

NC Ecosystem Enhancement Program Irwin Creek Stream Restoration

SCO# -01-05487-01

Mecklenburg County, North Carolina
MARCH 2010



DRAWING INDEX

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C-4	Plan Sta. 7+50 to Sta. 12+30			L-3	Planting Plan Details

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- Syntel
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UTILITIES / AGENCIES HAVE RECEIVED A COPY OF THESE PLANS. THIS LIST DOES NOT INDICATE UTILITY / AGENCY REVIEW OR APPROVAL OF THIS PROJECT

**RECORD DRAWINGS
3-5-10**

PROJECT PERMITS

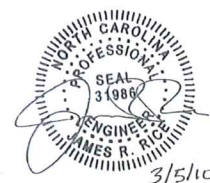
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NCDENR - DIV OF WATER QUALITY	SECTION 401	HELD BY EEP	-	
NCDENR - LAND QUALITY SECTION	NPDES - EROSION & SEDIMENT CONTROL			
MECK. COUNTY FLOODWAY ENCROACHMENT			-	

REVIEWED FOR CONSTRUCTION



HDR Engineering, Inc.
of the Carolinas

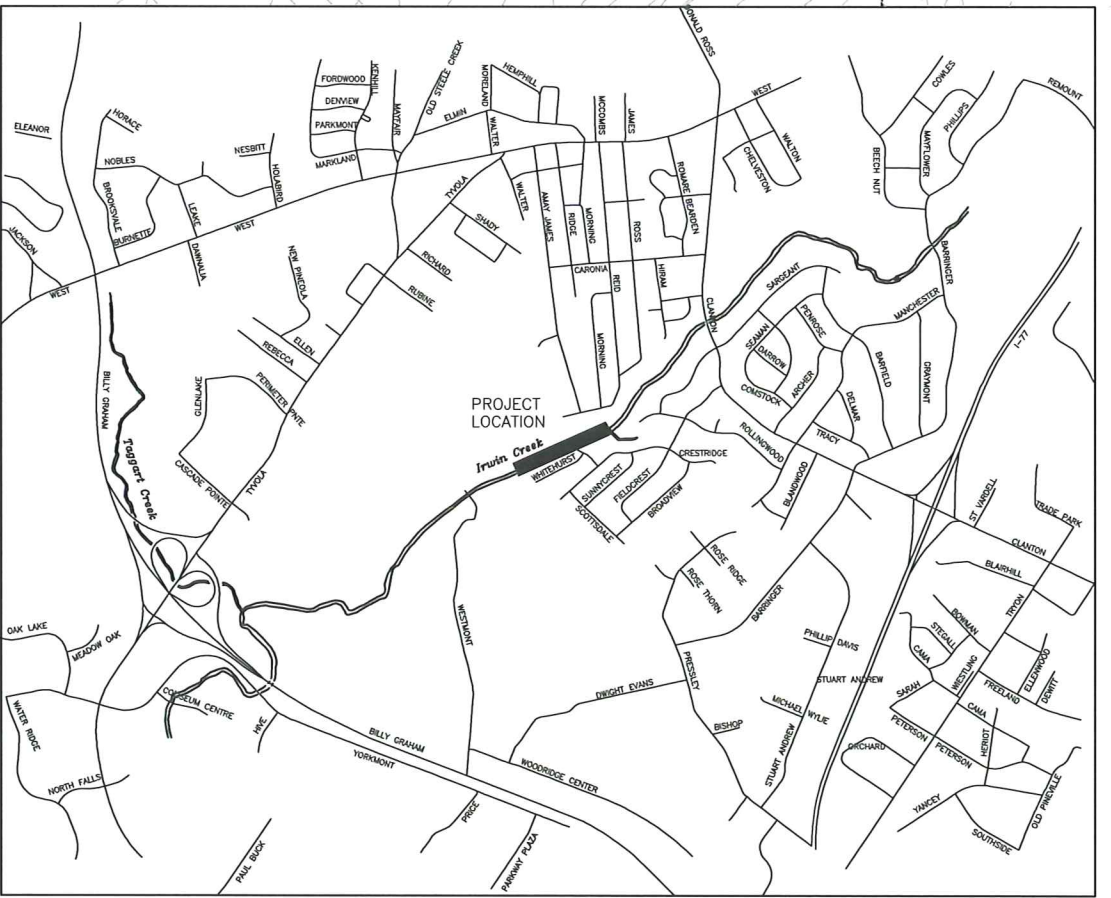
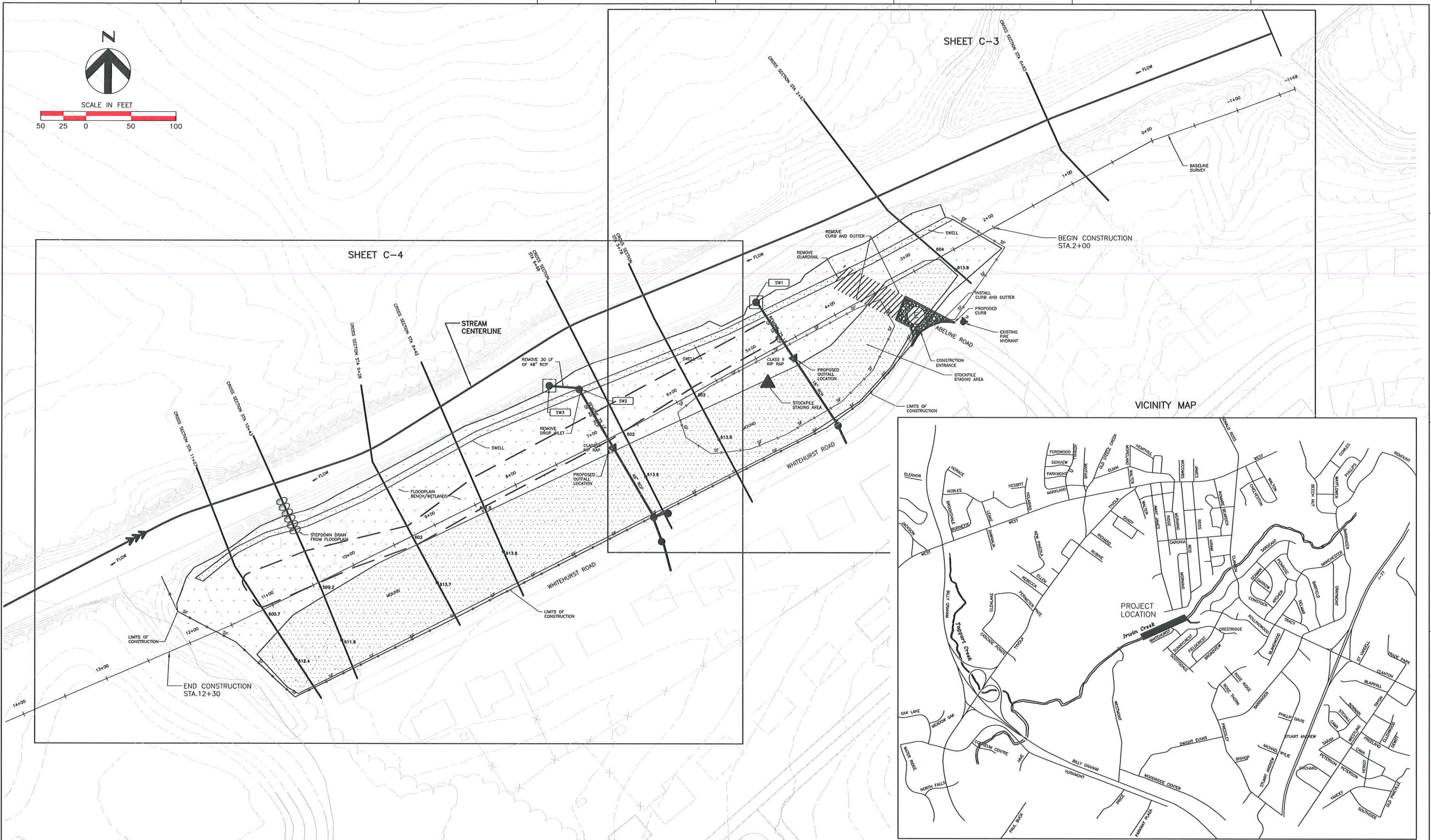
128 S. Tryon Street, Suite 1400 | Charlotte, NC 28202



NORTH CAROLINA ECOSYSTEM ENHANCEMENT PROGRAM
DEPT. OF ENVIRONMENTAL AND NATURAL RESOURCES
2728 CAPITAL BLVD, SUITE 1H 103
RALEIGH, NC 27612



SCALE IN FEET
50 25 0 50 100



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05/2005		PRELIMINARY (MAU)
04/2004		PRELIMINARY (JMP)

