



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

October 10, 2013

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

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

SUBJECT: Guilford County, Widening of SR 1820 (Skeet Club
Road) from US 311 to NC 68; Federal Aid No. STP-
1802(2); WBS No. 34962.1.1,
TIP U-3615A&B.

Please find attached the USACE Section 404 Individual Permit and the NCDWR Reissued Water Quality Certification and Buffer Authorization for the above-referenced project. All environmental permits have been received for the construction of this project.

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

Cc:
Mr. Randy Garris, P.E. State Contract Officer
Mr. Jerry Parker, Division Environ. Officer
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Jay Bennett, P.E., Roadway Design
Mr. Art McMillan, P.E., Hydraulics
Mr. Tom Koch, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. Ron Hancock, P.E., State Roadway Construction Engineer
Mr. Eric Midkiff, P.E., PDEA Central Planning
Mr. Clarence Coleman, P.E., FHWA
Ms. Beth Harmon, EEP
Mr. Phillip Ayscue, Office of Inspector General
Ms. Leilani Paugh, NES
Mr. Randy Griffin, P.E., NES

MAILING ADDRESS:
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WEBSITE: [NCDOT.GOV](http://www.ncdot.gov)

LOCATION:
CENTURY CENTER, BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

PROJECT COMMITMENTS

T.I.P. Project No. U-3615
SR 1003 (North Main Street) – SR 1820 (Skeet Club Road)
US 311 to NC 68 (Eastchester Drive), Guilford County
Federal Project No. STP-1802(2)
State Project No.8.2494701
WBS Element No.34962.1.1

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Structure Design Unit / Roadside Environmental Unit / Division Construction Engineer

For the removal of bridge No.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.

The note has been added to roadway plans.

Hydraulics Unit and Project Development and Environmental Analysis Unit

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 and 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 No. 65 is complete and does not have deck drains.

Project Development and Environmental Analysis Unit

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.

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 Bin the FONSL 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.

COMMITMENTS DEVELOPED FROM PERMITTING

Roadside Environmental and Division 7 Construction

401 condition 7

For the 150 linear feet of streams being impacted due to site dewatering activities, the site shall be graded to its preconstruction contours and revegetated with appropriate native species.

Division 7 Construction

401 condition 12

A turbidity curtain will be installed in Oak Hollow Lake if driving or drilling activities occur within the lake, on the bank, or within 5 feet of the top of bank. This condition can be waived with prior approval from DWR.

Project Development and Environmental Analysis Unit – Natural Environment Section

404 condition f

Compensatory mitigation requirements for U-3615B are summarized in Table 1 (see Permit). Due to the status of Section U-3615A being 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 stream impacts requiring mitigation.

The Corps is requiring 2:1 mitigation for 452 feet of perennial stream impacts and 1:1 mitigation for 1,536 feet of intermittent stream impacts. NCDOT is providing onsite mitigation of 760 feet of warm water stream by relocating a section of UT at site 3-3. The remaining mitigation requirement of 1,680 feet of permanent warm water stream impacts will be provided by the North Carolina Ecosystem Enhancement Program (NCEEP), as outlined in the letter dated April 23, 2013, from James B. Stanfill, NCEEP Asst. Management Supervisor. In order to compensate for this wetland impact associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit authorization. NCEEP will also provide mitigation for 0.82 acres (2:1 ratio) of permanent riparian wetland impacts resulting from roadway fill, excavation, and mechanized clearing. The on-site mitigation will be constructed and in compliance with the attached U-3615B Stream Mitigation Plan dated January 12, 2013 (see Permit - Identified as Exhibit C).

401 condition 20

Compensatory mitigation for impacts to 1,580 linear feet of streams at a replacement ration of 1:1 is required for U-3615B. Compensatory mitigation for impacts to jurisdictional streams shall be provided by onsite stream relocations of 760 linear feet of UT 3-3 West Fork of Deep River. The onsite stream relocation shall be constructed in accordance with the design submitted by your May 2, 2013 application. All on-site mitigation sites shall be protected in perpetuity by a conservation easement or through NCDOT fee simple acquisition and recorded in the NCDOT Natural Environment Unit mitigation geodatabase. Please be reminded that as-builts for the completed streams shall be submitted to the North Carolina Division of Water Resources 401 Wetland Unit with the as-builts for the rest of the project. If the parameters of this condition are not met, then the permittee shall supply additional stream mitigation for the 760 linear feet of impacts. All channel relocation will be constructed in a dry work area, will be completed and stabilized and must be approved on site by NCDWR staff, prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. All stream relocations shall have a 50-foot wide native wooded buffer planted on both sides of the stream unless otherwise authorized by this Certification. A transitional phase incorporating rolled erosion control product (RECP) and appropriate temporary cover is allowable.

401 condition 23

Compensatory mitigation for impacts to 101,023 square feet of protected riparian buffers in Zone 1 (303,069 square feet of mitigation) and 70,419 square feet of protected riparian buffers in Zone 2 (105,629 square feet of mitigation) shall be required for U3615B. In accordance with 15A NCAC 02B.0252, riparian vegetation reestablishment shall include a minimum of at least 2 native hardwood tree species planted at a density sufficient to provide 320 trees per acre at maturity. All on-site mitigation sites shall be protected in perpetuity by a conservation easement or through NCDOT fee simple acquisition and recorded in the NCDOT Natural Environment Unit mitigation geodatabase.

401 condition 24

The permittee shall monitor the buffer mitigation site. Monitoring shall consist of stem counts. An annual report shall be submitted to NCDWR for a period of 5 years showing monitoring results, survival rate/ success of tree and vegetation establishment, and that diffuse flow through the riparian buffer has been maintained. The first annual report shall be submitted within one year of final planting. Failure to achieve a buffer density of 320 trees per acre after 5 years will

require the annual report to provide appropriate remedial actions to be implemented and a schedule for implementation. Approval of the final annual report, and a formal "close out" of the mitigation site by NCDWR is required.

401 condition 25

Compensatory mitigation for 303,069 square feet of riparian buffers in Zone 1 and 105,629 square feet in riparian buffer Zone 2 shall be required for U3615B. We understand that 45,810 square feet of protected riparian buffer in Zone 1 and 29,829 square feet of protected riparian buffer in Zone 2 are being performed on-site. We understand that you have chosen to perform compensatory mitigation for the remaining 257,259 square feet of riparian buffer in Zone 1 and 75,800 square feet of riparian buffer in Zone 2 to protected buffers through use of the North Carolina Ecosystem Enhancement Program (NCEEP). Mitigation for unavoidable impacts to Randleman Riparian Buffers shall be provided in the Cape Fear River Basin and done in accordance with 15A NCAC2B.0252. NCEEP has indicated in a letter dated August 20, 2013 that they will assume responsibility for satisfying the compensatory mitigation requirements for the above-referenced project, in accordance with NCEEP's Mitigation Banking Instrument signed July 28, 2010.

DEPARTMENT OF THE ARMY PERMIT

Permittee: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ATTN: MR. PHILLIP S. HARRIS, III, PE

Permit No.: SAW-1999-21179

Issuing Office: CESA W-RG-R

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

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

Project Description: The NCDOT project is the widening SR 1003 (North Main Street) – SR 1820 (Skeet Club Road) from the existing 5-lane, curb-and-gutter section north of US 311 to the existing 5-lane, curb-and –gutter section just west of Eastchester Drive (NC 68) in Guilford County, North Carolina. The estimated length of the project is 6.3 miles. This project is included in the North Carolina Department of Transportation's Transportation Improvement Program (TIP U-3615). The project would permanently impact 2538 linear feet of jurisdictional stream channel, an additional 150 linear feet of temporary stream channel impact, permanently impact 0.82 acre of jurisdictional wetlands, and 0.04 acre of open water. 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.

Project Location: The proposed site is an existing linear 2 lane road (SR 1003 [North Main Street] and SR 1820 [Skeet Club Road]) from US 311 to NC 68 in High Point, Guilford County, North Carolina.

Project Area (acres): 230 Nearest Town: High Point
Nearest Waterway: West Fork Deep River River Basin: Cape Fear
Latitude and Longitude: 36. 036792 N, -80.019581 W

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2023**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

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

Special Conditions:

SEE ATTACHED SPECIAL CONDITIONS

Further Information:

1. **Congressional Authorities:** You have been authorized to undertake the activity described above pursuant to:
 - () Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
 - (**X**) Section 404 of the Clean Water Act (33 U.S.C. 1344).
 - () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
2. **Limits of this authorization.**
 - a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.

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

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

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

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

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

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

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

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

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


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

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

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

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

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



(PERMITTEE) NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
ATTN: MR. PHILLIP S. HARRIS, III. PE

09/12/2013

(DATE)

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



(DISTRICT COMMANDER) STEVEN A. BAKER, COLONEL

20 Sep 2013

(DATE)

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

(TRANSFEREE)

(DATE)

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

- a) The North Carolina Division of Water Quality (DWQ) permit/certification number WQC003966 was issued for this project on August 29, 2013. Special conditions were issued associated with this water quality permit/certification and a copy of these conditions is attached as Exhibit A. These referenced conditions are hereby incorporated as special conditions of this permit.
- b) All work authorized by this permit must be performed in strict compliance with the attached plans which were received on April 30, 2013. These plans are a part of this permit and identified as Exhibit B. Any modification to these plans must be approved by the US Army Corps of Engineers (USACE) prior to implementation.
- c) The permittee shall schedule a preconstruction meeting between its representatives, the contractor's representatives, and the Corps of Engineers, Raleigh Regulatory Field Office, NCDOT Regulatory Project Manager, prior to any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all of the terms and conditions contained within this Department of the Army Permit. The permittee shall provide the USACE, Raleigh Regulatory Field Office, NCDOT Regulatory Project Manager, with a copy of the final plans at least two weeks prior to the preconstruction meeting along with a description of any changes that have been made to the project's design, construction methodology or construction timeframe. The permittee shall schedule the preconstruction meeting for a time when the USACE and North Carolina Division of Water Quality (NCDWQ) Project Managers can attend. The permittee shall invite the Corps and NCDWQ Project Managers a minimum of thirty (30) days in advance of the scheduled meeting in order to provide those individuals with ample opportunity to schedule and participate in the required meeting.
- d) Except as authorized by this permit or any USACE approved modification to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.

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

f) Compensatory mitigation requirements for U-3615B are summarized below in Table 1. Due to the status of Section U-3615A being 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 does not require mitigation, resulting in 1,988 feet of stream impacts requiring mitigation. The total buffer impacts will be 104,501 square feet (Zone 1) and 72,093 square feet (Zone 2).

The Corps is requiring 2:1 mitigation for 452 feet of perennial stream impacts and 1:1 mitigation for 1,536 feet of intermittent stream impacts. NCDOT is providing onsite mitigation of 760 feet of warm water stream by relocating a section of UT at site 3-3. The remaining mitigation requirement of 1,680 feet of permanent warm water stream impacts will be provided by the North Carolina Ecosystem Enhancement Program (NCEEP), as outlined in the letter dated April 23, 2013, from James B. Stanfill, EEP Asst. Management Supervisor. In order to compensate for this wetland impact associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit authorization. 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. The on-site mitigation will be constructed and in compliance with the attached U-3615B Stream Mitigation Plan dated January 12, 2013. (Identified as exhibit C)

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. 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.

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Table 1 U-3515B USACE Required Compensatory M'ftg 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	0.82@ 2:1	58,691 @3:1	42,264 @ 1.5:1
	776@ 1:1			
Total Mitigation	1,680	1.64	176,073	63,396

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- g) All mechanized equipment will be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, the permittee shall immediately report it to the N.C. Division of Water Quality at 1-(800)-858-0368 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act will be followed.
- h) The permittee shall advise the Corps in writing prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.
- i) Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source and will be clean and free of any pollutants except in trace quantities. Metal products, organic materials (including debris from land clearing activities), or unsightly debris will not be used.
- j) The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions, shall be available at the project site during construction and maintenance of this project.
- k) The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).
- l) The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades in those areas, prior to project completion.
- m) During the clearing phase of the project, heavy equipment must not be operated in surface waters or stream channels. Temporary stream crossings will be used to access the opposite sides of stream channels. All temporary diversion channels and stream crossings

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- will be constructed of non-erodable materials. Grubbing of riparian vegetation will not occur until immediately before construction begins on a given segment of stream channel.
- n) No fill or excavation for the purposes of sedimentation and erosion control shall occur within jurisdictional waters, including wetlands, unless it is included on the plan drawings and specifically authorized by this permit.
- o) The permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.
- p) Violations of these conditions or violations of Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act must be reported in writing to the Wilmington District U.S. Army Corps of Engineers within 24 hours of the permittee's discovery of the violation.
- q) The permittee will ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Written verification shall be provided that the final construction drawings comply with the attached permit drawings prior to any active construction in waters of the United States, including wetlands. Any deviation in the construction design plans will be brought to the attention of the Corps of Engineers, Raleigh Regulatory Field Office prior to any active construction in waters or wetlands.
- r) Prior to commencing construction within jurisdictional waters of the United States for any portion of the proposed project, the permittee shall forward the latest version of project construction drawings to the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager. Half-size drawings will be acceptable.
- s) The permittee shall take measures to prevent live or fresh concrete from coming into contact with any surface waters until the concrete has hardened.

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- t) Measures will be included in the construction/installation that will promote the safe passage of fish and other aquatic organisms. The dimension, pattern, and profile of the stream above and below a pipe or culvert should not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed opening should be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. Spring flow should be determined from gauge data, if available. In the absence of such data, bankfull flow can be used as a comparable level.
- u) Culverts greater than 48 inches in diameter will be buried at least one foot below the bed of the stream. Culverts 48 inches in diameter or less shall be buried or placed on the stream bed as practicable and appropriate to maintain aquatic passage, and every effort shall be made to maintain the existing channel slope. The bottom of the culvert must be placed at a depth below the natural stream bottom to provide for passage during drought or low flow conditions. Destabilizing the channel and head cutting upstream should be considered in the placement of the culvert. A waiver from the depth specifications in this condition may be requested in writing. The waiver will be issued if it can be demonstrated that the proposal would result in the least impacts to the aquatic environment.
- v) To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent wetlands and streams, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. The permittee shall provide the USACE with appropriate maps indicating the locations of proposed borrow or waste sites as soon as the permittee has that information. The permittee will coordinate with the USACE before approving any borrow or waste sites that are within 400 feet of any streams or wetlands.
- w) If the permittee discovers any previously unknown historic or archaeological sites while accomplishing the authorized work, he shall immediately stop work and notify the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager who will initiate the required State/Federal coordination.

U.S. ARMY CORPS OF ENGINEERS

Wilmington District

Compensatory Mitigation Responsibility Transfer Form

Permittee: North Carolina Department of Transportation

Action ID: SAW-1999-21179

Project Name: SR 1003 (North Main St) & SR 1820 (Skeet Club Road) from US 311 to NC 68 TIP U-3615b

County: Guilford

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

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

Permitted Impacts and Compensatory Mitigation Requirements:

Permitted Impacts Requiring Mitigation*			8-digit HUC and Basin: 03030003, Cape Fear River Basin			
Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-riverine	Non-Riparian	Coastal
1228				0.82		

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

Compensatory Mitigation Requirements:			8-digit HUC and Basin: 03030003 Cape Fear River Basin			
Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-riverine	Non-Riparian	Coastal
1680				1.64		

Mitigation Site Debited: NCEEP

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

Section to be completed by the Mitigation Sponsor

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

Mitigation Sponsor Name: _____

Name of Sponsor's Authorized Representative: _____

Signature of Sponsor's Authorized Representative

Date of Signature

**USACE Wilmington District
Compensatory Mitigation Responsibility Transfer Form, Page 2**

Conditions for Transfer of Compensatory Mitigation Credit:

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

Comments/Additional Conditions:

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

USACE Project Manager: John Thomas
USACE Field Office: Raleigh Regulatory Field Office
US Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587
Email: john.t.thomas.jr@saw02.usace.army.mil



USACE Project Manager Signature

September 05, 2013

Date of Signature

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



North Carolina Department of Environment and Natural Resources

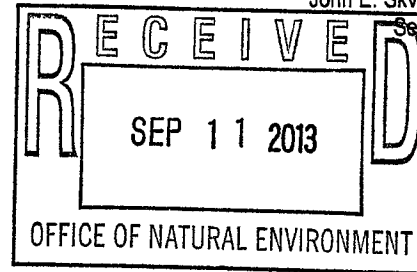
Division of Water Resources

Pat McCrory
Governor

Thomas A. Reeder
Director

John E. Skvarla, III
Secretary

August 29, 2013



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

Subject: REISSUE: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act and RANDLEMAN BUFFER RULES with ADDITIONAL CONDITIONS for Proposed widening form SR 1003 (North Main Street) and SR 1820 (Skeet Club Road) to NC 68 in High Point, Guilford County, Federal Aid Project No. STP-1820(2); WBS Element No. 34962.1.1, TIP U-3615. NCDWR Project No. 2013-0477.

Dear Dr. Thorpe:

Attached hereto is a copy of Certification No. 3966 issued to The North Carolina Department of Transportation (NCDOT) dated July xx, 2013 originally issued on June 28, 2013.

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

Sincerely,

Thomas A. Reeder

Attachments

cc: Jerry Parker, Division 7 Environmental Officer (electronic copy only)
Chris Militscher, Environmental Protection Agency (electronic copy only)
Travis Wilson, NC Wildlife Resources Commission (electronic copy only)
Jason Elliott, NCDOT, Roadside Environmental Unit (electronic copy only)
Beth Harmon, Ecosystem Enhancement Program (electronic copy only)
Amy Euliss, NCDWR Winston Salem Regional Office (electronic copy only)
File Copy

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

One
North Carolina
Naturally

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

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Resources (NCDWR) Regulations in 15 NCAC 2H .0500 and 15A NCAC 2B .0250. This certification authorizes the NCDOT to impact 2688 linear feet of jurisdictional streams, 0.85 acres of jurisdictional wetlands, 0.04 acres of open water, and 232798 square feet of protected riparian buffers in Guilford County. The project shall be constructed pursuant to the application dated received May 2, 2013 with additional information dated received June 20, 2013 and August 29, 2013. The authorized impacts are as described below:

Stream Impacts in the Cape Fear River Basin for U3615A

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
2			148	10	158	0
3	132	13			145	0
4	159	10			169	0*
TOTAL	291	23	148	10	472	0

*FONSI approved and 4A reached prior to Intermittent Stream Mitigation Policy effective October 16, 2009.

Total Stream Impact for U-3615A Project: 472 linear feet

Stream Impacts in the Cape Fear River Basin for U3615B

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1			119	16	135	0
2			594	10	604	594
3			699	10	709	699
3A			38	10	48	0
3B			119	4	123	0
3C			63		63	0
5	131	16			147	0
7	49	19			68	0
8			287	32	319	287
TOTAL	180	35	1919	82	2216	1580

Total Stream Impact for U-3615B Project: 2216 linear feet

Wetland Impacts in the Cape Fear River Basin for U-3615B

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Total Wetland Impact (ac)	Impacts Requiring Mitigation (ac)
3C			0.67			0.67	0.00
4	0.13		0.01			0.14	0.00
5	0.01			0.01		0.02	0.00
6	0.01			0.01		0.02	0.00
Total	0.15	0.00	0.68	0.02	0.00	0.85	0.00

Total Wetland Impact for Project: 0.85 acres.

Open Water Impacts in the Cape Fear River Basin for U-3519B

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
2A	0.02		0.02
5A	0.02		0.02
TOTAL	0.04	0.00	0.04

Total Open Water Impact for U-3615B Project: 0.04 acres.

Randleman Riparian Buffer Impacts for U-3615A

Site	Zone 1 Impact (sq ft)	minus Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Mitigation Required (3:1 ratio)	Zone 2 Impact (sq ft)	minus Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Mitigation Required (1.5:1 ratio)
1	2370		2370	0	1792		1792	0
2	6278		6278	0	3988		3988	0
3	10201		10201	30603	5639		5639	8458.5
4 (road crossing)	7174		7174	21522	3536		3536	5304
4 (parallel)	5898		5898	17694	3605		3605	5407.5
TOTAL	31921	0	31921	69819	18560	0	18560	19170

Total Buffer Impact for U-3615A Project: 50481square feet.

Randleman Riparian Buffer Impacts for U-3615B

Site	Zone 1 Impact (sq ft)	minus Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Mitigation Required (3:1 ratio)	Zone 2 Impact (sq ft)	minus Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Mitigation Required (1.5:1 ratio)
1	3854		3854	0	1931		1931	0
2 (road crossing)	4787		4787	0	2292		2292	0
2 (parallel)	36705		36705	110115	22604		22604	33906
2A	1369		1369	4107	9662		9662	14493
2B	0		0	0	51		51	0
3*	52487		52487	157461	31125		31125	46687.5
3A	2216		2216	0	623		623	0
3B	6967		6967	0	4638		4638	0
3C	0		0	0	64		64	0
4	1166		1166	0	998		998	0
5 (road crossing)	8784		8784	0	5141		5141	0
5 (parallel)	175		175	525	877		877	1315.5
6	3478		3478	0	1674		1674	0
6A	1271		1271	0	834		834	0
7	3933		3933	0	2411		2411	0
8	8902		8902	26706	4658		4658	6987
8A (bypass)	1226		1226	0	2536		2536	0
8A(parallel)	1385		1385	4155	1493		1493	2239.5
TOTAL	138705	0	138705	303069	93612	0	93612	105629

Total Buffer Impact for U-3615B Project: 232317 square feet.

The application provides adequate assurance that the discharge of fill material into the waters of the Cape Fear River Basin in conjunction with the proposed development will not result in a violation of applicable Water Quality

Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application dated received May 2, 2013 with additional information dated received June 20, 2013. Should your project change, you are required to notify the NCDWR and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). Additional buffer impacts may require compensatory mitigation as described in 15A NCAC .0248. For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Condition(s) of Certification:

Project Specific Conditions

1. All stormwater runoff shall be directed as sheetflow through stream buffers at nonerosive velocities, unless otherwise approved by this certification.
2. All riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated. Maintained buffers shall be permanently revegetated with non-woody species by the end of the growing season following completion of construction. For the purpose of this condition, maintained buffer areas are defined as areas within the transportation corridor that will be subject to regular NCDOT maintenance activities including mowing. The area with non-maintained buffers shall be permanently revegetated with native woody species before the next growing season following completion of construction.
3. Pursuant to 15A NCAC 2B .0250, sediment and erosion control devices shall not be placed in Zone 1 of any Randleman Buffer without prior approval by NCDWR. At this time, NCDWR has approved no sediment and erosion control devices in Zone 1, outside of the approved project impacts, anywhere on this project. Moreover, sediment and erosion control devices shall be allowed in Zone 2 of the buffers provided that Zone 1 is not compromised and that discharge is released as diffuse flow.
4. The NCDOT Division Environmental Officer or Environmental Assistant will conduct a pre-construction meeting with all appropriate staff to ensure that the project supervisor and essential staff understand the potential issues with stream and pipe alignment at the permitted site. NCDWR staff shall be invited to the pre-construction meeting.
5. Two copies of the final construction drawings shall be furnished to NCDWR Central Office prior to the pre-construction meeting. The permittee shall provide written verification that the final construction drawings comply with the permit drawings contained in the application dated May 2, 2013 with additional information dated received June 20, 2013. Any deviations from the approved drawings are not authorized unless approved by the NC Division of Water Quality.
6. Channel relocations not for credit shall be completed and stabilized, and approved by DWR staff, prior to diverting water into the new channel. Stream banks shall be matted with coir-fiber matting. Vegetation used for bank stabilization shall be limited to native riparian vegetation, and should include establishment of a vegetated buffer on both sides of the relocated channel to the maximum extent practical. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested. Once the stream has been turned into the new channel, it may be necessary to relocate stranded fish to the new channel to prevent fish kills.
7. For the 150 linear feet of streams being impacted due to site dewatering activities, the site shall be graded to its preconstruction contours and revegetated with appropriate native species.

8. Strict adherence to the most recent version of NCDOT's Best Management Practices For Bridge Demolition and Removal approved by the US Army Corps of Engineers is a condition of the 401 Water Quality Certification.
9. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of *Stormwater Best Management Practices*.
10. Bridge piles and bents shall be constructed using driven piles (hammer or vibratory) or drilled shaft construction methods. More specifically, jetting or other methods of pile driving are prohibited without prior written approval from NCDWR first.
11. No drill slurry or water that has been in contact with uncured concrete shall be allowed to enter surface waters. This water shall be captured, treated, and disposed of properly.
12. A turbidity curtain will be installed in Oak Hollow Lake if driving or drilling activities occur within the lake, on the bank, or within 5 feet of the top of bank. This condition can be waived with prior approval from DWR.
13. All bridge construction shall be performed from the existing bridge, temporary work bridges, temporary causeways, or floating or sunken barges. If work conditions require barges, they shall be floated into position and then sunk. The barges shall not be sunk and then dragged into position. Under no circumstances should barges be dragged along the bottom of the surface water.
14. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.
15. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.
16. The stream channel shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining the stream bank stability. Any applicable riparian buffer impact for access to stream channel shall be temporary and be revegetated with native riparian species.
17. NCDOT shall be in compliance with the NCS00250 issued to the NCDOT, including the applicable requirements of the NCG01000. Please note the extra protections for the sensitive watersheds.
18. Tall fescue shall not be used in the establishment of temporary or permanent groundcover within riparian areas. For the establishment of permanent herbaceous cover, erosion control matting shall be used in conjunction with an appropriate native seed mix on disturbed soils within the riparian area and on disturbed steep slopes with the following exception. Erosion control matting is not necessary if the area is contained by perimeter erosion control devices such as silt fence, temporary sediment ditches, basins, etc. Matting should be secured in place with staples, stakes, or wherever possible, live stakes of native trees. Erosion control matting placed in riparian areas shall not contain a nylon mesh grid, which can impinge and entrap small animals. For the establishment of temporary groundcover within riparian areas, hydroseeding along with wood or cellulose based hydro mulch applied from a fertilizer- and limestone-free tank is allowable at the appropriate rate in conjunction with the erosion control measures. Discharging hydroseed mixtures and wood or cellulose mulch into surface waters is prohibited. Riparian areas are defined as a distance 25 feet landward from top of stream bank.
19. NCDOT shall design, construct, and operate and maintain hazardous spill catch basins (HSCBs) at stream and lake crossing within the WS CA watershed. The HSCBs shall be located at Station numbers 183+00 - L-(Rt), 191+50-L-(Lt), 202+00-L-(Lt), 222+00-L-(Rt), 234+50-L-(Rt), 242+00-L-(Rt), 267+00-L-(Lt), 272+00-L-(Lt), 306+00-L-(Rt), and 314+50-L-(Rt).

20. Compensatory mitigation for impacts to 1580 linear feet of streams at a replacement ratio of 1:1 is required for U-3615B. Compensatory mitigation for impacts to jurisdictional streams shall be provided by onsite stream relocations of 760 linear feet of UT 3-3 West Fork of Deep River. The onsite stream relocation shall be constructed in accordance with the design submitted in your May 2, 2013 application. All on-site mitigation sites shall be protected in perpetuity by a conservation easement or through NCDOT fee simple acquisition and recorded in the NCDOT Natural Environment Unit mitigation geodatabase. Please be reminded that as-builts for the completed streams shall be submitted to the North Carolina Division of Water Quality 401 Wetlands Unit with the as-builts for the rest of the project. If the parameters of this condition are not met, then the permittee shall supply additional stream mitigation for the 760 linear feet of impacts. All channel relocations will be constructed in a dry work area, will be completed and stabilized, and must be approved on site by NCDWR staff, prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. All stream relocations shall have a 50-foot wide native wooded buffer planted on both sides of the stream unless otherwise authorized by this Certification. A transitional phase incorporating rolled erosion control product (RECP) and appropriate temporary ground cover is allowable.
21. The permittee shall visually monitor the vegetative plantings to assess and ensure complete stabilization of the mitigation stream segments. Riparian area success shall be determined by conducting stem counts to ensure a tree survival rate of 320 stems/acre. The monitoring shall be conducted annually for a minimum of 3 years after final planting. Photo documentation shall be utilized to document the success of the riparian vegetation and submitted to NCDWR in a final report within sixty (60) days after completing monitoring. After 3 years the NCDOT shall contact NCDWR to schedule a site visit to "close out" the mitigation site.
22. Compensatory mitigation for 820 linear feet of impact to streams is required (excluding 760 linear feet to be mitigated for on-site). We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in a letter dated April 23, 2013 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the EEP Mitigation Banking Instrument signed July 28, 2010.
23. Compensatory mitigation for impacts to 101023 square feet of protected riparian buffers in Zone 1 (303069 square feet of mitigation) and 70419 square feet of protected riparian buffers in Zone 2 (105629 square feet of mitigation) shall be required for U3615B. In accordance with 15A NCAC 02B .0252, riparian vegetation reestablishment shall include a minimum of at least 2 native hardwood tree species planted at a density sufficient to provide 320 trees per acre at maturity. All on-site mitigation sites shall be protected in perpetuity by a conservation easement or through NCDOT fee simple acquisition and recorded in the NCDOT Natural Environment Unit mitigation geodatabase.
24. The permittee shall monitor the buffer mitigation site. Monitoring shall consist of stem counts. An annual report shall be submitted to NCDWR for a period of 5 years showing monitoring results, survival rate/success of tree and vegetation establishment, and that diffuse flow through the riparian buffer has been maintained. The first annual report shall be submitted within one year of final planting. Failure to achieve a buffer density of 320 trees per acre after 5 years will require the annual report to provide appropriate remedial actions to be implemented and a schedule for implementation. Approval of the final annual report, and a formal "close out" of the mitigation site by NCDWR is required.
25. Compensatory mitigation for 303069 square feet of riparian buffers in Zone 1 and 105629 square feet in riparian buffer Zone 2 shall be required for U3615B. We understand that 45810 square feet of protected riparian buffer in zone 1 and 29829 square feet of protected riparian buffer in zone 2 are being performed on-site. We understand that you have chosen to perform compensatory mitigation for the remaining 257259 square feet of riparian buffer in zone 1 and 75800 square feet of riparian buffer in zone 2 to protected buffers through use of the North Carolina Ecosystem Enhancement Program (EEP). Mitigation for unavoidable impacts to Randleman Riparian Buffers shall be provided in the Cape Fear River Basin and done in accordance with 15A NCAC 2B .0252. EEP has indicated in a letter dated August 20, 2013 that they will assume responsibility for satisfying the compensatory mitigation requirements for the above-referenced project, in accordance with EEP's Mitigation Banking Instrument signed July 28, 2010.

26. When final design plans are completed for U-3615A, a modification to the 401 Water Quality Certification and the Randleman River Riparian Buffer Certification shall be submitted with fees to the NC Division of Water Quality. Final designs shall reflect all appropriate avoidance, minimization, and mitigation for impacts to wetlands, streams, and other surface waters, and buffers. No construction activities that impact any wetlands, streams, surface waters, or buffers located in U-3615A shall begin until after the permittee applies for, and receives a written modification of the 401 Water Quality Certification and the Randleman River Riparian Buffer Authorization from the NC Division of Water Quality.

General Conditions

27. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWR. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWR for guidance on how to proceed and to determine whether or not a permit modification will be required.
28. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.
29. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers.
30. The dimension, pattern and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions.
31. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage.
32. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval.
33. Prior to commencing ground disturbing activities, an acceptable monitoring and mitigation plan for the presence of sulfide-bearing rock must be approved by DWR.
34. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water.
35. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream.
36. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.
37. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification.
38. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.
39. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If NCDWR determines that such

standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, NCDWR may reevaluate and modify this certification.

40. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification.
41. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.
42. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification.
43. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.
44. The Permittee shall report any violations of this certification to the Division of Water Quality within 24 hours of discovery.
45. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer shall complete and return the enclosed "Certification of Completion Form" to notify NCDWR when all work included in the 401 Certification has been completed.
46. Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction.
47. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities.
48. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:
 - a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
 - b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
 - c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
 - d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.
49. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification.

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



North Carolina Department of Environment and Natural Resources

Division of Water Resources

Pat McCrory
Governor

Thomas A. Reeder
Director

John E. Skvarla, III
Secretary

NCDWR Project No.: _____ County: _____

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion

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

Applicant's Certification

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

Signature: _____ Date: _____

Agent's Certification

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

Signature: _____ Date: _____

Engineer's Certification

_____ Partial _____ Final

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

Signature _____ Registration No. _____

Date _____

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



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

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

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

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

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

Mr. Lacy Presnell, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center

This the 29th day of August 2013

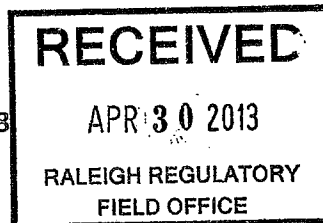
DIVISION OF WATER RESOURCES



Thomas A. Reeder

WQC No. 3966

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 occidentalis*) 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

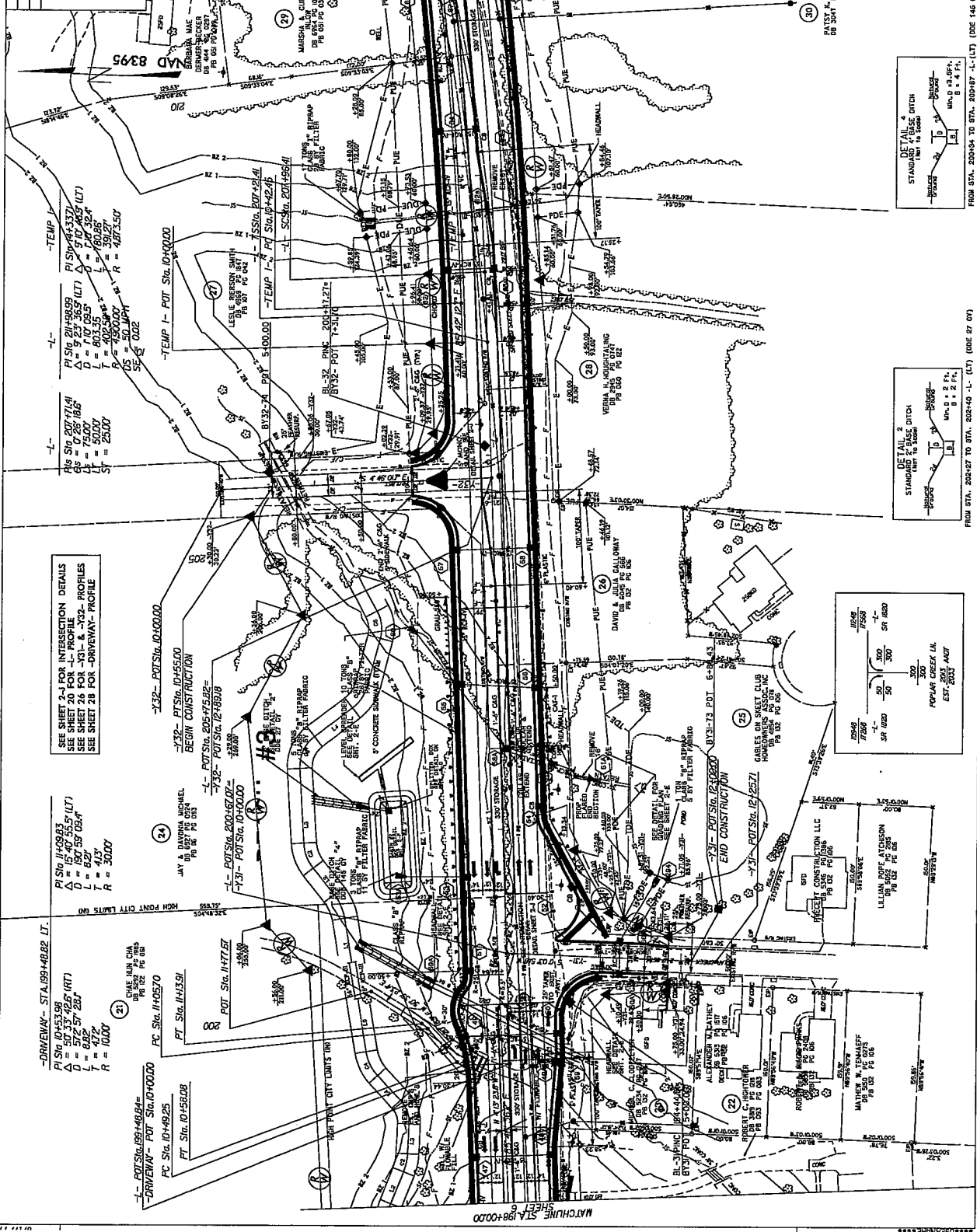
The site will be managed by NCDOT with its own distinct cost center number within the NCDOT budgeting and financial tracking system. Therefore, all accounting for revenues, contract encumbrances, fund transfers, and expenses will be performed and reported independently from other capital budget or operating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



Appendix A

RECEIVED
 APR 30 2013
 RALEIGH REGULATORY
 FIELD OFFICE

PROJECT REFERENCE NO. U-1815B
 ROADWAY DESIGN ENGINEER
 PRELIMINARY PLANS
 NO STOP TIME FOR CONSTRUCTION



SEE SHEET 24 FOR INTERSECTION DETAILS
 SEE SHEET 20 FOR -Y32- PROFILES
 SEE SHEET 26 FOR -Y31- & -Y32- PROFILES
 SEE SHEET 28 FOR -DRIVEWAY- PROFILE

PI Sta. 11429.83
 $\Delta = 15.40'$
 $D = 150.59'$
 $L = 6.20'$
 $T = 4.77'$
 $R = 30.00'$

-DRIVEWAY- STA. 091+49.22 LT.
 $\Delta = 50.33'$
 $D = 576.57'$
 $L = 4.77'$
 $R = 10.00'$

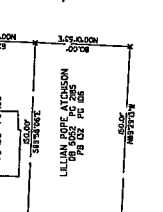
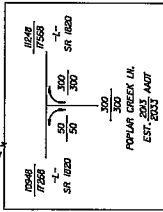
-DRIVEWAY- POT Sta. 10+00.00
 FC Sta. 10+05.70
 PT Sta. 11+31.91

-Y32- POT Sta. 10+00.00
 -Y32- PVI Sta. 10+55.00
 BEGIN CONSTRUCTION

-Y32- POT Sta. 205+75.92=

-Y31- POT Sta. 200+47.07=

-Y31- POT Sta. 10+00.00



FROM STA. 200+04 TO STA. 200+87 -1-(LT) (SEE 27 ST)

FROM STA. 202+27 TO STA. 202+40 -1-(LT) (SEE 27 ST)

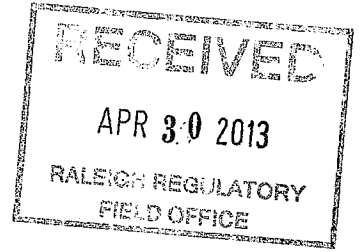
FROM STA. 202+40 TO STA. 202+49 -1-(LT) (SEE 27 ST)

FROM STA. 202+49 TO STA. 202+58 -1-(LT) (SEE 27 ST)

FROM STA. 202+58 TO STA. 202+67 -1-(LT) (SEE 27 ST)

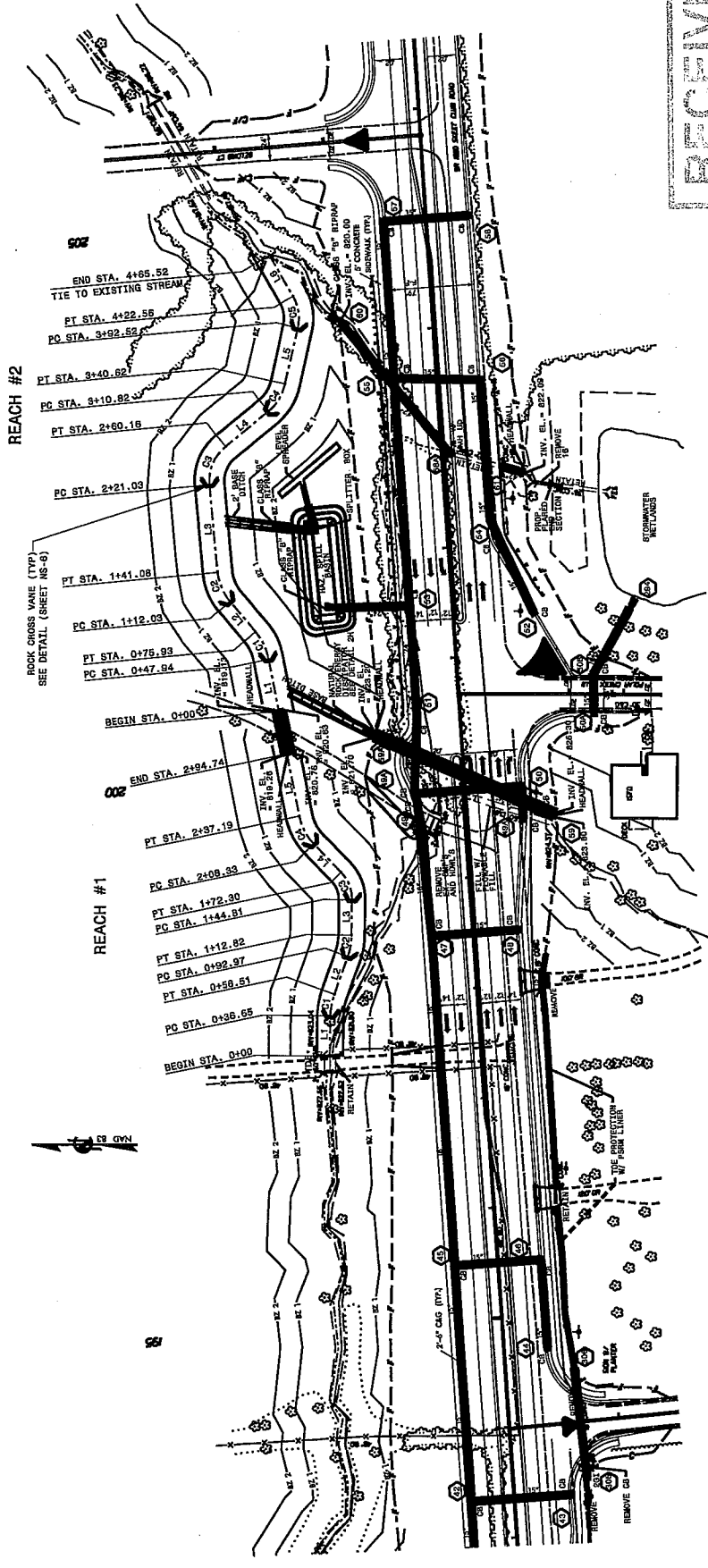
FROM STA. 202+67 TO STA. 202+76 -1-(LT) (SEE 27 ST)

FROM STA. 202+76 TO STA. 202+85 -1-(LT) (SEE 27 ST)



Appendix B

PROJECT REFERENCE NO. U-3815B
 SHEET NO. NS-1



REACH #2

REACH #1

ROCK CROSS WALES (TYP)
 SEE DETAIL (SHEET NS-6)



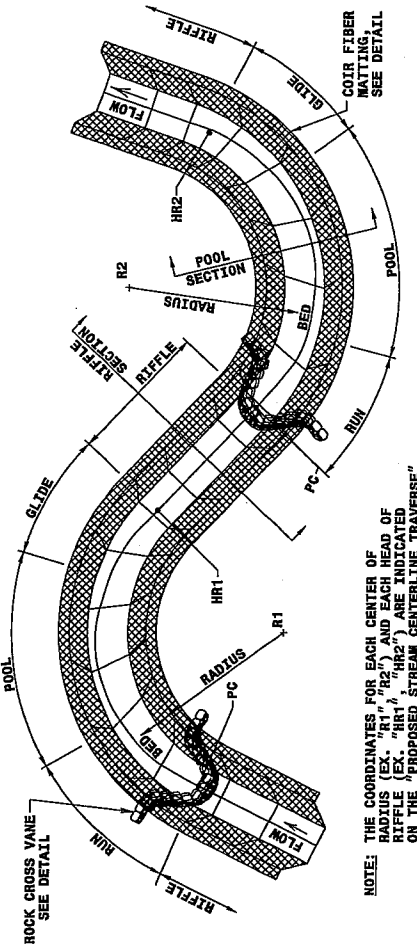
RECEIVED
 APR 30 2013
 RALEIGH REGULATORY
 FIELD OFFICE

REACHES #1 & #2

DESIGN SERVICES UNIT
 101 SPECTA DESIGN
 OFFICE: 818.226.4128 FAX: 818.226.4119

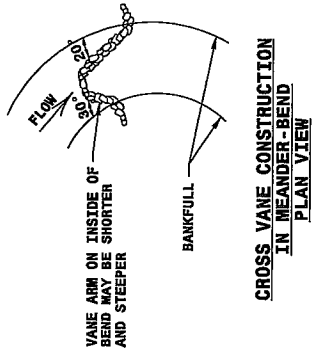
NATURAL STREAM DESIGN
 PLAN - REACHES #2 & #3

ORIGINAL BY: _____ DATE: _____
 CHECKED BY: _____ DATE: _____
 FILE: SFGC

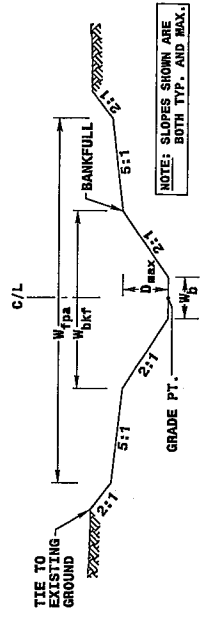


NOTE: THE COORDINATES FOR EACH CENTER OF RIFFLE (EX. "R1", "R2") AND EACH HEAD OF RIFFLE (EX. "HR1", "HR2") ARE INDICATED ON THE "PROPOSED STREAM CENTERLINE TRAVERSE" SHEETS.

