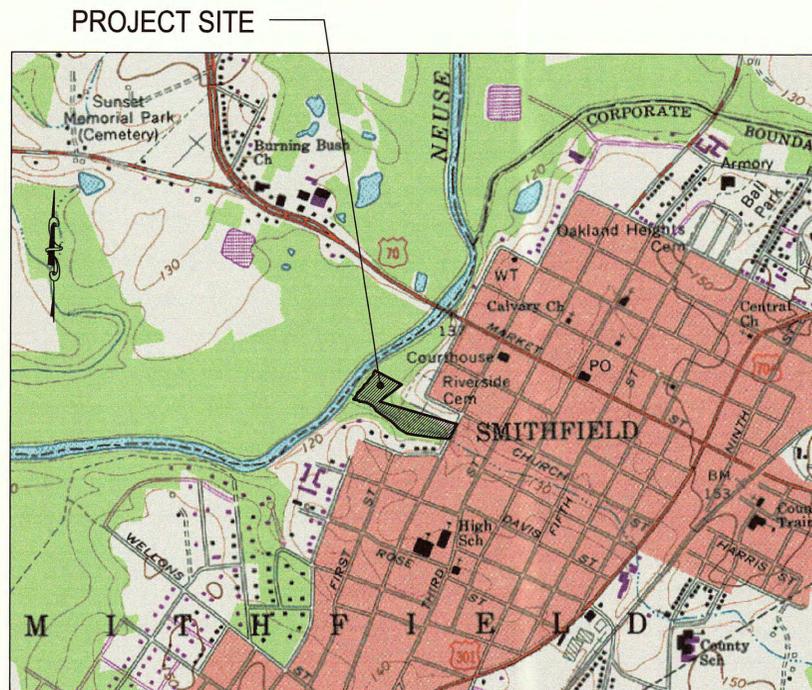


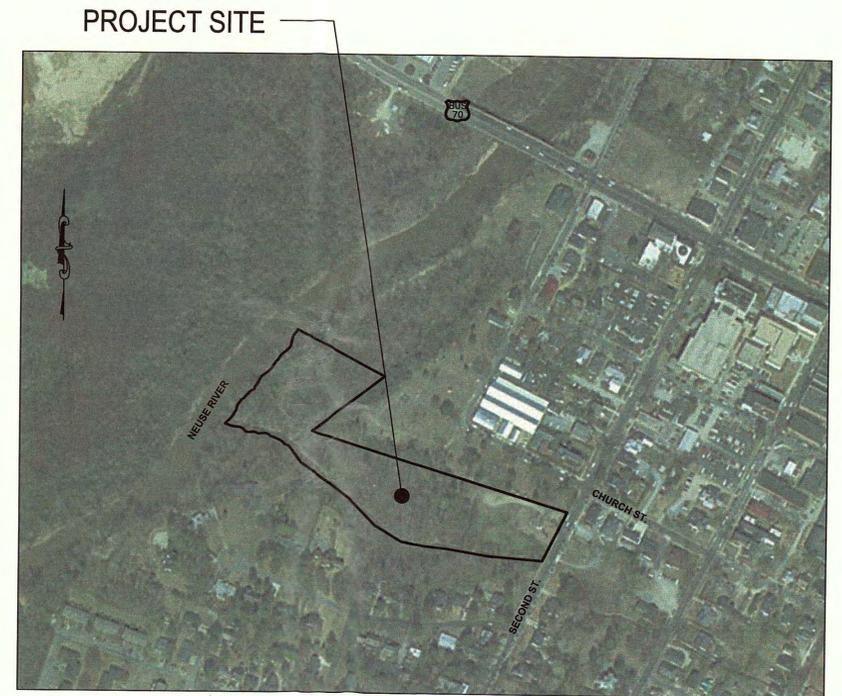
# SPRING BRANCH STORMWATER WETLAND FACILITY

TOWN OF SMITHFIELD, JOHNSTON COUNTY, NORTH CAROLINA

TRG PROJECT NO.: 00372.102



USGS QUAD. MAP "SELMA"  
SCALE: 1" = 1000'



SITE VICINITY MAP  
SCALE: 1" = 300'

OWNER:

TOWN OF SMITHFIELD  
P.O. BOX 761  
230 HOSPITAL ROAD  
SMITHFIELD, N.C. 27577

ENGINEER:

THE ROSE GROUP  
621-101 HUTTON STREET  
RALEIGH, N.C. 27606

PROJECT DESCRIPTION:

THE SPRING BRANCH STORMWATER WETLAND FACILITY PROJECT IS PARTIALLY FUNDED BY THE CLEAN WATER MANAGEMENT TRUST FUND OF NORTH CAROLINA AND IS AN EFFORT ON THE PART OF THE TOWN OF SMITHFIELD TO ADDRESS STORMWATER DISCHARGES TO SPRING BRANCH IN JOHNSTON COUNTY IN THE NEUSE RIVER BASIN BY USE OF AN ESTABLISHED STORMWATER BEST MANAGEMENT PRACTICE (BMP). SPRING BRANCH IS LOCATED IN A HIGHLY DEVELOPED PORTION OF THE TOWN LOCATED SOUTH OF HIGHWAY 70 AND WEST OF INTERSTATE 95. THE STREAM RUNS FROM NEAR INTERSTATE 95, THROUGH THE DOWNTOWN AREA, TO THE CONFLUENCE WITH THE NEUSE RIVER JUST DOWNSTREAM OF THE PROJECT SITE. THE OFF-LINE STORMWATER WETLAND IS DESIGNED TO TREAT WATER DIVERTED FROM SPRING BRANCH INTO THE FACILITY. TREATED WATER FROM THE STORMWATER WETLAND WILL BE DISCHARGED BACK INTO SPRING BRANCH THROUGH AN OUTLET DOWNSTREAM.

