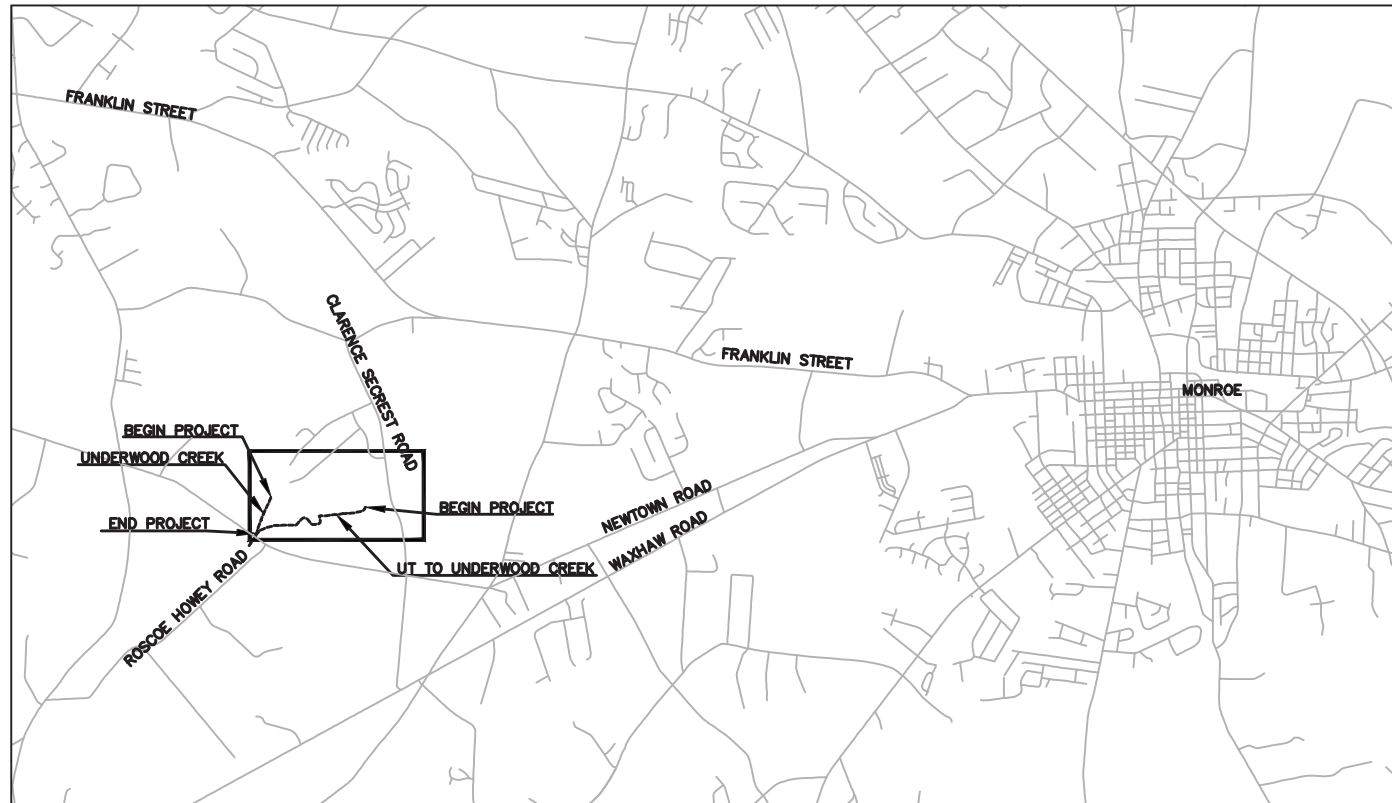


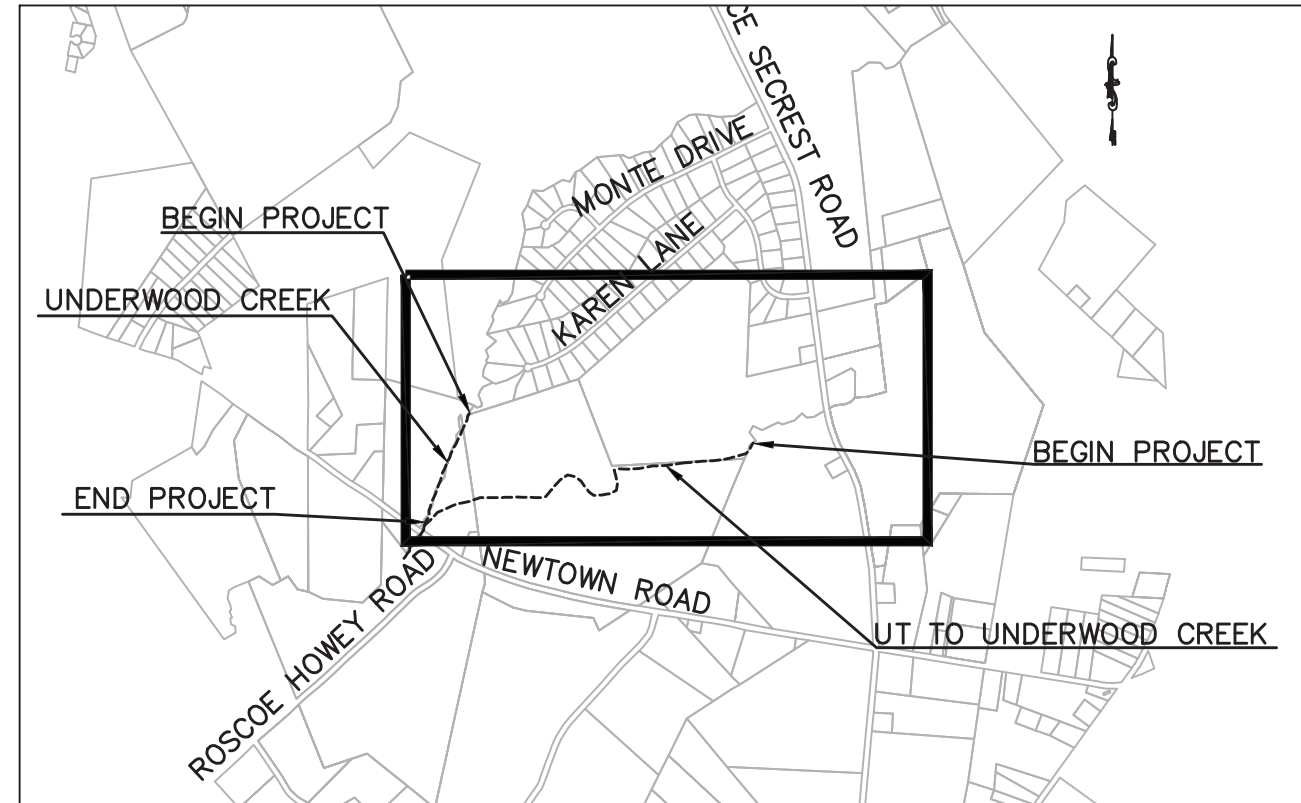
RECORD DRAWINGS FOR NEWTOWN STREAM AND WETLAND RESTORATION PROJECT UNION COUNTY, NORTH CAROLINA STATE CONTRACT NO:002025 RFP 16-001117



VICINITY MAP



VICINITY MAP



LOCATION MAP

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
T1	TITLE SHEET
L1	LEGENDS SYMBOLS AND SHEET KEY
TCS1	TYPICAL CONSTRUCTED CROSS SECTIONS
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PLN3-PLN6	STREAM PLAN UT TO UNDERWOOD CREEK
PRO1	PROFILE UNDERWOOD CREEK
PRO2-PRO3	PROFILES UT TO UNDERWOOD CREEK
PRO4	PROFILE TABLES
VP1	PLANT QUANTITIES
VP3	PLANTING PLAN LEGENDS AND KEY
VP4-VP8	PLANTING PLAN
ABF1-ABF5	UNDERWOOD CREEK FEMA AS-BUILT SURVEY AND CROSS SECTIONS

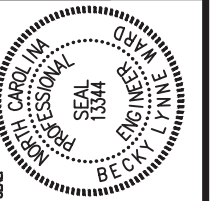
SURVEY DATA PROVIDED BY: R.B. Pharr & Associates
420 Hawthorne Lane
Charlotte NC 28204
PHONE: 704-376-2186
FAX: 704-333-8724

NATURAL SYSTEMS INVESTIGATION:

The Catena Group Inc.
410-B Millstone Drive
Hillsborough, NC 27278
PH: 919-732-1300
FAX: 919-732-1303

NCEP CONTACT: GUY PEARCE (919) 715-1656
WARD CONSULTING ENGINEERS CONTACT: BECKY WARD, PE (919) 870-0526
ENVIRONMENTAL BANC AND EXCHANGE CONTACT: NORTON WEBSTER (919) 829-9909

Ward Consulting Engineers, P.C.
FIRM LICENSE NO. C-2619
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Environmental Banc & Exchange
909 Capability Drive, Suite 3100
Raleigh NC 27606 Phone: (919) 829-9909
Fax: (919) 229-9913

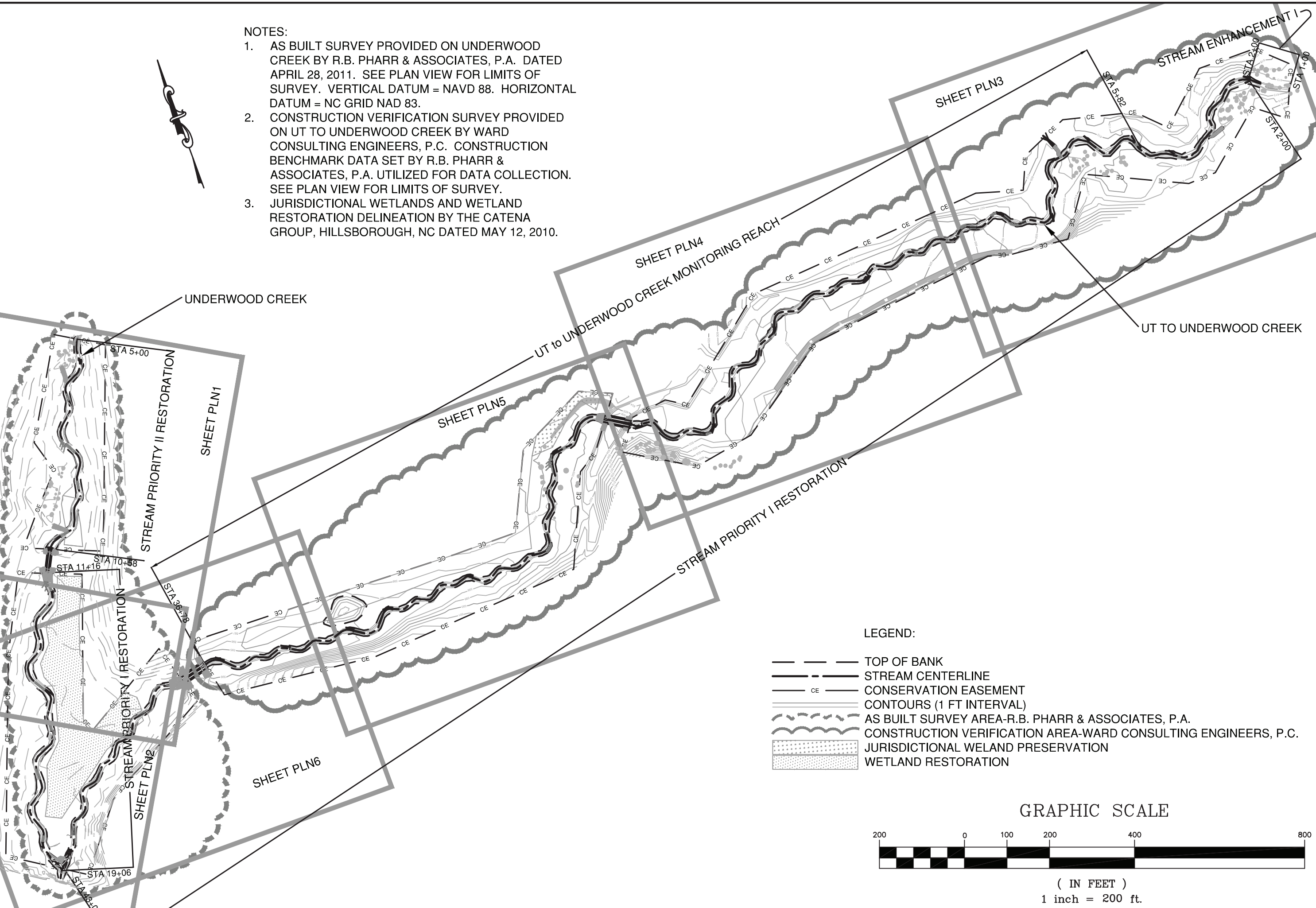


**NEWTOWN
TITLE SHEET
UNION COUNTY, NORTH CAROLINA**

DATE: 5-27-2011
REVISIONS:
PROJECT NAME: Newtown Creek
DWG NAME: Construction Cover Sheet
SCALE: NTS
RECORD DRAWINGS
SHEET NO.

NOTES:

1. AS BUILT SURVEY PROVIDED ON UNDERWOOD CREEK BY R.B. PHARR & ASSOCIATES, P.A. DATED APRIL 28, 2011. SEE PLAN VIEW FOR LIMITS OF SURVEY. VERTICAL DATUM = NAVD 88. HORIZONTAL DATUM = NC GRID NAD 83.
2. CONSTRUCTION VERIFICATION SURVEY PROVIDED ON UT TO UNDERWOOD CREEK BY WARD CONSULTING ENGINEERS, P.C. CONSTRUCTION BENCHMARK DATA SET BY R.B. PHARR & ASSOCIATES, P.A. UTILIZED FOR DATA COLLECTION. SEE PLAN VIEW FOR LIMITS OF SURVEY.
3. JURISDICTIONAL WETLANDS AND WETLAND RESTORATION DELINEATION BY THE CATENA GROUP, HILLSBOROUGH, NC DATED MAY 12, 2010.



