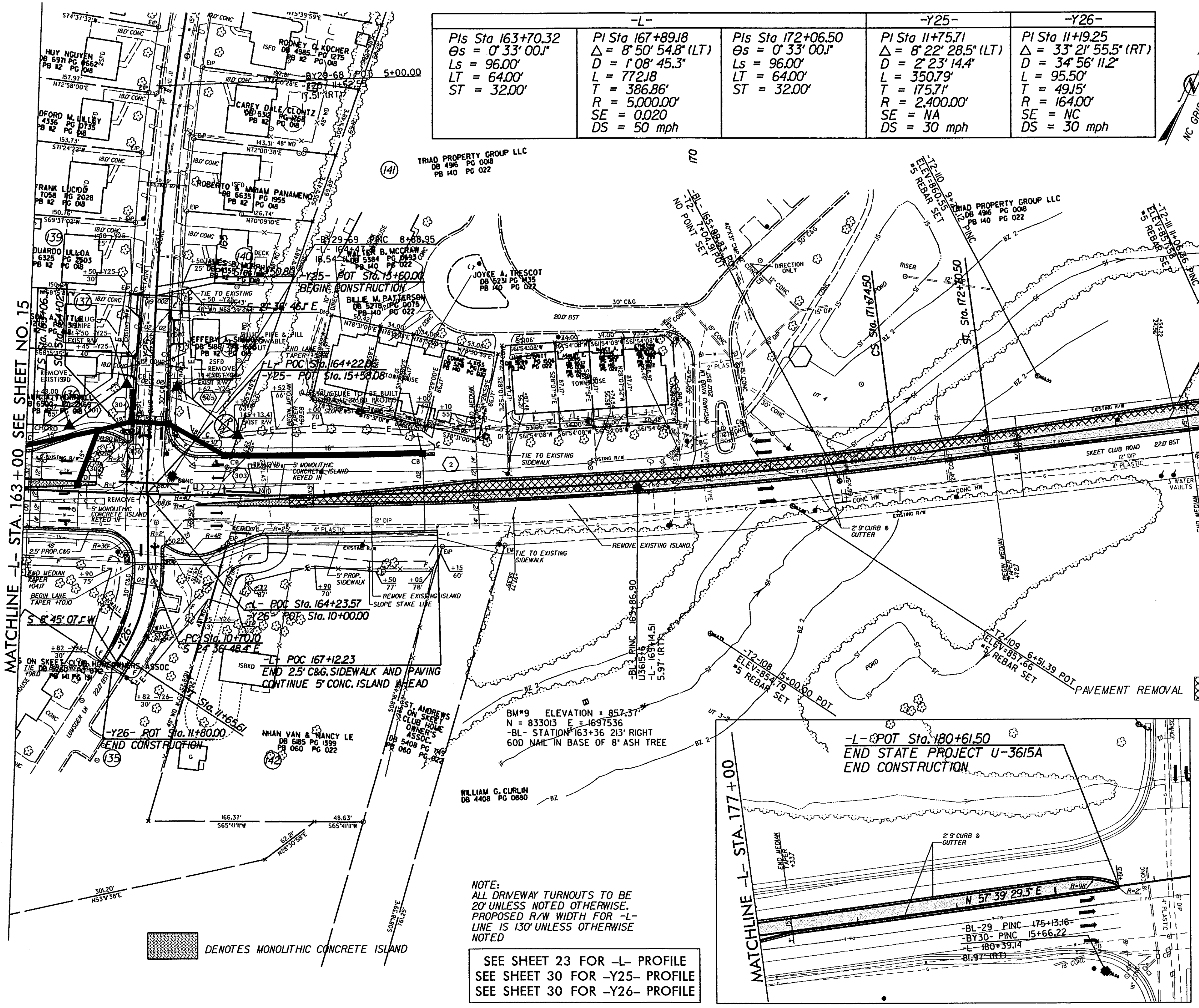
PROJECT REFERENCE NO.	SHEET NO.
U-3615A	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL

-L-			-Y25-	-Y26-
PIs Sta 163+70.32 Θs = 0° 33' 00.3" Ls = 96.00' LT = 64.00' ST = 32.00'	PI Sta 167+89.18 Δ = 8° 50' 54.8" (LT) D = 1° 08' 45.3" L = 772.18 T = 386.86' R = 5,000.00' SE = 0.020 DS = 50 mph	PIs Sta 172+06.50 Θs = 0° 33' 00.3" Ls = 96.00' LT = 64.00' ST = 32.00'	PI Sta 11+75.71 Δ = 8° 22' 28.5" (LT) D = 2° 23' 14.4" L = 350.79' T = 175.71' R = 2,400.00' SE = NA DS = 30 mph	PI Sta 11+19.25 Δ = 33° 21' 55.5" (RT) D = 34° 56' 11.2" L = 95.50' T = 49.15' R = 164.00' SE = NC DS = 30 mph

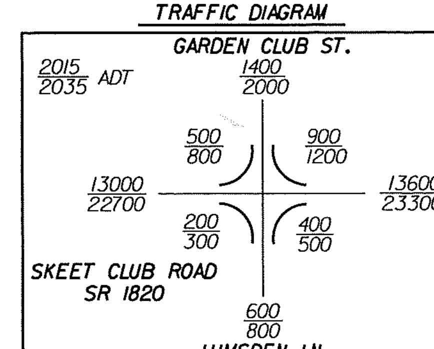


DENOTES MONOLITHIC CONCRETE ISLAND

NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE. PROPOSED R/W WIDTH FOR -L- LINE IS 130' UNLESS OTHERWISE NOTED

SEE SHEET 23 FOR -L- PROFILE
SEE SHEET 30 FOR -Y25- PROFILE
SEE SHEET 30 FOR -Y26- PROFILE

TRAFFIC DIAGRAM



8/17/99

REVISIONS

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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3615A	17

R/W SHEET NO.

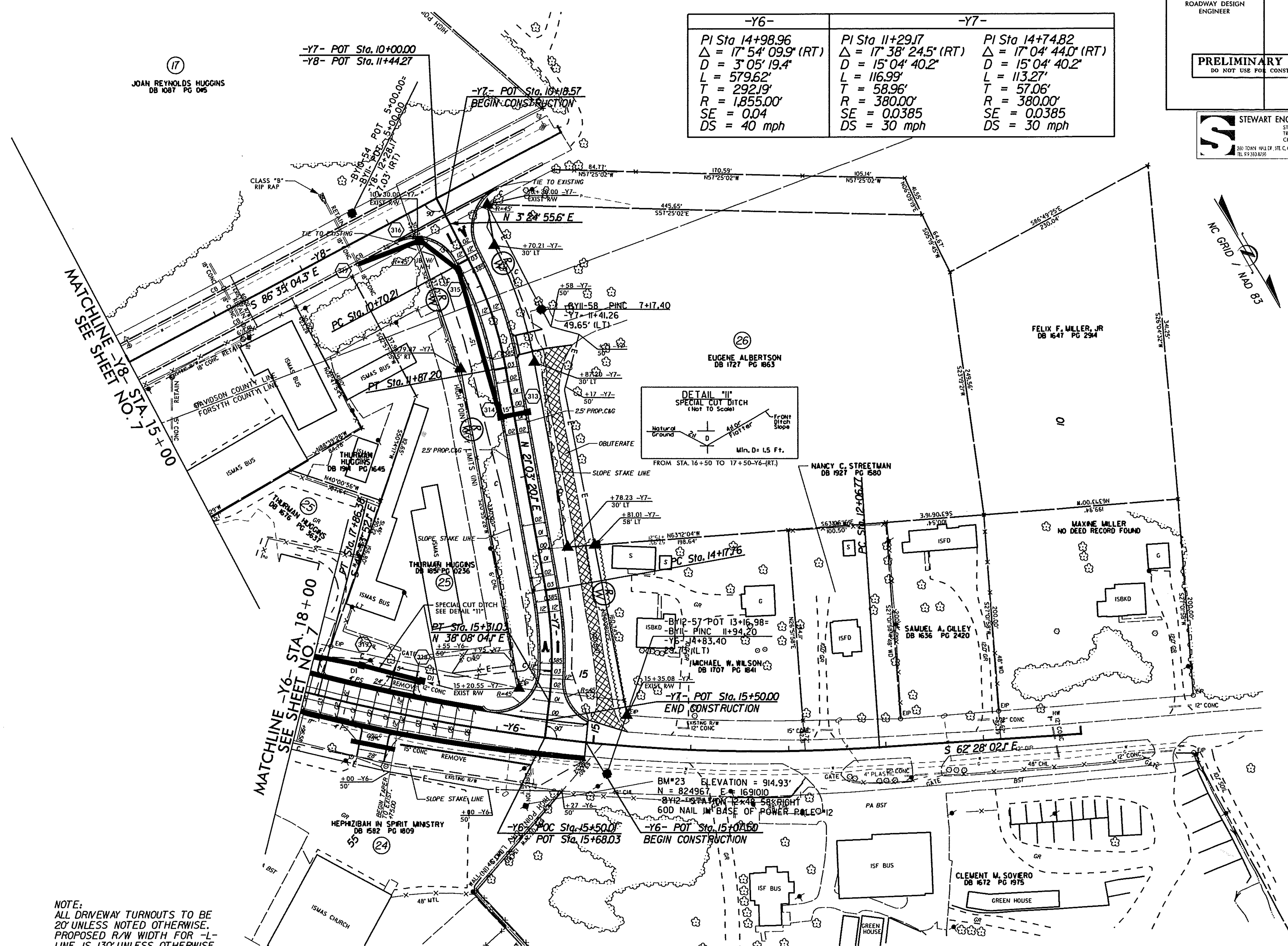
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL

-Y6-	-Y7-	
PI Sta 14+98.96	PI Sta 11+29.17	PI Sta 14+74.82
Δ = 17° 54' 09.9" (RT)	Δ = 17° 38' 24.5" (RT)	Δ = 17° 04' 44.0" (RT)
D = 3° 05' 19.4"	D = 15° 04' 40.2"	D = 15° 04' 40.2"
L = 579.62'	L = 116.99'	L = 113.27'
T = 292.19'	T = 58.96'	T = 57.06'
R = 1,855.00'	R = 380.00'	R = 380.00'
SE = 0.04	SE = 0.0385	SE = 0.0385
DS = 40 mph	DS = 30 mph	DS = 30 mph



NOTE:
ALL DRIVEWAY TURNOUTS TO BE 20' UNLESS NOTED OTHERWISE.
PROPOSED R/W WIDTH FOR -L- LINE IS 130' UNLESS OTHERWISE NOTED

SEE SHEET 25 FOR -Y6- PROFILE
SEE SHEET 26 FOR -Y7- PROFILE

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NCDOT Project No. 34962.1.1 (U-3615B)
Guilford County
Widening of Skeet Club Road from west of Johnson Street to NC 68

NATURAL STREAM DESIGN

Unnamed tributary to Oak Hollow Lake
From Sta. 197+70 to Sta. 200+25 –L- Lt.
From Sta. 200+65 to Sta. 205+40 –L- Lt.

Introduction

The construction of this widening project will require the relocation of approximately 760' of stream that currently parallels the existing roadway. The relocation and restoration will be done with the analysis and design incorporating the principles of the Rosgen Classification System. There are two sites that will be restored. A total of 760' of stream will be restored, with a 50' or greater wooded buffer preserved within a Permanent Drainage Easement.

The two sites are located on the project as follows: from Sta. 197+70 to Sta. 200+25 –L- Lt. and from Sta. 200+65 to Sta. 205+40 –L- Lt.

The drainage areas for these sites range from 262 acres to 370 acres, and is predominantly rural, but urbanizing. Land use in the vicinity of the stream ranges from natural woods to residential subdivisions. Future development in the watershed is anticipated. Soils are generally classified as fine sandy loam, with 2-6% slopes. The streambed is predominantly sand and gravel.

No comparable hydraulic gage data exists on this stream nor on nearby streams. Discharges were estimated using Regional Curves for Southeast Pennsylvania.

Existing Stream

The stream relocations begin and end at culvert locations. Some culverts are to remain and some will be upgraded in size during this roadway widening project. The entire stretch of stream was straightened into a roadside ditch during the original road construction and has been in place for many years. The stream channel in this area does not exhibit good morphological data (due to its manmade channelization). No bedrock is evident in the stream near this site, which is a characteristic of riffle-pool morphology. Bed material distribution is defined as fine gravel with a d_{50} of approximately 7 mm. Grass, weeds, and small woody vegetation contribute to the stability of the stream. Average slope is 0.7%.

Reference Reaches

The reference reach was selected from the NCDOT Reference Reach Database with a classification based on the presumed natural condition of the stream in an urbanized location. In addition to profile and planimetric data, cross-sections were taken of the existing stream. Bankfull indicators were examined and noted, but not used in the design due to the unnatural nature of the existing stream. Indicators surveyed included riffles, pools, point bars, vegetation lines, and bankfull shelves. A bed material sample was obtained and a sieve analysis was completed.

Proposed Stream

The proposed streams were designed to closely match the stable B4c/1 stream classification of the reference reach. The proposed stream alignment was laid out proportionately to match the ratios (see Morphological Measurement Table). Cross vanes were used to provide grade control and reduce the channel grade to a more stable reach in the riffles. Since natural bed material reclamation will be difficult, constructed riffles have been designed for use in the proposed section. The constructed riffles will have a mix ratio of 10% Class B Rip Rap, 60% Class A Rip Rap and 30% No. 57 Stone.

Bed shear stress computations were performed in lieu of entrainment calculations. Streambanks will be stabilized with grass, and the floodprone area (and other disturbed areas) will be planted with woody vegetation according to the reforestation plan.

Bankfull bed shear stress was computed for the riffle sections. The permissible shear stress for the constructed riffle mix (d_{50} = 4") is 1.70 #/s.f. In riffle sections the bed shear stress (0.32 #/s.f.) does not exceed the permissible for the proposed bed material. Additionally, velocity and bed shear stress for a 10-yr. event were checked and found to be acceptable. The average velocity during a 10-yr. event is 4.3 fps, and the bed shear stress is 0.46 #/s.f. for the same event.

Comparison of proposed and existing stream power shows that the proposed stream will effectively move the current sediment load. Proposed and existing stream power are 0.33 lb/ft-s and 0.36 lb/ft-s respectively.