DRAWING INDEX:

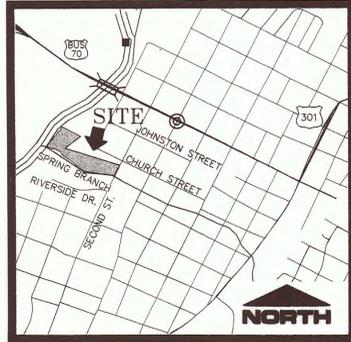
- COVER
- S-1 WETLANDS DELINEATION SURVEY
- C-1 STORMWATER WETLAND FACILITY LAYOUT AND GRADING PLAN
- C-2 SEDIMENTATION AND EROSION CONTROL PLAN
- C-3 SEDIMENTATION AND EROSION CONTROL DETAILS
- C-4 STORMWATER WETLAND FACILITY INLET SECTIONS AND DETAILS
- C-5 STORMWATER WETLAND FACILITY BERM AND OUTLET SECTIONS AND DETAILS
- C-6 GUIDE SPECIFICATIONS
- L-1 LANDSCAPE PLAN
- L-2 LANDSCAPE DETAILS



MAY 4, 2005

**FINAL DRAWING**  
FOR REVIEW PURPOSES ONLY

SPRING BRANCH



VICINITY MAP  
NOT TO SCALE

WETLANDS BOUNDARY TABULATION		
Number	Northing	Easting
101	640599.9299	219294.3464
102	641006.6318	219289.5304
103	641018.8853	219287.8125
104	641026.5663	219288.5028
105	641028.5355	219290.1994
106	641034.3528	219291.9606
107	641024.7010	219293.9244
108	640995.7967	219294.3067
114	640986.4783	219297.4624
115	640975.4834	219295.5632
116	640865.8584	219285.0393
117	640855.3073	219297.7938
118	640865.1364	219292.3648
119	640860.9104	219316.5721
120	640864.3553	219303.4636
121	640863.3324	219301.5696
122	640875.2611	219309.2716
123	640893.3647	219307.4002
124	640877.3689	219310.5624
125	640858.9830	219311.4278
126	640946.9702	219310.4371
127	640950.6517	219307.1465
128	640951.5130	219308.0641
129	640944.1139	219305.3100
130	640947.5234	219306.8811
131	640943.0034	219320.2767
132	640944.2097	219299.8931
133	640945.8455	219297.9011
134	640930.5966	219297.1198
135	640947.3633	219285.2903
136	640949.0236	219244.8964
137	640966.7864	219242.8802
138	640974.2797	219235.5208
139	640979.3462	219229.6906
109	640985.9238	219292.6848
110	640993.2486	219297.2702
111	641015.2707	219289.0903
112	641014.1443	219286.3333
113	641008.7826	219287.4756
502	640809.0605	219364.2161
504	640805.9386	219360.0212
507	640783.2961	219363.7976
510	640763.8738	219363.2665
512	640757.3750	219358.8502

REVISIONS

PROJECT NAME

**WETLANDS DELINEATION SURVEY FOR THE TOWN OF SMITHFIELD JOHNSTON COUNTY, NORTH CAROLINA**

CLIENT

**TOWN OF SMITHFIELD**

P.O. BOX 761  
 SMITHFIELD, NC 27577  
 Phone: (919) 934-2116  
 Fax: (919) 934-8937

PROJECT INFORMATION

SURVEYED BY:	DAVID
DRAWN BY:	JACK
CHECKED BY:	RAY
PROJECT NUMBER:	00372

DRAWING SCALE

HORIZONTAL: 1"=50'

DATE SURVEYED

JULY 29, 2002

SHEET NUMBER

1  
OF 1

LEGEND:  
 ▲ NCGS-NORTH CAROLINA GEODETIC MONUMENT  
 ○ EIS-EXISTING IRON STAKE  
 N/F-NOW OR FORMERLY  
 R/W-RIGHT OF WAY  
 ——— APPROXIMATELY PROPERTY LINE  
 - - - - - ADJACENT PROPERTY LINE

- NOTES:
- 1) HORIZONTAL-NAD 83. ALL COORDINATES AND DISTANCES FROM INFORMATION PREPARED BY THIS OFFICE IS SHOWN AS NCGS GRID AND NOT GROUND.
  - 2) COMBINED SCALE FACTOR FOR THIS PROJECT 0.99988218
  - 3) DATA BASE ON MONUMENT "POU 1968".
  - 4) TOPOGRAPHIC AND SITE CONDITIONS TAKEN FROM A DRAWING TITLED "TOPOGRAPHY AND LOCATION MAP OF PROPERTY AT BOB WALLACE KIDDEE PARK FOR THE TOWN OF SMITHFIELD, NORTH CAROLINA" BY CAD SOLUTIONS, DATED NOVEMBER 2, 2001
  - 5) WETLANDS DELINEATION BY OTHERS
  - 6) BOUNDARY IS APPROXIMATE AND SHOWN PER GIS INFORMATION FOR JOHNSTON COUNTY "ONLY". NO DEED OF RECORD OR RECORDED PLAT/SURVEY FOUND OR PROVIDED.
  - 7) WETLANDS AREA = 5,355 SF, 0.12 AC
  - 8) ADJOINING OWNERS INFORMATION PER JOHNSTON COUNTY REGISTRY OF DEEDS AND GIS.