LEGEND:

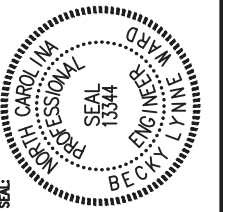
- — — — — TOP OF BANK
- — — — — STREAM CENTERLINE
- CE — — — CONSERVATION EASEMENT
- — — — — CONTOURS (1 FT INTERVAL)
- — — — — AS BUILT SURVEY AREA-R.B. PHARR & ASSOCIATES, P.A.
- — — — — CONSTRUCTION VERIFICATION AREA-WARD CONSULTING ENGINEERS, P.C.
- — — — — JURISDICTIONAL WETLAND PRESERVATION
- — — — — WETLAND RESTORATION

GRAPHIC SCALE



(IN FEET)
1 inch = 200 ft.

Ward Consulting Engineers, P.C.
 FIRM LICENSE NO C-2619 (919) 870-0526
 8388 Six Forks Rd, Suite 104 Raleigh, NC 27615-5083 FAX (919) 870-5359
 Environmental Banc & Exchange
 909 Capability Drive, Suite 3100 Raleigh, NC 27606 Phone: (919) 829-9909 Fax: (919) 229-9913

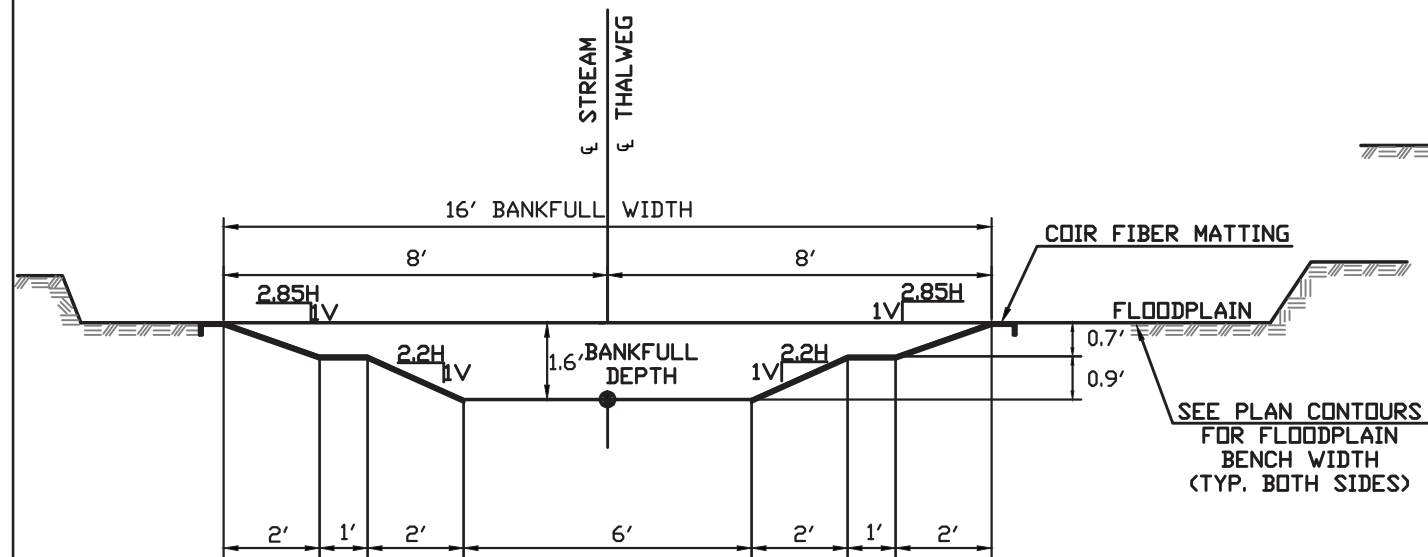


**NEWTOWN
 LEGENDS, SYMBOLS AND
 SHEET KEY
 UNION COUNTY, NORTH CAROLINA**

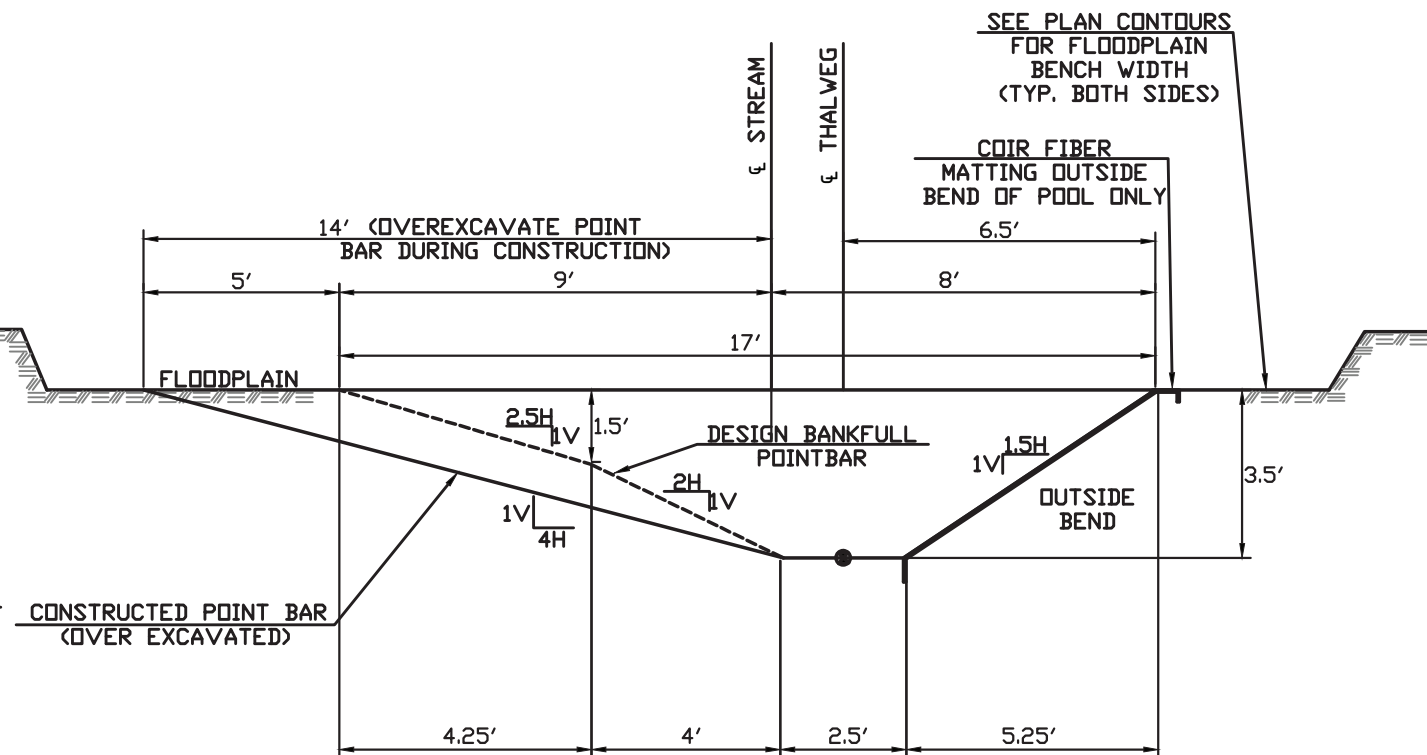
DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	EBX NEWTOWN
DWG NAME:	AS-BUILT
SCALE:	1" = 200'
RECORD DRAWINGS	
SHEET NO.	L1

NOTES:

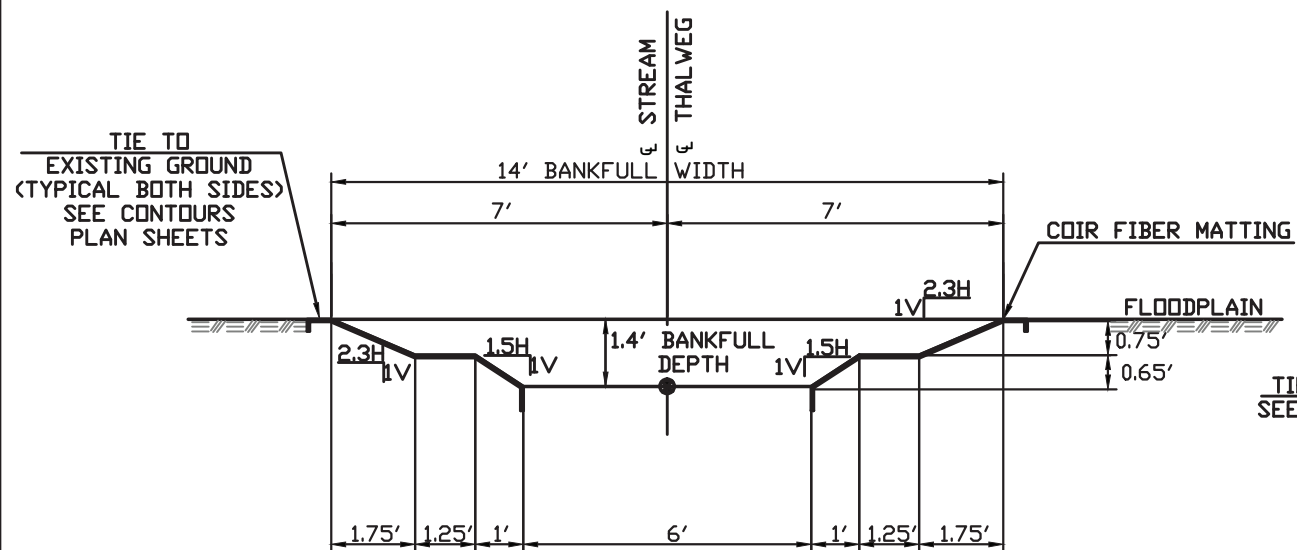
1. POOLS TO BE EXCAVATED BY CONTRACTOR ONE FOOT DEEPER TO ALLOW FOR SEDIMENTATION.
2. CONTRACTOR TO PROVIDE A SMOOTH TRANSITION BETWEEN THE RIFFLE AND POOL SECTIONS SHOWN BELOW.
3. CENTER LINE THALWEG. SEE STAKING PLAN SHEETS (SP) FOR VERTICAL ELEVATIONS AND HORIZONTAL LAYOUTS.
4. ϵ OF STREAM FOR HORIZONTAL LAYOUT AND ϵ OF THALWEG ARE AT DIFFERENT LOCATIONS IN POOL SECTIONS.
5. USE 700 GRAM COIR FIBER MATTING BLANKET WESTERN EXCELSIOR CORPORATION COIR MAT 700 OR APPROVED EQUAL.



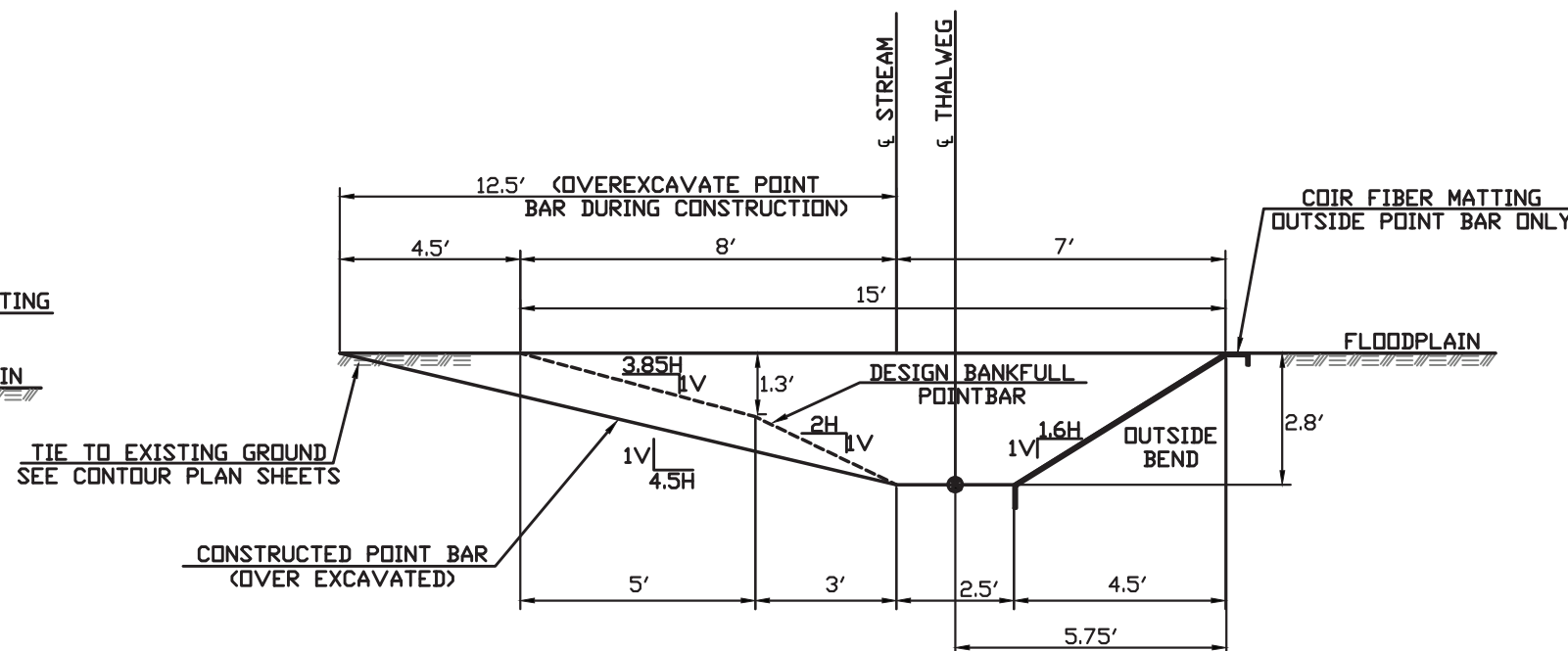
1 PROPOSED RIFFLE SECTION (UNDERWOOD CREEK)
SCALE: NOT TO SCALE (PRIORITY TWO RESTORATION)