12/15/05

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	NS-CS

NATURAL STREAM DESIGN

U-3615B, GUILFORD COUNTY

JUNE, 2011

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

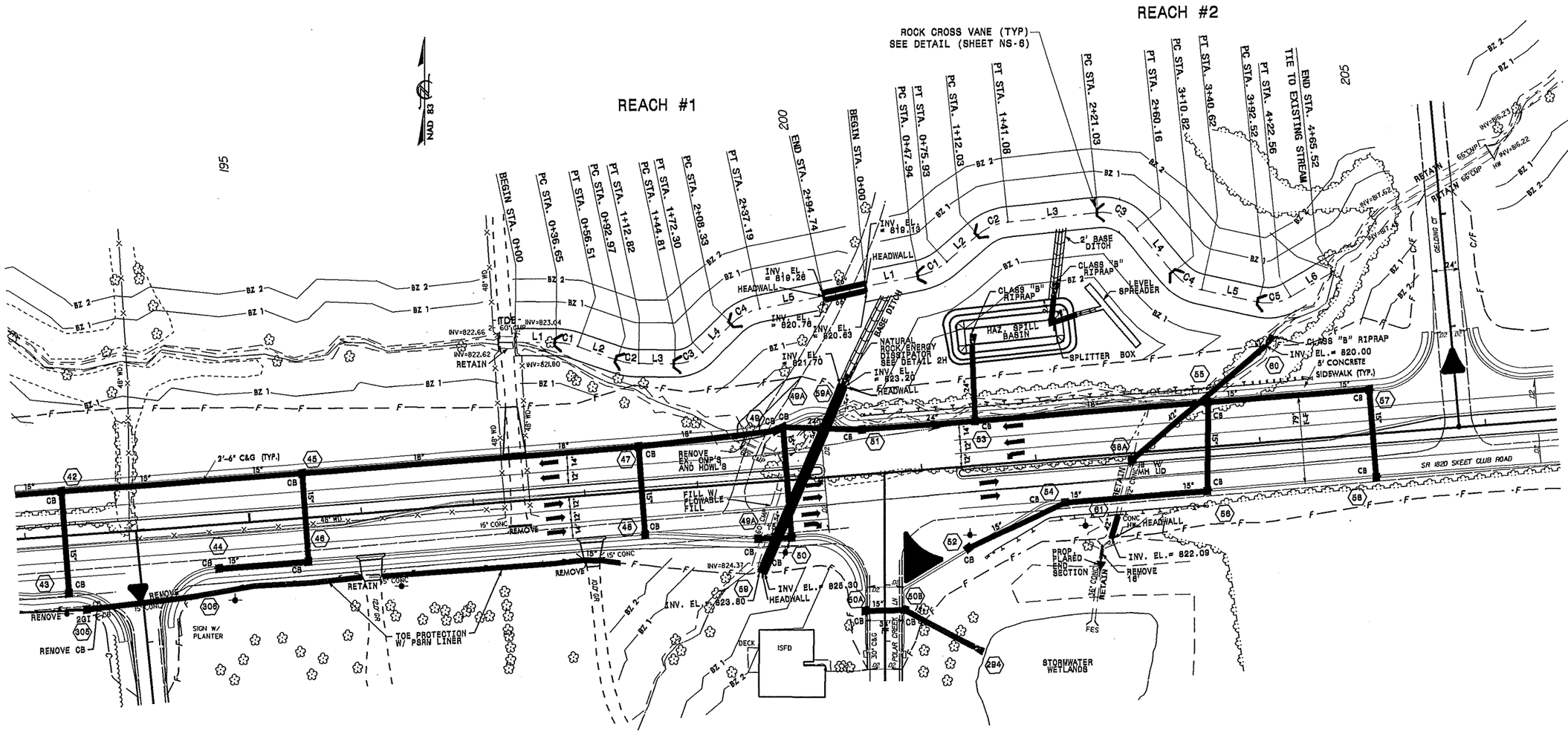
DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

NATURAL STREAM DESIGN

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

12/15/05

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	NS-1



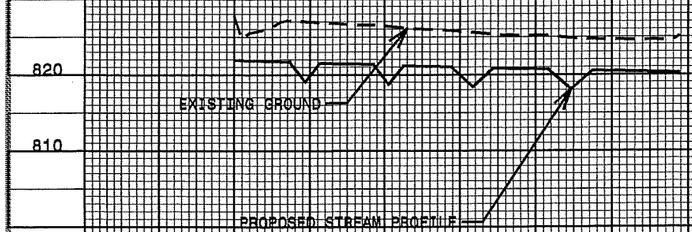
REACHES #1 & #2

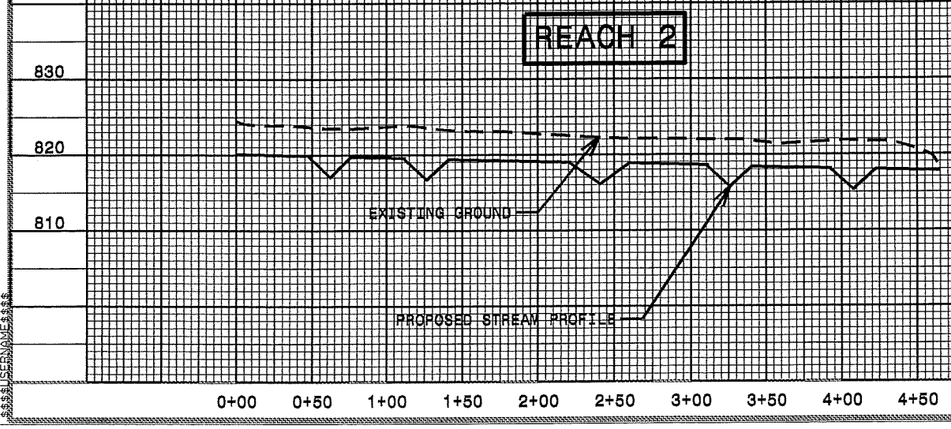
DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

NATURAL STREAM DESIGN
PLAN- REACHES #2 & #3

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

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





PROJECT REFERENCE NO.	SHEET NO.
	NS-2

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

HYDRAULICS UNIT
PHONE:(919)250-4100
FAX:(919)250-4108

5/28/99

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

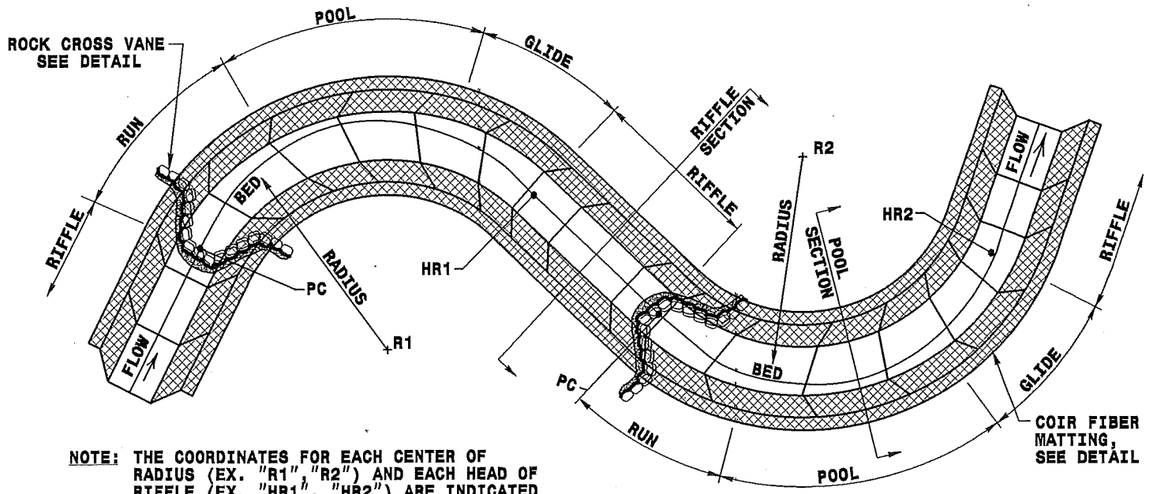
MORPHOLOGICAL MEASUREMENT TABLE- APPENDIX B

	VARIABLE	UNITS	REACH #1	REACH #2	REFERENCE REACH
1	STREAM TYPE	-	B4c/1	B4c/1	B4c/1
2	DRAINAGE AREA	sq. mi.	0.41	0.58	3.3
3	BANKFULL WIDTH	ft.	12.3	13.4	25.6
4	BANKFULL MEAN DEPTH	ft.	0.97	1.07	1.7
5	WIDTH/DEPTH RATIO	-	12.7	12.5	15.1
6	BANKFULL X-SECTIONAL AREA	s.f.	11.9	14.4	43.3
7	BANKFULL MEAN VELOCITY	fps	2.5	2.7	4.6
8	BANKFULL DISCHARGE	cfs	30	39	199
9	BANKFULL MAX. DEPTH	ft.	1.2	1.35	3.0
10	WIDTH of FLOODPRONE AREA	ft.	24.3	26.9	36.6
11	ENTRENCHMENT RATIO	-	2.0	2.0	1.4
12	MEANDER LENGTH	ft.	105	174	170
13	RATIO of MEANDER LENGTH to BANKFULL WIDTH	-	8.5	13.0	6.6
14	RADIUS of CURVATURE (MIN. C/L)	ft.	35	40	41
15	RATIO of RADIUS of CURVATURE to BANKFULL WIDTH	-	2.8	3.0	1.6
16	BELT WIDTH (AVG)	ft.	36.5	47.5	43.7
17	MEANDER WIDTH RATIO	-	3.0	3.5	1.7
18	SINUOSITY	-	1.02	1.03	1.07
19	VALLEY (WS) SLOPE	ft./ft.	0.0057	0.0053	0.0088
20	AVERAGE (WS) SLOPE	ft./ft.	0.0056	0.0051	0.0082
21	POOL (WS) SLOPE	ft./ft.	0.0003	0.0003	0.0004
22	RATIO of POOL SLOPE to AVERAGE SLOPE	-	0.05	0.06	0.05
23	MAXIMUM POOL DEPTH	ft.	2.5	2.8	4.5
24	RATIO of MAX. POOL DEPTH to AVERAGE BANKFULL DEPTH	-	2.58	2.62	2.65
25	AVERAGE POOL WIDTH (at BANKFULL HEIGHT)	ft.	12.5	14.0	25.9
26	RATIO of POOL WIDTH to BANKFULL WIDTH	-	1.02	1.04	1.01
27	POOL-to-POOL SPACING	ft.	58.7	86.4	62.4
28	RATIO of POOL-to-POOL SPACING to BANKFULL WIDTH	-	4.8	6.4	2.4
29	RATIO of LOWEST BANK HEIGHT to BANKFULL HEIGHT	-	1.0	1.0	2.1
a	STREAM LENGTH	ft.	295	465	348
b	VALLEY LENGTH	ft.	290	450	325
c	LOWEST BANK HEIGHT	ft.	1.0	1.1	3.6

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

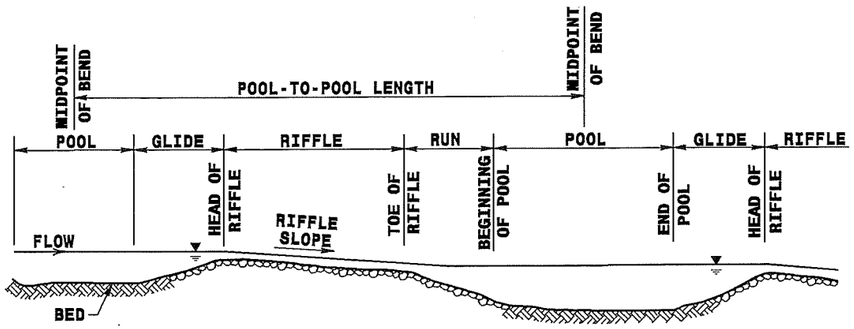
NATURAL STREAM DESIGN
APPENDIX B

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



NOTE: THE COORDINATES FOR EACH CENTER OF RADIUS (EX. "R1", "R2") AND EACH HEAD OF RIFFLE (EX. "HR1", "HR2") ARE INDICATED ON THE "PROPOSED STREAM CENTERLINE TRAVERSE" SHEETS.

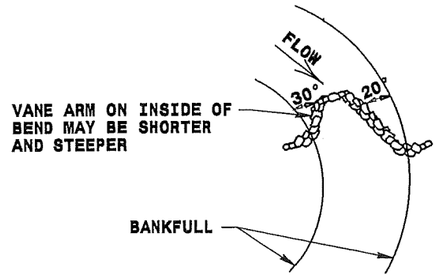
TYPICAL PLAN



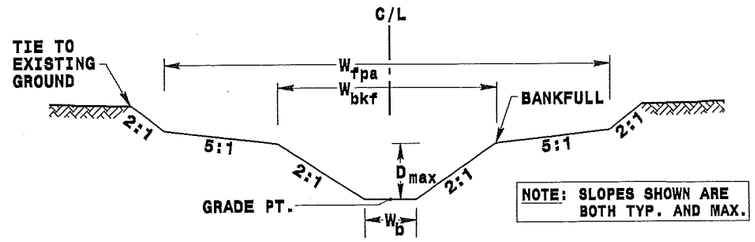
TYPICAL PROFILE FOR ARMORED RIFFLE SECTION

CROSS SECTION DIMENSIONS

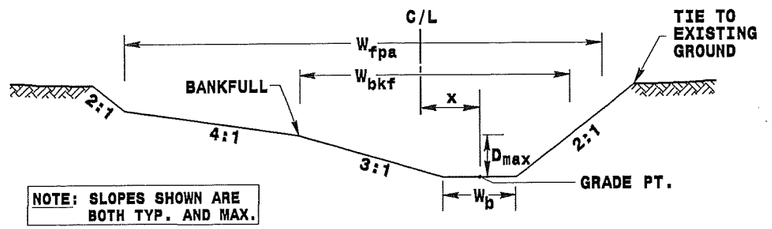
REACH	RIFFLE					POOL				
	W_{bkf}	D_{max}	W_b	W_{fpa}	W/D Ratio	W_{bkf}	D_{max}	W_b	W_{fpa}	x
#1	12.3′	1.20′	7.5′	24.3′	12.7	12.5′	2.5′	0	24.0′	3.2′
#2	13.4′	1.35′	8.0′	26.9′	12.5	14.0′	2.8′	0	27.0′	3.6′



CROSS VANE CONSTRUCTION IN MEANDER-BEND PLAN VIEW



TYPICAL RIFFLE SECTION WITH BANKFULL BENCH



TYPICAL POOL SECTION WITH BANKFULL BENCH

CHANNEL TYPICAL DETAIL

NOT TO SCALE

ABBREVIATIONS:

- R = RADIUS POINT
- HR = HEAD OF RIFFLE
- W/D = WIDTH/DEPTH
- W_{bkf} = BANKFULL WIDTH
- D_{max} = MAXIMUM BANKFULL DEPTH
- W_b = BOTTOM WIDTH
- W_{fpa} = FLOOD PRONE AREA WIDTH
- x = CENTERLINE OFFSET

