DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

REPLY TO
ATTENTION OF:

April 15, 2011

Regulatory Division

Action ID: SAW-2009-00876 (STIP R-3329 and R-2559, section R2559C in Mecklenburg and Union County, North Carolina)

Mr. Steve DeWitt, P.E.
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, North Carolina 27699

Dear Mr. DeWitt:

Enclosed is a Department of the Army permit to directly discharge dredged and/or fill material into jurisdictional wetlands and streams in order to facilitate the construction of the Monroe Connector/Bypass project, State Transportation Improvements Projects R-3329 and R-2559, section R-2559C in Mecklenburg and Union Counties, North Carolina. The proposed project originates west of Monroe, North Carolina just east of the intersection of US 74 and I-485 in Mecklenburg County. It follows existing US 74 for approximately one mile from just east of I-485 to east of Stallings Road (SR 1365) and then proceeds on a new location alignment from east of Stallings Road (SR 1365) to the project terminus at existing US 74 between the towns of Wingate and Marshville in Union County, a distance of approximately 19.7 miles. The proposed project is located in adjacent wetlands and tributaries that are hydrologically connected to the Yadkin River. More specifically, the proposed project begins at Latitude 35.1155 N/Longitude 80.6947 and terminates at Latitude 34.9848 N/Longitude 80.3890 W.

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

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

a. You must complete construction before December 31, 2016.

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

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

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

Sincerely,

Jefferson M. Ryscavage
Colonel, U.S. Army
District Commander

Enclosures

Copy furnished (with enclosures):

Chief, Source Data Unit
NOAA/National Ocean Service
ATTN: Sharon Tear N/CS261
1315 East-West Hwy., Rm 7316
Silver Spring, Maryland 20910-3282

Copies furnished (with special conditions and plans):

Mr. Ronald J. Mikulak, Chief
Wetlands Regulatory Section
61 Forsyth Street
Atlanta, Georgia 30303

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

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

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

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

RECEIVED
APR 13 2011
REG. WILM. FLD. OFC.

DEPARTMENT OF THE ARMY PERMIT

Permittee **North Carolina Turnpike Authority c/o Mr. Steven D. DeWitt**

Permit No. **SAW-2009-00876**

Issuing Office **CESAW-RG-A**

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

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

Project Description: **The proposed project involves the construction of approximately 20 miles of a four to six-lane controlled- access highway and service roads, the majority of which will be on new location in Mecklenburg and Union Counties.**

For STIP Project section R-2559C: US 74 to Austin Cheney Road, permanent impacts to jurisdictional wetlands total 1.58 acres, temporary impacts to wetlands total 1.69 acres, permanent impacts to jurisdictional streams total 2,472 linear feet and temporary impacts total 140 linear feet, permanent impacts to surface waters (ponds) total 0.57 acres. The design for this portion of the project was advanced to include a final hydraulic design and impacts for this section are based on that level of design.

For roadway STIP Project sections R-2559 B and R -3329: NCTA has prepared a functional design that shows permanent impacts to wetlands of approximately 6 acres based on a 70-foot median. Permanent impacts to jurisdictional streams total 16,186 linear feet. Additional impacts to open waters (ponds) total 2.55 acres. Based on information provided by the applicant, the NCTA will reduce the median width to 46-feet during final design thereby reducing impacts to streams and wetlands. We will add a special condition to the Department of the Army permit that requires the NCTA to construct a median of 46 feet or less.

Project Location: **In Mecklenburg and Union Counties, North Carolina**

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2016.** 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.

4.11.2011

(PERMITTEE) **NORTH CAROLINA TURNPIKE AUTHORITY** *(DATE)*

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

4-15-11

(DISTRICT COMMANDER) **JEFFERSON M. RYSCAVAGE** *(DATE)*
for COLONEL

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

(TRANSFEREE) *(DATE)*

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

SPECIAL CONDITIONS
SAW-2009-00876

WORK LIMITS

a. Failure to institute and carry out the details of the following special conditions below 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.

b. 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.

c. 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.

d. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

e. The Permittee shall not commence any activity, including but not limited to, clearing, grubbing, excavation, filling of any stream or wetland, or rerouting of any stream channel until such time that the District Engineer has been provided a copy of a final design for Sections A (Monroe Connector), B (US 601 to Austin Chaney Road), or C (Austin Chaney Road to end of project at US 74) of the Monroe Connector/Bypass and the permittee has received written approval from the District Engineer that such work may commence.

f. 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. All jurisdictional wetland lines on borrow and waste sites shall be verified by the Corps of Engineers and shown on the approved reclamation plans. The permittee shall ensure that all such areas comply with

Special Condition (b) of this permit, and shall require and maintain documentation of the location and characteristics of all borrow and disposal sites associated with this project. This information will include data regarding soils, vegetation and hydrology sufficient to clearly demonstrate compliance with the Special Condition (b). All information will be available to the USACE upon request. NCDOT shall require its contractors to complete and execute reclamation plans for each waste and borrow site and provide written documentation that the reclamation plans have been implemented and all work is completed. This documentation will be provided to the Corps of Engineers within 30 days of the completion of the reclamation work.

g. The permittee shall install barrier fencing around all wetlands that are not to be disturbed to make them readily visible and prevent construction equipment from inadvertently entering or disturbing these areas.

h. All authorized culverts will be installed to allow the passage of low stream flows and the continued movement of fish and other aquatic life as well as to prevent headcutting of the streambed. For all box culverts and for pipes greater than 48 inches in diameter, the bottom of the pipe will be buried at least one foot below the bed of the stream unless burial would be impractical and the Corps of Engineers has waived this requirement. For culverts 48 inches in diameter or smaller, the bottom of the pipe must be buried below the bed of the stream to a depth equal to or greater than 20 percent of the diameter of the culvert. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in disequilibrium of wetlands or streambeds or banks, adjacent to, upstream or downstream of the structures. In order to allow for the continued movement of bed load and aquatic organisms, existing stream channel widths and depths will be maintained at the inlet and outlet ends of culverts. Riprap armoring of streams at culvert inlets and outlets shall be minimized above the ordinary high water elevation in favor of bioengineering techniques such as bank sloping, erosion control matting and revegetation with deep-rooted, woody plants.

i. The permittee will ensure that the final design for the project will contain a median width of not greater than 46-feet.

RELATED LAWS

j. In accordance with 33 U.S.C. 1341(d), all conditions of the North Carolina Division of Water Quality 401 Water Quality Certification No. 3845 Dated December 22, 2010 are hereby incorporated as special conditions of this permit.

k. 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.

l. 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).

m. Permittee shall provide the cemetery delineation plan for Fowler/Hasty/Secrest cemetery (Site 31UN351) as well as any plan detailing removal of the burials will be submitted to, and approved by, the State Historic Preservation Office prior to any ground disturbing activities in areas suspected to contain marked or unmarked graves.

n. If any construction staging, storage, refueling, borrow pit, or spoil areas are chosen within the Goose Creek or Sixmile Creek watersheds, the permittee shall coordinate with NC DOT Division Environmental officer (or designee) and a representative from the US Fish and Wildlife Service and the contractor to develop Best Management Practices for each site to avoid and or minimize the potential for adverse effects resulting from such activity.

o. The permittee shall either preserve or manage two known populations of Schweinitz's sunflower (EO#77and ESI#1) on-site or relocate populations to a local prairie preserve if unavoidable impacts are expected to result from this project.

MITIGATION

p. Prior to commencing any work on the project, as defined by special condition (e), above, the permittee shall provide a final mitigation plan, as approved by the District Engineer, for any on-site mitigation proposed by the permittee, or, in the event on-site mitigation opportunities are found to be not available to the permittee, he shall provide documentation of this to the District Engineer prior to commencing any work on the project

q. Compensatory mitigation for the unavoidable impacts to 23,083 lf of warm-water stream and 8.10 acres of riparian wetlands associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated June 24, 2010 from William D. Gilmore, EEP Director. Pursuant to the In-Lieu-Fee Instrument signed July 28, 2010 between the State of North Carolina, Ecosystem Enhancement Program and the US Army Corps of Engineers the EEP will provide 46,166 lf of restoration equivalent warm-water stream and 16.20 acres of riparian wetlands in the Yadkin River Basin, (Hydrologic Cataloging Unit 03040105) in accordance with Section F of the instrument. For wetlands, a minimum of 1:1 (impact to mitigation) must be in the form of wetland restoration

ENFORCEMENT

r. Violations of these conditions or violations of Section 404 of the Clean Water 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.

PROJECT MAINTENANCE

s. The permittee shall schedule an environmental preconstruction meeting between its representatives, the contractor's representatives, and the USACE Asheville Regulatory Field Office NCDOT Regulatory Project Manager, prior to any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all of the terms and conditions contained within this Department of the Army Permit. The permittee shall schedule the environmental 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 USACE and NCDWQ Project Managers a minimum of four weeks in advance of the scheduled meeting in order to provide those individuals with ample opportunity to schedule and participate in the required meeting.

t. The permittee shall prevent live or fresh concrete from coming into contact with any surface waters until the concrete has hardened and cured.

u. During the clearing phase of the project, heavy equipment shall not be operated in surface waters or stream channels. All temporary diversion channels and stream crossings shall be constructed of non-erodable materials. Grubbing of riparian vegetation adjacent to stream channels will not occur until immediately before construction begins on a given segment of stream channel.

v. The permittee shall adhere to the NC Department of Transportation's *Design Standards in Sensitive Watersheds* for implementing erosion and sediment control BMPs along the entire project.

w. Final design will incorporate hazardous spill basins along the project corridor within the designated hazardous spill basin area associated with Lake Twitty.

x. 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.

y. 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.

z. 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

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

bb. 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.

NCDENR

North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

December 22, 2010

DEC 29 2010

Mr. Steve DeWitt, P.E.
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, North Carolina, 27699-1578

Subject: **401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with Additional Conditions for the Proposed Construction of the Monroe Connector/Bypass Toll Road from US 74 near I-485 in Southeastern Mecklenburg County to US 74 in the Area Between the Towns of Wingate and Marshville in Union County, STIP R-3329 and R-2559, Section R-2559C, NCDWQ Project No. 2002-0672**

Dear Mr. DeWitt:

Attached hereto is a copy of Certification No. 3845 issued to The North Carolina Turnpike Authority (NCTA) dated December 22, 2010.

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

Sincerely,

Coleen H. Sullins
for Director

Attachments

cc: Sarah Hair, US Army Corps of Engineers, Asheville Field Office
Chris Militscher, Environmental Protection Agency (electronic copy only)
Marla Chambers, NC Wildlife Resources Commission (electronic copy only)
Marella Buncick, US Fish and Wildlife Service (electronic copy only)
William Gilmore, Ecosystem Enhancement Program
Polly Lespinasse, NCDWQ Mooresville Regional Office
Brian Wrenn, NCDWQ Transportation Permitting Unit
File Copy

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

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (NCDWQ) Regulations in 15 NCAC 2H .0500. This certification authorizes the NCTA to permanently impact 18,658 linear feet of jurisdictional streams, 7.66 acres of jurisdictional wetlands, and 3.12 acres of surface waters (ponds) in Mecklenburg and Union Counties. The project shall be constructed pursuant to the application received September 9, 2010, and additional information received electronically November 1, November 8, and December 1, 2010. The authorized impacts are as described below:

Stream Impacts in the Yadkin River Basin
R-2559C

Map ID No.	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)
S156a, b			283(a), 466(b)	40	789	749
S157a	135			10	145	0
S158			311	20	331	311
S161a, b	538(a), 186(b)			30	754	724
S169a, b			25(a), 225(b)	20	270	250
SX162z	303			20	323	303
Total	**1,162 lf**		**1,310 lf**	**140 lf**	**2,612 lf**	**2,337 lf**

Total Stream Impacts for Project Section R-2559C: 2,612 linear feet

Stream Impacts in the Yadkin River Basin
R-3329 and R-2559

Map ID No.	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)
S006b			311		311	311
S007			175		175	175
S014b,c, d, e			222(b),74(c), 242(d), 26(e)		564	564
S015a,b	21(a), 17(b)				38	0
S016a	207				207	207
S017a, b, c, d, e			348(a), 63(b), 304(c), 94(d), 4(e)		813	813
S018	28				28	0
S019	183				183	183
S028b,c			4(b), 249(c)		253	253
S031a,c	160(a)		389(c)		549	549
S034			374		374	374
S036			9		9	0
S037c,d			247(c), 291(d)		538	538
S038a,b	2(a)		337(b)		339	339

S039c			496		496	496
S043	616				616	616
S052a	1,257				1,257	1,257
S053	46				46	0
S055	362				362	362
S058c	111				111	0
S064c	46				46	0
S068b,c			529(b), 79(c)		608	608
S069	359				359	359
S070b	370				370	370
S071	323				323	323
S076			417		417	417
S078a, d	252(a)		131(d)		383	383
S080a, b			153(a), 571(b)		724	724
S081a			127		127	0
S086			305		305	305
S088a	81				81	0
S089a	361				361	361
S092b	87				87	0
S093a,b	136(a)		71(b)		207	207
S094	536				536	536
S095a,b	124(a), 235(b)				359	359
S096	64				64	0
S102b	395				395	395
S103a, b			210(a), 203(b)		413	413
S106	348				348	348
S108a, b	52(a)		220(b)		272	272
S114a	192				192	192
S140f			994		994	994
S145, SX145z	710(S145), 77(SX145z)				787	787
SX504	159				159	159
Total	**7,917 lf**		**8,269 lf**		**16,186 lf**	**15,549 lf**

Includes impacts associated with a 40 foot zone on either side of the construction limits for the project.

Total Stream Impacts for Project Sections R-3329 and R-2559: 16,186 linear feet

Wetland Impacts in the Yadkin River Basin
(Riverine/Non-Riverine)
R-2559C

Map ID No.	Fill/Clearing Impacts (ac)	Temporary Impacts (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
W167		1.69 (clearing only)	1.69	0
W172a	0.04 (fill and clearing)		0.04	0.04
W173	0.28 (fill and clearing)		0.28	0.28
W174	0.07 (fill and clearing)		0.07	0.07
W176	0.94 (fill and clearing)		0.94	0.94
W177	0.02 (fill and clearing)		0.02	0.02
W190	0.05 (fill and clearing)		0.05	0.05
W196	0.06 (fill and clearing)		0.06	0.06
W201	0.02 (fill and clearing)		0.02	0.02
WX805	0.06 (fill and clearing)		0.06	0.06
WX811	0.02 (fill and clearing)		0.02	0.02
WX824	0.02 (fill and clearing)		0.02	0.02
Total	**1.58 acres**	**1.69 acres**	**3.27 acres**	**1.58 acres**

Total Wetland Impacts for Project Section R-2559C: 3.27 acres

Wetland Impacts in the Yadkin River Basin
(Riverine/Non-Riverine)
R-3329 and R-2559

Map ID No.	Fill/Clearing Impacts (ac)*	Temporary Impacts (ac)	Total Wetland Impact (ac)*	Wetland Impacts Requiring Mitigation (ac)*
W010	0.16 (fill and clearing)		0.16	0.16
W017	0.20 (fill and clearing)		0.20	0.20
W019	0.06 (fill and clearing)		0.06	0.06
W022b	0.23 (fill and clearing)		0.23	0.23
W024	0.07 (clearing only)		0.07	0.07
W025	0.12 (fill only)		0.12	0.12
W032	0.11 (fill and clearing)		0.11	0.11
W075	0.01 (clearing only)		0.01	0.01
W076	0.02 (clearing only)		0.02	0.02
W081	0.09 (fill only)		0.09	0.09
W082	0.02 (fill only)		0.02	0.02
W086	2.98 (fill and clearing)		2.98	2.98
W099	0.07 (fill and clearing)		0.07	0.07
W100	0.01 (clearing only)		0.01	0.01
W101	0.12 (fill and clearing)		0.12	0.12
W102	0.09 (fill and clearing)		0.09	0.09
W104	0.58 (fill and clearing)		0.58	0.58

W107	0.05 (fill and clearing)		0.05	0.05
W111	0.05 (fill and clearing)		0.05	0.05
W112	0.21 (fill and clearing)		0.21	0.21
W139	0.05 (fill only)		0.05	0.05
W140	0.01 (fill only)		0.01	0.01
W153	0.05 (fill and clearing)		0.05	0.05
WX207	0.11 (fill and clearing)		0.11	0.11
WX800	0.45 (fill and clearing)		0.45	0.45
WX806	0.01 (fill and clearing)		0.01	0.01
WX808	0.03 (fill and clearing)		0.03	0.03
WX812	0.04 (fill and clearing)		0.04	0.04
WX816	0.01 (fill and clearing)		0.01	0.01
WX822	0.07 (fill and clearing)		0.07	0.07
Total	**6.08 acres**		**6.08 acres**	**6.08 acres**

Includes impacts associated with a 40 foot zone on either side of the construction limits for the project.
***Wetland acreage impact amounts have been rounded to 1/100 of an acre.**

Total Wetland Impacts for Project Sections R-3329 and R-2559: 6.476 acres

Total Open Water Impacts for Project Sections R-3329 and R-2559: 2.549 acres

Open Water (Ponds) in the Yadkin River Basin
R-2559C

Map ID No.	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
P60b	0.56 (fill and clearing)		0.56
Total	**0.56 acres**		**0.56 acres**

Total Open Water Impacts for Project Section R-2559C: 0.56 acres

Open Water (Ponds) in the Yadkin River Basin
R-3329 and R-2559

Map ID No.	Permanent Fill in Open Waters (ac)*	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)*
P09	0.07 (fill only)		0.07
P10	0.07 (fill only)		0.07
P23	0.12 (fill and clearing)		0.12
P41	0.05 (clearing only)		0.05
P42b	0.02 (clearing only)		0.02

P43	1.09 (fill and clearing)		1.09
P48	0.05 (clearing)		0.05
P49	0.83 (fill and clearing)		0.83
PX69	0.17 (fill and clearing)		0.17
PX75	0.09 (fill and clearing)		0.09
Total	**2.56 acres**		**2.56 acres**

Includes impacts associated with a 40 foot zone on either side of the construction limits for the project.
***Pond acreage impact amounts have been rounded to 1/100 of an acre.**

Total Open Water Impacts for Project Sections R-3329 and R-2559: 2.56 acres

The application provides adequate assurance that the discharge of fill material into the waters of the Yadkin River Basin and associated wetlands, 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 August 31, 2010, and received September 9, 2010, with additional information submitted electronically on November 1, November 8, and December 1, 2010. Should your project change, you are required to notify the NCDWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Conditions of Certification:

1. This certification does not authorize construction of the project. Authorization for construction shall be granted when revised design plans for R-2559C and final design plans for the remaining sections of R-2559 and R-3329 are received, and approved by NCDWQ. Please be advised that when revised design plans are completed for R-2559C and final design plans for the remaining sections of R-2559, and R-3329, modifications to the 401 Water Quality Certification shall be submitted with five copies and fees to the NC Division of Water Quality. Revised and final designs shall reflect all appropriate avoidance, minimization, revised jurisdictional impact tables and mitigation for impacts to wetlands, streams, and other surface waters.

   No construction activities that impact any wetlands, streams, or surface waters located within any portion of Sections R-2559 or R-3329 shall begin until after the permittee applies for, and receives a written modification of this 401 Water Quality Certification from the NCDWQ.

2. The NCTA shall construct hazardous spill basins along the project corridor at stream crossings located within the Lake Twitty watershed as per the commitment in the Record of Decision (ROD) dated August 2010.

3. Compensatory mitigation for 17,886 linear feet of impact to streams is required. We understand that the North Carolina Ecosystem Enhancement Program (EEP) has agreed to implement the stream mitigation for the project. EEP has indicated in a letter dated June 24, 2010, that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004.

However, as per the application submitted by the NCTA, the NCTA will evaluate the feasibility of implementing stream enhancement projects at four (4) sites identified by the NCTA's consultant in January 2010. Prior to the initiation of any stream impacts, the NCTA must adequately demonstrate that the stream enhancement opportunities identified by the consultant have been fully investigated. This shall include the submission of the feasibility studies to NCDWQ for review and approval.

4. Compensatory mitigation for 7.66 acres of impacts to wetlands is required. We understand that you have chosen to perform compensatory mitigation for impacts to wetlands 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 June 24, 2010, that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004

5. **The permittee shall use *Design Standards in Sensitive Watersheds* [15A NCAC 4B.0124(a)-(e)] throughout the project.** However, due to the size of the project, NCTA shall not be required to meet 15A NCAC 4B .0124(a) regarding the maximum amount of uncovered acres. Temporary cover (wheat, millet, or similar annual grain) or permanent herbaceous cover shall be planted on all bare soil within 15 business days of ground disturbing activities to provide long term erosion control.

6. 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 appropriate seeding on disturbed soils within the riparian area and on disturbed steep slopes

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

8. If any construction staging, storage, refueling, borrow pit or spoil areas are chosen within the Goose Creek or Sixmile Creek watersheds, NCTA's representatives will coordinate with the NCDOT Environmental Officer and the U.S. Fish and Wildlife Service to develop BMPs for each site to avoid and minimize potential adverse effects. Additionally, the NCTA's representatives shall coordinate with NCDWQ for activities located within the Goose Creek watershed to ensure compliance with the Goose Creek Buffer Rules. Certain activities located within the Goose Creek watershed may require a modification to the permit and subsequent riparian buffer mitigation.

9. 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 NCDWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.

10. Floodplain benches, where proposed for construction to maintain the existing stream dimension, shall be constructed as depicted in the revised drawings received electronically on November 16, 2010.

11. 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.

12. 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.

13. 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.

14. 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.

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

16. 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.

17. 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.

18. 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.

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

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

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

22. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification.

23. 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.

24. 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.

25. 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.

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

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

28. 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.

29. 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.

30. 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.

31. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification.

32. At locations where ponds will be drained, proper measures will be taken to drain the pond with limited impact to upstream and downstream channel stability as well as to native aquatic species. Proper measures will be taken to avoid sediment release and/or sediment accumulation downstream as a result of pond draining. If typical pond draining techniques will create significant disturbance to native aquatic species, additional measures such as collection and relocation may be necessary to prevent a significant fish kill. NCTA shall consult with NC Wildlife Resources staff to determine if there are any sensitive species, and the most appropriate measures to limit impacts to these species. The permittee shall observe any natural channel re-establishment, or utilize natural channel construction techniques, to ensure that the jurisdictional stream channel above and below the drained pond remain stable, and that no additional impacts occur within the natural stream channel as a result of draining the pond.

33. 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*.

34. 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 NCDWQ first.

35. 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.

36. All pile driving or drilling activities shall be enclosed in turbidity curtains unless otherwise approved by NCDWQ in this certification.

37. 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.

38. 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.

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

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

41. Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 Permit. This Certification shall expire upon the expiration of the 404 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)-733-2698, Facsimile: (919)-733-3478

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

Ms. Mary Penny Thompson, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center
Raleigh, NC 27699-1601

This the 22nd day of December 2010

DIVISION OF WATER QUALITY

for Coleen H. Sullins
Director

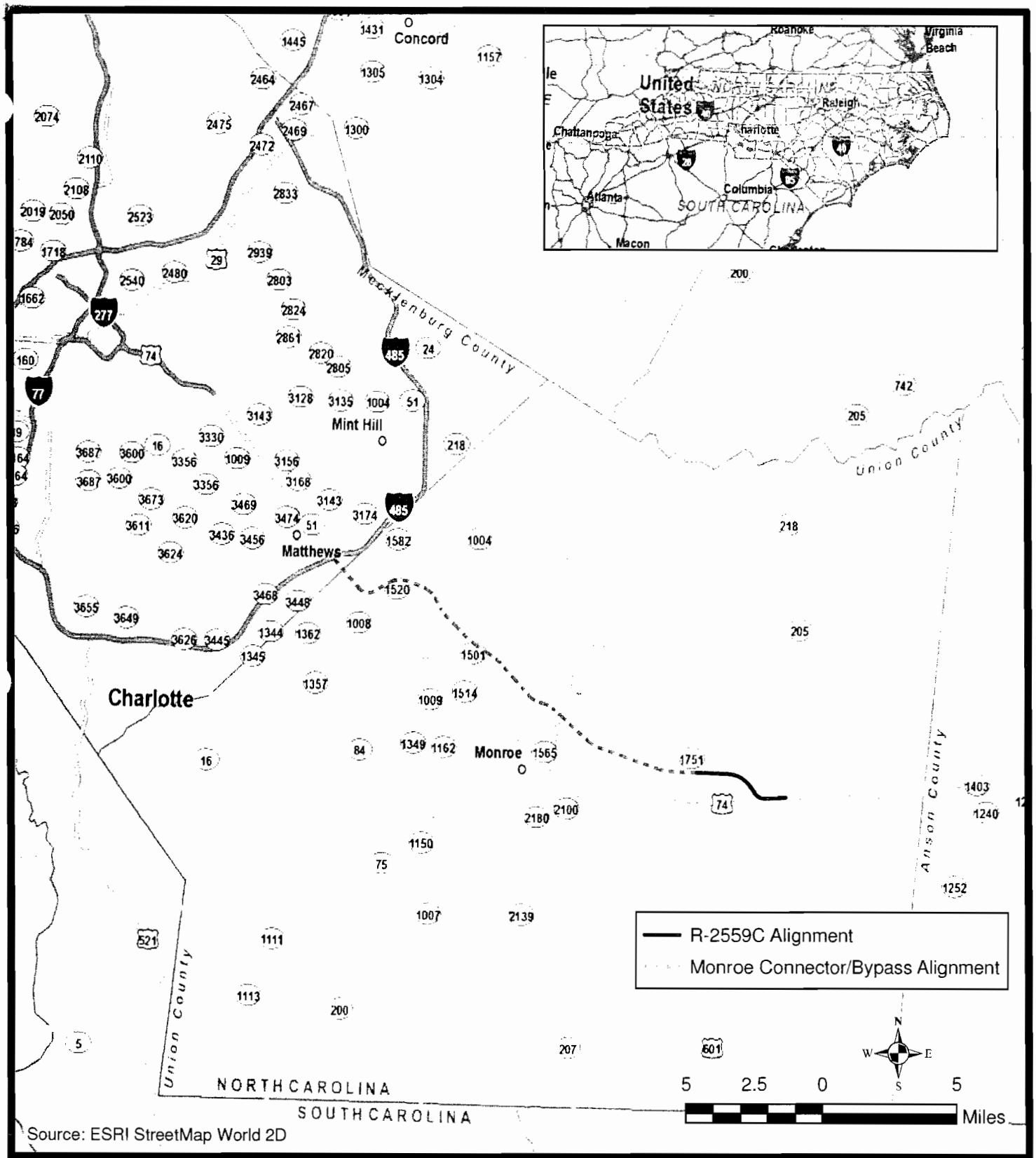
WQC No. 3845

This the 22nd day of December 2010

DIVISION OF WATER QUALITY

for Coleen H. Sullins
Director

WQC No. 3845



Source: ESRI StreetMap World 2D

NORTH CAROLINA
Turnpike Authority

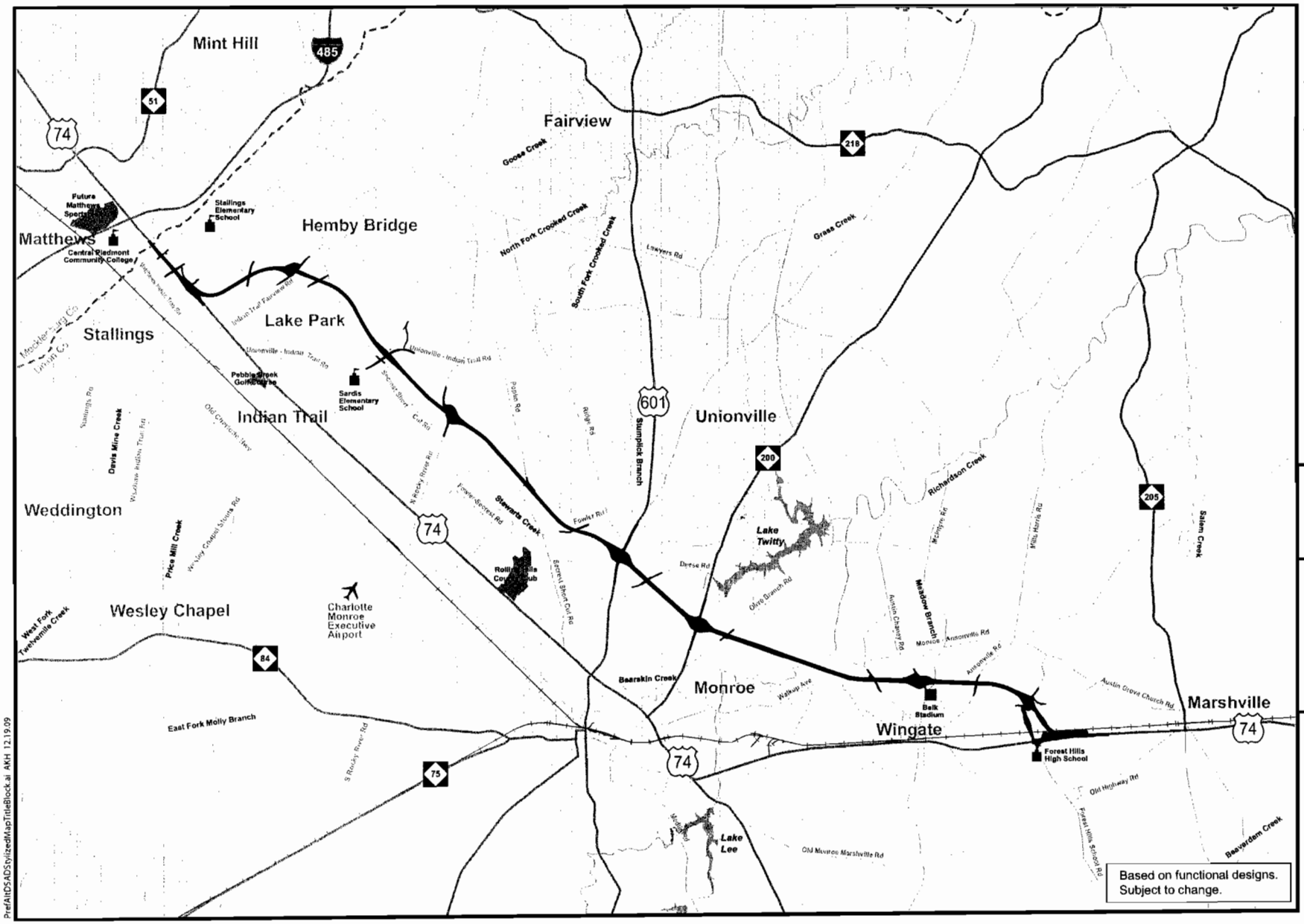
PROJECT VICINITY

STIP Nos. R-3329, R-2559
Monroe Connector / Bypass

Union and Mecklenburg Counties, North Carolina

Dwn By:	Ckd By:
ES	REF
Date: AUG 2010	
Scale: As Shown	
Project No.: 100014277	

FIGURE 1



NORTH CAROLINA Turnpike Authority

STIP PROJECT NO. R-3329/R-2559

Mecklenburg County and Union County

MONROE CONNECTOR / BYPASS

PREFERRED ALTERNATIVE DSA D

Figure 2

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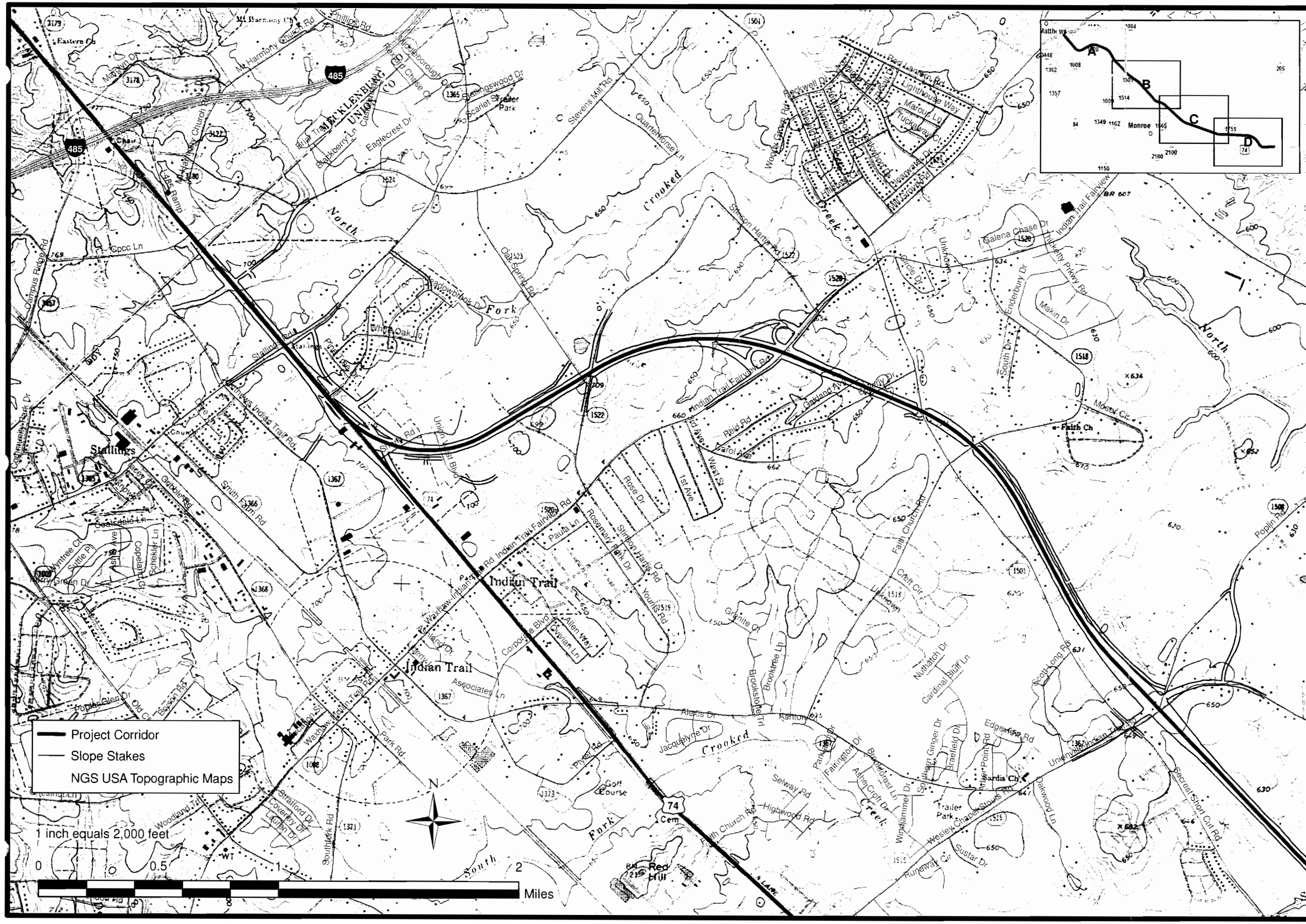


NORTH CAROLINA
Turnpike Authority

Project:

STIP Nos. R-3329, R-2559 Monroe Connector / Bypass

Union and Mecklenburg Counties, North Carolina

Title:

USGS Topography

Dwn By: ES	Ckd By: REF
Date: APR 2010	Scale: As Shown

ESC Project No.: 100014277

FIGURE

5A

NORTH CAROLINA
Turnpike Authority

Project:

STIP Nos. R-3329, R-2559 Monroe Connector / Bypass

Union and Mecklenburg Counties, North Carolina

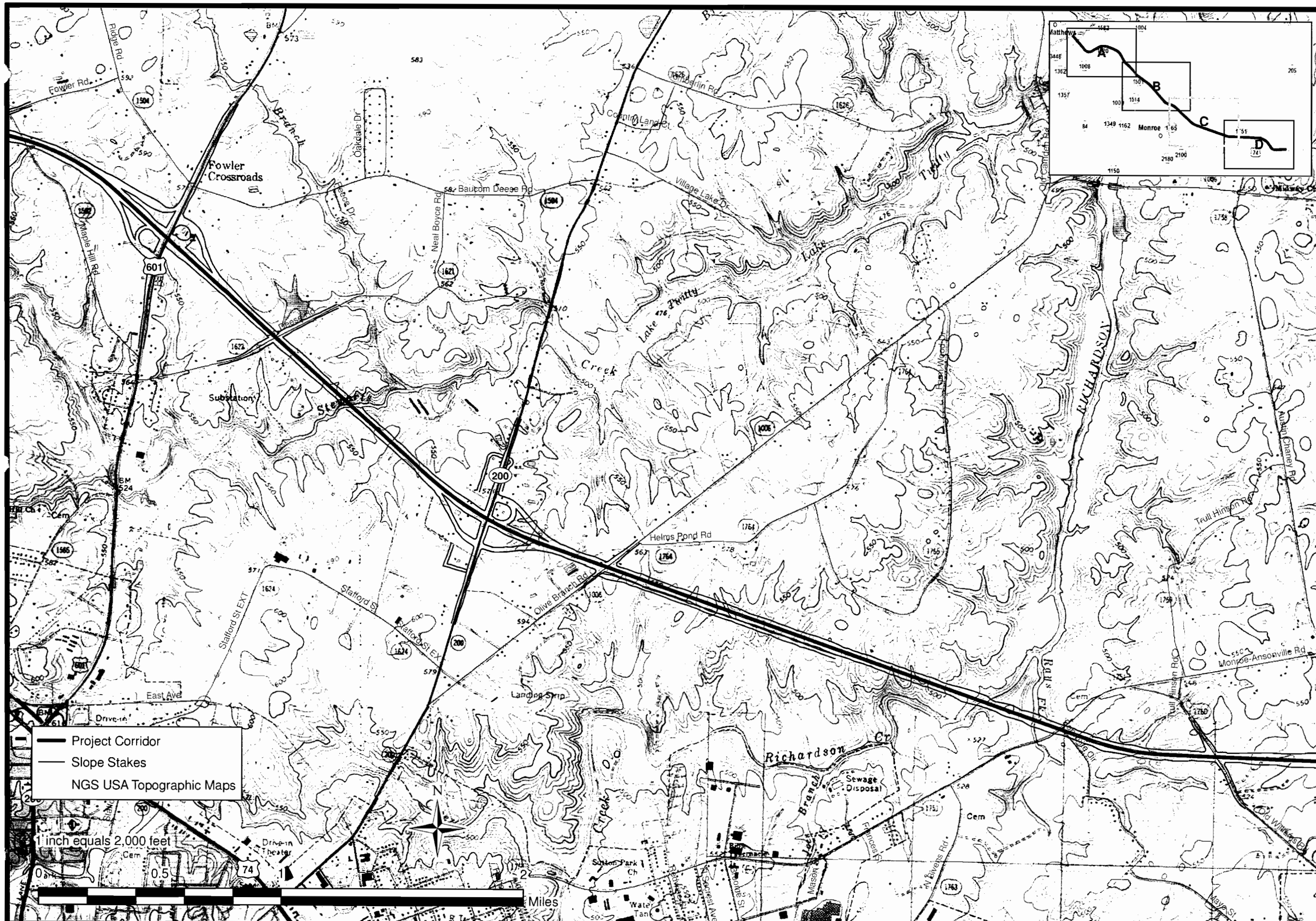
Title:

USGS Topography

Dwn By: ES	Ckd By: REF
Date: APR 2010	Scale: As Shown
ESC Project No.: 100014277	

FIGURE

5B



NORTH CAROLINA
Turnpike Authority

Project:

STIP Nos. R-3329, R-2559 Monroe Connector / Bypass

Union and Mecklenburg Counties, North Carolina

Title:

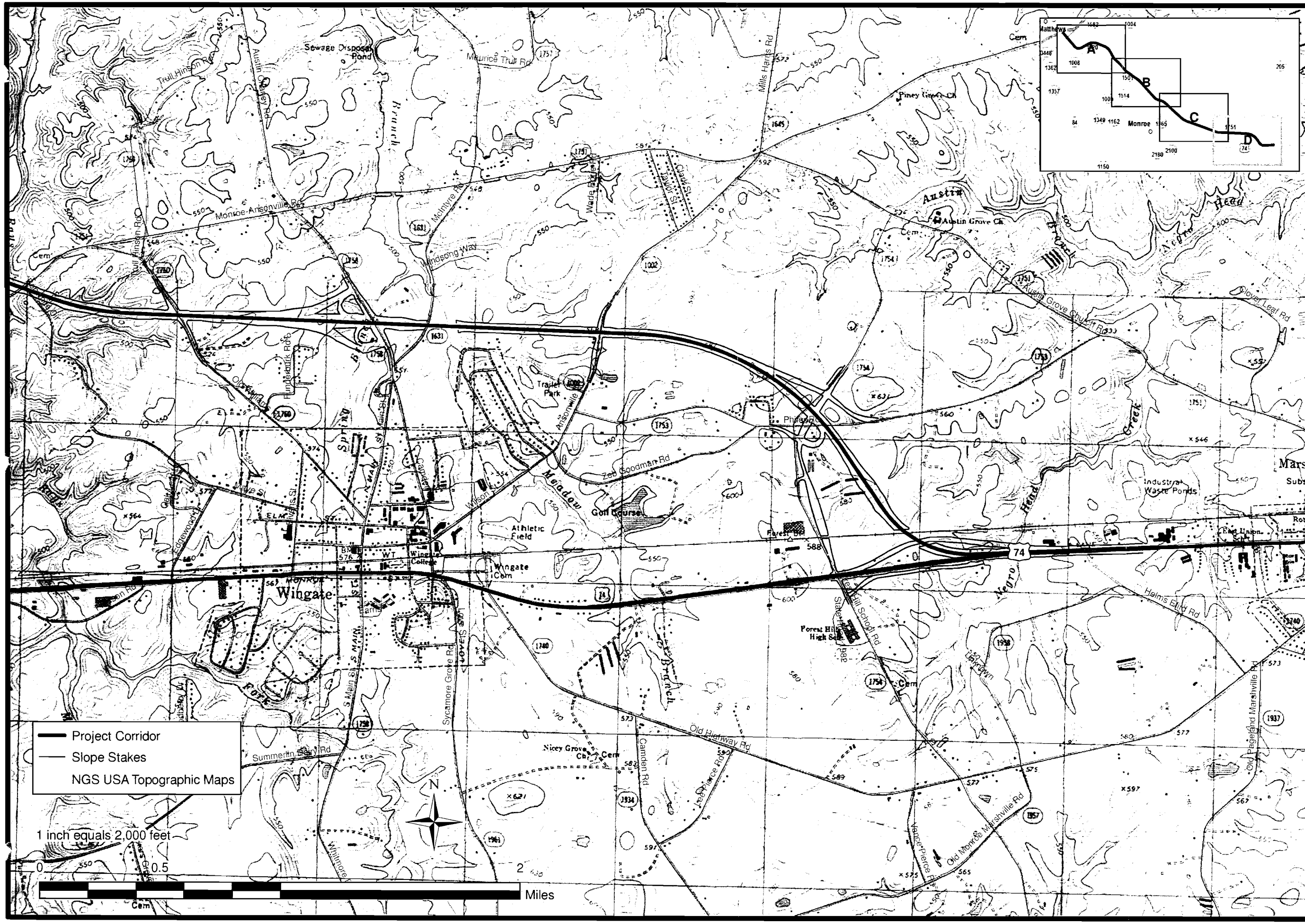
USGS Topography

Dwn By:	Ckd By:
ES	REF
Date: APR 2010	Scale: As Shown

ESC Project No.: 100014277

FIGURE

5C



NORTH CAROLINA
Turnpike Authority

Project:

STIP Nos. R-3329, R-2559 Monroe Connector / Bypass

Union and Mecklenburg Counties, North Carolina

Title:

USGS Topography

Dwn By:	Ckd By:
ES	REF
Date: APR 2010	Scale: As Shown
ESC Project No.: 100014277	

FIGURE

5D

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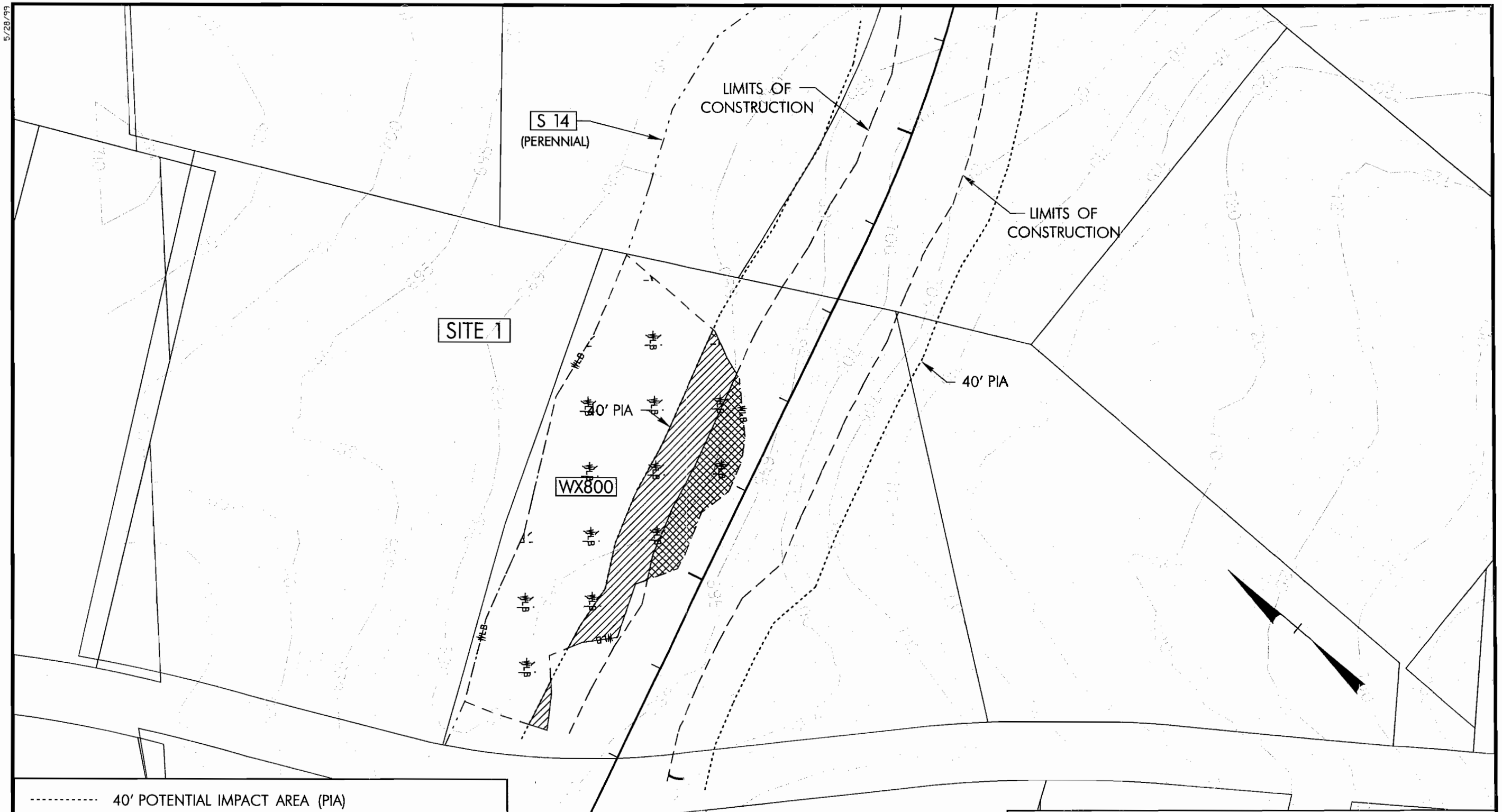

40' POTENTIAL IMPACT AREA (PIA)
STREAM
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 1
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WX800 = 0.150 ACRE
WETLAND IMPACT WITHIN 40' PIA
WX800 = 0.296 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 1

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 1
SCALE: 1" = 50'
DATE: AUG. 25, 2010

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BY: PSHUPPERT

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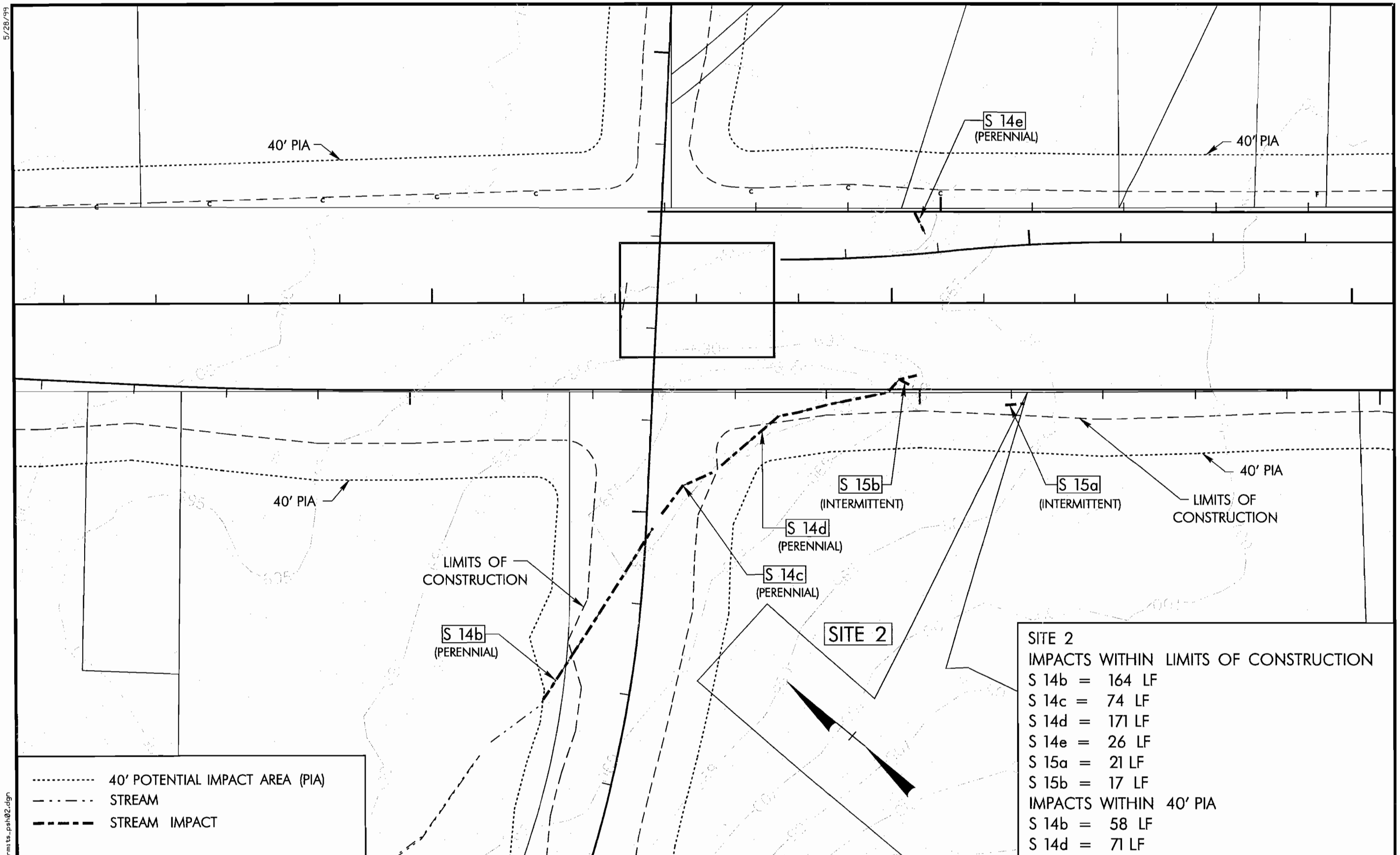

SITE 2
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 14b = 164 LF
S 14c = 74 LF
S 14d = 171 LF
S 14e = 26 LF
S 15a = 21 LF
S 15b = 17 LF
IMPACTS WITHIN 40' PIA
S 14b = 58 LF
S 14d = 71 LF

COMMENTS:

NORTH CAROLINA
Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 2

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 2
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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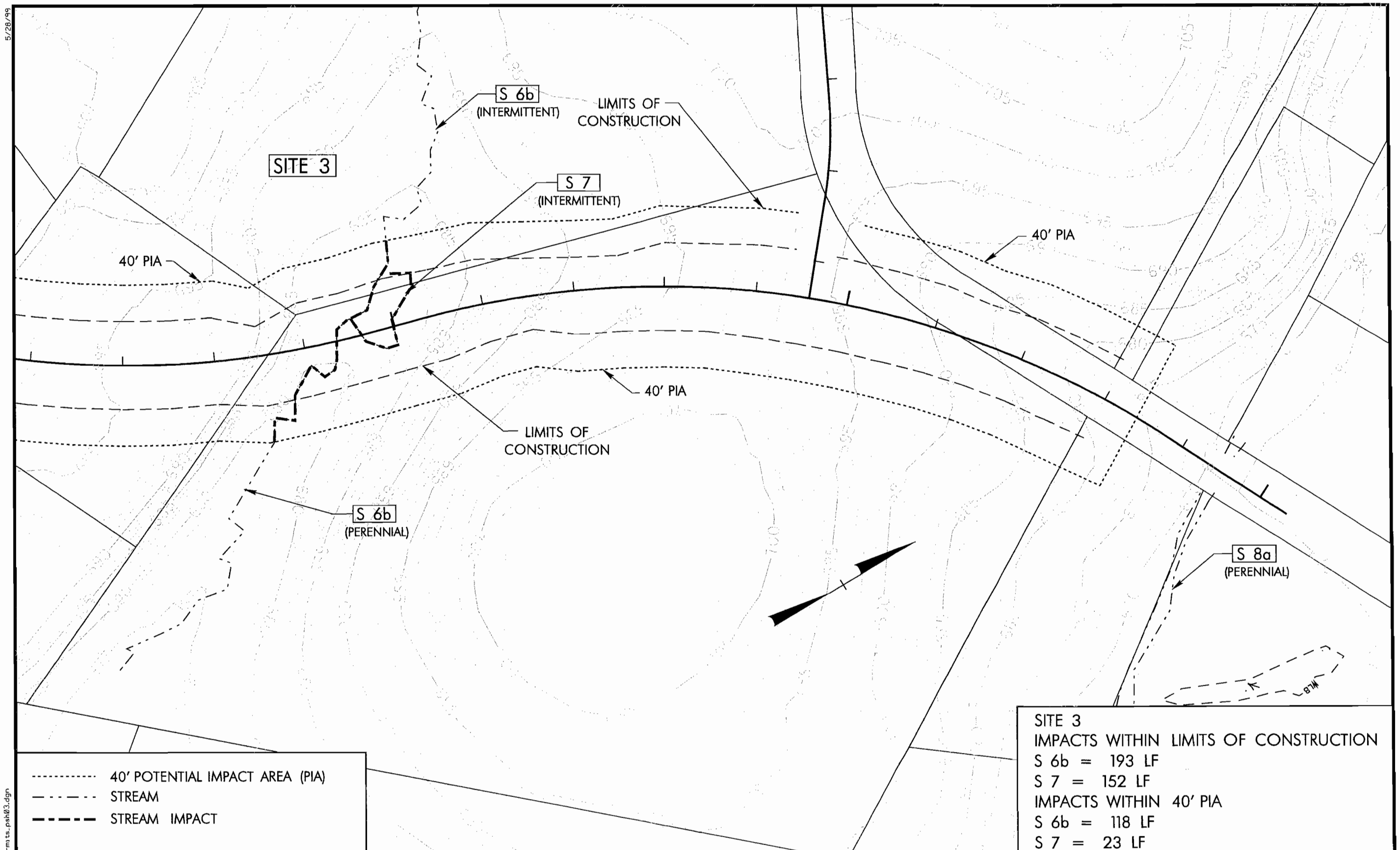