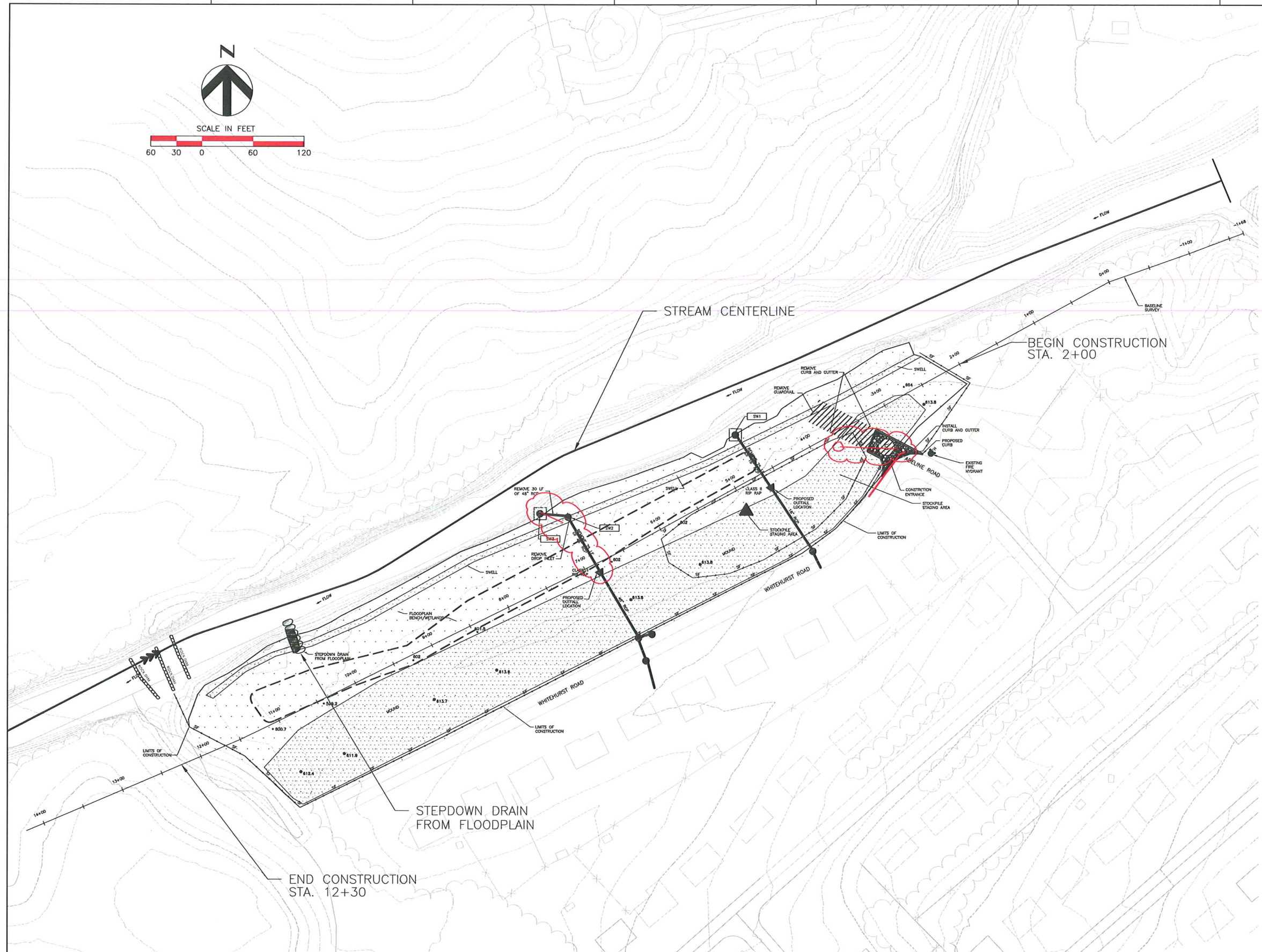
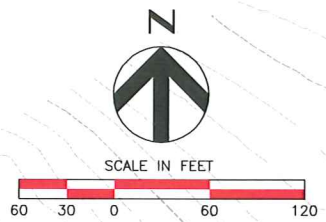
PROJECT MANAGER	CHRIS MATTHEWS DASA CROWELL, PE
PROJECT NUMBER	0977021-018



NC Wetlands Restoration Program
SCO# - 01-05487-01
Irwin Creek
Stream Restoration

Charlotte North Carolina

		FILENAME 00G-01.dwg	SHEET G-1
		SCALE AS NOTED	



Irwin Creek Construction Schedule:

Mobilize equipment to stream access location. Install stream access and construct three check dams at downstream construction limit according to check dam detail.

Secure stockpile locations. Install silt fence according to Silt Fence Detail, install safety fence.

The reshaping and grading of channel banks and flood plain bench shall be limited in extent each day to the length that can be stabilized by the end of that same workday.

Install stream access located at Abeline Road according to detail. Reshape banks, excavate a floodplain bench according to plans and stockpile the existing topsoil in screening location at Whitehurst Road. Remove pavement at Abeline Road according to plans. Construct wetland and screening mound. according to plans and detail. Construct step-down structure through levee to Irwin Creek.

Plant bank, floodplain bench and wetland with vegetative materials (live stakes, containerized materials, bare-root seedlings) according to planting detail.

Apply erosion control matting and seed according to specifications.

Remove stream access.

Re-vegetate stream access location.

Reconstruct curb at Abeline and Whitehurst Roads intersection/curve according to plans.

Plant buffer areas.

Remove silt and safety fence.

Remove excess construction materials and debris.

Demobilize equipment.

Anticipated Irwin Creek construction duration: 5 weeks.

Record Note: Construction Sequence was modified so that the step-down channel was installed prior to the completion of major grading of channel banks, floodplain bench construction, and wetland grading. This allowed the contractor to keep access to the downstream check dams open so that adjustments could be made if necessary. This change was discussed at the weekly meeting on April 14, 2009 Confirmation letter sent to EEP on April, 16 2009



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PROJECT MANAGER	CHRIS MATTHEWS DASA CROWELL, PE
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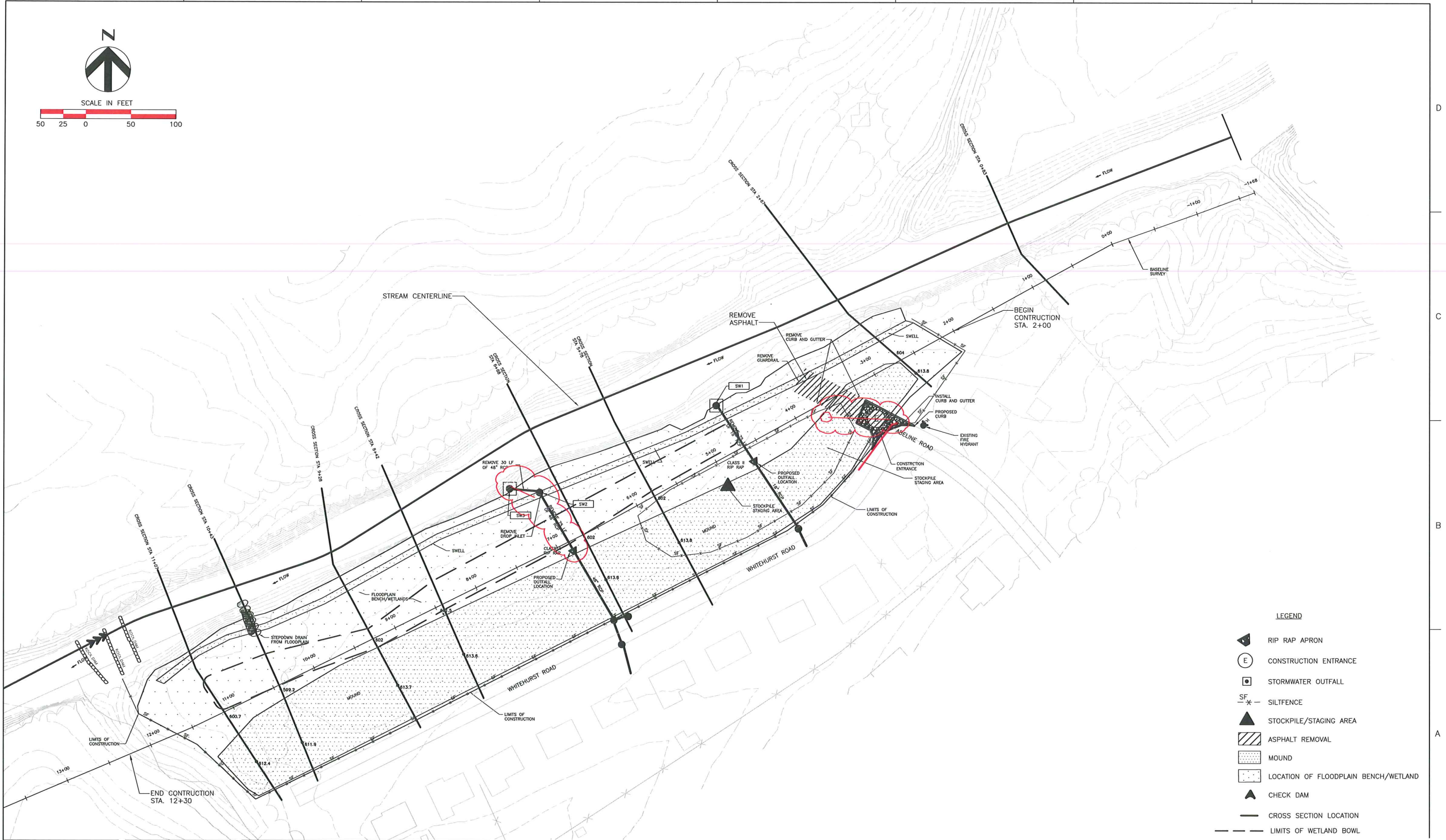
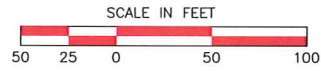
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SEDIMENT AND EROSION CONTROL PLAN

0 1" 2"

FILENAME	01C-01.dwg	SHEET	C-1
SCALE	AS NOTED		



LEGEND

- RIP RAP APRON
- CONSTRUCTION ENTRANCE
- STORMWATER OUTFALL
- SILTFENCE
- STOCKPILE/STAGING AREA
- ASPHALT REMOVAL
- MOUND
- LOCATION OF FLOODPLAIN BENCH/WETLAND
- CHECK DAM
- CROSS SECTION LOCATION
- LIMITS OF WETLAND BOWL

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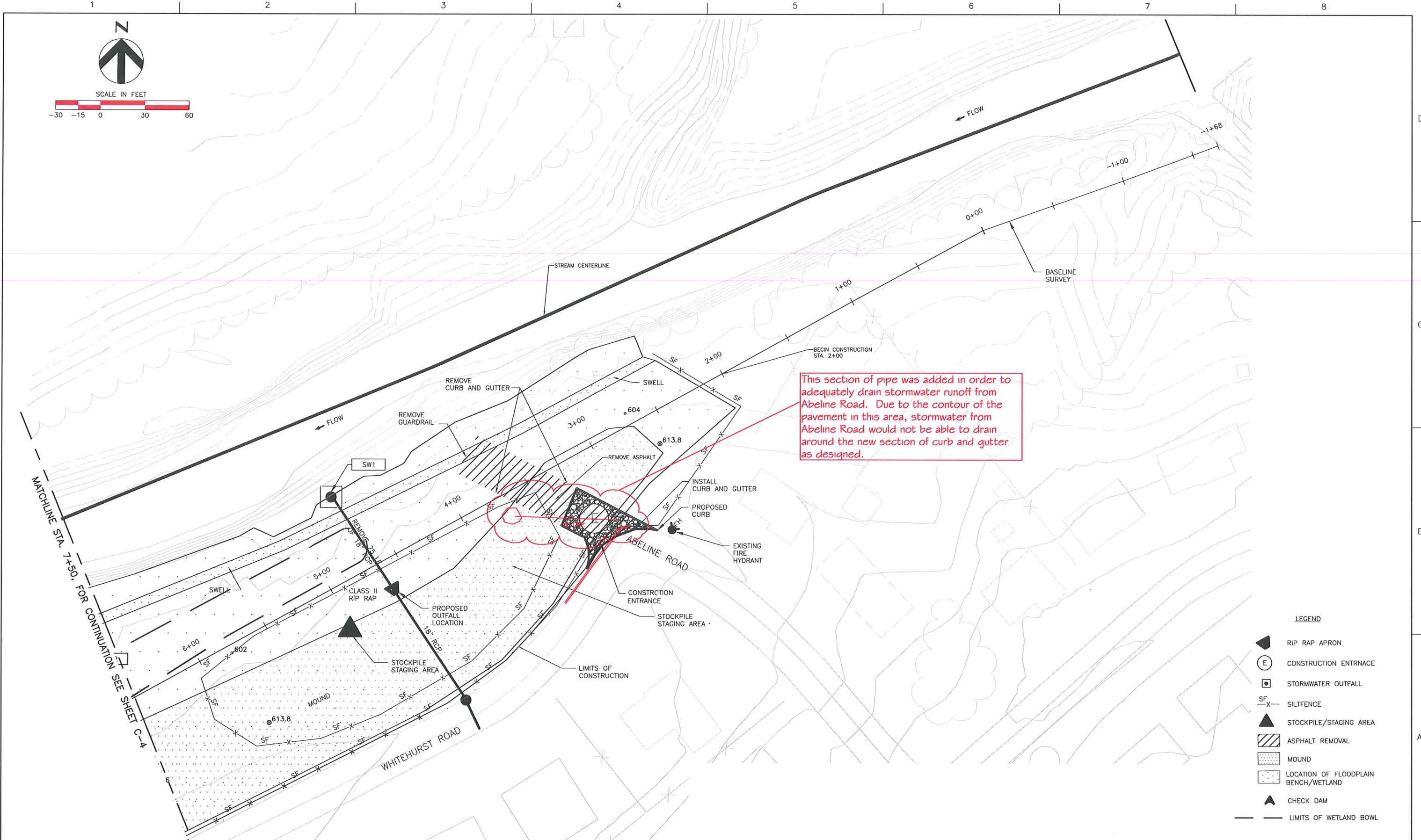
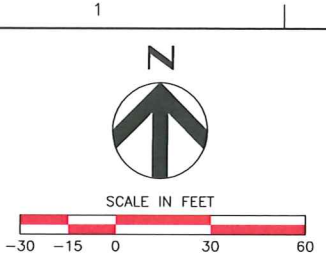


