



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

November 4, 2011

MEMORANDUM TO: Mr. Barry Moose, PE
Division 10 Engineer

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

SUBJECT: Cabarrus County; Widening of NC 49 from east of SR 2630
(Cline Road) to east of NC 73; Federal Project No. NHS-
0049(26); WBS Element 34448.1.1; **TIP R-2533CC.**

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

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

Cc: w/o attachment (see website for attachments):

Mr. Randy Garris, P.E. State Contract Officer
Mr. Larry Thompson, Division Environmental Officer
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Jay Bennett, P.E., Roadway Design Unit
Mr. Dewayne Sykes, P.E. Utilities Unit
Dr. David Chang, P.E., Hydraulics Unit
Mr. Art McMillan, P.E., Highway Design Branch
Mr. Tom Koch, P.E., Structure Design Unit
Mr. Mark Staley, Roadside Environmental Unit
Mr. Ron Hancock, P.E., State Roadway Construction Engineer
Mr. Mike Robinson, P.E., State Bridge Construction Engineer
Ms. Teresa Hart, P.E., PDEA Western Region Unit Head
Mr. Clarence Coleman, FHWA
Ms. Beth Harmon, EEP
Mr. Phillip Ayscue, NCDOT External Audit Branch

PROJECT COMMITMENTS

NC 49 Improvements
From East of SR 2630 to East of SR 2444
Cabarrus County
Federal Aid Project NHS-0049(26)
WBS 34448.1.1
T.I.P. No. R-2533 CC

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

PDEA, Roadway Design, Hydraulics Unit, and Structures Unit

1. The final roadway design will accommodate continued flow in all stream segments. Bridging will be implemented at Dutch Buffalo Creek. Pipes and culverts at all other crossings will be adequately sized in order to insure continuity of flow and to maintain aquatic habitat integrity.
2. Any stream channel modification or relocation that may be required will be coordinated with the United States Fish and Wildlife Service (USFWS) and the North Carolina Wildlife Resources Commission (NCWRC) in accordance with the Fish and Wildlife Coordination Act. Consideration for restoring natural drainage patterns will be given during the final design stages of the project.

PDEA, Hydraulics Unit, Structures Unit, and Division 10 Resident Engineer

3. The Division Resident Engineer will erect signs directing emergency response teams to the hazardous spill catch basins if the signs are deemed appropriate.

COMMITMENTS FROM PERMITTING

Division 10 Construction Engineer, Hydraulics Unit, Roadside Environmental Unit

401 Condition #1 The use of riprap at Permit Sites 1 and 4 shall be minimized to the greatest extent practical and should be limited to the streambanks. If riprap is placed in the streambeds of the relocated Unnamed Tributary (UT) to Adams Creek (Permit Site 1) or the UT to McAllister Creek (Permit Site 4), it shall be embedded such that low flow of water and aquatic passage are not impeded.

401 Condition #2 All riprap used for streambank stabilization, ditchline stabilization along streambanks and floodplain bench construction shall be of sufficient size to prevent migration of the riprap into the active stream channel.

401 Condition #3 The floodplain bench at the outlet of the culvert on Adams Creek (Permit Site 1) shall be constructed as per Detail Sheet 2-Y, and shall include coir fiber matting.

401 Condition #4 An 1800mm RCP, conveying a jurisdictional stream, at Permit Site 4 will be discharging into a 2.7m x 2.7m reinforced concrete box culvert, approximately nine (9) feet from the culvert outlet. The slope of the 1899mm RCP is greater than 5%. Please be advised that if stream destabilization occurs at the culvert outlet due to energy dissipation, NCDOT will be required to install corrective measures to address the stream destabilization.

401 Condition #5 The stream at Permit Site 5 will be relocated to a culvert. If the stream needs to be reconstructed at the culvert inlet to allow for proper alignment with the culvert, NCDOT shall notify the Division 10 Environmental Officer and/or Environmental Specialist to ensure that the stream realignment/reconstruction does not result in further impacts or stream destabilization.

Project Development & Environmental Analysis – Natural Environment Unit

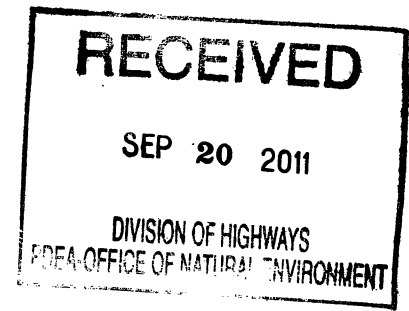
404 Condition U Compensatory mitigation for the unavoidable impacts to 0.31 acres of non riparian wetlands and 3,011 linear feet of stream associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated August 16, 2010 from William D. Gilmore, EEP Director. Pursuant to the In-Lieu-Fee Instrument signed July 28, 2010 between the State of North Carolina, Ecosystem Enhancement Program and the US Army Corps of Engineers the EEP will provide 0.62 acres of restoration equivalent riparian wetlands and 6,022 linear feet of restoration equivalent warm water stream channel in the Yadkin River Basin (Hydrologic Cataloging Unit 03040105) in accordance with Section F of the instrument. For wetlands, a minimum of 1:1 (impact to mitigation must be in the form of wetland restoration).



REPLY TO
ATTENTION OF:

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

September 16, 2011



Regulatory Division

Action ID: SAW-201000726

Gregory J. Thorpe, PhD. Environmental Management Director
North Carolina Department of Transportation
Project Development and Environmental Analysis Branch
1598 Mail Service Center
Raleigh, North Carolina

Dear Mr. Thorpe:

In accordance with your written request of December 22, 2010, and the ensuing administrative record, enclosed is a copy of a permit to directly discharge dredged and/or fill material into jurisdictional wetlands and streams in order to facilitate the widening of existing NC-49 State Transportation Improvement Project R-2533CC for approximately 2.1 miles, from east of NC 73 to east of SR 2630 (Cline Road) in Cabarrus County, North Carolina. The proposed project is located in adjacent wetlands and tributaries that are hydrologically connected to the Yadkin River. More Specifically, the proposed project begins at 35.38490 degrees north latitude and 80.51714 degrees west longitude and ends at 35.407668 degrees north and 80.450118 degrees west longitude.

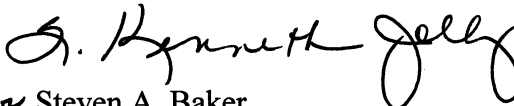
Any deviation in the authorized work will likely require modification of this permit. If a change in the authorized work is necessary, you should promptly submit revised plans to the Corps showing the proposed changes. You may not undertake the proposed changes until the Corps notifies you that your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

- a. You must complete construction before December 31, 2016.
- b. You must notify this office in advance as to when you intend to commence and complete work.
- c. You must allow representatives from this office to make periodic visits to your worksite as deemed necessary to assure compliance with permit plans and conditions.

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

Sincerely,


Steven A. Baker
Colonel, U.S. Army
District Commander

Enclosures

Copies 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

USEPA
Wetlands and Marine Regulatory Section
Ms. Rebecca Fox
1307 Firefly Road
Whittier, North Carolina 28789

Copies Furnished with special conditions
and plans:

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

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

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

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

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

DEPARTMENT OF THE ARMY PERMIT

Permittee **North Carolina Department of Transportation**

Permit No. **SAW-2010-00726**

Issuing Office **CESAW-RG-A**

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

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

Project Description: to directly discharge dredged and/or fill material into jurisdictional wetlands and streams in order to facilitate the widening of existing NC-49 State Transportation Improvement Project R-2533CC from east of NC 73 to east of SR 2630 (Cline Road) in Cabarrus County, North Carolina. The proposed project is located in adjacent wetlands and tributaries that are hydrologically connected to the Yadkin River. More specifically, the proposed project begins at 35.38490 degrees north latitude and 80.51714 degrees west longitude and ends at 35.407668 degrees north and 80.450118 degrees west longitude. Permanent authorized impacts to jurisdictional wetlands total 0.31 acres and 3, 058 linear feet of stream in order to facilitate construction of the project. Temporary impacts total 480 linear feet of stream.

Project Location: NC-49 from east of NC 73 to east of SR 2630 (Cline Road) in Cabarrus County, North Carolina

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2016**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit,

Special Conditions:

SEE ATTACHED SPECIAL CONDITIONS

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
 - Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
 - 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.

SPECIAL CONDITIONS
2010-00726

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

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 and attached as Exhibit A. Any modification to these plans must be approved by the US Army Corps of Engineers (USACE) prior to implementation.

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

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

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

Related Laws

e) The North Carolina Division of Water Quality has issued a conditioned Water Quality Certification for your project; the conditions of that certification are hereby incorporated as special conditions of this permit. For your convenience, a copy of the certification is attached as Exhibit B. These referenced conditions are hereby incorporated as special conditions of this permit.

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

Project Maintenance

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

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

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

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

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

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

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

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

Enforcement

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

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

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

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

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

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

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

Mitigation

v) Compensatory mitigation for the unavoidable impacts to 0.31 acres of non riparian wetlands and 3,011 linear feet of stream associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated August 16, 2010 from William D. Gilmore, EEP Director. Pursuant to the In-Lieu-Fee Instrument signed July 28, 2010 between the State of North Carolina, Ecosystem Enhancement Program and the US Army Corps of Engineers the EEP will provide 0.62 acres of restoration equivalent riparian wetlands and 6,022 linear feet of restoration equivalent warm water stream channel in the Yadkin River Basin (Hydrologic Cataloging Unit 03040105 in accordance with Section F of the instrument. For wetlands, a minimum of 1:1 (impact to mitigation) must be in the form of wetland restoration.

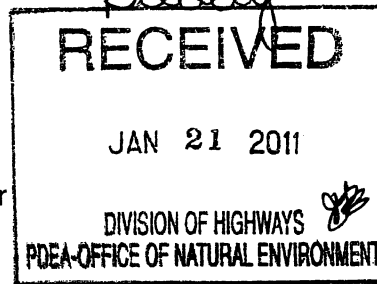


North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary



January 19, 2011

Gregory J. Thorpe, Ph.D., Environmental Management Director
North Carolina Department of Transportation
Project Development and Environmental Analysis Branch
1598 Mail Service Center
Raleigh, North Carolina, 27699-1598

Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with Additional Conditions for the Proposed Widening of NC 49 from East of NC 73 to East of SR 2630 (Cline Road), Cabarrus County, TIP No. R-2533CC, WBS 34448.1.1, NCDWQ Project No. 10-0782

Dear Dr. Thorpe:

Attached hereto is a copy of Certification No. 003847 issued to The North Carolina Department of Transportation (NCDOT) dated January 19, 2011.

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

Sincerely,

Coleen H. Sullins
Director

Attachments

cc: Sarah Hair, US Army Corps of Engineers, Asheville Field Office
Chris Militscher, Environmental Protection Agency (electronic copy only)
Marla Chambers, NC Wildlife Resources Commission (electronic copy only)
Marella Buncick, US Fish and Wildlife Service (electronic copy only)
William Gilmore, Ecosystem Enhancement Program
Jason Dilday, NCDOT PDEA
Larry Thompson, NCDOT Division 10 Environmental Officer
Sonia Carrillo, NCDWQ Transportation Permitting Unit
Polly Lespinasse, NCDWQ Mooresville Regional Office
Brian Wrenn, NCDWQ Transportation Permitting Unit
File Copy

Mooresville Regional Office
Location: 610 East Center Ave., Suite 301 Mooresville, NC 28115
Phone: (704) 663-1699 \ Fax: (704) 663-6040 \ Customer Service: 1-877-623-6748
Internet: <http://portal.ncdenr.org/web/wq>

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

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (NCDWQ) Regulations in 15 NCAC 2H .0500. This certification authorizes the NCDOT to permanently impact 3,058 linear feet of jurisdictional streams, 0.32 acres of jurisdictional wetlands, and temporarily impact 480 linear feet of streams in Cabarrus County. The project shall be constructed pursuant to the application received September 17, 2010, and additional information received December 29, 2010. The authorized impacts are as described below:

Stream Impacts in the Yadkin River Basin R-2533CC

Permit Site No./ Station No.s	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear.ft)	Total Stream Impact (linear.ft)	Stream Impacts Requiring Mitigation (linear.ft)
Site 1/Station 200+17/201+21-L- REV			242 lf* (108 lf for culverts, 98 lf for bank stabilization and floodplain bench construction, 36 lf for stream relocation)	125 lf	367 lf	151 lf
Site 2/Station 212+13/212+79-L- REV			85 lf (46 lf for culvert, 39 lf for bank stabilization)	184 lf	269 lf	0
Site 4/Station 218+26/219+34-L- REV			407 lf (361 lf for culverts, 46 lf for bank stabilization)	39 lf	446 lf	407 lf
Site 5/Station 9+90/12+47-Y1- REV RT			847 lf (837 lf for stream relocation, 10 lf for bank stabilization)		847 lf	847 lf
Site 6/Station 11+87/12+70-Y1- REV, Station 12+11.6-Y16-REV			437 lf (371 lf for culverts, 66 lf for bank stabilization)	89 lf	526 lf	437 lf
Site 7/Station 219+45/219+59-L- REV			902 lf (for stream relocation)	43 lf	945 lf	902 lf
Site 8/Station 11+06-Y16-REV-RT	20 lf (10 lf for culvert, 10 lf for bank stabilization)				20 lf	0
Site 9/Station 220+00/220+28-L- REV-LT	118 lf (for culvert)				118 lf	0
Total	138 lf	0	2,920 lf	480 lf	3,538 lf	2,744 lf

*91 linear feet of this impact associated with the construction of a floodplain bench – no mitigation required

Total Stream Impacts for Project: 3,538 linear feet

Wetland Impacts in the Yadkin River Basin (Riverine) – R2533CC

Permit Site No./ Station No.s	Fill/Clearing Impacts (ac)	Temporary Impacts (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
Site 1/Station 200+17/201+21-L-REV	0.03 ac (fill)		0.03 ac	0
Site 3/Station 213+52/214+02-L-REV	0.20 ac (fill)		0.20 ac	0
Site 5/Station 9+90/12+47- Y1-REV RT	0.09 ac (fill)		0.09 ac	0
Total	0.32 acres	0	0.32 acres	0

Total Wetland Impacts for Project: 0.32 acres

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

This approval is only valid for the purpose and design that you submitted in your application dated September 7, 2010, and received September 17, 2010, with additional information submitted on December 29, 2010. Should your project change, you are required to notify the NCDWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Conditions of Certification:

1. The use of riprap at Permit Sites 1 and 4 shall be minimized to the greatest extent practical and should be limited to the streambanks. If riprap is placed in the streambeds of the relocated Unnamed Tributary (UT) to Adams Creek (Permit Site 1) or the UT to McAllister Creek (Permit Site 4), it shall be embedded such that low flow of water and aquatic passage are not impeded.
2. All riprap used for streambank stabilization, ditchline stabilization along streambanks and floodplain bench construction shall be of sufficient size to prevent migration of the riprap into the active stream channel.
3. The floodplain bench at the outlet of the culvert on Adams Creek (Permit Site 1) shall be constructed as per Detail Sheet 2-Y, and shall include coir fiber matting.

4. An 1800mm RCP, conveying a jurisdictional stream, at Permit Site 4 will be discharging into a 2.7m x 2.7m reinforced concrete box culvert, approximately nine (9) feet from the culvert outlet. The slope of the 1800mm RCP is greater than 5%. Please be advised that if stream destabilization occurs at the culvert outlet due to energy dissipation, NCDOT will be required to install corrective measures to address the stream destabilization.
5. The stream at Permit Site 5 will be relocated to a culvert. If the stream needs to be reconstructed at the culvert inlet to allow for proper alignment with the culvert, NCDOT shall notify the Division 10 Environmental Officer and/or Environmental Specialist to ensure that the stream realignment/reconstruction does not result in further impacts or stream destabilization.
6. Compensatory mitigation for 2,744 linear feet of impact to streams is required. We understand that the North Carolina Ecosystem Enhancement Program (EEP) has agreed to implement the stream mitigation for the project. EEP has indicated in a letter dated August 16, 2010, that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004.
7. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.
8. 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.
9. 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.
10. 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.
11. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval.
12. 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.
13. 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.

14. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.
15. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification.
16. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.
17. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If NCDWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, NCDWQ may reevaluate and modify this certification.
18. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification.
19. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.
20. 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.
21. 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.
22. The Permittee shall report any violations of this certification to the Division of Water Quality within 24 hours of discovery.
23. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT (or their authorized agent) shall complete and return the enclosed "Certification of Completion Form" to notify NCDWQ when all work included in the 401 Certification has been completed.
24. Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction.
25. 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.
26. 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.
27. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification.
28. No drill slurry or water that has been in contact with uncured concrete shall be allowed to enter surface waters. This water shall be captured, treated, and disposed of properly.
29. 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.
30. Pipes and culverts used exclusively to maintain equilibrium in wetlands, where aquatic life passage is not a concern, shall not be buried. These pipes shall be installed at natural ground elevation.
31. Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 Permit. This Certification shall expire upon the expiration of the 404 Permit.

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

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


Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919)-733-2698, Facsimile: (919)-733-3478

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

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

This, the 19th day of January 2011

DIVISION OF WATER QUALITY

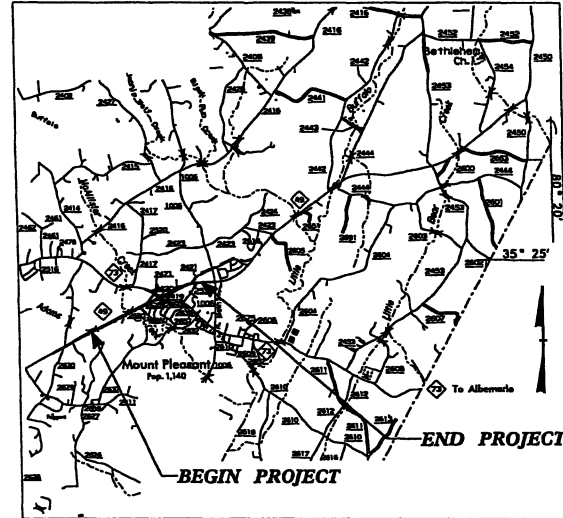


for Coleen H. Sullins
Director

WQC No. 003847

TIP: R-2533CC

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



VICINITY MAP OF PROJECT R-2533CC

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CABARRUS COUNTY

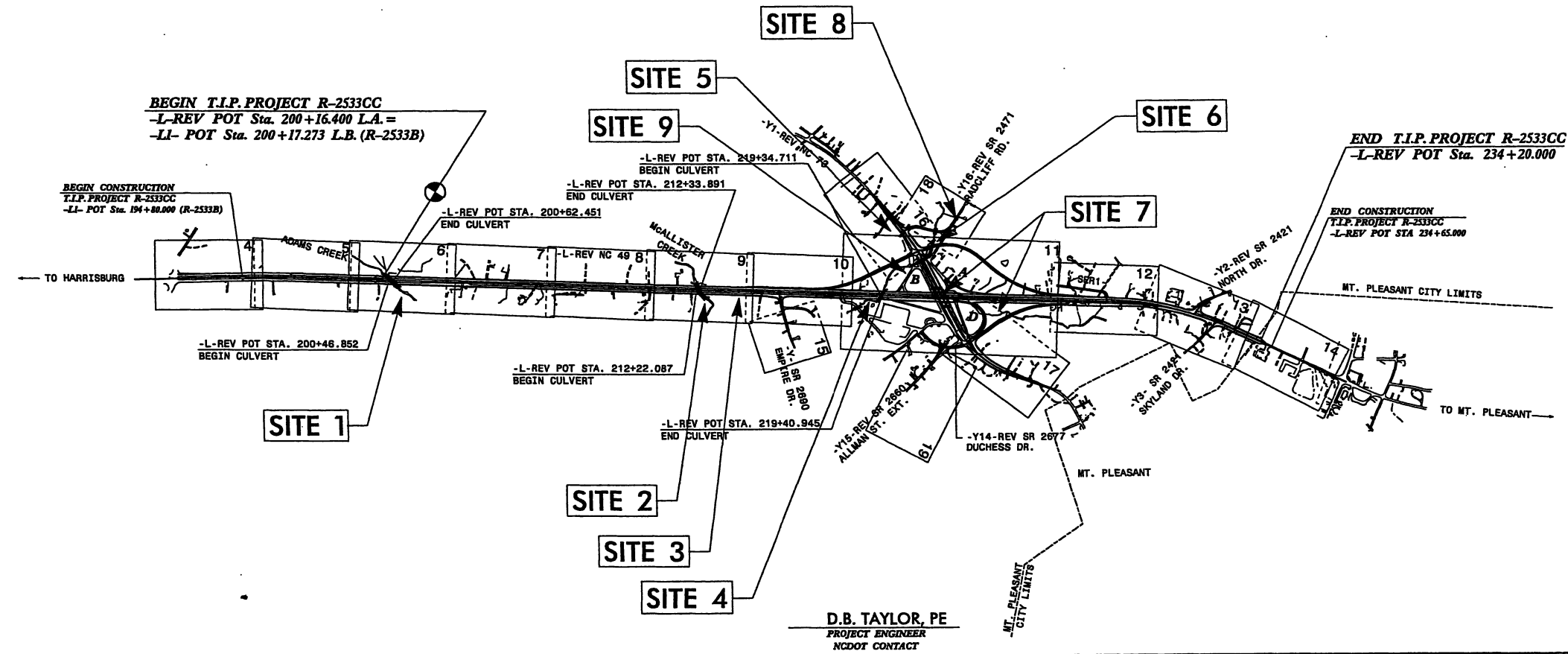
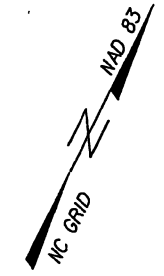
LOCATION: NC 49 FROM EAST OF SR 2630 TO EAST OF SR 2421

**TYPE OF WORK: GRADING, PAVING, STRUCTURES, CULVERTS,
DRAINAGE, SIGNALS, AND SIGNING**

METRIC
ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE NOTED

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2533CC	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34448.1.1	NHF-28-1(5)	PE	
34448.3.9	NHS-0049(26)	RW, UTIL CONST	

Permit Drawing
Sheet 8 of 51



**WETLAND/STREAM
IMPACTS**

D.B. TAYLOR, PE
PROJECT ENGINEER
NCDOT CONTACT

CONTROL OF ACCESS IS SHOWN ON PLANS
AT THE NC 49 - NC 73 INTERCHANGE

CONTRACT:

GRAPHIC RATIO

5 0 10
PLANS

5 0 10
PROFILE (HORIZONTAL)

1 0 2
PROFILE (VERTICAL)

DESIGN DATA

ADT 2011 = 10,685
ADT 2031 = 13,531

DHV = 11 %
D = 60 %
T = 13 %
(TTST 7% + DUALS 6%)

-L-REV NBL V = 100 km/h
-L-REV SBL V = 90 km/h
RRR - DESIGN GUIDELINES
FUNCT. CLASS. - ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY PROJECT R-2533CC = 3.370 Km
LENGTH STRUCTURES PROJECT R-2533CC = 0.034 Km
TOTAL LENGTH STATE PROJECT R-2533CC = 3.404 Km

**PLANS PREPARED FOR NCDOT
DIVISION OF HIGHWAYS**

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
October 18, 2002

LETTING DATE:
April 19, 2011

K. M. HAUGHEY, PE
EARTH TECH PROJECT MANAGER

N. J. DEAN, PE
PROJECT DESIGN ENGINEER

Prepared in the Office of:

NC FIRM LICENSE No: F-0342
701 Corporate Center Dr.
Suite 475
Raleigh, N.C. 27607
(919)-854-6200
FAX (919)-854-6259

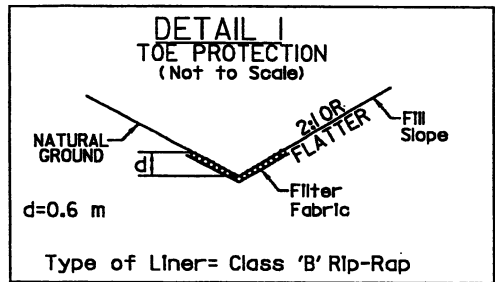
HYDRAULICS ENGINEER

ROADWAY DESIGN

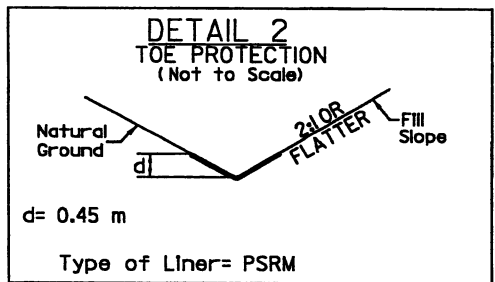
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

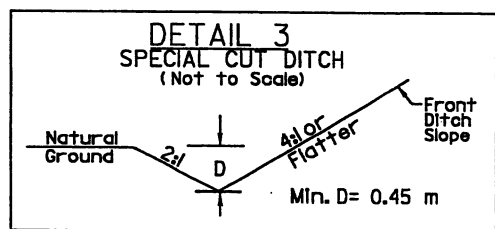
STATE HIGHWAY DESIGN ENGINEER



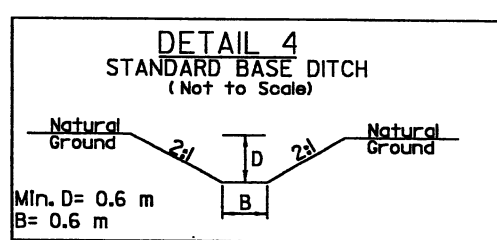
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 FROM STA. 200+80 TO STA. 202+40 -L-REV LT
 FROM STA. 233+30 TO STA. 234+30 -L-REV LT



Type of Liner= PSRM
 FROM STA. 202+40 TO STA. 202+60 -L-REV LT
 FROM STA. 204+25 TO STA. 204+80 -L-REV LT



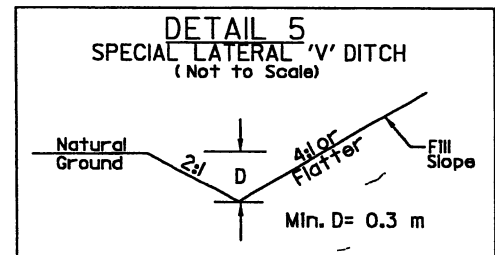
FROM STA. 204+98 TO STA. 206+60 -L-REV LT
 FROM STA. 206+00 TO STA. 206+28 -L-REV RT
 FROM STA. 206+80 TO STA. 207+81 -L-REV LT
 FROM STA. 9+85 TO STA. 10+72 -SERI- LT



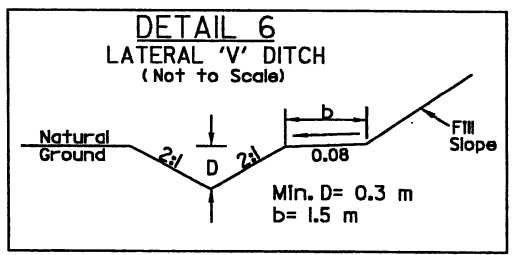
STA. 206+32 -L-REV RT
 STA. 207+66 -L-REV RT

PROJ. REFERENCE NO. R-2533CC		SHEET NO. 2-J	
HIGHWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
Prepared in the Office of:		AECOM NC FIRM LICENSE No. F-0342 701 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259 FAX	

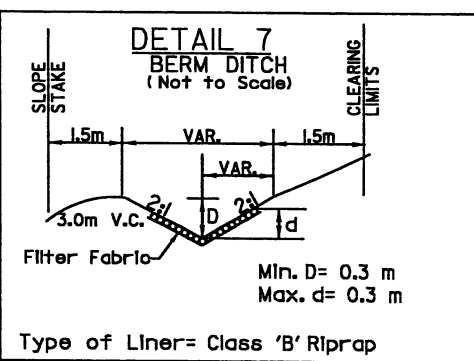
Revised 12/13/10



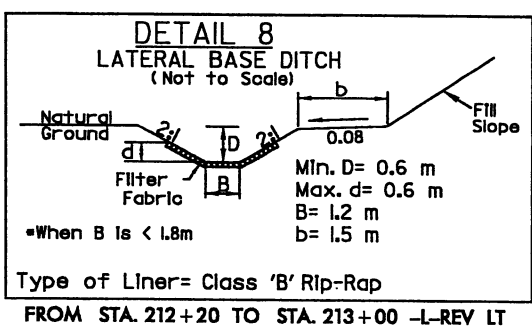
FROM STA. 208+40 TO STA. 208+80 -L-REV LT
 FROM STA. 228+60 TO STA. 229+40 -L-REV LT
 FROM STA. 16+40 TO STA. 17+00 -Y1-REV RT
 FROM STA. 5+50 TO STA. 6+16 RAMP A LT
 FROM STA. 0+45 TO STA. 1+20 LOOP D RT



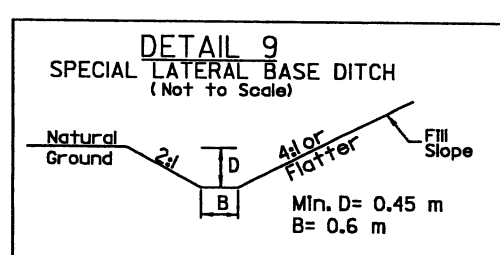
FROM STA. 208+80 TO STA. 210+80 -L-REV LT
 FROM STA. 228+13 TO STA. 228+60 -L-REV LT
 FROM STA. 11+19 TO STA. 11+40 -SERI- LT



Type of Liner= Class 'B' Riprap
 FROM STA. 211+60 TO STA. 211+95 -L-REV RT
 FROM STA. 3+40 TO STA. 3+60 RAMP B LT

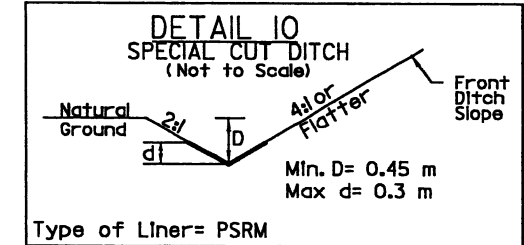


Type of Liner= Class 'B' Rip-Rap
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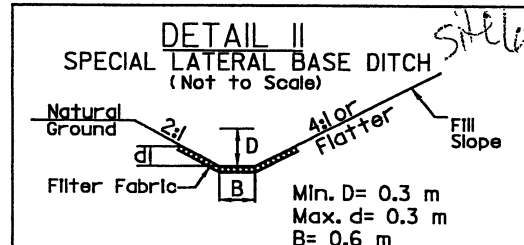


FROM STA. 213+00 TO STA. 214+00 -L-REV LT
 FROM STA. 218+20 TO STA. 219+00 -L-REV LT

Site 4

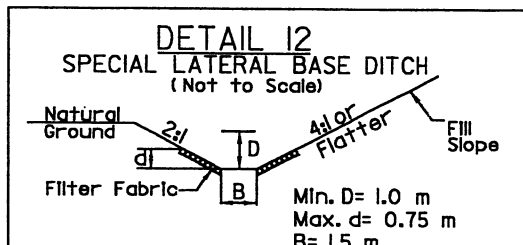


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 FROM STA. 214+00 TO STA. 214+60 -L-REV LT
 FROM STA. 16+53 TO STA. 18+00 -Y1-REV LT
 FROM STA. 10+05 TO STA. 10+86 -Y14-REV RT
 FROM STA. 11+40 TO STA. 11+83 -Y15-REV LT
 FROM STA. 11+60 TO STA. 11+84 -Y15-REV RT

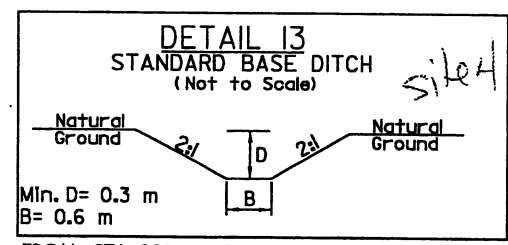


Type of Liner= Class 'B' Rip-Rap
 FROM STA. 11+20 TO STA. 12+03 -Y1-REV RT
 FROM STA. 12+80 TO STA. 13+60 -Y1-REV LT
 FROM STA. 3+60 TO STA. 4+30 -RAMP B- LT

Site 6

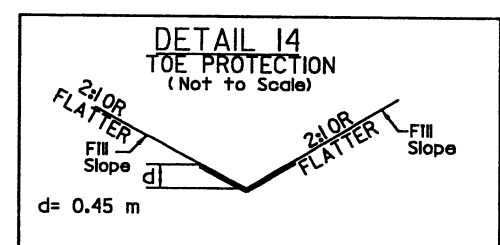


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 FROM STA. 219+80 TO STA. 221+00 -L-REV RT

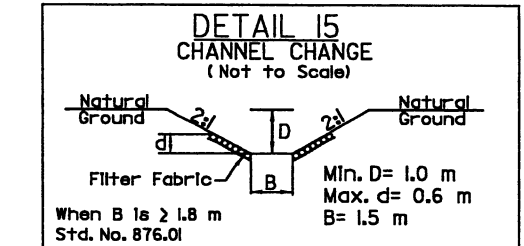


FROM STA. 221+80 TO STA. 222+15 -L-REV LT
 FROM STA. 222+74 TO STA. 222+85 -L-REV LT
 STA. 3+40 RAMP A LT
 STA. 2+40 RAMP B RT
 STA. 12+07 -Y14- LT

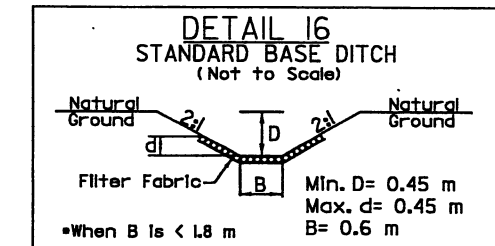
Site 4



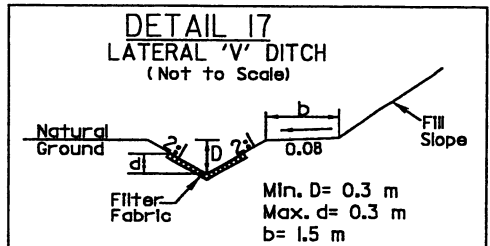
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 FROM STA. 1+40 TO STA. 1+80 -LOOP D- LT



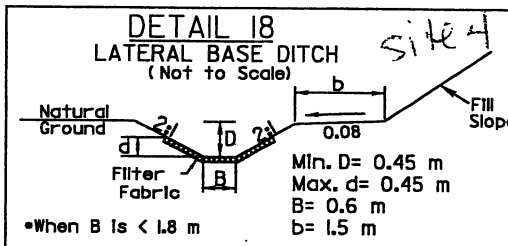
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 FROM STA. 200+38 TO STA. 200+48 -L-REV LT
 FROM STA. 223+36 TO STA. 224+07 -L-REV RT



Type of Liner= Class 'B' Rip-Rap
 STA. 224+00 -L-REV RT
 STA. 18+50 -Y1-REV RT
 STA. 18+60 -Y1-REV LT

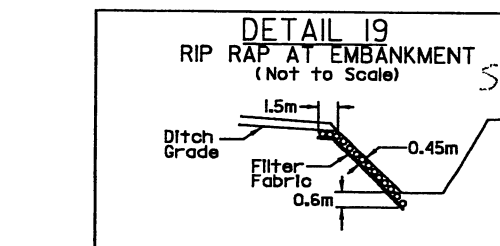


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 FROM STA. 5+64 TO STA. 5+96 RAMP A RT



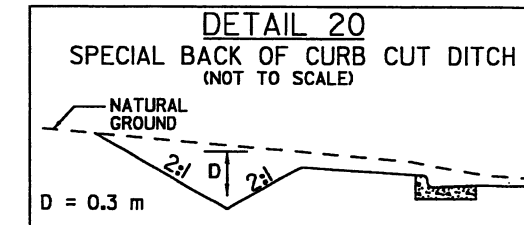
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 FROM STA. 210+80 TO STA. 212+10 -L-REV LT
 FROM STA. 219+00 TO STA. 219+45 -L-REV LT
 FROM STA. 233+71 TO STA. 233+97 -L-REV RT
 FROM STA. 11+55 TO STA. 12+10 -Y1-REV LT
 FROM STA. 6+03 TO STA. 6+45 -RAMP A- RT

Site 4

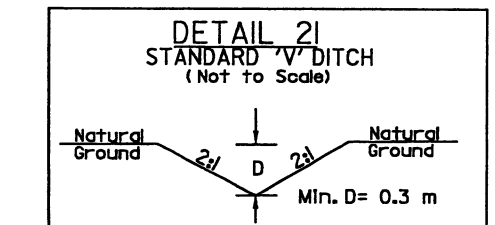


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 STA. 220+20 -L-REV RT

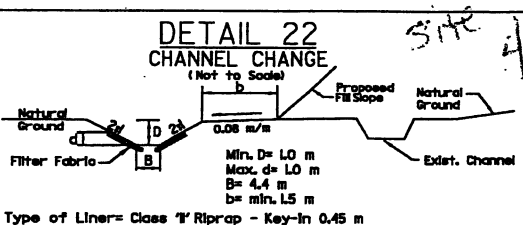
Site 6
 Site 6



FROM STA. 231+80 TO STA. 232+20 -L-REV LT
 FROM STA. 232+30 TO STA. 232+50 -L-REV LT
 FROM STA. 232+60 TO STA. 233+04 -L-REV LT

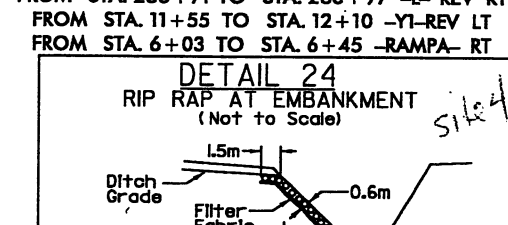


FROM STA. 11+60 TO STA. 11+80 -Y16-REV LT
 STA. 11+00 -Y2-REV RT



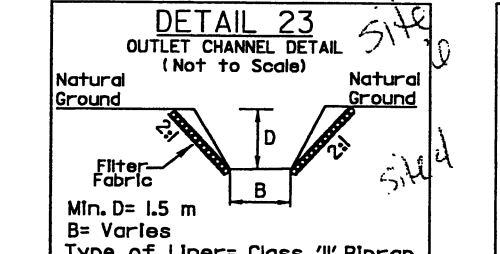
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 FROM STA. 218+58 TO STA. 219+20 -L-REV RT

Site 4



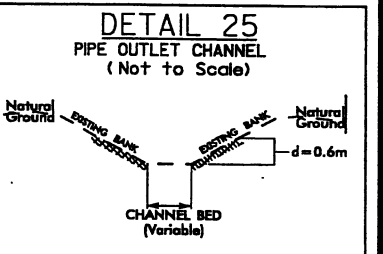
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 Filter Fabric= 13.9 sm
 STA. 212+10 -L-REV LT
 STA. 219+45 -L-REV LT