SITE 3
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 6b = 193 LF
S 7 = 152 LF
IMPACTS WITHIN 40' PIA
S 6b = 118 LF
S 7 = 23 LF

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACT

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 3

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 3
SCALE: 1" = 50'
DATE: AUG. 25, 2010

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S 16b
(INTERMITTENT)

W6

LIMITS OF CONSTRUCTION

40' PIA

LIMITS OF CONSTRUCTION

40' PIA

S 16a
(INTERMITTENT)

SITE 5

LIMITS OF CONSTRUCTION

40' PIA

40' PIA

LIMITS OF CONSTRUCTION

.....	40' POTENTIAL IMPACT AREA (PIA)
—·—·—	STREAM
▬▬▬	STREAM IMPACT
- —WLB—	WETLAND BOUNDARY

SITE 5
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 16a = 120 LF

IMPACTS WITHIN 40' PIA
S 16a = 87 LF

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 5

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 4
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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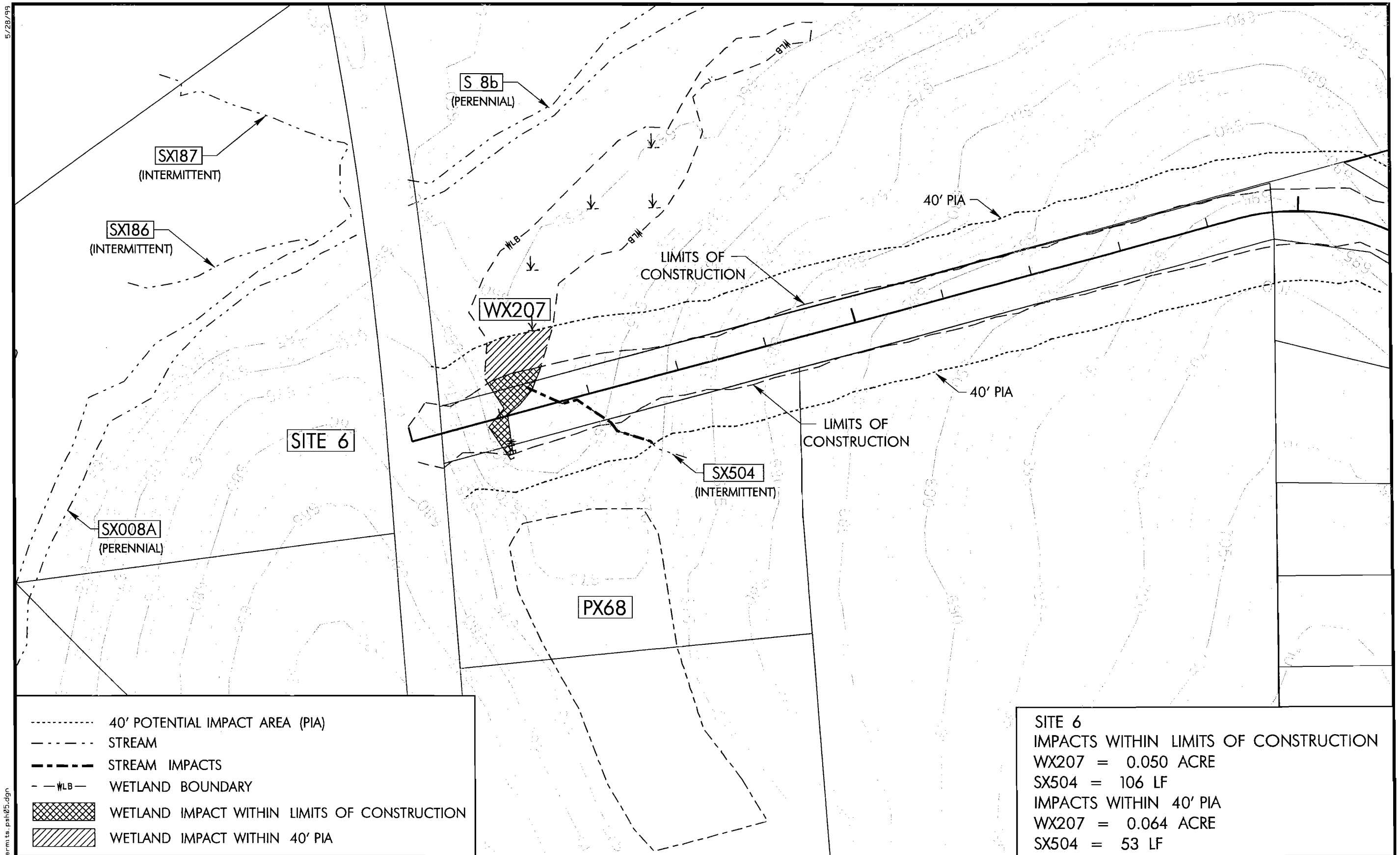

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 6
IMPACTS WITHIN LIMITS OF CONSTRUCTION
WX207 = 0.050 ACRE
SX504 = 106 LF
IMPACTS WITHIN 40' PIA
WX207 = 0.064 ACRE
SX504 = 53 LF

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 6

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 5
SCALE: 1" = 50'
DATE: AUG. 25, 2010

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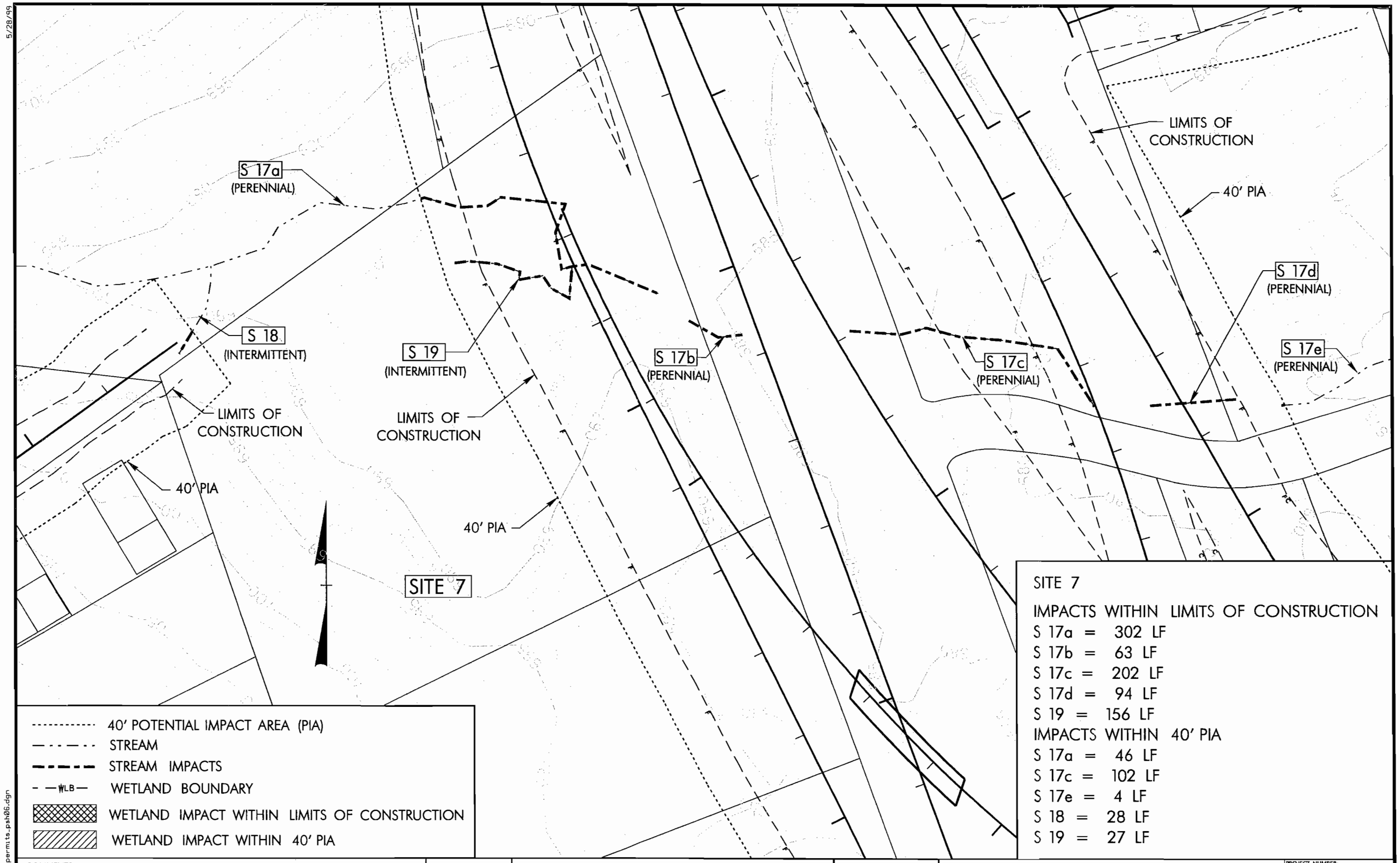

SITE 7

IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 17a = 302 LF
S 17b = 63 LF
S 17c = 202 LF
S 17d = 94 LF
S 19 = 156 LF

IMPACTS WITHIN 40' PIA
S 17a = 46 LF
S 17c = 102 LF
S 17e = 4 LF
S 18 = 28 LF
S 19 = 27 LF

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 7

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 6
SCALE: 1" = 50'
DATE: AUG. 25, 2010

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21145 BY Raleigh

5/28/99

S 21b
(PERENNIAL)

40' PIA

SITE 8

W 10

S 21a
(INTERMITTENT)

LIMITS OF CONSTRUCTION

PROP. BRIDGE

PROP. BRIDGE

LIMITS OF CONSTRUCTION

40' PIA

- 40' POTENTIAL IMPACT AREA (PIA)
- STREAM
- STREAM IMPACTS
- WLB — WETLAND BOUNDARY
- WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
- WETLAND IMPACT WITHIN 40' PIA

SITE 8

IMPACTS WITHIN LIMITS OF CONSTRUCTION
W 10 = 0.105 ACRE

IMPACTS WITHIN 40' PIA
W 10 = 0.053 ACRE

COMMENTS:

NORTH CAROLINA
Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 8

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 7
SCALE: 1" = 50'
DATE: AUG. 25, 2010

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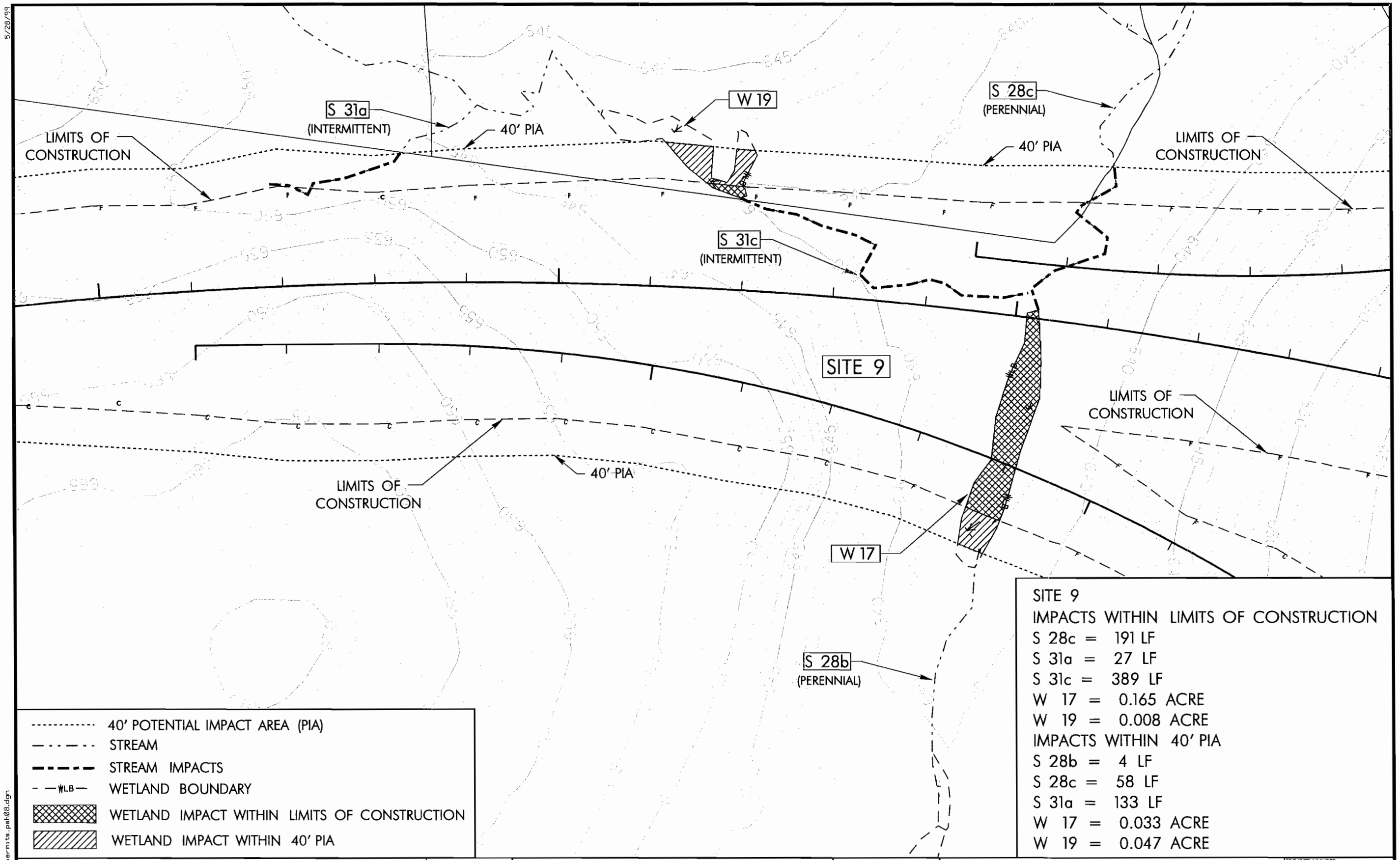

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 9
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 28c = 191 LF
S 31a = 27 LF
S 31c = 389 LF
W 17 = 0.165 ACRE
W 19 = 0.008 ACRE
IMPACTS WITHIN 40' PIA
S 28b = 4 LF
S 28c = 58 LF
S 31a = 133 LF
W 17 = 0.033 ACRE
W 19 = 0.047 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 9

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 8
SCALE: 1" = 50'
DATE: AUG. 25, 2010

5/28/99

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21145 AT R01 RSVBRT

5/28/99

S 34
(PERENNIAL)

40' PIA

S 36
(INTERMITTENT)

SITE 11

40' PIA

LIMITS OF CONSTRUCTION

SITE 10

LIMITS OF CONSTRUCTION

40' PIA

40' PIA

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 10
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 34 = 283 LF
IMPACTS WITHIN 40' PIA
S 34 = 91 LF

SITE 11
IMPACTS WITHIN 40' PIA
S 36 = 9 LF

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 10 & 11

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 9
SCALE: 1" = 50'
DATE: AUG. 25, 2010

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5/28/99

S 37d
(PERENNIAL)

40' PIA

40' PIA

SITE 13

P 10

LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

PROP. BRIDGE

P 9

PROP. BRIDGE

SITE 12

LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

40' PIA

40' PIA

S 37c
(INTERMITTENT)

- 40' POTENTIAL IMPACT AREA (PIA)
- STREAM
- STREAM IMPACTS
- WETLAND BOUNDARY
- WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
- WETLAND IMPACT WITHIN 40' PIA
- OPEN WATER IMPACT WITHIN LIMITS OF CONSTRUCTION

SITE 12
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 37c = 58 LF
IMPACTS WITHIN 40' PIA
S 37c = 189 LF

SITE 13
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 37d = 218 LF
P 9 = 0.067 ACRE
P 10 = 0.069 ACRE
IMPACTS WITHIN 40' PIA
S 37d = 73 LF

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2145 AT RALEIGH

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 12 & 13

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 10
SCALE: 1" = 50'
DATE: AUG. 25, 2010

5/28/99

S 38b
(PERENNIAL)

40' PIA

W 25

LIMITS OF CONSTRUCTION

SITE 14

LIMITS OF CONSTRUCTION

W22b

40' PIA

S 38a
(INTERMITTENT)

W 24

WLB

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 14
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 38b = 242 LF
W 22b = 0.026 ACRE
W 24 = 0.0001 ACRE (3.124 SF)
W 25 = 0.121 ACRE
IMPACTS WITHIN 40' PIA
S 38a = 2 LF
S 38b = 95 LF
W 22b = 0.204 ACRE
W 24 = 0.072 ACRE

COMMENTS:

NORTH CAROLINA
Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 14

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 11
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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21145 AT RALPSWEBH

5/28/99

S 43
(INTERMITTENT)

40' PIA

SITE 15

SITE 16

LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

40' PIA

S 39c
(PERENNIAL)

- 40' POTENTIAL IMPACT AREA (PIA)
- STREAM
- STREAM IMPACTS
- WLB WETLAND BOUNDARY
- WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
- WETLAND IMPACT WITHIN 40' PIA

SITE 15 & 16
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 39c = 413 LF
S 43 = 474 LF
IMPACTS WITHIN 40' PIA
S 39c = 83 LF
S 43 = 142 LF

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 15 & 16

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 12
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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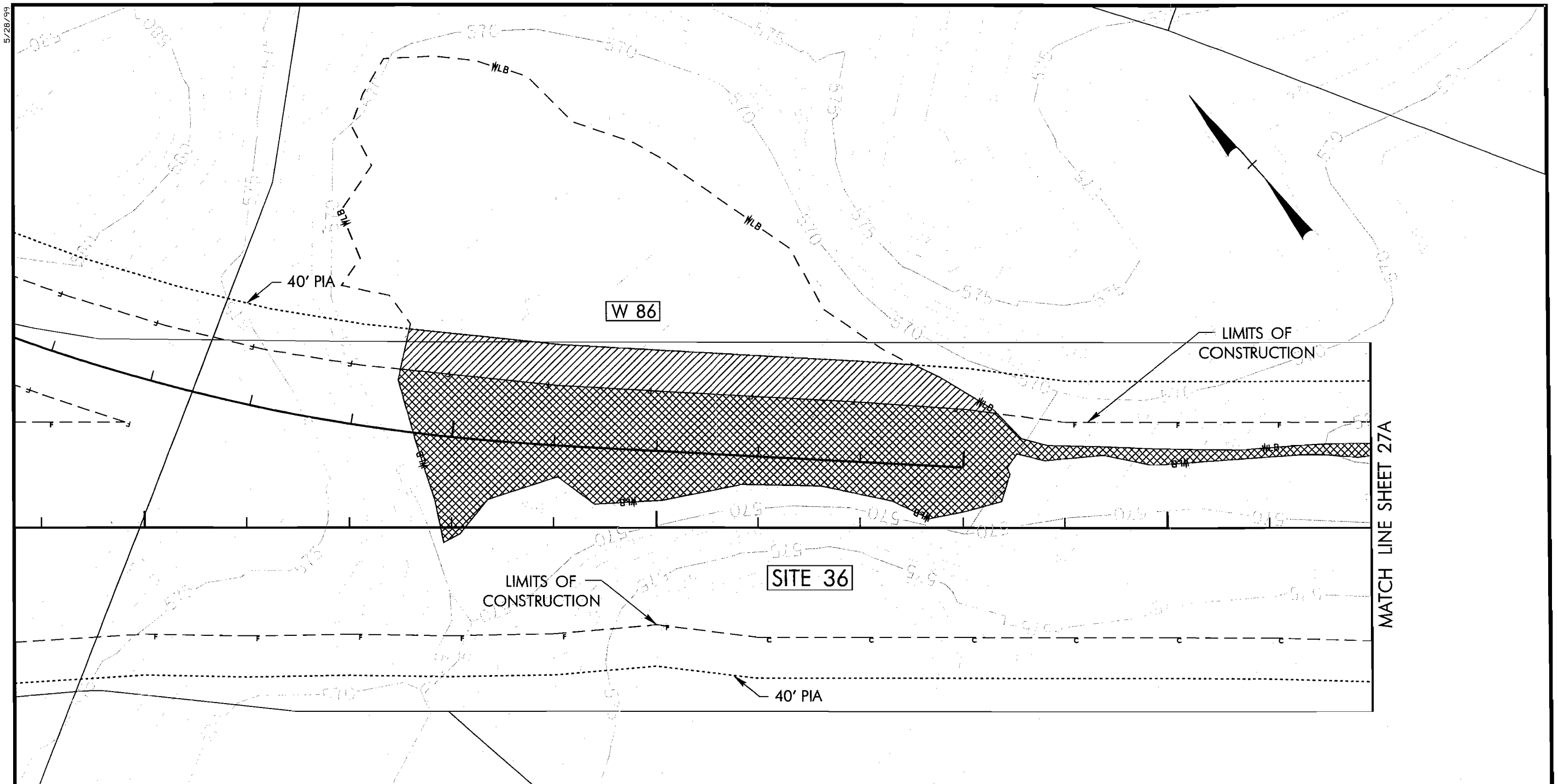

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 36

IMPACTS WITHIN LIMITS OF CONSTRUCTION
W 86 = 1.466 ACRE

IMPACTS WITHIN 40' PIA
W 86 = 0.498 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 36

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 27
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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PROP. BRIDGE

PROP. BRIDGE

SITE 35

W 82

LIMITS OF CONSTRUCTION

40' PIA

LIMITS OF CONSTRUCTION

40' PIA

S 81a
(PERENNIAL)

40' PIA

WX814

S 81b
(PERENNIAL)

LIMITS OF CONSTRUCTION

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 35
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 81a = 61 LF
W 82 = 0.021 ACRE

IMPACTS WITHIN 40' PIA
S 81a = 66 LF

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ
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RALEIGH, N. C. 27609
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STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 35

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 26
SCALE: 1" = 50'
DATE: AUG. 25, 2010

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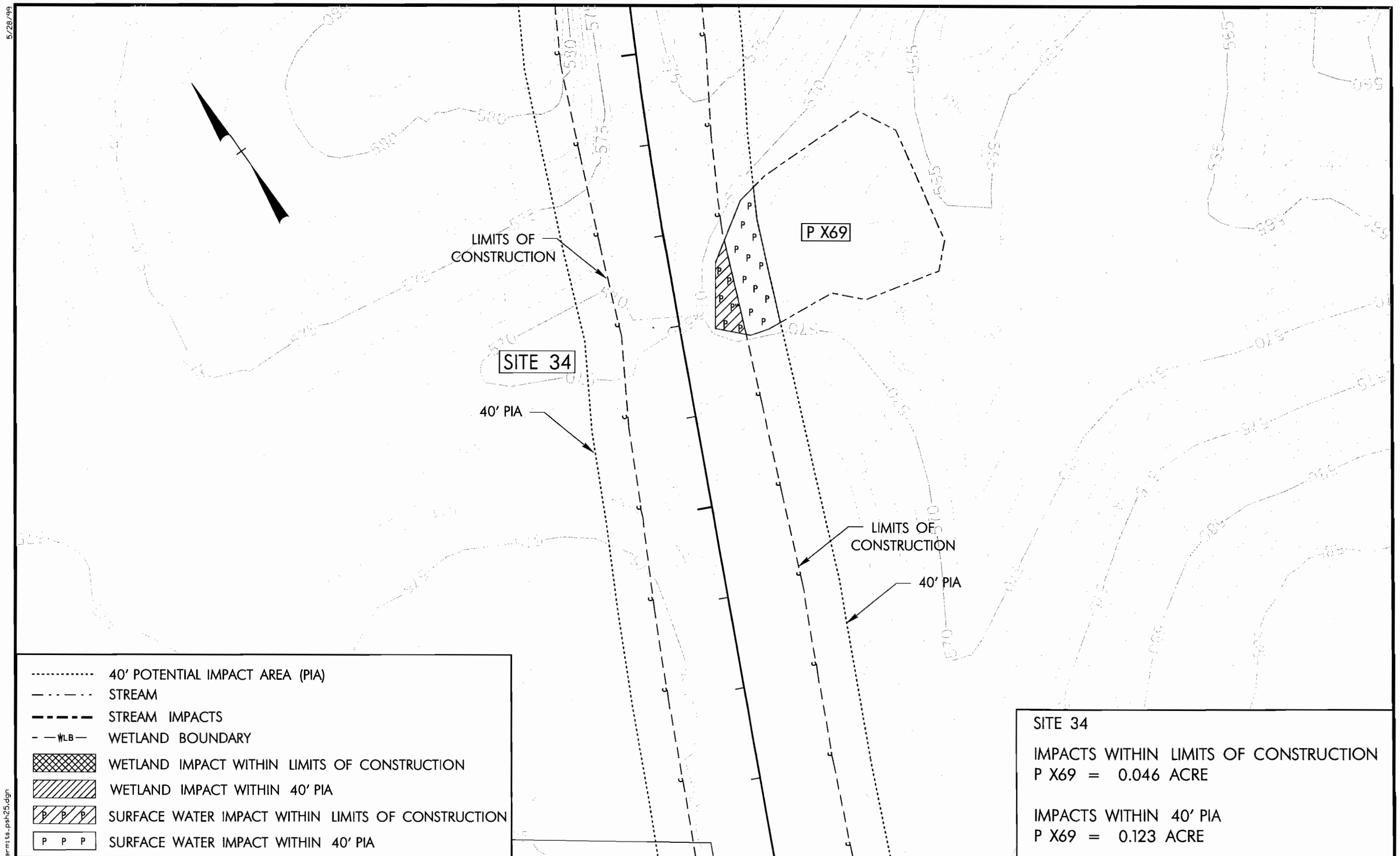

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA
SURFACE WATER IMPACT WITHIN LIMITS OF CONSTRUCTION
SURFACE WATER IMPACT WITHIN 40' PIA

SITE 34

IMPACTS WITHIN LIMITS OF CONSTRUCTION
P X69 = 0.046 ACRE

IMPACTS WITHIN 40' PIA
P X69 = 0.123 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 25
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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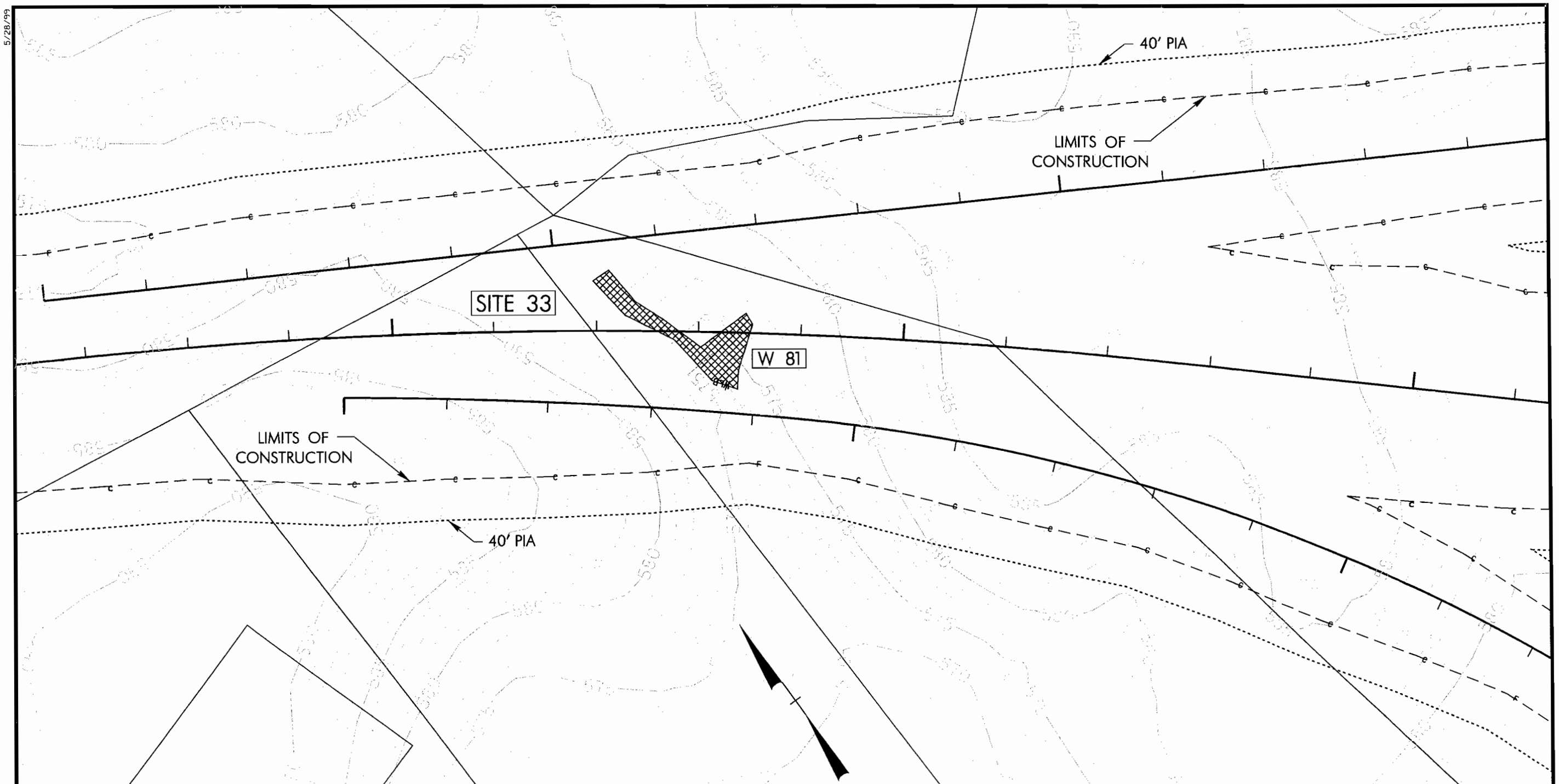

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 33

IMPACTS WITHIN LIMITS OF CONSTRUCTION
W 81 = 0.092 ACRE

IMPACTS WITHIN 40' PIA
NA

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 33

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 24
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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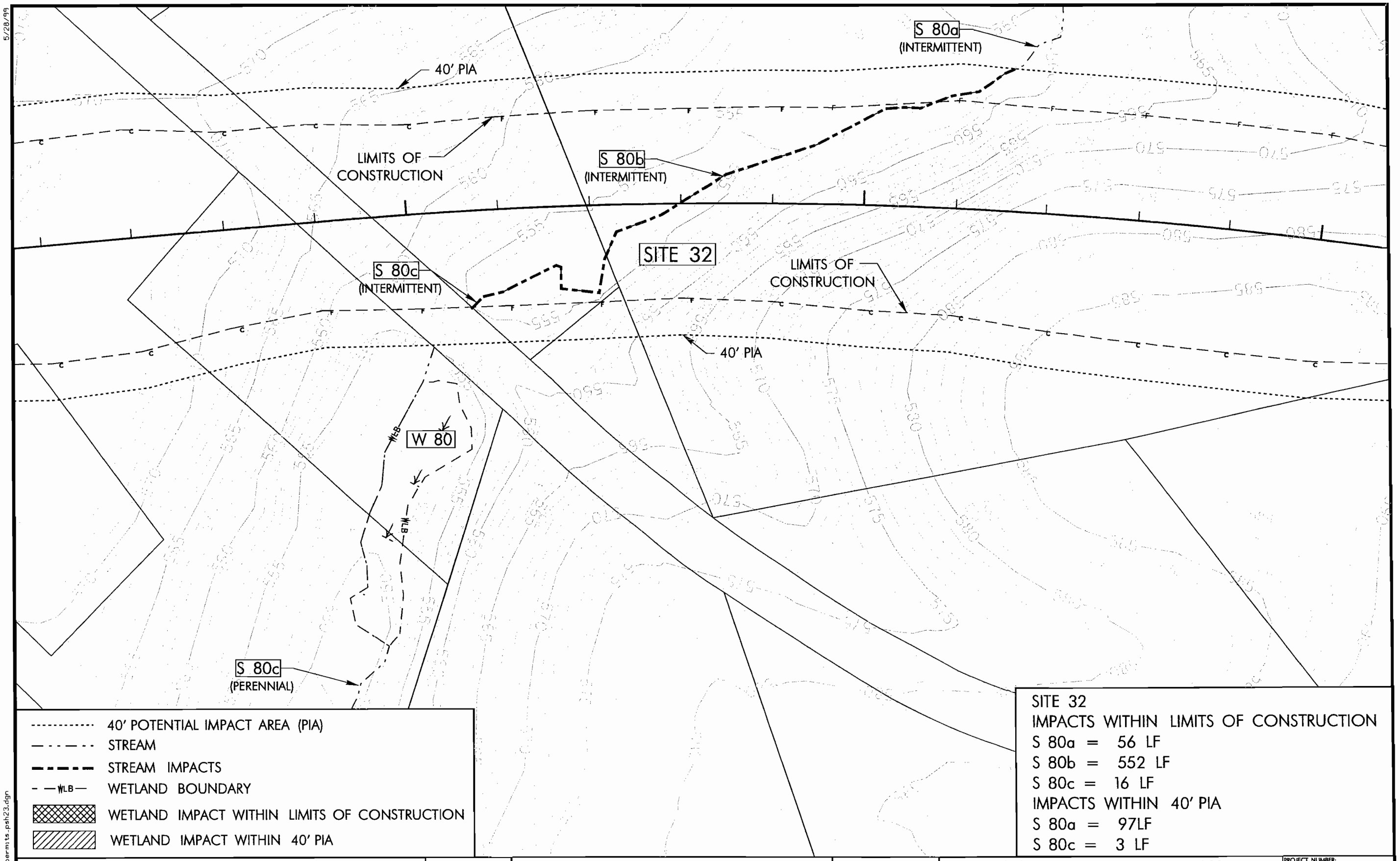

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 32
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 80a = 56 LF
S 80b = 552 LF
S 80c = 16 LF
IMPACTS WITHIN 40' PIA
S 80a = 97LF
S 80c = 3 LF

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 32

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 23
SCALE: 1" = 50'
DATE: AUG. 25, 2010

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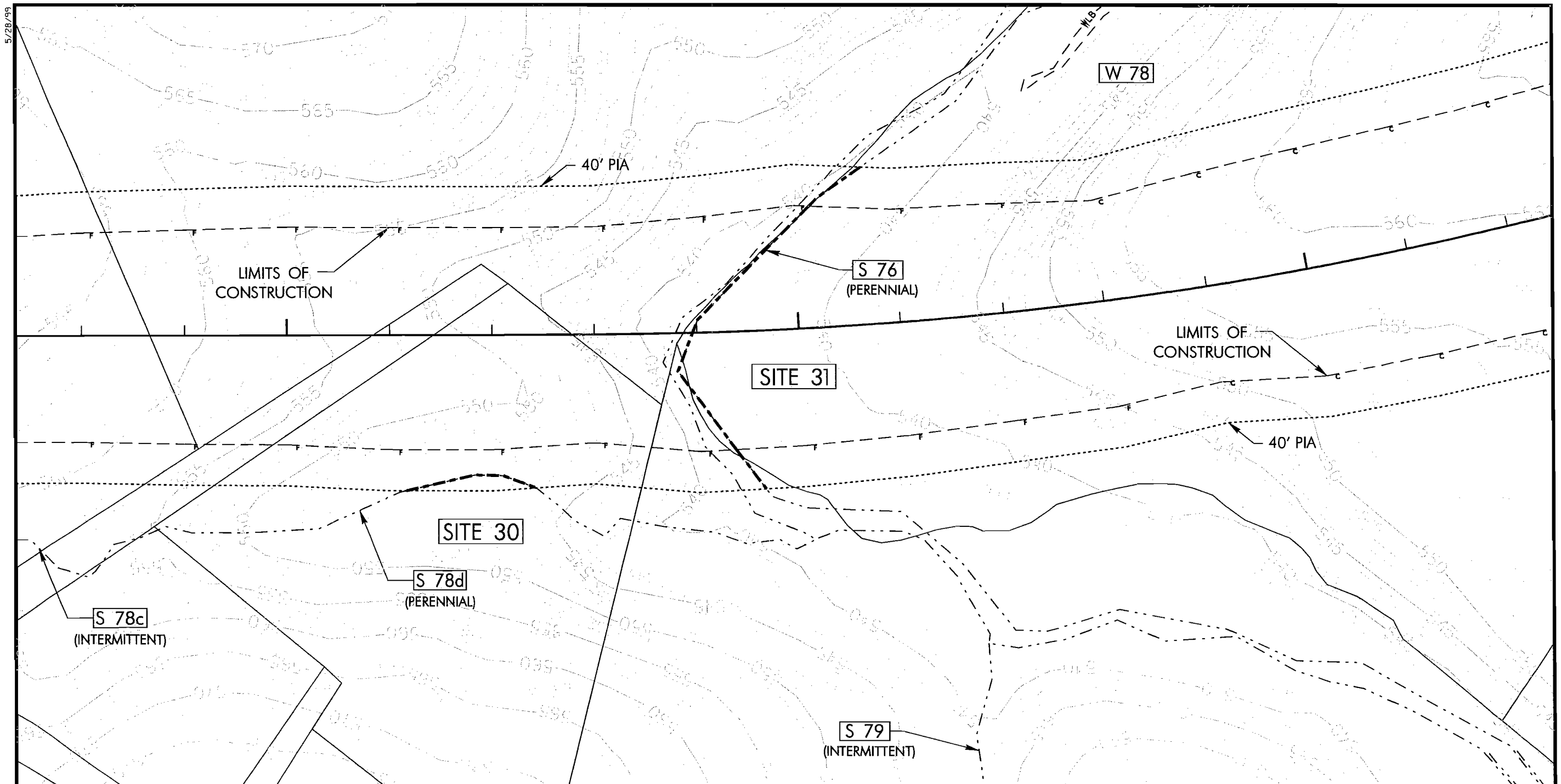

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 30 & 31
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 76 = 305 LF

IMPACTS WITHIN 40' PIA
S 76 = 112 LF
S 78d = 131 LF

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 30 & 31

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 22
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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5/28/99

40' PIA

LIMITS OF CONSTRUCTION

S 78a
(INTERMITTENT)

SITE 29

LIMITS OF CONSTRUCTION

W 75

40' PIA

W 76

W 77

SITE 28

S 78b
(INTERMITTENT)

S 78c
(INTERMITTENT)

S 78d
(PERENNIAL)

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 28 & 29
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 78a = 146 LF
IMPACTS WITHIN 40' PIA
S 78a = 106 LF
W 75 = 0.006 ACRE (271 SF)
W 76 = 0.022 ACRE (976 SF)

COMMENTS:

NORTH CAROLINA Turnpike Authority

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 28 & 29

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 21
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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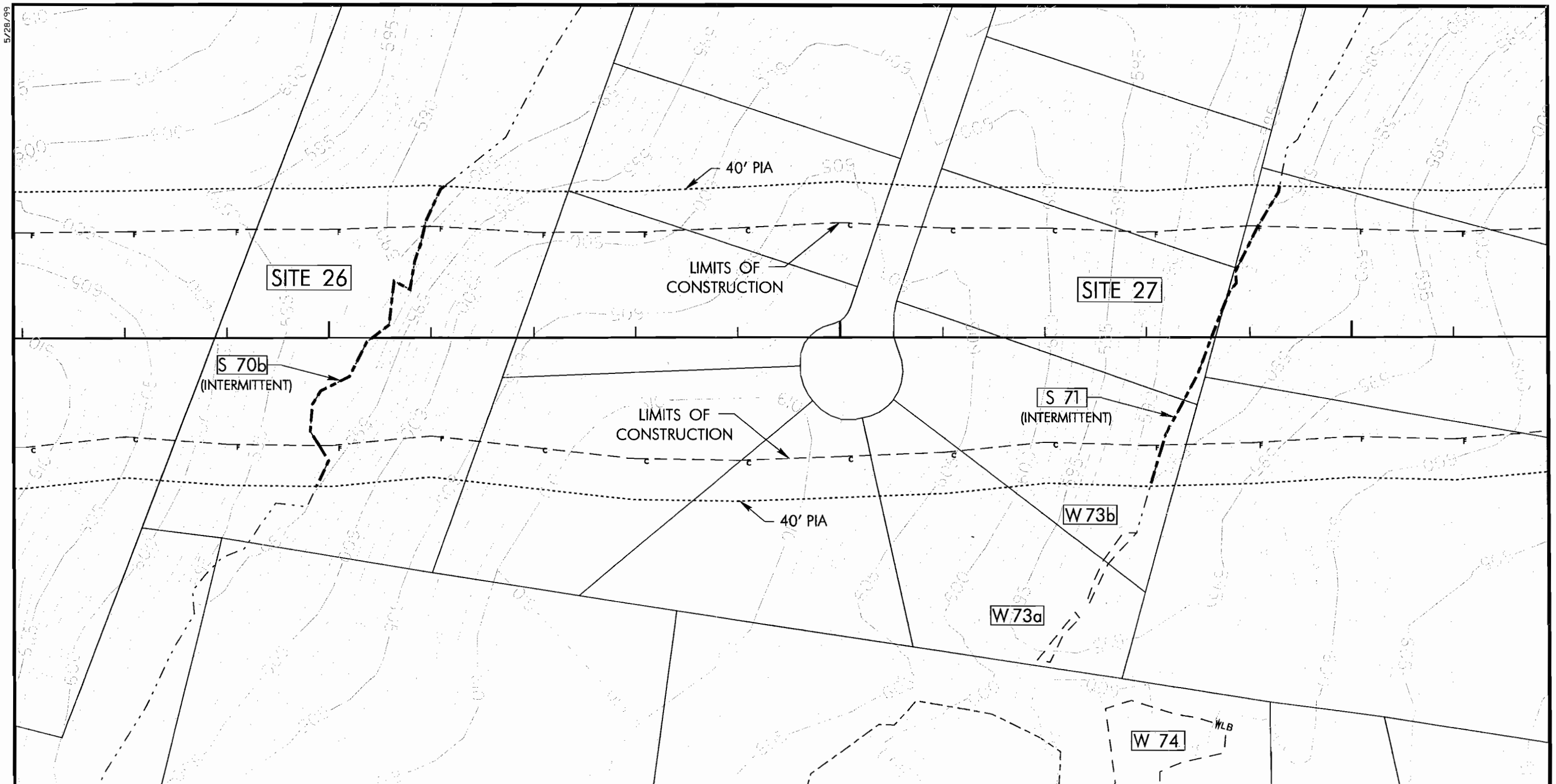

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 26 & 27
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 70b = 280 LF
S 71 = 236 LF
IMPACTS WITHIN 40' PIA
S 70b = 90 LF
S 71 = 87 LF

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 26 & 27

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 20
SCALE: 1" = 50'
DATE: JUNE 1, 2010

5/28/99

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5/28/99

S 68c
(PERENNIAL)

40' PIA

SITE 24

LIMITS OF CONSTRUCTION

S 68b
(PERENNIAL)

SITE 25

S 69
(INTERMITTENT)

LIMITS OF CONSTRUCTION

40' PIA

S 68a
(INTERMITTENT)

SITE 24 & 25
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 68b = 481 LF
S 68c = 34 LF
S 69 = 247 LF
IMPACTS WITHIN 40' PIA
S 68b = 48 LF
S 68c = 45 LF
S 69 = 112 LF

- 40' POTENTIAL IMPACT AREA (PIA)
- STREAM
- STREAM IMPACTS
- WLB WETLAND BOUNDARY
- WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
- WETLAND IMPACT WITHIN 40' PIA

COMMENTS:

NORTH CAROLINA Turnpike Authority

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 24 & 25

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 19
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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S 65
(INTERMITTENT)

40' PIA

S 64c
(INTERMITTENT)

SITE 24A

WX823

WLB

LIMITS OF CONSTRUCTION

40' PIA

P 30

40' PIA

S 64b
(INTERMITTENT)

LIMITS OF CONSTRUCTION

PROP. BRIDGE

PROP. BRIDGE

LIMITS OF CONSTRUCTION

40' PIA

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 24A

IMPACTS WITHIN LIMITS OF CONSTRUCTION
NA

IMPACTS WITHIN 40' PIA
S64c = 46 LF

COMMENTS:

NORTH CAROLINA
Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 24A

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 18
SCALE: 1" = 50'
DATE: AUG. 25, 2010

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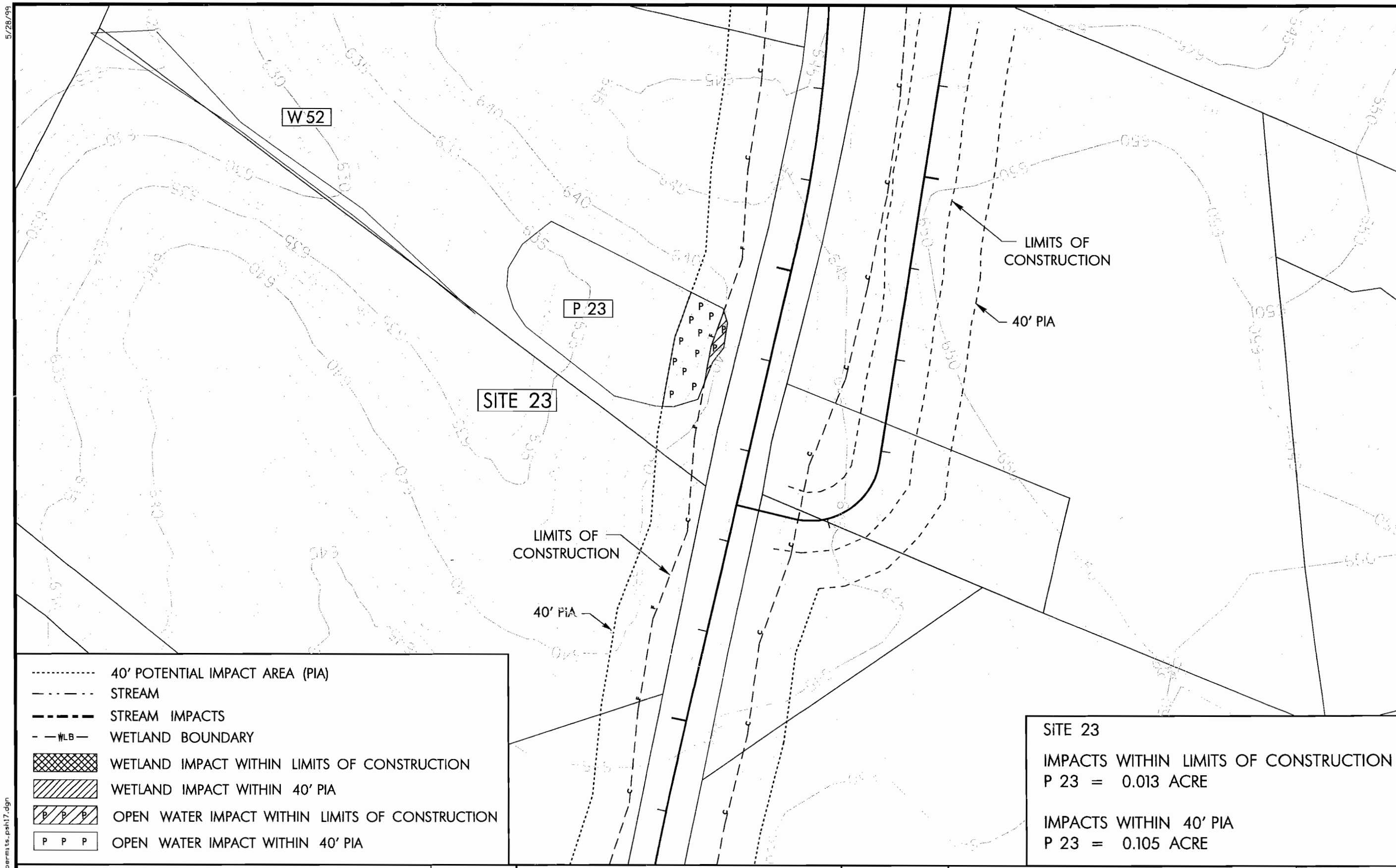

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA
OPEN WATER IMPACT WITHIN LIMITS OF CONSTRUCTION
P P P OPEN WATER IMPACT WITHIN 40' PIA

SITE 23

IMPACTS WITHIN LIMITS OF CONSTRUCTION
P 23 = 0.013 ACRE

IMPACTS WITHIN 40' PIA
P 23 = 0.105 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 23

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 17
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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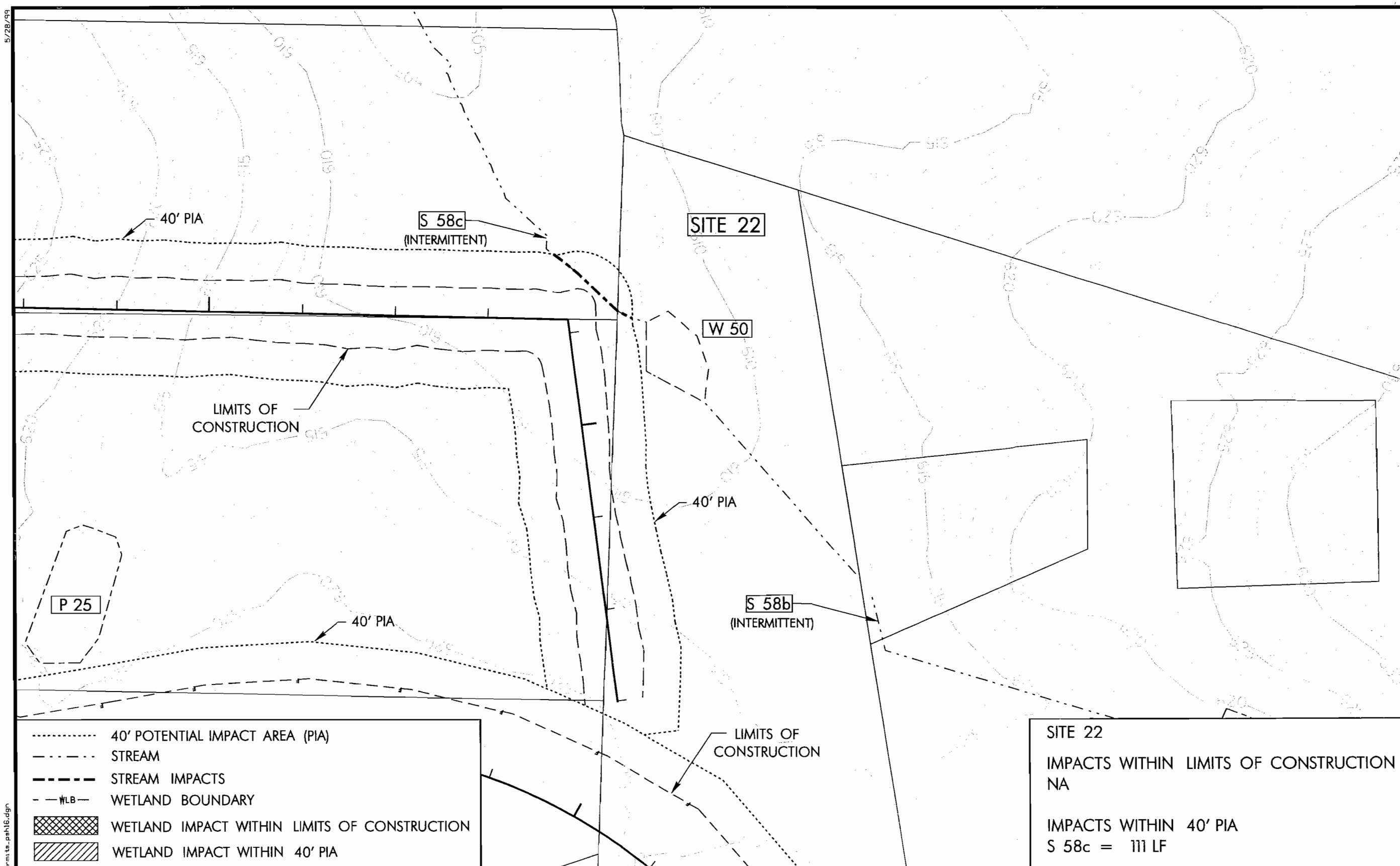

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 22

IMPACTS WITHIN LIMITS OF CONSTRUCTION
NA

IMPACTS WITHIN 40' PIA
S 58c = 111 LF

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 22

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 16
SCALE: 1" = 50'
DATE: JUNE 1, 2010

01-JUN-2010 09:40
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Plot Date: 5/28/99
BY: Bill Kewish

5/28/99

SITE 21

LIMITS OF CONSTRUCTION

40' PIA

PROP. BRIDGE

S 58d
(INTERMITTENT)

WX813

SITE 20

P 26

S 47
(PERENNIAL)

LIMITS OF CONSTRUCTION

40' PIA

W 49

LIMITS OF CONSTRUCTION

40' PIA

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 20 & 21
IMPACTS WITHIN LIMITS OF CONSTRUCTION
NO IMPACTS

IMPACTS WITHIN 40' PIA
NO IMPACTS

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 20 & 21

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 15
SCALE: 1" = 50'
DATE: AUG. 25, 2010

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5/28/99

S 47
(PERENNIAL)

40' PIA

S 55
(PERENNIAL)

LIMITS OF CONSTRUCTION

PROP. BRIDGE

PROP. BRIDGE

SITE 19

LIMITS OF CONSTRUCTION

40' PIA

SITE 18

WX822

W38

SOUTH FORK CROOKED CREEK

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 18
NO IMPACT

SITE 19
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 55 = 271 LF
WX822 = 0.026 ACRE
IMPACTS WITHIN 40' PIA
S 55 = 91 LF
WX822 = 0.047 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 18 & 19

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 14
SCALE: 1" = 50'
DATE: AUG. 25, 2010

