

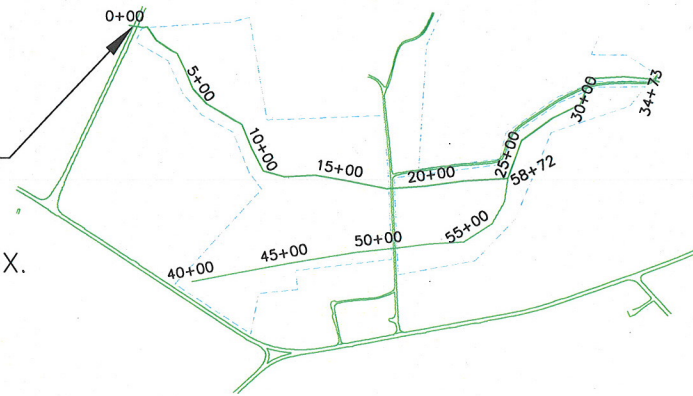
FINAL REPORT AS-BUILT SUBMITTAL

UT TO PEMBROKE CREEK STREAM AND WETLAND RESTORATION PROJECT EDENTON, CHOWAN COUNTY, NORTH CAROLINA NC ECOSYSTEM ENHANCEMENT PROGRAM PROJECT SCO# 050658801

GENERAL NOTES

1. PREPARED FOR NC ECOSYSTEM ENHANCEMENT PROGRAM, 1652 MAIL SERVICE CENTER, RALEIGH, NC 27699-1652.
2. THE TOTAL EASEMENT ACREAGE FOR THIS PROJECT IS 59.42 ACRES.
3. THE SENIOR DESIGN CONTACT FOR THIS PROJECT IS JAMES M. HALLEY, PE OF THE JOHN R. MCADAMS COMPANY, 919-361-5000.
4. THE EEP PROJECT MANAGER IS TRACY MORRIS, 919-715-1658.
5. THE EEP REVIEW COORDINATOR IS LIN XU, PE, 919-715-7571.
6. THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES PROJECT NUMBER IS D06102S.
7. A BOUNDARY SURVEY WAS NOT PERFORMED WHILE OBTAINING THE FIELD SURVEYED DATA SHOWN HEREON AND THIS SET OF RECORD DRAWINGS WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO ANY FACTS AND EASEMENTS WHICH MAY BE DISCLOSED BY A FULL AND ACCURATE TITLE SEARCH.
8. BOUNDARY INFORMATION SHOWN HEREON BASED ON A CONSERVATION EASEMENT SURVEY PREPARED BY NATURAL SYSTEMS ENGINEERING AND RECORDED IN PLAT CABINET NUMBER 2, SLIDE 34G OF THE CHOWAN COUNTY REGISTER OF DEEDS.
9. PHYSICAL FEATURES SHOWN HEREON SUCH AS BUILDINGS AND ROADWAYS ARE BASED ON AN AERIAL TOPOGRAPHIC SURVEY PREPARED BY GEODATA CORPORATION UNDER THE SUPERVISION OF JAMES M. SALMONS, PLS, PPS, LICENSE NUMBER L-4041 FROM MARCH 24, 2006 AERIAL PHOTOGRAPHY.
10. FIELD SURVEYED SPOT ELEVATIONS AND THE TOPOGRAPHIC DATA SHOWN HEREON OBTAINED BY GPS METHOD. THE DATA WAS DERIVED BY KINEMATIC GPS OBSERVATIONS USING A TRIMBLE R8 RECIEVER ON-SITE AND THE NCGS NETWORK RTK SYSTEM FROM 11-28-2007 TO 11-30-2007. THE DERIVED HORIZONTAL PRECISION ON POINTS ESTABLISHED ON-SITE IS 0.031'. THE ELEVATIONS ARE BASED ON THE NAVD 88 VERTICAL DATUM AND THE NC GRID (NAD 83) HORIZONTAL DATUM.
11. PLANTING WAS COMPLETED ON DECEMBER 18, 2007 - DECEMBER 19, 2007. THE VEGETATION PLOTS WERE LOCATED USING A TRIMBLE GEO XT SUBMETER GPS UNIT ON THESE DATES.

ALIGNMENT BEGINNING
LATITUDE = 36°05'38"
LONGITUDE = 76°39'52"
(PROJECT BEGINS AT APPROX.
STATION 0+50)



CONSTRUCTION DRAWINGS SHEET INDEX:

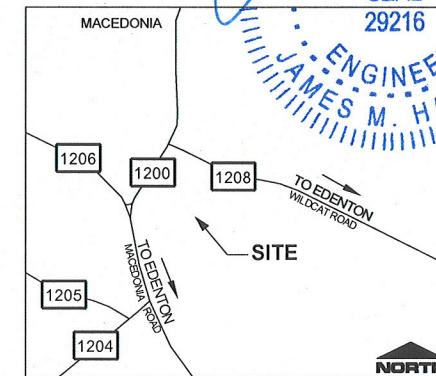
- SHEET 1/21 - TITLE AND INDEX
- SHEET 2/21 - LEGEND
- SHEET 3/21 - EXISTING CONDITIONS
- SHEET 4/21 - PROPOSED CONDITIONS
- SHEET 5/21 - LONGITUDINAL PROFILE
- SHEET 6/21 - GRADING PLAN AREAS 1A1 & 1A2
- SHEET 7/21 - GRADING PLAN AREA 1B
- SHEET 8/21 - GRADING PLAN AREA 2
- SHEET 9/21 - GRADING PLAN AREA 3
- SHEET 10/21 - IMPROVED ROAD DETAILS
- SHEET 11/21 - ROAD CROSSING DETAILS 1
- SHEET 12/21 - ROAD CROSSING DETAILS 2
- SHEET 13/21 - GRADE TRANSITION & HUMMOCK DETAILS
- SHEET 14/21 - EROSION AND SEDIMENT CONTROL (E&S)
- SHEET 15/21 - PUMP AROUND DETAILS
- SHEET 16/21 - CONSTRUCTION SEQUENCE
- SHEET 17/21 - E&S DETAILS
- SHEET 18/21 - E&S AND SEEDING NOTES
- SHEET 19/21 - PLANTING PLAN AREA 1
- SHEET 20/21 - PLANTING PLAN AREAS 2 & 3
- SHEET 21/21 - PLANTING NOTES

AS-BUILT DRAWINGS-RECORD SHEET INDEX:

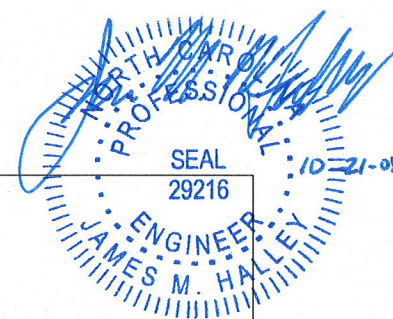
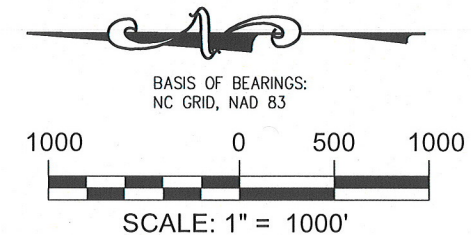
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- RECORD SHEET 2/10 - LEGEND
- RECORD SHEET 3/10 - PROPOSED CONDITIONS
- RECORD SHEET 4/10 - AREAS 1A1 & 1A2
- RECORD SHEET 5/10 - AREA 1B
- RECORD SHEET 6/10 - AREA 2
- RECORD SHEET 7/10 - AREA 3
- RECORD SHEET 8/10 - SITE VEGETATION
- RECORD SHEET 9/10 - CROSS-SECTIONS 1 & 2
- RECORD SHEET 10/10 - CROSS-SECTIONS 3 & 4

AS-BUILT OVERLAY SHEET INDEX:

- OVERLAY SHEET 1/4 - TITLE AND INDEX
- OVERLAY SHEET 2/4 - LEGEND
- OVERLAY SHEET 3/4 - AS-BUILT OVERLAY
- OVERLAY SHEET 4/4 - AS-BUILT GRADE TRANSITION



VICINITY MAP EDENTON, NC
NOT TO SCALE

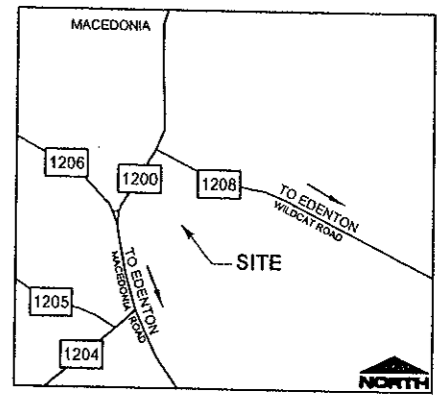


EcoEngineering
A Division of The John R. McAdams Company, Inc.
ENGINEERS/PLANNERS/SURVEYORS
RESEARCH TRIANGLE PARK, NC
P.O. BOX 14005 ZIP 27709-4005
(919) 361-5000

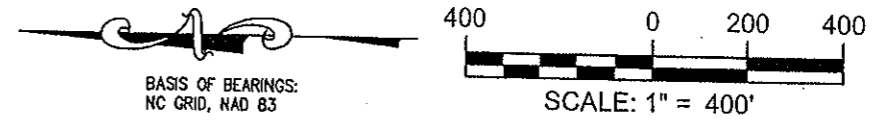
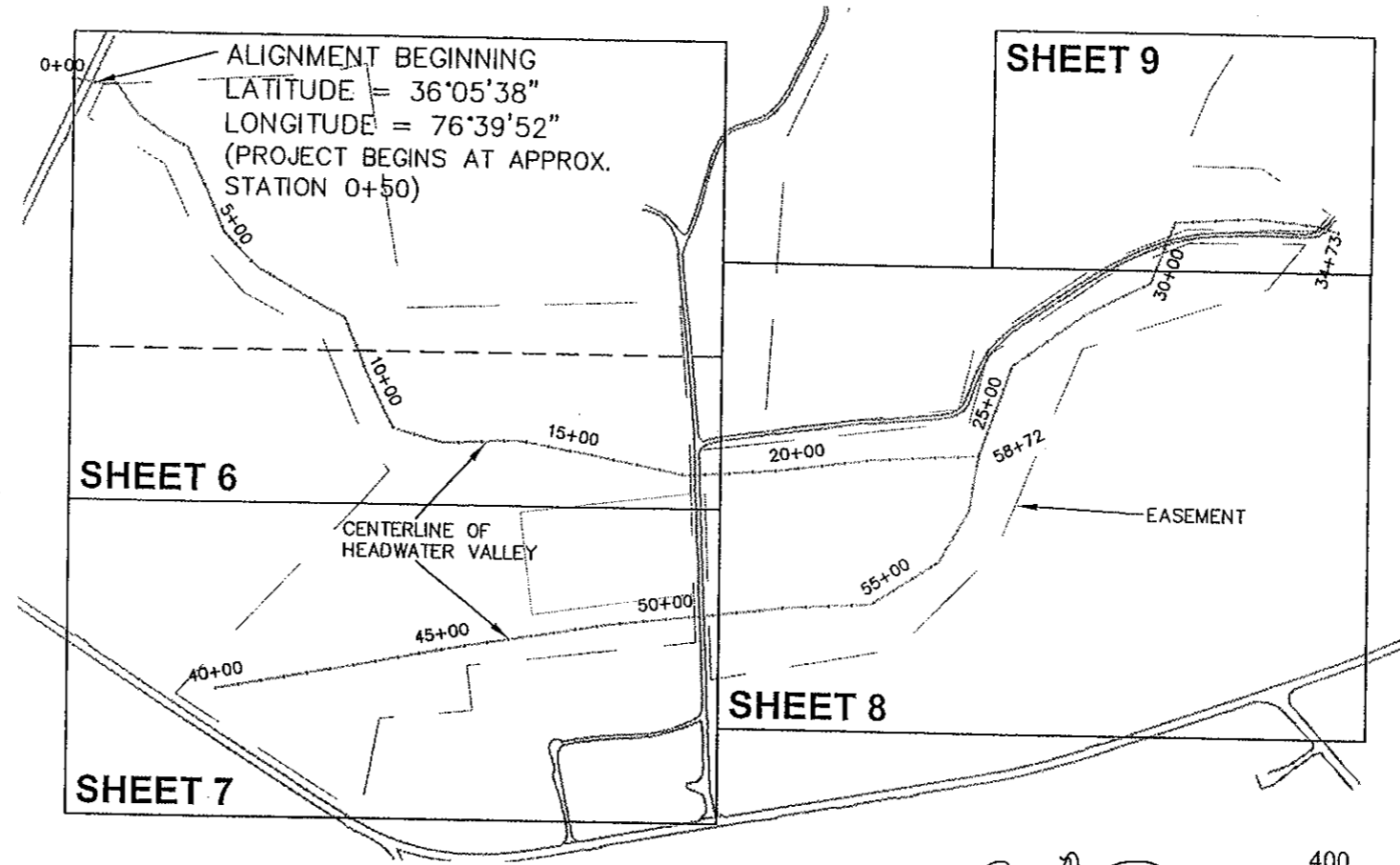
TITLE AND INDEX SHEET
UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

PROJECT NO. EEP-06010
FILENAME: AS-BUILTS
SCALE: 1" = 1000'
DATE: 10-20-08
McADAMS

UT TO PEMBROKE CREEK STREAM AND WETLAND RESTORATION PROJECT EDENTON, CHOWAN COUNTY, NORTH CAROLINA NC ECOSYSTEM ENHANCEMENT PROGRAM PROJECT SCO# 050658801



VICINITY MAP EDENTON, NC
NOT TO SCALE



GENERAL NOTES

1. PREPARED FOR NC ECOSYSTEM ENHANCEMENT PROGRAM, 1652 MAIL SERVICE CENTER, RALEIGH, NC 27699-1652.
2. GROUND AND WATER SURFACE ELEVATIONS COLLECTED WITH REAL TIME KINETIC GPS BY NATURAL SYSTEMS ENGINEERING UNDER THE SUPERVISION OF DAVID S. TURNER, PLS; LICENSE NUMBER L-4551; ON MARCH 22, 2006.
3. BASE CLASS "C" TOPOGRAPHY PROVIDED BY GEODATA CORP. UNDER THE SUPERVISION OF JAMES M. SALMONS, PLS, PPS; LICENSE NUMBER L-4041 FROM MARCH 24, 2006 AERIAL PHOTOGRAPHY; AND MEETS OR EXCEEDS THE NORTH CAROLINA ADMINISTRATIVE CODE 21.56,1605 AND 21.56.1606 STANDARDS.
4. MONITORING WELL ELEVATIONS WERE COLLECTED BY NATURAL SYSTEMS ENGINEERING UNDER THE SUPERVISION OF DAVID S. TURNER, PLS; LICENSE NUMBER L-4551; ON APRIL 12, 2006.
5. EXACT RECORDS CAN BE FOUND ON FILE WITH NATURAL SYSTEMS ENGINEERING UNDER JOB NUMBER EEP0601.
6. THE TOTAL EASEMENT ACREAGE FOR THIS PROJECT IS 59.42 ACRES; THE CONSTRUCTION DISTURBANCE AREA IS APPROXIMATELY 32 ACRES.
7. THE SENIOR DESIGN CONTACT FOR THIS PROJECT IS JAMES M. HALLEY, PE OF NATURAL SYSTEMS ENGINEERING, 919-878-5444.
8. THE EEP PROJECT MANAGER IS TRACY MORRIS, 919-715-1658.
9. THE EEP REVIEW COORDINATOR IS LIN XU, PE, 919-715-7571.
10. THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES PROJECT NUMBER IS D06102S.

REVISIONS, DATE AND INITIAL: LIMITS OF DISTURBANCE DENOTED WITH NEW LINE TYPE, 1-12-07, JMH // STAGING AREA DENOTED 3-13-07, JMH //
NATURAL SYSTEMS ENGINEERING
 3719 Benson Drive Raleigh, North Carolina 27609 (919) 878-5444 www.nsepc.com



DATE:	3/13/07
DESIGNED BY:	JMH/BMS
DRAWN BY:	DST
CHECKED BY:	JMH
PROJECT NO.:	EEP0601
FILE:	eep0601_base
SCALE:	1"=400'

PROJECT CUT/FILL SUMMARY:

SITE AREA	CUT (CY)	FILL (CY)	NET (CY)
EXISTING DITCH UPSTREAM OF ACCESS ROAD		-2,000	
EXISTING DITCH DOWNSTREAM OF ACCESS ROAD		-400	
WETLAND SWALE	+6,600		
ROAD FILL		-380	
TOTAL	+6,600	-2,780	+3,820


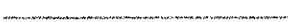









SHEET INDEX:









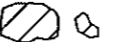
SHEET 1 - TITLE AND INDEX	SHEET 12 - ROAD CROSSING DETAILS 2
SHEET 2 - LEGEND	SHEET 13 - GRADE TRANSITION & HUMMOCK DETAILS
SHEET 3 - EXISTING CONDITIONS	SHEET 14 - EROSION & SEDIMENT CONTROL (E&S)
SHEET 4 - PROPOSED CONDITIONS	SHEET 15 - PUMP AROUND DETAILS
SHEET 5 - LONGITUDINAL PROFILE	SHEET 16 - CONSTRUCTION SEQUENCE
SHEET 6 - GRADING PLAN AREAS 1A1 & 1A2	SHEET 17 - E&S DETAILS
SHEET 7 - GRADING PLAN AREA 1B	SHEET 18 - E&S AND SEEDING NOTES
SHEET 8 - GRADING PLAN AREA 2	SHEET 19 - PLANTING PLAN AREA 1
SHEET 9 - GRADING PLAN AREA 3	SHEET 20 - PLANTING PLAN AREAS 2 & 3
SHEET 10 - IMPROVED ROAD DETAILS	SHEET 21 - PLANTING NOTES
SHEET 11 - ROAD CROSSING DETAILS 1	

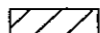
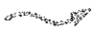

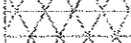





TITLE AND INDEX SHEET
 UT TO PEMBROKE CREEK
 STREAM AND WETLAND RESTORATION
 CHOWAN COUNTY, NORTH CAROLINA
 SHEET 1 OF 21

DETAIL KEY

DETAIL NUMBER  DETAIL APPEARS ON SHEET

-  EASEMENT BOUNDARY LINE
-  ROADS
-  FENCE
-  EXISTING MAJOR CONTOUR
-  EXISTING MINOR CONTOUR
-  PROPOSED CONTOUR
-  CLEARING AND GRUBBING LIMIT
-  HUMMOCK CREATION LINE
-  FINE GRADING LIMIT
-  SILT FENCE
-  LIMIT OF DISTURBANCE

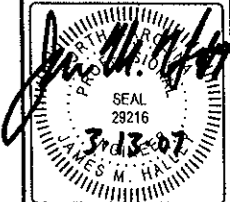
-  TREE LINES / WOODS
-  SINGLE TREE
-  UTILITY POLE
-  MONITORING WELL
-  CREST GAUGE
-  RAIN GAUGE
-  SPOT GROUND ELEVATION
-  SPOT WATER ELEVATION
-  HUMMOCK ILLUSTRATION
-  DEPRESSION ILLUSTRATION

- RUINS**
- 
- 
- 
- 
- 
- 
- 
- 
- 

- STRUCTURES
- ROAD CROSSING
- GENERAL SURFACE FLOW DIRECTION
- SURFACE ROUGHING
- GRADED TRANSITION
- RIP RAP
- ROCK CHECK DAM
- PERMANENT STOCKPILE AREA
- TEMPORARY STOCKPILE AREA
- PROPOSED FILL AREA

REVISIONS, DATE AND INITIAL: LIMITS OF DISTURBANCE DENOTED WITH NEW
 LINETYPE, 1-12-07, JMH // STAGING AREA DENOTED 3-13-07, JMH //

NATURAL SYSTEMS
 E N G I N E E R I N G
 3719 Benson Drive Raleigh, North Carolina 27609 (919) 876-5444 www.nsepc.com



DATE: 3/13/07

DESIGNED BY: JMH/BMS

DRAWN BY: DST

CHECKED BY: JMH

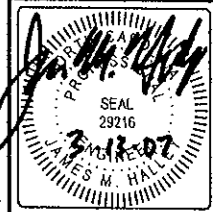
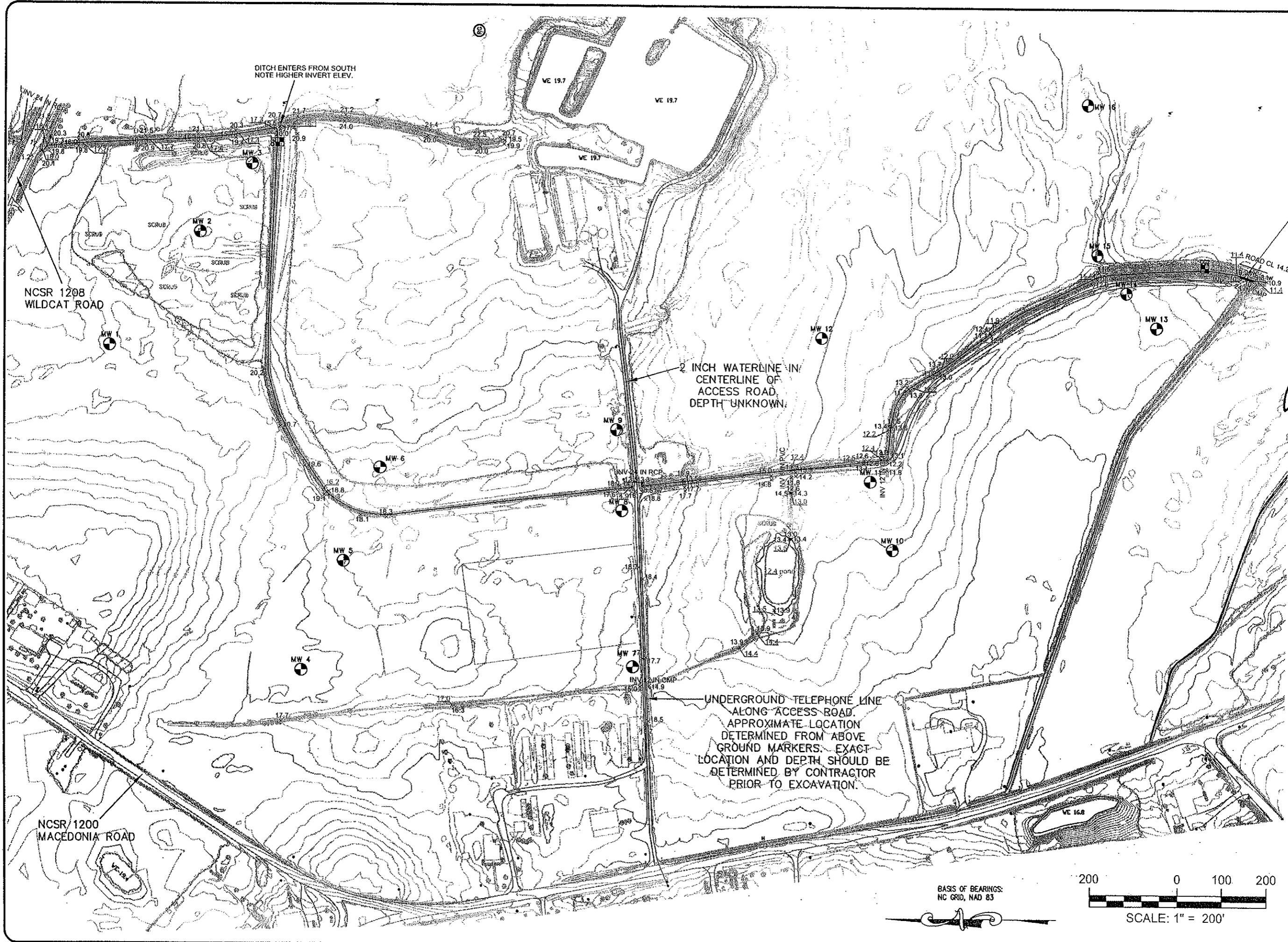
PROJECT NO.: EEP0601

FILE: eep0601_base

SCALE: NOT TO SCALE

LEGEND

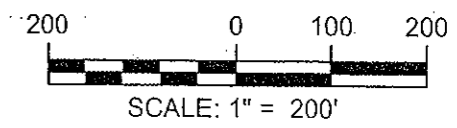
UT TO PEMBROKE CREEK
 STREAM AND WETLAND RESTORATION
 CHOWAN COUNTY, NORTH CAROLINA

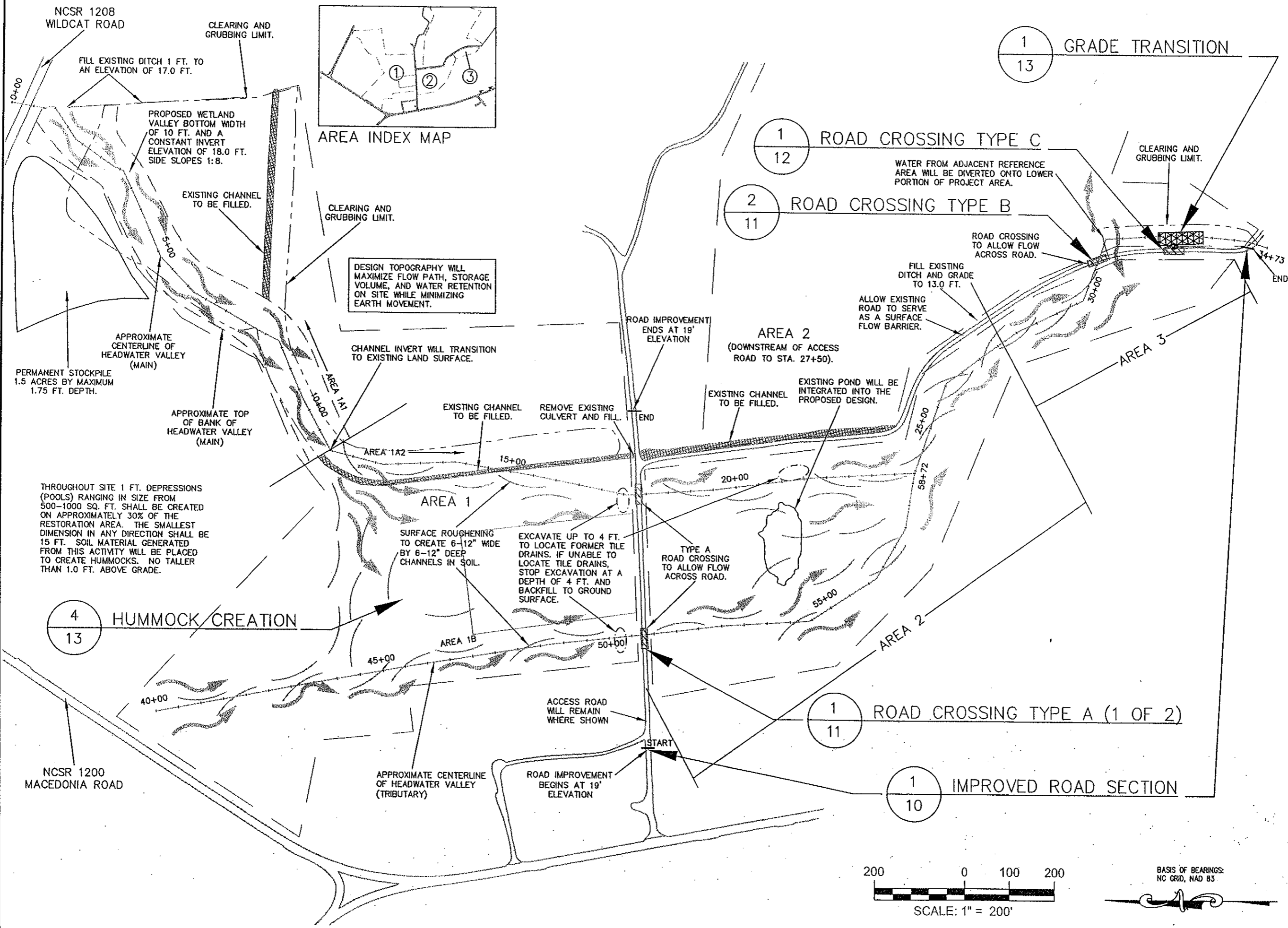


DATE: 3/13/07
 DESIGNED BY: JMH/BMS
 DRAWN BY: DST
 CHECKED BY: JMH
 PROJECT NO.: EEP0601
 FILE: eep0601_base
 SCALE: 1"=200'

EXISTING CONDITIONS
 UT TO PEMROKE CREEK
 STREAM AND WETLAND RESTORATION
 CHOWAN COUNTY, NORTH CAROLINA

BASIS OF BEARINGS:
 NC GRID, NAD 83





NCSR 1208 WILDCAT ROAD

CLEARING AND GRUBBING LIMIT.

FILL EXISTING DITCH 1 FT. TO AN ELEVATION OF 17.0 FT.

PROPOSED WETLAND VALLEY BOTTOM WIDTH OF 10 FT. AND A CONSTANT INVERT ELEVATION OF 18.0 FT. SIDE SLOPES 1:8.

EXISTING CHANNEL TO BE FILLED.

CLEARING AND GRUBBING LIMIT.