Site 4

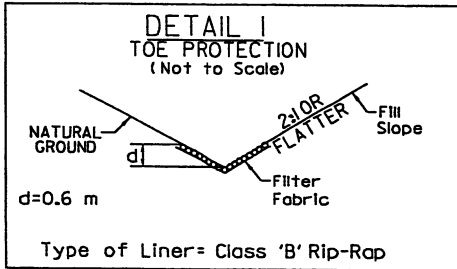


FROM STA. 218+25 TO STA. 218+38 -L-REV RT
 STA. 12+68 -Y1-REV RT
 STA. 12+12 -Y16-REV LT

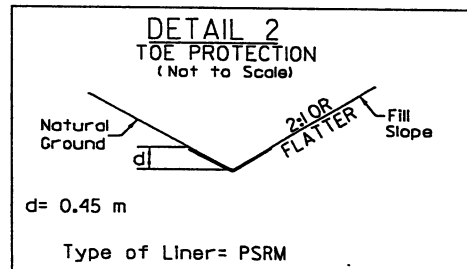
Site 4



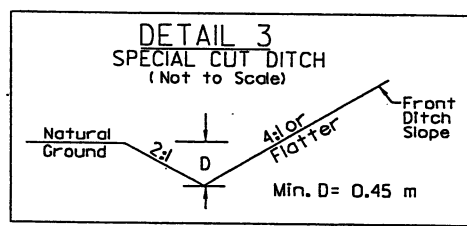
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 STA. 4+25 -RPB- RT LENGTH=5.0m



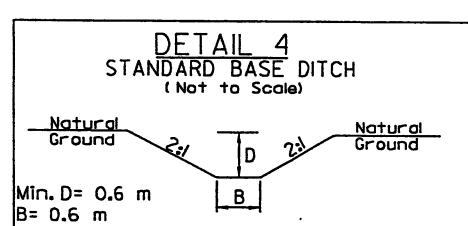
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 FROM STA. 233+30 TO STA. 234+30 -L-REV LT



Type of Liner = PSRM
 FROM STA. 202+40 TO STA. 202+60 -L-REV LT
 FROM STA. 204+25 TO STA. 204+80 -L-REV LT

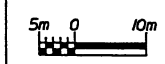


FROM STA. 204+98 TO STA. 206+60 -L-REV LT
 FROM STA. 206+00 TO STA. 206+28 -L-REV RT
 FROM STA. 206+80 TO STA. 207+81 -L-REV LT
 FROM STA. 9+85 TO STA. 10+72 -SERI- LT

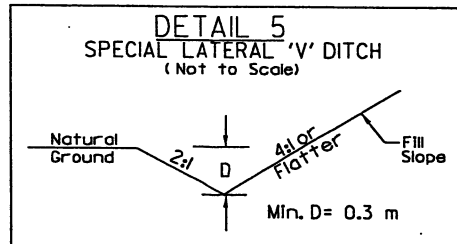


STA. 206+32 -L-REV RT
 STA. 207+66 -L-REV RT

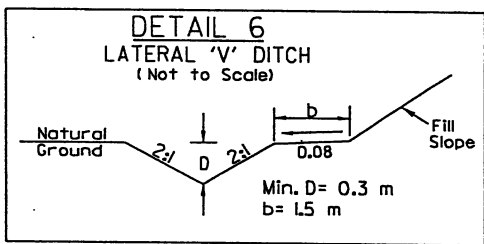
PROJ. REFERENCE NO. R-2533CC SHEET NO. 2-J
 HIGHWAY DESIGN ENGINEER HYDRAULICS ENGINEER
PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION
 Prepared in the Office of: **AECOM**
 NC FIRM LICENSE NO. 0342
 701 Corporate Center Drive, Suite 475
 Raleigh, NC 27601
 (919) 854-6200 • (919) 854-6259(FAX)
 CONST. REV. _____
 R/W REV. _____



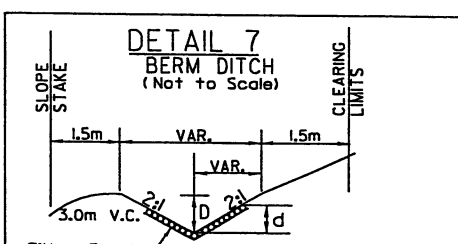
Permit Drawing
 Sheet 9 of 51
 Revised 12/13/10



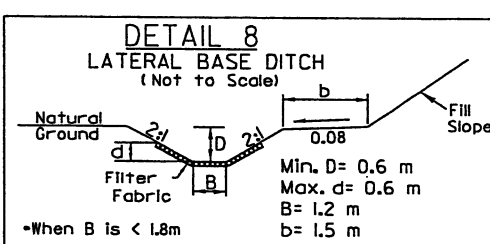
FROM STA. 208+40 TO STA. 208+80 -L-REV LT
 FROM STA. 228+60 TO STA. 229+40 -L-REV LT
 FROM STA. 16+40 TO STA. 17+00 -Y1-REV RT
 FROM STA. 5+50 TO STA. 6+16 RAMP A LT
 FROM STA. 0+45 TO STA. 1+20 LOOP D RT



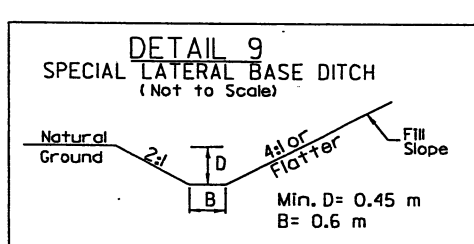
FROM STA. 208+80 TO STA. 210+80 -L-REV LT
 FROM STA. 228+13 TO STA. 228+60 -L-REV LT
 FROM STA. 11+19 TO STA. 11+40 -SERI- LT



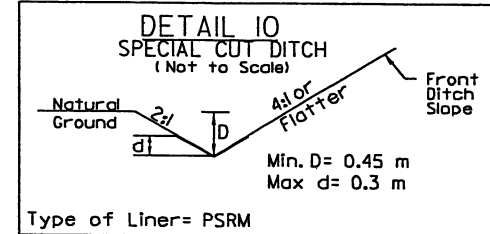
Type of Liner = Class 'B' Riprap
 FROM STA. 211+60 TO STA. 211+95 -L-REV RT
 FROM STA. 3+40 TO STA. 3+60 RAMP B LT



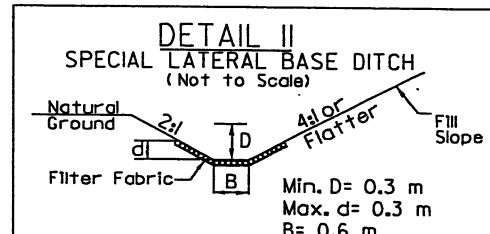
Type of Liner = Class 'B' Rip-Rap
 FROM STA. 212+20 TO STA. 213+00 -L-REV LT



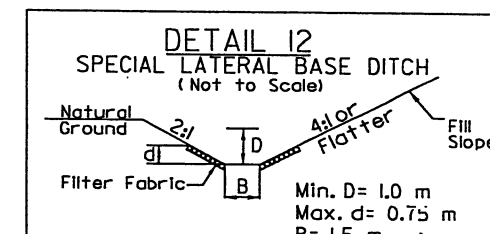
FROM STA. 213+00 TO STA. 214+00 -L-REV LT
 FROM STA. 218+20 TO STA. 219+00 -L-REV LT



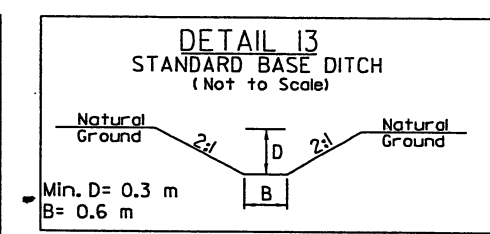
Type of Liner = PSRM
 FROM STA. 212+20 TO STA. 212+40 -L-REV RT
 FROM STA. 214+00 TO STA. 214+60 -L-REV LT
 FROM STA. 16+53 TO STA. 18+00 -Y1-REV LT
 FROM STA. 10+05 TO STA. 10+86 -Y14-REV RT
 FROM STA. 11+40 TO STA. 11+83 -Y15-REV LT
 FROM STA. 11+60 TO STA. 11+84 -Y15-REV RT



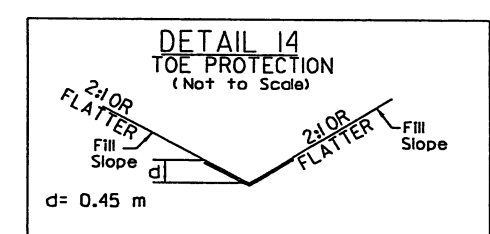
Type of Liner = Class 'B' Rip-Rap
 FROM STA. 11+20 TO STA. 12+03 -Y1-REV RT
 FROM STA. 12+80 TO STA. 13+60 -Y1-REV LT
 FROM STA. 3+60 TO STA. 4+30 -RAMP B- LT



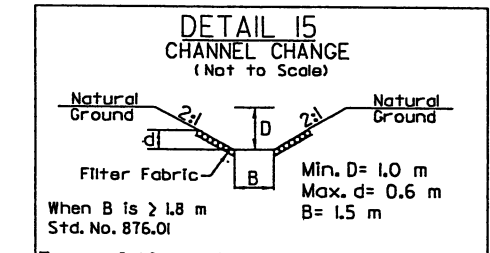
Type of Liner = Class 'I' Rip-Rap
 FROM STA. 219+80 TO STA. 221+00 -L-REV RT



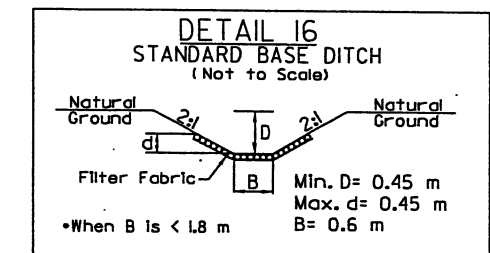
FROM STA. 221+80 TO STA. 222+15 -L-REV LT
 FROM STA. 222+74 TO STA. 222+85 -L-REV LT
 STA. 3+40 RAMP A LT
 STA. 2+40 RAMP B RT
 STA. 12+07 -Y14- LT



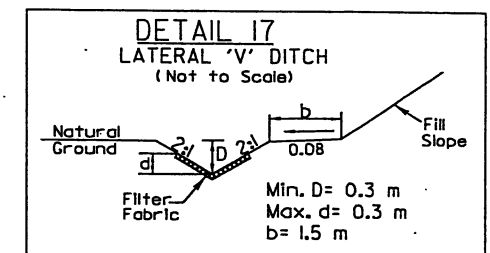
Type of Liner = PSRM
 FROM STA. 1+40 TO STA. 1+80 -LOOP D- LT



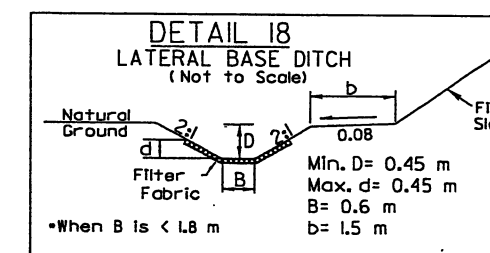
Type of Liner = Class 'I' Rip-Rap
 FROM STA. 200+38 TO STA. 200+48 -L-REV LT
 FROM STA. 223+36 TO STA. 224+07 -L-REV RT



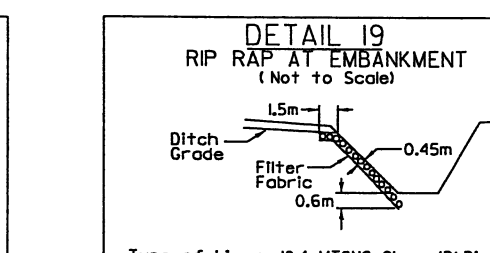
Type of Liner = Class 'B' Rip-Rap
 STA. 224+00 -L-REV RT
 STA. 18+50 -Y1-REV RT
 STA. 18+60 -Y1-REV LT



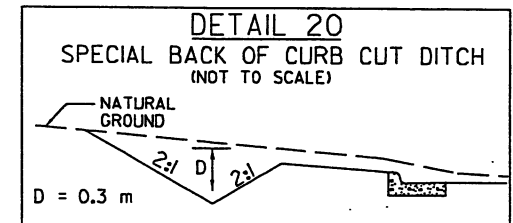
Type of Liner = Class 'B' Rip-Rap
 FROM STA. 5+64 TO STA. 5+96 RAMP A RT



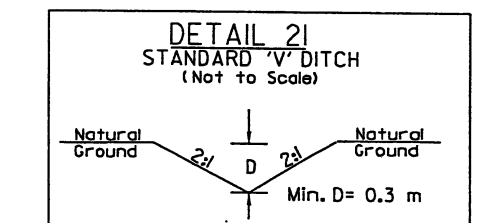
Type of Liner = Class 'B' Rip-Rap
 FROM STA. 210+80 TO STA. 212+10 -L-REV LT
 FROM STA. 219+00 TO STA. 219+45 -L-REV LT
 FROM STA. 233+71 TO STA. 233+97 -L-REV RT
 FROM STA. 11+55 TO STA. 12+10 -Y1-REV LT
 FROM STA. 6+03 TO STA. 6+45 -RAMP A- RT



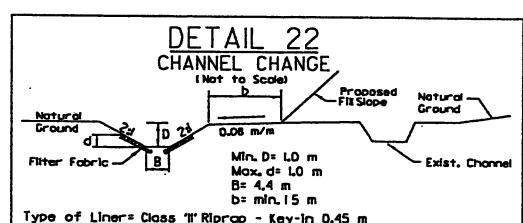
Type of Liner = 18.4 MTONS, Class 'B' Rip-Rap
 Filter Fabric = 19.2 sm
 STA. 220+20 -L-REV RT



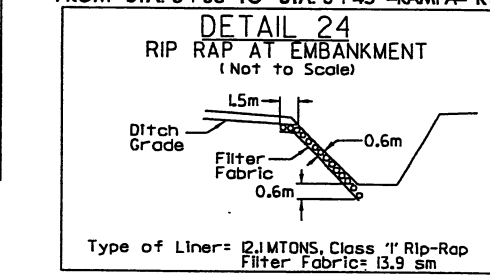
FROM STA. 231+80 TO STA. 232+20 -L-REV LT
 FROM STA. 232+30 TO STA. 232+50 -L-REV LT
 FROM STA. 232+60 TO STA. 233+04 -L-REV LT



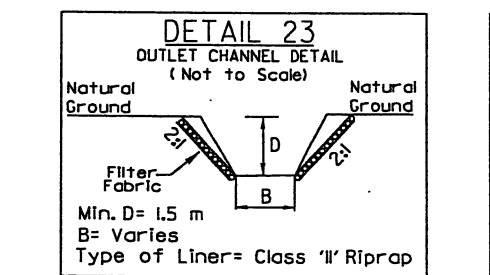
FROM STA. 11+60 TO STA. 11+80 -Y16-REV LT
 STA. 11+00 -Y2-REV RT



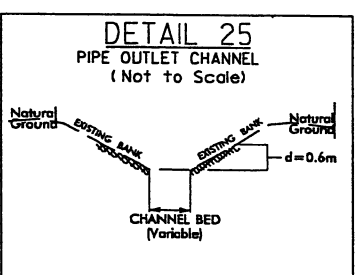
Type of Liner = Class 'I' Riprap - Key-In 0.45 m
 FROM STA. 218+58 TO STA. 219+20 -L-REV RT



Type of Liner = 2.1 MTONS, Class 'I' Rip-Rap
 Filter Fabric = 13.9 sm
 STA. 212+10 -L-REV LT
 STA. 219+45 -L-REV LT





Type of Liner = Class 'I' Riprap
 FROM STA. 218+25 TO STA. 218+38 -L-REV RT
 STA. 12+68 -Y1-REV RT
 STA. 12+12 -Y16-REV LT

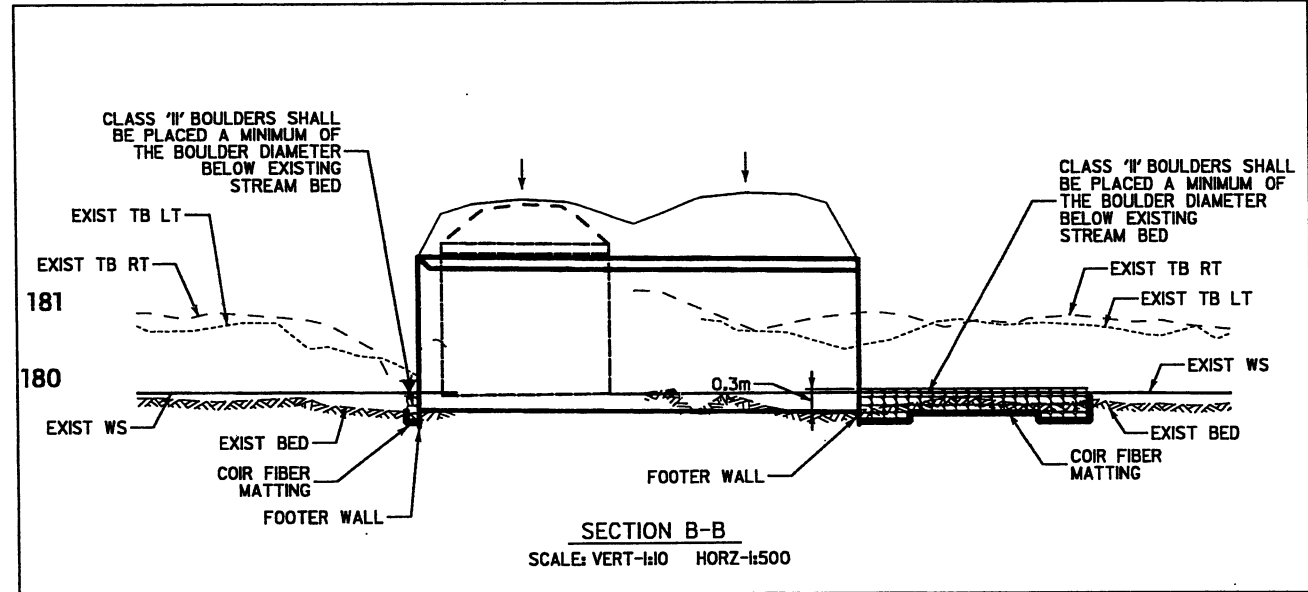


Class 'I' Rip-Rap
 STA. 11+07 -Y16-REV RT LENGTH = 3.0m
 STA. 4+25 -RPB- RT LENGTH = 5.0m

DATE: 12/13/10

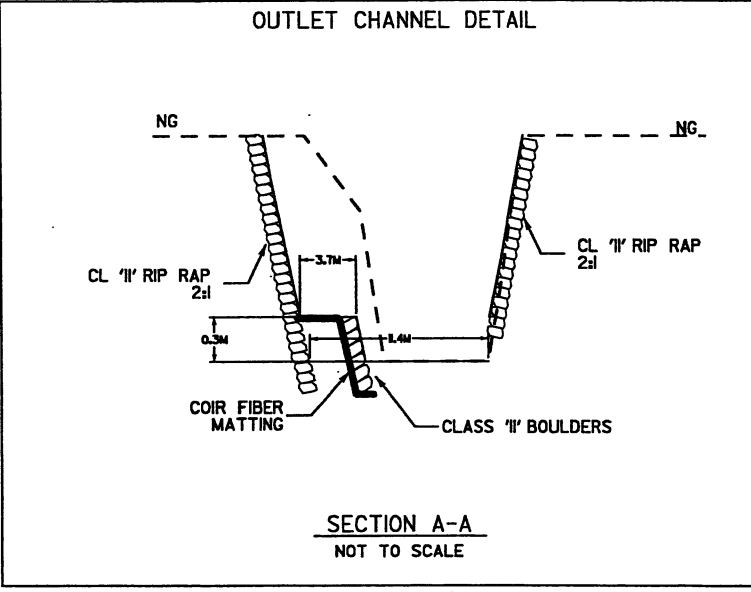
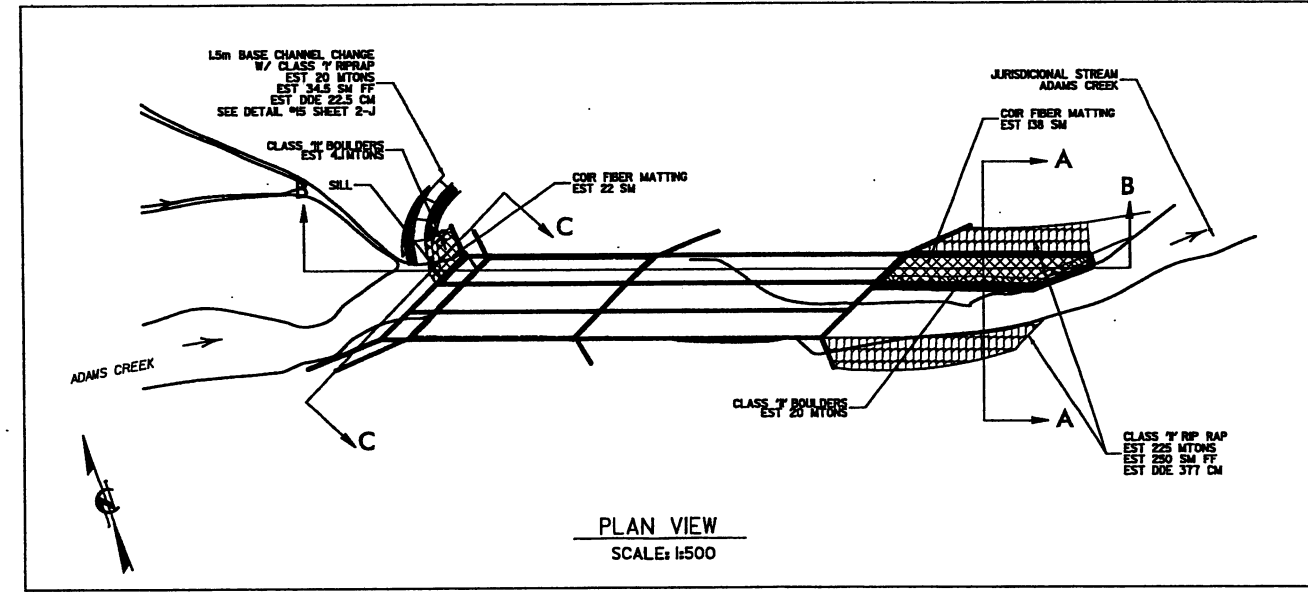
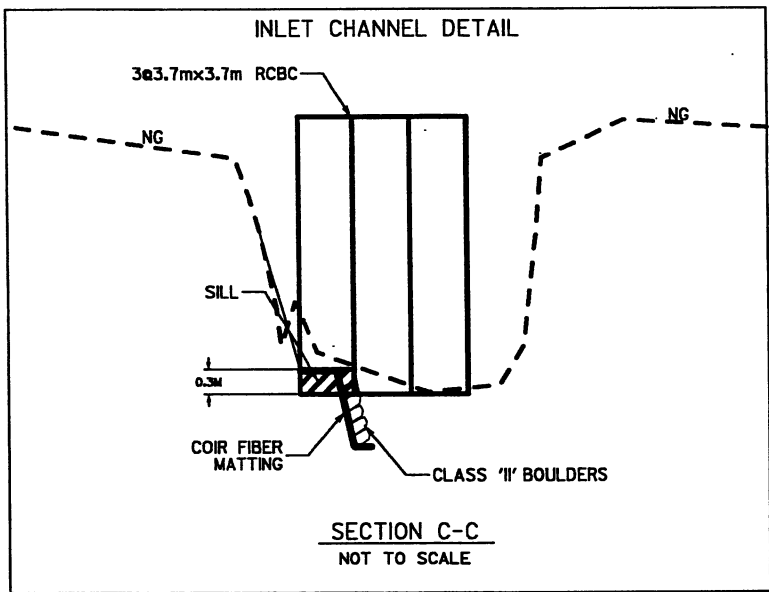
CHANNEL BENCH DETAIL SHEET

	PROJ. REFERENCE NO. R-2533CC	SHEET NO. 2-Y
	HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
	Prepared in the Office of: AECOM <small>NC FIRM LICENSE No. F-0342 701 Corporate Center Drive, Suite 415 Raleigh, NC 27607 (919) 854-6200 - (919) 854-6259 FAX</small>	
GDSY/REV. RWY/REV.	Revised 12/13/10	



NOTES:

- A BENCH 0.3m ABOVE THE BED SHALL BE ARMORED WITH BOULDERS AS SHOWN ON THE PLAN VIEW. THE DEPTH OF ARMOR PROTECTION SHOULD EXTEND 0.45m BELOW THE STREAM BED AND LINED WITH COIR FIBER MATTING.
- DIMENSIONS AND SLOPES MAY BE ADJUSTED TO FIT BY THE ENGINEER.
- EDGE ARMOR CAN BE NATURAL STREAM BOULDERS OR EXTRACTED FROM CLASS II RIPRAP OR SHOT ROCK MATERIAL AND CAN BE CUBICAL OR RECTANGULAR IN NATURE.
- ACCEPTABLE BOULDERS FOR THE EDGE ARMOR SHALL HAVE THE FOLLOWING APPROXIMATE DIMENSIONS: 0.9m x 0.6m x 0.3m. UNSUITABLE EDGE ARMOR MATERIAL THAT REMAINS FROM CLASS II RIP RAP OR SHOT ROCK STORES, MAY BE USED IN BACK FILL OF THE OVER BANK AREA OR DISCARDED.
- COIR FIBER MATTING SHALL EXTEND FROM THE BOTTOM OF THE FOOTER BOULDERS AND ACROSS THE BENCHED AREA TO PREVENT WASHOUT OF SEDIMENT THROUGH BOULDER GAPS.


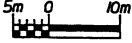


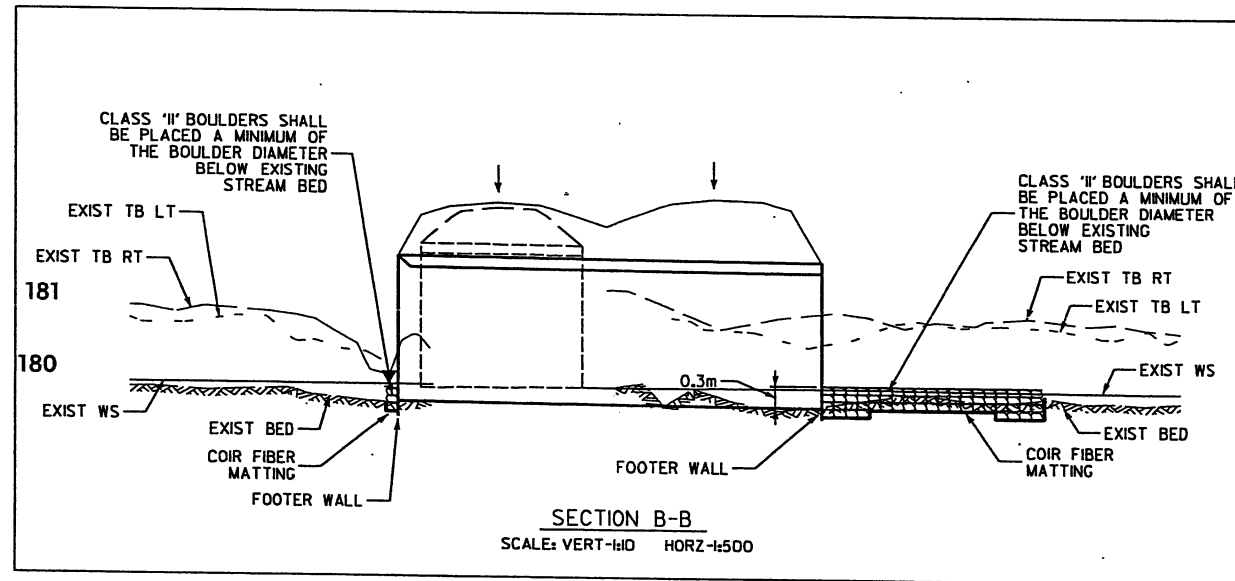
STA. 200+37 TO STA. 200+98 -L-REV

Side ①

CHANNEL BENCH DETAIL SHEET

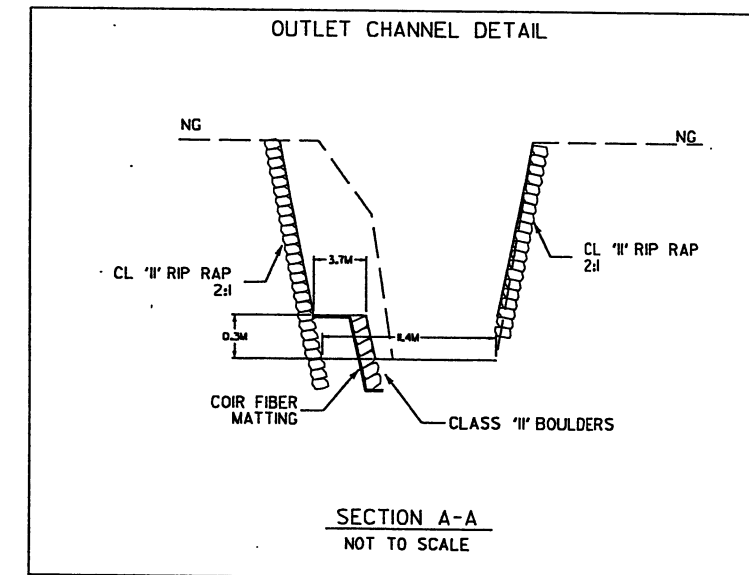
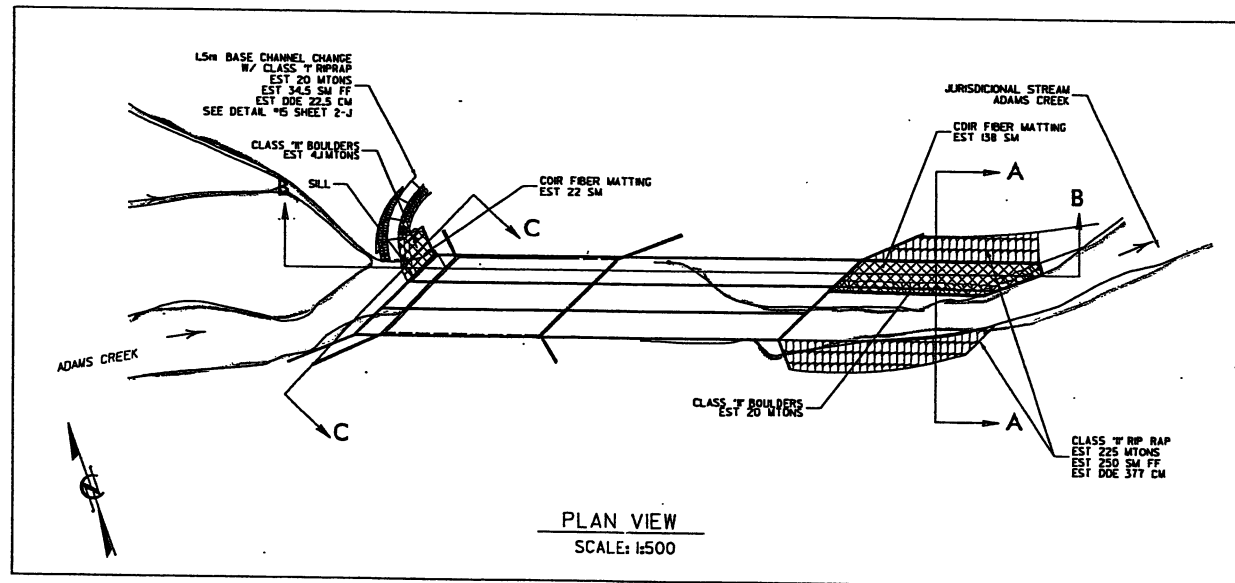
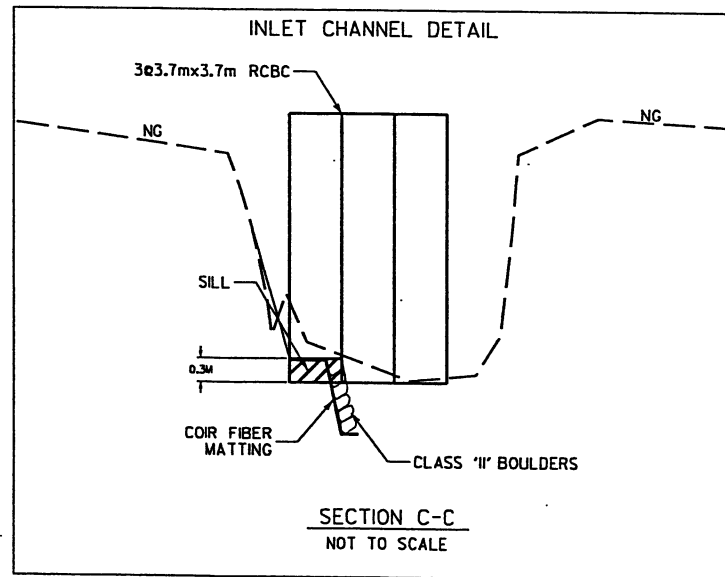
Permit Drawing
Sheet 11 of 61
Revised 12/13/10

 5m 0 10m 	PROJ. REFERENCE NO. R-2533CC	SHEET NO. 2-Y
	HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
CONST. REV.	Prepared in the Office of: AECOM <small>NC PERM LICENSE No. P-0342 701 Corporate Center Drive, Suite 475 Raleigh, NC 27601 (919) 854-6200 • (919) 854-6259 FAX</small>	



NOTES:

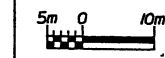
1. A BENCH 0.3m ABOVE THE BED SHALL BE ARMORED WITH BOULDERS AS SHOWN ON THE PLAN VIEW. THE DEPTH OF ARMOR PROTECTION SHOULD EXTEND 0.45m BELOW THE STREAM BED AND LINED WITH COIR FIBER MATTING.
2. DIMENSIONS AND SLOPES MAY BE ADJUSTED TO FIT BY THE ENGINEER.
3. EDGE ARMOR CAN BE NATURAL STREAM BOULDERS OR EXTRACTED FROM CLASS II RIPRAP OR SHOT ROCK MATERIAL AND CAN BE CUBICAL OR RECTANGULAR IN NATURE.
4. ACCEPTABLE BOULDERS FOR THE EDGE ARMOR SHALL HAVE THE FOLLOWING APPROXIMATE DIMENSIONS: 0.9m x 0.6m x 0.3m. UNSUITABLE EDGE ARMOR MATERIAL THAT REMAINS FROM CLASS II RIP RAP OR SHOT ROCK STORES, MAY BE USED IN BACK FILL OF THE OVER BANK AREA OR DISCARDED.
5. COIR FIBER MATTING SHALL EXTEND FROM THE BOTTOM OF THE FOOTER BOULDERS AND ACROSS THE BENCHED AREA TO PREVENT WASHOUT OF SEDIMENT THROUGH BOULDER GAPS.



STA. 200+37 TO STA. 200+98 -L-REV



HIGHWAY DESIGN ENGINEER HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



Prepared in the Office of: **AECOM**
NC FIRM LICENSE No. F-0342
70 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 / (919) 854-6259(FAX)

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND

Permit Drawing
Sheet 13 of 51
Revised 12/13/10



BEGIN T.J.P. PROJECT R-2533CC
-L-REV POT Sta 200+16.400 LA=
-U- POT Sta 200+17.273 LB. (R-2533B)

BEGIN GRADE
LI- POT Sta 199+95.000 (R-2533B)

SITE 1

CLASS "II" BOULDERS
EST 4.1 MTONS
EST 22 SM COIR FIBER MATTING
SEE DETAIL SHEET 2-Y
1.5m² BASE CHANNEL CHANGE
W/CLASS "I" RIPRAP ON BANKS ONLY
EST 20 MTONS RIPRAP
EST 34.5 SM FF
EST DDE 22.5 CM
SEE DETAIL SHEET 2-Y

TOE PROTECTION
STA. 200+80 TO 202+40 -L-REV LI
SEE DETAIL #1
EST 206 MTONS CLASS 'B' RIPRAP
EST 346.1 SM FF

TOE PROTECTION W/SPRM
STA. 202+40 TO 202+60 -L-REV LI
SEE DETAIL #2
EST 40.3 SM PSRM

CHANNEL BENCH W/CLASS "I" BOULDERS
EST 20 MTONS
EST 138 SM COIR FIBER MATTING
SEE DETAIL SHEET 2-Y

CLASS "II" RIPRAP
EST 225 MTONS
EST 250 SM FF
EST DDE 377 CM

CLASS "I" RIPRAP
EST 10 MTONS
EST 18.4 SM FF

R/W REV. 1/1
1) REVISED OWNER NAME PARCEL 2 JKND 10/15/03
2) REVISED OWNER NAME PARCEL 2 K.V. 7/8/04
3) ADDED PDE TO PARCEL 1 FOR DRAINAGE REV. 05/07/09
4) REMOVED PDE & ADDED TDE TO PARCEL 1
5) REVISED TDE ON PARCEL 1 TO ELIMINATE OVERLAP OF TDE AND CORRECTED LABELS ON PDE AND TDE ON PARCEL 2. CHKD 05/05/10

MATCH LINE -LI- STA. 199+00.000 SEE SHEET 5



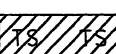
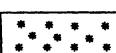
MATCH LINE -L-REV STA. 202+80 SEE SHEET 7

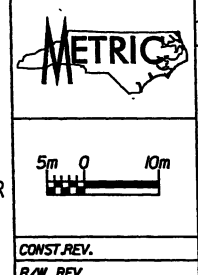
FOR CULVERT PLANS, SEE SHEETS C-1 THRU C-4

FOR -LI-/-L-REV PROFILE, SEE SHEETS 20 & 21
FOR -XOVERI- DETAILS, SEE SHEET 2-M
FOR DITCH DETAILS, SEE SHEET 2-J

NOTE: ALL DRIVEWAY RADII ARE 3.0m UNLESS OTHERWISE SHOWN.