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OVERALL SITE PLAN

FILENAME	01C-02.dwg	SHEET	C-2
SCALE	AS NOTED		



This section of pipe was added in order to adequately drain stormwater runoff from Abeline Road. Due to the contour of the pavement in this area, stormwater from Abeline Road would not be able to drain around the new section of curb and gutter as designed.

- LEGEND**
- RIP RAP APRON
 - CONSTRUCTION ENTRANCE
 - STORMWATER OUTFALL
 - SILTFENCE
 - STOCKPILE/STAGING AREA
 - ASPHALT REMOVAL
 - MOUND
 - LOCATION OF FLOODPLAIN BENCH/WETLAND
 - CHECK DAM
 - LIMITS OF WETLAND BOWL

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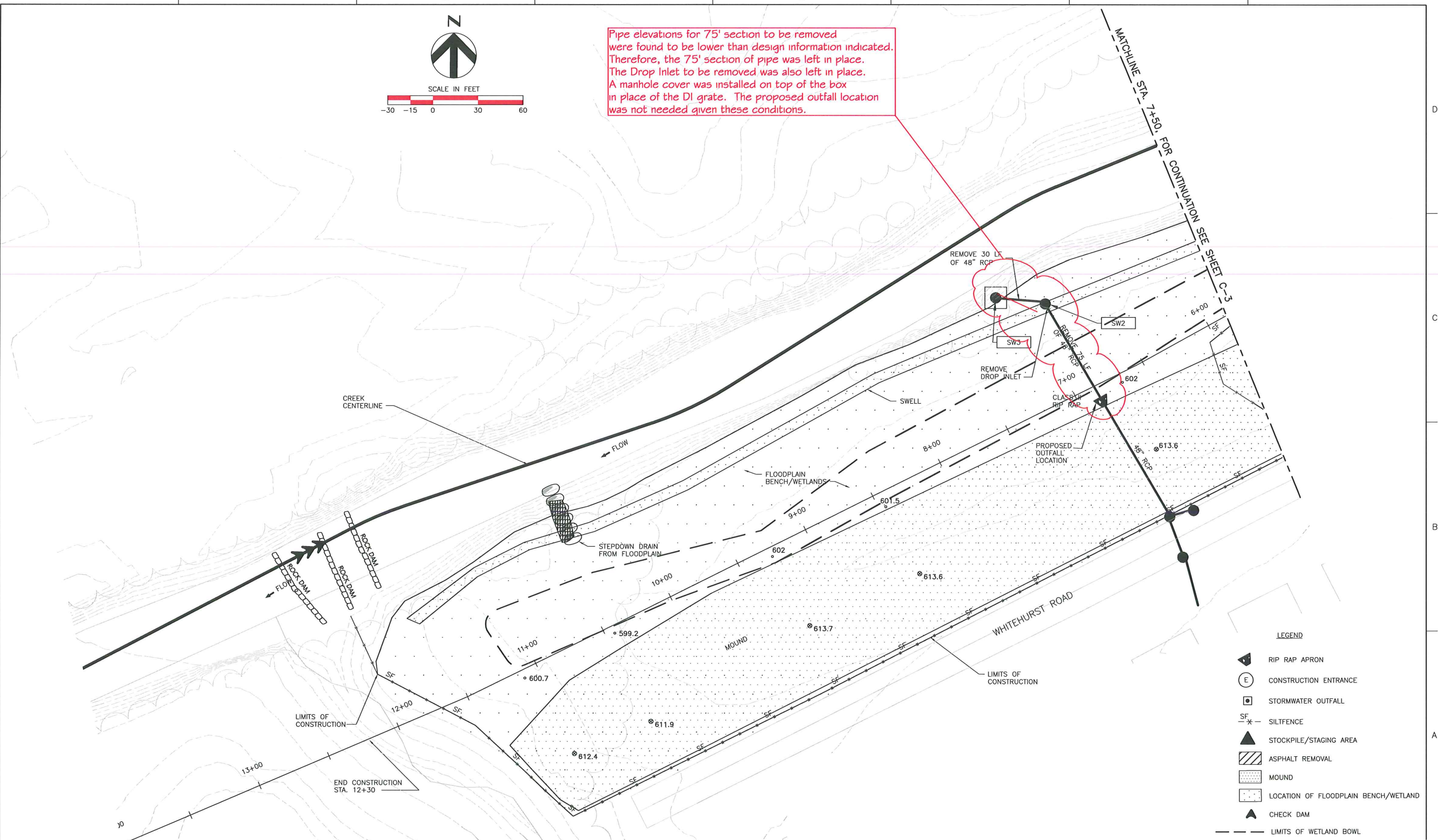
STA. 0+00 TO STA. 7+50

FILENAME	01C-03.dwg	SHEET	C-3
SCALE	AS NOTED		



Pipe elevations for 75' section to be removed were found to be lower than design information indicated. Therefore, the 75' section of pipe was left in place. The Drop Inlet to be removed was also left in place. A manhole cover was installed on top of the box in place of the DI grate. The proposed outfall location was not needed given these conditions.

MATCHLINE STA. 7+50 FOR CONTINUATION SEE SHEET C-3



LEGEND

- RIP RAP APRON
- CONSTRUCTION ENTRANCE
- STORMWATER OUTFALL
- SILTFENCE
- STOCKPILE/STAGING AREA
- ASPHALT REMOVAL
- MOUND
- LOCATION OF FLOODPLAIN BENCH/WETLAND
- CHECK DAM
- LIMITS OF WETLAND BOWL

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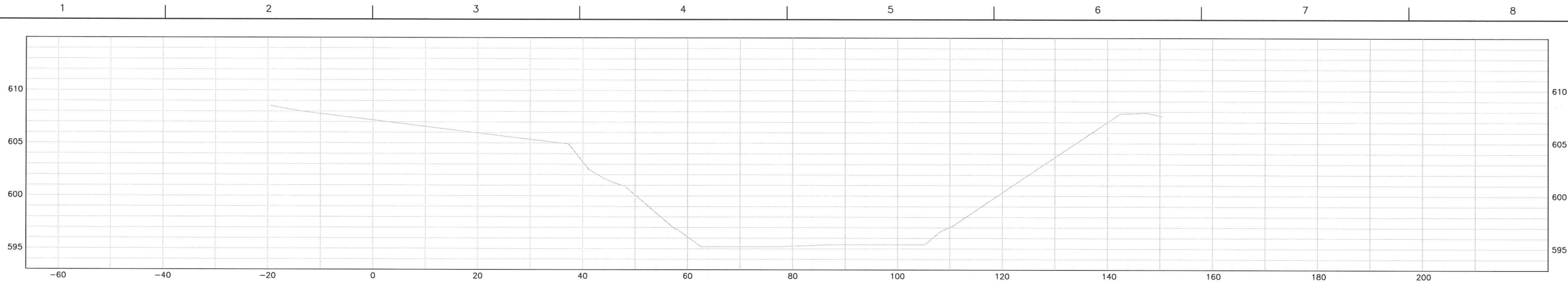
NC Wetlands Restoration Program
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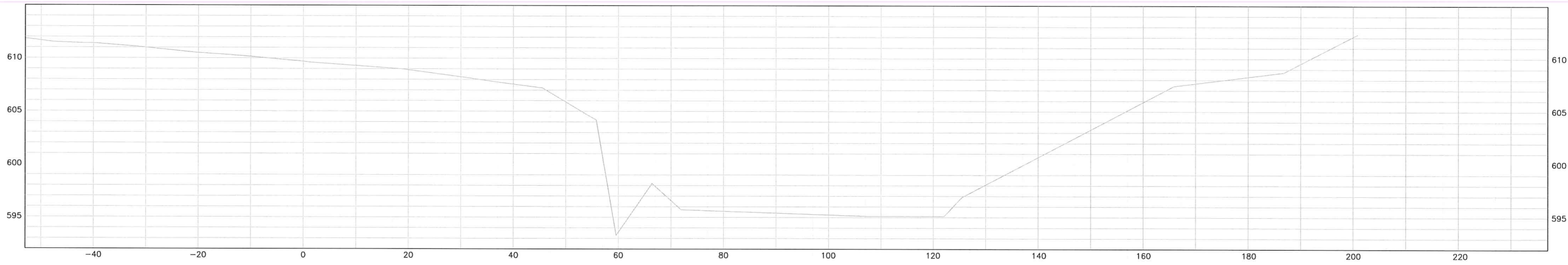
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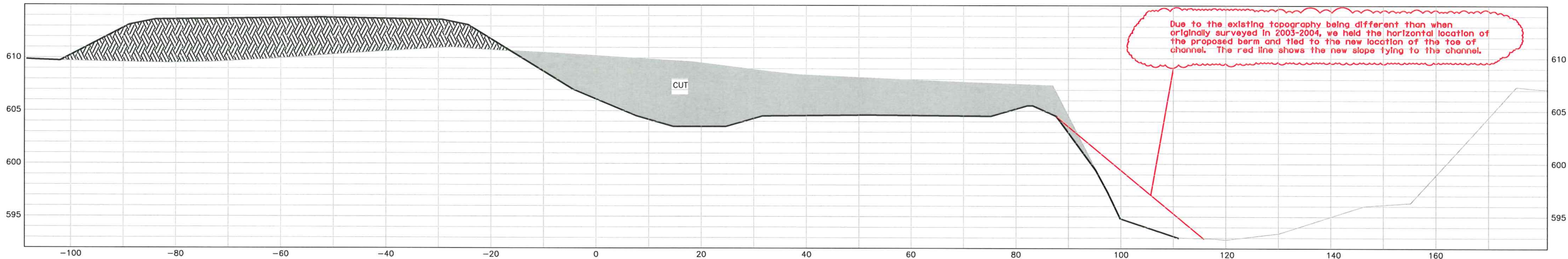
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STA 0+83