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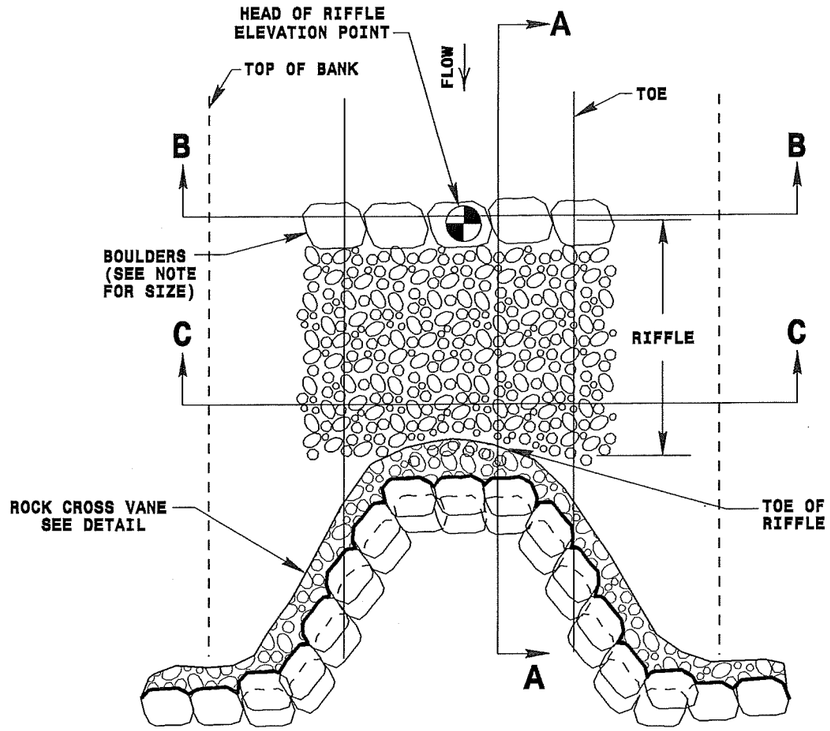
NATURAL STREAM DESIGN
CHANNEL TYPICAL DETAIL

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

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	NS-5

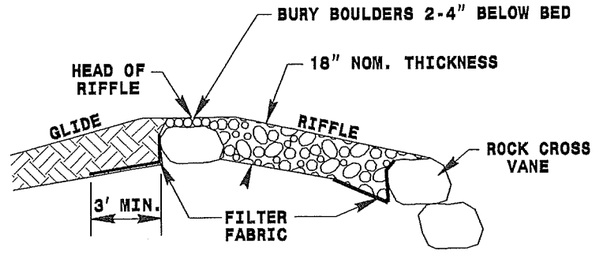


PLAN VIEW

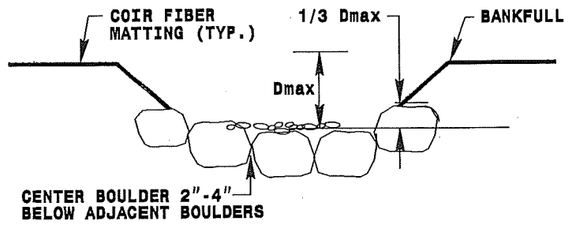
REACH	NO. RIFFLES	ESTIMATED QUANTITIES					
		#57 STONE	CL. A RIP RAP	CL. B RIP RAP	# BLDRS.	WT. BLDRS.	FILTER FABRIC
1	5	45 TONS	75 TONS	13 TONS	20	15 TONS	20 S.Y.
2	6	80 TONS	130 TONS	22 TONS	25	20 TONS	25 S.Y.
TOTAL	11	125 TONS	205 TONS	35 TONS	45	35 TONS	45 S.Y.

CONSTRUCTED RIFFLE DETAIL

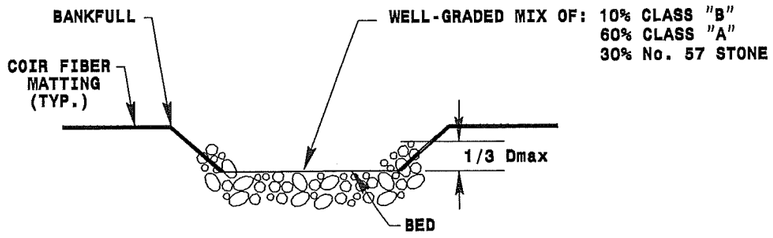
NOT TO SCALE



SECTION A-A



SECTION B-B



SECTION C-C

NOTE:
1. BOULDERS SHOULD BE NATIVE STONES OR SHOT ROCK, ANGULAR AND OBLONG, WITH AXES APPROXIMATELY (3'L x 2'W x 1.5'D).

2. SEE CHANNEL TYPICAL DETAIL FOR RIFFLE DIMENSIONS.

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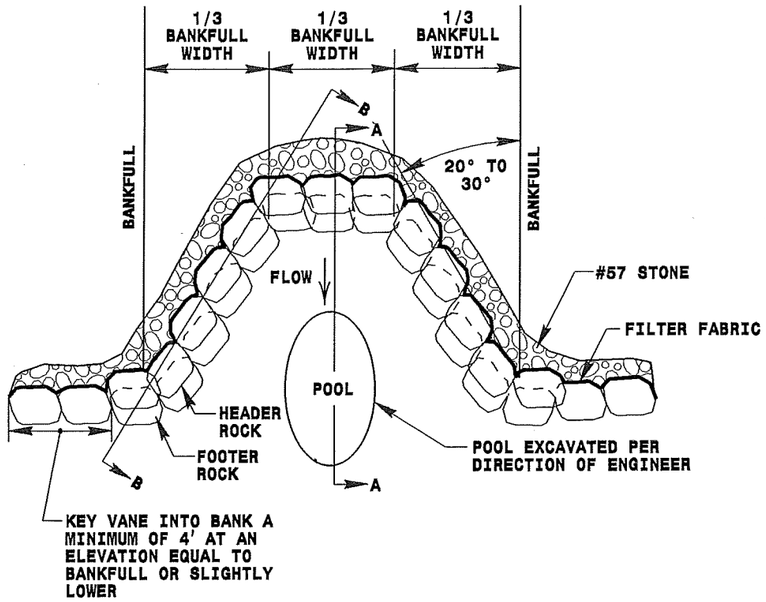
NATURAL STREAM DESIGN
CONSTRUCTED RIFFLE DETAIL

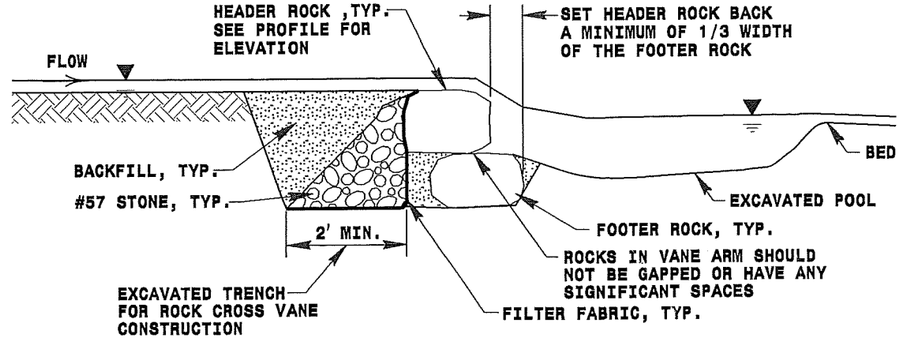
ORIGINAL BY:______ DATE:______
MODIFIED BY:______ DATE:______
CHECKED BY:______ DATE:______
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	NS-6

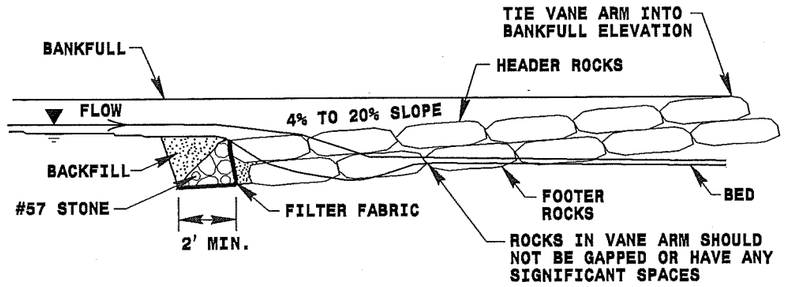
12/15/05



PLAN VIEW



SECTION A-A



SECTION B-B

REACH	NO. STRUCTURES	BOULDER DIMENSIONS (FT)			ESTIMATED QUANTITIES			
		HEIGHT	LENGTH	WIDTH	# BLDRS.	WT. BLDRS.	#57 STONE	FILTER FABRIC
1	4	1.5'	3'	2'	75	60 TONS	30 TONS	120 S.Y.
2	5	1.5'	3'	2'	90	70 TONS	40 TONS	150 S.Y.
TOTAL	9	1.5'	3'	2'	165	130 TONS	70 TONS	270 S.Y.

NOTES:
1. DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2. DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3. CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
4. COMPACT BANKFULL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5. POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

ROCK CROSS VANE DETAIL

NOT TO SCALE

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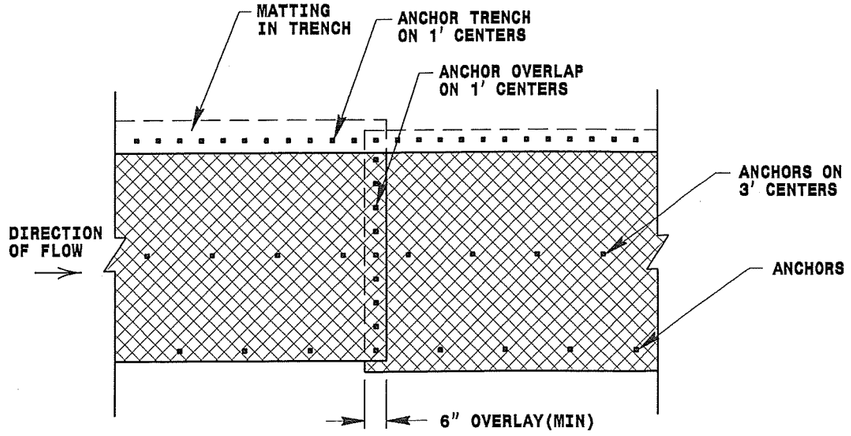
NATURAL STREAM DESIGN
ROCK CROSS VANE DETAIL

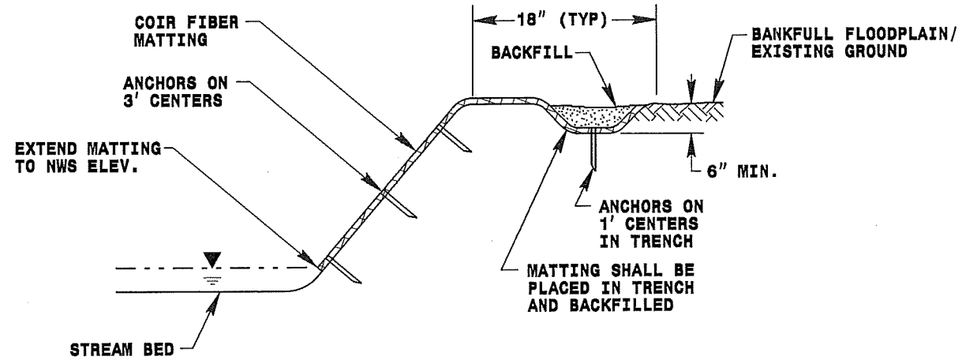
ORIGINAL BY:________ DATE:________
MODIFIED BY:________ DATE:________
CHECKED BY:________ DATE:________
FILE SPEC.:

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

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	NS-7

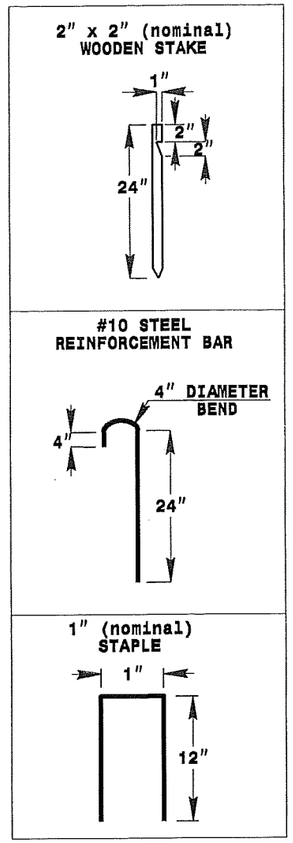


PLAN VIEW



TYPICAL CROSS SECTION

ESTIMATED QUANTITIES	
REACH	COIR FIBER MATTING
1	900 S.Y.
2	1400 S.Y.
TOTAL	2300 S.Y.



ANCHOR OPTIONS

NOTES:
1. IN AREAS TO BE MATTED, ALL SEEDING, SOIL AMENDMENTS, AND SOIL PREPARATION MUST BE COMPLETED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS PRIOR TO PLACEMENT OF COIR FIBER MATTING.
2. REBAR OR STAPLES MAY BE USED IN PLACE OF WOODEN STAKES AS DIRECTED BY THE ENGINEER.

COIR FIBER MATTING DETAIL

NOT TO SCALE

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NATURAL STREAM DESIGN
COIR FIBER MATTING DETAIL

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

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	NS-8

PROPOSED STREAM CENTERLINE TRAVERSE:

REACH #1

```
Point PT1              N       834,349.4817 E     1,700,064.2386, Sta.       0+00.00

Note: PT1 may need to be adjusted to invert out of existing pipes.

Course from PT1 to PC Curve #1, S 89* 31' 53.68" E, Distance 36.6520
```

```
                                  Curve #1 Data:

P.I.  Station              0+46.67  N          834,349.1001   E       1,700,110.9083
Delta         =        18* 57' 37.89" (RT)
Degree        =        95* 29' 34.68"
Tangent       =            10.0193
Length        =            19.8554
Radius        =            60.0000
External      =             0.8308
Long Chord    =            19.7649
Mid. Ord.     =             0.8195
P.C.  Station              0+36.65  N          834,349.1820   E       1,700,100.8893
P.T.  Station              0+56.51  N          834,345.7673   E       1,700,120.3571
C.C.                                N          834,289.1840   E       1,700,100.3988
Back          = S  89* 31' 53.68" E
Ahead         = S  70* 34' 15.79" E
Chord Bear    = S  80* 03' 04.73" E

Course from PT Curve #1 to PC Curve #2, S 70* 34' 15.79" E, Distance 36.4614
```

```
                                  Curve #2 Data:

P.I.  Station              1+02.99  N          834,330.3061   E       1,700,164.1909
Delta         =        18* 57' 37.89" (LT)
Degree        =        95* 29' 34.68"
Tangent       =            10.0193
Length        =            19.8554
Radius        =            60.0000
External      =             0.8308
Long Chord    =            19.7649
Mid. Ord.     =             0.8195
P.C.  Station              0+92.97  N          834,333.6389   E       1,700,154.7421
P.T.  Station              1+12.82  N          834,330.2242   E       1,700,174.2099
C.C.                                N          834,390.2222   E       1,700,174.7004
Back          = S  70* 34' 15.79" E
Ahead         = S  89* 31' 53.68" E
Chord Bear    = S  80* 03' 04.73" E

Course from PT Curve #2 to PC Curve #3, S 89* 31' 53.68" E, Distance 31.9832
```

```
                                  Curve #3 Data:

P.I.  Station              1+59.30  N          834,329.8442   E       1,700,220.6890
Delta         =        45* 00' 00.00" (LT)
Degree        =       163* 42' 08.02"
Tangent       =            14.4975
Length        =            27.4889
Radius        =            35.0000
External      =             2.8837
Long Chord    =            26.7878
Mid. Ord.     =             2.6642
P.C.  Station              1+44.81  N          834,329.9627   E       1,700,206.1920
P.T.  Station              1+72.30  N          834,340.0113   E       1,700,231.0237
C.C.                                N          834,364.9815   E       1,700,206.4782
Back          = S  89* 31' 53.68" E
Ahead         = N  45* 28' 06.32" E
Chord Bear    = N  67* 58' 06.32" E

Course from PT Curve #3 to PC Curve #4, N 45* 28' 06.32" E, Distance 36.0340
```

```
                                  Curve #4 Data:

P.I.  Station              2+23.17  N          834,375.6910   E       1,700,267.2916
Delta         =        33* 04' 00.01" (RT)
Degree        =       114* 35' 29.61"
Tangent       =            14.8423
Length        =            28.8561
Radius        =            50.0000
External      =             2.1564
Long Chord    =            28.4573
Mid. Ord.     =             2.0673
P.C.  Station              2+08.33  N          834,365.2820   E       1,700,256.7111
P.T.  Station              2+37.19  N          834,378.6411   E       1,700,281.8378
C.C.                                N          834,329.6388   E       1,700,291.7762
Back          = N  45* 28' 06.32" E
Ahead         = N  78* 32' 06.33" E
Chord Bear    = N  62* 00' 06.32" E

Course from PT Curve #4 to PT2, N 78* 32' 06.33" E, Distance 57.5539

Point PT2              N       834,390.0810 E     1,700,338.2433, Sta.       2+94.74

Note: PT2 may need to be adjusted to invert in of proposed pipes.
```

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NATURAL STREAM DESIGN
CENTERLINE TRAVERSE- REACH #1

ORIGINAL BY:__________ DATE:________
MODIFIED BY:__________ DATE:________
CHECKED BY:__________ DATE:________
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	NS-9

PROPOSED STREAM CENTERLINE TRAVERSE:

REACH #2

Point PT1 N 834,397.8948 E 1,700,376.7701, Sta. 0+00.00

Note: PT1 may need to be adjusted to invert out of proposed pipes.