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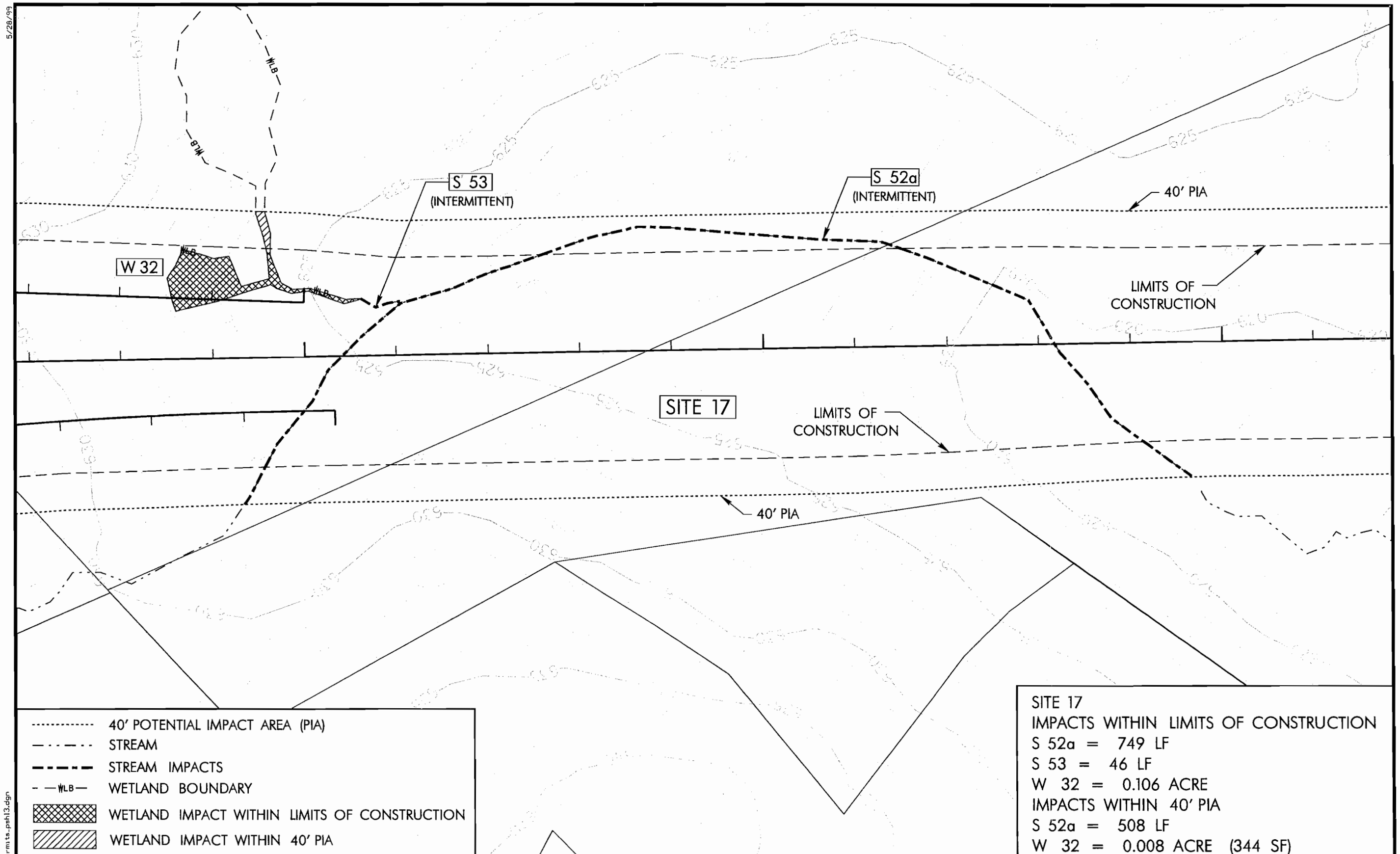
5/28/99



40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 17
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 52a = 749 LF
S 53 = 46 LF
W 32 = 0.106 ACRE
IMPACTS WITHIN 40' PIA
S 52a = 508 LF
W 32 = 0.008 ACRE (344 SF)

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 17

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 13
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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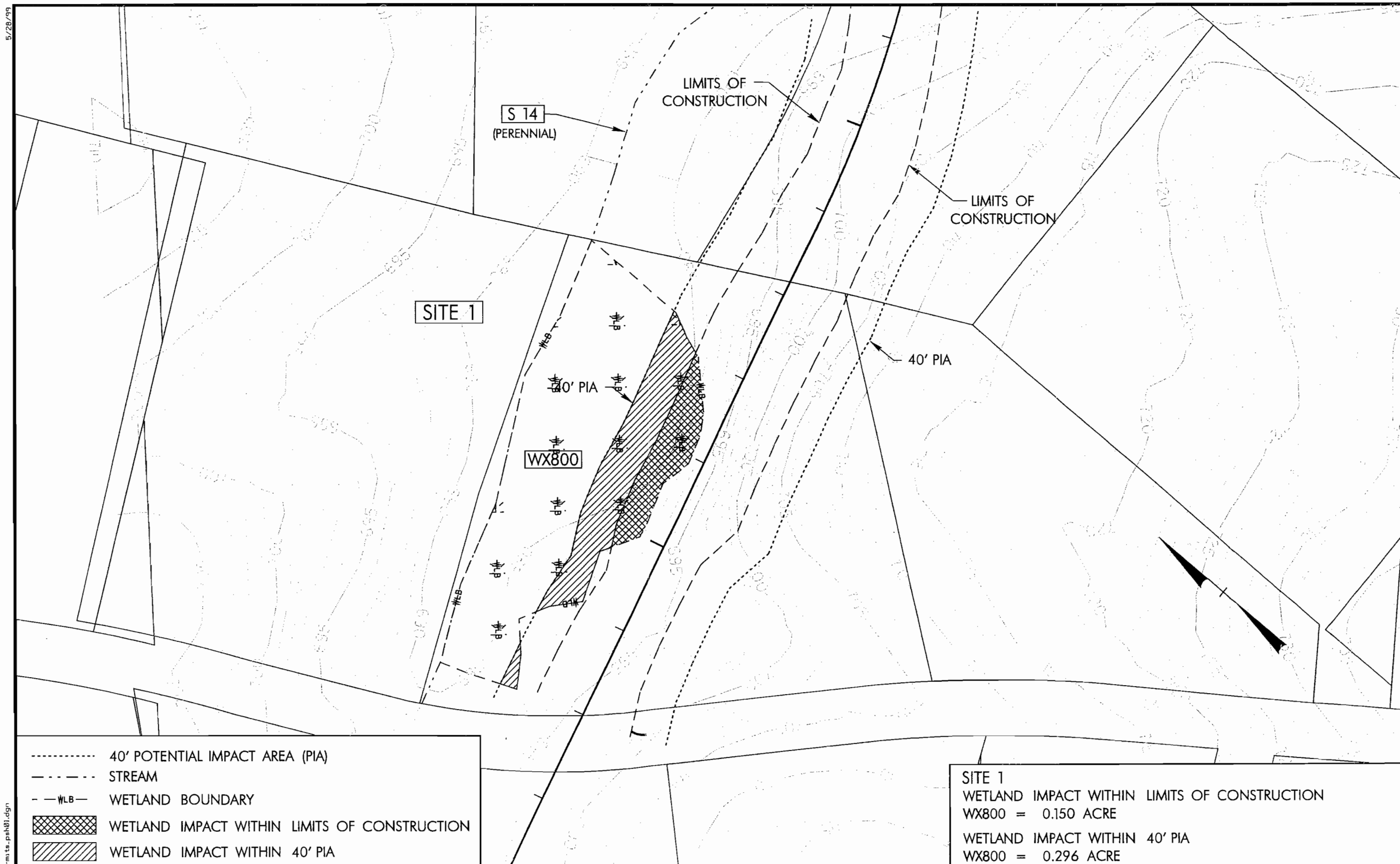

40' POTENTIAL IMPACT AREA (PIA)
STREAM
WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 1
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WX800 = 0.150 ACRE

WETLAND IMPACT WITHIN 40' PIA
WX800 = 0.296 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 1

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 1
SCALE: 1" = 50'
DATE: AUG. 25, 2010

5/28/99

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User: gwinne

5/28/99

P 42a

W 86

SITE 36

MATCH LINE SHEET 27

40' PIA

LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

40' PIA

40' POTENTIAL IMPACT AREA (PIA)

STREAM

STREAM IMPACTS

WLB WETLAND BOUNDARY

WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION

WETLAND IMPACT WITHIN 40' PIA

SITE 36

IMPACTS WITHIN LIMITS OF CONSTRUCTION
W 86 = 0.666 ACRE

IMPACTS WITHIN 40' PIA
W 86 = 0.347 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 36

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 27A
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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21145 AT RALPGVEDT

5/28/99

SITE 37

W 87

P 41

40' PIA

LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

40' PIA

W 88

WX88

40' POTENTIAL IMPACT AREA (PIA)

STREAM

STREAM IMPACTS

WLB WETLAND BOUNDARY

WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION

WETLAND IMPACT WITHIN 40' PIA

P P P SURFACE WATER IMPACT WITHIN LIMITS OF CONSTRUCTION

P P P SURFACE WATER IMPACT WITHIN 40' PIA

SITE 37

IMPACTS WITHIN LIMITS OF CONSTRUCTION
NA

IMPACTS WITHIN 40' PIA
P 41 = 0.048 ACRE

COMMENTS:

NORTH CAROLINA
Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 37

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 28
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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5/28/99

WX804

SX502

LIMITS OF CONSTRUCTION

P X42c

40' PIA

P 42b

P 42a

SITE 38

LIMITS OF CONSTRUCTION

40' PIA

40' POTENTIAL IMPACT AREA (PIA)

STREAM

STREAM IMPACTS

WLB WETLAND BOUNDARY

WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION

WETLAND IMPACT WITHIN 40' PIA

SURFACE WATER IMPACT WITHIN LIMITS OF CONSTRUCTION

SURFACE WATER IMPACT WITHIN 40' PIA

SITE 38

IMPACTS WITHIN LIMITS OF CONSTRUCTION
NA

IMPACTS WITHIN 40' PIA
P 42b = 0.019 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 38

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277

SHEET NUMBER: 29

SCALE: 1" = 50'

DATE: AUG. 25, 2010

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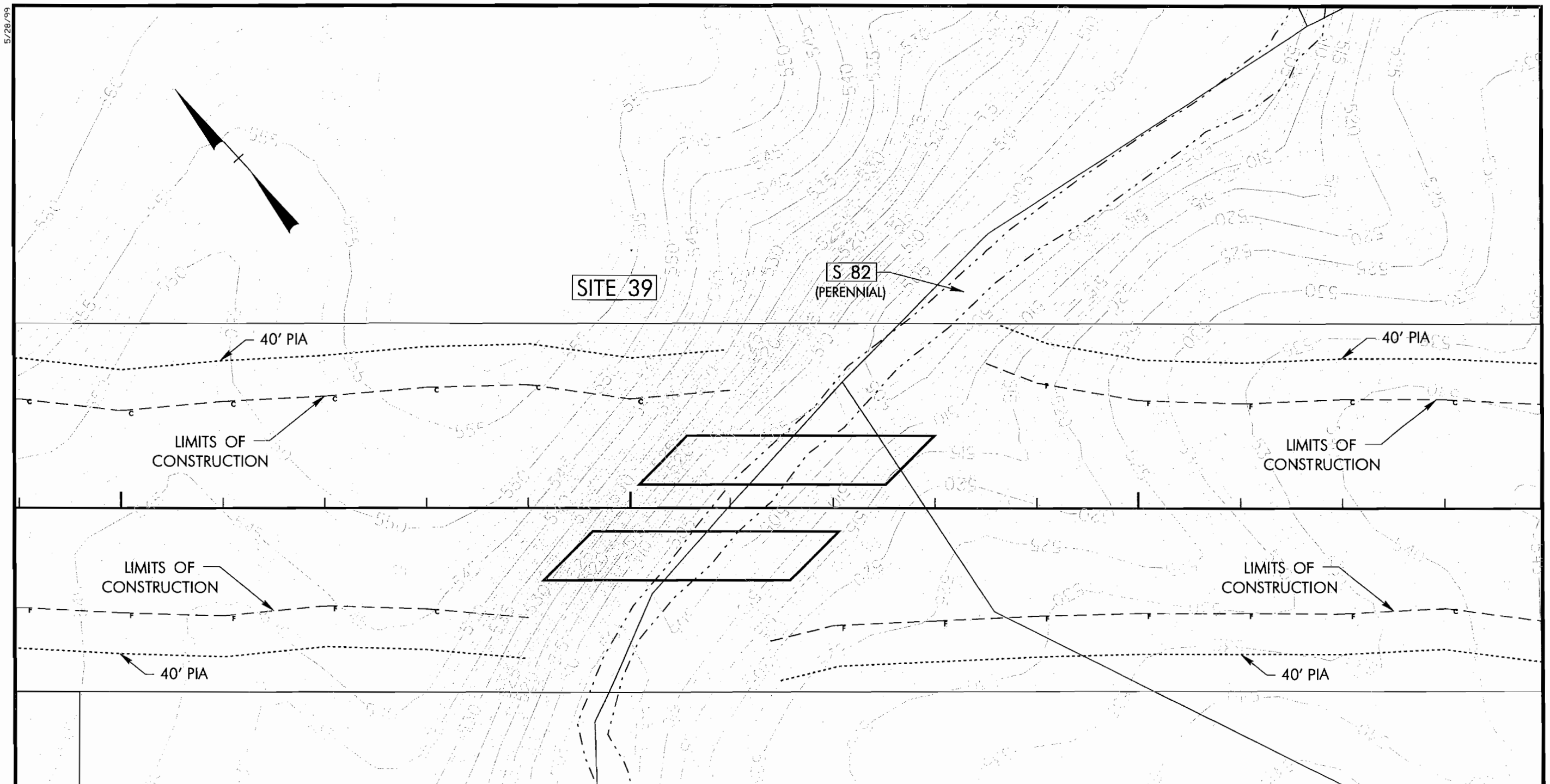
21145 AT RDI REVERT



40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 39

IMPACTS WITHIN LIMITS OF CONSTRUCTION
NA

IMPACTS WITHIN 40' PIA
NA

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 39

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 30
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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Bruce Vance

5/28/99

W 95

WLB

S 88a
(INTERMITTENT)

40' PIA

LIMITS OF CONSTRUCTION

SITE 40

S 86
(PERENNIAL)

LIMITS OF CONSTRUCTION

40' PIA

W 93

WLB

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 40
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 86 = 225 LF
S 88a = 30 LF
IMPACTS WITHIN 40' PIA
S 86 = 80 LF
S 88a = 51 LF

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 40

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 31
SCALE: 1" = 50'
DATE: AUG. 25, 2010

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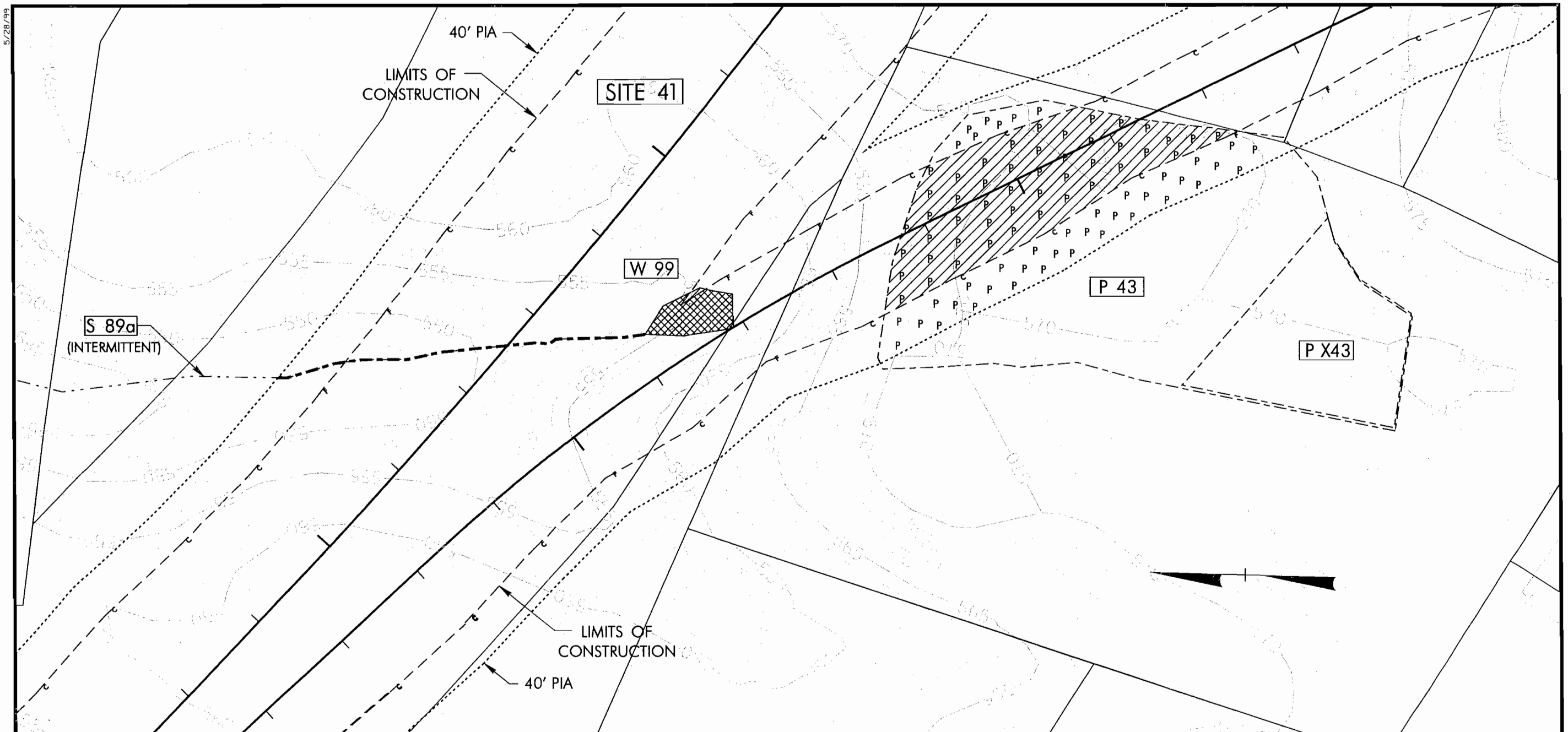

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA
SURFACE WATER IMPACT WITHIN LIMITS OF CONSTRUCTION
SURFACE WATER IMPACT WITHIN 40' PIA

SITE 41
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 89a = 295 LF
W 99 = 0.063 ACRE
P 43 = 0.628 ACRE
IMPACTS WITHIN 40' PIA
S 89a = 66 LF
W 99 = 0.002 ACRE (92.3 SF)
P 43 = 0.459 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 41

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 32
SCALE: 1" = 50'
DATE: JUNE 1, 2010

5/28/99

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5/28/99

40' PIA

LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

40' PIA

SITE 42

P 45

W 100

40' PIA

LIMITS OF CONSTRUCTION

P 44

40' PIA

LIMITS OF CONSTRUCTION

40' POTENTIAL IMPACT AREA (PIA)

STREAM

STREAM IMPACTS

WLB WETLAND BOUNDARY

WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION

WETLAND IMPACT WITHIN 40' PIA

SITE 42

IMPACTS WITHIN LIMITS OF CONSTRUCTION
NA

IMPACTS WITHIN 40' PIA
W100 = 0.004 ACRE (190 SF)

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ

1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 42

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277

SHEET NUMBER: 33

SCALE: 1" = 50'

DATE: JUNE 1, 2010

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5/28/99

LIMITS OF CONSTRUCTION

40' PIA

S 92a
(INTERMITTENT)

W 101

W 102

S 92b
(INTERMITTENT)

LIMITS OF CONSTRUCTION

40' PIA

SITE 43

W 103

P 46

S 98b
(PERENNIAL)

S 98a
(PERENNIAL)

LIMITS OF CONSTRUCTION

40' PIA

40' PIA

LIMITS OF CONSTRUCTION

WLB

SITE 43
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 92a = 34 LF
S 92b = 30 LF
W 101 = 0.085 ACRE
W 102 = 0.086 ACRE
W 103 = 0.085 ACRE
IMPACTS WITHIN 40' PIA
S 92a = 84 LF
S 92b = 57 LF
W 101 = 0.035 ACRE
W 102 = 0.007 ACRE (324 SF)
W 103 = 0.048 ACRE

- 40' POTENTIAL IMPACT AREA (PIA)
- STREAM
- STREAM IMPACTS
- WETLAND BOUNDARY
- WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
- WETLAND IMPACT WITHIN 40' PIA

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 43

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 34
SCALE: 1" = 50'
DATE: JUNE 1, 2010

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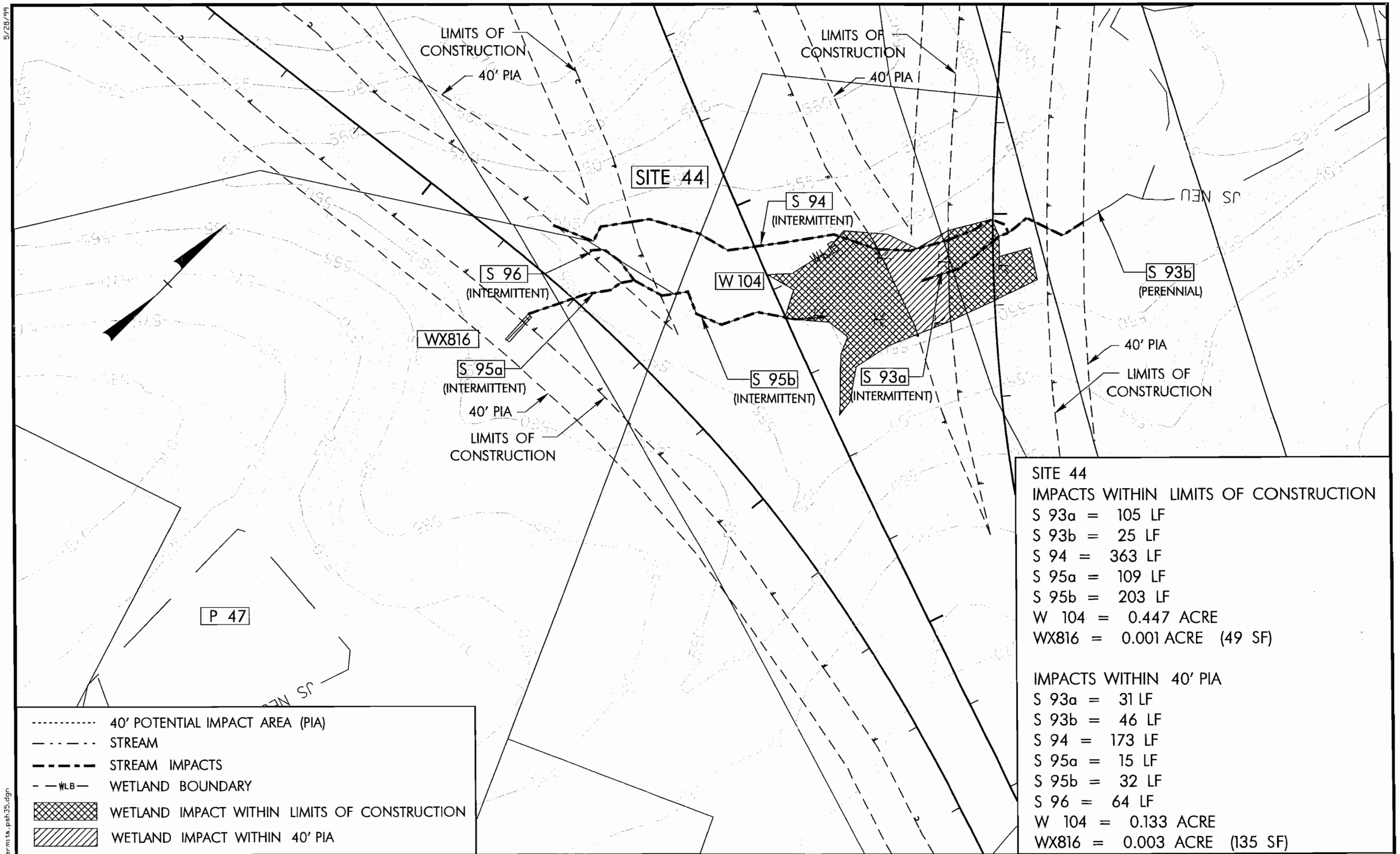
21149 Bailey, Bryan



40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 44
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 93a = 105 LF
S 93b = 25 LF
S 94 = 363 LF
S 95a = 109 LF
S 95b = 203 LF
W 104 = 0.447 ACRE
WX816 = 0.001 ACRE (49 SF)

IMPACTS WITHIN 40' PIA
S 93a = 31 LF
S 93b = 46 LF
S 94 = 173 LF
S 95a = 15 LF
S 95b = 32 LF
S 96 = 64 LF
W 104 = 0.133 ACRE
WX816 = 0.003 ACRE (135 SF)

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 44

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 35
SCALE: 1" = 50'
DATE: AUG. 25, 2010

5/28/99

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40' PIA

LIMITS OF CONSTRUCTION

P 49

SITE 44

SITE 45

LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

40' PIA

P 48

40' PIA

LIMITS OF CONSTRUCTION

40' POTENTIAL IMPACT AREA (PIA)

STREAM

STREAM IMPACTS

WLB WETLAND BOUNDARY

WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION

WETLAND IMPACT WITHIN 40' PIA

SURFACE WATER IMPACT WITHIN LIMITS OF CONSTRUCTION

SURFACE WATER IMPACT WITHIN 40' PIA

SITE 44 & 45
IMPACTS WITHIN LIMITS OF CONSTRUCTION
P 49 = 0.656 ACRE

IMPACTS WITHIN 40' PIA
P 48 = 0.052 ACRE
P 49 = 0.170 ACRE

COMMENTS:

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NORTH CAROLINA
Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

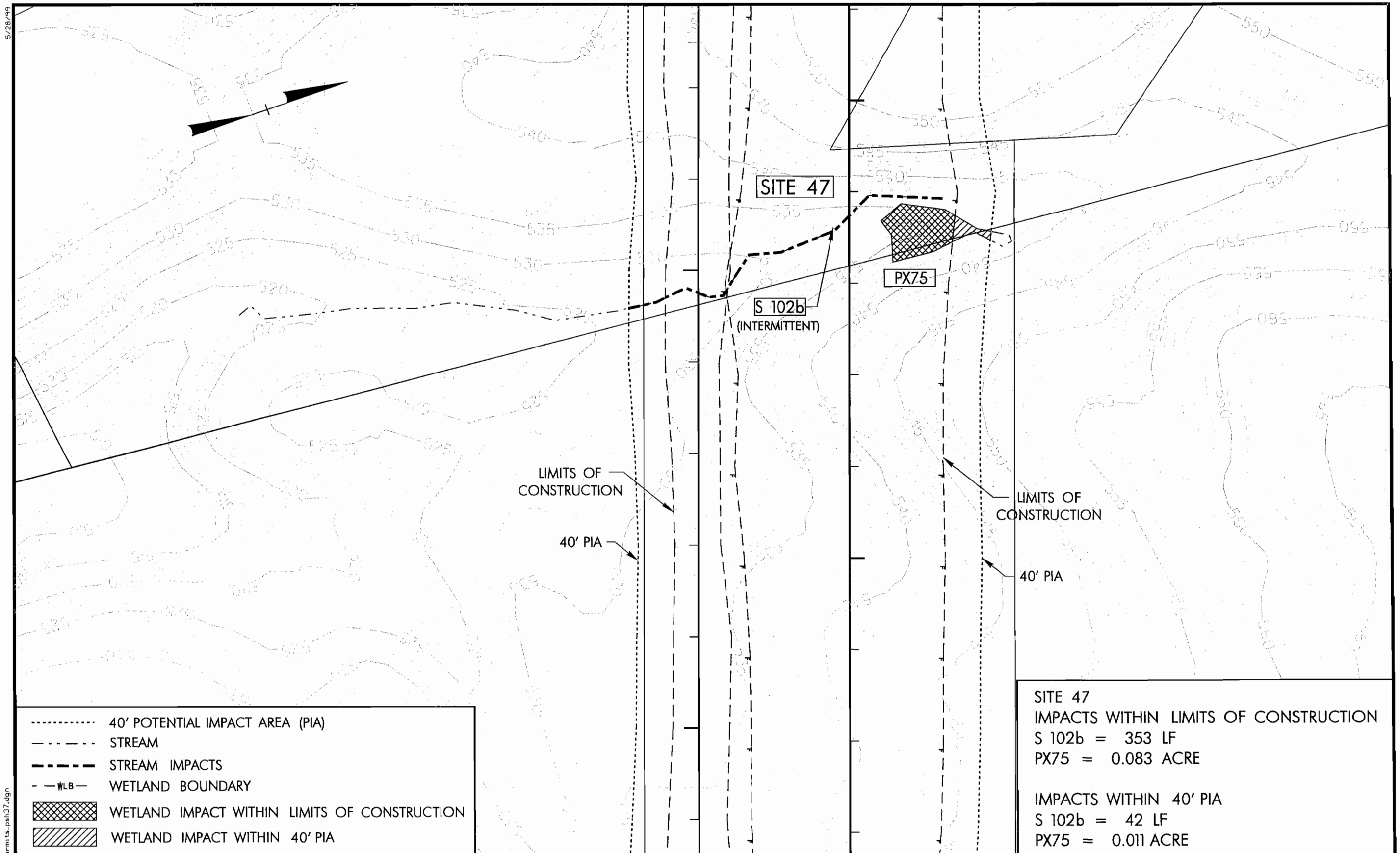
STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 44 & 45

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 36
SCALE: 1" = 50'
DATE: JUNE 1, 2010



SITE 47
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 102b = 353 LF
PX75 = 0.083 ACRE

IMPACTS WITHIN 40' PIA
S 102b = 42 LF
PX75 = 0.011 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 47

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER:	100014277
SHEET NUMBER:	37
SCALE:	1" = 50'
DATE:	AUG. 25, 2010

5/28/99

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5/28/99

S 103a
(PERENNIAL)

40' PIA

W 107

S 106
(INTERMITTENT)

LIMITS OF CONSTRUCTION

SITE 48

S 103b
(PERENNIAL)

LIMITS OF CONSTRUCTION

40' PIA

S 103c
(PERENNIAL)

SITE 48
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 103a = 167 LF
S 103b = 136 LF
S 106 = 275 LF
W 107 = 0.020 ACRE
IMPACTS WITHIN 40' PIA
S 103a = 43 LF
S 103b = 67 LF
S 106 = 73 LF
W 107 = 0.028 ACRE

- 40' POTENTIAL IMPACT AREA (PIA)
- STREAM
- STREAM IMPACTS
- WLB WETLAND BOUNDARY
- WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
- WETLAND IMPACT WITHIN 40' PIA

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 48

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 38
SCALE: 1" = 50'
DATE: AUG. 25, 2010

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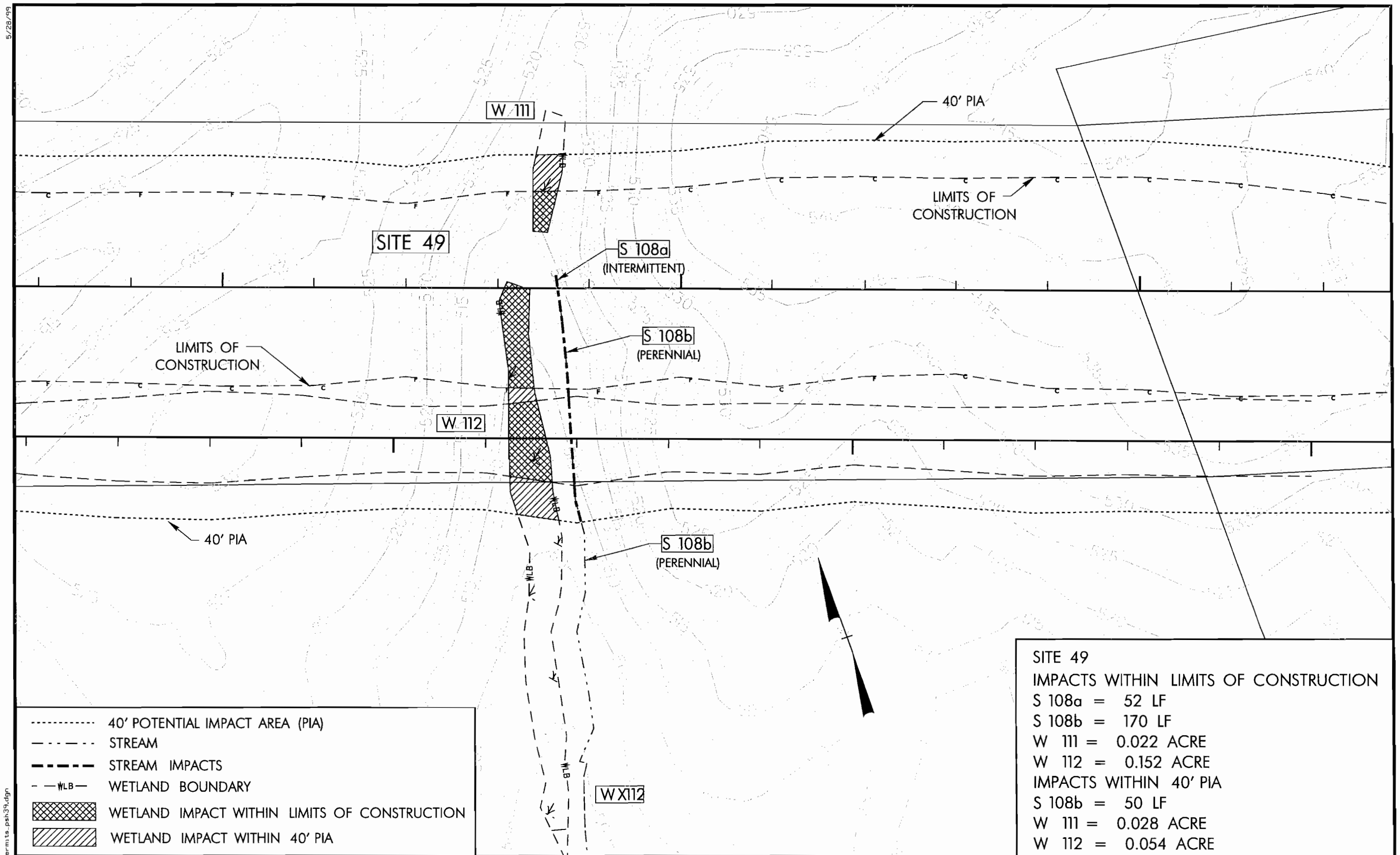
21145 AT RALEIGH



SITE 49
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 108a = 52 LF
S 108b = 170 LF
W 111 = 0.022 ACRE
W 112 = 0.152 ACRE
IMPACTS WITHIN 40' PIA
S 108b = 50 LF
W 111 = 0.028 ACRE
W 112 = 0.054 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 49

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 39
SCALE: 1" = 50'
DATE: AUG. 25, 2010

5/28/99
26-AUG-2010 09:47
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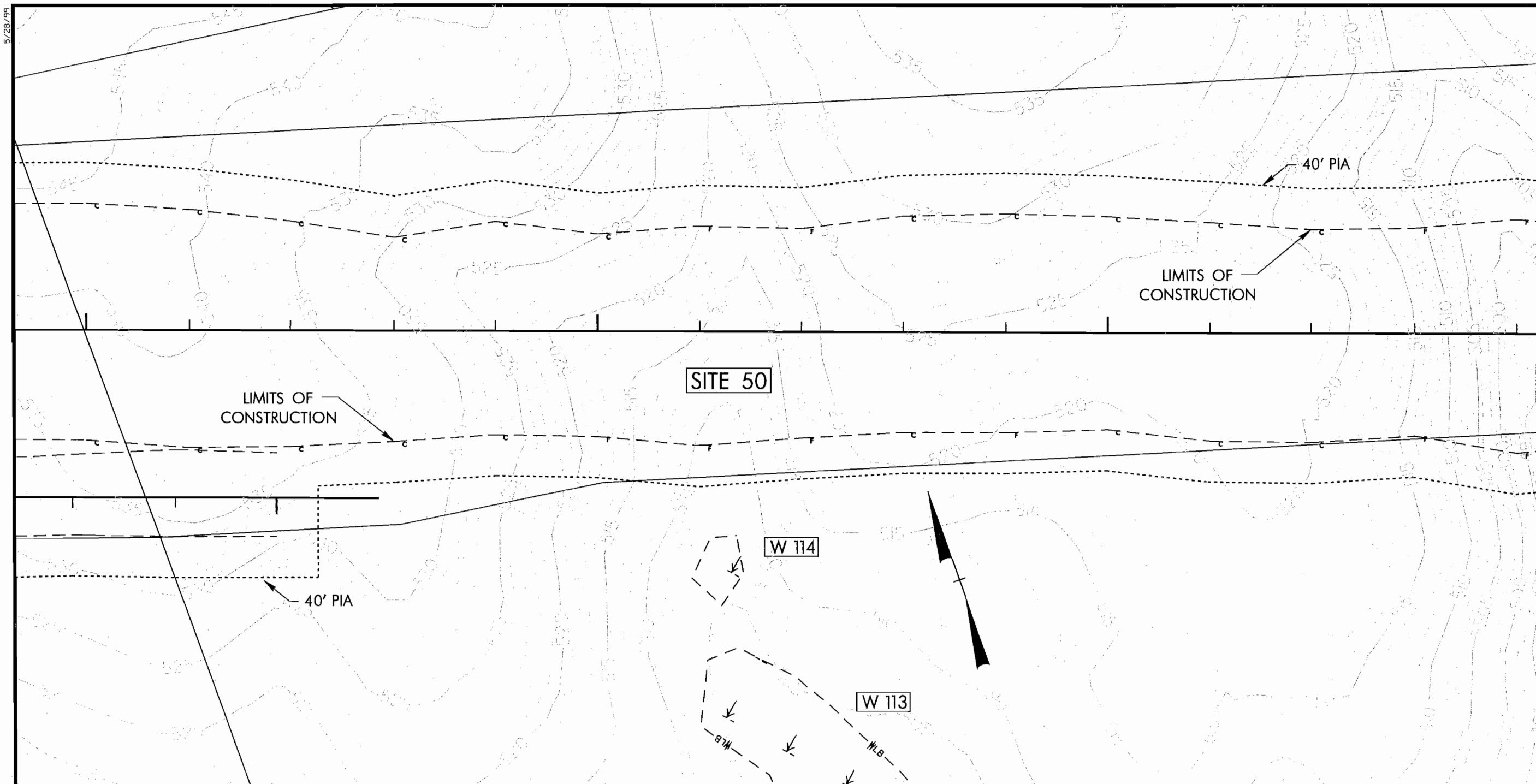
31.45 x 21.95 (BAYBORO)

5/28/99



40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 50
IMPACTS WITHIN LIMITS OF CONSTRUCTION
NO IMPACTS

IMPACTS WITHIN 40' PIA
NO IMPACTS

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

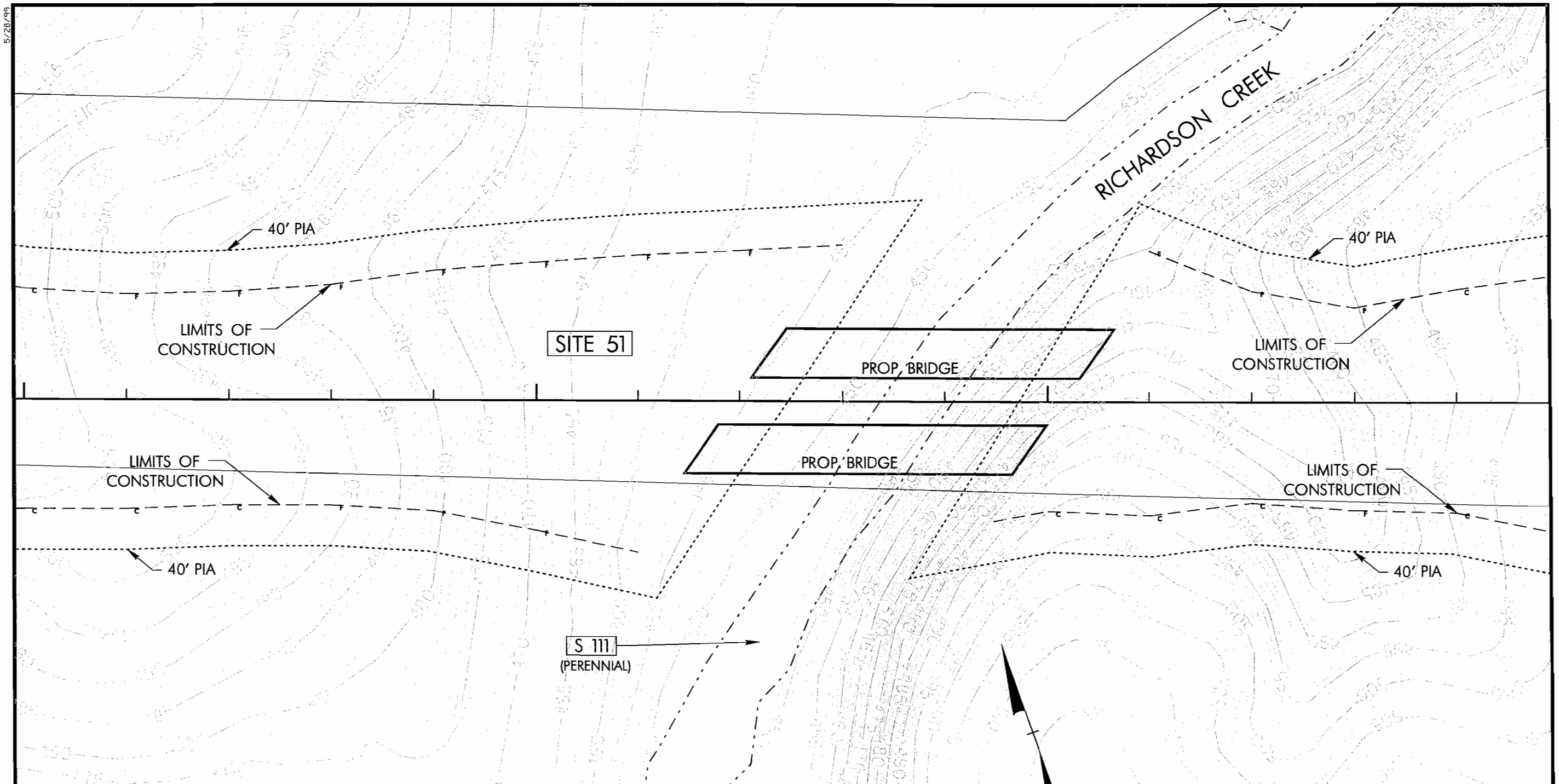
MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 50

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 40
SCALE: 1" = 50'
DATE: AUG. 25, 2010

26-AUG-2010 09:40
S:\Permits\Projects\R-3329_permits_psh40.dgn
User: d1 Workstation: 3329



40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 51

IMPACTS WITHIN LIMITS OF CONSTRUCTION
NO IMPACT

IMPACTS WITHIN 40' PIA
NO IMPACT

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 51

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 41
SCALE: 1" = 50'
DATE: AUG. 25, 2010

5/28/99

26-AUG-2010 09:40
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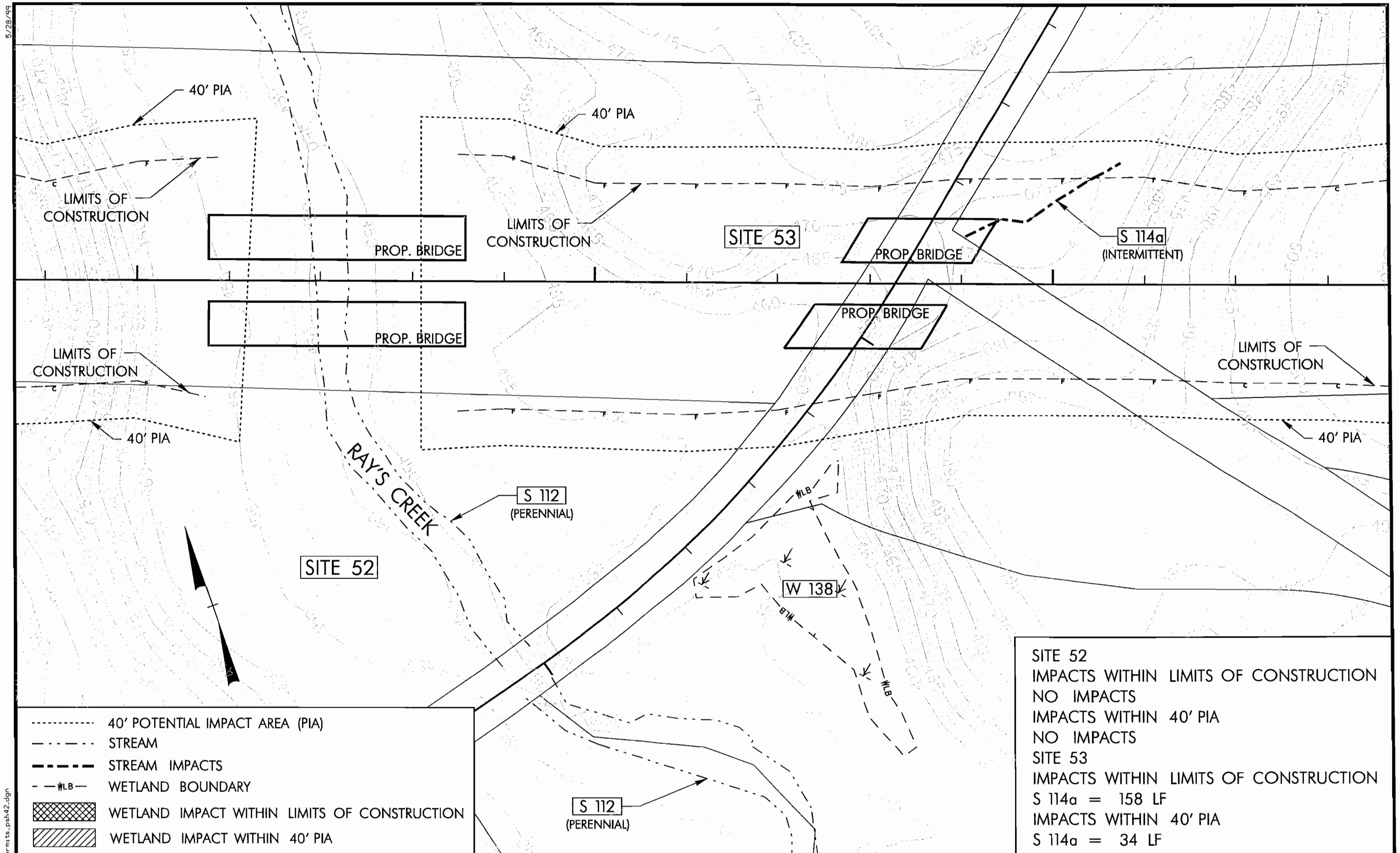

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 52
IMPACTS WITHIN LIMITS OF CONSTRUCTION
NO IMPACTS
IMPACTS WITHIN 40' PIA
NO IMPACTS
SITE 53
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 114a = 158 LF
IMPACTS WITHIN 40' PIA
S 114a = 34 LF

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 52 & 53

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 42
SCALE: 1" = 50'
DATE: AUG. 25, 2010

26-AUG-2010 09:48
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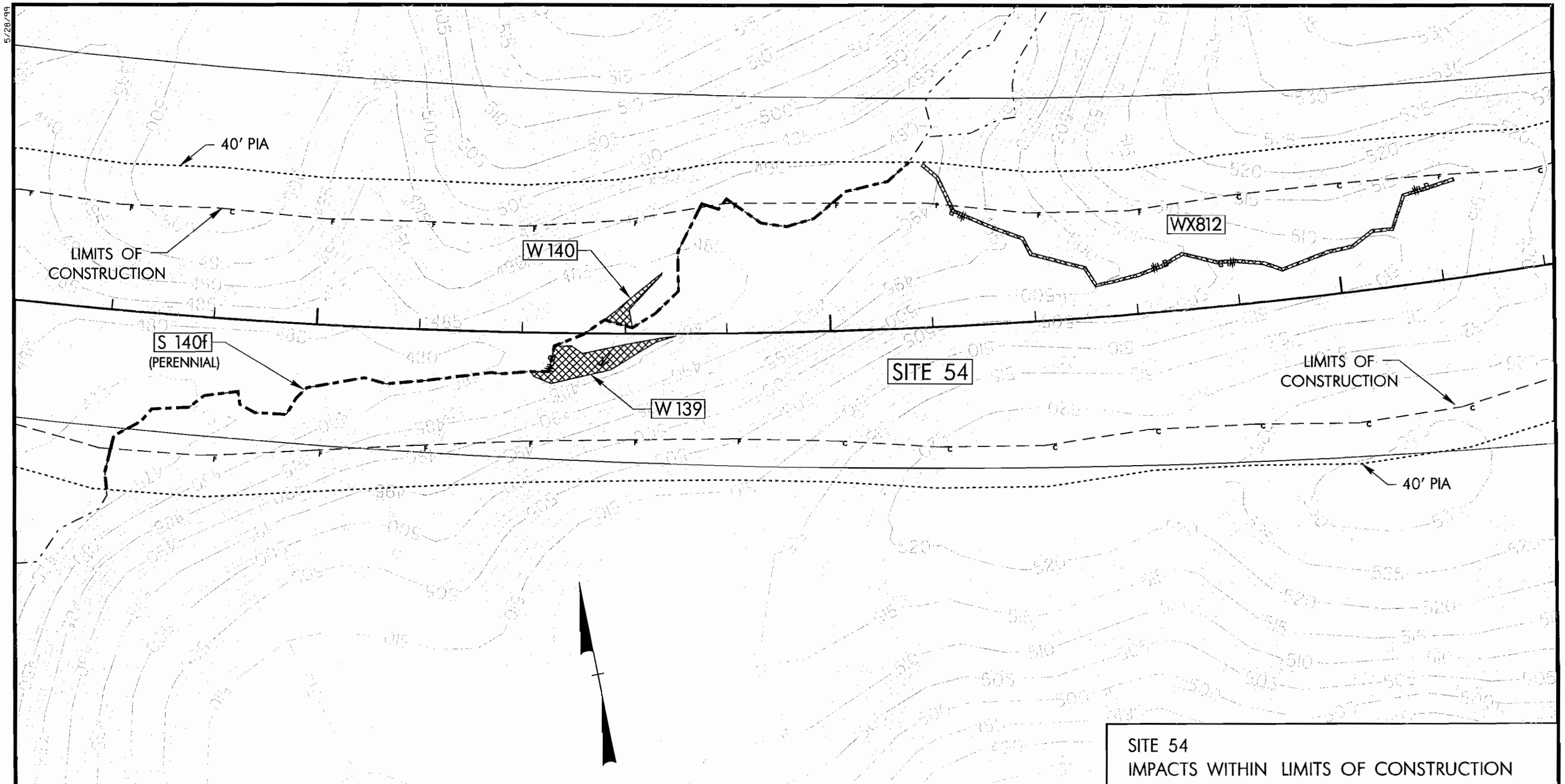
R:\Permits\PSH\PSH42.dgn



40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 54
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 140f = 841 LF
W 139 = 0.053 ACRE
W 140 = 0.012 ACRE
WX812 = 0.036 ACRE
IMPACTS WITHIN 40' PIA
S 140f = 153 LF
WX812 = 0.003 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 54

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 43
SCALE: 1" = 50'
DATE: AUG. 25, 2010

5/28/99

26-AUG-2010 09:49
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5/28/99

LIMITS OF CONSTRUCTION

40' PIA

LIMITS OF CONSTRUCTION

40' PIA

S 145
(INTERMITTENT)

S X145z
(INTERMITTENT)

S X196
(PERENNIAL)

WX808

WLB

S X145
(INTERMITTENT)

WX806

SITE 55

LIMITS OF CONSTRUCTION

W X210

WLB

40' PIA

40' POTENTIAL IMPACT AREA (PIA)
STREAM
STREAM IMPACTS
WLB WETLAND BOUNDARY
WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION
WETLAND IMPACT WITHIN 40' PIA

SITE 55
IMPACTS WITHIN LIMITS OF CONSTRUCTION
S 145 = 393 LF
S X145 = 107 LF
S X145z = 33 LF
WX806 = 18 SF
WX808 = 0.002 ACRE
IMPACTS WITHIN 40' PIA
S 145 = 210 LF
S X145z = 44 LF
WX806 = 0.005 ACRE
WX808 = 0.029 ACRE

COMMENTS:

NORTH CAROLINA
Turnpike Authority

PBSJ
1616 EAST MILLBROOK RD., STE. 310
RALEIGH, N. C. 27609
PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 55

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 44
SCALE: 1" = 50'
DATE: AUG. 25, 2010

26-AUG-2010 09:49
R:\permits\pvings\3329_permits_psh44.dgn
21145 BY: Raleigh

5/28/99

40' PIA

LIMITS OF CONSTRUCTION

SITE 56

LIMITS OF CONSTRUCTION

40' PIA

W 153

40' POTENTIAL IMPACT AREA (PIA)

STREAM

STREAM IMPACTS

WLB WETLAND BOUNDARY

WETLAND IMPACT WITHIN LIMITS OF CONSTRUCTION

WETLAND IMPACT WITHIN 40' PIA

SITE 56
IMPACTS WITHIN LIMITS OF CONSTRUCTION
W 153 = 0.007 ACRE

IMPACTS WITHIN 40' PIA
W 153 = 0.045 ACRE

COMMENTS:

NORTH CAROLINA Turnpike Authority

PBSJ 1616 EAST MILLBROOK RD., STE. 310 RALEIGH, N. C. 27609 PHONE: (919) 876-6888

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MONROE CONNECTOR /BYPASS
PROJECT R-3329 /R-2559
STREAM AND WETLAND IMPACTS

SITE 56

MECKLENBURG AND UNION COUNTY

PROJECT NUMBER: 100014277
SHEET NUMBER: 45
SCALE: 1" = 50'
DATE: AUG. 25, 2010

26-AUG-2010 09:38
c:\pwworking\...\r3329_permits_psh45.dgn
$$$$USER$$$$ BOLESNER

REVISIONS

NORTH CAROLINA Turnpike Authority

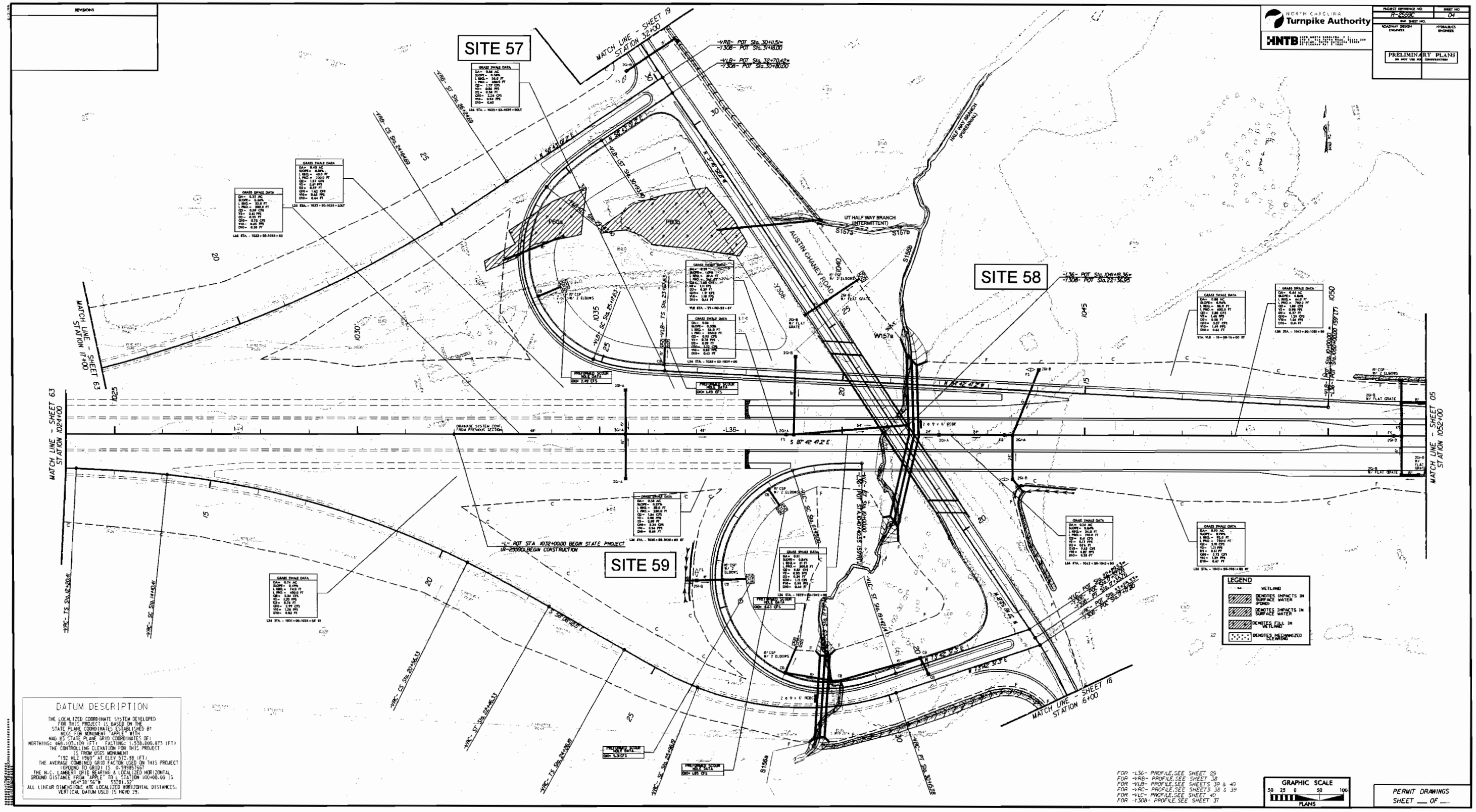
HNTB

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	04

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
NOT FOR CONSTRUCTION



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NGS FOR MONUMENT "APPLE" WITH NAD 83 STATE PLANE GRID COORDINATES OF: NORTHING: 466,103.109 (FT) EASTING: 1,538,806.873 (FT) THE CONTROL LINE ELEVATION FOR THIS PROJECT IS FROM USGS MONUMENT "192 WL2 (1987)" AT ELEV 372.38 (FT) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS 0.999857667 THE N.C. LAMBERT GRID BEARING & LOCALIZED HORIZONTAL GROUND DISTANCE FROM "APPLE" TO L STATION 1004+00.00 IS N54°38'56"W 5370.52 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES. VERTICAL DATUM USED IS NGVD 29.