I, RAYMOND B. DAWBER, CERTIFY THAT THIS GRID TIE WAS DRAWN FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION; THAT THIS GPS SURVEY WAS PERFORMED TO CLASS C2-II FCCC SPECIFICATIONS THAT USED REALTIME KINEMATIC GPS FIELD PROCEDURES AND COORDINATES WERE OBTAINED USING NO ADJUSTMENT. THAT THIS SURVEY WAS PERFORMED ON JULY 29, 2002 USING TRIMBLE 4700 & 4800 SERIES DUAL FREQUENCY RECEIVERS (2) AND ALL COORDINATES ARE BASED ON NCGS STATIONS "ALBERT AZ MK2" AND "POU 1968"

*Raymond B. Dawber*  
 PROFESSIONAL LAND SURVEYOR - L-3898

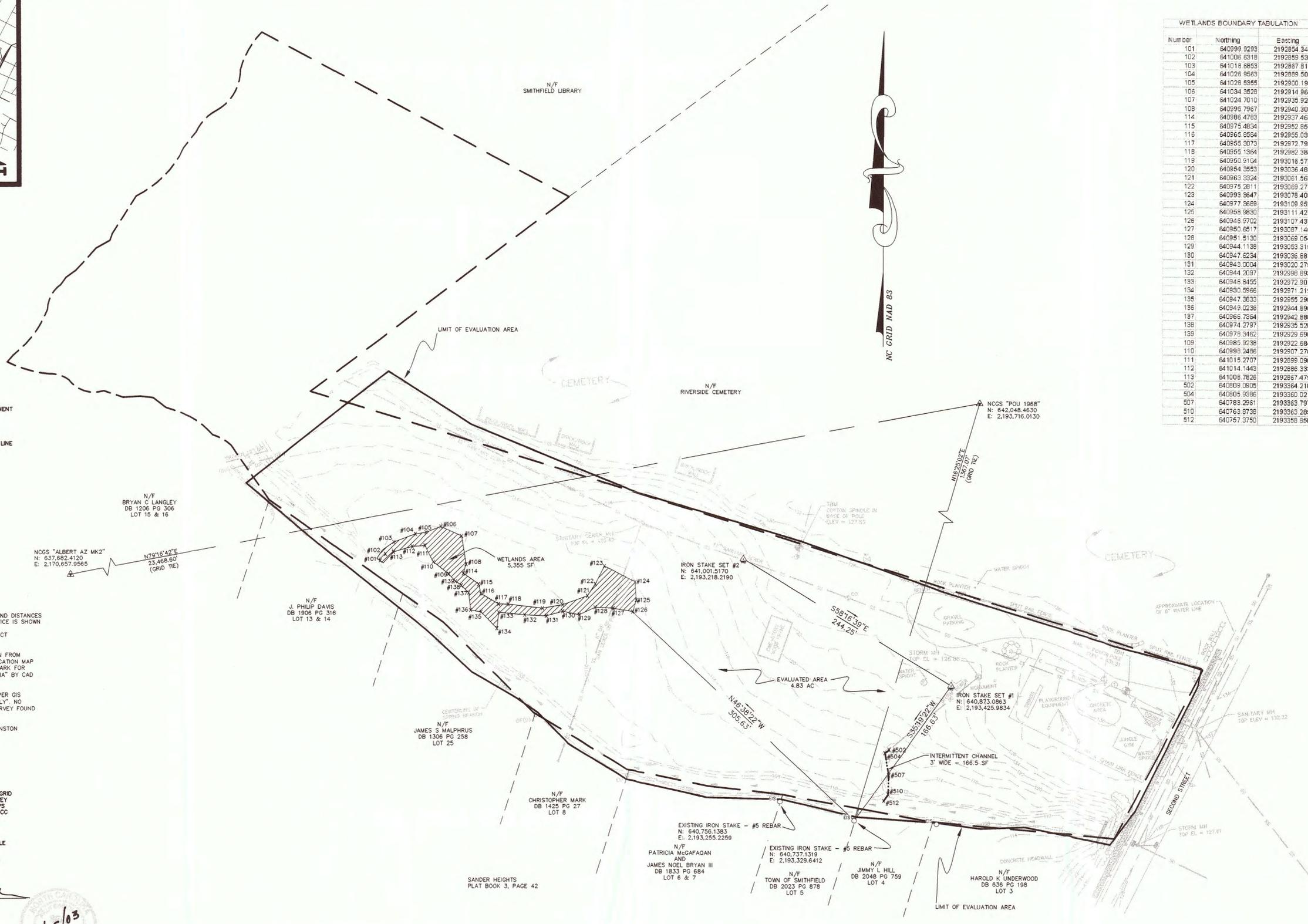
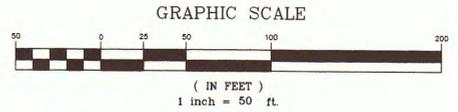
2/25/03

WETLAND CERTIFICATION  
 THIS PLAT IDENTIFIES AS WETLANDS AS MARKED IN THE FIELD BY OTHERS AS OF THE DATE DATE OF THIS SURVEY. NO BOUNDARY SURVEYING WAS PERFORMED. INFORMATION SHOWN HEREON DOES NOT MEET NC 47-30 REQUIREMENTS AND THEREFORE IS NOT FOR RECORDING OR TRANSFER OF TITLE. IT IS INTENDED TO INDICATE THE WETLANDS LIMITS AS SHOWN HEREON "ONLY".

*Raymond B. Dawber*  
 PROFESSIONAL LAND SURVEYOR - L-3898

"THIS CERTIFIES THAT THIS COPY OF THIS PLAT ACCURATELY DEPICTS THE BOUNDARY OF THE JURISDICTION OF SECTION 404 OF THE CLEAN WATER ACT AS DETERMINED BY THE UNDERSIGNED ON THIS DATE. UNLESS THERE IS A CHANGE IN THE LAW OR OUR PUBLISHED REGULATIONS, THIS DETERMINATION OF SECTION 404 JURISDICTION MAY BE RELIED UPON FOR A PERIOD NOT TO EXCEED FIVE YEARS FROM THIS DATE. THIS DETERMINATION WAS MADE UTILIZING THE 1987 CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL."

