



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

January 25, 2007

NC Department of Environment and Natural Resources
Division of Water Quality
Winston-Salem Regional Office
585 Waughtown St.
Winston-Salem, NC 27107

Attn: Ms. Sue Homewood
NCDOT Coordinator

Subject: **Request for Section 401 Permit Modification** for the revised stream remediation information for the proposed Greensboro Western Urban Loop, from I-85 south of Groometown Road to south of I-40 interchange; Federal Aid project No. STPNHF-NHF-124-1(1); State Project No. 8.U492101; WBS Elements 34820.1.8 and 34820.1.10; ; TIP U-2524 AB& AC.

References: USACE Section 404 Individual Permit, Action ID No. 200321137
NCDWQ Section 401 Water Quality Certification No. 3435, DWQ Project No. 030909

Dear Madam:

On October 30, 2003, the US Army Corps of Engineers (USACE) issued a Section 404 Individual Permit (Action ID No. 200321137) for the subject project. A Section 401 Water Quality General Certification No. 3435 was issued on October 24, 2003 from the N.C. Division of Water Quality (NCDWQ) with the Section 404 Permit. The permit was set to expire on December 31, 2006. A permit extension for the subject project was applied for on August 4, 2006 and the permit extension was received from the USACE in a letter dated August 21, 2006. The new permit expiration date is December 31, 2007.

Site 2BA, Long Branch Relocation (Section AC) of the U-2524 AB& AC permit (attached is a copy of pg. 11 of the permit application) was used as an on-site mitigation

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
NATURAL ENVIRONMENT UNIT
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-715-1334 or
919-715-1335

FAX: 919-715-5501

WEBSITE: WWW.NCDOT.ORG

LOCATION:

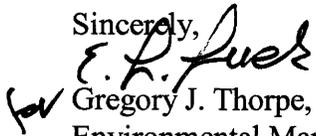
2728 CAPITAL BLVD. SUITE 240
RALEIGH NC 27604

site to offset impacts associated with construction of the project. The stream channel was constructed according to the plans and water turned into the channel in early 2006. Since that time, the stream has experienced bank erosion and the channel has downcut in several locations. The Natural Environment Unit Engineering group was asked by Division 7 Construction personnel and the NCDWQ to evaluate the stream. On August 18, 2006, the Natural Environment Unit Engineering group, Division 7 Construction and the NCDWQ met on-site to determine a course of action. Based on this meeting, it was determined that the Natural Environment Unit Engineering group would prepare a repair plan. On December 18, 2006, the Natural Environment Unit Engineering group, Division 7 Construction, the NCDWQ and the USACE met to review the repair plans. Per this meeting, all parties agreed that the repair plans would address the problems with the stream relocation.

Included with this letter are the proposed repair plans. The first set of repair plans are the stream remediation plans and the second set of plans are the erosion control plans. The plans include adding grade control structures, grading down inside meander beds at several locations, removing rootwads that have failed, installing stone toe protection and adjusting the alignment at the downstream end to allow a smoother transition into the culvert.

NCDOT is requesting a permit modification from the NCDWQ for the revised stream remediation information. According to Mr. Monte Matthews, USACE, a permit modification is not required for the revised stream remediation information from the USACE.

If you have any questions, or need additional information please contact Mr. Jamie Lancaster at (919) 715-1441.

Sincerely,

for Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA

Cc: w/ attachment

Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. Mark Staley, Roadside Environmental
Mr. Brad Wall, P.E., Division 7 Construction Engineer
Mr. Chris Kirkman, P.E., Division 7 Resident Engineer
Mr. Jerry Parker, Division 7 Environmental Officer
Mr. Scott McLendon, USACE, Wilmington
Mr. Randy Griffin, Natural Environment Unit Engineering Group
Mr. Monte Matthews, USACE

- Avoidance:**
- The NCDOT delineated 13.17 acres of wetlands within the 1000-foot corridor proposed for the road project. The NCDOT was able to avoid 11.85 acres of wetlands by placing the Urban Loop alignment as proposed for construction.
 - Wetland W1 near I-40 as described in the EIS will be completely avoided.

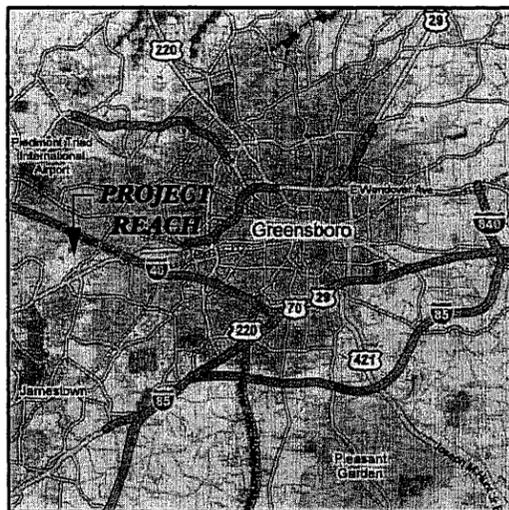
Minimization:

- *Long Branch Relocation (Section AC, Site 2BA).* Of particular concern to the agencies was the proposed piping of Long Branch at the proposed Urban Loop/I-40 interchange (Section AC, Site 2BA). This impact and relocation is found on permit drawings for Section AC. Sheets 32-35 of 36, Station 101.80-L- to 12+20-Ramp D-. Due to the substantial amount of channel impacts associated with this stream, the agencies suggested the NCDOT relocate and employ natural stream channel techniques when designing the channel relocation at this site. Natural stream channel techniques has been used in the relocation design. Construction of the relocated channel will be in the dry and was included with the design plans for TIP No. U-2524BA. The decision to include construction of the relocated channel in TIP No. U-2524 BA was made to provide a new, stabilized stream channel capable of receiving water near the time of construction for TIP No. U-2524 AC as Sections BA and AC connect with one another. The NCDOT will be replanting 1.21 acres of Zone 1 (within 30 feet of the stream's top of bank) and 0.74 acres of Zone 2 (within 20 of the stream's top of bank). Vegetation to be planted includes *black willow (Salix nigra)*, *silky dogwood (Cornus amomum)*, *green ash (Fraxinus pennsylvanica)*, *sycamore (Platanus accidentalis)*, *tulip poplar (Liriodendron tuliperifera)*, and *river birch (Betula nigra)*.

- *UT #3 Reddick's Creek.* The proposed road project has been placed on top of UT #3 Reddick's Creek (Section AB, Site 3) in order to fit between two housing developments. This impact is located on Sheets 9 and 10 of 26, Station No. 34+00 to 37+10 -L-. The NCDOT has minimized impacts to the stream by relocating it south of the proposed roadway. The NCDOT could not place the stream entirely into a relocated channel due to topographic constraints on the site. Relocating the entire stream in a new channel would have led to severe cuts to, and the taking of, highly valued property to accommodate the relocation and associated floodplain. The resource agencies agreed to this minimization technique at this site. The NCDOT will be replanting 0.67 acres of Zone 1 (within 30 feet of the stream's top of bank) and 0.44 acres of Zone 2 (within 20 of the stream's top of bank). Vegetation to be planted includes *black willow (Salix nigra)*, *silky dogwood (Cornus amomum)*, *green ash (Fraxinus pennsylvanica)*, *sycamore (Platanus accidentalis)*, *tulip poplar (Liriodendron tuliperifera)*, and *river birch (Betula nigra)*.
- All box culvert have been buried one foot. As a result there will be no impacts to aquatic life movements.

