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

IN REPLY REFER TO

April 22, 2008

Regulatory Division

Subject: Action ID: SAW-2007-02903-292; TIP No. R-2635

Mr. Steven D. DeWitt, P.E.
Chief Engineer
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, North Carolina 27699-1578

Dear Mr. DeWitt:

Enclosed is a Department of the Army permit to authorize the discharge of fill material into waters of the United States, for construction of the Western Wake Freeway toll facility (TIP R-2635), from NC 55 at SR 1172 (Old Smithfield Road), between Holly Springs and Apex, to the existing NC 540 at NC 55 near SR 1630 (Alston Avenue), west of Morrisville, in western Wake County, North Carolina.

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, 2013.

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.

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 Mr. Eric Alsmeyer at the Raleigh Regulatory Field Office, telephone (919) 554-4884, extension 23.

Sincerely,

John E. Pulliam, Jr.
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, MD 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
North Carolina 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

DEPARTMENT OF THE ARMY PERMIT

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REGULATORY
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Permittee: NORTH CAROLINA TURNPIKE AUTHORITY
MR. STEVEN D. DE WITT

Permit No: 2007-02903

Issuing Office: USAED, WILMINGTON

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 the office acting under the authority of the commanding officer.

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

Project Description: Place fill material impacting 14, 929 linear feet of stream, 11.23 acres of ponds, and 20.18 acres of wetlands., for construction of the Western Wake Freeway toll facility (TIP R-2635), crossing Little Branch, Big Branch, White Oak Creek, Beaver Creek, Reedy Branch, Clark Branch, Bachelor Branch, Panther Creek, Morris Branch, Nancy Branch, and unnamed tributaries.

Project Location: From NC 55 at SR 1172 (Old Smithfield Road), between Holly Springs and Apex, to the existing NC 540 at NC 55 near SR 1630 (Alston Avenue), west of Morrisville, in western Wake County, North Carolina.

Permit Conditions:

General Conditions:

1. The time Limit for completing the work authorized ends on December 31, 2013 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 Conditions 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 eligible for listing in the National Register of Historic Places.

4. If you sell the property associate 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 mad 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 33CFR 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 measure 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.

4.15.2008

(PERMITTEE) NORTH CAROLINA TURNPIKE AUTHORITY
MR. STEVEN D. DE WITT — *(DATE)*

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

22 April 2008

(DISTRICT Commander) JOHN E. PULLIAM, JR., COLONEL — *(DATE)*

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

(Transferee) — *(Date)*

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

RECEIVED
MAR 18 2008
RALEIGH REGULATORY FIELD OFFICE

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Coleen Sullins, Director
Division of Water Quality

2007-02903

March 17, 2008

Steven D. DeWitt, P.E., Chief Engineer
North Carolina Turnpike Authoity
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 Proposed Western Wake Freeway (NC 540) in Wake County, Federal Aid Project No. BRSTP-000S(491), State Project No. 6.408006T, TIP No. R-2635. DWQ Project No. 20071470 ver. 1.

Dear Mr. DeWitt:

Attached hereto is a copy of Water Quality Certification No. 3734 issued to The North Carolina Transit Authority dated March 17, 2008.

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

Sincerely,

Coleen Sullins,
Director

Attachments

cc: Eric Alsmeyer, US Army Corps of Engineers, Raleigh Field Office
Jennifer Harris, NC Turnpike Authority
Dr. Gregory J. Thorpe, NCDOT PDEA
Chris Murray, Division 5 Environmental Officer
Greg Price, NCDOT NEU
Kathy Matthews, Environmental Protection Agency
Travis Wilson, NC Wildlife Resources Commission
Beth Harmon, Ecosystem Enhancement Program
File Copy

Transportation Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
2321 Crabtree Boulevard, Suite 250, Raleigh, North Carolina 27604
Phone: 919-733-1786 / FAX 919-733-6893 / Internet: http://h2o.enr.state.nc.us/ncwetlands

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William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Coleen Sullins, Director
Division of Water Quality

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 (DWQ) Regulations in 15 NCAC 2H .0500. This certification authorizes the NC Turnpike Authority to impact 23.71 acres of jurisdictional wetlands and 14,959 linear feet of jurisdictional streams in Wake County. The project shall be constructed pursuant to the application dated received August 30, 2007, and additional information received November 1, 2007. The authorized impacts are as described below:

Section C Stream Impacts in the Cape Fear River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Impacts to Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Impacts to Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	128	0	0	0	128	0
3	0	0	1411	80	1491	1411
10	541	20	0	0	561	0
11	504	35	0	0	539	0
12	538	15	0	0	553	0
15	667	10	0	0	677	0
16	0	0	498	48	546	498
17	0	0	547	65	612	547
19	143	0	0	0	143	0
22	473	40	0	0	513	0
22A	52	20	0	0	72	0
23	0	0	546	50	596	546
24	0	0	172	25	197	172
26	332	0	30	0	362	30
29	232	14	0	0	246	0
29A	0	30	0	0	30	0
30	0	0	117	40	157	117
Total	**3610**	**184**	**3321**	**308**	**7423**	**3321**

Total Stream Impact for Section C: 7,423 linear feet

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Division of Water Quality

Section B Stream Impacts in the Cape Fear River Basin*

Site	Permanent Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
3	0	835	835	835
7	1148	0	1148	0
10	0	642	642	642
10A	266	0	266	0
30	0	282	282	282
35	0	124	124	124
15	119	0	119	0
16	431	0	431	0
19	0	21	21	0
22	935	0	935	0
23	0	541	541	541
Total	**2899**	**2445**	**5344**	**2424**

Total Stream Impact for Section B: 5,344 linear feet

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts) in future certifications prior to construction of this section.*

Section A Stream Impacts in the Cape Fear River Basin*

Site	Permanent Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	74	0	74	0
2	305	0	305	0
5	0	103	103	0
6	0	447	447	447
7	0	450	450	450
11	276	0	276	0
12	0	537	537	537
Total	**655**	**1537**	**2192**	**1434**

Total Stream Impact for Section A: 2,192 linear feet

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts) in future certifications prior to construction of this section.*

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Section C Wetland Impacts in the Cape Fear River Basin

Site	Permanent Fill (ac)	Temporary Fill (ac)	Hand Clearing (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
1	0.77	0	0	0.77	0.77
3	1.51	0	0	1.51	1.51
4	0.13	0	0	0.13	0.13
5	0.06	0	0	0.06	0.06
6	0.82	0	0	0.82	0.82
7	0.23	0	0	0.23	0.23
8	0.35	0	0	0.35	0.35
10	0.36	0	0	0.36	0.36
12	0.36	0	0	0.36	0.36
13	0.99	0	0.50	1.49	0.99
14	0	0	2.16	2.16	0
15	0.22	0	0	0.22	0.22
16	0.50	0	0	0.50	0.50
17	1.60	0	0	1.60	1.60
21	2.06	0	0.58	2.64	2.06
25	0.14	0	0	0.14	0.14
26	0	0.04	0.29	0.33	0
27	0.58	0	0	0.58	0.58
28	0.58	0	0	0.58	0.58
Total	**11.26**	**0.04**	**3.53**	**14.83**	**11.26**

Total Wetland Impact for Section C: 14.83 acres.

Section B Wetland Impacts in the Cape Fear River Basin*

Site	Permanent Fill (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
1	0.53	0.53	0.53
2	0.03	0.03	0.03
4	1.02	1.02	1.02
5	2.70	2.70	2.70
9	0.26	0.26	0.26
11	0.12	0.12	0.12
17	0.04	0.04	0.04
18	0.06	0.06	0.06
19	1.23	1.23	1.23
20	0.11	0.11	0.11
21	0.55	0.55	0.55
24	0.06	0.06	0.06
25	0.01	0.01	0.01
29	0.18	0.18	0.18
31	0.10	0.10	0.10
32	0.03	0.03	0.03
33	0.03	0.03	0.03
34	0.05	0.05	0.05
Total	**7.11**	**7.11**	**7.11**

Total Wetland Impact for Section B: 7.11 acres.

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts) in future certifications prior to construction of this section.*

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Section A Wetland Impacts in the Cape Fear River Basin *

Site	Permanent Fill (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
3	0.06	0.06	0.06
4	0.12	0.12	0.12
8	1.03	1.03	1.03
9	0.19	0.19	0.19
10	0.37	0.37	0.37
Total	**1.77**	**1.77**	**1.77**

Total Wetland Impact for Section A: 1.77 acres.

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts) in future certifications prior to construction of this section.*

Section C Open Water (Ponds) Impacts in the Cape Fear River Basin

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
2	1.11	0	1.11
8	1.55	0	1.55
9	0.69	0	0.69
14	0.20	0	0.20
15	0.61	0	0.61
18	0.58	0	0.58
19	1.16	0	1.16
20	0.91	0	0.91
Total	**6.81**	**0**	**6.81**

Total Open Water Impact for Section C: 6.81 acres.

Section B Open Water (Ponds) Impacts in the Cape Fear River Basin*

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
8	1.12	0	1.12
12	0.93	0	0.93
13	0.12	0	0.12
14	1.04	0	1.04
Total	**3.21**	**0**	**3.21**

Total Open Water Impact for Section B: 3.21 acres.

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts) in future certifications prior to construction of this section.*

Section A Open Water (Ponds) Impacts in the Cape Fear River Basin*

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
11	1.21	0	1.21
Total	**1.21**	**0**	**1.21**

Total Open Water Impact for Section A: 1.21 acres.

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts) in future certifications prior to construction of this section.*

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

This approval is only valid for the purpose and design that you submitted in your application dated received August 30, 2007. Should your project change, you are required to notify the DWQ 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. Compensatory mitigation for impacts to 7,179 linear feet of perennial streams at a replacement ratio of 1:1 is required. Compensatory mitigation for impacts to jurisdictional streams shall be provided by onsite stream relocations of 640 linear feet of UT Reedy Branch at Site 3, Section C. The onsite stream relocation shall be constructed in accordance with the design submitted in your August 30, 2007 application and additional information received November 1, 2007. Please be reminded that as-builts for the completed streams shall be submitted to the North Carolina Division of Water Quality 401 Wetlands Unit with the as-builts for the rest of the project. If the parameters of this condition are not met, then the permittee shall supply additional stream mitigation. All channel relocations will be constructed in a dry work area, will be completed and stabilized, and must be approved on site by DWQ staff, prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. All stream relocations shall have a 50-foot wide native wooded buffer planted on both sides of the stream unless otherwise authorized by this Certification. A transitional phase incorporating rolled erosion control product (RECP) and appropriate temporary ground cover is allowable.

2. The permittee shall visually monitor the vegetative plantings to assess and ensure complete stabilization of the mitigation stream segments. Riparian area success shall be determined by conducting stem counts to ensure a tree survival rate of 320 stems/acre. The monitoring shall be conducted annually for a minimum of 3 years after final planting. Photo documentation shall be utilized to document the success of the riparian vegetation and submitted to DWQ in a final report within sixty (60) days after completing monitoring. After 3 years the NC Turnpike Authority shall contact the DWQ to schedule a site visit to "close out" the mitigation site.

3. Compensatory mitigation for the remaining 6,539 linear feet of impact to perennial streams is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in a letter dated July 18, 2007 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.

4. Compensatory mitigation for impacts to 10.81 acres of riparian wetlands and 9.33 acres of non-riparian 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 July 18, 2007 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

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5. When final design plans are completed for R-2635 Sections A and B, a modifications to the 401 Water Quality Certification shall be submitted with four copies and fees to the NC Division of Water Quality. Final designs shall reflect all appropriate avoidance, minimization, and mitigation for impacts to wetlands, streams, and other surface waters, and buffers. No construction activities that impact any wetlands, streams, surface waters, or buffers located in R-2635 Sections A or B shall begin until after the permittee applies for, and receives a written modification of the 401 Water Quality Certification from the NC Division of Water Quality.

6. Due to the possibility that compaction and/or other site alterations might prevent the temporary wetland impact area from re-attaining jurisdictional wetland status, the permittee shall provide an update on the wetland areas at Site 26, section C, one year after the temporary impact is finished. This update will consist of photographs and a brief report on the progress of this temporarily impacted area in re-attaining wetland jurisdictional status. If the wetland area temporarily impacted by this project has not re-attained jurisdictional wetland status, NC DWQ shall determine if compensatory wetland mitigation will be required.

7. A copy of the final construction drawings shall be furnished to NCDWQ Central Office prior to the pre-construction meeting. The permittee shall provide written verification that the final construction drawings comply with the permit drawings contained in the application dated August 30, 2007. Any deviations from the approved drawings are not authorized unless approved by the NC Division of Water Quality. Also, the Division of Water Quality shall be notified a minimum of 30 days prior to the preconstruction conference.

8. The North Carolina Turnpike Authority shall acquire its NPDES permit from DWQ before this highway can be opened to the public. Written notification shall be made to the Transportation Permitting Unit to comply with this condition.

9. 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. The permittee 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. To comply with this condition, the permittee shall submit a Pond Drainage Plan to be approved by DWQ prior to draining any ponds on the project.

10. The post-construction removal of any temporary bridge structures must return the project site to its preconstruction contours and elevations. The impacted areas shall be revegetated with appropriate native species.

11. Strict adherence to the most recent version of NCDOT's Best Management Practices For Bridge Demolition and Removal approved by the US Army Corps of Engineers is a condition of the 401 Water Quality Certification.

12. Bridge deck drains shall not discharge directly into streams or surface waters. 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.*

13. 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.

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14. Placement of culverts and other structures in waters, streams, and wetlands 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 DWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact the NC DWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.

15. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.

16. For any streams being impacted due to site dewatering activties, the site shall be graded to its preconstruction contours and revegetated with appropriate native species.

17. 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.

18. 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.

19. 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.

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

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

22. 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.

23. 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.

24. 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.

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

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

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

Transportation Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
2321 Crabtree Boulevard, Suite 250, Raleigh, North Carolina 27604
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28. 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 DWQ 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, DWQ may reevaluate and modify this certification.

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

30. 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.

31. 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.

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

33. Upon completion of the project (including any impacts at associated borrow or waste site), the project manager shall complete and return the enclosed "Certification of Completion Form" to notify DWQ when all work included in the 401 Certification has been completed.

34. Native woody riparian vegetation (i.e., trees and shrubs native to your geographic region) must be reestablished within the construction limits of the project by the end of the growing season following completion of construction.

35. 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.

36. 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.

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

38. The onsite project manager shall schedule monthly review meetings once construction on impact areas begins. These meetings will be scheduled with DWQ and other interested resource agencies (USCOE, WRC, USFWS, NCDOT, etc). At the agencies' discretion, these meetings may be less frequent as project nears completion.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

If this Certification is unacceptable to you have the right to an adjudicatory hearing upon written request within sixty (60) days following receipt of this Certification. This request must be in the form of a written petition conforming to Chapter 150B of the North Carolina General Statutes and filed with the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, N.C. 27699-6714. If modifications are made to an original Certification, you have the right to an adjudicatory hearing on the modifications upon written request within sixty (60) days following receipt of the Certification. Unless such demands are made, this Certification shall be final and binding.

This the 17th day of March 2008

DIVISION OF WATER QUALITY

Coleen Sullins
Director

WQC No. 3734

Transportation Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
2321 Crabtree Boulevard, Suite 250, Raleigh, North Carolina 27604
Phone: 919-733-1786 / FAX 919-733-6893 / Internet: http://h2o.enr.state.nc.us/ncwetlands

MEMORANDUM OF AGREEMENT
AMONG
THE FEDERAL HIGHWAY ADMINISTRATION
AND
NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER
FOR
TIP No. R-2635
WESTERN WAKE FREEWAY
WAKE COUNTY, NC

WHEREAS, the Federal Highway Administration (FHWA) has determined that the Western Wake Freeway from NC 55 at SR 1172 to NC 55 near SR 1630 in Wake County, North Carolina (the undertaking) will have an effect upon the Green Level Historic District, a property listed in the National Register of Historic Places, and has consulted with the North Carolina State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, the North Carolina Department of Transportation (NCDOT), Town of Cary (Cary) and Wake County Historic Preservation Commission (Commission), participated in the consultation and have been invited to concur in this Memorandum of Agreement;

NOW, THEREFORE, FHWA and the North Carolina SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on the historic properties.

STIPULATIONS

FHWA will ensure that the following measures are carried out:

I. Historic District Signage Project: NCDOT will work with Cary, the Commission, and the North Carolina SHPO to plan and develop highway signage for and in the vicinity of the Green Level Historic District. The purpose of the highway signage is to identify entry into the Green Level Historic District. The signage project will also include small-scale landscaping around each sign. This signage project will include at least four (4) signs and is restricted to identifying the historic district proper. It will not identify individual properties within the district.

II. Funding of Historic District Signage Project: NCDOT will partner with state and local government entities, and other contributing parties, to fund the Historic District Signage Project. NCDOT funds should not exceed 80% of the total project cost. NCDOT will provide on-going maintenance for the signs and landscaping.

III. Assistance in Applying for TEA-21 Enhancement Funds for Viewshed Protection: NCDOT will provide assistance in the application process for TEA-21 Enhancement Funds to purchase land for the purpose of protecting the viewshed of the Green Level Historic District. The next statewide call for projects will be scheduled in 2002. Typically, funding is available for the purchase of scenic viewsheds and historic sites. NCDOT cannot guarantee that this viewshed protection project will be accepted. The intent is to provide support for the TEA-21 Enhancement Funds application.

IV. Dispute Resolution: Should the North Carolina SHPO object within (30) days to any plans or documentation provided for review pursuant to this agreement, FWHA shall consult with the North Carolina SHPO to resolve the objection. If FHWA or the North Carolina SHPO determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

A. Provide FHWA with recommendations which FHWA will take into account in reaching a final decision regarding the dispute, or
B. Notify FHWA that it will comment pursuant to 36 CFR Section 800.7(c) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FHWA in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all the actions under this agreement that are not the subject of the dispute will remain unchanged.

Execution of this Memorandum of Agreement by FHWA and the North Carolina SHPO, its subsequent filing with the Advisory Council on Historic Preservation, and implementation of its terms evidence that FHWA has afforded the Council an opportunity to comment on the Western Wake Freeway from NC 55 at SR 1172 to NC 55 near SR 1630 in Wake County, North Carolina and its effects on the Green Level Historic District, and that FHWA has taken into account the effects of the undertaking on the historic district.

AGREE:

Donald J. Voelker — 3/5/02

FEDERAL HIGHWAY ADMINISTRATION — DATE

Jeffrey Crow — 4/2/02

NORTH CAROLINA HISTORIC PRESERVATION OFFICER — DATE

FILED BY:

ADVISORY COUNCIL ON HISTORIC PRESERVATION — DATE

CONCUR:

William D. Gilmore — 8/13/01

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION — DATE

8-21-01

WAKE COUNTY HISTORIC PRESERVATION COMMISSION — DATE

William B. Coleman Jr. — 2/13/02

TOWN OF CARY, NORTH CAROLINA — DATE

SPECIAL CONDITIONS - (Action ID. 2007-02903; Mr. Steven D. DeWitt, North Carolina Turnpike Authority/TIP R-2635)

Work Limits

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

b) 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.

Related Laws

d) All mechanized equipment will be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, the permittee shall immediately report it to the N.C. Division of Water Quality at (919) 733-5083, Ext. 526 or (800) 662-7956 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act will be followed.

Project Maintenance

e) 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.

f) 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.

g) 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.

h) 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).

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

Enforcement

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

k) The permittee shall take the place of the North Carolina Department of Transportation to ensure compliance with the stipulations set forth in the Memorandum of Agreement (MOA) between the Federal Highway Administration, the North Carolina State Historic Preservation Officer, the Wake County Historic Preservation Commission, the Town of Cary, and the North Carolina Department of Transportation (last signature on 4/2/02). A copy of the Memorandum of Agreement is attached.

Phased Design and Construction

l) When final design plans are completed for Sections R-2635A and R-2635B, any necessary permit modifications shall be submitted to the District Engineer and the North Carolina Division of Water Quality (NCDWQ). If necessary, a public notice will be circulated for review. Final designs shall reflect all appropriate avoidance, minimization and mitigation for impacts within streams and wetlands. Construction within streams and wetlands on Sections R-2635A and R-2635B shall begin only after approval by the District Engineer of the modified impacts.

Culverts

m) 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.

Preconstruction Meeting

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

Borrow And Waste

o) 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 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 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.

Mitigation

Onsite Stream Relocation

p) The North Carolina Turnpike Authority (NCTA) will mitigate for 640 linear feet of unavoidable permanent impacts to streams with more than minimal function, with 640 linear feet of onsite stream relocation, at Section C, Site 3.

q) AS-BUILT SURVEY: The permittee shall complete an as-built survey within 60 days of completion of the stream relocation construction. The permittee shall document changes in the dimension, pattern, profile, vegetation plantings and in-channel structures of the relocated channel from the proposed design. The As-Built Survey shall also include photo documentation of representative channel segments with a reference plan view diagram.

r) MONITORING SCHEDULE/REPORT/SUCCESS CRITERIA: The permittee shall monitor the completed stream relocation in accordance with Monitoring Level 2 of the US Army Corps of Engineers, Wilmington District, Stream Mitigation Guidelines of April 2003. Monitoring will be conducted two times per year (spring and fall) each year of a 5-year monitoring period. The monitoring reports, including reference photographs, plant survival data and visual inspection notes identifying specific problem areas, will be submitted to the Corps of Engineers, Wilmington Regulatory Field Office within 60 days of completion of the monitoring. The monitoring report will also include a discussion of any deviations from the as-built condition and an evaluation of the significance of these deviations to channel stability. The success of the stream relocation as project mitigation will be evaluated based on those success criteria listed in the referenced Stream Mitigation Guidelines.

EEP Mitigation

s) NCTA will mitigate for the remaining 10,059 linear feet of unavoidable permanent impacts to streams with more than minimal function, and the 20.14 acres of impacts to wetlands, through payment to the Ecosystem Enhancement Program (EEP), in the amount determined by EEP sufficient to perform a total of 20,118 linear feet of restoration equivalent warm water stream channel, and 21.62 acres of restoration equivalent riverine wetlands, and 18.66 acres of non-riverine wetlands, in the Cape Fear River basin (Cataloging Unit 0303004 – 10,298 lf, 8.50 acres riverine, 4.78 acres non-riverine; Cataloging Unit 0303002 – 9,820 lf, 13.12 acres riverine, 13.88 acres non-riverine). Construction within jurisdictional areas on the property shall begin only after the NCTA has made full payment to EEP and provided a copy of the payment documentation to the Corps, and EEP has provided written confirmation to the Corps that it agrees to accept responsibility for the mitigation work required, in compliance with the MOU between the North Carolina Department of Environment and Natural Resources and the United States Army Corps of Engineers, Wilmington District, dated November 4, 1998.

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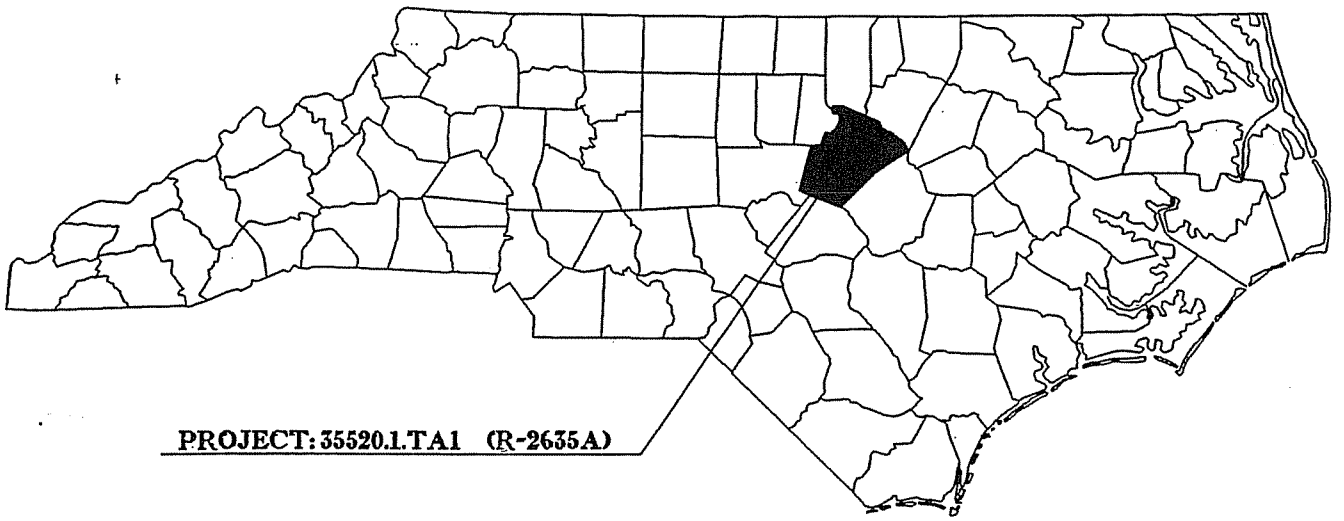
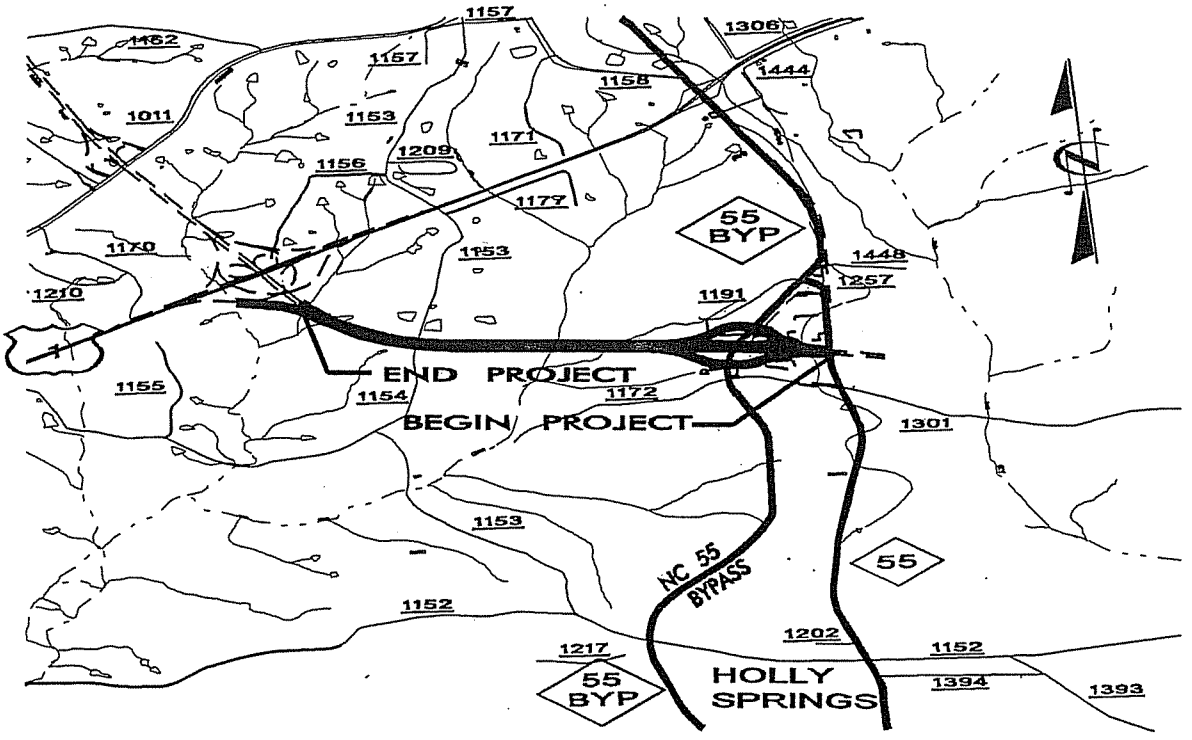
RALEIGH REGULATORY FIELD OFFICE





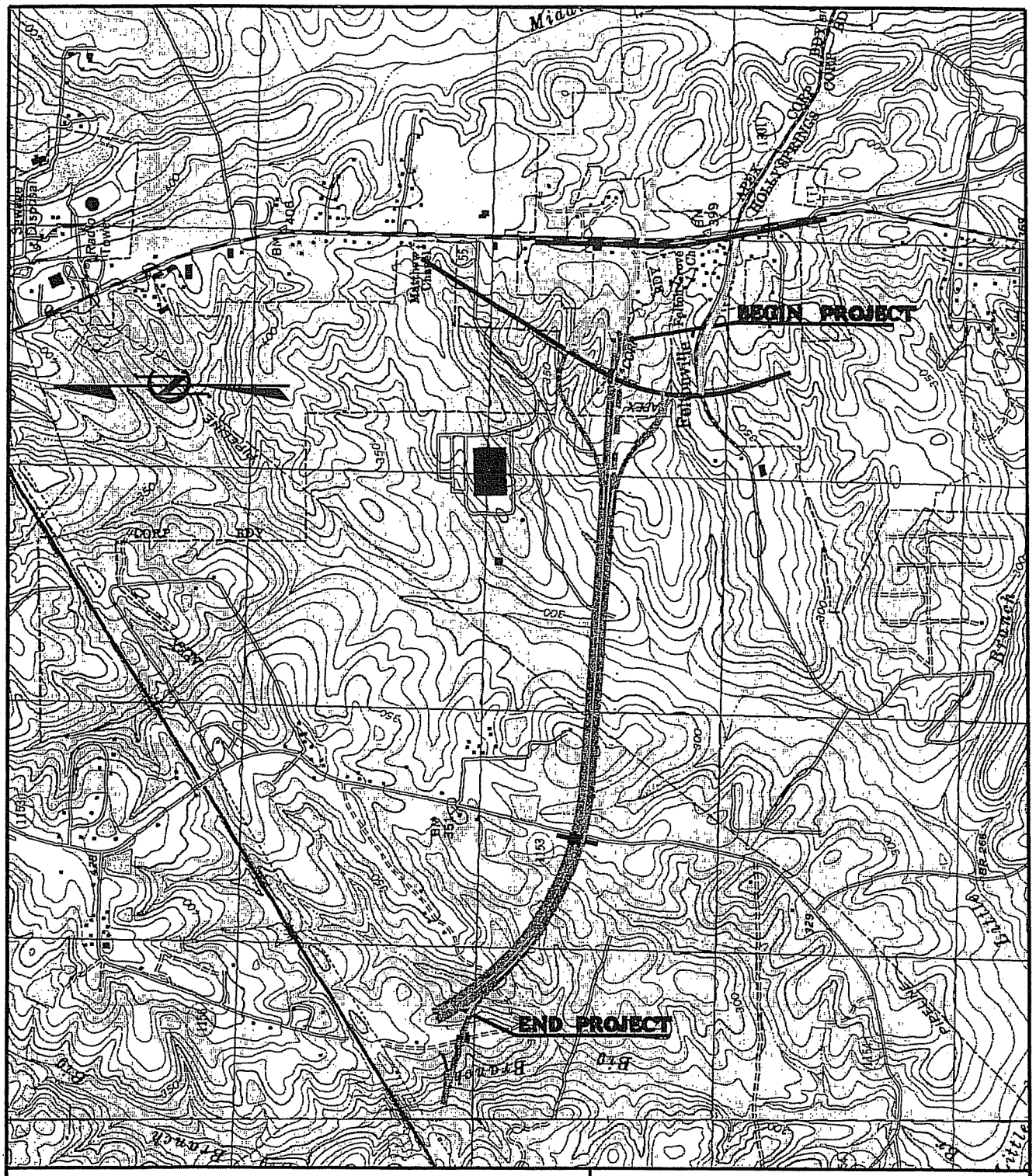
VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 35520.1.TA1 (R-2635A)

WESTERN WAKE EXPRESSWAY
FROM NC 55 TO US 1

SHEET 1 OF 21



LOCATION MAP

NCDOT

DIVISION OF HIGHWAYS

WAKE COUNTY

PROJECT: 6.408006T (R-2535A)

WESTERN WAKE EXPRESSWAY
FROM NC 55 TO US 1

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
82	EMC CORPORATION	1 BEACON ST. FL 31 BOSTON, MA. 02108-3116
17	CHARLES B. BLYTHE	P.O. BOX 69 TRENTON, NC 28585-0069
26	ANTHONY K. WOODELL	P.O. BOX 1109 SANFORD, NC 27331-1109
28	HIGHWAY 55 C&D LANDFILL LLC	19109 W. CATAWBA AVE SUITE 110 CORNELIUS, NC 28031-5613
29	LAMON ADAMS	3229 OLD HOLLY SRINGS-APEX RD. APEX, NC 27539-9301
1	CAROLINA POWER& LIGHT	P.O. BOX 14042 ST. PETERSBURG, FL. 33733-4042
??	BOBBY W. POE	????????

NCDOT

DIVISION OF HIGHWAYS

WAKE COUNTY

PROJECT: 35520.1.TA1 (R-2635A)

WESTERN WAKE EXPRESSWAY

FROM NC 55 TO US 1

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	40+00-EY2-									74		
2	25+35 -Y2RPD-									305		
3	45+00-L-RT.		0.06									
4	45+00-L-LT.		0.12									
5	24+35 -Y2RPA-									103		
6	64+80-L-									447		
7	74+00-L-									450		
8	80+00-L-		1.03									
9	101+00-L-		0.19									
10	108+20-L-		0.37									
11	124+00-L-							1.21		276		
12	129+00-L-									537		
TOTALS:			1.77					1.21		2192		

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: 35520.1.TA1 (R-2635A)

SHEET 4 of 21 4/4/2007

ATN Revised 3/31/05

05/08/59

TIP PROJECT: R-2635A

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

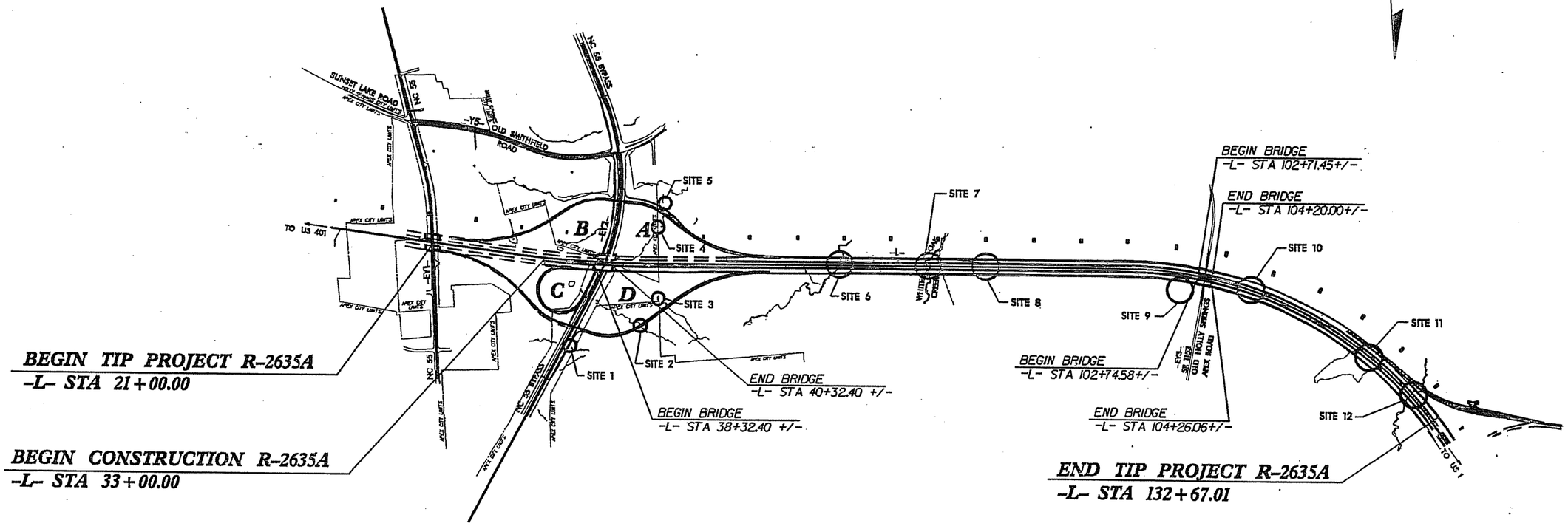
RECEIVED
AUG 30 2007
RALEIGH REGULATORY FIELD OFFICE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2635A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35520.1.1	NHF-540(11)	P.E.	

Permit Drawing
Sheet 5 of 21

LOCATION: WESTERN WAKE EXPRESSWAY
FROM NC 55 TO US 1

SITE LOCATION MAP



INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

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

DESIGN DATA

ADT 2012 =	41,245
ADT 2032 =	103,945
DHV =	9 %
D =	60 %
T =	18 % *
V =	70 MPH
FUNC. CLASS =	INTERSTATE
* TTST 12%	DUAL 6%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2635A	=	2.053 MI
LENGTH STRUCTURE TIP PROJECT R-2635A	=	0.062 MI
TOTAL LENGTH OF THIP PROJECT R-2635A	=	2.115 MI

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

GARY LOVERING, PE
PROJECT ENGINEER

ANTHONY WEST
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

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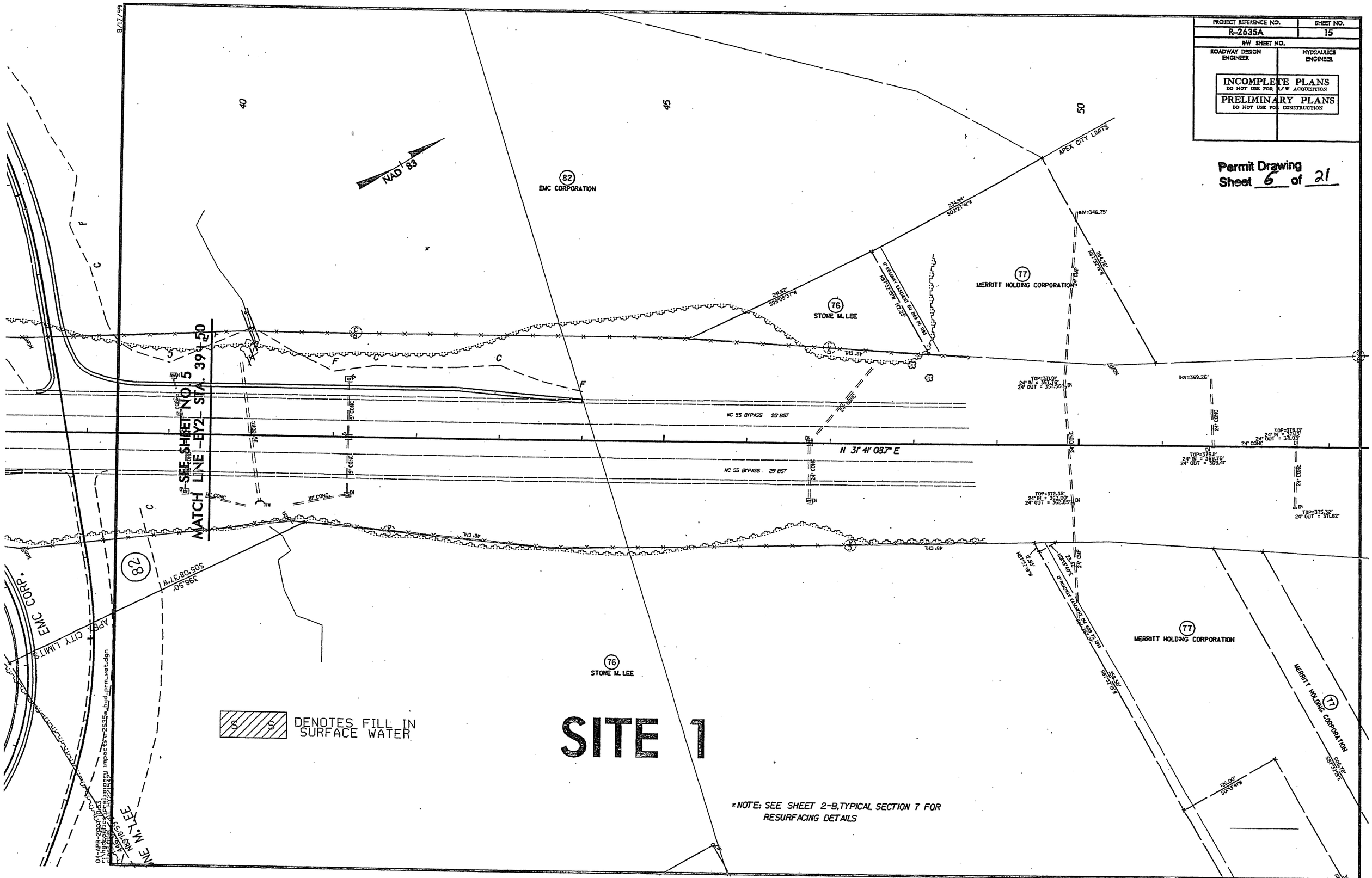
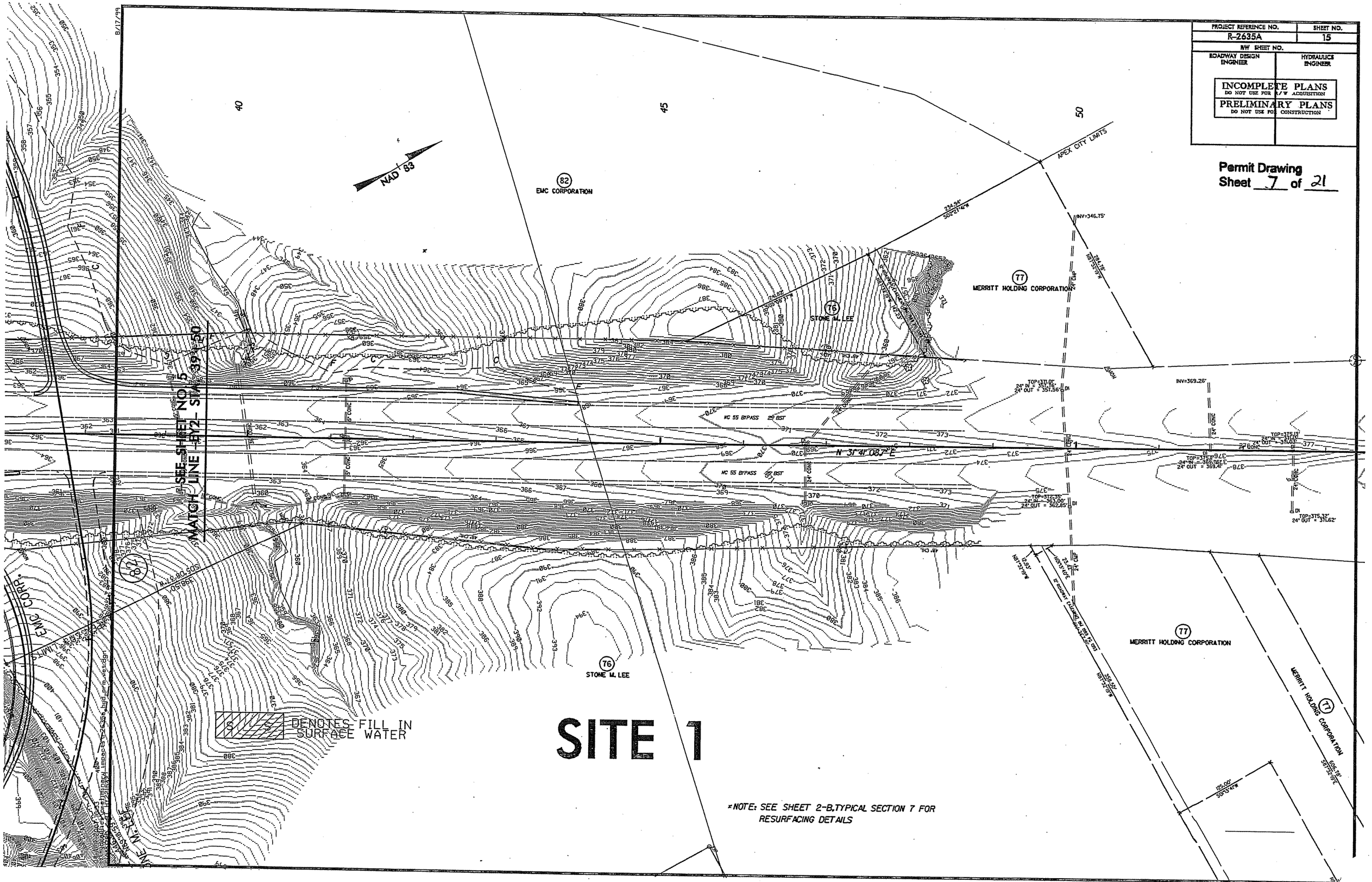
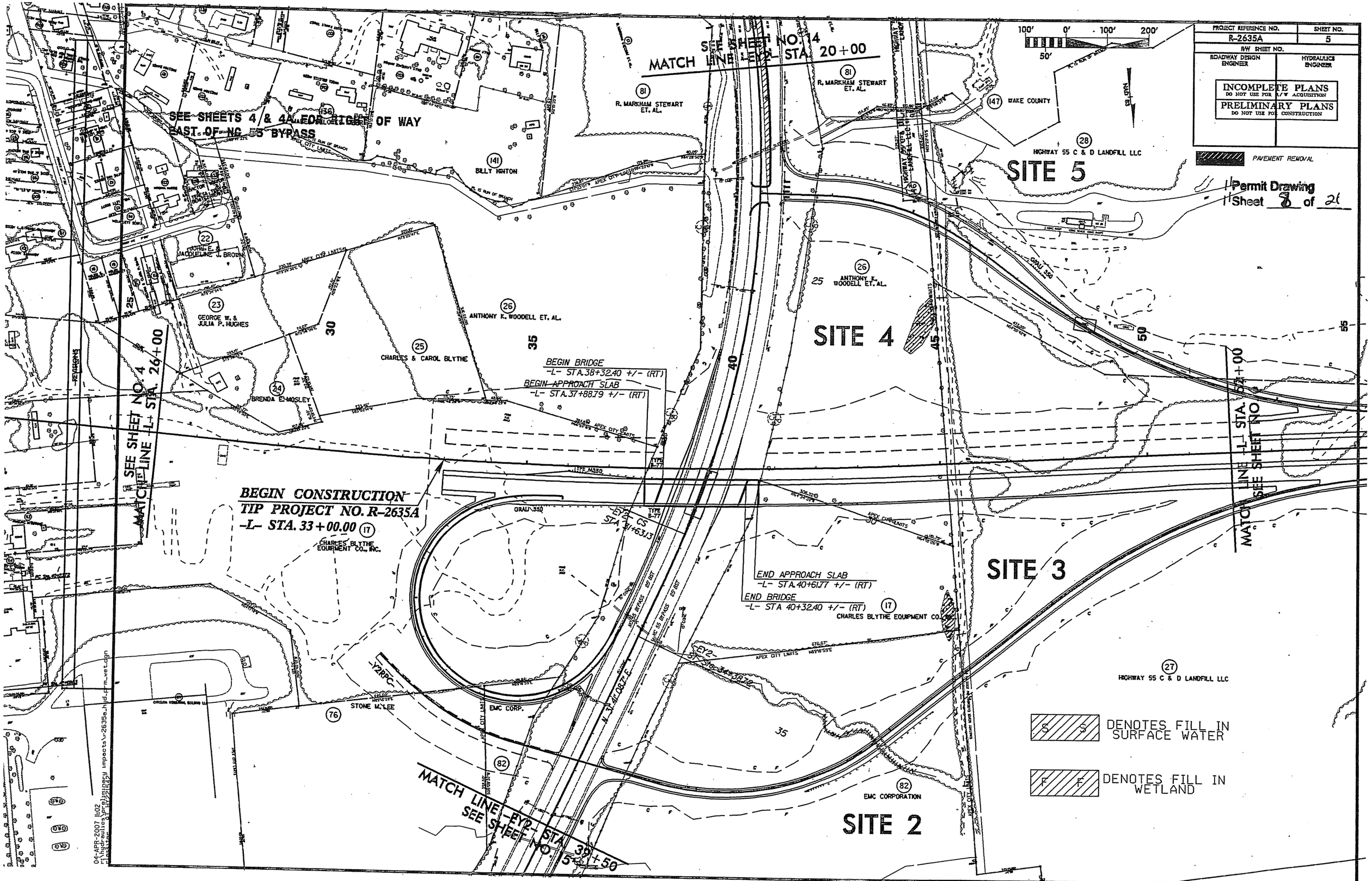


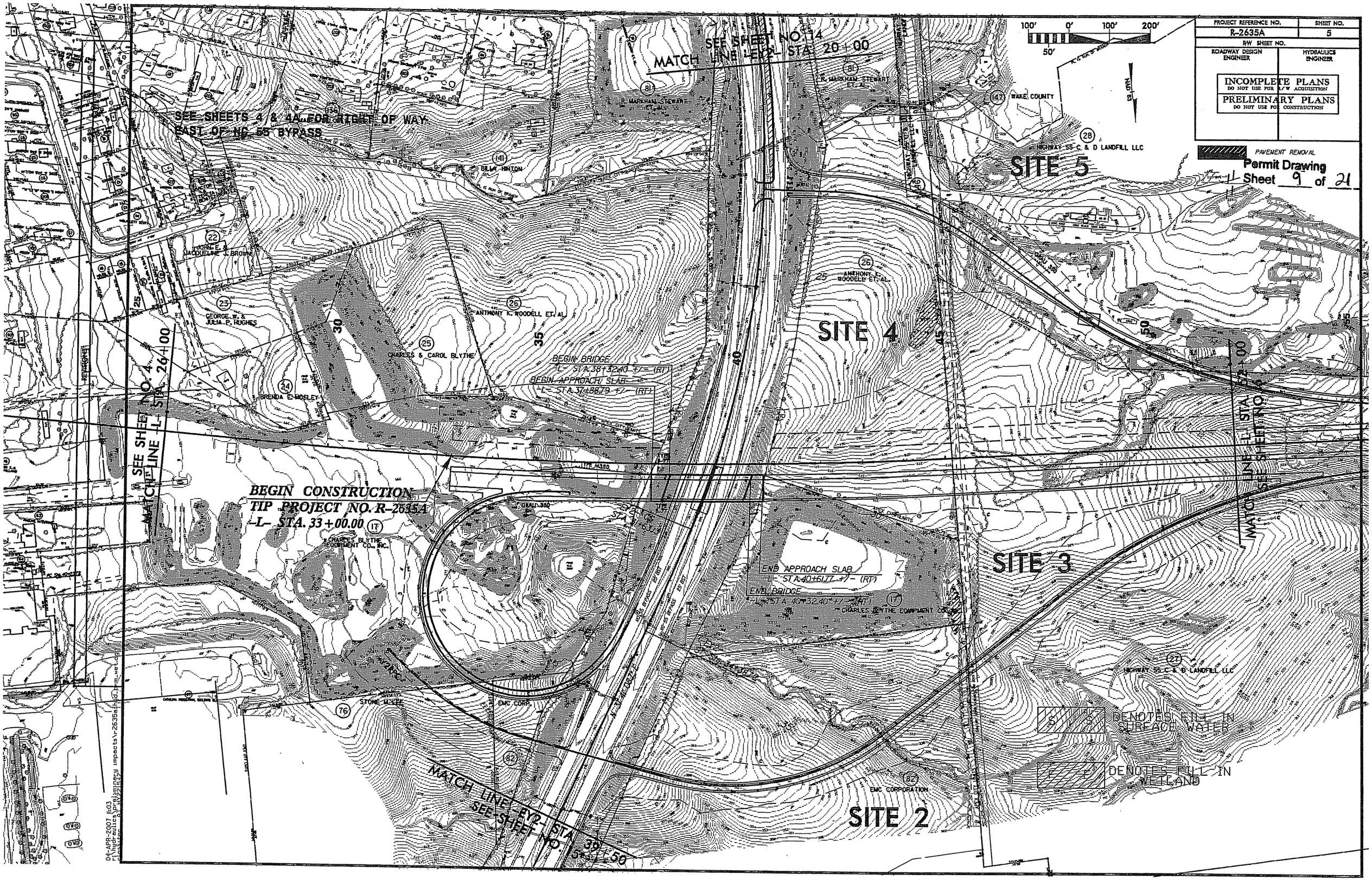
PROJECT REFERENCE NO.
R-2635A
SHEET NO.
15
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 6 of 21
NAD 83
82
EMC CORPORATION
76
STONE M. LEE
77
MERRITT HOLDING CORPORATION
APEX CITY LIMITS
SEE SHEET NO. 5
MATCH LINE -EY2- STA. 39+50
NC 55 BYPASS 25' BST
N 31° 41' 08.7" E
EMC CORP.
DENOTES FILL IN SURFACE WATER
SITE 1
*NOTE: SEE SHEET 2-B, TYPICAL SECTION 7 FOR RESURFACING DETAILS

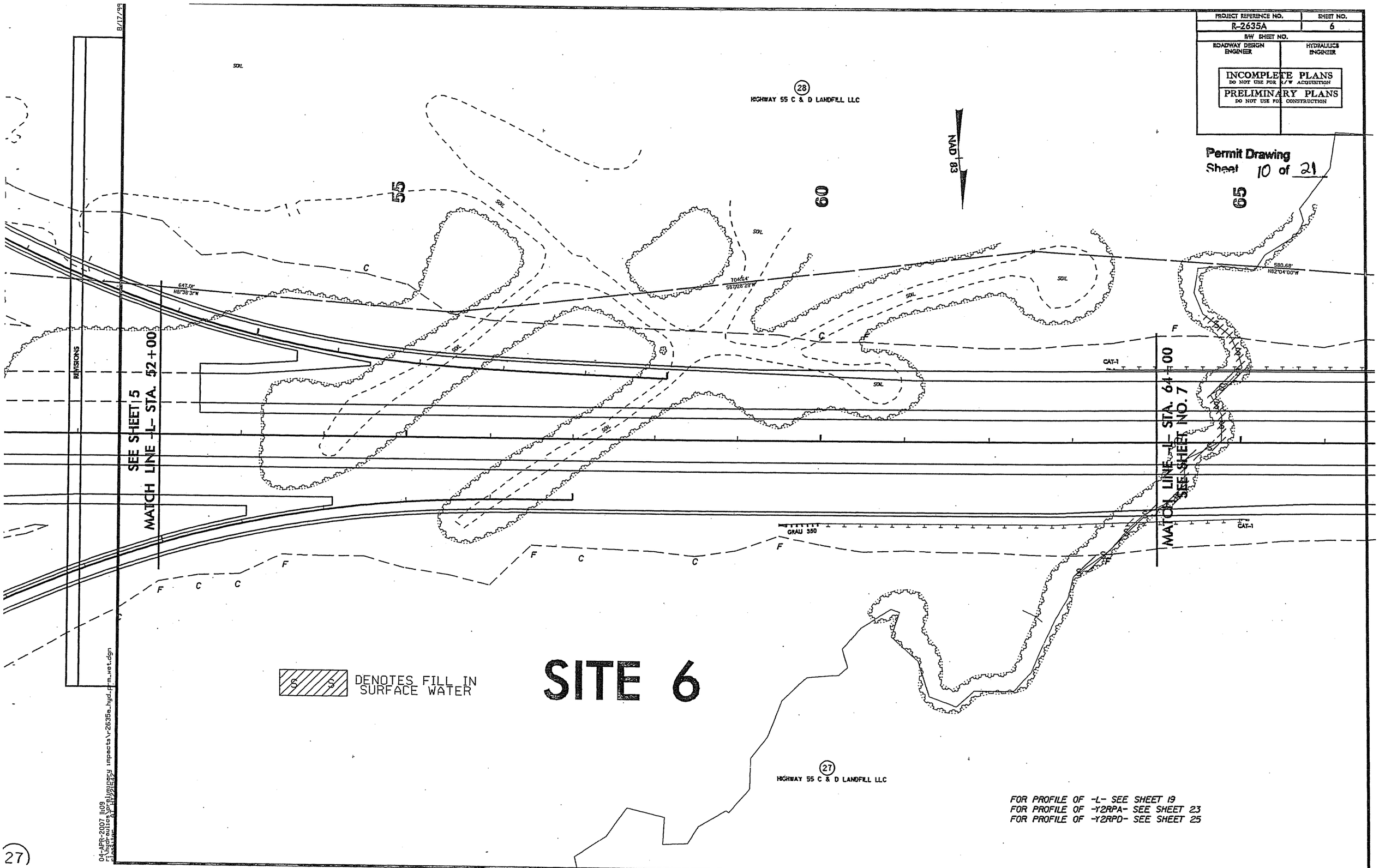


PROJECT REFERENCE NO.
R-2635A
SHEET NO.
15
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 7 of 21
NAD 83
82
EMC CORPORATION
77
MERRITT HOLDING CORPORATION
76
STONE M. LEE
APEX CITY LIMITS
SEE SHEET NO 5
MATCH LINE -EY2- STA 39+50
N 31°41'08.7" E
NC 55 BYPASS
DENOTES FILL IN SURFACE WATER
SITE 1
*NOTE: SEE SHEET 2-B, TYPICAL SECTION 7 FOR RESURFACING DETAILS



PROJECT REFERENCE NO.
R-2635A
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
PAVEMENT REMOVAL
Permit Drawing
Sheet 8 of 21
100' 0' 100' 200'
50'
SEE SHEET NO. 14
MATCH LINE -EY2- STA. 20+00
SEE SHEETS 4 & 4A FOR RIGHT OF WAY
EAST OF NC 55 BYPASS
R. MARKHAM STEWART ET. AL.
WAKE COUNTY
HIGHWAY 55 C & D LANDFILL LLC
BILLY HINTON
SITE 5
ANTHONY K. WOODELL ET. AL.
GEORGE W. & JULIA P. HUGHES
CHARLES & CAROL BLYTHE
BRENDA E. MOSLEY
SITE 4
BEGIN BRIDGE
-L- STA.38+32.40 +/- (RT)
BEGIN APPROACH SLAB
-L- STA.37+88.79 +/- (RT)
MATCH LINE -L- STA. 26+00
SEE SHEET NO. 4
MATCH LINE -L- STA. 52+00
SEE SHEET NO. 6
BEGIN CONSTRUCTION
TIP PROJECT NO. R-2635A
-L- STA. 33+00.00
CHARLES BLYTHE EQUIPMENT CO., INC.
END APPROACH SLAB
-L- STA.40+61.77 +/- (RT)
END BRIDGE
-L- STA 40+32.40 +/- (RT)
CHARLES BLYTHE EQUIPMENT CO., INC.
SITE 3
HIGHWAY 55 C & D LANDFILL LLC
STONE M. LEE
EMC CORP.
EMC CORPORATION
MATCH LINE -EY2- STA. 39+50
SEE SHEET NO. 15
SITE 2
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN WETLAND


PROJECT REFERENCE NO.
R-2635A
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
PAVEMENT REMOVAL
Permit Drawing
Sheet 9 of 21
100' 0' 100' 200'
50'
SEE SHEET NO. 14
MATCH LINE -EY2- STA. 20+00
SEE SHEETS 4 & 4A FOR RIGHT OF WAY
EAST OF NC 55 BYPASS
SITE 5
SITE 4
SITE 3
SITE 2
BEGIN BRIDGE
-L- STA. 38+32.40 +/- (RT)
BEGIN APPROACH SLAB
-L- STA. 37+88.79 +/- (RT)
END APPROACH SLAB
-L- STA. 40+61.77 +/- (RT)
END BRIDGE
-L- STA. 40+32.40 +/- (RT)
BEGIN CONSTRUCTION
TIP PROJECT NO. R-2635A
-L- STA. 33+00.00
MATCH LINE -L- STA. 26+00
SEE SHEET NO. 4
MATCH LINE -L- STA. 52+00
SEE SHEET NO. 6
MATCH LINE -EY2- STA. 39+50
SEE SHEET NO. 15
R. MARKHAM STEWART ET. AL.
WAKE COUNTY
HIGHWAY 55 C & D LANDFILL LLC
BILLA HINTON
JOHN E. & JACQUELINE J. BROWN
GEORGE W. & JULIA P. HUGHES
ANTHONY K. WOODELL ET. AL.
CHARLES & CAROL BLYTHE
BRENDA E. MOSLEY
CHARLES BLYTHE EQUIPMENT CO., INC.
STONE M. LEE
EMC CORP.
EMC CORPORATION
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN WETLAND
04-APR-2007 11:03


PROJECT REFERENCE NO.
R-2635A
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 10 of 21
28
HIGHWAY 55 C & D LANDFILL LLC
NAD 83
55
60
65
SOIL
REVISIONS
SEE SHEET 5
MATCH LINE -L- STA. 52+00
MATCH LINE -L- STA. 64+00
SEE SHEET NO. 7
CAT-1
GRAU 350
DENOTES FILL IN SURFACE WATER
SITE 6
27
HIGHWAY 55 C & D LANDFILL LLC
FOR PROFILE OF -L- SEE SHEET 19
FOR PROFILE OF -Y2RPA- SEE SHEET 23
FOR PROFILE OF -Y2RPD- SEE SHEET 25
8/17/99
04-APR-2007 11:09
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27

PROJECT REFERENCE NO.	SHEET NO.
R-2635A	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 11 of 21

NAD 83

HIGHWAY 55 C & D LANDFILL LLC

SEE SHEET 5 -L- STA. 52+00

MATCH LINE -L- STA. 64+00
SEE SHEET NO. 7

REVISIONS

DENOTES FILL IN SURFACE WATER

SITE 6

FOR PROFILE OF -L- SEE SHEET 19
FOR PROFILE OF -Y2RPA- SEE SHEET 23
FOR PROFILE OF -Y2RPD- SEE SHEET 25

04-APR-2007 11:09
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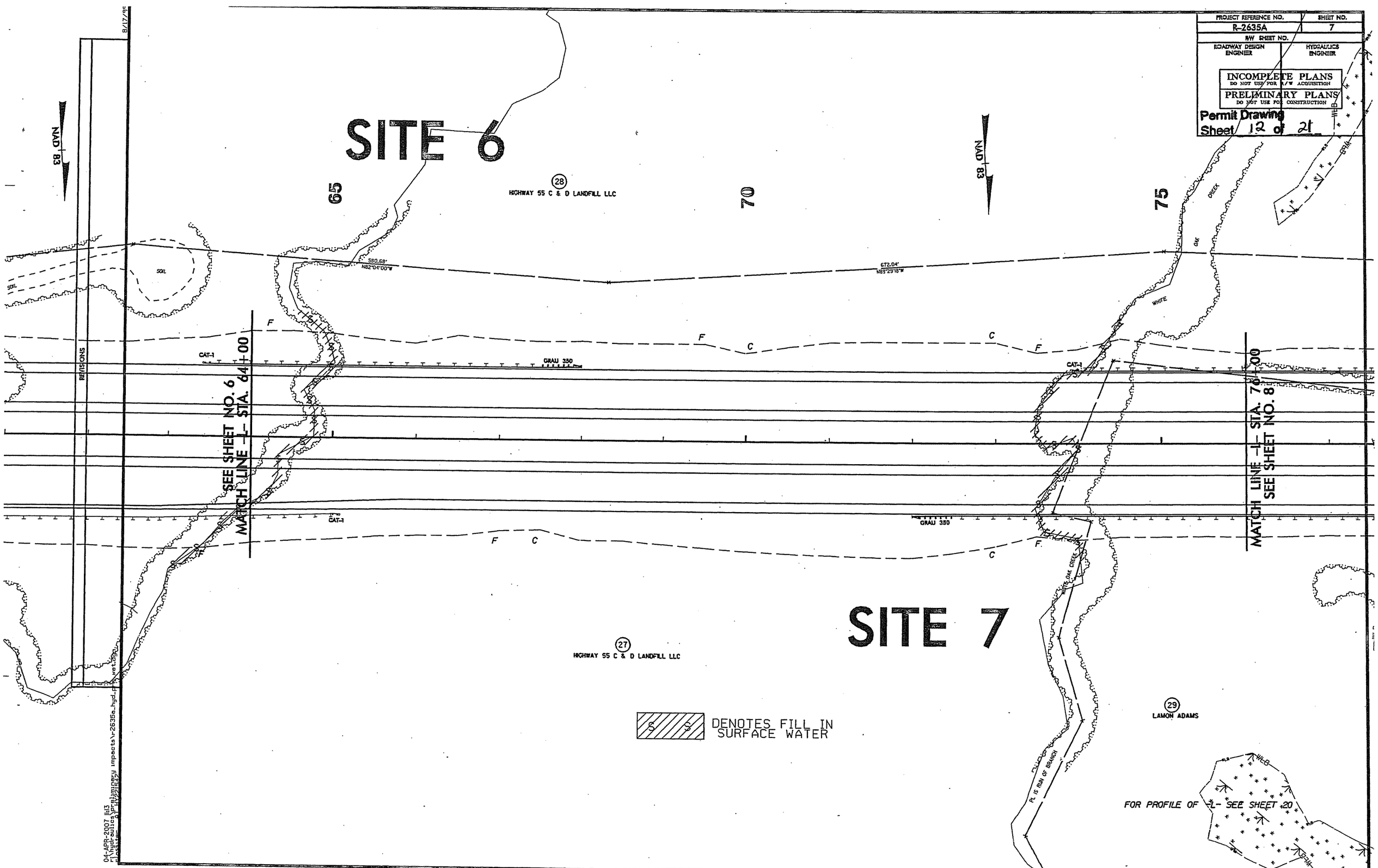
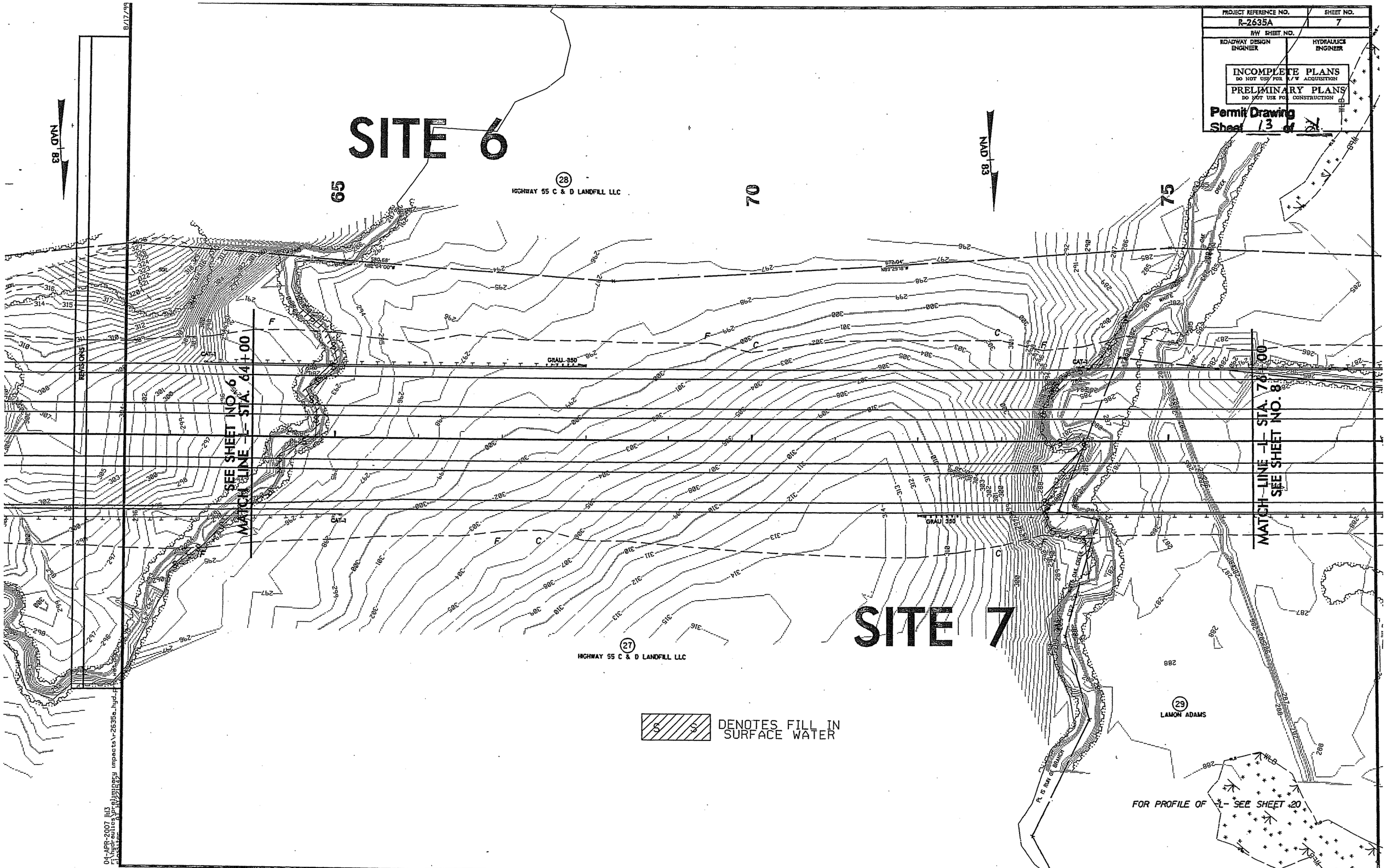

PROJECT REFERENCE NO.
R-2635A
SHEET NO.
7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 12 of 21
SITE 6
SITE 7
NAD 83
65
70
75
28
HIGHWAY 55 C & D LANDFILL LLC
27
HIGHWAY 55 C & D LANDFILL LLC
29
LAMON ADAMS
SEE SHEET NO. 6
MATCH LINE -L- STA. 64+00
MATCH LINE -L- STA. 76+00
SEE SHEET NO. 8
REVISIONS
SOIL
CAT-1
GRAU 350
WHITE OAK CREEK
PL IS RUN OF BRANCH
DENOTES FILL IN SURFACE WATER
FOR PROFILE OF -L- SEE SHEET 20
04-APR-2007 11:13