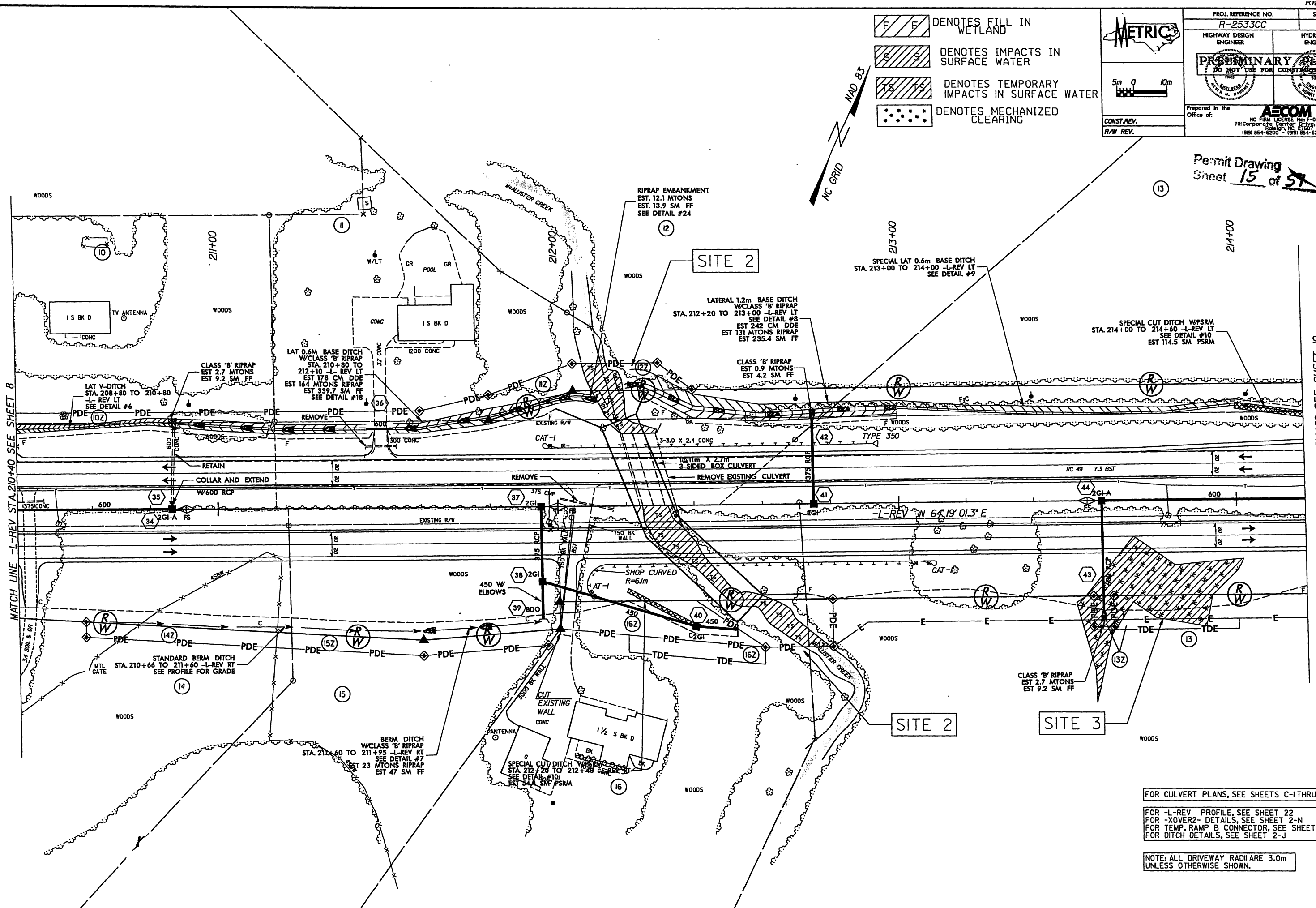
PROJ. REFERENCE NO. R-2533CC	SHEET NO. 9
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Prepared in the Office of: AECOM NC FIRM LICENSE No. F-0342 70 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 (919) 854-5259(FAX)	

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



Permit Drawing
Sheet **15** of **57**

EST. 20
ADT IN



MATCH LINE -L-REV STA. 210+40 SEE SHEET 8

MATCH LINE -L-REV STA. 214+20 SEE SHEET 10

FOR CULVERT PLANS, SEE SHEETS C-1 THRU C-

FOR -L-REV PROFILE, SEE SHEET 22
FOR -XOVER2- DETAILS, SEE SHEET 2-N
FOR TEMP. RAMP B CONNECTOR, SEE SHEET 2-R
FOR DITCH DETAILS, SEE SHEET 2-J

NOTE: ALL DRIVEWAY RADII ARE 3.0m UNLESS OTHERWISE SHOWN.

DATE: 08/25/08
TIME: 08:00 AM

METRICS

PROVISIONAL

DATE: 12/13/10

SCALE: 1" = 40'

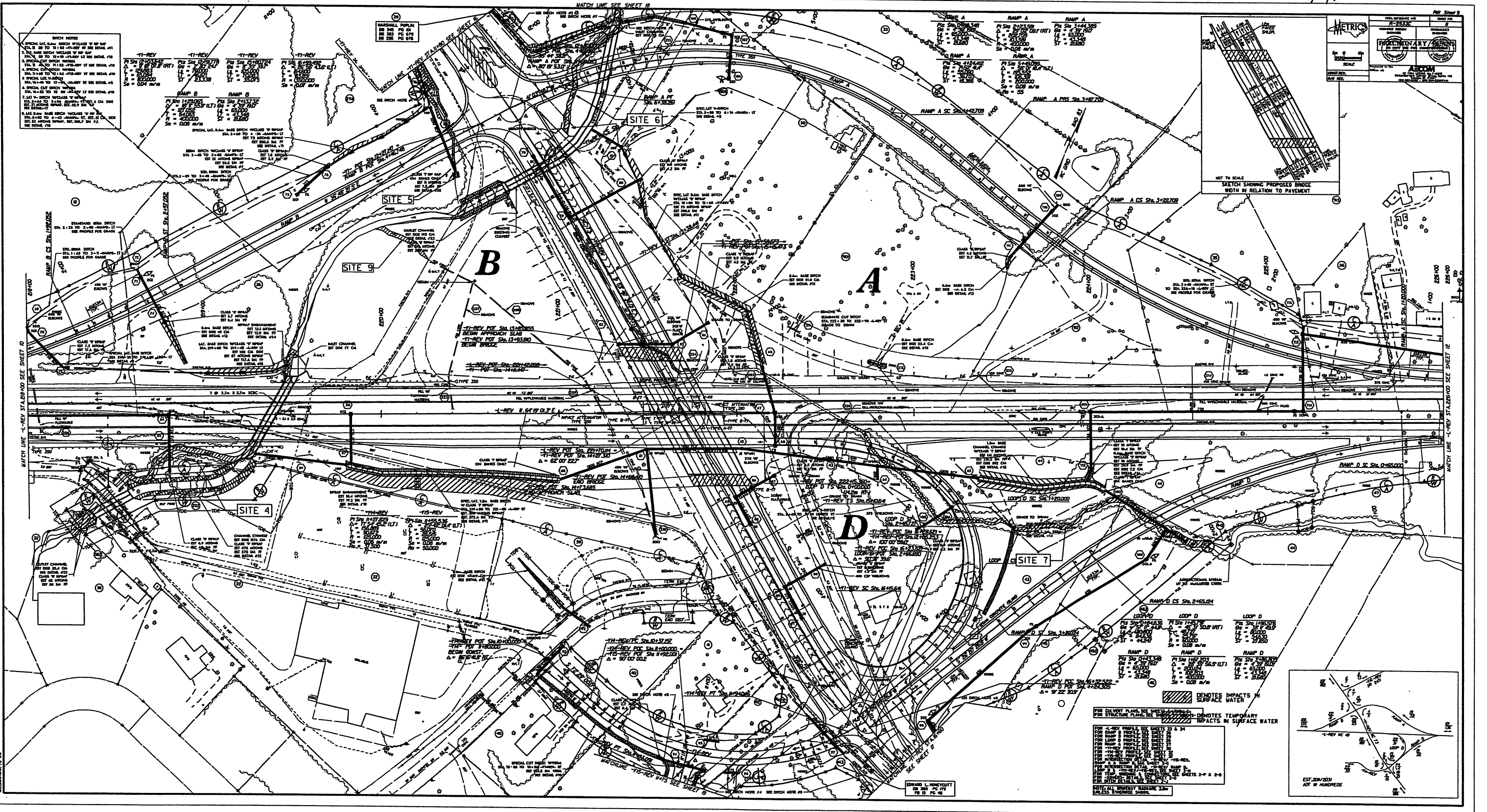
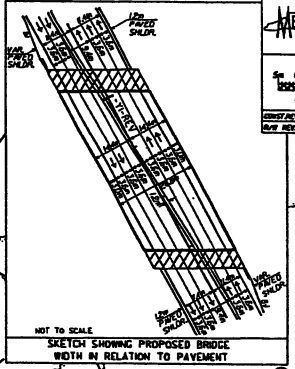
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LOCATION: [Illegible]

DESIGNER: [Illegible]

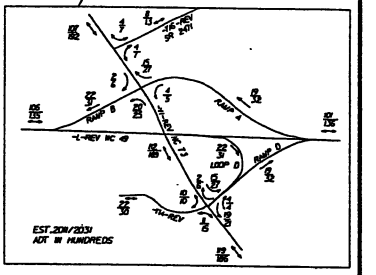
CHECKER: [Illegible]

APPROVED: [Illegible]



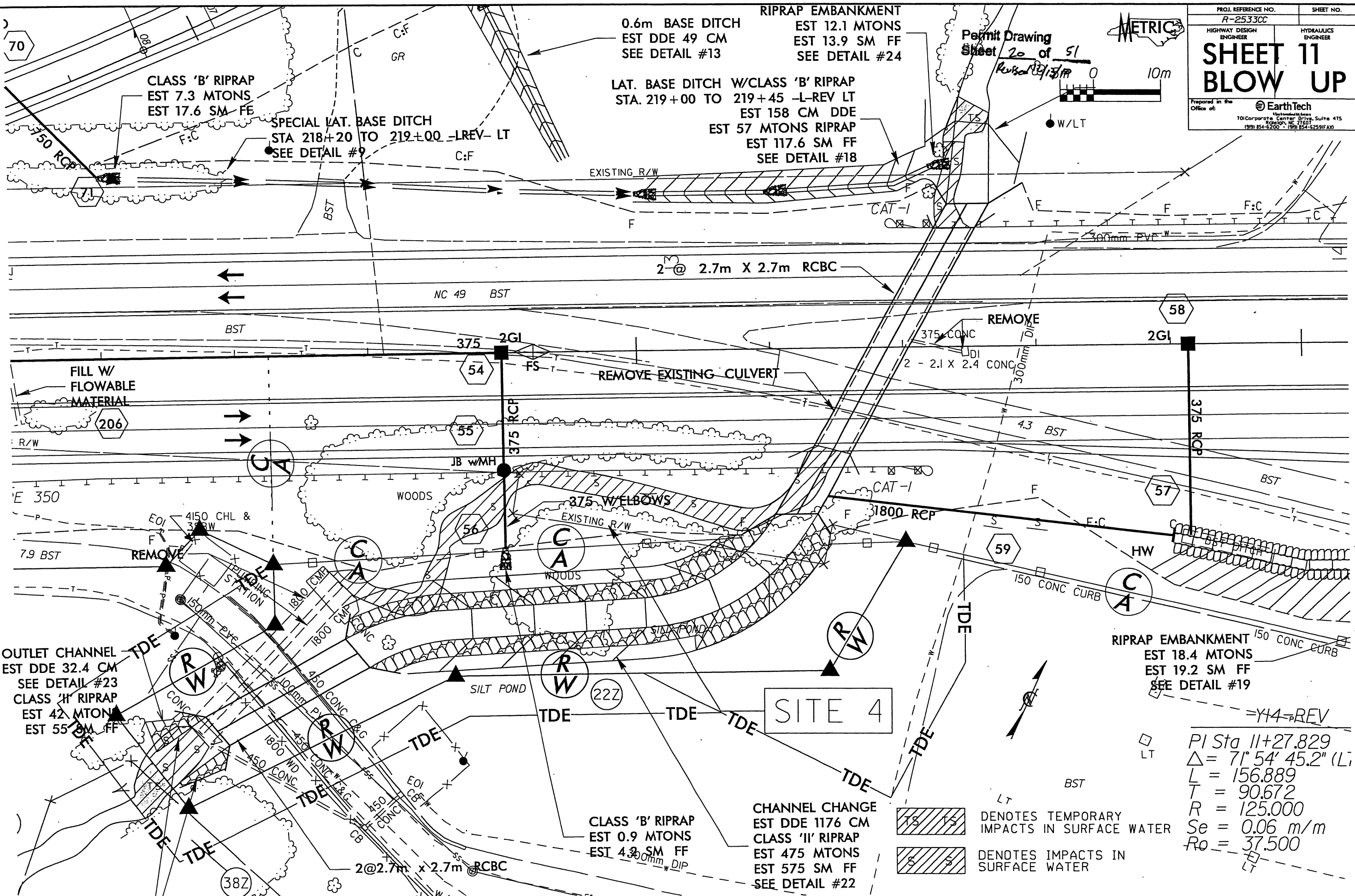
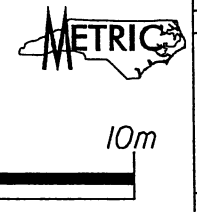
FOR ELEVATION PLANS, SEE SHEETS 22 & 24

ITEM	DATE	DESCRIPTION
1	12/13/10	ISSUED FOR PERMIT
2	12/13/10	REVISED PER PERMIT COMMENTS
3	12/13/10	REVISED PER PERMIT COMMENTS
4	12/13/10	REVISED PER PERMIT COMMENTS
5	12/13/10	REVISED PER PERMIT COMMENTS
6	12/13/10	REVISED PER PERMIT COMMENTS
7	12/13/10	REVISED PER PERMIT COMMENTS
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74	12/13/10	REVISED PER PERMIT COMMENTS
75	12/13/10	REVISED PER PERMIT COMMENTS
76	12/13/10	REVISED PER PERMIT COMMENTS
77	12/13/10	REVISED PER PERMIT COMMENTS
78	12/13/10	REVISED PER PERMIT COMMENTS
79	12/13/10	REVISED PER PERMIT COMMENTS
80	12/13/10	REVISED PER PERMIT COMMENTS
81	12/13/10	REVISED PER PERMIT COMMENTS
82	12/13/10	REVISED PER PERMIT COMMENTS
83	12/13/10	REVISED PER PERMIT COMMENTS
84	12/13/10	REVISED PER PERMIT COMMENTS
85	12/13/10	REVISED PER PERMIT COMMENTS
86	12/13/10	REVISED PER PERMIT COMMENTS
87	12/13/10	REVISED PER PERMIT COMMENTS
88	12/13/10	REVISED PER PERMIT COMMENTS
89	12/13/10	REVISED PER PERMIT COMMENTS
90	12/13/10	REVISED PER PERMIT COMMENTS
91	12/13/10	REVISED PER PERMIT COMMENTS
92	12/13/10	REVISED PER PERMIT COMMENTS
93	12/13/10	REVISED PER PERMIT COMMENTS
94	12/13/10	REVISED PER PERMIT COMMENTS
95	12/13/10	REVISED PER PERMIT COMMENTS
96	12/13/10	REVISED PER PERMIT COMMENTS
97	12/13/10	REVISED PER PERMIT COMMENTS
98	12/13/10	REVISED PER PERMIT COMMENTS
99	12/13/10	REVISED PER PERMIT COMMENTS
100	12/13/10	REVISED PER PERMIT COMMENTS



70

PROJ. REFERENCE NO. R-2533CC	SHEET NO.
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SHEET 11 BLOW UP	
Prepared in the Office of: EarthTech 101 Corporate Center Drive, Suite 415 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6299 FAX	



RIPRAP EMBANKMENT
EST 12.1 MTONS
EST 13.9 SM FF
SEE DETAIL #24

CLASS 'B' RIPRAP
EST 7.3 MTONS
EST 17.6 SM FF

SPECIAL LAT. BASE DITCH
STA 218+20 TO 219+00 -LREV- LT
SEE DETAIL #9

LAT. BASE DITCH W/CLASS 'B' RIPRAP
STA. 219+00 TO 219+45 -L-REV LT
EST 158 CM DDE
EST 57 MTONS RIPRAP
EST 117.6 SM FF
SEE DETAIL #18

0.6m BASE DITCH
EST DDE 49 CM
SEE DETAIL #13

2 @ 2.7m X 2.7m RCBC

NC 49 BST

REMOVE

REMOVE EXISTING CULVERT

FILL W/
FLOWABLE
MATERIAL

OUTLET CHANNEL
EST DDE 32.4 CM
SEE DETAIL #23
CLASS 'II' RIPRAP
EST 42 MTONS
EST 55 SM FF

RIPRAP EMBANKMENT
EST 18.4 MTONS
EST 19.2 SM FF
SEE DETAIL #19

CLASS 'B' RIPRAP
EST 0.9 MTONS
EST 4.2 SM FF

CHANNEL CHANGE
EST DDE 1176 CM
CLASS 'II' RIPRAP
EST 475 MTONS
EST 575 SM FF
SEE DETAIL #22

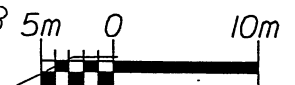
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER

PI Sta 11+27.829
Δ = 71° 54' 45.2" (L)
L = 156.889
T = 90.672
R = 125.000
Se = 0.06 m/m
Ro = 37.500

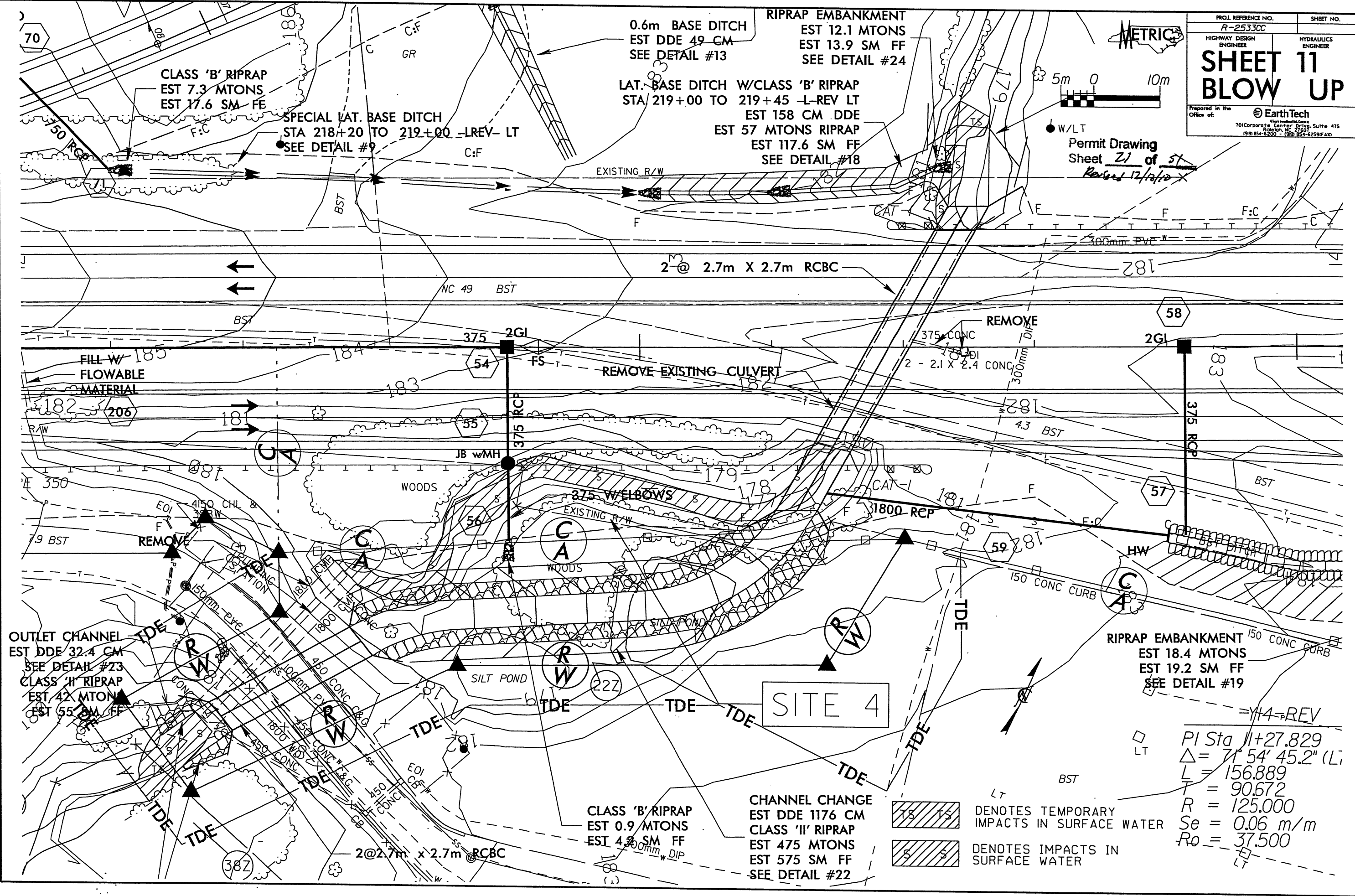
DATE: 08/05/03
USER: MONTGOMERY
PROJECT: 2533CC

70

PROJ. REFERENCE NO. R-2533CC	SHEET NO.
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SHEET 11 BLOW UP	
Prepared in the Office of: EarthTech 101 Corporate Center Drive, Suite 415 Raleigh, NC 27607 (919) 854-5200 • (919) 854-6250 (FAX)	



W/LT
Permit Drawing
Sheet 21 of 51
Revised 12/13/10



CLASS 'B' RIPRAP
EST 7.3 MTONS
EST 17.6 SM FF

SPECIAL LAT. BASE DITCH
STA 218+20 TO 219+00 -LREV- LT
SEE DETAIL #9

0.6m BASE DITCH
EST DDE 49 CM
SEE DETAIL #13

RIPRAP EMBANKMENT
EST 12.1 MTONS
EST 13.9 SM FF
SEE DETAIL #24

LAT. BASE DITCH W/CLASS 'B' RIPRAP
STA/ 219+00 TO 219+45 -L-REV LT
EST 158 CM DDE
EST 57 MTONS RIPRAP
EST 117.6 SM FF
SEE DETAIL #18

2 @ 2.7m X 2.7m RCBC

FILL W/
FLOWABLE
MATERIAL

REMOVE EXISTING CULVERT

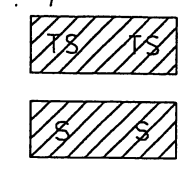
REMOVE

OUTLET CHANNEL
EST DDE 32.4 CM
SEE DETAIL #23
CLASS 'H' RIPRAP
EST 42 MTONS
EST 55.8 SM FF

RIPRAP EMBANKMENT
EST 18.4 MTONS
EST 19.2 SM FF
SEE DETAIL #19

CLASS 'B' RIPRAP
EST 0.9 MTONS
EST 4.2 SM FF

CHANNEL CHANGE
EST DDE 1176 CM
CLASS 'II' RIPRAP
EST 475 MTONS
EST 575 SM FF
SEE DETAIL #22



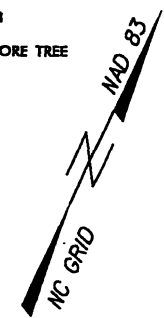
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN
SURFACE WATER

PI Sta 11+27.829
Δ = 71° 54' 45.2" (L)
L = 156.889
T = 90.672
R = 125.000
Se = 0.06 m/m
Ro = 37.500

DATE PLOTTED: 12/13/10

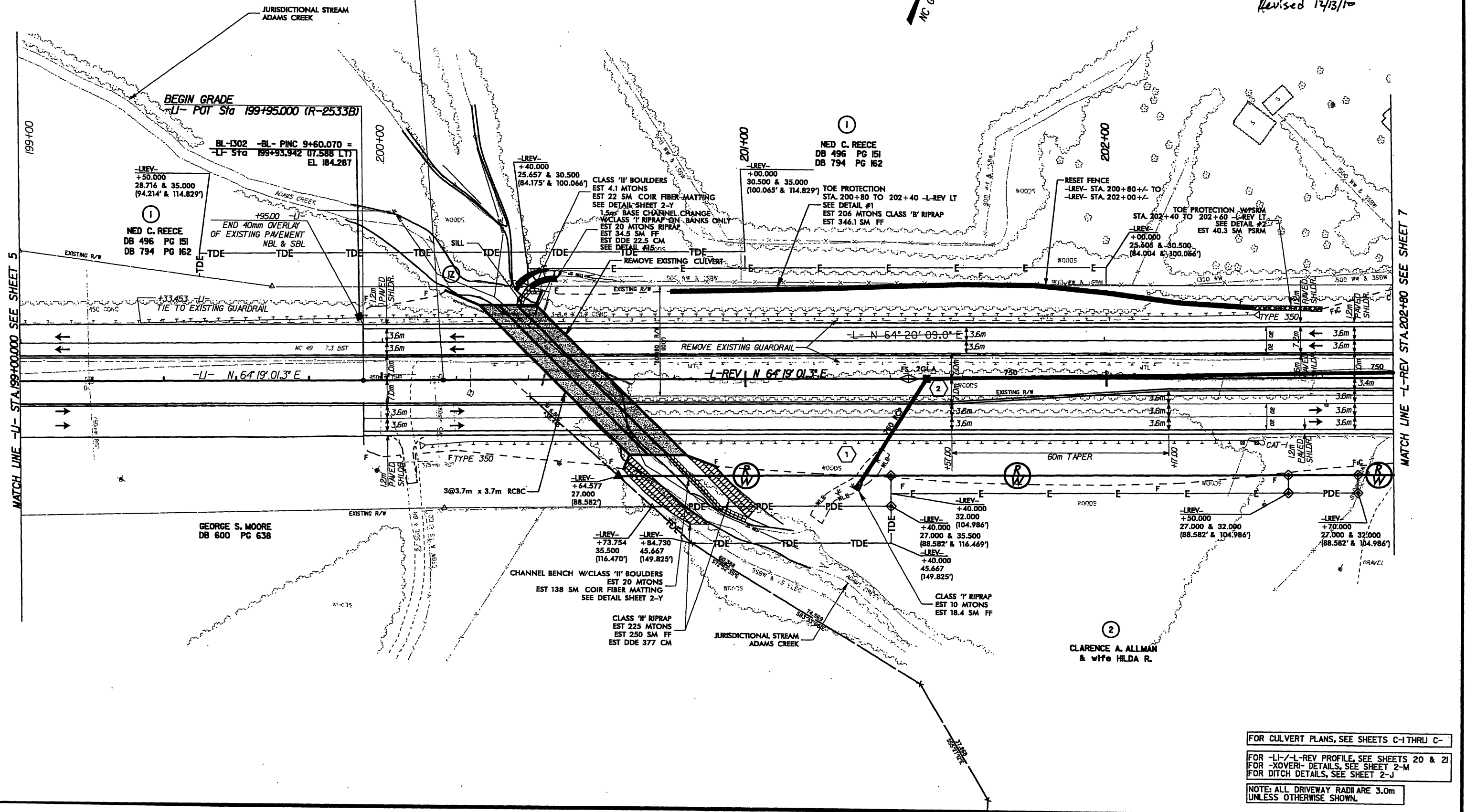
BM 113 EL=182.406, N 183847 E 475753
 LI STA 199+91.40 LT
 RR SPIKE IN BASE OF 375MM TWIN SYCAMORE TREE



PROJ. REFERENCE NO. R-2533CC		SHEET NO. 6	
HIGHWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
Prepared in the Office of:		AECOM	
CONST. REV.		NC FIRM LICENSE No. F-0342 701 Corporate Center Drive, Suite 415 Raleigh, NC 27601 (919) 854-6200 • (919) 854-6259(FAX)	
R/W REV.			

Revised 12/13/10

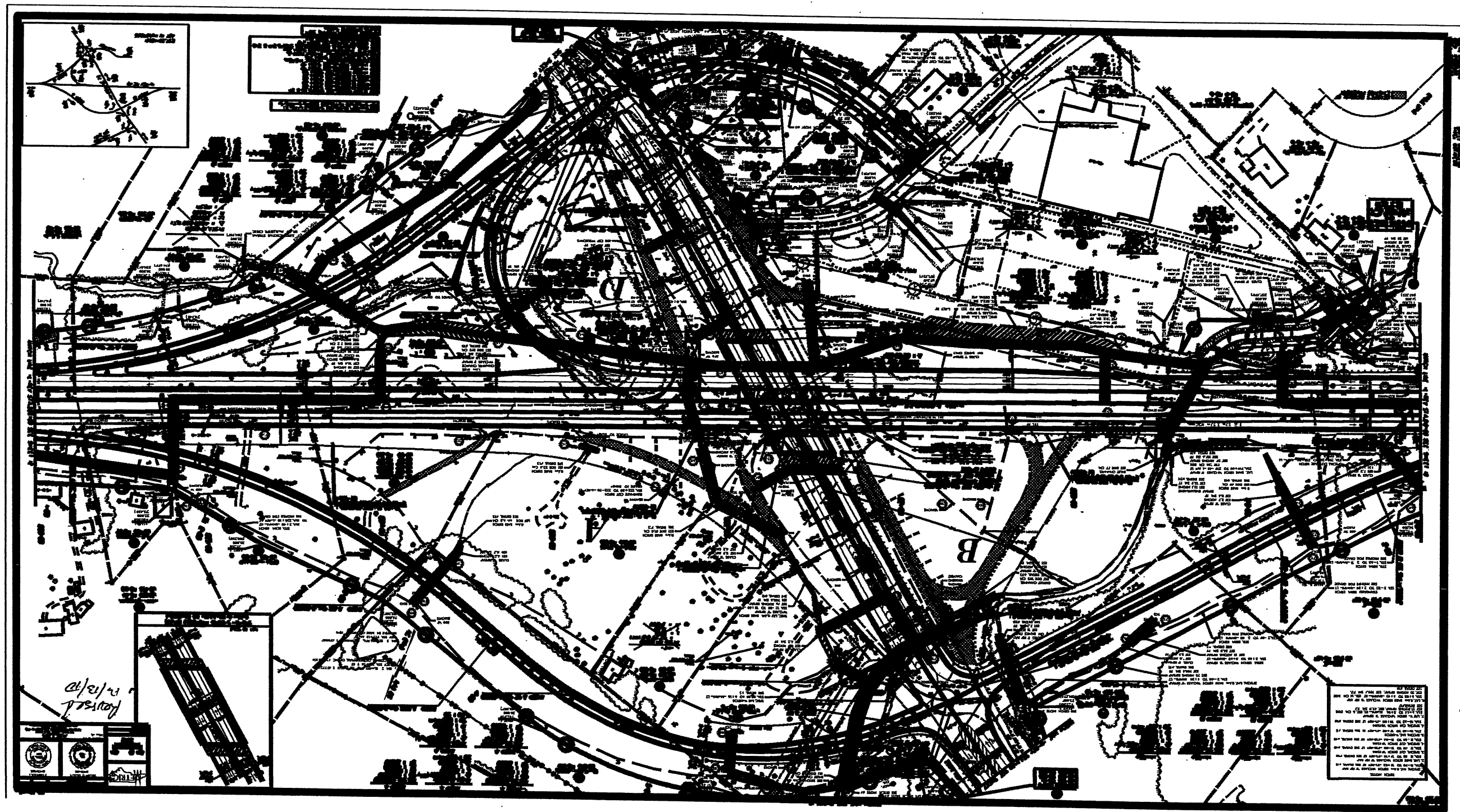
BEGIN T.I.P. PROJECT R-2533CC
 -L-REV POT Sta 200+16.400 LA=
 -L- POT Sta 200+17.273 LB. (R-2533B)



MATCH LINE -L- STA. 199+00.000 SEE SHEET 5

MATCH LINE -L-REV STA. 202+80 SEE SHEET 7

FOR CULVERT PLANS, SEE SHEETS C-1 THRU C-
 FOR -L-/-L-REV PROFILE, SEE SHEETS 20 & 21
 FOR -XOVER- DETAILS, SEE SHEET 2-M
 FOR DITCH DETAILS, SEE SHEET 2-J
 NOTE: ALL DRIVEWAY RADII ARE 3.0m UNLESS OTHERWISE SHOWN.

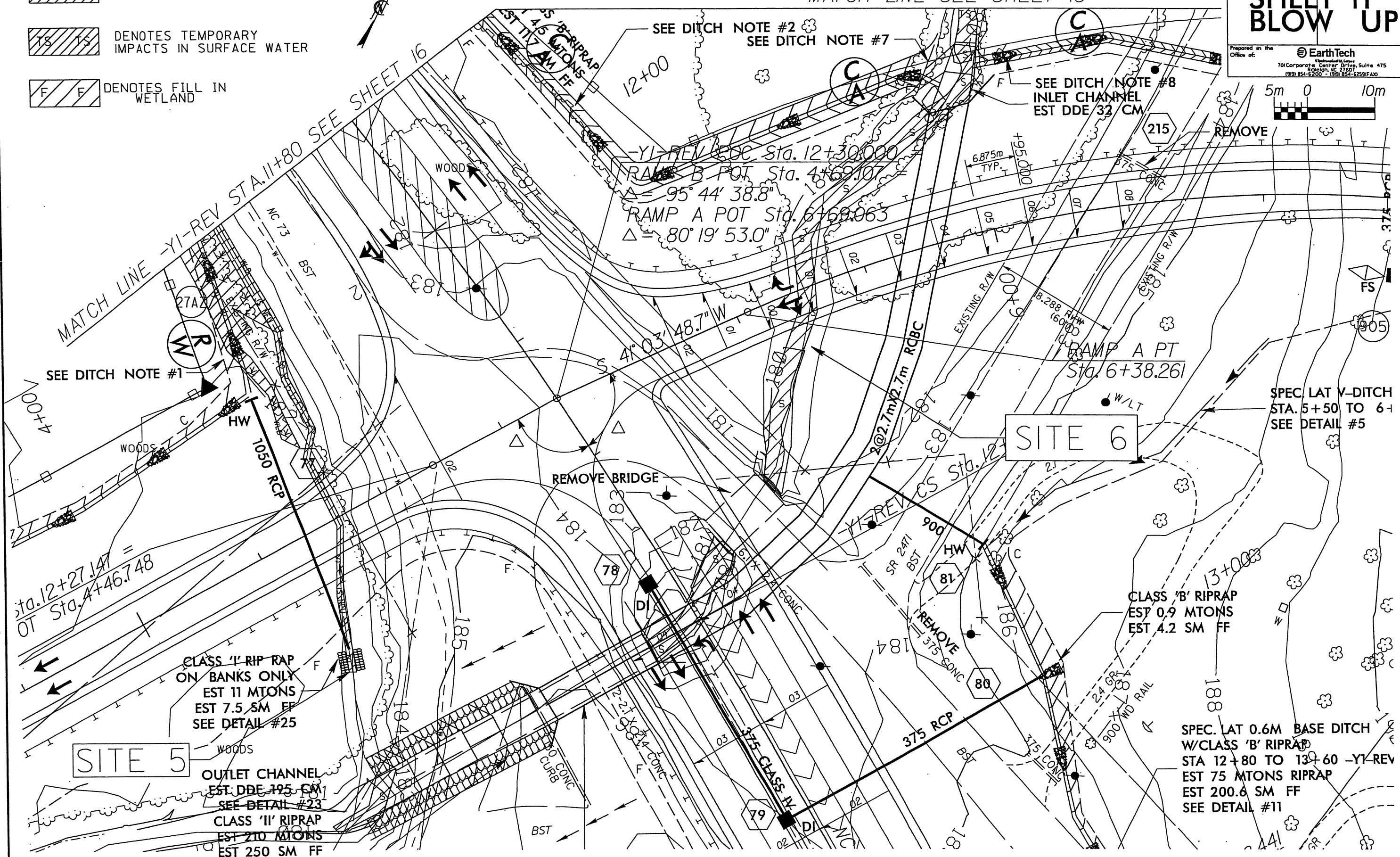
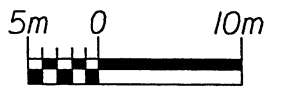




PROJ. REFERENCE NO. R-2533CC	SHEET NO.
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SHEET 11	
BLOW UP	
Prepared in the Office of: EarthTech <small>101 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259 FAX</small>	

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND

MATCH LINE SEE SHEET 18

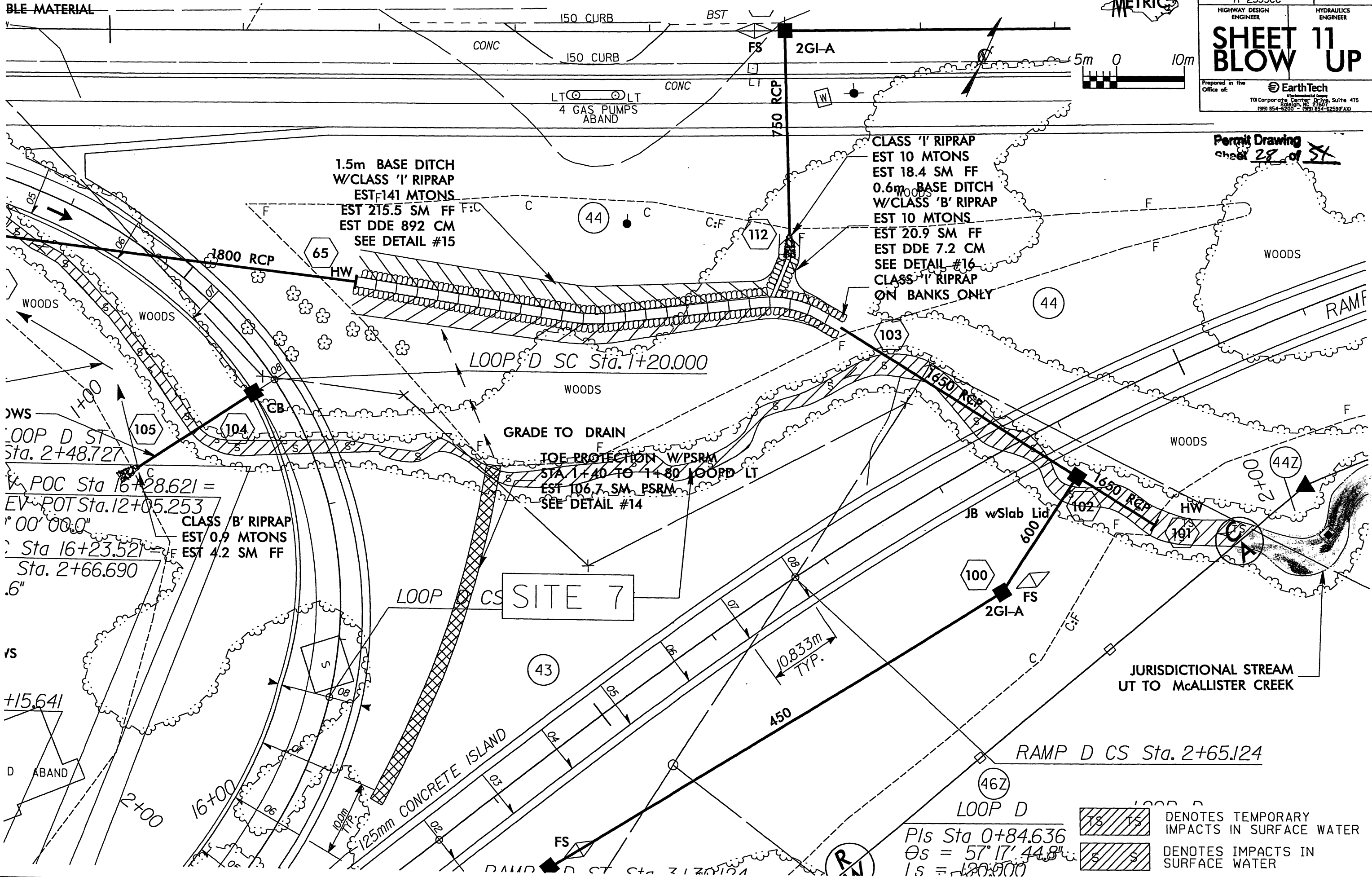
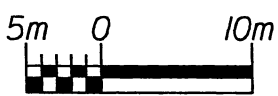


USER: BLUESKY
 PALE: 01/11/11
 DATE: 01/11/11

BLE MATERIAL



PROJ. REFERENCE NO. R-2533CC	SHEET NO.
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SHEET 11 BLOW UP	
Prepared in the Office of: EarthTech 701 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 - (919) 854-6258 FAX	



Permit Drawing
Sheet 28 of 54

1.5m BASE DITCH
W/CLASS 'I' RIPRAP
EST 141 MTONS
EST 215.5 SM FF
EST DDE 892 CM
SEE DETAIL #15

CLASS 'I' RIPRAP
EST 10 MTONS
EST 18.4 SM FF
0.6m BASE DITCH
W/CLASS 'B' RIPRAP
EST 10 MTONS
EST 20.9 SM FF
EST DDE 7.2 CM
SEE DETAIL #16
CLASS 'I' RIPRAP
ON BANKS ONLY