2 PROPOSED POOL SECTION (UNDERWOOD CREEK)
SCALE: NOT TO SCALE (PRIORITY TWO RESTORATION)



3 PROPOSED RIFFLE SECTION (UT-UNDERWOOD CREEK)
SCALE: NOT TO SCALE (PRIORITY ONE RESTORATION)



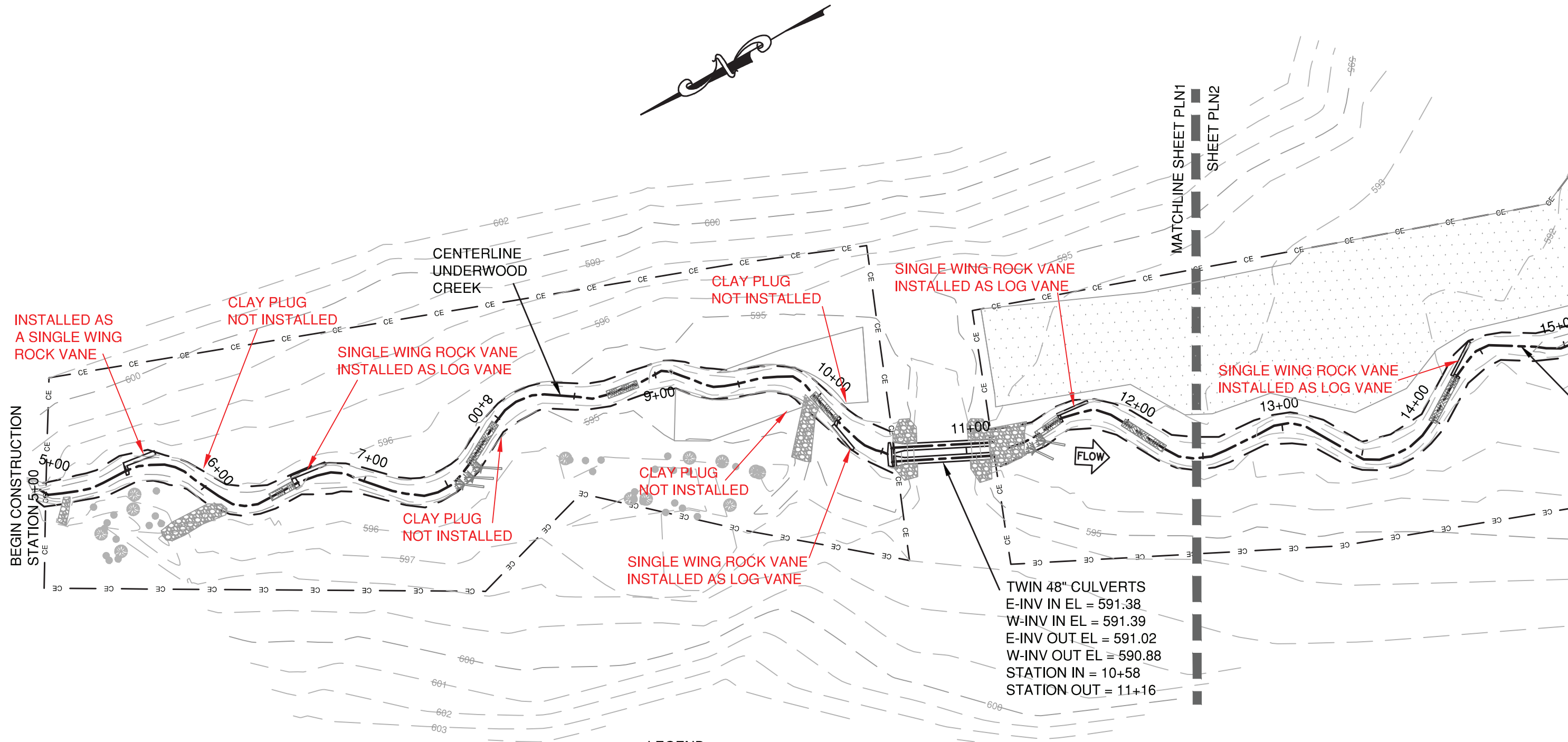
4 PROPOSED POOL SECTION (UT-UNDERWOOD CREEK)
SCALE: NOT TO SCALE (PRIORITY ONE RESTORATION)

Ward Consulting Engineers, P.C.
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Environmental Banc & Exchange
909 Capability Drive, Suite 3100
Raleigh NC 27606 Phone: (919) 829-9909
Fax: (919) 229-9913



NEWTOWN
TYPICAL CONSTRUCTED
CROSS SECTIONS WITH LEGENDS
UNION COUNTY, NORTH CAROLINA

DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	Newtown Creek
DWG NAME:	Typical Cross Sections
SCALE:	NTS
RECORD DRAWINGS	
SHEET NO.	



INSTALLED AS A SINGLE WING ROCK VANE

CLAY PLUG NOT INSTALLED

SINGLE WING ROCK VANE INSTALLED AS LOG VANE

CLAY PLUG NOT INSTALLED

CLAY PLUG NOT INSTALLED

SINGLE WING ROCK VANE INSTALLED AS LOG VANE

CLAY PLUG NOT INSTALLED

SINGLE WING ROCK VANE INSTALLED AS LOG VANE

SINGLE WING ROCK VANE INSTALLED AS LOG VANE

TWIN 48" CULVERTS
 E-INV IN EL = 591.38
 W-INV IN EL = 591.39
 E-INV OUT EL = 591.02
 W-INV OUT EL = 590.88
 STATION IN = 10+58
 STATION OUT = 11+16

BEGIN CONSTRUCTION STATION 5+00

CENTERLINE UNDERWOOD CREEK

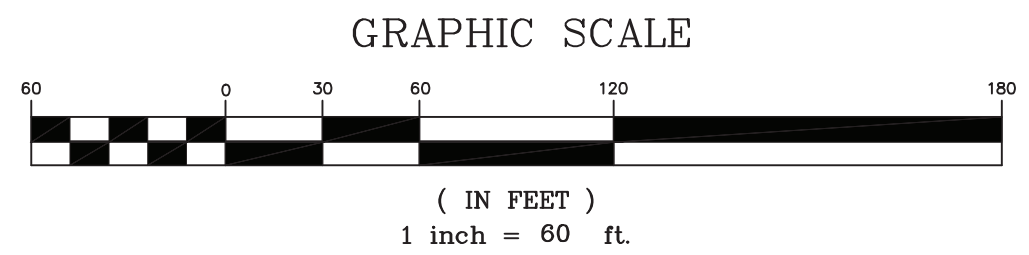
MATCHLINE SHEET PLN1
 SHEET PLN2

FLOW

LEGEND:

- AS-BUILT CONTOURS RBPA (1 FT INTERVALS)
- - - AS-BUILT TOP OF BANK
- AS-BUILT THALWEG
- | | | 2+00 DESIGN CENTERLINE STATIONING
- CE CONSERVATION EASEMENT
- [Pattern] WETLAND RESTORATION
- [Pattern] WETLAND PRESERVATION
- [Symbol] AS-BUILT STRUCTURE
- [Symbol] AS-BUILT CONSTRUCTED RIFFLE
- [Symbol] AS-BUILT GRADE TRANSITION STRUCTURE
- [Symbol] ROOT WADS
- [Symbol] ROCK TOE
- [Symbol] BRUSH TOE
- [Symbol] EARTHEN BERM
- [Symbol] BRUSH WETLAND EDGE
- [Symbol] RIP RAP PROTECTION

NOTE: ASBUILT SURVEY DATA THIS SHEET PROVIDED BY R.B. PHARR & ASSOCIATES, P.A.

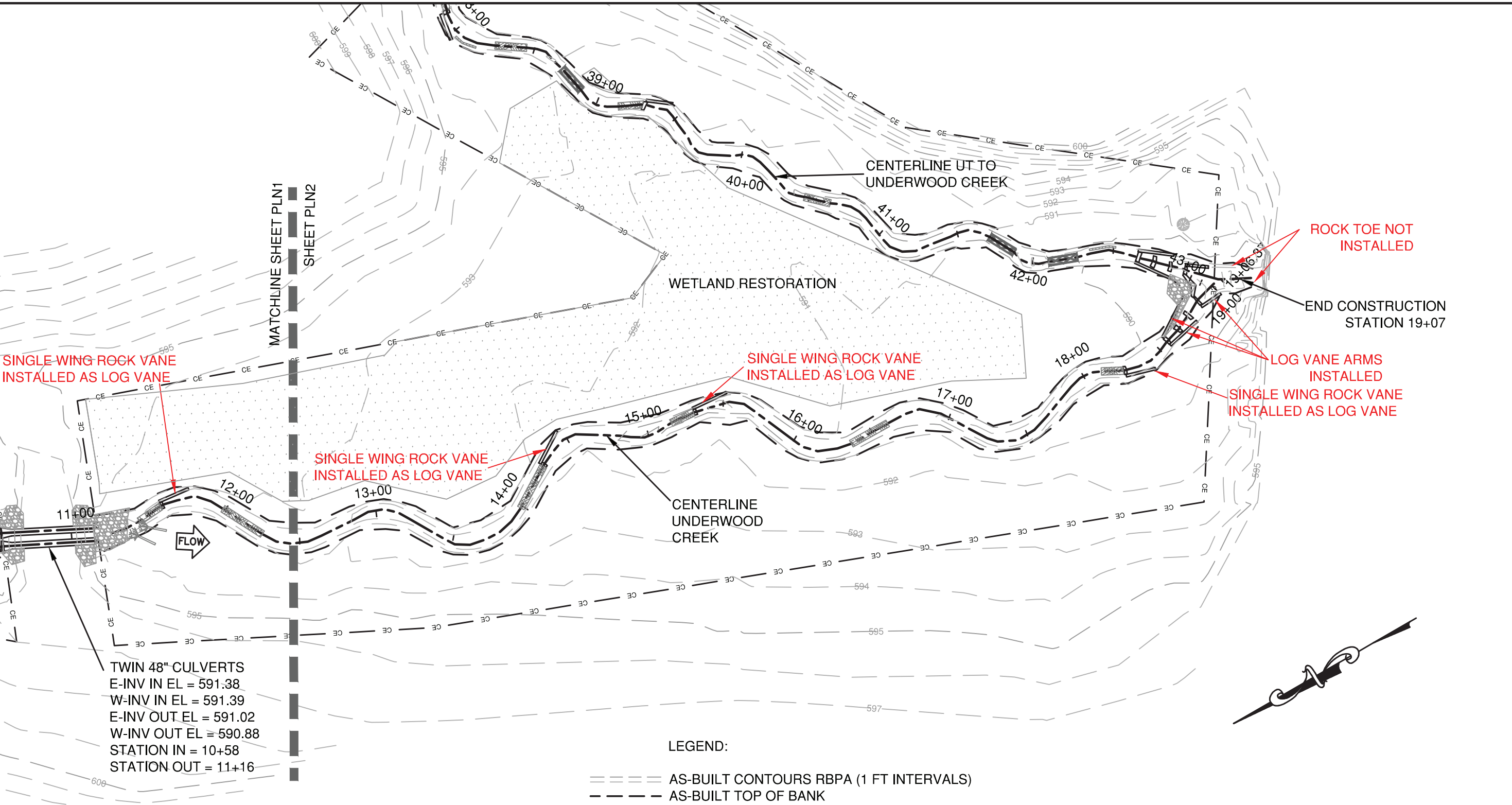


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**NEWTOWN
 UNDERWOOD CREEK
 UNION COUNTY, NORTH CAROLINA**

DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	EBX NEWTOWN
DWG NAME:	AS-BUILT
SCALE:	1" = 60'
RECORD DRAWINGS	
SHEET NO.	PLN1



SINGLE-WING ROCK VANE
INSTALLED AS LOG VANE

SINGLE WING ROCK VANE
INSTALLED AS LOG VANE

SINGLE WING ROCK VANE
INSTALLED AS LOG VANE

LOG VANE ARMS
INSTALLED
SINGLE WING ROCK VANE
INSTALLED AS LOG VANE

ROCK TOE NOT
INSTALLED

END CONSTRUCTION
STATION 19+07

TWIN 48" CULVERTS
E-INV IN EL = 591.38
W-INV IN EL = 591.39
E-INV OUT EL = 591.02
W-INV OUT EL = 590.88
STATION IN = 10+58
STATION OUT = 11+16

LEGEND:

- AS-BUILT CONTOURS RBPA (1 FT INTERVALS)
- - - AS-BUILT TOP OF BANK
- AS-BUILT THALWEG
- 2+00 | | DESIGN CENTERLINE STATIONING
- CE — CONSERVATION EASEMENT
- [Pattern] WETLAND RESTORATION
- [Pattern] WETLAND PRESERVATION
- [Symbol] AS-BUILT STRUCTURE
- [Symbol] AS-BUILT CONSTRUCTED RIFFLE
- [Symbol] AS-BUILT GRADE TRANSITION STRUCTURE
- [Symbol] ROOT WADS
- [Symbol] ROCK TOE
- [Symbol] BRUSH TOE
- [Symbol] EARTHEN BERM
- [Symbol] BRUSH WETLAND EDGE
- [Symbol] RIP RAP PROTECTION

NOTE: ASBUILT SURVEY DATA THIS SHEET
PROVIDED BY R.B. PHARR & ASSOCIATES, P.A.

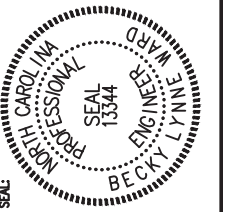
GRAPHIC SCALE



(IN FEET)
1 inch = 60 ft.

