



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

June 27, 2005

U.S. Army Corps of Engineers
Wilmington Regulatory Field Office
Post Office Box 1890
Wilmington, NC 28402-1890

ATTN: Mr. Richard Spencer
NCDOT Coordinator

Dear Sir:

SUBJECT: **Permit Modification Request for TIP No. R-2417BB**, Lee County, US 421/NC 87 Bypass from East of SR 1521 to east of NC 42, Federal Aid No. STP-NHF-421(2), State Project No. 8.T540402, NCDOT Division 8, \$475 Debit WBS Element 34431.1.1.

REFERENCE: USACE Individual Permit dated May 29, 2002, Action ID 200220899
USACE Permit Modification dated September 23, 2004, Action ID 200201326
NCDWQ Water Quality Certification dated April 10, 2002, DWQ Project No. 001432.
NCDWQ Modification to Water Quality Certification No. 3378 dated September 17, 2004, DWQ Project No. 001432.

The purpose of this letter is to request modifications to the Clean Water Act (CWA) Section 404 Permit issued by the USACE and the 401 Water Quality Certification issued by the NCDWQ. This modification addresses the revision to the natural stream design of the stream used for stream impacts at Site 6, and provides confirmation of mitigation by the EEP for the associated loss of 190 feet of natural stream design. Revised Plan Sheets 2AI, SAJ, and 2AK, and a new Detail Sheet are attached.

The North Carolina Department of Transportation (NCDOT) proposes a revision to the natural stream design for the stream relocation used for stream impacts at Site 6. A portion of the stream has been redesigned from a Rosgen type "C" channel to a Rosgen type "B" channel. The need for this redesign is due to this section of stream being located

MAILING ADDRESS:
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PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
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FAX: 919-733-9794

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

along a drained pond bottom that is on a 7% slope. The "B" type channel design being incorporated in this modification utilizes more gradient control structures and less sinuosity than the originally permitted "C" type design. This redesign has resulted in a 190-foot loss of natural stream design, reducing the permitted 1,924 feet of natural stream design to 1,734 feet. In support of this permit modification request, the NCDOT has received confirmation from the North Carolina Ecosystem Enhancement Program (EEP) that they will be providing compensatory mitigation for the associated 190-foot loss of natural stream design (letter attached).

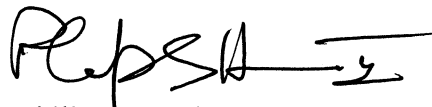
The referenced USACE Individual Permit and NCDWQ Water Quality Certification authorized 1,930 feet of natural stream design. The subsequent modifications revised the authorized natural stream design length from 1,930 feet to 1,924 feet.

REGULATORY APPROVALS

The NCDOT respectfully requests that the referenced 404 USACE Permit (and Modification) and 401 Water Quality Certification (and Modification) be modified to reflect the revision to the natural stream design outlined in this letter. In compliance with Section 143-215.3D(e) of the NCAC, NCDOT will provide \$475 to act as payment for processing the Section 401 certification modification application previously noted in this application (see Subject line). We are providing seven copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality for their review.

If you have any questions or need additional information, please contact Bill Barrett at (919) 715-1624.

Sincerely,



Philip S. Harris, III, P.E.
Unit Head, PDEA Natural Environment Unit

Attachment: EEP Mitigation Confirmation Letter dated June 23, 2005
Revised Plan Sheets

cc:

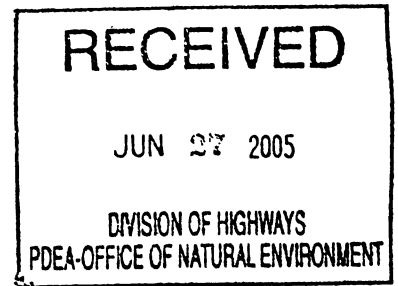
w/ attachments

Mr. John Hennessy, NCDWQ Raleigh (7 copies)
Ms. Polly Lespinasse, NCDWQ, Mooresville
Mr. Travis Wilson, NCWRC
Ms. Becky Fox, USEPA – Whittier, NC
Mr. Ronald Mikulak, USEPA – Atlanta, GA