DESIGN TOPOGRAPHY WILL MAXIMIZE FLOW PATH, STORAGE VOLUME, AND WATER RETENTION ON SITE WHILE MINIMIZING EARTH MOVEMENT.

CHANNEL INVERT WILL TRANSITION TO EXISTING LAND SURFACE.

PERMANENT STOCKPILE 1.5 ACRES BY MAXIMUM 1.75 FT. DEPTH.

APPROXIMATE CENTERLINE OF HEADWATER VALLEY (MAIN)

APPROXIMATE TOP OF BANK OF HEADWATER VALLEY (MAIN)

THROUGHOUT SITE 1 FT. DEPRESSIONS (POOLS) RANGING IN SIZE FROM 500-1000 SQ. FT. SHALL BE CREATED ON APPROXIMATELY 30% OF THE RESTORATION AREA. THE SMALLEST DIMENSION IN ANY DIRECTION SHALL BE 15 FT. SOIL MATERIAL GENERATED FROM THIS ACTIVITY WILL BE PLACED TO CREATE HUMMOCKS. NO TALLER THAN 1.0 FT. ABOVE GRADE.

EXISTING CHANNEL TO BE FILLED.

REMOVE EXISTING CULVERT AND FILL.

ROAD IMPROVEMENT ENDS AT 19' ELEVATION

AREA 2 (DOWNSTREAM OF ACCESS ROAD TO STA. 27+50).

EXISTING CHANNEL TO BE FILLED.

EXISTING POND WILL BE INTEGRATED INTO THE PROPOSED DESIGN.

ALLOW EXISTING ROAD TO SERVE AS A SURFACE FLOW BARRIER.

FILL EXISTING DITCH AND GRADE TO 13.0 FT.

ROAD CROSSING TO ALLOW FLOW ACROSS ROAD.

CLEARING AND GRUBBING LIMIT.

AREA 1

SURFACE ROUGHENING TO CREATE 6-12" WIDE BY 6-12" DEEP CHANNELS IN SOIL.

EXCAVATE UP TO 4 FT. TO LOCATE FORMER TILE DRAINS. IF UNABLE TO LOCATE TILE DRAINS, STOP EXCAVATION AT A DEPTH OF 4 FT. AND BACKFILL TO GROUND SURFACE.

TYPE A ROAD CROSSING TO ALLOW FLOW ACROSS ROAD.

4 HUMMOCK CREATION 13

45+00

AREA 1B

50+00

ACCESS ROAD WILL REMAIN WHERE SHOWN

START

APPROXIMATE CENTERLINE OF HEADWATER VALLEY (TRIBUTARY)

ROAD IMPROVEMENT BEGINS AT 19' ELEVATION

1 ROAD CROSSING TYPE A (1 OF 2) 11

1 IMPROVED ROAD SECTION 10

NCSR 1200 MACEDONIA ROAD

1 GRADE TRANSITION 13

1 ROAD CROSSING TYPE C 12

2 ROAD CROSSING TYPE B 11

WATER FROM ADJACENT REFERENCE AREA WILL BE DIVERTED ONTO LOWER PORTION OF PROJECT AREA.

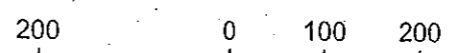
20+00

58+72

25+00

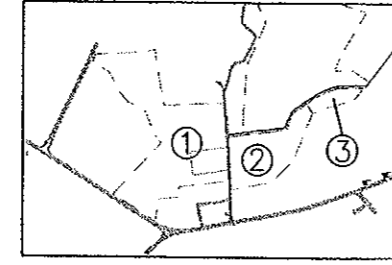
55+00

AREA 2



SCALE: 1" = 200'

BASIS OF BEARINGS: NC GRID, NAD 83



AREA INDEX MAP

REVISIONS, DATE AND INITIALS: LIMITS OF DISTURBANCE DENOTED WITH NEW LINE TYPE. 1-12-07, JMH // STAGING AREA DENOTED 3-13-07, JMH //

NATURAL SYSTEMS
ENGINEERING

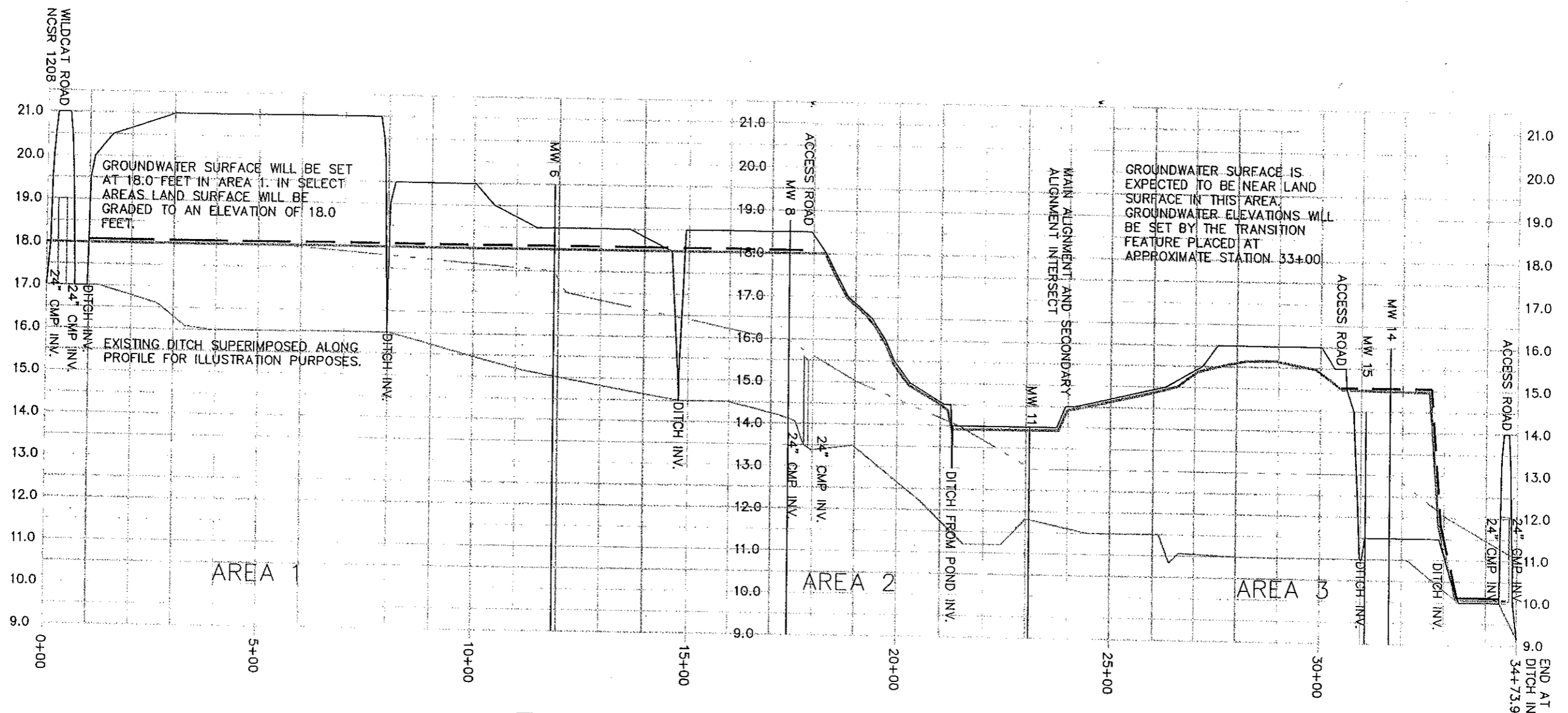
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DATE: 3/13/07
DESIGNED BY: JMH/BMS
DRAWN BY: DST
CHECKED BY: JMH
PROJECT NO.: EEP0601
FILE: eep0601_base
SCALE: 1"=200'

PROPOSED CONDITIONS

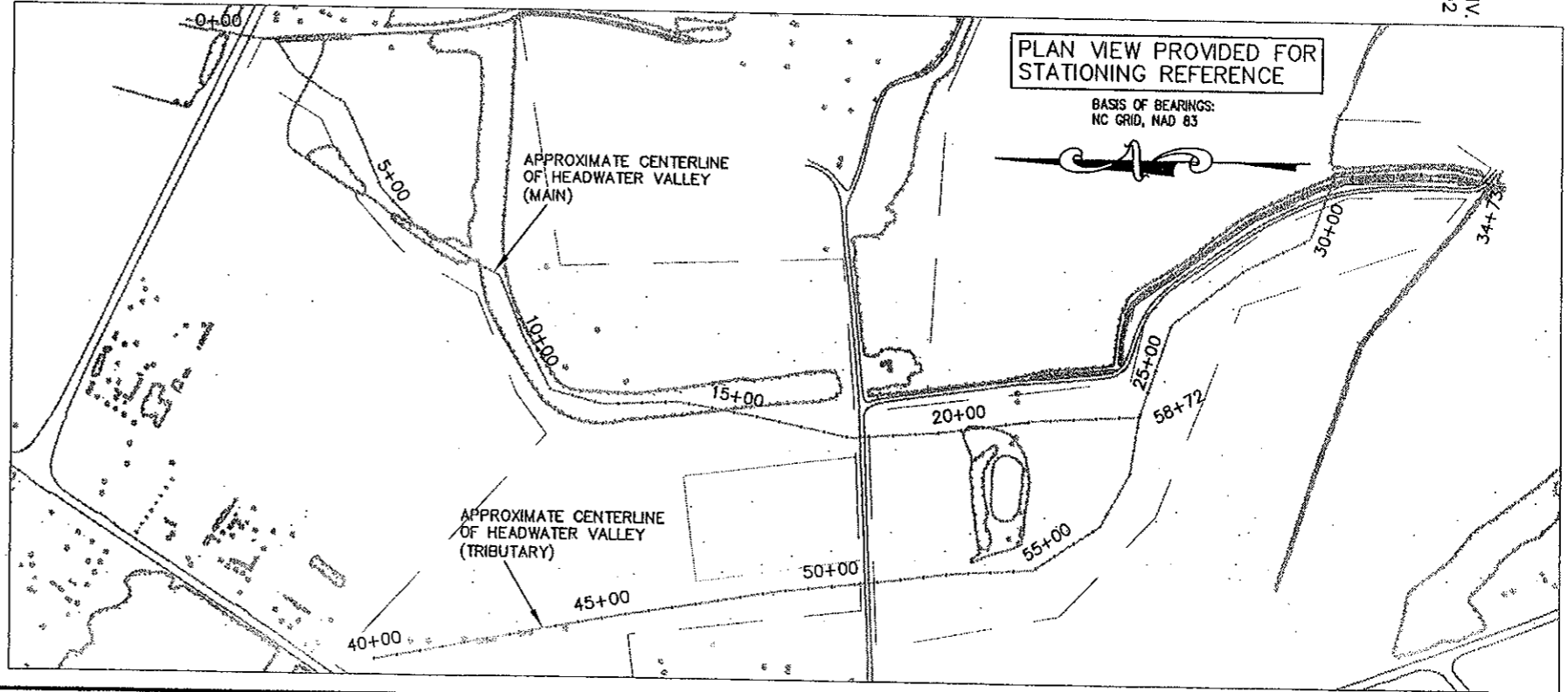
UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA



PROFILE LEGEND

- EXISTING GROUND WATER ELEVATION
- PROPOSED GROUND WATER ELEVATION
- EXISTING GROUND SURFACE
- - - PROPOSED GROUND SURFACE MODIFICATION
- EXISTING DITCH ELEVATION

VERTICAL INCREMENT = 0.5 FT.
 HORIZONTAL INCREMENT = 100 FT.



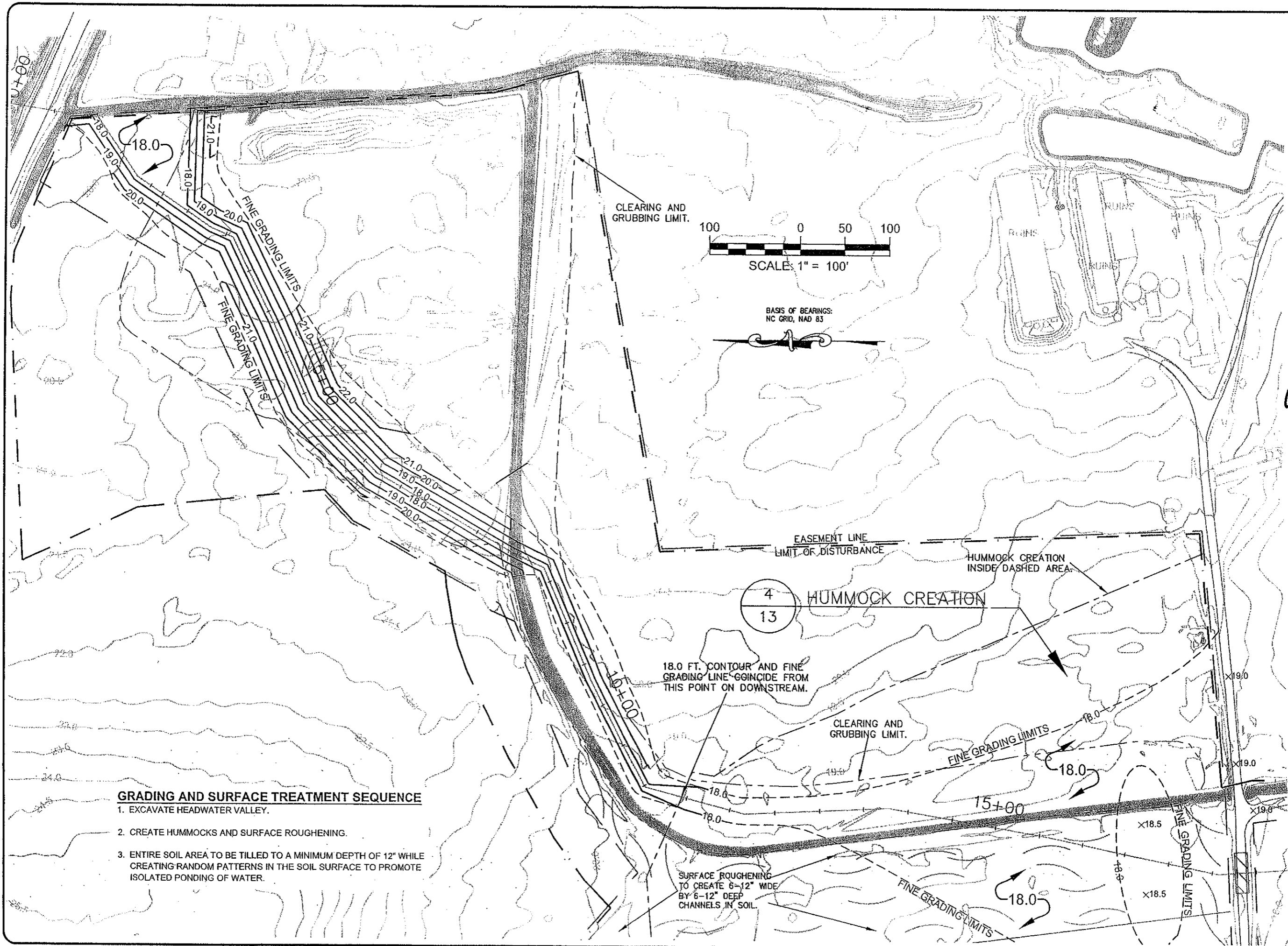
REVISIONS, DATE AND INITIAL: LIMITS OF DISTURBANCE DENOTED WITH NEW LINETYPE. 1-12-07, JMH // STAGING AREA DENOTED 3-13-07, JMH //

NATURAL SYSTEMS
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DATE: 3/13/07
 DESIGNED BY: JMH/BMS
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 SCALE: NOT TO SCALE

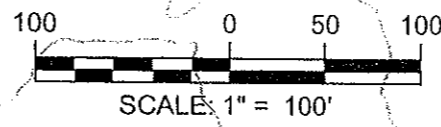
LONGITUDINAL PROFILE
 UT TO PEMBROKE CREEK
 STREAM AND WETLAND RESTORATION
 CHOWAN COUNTY, NORTH CAROLINA

SHEET **5** OF 21



GRADING AND SURFACE TREATMENT SEQUENCE

1. EXCAVATE HEADWATER VALLEY.
2. CREATE HUMMOCKS AND SURFACE ROUGHENING.
3. ENTIRE SOIL AREA TO BE TILLED TO A MINIMUM DEPTH OF 12" WHILE CREATING RANDOM PATTERNS IN THE SOIL SURFACE TO PROMOTE ISOLATED PONDING OF WATER.



BASIS OF BEARINGS:
NC GRID, NAD 83



REVISIONS, DATE AND INITIAL: LIMITS OF DISTURBANCE DENOTED WITH NEW LINETYPE, 1-12-07, JMH // STAGING AREA DENOTED 3-13-07, JMH //

NATURAL SYSTEMS ENGINEERING
3719 Benson Drive Raleigh, North Carolina 27609 (919) 878-5444 www.nsepc.com

James M. Hall
SEAL
29216
JAMES M. HALL

DATE: 3/13/07
DESIGNED BY: JMB/BMS
DRAWN BY: DST
CHECKED BY: JMH
PROJECT NO.: EEP0601
FILE: eep0601_base
SCALE: 1"=100'

GRADING PLAN AREAS 1A1 & 1A2
UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

SHEET **6** of 21

GRADING AND SURFACE TREATMENT SEQUENCE

1. EXCAVATE HEADWATER VALLEY.
2. CREATE HUMMOCKS AND SURFACE ROUGHENING.
3. ENTIRE SOIL AREA TO BE TILLED TO A MINIMUM DEPTH OF 12" WHILE CREATING RANDOM PATTERNS IN THE SOIL SURFACE TO PROMOTE ISOLATED PONDING OF WATER.



BASIS OF BEARINGS:
NC GRID, NAD 83



CLEARING AND GRUBBING LIMIT.

18.0 FT. CONTOUR AND FINE GRADING LINE ARE THE SAME FROM THIS POINT ON DOWNSTREAM.

FINE GRADING LIMITS

EXISTING PIPE TO BE REMOVED

EASEMENT LINE
LIMIT OF DISTURBANCE

4
13

HUMMOCK CREATION

HUMMOCK CREATION
INSIDE LIMIT LINE

HUMMOCK CREATION
LIMIT LINE

SURFACE ROUGHENING TO
CREATE 6-12" WIDE BY 6-12"
DEEP CHANNELS IN SOIL.

EXISTING PIPE
TO BE REMOVED

CENTERLINE
EL. = 18.0 FT.

NO EXCAVATION ALONG
WATER FEATURE.

SURFACE ROUGHENING ONLY.

40+00

45+00

50+00

CENTERLINE
EL. = 18.0 FT.

15+00

REVISIONS, DATE AND INITIAL; LIMITS OF DISTURBANCE DENOTED WITH NEW LINE TYPE, 1-12-07, JMH // STAGING AREA DENOTED 3-13-07, JMH //

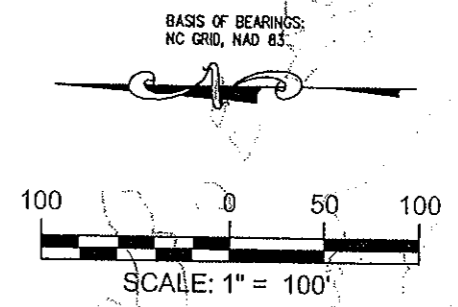
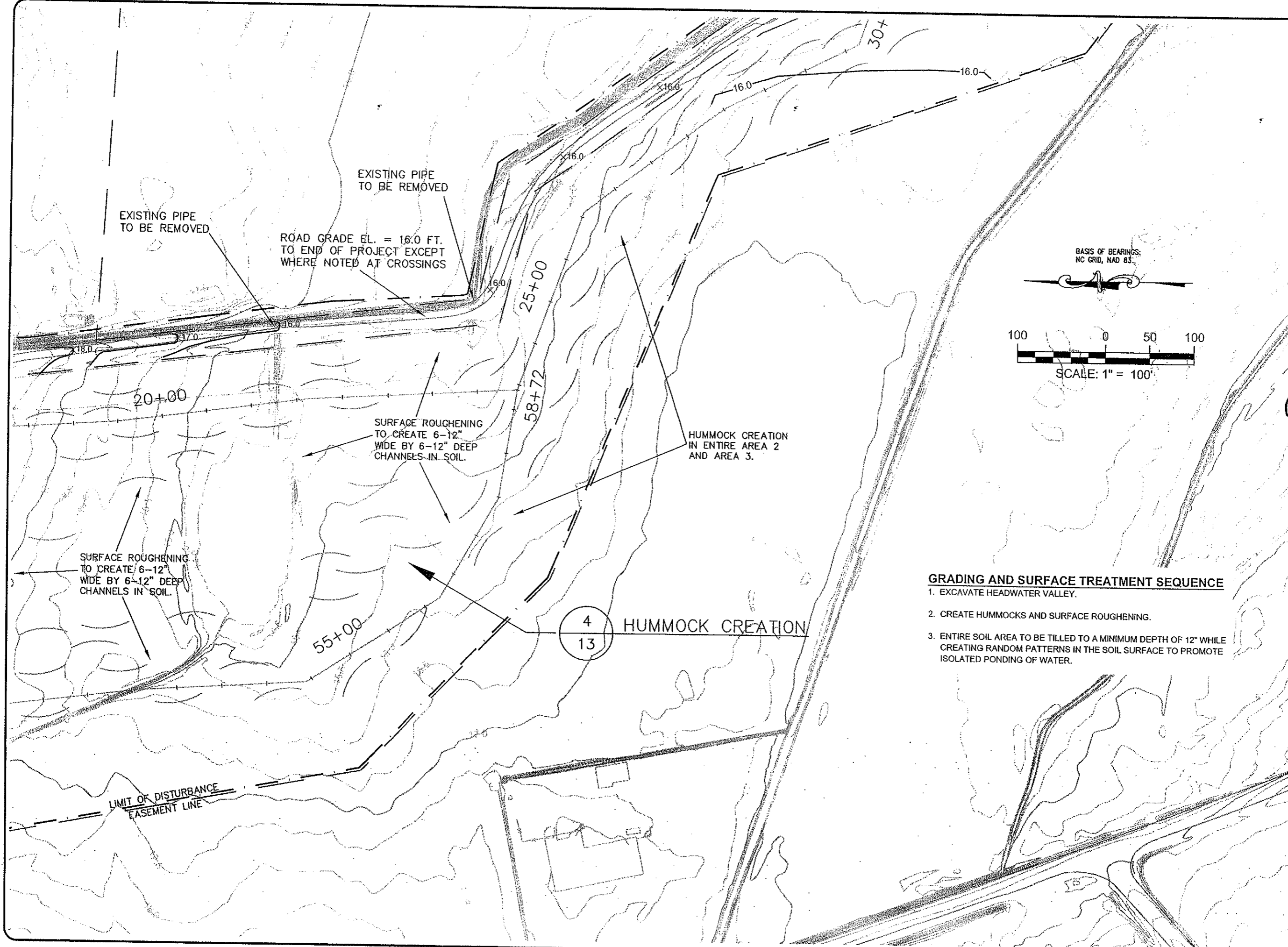
NATURAL SYSTEMS
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DATE:	3/13/07
DESIGNED BY:	JMH/BMS
DRAWN BY:	DST
CHECKED BY:	JMH
PROJECT NO.:	EEP0601
FILE:	eep0601_base
SCALE:	1"=100'

GRADING PLAN AREA 1B

UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA



GRADING AND SURFACE TREATMENT SEQUENCE

1. EXCAVATE HEADWATER VALLEY.
2. CREATE HUMMOCKS AND SURFACE ROUGHENING.
3. ENTIRE SOIL AREA TO BE TILLED TO A MINIMUM DEPTH OF 12" WHILE CREATING RANDOM PATTERNS IN THE SOIL SURFACE TO PROMOTE ISOLATED PONDING OF WATER.

REVISIONS, DATE AND INITIAL: LIMITS OF DISTURBANCE DENOTED WITH NEW LINETYPE, 1-12-07, JMH // STAGING AREA DENOTED 3-13-07, JMH //

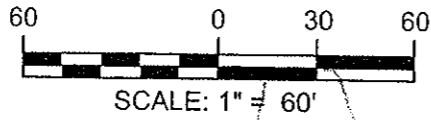
NATURAL SYSTEMS
ENGINEERING
3719 Benson Drive Raleigh, North Carolina 27609 (919) 876-5444 www.nsepc.com

DATE: 3/13/07
DESIGNED BY: JMH/BMS
DRAWN BY: DST
CHECKED BY: JMH
PROJECT NO.: EEP0601
FILE: eep0601_base
SCALE: 1"=100'

GRADING PLAN AREA 2
UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

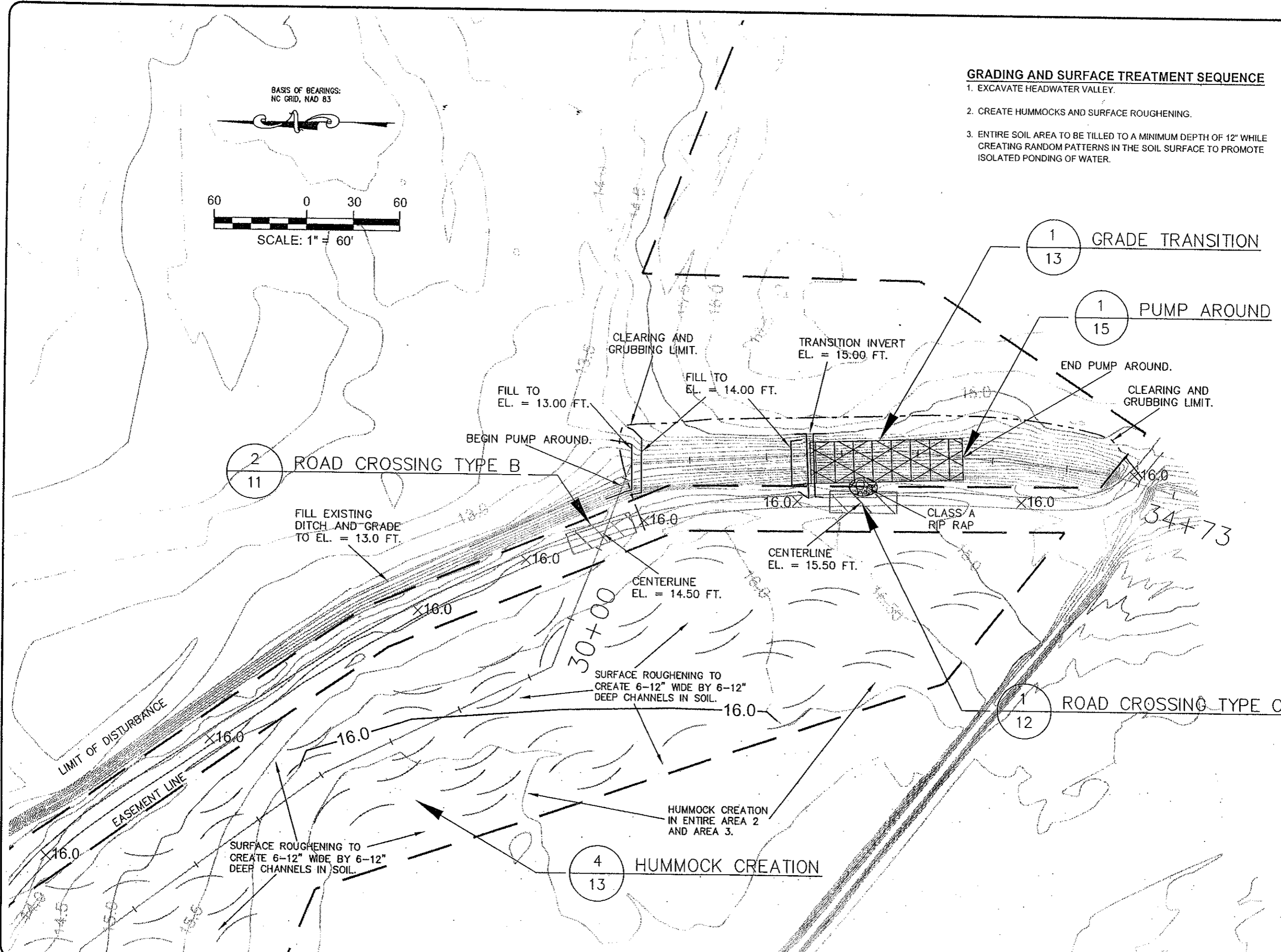
SHEET 8 of 21

BASIS OF BEARINGS:
NC GRID, NAD 83



GRADING AND SURFACE TREATMENT SEQUENCE

1. EXCAVATE HEADWATER VALLEY.
2. CREATE HUMMOCKS AND SURFACE ROUGHENING.
3. ENTIRE SOIL AREA TO BE TILLED TO A MINIMUM DEPTH OF 12" WHILE CREATING RANDOM PATTERNS IN THE SOIL SURFACE TO PROMOTE ISOLATED PONDING OF WATER.