FOR -L36- PROFILE,SEE SHEET 25
FOR -Y-R6- PROFILE,SEE SHEET 38
FOR -Y-L8- PROFILE,SEE SHEETS 39 & 40
FOR -Y-RC- PROFILE,SEE SHEETS 38 & 39
FOR -Y-LC- PROFILE,SEE SHEET 40
FOR -Y-308- PROFILE,SEE SHEET 37

GRAPHIC SCALE
50 25 0 50 100
PLANS

PERMIT DRAWINGS
SHEET ___ OF ___

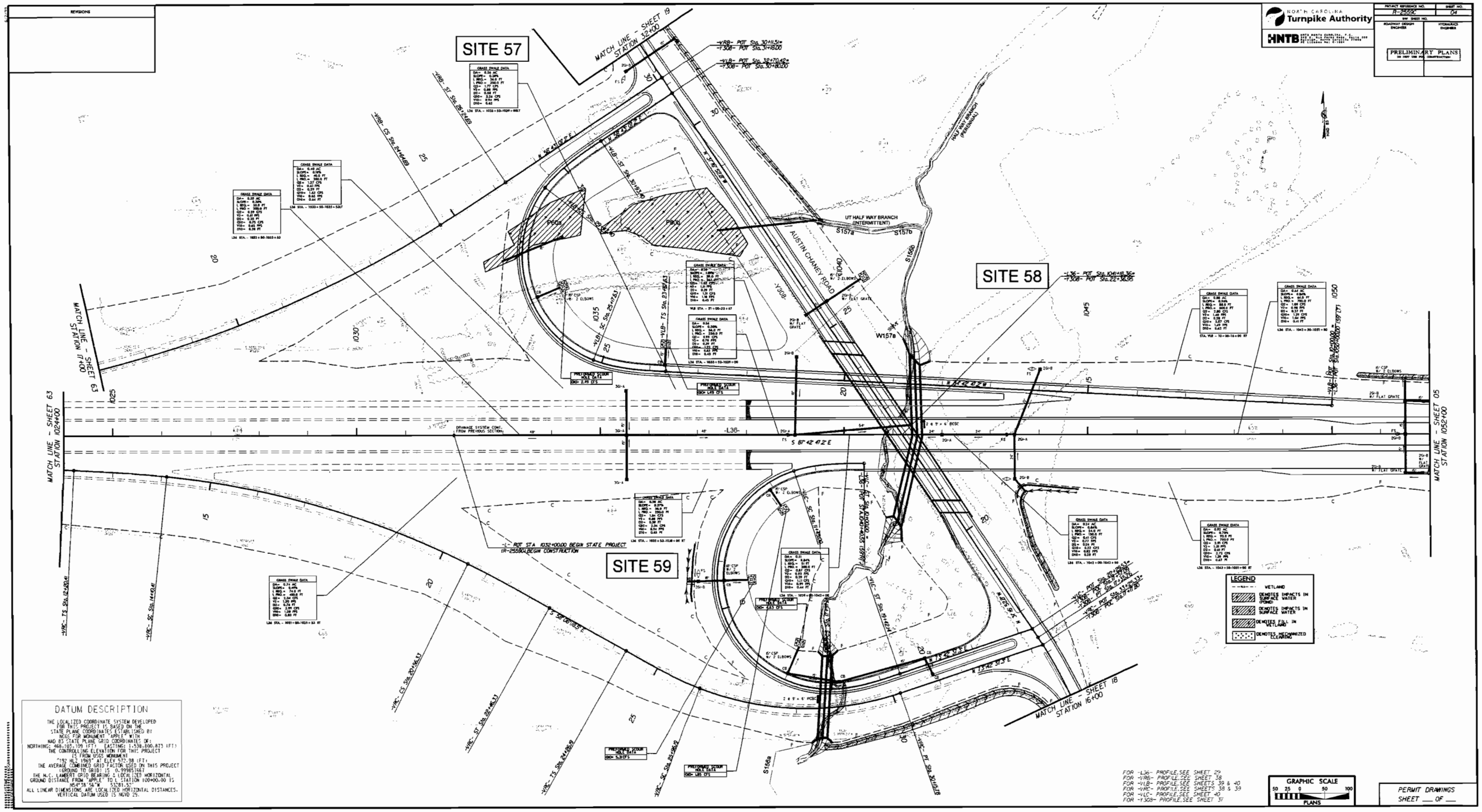
REVISIONS

NORTH CAROLINA Turnpike Authority

HNTB

PROJECT REFERENCE NO.	SHEET NO.
R-2500C	04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
NOT FOR CONSTRUCTION



FOR -L36- PROFILE, SEE SHEET 22
FOR -Y/R6- PROFILE, SEE SHEET 38
FOR -Y/LB- PROFILE, SEE SHEETS 39 & 40
FOR -Y/RC- PROFILE, SEE SHEETS 38 & 39
FOR -Y/LC- PROFILE, SEE SHEET 40
FOR -Y309- PROFILE, SEE SHEET 37

DATUM DESCRIPTION

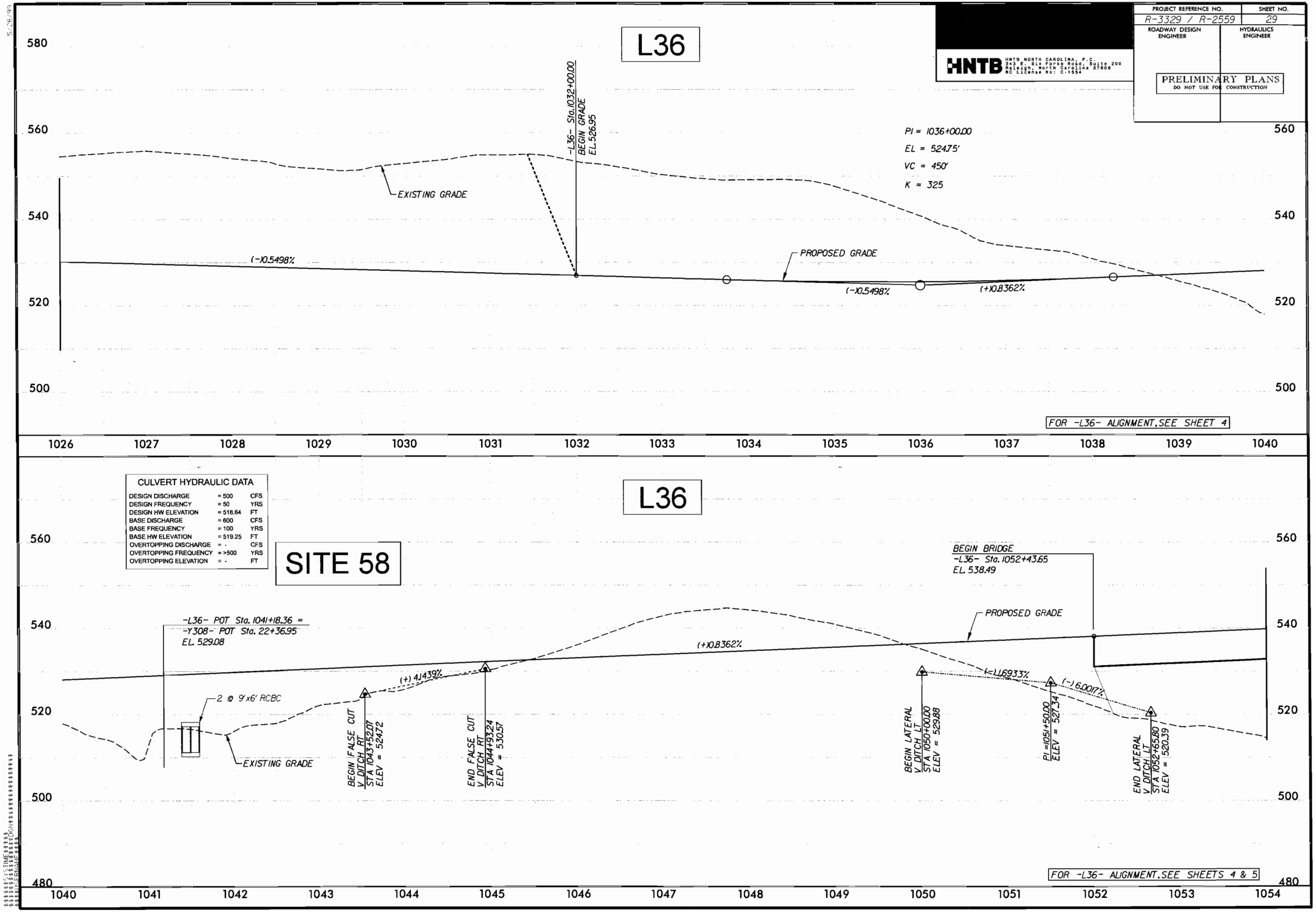
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NGS FOR MONUMENT "APPLE" WITH NAD 83 STATE PLANE GRID COORDINATES OF: NORTHING: 468,103.109 (FT) EASTING: 1,538,800.873 (FT)
THE CONTROLLING ELEVATION FOR THIS PROJECT IS FROM USGS MONUMENT "192 HLS 1985" AT ELEV. 572.38 (FT).
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS 0.999851667
THE N.C. LAMBERT GRID BEARING & LOCALIZED HORIZONTAL GROUND DISTANCE FROM "APPLE" TO L STATION 100+00.00 IS N54°38'56"W 5281.57
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES. VERTICAL DATUM USED IS NGVD 29.

PERMIT DRAWINGS
SHEET ___ OF ___

PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

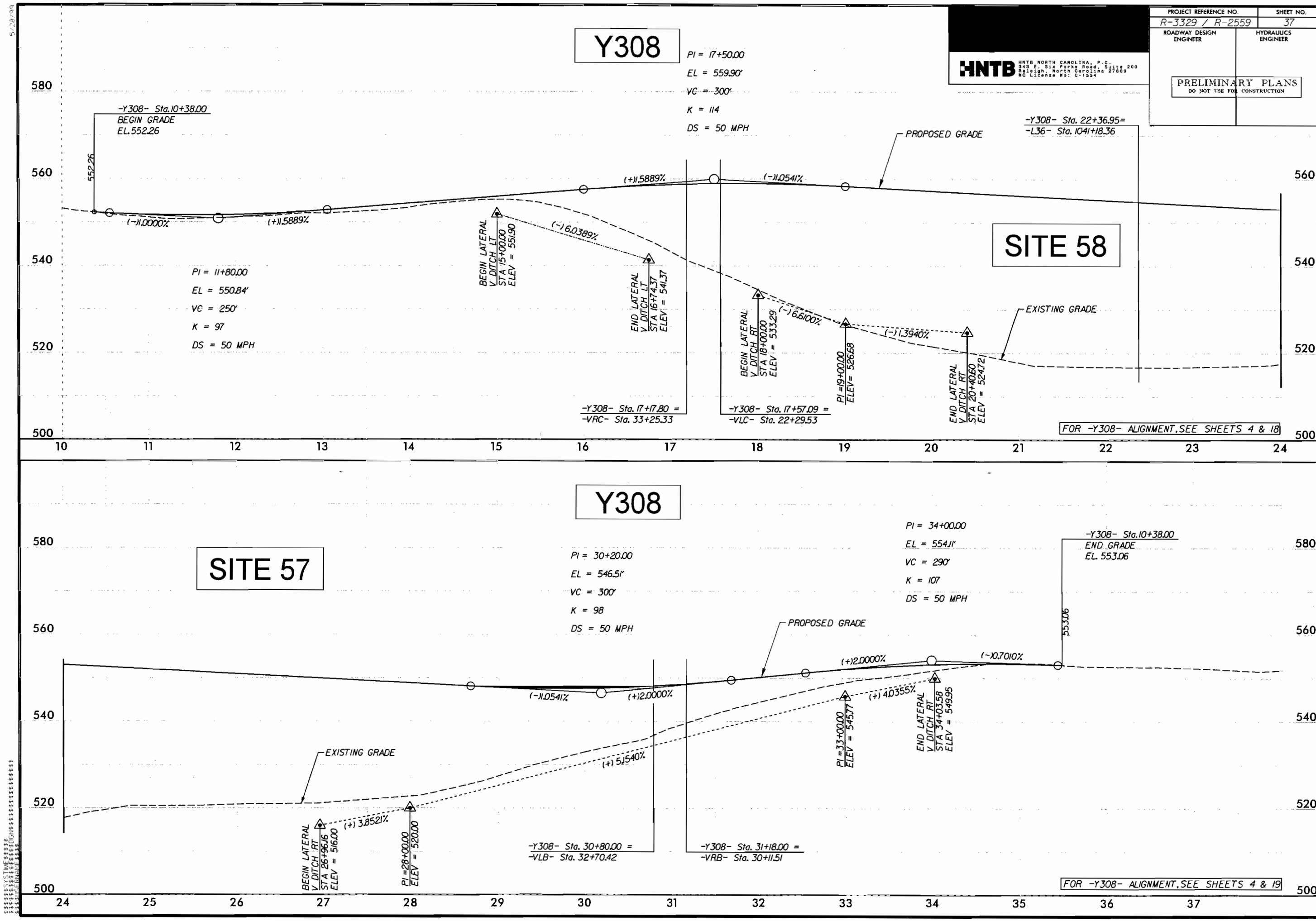
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

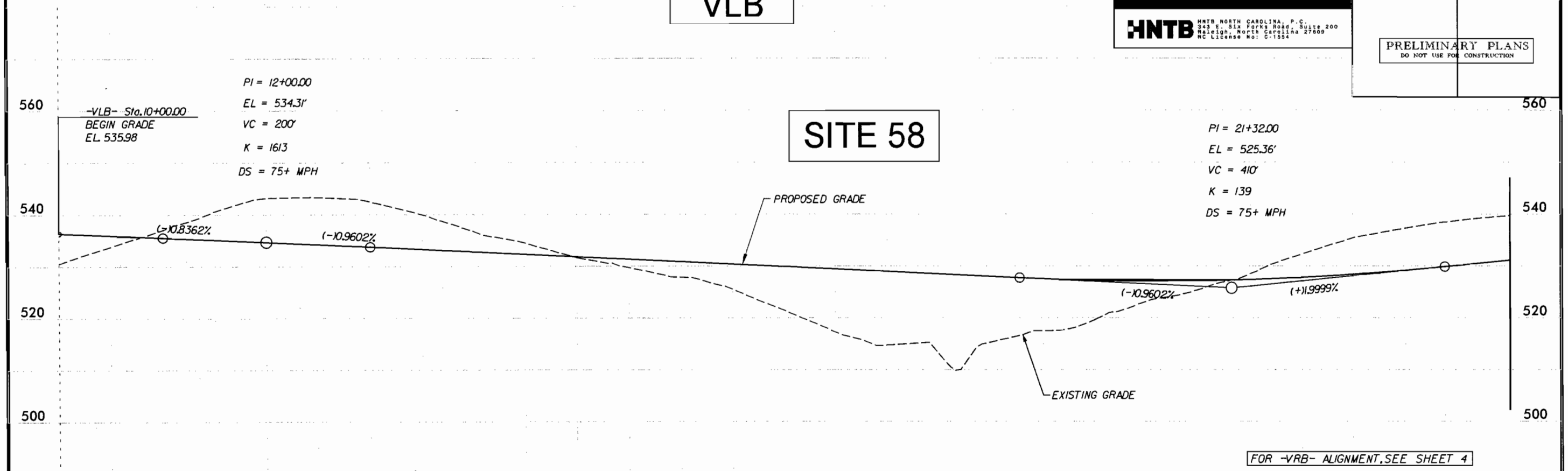
HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

VLB

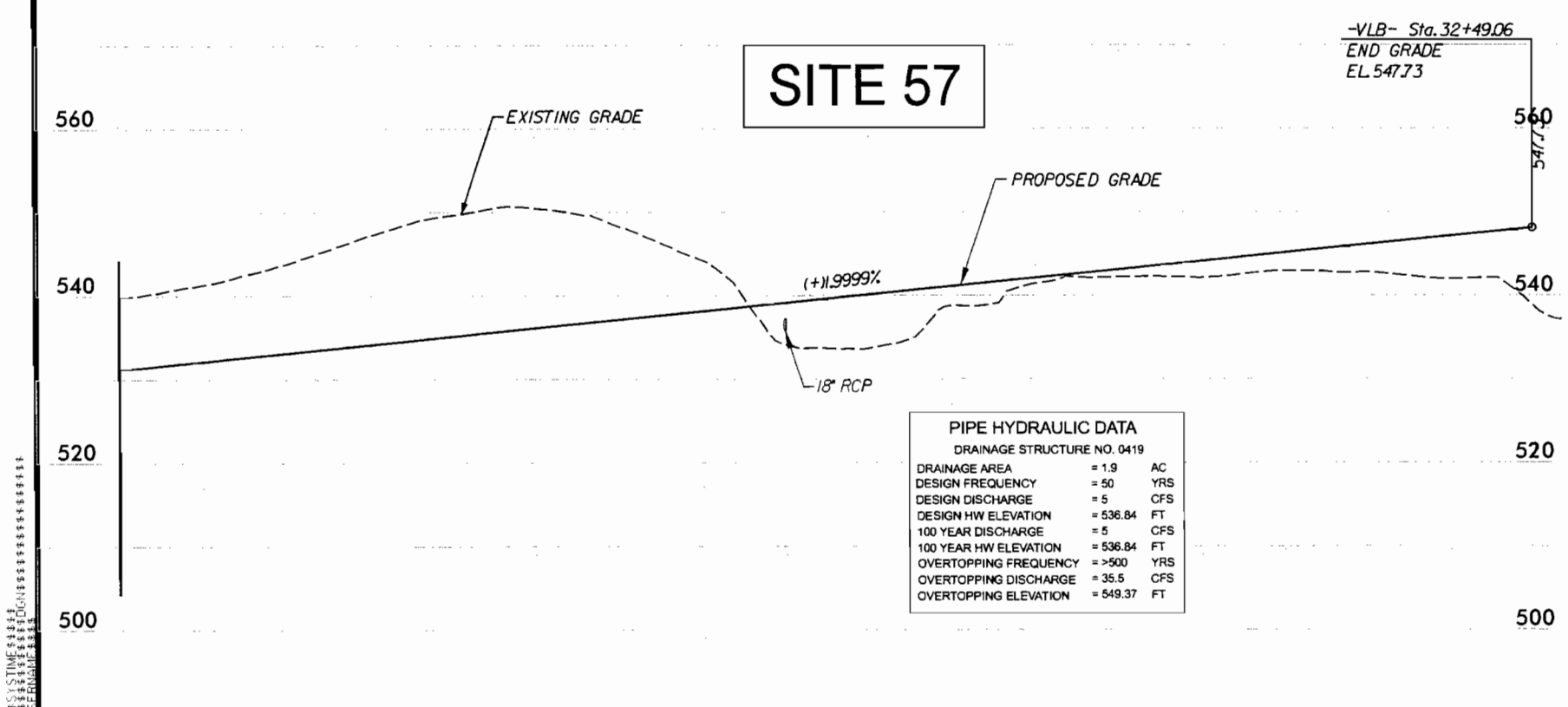
SITE 58



FOR -VRB- ALIGNMENT, SEE SHEET 4

VLB

SITE 57

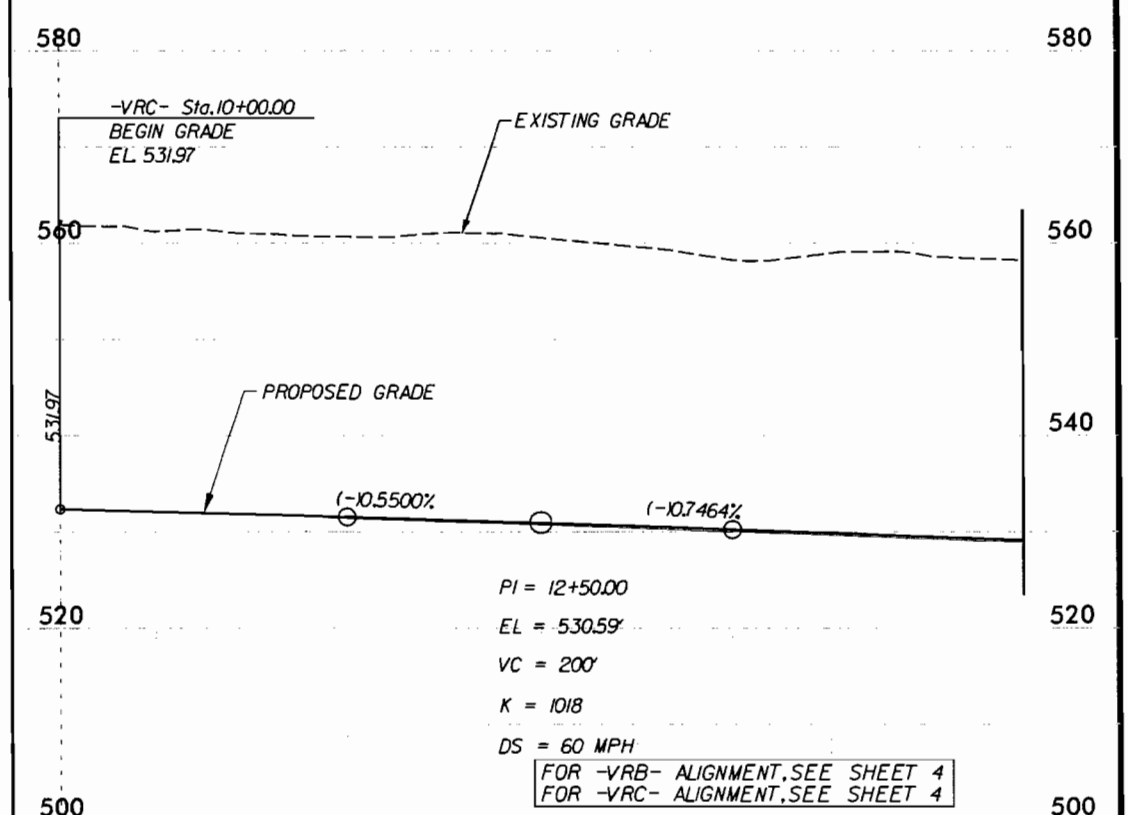


PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 0419

DRAINAGE AREA	= 1.9	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 5	CFS
DESIGN HW ELEVATION	= 536.84	FT
100 YEAR DISCHARGE	= 5	CFS
100 YEAR HW ELEVATION	= 536.84	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 35.5	CFS
OVERTOPPING ELEVATION	= 549.37	FT

VRC



FOR -VRB- ALIGNMENT, SEE SHEET 4
FOR -VRC- ALIGNMENT, SEE SHEET 4

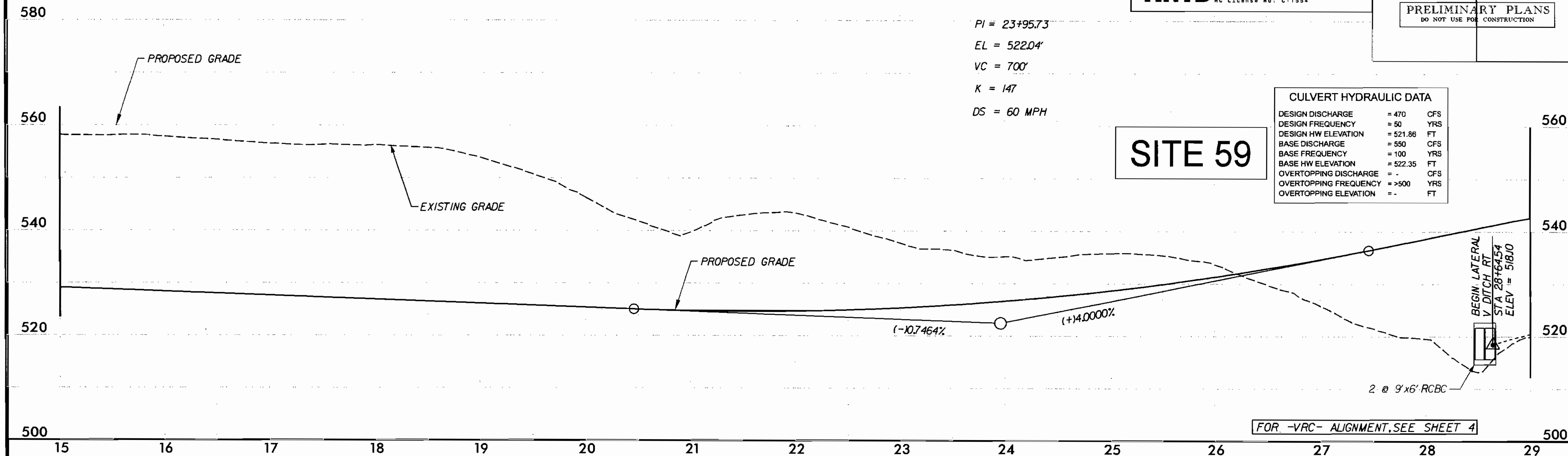
PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

SITE 59

VRC

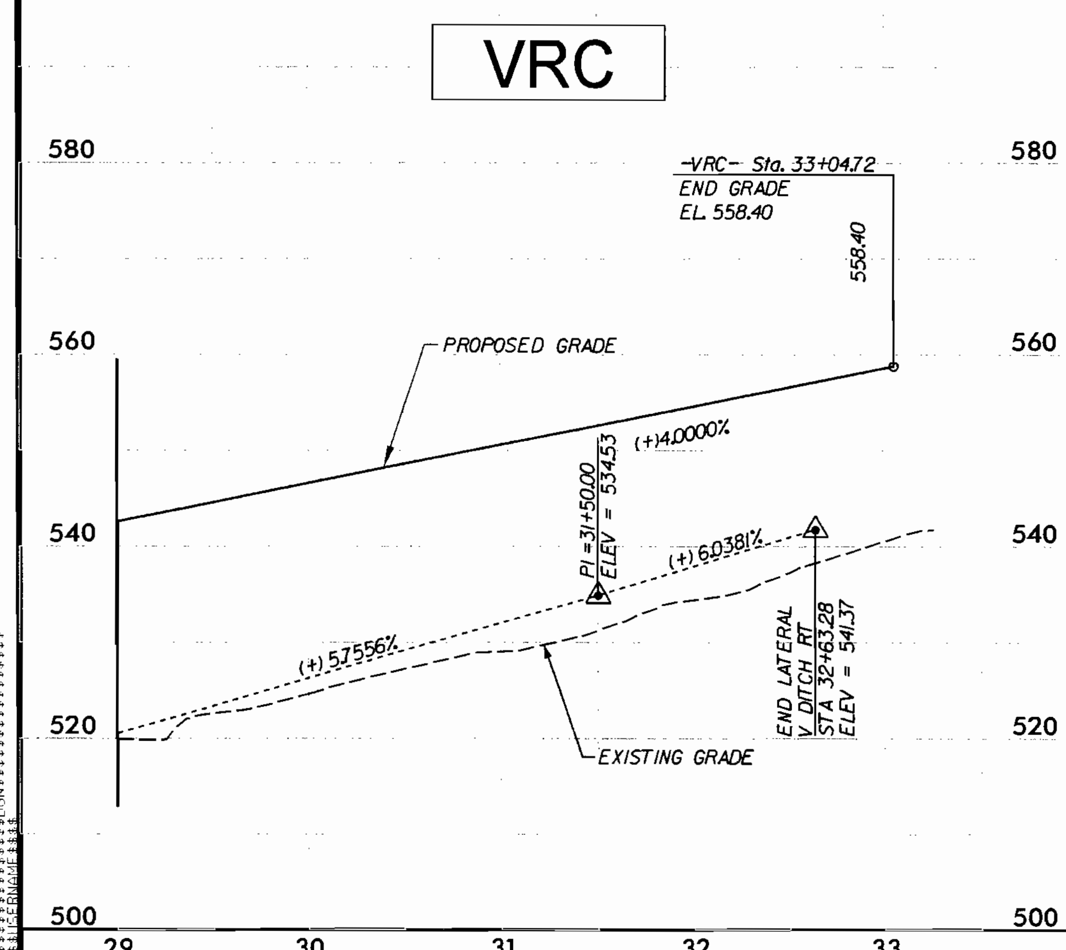


CULVERT HYDRAULIC DATA

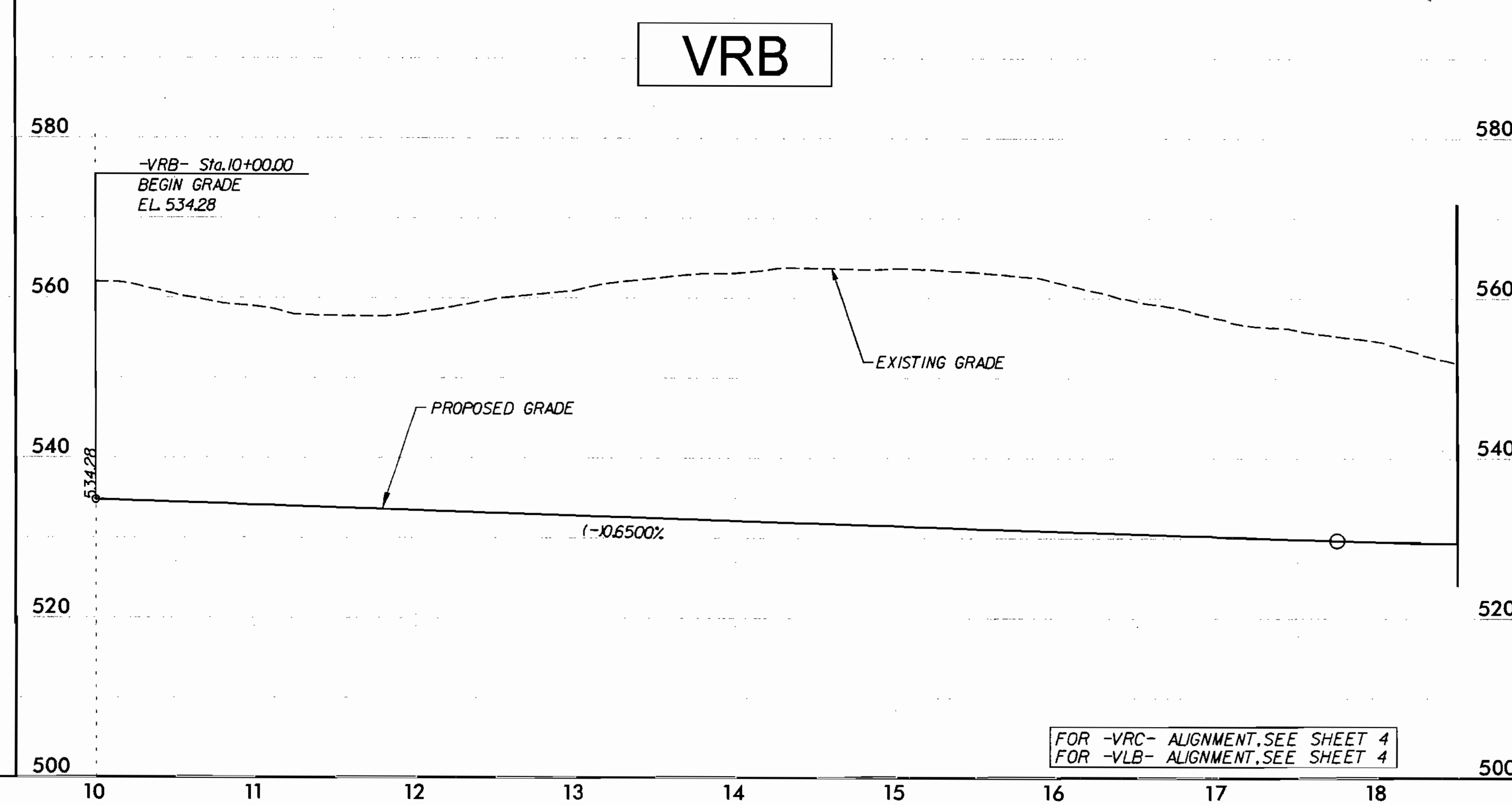
DESIGN DISCHARGE	= 470	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 521.86	FT
BASE DISCHARGE	= 550	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 522.35	FT
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= -	FT

FOR -VRC- ALIGNMENT, SEE SHEET 4

VRC



VRB



FOR -VRC- ALIGNMENT, SEE SHEET 4
FOR -VLB- ALIGNMENT, SEE SHEET 4

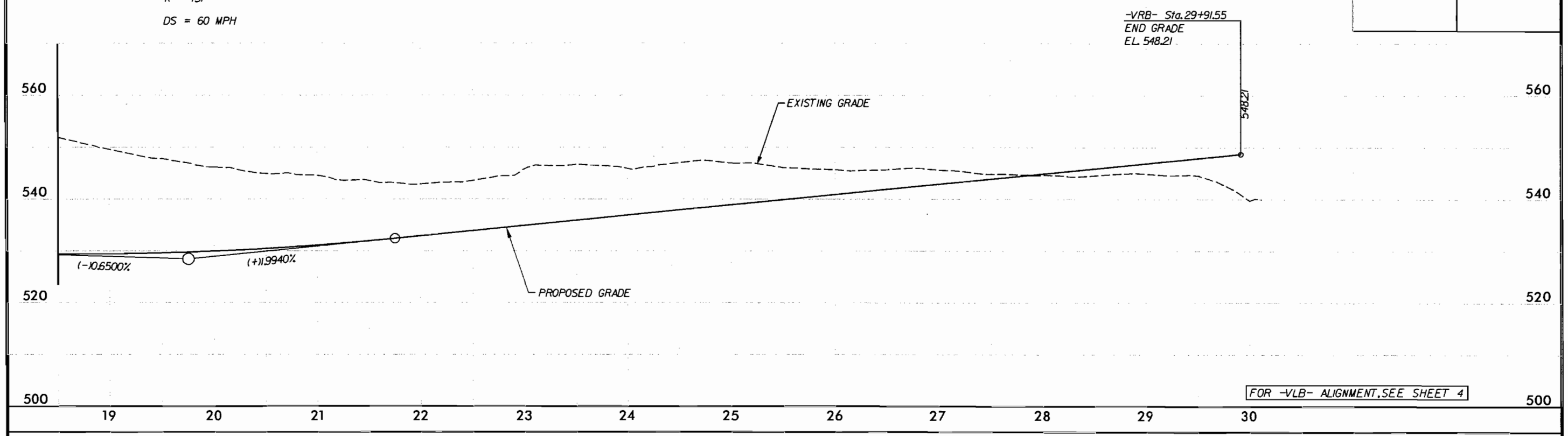
PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

VRB

PI = 19+75.00
EL = 527.94'
VC = 400'
K = 151
DS = 60 MPH



FOR -VLB- ALIGNMENT, SEE SHEET 4

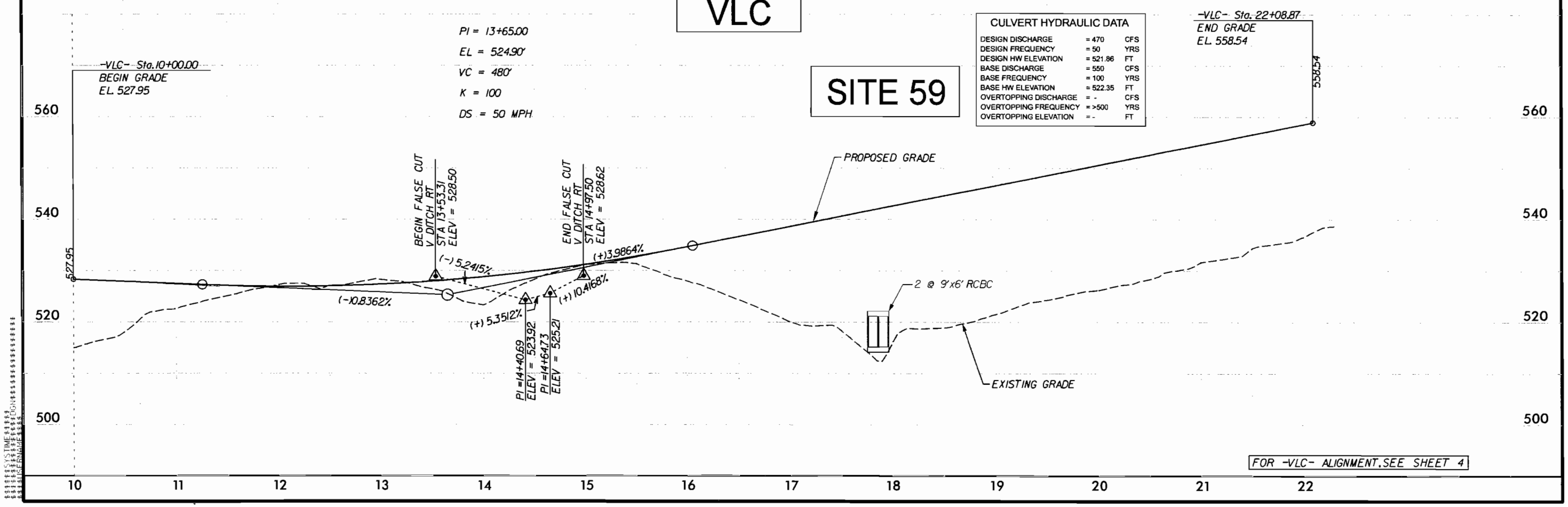
VLC

PI = 13+65.00
EL = 524.90'
VC = 480'
K = 100
DS = 50 MPH

SITE 59

CULVERT HYDRAULIC DATA

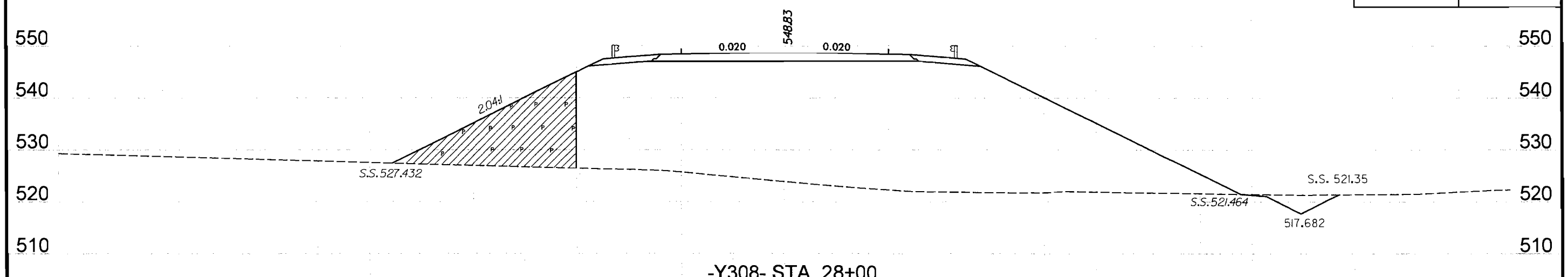
DESIGN DISCHARGE	= 470	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 521.86	FT
BASE DISCHARGE	= 550	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 522.35	FT
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= -	FT



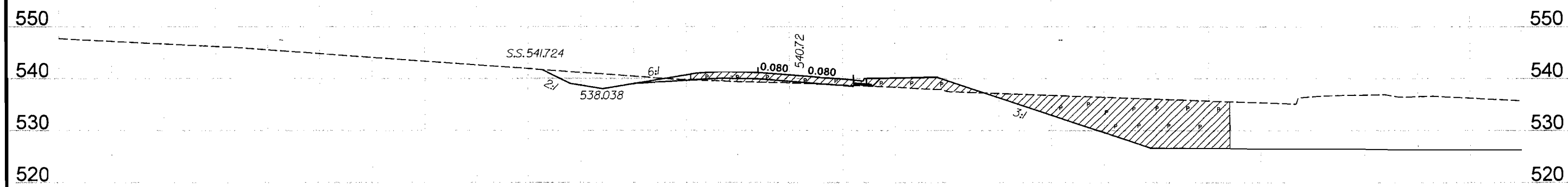
FOR -VLC- ALIGNMENT, SEE SHEET 4

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-Y308- STA. 28+00



-VLB- STA. 28+50

NORTH CAROLINA
Turnpike Authority

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

SURFACE WATER IMPACT (POND)

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

WETLAND CROSS SECTIONS

SITE 57

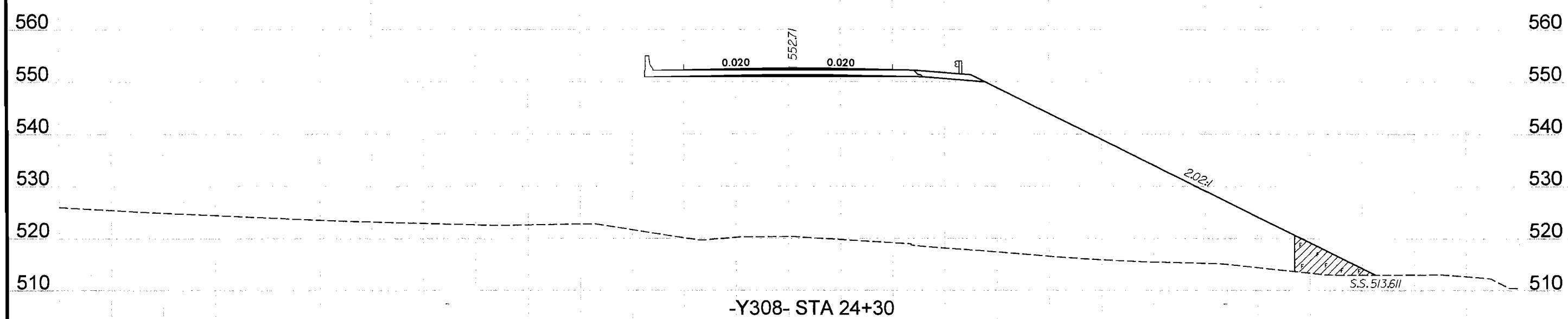
UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

120 100 80 60 40 20 0 20 40 60 80 100 120

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DENOTES FILL IN WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

WETLAND CROSS SECTION

SITE 58

NORTH CAROLINA Turnpike Authority

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

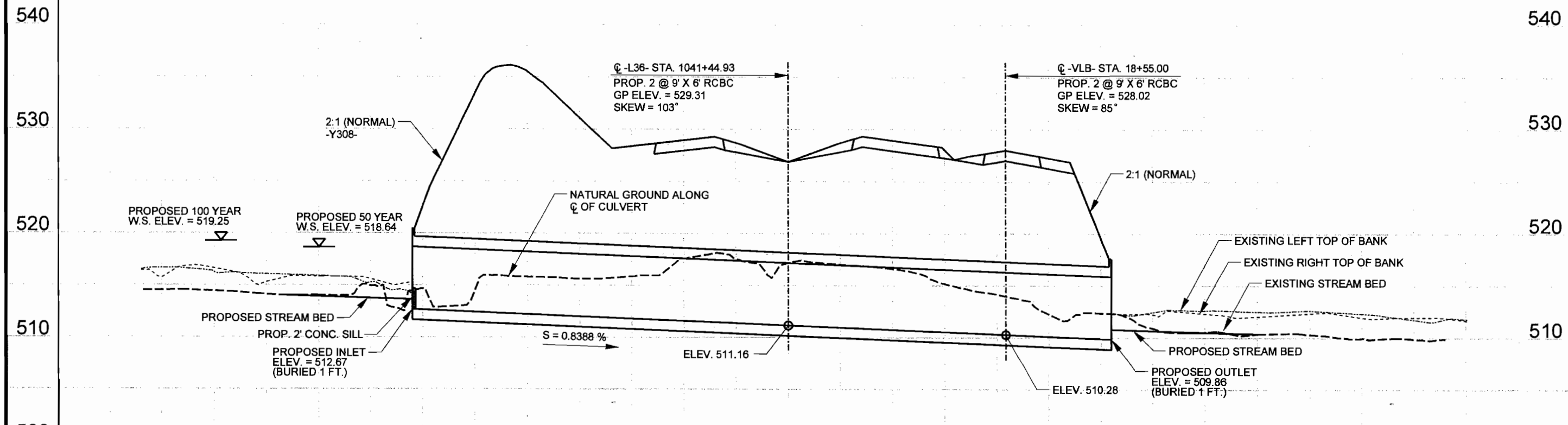
UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

120 100 80 60 40 20 0 20 40 60 80 100 120

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROFILE ALONG STRUCTURE

SITE 58

SCALE
1"=50' HORIZONTAL
1"=10' VERTICAL

NORTH CAROLINA
Turnpike Authority

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

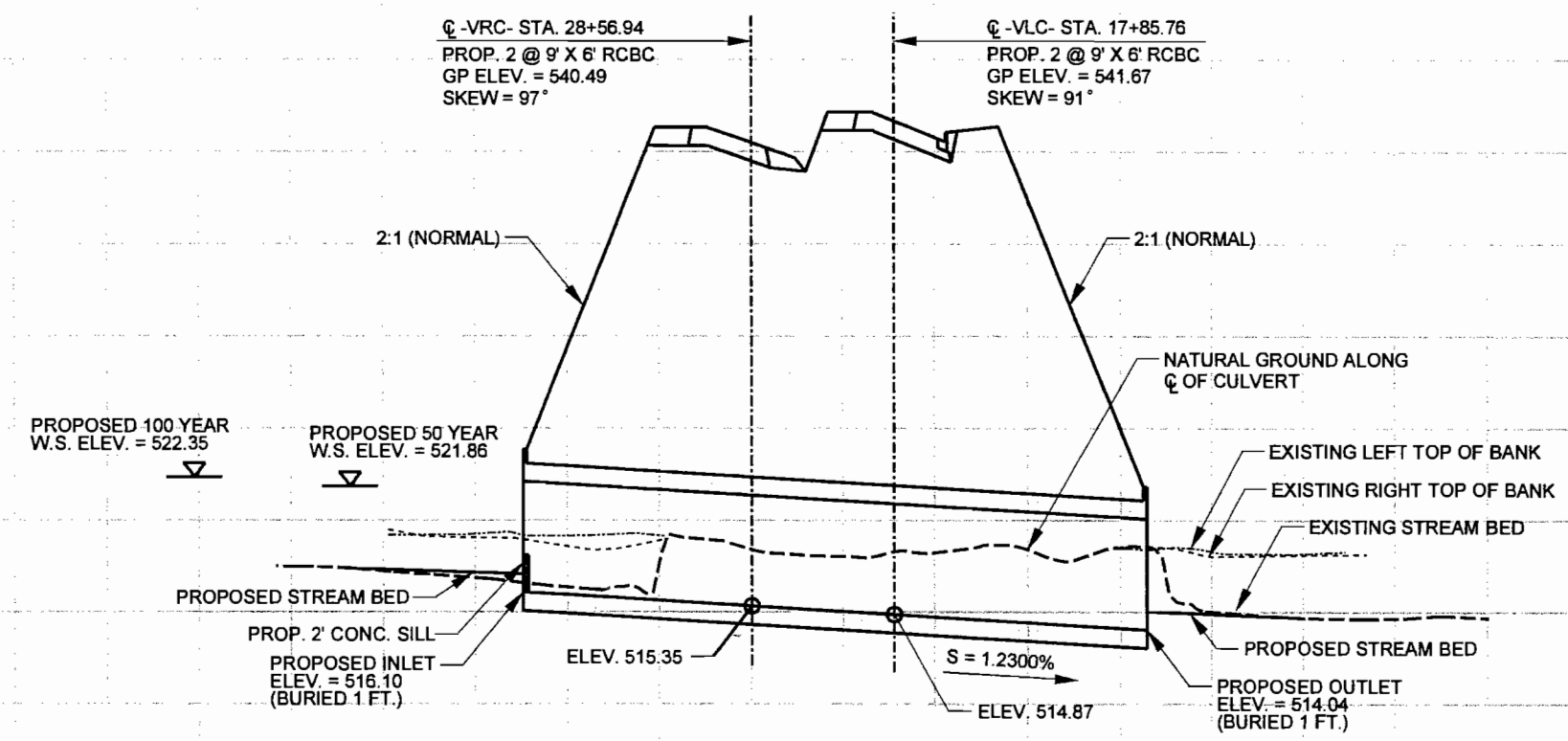
UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

200 150 100 50 0 50 100 150 200

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	-
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROFILE ALONG STRUCTURE

SITE 59

NORTH CAROLINA
Turnpike Authority

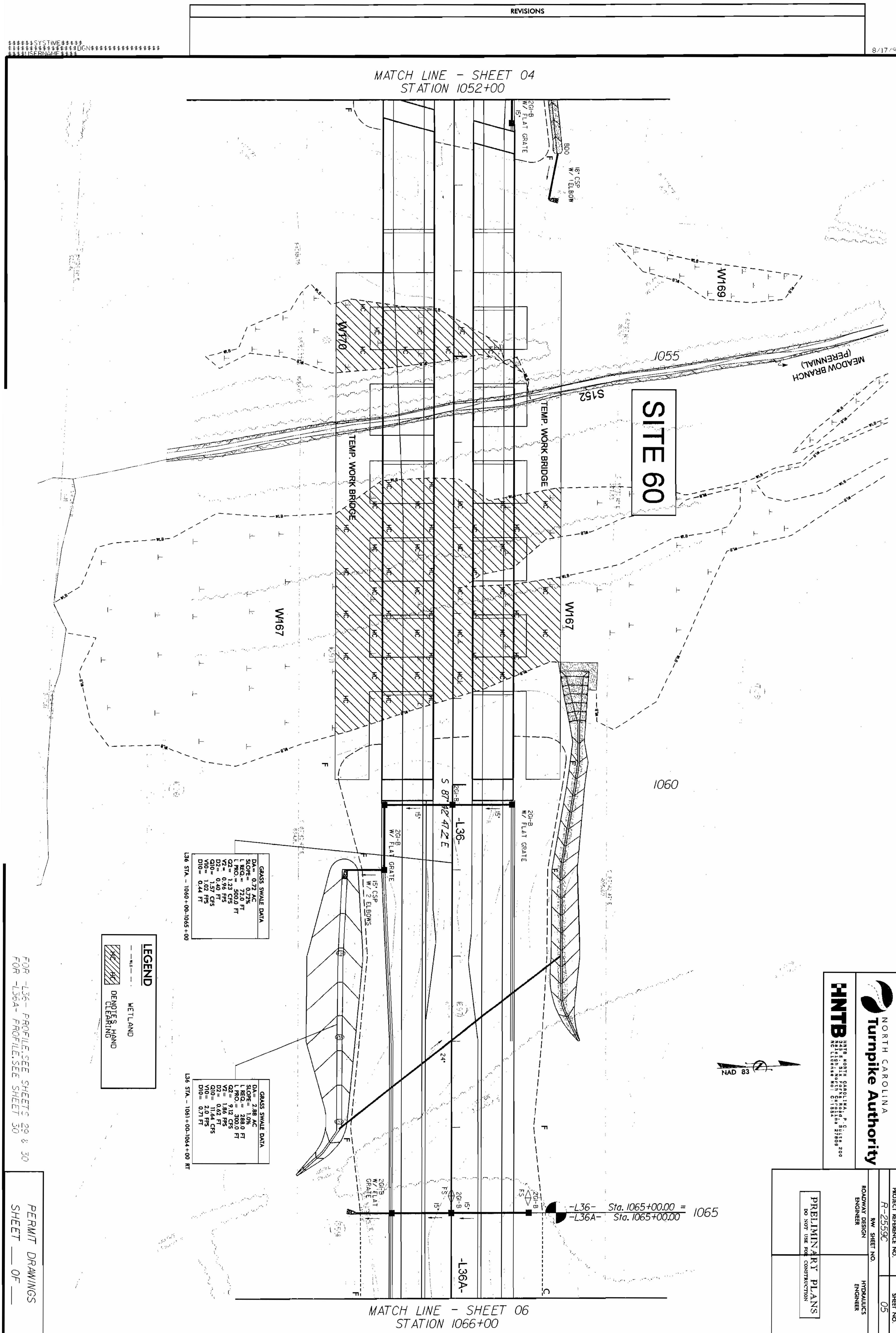
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

SCALE
1"=50' HORIZONTAL
1"=10' VERTICAL

150 100 50 0 50 100 150


REVISIONS
8/17/99
MATCH LINE - SHEET 04
STATION 1052+00
2GI-B W/ FLAT GRATE
BDO
18" CSP W/ ELBOW
W169
W170
1055
MEADOW BRANCH (PERENNIAL)
S152
SITE 60
TEMP. WORK BRIDGE
TEMP. WORK BRIDGE
W167
W167
1060
S 87° 12' 47.2 E
-L36-
2GI-B W/ FLAT GRATE
15" CSP W/ 2 ELBOWS
GRASS SWALE DATA
DA= 0.72 AC
SLOPE= 0.72%
L REQ.= 72.0 FT
L PRO.= 500.0 FT
Q2= 1.23 CFS
V2= 0.96 FPS
D2= 0.40 FT
Q10= 1.57 CFS
V10= 1.02 FPS
D10= 0.44 FT
L36 STA. - 1060+00-1065+00
GRASS SWALE DATA
DA= 2.88 AC
SLOPE= 1.0%
L REQ.= 288.0 FT
L PRO.= 300.0 FT
Q2= 9.12 CFS
V2= 1.86 FPS
D2= 0.62 FT
Q10= 11.64 CFS
V10= 2.0 FPS
D10= 0.71 FT
L36 STA. - 1061+00-1064+00 RT
LEGEND
WETLAND
DENOTES HAND CLEARING
FOR -L36- PROFILE SEE SHEETS 29 & 30
FOR -L36A- PROFILE SEE SHEET 30
24"
NAD 83
-L36- Sta. 1065+00.00 =
-L36A- Sta. 1065+00.00
1065
-L36A-
MATCH LINE - SHEET 06
STATION 1066+00
PERMIT DRAWINGS
SHEET __ OF __
NORTH CAROLINA
Turnpike Authority
HNTB
PROJECT REFERENCE NO.
R-2559C
SHEET NO.
05
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NORTH CAROLINA
Turnpike Authority