U-2524BA

WBS ELEMENT: 34154.3.14



VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

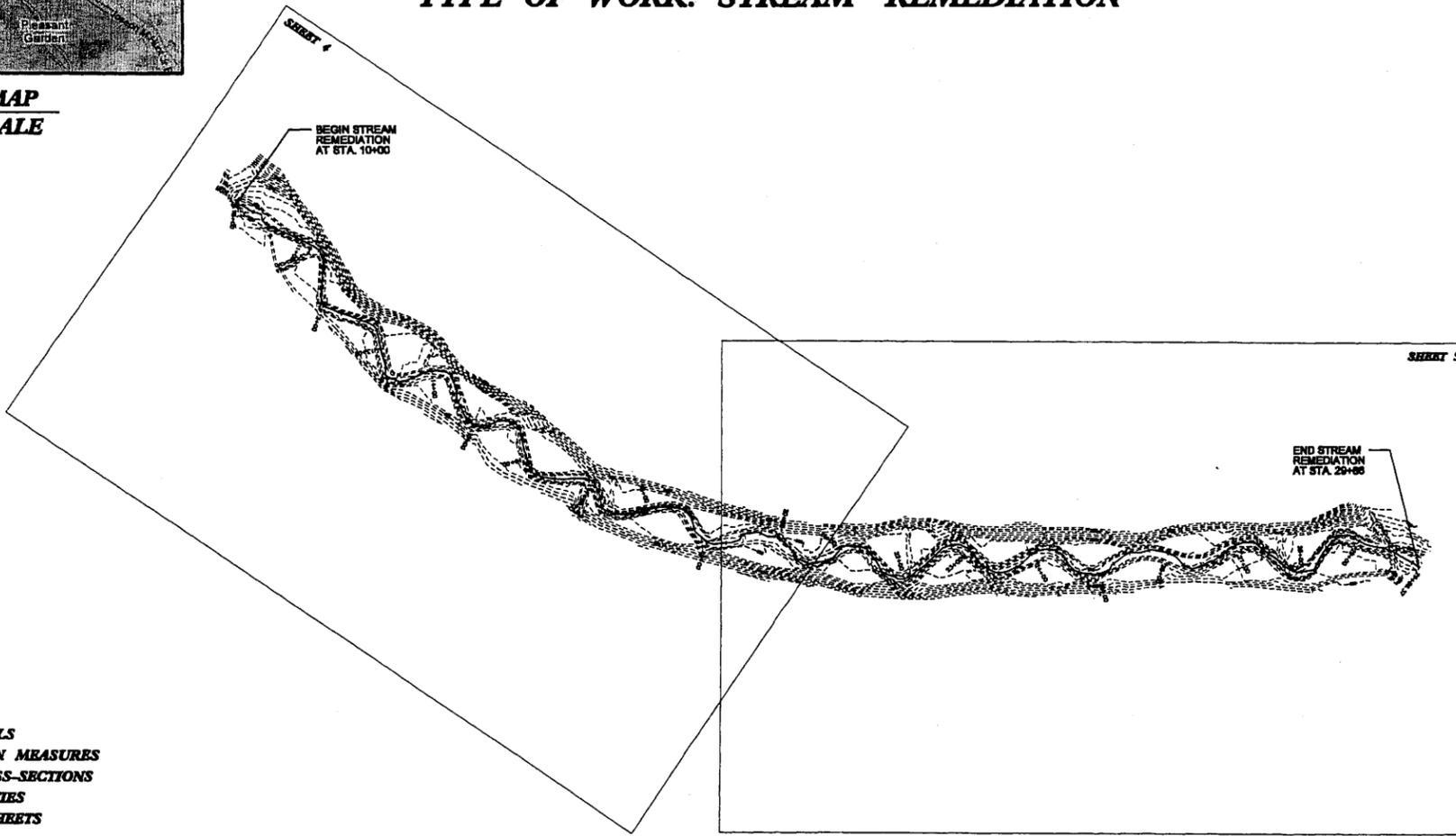
GUILFORD COUNTY

LOCATION: U-2524 - GREENSBORO WESTERN URBAN LOOP

GREENSBORO, NORTH CAROLINA

TYPE OF WORK: STREAM REMEDIATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2524BA	1	7
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34154.3.14		CONST.	



INDEX OF SHEETS

- 1 TITLE SHEET
- 1A CONVENTIONAL SYMBOLS
- 2 DETAILS: STABILIZATION MEASURES
- 2A DETAILS: TYPICAL CROSS-SECTIONS
- 3 SUMMARY OF QUANTITIES
- 4 - 5 PLAN AND PROFILE SHEETS

GRAPHIC SCALES



PROJECT DATA

STREAM REMEDIATION LENGTH = 1,986 FEET



Prepared in the Office of:
KCI Associates
of North Carolina, P.A.
SUITE 220, LANDMARK CENTER II, 4601 SIX FORKS RD.
RALEIGH, NC 27609-5210
•ENGINEERS • PLANNERS • ECOLOGISTS

for the
DIVISION OF HIGHWAYS

2002 STANDARD SPECIFICATIONS

LETTING DATE:

TIMOTHY P. DONOHUE, P.E.
PROJECT ENGINEER
GARY M. MRYNCZA, E.I.T.
DESIGN ENGINEER
ALEX FRENCH
REMEDIATION DESIGN

PROJECT ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER _____ P.E.
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED _____ DATE _____
DIVISION ADMINISTRATOR

SIGNATURE:

P.E.

DATE

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS



CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	⊙
Property Corner	-----
Property Monument	⊠
Parcel/Sequence Number	Ⓣ
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	⊠
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-----
Proposed Wetland Boundary	-----
Existing Endangered Animal Boundary	-----
Existing Endangered Plant Boundary	-----

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	⊙
Well	⊙
Small Mine	⊗
Foundation	⊠
Area Outline	⊠
Cemetery	⊠
Building	⊠
School	⊠
Church	⊠
Dam	⊠

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	⊠
Jurisdictional Stream	-----
Buffer Zone 1	-----
Buffer Zone 2	-----
Flow Arrow	←
Disappearing Stream	-----
Spring	⊙
Swamp Marsh	⊗
Proposed Lateral, Tail, Head Ditch	-----
False Sump	⊠

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	⊙
Switch	⊠
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite Marker	-----
Existing Control of Access	⊙
Proposed Control of Access	⊙
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Utility Easement	-----

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----
Proposed Slope Stakes Fill	-----
Proposed Wheel Chair Ramp	⊠
Proposed Wheel Chair Ramp Curb Cut	⊠
Curb Cut for Future Wheel Chair Ramp	⊠
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊙
Pavement Removal	⊠

VEGETATION:

Single Tree	⊙
Single Shrub	⊙
Hedge	-----
Woods Line	-----
Orchard	⊙
Vineyard	⊠

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	⊠
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊙
Storm Sewer	-----

UTILITIES:

POWER:	
Existing Power Pole	⊙
Proposed Power Pole	⊙
Existing Joint Use Pole	⊙
Proposed Joint Use Pole	⊙
Power Manhole	⊙
Power Line Tower	⊗
Power Transformer	⊗
U/G Power Cable Hand Hole	⊠
H-Frame Pole	⊙
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	⊙
Proposed Telephone Pole	⊙
Telephone Manhole	⊙
Telephone Booth	⊠
Telephone Pedestal	⊠
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	⊠
Recorded U/G Telephone Cable	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

WATER:

Water Manhole	⊙
Water Meter	⊙
Water Valve	⊙
Water Hydrant	⊙
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	-----

TV:

TV Satellite Dish	⊙
TV Pedestal	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	⊠
Recorded U/G TV Cable	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

GAS:

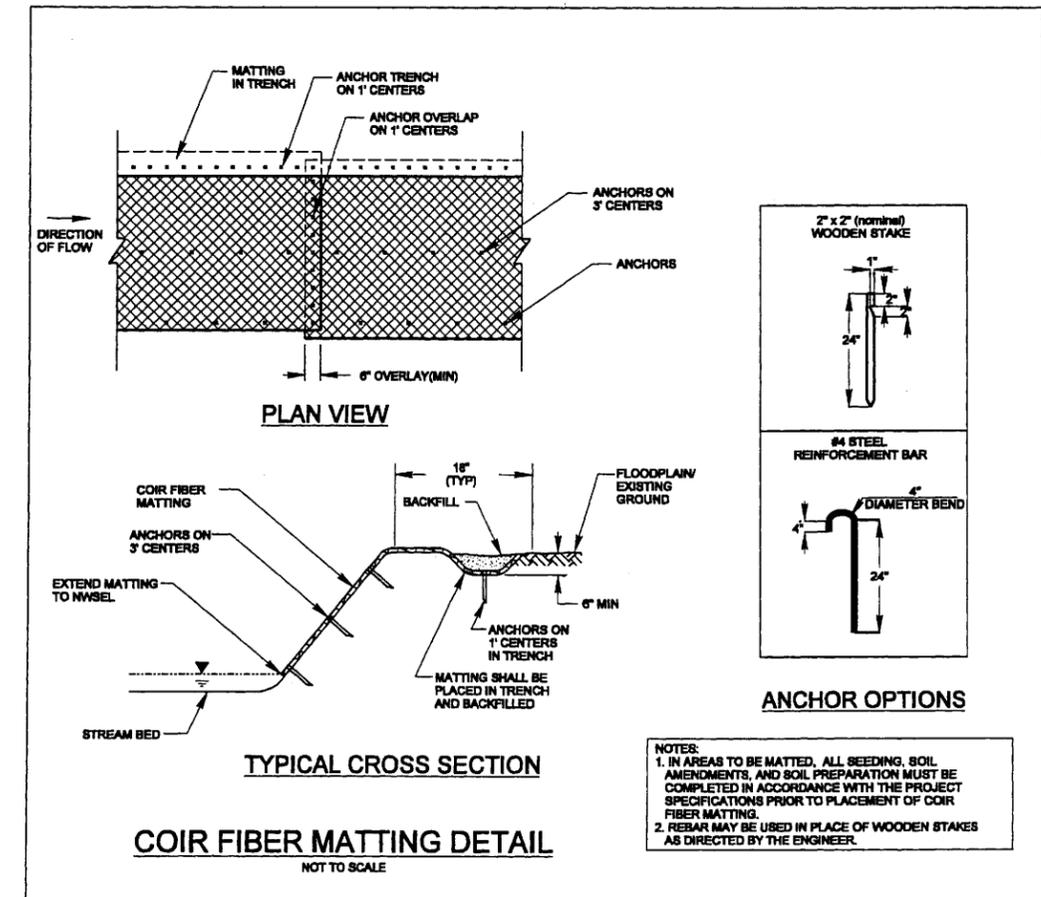
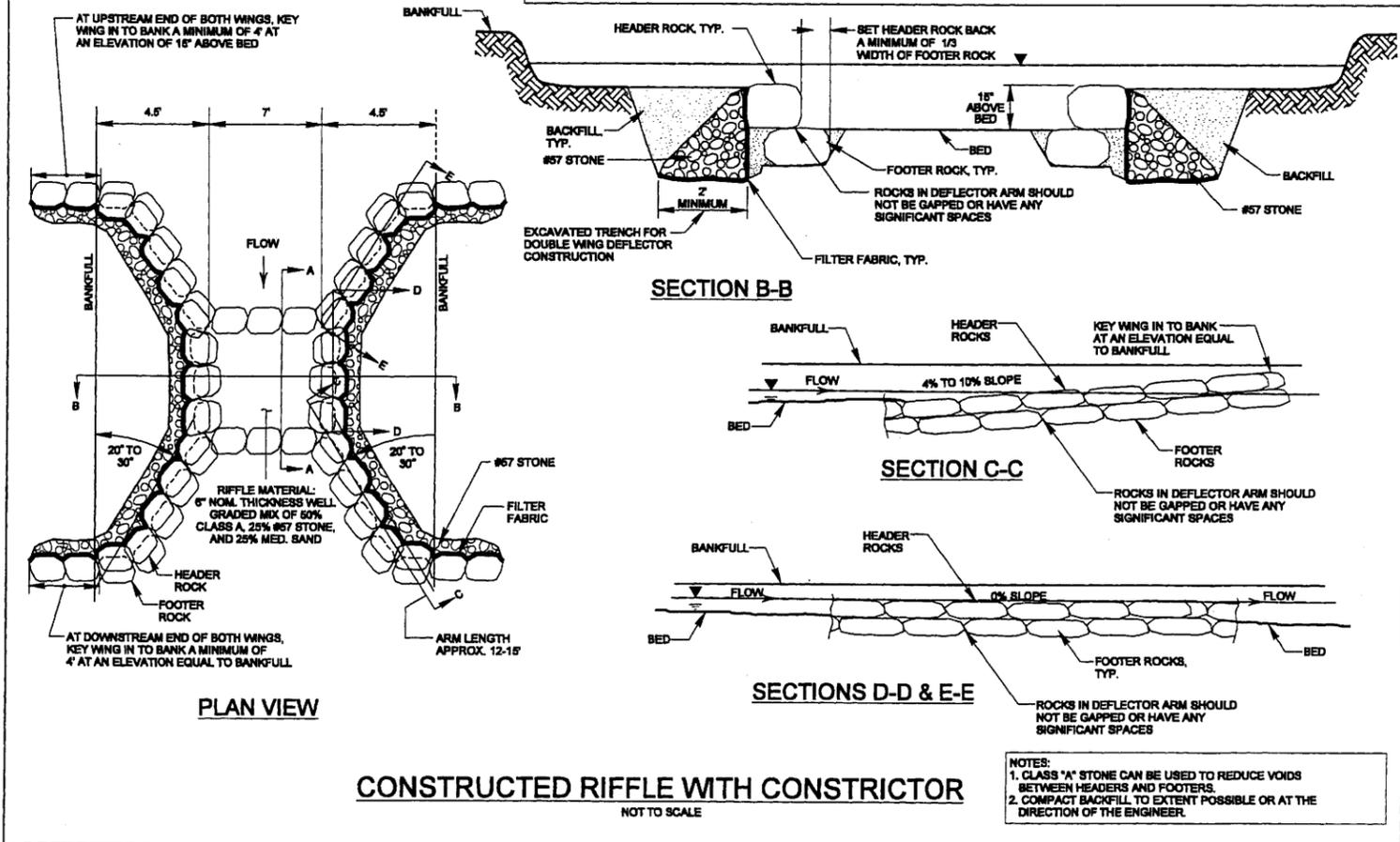
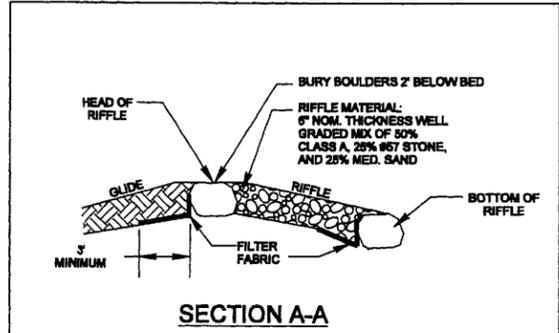
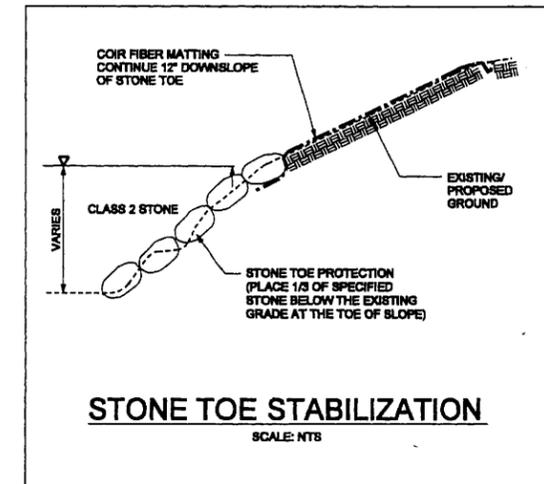