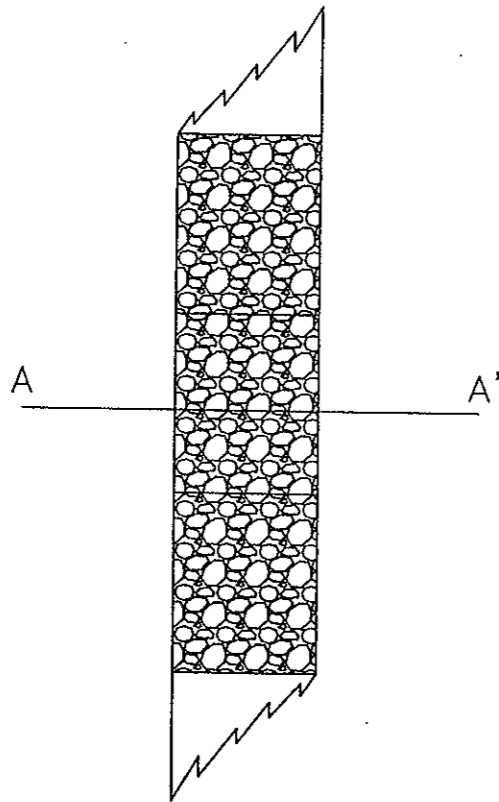
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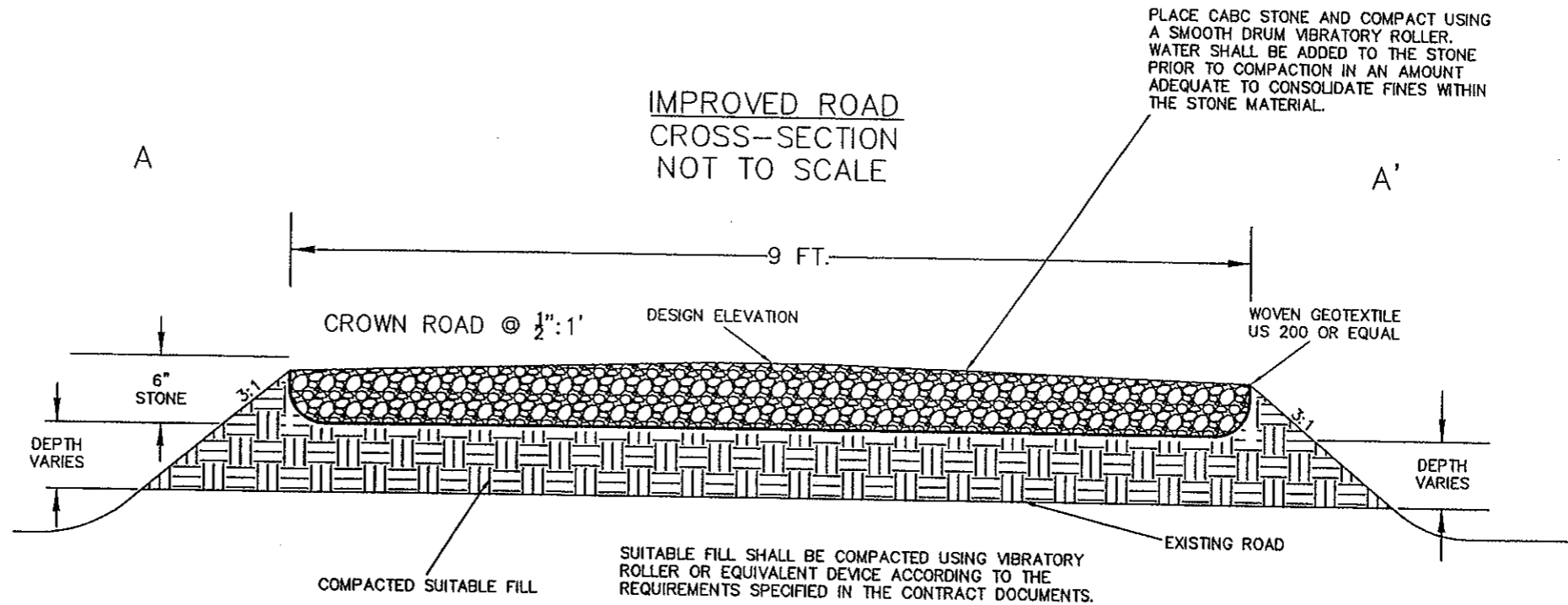
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 SCALE: 1"=60'

GRADING PLAN AREA 3
 UT TO PEMBROKE CREEK
 STREAM AND WETLAND RESTORATION
 CHOWAN COUNTY, NORTH CAROLINA

IMPROVED ROAD
PLAN VIEW
NOT TO SCALE



IMPROVED ROAD
CROSS-SECTION
NOT TO SCALE



1
10

IMPROVED ROAD SECTION

NOT TO SCALE

CABC = CRUSHED AGGREGATE BASE COURSE

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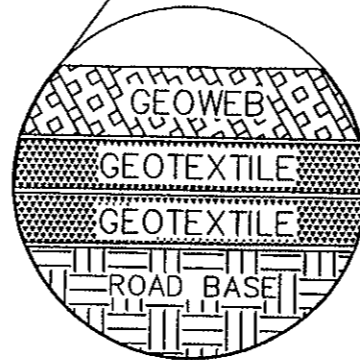
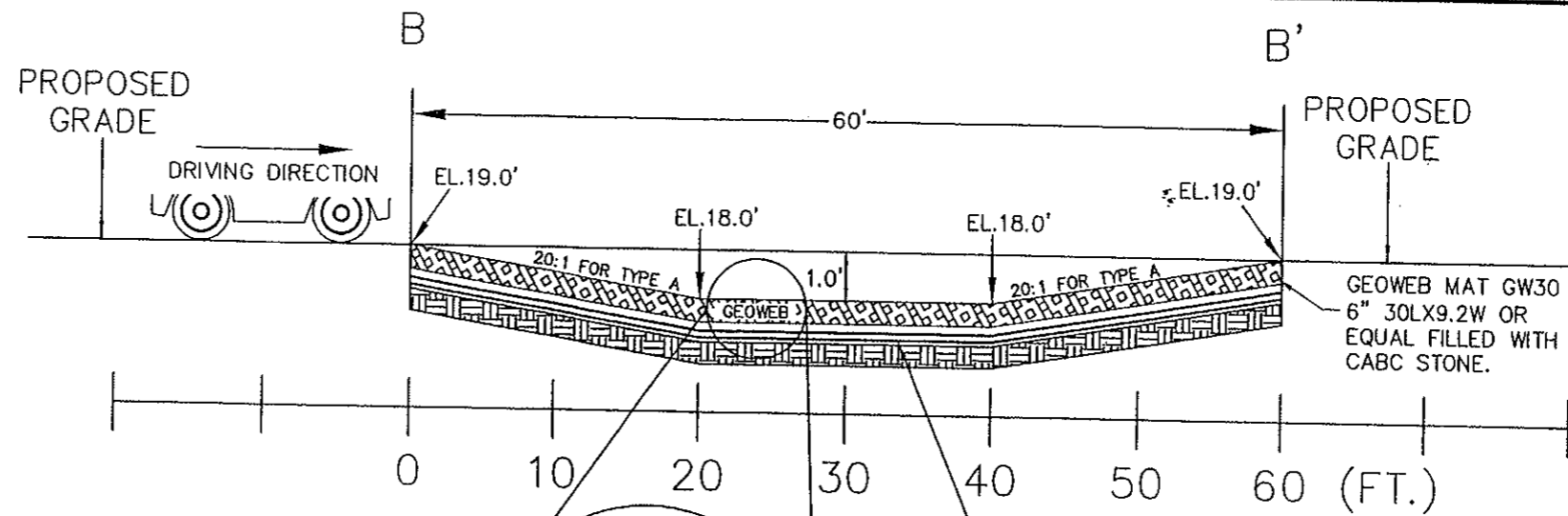
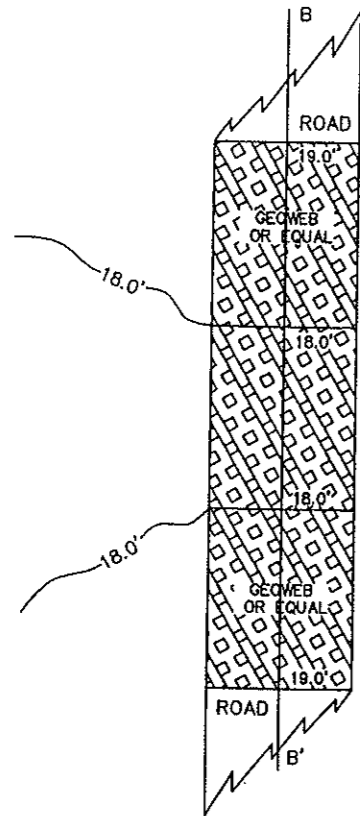
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DESIGNED BY:	JMH/BMS
DRAWN BY:	DST
CHECKED BY:	JMH
PROJECT NO.:	EEP0601
FILE:	ee0601_base
SCALE:	NOT TO SCALE

IMPROVED ROAD DETAILS

UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

SHEET 10 of 21

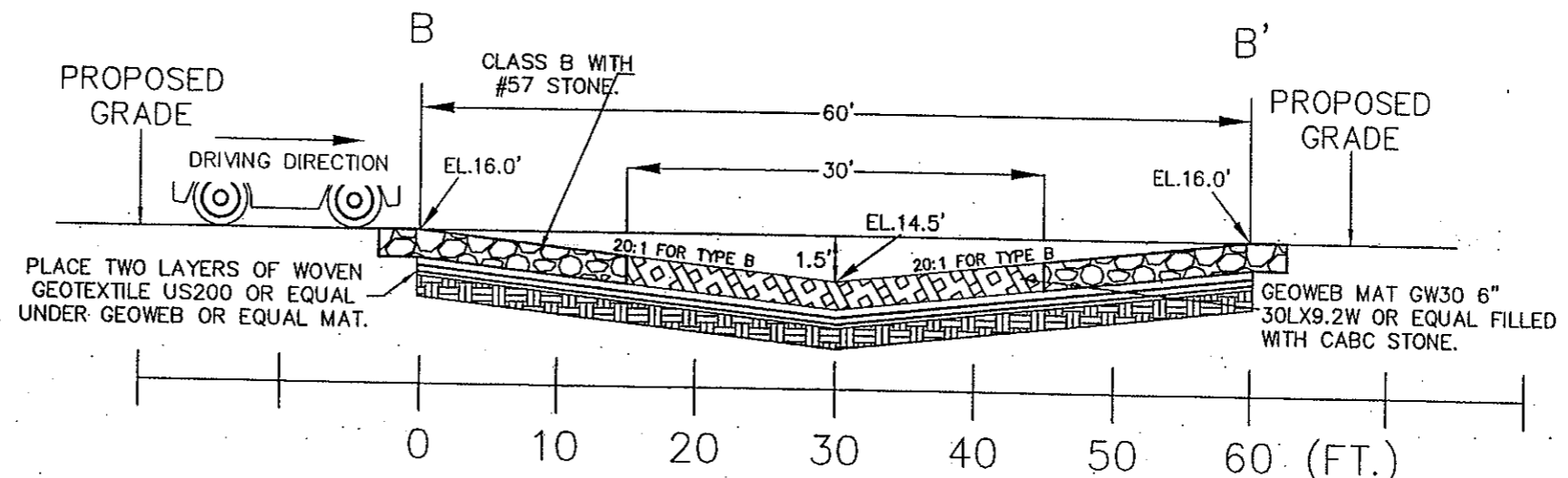
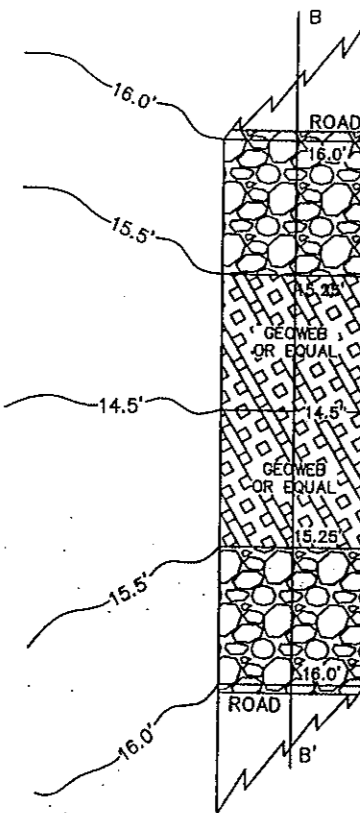
NOTE: ROAD CROSSING DETAILS ON SHEET 12.



TYPICAL OF ALL CROSSINGS (TYPE A, B, AND C).

PLACE TWO LAYERS OF WOVEN GEOTEXTILE US200 OR EQUAL UNDER GEOWEB OR EQUAL MAT.

1 ROAD CROSSING TYPE A
11 NOT TO SCALE



PLACE TWO LAYERS OF WOVEN GEOTEXTILE US200 OR EQUAL UNDER GEOWEB OR EQUAL MAT.

GEOWEB MAT GW30 6" 30LX9.2W OR EQUAL FILLED WITH CABG STONE.

2 ROAD CROSSING TYPE B
11 NOT TO SCALE

NOTE: ROAD CROSSING DETAILS ON SHEET 12.

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NATURAL SYSTEMS
ENGINEERING

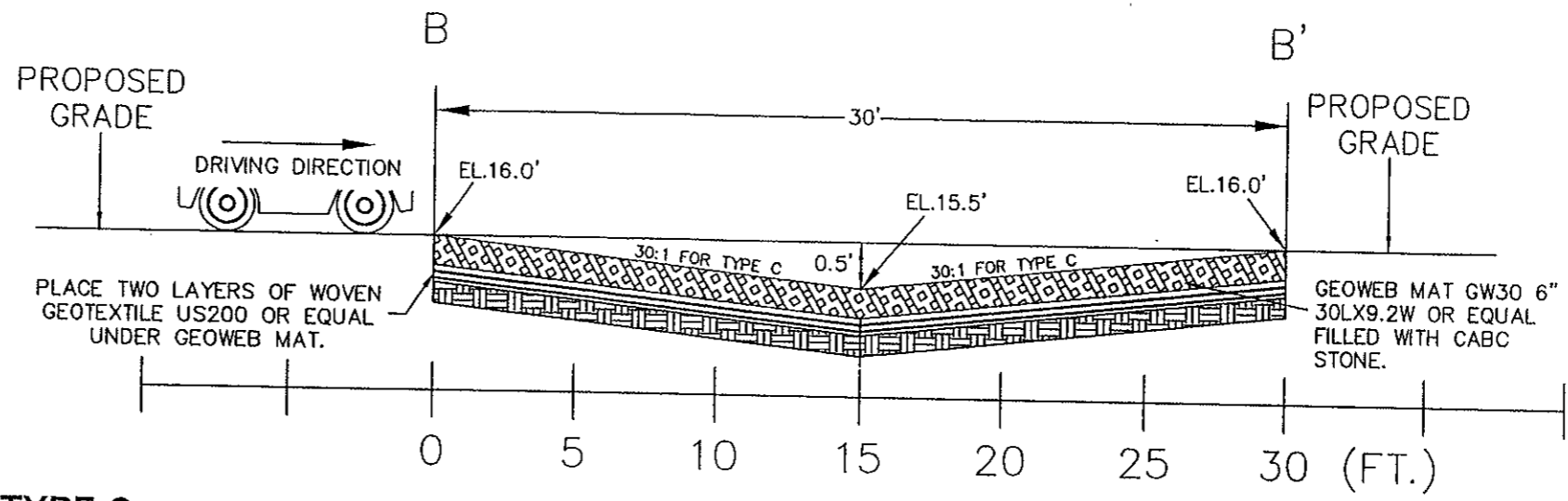
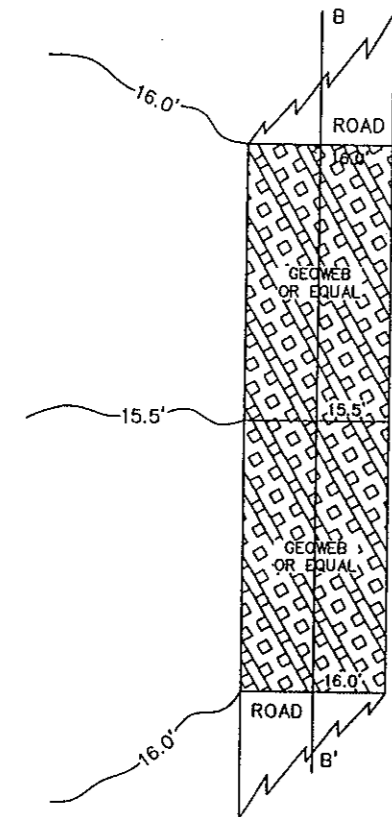
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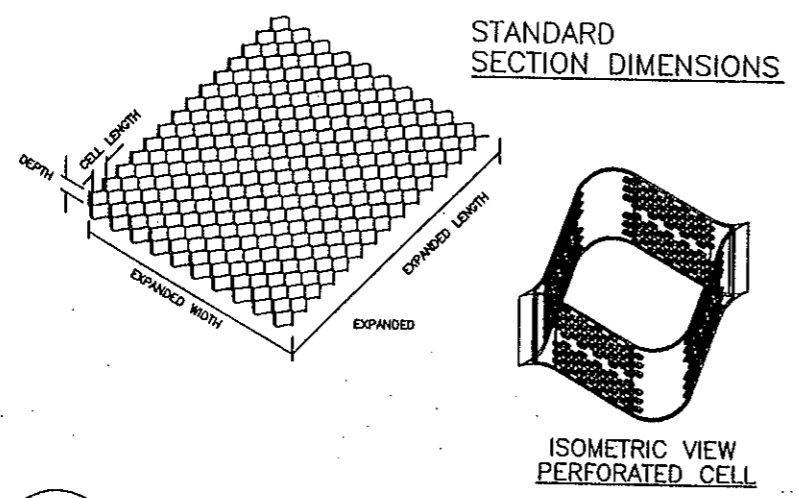
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DESIGNED BY:	JMH/BMS
DRAWN BY:	DST
CHECKED BY:	JMH
PROJECT NO.:	EEP0601
FILE:	eep0601_base
SCALE:	NOT TO SCALE

ROAD CROSSING DETAILS 1

UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA



1
12
ROAD CROSSING TYPE C
NOT TO SCALE



2
12
GEOWEB OR EQUAL MATERIAL SPECIFICATIONS
NOT TO SCALE

NOTES FOR STANDARD CONNECTIONS

1. ADJACENT GEOWEB SECTIONS ARE STAPLED TOGETHER USING MANUFACTURER APPROVED STAPLERS AND STAPLES
2. THE TOP EDGES OF ADJACENT CELL WALLS SHOULD BE HELD FLUSH WHEN STAPLING.
3. SIDE CONNECTIONS BETWEEN EXPANDED GEOWEB SECTIONS SHOULD BE INTERLEAFED AS SHOWN IN FIGURE A. WELDED EDGE SEAMS SHOULD BE ALIGNED WHEN STAPLING.
4. END CONNECTIONS BETWEEN GEOWEB SECTIONS SHOULD BE BUTTED AS SHOWN IN FIGURE B. THE LONGITUDINAL CENTER-LINES OF ABUTTING EXTERNAL CELLS SHOULD BE ALIGNED AND STAPLED AT THE CELL WALL CONTACT POINT.

CELL SIZES

THE CELL		NON-STANDARD 200 (8)	NOMINAL CELL AREA cm ² (in ²)	DIMENSIONS AT RECOMMENDED CELL EXPANSION RANGE		MINIMUM		MAXIMUM	
CELL DEPTHS mm (in)	CELL LENGTH			LENGTH cm (in)	WIDTH cm (in)	LENGTH cm (in)	WIDTH cm (in)		
75 (3)	100 (4)	150 (6)	490 (71.3)	280 (10.23)	288 (11.30)	315 (12.39)	360 (13.77)		

NOTE: ALL DIMENSIONS ARE NOMINAL AND ARE SUBJECT TO MANUFACTURING TOLERANCES

SECTION SIZES

GW30V - 8 CELLS WIDE (FOR SLOPE & CHANNEL PROTECTION, AND LOAD SUPPORT)

CELLS LONG	MINIMUM EXPANSION LENGTH		MAXIMUM EXPANSION LENGTH		NOMINAL AREA	
	ft	m	ft	m	ft ²	m ²
15	15.4	4.7	9.2	2.8	143	13.3
18	18.0	5.5			167	15.5
21	21.4	6.5			198	18.4
25	24.8	7.6			230	21.4
29	29.1	8.9			270	25.0
33	34.2	10.4			317	29.5

REVISIONS, DATE AND INITIAL LIMITS OF DISTURBANCE DENOTED WITH NEW LINE TYPE, 1-12-07, JMH // STAGING AREA DENOTED 3-13-07, JMH //

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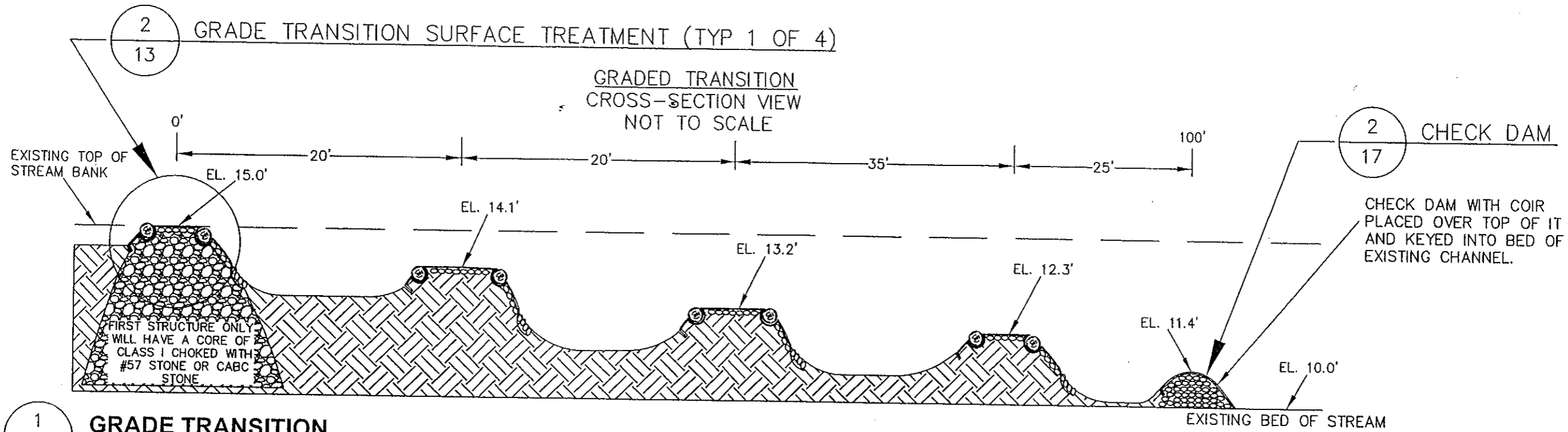
SEAL
29216
3-13-07
JAMES M. HALL

DATE: 3/13/07
DESIGNED BY: JMH/BMS
DRAWN BY: DST
CHECKED BY: JMH
PROJECT NO.: EEP0601
FILE: eep0601_base
SCALE: NOT TO SCALE

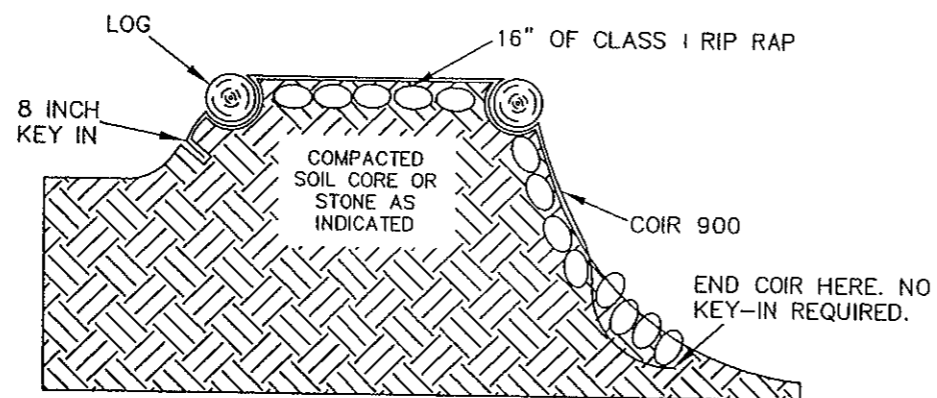
ROAD CROSSING DETAILS 2

UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

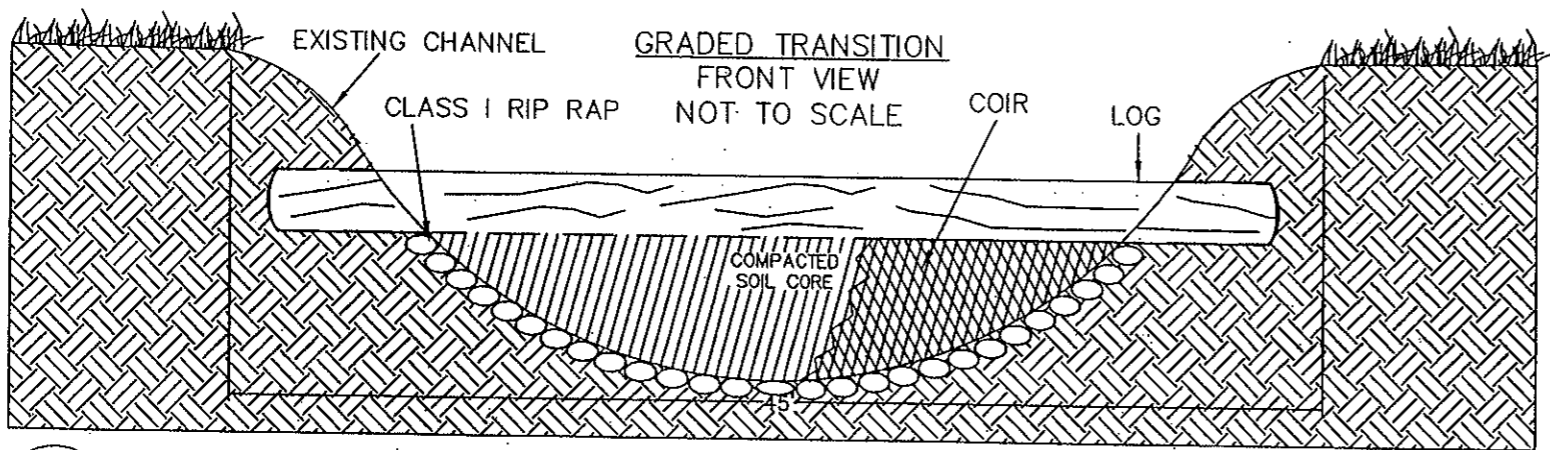
SHEET 12 of 21



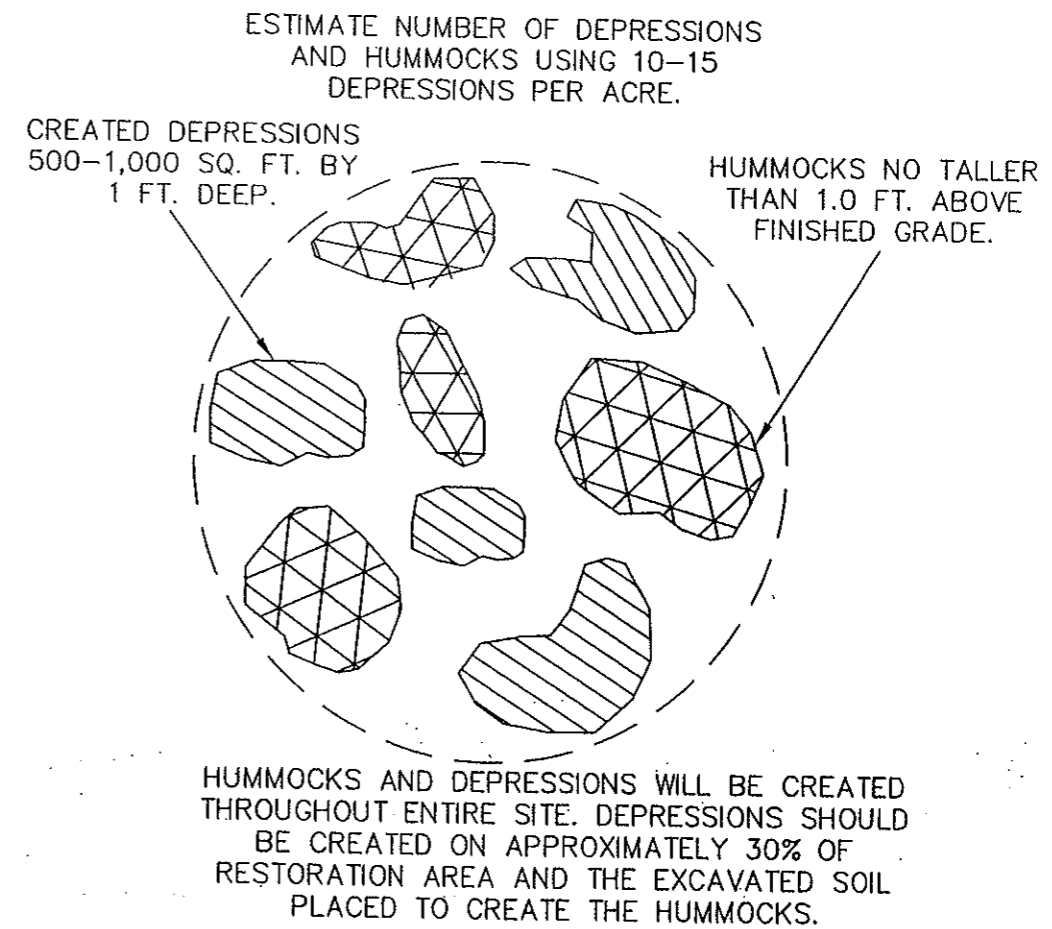
1
13 GRADE TRANSITION
NOT TO SCALE



2
13 GRADE TRANSITION SURFACE TREATMENT
NOT TO SCALE



3
13 GRADE TRANSITION
NOT TO SCALE



4
13 HUMMOCK CREATION
NOT TO SCALE

REVISIONS, DATE AND INITIAL: LIMITS OF DISTURBANCE DENOTED WITH NEW LINE/TYPE, 1-12-07, JMH // STAGING AREA DENOTED 3-13-07, JMH //