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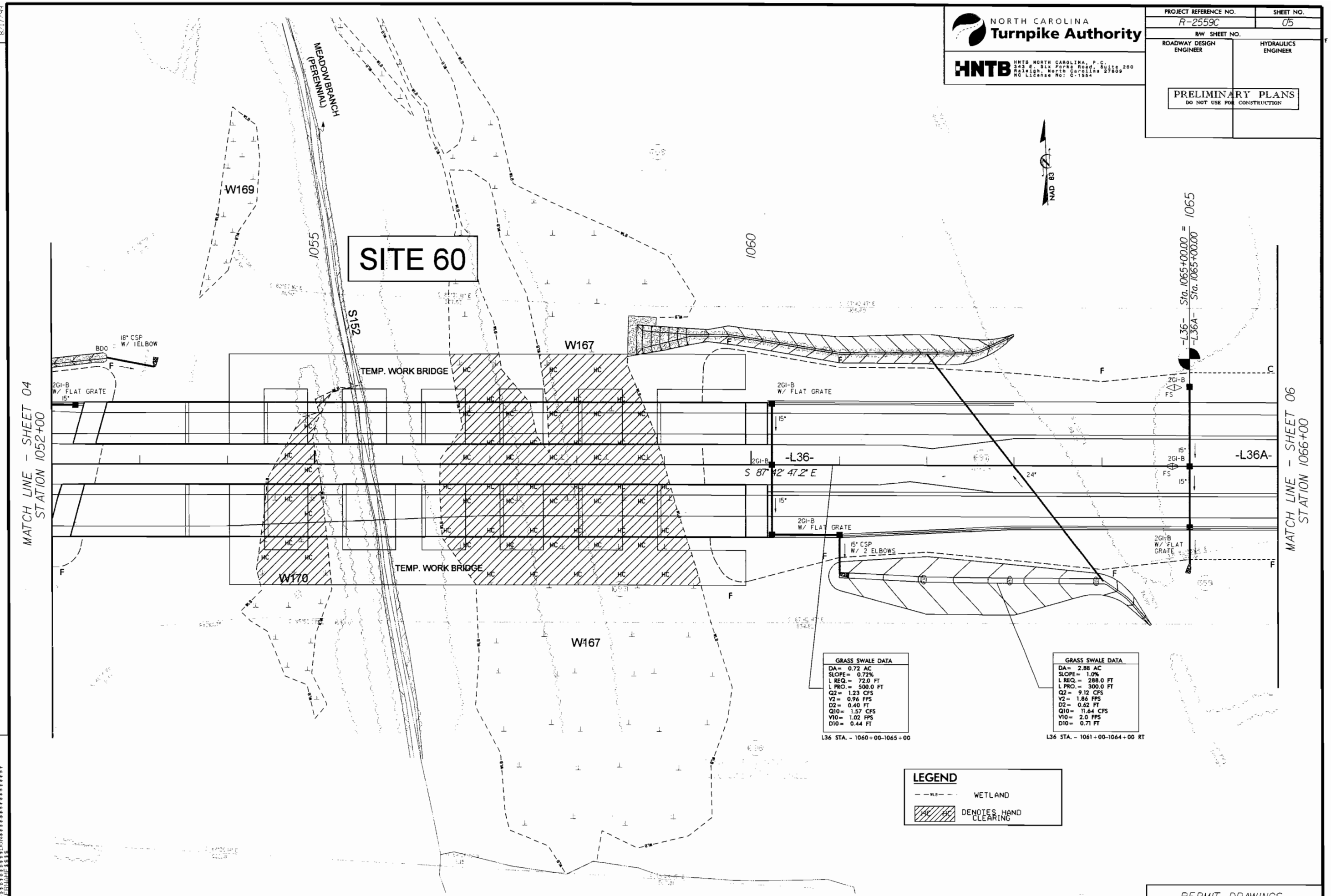
PROJECT REFERENCE NO.	SHEET NO.
R-2559C	05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L36- PROFILE, SEE SHEETS 29 & 30
FOR -L36A- PROFILE, SEE SHEET 30

PERMIT DRAWINGS
SHEET ___ OF ___

REVISIONS

8/17/99

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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L36

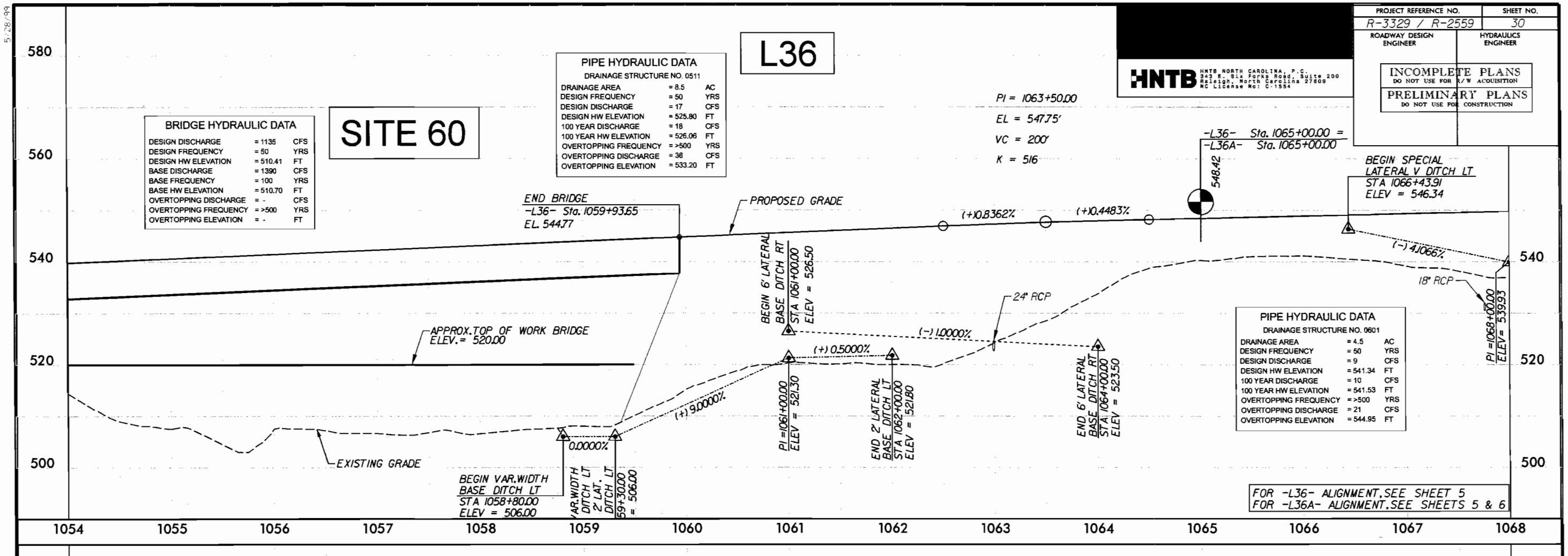
SITE 60

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1135	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 510.41	FT
BASE DISCHARGE	= 1390	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 510.70	FT
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= -	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 0511

DRAINAGE AREA	= 8.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 17	CFS
DESIGN HW ELEVATION	= 525.80	FT
100 YEAR DISCHARGE	= 18	CFS
100 YEAR HW ELEVATION	= 526.06	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 38	CFS
OVERTOPPING ELEVATION	= 533.20	FT



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 0601

DRAINAGE AREA	= 4.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 9	CFS
DESIGN HW ELEVATION	= 541.34	FT
100 YEAR DISCHARGE	= 10	CFS
100 YEAR HW ELEVATION	= 541.53	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 21	CFS
OVERTOPPING ELEVATION	= 544.95	FT

FOR -L36- ALIGNMENT, SEE SHEET 5
FOR -L36A- ALIGNMENT, SEE SHEETS 5 & 6

L36A

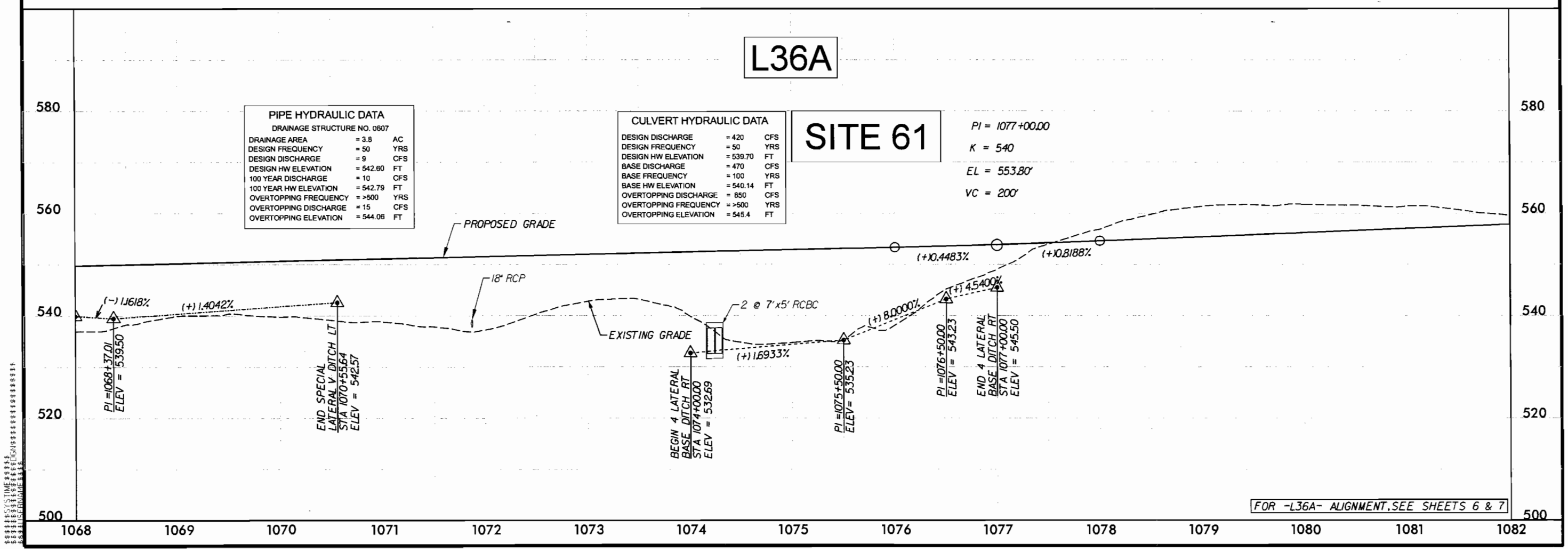
SITE 61

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 0607

DRAINAGE AREA	= 3.8	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 9	CFS
DESIGN HW ELEVATION	= 542.60	FT
100 YEAR DISCHARGE	= 10	CFS
100 YEAR HW ELEVATION	= 542.79	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 15	CFS
OVERTOPPING ELEVATION	= 544.06	FT

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 420	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 539.70	FT
BASE DISCHARGE	= 470	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 540.14	FT
OVERTOPPING DISCHARGE	= 850	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= 545.4	FT



FOR -L36A- ALIGNMENT, SEE SHEETS 6 & 7

NORTH CAROLINA
Turnpike Authority

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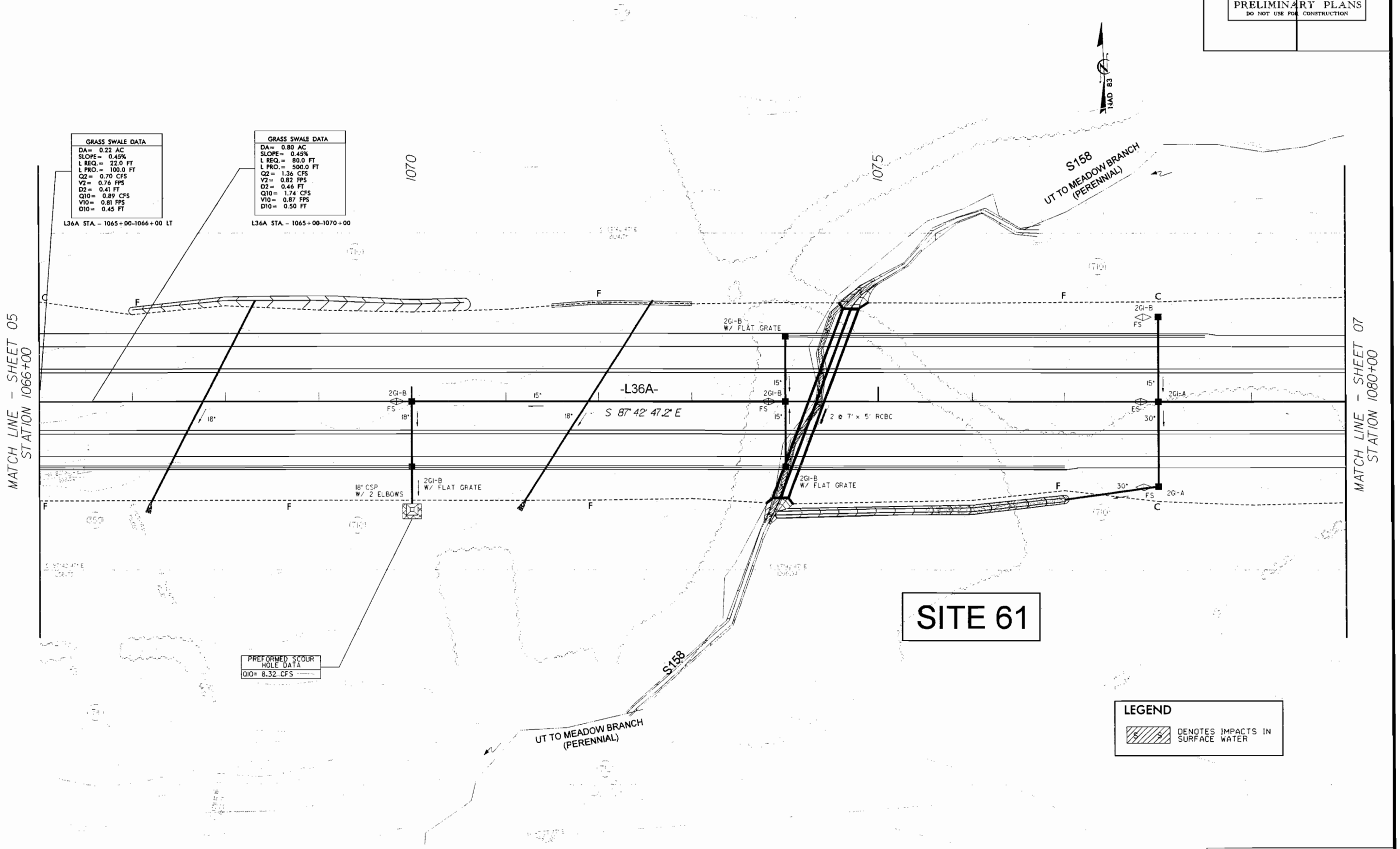
PROJECT REFERENCE NO.	SHEET NO.
R-2559C	06
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS



FOR -L36A- PROFILE, SEE SHEET 30

PERMIT DRAWINGS
SHEET ___ OF ___

NORTH CAROLINA
Turnpike Authority

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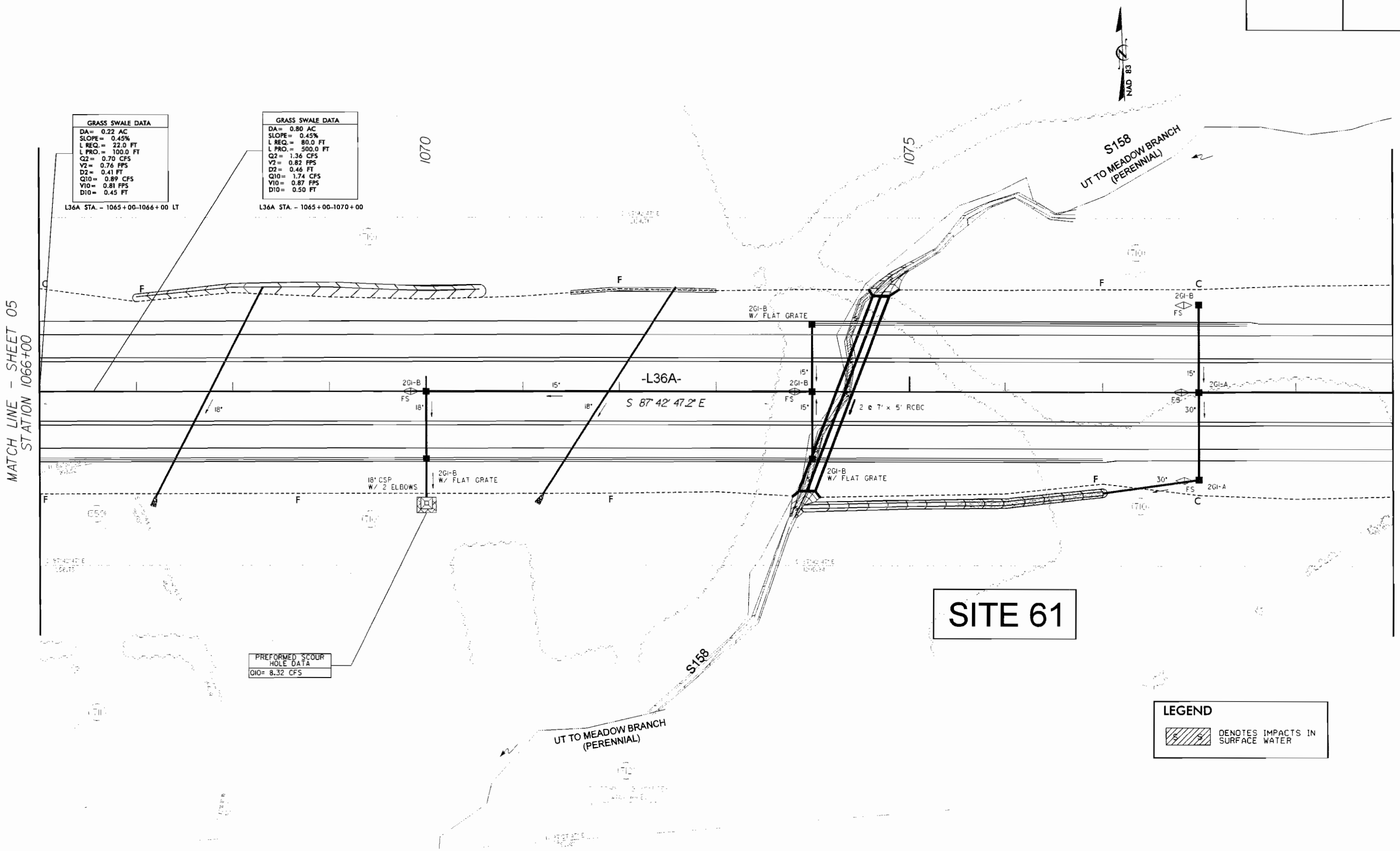
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	06
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

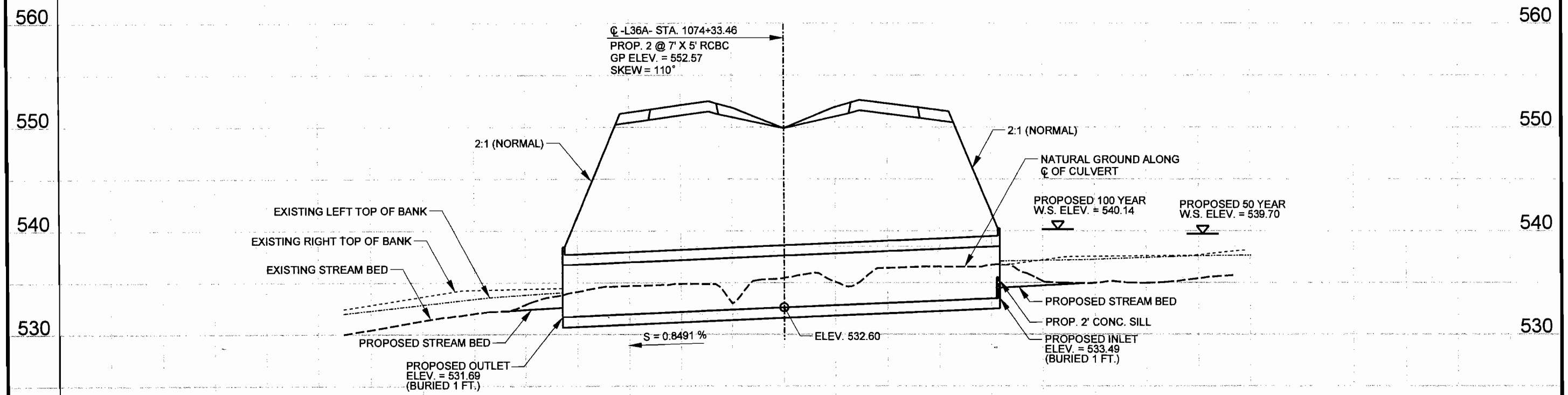


FOR -L36A- PROFILE, SEE SHEET 30

PERMIT DRAWINGS
SHEET ___ OF ___

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROFILE ALONG STRUCTURE

SITE 61

SCALE
1"=50' HORIZONTAL
1"=10' VERTICAL

NORTH CAROLINA
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UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

200 150 100 50 0 50 100 150 200

NORTH CAROLINA
Turnpike Authority

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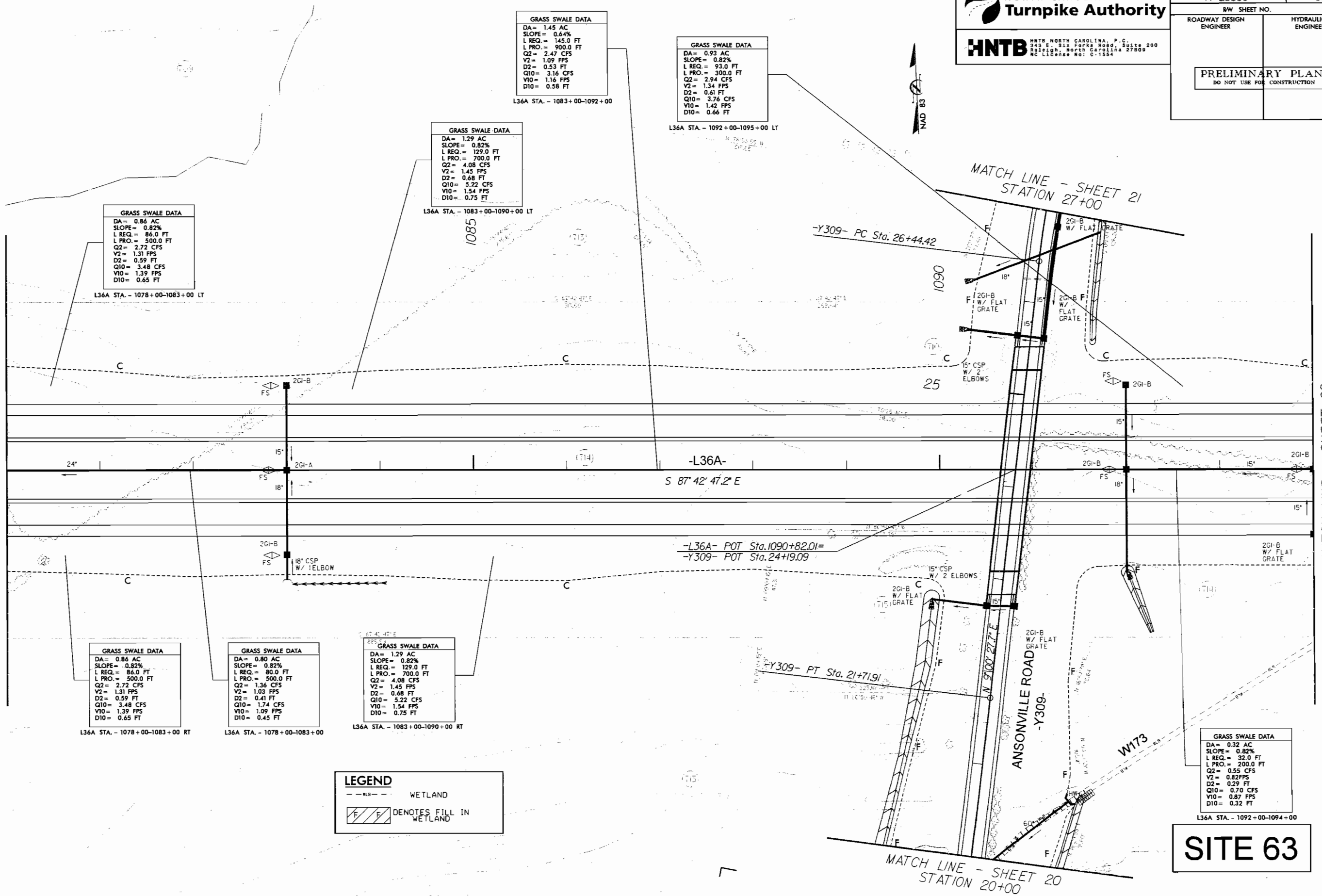
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	07
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



SITE 63

FOR -L36A- PROFILE, SEE SHEETS 30 & 31
FOR -Y309- PROFILE, SEE SHEET 41

PERMIT DRAWINGS
SHEET ___ OF ___

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Turnpike Authority

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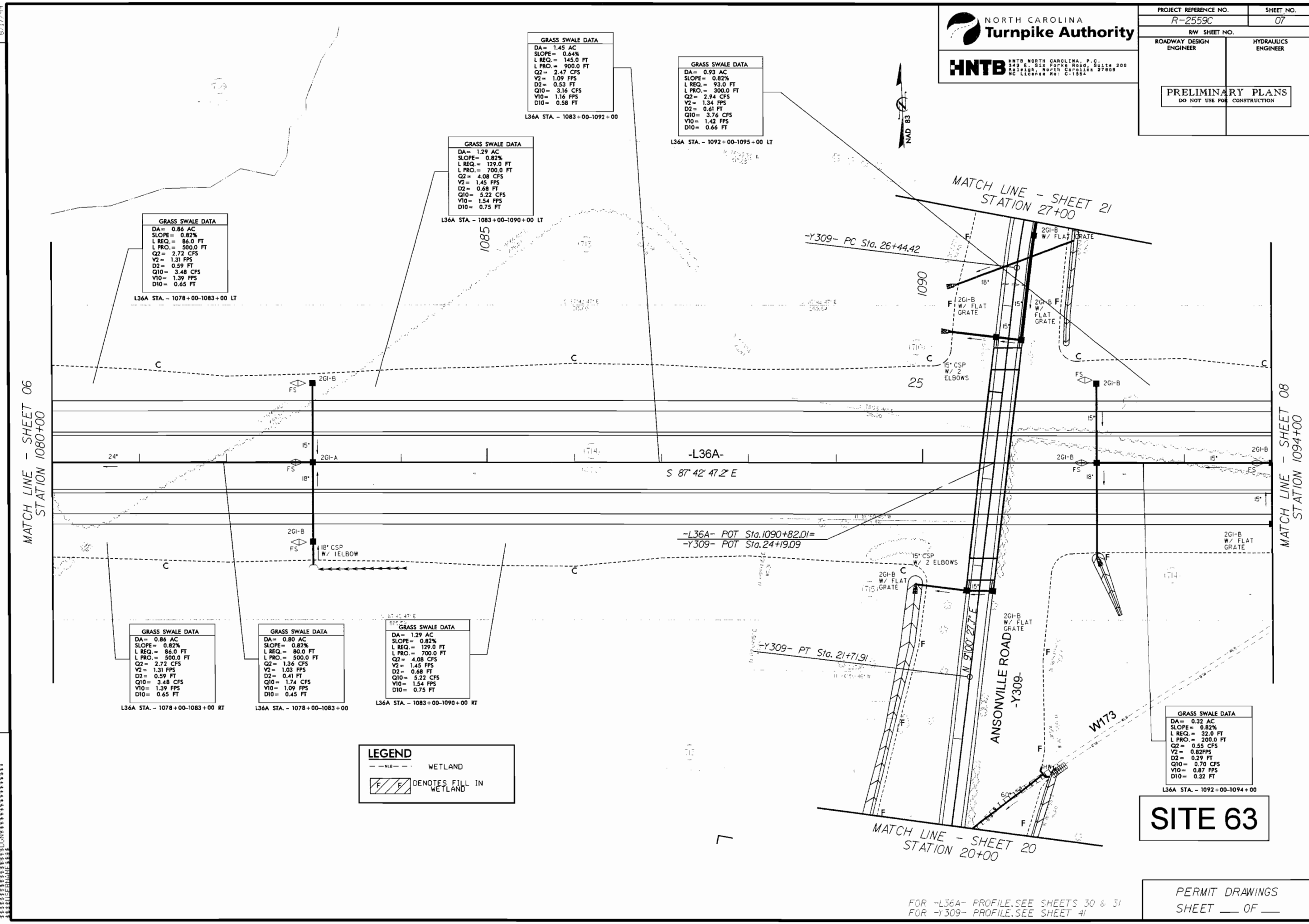
PROJECT REFERENCE NO.	SHEET NO.
R-2559C	07
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



FOR -L36A- PROFILE, SEE SHEETS 30 & 31
FOR -Y309- PROFILE, SEE SHEET 41

PERMIT DRAWINGS
SHEET ___ OF ___

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

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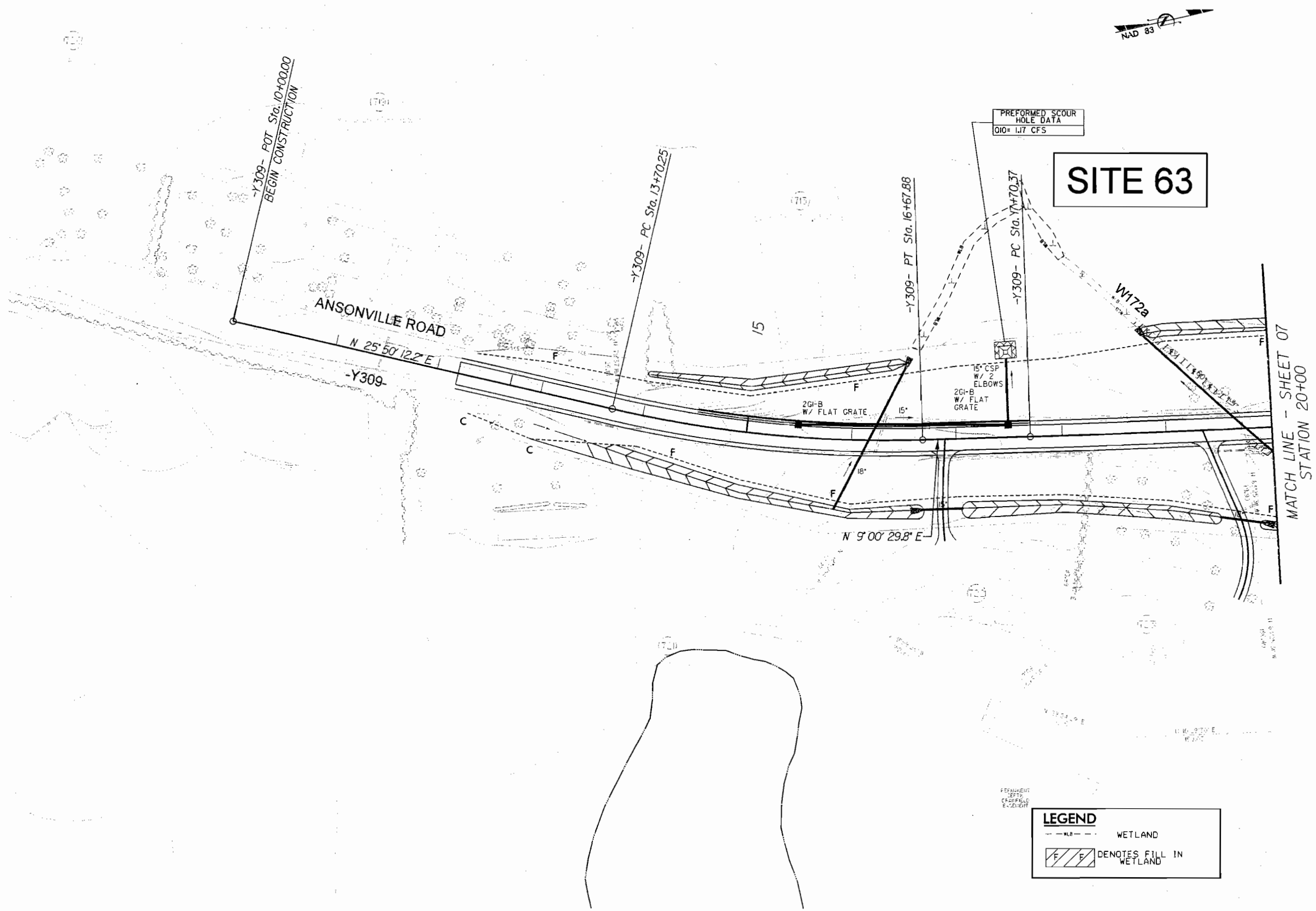
PROJECT REFERENCE NO.	SHEET NO.
R-2559C	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



FOR -Y309- PROFILE, SEE SHEET 41

PERMIT DRAWINGS
SHEET ___ OF ___

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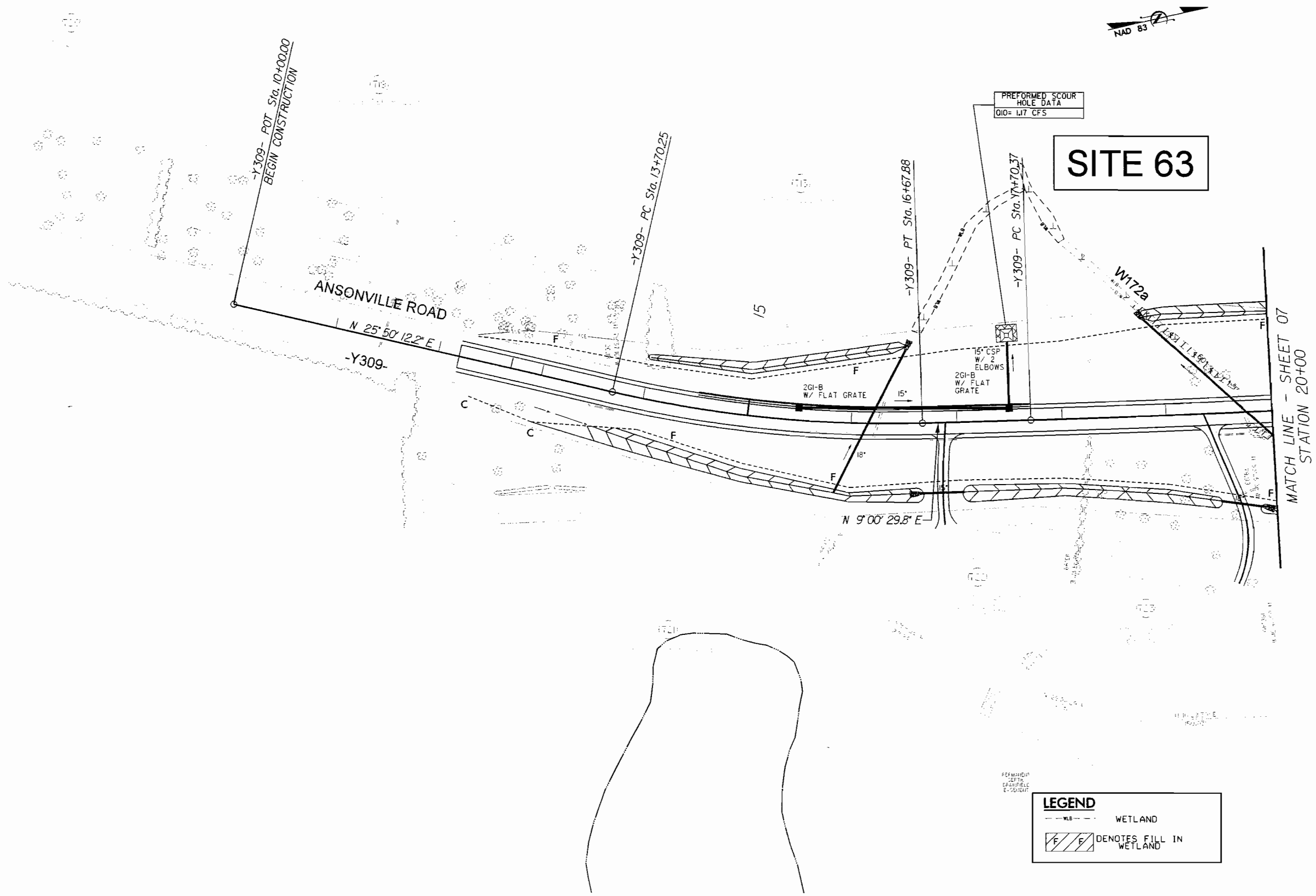
PROJECT REFERENCE NO.	SHEET NO.
R-2559C	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



FOR -Y309- PROFILE, SEE SHEET 41

PERMIT DRAWINGS
SHEET ___ OF ___

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NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y309

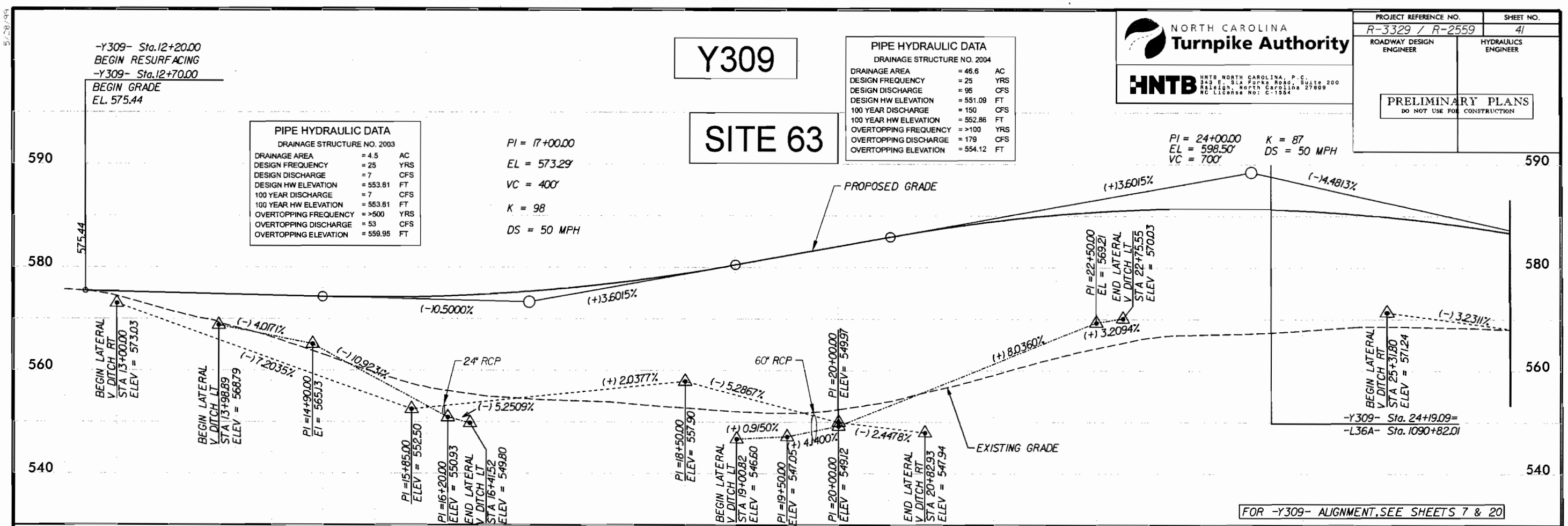
SITE 63

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 2004

DRAINAGE AREA	= 46.6	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 95	CFS
DESIGN HW ELEVATION	= 551.09	FT
100 YEAR DISCHARGE	= 150	CFS
100 YEAR HW ELEVATION	= 552.86	FT
OVERTOPPING FREQUENCY	= >100	YRS
OVERTOPPING DISCHARGE	= 179	CFS
OVERTOPPING ELEVATION	= 554.12	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 2003

DRAINAGE AREA	= 4.5	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 7	CFS
DESIGN HW ELEVATION	= 553.81	FT
100 YEAR DISCHARGE	= 7	CFS
100 YEAR HW ELEVATION	= 553.81	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 53	CFS
OVERTOPPING ELEVATION	= 559.95	FT

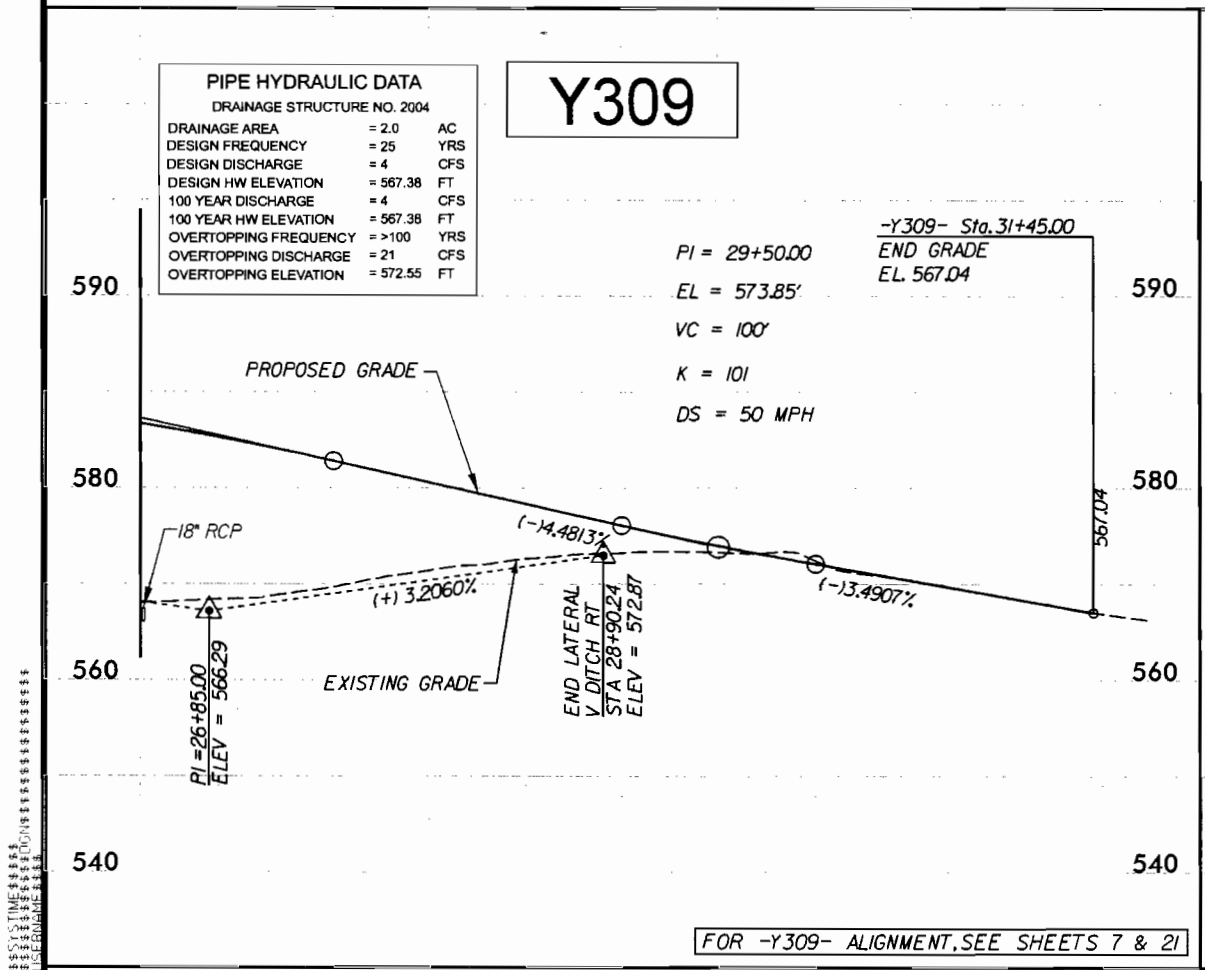


FOR -Y309- ALIGNMENT, SEE SHEETS 7 & 20

Y309

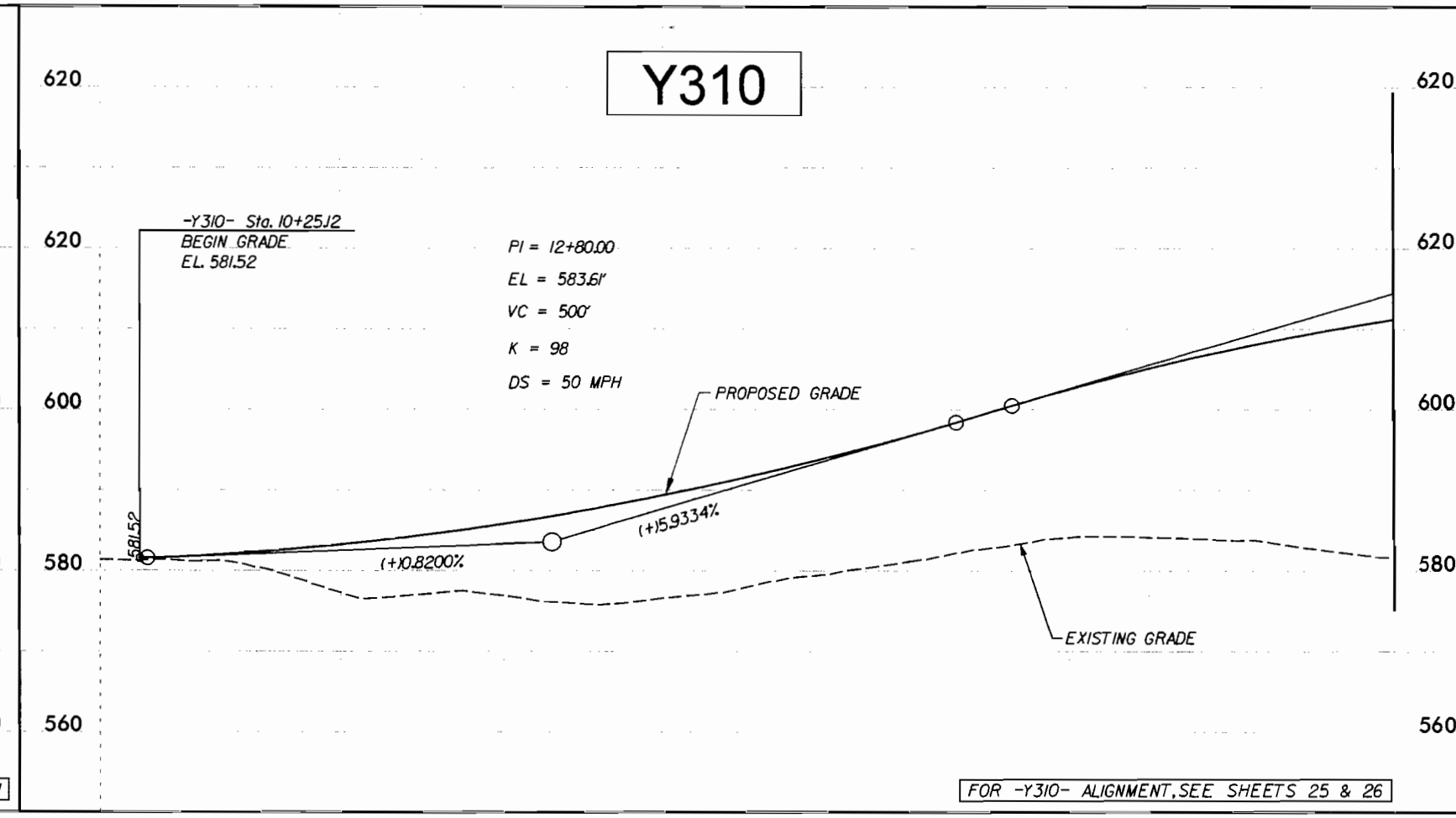
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 2004

DRAINAGE AREA	= 2.0	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 4	CFS
DESIGN HW ELEVATION	= 567.38	FT
100 YEAR DISCHARGE	= 4	CFS
100 YEAR HW ELEVATION	= 567.38	FT
OVERTOPPING FREQUENCY	= >100	YRS
OVERTOPPING DISCHARGE	= 21	CFS
OVERTOPPING ELEVATION	= 572.55	FT



FOR -Y309- ALIGNMENT, SEE SHEETS 7 & 21

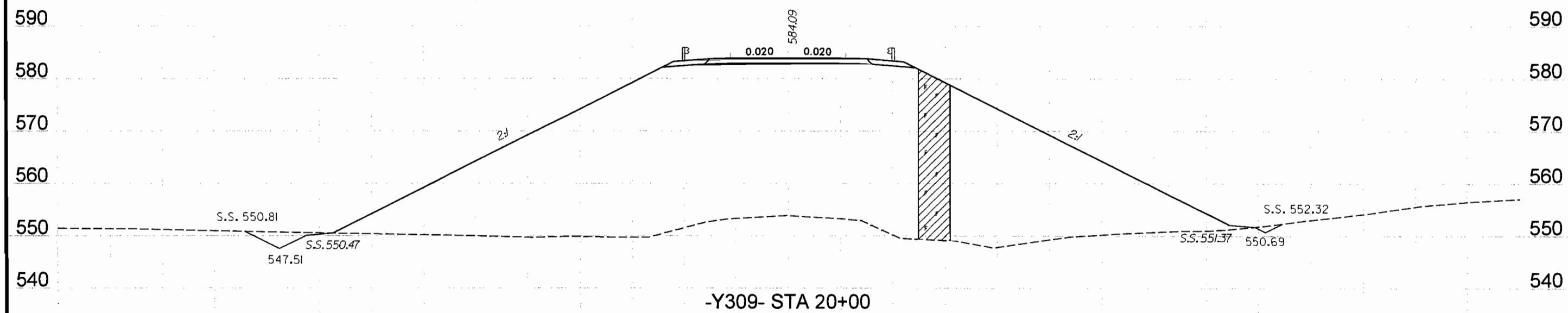
Y310



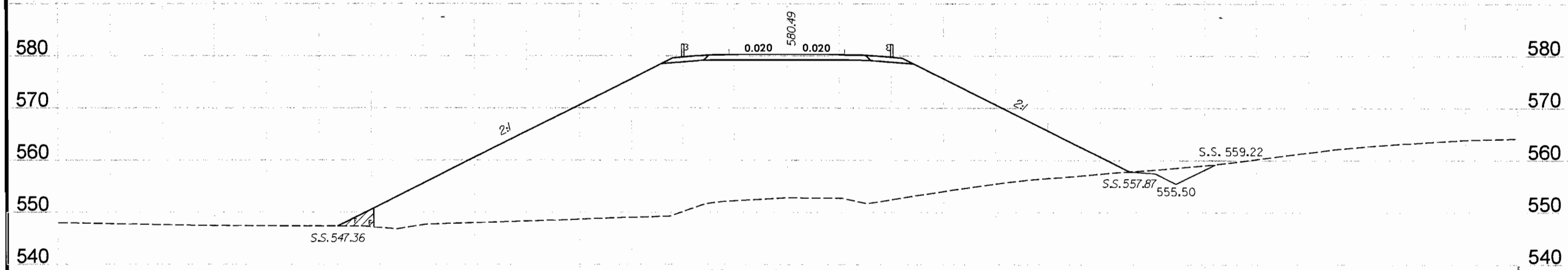
FOR -Y310- ALIGNMENT, SEE SHEETS 25 & 26

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-Y309- STA 20+00



-Y309- STA 19+00

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Turnpike Authority

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NC License No: C-1554

DENOTES FILL IN WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

WETLAND CROSS SECTIONS

SITE 63

UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

120 100 80 60 40 20 0 20 40 60 80 100 120

NORTH CAROLINA
Turnpike Authority

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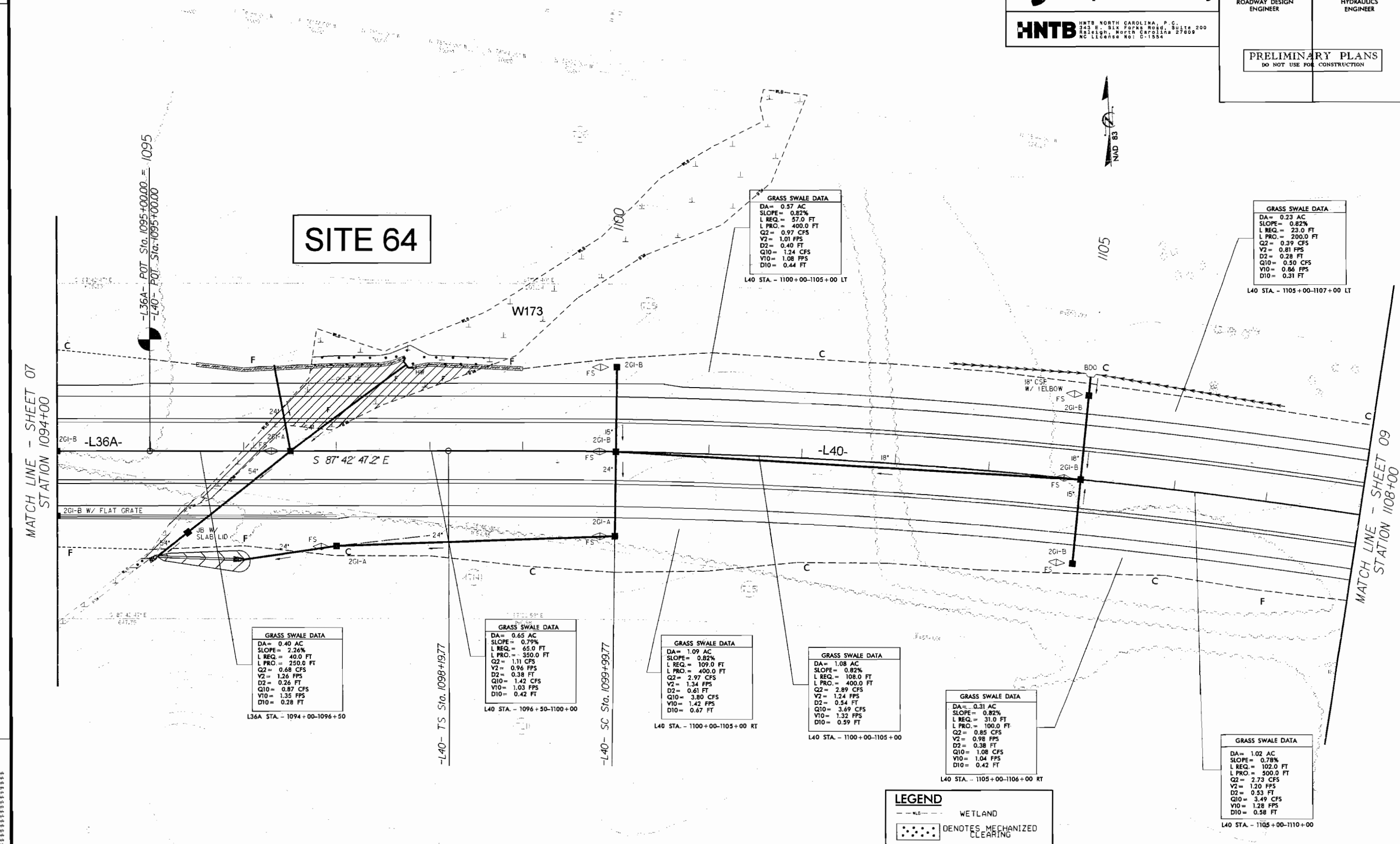
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	08
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