Mr. Gary Jordan, USFWS
Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Greg Perfetti, P.E., Structure Design
Mr. Terry Gibson, P.E., Division Engineer
Mr. Jim Rerko, Division 8 Environmental Officer

w/o attachments

Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Felix Davila, P.E., FHWA
Mr. David Franklin, USACE, Wilmington
Mr. Jay McInnis, PDEA Project Engineer
Ms. Beth Harmon, EEP
Ms. Todd Jones, CPA, NCDOT, External Audit Branch
Mr. Carl Goode, P.E., Human Environment Unit Head



June 23, 2005

Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:
R-2417BB, US 421/NC 87 Bypass, Lee County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide stream mitigation for the subject project. Based on the information supplied by you in a letter dated June 17, 2005, the impacts are located in CU 03030004 of the Cape Fear River Basin in the Southern Piedmont (SP) Eco-Region, and are as follows:

Stream Impacts: 190 feet

As stated in your letter, the subject project is listed in Exhibit 2 of the Memorandum of Agreement among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, Wilmington District dated July 22, 2003. The mitigation for the subject project will be provided in accordance with this agreement.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,

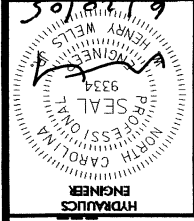
A handwritten signature in black ink that reads "James B. Shankell Sr." in a cursive script.

William D. Gilmore, P.E.
EEP Director

cc: Mr. Richard Spencer, USACE - Wilmington Field Office
Mr. John Hennessy, Division of Water Quality, Wetlands/401 Unit
File: R-2417BB



STREAM RESTORATION CURVE DATA



PROJECT REFERENCE NO. R-247BB
 SHEET NO. 2A
 HYDRAULIC ENGINEER
 NORTH CAROLINA PROFESSIONAL ENGINEERS SEAL
 HENRY WELLS
 LICENSE NO. 9334

PI Sta 12+31.85
 Δ = 38.30' 00.0" (RT)
 D = 190' 59" 09.4"
 L = 20.16'
 T = 10.48'
 R = 30.00'

PI Sta 11+85.14
 Δ = 54' 45" 00.0" (RT)
 D = 402' 04" 32.3"
 L = 13.62'
 T = 7.38'
 R = 14.25'

PI Sta 11+64.55
 Δ = 94' 30" 00.0" (LT)
 D = 318' 18" 35.6"
 L = 29.69'
 T = 19.47'
 R = 18.00'

PI Sta 11+51.93
 Δ = 144' 55" 00.0" (RT)
 D = 388' 26" 45.5"
 L = 37.31'
 T = 46.66'
 R = 14.75'

PI Sta 11+07.30
 Δ = 138' 45" 00.0" (LT)
 D = 297' 38" 25.5"
 L = 46.62'
 T = 51.15'
 R = 19.25'

PI Sta 10+44.10
 Δ = 87' 15" 00.0" (RT)
 D = 381' 58" 18.7"
 L = 22.84'
 T = 14.30'
 R = 15.00'

PI Sta 10+21.91
 Δ = 78' 05" 00.0" (LT)
 D = 458' 21" 58.4"
 L = 17.04'
 T = 10.14'
 R = 12.50'

PI Sta 10+07.44
 Δ = 39' 50" 00.0" (RT)
 D = 572' 57" 28.1"
 L = 6.95'
 T = 3.62'
 R = 10.00'

PI Sta 13+50.19
 Δ = 4' 00" 00.0" (RT)
 D = 7' 29" 22.7"
 L = 53.41'
 T = 26.71'
 R = 765.00'

PI Sta 13+13.01
 Δ = 4' 00" 00.0" (RT)
 D = 19' 05" 54.9"
 L = 20.94'
 T = 10.48'
 R = 300.00'

PI Sta 12+89.49
 Δ = 59' 20" 00.0" (LT)
 D = 204' 37" 40.0"
 L = 29.00'
 T = 15.95'
 R = 28.00'

PI Sta 13+91.11
 Δ = 24' 41" 17.5" (RT)
 D = 88' 08" 50.5"
 L = 28.01'
 T = 14.22'
 R = 65.00'