PROJECT REFERENCE NO.
R-2635A
SHEET NO.
7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 13 of 21
SITE 6
SITE 7
NAD 83
65
70
75
28
HIGHWAY 55 C & D LANDFILL LLC
27
HIGHWAY 55 C & D LANDFILL LLC
29
LAMON ADAMS
GRAU 350
CAT-1
REVISIONS
SEE SHEET NO. 6
MATCH LINE -L- STA. 64+00
MATCH LINE -L- STA. 76+00
SEE SHEET NO. 8
DENOTES FILL IN SURFACE WATER
FOR PROFILE OF -L- SEE SHEET 20
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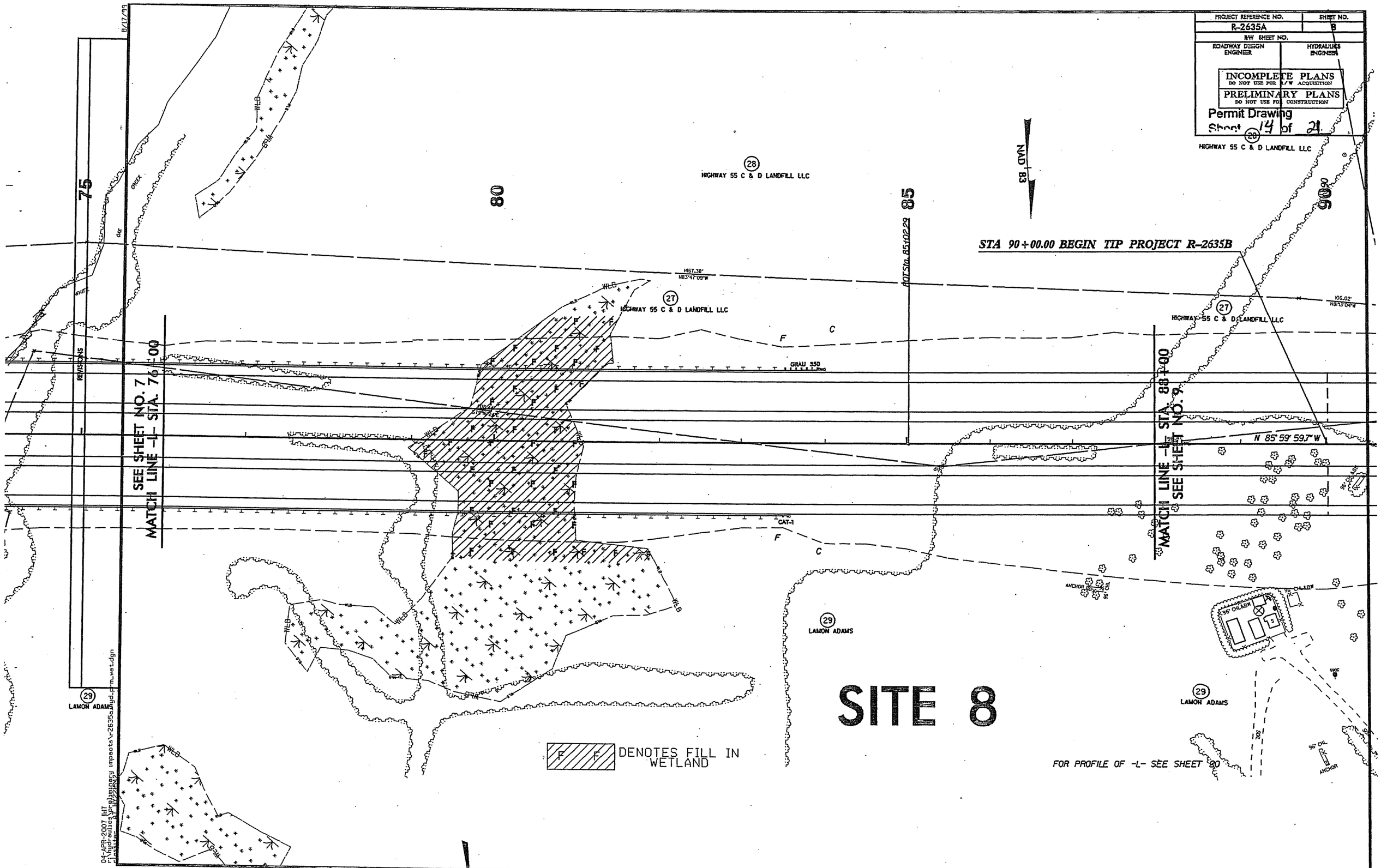

PROJECT REFERENCE NO.
R-2635A
SHEET NO.
8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 14 of 21
HIGHWAY 55 C & D LANDFILL LLC
NAD 83
STA 90+00.00 BEGIN TIP PROJECT R-2635B
SEE SHEET NO. 7
MATCH LINE -L- STA. 76+00
MATCH LINE -L- STA. 88+00
SEE SHEET NO. 9
N 85° 59' 59.7" W
GRAU 350
CAT-1
LAMON ADAMS
SITE 8
DENOTES FILL IN WETLAND
FOR PROFILE OF -L- SEE SHEET 20

PROJECT REFERENCE NO.	SHEET NO.
R-2635A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 15 of 21

8/17/99

NAD 83

STA. 90+00.00 BEGIN TIP PROJECT R-2635B

SEE SHEET NO. 7 STA. 76+00
MATCH LINE -L- STA. 76+00

MATCH LINE -L- STA. 88+00
SEE SHEET NO. 9

HIGHWAY 55 C & D LANDFILL LLC

LAMON ADAMS

N 85° 59' 59.7" W

F F DENOTES FILL IN WETLAND

SITE 8

FOR PROFILE OF -L- SEE SHEET 20

04-APR-2007 14:17
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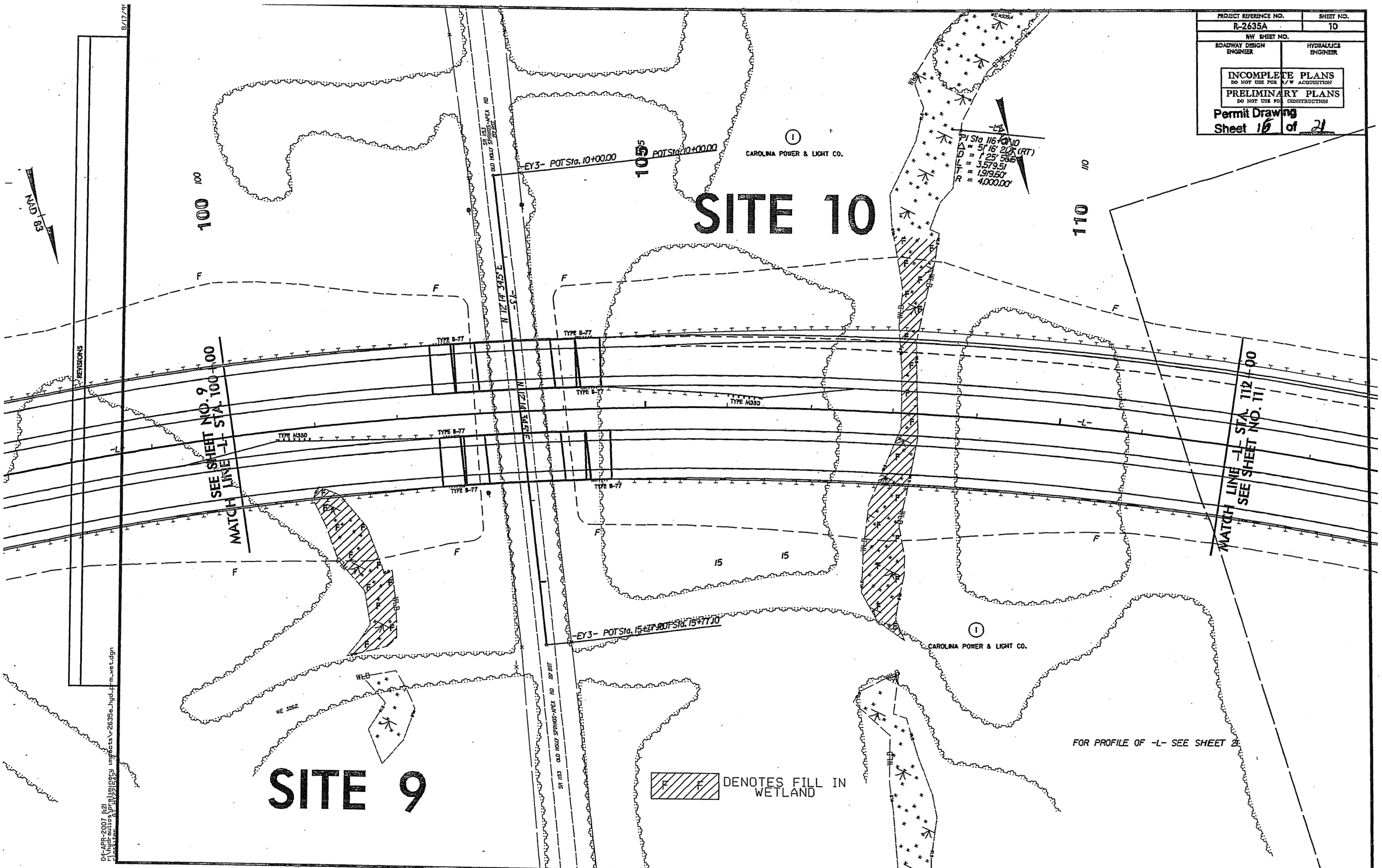
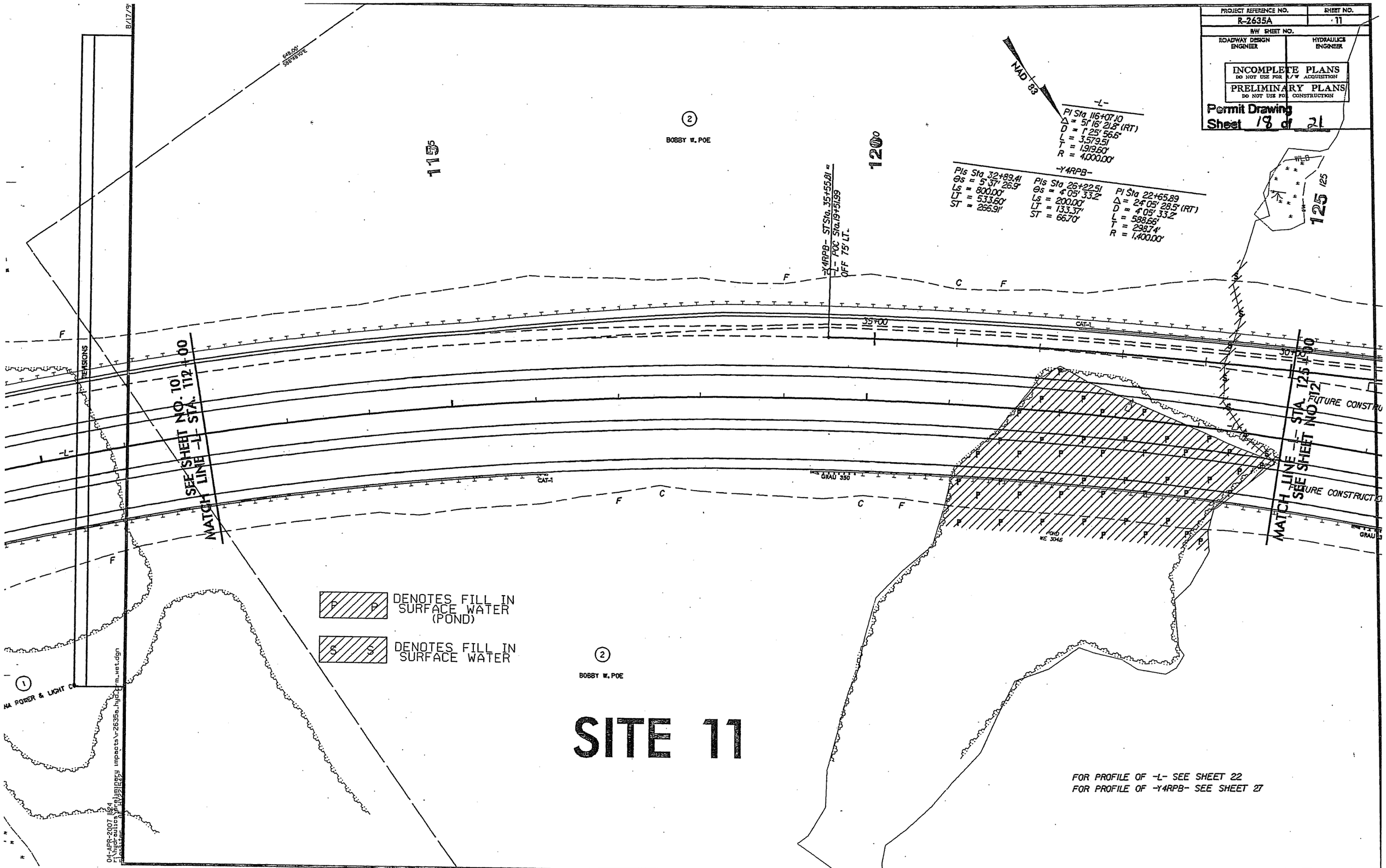

PROJECT REFERENCE NO.
R-2635A
SHEET NO.
10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 16 of 21
SITE 10
SITE 9
CAROLINA POWER & LIGHT CO.
CAROLINA POWER & LIGHT CO.
-EY3- POT Sta. 10+00.00
POT Sta. 10+00.00
-EY3- POT Sta. 15+77.10
POT Sta. 15+77.10
PI Sta 116+07.10
Δ = 51° 16' 21.8" (RT)
D = 1° 25' 56.5"
L = 3,579.51'
T = 1,919.60'
R = 4,000.00'
N 12° 14' 34.5" E
-Y3-
-L-
TYPE B-77
TYPE M350
SEE SHEET NO. 9
MATCH LINE -L- STA. 100+00
MATCH LINE -L- STA. 112+00
SEE SHEET NO. 11
100
105
110
15
15
NAD 83
REVISIONS
WE 3262
SR 1153 OLD HOLLY SPRINGS-APEX RD
FOR PROFILE OF -L- SEE SHEET 21
DENOTES FILL IN WETLAND
04-APR-2007 11:21

PROJECT REFERENCE NO. R-2635A
SHEET NO. 10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
Permit Drawing Sheet 17 of 21
SITE 10
SITE 9
CAROLINA POWER & LIGHT CO.
-EY3- POT Sta. 10+00.00
POT Sta. 10+00.00
-EY3- POT Sta. 15+77 POT Sta. 15+77.10
PI Sta 116+07.10
Δ = 51° 16' 21.8" (RT)
D = 1° 25' 56.5"
L = 3,579.51
T = 1,919.60
R = 4,000.00
MATCH LINE -L- STA. 100+00
SEE SHEET NO. 9
MATCH LINE -L- STA. 112+00
SEE SHEET NO. 11
N 12° 14' 34.5" E
SR 1153 OLD HOLLY SPRINGS-APEX RD
TYPE B-77
TYPE M350
-L-
-Y3-
NAD 83
REVISIONS
DENOTES FILL IN WETLAND
FOR PROFILE OF -L- SEE SHEET 21
04-APR-2007 11:21


PROJECT REFERENCE NO.
R-2635A
SHEET NO.
11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 18 of 21
NAD 83
-L-
PI Sta 116+07.10
Δ = 51° 16' 21.8" (RT)
D = 1° 25' 56.6"
L = 3,579.51
T = 1,919.60'
R = 4,000.00'
-Y4RPB-
PIs Sta 32+89.41
θs = 5° 37' 26.9"
Ls = 800.00'
LT = 533.60'
ST = 266.91'
PIs Sta 26+22.51
θs = 4° 05' 33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'
PI Sta 22+65.89
Δ = 24° 05' 28.5" (RT)
D = 4° 05' 33.2"
L = 588.66'
T = 298.74'
R = 1,400.00'
-Y4RPB- ST Sta. 35+55.81 =
-L- POC Sta.19+51.99
OFF 75' LT.
115
120
125
BOBBY W. POE
SEE SHEET NO. 10
MATCH LINE -L- STA. 112+00
MATCH LINE -L- STA. 125+00
SEE SHEET NO. 12
FUTURE CONSTRUCTION
CAT-1
GRAU 350
POND WE 3046
DENOTES FILL IN SURFACE WATER (POND)
DENOTES FILL IN SURFACE WATER
SITE 11
FOR PROFILE OF -L- SEE SHEET 22
FOR PROFILE OF -Y4RPB- SEE SHEET 27
04-APR-2007 11:24
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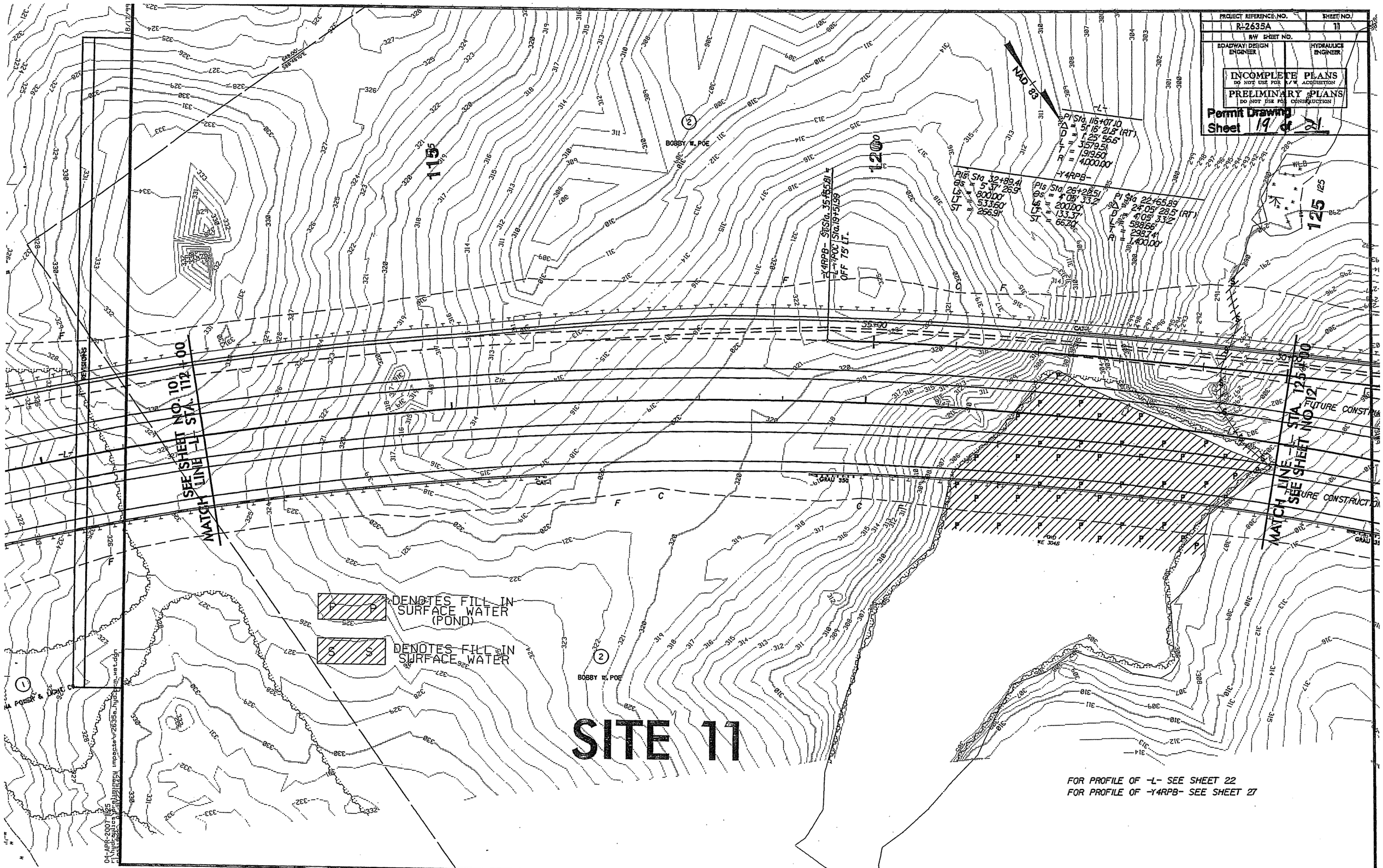
PROJECT REFERENCE NO.
R-2635A
SHEET NO.
11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 19 of 21
NAD 83
PI Sta. 116+07.10
Δ = 51°16'21.8" (RT)
D = 1°25'56.6"
L = 3,579.51'
T = 1,919.60'
R = 4,000.00'
-Y4RPB-
PIs Sta. 32+89.41
θs = 5°37'26.9"
Ls = 800.00'
LT = 533.60'
ST = 266.91'
PIs Sta. 26+28.51
θs = 4°05'33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'
PI Sta. 22+65.89
Δ = 24°05'28.5" (RT)
D = 4°05'33.2"
L = 588.66'
T = 298.74'
R = 1,400.00'
-Y4RPB- Sta. 35+65.81
-L- POC Sta. 19+51.99
OFF 75' LT.
BOBBY W. POE
115
120
125
SEE SHEET NO. 10
MATCH LINE -L- STA. 112+00
MATCH LINE -L- STA. 125+00
SEE SHEET NO. 12
FUTURE CONSTRUCTION
DENOTES FILL IN SURFACE WATER (POND)
DENOTES FILL IN SURFACE WATER
SITE 11
FOR PROFILE OF -L- SEE SHEET 22
FOR PROFILE OF -Y4RPB- SEE SHEET 27

PROJECT REFERENCE NO.	SHEET NO.
R-2635A	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 20 of 21

SITE 12

MATCH LINE - SEE SHEET NO. 11 STA. 125+00

MATCH LINE - SEE SHEET NO. 13 STA 23+00

FUTURE CONSTRUCTION

FUTURE CONSTRUCTION

BEGIN TIP PROJECT R-2635B -L- STA. 132+67.01

BEGIN BRIDGE -L- STA.137+26.00+/-

END BRIDGE -L- STA.138+

BEGIN BRIDGE -L- STA.137+49.00+/-

END BRIDGE -FLYOVERAC- STA.44+79.00+/-

-Y4RPC- POT Sta. 10+00.00 = -L- POS Sta. 135+64.95 OFF 75' RT.

250' TAPER

-FLYOVERBD-

PIs Sta 57+69.56
Es = 4°05' 33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

PI Sta 62+17.37
Δ = 30°27' 42.3" (RT)
D = 4°05' 33.2"
L = 744.32'
T = 381.18'
R = 1,400.00'

PIs Sta 55+02.91
Es = 5°22' 47.6"
Ls = 200.00'
LT = 133.39'
ST = 66.72'

PI Sta 85+75.44
160°15' 00.0" (LT)
D = 5°22' 47.6"
L = 2978.69'
T = 6,117.93'
R = 1,065.00'

-FLYOVERAC-

PI Sta 15+88.13
Δ = 30°59' 27.2" (RT)
D = 4°05' 33.2"
L = 757.24'
T = 388.13'
R = 1,400.00'

PIs Sta 22+90.65
Es = 5°22' 47.6"
Ls = 200.00'
LT = 133.39'
ST = 66.72'

PIs Sta 20+23.95
Es = 4°05' 33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

PI Sta 103+12.57
164°45' 00.0" (LT)
D = 5°22' 47.6"
L = 3,062.33'
T = 7,955.32'
R = 1,065.00'

PIs Sta 13+02.62
PI Sta 19+09.12

FOR PROFILE OF -L- SEE SHEET 22
FOR PROFILE OF -Y4RPB- SEE SHEET
FOR PROFILE OF -Y4RBT- SEE SHEET

DENOTES FILL IN SURFACE WATER

BOBBY W. POE

RANSOM GREEN HEIRS C/O BETTY G. BARTON

-FLYOVERAC-

SRSSta. 27+55.81

CSSta. 25+55.81

CSSta. 132+67.01

STSta. 135+67.01

SCSta. 137+69.16

TSSta. 141+49.16

TYPE-III

TYPE M350

GRAU 350

N 28°07' 43.4" W

185.9' ROOT 23'E

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PROJECT REFERENCE NO. R-2635A | SHEET NO. | TOTAL SHEETS

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 21 of 21

SITE 12

DENOTES FILL IN SURFACE WATER

MATCH LINE SEE SHEET -Y4RPB-

MATCH LINE SEE SHEET -Y4RPA-

-Y4RPB- STA 23+00

-Y4RPB- STA 10+00.00 = -L- STA 135+64.95 OFF 75' RT.

BEGIN T/P PROJECT R-2635B -L- STA 132+67.01

BEGIN BRIDGE -L- STA 131+26.00+/-

END BRIDGE -L- STA 131+

END BRIDGE -FLYOVERAC- STA 44+79.00+/-

BEGIN BRIDGE -L- STA 137+49.00+/-

END BRIDGE -L- STA

-FLYOVERBD-
PIs Sta 57+69.56
Es = 4°05'33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

PI Sta 62+17.37
Δ = 30°27'42.3" (RT)
D = 4°05'33.2"
L = 744.32'
T = 381.18'
R = 1,400.00'

PIs Sta 55+03.91
Es = 5°22'47.6"
Ls = 200.00'
LT = 133.39'
ST = 66.72'

PI Sta 85+75.44
160°15'00.0" (LT)
D = 22°47.6"
L = 2978.69'
T = 2117.93'
R = 1,065.00'

-FLYOVERAC-
PI Sta 15+88.13
30°59'27.2" (RT)
D = 4°05'33.2"
L = 758.23'
T = 388.13'
R = 1,400.00'

PIs Sta 20+23.95
Es = 4°05'33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

PIs Sta 22+90.85
Es = 5°22'47.6"
Ls = 200.00'
LT = 133.39'
ST = 66.72'

PI Sta 103+12.57
160°45'00.0" (LT)
D = 5°22'47.6"
L = 3,062.33'
T = 7,955.32'
R = 1,065.00'

-Y4RPC- POT Sta. 10+00.00 = -L- POS Sta. 135+64.95 OFF 75' RT.

FOR PROFILE OF -L- SEE SHEET 22
FOR PROFILE OF -Y4RPB- SEE SHEET 23
FOR PROFILE OF -Y4RBT- SEE SHEET 28

-Y4RPC-
PIs Sta 13+02.62
PI Sta 19+09.12

FUTURE CONSTRUCTION

SHEET NO. 125 STA 125+60

SHEET NO. 125 STA 125+60

REVISIONS

BOBBY W. POE

RANSOM GREEN HEIRS C/O BETTY G. BARTON

CRAU 350

CRAU 350

250' TAPER

N 28°10'43.4" W

TYPE III

TYPE III

TYPE III

TYPE III

TYPE M350

TYPE M350

CAT-1

CAT-1

SRSSta. 27+55.81

SRSSta. 25+55.81

SRSSta. 132+67.01

SRSSta. 135+67.01

SCSSta. 137+39.16

130

125

135

40'+00

25.00

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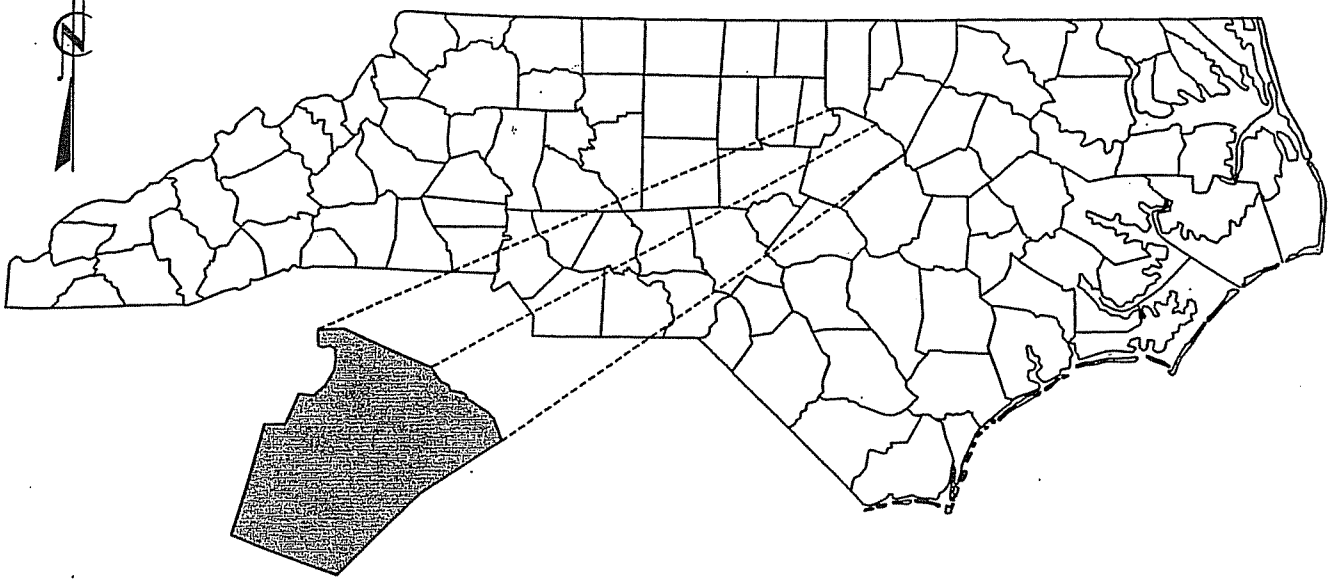
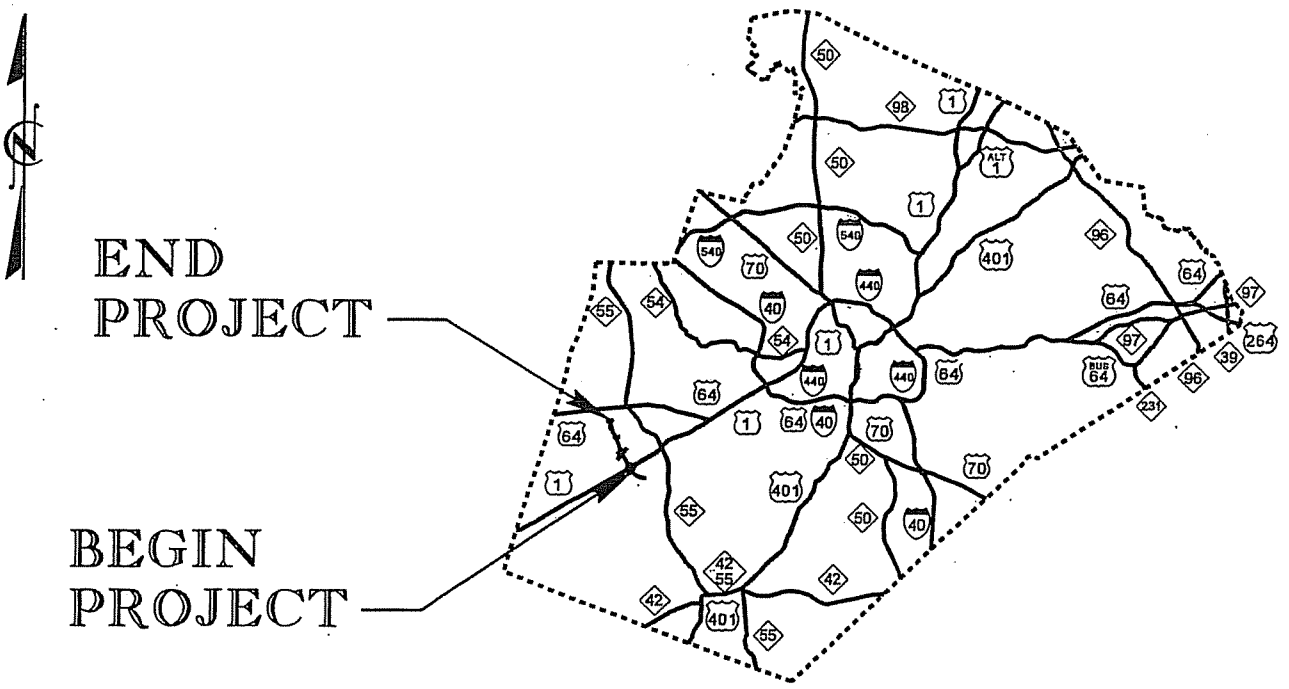
AUG 3 0 2007

RALEIGH REGULATORY FIELD O

NORTH CAROLINA



WAKE COUNTY



VICINITY MAP

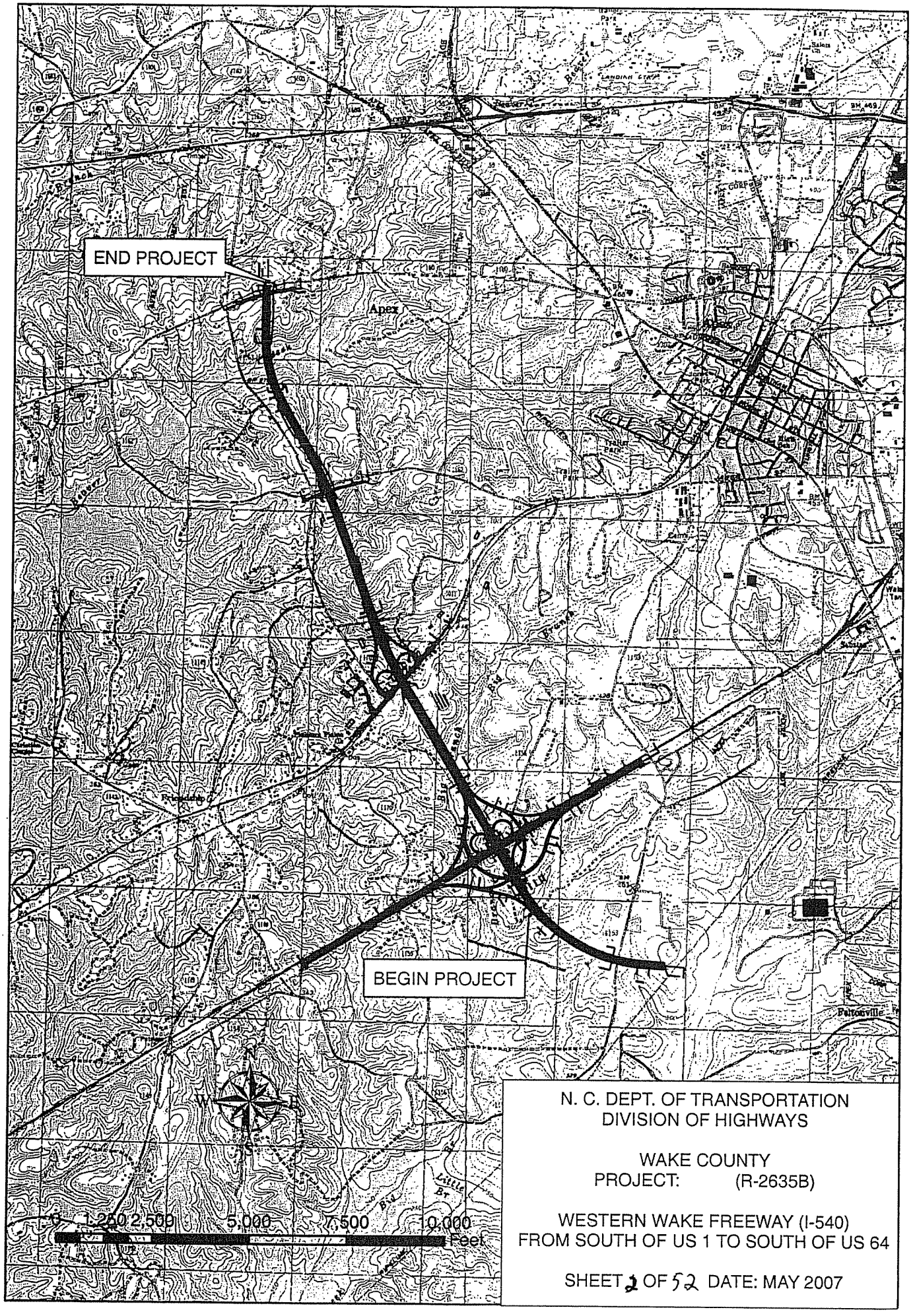
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY

PROJECT: (R-2635B)

WESTERN WAKE FREEWAY (I-540)
FROM SOUTH OF US 1 TO
SOUTH OF US 64

SHEET 1 OF 52 DATE 05/07



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: (R-2635B)

WESTERN WAKE FREEWAY (I-540)
FROM SOUTH OF US 1 TO SOUTH OF US 64

SHEET 1 OF 52 DATE: MAY 2007

WETLAND LEGEND

WLB WETLAND BOUNDARY

WETLAND

F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

P P DENOTES FILL IN SURFACE WATER (POND)

T T DENOTES TEMPORARY FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB TOP OF BANK

WE EDGE OF WATER

C PROP. LIMIT OF CUT

F PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG NATURAL GROUND

PL PROPERTY LINE

TDE TEMP. DRAINAGE EASEMENT

PDE PERMANENT DRAINAGE EASEMENT

EAB EXIST. ENDANGERED ANIMAL BOUNDARY

EPB EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

COIR FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE

LEVEL SPREADER (LS)

DITCH / GRASS SWALE

NCDOT

DIVISION OF HIGHWAYS

WAKE COUNTY

PROJECT: R-2635B

WESTERN WAKE FREEWAY (I 540)
FROM SOUTH OF US 1 TO
SOUTH OF US 64

PROPERTY OWNER

NAME AND ADDRESS

OWNER'S NAME	ADDRESS
SHAYLOR H. DUNCAN JR.	1174-H AIRPORT RD MONTEREY, CA 93940
G.L. WINCHESTER	1103 FOREST HILL DR GREENSBORO, NC 27410
PROGRESSIVE FARMS LLC	11 RANDER CT SMITHFIELD, NC 27577
DON H. EDWARDS	1721 OLD US 1 HWY APEX, NC 27502
LUTHER GLENN CUTHRELL	910 W 2ND ST ROANOKE RAPIDS, NC 27870
NCDOT	
RICHARD PATRICK FAHEY	2517 KELLY RD APEX, NC 27502
JOHN L. HUBISZ JR.	1604 S SALEM ST APEX, NC 27502
CAREY B. HUNTER	1525 S SALEM ST APEX, NC 27502
MARGARET M TRAVIS	1220 KINGSTON RIDGE RD CARY, NC 27511
E.B. TINGEN	APEX, NC 27502
GORDON A. ROSS	1230 E HEDGELAWN WAY SOUTHERN PINES, NC 28387
WAKE COUNTY BOARD OF EDUCATION	1551 ROCK QUARRY RD RALEIGH, NC 27610
HELEN MOORE CASEY	1700 OLIVE CHAPEL RD APEX, NC 27502
HINDES BENNETT DEVELOPMENT CO.	1409 CHAPEL RIDGE RD APEX, NC 27502
BERNARD F. MCLEOD JR.	100 PARK AVE FUQUAY VARINA, NC 27526
BOBBY W. POE	6400 APEX BARBECUE RD APEX, NC 27502

WETLAND & SURFACE WATER

N.C DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: 35520.1.1 (R-2635B)
WESTERN WAKE FREEWAY
(I-540)
FROM SOUTH OF US 1 TO SOUTH OF US 64

 DATE: 05/07

PROPERTY OWNER

NAME AND ADDRESS

OWNER'S NAME	ADDRESS
F.D. PRINCE SR.TRUSTEE	3012 HOLLY SPRINGS RD APEX, NC 27502
MICHAEL A. BIGELOW	608 RIDGELINE DR HURST, TX 76053
ROBERT RUTT	8128 MITCHELL MILL RD ZEBULON, NC 27597
LINWOOD M. COUNCIL	3013 TINGEN RD APEX, NC 27502
ROBERT D. BEREMAN	2900 WOODFIELD DEAD END RD APEX, NC 27502

WETLAND & SURFACE WATER

N.C DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: 35520.1.1 (R-2635B)
WESTERN WAKE FREEWAY
(I-540)
FROM SOUTH OF US 1 TO SOUTH OF US 64

 DATE: 05/07

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing In Wetlands (ac)	Hand Clearing In Wetlands (ac)	Permanent SW Impacts (ac)	Temp. SW Impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	21+40 / 22+50 -FLYOVERBD-		0.4			0.13						
2	23+90 -FLYOVERBD-		0.03									
3	24+24 -FLYOVERBD-									835		
4	18+49 / 19+59 -Y4RPA-		1.02									
5	11+92 / 16+43 -Y4RPA-		2.7									
7	144+87 -L-									1148		
8	62+88 / 65+20 -FLYOVERBD-							1.12				
9	166+50 / 168+44 -L-		0.23			0.03						
10	171+35 -L-									642		
10A	173+00 -L-									266		
11	LT OF 174+00 -L-		0.06			0.06						
12	196+83 / 198+83 -L-							0.93				
13	RT OF 198+00 -L-							0.12				
14	17+61 / 20+08 -Y5RPD-							1.04				
15	RT OF 206+00 -L-									119		
16	207+40 -L-									431		
17	LT OF 214+00 -L-		0.01			0.03						
18	LT OF 234+50 -L-		0.02			0.04						
19	235+80 / 237+40 -L-		1.04			0.19				21		
20	RT OF 241+00 -L-		0.1			0.01						
21	253+60 / 256+05 -L-		0.4			0.15						
22	252+44 / 260+54 -L-									935		
TOTALS:			6.01	0	0	0.64	0.00	3.21	0	4397	0	0

Form Revised 3/22/01

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT 35520.1.1 (R-2635B)
WESTERN WAKE FREEWAY (I-540)
FROM SOUTH OF US 1 TO SOUTH OF US 64

5/2/2007

WETLAND PERMIT IMPACT SUMMARY

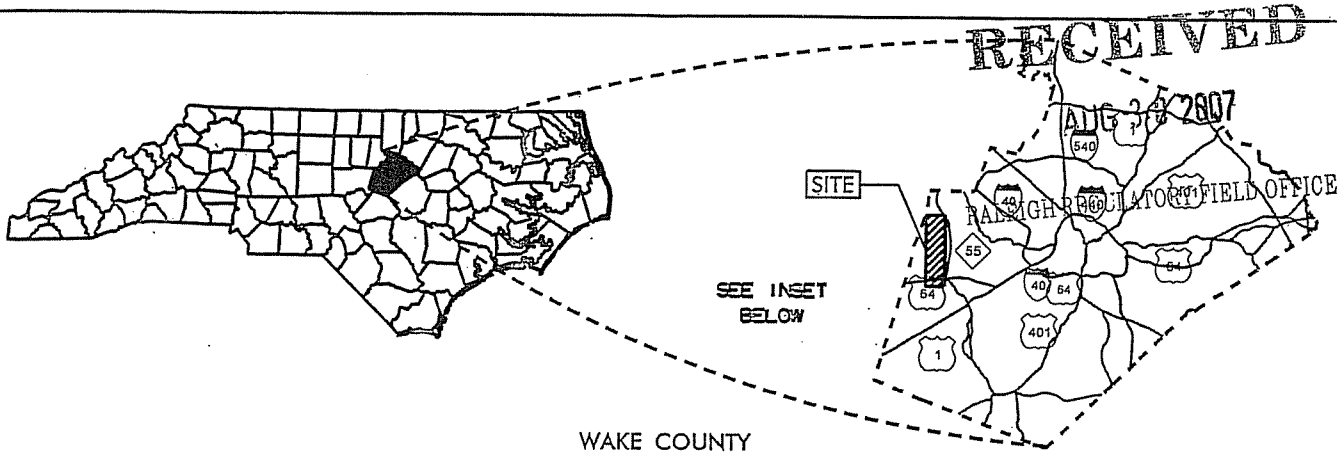
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing In Wetlands (ac)	Hand Clearing In Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW Impacts (ac)	Temp. SW Impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
23	- 264+54 -L-									541		
24	LT OF 262+33 -L-		0.05			0.01						
25	RT OF 266+50 -L-		0.002			0.01						
26	277+30 / 281+00 -L-						1.50					
28	282+20 / 286+75 -L-						1.56					
29	LT OF 298+50		0.18									
30	21+47 / 23+57 -Y4-									282		
31	21+50 / 21+79 -Y4RPD-		0.07			0.03						
32	RT OF 87+35 -Y4-		0.01			0.02						
33	LT OF 89+95 -Y4-		0.003			0.03						
34	RT OF 93+50 -Y4-		0.01			0.04						
35	146+27 -L-									124		
TOTALS:			0.33	0	0	0.14	3.06	0	0	947	0	0
TOTALS FOR PROJECT:			6.34	0	0	0.78	3.06	3.21	0	5344	0	0

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT 35520.1.1 (R-2635B)
WESTERN WAKE FREEWAY (I-540)
FROM SOUTH OF US 1 TO SOUTH OF US 64

5/2/2007

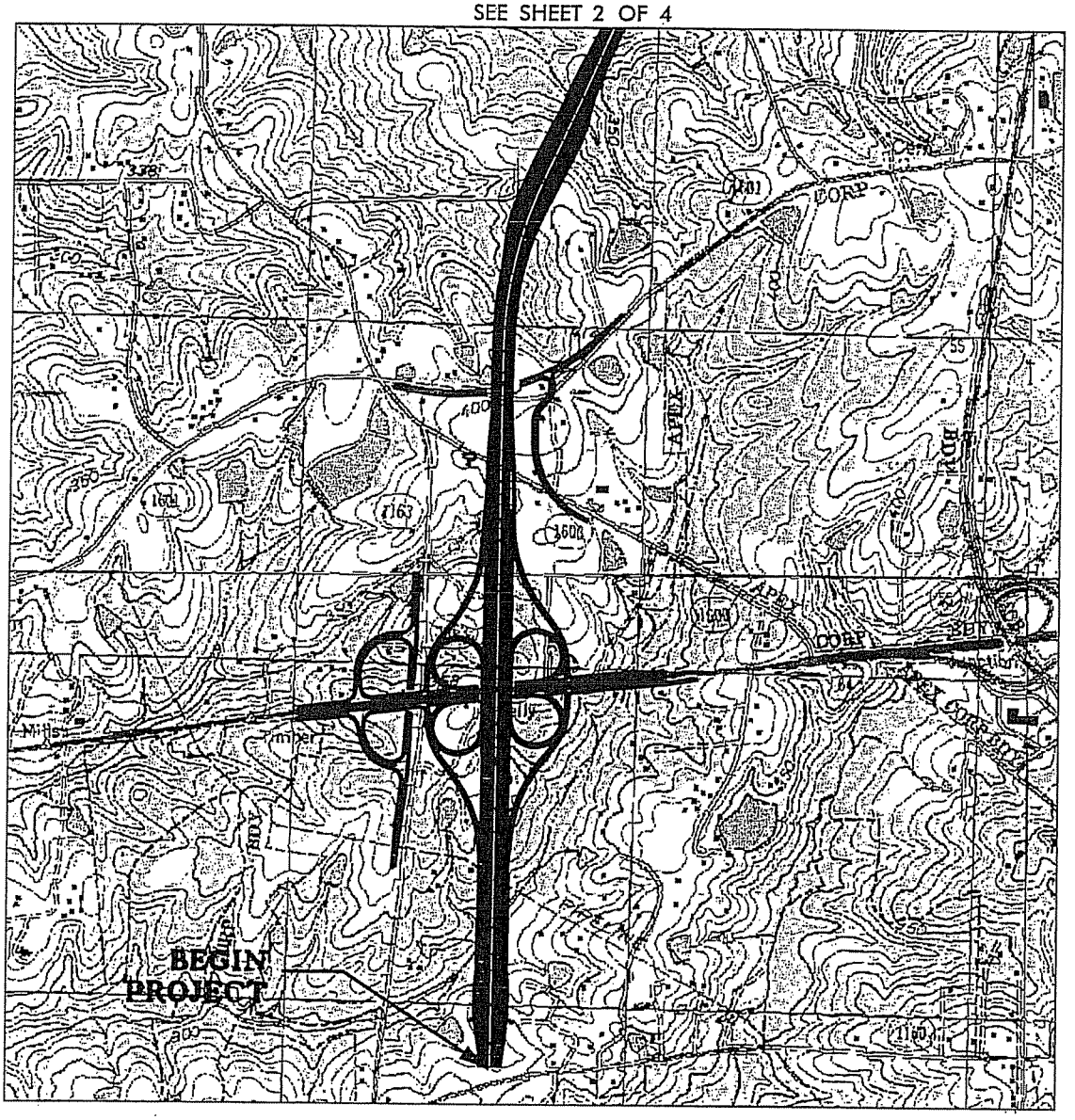
Form Revised 3/22/01

RECEIVED
AUG 2 6 2007
RALEIGH REGULATORY FIELD OFFICE



WAKE COUNTY

SEE SHEET 2 OF 4

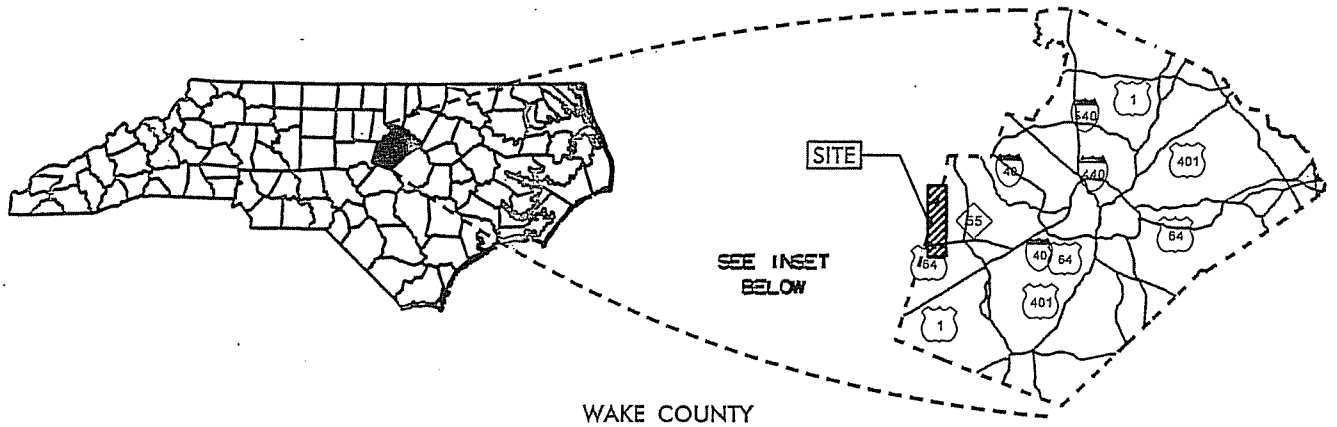


WETLAND IMPACTS
VICINITY MAP
SHEET 1 OF 4

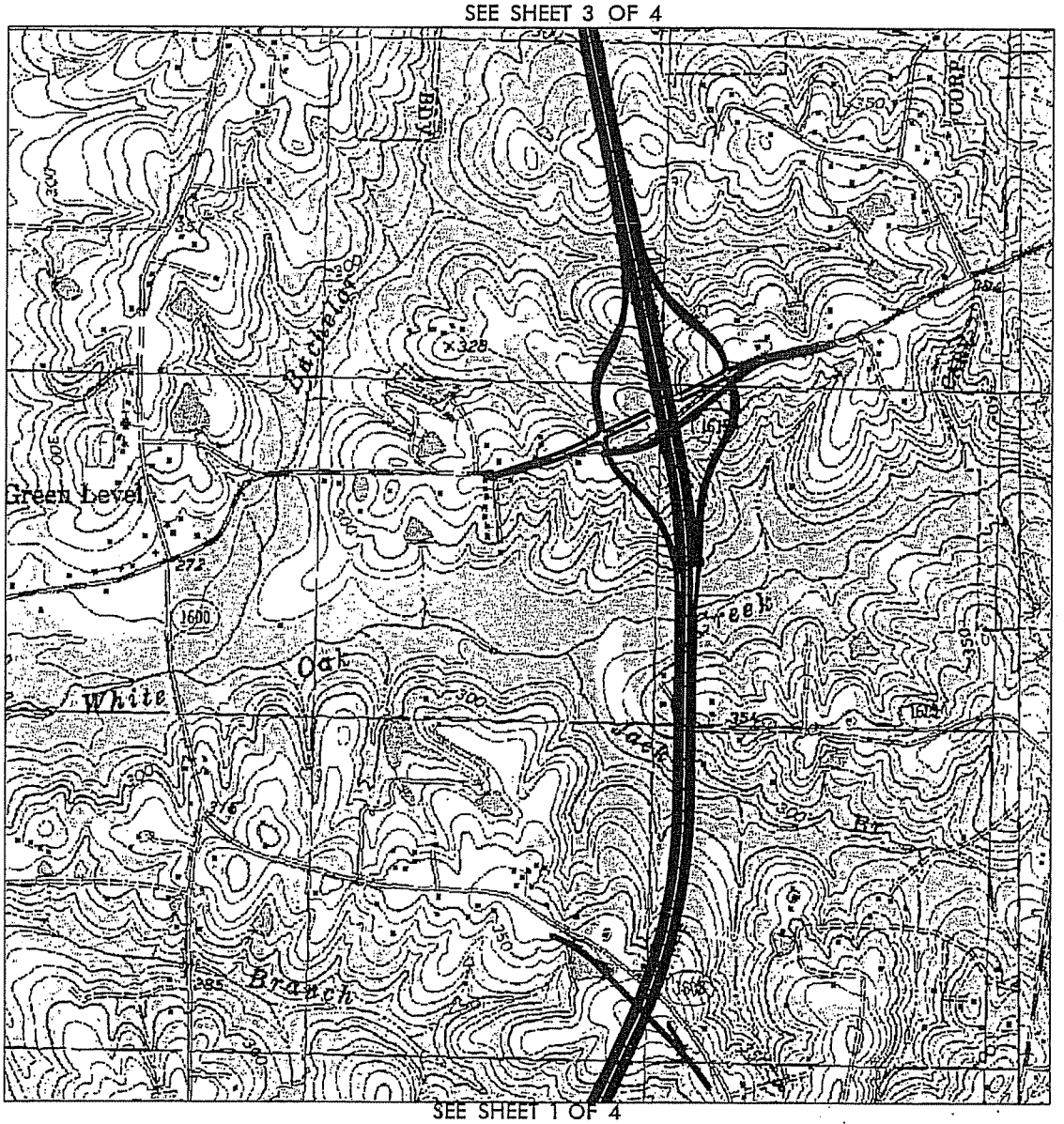
N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT:35520.1.1 (R-2635C)
WESTERN WAKE PARKWAY
(I-540) FROM SOUTH OF
US 64 TO NC 55

SHEET 1 **OF** 10S **5/30/07**



SEE SHEET 3 OF 4



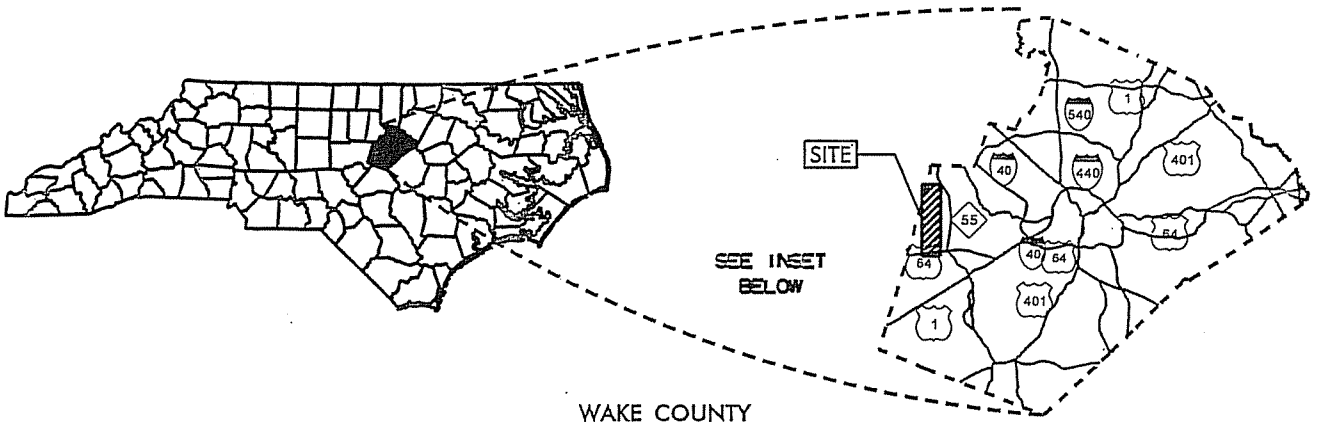
SEE SHEET 1 OF 4

WETLAND IMPACTS
VICINITY MAP
SHEET 2 OF 4

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

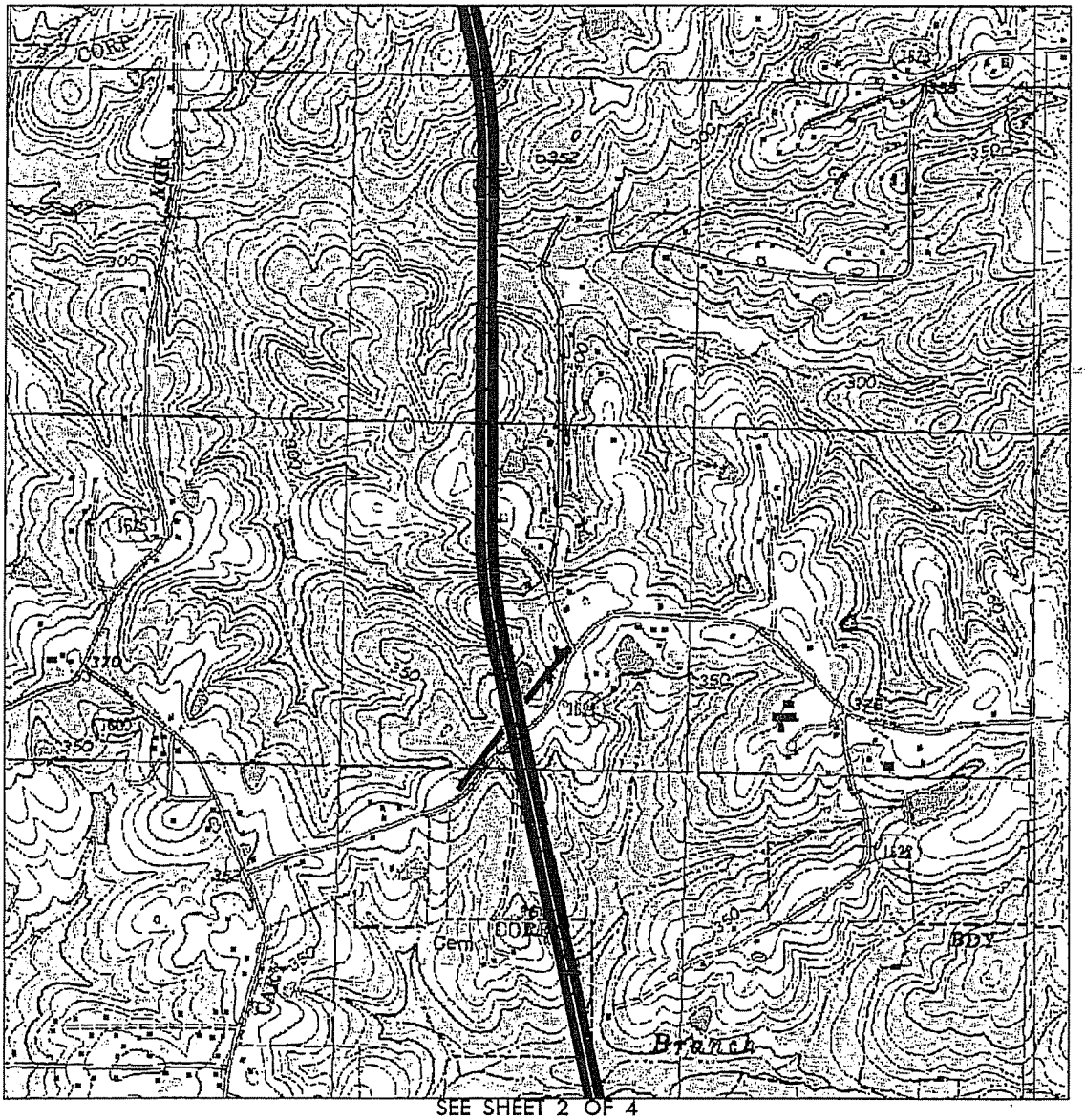
WAKE COUNTY
PROJECT: 35520.1.1 (R-2635C)
WESTERN WAKE PARKWAY
(I-540) FROM SOUTH OF
US 64 TO NC 55

SHEET 2 **OF** 108 **5/30/07**



WAKE COUNTY

SEE SHEET 4 OF 4



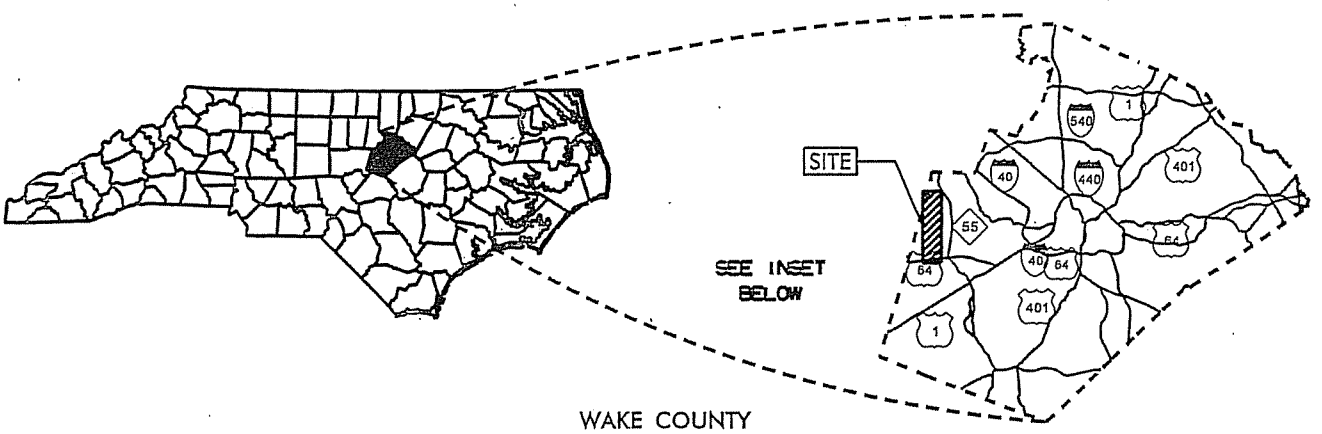
SEE SHEET 2 OF 4

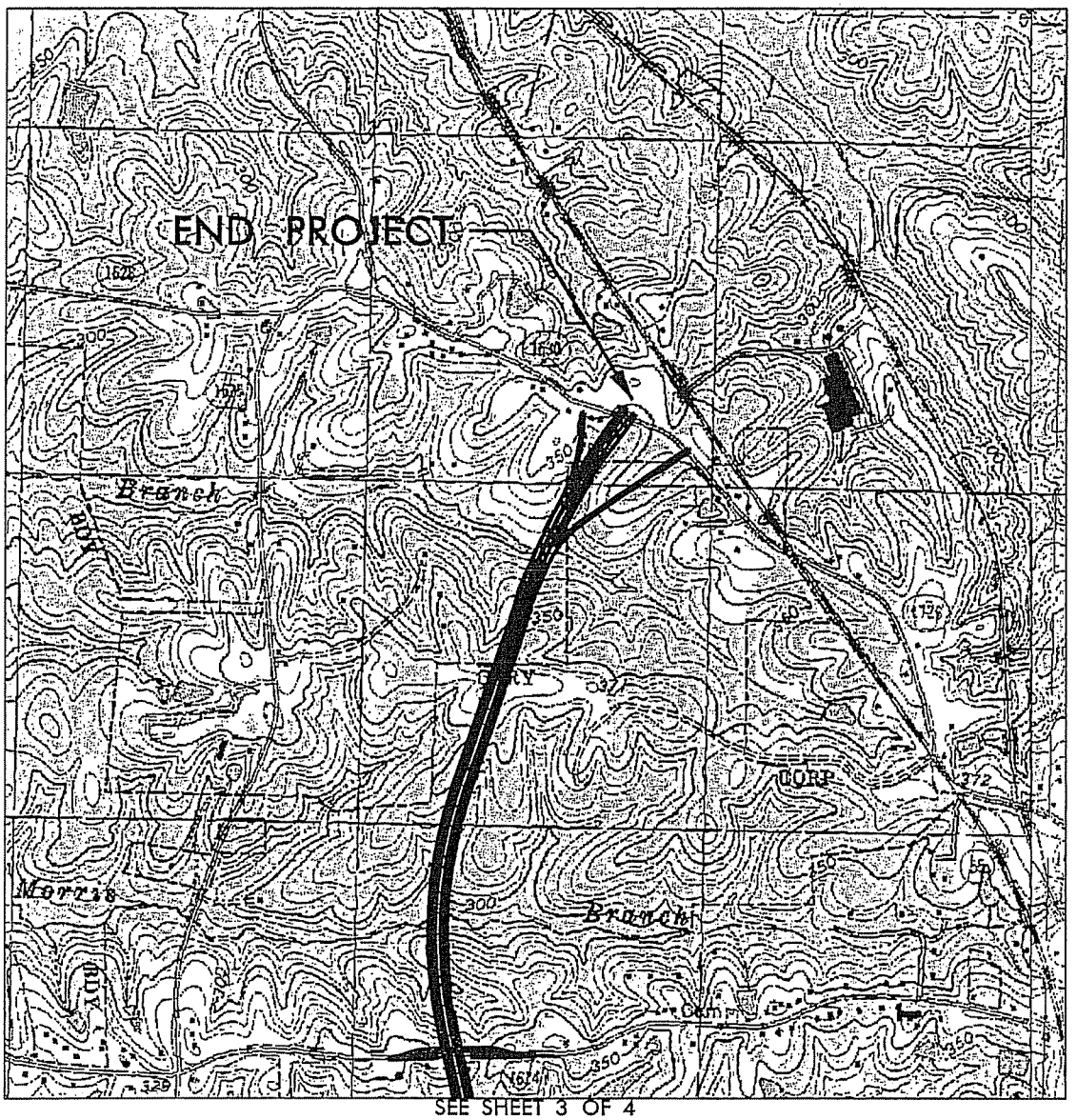
WETLAND IMPACTS
VICINITY MAP
SHEET 3 OF 4

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT:35520.1.1 (R-2635C)
WESTERN WAKE PARKWAY
(I-540) FROM SOUTH OF
US 64 TO NC 55

SHEET 3 **OF** 108 **5/30/07**





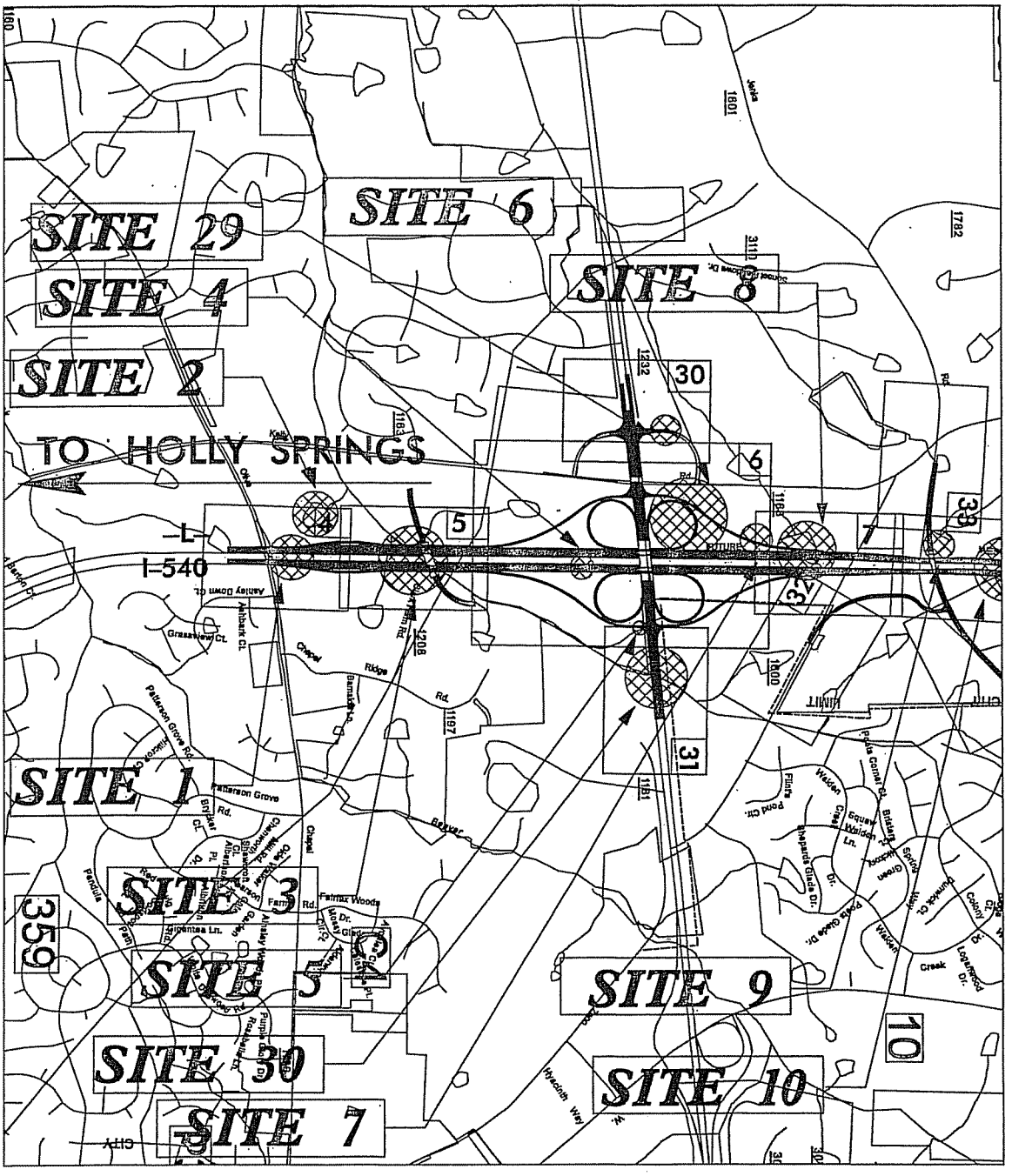
WETLAND IMPACTS
VICINITY MAP
SHEET 4 OF 4

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT:35520.1.1 (R-2635C)
WESTERN WAKE PARKWAY
(I-540) FROM SOUTH OF
US 64 TO NC 55