LOOP D SC Sta. 1+20.000

GRADE TO DRAIN
TOE PROTECTION W/PSRM
STA 1+40 TO 1+80 LOOP D LT
EST 106.7 SM PSRM
SEE DETAIL #14

SITE 7

LOOP CS

RAMP D CS Sta. 2+65.124

LOOP D

Pls Sta 0+84.636
θs = 57° 17' 44.8"
Is = 120.900

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

POC Sta 16+28.621 =
EV POT Sta. 12+05.253
1° 00' 00.0"
Sta 16+23.521
Sta. 2+66.690
6"

CLASS 'B' RIPRAP
EST 0.9 MTONS
EST 4.2 SM FF

+15.641

D ABAND

VS

DWS

LOOP D ST
Sta. 2+48.727

LOOP D ST

POC Sta 16+28.621 =

EV POT Sta. 12+05.253

1° 00' 00.0"

Sta 16+23.521

Sta. 2+66.690

6"

VS

+15.641

D ABAND

D ABAND

D ABAND

D ABAND

D ABAND

D ABAND

D ABAND

16+00

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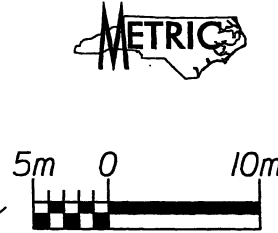
16+00

16+00

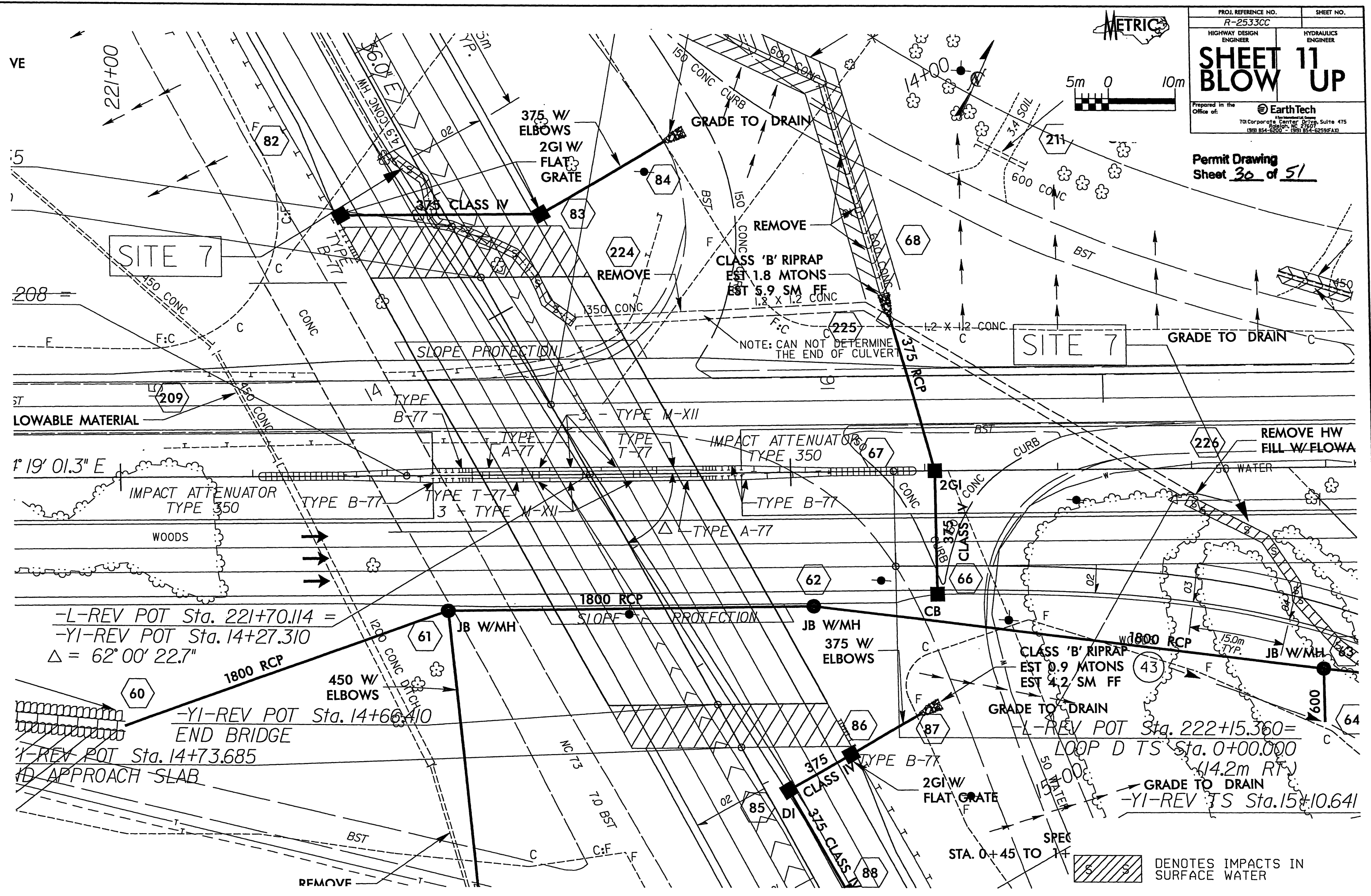
16+00

16+00

16+00



Permit Drawing
Sheet 30 of 51



-L-REV POT Sta. 221+70.114 =
-YI-REV POT Sta. 14+27.310
 $\Delta = 62^\circ 00' 22.7''$

-YI-REV POT Sta. 14+66.410
END BRIDGE

X-REV POT Sta. 14+73.685
D APPROACH SLAB

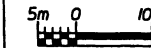
CLASS 'B' RIPRAP
EST 0.9 MTONS
EST 4.2 SM FF
L-REV POT Sta. 222+15.360 =
LOOP D TS Sta. 0+00.000
(14.2m RT)
-YI-REV TS Sta. 15+10.641

DENOTES IMPACTS IN SURFACE WATER

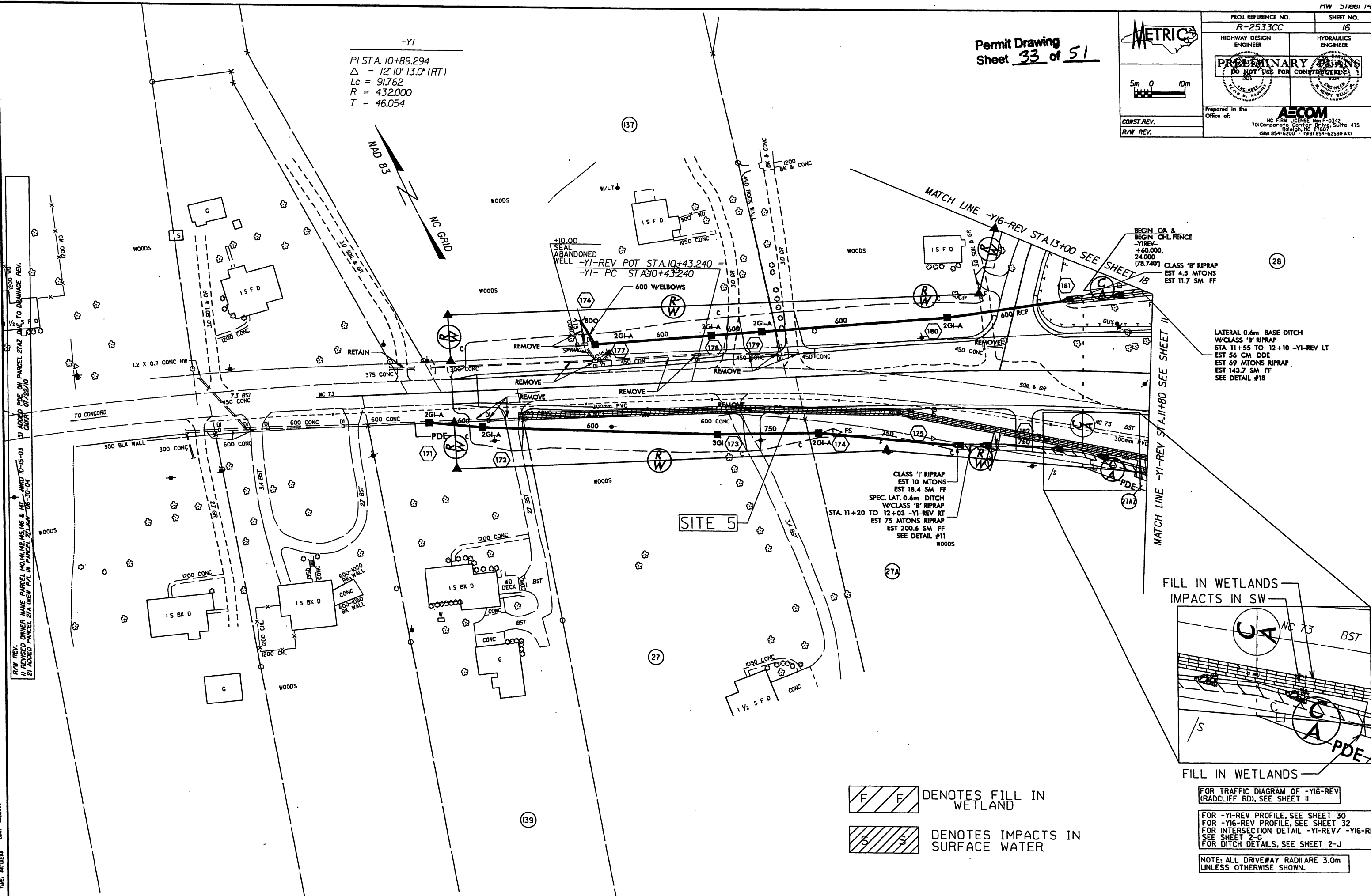
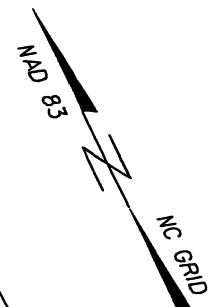
Permit Drawing
Sheet 33 of 51



PROJ. REFERENCE NO. R-2533CC	SHEET NO. 16
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
AECOM NC FIRM LICENSE No. F-0342 701 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 (919) 854-6259(FAX)	
Prepared in the Office of:	
CONST. REV.	R/W REV.



-Y1-
 PI STA. 10+89.294
 $\Delta = 12' 10'' 13.0'' (RT)$
 $L_c = 91.762$
 $R = 432.000$
 $T = 46.054$

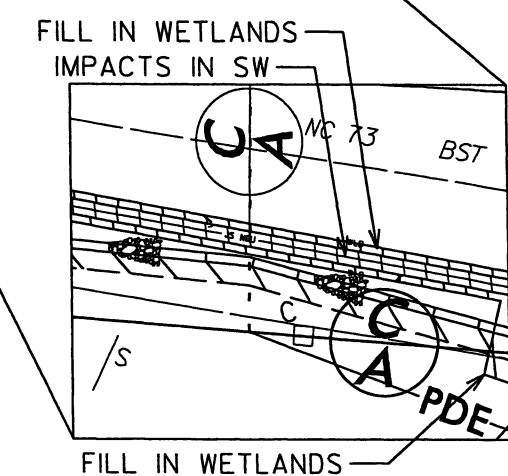


R/W REV.
 1) REVISED OWNER NAME PARCEL 140, 141, 142, 143 & 144 AND 10-15-03
 2) ADDED PARCEL 27A (NEW P/L IN PARCEL 27) 06-30-04

BEGIN CA & BEGIN CHL FENCE
 -Y1REV-
 +60,000,
 24,000
 (78,740)
 CLASS 'B' RIPRAP
 EST 4.5 MTONS
 EST 11.7 SM FF

LATERAL 0.6m BASE DITCH
 W/CLASS 'B' RIPRAP
 STA 11+55 TO 12+10 -Y1-REV LT
 EST 56 CM DDE
 EST 69 MTONS RIPRAP
 EST 143.7 SM FF
 SEE DETAIL #18

CLASS 'I' RIPRAP
 EST 10 MTONS
 EST 18.4 SM FF
 SPEC. LAT. 0.6m DITCH
 W/CLASS 'B' RIPRAP
 STA. 11+20 TO 12+03 -Y1-REV RT
 EST 75 MTONS RIPRAP
 EST 200.6 SM FF
 SEE DETAIL #11



DENOTES FILL IN WETLAND

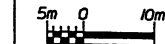
DENOTES IMPACTS IN SURFACE WATER

FOR TRAFFIC DIAGRAM OF -Y16-REV (RADCLIFF RD), SEE SHEET II

FOR -Y1-REV PROFILE, SEE SHEET 30
 FOR -Y16-REV PROFILE, SEE SHEET 32
 FOR INTERSECTION DETAIL -Y1-REV/ -Y16-REV, SEE SHEET 2-G
 FOR DITCH DETAILS, SEE SHEET 2-J

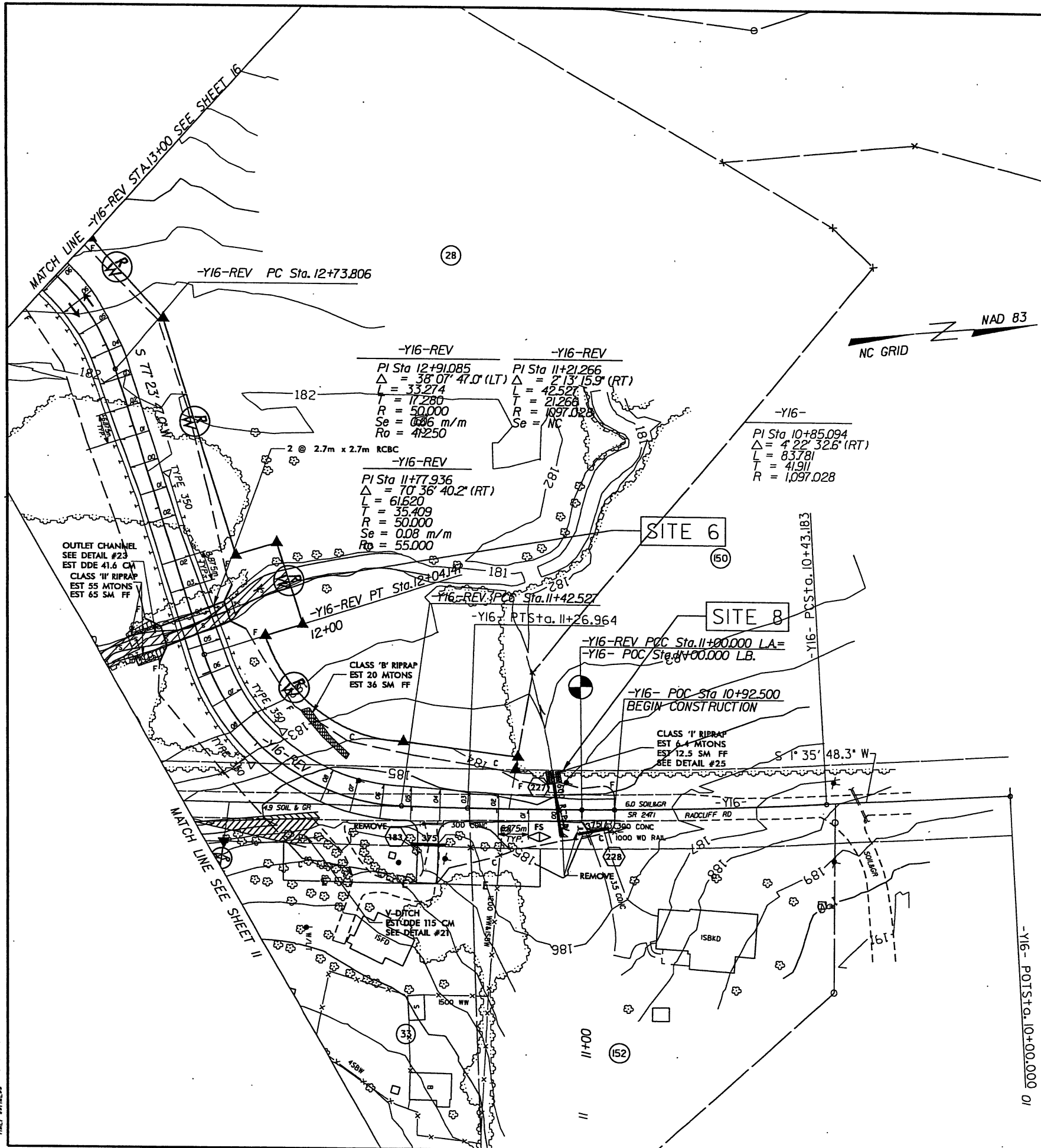
NOTE: ALL DRIVEWAY RADII ARE 3.0m UNLESS OTHERWISE SHOWN.

ONCE PRINTED
 THIS SHEET IS
 USER'S PROPERTY



Permit Drawing
Sheet 36 of 51

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

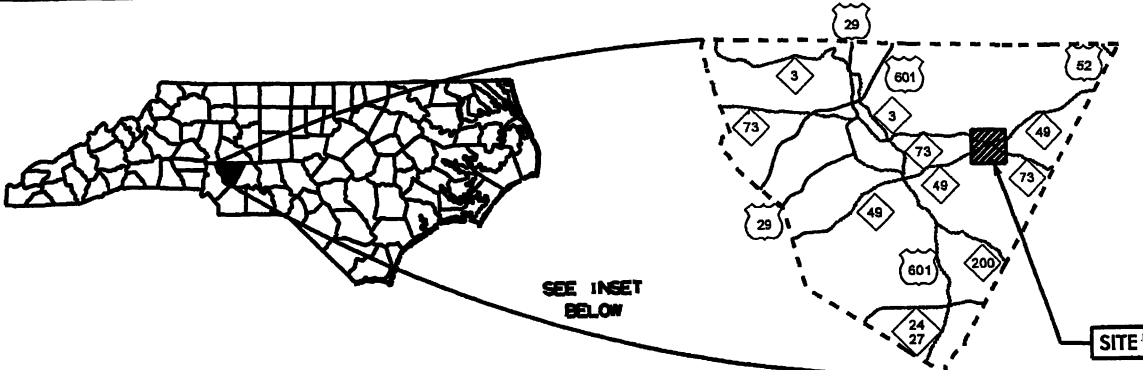


FOR CULVERT PLANS, SEE SHEETS C-I THRU C-

FOR -Y16-REV PROFILE, SEE SHEET 32
FOR DITCH DETAILS, SEE SHEET 2-J

NOTE: ALL DRIVEWAY RADII ARE 3.0m UNLESS OTHERWISE SHOWN.

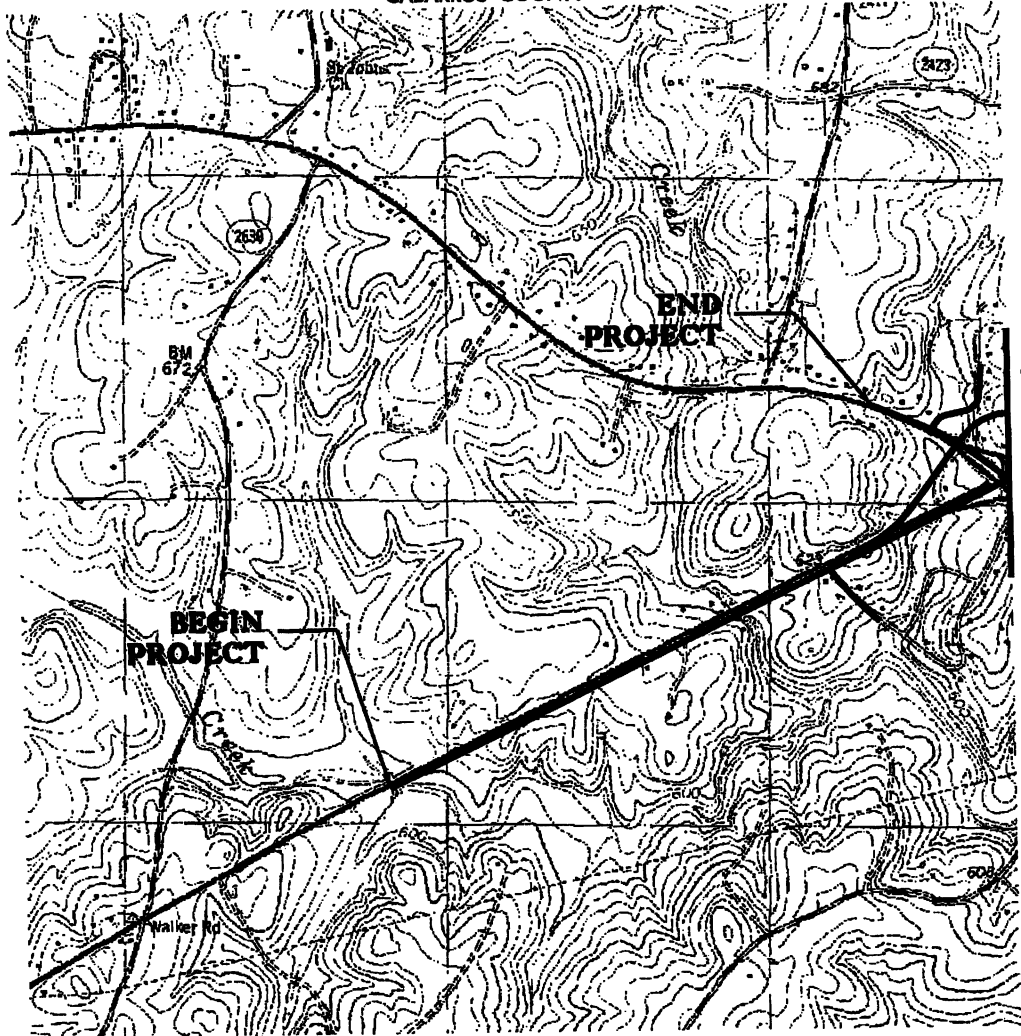
DATE: 08/11/08 USER: R0858904



SEE INSET
BELOW

SITE

CABARRUS COUNTY



SEE SHEET 2 OF 2

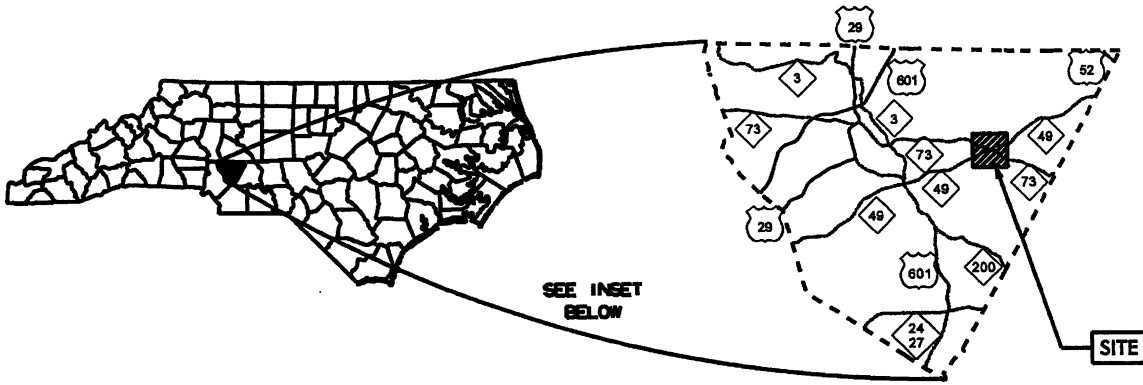
WETLAND/STREAM
IMPACTS
(1 OF 2)

**N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
CABARRUS COUNTY**

PROJECT: 34448.1.1 (R-2533CC)
NC 49 FROM EAST OF SR 2630
TO EAST OF SR 2421

SHEET ___ OF ___ 8-24-09

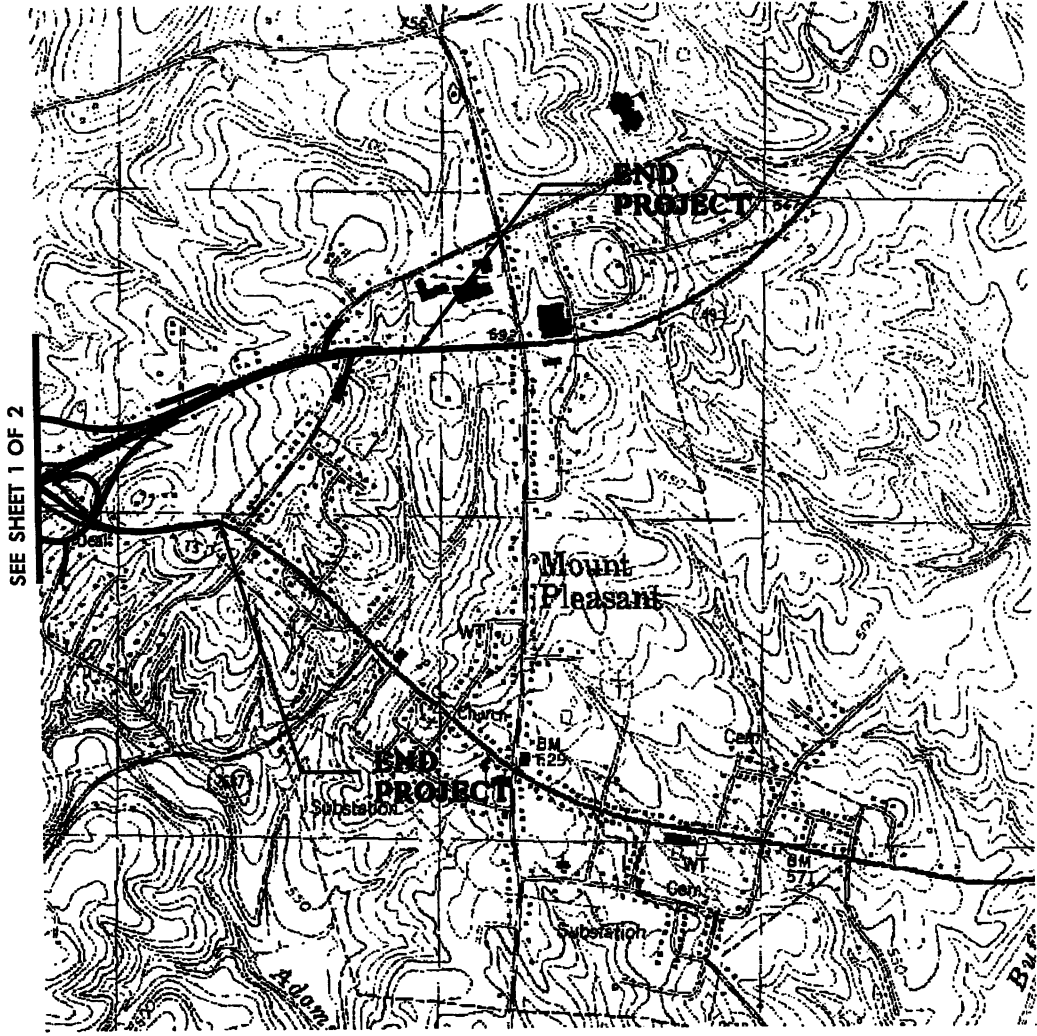
Permit Drawing
Sheet 1 of 4



SEE INSET
BELOW

SITE

CABARRUS COUNTY



SEE SHEET 1 OF 2

WETLAND/STREAM
IMPACTS
(2 OF 2)

Permit Drawing
Sheet 2 of 40

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
CABARRUS COUNTY

PROJECT:34448.1.1 (R-2533CC)
NC 49 FROM EAST OF SR 2630
TO EAST OF SR 2421

SHEET ___ OF ___

8-24-09

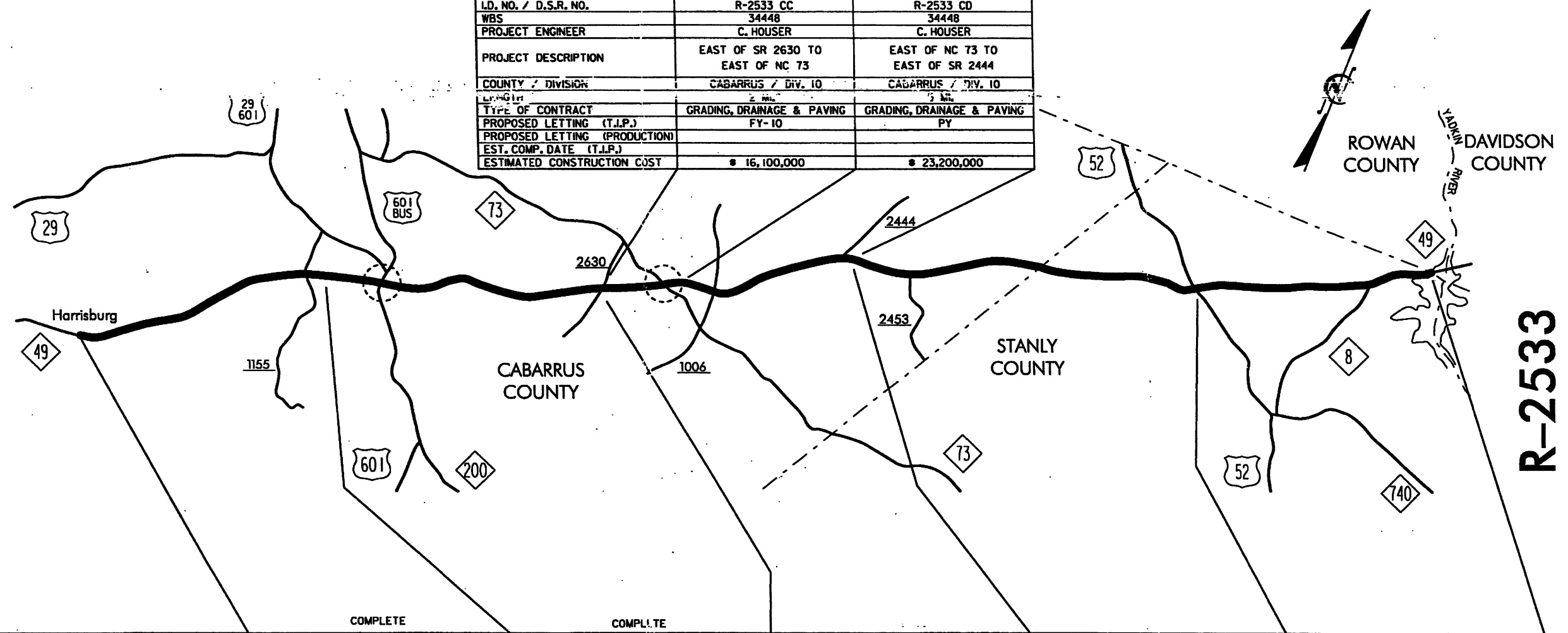
R-2533

CABARRUS & STANLY COUNTIES
NC 49

PROJECT
BREAKDOWN
MAP

PROJECT SCHEDULES AND COSTS ARE ACCURATE AS OF DATE SHOWN

I.D. NO. / D.S.R. NO.	R-2533 CC	R-2533 CD
WBS	34448	34448
PROJECT ENGINEER	C. HOUSER	C. HOUSER
PROJECT DESCRIPTION	EAST OF SR 2630 TO EAST OF NC 73	EAST OF NC 73 TO EAST OF SR 2444
COUNTY / DIVISION	CABARRUS / DIV. 10	CABARRUS / DIV. 10
TYPE OF CONTRACT	GRADING, DRAINAGE & PAVING	GRADING, DRAINAGE & PAVING
PROPOSED LETTING (T.I.P.)	FY-10	PY
PROPOSED LETTING (PRODUCTION)		
EST. COMP. DATE (T.I.P.)		
ESTIMATED CONSTRUCTION COST	\$ 16,100,000	\$ 23,200,000



I.D. NO. / D.S.R. NO.	COMPLETE R-2533 A	COMPLETE R-2533 B	R-2533 CA	R-2533 CB	R-2533 D
WBS	34448	34448	34448	34448	34448
PROJECT ENGINEER	LASSITER	T. HOUSER	C. HOUSER	T. HOUSER	T. HOUSER
PROJECT DESCRIPTION	HARRISBURG TO EAST OF SR 1155	EAST OF SR 1155 TO EAST OF SR 2630	EAST OF SR 2630 TO EAST OF SR 2444	EAST OF SR 2444 TO US 52	US 52 TO YADKIN RIVER
COUNTY / DIVISION	CABARRUS / DIV. 10	CABARRUS / DIV. 10	CABARRUS / DIV. 10	STANLY / DIV. 10	STANLY / DIV. 10
LENGTH	5.57 ML	6.15 ML	7.29 ML	6.16 ML	5.2 ML
TYPE OF CONTRACT	GRADING, DRAINAGE & PAVING	GRADING, DRAINAGE & PAVING	ROW ONLY	GRADING, DRAINAGE & PAVING	GRADING, DRAINAGE & PAVING
REMARKS					
BEGIN R/W ACQUISITION (T.I.P.)	2-97	11-99	10-02	PY	PY
BEGIN R/W ACQUISITION (PRODUCTION)					
PROPOSED LETTING (T.I.P.)	12-01	6-01		PY	PY
PROPOSED LETTING (PRODUCTION)					
EST. COMP. DATE (T.I.P.)	9-06	9-06			
ESTIMATED R/W COST	\$ 5,850,000	\$ 7,600,000	\$ 7,800,000	\$ 5,500,000	\$ 5,500,000
ESTIMATED CONSTRUCTION COST	\$ 26,800,000	\$ 25,400,000		\$ 34,600,000	\$ 24,700,000

R-2533

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	NED C. REESE	1103 ROGERS LK RD KANNAPLOIS, NC 28081
2	CLARENCE A. & HILDA R. ALLMAN	ADDRESSES
11	STEVEN B. COCHRANE	6851 HWY 49 MT. PLEASANT, NC 28124
12	ECB, LLC	ADDRESSES
16	LOUIS M. HELMS, JR	6910 HWY 49 NORTH MT. PLEASANT, NC 28124
13	JOHN RAY NOBLES, JR	577 COVINGTON MILL POND RD BENNETSVILLE, NC 29512
22	H. KENNETH WILLIS & DIANE M. WILLIS J.O. WILLIS & LLAGE HOYLE WILLIS	751 BRAFFORD DR CONCORD, NC 28025
26	GATHA G. AUSTIN	P.O. BOX 307 LOCUST, NC 28097
28	MARSHALL POPLIN	P.O. BOX 818 MT. PLEASANT, NC 28124
43	WILLIAM F. PULLIUM	116 11TH AVE NEW LONDON, NC 28127

WETLAND/ STREAM
IMPACTS

Permit Drawing
Sheet 4 of 40

NCDOT

DIVISION OF HIGHWAYS
CABARRUS COUNTY

PROJECT: 34448.1.1 (R-2533CC)
NC 49 FROM EAST OF SR 2630
TO EAST OF SR 2421

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
44	FRANCES B. MEDLIN	43 UNION ST SOUTH CONCORD, NC 28025
46	PATRICIA P. HARRINGTON	3852 LAKE AIRE DR NASHVILLE, TN 37217

WETLAND/ STREAM
IMPACTS

Permit Drawing
Sheet 5 of 40

NCDOT

**DIVISION OF HIGHWAYS
CABARRUS COUNTY**

PROJECT: 34448.1.1 (R-2533CC)
NC 49 FROM EAST OF SR 2630
TO EAST OF SR 2421

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 (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)		
1 *	200+17/201+21-L-REV	3@3.7 x 3.7 RCBC Bank Stabilization	0.020						0.08	0.07	144	125		
2	212+13/212+79-L-REV	1@11.0 x 2.7 BOTTOMLESS RCBC Bank Stabilization							0.01	0.12	46	184		
3 *	213+52/214+02-L-REV	Roadway Fill	0.200								20			
4	218+26/219+34-L-REV	2@2.7 x 2.7 RCBC							0.08	0.01	315	62		
	Shopping Center Access	2@2.7 x 2.7 RCBC									26			
5	4+23/4+31-RPB-REV	Bank Stabilization 1050mm RCP							<.01		52			
6	11+87/12+70-Y1-REV	Bank Stabilization 2@2.7 x 2.7 RCBC							0.07	0.04	338	144		
	12+11.6-Y16-REV	2@2.7 x 2.7 RCBC									10			
7	219+45/219+59-L-REV	Bank Stabilization 1 @ 1650mm RCP							0.13	0.01	902	43		
		1 @ 1800mm RCP									118			
8	220+00/220+28-L-REV/LT	450mm RCP							0.02		20			
	11+06-Y16REV-RT	600 RCP							<.01					
TOTALS:			0.22						0.40	0.25	2129	558		

ENGLISH IMPACTS

* WETLAND CONSIDERED TOTAL TAKE.

Permit Drawing
Sheet 6 of 12

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

CABARRUS COUNTY
WBS - 34448.1.1 (R-2533CC)

SHEET

3/10/2010

Metric Table

WETLAND PERMIT IMPACT SUMMARY													
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS						
			Permanent Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation in Wetlands (ha)	Mechanized Clearing in Wetlands (ha)	Hand Clearing in Wetlands (ha)	Permanent SW impacts (ha)	Temp. SW impacts (ha)	Existing Channel Impacts Permanent (m)	Existing Channel Impacts Temp. (m)	Natural Stream Design (m)	
1 *	200+17/201+21-L-REV	3@3.7 x 3.7 RCBC Bank Stabilization	0.010						0.033	0.028	44	38	
2	212+13/212+79 -L-REV	1@11.0 x 2.7 BOTTOMLESS RCBC							0.006	0.049	14	56	
3 *	213+52/214+02 -L-REV	Bank Stabilization Roadway Fill	0.081						6				
4	218+26/219+34 -L-REV	2@2.7 x 2.7 RCBC							0.031	0.005	96	19	
	Shopping Center Access	2@2.7 x 2.7 RCBC									8		
5	4+23/4+31 -RPB-REV	Bank Stabilization 1050mm RCP							0.002		16		
6	11+87/12+70 -Y1-REV	Bank Stabilization							0.027	0.015	103	44	
	12+11.6 -Y16-REV	2@2.7 x 2.7 RCBC									9		
7	219+45/219+59 -L-REV	Bank Stabilization							0.053	0.005	275	13	
		1 @ 1650mm RCP											
		1 @ 1800mm RCP							0.008		36		
8	220+00/220+28-L-REV LT	450mm RCP							<0.001		6		
	11+06-Y16REV-RT	600 RCP											
TOTALS:			0.091						0.160	0.102	649	170	

METRIC IMPACTS

* WETLAND CONSIDERED A TOTAL TAKE.