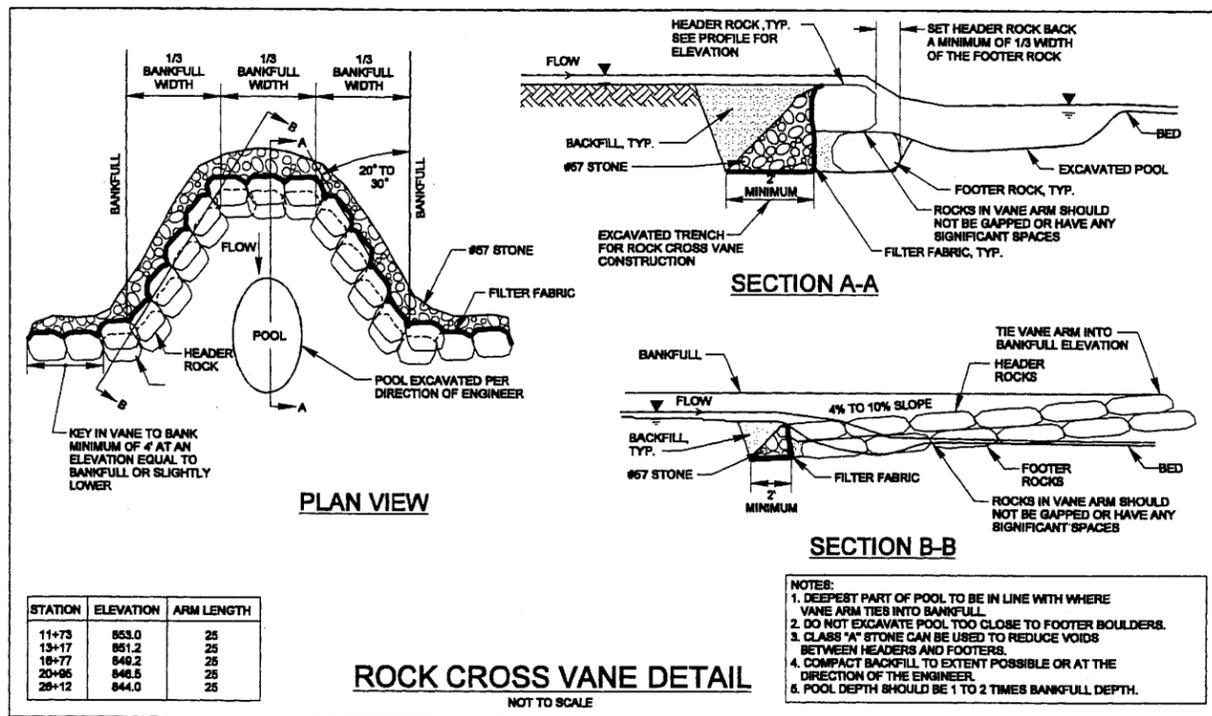
Gas Valve	⊙
Gas Meter	⊙
Recorded U/G Gas Line	-----
Designated U/G Gas Line (S.U.E.*)	-----
Above Ground Gas Line	-----