NATURAL SYSTEMS
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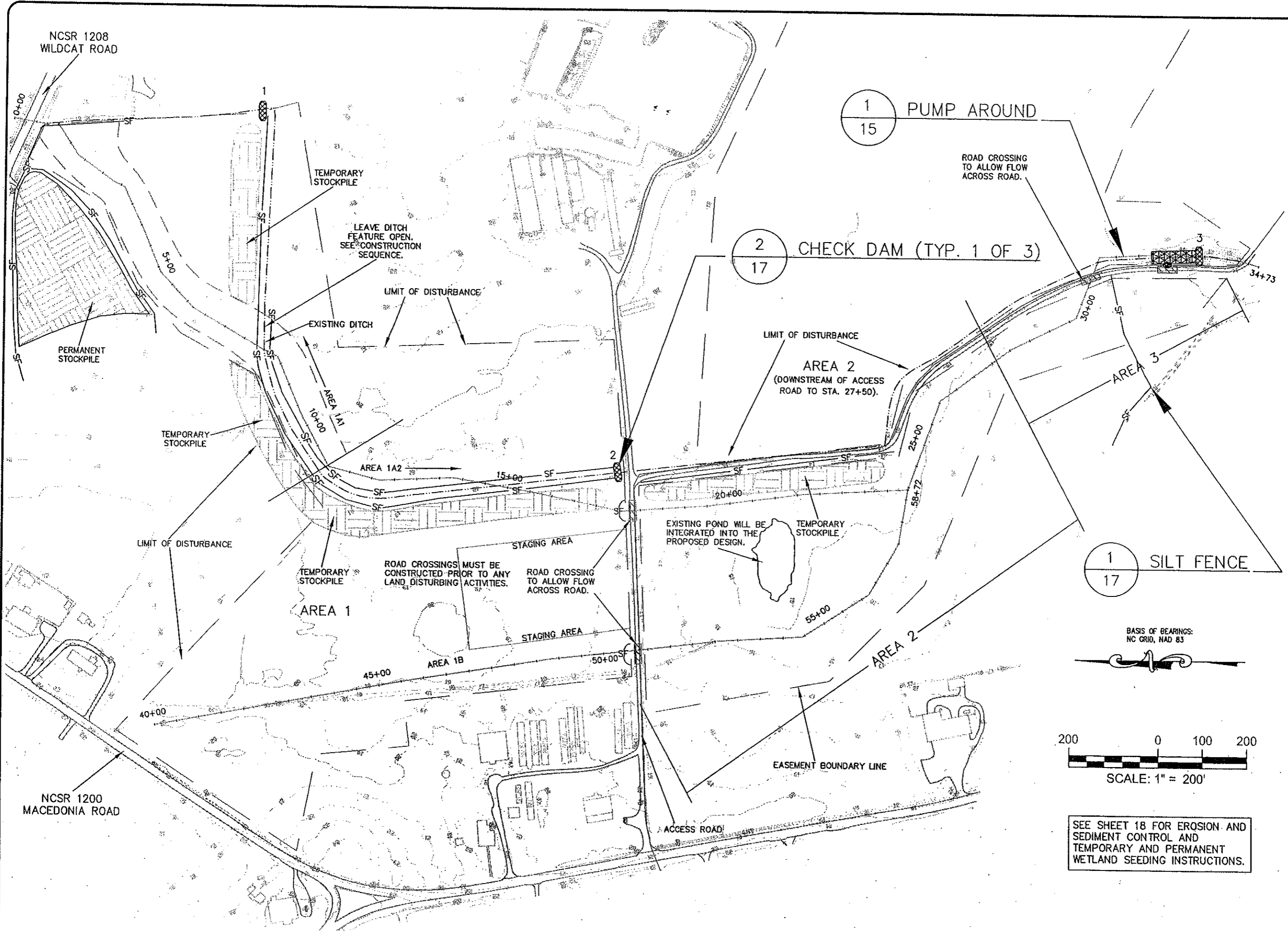
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DRAWN BY:	DST
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PROJECT NO.:	EEP0601
FILE:	eep0601_base
SCALE:	NOT TO SCALE

GRADE TRANSITION AND HUMMOCK DETAILS

UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA



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NATURAL SYSTEMS
ENGINEERING

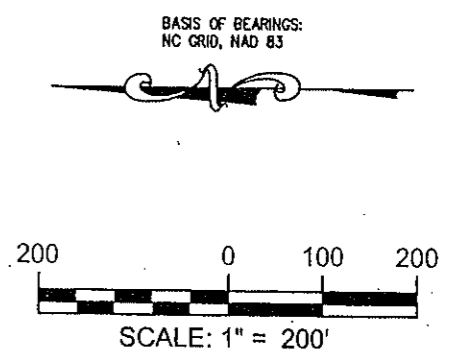
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 DESIGNED BY: JMH/BMS
 DRAWN BY: DST
 CHECKED BY: JMH
 PROJECT NO.: EEP0601
 FILE: eep0601_base
 SCALE: 1"=200'

EROSION AND SEDIMENT CONTROL

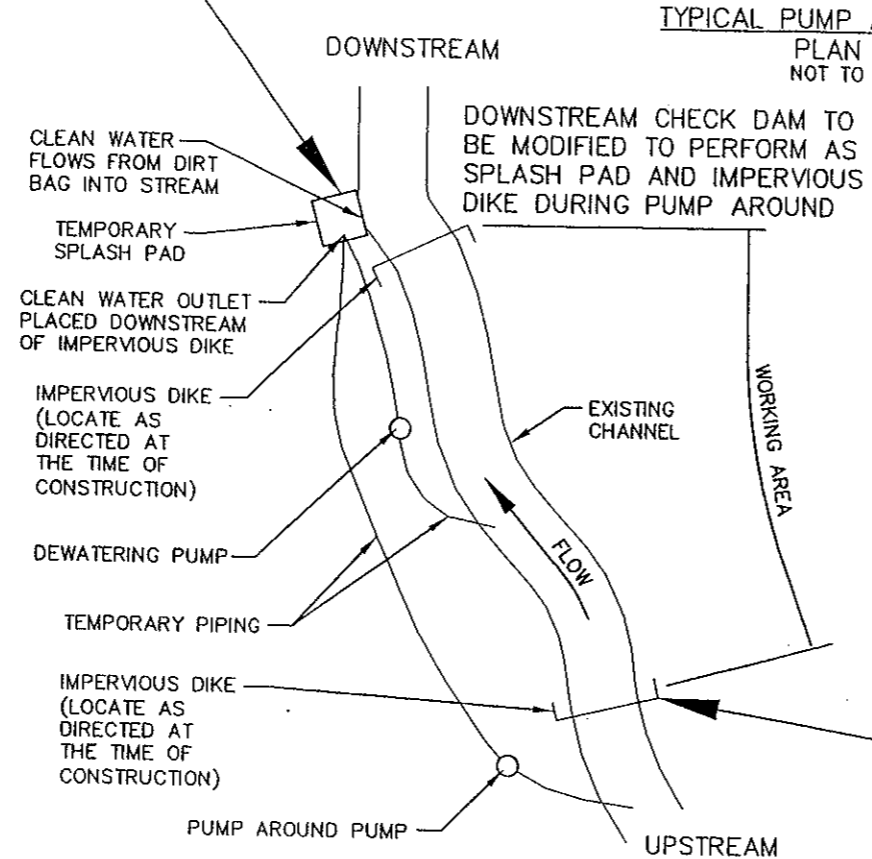
UT TO PEMBROKE CREEK
 STREAM AND WETLAND RESTORATION
 CHOWAN COUNTY, NORTH CAROLINA



SEE SHEET 18 FOR EROSION AND SEDIMENT CONTROL AND TEMPORARY AND PERMANENT WETLAND SEEDING INSTRUCTIONS.

2
15

TEMPORARY SPLASH PAD



NOTES:

1. EXCAVATION SHALL BE PERFORMED IN ONLY DRY SECTIONS OF CHANNEL UNLESS DRAINAGE AREA EXCEEDS 6 SQUARE MILES.
2. IMPERVIOUS DIKES SHOULD BE USED TO ISOLATE WORK AREAS FROM STREAM FLOW. THE CONTRACTOR SHALL NOT DISTURB MORE AREA THAN CAN BE STABILIZED IN ONE WORKING DAY.
3. EACH PUMP AROUND PUMP SHOULD ADEQUATELY CONVEY BASE FLOW VOLUMES.

SEQUENCE OF CONSTRUCTION FOR TYPICAL PUMP AROUND

1. THE CONTRACTOR WILL INSTALL THE PUMP AROUND PUMP AND THE THE TEMPORARY PIPING THAT WILL CONVEY THE BASE FLOW FROM UPSTREAM OF THE WORK SITE TO THE SPECIAL STILLING BASIN.
2. INSTALL UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
3. INSTALL THE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS IF NEEDED TO DEWATER THE ENTRAPPED AREA. THE PUMP AND HOSE FOR THIS PURPOSE SHALL BE OF SUFFICIENT SIZE TO DEWATER THE WORK AREA.
4. THE CONTRACTOR WILL PERFORM STREAM RESTORATION WORK IN ACCORDANCE WITH THE PLAN AND FOLLOWING THE GENERAL CONSTRUCTION SEQUENCE.
5. THE CONTRACTOR WILL EXCAVATE ANY ACCUMULATED SEDIMENT AND DEWATER BEFORE REMOVAL OF THE IMPERVIOUS DIKE. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE/PIPING STARTING WITH THE DOWNSTREAM DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE/PIPING STARTING WITH THE DOWNSTREAM DIKE FIRST.
6. ONCE THE WORKING AREA IS COMPLETED, REMOVE THE STILLING BASINS AND STABILIZE DISTURBED AREAS TO SPECIFICATIONS AS SHOWN ON PLANS.

3
15

IMPERVIOUS DIKE

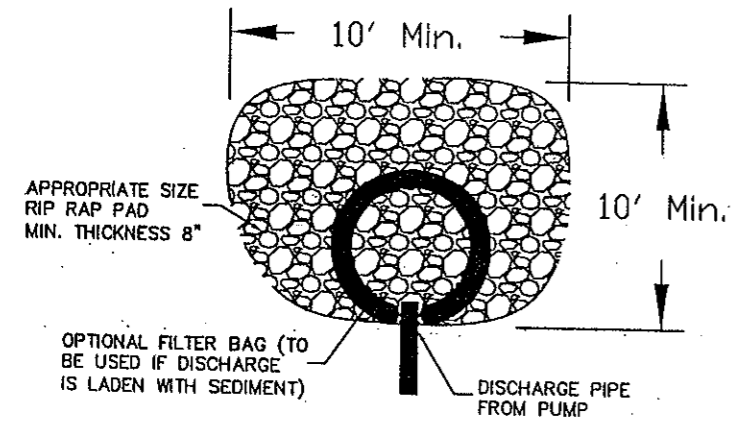
1
15

PUMP AROUND

NOT TO SCALE

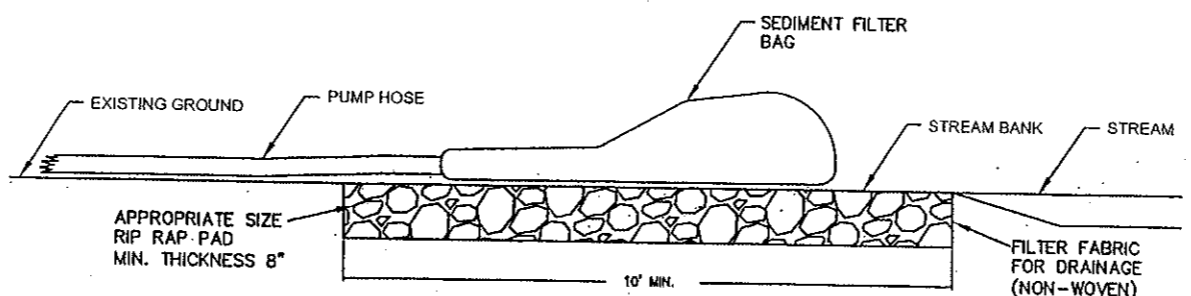
TEMPORARY SPLASH PAD DETAIL

PLAN VIEW
NOT TO SCALE



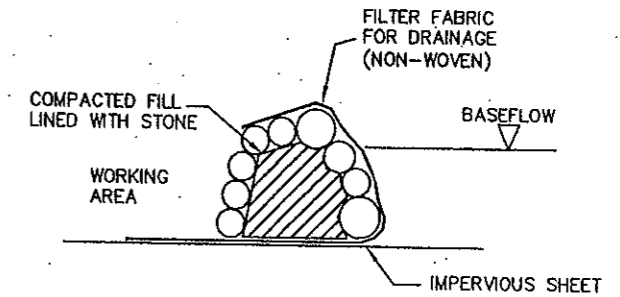
TEMPORARY SPLASH PAD DETAIL

PROFILE VIEW
NOT TO SCALE



IMPERVIOUS DIKE

PROFILE VIEW
NOT TO SCALE



NOTES:

AT THE ENGINEER'S DISCRETION, ALTERNATE DEWATERING STRUCTURES MAY BE USED (I.E. SEDIMENT TANKS, FILTER BOX, STRAW BALE/SILT FENSE PIT). HOWEVER, REGARDLESS OF THE DEWATERING STRUCTURE USED, ALL MUST BE SIZED AND OPERATE TO ALLOW ALL PUMPED WATER TO BE FILTERED TO PREVENT SEDIMENTS FROM ERODING AND MOVING OFF SITE.

2
15

TEMPORARY SPLASH PAD

NOT TO SCALE

3
15

IMPERVIOUS DIKE

NOT TO SCALE

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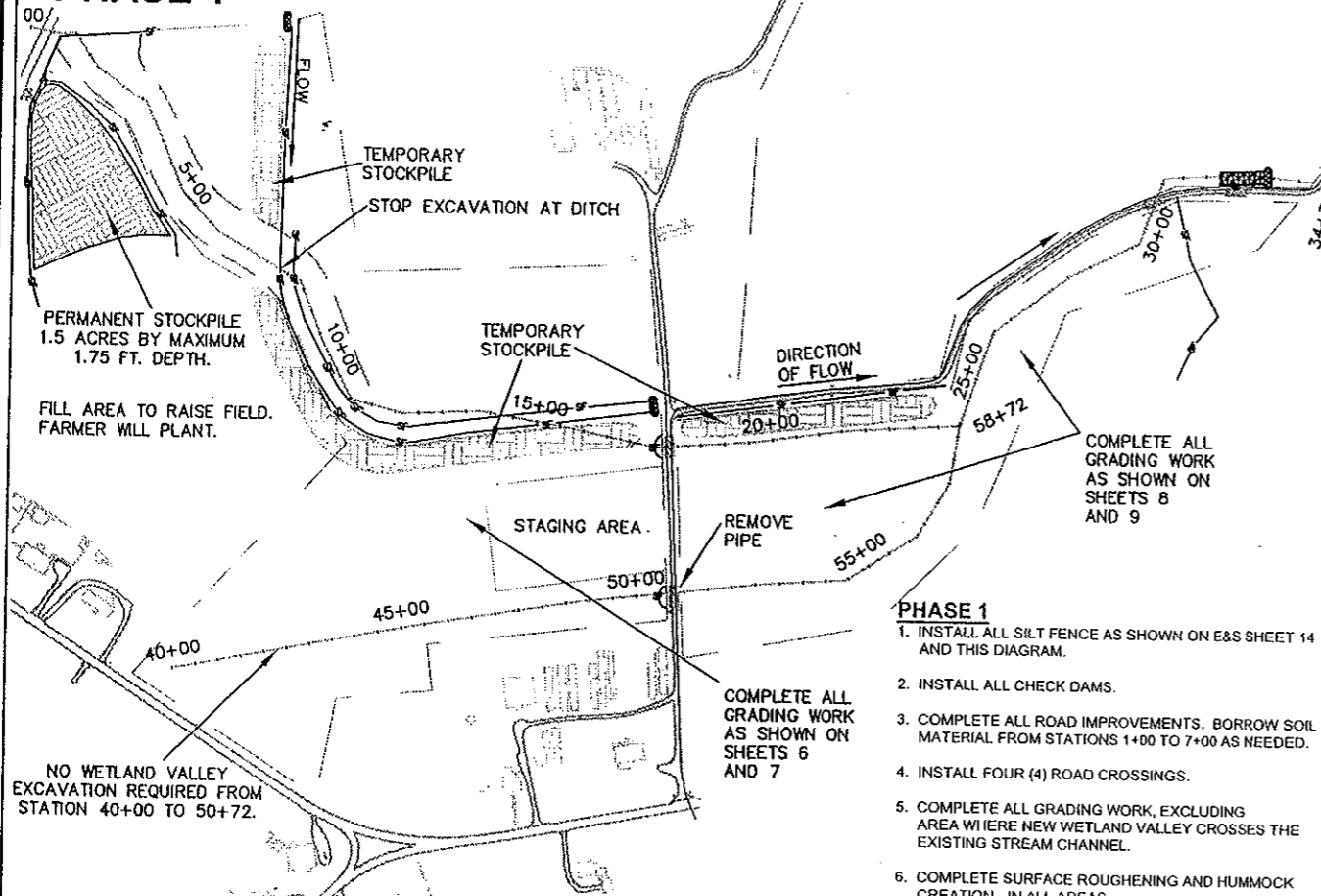
Professional Engineer Seal for James M. Hall, No. 29216, dated 3/12/07.

DATE:	3/13/07
DESIGNED BY:	JMH/BMS
DRAWN BY:	DST
CHECKED BY:	JMH
PROJECT NO.:	EEP0601
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SCALE:	NOT TO SCALE

PUMP AROUND DETAILS

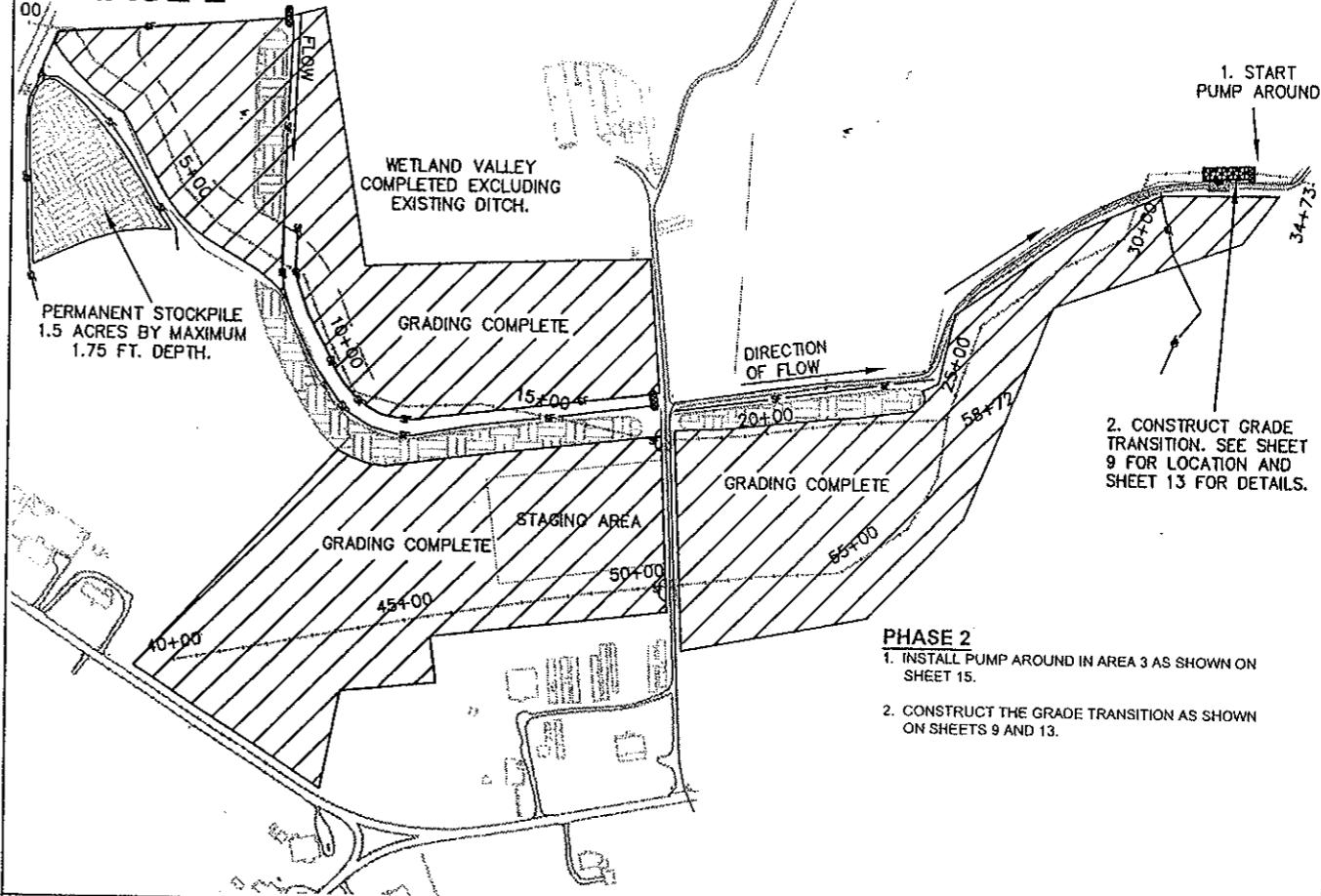
UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

PHASE 1



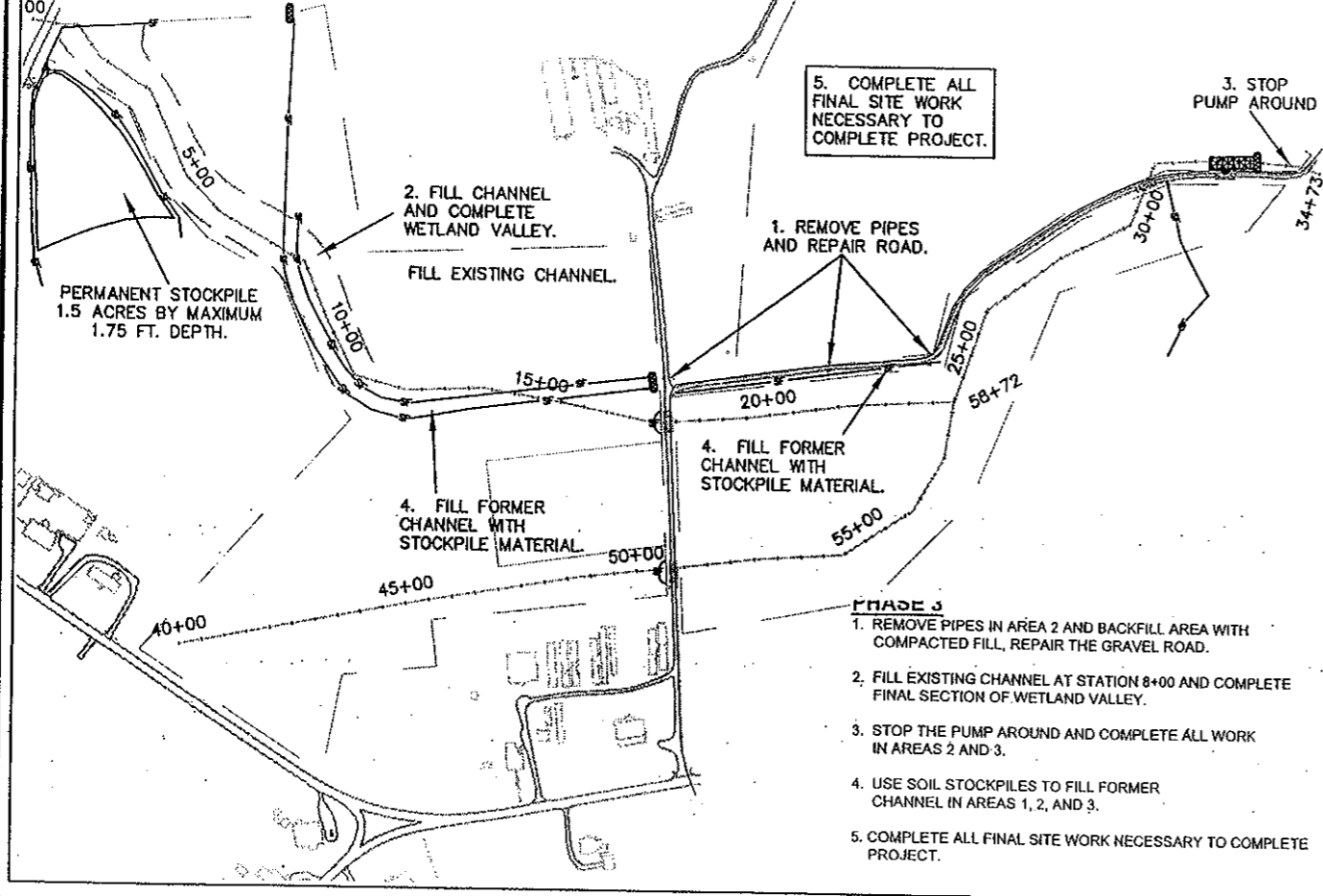
- PHASE 1**
1. INSTALL ALL SILT FENCE AS SHOWN ON E&S SHEET 14 AND THIS DIAGRAM.
 2. INSTALL ALL CHECK DAMS.
 3. COMPLETE ALL ROAD IMPROVEMENTS. BORROW SOIL MATERIAL FROM STATIONS 1+00 TO 7+00 AS NEEDED.
 4. INSTALL FOUR (4) ROAD CROSSINGS.
 5. COMPLETE ALL GRADING WORK, EXCLUDING AREA WHERE NEW WETLAND VALLEY CROSSES THE EXISTING STREAM CHANNEL.
 6. COMPLETE SURFACE ROUGHENING AND HUMMOCK CREATION - IN ALL AREAS.

PHASE 2



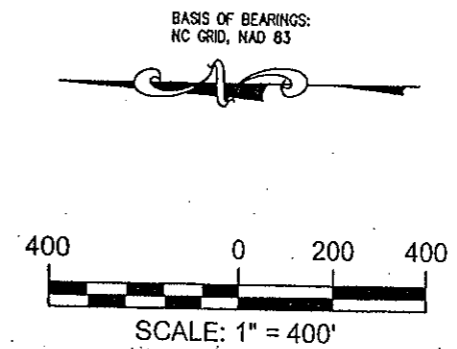
- PHASE 2**
1. INSTALL PUMP AROUND IN AREA 3 AS SHOWN ON SHEET 15.
 2. CONSTRUCT THE GRADE TRANSITION AS SHOWN ON SHEETS 9 AND 13.

PHASE 3



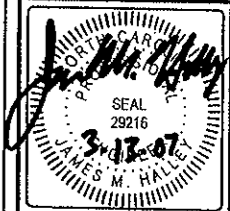
- PHASE 3**
1. REMOVE PIPES AND REPAIR ROAD.
 2. STOP THE PUMP AROUND AND COMPLETE ALL WORK IN AREAS 2 AND 3.
 3. STOP PUMP AROUND
 4. USE SOIL STOCKPILES TO FILL FORMER CHANNEL IN AREAS 1, 2, AND 3.
 5. COMPLETE ALL FINAL SITE WORK NECESSARY TO COMPLETE PROJECT.

ANY DISTURBED AREAS WILL BE SEEDED AND STABILIZED WITHIN 21 CALENDAR DAYS OF LAND DISTURBANCE. SEE E&S AND SEEDING NOTES FOR ADDITIONAL INSTRUCTIONS.