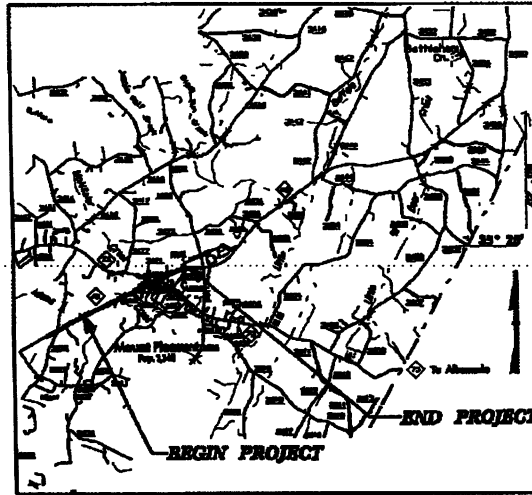
Permit Drawing
Sheet 7 of 42

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
CABARRUS COUNTY
WBS - 34448.1.1 (R-2533CC)

SHEET 3/10/2010

TIP: R-2533CC

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

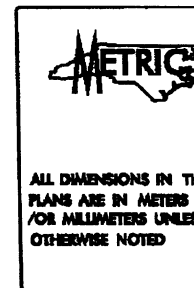


VICINITY MAP OF PROJECT R-2533CC

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS CABARRUS COUNTY

LOCATION: NC 49 FROM EAST OF SR 2630 TO EAST OF SR 2421

**TYPE OF WORK: GRADING, PAVING, STRUCTURES, CULVERTS,
DRAINAGE, SIGNALS, AND SIGNING**



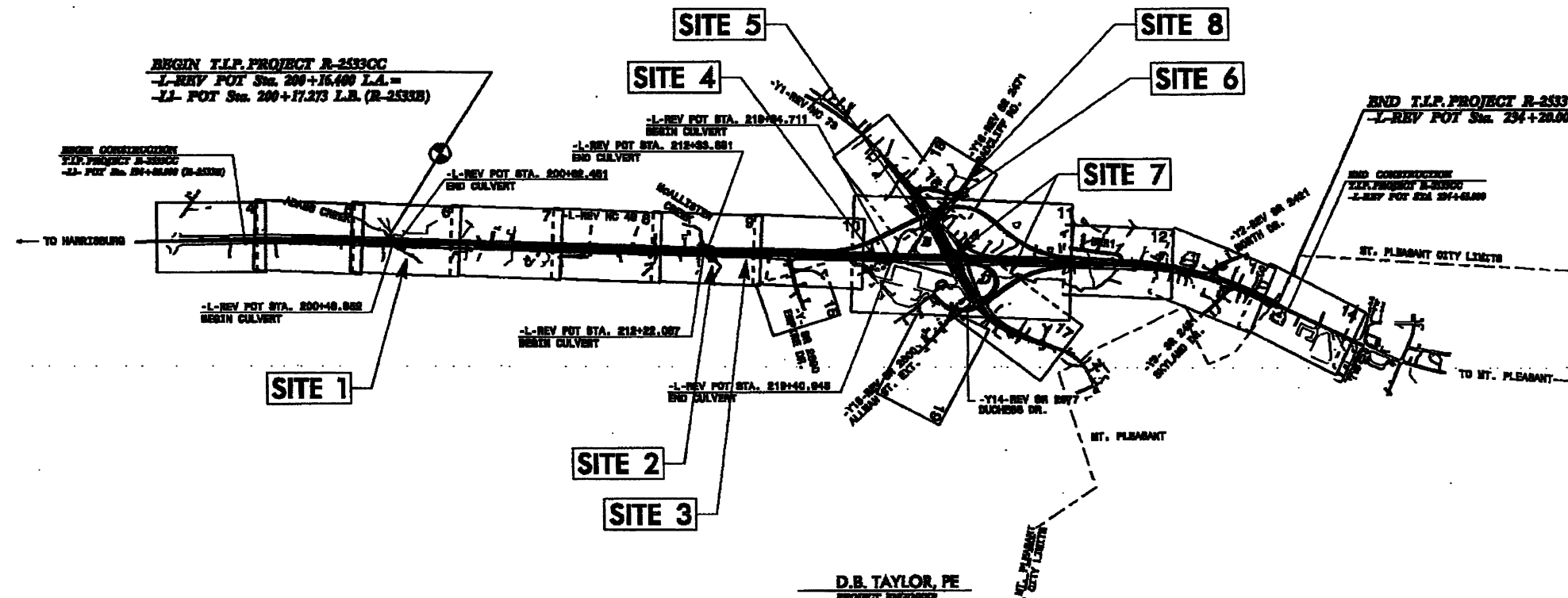
ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND /OR MILLIMETERS UNLESS OTHERWISE NOTED

STATE	STATE PROJECT NUMBER	SHEET	TOTAL SHEETS
N.C.	R-2533CC	1	
PLAN NUMBER	PLAN NAME	DESCRIPTION	
34448.1.1	NHF-2B-1(5)	FE	
34448.3.9	NHS-0049(26)	RW, UTIL CONST	

Permit Drawing
Sheet 8 of 40



**WETLAND/STREAM
IMPACTS**



D.B. TAYLOR, PE
PROJECT ENGINEER
NCDOT CONTRACT

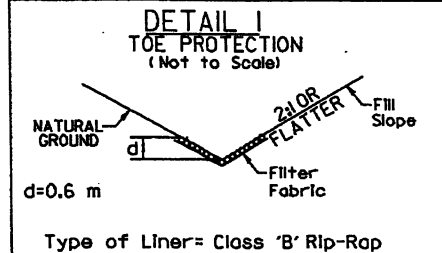
CONTROL OF ACCESS IS SHOWN ON PLANS
AT THE NC 49 - NC 15 INTERCHANGE

CONTRACT:

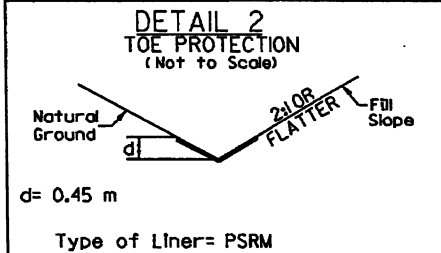
<p>GRAPHIC RATIO</p> <p>PLANS: 1" = 100'</p> <p>PROFILE (HORIZONTAL): 1" = 100'</p> <p>PROFILE (VERTICAL): 1" = 20'</p>	<p>DESIGN DATA</p> <p>ADT 2011 = 10,685 ADT 2031 = 13,531</p> <p>DHV = 11 % D = 60 % T = 13 % (TTST 7% + DUALS 6%)</p> <p>-L-REV NBL V = 100 km/h -L-REV SBL V = 90 km/h RRR - DESIGN GUIDELINES FUNCT. CLASS. - ARTERIAL</p>	<p>PROJECT LENGTH</p> <p>LENGTH ROADWAY PROJECT R-2533CC = 3.370 Km LENGTH STRUCTURES PROJECT R-2533CC = 0.634 Km TOTAL LENGTH STATE PROJECT R-2533CC = 3.404 Km</p>	<p>PLANS PREPARED FOR NCDOT DIVISION OF HIGHWAYS</p> <p>200 STANDARD SPECIFICATIONS</p> <p>RIGHT OF WAY DATE: October 18, 2002</p> <p>LETTING DATE: April 19, 2011</p>	<p>Prepared in the Office of</p> <p>NC FIRM LICENSE No: F-0342 701 Corporate Center Dr. Suite 475 Raleigh, N.C. 27607 (919)-854-6200 FAX (919)-854-6259</p>	<p>HYDRAULICS ENGINEER</p> <p>ROADWAY DESIGN</p> <p>PRELIMINARY PLANS</p> <p>NO MORE THAN PRELIMINARY</p>	<p>DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA</p> <p>STATE HIGHWAY DESIGN ENGINEER</p>
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Permit Drawing
Sheet 9 of 40

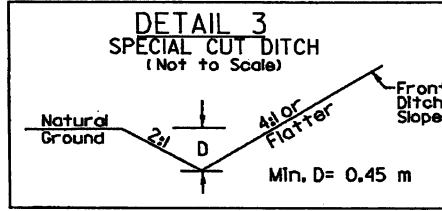
	PROJ. REFERENCE NO. R-2533CC	SHEET NO. 2-J
	HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
Prepared in the Office of:		
NC PERM. LICENSE No. P-0342 70 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 - (919) 854-6259 FAX		



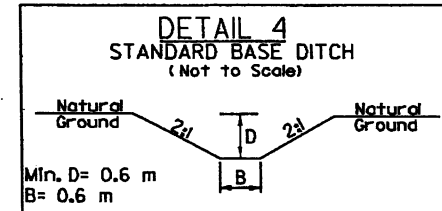
FROM STA. 200+80 TO STA. 202+40 -L-REV LT
FROM STA. 233+30 TO STA. 234+30 -L-REV LT



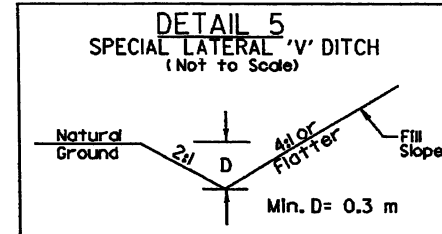
FROM STA. 202+40 TO STA. 202+60 -L-REV LT
FROM STA. 204+25 TO STA. 204+80 -L-REV LT
FROM STA. 212+20 TO STA. 212+47 -L-REV RT



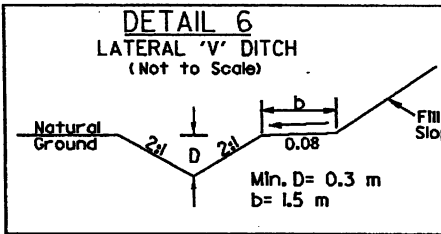
FROM STA. 204+98 TO STA. 206+60 -L-REV LT
FROM STA. 206+00 TO STA. 206+28 -L-REV RT
FROM STA. 206+80 TO STA. 207+81 -L-REV LT
FROM STA. 9+85 TO STA. 10+72 -SERI- LT



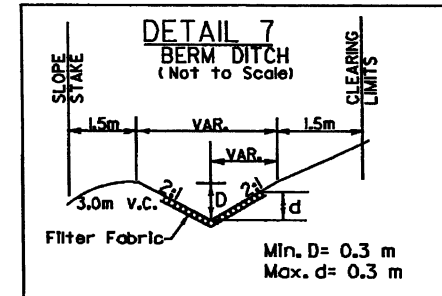
STA. 206+32 -L-REV RT
STA. 207+66 -L-REV RT



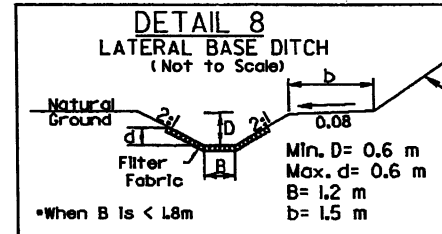
FROM STA. 208+40 TO STA. 208+80 -L-REV LT
FROM STA. 228+60 TO STA. 229+40 -L-REV LT
FROM STA. 16+40 TO STA. 17+00 -Y1-REV RT
FROM STA. 5+50 TO STA. 6+16 RAMP A LT
FROM STA. 0+45 TO STA. 1+20 LOOP D RT



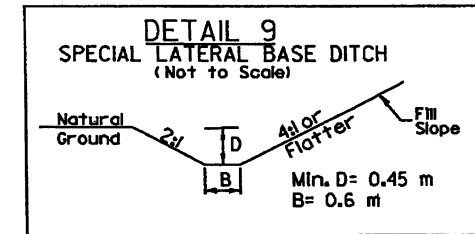
FROM STA. 208+80 TO STA. 210+85 -L-REV LT
FROM STA. 228+13 TO STA. 228+60 -L-REV LT
FROM STA. 11+19 TO STA. 11+40 -SERI- LT



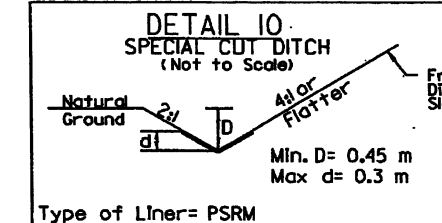
Type of Liner= Class 'B' Riprap
FROM STA. 211+60 TO STA. 211+95 -L-REV RT
FROM STA. 3+40 TO STA. 3+60 RAMP B LT



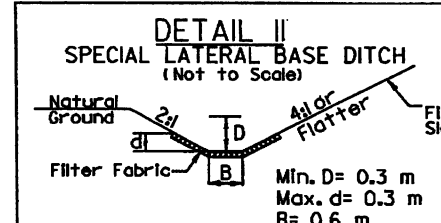
Type of Liner= Class 'B' Rip-Rap
FROM STA. 212+30 TO STA. 213+00 -L-REV LT



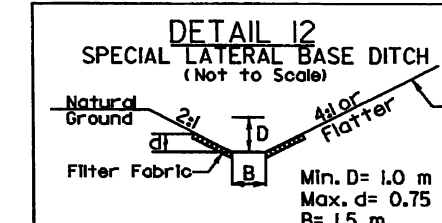
FROM STA. 213+00 TO STA. 214+00 -L-REV LT
FROM STA. 218+20 TO STA. 219+00 -L-REV LT



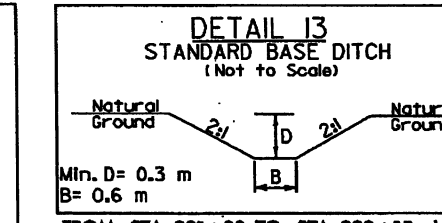
Type of Liner= PSRM
FROM STA. 214+00 TO STA. 214+60 -L-REV LT
FROM STA. 16+53 TO STA. 18+00 -Y1-REV LT
FROM STA. 10+05 TO STA. 10+86 -Y14-REV RT
FROM STA. 11+40 TO STA. 11+83 -Y15-REV LT
FROM STA. 11+60 TO STA. 11+84 -Y15-REV RT



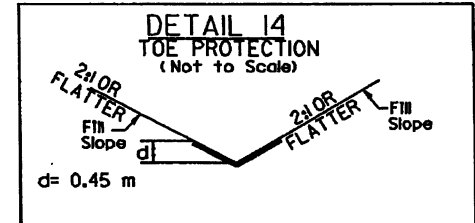
Type of Liner= Class 'B' Rip-Rap
FROM STA. 11+20 TO STA. 12+00 -Y1-REV RT
FROM STA. 12+80 TO STA. 13+60 -Y1-REV LT
FROM STA. 3+60 TO STA. 4+40 -RAMP B- LT



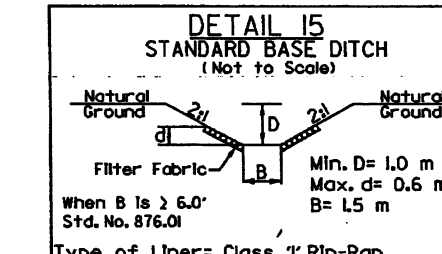
Type of Liner= Class '1' Rip-Rap
FROM STA. 219+80 TO STA. 221+00 -L-REV RT



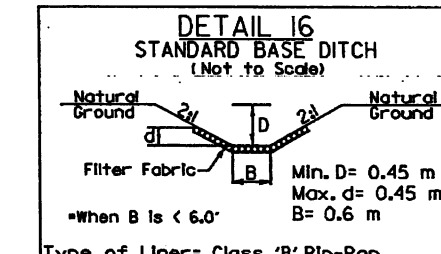
FROM STA. 221+80 TO STA. 222+15 -L-REV LT
FROM STA. 222+74 TO STA. 222+85 -L-REV LT
STA. 3+40 RAMP A LT
STA. 2+40 RAMP B RT
STA. 12+07 -Y14- LT



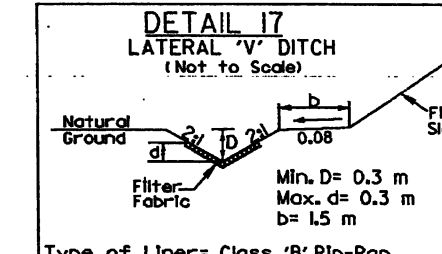
Type of Liner= PSRM
FROM STA. 1+40 TO STA. 1+80 -LOOP D- LT



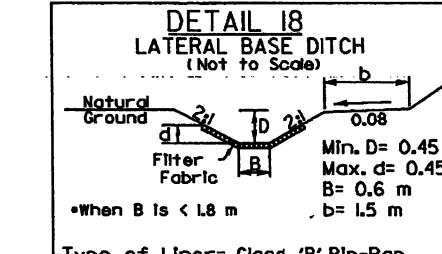
When B is > 6.0'
Std. No. 876.01
Type of Liner= Class '1' Rip-Rap
FROM STA. 223+36 TO STA. 224+07 -L-REV RT



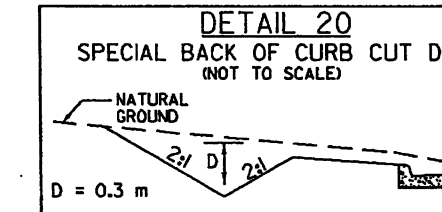
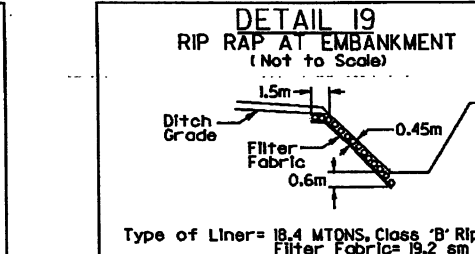
When B is < 6.0'
Type of Liner= Class 'B' Rip-Rap
STA. 224+00 -L-REV RT
STA. 18+50 -Y1-REV RT
STA. 18+60 -Y1-REV LT



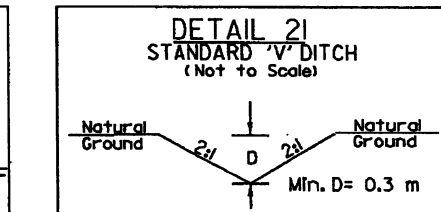
Type of Liner= Class 'B' Rip-Rap
FROM STA. 5+64 TO STA. 5+96 RAMP A RT



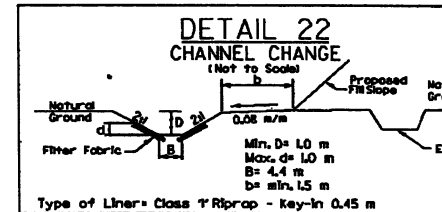
When B is < 1.8 m
Type of Liner= Class 'B' Rip-Rap
FROM STA. 219+00 TO STA. 219+45 -L-REV LT
FROM STA. 233+71 TO STA. 233+97 -L-REV RT
FROM STA. 11+55 TO STA. 12+10 -Y1-REV LT
FROM STA. 6+03 TO STA. 6+45 -RAMP A- RT



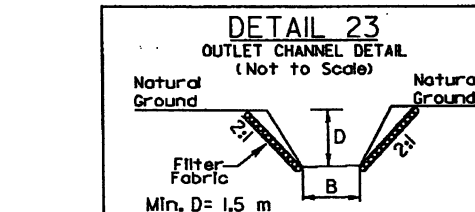
FROM STA. 231+80 TO STA. 232+20 -L-REV LT
FROM STA. 232+30 TO STA. 232+50 -L-REV LT
FROM STA. 232+60 TO STA. 233+04 -L-REV LT



FROM STA. 11+60 TO STA. 11+80 -Y16-REV LT
STA. 11+00 -Y2-REV RT



Type of Liner= Class '1' Rip-Rap - Key-in 0.45 m
FROM STA. 218+58 TO STA. 219+20 -L-REV RT



FROM STA. 200+75 TO STA. 200+98 -L-REV RT
STA. 212+56 TO 212+70 -L-REV RT
STA. 12+12 -Y16-REV LT

DATE: 08/11/03

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

Permit Drawing
Sheet 10 of 40

 5m 0 10m 1" = 100'	PROJ. REFERENCE NO. R-2533CC	SHEET NO. 6
	HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
Prepared in the Office of: AECOM <small>NC REG. LICENSE NO. 1-4342 701 Corporate Center, Suite 415 Raleigh, NC 27601 (919) 854-6200 - (919) 854-6259(FAX)</small>		

BEGIN T.I.P. PROJECT R-2533CC
-L-REV POT Sta 200+16.400 LA=
-LI- POT Sta 200+17.273 L.B. (R-2533B)

BEGIN GRADE
-LI- POT Sta 199+95.000 (R-2533B)

SITE I

TOE PROTECTION
STA. 200+80 TO 202+40 -L-REV LT
SEE DETAIL #1
EST 204 MTONS CLASS 'B' RIPRAP
EST 346.1 SM FF

TOE PROTECTION W/PSMA
STA. 202+40 TO 202+60 -L-REV LT
SEE DETAIL #2
EST 40.3 SM PSMA

NEW BASE DITCH W/CLASS 'Y' RIPRAP
EST 20 MTONS RIPRAP
EST 34.8 SM FF
EST DDE 22.8 CM
SEE DETAIL #15

OUTLET CHANNEL
SEE DETAIL #23
CLASS 'Y' RIPRAP
EST 143 MTONS
EST 232 SM FF
EST DDE 377 CM

CLASS 'Y' RIPRAP
EST 10 MTONS
EST 18.4 SM FF


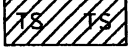
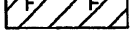
MODEL 427426
R2533BCA

R/W REV. 3) ADDED PIPE TO PARCEL FOR DRAINAGE REV. 05/07/09
4) REMOVED PIPE & ADDED TDE TO PARCEL 1 FOR EROSION CONTROL CMR 07/20/09
1) REVISED OWNER NAME PARCEL 2, JMD 05/10/03
2) REVISED OWNER NAME PARCEL 2, A.V. 7/18/04



MATCH LINE -LI- STA. 199+00.000 SEE SHEET 5

MATCH LINE -L-REV STA. 202+96.000 SEE SHEET 11

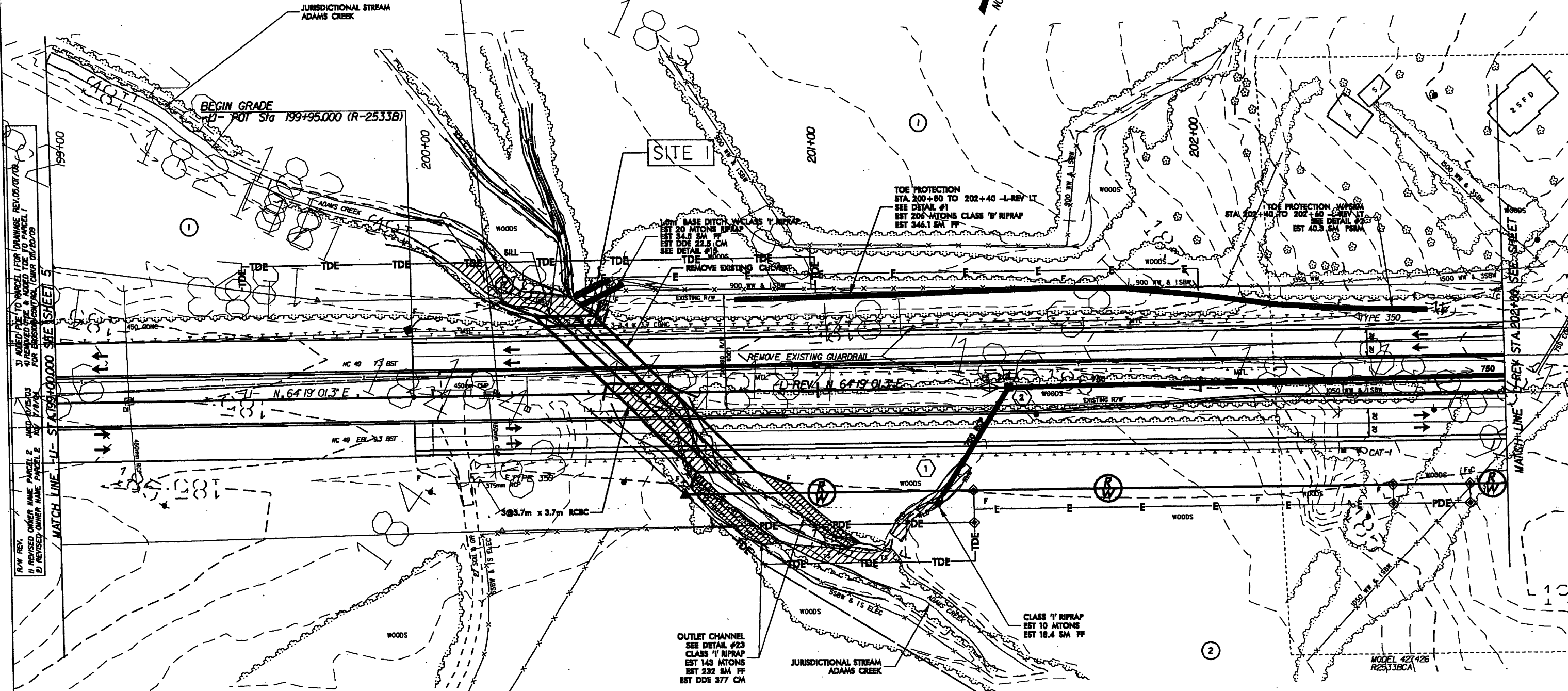
FOR CULVERT PLANS, SEE SHEETS C-1 THRU C-
FOR -LI-/-L-REV PROFILE, SEE SHEETS 20 & 21
FOR -XOVERI- DETAILS, SEE SHEET 2-M
FOR DITCH DETAILS, SEE SHEET 2-J
NOTE: ALL DRIVEWAY RADII ARE 3.0m UNLESS OTHERWISE SHOWN.

-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER
-  DENOTES FILL IN WETLAND

Permit Drawing
Sheet 11 of 40

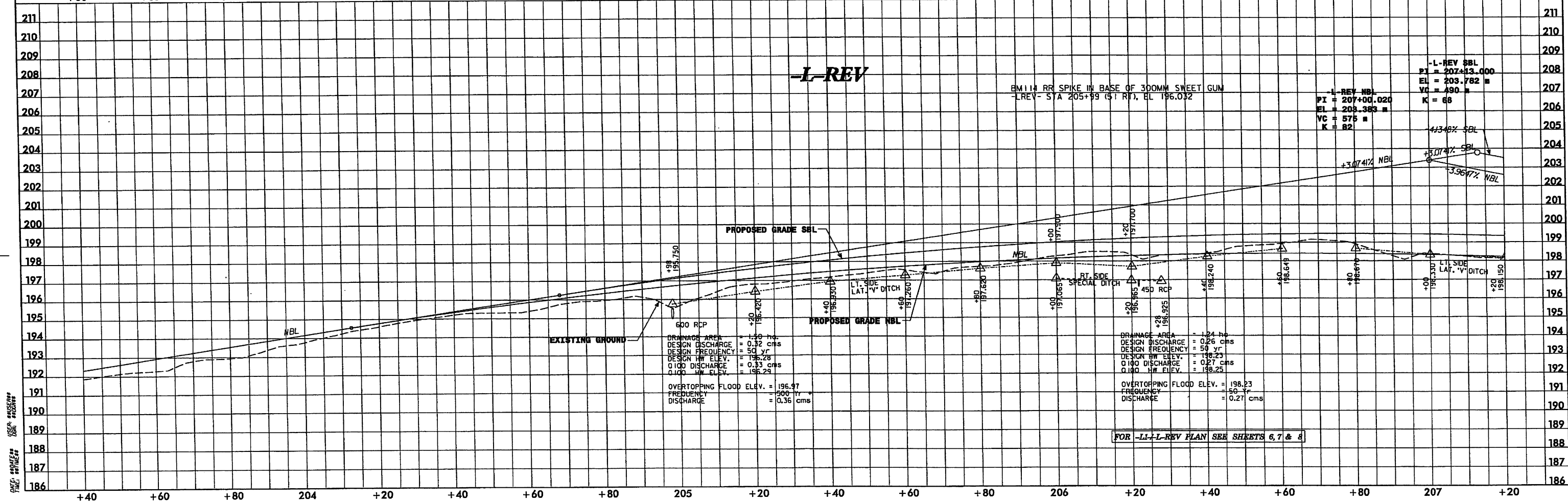
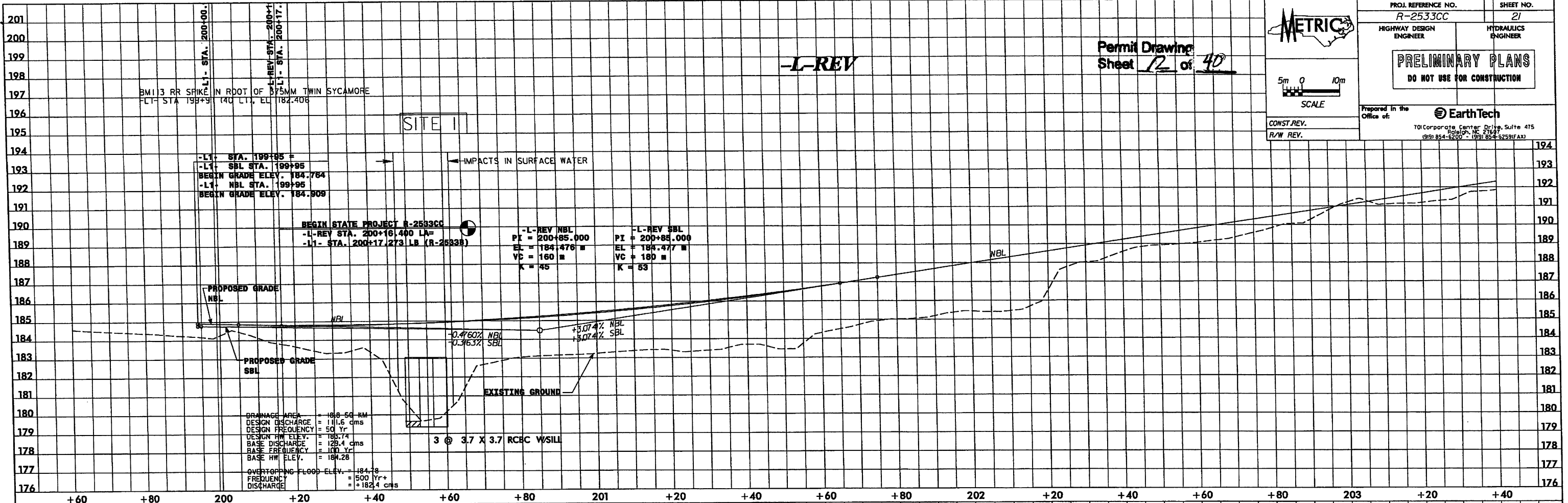
	PROJ. REFERENCE NO. R-2533CC	SHEET NO. 6
	HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
Prepared in the Office of:		
		
NC REG. LICENSE No. 10345 701 Corporate Center, Suite 475 Cary, NC 27513 (919) 854-6200 • (919) 854-6295 FAX		

BEGIN T.J.P. PROJECT R-2533CC
 -L-REV POT Sta 200+16.400 LA=
 -U- POT Sta 200+17.273 LB. (R-2533B)

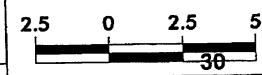


1) REV. REV. OTHER NAME PARCEL 2 AND 3
 2) REVISED OTHER NAME PARCEL 2 AND 3
 3) ADDED PIE TO PARCEL 1 FOR DRAINAGE REV. 05/07/08
 4) REMOVED TDE & ADDED TDE TO PARCEL 1
 5) REVISED OTHER NAME PARCEL 2 AND 3 FOR EXISTING CULVERT, CMR 08/20/09

FOR CULVERT PLANS, SEE SHEETS C-1 THRU C-
 FOR -LI-/-L-REV PROFILE, SEE SHEETS 20 & 21
 FOR -XOVERI- DETAILS, SEE SHEET 2-M
 FOR DITCH DETAILS, SEE SHEET 2-J
 NOTE: ALL DRIVEWAY RADIARE 3.0m UNLESS OTHERWISE SHOWN.

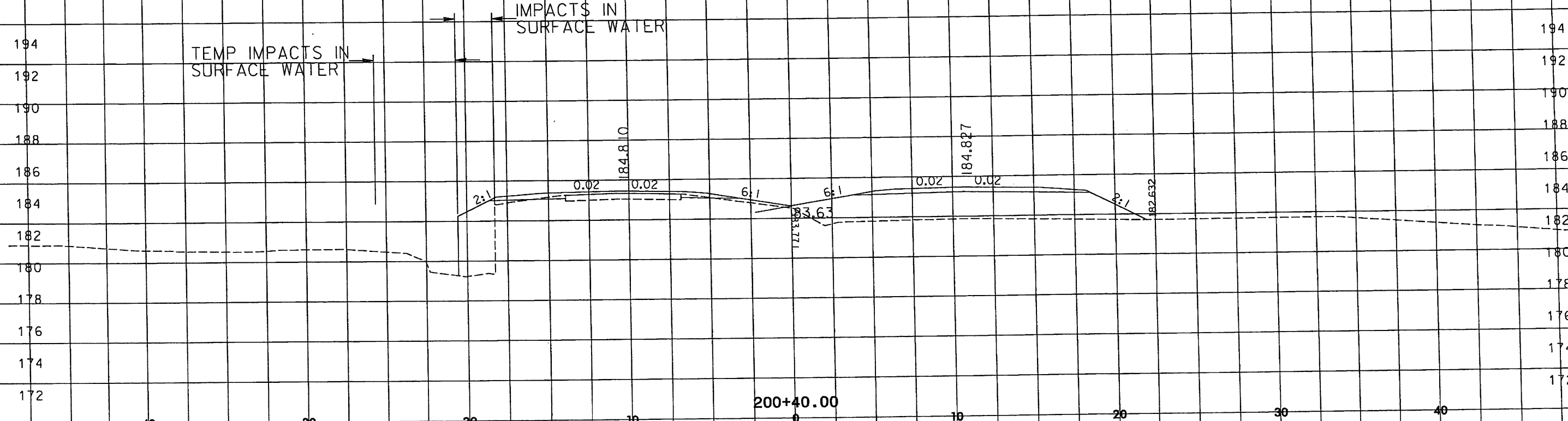
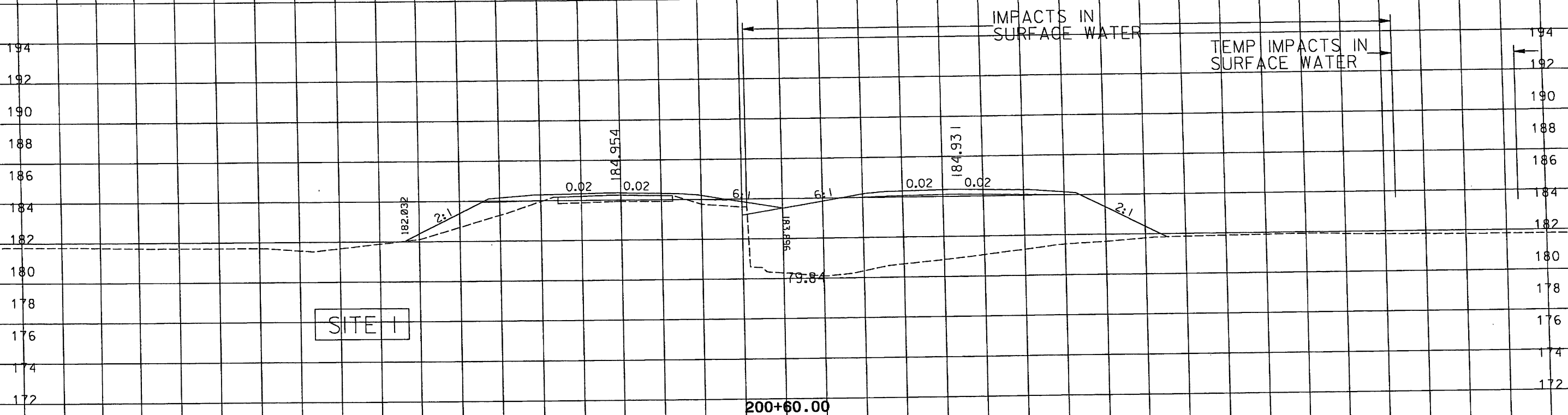


DATE: 10/26/2011
PROJECT: METRIC
DRAWING: R-2533CC
SHEET: X-13



PROJECT REFERENCE NO. R-2533CC
SHEET NO. X-13

Permit Drawing
Sheet 13 of 40





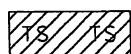
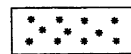
-L-REV

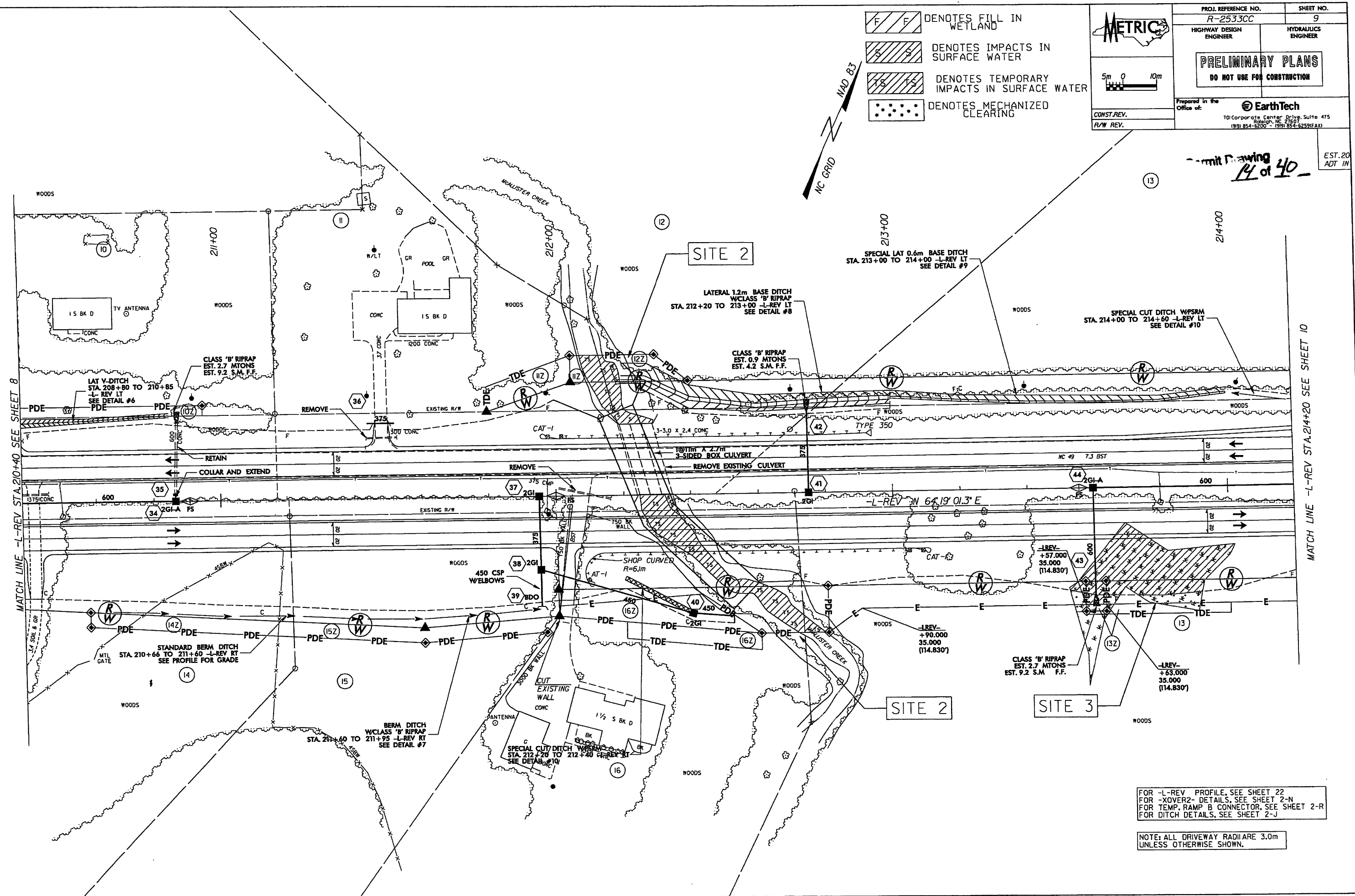
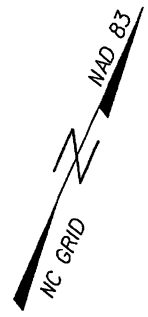
PROJ. REFERENCE NO. R-2533CC	SHEET NO. 9
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	
Prepared in the Office of:	
EarthTech	
101 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-3200 • (919) 854-4259(FAX)	

METRIC

5m 0 10m

CONST. REV.
R/W REV.