NAME: *Raymond B. Dawber*  
 TITLE: *Raymond B. Dawber*  
 FIRM: *CDE*  
 DATE: *March 31, 2003*





**REVISIONS**

**PROJECT NAME**

**SPRING BRANCH STORMWATER WETLAND FACILITY**

**CLIENT**

**TOWN OF SMITHFIELD**

P.O. Box 761  
 230 Hospital Road  
 Smithfield, N.C. 27577  
 Phone: (919) 934-2596  
 Fax: (919) 934-4223

**PROJECT INFORMATION**

PROJECT MANAGER:	EHK
DRAWN BY:	KPG
CHECKED BY:	TLL
PROJECT NUMBER:	00372.102

**SHEET NAME**

**STORMWATER WETLAND FACILITY LAYOUT AND GRADING PLAN**

**DRAWING SCALE**

1" = 40'

**DATE**

MAY 4, 2005

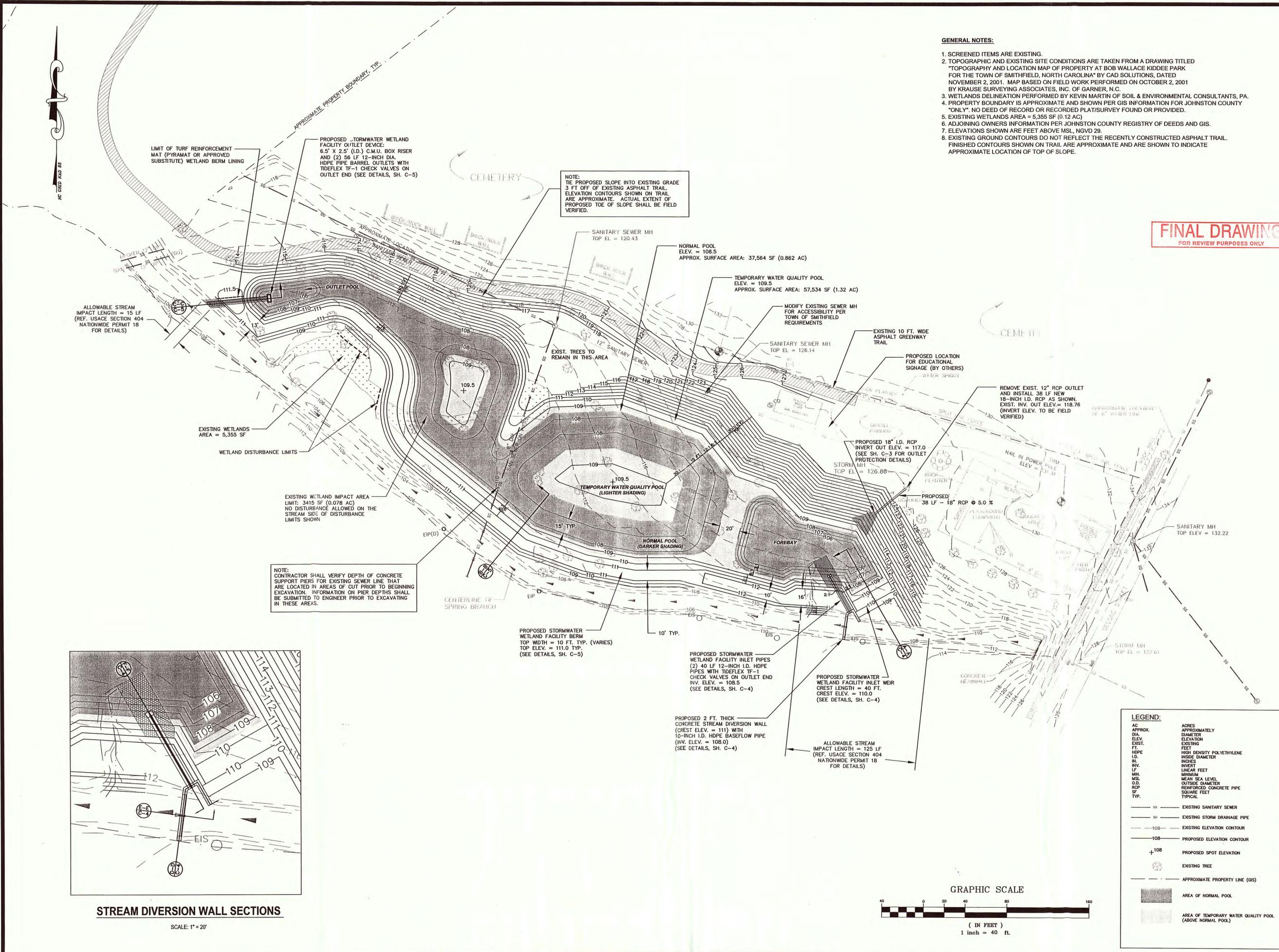
**SHEET NUMBER**

**C-1**

**GENERAL NOTES:**

- SCREENED ITEMS ARE EXISTING.
- TOPOGRAPHIC AND EXISTING SITE CONDITIONS ARE TAKEN FROM A DRAWING TITLED "TOPOGRAPHY AND LOCATION MAP OF PROPERTY AT BOB WALLACE KIDDEE PARK FOR THE TOWN OF SMITHFIELD, NORTH CAROLINA" BY CAD SOLUTIONS, DATED NOVEMBER 2, 2001. MAP BASED ON FIELD WORK PERFORMED ON OCTOBER 2, 2001 BY KRAUSE SURVEYING ASSOCIATES, INC. OF GARNER, N.C.
- WETLANDS DELINEATION PERFORMED BY KEVIN MARTIN OF SOIL & ENVIRONMENTAL CONSULTANTS, PA.
- PROPERTY BOUNDARY IS APPROXIMATE AND SHOWN PER GIS INFORMATION FOR JOHNSTON COUNTY "ONLY". NO DEED OF RECORD OR RECORDED PLATS/SURVEY FOUND OR PROVIDED.
- EXISTING WETLANDS AREA = 5,355 SF (0.12 AC)
- ADJOINING OWNERS INFORMATION PER JOHNSTON COUNTY REGISTRY OF DEEDS AND GIS.
- ELEVATIONS SHOWN ARE FEET ABOVE MSL, NGVD 29.
- EXISTING GROUND CONTOURS DO NOT REFLECT THE RECENTLY CONSTRUCTED ASPHALT TRAIL. FINISHED CONTOURS SHOWN ON TRAIL ARE APPROXIMATE AND ARE SHOWN TO INDICATE APPROXIMATE LOCATION OF TOP OF SLOPE.

**FINAL DRAWING**  
 FOR REVIEW PURPOSES ONLY



NOTE:  
 THE PROPOSED SLOPE INTO EXISTING GRADE 3 FT. OFF OF EXISTING ASPHALT TRAIL. ELEVATION CONTOURS SHOWN ON TRAIL ARE APPROXIMATE. ACTUAL EXTENT OF PROPOSED TOE OF SLOPE SHALL BE FIELD VERIFIED.

NOTE:  