FOR -L36A- PROFILE, SEE SHEET 31
FOR -L40- PROFILE, SEE SHEET 31

PERMIT DRAWINGS
SHEET ___ OF ___

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Turnpike Authority

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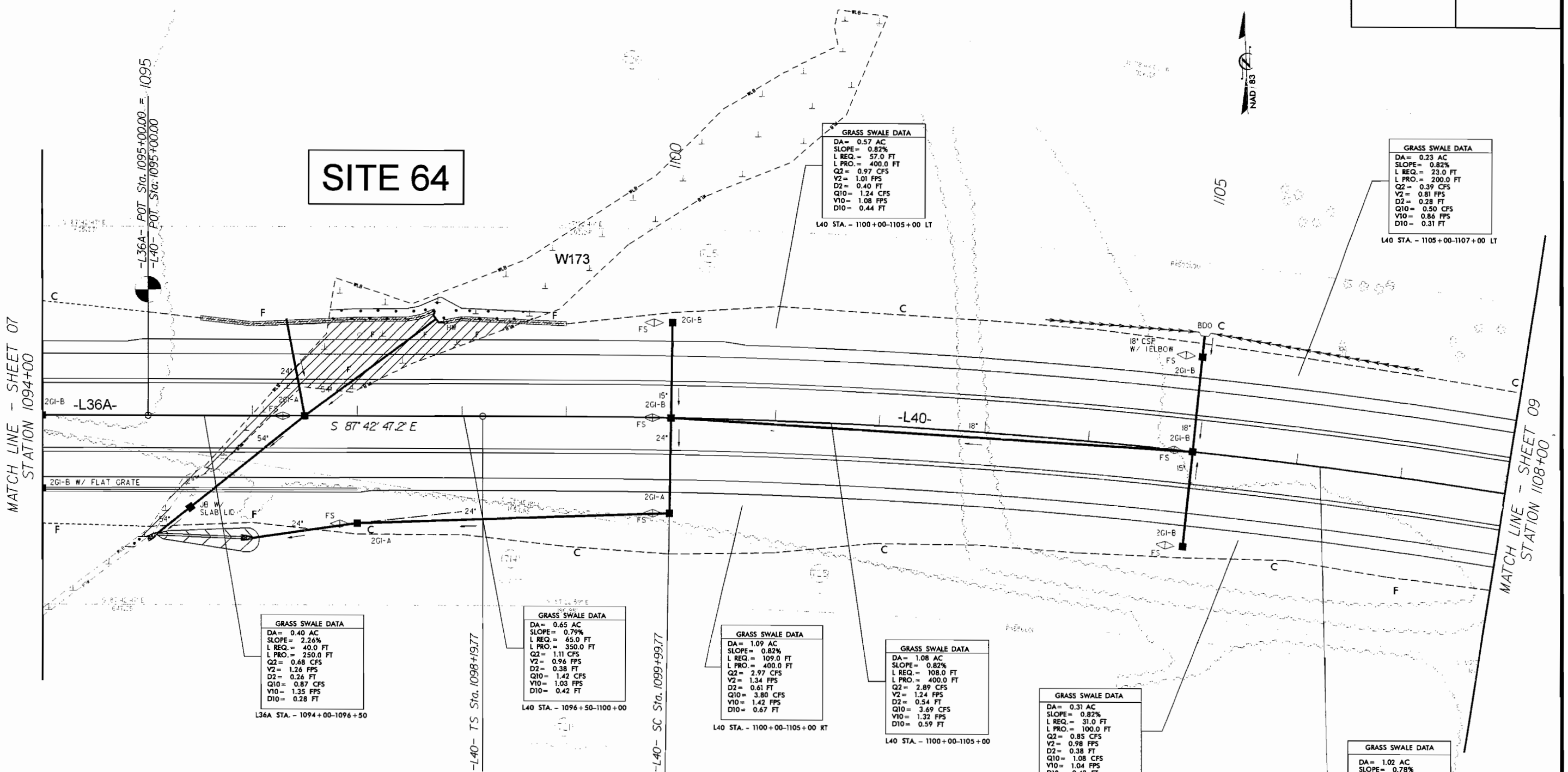
PROJECT REFERENCE NO.	SHEET NO.
R-2559C	08
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



FOR -L36A- PROFILE, SEE SHEET 31
FOR -L40- PROFILE, SEE SHEET 31

PERMIT DRAWINGS
SHEET ___ OF ___

PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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Raleigh, North Carolina 27609
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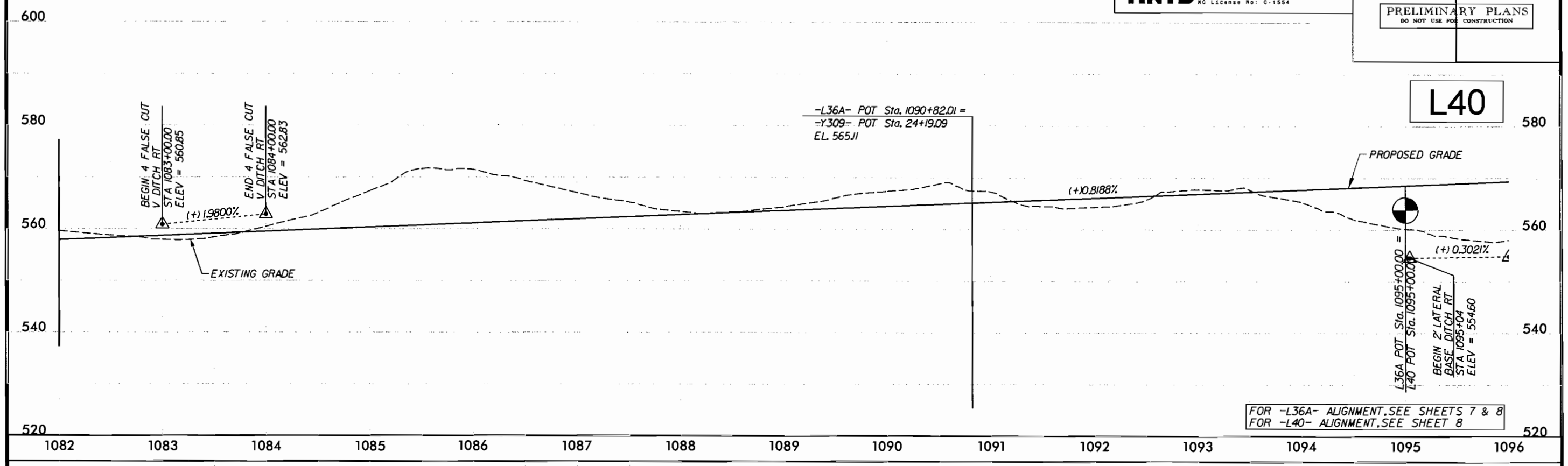
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

L36A

L40



FOR -L36A- ALIGNMENT, SEE SHEETS 7 & 8
FOR -L40- ALIGNMENT, SEE SHEET 8

L40

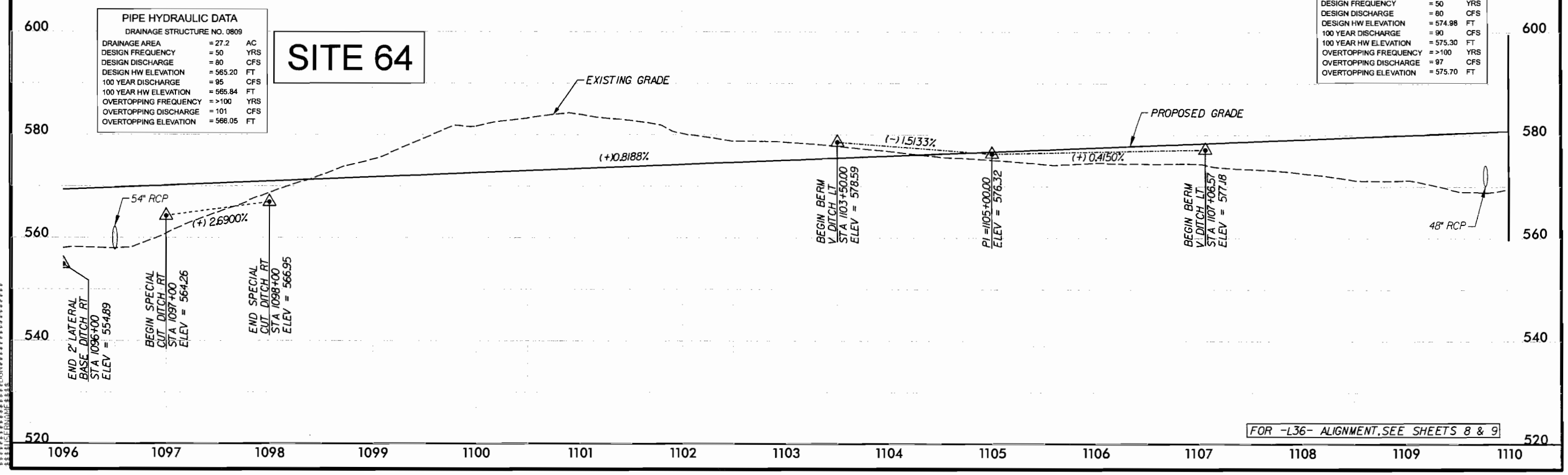
SITE 64

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 0809

DRAINAGE AREA	= 27.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 80	CFS
DESIGN HW ELEVATION	= 565.20	FT
100 YEAR DISCHARGE	= 95	CFS
100 YEAR HW ELEVATION	= 565.84	FT
OVERTOPPING FREQUENCY	= >100	YRS
OVERTOPPING DISCHARGE	= 101	CFS
OVERTOPPING ELEVATION	= 566.05	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 0901

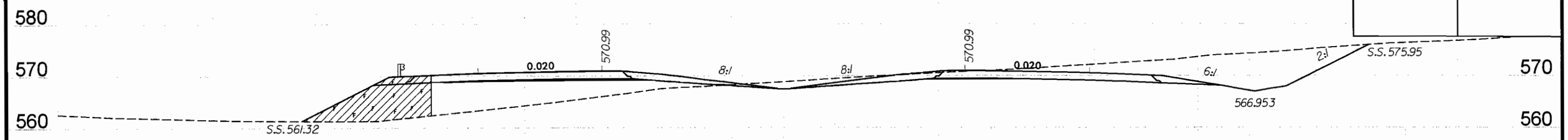
DRAINAGE AREA	= 26.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 80	CFS
DESIGN HW ELEVATION	= 574.98	FT
100 YEAR DISCHARGE	= 90	CFS
100 YEAR HW ELEVATION	= 575.30	FT
OVERTOPPING FREQUENCY	= >100	YRS
OVERTOPPING DISCHARGE	= 97	CFS
OVERTOPPING ELEVATION	= 575.70	FT



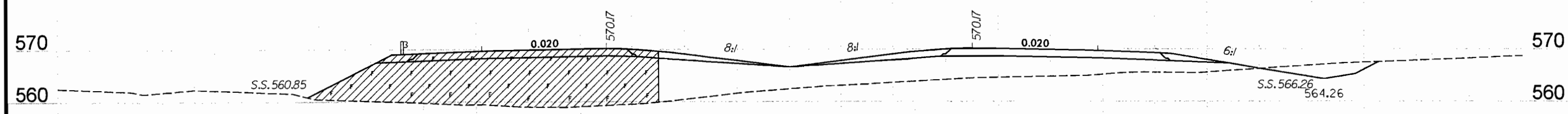
FOR -L36- ALIGNMENT, SEE SHEETS 8 & 9

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

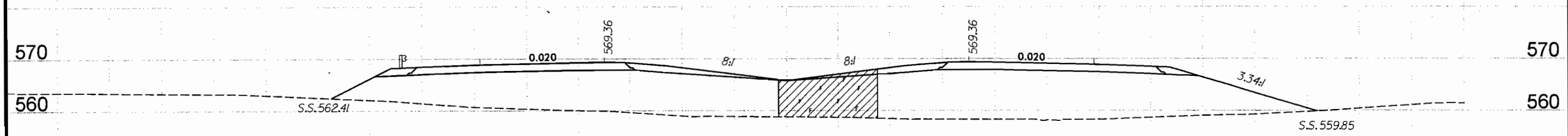
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



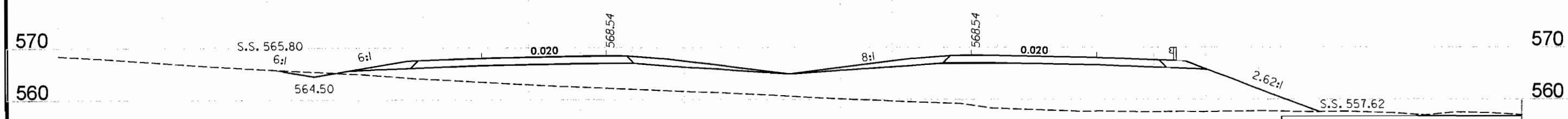
-L40- STA 1098+00



-L40- STA 1097+00



-L40- STA 1096+00



-L40- STA 1095+00

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DENOTES FILL IN WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

WETLAND CROSS SECTIONS

SITE 64

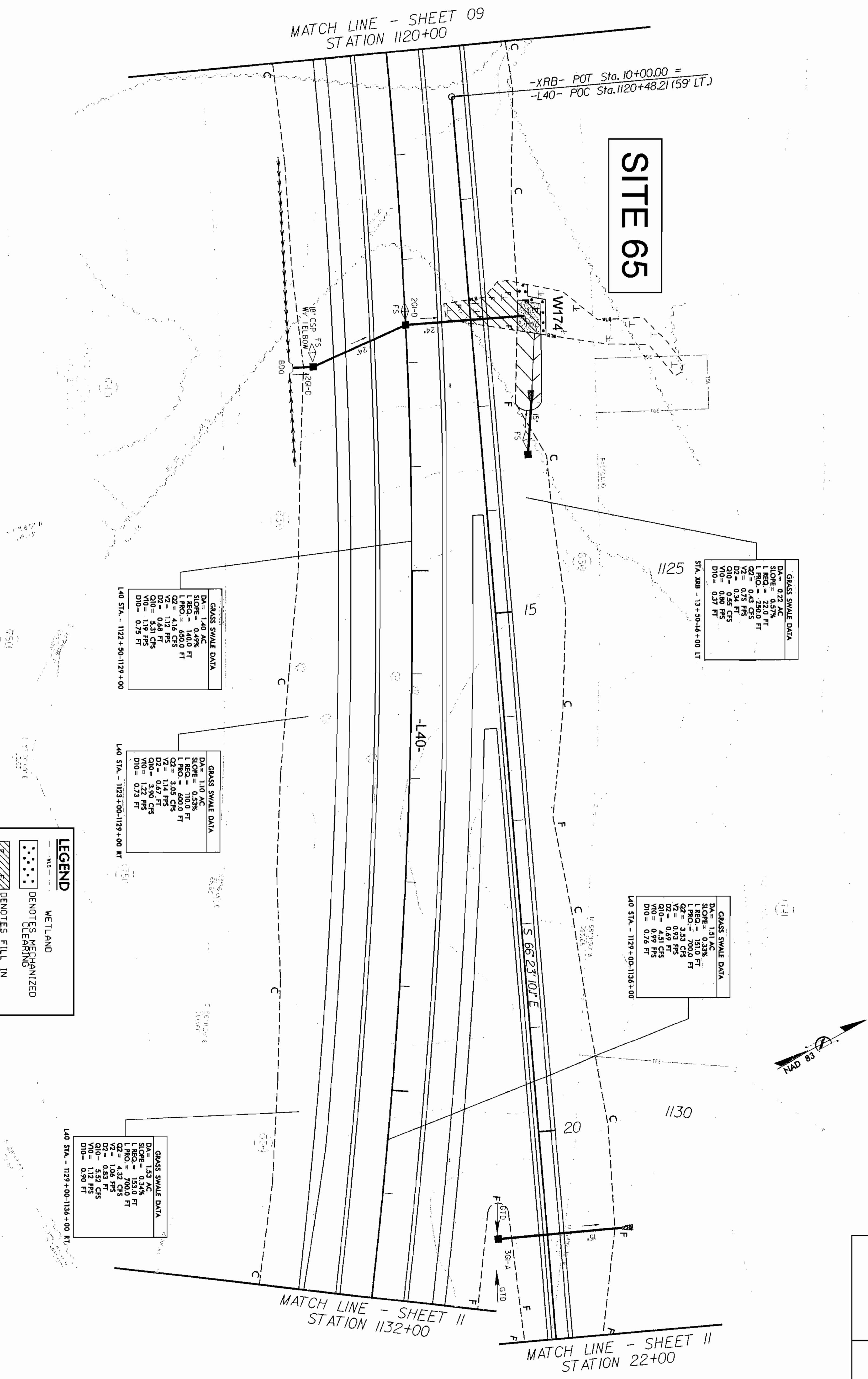
UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

120 100 80 60 40 20 0 20 40 60 80 100 120

REVISIONS

8/17/99



LEGEND

WETLAND

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

FOR -L40- PROFILE, SEE SHEET 32
FOR -XRB- PROFILE, SEE SHEET 43

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PROJECT REFERENCE NO.	SHEET NO.
R-2559C	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET __ OF __

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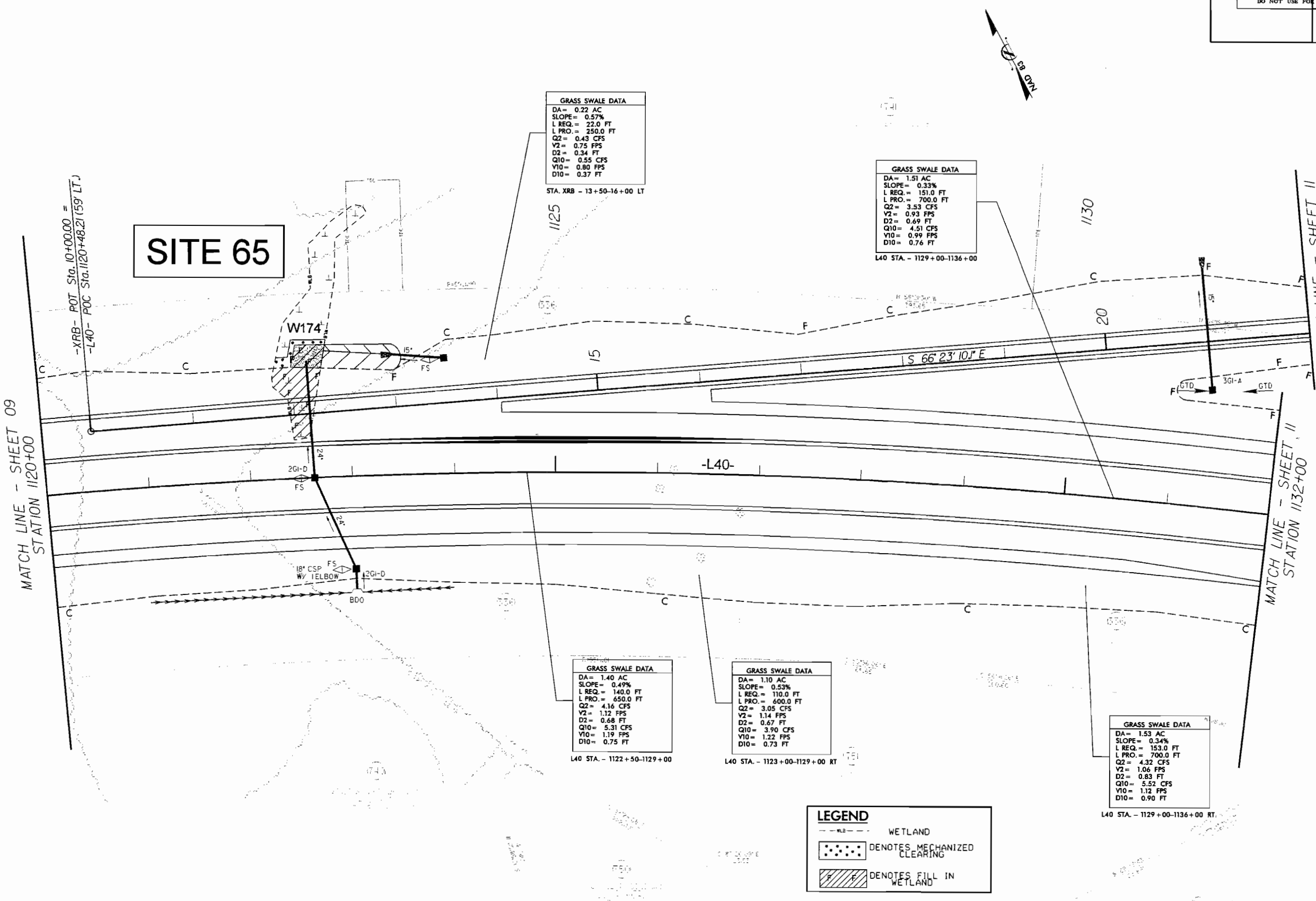
PROJECT REFERENCE NO.	SHEET NO.
R-2559C	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L40- PROFILE, SEE SHEET 32
FOR -XRB- PROFILE, SEE SHEET 43

PERMIT DRAWINGS
SHEET ___ OF ___

REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	43
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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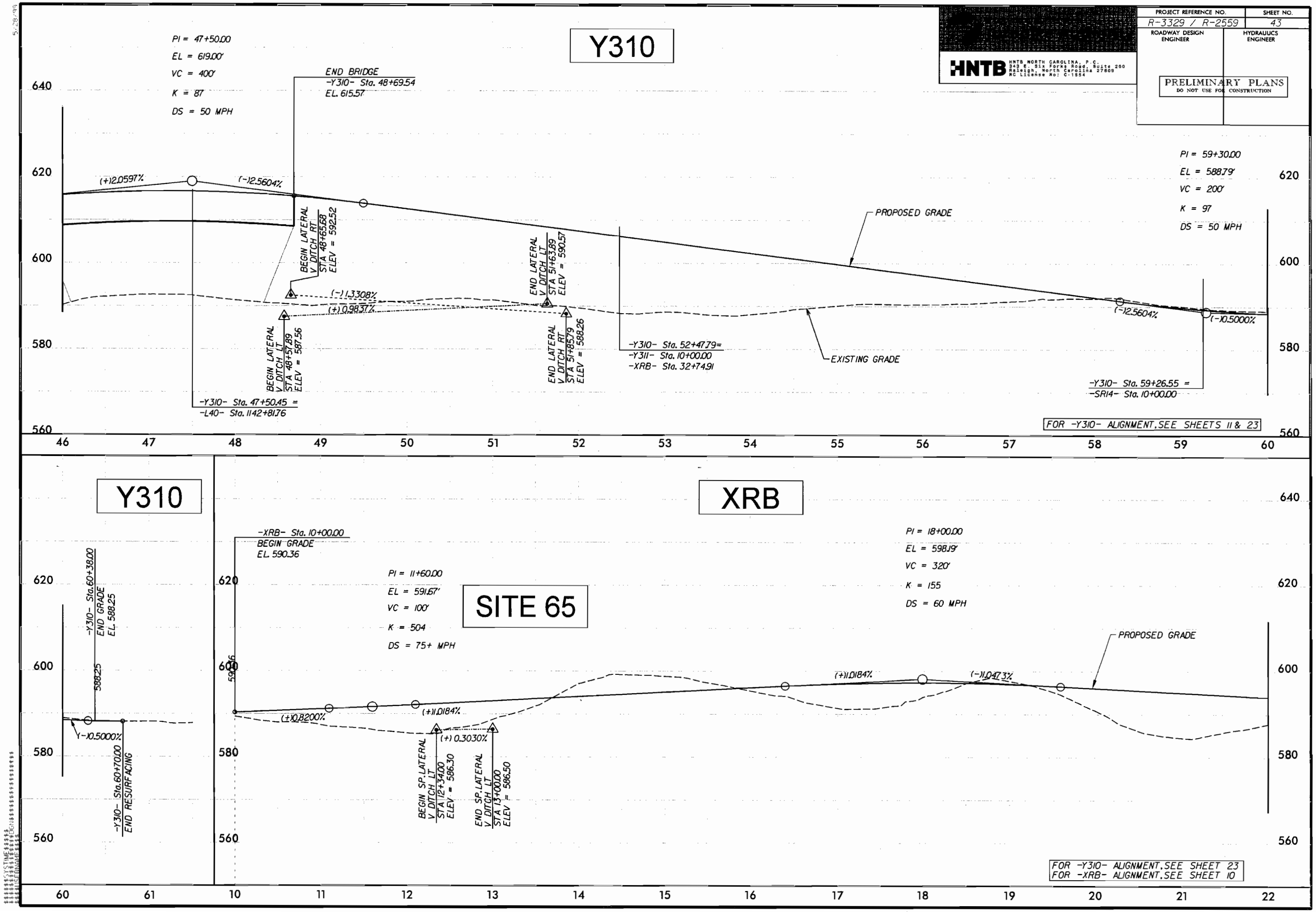
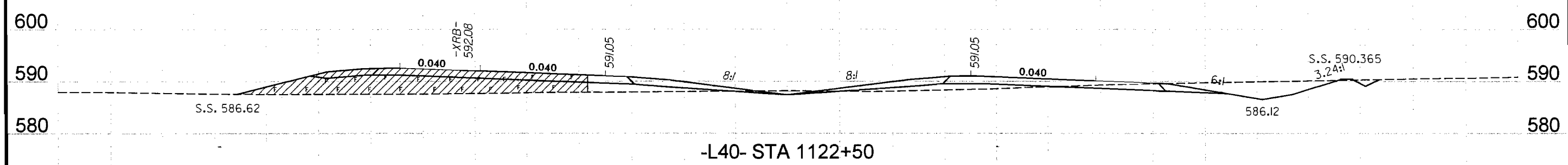
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DENOTES FILL IN WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

WETLAND CROSS SECTION

SITE 65

NORTH CAROLINA Turnpike Authority

HNTB

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Raleigh, North Carolina 27609
NC License No: C-1554

UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

120 100 80 60 40 20 0 20 40 60 80 100 120

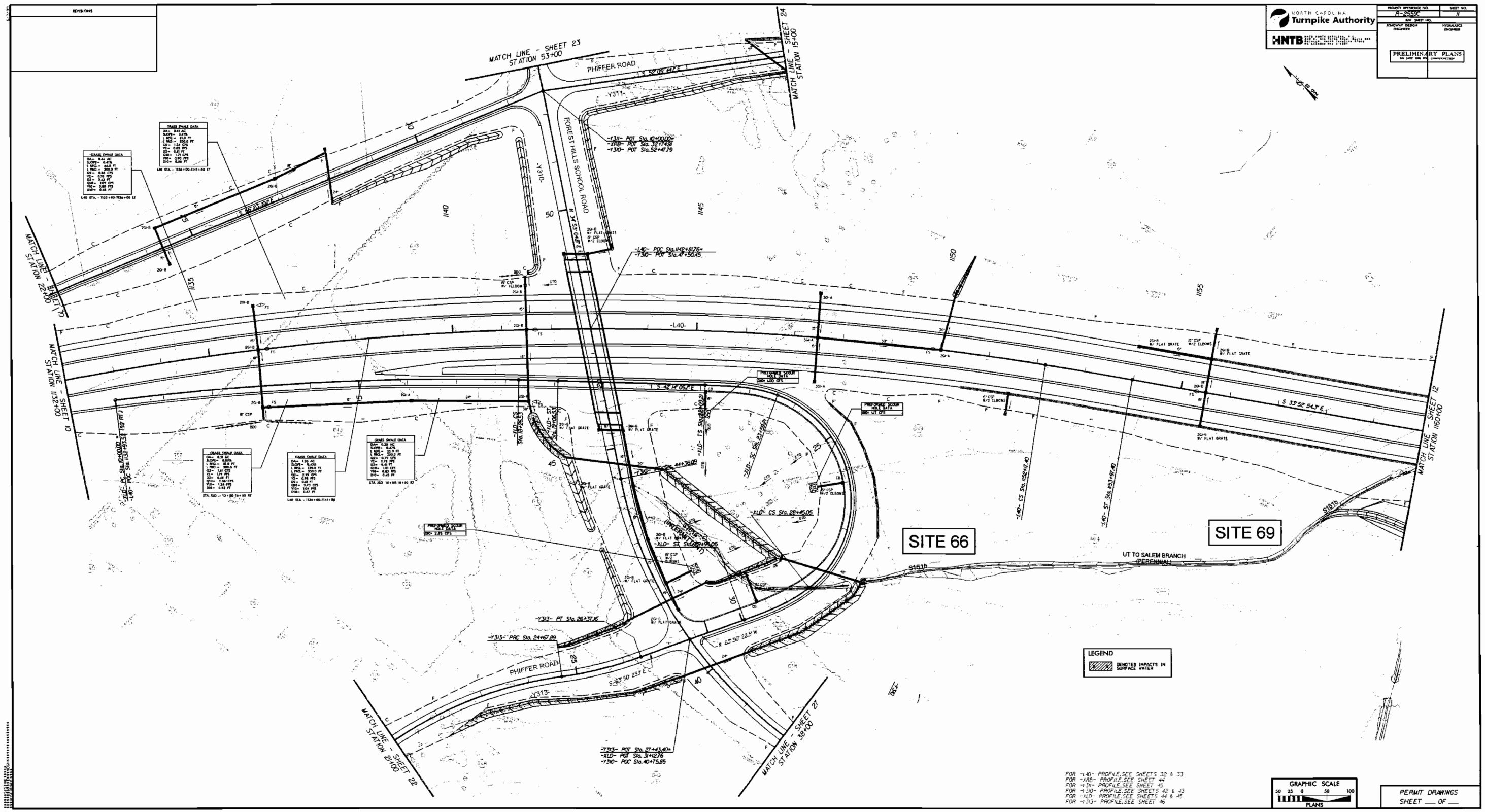
REVISIONS

NORTH CAROLINA Turnpike Authority

HNTB

PROJECT REFERENCE NO.	SHEET NO.
R-2500A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
NOT FOR CONSTRUCTION



PERMIT DRAWINGS
SHEET ___ OF ___

REVISIONS

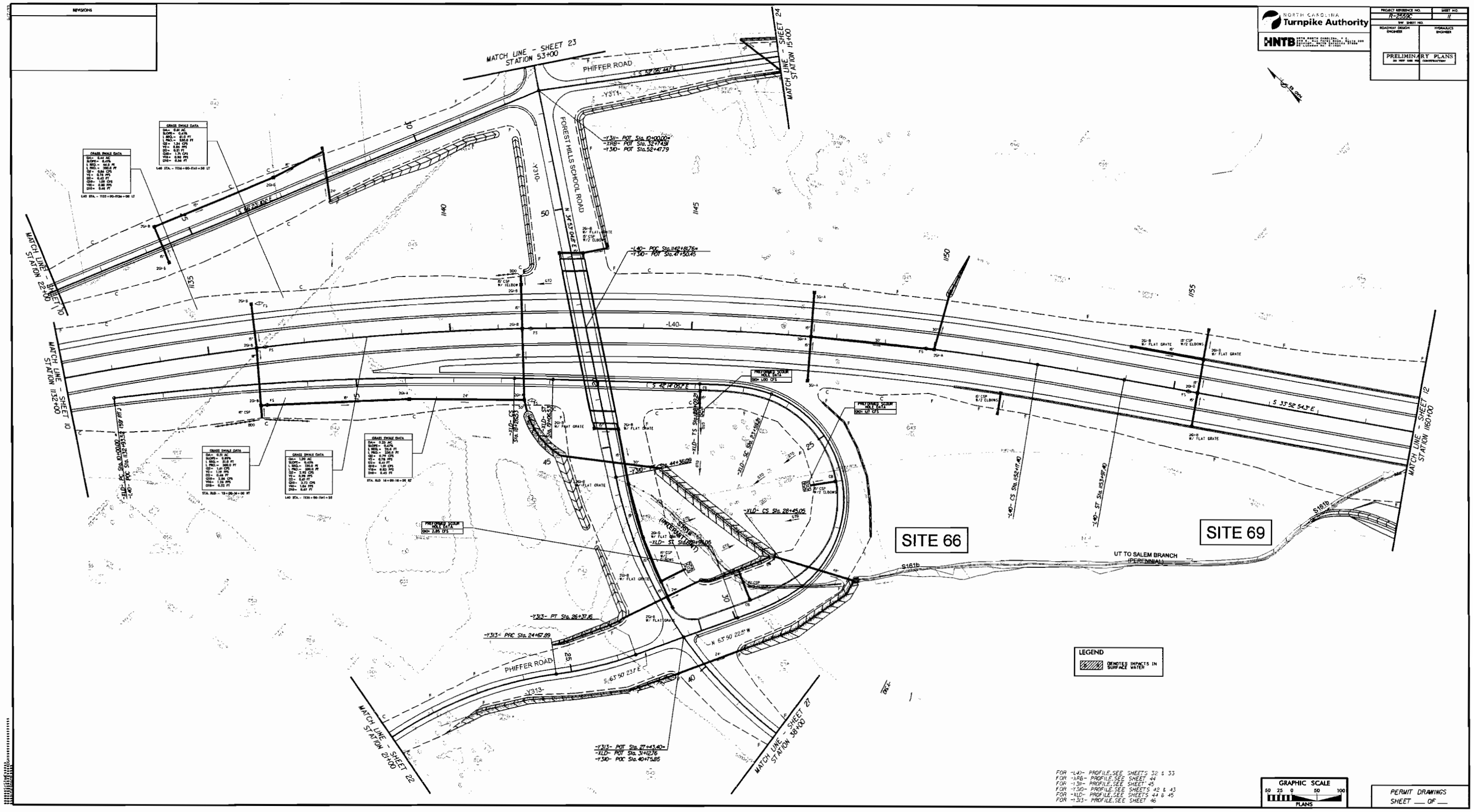
NORTH CAROLINA Turnpike Authority

HNTB

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION



PERMIT DRAWINGS
SHEET ___ OF ___

PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	45
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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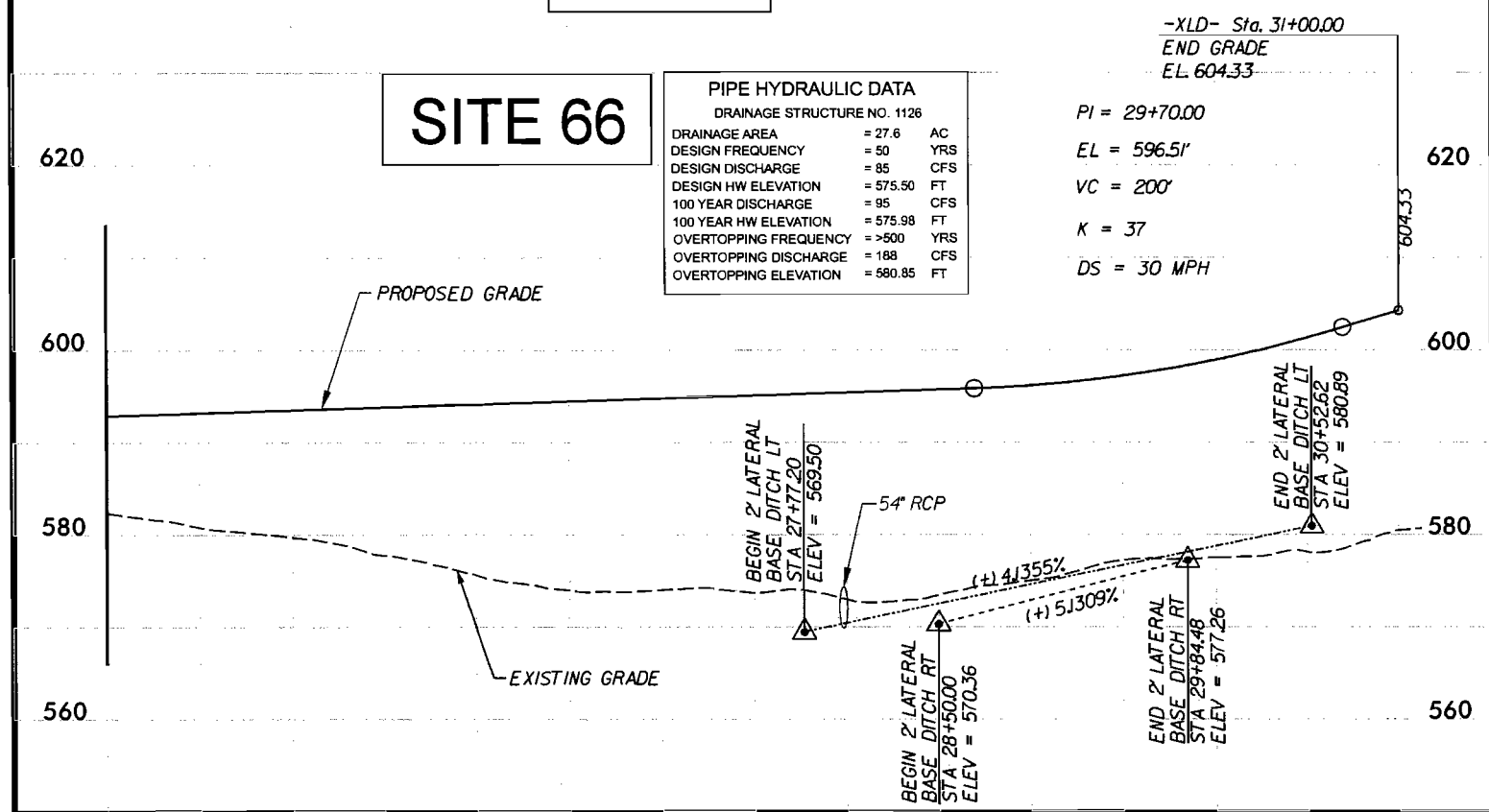
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

XLD

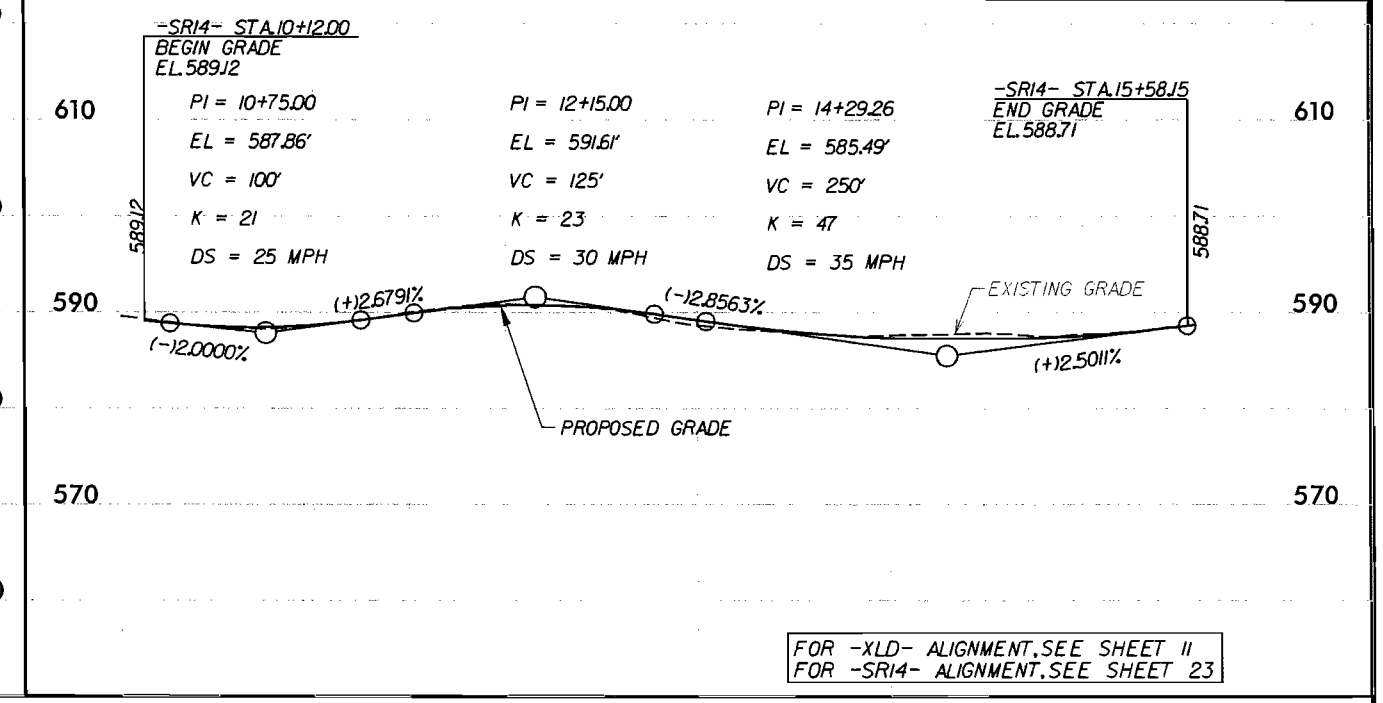
SITE 66

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 1126

DRAINAGE AREA	= 27.6	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 85	CFS
DESIGN HW ELEVATION	= 575.50	FT
100 YEAR DISCHARGE	= 95	CFS
100 YEAR HW ELEVATION	= 575.98	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 188	CFS
OVERTOPPING ELEVATION	= 580.85	FT



SR14



FOR -XLD- ALIGNMENT, SEE SHEET 11
FOR -SR14- ALIGNMENT, SEE SHEET 23

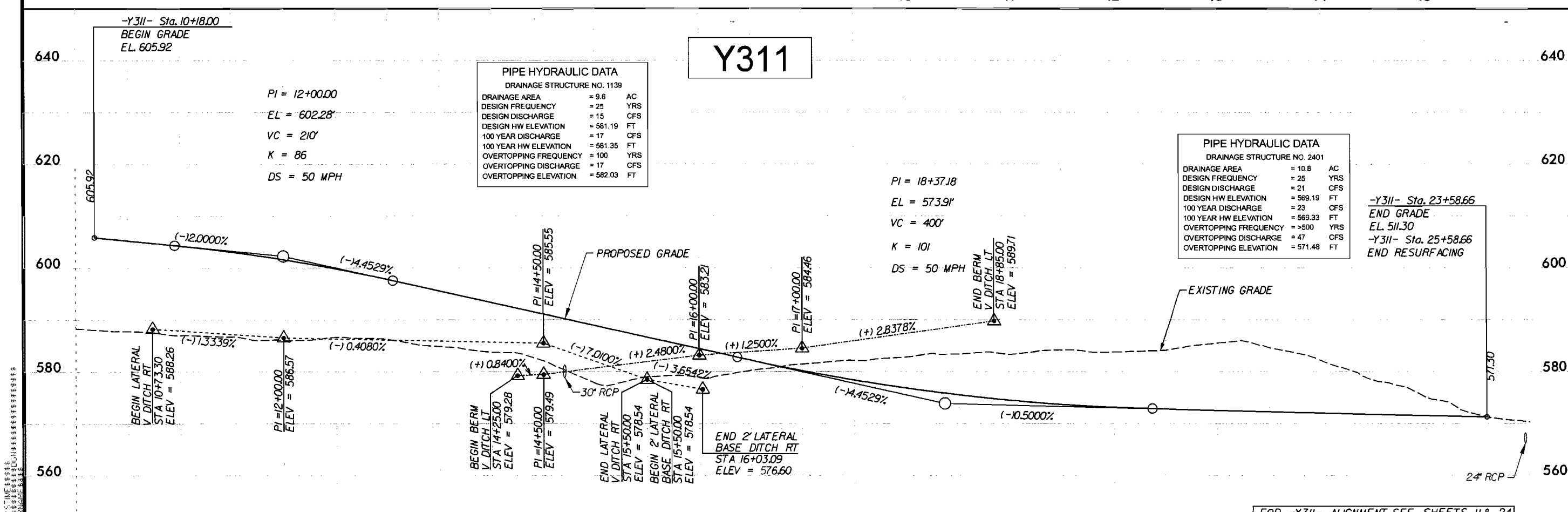
Y311

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 1139

DRAINAGE AREA	= 9.6	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 15	CFS
DESIGN HW ELEVATION	= 581.19	FT
100 YEAR DISCHARGE	= 17	CFS
100 YEAR HW ELEVATION	= 581.35	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 17	CFS
OVERTOPPING ELEVATION	= 582.03	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 2401

DRAINAGE AREA	= 10.8	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 21	CFS
DESIGN HW ELEVATION	= 569.19	FT
100 YEAR DISCHARGE	= 23	CFS
100 YEAR HW ELEVATION	= 569.33	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 47	CFS
OVERTOPPING ELEVATION	= 571.48	FT



FOR -Y311- ALIGNMENT, SEE SHEETS 11 & 24

5/28/99

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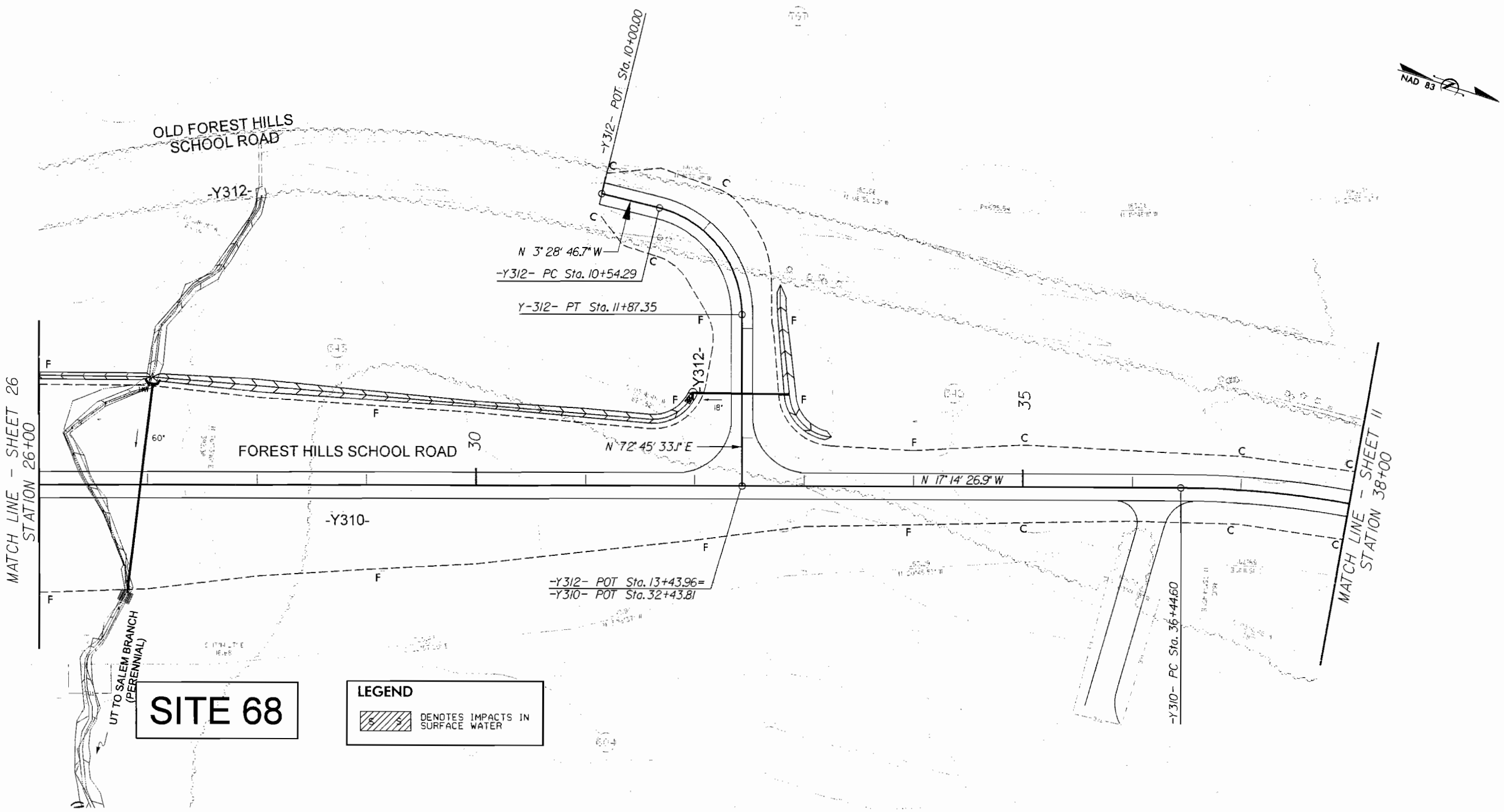
PROJECT REFERENCE NO.	SHEET NO.
R-2559C	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -Y310- PROFILE, SEE SHEET 42
FOR -Y312- PROFILE, SEE SHEET 46

PERMIT DRAWINGS
SHEET ___ OF ___

REVISIONS

8/17/99

NORTH CAROLINA
Turnpike Authority

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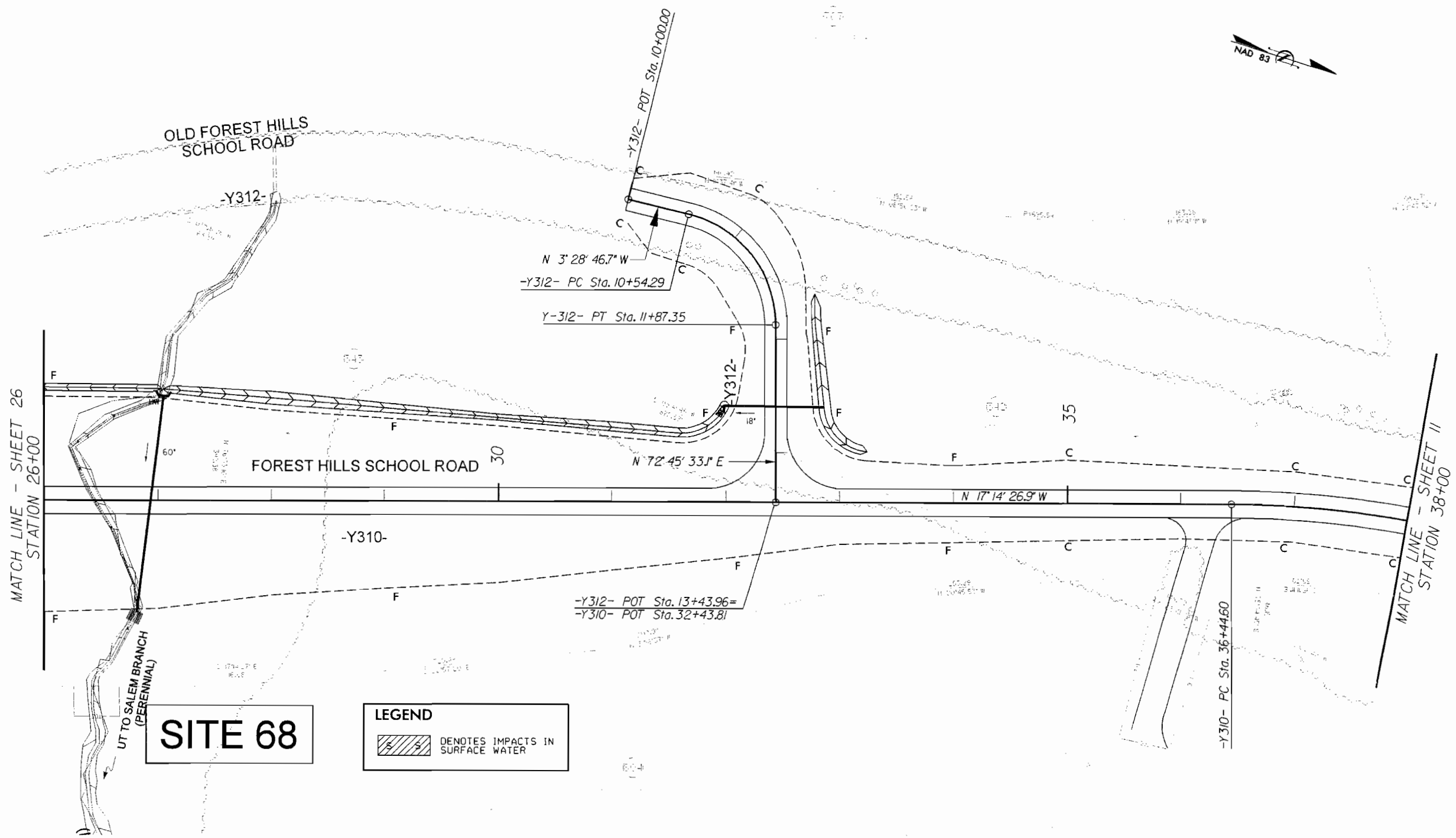
PROJECT REFERENCE NO.	SHEET NO.
R-2559C	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -Y310- PROFILE, SEE SHEET 42
FOR -Y312- PROFILE, SEE SHEET 46

PERMIT DRAWINGS
SHEET ___ OF ___

REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	42
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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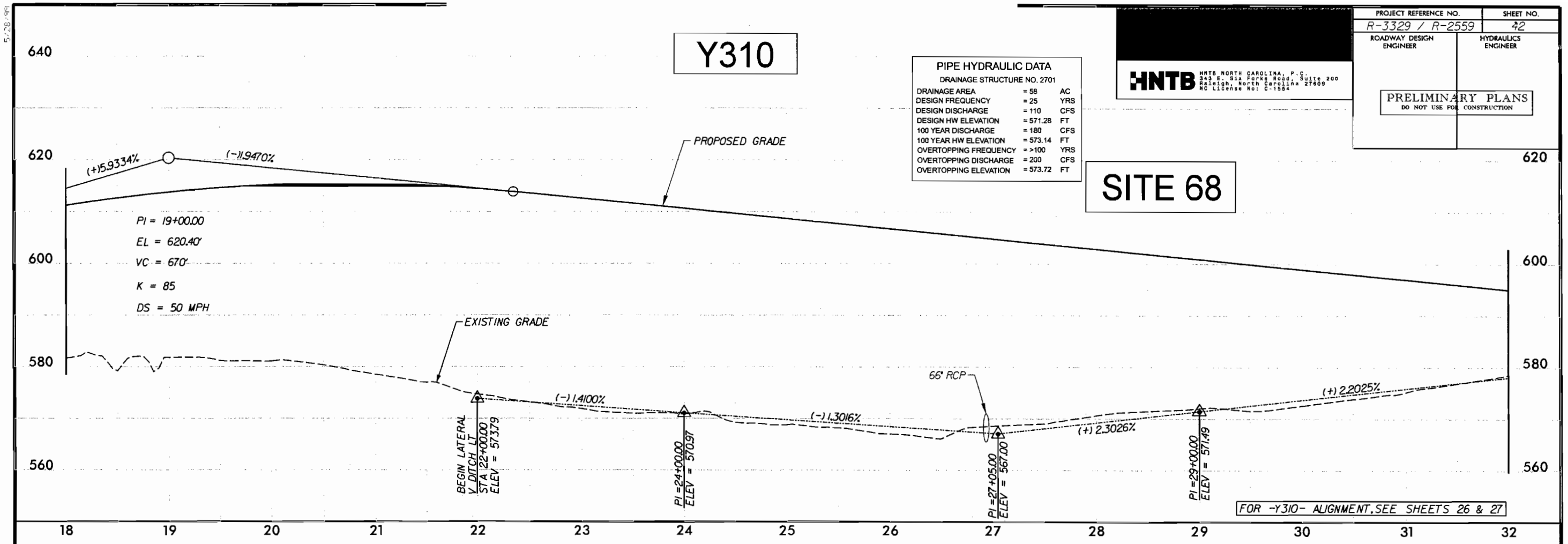
Raleigh, North Carolina 27609
NC License No: C-1554