TYPICAL PLAN

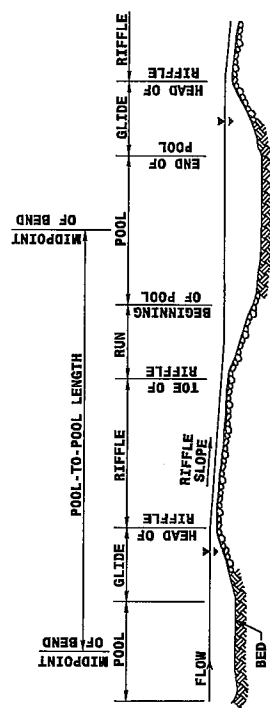


CROSS VANE CONSTRUCTION IN MEANDER-BEND PLAN VIEW



NOTE: SLOPES SHOWN ARE BOTH TYP. AND MAX.

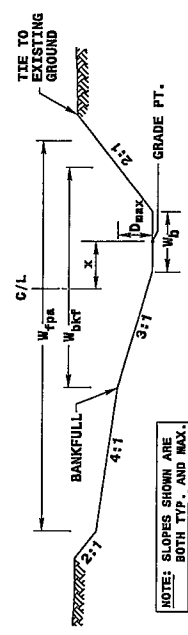
TYPICAL RIFFLE SECTION WITH BANKFULL BENCH



TYPICAL PROFILE FOR ARMORED RIFFLE SECTION

CROSS SECTION DIMENSIONS

REACH	RIFFLE			POOL		
	W _{bkf}	D _{max}	W/D	W _{bkf}	D _{max}	W/D
#1	12.3'	1.20'	7.5' / 24.3' / 12.7	0	24.0'	3.2'
#2	13.4'	1.35'	8.0' / 26.9' / 12.5	0	27.0'	3.6'



NOTE: SLOPES SHOWN ARE BOTH TYP. AND MAX.

TYPICAL POOL SECTION WITH BANKFULL BENCH

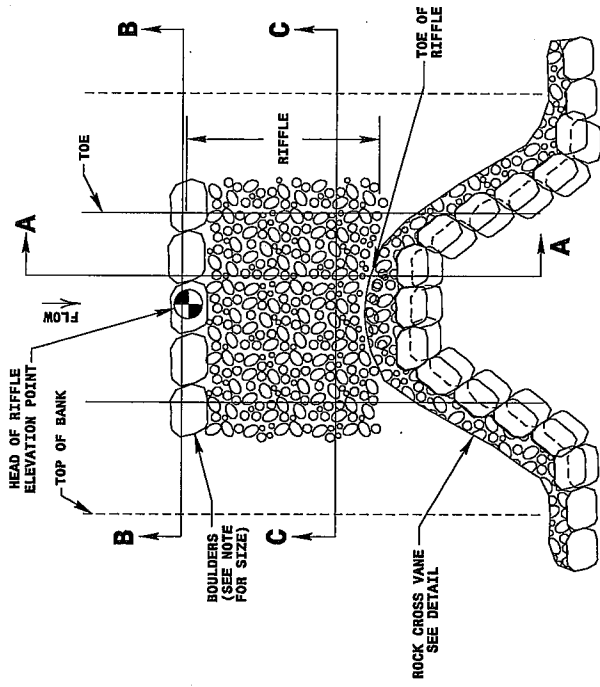
ABBREVIATIONS:
R = RADIUS POINT
HR = HEAD OF RIFFLE
W/D = WIDTH/DEPTH
W_{bkf} = BANKFULL WIDTH
D_{max} = MAXIMUM BANKFULL DEPTH
W_b = BOTTOM WIDTH
W_{fpa} = FLOOD PRONE AREA WIDTH
X = CENTERLINE OFFSET

CHANNEL TYPICAL DETAIL
NOT TO SCALE

DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
9713 E 9TH AVE SUITE 100 DENVER, CO 80231
TEL: 303-751-1128 FAX: 303-751-1119

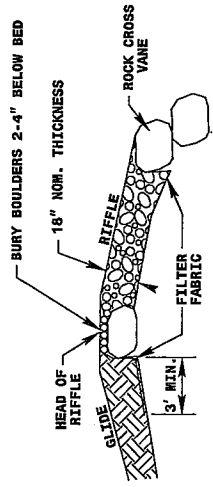
NATURAL STREAM DESIGN
CHANNEL TYPICAL DETAIL

ORIGINAL BY: _____ DATE: _____
REVISION BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC: _____

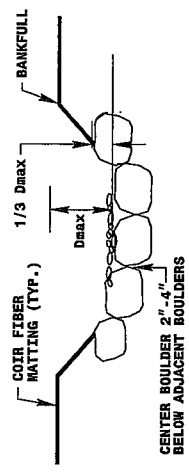


PLAN VIEW

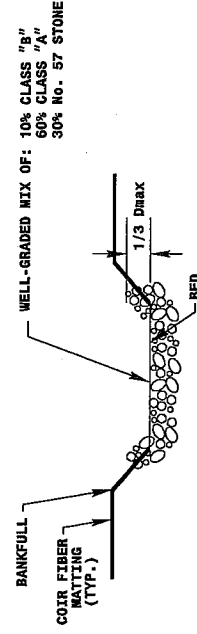
REACH	NO. RIFFLES	ESTIMATED QUANTITIES				
		#57 STONE	CL. A RIP RAP	CL. B RIP RAP	# BLDRS.	WT. BLDRS. FILTER FABRIC
1	5	45 TONS	75 TONS	13 TONS	20	15 TONS
2	6	80 TONS	130 TONS	22 TONS	25	20 TONS
TOTAL	11	125 TONS	205 TONS	35 TONS	45	35 TONS



SECTION A-A



SECTION B-B



SECTION C-C

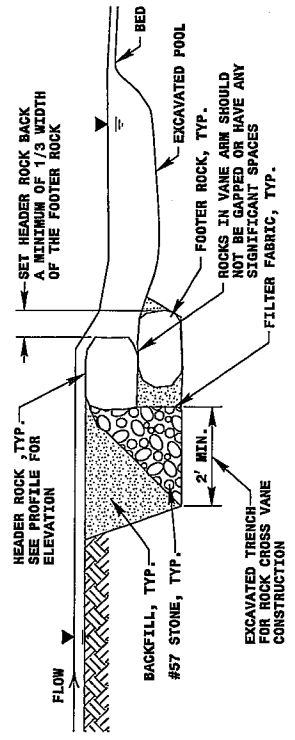
NOTE:
 1. BOULDERS SHOULD BE NATIVE STONES OR SHOT ROCK, ANGULAR AND OBLONG, WITH AXES APPROXIMATELY (3'L x 2'W x 1.5'D).
 2. SEE CHANNEL TYPICAL DETAIL FOR RIFFLE DIMENSIONS.

CONSTRUCTED RIFFLE DETAIL
 NOT TO SCALE

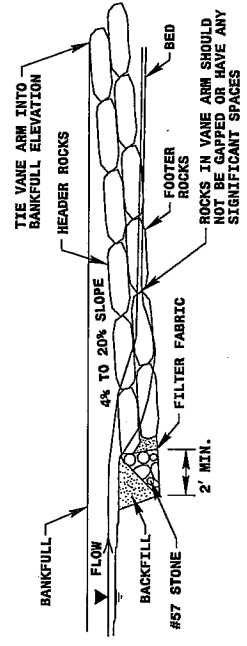
DESIGN SERVICES UNIT
 STANDARDS AND SPECIAL DESIGN
 OFFICE 919-250-4128 FAX 919-250-4119

NATURAL STREAM DESIGN
 CONSTRUCTED RIFFLE DETAIL

ORIGINAL BY: _____ DATE: _____
 MODIFIED BY: _____ DATE: _____
 CHECKED BY: _____ DATE: _____
 FILE NO.: _____

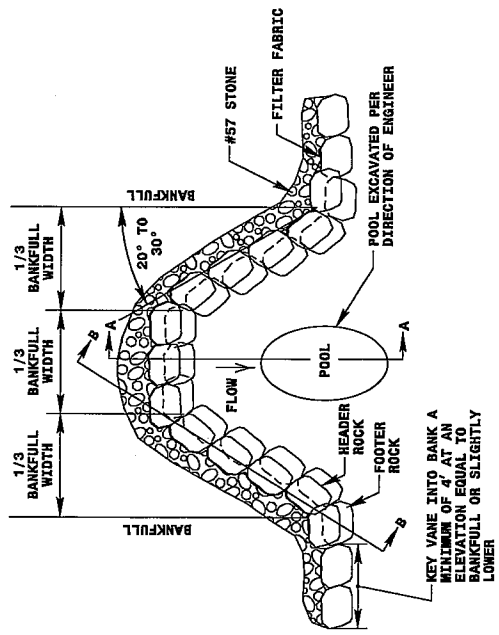


SECTION A-A



SECTION B-B

- 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 DISCRETION OF THE ENGINEER.
 5. POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.



PLAN VIEW

REACH	NO. STRUCTURES	BOULDER DIMENSIONS (FT)			ESTIMATED QUANTITIES			
		HEIGHT	LENGTH	WIDTH	# BLDGS.	WT. BLDGS.	#57 STONE	FILTER FABRIC
1	4	1.5'	3'	2'	76	60 TONS	30 TONS	120 S.Y.
2	5	1.5'	3'	2'	50	70 TONS	40 TONS	150 S.Y.
TOTAL	9	1.5'	3'	2'	165	130 TONS	70 TONS	270 S.Y.

ROCK CROSS VANE DETAIL

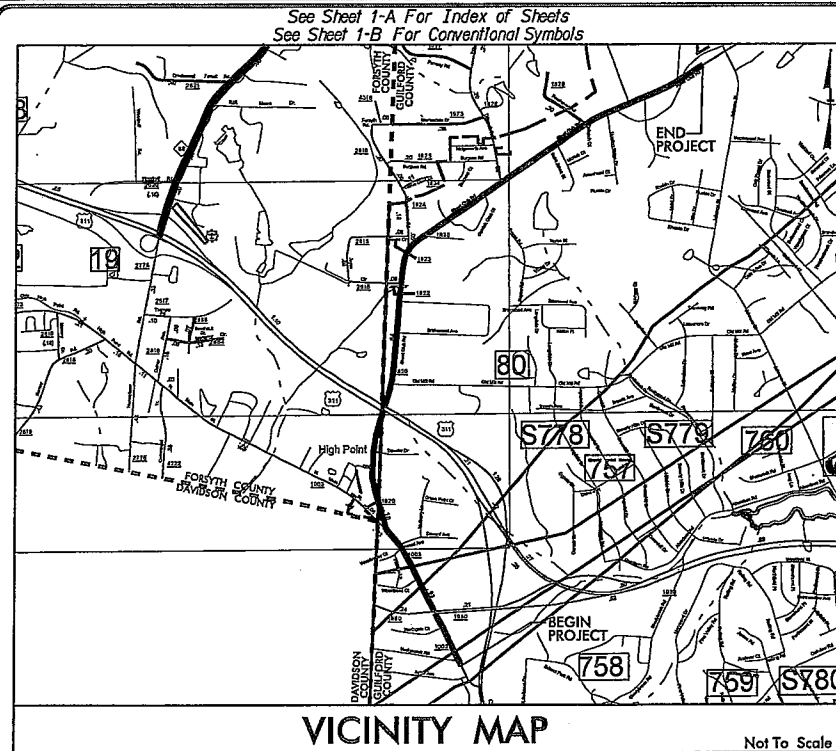
NOT TO SCALE

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 NO.: _____

CONTRACT: TIP: U-3615A



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS



GUILFORD COUNTY

RECEIVED
APR 30 2013
RALEIGH REGULATORY
FIELD OFFICE

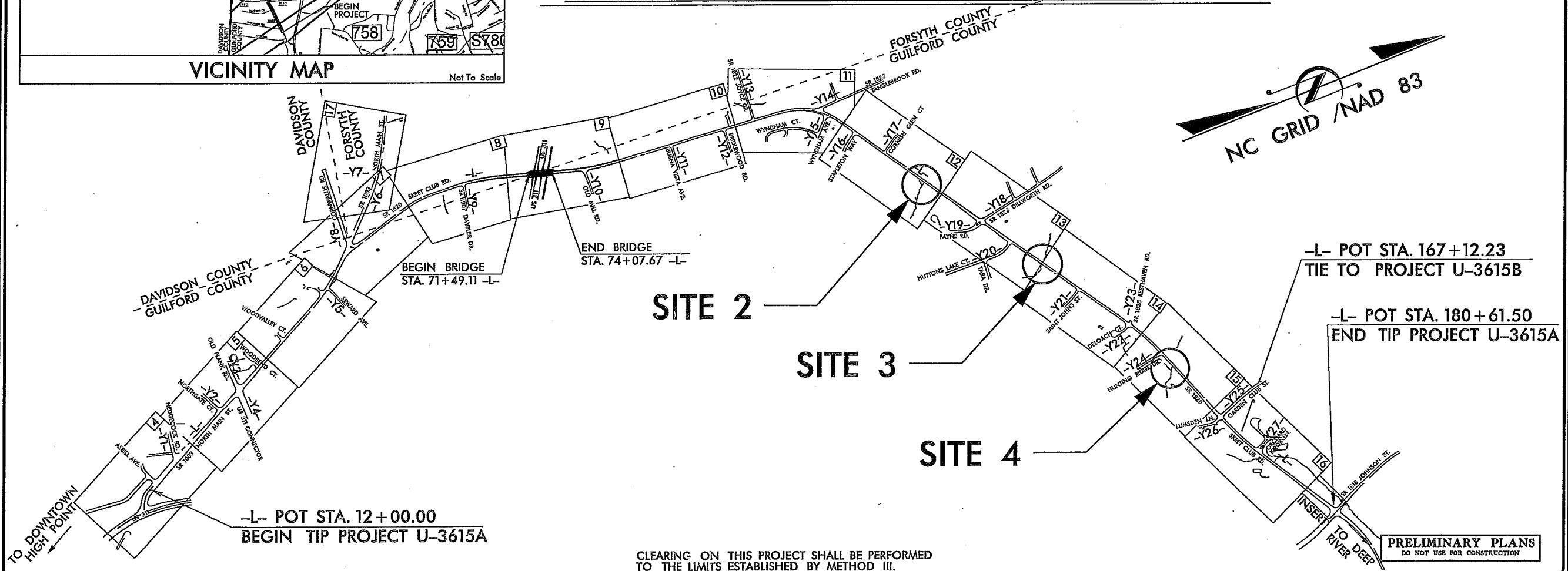
LOCATION: SR 1003 (NORTH MAIN STREET) AND SR 1820 (SKEET CLUB ROAD) BETWEEN US 311 AND SR 1818 (JOHNSON STREET).

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

WETLAND/SURFACE WATER PERMIT DRAWING

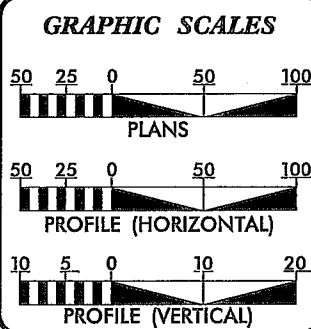
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3615A	1	
WB NO.	P.A. PROJ. NO.	DESCRIPTION	
34962.1.1	STP-1820(2)	P.E.	
34962.2.2	STP-1820(4)	RW & UTILITIES	

Permit Drawing
Sheet 1 of 14



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

CONTRACT: TIP: U-3615A



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
200 TOWN HIRE DR., STE. C, CHARLOTTE, NC 28268
TEL: 919.286.8750 FAX: 919.286.8751

FOR: NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCT 18, 2013	DAVID RUGGLES, PE PROJECT ENGINEER
LETTING DATE: OCT 20, 2015	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

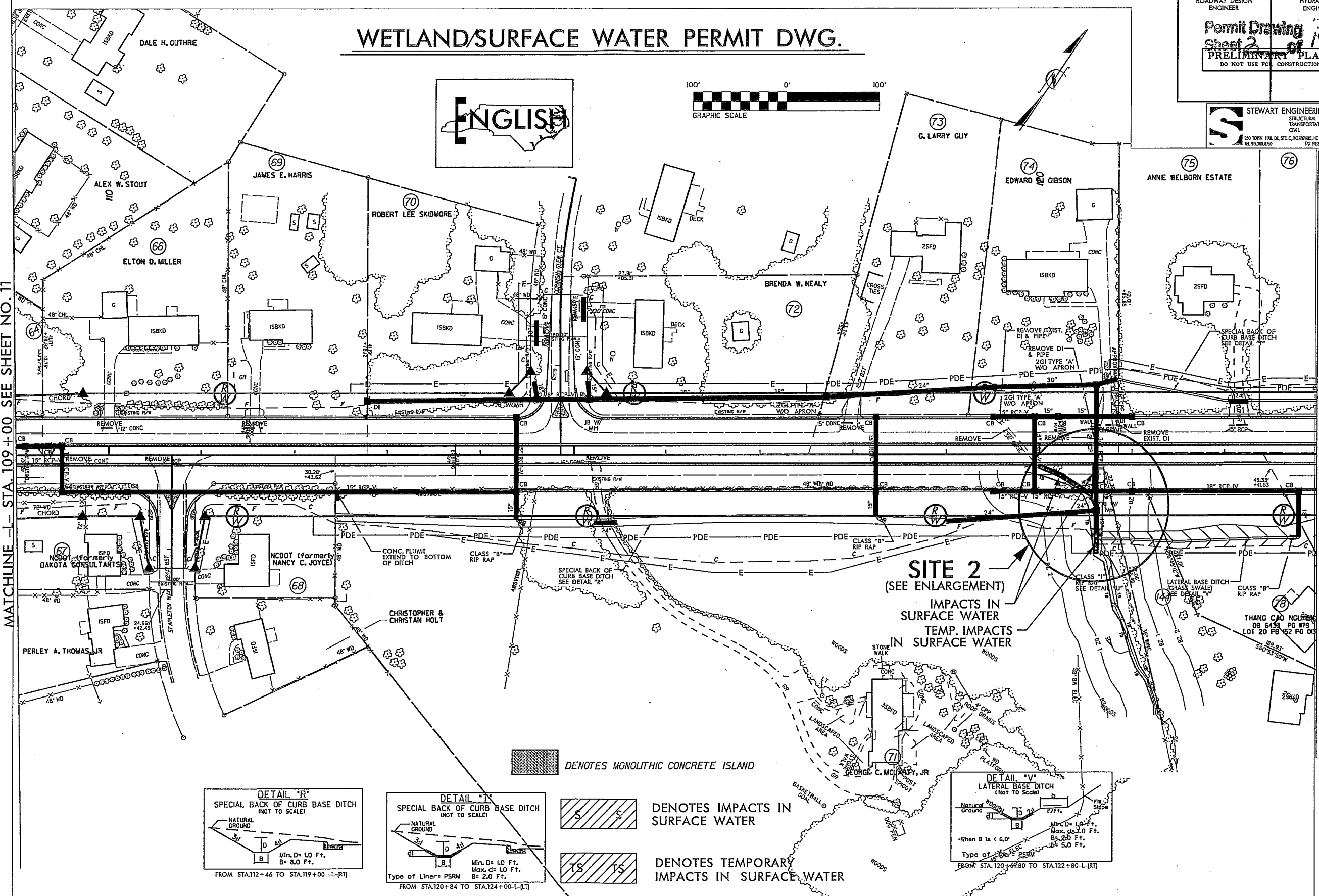
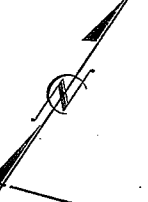
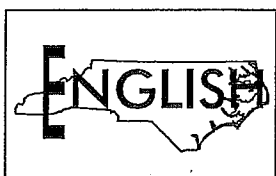
WETLAND/SURFACE WATER PERMIT DWG.

PROJECT REFERENCE NO. U-3615A SHEET NO. 12

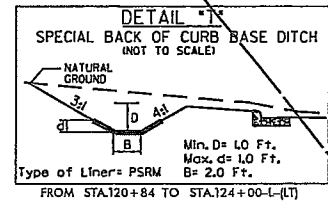
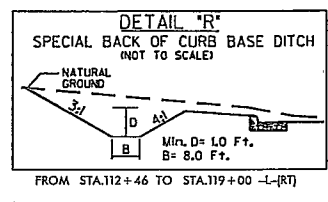
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

Permit Drawing Sheet 2 of 11 PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

STEWART ENGINEERING
 STRUCTURAL
 TRANSPORTATION
 CIVIL
 280 TOWN HALL DR., STE. C, WOODVILLE, NC 27160
 TEL. 919.338.8720 FAX 919.338.8723



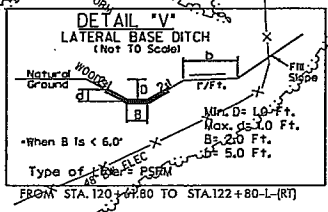
SITE 2
 (SEE ENLARGEMENT)
 IMPACTS IN SURFACE WATER
 TEMP. IMPACTS IN SURFACE WATER



[Stippled Box] DENOTES MONOLITHIC CONCRETE ISLAND

[Hatched Box] DENOTES IMPACTS IN SURFACE WATER

[Hatched Box with 'TS'] DENOTES TEMPORARY IMPACTS IN SURFACE WATER



REVISIONS
 8/17/99

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

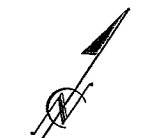
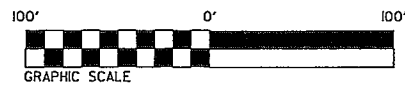
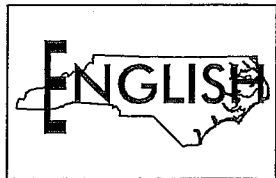
MATCHLINE -L- STA.123+00 SEE SHEET NO.13

8/17/99

PROJECT REFERENCE NO. U-3615A	SHEET NO. 12
ROADWAY DESIGN ENGINEER Permit Drawing Sheet 3 of 14	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

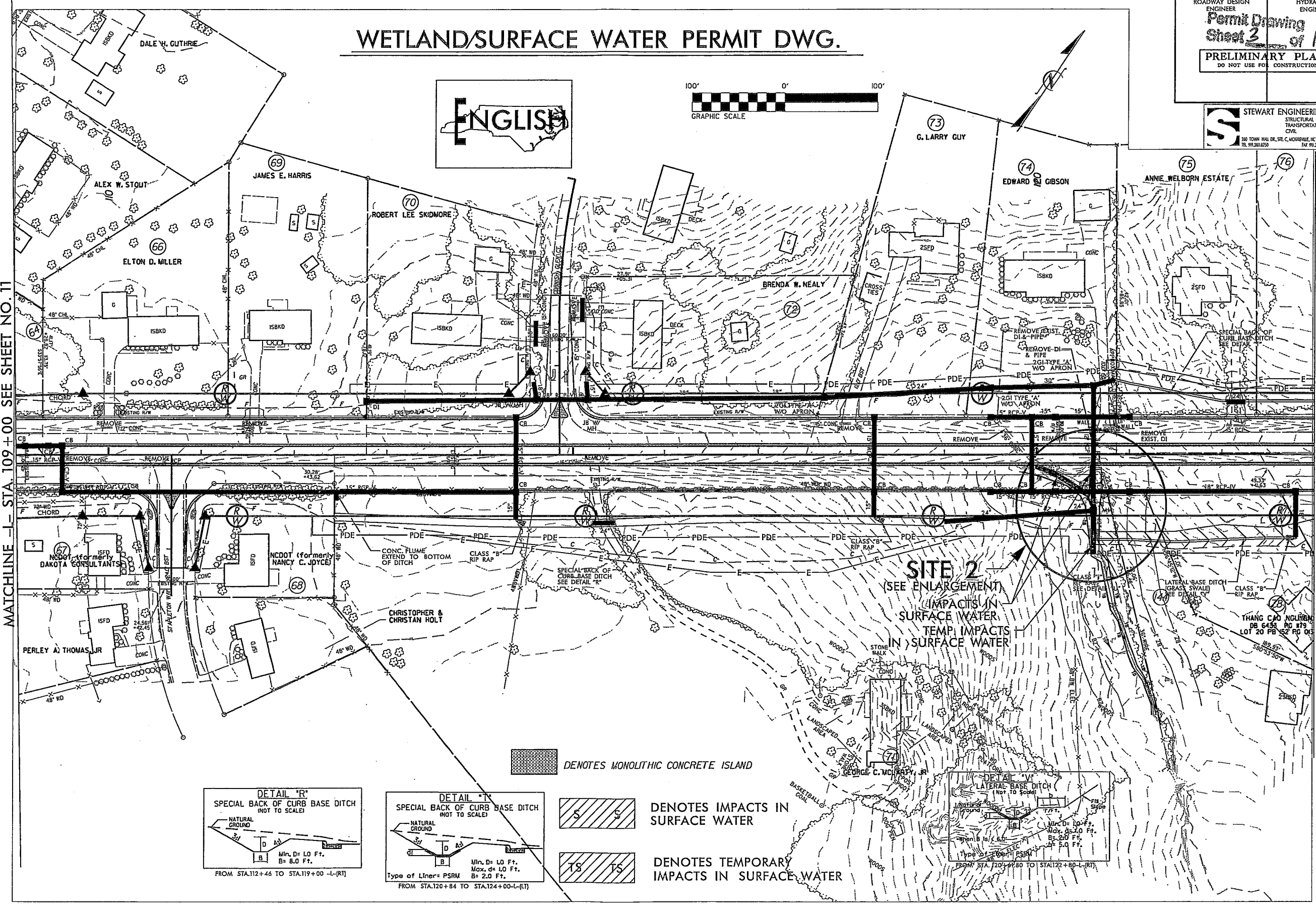
STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL
280 TOWN HALL DR., STE. C, WOODRIDGE, NC 27150
TEL. 919.380.8250 FAX 919.380.8753

WETLAND/SURFACE WATER PERMIT DWG.



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

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

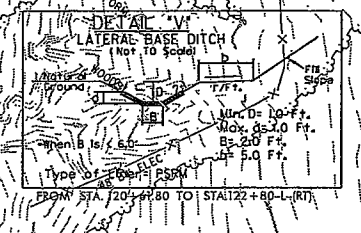
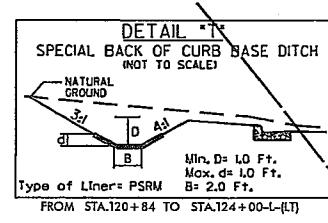
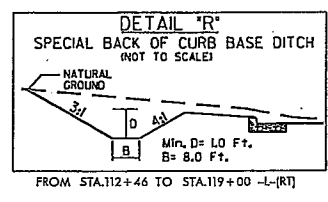


SITE 2
(SEE ENLARGEMENT)
IMPACTS IN SURFACE WATER
TEMP IMPACTS IN SURFACE WATER

DENOTES MONOLITHIC CONCRETE ISLAND

DENOTES IMPACTS IN SURFACE WATER

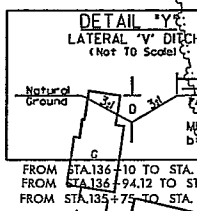
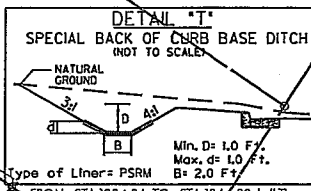
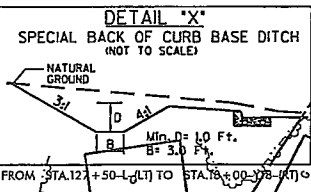
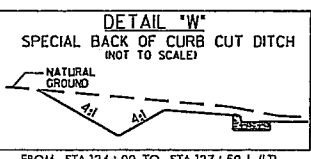
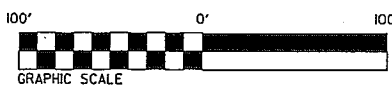
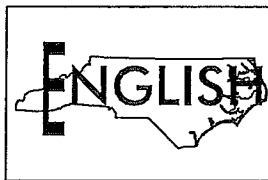
DENOTES TEMPORARY IMPACTS IN SURFACE WATER



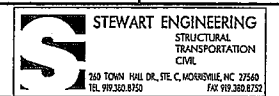
REVISIONS

*****SYSTEMS CONSULTANTS*****

WETLAND/SURFACE WATER PERMIT DWG.

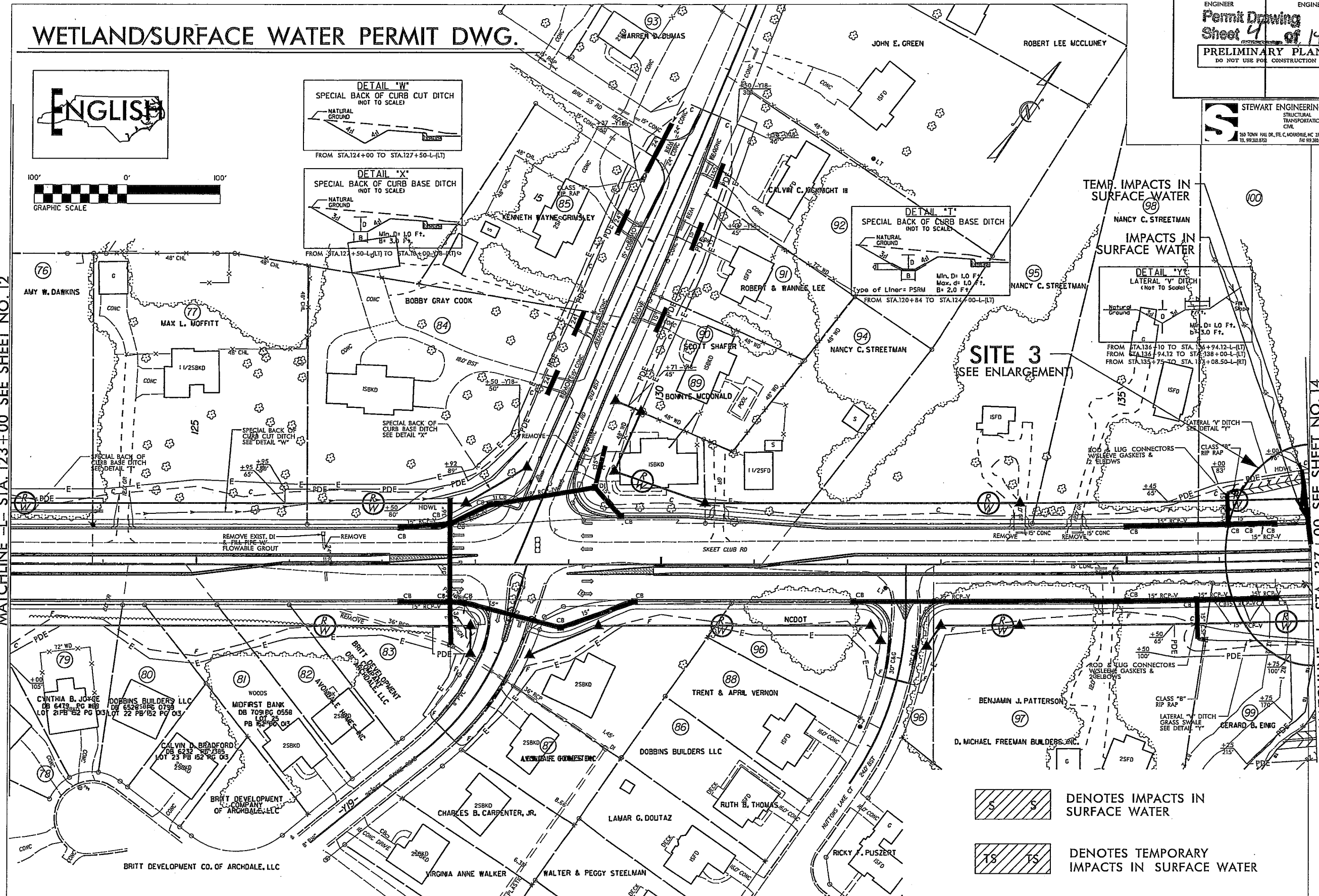


PROJECT REFERENCE NO. U-3615A	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Permit Drawing Sheet 9 of 14	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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

8/17/99
REVISIONS
SYSTEMS
CONSULTANTS

8/17/99

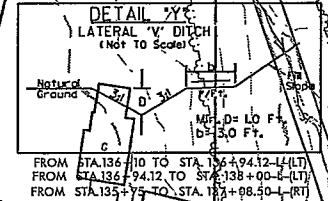
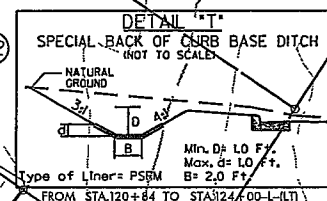
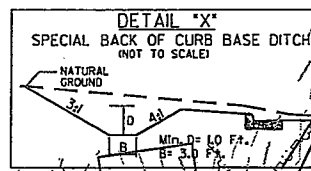
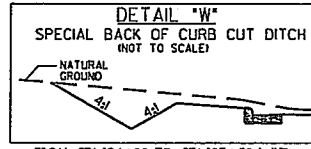
PROJECT REFERENCE NO. U-3615A	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Permit Drawing Sheet 2 of 14 PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

STEWART ENGINEERING
 STRUCTURAL TRANSPORTATION CIVIL
 100 TOWN HILL DR., STE. C, MORRISVILLE, NC 27555
 TEL. 919.863.8150 FAX 919.863.8152

WETLAND/SURFACE WATER PERMIT DWG.

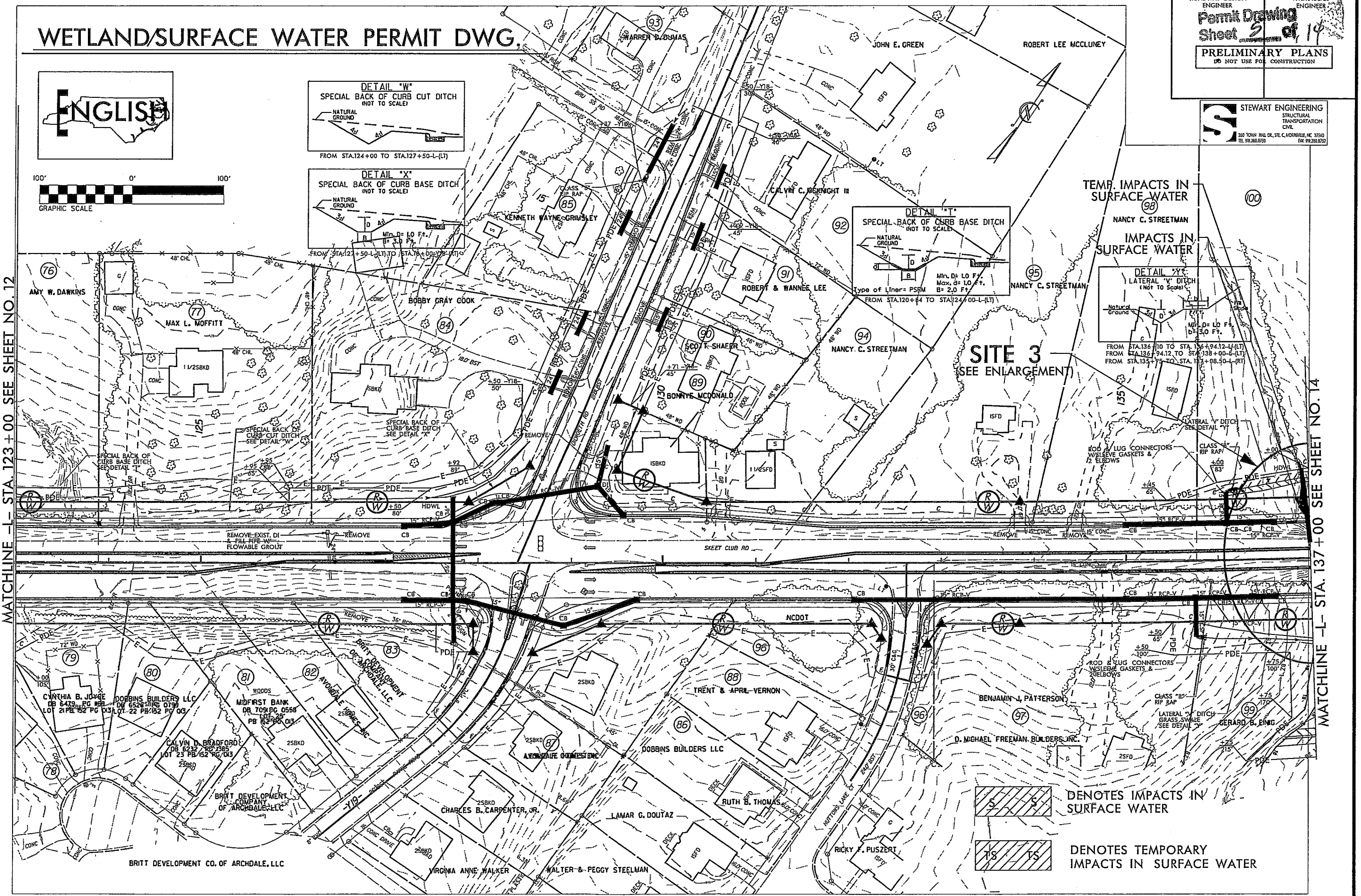


100' 0' 100'
GRAPHIC SCALE



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

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



TEMP. IMPACTS IN SURFACE WATER
 IMPACTS IN SURFACE WATER

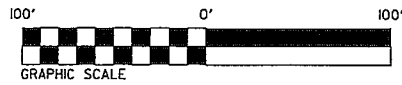
SITE 3
(SEE ENLARGEMENT)

DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS
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R/17/99

WETLAND/SURFACE WATER PERMIT DWG.



CALVIN C. QUINN

SHUGART ENTERPRISES LLC

SHUGART MANAGEMENT INC

SHUGART MANAGEMENT INC

SHUGART ENTERPRISES LLC

SHUGART MANAGEMENT INC



RAYMOND WILLIAMS JR. et al

BOBBY D. CURTIS

MIRIAM FOSTER KINDLE

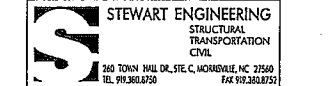
GLORIA FOSTER BASS

PROJECT REFERENCE NO. U-3615A SHEET NO. 14

RAW SHEET NO.

ROADWAY DESIGN ENGINEER
PERMIT Drawing Sheet 14 of 14
HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

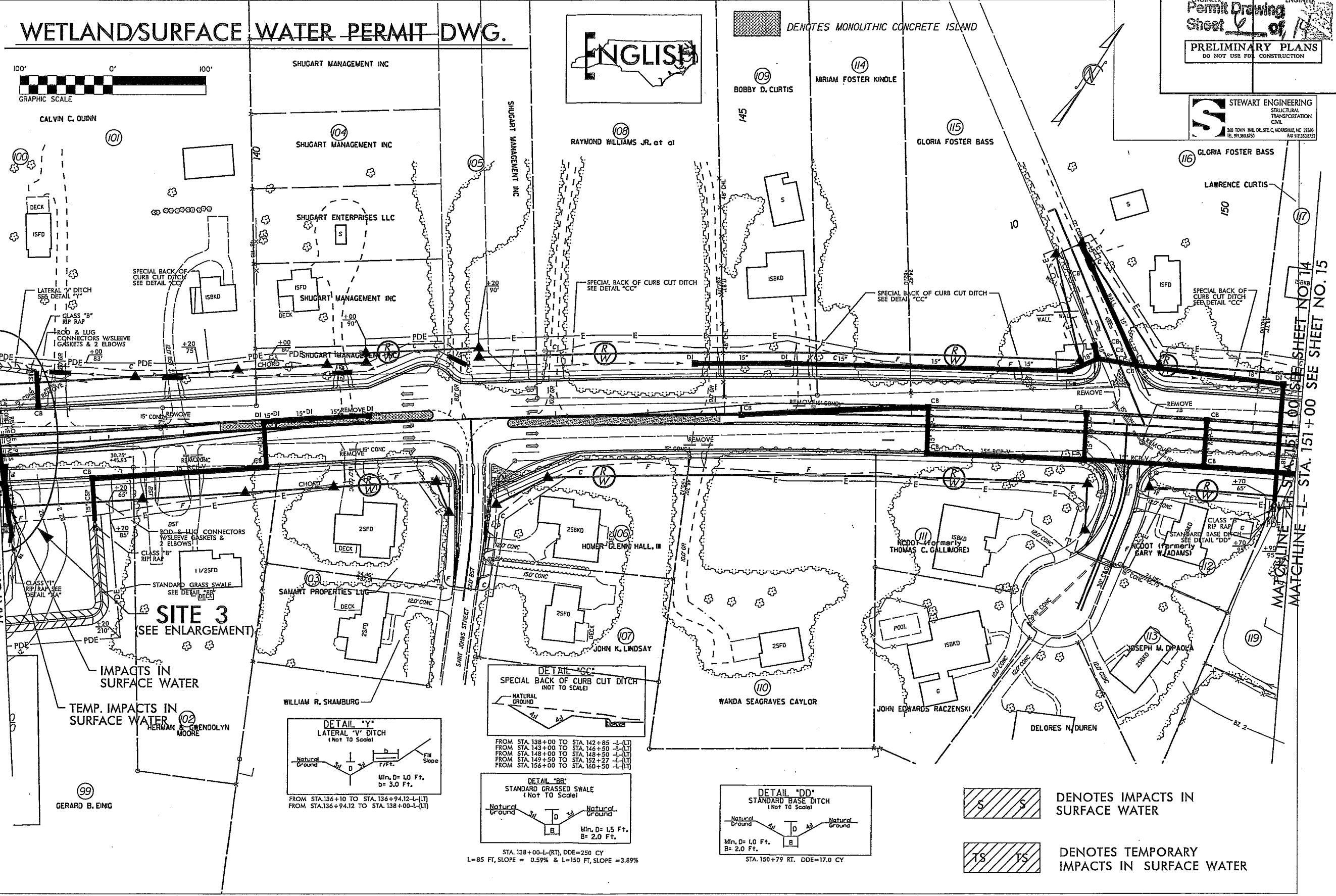


GLORIA FOSTER BASS

LAWRENCE CURTIS

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

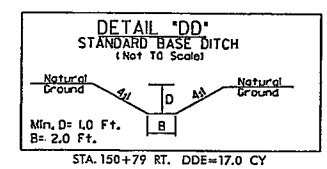
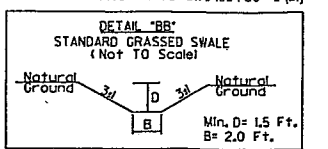
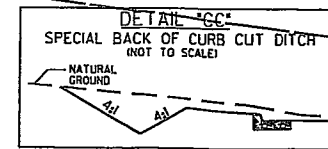
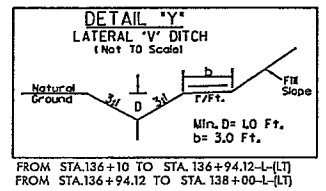
MATCHLINE -R- STA. 151+00 SEE SHEET NO. 15



SITE 3
SEE ENLARGEMENT

IMPACTS IN SURFACE WATER

TEMP. IMPACTS IN SURFACE WATER



DENOTES IMPACTS IN SURFACE WATER



DENOTES TEMPORARY IMPACTS IN SURFACE WATER

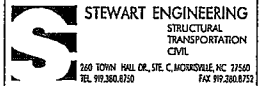
STA. 138+00-L-(RT), DDE=250 CY
L=85 FT, SLOPE = 0.59% & L=150 FT, SLOPE =3.89%

STA. 150+79 RT. DDE=17.0 CY

REVISIONS

DATE: 09/17/99
BY: [Signature]
CHECKED: [Signature]
APPROVED: [Signature]

8/17/99

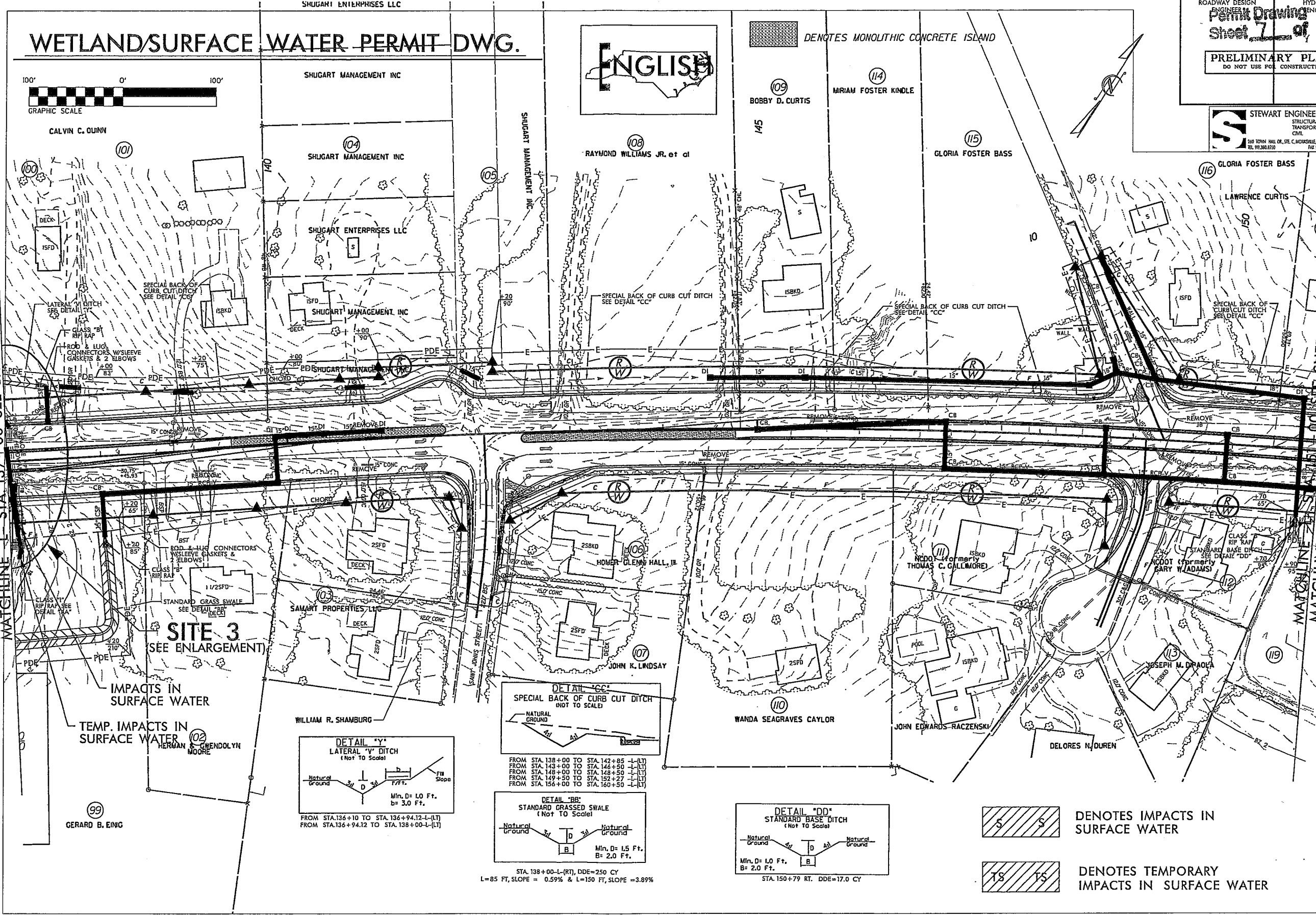
PROJECT REFERENCE NO. U-3615A	SHEET NO. 14
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Permit Drawing Sheet 7 of 14	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 STEWART ENGINEERING STRUCTURAL TRANSPORTATION CIVIL <small>288 TOWN HALL DR., STE. C, MONROE, NC 27040 TEL. 919.388.8720 FAX 919.388.8723</small>	

WETLAND/SURFACE WATER PERMIT DWG.