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



Permit Drawing
14 of 40

EST. 20
ADT IN

MATCH LINE -L-REV STA. 210+40 SEE SHEET 8

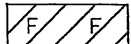

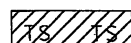
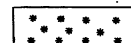
MATCH LINE -L-REV STA. 214+20 SEE SHEET 10

FOR -L-REV PROFILE SEE SHEET 22
FOR -XOVER2- DETAILS SEE SHEET 2-N
FOR TEMP. RAMP B CONNECTOR SEE SHEET 2-R
FOR DITCH DETAILS SEE SHEET 2-J

NOTE: ALL DRIVEWAY RADII ARE 3.0m UNLESS OTHERWISE SHOWN.

DATE: 03/28/11
USER: MUSEERS
SCALE: AS SHOWN

Permit Drawing
Sheet 15 of 40

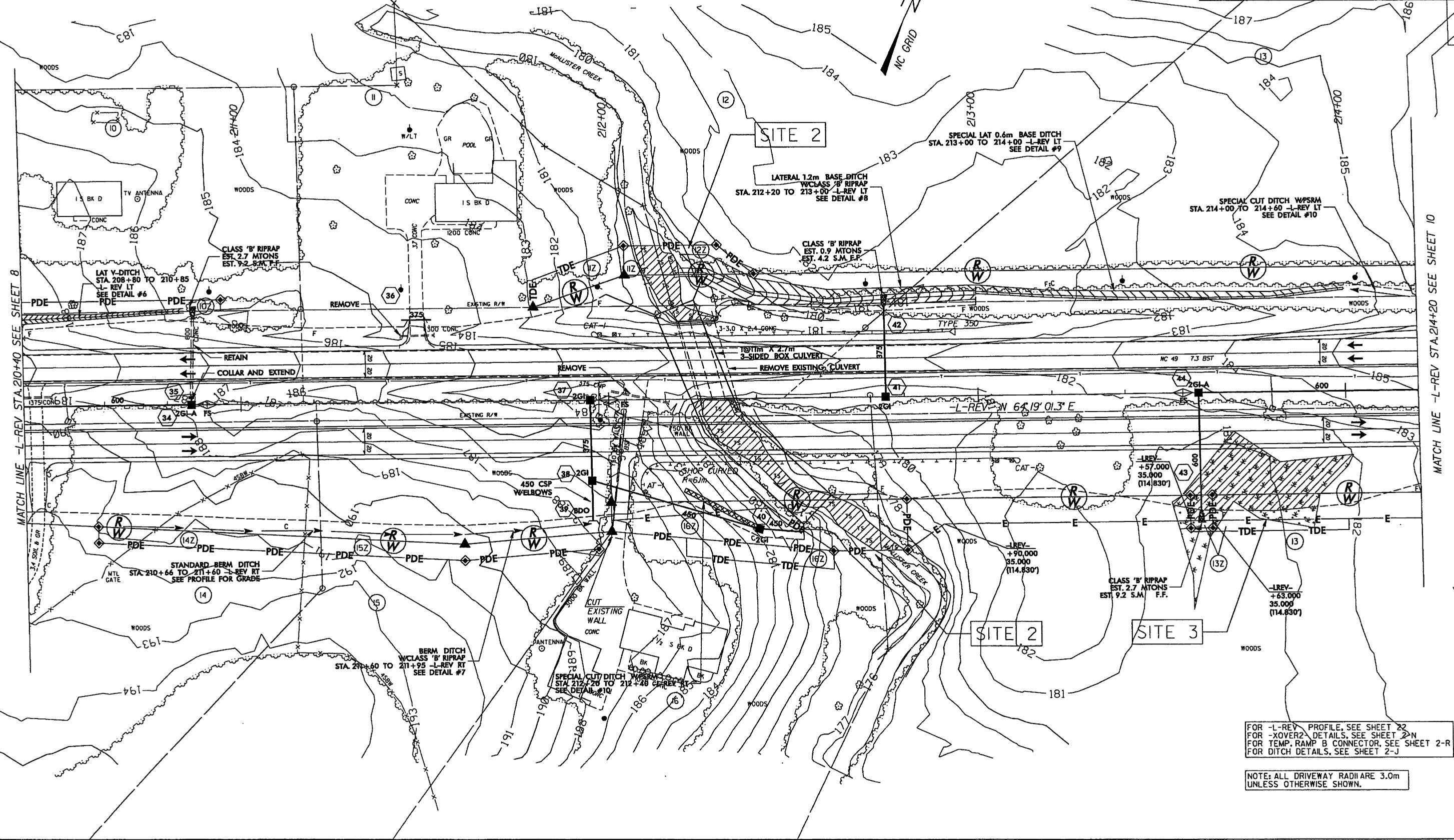
-  DENOTES FILL IN WETLAND
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER
-  DENOTES MECHANIZED CLEARING

METRIC

5m 0 10m

CONST. REV.
R/W REV.

PROJ. REFERENCE NO. R-2533CC	SHEET NO. 9
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	
Prepared in the Office of:	
EarthTech	
101 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6296 FAX	



MATCH LINE -L-REV STA.210+40 SEE SHEET 8

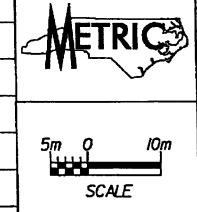
MATCH LINE -L-REV STA.214+20 SEE SHEET 10

FOR -L-REV PROFILE, SEE SHEET 22
 FOR -XOVER2- DETAILS, SEE SHEET 2-N
 FOR TEMP. RAMP B CONNECTOR, SEE SHEET 2-R
 FOR DITCH DETAILS, SEE SHEET 2-J

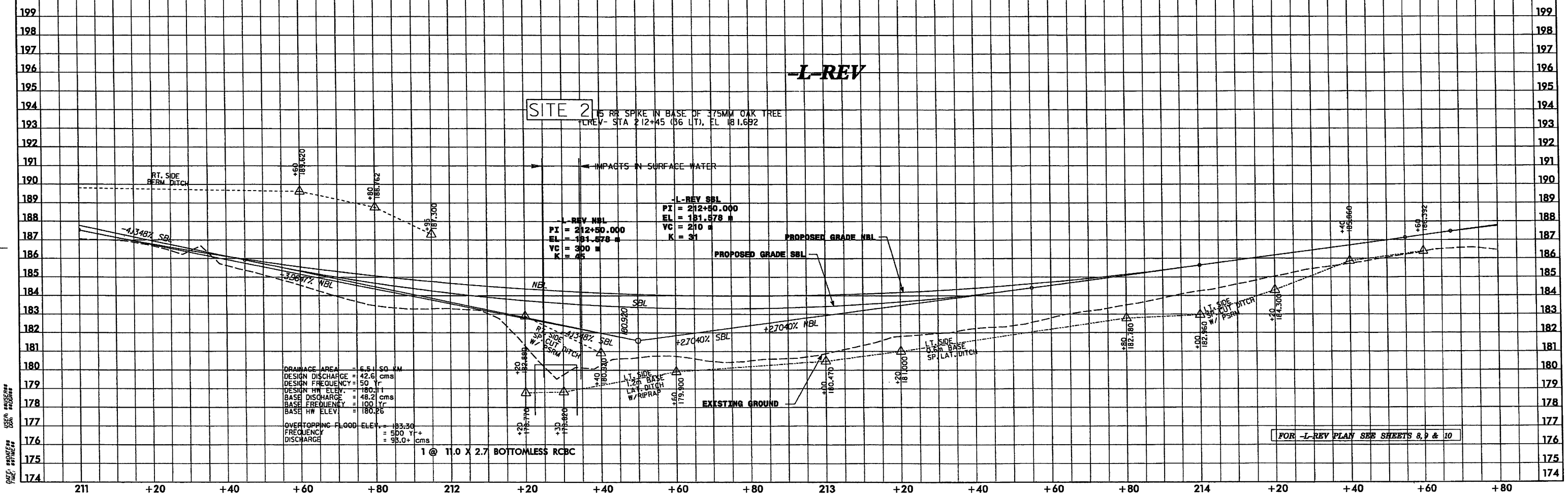
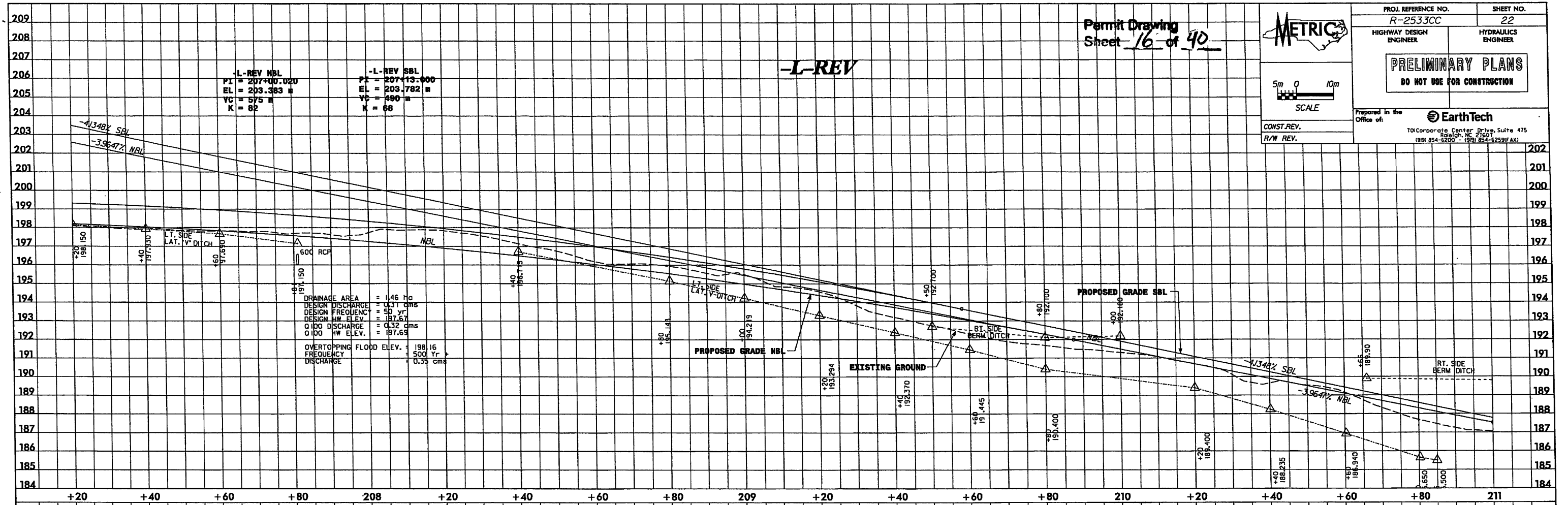
NOTE: ALL DRIVEWAY RADII ARE 3.0m
 UNLESS OTHERWISE SHOWN.

DATE: 11/11/2011
 USER: JLD/MSR
 TIME: 10:00 AM
 CON: 100000

Permit Drawing
Sheet 16 of 40

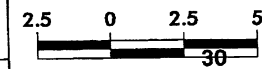


PROJ. REFERENCE NO. R-2533CC	SHEET NO. 22
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	
Prepared in the Office of:	
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10 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 - (919) 854-6259 FAX	



DATE: 08/08/08 USER: #000000 PLOT: #000000

0/25/21

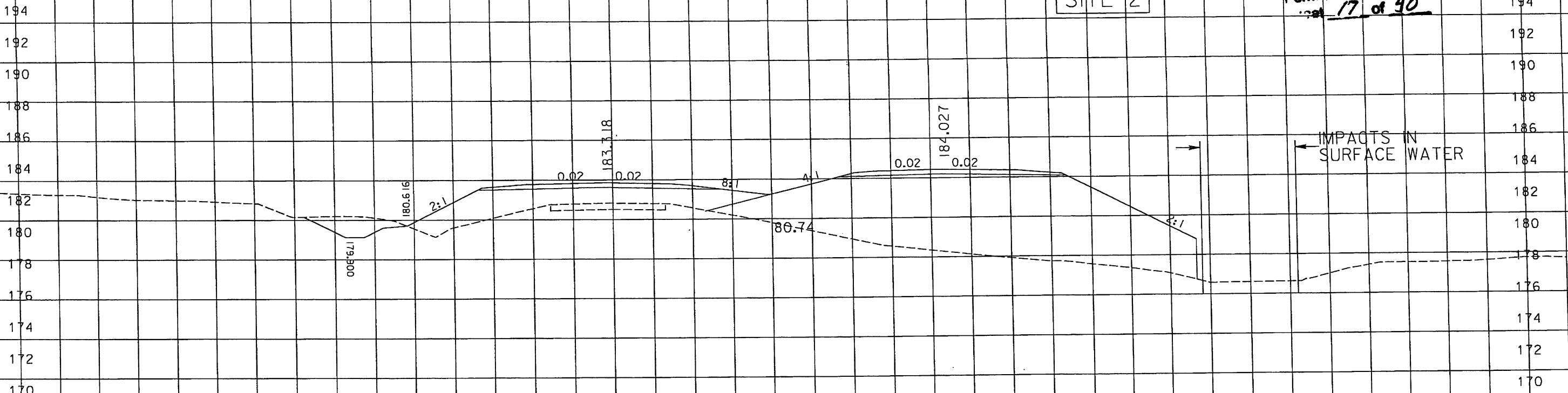


PROJECT REFERENCE NO. R-2533CC	SHEET NO. X-50
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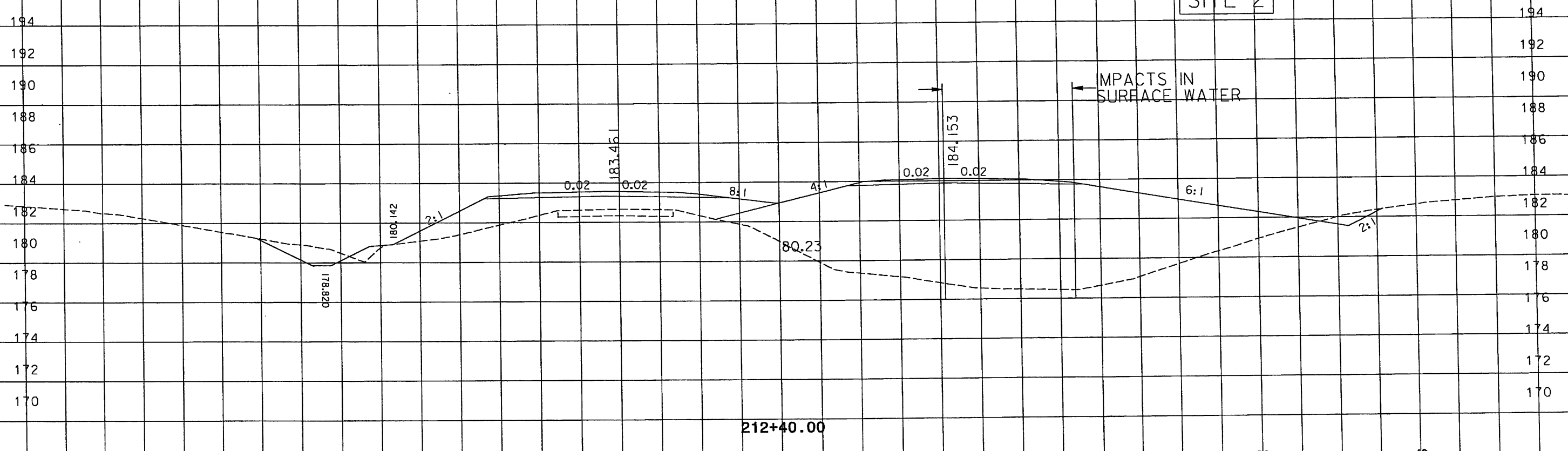
SITE 2

Permit Drawing
Sheet 17 of 40



← IMPACTS IN SURFACE WATER

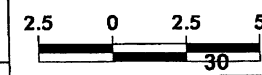
SITE 2



← IMPACTS IN SURFACE WATER

SYTIME

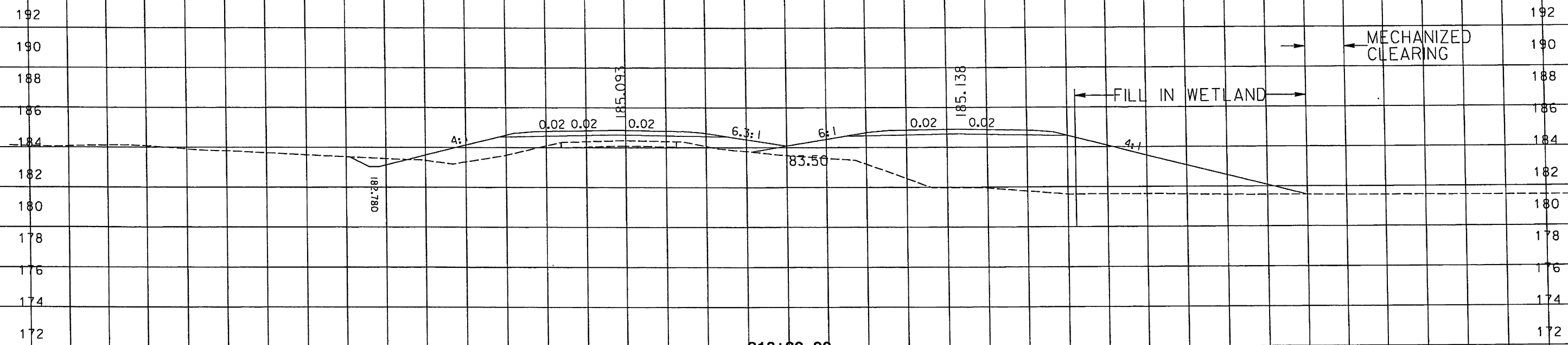
07/26/19



PROJECT REFERENCE NO. R-2533CC	SHEET NO. X-53
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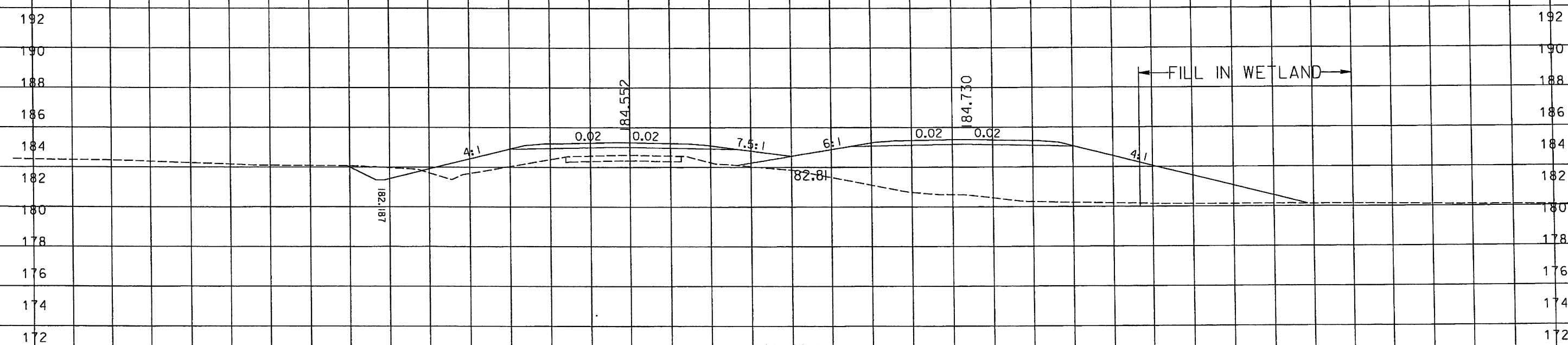
Permit Drawing
18 of 40

SITE 3



213+80.00

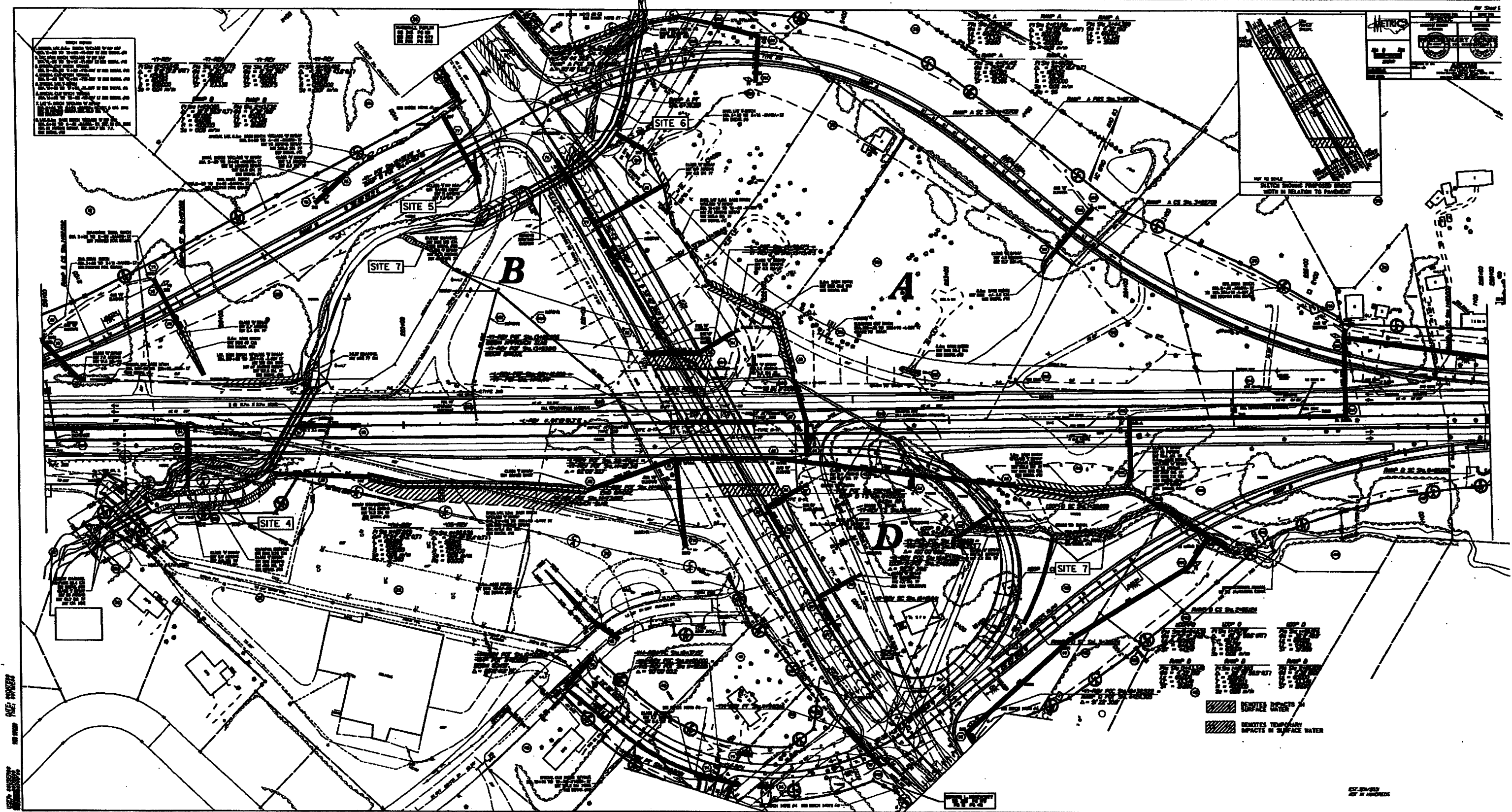
SITE 3

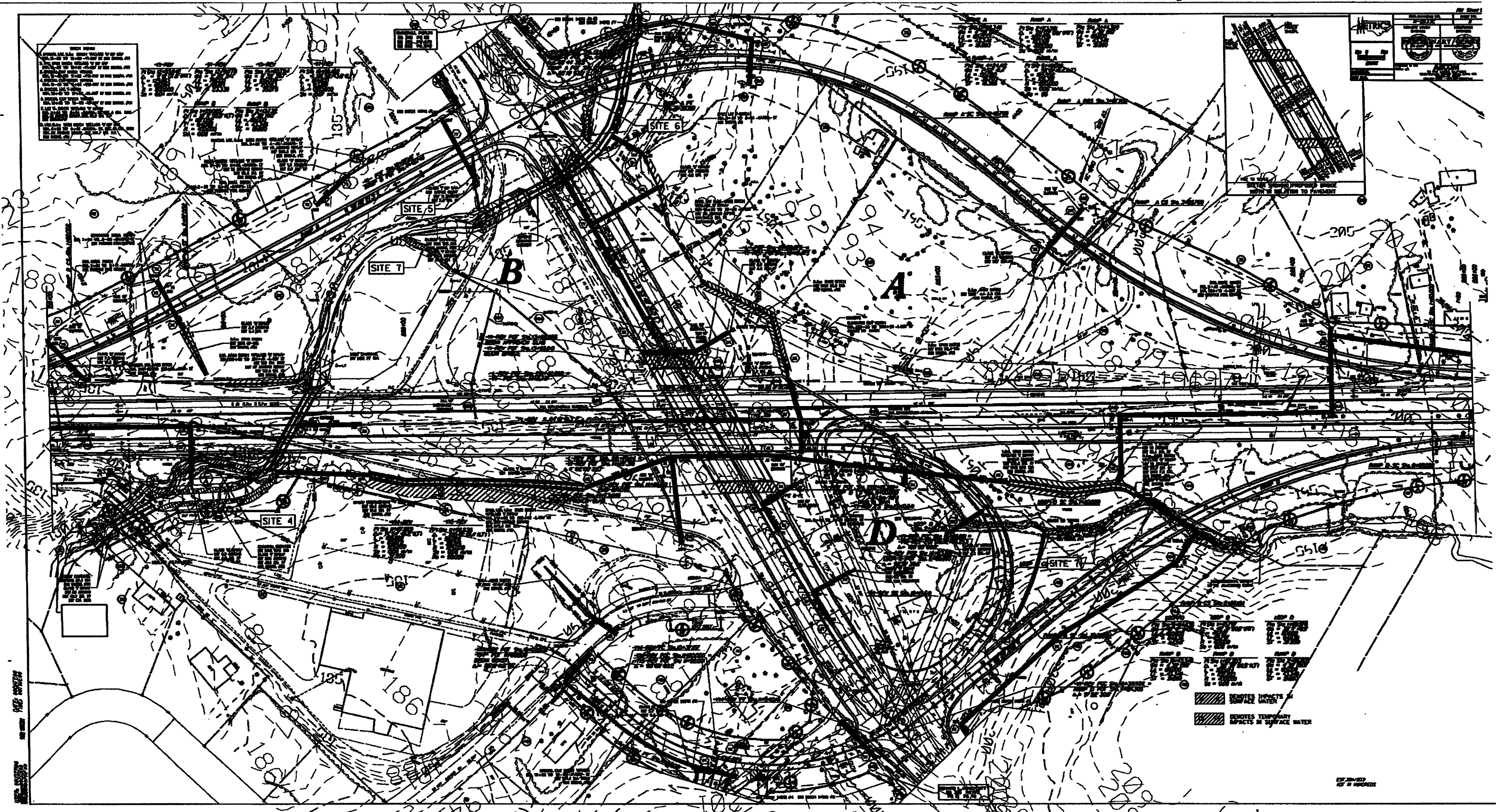


213+60.00

-L-REV

07/26/19





70

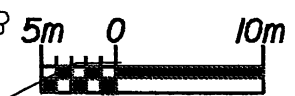
CLASS 'B' RIPRAP
EST 7.3 MTONS
EST 17.6 SM FF

SPECIAL LAT. BASE DITCH
STA 218+20 TO 219+00 -LREV- LT
SEE DETAIL #9

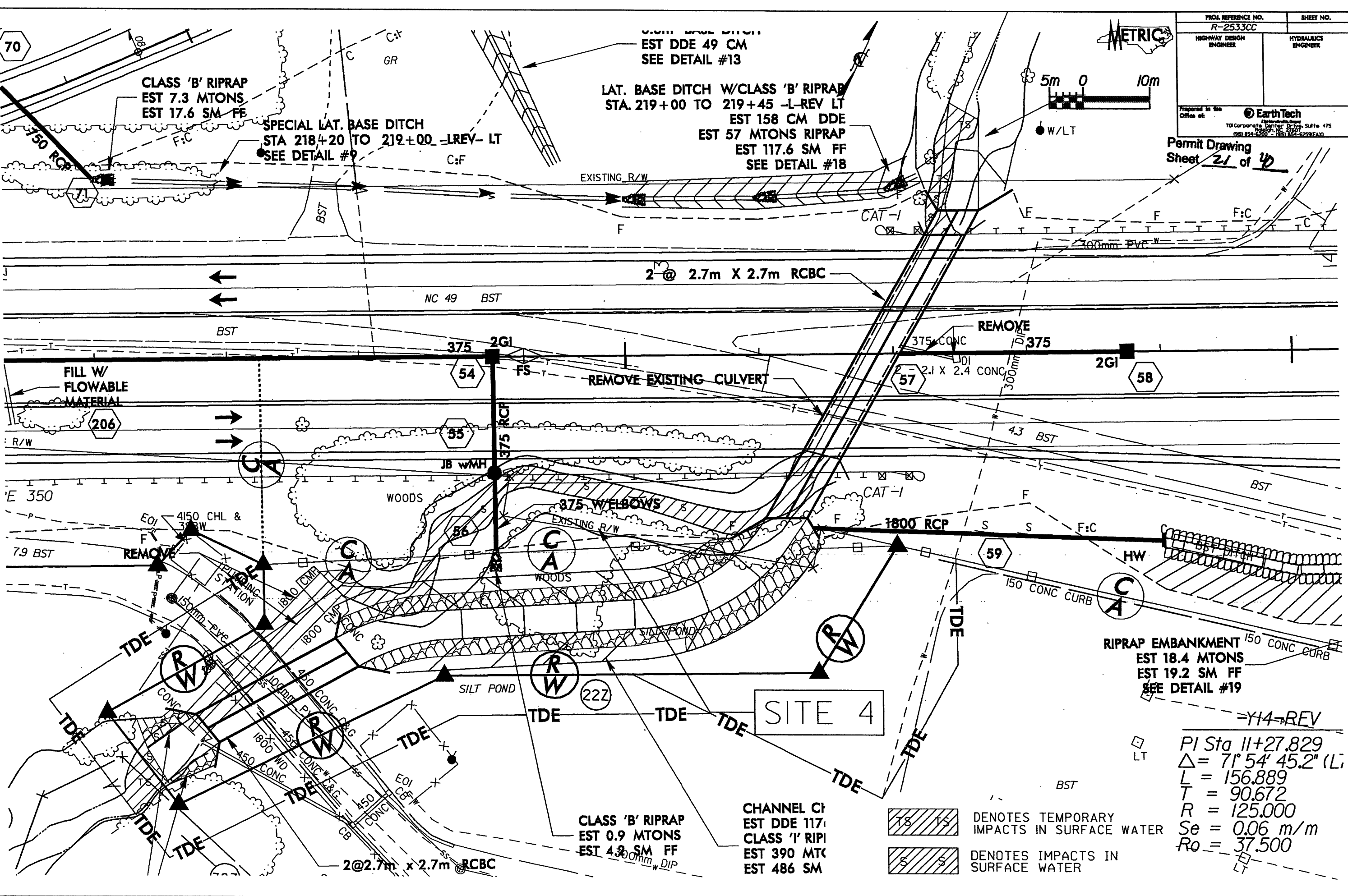
EST DDE 49 CM
SEE DETAIL #13

LAT. BASE DITCH W/CLASS 'B' RIPRAP
STA. 219+00 TO 219+45 -L-REV LT
EST 158 CM DDE
EST 57 MTONS RIPRAP
EST 117.6 SM FF
SEE DETAIL #18

PROJ. REFERENCE NO. R-2533CC	SHEET NO.
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office at EarthTech <small>70 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 851-5200 • (919) 851-5292 FAX</small>	



Permit Drawing Sheet 21 of 40



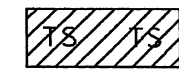
FILL W/
FLOWABLE
MATERIAL

REMOVE EXISTING CULVERT

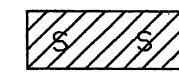
REMOVE

RIPRAP EMBANKMENT
EST 18.4 MTONS
EST 19.2 SM FF
SEE DETAIL #19

CHANNEL C
EST DDE 117
CLASS 'I' RIPI
EST 390 MTC
EST 486 SM



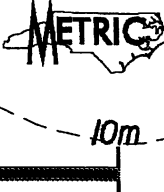
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



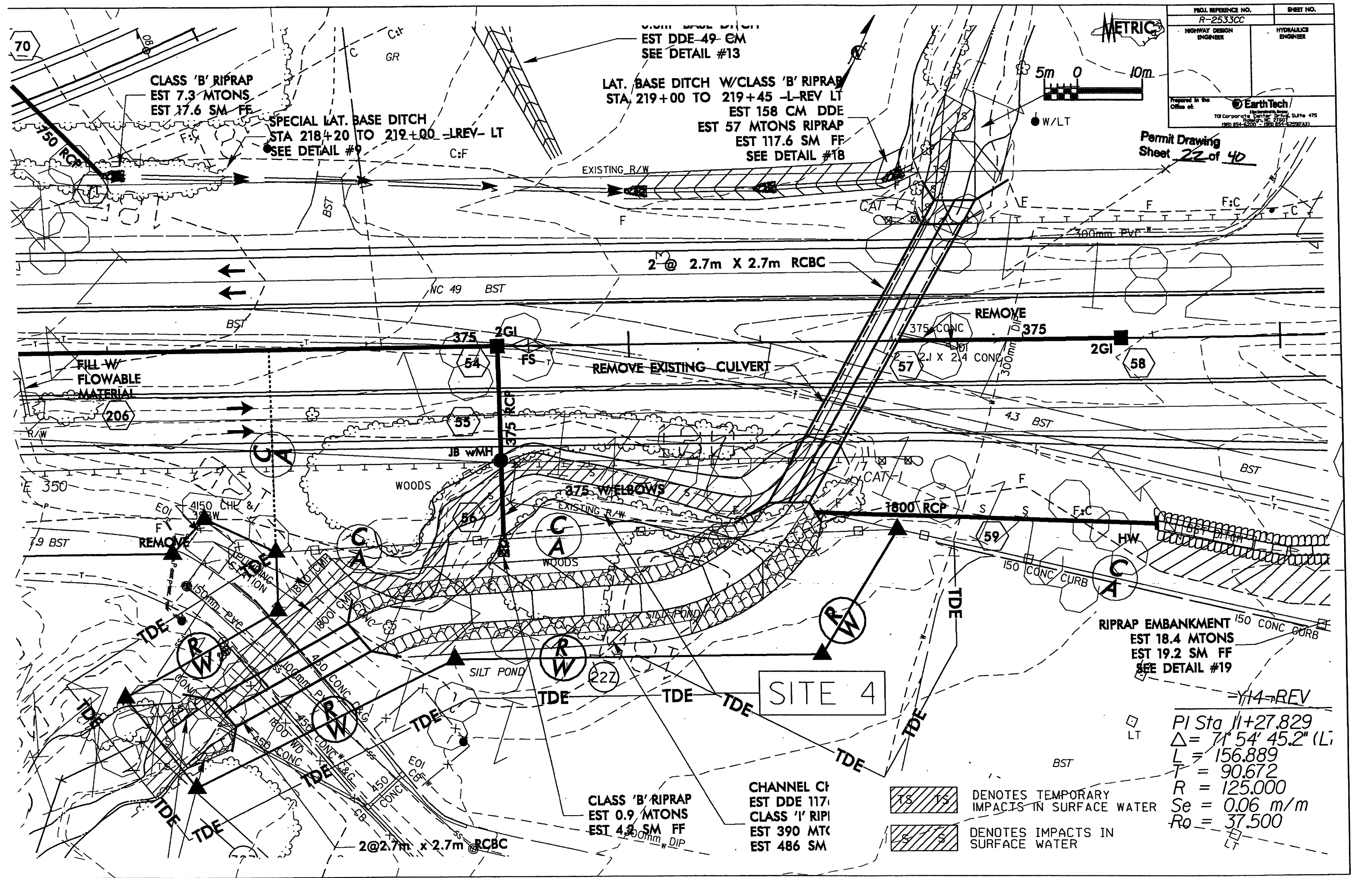
DENOTES IMPACTS IN
SURFACE WATER

PI Sta 11+27.829
 $\Delta = 7^\circ 54' 45.2''$ (L)
 $L = 156.889$
 $T = 90.672$
 $R = 125.000$
 $Se = 0.06 \text{ m/m}$
 $Ro = 37.500$

PROJ. REFERENCE NO. R-2533CC	SHEET NO.
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: EarthTech <small>70 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-5200 - FAX (919) 854-5250</small>	



Permit Drawing
Sheet 22 of 40



CLASS 'B' RIPRAP
EST 7.3 MTONS
EST 17.6 SM FF

SPECIAL LAT. BASE DITCH
STA 218+20 TO 219+00 -LREV- LT
SEE DETAIL #9

EST DDE 49 CM
SEE DETAIL #13
LAT. BASE DITCH W/CLASS 'B' RIPRAP
STA. 219+00 TO 219+45 -L-REV LT
EST 158 CM DDE
EST 57 MTONS RIPRAP
EST 117.6 SM FF
SEE DETAIL #18