PI Sta 18+08.44
 Δ = 80' 58" 42.5" (RT)
 D = 375' 42" 36.1"
 L = 21.55'
 T = 13.02'
 R = 15.25'

PI Sta 20+84.77
 Δ = 95' 30" 00.0" (LT)
 D = 327' 24" 16.0"
 L = 29.17'
 T = 19.27'
 R = 17.50'

PI Sta 20+57.63
 Δ = 131' 30" 00.0" (RT)
 D = 381' 58" 18.7"
 L = 34.43'
 T = 33.30'
 R = 15.00'

PI Sta 20+27.12
 Δ = 145' 00" 00.0" (LT)
 D = 318' 18" 35.6"
 L = 45.55'
 T = 57.09'
 R = 18.00'

PI Sta 19+60.22
 Δ = 94' 30" 00.0" (RT)
 D = 416' 41" 47.7"
 L = 22.68'
 T = 14.87'
 R = 13.75'

PI Sta 19+35.67
 Δ = 76' 00" 00.0" (LT)
 D = 381' 58" 18.7"
 L = 19.90'
 T = 11.72'
 R = 15.00'

PI Sta 19+13.97
 Δ = 126' 40" 00.0" (RT)
 D = 337' 02" 02.4"
 L = 37.58'
 T = 33.85'
 R = 17.00'

PI Sta 22+76.77
 Δ = 90' 00" 00.0" (RT)
 D = 409' 15" 20.0"
 L = 21.99'
 T = 14.00'
 R = 14.00'

PI Sta 22+50.19
 Δ = 69' 00" 00.0" (LT)
 D = 467' 43" 14.3"
 L = 14.75'
 T = 8.42'
 R = 12.25'

PI Sta 22+24.15
 Δ = 115' 30" 00.0" (RT)
 D = 286' 28" 44.0"
 L = 40.32'
 T = 31.70'
 R = 20.00'

PI Sta 23+33.59
 Δ = 138' 45" 00.0" (LT)
 D = 318' 18" 35.6"
 L = 43.59'
 T = 47.82'
 R = 18.00'

PI Sta 23+64.86
 Δ = 117' 25" 00.0" (RT)
 D = 301' 33" 24.2"
 L = 38.94'
 T = 31.26'
 R = 19.00'

PI Sta 23+92.46
 Δ = 84' 35" 00.0" (LT)
 D = 327' 24" 16.0"
 L = 25.83'
 T = 15.92'
 R = 17.50'

PI Sta 24+18.18
 Δ = 85' 00" 00.0" (RT)
 D = 402' 04" 32.3"
 L = 21.14'
 T = 13.06'
 R = 14.25'

PI Sta 24+40.90
 Δ = 72' 15" 00.0" (LT)
 D = 375' 42" 36.1"
 L = 19.23'
 T = 11.13'
 R = 15.25'

PI Sta 25+46.25
 Δ = 69' 00" 00.0" (RT)
 D = 432' 25" 15.5"
 L = 15.96'
 T = 9.11'
 R = 13.25'

PI Sta 25+20.60
 Δ = 94' 00" 00.0" (LT)
 D = 276' 07" 27.3"
 L = 34.04'
 T = 22.25'
 R = 20.75'

PI Sta 24+80.67
 Δ = 100' 50" 00.0" (RT)
 D = 243' 48" 42.6"
 L = 41.36'
 T = 28.42'
 R = 23.50'

PI Sta 25+75.00
 Δ = 93' 45" 00.0" (LT)
 D = 337' 02" 02.4"
 L = 27.82'
 T = 18.15'
 R = 17.00'

PI Sta 26+48.20
 Δ = 151' 35" 00.0" (RT)
 D = 402' 04" 32.3"
 L = 37.70'
 T = 56.28'
 R = 14.25'

PI Sta 29+03.02
 Δ = 171' 50" 00.0" (LT)
 D = 297' 38" 25.5"
 L = 57.73'
 T = 269.65'
 R = 19.25'

