



DEPARTMENT OF THE ARMY  
WILMINGTON DISTRICT, CORPS OF ENGINEERS

P.O. BOX 1890  
WILMINGTON, NORTH CAROLINA 28402-1890

IN REPLY REFER TO

November 15, 2000

Regulatory Division

Action ID. 199930861, TIP NO. A-9DD

Mr. William D. Gilmore, P.E., Manager  
Project Development and Environmental Analysis Branch  
North Carolina Department of Transportation  
1548 Mail Service Center  
Raleigh, North Carolina 27699-1548

Dear Mr. Gilmore:

In accordance with the written request of April 20, 1999, and the ensuing administrative record, enclosed is a permit to discharge dredged or fill material into the waters and adjacent wetlands of Wolf Creek, Fontana Lake and unnamed tributaries impacting 5,677 linear feet of stream channel, 6.86 acres of wetland and 3.77 acres of open water to facilitate the widening of 2.85 miles of NC Highway 28 from Edwards Gap to SR 1231, East of Stecoah, Graham County, North Carolina (TIP No. A-9DD, State Project No. 8.3019122).

If any change in the authorized work is required because of unforeseen or altered conditions or for any other reason, the plans revised to show the change must be sent promptly to this office. Such action is necessary, as revised plans must be reviewed and the permit 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:

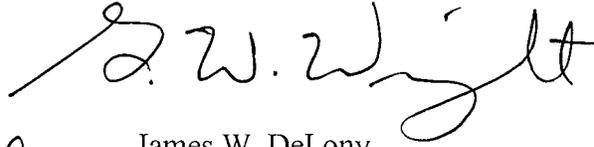
- a. You must complete construction before December 31, 2003.
- b. You must notify this office in advance as to when you intend to commence and complete work.
- c. You must allow representatives from this office to make periodic visits to your worksite as deemed necessary to assure compliance with permit plans and conditions.



405

Should you have any question, contact Mr. Steven Lund, in our Asheville Regulatory Field Office, Regulatory Division, telephone (828) 271-4857.

Sincerely,



James W. DeLony  
Colonel, U.S. Army  
District Engineer

Enclosures

Copy Furnished with enclosures:

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

Mr. Larry Hardy  
National Marine Fisheries Service  
Pivers Island  
Beaufort, North Carolina 28516

Copies Furnished with special conditions  
and plans:

Mr. William L. Cox, Chief  
Wetlands Section - Region IV  
Water Management Division  
U.S. Environmental Protection Agency  
Atlanta Federal Center  
61 Forsyth Street, SW  
Atlanta, Georgia 30303

Mr. John Hefner, Field Supervisor  
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  
North Carolina Department of  
Environment and Natural Resources  
1638 Mail Service Center  
Raleigh, North Carolina 27699-1638

**RECEIVED**

**NOV 15 2000**

**REGULATORY  
WILMINGTON FIELD OFFICE**

**DEPARTMENT OF THE ARMY PERMIT**

Permittee NC Department of Transportation

Permit No. 199930861

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 discharge dredged or fill material into the waters and adjacent wetlands of Wolf Creek, Fontana Lake and unnamed tributaries impacting 5,677 linear feet of stream channel, 6.86 acres of wetland, and 3.77 acres of open water to facilitate the widening of 2.85 miles of NC Highway 28 from Edwards Gap to SR 1231, East of Stecoah, Graham County, North Carolina (TIP No. A-9DD, State Project No. 8.3019122).

**Project Location:**

From Edwards Gap to SR 1231, East of Stecoah, Graham County, North Carolina (TIP No. A-9DD).

**Permit Conditions:**

**General Conditions:**

1. The time limit for completing the work authorized ends on December 31, 2003. 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.

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

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

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

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

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

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

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

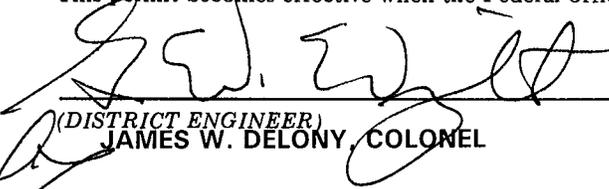
6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable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

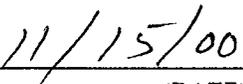
Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

  
\_\_\_\_\_  
(PERMITTEE)  
NC DEPARTMENT OF TRANSPORTATION

  
\_\_\_\_\_  
(DATE)

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

  
\_\_\_\_\_  
(DISTRICT ENGINEER)  
JAMES W. DELONY, COLONEL

  
\_\_\_\_\_  
(DATE)

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

\_\_\_\_\_  
(TRANSFeree)

\_\_\_\_\_  
(DATE)

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 enclosed sheet.

**Further Information:**

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
  - ( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
  - (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
  - ( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
2. Limits of this authorization.
  - a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
  - b. This permit does not grant any property rights or exclusive privileges.
  - c. This permit does not authorize any injury to the property or rights of others.
  - d. This permit does not authorize interference with any existing or proposed Federal project.
3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
  - a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
  - b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
  - c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
  - d. Design or construction deficiencies associated with the permitted work.

## **SPECIAL CONDITIONS**

1. All work authorized by this permit must be performed in strict compliance with the attached plans, which are a part of this permit.
2. All conditions of Section 401, Clean Water Act, Water Quality Certification No. 3260, issued by the North Carolina Division of Water Quality on November 29, 1999 and modified on July 31, 2000, will be regarded as conditions of this Department of the Army permit.
3. The permittee shall schedule a preconstruction meeting between their representatives, the contractor and a representative of the Corps of Engineers, Asheville Regulatory Field Office prior to any work in jurisdictional waters and wetlands to ensure that there is a mutual understanding of all terms and conditions contained in this Department of the Army permit. The permittee shall notify the Corps of Engineers a minimum of thirty (30) days in advance of the meeting.
4. The permittee and his contractors and/or agents shall not excavate, fill or perform land clearing at any time in the construction or maintenance of this project within waters and/or wetlands except as authorized by this permit or any modification to this permit. There shall be no excavation from or waste disposal into jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit.
5. To ensure that all borrow and waste activities occur on uplands, 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 ensure that all such areas comply with Special Condition No. 4 of this permit and shall require and maintain documentation of the location and characteristics of all borrow and disposal sites associated with this project. This information will include data regarding soils, vegetation and hydrology sufficient to clearly demonstrate compliance with Special Condition No. 4 above. All information will be available to the Corps of Engineers upon request.
6. The permittee shall require his 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 his contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit.
7. Adequate sedimentation and erosion control measures must be implemented prior to any ground disturbing activities to minimize impacts to downstream aquatic resources including trout waters. These measures must be inspected and maintained regularly, especially following rainfall events.

8. 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. Grubbing of riparian vegetation will not occur until immediately before construction begins on a given segment of channel.

9. All temporary diversion channels and stream crossings will be constructed of non-erodible materials. Any such structures located outside of the authorized construction limits will be reported in writing to the Corps of Engineers, Asheville Regulatory Field Office, together with a location map and restoration plan.

10. The permittee will insure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Any deviations 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.

11. All channel relocations will be constructed in a dry work area and stabilized before stream flows are diverted through them. To the maximum extent practicable, channel relocations will be completed during the growing season to allow for the establishment of stabilizing vegetation. Stability shall be achieved during the non-growing season through the use of erosion control matting or mats of existing field sod. Native species of woody vegetation will be utilized including alder, silky dogwood, eastern hemlock, sycamore, black gum and river birch. Representatives of the Corps of Engineers and the US Fish and Wildlife Service shall be notified in advance by facsimile transmission or electronic mail of the intended diversion of water into the new channel(s).

12. In order to compensate for unavoidable impacts to functional stream channel and wetlands associated with this project, the permittee will utilize 3248 linear feet of successfully restored stream channel and 13.72 acres of successfully restored swamp forest wetland at their Tulula Creek Wetlands Mitigation Site near Topton, Graham County, North Carolina. The mitigation work will be accomplished in accordance with the terms and conditions of the permittee's Nationwide Permit No. 27 of April 7, 2000 and their *Stream and Wetland Mitigation Plan, Tulula Creek Wetlands Mitigation Bank, Graham County, North Carolina* date September 1997. Monitoring of stream channel restoration success will be accomplished in accordance with the Section 401, Clean Water Act, Water Quality Certification No. 3256, issued by the North Carolina Division of Water Quality on October 2, 2000 (copy attached) with reports also provided to the Corps of Engineers, Asheville Regulatory Field Office. Monitoring of wetland restoration success will be accomplished in accordance with the permittee's *Stream and Wetland Monitoring Plan, Tulula Creek Wetland Mitigation Site*, dated August 2000. The permittee will provide a survey identifying the location of the 3248 linear feet of stream channel and the 13.72 acres of wetland that will satisfy this mitigation requirement.

13. The permittee will maintain the mitigation sites described in condition 12 in the condition established by the mitigation plans in perpetuity. Prohibited activities within the mitigation areas specifically include, but are not limited to: the construction or placement of roads, walkways, buildings, signs, or structures of any kind (i.e., billboards, interior fences, etc.); filling, grading, excavation, leveling, or any other earth moving activity that may alter the drainage pattern on the property; the cutting, mowing, destruction, removal, damage or other alternation of any vegetation; disposal or storage of any debris, waste or garbage; except as may be authorized by the mitigation plans or subsequent modifications which are approved by the Corps of Engineers. In addition, the permittee shall take no action, whether on or off the mitigation properties, which will adversely impact the restored wetlands or streams.

14. Condition 13, above, runs with the land. The permittee shall not sell, lease, or otherwise convey any interest in the properties used to satisfy mitigation requirements for this permit, to any third party, without the express written consent of the Corps of Engineers.

15. All channel relocations on Wolf Creek will be constructed according to the attached permit plans. The stability and success of the 4053 linear feet of natural stream channel relocation will be monitored, as a unit, in accordance with the stream monitoring requirements of Special Condition No. 12, above.

16. Concrete box culverts will be constructed so that the bottom of the culvert is one foot below the bed of the stream. If not restricted by bedrock, metal pipe culverts should be buried a sufficient depth to allow the accumulation of natural substrate and the passage of indigenous aquatic life during normal flow conditions. Multiple cell box culverts will be constructed so that normal and low flows are diverted through only one cell. Notched baffles will be constructed at approximately 25-foot intervals within the bottom of the low flow cell to allow for the accumulation of natural bed materials and to create resting areas to facilitate the movement of fish and other aquatic organisms through these culverts.

17. In order to allow for continued movement of bed load and aquatic organisms, existing stream channel widths and depths will be maintained at the inlet and outlet ends of culverts. Riprap armoring of streams at culvert inlets and outlets shall be minimized in favor of bioengineering techniques such as bank sloping, erosion control matting and revegetation with deep-rooted, woody plants.

18. In order to protect egg and fry stages from sedimentation, instream construction is prohibited during the trout spawning period of January 1 to April 15 of any year.

19. Where practicable, storm water shall be directed to vegetated buffer areas or retention basins and not directly into trout waters or their tributaries.

20. All mechanized equipment operating near surface waters shall be regularly inspected to prevent contamination of streams from leakage of fuels, lubricants, hydraulic fluids or other toxic materials.

21. In order to monitor for the exposure of pyritic (acid) rock, the permittee will extend, into this permit area, the existing water quality sampling program of surface waters that was developed and initiated for TIP No. A-9 DB/DC, Action ID No. 199505335. Monitoring will continue until construction is completed. A pH reading of 6.0 or below will trigger implementation of the same acid rock contingency plan developed for this adjacent project.

22. Potential roost trees for the Indiana bat, including dead or damaged specimens, will be avoided to the maximum extent practicable. Any cutting of such trees will be limited to the period October 15 to April 15 of any year.

23. In order to protect aquatic insect populations that provide a food source for the Indiana bat, area streams will be protected from degradation to the maximum extent practicable.

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

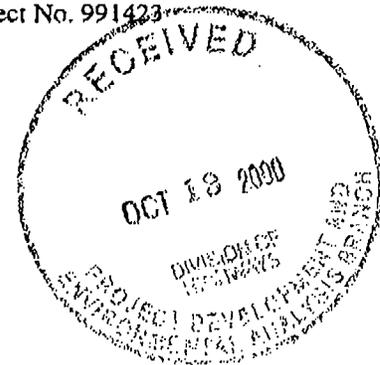
James B. Hunt, Jr., Governor  
Bill Holman, Secretary  
Kerr T. Stevens, Director



October 2, 2000  
Graham County  
DWQ Project No. 991423

**APPROVAL OF 401 Water Quality Certification**

Mr. William D. Gilmore, P.E., Manager  
Planning and Environmental Branch  
North Carolina Department of Transportation  
P.O. Box 25201  
Raleigh, NC, 27611-5201



Dear Mr. Gilmore:

You have our approval, as described in your application dated September 23, 1999, your mitigation plan dated September 1997 (except where modified by the design drawings received March 13, 2000), your correspondence submitted July 21, 2000, your correspondence dated July 28, 2000, your design drawings for project 6.939004T received March 13, 2000, your monitoring plan dated August 2000, and in accordance with the attached conditions and those listed below, to place fill material in wetlands and streams for the purpose of constructing the Tulula Creek Wetland and Stream Mitigation Site in Graham County. The project should be constructed in accordance with your application dated September 23, 1999, your mitigation plan dated September 1997 (except where modified by the design drawings received March 13, 2000), your correspondence submitted July 21, 2000, your correspondence dated July 28, 2000, your design drawings for project 6.939004T received March 13, 2000, and your monitoring plan dated August 2000. After reviewing your application, we have decided that this fill is covered by General Water Quality Certification Number 3256. Certification Number 3256 corresponds to Nationwide Permit Number 27 issued by the Corps of Engineers. In addition, you should acquire any other federal, state or local permits before you proceed with your project including (but not limited to) Sediment and Erosion Control, Non-Discharge and Water Supply Watershed regulations. This approval will expire when the accompanying 404 permit expires unless otherwise specified in the General Certification.

This approval is valid solely for the purpose and design described in your application (unless modified below). Should your project change, you must notify the DWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. This approval shall expire with the corresponding Nationwide Permit expires or as otherwise provided in the General Certification. For this approval to be valid, you must follow the conditions listed in the attached certification and any additional conditions listed below.

- 1.) Upon completion of the project, the NCDOT shall complete and return the enclosed "Certification of Completion Form" to notify DWQ when all work included in the 401 Certification has been completed. The responsible party shall complete the attached form and return it to the 401/Wetlands Unit of the Division of Water Quality upon completion of the project.
- 2.) Upon completion of the project, the NC Division of Water shall be provided as built for the referenced project within 3 months of the project's completion.

Wetlands/401 Unit

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



James B. Hunt, Jr., Governor  
Bill Holman, Secretary  
Kerr T. Stevens, Director

- 3.) Four permanent channel cross sections must be established. The cross sections must include two riffles and pools. All four channel cross section monitoring sites shall be approved in writing by the NC Division of Water Quality. Elevations of thalwegs, bank toes, bankfull benches, point bars, bankfull widths, and cross section areas must be surveyed and recorded and submitted to DWQ annually for five years.
- 4.) The longitudinal channel profile must be surveyed, recorded and submitted to DWQ after the first year and every two years for the next four years. Thalweg, water surface, bankfull bench, and top of bank elevations should be surveyed and recorded for all pools and riffles.
- 5.) Channel pattern must be measured and recorded and submitted to DWQ the first year, and every two years thereafter for the next four years. Measures must include sinuosity, meander wavelength, radius of curvature, and belt width.
- 6.) Pebble counts must be conducted, recorded, and submitted to DWQ on a yearly basis for the entire reach. The method utilized must be done in order to characterize the entire reach. Also, an active channel and subsurface sediment analysis should be conducted yearly at the same riffle and the results should be submitted to DWQ on a yearly basis for a total of five years from the date of issuance of the 401 Water Quality Certification. The method should be submitted to DWQ for written approval within 3 months of issuance of the 401 Water Quality Certification.
- 7.) Bank stability must be evaluated at two meanders bends. The sites shall be approved by the NC DWQ in writing. The evaluation must establish permanent toe pins at these bends to which to compare any lateral bank movement or failure. The banks must be evaluated and the results submitted on a yearly basis to DWQ for a total of five years from the date of issuance of the 401 Water Quality Certification. The locations and positions of the pins must be submitted to DWQ within 90 days of the issuance of the 401 Water Quality Certification for written approval.
- 8.) Photographs must be taken at the same location and orientation at four points (at the cross sections described in condition 3) and submitted to DWQ on a yearly basis.
- 9.) In addition to conditions 3 through 8, DOT will perform monitoring as described in the Stream and Wetlands Monitoring Plan dated August 2000.
- 10.) All macrobenthos monitoring shall be performed in accordance with NC DENR's Internal Technical Guide for Benthic Macroinvertebrate Monitoring Protocols dated May 2000.
- 11.) If the stream relocation becomes unstable, the stream shall be repaired or stabilized using only natural channel design techniques. Additionally all repair designs must be submitted to and receive written approval from the NC Division of Water Quality before the repair work is performed. If any portion of the relocated of the stream is used as compensatory mitigation for stream impacts, that portion shall be preserved in perpetuity through an easement or some other legally binding mechanism.

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



James B. Hunt, Jr., Governor  
Bill Holman, Secretary  
Kerr T. Stevens, Director

12.) A permanent conservation easement shall be obtained for the purpose of protecting the site in perpetuity.

If you do not accept any of the conditions of this certification, you may ask for an adjudicatory hearing. You must act within 60 days of the date that you receive this letter. To ask for a hearing, send a written petition, which conforms to Chapter 150B of the North Carolina General Statutes to the Office of Administrative Hearings, P.O. Box 27447, Raleigh, N.C. 27611-7447. This certification and its conditions are final and binding unless you ask for a hearing.

This letter completes the review of the Division of Water Quality under Section 401 of the Clean Water Act. If you have any questions, please telephone John Dorney at 919-733-9646.

Sincerely,



John Dorney  
Kerr T. Stevens

Attachment

cc: Wilmington District Corps of Engineers  
Corps of Engineers Asheville Field Office  
Asheville DWQ Regional Office  
File Copy  
Central Files

c:\ncdol\TIP A-9\wqc\991423wqc.doc

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



James B. Hunt, Jr., Governor  
Bill Holman, Secretary  
Kerr T. Stevens, Director

November 29, 1999

Mr. Bill Gilmore  
Project Development and Environmental Analysis Branch  
North Carolina Department of Transportation  
Post Office Box 25201  
Raleigh, North Carolina 27611-5201

RECEIVED  
FEB 08 2000  
CESAW-CO-RA

Dear Mr. Gilmore:

Re: Certification Pursuant to Section 401 of the Federal Clean Water Act,  
Proposed Widening of NC 28 from Edwards Gap to SR 1231  
WQC Project #: 990414 TIP #: R-A-9DD State Project #: 8.3019122  
County: Graham

Attached hereto is a copy of Certification No. 3260 issued to the North Carolina Department of Transportation dated November 29, 1999.

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

Sincerely,

Kerr T. Stevens

Attachments

cc: Wilmington District Corps of Engineers  
Corps of Engineers Asheville Field Office  
Asheville DWQ Regional Office  
Mr. John Dorney  
Mr. John Hennessey; DWQ  
Central Files

## NORTH CAROLINA 401 WATER QUALITY CERTIFICATION

**THIS CERTIFICATION** is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (DWQ) Regulations in 15 NCAC 2H, Section .0500. It is issued to North Carolina Department of Transportation resulting in 6.93 acres of wetland impact in Graham County pursuant to revise application filed on the 29<sup>th</sup> day of September 1999 to widen NC 28 from Edwards Gap to SR 1231.

The application provides adequate assurance that the discharge of fill material into the waters of Fontana Lake 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, as described in the Public Notice. If you change your project, you must notify us and send us a new application for a new certification. If the property is sold, the new owner must be given a copy of the Certification and approval letter and is thereby responsible for complying with all conditions. If total wetland fills for this project (now or in the future exceed one acre, compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to be valid, you must follow the conditions listed below. In addition, you should get any other federal, state or local permits before you go ahead with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations.

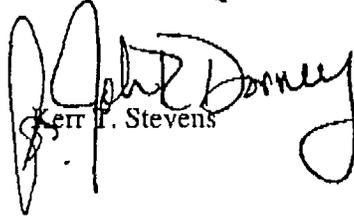
### Condition(s) of Certification:

1. Appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of two manuals. Either the "North Carolina Sediment and Erosion Control Planning and Design Manual" or the "North Carolina Surface Mining Manual" (available from the Division of Land Resources in the DEHNR Regional or Central Offices). The control practices shall be utilized to prevent exceedances of the appropriate turbidity water quality standard (50 NTUs in all fresh water streams and rivers not designated as trout waters; 25 NTUs in all lakes and reservoirs, and all saltwater classes; and 10 NTUs in trout waters);
2. All sediment and erosion control measures placed in wetlands or waters shall be removed and the natural grade restored after the Division of Land Resources has released the project;
3. Measures shall be taken to prevent live or fresh concrete from coming into contact with waters of the state until the concrete has hardened;
4. Should waste or borrow sites be located in wetlands or other waters, compensatory mitigation will be required since it is a direct impact from road construction activities;
5. Compensatory mitigation shall be done in accordance with the CORPS of Engineers requirements at least as those described in the September 16, 1999 public Notice. DWQ shall be copied on the final mitigation decision once the mitigation banking instrument for the Tulula Creek mitigation has been approved.

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

If this Certification is unacceptable to you, you have the right to an adjudicatory hearing upon written request within sixty (60) days following receipt of this Certification. This request must be in the form of a written petition conforming to Chapter 150B of the North Carolina General Statutes and filed with the Office of Administrative Hearings, P.O. Box 27447, Raleigh, N.C. 27611-7447. If modifications are made to an original Certification, you have the right to an adjudicatory hearing on the modifications upon written request within sixty (60) days following receipt of the Certification. Unless such demands are made, this Certification shall be final and binding.

This the 23<sup>rd</sup> day of November 1999  
DIVISION OF WATER QUALITY

  
Kerr L. Stevens

WQC # 3260

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



James B. Hunt, Jr., Governor  
 Bill Holman, Secretary  
 Kerr T. Stevens, Director

July 31, 2000

Mr. Bill Gilmore, P.E., Manager  
 Planning & Environmental Branch  
 N.C. Department of Transportation  
 PO Box 25201  
 Raleigh, NC 27611-5201

Dear Mr. Gilmore

Re: Certification Pursuant to Section 401 of the Federal Clean Water Act,  
 Modification to the improvements to NC 28 (Future US 19-74-129 Relocation), from Edwards Gap to  
 east of SR 1231 at Stecoah, TIP R-A-9DD, Federal Aid Project APD-12-1(22), State Project No.  
 8.3019122, WQC Project No. 001335 (DWQ No. for original application 990414).  
 Graham County

Attached hereto is a modification to Certification No. 3260 issued to the North Carolina Department of  
 Transportation on November 29, 1999, and a modification issued July 31, 2000. The attached  
 modification authorizes impacts to streams as described below.

Site Number	Streams Impacted (linear feet)	Streams Relocated (linear feet)	Total Impact (linear feet)
Site 8	607	623	-16

It should be noted the modification is applicable only to the additional proposed activities. All the  
 authorized activities and conditions of certification associated with the original Water Quality  
 Certification dated November 29, 1999 and all other corresponding modifications still apply except  
 where superceded by this certification.

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

Sincerely,

Kerr T. Stevens

**Attachments:****Modification to WQC No. 3066**

**cc: Wilmington District Corps of Engineers  
Corps of Engineers Washington Field Office  
Deborah Sawyer, DWQ Regional Office  
Mr. John Dorney  
Cathy Brittingham, Division of Coastal Management  
Central Files**

### NORTH CAROLINA 401 WATER QUALITY CERTIFICATION

**THIS CERTIFICATION** is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (DWQ) Regulations in 15 NCAC 2H, Section .0500. This modification authorizes impacts to streams as described below.

Site Number	Streams Impacted (linear feet)	Streams Relocated (linear feet)	Total Impact (linear feet)
Site 8	607	623	-16

It should be noted the modification is applicable only to the additional proposed activities. All the authorized activities and conditions of certification associated with the original Water Quality Certification dated November 29, 1999 and all other corresponding modifications still apply except where superceded by this certification.

The application provides adequate assurance that the discharge of fill material into the proposed 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, as described in the Public Notice. Should your project change, you are required to notify the DWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If total wetland fills for this project (now or in the future exceed one acre, 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.

#### Condition(s) of Certification:

1. Appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of two manuals. Either the "North Carolina Sediment and Erosion Control Planning and Design Manual" or the "North Carolina Surface Mining Manual" (available from the Division of Land Resources in the DERNR Regional or Central Offices). The control practices shall be utilized to prevent exceedances of the appropriate turbidity water quality standard (50 NTUs in all fresh water streams and rivers not designated as trout waters; 25 NTUs in all lakes and reservoirs, and all saltwater classes; and 10 NTUs in trout waters);
2. All sediment and erosion control measures placed in wetlands or waters shall be removed and the natural grade restored after the Division of Land Resources has released the project;
3. Measures shall be taken to prevent live or fresh concrete from coming into contact with waters of the state until the concrete has hardened;
4. There shall be no excavation from or waste disposal into jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit. Should waste or borrow sites be located in wetlands or stream, compensatory mitigation will be required since it is a direct impact from road construction activities;

5. The additional stream impacts of 184 linear feet will be mitigated at a ratio of 1:1 at the Tulula Creek Mitigation Site in Graham County. All other mitigation requirements associated with the original 401 Water Quality Certification dated November 29, 1999 still apply.
6. All other conditions written into previous Water Quality Certifications for this project still apply.

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

If this Certification is unacceptable to you have the right to an adjudicatory hearing upon written request within sixty (60) days following receipt of this Certification. This request must be in the form of a written petition conforming to Chapter 150B of the North Carolina General Statutes and filed with the Office of Administrative Hearings, P.O. Box 27447, Raleigh, N.C. 27611-7447. If modifications are made to an original Certification, you have the right to an adjudicatory hearing on the modifications upon written request within sixty (60) days following receipt of the Certification. Unless such demands are made, this Certification shall be final and binding.

This the 20th day of October 2000  
DIVISION OF WATER QUALITY

Kerr T. Stevens

Modification to WQC No. 3260

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



James B. Hunt, Jr., Governor  
 Bill Holman, Secretary  
 Kerr T. Stevens, Director

July 31, 2000

Mr. Bill Gilmore, P.E., Manager  
 Planning & Environmental Branch  
 N.C. Department of Transportation  
 PO Box 25201  
 Raleigh, NC 27611-5201

Dear Mr. Gilmore

Re: Certification Pursuant to Section 401 of the Federal Clean Water Act,  
 Modification to the improvements to NC 28 (Future US 19-74-129 Relocation), from Edwards Gap to  
 east of SR 1231 at Stecoah, TIP R-A-9DD, Federal Aid Project APD-12-1(22), State Project No.  
 8.3019122, WQC Project No. 000529 (DWQ No. for original application 990414).  
 Graham County

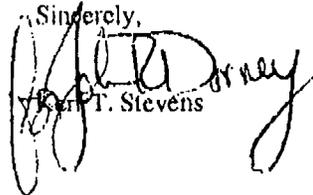
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 Transportation on November 29, 1999. The attached modification authorizes impacts to streams as  
 described below.

Site Number	Streams Impacted (linear feet)	Streams Relocated (linear feet)	Total Impact (linear feet)
Site 5	869	715	154
Site 7	148	33	115
Site 10	213	0	213

It should be noted the modification is applicable only to the additional proposed activities. All the  
 authorized activities and conditions of certification associated with the original Water Quality  
 Certification dated November 29, 1999 and all other corresponding modifications still apply except  
 where superseded by this certification.