STA 2+67

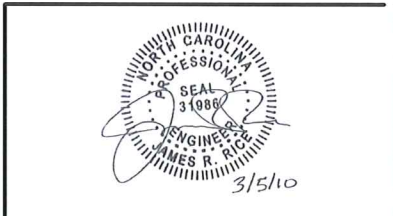


STA 5+78



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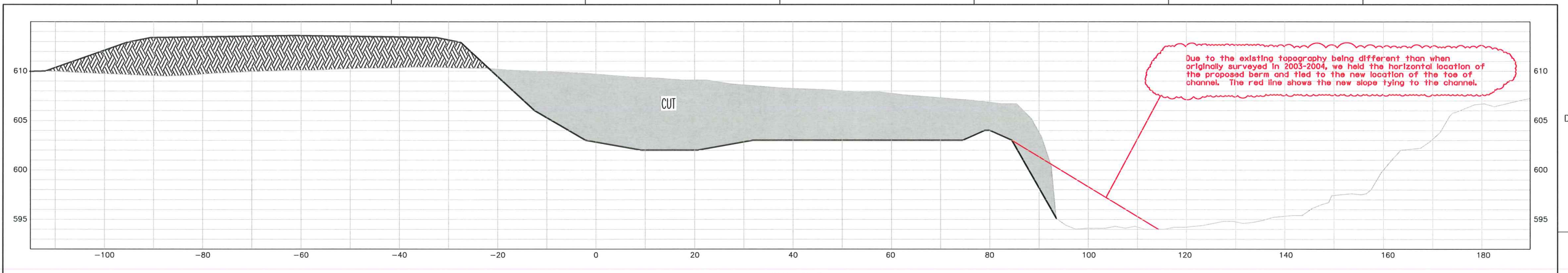
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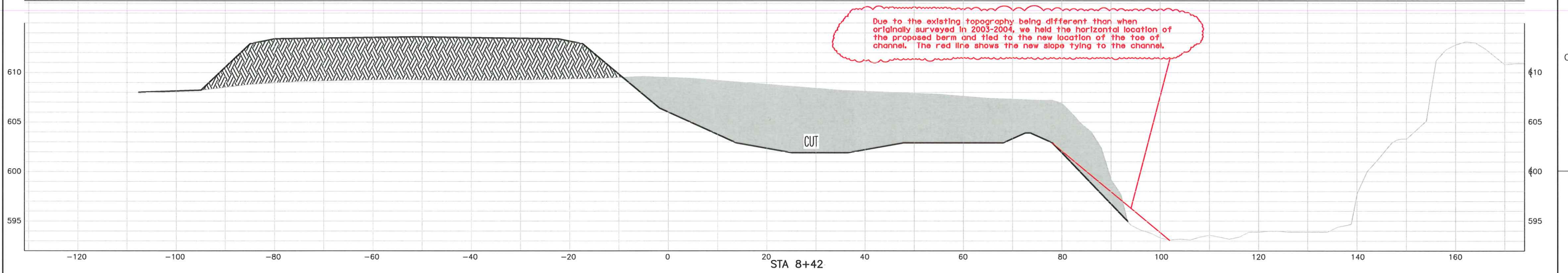
NC Wetlands Restoration Program
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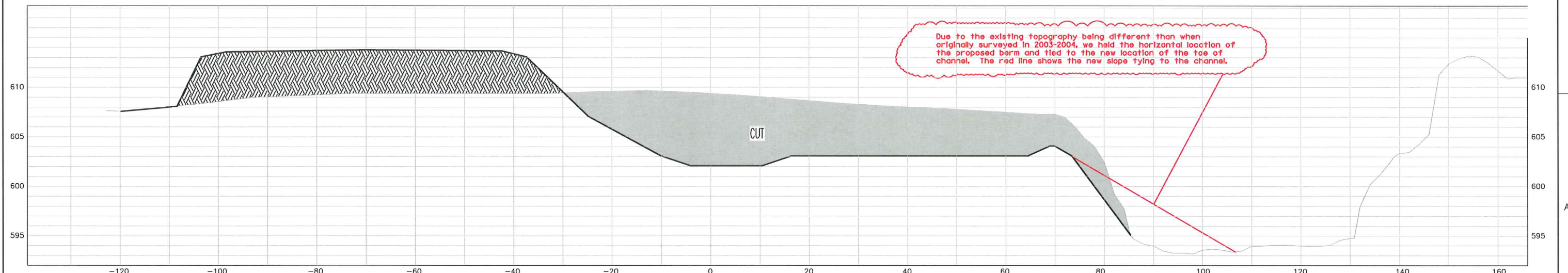
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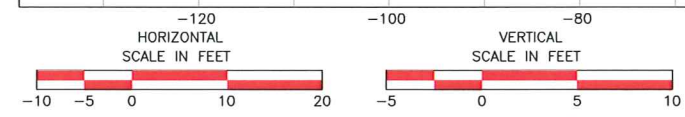
STA 6+68