Course from PT1 to PC Curve #1, N 78* 32' 06.33" E, Distance 47.9406

Curve #1 Data:

P.I. Station	0+62.25	N	834,410.2673	E	1,700,437.7739
Delta =	29* 09' 31.48" (LT)				
Degree =	104* 10' 26.92"				
Tangent =	14.3053				
Length =	27.9904				
Radius =	55.0000				
External =	1.8299				
Long Chord =	27.6893				
Mid. Ord. =	1.7710				
P.C. Station	0+47.94	N	834,407.4238	E	1,700,423.7541
P.T. Station	0+75.93	N	834,419.5813	E	1,700,448.6317
C.C.		N	834,461.3264	E	1,700,412.8219

Back = N 78* 32' 06.33" E
Ahead = N 49* 22' 34.85" E
Chord Bear = N 63* 57' 20.59" E

Course from PT Curve #1 to PC Curve #2, N 49* 22' 34.85" E, Distance 36.0996

Curve #2 Data:

P.I. Station	1+27.02	N	834,452.8467	E	1,700,487.4107
Delta =	35* 02' 04.45" (RT)				
Degree =	120* 37' 21.70"				
Tangent =	14.9924				
Length =	28.0448				
Radius =	47.5000				
External =	2.3099				
Long Chord =	28.8944				
Mid. Ord. =	2.2028				
P.C. Station	1+12.03	N	834,443.0853	E	1,700,476.0314
P.T. Station	1+41.08	N	834,454.3088	E	1,700,502.3319
C.C.		N	834,407.0327	E	1,700,506.9581

Back = N 49* 22' 34.85" E
Ahead = N 84* 24' 39.29" E
Chord Bear = N 66* 53' 37.07" E

Course from PT Curve #2 to PC Curve #3, N 84* 24' 39.29" E, Distance 79.9529

Curve #3 Data:

P.I. Station	2+42.32	N	834,464.1675	E	1,700,603.0961
Delta =	56* 03' 15.32" (RT)				
Degree =	143* 14' 22.02"				
Tangent =	21.2927				
Length =	39.1333				
Radius =	40.0000				
External =	5.3142				
Long Chord =	37.5912				
Mid. Ord. =	4.6910				
P.C. Station	2+21.03	N	834,462.0937	E	1,700,581.9047
P.T. Station	2+60.16	N	834,447.7458	E	1,700,616.6499
C.C.		N	834,422.2839	E	1,700,585.6004

Back = N 84* 24' 39.29" E
Ahead = S 39* 32' 05.38" E
Chord Bear = S 67* 33' 43.05" E

Course from PT Curve #3 to PC Curve #4, S 39* 32' 05.38" E, Distance 50.6630

Curve #4 Data:

P.I. Station	3+26.29	N	834,396.7447	E	1,700,658.7440
Delta =	37* 56' 03.32" (LT)				
Degree =	127* 19' 26.24"				
Tangent =	15.4659				
Length =	29.7935				
Radius =	45.0000				
External =	2.5835				
Long Chord =	29.2523				
Mid. Ord. =	2.4433				
P.C. Station	3+10.82	N	834,408.6725	E	1,700,648.8993
P.T. Station	3+40.62	N	834,393.3891	E	1,700,673.8415
C.C.		N	834,437.3172	E	1,700,683.6050

Back = S 39* 32' 05.38" E
Ahead = S 77* 28' 08.71" E
Chord Bear = S 58* 30' 07.05" E

Course from PT Curve #4 to PC Curve #5, S 77* 28' 08.71" E, Distance 51.9048

Curve #5 Data:

P.I. Station	4+08.29	N	834,378.7065	E	1,700,739.9018
Delta =	43* 01' 39.13" (LT)				
Degree =	143* 14' 22.02"				
Tangent =	15.7675				
Length =	30.0389				
Radius =	40.0000				
External =	2.9955				
Long Chord =	29.3380				
Mid. Ord. =	2.7868				
P.C. Station	3+92.52	N	834,382.1275	E	1,700,724.5099
P.T. Station	4+22.56	N	834,386.7083	E	1,700,753.4880
C.C.		N	834,421.1747	E	1,700,733.1885

Back = S 77* 28' 08.71" E
Ahead = N 59* 30' 12.16" E
Chord Bear = N 81* 01' 01.73" E

Course from PT Curve #5 to PT2, N 59* 30' 12.16" E, Distance 42.9544
Point PT2 N 834,408.5071 E 1,700,790.5001, Sta. 4+65.52

Note: PT2 may need to be adjusted to match invert of existing stream.

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NATURAL STREAM DESIGN

CENTERLINE TRAVERSE- REACH #2

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

REACH #1- PROFILE DATA TABLE

STATION	ELEVATION	DESCRIPTION
0+00.00	821.90	INVERT OUT
0+36.65	821.72	TOE OF RIFFLE (HIGH POINT)
0+46.58	819.06	POOL
0+56.51	821.56	HEAD OF RIFFLE
0+92.97	821.38	TOE OF RIFFLE (HIGH POINT)
1+02.90	818.72	POOL
1+12.82	821.22	HEAD OF RIFFLE
1+44.81	821.06	TOE OF RIFFLE (HIGH POINT)
1+58.56	818.40	POOL
1+72.30	820.89	HEAD OF RIFFLE
2+08.33	820.71	TOE OF RIFFLE (HIGH POINT)
2+22.76	818.06	POOL
2+37.19	820.55	HEAD OF RIFFLE
2+94.74	820.26	INVERT IN

REACH #2- PROFILE DATA TABLE

STATION	ELEVATION	DESCRIPTION
0+00.00	820.13	INVERT OUT
0+47.94	819.89	TOE OF RIFFLE (HIGH POINT)
0+61.94	817.03	POOL
0+75.93	819.73	HEAD OF RIFFLE
1+12.03	819.55	TOE OF RIFFLE (HIGH POINT)
1+26.55	816.69	POOL
1+41.08	819.38	HEAD OF RIFFLE
2+21.03	818.98	TOE OF RIFFLE (HIGH POINT)
2+40.60	816.13	POOL
2+60.16	818.82	HEAD OF RIFFLE
3+10.82	818.56	TOE OF RIFFLE (HIGH POINT)
3+25.73	815.71	POOL
3+40.62	818.40	HEAD OF RIFFLE
3+92.52	818.14	TOE OF RIFFLE (HIGH POINT)
4+07.54	815.28	POOL
4+22.56	817.98	HEAD OF RIFFLE
4+65.52	817.76	INVERT IN

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

NATURAL STREAM DESIGN
PROFILE DATA- REACHES #1 & #2

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

Skeet Club Road Stream Mitigation Plan
Widening of Skeet Club Road from West of Johnson Street to NC 68
Guilford County, NC

U-3615B
34962.1.1
ONE ID# 041-018

01/12/2013

1.0 Baseline

The North Carolina Department of Transportation (NCDOT) will perform onsite mitigation for stream impacts associated with State Transportation Improvement Project (STIP) U-3615B, in Guilford County. The widening of Skeet Club Road will impact 699 feet of an unnamed tributary (UT) to West Fork Deep River. NCDOT will relocate the UT using natural stream design north of the existing stream location. The existing UT runs parallel to Skeet Club Road within a low density residential area. The UT has an unstable, incised G4/C channel with a sparse buffer consisting mainly of small trees and blackberry. All stream work will take place within the Hydrologic Cataloging Unit (HUC) 03030003 within the Cape River Basin in sub basin (03-06-08). Channel dimensions, substrate type and stream type are listed below in Table 1. Additional information can be acquired from the NRTR dated March 9, 2001.

Table 1

Stream Reach	Stream Channel Width	Channel Depth	Channel Substrate	Jurisdictional Status
UT 3-3 UT W Fork Deep R.	6 feet	2 feet	Silt, sand	Perennial

2.0 Site Selection

STIP U-3615B involves the widening and improvements of North Main Street (Old US 311/SR 1003) from the existing 5-lane, curb-and-gutter section north of US 311 to Skeet Club Road. Skeet Club Road will also be widened from North Main Street to the existing 5-lane, curb-and-gutter section just west of Eastchester Drive (NC 68). Permanent stream impacts

associated with this project are 2120 linear feet. These impacts include 699 feet of UT to West Fork Deep River that will be filled during construction and therefore will be relocated. The stream relocation will vary from 30 to 100 feet north of the existing location. The mitigation site is located between -L- Sta. 197+70 to Sta. 205+40. The stream between Sta. 200+25 and Sta. 200+65 is not included in the proposed mitigation due to an access to existing dwelling (see Appendix A)

3.0 Site Protection Instrument

The mitigation area is located within the NCDOT Right of Way that was acquired for the U-3515B. NCDOT will manage the proposed mitigation site to prohibit all use inconsistent with its use as mitigation property, including any activity that would materially alter the biological integrity or functional and educational value of the site, consistent with this mitigation plan. The site will be placed on the NES mitigation geodatabase, have annual field visits during the monitoring period, and then be placed in the NCDOT Stewardship Program for long term maintenance and protection.

4.0 Objectives

The project involves the relocation of 699 feet of the UT to West Fork Deep River, resulting in 760 feet of natural stream design to mitigate for impacts associated with STIP U-3615B. The functional restoration of the stream will be accomplished using natural stream design and buffer restoration. Buffer restoration will consist of planting trees over an area a minimum of 50 feet on both sides of the relocated channel (approximately 76,000 square feet total). NCDOT proposes a 1:1 mitigation ratio for the 760 foot UT to West Fork Deep River stream relocation and for the 76,000 square feet of buffer restoration.

5.0 Mitigation Work Plan

The mitigation site will be constructed in conjunction with STIP U-3615B. Construction activities related to the mitigation site involve floodplain excavation, stream channel grading, structure installation, and native vegetation planting. The design involves the relocation of an unstable, incised channel (G4C stream type) with the Rosgen Priority Level II approach, in which a new stream channel (B4C stream type) will be constructed through a newly established floodplain. In-stream structures will consist of (9) rock cross vanes to provide stability (See Appendix B). The stream banks and adjacent floodplain areas will be planted with native vegetation that are moderately to highly tolerant of flooded conditions.

Following the successful completion of site grading and stabilization, the vegetation plan for the site includes the planting of live stake trees along the face of the stream banks. A minimum 50

foot buffer (from top of bank) will also be established using bare root trees. Tree species commonly found in the piedmont area will be planted across the site No less than four native species appropriate for the site conditions, such as river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), sycamore (*Platanus occidentalis*), and overcup oak (*Quercus lyrata*), will be used. Final species selection will be based on availability.

Two small areas within the buffer restoration area will be planted with low growing shrubs such as silky dogwood (*Cornus amomum*) and button bush (*Cephalanthus occid*entalis*)* because of existing utility easements.

Native grass seeding and mulching will be performed on any disturbed areas along the stream relocation for stabilization purposes according to the guidance and standard procedures of NCDOT's Roadside Environmental Unit. An as-built report will be submitted within 60 days of completion of the project.

6.0 Performance Standards

Buffer vegetation success criteria are based on the survival of at least 260 stems per acre at year five. Stream channel relocation success will be based on channel stability, vegetation survival, and placement of structures.

7.0 Monitoring Requirements

NCDOT will visually monitor the stream relocation as well as established vegetation plots. These monitoring activities will be conducted bi-annually for a five year period and documented in an annual report distributed to the regulatory agencies.

8.0 Other Information

No additional pertinent information available.

9.0 Determination of Credits

Per NCDOT plans and 401/404 permit application for STIP U-3615B; NCDOT proposes to relocate 699 feet of UT West Fork Deep River. The proposed mitigation will result in 760 linear feet of stream relocation to be used as on-site mitigation for associated stream impacts for U-3615B at a 1:1 ratio. An as-built report will be submitted within 60 days of completion of the project to verify actual linear feet constructed and buffer acreage planted. The success of the mitigation area and determination of final credits will be based upon successful completion of the mitigation plan and closeout of the monitoring period.

9.1 Credit Release Schedule

NCDOT proposes immediate, full release of the proposed 760 feet of stream at a 1:1 ratio as on-site mitigation for the impacts associated with STIP U-3615B.

10.0 Geographic Service Area

The proposed geographic Service Area (GSA) for the mitigation is composed of the 8 digit Hydrologic Cataloging Unit (HUC) 03030003. It is anticipated that the entire 760 linear feet will be used on-site at a 1:1 ratio to offset stream impacts associated with U-3615B.

11.0 Maintenance Plan

The site will be held by NCDOT and placed on the NES mitigation geodatabase. Once monitoring is completed and the site is closed out, it will be placed in the NCDOT Stewardship Program for long term maintenance and protection.

If an appropriate third party recipient is identified in the future, then the transfer of the property will include a conservation easement or other measure to protect the natural features and mitigation value of the site in perpetuity.