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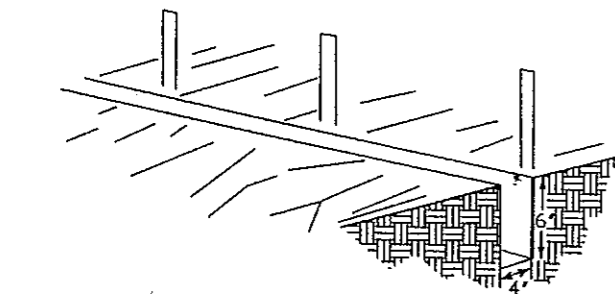
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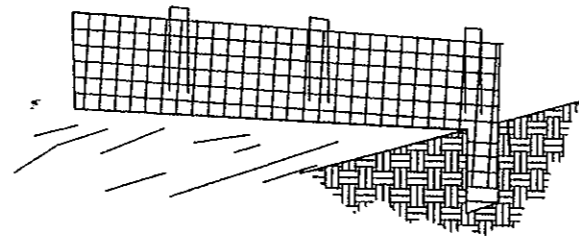
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CONSTRUCTION SEQUENCE

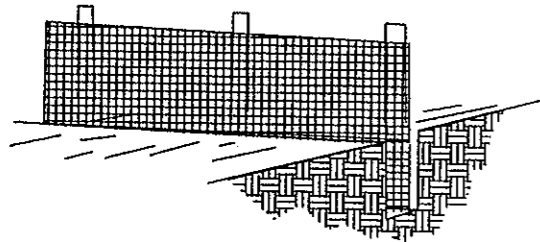
UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA



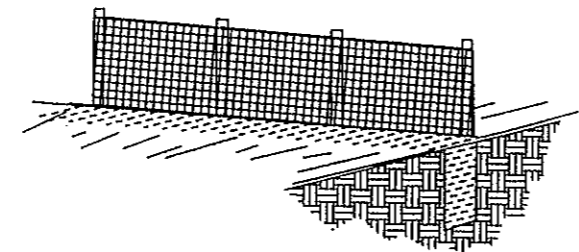
1. SET POSTS AND EXCAVATE A 4" WIDE X 6" DEEP TRENCH UPSLOPE ALONG THE LINE OF POSTS.



2. STAPLE WIRE FENCING TO THE POSTS.



3. ATTACH THE FILTER FABRIC TO THE WIRE FENCE AND EXTEND IT INTO THE TRENCH.



4. BACKFILL AND COMPACT THE EXCAVATED FILL.

NOTE: THIS SEDIMENT BARRIER UTILIZES STANDARD STRENGTH OR EXTRA STRENGTH SYNTHETIC FILTER FABRICS. IT IS DESIGNED FOR SITUATIONS IN WHICH ONLY SHEET OR OVERLAND FLOWS ARE EXPECTED.

SILT FENCE CONSTRUCTION SPECIFICATIONS

1. THE HEIGHT OF A SILT FENCE SHALL NOT EXCEED 36 INCHES (HIGHER FENCES MAY IMPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE).
2. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6 INCH OVERLAP, AND SECURELY SEALED.
3. POSTS SHALL BE SPACES A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 6 INCHES). WHEN EXTRA IS USED WITHOUT WIRE SUPPORT FENCE, POST SPACING SHALL NOT EXCEED 6 FEET.
4. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES WIDE AND 4 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER.
5. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST ONE INCH LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF TWO INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
6. THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 8 INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.
7. WHEN EXTRA STRENGTH FILTER FABRIC AND CLOSER POST SPACING ARE USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH A CASE, THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS WITH ALL OTHER PROVISIONS OF ITEM #6 APPLYING.
8. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.
9. SILT FENCE SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.

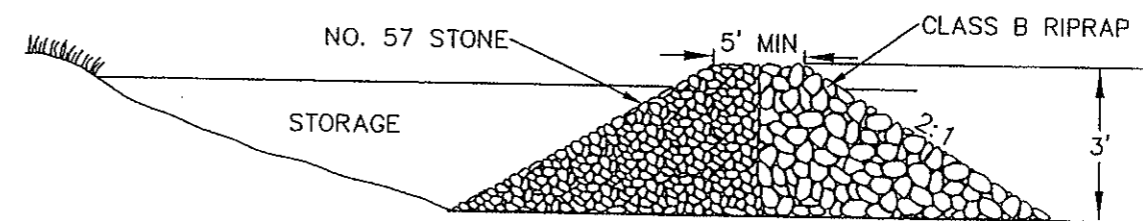
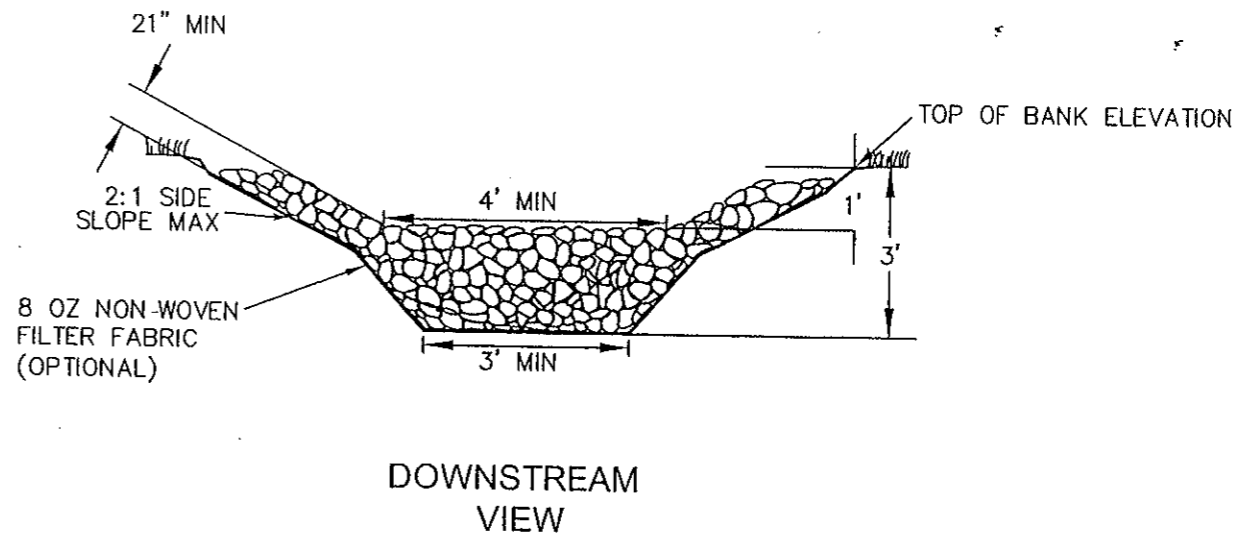
MAINTENANCE:

1. SILT FENCES AND FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST AFTER A DAILY PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE DONE IMMEDIATELY.
2. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.

1
17

SILT FENCE

NOT TO SCALE



CHECK DAM CONSTRUCTION SPECIFICATIONS

1. CHECK DAMS SHALL BE INSTALLED IN THE STREAM CHANNEL AS DEPICTED ON THE EROSION CONTROL PLANS OR AS DIRECTED BY THE CONSTRUCTION SUPERVISOR AT THE TIME OF CONSTRUCTION.
2. AS DEPICTED ON THE EROSION CONTROL PLANS, AT LEAST ONE CHECK DAM SHALL EXIST DOWNSTREAM OF ANY ACTIVE GRADING OR IN-STREAM WORK. CHECK DAMS INSTALLED SHALL NOT BE REMOVED UNTIL DETERMINED AND AS INSTRUCTED BY THE CONSTRUCTION SUPERVISOR.
3. STONE FROM THE REMOVAL OF THE TEMPORARY CHECK DAM MAY BE UTILIZED AS BACKFILL.

TECHNICAL SPECIFICATIONS

CHECK DAM 1 - NEAR START OF PROJECT
TOP OF BANK ELEVATION: 18 FT.
WEIR ELEVATION: 17 FT.
FLOW DEPTH: 1 FT.

CHECK DAM 2 - UPSTREAM OF ACCESS ROAD
ONSITE DRAINAGE AREA: 20 ACRES
LENGTH OF STORAGE: 1500 FT.
TOP OF BANK ELEVATION: 18 FT.
WEIR ELEVATION: 17 FT.
AVERAGE CROSS SECTIONAL AREA: 5.45 SQ. FT.
VOLUME: 8,175 CU FT.
WEIR WIDTH: 20 FT.
FLOW DEPTH: 1 FT.

CHECK DAM 3 - END OF PROJECT
ONSITE DRAINAGE AREA: 7.12 ACRES
LENGTH OF STORAGE: 1300 FT.
TOP OF BANK ELEVATION: 13.5 FT.
WEIR ELEVATION: 12.5 FT.
AVERAGE CROSS SECTIONAL AREA: 13.13 SQ. FT.
VOLUME: 17,078 CU FT.
WEIR WIDTH: 8 FT.
FLOW DEPTH: 1 FT.

2
17

CHECK DAM

NOT TO SCALE

REVISIONS, DATE AND INITIAL: LIMITS OF DISTURBANCE DENOTED WITH NEW LINE TYPE, 1-12-07, JMH // STAGING AREA DENOTED 3-13-07, JMH //

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SEAL
29216
3-13-07
JAMES M. HALL

DATE: 3/13/07
DESIGNED BY: JMH/BMS
DRAWN BY: OST
CHECKED BY: JMH
PROJECT NO.: EEP0601
FILE: eep0601_base
SCALE: NOT TO SCALE

E&S DETAILS
UT TO PEMROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

SHEET
17 of 21

EROSION AND SEDIMENT CONTROL MEASURES

SILT FENCE

Practice 6.62

1. PRIOR TO THE CONSTRUCTION OF THE VALLEY FEATURE, SILT FENCES WILL BE INSTALLED ON THE NORTH AND SOUTH END OF THE CHANNEL AND ON THE WEST SIDE OF THE DRAINAGE DITCH. THE SILT FENCE ON THE SOUTH END WILL PREVENT SEDIMENT FROM BEING WASHED DOWNSTREAM. DUE TO THE FLAT SLOPE, THE FENCE ON THE NORTH END WILL PREVENT SEDIMENT FROM WASHING OFF THE SITE IN AN UPSTREAM DIRECTION AS A RESULT OF A STORM EVENT. WHEN THE HEADWATER WETLAND FEATURE IS EXCAVATED THE SOIL WILL BE STOCKPILED FOR FUTURE USE IN FILLING THE EXISTING DITCH ON THE PROPERTY. THE SILT FENCE ON THE WEST SIDE OF THE DITCH WILL PROTECT THIS SOIL STOCK PILE. ALL SOIL STOCKPILES WILL BE PROTECTED WITH SILT FENCE.

CHECK DAMS

Practice 6.83

1. THREE (3) SMALL TEMPORARY STONE DAMS WILL BE CONSTRUCTED ACROSS THE DRAINAGE DITCH IN THE EVENT THAT SEDIMENT ENTERS THE DITCH. THIS IS NOT A PRIMARY CONTROL MEASURE; THEY WILL PREVENT SEDIMENT FROM LEAVING THE SITE IN THE EVENT IT DOES REACH THE DRAINAGE DITCH. THE DAMS WILL RESTRICT THE FLOW VELOCITY AND ALLOW THE SEDIMENT TO SETTLE BEFORE THE WATER LEAVES THE SITE.

TEMPORARY EROSION CONTROL SEEDING

1. FALL

RYE (grain) RATE: 120 (lb/acre)

SEEDING DATES: COASTAL PLAIN: AUGUST 15 - DECEMBER 30

SOIL AMENDMENTS: FOLLOW SOIL TESTS OR 2,000 lb/acre OF GROUND AGRICULTURAL LIMESTONE & 750 lb/acre OF 10-10-10 FERTILIZER.

MAINTENANCE: REFERTILIZE IF GROWTH IS NOT ADEQUATE. REPLANT FOLLOWING DAMAGE.

2. LATE WINTER & EARLY SPRING

RYE (grain) RATE: 120 (lb/acre)

SEEDING DATES: COASTAL PLAIN: DECEMBER 1 - APRIL 15

SOIL AMENDMENTS: FOLLOW SOIL TESTS OR 2,000 lb/acre OF GROUND AGRICULTURAL LIMESTONE & 750 lb/acre OF 10-10-10 FERTILIZER.

MAINTENANCE: REFERTILIZE IF GROWTH IS NOT ADEQUATE. REPLANT FOLLOWING DAMAGE.

3. SUMMER

GERMAN MILLET RATE: 40 (lb/acre)

SEEDING DATES: APRIL 15 - AUGUST 15

SOIL AMENDMENTS: FOLLOW SOIL TESTS OR 2,000 lb/acre OF GROUND AGRICULTURAL LIMESTONE & 750 lb/acre OF 10-10-10 FERTILIZER.

MAINTENANCE: REFERTILIZE IF GROWTH IS NOT ADEQUATE. REPLANT FOLLOWING DAMAGE.

PERMANENT WETLAND SEEDING

SEEDBED PREPARATION

1. SEE TEMPORARY SEEDING GUIDELINES.

SEEDING METHODS

1. SEED MAY BE MIXED WITH TEMPORARY SEED OR OVER SEEDED WHEN TEMPORARY SEEDING HAS BEEN COMPLETED.
2. MULCH IF PERMENENT SEED IS SOWN DURING WINTER OR THE TEMPORARY PLANTING IS NO LONGER PRESENT.
3. RESEED AND MULCH AREAS WHERE SEEDLING EMERGENCE IS POOR, OR WHERE EROSION OCCURS, AS SOON AS POSSIBLE. DO NOT MOW. PROTECT FROM TRAFFIC AS MUCH AS POSSIBLE.

MAINTENANCE PLAN

1. SEE TEMPORARY SEEDING GUIDELINES.

PERMANENT SEEDING

1. PERMANENT WETLAND SEED MIX

RED TOP (*AGROSTIS ALBA*) RATE: 2 (lb/acre)

WILD RYE (*ELYMUS VIRGINICUS*) RATE: 5 (lb/acre)

RUSH (*JUNCUS EFFUSUS*) RATE: 0.5 (lb/acre)

2. SEEDING DATES: NO SPECIFIC SEEDING DATE. CONTRACTOR MAY SPREAD PERMANENT SEED WITH THE TEMPORARY SEED OR AFTER MULCHING IS RECOMMENDED IF PLANTED IN THE WINTER AND THE TEMPORARY PLANTING IS NO LONGER PRESENT.
3. SOIL AMENDMENTS: SAME AS FOR TEMPORARY SEEDING.
4. MAINTENANCE: SAME AS FOR TEMPORARY SEEDING.

TEMPORARY SEEDING

SEEDBED PREPARATION

1. APPLY LIME AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS. SOILS WITH A PH OF 6 OR HIGHER NEED NOT BE LIMED. IF RECENT TILLAGE OPERATIONS HAVE RESULTED IN A LOOSE SURFACE, ADDITIONAL ROUGHENING MAY NOT BE REQUIRED EXCEPT TO BREAK UP LARGE CLOUDS. IF RAINFALL CAUSES THE SURFACE TO BECOME SEALED OR CRUSTED, LOOSEN IT JUST PRIOR TO SEEDING BY DISKING, RAKING, HARROWING, OR OTHER SUITABLE METHODS.

SEEDING METHODS

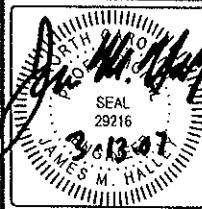
1. EVENLY APPLY SEED USING A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER. THIS MUST BE DONE WITHIN 21 CALENDAR DAYS OF LAND DISTURBING ACTIVITIES.
2. MULCH
3. AFTER SEEDING, APPLY MULCH TO AREAS UNDER HARSH CONDITIONS SUCH AS AREAS THAT HAVE BEEN GRADED, OR THOSE WHICH WILL RECEIVE CONCENTRATED FLOWS. AREAS CONSIDERED TO BE UNDER HARSH CONDITIONS WILL BE CONSIDERED THE AREAS GRADED FOR THE WETLAND VALLEY. MULCH MUST BE APPLIED FOR 25 FT. ON BOTH SIDES OF THE CENTERLINE OF THE WETLAND VALLEY FEATURE FROM STATION 0+50 TO 12+50.
4. RESEED AND MULCH AREAS WHERE SEEDLING EMERGENCE IS POOR, OR WHERE EROSION OCCURS, AS SOON AS POSSIBLE. DO NOT MOW. PROTECT FROM TRAFFIC AS MUCH AS POSSIBLE.

MAINTENANCE PLAN

1. ALL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
2. SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCES WHEN IT BECOMES APPROXIMATELY SIX (6) INCHES DEEP AT THE FENCE. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER.
3. ALL SEEDED AREAS WILL BE FERTILIZED, RESEEDED AS NECESSARY, AND MULCHED ACCORDING TO SPECIFICATIONS IN THE VEGETATIVE PLAN. BECAUSE THE GOAL OF THE RESTORATION IS TO ESTABLISH A SELF MAINTAINING VEGETATED CORRIDOR, MAINTENANCE SHOULD BE MINIMAL.

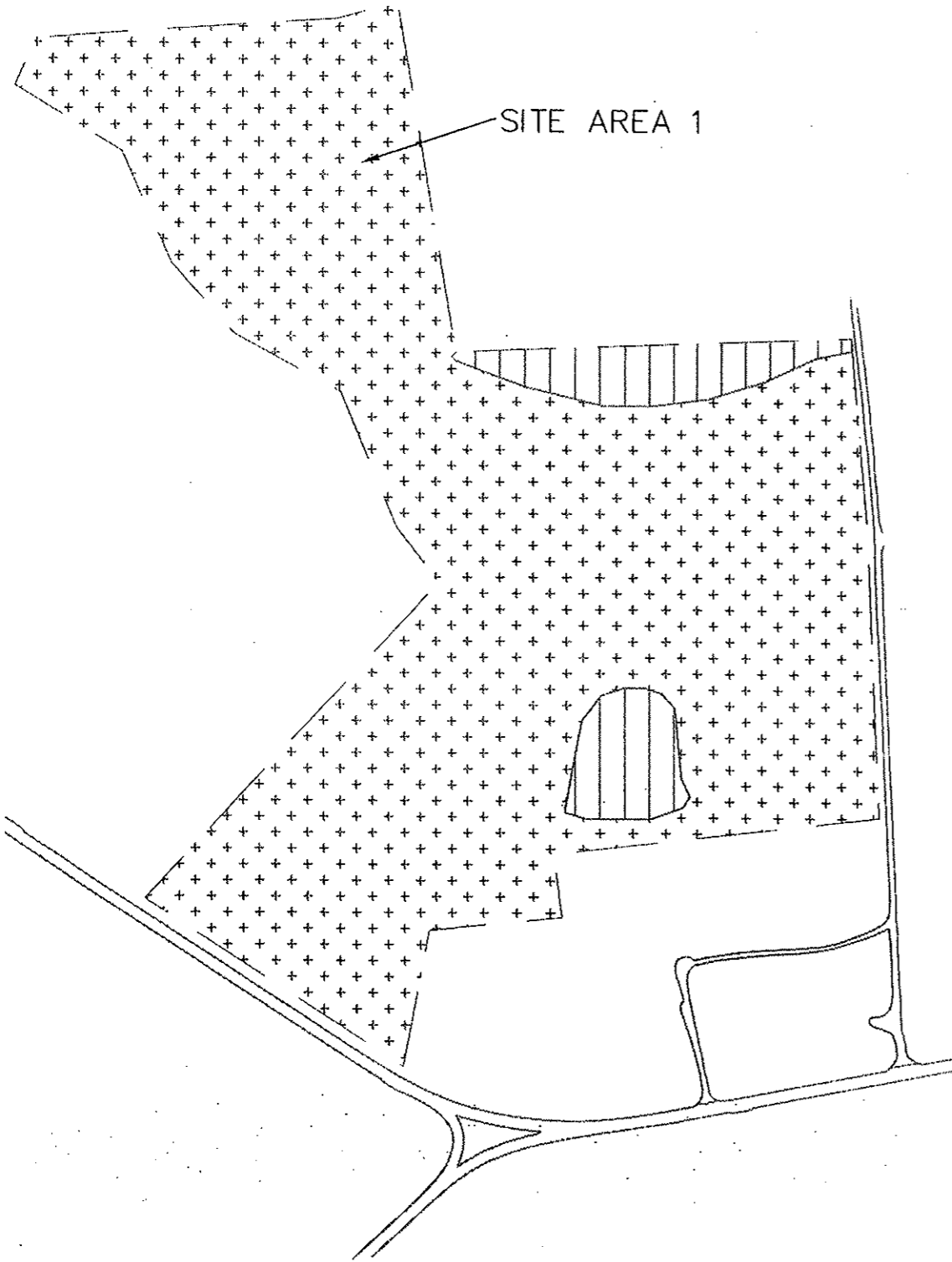
REVISIONS, DATE AND INITIAL: LIMITS OF DISTURBANCE DENOTED WITH NEW LINE/TYPE, 1-12-07, JMH // STAGING AREA DENOTED 3-13-07, JMH //

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DATE:	3/13/07
DESIGNED BY:	JMH/BMS
DRAWN BY:	DST
CHECKED BY:	JMH
PROJECT NO.:	EEP0601
FILE:	eep0601_base
SCALE:	NOT TO SCALE

E&S AND SEEDING NOTES
UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA



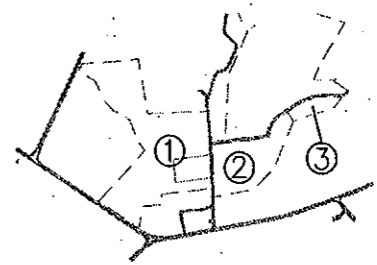
SITE AREA 1

ZONE 1 MESIC MIXED HARDWOOD FOREST				
SPECIES	COMMON NAME	GROWTH HABIT	PROPAGATION METHOD	SPACING
FAGUS GRANDIFOLIA	AMERICAN BEECH	TREE	BARE ROOT	8 X 8
LIRIODENDRON TULIPIFERA	TULIP POPLAR	TREE	BARE ROOT	8 X 8
QUERCUS ALBA	WHITE OAK	TREE	BARE ROOT	8 X 8
QUERCUS MICHAUXII	SWAMP CHESTNUT OAK	TREE	BARE ROOT	8 X 8
QUERCUS NIGRA	WATER OAK	TREE	BARE ROOT	8 X 8
ULMUS AMERICANA	AMERICAN ELM	TREE	BARE ROOT	8 X 8
SAMBUCUS CANADENSIS	COMMON ELDERBERRY	SHRUB	PLUG	8 X 8
MORELLA CERIFERA	WAX MYRTLE	SHRUB	PLUG	8 X 8
CALLICARPA AMERICANA	AMERICAN BEAUTYBERRY	SHRUB	PLUG	8 X 8

ZONE 2 NON-RIVERINE WET HARDWOOD FOREST				
SPECIES	COMMON NAME	GROWTH HABIT	PROPAGATION METHOD	SPACING
CARPINUS CAROLINIANA	AMERICAN HORNBEAM	TREE	BARE ROOT	8 X 8
FRAXINUS CAROLINIANA	CAROLINA ASH	TREE	BARE ROOT	8 X 8
LIRIODENDRON TULIPIFERA	TULIP POPLAR	TREE	BARE ROOT	8 X 8
NYSSA BIFLORA	SWAMP TUPELO	TREE	BARE ROOT	8 X 8
PERSEA PALUSTRIS	SWAMP BAY	TREE	BARE ROOT	8 X 8
QUERCUS MICHAUXII	SWAMP CHESTNUT OAK	TREE	BARE ROOT	8 X 8
QUERCUS LAURIFOLIA	LAUREL OAK	TREE	BARE ROOT	8 X 8
QUERCUS NIGRA	WATER OAK	TREE	BARE ROOT	8 X 8
ULMUS AMERICANA	AMERICAN ELM	TREE	BARE ROOT	8 X 8
VACCINIUM CORYMBOSUM	HIGHBUSH BLUEBERRY	SHRUB	PLUG	8 X 8
MORELLA CERIFERA	WAX MYRTLE	SHRUB	PLUG	8 X 8
CLETHRA ALNIFOLIA	COASTAL SWEET PEPPERBUSH	SHRUB	PLUG	8 X 8

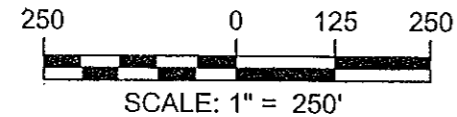
ZONE 3 COASTAL PLAIN SMALL STREAM SWAMP				
SPECIES	COMMON NAME	GROWTH HABIT	PROPAGATION METHOD	SPACING
CARPINUS CAROLINIANA	AMERICAN HORNBEAM	TREE	BARE ROOT	8 X 8
FRAXINUS CAROLINIANA	CAROLINA ASH	TREE	BARE ROOT	8 X 8
LIRIODENDRON TULIPIFERA	TULIP POPLAR	TREE	BARE ROOT	8 X 8
NYSSA BIFLORA	SWAMP TUPELO	TREE	BARE ROOT	8 X 8
PERSEA PALUSTRIS	SWAMP BAY	TREE	BARE ROOT	8 X 8
QUERCUS LYRATA	OVERCUP OAK	TREE	BARE ROOT	8 X 8
CYRILLA RACEMIFLORA	SWAMP TITI	TREE	PLUG	8 X 8
ITEA VIRGINICA	VIRGINIA SWEETSPIRE	SHRUB	PLUG	8 X 8

- LEGEND**
- EASEMENT BOUNDARY LINE
 - EXISTING ROADS
 - [Vertical Lines] ZONE 1 MESIC MIXED HARDWOOD FOREST
 - [Cross-hatch] ZONE 2 NON-RIVERINE WET HARDWOOD FOREST
 - [Vertical Lines] ZONE 3 COASTAL PLAIN SMALL STREAM SWAMP
 - [Diagonal Lines] ZONE 4 WOODLAND PRESERVATION AREA



AREA INDEX MAP

BASIS OF BEARINGS:
NC GRID, NAD 83

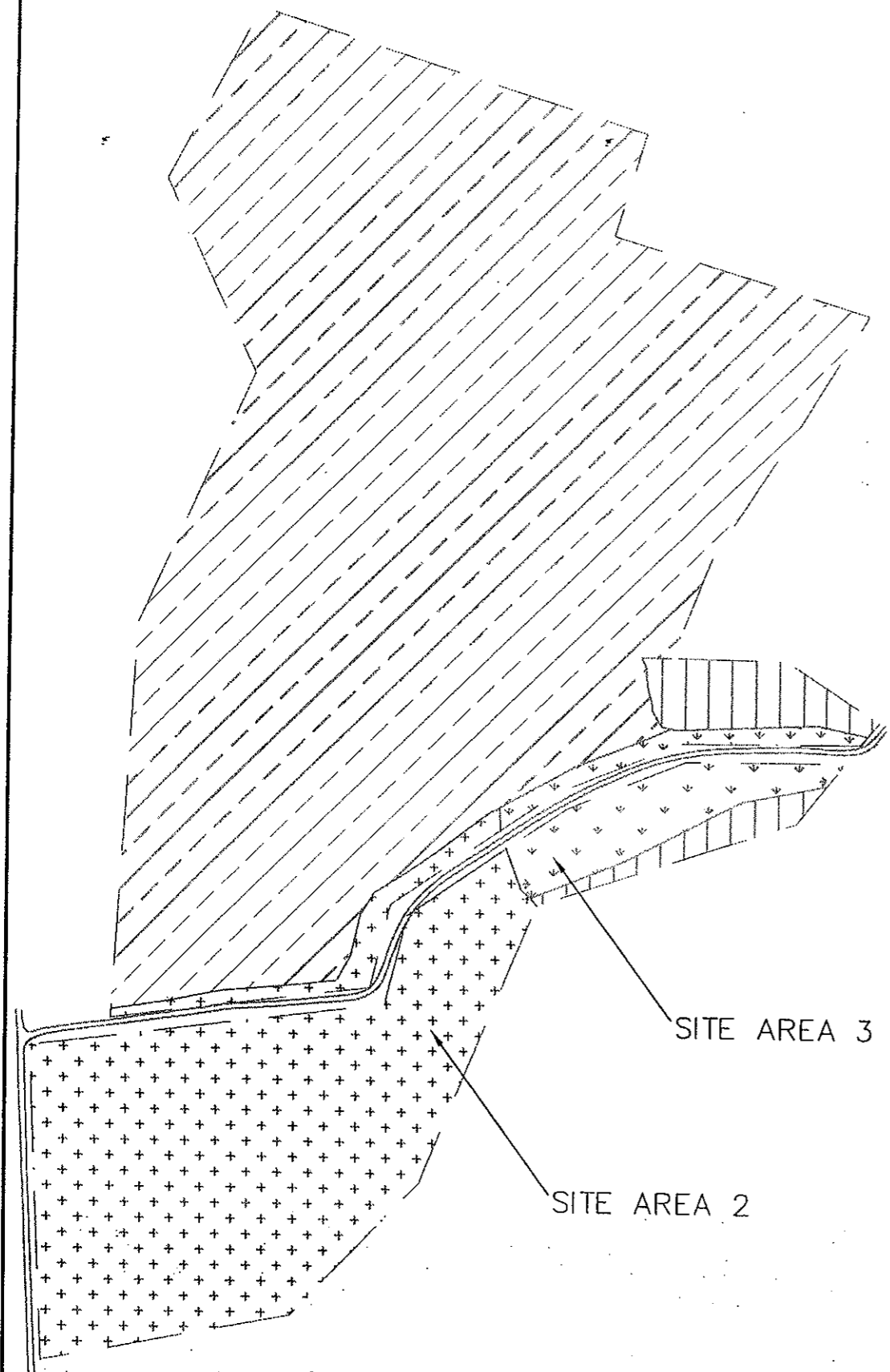


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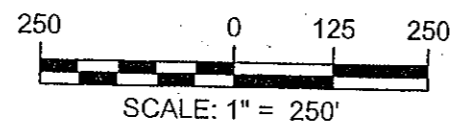