 CONTRACTOR SHALL VERIFY DEPTH OF CONCRETE SUPPORT PIERS FOR EXISTING SEWER LINE THAT ARE LOCATED IN AREAS OF CUT PRIOR TO BEGINNING EXCAVATION. INFORMATION ON PIER DEPTHS SHALL BE SUBMITTED TO ENGINEER PRIOR TO EXCAVATING IN THESE AREAS.

ALLOWABLE STREAM IMPACT LENGTH = 15 LF (REF. USACE SECTION 404 NATIONWIDE PERMIT 18 FOR DETAILS)

LIMIT OF TURF REINFORCEMENT MAT (PYRAMAT OR APPROVED SUBSTITUTE) WETLAND BERM LINING

PROPOSED STORMWATER WETLAND FACILITY OUTLET DEVICE:  
 6.5' X 2.5' (I.D.) C.M.U. BOX RISER AND (2) 56 LF 12-INCH DIA. HDPE PIPE BARREL OUTLETS WITH TIDEFLEX TF-1 CHECK VALVES ON OUTLET END (SEE DETAILS, SH. C-5)

SANITARY SEWER MH TOP EL. = 120.43

NORMAL POOL ELEV. = 108.5 APPROX. SURFACE AREA: 37,564 SF (0.862 AC)

TEMPORARY WATER QUALITY POOL ELEV. = 109.5 APPROX. SURFACE AREA: 57,534 SF (1.32 AC)

MODIFY EXISTING SEWER MH FOR ACCESSIBILITY PER TOWN OF SMITHFIELD REQUIREMENTS

SANITARY SEWER MH TOP EL. = 126.14

EXISTING 10 FT. WIDE ASPHALT GREENWAY TRAIL

PROPOSED LOCATION FOR EDUCATIONAL SIGNAGE (BY OTHERS) WATER SPOUT

REMOVE EXIST. 12" RCP OUTLET AND INSTALL 36 LF NEW 18-INCH I.D. RCP AS SHOWN. EXIST. INV. OUT ELEV. = 118.76 (INVERT ELEV. TO BE FIELD VERIFIED)

PROPOSED 18" I.D. RCP INVERT OUT ELEV. = 117.0 (SEE SH. C-3 FOR OUTLET PROTECTION DETAILS)

PROPOSED 36 LF - 18" RCP @ 5.0 %

STORM MH TOP EL. = 126.86

SANITARY MH TOP ELEV. = 132.22

STORM MH TOP EL. = 127.61

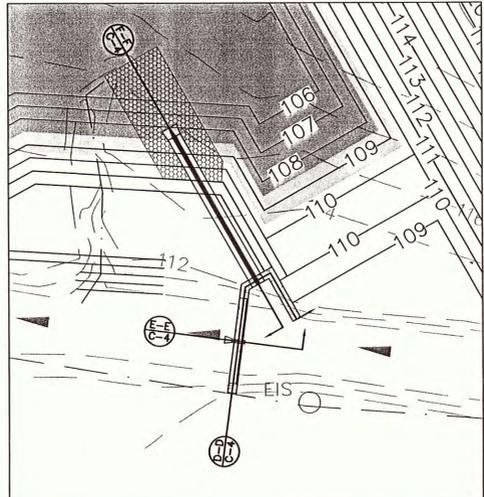
PROPOSED STORMWATER WETLAND FACILITY BERM TOP WIDTH = 10 FT. TYP. (VARIES) TOP ELEV. = 111.0 TYP. (SEE DETAILS, SH. C-5)

PROPOSED STORMWATER WETLAND FACILITY INLET PIPES (2) 40 LF 12-INCH I.D. HDPE PIPES WITH TIDEFLEX TF-1 CHECK VALVES ON OUTLET END INV. ELEV. = 108.5 (SEE DETAILS, SH. C-4)

PROPOSED 2 FT. THICK CONCRETE STREAM DIVERSION WALL (CREST ELEV. = 111) WITH 10-INCH I.D. HDPE BASEFLOW PIPE (INV. ELEV. = 108.0) (SEE DETAILS, SH. C-4)