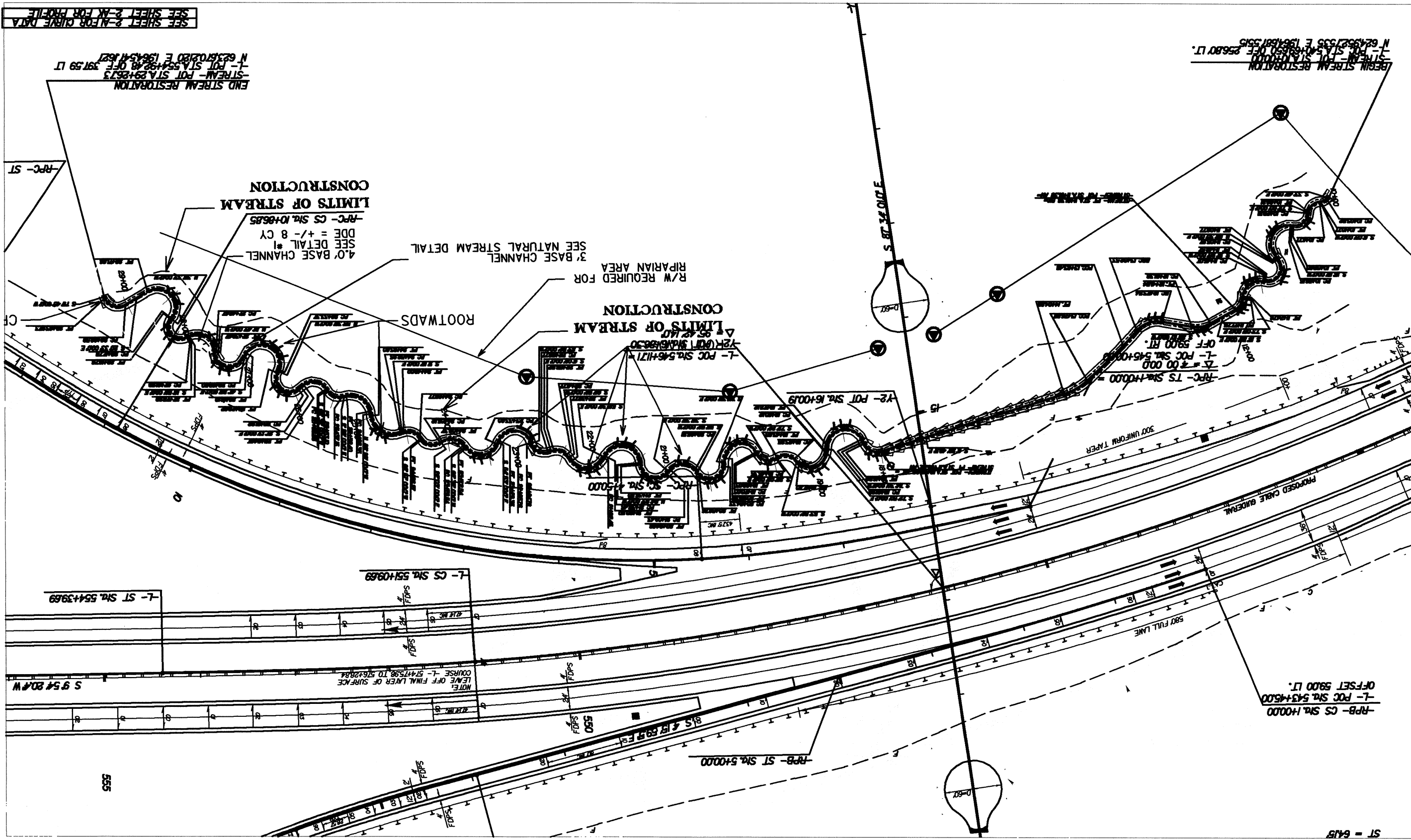
PI Sta 27+50.72
 Δ = 145' 45" 00.0" (RT)
 D = 363' 46" 57.8"
 L = 40.07'
 T = 51.12'
 R = 15.75'

PI Sta 27+71.77
 Δ = 117' 15" 00.0" (LT)
 D = 322' 47" 35.2"
 L = 36.32'
 T = 29.11'
 R = 17.75'