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

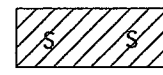
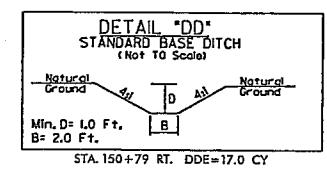
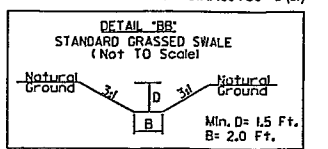
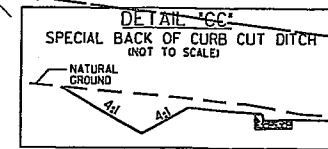
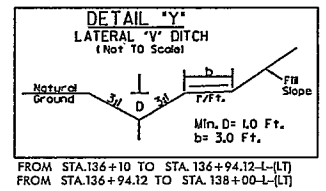
MATCHLINE -L- STA. 151+00 SEE SHEET NO. 15



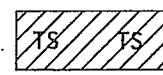
SITE 3
SEE ENLARGEMENT

IMPACTS IN SURFACE WATER

TEMP. IMPACTS IN SURFACE WATER



DENOTES IMPACTS IN SURFACE WATER



DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

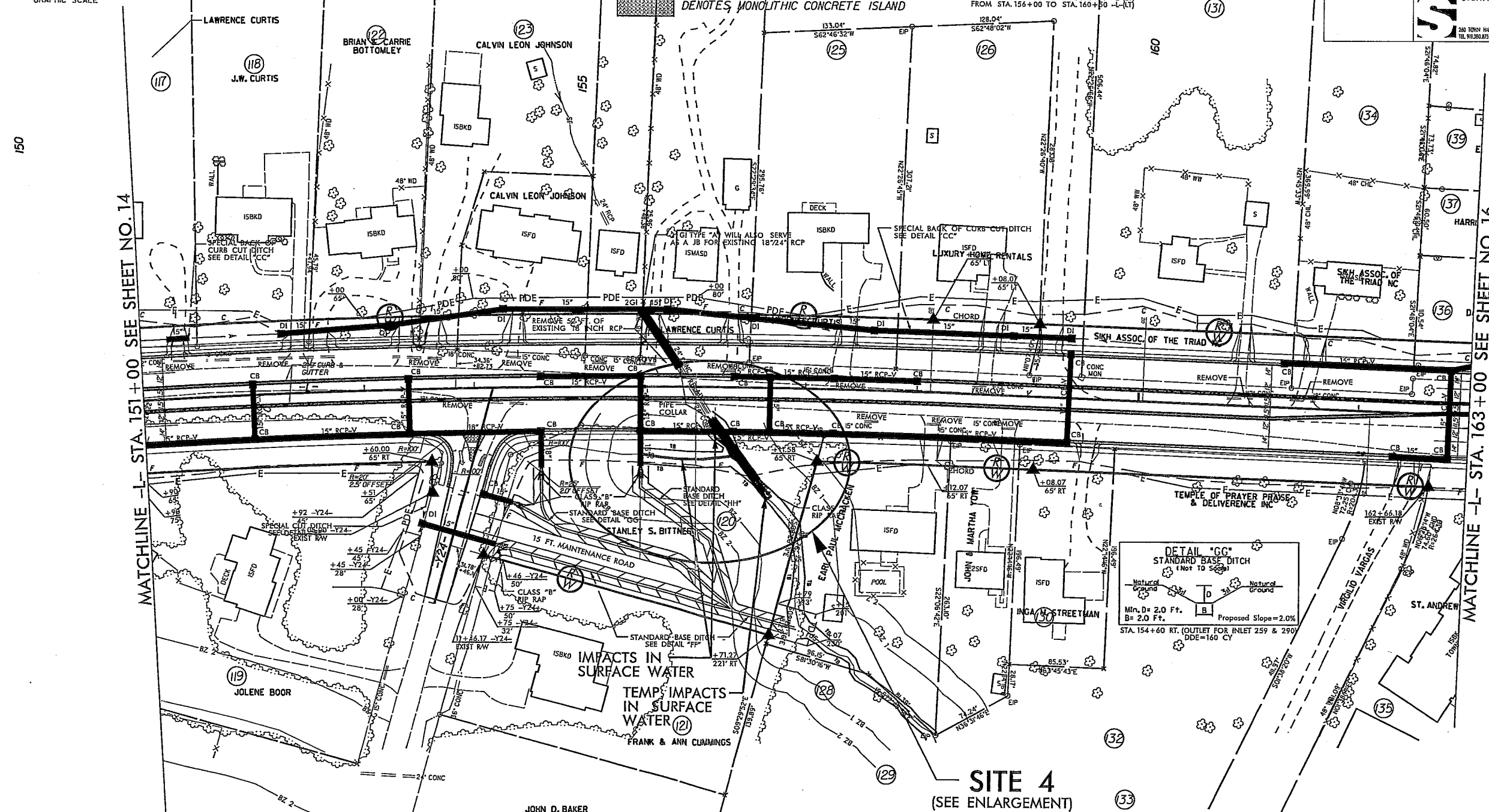
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WETLAND/SURFACE WATER PERMIT DWG.

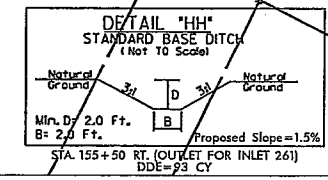
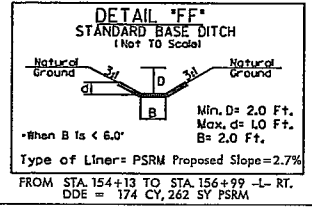
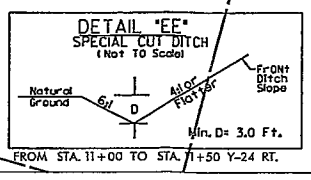


PROJECT REFERENCE NO. U-3615A		SHEET NO. 15
RW SHEET NO.		HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	STUART ENGINEERING STRUCTURAL TRANSPORTATION CIVIL	

Permit Drawing
Sheet 8 of 14
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



SITE 4
(SEE ENLARGEMENT)

REVISIONS
 01/25/2017
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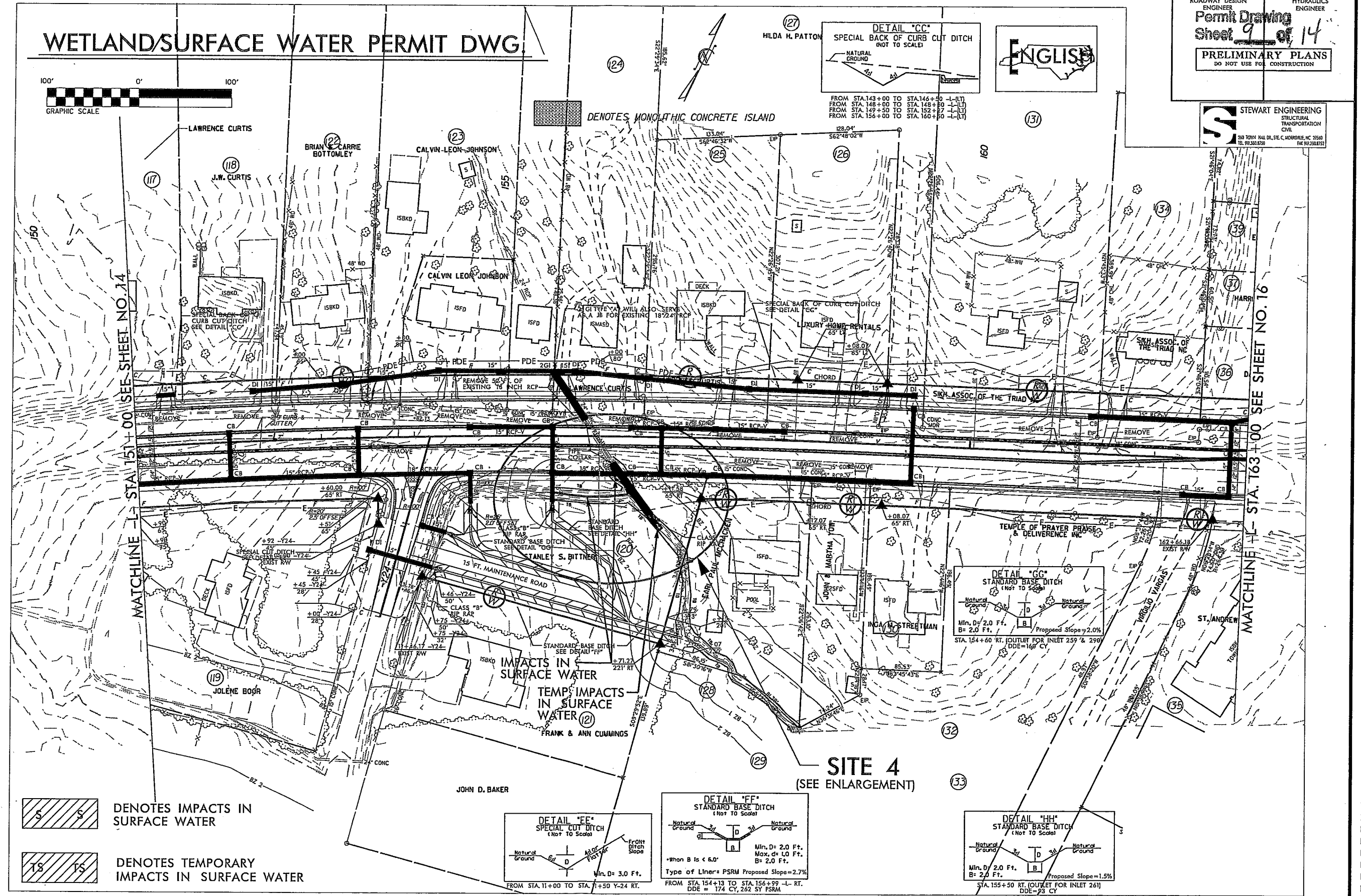
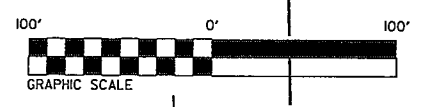
MATCHLINE -L- STA. 151+00 SEE SHEET NO. 14

MATCHLINE -L- STA. 163+00 SEE SHEET NO. 16

PROJECT REFERENCE NO. U-3615A	SHEET NO. 15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER Permit Drawing Sheet 9 of 14	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

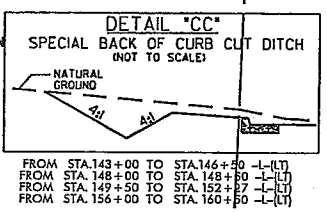
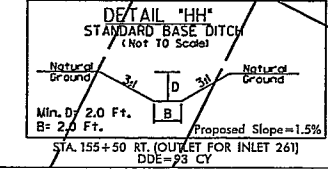
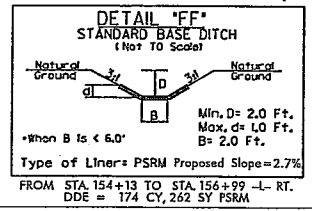
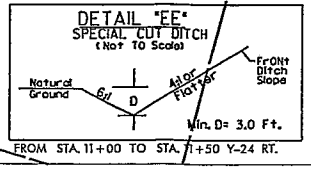
STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL
200 TOWN HALL DR., STE. C, HENDERLE, NC 27560
TEL: 919.303.9750 FAX: 919.303.8752

WETLAND/SURFACE WATER PERMIT DWG



DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER



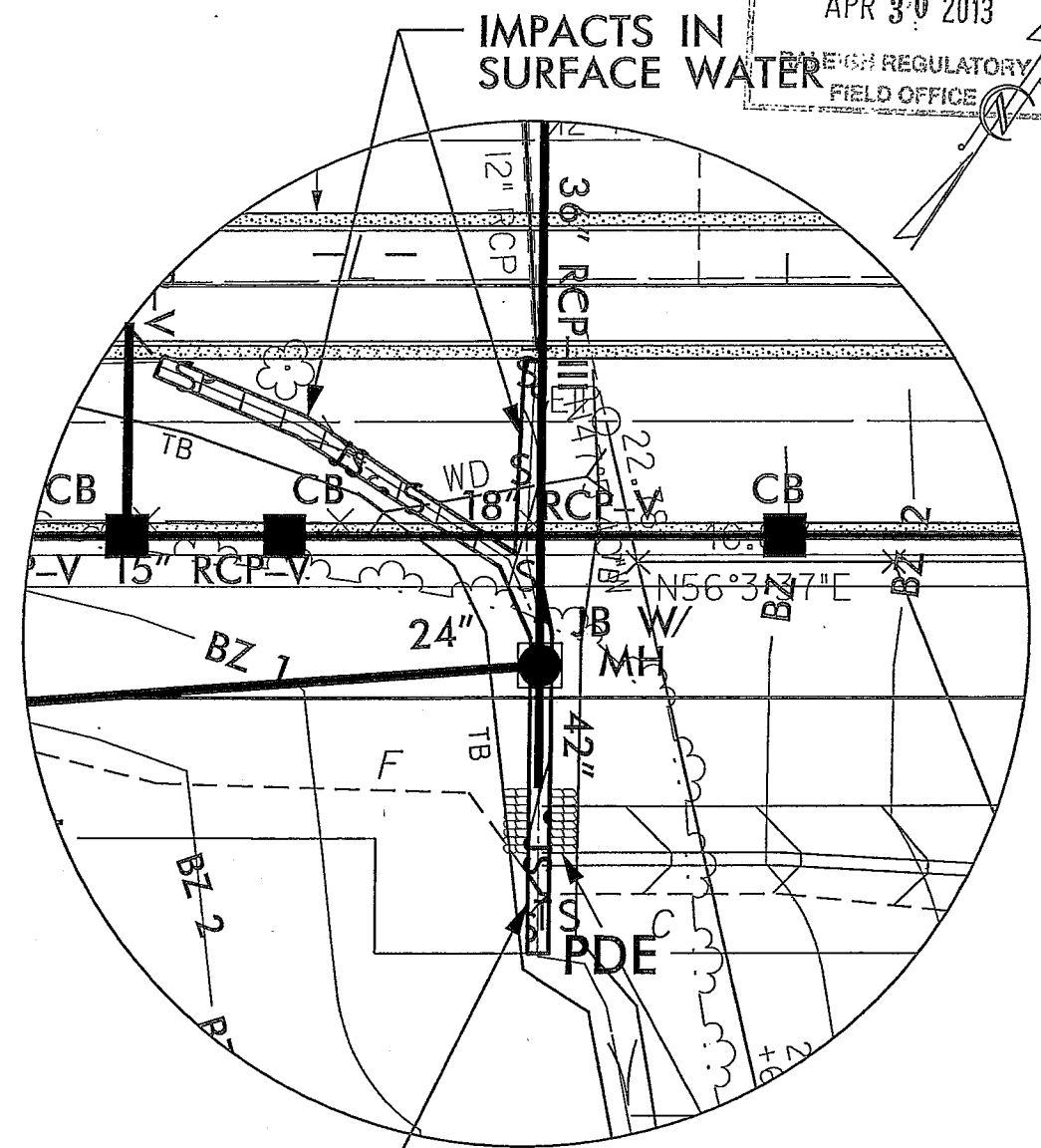
REVISIONS

DATE: 08/17/95

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

MATCHLINE -L- STA. 163+00 SEE SHEET NO. 16

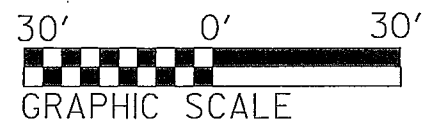
RECEIVED
 APR 30 2013
 RALEIGH REGULATORY
 FIELD OFFICE



TEMP. IMPACTS IN SURFACE WATER

SITE 2 ENLARGEMENT

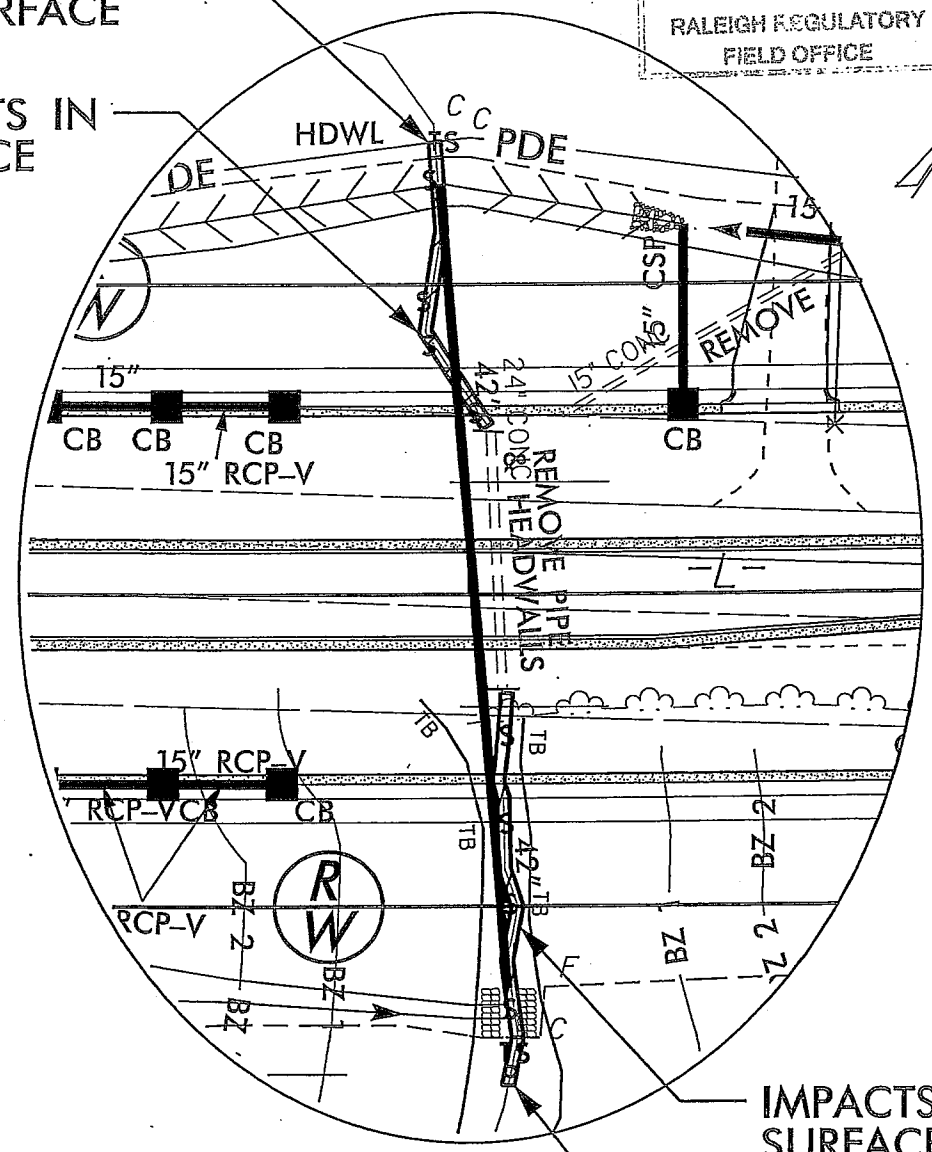
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



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)
 SHEET 10 OF 14 9/24/12

RECEIVED
 APR 30 2013
 RALEIGH REGULATORY
 FIELD OFFICE

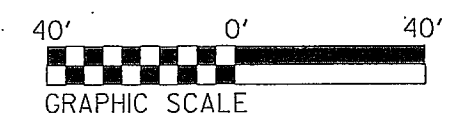
TEMP. IMPACTS IN SURFACE WATER
 IMPACTS IN SURFACE WATER



IMPACTS IN SURFACE WATER
 TEMP. IMPACTS IN SURFACE WATER

SITE 3 ENLARGEMENT

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

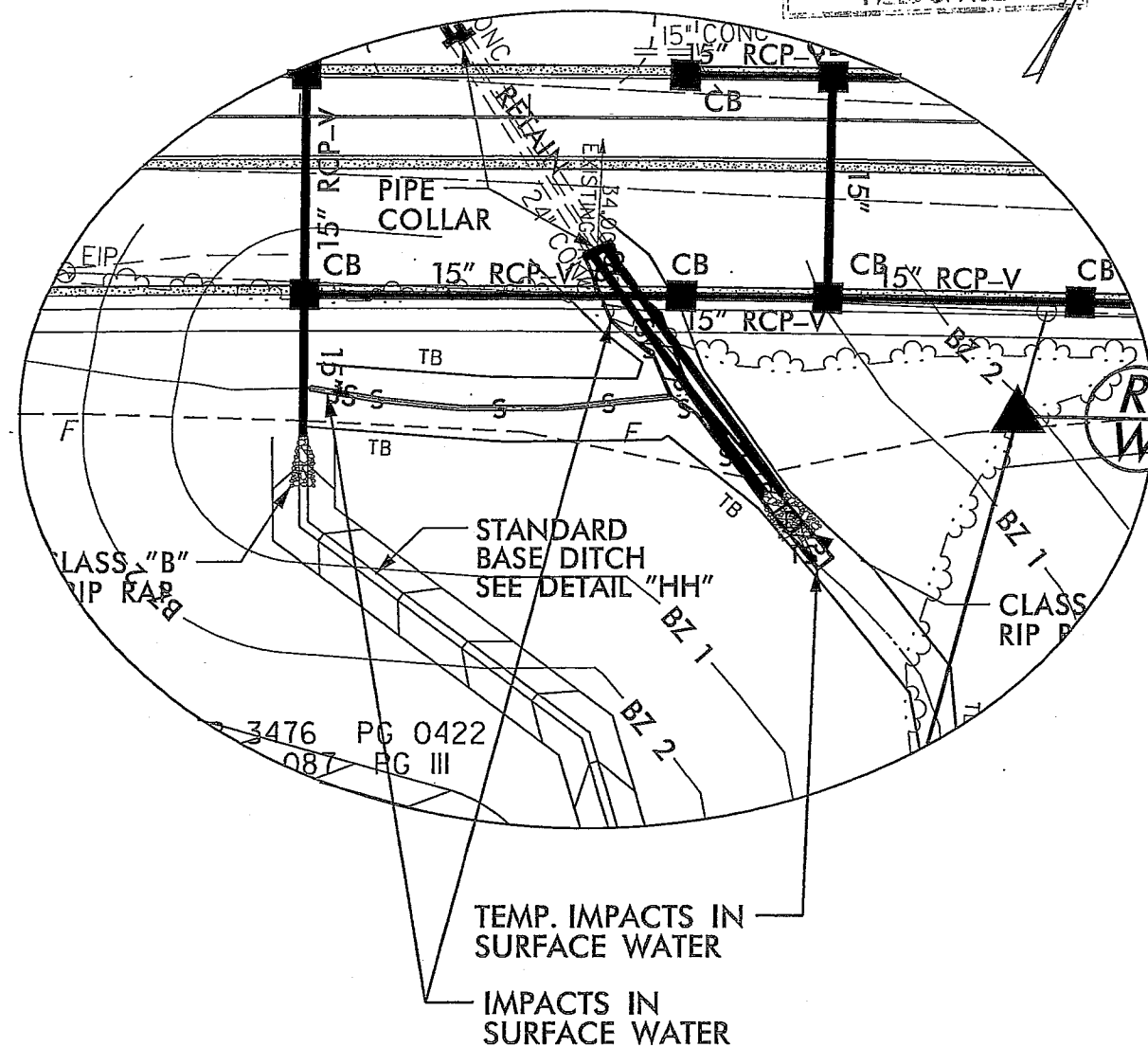


NCDOT
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 8.2494701 (U-3615A)
 SR 1003 (NORTH MAIN STREET)
 AND SR 1820 (SKEET CLUB ROAD)
 BETWEEN US 311 AND
 SR 1818 (JOHNSON STREET)
 SHEET 11 OF 14 10/16/01

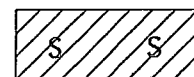
RECEIVED

APR 30 2013

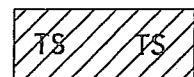
RALEIGH REGULATORY
FIELD OFFICE



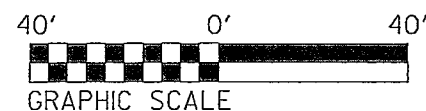
SITE 4 ENLARGEMENT



DENOTES IMPACTS IN
SURFACE WATER



DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



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)

SHEET 12 OF 14 9/24/12

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

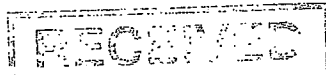
WETLAND PERMIT DRAWING

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)

SHEET 13 OF 14 9/24/12

WETLAND PERMIT IMPACT SUMMARY												
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing In Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
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

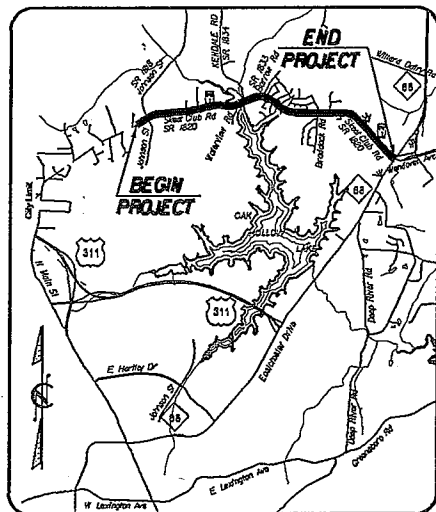
ATN Revised 3/31/05


 APR 30 2013
 RALEIGH REGULATORY
 FIELD OFFICE

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 4 OF 14 (9/19/2012)

TIP PROJECT: U-3615B

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

EXHIBIT B

RECEIVED
APR 30 2013
RALEIGH REGULATORY
FIELD OFFICE

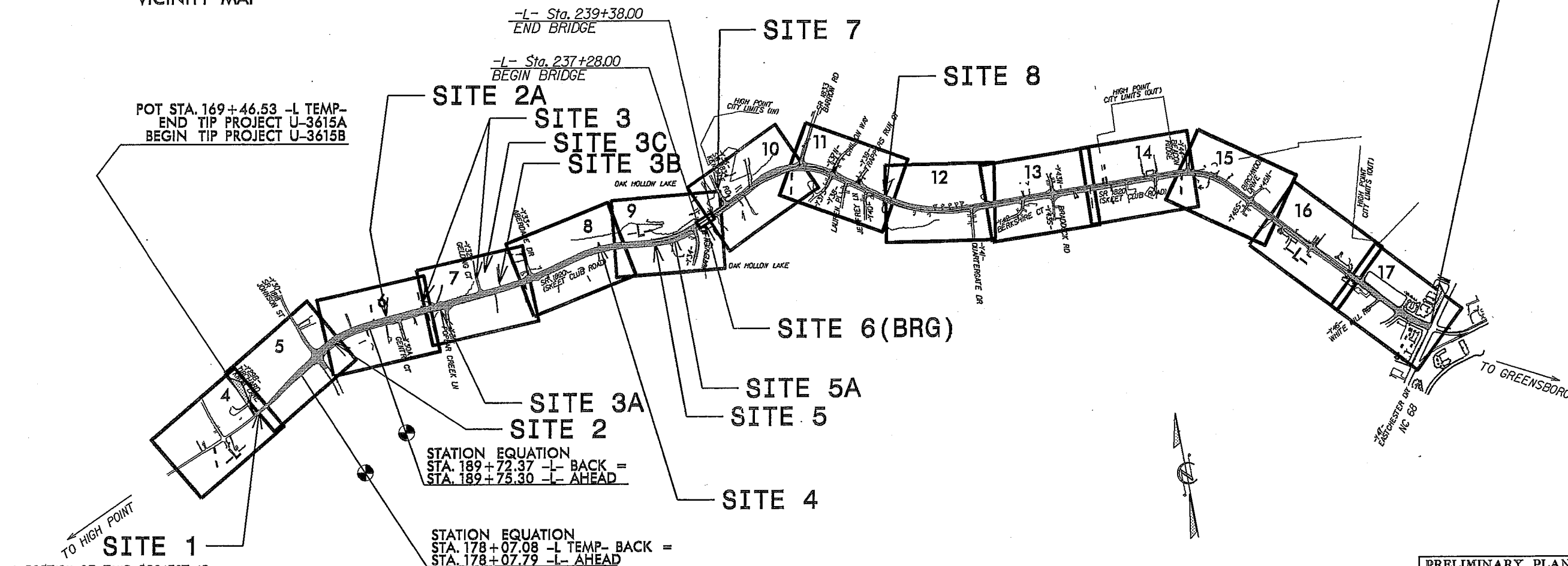
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3615B	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34962.1.1	STP-1820(2)	P.E.	
34962.2.3	STP-1820(2)	R/W, UTL.	
Permit Drawing Sheet 1 of 27			

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

STA. 348+41.04 -L- END TIP PROJECT U-3615B



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

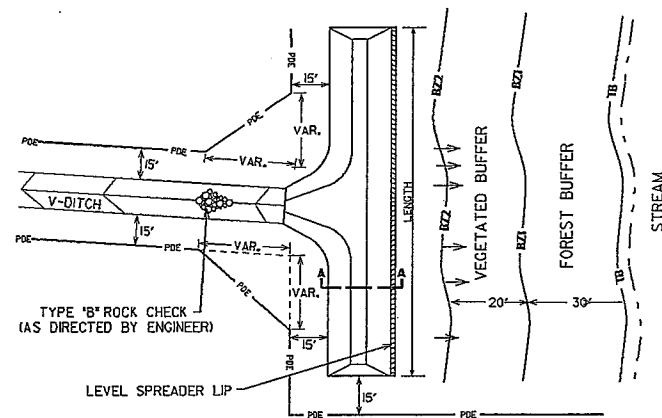
CONTRACT:

<p>GRAPHIC SCALES</p> <p>50 25 0 50 100 PLANS</p> <p>50 25 0 50 100 PROFILE (HORIZONTAL)</p> <p>10 5 0 10 20 PROFILE (VERTICAL)</p>	<p>DESIGN DATA</p> <p>ADT 2013 = 10860-23524 ADT 2035 = 17900-34700</p> <p>DHV = 10 % D = 60 % T = 5 % * V = 50 MPH * TTST = 2% DUAL 3% FUNC CLASS = URBAN MINOR ARTERIAL SUBREGIONAL TIER</p>	<p>PROJECT LENGTH</p> <p>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</p>	<p style="text-align: center;">WETHERILL ENGINEERING</p> <p style="font-size: small;">Prepared for the North Carolina Department of Transportation in the Office of: SR JONES BRANCH ROAD</p> <p>2012 STANDARD SPECIFICATIONS</p> <p>RIGHT OF WAY DATE: EDWARD G. WETHERILL, PE APRIL 27, 2009 PROJECT ENGINEER</p> <p>LETTING DATE: GREG S. PURVIS, PE OCTOBER 15, 2013 PROJECT DESIGN ENGINEER</p> <p>NCDOT CONTACT: BRENDA L. MOORE, PE ROADWAY DESIGN, ENGINEERING COORDINATION SECTION PROJECT ENGINEER</p>	<p>HYDRAULICS ENGINEER</p> <p>SIGNATURE: _____ P.E.</p> <p style="text-align: center;">ROADWAY DESIGN ENGINEER</p> <p>SIGNATURE: _____ P.E.</p>	
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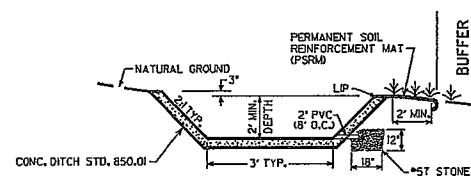
\$\$\$\$\$SYTIME\$\$\$\$\$

LEVEL SPREADER

(NOT TO SCALE)



PLAN VIEW



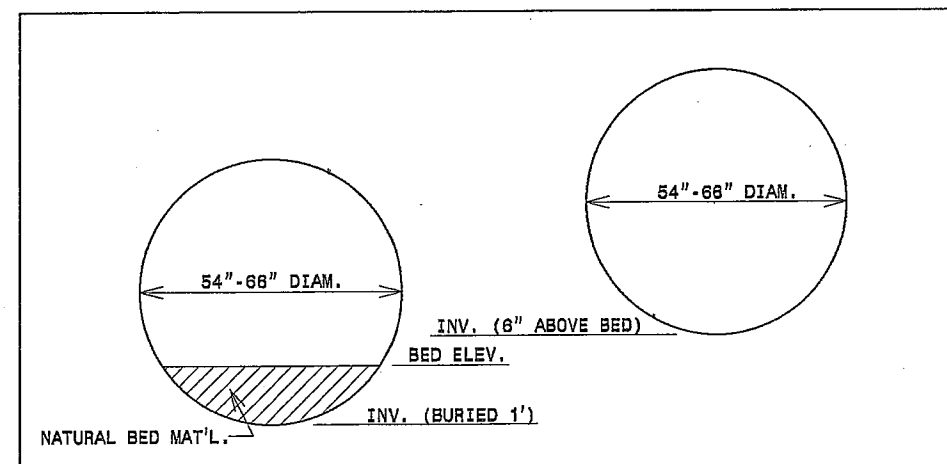
SECTION-AA

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'	807.6
6	267+00 (LT)	75'	2'	813.0
7	272+00 (RT)	120'	2'	820.0

CONCRETE ENDWALL FOR DOUBLE PIPE CULVERTS

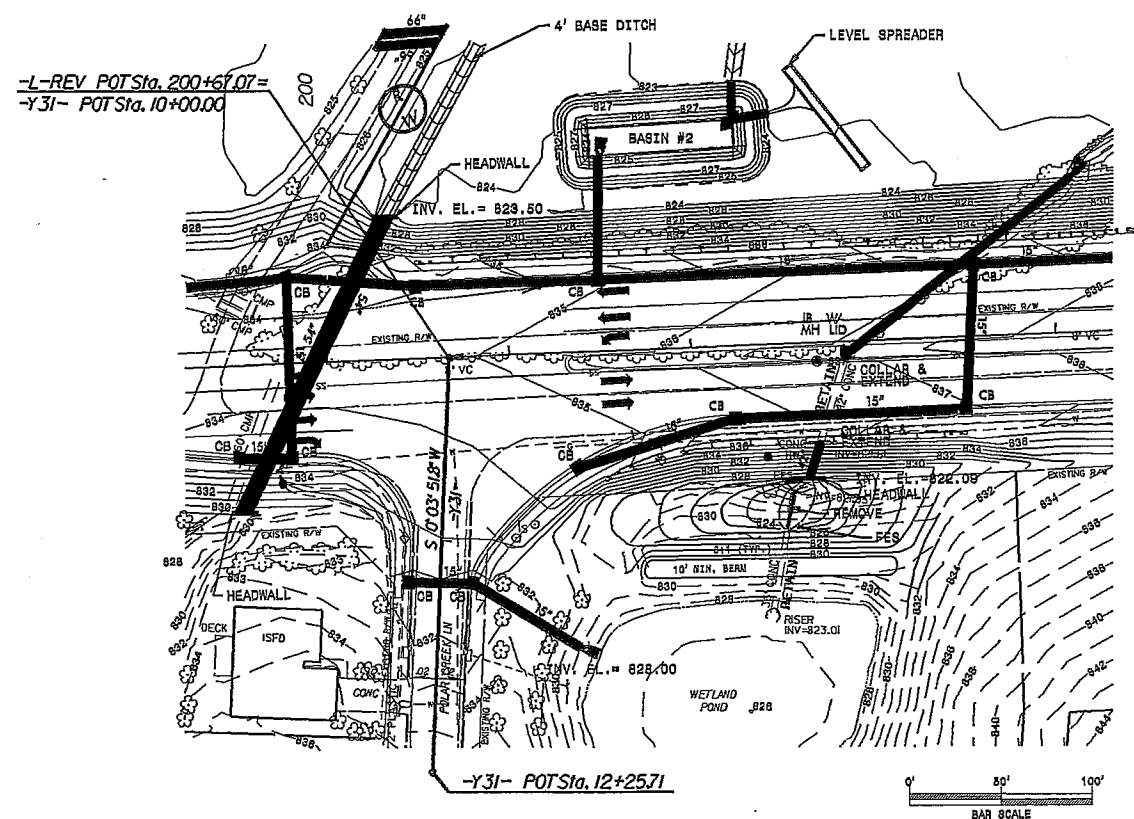
SEE NCDOT STANDARD DRAWINGS 838.22, 838.28 & 838.34 FOR STRUCTURAL DETAILS.



(NOT TO SCALE)

GRADING PLAN AT OUTLET OF WETLAND POND

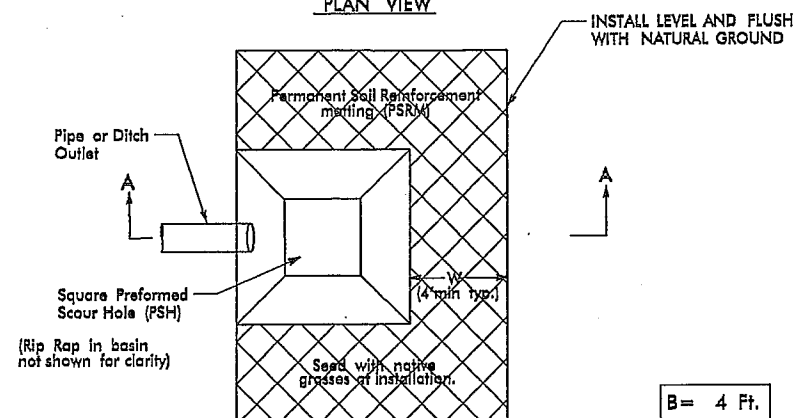
-L- STA. 202+50+/- (RT.)



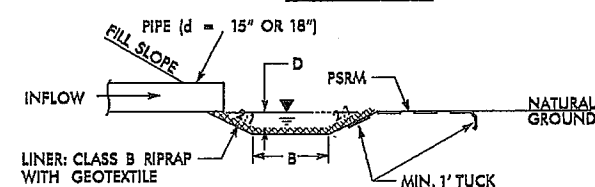
PREFORMED SCOUR HOLE

*NOT TO SCALE

PLAN VIEW



SECTION A-A



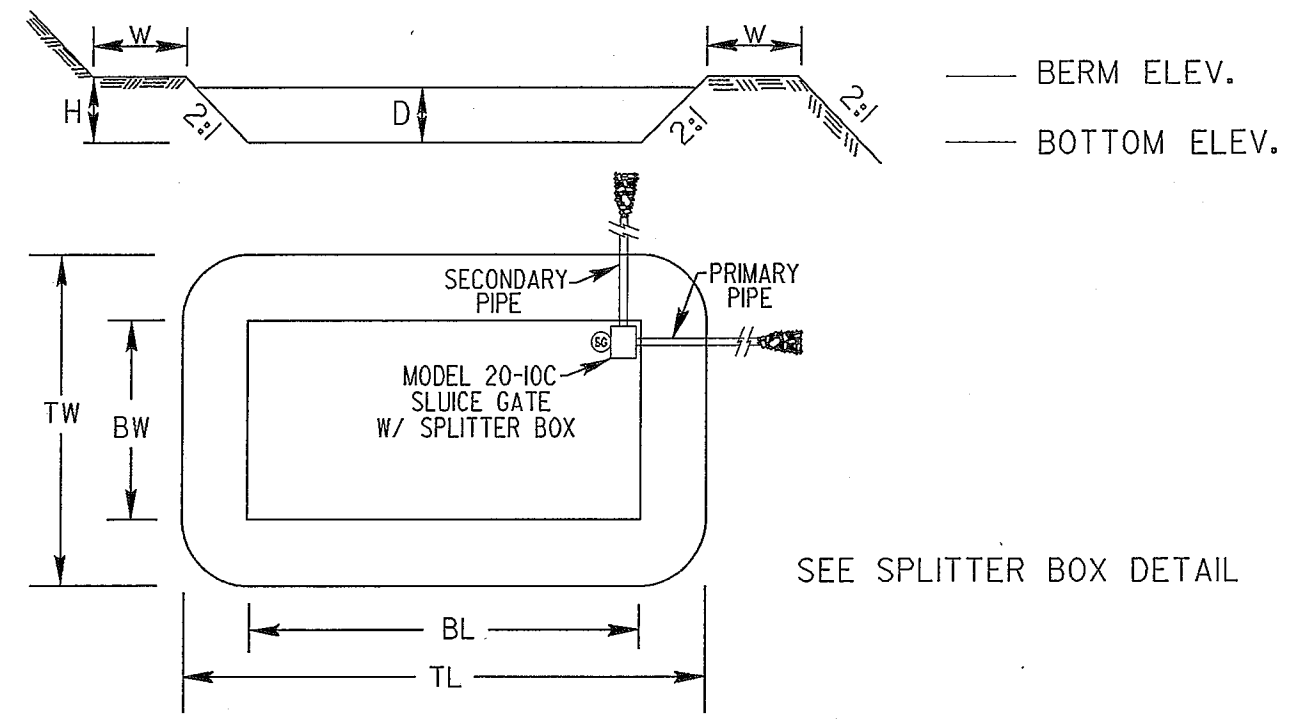
- LOCATIONS:
- Y30- STA. 17+95 (LT.)
 - L- STA. 176+40 (LT.)
 - Y34- STA. 11+34 (LT.)
 - L- STA. 242+81 (RT.)
 - Y35- STA. 13+18 (LT.)