SHEET 4 **OF** 108 **5/30/07**

WAKE COUNTY



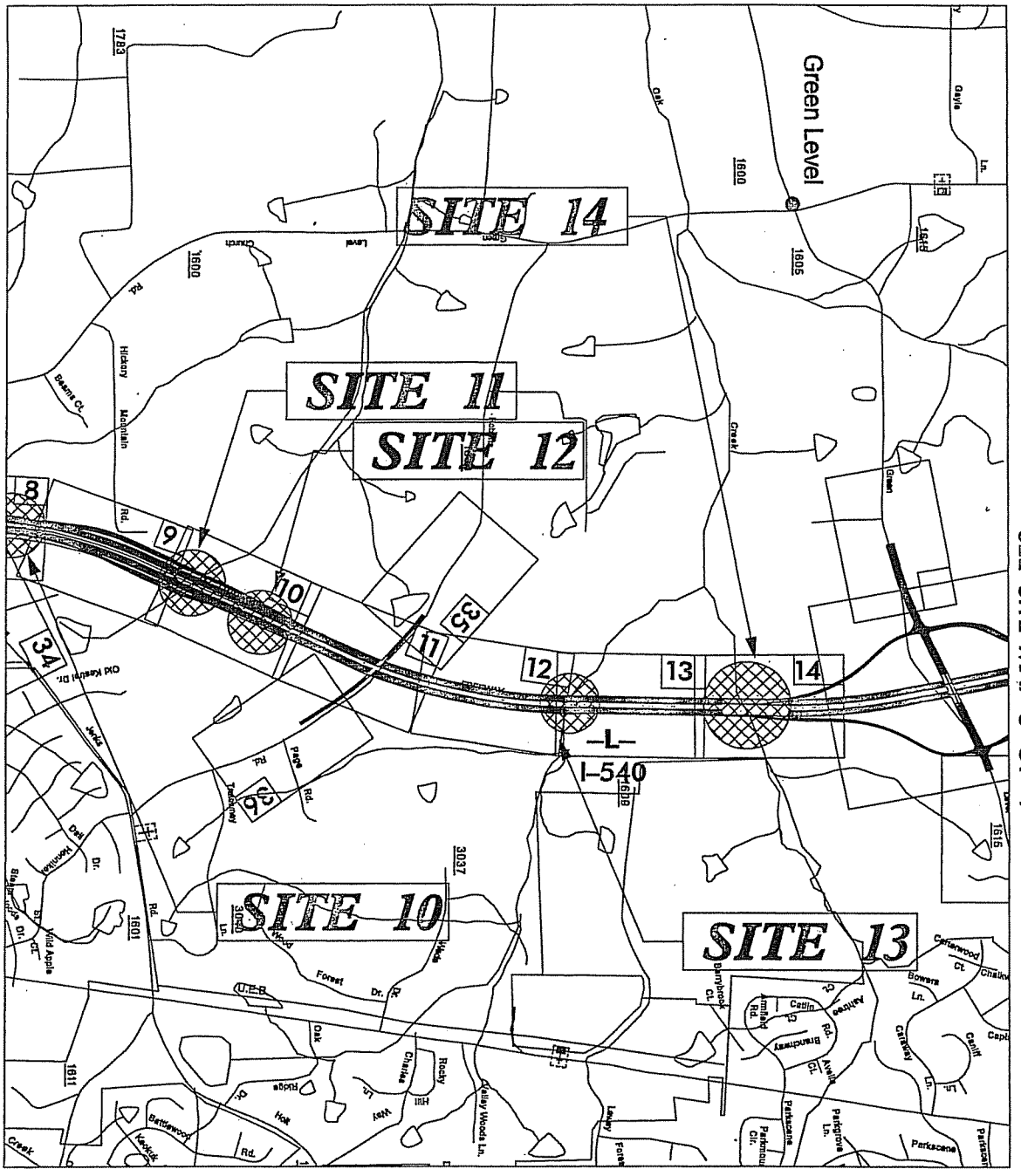
SITE MAP
1 OF 4

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT:35520.1.1 (R-2635C)
WESTERN WAKE PARKWAY
(I-540) FROM SOUTH OF
US 64 TO NC 55

SHEET 5 OF 108 6/6/07

WAKE COUNTY



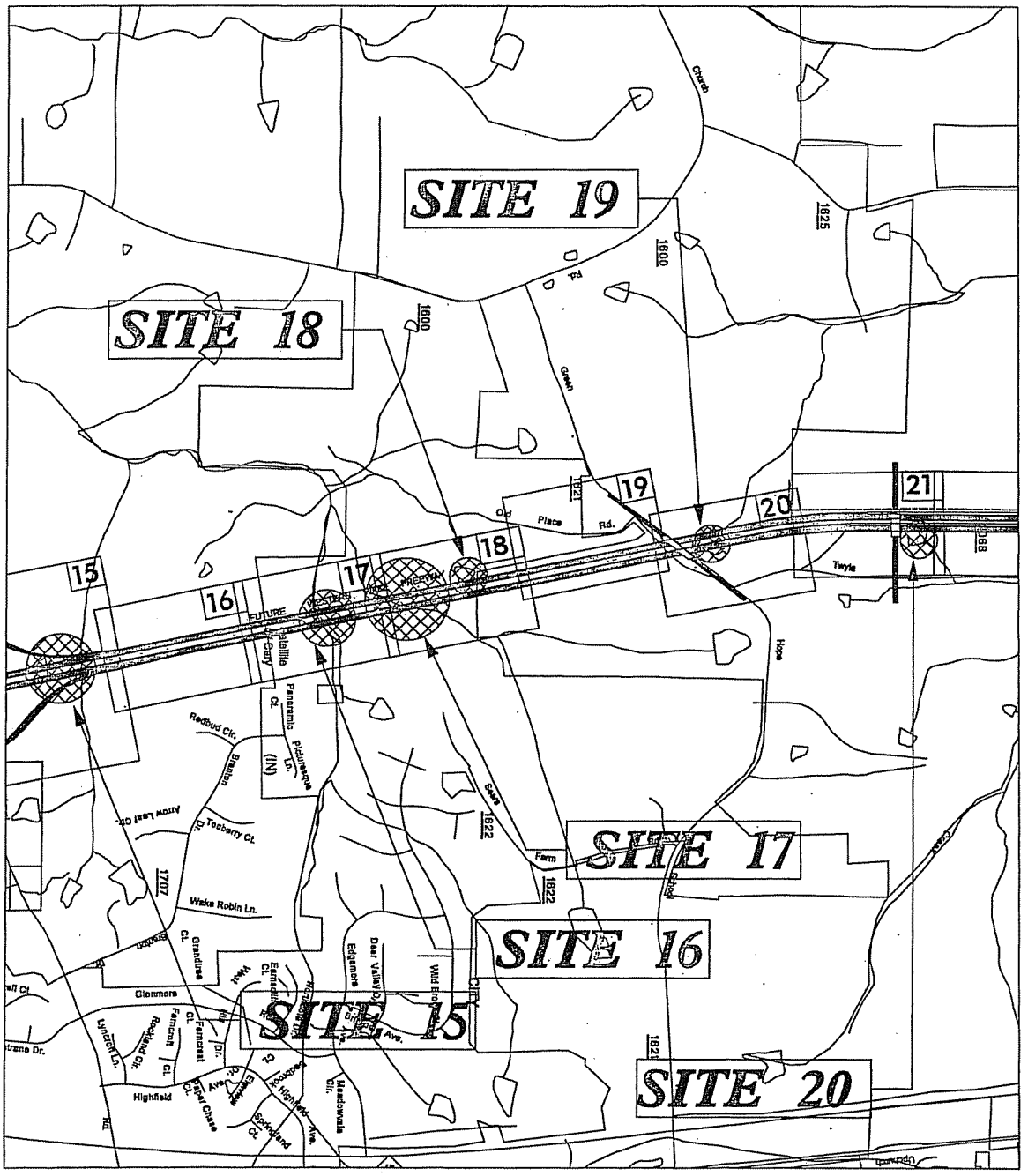
SITE MAP
2 OF 4

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT:35520.1.1 (R-2635C)
WESTERN WAKE PARKWAY
(I-540) FROM SOUTH OF
US 64 TO NC 55

SHEET 6 OF 108 6/6/07

WAKE COUNTY



SITE MAP
3 OF 4

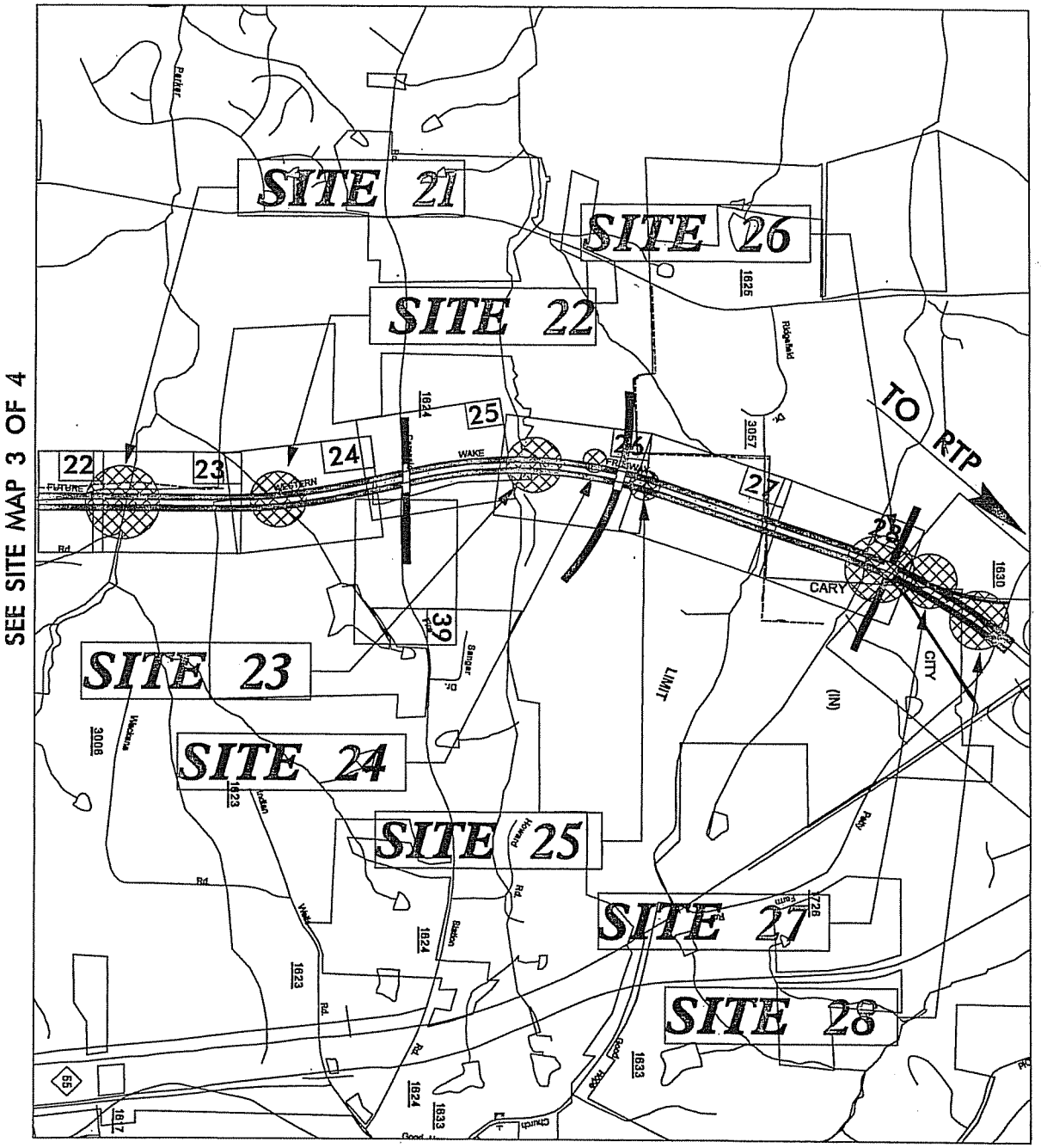
N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT:35520.1.1 (R-2635C)
WESTERN WAKE PARKWAY
(I-540) FROM SOUTH OF
US 64 TO NC 55

SHEET 7 OF 108

6/6/07

WAKE COUNTY



SITE MAP
4 OF 4

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT:35520.1.1 (R-2635C)
WESTERN WAKE PARKWAY
(I-540) FROM SOUTH OF
US 64 TO NC 55

SHEET 8 OF 108 6/6/07

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
2	John A. Roccoforte	1517 Clark Farm Rd. Apex, NC 27502
5	Ronald B. Rose	P.O. Box 767 Apex, NC 27502
6	Thomas E. Whittlesey	1313 Kelly Rd. Apex, NC 27502
7	Grayson G. Kelley	1309 Kelly Rd. Apex, NC 27502
8	Terri Berri Waldron	1200 Chapel Ridge Rd. Apex, NC 27502
11	Hyck Associates	2432 Zeno Rd. Apex, NC 27502
17	William S. Robinson	1136 Kelly Rd. Apex, NC 27502
20	Andrew J. Gregory	1810 Chester Rd. Raleigh, NC 27608
22	Raeford Carl Morris	7129 Green Level Church Rd. Apex, NC 27523
23	William C. Mills Jr.	7001 Green Level Church Rd. Apex, NC 27523
25, 63, 79, 87, 94, 107, 110 114, 128, 135, 137, 165	NCDOT	
26	Jerry B. Lewter	1309 Kelly Rd. Apex, NC 27502
45	Edson R. Mckinney	111 Windrock Ln. Cary, NC 27511
47	John T. Shehan	7305 Green Level Church Rd. Apex, NC 27502

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: R-2635C

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
53	Dwight Douglas Morris	7409 Jenks Rd. Apex, NC 27523
54	David H. Morris	7409 Jenks Rd. Apex, NC 27523
55	Marie H. Morris	7409 Jenks Rd. Apex, NC 27523
61	Bobby Lee Womble	9529 Lee Yancey Rd. Bullock, NC 27507
78	Judith H. Stewart	7129 Turner Creek Rd. Cary, NC 27519
81	Victor M. Chen	P.O. Box 324 Creedmoor, NC 27522
86	George M. Beavers Jr.	2912 Green Level Road Cary, NC 27519
99	Highcroft Investors LLC	P.O. Box 3557 Cary, NC 27519
100	Helen Moore Casey	1700 Olive Chapel Road Apex, NC 27502
101	Hindes Bennett Development Co.	1409 Chapel Ridge Road Apex, NC 27502
101	Town of Cary	P.O. Box 8005 Cary, NC 27512
109	Thelma B. Hallock Heirs C/O Ed Stallings	P.O. Box 1614 Pittsboro, NC 27312
126	John Larkin Smith Sr.	7437 Carpenter Fire Station Rd. Morrisville, NC 27560
127	Jihad L. Libbus C/O H&M Diversified Investments	2515 Fairview Rd. Raleigh, NC 27608

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: R-2635C

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
132	Panther Creek Raleigh Limited Partnership	190 Finley Golf Course Rd. Chapel Hill, NC 27514
133	John Larkin Farm Limited Partnership Smith I	7437 Carpenter Fire Station Rd. Morrisville, NC 27560
134	Panther Creek Raleigh Limited Partnership	190 Finley Golf Course Rd. Chapel Hill, NC 27514

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: R-2635C

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	305+11/306+07 L	N/A			0.77			0.01		128		
2	308+00 -L- LT	EXISTING POND						1.11				
3	317+00 -L-	2 @ 9' X 8' RCBC	0.95		0.34	0.22		0.19	0.01	1411	80	640
4	335+00 -l-	N/A			0.13							
5	23+00 RP1C	N/A			0.06							
6	20+20 RP1A	N/A			0.82							
7	12+00 RP1A	N/A			0.23							
8	15+00 TOLLCD2	N/A			0.33	0.02		1.55				
9	19+00 Y11	N/A						0.69				
10	377+00 -L-	36"/30" RCP			0.36			0.03	0.00	541	20	
11	397+55 -L-	60" RCP						0.03	0.00	504	35	
12	405+00 -L-	54" RCP	0.32			0.04		0.04	0.00	538	15	
13	438+00 -L-	BRIDGE	0.79		0.01	0.19	0.50					
14	455+00 -L-	BRIDGE					2.16	0.20				
*15	491+44 -L-	8' X 6' RCBC / 72" RCP	0.16			0.06		0.66	0.00	667	10	
16	515+00 -L-	2 @ 11' X 11' RCBC	0.47			0.03		0.14	0.02	498	48	
17	522+00 -L-	3 @ 8' X 6' RCBC	1.42		0.04	0.14		0.07	0.01	547	65	
18	530+00 -L- LT	N/A						0.58				
*19	554+00 -L-	N/A						1.17		143		
20	575+00 -L-	N/A						0.91				
21	595+00 -L-	BRIDGE	1.79			0.27	0.58					
22	609+50 -L-	60" RCP						0.09	0.01	473	40	
22A	630+00 -L-	42" RCP						0.01	0.00	52	20	
TOTALS:			5.90	0.00	3.09	0.97	3.24	7.48	0.05	5502	333	640

* Of Total Surface Water Impacts, the ponds at Sites 15 and 19 account for 0.61 and 1.16 acres, respectively.

REV 4/17/07 - Updated Site 19 and added Site 22A
REV 5/30/07 - Updated per comments from 4C Meeting

All area quantities of 0.00 are less than 0.01 acres
Rev 6/14/07 - Updated per comments by NEU

ATN Revised 3/31/05

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: 35520.1.1 (R-2635C)

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
23	635+22 -L-	2 @ 10' X 8'						0.17	0.02	546	50	
24	642+00 -L- LT	36" RCP						0.01	0.00	172	25	
25	647+58 -L-	N/A			0.14							
26	673+00 -L-	BRIDGE		0.04			0.29	0.03		362		
27	9+00 RP3B	N/A	0.58									
28	683+00 -L-	N/A	0.58									
29	12+40 PRY18A	48" RCP						0.02	0.00	232	14	
29A	11+60 -Y8-	EX 36" RCP							0.00		30	
30	42+00 -Y8-	EX 8' X 6' RCBC						0.03	0.01	117	40	
TOTALS:			7.06	0.04	3.23	0.97	3.53	7.74	0.08	6931	492	640

REV 4/17/07 - Updated Site 19 and added Site 22A
REV 5/30/07 - Updated per comments from 4C Meeting

All area quantities of 0.00 are less than 0.01 acres
6/14/07 - Updated per comments by NEU

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: 35520.1.1 (R-2635C)

SHEET 13 of 108

REV 6/07

ATN Revised 3/31/05

5/14/99

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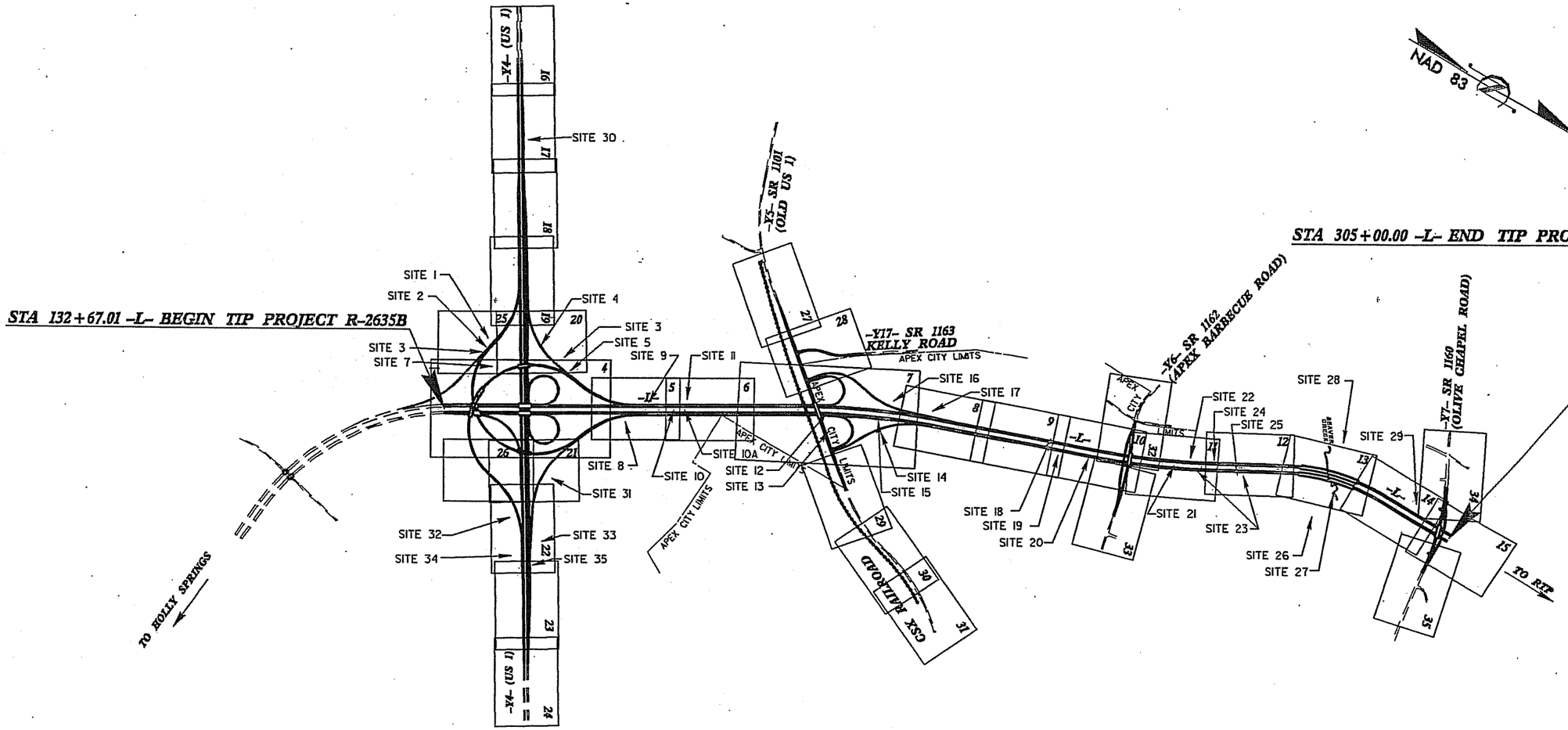
RALEIGH REGULATORY FIELD OFFICE

Permit Drawing
Sheet 8 of 52

SITE MAP



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: (R-2635B)

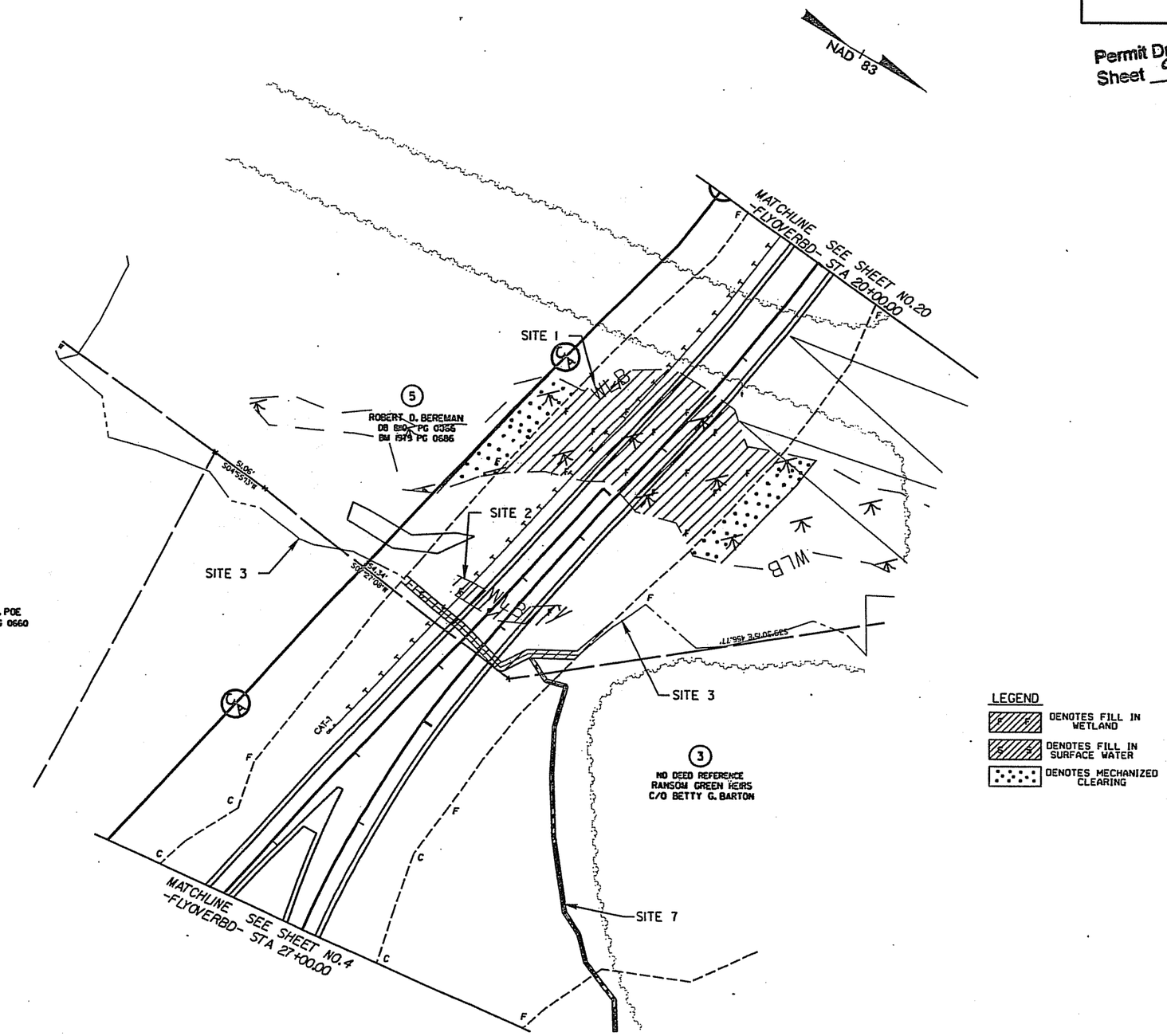
WESTERN WAKE FREEWAY (I-540)
FROM SOUTH OF US 1 TO
SOUTH OF US 64
SHEET 8 OF 52 DATE

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 9 of 52



FOR -Y4RPB- PROFILE SEE SHEET NO.54
FOR -FLYOVERBD- PROFILE SEE SHEET NO.50-51

REVISIONS

8/17/99

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

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 10 of 52

LEGEND

- DENOTES FILL IN WETLAND
- DENOTES FILL IN SURFACE WATER
- DENOTES MECHANIZED CLEARING

FOR -Y4RPB- PROFILE SEE SHEET NO.54
FOR -FLYOVERBD- PROFILE SEE SHEET NO.50-51

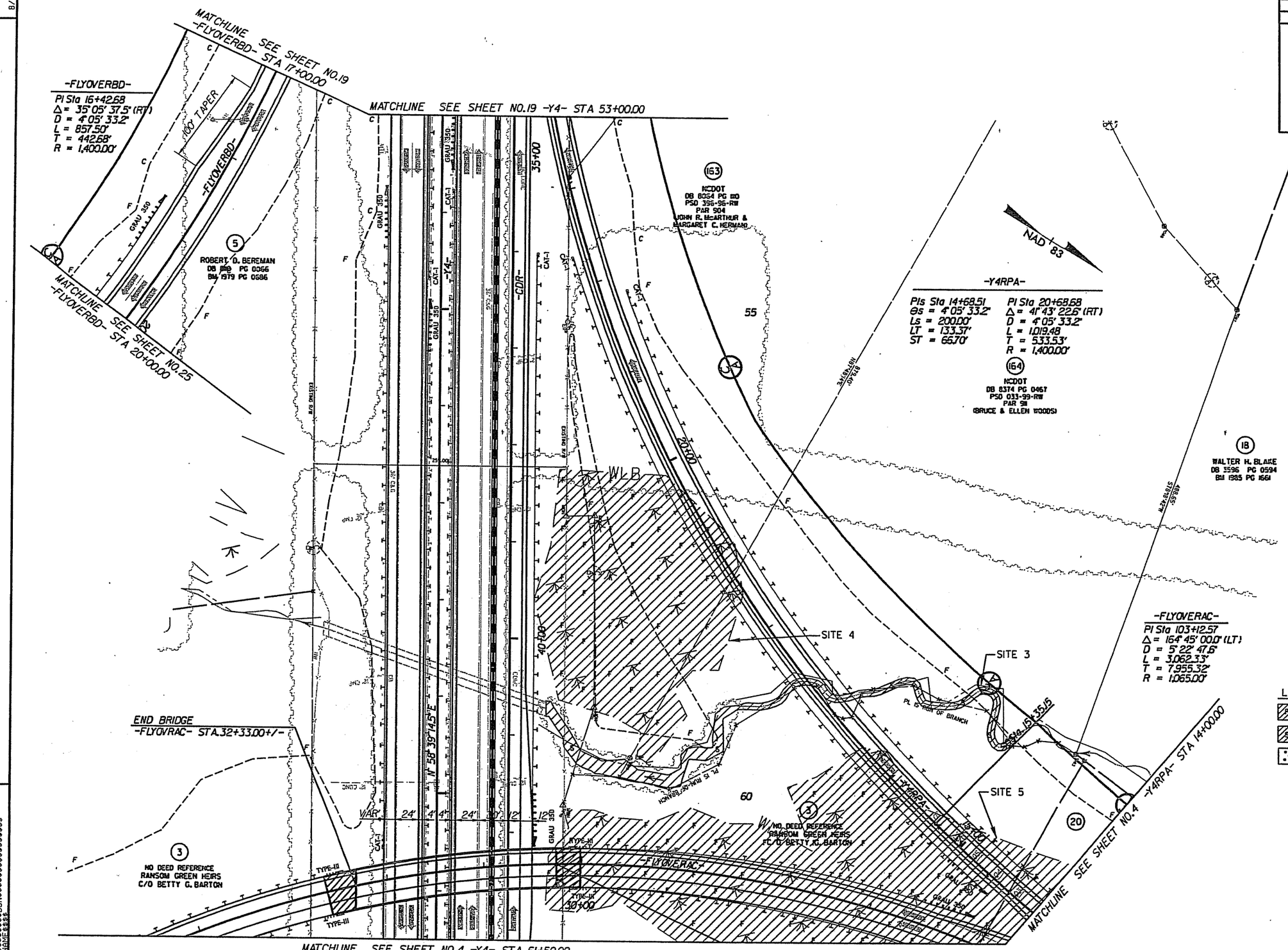
$$$$SYSTIME$$$$
$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 11 of 52



LEGEND

- DENOTES FILL IN WETLAND
- DENOTES FILL IN SURFACE WATER
- DENOTES MECHANIZED CLEARING

FOR -Y4- PROFILE SEE SHEET NO.44
FOR -FLYOVERBD- PROFILE SEE SHEET NO.50
FOR -FLYOVERAC- PROFILE SEE SHEET NO.48
FOR -Y4RPA- PROFILE SEE SHEET NO.53

REVISIONS

8/17/99

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 12 of 52

REVISIONS

LEGEND

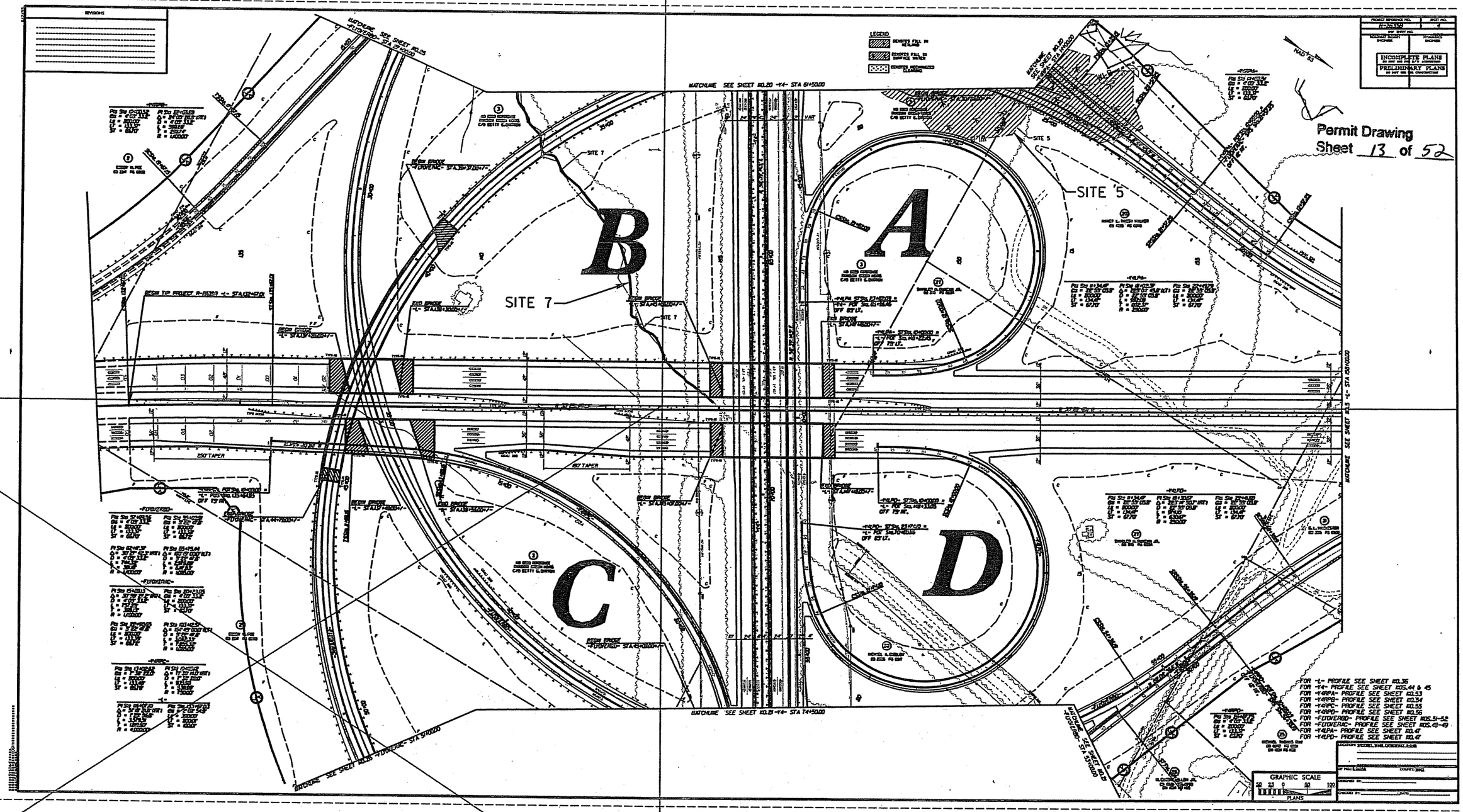
- DENOTES FILL IN WETLAND
- DENOTES FILL IN SURFACE WATER
- DENOTES MECHANIZED CLEARING

FOR -Y4- PROFILE SEE SHEET NO.44
FOR -FLYOVERBD- PROFILE SEE SHEET NO.50
FOR -FLYOVERAC- PROFILE SEE SHEET NO.48
FOR -Y4RPA- PROFILE SEE SHEET NO.53

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

SHEET 4A

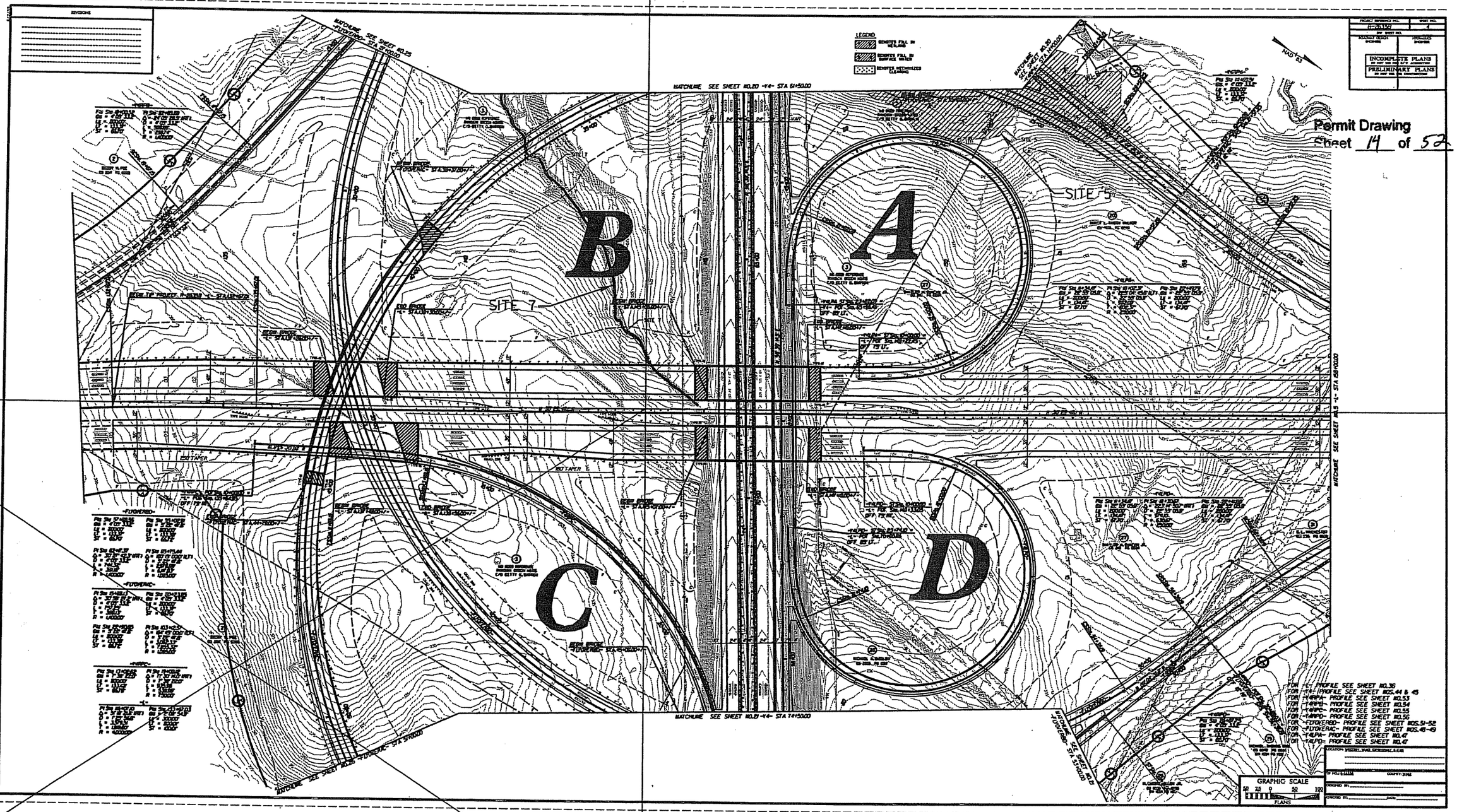
SHEET 4B



SHEET 4C

SHEET 4A

SHEET 4B



Permit Drawing
Sheet 14 of 52

SHEET 4C

SHEET 4A

Permit Drawing
Sheet 15 of 52

6/2/99

REVISIONS

MATCHLINE SEE SHEET NO. 25
-FLYOVERBD- STA 27+00.00

-Y4RPB-

PIs Sta 19+00.52	PI Sta 22+65.89
θs = 4° 05' 33.2"	Δ = 24° 05' 28.5" (RT)
Ls = 200.00'	D = 4° 05' 33.2"
LT = 133.37'	L = 588.65'
ST = 65.70'	T = 298.74'
	R = 1,400.00'

TSSta. 17+87.15

SCSta. 19+67.15

SCSta. 21+55.80

CSSta. 132+67.01

STSta. 135+67.01

(2) BOBBY W. POE
DB 2517 PG 0660

(3) NO DEED REFERENCE
RANSOM GREEN HEIRS
C/O BETTY G. BARTON

SITE 7

BEGIN BRIDGE
-FLYOVERAC- STA. 39+37.00+/-

BEGIN TIP PROJECT R-2635B -L- STA.132+67.01

BEGIN BRIDGE
-L- STA.137+26.00+/-

END BRIDGE
-L- STA.138+30.00+/-

BEGIN BRIDG
-L- STA.145

15+00
20+00
30+00
35+00
40+00

135
140

TYPE-III

12'
48'
24'
12'
05
04
03
02
01
00
01
02

B

SHEET 4A

Permit Drawing
Sheet 16 of 52

6/2/99

REVISIONS

MATCHLINE SEE SHEET NO. 25
-FLYOVERBD- STA 27+00.00

-YARPB-
Pls Sta 19+00.52
θs = 4°05'33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

PI Sta 22+65.89
Δ = 24°05'28.5" (RT)
D = 4°05'33.2"
L = 588.56'
T = 298.74'
R = 1,400.00'

-YARPB-

BOBBY W. POE
DB 2517 PG 0660

NO DEED REFERENCE
RANSOM GREEN HEIRS
E/O BETTY G. BARTON

SITE 7

BEGIN BRIDGE
-FLYOVERAC- STA 39+37.00+/-

END BRIDGE
-L- STA 138+30.00+/-

BEGIN TIP PROJECT R-2635B -L- STA 132+67.01

BEGIN BRIDGE
-L- STA 137+26.00+/-

BEGIN BRIDGE
-L- STA 145

B

SHEET 4B

Permit Drawing
Sheet 17 of 52

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEGEND
- DENOTES FILL IN WETLAND
- DENOTES FILL IN SURFACE WATER
- DENOTES MECHANIZED CLEARING

MATCHLINE SEE SHEET NO.20 -Y4- STA 61+50.00

MATCHLINE SEE SHEET NO.20 -Y4RPA- STA 14+00.00

BEGIN BRIDGE -FLYOVER- STA 30+26.00+/-

NO DEED REFERENCE
RANSOM GREEN HEIRS
C/O BETTY G. BARTON

SITE 5

A

-Y4LPA

-Y4RPA-
Pls Sta 14+68.51
Θs = 4° 05' 33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

-Y4RPA- POT Sta. 10+00.00 = -FLYOVER- SRS Sta. 21+57.25 OFF 12 Rt.

NAD '83

CSSta. 21+82.09

SRSSta. 21+57.25

CSSta. 19+57.25

-Y4LPA ST Sta. 23+82.09 = -Y4- POT Sta. 65+95.46 OFF 85' LT.

END BRIDGE -L- STA 147+16.00+/-

-Y4LPA- ST Sta. 10+00.00 = -L- POT Sta. 148+22.45 OFF 75' LT.

-Y4LPA-

Pls Sta 11+34.47	Pl Sta 18+02.37	Pls Sta 22+49.79
Θs = 22° 55' 05.9"	Δ = 225° 04' 45.6" (LT)	Θs = 22° 55' 05.9"
Ls = 200.00'	D = 22° 55' 05.9"	Ls = 200.00'
LT = 134.47'	L = 982.09	LT = 134.47'
ST = 67.70'	T = 602.37'	ST = 67.70'
	R = 250.00'	

(3) NO DEED REFERENCE RANSOM GREEN HEIRS C/O BETTY G. BARTON

(27) SHAYLOR H. DURHAM JR. DB 280 PG 0204

(20) NANCY L. TINGEN WALKER DB 4285 PG 0240

-L- STA 158+00.00

SHEET 4B

Permit Drawing
Sheet 18 of 52

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEGEND
- DENOTES FILL IN WETLAND
- DENOTES FILL IN SURFACE WATER
- DENOTES MECHANIZED CLEARING

NAD 83

MATCHLINE SEE SHEET NO.20 -Y4- STA 61+50.00

MATCHLINE SEE SHEET NO.20 -Y4RPA- STA 14+00.00

BEGIN BRIDGE FLYOVER -L- STA 30+26.00 +/-

END BRIDGE -L- STA 147+16.00 +/-

SITE 5

-Y4RPA-
Pls Sta 14+68.51
Θs = 4°05'33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

-Y4RPA- POT Sta 10+00.00 FLYOVER -SR3- Sta 21+57.25 OFF 12 RT.

-Y4LPA- ST Sta. 23+82.09 = -Y4- POT Sta. 65+96.46' OFF 85' LT.

-Y4LPA- ST Sta. 10+00.00 = -L- POT Sta. 148+22.45 OFF 75' LT.

-Y4LPA-

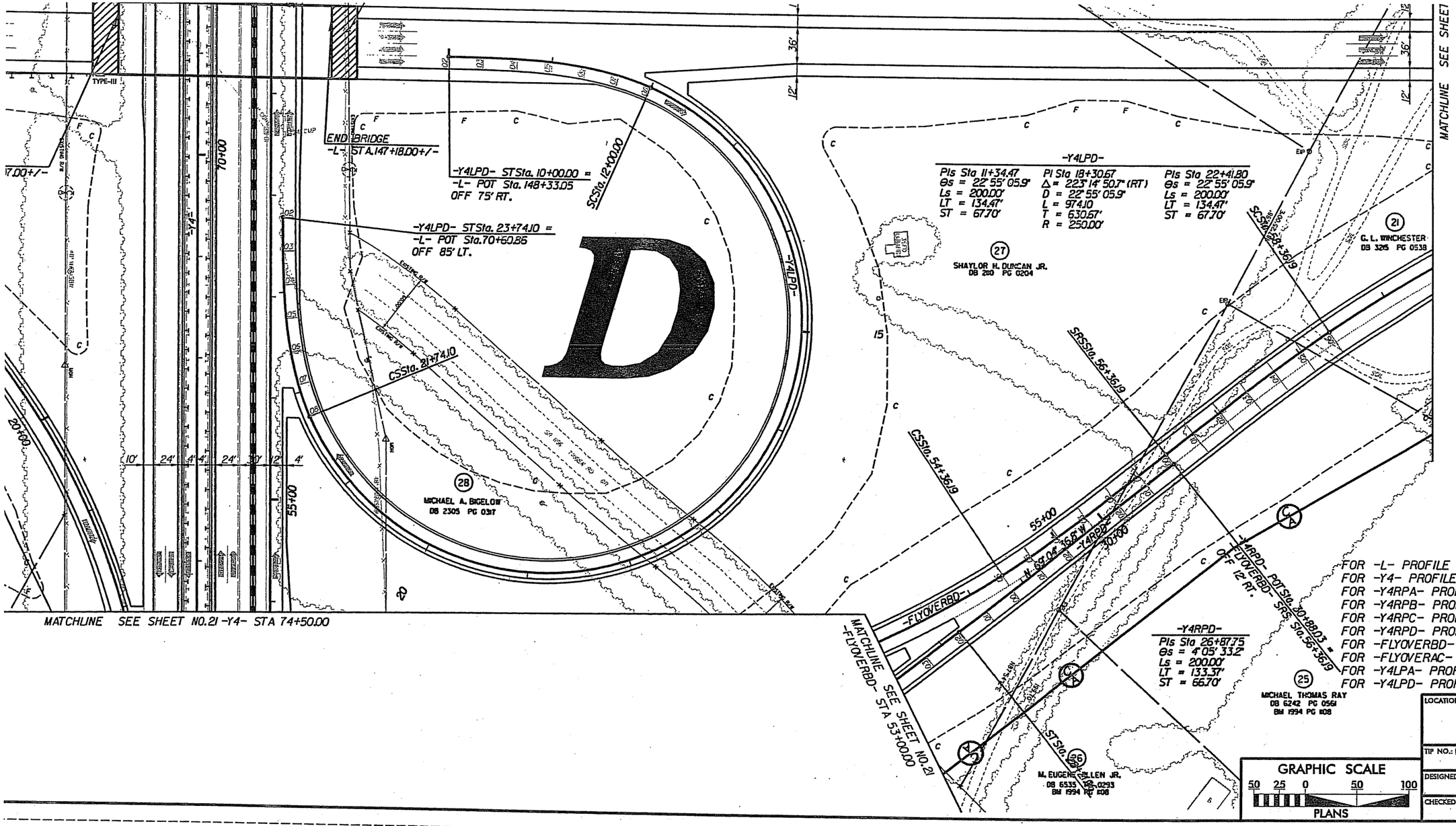
Pls Sta 11+34.47	Pl Sta 18+02.37	Pls Sta 22+49.79
Θs = 22°55'05.9"	Δ = 225°04'45.6" (LT)	Θs = 22°55'05.9"
Ls = 200.00'	D = 22°55'05.9"	Ls = 200.00'
LT = 134.47'	L = 982.09	LT = 134.47'
ST = 67.70'	T = 602.37'	ST = 67.70'
	R = 250.00'	

(3) NO DEED REFERENCE RANSOM GREEN, HEIRS C/O BETTY G. BARTON

(20) NANCY L. TINGEN WALKER DB 4285 PG 0240

(27) SHAYLOR H. DUNCAN JR. DB 280 PG 0204

-L- STA 158+00.00



FOR -L- PROFILE SEE SHEET NO.36
FOR -Y4- PROFILE SEE SHEET NOS.44 & 45
FOR -Y4RPA- PROFILE SEE SHEET NO.53
FOR -Y4RPB- PROFILE SEE SHEET NO.54
FOR -Y4RPC- PROFILE SEE SHEET NO.55
FOR -Y4RPD- PROFILE SEE SHEET NO.56
FOR -FLYOVERBD- PROFILE SEE SHEET NOS.51-52
FOR -FLYOVERAC- PROFILE SEE SHEET NOS.48-49
FOR -Y4LPA- PROFILE SEE SHEET NO.47
FOR -Y4LPD- PROFILE SEE SHEET NO.47

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION: WESTERN WAKE EXPRESSWAY (I-540)

TIP NO.: R-2635B COUNTY: WAKE

DESIGNED BY:

CHECKED BY: DATE:

Permit Drawing
Sheet 19 of 52

SHEET 4C

Permit Drawing
Sheet 20 of 52

MATCHLINE SEE SHEET NO.21 -Y4- STA 74+50.00

MATCHLINE SEE SHEET NO.21 -FLYOVERBD- STA 53+00.00

-Y4LPD- ST Sta. 10+00.00 = -L- POT Sta. 148+33.05 OFF 75' RT.

-Y4LPD- ST Sta. 23+74.10 = -L- POT Sta. 70+60.86 OFF 85' LT.

-Y4LPD=
Pls Sta 11+34.47
θs = 22° 55' 05.9"
Ls = 200.00'
LT = 134.47'
ST = 67.70'

-Y4LPD=
PI Sta 18+30.67
Δ = 223° 14' 50.7" (RT)
D = 22° 55' 05.9"
L = 974.10'
T = 630.67'
R = 250.00'

Pls Sta 22+41.80
θs = 22° 55' 05.9"
Ls = 200.00'
LT = 134.47'
ST = 67.70'

-Y4RPD-
Pls Sta 26+87.75
θs = 4° 05' 33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

-Y4RPD- POT Sta. 30+88.01 = -FLYOVERBD- Sta. 56+36.19 OFF 12' RT.

END BRIDGE -L- STA 147+18.00+/-

TYPE III

SEE SHEET NO.21 -Y4- STA 74+50.00

SEE SHEET NO.21 -FLYOVERBD- STA 53+00.00

(27) SHAYLOR H. DUNCAN JR. DB 210 PG 0204

(28) MICHAEL A. BIGELOW DB 2305 PG 0317

(21) G. L. WINCHESTER DB 3215 PG 0538

(25) MICHAEL THOMAS RAY DB 6242 PG 0561 BM 1994 PG 1081

(26) M. EUGENE ALLEN JR. DB 6535 PG 0293 BM 1994 PG 1081

FOR -L- PROFILE SEE SHEET NO.36
FOR -Y4- PROFILE SEE SHEET NOS.44 & 45
FOR -Y4RPA- PROFILE SEE SHEET NO.53
FOR -Y4RPB- PROFILE SEE SHEET NO.54
FOR -Y4RPC- PROFILE SEE SHEET NO.55
FOR -Y4RPD- PROFILE SEE SHEET NO.56
FOR -FLYOVERBD- PROFILE SEE SHEET NOS.51-52
FOR -FLYOVERAC- PROFILE SEE SHEET NOS.48-49
FOR -Y4LPA- PROFILE SEE SHEET NO.47
FOR -Y4LPD= PROFILE SEE SHEET NO.47

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION: WESTERN WAKE EXPRESSWAY (I-540)

TIP NO.: R-2635B COUNTY: WAKE

DESIGNED BY: _____

CHECKED BY: _____ DATE: _____

SHEET 4C

PROJECT REFERENCE NO.
R-2635B
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
Permit Drawing
Sheet 21 of 52
8/17/9
REVISIONS
20
NANCY L. TINGEN WALKER
DB 4285 PG 0240
21
G. L. WINCHESTER
DB 325 PG 0538
22
PROGRESSIVE FARMS LLC
DB 8757 PG 1066
BM 2000 PG 0477
PL IS RUN OF BRANCH
160
165
170
TAPER
-FLYOVERAC-
15+00
SCSta. 12+00.00
-FLYOVERAC- STSta. 10+00.00 =
-L- POT Sta. 165+50.00
OFF 75' LT.
CAT-1
SITE 9
SITE 10
NON-JURISDICTIONAL
MATCHLINE SEE SHEET NO.4 -L- STA 158+00.00
MATCHLINE SEE SHEET NO.6 -L- STA 171+00.00
-L-
N 30°25' 48.1" W
12'
36'
48'
60'
GRAU 350
65+00
60+00
-FLYOVERBD-
CSSta. 65+80.51
-FLYOVERBD- STSta. 67+80.51 =
-L- POT Sta. 165+93.18
OFF. 75' RT.
SITE 8
21
G. L. WINCHESTER
DB 325 PG 0538
+74
425 RT
+87
467 RT
PDE
24
LUTHER GLENN CUTHRELL
DB 5951 PG 0196
N89°36'26"W
LEGEND
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN SURFACE WATER (POND)
DENOTES MECHANIZED CLEARING
-FLYOVERAC-
PIs Sta 11+33.37
θs = 4°05' 33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'
PI Sta 15+88.13
Δ = 30°59' 27.2" (RT)
D = 4°05' 33.2"
L = 757.25'
T = 388.13'
R = 1,400.00'
-FLYOVERBD-
PI Sta 62+17.37
Δ = 30°27' 42.3" (RT)
D = 4°05' 33.2"
L = 744.32'
T = 381.18'
R = 1,400.00'
PIs Sta 66+47.21
θs = 4°05' 33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'
FOR -L- PROFILE SEE SHEET NO.37
FOR -FLYOVERAC- PROFILE SEE SHEET NO.48
FOR -FLYOVERBD- PROFILE SEE SHEET NO.52
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 22 of 52

REVISIONS 8/17/95

$$$$$$SYSTIME$$$$$$
$$$$$$DGNFILE$$$$$$
$$$$$$USERNAME$$$$$$

NAD 83

(20) NANCY L. TINGEN-WALKER
DB 4285 PG 0240

(21) G. L. WINCHESTER
DB 325 PG 0538

(22) PROGRESSIVE FARMS LLC
DB 8757 PG 1066
DM 2000 PG 0477

(24) LUTHER GLENN CUTHRELL
DB 5951 PG 0096

-L- STA 160+00

-FLYOVERAC- STA 15+00

-FLYOVERAC- ST Sta. 10+00.00 BK
TL POT Sta. 65+60.00
OFF 115' LT.

-FLYOVERAC- ST Sta. 12+00.00

-FLYOVERBD- ST Sta. 67+80.51
TL POT Sta. 65+93.78
OFF 75' RT.

-FLYOVERBD-

SITE 8

SITE 9

SITE 10

NON-JURISDICTIONAL

CAT-1

GRAU 350

+14' 425' RT

+87 467' RT

MATCHLINE SEE SHEET NO.4 -L- STA 158+00.00

MATCHLINE SEE SHEET NO.6 -L- STA 171+00.00

LEGEND

- DENOTES FILL IN WETLAND
- DENOTES FILL IN SURFACE WATER
- DENOTES FILL IN SURFACE WATER (POND)
- DENOTES MECHANIZED CLEARING

-FLYOVERAC-

PI Sta 11+33.37	PI Sta 15+88.13
θs = 4° 05' 33.2"	Δ = 30° 59' 27.2" (RT)
Ls = 200.00'	D = 4° 05' 33.2"
LT = 133.37'	L = 757.25'
ST = 66.70'	T = 388.13'
	R = 1,400.00'

-FLYOVERBD-

PI Sta 62+17.37	PI Sta 66+47.21
Δ = 30° 27' 42.3" (RT)	θs = 4° 05' 33.2"
D = 4° 05' 33.2"	Ls = 200.00'
L = 744.32'	LT = 133.37'
T = 381.18'	ST = 66.70'
R = 1,400.00'	

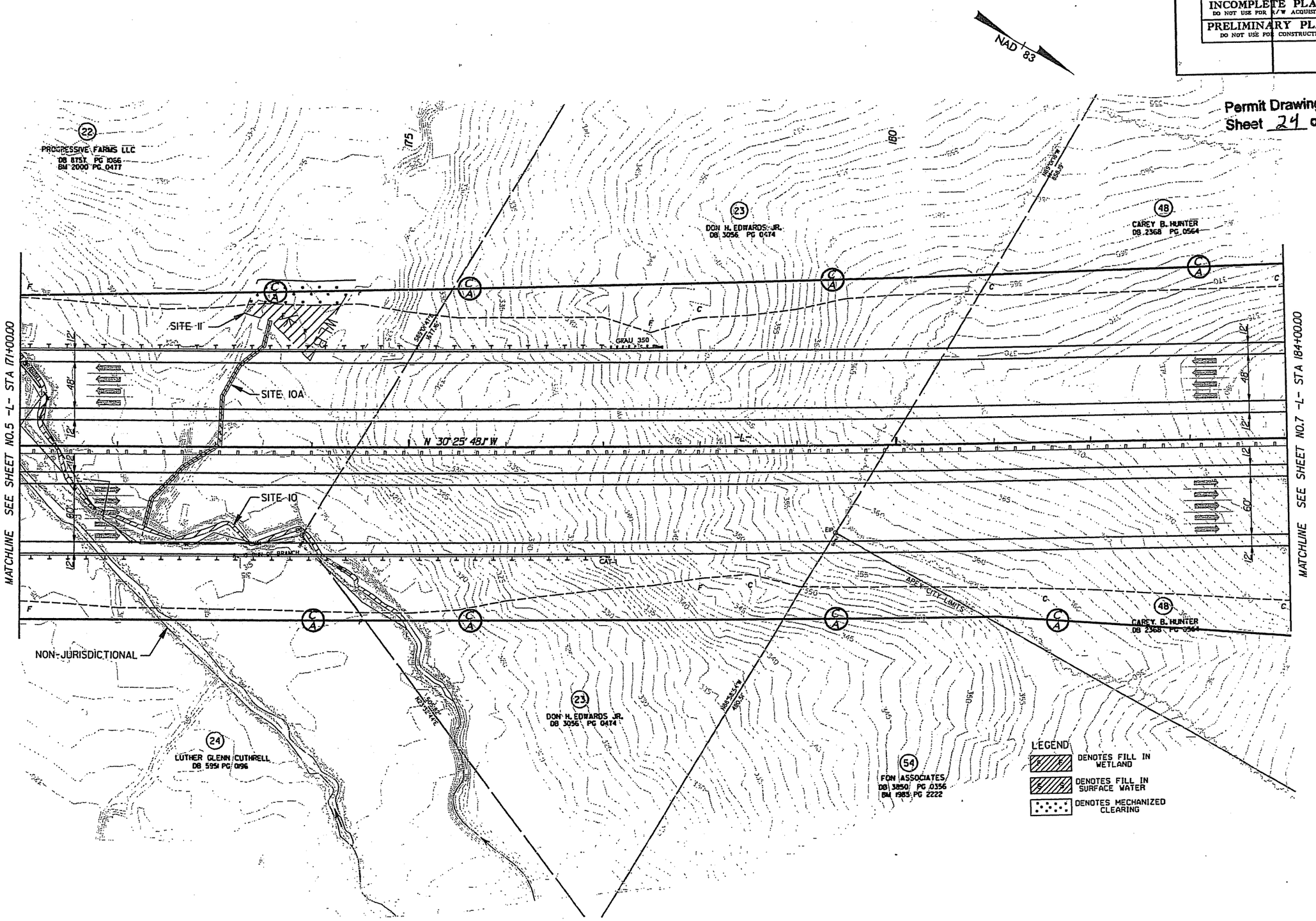
FOR -L- PROFILE SEE SHEET NO.37
FOR -FLYOVERAC- PROFILE SEE SHEET NO.48
FOR -FLYOVERBD- PROFILE SEE SHEET NO.52

PROJECT REFERENCE NO.
R-2635B
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 23 of 52
NAD 83
REVISIONS
8/17/9
22
PROGRESSIVE FARMS LLC
DB 8757 PG 1056
BM 2000 PG 0477
175
180
23
DON H. EDWARDS JR.
DB 3056 PG 0474
48
CAREY B. HUNTER
DB 2368 PG 0564
S89°01'47"E
1677.16'
N89°01'18"W
858.19'
SITE 11
SITE 10A
SITE 10
GRAU 350
CAT-1
N 30°25'48.1" W
-L-
12'
48'
60'
MATCHLINE SEE SHEET NO.5 -L- STA 171+00.00
MATCHLINE SEE SHEET NO.7 -L- STA 184+00.00
EIP
APEX CITY LIMITS
NON-JURISDICTIONAL
N23°32'44"E
505.82'
N88°58'54"W
480.51'
24
LUTHER GLENN CUTHRELL
DB 5951 PG 096
54
FON ASSOCIATES
DB 3850 PG 0356
BM 1985 PG 2222
LEGEND
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
FOR -L- PROFILE SEE SHEET NO.37
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

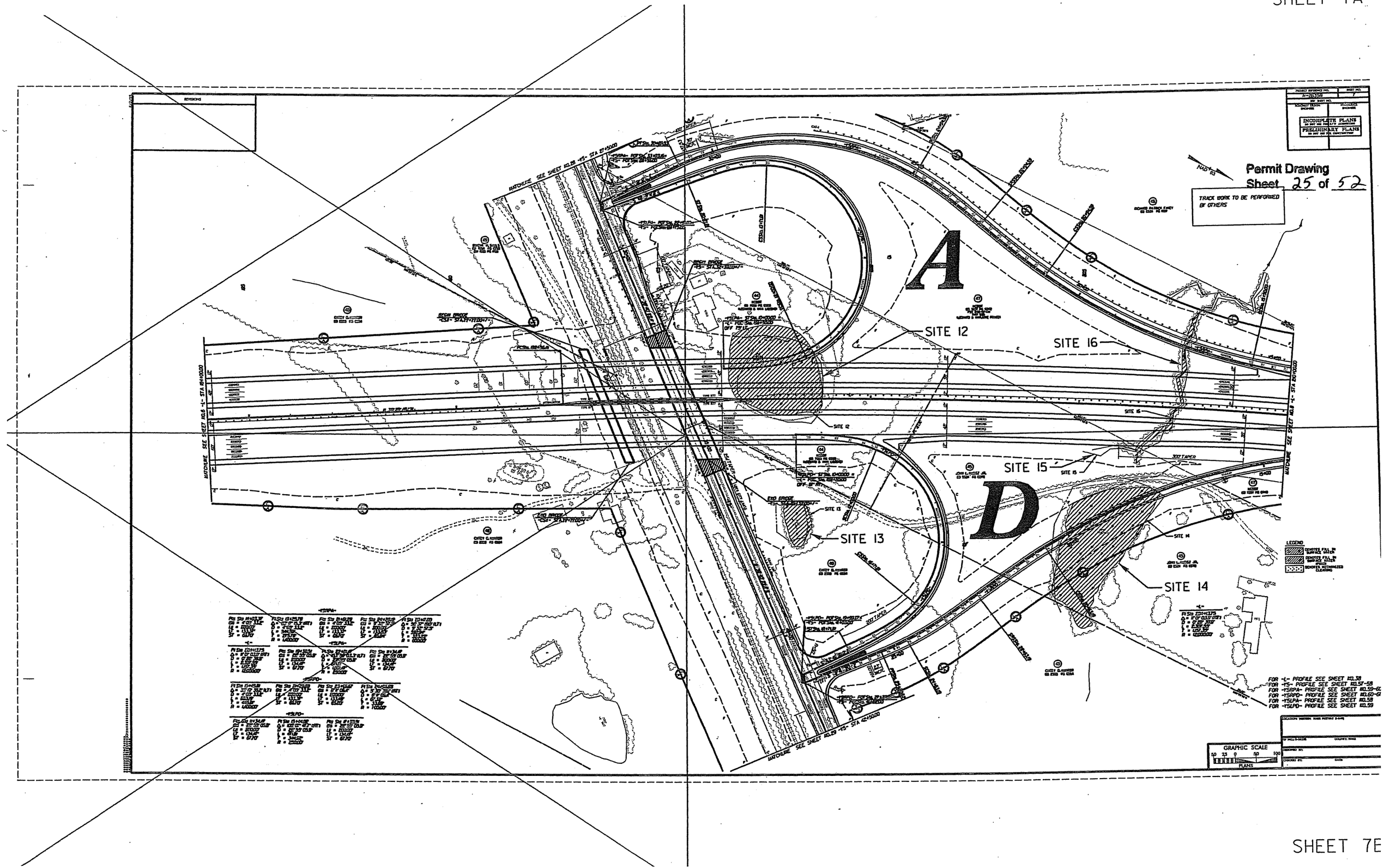
Permit Drawing
Sheet 24 of 52



FOR -L- PROFILE SEE SHEET NO 37

REVISIONS

8/17/9


Permit Drawing
Sheet 25 of 52
TRACK WORK TO BE PERFORMED BY OTHERS
INCOMPLETE PLANS
PRELIMINARY PLANS
A
D
SITE 12
SITE 13
SITE 14
SITE 15
SITE 16
MATCHLINE SEE SHEET NO.28 -Y5- STA 27+50.00
MATCHLINE SEE SHEET NO.29 -Y5- STA 42+50.00
MATCHLINE SEE SHEET NO.6 -L- STA 184+00.00
MATCHLINE SEE SHEET NO.8 -L- STA 150+00.00
LEGEND
GRAPHIC SCALE
PLANS

REVISIONS

INCOMPLETE PLANS
DO NOT BID OR CONSTRUCT
PRELIMINARY PLANS
NOT FOR BID OR CONSTRUCTION

Permit Drawing
Sheet 26 of 52

TRACK WORK TO BE PERFORMED BY OTHERS

MATCHLINE SEE SHEET #0.58 -15- STA 67+00.00

MATCHLINE SEE SHEET #0.58 -L- STA 84+00.00

MATCHLINE SEE SHEET #0.59 -L- STA 120+00.00

MATCHLINE SEE SHEET #0.59 -15- STA 42+50.00

SITE 12

SITE 16

SITE 15

SITE 13

SITE 14

A

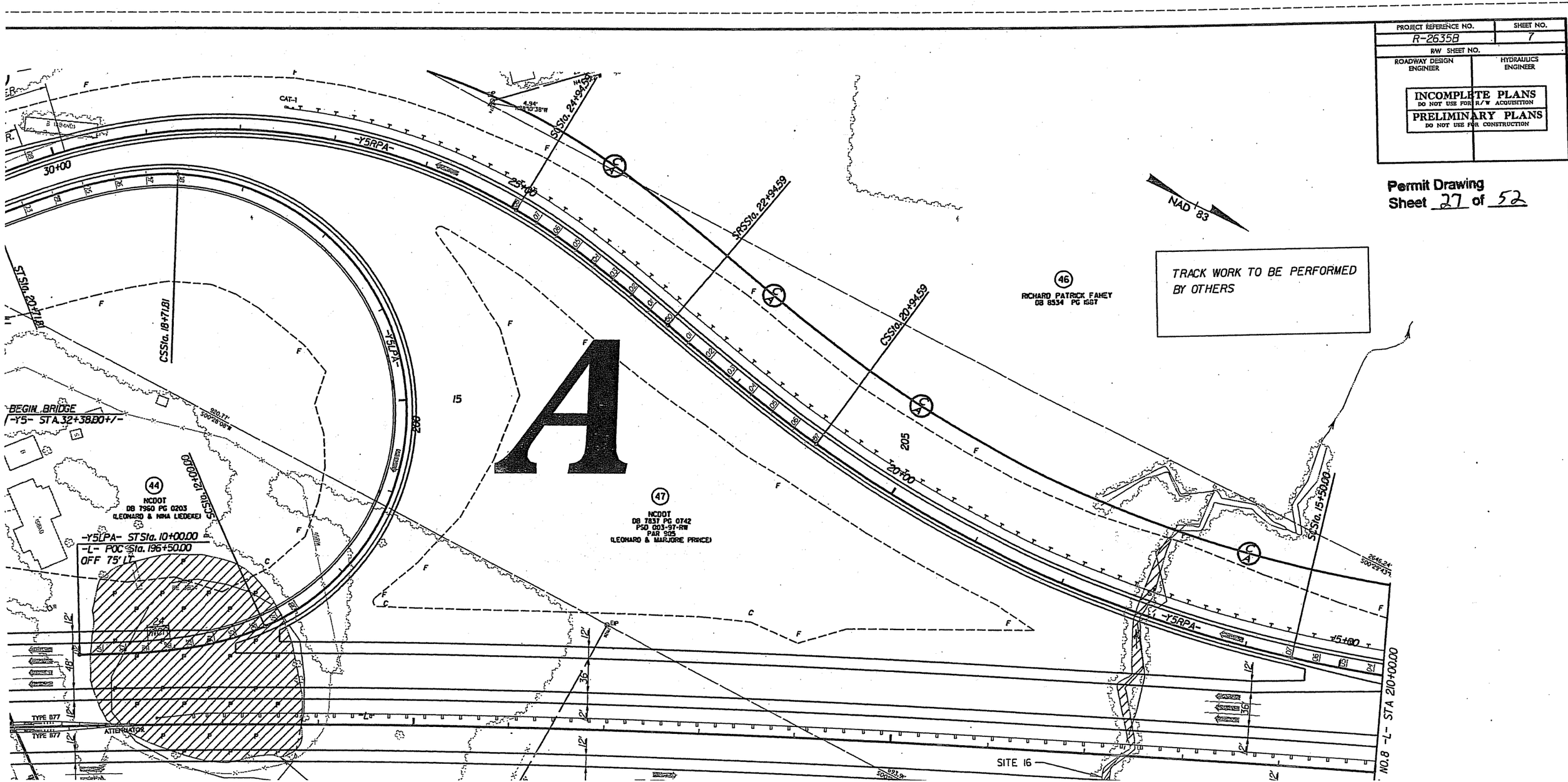
D

LEGEND

FOR -L- PROFILE SEE SHEET #0.58
FOR -15- PROFILE SEE SHEET #0.57-58
FOR -15APA- PROFILE SEE SHEET #0.58-59
FOR -15APD- PROFILE SEE SHEET #0.60-61
FOR -15LPA- PROFILE SEE SHEET #0.58
FOR -15LPD- PROFILE SEE SHEET #0.59

GRAPHIC SCALE
50 25 0 50 100
PLANS

SHEET 7A



PROJECT REFERENCE NO.
R-2635B
SHEET NO.
7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 27 of 52
TRACK WORK TO BE PERFORMED BY OTHERS
NAD 83
A
46
RICHARD PATRICK FAHEY
DB 8534 PG 1687
47
NCDOT
DB 7837 PG 0742
PSD 003-97-RW
PAR 905
(LEONARD & MARJORIE PRINCE)
44
NCDOT
DB 7960 PG 0203
(LEONARD & NINA LIEDEKE)
BEGIN BRIDGE
-Y5- STA.32+38.80+/-
-Y5LPA- STSta. 10+00.00
-L- POC Sta. 196+50.00
OFF 75' LT.
-Y5RPA-
-Y5LPA-
-Y5RPA-
-L-
SITE 16
NO.8 -L- STA 210+00.00
SCSta. 24+94.59
SRSSta. 22+94.59
CSSta. 20+94.59
SCSta. 15+50.00
SCSta. 12+00.00
CSSta. 18+71.81
STSta. 20+71.81
30+00
25+00
20+00
15+00
TYPE B77
ATTENUATOR

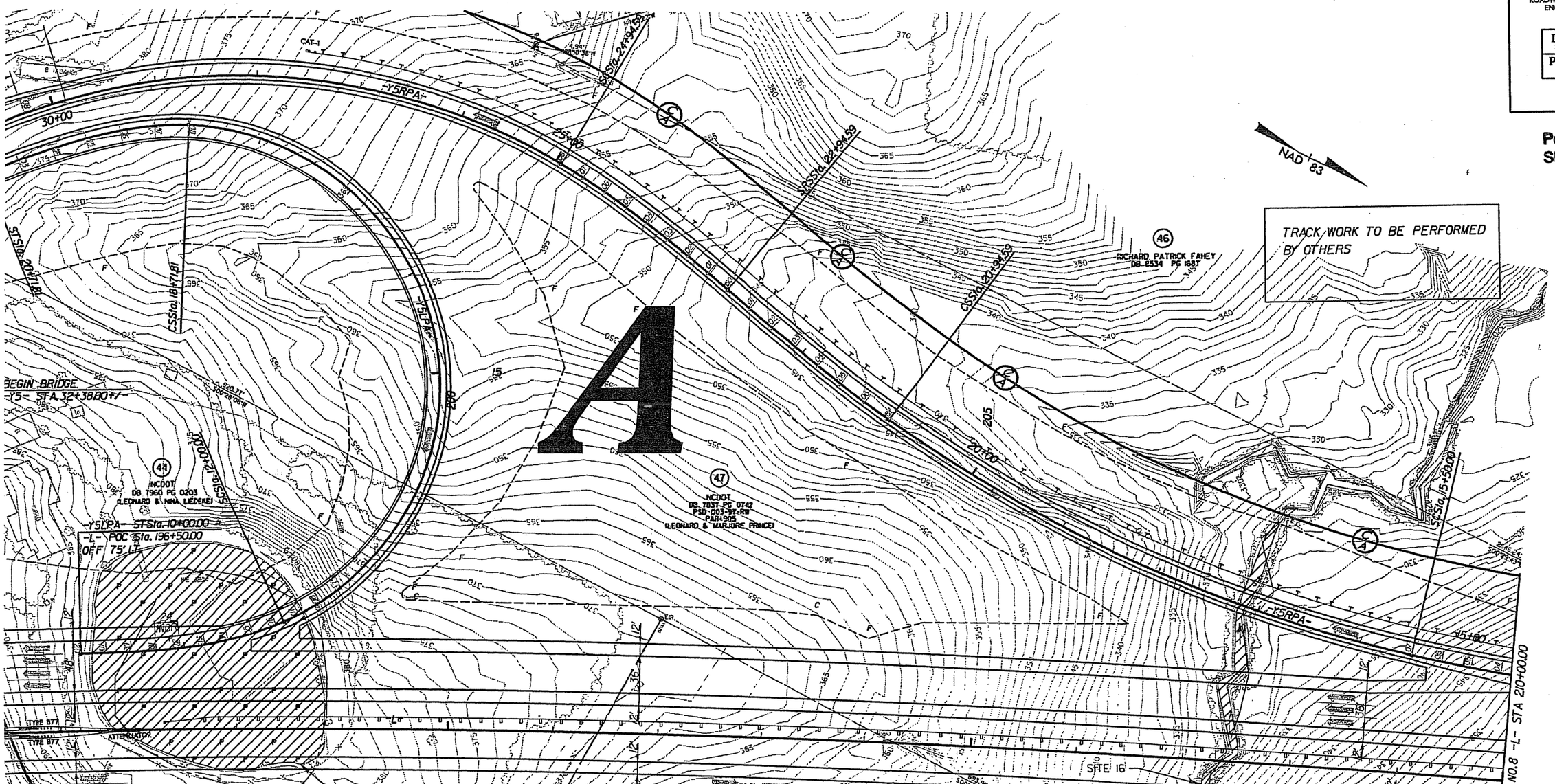
SHEET 7A

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 28 of 52



D

SITE 15

SITE 13

SITE 14

(44) NCDOT
DB 7360 PG 0203
(LEONARD & NINA LEDERER)

(45) JOHN L. HUBISZ JR.
DB 5634 PG 0279

(47) NCDOT
DB 7037 PG 0740

(48) CAREY B. HUNTER
DB 2368 PG 0564

-Y5LPD- STSta. 10+00.00 =
-L- PGC Sta. 198+20.00
OFF 87' RT.