PI Sta 29+15.96
 Δ = 100' 18" 00.0" (RT)
 D = 395' 08" 35.9"
 L = 25.38'
 T = 17.37'
 R = 14.50'

PI Sta 29+32.80
 Δ = 161' 00" 00.0" (LT)
 D = 297' 38" 25.5"
 L = 54.09'
 T = 115.03'
 R = 19.25'

PI Sta 28+50.83
 Δ = 159' 25" 00.0" (RT)
 D = 458' 21" 58.4"
 L = 34.78'
 T = 68.84'
 R = 12.50'



SEE SHEET 2-AK FOR PROFILE
SEE SHEET 2-A FOR GROUND DATA

BEGIN STREAM RESTORATION
R-PB-CS STA. 543+4500
R-PB-POT STA. 16+00.9
R-PB-TS STA. 4000
OFFSET 5900 FT.
R-PB-CS STA. 545+000
R-PB-TS STA. 4000
OFFSET 5900 FT.

END STREAM RESTORATION
R-PB-CS STA. 543+4500
R-PB-POT STA. 16+00.9
R-PB-TS STA. 4000
OFFSET 5900 FT.
R-PB-CS STA. 545+000
R-PB-TS STA. 4000
OFFSET 5900 FT.

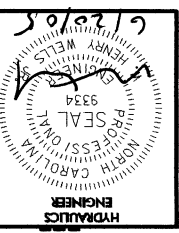
CONSTRUCTION
LIMITS OF STREAM
R-PB-CS STA. 10+06.85
DDE = +/- 8 CY
SEE DETAIL #1

CONSTRUCTION
LIMITS OF STREAM
R-PB-CS STA. 10+06.85
DDE = +/- 8 CY
SEE DETAIL #1

R-PB-CS STA. 543+4500
R-PB-TS STA. 4000
OFFSET 5900 FT.

R-PB-CS STA. 551+09.69
R-PB-TS STA. 4000
OFFSET 5900 FT.