STA 8+42



STA 9+28

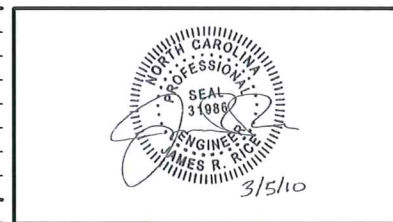


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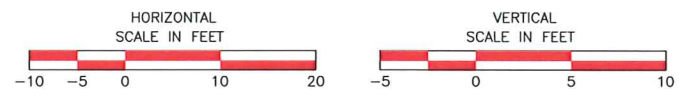
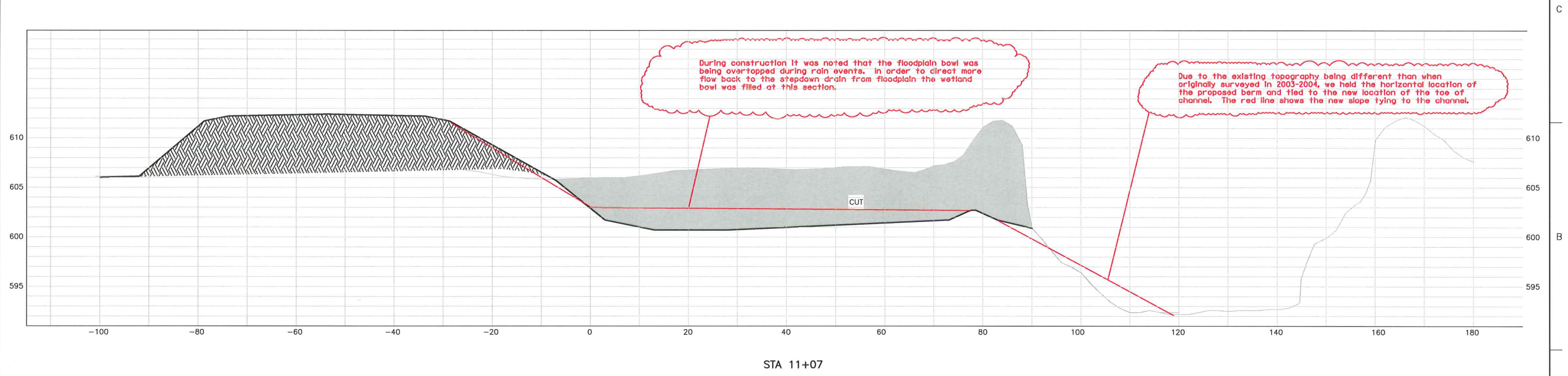
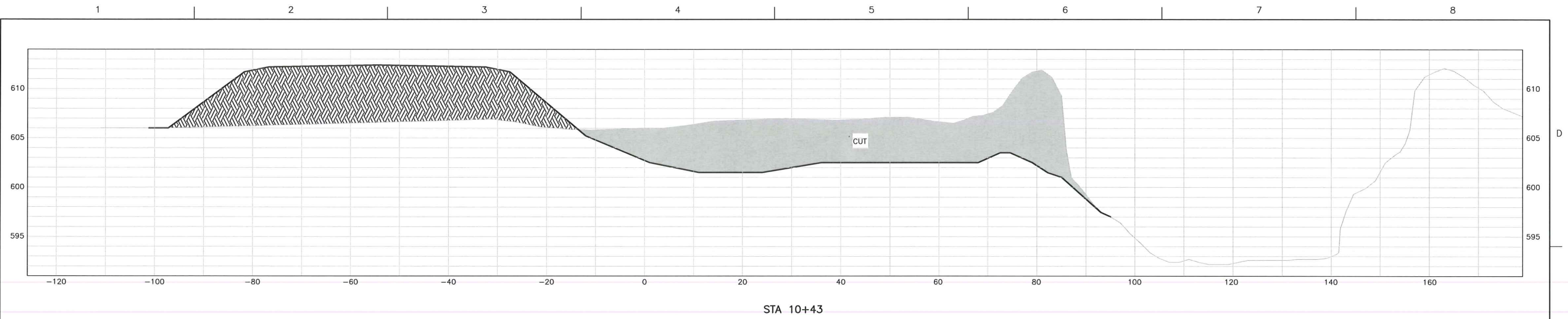
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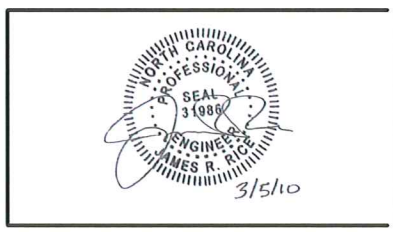
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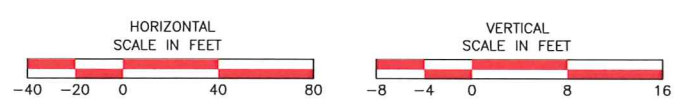
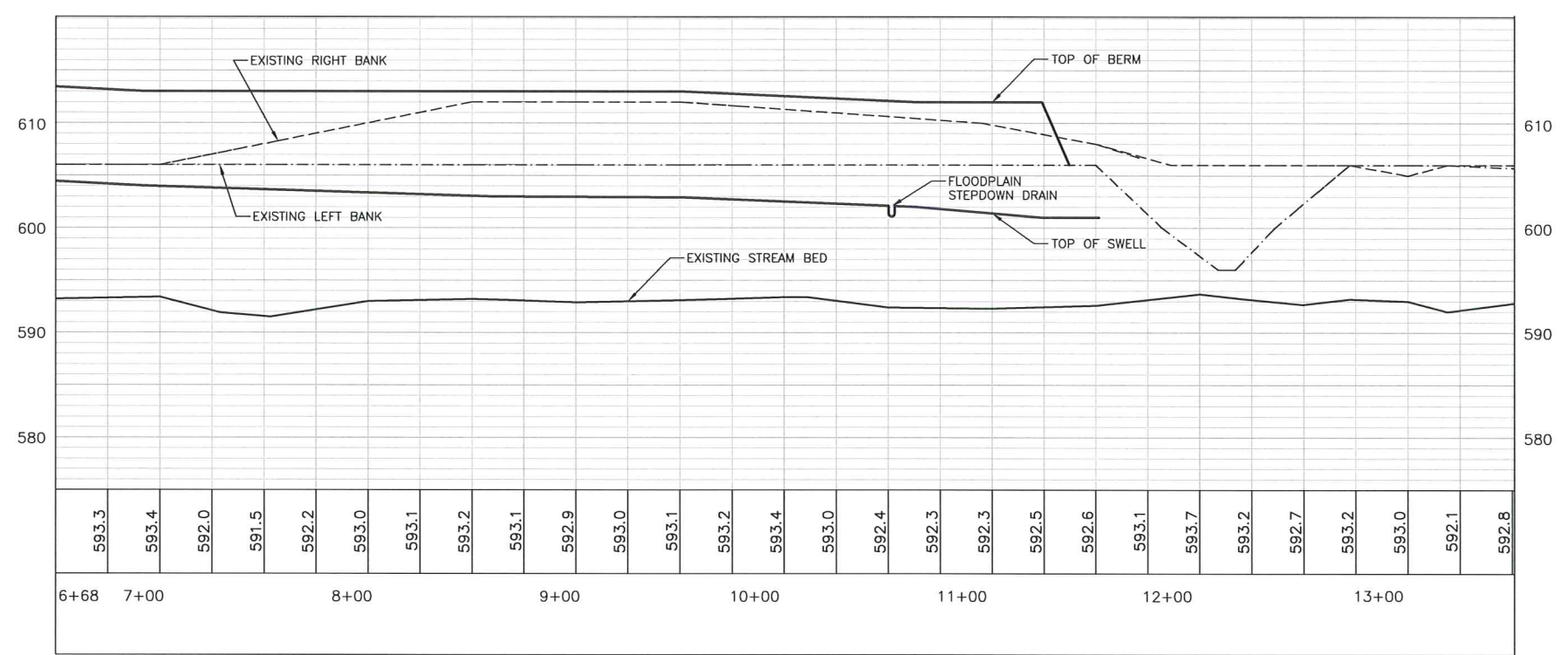
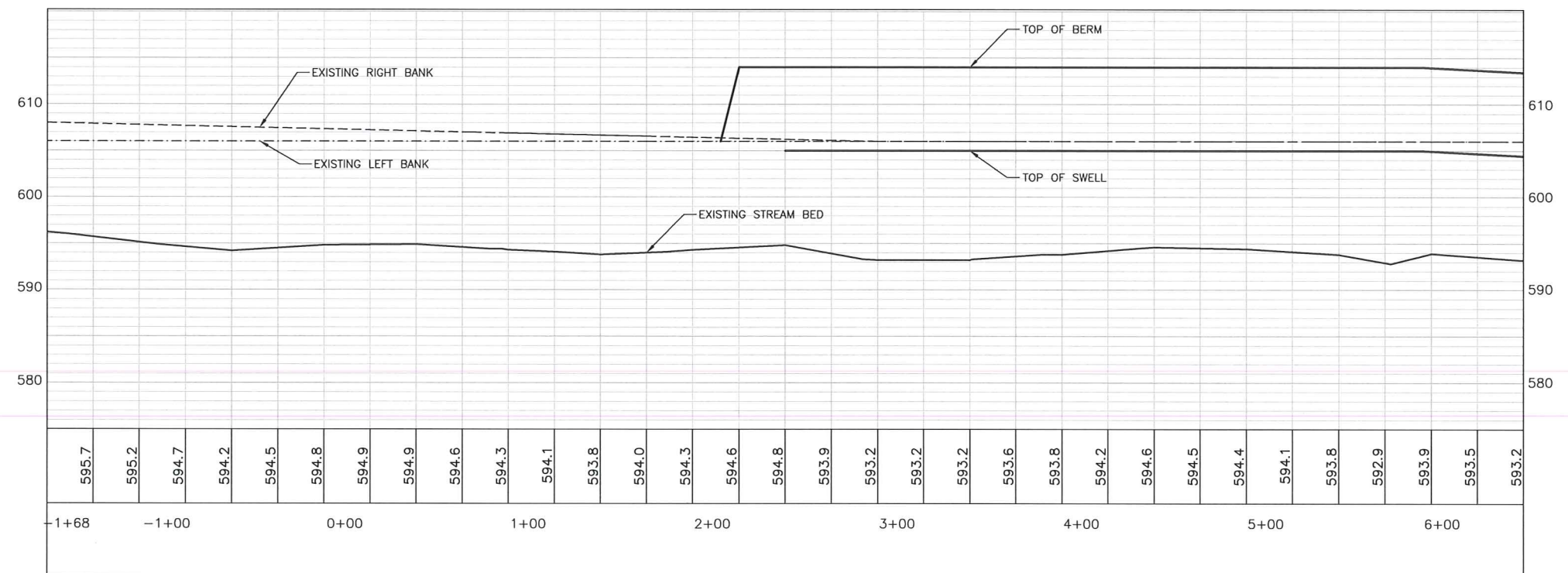
Charlotte North Carolina

CROSS SECTIONS
STA. 10+43
STA. 11+07

0 1" 2"

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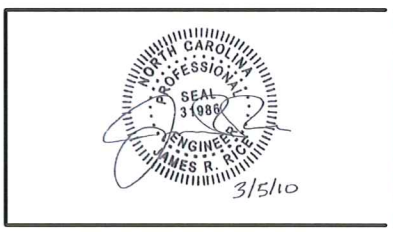


All profile elevations are within allowable tolerance



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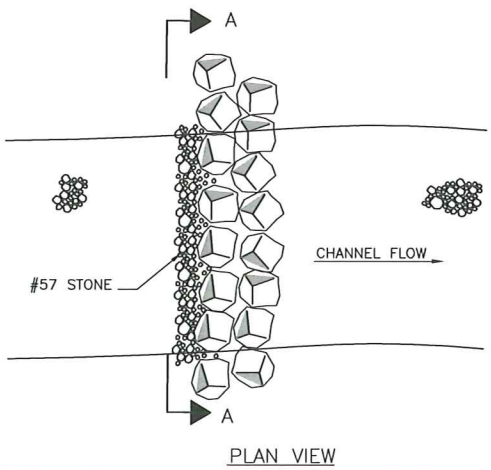
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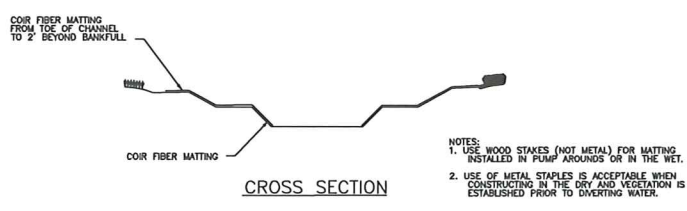
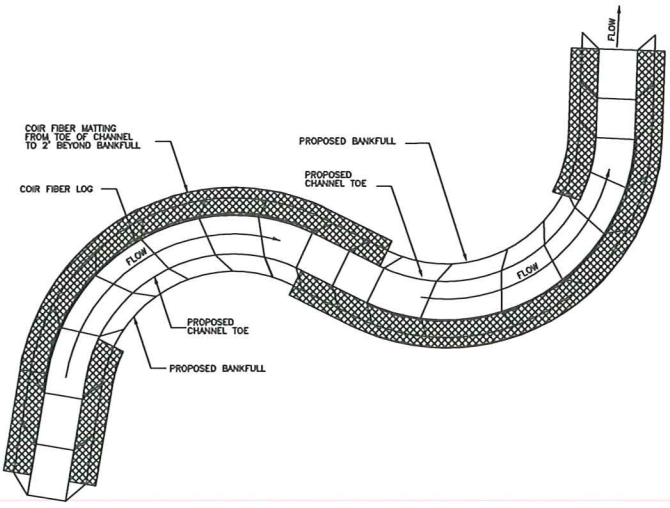
LONGITUDINAL PROFILE SECTION

0 1" 2"

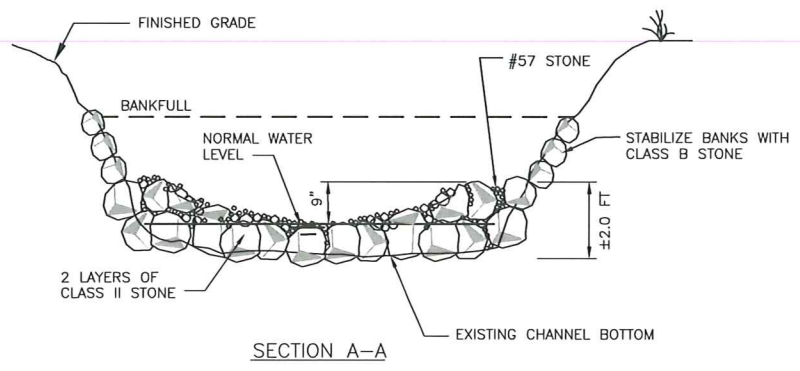
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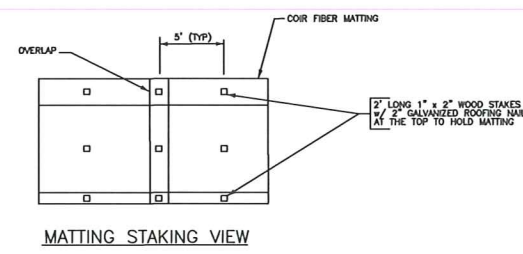
PLAN VIEW