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

Sincerely,



Karl T. Stevens

Attachments:

Modification to WQC No. 3066

cc: Wilmington District Corps of Engineers  
Corps of Engineers Washington Field Office  
Deborah Sawyer, DWQ Regional Office  
Mr. John Dorney  
Cathy Brittingham, Division of Coastal Management  
Central Files

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**Condition(s) of Certification:**

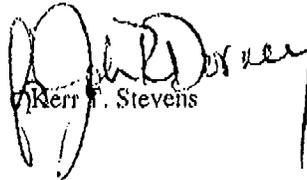
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2. All sediment and erosion control measures placed in wetlands or waters shall be removed and the natural grade restored after the Division of Land Resources has released the project;
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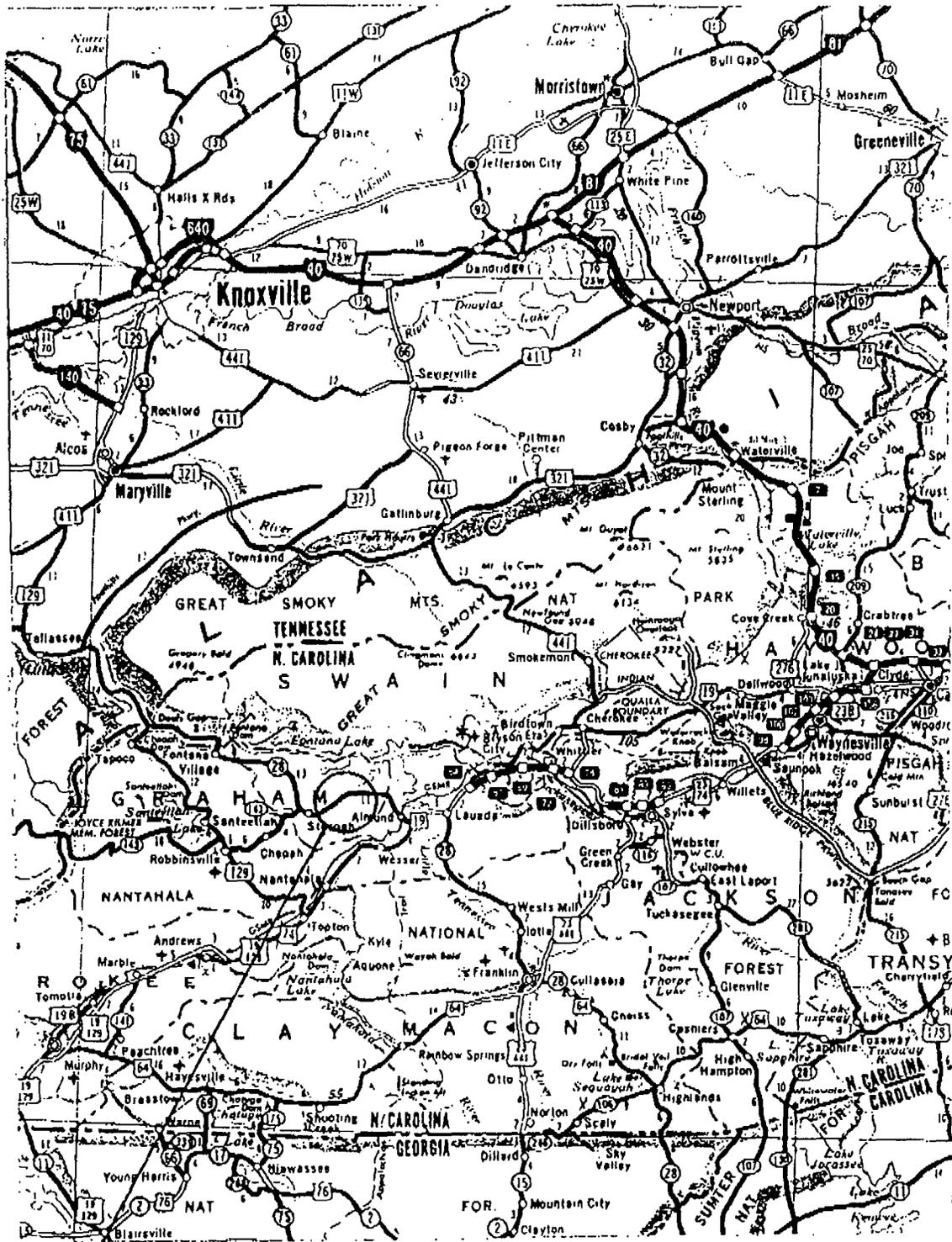
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This the 4th day of April 2000  
DIVISION OF WATER QUALITY



Kerr F. Stevens

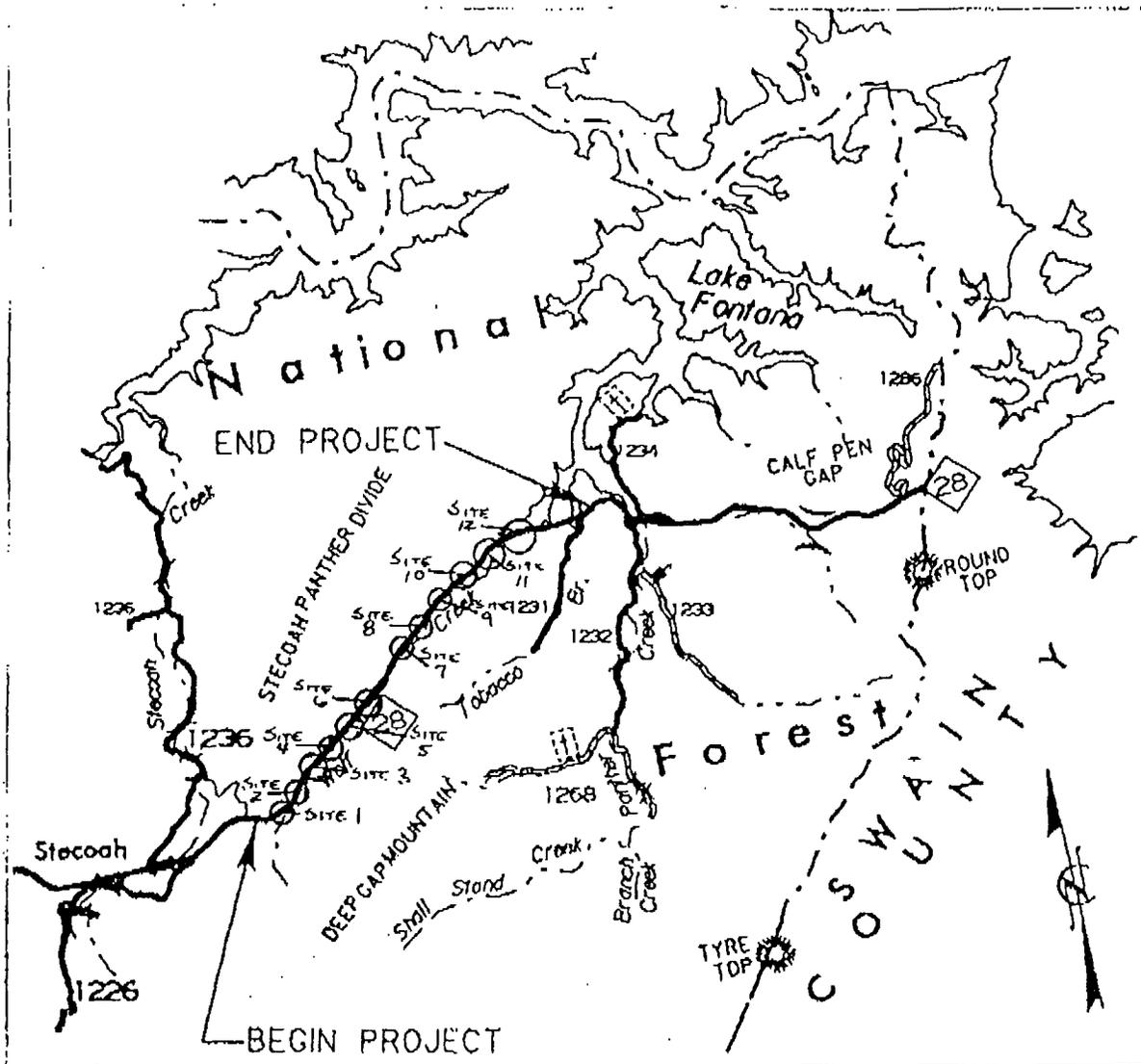
Modification to WQC No. 3260



STATE PROJ. 8.3019122

FOR JUL 31, 2000

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231  
 SHEET 1 OF 71

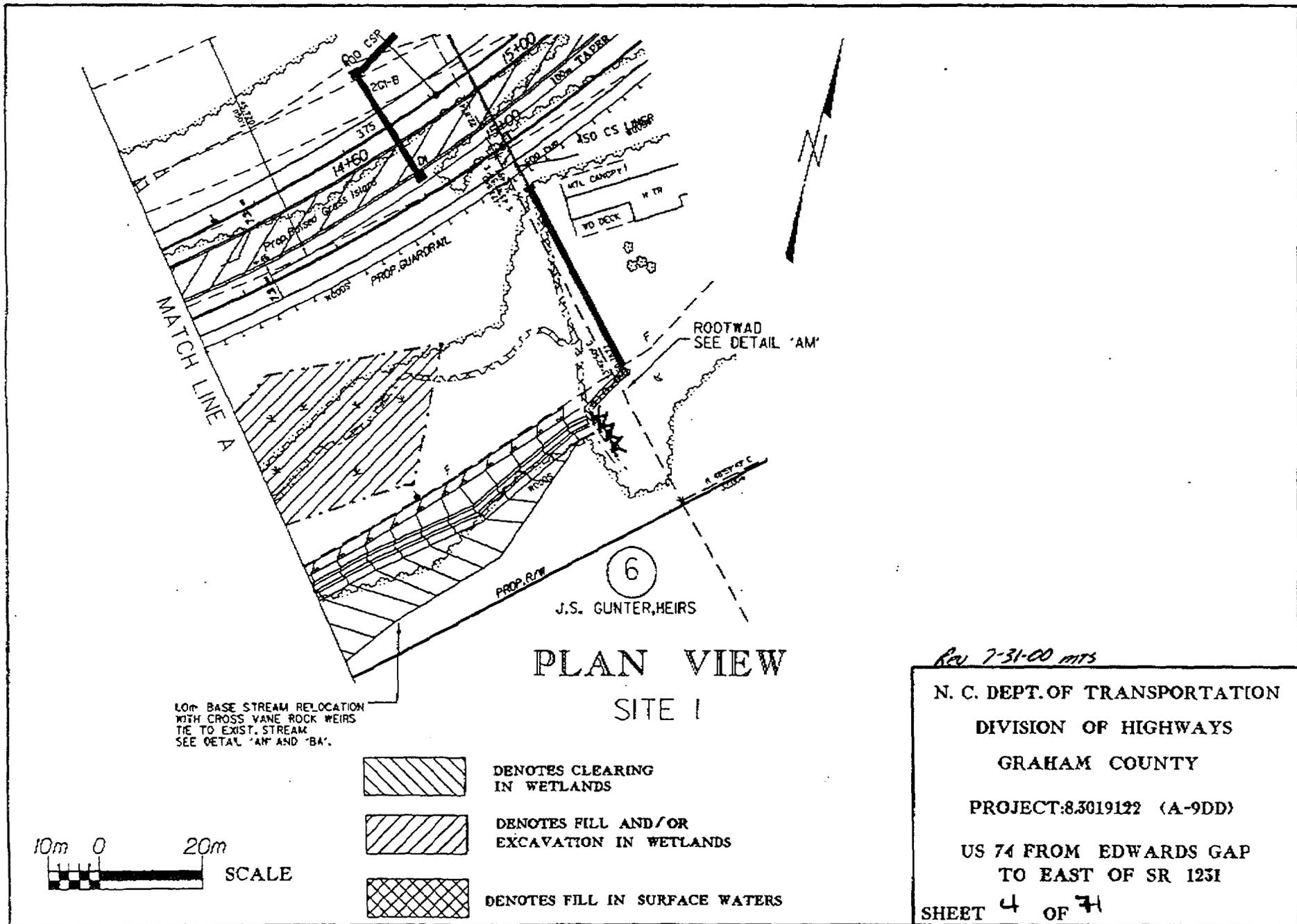


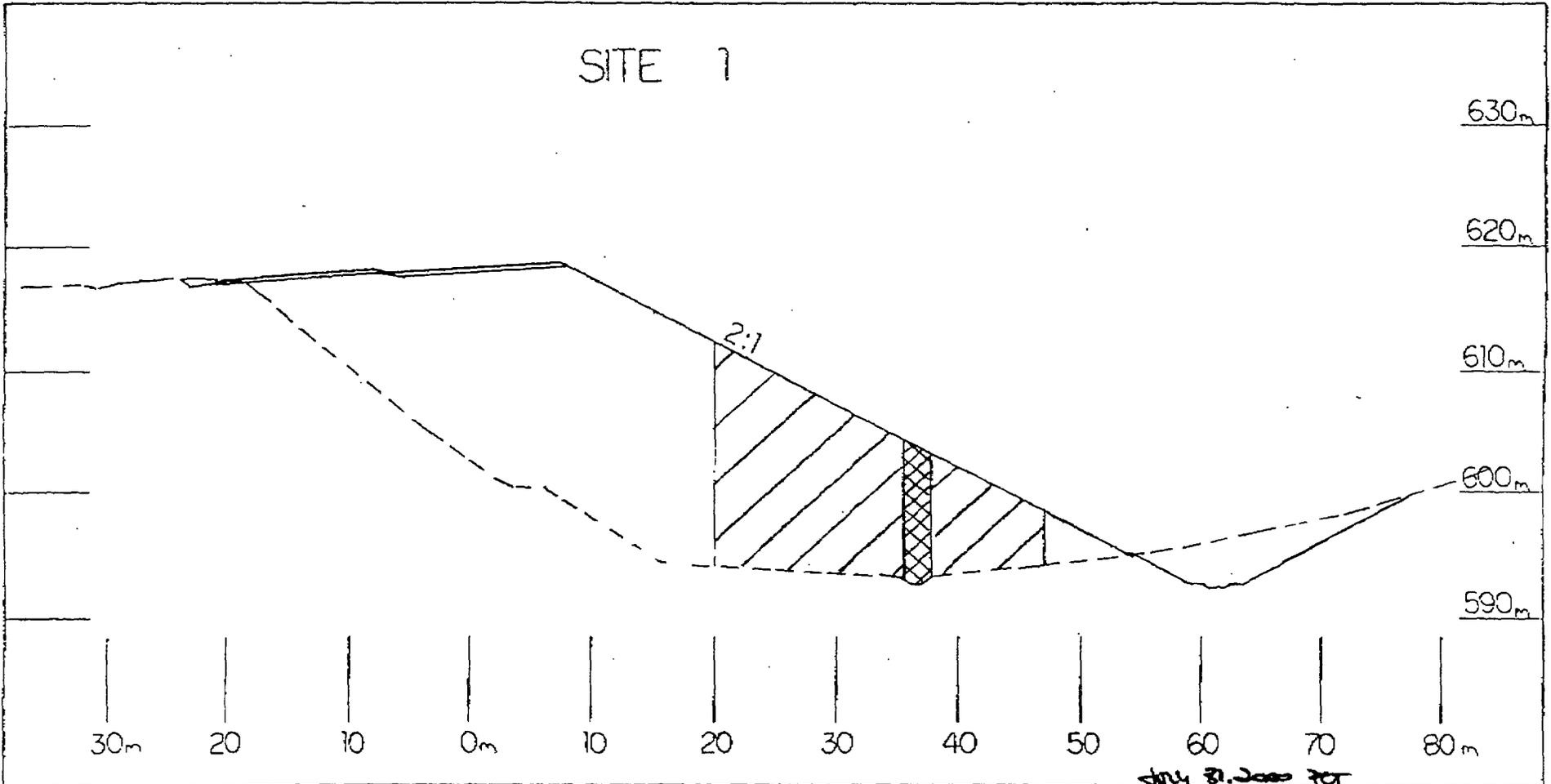
VICINITY MAP SHOWING LOCATION  
OF STATE PROJECT No. 8.T930201

PCY JUN 31, 2000

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.5019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231  
 SHEET 2 OF 71



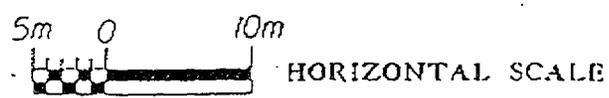




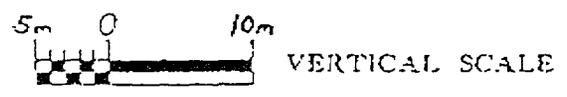
*July 31, 2000 JOT*

13+80 -LRT-

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.5019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231  
 SHEET 5 OF 71

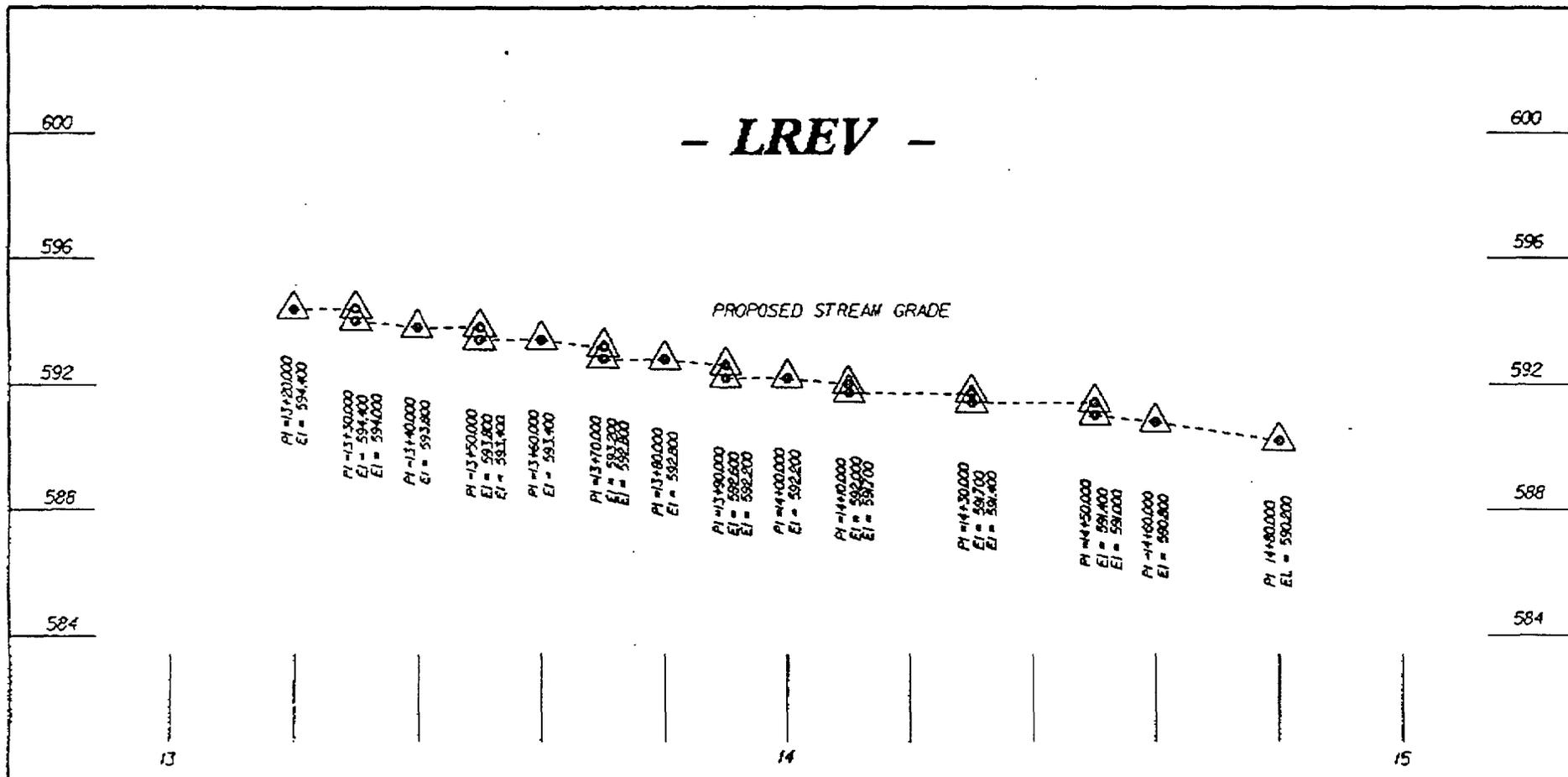


DENOTES FILL  
IN SURFACE WATERS

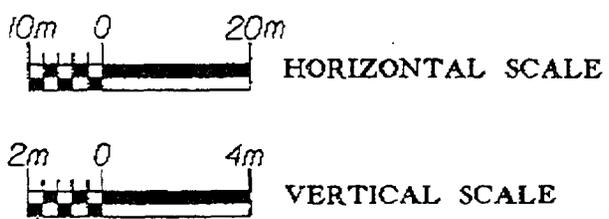


DENOTES FILL AND/OR  
EXCAVATION IN WETLANDS

# - LREV -



## PROFILE SITE 1 WOLF CREEK

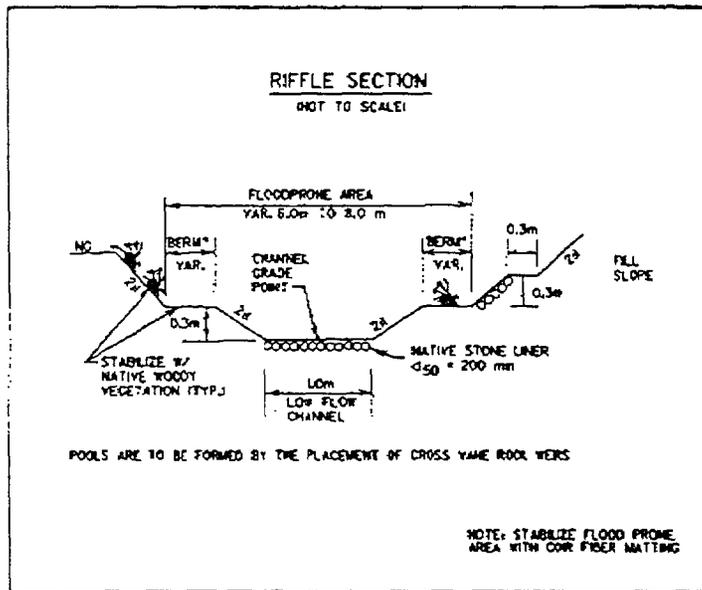


REV 7-31-00 MTS

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231

SHEET 6 OF 71

NATURAL CHANNEL DESIGN DETAILS  
STA 13+21 TO STA 14+85.5 -LRT- RT.



SITE 1

*REV 7-31-00 mms*

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

PROJECT: 83019122 (A-9DD)  
US 74 FROM EDWARDS GAP  
TO EAST OF SR 1231

SHEET 7 OF 71

SITE 1: FROM STA 13+21 TO STA 14+85.5 -LRT-

ITEM	EXISTING STREAM	REFERENCE STREAM	PROPOSED RELOCATION
STREAM NAME	WOLF CREEK	WOLF CREEK	WOLF CREEK
DRAINAGE AREA (DA)	67 ha	67 ha	67 ha
CHANNEL SLOPE (S)	.025	.025	.026
BANKFUL WIDTH ( $W_{bkr}$ )	1.6 m	1.6 m	2.2 m
MEAN DEPTH ( $d_{bkr}$ )	0.3 m	0.3 m	0.25 m
BANKFUL X-SECTION AREA ( $A_{bkr}$ )	0.48 m <sup>2</sup>	0.48 m <sup>2</sup>	0.55 m <sup>2</sup>
WIDTH/DEPTH RATIO ( $W_{bkr}/d_{bkr}$ )	5.3	5.3	8.8
Maximum DEPTH ( $d_{mbkr}$ )	0.34 m	0.34 m	0.3 m
WIDTH Flood-Prone Area ( $W_{fpa}$ )	3.2 m	3.2 m	6.5 m
ENTRENCHMENT RATIO (ER)	2	2	3
CHANNEL MATERIALS: D50	150 mm	150 mm	200 mm
SINUOSITY (K)	1.1	1.1	1.0
MEANDERS:			
AVG. LENGTH	22 m	22 m	N/A
AVG. AMPLITUDE	4.5 m	4.5 m	N/A
AVG. RADIUS	2.0 m	2.0 m	N/A
DISCHARGES:			
Q BANKFULL	0.52 m <sup>3</sup> /s	0.52 m <sup>3</sup> /s	0.71 m <sup>3</sup> /s
Q2	1.1 m <sup>3</sup> /s	1.1 m <sup>3</sup> /s	1.1 m <sup>3</sup> /s
Q10	2.0 m <sup>3</sup> /s	2.0 m <sup>3</sup> /s	2.0 m <sup>3</sup> /s
VELOCITY:			
V BANKFULL	1.3 m/s	1.3 m/s	1.5 m/s
V2	1.6 m/s	1.6 m/s	1.7 m/s
V10	1.9 m/s	1.9 m/s	2.0 m/s
CLASSIFICATION	B4	B4	B4

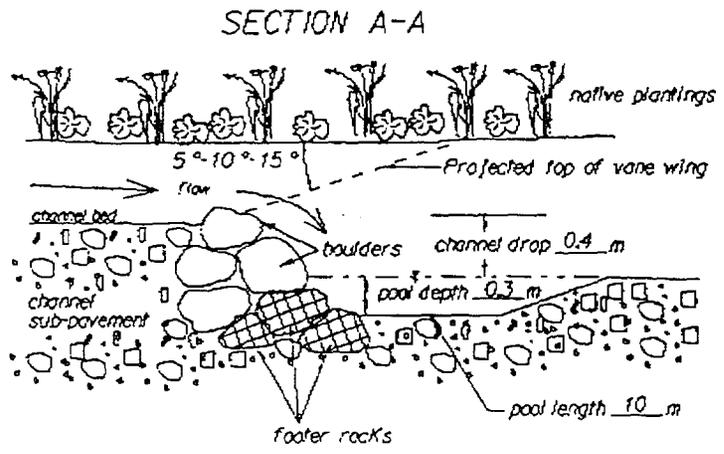
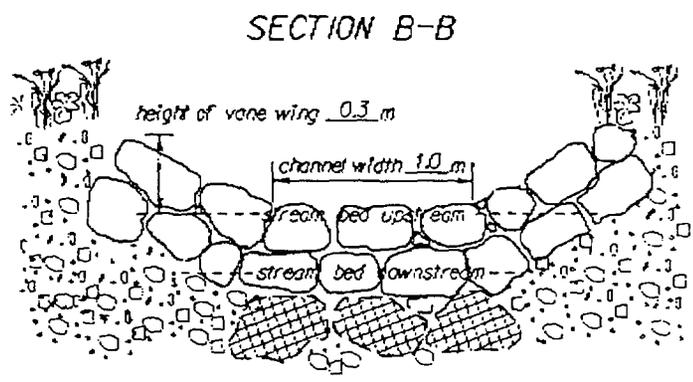
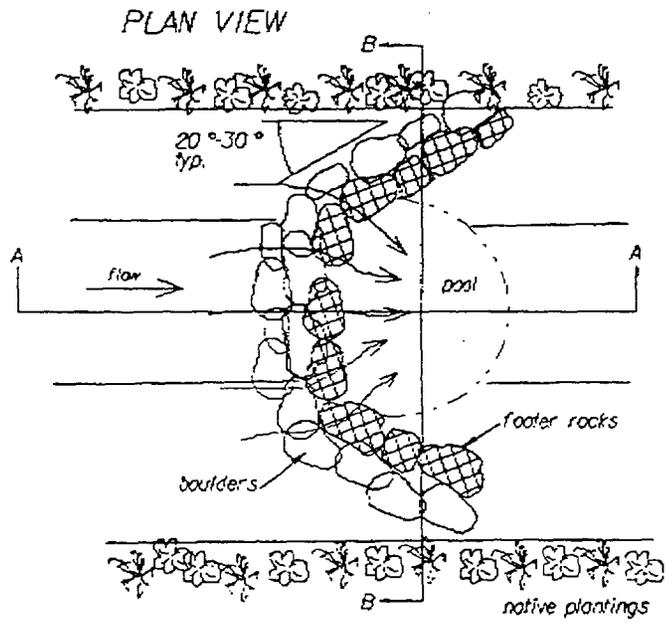
N. C. DEPT. OF TRANSPORTATION

DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122  
 (A-9 DD)

REV-7731-60 1175

SHEET 8 OF 71

# CROSS VANE ROCK WEIR DETAIL AN



## STATIONS (-LREV- RT)

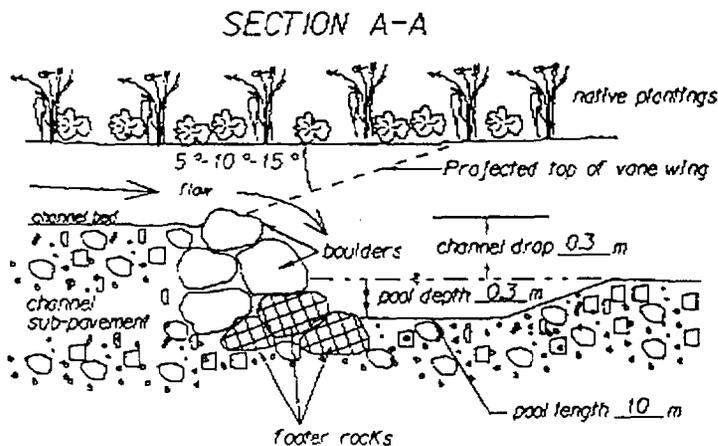
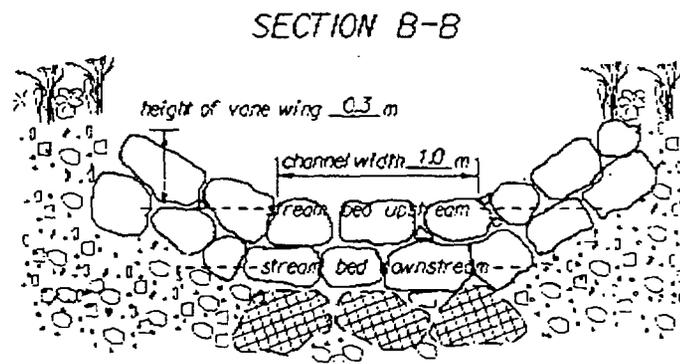
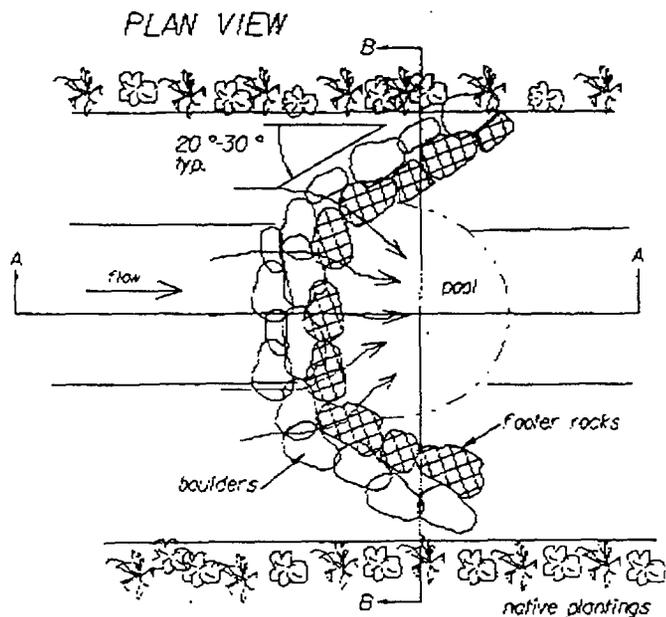
- 13+30
- 13+50
- 13+70
- 13+90
- 14+50
- 18+20
- 18+60
- 19+40
- 19+60
- 19+80

Note: Boulders should be native stone or shot rock, angular and oblong with axis approximately 0.6 m in length

2 TONS/CROSS VANE ROCK WEIR

REV 7-31-00 MTS

# CROSS VANE ROCK WEIR DETAIL BA



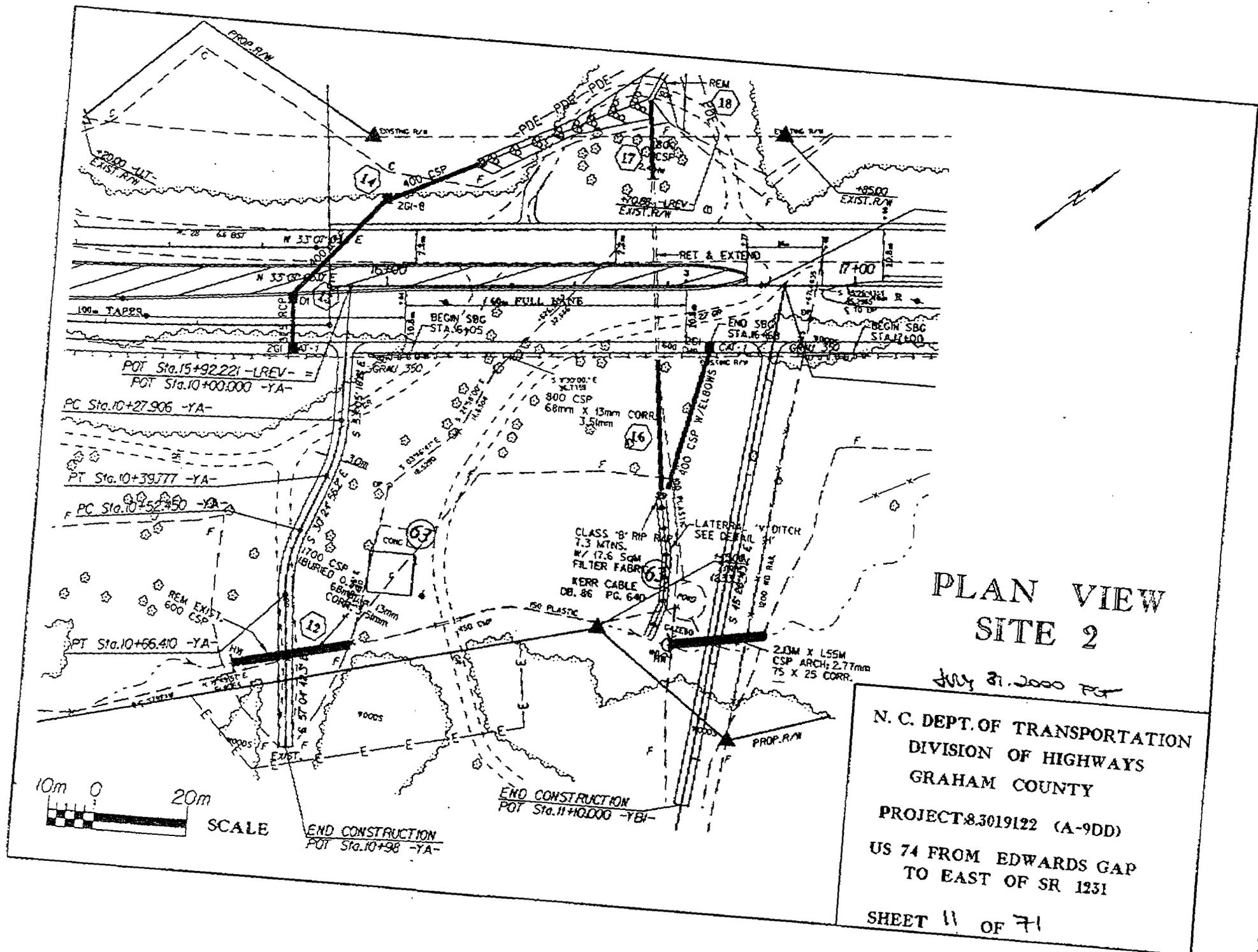
STATIONS (-LREV- RT)

- 14+10
- 14+30
- 18+40
- 19+00

Note: Boulders should be native stone or shot rock, angular and oblong with axis approximately 0.6 m in length

1.9 TONS/CROSS VANE ROCK WEIR

PROJECT: 8.3019122(A-9DD) SHEET 10 OF 71

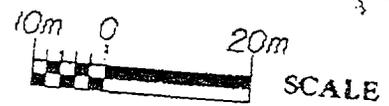


# PLAN VIEW SITE 2

July 31, 2000 P.C.