PROPOSED STORMWATER WETLAND FACILITY INLET WEIR CREST LENGTH = 40 FT. CREST ELEV. = 110.0 (SEE DETAILS, SH. C-4)

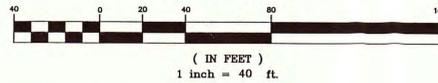
ALLOWABLE STREAM IMPACT LENGTH = 125 LF (REF. USACE SECTION 404 NATIONWIDE PERMIT 18 FOR DETAILS)



**STREAM DIVERSION WALL SECTIONS**

SCALE: 1" = 20'

**GRAPHIC SCALE**



**LEGEND:**

AC	ACRES	APPROXIMATELY
APPROX.	DIAMETER	EXISTING
ELEV.	ELEVATION	EXISTING
EXIST.	FEET	EXISTING
FT.	FEET	EXISTING
HDPE	HIGH DENSITY POLYETHYLENE	EXISTING
I.D.	INSIDE DIAMETER	EXISTING
IN.	INCHES	EXISTING
INVERT	INVERT	EXISTING
LF	LINEAR FEET	EXISTING
MIN.	MINIMUM	EXISTING
MSL	MEAN SEA LEVEL	EXISTING
O.D.	OUTSIDE DIAMETER	EXISTING
RCP	REINFORCED CONCRETE PIPE	EXISTING
SF	SQUARE FEET	EXISTING
TYP.	TYPICAL	EXISTING
---	EXISTING SANITARY SEWER	
---	EXISTING STORM DRAINAGE PIPE	
---	EXISTING ELEVATION CONTOUR	
---	PROPOSED ELEVATION CONTOUR	
+	PROPOSED SPOT ELEVATION	
○	EXISTING TREE	
---	APPROXIMATE PROPERTY LINE (GS)	
■	AREA OF NORMAL POOL	
■	AREA OF TEMPORARY WATER QUALITY POOL (ABOVE NORMAL POOL)	



**REVISIONS**

**PROJECT NAME**

**SPRING BRANCH STORMWATER WETLAND FACILITY**

**CLIENT**

**TOWN OF SMITHFIELD**

P.O. Box 761  
 230 Hospital Road  
 Smithfield, N.C. 27577  
 Phone: (919) 934-2596  
 Fax: (919) 934-4223

**PROJECT INFORMATION**

PROJECT MANAGER:	EHK
DRAWN BY:	KPG
CHECKED BY:	TLL
PROJECT NUMBER:	00372.02

**SHEET NAME**

**SEDIMENTATION AND EROSION CONTROL PLAN**

**DRAWING SCALE**

1" = 40'

**DATE**

MAY 4, 2005

**SHEET NUMBER**

**C-2**

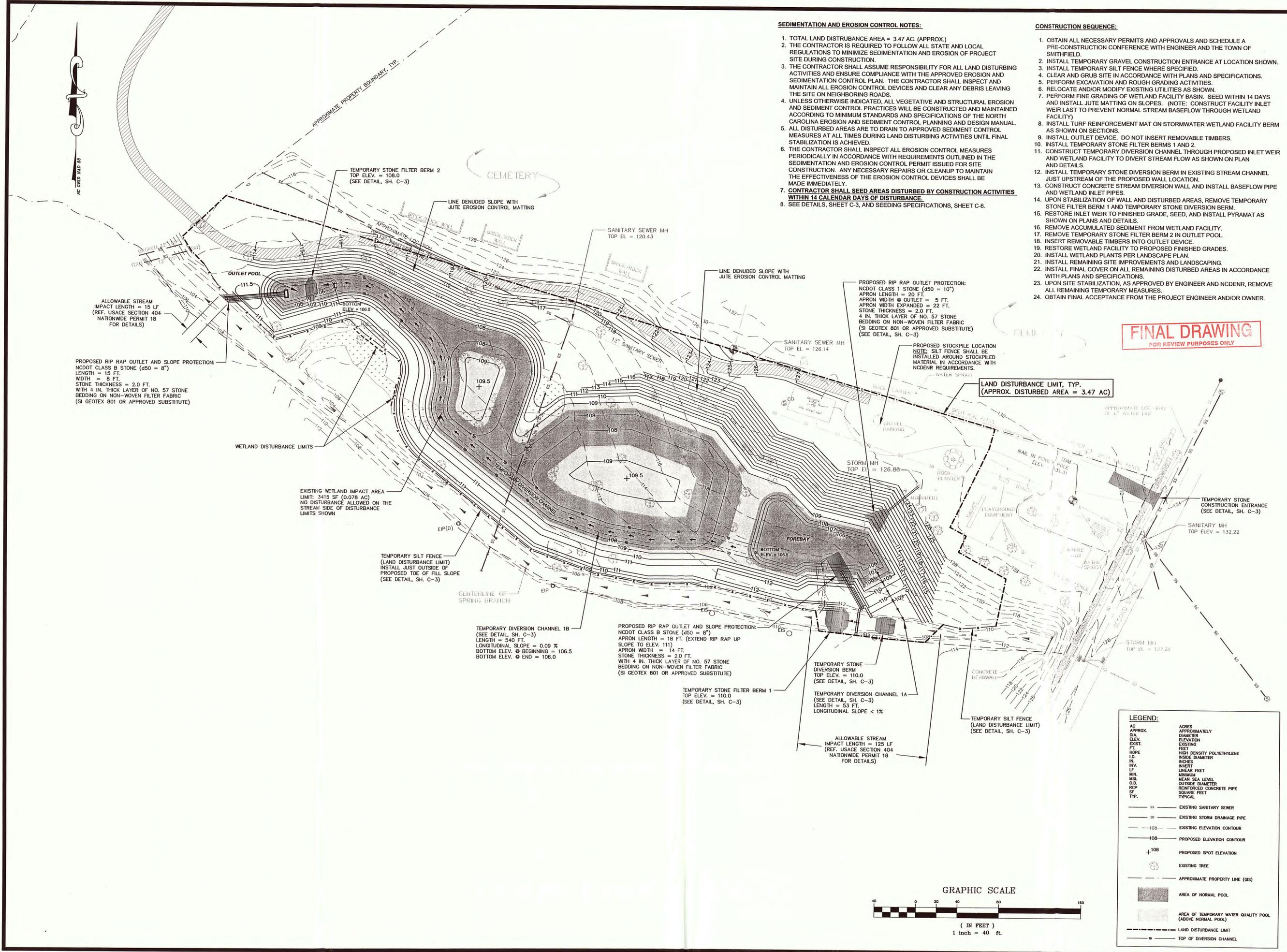
**SEDIMENTATION AND EROSION CONTROL NOTES:**