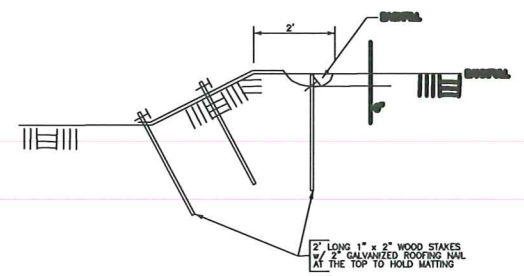
CROSS SECTION



SECTION A-A



MATTING STAKING VIEW



SECTION A-A

TYPICAL MATTING LOCATION
NTS

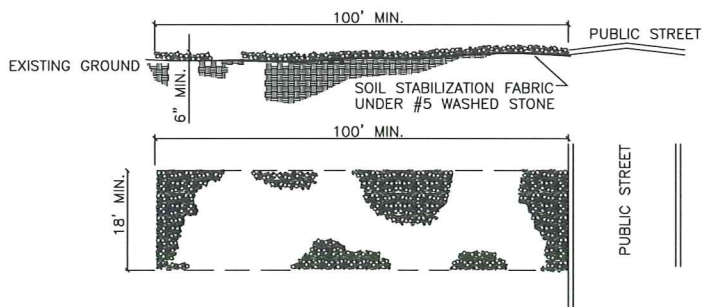
TEMPORARY ROCK SILT CHECK

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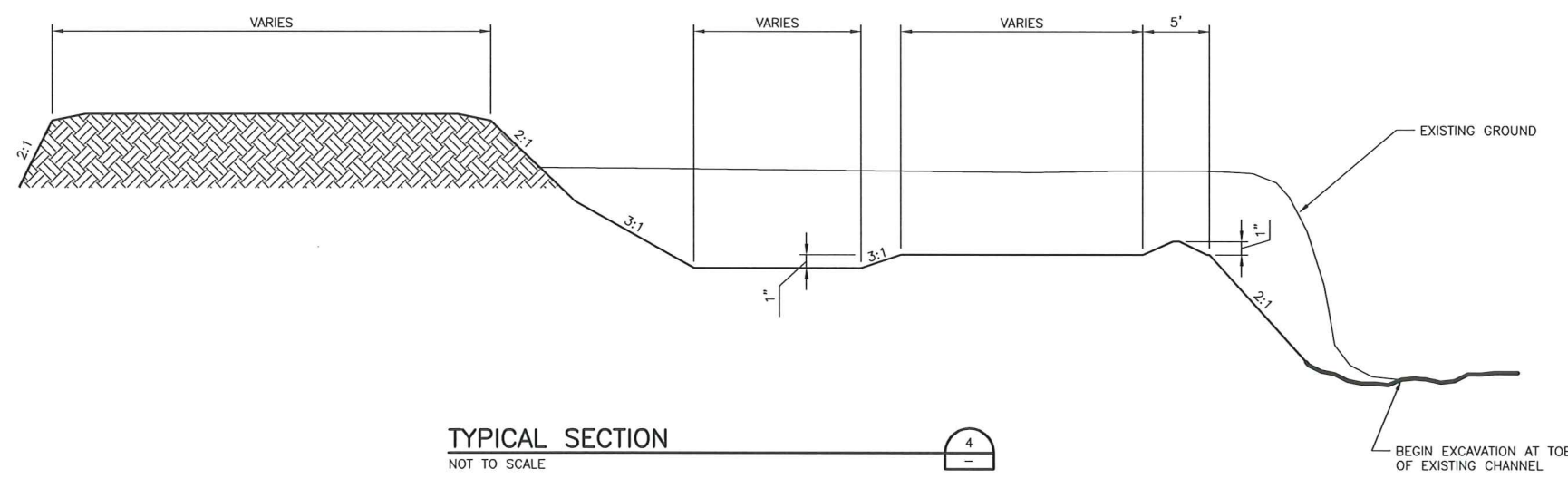
NOTES:

1. A STABILIZED ENTRANCE PAD OF #5 WASHED STONE OR RAIL ROAD BALLAST SHALL BE LOCATED WHERE TRAFFIC WILL ENTER OR LEAVE THE CONSTRUCTION SITE ONTO A PUBLIC STREET.
2. FILTER FABRIC OR COMPACTED CRUSHER RUN STONE SHALL BE USED AS A BASE FOR THE CONSTRUCTION ENTRANCE.
3. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC STREETS OR EXISTING PAVEMENT. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS WARRANT AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
4. ANY SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC STREETS MUST BE REMOVED IMMEDIATELY.
5. WHEN APPROPRIATE, WHEELS MUST BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTERING A PUBLIC STREET. WHEN WASHING IS REQUIRED, IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT BASIN SEE STD. NO. 30.11B.



TEMPORARY GRAVEL CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE



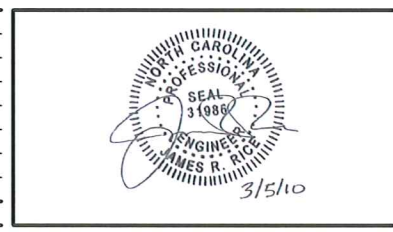
TYPICAL SECTION

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STANDARD DETAILS

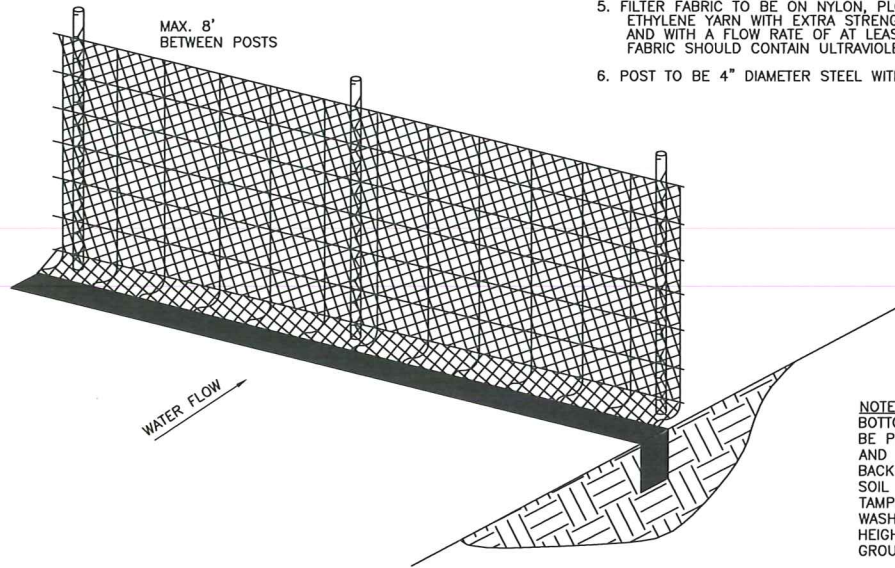
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SCALE	AS NOTED		

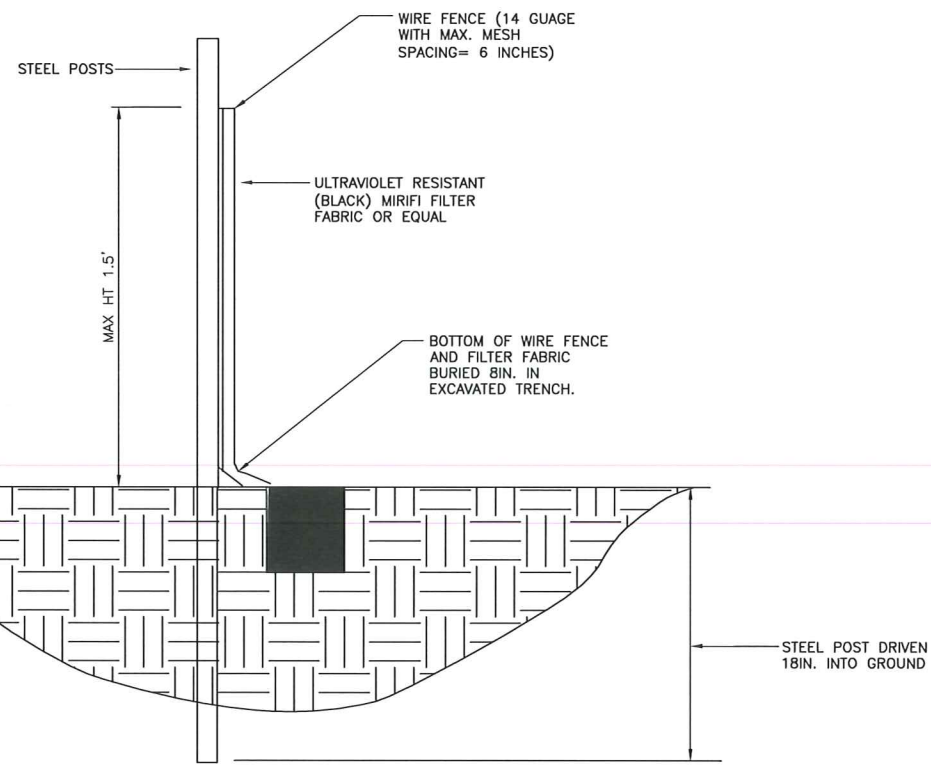
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CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT SEDIMENT FENCE ON LOW SIDE OF TOPSOIL STOCKPILE TO PREVENT SEDIMENT FROM BEING WASHED INTO THE DRAINAGE SYSTEM. FENCE TO EXTEND AROUND APPROXIMATELY 70% OF THE PERIMETER OF THE STOCKPILE.
2. LOCATE POSTS DOWNSLOPE OF FABRIC TO HELP SUPPORT FENCING.
3. BURY TOE OF FENCE APPROXIMATELY 8" DEEP TO PREVENT UNDERCUTTING.
4. WHEN JOINTS ARE NECESSARY, SECURELY FASTEN THE FABRIC AT A SUPPORT POST WITH OVERLAP TO THE NEXT POST.
5. FILTER FABRIC TO BE ON NYLON, PLOYESTER, PROPYLENE OR ETHYLENE YARN WITH EXTRA STRENGTH-50LB/ LIN. IN. (MINIMUM) AND WITH A FLOW RATE OF AT LEAST 0.3 GAL./SQFT / MINUTE. FABRIC SHOULD CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS.
6. POST TO BE 4" DIAMETER STEEL WITH A MINIMUM LENGTH OF 4'.