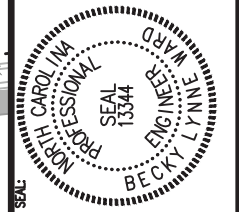
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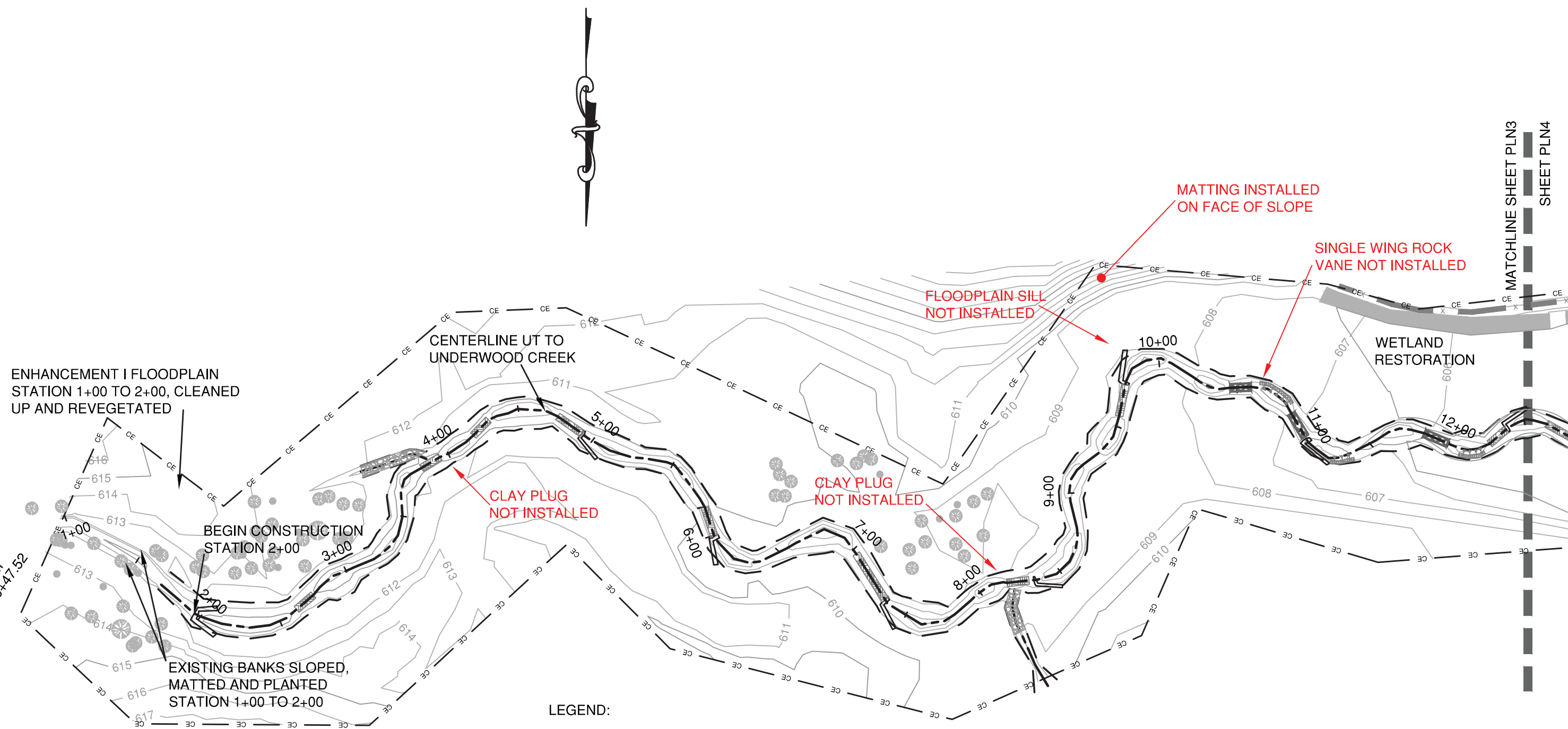
**NEWTOWN
UNDERWOOD CREEK**
UNION COUNTY, NORTH CAROLINA

DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	EBX NEWTOWN
DWG NAME:	AS-BUILT
SCALE:	1" = 60'
RECORD DRAWINGS	
SHEET NO.	



**NEWTOWN
 UT to UNDERWOOD CREEK
 UNION COUNTY, NORTH CAROLINA**

DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	EBX NEWTOWN
DWG NAME:	AS-BUILT
SCALE:	1" = 60'
RECORD DRAWINGS	
SHEET NO.	PLN3



ENHANCEMENT I FLOODPLAIN
 STATION 1+00 TO 2+00, CLEANED
 UP AND REVEGETATED

BEGIN CONSTRUCTION
 STATION 2+00

EXISTING BANKS SLOPED,
 MATTED AND PLANTED
 STATION 1+00 TO 2+00

CENTERLINE UT TO
 UNDERWOOD CREEK

MATting INSTALLED
 ON FACE OF SLOPE

FLOODPLAIN SILL
 NOT INSTALLED

SINGLE WING ROCK
 VANE NOT INSTALLED

CLAY PLUG
 NOT INSTALLED

CLAY PLUG
 NOT INSTALLED

WETLAND
 RESTORATION

LEGEND:

- AS-BUILT CONTOURS WCE (1 FT INTERVALS)
- AS-BUILT TOP OF BANK
- AS-BUILT THALWEG
- DESIGN CENTERLINE STATIONING
- CONSERVATION EASEMENT
- WETLAND RESTORATION
- WETLAND PRESERVATION
- AS-BUILT STRUCTURE
- AS-BUILT CONSTRUCTED RIFFLE
- AS-BUILT GRADE TRANSITION STRUCTURE
- ROOT WADS
- ROCK TOE
- BRUSH TOE
- EARTHEN BERM
- BRUSH WETLAND EDGE
- RIP RAP PROTECTION

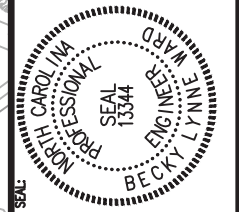
NOTE: ASBUILT CONSTRUCTION VERIFICATION
 SURVEY DATA THIS SHEET PROVIDED BY WARD
 CONSULTING ENGINEERS, P.C.

GRAPHIC SCALE



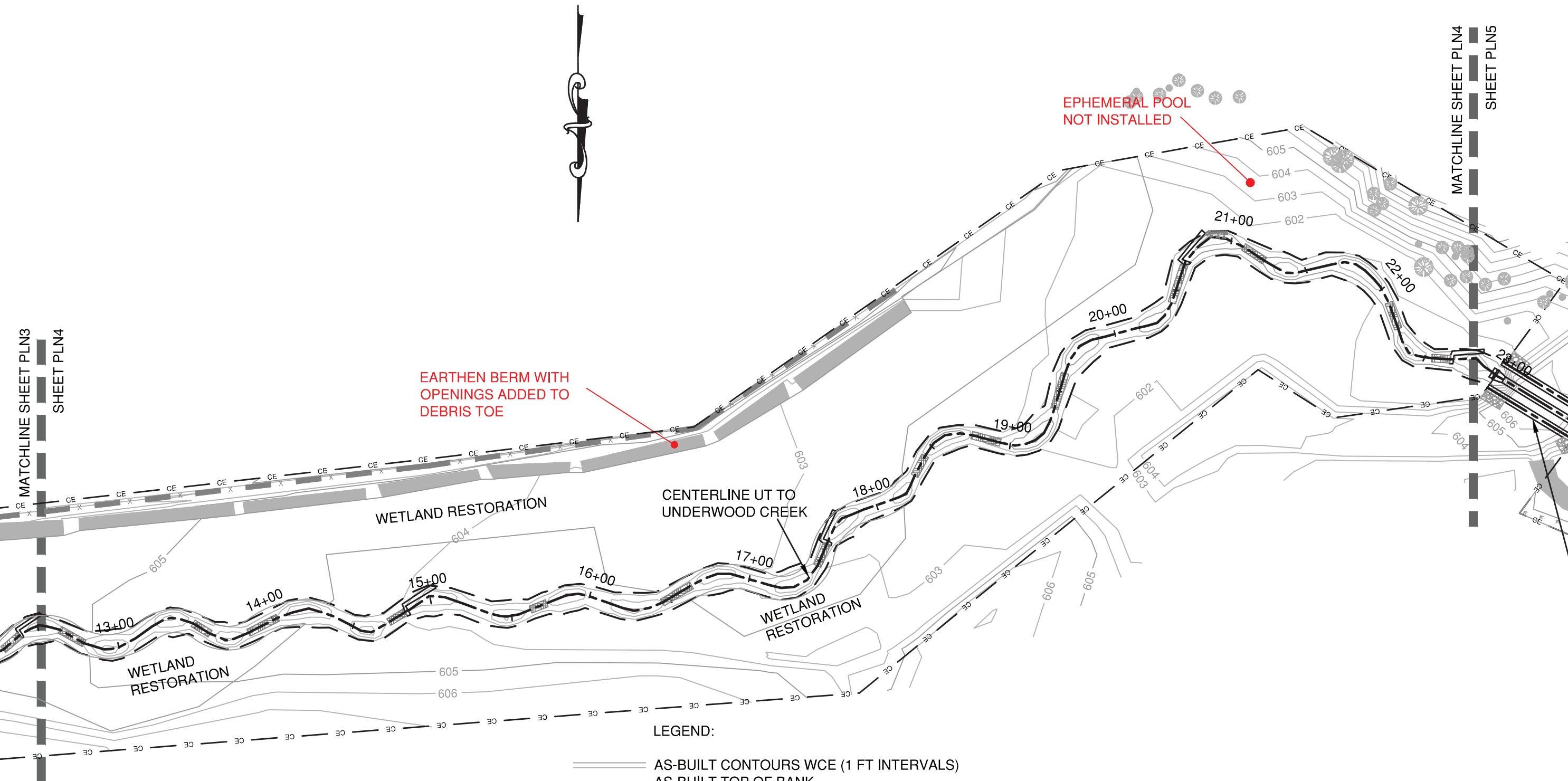
(IN FEET)
 1 inch = 60 ft.

MATCHLINE SHEET PLN3
 SHEET PLN4



**NEWTOWN
 UT to UNDERWOOD CREEK
 UNION COUNTY, NORTH CAROLINA**

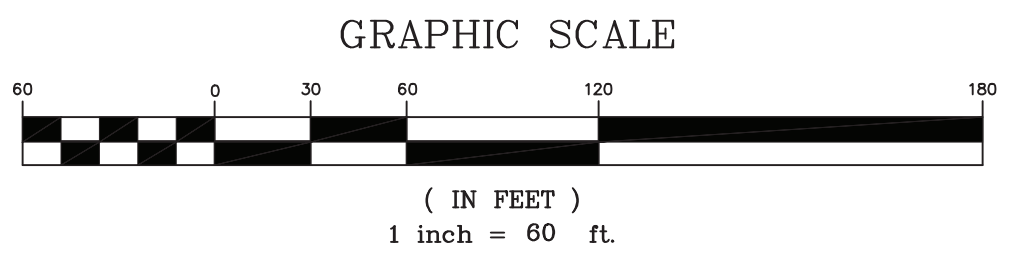
DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	EBX NEWTOWN
DWG NAME:	AS-BUILT
SCALE:	1" = 60'
RECORD DRAWINGS	
SHEET NO.	PLN4



LEGEND:

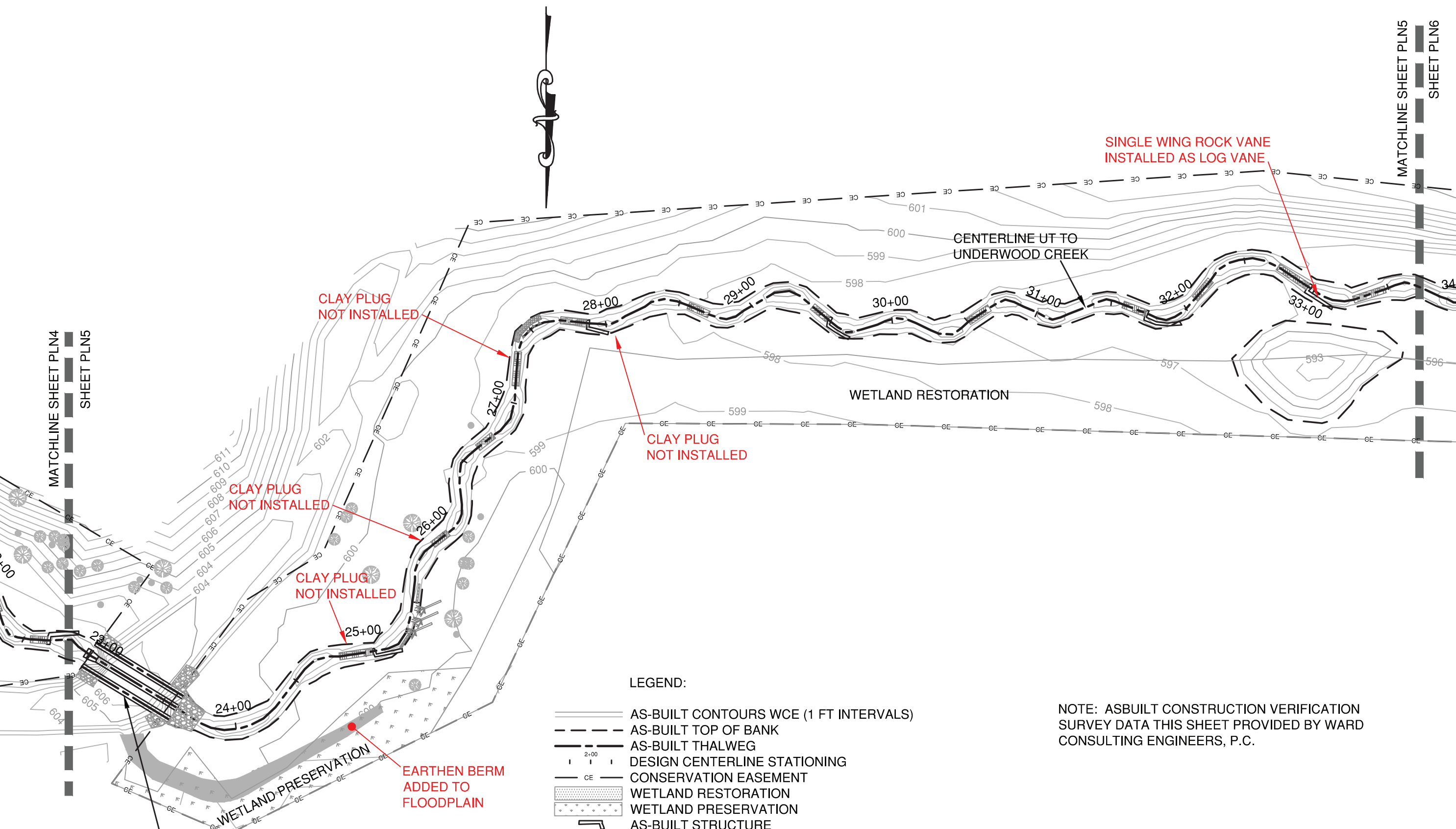
- AS-BUILT CONTOURS WCE (1 FT INTERVALS)
- AS-BUILT TOP OF BANK
- AS-BUILT THALWEG
- DESIGN CENTERLINE STATIONING
- CONSERVATION EASEMENT
- WETLAND RESTORATION
- WETLAND PRESERVATION
- AS-BUILT STRUCTURE
- AS-BUILT CONSTRUCTED RIFFLE
- AS-BUILT GRADE TRANSITION STRUCTURE
- ROOT WADS
- ROCK TOE
- BRUSH TOE
- EARTHEN BERM
- BRUSH WETLAND EDGE
- RIP RAP PROTECTION

NOTE: ASBUILT CONSTRUCTION VERIFICATION SURVEY DATA THIS SHEET PROVIDED BY WARD CONSULTING ENGINEERS, P.C.