SANITARY SEWER:

Sanitary Sewer Manhole	⊙
Sanitary Sewer Cleanout	⊙
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

MISCELLANEOUS:

Utility Pole	⊙
Utility Pole with Base	⊠
Utility Located Object	⊙
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line	-----
U/G Tank; Water, Gas, Oil	⊠
AG Tank; Water, Gas, Oil	⊠
U/G Test Hole (S.U.E.*)	⊙
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

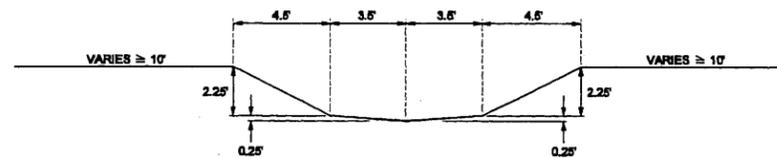


REVISIONS

KCI Associates
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 SUITE 220, LANDMARK CENTER II, 460 SIX FORKS RD.
 RALEIGH, NC 27609-5200
 *ENGINEERS * PLANNERS * ECOLOGISTS

PROJECT REFERENCE NO. U-2524BA
 SHEET NO. 2A

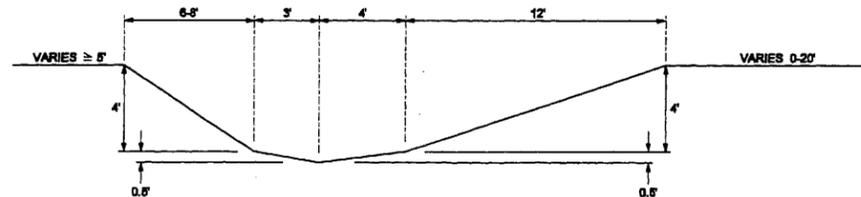
TYP. CHANNEL SECTION.
 REFER TO TYPICAL AS
 NECESSARY TO RE-GRADE
 UNSTABLE RIFFLE/RUN SECTIONS



DESIGN CRITERIA COMPARISON (RIFFLE):

ORIGINAL DESIGN	REMEDIAL DESIGN
W = 14.4 ft	W = 16.0 ft
A = 20.7 ft ²	A = 26.8 ft ²
W/D = 10.0	W/D = 9.6
d _{max} = 2.0 ft	d _{max} = 2.5 ft
Q = 94 cfs	Q = 120 cfs

TYP. POOL SECTION.
 REFER TO TYPICAL
 WHEN DIRECTED TO
 GRADE BACK ON 3:1



FOR INFORMATIONAL PURPOSES:
 SEDIMENT DISTRIBUTION
 BASED ON BAR / BULK SAMPLING

d₁₀ = 1.0 MM
 d₂₅ = 2.8 MM
 d₅₀ = 5.1 MM
 d₆₀ = 17.7 MM
 d₉₀ = 27.7 MM

REVISIONS



PROJECT REFERENCE NO.	SHEET NO.
U-2524BA	3

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

SECT.	QUANTITY	UNIT	ITEM DESCRIPTION
800	1	LS	MOBILIZATION
801	1	LS	CONSTRUCTION SURVEY
228	1	LS	GRADING
1005	3	TON	2S FINE AGGREGATE / MEDIUM SAND
1005	100	TON	NO. 57 STONE
1042	50	TON	RIP RAP, CLASS A
1042	75	TON	RIP RAP, CLASS B
1042	170	TON	RIP RAP, CLASS 1
1042/SP	200	TON	STONE, BOULDER
1056	500	SY	FILTER FABRIC FOR DRAINAGE, TYPE 2
1680	2	AC	NATIVE GRASS SEEDING AND MULCHING
1620	2	AC	TEMPORARY SEEDING
1661	50	LB	SEED FOR REPAIR SEEDING
1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
1665	0.75	TON	FERTILIZER TOPDRESSING
1605	730	LF	TEMPORARY SILT FENCE
1080	1	LS	DIVERSION PUMPING
SP	4	EA	SPECIAL STILLING BASIN
1630	85	CY	SILT EXCAVATION
SP	900	SY	COIR FIBER MAT

SUMMARY OF EARTHWORK

	(IN CUBIC YARDS)
SITE EXCAVATION	700 CY
SITE EMBANKMENT	200 CY
NET WASTE	500 CY

NOTE: ALL QUANTITIES SHOWN ARE APPROXIMATE. CONTRACTOR MUST VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION. NO SHRINKAGE FACTOR INCLUDED.