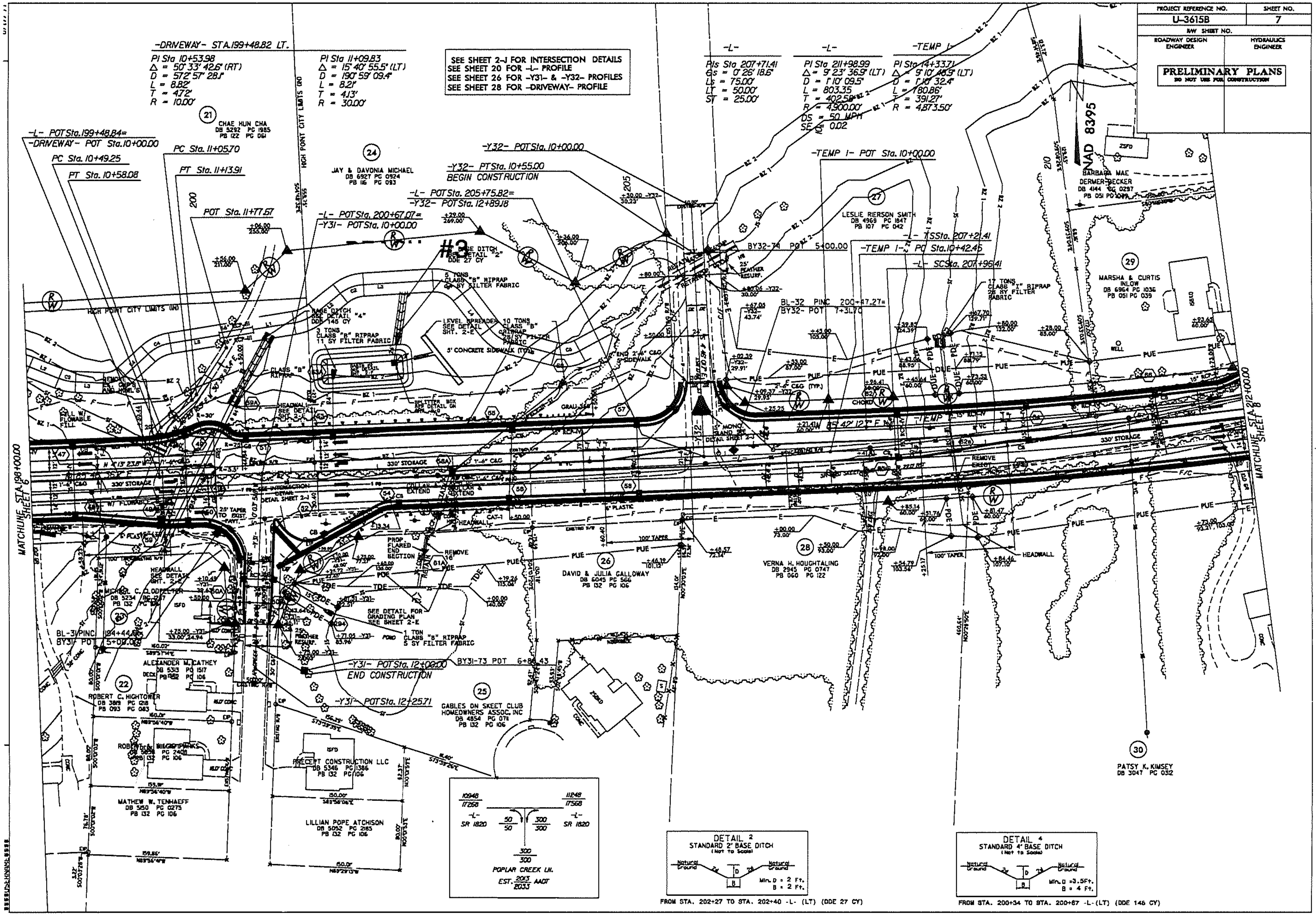
12.0 Long Term Adaptive Management Plan

The site will be managed by NCDOT according to the mitigation plan. In the event that unforeseen issues arise that affect the management of the site, any remediation will be addressed by NCDOT in coordination with the Interagency Review Team.

13.0 Financial Assurances

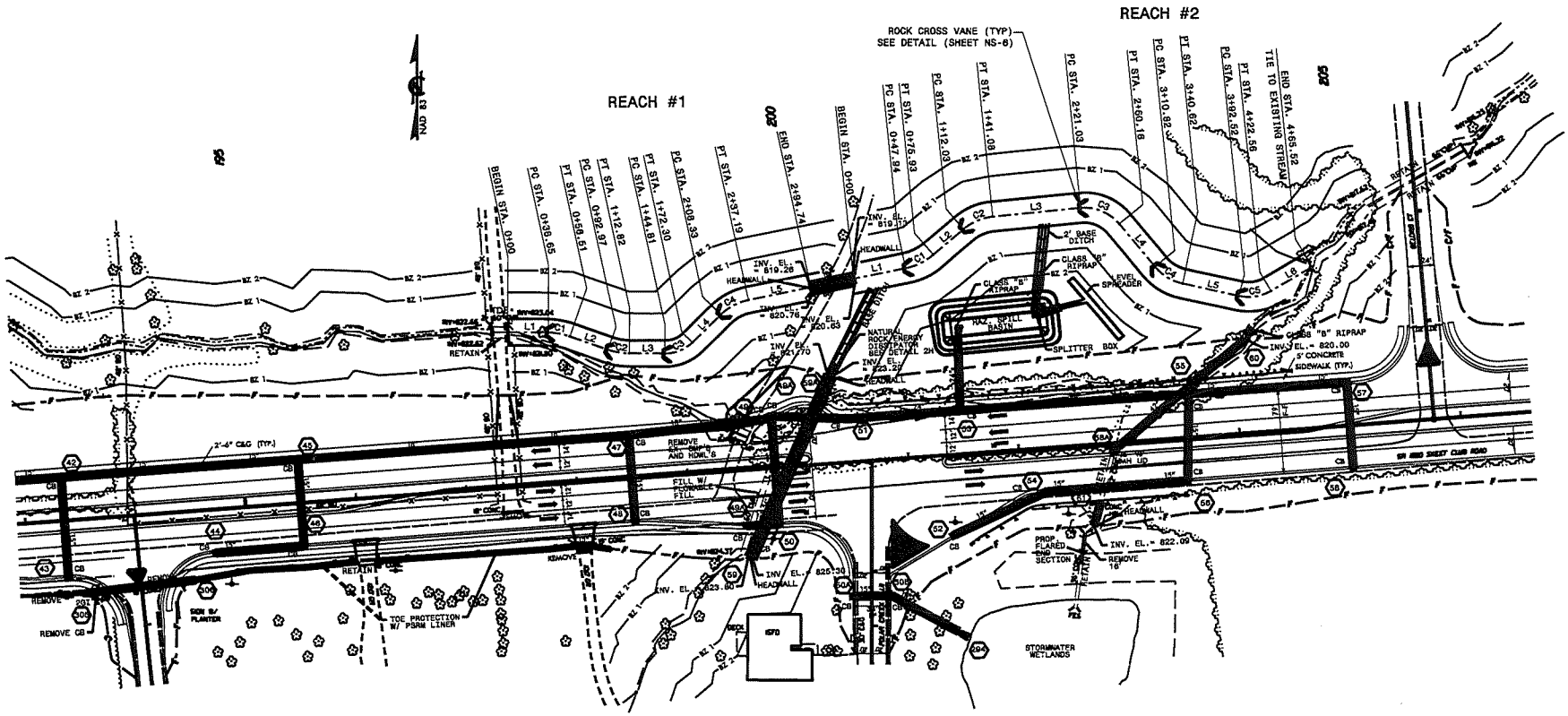
The site will be managed by NCDOT with its own distinct cost center number within the NCDOT budgeting and financial tracking system. Therefore, all accounting for revenues, contract encumbrances, fund transfers, and expenses will be performed and reported independently from other capital budget or operating budget accounting.

Appendix A


PROJECT REFERENCE NO. U-3615B
SHEET NO. 7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SEE SHEET 2-J FOR INTERSECTION DETAILS
SEE SHEET 20 FOR -L- PROFILE
SEE SHEET 26 FOR -Y31- & -Y32- PROFILES
SEE SHEET 28 FOR -DRIVEWAY- PROFILE
-DRIVEWAY- STA.199+48.82 LT.
NAD 83/95
MATCHLINE STA.198+00.00 SHEET 6
MATCHLINE STA.212+00.00 SHEET 8
HIGH POINT CITY LIMITS
-Y32- POT Sta. 10+00.00
-Y32- PT Sta. 10+55.00
BEGIN CONSTRUCTION
-Y31- POT Sta. 12+00.00
END CONSTRUCTION
CHAE HUN CHA
JAY & DAVONIA MICHAEL
LESLIE RIERSON SMITH
MARSHA & CURTIS INLOW
BARBARA MAE DERMER-DECKER
DAVID & JULIA GALLOWAY
VERNA H. HOUGHTALING
PATSY K. KIMSEY
GABLES ON SKEET CLUB HOMEOWNERS ASSOC. INC
ALEXANDER M. CATHEY
ROBERT C. HIGHTOWER
MATHEW W. TENHAEFF
PRECEPT CONSTRUCTION LLC
LILLIAN POPE ATCHISON
POPLAR CREEK LN.
SR 1820
DETAIL 2
STANDARD 2' BASE DITCH
FROM STA. 202+27 TO STA. 202+40 -L- (LT) (DDE 27 CY)
DETAIL 4
STANDARD 4' BASE DITCH
FROM STA. 200+34 TO STA. 200+87 -L- (LT) (DDE 145 CY)

Appendix B

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	NS-1



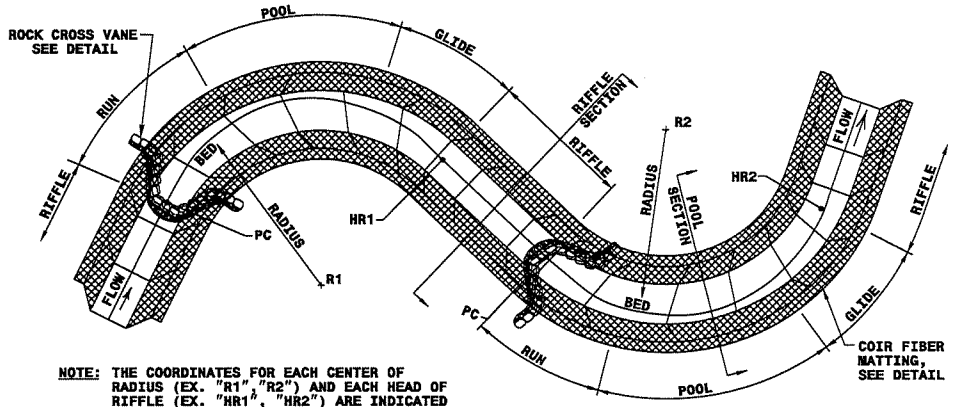
REACHES #1 & #2

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

NATURAL STREAM DESIGN
PLAN- REACHES #2 & #3

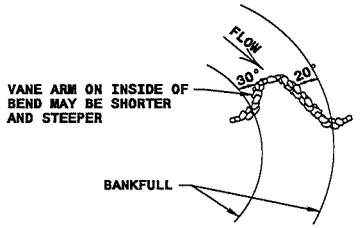
ORIGINAL BY: _____ DATE: _____
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	NS-4

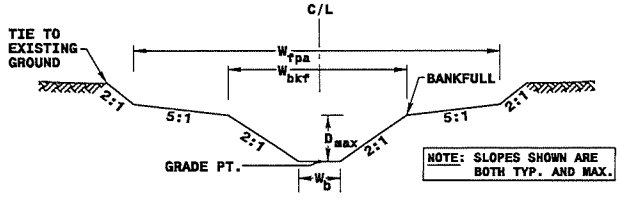


NOTE: THE COORDINATES FOR EACH CENTER OF RADIUS (EX. "R1","R2") AND EACH HEAD OF RIFFLE (EX. "HR1", "HR2") ARE INDICATED ON THE "PROPOSED STREAM CENTERLINE TRAVERSE" SHEETS.

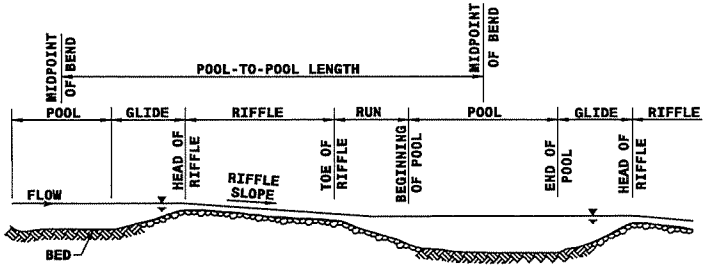
TYPICAL PLAN



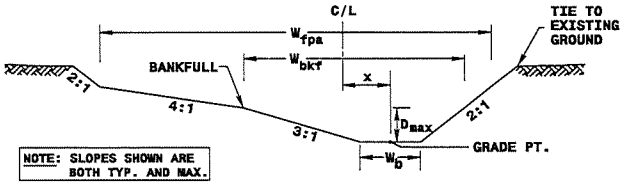
CROSS VANE CONSTRUCTION IN MEANDER-BEND PLAN VIEW



TYPICAL RIFFLE SECTION WITH BANKFULL BENCH



TYPICAL PROFILE FOR ARMORED RIFFLE SECTION



TYPICAL POOL SECTION WITH BANKFULL BENCH

CROSS SECTION DIMENSIONS

REACH	RIFFLE					POOL				
	W_{bkf}	D_{max}	W_b	W_{fpa}	W/D Ratio	W_{bkf}	D_{max}	W_b	W_{fpa}	x
#1	12.3'	1.20'	7.5'	24.3'	12.7	12.5'	2.5'	0	24.0'	3.2'
#2	13.4'	1.35'	8.0'	26.9'	12.5	14.0'	2.8'	0	27.0'	3.6'

CHANNEL TYPICAL DETAIL

NOT TO SCALE

ABBREVIATIONS:

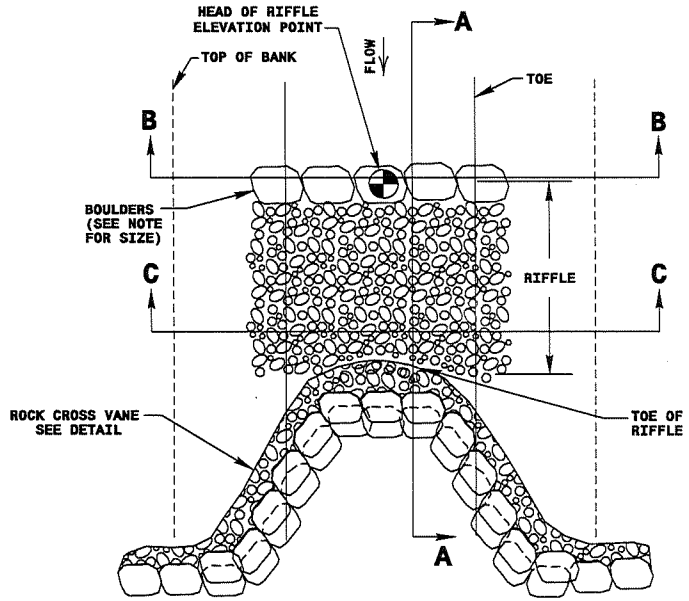
R	= RADIUS POINT
HR	= HEAD OF RIFFLE
W/D	= WIDTH/DEPTH
W_{bkf}	= BANKFULL WIDTH
D_{max}	= MAXIMUM BANKFULL DEPTH
W_b	= BOTTOM WIDTH
W_{fpa}	= FLOOD PRONE AREA WIDTH
x	= CENTERLINE OFFSET

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

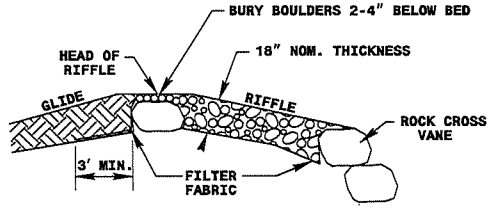
NATURAL STREAM DESIGN
CHANNEL TYPICAL DETAIL

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

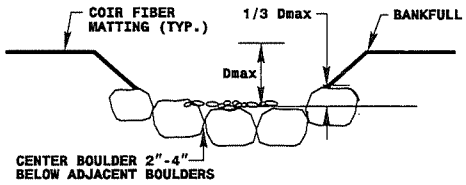
PROJECT REFERENCE NO.	SHEET NO.
U-3615B	NS-5



PLAN VIEW

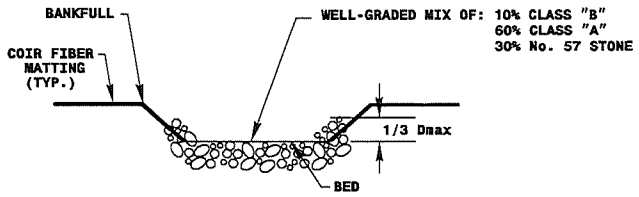


SECTION A-A



SECTION B-B

REACH	NO. RIFFLES	ESTIMATED QUANTITIES					
		#57 STONE	CL. A RIP RAP	CL. B RIP RAP	# BLDRS.	WT. BLDRS.	FILTER FABRIC
1	5	45 TONS	75 TONS	13 TONS	20	15 TONS	20 S.Y.
2	6	80 TONS	130 TONS	22 TONS	25	20 TONS	25 S.Y.
TOTAL	11	125 TONS	205 TONS	35 TONS	45	35 TONS	45 S.Y.