END BRIDGE
-Y5- STA 35+32.00+/-

SCSta. 12+00.00

CSSta. 16+71.81

-Y5RPD- STSta. 18+71.81

-Y5LPD- POTSta. 19+99.77 =
-Y5- POTSta. 41+03.00

200' TAPER

300' TAPER

-Y5RPD- POTSta. 27+22.85
-Y5- POTSta. 41+22.00

SRSSta. 22+63.19

SCSta. 24+63.19

PTSSta. 25+52.52

CSSta. 20+53.19

-L-
PI Sta 204+13.75
Δ = 11°01' 03.9" (RT)
D = 0°28' 38.9"
L = 2,307.55'
T = 1,157.35'
R = 12,000.00'

N 39° 40' 25.5" E

S 53° 46' 21.0" E

S 39° 46' 21.0" E

R=50'

R=50'

25+00

29+00

15+00

23' INCR.

699+

MATCHLINE SEE SHEET NO.29 -Y5- STA 42+50.00

MATCHLINE SEE

LEGEND
- DENOTES FILL IN SURFACE WATER
- DENOTES FILL IN SURFACE WATER (POND)
- DENOTES MECHANIZED CLEARING

FOR -L- PROFILE SEE SHEET NO.38
FOR -Y5- PROFILE SEE SHEET NO.57-58
FOR -Y5RPA- PROFILE SEE SHEET NO.59-60
FOR -Y5RPD- PROFILE SEE SHEET NO.60-61
FOR -Y5LPA- PROFILE SEE SHEET NO.58
FOR -Y5LPD- PROFILE SEE SHEET NO.59

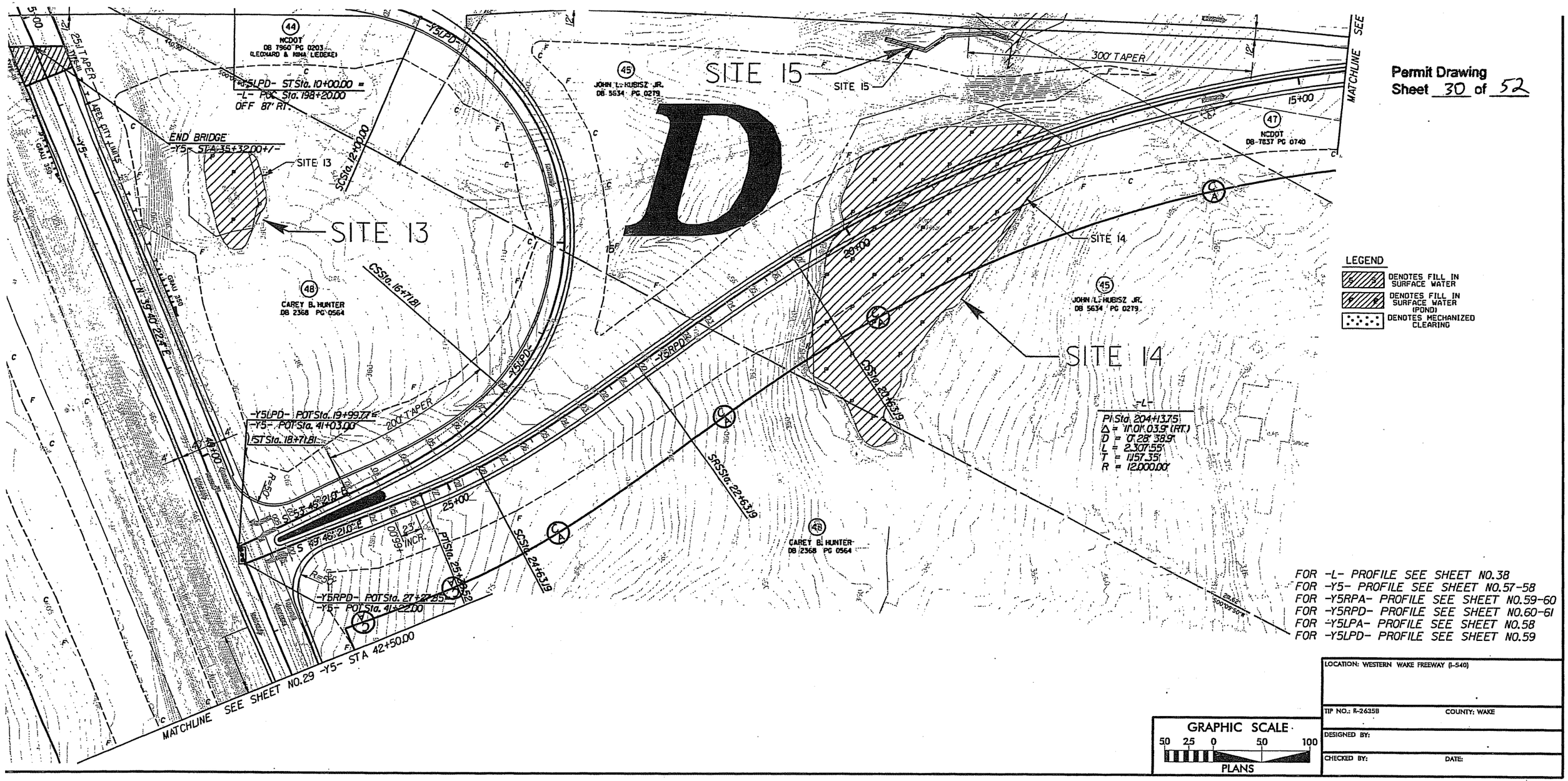
LOCATION: WESTERN WAKE FREEWAY (I-540)

TIP NO.: R-2635B COUNTY: WAKE

DESIGNED BY:

CHECKED BY: DATE:

GRAPHIC SCALE
50 25 0 50 100
PLANS



Permit Drawing
Sheet 30 of 52
SITE 15
SITE 13
SITE 14
D
NCDOT
DB 7960 PG 0203
(LEONARD & NINA LIEDEKE)
JOHN L. HUBISZ JR.
DB 5634 PG 0279
NCDOT
DB 7837 PG 0740
CAREY B. HUNTER
DB 2368 PG 0564
END BRIDGE
-Y5- STA 35+32.00+/-
-Y5LPD- ST Sta. 10+00.00 =
-L- POC Sta. 198+20.00
OFF 87' RT.
-Y5LPD- POT Sta. 19+99.77 =
-Y5- POT Sta. 41+03.00
ST Sta. 18+71.81
-Y5RPD- POT Sta. 27+27.85
-Y5- POT Sta. 41+22.00
PI Sta. 204+13.75
Δ = 11°01'03.9" (RT.)
D = 0°28'38.9"
L = 2,307.55'
T = 1,157.35'
R = 12,000.00'
300' TAPER
200' TAPER
25:1 TAPER
APEX CITY LIMITS
MATCHLINE SEE SHEET NO.29 -Y5- STA 42+50.00
MATCHLINE SEE
LEGEND
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN SURFACE WATER (POND)
DENOTES MECHANIZED CLEARING
FOR -L- PROFILE SEE SHEET NO.38
FOR -Y5- PROFILE SEE SHEET NO.57-58
FOR -Y5RPA- PROFILE SEE SHEET NO.59-60
FOR -Y5RPD- PROFILE SEE SHEET NO.60-61
FOR -Y5LPA- PROFILE SEE SHEET NO.58
FOR -Y5LPD- PROFILE SEE SHEET NO.59
GRAPHIC SCALE
50 25 0 50 100
PLANS
LOCATION: WESTERN WAKE FREEWAY (I-540)
TIP NO.: R-2635B
COUNTY: WAKE
DESIGNED BY:
CHECKED BY:
DATE:

SHEET 7B

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 31 of 52

FOR -L- PROFILE SEE SHEET NO.39
FOR -Y5RPA- PROFILE SEE SHEET NO.59
FOR -Y5PRD- PROFILE SEE SHEET NO.60

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

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 32 of 52

8/17/99

REVISIONS

-L-
PI Sta 204+13.75
Δ = 11° 01' 03.9" (RT)
D = 0° 28' 38.9"
L = 2,307.55'
T = 1,157.35'
R = 12,000.00'

-Y5RPA-
PIs Sta 14+83.37
θs = 4° 05' 33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

NON-JURISDICTIONAL

-Y5RPA- PI Sta 10+00.00 = -L- POC Sta 214+50.00 OFF 75' LT.

PI Sta 215+63.96

-L- STA 210+00.00

MATCHLINE SEE SHEET NO.7 -L- STA 210+00.00

-L- STA 13+50.00

NCDOT DB 7837 PG 0742 PSO 003-97-RW PAR 905

SITE 17

S 17° 39' 23.0" E

250' TAPER

RICHARD PATRICK FAHEY DB 8534 PG 1687

N 9° 24' 44.2" W

-L- STA 223+00.00

MATCHLINE SEE SHEET NO.9 -L- STA 223+00.00

-Y5RPD-

GRAU 350

SC Sta 12+00.00

-Y5RPD- ST Sta 10+00.00 = -L- POC Sta 214+50.00 OFF 75' RT.

NCDOT DB 7837 PG 0742 PSO 003-97-RW PAR 905

NCDOT DB 7837 PG 0740

256.57' S 00° 29' 44" E

-Y5RPD-
PIs Sta 11+33.37
θs = 4° 05' 33.2"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

PI Sta 16+45.81
Δ = 35° 19' 36.2" (LT)
D = 4° 05' 33.2"
L = 863.19'
T = 445.81'
R = 1,400.00'

JOHN L. HUBISZ JR. DB 5634 PG 0279

RICHARD PATRICK FAHEY DB 8534 PG 1687

LEGEND
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING

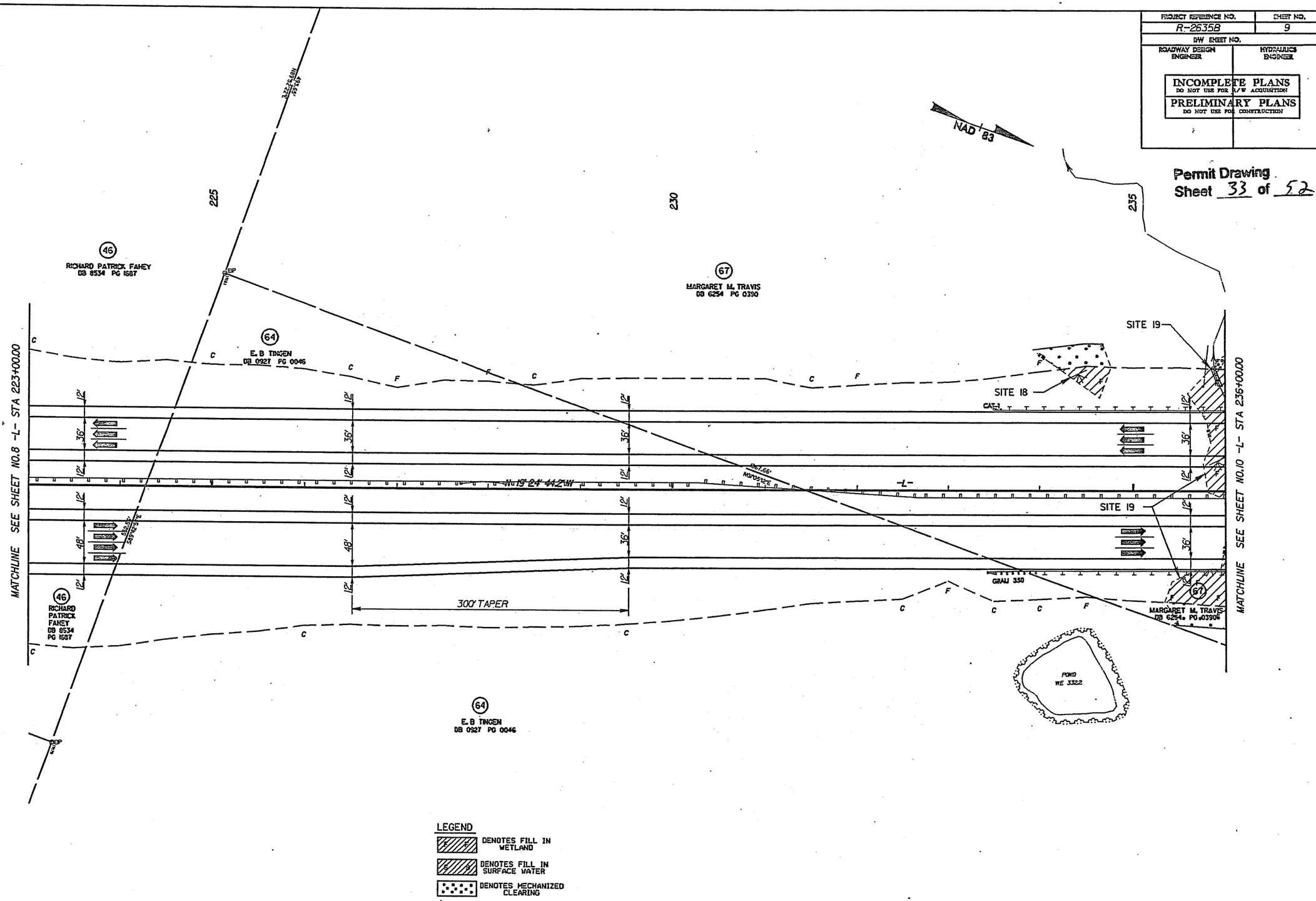
FOR -L- PROFILE SEE SHEET NO.39
FOR -Y5RPA- PROFILE SEE SHEET NO.59
FOR -Y5PRD- PROFILE SEE SHEET NO.60

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 33 of 52



FOR -L- PROFILE SEE SHEET NO.39

REVISIONS

8/17/99

22-JUN-2007 09:06
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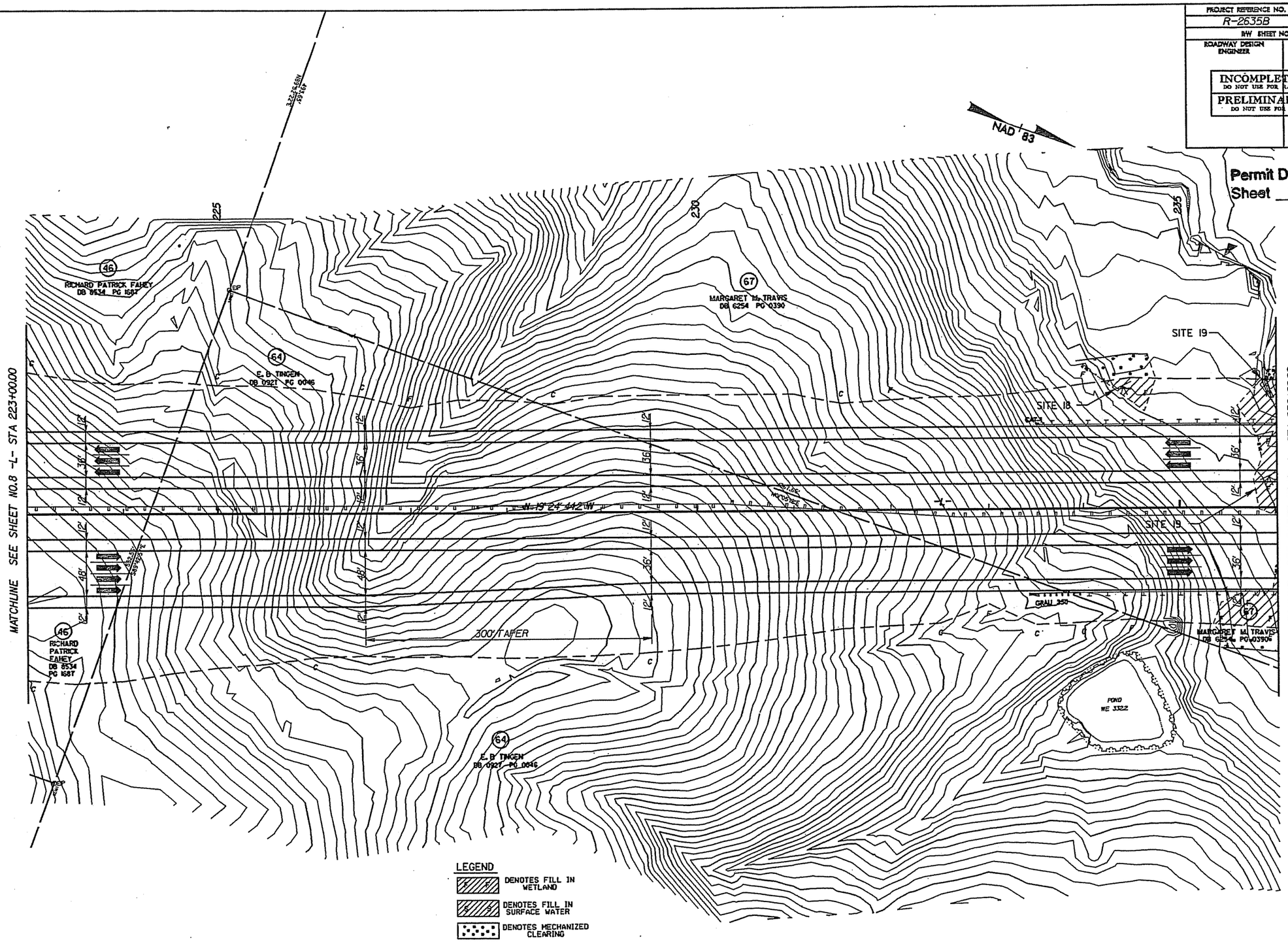
PROJECT REFERENCE NO.	SHEET NO.
R-2635B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 34 of 52



FOR -L- PROFILE SEE SHEET NO.39

REVISIONS

8/17/99

22-JUN-2007 09:06
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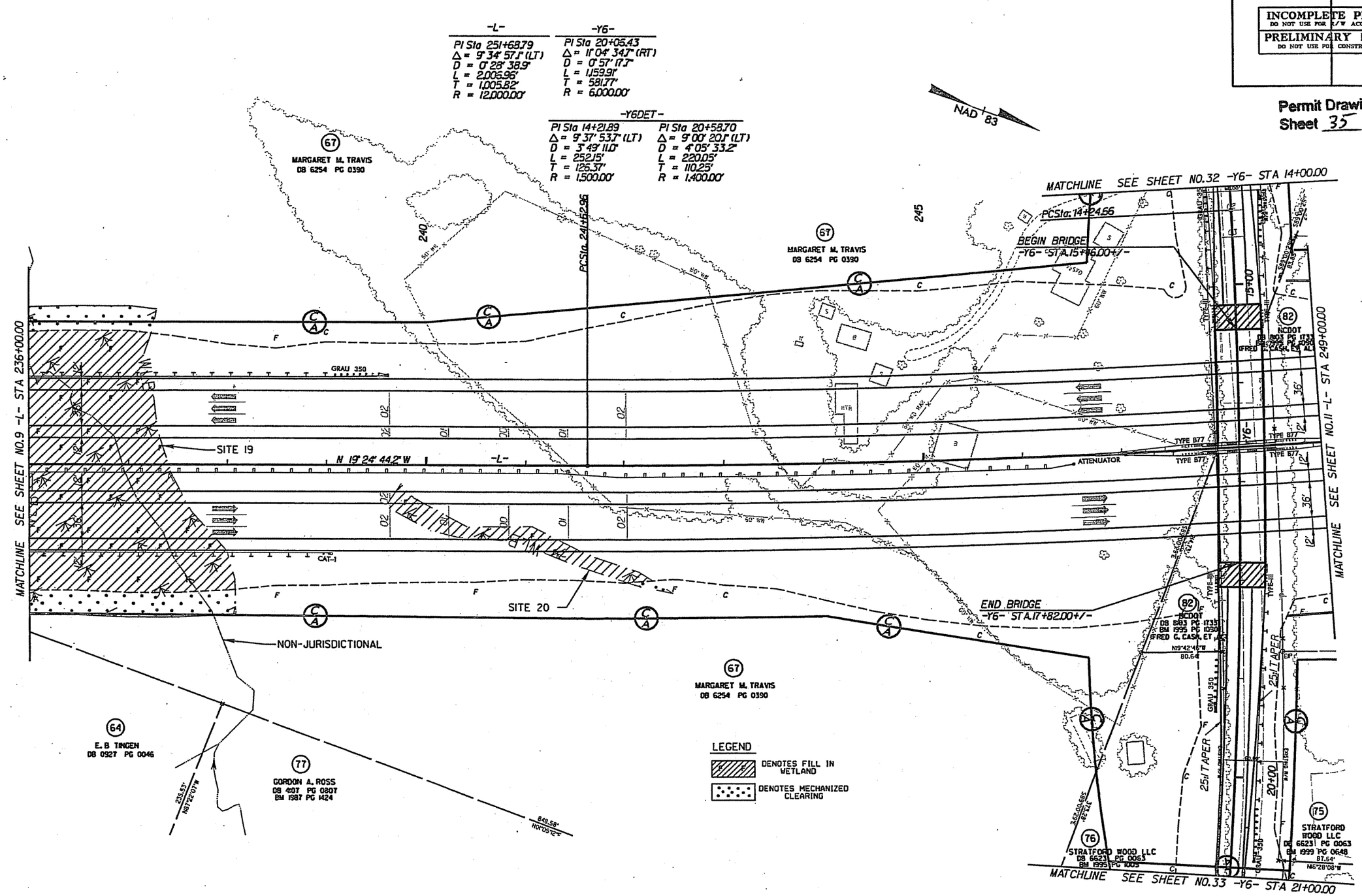
ddufield AT HY221523

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

Permit Drawing
Sheet 35 of 52



APPROACH SLAB
FOR -L- PROFILE SEE SHEET NO.40
FOR -Y6- PROFILE SEE SHEET NO.62
FOR -Y6DET- PROFILE SEE SHEET NO.63

REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 36 of 52

8/17/99

REVISIONS

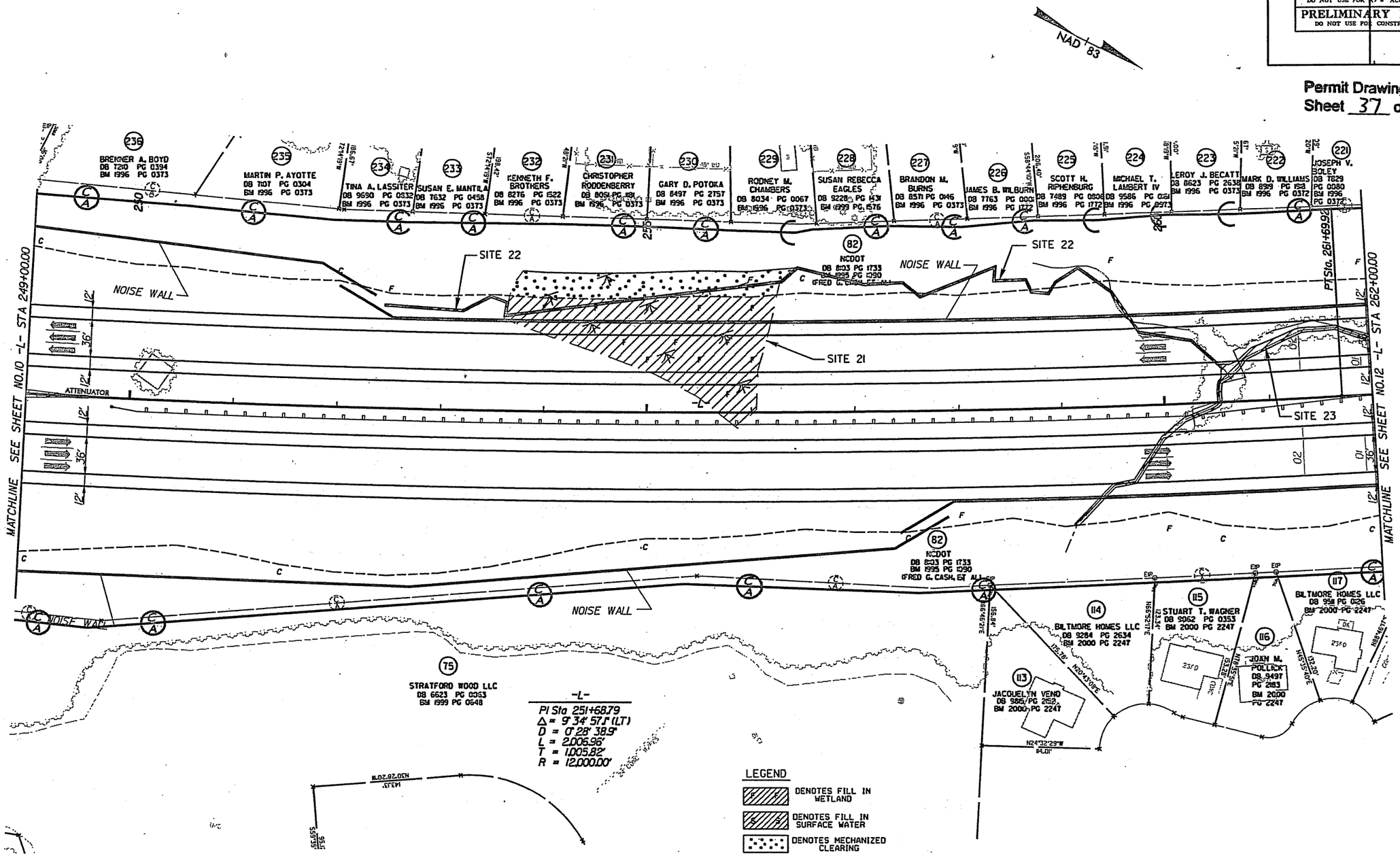
APPROACH SLAB
FOR -L- PROFILE SEE SHEET NO.40
FOR -Y6- PROFILE SEE SHEET NO.62
FOR -Y6DET- PROFILE SEE SHEET NO.63

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

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

Permit Drawing
Sheet 37 of 52



FOR -L- PROFILE SEE SHEET NO.40

REVISIONS

8/17/99

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

Permit Drawing
Sheet 38 of 52

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

FOR -L- PROFILE SEE SHEET NO.40

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 39 of 52

8/17/99

REVISIONS

LEGEND

- DENOTES FILL IN WETLAND
- DENOTES FILL IN SURFACE WATER
- DENOTES MECHANIZED CLEARING

NAD 83

-L-
PIs Sta 275+05.95
θs = 2°56'56.6"
Ls = 350.00'
LT = 233.37'
ST = 116.70'

MATCHLINE SEE SHEET NO.11 -L- STA 262+00.00

MATCHLINE SEE SHEET NO.13 -L- STA 275+00.00

SITE 24

SITE 23

SITE 25

NOISE WALL

FOR -L- PROFILE SEE SHEET NO.41

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 40 of 52

8/17/99

REVISIONS

FOR -L- PROFILE SEE SHEET NO.41

PROJECT REFERENCE NO. R-2635B
SHEET NO. 13
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 41 of 52
8/17/99
REVISIONS
NAD 83
198 KELLY R. MERCER DB 9302 PG 0783 BM 1995 PG 1567
202 MIKE KEY DB 7179 PG 0184 BM 1995 PG 1567
199 BENJAMIN J. CANNON DB 8943 PG 1630 BM 1995 PG 1567
203 JEREMY M. DAVIS DB 8936 PG 1663 BM 1995 PG 1567
85 TOWN OF APEX DB 6902 PG 0289 BM 1995 PG 1567
86 TOWN OF APEX DB 7056 PG 0571 BM 1996 PG 1398
82 NCDOT DB 8803 PG 1733 BM 1995 PG 1090 (FRED G. CASH, ET AL)
88 NCDOT DB 8005 PG 0476 PSD 208-97-RW PAR 906 (OLIVE CHAPEL ASSOCIATES)
84 SCOTTS MILL HOMEOWNERS ASSOC. DB 8431 PG 140 BM 1999 PG 1815&16
104 SNYDER HUNT OF NORTH CAROLINA INC DB 6187 PG 877 BM 1994 PG 904
130 CARL W. ZOLPER III DB 9031 PG 0526 BM 2000 PG 2179
131 JOHN L. FRANKLIN DB 9224 PG 1544 BM 2000 PG 2179
132 JEFFREY ALLAN BOYDEN DB 9042 PG 0487 BM 2000 PG 2179
133
BEGIN BRIDGE -L- STA. 277+12.00+/-
BEGIN BRIDGE -L- STA. 276+92.00+/-
END BRIDGE -L- STA. 287+38+/-
END BRIDGE -L- STA. 287+05+/-
SITE 26
SITE 27
SITE 28
SCSta. 276+23.59
MATCHLINE SEE SHEET NO.12 -L- STA 275+00.00
MATCHLINE SEE SHEET NO.14 -L- STA 288+00.00
NOISE WALL
TYPE-III
-L-
60'
280
285
N21°11'40"W 93.54'
197.25' N04°49'29"W
59.54' S72°14'28"W
146.51' N72°14'30"E
242.18' S20°26'39"W
289.33' N72°59'30"W
119.71' S65°23'09"W
335.18' N00°38'15"E
N89°45'27"E 64.20'
244.12' N44°43'09"E
243.34' N44°43'09"E
192.03' N54°17'06"E
PL ALONG BRANCH
-L-
PIs Sta 275+06.96
θs = 2° 56' 56.6"
Ls = 350.00'
LT = 233.37'
ST = 116.70'
PI Sta 283+33.78
Δ = 23° 35' 47.9" (RT)
D = 1° 41' 06.6"
L = 1,400.25
T = 710.19'
R = 3,400.00'
LEGEND
DENOTES HAND CLEARING
APPROACH SLAB
FOR -L- PROFILE SEE SHEET NO.41

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 42 of 52

REVISIONS

8/17/99

NAD 83

MATCHLINE SEE SHEET NO.12 -L- STA 275+00.00

MATCHLINE SEE SHEET NO.14 -L- STA 288+00.00

BEGIN BRIDGE
-L- STA. 277+12.00+/-

END BRIDGE
-L- STA. 287+38+/-

BEGIN BRIDGE
-L- STA. 276+92.00+/-

END BRIDGE
-L- STA. 287+06+/-

SITE 26

SITE 27

SITE 28

-L-

WLB

NOISE WALL

PI Sta 275+06.96
Θs = 2°56'56.6"
Ls = 350.00'
LT = 233.37'
ST = 116.70'

PI Sta 283+33.78
Δ = 23°35'47.9" (RT)
D = 1°41'06.6"
L = 1,400.25
T = 710.19'
R = 3,400.00'

(82) NCDOT
DB 8803 PG 1733
BM 1995/PG 1090
(FRED G. CASH, ET AL)

(84) SCOTTS MILL HOMEOWNERS ASSOC.
DB 8431 PG 1480
BM 1999 PG 1985&86

(85) TOWN OF APEX
DB 6802 PG 0289
BM 1995 PG 1667

(86) TOWN OF APEX
DB 7056 PG 0571
BM 1996 PG 1098

(88) NCDOT
DB 8005 PG 0476
PSD 208-97-RW
PAR 906
(OLIVE CHAPEL ASSOCIATES)

(104) SNYDER HUNT OF NORTH CAROLINA INC
DB 6887 PG 877
BM 1994 PG 904

(130) CARL W. ZOLPER III
DB 9039 PG 0556
BM 2000 PG 2179

(131) JOHN L. FRANKLIN
DB 9224 PG 1544
BM 2000 PG 2179

(132) JEFFREY ALLAN BOYDEN
DB 9242 PG 0487
BM 2000 PG 2179

(133)

(198) KELLY R. MERCER
DB 9302 PG 0783
BM 1995 PG 1667

(199) BENJAMIN J. CANNON
DB 8943 PG 1530
BM 1995 PG 1667

(202) MIKE KEY
DB 7179 PG 0814
BM 1995 PG 1667

(203) JEREMY M. DAVIS
DB 8936 PG 1663
BM 1995 PG 1667

LEGEND

HC DENOTES HAND CLEARING

APPROACH SLAB

FOR PROFILE SEE SHEET NO. 41

TYPE III

PL ALONG BRANCH

N89°45'27"E 64.20'

N86°27'35"E

N12°40'W 53.54'

N11°53'30"W 268.33'

N19°29'W 197.25'

N12°40'30"E 146.57'

S12°42'28"W 55.54'

N00°38'15"E 335.18'

S30°05'36"E 242.28'

N30°05'36"W 242.28'

S89°54'33"E 133.74'

S89°54'33"E 133.74'

S89°54'33"E 207.82'

S89°54'33"E 207.82'

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 43 of 52

8/17/99

REVISIONS

LEGEND

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83

-L-

PI Sta 283+33.78
Δ = 23° 35' 47.9" (RT)
D = 1° 41' 06.6"
L = 1,400.25
T = 710.19'
R = 3,400.00'

PIs Sta 291+40.54
θs = 2° 55' 55.6"
Ls = 350.00'
LT = 233.37'
ST = 116.70'

CSSta 290+23.84

STSta 291+73.84

290

295

300

(86) TOWN OF APEX
DB 7096 PG 0571
BM 1996 PG 1098

(87) WAKE COUNTY BOARD OF EDUCATION
DB 6525 PG 0227
BM 1995 PG 1553

(88) NCDOT
DB 6305 PG 0476
PSD 208-97-RW
PAR 905
GRAU 350 (OLIVE CHAPEL ASSOCIATES)

SITE 29

-L- STA 288+00.00

MATCHLINE SEE SHEET NO.13

-L- STA 301+00.00

MATCHLINE SEE SHEET NO.15

N 0° 23' 59.9" E

TYPE M350

NOISE WALL

(133) ANANDA BOYINA
DB 9311 PG 0030
BM 2000 PG 2179

(134) MATTHEW W. BURGESS
DB 9256 PG 0172
BM 2000 PG 2179

(135) THOMAS DELSIGNORE
DB 8828 PG 2053
BM 2000 PG 1657

(136) GANAPATI D. KAMAT
DB 8797 PG 2599
BM 2000 PG 1657

(137) CHRISTOPHER M. CRUMPLER
DB 8971 PG 1542
BM 2000 PG 1657

(138) CHRISTOPHER A. MATTINGLY
DB 8797 PG 2744
BM 2000 PG 1657

(139) MUHAMMAD A. BARI
DB 8772 PG 1509
BM 2000 PG 1657

(140) BARRY EUGENE PUGH
DB 8811 PG 2401
BM 2000 PG 1657

(271) ROGER D. CHESUM
DB 8472 PG 0304
BM 1995 PG 1598

(272) ANDREW H. BOSWELL
DB 8847 PG 0341
BM 1995 PG 1598

(273) GLEN A. WOMBLE
DB 7237 PG 0432
BM 1995 PG 1598

(274) STEPHEN M. ZUGAY
DB 8509 PG 1397
BM 1995 PG 1597

(275) KEITH T. HARKEY
DB 8572 PG 1178
BM 1995 PG 1597

(276) DANIEL D. BROWN
DB 7307 PG 0648
BM 1995 PG 1597

(277) JOHN CERNEL
DB 7287 PG 0595
BM 1995 PG 1597

FOR -L- PROFILE SEE SHEET NO.42

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

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

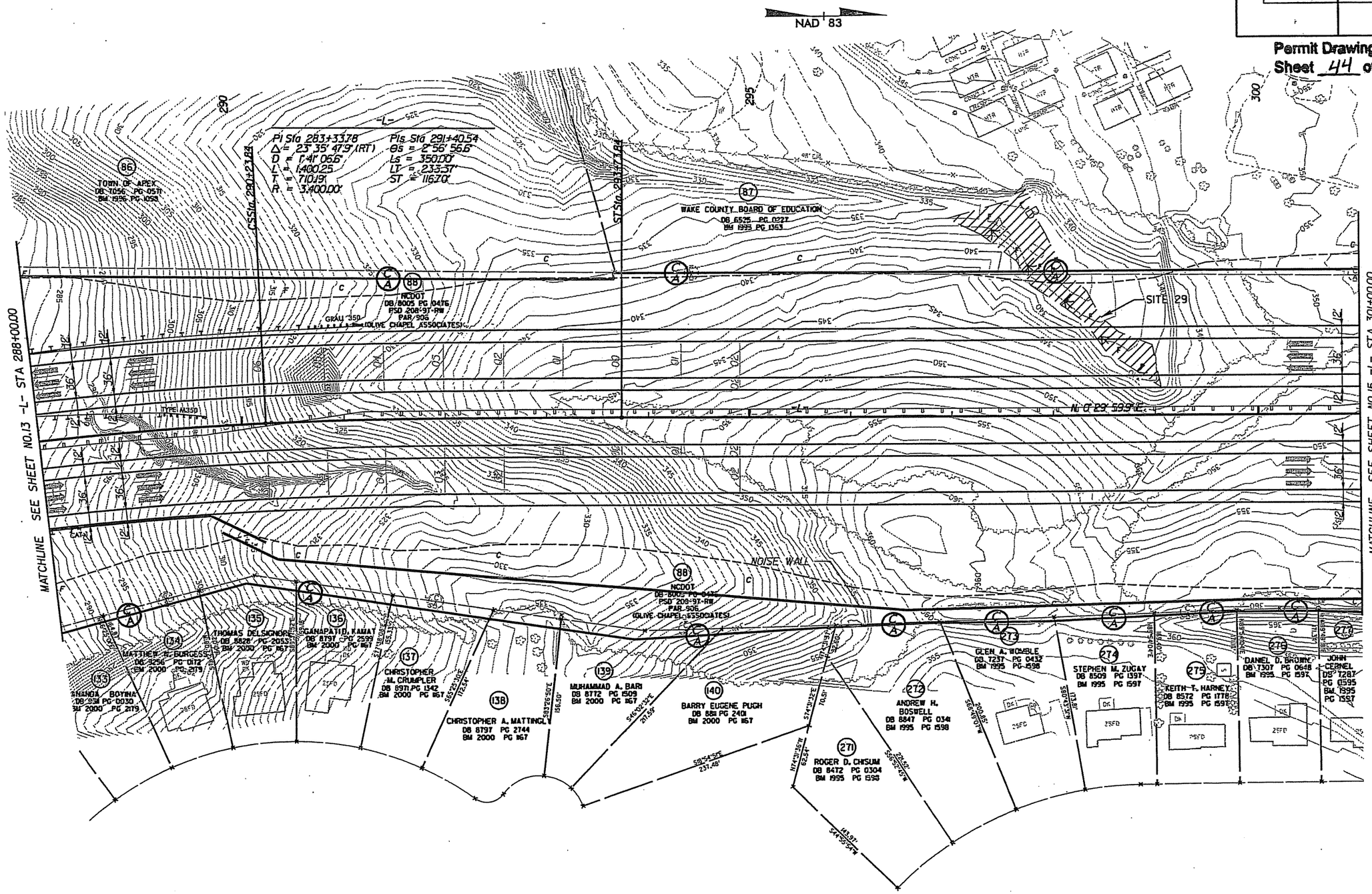
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 44 of 52

LEGEND

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING



FOR -L- PROFILE SEE SHEET NO. 18

REVISIONS

8/17/99

8/17/99
REVISIONS
PROJECT REFERENCE NO.
SHEET NO.
R-2635B
17
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 45 of 52
LEGEND
DENOTES FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
NAD 83
15
20
25
CAROLINA POWER & LIGHT CO.
DB 8249 PG 1397
BERNARD F. MCLEOD JR.
DB 2290 PG 0321
SITE 30
300' TAPER
MATCHLINE SEE SHEET NO.16 -Y4- STA 14+00.00
MATCHLINE SEE SHEET NO.18 -Y4- STA 27+00.00
N 58° 39' 14.5" E
-Y4-
CAT-1
GRAU 350
36' C&G
EXISTING R/W
MON
36'
4'
24'
10'
48'
DORA H. BURRELL
DB 2260 PG 0657
JAMES O. HARRIS
DB 2260 PG 0570
BM 1974 PG 0228
1993.86'
S88°22'21"E
431.78'
EIP
FOR -Y4- PROFILE SEE SHEET NO.43

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 46 of 52

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

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 47 of 52

LEGEND

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

FOR -Y4- PROFILE SEE SHEET NO.45
FOR -Y4RPC- PROFILE SEE SHEET NO.55
FOR -FLYOVERBD- PROFILE SEE SHEET NO.51-52
FOR -Y4RPD- PROFILE SEE SHEET NO.56

REVISIONS

8/17/99

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

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 48 of 52

8/17/99

REVISIONS

LEGEND

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

FOR -Y4- PROFILE SEE SHEET NO.45
FOR -Y4RPC- PROFILE SEE SHEET NO.55
FOR -FLYOVERBD- PROFILE SEE SHEET NO.51-52
FOR -Y4RPD- PROFILE SEE SHEET NO.56

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

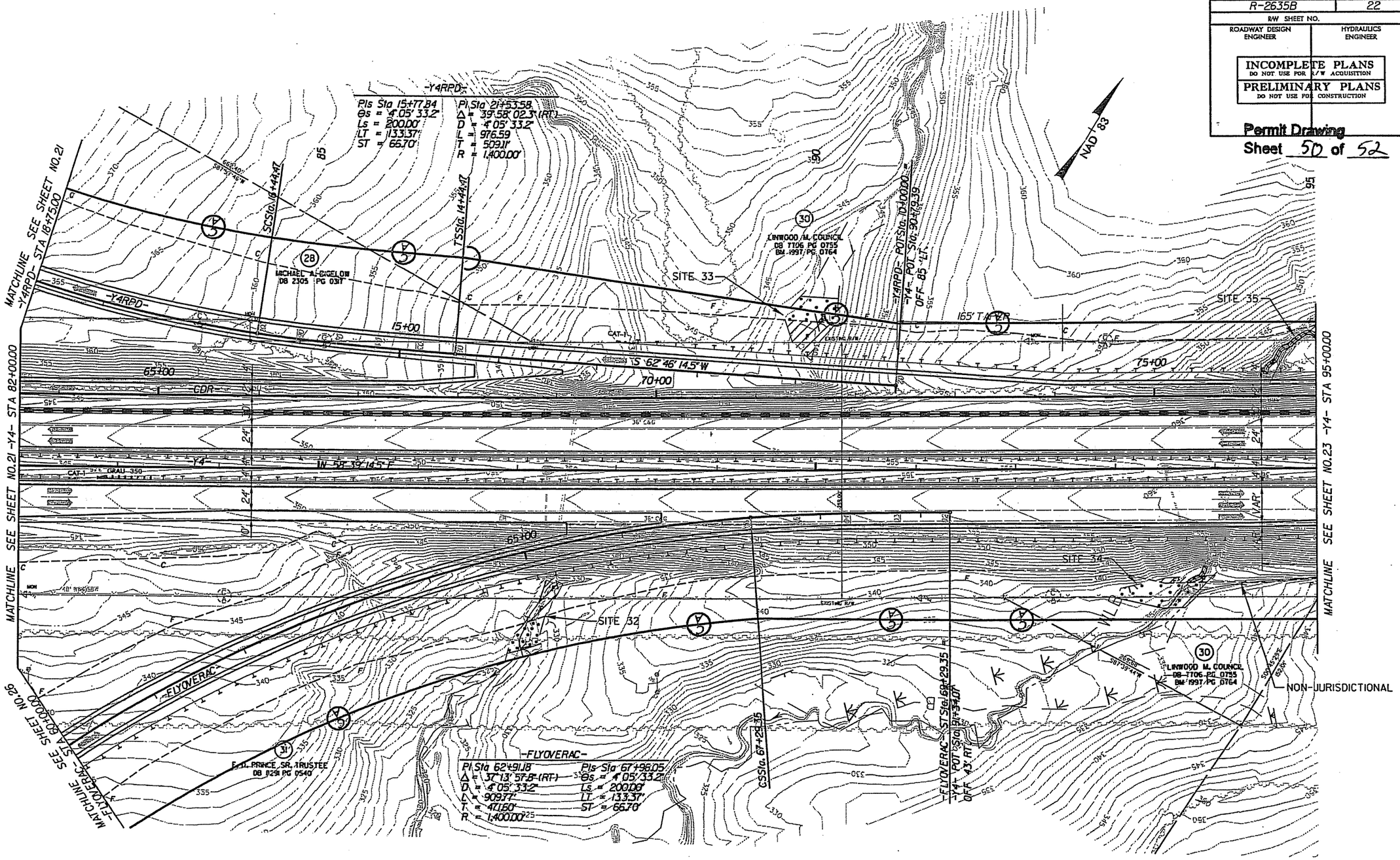
PROJECT REFERENCE NO.
R-2635B
SHEET NO.
22
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 49 of 52
NAD 83
8/17/99
REVISIONS
-Y4RPD-
PIs Sta 15+77.84
θs = 4°05′ 33.2″
Ls = 200.00′
LT = 133.37′
ST = 66.70′
PI Sta 21+53.58
Δ = 39°58′ 02.3″ (RT)
D = 4°05′ 33.2″
L = 976.59
T = 509.11′
R = 1,400.00′
MATCHLINE SEE SHEET NO.21 -Y4RPD- STA 18+75.00
SCSta. 16+44.47
TSSta. 14+44.47
662.40′
S87°57′46″W
28
MICHAEL A. BIGELOW
DB 2305 PG 0317
-Y4RPD-
15+00
CAT-1
S 62°46′ 14.5″ W
70+00
65+00
-CDR-
36′ C&G
-Y4-
W 58°39′ 14.5″ E
CAT-1
GRAU 350
30
LINWOOD M. COUNCIL
DB 7706 PG 0755
BM 1997 PG 0764
SITE 33
EXISTING R/W
-Y4RPD- POT Sta. 70+00.00 = -Y4- POT Sta. 90+79.39 OFF 85′ LT.
165′ TAPER
75+00
SITE 35
MATCHLINE SEE SHEET NO.21 -Y4- STA 82+00.00
MATCHLINE SEE SHEET NO.23 -Y4- STA 95+00.00
48′ RW/SBW
-FLYOVERAC-
65+00
SITE 32
SITE 34
NON-JURISDICTIONAL
269.68
S87°39′44″W
S00°45′29″E
152.01′
30
LINWOOD M. COUNCIL
DB 7706 PG 0755
BM 1997 PG 0764
MATCHLINE SEE SHEET NO.26 STA 60+00.00 -FLYOVERAC-
31
E.D. PRINCE SR. TRUSTEE
DB 6291 PG 0540
-FLYOVERAC-
PI Sta 62+91.18
Δ = 37°13′ 57.8″ (RT)
D = 4°05′ 33.2″
L = 909.77′
T = 471.60′
R = 1,400.00′
PIs Sta 67+96.05
θs = 4°05′ 33.2″
Ls = 200.00′
LT = 133.37′
ST = 66.70′
CSSta. 67+29.35
-FLYOVERAC- STSta. 69+29.35 -Y4- POT Sta. 91+34.07 OFF 43′ RT.
LEGEND
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
FOR -Y4- PROFILE SEE SHEET NO.45-46
FOR -FLYOVERAC- PROFILE SEE SHEET NO.49-50
FOR -Y4RPD- PROFILE SEE SHEET NO.56

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 50 of 52



LEGEND

- DENOTES FILL IN WETLAND
- DENOTES FILL IN SURFACE WATER
- DENOTES MECHANIZED CLEARING

FOR -Y4- PROFILE SEE SHEET NO.45-46
FOR -FLYOVERAC- PROFILE SEE SHEET NO.49-50
FOR -Y4RPD- PROFILE SEE SHEET NO.56

REVISIONS

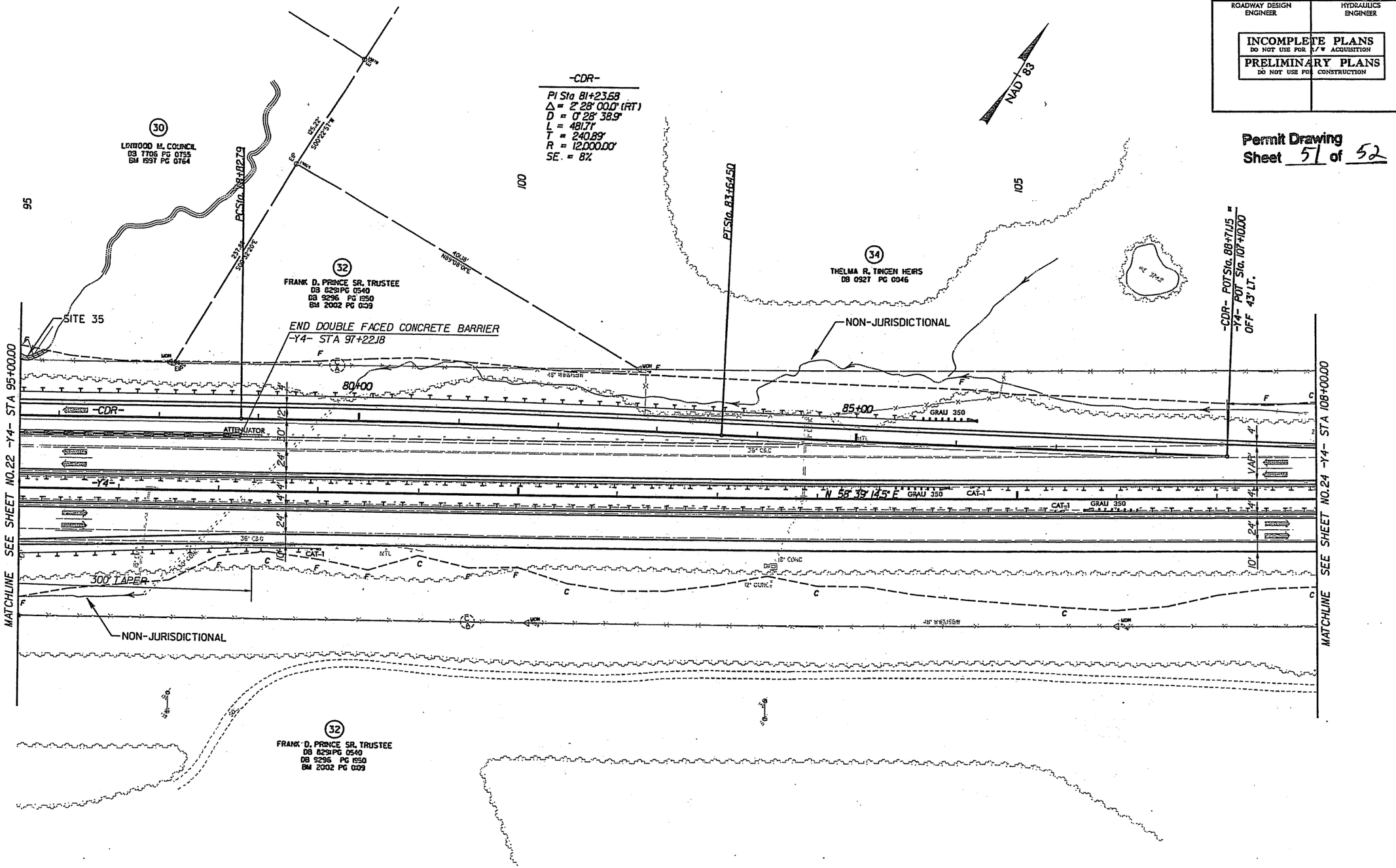
8/17/99

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

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

Permit Drawing
Sheet 51 of 52



FOR -Y4- PROFILE SEE SHEET NO.46

REVISIONS

8/17/99

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 50 of 52

LEGEND

F (hatched)	DENOTES FILL IN WETLAND
S (hatched)	DENOTES FILL IN SURFACE WATER
(dotted)	DENOTES MECHANIZED CLEARING

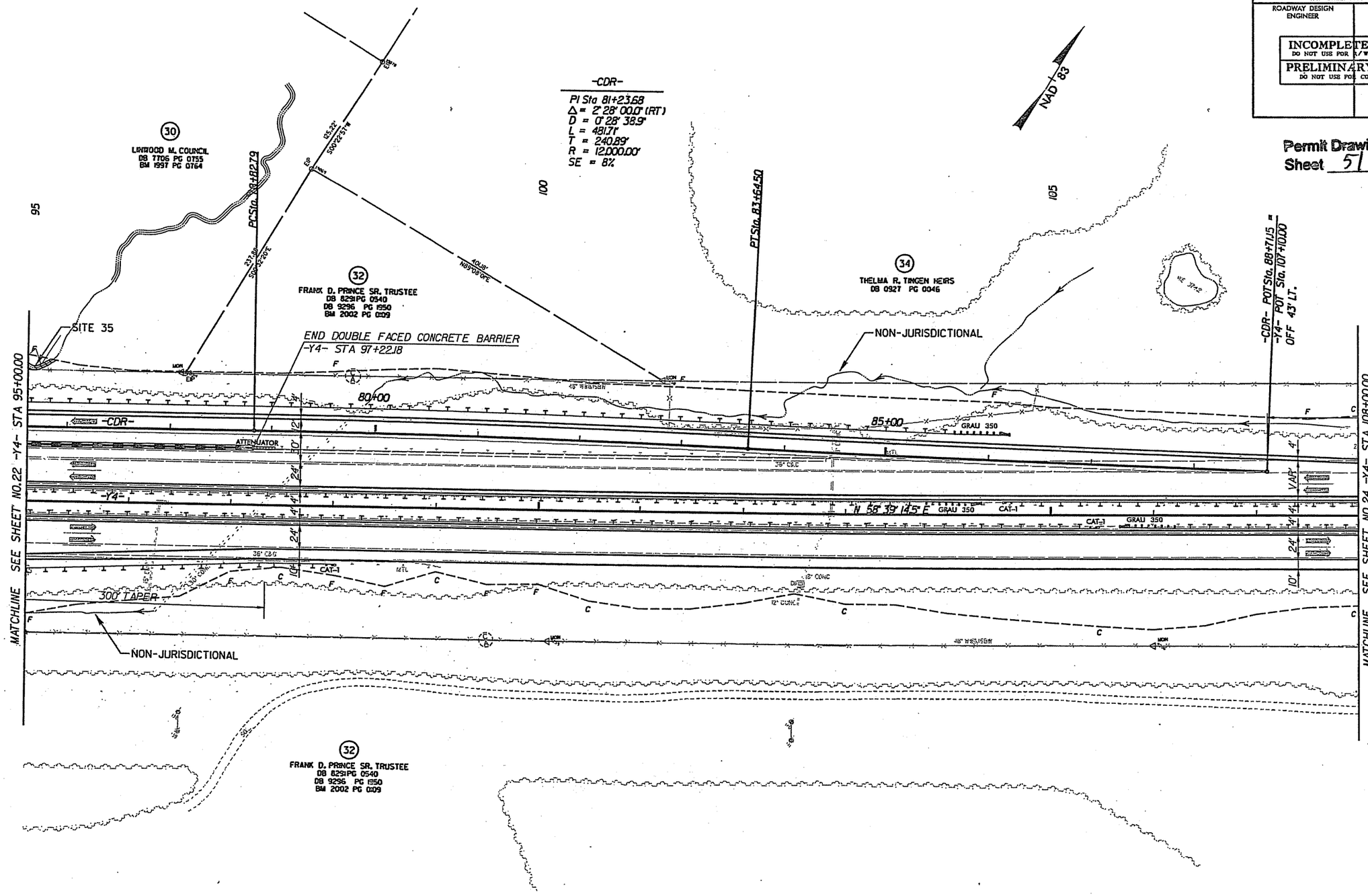
FOR -Y4- PROFILE SEE SHEET NO.45-46
FOR -FLYOVERAC- PROFILE SEE SHEET NO.49-50
FOR -Y4RPD- PROFILE SEE SHEET NO.56

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

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

Permit Drawing
Sheet 51 of 52



FOR -Y4- PROFILE SEE SHEET NO.46

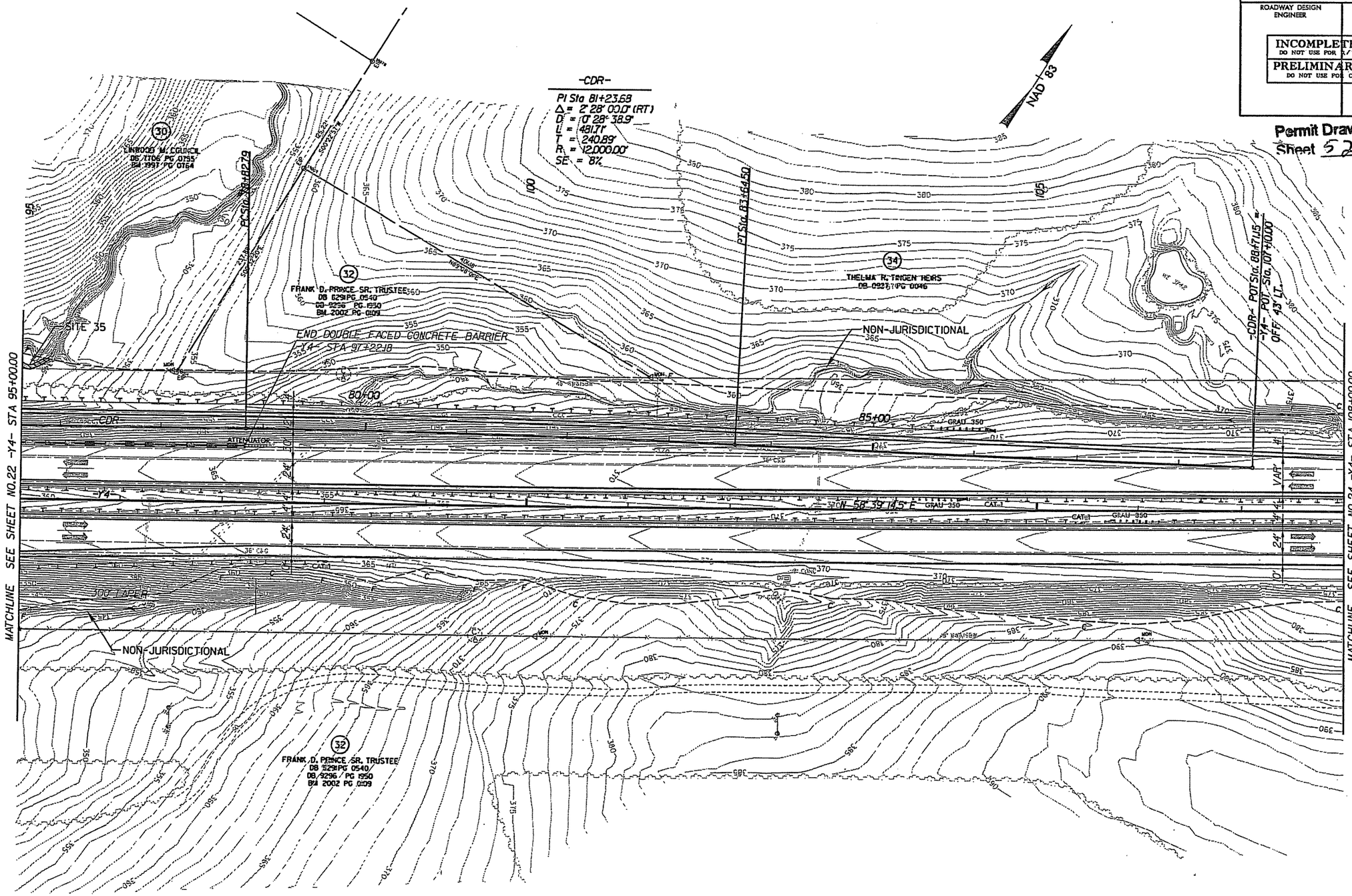
REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635B	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

Permit Drawing
Sheet 52 of 52



FOR -Y4- PROFILE SEE SHEET NO.46

REVISIONS

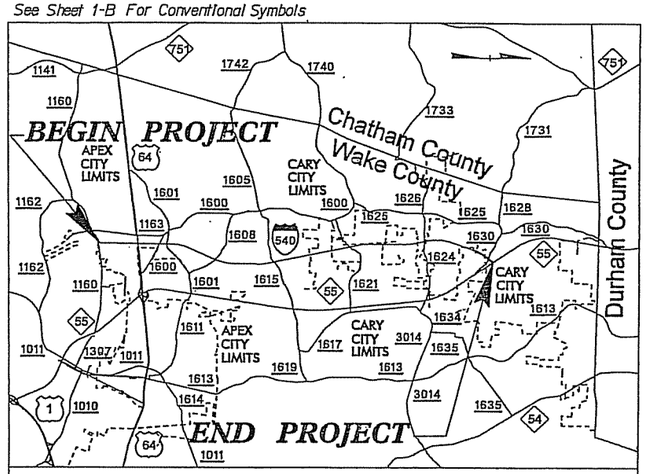
8/17/99

05/08/59

CONTRACT: TIP PROJECT: R-2635C

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

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



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RECEIVED
AUG 30 2007
RALEIGH REGULATORY FIELD OFFICE

WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2635C	1	

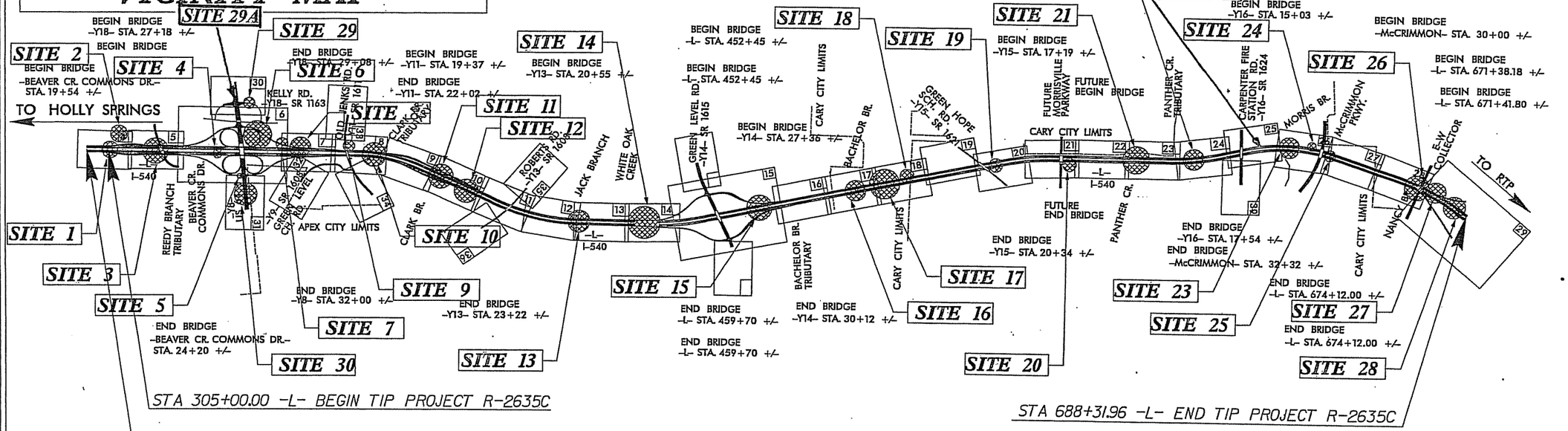
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

NAD 83

Permit Drawing
Sheet 14 of 109

LOCATION:

TYPE OF WORK: *GRADING, DRAINAGE, STRUCTURES, PAVING,*



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

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

GRAPHIC SCALES

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

DESIGN DATA

ADT 2008 =
ADT 2028 =
DHV = %
D = %
T = 18 % *
V = 70 MPH

PROJECT LENGTH

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

BRENDA MOORE, P.E.
PROJECT ENGINEER

THAD F. DUNCAN, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

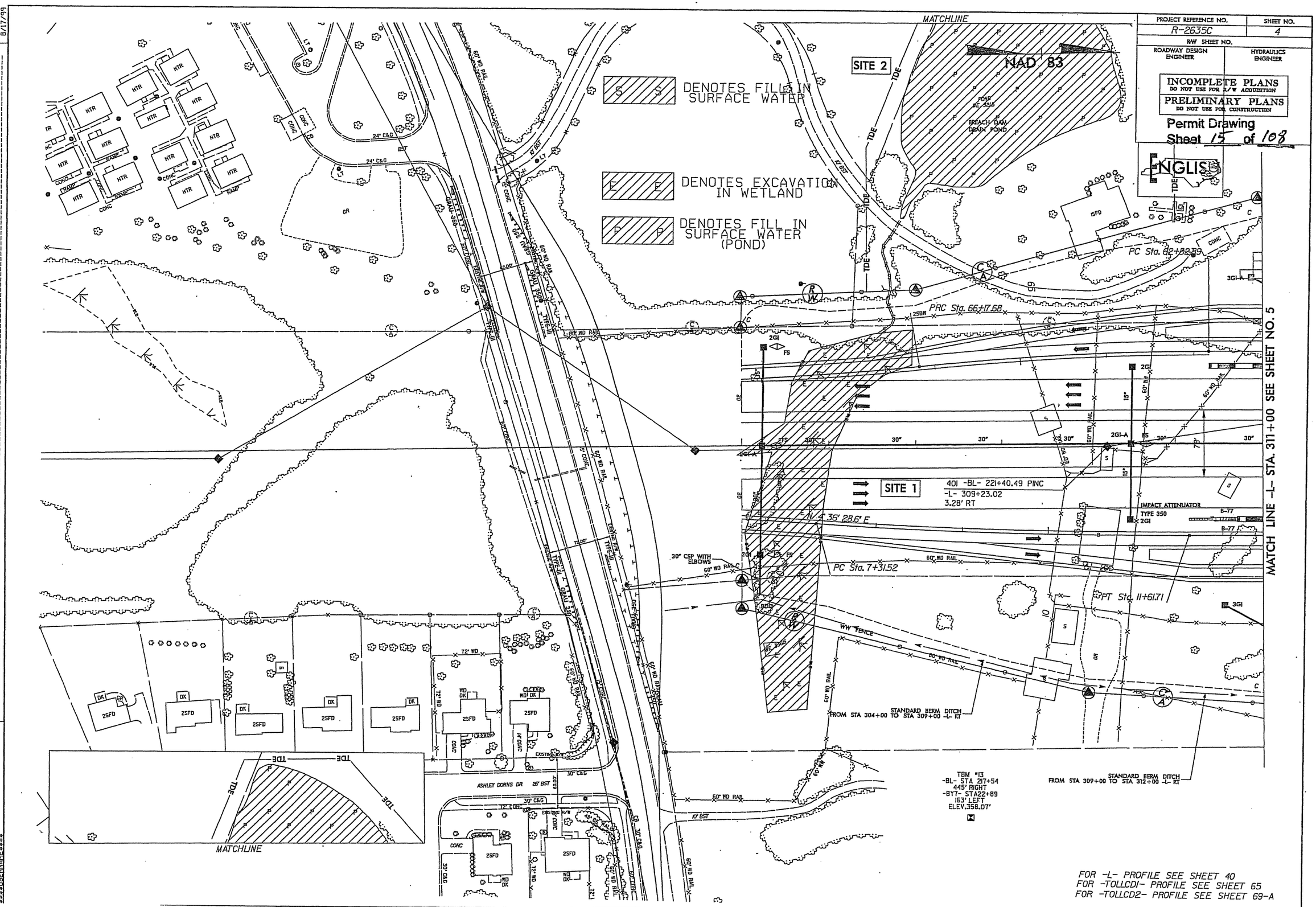
SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