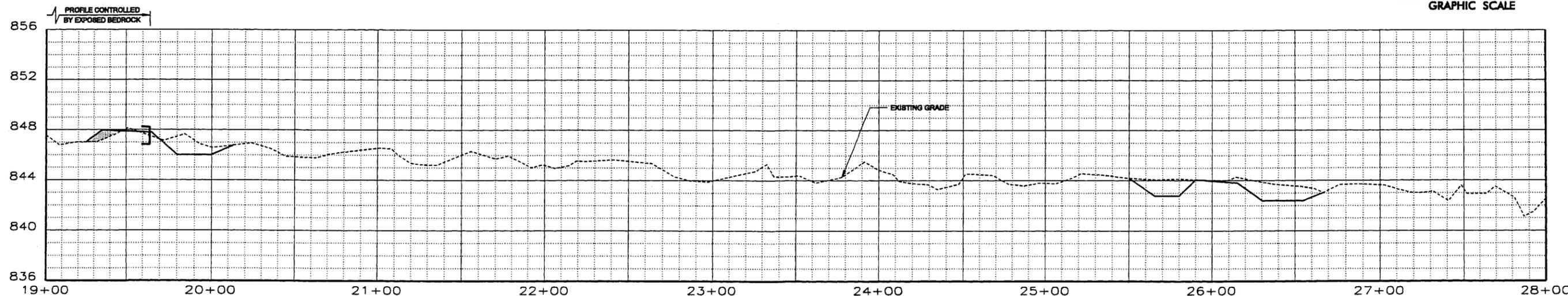
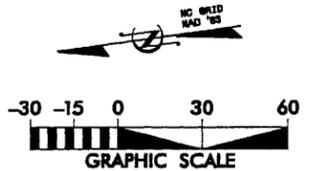
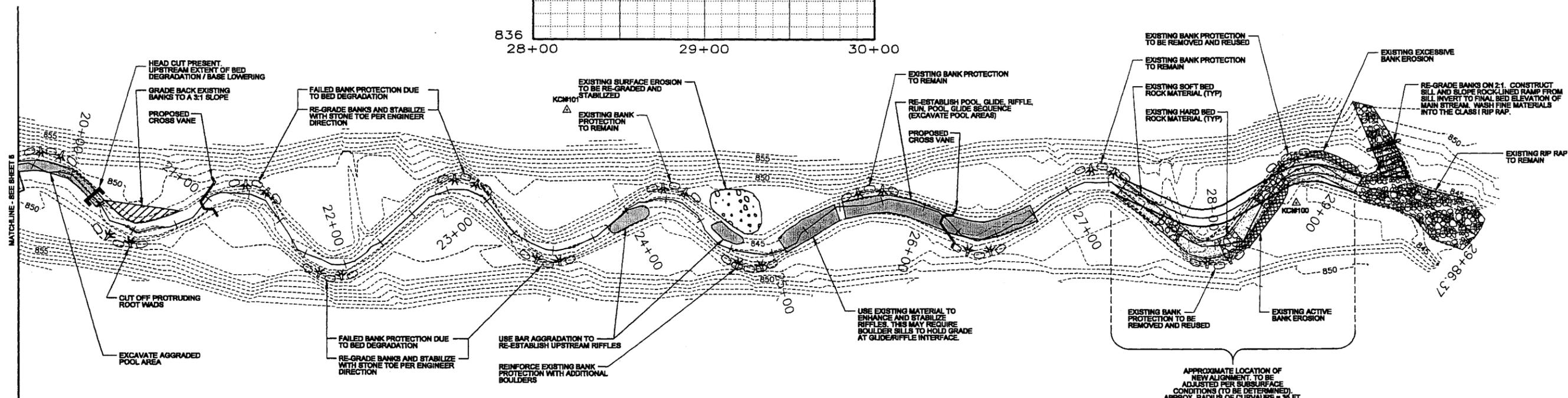
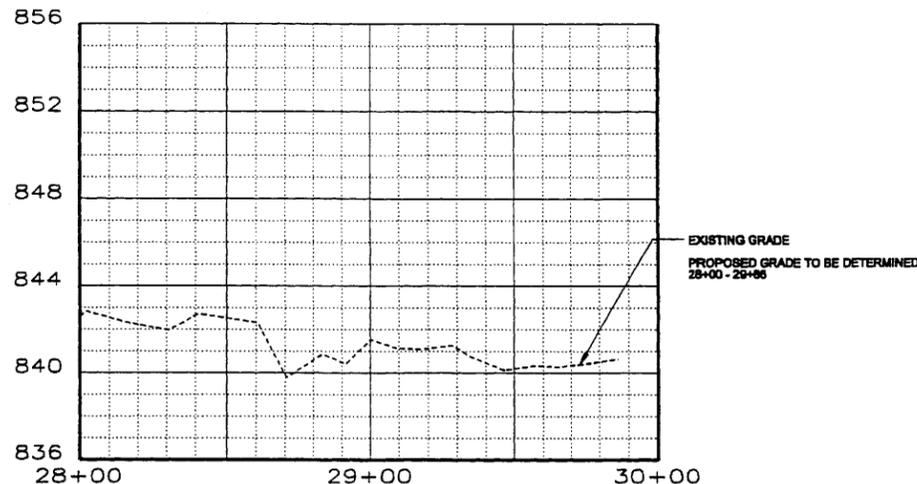
REVISIONS