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

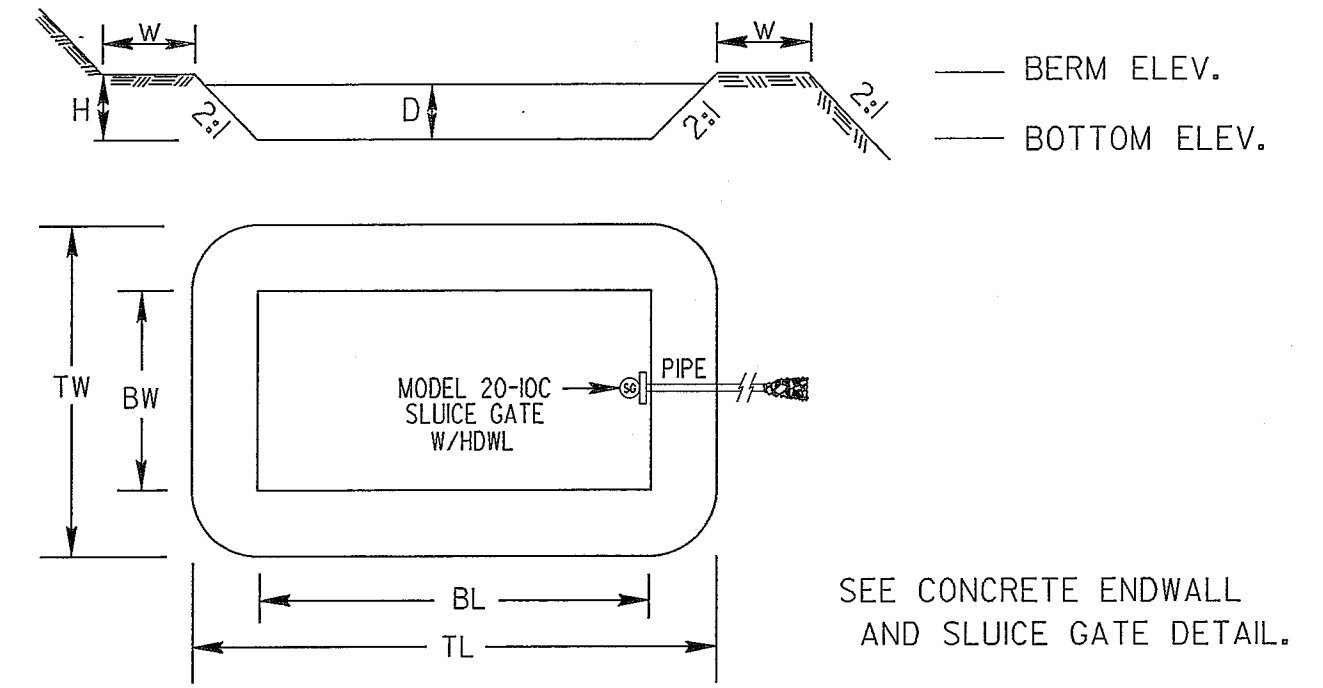
DETAILS

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

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



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



DIMENSIONS

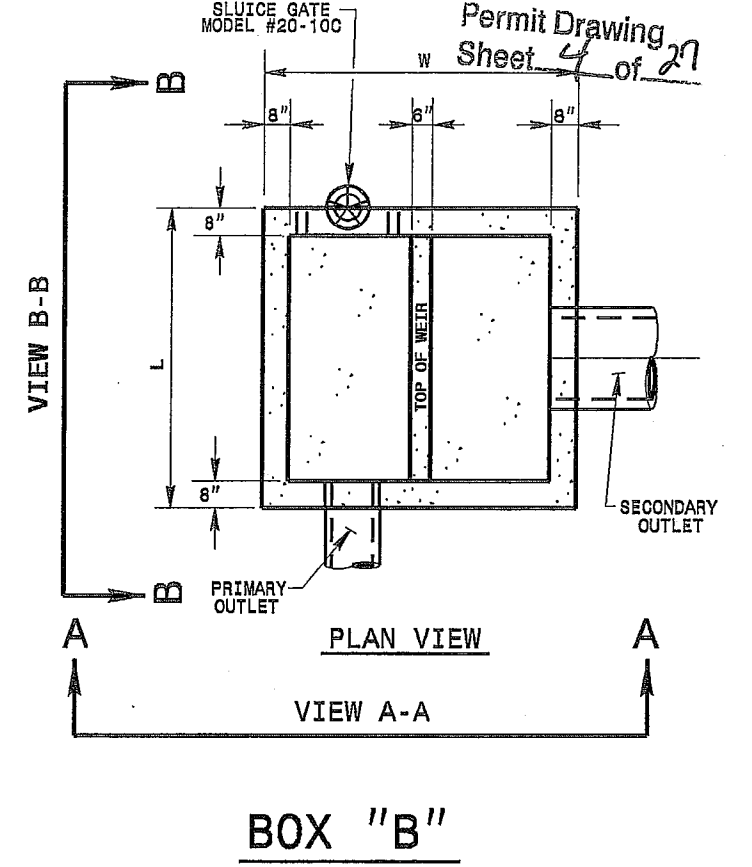
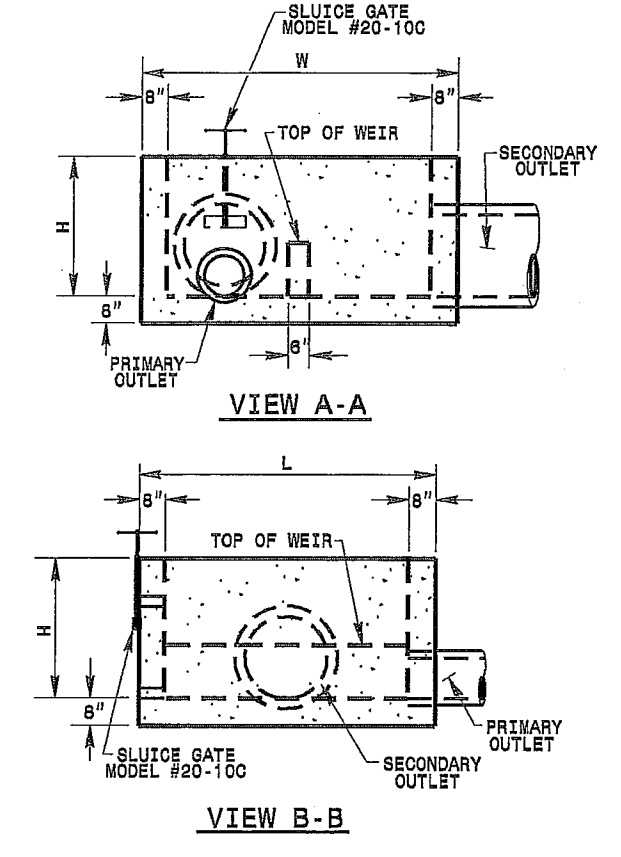
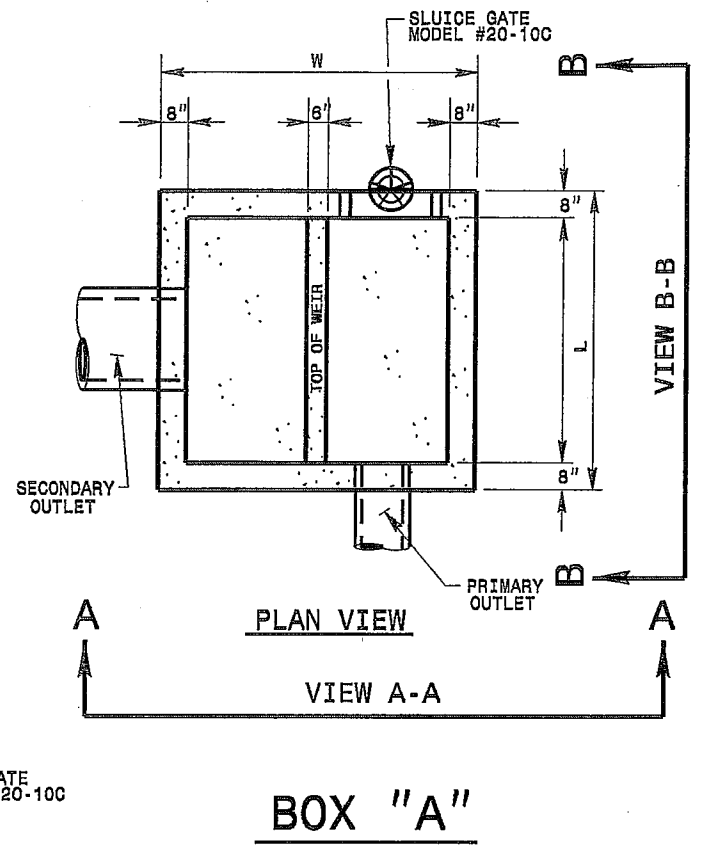
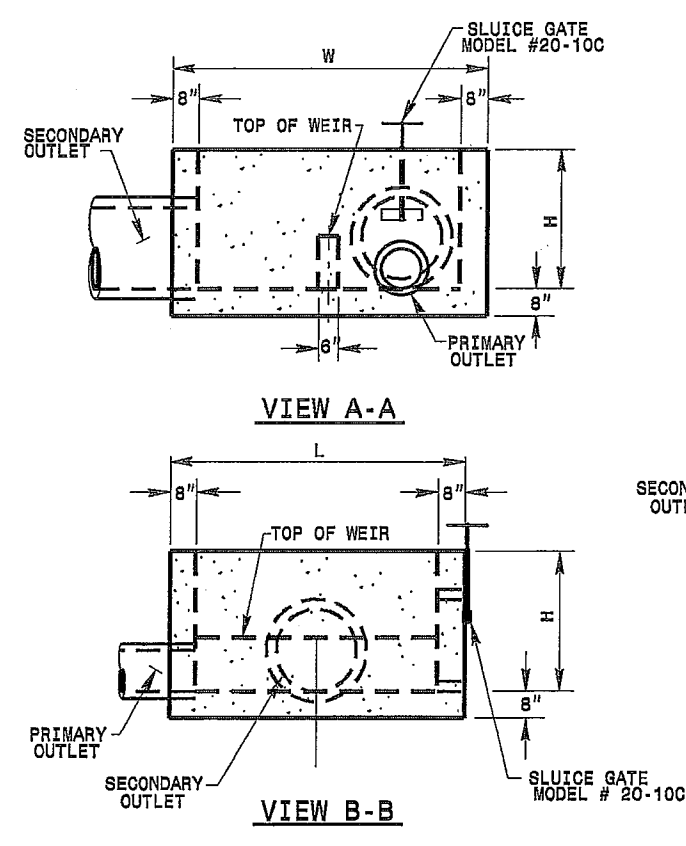
BASIN NO.	PROJECT STATION (-L-)	DETAIL	CAPACITY REQUIRED (c.f.)	CAPACITY PROVIDED (c.f.)	DEPTH (D)	HEIGHT (H)	BERM WIDTH (W)	BOTTOM LENGTH (BL)	BOTTOM WIDTH (BW)	TOP LENGTH (TL)	TOP WIDTH (TW)	BOTTOM ELEV.	BERM ELEV.
1	183+00 (RT)	B	5120	7650	8.0'	4.5'	5'	90'	20'	131'	66'	838.98	844.98
2	202+00 (LT)	A	6560	8700	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'	108'	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'	28'	88'	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'	18'	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**
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**HAZARDOUS SPILL
RETENTION BASIN
DETAILS**

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

*****SYSTEMS*****
 *****DESIGN*****
 *****USERNAME*****



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"	38 3/4"	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

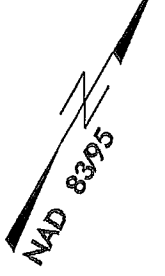
SPLITTER BOX DETAILS

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

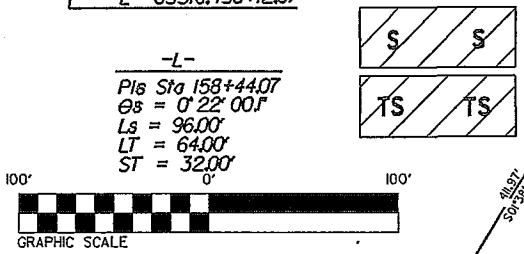
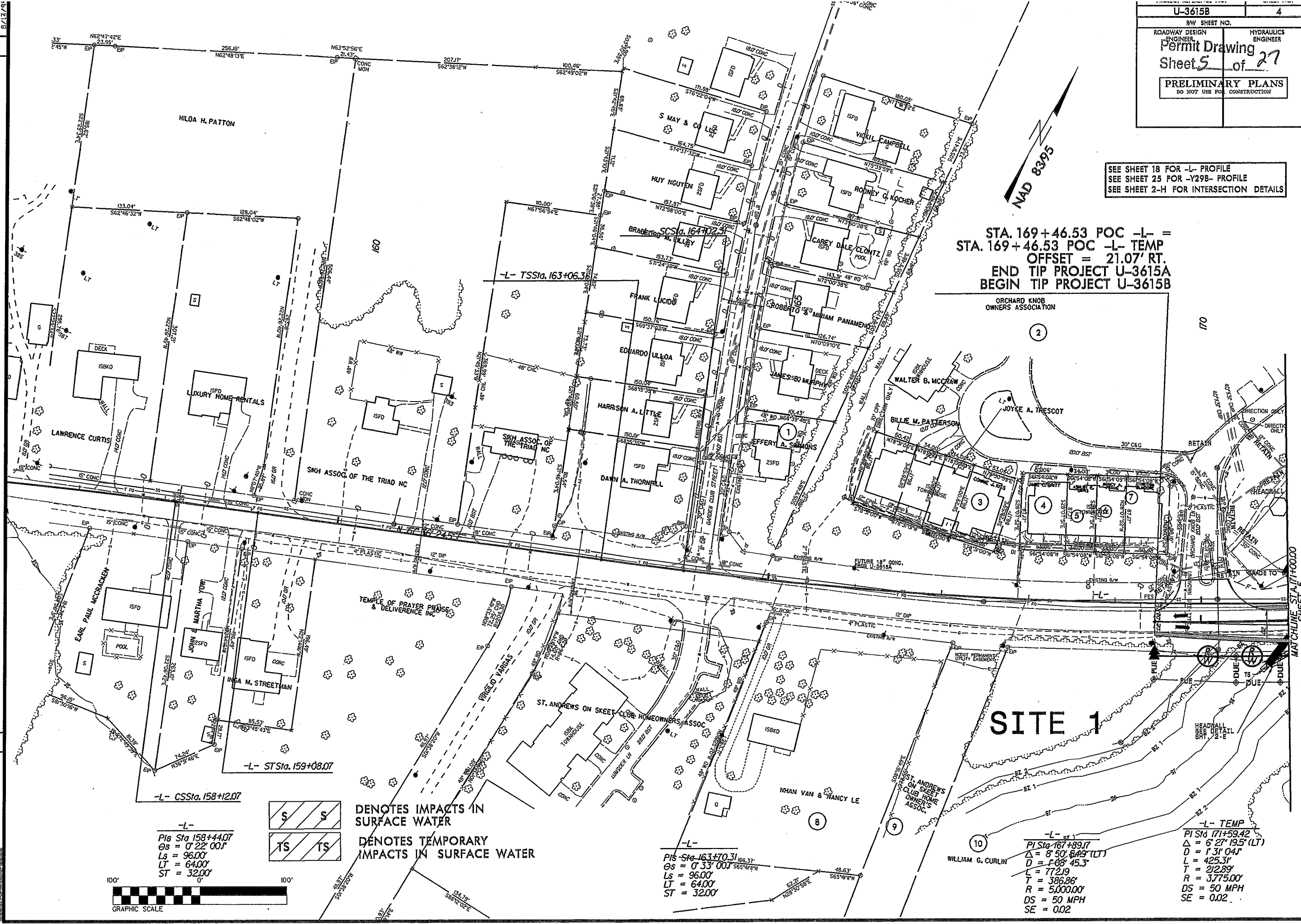
SYSTEMS
 CUSTOMER SERVICE
 UNIVERSITY AVENUE
 RTP, NC 27695
 PHONE 919 250 4128
 FAX 919 250 4119
 WWW.DSUNIVERSITY.COM

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



REVISIONS
 9/29/09 RW REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
 2/28/12 RW REVISION: REVISED RIGHT-OF-WAY AND EASEMENTS FROM PARCELS 3-5, REMOVED PERMANENT UTILITY EASEMENT B PERMANENT DRAINAGE EASEMENT FROM PARCELS 18-20 SKK
 5/20/12 RW REVISION: CHANGED NAME ON PARCEL 002 TO ORCHARD KNOB OWNERS ASSOCIATION/SK



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

-L-
 Pts Sta 158+44.07
 Os = 0' 22' 00"
 Ls = 96.00'
 LT = 64.00'
 ST = 32.00'

-L-
 Pts Sta 163+70.31
 Os = 0' 33' 00"
 Ls = 96.00'
 LT = 64.00'
 ST = 32.00'

-L-
 Pts Sta 167+89.17
 Os = 0' 50' 54.9" (LT)
 L = 425.31'
 T = 212.89'
 R = 386.86'
 DS = 50 MPH
 SE = 0.02

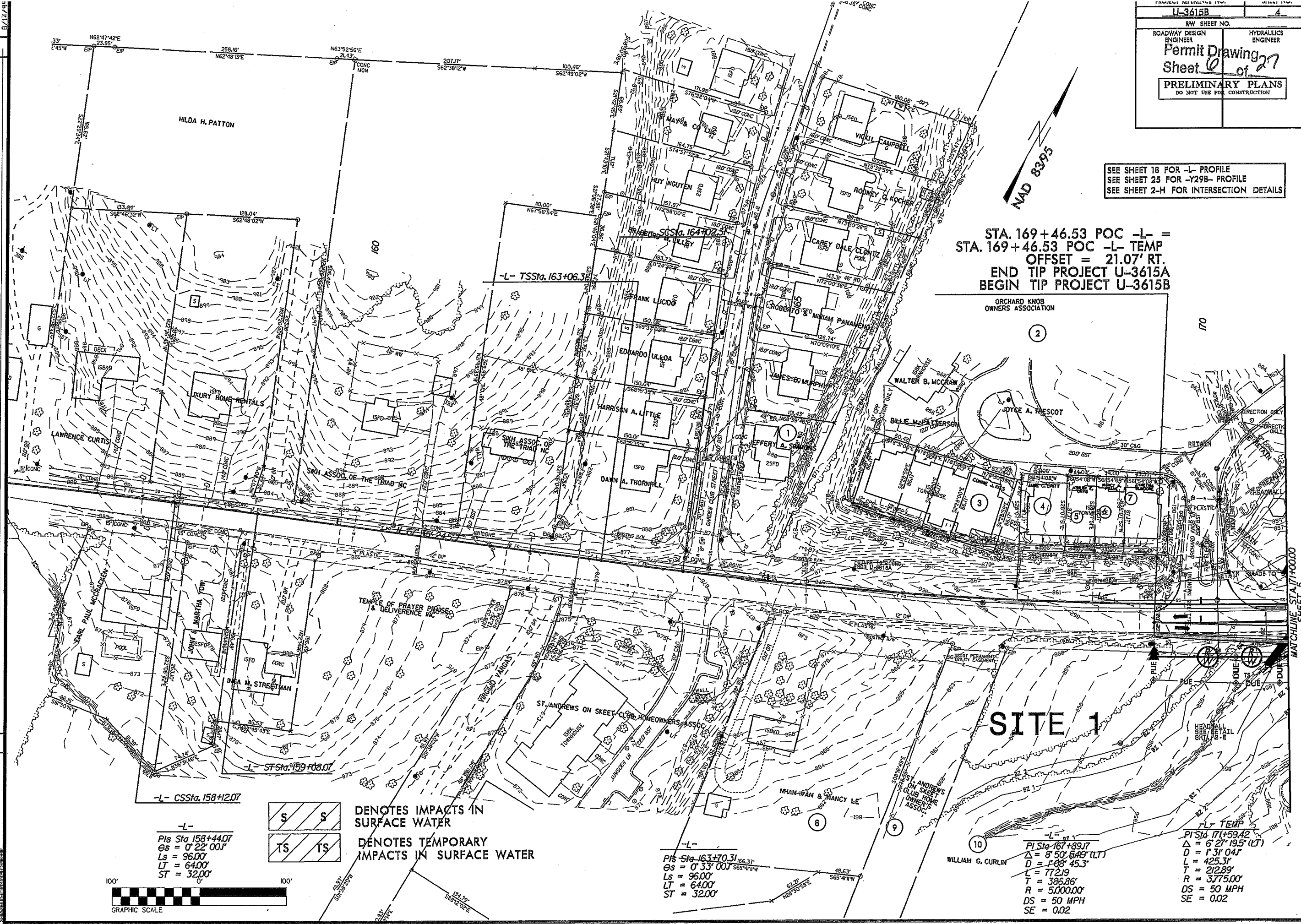
-L- TEMP
 Pts Sta 171+59.42
 Os = 6' 27' 19.5" (LT)
 D = 1' 31' 04"
 L = 425.31'
 T = 212.89'
 R = 3775.00'
 DS = 50 MPH
 SE = 0.02

MATCHLINE STA 171+00.00 SHEET 5

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

SITE 1



REVISIONS
 9/29/09 RW REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
 2/27/12 RW REVISION: REMOVED RIGHT-OF-WAY AND EASEMENTS FROM PARCELS 3 & 4. REMOVED PERMANENT UTILITY EASEMENT FROM PARCELS 10 & 11. REMOVED PERMANENT UTILITY EASEMENT FROM PARCELS 10 & 11.
 5/24/12 RW REVISION: CHANGED NAME ON PARCEL 002 TO ORCHARD KNOB OWNERS ASSOCIATION.

-L-
 Pts Sta 158+44.07
 Cs = 0' 22' 00"
 Ls = 96.00'
 LT = 64.00'
 ST = 32.00'
 GRAPHIC SCALE

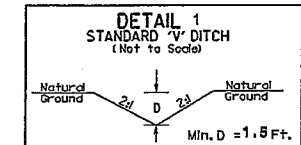
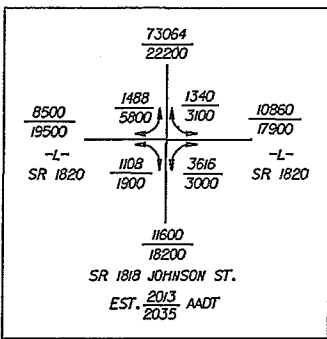
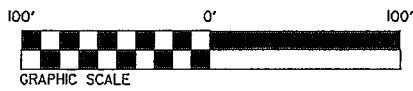
S S
 TS TS
 DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

-L-
 Pts Sta 163+70.31
 Cs = 0' 33' 00"
 Ls = 96.00'
 LT = 64.00'
 ST = 32.00'

-L-
 Pts Sta 167+89.17
 Cs = 8' 50' 54.9" (LT)
 Ls = 108' 45.3"
 L = 772.19
 T = 386.86'
 R = 5,000.00'
 DS = 50 MPH
 SE = 0.02

-L-
 Pts Sta 171+59.42
 Cs = 6' 27' 19.5" (LT)
 Ls = 131' 04"
 L = 425.31'
 T = 212.89'
 R = 3,775.00'
 DS = 50 MPH
 SE = 0.02

MATCHLINE STA. 171+00.00 SHEET 5



FROM STA. 171+94 TO STA. 172+23 -L- (RT) (BDE 18 CY)
FROM STA. 172+23 TO STA. 172+60 -L- (RT) (BDE 6 CY)

DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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

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

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

-L-
PIs Sta 183+94.03
 $\Delta s = 4'31''28.1''$
 $Ls = 150.00'$
 $LT = 100.03'$
 $ST = 50.03'$

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

-Y30- PCSta. 18+59.74
-L- POTSta. 181+36.38=
-Y30- POCSta. 19+68.28

-Y30- PSta. 18+16.39
PSH
SEE DETAIL
SHT. 2-E

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

SITE 1

SITE 2

SYSTEM 2

SITE 1

SYSTEM 1

-L-
PI Sta 167+89.17
 $\Delta = 8'50''54.9''$ (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
 $\Delta s = 0'33''00.0''$
 $Ls = 96.00'$
 $LT = 64.00'$
 $ST = 32.00'$

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

-Y30-
PCSta. 23+03.41
 $\Delta = 34.03'$ -Y30-
62.63' EX. RW

-Y30-
PTSta. 21+80.37
END
CONSTRUCTION

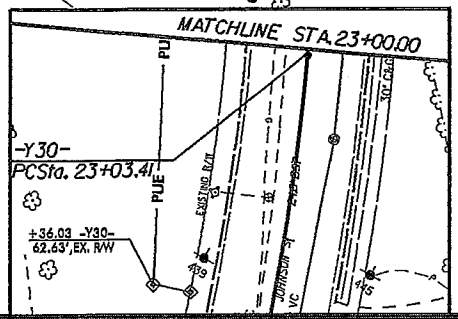
-Y30-
PI Sta 24+40.55
 $\Delta = 13'12''11.3''$ (RT)
 $D = 4'50''06.3''$
 $L = 273.07'$
 $T = 137.14'$
 $R = 1,485.00'$

-L- SC Sta. 183+58.92

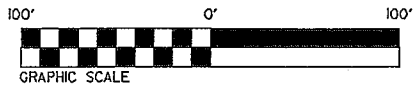
REVISIONS
RW REVISION: 9/29/12 REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
RW REVISION: 2/29/12 CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY ON PARCEL 10. REVISED PERMANENT DRAINAGE EASEMENT AND ADDED DRAINAGE UTILITY EASEMENT ON PARCEL 10. REVISED PERMANENT DRAINAGE EASEMENT AND ADDED DRAINAGE UTILITY EASEMENT ON PARCEL 12. REMOVED PERMANENT UTILITY EASEMENT, PERMANENT DRAINAGE EASEMENT AND REVISED RIGHT OF WAY ON PARCEL 13. - SLK
S2/12 RW REVISION: CHANGED NAME ON PARCEL 002 TO ORCHARD KNOB OWNERS ASSOCIATION - SLK

MATCHLINE STA. 17+00.00

MATCHLINE STA. 18+00.00

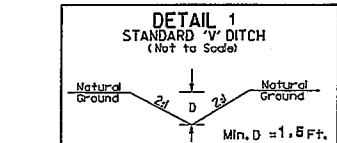
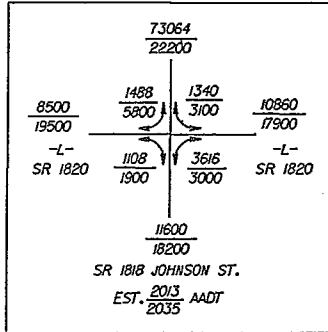


MATCHLINE STA. 23+00.00



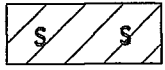
U-3615B 5

RW SHEET NO. ROADWAY DESIGN ENGINEER
Permit Drawing
 Sheet 6 of 27
 HYDRAULICS ENGINEER
 PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

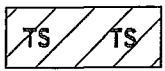


FROM STA. 171+94 TO STA. 172+23 -L- (RT) (DDE 18 CY)
 FROM STA. 172+23 TO STA. 172+60 -L- (RT) (DDE 6 CY)

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

-Y30-
 PI Sta 13+04.81
 $\Delta = 3'22'' 29.0' (LT)$
 $D = 1'16'' 56.3'$
 $L = 263.17'$
 $T = 131.62'$
 $R = 4,468.4'$

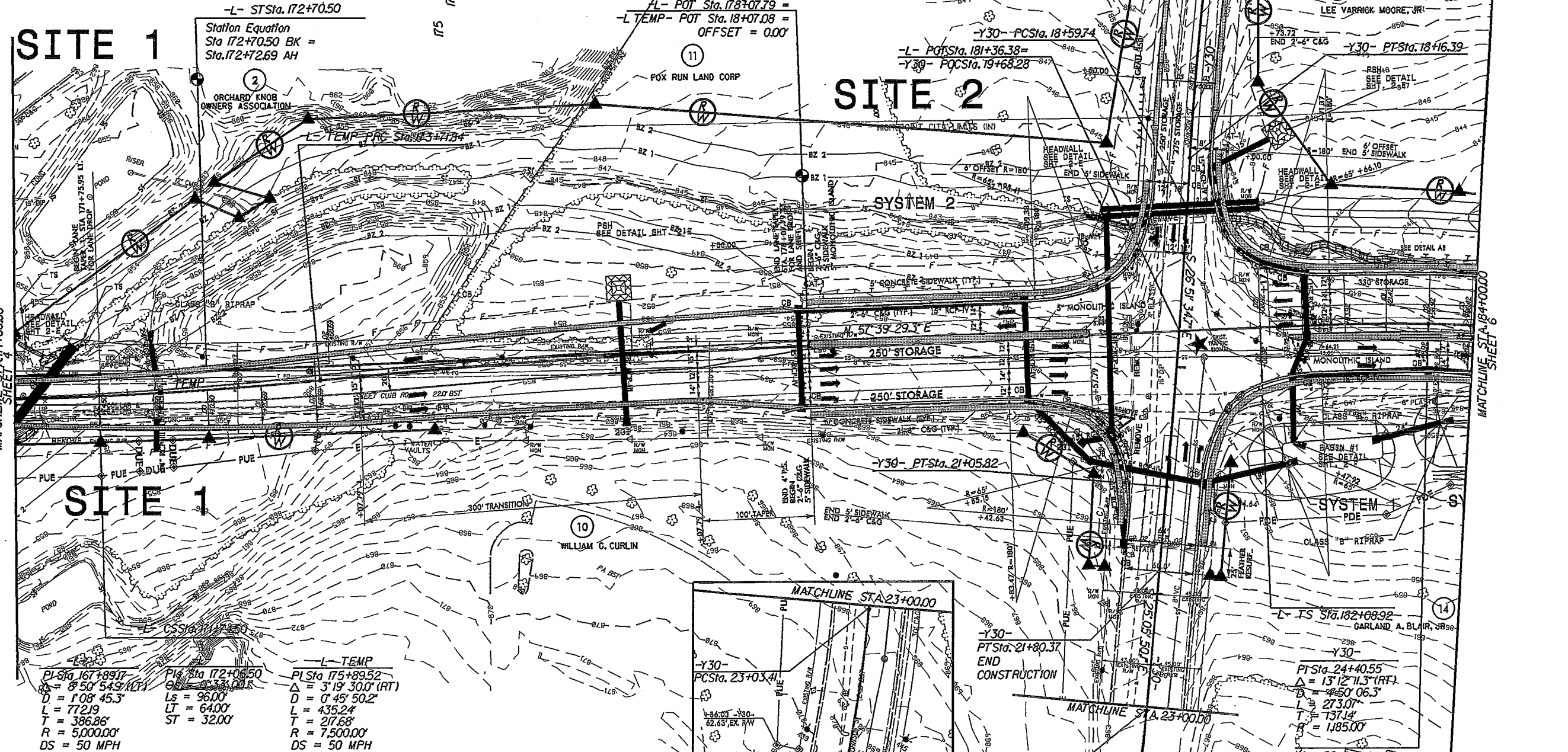
-Y30-
 PI Sta 16+79.88
 $\Delta = 5'27'' 52.5' (LT)$
 $D = 2'00'' 00.0'$
 $L = 273.23'$
 $T = 136.72'$
 $R = 2,864.79'$

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

PIs Sta 183+94.03
 $\Theta_s = 4'31'' 29.1'$
 $L_s = 150.00'$
 $L_T = 100.03'$
 $ST = 500.3'$

-L- POT Sta. 181+36.38 =
 -Y30- POCSta. 19+68.28 =

-Y30- PCSta. 18+59.74 =



-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'

SITE 1

SITE 2

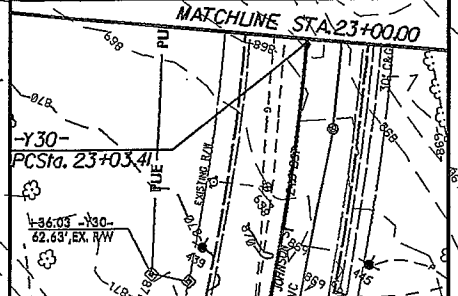
SYSTEM 2

SYSTEM PDE

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

-L- TEMP
 PI Sta 172+00.50
 $\Delta = 8'33'' 00.5'$
 $L_s = 96.00'$
 $L_T = 64.00'$
 $ST = 32.00'$

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



-Y30-
 PTSta. 21+80.37
 END CONSTRUCTION

-L- TS Sta. 182+08.92 =
 GARLAND A. BLAIR, JR.
 -Y30-
 PTSta. 24+40.55
 $\Delta = 13'12'' 11.3' (RT)$
 $D = 4'50'' 06.3'$
 $L = 273.07'$
 $T = 137.14'$
 $R = 1,885.00'$

-L- SC Sta. 183+15.92 =

REVISIONS

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

R/W REVISION: 2/23/12 CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY ON PARCEL 13-0100 AND IF REMOVED PERMANENT DRAINAGE EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT AND ADDED DRAINAGE UTILITY EASEMENT ON PARCEL 10-REVISED PERMANENT DRAINAGE EASEMENT AND ADDED CONSTRUCTION EASEMENT ON PARCEL 13-0100 PERMANENT UTILITY EASEMENT, PERMANENT DRAINAGE EASEMENT AND REVISED RIGHT OF WAY ON PARCEL 13-0100

S/2/12 R/W REVISION: CHANGED NAME ON PARCEL 002 TO ORCHARD KNOB OWNERS ASSOCIATION - SIK

MATCHLINE STA. 17+00.00

MATCHLINE STA. 18+00.00

MATCHLINE STA. 23+00.00

MATCHLINE STA. 23+00.00

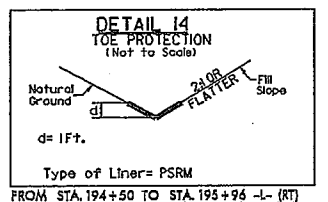
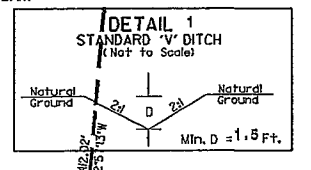
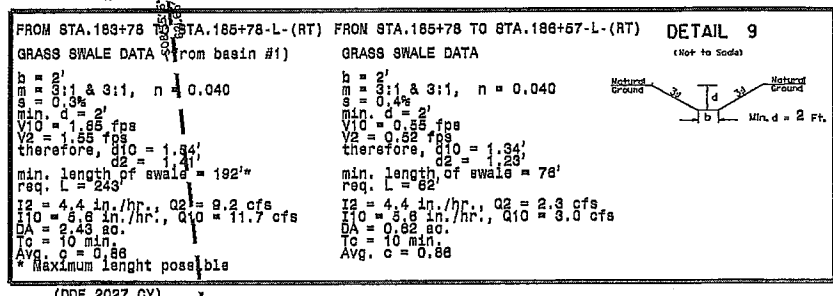
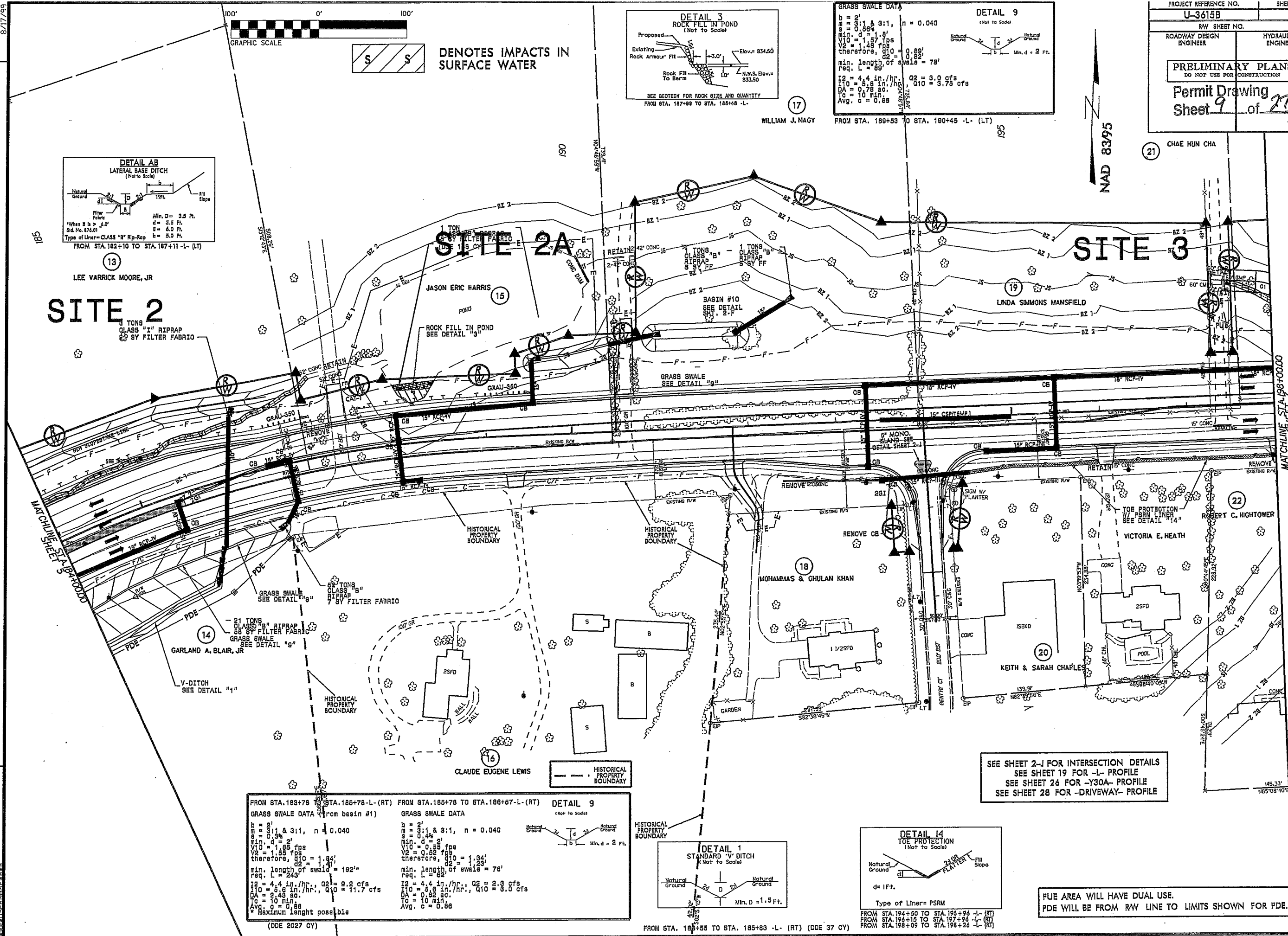
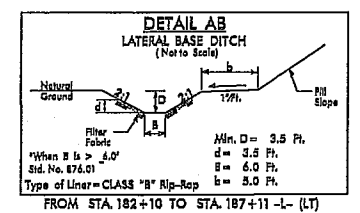
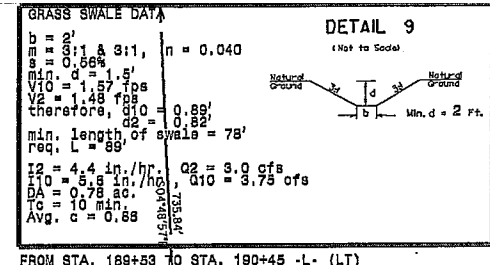
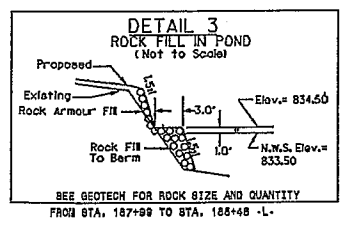
8/17/9

8/17/99
 REVISIONS
 92909 RW REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
 22972 RW REVISION: REMOVED PERMANENT DRAINAGE EASEMENT AND REVISED RIGHT OF WAY ON PARCEL 13; REMOVED PERMANENT DRAINAGE EASEMENT AND ADDED RIGHT OF WAY
 49813 RW REVISION: REMOVED PERMANENT DRAINAGE EASEMENT ON PARCEL 15; CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY AND REMOVED PERMANENT UTILITY
 EASEMENT ON PARCEL 17; AND 21. - SILK
 49813 RW REVISION: ADDED TEMPORARY CONSTRUCTION EASEMENT AROUND DETENTION POND ON PARCEL 15. - SILK

 SYSTEMS



DENOTES IMPACTS IN SURFACE WATER



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

PUE AREA WILL HAVE DUAL USE.
 PDE WILL BE FROM RW LINE TO LIMITS SHOWN FOR PDE.