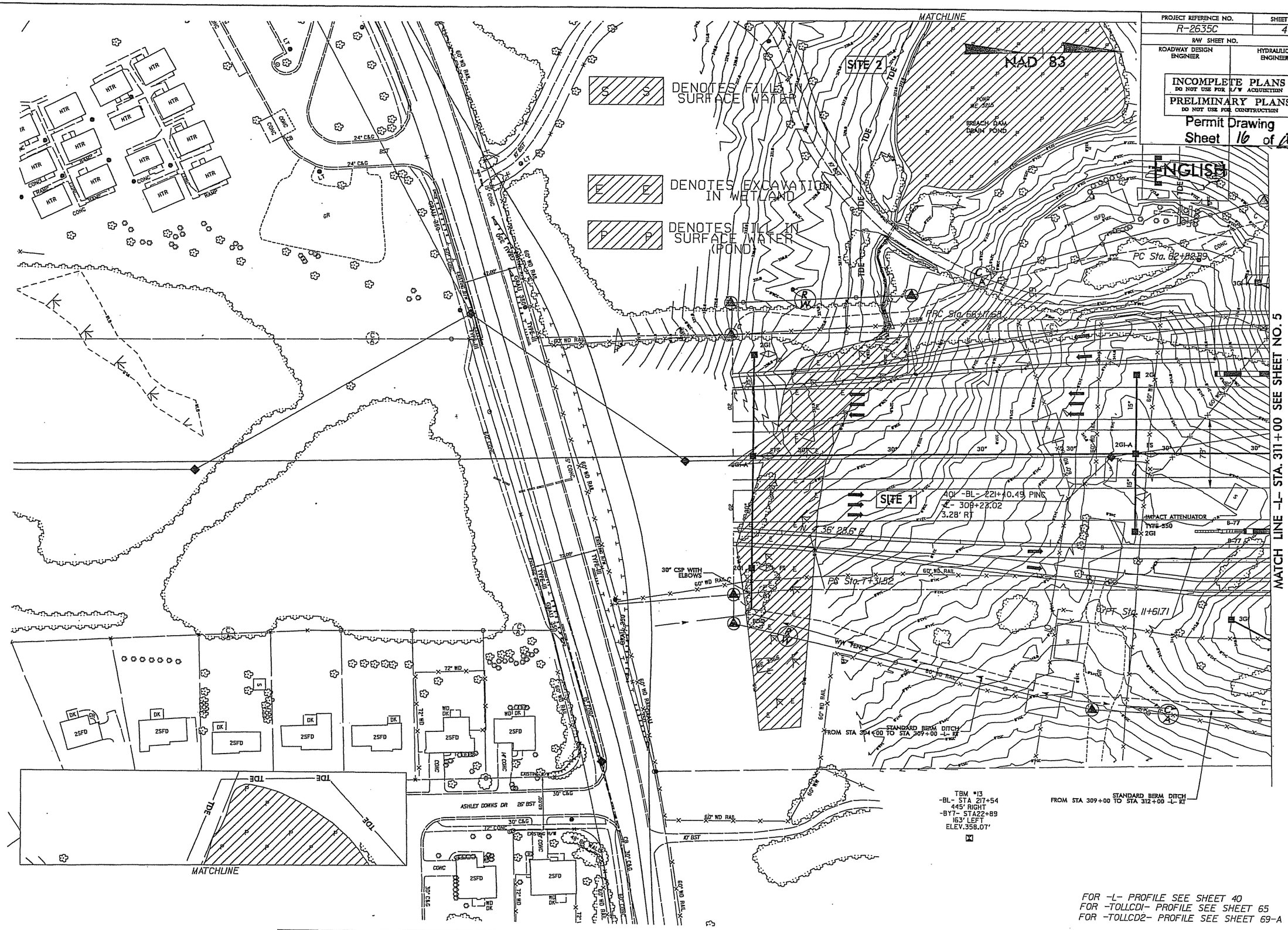
APPROVED
DIVISION ADMINISTRATOR DATE



FOR -L- PROFILE SEE SHEET 40
FOR -TOLLCD1- PROFILE SEE SHEET 65
FOR -TOLLCD2- PROFILE SEE SHEET 69-A

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 16 of 108



FOR -L- PROFILE SEE SHEET 40
FOR -TOLLCD1- PROFILE SEE SHEET 65
FOR -TOLLCD2- PROFILE SEE SHEET 69-A

REVISIONS

8/17/99

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2635C	X-LTTo111

Permit Drawing
Sheet 17 of 108

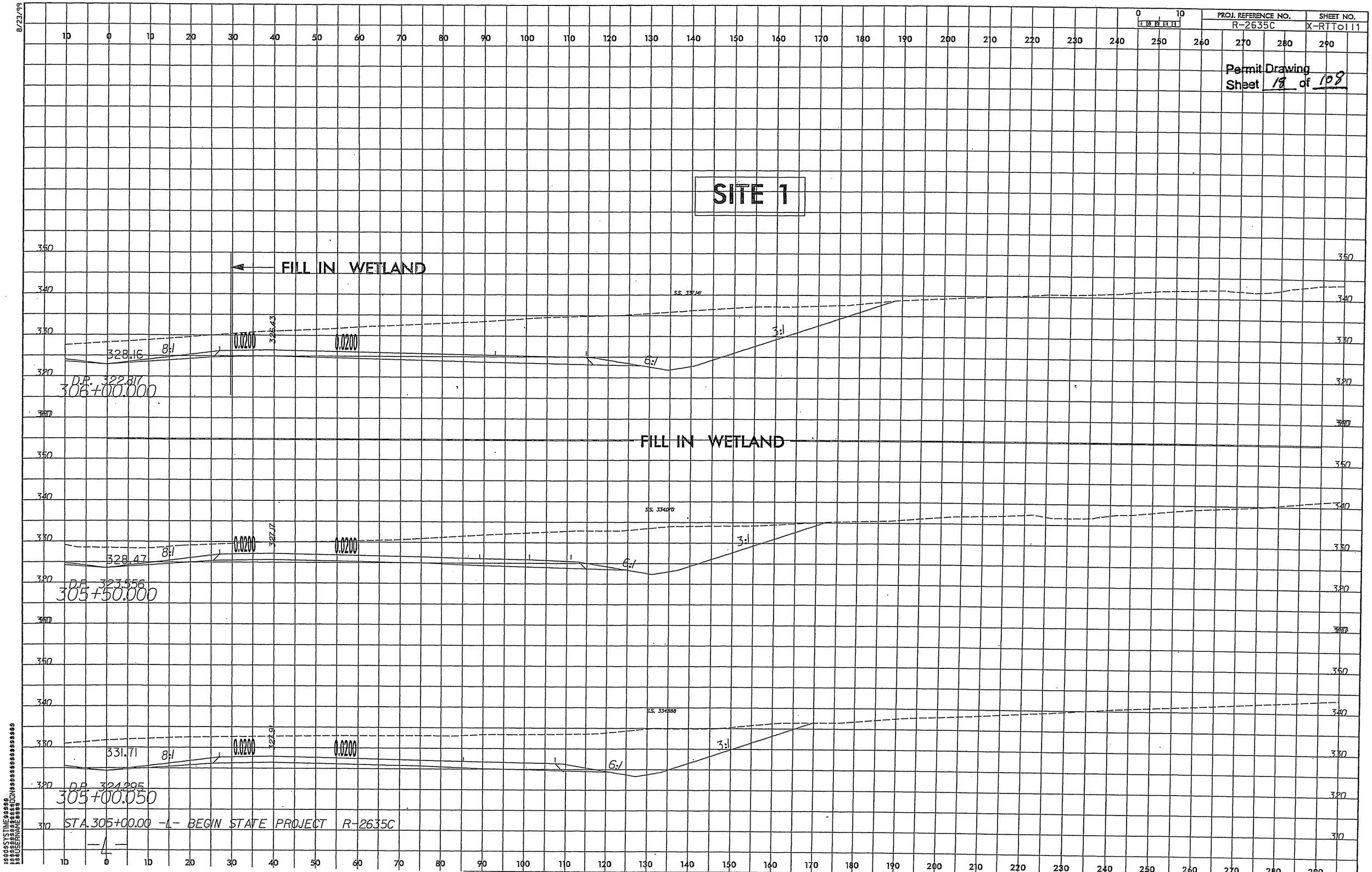
SITE 1

FILL IN WETLAND

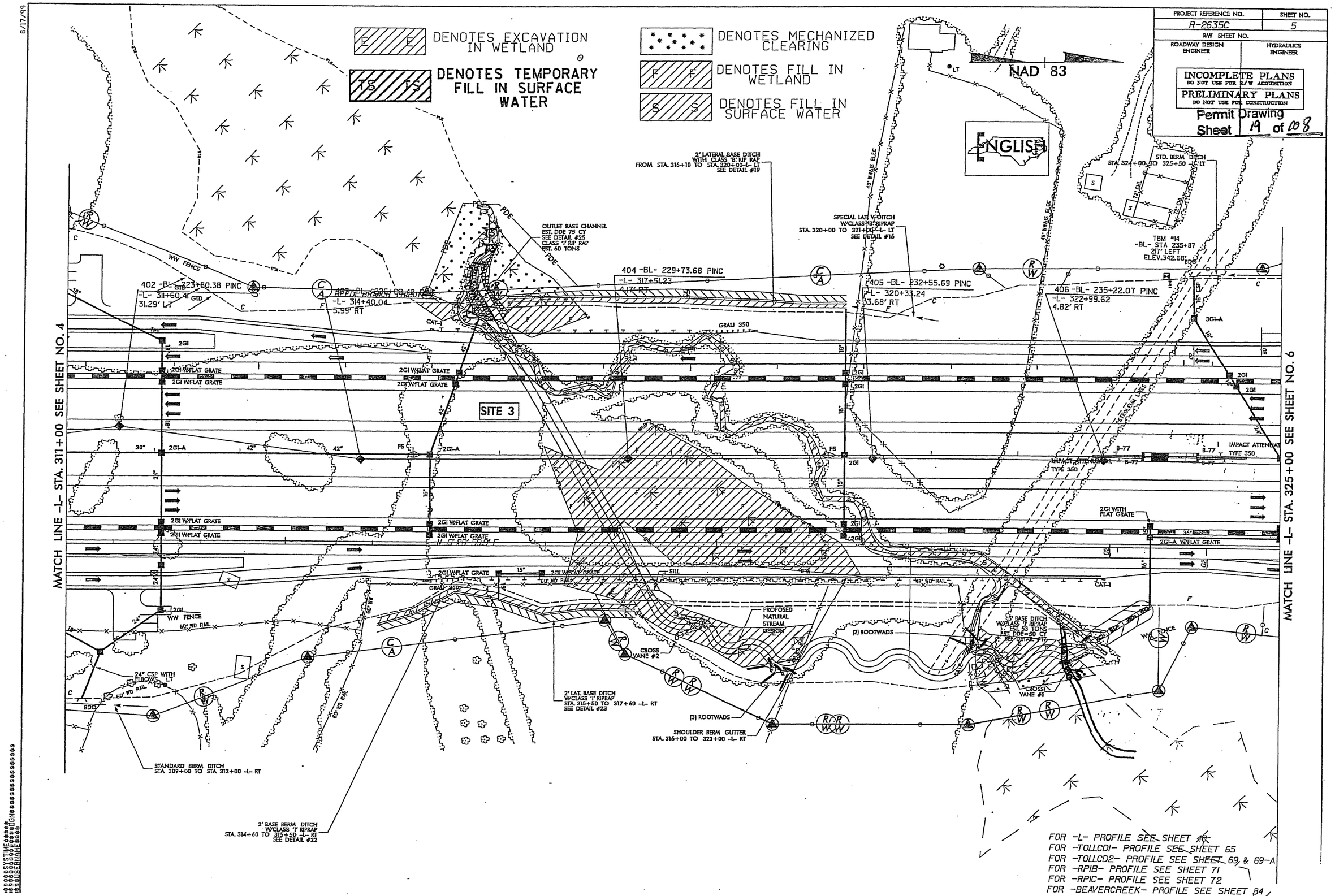
FILL IN WETLAND

FILL IN WETLAND

STA. 305+00.00 -L- BEGIN STATE PROJECT R-2635C



PROJ. REFERENCE NO.
R-2635C
SHEET NO.
X-RTT0111
Permit Drawing
Sheet 18 of 108
SITE 1
FILL IN WETLAND
328.16
8:1
0.0200
326.43
0.0200
6:1
3:1
D.P. 322.817
306+00.000
FILL IN WETLAND
328.47
8:1
0.0200
327.17
0.0200
6:1
3:1
D.P. 323.556
305+50.000
331.71
8:1
0.0200
327.91
0.0200
6:1
3:1
D.P. 324.295
305+00.050
STA.305+00.00 -L- BEGIN STATE PROJECT R-2635C
-L-



FOR -L- PROFILE SEE SHEET 48
FOR -TOLLCD1- PROFILE SEE SHEET 65
FOR -TOLLCD2- PROFILE SEE SHEET 69 & 69-A
FOR -RPIB- PROFILE SEE SHEET 71
FOR -RPIC- PROFILE SEE SHEET 72
FOR -BEAVERCREEK- PROFILE SEE SHEET 84

8/17/99

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 20 of 108

DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

NAD 83

ENGLISH

MATCH LINE -L- STA. 311+00 SEE SHEET NO. 4

MATCH LINE -L- STA. 325+00 SEE SHEET NO. 6

SITE 3

2' LATERAL BASE DITCH WITH CLASS 'B' RIP RAP FROM STA. 316+10 TO STA. 320+00 -L- LT SEE DETAIL #19

OUTLET BASE CHANNEL EST. DDE 75 SEE DETAIL #22 CLASS 'I' RIP RAP EST. 40 TONS

SPECIAL LATV. DITCH W/CLASS 'A' RIPRAP STA. 320+00 TO 321+00 -L- LT SEE DETAIL #16

STD. BERM DITCH STA. 324+00 TO 325+50 -L- LT

TBM #14 -BL- STA 235+87 217' LEFT ELEV. 342.68

402 -BL- 223+80.38 PINC -L- 311+60.41 SID 342.29 LT

403 -BL- 226+07.43 PINC -L- 314+40.64 5.99' RT

404 -BL- 229+73.68 PINC -L- 317+51.72 4.17' RT

405 -BL- 232+55.69 PINC -L- 320+35.28 3.68' RT

406 -BL- 235+22.07 PINC -L- 322+99.82 4.82' RT

STANDARD BERM DITCH STA 309+00 TO STA 312+00 -L- RT

2' BASE BERM DITCH W/CLASS 'I' RIPRAP STA. 314+60 TO 315+50 -L- RT SEE DETAIL #22

2' LAT. BASE DITCH W/CLASS 'I' RIPRAP STA. 315+50 TO 317+60 -L- RT SEE DETAIL #23

PROPOSED NATURAL STREAM DESIGN

CROSS VANE #2

(3) ROOTWADS

SHOULDER BERM GUTTER STA. 316+00 TO 323+00 -L- RT

(2) ROOTWADS

15' BASE DITCH W/CLASS 'I' RIPRAP EST. 63 TONS EST. DDE=50' SEE DETAIL #17

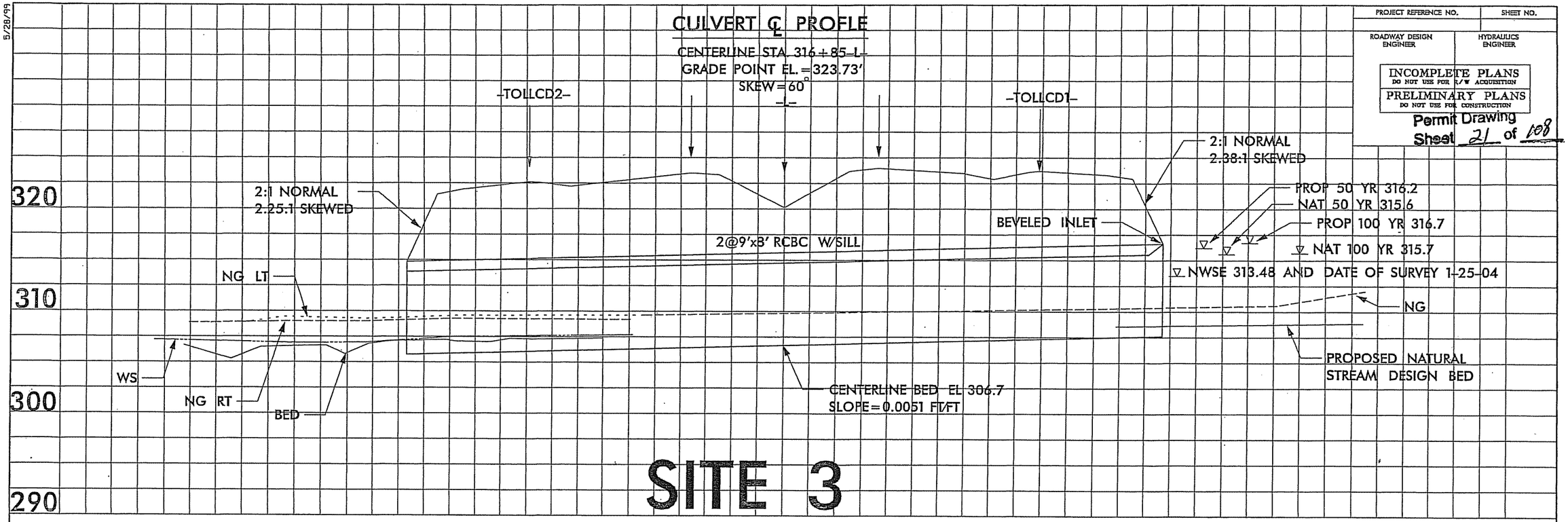
CROSS VANE #1

IMPACT ATTENUATOR TYPE 350

DENOTES TEMPORARY FILL IN SURFACE WATER

FOR -L- PROFILE SEE SHEET 16
FOR -TOLLCD1- PROFILE SEE SHEET 65
FOR -TOLLCD2- PROFILE SEE SHEET 69 & 69-A
FOR -RPIB- PROFILE SEE SHEET 71
FOR -RPIC- PROFILE SEE SHEET 72
FOR -BEAVERCREEK- PROFILE SEE SHEET 84

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



PROJECT REFERENCE NO.	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

Permit Drawing
Sheet 21 of 108

5/28/99

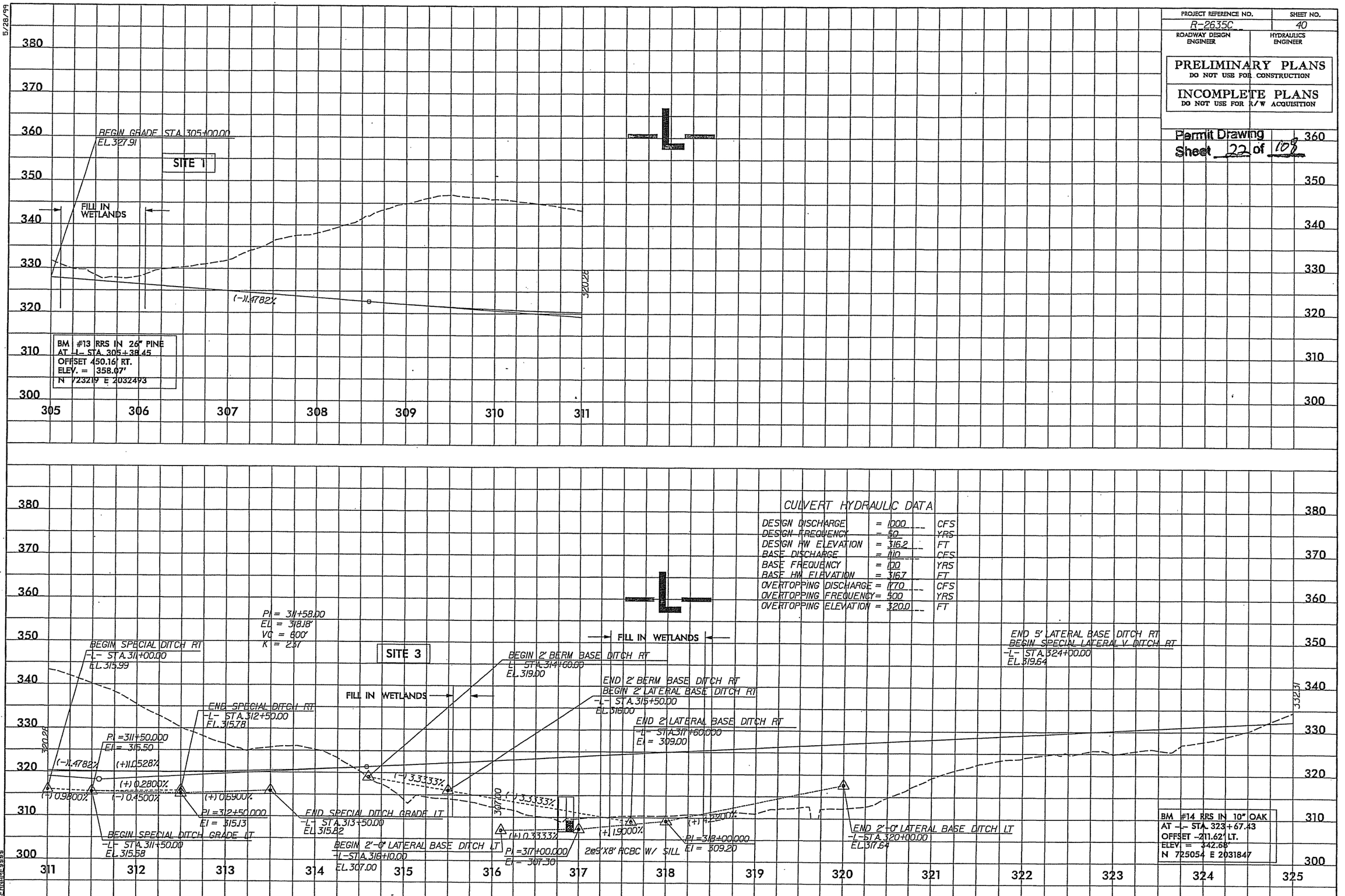
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

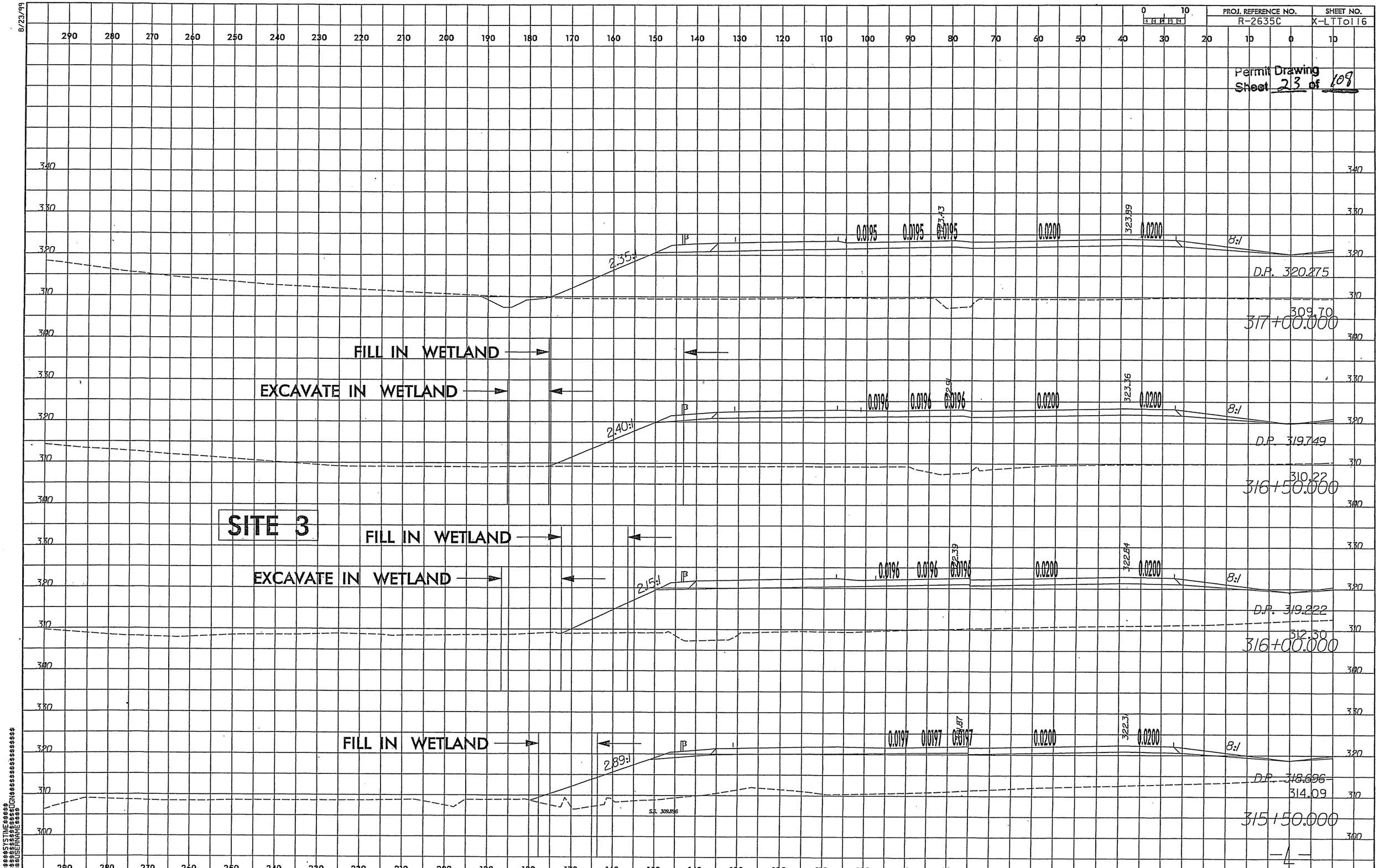
Permit Drawing
Sheet 22 of 108



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1000	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 316.2	FT
BASE DISCHARGE	= 770	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 316.7	FT
OVERTOPPING DISCHARGE	= 1770	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 320.0	FT

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

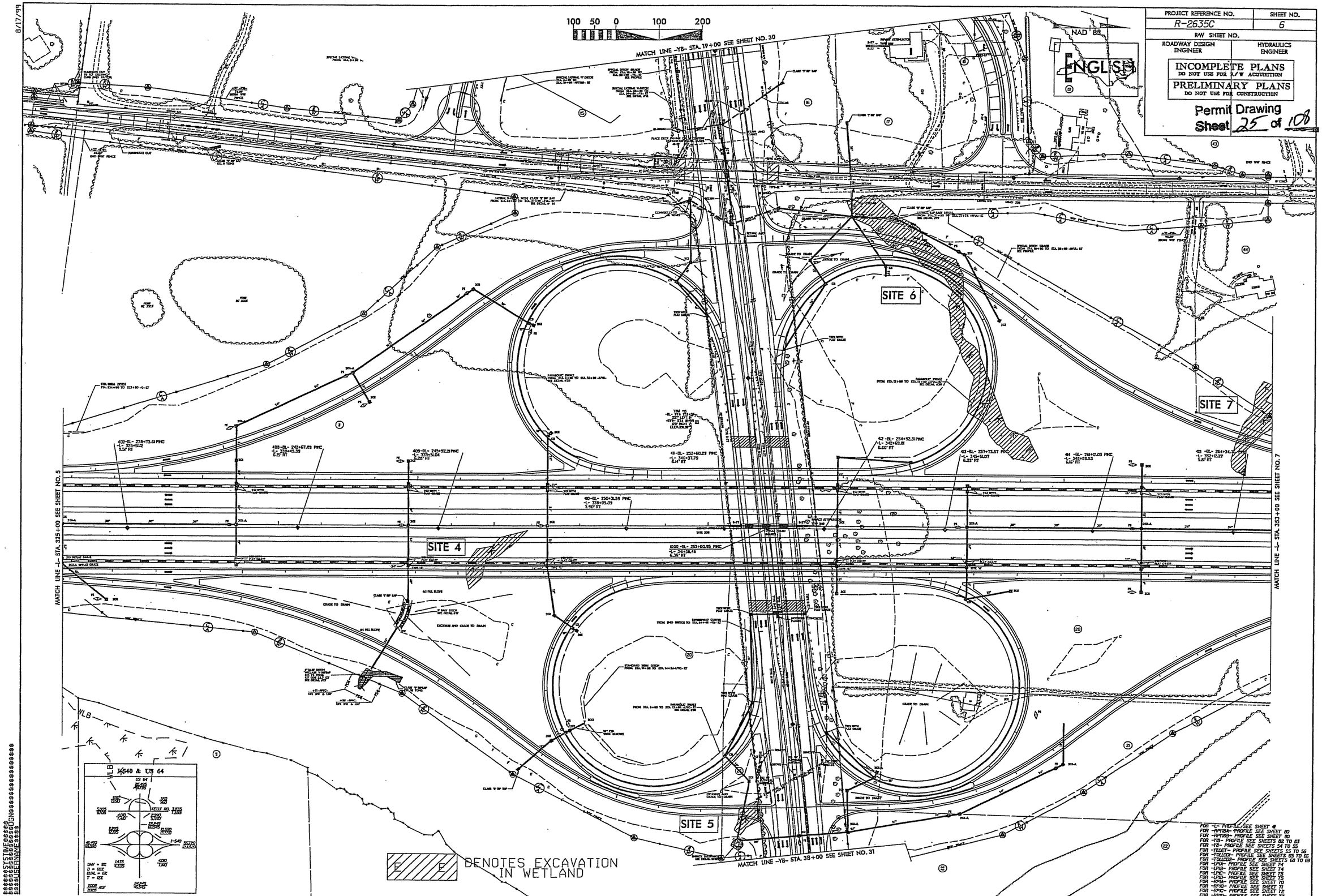


PROJ. REFERENCE NO.
R-2635C
SHEET NO.
X-LTT0116
Permit Drawing
Sheet 23 of 108
SITE 3
FILL IN WETLAND
EXCAVATE IN WETLAND
FILL IN WETLAND
EXCAVATE IN WETLAND
FILL IN WETLAND
2.35:1
2.40:1
2.15:1
2.89:1
0.0195
0.0196
0.0197
0.0200
323.89
323.36
322.84
322.31
8:1
D.P. 320.275
309.70
317+00.000
D.P. 319.749
310.22
316+50.000
D.P. 319.222
312.30
316+00.000
D.P. 318.696
314.09
315+50.000
S.S. 309.896

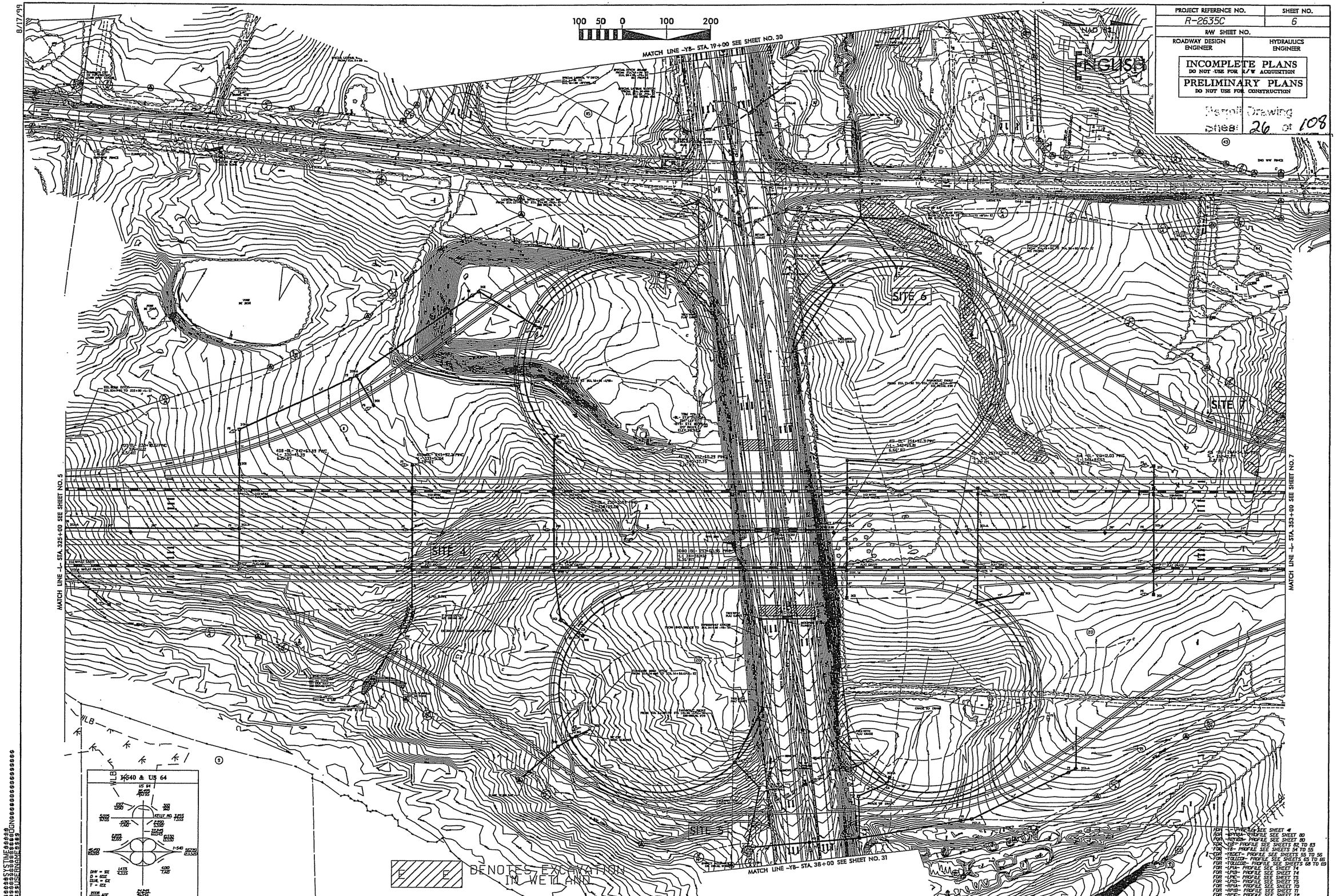
8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2635C	X-RTTo118

Permit Drawing
Sheet 24 of 108



PROJECT REFERENCE NO.
R-2635C
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 25 of 108
NAD 83
ENGLISH
100 50 0 100 200
MATCH LINE -YB- STA. 19+00 SEE SHEET NO. 30
MATCH LINE -L- STA. 325+00 SEE SHEET NO. 5
MATCH LINE -L- STA. 353+00 SEE SHEET NO. 7
MATCH LINE -YB- STA. 38+00 SEE SHEET NO. 31
SITE 4
SITE 5
SITE 6
SITE 7
I-540 & US 64
DENOTES EXCAVATION IN WETLAND



8/17/99
PROJECT REFERENCE NO.
R-2635C
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Parrott Drawing
Sheet 26 of 108
100 50 0 100 200
MATCH LINE -Y8- STA. 19+00 SEE SHEET NO. 30
ENGLISH
SITE 6
SITE 7
SITE 4
SITE 5
MATCH LINE -L- STA. 325+00 SEE SHEET NO. 5
MATCH LINE -L- STA. 353+00 SEE SHEET NO. 7
MATCH LINE -Y8- STA. 38+00 SEE SHEET NO. 31
I-540 & US 64
DENOTES EXCAVATION IN WETLAND

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	65
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Permit Drawing
Sheet 27 of 108

5/28/99

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

5/28/99

-RPTC-

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	72
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

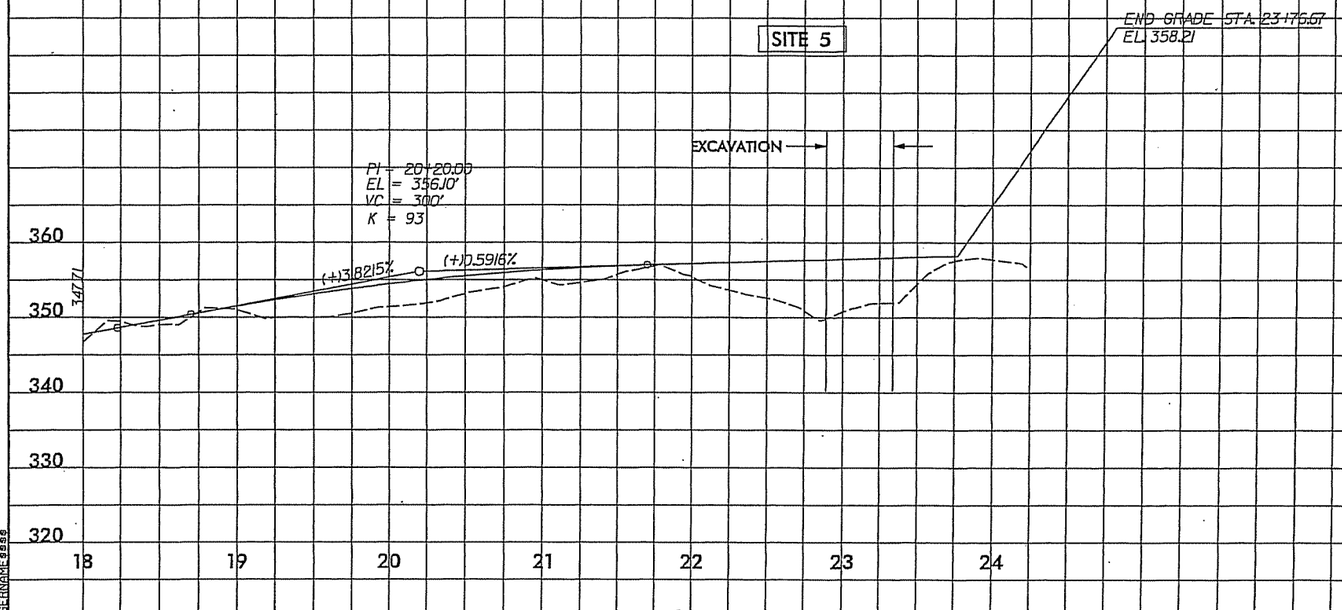
Permit Drawing
Sheet 28 of 108

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 56

DRAINAGE AREA	= 33	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 125	CFS
DESIGN HW ELEVATION	= 334.2	FT
100 YEAR DISCHARGE	= 136	CFS
100 YEAR HW ELEVATION	= 334.4	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 136	CFS
OVERTOPPING ELEVATION	= 334.5	FT

-RPTC-



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

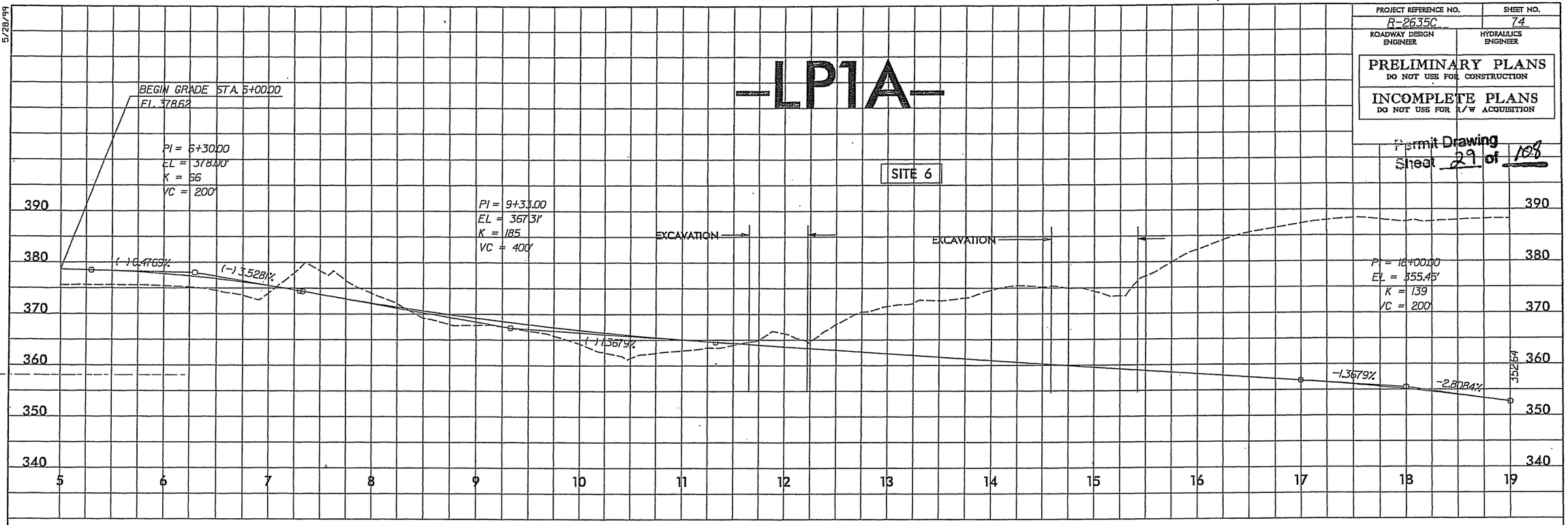
5/28/99

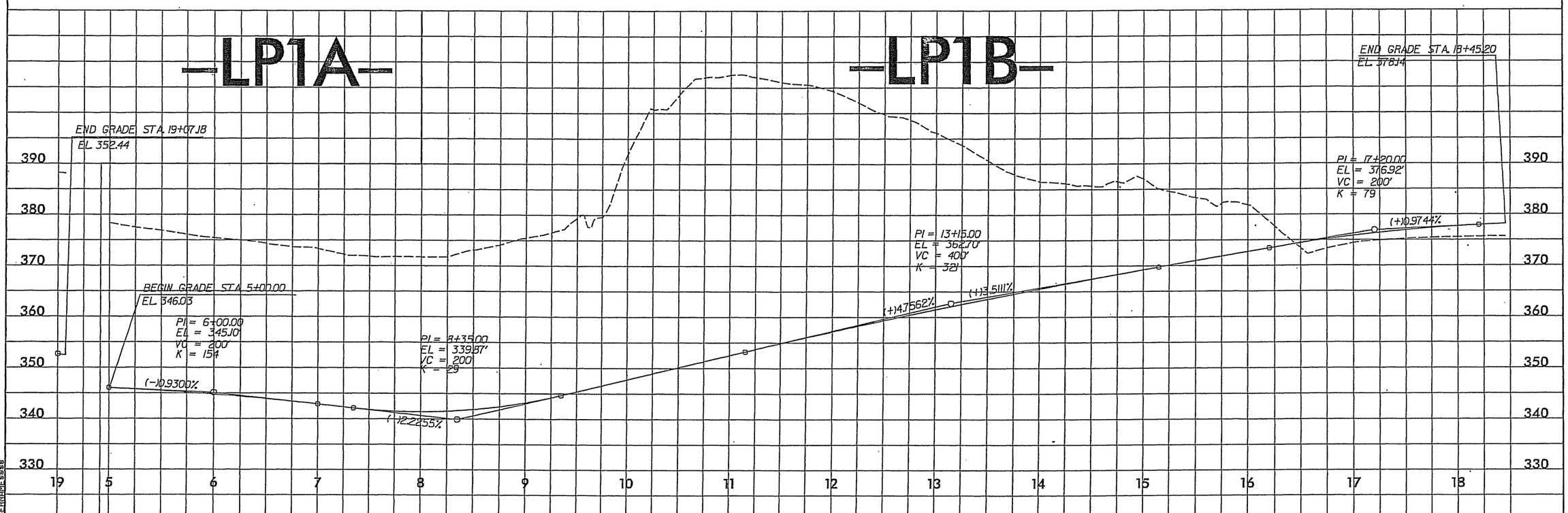
PROJECT REFERENCE NO.	SHEET NO.
R-2635C	74
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Permit Drawing
Sheet 29 of 108





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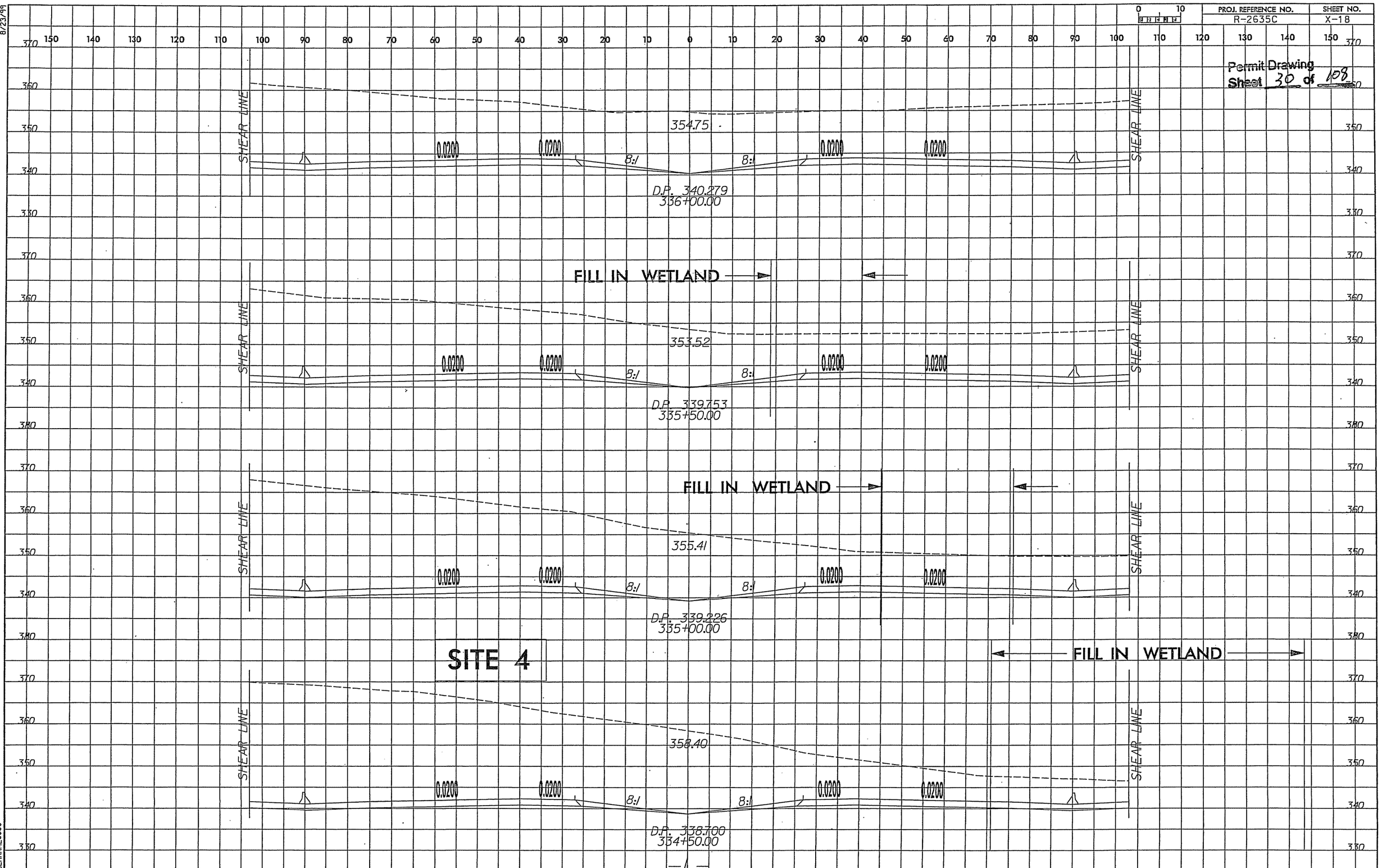
$$$$DGN$$$$
$$$$USERNAME$$$$

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2635C	X-18

Permit Drawing
Sheet 30 of 108



8/17/99
PROJECT REFERENCE NO. R-2635C
SHEET NO. 7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 31 of 108
ENGLISH
NAD 83
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN SURFACE WATER (POND)
DENOTES MECHANIZED CLEARING
SITE 7
SITE 8
45
46
47
50
REMOVE DAM
417 -BL- 271+60.64 PINC
-L- 359+38.14
6.83' RT
1002-BL- 274+33.04 PINC
-L- 362+10.54
7.02' RT
-BY10- 220 5+00.00 POT
416 -BL- 267+57.63 PINC
-L- 355+35.13
6.00' RT
418 -BL- 276+67.36 PINC
-L- 364+44.86
7.19' RT
TBM #16
-BL- STA 271+48
219' RIGHT
-BY10- STA 10+08
152' RIGHT
ELEV.399.58'
-BY10- 221 10+39.18 PINC
N 0° 32' 01.1" E
N 0° 37' 04.9" E
N 0° 32' 24.5" E
N 0° 22' 33.1" E
S 62° 01' 17.8" E
SR 1600 GREEN LEVEL CHURCH RD
IMPACT ATTENUATOR TYPE 350
CONTINUE .04 TO FORM TROUGH
2GI WITH FLAT GRATE
TBDI WITH FLAT GRATE
REMOVE
WELL HOUSE
GREEN HOUSE
MATCH LINE -L- STA. 353+00 SEE SHEET NO. 6
MATCH LINE -L- STA. 367+00 SEE SHEET NO. 8
MATCH LINE -Y9- STA. 15+00 SEE SHEET NO. 32
FOR -L- PROFILE SEE SHEET 42
FOR -CD1- PROFILE SEE SHEETS 66 TO 67
FOR -CD2- PROFILE SEE SHEETS 67 TO 68
FOR -RP1A- PROFILE SEE SHEET 70
FOR -RP1D- PROFILE SEE SHEET 73
FOR -Y9- PROFILE SEE SHEET 56

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 32 of 109

ENGLISH

NAD 83

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN SURFACE WATER (POND)

DENOTES MECHANIZED CLEARING

SITE 7

SITE 8

REMOVE DAM

4PT -BL- 271+60.64 PINC
-L- 359+38.14
6.83 RT

1002-BL- 271+33.04 PINC
-L- 362+10.54
7.02' RT

-BY10- 220 5+00.00 PDT

IMPACT ATTENUATOR TYPE 350

TBM 516
-BL- STA 271+48
219' RIGHT
-BY10- STA 10+08
152' RIGHT
ELEV.399.58'

416 -BL- 267+57.63 PINC
-L- 355+35.13
6.00' RT

418 -BL- 276+67.36 PINC
-L- 364+44.86
7.19' RT

-BY10- 221 10+39.18 PINC

N 0° 32' 01.1" E

N 0° 37' 04.8" E

N 0° 32' 24.5" E

N 0° 32' 24.5" E

N 0° 22' 33.1" E

CONTINUE .04 TO FORM TROUGH

REMOVE

MATCH LINE -L- STA. 353+00 SEE SHEET NO. 6

MATCH LINE -L- STA. 367+00 SEE SHEET NO. 8

MATCH LINE -Y9- STA. 15+00 SEE SHEET NO. 3

FOR -L- PROFILE SEE SHEET 42
FOR -CD1- PROFILE SEE SHEETS 66 TO 67
FOR -CD2- PROFILE SEE SHEETS 67 TO 68
FOR -RPIA- PROFILE SEE SHEET 70
FOR -RPID- PROFILE SEE SHEET 73
FOR -Y9- PROFILE SEE SHEET 56

8/17/95

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

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	70
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Permit Drawing
Sheet 33 of 108

-RP1A-

SITE 8

BEGIN GRADE STA 5+00.00
EL 384.01'

EXCAVATION

PI = 8+00.00
EL = 384.91'
K = 259
VC = 600'

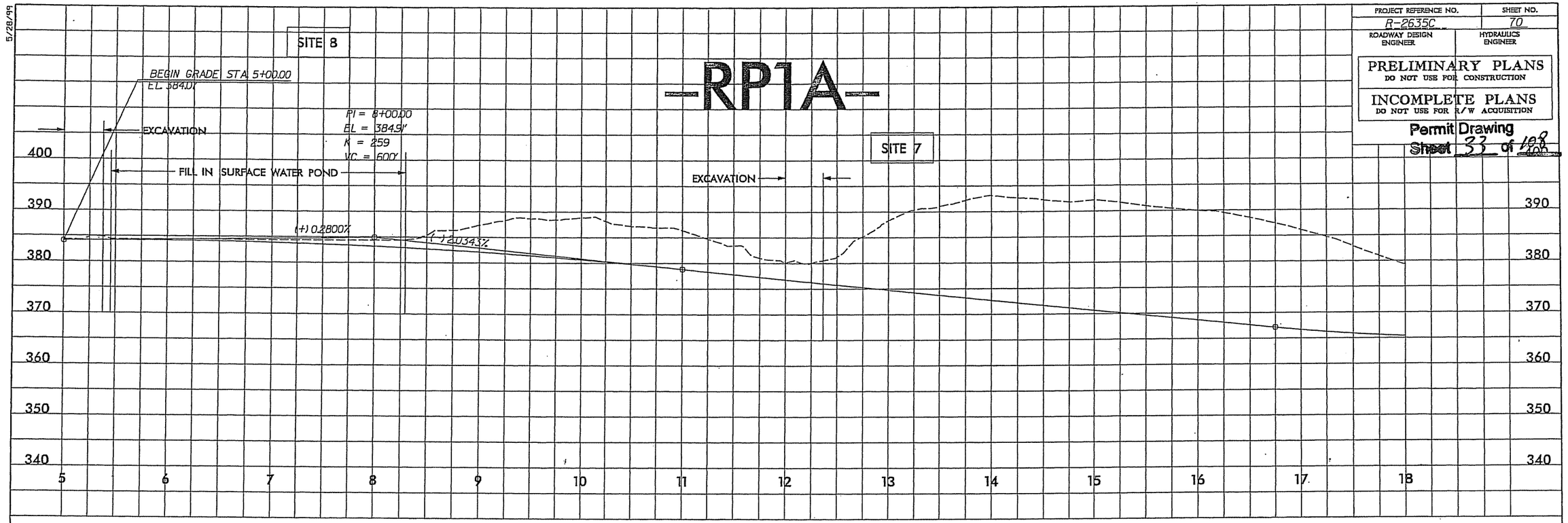
FILL IN SURFACE WATER POND

(+) 0.2800%

(-) 2.0343%

SITE 7

EXCAVATION



-RP1A-

SITE 6

EXCAVATION

PI = 18+50.00
EL = 365.55'
K = 95
VC = 350'

PI = 21+27.00
EL = 368.12'
K = 972
VC = 200'

END GRADE STA 24+58.03
EL 372.90

(-) 2.0343%

(+) 1.6498%

(+) 1.4440%

(-) 0.3000%

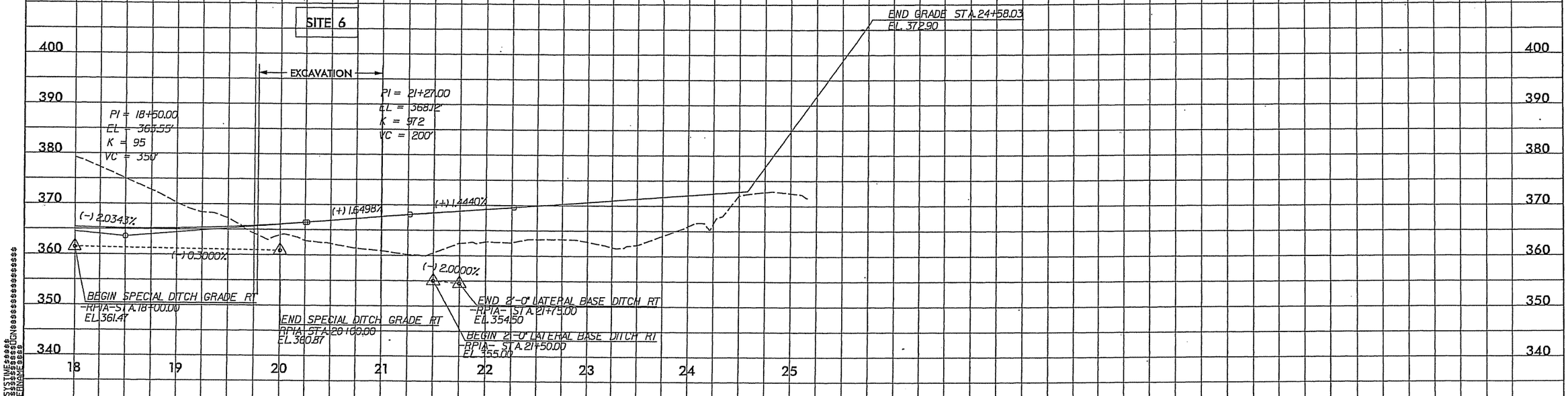
(-) 2.0000%

BEGIN SPECIAL DITCH GRADE RT
-RP1A- STA 18+00.00
EL 361.41'

END SPECIAL DITCH GRADE RT
-RP1A- STA 20+60.00
EL 360.87

END 2'-0" LATERAL BASE DITCH RT
-RP1A- STA 21+75.00
EL 354.50

BEGIN 2'-0" LATERAL BASE DITCH RT
-RP1A- STA 21+50.00
EL 355.00



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

5/28/99

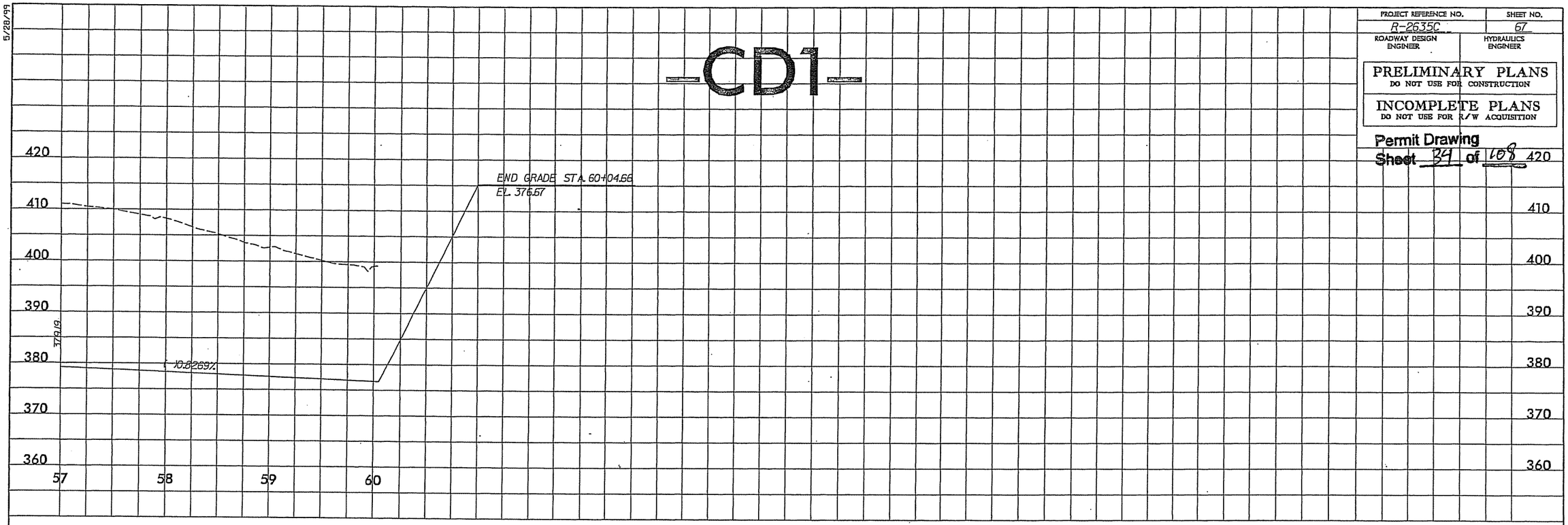
PROJECT REFERENCE NO.	SHEET NO.
R-2635C	67
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

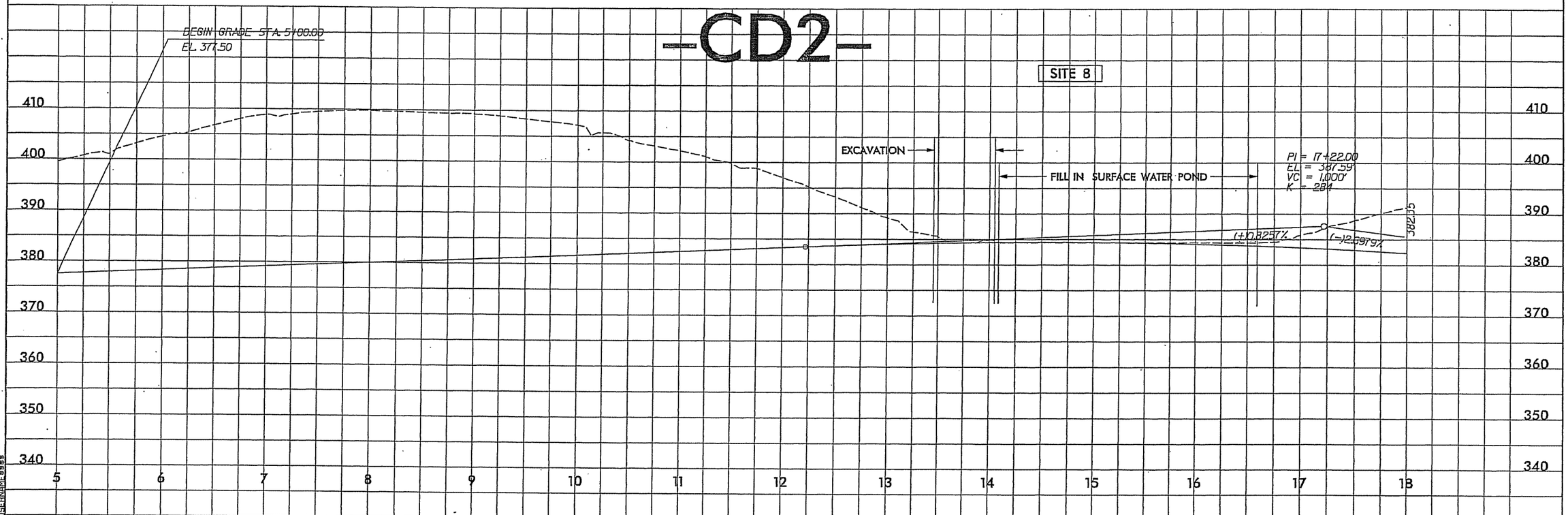
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Permit Drawing
Sheet 34 of 108

-CD1-



-CD2-



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

8/17/99
PROJECT REFERENCE NO. R-2635C
SHEET NO. 8
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 35 of 108
ENGLISH
NAD 83
DENOTES EXCAVATION IN WETLAND
DENOTES TEMPORARY FILL IN SURFACE WATER
DENOTES FILL IN SURFACE WATER (POND)
DENOTES FILL IN SURFACE WATER
MATCH LINE -Y11- STA. 16+00 SEE SHEET NO. 33
MATCH LINE -L- STA. 367+00 SEE SHEET NO. 7
MATCH LINE -L- STA. 381+00 SEE SHEET NO. 9
MATCH LINE -Y11- STA. 26+00 SEE SHEET NO. 34
LATERAL 2' BASE DITCH WITH CLASS 'B' RIP RAP FROM STA. 15+00 TO STA. 17+00 -Y11- RT SEE DETAIL #3
2' BASE DITCH W/CLASS B RIPRAP EST. DDE 670 CY SEE DETAIL #1
TDE
SITE 9
15" CSP W/ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET
BREACH DAM DRAIN POND
CLASS 'B' RIP RAP
POND WE 387.1
TBM #17 -BL- STA 286+23 267' LEFT ELEV.386.88'
420 -BL- 286+22.49 PINC -L- 374+00.02 6.37' RT
421-BL- 290+34.25 PINC -L- 378+12.47 5.67' RT
TOE PROTECTION FROM STA. 377+50 TO STA. 378+90 SEE DETAIL #6
TS Sta. 32+41.40
-L- POC Sta 379+79.33
-GOLPLAZA- ST Sta. 33+61.40 75.00 LT
4' BASE DITCH WITH CLASS 'I' RIP RAP EST. DDE 18 CY SEE DETAIL #8
IMPACT ATTENUATOR TYPE 350
SITE 10
419-BL- 281+39.77 PINC -L- 369+17.27 6.16' RT
STANDARD BERM DITCH FROM STA. 367+00 TO STA. 370+30 RT TIE TO LATERAL DITCH
CLASS 'B' RIP RAP
18" CSP WITH ELBOWS ROD AND LUG WITH SLEEVE GASKET
CLASS 'I' RIP RAP
CLARK BRANCH TRIBUTARY
SPECIAL LAT. V-DITCH W/CLASS 'B' RIPRAP STA. 375+75 TO 376+50 -L- RT SEE DETAIL #16
BERM DITCH WITH CLASS 'B' RIP RAP FROM STA. 376+50 TO STA. 382+50 -L- RT SEE DETAIL #5
30" CS WITH ELBOWS
LATERAL 2' BASE DITCH FROM STA. 22+50 TO STA. 24+20 -Y11- RT SEE DETAIL #4
LATERAL V-DITCH FROM STA. 24+20 TO STA. 24+60 -Y11- RT FROM STA. 25+80 TO STA. 28+00 -Y11- RT SEE DETAIL #7
SR 1118 OLD JENKS RD
FOR -L- PROFILE SEE SHEET 42
FOR -TOLLCD1- PROFILE SEE SHEET 67
FOR -TOLLCD2- PROFILE SEE SHEET 68
FOR -Y9- PROFILE SEE SHEETS 56 TO 57
FOR -Y11- PROFILE SEE SHEETS 57 TO 58

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 36 of 108

MATCH LINE -Y11- STA. 16+00 SEE SHEET NO. 33

MATCH LINE -L- STA. 367+00 SEE SHEET NO. 7

MATCH LINE -L- STA. 381+00 SEE SHEET NO. 9

MATCH LINE -Y11- STA. 26+00 SEE SHEET NO. 34

E E DENOTES EXCAVATION IN WETLAND

NAD 83

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER

ENGLISH

F F DENOTES FILL IN SURFACE WATER (POND)

S S DENOTES FILL IN SURFACE WATER

SITE 9

SITE 10

LATERAL 2' BASE DITCH WITH CLASS 'B' RIP RAP FROM STA. 15+00 TO STA. 17+00 -Y11- RT SEE DETAIL #3

2' BASE DITCH W/CLASS B RIPRAP EST. 0.06 AC CR SEE DETAIL #7

15" CSP WELDING ROD AND LUG CONNECTORS W/SLEEVE GASKET

BREACH DAM DRAIN TO POND

CLASS 'B' RIP RAP

POND RE 3071

TBM #17
-BL- STA 286+23
262' LEFT
ELEV. 386.88'

420 -BL- 286+22.49 PINC
-L- 374+00.02
6.37' RT

421-BL- 290+34.25 PINC
-L- 378+12.41
5.67' RT

TOE PROTECTION FROM STA 377+80 TO STA 378+50 SEE DETAIL #6

-L- POB Sta 378+79.33
-TOLLPLAZA- ST Sta 83+61.40
75.00 LT

2' BASE DITCH WITH CLASS 'B' RIP RAP SEE DETAIL #8

419-BL- 281+39.77 PINC
-L- 369+17.27
5.16' RT

IMPACT ATTENUATOR TYPE 350

STANDARD BERM DITCH FROM STA. 367+00 TO STA. 370+30 TIE TO LATERAL DITCH

18" CSP WITH 4 ELBOWS ROD AND LUG WITH SLEEVE GASKET

CLASS 'B' RIP RAP

SPECIAL LAT. 'L' DITCH W/CLASS 'B' RIPRAP STA. 375+75 TO 376+50 -L- RT SEE DETAIL #16

BERM DITCH WITH CLASS 'B' RIP RAP FROM STA. 376+50 TO STA. 382+50 -L- RT SEE DETAIL #5

CLARK BRANCH TRIBUTARY

30" CS WITH ELBOWS

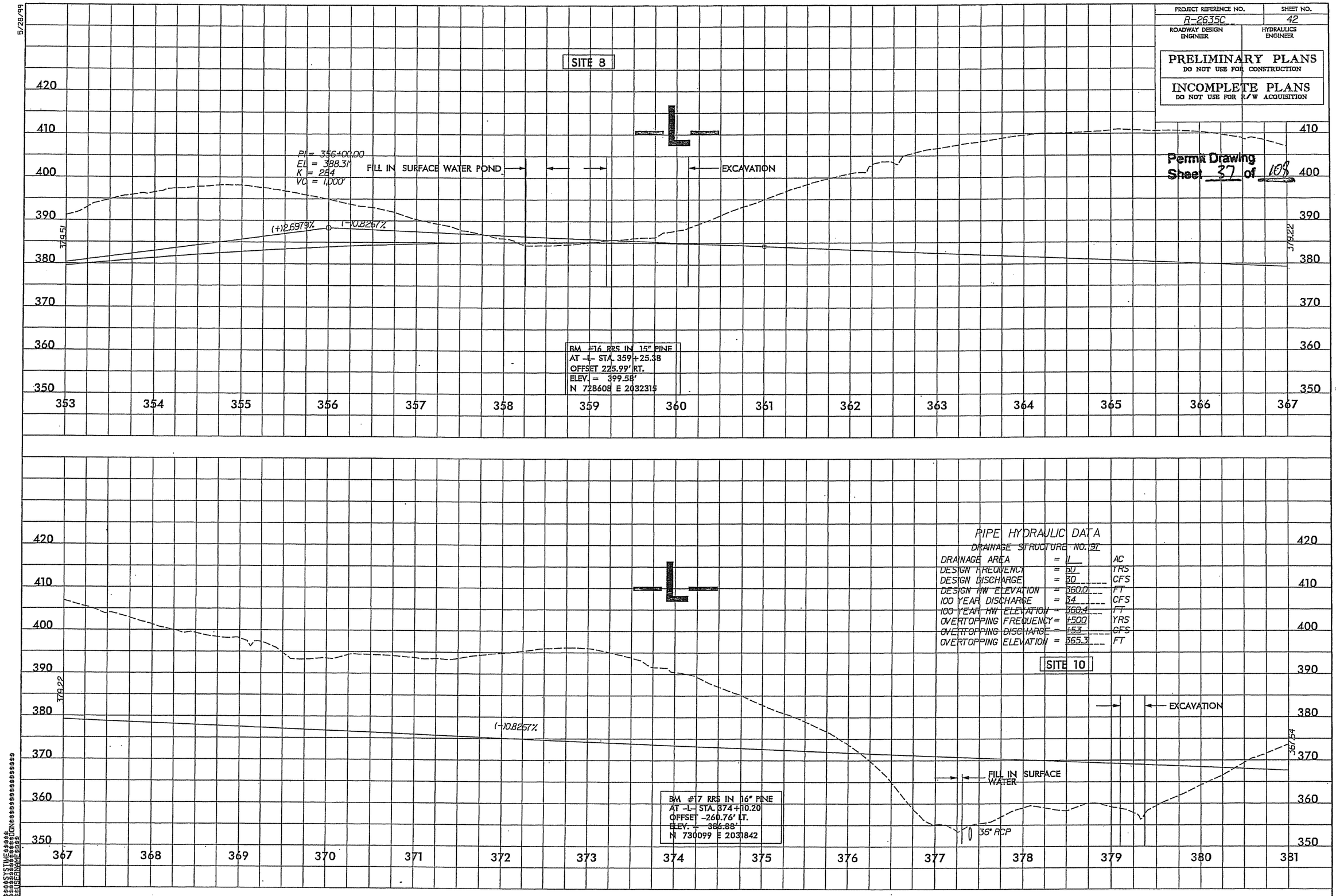
LATERAL 2' BASE DITCH FROM STA. 22+80 TO STA. 24+20 -Y11- RT SEE DETAIL #4