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231

SHEET 11 OF 71



END CONSTRUCTION  
POT Sta. 10+98 -YA-

END CONSTRUCTION  
POT Sta. 11+00.000 -YB1-

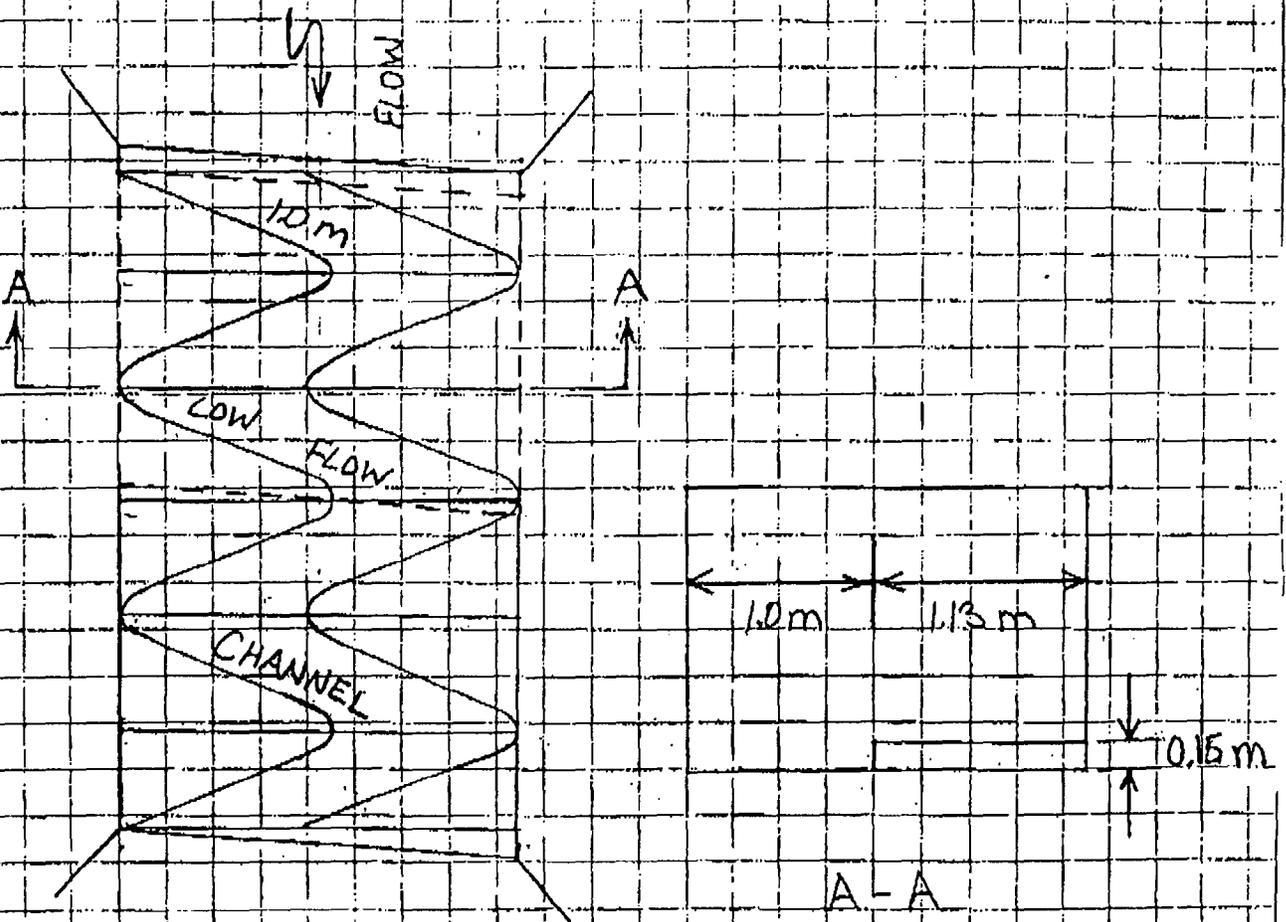
ID: 18282714858

NDV 02:00 15:40 No. 003 P. 07





USE T SILLS  
@ 6.1m SPACING



BAFFLE DETAIL  
STA. 21+93 -LREV-

KSD REVISED 2/16/00

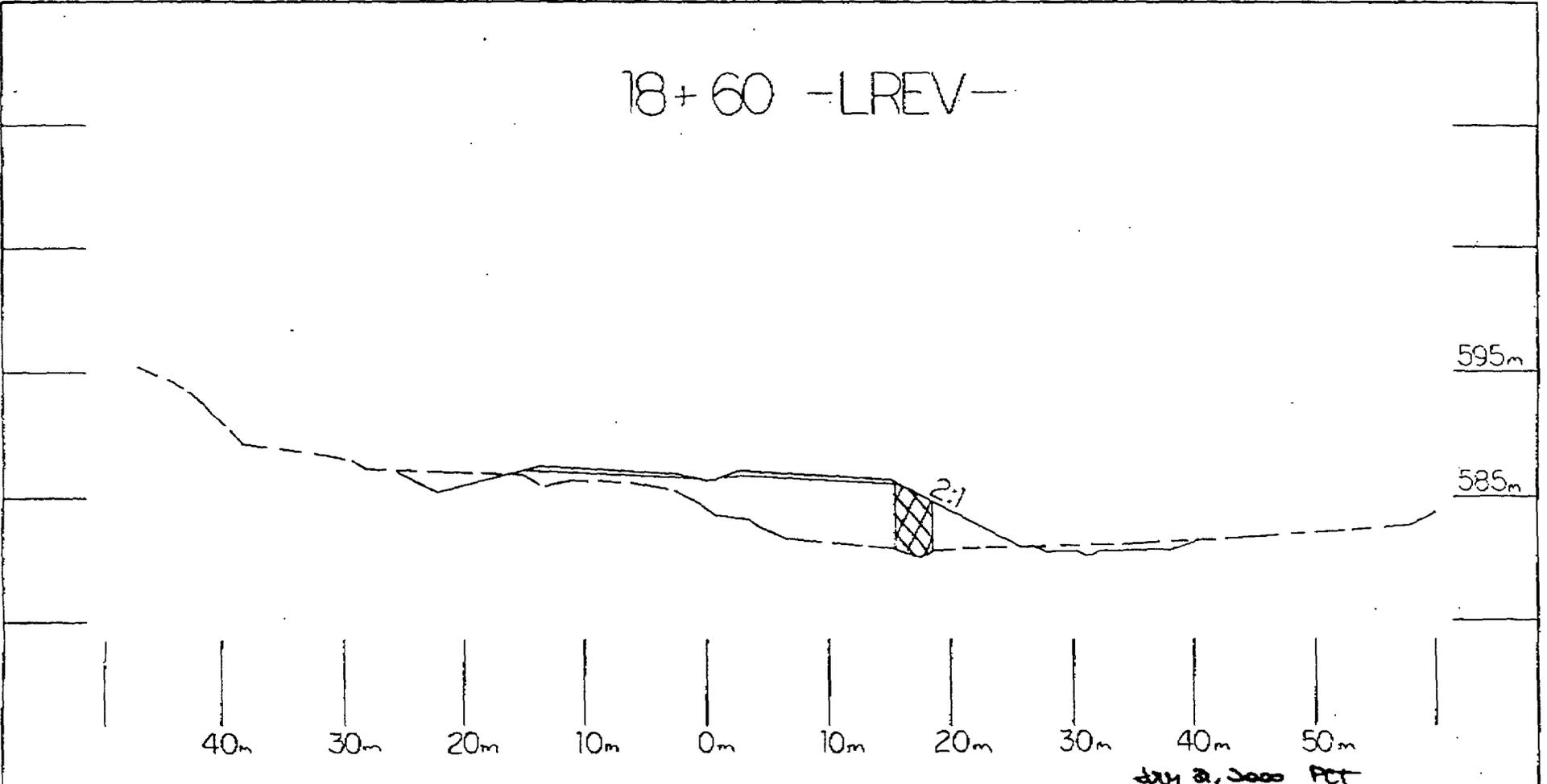
N. C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GRAHAM COUNTY

PROJECT: 8.3019122 (A-9DD)

US 74 FROM EDWARDS GAP  
TO EAST OF SR 1231

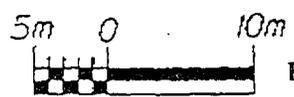
SHEET 14 OF 71

18+60 -LREV-



SECTION

SITE 3



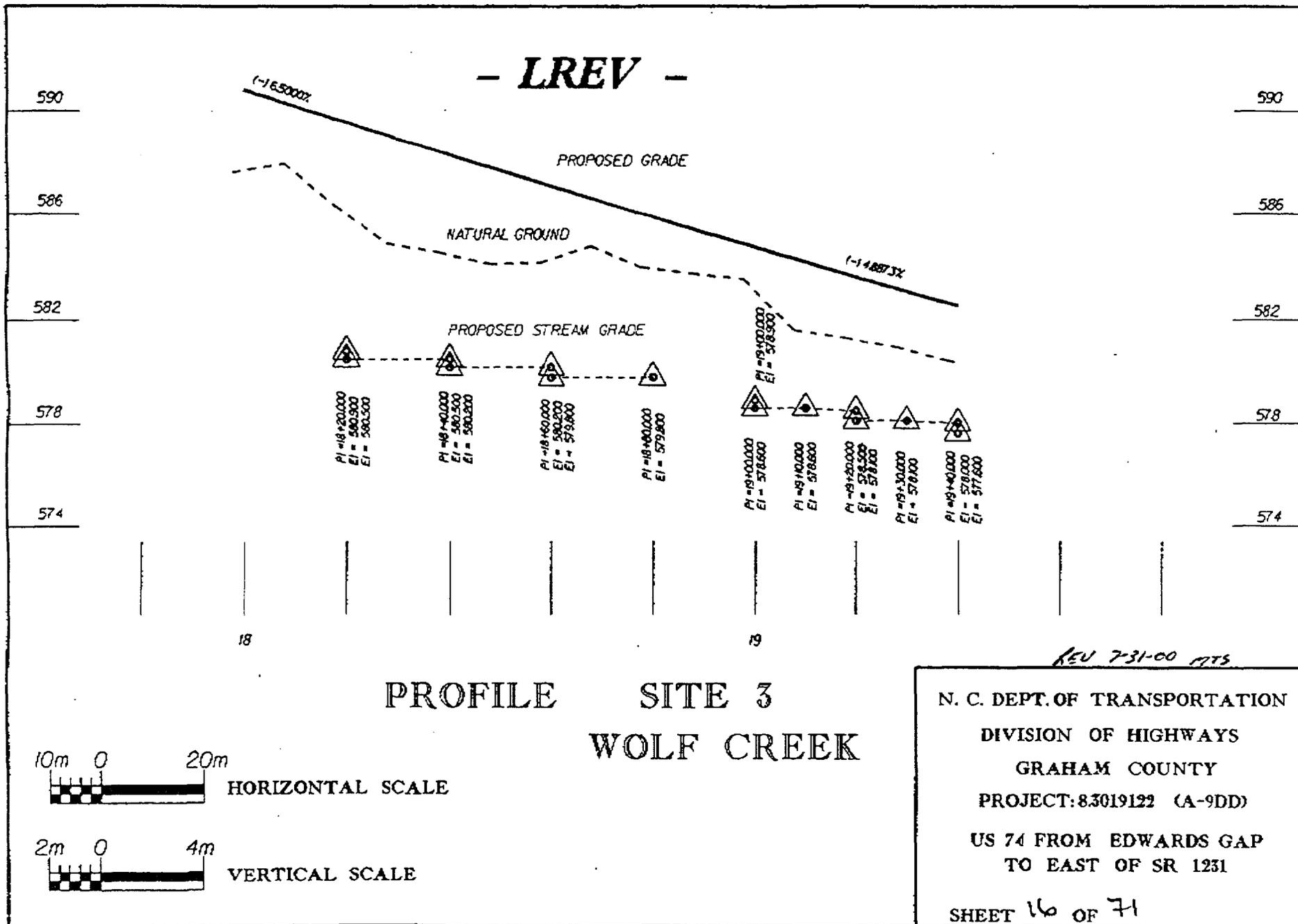
HORIZONTAL SCALE AND VERTICAL SCALE



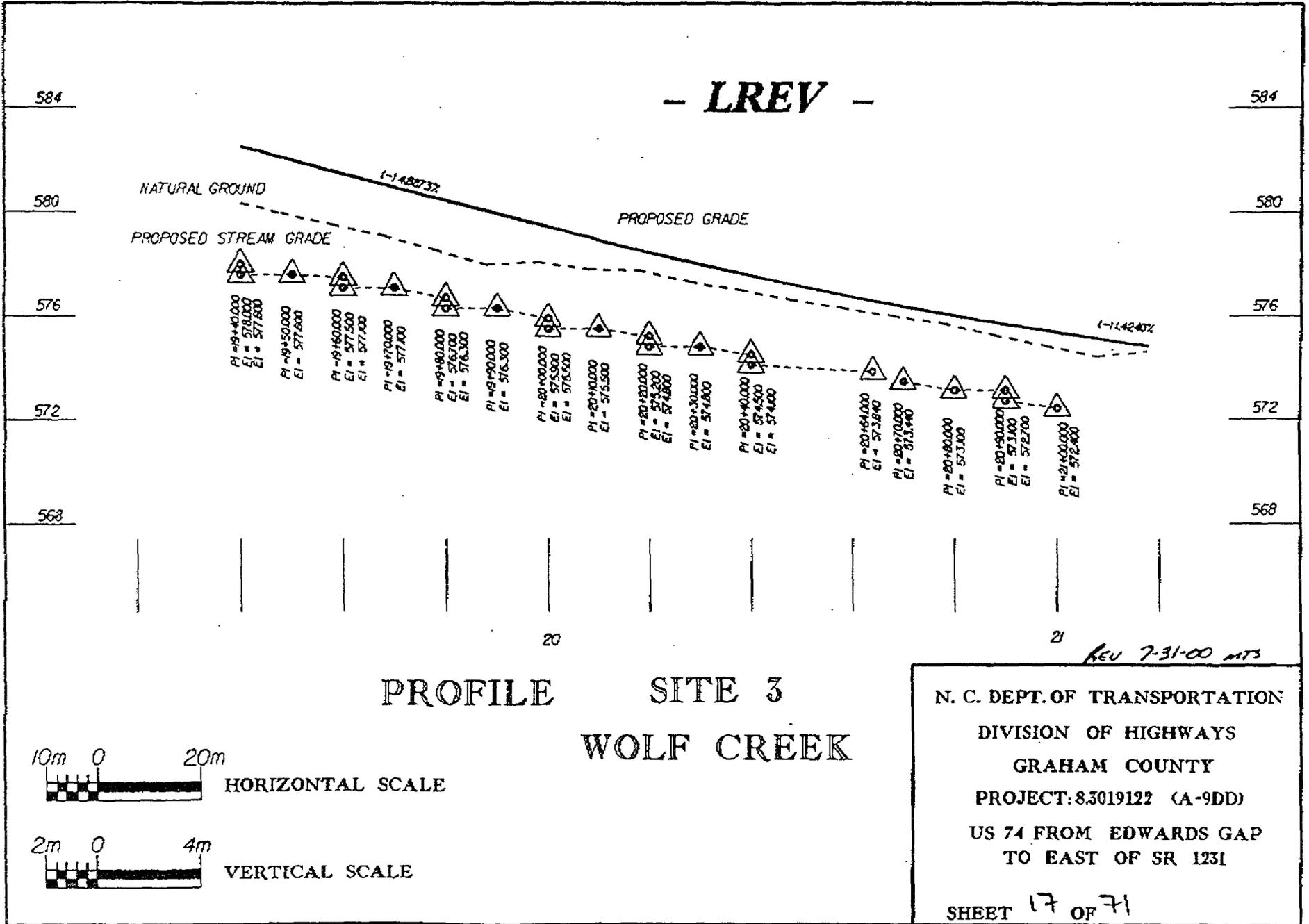
DENOTES FILL IN SURFACE WATERS

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT:8.5019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231

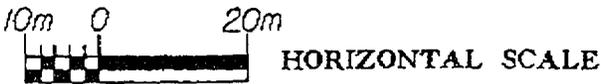
SHEET 15 OF 71



# - LREV -



## PROFILE SITE 3 WOLF CREEK

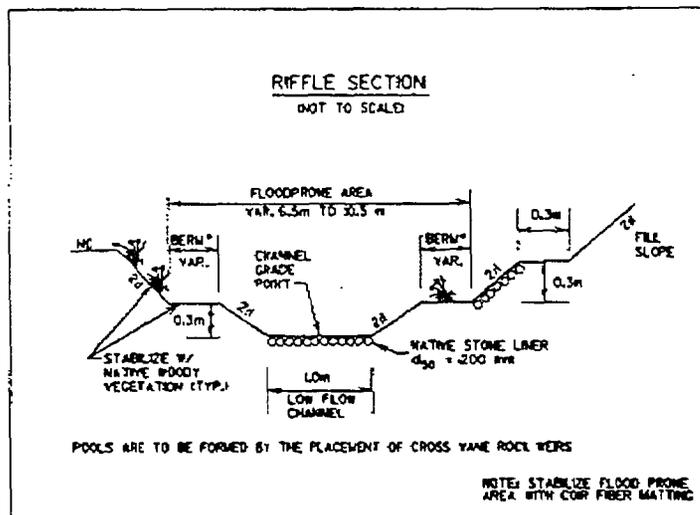


REV 7-31-00 MTS

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 83019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231

SHEET 17 OF 71

NATURAL CHANNEL DESIGN DETAILS  
 STA 18+20 TO STA 18+80 -LREV- RT.  
 STA 19+00 TO STA 19+89.5 -LREV- RT.



**SITE 3**

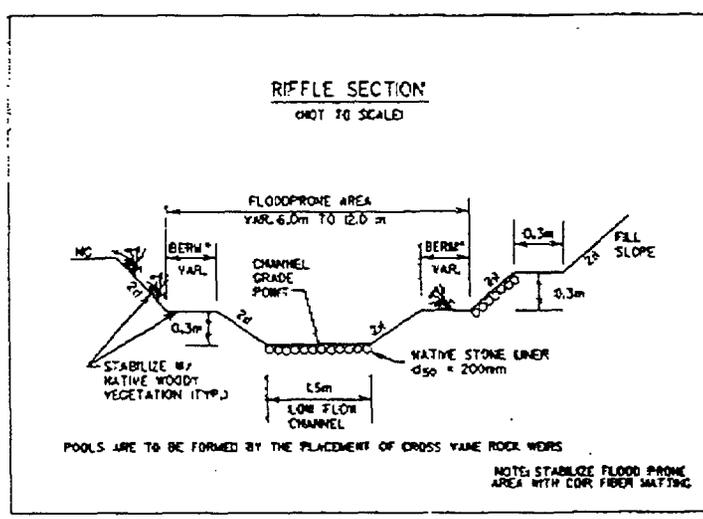
*REV 7-31-00 mts*

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

PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231

SHEET 18 OF 71

NATURAL CHANNEL DESIGN DETAILS  
 STA 19+89.5 TO STA 20+64 -LREV- RT.  
 STA 20+70 TO STA 21+15 -LREV- RT.



SITE 3

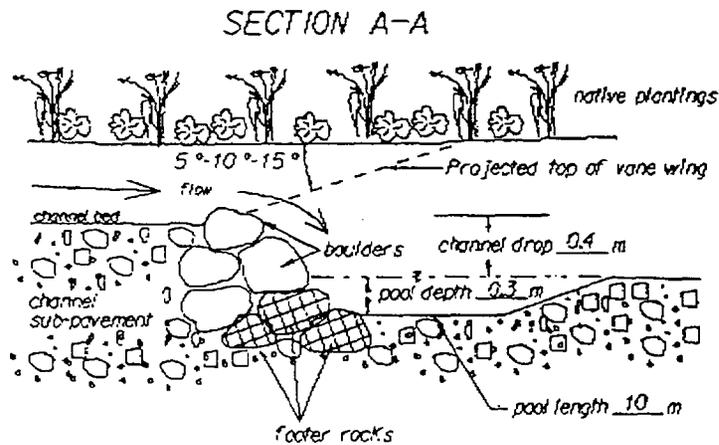
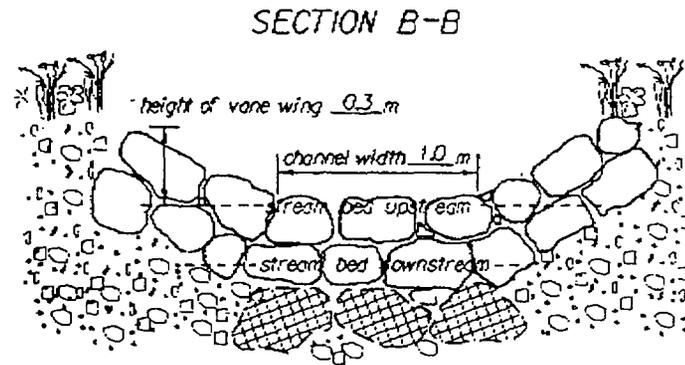
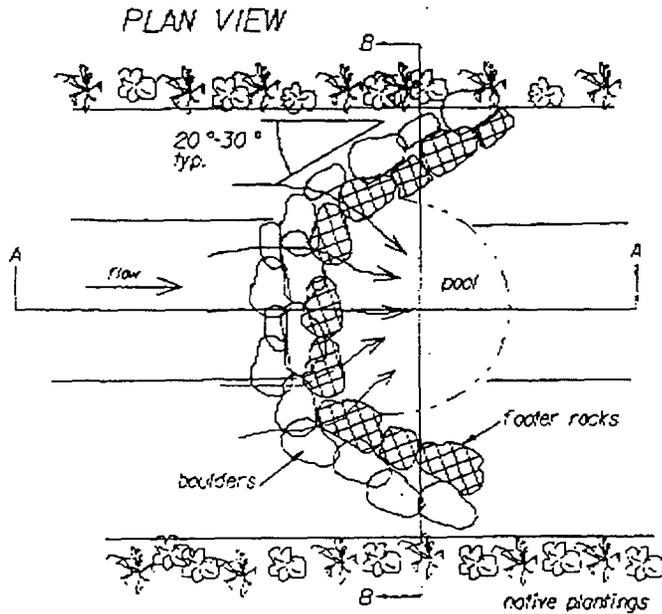
*Rev 7-31-00 mts*

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

PROJECT: 83019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231

SHEET 19 OF 71

# CROSS VANE ROCK WEIR DETAIL AN



STATIONS (-LREV- RT)

- 13+30
- 13+50
- 13+70
- 13+90
- 14+50
- 18+20
- 18+60
- 19+40
- 19+60
- 19+80

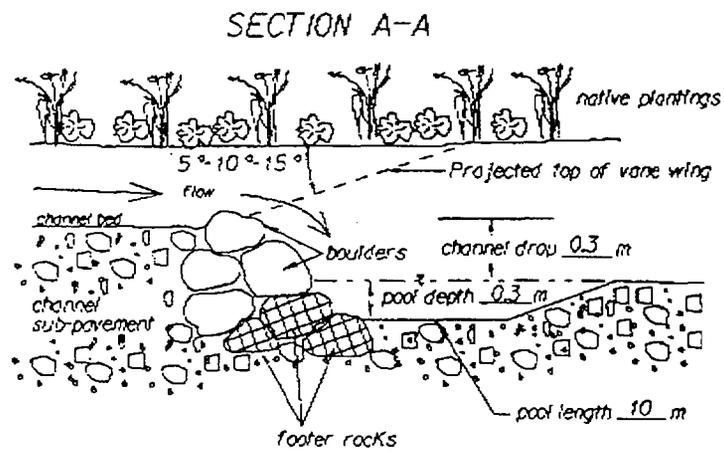
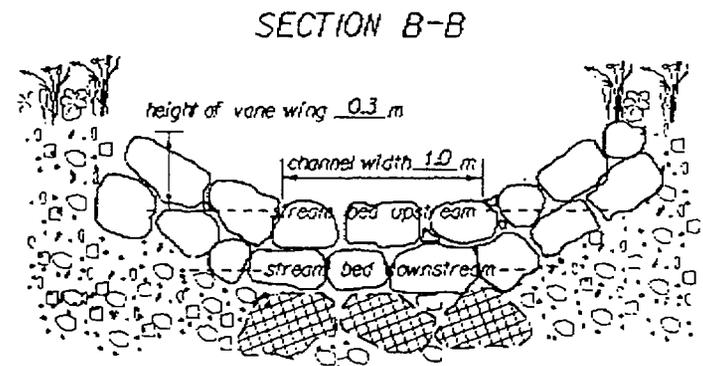
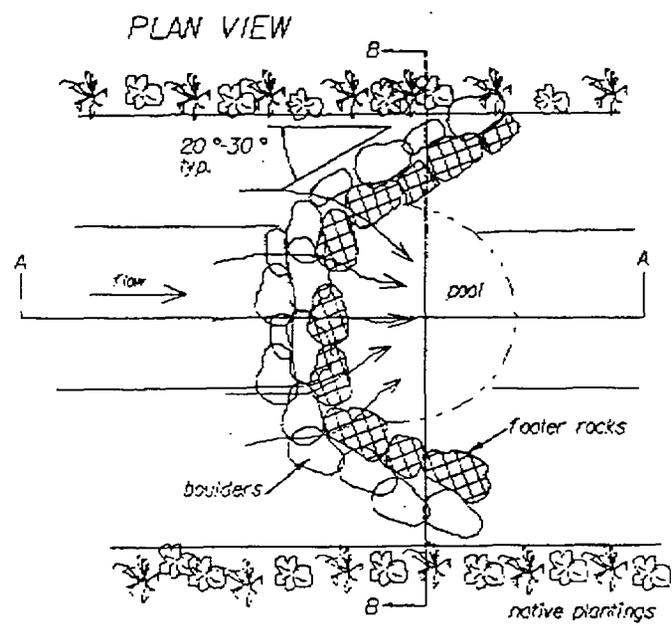
Note: Boulders should be native stone or shot rock, angular and oblong with axis approximately 0.6 m in length

2 TONS/CROSS VANE ROCK WEIR

PROJECT: 8.3019122(A-9DD) SHEET 20 OF 71

REV 7-31-00 MTS

# CROSS VANE ROCK WEIR DETAIL BA



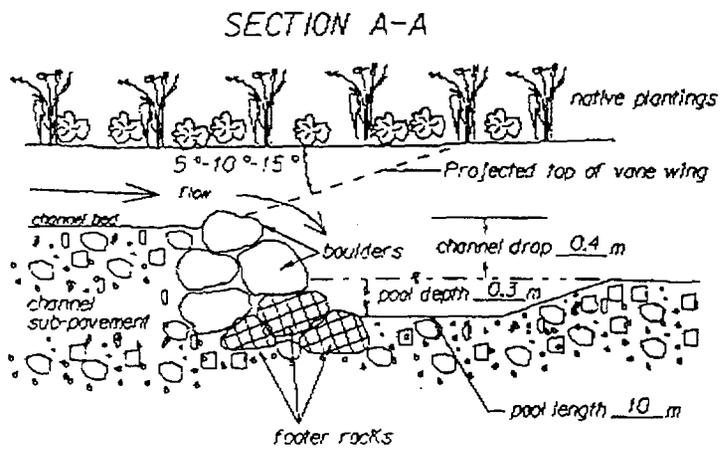
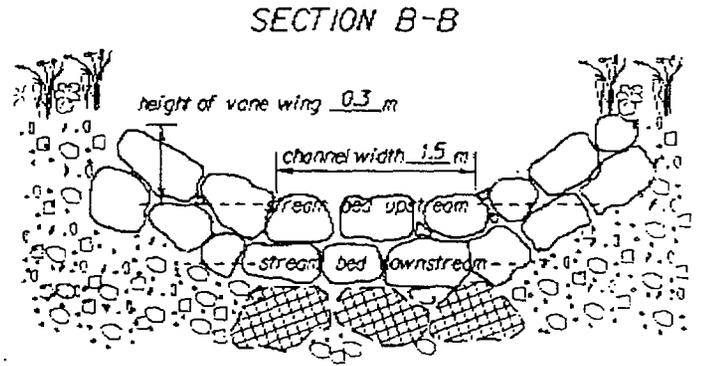
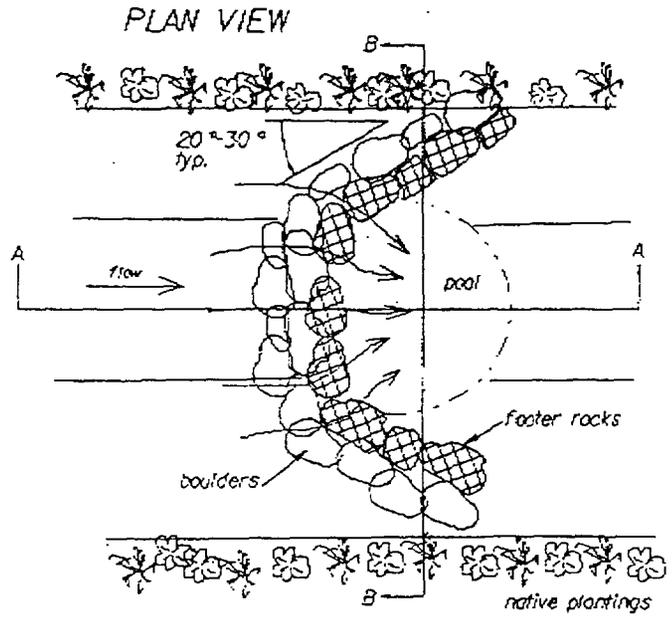
## STATIONS (-LREV- RT)

- 14+10
- 14+30
- 18+40
- 19+00

Note: Boulders should be native stone or shot rock, angular and oblong with axis approximately 0.6 m in length