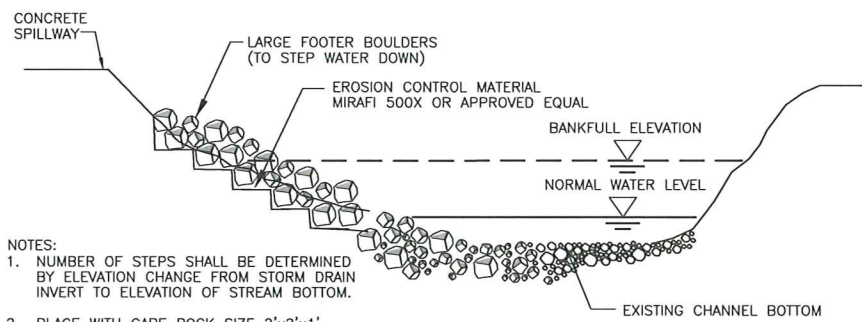


NOTE:
BOTTOM OF FILTER MUST BE PLACED IN TRENCH AND SECURED BY EITHER BACK-FILLING WITH SOIL MATERIAL AND TAMPING OR BY PLACING WASHED STONE TO A HEIGHT OF 6IN. ABOVE GROUND LEVEL.



SILT FENCE DETAIL

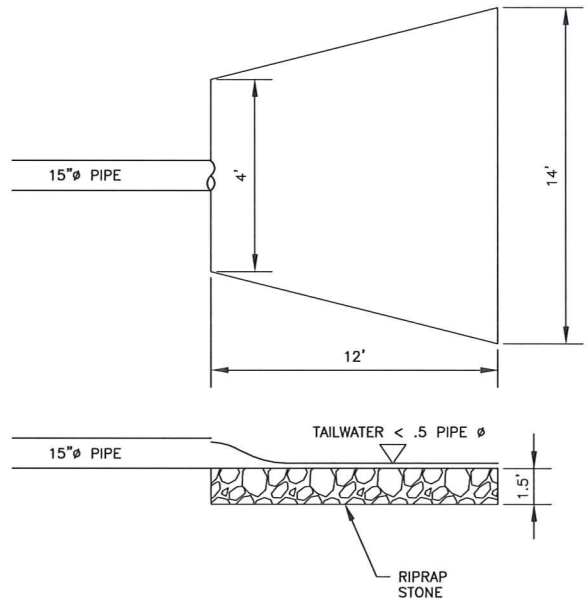
NOT TO SCALE



- NOTES:
1. NUMBER OF STEPS SHALL BE DETERMINED BY ELEVATION CHANGE FROM STORM DRAIN INVERT TO ELEVATION OF STREAM BOTTOM.
 2. PLACE WITH CARE ROCK SIZE 2'x2'x1'

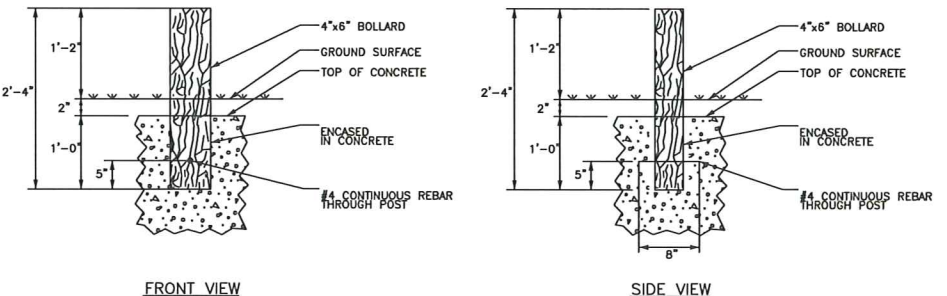
STEP-DOWN CHANNEL

NOT TO SCALE



STORM DRAIN OUTFALL PROTECTION

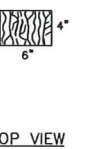
NOT TO SCALE



- NOTES:
1. BASE DIMENSIONS: STANDARD 4"x6" POST
 2. SIZE FOOTER HOLE TO ACCOMMODATE 1 CUBIC FOOT OF CONCRETE AND WOODEN POST.

BOLLARD DETAIL

NOT TO SCALE



TOP VIEW

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ISSUE	DATE	DESCRIPTION
05/2008		PRELIMINARY
05/2005		PRELIMINARY (MAU)
04/2004		PRELIMINARY (JMP)

PROJECT MANAGER	CHRIS MATTHEWS
	DASA CROWELL, PE
PROJECT NUMBER	0977021-018

NC Wetlands Restoration Program
SCO# - 01-05487-01
Irwin Creek
Stream Restoration

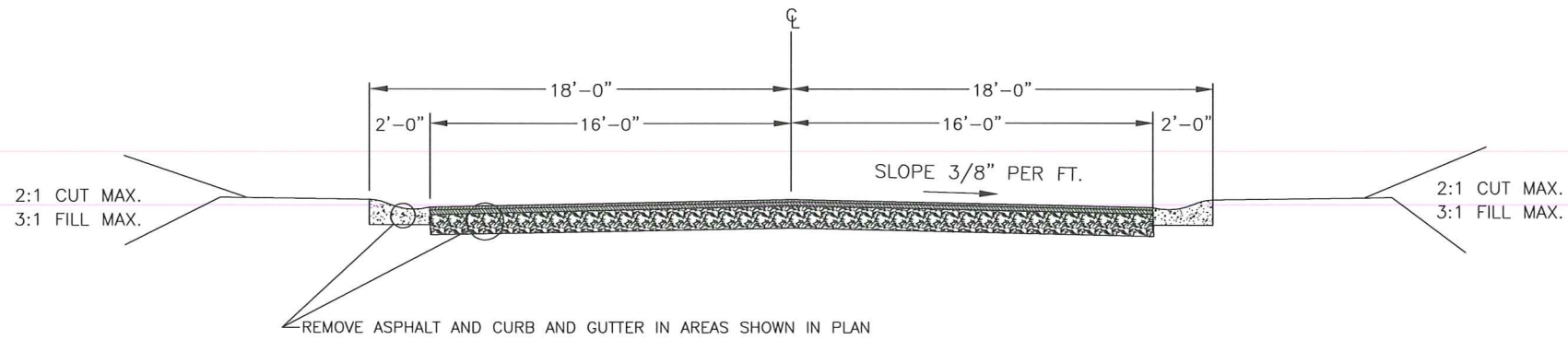
Charlotte North Carolina

STANDARD DETAILS

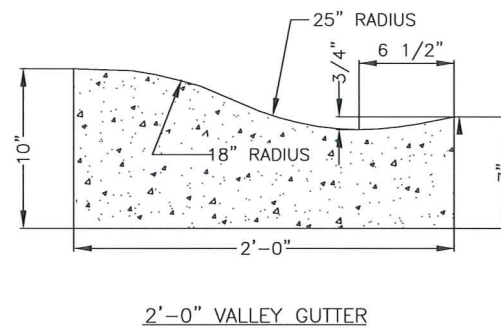
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SCALE	AS NOTED		

ABELINE ROAD ASPHALT PAVEMENT REMOVAL

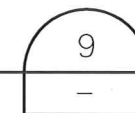


ABELINE ROAD CURB AND GUTTER INSTALLATION



ABELINE ROAD ALTERATIONS DETAIL

NTS

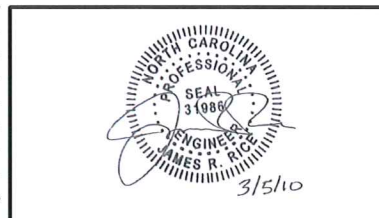


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ISSUE	DATE	DESCRIPTION
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PROJECT MANAGER	CHRIS MATTHEWS DASA CROWELL, PE
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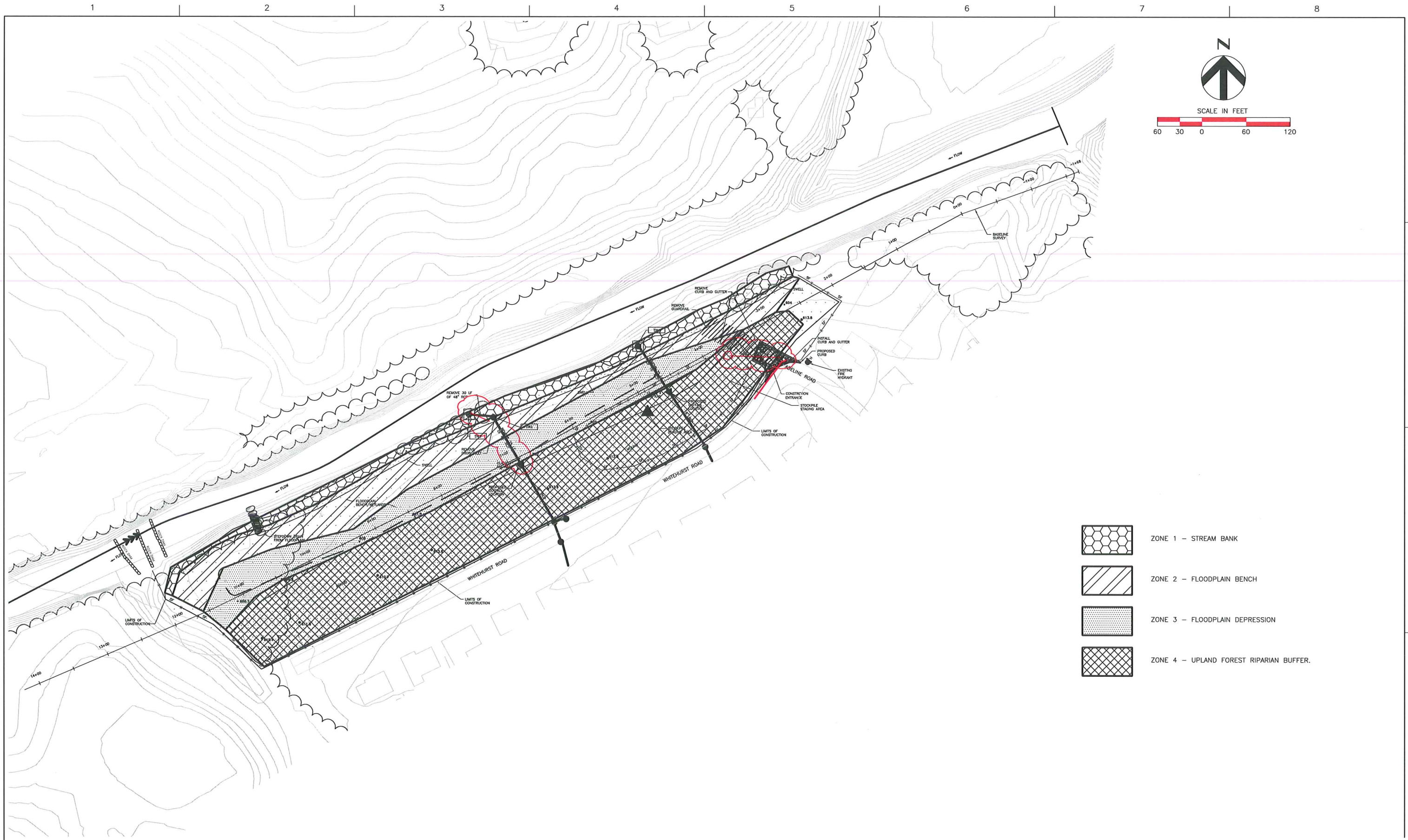
Charlotte North Carolina





STANDARD DETAILS

0 1" 2" SCALE AS NOTED

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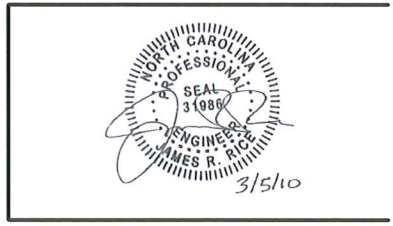


-  ZONE 1 - STREAM BANK
-  ZONE 2 - FLOODPLAIN BENCH
-  ZONE 3 - FLOODPLAIN DEPRESSION
-  ZONE 4 - UPLAND FOREST RIPARIAN BUFFER.