LATERAL 'K' DITCH FROM STA. 24+20 TO STA. 25+80 TO STA. 28+00 -Y11- RT SEE DETAIL #7

REMOVE

FOR -L- PROFILE SEE SHEET 42
FOR -TOLLCD1- PROFILE SEE SHEET 67
FOR -TOLLCD2- PROFILE SEE SHEET 68
FOR -Y9- PROFILE SEE SHEETS 56 TO 57
FOR -Y11- PROFILE SEE SHEETS 57 TO 58

USER:SYSTIME
DGN:
DATE:SYSTIME
USER:SYSTIMEUSER



5/28/99
PROJECT REFERENCE NO.
R-2635C
SHEET NO.
42
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
Permit Drawing
Sheet 37 of 108
SITE 8
PI = 356+00.00
EL = 388.31'
K = 284
VC = 1,000'
FILL IN SURFACE WATER POND
EXCAVATION
(+)2.6979%
(-)0.8267%
379.51
379.22
BM #16 RRS IN 15" PINE
AT -L- STA. 359+25.38
OFFSET 225.99' RT.
ELEV. = 399.58'
N 728608 E 2032315
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 197
DRAINAGE AREA = 11 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 30 CFS
DESIGN HW ELEVATION = 360.0 FT
100 YEAR DISCHARGE = 34 CFS
100 YEAR HW ELEVATION = 360.4 FT
OVERTOPPING FREQUENCY = +500 YRS
OVERTOPPING DISCHARGE = +53 CFS
OVERTOPPING ELEVATION = 365.3 FT
SITE 10
(-)0.8267%
EXCAVATION
FILL IN SURFACE WATER
36" RCP
367.54
BM #17 RRS IN 16" PINE
AT -L- STA. 374+10.20
OFFSET -260.76' LT.
ELEV. = 386.88'
N 730099 E 2031842

5/28/99

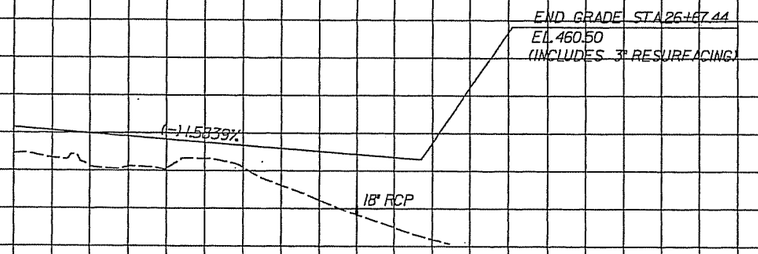
PROJECT REFERENCE NO.	SHEET NO.
R-2635C	57
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Permit Drawing
Sheet 29 of 109

-Y9-



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 187

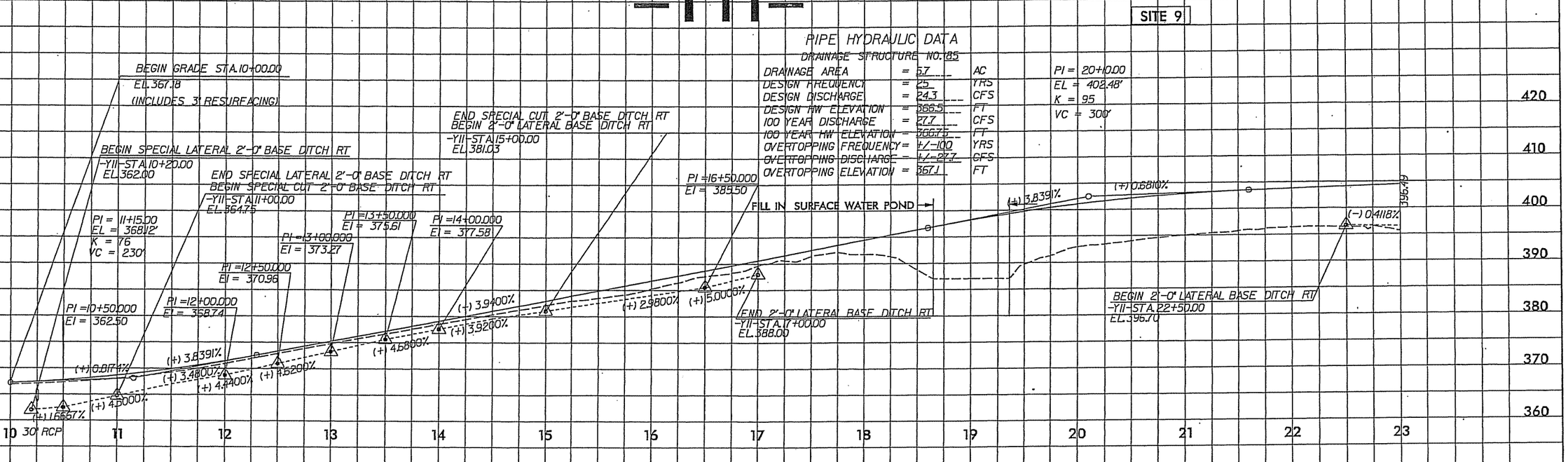
DRAINAGE AREA	= 1.6	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 5.8	CFS
DESIGN HW ELEVATION	= 401.8	FT
100 YEAR DISCHARGE	= 6.6	CFS
100 YEAR HW ELEVATION	= 402.0	FT
OVERTOPPING FREQUENCY	= +100	YRS
OVERTOPPING DISCHARGE	= 6.6	CFS
OVERTOPPING ELEVATION	= 402.5	FT

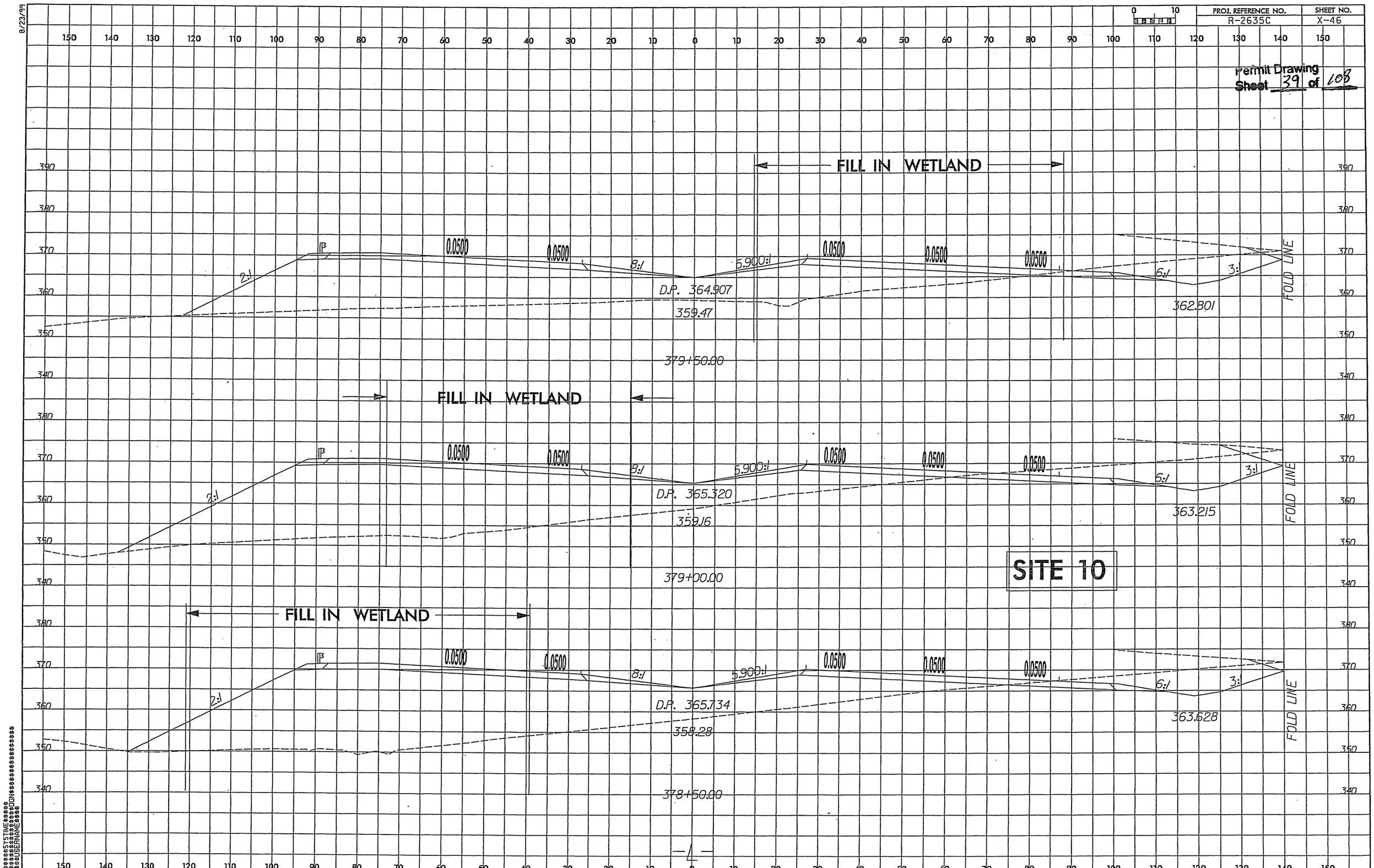
-Y11-

SITE 9

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 185

DRAINAGE AREA	= 5.7	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 24.3	CFS
DESIGN HW ELEVATION	= 366.5	FT
100 YEAR DISCHARGE	= 27.7	CFS
100 YEAR HW ELEVATION	= 366.75	FT
OVERTOPPING FREQUENCY	= +/-100	YRS
OVERTOPPING DISCHARGE	= +/-27.7	CFS
OVERTOPPING ELEVATION	= 367.1	FT





PROJ. REFERENCE NO.
R-2635C
SHEET NO.
X-46
Permit Drawing
Sheet 39 of 108
FILL IN WETLAND
FILL IN WETLAND
FILL IN WETLAND
0.0500
2:1
8:1
5.900:1
6:1
3:1
D.P. 364.907
359.47
362.801
379+50.00
D.P. 365.320
359.16
363.215
379+00.00
D.P. 365.734
358.28
363.628
378+50.00
FOLD LINE
SITE 10

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

Permit Drawing
Sheet 40 of 108

8/17/99

-TOLPLAZA1-	-TOLPLAZA2-		
PI Sta 11+40.78	PI Sta 20+98.84	PI Sta 23+98.63	PIs Sta 25+69.25
Δ = 4° 07' 00.1" (LT)	Δ = 8° 05' 37.0" (LT)	Δ = 6° 50' 53.0" (RT)	Θs = 1° 14' 44.0"
D = 0° 57' 17.7"	D = 2° 29' 28.0"	D = 2° 29' 28.0"	Ls = 100.00'
L = 431.10'	L = 324.90'	L = 274.90'	LT = 66.67'
T = 215.64'	T = 162.72'	T = 137.61'	ST = 33.33'
R = 6,000.00'	R = 2,300.00'	R = 2,300.00'	

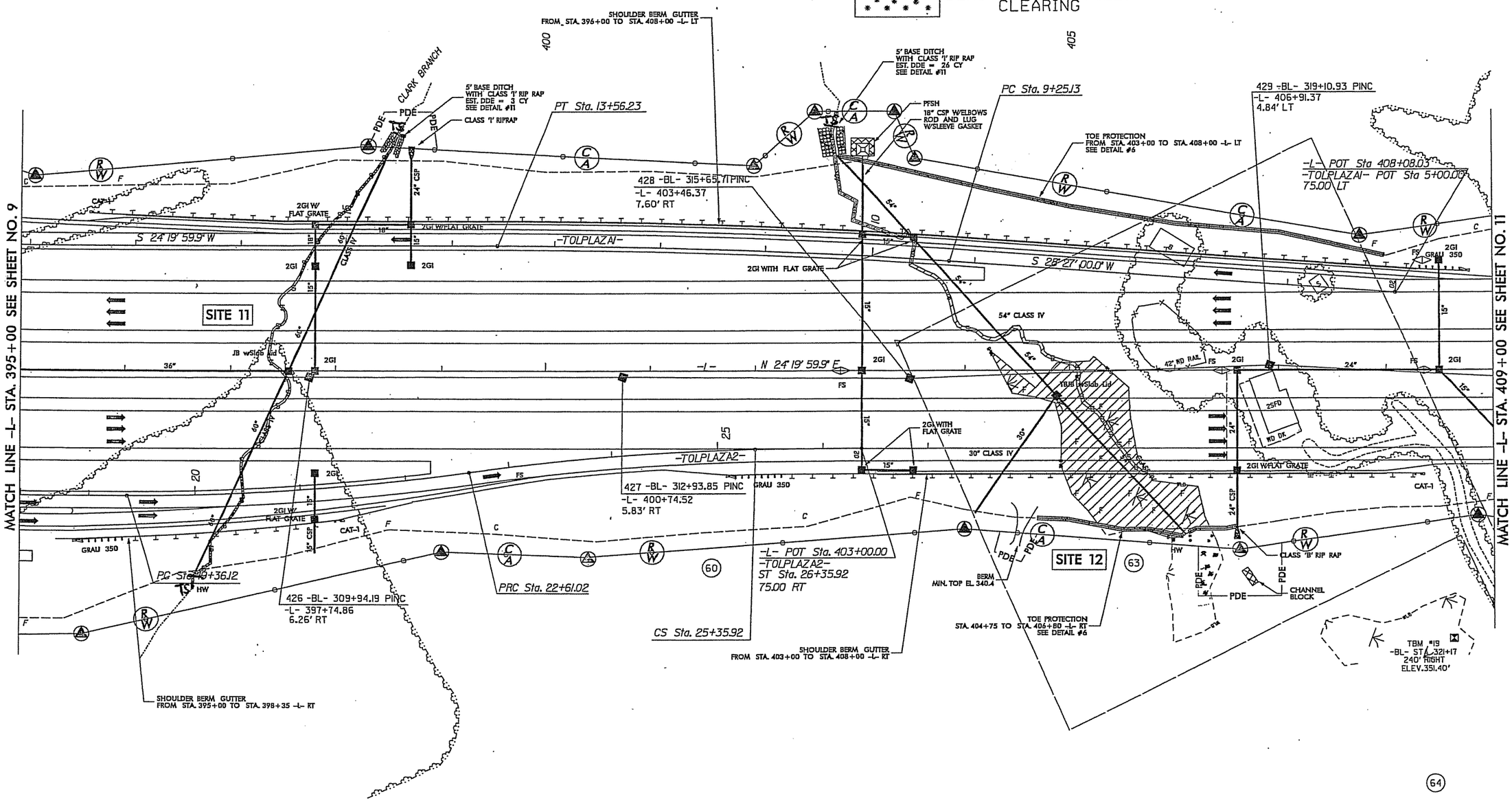
DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

NAD 83

ENGLISH



DENOTES TEMPORARY FILL IN SURFACE WATER

FOR -L- PROFILE SEE SHEET 43
FOR -TOLPLAZA1- PROFILE SEE SHEET 86
FOR -TOLPLAZA2- PROFILE SEE SHEET 87

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 41 of 108

-TOLPLAZA1-
PI Sta 11+40.78
Δ = 4° 07' 00.1" (LT)
D = 0° 57' 17.7"
L = 431.10'
T = 215.64'
R = 6,000.00'

-TOLPLAZA2-
PI Sta 20+98.84
Δ = 8° 05' 37.0" (LT)
D = 2° 29' 28.0"
L = 324.90'
T = 162.72'
R = 2,300.00'

-TOLPLAZA2-
PI Sta 23+98.63
Δ = 6° 50' 53.0" (RT)
D = 2° 29' 28.0"
L = 274.90'
T = 137.61'
R = 2,300.00'

PIs Sta 25+69.25
Θs = 1° 14' 44.0"
Ls = 100.00'
LT = 66.67'
ST = 33.33'

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER

F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

NAD 83

ENGLISH

MATCH LINE -L- STA. 395+00 SEE SHEET NO. 9

MATCH LINE -L- STA. 409+00 SEE SHEET NO. 11

SHOULDER BERM GUTTER FROM STA. 396+00 TO STA. 408+00 -L- LT

5' BASE DITCH WITH CLASS 'I' RIP RAP EST. DDE = 3 CY SEE DETAIL #11

CLASS 'I' RIPRAP

PT Sta. 13+56.23

CLARK BRANCH

PDE

428 -BL- 315+65.17 RINC
-L- 403+45.37
7.60' RT

TOLPLAZA1

S 24°19' 59.9" W

2GI W/FLAT GRATE

SITE 11

5' BASE DITCH WITH CLASS 'I' RIP RAP EST. DDE = 2.5 CY SEE DETAIL #11

PC Sta. 9+25.13

FPSH-18" CSP W/ELBOWS ROD AND LUG W/SLEEVE GASKET

TOE PROTECTION FROM STA. 408+00 TO STA. 408+00 -L- LT SEE DETAIL #6

429 -BL- 319+10.93 PINC
-L- 406+91.37
4.84' LT

-L- POT Sta. 408+08.03
TOLPLAZA1- POT Sta. 5+00.00
5.00' LT

54" CLASS IV

30" CLASS III

2GI WITH FLAT GRATE

TBM #18
-BL- STA. 315+17
240' RIGHT
ELEV. 351.40'

GRAU 350

PC Sta. 19+36.12

426 -BL- 308+94.19 PINC
-L- 391+27.86
5.20' RT

PRC Sta. 22+61.02

CS Sta. 25+35.92

427 -BL- 312+93.85 PINC
-L- 400+14.52
5.83' RT

-L- POT Sta. 403+00.00
-TOLPLAZA2-
ST Sta. 25+35.92
75.00' RT

SITE 12

BERM MIN. TOP EL. 340.4

TOE PROTECTION FROM STA. 404+76 TO STA. 406+80 -L- RT SEE DETAIL #6

SHOULDER BERM GUTTER FROM STA. 403+00 TO STA. 405+00 -L- RT

SHOULDER BERM GUTTER FROM STA. 395+00 TO STA. 398+35 -L- RT

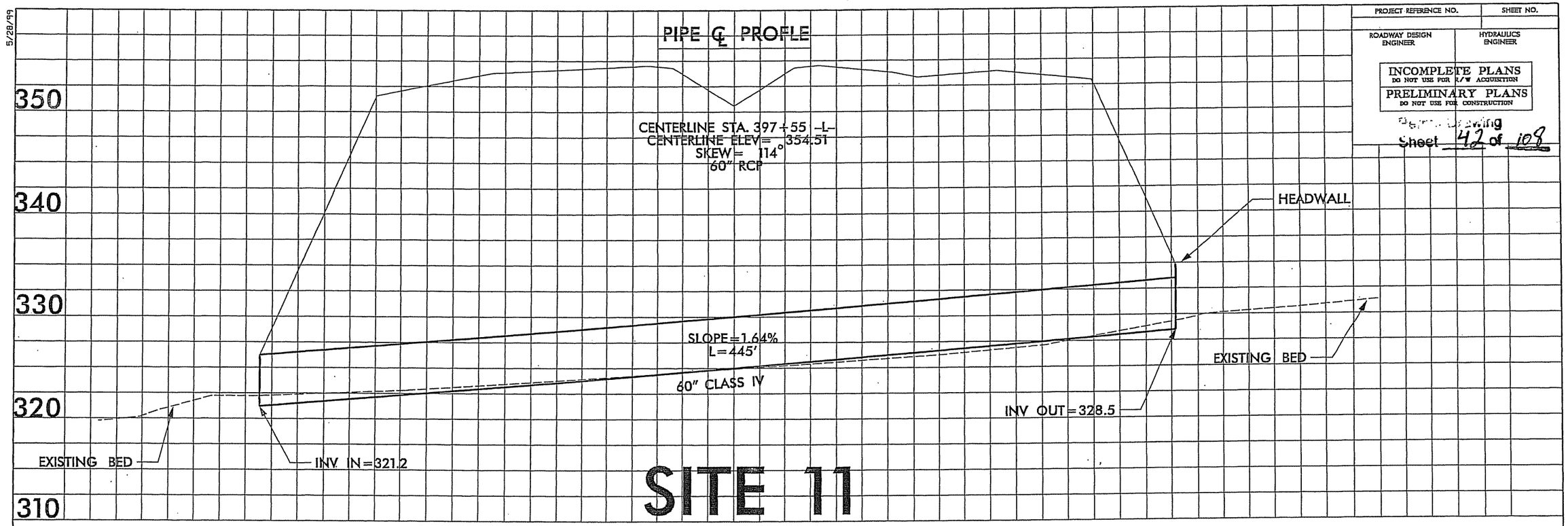
CLASS 'B' RIP RAP

CHANNEL BLOCK

TBM #19
-BL- STA. 321+17
240' RIGHT
ELEV. 351.40'

FOR -L- PROFILE SEE SHEET 43
FOR -TOLPLAZA1- PROFILE SEE SHEET 86
FOR -TOLPLAZA2- PROFILE SEE SHEET 87

DGN: $$$$SYSTIME$$$$
USER: $$$$USERNAME$$$$

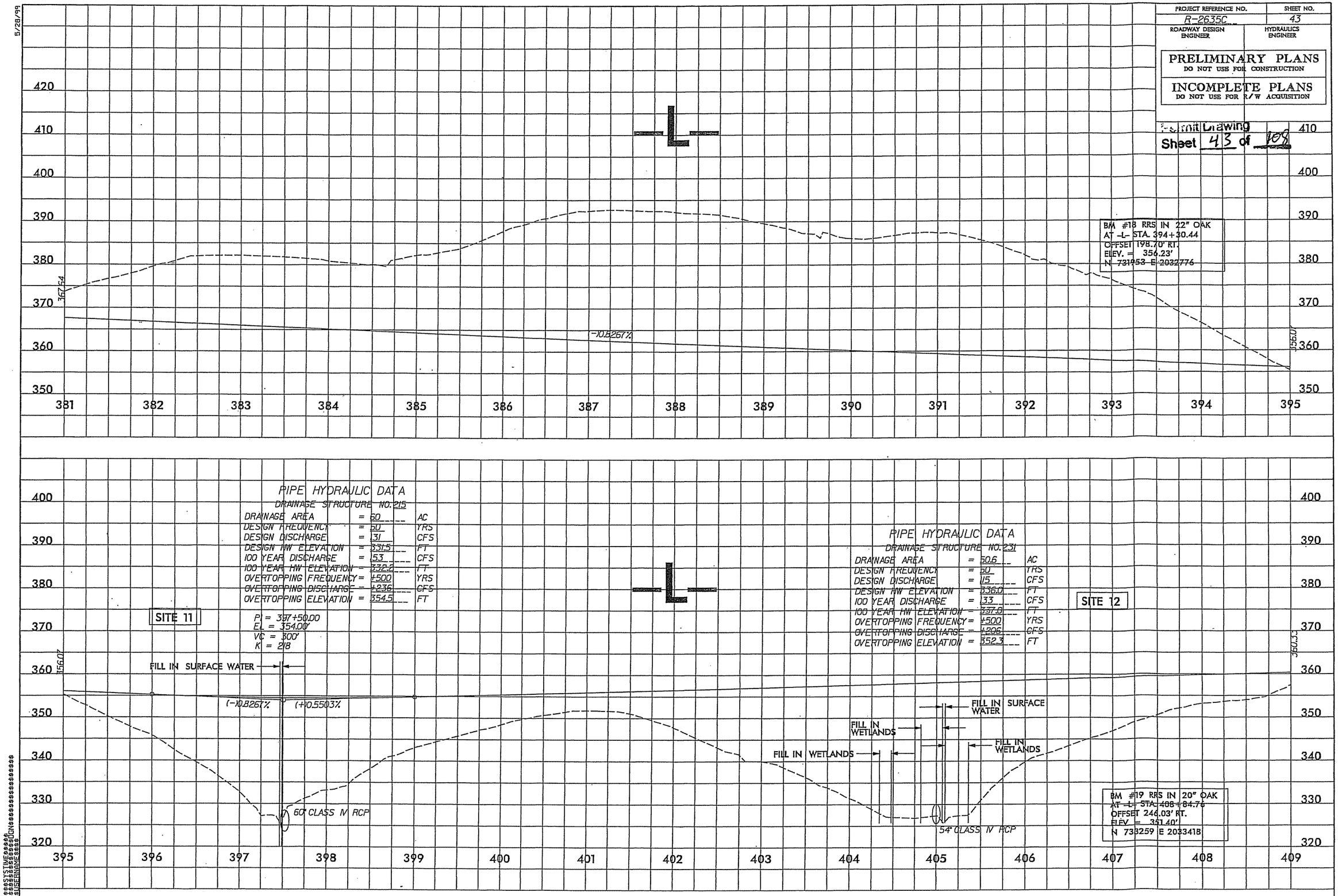


PROJECT REFERENCE NO.	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

Permit Drawing
Sheet 42 of 108

5/28/99



5/28/99
PROJECT REFERENCE NO.
R-2635C
SHEET NO.
43
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
Permit Drawing
Sheet 43 of 108
BM #18 RRS IN 22" OAK
AT -L- STA. 394+30.44
OFFSET 198.70' RT.
ELEV. = 356.23'
N 731953 E 2032776
-L-
367.54
356.07
(-)0.8267%
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 215
DRAINAGE AREA = 60 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 131 CFS
DESIGN HW ELEVATION = 331.5 FT
100 YEAR DISCHARGE = 153 CFS
100 YEAR HW ELEVATION = 332.2 FT
OVERTOPPING FREQUENCY = +500 YRS
OVERTOPPING DISCHARGE = +236 CFS
OVERTOPPING ELEVATION = 354.5 FT
SITE 11
PI = 397+50.00
EL = 354.00'
VC = 300'
K = 218
FILL IN SURFACE WATER
(-)0.8267%
(+)0.5503%
60" CLASS IV RCP
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 231
DRAINAGE AREA = 50.6 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 115 CFS
DESIGN HW ELEVATION = 336.0 FT
100 YEAR DISCHARGE = 133 CFS
100 YEAR HW ELEVATION = 337.0 FT
OVERTOPPING FREQUENCY = +500 YRS
OVERTOPPING DISCHARGE = +206 CFS
OVERTOPPING ELEVATION = 352.3 FT
SITE 12
FILL IN SURFACE WATER
FILL IN WETLANDS
FILL IN WETLANDS
FILL IN WETLANDS
54" CLASS IV RCP
BM #19 RRS IN 20" OAK
AT -L- STA. 408+84.76
OFFSET 246.03' RT.
ELEV = 351.40'
N 733259 E 2033418

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2635C	X-RTTo1165

Permit Drawing
Sheet 44 of 108

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 45 of 108

NAD 83

ENGLISH

REVISIONS 8/17/99

-L-
PI Sta 426+24.05
Δ = 21° 03' 44.3" (LT)
D = 1° 02' 30.3"
L = 2,021.84
T = 1,022.46'
R = 5,500.00'
SE = .04

PIs Sta 437+06.77
θs = 1° 18' 07.8"
Ls = 250.00'
LT = 166.67'
ST = 83.34'

DENOTES FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

SITE 13

435 -BL- 336+22.06 PINC
-L- 423+91.28
1.25' RT

436 -BL- 338+39.96 PINC
-L- 426+08.93
7.45' RT

437 -BL- 341+39.56 PINC
-L- 429+08.22
4.96' RT

438 -BL- 343+79.57 PINC
-L- 431+48.05
4.03' RT

439 -BL- 347+43.86 PINC
-L- 435+12.10
5.10' RT

TBM #20
-BL- STA 339+41
187' LEFT
ELEV. 336.44'

+00 -L- 240'
+60 -L- ON RW
+35 -L- ON RW & 230'
+78 -L- ON RW

TDE
SKIMMER BASIN
JB W/MH
SHOULDER BERM GUTTER STA. 428+00 TO 443+00 -L- LT
2GI WITH FLAT GRATE
CLASS 'B' RIP RAP
GRAU 350
WW FENCE
CSSta. 436+23.43
TYPE M350
TYPE B-77
LATERAL 2' BASE DITCH WITH CLASS 'B' RIP RAP FROM STA. 434+80 TO STA. 436+05 -L- RT SEE DETAIL #3

MATCH LINE -L- STA. 423+00 SEE SHEET NO. 11

MATCH LINE -L- STA. 437+00 SEE SHEET NO. 13

FOR -L- PROFILE SEE SHEET 44

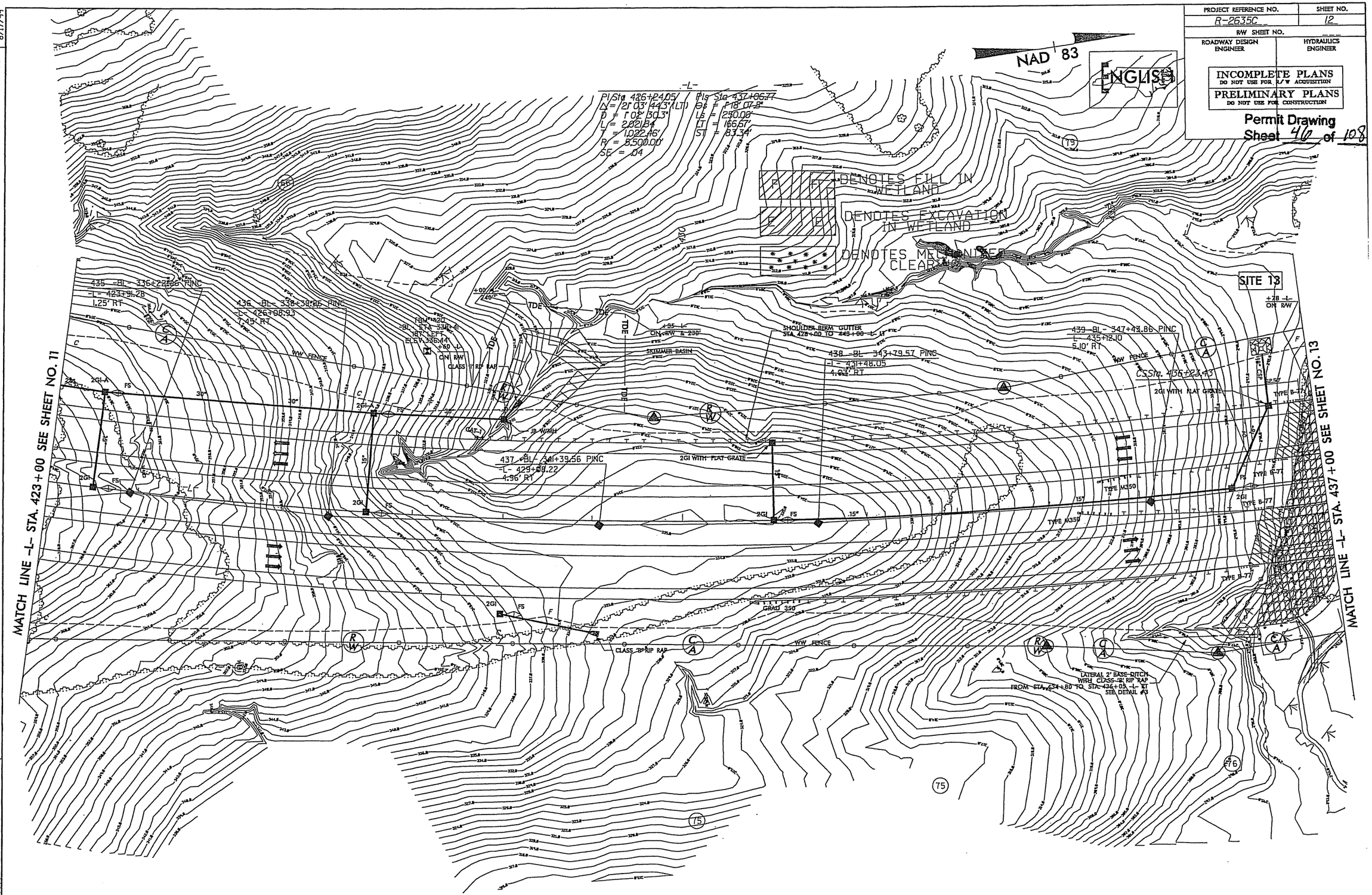
$$$$SYSTIME$$$$
$$$$DESIGN$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 46 of 108



FOR -L- PROFILE SEE SHEET 44

REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 47 of 108

ENGLISH

NAD 83

DENOTES MECHANIZED CLEARING

HC HC DENOTES HAND CLEARING

-L-
Pls Sta 437+06.77
θs = 1°18' 07.8"
Ls = 250.00'
LT = 166.67'
ST = 83.34'

F F DENOTES FILL IN WETLAND

F F DENOTES EXCAVATION IN WETLAND

SITE 13

SHOULDER BERM GUTTER FROM STA. 428+00 TO STA. 443+00 -L- LT

ST Sta. 438+73.43

ENERGY DISSIPATOR BASIN

24" CSP WITH ELBOWS ROD AND LUG WITH SLEEVE GASKET

441 -BL- 354+45.11 PINC
-L- 442+13.16
6.41' RT

440 -BL- 438+25.05 PINC
-L- 438+93.32
5.78' RT

CLASS 'B' RIP RAP

WW FENCE

JACK BRANCH

SWAMP

440

2GI WITH FLAT GRATE

TYPE B-77

15"

24" CSP

18"

2GI

442 -BL- 359+20.19 PINC
-L- 446+88.20
12.77' RT

GRAU 350

48" CHL

SHOULDER BERM GUTTER STA. 450+00-L- LT TO BEGIN BRIDGE

CAT-1

TBDI WITH FLAT GRATE

42" WD RAIL

60" WD RAIL

42" WD RAIL

460

POOL

PUMP HOUSE

HTR

GR

TYPE M350

3GI-A

MCF TYPE B-77 RT

N 0° 39' 59.9" E

443 -BL- 443+34.34 PINC
-L- 448+82.99
0.98' RT

TYPE-III

CAT-1

FS

2GI

REMOVE

12" CMP

18" CSP WITH ELBOWS

BDO

TBM #21
-BL- STA 354+30
201' RIGHT
ELEV.324.38'

STANDARD BERM DITCH FROM STA. 441+57 TO STA. 443+00 -L- RT SEE PROFILE FOR GRADE

LATERAL 2' BASE DITCH WITH CLASS 'B' RIP RAP FROM STA. 437+75 TO STA. 440+00 -L- RT SEE DETAIL #3

35' NO WALL

35 ELEC

SHOULDER BERM GUTTER FROM STA. 450+00 -L- RT TO BEGIN BRIDGE

MATCH LINE -L- STA. 437+00 SEE SHEET NO. 12

MATCH LINE -L- STA. 451+00 SEE SHEET NO. 14

FOR -L- PROFILE SEE SHEET 45

REVISIONS

8/17/99

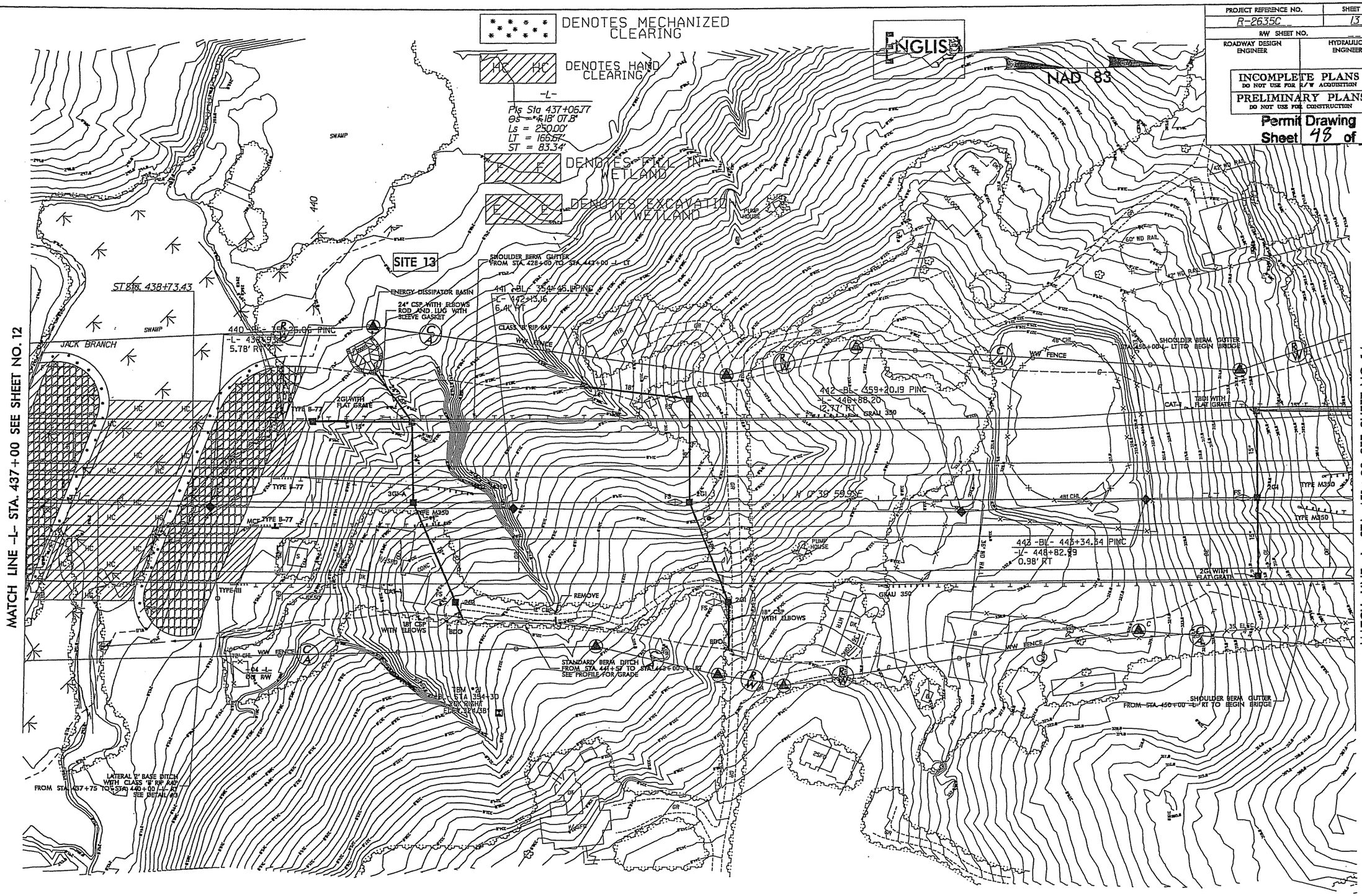
$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 48 of 108



REVISIONS

8/17/99

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

FOR -L- PROFILE SEE SHEET 45

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2635C	X-89

Permit Drawing
Sheet 49 of 108

SITE 13

FILL IN WETLAND

0.0200 | 0.0197 | 7.009:1 | 8:1 | 0.0200 | 0.0197

D.P. 317.467

2:1 | 2:1

FOLD LINE | FOLD LINE

290.86 | 2.0 | 290.50

437+50.00

FILL IN WETLAND

0.0277 | 0.0277 | 6.682:1 | 8:1 | 0.0277 | 0.0277

D.P. 318.263

2:1 | 2:1

FOLD LINE | FOLD LINE

290.75

437+00.00

330 320 310 300 290 280 270

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 50 of 105

NAD 83

ENGLISH

REVISIONS 8/17/99

P P DENOTES FILL IN SURFACE WATER (POND)

HC HC DENOTES HAND CLEARING

SITE 14

JURISDICTIONAL STREAM
WHITE OAK CREEK

SWAMP

42" WD RAIL

SHOULDER BERM GUTTER FROM STA. 450+00 TO BEGIN BRIDGE

CLASS 'B' RIP RAP

TBDI WITH FLAT GRATE

COLLAR

TYPE B-77

2GI WITH FLAT GRATE

WORK BRIDGE

1@60', 5@120', 1@75' PSCG

SHOULDER BERM GUTTER FROM END BRIDGE TO STA. 9+50 -RP2B-

TOE PROTECTION FROM STA. 459+80 TO STA. 461+50 -L- LT SEE DETAIL #6

TBM #22
BL- STA 373+31
9'24" LEFT
ELEV. 329.86'

GRADE TO DRAIN

3GI

447 -BL- 373+68.44 PINC
-L- 461+35.77
7.92' RT

TYPE M350

2GI-A

446 -BL- 371+56.47 PINC
-L- 459+24.03
4.25' RT

445 -BL- 367+74.31 PINC
-L- 455+41.92
6.28' RT

444 -BL- 365+08.03 PINC
-L- 452+36.90
6.04' RT

LAT. V-DITCH W/CLASS 'B' RIPRAP
STA. 452+10.03 PINC +10-L- RT
SEE DETAIL #4

SHOULDER BERM GUTTER FROM STA. 451+72 TO BEGIN BRIDGE

SOUTH BOUND BRIDGE
USE ENCLOSED SYSTEM WITH 15" PVC
STD. 6" DECK DRAINS ON 12' CENTERS
FROM BEGIN BRIDGE TO END BRIDGE

NORTH BOUND BRIDGE
USE STD. 6" DECK DRAINS ON 12' CENTERS
FROM BEGIN BRIDGE TO STA. 454+50
STA. 459+00 TO END BRIDGE

APPROX. LOCATION OF GREENWAY BENCHING BY TOWN OF CARY

POND
WE 283.9

DOCK

WE 285.3

WHITE OAK CREEK

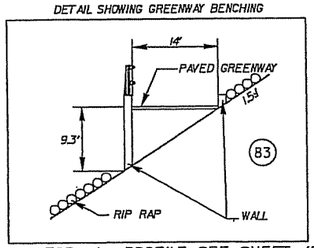
JB w/MH

CLASS 'I' RIP RAP

CLASS 'B' RIP RAP

15" CSP

DETAIL SHOWING GREENWAY BENCHING



MATCH LINE -L- STA. 451+00 SEE SHEET NO. 13

MATCH LINE -L- STA. 465+00 SEE SHEET NO. 15

FOR -L- PROFILE SEE SHEET 45
FOR -RP2B- PROFILE SEE SHEET 77
FOR -RP2C- PROFILE SEE SHEET 78

$$SYSTIME$$
$$USERNAME$$

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

Permit Drawing
Sheet 51 of 108

NAD 83

ENGLISH

REVISIONS 8/17/99

MATCH LINE -L- STA. 451+00 SEE SHEET NO. 13

MATCH LINE -L- STA. 465+00 SEE SHEET NO. 15

P P DENOTES FILL IN SURFACE WATER (POND)

HC HC DENOTES HAND CLEARING

SITE 14

JURISDICTIONAL STREAM WHITE OAK CREEK

SHOULDER BERM GUTTER FROM STA. 450+00 TO BEGIN BRIDGE

CLASS 'B' RIP RAP

42" RD RAIL

SHOULDER BERM GUTTER FROM STA. 459+50 TO STA. 461+50 -L- LT

TOE PROTECTION FROM STA. 459+50 TO STA. 461+50 -L- LT SEE DETAIL #6

TBM #29 -L- STA. 373+31 12" LEFT ELEV. 329.89'

TBD WITH FLAT GRATE

POND WE 299.5

1@60', 5@120', 1@75' PSCG

WORK BRIDGE

TYPE B-77

2GI WITH FLAT GRATE

GRATE TO DRAIN

2GI

3GI

TYPE M350

2GI-A

447 -BL- 373+68.44 PINC
-L- 461+35.77
7.92' RT

446 -BL- 371+56.47 PINC
459+24.03
4.25' RT

445 -BL- 367+74.31 PINC
-L- 455+41.92
6.28' RT

444 -BL- 362+36.90
-L- 442+09.01
5.04' RT

LAT. V-DITCH W/CLASS 'B' RIPRAP

SHOULDER BERM GUTTER FROM STA. 451+72 TO BEGIN BRIDGE

SOUTH BOUND BRIDGE USE ENCLOSED SYSTEM WITH 15" RCP STD. 6' DROP DRAINS ON 12' CENTERS FROM BEGIN BRIDGE TO END BRIDGE

NORTH BOUND BRIDGE USE STD. 6' DROP DRAINS ON 12' CENTERS FROM BEGIN BRIDGE TO STA. 454+50 STA. 459+00 TO END BRIDGE

APPROX. LOCATION OF GREENWAY BENCHING BY TOWN OF CARY

POND WE 283.9

DOCK

WE 285.3

WHITE OAK CREEK

JB w/MH

CLASS 'B' RIP RAP

GLASS 'B' RIP RAP

DETAIL SHOWING GREENWAY BENCHING

PAVED GREENWAY

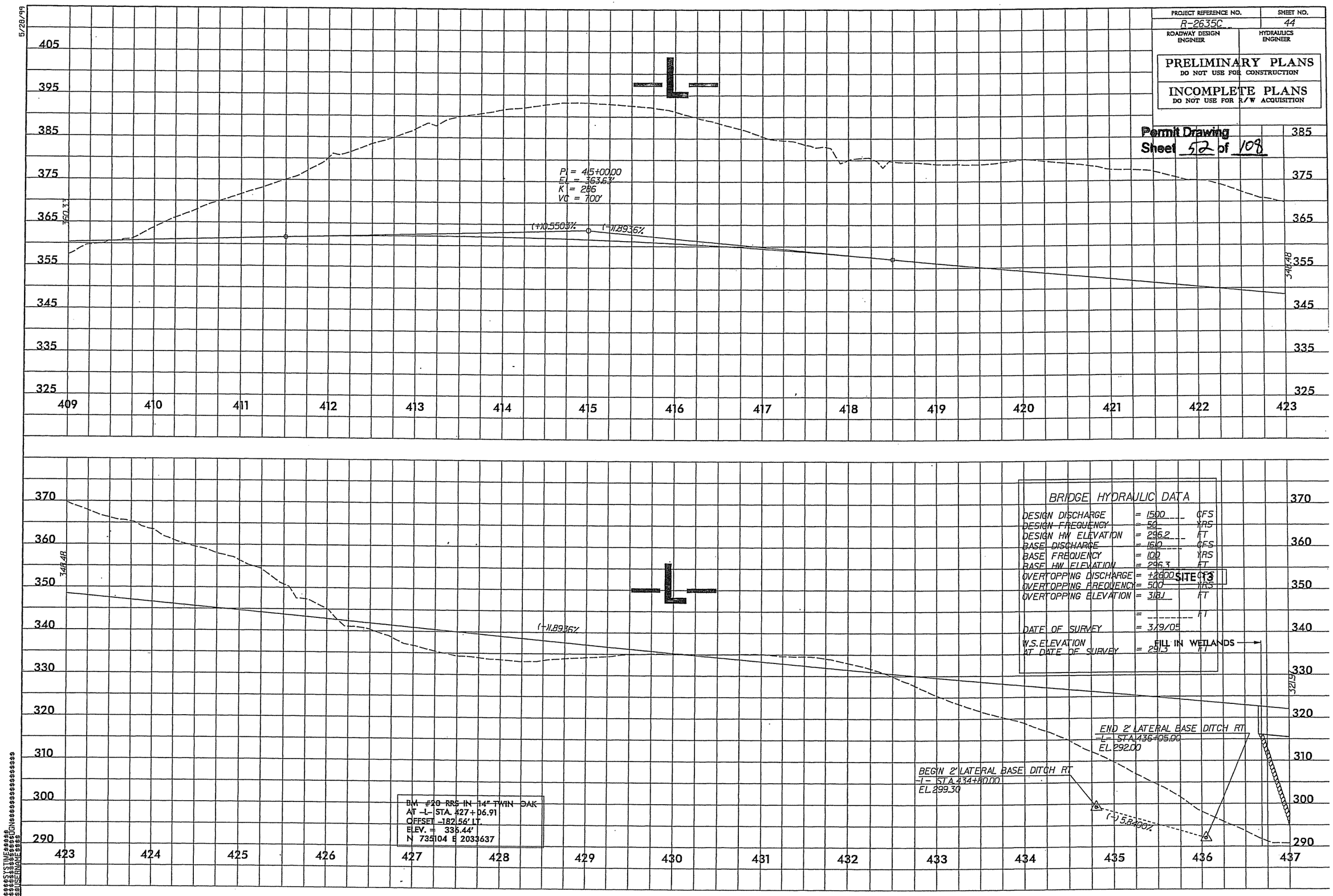
14'

9.3'

RIP RAP

WALL

FOR -L- PROFILE SEE SHEET 45
FOR -RPBB- PROFILE SEE SHEET 77
FOR -RPBC- PROFILE SEE SHEET 78



PROJECT REFERENCE NO.
R-2635C
SHEET NO.
44
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
Permit Drawing
Sheet 52 of 108
-L-
PI = 415+00.00
EL = 363.63'
K = 286
VC = 700'
(+)0.5503%
(-)1.8936%
360.33
348.48
321.97
BRIDGE HYDRAULIC DATA
DESIGN DISCHARGE = 1500 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 296.2 FT
BASE DISCHARGE = 1610 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 296.3 FT
OVERTOPPING DISCHARGE = +2600 CFS
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING ELEVATION = 318.1 FT
= FT
DATE OF SURVEY = 3/9/05
W.S. ELEVATION AT DATE OF SURVEY = 291.3 FT
SITE 13
FILL IN WETLANDS
END 2' LATERAL BASE DITCH RT
-L- STA. 436+05.00
EL. 292.00
BEGIN 2' LATERAL BASE DITCH RT
-L- STA. 434+80.00
EL. 299.30
(-)5.8400%
BM #20 RRS IN 14" TWIN OAK
AT -L- STA. 427+06.91
OFFSET -182.56' LT.
ELEV. = 336.44'
N 735104 E 2033637

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	45
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Permit Drawing
Sheet 53 of 108

SITE 13

MECHANIZED CLEARING
HAND CLEARING
FILL IN WETLANDS
MECHANIZED CLEARING
FILL IN WETLANDS

PI = 440+00.00
EI = 316.29'
K = 215
VC = 600'

321.92

BEGIN STANDARD BERM DITCH RT
-L- STA. 441+57.00
EL. 317.00

(+) 0.5825%
(+) 8.5000%
(-) 1.8936%
(+) 0.9005%

BEGIN 2'-0" LATERAL BASE DITCH RT
-L- STA. 437+75.00
EL. 290.50

PI = 442+60.000
EI = 317.60

END STANDARD BERM DITCH RT
-L- STA. 443+00.00
EL. 321.00

(+) 0.6667%
(+) 2.0000%
6.8000%
(+) 3.2000%

PI = 438+50.000
EI = 291.00

PI = 439+00.000
EI = 292.00

PI = 439+50.000
EI = 295.40

END 2'-0" LATERAL BASE DITCH RT
-L- STA. 440+00.00
EL. 300.00

BM #21 RRS IN 14" PINE
AT -L- STA. 441+98.12
OFFSET 207.42' RT.
ELEV. = 324.38'
N 736549 E 2034139

355 345 335 325 315 305 295 285 275

437 438 439 440 441 442 443 444 445 446 447 448 449 450 451

SITE 14

HAND CLEARING

326.19

(+) 0.9005%

336.80

BEGIN LATERAL V-DITCH RT
-L- STA. 452+00.00
EL. 298.00

(-) 6.1818%

END LATERAL V-DITCH RT
-L- STA. 453+10.00
EL. 291.20

BM #22 RRS IN 8" OAK
AT -L- STA. 461+11.14
OFFSET -204.77' LT.
ELEV. = 329.86'
N 738458 E 2033743

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1950	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 287.0	FT
BASE DISCHARGE	= 2160	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 287.2	FT
OVERTOPPING DISCHARGE	= 13800	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 324.0	FT
	=	FT
DATE OF SURVEY	= 4/5/05	
W.S. ELEVATION AT DATE OF SURVEY	= 281.1	FT

355 345 335 325 315 305 295 285 275

451 452 453 454 455 456 457 458 459 460 461 462 463 464 465

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

8/17/99

P P DENOTES FILL IN SURFACE WATER (POND)

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

S S DENOTES FILL IN SURFACE WATER

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER

ENGLISH

NAD '83

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 54 of 108

100 50 0 100 200

SITE 15

MATCH LINE -Y14- STA. 19+00 SEE SHEET NO. 37

MATCH LINE -L- STA. 465+00 SEE SHEET NO. 14

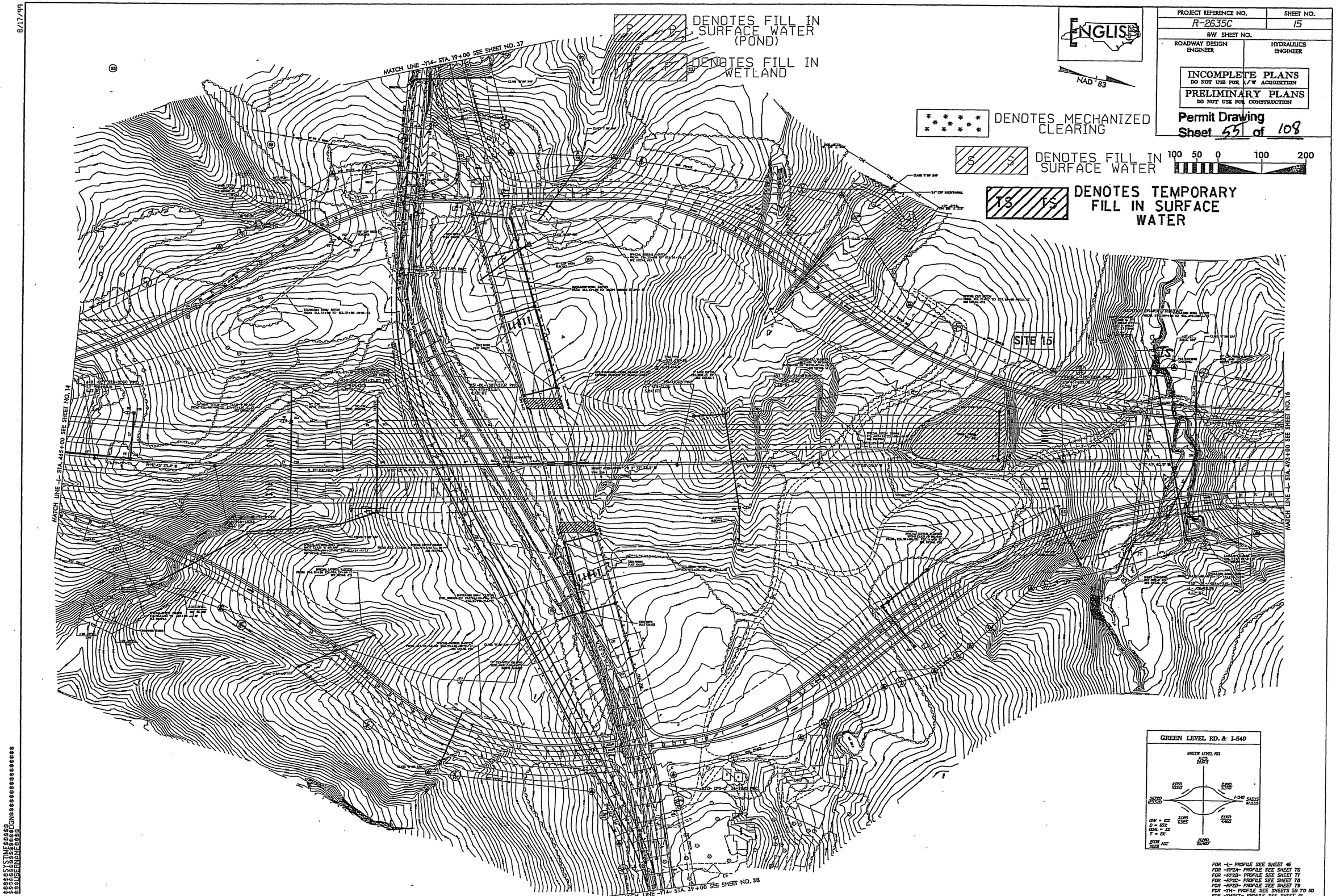
MATCH LINE -L- STA. 493+00 SEE SHEET NO. 16

MATCH LINE -Y14- STA. 39+00 SEE SHEET NO. 38

GREEN LEVEL RD. & I-540

FOR -L- PROFILE SEE SHEET 45
FOR -RPZA- PROFILE SEE SHEET 76
FOR -RPZB- PROFILE SEE SHEET 77
FOR -RPZC- PROFILE SEE SHEET 78
FOR -RPZD- PROFILE SEE SHEET 79
FOR -YA- PROFILE SEE SHEETS 59 TO 60
FOR -Y14DET- PROFILE SEE SHEET 61

$$SYSTIME$$
$$SIGNATURE$$



8/17/99
DENOTES FILL IN SURFACE WATER (POND)
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY FILL IN SURFACE WATER
ENGLISH
NAD 83
PROJECT REFERENCE NO.
R-2635C
SHEET NO.
15
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 55 of 108
100 50 0 100 200
MATCH LINE -Y14- STA. 19+00 SEE SHEET NO. 37
MATCH LINE -L- STA. 465+00 SEE SHEET NO. 14
MATCH LINE -L- STA. 493+00 SEE SHEET NO. 16
MATCH LINE -Y14- STA. 39+00 SEE SHEET NO. 38
SITE 15
GREEN LEVEL RD. & I-540
FOR -L- PROFILE SEE SHEET 46
FOR -RP2A- PROFILE SEE SHEET 76
FOR -RP2B- PROFILE SEE SHEET 77
FOR -RP2C- PROFILE SEE SHEET 78
FOR -RP2D- PROFILE SEE SHEET 79
FOR -Y14- PROFILE SEE SHEETS 59 TO 60
FOR -Y14DET- PROFILE SEE SHEET 61

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 5 of 10

8/17/99

T8 T5 DENOTES TEMPORARY FILL IN SURFACE WATER

P P DENOTES FILL IN SURFACE WATER (POND)

F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

ENGLISH

-RP2A- CS Sta. 16+38.38

-RP2A- TS Sta. 8+40.00

SITE 15

-RP2A- SC Sta. 10+40.00

NAD 83

50 25 0 50 100

BACHELOR BRANCH TRIBUTARY

SPECIAL CUT DITCH FROM STA. 12+27 TO STA. 15+50 -RP2A- LT SEE DETAIL #12

SHOULDER BERM GUTTER FROM STA. 489+50 TO STA. 494+50 -L- LT

OUTLET CHANNEL EST DDE 15 CY SEE DETAIL #27 CLASS 'I' RIPRAP EST. 37 TONS

+65 -L- ON R/W & 255'

+51 -L- 215' & 255'

CLASS 'B' RIP RAP

TBM #23
BL- STA 390+99
227' LEFT
ELEV. 346.81'

2' BASE DITCH EST. DDE=2 CY SEE DETAIL 1

SPECIAL LAT. V-DITCH W/CLASS 'B' RIP RAP STA. 15+50 TO 18+10-RP2A- LT SEE DETAIL 16

453 -BL- 394+75.18 PINC
-L- 482+41.62
5.68' RT

- 391+46.62 PINC
-13.06

454-BL- 400+32.64 PINC
-L- 487+99.08
4.36' RT

FILL EXISTING CHANNEL

15" CSP WITH ELBOWS ROD AND LUG WITH SLEEVE GASKET

SPECIAL DITCH GRADE STA. 480+25 TO 485+00-L- LT SEE PROFILE

DRAIN POND

CLASS 'B' RIP RAP

S 7° 43' 00.1" E

2GI WITH FLAT GRATE

N 11° 50' 08.1" W

N 11° 51' 43.2" W

N 11° 58' 09.5" W

N 1° 47' 40.9" W

-L- POT Sta. 476+37.83
-Y14- POT Sta. 28+69.81

24" CSP WITH ELBOWS

STD. BERM DITCH STA. 477+75 TO 481+00-L- RT

SPECIAL LATERAL V-DITCH WITH CLASS 'B' RIP RAP FROM STA. 10+85 TO STA. 14+00 RT SEE DETAIL #16

30" CSP 14 GA. 2"X1" CORRUGATED

CLASS 'I' RIP RAP

-RP2D-

-RP2D- SC Sta. 18+66.03

-RP2D- SC Sta. 7+00.00

INLET CHANNEL EST DDE 3 CY SEE DETAIL #26

SHOULDER BERM GUTTER FROM STA. 10+00 -RP2D- TO 493+50 -L- RT

455 -BL- 404+23.15 PINC
-L- 491+89.59
4.62' RT

LATERAL 2.0' BASE DITCH STA. 7+50 TO 8+05 -RP2 SEE DETAIL #4

GREEN LEVEL RD. & I-540

WW FENCE

GRAU 350

SOIL

CAT-1

ITH RATE

\\SYSTIMEFORMAT\\
\\DGNFILE\\
\\USERNAME\\

8/17/99
DENOTES TEMPORARY FILL IN SURFACE WATER
DENOTES FILL IN SURFACE WATER (POND)
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
PROJECT REFERENCE NO. R-2635C
SHEET NO. 15
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 57 of 108
50 25 0 50 100
SITE 15
NAD 83
-RP2A- CS Sta. 16+39.38
-RP2A- TS Sta. 8+40.0
-RP2A- SC Sta. 10+40.00
SPECIAL CUT DITCH FROM STA. 12+27 TO STA. 15+50 -RP2A- LT SEE DETAIL #12
BACHELOR BRANCH TRIBUTARY
SHOULDER BERM GUTTER FROM STA. 489+50 TO STA. 494+50 -L- LT
OUTLET CHANNEL EST DDE 15 CY SEE DETAIL #27 CLASS 'I' RIPRAP EST. 37 TONS
CLASS 'B' RIP RAP
+51 -L- 215' & 255'
FILL EXISTING CHANNEL
15" CSP WITH ELBOWS ROD AND LUG WITH SLEEVE GASKET
WW FENCE
TBM #23 BL- STA 390+89 227' LEFT ELEV 346.81
SPECIAL LAT. V-DITCH W/CLASS 'B' RIP RAP STA. 15+50 TO 18+10 -RP2A- LT SEE DETAIL 16
2' BASE DITCH EST. DDE=2 CY SEE DETAIL 1
391+46.62 PINC -13.05
453 -BL- 394+75.18 PINC -L- 482+41.62 5.68' RT
454 -BL- 400+32.64 PINC -L- 487+99.08 4.36' RT
SPECIAL DITCH GRADE STA. 480+25 TO 485+00 -L- RT SEE PROFILE
DRAIN POND
2GI WITH FLAT GRATE
8' X 6' RCBC
N 11° 50' 08.1" W
N 11° 51' 43.2" W
N 11° 58' 09.5" W
N 11° 47' 40.9" W
-L- POT Sta. 476+37.83
-Y14- POT Sta. 28+69.81
24" CSP WITH ELBOWS
SPECIAL LATERAL V-DITCH WITH CLASS 'B' RIP RAP FROM STA. 10+85 TO STA. 14+00 RT SEE DETAIL #18
30" CSP 14 GA. 2"X1" CORRUGATED
CLASS 'I' RIP RAP
STD. BERM DITCH STA. 477+75 TO 481+00 -L- RT
LATERAL 2.0' BASE DITCH STA. 7+50 TO 8+05 -RP2D- SEE DETAIL #4
-RP2D- SC Sta. 7+00.00
SHOULDER BERM GUTTER FROM STA. 10+00 -RP2D- TO 493+50 -L- RT
INLET CHANNEL EST DDE 3 CY SEE DETAIL #26
455 -BL- 404+23.15 PINC -L- 491+89.59 4.62' RT
-RP2D- SC Sta. 18+66.03
GREEN LEVEL RD. & I-540
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$$

5/28/99
CULVERT ℄ PROFLE
CENTERLINE STA. 489+81 -L-
GRADE POINT ELEV= 334.91
SKEW= 97°
1@8'XD6' RCBC
2:1 NORMAL
2:1 NORMAL
2.12:1 SKEWED
NWSE AND WSE
3/15/04 = 306.0
NAT 100 YR 309.4
NAT 50 YR 309.3
PROP 100 YR 310.4
PROP 50 YR 310.0
BEVELED HW
NG ALONG CULVERT CENTERLINE
RT TB
LT TB
RT TB
LT TB
WS
BED
CENTERLINE BED ELEV=300.4
SLOPE=2.22%
320
310
300
290
SITE 15
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 58 of 108
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	46
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

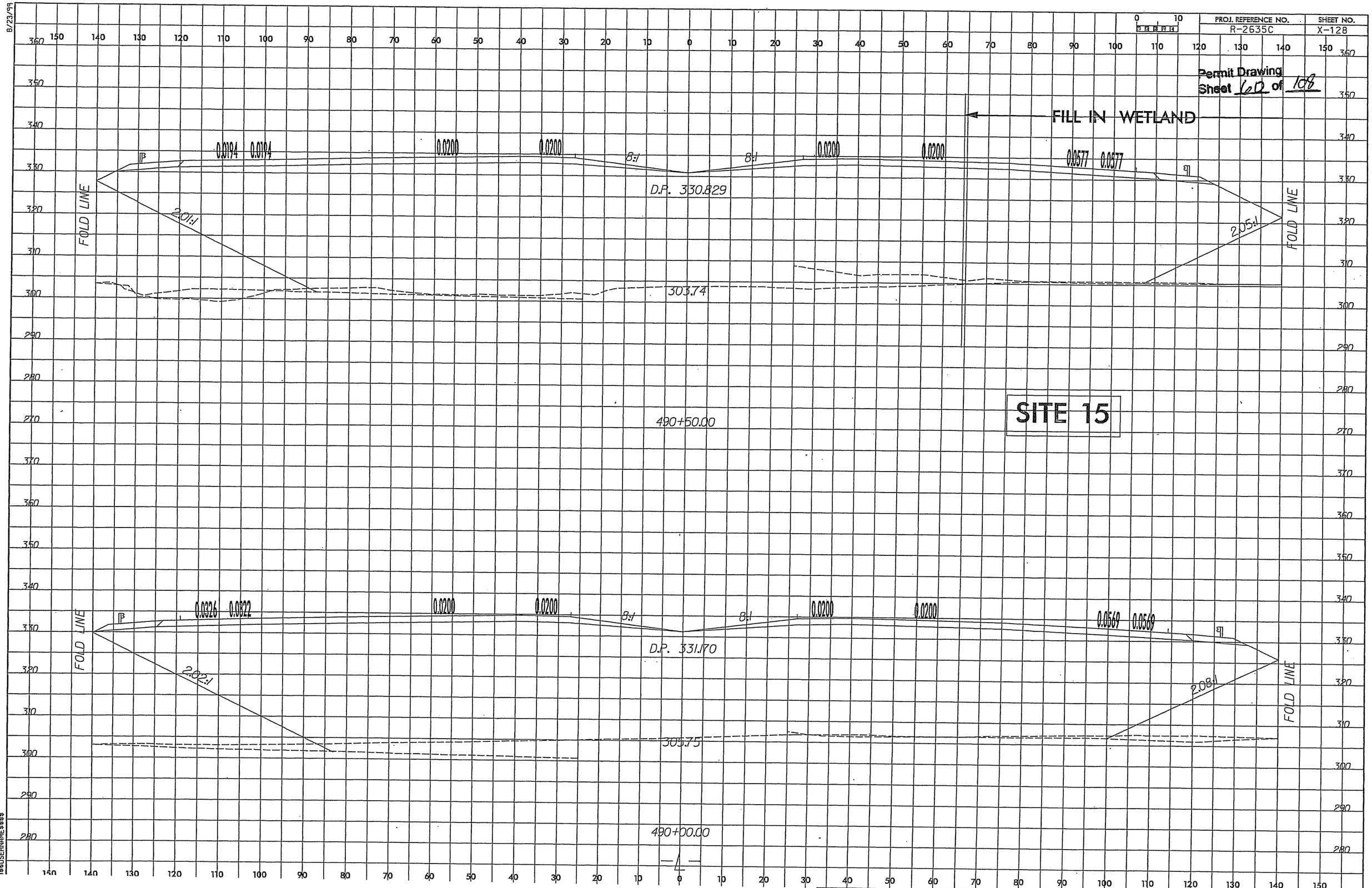
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Permit Drawing
Sheet 59 of 108

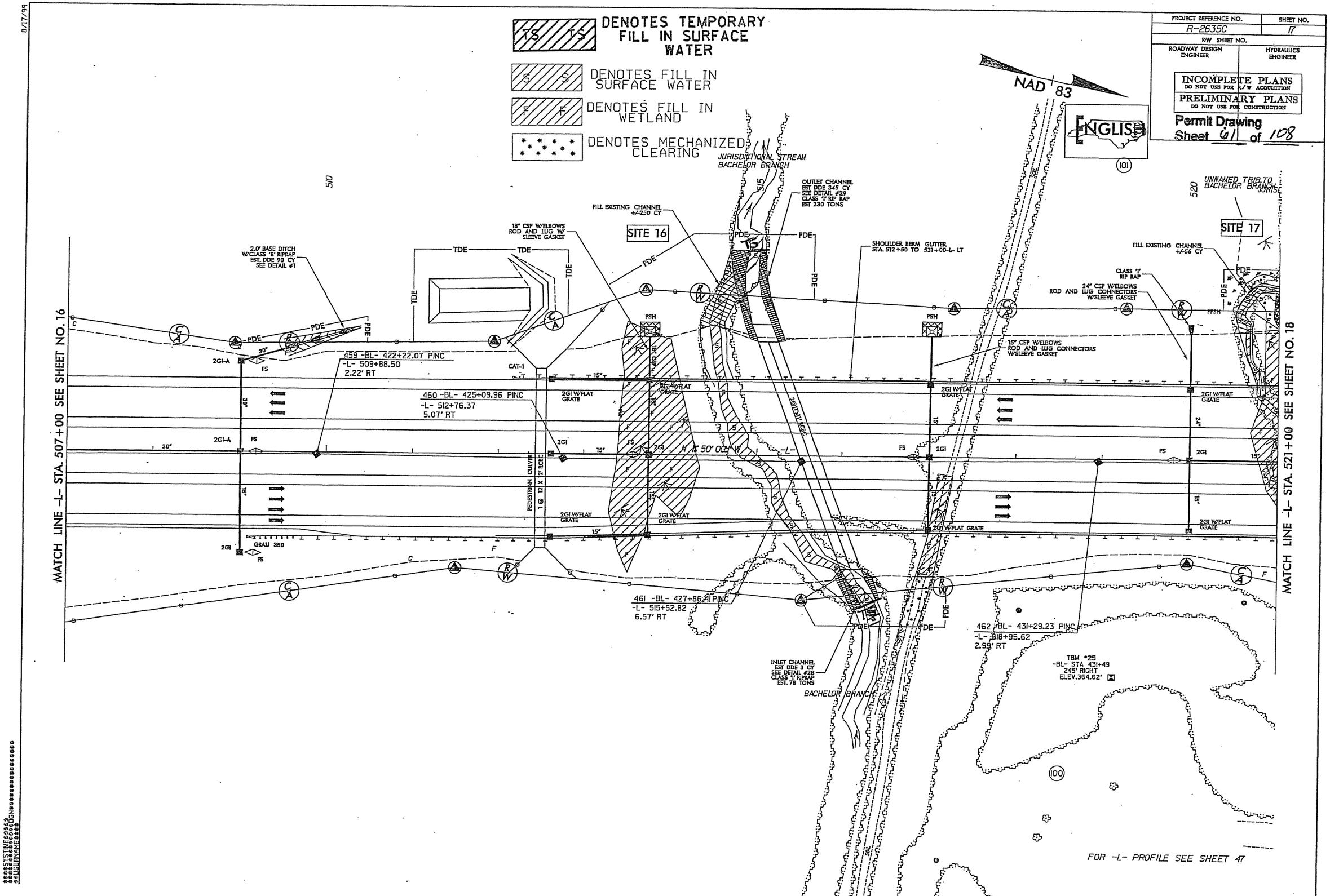
CULV. & PIPE HYDRAULIC DATA

DESIGN DISCHARGE	=	420	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	310.0	FT
BASE DISCHARGE	=	470	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	310.4	FT
OVERTOPPING DISCHARGE	=	+790	CFS
OVERTOPPING FREQUENCY	=	+500	YRS
OVERTOPPING ELEVATION	=	327.5	FT