1.9 TONS/CROSS VANE ROCK WEIR  
 PROJECT: 8.3019122(A-9DD) SHEET 21 OF 71

# CROSS VANE ROCK WEIR DETAIL AT

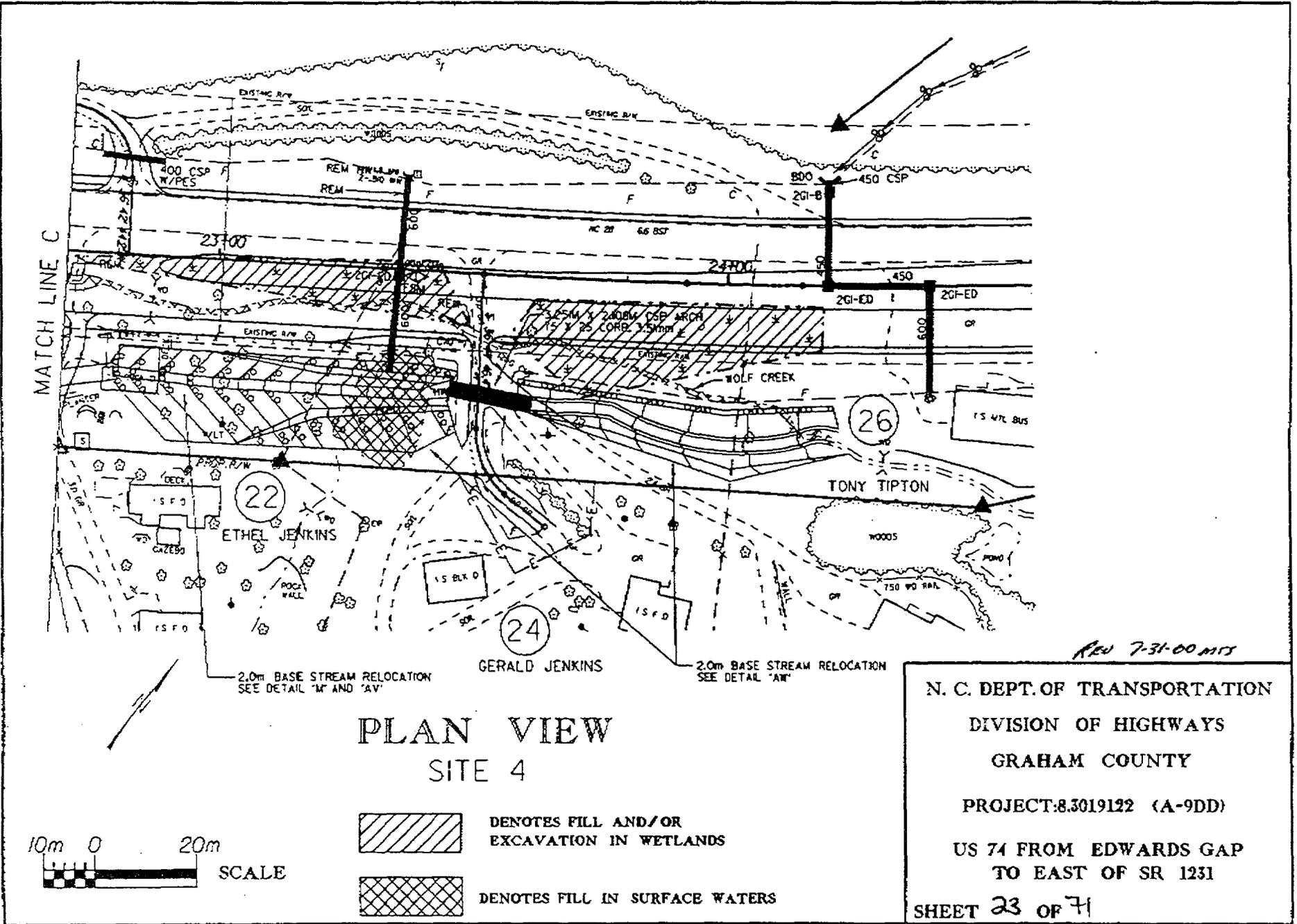


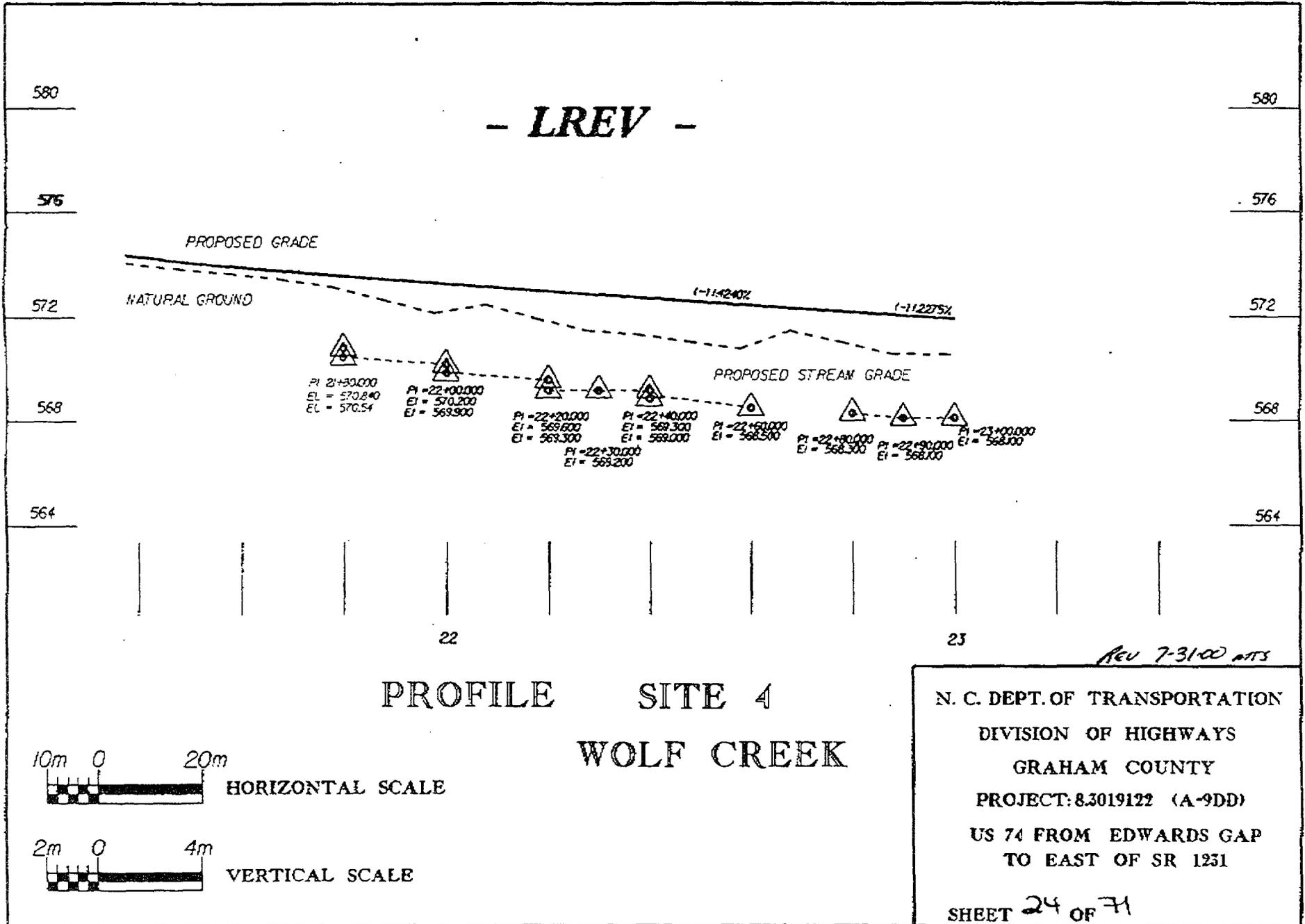
## STATIONS (-LREV- RT)

- 20+00
- 20+20
- 20+40
- 20+90

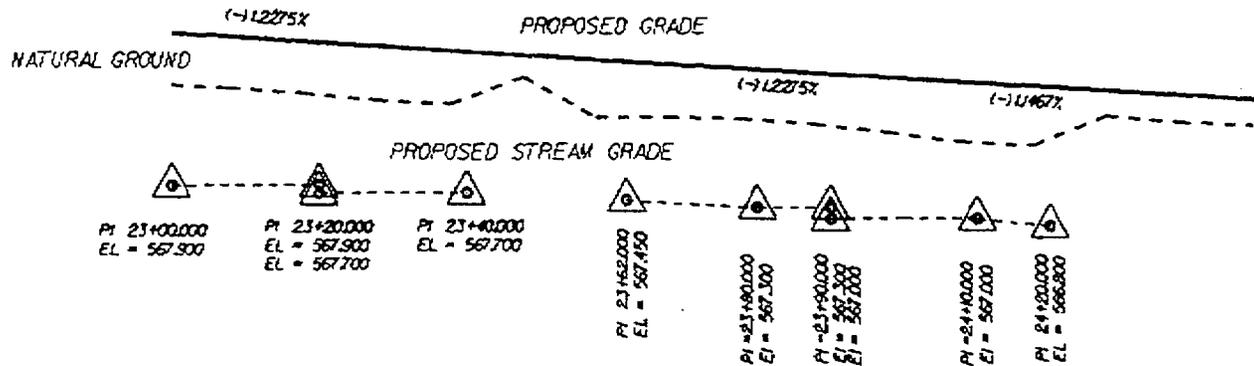
Note: Boulders should be native stone or shot rock, angular and oblong with axis approximately 0.6 m in length

2.4 TONS/CROSS VANE ROCK WEIR





# - LREV -

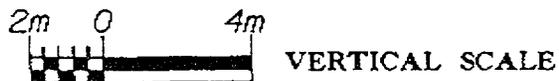
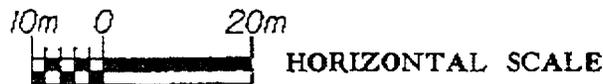


23

24

Rev 7-31-00 mrs

## PROFILE SITE 4 WOLF CREEK



N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231

SHEET 25 OF 71

SITE 4 : FROM STA 23+00 TO STA 24+20 -L-

ITEM	EXISTING STREAM	REFERENCE STREAM	PROPOSED RELOCATION
STREAM NAME	WOLF CREEK	WOLF CREEK	WOLF CREEK
DRAINAGE AREA (DA)	268 ha	268 ha	268 ha
CHANNEL SLOPE (S)	.016	.016	.01
BANKFUL WIDTH ( $W_{bkr}$ )	2.4 m	2.4 m	3.0 m
MEAN DEPTH ( $d_{bkr}$ )	0.3 m	0.3 m	0.25 m
BANKFUL X-SECTION AREA ( $A_{bkr}$ )	0.72 m <sup>2</sup>	0.72 m <sup>2</sup>	0.75 m <sup>2</sup>
WIDTH/DEPTH RATIO ( $W_{bkr}/d_{bkr}$ )	8.0	6.0	12
Maximum DEPTH ( $d_{mbkr}$ )	0.6 m	0.6 m	0.3 m
WIDTH Flood-Prone Area ( $W_{fpa}$ )	32 m	32 m	4.0 m - 9.0 m
ENTRENCHMENT RATIO (ER)	13	13	1.3 - 3.0
CHANNEL MATERIALS: D50	200 mm	200 mm	200 mm
SINUOSITY (K)	1.1	1.1	1.0
MEANDERS:			
AVG. LENGTH	15 m	15 m	18 m
AVG. AMPLITUDE	1.7 m	1.7 m	1.9 m
AVG. RADIUS	1.0 m	1.0 m	1.5 m
DISCHARGES:			
Q BANKFULL	0.55 m <sup>3</sup> /s	0.55 m <sup>3</sup> /s	0.67 m <sup>3</sup> /s
Q2	4.6 m <sup>3</sup> /s	4.6 m <sup>3</sup> /s	4.6 m <sup>3</sup> /s
Q10	8.2 m <sup>3</sup> /s	8.2 m <sup>3</sup> /s	8.2 m <sup>3</sup> /s
VELOCITY:			
V BANKFULL	0.97 m/s	0.97 m/s	0.86 m/s
V2	1.7 m/s	1.7 m/s	1.5 m/s
V10	2.0 m/s	2.0 m/s	1.8 m/s
CLASSIFICATION	B3c	B3c	B3c

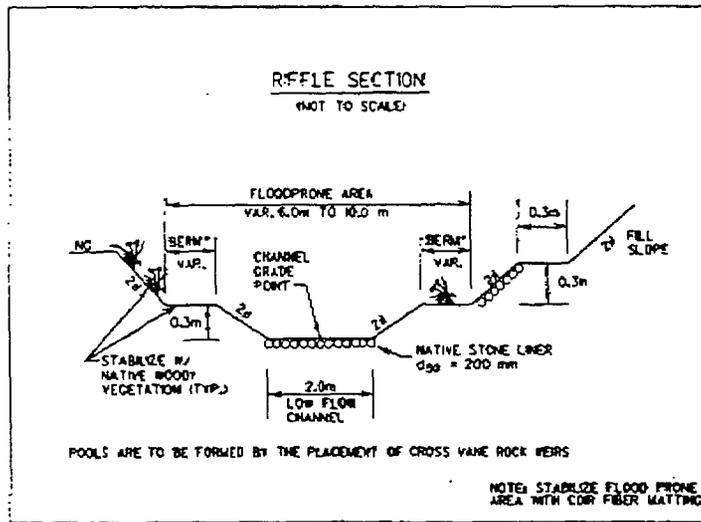
REV 7-31-00 MTS

N. C. DEPT. OF TRANSPORTATION

DIVISION OF HIGHWAYS  
GRAHAM COUNTYPROJECT: 8.3019122  
(A-9 DD)

SHEET 26 OF 71

NATURAL CHANNEL DESIGN DETAILS  
 STA 23+00 TO STA 23+45 -LREV- RT.  
 STA 23+62 TO STA 24+20 -LREV- RT.



SITE 4

*REV 7-31-00 MTS*

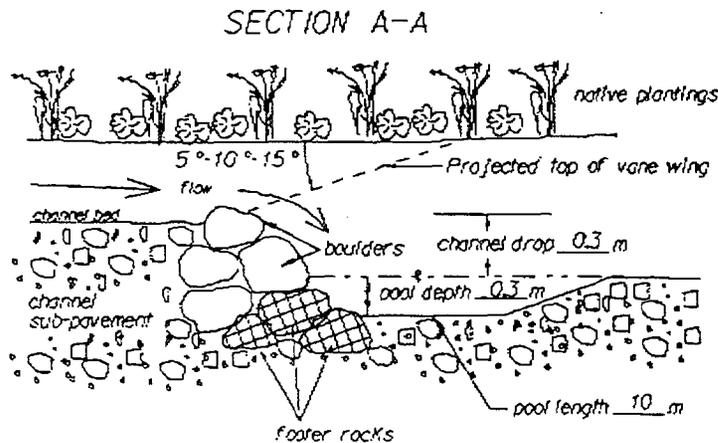
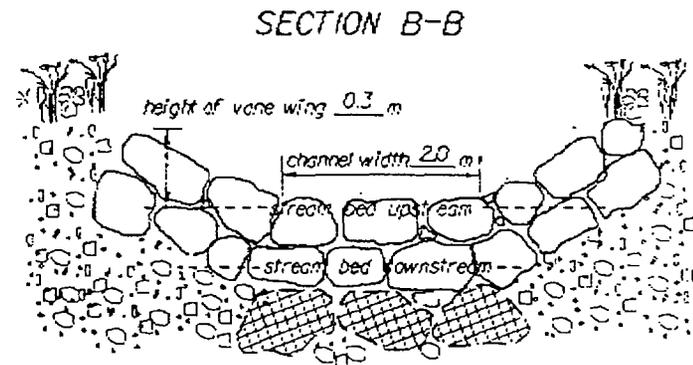
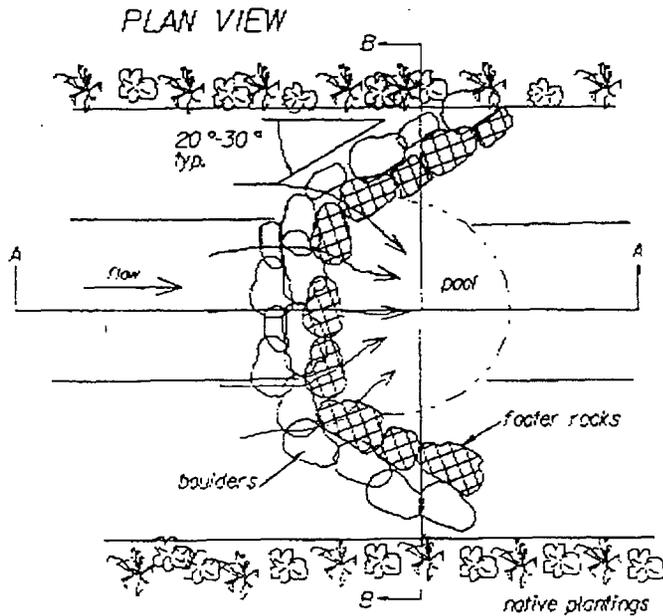
N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY

PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231

SHEET 27 OF 71

REV 7-31-00 MTS

# CROSS VANE ROCK WEIR DETAIL AW



## STATIONS (-LREV- RT)

21+80	29+60
22+00	29+70
22+20	
22+40	
23+90	

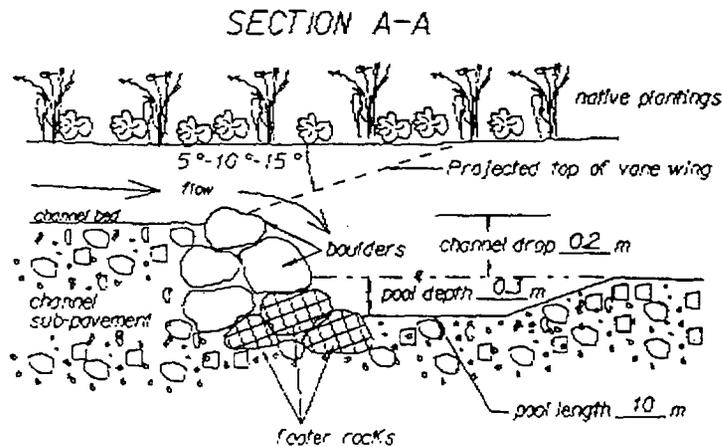
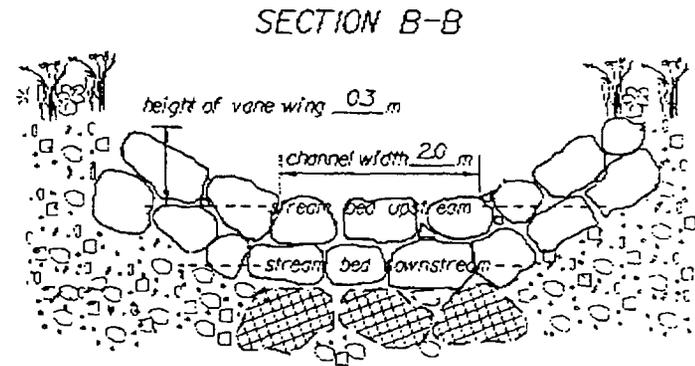
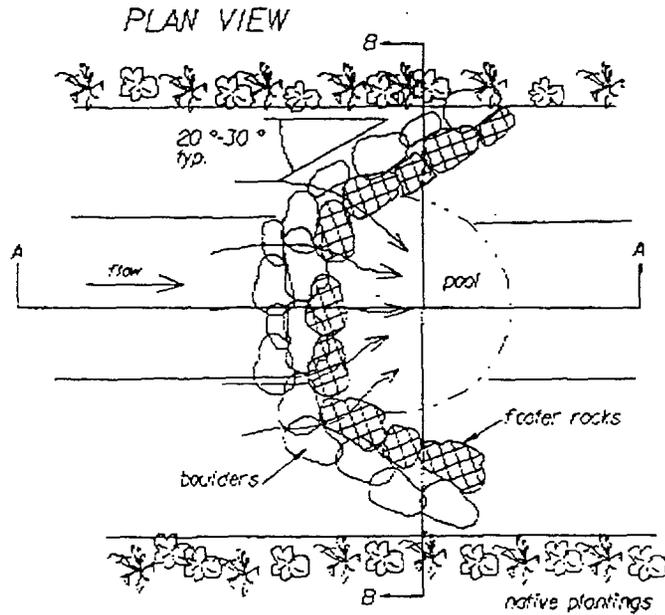
Note: Boulders should be native stone or shot rock, angular and oblong with axis approximately 0.5 m in length

2.5 TONS/CROSS VANE ROCK WEIR

PROJECT: 8.3019!22(A-900) SHEET 28 OF 71

ASU 7-31-00 MTS

# CROSS VANE ROCK WEIR DETAIL AV



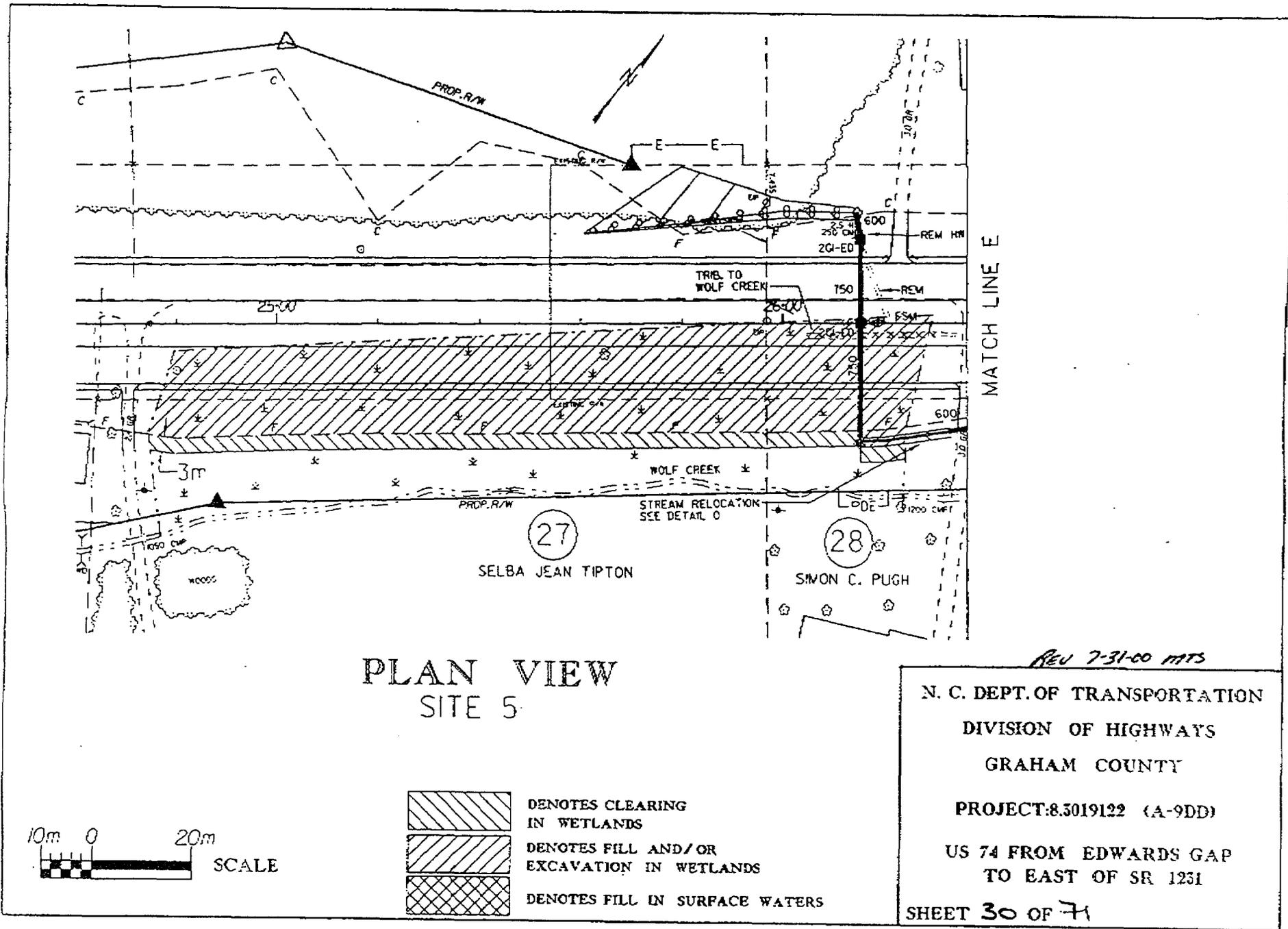
## STATIONS (-LREV- RT)

23+00  
23+20

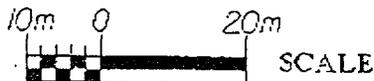
Note: Boulders should be native stone or shot rock, angular and oblong with axis approximately 0.6 m in length

2.4 TONS/CROSS VANE ROCK WEIR

PROJECT: 8.3019122(A-9DD) SHEET 29 OF 31



PLAN VIEW  
SITE 5



-  DENOTES CLEARING IN WETLANDS
-  DENOTES FILL AND/OR EXCAVATION IN WETLANDS
-  DENOTES FILL IN SURFACE WATERS

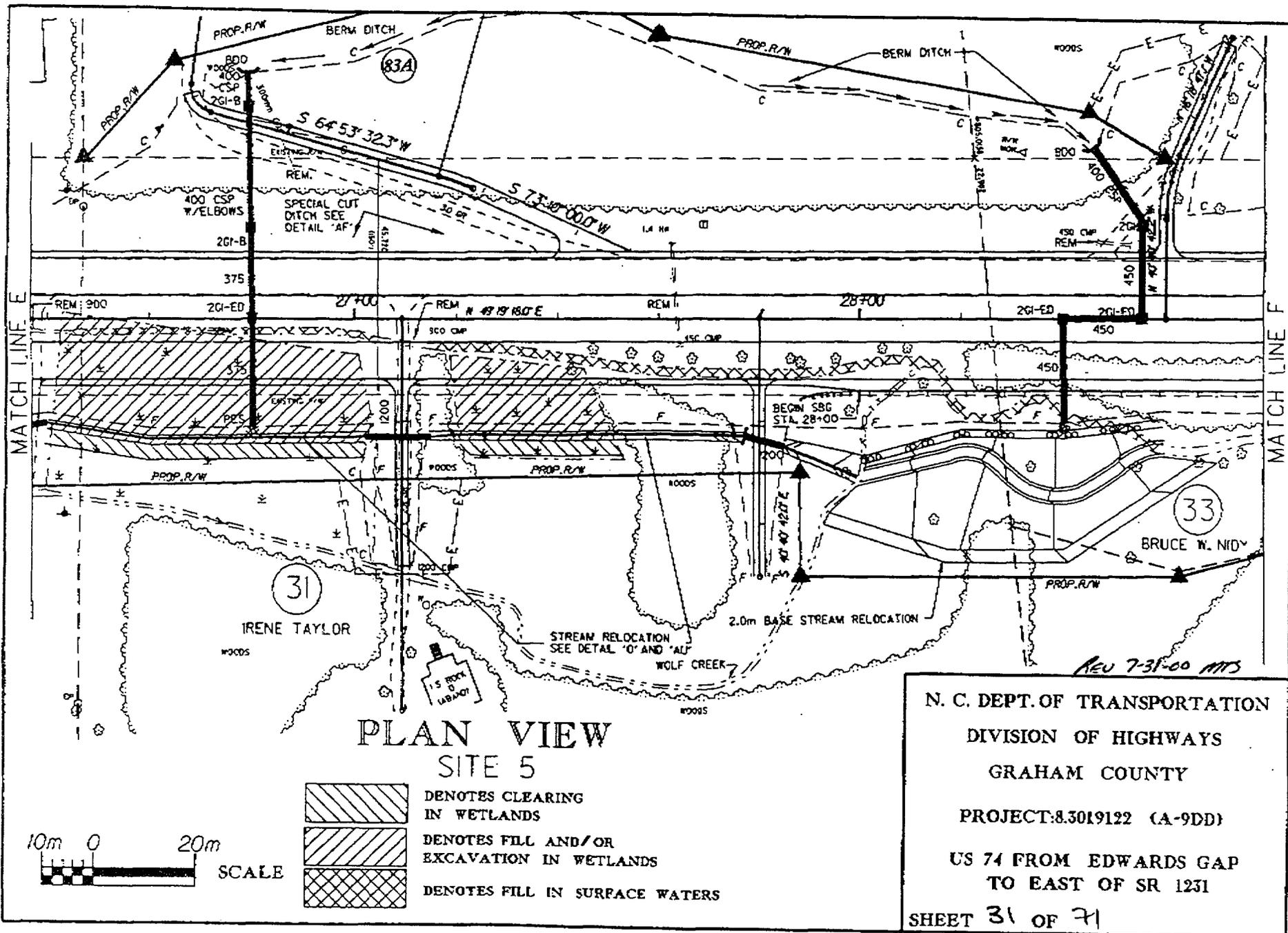
REV 7-31-00 MTS

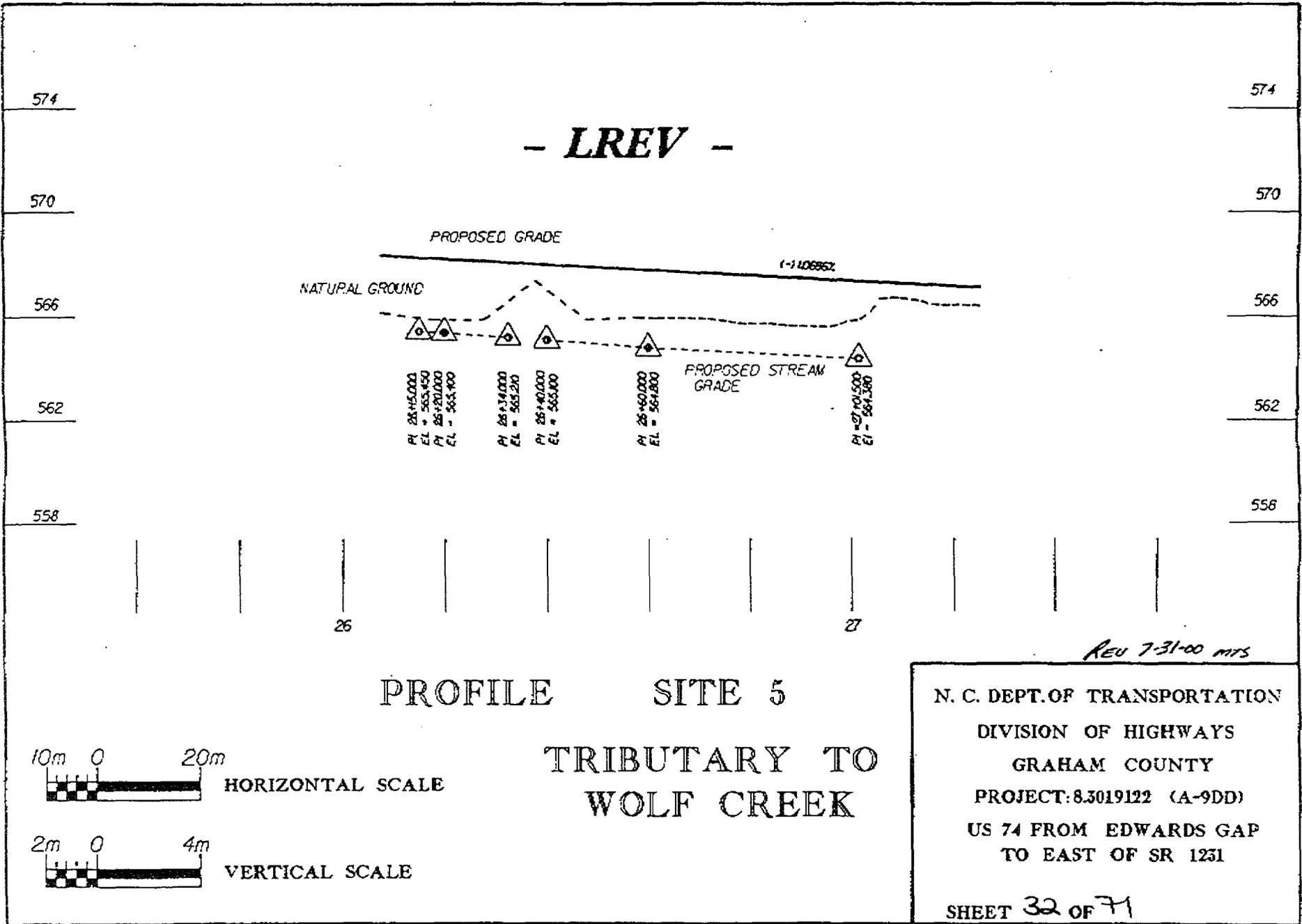
N. C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GRAHAM COUNTY

PROJECT:8.5019122 (A-9DD)