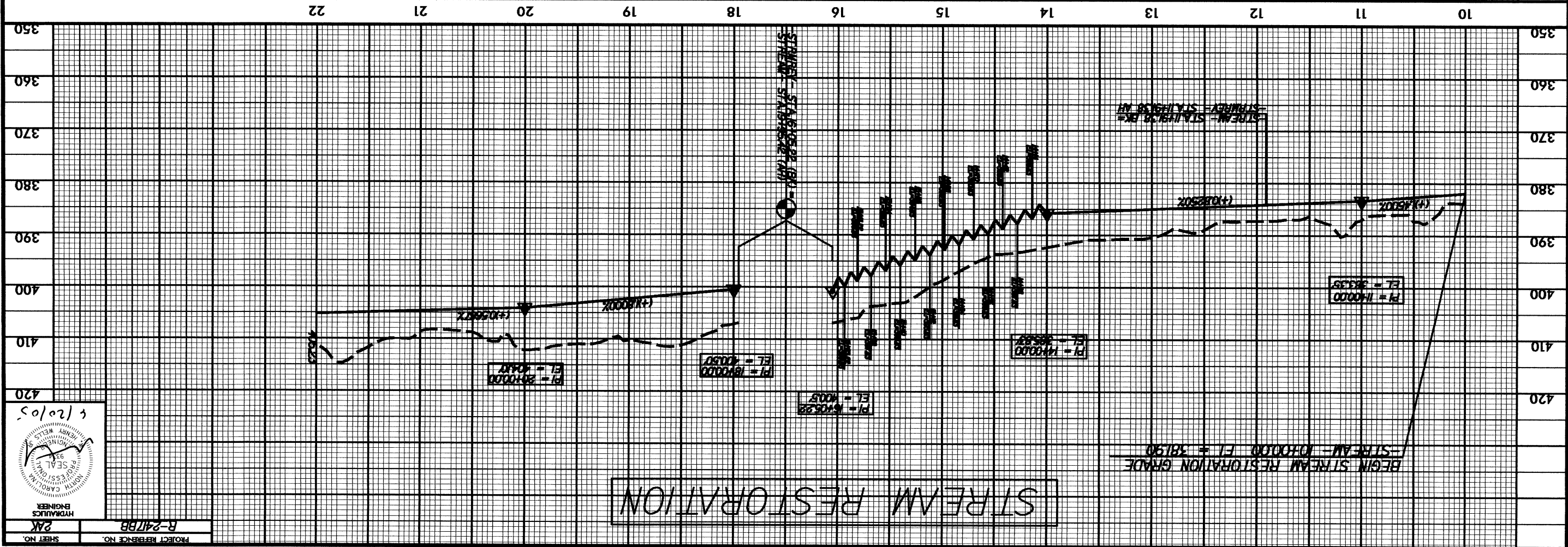
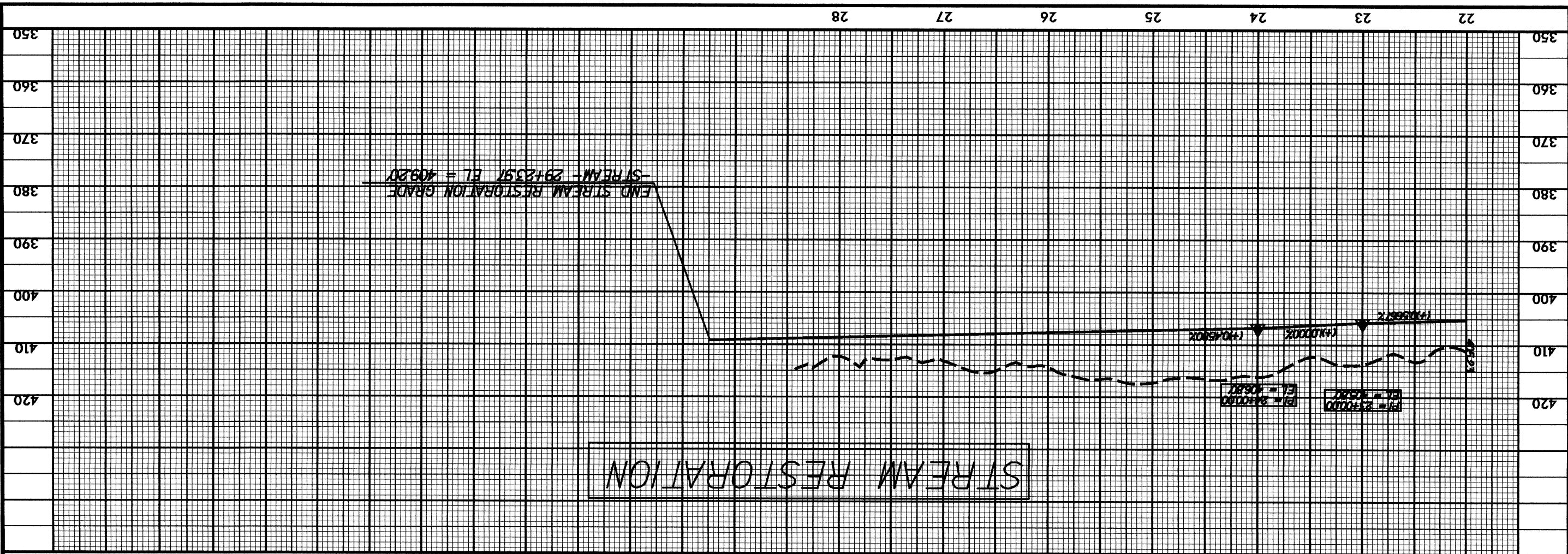
NOTE: LEAVE OFF FINAL LAYER OF SURFACE COURSE - ST. 44+75.98 TO ST. 46+28.84
S 954 204' W



PROJECT REFERENCE NO. R-247BB
SHEET NO. 2A
HYDRAULICS ENGINEER
RW SHEET NO.