REMOVE EXISTING CULVERT

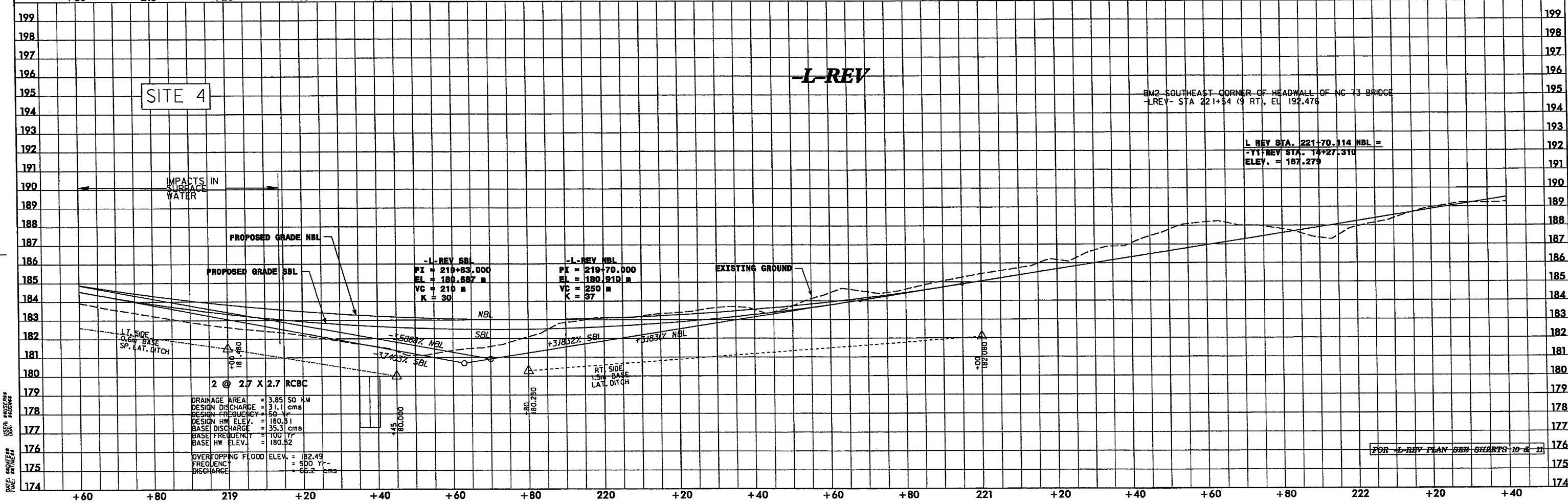
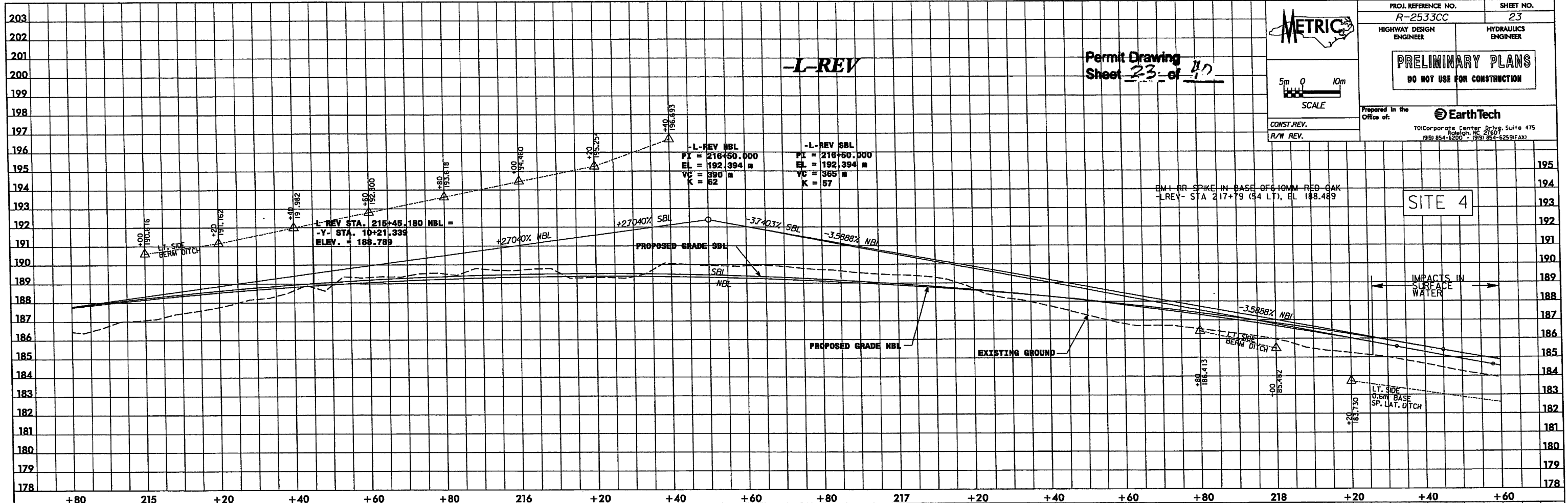
RIPRAP EMBANKMENT
EST 18.4 MTONS
EST 19.2 SM FF
SEE DETAIL #19

CLASS 'B' RIPRAP
EST 0.9 MTONS
EST 4.2 SM FF

CHANNEL C
EST DDE 117
CLASS 'I' RIPI
EST 390 MTC
EST 486 SM

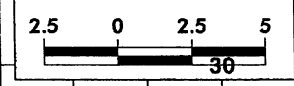
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER

PI Sta 11+27.829
 $\Delta = 71^\circ 54' 45.2''$ (L)
 $L = 156.889$
 $T = 90.672$
 $R = 125.000$
 $Se = 0.06$ m/m
 $Ro = 37.500$



USER: MUSEERS
 DATE: 8/27/08
 FILE: 887108.dwg

10/25/23



PROJECT REFERENCE NO. R-25330C	SHEET NO. X-23
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40 30 20 10 0 10 20 40 50

194 194

192 192

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170 170

196 196

194 194

192 192

190 190

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186 186

184 184

182 182

180 180

178 178

176 176

174 174

172 172

170 170

Permit Drawing
Sheet 24 of 40

SITE 4

← IMPACTS IN
SURFACE WATER

← IMPACTS IN
SURFACE WATER

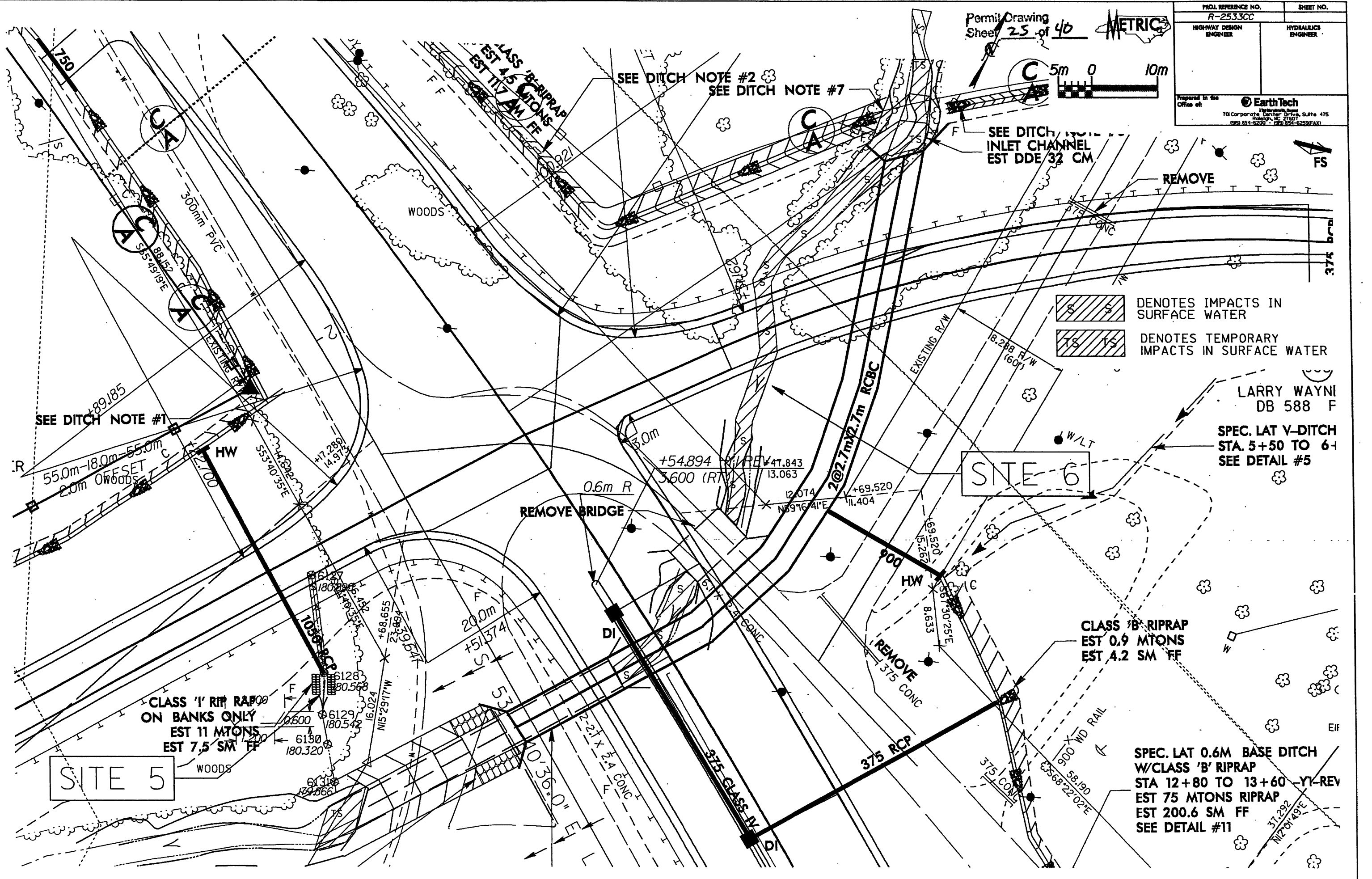
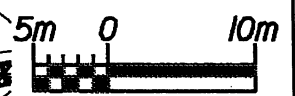
219+20.00

219+00.00

-L-REV

SUSTAINABLE
DESIGN

PROJ. REFERENCE NO. R-2533CC	SHEET NO.
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: EarthTech 70 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-5200 • (919) 854-5295(FAX)	



SEE DITCH NOTE #2
 SEE DITCH NOTE #7

SEE DITCH INLET CHANNEL
 EST DDE 32 CM

REMOVE

DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

LARRY WAYNE
 DB 588 F
 SPEC. LAT V-DITCH
 STA. 5+50 TO 6+1
 SEE DETAIL #5

SITE 6

CLASS 'B' RIPRAP
 EST 0.9 MTONS
 EST 4.2 SM FF

CLASS 'I' RIP RAP
 ON BANKS ONLY
 EST 11 MTONS
 EST 7.5 SM FF

SITE 5

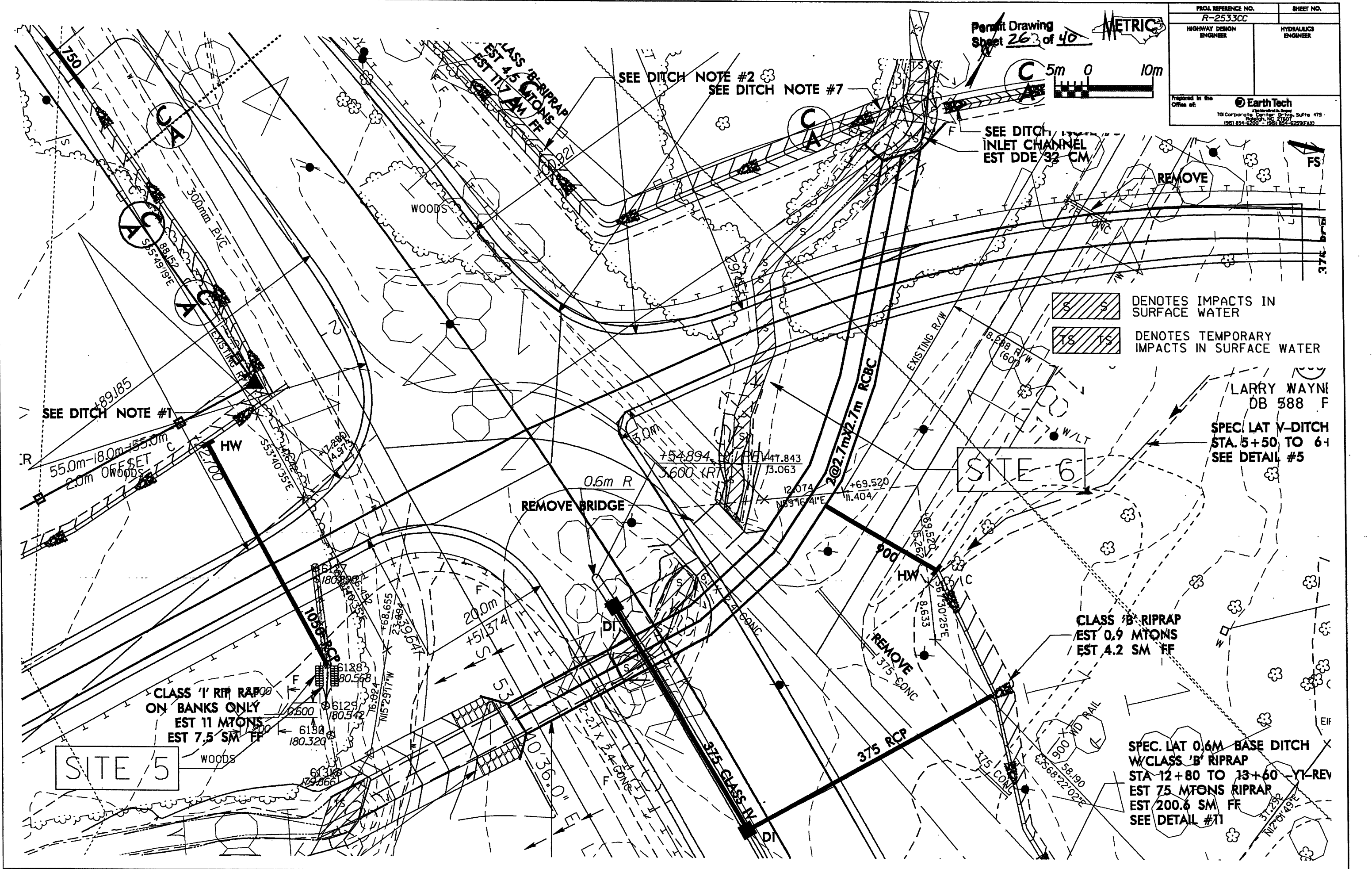
SPEC. LAT 0.6M BASE DITCH
 W/CLASS 'B' RIPRAP
 STA 12+80 TO 13+60 -YI-REV
 EST 75 MTONS RIPRAP
 EST 200.6 SM FF
 SEE DETAIL #11

PROJ. REFERENCE NO. R-2533CC	SHEET NO.
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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Permit Drawing
Sheet 263 of 40

METRIC

0 5m 10m



SEE DITCH NOTE #2
SEE DITCH NOTE #7

SEE DITCH
INLET CHANNEL
EST DDE 32 CM

REMOVE

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

LARRY WAYNE
DB 588 F

SPEC. LAT V-DITCH
STA. 5+50 TO 6+1
SEE DETAIL #5

SITE 6

REMOVE BRIDGE

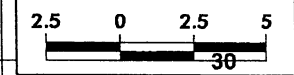
CLASS 'B' RIPRAP
EST 0.9 MTONS
EST 4.2 SM FF

CLASS 'I' RIP RAP
ON BANKS ONLY
EST 11 MTONS
EST 7.5 SM FF

SITE 5

SPEC. LAT 0.6M BASE DITCH
W/CLASS 'B' RIPRAP
STA 12+80 TO 13+60 -Y1-REV
EST 75 MTONS RIPRAP
EST 200.6 SM FF
SEE DETAIL #11

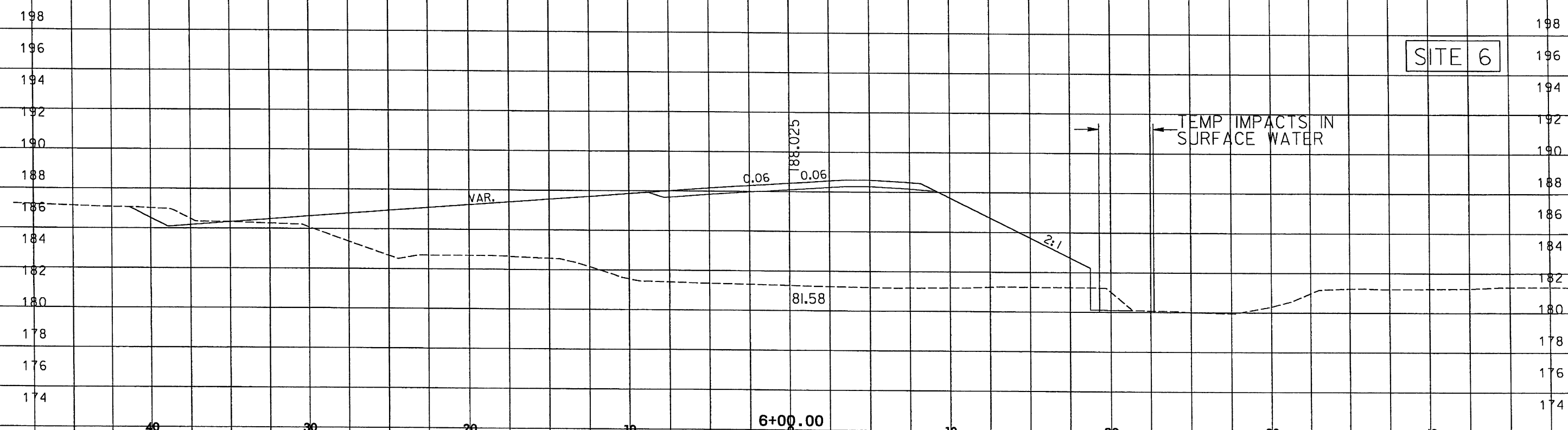
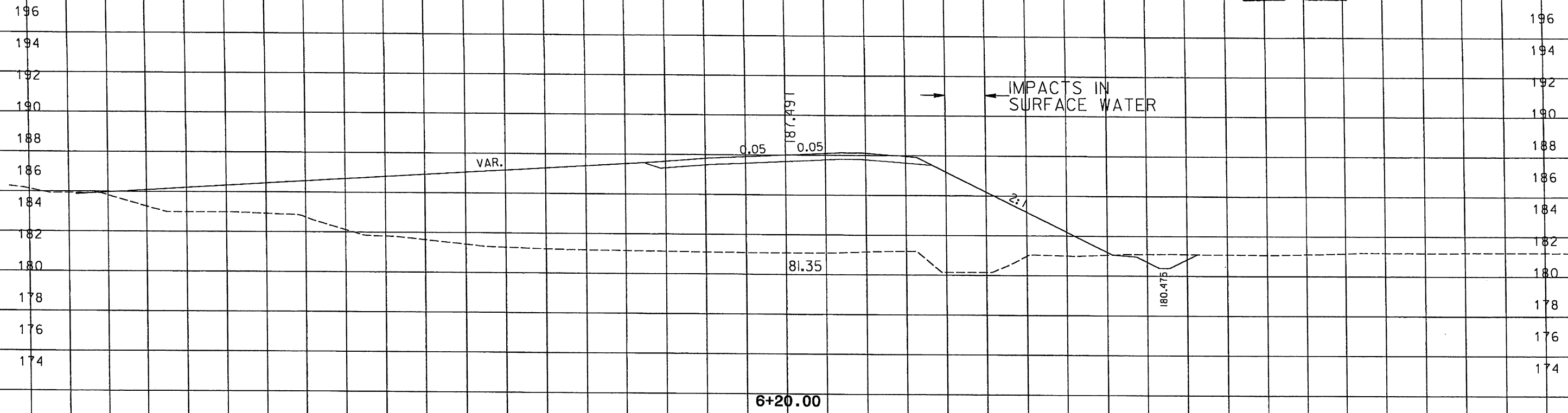
10/26/20
CONSTRUCTION



PROJECT REFERENCE NO. R-2533CC	SHEET NO. X-145
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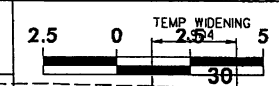
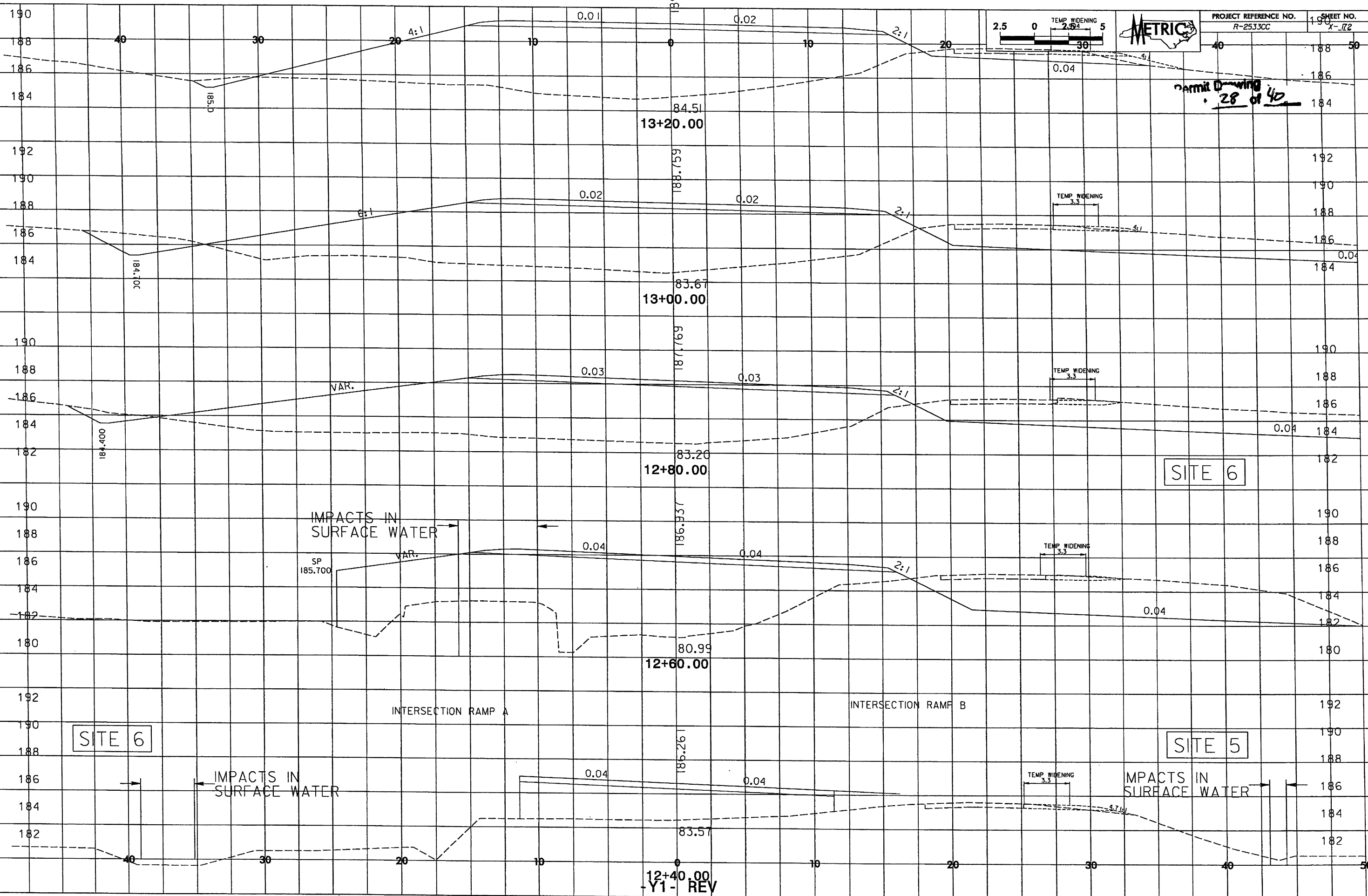
Permit Drawing
Sheet 27 of 40

SITE 6



-Y1- RAMP A

DATE: 02/27/08



PROJECT REFERENCE NO. R-2533CC SHEET NO. 198 X-172

Permit Drawing
28 of 40

SITE 6

IMPACTS IN SURFACE WATER

SP 185.700

INTERSECTION RAMP A

INTERSECTION RAMP B

SITE 6

IMPACTS IN SURFACE WATER

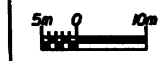
SITE 5

IMPACTS IN SURFACE WATER

12+40.00
-Y1- REV



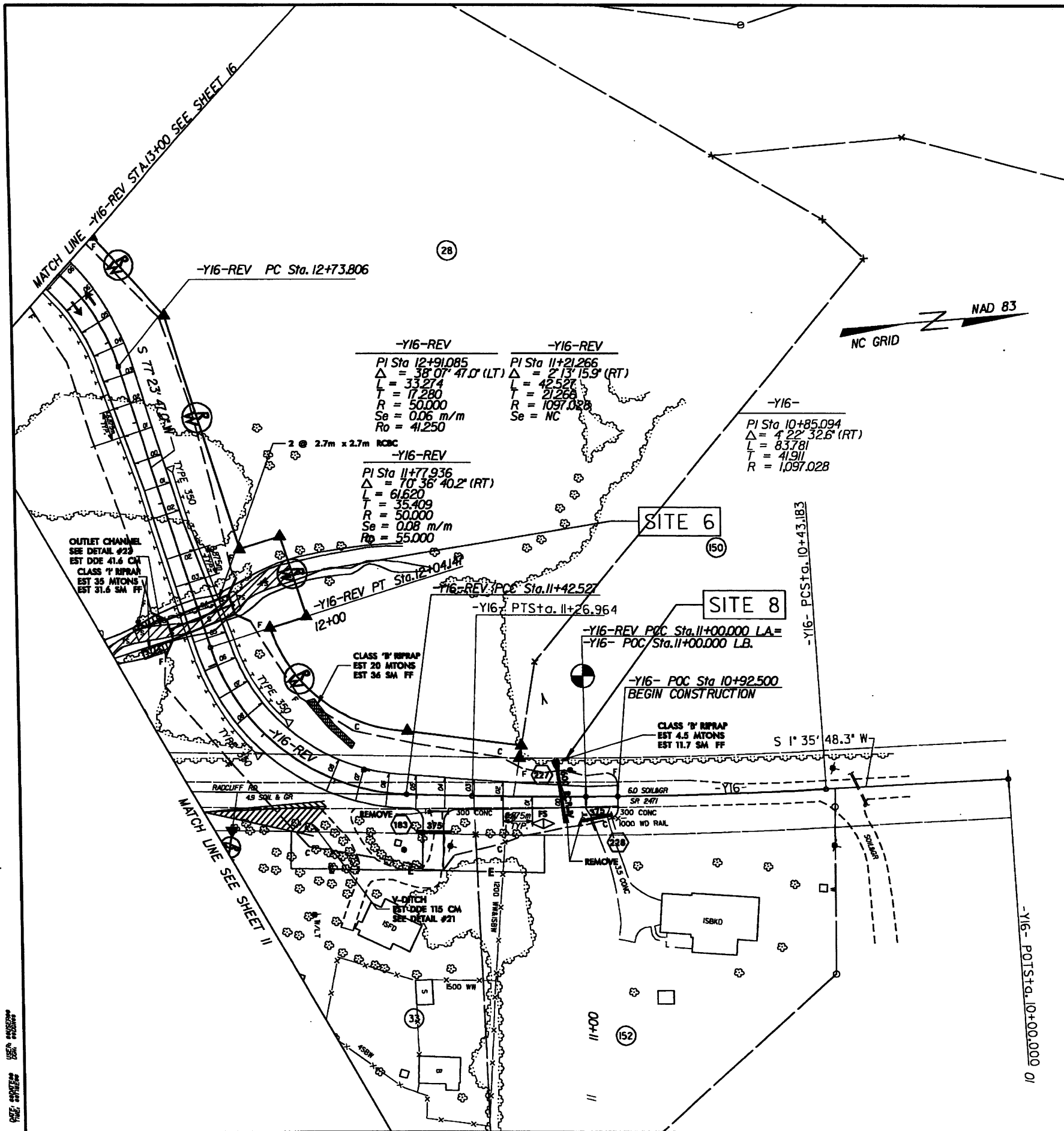
PROJ. REFERENCE NO. R-2533CC	SHEET NO. 18
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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AECOM
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701 Corporate Center Drive, Suite 415
Raleigh, NC 27607
(919) 854-2200 • (919) 854-2299 FAX

Permit Drawing
Sheet 29 of 40

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



FOR -Y16-REV PROFILE, SEE SHEET 32
FOR DITCH DETAILS, SEE SHEET 2-J

NOTE: ALL DRIVEWAY RADII ARE 3.0m
UNLESS OTHERWISE SHOWN.

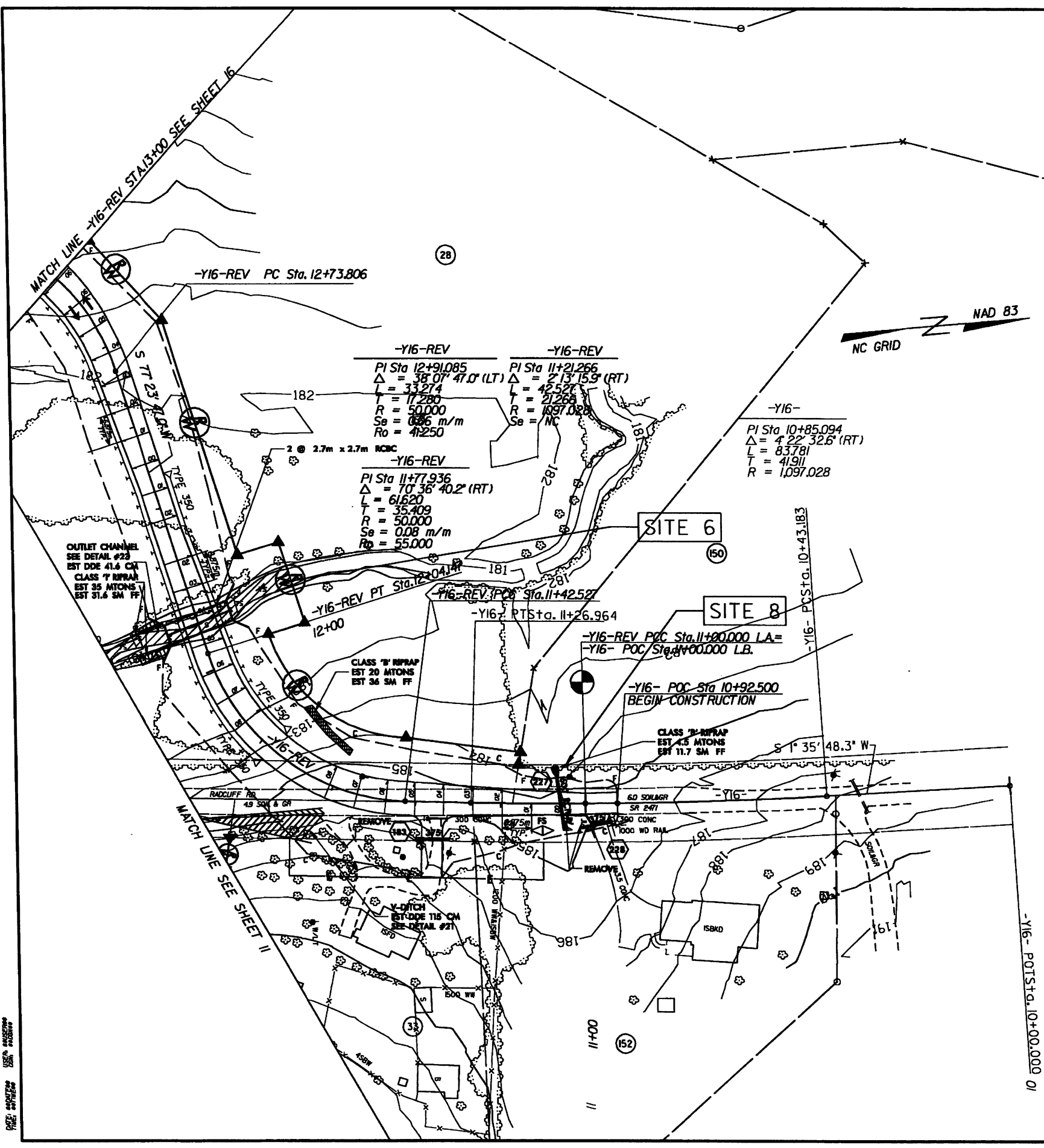
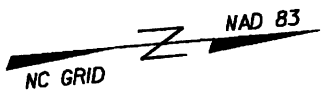


PROJ. REFERENCE NO. R-2533CC	SHEET NO. 18
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
AECOM	
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Permit Drawing
Sheet 30 of 40

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



-Y16-REV
 PI Sta 12+91.085
 $\Delta = 38^{\circ} 07' 47.0''$ (LT)
 $L = 33.274$
 $R = 50.000$
 $Se = 0.006$ m/m
 $Ro = 41250$

-Y16-REV
 PI Sta 11+21.266
 $\Delta = 2^{\circ} 13' 15.9''$ (RT)
 $L = 42.527$
 $R = 21266$
 $Se = 1.097$ 0.28
 $Ro = NC$

-Y16-REV
 PI Sta 11+77.936
 $\Delta = 70^{\circ} 36' 40.2''$ (RT)
 $L = 61.620$
 $T = 35.409$
 $R = 50.000$
 $Se = 0.008$ m/m
 $Ro = 55.000$

-Y16-
 PI Sta 10+85.094
 $\Delta = 4^{\circ} 22' 32.6''$ (RT)
 $L = 83.781$
 $T = 41.911$
 $R = 1,097.028$

CLASS 'B' NIPRAP
EST 20 MTONS
EST 36 SM FF

-Y16- POC Sta 10+92.500
BEGIN CONSTRUCTION

CLASS 'B' NIPRAP
EST 4.5 MTONS
EST 11.7 SM FF

FOR -Y16-REV PROFILE, SEE SHEET 32
 FOR DITCH DETAILS, SEE SHEET 2-J
 NOTE: ALL DRIVEWAY RADII ARE 3.0m
 UNLESS OTHERWISE SHOWN.

RAMP A STA: 0+00.000 =
 -YI-REV STA: 228+90.000 14.2m LT
 BEGIN GRADE ELEV 205.998 m

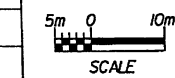
PI = 0+48.000
 EL = 204.282 m
 VC = 96 m
 K = 118

PI = 1+35.000
 EL = 200.430 m
 VC = 78 m
 K = 44

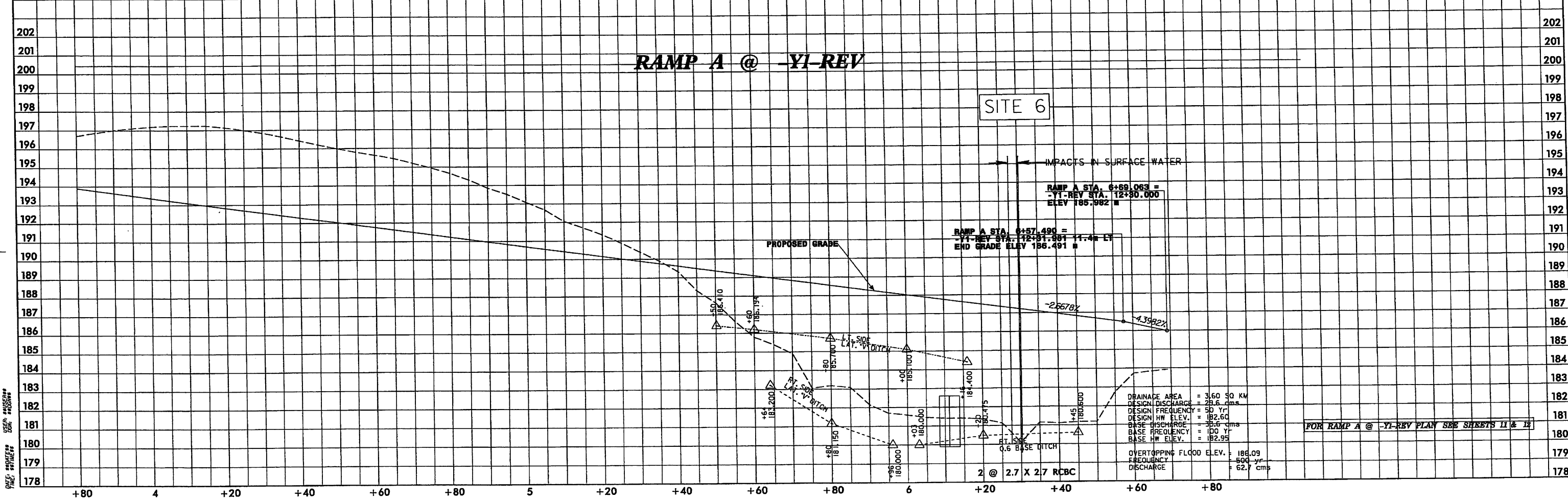
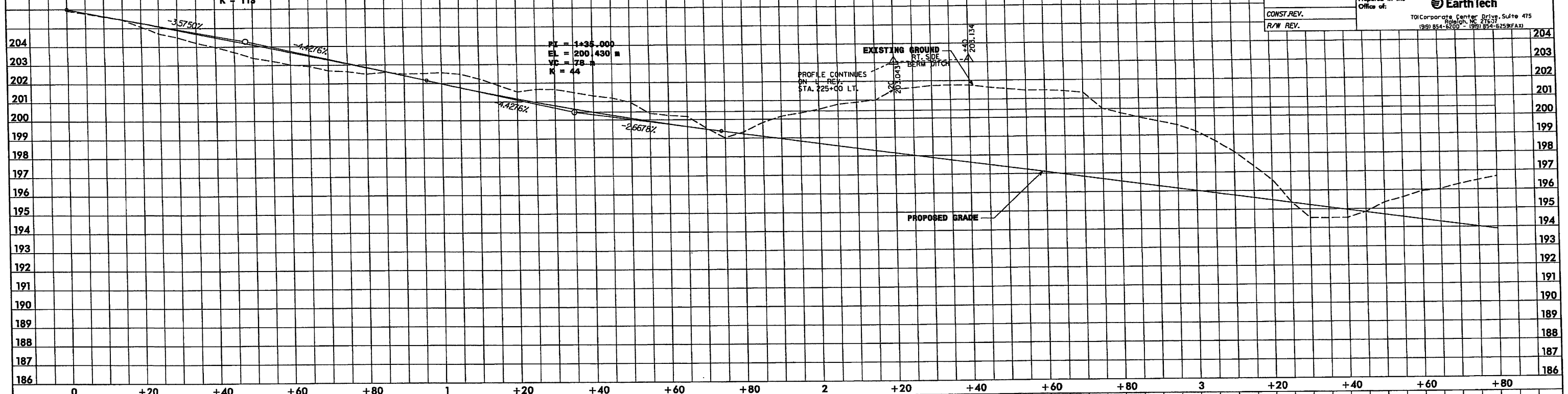
Permit Drawing
 Sheet 31 of 40



PROJ. REFERENCE NO. R-2533CC	SHEET NO. 27
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	
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EarthTech	
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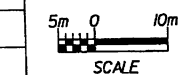
CONST. REV.
 R/W REV.



DATE: 08/11/09
 USER: JMS/MSH
 PLOT: 08/11/09



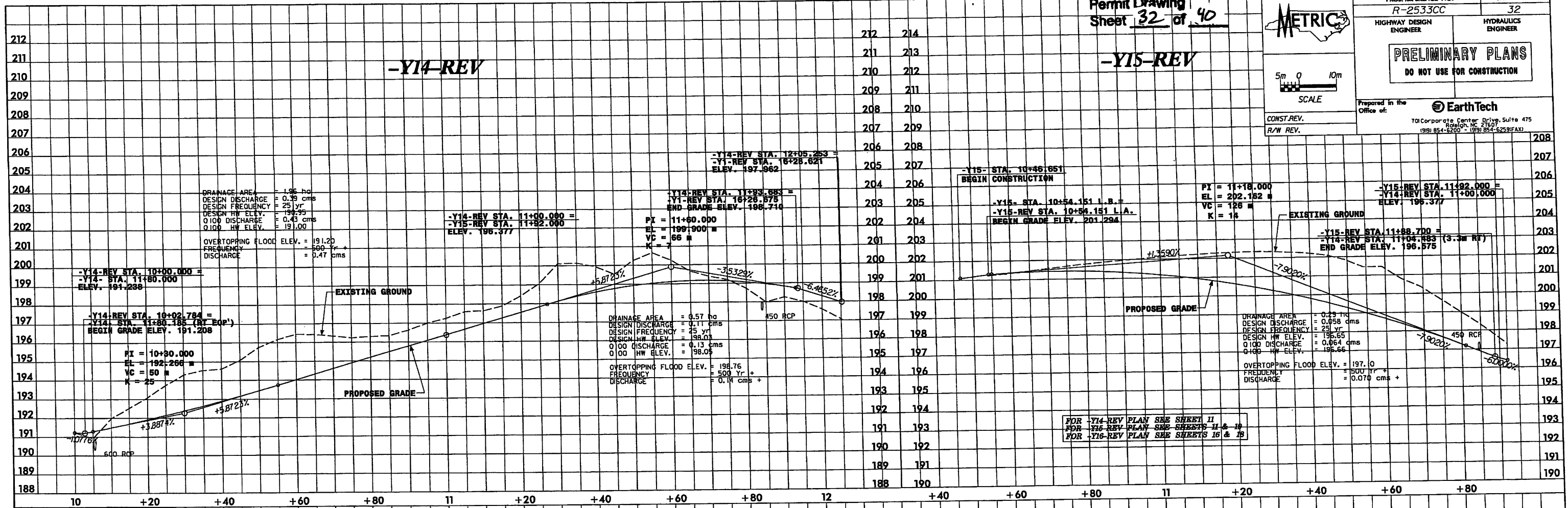
PROJ. REFERENCE NO. R-2533CC	SHEET NO. 32
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	
Prepared in the Office of: EarthTech 701 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6293 FAX	



CONST. REV.
R/W REV.