SECTION C-C

CONSTRUCTED RIFFLE DETAIL

NOT TO SCALE

NOTE:
1. BOULDERS SHOULD BE NATIVE STONES OR SHOT ROCK, ANGULAR AND OBLONG, WITH AXES APPROXIMATELY (3'L x 2'W x 1.5'D).

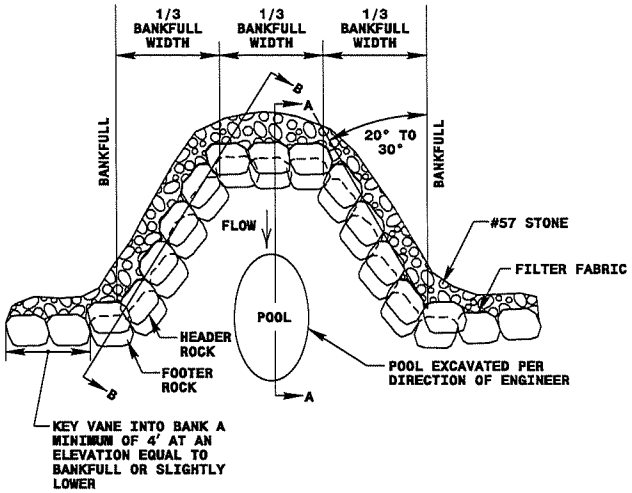
2. SEE CHANNEL TYPICAL DETAIL FOR RIFFLE DIMENSIONS.

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

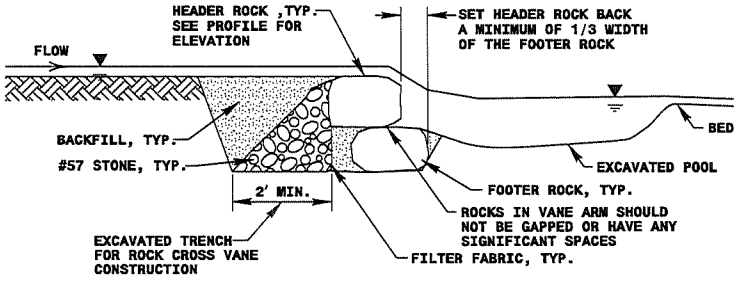
NATURAL STREAM DESIGN
CONSTRUCTED RIFFLE DETAIL

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

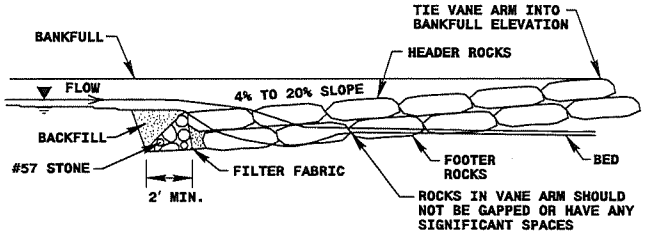
PROJECT REFERENCE NO.	SHEET NO.
U-3615B	NS-6



PLAN VIEW



SECTION A-A



SECTION B-B

REACH	NO. STRUCTURES	BOULDER DIMENSIONS (FT) HEIGHT	LENGTH	WIDTH	ESTIMATED QUANTITIES # BLDRS.	WT. BLDRS.	#57 STONE	FILTER FABRIC
1	4	1.5'	3'	2'	75	60 TONS	30 TONS	120 S.Y.
2	5	1.5'	3'	2'	90	70 TONS	40 TONS	150 S.Y.
TOTAL	9	1.5'	3'	2'	165	130 TONS	70 TONS	270 S.Y.

NOTES:
1. DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2. DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3. CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
4. COMPACT BANKFULL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5. POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

ROCK CROSS VANE DETAIL

NOT TO SCALE

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

NATURAL STREAM DESIGN
ROCK CROSS VANE DETAIL

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

Ecosystem Enhancement PROGRAM

April 23, 2013

Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director
Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

U-3615B, SR 1820 (Skeet Club Road) from East of SR 1818 (Johnston Street) to West of NC 68, Guilford County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the stream and riparian wetland mitigation and buffer mitigation for the subject project. Based on the information supplied by you on April 19 and 23, 2013, the stream and riparian wetland impacts are located in CU 03030003 of the Cape Fear River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Stream and Wetlands	River Basin	CU Location	Eco-Region	Stream			Wetlands		
				Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh
Impacts	Cape Fear	03030003	CP	0	0	1,228.0	0.82	0	0

*Some of the stream and wetland impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details.

EEP's willingness to accept payment for the above impact is conditional and subject to the approval of the use of alternative mitigation options by the Division of Water Quality. All buffer mitigation requests and approvals are administrated through the Riparian Restoration Buffer Fund. The NCDOT will be responsible to ensure that appropriate compensation for the buffer mitigation will be provided in the agreed upon method of fund transfer. Upon receipt of the NCDWQ's Buffer Authorization Certification, EEP will transfer funds from the NCDOT 2984 Fund into the Riparian Restoration Buffer Fund. Upon completion of transfer payment, NCDOT will have completed its riparian buffer mitigation responsibility for TIP Number U-3615B. Subsequently, EEP will conduct a review of current NCDOT ILF Program mitigation projects in the river basin to determine if available buffer mitigation credits exist. If there are buffer mitigation credits available, then the Riparian Restoration Buffer Fund will purchase the appropriate amount of buffer mitigation credits from NCDOT ILF Program.

Buffer	River Basin / CU	Watershed	Eco-Region	Buffer		
				Zone 1	Zone 2	TOTAL
Impacts	Cape Fear / 03030003	Randleman	CP	58,691.0	42,264.0	100,955.0

EEP commits to implementing sufficient compensatory stream and riparian wetland mitigation credits and mitigation for the buffer impacts to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

James B. Stanfill
EEP Asset Management Supervisor

Cc: Mr. Andy Williams, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NC Division of Water Quality
File: U-3615B

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: U-3615B **County(ies):** Guilford

General Project Information

Project No.:	U-3615B		**Project Type:**	Roadway Widening		**Date:**	10/8/2012
NCDOT Contact:	Randy Henegar		**Contractor / Designer:**	Randy Henegar			
	Address:	1590 Mail Service Center Raleigh, NC 27699-1590		**Address:**			
	Phone:	(919)-707-6726		**Phone:**	(919)-707-6726		
	Email:	rhenegar@ncdot.gov		**Email:**	rhenegar@ncdot.gov		
City/Town:	High Point		**County(ies):**	Guilford			
River Basin(s):	Cape Fear		**CAMA County?**	No			
Primary Receiving Water:	Oak Hollow Lake		**NCDWQ Stream Index No.:**	17-3-(0.7)			
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:**		Water Supply IV (WS-IV)				
	Supplemental:						
Other Stream Classification:	None						
303(d) Impairments:	None						
Buffer Rules in Effect	Randleman Lake						

Project Description

Project Length (lin. Miles or feet):	3.478 mi.	**Surrounding Land Use:**	Residential/Commercial	
	Proposed Project		**Existing Site**	
Project Built-Upon Area (ac.)	ac.		ac.	
Typical Cross Section Description:	4 LANE CURB AND GUTTER		2 LANE SHOULDER SECTION	
Average Daily Traffic (veh/hr/day):	Design/Future:	9600	Existing:	9600
General Project Narrative:	Widening of SR 1820 (Skeet Club Road) from West of SR 1818 (Johnson Street) to NC 68 (Eastchester Drive). This project will be adding hazardous spill basins throughout the project all having sluice gates and some of which are equiped with level spreaders, grass swales, and/or a bypass pipe. Preformed scour holes and grass swales where utilized where appropriate.			

References

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

(Version 1.2; Released July 2012) FOR LINEAR ROADWAY PROJECTS

Project/TIP No.: U-3615B **County(ies):** Guilford

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
4&5	170+67-L- (LT & RT)	Stream	Perennial						Culvert		
4&5	170+06 -L- (LT&RT) 172+39 -L- (LT&RT)	Buffer	Randleman Lake						Culvert		
5&6	180+59 -L- (LT&RT) 188+46 -L- (LT&RT)	Stream	Perennial						Culvert & Fill		
5&6	177+99 -L- (LT) 187+30 -L- (LT)	Buffer	Randleman Lake						Fill		
6	187+99 -L- (LT) 188+46 -L- (LT)	Open Water	Perennial						Fill		
6	187+45 -L- (LT) 196+55-L- (LT)	Buffer	Randleman Lake						Fill		
6&7	197+50 -L- (LT) 204+26 -L- (LT)	Stream	Perennial						Fill		
6&7	197+50 -L- (LT) 205+22-L- (LT)	Buffer	Randleman Lake						Fill		
7	199+27 -L-(RT) 199+95 -L- (LT)	Stream	Perennial						Culvert		
7	198+75 -L-(RT) 200+23 -L-(RT)	Buffer	Randleman Lake						Culvert		
7	208+63 -L- (LT)	Stream	Perennial						Culvert		
7	208+02 -L-(LT) 209+14 -L-(LT)	Stream	Perennial						Culvert		
8	218+72-L- (LT&RT) 219+72 -L- (LT&RT)	Wetland	Riverine Swamp Forest						Fill		
8	221+97 -L-(LT) 222+25 -L-(LT)	Stream	Perennial						Excavation		
8	221+87 -L-(LT) 223+01 -L-(LT)	Buffer	Perennial						Excavation		
9	231+60-L-(RT) 232+27-L-(LT)	Stream	Perennial						Excavation/Fill & Culvert		
9	230+94-L-(LT) 232+87-L-(RT)	Buffer	Randleman Lake								

* List all stream and surface water impact locations regardless of jurisdiction or size.

Equalizer Pipes to be noted as a minimization of impacts.

All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

References

Project/TIP No.: U-3615B **County(ies):** Guilford

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
9	232+00-L- (LT) 232+80-L-(LT)	Wetland	Unknown						Fill		
9	232+87-L-(LT) 236+40-L-(LT)	Open Water	Lake						Fill & Stabilization		
9	232+87-L-(LT) 236+40-L-(LT)	Buffer	N/A								
9	237+28 -L- 239+38 -L-	Open Water	Lake						Fill & Stablilization		
9&10	237+28-L-(LT) 239+38-L-(LT)	Buffer	Randleman Lake						Fill & Stablilization		
10	240+14-L- (LT) 240+31-L-(LT)	Wetland	Non-Riverine Swamp Forest						Fill Stablilization Clearing		
10	240+18-L- (RT) 240+35-L-(RT)	Open Water	Lake						Excavation		
10	240+18-L- (RT) 240+81-L-(RT)	Buffer	Randleman Lake						Excavation		
10	12+20 -Y35- (LT & RT)	Open Water & Stream	Lake & Perennial						Culvert		
10	11+52-L- (RT) 12+86-L- (LT)	Buffer	Randleman Lake						Culvert		
10	246+25 -L- (LT) 246+54 -L- (LT)	Stream	Perennial						Temp. Excavation		
10	246+09 -L- (LT) 246+54 -L- (LT)	Buffer	Randleman Lake						Excavation		
11	266+36 -L- (LT & RT)	Stream	Perennial						Culvert		
11	265+24-L- (LT) 266+91 -L-(RT)	Buffer	Randleman Lake						Fill/Excavation/ Stabilization/Cl		
12	273+60 -L- (RT)	Stream	Perennial						Temp. Excavation		
12	271+16-L-(RT) 273+92-L-(RT)	Buffer	Randleman Lake						Excavation & Clearing		
12	275+43-L-(RT) 276+59-L-(RT)	Open Water	Pond						Fill & Stablilization		

* List all stream and surface water impact locations regardless of jurisdiction or size.
Equalizer Pipes to be noted as a minimization of impacts.
All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

References

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: U-3615B **County(ies):** Guilford

Swales

Sheet No.	Station (From / To)	Stream Crossing Station	Base Width (ft)	Front Slope (H:V)	Back Slope (H:V)	Drainage Area (ac)	Recommended Treatment Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used
6	183+73 -L- 185+78-L-	186+01 -L-	2.0	3:1	3:1	2.43	243	192	0.30%	9.2	1.3	11.7	1.7	No
6	186+57 -L_ 185+78 -L-	186+01 -L-	2.0	3:1	3:1	0.62	62	76	0.40%	2.3	0.5	3.0	0.6	No
6	189+53 -L- 190+45 -L-	N/A	2.0	3:1	3:1	0.78	78	90	0.56%	3.0	1.5	3.8	1.6	No
9	234+68 -L- 231+65 -L-	231+98 -L-	0.0	3:1	3:1	3.00	300	323	0.54%	8.8	1.9	11.2	2.0	No
10	246+15 -L- 246+41 -L-	N/A	2.0	3:1	3:1	3.51	351	87	0.30%	13.3	1.7	16.9	1.8	No
16	329+27 -L- 331+59 -L-	N/A	4.0	4:1	3:1	2.00	200	232	0.80%	7.7	2.0	9.8	2.1	No
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Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), been met and verified? If No, provide further explanantion of why design criteria was not met.

Additional Comments

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: U-3615B **County(ies):** Guilford

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)
4	176+40 -L- (LT)	PFSH	Class 'B'	2.60	Pipe	18	8.0	4.0
9	11+34 -Y34- (LT)	PFSH	Class 'B'	0.30	Pipe	15	1.5	1.2
10	13+18 -Y35- (LT)	PFSH	Class 'B'	0.10	Pipe	15	0.5	0.4

Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox (2008), NCDOT Standard Details, or FHWA HEC-14 (July 2006), been met and verified, as applicable? If No, provide further explanantion of why design criteria was not met.