U-2524 SITE CONTROL POINTS

Point	Northing	Easting	Elevation	Description
100	842084.3330	1728276.8666	846.24	KCM#100
101	842481.2280	1728287.2780	858.24	KCM#101
103	842847.0132	1728461.4281	864.83	KCM#103
104	843248.1188	1728779.4708	870.41	KCM#104

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PROJECT REFERENCE NO. U-2524BA
SHEET NO. 5



REVISIONS

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RALEIGH, NC 27609-5210
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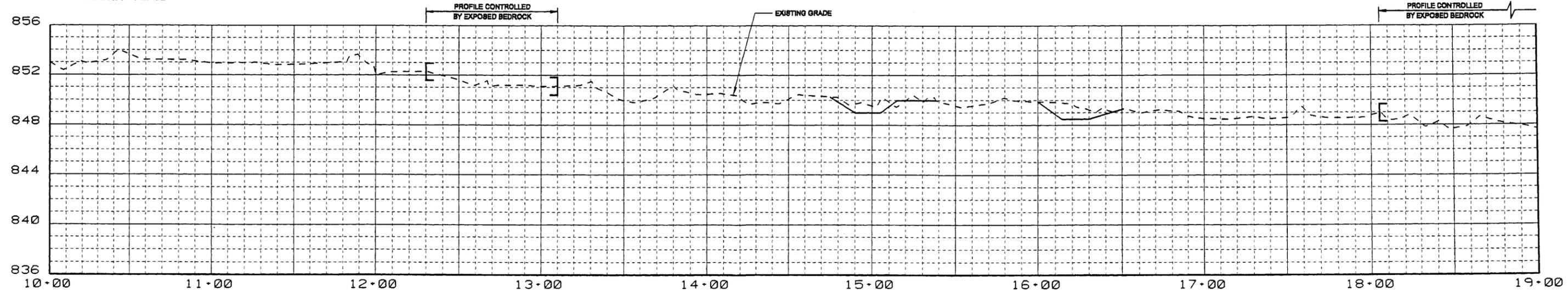
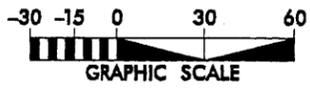
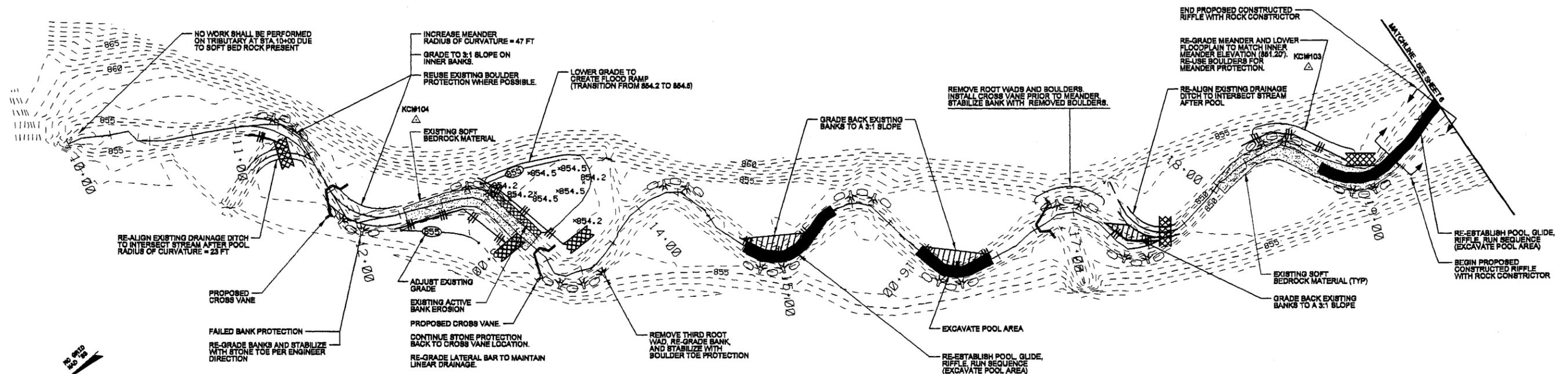
PROJECT REFERENCE NO.
U-2524BA

SHEET NO.
EC-2

NOTE:
PLACE TEMPORARY ROCK SILT CHECKS TYPE-A AT
DRAINAGE OUTLETS.

U-2524 SITE CONTROL POINTS

Point	Northing	Eastng	Elevation	Description
100	842064.3330	1728275.8856	848.24	KC#100
101	842481.8280	1728387.2750	888.24	KC#101
103	842847.0132	1728481.4251	864.83	KC#103
104	843248.1158	1728779.4708	870.41	KC#104



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RALEIGH, NC 27609-5210
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PROJECT REFERENCE NO.	SHEET NO.
U-2524BA	EC-3

NOTE: PLACE TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

U-2524 SITE CONTROL POINTS

Point	Northing	Easting	Elevation	Description
100	842094.3330	1728275.8668	848.24	KCH#100
101	842481.8280	1728387.2780	888.24	KCH#101
103	842847.0132	1728481.4281	894.83	KCH#103
104	843248.1158	1728779.4708	870.41	KCH#104