DATE: 3/13/07
 DESIGNED BY: JMH/BMS
 DRAWN BY: DST
 CHECKED BY: JMH
 PROJECT NO.: EEP0601
 FILE: eep0601_base
 SCALE: 1"=250'

PLANTING PLAN AREA 1
 UT TO PEMBROKE CREEK
 STREAM AND WETLAND RESTORATION
 CHOWAN COUNTY, NORTH CAROLINA



BASIS OF BEARINGS:
NC GRID, NAD 83

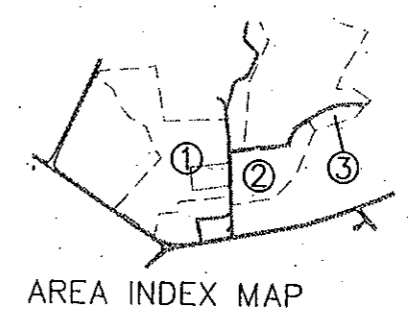


ZONE 1 MESIC MIXED HARDWOOD FOREST				
SPECIES	COMMON NAME	GROWTH HABIT	PROPAGATION METHOD	SPACING
FAGUS GRANDIFOLIA	AMERICAN BEECH	TREE	BARE ROOT	8 X 8
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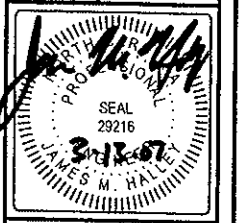
ZONE 2 NON-RIVERINE WET HARDWOOD FOREST				
SPECIES	COMMON NAME	GROWTH HABIT	PROPAGATION METHOD	SPACING
CARPINUS CAROLINIANA	AMERICAN HORNBEAM	TREE	BARE ROOT	8 X 8
FRAXINUS CAROLINIANA	CAROLINA ASH	TREE	BARE ROOT	8 X 8
LIRIODENDRON TULIPIFERA	TULIP POPLAR	TREE	BARE ROOT	8 X 8
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QUERCUS LAURIFOLIA	LAUREL OAK	TREE	BARE ROOT	8 X 8
QUERCUS NIGRA	WATER OAK	TREE	BARE ROOT	8 X 8
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VACCINIUM CORYMBOSUM	HIGHBUSH BLUEBERRY	SHRUB	PLUG	8 X 8
MORELLA CERIFERA	WAX MYRTLE	SHRUB	PLUG	8 X 8
CLETHRA ALNIFOLIA	COASTAL SWEET PEPPERBUSH	SHRUB	PLUG	8 X 8

ZONE 3 COASTAL PLAIN SMALL STREAM SWAMP				
SPECIES	COMMON NAME	GROWTH HABIT	PROPAGATION METHOD	SPACING
CARPINUS CAROLINIANA	AMERICAN HORNBEAM	TREE	BARE ROOT	8 X 8
FRAXINUS CAROLINIANA	CAROLINA ASH	TREE	BARE ROOT	8 X 8
LIRIODENDRON TULIPIFERA	TULIP POPLAR	TREE	BARE ROOT	8 X 8
NYSSA BIFLORA	SWAMP TUPELO	TREE	BARE ROOT	8 X 8
PERSEA PALUSTRIS	SWAMP BAY	TREE	BARE ROOT	8 X 8
QUERCUS LYRATA	OVERCUP OAK	TREE	BARE ROOT	8 X 8
CYRILLA RACEMIFLORA	SWAMP TITI	TREE	PLUG	8 X 8
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- LEGEND**
- EASEMENT BOUNDARY LINE
 - EXISTING ROADS
 - [Diagonal hatching] ZONE 1 MESIC MIXED HARDWOOD FOREST
 - [Cross-hatching] ZONE 2 NON-RIVERINE WET HARDWOOD FOREST
 - [Plus sign pattern] ZONE 3 COASTAL PLAIN SMALL STREAM SWAMP
 - [Diagonal hatching] ZONE 4 WOODLAND PRESERVATION AREA



REVISIONS, DATE AND INITIAL: LIMITS OF DISTURBANCE DENOTED WITH NEW
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 SCALE: 1"=250'

PLANTING PLAN AREAS 2 & 3
 UT TO PEMBROKE CREEK
 STREAM AND WETLAND RESTORATION
 CHOWAN COUNTY, NORTH CAROLINA

GENERAL PLANTING NOTES

1. PLEASE REFER TO THE SPECIFICATIONS UNDER "SOIL AND PLANTING SPECIFICATIONS" FOR FURTHER INFORMATION ON THE SPECIFIC PLANTING REQUIREMENTS FOR THIS PROJECT.
2. THE PLANTING PERIOD FOR THIS PROJECT SHALL BE BETWEEN DECEMBER 15 AND FEBRUARY 15. ANY CHANGES TO THIS SCHEDULE MUST BE BROUGHT TO THE DESIGNER WITH A DESCRIPTION OF HOW PLANT SURVIVABILITY WILL BE ASSURED.
3. IT IS MANDATORY THAT THE CONSTRUCTION CONTRACTOR PROVIDE, OR SUBCONTRACT WITH, A PLANTING SUPERVISOR THAT HAS ONE OF THE FOLLOWING CREDENTIALS: CERTIFIED PLANT PROFESSIONAL, REGISTERED FORESTER, OR REGISTERED LANDSCAPE CONTRACTOR.
4. THE PLANTING SUPERVISOR WILL BE RESPONSIBLE FOR MANAGING ALL ACTIVITIES INVOLVING PERMANENT PLANTING, INCLUDING BUT NOT LIMITED TO THE FOLLOWING: SITE PREPARATION FOR PLANTING, EXOTIC PLANT REMOVAL, SEEDLING HANDLING AND STORAGE, PLANTING OPERATIONS, QUALITY CONTROL INSPECTIONS, MANAGING PLANT COMPETITION.
5. THE PLANTING STOCK SHOULD BE GROWN BY NURSERIES WITHIN 300 MILES OF THE PROJECT SITE. THE SEED SOURCES FOR THE PLANT MATERIAL SHALL BE FROM THE COASTAL PLAIN AND BE COLLECTED FROM WITHIN 200 MILES OF THE PROJECT SITE.
6. FOR ALL PLANTED MATERIAL, THE CONSTRUCTION CONTRACTOR SHALL WARRANT AN 80% SURVIVAL RATE AGAINST DEFECTS INCLUDING MORTALITY AND POOR GROWTH, EXCEPT FOR DEFECTS RESULTING FROM ABUSE BY OTHER PARTIES AND ABNORMAL WEATHER CONDITIONS. THE CONTRACTOR IS WARRANTING AN 80% SURVIVAL RATE. IT IS THEREFORE INTENDED THAT THESE SPECIFICATIONS ARE MINIMUM STANDARDS AND THE CONTRACTOR MAY PROVIDE ADDITIONAL MEASURES THAT THEY DETERMINE WILL BE BENEFICIAL TO PLANT SURVIVABILITY. ANY ADDITIONAL MEASURES WILL BE CONSIDERED PART OF THE 80% SURVIVAL CLAUSE AND WILL NOT CONSTITUTE A CHANGE ORDER. THIS MAY INCLUDE BUT IS NOT LIMITED TO SOIL AMENDMENTS, IRRIGATION, SLOW RELEASE FERTILIZER, AND MULCH.
7. THE PLANTS AS LISTED IN THE PLANT TABLES WILL BE PLANTED IN EACH DESIGNATED PLANTING ZONE. SUBSTITUTES WILL NOT BE CONSIDERED FOR THIS PROJECT. FLEXIBILITY HAS BEEN INCLUDED IN THE VEGETATION SELECTION NOTES LISTED FOR EACH PLANTING ZONE. THE PLANTS LISTED FOR EACH ZONE HAVE BEEN CHECKED TO ENSURE THAT NURSERIES DO GROW THE PLANTS LISTED. HOWEVER, IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT AN ADEQUATE NUMBER OF THE PLANTS ARE AVAILABLE WHEN THE TIME FOR PLANTING OCCURS.
8. AT THE CONTRACTOR'S DISCRETION, THE PROPAGATION METHOD LISTED FOR EACH PLANT MAY BE ALTERED IF IT IS LIKELY TO IMPROVE SURVIVABILITY. THIS WILL BE SOLELY AT THE CONTRACTOR'S DISCRETION AND WILL THEREFORE NOT BE CONSIDERED A CHANGE ORDER. ALSO, NO CHANGE IN THE PLANTING DENSITY WILL BE GIVEN.
9. AFTER PLANTING, A WRITTEN LIST, SIGNED BY THE PLANTING SUPERVISOR, OF THE ACTUAL SPECIES INSTALLED AND IN WHAT PERCENTAGES, MUST BE DELIVERED TO THE ENGINEER FOR REVIEW BEFORE FINAL APPROVAL OF THE PLANTING WILL BE ISSUED.
10. EACH PLANTING ZONE SHALL BE CLEARLY MARKED OUT BEFORE PLANTING IN THE ZONES COMMENCES.
11. THE CORRECT SPACING OF VEGETATION WITHIN EACH ZONE SHOULD BE CHECKED BY THE PLANTING SUPERVISOR ON A REGULAR BASIS.

GRADING AND SOIL PREPARATION NOTES

1. PLEASE REFER TO THE SPECIFICATIONS UNDER "SOIL AND PLANTING SPECIFICATIONS" FOR FURTHER INFORMATION ON THE SPECIFIC SOIL PREPARATION REQUIREMENTS FOR THIS PROJECT.
2. IN THE VALLEY PORTION OF AREA 1A1, THE TOPSOIL MUST BE STOCKPILED. THE VALLEY SHALL BE GRADED NO LESS THAN 4 INCHES AND NO MORE THAN 6 INCHES BELOW THE FINAL GRADE OF THE VALLEY. IF THE GRADING PROCESS CAUSES A BREACH COMPLETELY THROUGH THE UNDERLYING CLAY LAYER, THEN A COMPACTED LAYER OF CLAY, SUFFICIENT TO IMPEDE THE DOWNWARD MOVEMENT OF WATER, WILL BE APPLIED BEFORE THE TOPSOIL IS REAPPLIED.
3. ANY AREAS ON THE SITE THAT ARE COMPACTED DURING THE CONSTRUCTION PROCESS, MUST BE DEEP TILLED TO ENSURE THAT THE ROOT GROWTH OF THE PLANTS WILL NOT BE IMPEDED BY COMPACTED SOIL. THIS DOES NOT INCLUDE ANY AREAS THAT ARE PURPOSEFULLY COMPACTED IN THE SUBSOIL TO PREVENT THE DOWNWARD MOVEMENT OF WATER.

ZONE PLANTING REQUIREMENTS NOTES

1. ZONE 1 SHALL BE PLANTED WITH AT LEAST FIVE OF THE LISTED SPECIES. THE FOLLOWING SPECIES MUST BE INCLUDED IN THE SELECTION: AT LEAST ONE "SHRUB" MUST BE SELECTED. NO MORE THAN 25% OF ANY ONE SPECIES SHALL MAKE UP ZONE 1. NO SPECIES SHALL MAKE UP LESS THAN 10% OF ZONE 1. NO PLANT SUBSTITUTIONS ARE ALLOWED.
2. ZONE 2 SHALL BE PLANTED WITH AT LEAST SIX OF THE LISTED SPECIES. THE FOLLOWING SPECIES MUST BE INCLUDED IN THE SELECTION: AT LEAST ONE "SHRUB" MUST BE SELECTED. NO MORE THAN 20% OF ANY ONE SPECIES SHALL MAKE UP ZONE 2. NO SPECIES SHALL MAKE UP LESS THAN 10% OF ZONE 2. NO PLANT SUBSTITUTIONS ARE ALLOWED.
3. ZONE 3 SHALL BE PLANTED WITH AT LEAST FIVE OF THE LISTED SPECIES. THE FOLLOWING SPECIES MUST BE INCLUDED IN THE SELECTION: *NYSSA BIFLORA* NO MORE THAN 25% OF ANY ONE SPECIES SHALL MAKE UP ZONE 3. NO SPECIES SHALL MAKE UP LESS THAN 10% OF ZONE 3. NO PLANT SUBSTITUTIONS ARE ALLOWED.

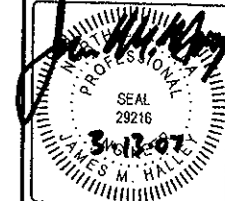
PLANT DISTRIBUTION NOTES

PLANT DISTRIBUTIONS CALLED FOR ON THIS PROJECT ARE AS FOLLOWS:

1. RANDOM - TAKE ALL PLANTS FROM A ZONE LISTED AS "RANDOM" AND CAREFULLY MIX THE PLANTS SO THAT THEY ARE ALL PLANTED RANDOMLY. IF DONE PROPERLY, SOMETIMES TWO OR MORE OF THE SAME SPECIES WILL BE PLANTED ADJACENT TO EACH OTHER AND OTHER TIMES THERE MAY ONLY BE ONE PLANT OF A SPECIES COMPLETELY SURROUNDED BY ONE OR MORE OTHER SPECIES.
2. THE FIRST PLANTING ROW SHOULD BEGIN $\frac{1}{2}$ OF THE PLANTING DISTANCE IN FROM THE OUTER EDGE OF THE PLANTING ZONE. ALL ZONES SHALL BE PLANTED FULLY AT THE DESIGNATED SPACING. EACH ZONE IS TO BE PLANTED TO WITHIN $\frac{1}{2}$ THE DESIGNATED PLANT SPACING DISTANCE FROM ANY EDGE OF A ZONE. IN ALL CASES, PLANTS SHALL BE PLANTED UNTIL PLANTS ARE PLACED TO WITHIN A MAXIMUM OF $\frac{3}{4}$ OF THE PLANT SPACING DISTANCE FROM ANY EDGE.

REVISIONS: DATE AND INITIAL: LIMITS OF DISTURBANCE DENOTED WITH NEW
LINETYPE, 1-12-07, JMH // STAGING AREA DENOTED 3-13-07, JMH //

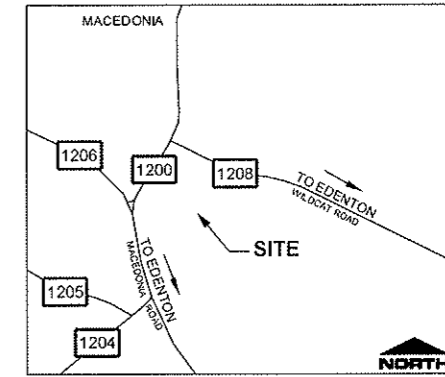
NATURAL SYSTEMS
E N G I N E E R I N G
3719 Benson Drive Raleigh, North Carolina 27609 (919) 878-5444 www.nsepc.com



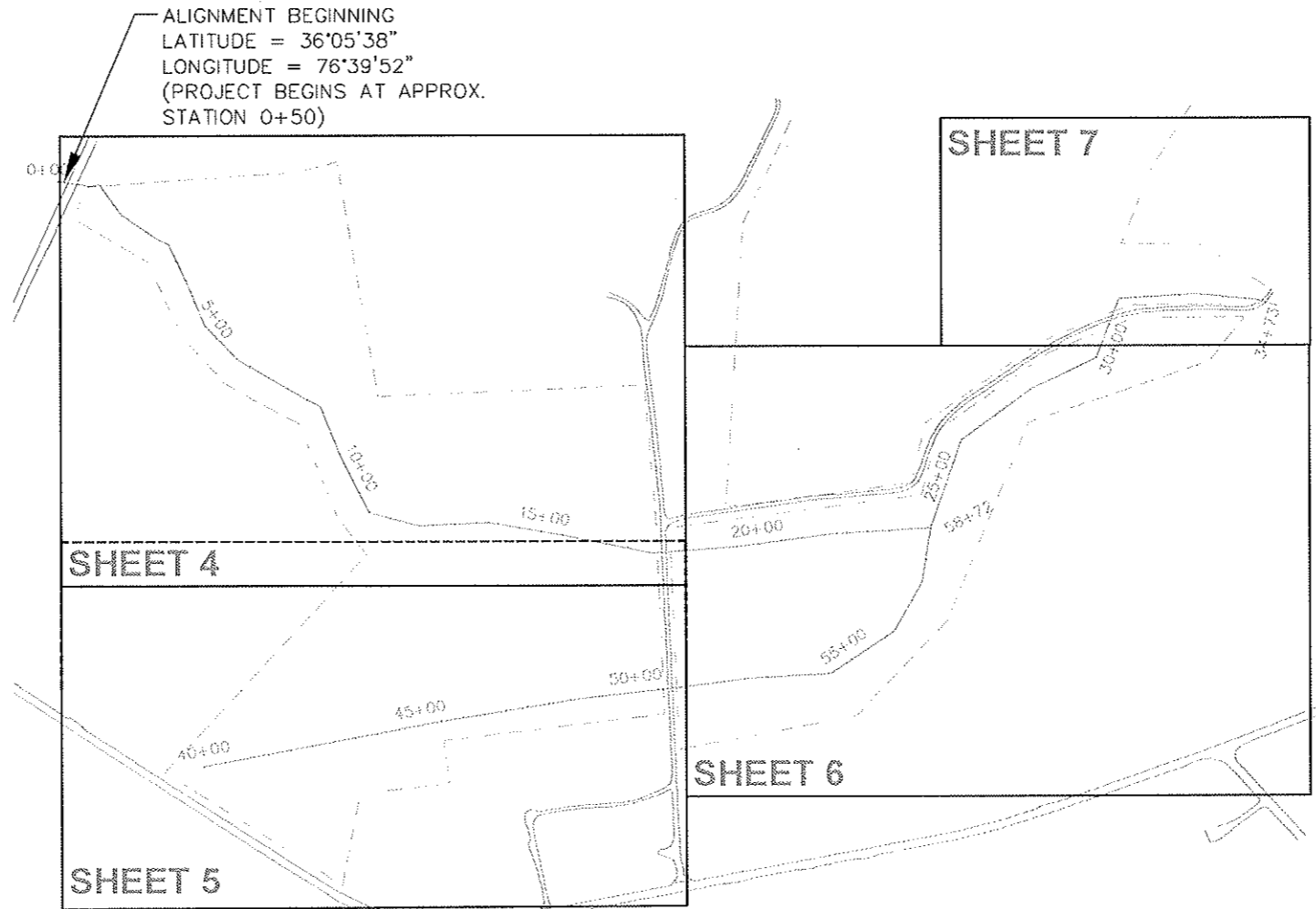
DATE: 3/13/07
DESIGNED BY: JMH/BMS
DRAWN BY: DST
CHECKED BY: JMH
PROJECT NO.: EEP0601
FILE: eep0601_base
SCALE: NOT TO SCALE

PLANTING NOTES
UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

**AS-BUILT DRAWINGS - UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION PROJECT
EDENTON, CHOWAN COUNTY, NORTH CAROLINA
NC ECOSYSTEM ENHANCEMENT PROGRAM PROJECT
SCO# 050658801**



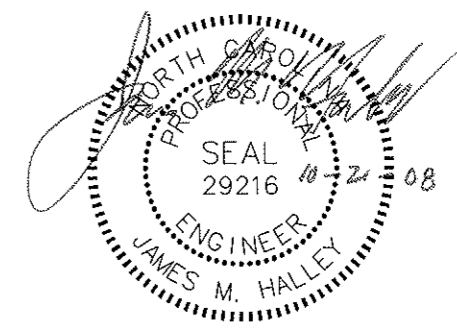
VICINITY MAP EDENTON, NC
NOT TO SCALE



ALIGNMENT BEGINNING
LATITUDE = 36°05'38"
LONGITUDE = 76°39'52"
(PROJECT BEGINS AT APPROX.
STATION 0+50)

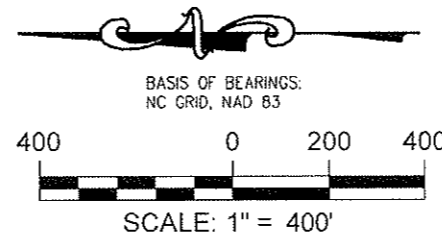
GENERAL NOTES

1. PREPARED FOR NC ECOSYSTEM ENHANCEMENT PROGRAM, 1652 MAIL SERVICE CENTER, RALEIGH, NC 27699-1652.
2. THE TOTAL EASEMENT ACREAGE FOR THIS PROJECT IS 59.42 ACRES.
3. THE SENIOR DESIGN CONTACT FOR THIS PROJECT IS JAMES M. HALLEY, PE OF THE JOHN R. MCADAMS COMPANY, 919-361-5000.
4. THE EEP PROJECT MANAGER IS TRACY MORRIS, 919-715-1658.
5. THE EEP REVIEW COORDINATOR IS LIN XU, PE, 919-715-7571.
6. THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES PROJECT NUMBER IS D06102S.
7. A BOUNDARY SURVEY WAS NOT PERFORMED WHILE OBTAINING THE FIELD SURVEYED DATA SHOWN HEREON AND THIS SET OF RECORD DRAWINGS WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO ANY FACTS AND EASEMENTS WHICH MAY BE DISCLOSED BY A FULL AND ACCURATE TITLE SEARCH.
8. BOUNDARY INFORMATION SHOWN HEREON BASED ON A CONSERVATION EASEMENT SURVEY PREPARED BY NATURAL SYSTEMS ENGINEERING AND RECORDED IN PLAT CABINET NUMBER 2, SLIDE 34G OF THE CHOWAN COUNTY REGISTER OF DEEDS.
9. PHYSICAL FEATURES SHOWN HEREON SUCH AS BUILDINGS AND ROADWAYS ARE BASED ON AN AERIAL TOPOGRAPHIC SURVEY PREPARED BY GEODATA CORPORATION UNDER THE SUPERVISION OF JAMES M. SALMONS, PLS, PPS, LICENSE NUMBER L-4041 FROM MARCH 24, 2006 AERIAL PHOTOGRAPHY.
10. FIELD SURVEYED SPOT ELEVATIONS AND THE TOPOGRAPHIC DATA SHOWN HEREON OBTAINED BY GPS METHOD. THE DATA WAS DERIVED BY KINEMATIC GPS OBSERVATIONS USING A TRIMBLE R8 RECIEVER ON-SITE AND THE NCGS NETWORK RTK SYSTEM FROM 11-28-2007 TO 11-30-2007. THE DERIVED HORIZONTAL PRECISION ON POINTS ESTABLISHED ON-SITE IS 0.031'. THE ELEVATIONS ARE BASED ON THE NAVD 88 VERTICAL DATUM AND THE NC GRID (NAD 83) HORIZONTAL DATUM.
11. PLANTING WAS COMPLETED ON DECEMBER 18, 2007 - DECEMBER 19, 2007. THE VEGETATION PLOTS WERE LOCATED USING A TRIMBLE GEO XT SUBMETER GPS UNIT ON THESE DATES.



SHEET INDEX:

- SHEET 1 - TITLE AND INDEX
- SHEET 2 - LEGEND
- SHEET 3 - POST-CONSTRUCTION CONDITIONS
- SHEET 4 - AREAS 1A1 & 1A2
- SHEET 5 - AREA 1B
- SHEET 6 - AREA 2
- SHEET 7 - AREA 3
- SHEET 8 - SITE VEGETATION
- SHEET 9 - CROSS-SECTIONS 1 & 2
- SHEET 10 - CROSS-SECTIONS 3 & 4



**SHEET
1 OF 10**




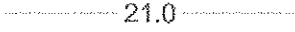
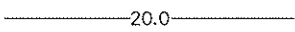


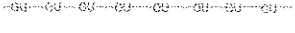
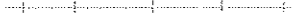
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(919) 361-5000





TITLE AND INDEX SHEET
UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

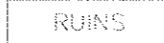




PROJECT NO. EEP-06010
FILENAME: AS-BUILTS
SCALE: 1" = 400'
DATE: 10-20-08
McADAMS

DETAIL KEY



-  EASEMENT BOUNDARY LINE
-  ROADS
-  FENCE
-  DESIGN CONTOUR
-  EXISTING CONTOUR
-  HUMMOCK CREATION LINE
-  FINE GRADING LIMIT
-  OVERHEAD UTILITIES
-  HEADWATER VALLEY CENTERLINE

-  TREE LINES / WOODS
-  UTILITY POLE
-  MONITORING WELL
-  SPOT GROUND ELEVATION

-  RUINS
-  ROAD CROSSING
-  DESIGN SURFACE FLOW DIRECTION
-  GRADE TRANSITION
-  RIP RAP

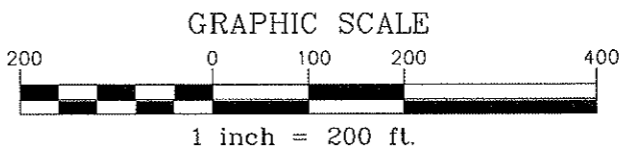
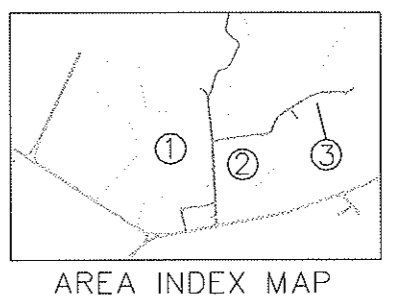
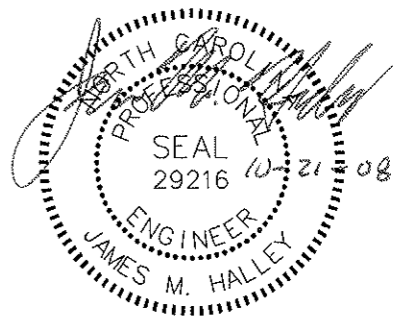
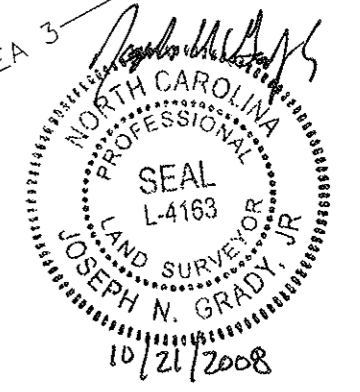
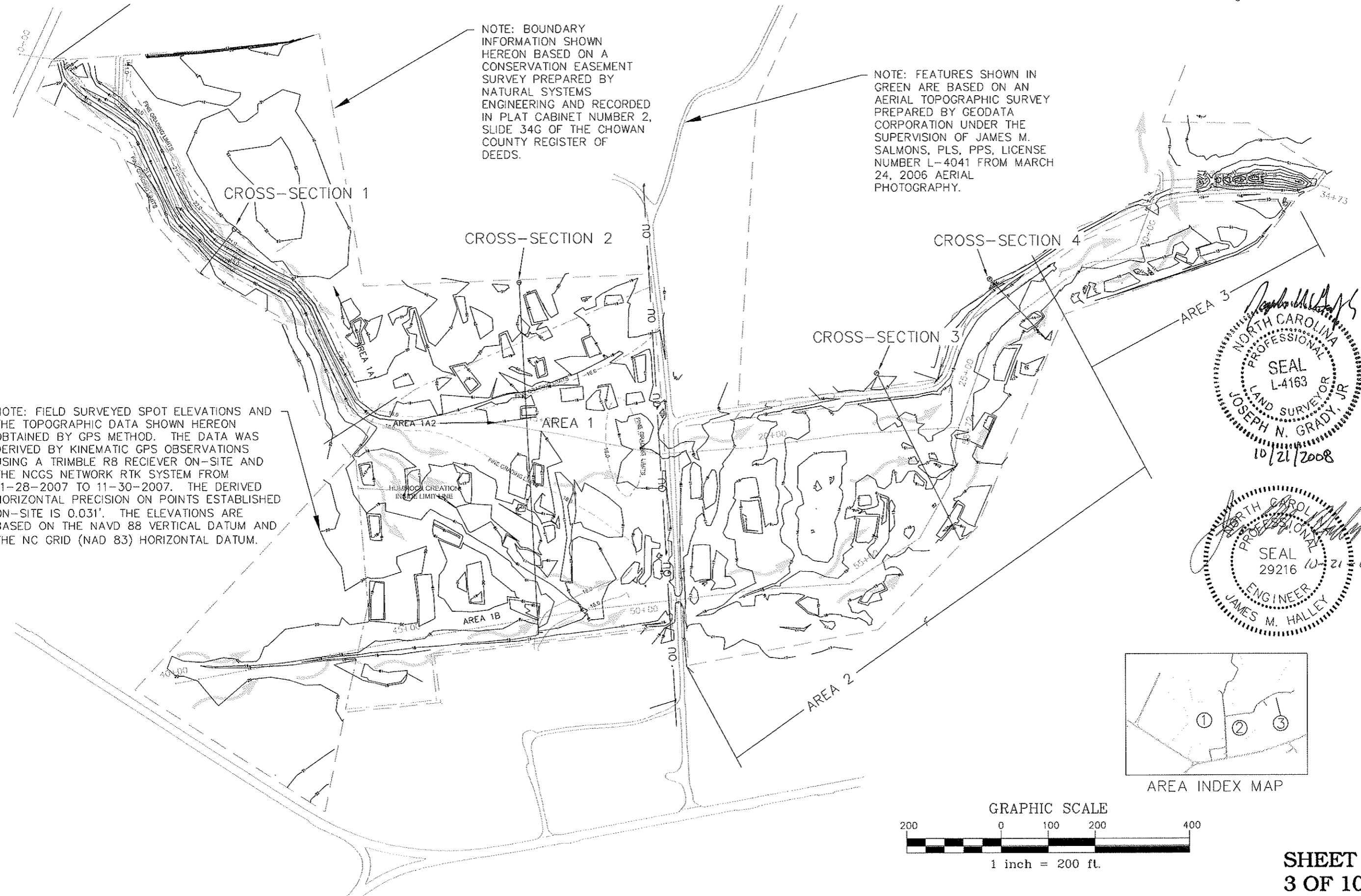
**SHEET
2 OF 10**



NOTE: BOUNDARY INFORMATION SHOWN HEREON BASED ON A CONSERVATION EASEMENT SURVEY PREPARED BY NATURAL SYSTEMS ENGINEERING AND RECORDED IN PLAT CABINET NUMBER 2, SLIDE 34G OF THE CHOWAN COUNTY REGISTER OF DEEDS.