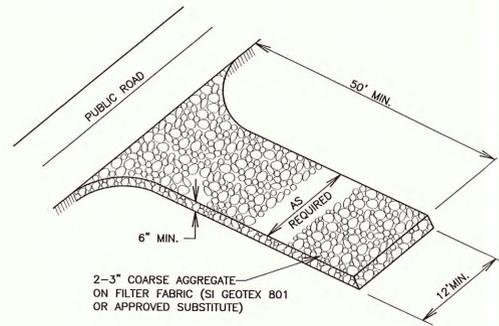
- TOTAL LAND DISTURBANCE AREA = 3.47 AC. (APPROX.)
- THE CONTRACTOR IS REQUIRED TO FOLLOW ALL STATE AND LOCAL REGULATIONS TO MINIMIZE SEDIMENTATION AND EROSION OF PROJECT SITE DURING CONSTRUCTION.
- THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ALL LAND DISTURBING ACTIVITIES AND ENSURE COMPLIANCE WITH THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN. THE CONTRACTOR SHALL INSPECT AND MAINTAIN ALL EROSION CONTROL DEVICES AND CLEAR ANY DEBRIS LEAVING THE SITE ON NEIGHBORING ROADS.
- UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.
- ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES UNTIL FINAL STABILIZATION IS ACHIEVED.
- THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY IN ACCORDANCE WITH REQUIREMENTS OUTLINED IN THE SEDIMENTATION AND EROSION CONTROL PERMIT ISSUED FOR SITE CONSTRUCTION. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.
- CONTRACTOR SHALL SEED AREAS DISTURBED BY CONSTRUCTION ACTIVITIES WITHIN 14 CALENDAR DAYS OF DISTURBANCE.
- SEE DETAILS, SHEET C-3, AND SEEDING SPECIFICATIONS, SHEET C-6.

**CONSTRUCTION SEQUENCE:**

- OBTAIN ALL NECESSARY PERMITS AND APPROVALS AND SCHEDULE A PRE-CONSTRUCTION CONFERENCE WITH ENGINEER AND THE TOWN OF SMITHFIELD.
- INSTALL TEMPORARY GRAVEL CONSTRUCTION ENTRANCE AT LOCATION SHOWN.
- INSTALL TEMPORARY SILT FENCE WHERE SPECIFIED.
- CLEAR AND GRUB SITE IN ACCORDANCE WITH PLANS AND SPECIFICATIONS.
- PERFORM EXCAVATION AND ROUGH GRADING ACTIVITIES.
- RELOCATE AND/OR MODIFY EXISTING UTILITIES AS SHOWN.
- PERFORM FINE GRADING OF WETLAND FACILITY BASIN. SEED WITHIN 14 DAYS AND INSTALL JUTE MATTING ON SLOPES. (NOTE: CONSTRUCT FACILITY INLET WEIR LAST TO PREVENT NORMAL STREAM BASEFLOW THROUGH WETLAND FACILITY)
- INSTALL TURF REINFORCEMENT MAT ON STORMWATER WETLAND FACILITY BERM AS SHOWN ON SECTIONS.
- INSTALL OUTLET DEVICE. DO NOT INSERT REMOVABLE TIMBERS.
- INSTALL TEMPORARY STONE FILTER BERMS 1 AND 2.
- CONSTRUCT TEMPORARY DIVERSION CHANNEL THROUGH PROPOSED INLET WEIR AND WETLAND FACILITY TO DIVERST STREAM FLOW AS SHOWN ON PLAN AND DETAILS.
- INSTALL TEMPORARY STONE DIVERSION BERM IN EXISTING STREAM CHANNEL JUST UPSTREAM OF THE PROPOSED WALL LOCATION.
- CONSTRUCT CONCRETE STREAM DIVERSION WALL AND INSTALL BASEFLOW PIPE AND WETLAND INLET PIPES.
- UPON STABILIZATION OF WALL AND DISTURBED AREAS, REMOVE TEMPORARY STONE FILTER BERM 1 AND TEMPORARY STONE DIVERSION BERM.
- RESTORE INLET WEIR TO FINISHED GRADE, SEED, AND INSTALL PYRAMAT AS SHOWN ON PLANS AND DETAILS.
- REMOVE ACCUMULATED SEDIMENT FROM WETLAND FACILITY.
- REMOVE TEMPORARY STONE FILTER BERM 2 IN OUTLET POOL.
- INSERT REMOVABLE TIMBERS INTO OUTLET DEVICE.
- RESTORE WETLAND FACILITY TO PROPOSED FINISHED GRADES.
- INSTALL WETLAND PLANTS PER LANDSCAPE PLAN.
- INSTALL REMAINING SITE IMPROVEMENTS AND LANDSCAPING.
- INSTALL FINAL COVER ON ALL REMAINING DISTURBED AREAS IN ACCORDANCE WITH PLANS AND SPECIFICATIONS.
- UPON SITE STABILIZATION, AS APPROVED BY ENGINEER AND NCDENR, REMOVE ALL REMAINING TEMPORARY MEASURES.
- OBTAIN FINAL ACCEPTANCE FROM THE PROJECT ENGINEER AND/OR OWNER.