Additional Comments

* Refer to the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), NCDOT Standard Details, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

December 17, 2012

MEMORANDUM TO: M. Penney, Project Development Engineer

FROM: Deanna Riffey, Environmental Specialist

SUBJECT: Protected Species Update for U-3615 A
Guilford County: SR 1820 (Skeet Club Rd) from US 311 to East of SR 1818 (Johnston St.)

This memo serves to update the status of the federally protected species for the above referenced project.

Species: Small whorled pogonia, (*Isotria medeoloides*)

Survey Date: 5/21/08

Habitat Description/ Survey Information: Suitable habitat was not present within this section of the project. Suitable habitat consists of forested areas with north and east facing slopes with little to no understory with occasional breaks in the canopy allowing sunlight to reach the forest floor. South and west facing slopes could potentially provide habitat as well. Habitat was not suitable within this section of project study area due to areas having a densely populated forest floor or being early successional forests lacking available sunlight on the forest floor and manicured lawn areas. In addition to the survey, a review of NCNHP (updated July 1, 2010) revealed no known occurrences of this species within 1.0 mile of the project. Based on the lack of habitat and the lack of known occurrences within 1.0 mile of the project, a biological conclusion of No Effect has been rendered for this species.

Length of Survey: 2 Person Hours

Biological Conclusion: No Effect

Principal Investigators (please see attachment for qualifications):
Deanna Riffey
Sara Easterly
Kris Dramby
James Mason

If you have any questions, please contact Deanna Riffey at driffey@ncdot.gov or 919-707-6151.

MAILING ADDRESS:
N.C. DEPARTMENT OF TRANSPORTATION
PDEA – NATURAL ENVIRONMENT SECTION
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-707-6100

FAX: 919-212-5785

WEBSITE: WWW.NCDOT.ORG

PHYSICAL ADDRESS:
CENTURY CENTER – BUILDING B
1020 BIRCH RIDGE DR.
RALEIGH, NC 27610-4328

Qualifications of Principal Investigators

Investigator: Deanna Riffey
Education: B.S. Biology, University of Tennessee
M.S. Environmental Health Science, East Tennessee State University

Experience: Environmental Supervisor, NCDOT, Raleigh, NC, 6/05 to Present.
Environmental Specialist, NCDOT, Raleigh, NC, 10/03 to 6/05.
Environmental & Safety Compliance Officer, City of Bristol, VA, 9/96 to 10/03.

Investigator: Sara Easterly
Education: B.A. Biology, Carson Newman College
Master of Environmental Health Science, East Tennessee State University

Experience: Environmental Specialist, NCDOT, Raleigh, NC, January 2006-January 2012.
Environmental, Health & Safety Compliance Specialist, ARCADIS, Durham, NC, May 2000-January 2006.

Investigator: Kris Dramby
Education: Graduate Certificate, Natural Resource Management, Virginia Tech, 2005
B.S. Biology (Concentration in Wildlife Ecology), Towson University, 2000
Certification: Professional Wetland Scientist (Society of Wetland Scientists)
Certified Ecologist (Ecological Society of America)

Experience: Environmental Biologist, NCDOT, April 2006-April 2011.
Ecologist, Williamsburg Environmental Group, March 2001-March 2006
Wildland Firefighter, USFS, Salmon-Challis National Forest, Salmon, Idaho, September 2000
Wildlife Technician, USFS, Allegheny National Forest, April 2000- September 2000
Wildlife Technician, Howard County Parks & Recreation, April 1999- August 1999

Investigator: James Mason
Education: B.A., Biology, Colby College
M.S., Biology/Ecology, University of North Carolina at Charlotte

Experience: Environmental Specialist, NCDOT, Raleigh, NC, June 2006 to Present
Coastal Waterbird Monitor, Massachusetts Audubon Society, Westport, MA, 04/05 to 08/05
Osprey Monitor, Project Osprey Watch, Martha's Vineyard, MA, 05/02 to 08/02
Coastal Waterbird Monitor, Massachusetts Audubon Society, Barnstable, MA, 04/01 to 08/01

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

December 17, 2012

MEMORANDUM TO: M. Penney, Project Development Engineer

FROM: Deanna Riffey, Environmental Specialist

SUBJECT: Protected Species Update for U-3615 B
Guilford County: SR 1820 (Skeet Club Rd) from East of SR 1818 (Johnston St) to West of NC 68 (Eastchester Dr.).

This memo serves to update the status of the federally protected species for the above referenced project.

Species: Small whorled pogonia, (*Isotria medeoloides*)

Survey Date: 5/21/2008

Habitat Description/ Survey Information: As of January 31, 2008, the U.S. Fish and Wildlife Service (USFWS) lists one federally protected species for Guilford County: Small whorled pogonia (Isotria medeoloides). A species description and biological conclusion for the small whorled pogonia was not stated in either the EA or FONSI because the species was not added to the USFWS county list of protected species until after the documents were completed. A survey was done for the small whorled pogonia by NCDOT biologists in May 2008. Suitable habitat was present within the project area. Habitat consisted of forested areas with north and east facing slopes with little to no understory with occasional breaks in the canopy allowing sunlight to reach the forest floor. However, south and west facing slopes were also surveyed if preferred habitat conditions were present. Small whorled pogonia was not found within in the project area and a biological conclusion of No Effect was given. A search of the North Carolina Natural Heritage Database (NCNHP; updated August 2011) revealed no known occurrences of the federally protected species within 1.0 mile of the limits of this project. Therefore, the biological conclusion of No Effect remains valid for the small whorled pogonia.

Length of Survey: 4 Person Hours

Biological Conclusion: No Effect, but Habitat Present
Principal Investigators (please see attachment for qualifications):
Deanna Riffey
Sara Easterly
James Mason
Kris Dramby

If you have any questions, please contact Deanna Riffey at driffey@ncdot.gov or 919-707-6151.

MAILING ADDRESS:
N.C. DEPARTMENT OF TRANSPORTATION
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Environmental, Health & Safety Compliance Specialist, ARCADIS, Durham, NC, May 2000-January 2006.

Investigator: James Mason
Education: B.A., Biology, Colby College
M.S., Biology/Ecology, University of North Carolina at Charlotte

Experience: Environmental Specialist, NCDOT, Raleigh, NC, June 2006 to Present
Coastal Waterbird Monitor, Massachusetts Audubon Society, Westport, MA, 04/05 to 08/05
Osprey Monitor, Project Osprey Watch, Martha's Vineyard, MA, 05/02 to 08/02
Coastal Waterbird Monitor, Massachusetts Audubon Society, Barnstable, MA, 04/01 to 08/01

Investigator: Kris Dramby
Education: Graduate Certificate, Natural Resource Management, Virginia Tech, 2005
B.S. Biology (Concentration in Wildlife Ecology), Towson University, 2000
Certification: Professional Wetland Scientist (Society of Wetland Scientists)
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Ecologist, Williamsburg Environmental Group, March 2001-March 2006
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Wildlife Technician, USFS, Allegheny National Forest, April 2000- September 2000
Wildlife Technician, Howard County Parks & Recreation, April 1999- August 1999

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

September 24, 2010

MEMORANDUM

To: Mary Pope Furr, Architectural Historian
NCDOT/PDEA/HEU

From: Peter Sandbeck

Re: Intensive evaluation of the Elihu and Abigail Mendenhall House, Improvements to US 311, U-3615, High Point, Guilford County, CH03-0404

Thank you for your letter of September 8, 2010, transmitting the above referenced evaluation for the Mendenhall House. Members of my staff reviewed the updated evaluation and visited the site on September 22, 2010 to get a better understanding the property and its setting. Based on the report and site visit, we reaffirm our concurrence with the North Carolina Department of Transportation (NCDOT) that the property is eligible for listing in the National Register of Historic Places under Criterion B for it association with prominent Quakers Elihu and Abigail Mendenhall and under Criterion C for it Greek Revival-style architecture. We also believe that it is eligible for listing under Criterion D as the spring house site is likely to yield information important to a better understanding of this early building type and its contribution to the history of the property. The proposed boundaries appear appropriate for this property.

We are also in receipt of a September 14, 2010, letter from the City of High Point's Mayor Rebecca Smothers, inviting us to participate in a meeting to discuss the boundaries of this property. As NCDOT and the Federal Highway Administration are the agencies responsible for identifying historic properties as part of the planning process for federally-funded transportation improvements, we would appreciate your responding to Mayor Smothers and arranging such a meeting, if appropriate. We will be happy to attend the meeting, if requested.

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

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579. In all future communication concerning this project, please cite the above referenced tracking number.

cc: Mayor Rebecca Smothers
Donnie Brew, FHWA
Jeffrey Crow, SHPO

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

September 27, 2010

The Honorable Rebecca Smothers, Mayor
City of High Point
PO Box 230
High Point, NC 27261

RE: Historic Site Boundaries for Elihu and Abigail Mendenhall House, Skeet Club Road, High Point, Guilford County, ER03-0404

Dear Mayor Smothers:

Thank you for your September 14, 2010, letter concerning the above referenced property. We recently responded to the North Carolina Department of Transportation's reevaluation of the Mendenhall property's National Register eligibility and enclose a copy of our memorandum for your review.

As the proposed improvements of Skeet Club Road are a federally-funded undertaking, the Federal Highway Administration and North Carolina Department of Transportation are the agencies responsible for carrying out the regulatory process related to historic properties. We have asked them to discuss this matter with you and set up the requested meeting, if appropriate. We will be happy to attend any such meeting once scheduled.

Sincerely,

Renee Gledhill-Earley

Renee Gledhill-Earley
Environmental Review Coordinator

Enclosure

cc: Donnie Brew, FHWA
Mary Pope Furr, NCDOT
Jeffrey Crow, SHPO
Peter Sandbeck, DSHPO

Form Revised 6-10-92

North Carolina Department of Transportation
PROJECT ENVIRONMENTAL CONSULTATION FORM
I.D. No. U-3615

I. GENERAL INFORMATION

a.	Consultation Phase:	Right of Way	
b.	Project Description	SR 1820 (Skeet Club Road) – SR1003 (North Main Street) US 311 to NC 68 (Eastchester Drive), in Guilford County	
c.	WBS: State Project: Federal Project:	34962.1.1 8.2494701 STP-1820(2)	
d.	Document Type:	EA	December 2002 Date
		FONSI	May 2004 Date

II. CONCLUSIONS

The above environmental document has been reevaluated as required by 23 CFR 771. It was determined that the current proposed action is essentially the same as the original proposed action. Proposed changes are noted below in Section III. It has been determined that anticipated social, economic, and environmental impacts were accurately described in the above referenced document(s) unless noted otherwise herein. Therefore, the original Administration Action remains valid.

III. CHANGES IN PROPOSED ACTION AND ENVIRONMENTAL CONSEQUENCES

Property owned by the City of High Point at Oak Hollow Lake was purchased with grants from the US Department of Interior. That property is protected by Section 6(f)(3) of the Land and Water Conservation Fund (LWCF) Act of 1965. Right of way needs of this property for this project will be a LWCF Conversion. NC Department of Environment and Natural Resources, Division of Parks and Recreation, must approve mitigation by replacement with property of equal value. This project commitment has been added to the green sheets.

There are no significant changes that affect the FONSI. The Finding of No Significant Impact remains valid.

IV. LIST OF ENVIRONMENTAL COMMITMENTS

D.O.T. will implement all practical measures and procedures to minimize and avoid environmental impacts. (See attached project commitments.)

V. COORDINATION

Project Development and Environmental Analysis Branch personnel have discussed current project proposals with others as follows:

Design Engineer:	David Scheffel	February 3, 2009 Date
FHWA Engineer:	Felix Davila	December 19, 2008 Date
Permits Section:	Deanna Riffey	June 20, 2008 Date

VI. NCDOT CONCURRENCE

Richard Helms — 2/12/09

Project Planning Engineer — Date

Beverly Robinson — 2/12/09

Project Engineer — Date

VII. FHWA CONCURRENCE

for Felix Davila — 2-17-09

Federal Highway Administration — Date
Division Administrator

PROJECT COMMITMENTS
SR 1003 (North Main Street)-
SR 1820 (Skeet Club Road)
US311 To NC 68 (Eastchester Drive), Guilford County
Federal Aid Project No. STP-1820(2)
State Project No. 8.2494701
WBS Project No. 34962.1.1
T.I.P. Project No. U-3615

Structure Design Unit / Roadside Environmental Unit / Division Construction Engineer

For the removal of bridge #65 over Oak Hollow Lake, Best Management Practices will be employed to minimize sediment distribution downstream in the lake. Care will be taken in the removal of the bridge, and the removal of erosion control or sediment control devices so that sediment is not released downstream in the lake.

This is a standard operating procedure.

Roadway Design Unit

The Elihu Mendenhall property, a 4(f) resource, will be impacted with temporary easements. These easements will be needed only during the construction of the project. The easements will not cause permanent or adverse physical impacts, or interfere with the activities or purposes of the Farmstead. A note will be added to the roadway design plans and/or project special provisions instructing the contractor to fully restore each easement area to a condition equal to or better than what existed prior to the project. As specified in 23 CFR 771.135, the temporary easements will not constitute a use of property from the Farmstead within the meaning of Section 4(f), and a Section 4(f) Evaluation is not required. However, if modifications during final design result in any of the above conditions not being met, then a 4(f) evaluation will be required.

A note instructing the contractor to fully restore each easement in the area of Elihu Mendenhall property to a condition equal to or greater than what existed prior to the project was not included on the Right of Way Plans or in the Project Special Provisions. Roadway agreed the note will be added to the plans.

Hydraulics Unit / Project Development and Environmental Analysis Branch

Any impacts to wetlands, streams, and buffers must comply with the Randleman Buffer Rules, 404/401 regulations, water supply regulations (15A NCAC 2B .0216), and any other required federal, state, and local regulations.

This is a standard operating procedure.

Geotechnical Unit
It is anticipated that the proposed widening of Skeet Club Road will encroach on one property identified as an underground storage tank (UST) site. This impacted site will be further evaluated prior to right of way acquisition.

There are three (3) UST sites identified by NCDOT Geotechnical Unit that may be impacted by the proposed widening. 1) Bizzy Bee Grocery II at 3802 North Main Street 2) Dixon Produce at 3300 North Main Street 3) Former Tan Safeway at 3301 North Main Street. All three sites will be evaluated prior to acquisition.

Hydraulics Unit
Hazardous spill basins will be required on any part of the project that falls within a 0.5 mile of the Critical Area of the Water Supply Watershed.

Hazardous spill basins have been included in the Right of Way Plans as needed.

Hydraulics Unit / Structure Design Unit
In association with the replacement of Bridge #65, no deck drains will be allowed to discharge directly into Oak Hollow Lake.

Bridge design of Bridge #65 is complete and does not have deck drains.

Project Development and Environmental Analysis Branch
The noise analysis in this report assumed a worst-case scenario of a 4-lane median divided typical section. It is anticipated that the final recommendation on the typical section may reduce the number of impacted noise receptors. Once the typical section recommendation has been determined, the number of impacted noise receptors will be re-calculated and reported in the final environmental document.