MATCHLINE STA 198+00.00

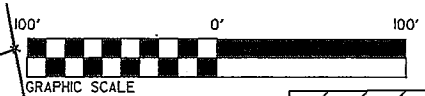
(DDE 2027 CY)

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

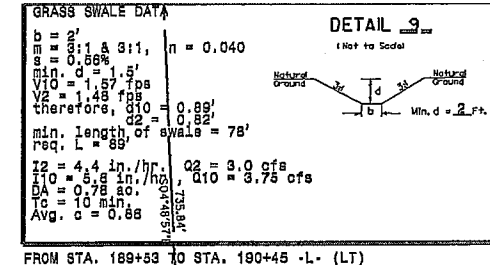
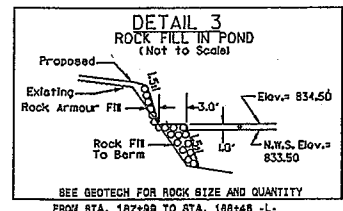
FROM STA. 194+50 TO STA. 195+96 -L- (RT)
 FROM STA. 194+15 TO STA. 197+96 -L- (RT)
 FROM STA. 198+09 TO STA. 198+26 -L- (RT)

145.33'
 N85°08'40"E

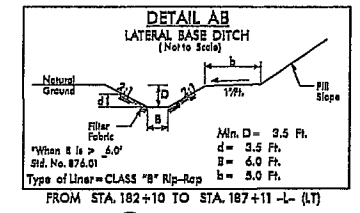
8/17/99



S S DENOTES IMPACTS IN SURFACE WATER



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			

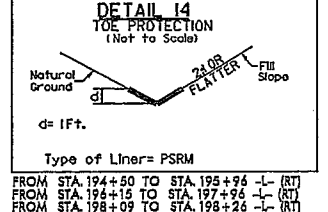
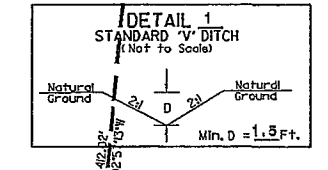
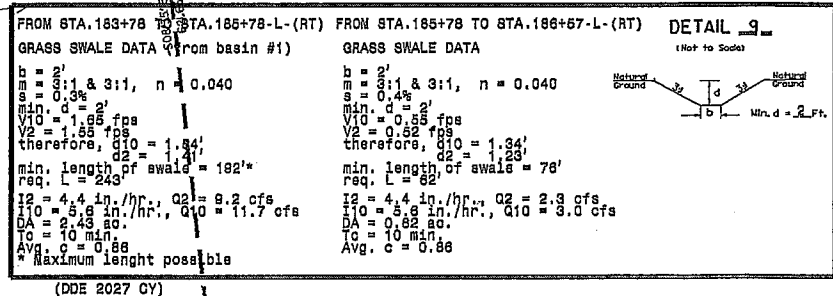
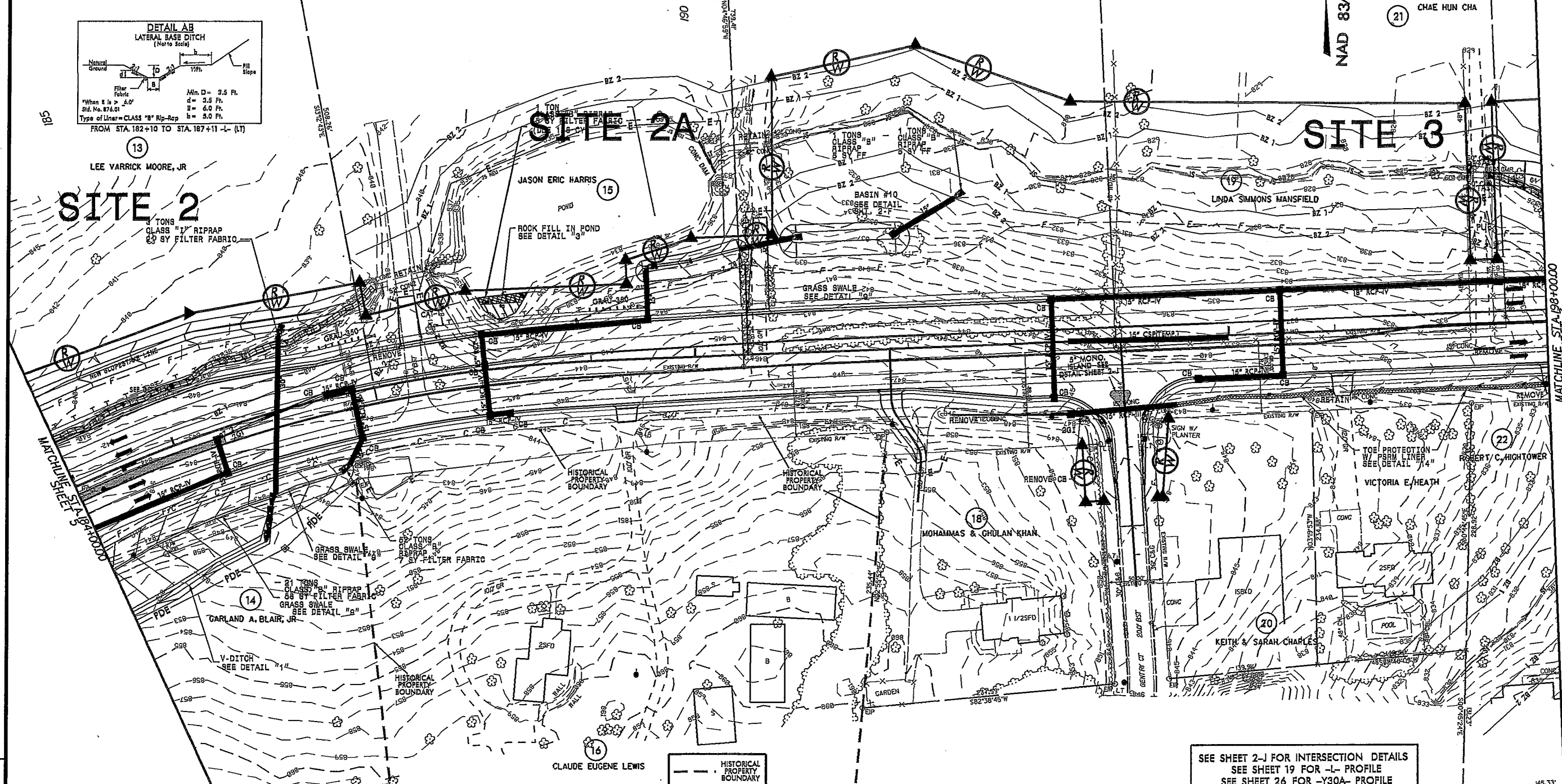


SITE 2
LEE VARRICK MOORE, JR.
1 TONS CLASS #1 RIPRAP
BY FILTER FABRIC

SITE 2A
JASON ERIC HARRIS
POND
ROCK FILL IN POND
SEE DETAIL 3

SITE 3
LINDA SIMMONS MANSFIELD

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 ON PARCEL 13; REMOVED PERMANENT DRAINAGE EASEMENT AND ADDED RIGHT OF WAY AND REMOVED PERMANENT UTILITY 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; - SIK
4/21/13 RW REVISION: ADDED TEMPORARY CONSTRUCTION EASEMENT AROUND DETENTION POND ON PARCEL 15. - SIK



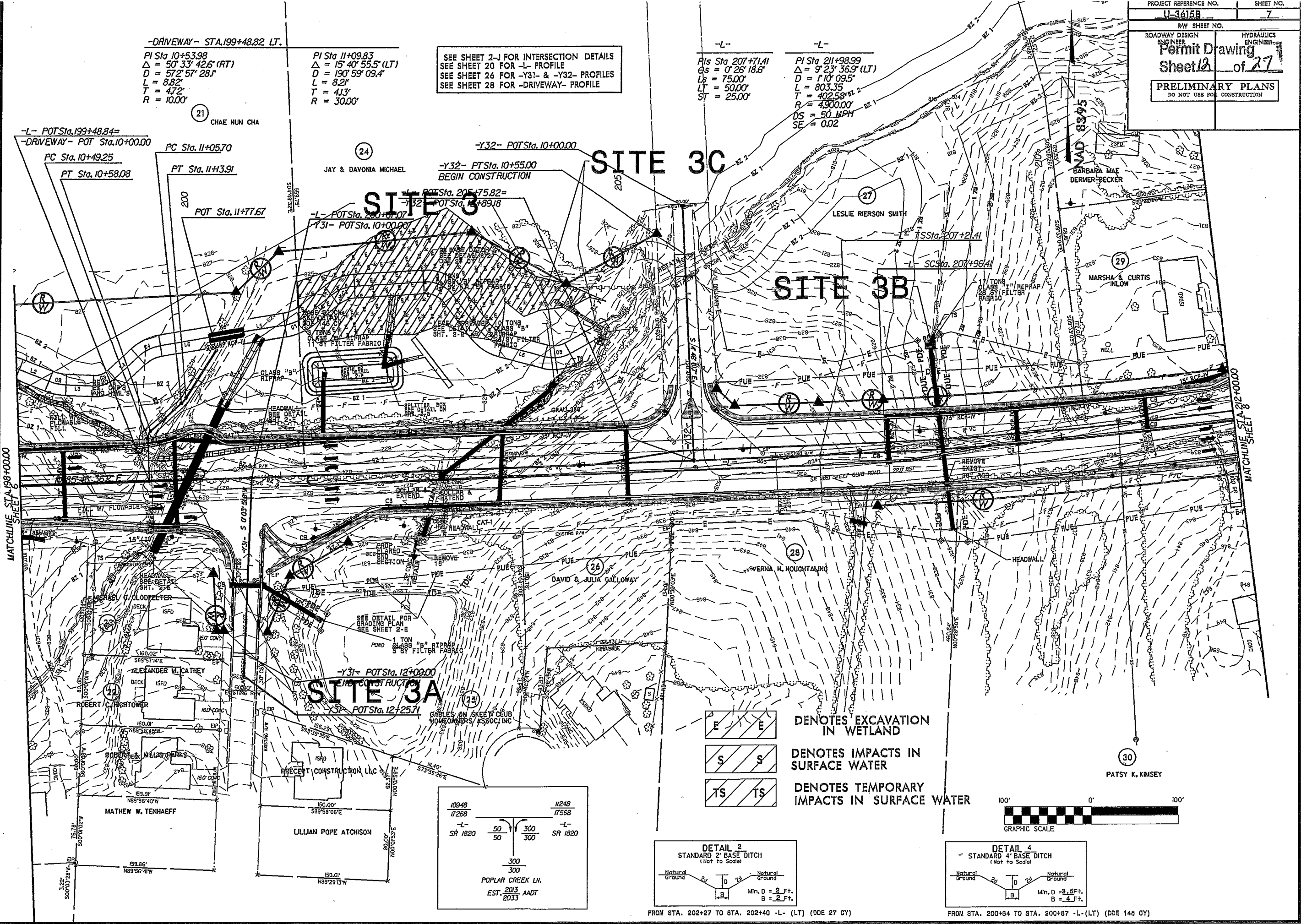
SEE SHEET 2-J FOR INTERSECTION DETAILS
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 26 FOR -Y30A- PROFILE
SEE SHEET 28 FOR -DRIVEWAY- PROFILE

PUE AREA WILL HAVE DUAL USE.
PDE WILL BE FROM RW LINE TO LIMITS SHOWN FOR PDE.

REVISIONS

9/29/09 RW REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
 9/29/09 RW REVISION: CHANGED PERMANENT DRAINAGE EASEMENT TO REFLECT OF WAY AND REMOVED PERMANENT EASEMENT FROM PARCELS 21 AND 24. REVERSED PERMANENT UTILITY EASEMENT AND ADDED TEMPORARY CONSTRUCTION EASEMENT OVERLAP TO PARCEL 27. - SJK
 5/14/12 RW REVISION: CHANGED PERMANENT UTILITY EASEMENT/PERMANENT DRAINAGE EASEMENT OVERLAP TO DRAINAGE UTILITY EASEMENT ON PARCEL 27. - SJK
 7/17/12 RW REVISION: CHANGED PERMANENT UTILITY EASEMENT TO TEMPORARY CONSTRUCTION EASEMENT AND ADDED DRIVEWAY PIPE ON PARCEL 28. - SJK

8/17/99



-DRIVEWAY- STA.199+48.82 LT.
 PI Sta 10+53.98
 $\Delta = 50' 33" 42.6'$ (RT)
 $D = 572' 57" 28.1'$
 $L = 8.82'$
 $T = 4.72'$
 $R = 10.00'$

PI Sta 11+09.83
 $\Delta = 15' 40" 55.5'$ (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

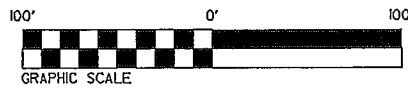
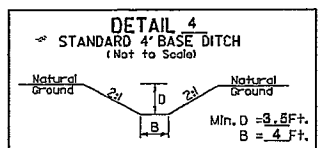
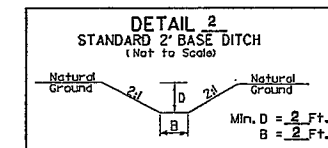
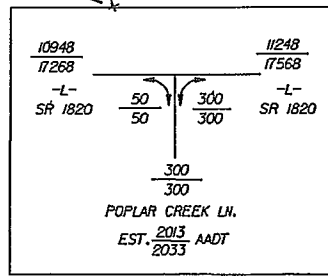
-L-
 PIs Sta 207+71.41
 $\Delta s = 0' 26" 18.6'$
 $Ls = 75.00'$
 $LT = 50.00'$
 $ST = 25.00'$

-L-
 PI Sta 211+98.99
 $\Delta = 9' 23" 36.9'$ (LT)
 $D = 1' 10" 09.5'$
 $L = 803.35'$
 $T = 402.58'$
 $R = 4900.00'$
 $DS = 50$ MPH
 $SE = 0.02$

DENOTES EXCAVATION IN WETLAND

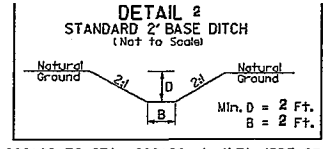
DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

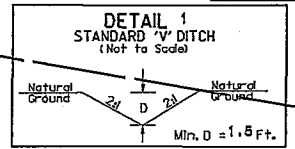


FROM STA. 202+27 TO STA. 202+40 -L- (LT) (DDE 27 CY)

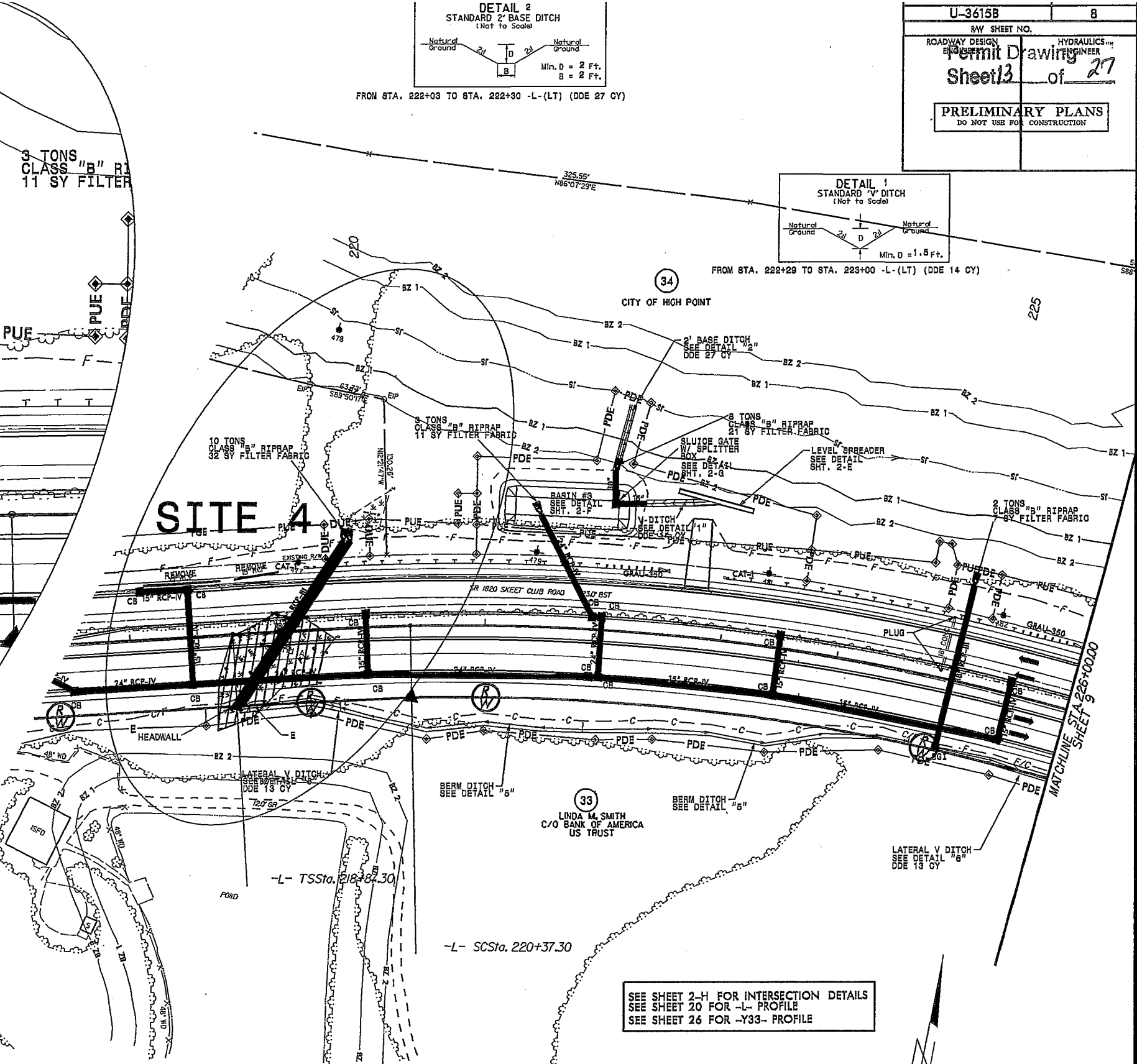
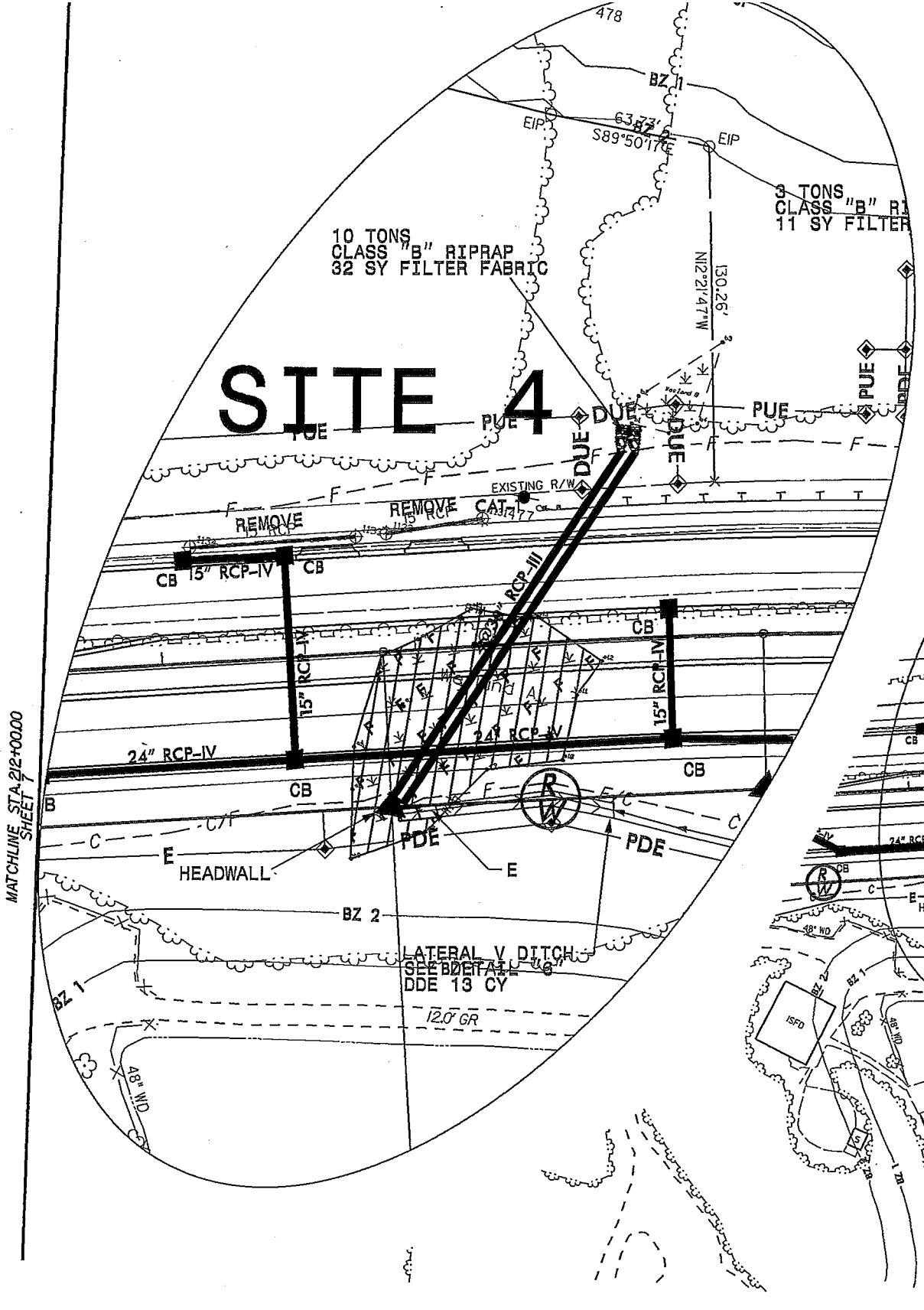
FROM STA. 200+84 TO STA. 200+87 -L- (LT) (DDE 146 CY)



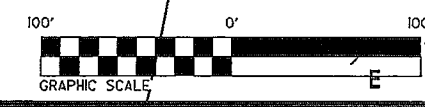
FROM STA. 222+03 TO STA. 222+30 -L-(LT) (DDE 27 CY)



FROM STA. 222+29 TO STA. 223+00 -L-(LT) (DDE 14 CY)

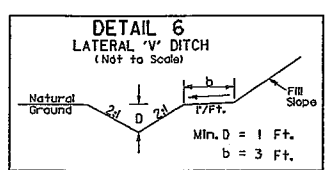


- REVISIONS
1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
 2. CHANGED PUE/PDE OVERLAP TO DUE ON PARCEL 32.
 3. NAME CHANGE ON PARCELS 29 AND 32.
 4. CHANGE PUE TO DUE - CLOSED CLAIM ON PARCELS 22
 5. ADDED 3 - CURB CUTS ON PARCEL 32.
 6. CHANGE PDE TO DUE ON PARCEL 31. (1-10-12) S.L.K.

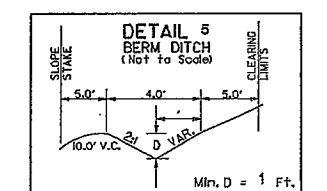


F DENOTES FILL IN WETLAND

E DENOTES EXCAVATION IN WETLAND



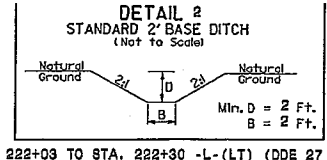
FROM STA. 218+80 TO STA. 219+75 -L- (RT) (DDE 13 CY)
FROM STA. 226+00 TO STA. 226+00 -L- (RT) (DDE 13 CY)



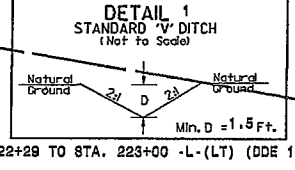
FROM STA. 216+85 TO STA. 216+80 -L-(RT)
FROM STA. 219+75 TO STA. 221+68 -L-(RT)
FROM STA. 221+88 TO STA. 224+75 -L-(RT)

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

NAD 8395



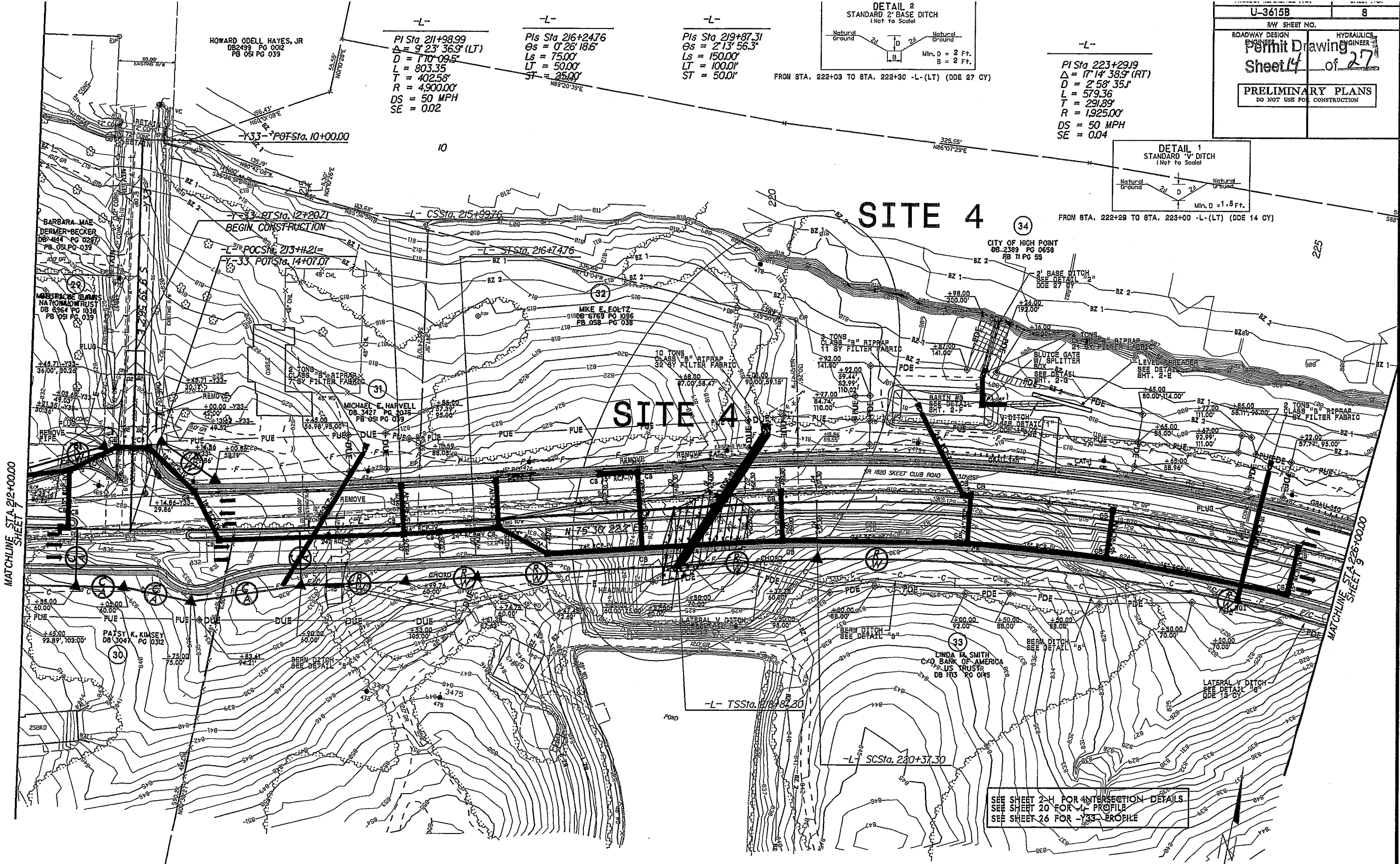
-L-
 PI Sta 223+29.9
 $\Delta = 17'14'' 38.9''$ (RT)
 $D = 2'58'' 35.1''$
 $L = 579.36$
 $T = 291.89$
 $R = 1,925.00'$
 $DS = 50$ MPH
 $SE = 0.04$



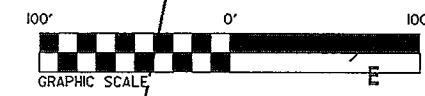
-L-
 PI Sta 211+98.99
 $\Delta = 9'23'' 36.9''$ (LT)
 $D = 1'10'' 09.5''$
 $L = 803.35$
 $T = 402.58'$
 $R = 4,900.00'$
 $DS = 50$ MPH
 $SE = 0.02$

-L-
 Pls Sta 216+24.76
 $\Theta_s = 0'26'' 18.6''$
 $L_s = 75.00'$
 $LT = 50.00'$
 $ST = 25.00'$

-L-
 Pls Sta 219+87.31
 $\Theta_s = 2'13'' 56.3''$
 $LT = 150.00'$
 $ST = 50.00'$

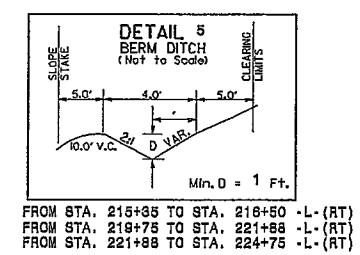
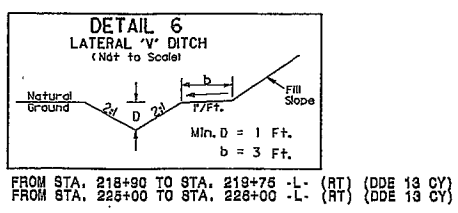


- REVISIONS
1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
 2. CHANGED PUE/PDE OVERLAP TO DUE ON PARCEL 32.
 3. NAME CHANGE ON PARCELS 29 AND 32.
 4. CHANGE PUE TO DUE - CLOSED CHAIN - ON PARCEL 32.
 5. ADDED 3" - CURB CUTS ON PARCEL 32.
 6. CHANGE PDE TO DUE ON PARCEL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



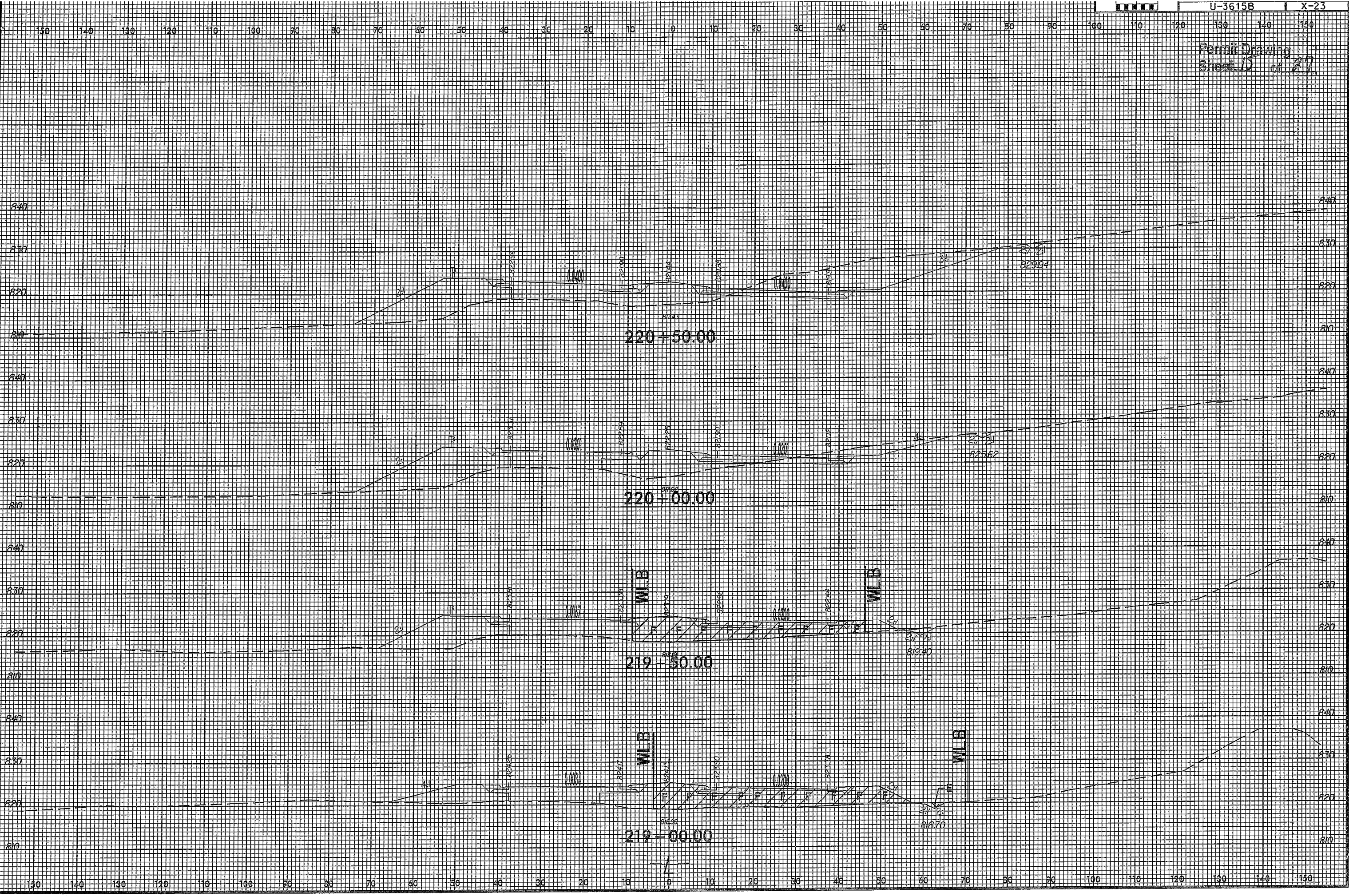
DENOTES FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND



NAD 83/95

8/23/95

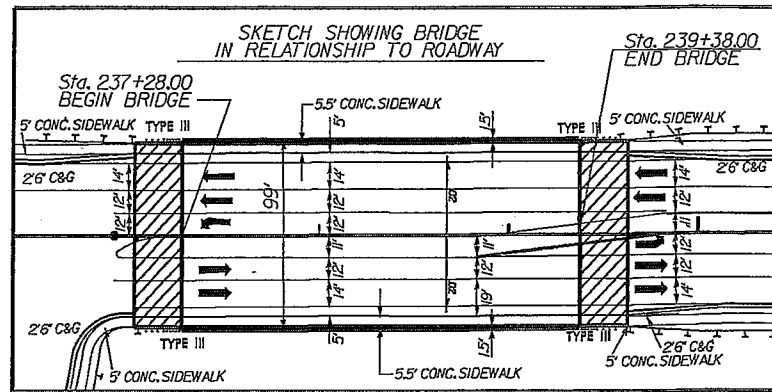


UNIVERSITY OF CALIFORNIA
SCHOOL OF CIVIL AND ENVIRONMENTAL ENGINEERING
101 SHIVERS DRIVE
BERKELEY, CA 94720-1787
TEL: (415) 864-2300
FAX: (415) 864-2300
WWW: WWW.CEE.BERKELEY.EDU

8/17/99

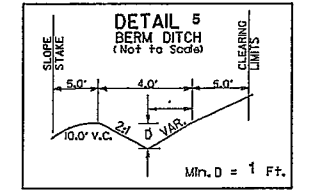
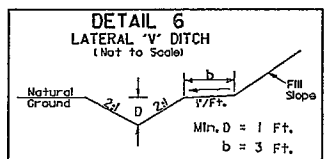
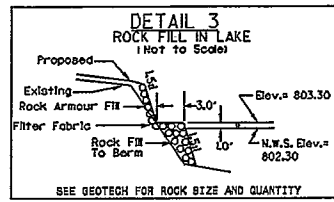
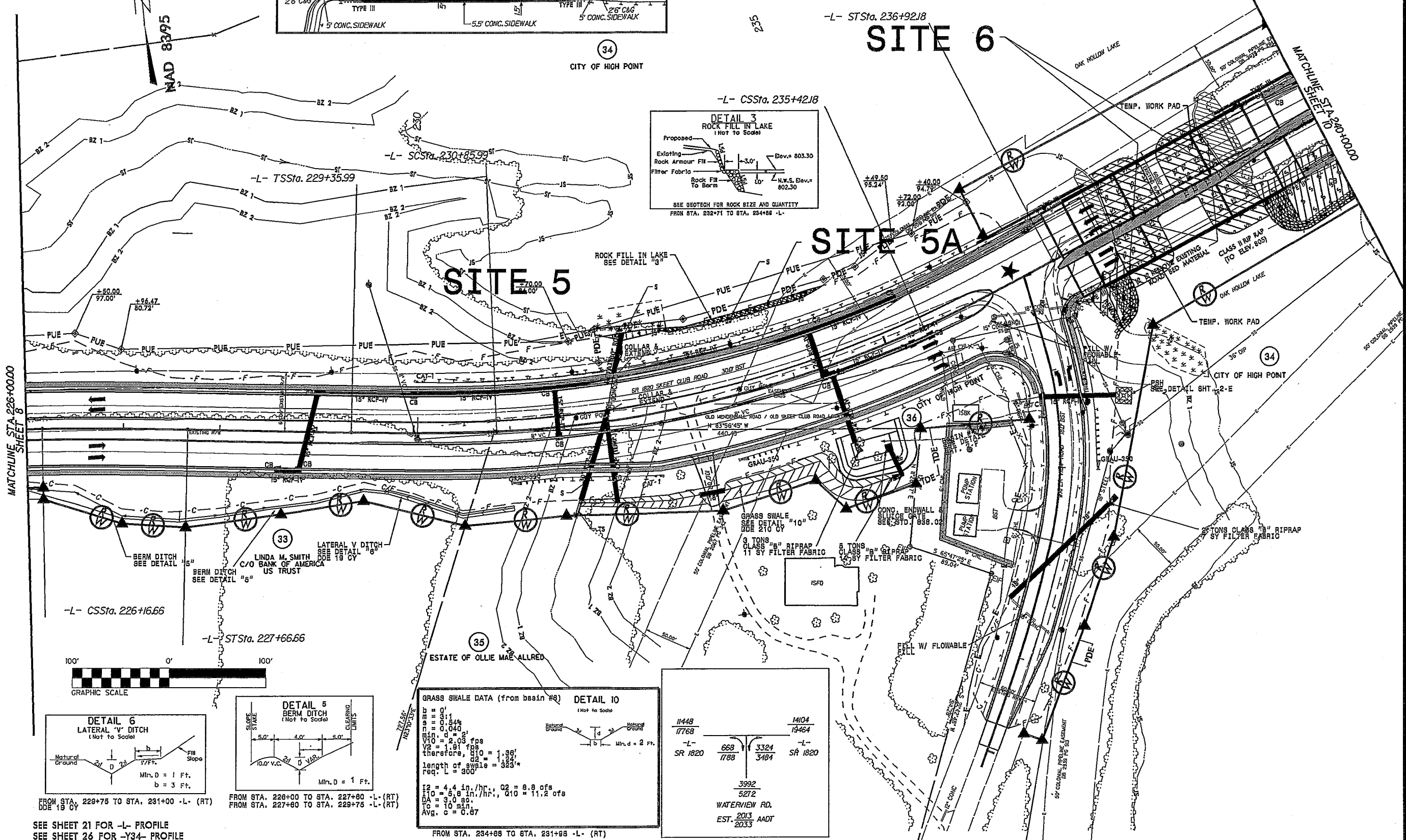
NOTE:
NO DIRECT DISCHARGE INTO THE WATER
FROM THE BRIDGE

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
Permit Drawing Sheet 16 of 27	



REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/99
 2. NAME CHANGE ON PARCEL 35.
 3. REVISED RW TO PROPERTY LINE, ADDED TDE, ADDED NOTE TO PLANS FOR EXIST. FENCE, ADDED NOTE TO PLANS FOR POWER TRANSFORMER ON PARCEL 36.
 5/17/99 REVISION: NAME CHANGE TO ESTATE OF OLLIE MAE ALLRED ON PARCEL 35. - SIK



GRASS SWALE DATA (from basin #8) DETAIL 10 (Not to Scale)

11448	14104
17768	19464
-L- SR 1820	-L- SR 1820
668	3324
1788	3484
3992	
5272	
WATERVIEW RD.	
EST. 2013 AADT	
2033	

FROM STA. 228+00 TO STA. 227+80 -L- (RT)
 FROM STA. 227+80 TO STA. 229+75 -L- (RT)

FROM STA. 234+88 TO STA. 231+88 -L- (RT)

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

8/17/91

NOTE:
NO DIRECT DISCHARGE INTO THE WATER
FROM THE BRIDGE

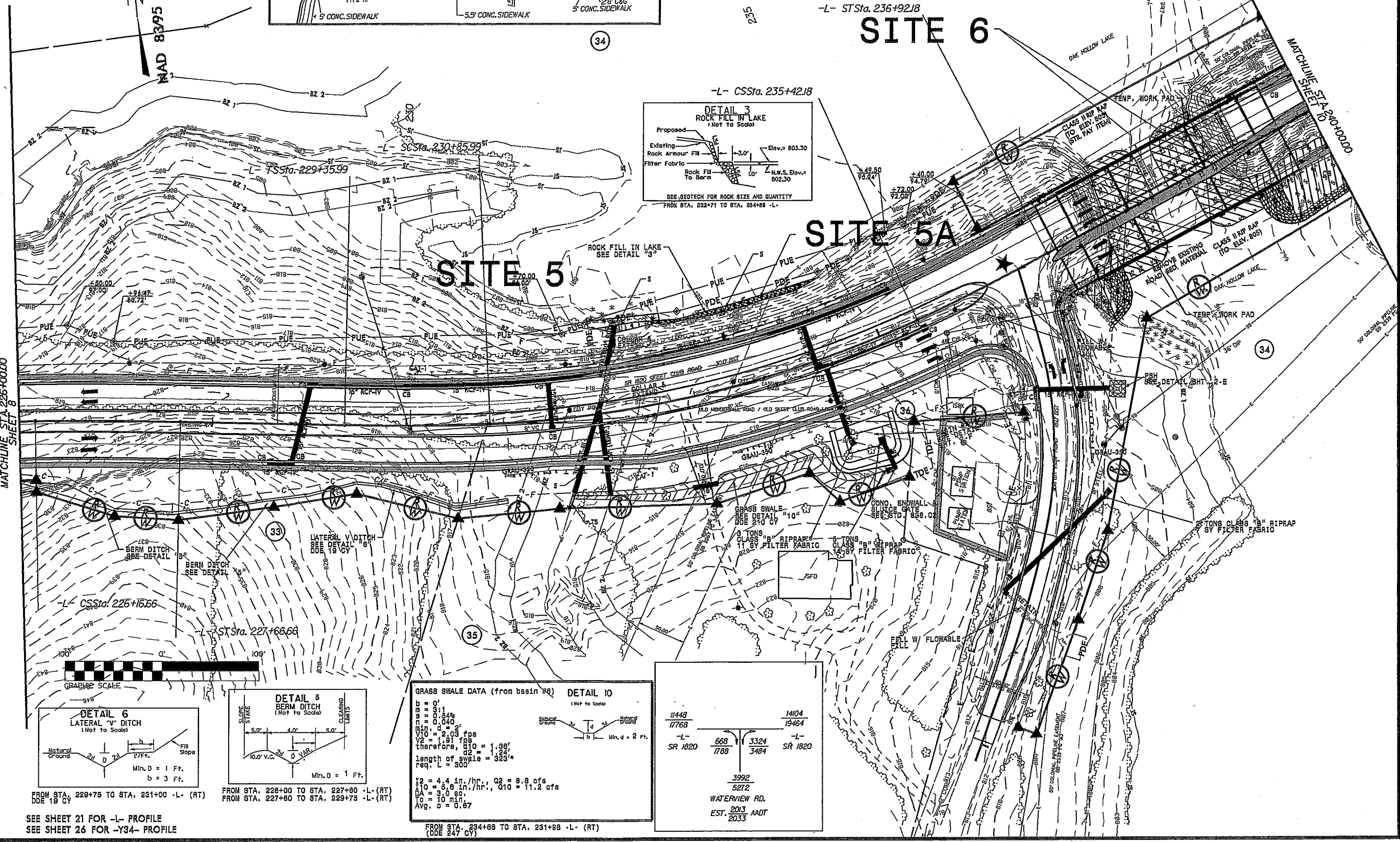
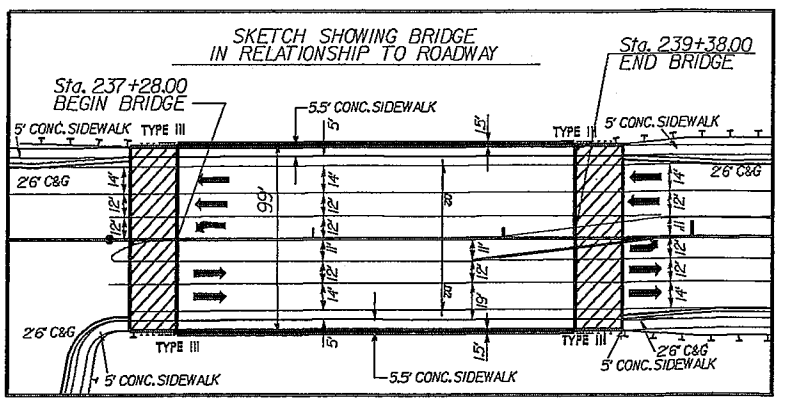
U-3615B 9

RAW SHEET NO.

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Permit Drawing
Sheet 17 of 27



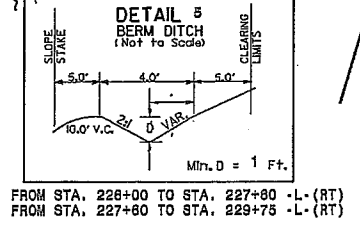
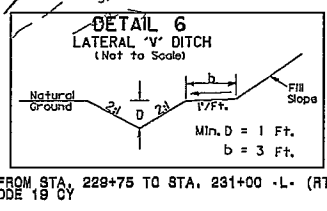
REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/89

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.