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



PROJ. REFERENCE NO.
R-2635C
SHEET NO.
X-128
Permit Drawing
Sheet 60 of 108
FILL IN WETLAND
0.0194 0.0194
0.0200
0.0200
8:1
8:1
0.0200
0.0200
0.0577 0.0577
D.P. 330.829
FOLD LINE
2.01:1
2.05:1
303.74
490+50.00
SITE 15
0.0326 0.0322
0.0200
0.0200
8:1
8:1
0.0200
0.0200
0.0569 0.0569
D.P. 331.170
2.02:1
2.08:1
305.75
490+00.00



DENOTES TEMPORARY FILL IN SURFACE WATER
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
PROJECT REFERENCE NO.
R-2635C
SHEET NO.
17
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 61 of 108
NAD 83
ENGLISH
101
510
515
520
JURISDICTIONAL STREAM BACHELOR BRANCH
UNNAMED TRIB.TO BACHELOR BRANCH JURISD
SITE 16
SITE 17
FILL EXISTING CHANNEL +/-250 CY
OUTLET CHANNEL EST DDE 345 CY SEE DETAIL #29 CLASS 'I' RIP RAP EST 230 TONS
18" CSP W/ELBOWS ROD AND LUG W/ SLEEVE GASKET
2.0' BASE DITCH W/CLASS 'B' RIPRAP EST. DDE 90 CY SEE DETAIL #1
SHOULDER BERM GUTTER STA. 512+50 TO 531+00-L- LT
FILL EXISTING CHANNEL +/-56 CY
CLASS 'I' RIP RAP
24" CSP W/ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET
15" CSP W/ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET
459 -BL- 422+22.07 PINC
-L- 509+88.50
2.22' RT
460 -BL- 425+09.96 PINC
-L- 512+76.37
5.07' RT
461 -BL- 427+86.41 PINC
-L- 515+52.82
6.57' RT
462 -BL- 431+29.23 PINC
-L- 518+95.62
2.99' RT
TBM #25
-BL- STA 431+49
245' RIGHT
ELEV.364.62'
INLET CHANNEL EST DDE 3 CY SEE DETAIL #28 CLASS 'I' RIPRAP EST. 78 TONS
BACHELOR BRANCH
PEDESTRIAN CULVERT 1 @ 12 X 2' RCBC
2GI W/FLAT GRATE
GRAU 350
MATCH LINE -L- STA. 507+00 SEE SHEET NO. 16
MATCH LINE -L- STA. 521+00 SEE SHEET NO. 18
FOR -L- PROFILE SEE SHEET 47

8/17/99

DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 62 of 108

NAD 83

ENGLISH

MATCH LINE -L- STA. 507+00 SEE SHEET NO. 16

MATCH LINE -L- STA. 521+00 SEE SHEET NO. 18

JURISDICTIONAL STREAM BACHELOR BRANCH

UNNAMED TRIB TO BACHELOR BRANCH JURIS

SITE 16

SITE 17

2.0' BASE DITCH W/CLASS 'B' RIPRAP EST. DDE 90 CY SEE DETAIL

EXISTING CHANNEL +/-256 CY

18" CSP W/ELBOWS ROD AND LUG W/ SLEEVE GASKET

OUTLET CHANNEL EST DDE 345 CY SEE DETAIL #29 CLASS 'I' RIP RAP EST 230 TONS

SHOULDER BERM GUTTER STA. 512+50 TO 531+00-L- LT

FILL EXISTING CHANNEL +/-56 CY

CLASS 'I' RIP RAP

24" CSP W/ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET

15" CSP W/ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET

459 -BL- 422+22.07 PINC
-L- 509+88.50
2.22' RT

460 -BL- 425+09.96 PINC
-L- 512+76.37
5.07' RT

461 -BL- 427+86.91 PINC
-L- 515+52.82
6.57' RT

462 -BL- 431+29.44 PINC
-L- 518+95.62
2.59' RT

INLET CHANNEL EST DDE 3 CY SEE DETAIL #28 CLASS 'I' RIPRAP EST. 18 TONS

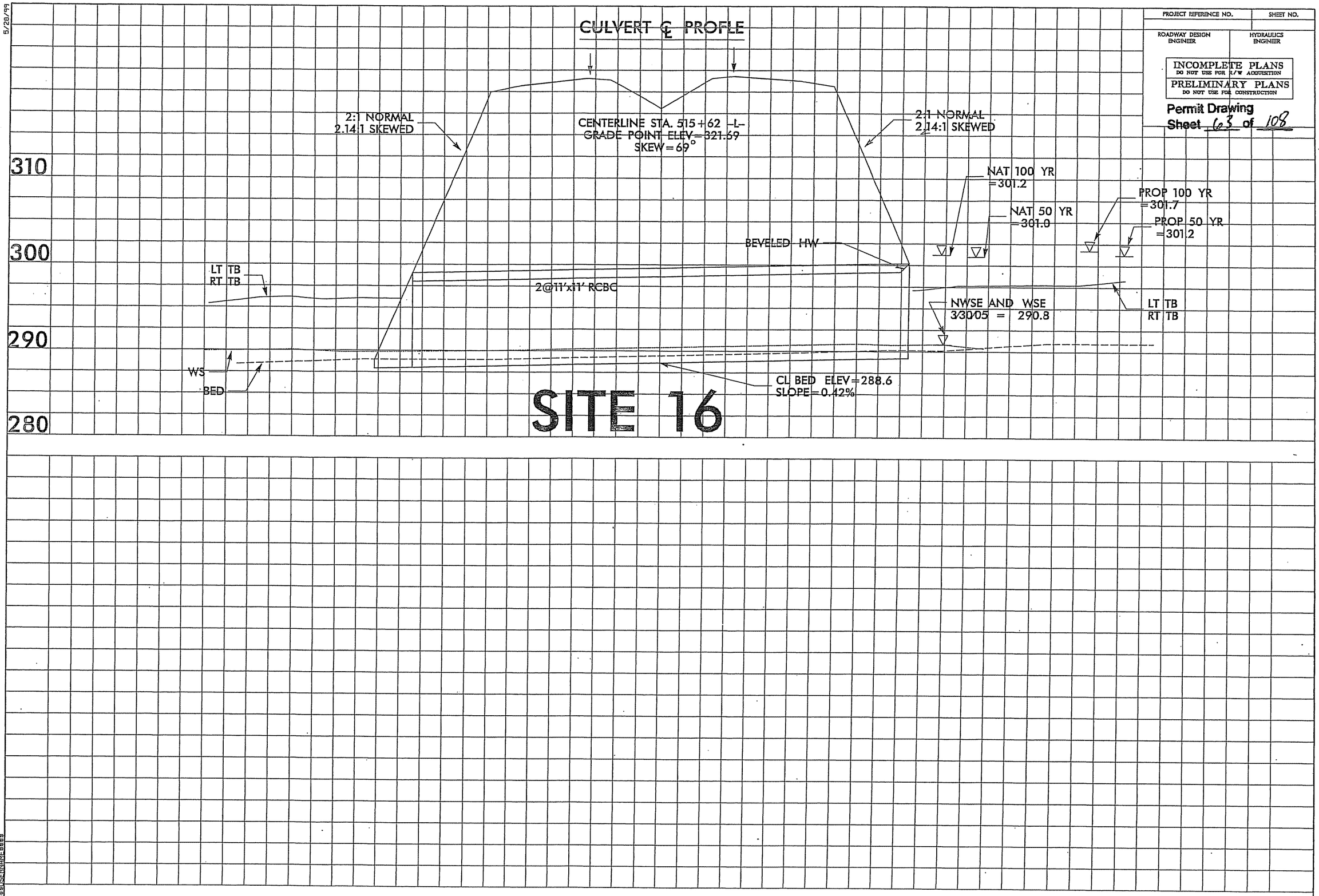
BACHELOR BRANCH

FEDESTRIAN CULVER 1-@ 12'-0" X 9'-0" RCBC

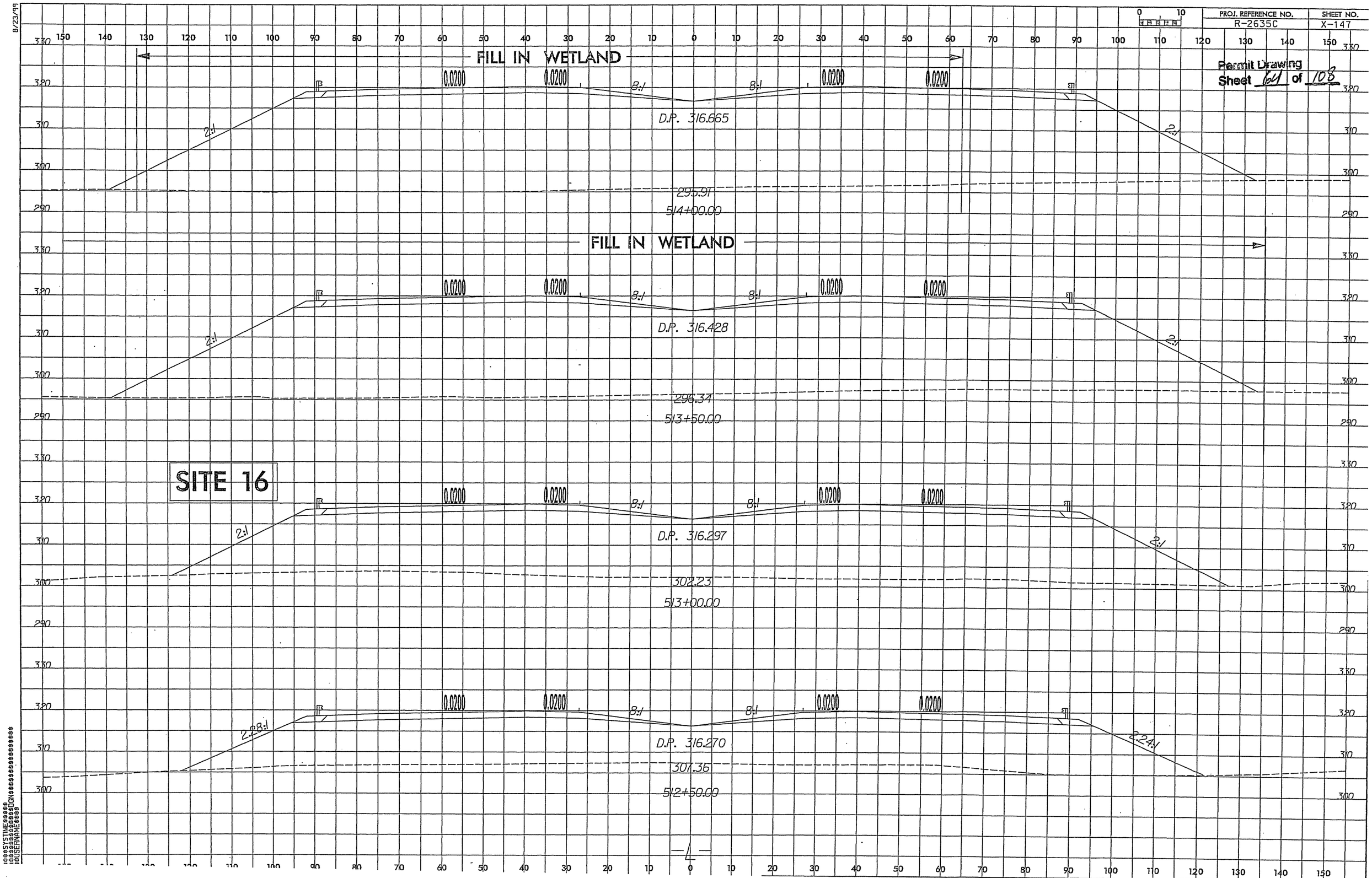
TBM #25
-BL- STA 431+49
95' RIGHT
ELEV. 364.82

FOR -L- PROFILE SEE SHEET 4

#DESIGNTIME#
#DESIGNDATE#
#USERNAME#



5/28/99
CULVERT ℄ PROFLE
2:1 NORMAL
2.14:1 SKEWED
CENTERLINE STA. 515+62 -L-
GRADE POINT ELEV=321.69
SKEW=69°
2:1 NORMAL
2.14:1 SKEWED
310
300
290
280
NAT 100 YR
=301.2
NAT 50 YR
=301.0
PROP 100 YR
=301.7
PROP 50 YR
=301.2
BEVELED HW
LT TB
RT TB
2@11'x11' RCBC
NWSE AND WSE
3/30/05 = 290.8
LT TB
RT TB
WS
BED
CL BED ELEV=288.6
SLOPE=0.42%
SITE 16
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 63 of 108



PROJ. REFERENCE NO.
R-2635C
SHEET NO.
X-147
Permit Drawing
Sheet 64 of 108
FILL IN WETLAND
0.0200
8:1
2:1
D.P. 316.665
295.91
514+00.00
FILL IN WETLAND
D.P. 316.428
296.34
513+50.00
SITE 16
D.P. 316.297
302.23
513+00.00
2.28:1
2.24:1
D.P. 316.270
307.36
512+50.00

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 65 of 109

REVISIONS

8/17/99

DENOTES MECHANIZED CLEARING

DENOTES TEMPORARY FILL IN SURFACE WATER

NAD 83

ENGLISH

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER (POND)

DENOTES FILL IN SURFACE WATER

MATCH LINE -L- STA. 521+00 SEE SHEET NO. 17

MATCH LINE -L- STA. 535+00 SEE SHEET NO. 19

SITE 17

SITE 18

UNNAMED TRIB TO BACHELOR BRANCH

OUTLET CHANNEL
EST DDE 20 CY
SEE DETAIL #31
CLASS 'I' RIP RAP
EST 38 TONS

LAT 2' BASE DITCH W/CLASS 'B' RIP RAP
STA. 521+50 TO STA. 524+00 -L- LT
SEE DETAIL 3

SHOULDER BERM GUTTER
STA. 512+50 TO STA. 531+00 -L- LT

LAT 'A' DITCH W/CLASS 'B' RIP RAP
STA. 524+00 TO STA. 528+00 -L- LT
SEE DETAIL 14

BREACH DAM
DRAIN POND

CLASS 'B' RIP RAP

LAT 2' BASE DITCH W/CLASS 'B' RIP RAP
STA. 528+00 TO STA. 530+65 -L- LT
SEE DETAIL 3

CLASS 'B' RIP RAP

463 -BL- 436+82.85 PINC
-L- 524+49.24
4.90' RT

465 -BL- 443+95.28 PINC
-L- 531+61.67
4.99' RT

464 -BL- 440+49.78 PINC
-L- 528+16.16
5.36' RT

N 11° 50' 00.1" W

-L-

2GI W/FLAT GRATE

2GI

2GF

FS

30" CLASS IV

18" C

15"

CAT-1

FILL W/SELECTED MATERIAL +/-2 CY

INLET CHANNEL
EST-DDE 31 CY
SEE DETAIL #30
CLASS 'I' RIPRAP
EST. 15 TONS

FOR -L- PROFILE SEE SHEET 48

$$$$$SYSTIME$$$$$
$$$$$DESIGN$$$$$
$$$$$USERNAME$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 66 of 108

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

NAD '83

ENGLISH

F W F DENOTES FILL IN WETLAND

P P P DENOTES FILL IN SURFACE WATER (POND)

S F S DENOTES FILL IN SURFACE WATER

REVISIONS

8/17/99

MATCH LINE –L– STA. 521+00 SEE SHEET NO. 17

MATCH LINE –L– STA. 535+00 SEE SHEET NO. 19

SITE 17

SITE 18

UNNAMED TRIB TO BACHELOR BRANCH

BOULDER CHANNEL SEE DOS 201.01 SEE DETAIL #31 CLASS "I" RIP RAP EST 38 TONS

LAT 2' BASE DITCH W/CLASS "B" RIP RAP STA. 521+50 TO STA. 524+60 –L– LT SEE DETAIL 3

LAT 'V' DITCH W/CLASS "B" RIP RAP STA. 524+00 TO STA. 528+60 –L– LT SEE DETAIL 14

LAT 2' BASE DITCH W/CLASS "B" RIP RAP STA. 528+00 TO STA. 530+65 –L– LT SEE DETAIL 3

SHOULDER BERM GUTTER STA. 513+50 TO STA. 531+00 –L– LT

BREACH DAM DRAIN POND P

POND WS 3254

CLASS "B" RIP RAP

463 –BL– 436+82.85 PINC
–L– 524+49.24
4.90' RT

N 41° 50' 00.0" W

464 –BL– 440+49.78 PINC
–L– 528+18.16
5.36' RT

465 –BL– 443+85.28 PINC
–L– 531+61.67
4.99' RT

GRAD 350

2GI W/FLAT GRATE

15" CSP W/ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET

FILL MATERIAL MAY BE NEEDED FOR THIS AREA

INLET CHANNEL EST DOS 41.01 SEE DETAIL #20 CLASS "I" RIPRAP EST. 15 TONS

SHOULDER BERM GUTTER STA. 519+00 TO STA. 530+00 –L– RT

FOR –L– PROFILE SEE SHEET 48

USERNAME SYSTIME DESIGN

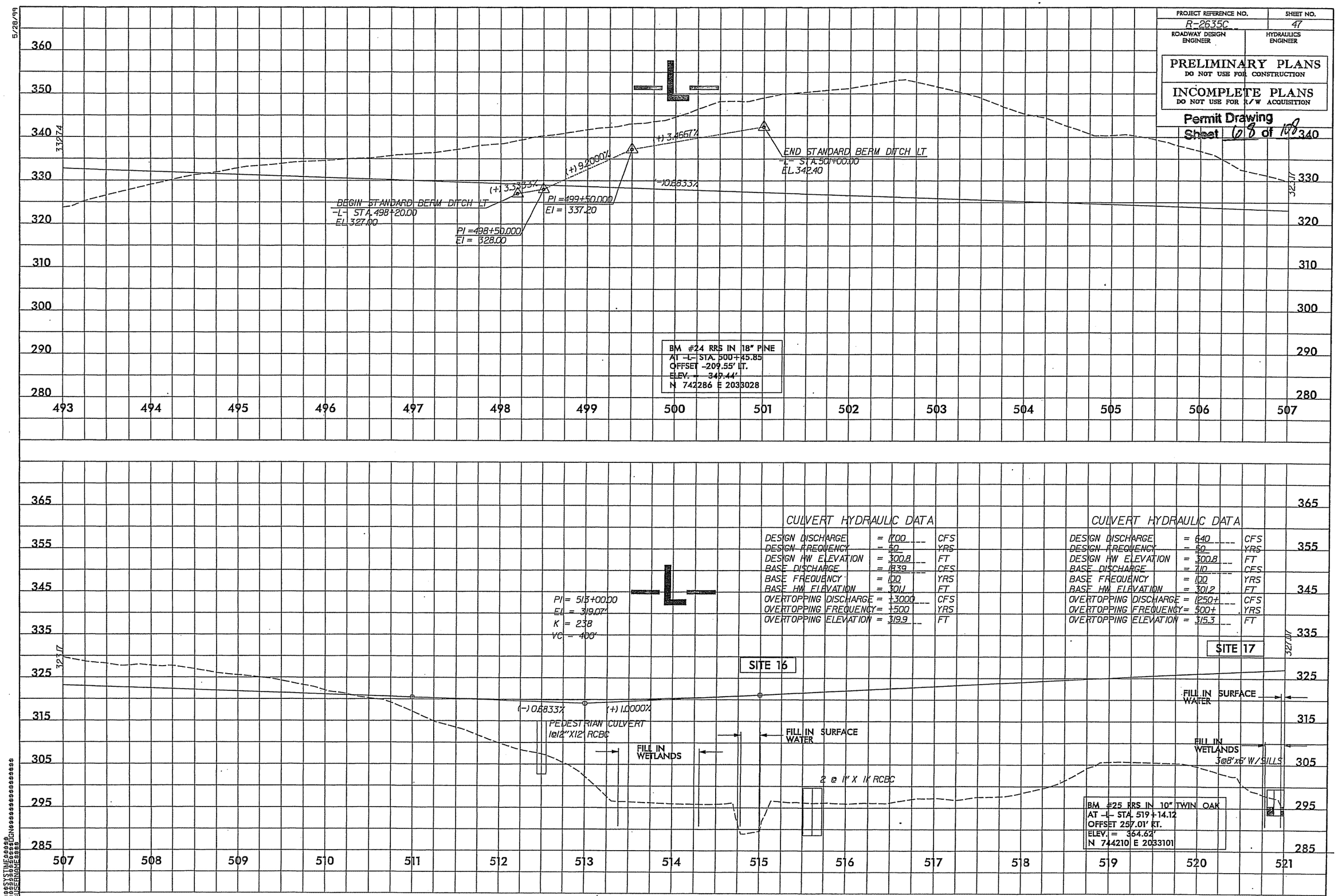
PROJECT REFERENCE NO.	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

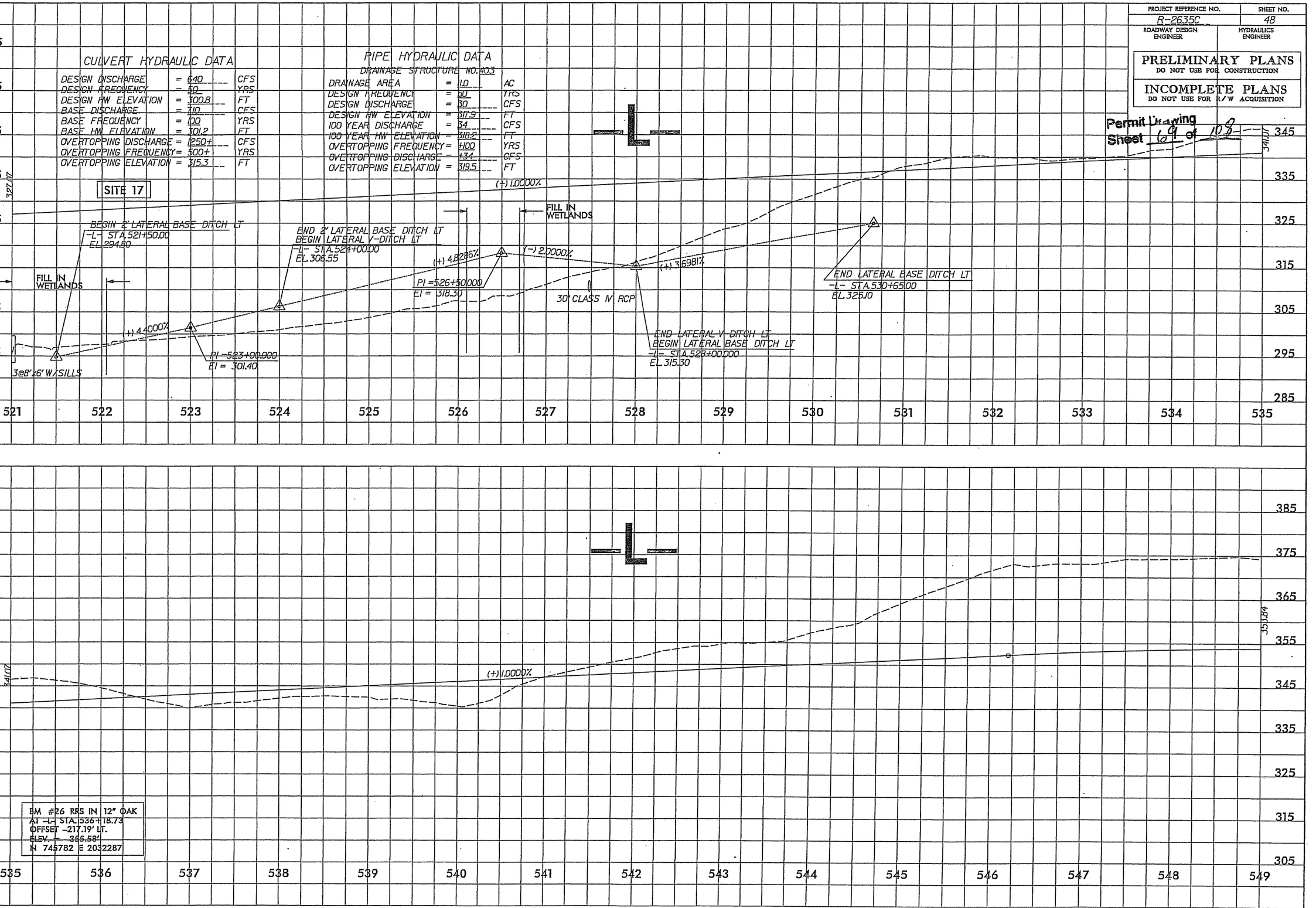
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 67 of 108

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



PROJECT REFERENCE NO.
R-2635C
SHEET NO.
47
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
Permit Drawing
Sheet 68 of 108
5/28/99
-L-
BEGIN STANDARD BERM DITCH LT
-L- STA. 498+20.00
EL 327.00
PI =498+50.000
EI = 328.00
(+) 3.3333%
PI =499+50.000
EI = 337.20
(+) 9.2000%
(+) 3.4667%
(-) 0.6833%
END STANDARD BERM DITCH LT
-L- STA. 501+00.00
EL 342.40
BM #24 RRS IN 18" PINE
AT -L- STA. 500+45.85
OFFSET -209.55' LT.
ELEV. = 349.44'
N 742286 E 2033028
PI = 513+00.00
EL = 319.07'
K = 238
VC = 400'
CULVERT HYDRAULIC DATA
DESIGN DISCHARGE = 1700 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 300.8 FT
BASE DISCHARGE = 1839 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 301.1 FT
OVERTOPPING DISCHARGE = +3000 CFS
OVERTOPPING FREQUENCY = +500 YRS
OVERTOPPING ELEVATION = 319.9 FT
CULVERT HYDRAULIC DATA
DESIGN DISCHARGE = 640 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 300.8 FT
BASE DISCHARGE = 710 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 301.2 FT
OVERTOPPING DISCHARGE = 1250+ CFS
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING ELEVATION = 315.3 FT
SITE 16
SITE 17
(-) 0.6833%
(+) 1.0000%
PEDESTRIAN CULVERT
1@12"X12' RCBC
FILL IN WETLANDS
FILL IN SURFACE WATER
2 @ 11' X 11' RCBC
FILL IN SURFACE WATER
FILL IN WETLANDS
3@8'x6' W/SILLS
BM #25 RRS IN 10" TWIN OAK
AT -L- STA. 519+14.12
OFFSET 257.01' RT.
ELEV. = 364.62'
N 744210 E 2033101

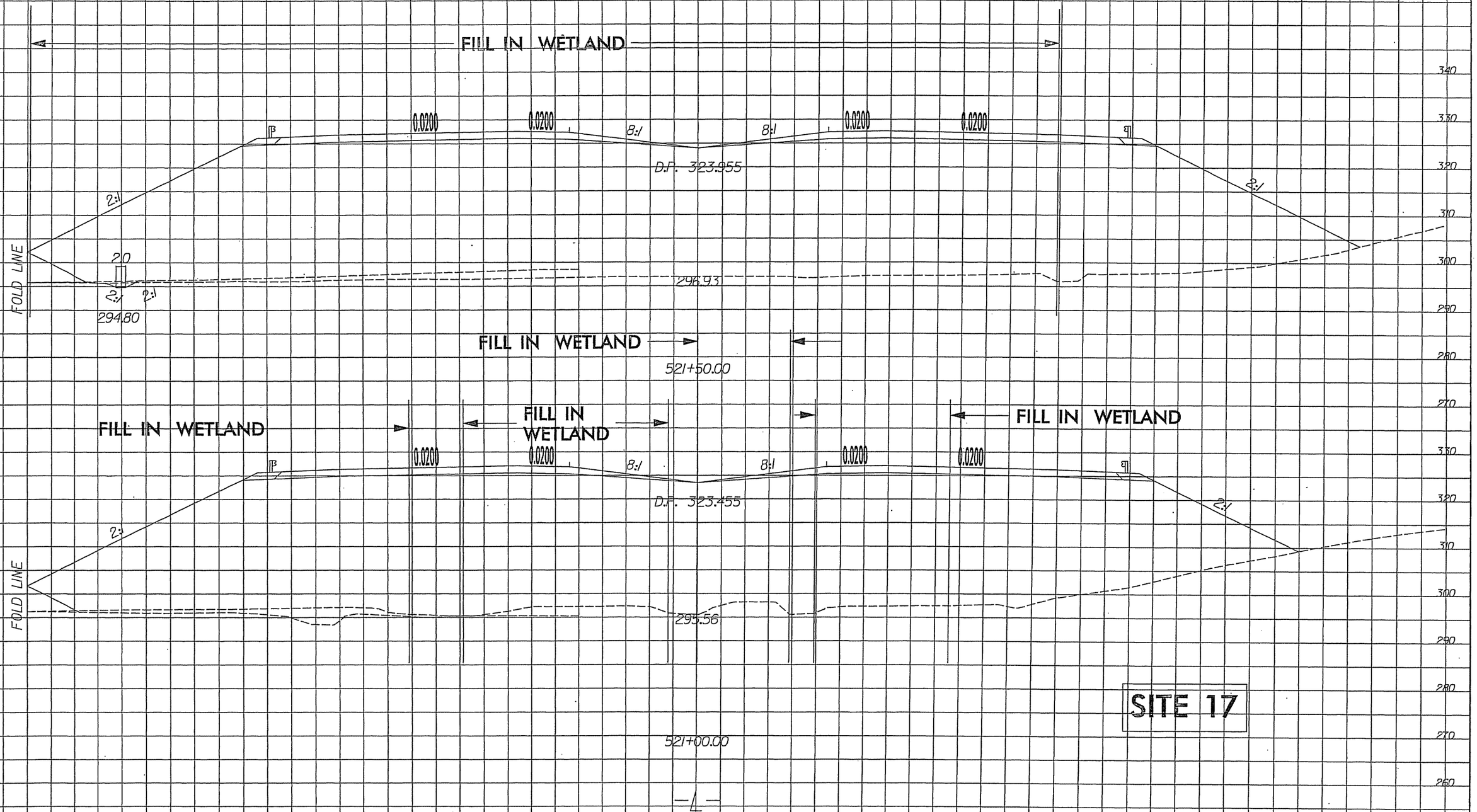


PROJECT REFERENCE NO.
R-2635C
SHEET NO.
48
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
Permit Drawing
Sheet 69 of 108
CULVERT HYDRAULIC DATA
DESIGN DISCHARGE = 640 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 300.8 FT
BASE DISCHARGE = 710 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 301.2 FT
OVERTOPPING DISCHARGE = 1250+ CFS
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING ELEVATION = 315.3 FT
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 403
DRAINAGE AREA = 11.0 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 30 CFS
DESIGN HW ELEVATION = 317.9 FT
100 YEAR DISCHARGE = 34 CFS
100 YEAR HW ELEVATION = 318.2 FT
OVERTOPPING FREQUENCY = +100 YRS
OVERTOPPING DISCHARGE = +34 CFS
OVERTOPPING ELEVATION = 319.5 FT
SITE 17
-L-
(+) 1.0000%
FILL IN WETLANDS
BEGIN 2' LATERAL BASE DITCH LT
-L- STA. 521+50.00
EL. 294.80
END 2' LATERAL BASE DITCH LT
BEGIN LATERAL V-DITCH LT
-L- STA. 524+00.00
EL. 306.55
(+) 4.8286%
(-) 2.0000%
(+) 3.6981%
PI = 526+50.000
EI = 318.30
30" CLASS IV RCP
END LATERAL BASE DITCH LT
-L- STA. 530+65.00
EL. 325.10
END LATERAL V-DITCH LT
BEGIN LATERAL BASE DITCH LT
-L- STA. 528+00.000
EL. 315.30
(+) 4.4000%
PI = 523+00.000
EI = 301.40
3@8'x6' W/SILLS
327.07
341.07
365
355
345
335
325
315
305
295
285
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
385
375
365
355
345
335
325
315
305
(+) 1.0000%
353.84
BM #26 RRS IN 12" OAK
AT -L- STA. 536+18.73
OFFSET -217.19' LT.
ELEV. = 355.58'
N 745782 E 2032287
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2635C	X-154

Permit Drawing
Sheet 70 of 198



PROJECT REFERENCE NO.	SHEET NO.
R-2635C	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 71 of 109

P P DENOTES FILL IN SURFACE WATER (POND)

S S DENOTES FILL IN SURFACE WATER

ENGLISH

NAD 83

REVISIONS

8/17/99

MATCH LINE -L- STA. 549+00 SEE SHEET NO. 19

MATCH LINE -L- STA. 563+00 SEE SHEET NO. 21

SHOULDER BERM GUTTER STA. 15+50 TO BEGIN BRIDGE -Y15- RT

SHOULDER BERM GUTTER STA. 16+50 TO BEGIN BRIDGE -Y15- LT

SITE 19

473-BL- 467+58.87 PINC
-L- 555+25.24
7.25' RT

472-BL- 463+94.52 PINC
-L- 551+60.90
4.40' RT

USE STD. 6" DECK DRAIN ON 12' CENTERS
BEGIN BRIDGE TO STA. 17+76 LT
STA. 20+06 LT TO END BRIDGE
BEGIN BRIDGE TO STA. 17+46 RT
STA. 19+76 RT TO END BRIDGE

475-BL- 473+31.34 PINC
-L- 560+98.07
9.35' RT

474-BL- 471+15.71 PINC
-L- 558+82.20
5.48' RT

470-BL- 461+35.53 PINC
-L- 549+01.92
5.16' RT

TBM #27
-BL- STA 467+59
251' RIGHT
-BY14- STA 37+63
245' RIGHT
ELEV. 367.58'

TBDI W/NARROW SLOT FLAT GRATE

TBDI W/FLAT GRATE-TYPE A

IMPACT ATTENUATOR TYPE 350

CLASS 'I' RIP RAP

CLASS 'B' RIPRAP

24" CSP W/ELBOWS

18" CSP W/ELBOWS

15" CSP W/ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET

STD BERM DITCH STA. 550+00 TO STA. 551+40 -L- RT

STD BERM DITCH STA. 553+00 TO STA. 560+00 -L- RT

SHOULDER BERM GUTTER END BRIDGE TO STA. 21+90 -Y15- LT & RT

LAT 'V' DITCH STA. 20+40 TO STA. 22+00 -Y15- RT SEE DETAIL 7

REMOVE

TYPE III

TYPE B-77

GRAU 350

GRAU 350 SOIL

GRAU 350 ROCK

GRAU 350 WATER

WW FENCE

BDD

TDE

ISFD

POWER HOUSE

POND WS 397.5

EXISTING R/W

SR 3068 TWYLA RD 18' BST

18" CMP

FOR -L- PROFLE SEE SHEET 49
FOR -Y15- PROFLE SEE SHEET 62

$$$$SYSTIME$$$$
$$$$DESIGN$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 72 of 108

8/17/99

REVISIONS

MATCH LINE -L- STA. 549+00 SEE SHEET NO. 19

MATCH LINE -L- STA. 563+00 SEE SHEET NO. 21

R/W DENOTES FILL IN SURFACE WATER (POND/WATER)

S DENOTES FILL IN SURFACE WATER

ENGLISH

NAD 83

SITE 19 473-BL- 467+58.87 RINC -L- 555+25.24 7.25' RT

475-BL- 463+94.52 PINC -L- 551+60.90 4.40' RT

USE STD. 6" DECK DRAIN ON 12' CENTERS. BEGIN BRIDGE TO STA 17+76 LT STA 20+06 LT TO END BRIDGE BEGIN BRIDGE TO STA 17+46 RT STA 19+76 RT TO END BRIDGE

475-BL- 473+31.34 PINC -L- 560+98.07 9.35' RT

474-BL- 471+15.7 PINC -L- 558+82.20 5.48' RT

470-BL- 461+35.53 PINC -L- 549+01.92 5.16' RT

TBM #27 -BL- STA 467+59 25' RIGHT -BY14- STA 371+63 265' RIGHT ELEV. 387.58'

STD BERM DITCH STA. 550+00 TO STA 551+40 -L- RT

STD BERM DITCH STA. 555+00 TO STA. 560+00 -L- RT

SHOULDER BERM GUTTER STA 15+50 TO BEGIN BRIDGE -Y15- RT

SHOULDER BERM GUTTER STA 16+50 TO BEGIN BRIDGE -Y15- LT

SHOULDER BERM GUTTER END BRIDGE TO STA 23+90 -Y15- LT & RT

LAT 'V' DITCH STA. 20+40 TO STA 22+00 -Y15- RT SEE DETAIL 7

TBDI W/NARROW SLOT FLAT GRATE

TBDI W/FLAT GRATE-TYPE 7

IMPACT ATTENUATOR TYPE 350

24" CSP W/ELBOWS

18" CSP W/ELBOWS

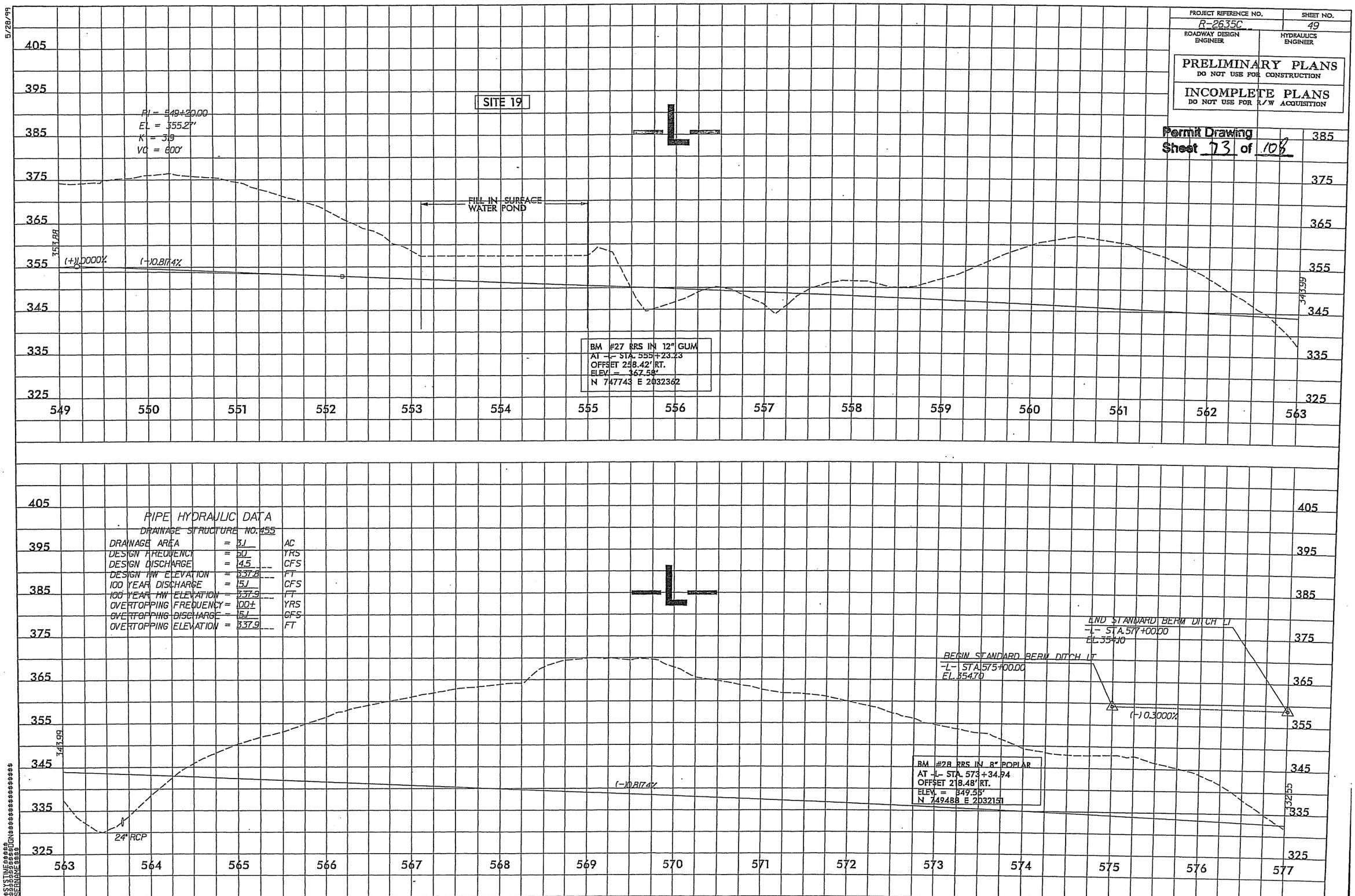
15" CSP W/ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET

CLASS 'B' RIPRAP

REMOVE

FOR -L- PROFILE SEE SHEET 49
FOR -Y15- PROFILE SEE SHEET 23

8888888SYSTIME8888888
8888888SYSDATE8888888
8888888USERNAME8888888



5/28/99
PROJECT REFERENCE NO.
R-2635C
SHEET NO.
49
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
Permit Drawing
Sheet 73 of 108
SITE 19
PI = 549+20.00
EL = 355.27'
K = 319
VC = 600'
FILL IN SURFACE WATER POND
(+)1.0000%
(-)0.8174%
353.88
343.99
BM #27 RRS IN 12" GUM
AT -L- STA. 555+23.23
OFFSET 258.42' RT.
ELEV. = 367.58'
N 747743 E 2032362
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 455
DRAINAGE AREA = 3.1 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 14.5 CFS
DESIGN HW ELEVATION = 337.8 FT
100 YEAR DISCHARGE = 15.1 CFS
100 YEAR HW ELEVATION = 337.9 FT
OVERTOPPING FREQUENCY = 100+ YRS
OVERTOPPING DISCHARGE = 15.1 CFS
OVERTOPPING ELEVATION = 337.9 FT
END STANDARD BERM DITCH LT
-L- STA. 577+00.00
EL. 354.10
BEGIN STANDARD BERM DITCH LT
-L- STA. 575+00.00
EL. 354.70
(-) 0.3000%
(-)0.8174%
24" RCP
BM #28 RRS IN 8" POPLAR
AT -L- STA. 573+34.94
OFFSET 218.48' RT.
ELEV. = 349.55'
N 749488 E 2032151
343.99
332.55

8/17/99
REVISIONS
PROJECT REFERENCE NO.
R-2635C
SHEET NO.
21
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 74 of 108
NAD 83
ENGLISH
-L-
PI Sta 563+83.04
Δ = 9° 26' 45.7" (RT)
D = 0° 57' 17.7"
L = 989.19
T = 495.72'
R = 6,000.00'
SE = .04
PIs Sta 569+59.85
θs = 1° 11' 37.2"
Ls = 250.00'
LT = 166.67'
ST = 83.34'
DENOTES FILL IN SURFACE WATER (POND)
565
570
575
MORRISVILLE PARKWAY TO BE CONSTRUCTED BY OTHERS
476 -BL- 476+68.26 PINC
-L- 564+35.50
7.32' RT
477 -BL- 480+67.93 PINC
-L- 568+35.66
5.02' RT
478 -BL- 482+59.45 PINC
-L- 570+27.31
7.34' RT
479 -BL- 485+70.43 PINC
-L- 573+38.29
4.19' RT
480 -BL- 488+86.71 PINC
-L- 576+54.55
7.40' RT
WW FENCE
STD BERM DITCH
STA. 572+50 TO STA 576+50 -L- LT
BDO
18" CSP
CLASS 'I' RIP RAP
CAT-1
GRAU 350
3GI-A
3GI
2GI
2GI-A
FS
Due North
CLASS 'B' RIP RAP
EST 8 TONS
SITE 20
TBM #28
-BL- STA 485+65
214' RIGHT
ELEV.349.55'
POND
WE 339.0
GRADE TO DRAIN
BREACH DAM
DRAIN POND
CSSta. 568+76.51
STSta. 571+26.51
MATCH LINE -L- STA. 563+00 SEE SHEET NO. 20
MATCH LINE -L- STA. 577+00 SEE SHEET NO. 22
FOR -L- PROFILE SEE SHEET 49
ISFD
2SFBUS
ISBKD
CONC
GR
BLK WALL
15" CONC

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 75 of 108

NAD 83

NGLIS

-L-
PI Sta 563+83.04
Δ = 97°25'45.7" (RT)
D = 0°57'17.7"
L = 989.98'
T = 495.72'
R = 6000.00'
SE = 0.04

PI Sta 569+59.85
θs = 1° 11' 37.2"
Ls = 250.00'
LT = 166.67'
ST = 83.34'

DENOTES FILL IN SURFACE WATER (POND)

MORRISVILLE PARKWAY TO BE CONSTRUCTED BY OTHERS

477 -BL- 480+67.93 PINC
-L- 566+35.66
5.02' RT

476 -BL- 478+68.28 PINC
-L- 564+38.50
7.41' RT

478 -BL- 482+59.45 PINC
-L- 570+27.31
7.34' RT

479 -BL- 485+70.43 PINC
-L- 573+38.29
4.19' RT

480 -BL- 486+86.71 PINC
-L- 576+54.55
7.40' RT

WW FENCE

STA 572+50 TO STA 576+50 -L- LT
BERM DITCH

BDO

18" CMP

Due North

SITE 20

TBM #28
-BL- STA 485+65
214' RIGHT
ELEV. 319.55'

WW FENCE
POND
WS 339.0

BREACH DAM
DRAIN. POND

CLASS 'A' RIP RAP
EST. 8 TONS

CSSta. 566+76.51

ST Sta. 571+26.51

FOR -L- PROFILE SEE SHEET 49

MATCH LINE -L- STA. 563+00 SEE SHEET NO. 20

MATCH LINE -L- STA. 577+00 SEE SHEET NO. 22

REVISIONS

8/17/99

$$$$USERNAME$$$$

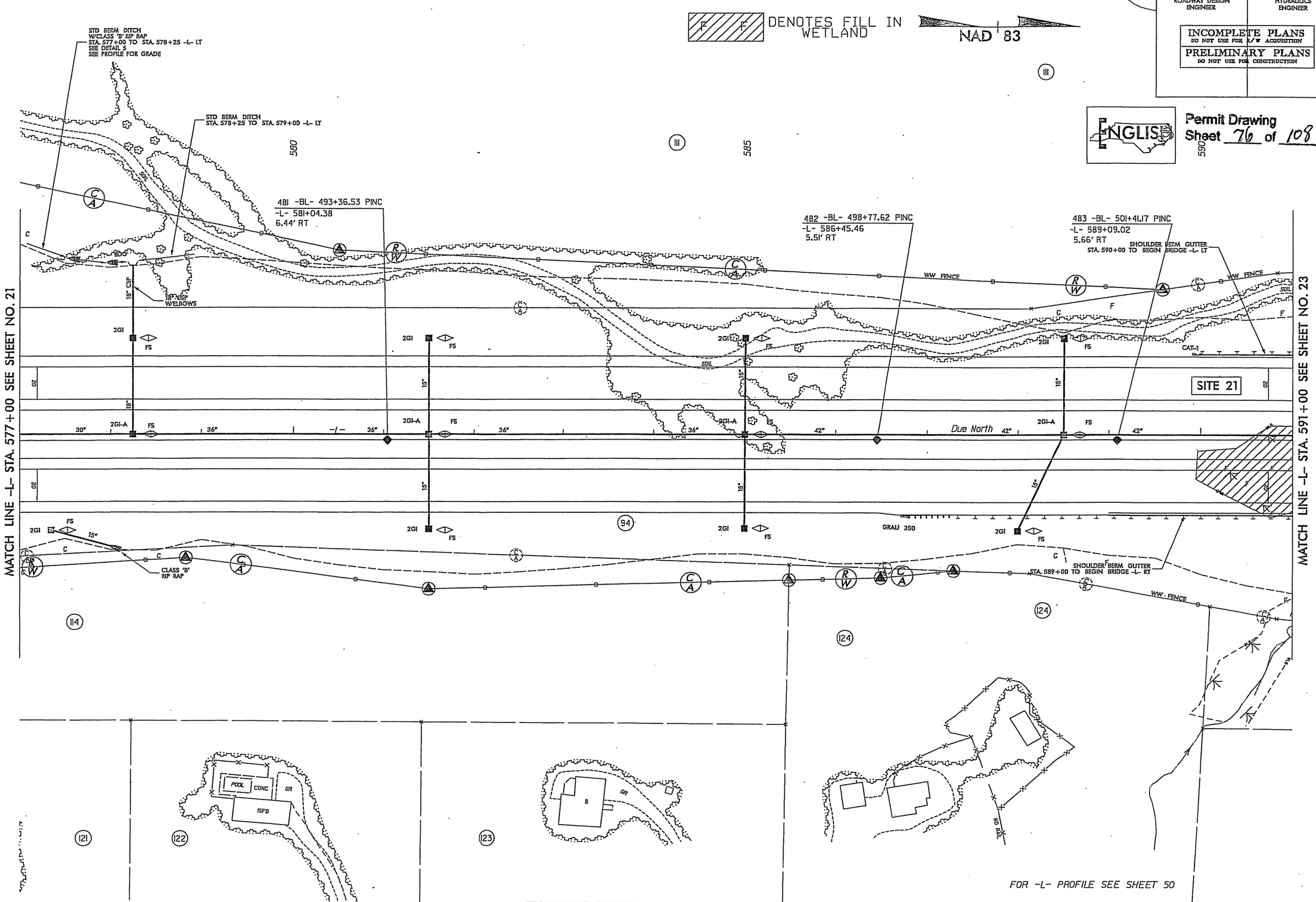
PROJECT REFERENCE NO.	SHEET NO.
R-2635C	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

Permit Drawing
Sheet 76 of 108



REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 77 of 108

8/17/99

REVISIONS

MATCH LINE -L- STA. 577+00 SEE SHEET NO. 21

MATCH LINE -L- STA. 591+00 SEE SHEET NO. 23

DENOTES FILL IN WETLAND

NAD 83

ENGLISH

STD BERM DITCH W/CLASS 'B' RIP RAP STA. 577+00 TO STA. 578+25 -L- LT SEE DETAIL 5 SEE PROFILE FOR GRADE

STD BERM DITCH STA. 578+25 TO STA. 579+00 -L- LT

481 -BL- 493+36.53 PINC -L- 581+04.38 5.44' RT

482 -BL- 498+77.62 PINC -L- 586+45.46 5.51' RT

483 -BL- 501+41.17 PINC -L- 588+09.02 5.66' RT

SHOULDER BERM GUTTER STA. 590+00 TO BEGIN BRIDGE -L- LT

SHOULDER BERM GUTTER STA. 589+00 TO BEGIN BRIDGE -L- RT

SITE 24

Due North

GRAU 35D

FOR -L- PROFILE SEE SHEET 50

$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 76 of 108

ENGLISH

REVISIONS

8/17/99

-L-
Pls Sta 603+79.21
θs = 1° 11' 37.2"
Ls = 250.00'
LT = 166.67'
ST = 83.34'

Pl Sta 610+00.75
Δ = 10° 15' 06.5" (LT)
D = 0° 57' 17.7"
L = 1,073.51'
T = 538.22'
R = 6,000.00'
SE = .04

NAD 83

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

HC HC DENOTES HAND CLEARING

SITE 21

JURISDICTIONAL STREAM
PANTHER CREEK

595 600 605

484 -BL- 504+78.53 PINC
-L- 592+46.38
5.02' RT

ENERGY DISSIPATOR SEE DETAIL SHEET

PDE

SOIL

JB w/MH

TOE PROTECTION
STA. 596+00 TO STA. 597+50 -L- LT
PANTHER CREEK SEE DETAIL 6

WE
TB

ROD AND LUG CONNECTORS W/SLEEVE GASKET

18" CSP W/ELBOWS

CLASS 'B' RIP RAP

WW FENCE

WORK BRIDGE

SWAMP

END APPROACH SLAB
-L- STA. 596+12 +/-

SHOULDER BERM GUTTER
STA. 590+00 TO STA. 597+50 -L- LT

TOE PROTECTION
STA. 598+50 TO STA. 599+50 -L- LT
SEE DETAIL 6

TSSta. 602+12.54

486 -BL- 513+49.02 PINC
-L- 601+16.86
7.30' RT

SCSta. 604+62.54

CLASS 'B' RIPRAP

SHOULDER BERM GUTTER
STA. 603+50 TO STA. 611+50 -L- LT

62.50'

2GI W/FLAT GRATE

2GI-A W/FLAT GRATE

BEGIN APPROACH SLAB
-L- STA. 593+12 +/-

TYPE B-77

TYPE M350

42"

2GI-A

FS

15"

2GI

2GI-D

HC

F

C

E

BEGIN BRIDGE
-L- STA. 596+11 +/-

END BRIDGE
-L- STA. 596+63 +/-

-BL- 509+44.78 PINC
-L- 551+13.62
63.83' RT

Due North

SOIL

CAT-1

SHOULDER BERM GUTTER
END BRIDGE TO STA. 598+00 -L- RT

BED

TBM #29
-BL- STA 509+02
236' RIGHT
ELEV. 278.71'

APPROX. LOCATION OF GREENWAY BOARDWALK BY TOWN OF CARY

MATCH LINE -L- STA. 591+00 SEE SHEET NO. 22

MATCH LINE -L- STA. 605+00 SEE SHEET NO. 24

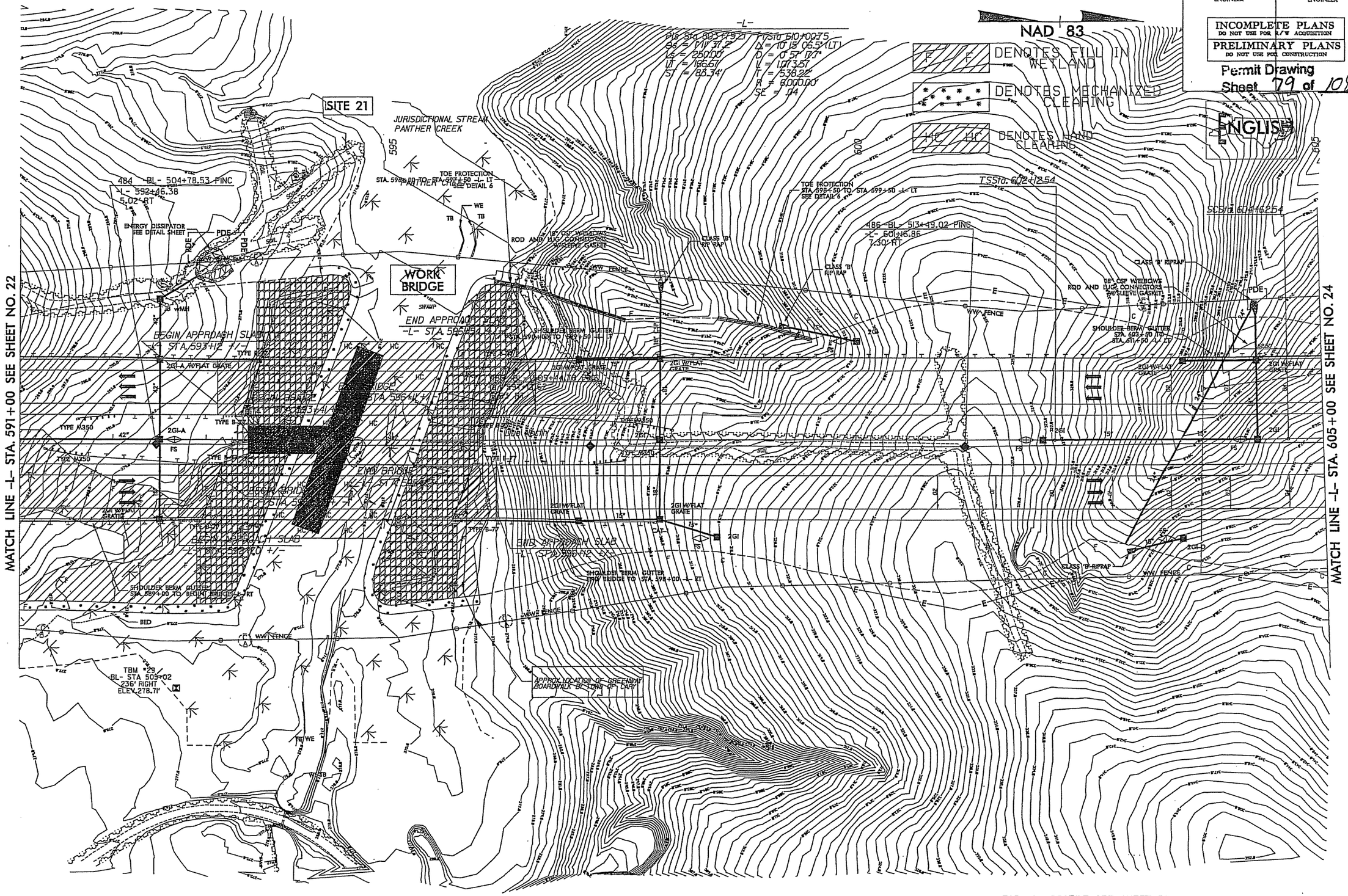
FOR -L- PROFILE SEE SHEET 50

DESIGN SYSTIME USERNAME

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

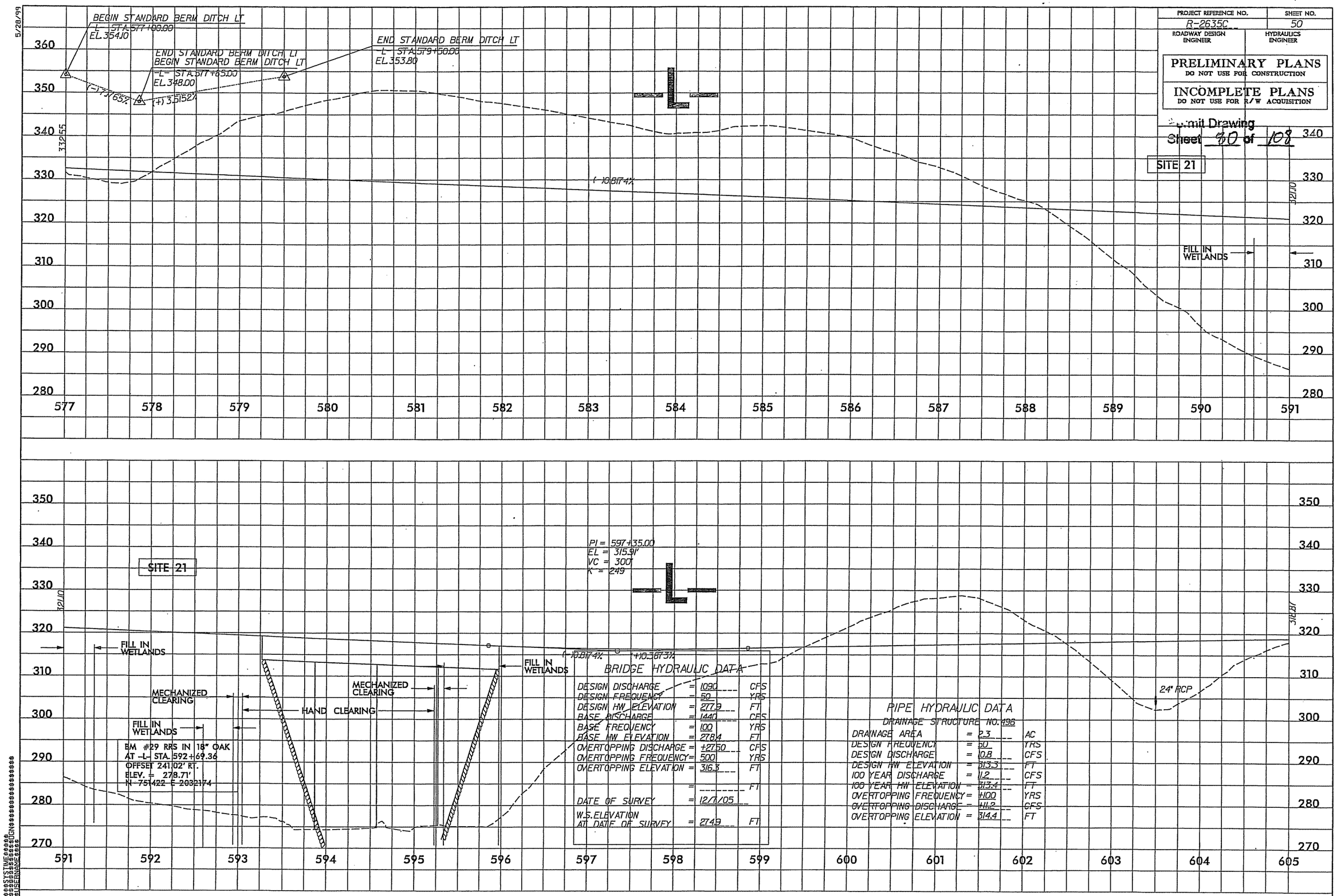
Permit Drawing
Sheet 79 of 108



FOR -L- PROFILE SEE SHEET 50

REVISIONS

8/17/99



5/28/99
PROJECT REFERENCE NO.
R-2635C
SHEET NO.
50
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
Permit Drawing
Sheet 80 of 108
SITE 21
BEGIN STANDARD BERM DITCH LT
-L- STA. 577+00.00
EL 354.10
END STANDARD BERM DITCH LT
BEGIN STANDARD BERM DITCH LT
-L- STA. 577+65.00
EL 348.00
END STANDARD BERM DITCH LT
-L- STA. 579+50.00
EL 353.80
(-)7.7165%
(+)3.5152%
(-)0.8174%
332.55
321.10
FILL IN WETLANDS
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
PI = 597+35.00
EL = 315.91'
VC = 300'
K = 249
(-)0.8174%
(+)0.3673%
MECHANIZED CLEARING
HAND CLEARING
BM #29 RRS IN 18" OAK
AT -L- STA. 592+69.36
OFFSET 241.02' RT.
ELEV. = 278.71'
N 751422 E 2032174
24" RCP
BRIDGE HYDRAULIC DATA
DESIGN DISCHARGE = 1090 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 277.9 FT
BASE DISCHARGE = 1440 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 278.4 FT
OVERTOPPING DISCHARGE = +27.50 CFS
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING ELEVATION = 316.3 FT
= FT
DATE OF SURVEY = 12/7/05
W.S. ELEVATION AT DATE OF SURVEY = 274.9 FT
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 496
DRAINAGE AREA = 2.3 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 10.8 CFS
DESIGN HW ELEVATION = 313.3 FT
100 YEAR DISCHARGE = 11.2 CFS
100 YEAR HW ELEVATION = 313.4 FT
OVERTOPPING FREQUENCY = +100 YRS
OVERTOPPING DISCHARGE = +11.2 CFS
OVERTOPPING ELEVATION = 314.4 FT
$$$$SYSTIME$$$$
$$$$DGN$$$$
$$USERNAME$$$$

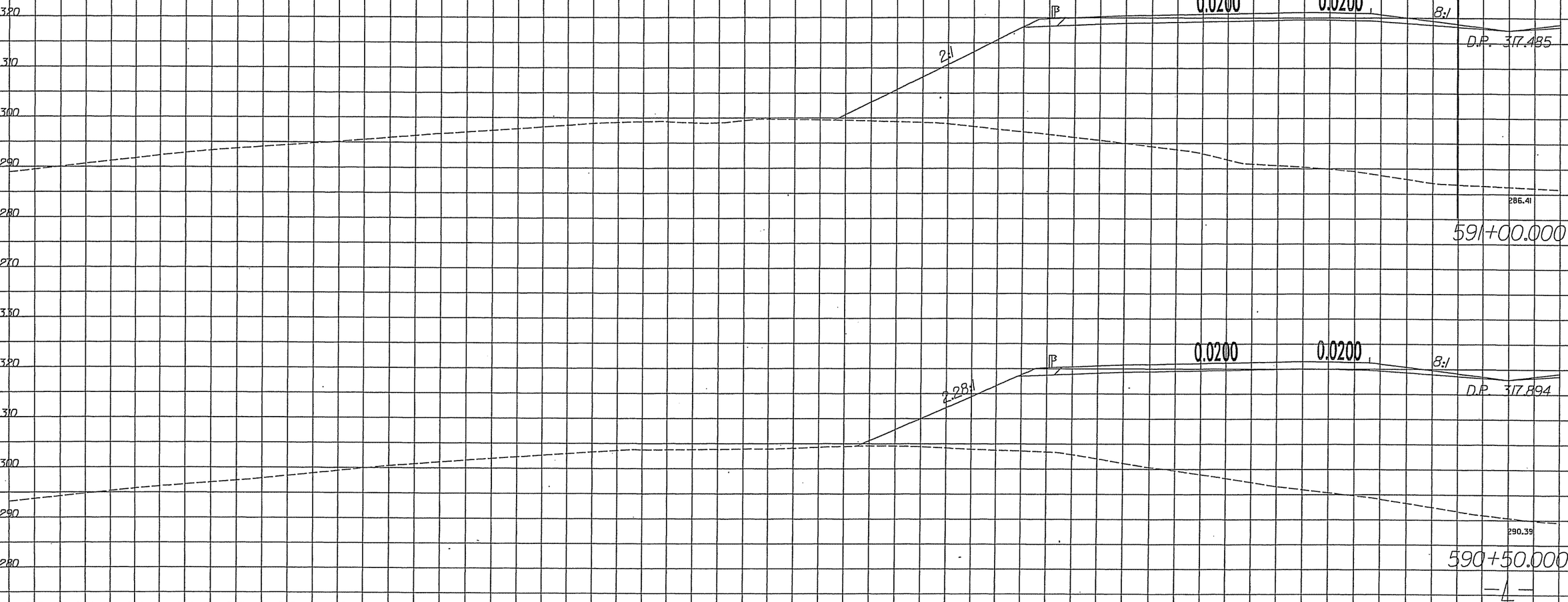
8/23/99

PROJ. REFERENCE NO. R-2635C | SHEET NO. L+Tol_196

Permit Drawing
Sheet 81 of 108

SITE 21

FILL IN WETLAND



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8/23/99

0 10

PROJ. REFERENCE NO.	SHEET NO.
R-2635C	R+Tol_198

Permit Drawing
Sheet 82 of 108

SITE 21

FILL IN WETLAND

0.0200 0.0200

8:1

D.P. 317.077

2:1

282.93

591+50.000

FILL IN WETLAND

0.0200 0.0200

8:1

D.P. 317.485

2:1

286.41

591+00.000

—℄—

330 320 310 300 290 280 270

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

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

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 83 of 108

FOR -L- PROFILE SEE SHEET 51

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

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 84 of 108

8/17/99

REVISIONS

DENOTES FILL IN SURFACE WATER

DENOTES TEMPORARY FILL IN SURFACE WATER

NAD 83

ENGLISH

-L-
PI Sta 610+00.75
Δ = 10° 15' 06.5" (LT)
D = 0° 57' 17.7"
Lc = 1013.35'
R = 5729.22'
T = 506.22'
PIs Sta 616+19.44
Θs = 1° 11' 37.2"
Ls = 250.00'
LT = 166.67'
ST = 83.34'

MATCH LINE -L- STA. 605+00 SEE SHEET NO. 23

MATCH LINE -L- STA. 619+00 SEE SHEET NO. 25

JURISDICTIONAL STREAM
PANTHER CREEK TRIBUTARY

SEE 22

GLASS 'I' RIPRAP
EST 70 TONS
ON BANKS OF
486 -BL- 520+82.17 PINC
-L- 608+49.45
6.33' LT

18" CSP W/ELBOWS
ROD AND LUG CONNECTIONS
W/SLEEVE GASKETS

PF5H

WW FENCE

SHOULDER BERM GUTTER
STA. 603+50 TO STA. 611+50 -L- LT

LAT 2' BASE DITCH
W/CLASS 'A' RIP RAP
STA. 608+10 TO STA. 608+50 -L- LT
SEE DETAIL-3

CLASS 'B' RIP RAP

16" CSP

60" CLASS IV
W/METHOD 'B'
INSTALLATION

2GI W/FLAT GRATE

489 -BL- 522+47.42 PINC
-L- 610+84.55
2.41' RT

24" CLASS IV
W/METHOD 'B'
INSTALLATION

GRAU 350

2GI

2GI-D

2GI-A

FS

FS5

FS6

HO

HO5

HO7

HW

PDE

BDO

PDE5

WW FENCE

TOE PROTECTION
STA 607+00 TO STA 611+00 -L- RT
SEE DETAIL 6

487 -BL- 518+54.07 PINC
-LL- 605+40.65
6.91' RT

BM #30
-BL- STA. 523+27
DIST. RIGHT
ELEV. 292.12'