A revised noise report has been completed and is summarized in Section V of the FONSI.

Project Development and Environmental Analysis Branch
In the area of the Historic Spring House, in order to accommodate for the widening of the road and avoid impacts to the Spring House ruins, two avoidance alternatives have been developed. Until final designs are complete, it cannot be determined at this time which alternate will be used. The State Historic Preservation Officer issued a determination of "no effect" for Alternative 1 (1:1 slope), and a determination of "adverse effect" for Alternative 2 (retaining wall) (see pages B-1 and B-2 in Appendix B for concurrence forms). Once more detailed survey and soils information is obtained, an alternative will be selected, and the project's impact on this 4(f) resource will be re-evaluated. If the "adverse effect" alternative is selected, a Memorandum of Agreement (MOA) will have to be issued. Impacts associated with the selected alternative will be included in the final environmental document.

After investigating the soils in the area of the Spring House Ruins, it was determined that a 2:1 slope could be utilized. After presenting this information to the SHPO, it was determined that the slope alternative would result in "no adverse effect" on the historic property, and the retaining wall alternative (which includes a handrail and guardrail) would result in an "adverse effect". Although the slope would impact the site, it would act as a protective covering for the Spring House. This decision was made with the condition that archaeological monitoring be provided during fill and construction of the project (see Appendix B in the FONSI, pages B-1 and B-2 for concurrence form). The retaining wall alternative was seen as a least desirable alternative due to the fact that the guardrail, handrail, and size and appearance of the retaining wall would not be consistent with the historic and rural nature of the National Register Property.

Right of Way Unit

Properties owned by the City of High Point at Oak Hollow Lake were purchased with grants from the US Department of Interior. That property is protected by Section 6(f)(3) of the Land and Water Conservation Fund (LWCF) Act of 1965. Rights of way needs of this property for this project are a LWCF Conversion. NC Department of Environment and Natural Resources, Division of Parks and Recreation, and the US Department of Interior have approved of the mitigation by replacement with property of equal value.

See the City of High Point Conversion attachment to the Consultation for U-3615 of February 2009.

The above referenced properties of Oak Hollow Lake are protected by Section 4(f). They are qualified as Deminimus.

See the City of High Point Letter of March 15, 2007 and the published Public Notice of January 2, 2009 attached to the Consultation of February 2009.

North Carolina Department of Environment and Natural Resources
Division of Parks and Recreation

Beverly Eaves Perdue, Governor | Dee Freeman, Secretary | Lewis Ledford, Director

February 2, 2009

Mr. Allen Oliver
High Point Parks and Recreation Department
1560 North Main Street, Suite 201
High Point, North Carolina 27262

SUBJECT: Section 6(f)(3) Conversion Approval for Oak Hollow Park Park, LWCF # 37-00174, Amendment # 19

Dear Mr. Oliver:

The State of North Carolina has received approval from the National Park Service (NPS) for the city's request to convert 6.36 acres at Oak Hollow Park and to replace it with 1.23 acres located along the eastern border of the park. The conversion will allow the N.C. Department of Transportation to widen Skeet Club Road in order to increase traffic capacity and to improve safety.

To complete the conversion process, the city will be require to place an "affidavit/notification of limitation of use" statement as part of the deed for the replacement property. The statement should include language such as "the property identified has been acquired with federal Land and Water Conservation Fund assistance from the National Park Service and pursuant to the requirements of that program must be used for public outdoor recreation purposes only in perpetuity."

Once the property have been transferred and the notice of limitation of use statement placed on the deed, three (3) copies of the deed are required to be sent to the State.

The conversion will be officially completed once the deeds are received by the State. We have enclosed a copy of the approved NPS conversion amendment for the city's Oak Hollow Park LWCF project file.

If you have any questions, please contact your regional consultant Vonda Martin at (336) 771-5065.

Sincerely,

John C. Poole
Grants Program Manager

cc: Vonda Martin, RRS

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

STATE North Carolina

Project Amendment No. 19

AMENDMENT TO PROJECT AGREEMENT

(OMB No. 1024-0033, August 31, 2010)

THIS AMENDMENT To Project Agreement No. 37-00174 is hereby made and agreed upon by the United States of America, acting through the Director of the National Park Service and by the State of North Carolina pursuant to the Land and Water Conservation Fund Act of 1965, 78 Stat. 897 (1964).

The State and the United States, in mutual consideration of the promises made herein and in the agreement of which this is an amendment, do promise as follows:

That the above mentioned agreement is amended by adding the following:

In accordance with Section 6(f)(3), N.C. DENR requests to delete 6.36 acres valued at $ 87,200 and to replace the land with 1.23 acres valued at $ 93,000.

In all other respects the agreement of which this is an amendment, and the plans and specifications relevant thereto, shall remain in full force and effect. In witness thereof the parties hereto have executed this amendment as of the date entered below.

THE UNITED STATES OF AMERICA

By _____
(Signature)
Chief, Recreation Programs Branch
(Title)

National Park Service
United States Department of the Interior

Date 1-22-09

STATE

North Carolina
(State)

By _____
(Signature)

Lewis Ledford
(Name)

State Liaison Officer
(Title)

Estimated Burden Statement: The public reporting burden for this collection of information is estimated to average 3 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form should be sent to the National Park Service, State and Local Assistance Programs Division, 1849 C Street NW, Washington, DC 20240.

Paperwork Reduction Act Statement: This form is necessary to provide data input into an NPS project database which provides timely data on projects funded over the life of the program. Such data is used to monitor project progress and to analyze program trends. A Federal Agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Any comments on the burden estimate or other aspects of this collection of information may be addressed to the National Park Service, State and Local Assistance Programs Division, 1849 C Street NW, Washington, DC 20240.

NPS 10-002A (July 1981)

Parks & Recreation Department

Director

NORTH CAROLINA'S INTERNATIONAL CITY™

March 15, 2007

Mr. Gregory J. Thorpe, Ph.D., Manager
Project Development and Environmental Analysis Branch
1548 Mail Service Center
Raleigh, NC 27699-1548

Subject: Finding of No Adverse Affect to the recreational use of Oak Hollow Lake Recreation Park by NCDOT TIP Project U-3615B

Dear Mr. Thorpe:

The City of High Point confirms the finding that the proposed Skeet Club Road widening project will have no adverse affect on the Oak Hollow Lake Recreation Area. We agree that the impacts from the proposed project to be *de minimis*.

This letter will satisfy the requirement of Section 4(f) of the U. S. Department of Transportation Act of 1966.

If you or your staff needs additional information concerning this project, you can contact, me by email at allen.oliver@highpointnc.gov or by phone at (336) 883-3473.

Yours truly,

Allen Oliver, Director
City of High Point
Parks and Recreation Department

AO/gnr

cc: Pat Pate, Assistant City Manager
Kathy White, Recreation Resource Services
Phil Wylie, Transportation Director

1560 North Main Street, Suite 201 • P.O. Box 230 • High Point, NC • 27262 • USA
Phone: 336-883-3469 • Fax: 336-883-3281 • www.high-point.net/pr

PUBLIC NOTICE OF OAK HOLLOW PARK PROPERTY CONVERSION AT SKEET CLUB ROAD IN HIGH POINT

TIP Project No. U-3615 Guilford County

The North Carolina Department of Transportation (NCDOT) is acquiring 3.39 acres of land adjacent to existing Skeet Club Road at Oak Hollow Park from the City of High Point. This property will be used as a part of the proposed improvements to Skeet Club Road. Improvements include widening Skeet Club Road to a multi-lane facility.

The purpose of this public notice is to allow the public an opportunity to comment on the use of the acquired property for the highway improvements. Right of Way acquisition is currently scheduled to begin in 2009 with construction scheduled to begin in 2011.

Comments will be received for 30 days from the first publishing date of this notice. Please send comments to Richard Helms, Project Development and Environmental Analysis Branch at 1548 Mail Service Center, Raleigh, NC 27699-1548. Anyone desiring additional information may contact Richard Helms by mail as noted above, by email at rhelms@ncdot.gov, or by phone at (919) 733-3141.

Minutes of the 30% Hydraulic Design Review (4b) Meeting on September 21, 2005 for U-3615B, Guilford County

Participant:

Team Members:
Randy Henegar, NCDOT Hydraulics (present)
John Thomas, USACE (present)
Sue Homewood, NCDWQ (present)
Eric Midkiff, NCDOT PD&EA (absent)
Travis Wilson, NCWRC (present)
Gary Jordan, USFWS (absent)
Chris Militscher, EPA (absent)
Deanna Riffey, NCDOT NEU(present)
Brad Wall, NCDOT Division 7 (absent)
David Scheffel, NCDOT Roadway (present)
Donnie Brew, FHWA (present)

Other Attendees
John Frye, NCDOT Structures
John Hennessy, NCDWQ
Paul Fisher, NCDOT Hydraulics
Shawn Harris, NCDOT Hydraulics

It should be noted that the Concurrence Points 2A and 4A meetings for this project have been held on 3/11/04. Concurrence was reached and a signed concurrence form was sent out to attendees with minutes from this meeting. The 4B meeting commenced at approximately 2:30 p.m. Randy Henegar (NCDOT Hydraulics Unit) began by providing an overview of the project noting that this was a continuation of U-3615A, but that most of this project would have Hazardous Spill Basins due to the proximity to Oak Hollow Lake (which is the City of High Point's water supply source.) Comments were as follows:

U-3615B

1. Plan Sheet #4: John Hennessy made the general comment that if NCDOT is going to use a splitter box before a level spreader, they should document the full design length of the level spreader without a splitter box and a reason why that was impractical to construct.

2. Plan Sheet #5: No Comments.

3. Plan Sheet #6: NCDOT will use 1.5:1 fill slopes at the pond near –L- Rev. Sta. 189+00 (LT) to minimize surface water impacts.

4. Plan Sheet #7: Add Buffer limits on UT-6.

5. Plan Sheet #8: Two small wetlands shown on plans are "isolated wetlands".

6. Plan Sheet #9: No Comments.

7. Plan Sheet # 10: There are no buffers around the pond near –L- Rev. Sta. 248+50 (RT).

8. Plan Sheet #11: Although the system has not yet been designed, Randy Henegar described the intention of keeping the off-site water in a separate system and discharging it directly into the stream inside the Transportation Facility. Everyone was in general agreement with this concept, which applies throughout the project.

9. Plan Sheet # 12: Since this part of the project has not yet been designed, NCDOT agreed to notify Sue Homewood of any potential conflicts before the 4C Meeting. Everyone in attendance was in agreement that there would be no buffers on the existing stormwater pond near –L- Sta. 275+00 (RT).

10. Plan Sheet # 13: No Comments.

11. Plan Sheet # 14: Everyone in attendance was in agreement that there would be no buffer on the stormwater outfall near –L- Sta. 305+50 (RT).

12. Plan Sheet # 15: Deanna Riffey and Sue Homewood agreed to investigate the buffer status of the stormwater outfall near –L- Sta. 315+00 (RT), and report back to NCDOT Hydraulics Unit.

13. Plan Sheet # 16: No Comments.

14. Plan Sheet # 17: NCDOT Hydraulics Unit indicated that they were going to try and treat their water from Skeet Club Road prior to discharging into UT-13, which is classified as Perennial.

No further comments were recorded, and the meeting adjourned at 3:45 p.m.

Minutes of the Interagency Hydraulic Design Review (4c) Meeting on September 12, 2012 for U-3615B, Guilford County

Participant:

Team Members:
Randy Henegar, NCDOT Hydraulics (present)
Thomas Brown, USACE (present)
Amy Euliss, NCDWQ (present)
Michael Penney, NCDOT PD&EA (present)
Travis Wilson, NCWRC (absent)
Gary Jordan, USFWS (absent)
Chris Militscher, EPA (telephone conference call)
Deanna Riffey, NCDOT NEU(present)
Brad Wall, NCDOT Division 7 (absent)
Tatia White, NCDOT Engineering Coordination(present)
Felix Davila, FHWA (present)

Other Attendees
Ting Fang, NCDOT Structures
Rachelle Beauregard, NCDOT NES
Paul Fisher, NCDOT Hydraulics
Shawn Harris, NCDOT Hydraulics
Barney Blackburn, NCDOT REU
Jennifer Parish, NCDOT REU
LeiLani Paugh, NCDOT NEU
Jason Elliott, NCDOT NEU

It should be noted that the 30% Hydraulic Design Review (4b) meeting for this project was held on 9/21/05. The 4C meeting commenced at approximately 10:30 a.m. Randy Henegar (NCDOT Hydraulics Unit) began by noting that this was a continuation of U-3615A, but that most of this project would have Hazardous Spill Basins due to the proximity to Oak Hollow Lake (which is the City of High Point's water supply source.) Comments were as follows:

U-3615B

1. Cover Sheet: The Let Date on the plans, October 15, 2013 is the current scheduled Let Date. The Engineer has changed from Wang Engineering to Wetherill Engineering.

2. Plan Sheet #5: The area between Sites 1 & 2 that encompasses the stream buffers and is in the Right-of-Way will be a Preservation Site.

3. Plan Sheet #6: Designate the pond impacts as Site 2A. This will help separate stream impacts from open water pond impacts.

4. Plan Sheet #7: Show impacts at the inlet of the 2 @ 54" and add a Site number for this.

5. Plan Sheet #8: Do a "total take" on the wetlands near –L- Sta. 219+00.

6. Plan Sheet #9: Do a Blow-Up to better show impacts near –L- Sta. 232+00. Have Location and Surveys extend the JS line from the inlet of the 30" pipe to the south. Separate the stream impacts from the open water impacts. Note on plans that there will be no direct discharge from the bridge to the water.

7. Plan Sheet # 10: There are no buffers around the pond near –L- Rev. Sta. 248+50 (RT).

8. Plan Sheet #11: Randy Henegar described the separate systems for off-site water and project water. The off-site system will discharge directly into the stream inside the Transportation Facility. Everyone was in general

agreement with this concept, which applies throughout the project. Provide a Blow-Up of the 8' x8' box culvert impacts for clarity.

9. Plan Sheet # 12: The stream at the outlet of the 24" pipe should be shown as a JS. There would be no buffer on the existing stormwater pond near –L- Sta. 275+00 (RT).

10. Plan Sheet # 13: No Comments.

11. Plan Sheet # 14: Everyone in attendance was in agreement that there would be no buffer on the stormwater outfall near –L- Sta. 305+50 (RT.) The stormwater pond near –L- Sta. 307+50 (LT.) is not a JS.

12. Plan Sheet # 15: There are no buffers on the stormwater outfall near –L- Sta. 315+00 (RT.)

13. Plan Sheet # 16: Remove the JS symbol on the stormwater pond near –L- Sta. 333+00 (RT.)

14. Plan Sheet # 17: NCDOT Hydraulics Unit indicated that they were going to tie the new storm drainage syster in Skeet Club Road into the existing storm drainage system prior to discharging into UT-13, which is classified as Perennial. The buffers on this stream begin at the end of the rip rap outlet.

The Corps of Engineers questioned whether a new Environmental assessment was required since the original is over five (5) years old. Michael Penney will coordinate this with the COE.

No further comments were recorded, and the meeting adjourned at 12:00 p.m.