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PROJECT MANAGER	CHRIS MATTHEWS DASA CROWELL, PE
PROJECT NUMBER	0977021-018

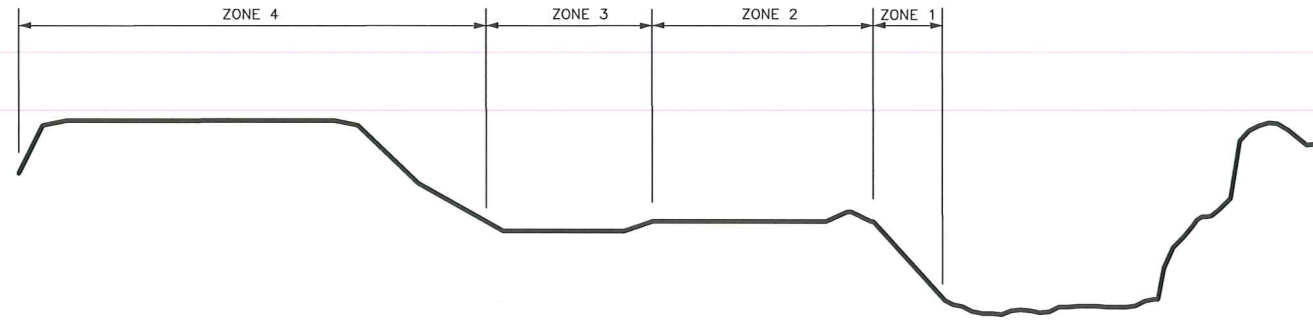


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Irwin Creek
Stream Restoration

Charlotte North Carolina

PLANTING PLAN			FILENAME	01L-01.dwg	SHEET
SCALE	AS NOTED		L-1		

PLANTING DETAILS



ZONE 1

Live Stakes

Species Name	Common Name
Cornus amomum	Silky dogwood
Salix nigra	Black willow
Salix sericea	Silky willow
Sambucus canadensis	Elderberry

To be installed approx. 3' on center (4840 stakes/acre)

ZONE 2

Containerized /Plugs

Species Name	Common Name
Alnus serrulata	Tag alder
Aronia arbutifolia	Chokeberry
Callicarpa americana	Beautyberry
Cephalanthus occidentalis	Button bush
Ilex verticillata	Winterberry
Itea virginica	Virginia willow
Viburnum nudum	Possumhaw

A minimum of 5 out of the 7 species to be installed approx. 15' on center. 30-40% container, the remainder to be plugs.

ZONE 3

Bare Root

Species Name	Common Name
Betula nigra	River birch
Fraxinus pennsylvanica	Green Ash
Itea virginica	Virginia willow
Xanthoxhiza simplicissima	Yellowroot
Cornus amomum	Silky dogwood
Cephalanthus occidentalis	Buttonbush
Salix nigra	Black willow
Sambucus canadensis	Elderberry

A minimum of 5 out of the 8 species to be installed approx. 8' on center (680 bare roots/acre)

ZONE 4

Bare Root

Species Name	Common Name
Liquidambar styraciflua	Sweet gum
Liriodendron tulipifera	Yellow poplar
Acer rubrum	Red maple
Fraxinus pennsylvanica	White ash

To be installed approx. 10' on center. (680 bare roots/acre)

TEMPORARY SEEDING

Species Name	Common Name
Secale cereale	Rye grain (for cool season)
Pennisetum glaucum	Pearl millet (for warm season)

Applied at a rate of 50lbs per acre

Bare Root

Species Name	Common Name
Acer rubrum	Red maple
Betula nigra	River birch
Fraxinus pennsylvanica	Green Ash
Platanus occidentalis	Sycamore
Quercus nigra	Water oak
Quercus phellos	Willow oak

SEE SPECIAL PROVISIONS FOR SPECIFICATIONS

Permanent Seed Mix (Zones 1,2,3)

Species Name	Common Name
Andropogon gerardii	Big bluestem
Panicum clandestinum	Deertongue
Chasmanthium latifolium	River oats
Elymus virginicus	Virginia wildrye
Tripsacum dactyloides	Eastern gamma grass
Eragrostis spectabilis	Purple love grass
Juncus effusus	Soft rush

A minimum of 4 out of the 7 species applied at 40 lbs/acre

Permanent Seed Mix (Zones 4)

Species Name	Common Name
Tridens flavus	Purpletop tridens
Panicum virgatum	Switchgrass
Andropogon virginicus	Broomsedge bluestem
Sorghastrum nutans	Indian grass
Elymus virginicus	Virginia wildrye

A minimum of 4 out of the 5 species applied at 40 lbs/acre

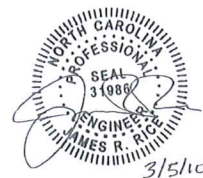
A minimum of 4 out of the 6 species to be installed approx. 8' on center (680 bare roots/acre)

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ISSUE	DATE	DESCRIPTION
	5/2008	PRELIMINARY
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PROJECT MANAGER	CHRIS MATTHEWS
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Charlotte North Carolina

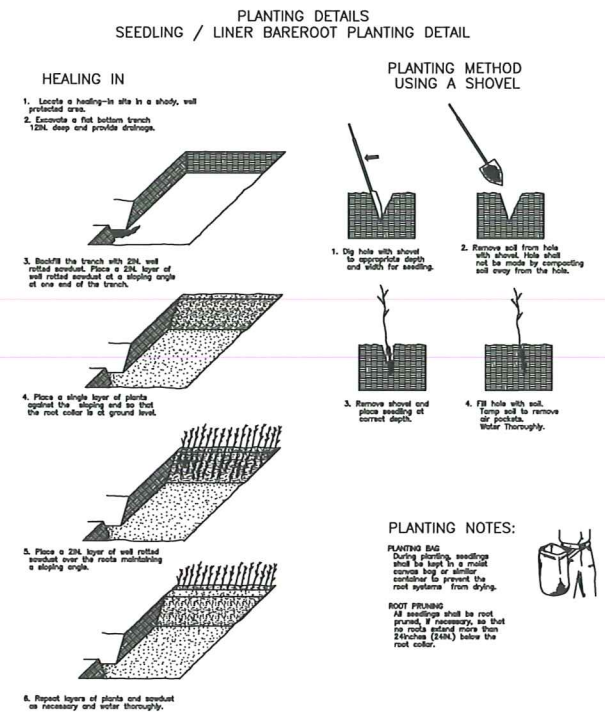
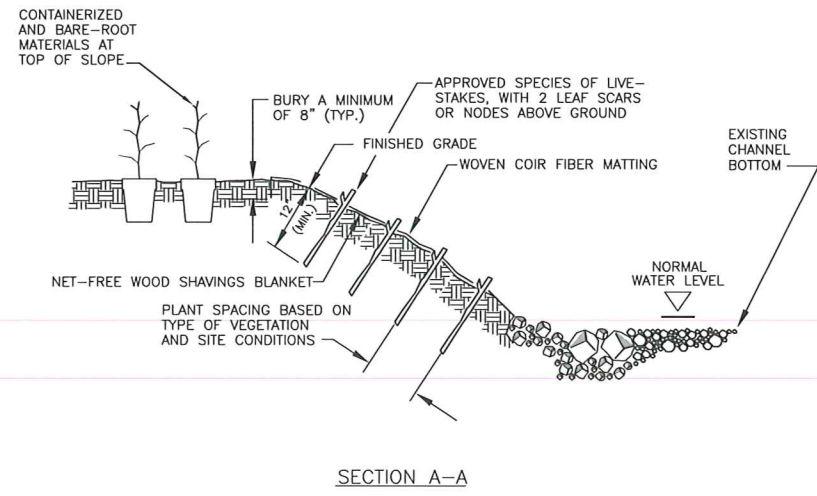
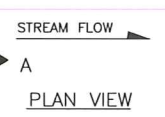
PLANTING PLAN DETAILS

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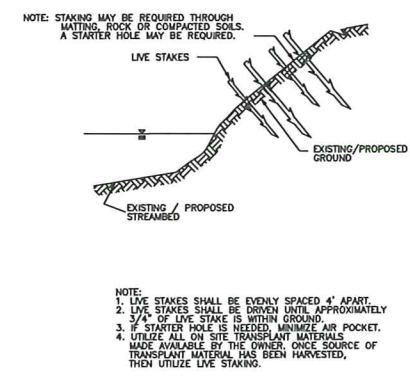
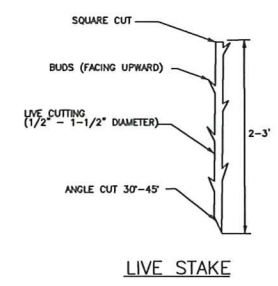


- PLANTING SCHEDULE**
1. STREAMBANK GRADING
 2. SOIL SURFACE ROUGHENING
 3. SEEDING OF GRASS COVER CROP WITH SPECIFIED SEED MIX
 4. INSTALLATION OF EROSION CONTROL BLANKET ACCORDING TO MANUFACTURER'S SPECIFICATIONS
 5. TOP PROTECTION INSTALLATION
 6. LIVE-STAKING
 7. CONTAINERIZED AND BARE-ROOT SEEDLING INSTALLATION



PLANTING DETAIL
NOT TO SCALE

PLANTING DETAIL
NTS

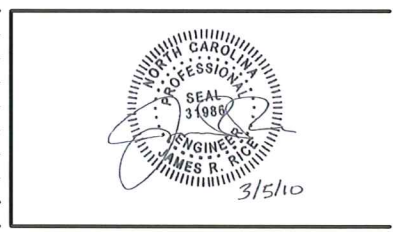


LIVE STAKE DETAIL
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Irwin Creek
Stream Restoration

Charlotte North Carolina

STANDARD DETAILS

0 1" 2"

FILENAME	01D-002.dwg	SHEET	L-3
SCALE	AS NOTED		