490 -BL- 525+49.31 PINC
-L- 613+18.31
2.29' RT

CSSta. 615+36.10

STSta. 617+86.10

491 -BL- 527+[illegible] PINC
-L- 615+54.86
4.04' RT

STA 617+50 TO STA 618+50 -L- RT
STD BERM DITCH

SPECIAL DITCH GRADE
STA. 618+00 TO STA. 619+00 -L- RT
SEE PROFILE FOR GRADE

TOE PROTECTION
STA 614+75 TO STA 616+75 -L- RT
SEE DETAIL 6

18" CSP W/ELBOWS

2GI-A
N 12°-38'-20.9"-W

FOR -L- PROFILE SEE SHEET 51

126

605

610

615

620

125

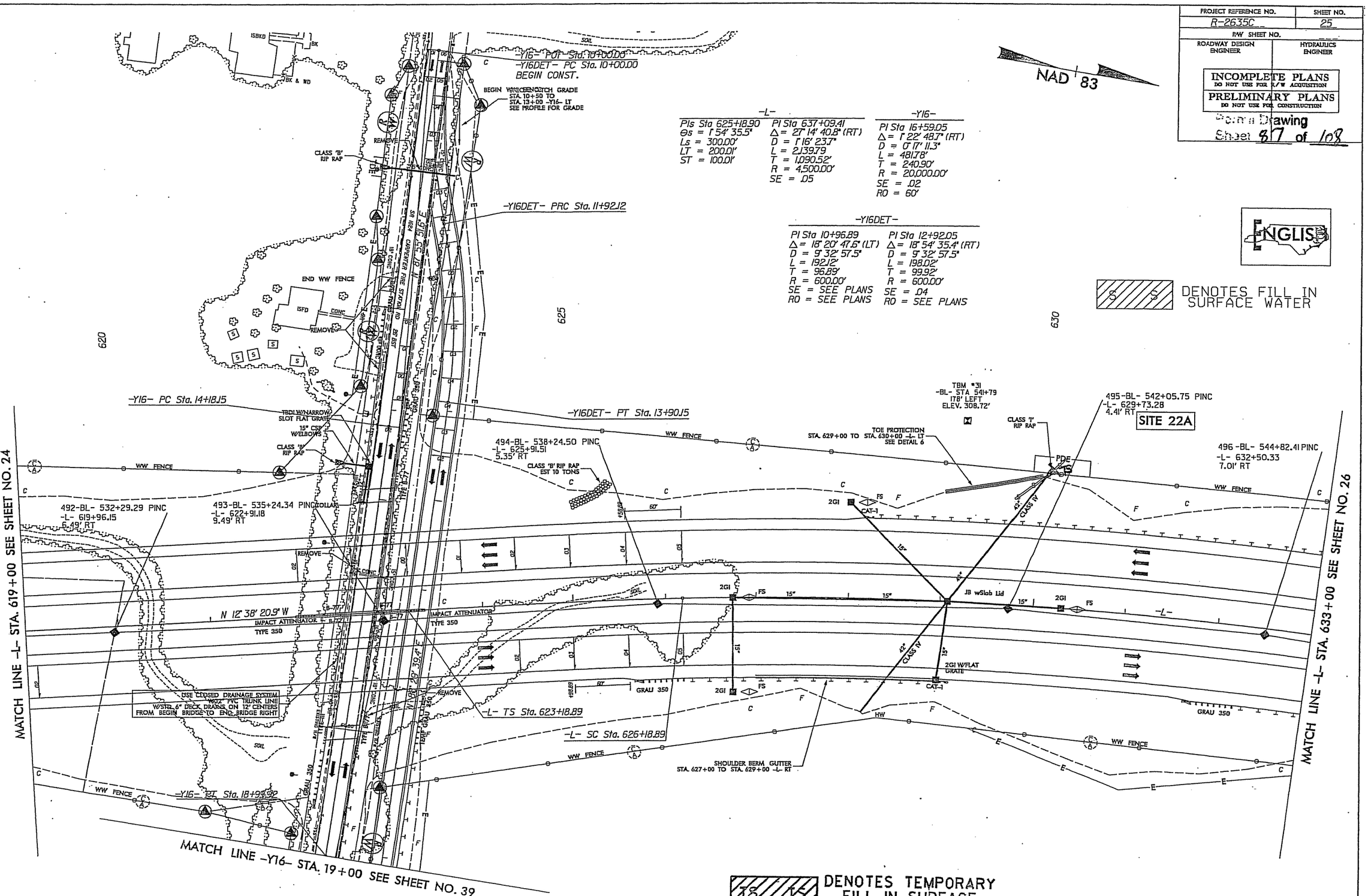
PIPE ℄ PROFILE
CENTERLINE STA. 609+50 -L-
CENTERLINE ELEV= 320.61
SKEW= 50°
60" RCP
340
320
300
280
260
SLOPE=2.42%
L=430'
60" CLASS IV
HEADWALL
EXISTING BED
INV IN=287.4
INV OUT=277.0
EXISTING BED
SITE 22
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 85 of 108
5/28/99
$$$SYSTIME$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$USERNAME$$$$

5/28/99
PROJECT REFERENCE NO. R-2635C
SHEET NO. 51
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
Permit Drawing
Sheet 86 of 108
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 504
DRAINAGE AREA = 59 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 130 CFS
DESIGN HW ELEVATION = 292.8 FT
100 YEAR DISCHARGE = 151 CFS
100 YEAR HW ELEVATION = 293.3 FT
OVERTOPPING FREQUENCY = +500 YRS
OVERTOPPING DISCHARGE = +233 CFS
OVERTOPPING ELEVATION = 308.0 FT
SITE 22
-L-
318.87
(+)0.3873%
END 2'-0" LATERAL BASE DITCH LT
-L- STA. 609+50.00
EL. 288.20
PI = 609+00.000
EI = 285.000
FILL IN SURFACE WATER
BEGIN 2'-0" LATERAL BASE DITCH LT
-L- STA. 608+10.00
EL. 282.00
(+) 3.3333%
(+) 6.4000%
60" CLASS IV W/ METHOD B INSTALLATION
BM #30 RRS IN 14" MAPLE
AT -L- STA. 610+98.15
OFFSET 220.30' RT.
ELEV. = 292.12'
N 753277 E 2032103
BEGIN SPECIAL DITCH GRADE RT
-L- STA. 618+00.00
EL. 319.78
(+) 0.3000%
END SPECIAL DITCH GRADE RT
-L- STA. 619+00.00
EL. 320.08
324.30
360 350 340 330 320 310 300 290 280
605 606 607 608 609 610 611 612 613 614 615 616 617 618 619
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 524
DRAINAGE AREA = 15.5 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 41 CFS
DESIGN HW ELEVATION = 303.5 FT
100 YEAR DISCHARGE = 47 CFS
100 YEAR HW ELEVATION = 303.9 FT
OVERTOPPING FREQUENCY = +500 YRS
OVERTOPPING DISCHARGE = +73 CFS
OVERTOPPING ELEVATION = 313.2 FT
-L-
324.30
(+)0.3873%
(-)1.8393%
PI = 625+00.00
EL = 326.62'
VC = 600'
K = 269
312.04
42" CLASS M
BM #31 RRS IN 14" OAK
AT -L- STA. 629+39.88
OFFSET -171.96' LT.
ELEV. = 308.72'
N 755036 E 2031362
365 355 345 335 325 315 305 295 285
619 620 621 622 623 624 625 626 627 628 629 630 631 632 633
$$$$SYSTIME$$$$
$$$$DGN$$$$
$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

Form Drawing
Sheet 87 of 108



-L-

PIs Sta 625+18.90	PI Sta 637+09.41
Θs = 1° 54' 35.5"	Δ = 27° 14' 40.8" (RT)
Ls = 300.00'	D = 1° 16' 23.7"
LT = 200.01'	L = 2,139.79
ST = 100.01'	T = 1,090.52'
	R = 4,500.00'
	SE = .05

-Y16-

PI Sta 16+59.05
Δ = 1° 22' 48.7" (RT)
D = 0° 17' 11.3"
L = 481.78'
T = 240.90'
R = 20,000.00'
SE = .02
RO = 60'

-Y16DET-

PI Sta 10+96.89	PI Sta 12+92.05
Δ = 18° 20' 47.6" (LT)	Δ = 18° 54' 35.4" (RT)
D = 9° 32' 57.5"	D = 9° 32' 57.5"
L = 192.12'	L = 198.02'
T = 96.89'	T = 99.92'
R = 600.00'	R = 600.00'
SE = SEE PLANS	SE = .04
RO = SEE PLANS	RO = SEE PLANS

ENGLISH

DENOTES FILL IN SURFACE WATER

DENOTES TEMPORARY FILL IN SURFACE WATER

FOR -L- PROFILE SEE SHEET 51
FOR -Y16- PROFILE SEE SHEET 63
FOR -Y16DET- PROFILE SEE SHEET 64

REVISIONS

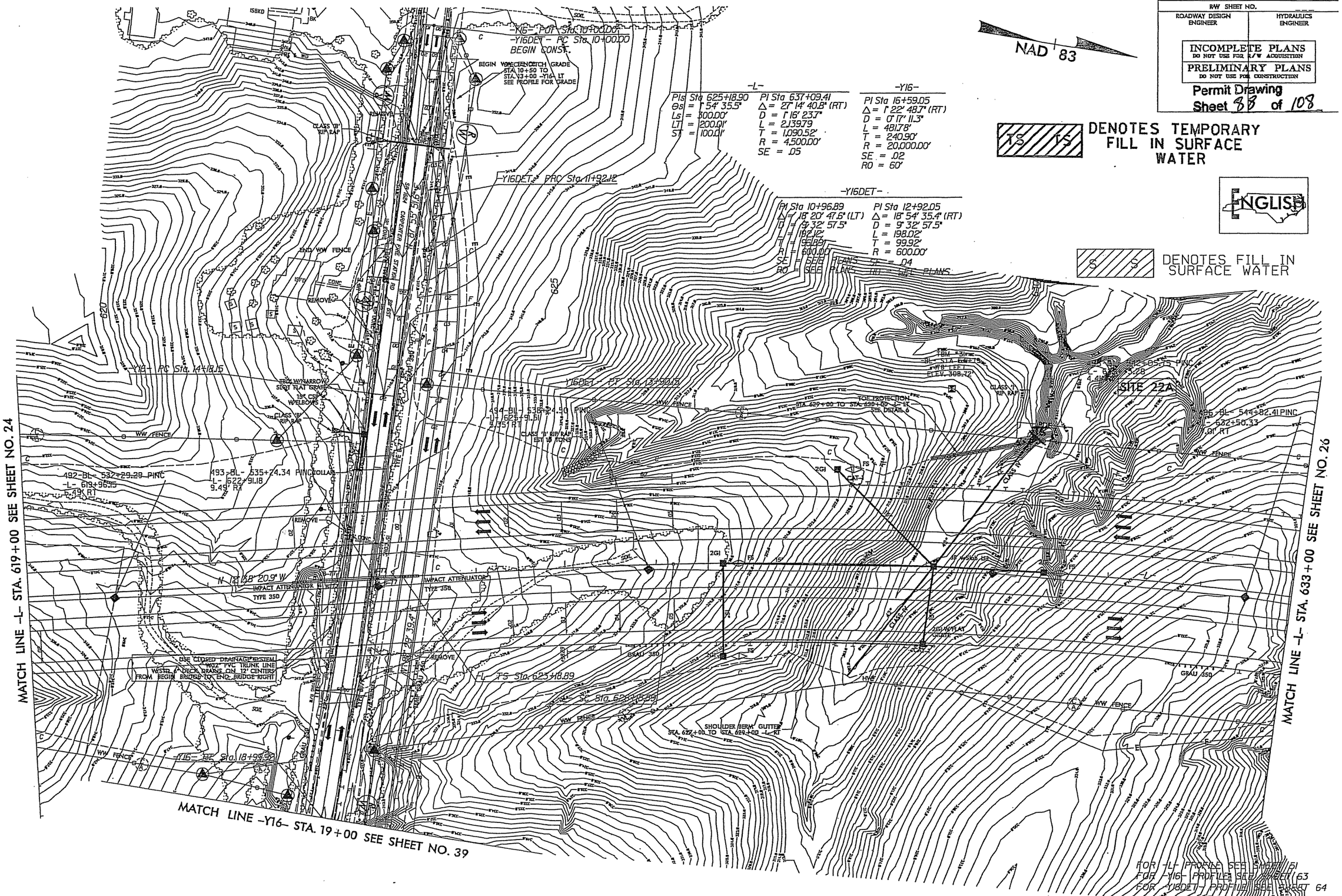
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 88 of 108



DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER

ENGLISH

FOR -L- PROFILE SEE SHEET 51
FOR -Y16- PROFILE SEE SHEET 63
FOR -Y16DET- PROFILE SEE SHEET 64

REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 89 of 109

ENGLISH

REVISIONS 8/17/99

TS DENOTES TEMPORARY FILL IN SURFACE WATER

E DENOTES EXCAVATION IN WETLAND

S DENOTES FILL IN SURFACE WATER

NAD 83

640

635

SITE 23

SITE 24

SITE 25

-Mc CRIMMON- POC STA: 28+23.69
BEGIN CONSTRUCTION

BY OTHERS

FILL EXISTING CHANNEL

OUTLET CHANNEL
EST DDE 155 CY
SEE DETAIL #33
CLASS 'I' RIP RAP
EST 168 TONS

TOE PROTECTION
STA. 636+50 TO STA. 637+50 -L- LT
SEE DETAIL 6

498 -BL- 552+31.26 PINC
-L- 640+00.31
5.04' RT

TOE PROTECTION
STA. 641+82 TO STA. 643+00 -L- LT
SEE DETAIL 6

ENERGY DISSIPATOR

-L- POC STA.644+97.03
-McCl- POC STA.31+09.70

STD BERM DITCH
STA. 646+10 TO
STA. 647+50 -L- LT

500 -BL- 558+68.13 PINC
-L- 646+38.25
4.94' RT

JURISDICTIONAL STREAM
MORRIS BRANCH

497 -BL- 548+76.86 PINC
-L- 636+45.42
4.95' RT

MATCH LINE -L- STA. 633+00 SEE SHEET NO. 25

MATCH LINE -L- STA. 647+00 SEE SHEET NO. 27

2GI W/FLAT GRATE

CAT-1

CLASS 'B' RIP RAP

15" CSP W/ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET

INLET CHANNEL
EST DDE 140 CY
SEE DETAIL #32
CLASS 'I' RIP RAP
EST 63 TONS

MORRIS BRANCH

499 -BL- 554+76.52 PINC
-L- 642+45.94
8.49' RT

STD BERM DITCH
STA. 642+70 TO
STA. 644+00 -L- RT

STD BERM DITCH
STA. 646+00 TO
STA. 647+50 -L- RT

TIE SIDEWALK TO EXIST.

PT = 33+69.08

TIE TO EXIST. GR

-L-
PI Sta 637+09.41
Δ = 27° 14' 40.8" (RT)
D = 1° 16' 23.7"
L = 2,139.79
T = 1,090.52'
R = 4,500.00'
SE = .05

35+00

30+00

REMOVE

IMPACT ATTENUATOR TYPE 350

B-77

48" RCP B-77

36" CSP WELBOWS

BDO

2GI-A

TYPE M350

GRAU 350

TYPE III

REMOVE EXIST. GR

TYPE M350 SHOULDER BERM

SOIL

McCRIMMON PARKWAY BY THE TOWN OF CARY

FOR -L- PROFILE SEE SHEET 52

DGN:USERNAME:SYSTIME

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 90 of 108

8/17/99

REVISIONS

DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN SURFACE WATER

NAD 83

MATCH LINE -L- STA. 633+00 SEE SHEET NO. 25

MATCH LINE -L- STA. 647+00 SEE SHEET NO. 27

SITE 23

SITE 24

SITE 25

-Nc CRIMMON- POC STA 28+23.69
BEGIN CONSTRUCTION

-L- POC STA 644+91.03
MCCI POC STA 31+09.X

TOE PROTECTION
STA. 636+50 TO STA. 637+50 -L- LT
SEE DETAIL 6

TOE PROTECTION
STA. 641+82 TO STA. 643+80 -L- LT
SEE DETAIL 6

FILL EXISTING CHANNEL

ENERGY DISSIPATOR

JURISDICTIONAL STREAM
MORRIS BRANCH

INLET CHANNEL
57' DDE 740 CY
SEE DETAIL 632
CLASS 'I' RIPRAP
EST 35 TONS

15" CSP W/ELBOWS
ROD AND LUG CONNECTORS
W/SLEEVE GASKET

STD BERM DITCH
STA. 642+70 TO
STA. 644+00 -L- RT

STD BERM DITCH
STA. 646+10 TO
STA. 647+50 -L- RT

STD BERM DITCH
STA. 646+00 TO
STA. 647+50 -L- RT

498 -BL- 552+31.25 PINC
-L- 649+06.31
5.04' RT

497 -BL- 548+76.86 PINC
-L- 645+45.72
4.95' RT

496 -BL- 551+76.52 PINC
-L- 647+45.98
8.49' RT

PI = 33+89.08

PI Sta 637+09.41
Δ = 27°14'40.8" (RT)
D = 1°16'23.7"
L = 2,139.79'
T = 1,090.52'
R = 4,500.00'
SE = .05

PT = 43+00

REMOVE

IMPACT ATTENUATOR TYPE 350

2GI W/FLAT GRATE

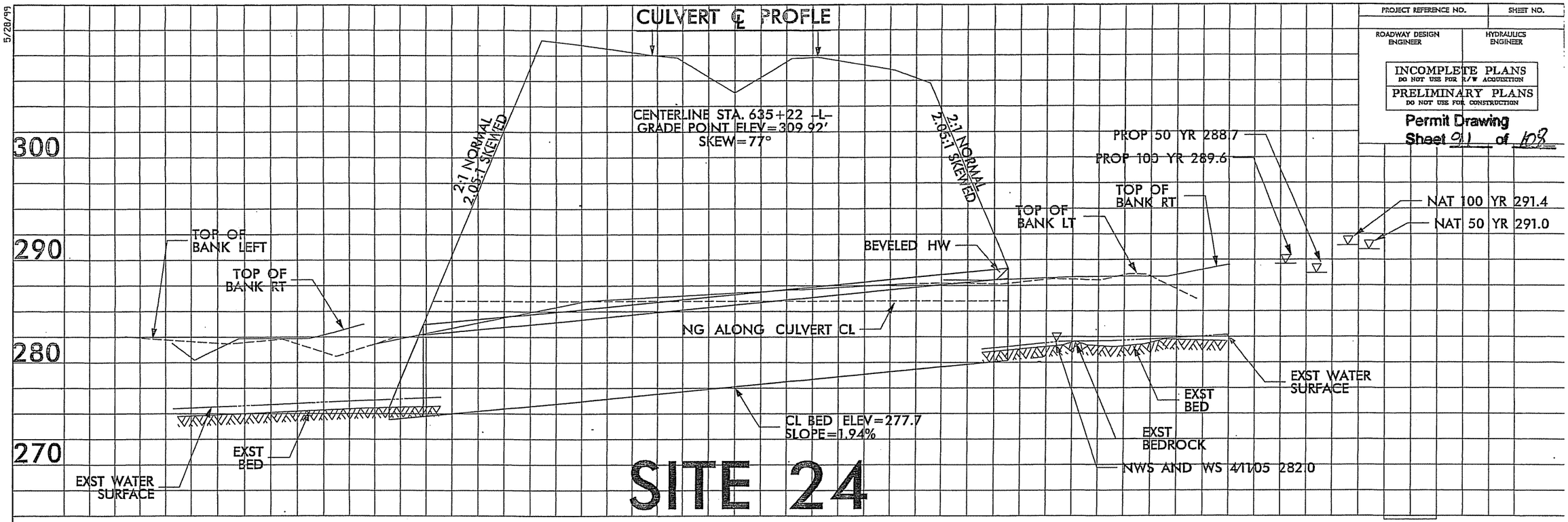
SIDEWALK TO EXIST.

TIE TO EXIST. GB

FOR -L- PROFILE SEE SHEET 52

5/28/99

CULVERT ℄ PROFLE



SITE 24

PROJECT REFERENCE NO.	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 21 of 103

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

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	52
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Permit Drawing
Sheet 92 of 108

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1080	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 288.7	FT
BASE DISCHARGE	= 1230	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 289.6	FT
OVERTOPPING DISCHARGE	= +1840	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 309.7	FT

SITE 23

PI = 637+23.00
EL = 304.13'
K = 214
VC = 1,000'

312.04

(-)11.8393%

(+)2.8435%

FILL IN SURFACE WATER

2 @ 10' X 8' RCBC

SITE 25

331.91

EXCAVATION

PI = 659+50.00
EL = 367.45'
VC = 1,300'
K = 267

(+)2.8435%

(-)12.0191%

339.75

SITE 25

331.91

BEGIN SPECIAL LATERAL V-DITCH LT
-L- STA. 647+50.00
EL. 333.23

PI = 648+30.000
EL = 330.00

END SPECIAL LATERAL V-DITCH LT
-L- STA. 649+00.00
EL. 336.20

(-) 4.0375%

(+) 8.8571%

(-) 2.6250%

(+) 4.5095%

EXCAVATION

PI = 648+80.000
EL = 327.70

END SPECIAL LATERAL V-DITCH RT
-L- STA. 650+90.00
EL. 337.80

BEGIN SPECIAL LATERAL V-DITCH RT
-L- STA. 648+00.00
EL. 329.80

331.91

BM #32 RRS IN 16" OAK
AT -L- STA. 650+18.76
OFFSET -206.73' LT
ELEV. = 356.00'
N 757169 E 2031571

$$$$SYSTIME$$$$
$$$$SYSDATE$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 93 of 108

ENGLISH

NAD 83

E E DENOTES EXCAVATION IN WETLAND

REVISIONS 8/17/99

MATCH LINE -L- STA. 647+00 SEE SHEET NO. 26

MATCH LINE -L- STA. 661+00 SEE SHEET NO. 28

650 655 660

(135)

501 -BL- 562+24.30 PINC
-L- 649+94.77
5.15' RT

TBM #32
-BL- STA 562+47
212' LEFT
ELEV.356.00'

502 -BL- 566+13.86 PINC
-L- 653+84.34
6.66' RT

503 -BL- 570+11.79 PINC
-L- 657+82.26
5.92' RT

504 -BL- 572+62.52 PINC
-L- 660+32.99
6.46' RT

STD BERM DITCH
STA. 645+10 TO
STA. 647+50 -L- LT

SPECIAL LAT 'V' DITCH
W/CLASS 'B' RIP RAP
STA. 647+50 TO 649+00 -L- LT
SEE DETAIL 16

SITE 25

STD BERM DITCH
STA. 646+00 TO
STA. 648+68.68

ST Sta. 650+58.68

SPECIAL LAT 'V' DITCH
W/CLASS 'B' RIP RAP
STA. 648+00 TO 650+90 -L- RT
SEE DETAIL 16

N 18° 25' 30.9" E

-L-

PI Sta 637+09.41	PIs Sta 648+58.69
Δ = 27° 14' 40.8" (RT)	θs = 1° 54' 35.5"
D = 1° 16' 23.7"	Ls = 300.00'
L = 2,139.79	LT = 200.01'
T = 1,090.52'	ST = 100.01'
R = 4,500.00'	
SE = .05	

FOR -L- PROFILE SEE SHEET 52

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 94 of 108

ENGLISH

NAD 83

E7 E DENOTES EXCAVATION IN WETLAND

REVISIONS

5/7/18

MATCH LINE -L- STA. 647+00 SEE SHEET NO. 26

MATCH LINE -L- STA. 661+00 SEE SHEET NO. 28

SITE 25

501 -BL- 562+24.30 PINC
-L- 649+94.74
5.15' RT

502 -BL- 566+13.86 PINC
-L- 653+84.34
6.56' RT

503 -BL- 570+11.79 PINC
-L- 657+82.26
5.92' RT

504 -BL- 572+62.52 PINC
-L- 660+32.99
6.46' RT

TBM #32
-BL- STA 562+47
212' LEFT
ELEV. 350.00'

STD BERM DITCH
STA 644+00 TO
STA 647+50 -L- LT

SPECIAL LAT 'V' DITCH
W/CLASS 'B' RIP RAP
STA 647+50 TO 649+00 -L- LT
SEE DETAIL 16

STD BERM DITCH
STA 644+00 TO
STA 648+00 -L- LT

ST Sta. 650+58.68

SPECIAL LAT 'V' DITCH
W/CLASS 'B' RIP RAP
STA 648+00 TO 650+90 -L- RT
SEE DETAIL 16

PI Sta 637+09.41
Δ = 27°14'48.2" (RT)
D = 1°16'23.2"
Lc = 2139.79
T = 1,090.52'
R = 4,500.00'
SE = .05

PI Sta 648+58.68
θs = 1°54'35.5"
Ls = 300.00'
LT = 200.01'
ST = 100.01'

N 18° 25' 30.9" E

FOR -L- PROFILE SEE SHEET 52

$$USERNAME$$ $$SYSTIME$$

PROJECT REFERENCE NO. R-2635C
SHEET NO. 28
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
Permit Drawing Sheet 95 of 108
8/17/99
REVISIONS
DENOTES TEMPORARY FILL IN WETLAND
DENOTES HAND CLEARING
DENOTES FILL IN SURFACE WATER
NAD 83
ENGLISH
SITE 26
665
670
NANCY BRANCH
5' BASE DITCH W/CLASS 'I' RIP RAP EST DDE=92 CY SEE DETAIL 17
EMBANKMENT RIPRAP EST. +/- 30 TONS SEE DETAIL 21
TOE PROTECTION STA. 667+50 TO STA. 667+50 SEE DETAIL #6
-RP3B- TSSta. 5+00.00
-L- POCSta. 674+94.49 64.96' LT
LAT 5' BASE DITCH W/CLASS 'I' RIP RAP STA. 673+90 -L- LT TO STA. 680+80 -L- LT SEE DETAIL 18
CLASS 'B' RIP RAP
MATCH LINE -L- STA. 661+00 SEE SHEET NO. 27
MATCH LINE -L- STA. 675+00 SEE SHEET NO. 29
N 18° 25' 30.9" E
TYPE M350
TYPE B-77
CAT-1
GRAU 350
SHOULDER BERM GUTTER STA. 667+00 TO BEGIN BRIDGE -L- RT
TSSta. 665+53.25
SCSta. 669+63.35
SCSta. 7+29.66
TOE PROTECTION STA. 660+00 TO STA. 667+00 -L- RT SEE DETAIL #6
LAT 2' BASE DITCH W/CLASS 'B' RIP RAP STA. 667+00 TO STA. 670+75 -L- RT SEE DETAIL 3
-RP3C- TSSta. 5+00.00
-L- POCSta. 670+23.29 64.96' RT
2GI W/FLAT GRATE
CLASS 'I' RIP RAP
30" CSP W/ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET
ENERGY DISSIPATOR SEE DETAIL SHEET
5' BASE DITCH W/CLASS 'I' RIP RAP EST DDE=48 CY SEE DETAIL 17
15" CSP W/ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET
-L- POC STA.673+56.35
-EWC- POT STA.24+69.41
-RP3C- POC STA.8+32.26
-EWC- POT STA.23+82.37
MOD CONC FLUME
18" CSP W/2 ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET
PROPOSED PIPE (BY OTHERS)
LATERAL V-DITCH W/CLASS 'B' RIPRAP STA. 8+91 TO 10+53 RT -RP3C- SEE DETAIL #14
SHOULDER BERM GUTTER END BRIDGE TO STA. 1
E W COLLECTOR BY THE TOWN OF CARY
-RP3B-
PIs Sta 5+54.68
Θs = 0° 48' 33.7"
Ls = 164.04'
LT = 109.36'
ST = 54.68'
-RP3C-
PIs Sta 6+42.13
Θs = 1° 09' 30.9"
Θs = 6° 47' 53.7"
Ls = 229.66'
LT = 142.13'
ST = 87.86'
PI Sta 8+99.63
Δ = 19° 55' 15.0" (RT)
D = 5° 55' 11.7"
L = 336.50'
T = 169.97'
R = 967.85'
SE = .08
-L-
PIs Sta 668+26.67
Θs = 2° 02' 46.6"
Ls = 410.10'
LT = 273.42'
ST = 136.72'
PI Sta 695+85.11
Δ = 49° 05' 10.7" (RT)
D = 0° 59' 52.6"
L = 4,918.81
T = 2,621.76'
R = 5,741.46'
SE = .04

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 96 of 108

REVISIONS

8/17/98

T T DENOTES TEMPORARY FILL IN WETLAND

HC HC DENOTES HAND CLEARING

S S DENOTES FILL IN SURFACE WATER

NAD 83

ENGLISH

SITE 26

NANCY BRANCH

5' BASE DITCH W/CLASS 'I' RIP RAP EST DDE=92 CY SEE DETAIL 17

-RP3B- PI Sta 5+54.68
Δs = 0° 48' 33.7"
Ls = 164.04'
LT = 109.36'
ST = 54.68'

-RP3C- PI Sta 6+42.13
Δs = 1° 09' 30.9"
Δs = 6° 47' 53.7"
Ls = 229.66'
LT = 142.13'
ST = 87.86'

-RP3C- PI Sta 8+99.63
Δ = 19° 55' 15.0" (RT)
D = 5° 55' 11.7"
L = 336.50'
T = 169.97'
R = 967.85'
SE = .08

-L- PI Sta 668+26.67
Δs = 2° 02' 46.6"
Ls = 410.10'
LT = 273.42'
ST = 136.72'

-L- PI Sta 695+85.11
Δ = 49° 05' 10.7" (RT)
D = 0° 59' 52.6"
L = 4,918.81'
T = 2,621.76'
R = 5,741.46'
SE = .04

MATCH LINE -L- STA. 661+00 SEE SHEET NO. 27

MATCH LINE -L- STA. 675+00 SEE SHEET NO. 29

E W COLLECTOR ST. TOWN OF GARY

SYSTIME
DGN
USERNAME

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sht 97 of 108

NAD 83

ENGLISH

F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

SITE 27

SITE 28

STA 688+31.96 END STATE PROJECT R-2635C

MATCH LINE -L- STA 675+00 SEE SHEET NO. 28

REVISIONS

8/17/99

-L-
PI Sta 685+65.31
Δ = 91° 00' 32" (RT)
D = 0° 59' 58.6"
Lc = 4,000.81
T = 3,209.76
R = 5,741.49
SE = 04

-RP3C-
PI Sta 8+93.63
Δ = 65° 55' 50" (RT)
D = 2° 55' 47"
Lc = 1,362.50
T = 769.69
R = 967.89'
SE = 08

PI Sta 8+42.88
Δ = 6° 41' 52"
Lc = 835.60
T = 418.32
ST = 716.66

-RP3D-
PI Sta 5+54.68
Δ = 9° 48' 33"
D = 8°45'56"
Lc = 551.50
ST = 549.68

PI Sta 6+17.18
Δ = 3° 39' 40.5"
D = 2°55'56"
Lc = 731.13
ST = 715.58

PI Sta 8+25.40
Δ = 17° 57' 53.9" (LT)
D = 5° 59' 09.3"
Lc = 596.40
T = 302.12
R = 1,965.09'
SE = 06

PI Sta 15+23.77
Δ = 3° 24' 40.5"
D = 2°51'04"
Lc = 2,010.24
ST = 1,676.58

PI Sta 19+18.79
Δ = 5° 25' 10.1"
D = 2°55'56"
Lc = 1,172.26
ST = 1,157.70

PI Sta 21+38.94
Δ = 25° 16' 07.1" (RT)
D = 6° 35' 24.4"
Lc = 1,001.14
T = 504.82
R = 869.42'

PI Sta 23+50.06
Δ = 6° 29' 10.1"
D = 2°55'56"
Lc = 1,172.26
ST = 1,157.70

FOR -L- PROFILE SEE SHEET 53
FOR -RP3D- PROFILE SEE SHEET 81
FOR -RP3C- PROFILE SEE SHEETS 81TO 82

$$$$USERNAME$$$$
$$$$SYSTIME$$$$
$$$$DATE$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sht 93 of 109

REVISIONS

8/17/99

F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

ENGLISH

SITE 27

SITE 28

STA 688+31.96 END STATE PROJECT R-2635C

MATCH LINE -L- STA 675+00 SEE SHEET NO. 28

-L-

PI Sta 685+85.31
Δ = 49° 05' 52.2" (RT)
D = 0° 59' 53.5"
Ls = 400.00'
T = 2503.76'
R = 5741.46'
SE = .04

-RP3C-

PI Sta 8+99.63
Δ = 19° 55' 15.0" (RT)
D = 5° 33' 31.9"
L = 1361.50'
T = 690.91'
R = 967.89'
SE = .08

PI Sta 11+42.88
Gs = 5° 41' 52.1"
Ls = 225.00'
LT = 153.29'
ST = 76.65'

-RP3B-

PI Sta 5+54.08
Gs = 6° 48' 33.1"
Ls = 600.04'
LT = 599.58'
ST = 54.68'

PI Sta 8+17.18
Gs = 9° 29' 40.6"
Ls = 225.00'
LT = 153.13'
ST = 76.58'

PI Sta 11+95.40
Δ = 11° 57' 33.9" (LT)
D = 5° 59' 06.9"
L = 1995.49'
T = 1017.17'
R = 1595.29'
SE = .06

PI Sta 15+46.77
Gs = 9° 29' 40.6"
Ls = 225.00'
LT = 153.13'
ST = 76.58'

PI Sta 19+40.79
Gs = 6° 29' 10.7"
Ls = 600.00'
LT = 599.56'
ST = 65.70'

PI Sta 21+32.94
Δ = 26° 03' 03.1" (RT)
D = 12° 53' 24.4"
L = 1393.04'
T = 704.05'
R = 890.42'

PI Sta 23+95.06
Gs = 6° 29' 10.7"
Ls = 600.00'
LT = 599.56'
ST = 65.70'

FOR -L- PROFILE SEE SHEET 53
FOR -RP3B- PROFILE SEE SHEET 61
FOR -RP3C- PROFILE SEE SHEETS 81 TO 82

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

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	53
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Permit Drawing
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5/28/99

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	520	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	306.8	FT
BASE DISCHARGE	=	580	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	307.J	FT
OVERTOPPING DISCHARGE	=	+990	CFS
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING ELEVATION	=	341.5	FT
	=		FT
DATE OF SURVEY	=	12/7/05	
W.S. ELEVATION AT DATE OF SURVEY	=	299.4	FT

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	=	9.0	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	36	CFS
DESIGN HW ELEVATION	=	331.4	FT
100 YEAR DISCHARGE	=	38	CFS
100 YEAR HW ELEVATION	=	331.6	FT
OVERTOPPING FREQUENCY	=	+100	YRS
OVERTOPPING DISCHARGE	=	+38	CFS
OVERTOPPING ELEVATION	=	335.8	FT

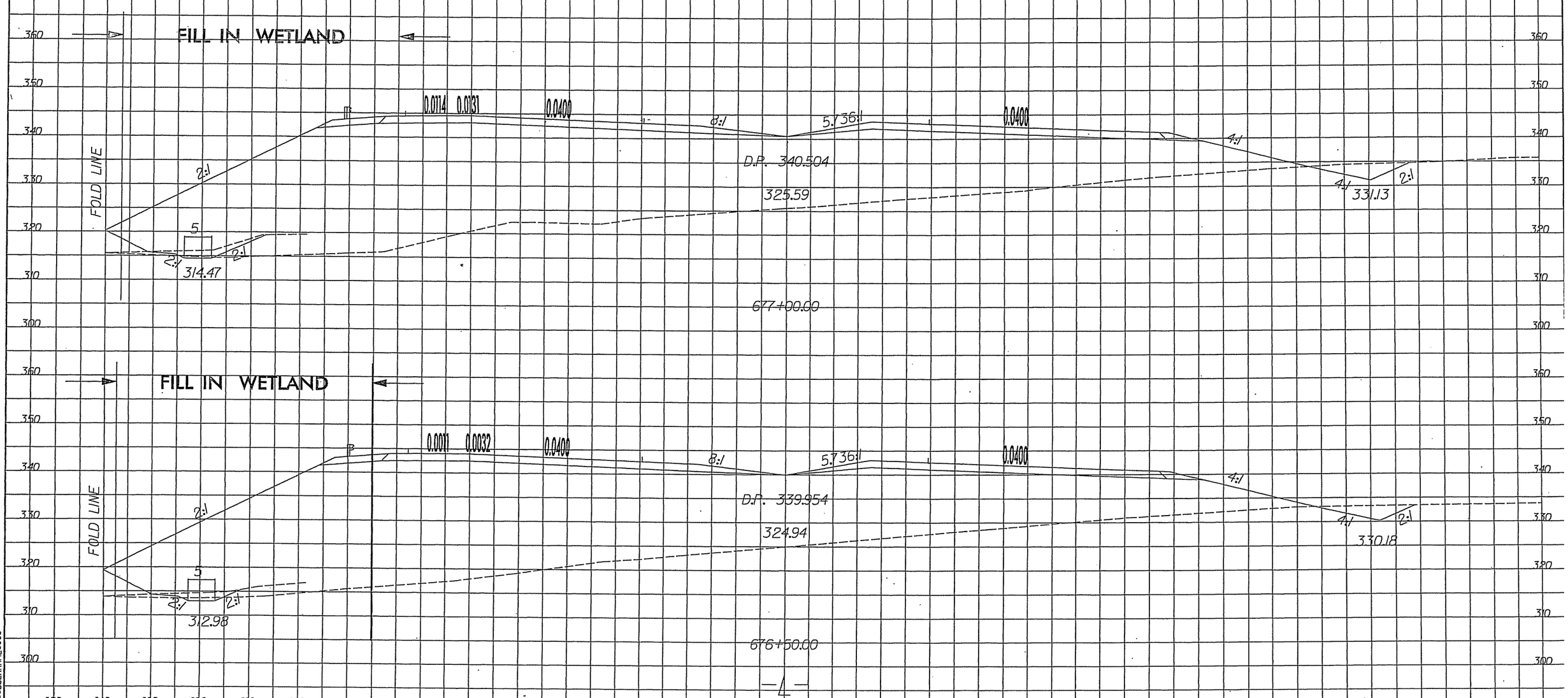
$$$$SYSTIME$$$$ $$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$ $$$USERNAME$$$$

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-2635C	X-259

Permit Drawing
Sheet 107 of 108

SITE 27



$$SYSTIME$$
$$USERNAME$$
$$DGNS$$

PROJ. REFERENCE NO.	SHEET NO.
R-2635C	X-264

Permit Drawing
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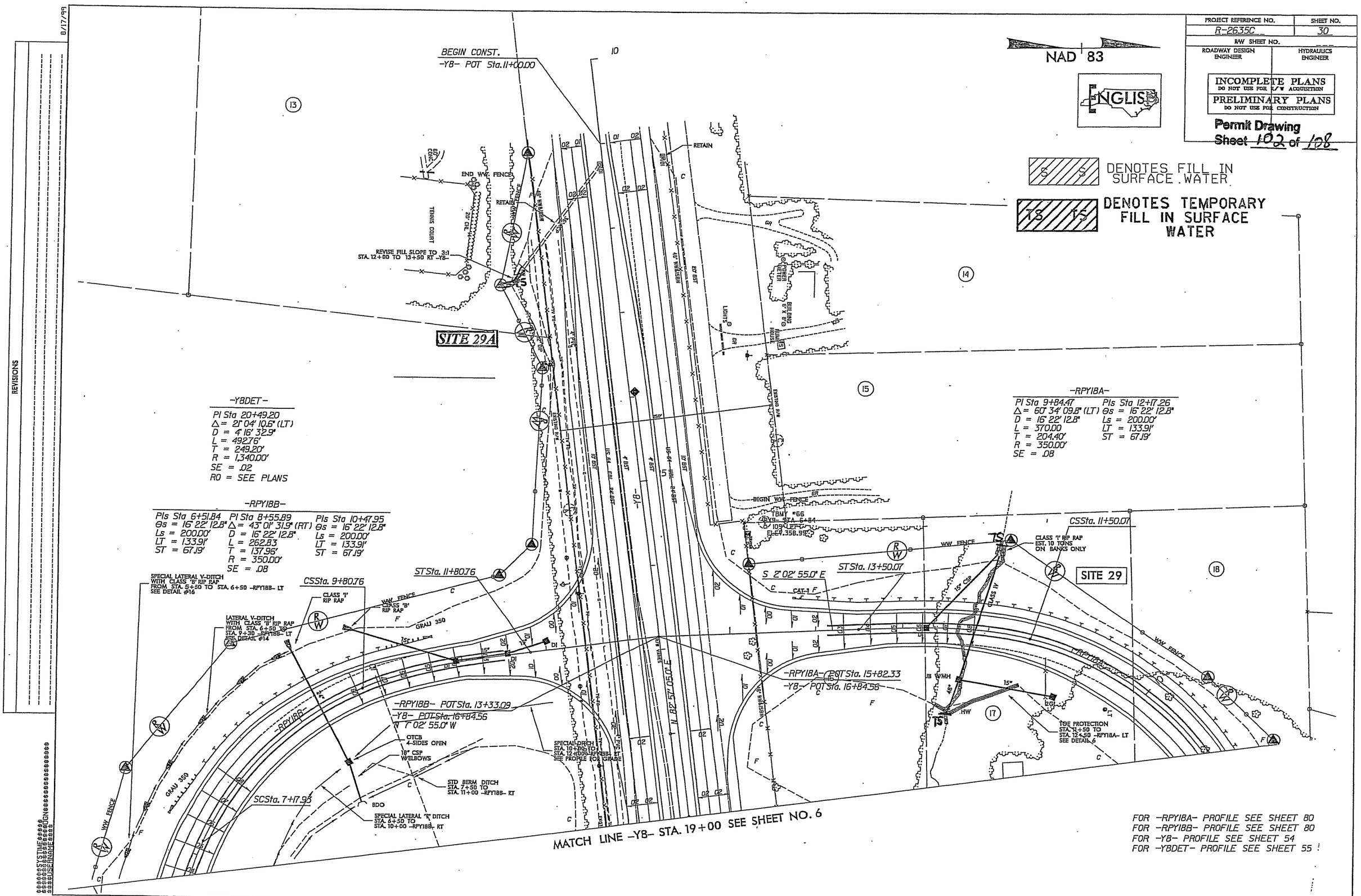

PROJECT REFERENCE NO.
R-2635C
SHEET NO.
30
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 102 of 108
NAD 83
ENGLISH
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY FILL IN SURFACE WATER
BEGIN CONST.
-Y8- POT Sta.11+00.00
SITE 29A
SITE 29
-Y8DET-
PI Sta 20+49.20
Δ = 21° 04' 10.6" (LT)
D = 4° 16' 32.9"
L = 492.76'
T = 249.20'
R = 1,340.00'
SE = .02
RO = SEE PLANS
-RPY18B-
PIs Sta 6+51.84
Θs = 16° 22' 12.8"
Ls = 200.00'
LT = 133.91'
ST = 67.19'
PI Sta 8+55.89
Δ = 43° 01' 31.9" (RT)
D = 16° 22' 12.8"
L = 262.83
T = 137.96'
R = 350.00'
SE = .08
PIs Sta 10+47.95
Θs = 16° 22' 12.8"
Ls = 200.00'
LT = 133.91'
ST = 67.19'
-RPY18A-
PI Sta 9+84.47
Δ = 60° 34' 09.8" (LT)
D = 16° 22' 12.8"
L = 370.00
T = 204.40'
R = 350.00'
SE = .08
PIs Sta 12+17.26
Θs = 16° 22' 12.8"
Ls = 200.00'
LT = 133.91'
ST = 67.19'
CSSta. 9+80.76
STSta. 11+80.76
CSSta. 11+50.07
STSta. 13+50.07
S 2° 02' 55.0" E
N 82° 57' 05.0" E
-RPY18B- POT Sta. 13+33.09
-Y8- POT Sta. 16+84.56
N 7° 02' 55.0" W
-RPY18A- POT Sta. 15+82.33
-Y8- POT Sta. 16+84.56
SCSta. 7+17.95
MATCH LINE -Y8- STA. 19+00 SEE SHEET NO. 6
FOR -RPY18A- PROFILE SEE SHEET 80
FOR -RPY18B- PROFILE SEE SHEET 80
FOR -Y8- PROFILE SEE SHEET 54
FOR -Y8DET- PROFILE SEE SHEET 55
REVISIONS
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 103 of 105

NAD 83

ENGLISH

S S DENOTES FILL IN SURFACE WATER

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER

REVISIONS 8/17/99

BEGIN CONST.
-Y8- POT Sta.11+00.00

-Y8DET-
PI Sta 20+49.20
Δ = 21° 04' 10.6" (LT)
D = 4° 16' 32.9"
L = 492.76'
T = 249.20'
R = 1,340.00'
SE = .02
RO = SEE PLANS

-RPY18B-
PIs Sta 6+51.84 PI Sta 8+55.89 PIs Sta 10+47.95
Θs = 16° 22' 12.8" Δ = 45° 01' 31.9" (RT) Θs = 16° 22' 12.8"
Ls = 200.00' D = 16° 22' 12.8" Ls = 200.00'
LT = 133.91' L = 262.83' LT = 133.91'
ST = 67.19' T = 137.96' ST = 67.19'
R = 350.00'
SE = .08

-RPY18A-
PI Sta 9+84.47 PIs Sta 12+17.26
= 60° 34' 09.8" (LT) Θs = 16° 22' 12.8"
16° 22' 12.8" Ls = 200.00'
= 200.00' LT = 133.91'
= 350.00' ST = 67.19'
= .08

-RPY18B- POT Sta.13+33.09
-Y8- POT Sta.16+84.56
N 7°02' 55.0" W

-RPY18A- POT Sta.15+82.35
-Y8- POT Sta.16+82.56

SITE 29A

SITE 29

REVISE FILL SLOPE TO 3:1 STA. 12+00 TO 13+50 RT -Y8-

TENNIS COURT

SPECIAL LATERAL 'A' DITCH WITH CLASS 'B' RIP RAP FROM STA 6+50 TO STA. 9+30 -RPY18B- LT SEE DETAIL #14

SPECIAL LATERAL 'A' DITCH WITH CLASS 'B' RIP RAP FROM STA 6+50 TO STA. 9+30 -RPY18B- LT SEE DETAIL #16

CSSta. 9+80.76

CLASS 'I' RIP RAP

CLASS 'B' RIP RAP

GRAU 450

GRAU 350

STD BERM DITCH STA 7+80 TO STA 11+00 -RPY18B- RT

SPECIAL LATERAL 'A' DITCH STA 6+80 TO STA 10+00 -RPY18B- RT

SPECIAL DITCH STA 10+25 TO STA 12+00 -RPY18A- SEE PROFILE FOR GRADE

OTCR 4 SIDES OPEN

18" CSP W/ELBOWS

SCSta. 7+17.93

CSSta. 11+50.01

CLASS 'I' RIP RAP EST. 10 TONS (ON BANKS ONLY)

TOE PROTECTION STA. 11+50 TO STA. 12+50 -RPY18A- LT SEE DETAIL 6

REGENT WOOL FENCE

IBM 256 MODEL 3 SYS 6 BC 109 USERS 4K 358.99

WW FENCE

MATCH LINE -Y8- STA. 19+00 SEE SHEET NO. 6

FOR -RPY18A- PROFILE SEE SHEET 80
FOR -RPY18B- PROFILE SEE SHEET 80
FOR -Y8- PROFILE SEE SHEET 54
FOR -Y8DET- PROFILE SEE SHEET 55

C:\MSTN\WORKSETS\DGN\USERNAME\

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	80
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Permit Drawing
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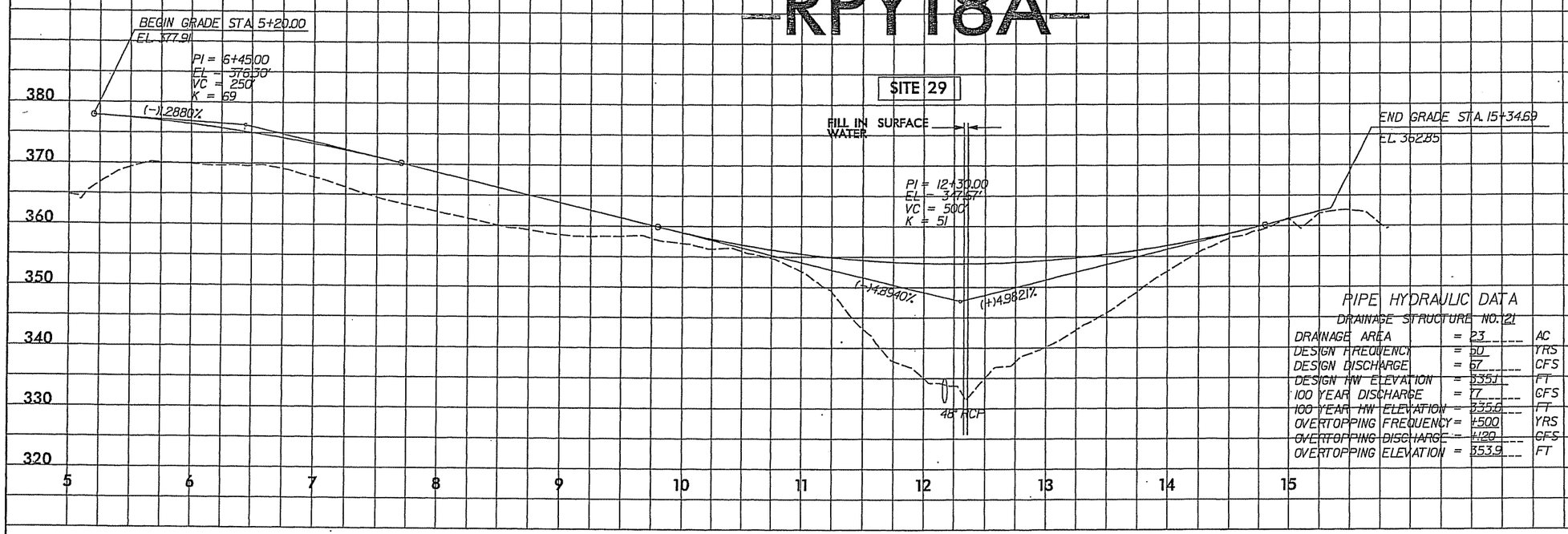
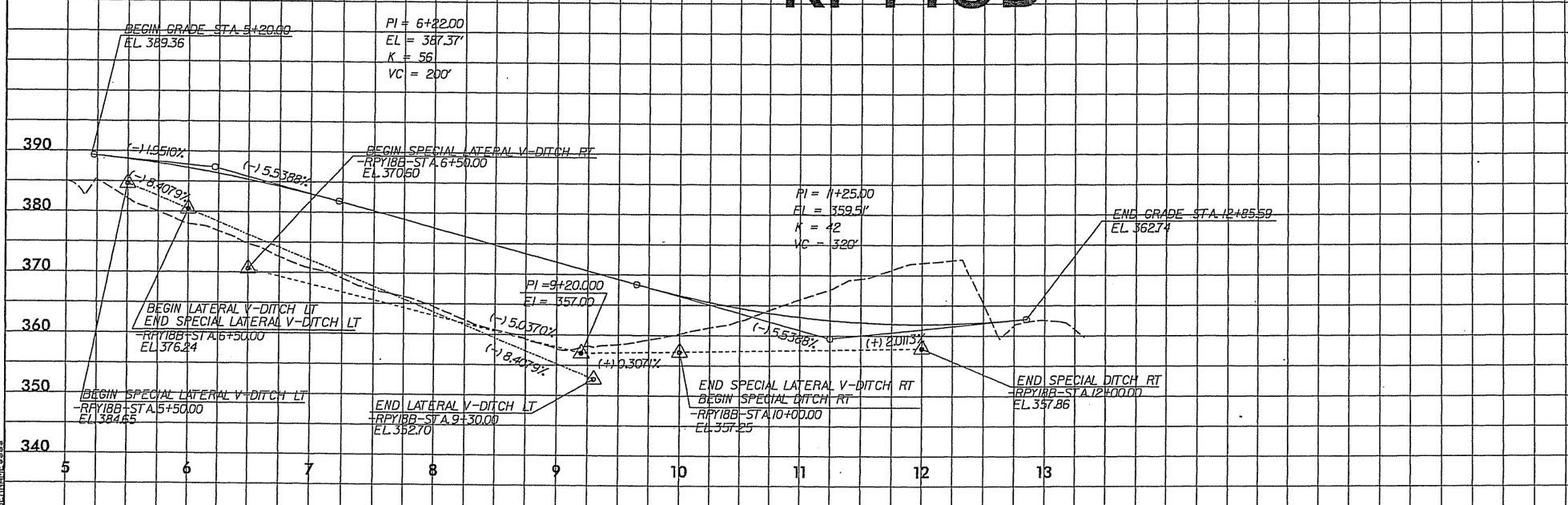
-RPY18A-



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 121

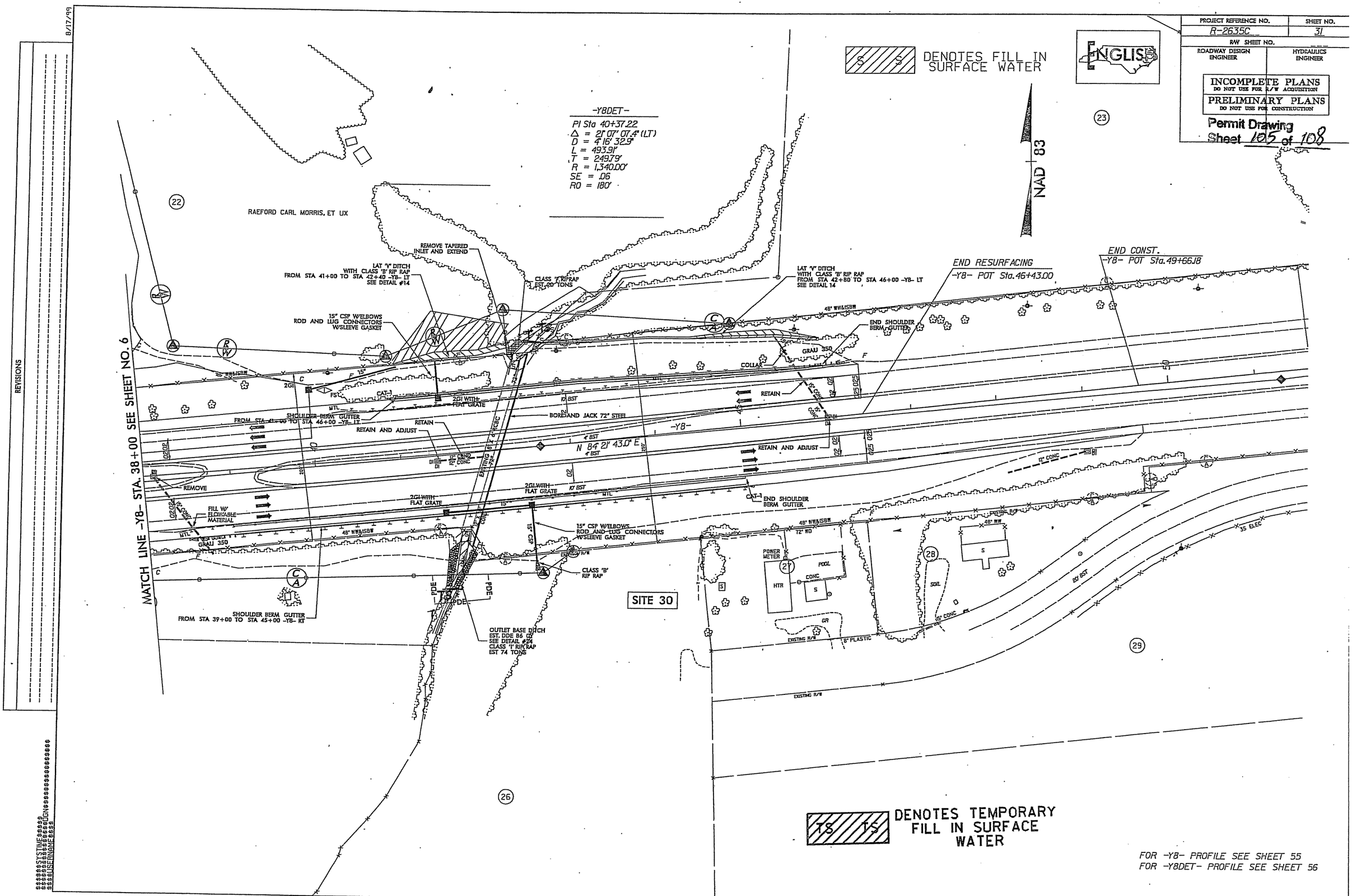
DRAINAGE AREA	=	23	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	67	CFS
DESIGN HW ELEVATION	=	335.1	FT
100 YEAR DISCHARGE	=	77	CFS
100 YEAR HW ELEVATION	=	335.6	FT
OVERTOPPING FREQUENCY	=	+500	YRS
OVERTOPPING DISCHARGE	=	+120	CFS
OVERTOPPING ELEVATION	=	353.9	FT

-RPY18B-



5/28/99

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



PROJECT REFERENCE NO.
R-2635C
SHEET NO.
31
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 105 of 108
ENGLISH
DENOTES FILL IN SURFACE WATER
-Y8DET-
PI Sta 40+37.22
Δ = 21° 07' 07.4" (LT)
D = 4° 16' 32.9"
L = 493.91'
T = 249.79'
R = 1,340.00'
SE = .06
RO = 180'
NAD 83
RAEFORD CARL MORRIS, ET UX
REMOVE TAPERED INLET AND EXTEND
LAT 'V' DITCH WITH CLASS 'B' RIP RAP FROM STA 41+00 TO STA 42+40 -Y8- LT SEE DETAIL #14
CLASS 'I' RIPRAP EST 20 TONS
LAT 'V' DITCH WITH CLASS 'B' RIP RAP FROM STA 42+80 TO STA 46+00 -Y8- LT SEE DETAIL 14
END RESURFACING
-Y8- POT Sta.46+43.00
END CONST.
-Y8- POT Sta.49+66.18
15" CSP W/ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET
END SHOULDER BERM GUTTER
GRAU 350
COLLAR
RETAIN
SHOULDER BERM GUTTER FROM STA 41+00 TO STA 46+00 -Y8- LT
RETAIN AND ADJUST
BORE AND JACK 72" STEEL
-Y8-
N 84° 21' 43.0" E
MATCH LINE -Y8- STA. 38+00 SEE SHEET NO. 6
REMOVE
FILL W/ FLOWABLE MATERIAL
2GI WITH FLAT GRATE
15" CSP W/ELBOWS ROD AND LUG CONNECTORS W/SLEEVE GASKET
CLASS 'B' RIP RAP
SITE 30
POWER METER
HTR
POOL
CONC
SOIL
GR
8" PLASTIC
SHOULDER BERM GUTTER FROM STA 39+00 TO STA 45+00 -Y8- RT
OUTLET BASE DITCH EST. DDE 86 CY SEE DETAIL #24 CLASS 'I' RIP RAP EST 74 TONS
EXISTING R/W
35 ELEC
20' BST
DENOTES TEMPORARY FILL IN SURFACE WATER
FOR -Y8- PROFILE SEE SHEET 55
FOR -Y8DET- PROFILE SEE SHEET 56
REVISIONS
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
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8/17/99

REVISIONS

MATCH LINE -Y8- STA. 38+00 SEE SHEET NO. 6

S S DENOTES FILL IN SURFACE WATER

ENGLISH

NAD 83

-Y8DET-
PI Sta 40+37.22
Δ = 90°00'00" (LT)
D = 31°50'59"
T = 180.00'
L = 282.74'
SE = .06
RO = 18.0%

RAEFORD CARL MORRIS ET UX

REMOVE TAPERED END EXTEND

FROM STA 41+80 TO STA 42+40 -Y8- LT
SEE DETAIL #14

CLASS 'B' RIPRAP

15" CSP W/ELBOWS
ROD AND LUG CONNECTORS
W/SLEEVE GASKET

2GI WITH FLAT GRATE

SHOULDER BERM GUTTER
FROM STA 41+00 TO STA 46+00 -Y8- LT

RETAIN AND ADJUST

RETAIN

10' BST

MORE AND JACK 72" STEEL

-Y8

N 84° 21' 43.0" E

4' BST

2GI WITH FLAT GRATE

REMOVE

FILL W/ FLOWABLE MATERIAL

SHOULDER BERM GUTTER
FROM STA 39+00 TO STA 45+00 -Y8- RT

PIPE

OUTLET BASE WIDTH
EST DISCHARGE
SEE DETAIL FOR
CLASS 'A' RIP RAP
TO BE PLACED

SITE 30

LAT 'V' DITCH
WITH CLASS 'B' RIP RAP
FROM STA 42+80 TO STA 46+00 -Y8- LT
SEE DETAIL 14

END RESURFACING
-Y8- POT Sta. 46+43.00

END CONST.
-Y8- POT Sta. 49+66.18

END SHOULDER BERM GUTTER

48" RW&ISBW

72" RD

48" RW

POWER METER

POOL

CONC

HTR

SOIL

GR

EXISTING RIP

15" ELEC

20' BST

15' CONC

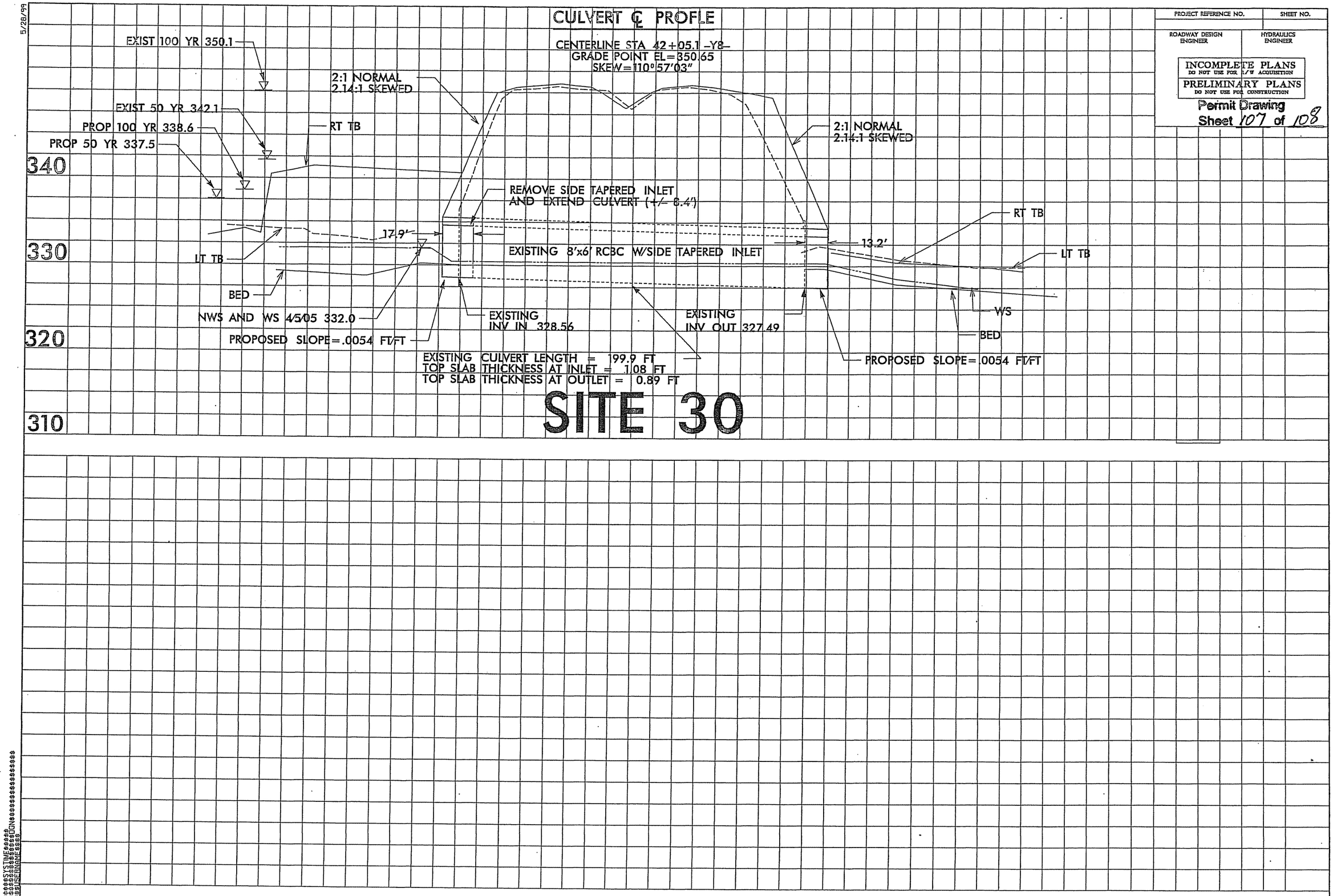
EXISTING R/W

26 27 28 29

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER

FOR -Y8- PROFILE SEE SHEET 55
FOR -Y8DET- PROFILE SEE SHEET 56

$$USERNAME$$ $$DESIGN$$ $$FILE$$ $$SYSTIME$$


CULVERT ℄ PROFLE
CENTERLINE STA 42+05.1 -Y8-
GRADE POINT EL=350.65
SKEW=110°57'03"
EXIST 100 YR 350.1
EXIST 50 YR 342.1
PROP 100 YR 338.6
PROP 50 YR 337.5
2:1 NORMAL
2.14:1 SKEWED
RT TB
LT TB
BED
NWS AND WS 4/5/05 332.0
PROPOSED SLOPE=.0054 FT/FT
REMOVE SIDE TAPERED INLET
AND EXTEND CULVERT (+/- 8.4')
17.9'
13.2'
EXISTING 8'x6' RCBC W/SIDE TAPERED INLET
EXISTING
INV IN 328.56
EXISTING
INV OUT 327.49
EXISTING CULVERT LENGTH = 199.9 FT
TOP SLAB THICKNESS AT INLET = 1.08 FT
TOP SLAB THICKNESS AT OUTLET = 0.89 FT
WS
BED
PROPOSED SLOPE=.0054 FT/FT
340
330
320
310
SITE 30
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
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5/28/99

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635C	55
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

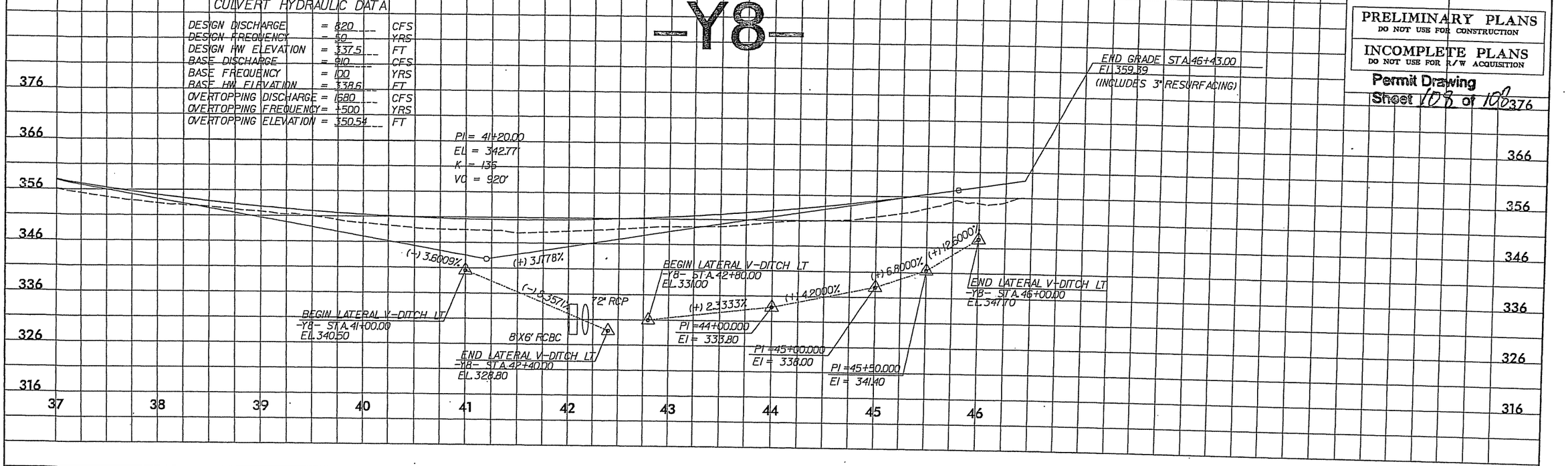
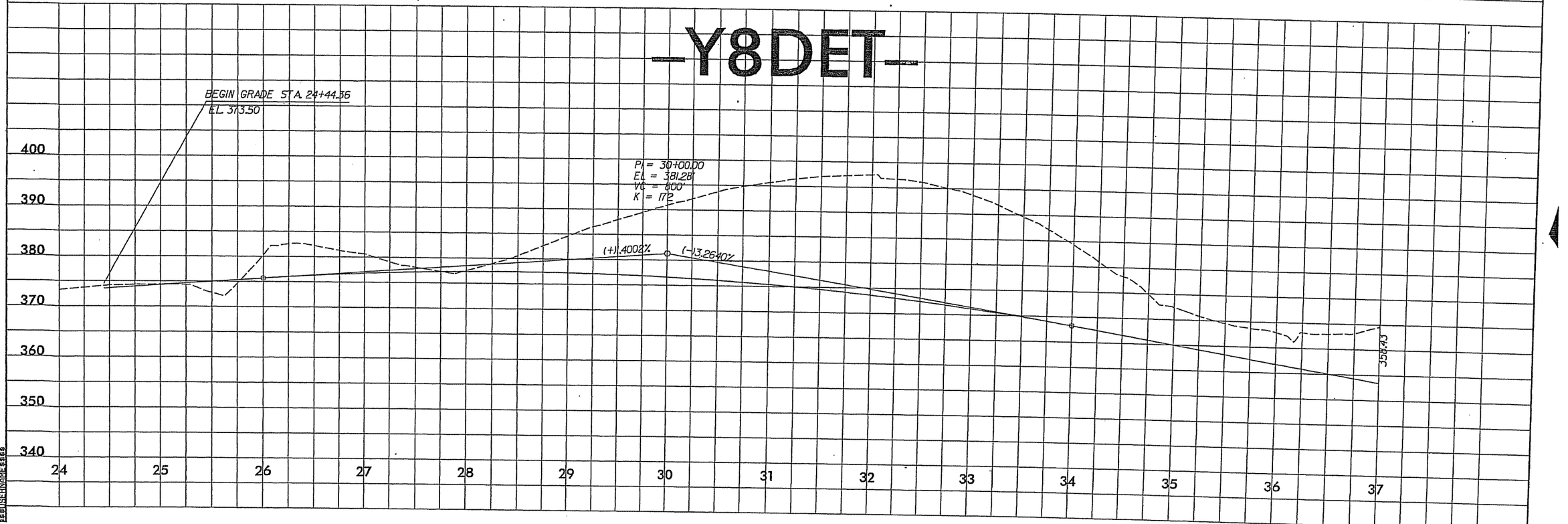
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Permit Drawing
Sheet 108 of 108

-Y8-

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 820	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 337.5	FT
BASE DISCHARGE	= 910	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 338.6	FT
OVERTOPPING DISCHARGE	= 1680	CFS
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING ELEVATION	= 350.54	FT



-Y8DET-