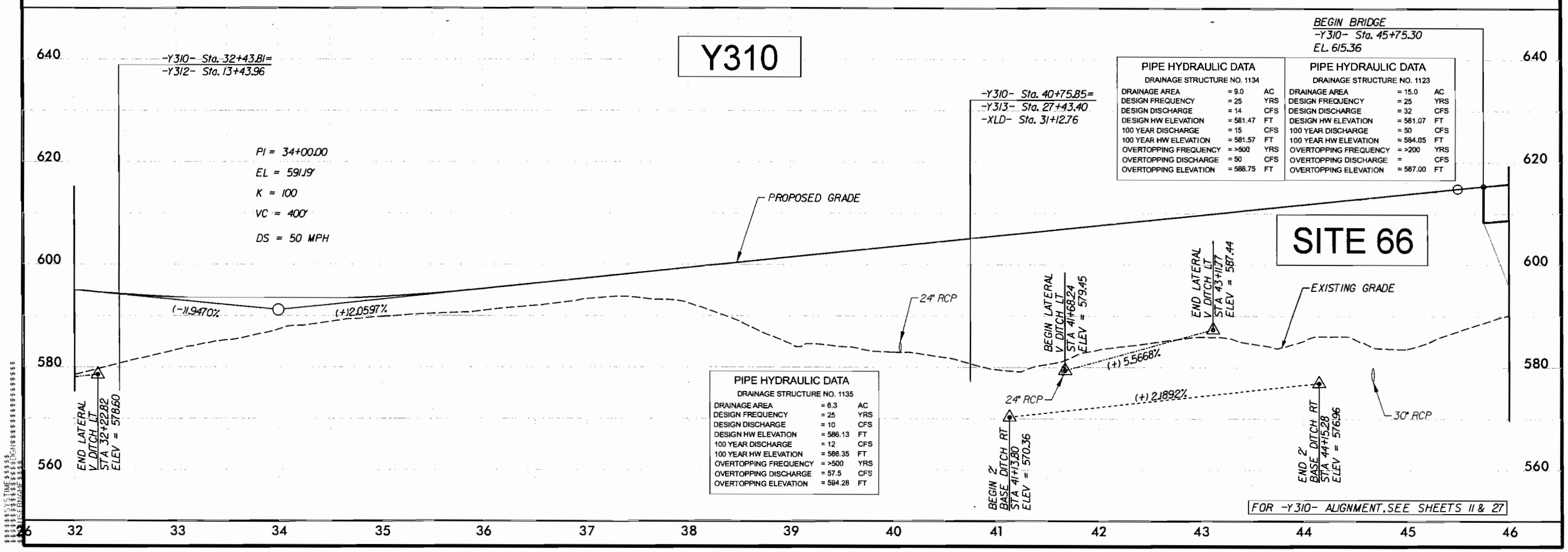
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 2701

DRAINAGE AREA	= 58	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 110	CFS
DESIGN HW ELEVATION	= 571.28	FT
100 YEAR DISCHARGE	= 180	CFS
100 YEAR HW ELEVATION	= 573.14	FT
OVERTOPPING FREQUENCY	= >100	YRS
OVERTOPPING DISCHARGE	= 200	CFS
OVERTOPPING ELEVATION	= 573.72	FT

FOR -Y310- ALIGNMENT, SEE SHEETS 26 & 27



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 1134

DRAINAGE AREA	= 9.0	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 581.47	FT
100 YEAR DISCHARGE	= 15	CFS
100 YEAR HW ELEVATION	= 581.57	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 50	CFS
OVERTOPPING ELEVATION	= 588.75	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 1123

DRAINAGE AREA	= 15.0	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 32	CFS
DESIGN HW ELEVATION	= 581.07	FT
100 YEAR DISCHARGE	= 50	CFS
100 YEAR HW ELEVATION	= 584.05	FT
OVERTOPPING FREQUENCY	= >200	YRS
OVERTOPPING DISCHARGE	=	CFS
OVERTOPPING ELEVATION	= 587.00	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 1135

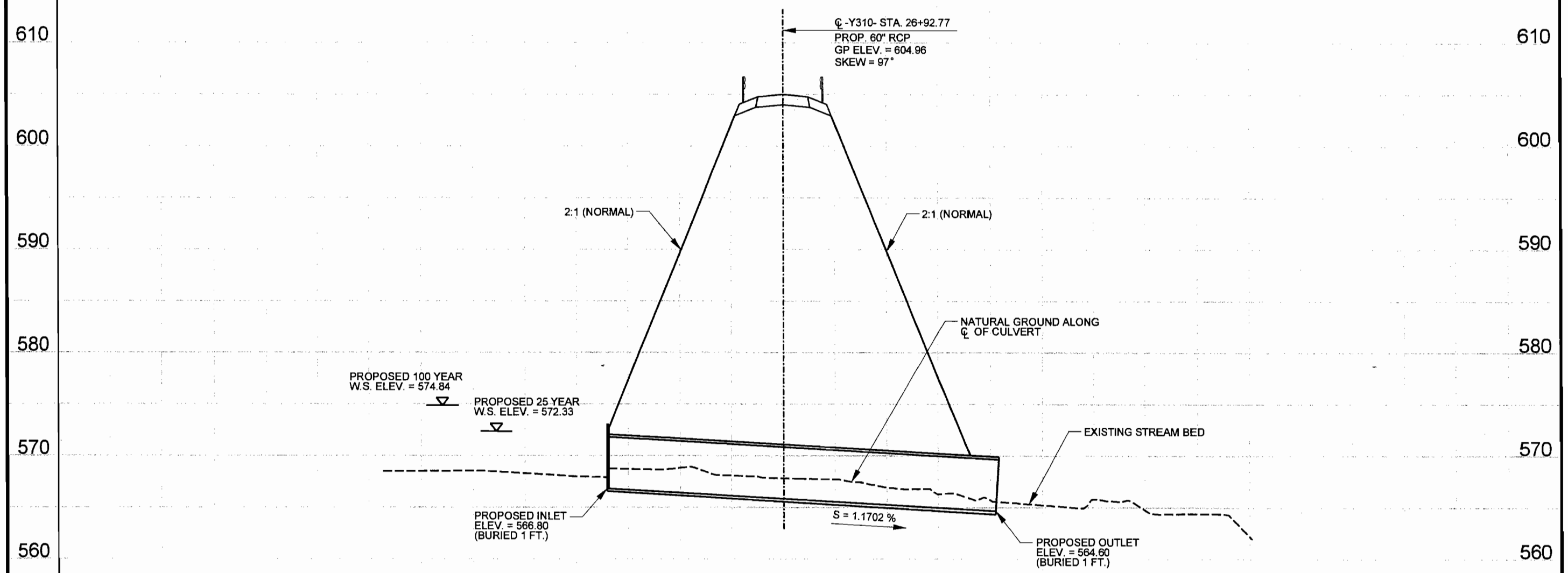
DRAINAGE AREA	= 6.3	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 10	CFS
DESIGN HW ELEVATION	= 586.13	FT
100 YEAR DISCHARGE	= 12	CFS
100 YEAR HW ELEVATION	= 586.35	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 57.5	CFS
OVERTOPPING ELEVATION	= 594.28	FT

FOR -Y310- ALIGNMENT, SEE SHEETS 11 & 27

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROFILE ALONG STRUCTURE

SITE 68

SCALE
1"=50' HORIZONTAL
1"=10' VERTICAL

NORTH CAROLINA Turnpike Authority

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UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

NORTH CAROLINA
Turnpike Authority

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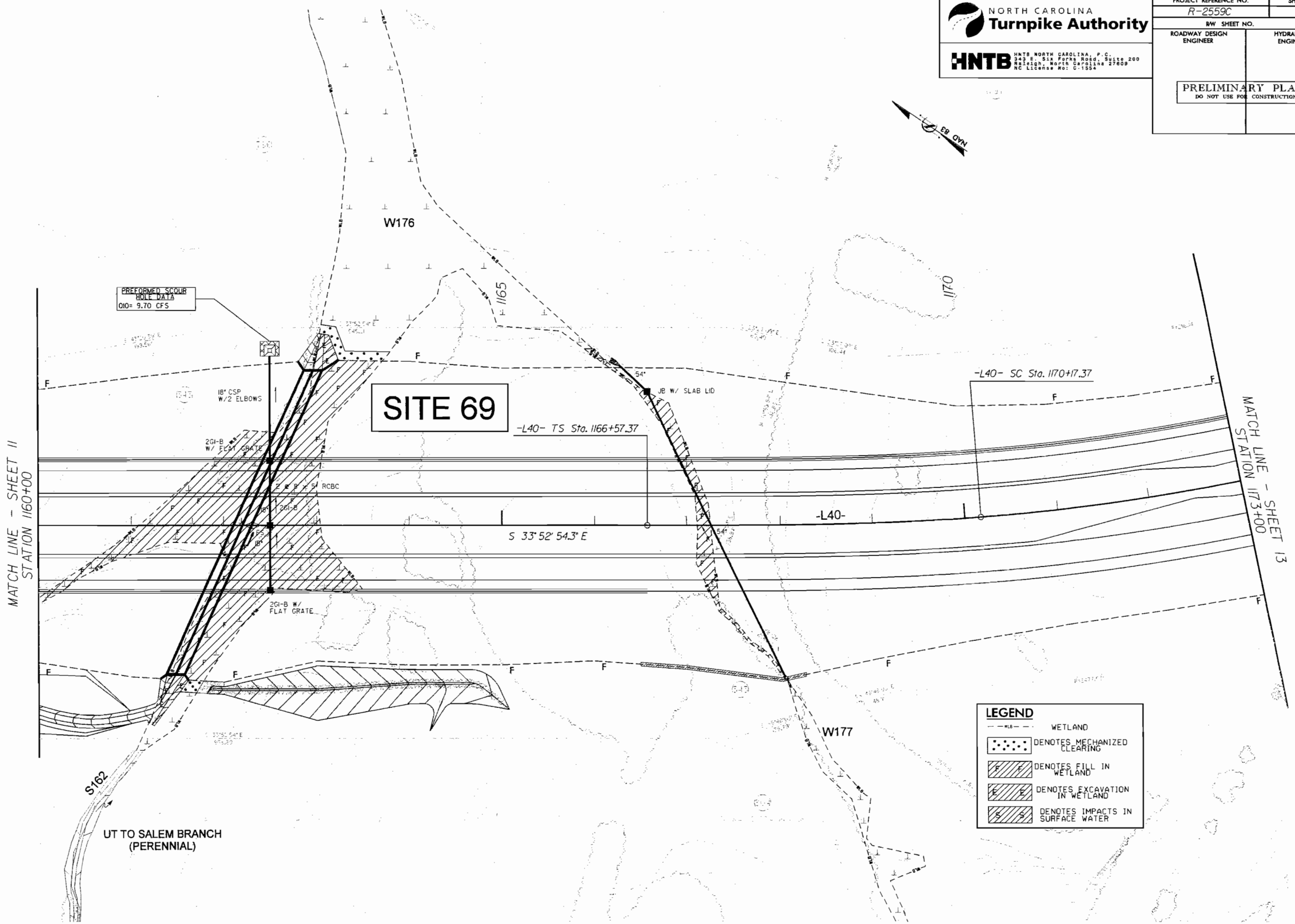
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



FOR -L40- PROFILE, SEE SHEETS 33 & 34

PERMIT DRAWINGS
SHEET ___ OF ___

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Turnpike Authority

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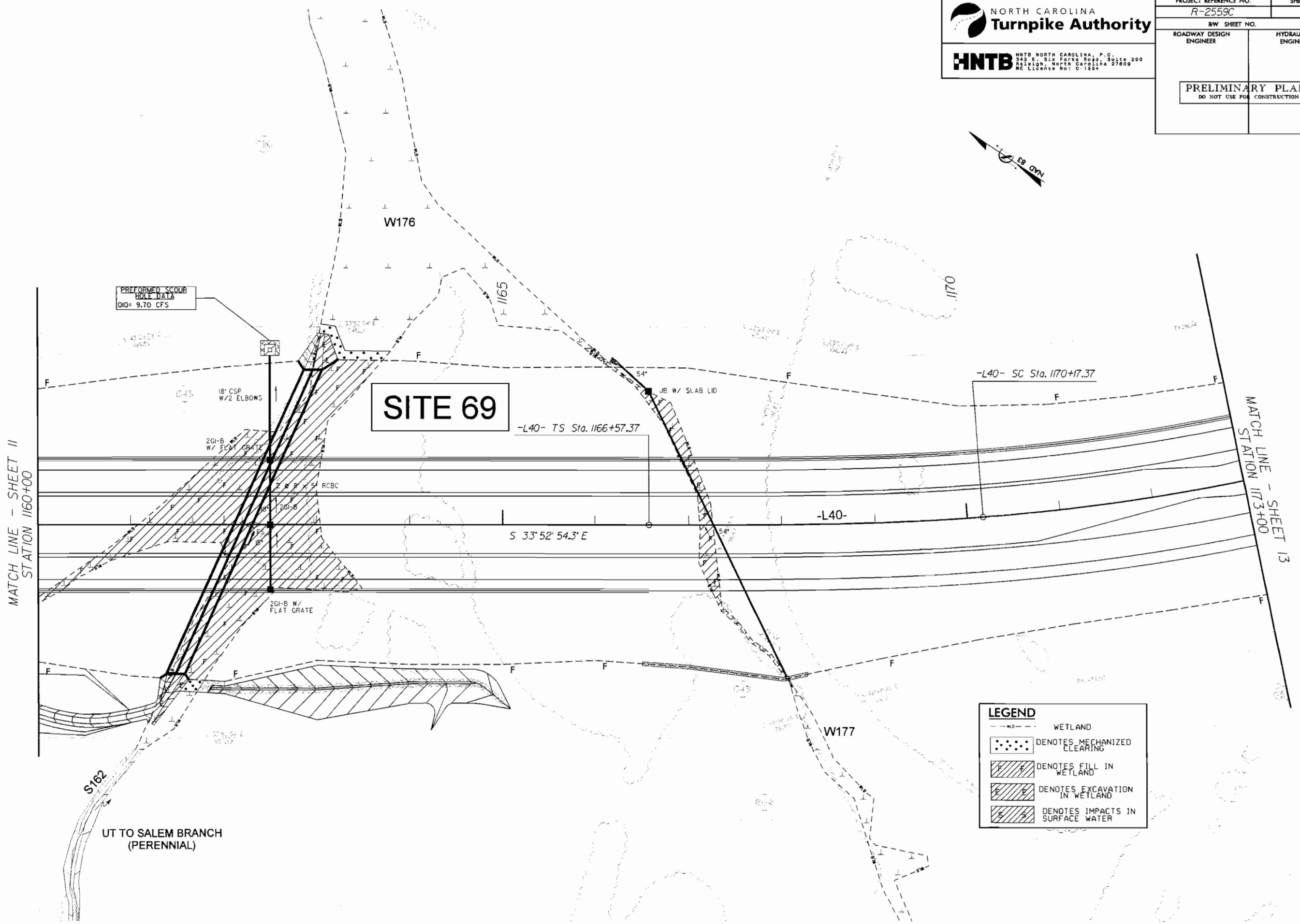
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L40- PROFILE, SEE SHEETS 33 & 34

PERMIT DRAWINGS
SHEET ___ OF ___

REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NC License No: C-1554

PRELIMINARY PLANS
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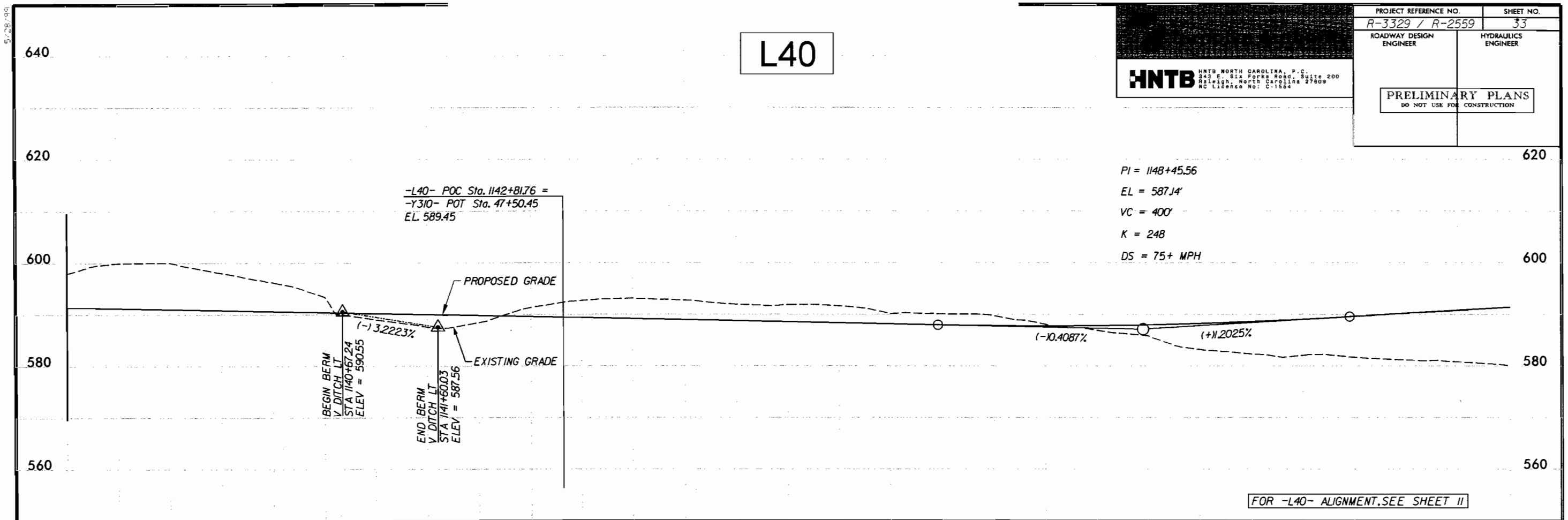
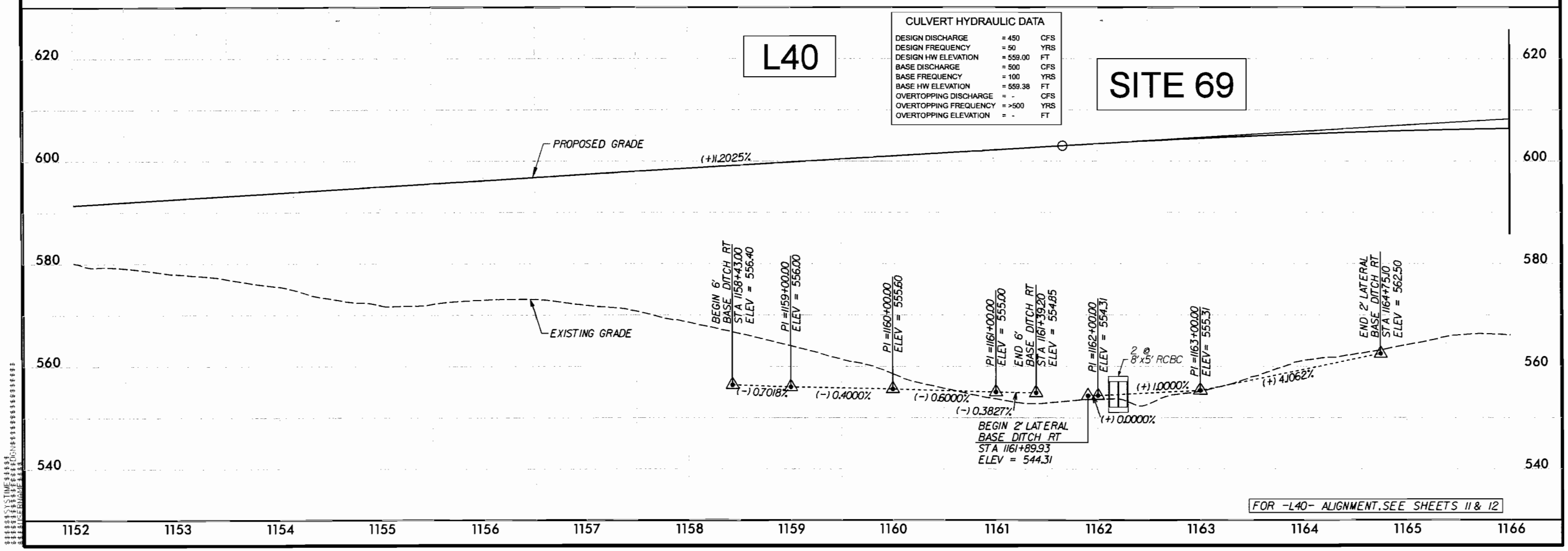


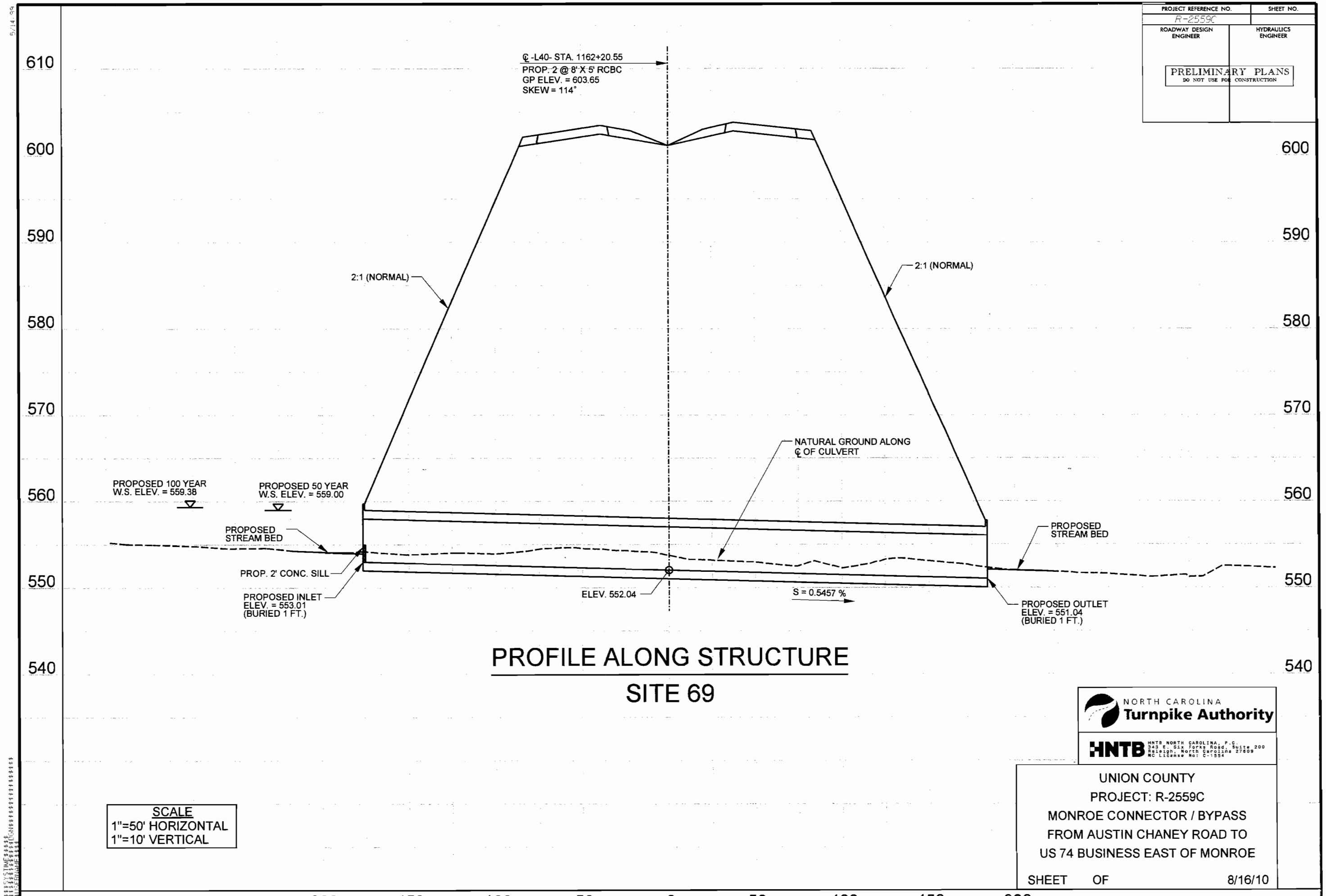


CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 450	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 559.00	FT
BASE DISCHARGE	= 500	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 559.38	FT
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= -	FT

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROFILE ALONG STRUCTURE

SITE 69

NORTH CAROLINA
Turnpike Authority

HNTB
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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

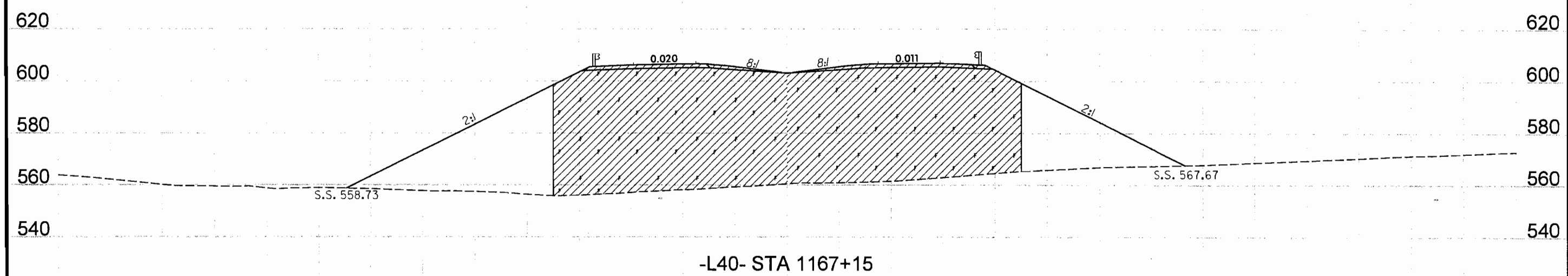
SCALE
1"=50' HORIZONTAL
1"=10' VERTICAL

UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DENOTES FILL IN WETLAND

SCALE
1"=40' HORIZONTAL
1"=40' VERTICAL

WETLAND CROSS SECTION

SITE 69

NORTH CAROLINA
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NC License No: C-1554

UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

240 200 160 120 80 40 0 40 80 120 160 200 240

NORTH CAROLINA
Turnpike Authority

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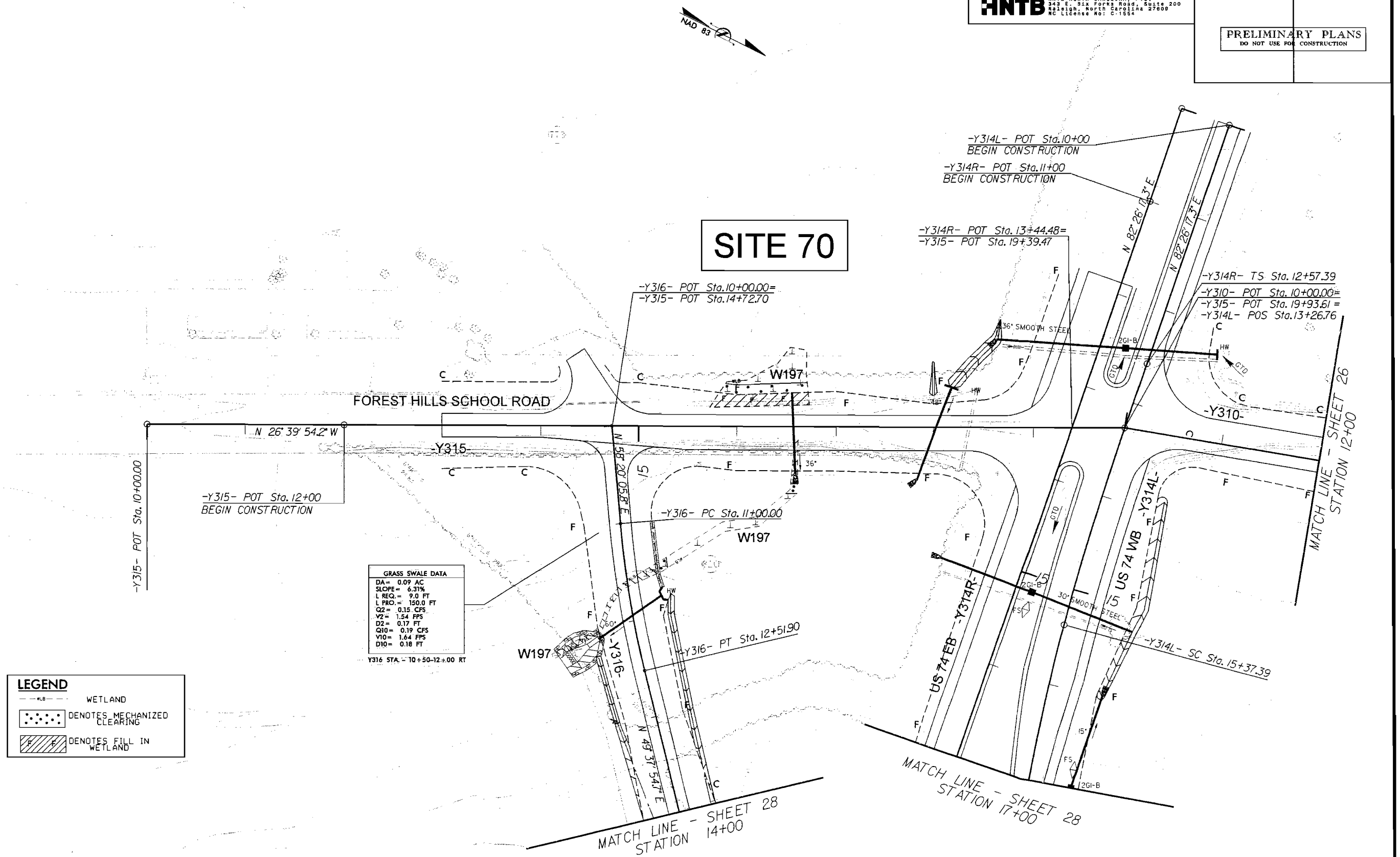
PROJECT REFERENCE NO.	SHEET NO.
R-2559C	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



FOR -Y310- PROFILE, SEE SHEET 41
FOR -Y314L- PROFILE, SEE SHEET 46
FOR -Y314R- PROFILE, SEE SHEET 48
FOR -Y315- PROFILE, SEE SHEET 50
FOR -Y316- PROFILE, SEE SHEET 50

PERMIT DRAWINGS
SHEET ___ OF ___

$$$$$$$SYSTIME$$$$$$
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NORTH CAROLINA
Turnpike Authority

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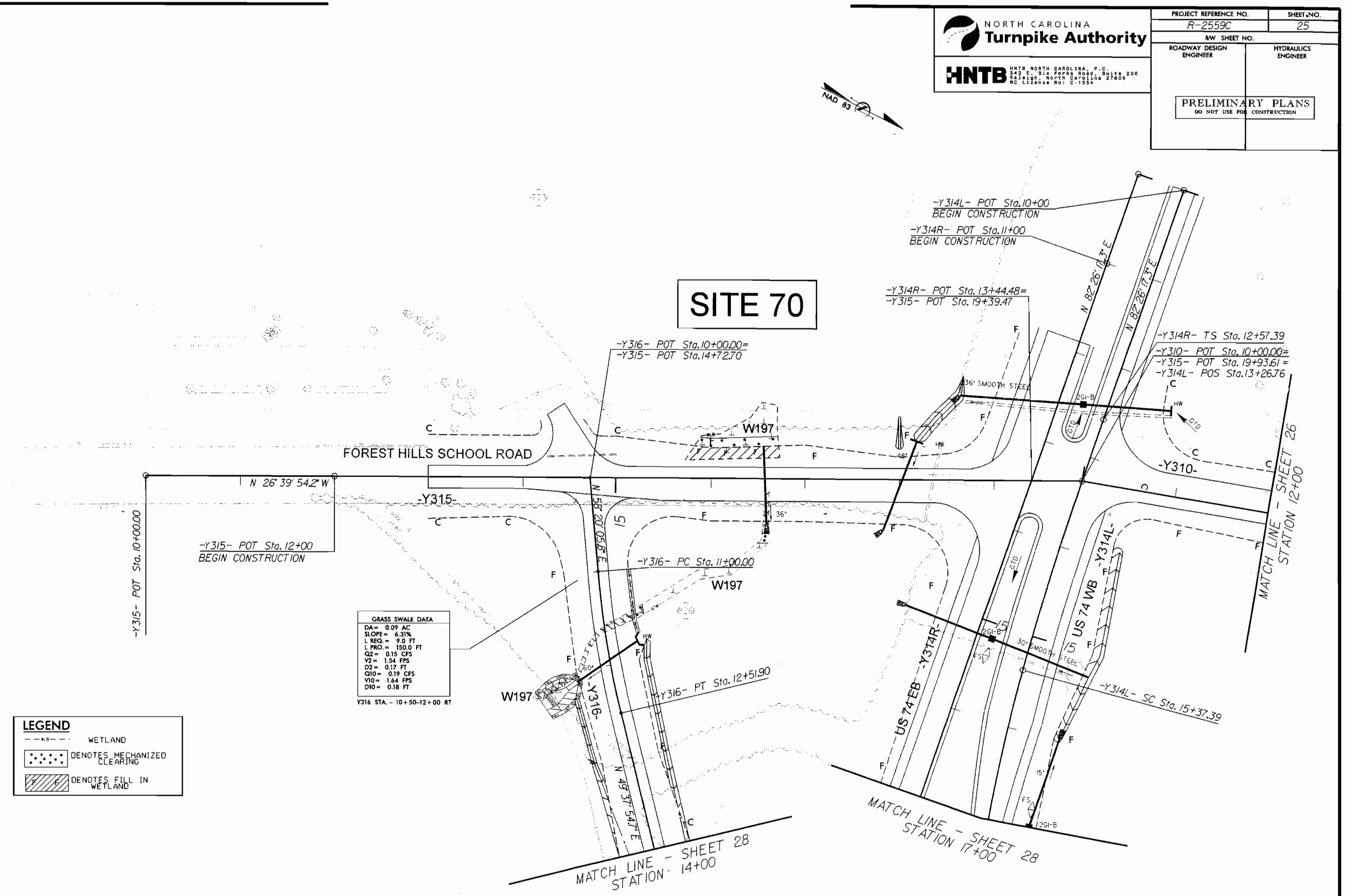
PROJECT REFERENCE NO.	SHEET NO.
R-2559C	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

SITE 70



FOR -Y310- PROFILE, SEE SHEET 41
FOR -Y314L- PROFILE, SEE SHEET 46
FOR -Y314R- PROFILE, SEE SHEET 48
FOR -Y315- PROFILE, SEE SHEET 50
FOR -Y316- PROFILE, SEE SHEET 50

PERMIT DRAWINGS
SHEET ___ OF ___

PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	50
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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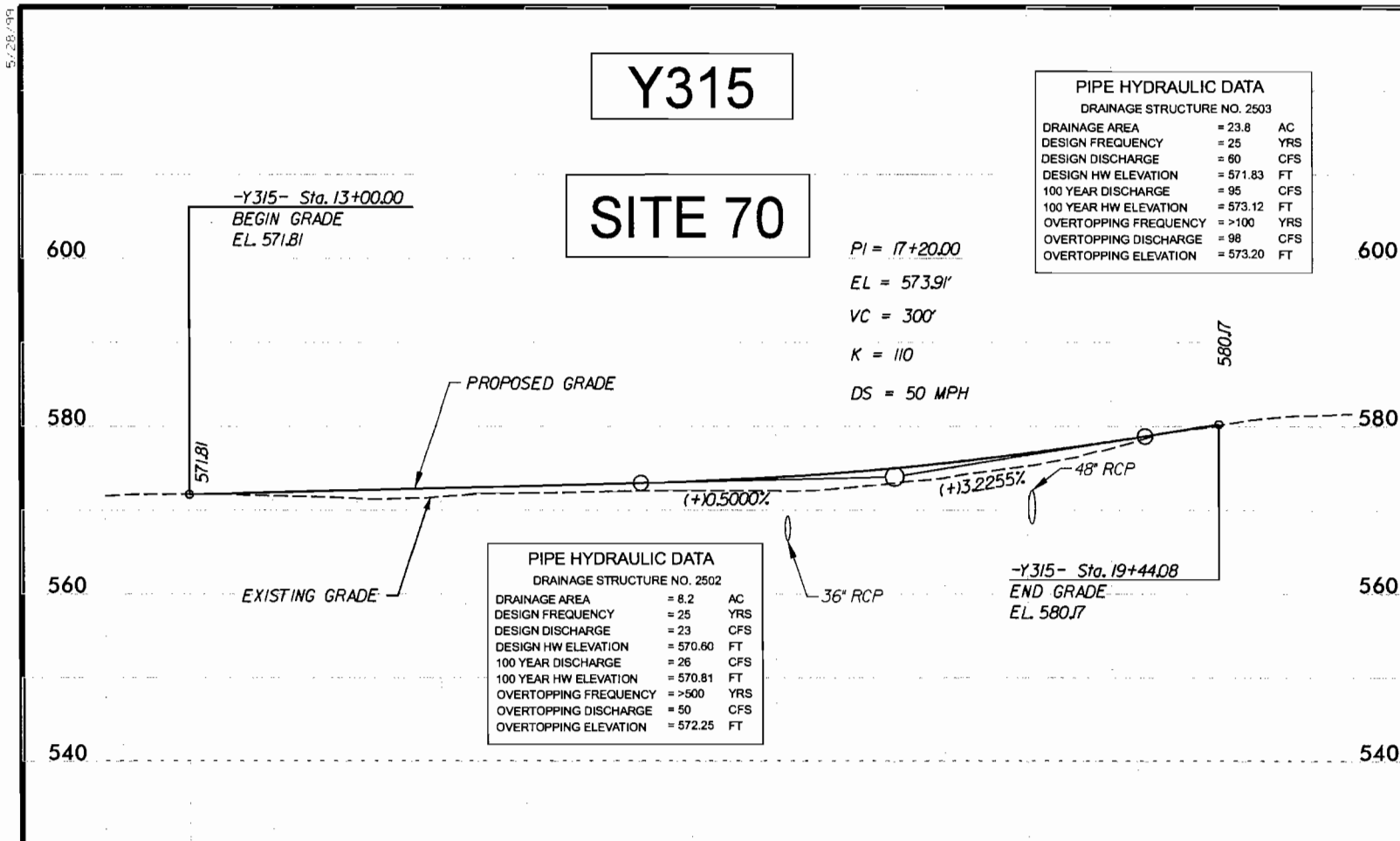
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y315

SITE 70



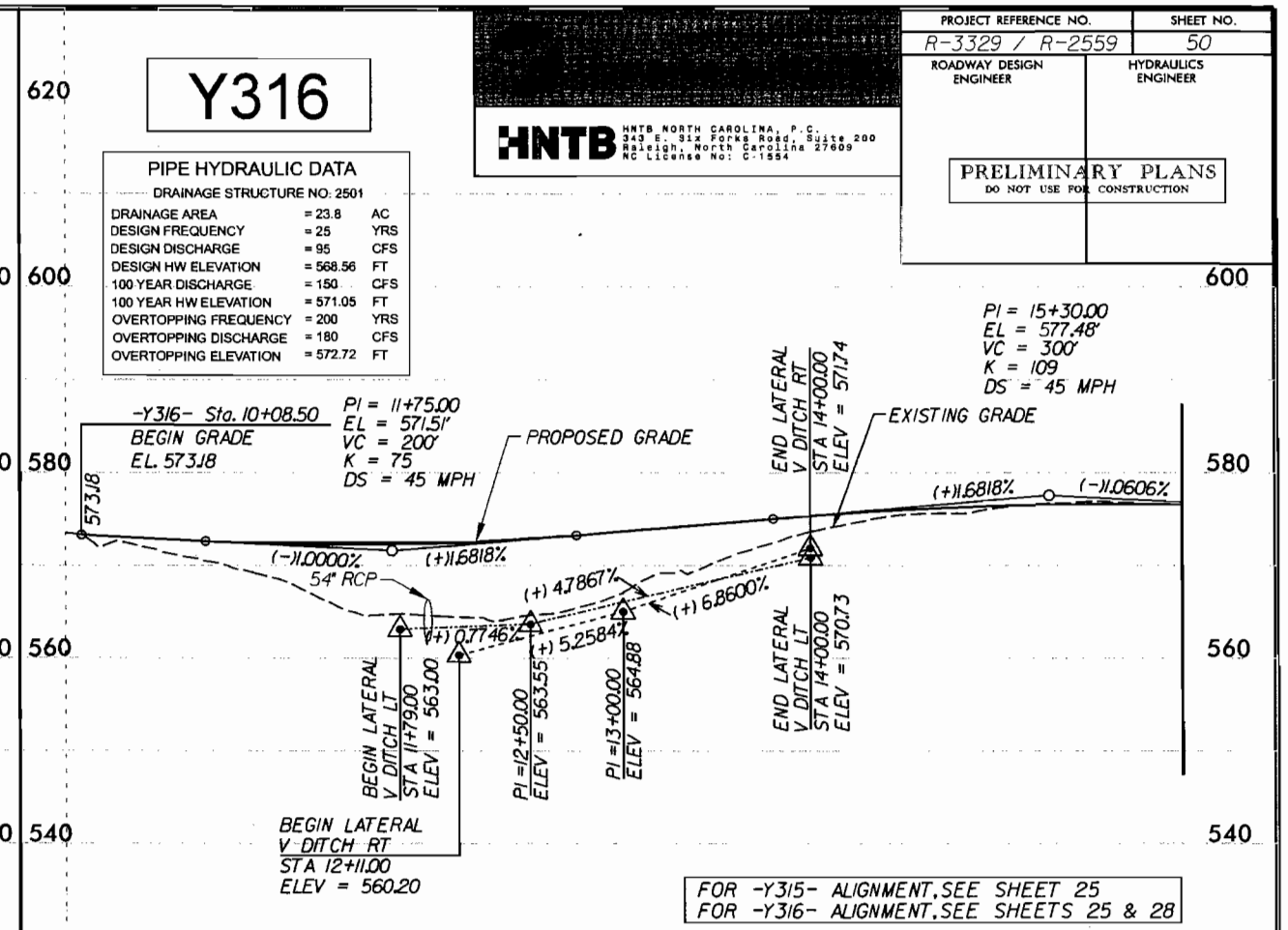
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 2503

DRAINAGE AREA	= 23.8	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 60	CFS
DESIGN HW ELEVATION	= 571.83	FT
100 YEAR DISCHARGE	= 95	CFS
100 YEAR HW ELEVATION	= 573.12	FT
OVERTOPPING FREQUENCY	= >100	YRS
OVERTOPPING DISCHARGE	= 98	CFS
OVERTOPPING ELEVATION	= 573.20	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 2502

DRAINAGE AREA	= 8.2	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 23	CFS
DESIGN HW ELEVATION	= 570.60	FT
100 YEAR DISCHARGE	= 26	CFS
100 YEAR HW ELEVATION	= 570.81	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 50	CFS
OVERTOPPING ELEVATION	= 572.25	FT

Y316



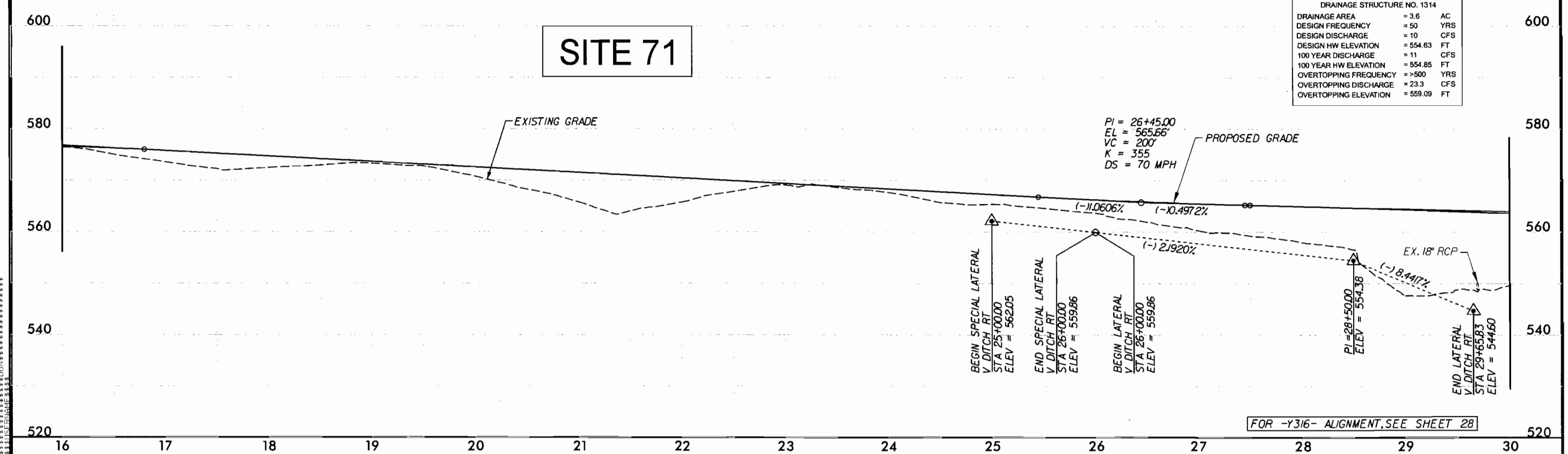
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 2501

DRAINAGE AREA	= 23.8	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 95	CFS
DESIGN HW ELEVATION	= 568.56	FT
100 YEAR DISCHARGE	= 150	CFS
100 YEAR HW ELEVATION	= 571.05	FT
OVERTOPPING FREQUENCY	= 200	YRS
OVERTOPPING DISCHARGE	= 180	CFS
OVERTOPPING ELEVATION	= 572.72	FT

FOR -Y315- ALIGNMENT, SEE SHEET 25
FOR -Y316- ALIGNMENT, SEE SHEETS 25 & 28

Y316

SITE 71



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 1314

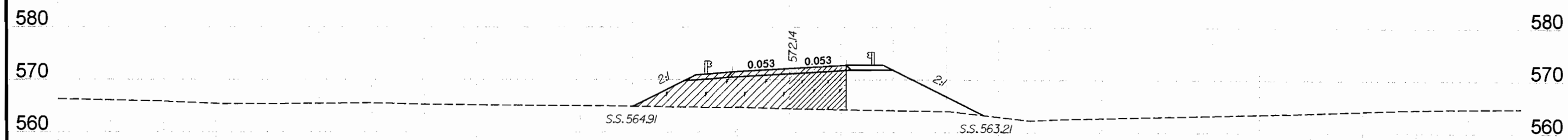
DRAINAGE AREA	= 3.6	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 10	CFS
DESIGN HW ELEVATION	= 554.63	FT
100 YEAR DISCHARGE	= 11	CFS
100 YEAR HW ELEVATION	= 554.85	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 23.3	CFS
OVERTOPPING ELEVATION	= 559.09	FT

FOR -Y316- ALIGNMENT, SEE SHEET 28

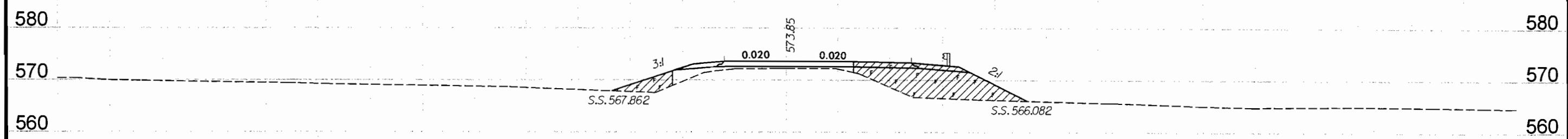
5-28-99

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-Y316- STA 11+50



-Y315- STA 16+50

DENOTES FILL IN WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

WETLAND CROSS SECTIONS

SITE 70

NORTH CAROLINA Turnpike Authority

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

120 100 80 60 40 20 0 20 40 60 80 100 120

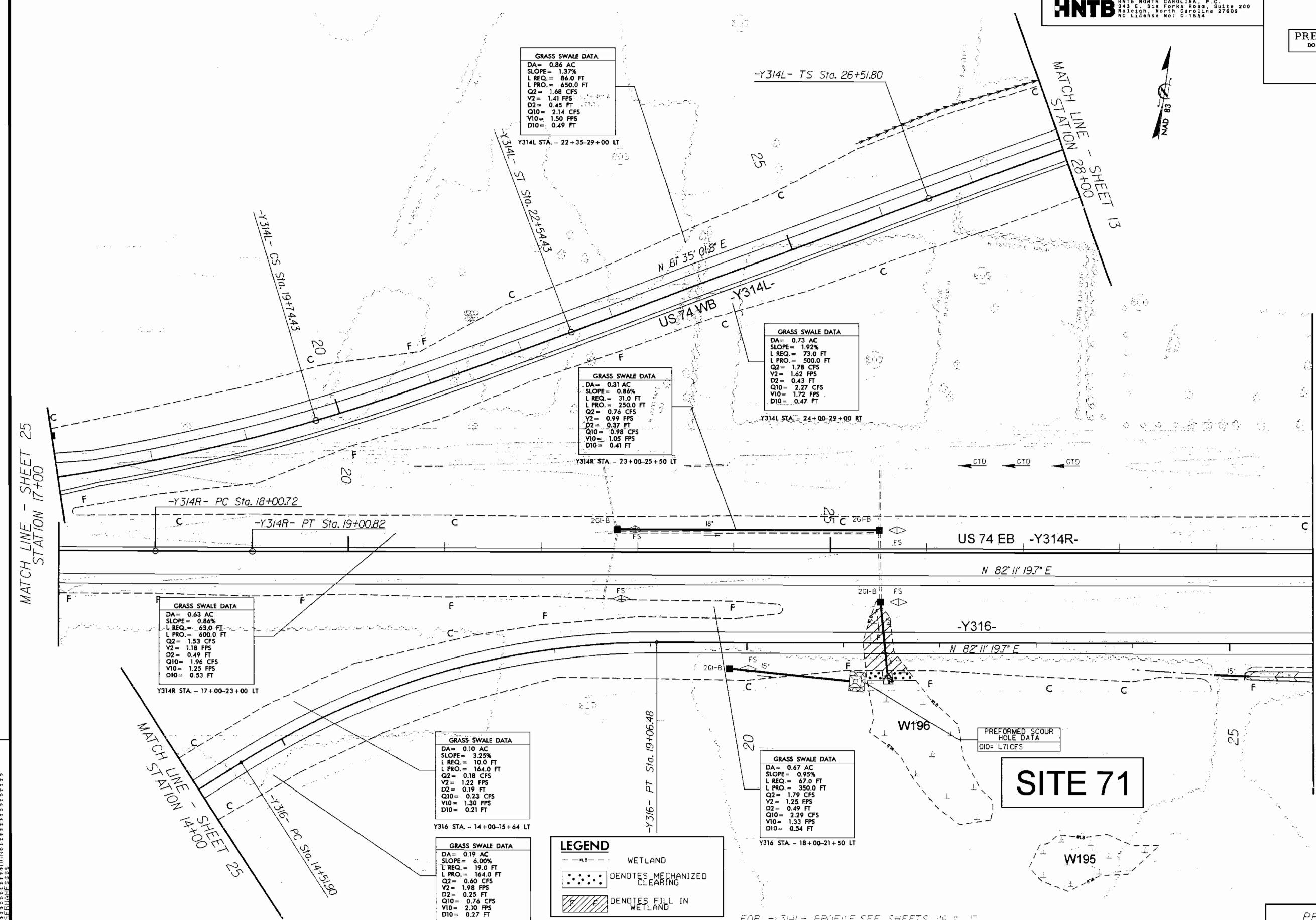
NORTH CAROLINA
Turnpike Authority

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS



FOR -Y314L- PROFILE, SEE SHEETS 46 & 47
FOR -Y314R- PROFILE, SEE SHEETS 48 & 49
FOR -Y316- PROFILE, SEE SHEET 50

PERMIT DRAWINGS
SHEET ___ OF ___

NORTH CAROLINA
Turnpike Authority

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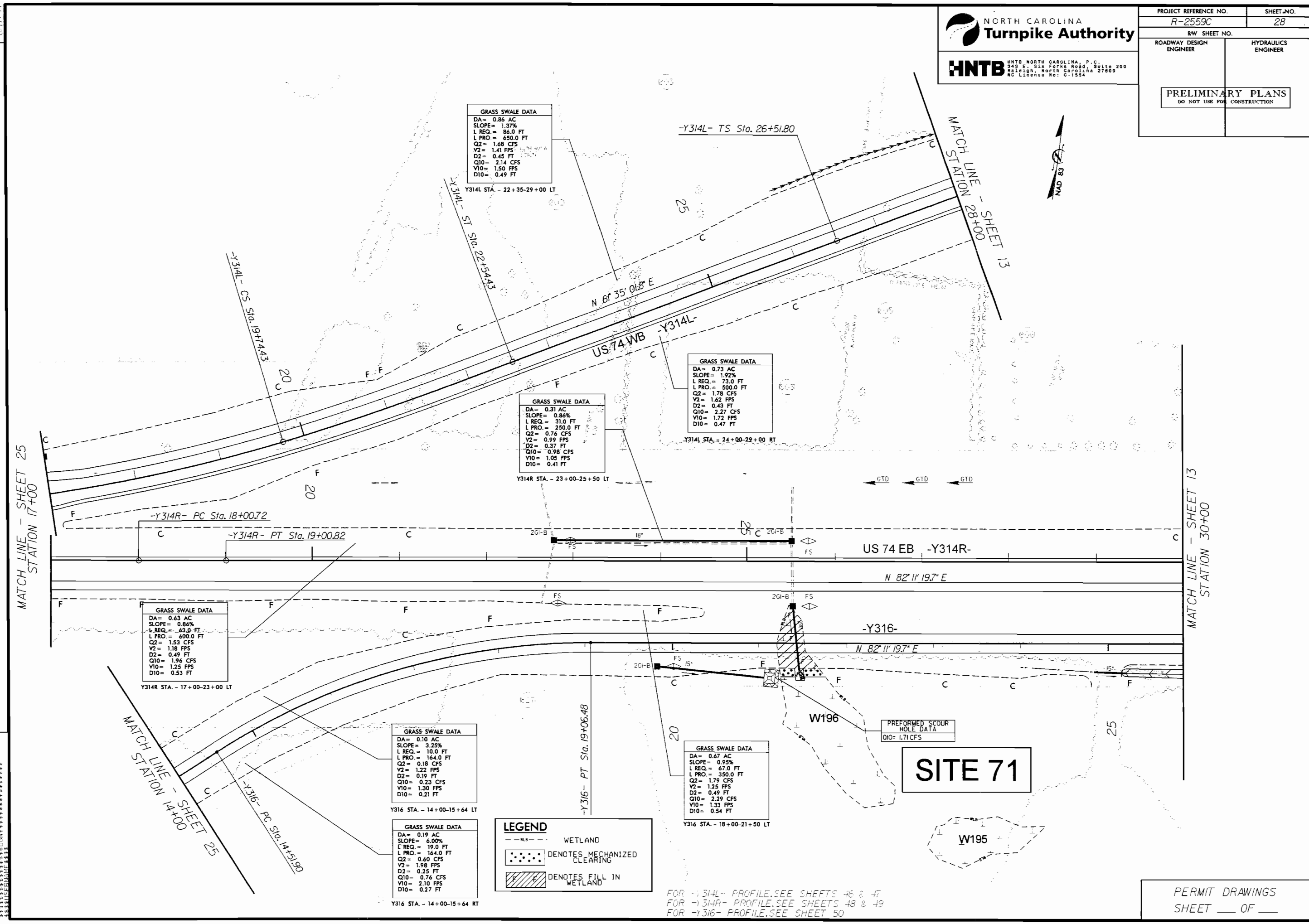
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