MATCHLINE SHEET PLN4
SHEET PLN5

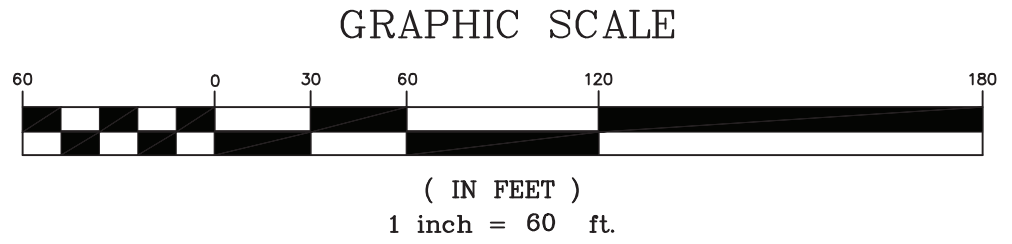
MATCHLINE SHEET PLN5
SHEET PLN6



CHANNEL 48" RCP STATION IN = 22+95, 64 LF
 FLOODPLAIN S-36" RCP STATION IN = 22+95, 64 LF
 FLOODPLAIN N-36" RCP STATION IN = 22+95, 64 LF
 48" INV IN = 598.34
 N-36" INV IN = 600.55
 S-36" INV IN = 600.55
 48" INV OUT = 597.79
 N-36" INV OUT = 600.00
 S-36" INV OUT = 600.00

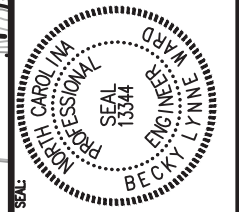
- LEGEND:
- AS-BUILT CONTOURS WCE (1 FT INTERVALS)
 - AS-BUILT TOP OF BANK
 - AS-BUILT THALWEG
 - DESIGN CENTERLINE STATIONING
 - CONSERVATION EASEMENT
 - WETLAND RESTORATION
 - WETLAND PRESERVATION
 - AS-BUILT STRUCTURE
 - AS-BUILT CONSTRUCTED RIFFLE
 - AS-BUILT GRADE TRANSITION STRUCTURE
 - ROOT WADS
 - ROCK TOE
 - BRUSH TOE
 - EARTHEN BERM
 - BRUSH WETLAND EDGE
 - RIP RAP PROTECTION

NOTE: ASBUILT CONSTRUCTION VERIFICATION SURVEY DATA THIS SHEET PROVIDED BY WARD CONSULTING ENGINEERS, P.C.



Ward Consulting Engineers, P.C.
 FIRM LICENSE NO C-2619
 8388 Six Forks Rd, Suite 104
 Raleigh, NC 27615-5083
 (919) 870-0526
 FAX (919) 870-5359




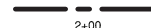

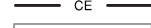











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 909 Capability Drive, Suite 3100
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**NEWTOWN
 UT to UNDERWOOD CREEK
 UNION COUNTY, NORTH CAROLINA**

DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	EBX NEWTOWN
DWG NAME:	AS-BUILT
SCALE:	1" = 60'
RECORD DRAWINGS	
SHEET NO.	PLN5

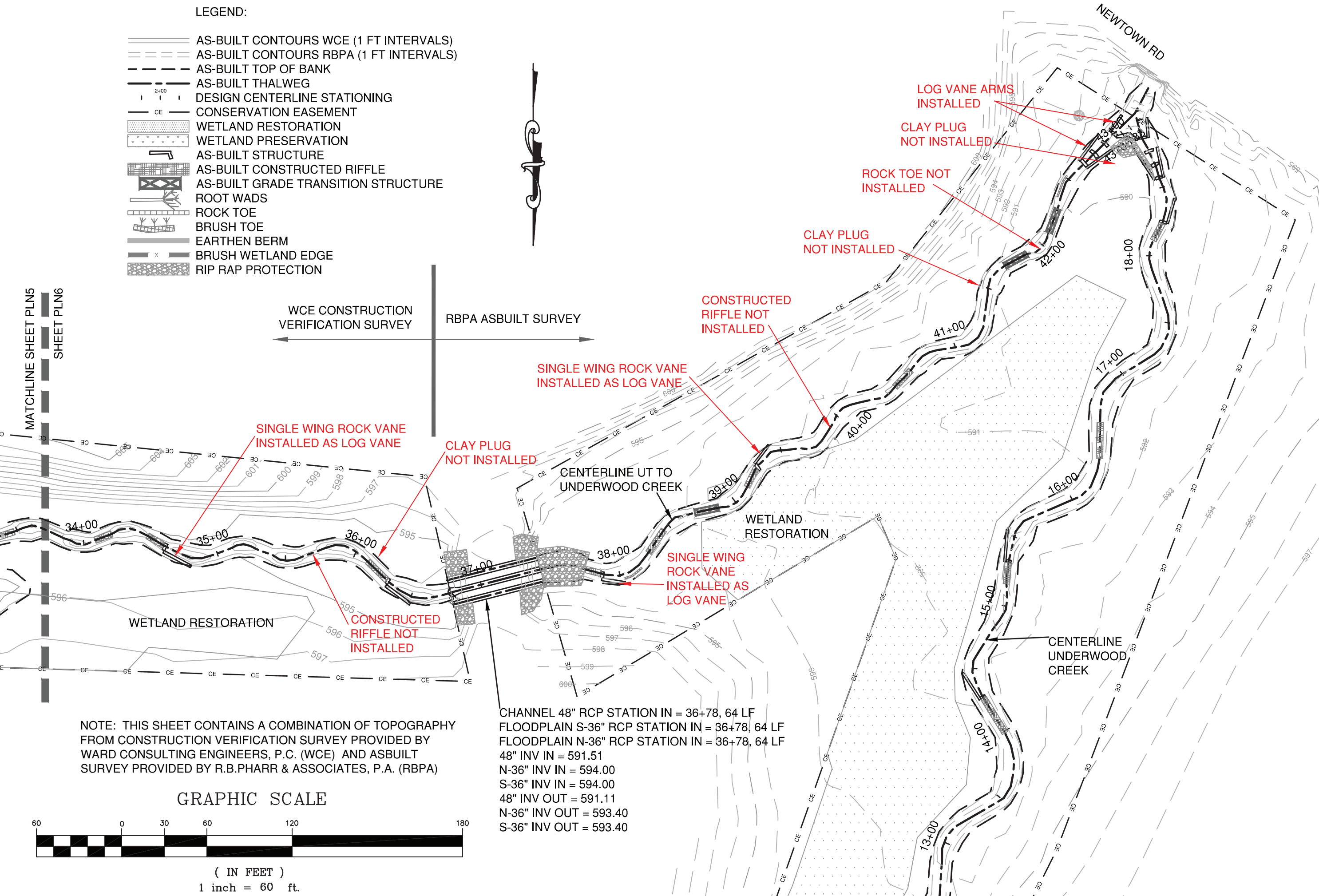
LEGEND:

-  AS-BUILT CONTOURS WCE (1 FT INTERVALS)
-  AS-BUILT CONTOURS RBPA (1 FT INTERVALS)
-  AS-BUILT TOP OF BANK
-  AS-BUILT THALWEG
-  DESIGN CENTERLINE STATIONING
-  CONSERVATION EASEMENT
-  WETLAND RESTORATION
-  WETLAND PRESERVATION
-  AS-BUILT STRUCTURE
-  AS-BUILT CONSTRUCTED RIFFLE
-  AS-BUILT GRADE TRANSITION STRUCTURE
-  ROOT WADS
-  ROCK TOE
-  BRUSH TOE
-  EARTHEN BERM
-  BRUSH WETLAND EDGE
-  RIP RAP PROTECTION



← WCE CONSTRUCTION VERIFICATION SURVEY
 RBPA ASBUILT SURVEY →

MATCHLINE SHEET PLN5
SHEET PLN6



NOTE: THIS SHEET CONTAINS A COMBINATION OF TOPOGRAPHY FROM CONSTRUCTION VERIFICATION SURVEY PROVIDED BY WARD CONSULTING ENGINEERS, P.C. (WCE) AND ASBUILT SURVEY PROVIDED BY R.B.PHARR & ASSOCIATES, P.A. (RBPA)

CHANNEL 48" RCP STATION IN = 36+78, 64 LF
 FLOODPLAIN S-36" RCP STATION IN = 36+78, 64 LF
 FLOODPLAIN N-36" RCP STATION IN = 36+78, 64 LF
 48" INV IN = 591.51
 N-36" INV IN = 594.00
 S-36" INV IN = 594.00
 48" INV OUT = 591.11
 N-36" INV OUT = 593.40
 S-36" INV OUT = 593.40

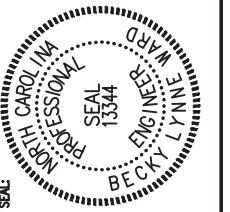
GRAPHIC SCALE



(IN FEET)
 1 inch = 60 ft.

Ward Consulting Engineers, P.C.
 FIRM LICENSE NO C-2619
 8368 Six Forks Rd, Suite 104
 Raleigh, NC 27615-5083
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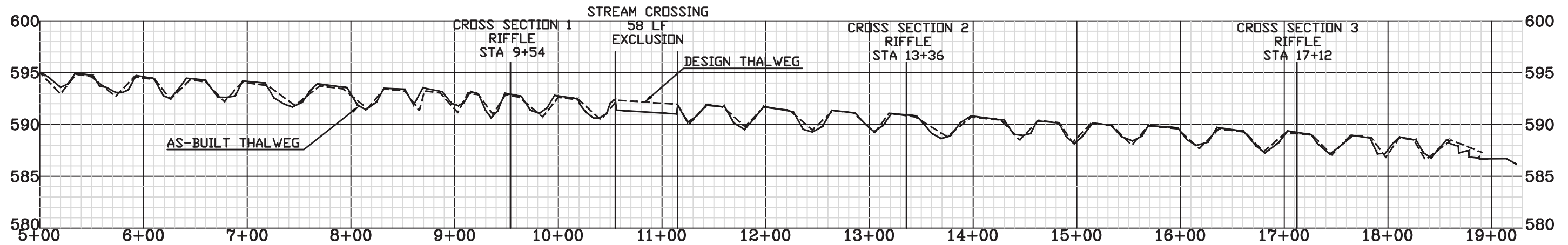
Environmental Banc & Exchange
 909 Capability Drive, Suite 3100
 Raleigh NC 27606 Phone: (919) 829-9909
 Fax: (919) 229-9913



**NEWTOWN
 UT to UNDERWOOD CREEK
 UNION COUNTY, NORTH CAROLINA**

DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	EBX NEWTOWN
DWG NAME:	AS-BUILT
SCALE:	1" = 60'
RECORD DRAWINGS	
SHEET NO.	PLN6

AS-BUILT UNDERWOOD CREEK (NEWTOWN)
LONGITUDINAL PROFILE
MAIN CHANNEL



SCALE:
HORIZONTAL - 1" = 100'
VERTICAL - 1" = 10'

LEGEND

- AS-BUILT TW
- DESIGN TW

GRAPHIC SCALE



(IN FEET)
1 inch = 100 ft.

Ward Consulting Engineers, P.C.
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Fax: (919) 229-9913



NEWTOWN
AS-BUILT PROFILE
UNDERWOOD CREEK
UNION COUNTY, NORTH CAROLINA

DATE: 5-27-2011

REVISIONS:

PROJECT NAME:
EBX NEWTOWN

DWG NAME:
ASBUILT PROFILES

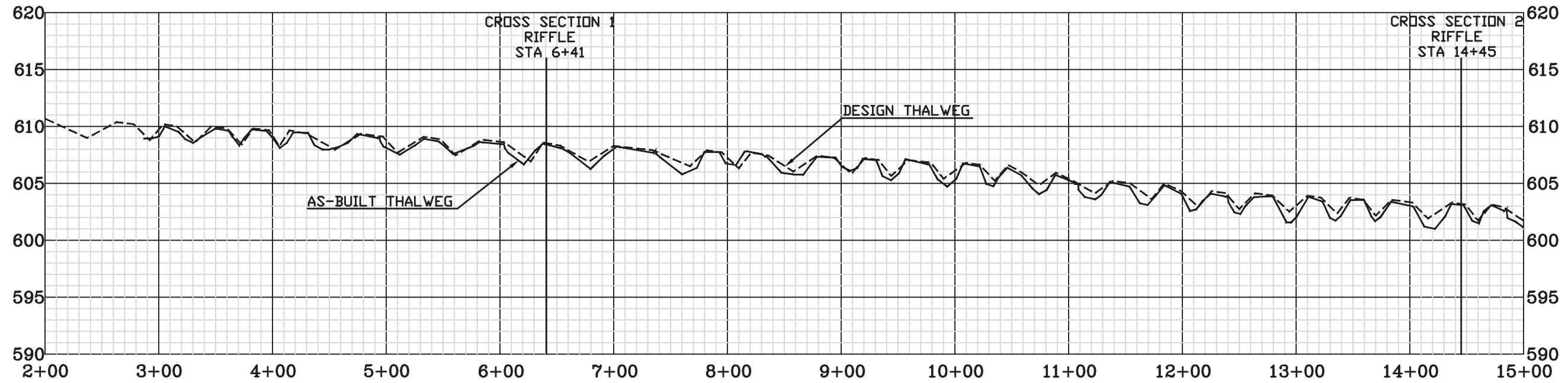
SCALE:
1" = 100

RECORD DRAWINGS

SHEET NO.