NO.	REVISIONS

ST - 6418



PROJECT REFERENCE NO. R-247BB
 SHEET NO. 2AK

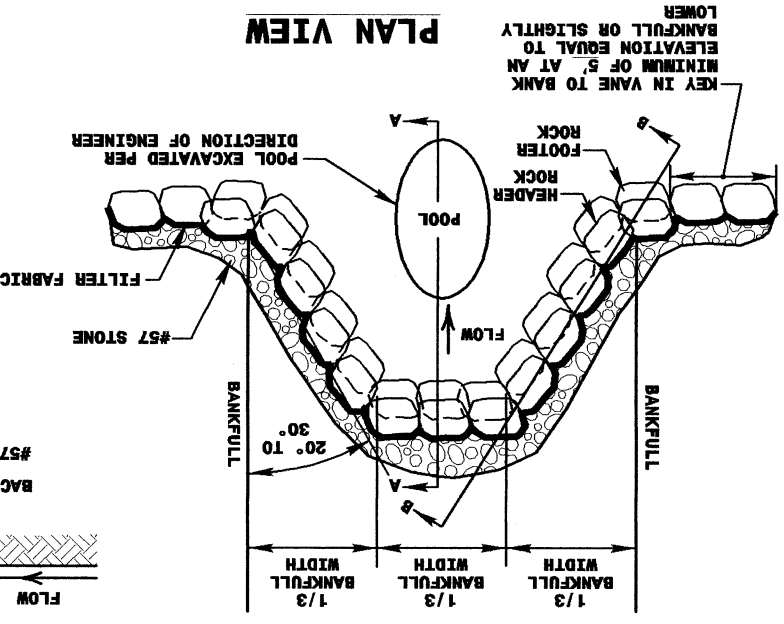
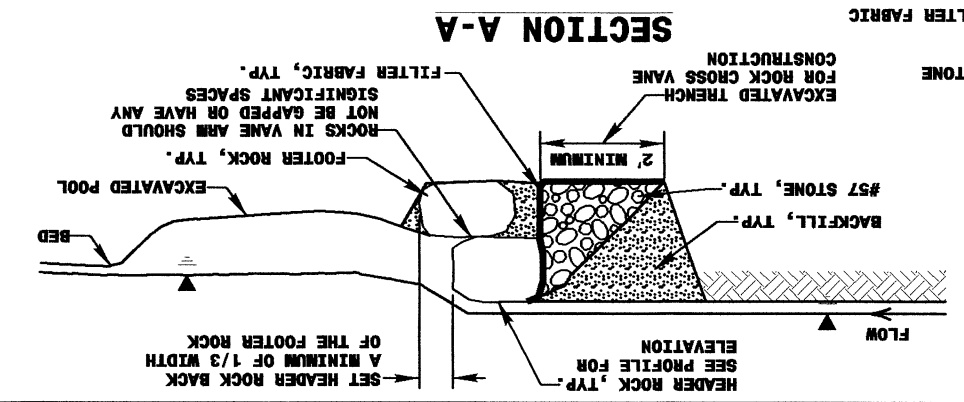
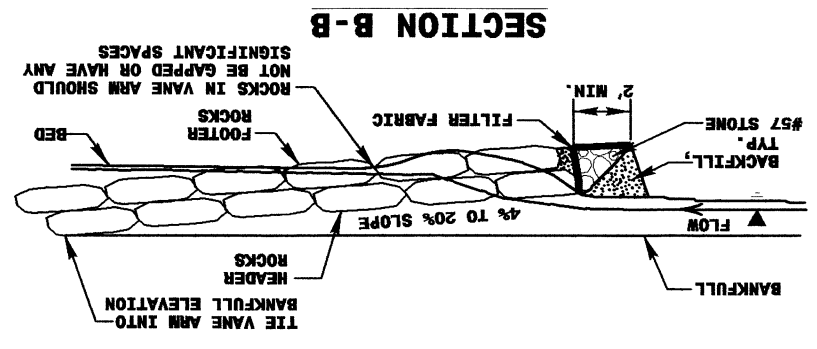
6/20/05