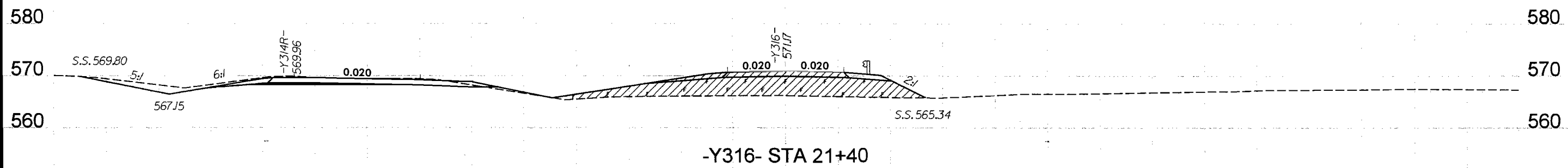
8/17/99



PERMIT DRAWINGS
SHEET ___ OF ___

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DENOTES FILL IN WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

WETLAND CROSS SECTION

SITE 71

NORTH CAROLINA Turnpike Authority

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

120 100 80 60 40 20 0 20 40 60 80 100 120

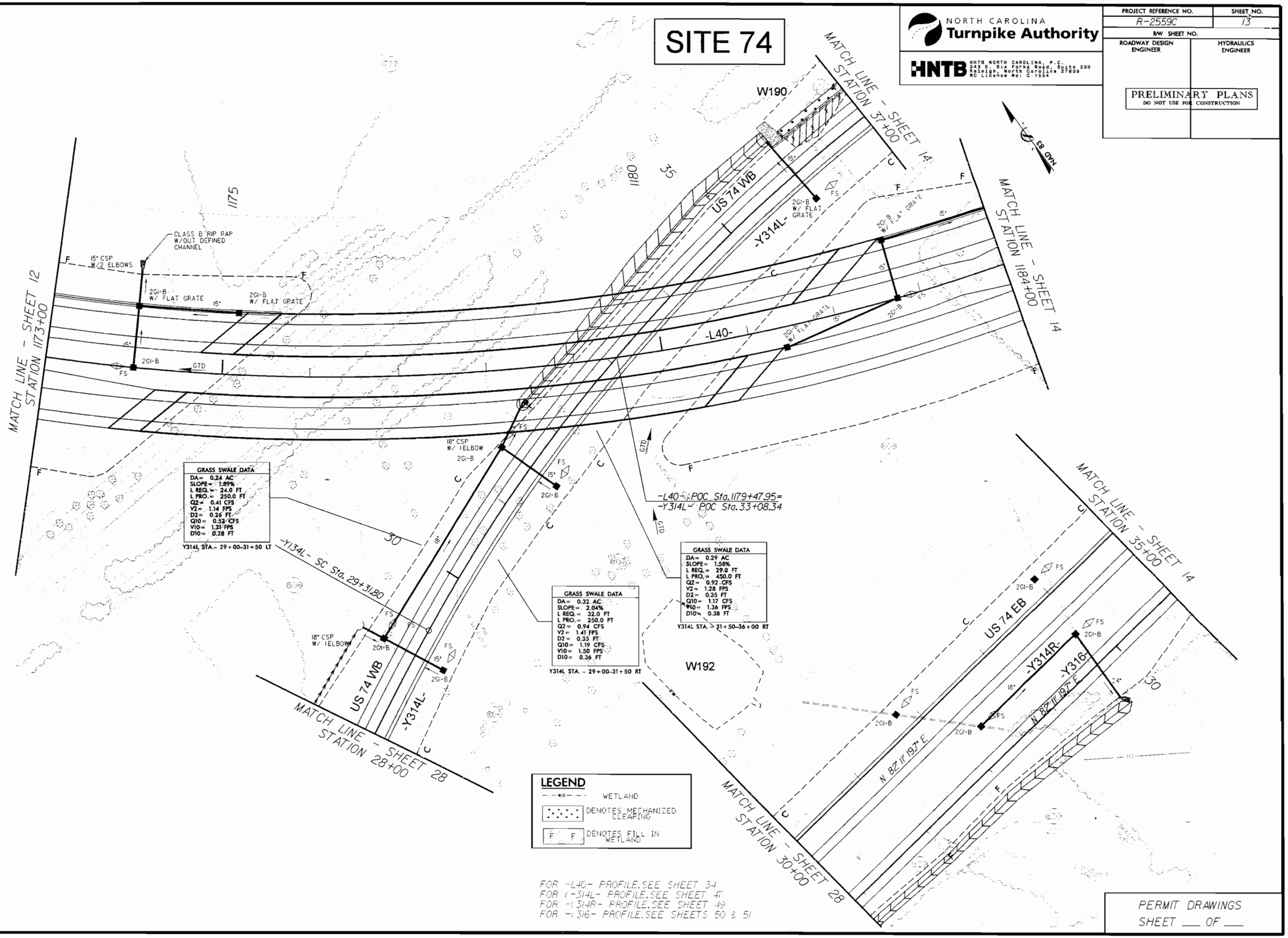
SITE 74

NORTH CAROLINA
Turnpike Authority

HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L40- PROFILE, SEE SHEET 34
FOR -Y314L- PROFILE, SEE SHEET 47
FOR -Y314R- PROFILE, SEE SHEET 49
FOR -Y316- PROFILE, SEE SHEETS 50 & 51

PERMIT DRAWINGS
SHEET ___ OF ___

REVISIONS

8/17/99

SITE 74

NORTH CAROLINA
Turnpike Authority

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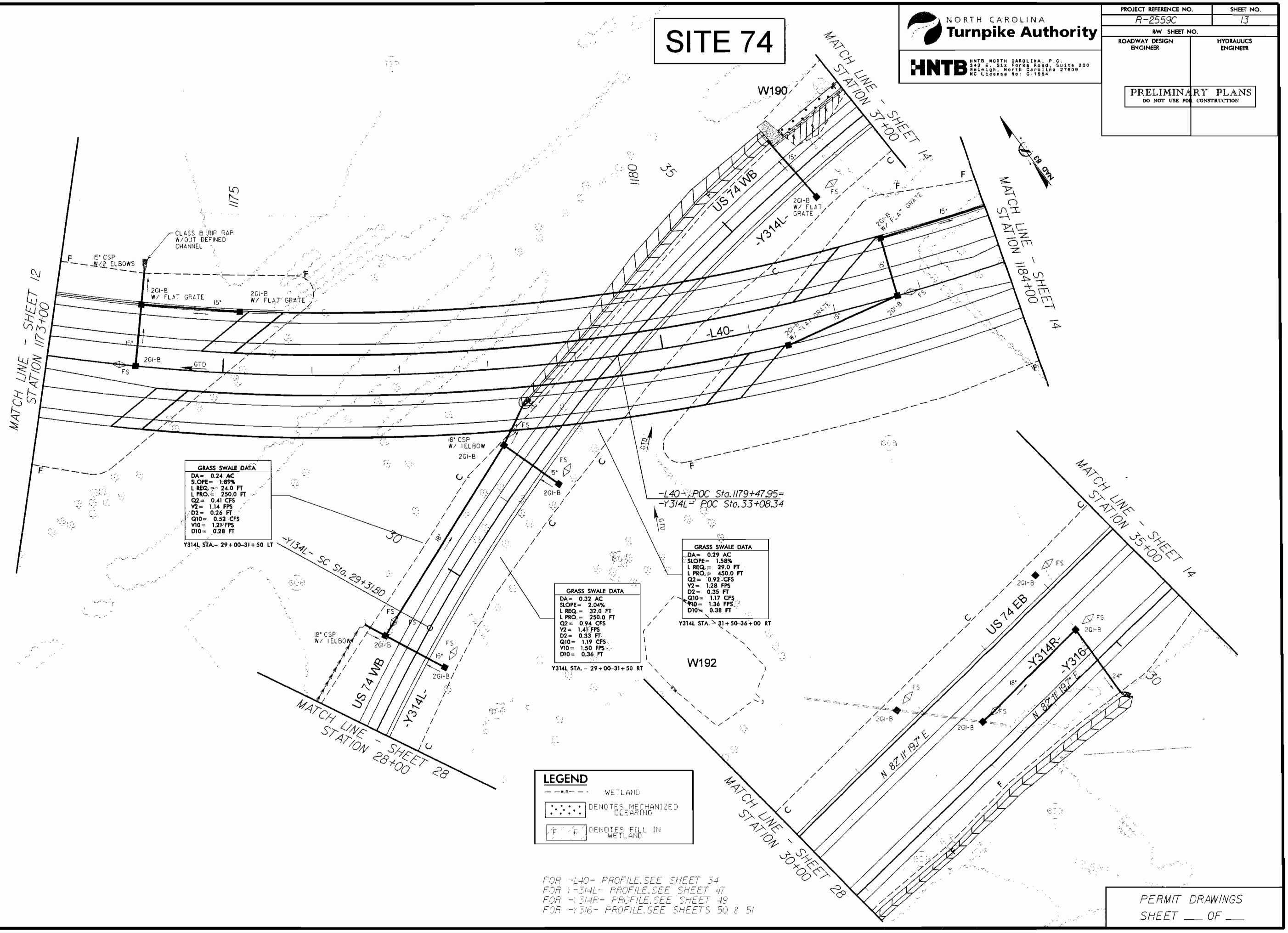
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L40- PROFILE, SEE SHEET 34
FOR -Y314L- PROFILE, SEE SHEET 47
FOR -Y314R- PROFILE, SEE SHEET 49
FOR -Y316- PROFILE, SEE SHEETS 50 & 51

PERMIT DRAWINGS
SHEET ___ OF ___

REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET ___ OF ___

REVISIONS

8/17/99

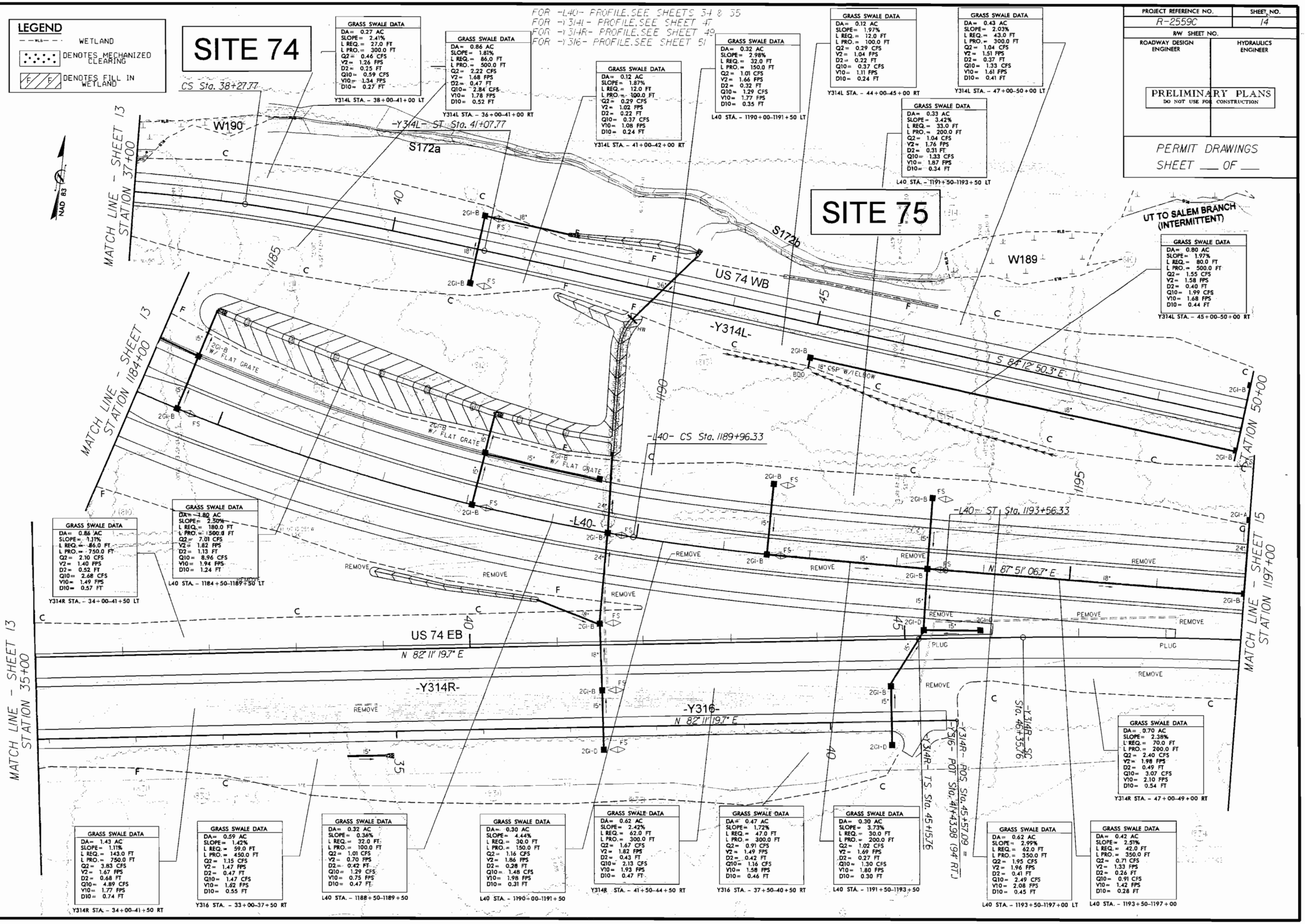
LEGEND

- WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND

FOR -L40- PROFILE, SEE SHEETS 34 & 35
FOR -Y314- PROFILE, SEE SHEET 47
FOR -Y314R- PROFILE, SEE SHEET 49
FOR -Y316- PROFILE, SEE SHEET 51

SITE 74

SITE 75



GRASS SWALE DATA
DA= 0.27 AC
SLOPE= 2.41%
L REQ.= 27.0 FT
L PRO.= 300.0 FT
Q2= 0.46 CFS
V2= 1.26 FPS
D2= 0.25 FT
Q10= 0.59 CFS
V10= 1.34 FPS
D10= 0.27 FT
Y314L STA. - 38+00-41+00 LT

GRASS SWALE DATA
DA= 0.86 AC
SLOPE= 1.81%
L REQ.= 86.0 FT
L PRO.= 500.0 FT
Q2= 2.22 CFS
V2= 1.68 FPS
D2= 0.47 FT
Q10= 2.84 CFS
V10= 1.78 FPS
D10= 0.52 FT
Y314L STA. - 36+00-41+00 RT

GRASS SWALE DATA
DA= 0.12 AC
SLOPE= 1.87%
L REQ.= 12.0 FT
L PRO.= 100.0 FT
Q2= 0.29 CFS
V2= 1.02 FPS
D2= 0.22 FT
Q10= 0.37 CFS
V10= 1.08 FPS
D10= 0.24 FT
Y314L STA. - 41+00-42+00 RT

GRASS SWALE DATA
DA= 0.32 AC
SLOPE= 2.98%
L REQ.= 32.0 FT
L PRO.= 150.0 FT
Q2= 1.01 CFS
V2= 1.66 FPS
D2= 0.32 FT
Q10= 1.29 CFS
V10= 1.77 FPS
D10= 0.35 FT
L40 STA. - 1190+00-1191+50 LT

GRASS SWALE DATA
DA= 0.12 AC
SLOPE= 1.97%
L REQ.= 12.0 FT
L PRO.= 100.0 FT
Q2= 0.29 CFS
V2= 1.04 FPS
D2= 0.22 FT
Q10= 0.37 CFS
V10= 1.11 FPS
D10= 0.24 FT
Y314L STA. - 44+00-45+00 RT

GRASS SWALE DATA
DA= 0.43 AC
SLOPE= 2.03%
L REQ.= 43.0 FT
L PRO.= 300.0 FT
Q2= 1.04 CFS
V2= 1.51 FPS
D2= 0.37 FT
Q10= 1.33 CFS
V10= 1.61 FPS
D10= 0.41 FT
Y314L STA. - 47+00-50+00 LT

GRASS SWALE DATA
DA= 0.33 AC
SLOPE= 3.42%
L REQ.= 33.0 FT
L PRO.= 200.0 FT
Q2= 1.04 CFS
V2= 1.76 FPS
D2= 0.31 FT
Q10= 1.33 CFS
V10= 1.87 FPS
D10= 0.34 FT
L40 STA. - 1191+50-1193+50 LT

GRASS SWALE DATA
DA= 0.80 AC
SLOPE= 1.97%
L REQ.= 80.0 FT
L PRO.= 500.0 FT
Q2= 1.55 CFS
V2= 1.58 FPS
D2= 0.40 FT
Q10= 1.99 CFS
V10= 1.68 FPS
D10= 0.44 FT
Y314L STA. - 45+00-50+00 RT

GRASS SWALE DATA
DA= 0.86 AC
SLOPE= 1.31%
L REQ.= 86.0 FT
L PRO.= 750.0 FT
Q2= 2.10 CFS
V2= 1.40 FPS
D2= 0.52 FT
Q10= 2.68 CFS
V10= 1.49 FPS
D10= 0.57 FT
Y314R STA. - 34+00-41+50 LT

GRASS SWALE DATA
DA= 1.80 AC
SLOPE= 2.50%
L REQ.= 180.0 FT
L PRO.= 1500.0 FT
Q2= 7.01 CFS
V2= 1.82 FPS
D2= 1.13 FT
Q10= 8.96 CFS
V10= 1.94 FPS
D10= 1.24 FT
L40 STA. - 1184+50-1189+50 LT

GRASS SWALE DATA
DA= 0.70 AC
SLOPE= 2.38%
L REQ.= 70.0 FT
L PRO.= 200.0 FT
Q2= 2.40 CFS
V2= 1.98 FPS
D2= 0.49 FT
Q10= 3.07 CFS
V10= 2.10 FPS
D10= 0.54 FT
Y314R STA. - 47+00-49+00 RT

GRASS SWALE DATA
DA= 1.43 AC
SLOPE= 1.11%
L REQ.= 143.0 FT
L PRO.= 750.0 FT
Q2= 3.83 CFS
V2= 1.67 FPS
D2= 0.68 FT
Q10= 4.89 CFS
V10= 1.77 FPS
D10= 0.74 FT
Y314R STA. - 34+00-41+50 RT

GRASS SWALE DATA
DA= 0.59 AC
SLOPE= 1.42%
L REQ.= 59.0 FT
L PRO.= 450.0 FT
Q2= 1.15 CFS
V2= 1.47 FPS
D2= 0.47 FT
Q10= 1.47 CFS
V10= 1.62 FPS
D10= 0.55 FT
Y316 STA. - 33+00-37+50 RT

GRASS SWALE DATA
DA= 0.32 AC
SLOPE= 0.36%
L REQ.= 32.0 FT
L PRO.= 100.0 FT
Q2= 1.01 CFS
V2= 0.70 FPS
D2= 0.42 FT
Q10= 1.29 CFS
V10= 0.75 FPS
D10= 0.47 FT
L40 STA. - 1188+50-1189+50

GRASS SWALE DATA
DA= 0.30 AC
SLOPE= 4.44%
L REQ.= 30.0 FT
L PRO.= 150.0 FT
Q2= 1.16 CFS
V2= 1.86 FPS
D2= 0.28 FT
Q10= 1.48 CFS
V10= 1.98 FPS
D10= 0.31 FT
L40 STA. - 1190+00-1191+50

GRASS SWALE DATA
DA= 0.62 AC
SLOPE= 2.42%
L REQ.= 62.0 FT
L PRO.= 300.0 FT
Q2= 1.67 CFS
V2= 1.82 FPS
D2= 0.43 FT
Q10= 2.13 CFS
V10= 1.93 FPS
D10= 0.47 FT
Y314R STA. - 41+50-44+50 RT

GRASS SWALE DATA
DA= 0.47 AC
SLOPE= 1.72%
L REQ.= 47.0 FT
L PRO.= 300.0 FT
Q2= 0.91 CFS
V2= 1.49 FPS
D2= 0.42 FT
Q10= 1.16 CFS
V10= 1.58 FPS
D10= 0.46 FT
Y316 STA. - 37+50-40+50 RT

GRASS SWALE DATA
DA= 0.30 AC
SLOPE= 3.73%
L REQ.= 30.0 FT
L PRO.= 200.0 FT
Q2= 1.02 CFS
V2= 1.69 FPS
D2= 0.27 FT
Q10= 1.30 CFS
V10= 1.80 FPS
D10= 0.30 FT
L40 STA. - 1191+50-1193+50

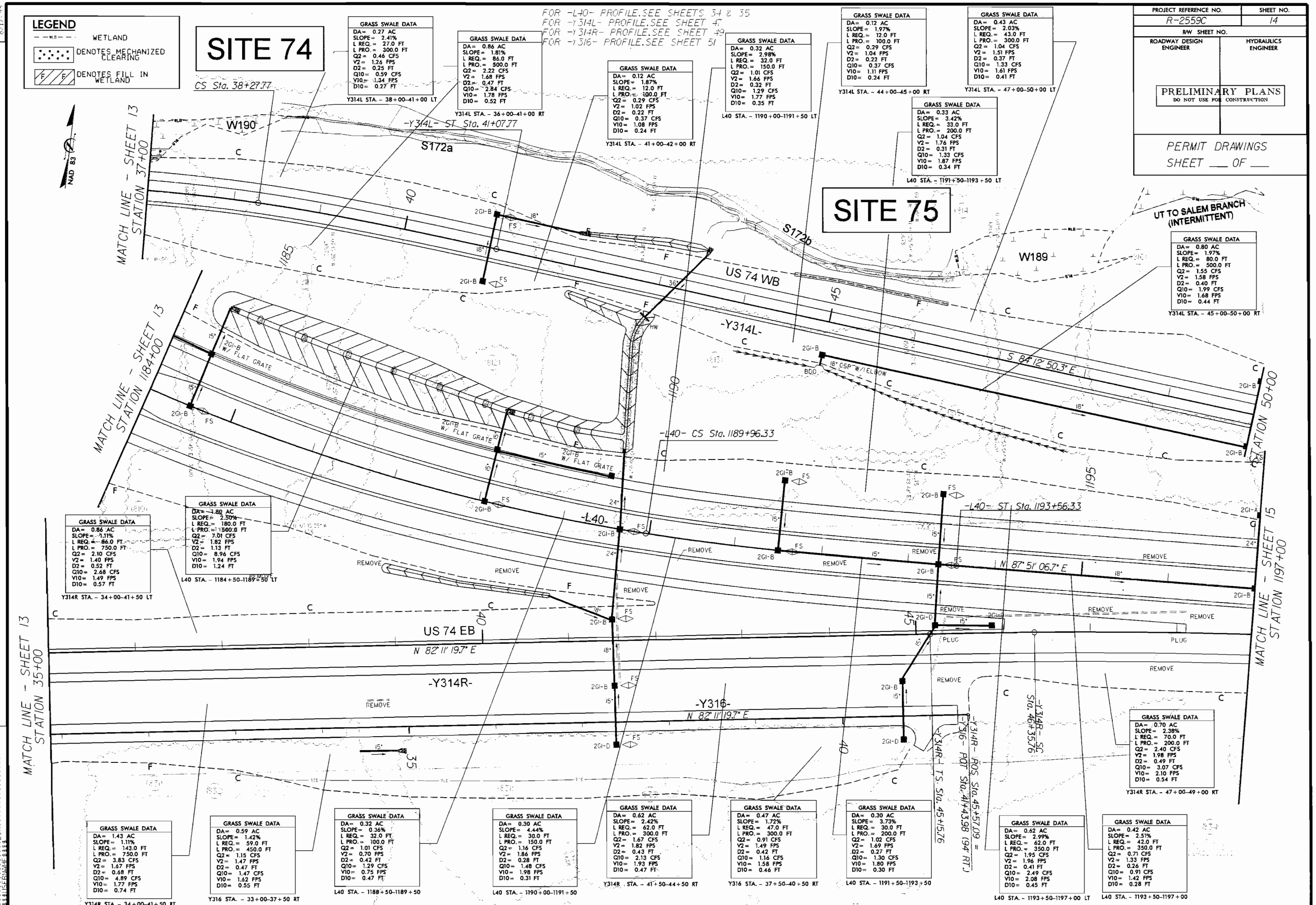
GRASS SWALE DATA
DA= 0.62 AC
SLOPE= 2.99%
L REQ.= 62.0 FT
L PRO.= 350.0 FT
Q2= 1.95 CFS
V2= 1.96 FPS
D2= 0.41 FT
Q10= 2.49 CFS
V10= 2.08 FPS
D10= 0.45 FT
L40 STA. - 1193+50-1197+00 LT

GRASS SWALE DATA
DA= 0.42 AC
SLOPE= 2.51%
L REQ.= 42.0 FT
L PRO.= 350.0 FT
Q2= 0.71 CFS
V2= 1.33 FPS
D2= 0.26 FT
Q10= 0.91 CFS
V10= 1.42 FPS
D10= 0.28 FT
L40 STA. - 1193+50-1197+00

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET ___ OF ___



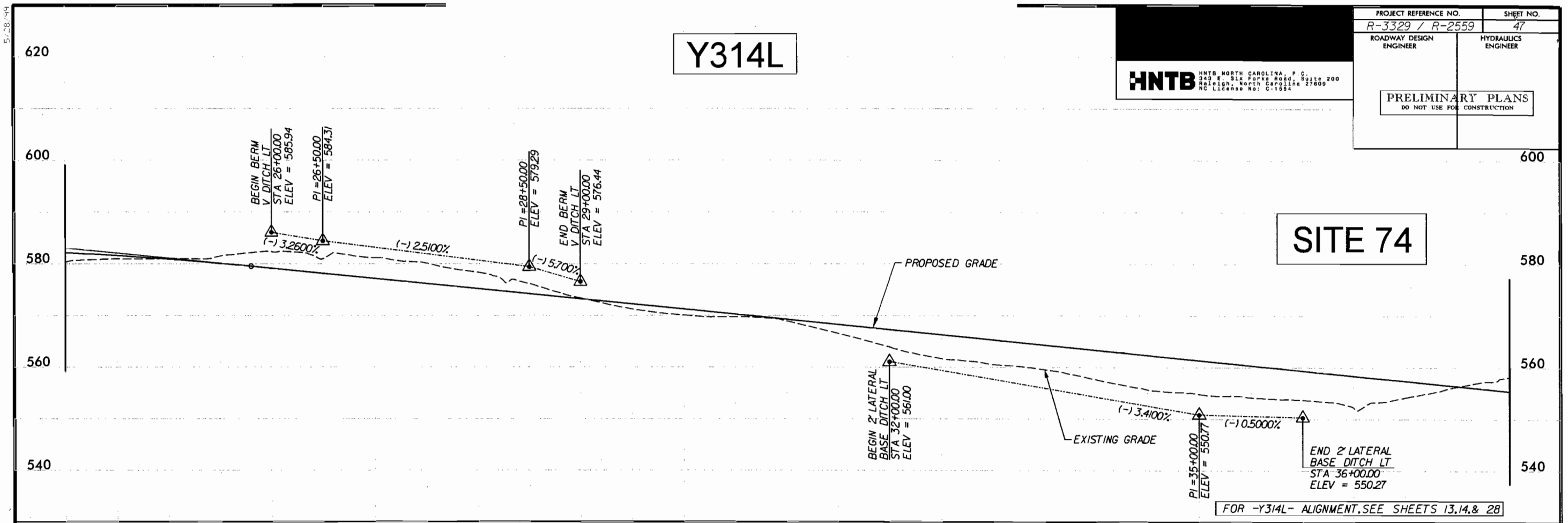
REVISIONS

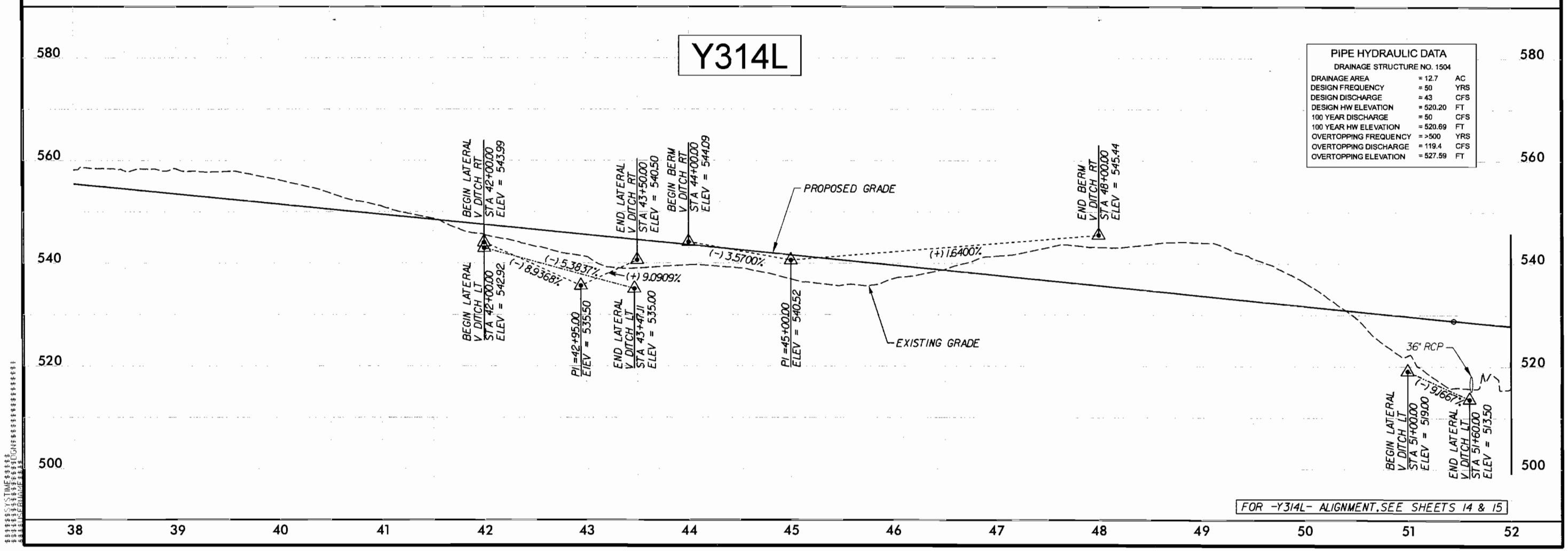
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





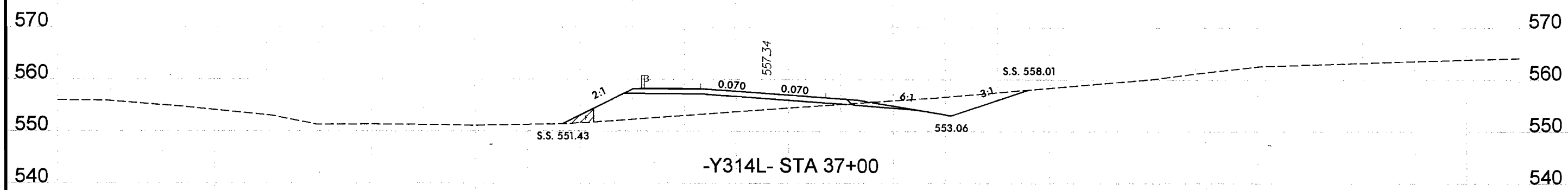
PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 1504

DRAINAGE AREA	= 12.7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 43	CFS
DESIGN HW ELEVATION	= 520.20	FT
100 YEAR DISCHARGE	= 50	CFS
100 YEAR HW ELEVATION	= 520.69	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 119.4	CFS
OVERTOPPING ELEVATION	= 527.59	FT

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DENOTES FILL IN WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

WETLAND CROSS SECTION

SITE 74

NORTH CAROLINA Turnpike Authority

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

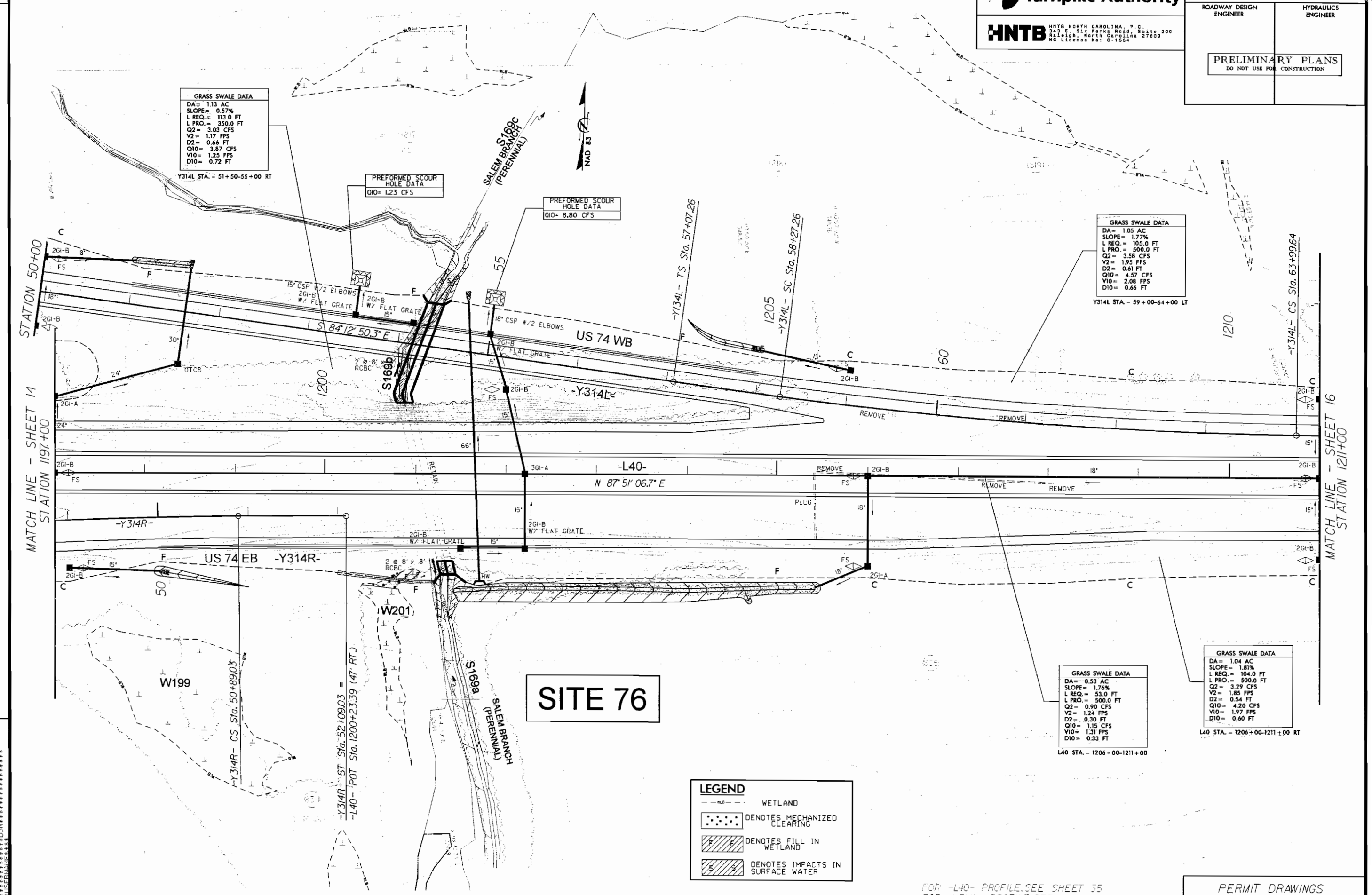
120 100 80 60 40 20 0 20 40 60 80 100 120

NORTH CAROLINA
Turnpike Authority

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L40- PROFILE, SEE SHEET 35
FOR -Y314L- PROFILE, SEE SHEETS 47 & 48
FOR -Y314R PROFILE, SEE SHEET 49

PERMIT DRAWINGS
SHEET ___ OF ___

REVISIONS

8/17/99

NORTH CAROLINA
Turnpike Authority

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Raleigh, North Carolina 27609
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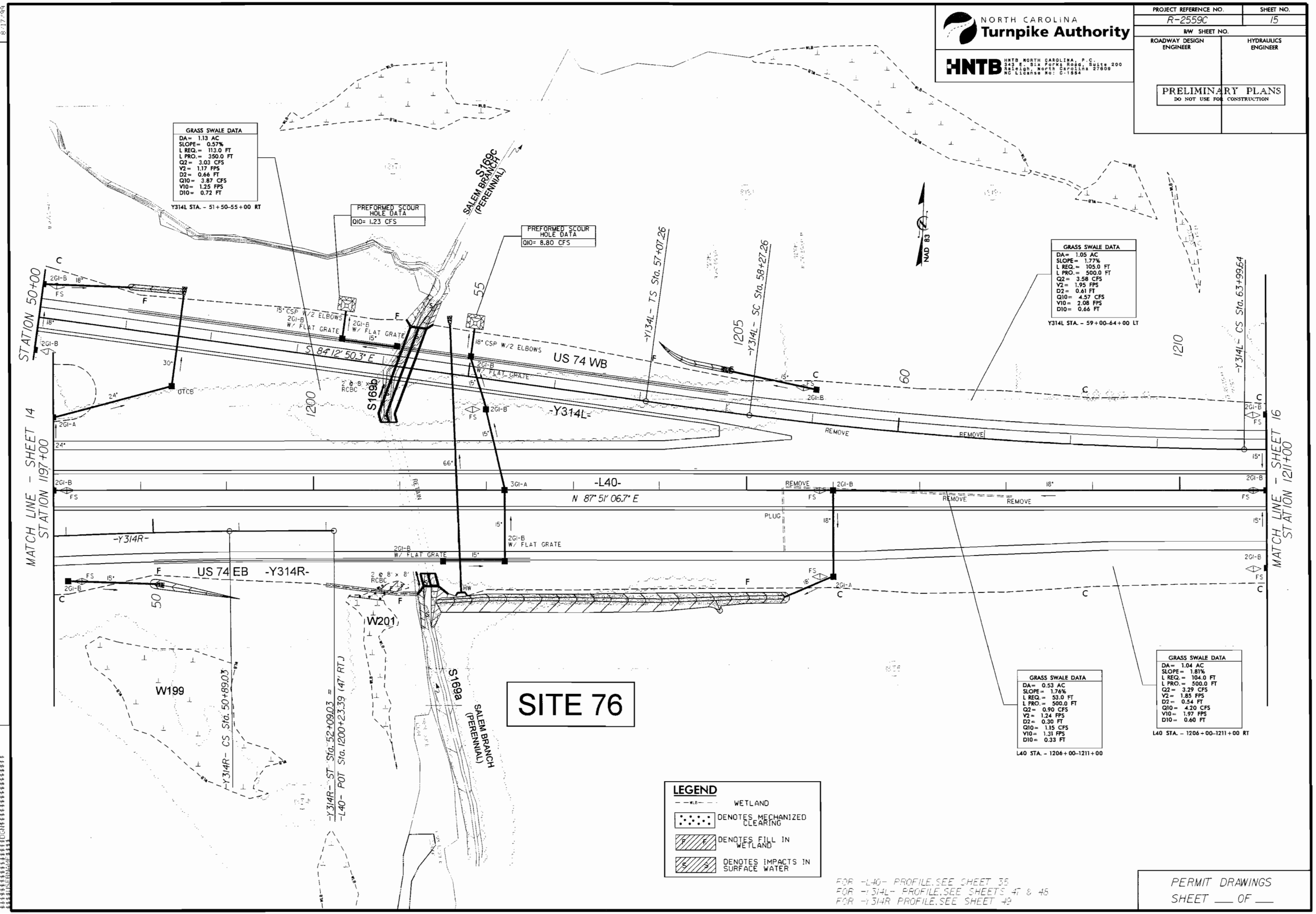
PROJECT REFERENCE NO.	SHEET NO.
R-2559C	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



FOR -L40- PROFILE, SEE SHEET 38
FOR -Y314L- PROFILE, SEE SHEETS 47 & 48
FOR -Y314R PROFILE, SEE SHEET 49

PERMIT DRAWINGS
SHEET ___ OF ___

PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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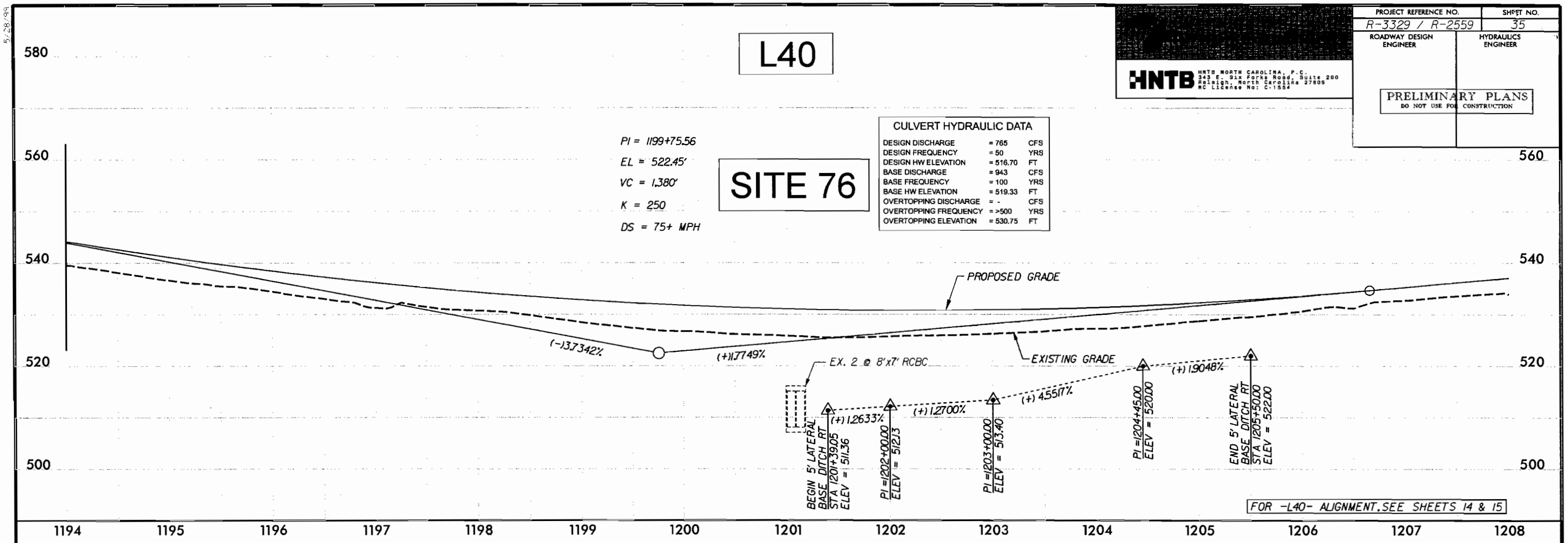
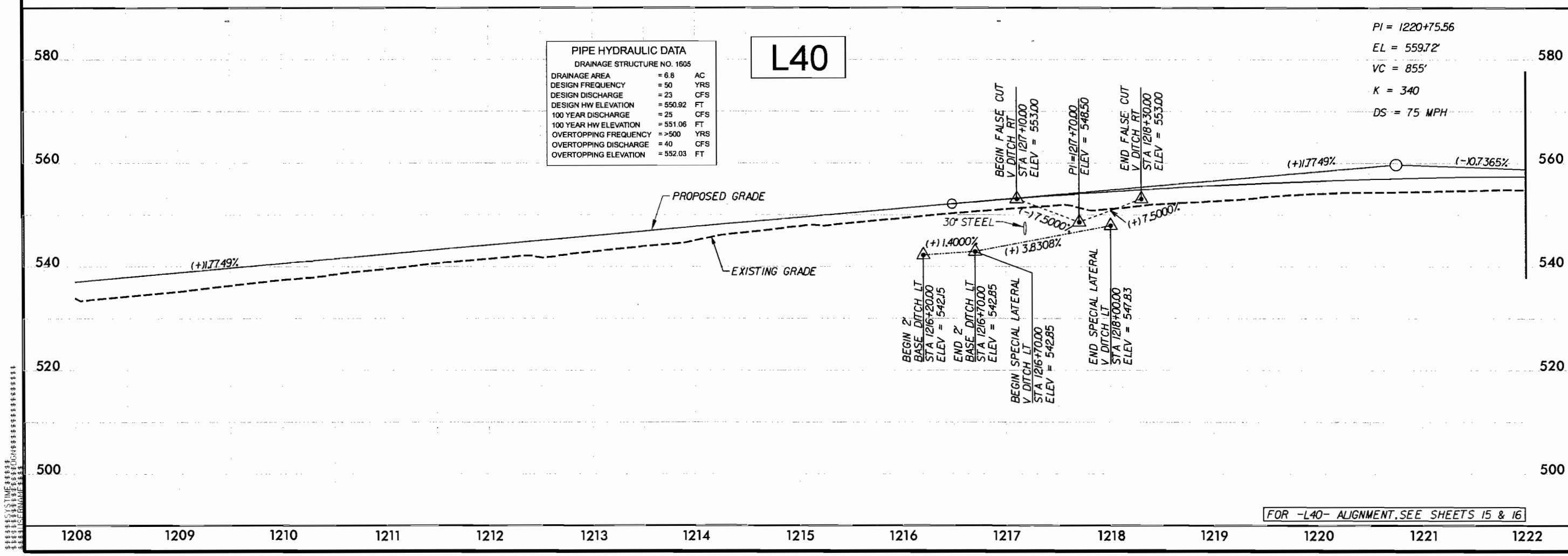
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 765	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 516.70	FT
BASE DISCHARGE	= 943	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 519.33	FT
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= 530.75	FT



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 1605

DRAINAGE AREA	= 6.8	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 23	CFS
DESIGN HW ELEVATION	= 550.92	FT
100 YEAR DISCHARGE	= 25	CFS
100 YEAR HW ELEVATION	= 551.06	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 40	CFS
OVERTOPPING ELEVATION	= 552.03	FT

PROJECT REFERENCE NO.	SHEET NO.
R-3329 / R-2559	48
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

HNTB NORTH CAROLINA, P.C.
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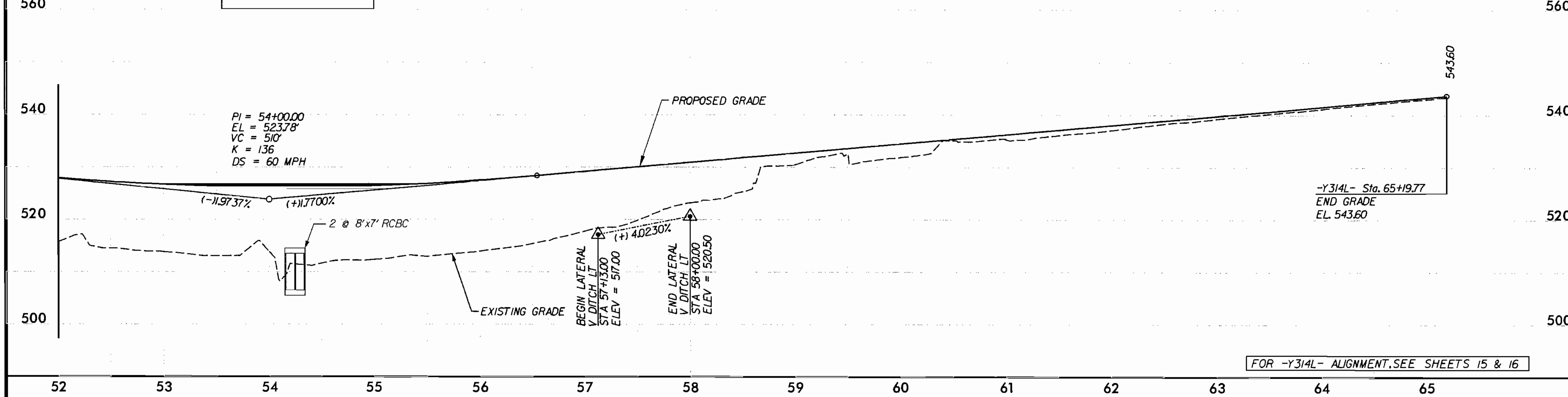
Raleigh, North Carolina 27609
NC License No: C-1554

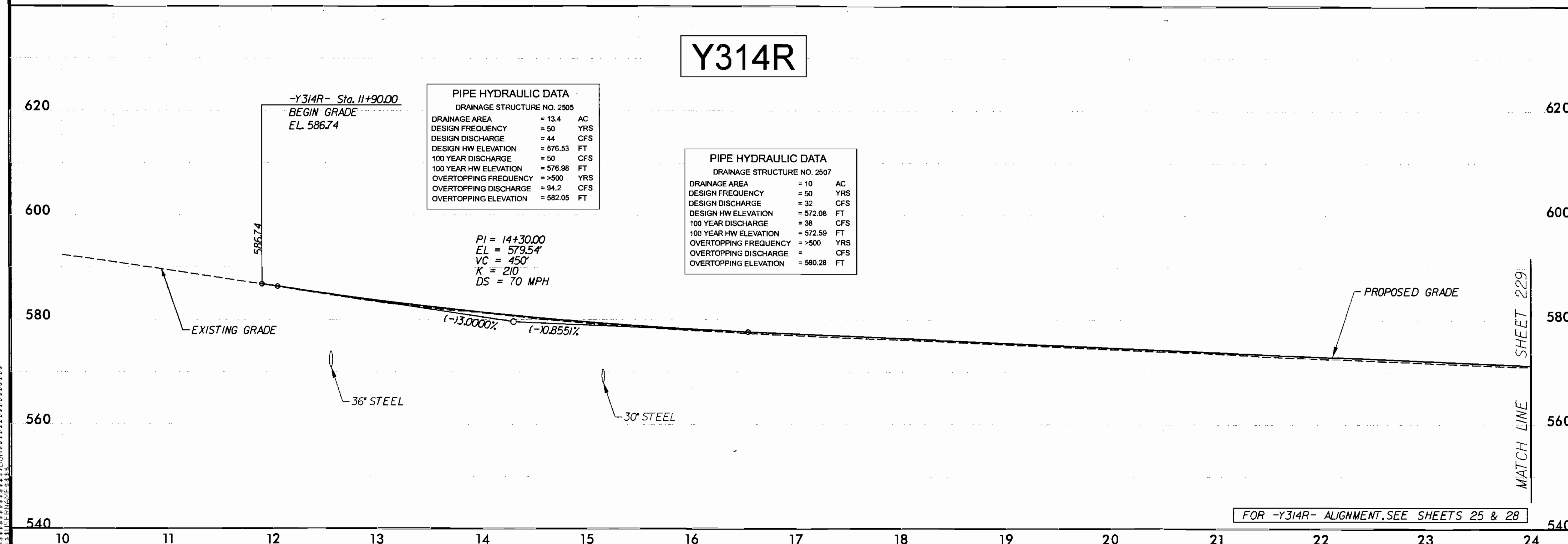
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SITE 76

Y314L



Y314R



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 2505

DRAINAGE AREA	= 13.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 44	CFS
DESIGN HW ELEVATION	= 576.53	FT
100 YEAR DISCHARGE	= 50	CFS
100 YEAR HW ELEVATION	= 576.98	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 94.2	CFS
OVERTOPPING ELEVATION	= 582.05	FT

PIPE HYDRAULIC DATA

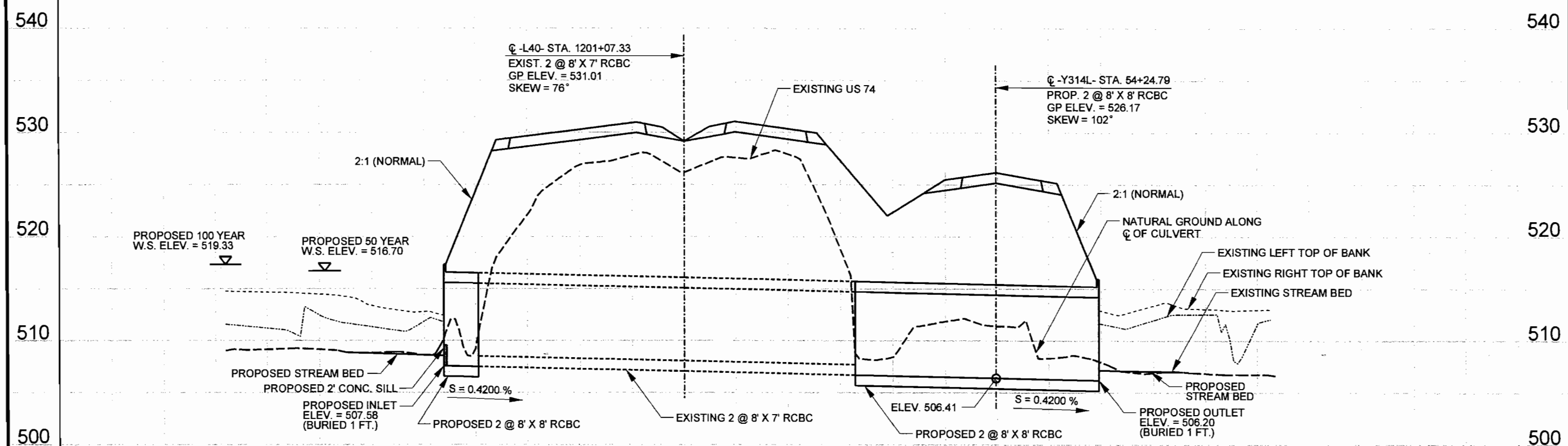
DRAINAGE STRUCTURE NO. 2507

DRAINAGE AREA	= 10	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 32	CFS
DESIGN HW ELEVATION	= 572.08	FT
100 YEAR DISCHARGE	= 38	CFS
100 YEAR HW ELEVATION	= 572.59	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	=	CFS
OVERTOPPING ELEVATION	= 580.28	FT

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROFILE ALONG STRUCTURE

SITE 76

SCALE
1"=50' HORIZONTAL
1"=10' VERTICAL

NORTH CAROLINA
Turnpike Authority

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

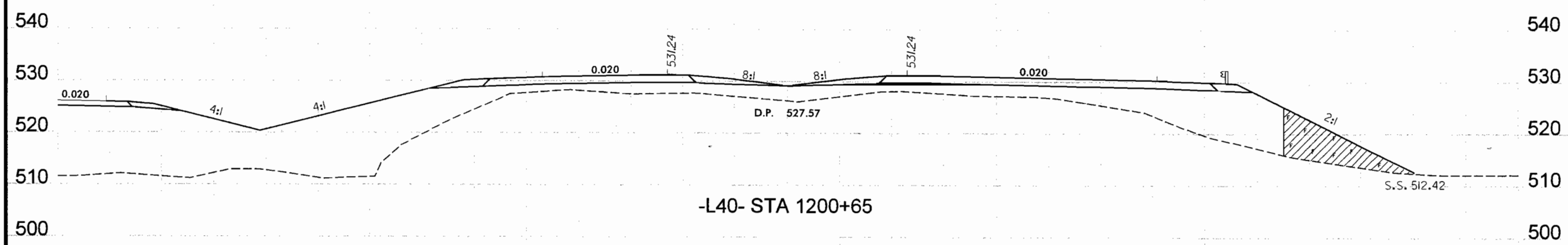
SHEET OF 8/16/10

250 200 150 100 50 0 50 100 150 200 250

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2559C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DENOTES FILL IN WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

WETLAND CROSS SECTION

SITE 76

NORTH CAROLINA
Turnpike Authority

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UNION COUNTY
PROJECT: R-2559C
MONROE CONNECTOR / BYPASS
FROM AUSTIN CHANEY ROAD TO
US 74 BUSINESS EAST OF MONROE

SHEET OF 8/16/10

120 100 80 60 40 20 0 20 40 60 80 100 120