PR01

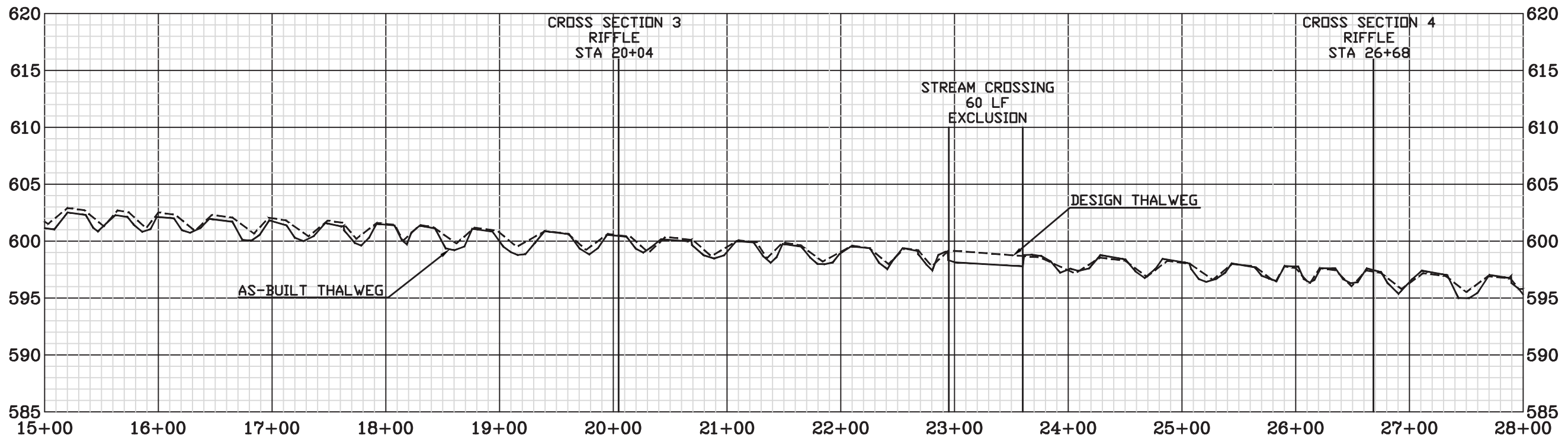
AS-BUILT UT TO UNDERWOOD CREEK (NEWTOWN)
LONGITUDINAL PROFILE
TRIBUTARY CHANNEL



SCALE:
HORIZONTAL - 1" = 100'
VERTICAL - 1" = 10'

LEGEND

— AS-BUILT TW
- - - DESIGN TW



SCALE:
HORIZONTAL - 1" = 100'
VERTICAL - 1" = 10'

GRAPHIC SCALE



(IN FEET)
1 inch = 100 ft.

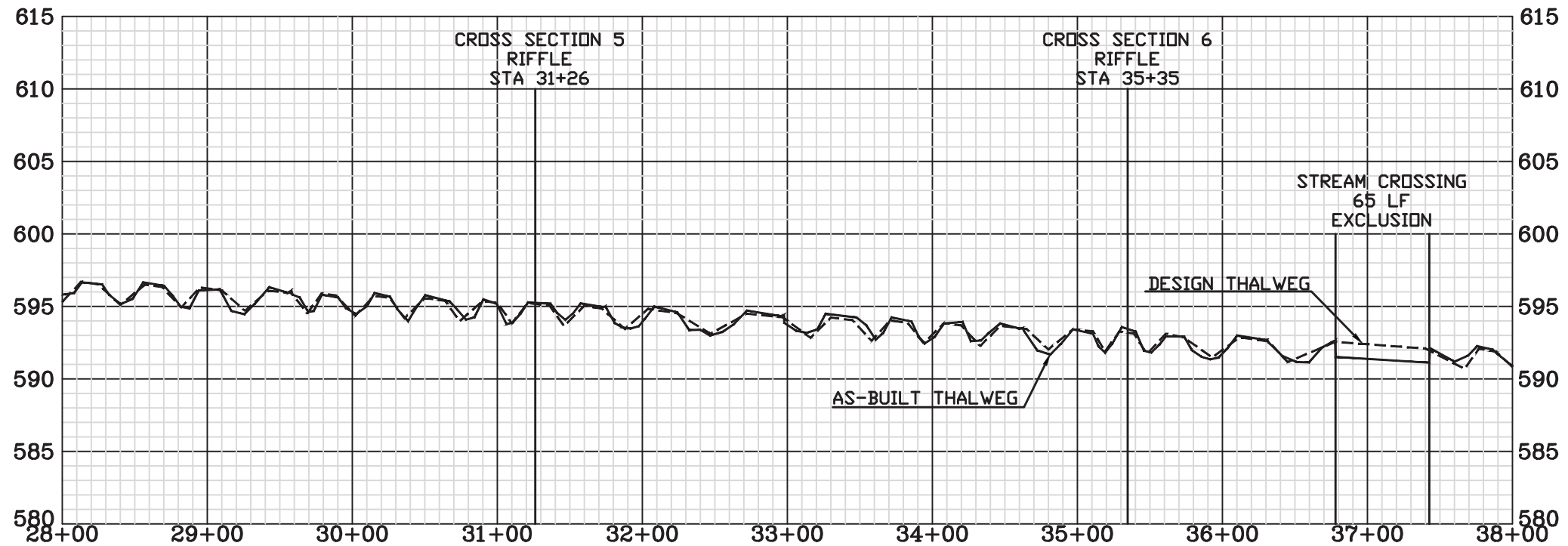
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**NEWTOWN
AS-BUILT PROFILES
UT TO UNDERWOOD CREEK
UNION COUNTY, NORTH CAROLINA**

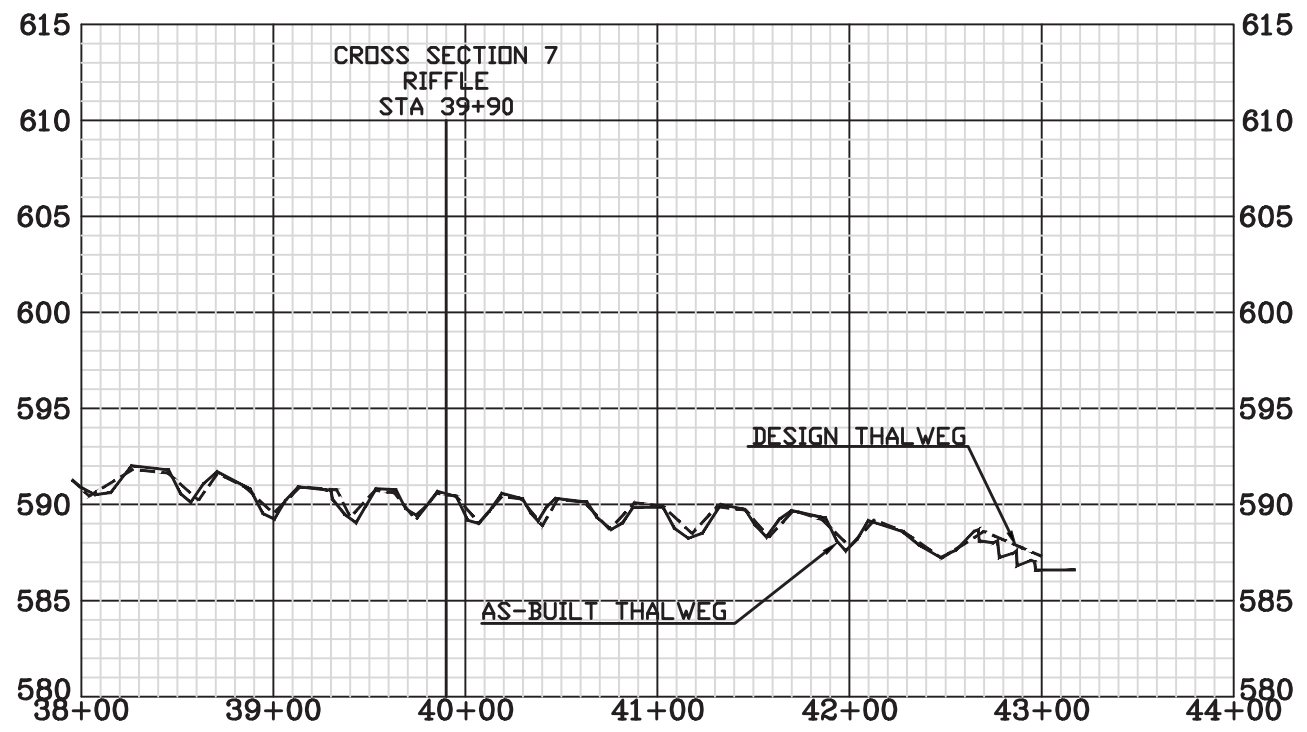
DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	EBX NEWTOWN
DWG NAME:	ASBUILT PROFILES
SCALE:	1" = 100
RECORD DRAWINGS	
SHEET NO.	

AS-BUILT UT TO UNDERWOOD CREEK (NEWTOWN)
LONGITUDINAL PROFILE
TRIBUTARY CHANNEL



SCALE:
HORIZONTAL - 1" = 100'
VERTICAL - 1" = 10'

LEGEND
—— AS-BUILT TW
----- DESIGN TW



SCALE:
HORIZONTAL - 1" = 100'
VERTICAL - 1" = 10'



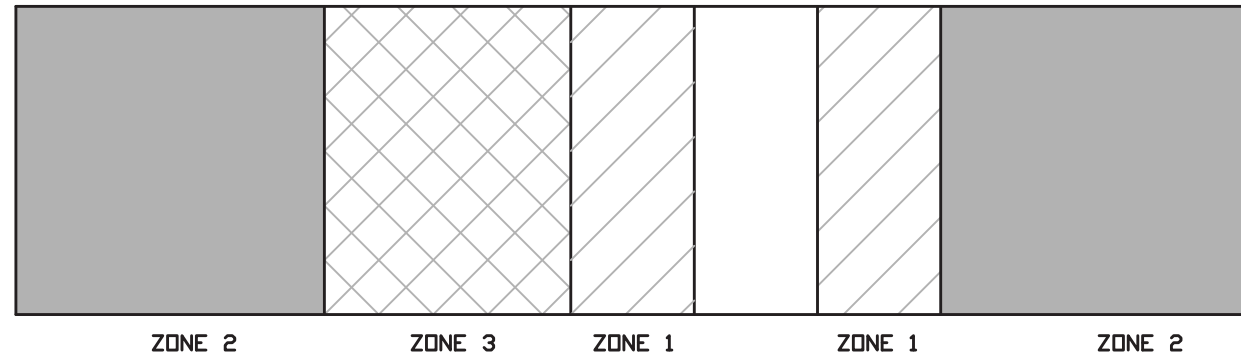
GRAPHIC SCALE
(IN FEET)
1 inch = 100 ft.

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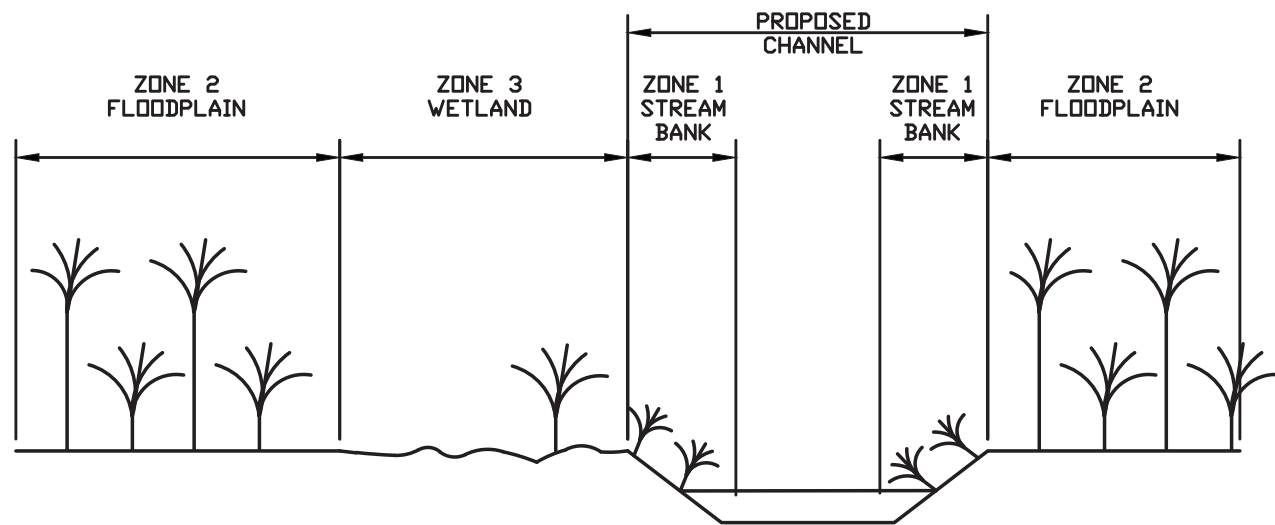


NEWTOWN
AS-BUILT PROFILES
UT TO UNDERWOOD CREEK
UNION COUNTY, NORTH CAROLINA

DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	EBX NEWTOWN
DWG NAME:	ASBUILT PROFILES
SCALE:	1" = 100
RECORD DRAWINGS	
SHEET NO.	PR03



PLAN VIEW



PLANTING ZONE PROFILE SCHEMATIC
NOT TO SCALE

GENERAL NOTES:

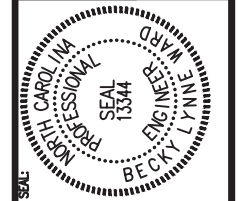
1. TEMPORARY PLANTING WILL OCCUR IMMEDIATELY AFTER CONSTRUCTION TO STABILIZE AREAS OF BARE SOIL. PERMANENT PLANTING AND SEEDINGS SHALL BEGIN IN SEASON OPTIMALLY BETWEEN NOVEMBER 15 AND APRIL 15.
2. PRIOR TO PERMANENT PLANTINGS AND SEEDINGS, THE SITE SOILS SHALL BE PREPARED FOR PLANTING. WHERE NEEDED THE SOILS SHOULD BE PLOWED OR RIPPED TO IMPROVE COMPACTED SOILS AND ELIMINATE CHANNELIZED FLOW FROM NON-TARGET AREAS. IF NECESSARY SOILS SHALL BE AMENDED WITH STORED SITE TOPSOIL TO FACILITATE VIGOROUS PLANT GROWTH. EXOTIC AND INVASIVE PLANTS SHALL BE TREATED AND REMOVED.
3. SUMMARY OF PLANT QUANTITIES CHART SIZE REFERS TO THE SIZE OF THE PLANTS AT INSTALLATION.
4. THE SPACING OF THE PLANTS SHALL BE 3' ON CENTER FOR SMALL PLANTS, WETLAND FORBES, AND ON STREAM BANK ZONES FOR TREES AND SHRUBS. SPACING SHALL BE 10 FEET ALONG ROWS WITH 10 FOOT ROW SPACING. FOR TREES AND SHRUBS PLANTING DENSITY IS TO BE 640 PLANTS/ACRE.
5. PLANTS WILL BE KEPT SHADED AND WELL WATERED TO MAINTAIN HEALTHY, VIGOROUS CONDITION PRIOR TO PLANTING.
6. PERMANENT SEED MIX REQUIRES ADVANCE PRE-ORDER AND SHIPMENT.
7. ALL PLANT MATERIAL SHALL CONFORM TO OR EXCEED THE AMERICAN STANDARD FOR NURSERY STOCK (LATEST EDITION) AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
8. THE SITE SHALL BE PLANTED BY THE ZONES DEPICTED IN THE PLANTING PLAN SHEETS WITH SPECIES LISTED IN THE PLANTING TABLES.
9. PLANTING ZONE DESCRIPTIONS:
 - ZONE 1- STREAM BANK
THE STREAM BANK ZONE INCLUDES THE STREAM CHANNEL FROM BASE FLOW TO THE BANKFULL ELEVATION.
 - ZONE 2- STREAM BUFFER
THE STREAM BUFFER INCLUDES THE AREA FROM THE BANKFULL ELEVATION TO THE CONSERVATION EASEMENT LIMIT.
 - ZONE 3- WETLAND
THE WETLAND ZONES INCLUDE POCKETS OF RESTORED WETLAND AREAS WITHIN ZONE 2.