ROCK CROSS VANE DETAIL FOR STEP POOLS OR PER EACH

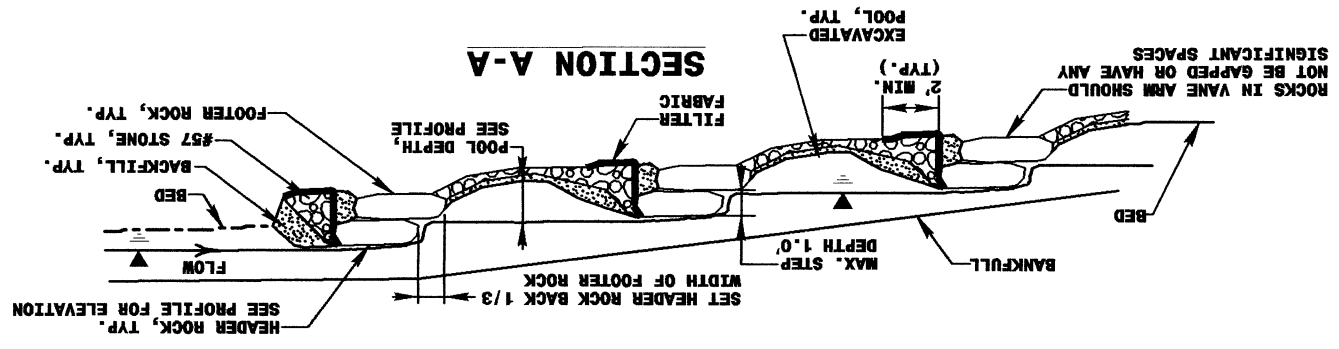
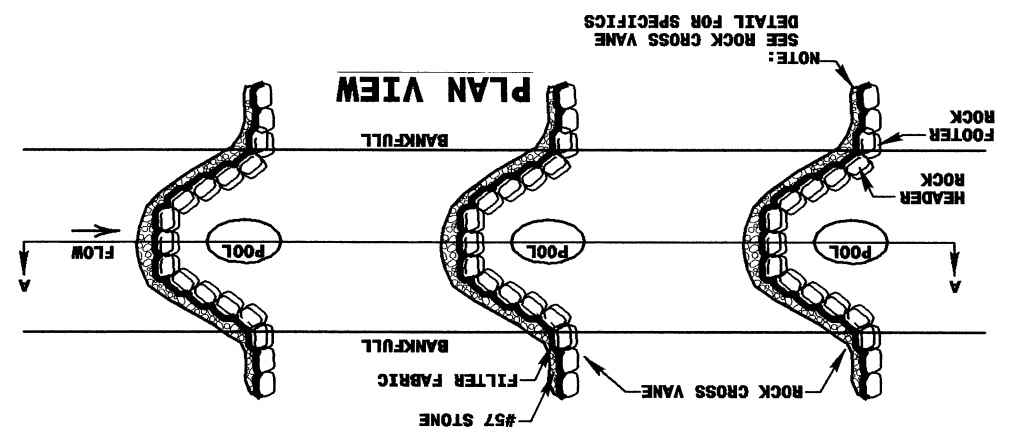
NOT TO SCALE

BOULDER DIMENSIONS (FEET)	STATION	HEIGHT	LENGTH	WIDTH
	ENTIRE REACH	1.5'	3.0'	2.0'

- NOTES:
1. DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
 2. DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
 3. CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
 4. COMPACT BANKFULL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
 5. POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.



- NOTES:
1. STEPS TO BE SHORT, FREQUENT, AND CLOSELY SPACED.
 2. POOL SPACING SHALL BE INVERSELY PROPORTIONAL TO STREAM SLOPE, AND DIRECTLY PROPORTIONAL TO BANKFULL WIDTH.
 3. POOL DEPTHS AT BANKFULL ELEVATION SHALL BE TYPICALLY 2 TO 3 TIMES DEEPER THAN STEP DEPTHS AT BANKFULL ELEVATION.
 4. ADEQUATE NUMBER OF FOOTER BOULDERS TO BE USED IN ORDER TO HOLD UP THE BOULDERS AT HEAD OF STEPS DURING HIGH ENERGY/HIGH FLOW EVENTS.
 5. STEP POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.



STEP POOL DETAIL

NOT TO SCALE

Sta 14+00 to 16+05 -NSD-
SPACE CROSSVANES +/- 14'
TO ACHIEVE 1' MAX DROP BETWEEN
STRUCTURES

NO.	REVISIONS

PROJECT REFERENCE NO. **R-247 BB**
SHEET NO.

HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER

12/20/05