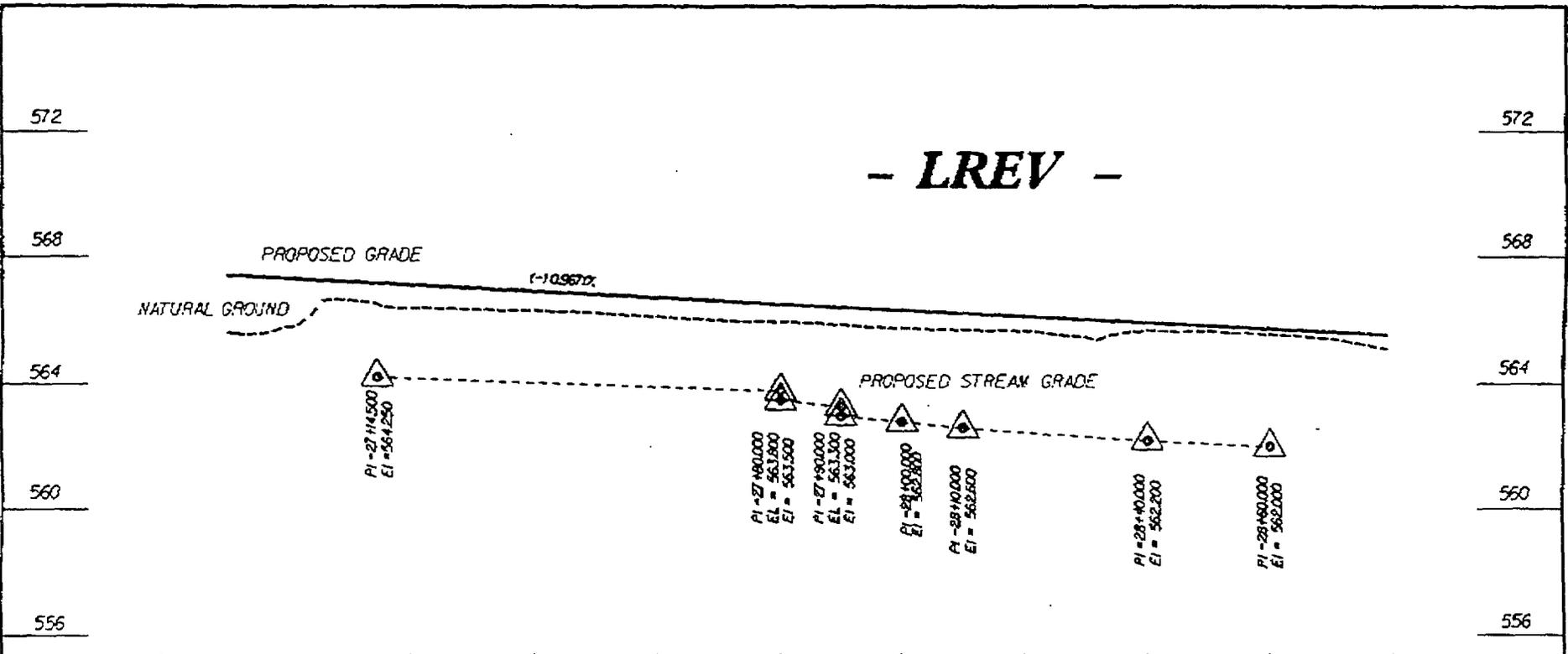
US 74 FROM EDWARDS GAP  
TO EAST OF SR 1251

SHEET 30 OF 71

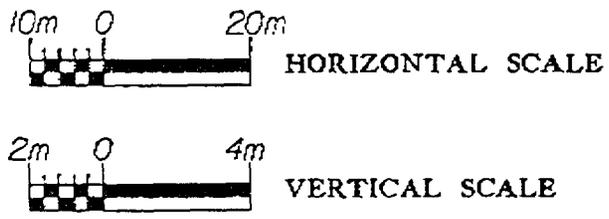




- LREV -



PROFILE SITE 5  
 TRIBUTARY TO  
 WOLF CREEK AND  
 WOLF CREEK



REV 7-51-00 MTS  
 N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231  
 SHEET 33 OF 71

SITE 5:

FROM STA 26+15 TO STA 28+00

ITEM	EXISTING STREAM	REFERENCE STREAM	PROPOSED RELOCATION
STREAM NAME	TRIBUTARY TO WOLF CREEK		
DRAINAGE AREA (DA)	12.5 ha	12.5 ha	12.5 ha
CHANNEL SLOPE (S)	.012	.012	.015
BANKFUL WIDTH ( $W_{bkr}$ )	1.1 m	1.1 m	1.5 m
MEAN DEPTH ( $d_{bkr}$ )	0.25 m	0.25 m	0.18 m
BANKFUL X-SECTION AREA ( $A_{bkr}$ )	0.28 m <sup>2</sup>	0.28 m <sup>2</sup>	0.27 m <sup>2</sup>
WIDTH/DEPTH RATIO ( $W_{bkr}/d_{bkr}$ )	4.4	4.4	8.3
Maximum DEPTH ( $d_{mbkr}$ )	0.4 m	0.4 m	0.3 m
WIDTH Flood-Prone Area ( $W_{fpa}$ )	1.5 m	1.5 m	7.5 m
ENTRENCHMENT RATIO (ER)	1.4	1.4	5
CHANNEL MATERIALS: D50	N/A	N/A	N/A
SINUOSITY (K)	1.0	1.0	1.0
MEANDERS:			
AVG. LENGTH	N/A	N/A	N/A
AVG. AMPLITUDE	N/A	N/A	N/A
AVG. RADIUS	N/A	N/A	N/A
DISCHARGES:			
Q BANKFULL	0.26 m <sup>3</sup>	0.26 m <sup>3</sup>	0.25 m <sup>3</sup>
Q2	0.21 m <sup>3</sup>	0.21 m <sup>3</sup>	0.21 m <sup>3</sup>
Q10	0.37 m <sup>3</sup>	0.37 m <sup>3</sup>	0.37 m <sup>3</sup>
VELOCITY:			
V BANKFULL	0.92 m/s	0.92 m/s	0.92 m/s
V2	0.71 m/s	0.71 m/s	0.88 m/s
V10	0.85 m/s	0.85 m/s	1.0 m/s
CLASSIFICATION	G W/LOW K	G W/LOW K	E W/LOW K

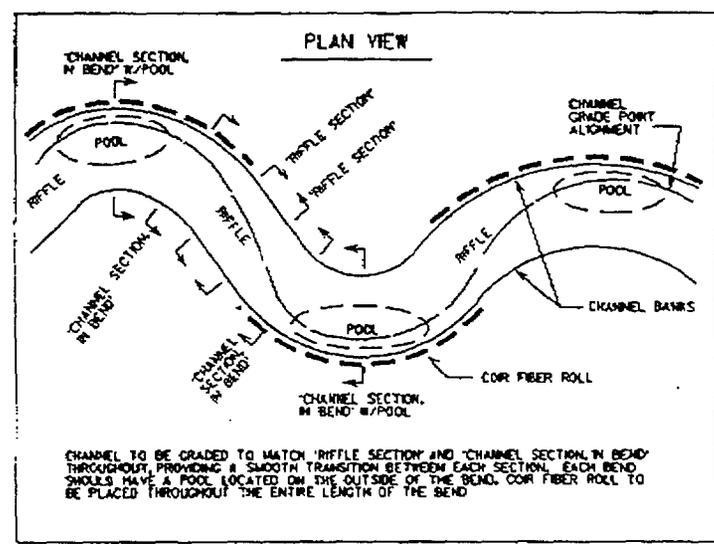
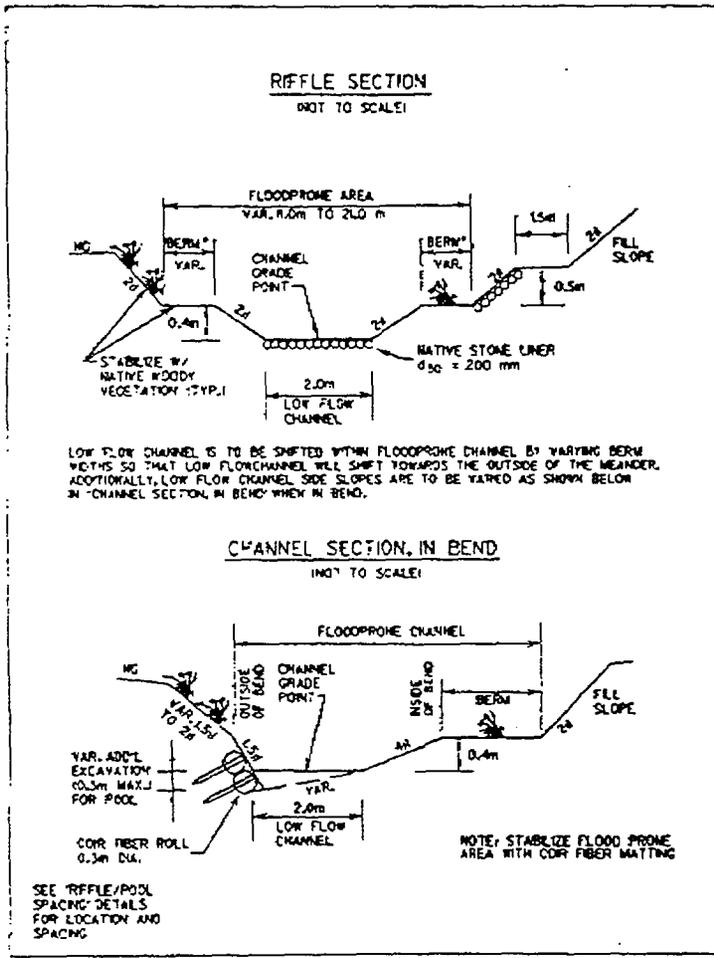
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N. C. DEPT. OF TRANSPORTATION

DIVISION OF HIGHWAYS  
GRAHAM COUNTY

PROJECT: 8.3019122  
(A-9 DD)

NATURAL CHANNEL DESIGN DETAILS  
STA 28+00 TO STA 28+60 -LREV- RT.



**SITE 5**

*REV 7-31-00 MTS*

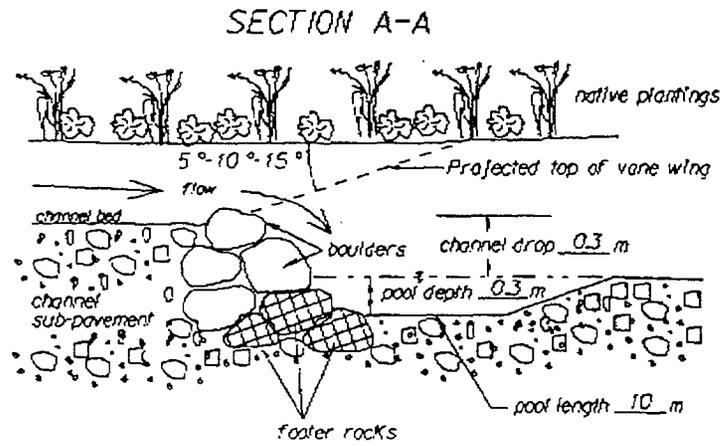
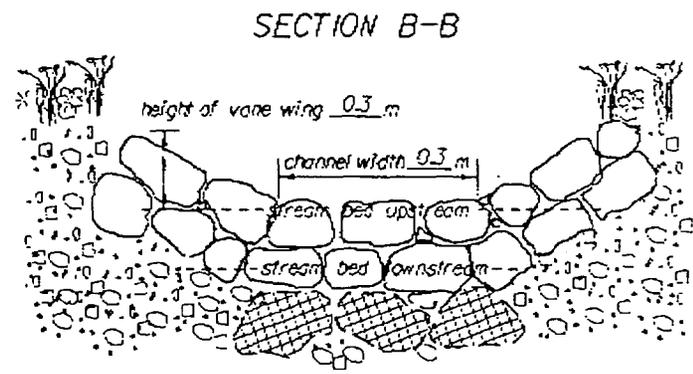
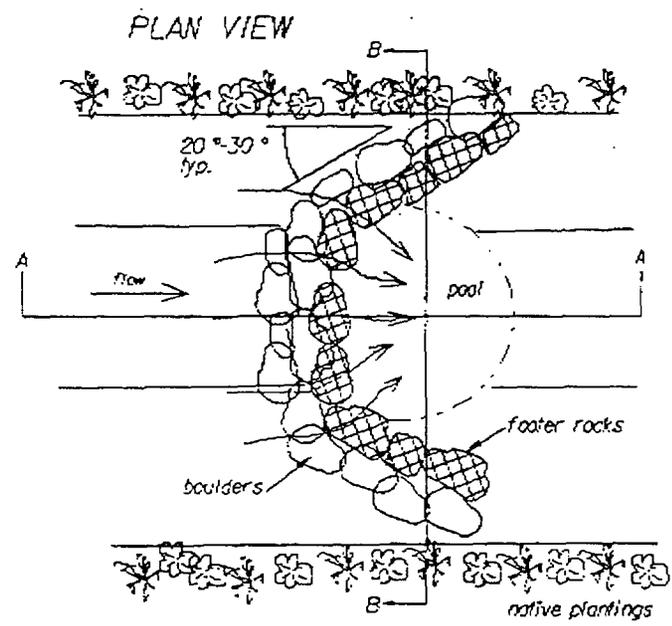
N. C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GRAHAM COUNTY

PROJECT: 8.3019122 (A-9DD)  
US 74 FROM EDWARDS GAP  
TO EAST OF SR 1231

SHEET 35 OF 71

Rev 7-31-00 MTS

# CROSS VANE ROCK WEIR DETAIL AU



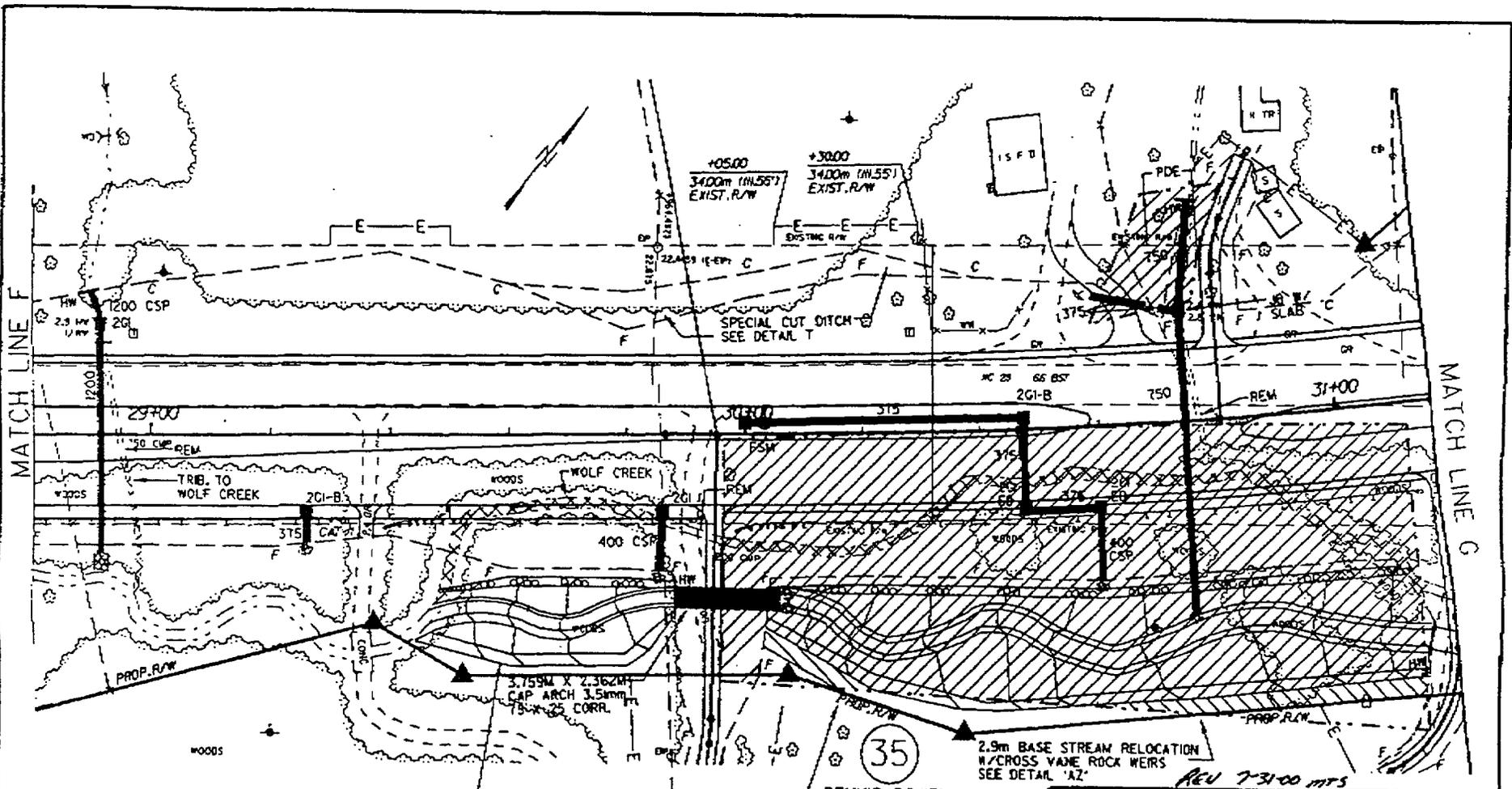
STATIONS (-LREV- RT)

27+80  
27+90

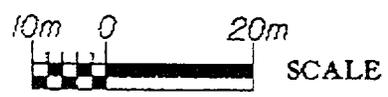
Note: Boulders should be native stone or shot rock, angular and abating with axis approximately 0.6 m in length

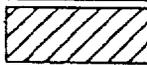
1.5 TONS/CROSS VANE ROCK WEIR

PROJECT: 8.30i9122(A-9DD) SHEET 36 OF 71

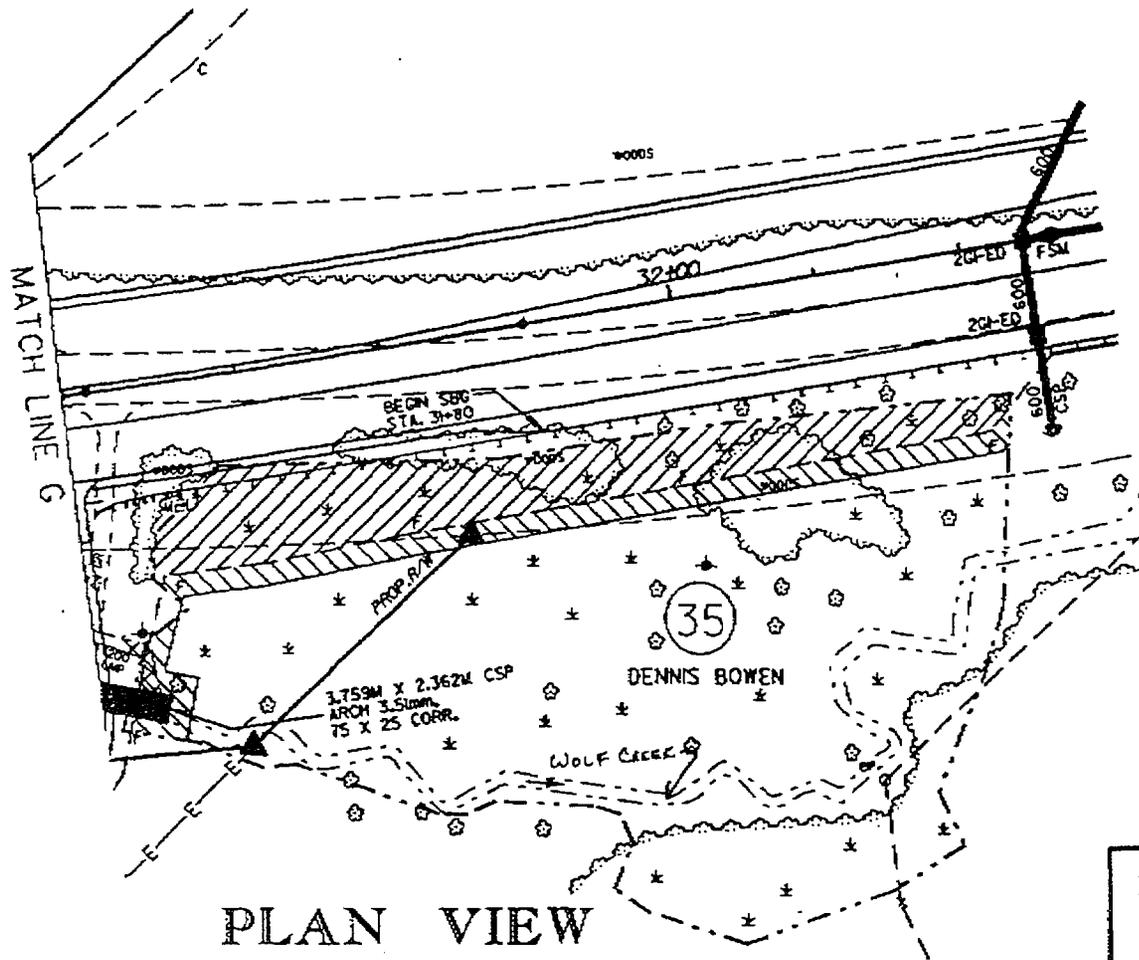


PLAN VIEW  
SITE 6

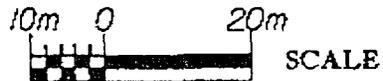


-  DENOTES CLEARING IN WETLANDS
-  DENOTES FILL AND/OR EXCAVATION IN WETLANDS
-  DENOTES FILL IN SURFACE WATERS

N. C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GRAHAM COUNTY  
PROJECT:8.5019122 (A-9DD)  
US 74 FROM EDWARDS GAP  
TO EAST OF SR 1251  
SHEET 37 OF 71



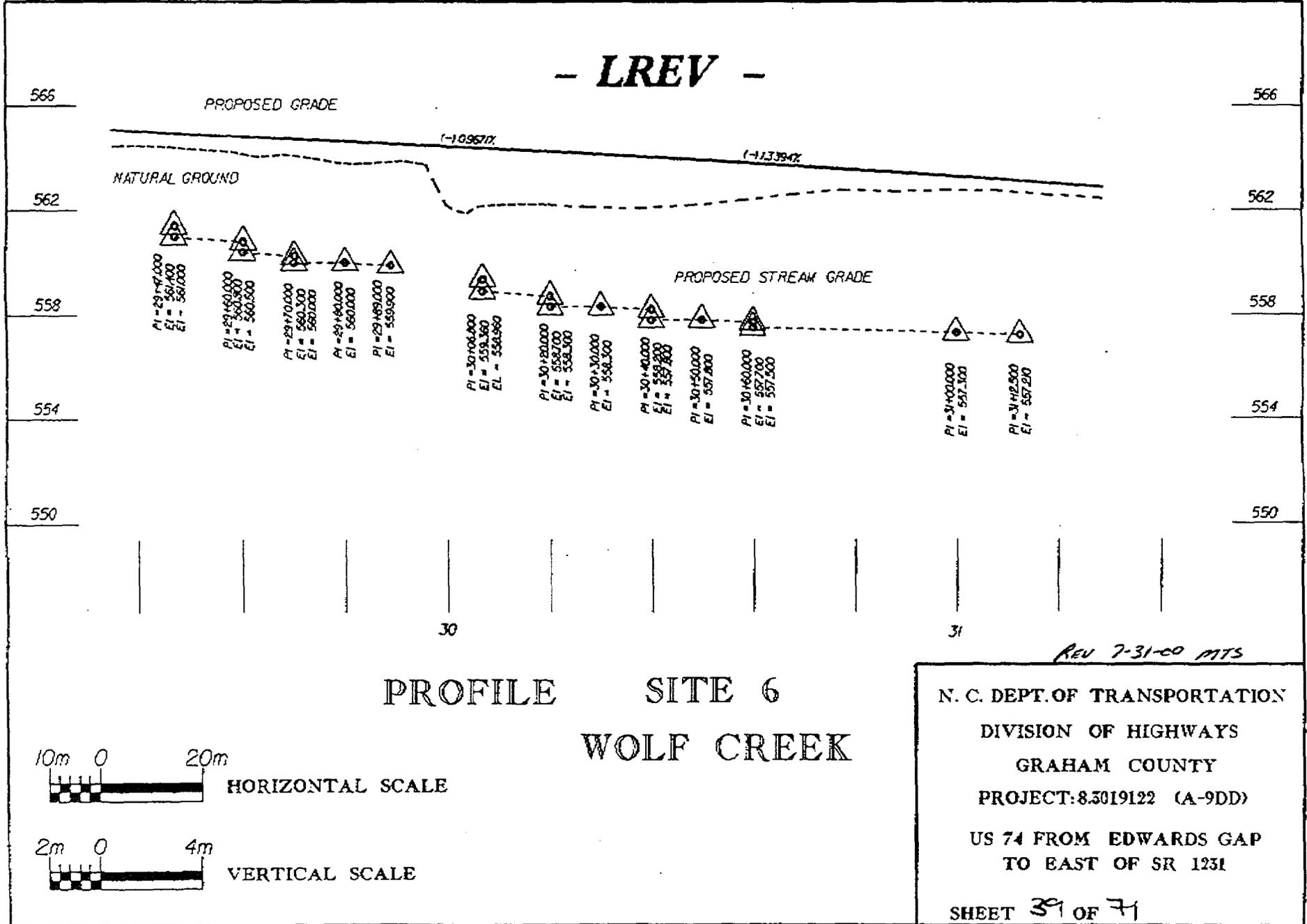
PLAN VIEW  
SITE 6



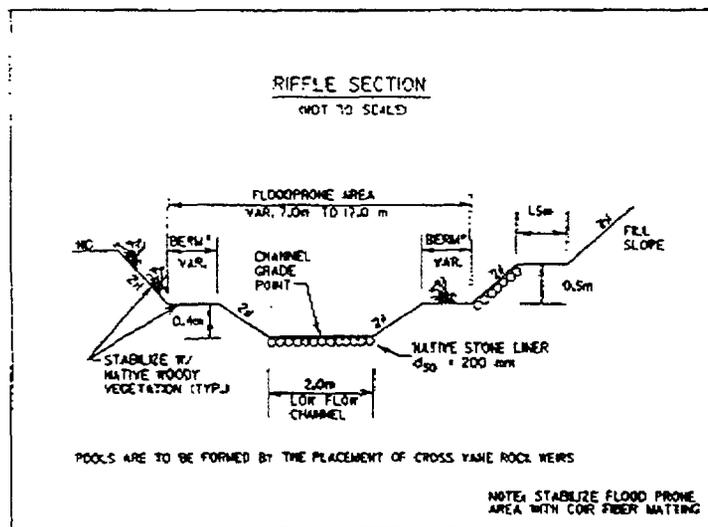
-  DENOTES CLEARING IN WETLANDS
-  DENOTES FILL AND/OR EXCAVATION IN WETLANDS
-  DENOTES FILL IN SURFACE WATERS

JULY 31, 2000 PCT  
 N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231  
 SHEET 38 OF 71

# - LREV -



NATURAL CHANNEL DESIGN DETAILS  
 STA 29+47 TO STA 29+89 -LREV- RT.  
 STA 30+06.8 TO STA 30+40 -LREV- RT.



SITE 6

*REV 731-00 MTS*

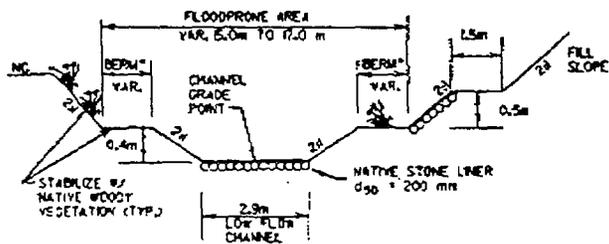
N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY

PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1251

SHEET 40 OF 71

**RIFFLE SECTION**

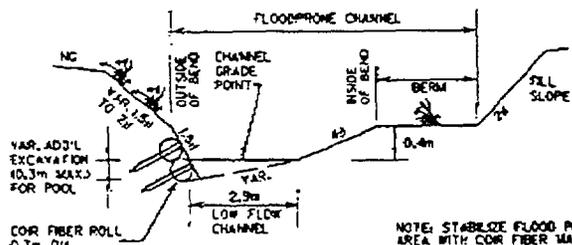
NOT TO SCALE



LOW FLOW CHANNEL IS TO BE SHIFED WITH FLOODPRONE CHANNEL BY TYPING BERM TO THIS SO THAT LOW FLOW CHANNEL WILL SHIFIT "OWARDS THE OUTSIDE OF THE MEANDER. ADDITIONALLY, LOW FLOW CHANNEL SIDE SLOPES ARE TO BE VARIED AS SHOWN BELOW IN "CHANNEL SECTION, IN BEND" WHEN IN BEND.