Plant Table			
Bare Roots	Zone 1 (Stream banks)	Zone 2 (Buffer)	Zone 3 (Wetland)
Willow Oak (<i>Quercus phellos</i>)		1500	500
Swamp Chestnut Oak (<i>Quercus michauxii</i>)		2000	500
Hackberry (<i>Celtis laevigata</i>)		500	
Paw Paw (<i>Asimina triloba</i>)		500	
American Sycamore (<i>Platanus occidentalis</i>)		1300	300
Green Ash (<i>Fraxinus Pennsylvanica</i>)		1500	300
American Hornbeam/Ironwood (<i>Carpinus caroliniana</i>)		500	
Silky Dogwood (<i>Comus amomum</i>)			200
Buttonbush (<i>Cephalanthus occidentalis</i>)			300
Persimmon (<i>Diospyros virginiana</i>)		500	200
River Birch (<i>Betula nigra</i>)		300	300
Bare Root Total =	0	8600	2600
Live Stakes			
Silky Dogwood (<i>Comus amomum</i>)	2000		
Black Willow (<i>Salix nigra</i>)	3700		

Wetland Planting Zones - Permanent Seed Mix		
Recommended application rate: 20 lbs. per acre		
Species	Common Name	Percent
<i>Agrostis stolonifera</i>	Creeping bentgrass	33
<i>Carex vulpinoidea</i>	Fox sedge	20
<i>Elymus virginicus</i>	Virginia wild rye	25
<i>Helenium autumnale VA ecotype</i>	Sneezeweed	5
<i>Iris versicolor</i>	Blue flag	5
<i>Juncus effusus</i>	Showy tick trefoil	4
<i>Rudbeckia hirta</i>	Black-eyed susan	4
<i>Verbena hastata</i>	Blue vervain	4
	Total:	100
	3.38 Total Acres	
	20 lbs./acre	
	67.6 Total lbs.	

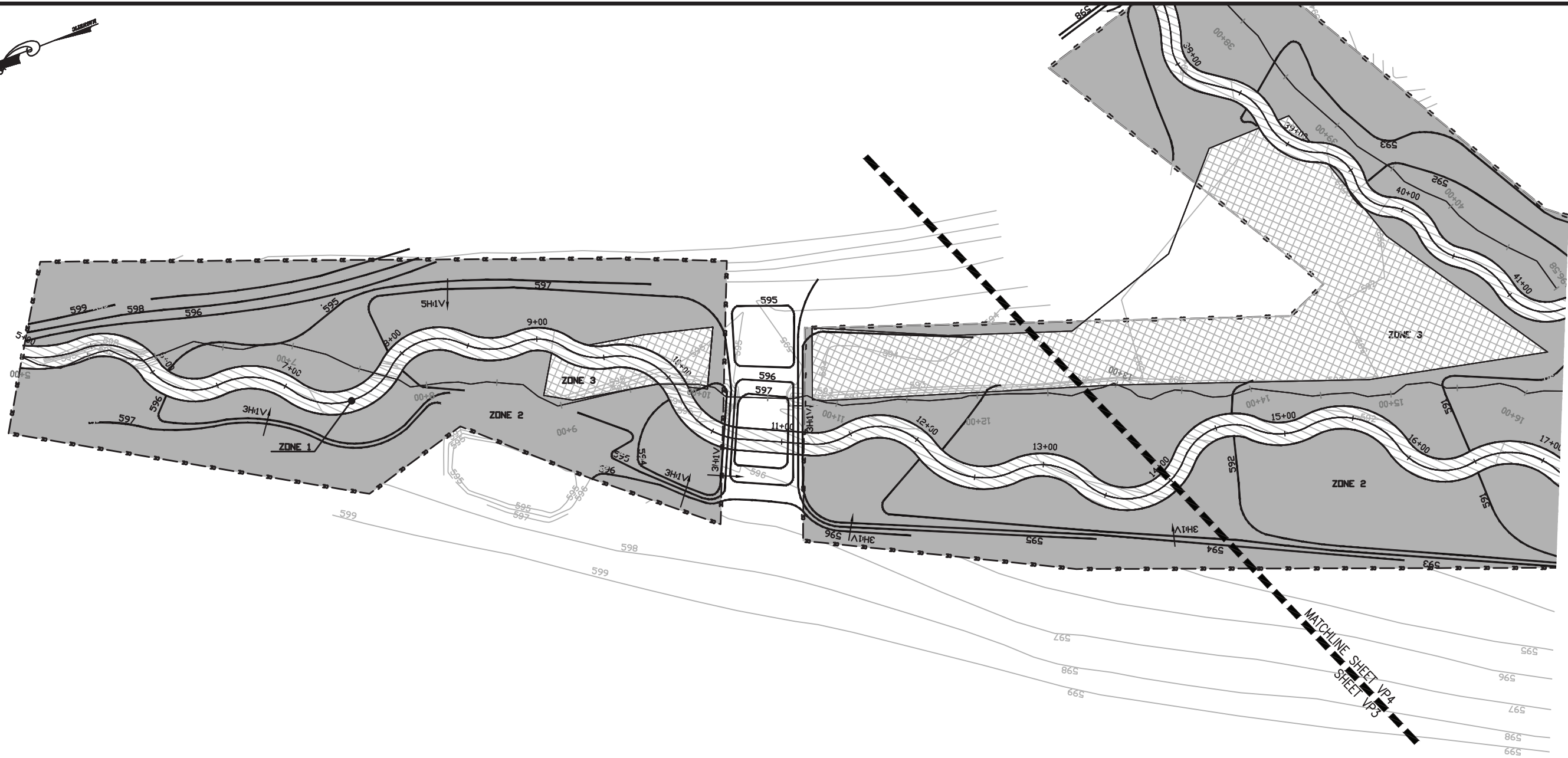
Stream Buffer and Stream Banks Planting Zones-Permanent Seed Mix		
Recommended application rate: 20 lbs. per acre		
Scientific Name	Common Name	Percent
<i>Elymus virginicus</i>	Virginia wild rye	20
<i>Panicum virgatum</i>	Switchgrass	20
<i>Agrostis stolonifera</i>	Creeping bentgrass	15
<i>Coreopsis lanceolata</i>	Coreopsis	10
<i>Panicum clandestinum</i>	Deer tongue	10
<i>Andropogon gerardii</i>	Big bluestem	5
<i>Juncus effusus</i>	Soft rush	5
<i>Polygonum pennsylvanicum</i>	Penn. Smartweed	5
<i>Schizachyrium scoparium</i>	Little bluestem	5
<i>Sorghastrum nutans</i>	Indian grass	5
		100
	13.86 Total Acres	
	20 lbs./acre	
	277.2 Total lbs.	

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NEWTOWN
 PLANT QUANTITIES
 UNION COUNTY, NORTH CAROLINA

DATE: 5-27-2011
 REVISIONS:
 PROJECT NAME:
 Newtown Creek
 DWG NAME:
 Planting Notes
 SCALE:
 NTS
 RECORD DRAWINGS
 SHEET NO.

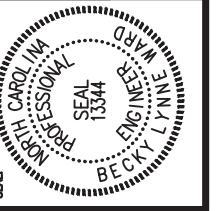


LEGEND

- ZONE 1 - PIEDMONT ALLUVIAL FOREST STREAM BANK-1.87 ACRES
- ZONE 2 - PIEDMONT ALLUVIAL FOREST STREAM BUFFER-11.99 ACRES
- ZONE 3 - PIEDMONT ALLUVIAL FOREST WETLAND RESTORATION-3.38 ACRES



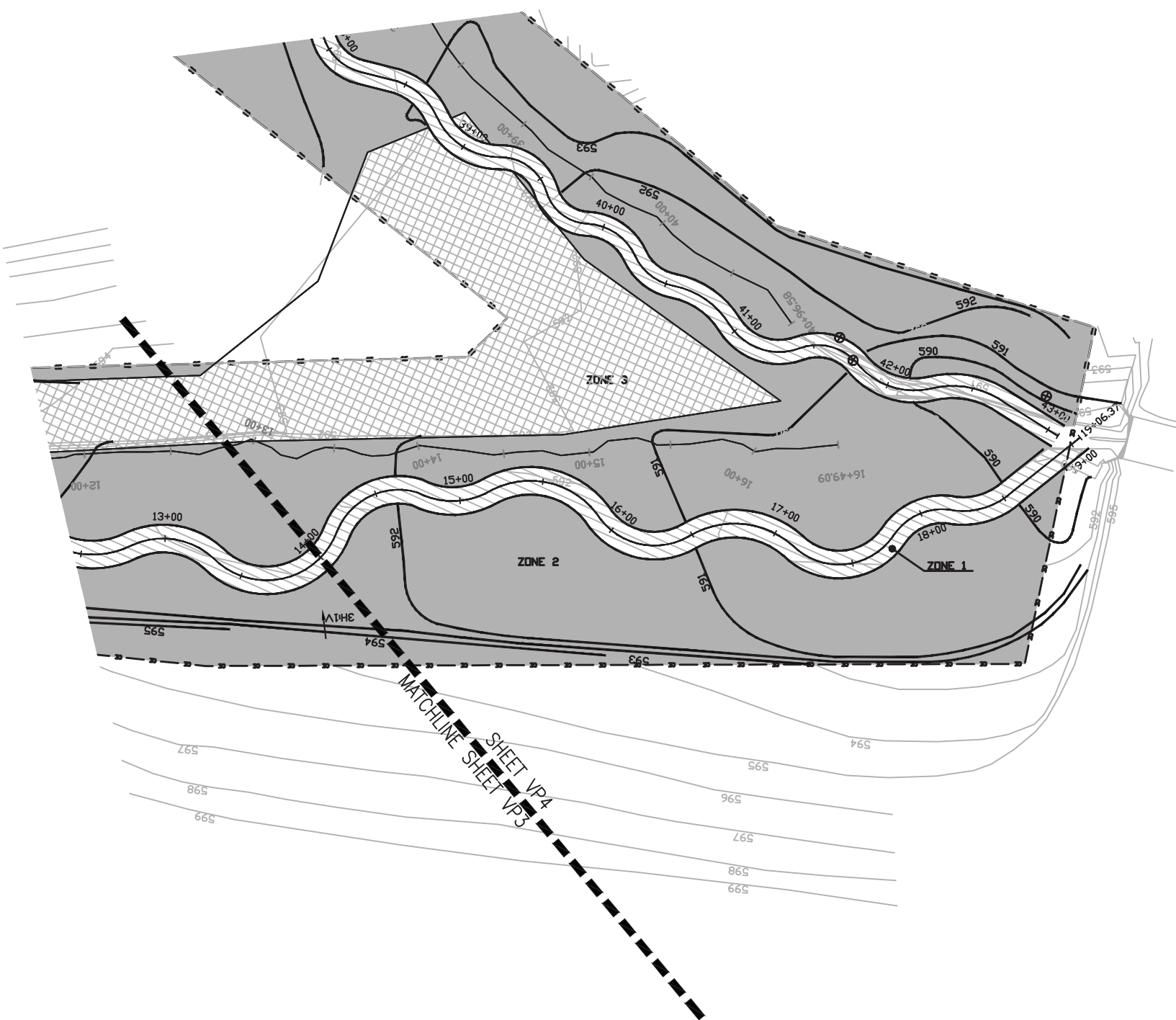
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**NEWTOWN PLANTING PLAN
 STATION 5+00 TO 14+00
 UNDERWOOD CREEK
 UNION COUNTY, NORTH CAROLINA**

DATE: 5-27-2011
REVISIONS:
PROJECT NAME: Newtown Creek
DWG NAME: Planting Plan
SCALE: 1"=40'
RECORD DRAWINGS
SHEET NO.