NOTE: FEATURES SHOWN IN GREEN ARE BASED ON AN AERIAL TOPOGRAPHIC SURVEY PREPARED BY GEODATA CORPORATION UNDER THE SUPERVISION OF JAMES M. SALMONS, PLS, PPS, LICENSE NUMBER L-4041 FROM MARCH 24, 2006 AERIAL PHOTOGRAPHY.

NOTE: FIELD SURVEYED SPOT ELEVATIONS AND THE TOPOGRAPHIC DATA SHOWN HEREON OBTAINED BY GPS METHOD. THE DATA WAS DERIVED BY KINEMATIC GPS OBSERVATIONS USING A TRIMBLE R8 RECIEVER ON-SITE AND THE NCGS NETWORK RTK SYSTEM FROM 11-28-2007 TO 11-30-2007. THE DERIVED HORIZONTAL PRECISION ON POINTS ESTABLISHED ON-SITE IS 0.031'. THE ELEVATIONS ARE BASED ON THE NAVD 88 VERTICAL DATUM AND THE NC GRID (NAD 83) HORIZONTAL DATUM.

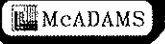


**SHEET
3 OF 10**

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POST-CONSTRUCTION CONDITIONS
UT to PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

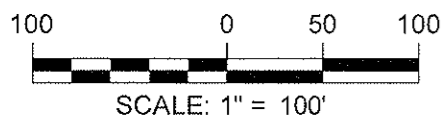
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FILENAME:	AS-BUILTS
SCALE:	1" = 200'
DATE:	10-20-08





NORTH CAROLINA
 PROFESSIONAL
 SEAL
 L-4163
 LAND SURVEYOR
 JOSEPH N. GRADY, JR.
 10/21/2008

NORTH CAROLINA
 PROFESSIONAL
 SEAL
 29216
 ENGINEER
 JAMES M. HALLEY
 10-21-08



BASIS OF BEARINGS:
NC GRID, NAD 83

NOTE: SEE GENERAL NOTES ON SHEET 1
REGARDING DATA SOURCES

**SHEET
4 OF 10**

AREAS 1A1 & 1A2
UT to PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
 CHOWAN COUNTY, NORTH CAROLINA

PROJECT NO.	EEP-06010
FILENAME:	AS-BUILTS
SCALE:	1" = 100'
DATE:	10-20-08

BASIS OF BEARINGS:
NC GRID, NAD 83

100 0 50 100

SCALE: 1" = 100'

NOTE: SEE GENERAL NOTES ON SHEET 1
REGARDING DATA SOURCES



Joseph N. Grady, Jr.
 NORTH CAROLINA
 PROFESSIONAL
 SEAL
 L-4163
 LAND SURVEYOR
 JOSEPH N. GRADY, JR.
 10/21/2008

James M. Halley
 NORTH CAROLINA
 PROFESSIONAL
 SEAL
 29216
 ENGINEER
 JAMES M. HALLEY
 10/21/08

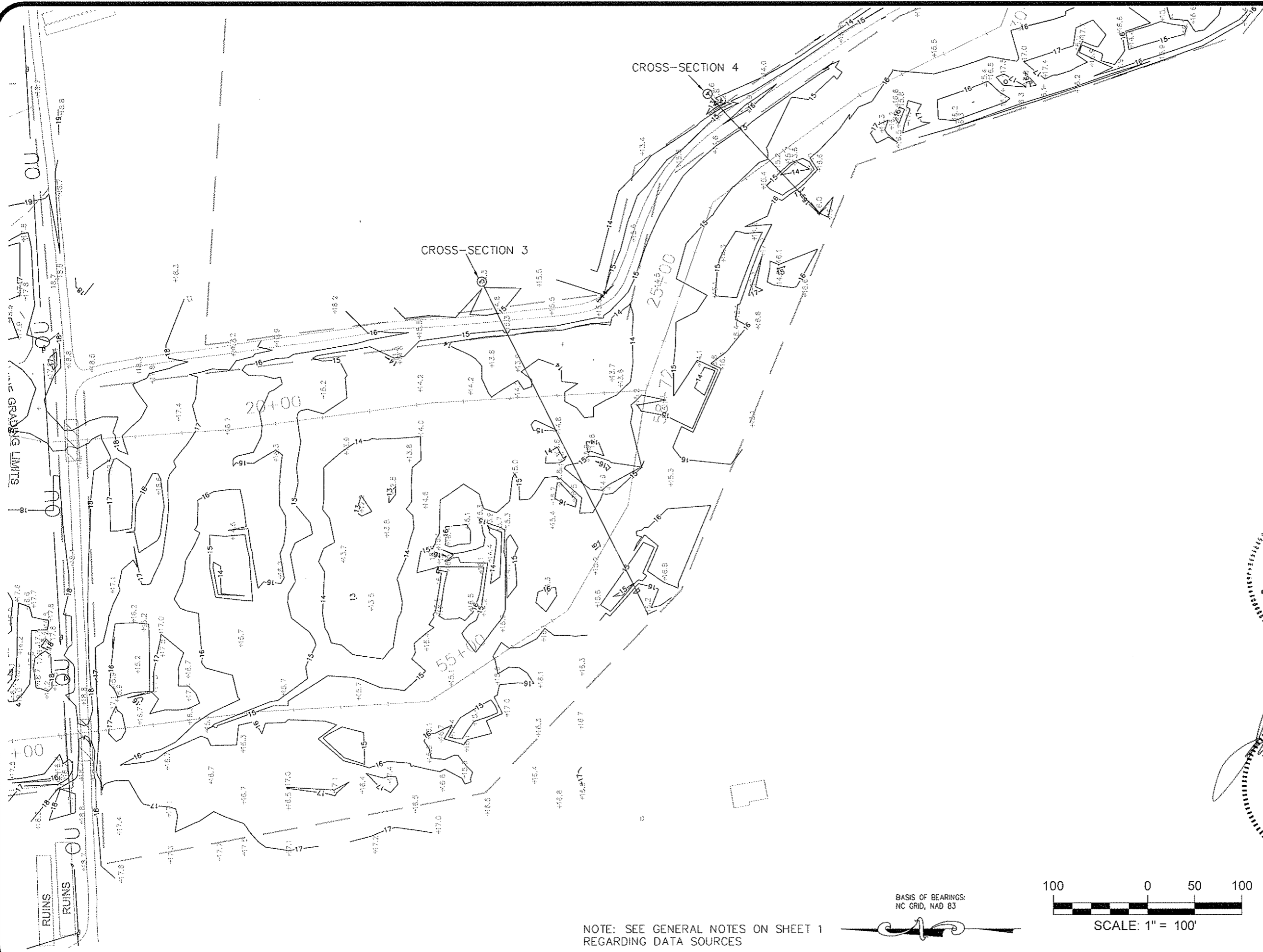
SHEET
5 OF 10

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AREA 1B
UT to PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
 CHOWAN COUNTY, NORTH CAROLINA

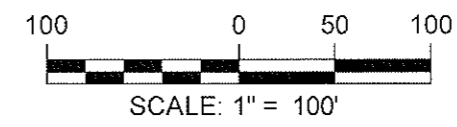
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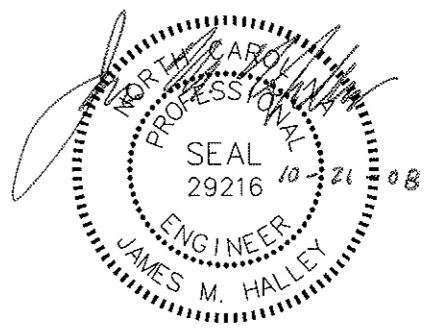
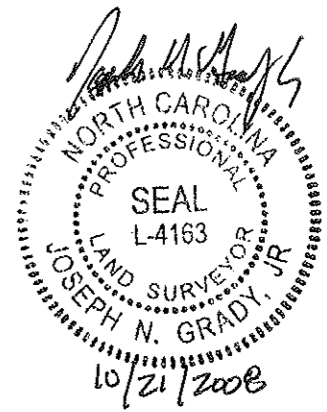


NOTE: SEE GENERAL NOTES ON SHEET 1 REGARDING DATA SOURCES

BASIS OF BEARINGS:
NC GRID, NAD 83



**SHEET
6 OF 10**

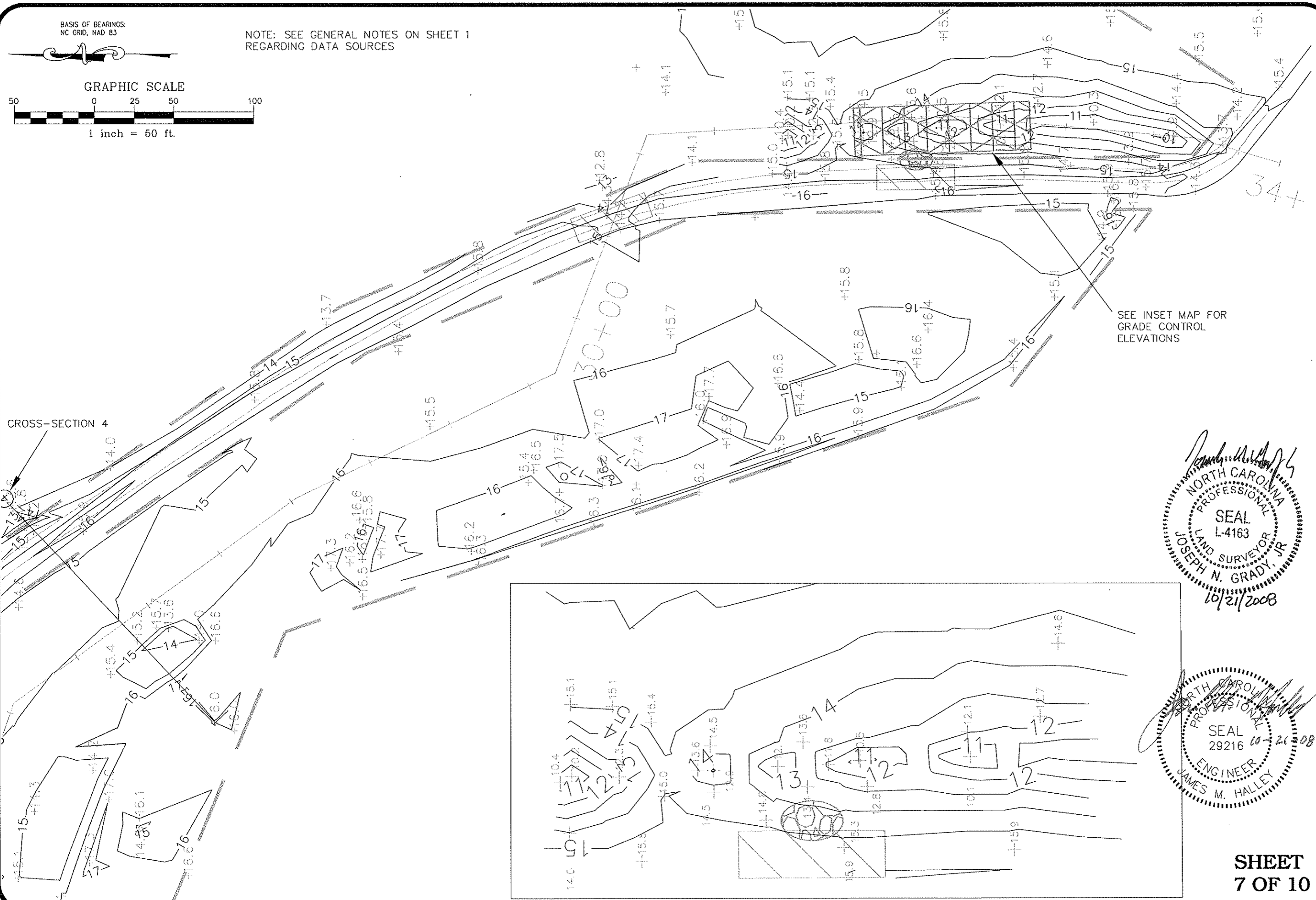
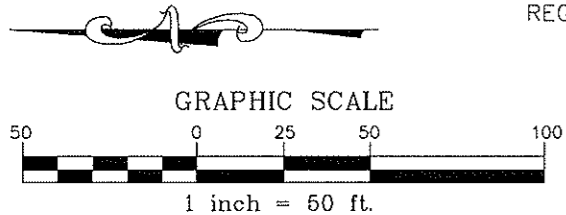


AREA 2
UT to PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

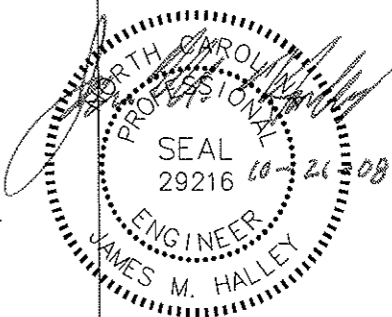
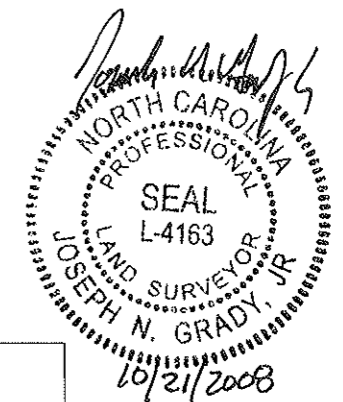
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FILENAME:	AS-BUILTS
SCALE:	1" = 100'
DATE:	10-20-08

BASIS OF BEARINGS:
NC GRID, NAD 83

NOTE: SEE GENERAL NOTES ON SHEET 1
REGARDING DATA SOURCES



SEE INSET MAP FOR
GRADE CONTROL
ELEVATIONS



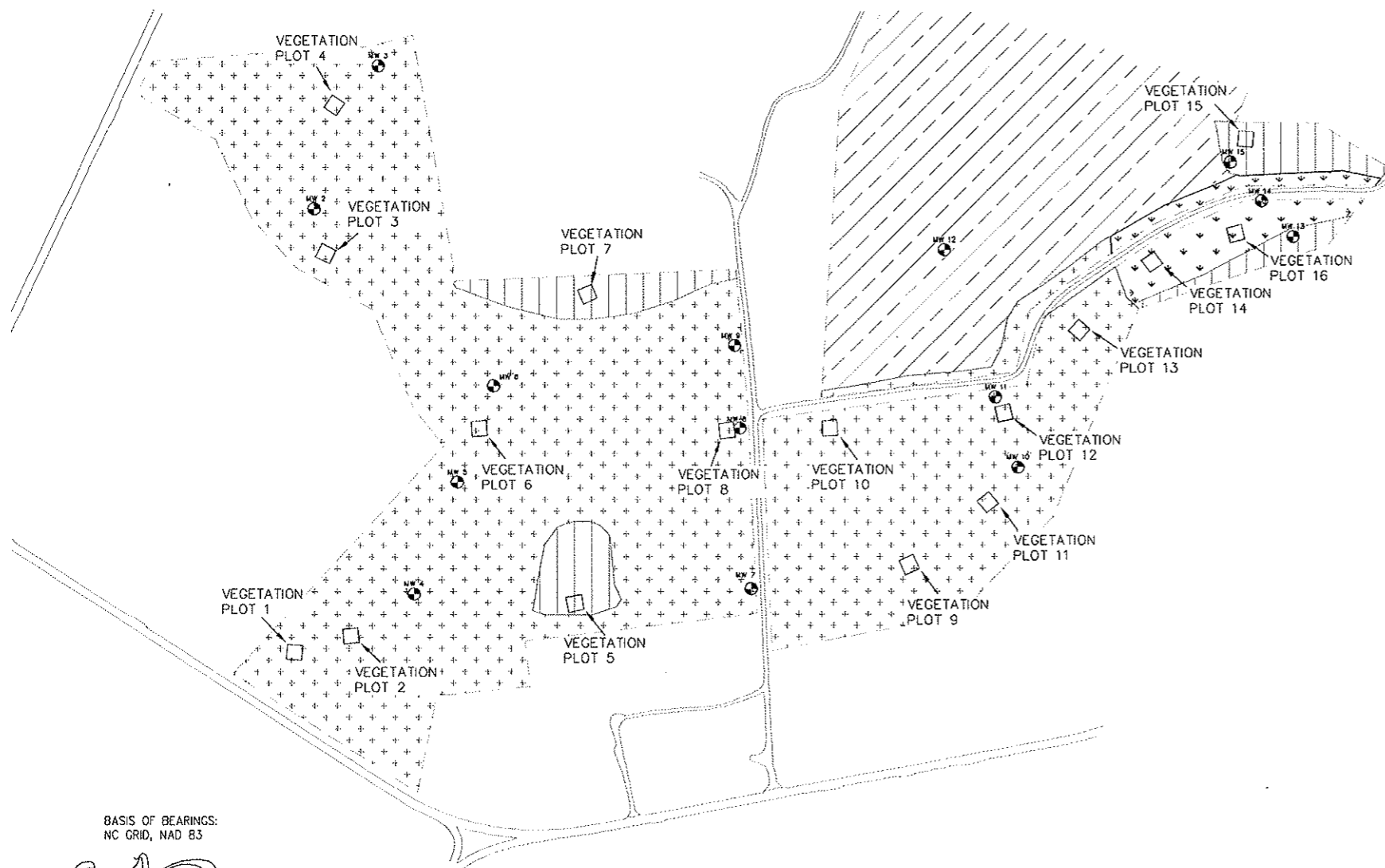
**SHEET
7 OF 10**

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AREA 3
UT to PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

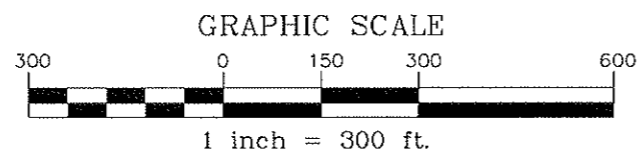
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FILENAME:	AS-BUILTS
SCALE:	1" = 50'
DATE:	10-20-08

McADAMS



BASIS OF BEARINGS:
NC GRID, NAD 83

NOTE: SEE GENERAL NOTES ON SHEET 1
REGARDING DATA SOURCES



ZONE 1 VEGETATION			
COMMON NAME	SCIENTIFIC NAME	DESCRIPTION	STEMS PLANTED
WHITE OAK	QUERCUS ALBA	BARE ROOT	300
SWAMP CHESTNUT OAK	QUERCUS MICHAUXII	BARE ROOT	400
WATER OAK	QUERCUS NIGRA	BARE ROOT	400
TULIP POPLAR	LIRIODENDRON TULIPIFERA	BARE ROOT	350
AMERICAN ELM	ULMUS AMERICANA	BARE ROOT	300
COMMON ELDERBERRY	SAMBUCUS CANADENSIS	CONTAINERIZED	189
RED TOP	AGROSTIS ALBA	WETLAND SEED	BROADCAST
WILD RYE	ELYMUS VIRGINICUS	WETLAND SEED	BROADCAST
RUSH	JUNCUS EFFUSES	WETLAND SEED	BROADCAST

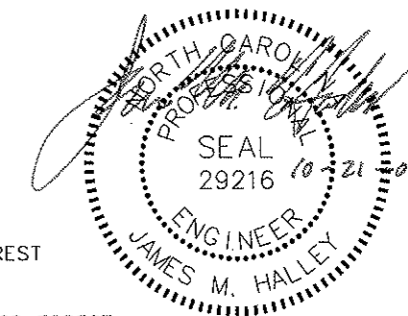
ZONE 2 VEGETATION			
COMMON NAME	SCIENTIFIC NAME	DESCRIPTION	STEMS PLANTED
TULIP POPLAR	LIRIODENDRON TULIPIFERA	BARE ROOT	3,000
SWAMP TUPELO	NYSSA BIFLORA	BARE ROOT	3,050
SWAMP CHESTNUT OAK	QUERCUS MICHAUXII	BARE ROOT	3,100
LAURAL OAK	QUERCUS LAURIFOLIA	BARE ROOT	2,600
WATER OAK	QUERCUS NIGRA	BARE ROOT	3,100
AMERICAN ELM	ULMUS AMERICANA	BARE ROOT	3,100
WAX MYRTLE	MORELLA CERIFERA	CONTAINERIZED	3,100
RED TOP	AGROSTIS ALBA	WETLAND SEED	BROADCAST
WILD RYE	ELYMUS VIRGINICUS	WETLAND SEED	BROADCAST
RUSH	JUNCUS EFFUSES	WETLAND SEED	BROADCAST

ZONE 3 VEGETATION			
COMMON NAME	SCIENTIFIC NAME	DESCRIPTION	STEMS PLANTED
TULIP POPLAR	LIRIODENDRON TULIPIFERA	BARE ROOT	250
SWAMP TUPELO	NYSSA BIFLORA	BARE ROOT	250
OVERCUP OAK	QUERCUS LYRATA	BARE ROOT	200
SWAMP BAY	PERSEA PALUSTRIS	BARE ROOT	200
VIRGINIA SWEETSPIRE	ITEA VIRGINICA	CONTAINERIZED	101
RED TOP	AGROSTIS ALBA	WETLAND SEED	BROADCAST
WILD RYE	ELYMUS VIRGINICUS	WETLAND SEED	BROADCAST
RUSH	JUNCUS EFFUSES	WETLAND SEED	BROADCAST

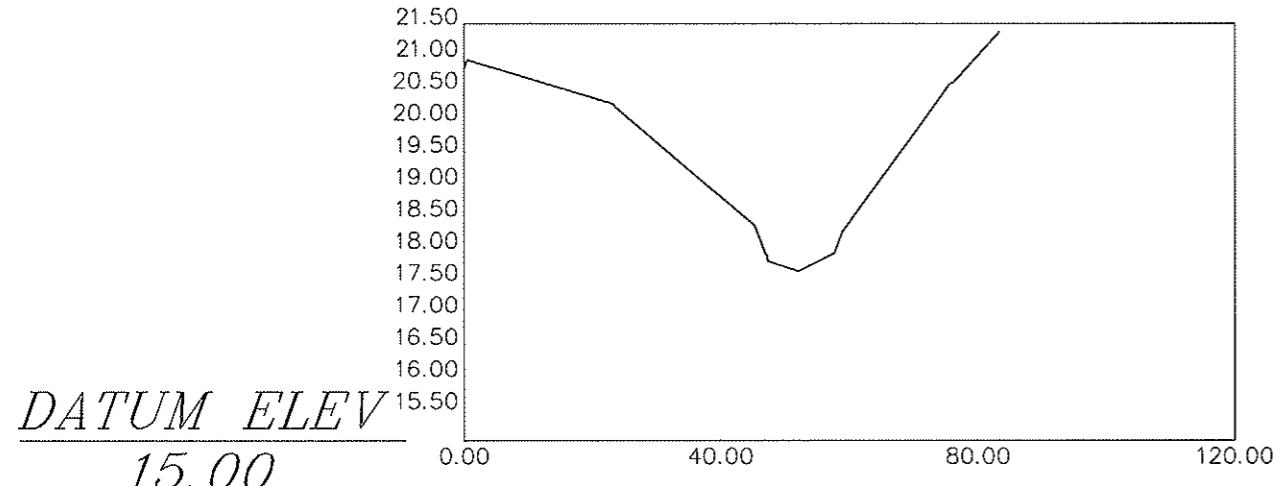
*NOTE: PLANTING WAS COMPLETED ON DECEMBER 18, 2007 -
DECEMBER 19, 2007. THE VEGETATION PLOTS WERE LOCATED
USING A TRIMBLE GEO XT SUBMETER GPS UNIT ON THESE DATES.

LEGEND

- EASEMENT BOUNDARY LINE
- EXISTING ROADS
- [Vertical Hatching] ZONE 1 MESIC MIXED HARDWOOD FOREST
- [Cross-hatch] ZONE 2 NON-RIVERINE WET HARDWOOD FOREST
- [Downward Arrow] ZONE 3 COASTAL PLAIN SMALL STREAM SWAMP
- [Diagonal Hatching] ZONE 4 WOODLAND PRESERVATION AREA

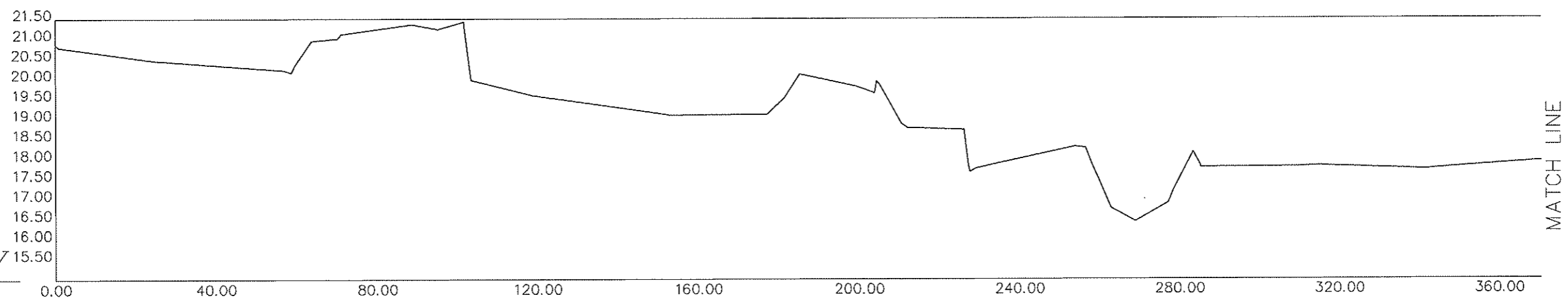
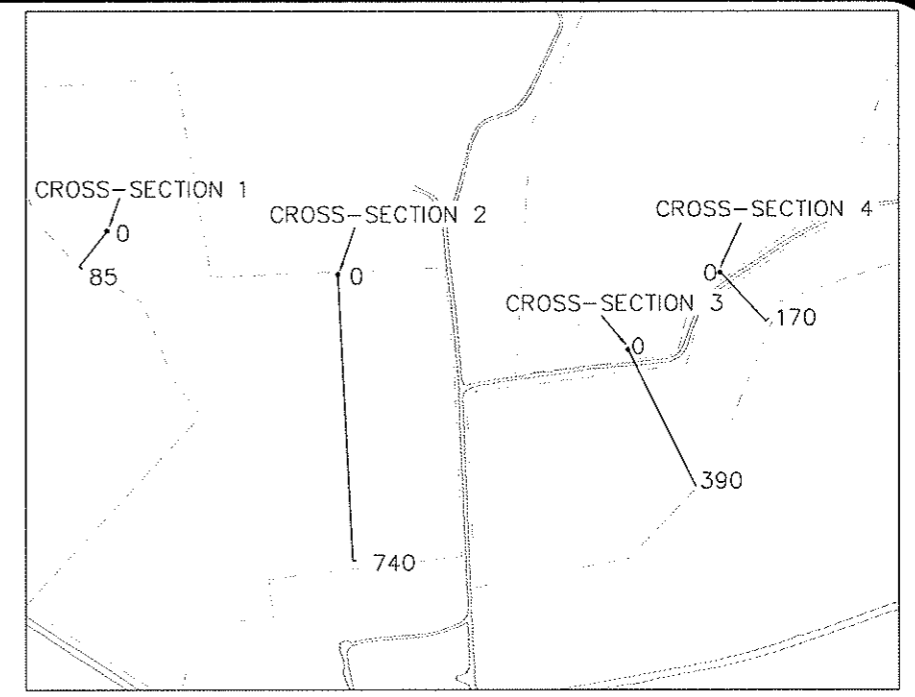
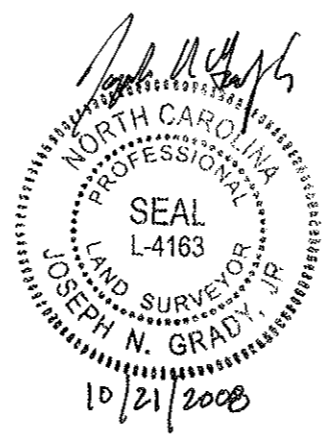