5/14/92 R/W REVISION: NAME CHANGE TO ESTATE OF OLLIE MAE ALLRED ON PARCEL 35. - SIK



GRASS SWALE DATA (from basin #9) DETAIL 10
(Not to Scale)

11448	14104
17768	19464
-L- SR 1820	-L- SR 1820
668	3324
1788	3484
3992	
5272	
WATERVIEW RD.	
EST. 2013 AADT	
2033	

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

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

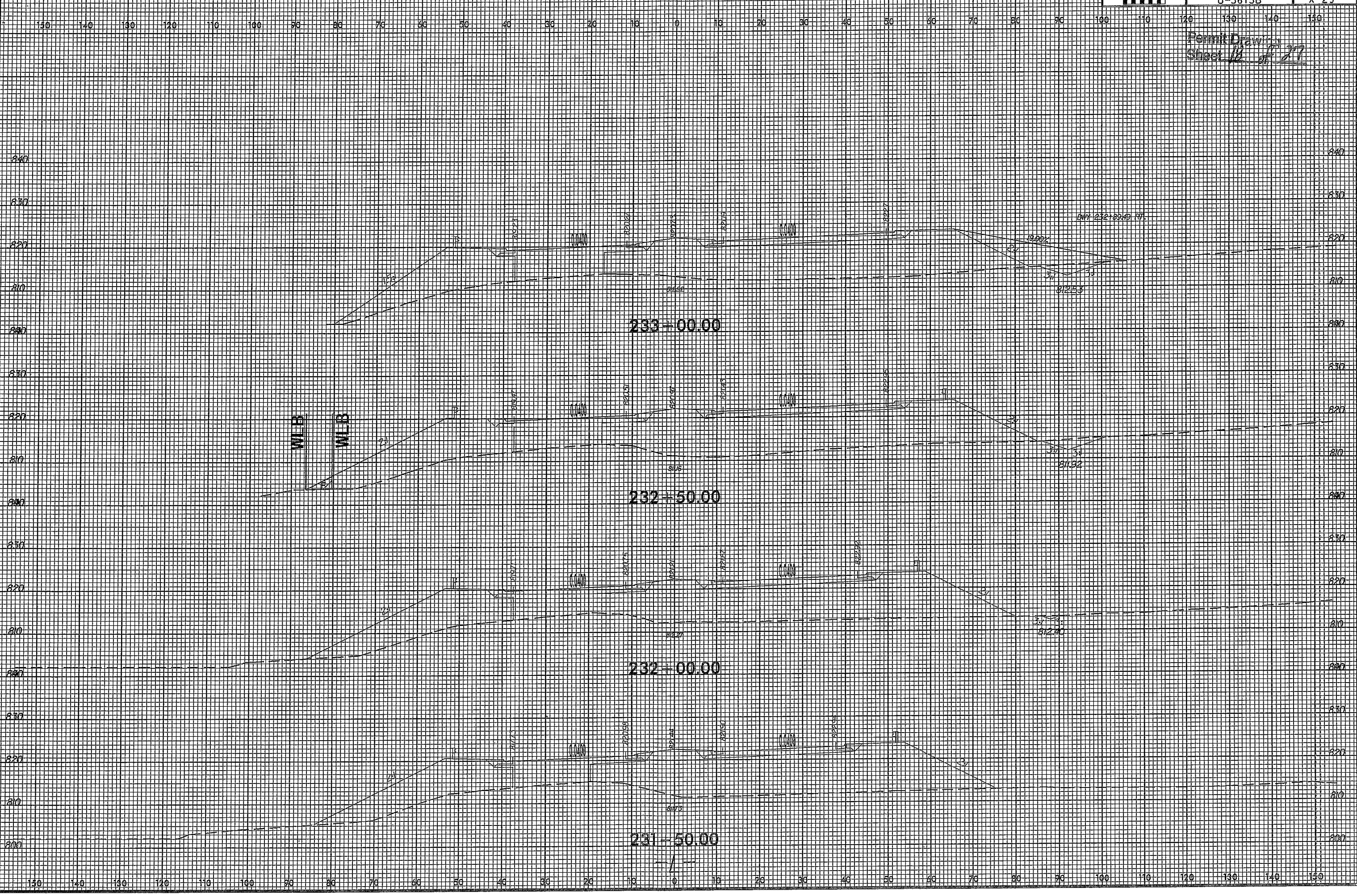
8/23/5



U-3615B

X-29

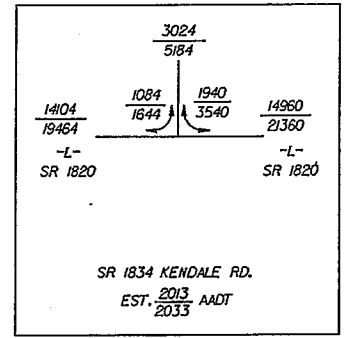
Permit Drawing
Sheet 16 of 27



SYSTEMS
DESIGN
INCORPORATING
CONSTRUCTION
METHODS

PIs Sta 240+00.00
 Os = 4' 37" 14.3"
 Ls = 150.00'
 LT = 100.03'
 ST = 50.03'

$\Delta = 51^{\circ} 46' 45.8" (RT)$
 D = 6' 09" 39.0"
 L = 840.46'
 T = 451.38'
 R = 930.00'
 DS = 50 MPH
 SE = 0.04



-Y35-

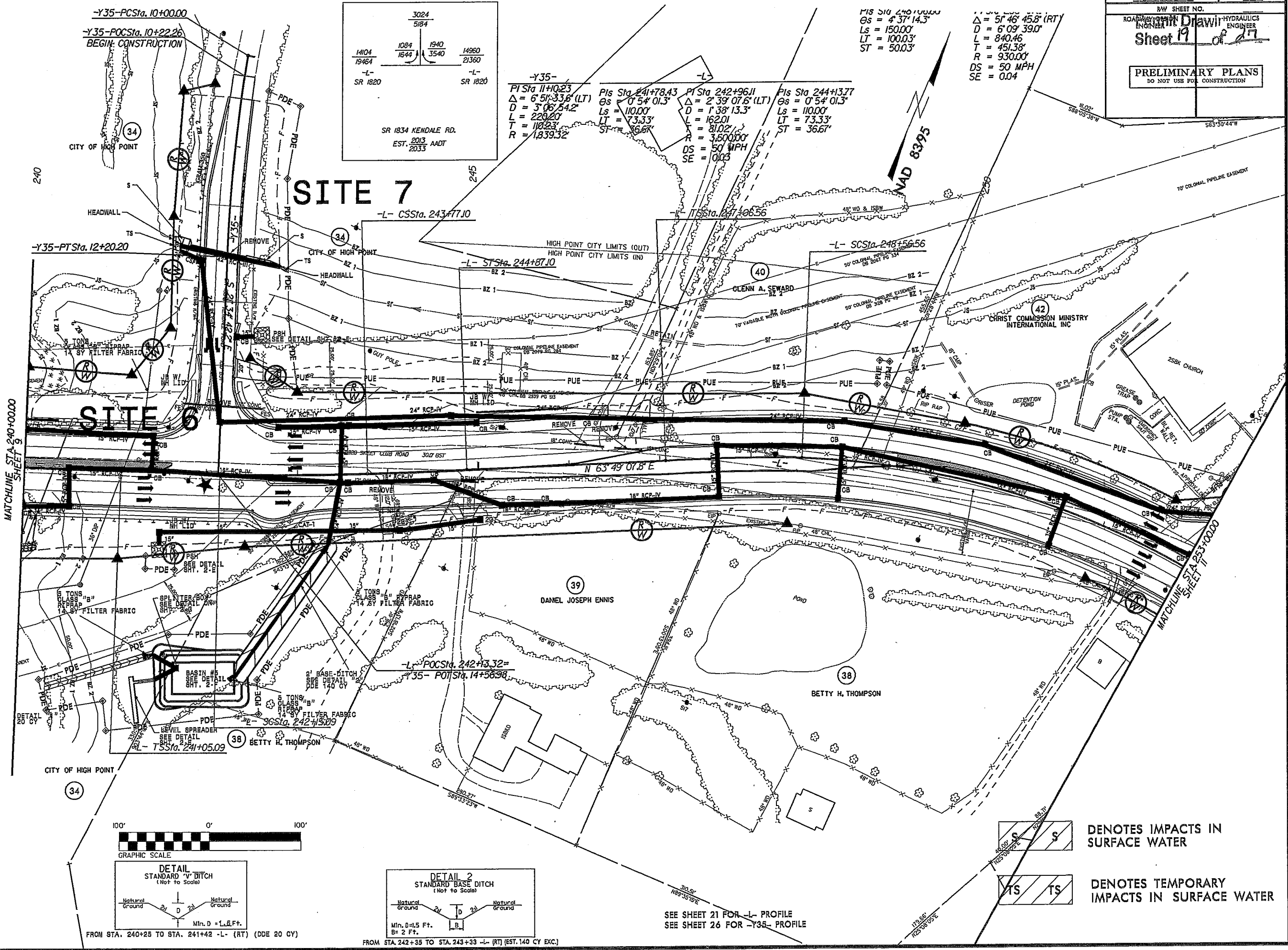
PI Sta 241+10.23
 $\Delta = 6' 51" 33.6" (LT)$
 Os = 0' 54" 01.3"
 Ls = 110.00'
 LT = 73.33'
 ST = 36.67'
 R = 1,839.32'

PI Sta 241+78.43
 $\Delta = 0' 54" 01.3" (LT)$
 Os = 0' 54" 01.3"
 Ls = 110.00'
 LT = 73.33'
 ST = 36.67'
 R = 1,839.32'

PI Sta 242+96.11
 $\Delta = 2' 39" 07.6" (LT)$
 Os = 0' 54" 01.3"
 Ls = 110.00'
 LT = 73.33'
 ST = 36.67'
 R = 1,839.32'

PI Sta 244+13.77
 $\Delta = 0' 54" 01.3" (LT)$
 Os = 0' 54" 01.3"
 Ls = 110.00'
 LT = 73.33'
 ST = 36.67'
 R = 1,839.32'

-L-
 DS = 50 MPH
 SE = 0.03



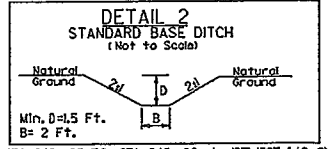
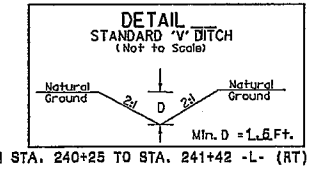
REVISIONS

1. REVISED LABEL OFFSETS FOR EXISTING RIGHT-OF-WAY TO ACTUAL DISTANCES 02/29/09

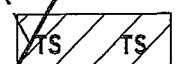
2. NAME CHANGE ON PARCEL 38 AND COMBINE WITH PARCEL 41.

3. NAME CHANGE ON PARCEL 37.

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



DENOTES IMPACTS IN SURFACE WATER



DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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

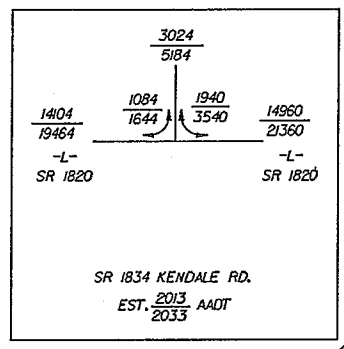
FROM STA. 240+25 TO STA. 241+42 -L- (RT) (DDE 20 CY)

FROM STA. 242+35 TO STA. 243+33 -L- (RT) (EST. 140 CY EXC.)

8/17/99

PIs Sta 240+00.00
 Os = 4' 37" 14.3"
 Ls = 150.00'
 LT = 100.03'
 ST = 50.03'

$\Delta = 51' 46" 45.8$ (RT)
 D = 6' 09" 39.0"
 L = 840.46'
 T = 451.38'
 R = 930.00'
 DS = 50 MPH
 SE = 0.04



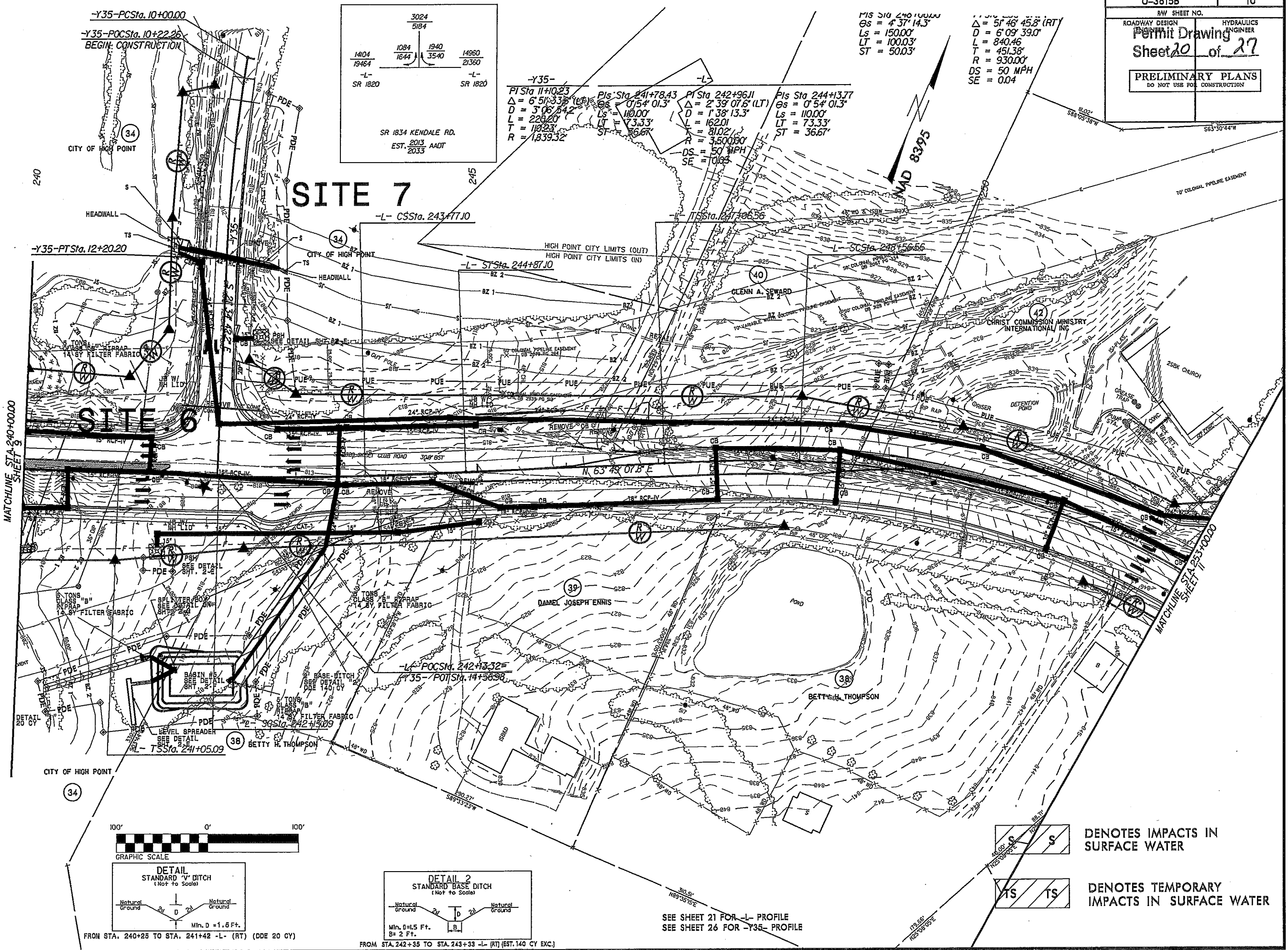
-Y35-
 PI Sta 11+00.23 $\Delta = 6' 51" 33.8$ (RT)
 Os = 0' 54" 01.3"
 Ls = 110.00'
 LT = 73.33'
 ST = 36.67'

PI Sta 241+78.43 $\Delta = 2' 39" 07.6$ (LT)
 Os = 0' 54" 01.3"
 Ls = 110.00'
 LT = 73.33'
 ST = 36.67'

PI Sta 242+96.11 $\Delta = 1' 38" 13.3$
 Os = 0' 54" 01.3"
 Ls = 110.00'
 LT = 73.33'
 ST = 36.67'

PI Sta 244+13.77 $\Delta = 0' 54" 01.3$
 Os = 0' 54" 01.3"
 Ls = 110.00'
 LT = 73.33'
 ST = 36.67'

R = 3500.00'
 DS = 50 MPH
 SE = 0.04



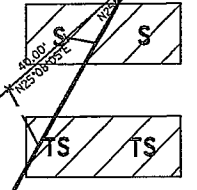
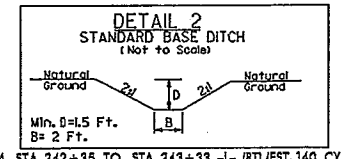
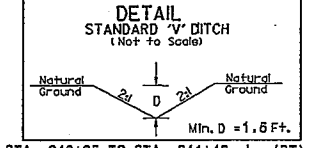
REVISIONS

1. REVISED LABEL CHECKS FOR EXISTING RIGHT-OF-WAY TO ACTUAL DISTANCES. 9/29/09

2. NAME CHANGE ON PARCEL 3B AND COMBINE WITH PARCEL 4I.

3. NAME CHANGE ON PARCEL 3C.

02/25/13 RW REVISION: THE PDE WAS REVISED AROUND RELOCATED BASIN #5 ON PARCELS 34 AND 3B AND PDE WAS ADDED FROM -L- STA. 241+36.00 TO STA. 241+68.00 RT. ON PARCEL 34. - TEM



Denotes IMPACTS IN SURFACE WATER

Denotes TEMPORARY IMPACTS IN SURFACE WATER

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

SYSTEMS ENGINEERING

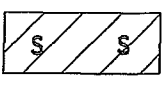
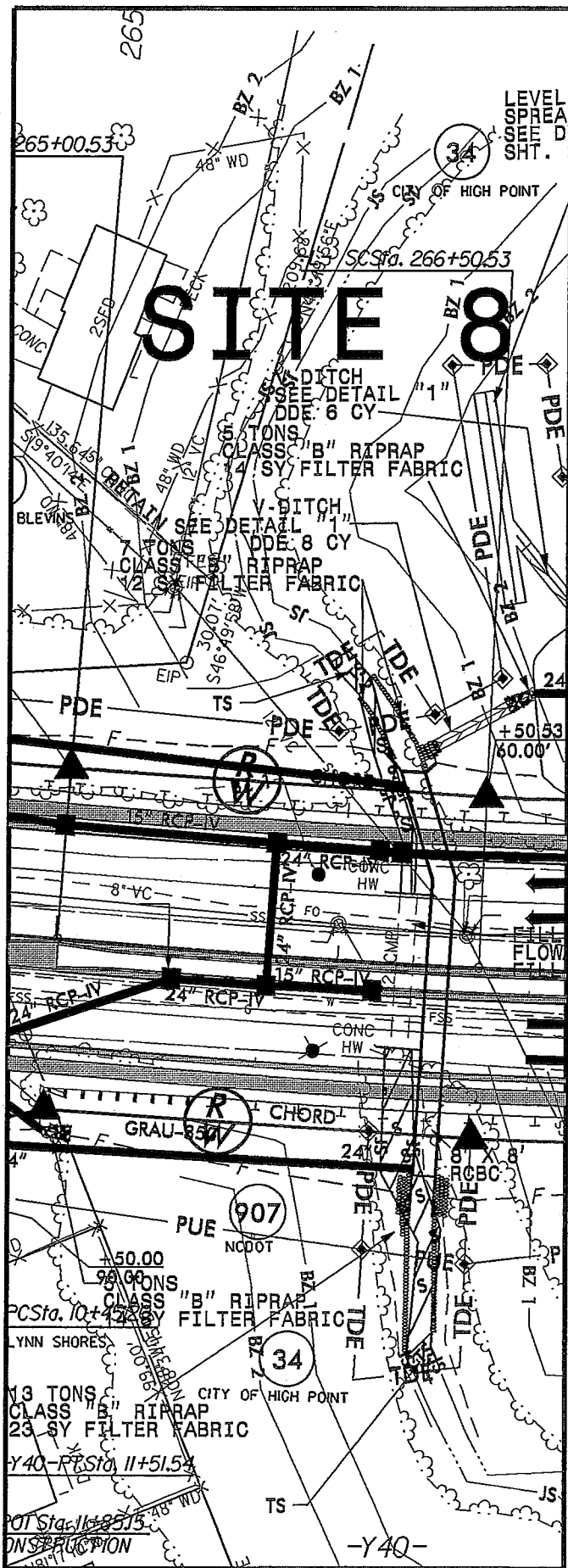
8/17/95

8/17/24

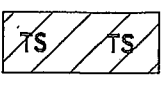
100' 0' 100'



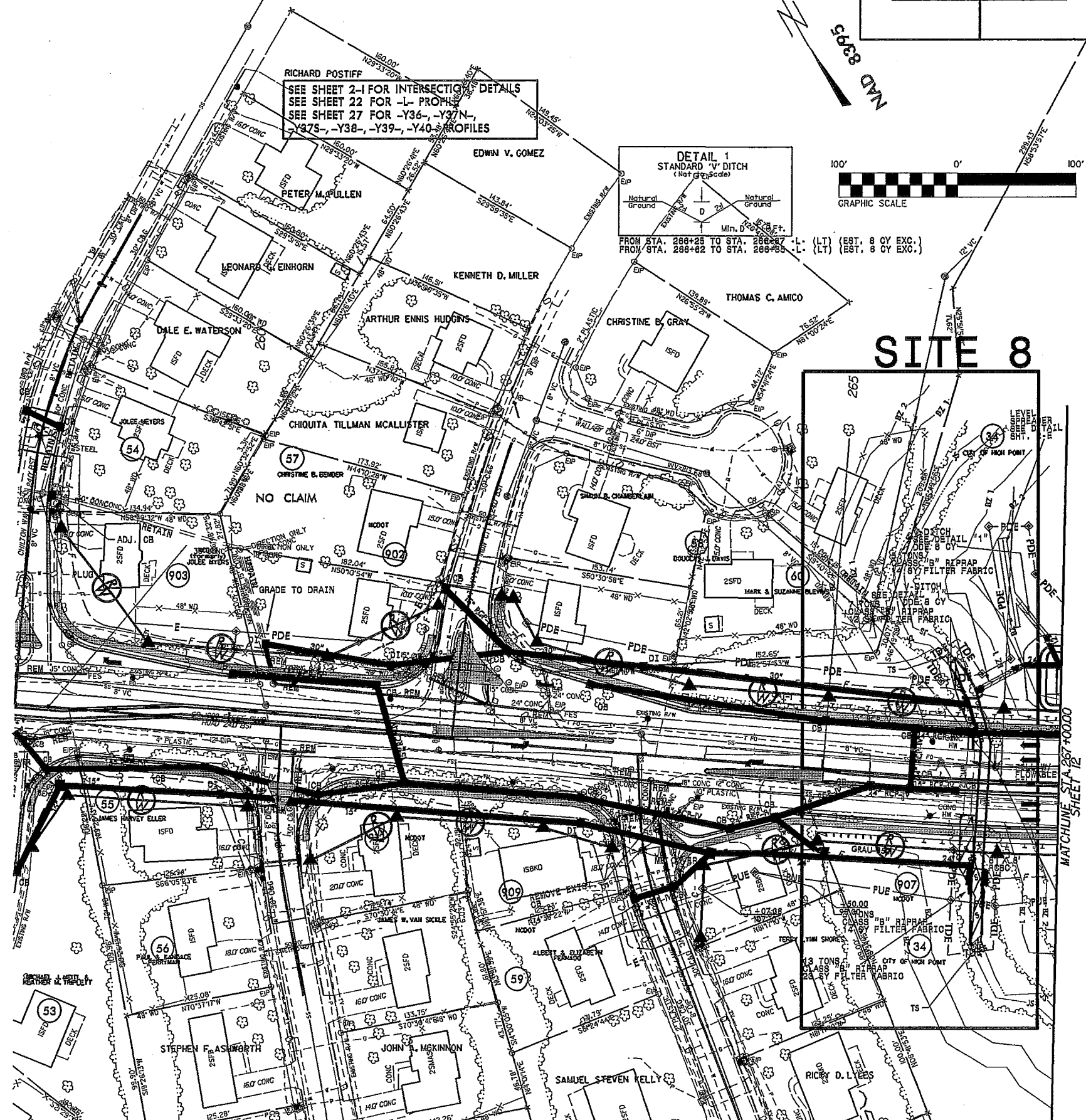
GRAPHIC SCALE



DENOTES IMPACTS IN SURFACE WATER



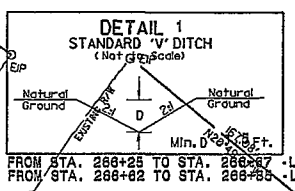
DENOTES TEMPORARY IMPACTS IN SURFACE WATER



U-3615B		11
RW SHEET NO.		
ROADWAY DESIGN	HYDRAULICS ENGINEER	
Permit Drawing		
Sheet 21		of 27
PRELIMINARY PLANS		
DO NOT USE FOR CONSTRUCTION		



GRAPHIC SCALE



SITE 8

REVISIONS

*****SYSTEM*****
*****DRAWING*****
*****DATE*****
*****USER*****

MATCHLINE STA. 257+00.00 SHEET 12

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, 54, 59, AND 60.

3. PDE LINE SHIFT ON PARCEL 58.

4. NAME CHANGE ON PARCELS 707, 708, 709, 710 TO "NO CLAIM".

5. 1/27/12 RW REVISION: REMOVED TEMPORARY CONSTRUCTION EASEMENT AND CLAIM ON PARCEL 57. SIK

REVISIONS

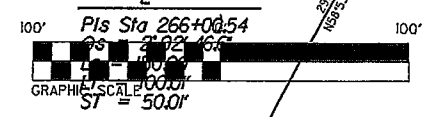
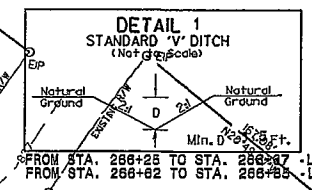
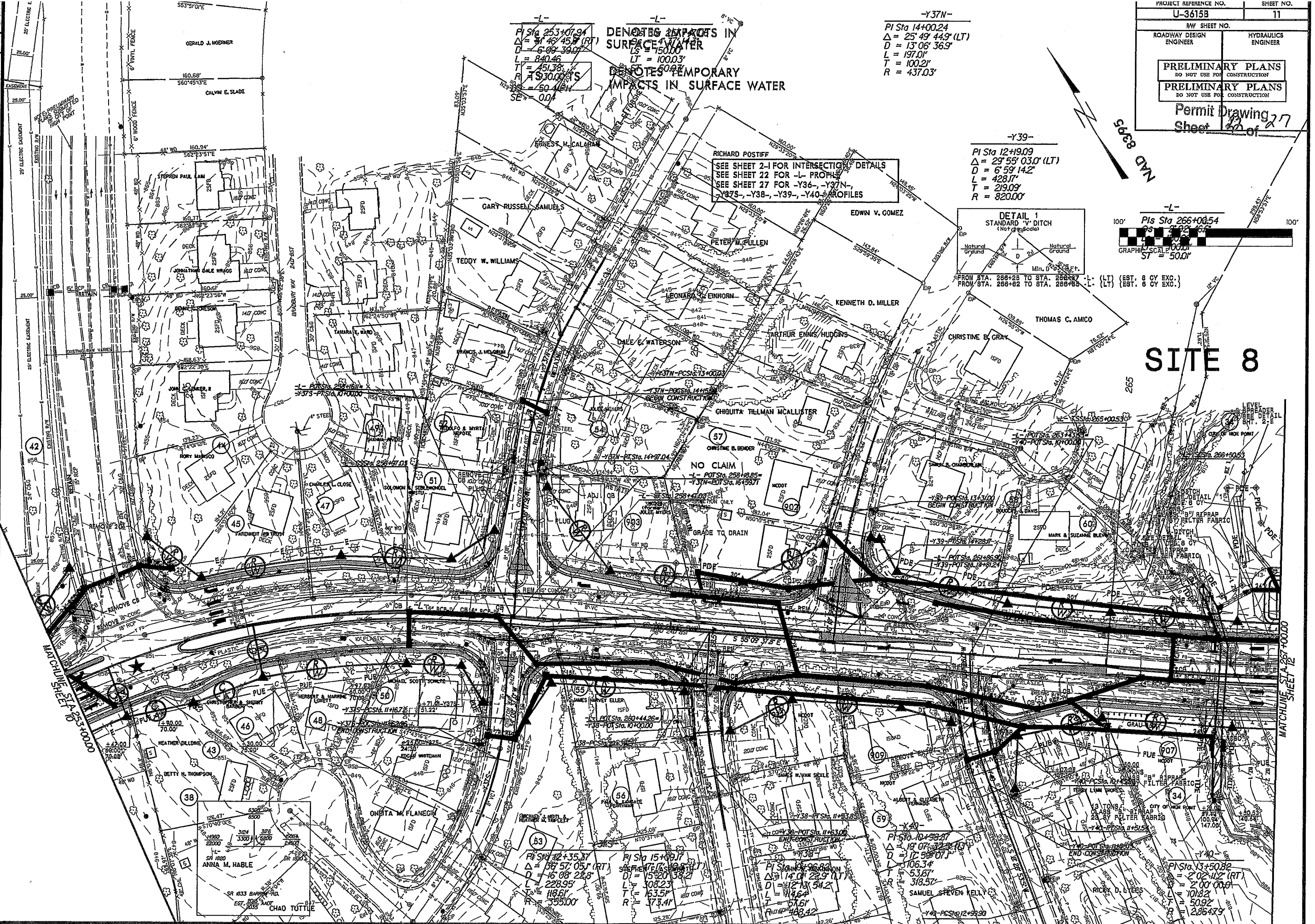
1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09

2. NAME CHANGE ON PARCELS 43, 44, 45, 48, 49, 51, 52, 53, 54, 59, AND 60.

3. PDE LINE SHIFT ON PARCEL 58.

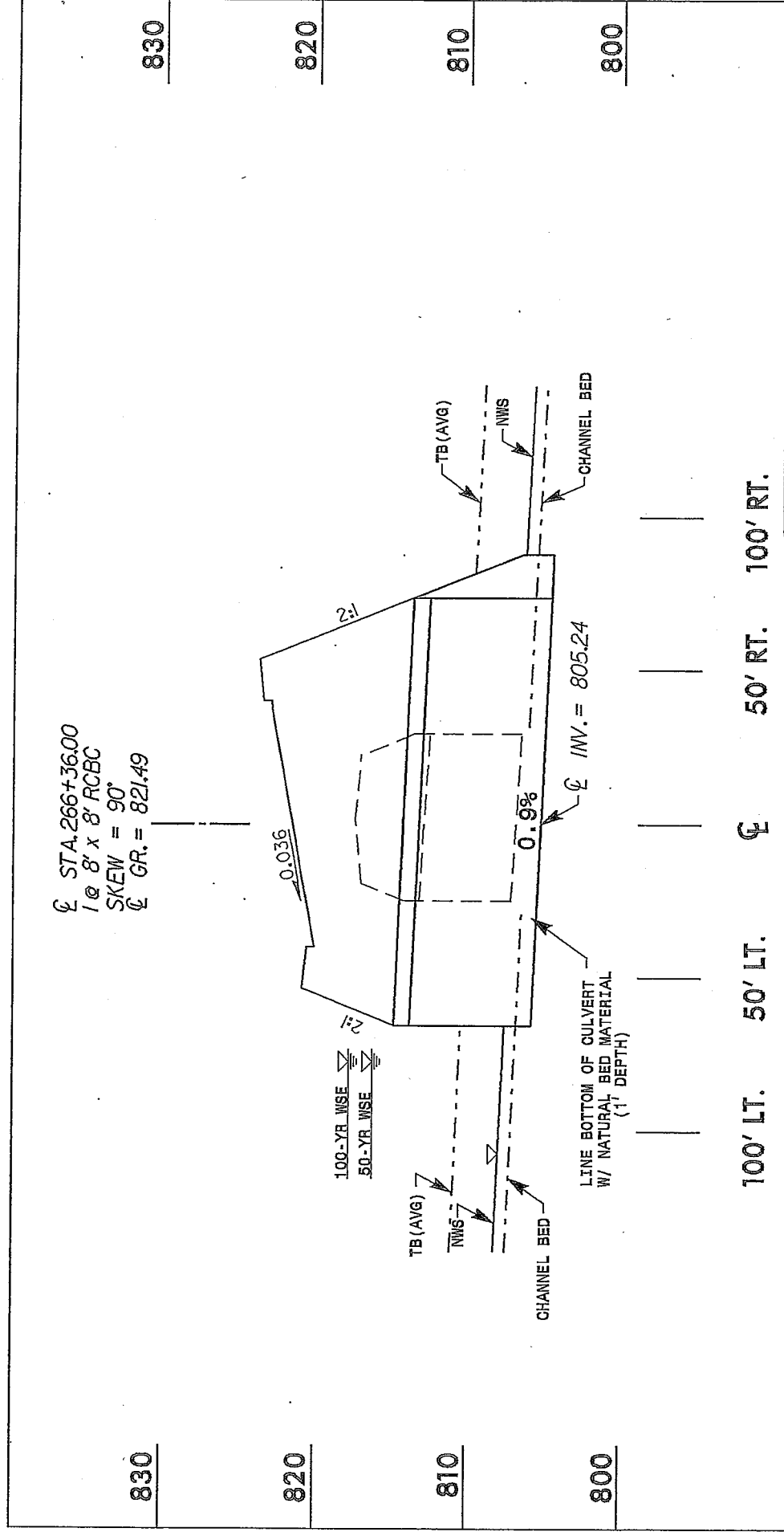
4. NAME CHANGE ON PARCELS 707, 708, 709, 710 TO "NO CLAIM".

5. 1/27/12 RW REVISION: REMOVED TEMPORARY CONSTRUCTION EASEMENT AND CLAIM ON PARCEL 57. SIK



SITE 8

*****SYSTEMS*****
*****DRAWN BY: *****
*****CHECKED BY: *****
*****DATE: *****



PROFILE

100' LT. 50' LT. 50' RT. 100' RT.

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 66 (EASTCHESTER DRIVE)
 SHEET 23 OF 27 11/05/12

RECEIVED
 APR 30 2013
 RALEIGH REGULATORY
 FIELD OFFICE

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)
 SHEET 24 of 27 11/5/2012

RECEIVED
 APR 30 2013
 RALEIGH REGULATORY
 FIELD OFFICE

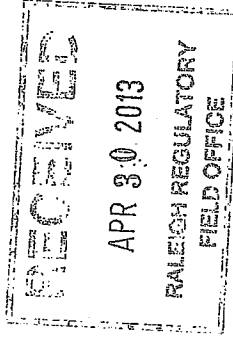
PROPERTY OWNERS

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

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

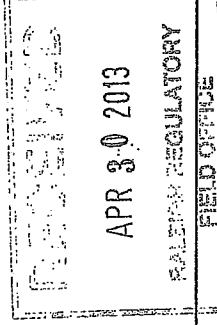
GUILFORD COUNTY
WBS - 34962.1.1 (U-3615B)

SHEET 25 of 27 11/5/2012



WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS					
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	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	
3C	201+27/204+76 -L-	BANK STABILIZATION NAT. STREAM DESIGN			0.67			<0.01	<0.01	10		
4	218+72/219+72 -L-	2@30" RCP	0.13		<0.01					63		
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

GUILFORD COUNTY

WBS - 34962.1.1 (U-3615B)

SHEET 26 of 27 4/9/2013

WETLAND PERMIT IMPACT SUMMARY												
WETLAND IMPACTS				SURFACE WATER IMPACTS								
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill in Wetlands (ac)	Temp. Fill in Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW Impacts (ac)	Temp. SW Impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
7	12+20 -Y35-	42" RCP						<0.01	<0.01	49	19	
8	266+36 -L-	8'X8' RCBC BANK STABILIZATION						0.03	<0.01	186 101	32	
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)

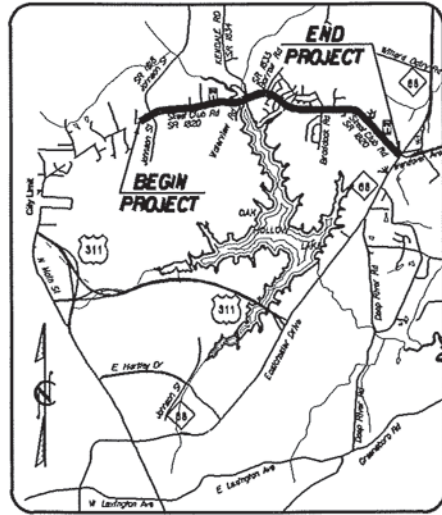
RECEIVED

APR 30 2013
RALEIGH REGULATORY
FIELD OFFICE

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILDFORD COUNTY

WBS 34960.1.1 (U-36.15B)
SHEET 27 of 27
4/9/2013

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

LOCATION: 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

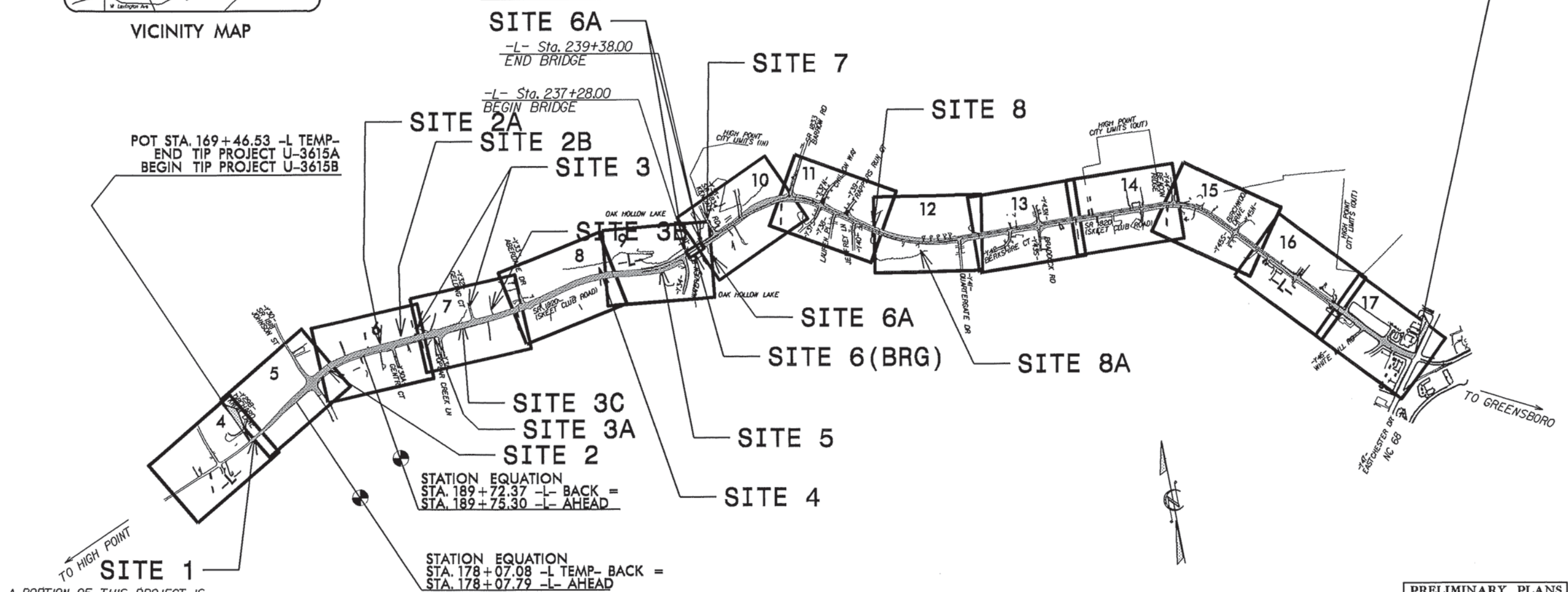
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3615B	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34962.1.1	STP-1820(2)	P.E.	
34962.2.3	STP-1820(2)	RW, UTL.	
Buffer Drawing			
Sheet 1 of 13			

TIP PROJECT: U-3615B

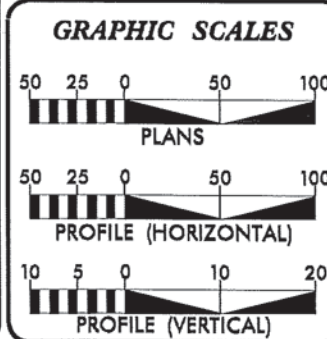
CONTRACT:

BUFFER IMPACTS PERMIT

STA. 348+41.04 -L- END TIP PROJECT U-3615B



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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 in the Office of:
533 JONES FRANKLIN ROAD
SLATE 164
RALEIGH, N.C. 27604
License No. F-43377
P.O. Box 919 85 8077
Tel. 919 851 8107

WETHERILL ENGINEERING

2012 STANDARD SPECIFICATIONS	EDWARD G. WETHERILL, PE PROJECT ENGINEER
RIGHT OF WAY DATE: APRIL 27, 2009	GREG S. PURVIS, PE PROJECT DESIGN ENGINEER
LETTING DATE: OCTOBER 15, 2013	BRENDA L. MOORE, PE ROADWAY DESIGN ENGINEERING COORDINATION SECTION PROJECT ENGINEER
NCDOT CONTACT:	

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

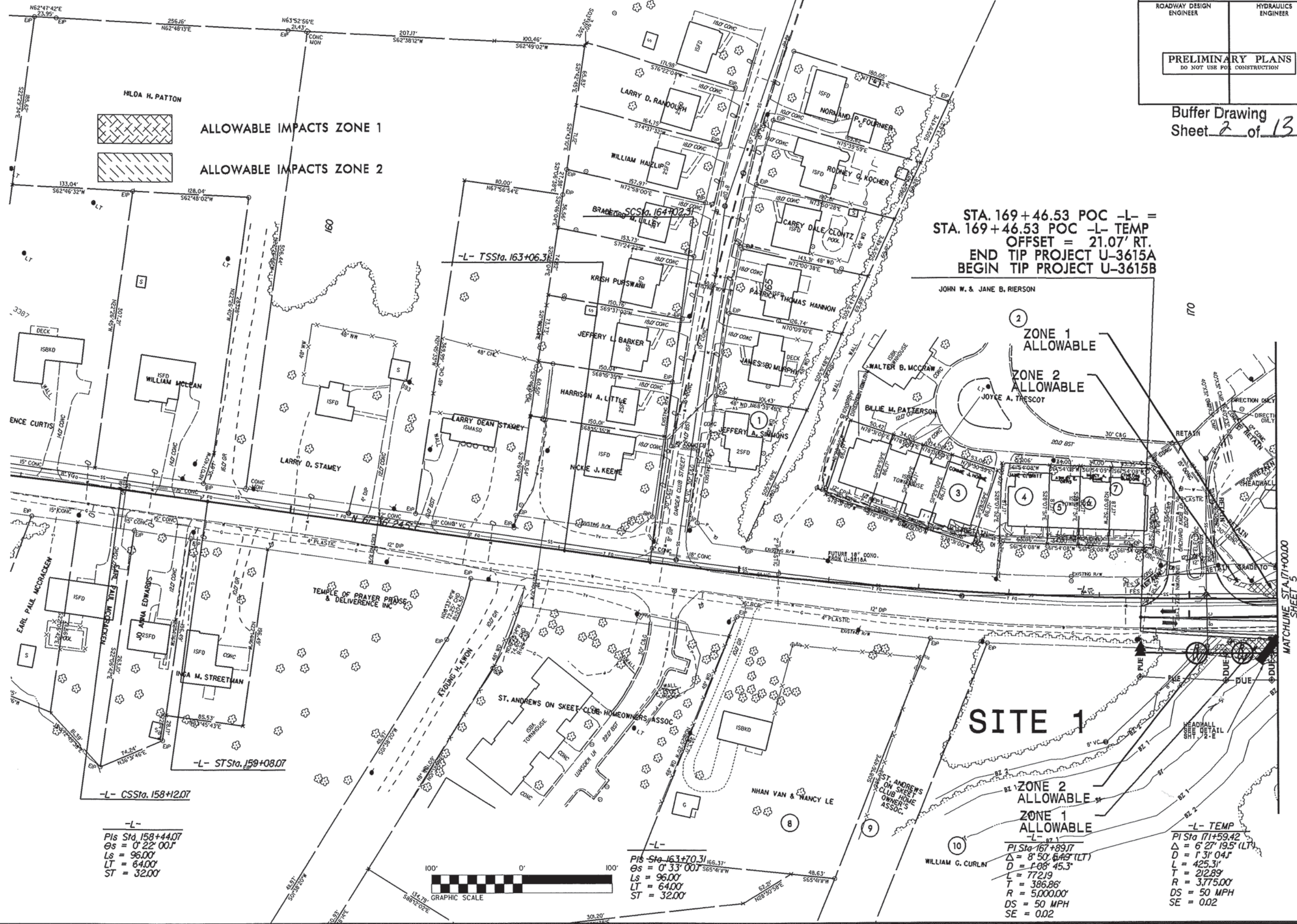


\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

PROJECT REFERENCE NO.	SHEET NO.
U-3615B	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Buffer Drawing
Sheet 2 of 13