VP3



- LEGEND**
- ZONE 1 - PIEDMONT ALLUVIAL FOREST STREAM BANK
 - ZONE 2 - PIEDMONT ALLUVIAL FOREST STREAM BUFFER
 - ZONE 3 - PIEDMONT ALLUVIAL FOREST WETLAND RESTORATION

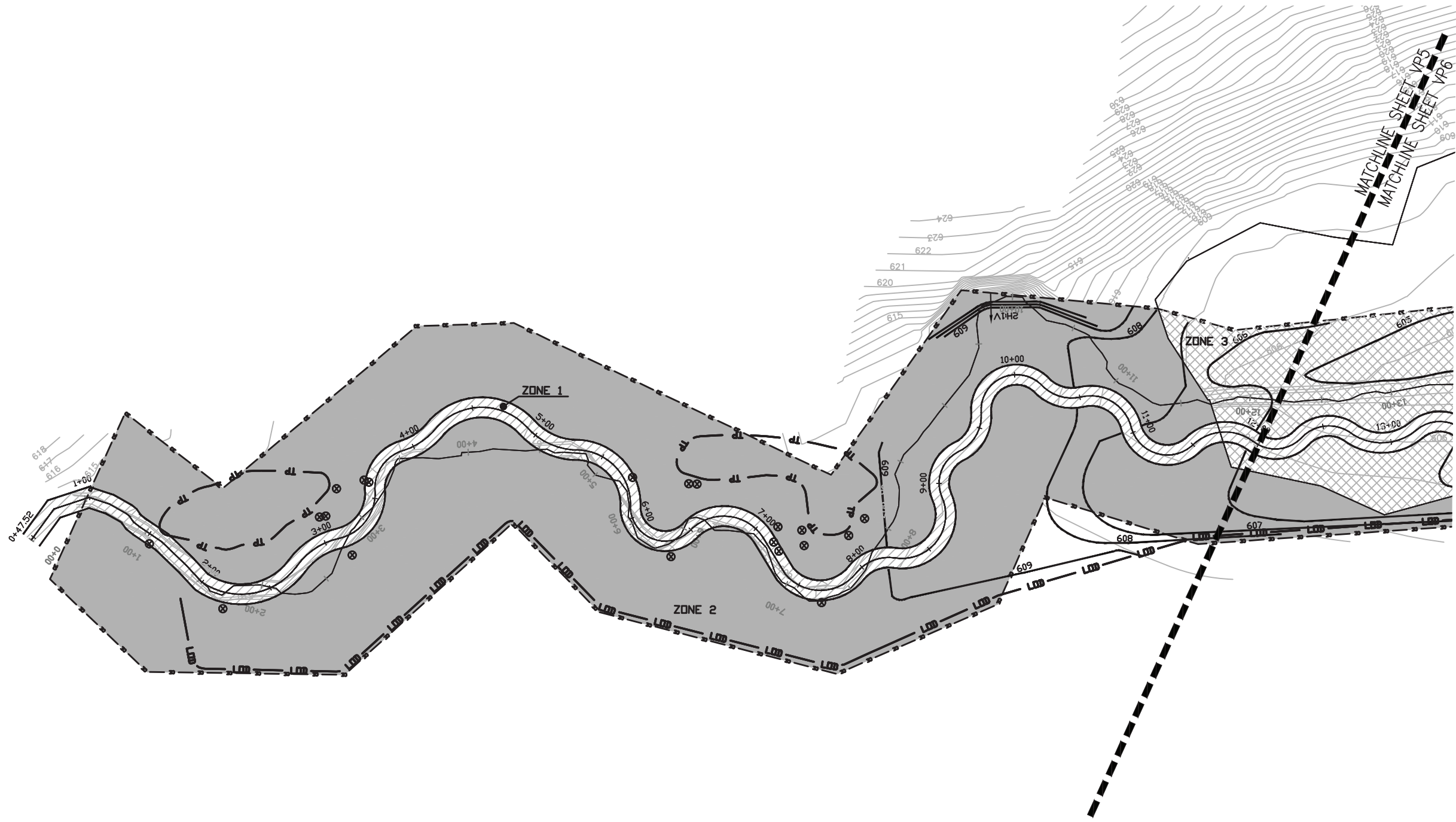





NEWTOWN PLANTING PLAN
STATION 14+00 TO 19+06.37
UNDERWOOD CREEK
UNION COUNTY, NORTH CAROLINA

DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	Newtown Creek
DWG NAME:	Planting Plan
SCALE:	1"=40'
RECORD DRAWINGS	
SHEET NO.	

VP4

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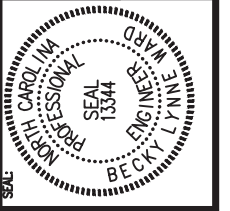
- LEGEND**
-  ZONE 1 - PIEDMONT ALLUVIAL FOREST STREAM BANK
 -  ZONE 2 - PIEDMONT ALLUVIAL FOREST STREAM BUFFER
 -  ZONE 3 - PIEDMONT ALLUVIAL FOREST WETLAND RESTORATION



NEWTOWN PLANTING PLAN
STATION 0+00 TO 12+00
UT TO UNDERWOOD CREEK
UNION COUNTY, NORTH CAROLINA

DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	New Town Creek
DWG NAME:	Planting Plan
SCALE:	1"=40'
RECORD DRAWINGS	
SHEET NO.	

VP5



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- LEGEND**
- ZONE 1 - PIEDMONT ALLUVIAL FOREST STREAM BANK
 - ZONE 2 - PIEDMONT ALLUVIAL FOREST STREAM BUFFER
 - ZONE 3 - PIEDMONT ALLUVIAL FOREST WETLAND RESTORATION



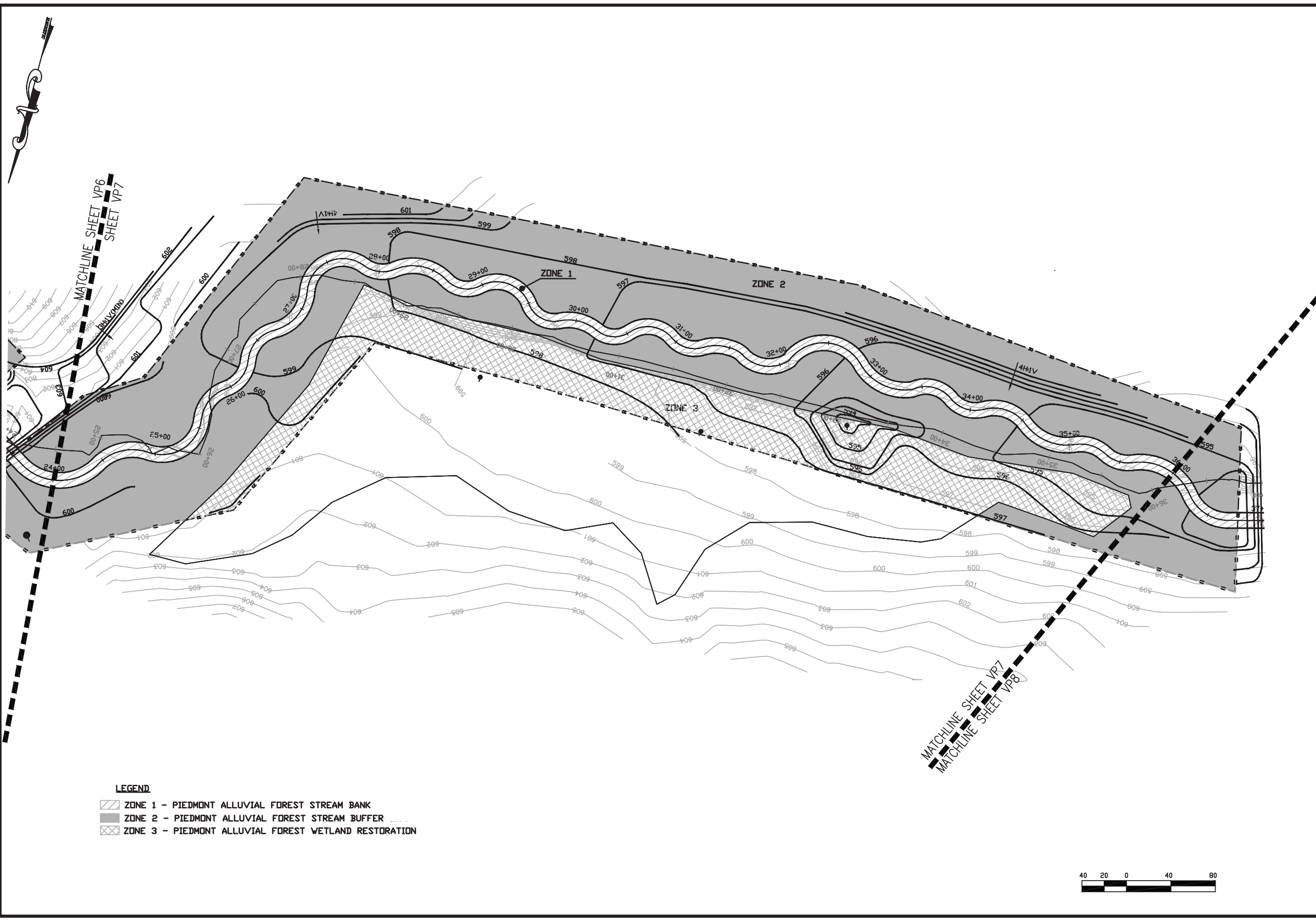
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**NEWTOWN PLANTING PLAN
 STATION 12+00 TO 24+00
 UT TO UNDERWOOD CREEK
 UNION COUNTY, NORTH CAROLINA**

DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	Newtown Creek
DWG NAME:	Planting Plan
SCALE:	1"=40'
RECORD DRAWINGS	
SHEET NO.	

VP6



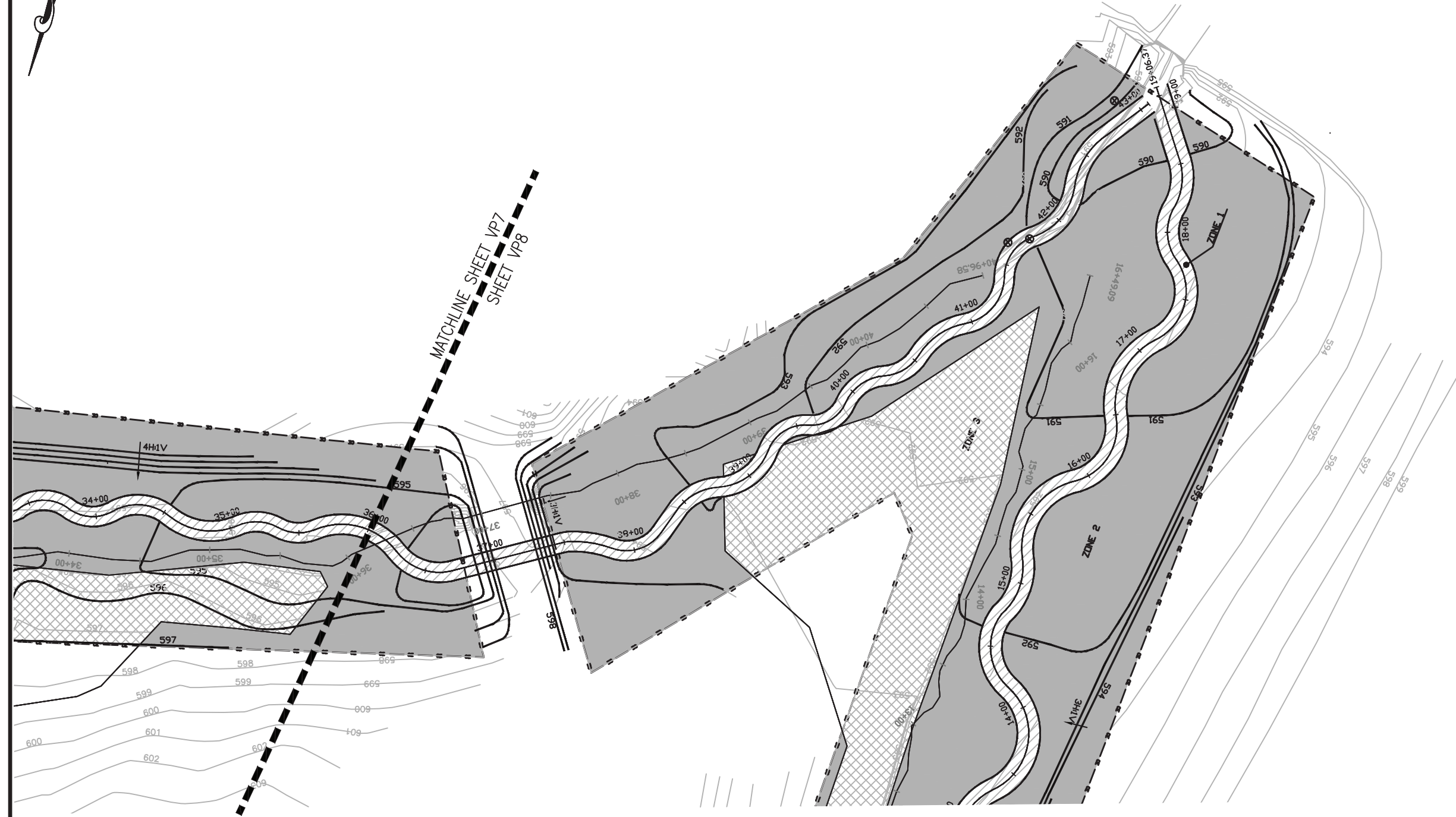
- LEGEND**
- ZONE 1 - PIEDMONT ALLUVIAL FOREST STREAM BANK
 - ZONE 2 - PIEDMONT ALLUVIAL FOREST STREAM BUFFER
 - ZONE 3 - PIEDMONT ALLUVIAL FOREST WETLAND RESTORATION






NEWTOWN PLANTING PLAN
STATION 24+00 TO 36+00
UT TO UNDERWOOD CREEK
UNION COUNTY, NORTH CAROLINA

DATE:	5-27-2011
REVISIONS:	
PROJECT NAME:	Newtown Creek
DWG NAME:	Planting Plan
SCALE:	1"=40'
RECORD DRAWINGS	
SHEET NO.	VP7

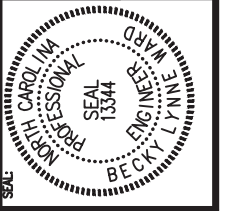
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- LEGEND**
-  ZONE 1 - PIEDMONT ALLUVIAL FOREST STREAM BANK
 -  ZONE 2 - PIEDMONT ALLUVIAL FOREST STREAM BUFFER
 -  ZONE 3 - PIEDMONT ALLUVIAL FOREST WETLAND RESTORATION



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**NEWTOWN PLANTING PLAN
 STATION 36+00 TO 43+06
 UT TO UNDERWOOD CREEK
 UNION COUNTY, NORTH CAROLINA**

DATE: 5-27-2011
 REVISIONS:

 PROJECT NAME:
 Newtown Creek
 DWG NAME:
 Planting Plan
 SCALE:
 1"=40'
 RECORD DRAWINGS
 SHEET NO.

VP8