**SHEET
8 OF 10**



DATUM ELEV
15.00

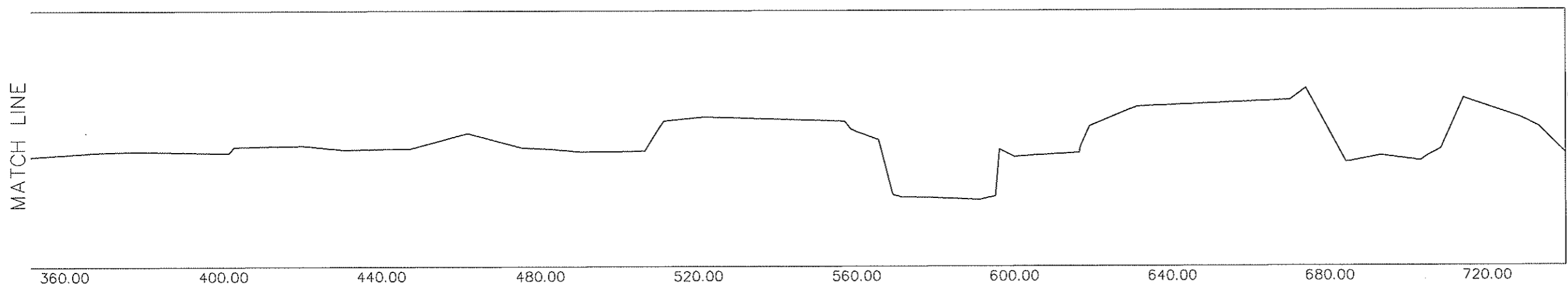
GROUP AS-BUILT
SECTION 1 0-YEAR DATA



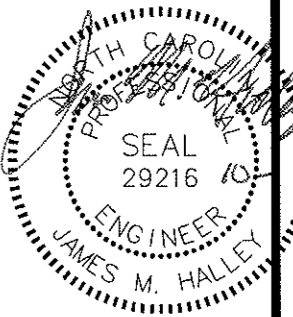
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GROUP AS-BUILT
SECTION 2 0-YEAR DATA

MATCH LINE



MATCH LINE

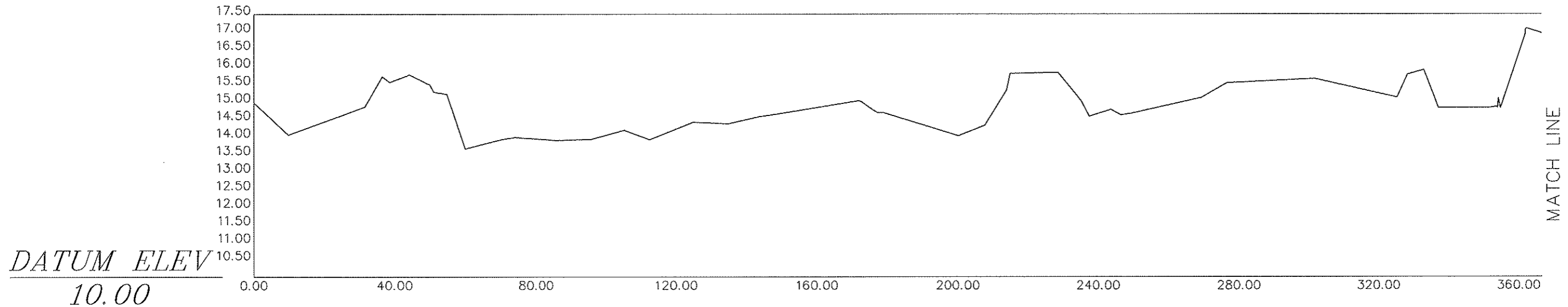


SHEET
9 OF 10

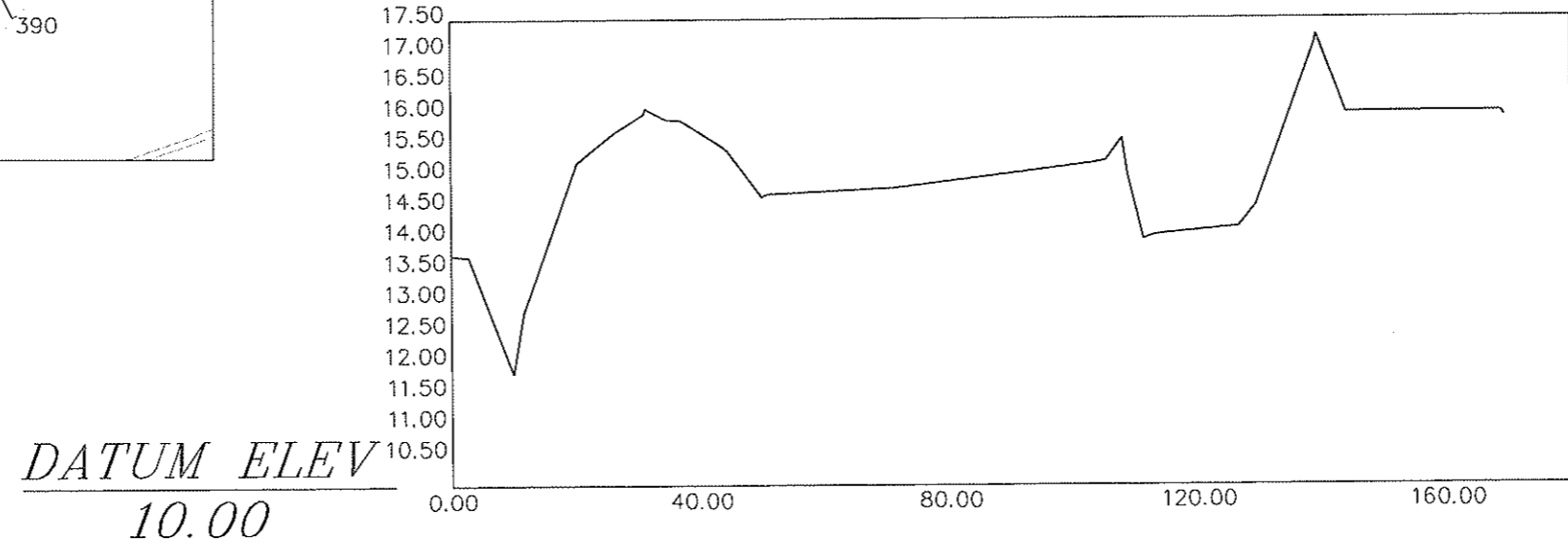
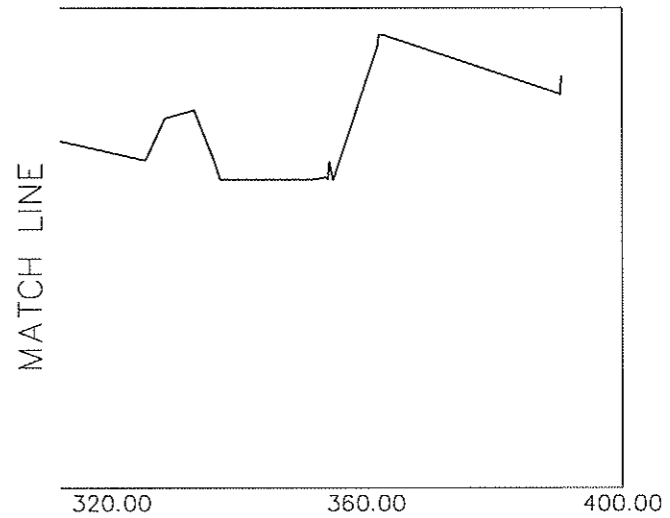
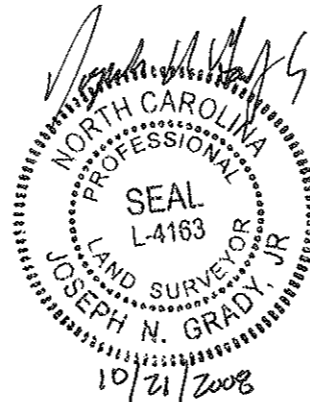
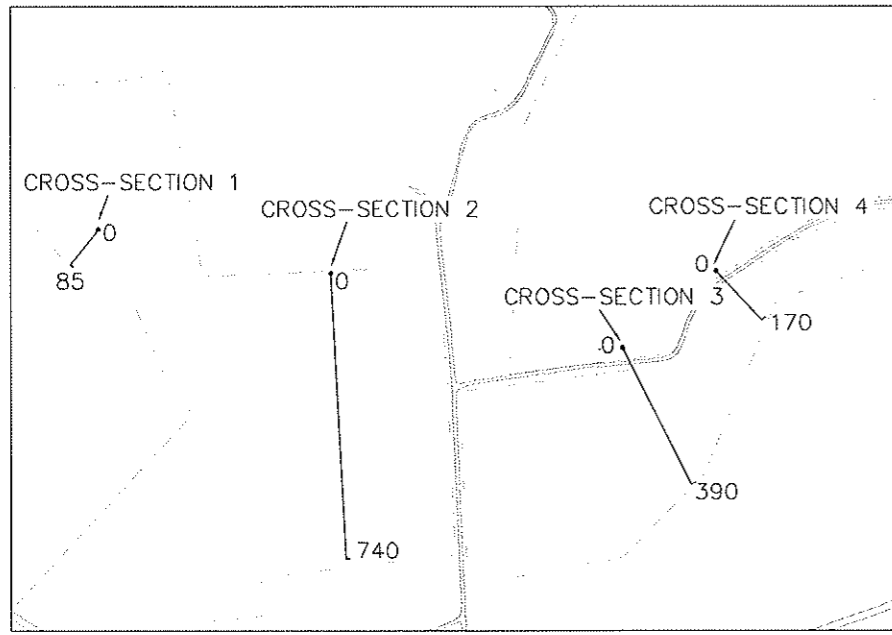
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(919) 361-5000

CROSS-SECTIONS
UT to PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

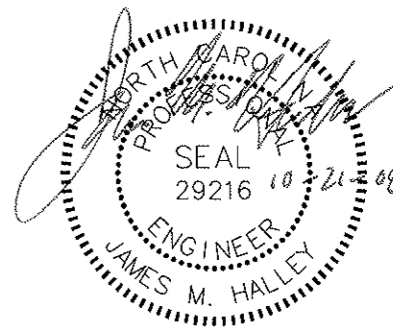
PROJECT NO. EEP-06010	FILENAME: AS-BUILT S	SCALE: 1" = 30'	DATE: 10-20-08
McADAMS			



GROUP AS-BUILT
SECTION 3 0-YEAR DATA



GROUP AS-BUILT
SECTION 4 0-YEAR DATA



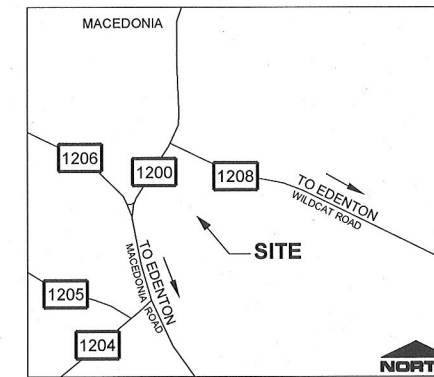
**SHEET
10 OF 10**

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(919) 361-6000

CROSS-SECTIONS
UT to PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA

PROJECT NO. EEP-06010
FILENAME: AS-BUILTS
SCALE: 1" = 30'
DATE: 10-20-08
McADAMS

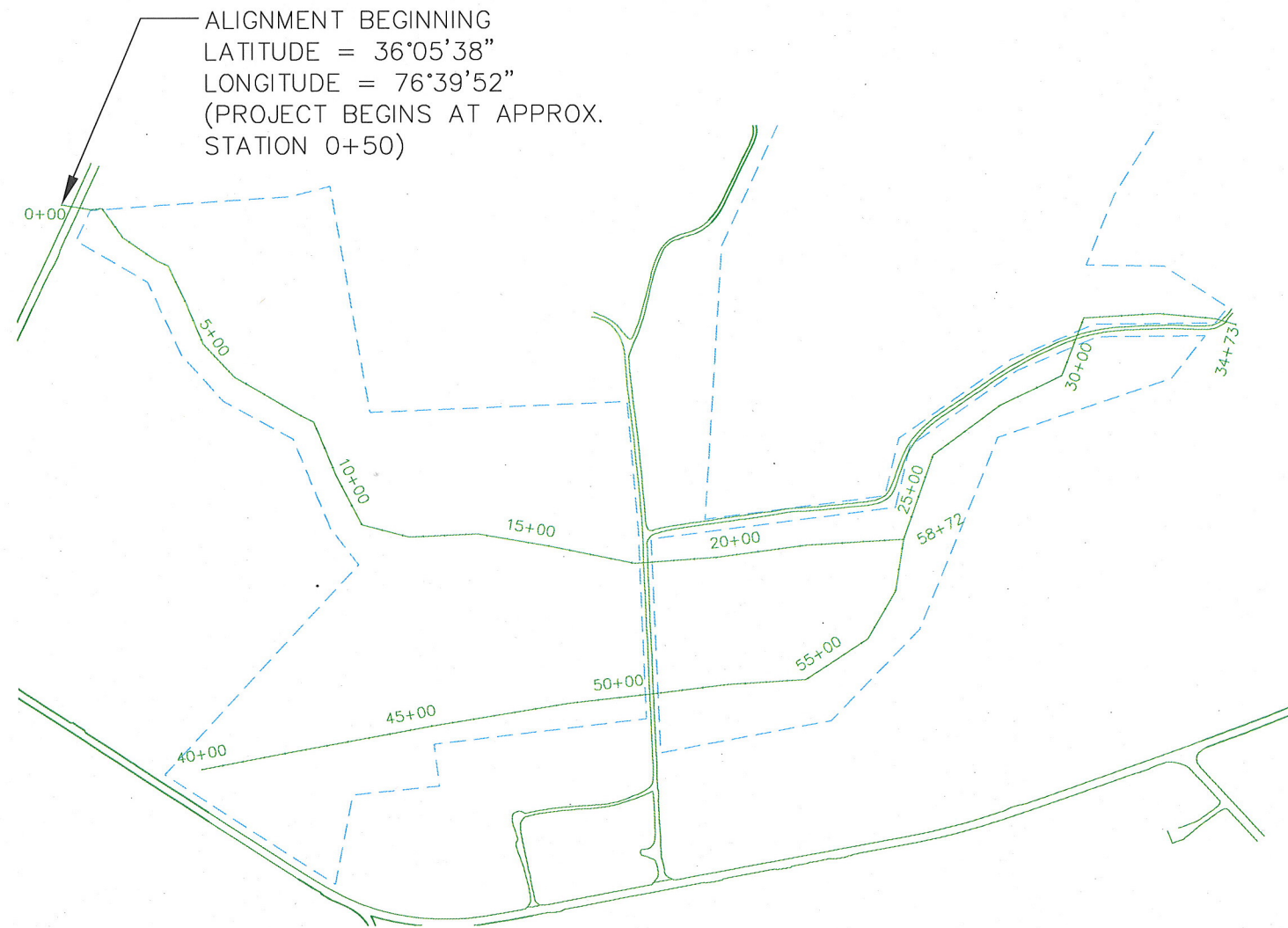
**AS-BUILT OVERLAY DRAWINGS - UT TO PEMBROKE CREEK
 STREAM AND WETLAND RESTORATION PROJECT
 EDENTON, CHOWAN COUNTY, NORTH CAROLINA
 NC ECOSYSTEM ENHANCEMENT PROGRAM PROJECT
 SCO# 050658801**



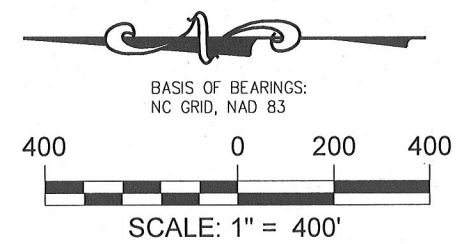
VICINITY MAP EDENTON, NC
 NOT TO SCALE

GENERAL NOTES

1. PREPARED FOR NC ECOSYSTEM ENHANCEMENT PROGRAM, 1652 MAIL SERVICE CENTER, RALEIGH, NC 27699-1652.
2. THE TOTAL EASEMENT ACREAGE FOR THIS PROJECT IS 59.42 ACRES.
3. THE SENIOR DESIGN CONTACT FOR THIS PROJECT IS JAMES M. HALLEY, PE OF THE JOHN R. MCADAMS COMPANY, 919-361-5000.
4. THE EEP PROJECT MANAGER IS TRACY MORRIS, 919-715-1658.
5. THE EEP REVIEW COORDINATOR IS LIN XU, PE, 919-715-7571.
6. THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES PROJECT NUMBER IS D06102S.
7. A BOUNDARY SURVEY WAS NOT PERFORMED WHILE OBTAINING THE FIELD SURVEYED DATA SHOWN HEREON AND THIS SET OF RECORD DRAWINGS WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO ANY FACTS AND EASEMENTS WHICH MAY BE DISCLOSED BY A FULL AND ACCURATE TITLE SEARCH.
8. BOUNDARY INFORMATION SHOWN HEREON BASED ON A CONSERVATION EASEMENT SURVEY PREPARED BY NATURAL SYSTEMS ENGINEERING AND RECORDED IN PLAT CABINET NUMBER 2, SLIDE 34G OF THE CHOWAN COUNTY REGISTER OF DEEDS.
9. PHYSICAL FEATURES SHOWN HEREON SUCH AS BUILDINGS AND ROADWAYS ARE BASED ON AN AERIAL TOPOGRAPHIC SURVEY PREPARED BY GEODATA CORPORATION UNDER THE SUPERVISION OF JAMES M. SALMONS, PLS, PPS, LICENSE NUMBER L-4041 FROM MARCH 24, 2006 AERIAL PHOTOGRAPHY.
10. FIELD SURVEYED SPOT ELEVATIONS AND THE TOPOGRAPHIC DATA SHOWN HEREON OBTAINED BY GPS METHOD. THE DATA WAS DERIVED BY KINEMATIC GPS OBSERVATIONS USING A TRIMBLE R8 RECIEVER ON-SITE AND THE NCGS NETWORK RTK SYSTEM FROM 11-28-2007 TO 11-30-2007. THE DERIVED HORIZONTAL PRECISION ON POINTS ESTABLISHED ON-SITE IS 0.031'. THE ELEVATIONS ARE BASED ON THE NAVD 88 VERTICAL DATUM AND THE NC GRID (NAD 83) HORIZONTAL DATUM.
11. PLANTING WAS COMPLETED ON DECEMBER 18, 2007 - DECEMBER 19, 2007. THE VEGETATION PLOTS WERE LOCATED USING A TRIMBLE GEO XT SUBMETER GPS UNIT ON THESE DATES.



ALIGNMENT BEGINNING
 LATITUDE = 36°05'38"
 LONGITUDE = 76°39'52"
 (PROJECT BEGINS AT APPROX.
 STATION 0+50)



SHEET INDEX:

SHEET 1	-	TITLE AND INDEX
SHEET 2	-	LEGEND
SHEET 3	-	AS-BUILT OVERLAY
SHEET 4	-	AS-BUILT GRADE TRANSITION

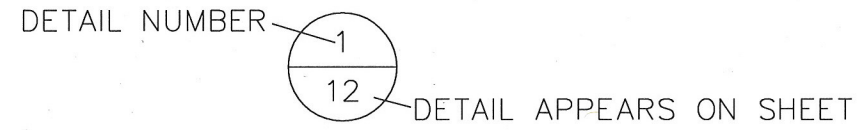
**SHEET
 1 OF 4**








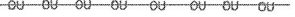

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 ENGINEERS/PLANNERS/SURVEYORS
 RESEARCH TRIANGLE PARK, NC
 P.O. BOX 14005 ZIP 27709-4005
 (919) 361-5000





TITLE AND INDEX SHEET
 UT TO PEMBROKE CREEK
 STREAM AND WETLAND RESTORATION
 CHOWAN COUNTY, NORTH CAROLINA

PROJECT NO. EEP-06010
 FILENAME: AS-BUILTS
 SCALE: 1" = 400'
 DATE: 10-20-08
 McADAMS

DETAIL KEY



-  EASEMENT BOUNDARY LINE
-  ROADS
-  FENCE
-  DESIGN CONTOUR
-  EXISTING CONTOUR
-  HUMMOCK CREATION LINE
-  FINE GRADING LIMIT
-  OVERHEAD UTILITIES
-  HEADWATER VALLEY CENTERLINE

-  TREE LINES / WOODS
-  UTILITY POLE
-  MW 1
MONITORING WELL
-  +16.5
SPOT GROUND ELEVATION

-  RUINS STRUCTURES
-  ROAD CROSSING
-  DESIGN SURFACE FLOW DIRECTION
-  GRADE TRANSITION
-  RIP RAP

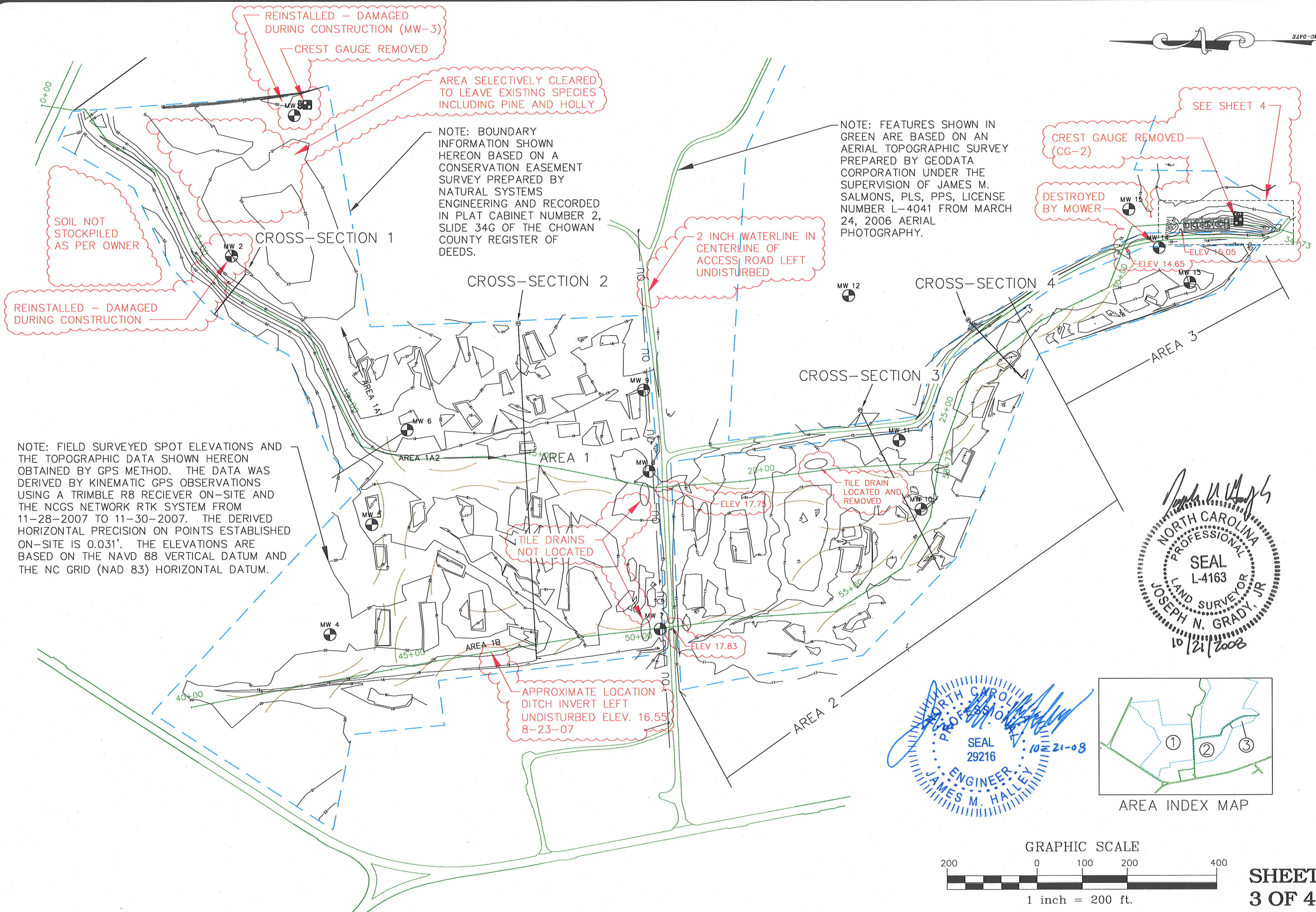
**SHEET
2 OF 4**

PROJECT NO. EEP-06010
 FILENAME: AS-BUILTS
 SCALE: NOT TO SCALE
 DATE: 10-16-08

 McADAMS

LEGEND
 UT to PEMBROKE CREEK
 STREAM AND WETLAND RESTORATION
 CHOWAN COUNTY, NORTH CAROLINA

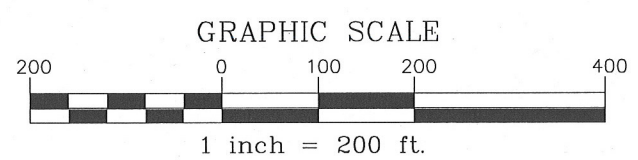
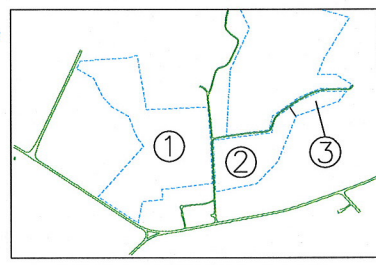
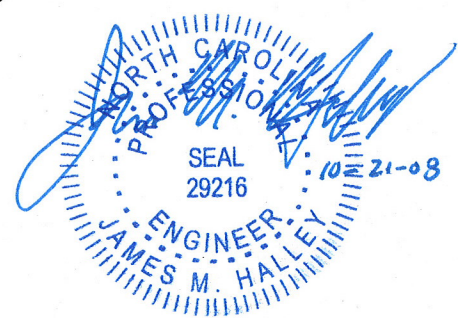
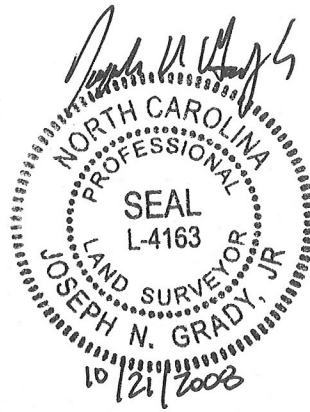
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NOTE: FIELD SURVEYED SPOT ELEVATIONS AND THE TOPOGRAPHIC DATA SHOWN HEREON OBTAINED BY GPS METHOD. THE DATA WAS DERIVED BY KINEMATIC GPS OBSERVATIONS USING A TRIMBLE R8 RECIEVER ON-SITE AND THE NCGS NETWORK RTK SYSTEM FROM 11-28-2007 TO 11-30-2007. THE DERIVED HORIZONTAL PRECISION ON POINTS ESTABLISHED ON-SITE IS 0.031'. THE ELEVATIONS ARE BASED ON THE NAVD 88 VERTICAL DATUM AND THE NC GRID (NAD 83) HORIZONTAL DATUM.

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NOTE: FEATURES SHOWN IN GREEN ARE BASED ON AN AERIAL TOPOGRAPHIC SURVEY PREPARED BY GEODATA CORPORATION UNDER THE SUPERVISION OF JAMES M. SALMONS, PLS, PPS, LICENSE NUMBER L-4041 FROM MARCH 24, 2006 AERIAL PHOTOGRAPHY.



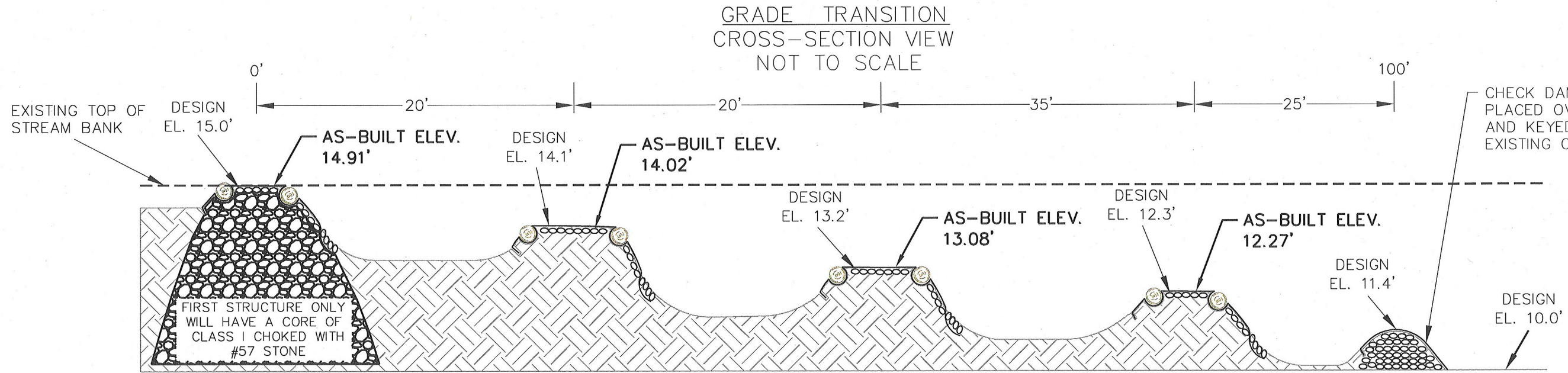
**SHEET
3 OF 4**

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**AS-BUILT OVERLAY
UT TO PEMBROKE CREEK
STREAM AND WETLAND RESTORATION
CHOWAN COUNTY, NORTH CAROLINA**

PROJECT NO. EEP-06010
FILENAME: AS-BUILTS
SCALE: 1" = 200'
DATE: 10-20-08





AS-BUILT PLAN VIEW