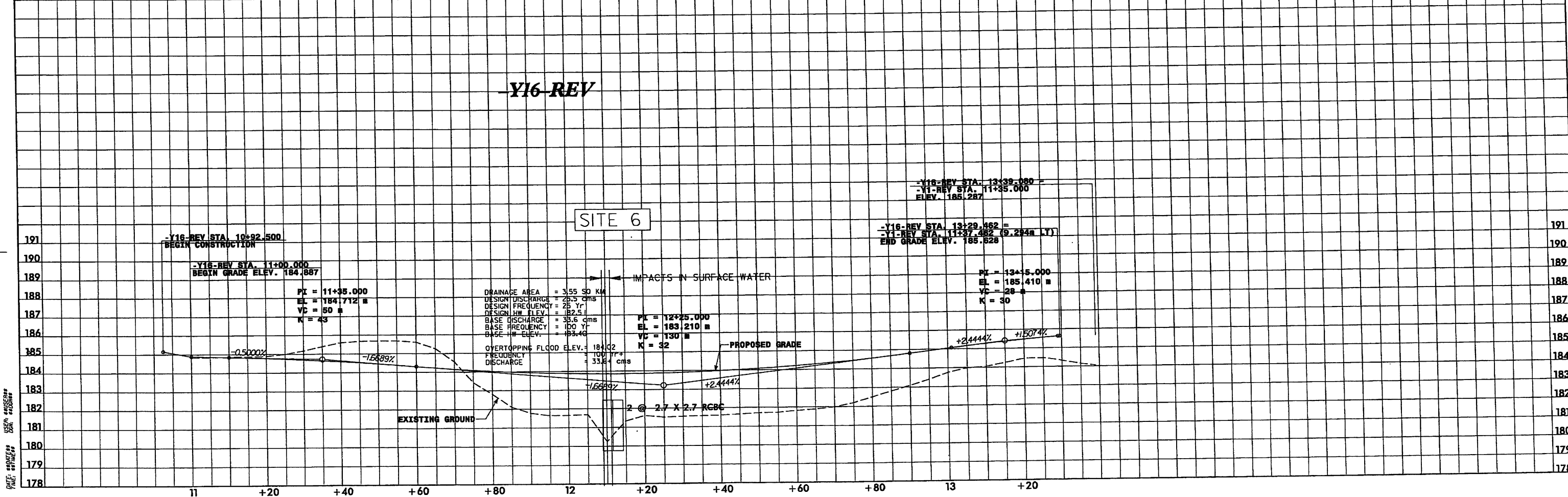
-Y14-REV

-Y15-REV

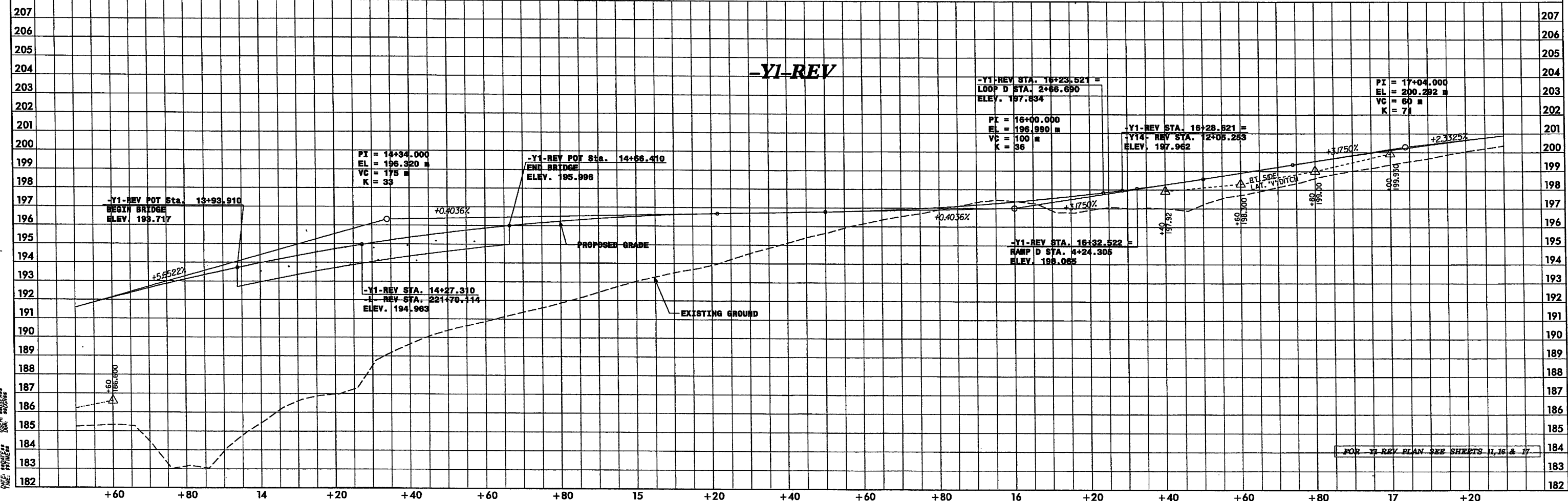
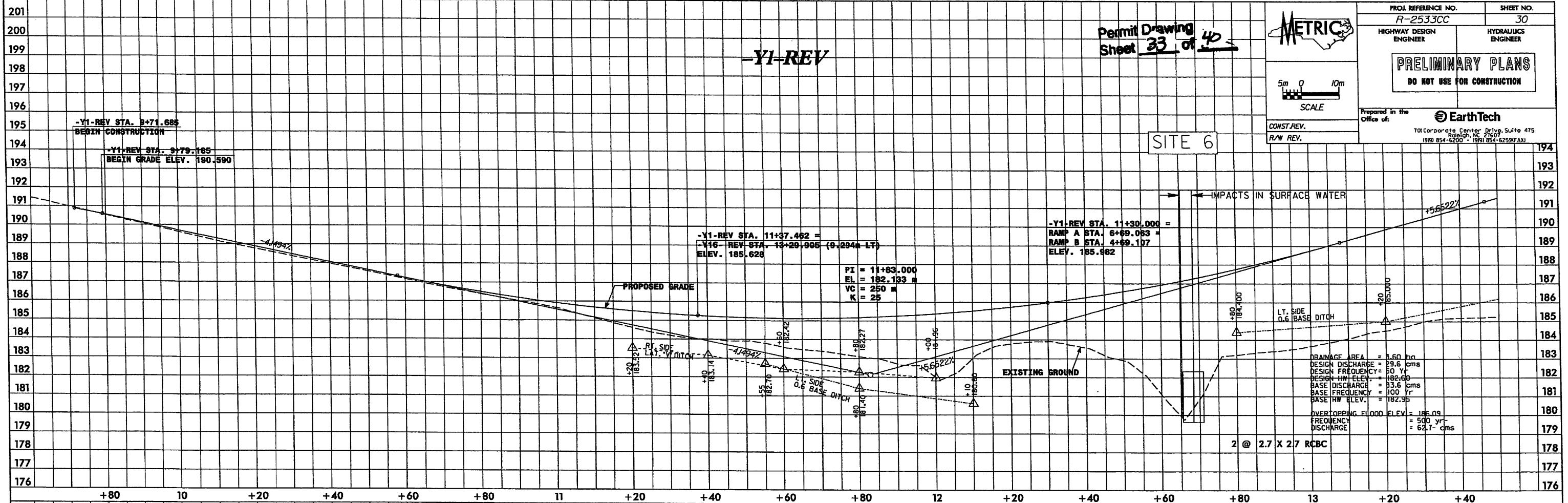


-Y16-REV

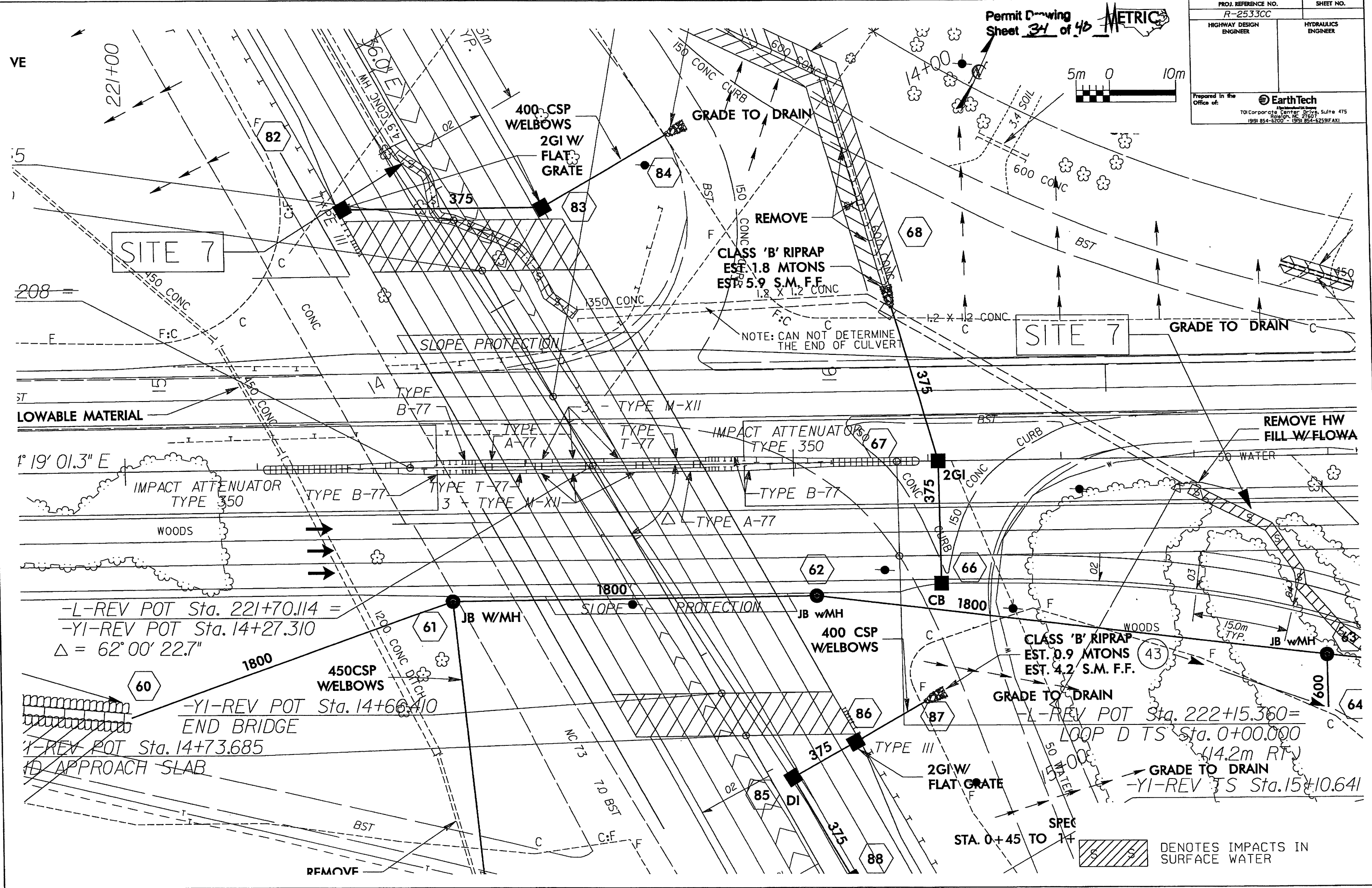
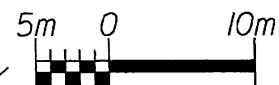
SITE 6



DATE: 04/01/03 USER: JCS/RSR PLOT: 04/01/03



Permit Drawing
Sheet 34 of 40



VE
221+00

SITE 7

SITE 7

LOWABLE MATERIAL

1° 19' 01.3" E
IMPACT ATTENUATOR
TYPE 350

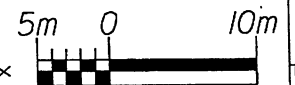
-L-REV POT Sta. 221+70.114 =
-YI-REV POT Sta. 14+27.310
Δ = 62° 00' 22.7"

-YI-REV POT Sta. 14+66.410
END BRIDGE
X-REV POT Sta. 14+73.685
D APPROACH SLAB

CLASS 'B' RIPRAP
EST. 0.9 MTONS
EST. 4.2 S.M. F.F.
L-REV POT Sta. 222+15.360 =
LOOP D TS Sta. 0+00.000
(14.2m RT.)
-YI-REV TS Sta. 15+10.641

DENOTES IMPACTS IN SURFACE WATER

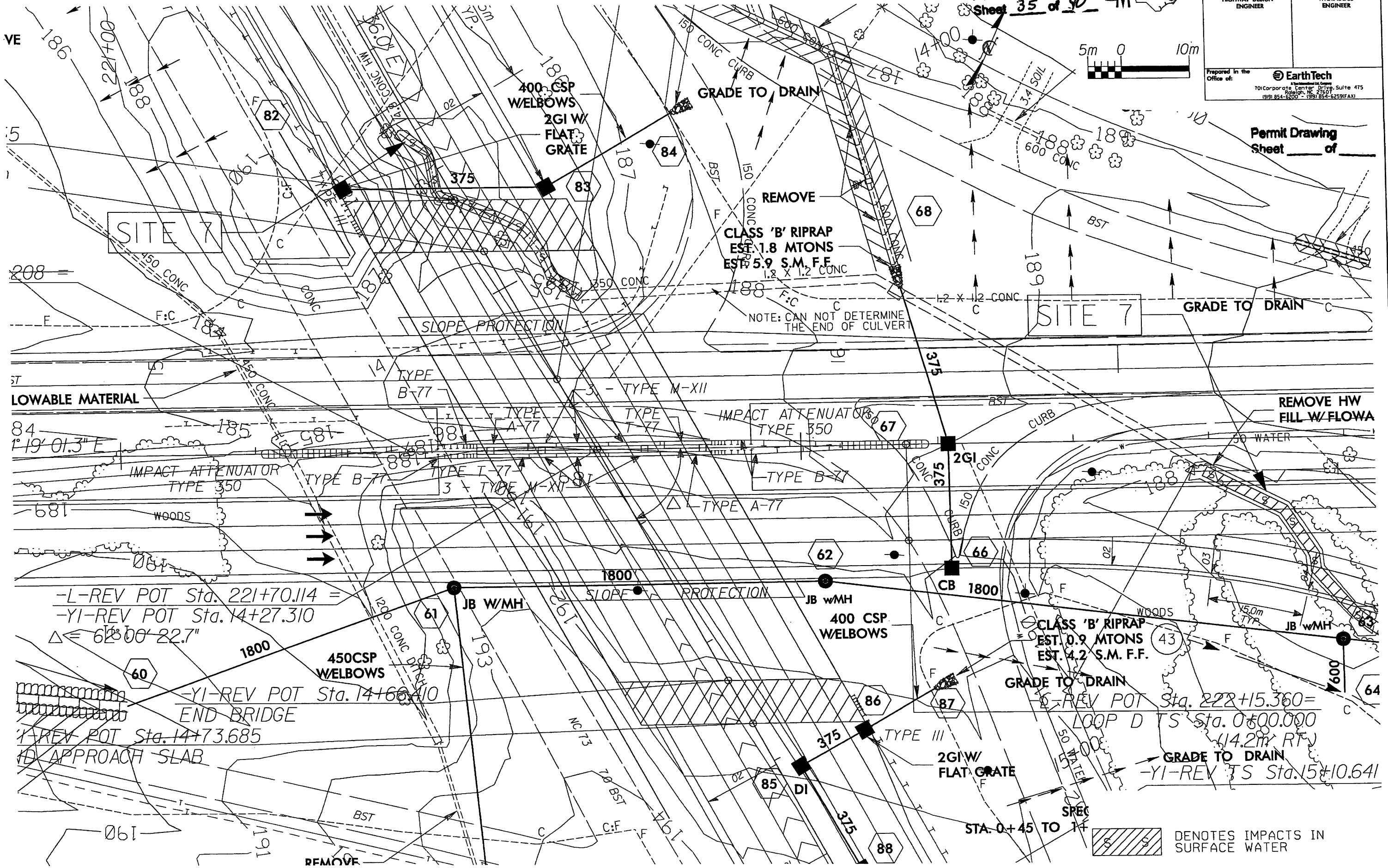
PROJ. REFERENCE NO. R-2533CC	SHEET NO.
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of:	
701 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-5600 • (919) 854-5259(FAX)	



Permit Drawing
Sheet 35 of 40



Permit Drawing
Sheet ___ of ___



DENOTES IMPACTS IN SURFACE WATER

LOWABLE MATERIAL

-L-REV POT Sta. 221+70.114 =
-YI-REV POT Sta. 14+27.310
 $\Delta \leq 62^{\circ}00'22.7''$

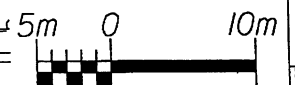
-YI-REV POT Sta. 14+66.410
END BRIDGE
YI-REV POT Sta. 14+73.685
APPROACH SLAB

CLASS 'B' RIPRAP
EST. 0.9 MTONS
EST. 4.2 S.M. F.F.

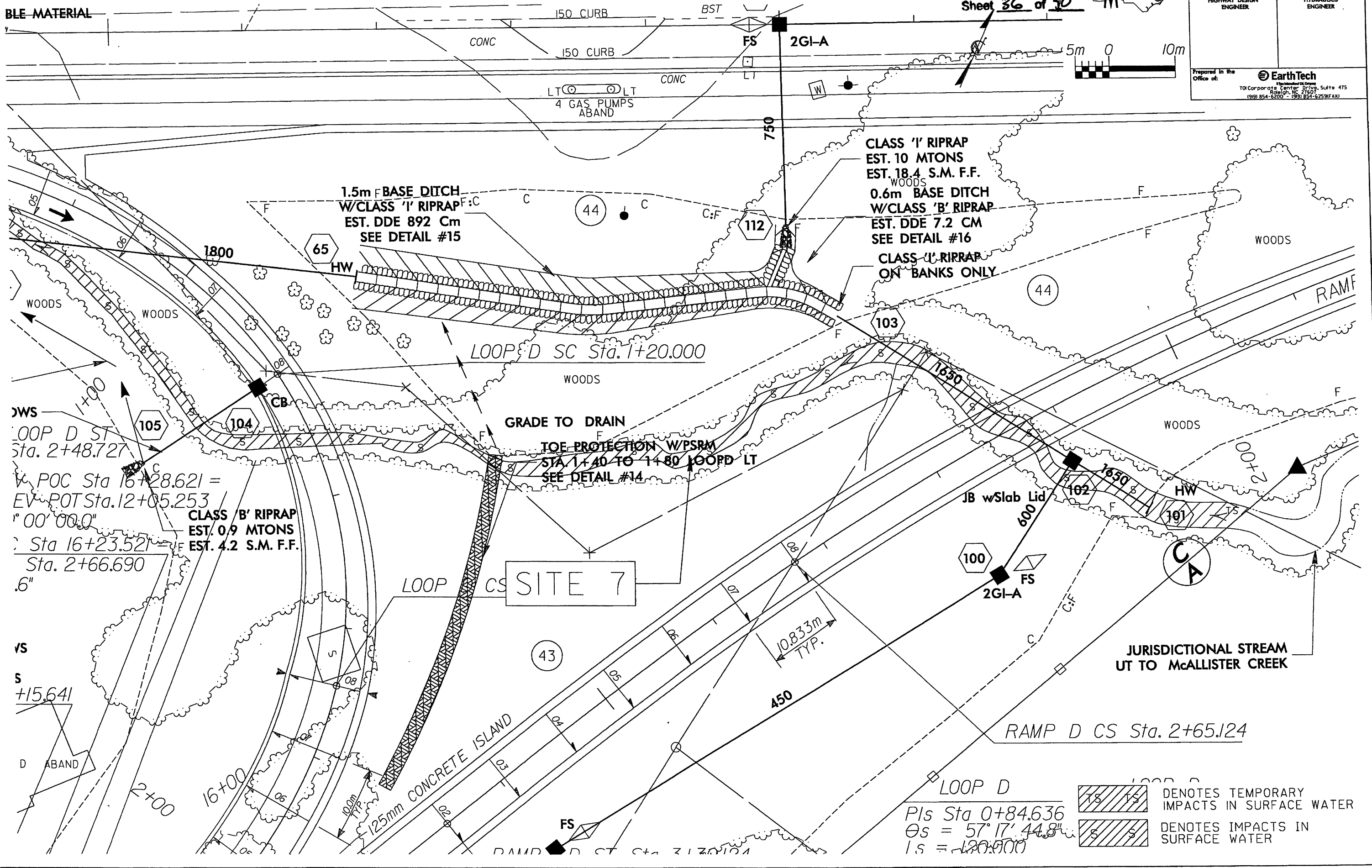
GRADE TO DRAIN
REV POT Sta. 222+15.360 =
LOOP D 'S' Sta. 0+00.000
(14.2m RT)
GRADE TO DRAIN
-YI-REV 'S' Sta. 15+10.641

NOTE: CAN NOT DETERMINE THE END OF CULVERT

BLE MATERIAL



PROJ. REFERENCE NO. R-2533CC	SHEET NO.
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of:	
 <small>Headquarters Office</small> 701 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-5200 • (919) 854-5292 FAX	



CLASS 'B' RIPRAP
EST. 0.9 MTONS
EST. 4.2 S.M. F.F.

GRADE TO DRAIN
TOE PROTECTION W/PSRM
STA 1+40 TO 1+80 LOOPD LT
SEE DETAIL #14

CLASS 'I' RIPRAP
EST. 10 MTONS
EST. 18.4 S.M. F.F.
0.6m BASE DITCH
W/CLASS 'B' RIPRAP
EST. DDE 7.2 CM
SEE DETAIL #16
CLASS 'I' RIPRAP
ON BANKS ONLY

JURISDICTIONAL STREAM
UT TO McALLISTER CREEK

DENOTES TEMPORARY IMPACTS IN SURFACE WATER
 DENOTES IMPACTS IN SURFACE WATER

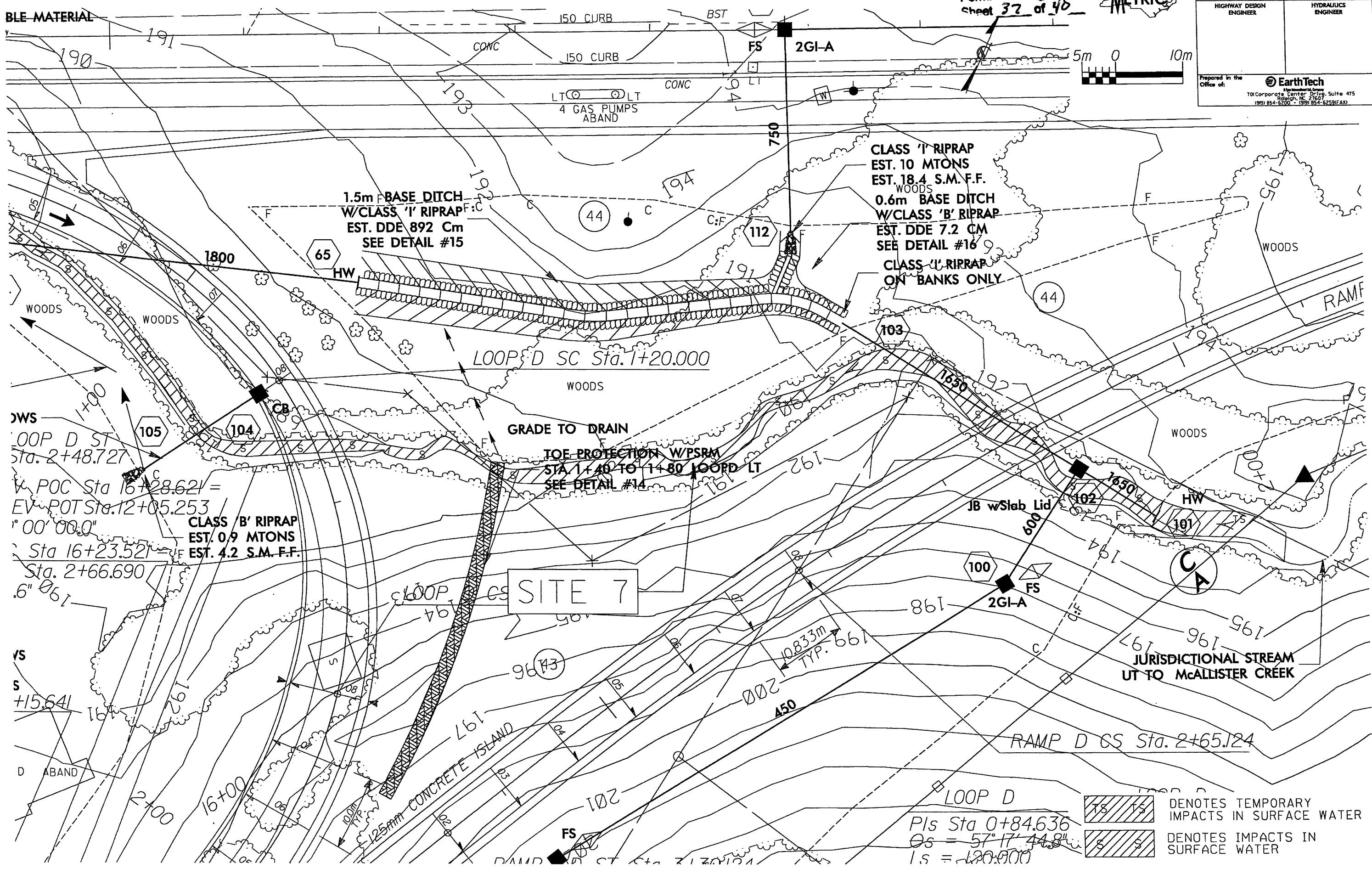
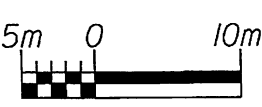
LOOP D
 Pls Sta 0+84.636
 $\theta_s = 57^{\circ}17'44.8''$
 $I_s = 120:900$

BLE MATERIAL

Permit Drawing
Sheet 32 of 40



PROJ. REFERENCE NO. R-2533CC	SHEET NO.
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of:	
EarthTech	
<small>101 Corporate Center Dr. Suite 475 Raleigh, NC 27607 (919) 854-8200 • (919) 854-8258(FAX)</small>	



1.5m BASE DITCH
W/CLASS 'I' RIPRAP
EST. DDE 892 Cm
SEE DETAIL #15

CLASS 'I' RIPRAP
EST. 10 MTONS
EST. 18.4 S.M. F.F.
0.6m BASE DITCH
W/CLASS 'B' RIPRAP
EST. DDE 7.2 CM
SEE DETAIL #16
CLASS 'I' RIPRAP
ON BANKS ONLY

CLASS 'B' RIPRAP
EST. 0.9 MTONS
EST. 4.2 S.M. F.F.

SITE 7

JURISDICTIONAL STREAM
UT TO McALLISTER CREEK

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
SS SS DENOTES IMPACTS IN SURFACE WATER

LOOP D
Pls Sta 0+84.636
Os = 57°17'44.8"
Is = 120.000

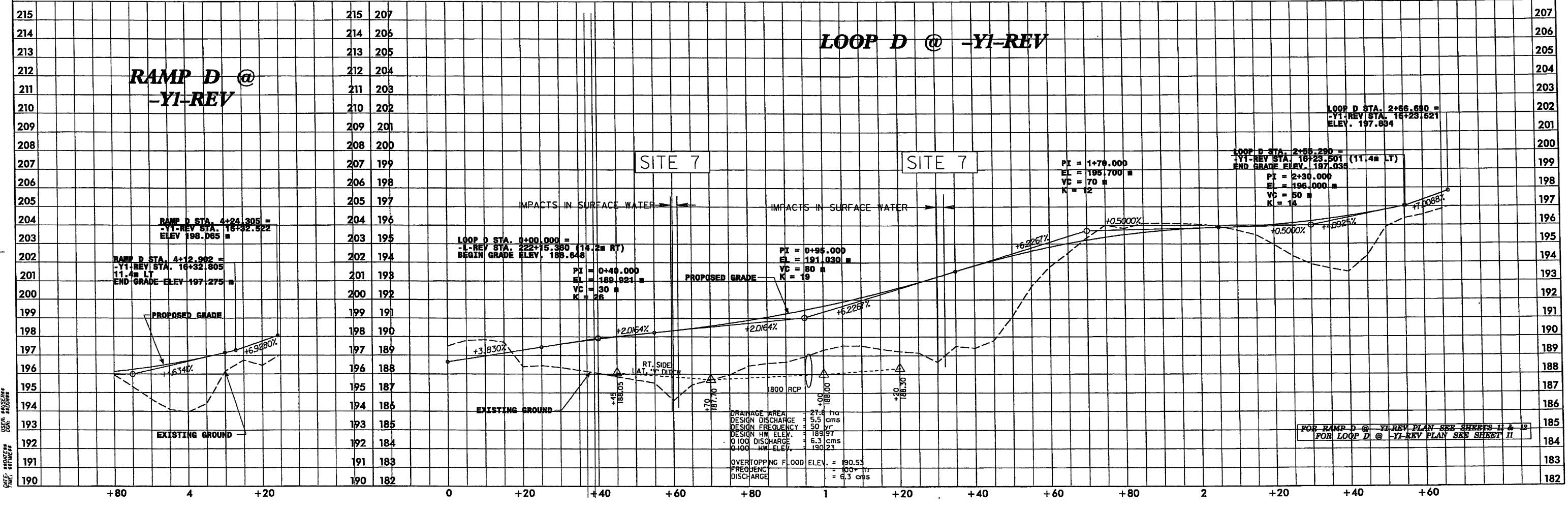
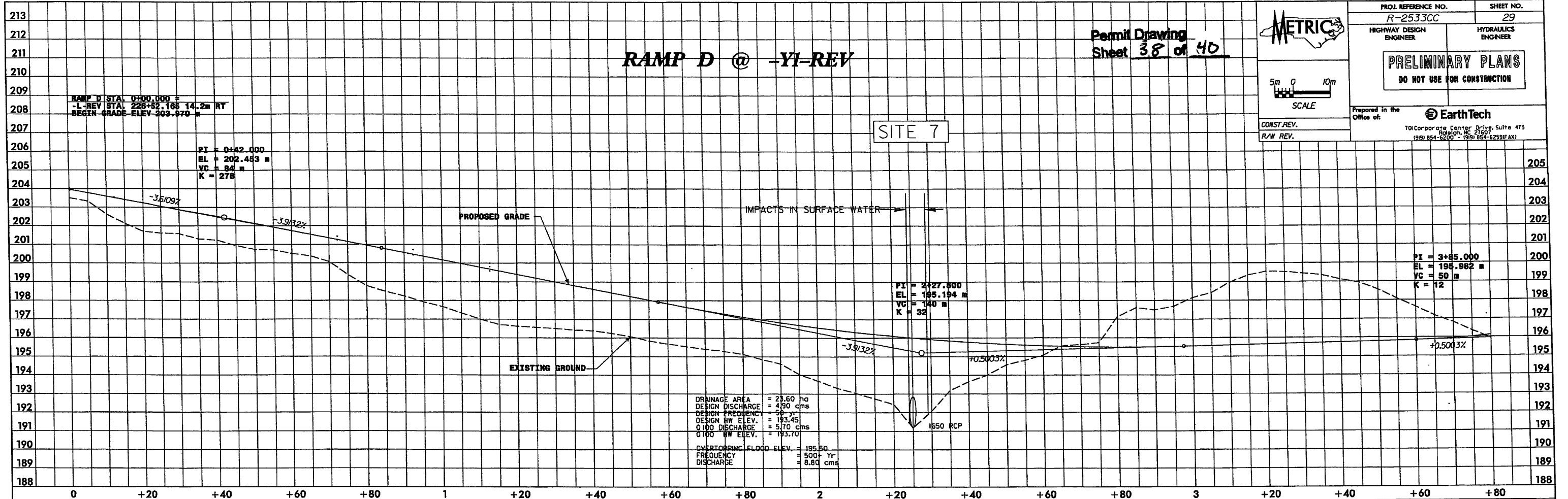
JWS
LOOP D ST
Sta. 2+48.727
V. POC Sta 16+28.621 =
EV. POT Sta. 12+05.253
1°00'00.0"
Sta 16+23.521 =
Sta. 2+66.690
6" @ 61

GRADE TO DRAIN
TOE PROTECTION W/PSRM
STA 1+40 TO 1+80 LOOP LT
SEE DETAIL #14

RAMP D CS Sta. 2+65.124

VS
S
+15.641
D
ABAND

DAMD ST Sta. 2+30.104

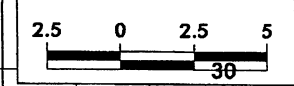


USER: #10000000
 DATE: 08/08/00
 TIME: 08:00

FOR RAMP D @ -YI-REV PLAN SEE SHEETS 11 & 12
FOR LOOP D @ -YI-REV PLAN SEE SHEET 11

10/26/21

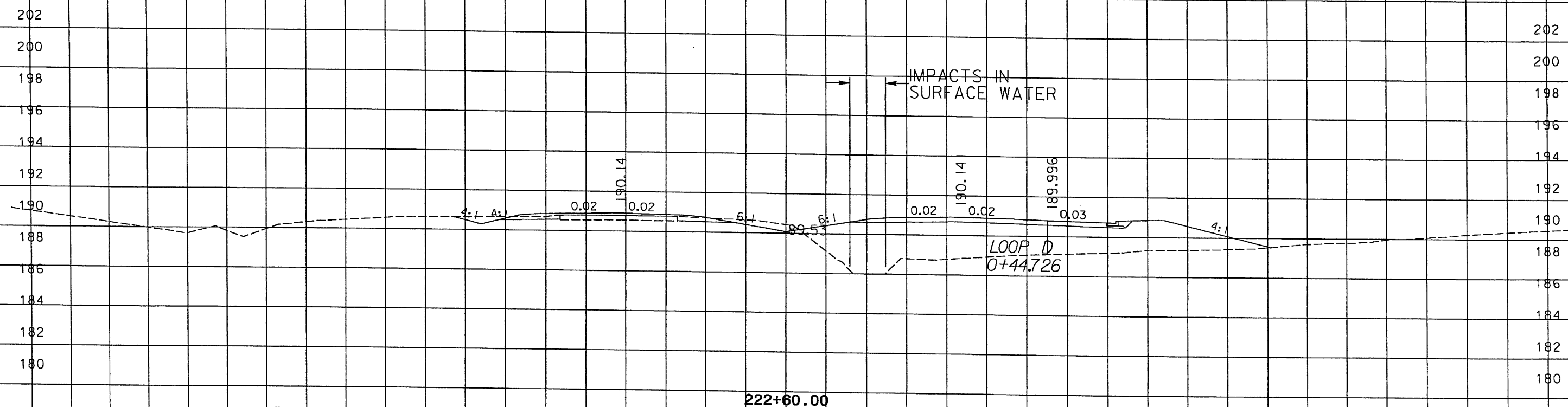
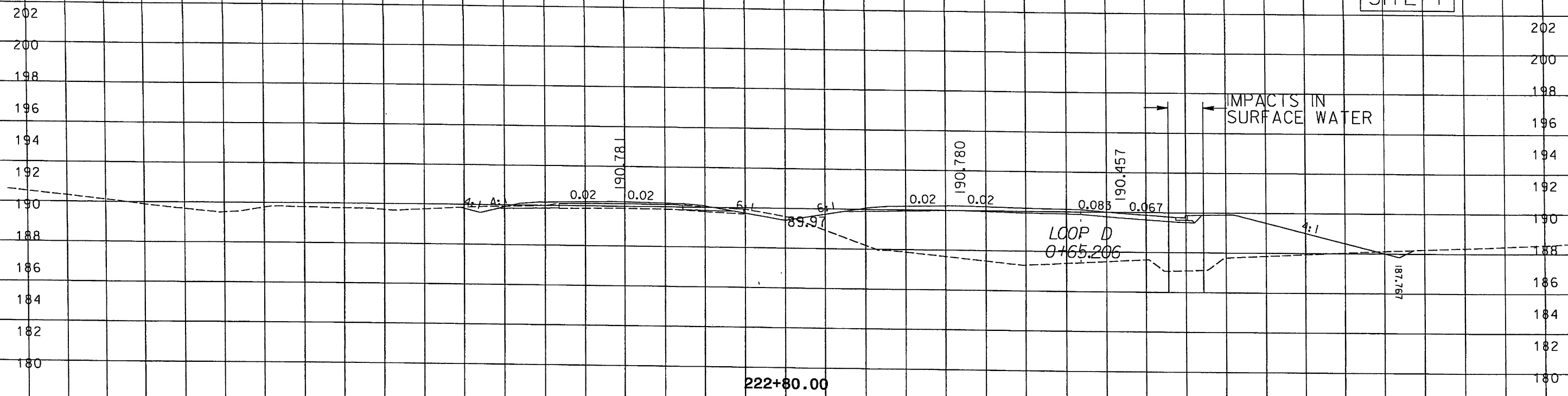
40 30 20 10 0 10 20 30 40 50



PROJECT REFERENCE NO. R-2533CC SHEET NO. X-03

Permit Drawing set 39 of 40

SITE 7



*****SYTIME*****
*****USE ONLY*****

-L-REV

40

30

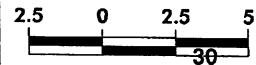
20

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0

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PROJECT REFERENCE NO.	SHEET NO.
R-2533CC	X-15Z
40	50

Permit Drawing
 Sheet 40 of 40

222

220

218

216

214

212

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208

206

204

202

200

198

196

194

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188

222

220

218

216

214

212

210

208

206

204

202

200

198

196

194

192

190

188

SITE 7

← IMPACTS IN SURFACE WATER

2:1

4:1

6:1

0.08

95.78

0.08

93.65

4:1

2+40.00

-Y1 - RAMP D

40

30

20

10

10

20

30

40

50

 DATE PLOTTED: 10/26/2019 10:28:30 AM
 PLOTTER: HP DesignJet T1100E
 PLOTTER MODEL: HP DesignJet T1100E
 PLOTTER SERIAL: 388738014
 PLOTTER DRIVER: HP DesignJet T1100E
 PLOTTER OPTIONS: HP DesignJet T1100E
 PLOTTER LANGUAGE: HP DesignJet T1100E
 PLOTTER COMMANDS: HP DesignJet T1100E
 PLOTTER PARAMETERS: HP DesignJet T1100E
 PLOTTER SETTINGS: HP DesignJet T1100E
 PLOTTER STATUS: HP DesignJet T1100E
 PLOTTER USER: HP DesignJet T1100E