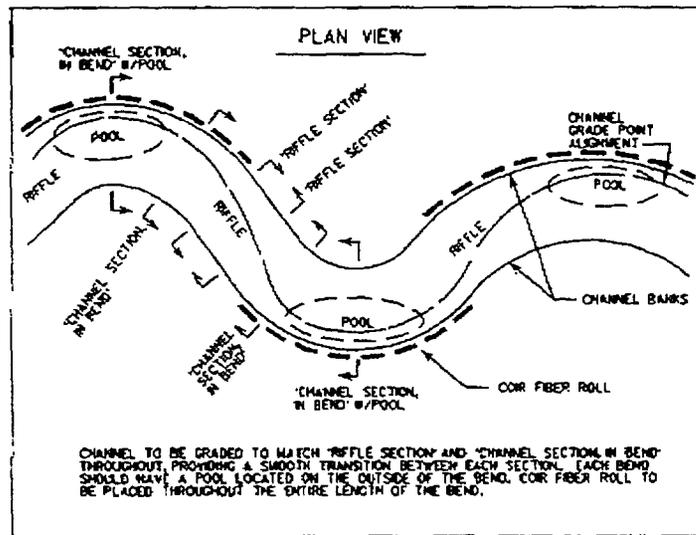
**CHANNEL SECTION, IN BEND**

NOT TO SCALE



SEE "RIFFLE/POOL SPACING DETAILS FOR LOCATION AND SPACING"

**NATURAL CHANNEL DESIGN DETAILS**  
STA 30+40 TO STA 31+12.5 -LREV- RT.



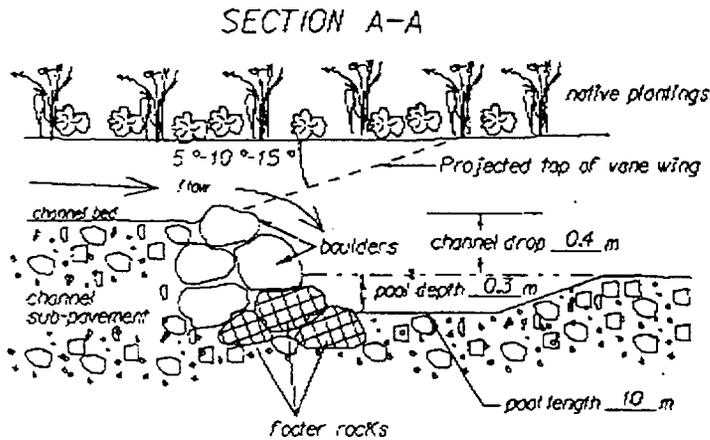
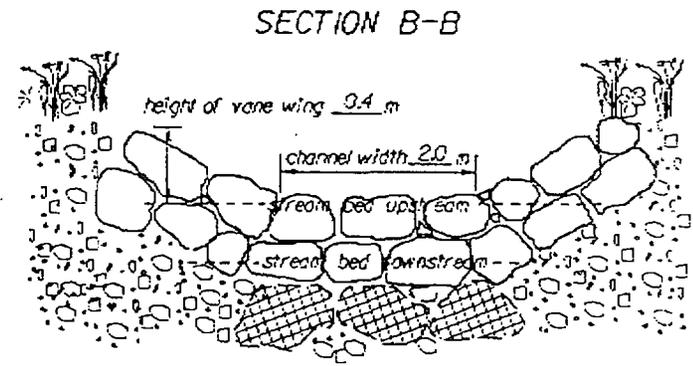
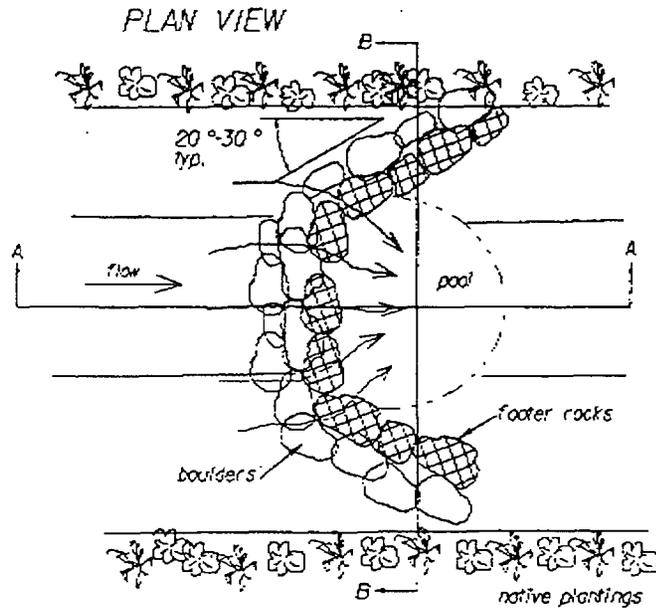
**SITE 6**

*REV 7-31-00 MTS*  
N. C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GRAHAM COUNTY

PROJECT: 8.3019122 (A-9DD)  
US 74 FROM EDWARDS GAP  
TO EAST OF SR 1231

SHEET 41 OF 71

# CROSS VANE ROCK WEIR DETAIL AX



STATIONS (-LREV- RT)

29+47  
30+06.8

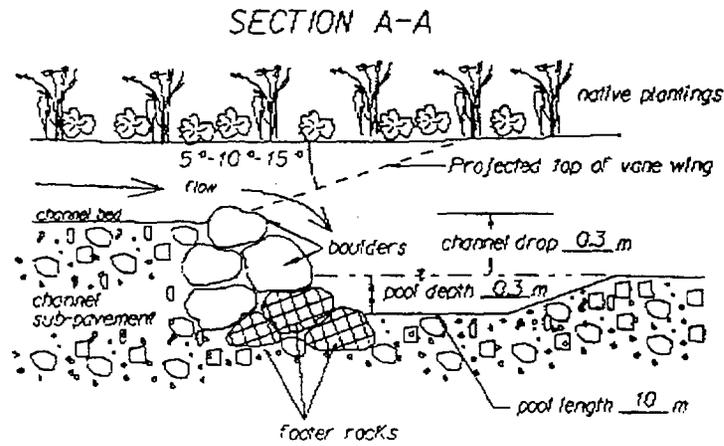
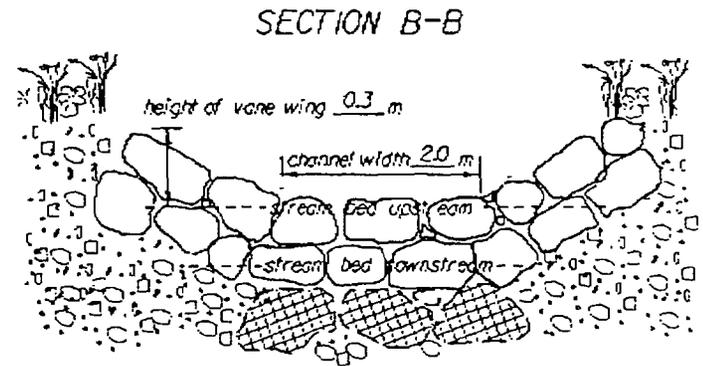
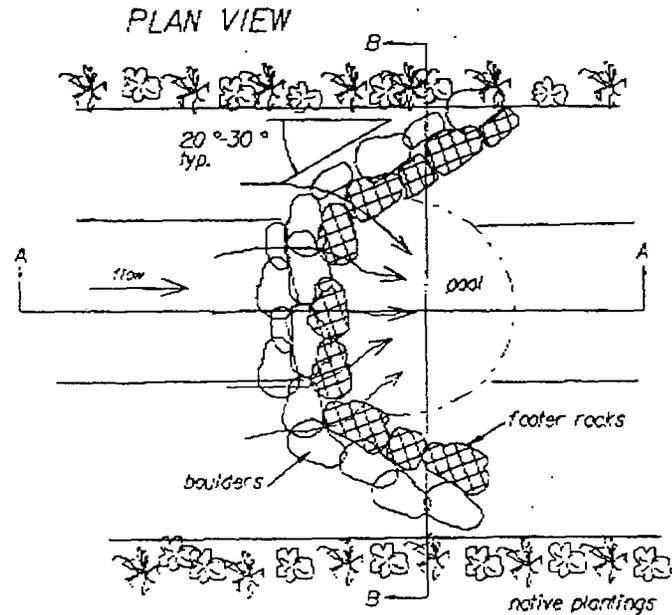
Note: Boulders should be native stone or shot rock, angular and oblong with axis approximately 0.6 m in length

3.2 TONS/CROSS VANE ROCK WEIR

PROJECT: 8.3019122(A-9DD) SHEET 42 OF 71

REV 7-31-00 MTS

# CROSS VANE ROCK WEIR DETAIL AW



## STATIONS (-LREV- RT)

21+80	29+60
22+00	29+70
22+20	
22+40	
23+90	

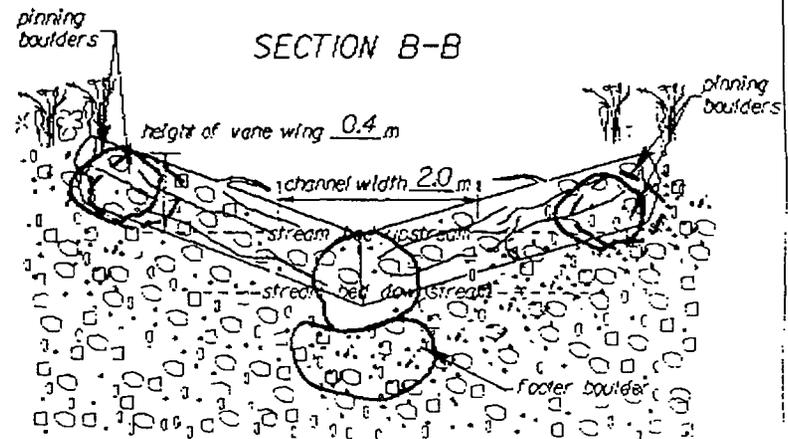
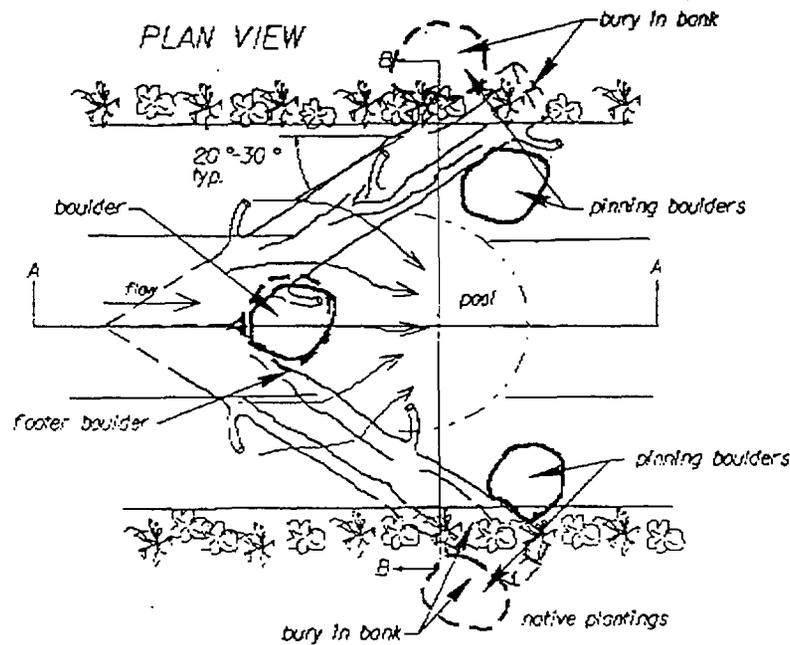
Note: Boulders should be native stone or shot rock, angular and oblong with axis approximately 0.6 m in length

2.5 TONS/CROSS VANE ROCK WEIR

PROJECT: 8.3019122(A-9DD) SHEET 43 OF 71

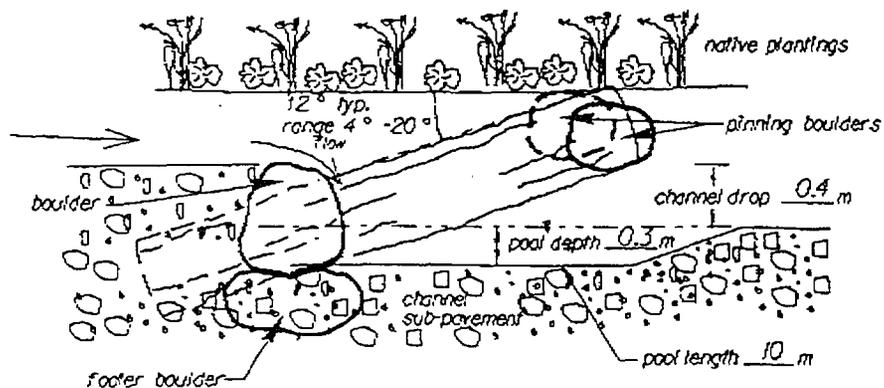
REV 7-31-00 MTS

# CROSS VANE LOG WEIR DETAIL



Note: Boulders should be native stone or shot rock, angular and oblong with axis approximately 0.6 m in length. Logs should be approximately 0.3 m diameter and 6-9 m in length. Logs should be straight hardwood tree or Hemlock tree.

SECTION A-A

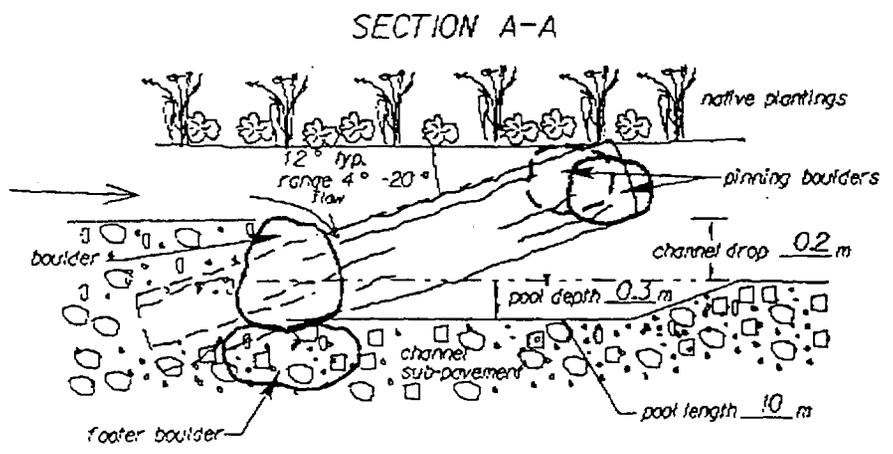
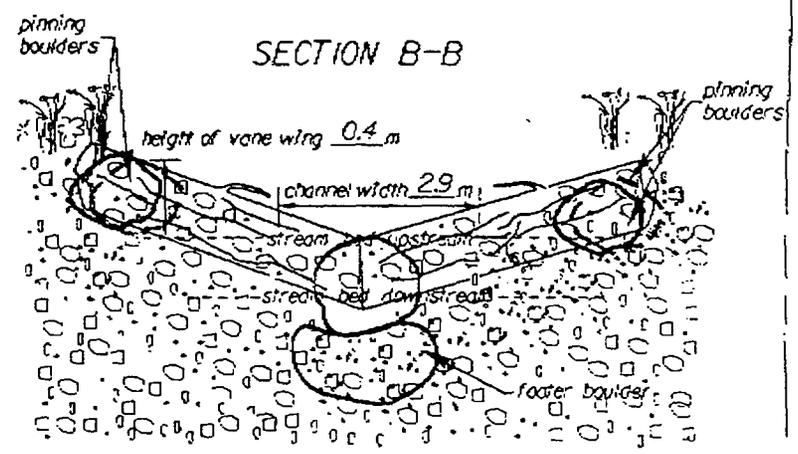
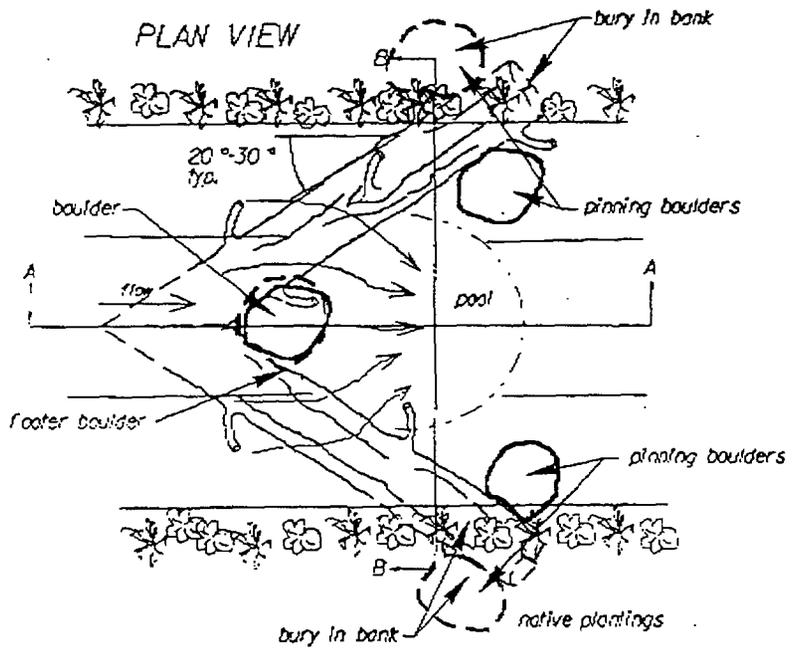


STATION (-LREV- RT)

30+20  
30+40

Rev 7-31-00 mts

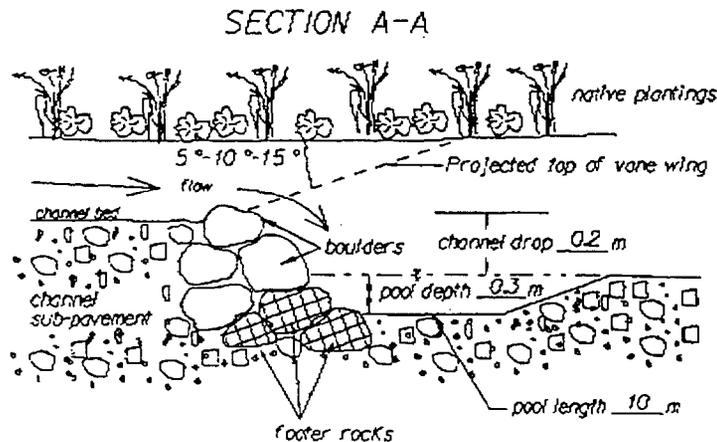
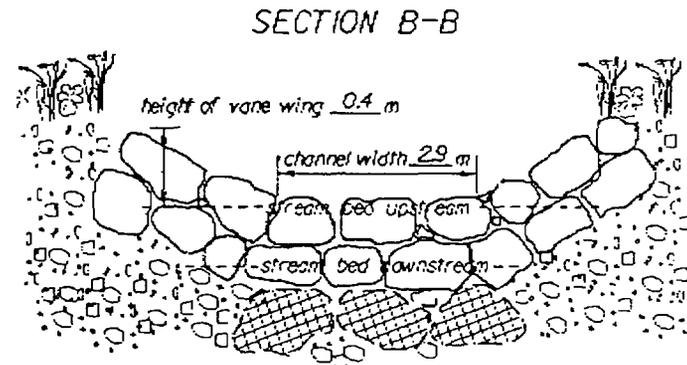
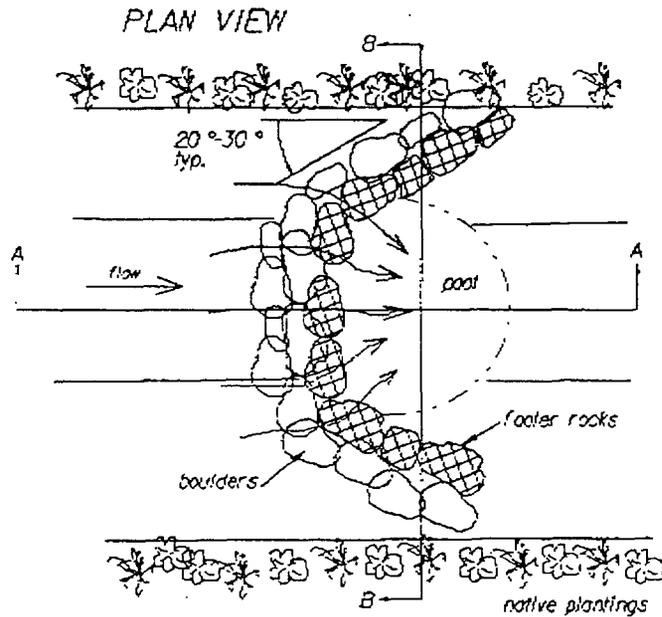
# CROSS VANE LOG WEIR DETAIL



Note: Boulders should be native stone or shot rock, angular and oblong with axis approximately 0.6 m in length. Logs should be approximately 0.3 m diameter and 6-9 m in length. Logs should be straight hardwood tree or Hemlock tree.

STATION (-LREV- RT)  
30+60

# CROSS VANE ROCK WEIR DETAIL AZ



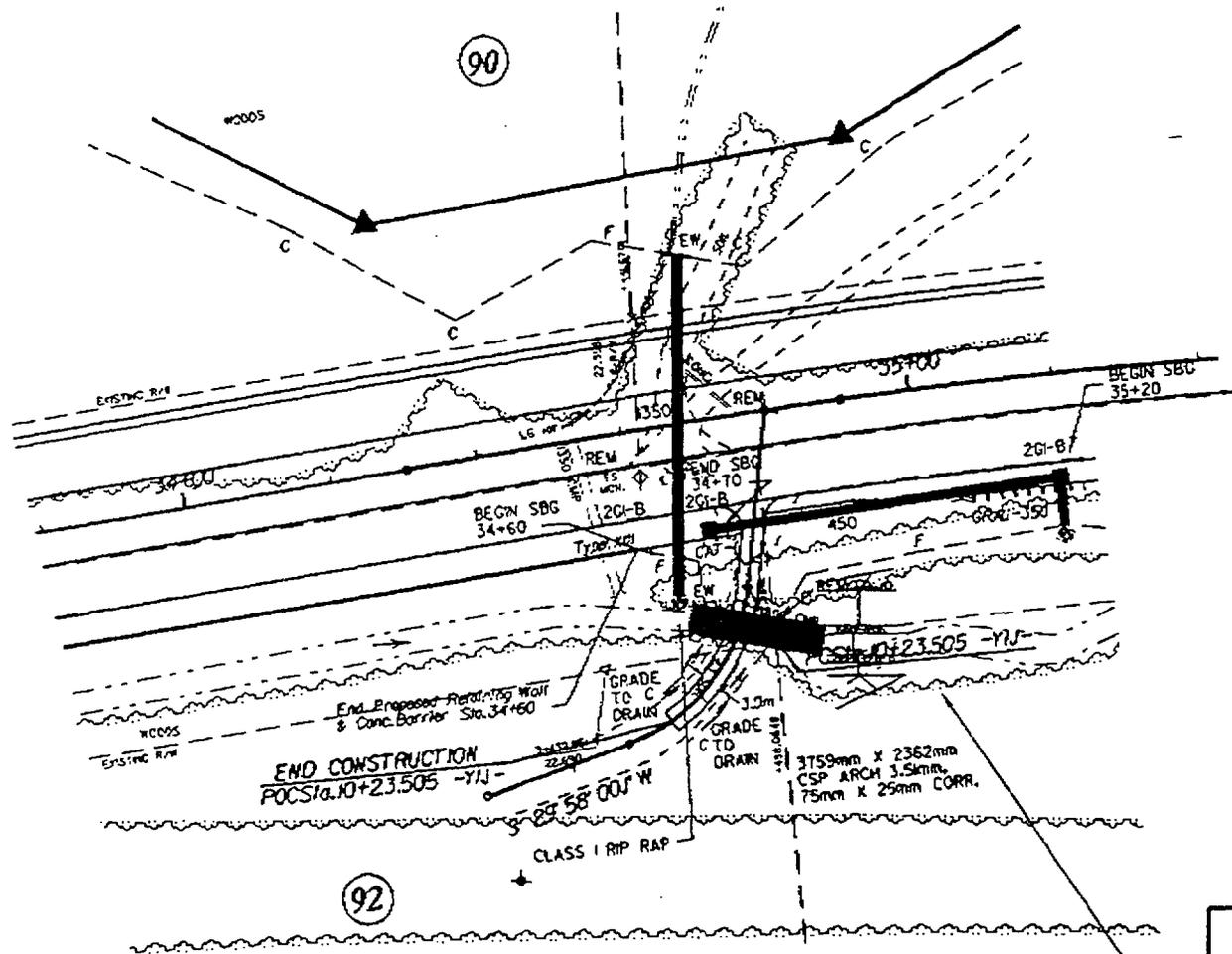
STATIONS (-LREV- RT)

30+80

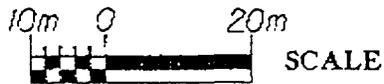
Note: Boulders should be native stone or shot rock, angular and oblong with axis approximately 0.6 m in length

3.2 TONS/CROSS VANE ROCK WEIR

PROJECT: 8.3019122(A-9DD) SHEET 46 OF 71



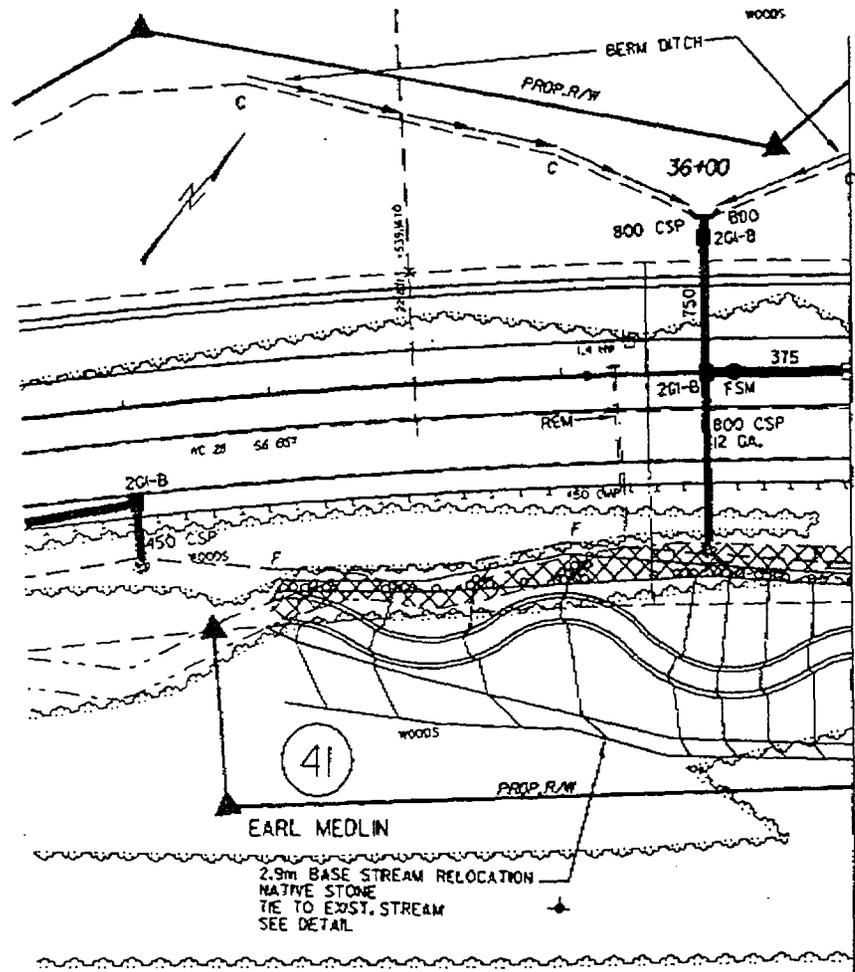
PLAN VIEW  
SITE 7



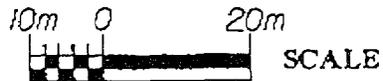
DENOTES FILL IN SURFACE WATERS

JUN 31, 2000 PCT

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231  
 SHEET 47 OF 71



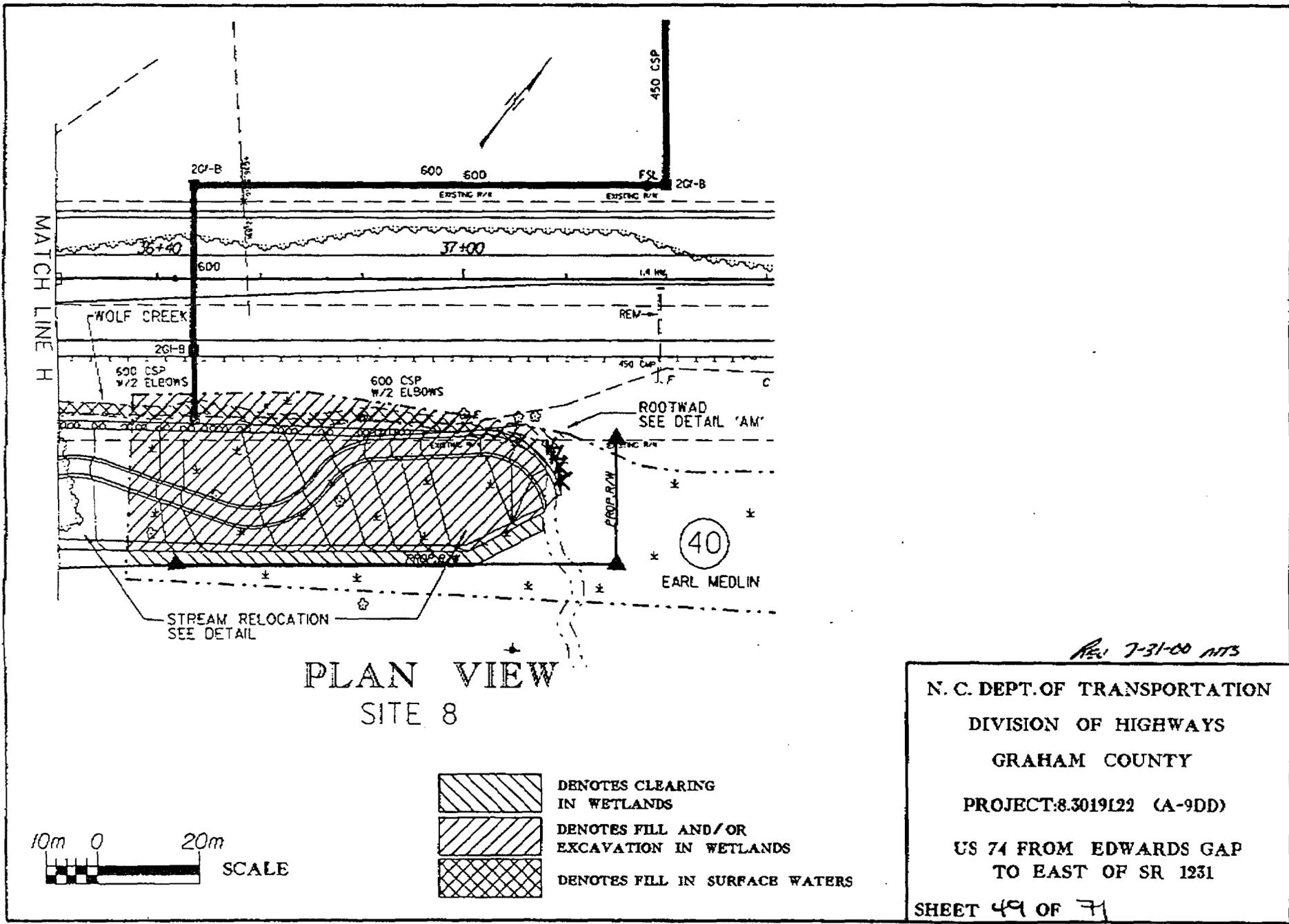
PLAN VIEW  
SITE 8



DENOTES FILL IN SURFACE WATERS

*REV 7-31-00 MTS*

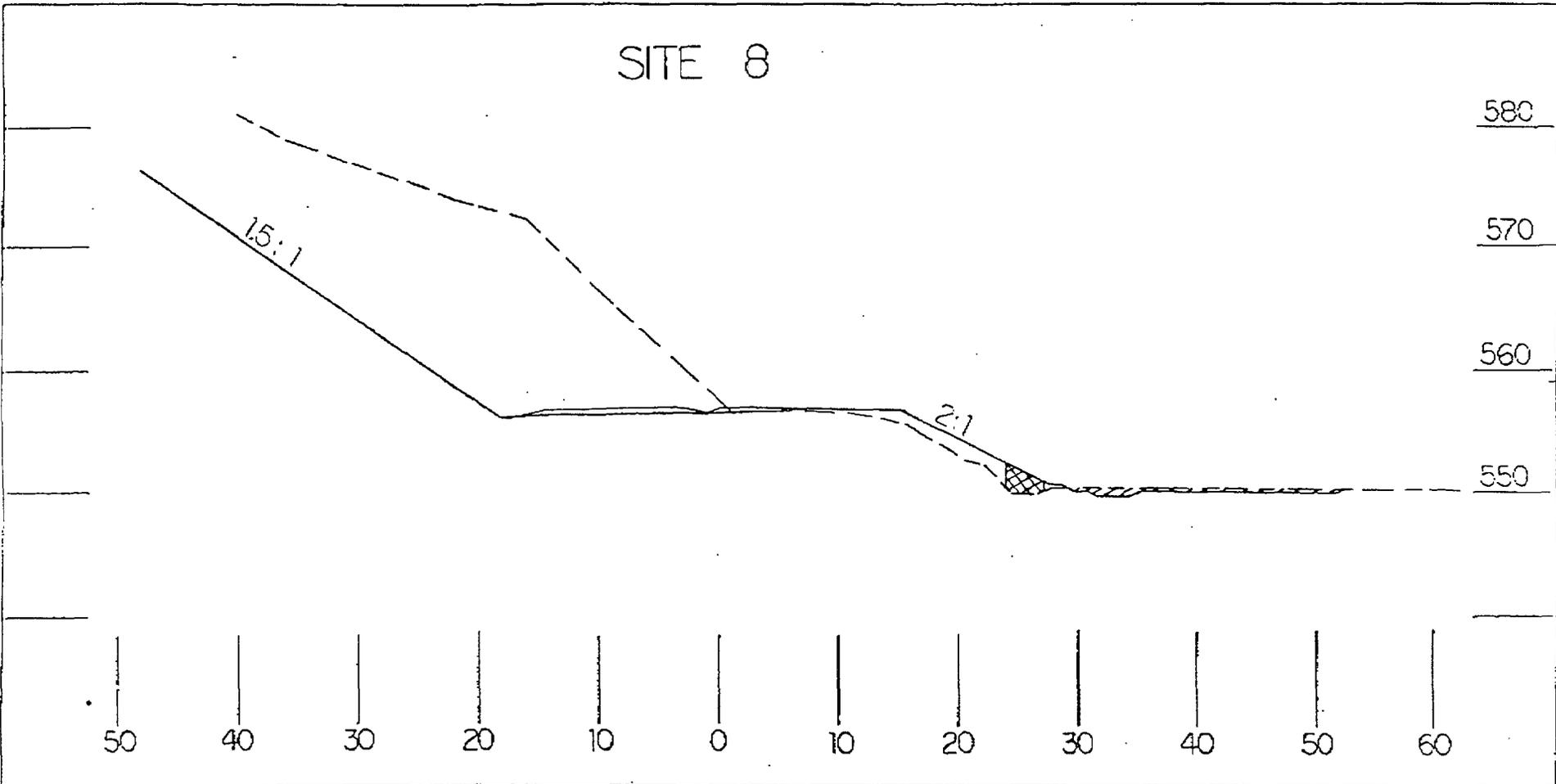
N. C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GRAHAM COUNTY  
PROJECT: 8.3019122 (A-9DD)  
US 74 FROM EDWARDS GAP  
TO EAST OF SR 1231  
SHEET 48 OF 71