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



ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

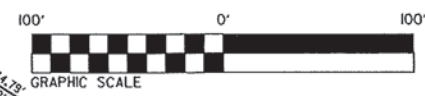
ZONE 1 ALLOWABLE
ZONE 2 ALLOWABLE

SITE 1
ZONE 2 ALLOWABLE
ZONE 1 ALLOWABLE

-L-
PI Sta. 158+44.07
Δs = 0' 22' 00"
Ls = 96.00'
LT = 64.00'
ST = 32.00'

-L-
PI Sta. 163+70.31
Δs = 0' 33' 00"
Ls = 96.00'
LT = 64.00'
ST = 32.00'

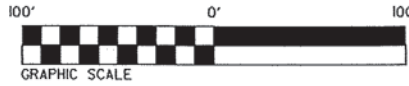
-L- TEMP
PI Sta. 171+59.42
Δ = 6' 27' 19.5" (LT)
D = 1' 31' 04.1"
L = 425.31'
T = 212.89'
R = 386.86'
DS = 50 MPH
SE = 0.02



REVISIONS

8/17/99

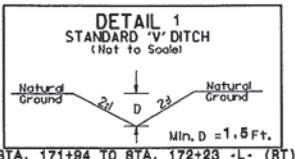
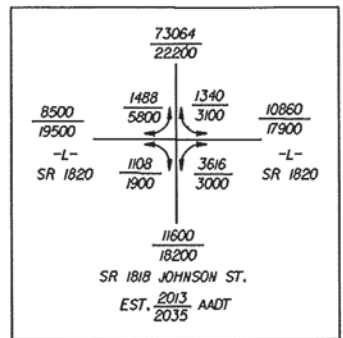
MATCHLINE STA. 171+00.00
SHEET 5



PROJECT REFERENCE NO.		SHEET NO.	
U-3615B		5	
RAW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
Buffer Drawing Sheet 3 of 13			

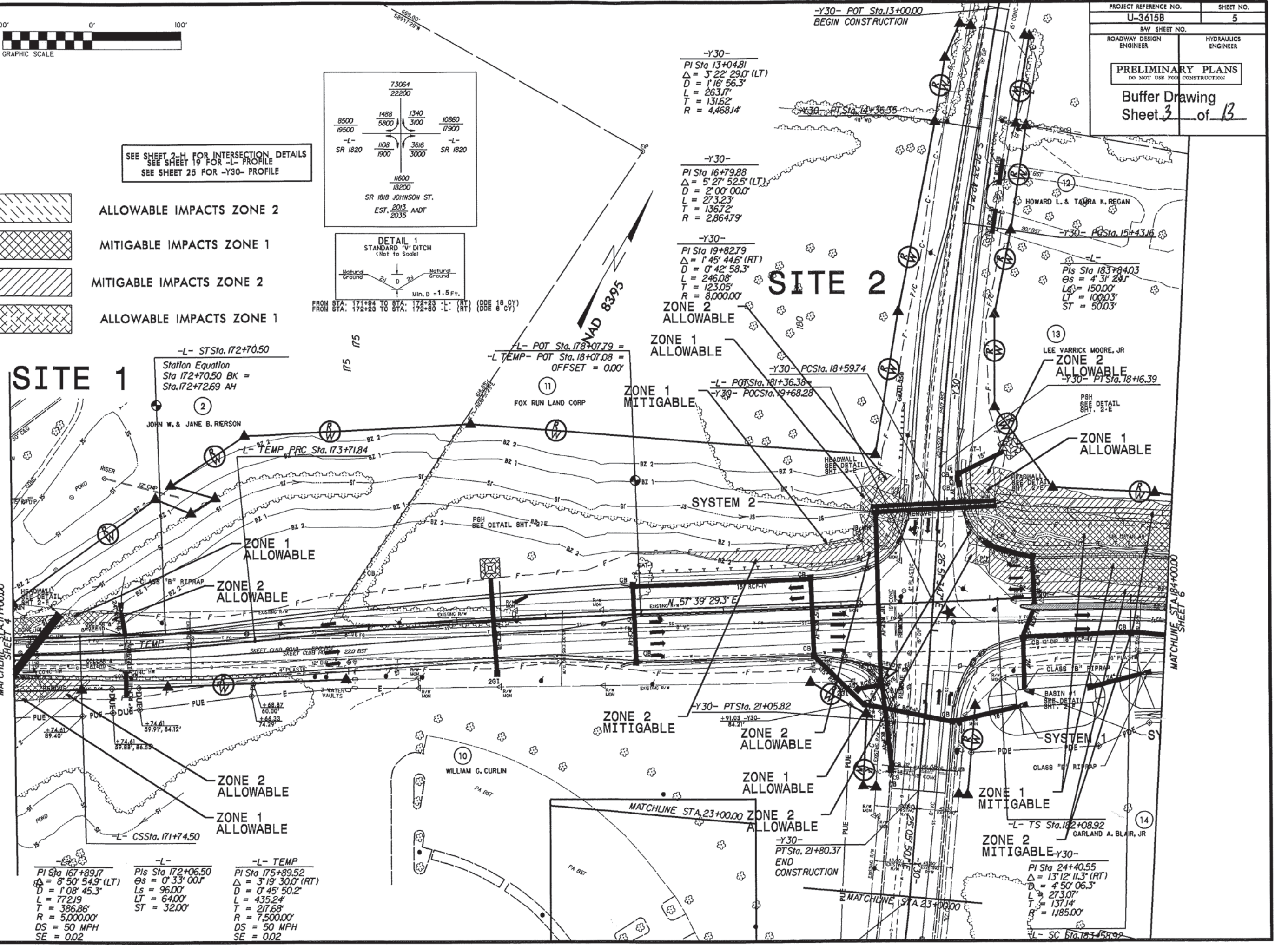
SEE SHEET 2-H FOR INTERSECTION DETAILS
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 25 FOR -Y30- PROFILE

- ALLOWABLE IMPACTS ZONE 2
- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2
- ALLOWABLE IMPACTS ZONE 1



FROM STA. 171+94 TO STA. 172+23 -L- (RT) (DDE 16 CY)
FROM STA. 172+23 TO STA. 172+80 -L- (RT) (DDE 8 CY)

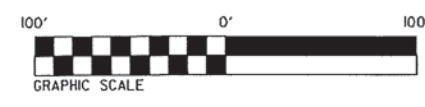
REVISIONS
 9/29/12 REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
 RW REVISION: 2/29/12: CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY ON PARCEL 10; REMOVED PERMANENT DRAINAGE EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT AND ADDED DRAINAGE UTILITY EASEMENT ON PARCEL 10; REVISED 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



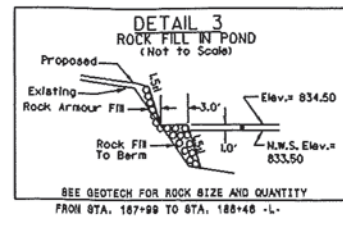
MATCHLINE STA. 17+00.00

MATCHLINE STA. 18+00.00

-L-	-L-	-L- TEMP
PI Sta 167+89.17	PI Sta 172+06.50	PI Sta 175+89.52
Δ = 8° 50' 54.9" (LT)	Δs = 0° 33' 00.1"	Δ = 3° 19' 30.0" (RT)
D = 1' 08' 45.3"	Ls = 96.00'	D = 0' 45' 50.2"
L = 772.19'	LT = 64.00'	L = 435.24'
T = 386.86'	ST = 32.00'	T = 217.68'
R = 5,000.00'		R = 7,500.00'
DS = 50 MPH		DS = 50 MPH
SE = 0.02		SE = 0.02

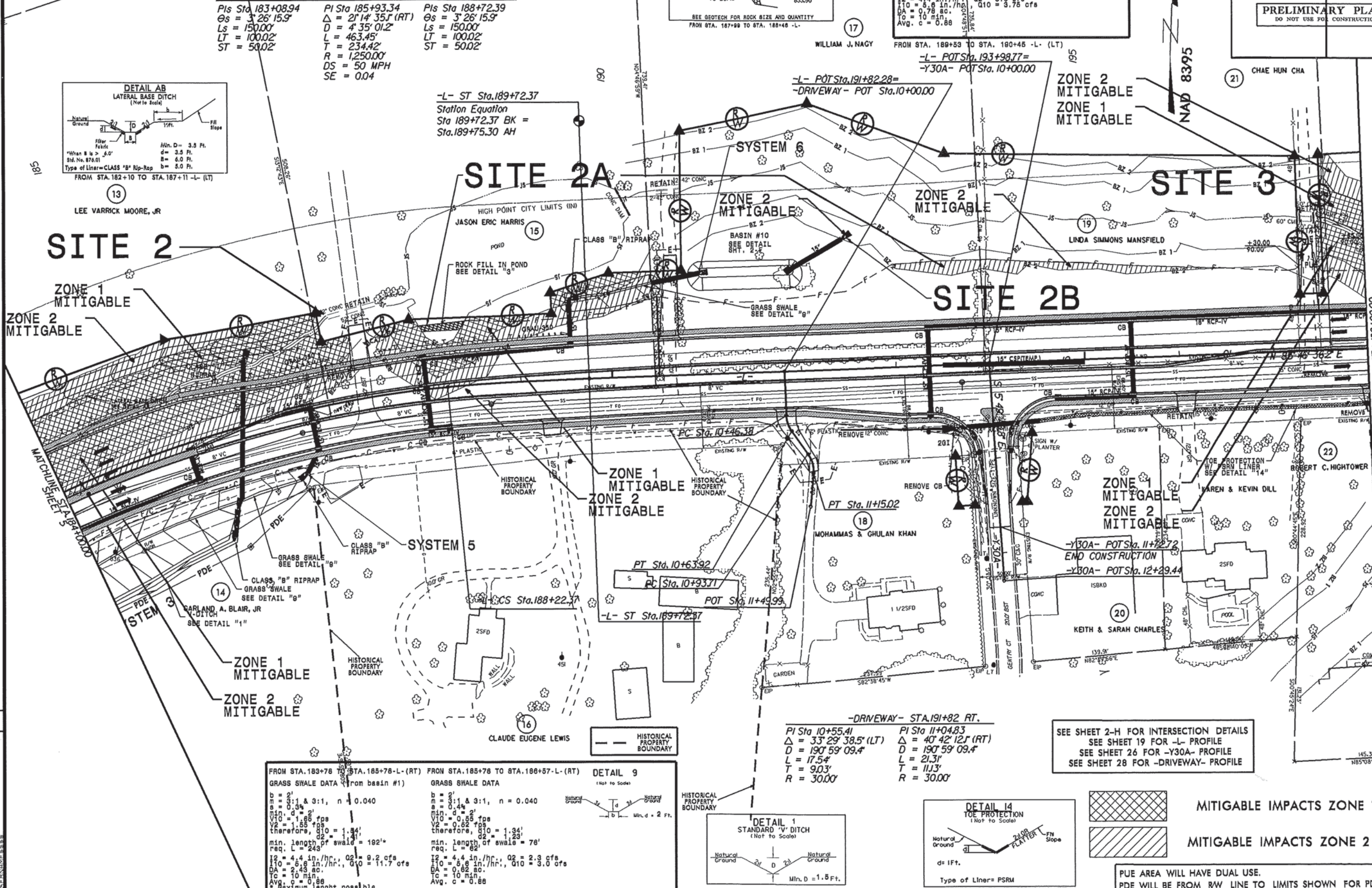
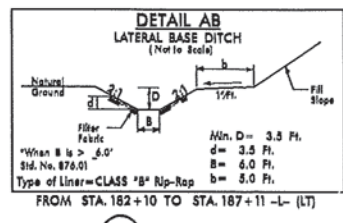


PIs Sta 183+08.94 $\Theta_s = 3' 26'' 15.9''$ $L_s = 150.00'$ $LT = 100.02'$ $ST = 50.02'$	PIs Sta 185+93.34 $\Delta = 2' 14'' 35.1'' (RT)$ $D = 4' 35'' 01.2''$ $L = 463.45'$ $T = 234.42'$ $DS = 50 MPH$ $SE = 0.04$	PIs Sta 188+72.39 $\Theta_s = 3' 26'' 15.9''$ $L_s = 150.00'$ $LT = 100.02'$ $ST = 50.02'$
--	---	--

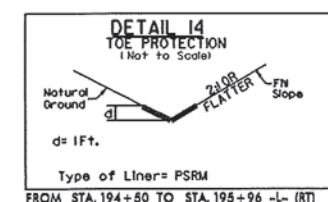
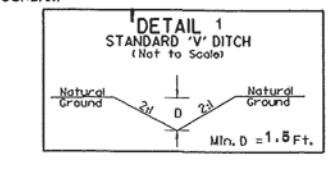


GRASS SWALE DATA

$b = 2'$	$n = 0.040$
$m = 3:1$	
$\theta = 0.68^\circ$	
$V_{10} = 1.57 fps$	
$V_2 = 1.48 fps$	
therefore, $Q_2 = 0.89'$	
min. length of swale = 78'	
req. $L = 89'$	
$I_2 = 4.4 in./hr.$	$Q_2 = 3.0 cfs$
$I_{10} = 5.8 in./hr.$	$Q_{10} = 3.75 cfs$
$DA = 0.62 ac.$	
$T_c = 10 min.$	
Avg. $c = 0.88$	



FROM STA. 183+78 TO STA. 185+78 -L- (RT) GRASS SWALE DATA (from basin #1) $b = 2'$ $m = 3:1$ $n = 0.040$ $\theta = 0.68^\circ$ $V_{10} = 1.55 fps$ $V_2 = 1.48 fps$ therefore, $Q_2 = 1.34'$ $Q_{10} = 1.34'$ min. length of swale = 192' req. $L = 243'$ $I_2 = 4.4 in./hr.$, $Q_2 = 9.2 cfs$ $I_{10} = 5.8 in./hr.$, $Q_{10} = 11.7 cfs$ $DA = 2.43 ac.$ $T_c = 10 min.$ Avg. $c = 0.88$ Maximum length possible	FROM STA. 185+78 TO STA. 186+57 -L- (RT) GRASS SWALE DATA $b = 2'$ $m = 3:1$ $n = 0.040$ $\theta = 0.68^\circ$ $V_{10} = 1.55 fps$ $V_2 = 1.48 fps$ therefore, $Q_2 = 1.34'$ $Q_{10} = 1.34'$ min. length of swale = 78' req. $L = 82'$ $I_2 = 4.4 in./hr.$, $Q_2 = 2.3 cfs$ $I_{10} = 5.8 in./hr.$, $Q_{10} = 3.0 cfs$ $DA = 0.62 ac.$ $T_c = 10 min.$ Avg. $c = 0.88$
---	---



MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PUE AREA WILL HAVE DUAL USE.
PDE WILL BE FROM RW LINE TO LIMITS SHOWN FOR PDE.

9/29/09 RW REVISION: REVISED LABEL RIGHTS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.
 2/28/08 RW REVISION: REMOVED PERMANENT DRAINAGE EASEMENT AND REVERSED RIGHT OF WAY ON PARCEL 19; REMOVED PERMANENT DRAINAGE EASEMENT AND ADDED RIGHT OF WAY
 2/28/08 RW REVISION: REMOVED PERMANENT DRAINAGE EASEMENT AND REVERSED RIGHT OF WAY ON PARCEL 15; CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY AND REMOVED PERMANENT UTILITY
 EASEMENT ON PARCEL 17, 19, AND 21.

8/17/99
 REVISIONS
 13 LEE VARRICK MOORE, JR.
 14 CARLAND A. BLAIR, JR.
 15 JASON ERIC HARRIS
 16 CLAUDE EUGENE LEWIS
 17 WILLIAM J. NAGY
 18 MOHAMMAM & GHULAN KHAN
 19 LINDA SIMMONS MANSFIELD
 20 KEITH & SARAH CHARLES
 21 CHAE HUN CHA
 22 ROBERT C. HIGHTOWER
 WAREN & KEVIN DILL

MATCHLINE STA. 198+00.00

145.33'
185°08'40"E

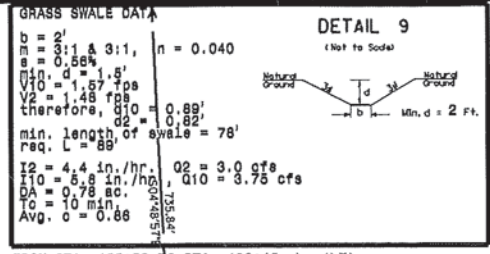
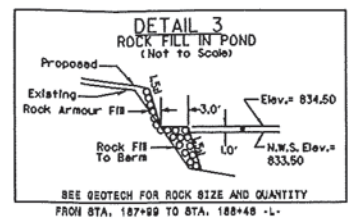
8/17/98

REVISIONS

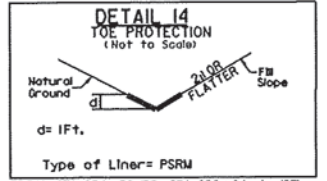
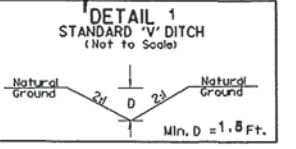
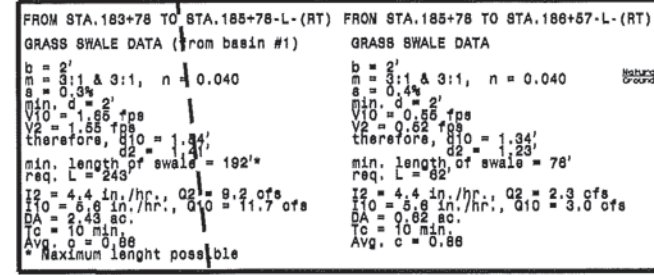
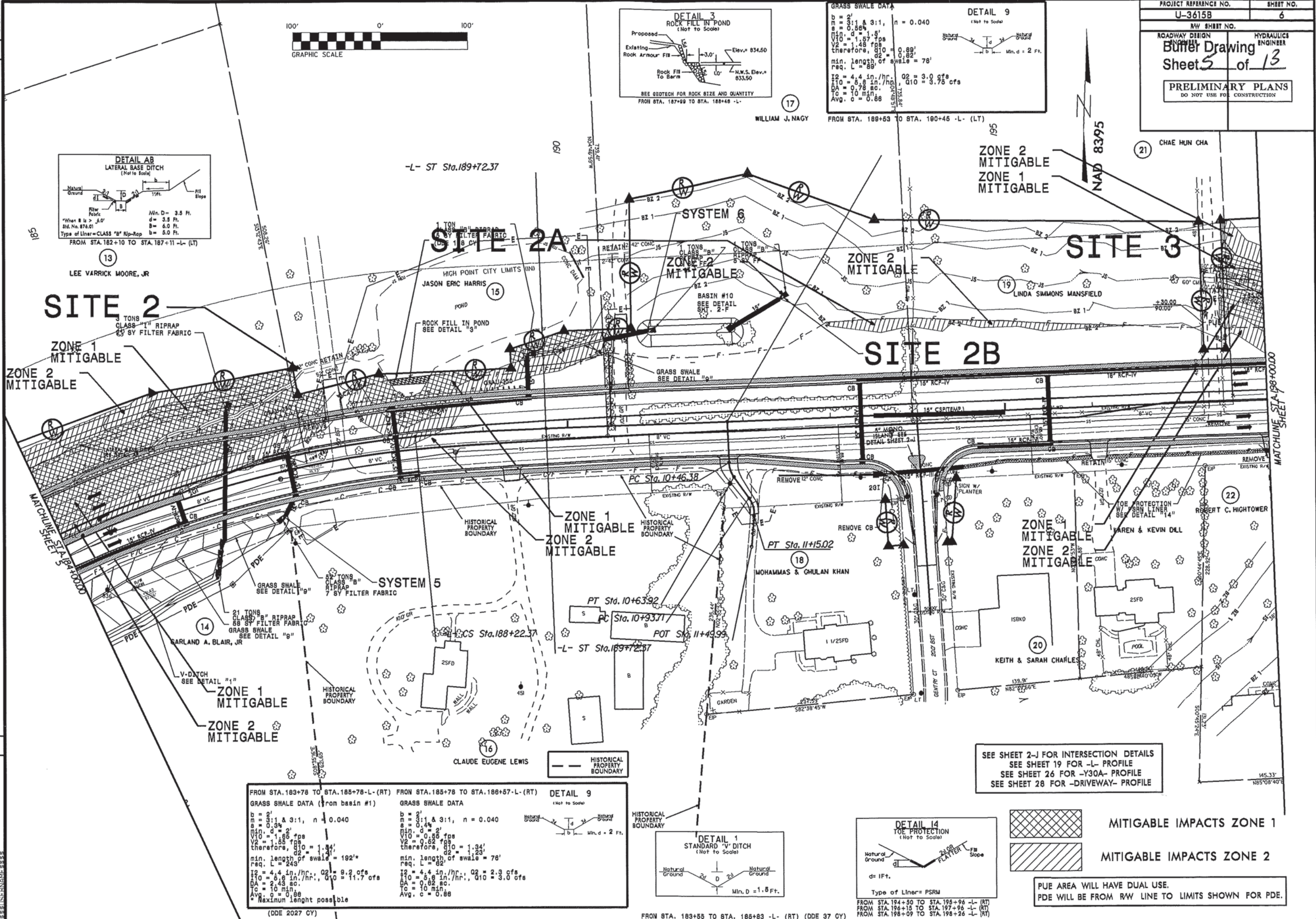
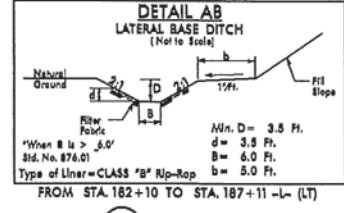
9/29/09 RW REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.

2/29/12 RW REVISION: REMOVE TEMPORARY EASEMENT FROM PARCEL 15 AND PARCEL 16. CHANGED PERMANENT DRAINAGE EASEMENT TO RIGHT OF WAY AND REMOVED PERMANENT UTILITY EASEMENT ON PARCELS 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

4/11/13 RW REVISION: ADDED TEMPORARY CONSTRUCTION EASEMENT AROUND DETENTION POND ON PARCEL 15. - SJK



PROJECT REFERENCE NO.	SHEET NO.
U-3615B	6
Roadway Design	Hydraulic Engineer
Buffer Drawing	Sheet 5 of 13
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	



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 RW LINE TO LIMITS SHOWN FOR PDE.

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

8/17/99

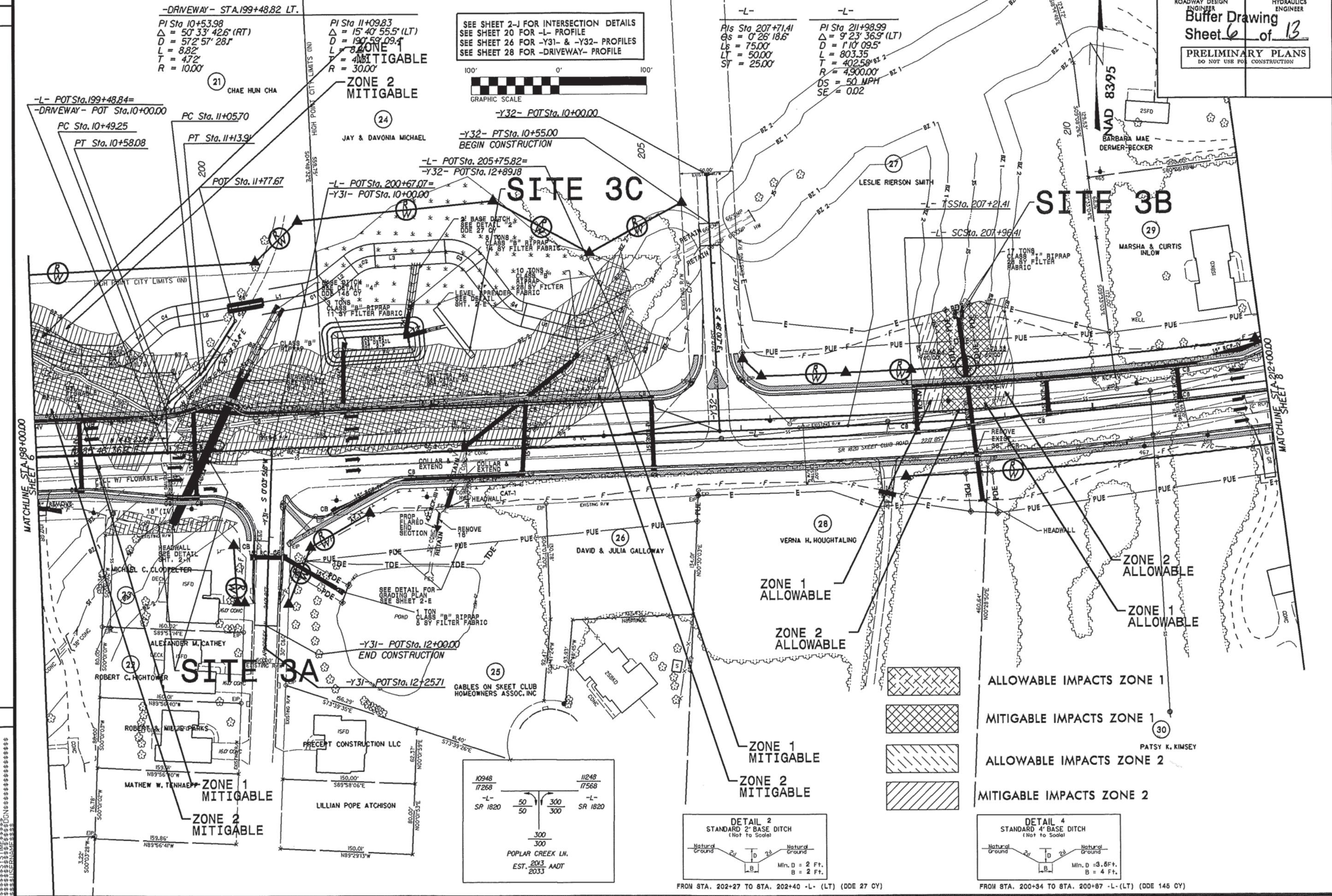
REVISIONS

9/29/09 RW REVISION: REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES.

5/29/02 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 OVER PARCEL 28. - SIK

5/17/02 RW REVISION: CHANGED PERMANENT UTILITY EASEMENT PERMANENT DRAINAGE EASEMENT OVERLAY TO DRAINAGE UTILITY EASEMENT ON PARCEL 27. - SIK

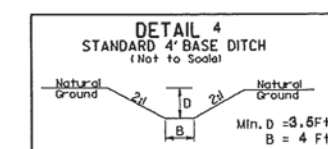
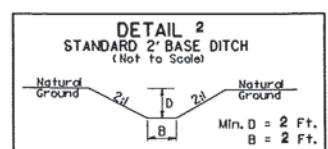
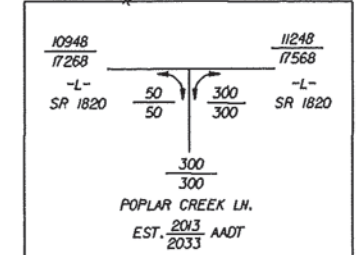
7/12/02 RW REVISION: CHANGED PERMANENT UTILITY EASEMENT TO TEMPORARY CONSTRUCTION EASEMENT AND ADDED DRIVEWAY PIPE ON PARCEL 28. - SIK



*****SYTIME*****
*****DOWN*****

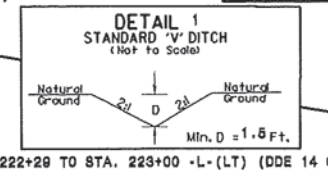
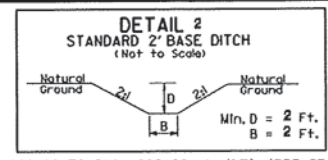
MATCHLINE STA 212+00.00

MATCHLINE STA 198+00.00

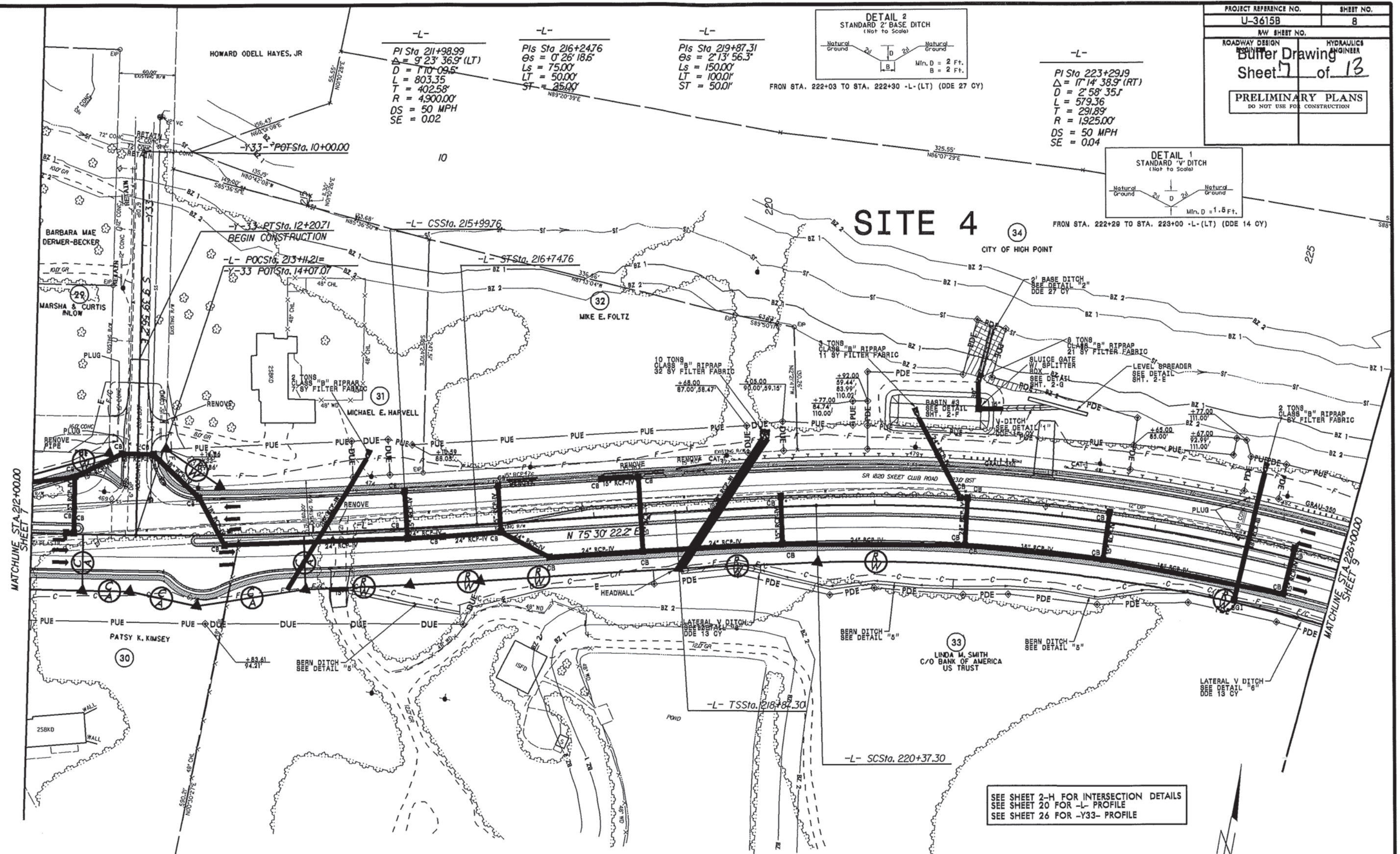




FROM STA. 202+27 TO STA. 202+40 -L- (LT) (DDE 27 CY)

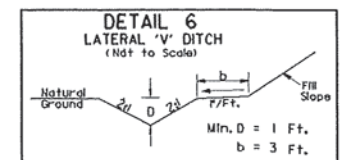
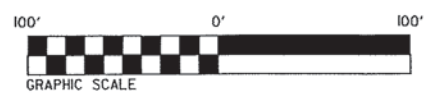
FROM STA. 200+34 TO STA. 200+87 -L- (LT) (DDE 146 CY)



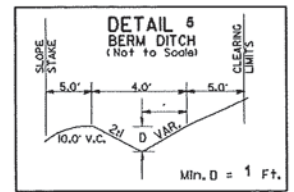
- REVISIONS
1. REVISED LABEL OFFSETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES. 9/29/09
 2. CHANGED PUE/PDE OVERLAP TO DUE ON PARCEL 32.
 3. NAME CHANGE ON PARCELS 29 AND 32.
 4. CHANGED PUE TO DUE CLOSED CLAIM ON PARCEL 32.
 5. ADDED 3" CURB CUTS ON PARCEL 32.
 6. CHANGE PDE TO DUE ON PARCEL 31.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



 MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2



FROM STA. 218+80 TO STA. 219+76 -L- (RT) (DDE 13 CY)
FROM STA. 223+00 TO STA. 228+00 -L- (RT) (DDE 13 CY)



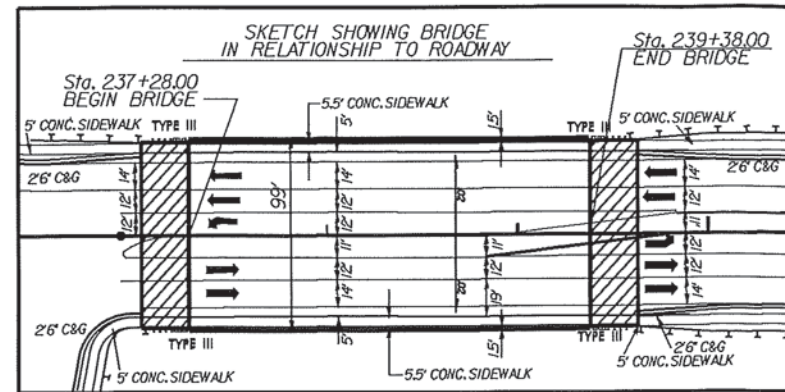
FROM STA. 215+35 TO STA. 218+50 -L- (RT)
FROM STA. 219+75 TO STA. 221+88 -L- (RT)
FROM STA. 221+88 TO STA. 224+75 -L- (RT)

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

NAD 83/95

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

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



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

NOTE:
NO DIRECT DISCHARGE INTO THE WATER FROM THE BRIDGE

Sta. 239+62.00 -L-
END APPROACH
SLAB

Sta. 239+38.00 -L-
END BRIDGE

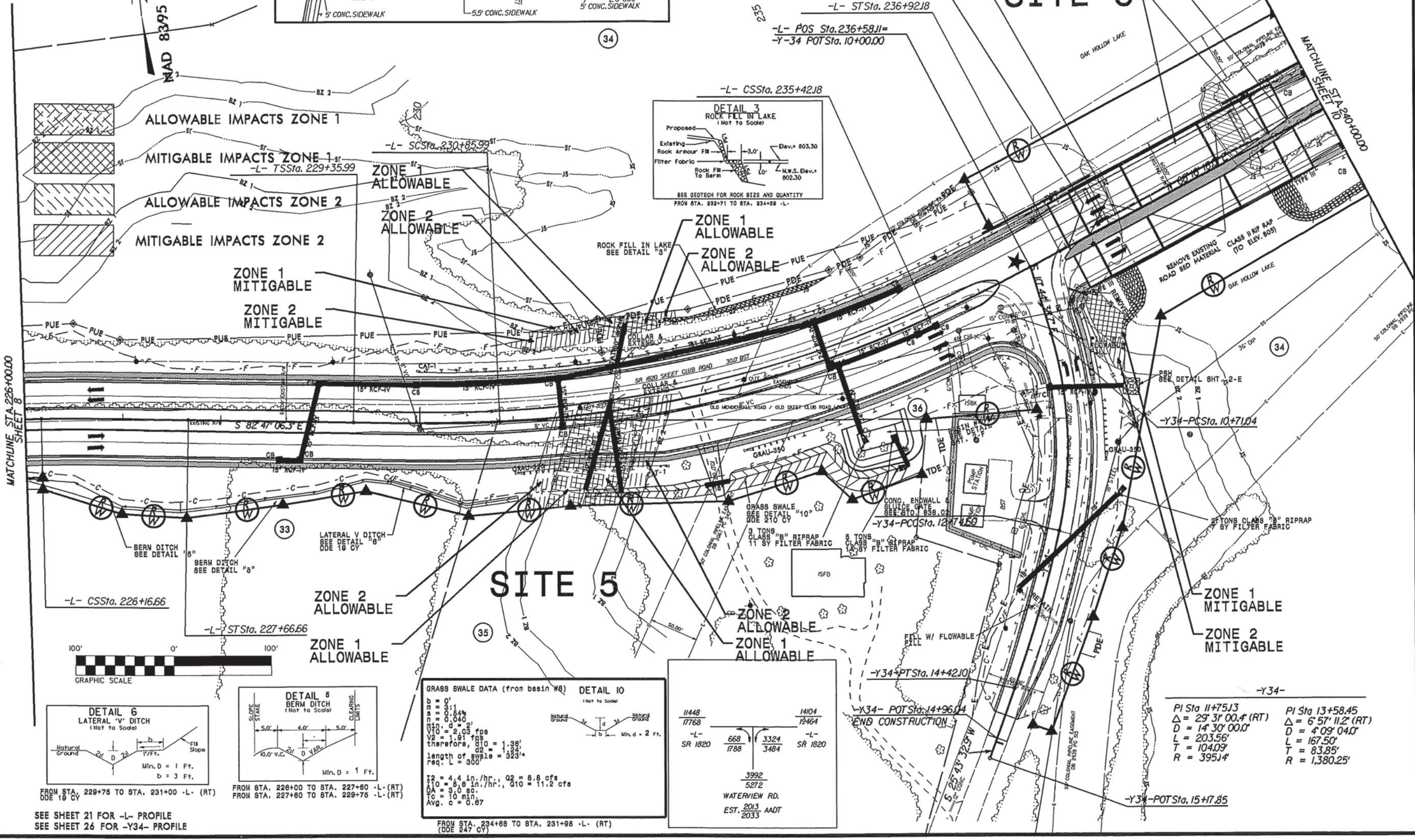
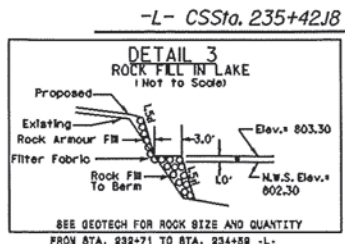
Sta. 237+28.00 -L-
BEGIN BRIDGE

Sta. 237+04.00 -L-
BEGIN APPROACH
SLAB

-L- STSta. 236+92.18

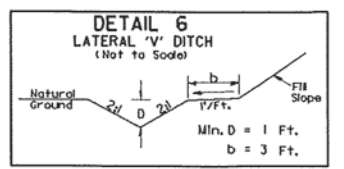
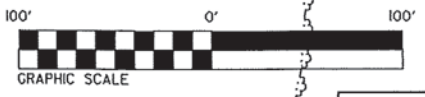
SITE 6

-L- POS Sta. 236+58.11 =
-Y-34 POT Sta. 10+00.00

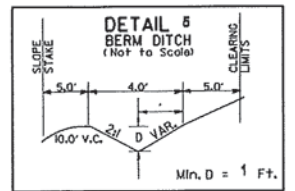


MATCHLINE STA. 226+00.00
SHEET 8

MATCHLINE STA. 240+00.00
SHEET 10



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



FROM STA. 226+00 TO STA. 227+80 -L- (RT)
FROM STA. 227+80 TO STA. 229+75 -L- (RT)

GRASS SWALE DATA (from basin #8) DETAIL 10 (Not to Scale)

b	= 0'
a	= 0.84'
n	= 0.04
n ₁₀	= 2'
V ₁₀	= 2.03 fps
V ₂	= 1.81 fps
Therefore, Q ₁₀	= 1.38 cfs
length of swale	= 323'
req. L	= 300'

I₂ = 4.4 in./hr.; Q₂ = 8.8 cfs
I₁₀ = 8.8 in./hr.; Q₁₀ = 11.2 cfs
Q_A = 3.0 cfs
T_c = 10 min.
Avg. c = 0.67

11448 17768	14104 13464
-L- SR 1820	-L- SR 1820
668 1788	3324 3484
3992 5272	
WATERVIEW RD. EST. 2013 2033	

PI Sta 11+75.13
Δ = 29' 31" 00.4" (RT)
D = 4' 09" 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'

8/17/99

REVISIONS

1. REVISED LABEL SHEETS FOR EXISTING RIGHT OF WAY TO ACTUAL DISTANCES 9/29/99

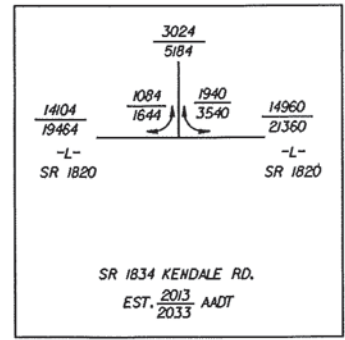
2. NAME CHANGE ON PARCEL 35.

3. REVISED RW TO PROPERTY LINE; ADDED NOTE TO TOWNS FOR EAST FENCE; ADDED NOTE TO TOWNS FOR POWER TRANSMISSION ON PARCEL 35.

5/1/02 RW REVISION: NAME CHANGE TO ESTATE OF OLLIE MAE ALRED ON PARCEL 35. - SJK

-L-
PI Sta 248+06.60
Δs = 4' 37" 14.3"
Ls = 150.00'
LT = 100.03'
ST = 50.03'

-L-
PI Sta 253+07.94
Δs = 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



-Y35-
PI Sta 11+02.3
Δs = 6' 51" 33.6" (LT)
D = 3' 06" 54.2"
L = 225.20'
T = 110.23'
R = 1,839.32'

-L-
PI Sta 241+78.43
Δs = 0' 54" 01.3"
Ls = 110.00'
LT = 73.33'
ST = 36.67'

-L-
PI Sta 242+96.11
Δs = 2' 39" 07.6" (LT)
D = 1' 38" 13.3"
L = 162.01'
T = 81.02'
R = 3,500.00'
DS = 50 MPH
SE = 0.03

-L-
PI Sta 244+13.77
Δs = 0' 54" 01.3"
Ls = 110.00'
LT = 73.33'
ST = 36.67'

8/17/99

REVISIONS

1. REVISED LABELS FOR EXISTING RIGHT-OF-WAY TO ACTUAL DISTANCES 9/29/99

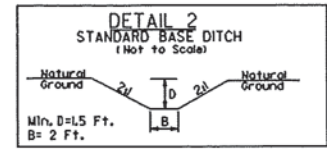
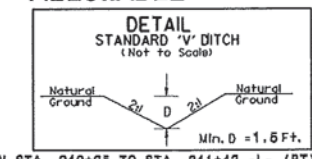
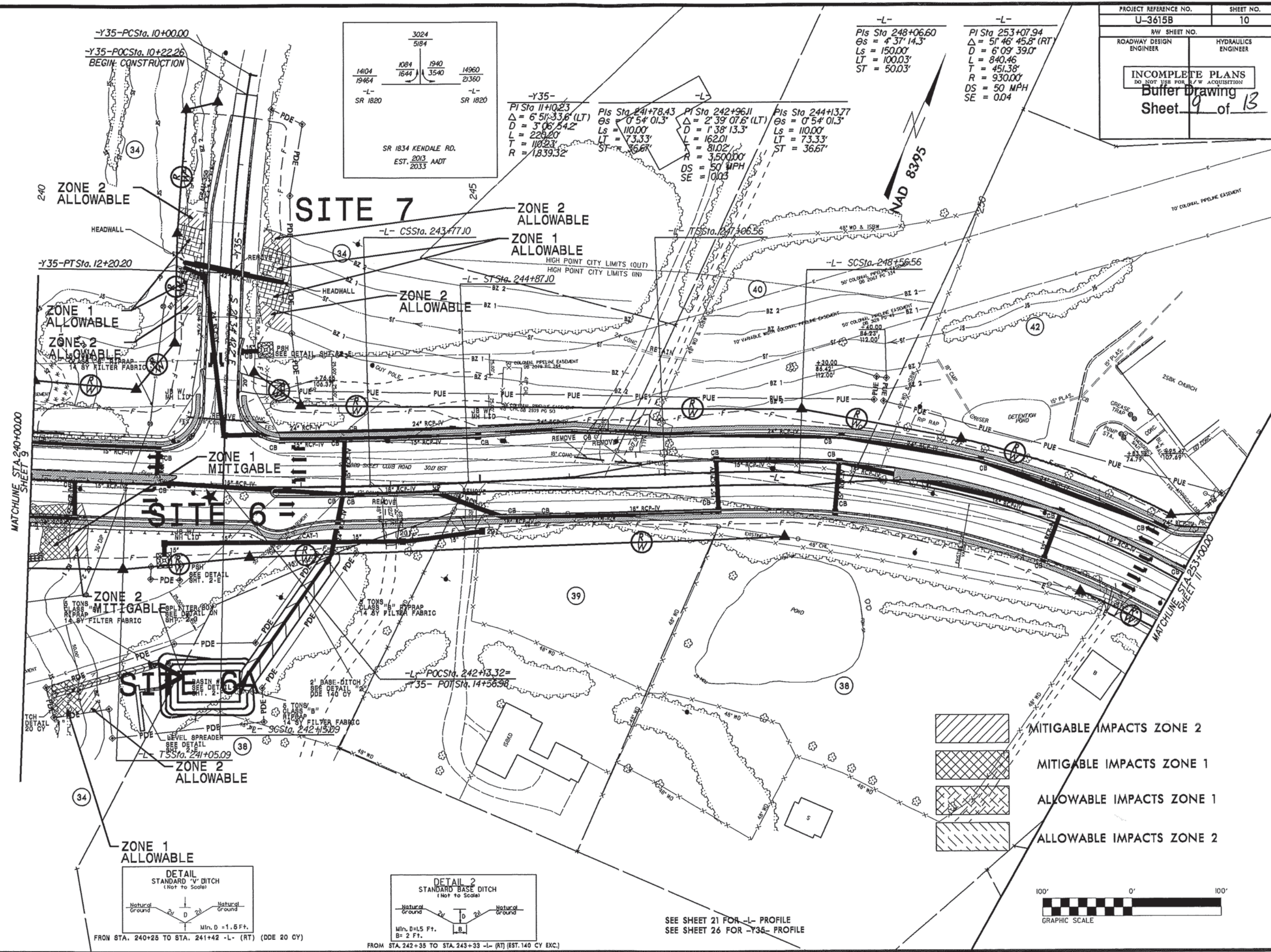
2. NAME CHANGE ON PARCEL 38 AND COMBINE WITH PARCEL 41

3. NAME CHANGE ON PARCEL 42

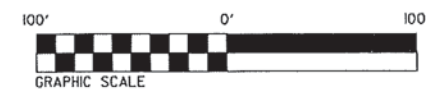
02/25/93 RW REVISION: THE PDE WAS REVISED AROUND RELOCATED BASIN #5 ON PARCELS 34 AND 38 AND PDE WAS ADDED FROM -L- STA. 241+36.00 TO STA. 241+68.00 RT. ON PARCEL 34. - TEM

MATCHLINE STA. 240+00.00
SHEET 9

MATCHLINE STA. 253+00.00
SHEET 11



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



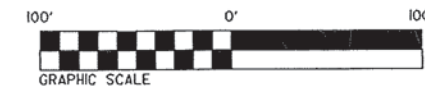
FROM STA. 240+25 TO STA. 241+42 -L- (RT) (DDE 20 CY)

FROM STA. 242+35 TO STA. 243+33 -L- (RT) (EST. 140 CY EXC.)