*REV 7-31-00 MTS*

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019L22 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231  
 SHEET 49 OF 71

# SITE 8



36+80 -LREV-

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122 (A-9DD)  
 US 71 FROM EDWARDS GAP  
 TO EAST OF SR 1231  
 SHEET 50 OF 71 *July 11, 2000*



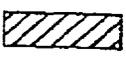
HORIZONTAL SCALE



DENOTES FILL IN SURFACE WATER

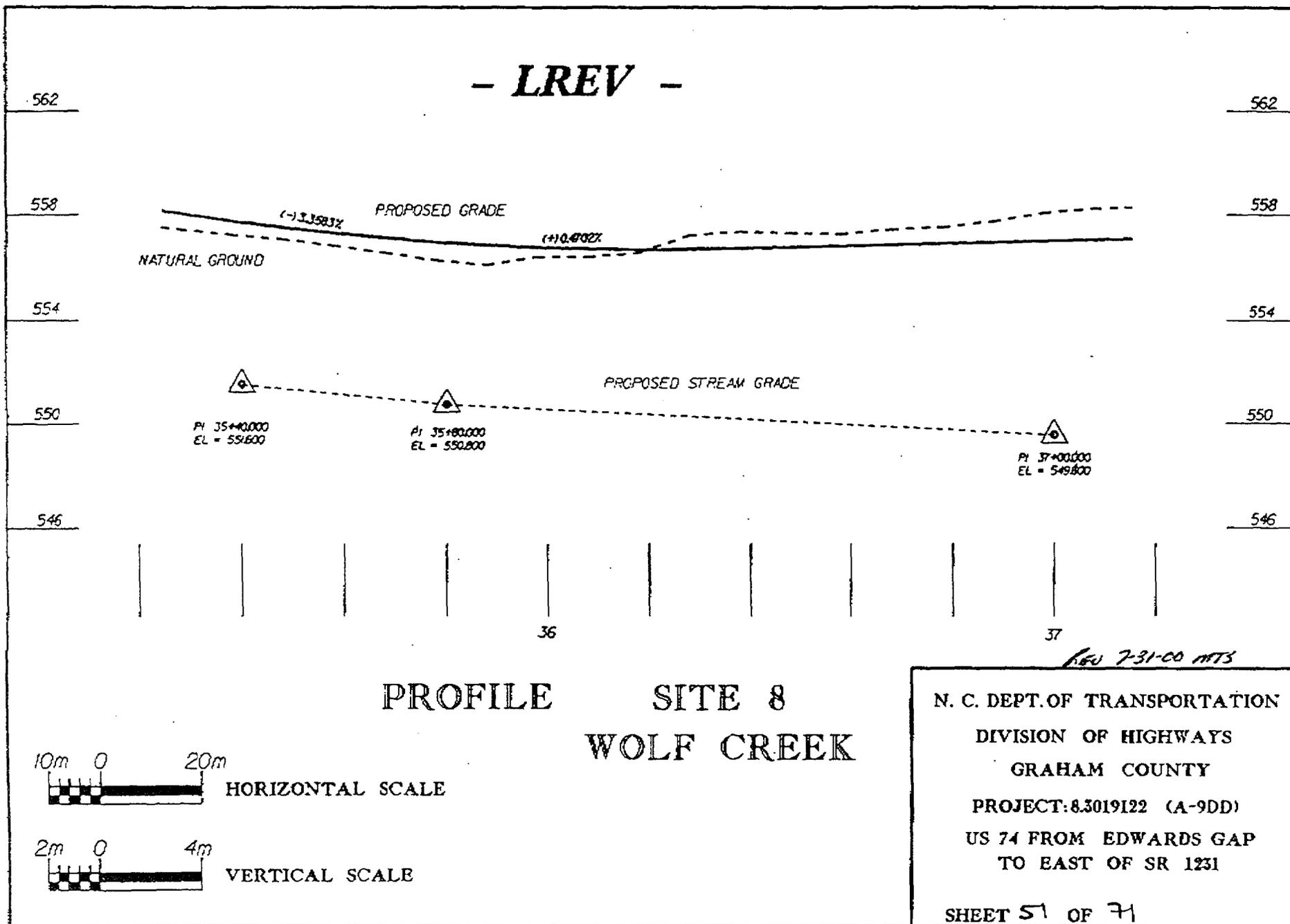


VERTICAL SCALE



DENOTES FILL AND/OR EXCAVATION IN WETLANDS

# - LREV -



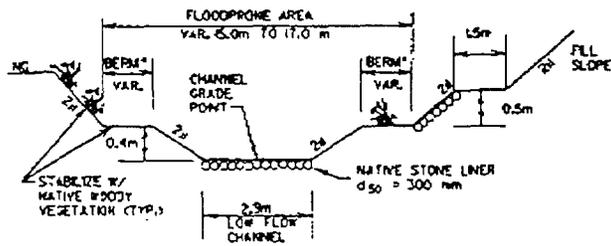
## PROFILE SITE 8 WOLF CREEK

REV 7-31-00 MTS

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231

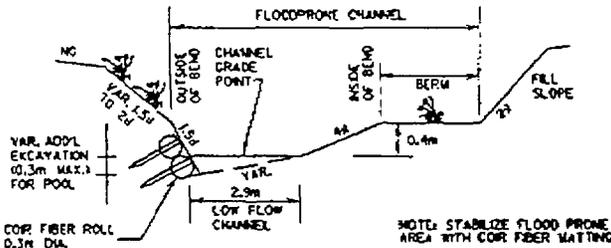
SHEET 51 OF 71

**RIFFLE SECTION**  
NOT TO SCALE



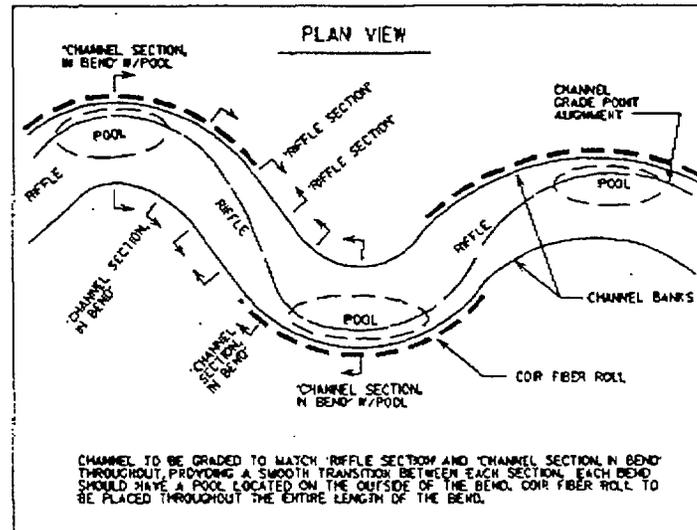
LOW FLOW CHANNEL IS TO BE SHIFTED WITHIN FLOODPRONE CHANNEL BY VARYING BERM WIDTHS SO THAT LOW FLOW CHANNEL WILL SHIFT TOWARDS THE OUTSIDE OF THE MEANDER. ADDITIONALLY, LOW FLOW CHANNEL SIDE SLOPES ARE TO BE VARED AS SHOWN BELOW IN 'CHANNEL SECTION IN BEND' WHEN IN BEND.

**CHANNEL SECTION IN BEND**  
(NOT TO SCALE)



SEE 'RIFFLE/POOL SPACING' DETAILS FOR LOCATION AND SPACING

**NATURAL CHANNEL DESIGN DETAILS**  
STA 35+40 TO STA 37+10 -LREV- RT.



**SITE 8**

*Rev 7-31-00 1175*

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

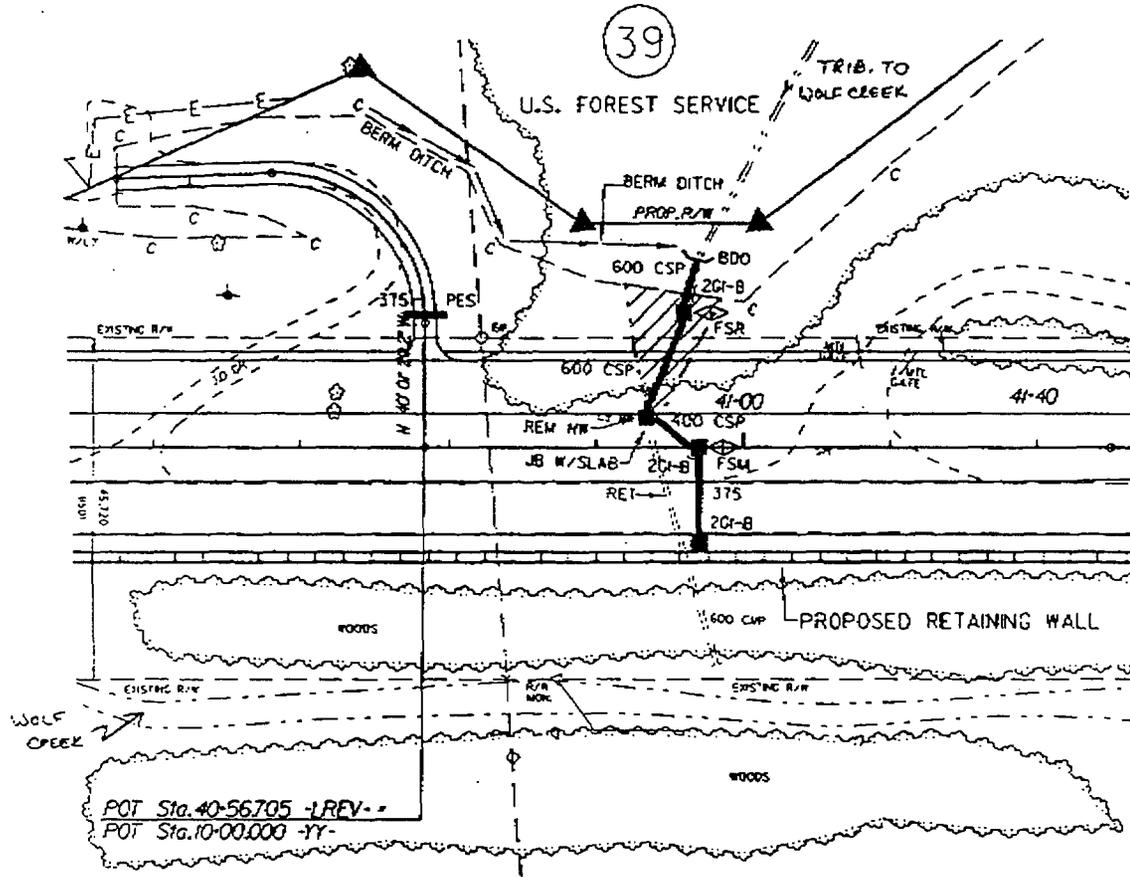
PROJECT: 8.3019122 (A-9DD)  
US 74 FROM EDWARDS GAP  
TO EAST OF SR 1231

SITE 8: FROM STA 35+40 TO STA 37+10

ITEM	EXISTING STREAM	REFERENCE STREAM	PROPOSED RELOCATION
STREAM NAME	WOLF CREEK	WOLF CREEK	WOLF CREEK
DRAINAGE AREA (DA)	481 ha	481 ha	481 ha
CHANNEL SLOPE (S)	.013	.013	.013
BANKFUL WIDTH ( $W_{bkr}$ )	3.1 m	3.1 m	4.5 m
MEAN DEPTH ( $d_{bkr}$ )	0.4 m	0.4 m	0.33 m
BANKFUL X-SECTION AREA ( $A_{bkr}$ )	1.24 m <sup>2</sup>	1.24 m <sup>2</sup>	1.48 m <sup>2</sup>
WIDTH/DEPTH RATIO ( $W_{bkr}/d_{bkr}$ )	7.8	7.8	12.7
Maximum DEPTH ( $d_{mbkr}$ )	0.61 m	0.61 m	0.4 m
WIDTH Flood-Prone Area ( $W_{fpa}$ )	39 m	39 m	17.5 m
ENTRENCHMENT RATIO (ER)	8.5	8.5	4.2
CHANNEL MATERIALS: D50	200 mm	200 mm	300 mm
SINUOSITY (K)	1.1	1.1	1.1
MEANDERS:			
AVG. LENGTH	38 m	38 m	39 m
AVG. AMPLITUDE	3 m	3 m	9 m
AVG. RADIUS	3 m	3 m	7 m
DISCHARGES:			
Q BANKFULL	1.2 m <sup>3</sup> /s	1.2 m <sup>3</sup> /s	1.8 m <sup>3</sup> /s
Q2	6.3 m <sup>3</sup> /s	6.3 m <sup>3</sup> /s	6.3 m <sup>3</sup> /s
Q10	14.5 m <sup>3</sup> /s	14.5 m <sup>3</sup> /s	14.5 m <sup>3</sup> /s
VELOCITY:			
V BANKFULL	1.2 m/s	1.2 m/s	1.2 m/s
V2	1.9 m/s	1.9 m/s	1.8 m/s
V10	2.4 m/s	2.4 m/s	2.3 m/s
CLASSIFICATION	E W/LOW K	E W/LOW K	E W/LOW K

REV 7-31-00 MTS

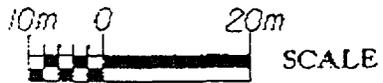
N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122  
 (A-9 DD)



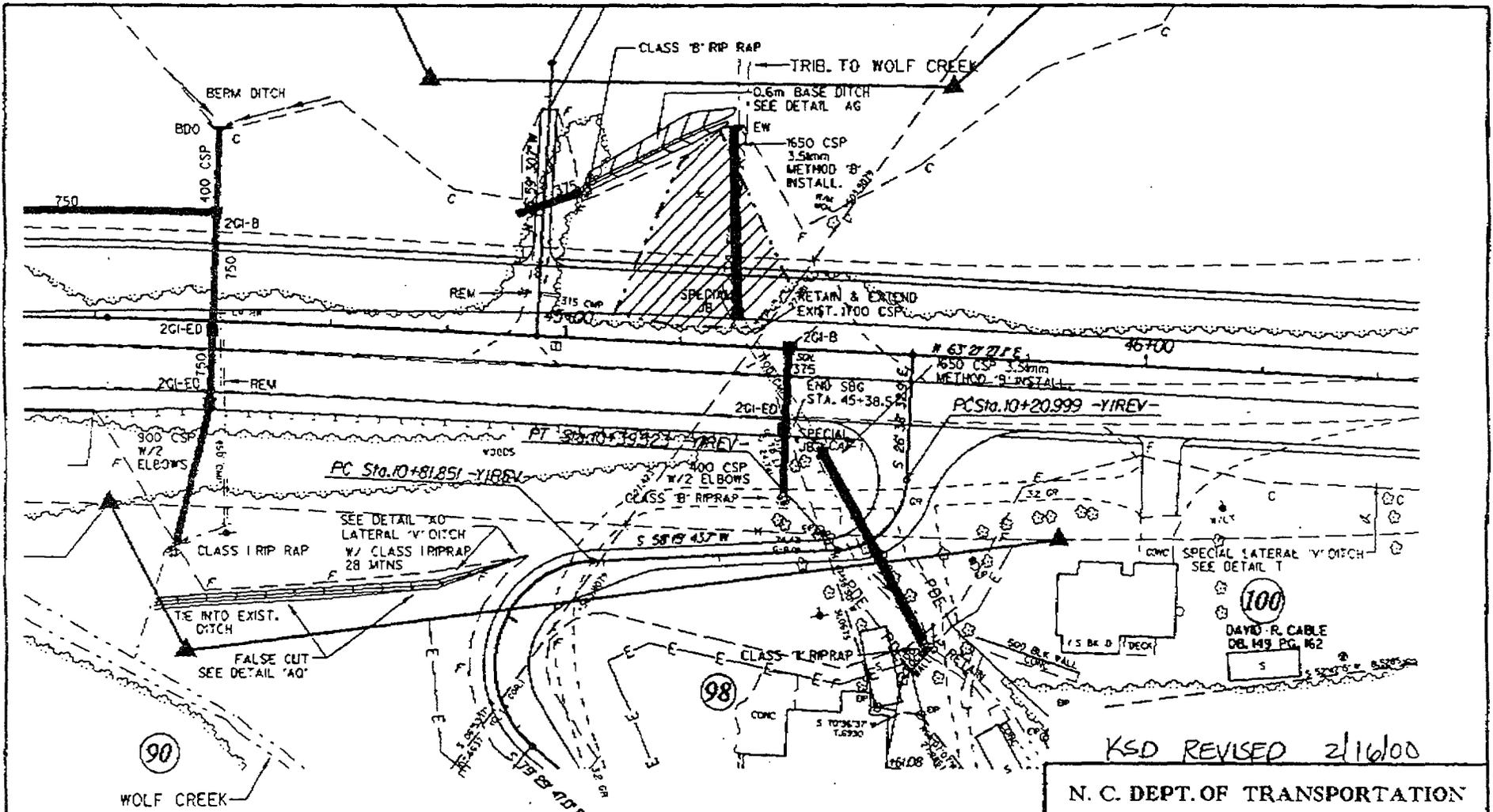
PLAN VIEW  
SITE 9

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.5019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231  
 SHEET 54 OF 71

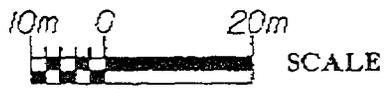
REV JULY 31, 2000



DENOTES FILL AND/OR  
EXCAVATION IN WETLANDS



PLAN VIEW  
SITE 10



-  DENOTES FILL AND/OR EXCAVATION IN WETLANDS
-  DENOTES FILL IN SURFACE WATERS

KSD REVISED 2/16/00

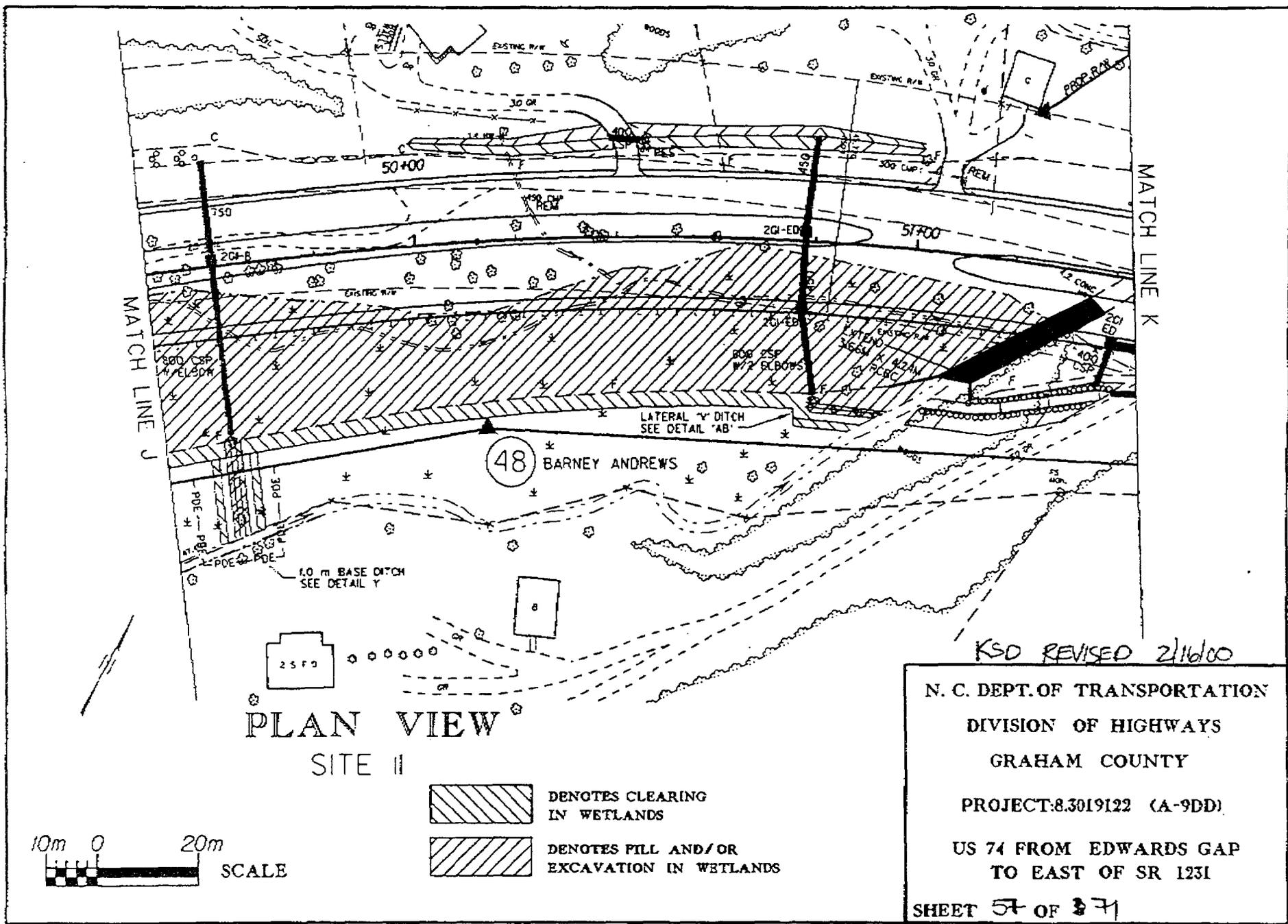
N. C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GRAHAM COUNTY

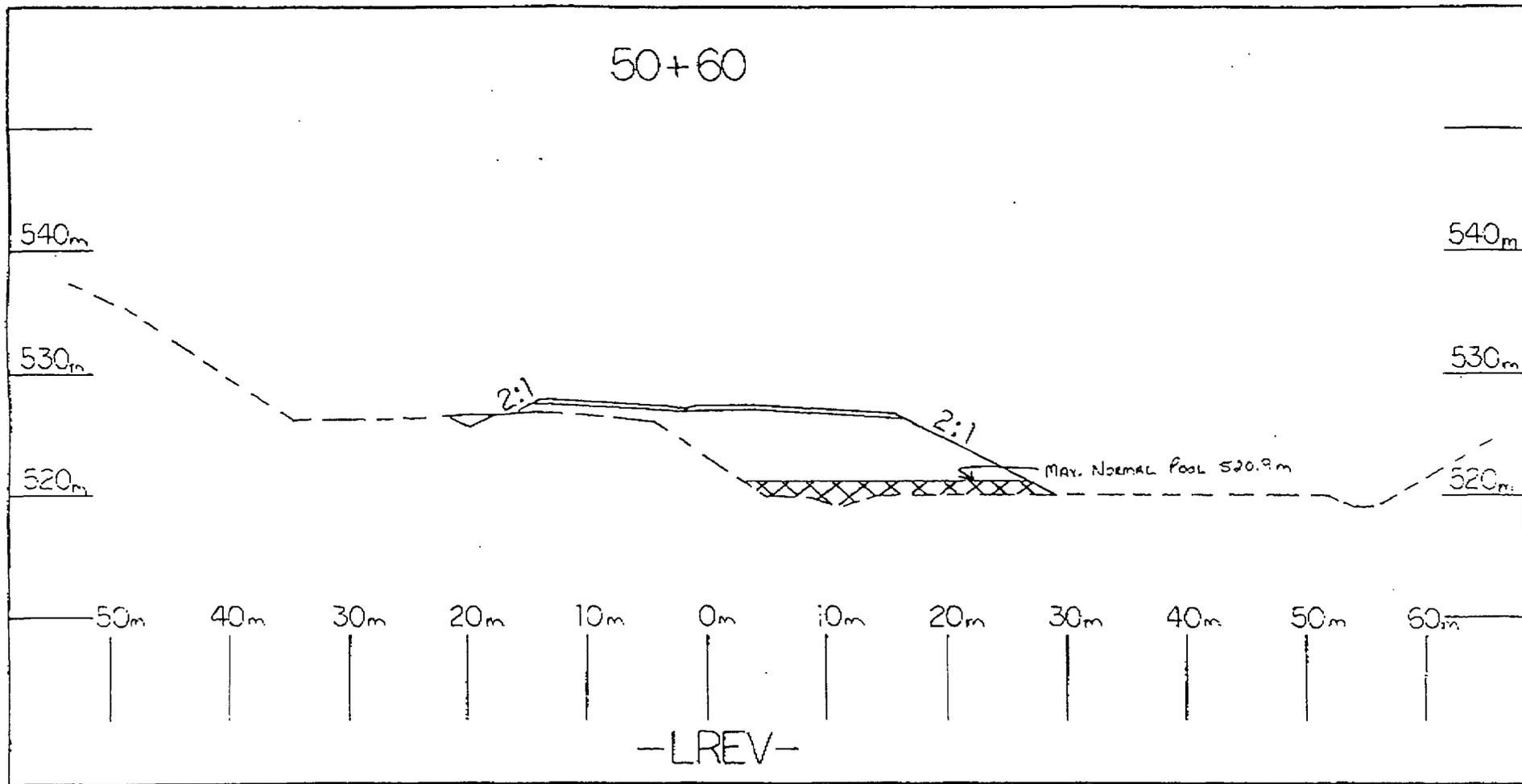
PROJECT: 8.3019122 (A-9DD)

US 74 FROM EDWARDS GAP  
TO EAST OF SR 1251

SHEET 55 OF 71







### SECTION

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.5019122 (A-9DD)

US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231

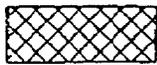
SHEET 58 OF 71

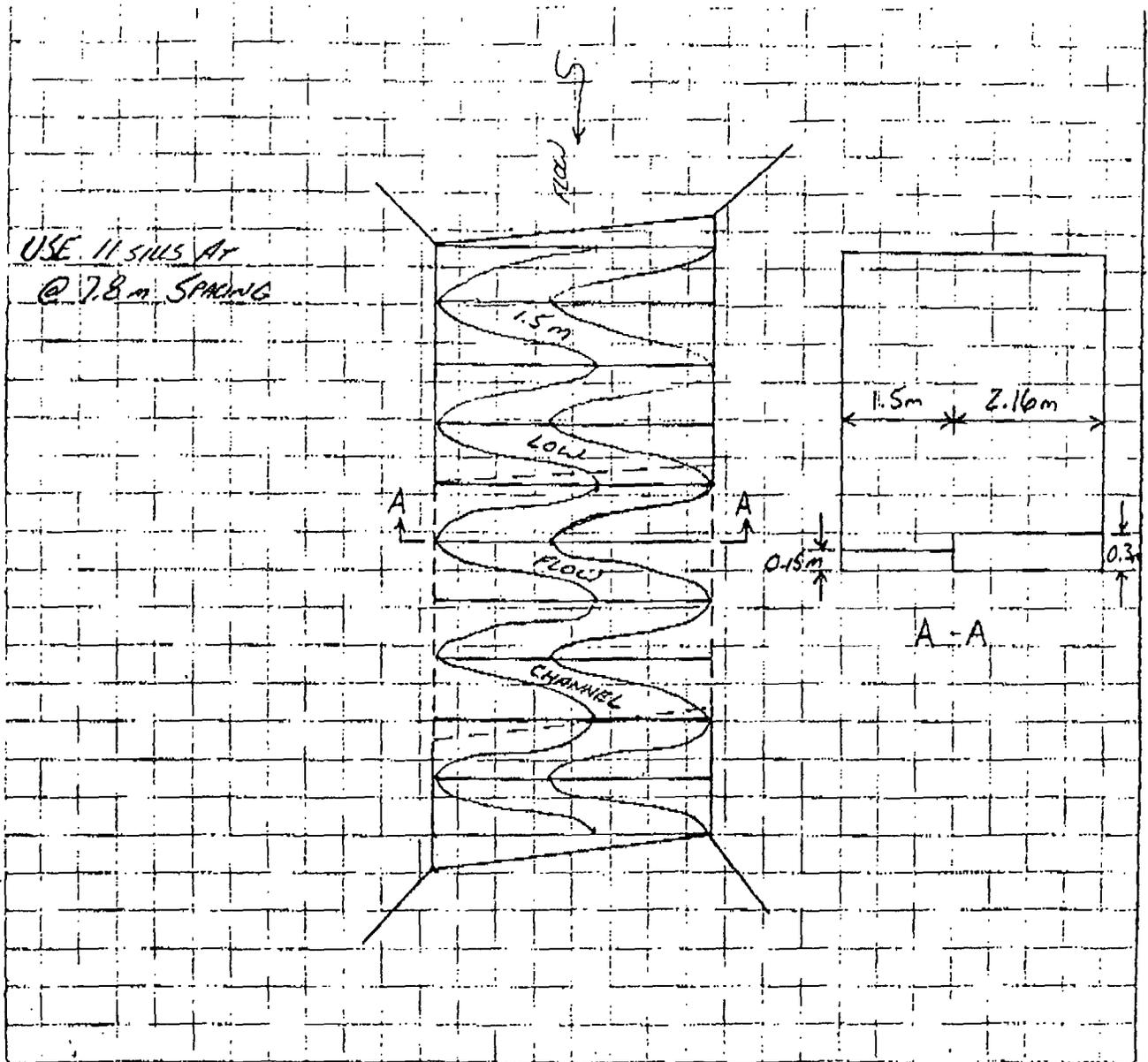
*July 21, 2000*  
*PC*



SITE 11



 DENOTES FILL IN SURFACE WATERS

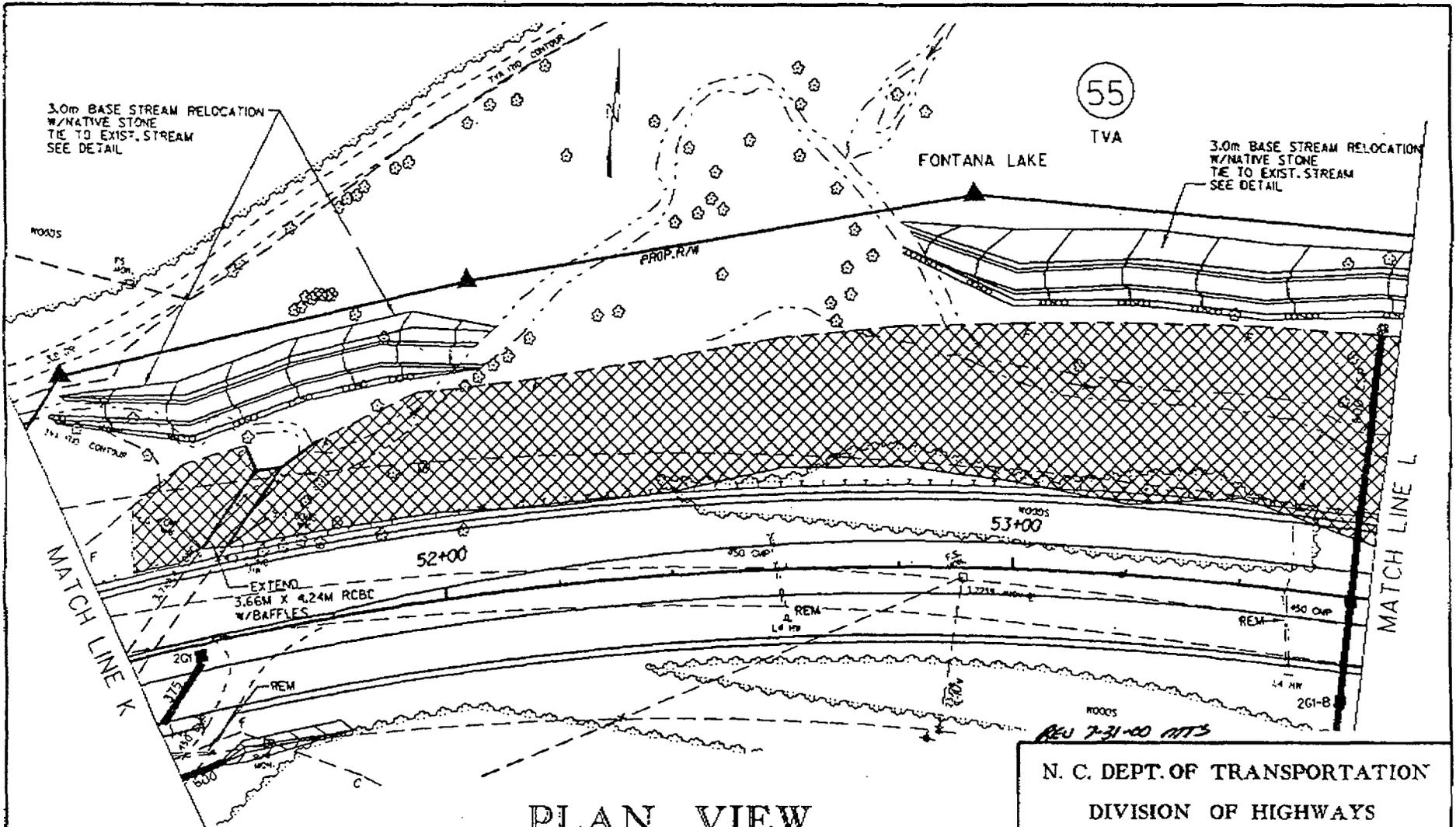


BAFFLE DETAIL

STA. 51+45 - LREV -

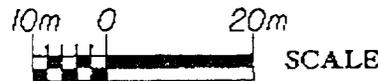
N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231  
 SHEET 59 OF 71