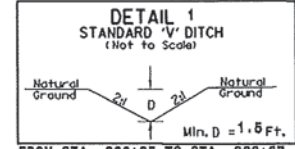
-L-
 PI Sta 253+07.94
 $\Delta = 51' 46" 45.8" (RT)$
 $D = 6' 09" 39.0"$
 $L = 840.46$
 $T = 451.38$
 $R = 930.00$
 $DS = 50 MPH$
 $SE = 0.04$

-L-
 PIs Sta 257+47.06
 $\Delta = 4' 37" 14.3"$
 $Es = 150.00'$
 $Ls = 150.00'$
 $LT = 100.03'$
 $ST = 50.03'$

-Y37N-
 PI Sta 14+00.24
 $\Delta = 25' 49" 44.9" (LT)$
 $D = 13' 06" 36.9"$
 $Ls = 197.01'$
 $T = 100.21'$
 $R = 437.03'$

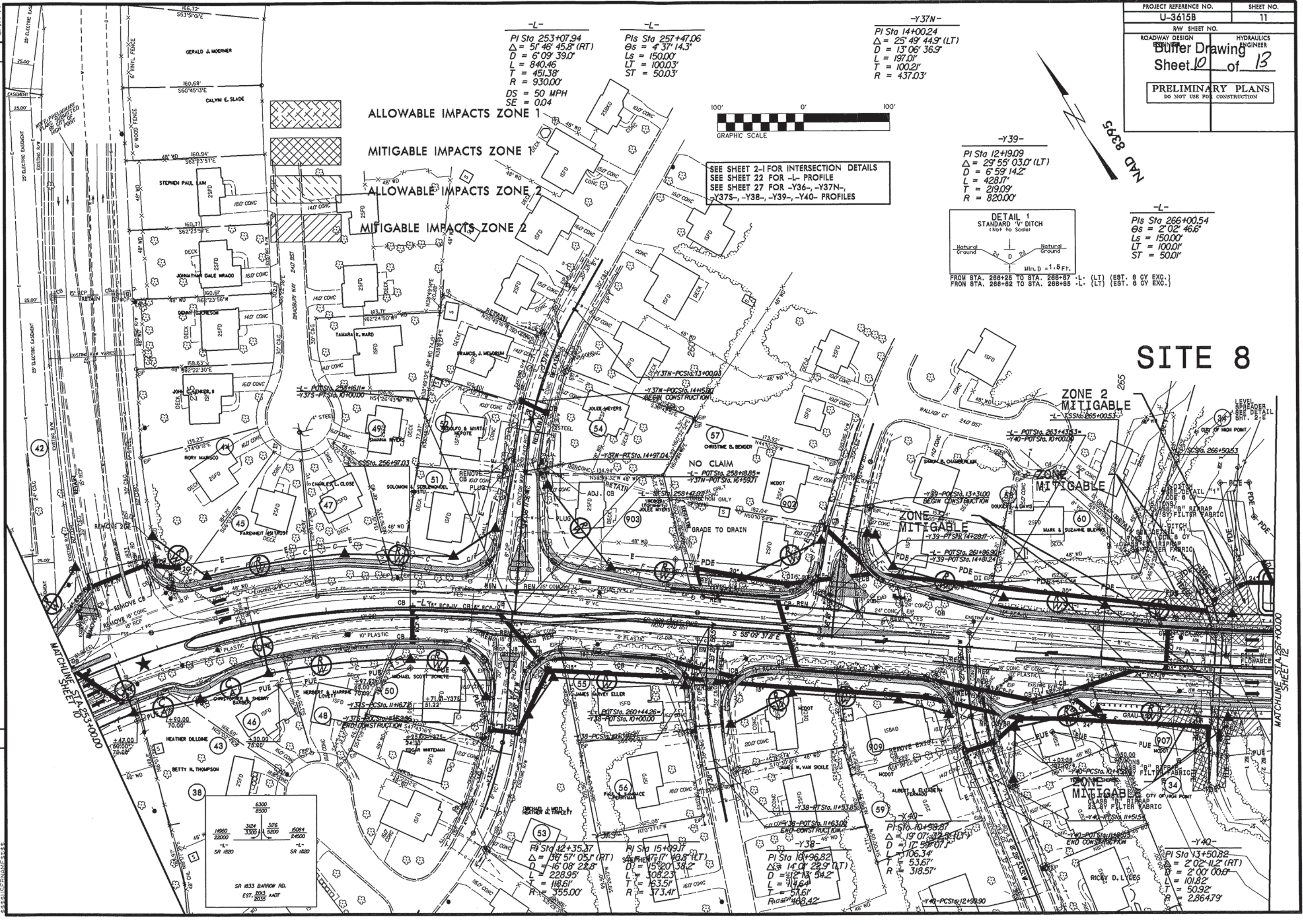


-Y39-
 PI Sta 12+19.09
 $\Delta = 29' 55" 03.0" (LT)$
 $D = 6' 59" 14.2"$
 $L = 428.71'$
 $T = 219.09'$
 $R = 820.00'$



-L-
 PIs Sta 266+00.54
 $\Delta = 2' 02" 46.6"$
 $Ls = 150.00'$
 $LT = 100.01'$
 $ST = 50.01'$

- 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, 55, 59, AND 60
 3. PDE LINE SHIFT ON PARCEL 58
 4. NAME CHANGE ON PARCELS 902, 903 AND 909 TO 'NO CLAIM'
 5. 7/27/12 R/W REVISION: REMOVED TEMPORARY CONSTRUCTION EASEMENT AND CLAIM ON PARCEL 57. SIX



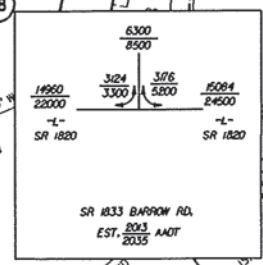
SITE 8

ZONE 2
MITIGABLE

ZONE 1
MITIGABLE

ZONE 1
MITIGABLE

ZONE 1
MITIGABLE



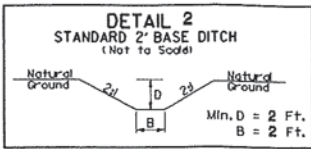
PI Sta 12+35.37
 $\Delta = 36' 57" 05.1" (RT)$
 $D = 16' 08" 22.8"$
 $L = 228.95'$
 $T = 118.61'$
 $R = 355.00'$

PI Sta 15+09.17
 $\Delta = 17' 17" 40.8" (LT)$
 $D = 15' 20" 38.2"$
 $L = 228.23'$
 $T = 163.51'$
 $R = 173.41'$

PI Sta 18+96.82
 $\Delta = 14' 01" 22.9" (LT)$
 $D = 12' 13" 54.2"$
 $L = 91.64'$
 $T = 51.61'$
 $R = 468.42'$

PI Sta 10+98.87
 $\Delta = 19' 07" 22.2" (LT)$
 $D = 17' 58" 07.1"$
 $L = 106.34'$
 $T = 53.67'$
 $R = 318.57'$

PI Sta 13+50.82
 $\Delta = 2' 02" 11.2" (RT)$
 $D = 2' 00" 00.6"$
 $L = 101.82'$
 $T = 50.92'$
 $R = 2,864.79'$



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)

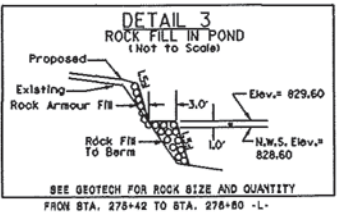
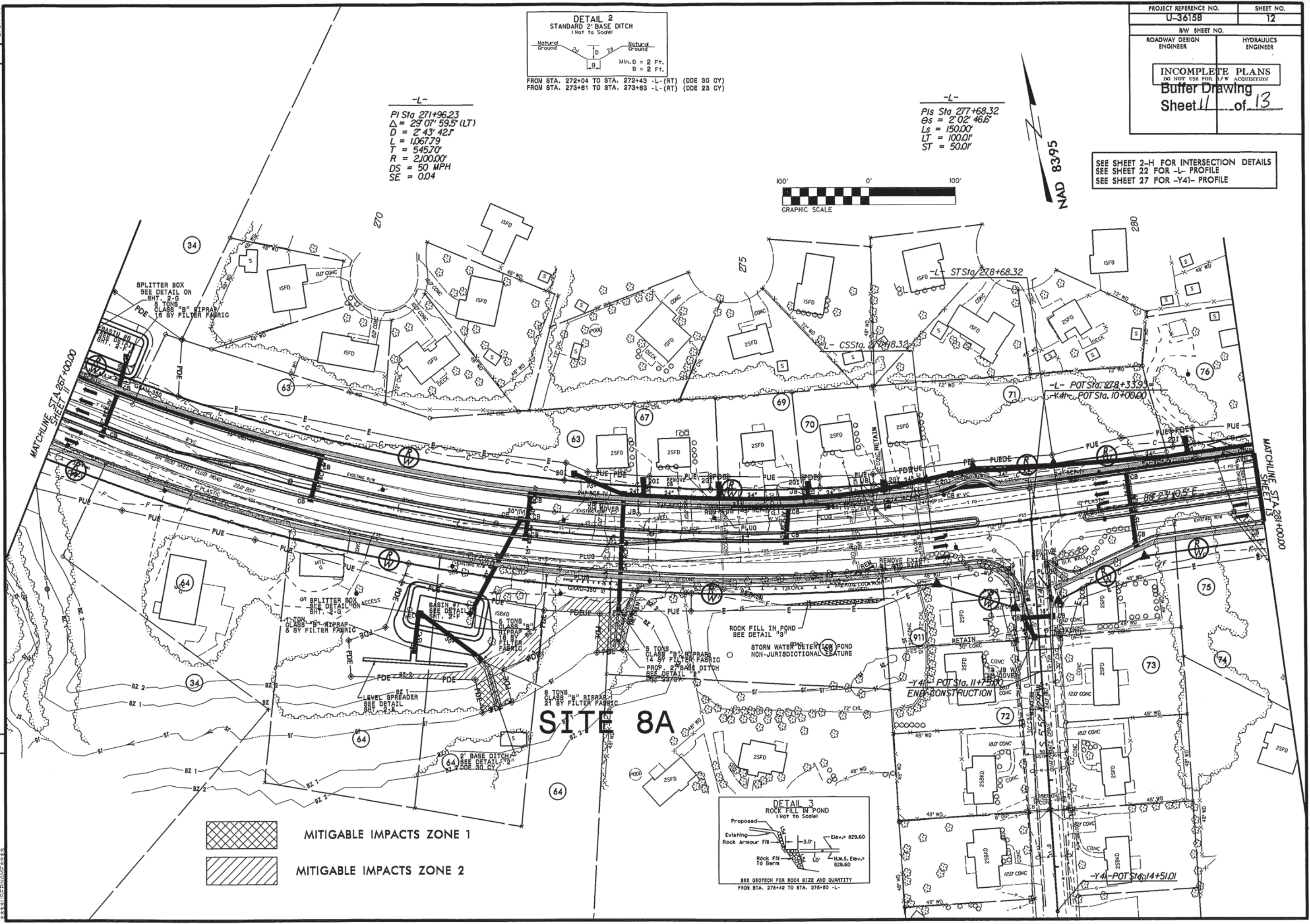
-L-
 PI Sta 271+96.23
 $\Delta = 29^{\circ} 07' 59.5''$ (LT)
 $D = 2' 43' 42.7''$
 $L = 1,067.79$
 $T = 545.70'$
 $R = 2,100.00'$
 $DS = 50$ MPH
 $SE = 0.04$

-L-
 PIs Sta 277+68.32
 $\Theta_s = 2^{\circ} 02' 46.6''$
 $L_s = 150.00'$
 $LT = 100.00'$
 $ST = 50.0'$



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

- 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, 78, 79, DRIVE ENTRANCE CHANGE
 5. NAME CHANGE ON PARCEL 91 TO NCDOT.
- 5/24/12 RW REVISION: COMBINED PARCELS 064, 065, AND 066 INTO ONE PARCEL AS 064 - SUK



MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2

BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)	STRUCTURE SIZE / TYPE	IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)
			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)		
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		51						
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	15738		90736	64268		45810	29829

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 34962.1.1 (U-3615B)

4/9/2013

Sheet 12 of 13

BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)	STRUCTURE SIZE / TYPE	IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)
			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)		
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

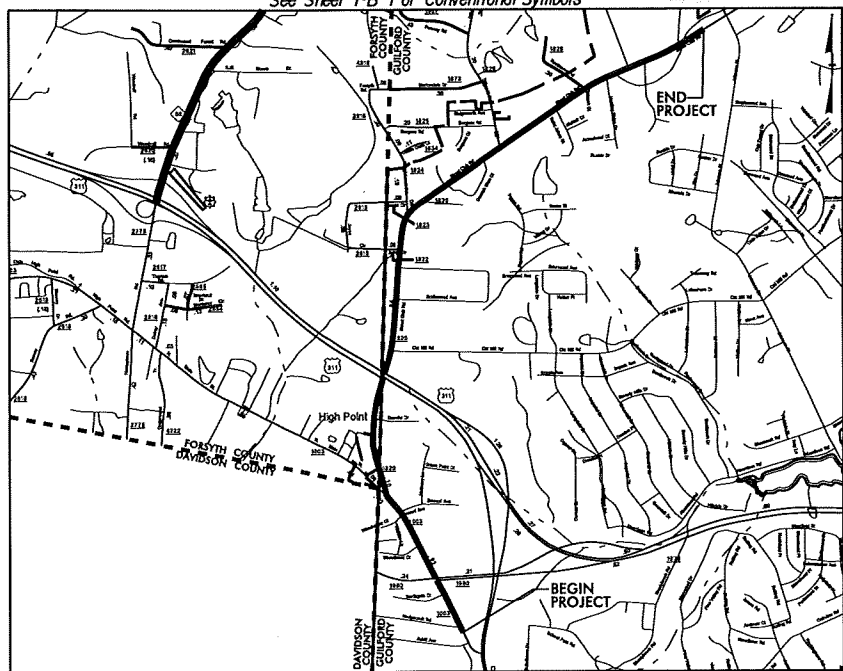
SHEET 13 OF 13

9/10/13

TIP: U-3615A

CONTRACT:

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



VICINITY MAP

Not To Scale

RW PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

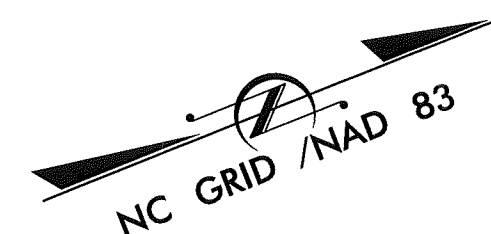
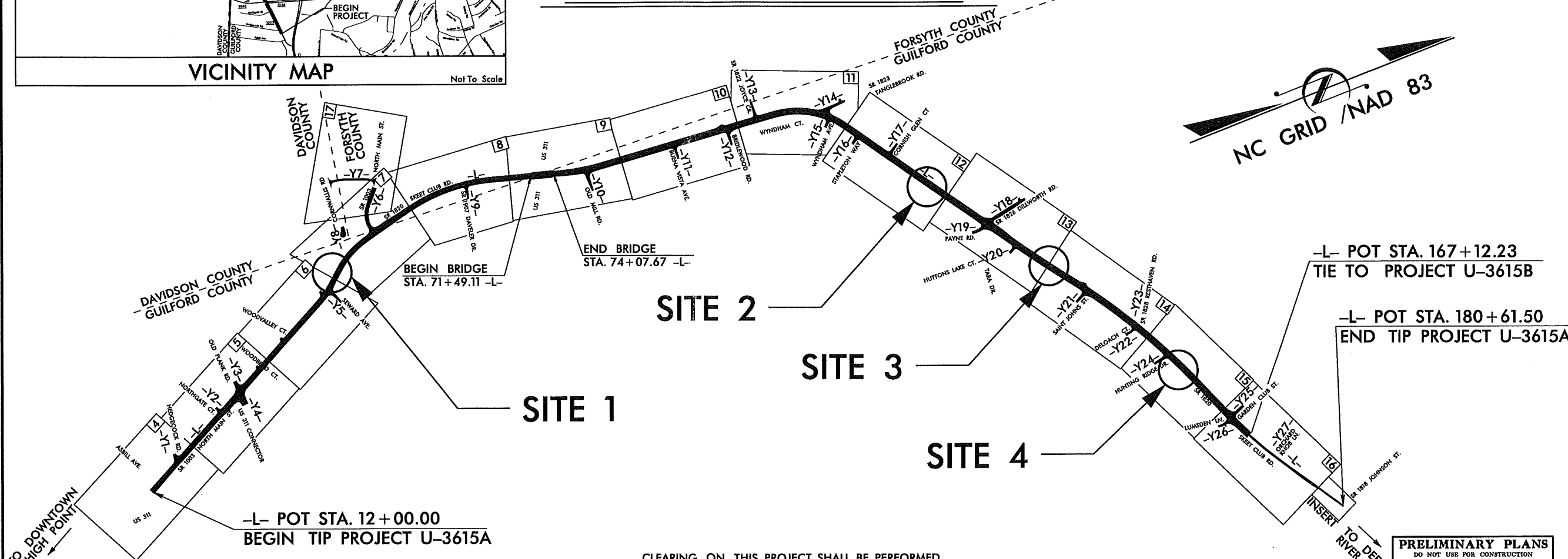
LOCATION: SR 1003 (NORTH MAIN STREET) AND SR 1820
(SKEET CLUB ROAD) BETWEEN US 311 AND
SR 1818 (JOHNSON STREET).

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	
WM NO.	P.A. PROJ. NO.	DESCRIPTION	
34962.1.1	STP-1820(2)	P.E.	
34962.2.2	STP-1820(4)	RW & UTILITIES	

Buffer Drawing
Sheet 1 of 9



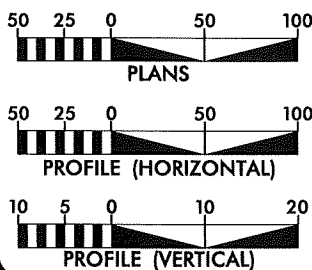
-L- POT STA. 167+12.23
TIE TO PROJECT U-3615B

-L- POT STA. 180+61.50
END TIP PROJECT U-3615A

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



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.

NC DOT CONTACT: CATHY HOUSER, PE
PROJECT ENGINEER, ROADWAY DESIGN UNIT

Prepared in the Office of: STEWART ENGINEERING, INC.



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.

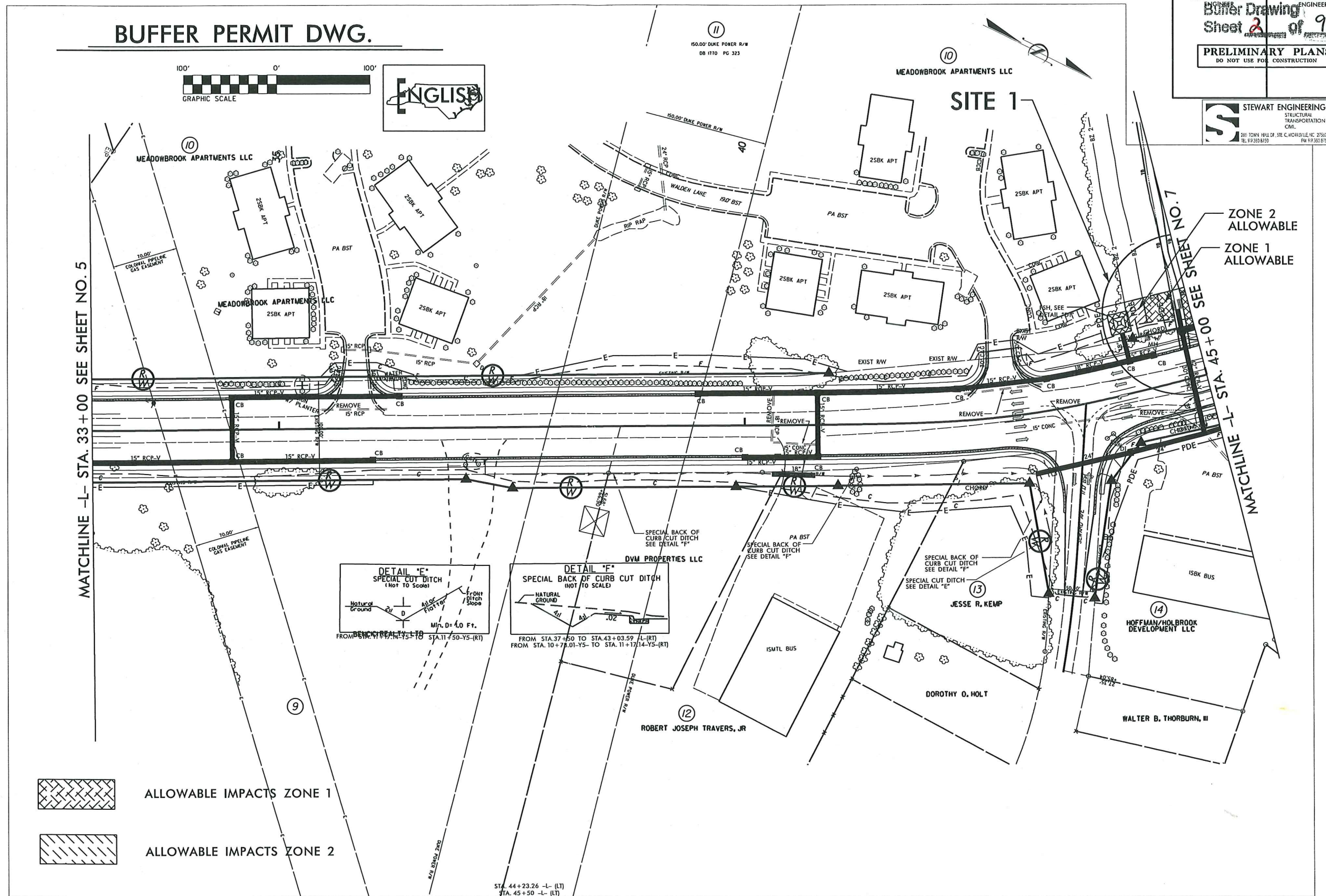
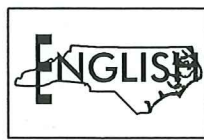
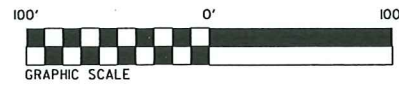
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

PROJECT REFERENCE NO. U-3615A	SHEET NO. 6
RAW SHEET NO.	
ROADWAY DESIGN Buffer Drawing	HYDRAULICS ENGINEER
Sheet 2 of 9	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 STEWART ENGINEERING STRUCTURAL TRANSPORTATION CIVIL <small>260 TOWN HALL DR. STE. C, CHARLOTTE, NC 27503 TEL: 919.333.8750 FAX: 919.333.8752</small>	

BUFFER PERMIT DWG.

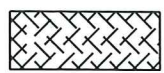


MATCHLINE -L- STA. 33+00 SEE SHEET NO. 5

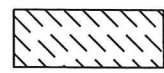
MATCHLINE -L- STA. 45+00 SEE SHEET NO. 7

ZONE 2 ALLOWABLE

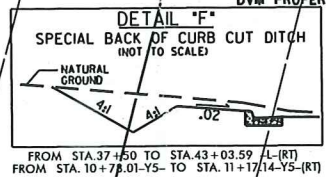
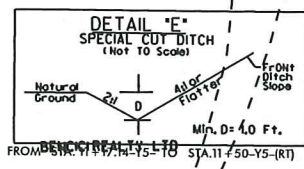
ZONE 1 ALLOWABLE



ALLOWABLE IMPACTS ZONE 1



ALLOWABLE IMPACTS ZONE 2

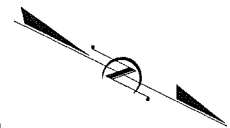
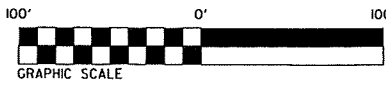


REVISIONS

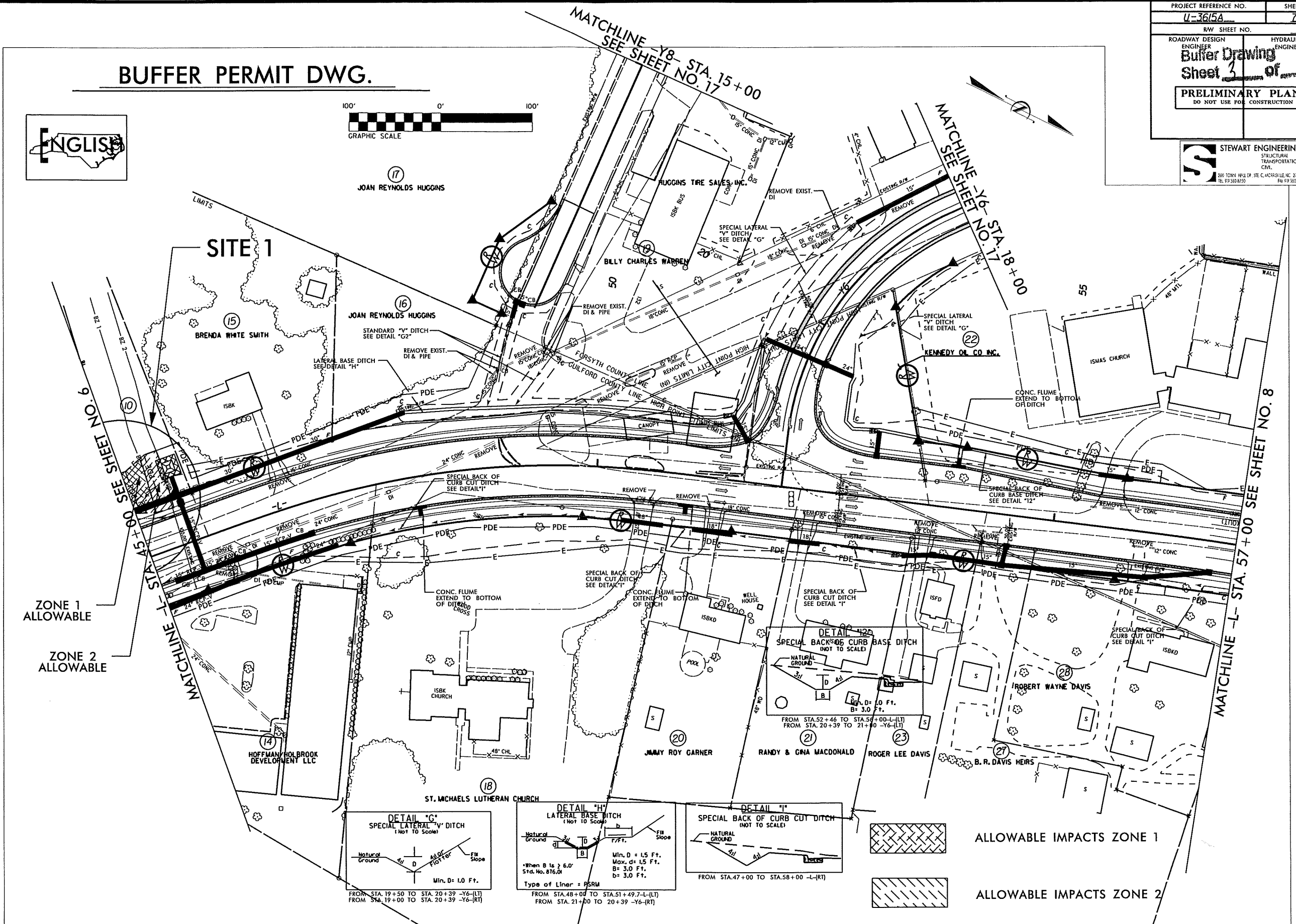
DATE: 8/17/09

8/17/99

BUFFER PERMIT DWG.



PROJECT REFERENCE NO.	SHEET NO.
U-3615A	7
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Buffer Drawing	9
Sheet 3 of 9	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



ZONE 1 ALLOWABLE

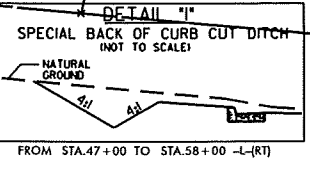
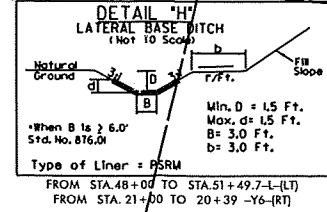
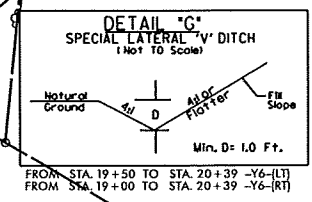
ZONE 2 ALLOWABLE

MATCHLINE - L - STA. 15+00 SEE SHEET NO. 6

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

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

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



ALLOWABLE IMPACTS ZONE 1



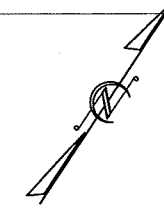
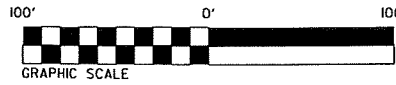
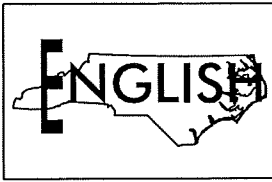
ALLOWABLE IMPACTS ZONE 2

REVISIONS

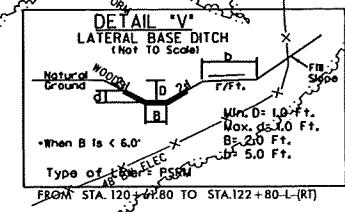
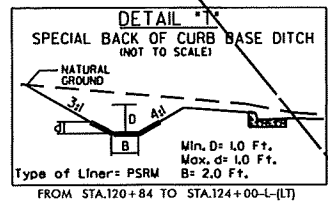
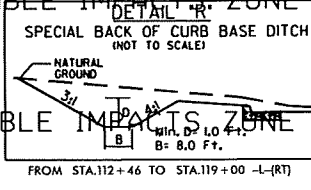
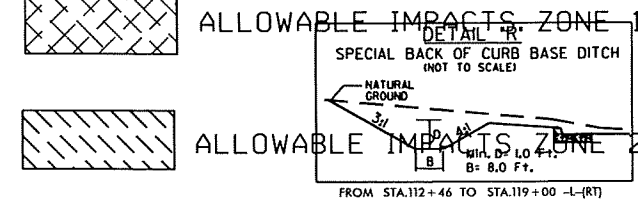
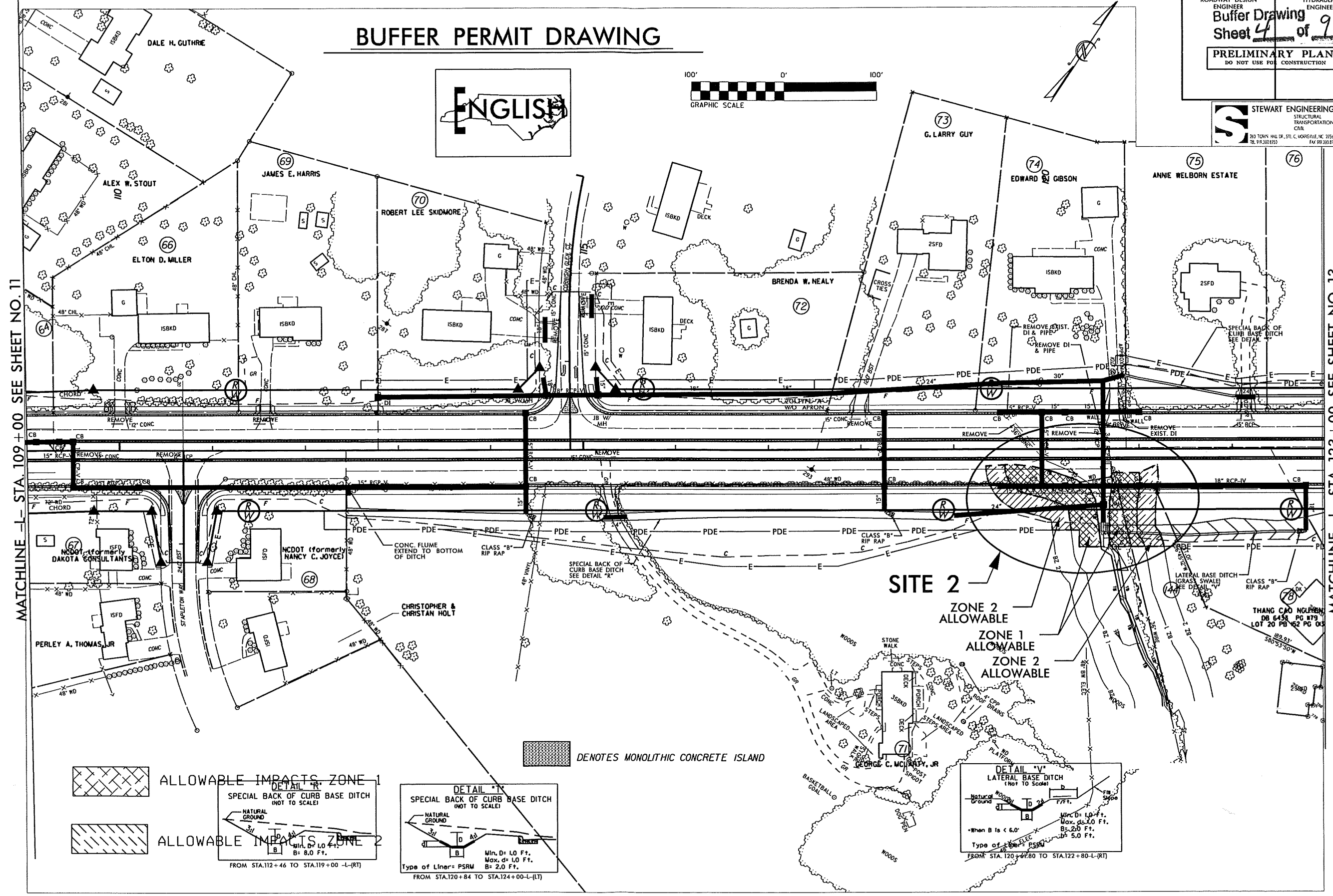
1. 8/17/99
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PROJECT REFERENCE NO. U-3615A	SHEET NO. 12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER Buffer Drawing	HYDRAULICS ENGINEER
Sheet 4 of 9	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

BUFFER PERMIT DRAWING



STEWART ENGINEERING
STRUCTURAL
TRANSPORTATION
CIVIL
283 TOWN HALL DR., STE. C. MORRISVILLE, NC 27560
TEL. 919.388.8753 FAX 919.388.8753



▨ DENOTES MONOLITHIC CONCRETE ISLAND

8.17/99
REVISIONS

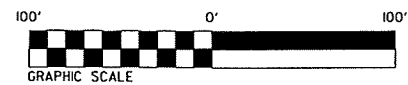
MATCHLINE -L- STA. 109+00 SEE SHEET NO. 11

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

SY-TIMES
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8/17/18

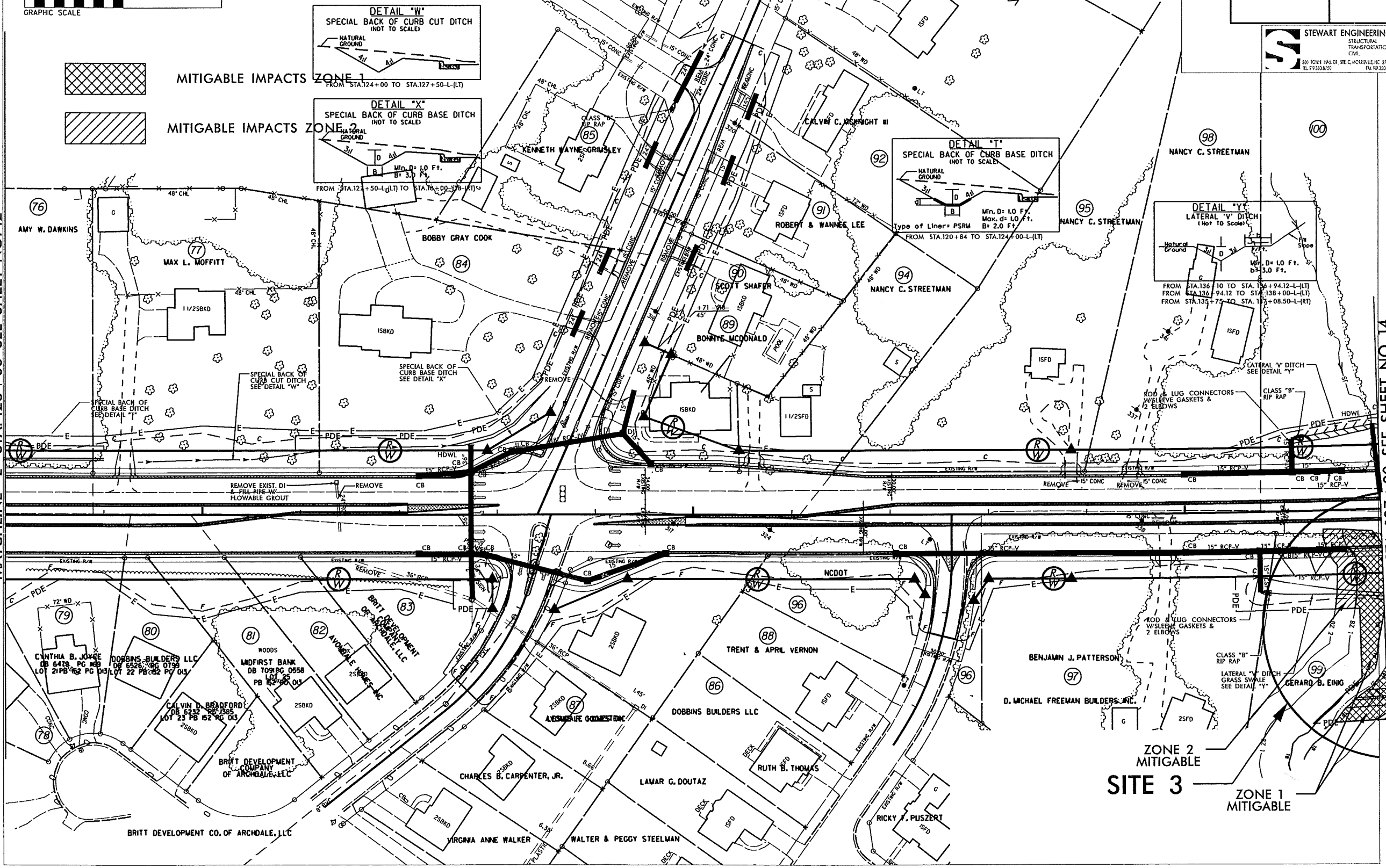
BUFFER PERMIT DRAWING



PROJECT REFERENCE NO.	SHEET NO.
U-3615A	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Buffer Drawing	Sheet 5 of 9
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	



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



ZONE 2 MITIGABLE
SITE 3
 ZONE 1 MITIGABLE


REVISIONS

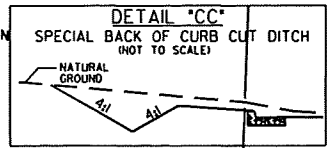
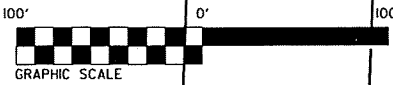
MATCHLINE -L- STA. 137+00 SEE SHEET NO. 14

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B.17/99

BUFFER PERMIT DRAWING

PROJECT REFERENCE NO. U-3615A	SHEET NO. 15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER Buffer Drawing	HYDRAULICS ENGINEER
Sheet 7 of 9	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 STEWART ENGINEERING STRUCTURAL TRANSPORTATION CIVIL 240 TOWN HILL DR., STE. C. WARRAVILLE, NC 27580 TEL. 919.330.8193 FAX 919.332.1752	



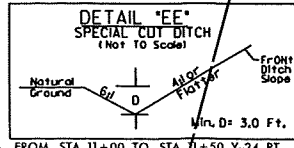
FROM STA. 143+00 TO STA. 146+00 -L-(LT)
 FROM STA. 148+00 TO STA. 148+00 -L-(LT)
 FROM STA. 149+50 TO STA. 152+00 -L-(LT)
 FROM STA. 156+00 TO STA. 160+00 -L-(LT)

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

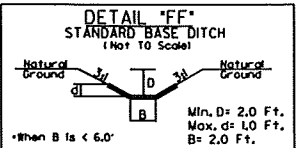
MATCHLINE -L- STA. 163+00 SEE SHEET NO. 16

 MITIGABLE IMPACTS ZONE 1

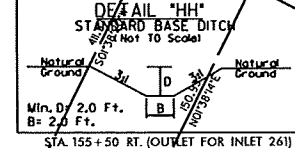
SITE 4
JOHN D. BAKER



FROM STA. 11+00 TO STA. 11+50 Y-24 RT.
Min. D= 3.0 Ft.



FROM STA. 154+13 TO STA. 156+99 -L- RT.
DDE = 174 CY, 262 SY PSRW
Min. D= 2.0 Ft.
Max. d= 10 Ft.
B= 2.0 Ft.



FROM STA. 155+50 RT. (OUTLET FOR INLET 261)
DDE=93 CY
Min. D= 2.0 Ft.
B= 2.0 Ft.

ZONE 2 MITIGABLE
ZONE 1 MITIGABLE
ZONE 1 MITIGABLE

REVISIONS
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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)**

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)
			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)		
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)