FOR JULY 81, 2000



**PLAN VIEW**  
**SITE 12**

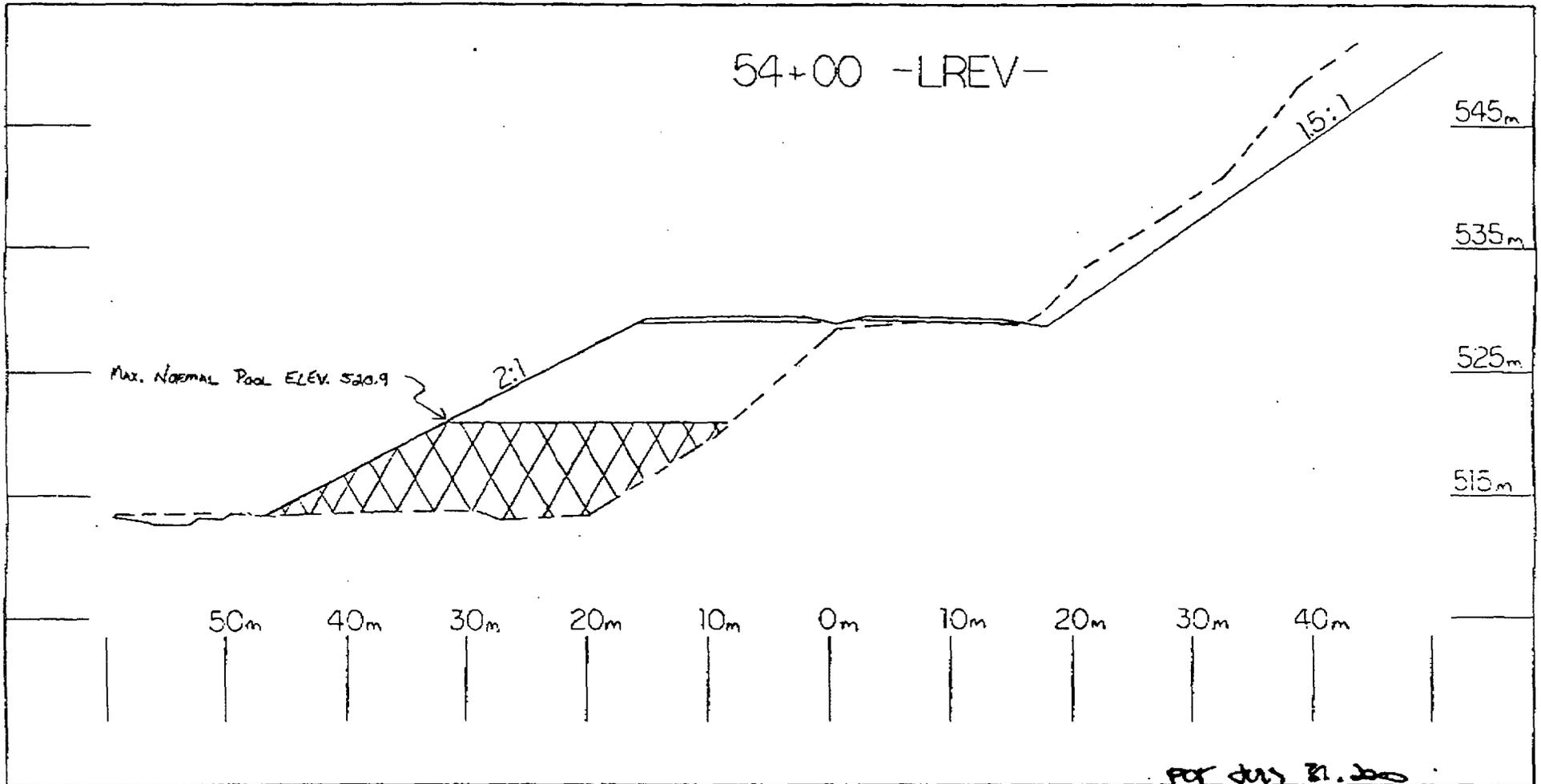
NOTE:  
 ALL PROPOSED CHANNEL WORK  
 IS BELOW NORMAL POOL



DENOTES FILL IN SURFACE WATERS

N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231  
 SHEET 60 OF 71





Per July 21, 2000

SECTION

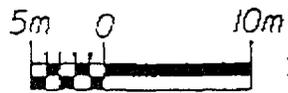
SITE 12

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

PROJECT: 8.3019122 (A-9DD)

US 74 FROM EDWARDS GAP  
TO EAST OF SR 1231

SHEET 62 OF 71

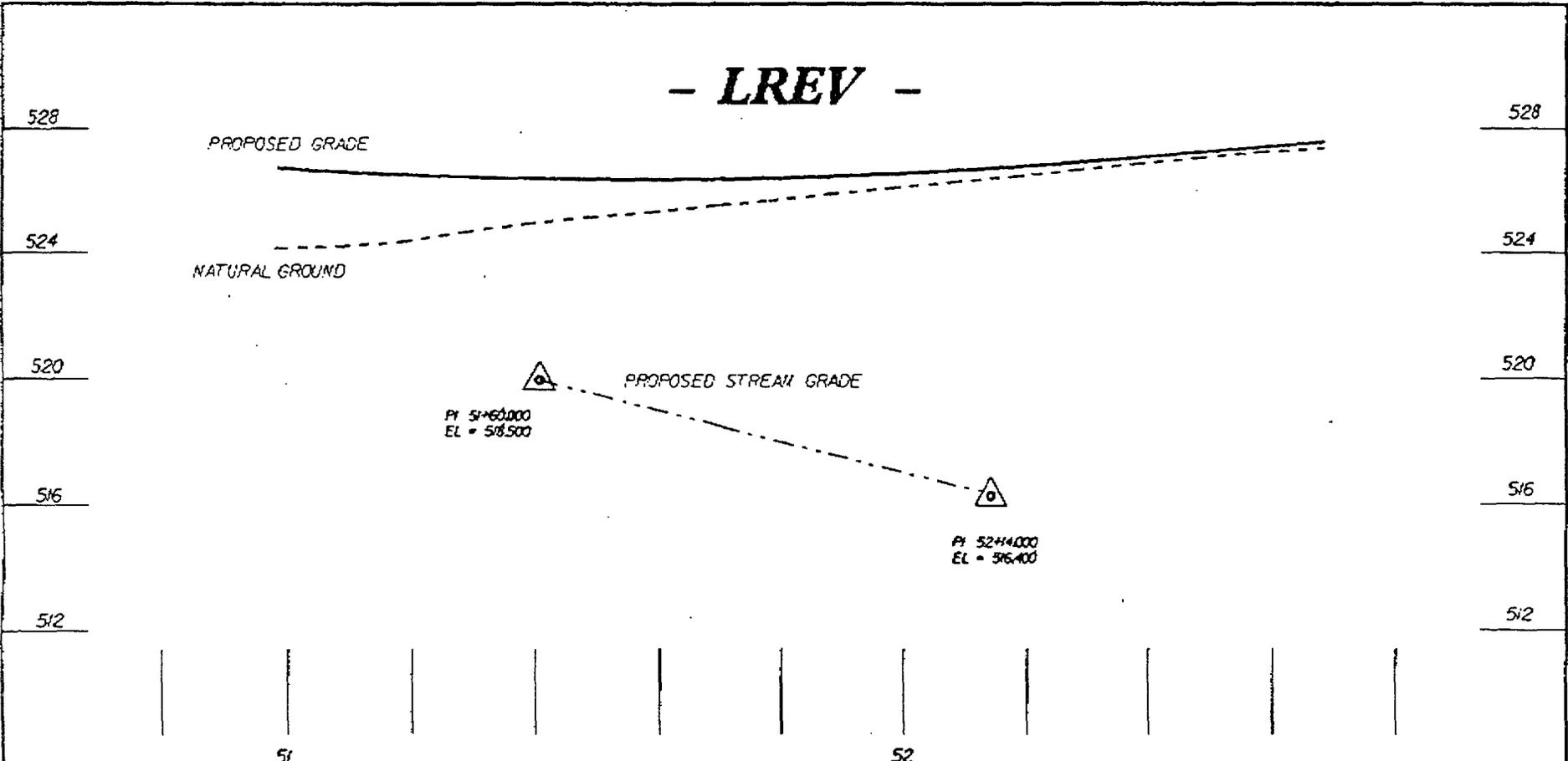


HORIZONTAL SCALE  
AND  
VERTICAL SCALE

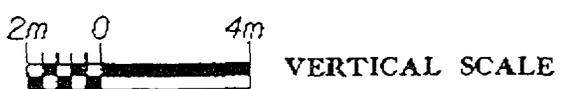


FILL IN  
SURFACE WATERS

# - LREV -



## PROFILE SITE 12

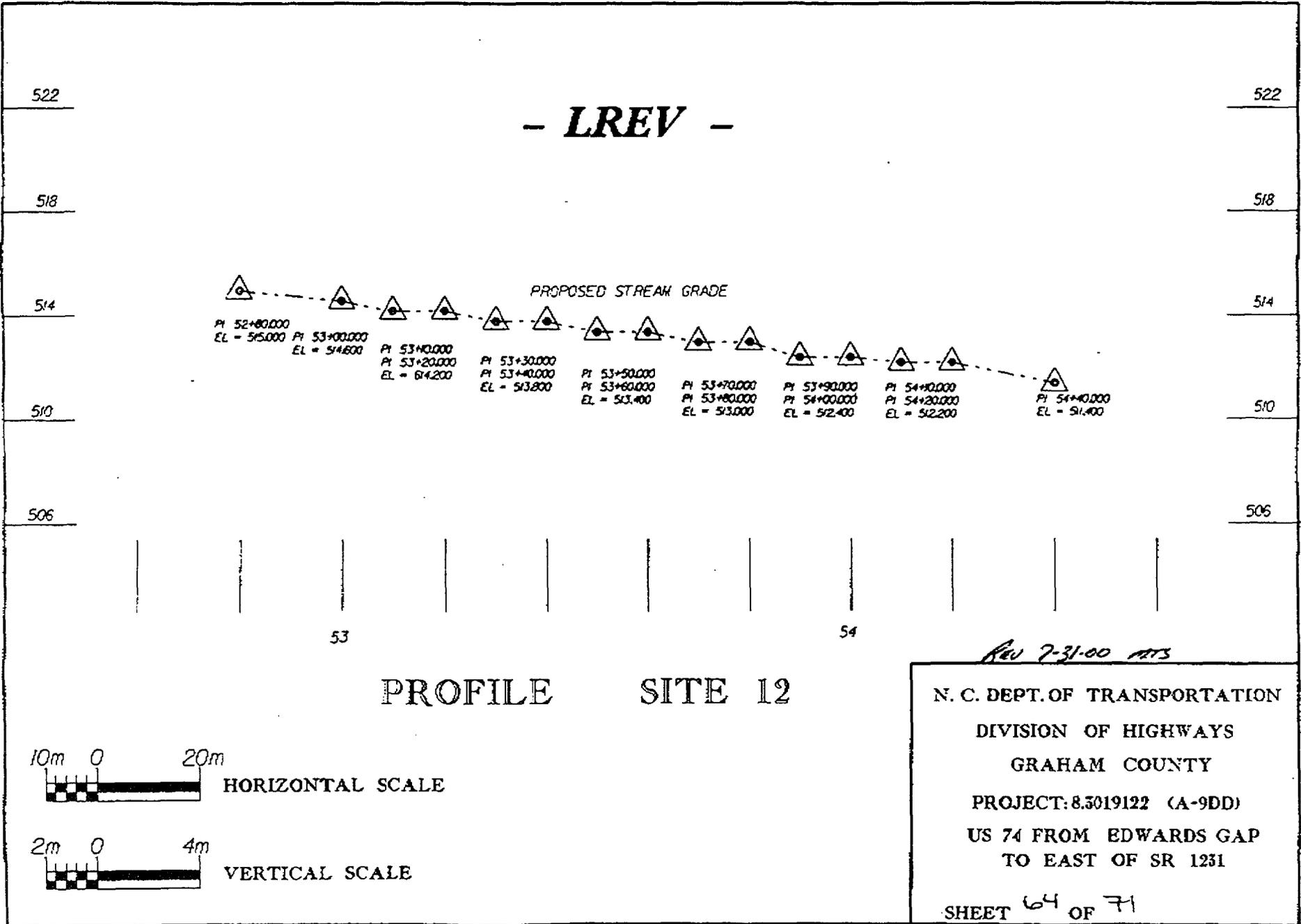


*REV 7-31-00 MTS*

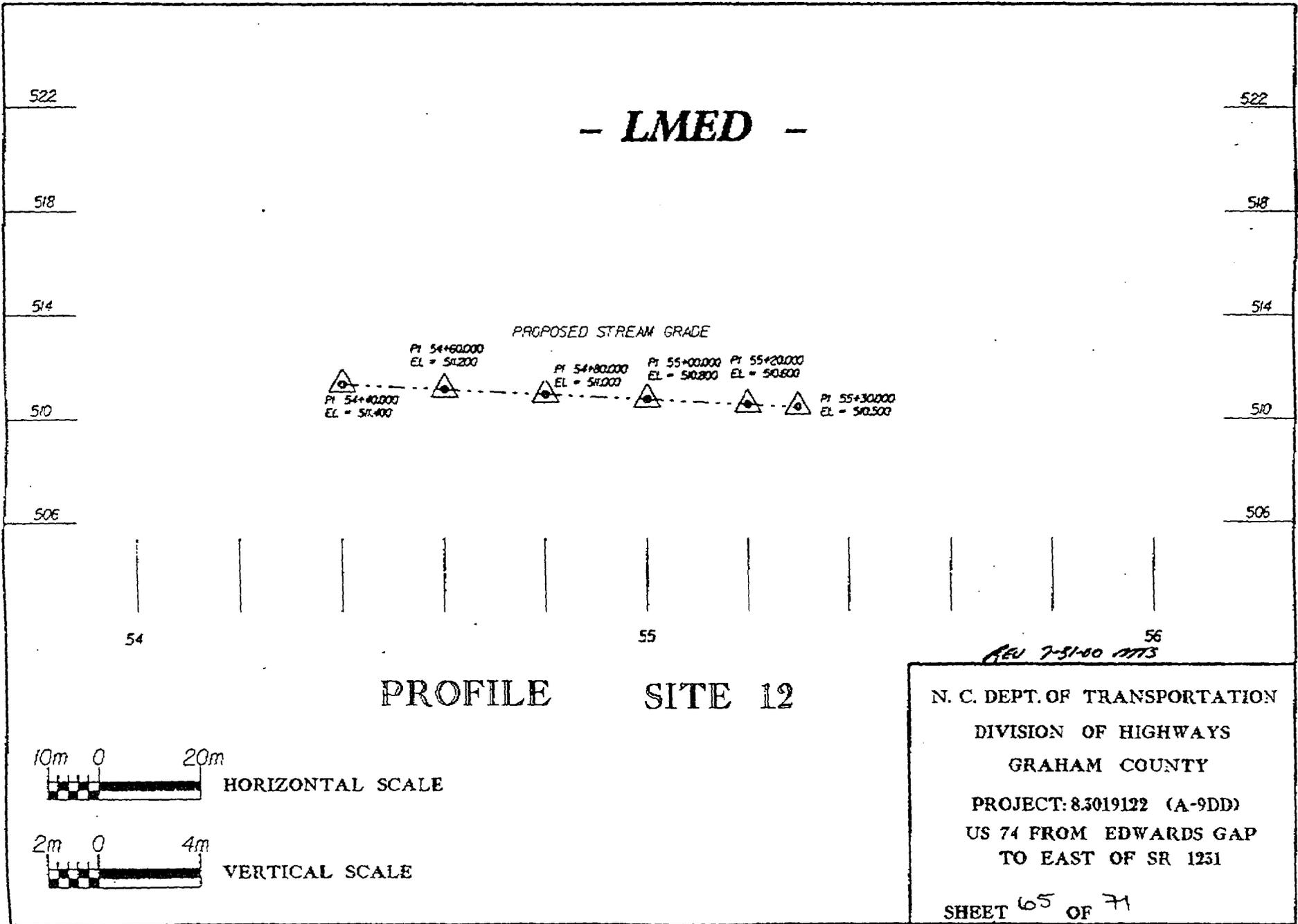
N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231

SHEET 63 OF 71

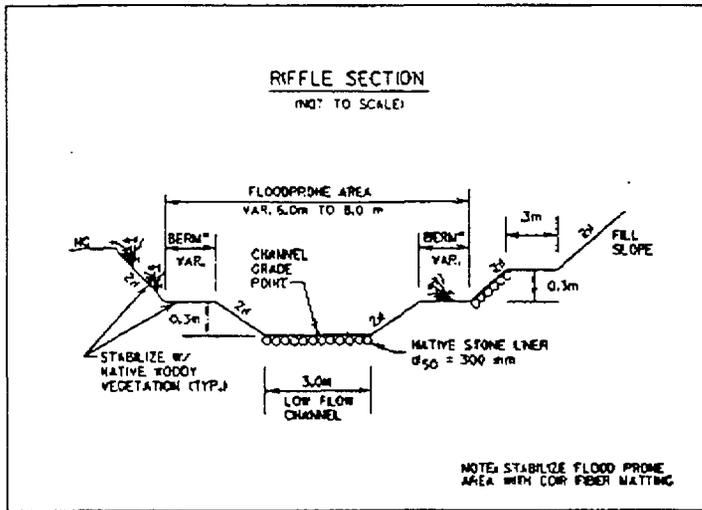
# - LREV -



- LMED -



NATURAL CHANNEL DESIGN DETAILS  
 STA 51+40 TO STA 52+14 -LREV- LT.  
 STA 52+80 TO STA 55+54 -LREV- LT.



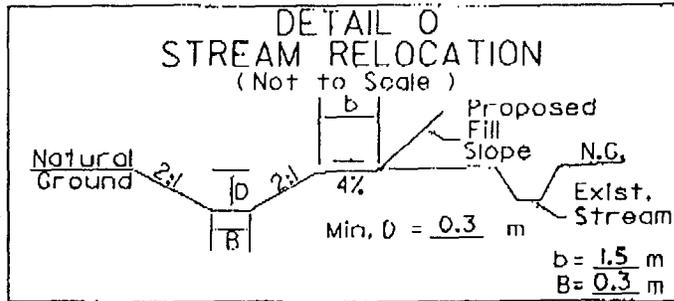
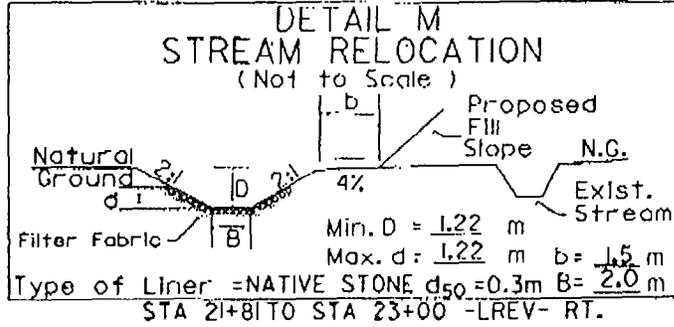
**SITE 12**

*REV 7-31-00 ATTS*

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

PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231

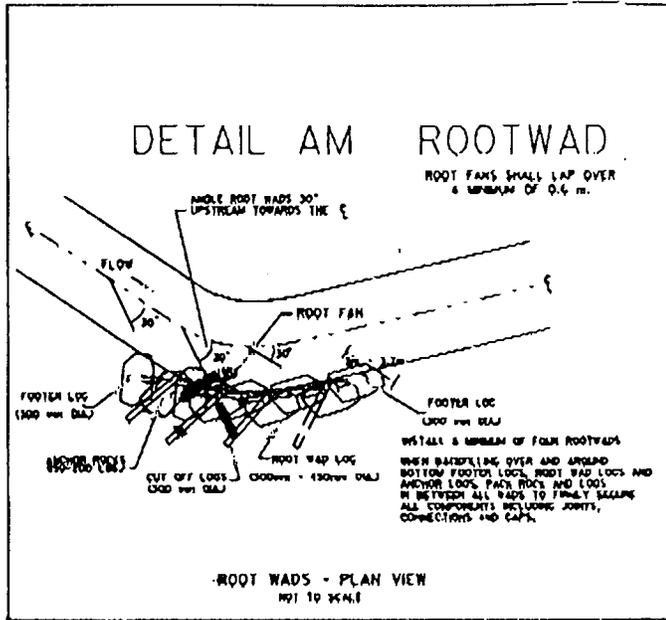
SHEET *60* OF *71*



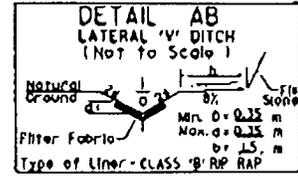
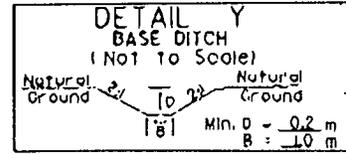
STA 26+40 TO STA 27+01.5 -LREV- RT.  
 STA 27+14.5 TO STA 27+77 -LREV- RT.  
 STA 26+15 TO STA 26+34 -LREV- RT.  
 STA 27+85 TO STA 28+00 -LREV- RT.

*REV 7-31-00 MTS*

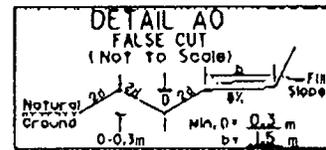
N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.3019122 (A-9DD)  
 US 74 FROM EDWARDS GAP  
 TO EAST OF SR 1231  
 SHEET 67 OF 71



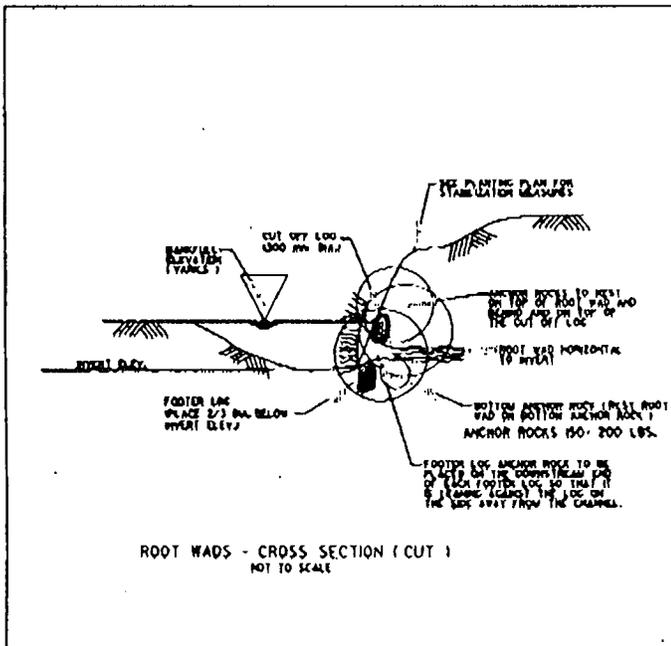
STA 37+16 -LREV- RT  
STA 14+86 -LRT- RT



STA 50+80 TO 51+00 -LREV- RT



STA 44+34 TO STA 44+80 -LREV- RT.



STA 37+16 -LREV- RT  
STA 14+86 -LRT- RT

K62 REVISED 2/14/00

N. C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GRAHAM COUNTY  
PROJECT: 8.3019122 (A-9DD)  
US 74 FROM EDWARDS GAP  
TO EAST OF SR 1231  
SHEET 68 OF 71

## SUMMARY REPORT OF PROPERTY OWNERS

PARCEL NUMBER		PARCEL NUMBER	
14	HOBART CABLE 68 WOLF CREEK ROAD ALMOND N.C. 28702	6	PAULINE & DARYL GUNTER 530 BRYSON BRANCH RO. BRYSON CITY N.C. 28713
22	ETHEL JENKINS 50A WOLF CREEK ROAD ALMOND N.C. 28702	4	BARBRY MARIE MCCRACKEN RT.2, BOX 125C ROBBINSVILLE N.C. 28771
24	GERALD JENKINS 50 WOLF CREEK ROAD ALMOND N.C. 28702	10	KERR CABLE 73 WOLF CREEK ROAD ALMOND N.C. 28702
26	TONY TIPTON 42 WOLF CREEK ROAD ALMOND N.C. 28702	13	JENNIFER CABLE HYDE 72A WOLF CREEK ROAD ALMOND N.C. 28702
27	SELBA JEAN TIPTON WOLF CREEK ROAD ALMOND N.C.	17	LEON SMITH 17 WOLF CREEK ROAD ALMOND N.C. 28702
28	SIMON C. PUGH WOLF CREEK ROAD ALMOND N.C.	19	CLARENCE MOORE 66 WOLF CREEK ROAD ALMOND N.C. 28702
31	IRENE TAYLOR 35 WOLF CREEK ROAD ALMOND N.C. 28702	21	DON JENKINS 51 WOLF CREEK ROAD ALMOND N.C. 28702
35	DENNIS BOWEN 30 WOLF CREEK ROAD ALMOND N.C. 28702	41	JOHN MEDLIN RT.2 BOX 15M ROBBINSVILLE N.C. 28771
16	MAXINE GREENE RT.1 BOX 181A ROBBINSVILLE N.C. 28771	39	U.S. FOREST SERVICE C/O GLEN MCCONNELL RT.1 BOX 16A CROOK RANGER STATION ROBBINSVILLE N.C. 28771
33	BRUCE W. NIDY	47	DAVID R. CABLE RT.2 BOX 118 ROBBINSVILLE N.C. 28771
40	EARL MEDLIN RT.4 BOX 2070 LEICESTER N.C. 28748	48	BARNEY ANDREWS STAR ROUTE ROBBINSVILLE N.C. 28771
55	TVA C/O GREG MCXIBBEN P.O. BOX 606 ATHENS TN. 37371		

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

PROJECT:8.3019122 (A-9DD)

US 74 FROM EDWARDS GAP  
TO EAST OF SR 1231

SHEET 69 OF 71

PER JUL 31, 2000

**SUMMARY**

Site No.	Station (From/To)	Structure Size	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Fill In Wetlands (ha)	Temp.Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Interchange Isolated Wetland (ha)	Mechanized Clearing (Method II) (ha)	Fill In SW (Natural) (ha)	Fill In SW (Pond) (ha)	Existing Channel Impacts (m)	Relocated Channel (m)	Enclosed Channel (m)
1	12+33 -LREV-	450 CSP	0.44	0		0	0.009	0.03	0	334	190	144
	15+00 -LREV-	1700 CSP										
2	15+40 -LRT-	1700 CSP	0	0	0	0	0	0.003	0	46	0	46
	15+90 -LREV-	2.1X1.6CSPA										
3	17+80 -LREV-	2.2X1.6CSOA	0.01	0	0	0	0	0.05	0	360	271	66
	21+20 -LREV-	2.0X1.3CSPA										
		2.2X1.4CSPA										
4	21+80 -LREV-	2@3.3X2.1	0.11	0	0	0	0	0.07	0	240	203	50
	24+20 -LREV-	CSPA										
5	24+80 -LREV-	2@600CSP	0.43	0	0.03	0	0.07	0.03	0	265	218	27
	27+00 -LREV-											
6	29+50 -LREV-	750 CSP	0.4	0	0.23	0	0.06	0.04	0	168	159	32
	32+40 -LREV-	2@3.8X2.4										
		CSPA										
7	34+60 -LREV-	1350 CSP	0	0	0	0	0	0.003	0	45	10	35
	34+80 -LREV-											
TOTALS:												

*KSD REVISED 2/16/00*  
 N.C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.301912 (A-000900)  
 US 74  
 SHEET 20 OF 71

**SUMMARY**

Site No.	Station (From/To)	Structure Size	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Fill In Wetlands (ha)	Temp. Fill n Wetlands (ha)	Excavation In Wetlands (ha)	Interchange Isolated Wetland (ha)	Mechanized Clearing (Method II) (ha)	Fill In SW (Natural) (ha)	Fill In SW (Pond) (ha)	Existing Channel Impacts (m)	Relocated Channel (m)	Enclosed Channel (m)
8	35+40 -LREV- 38+10 -LREV-	1500 CSP	0.04	0	0.17	0	0.02	0.05	0	185	190	0
9	40+85 -LREV- 40+95 -LREV-	600CSP	0	0	0.02	0	0	0.002	0	23	0	23
10	45+10 -LREV- 45+35 -LREV-	1700 CSP	0.06	0	0	0	0.006	0.003	0	65	0	55
11	48+80 -LREV- 51+40 -LREV-	3.66X4.24 RCBC	0.58	0	0.012	0	0.084	0	0	0	0	0
12	51+50 -LREV- 55+40 -LREV-	3.66X4.24 RCBC	0	0	0	0	0	0	1.26	0	0	0
<b>TOTALS:</b>			2.07	0	0.47	0	0.26	0.282	1.26	1731	1241	486

NOTE: THE CHANNEL RELOCATIONS OF WOLF CREEK WHICH ARE LOCATED BELOW THE MAXIMUM NORMAL POOL ELEVATION OF FONTANA LAKE ARE DESIGNED AS NATURAL CHANNELS, BUT ARE NOT INCLUDED AS STREAM IMPACTS ON SUMMARY SHEET.

ALL SITES ARE ABOVE HEADWATERS EXCEPT SITE 12.

SITE 11: DRAIN EFFECT: 0.008 ha

*Rev. 8-1-00 MTS*  
 N.C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 GRAHAM COUNTY  
 PROJECT: 8.301912 (A-0009DD)  
 US74  
 SHEET **71** OF **71**

Permit Number: **199930861**

Name of Permittee: **NCDOT/A-9DD, INDIVIDUAL PERMIT**

Issuance: **11/15/2000**

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

**US ARMY COE/WILMINGTON DISTRICT  
ASHEVILLE REGULATORY FIELD OFFICE  
151 PATTON AVENUE, ROOM 208  
ASHEVILLE, NORTH CAROLINA 28801-5006**

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and condition of the said permit, and required mitigation was completed in accordance with the permit conditions.

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**Signature of Permittee**