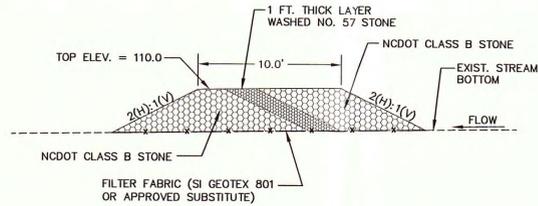
**FINAL DRAWING**  
 FOR REVIEW PURPOSES ONLY





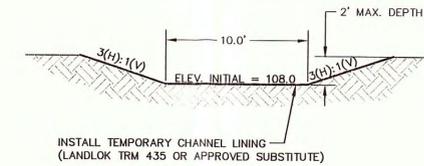
**TEMPORARY STONE CONSTRUCTION ENTRANCE**

N.T.S.



**TEMPORARY STONE FILTER BERM 1 SECTION**

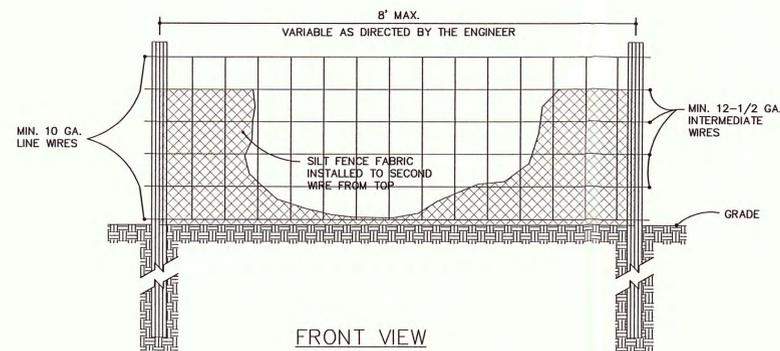
N.T.S.



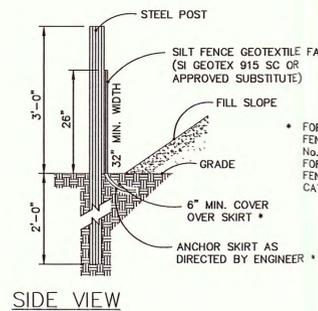
**TEMPORARY DIVERSION CHANNEL 1A SECTION**

N.T.S.

**FINAL DRAWING**  
 FOR REVIEW PURPOSES ONLY



**FRONT VIEW**



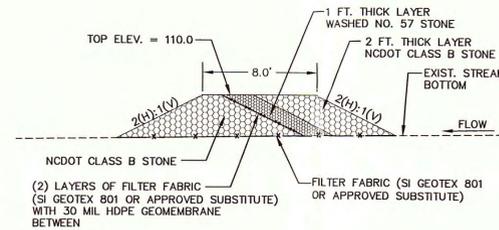
**SIDE VIEW**

**NOTE:**

- USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NOT IN AREAS OF CONCENTRATED FLOW
- END OF SILT FENCE NEEDS TO BE TURNED UPHILL.
- REF: CITY OF RALEIGH, CENTRAL ENGINEERING DEPT.

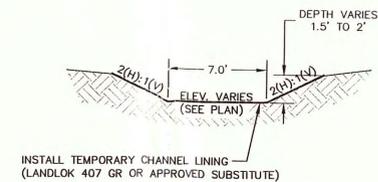
**TEMPORARY SILT FENCE**

N.T.S.



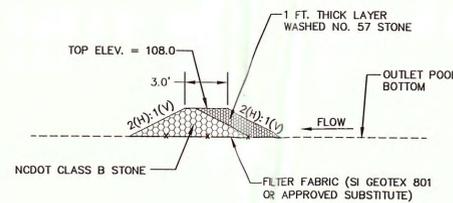
**TEMPORARY STONE DIVERSION BERM SECTION**

N.T.S.



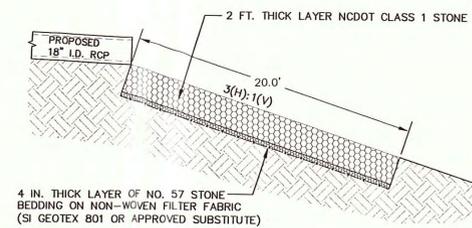
**TEMPORARY DIVERSION CHANNEL 1B SECTION**

N.T.S.



**TEMPORARY STONE FILTER BERM 2 SECTION**

N.T.S.



**STORM DRAIN MODIFICATION OUTLET PROTECTION DETAIL**

N.T.S.

**PROJECT NAME**

**SPRING BRANCH STORMWATER WETLAND FACILITY**

**CLIENT**

**TOWN OF SMITHFIELD**

P.O. Box 761  
 230 Hospital Road  
 Smithfield, N.C. 27577  
 Phone: (919) 934-2596  
 Fax: (919) 934-4223

**PROJECT INFORMATION**

PROJECT MANAGER:	EHK
DRAWN BY:	KPG
CHECKED BY:	TLL
PROJECT NUMBER:	00372.02

**SHEET NAME**

**SEDIMENTATION AND EROSION CONTROL DETAILS**

**DRAWING SCALE**

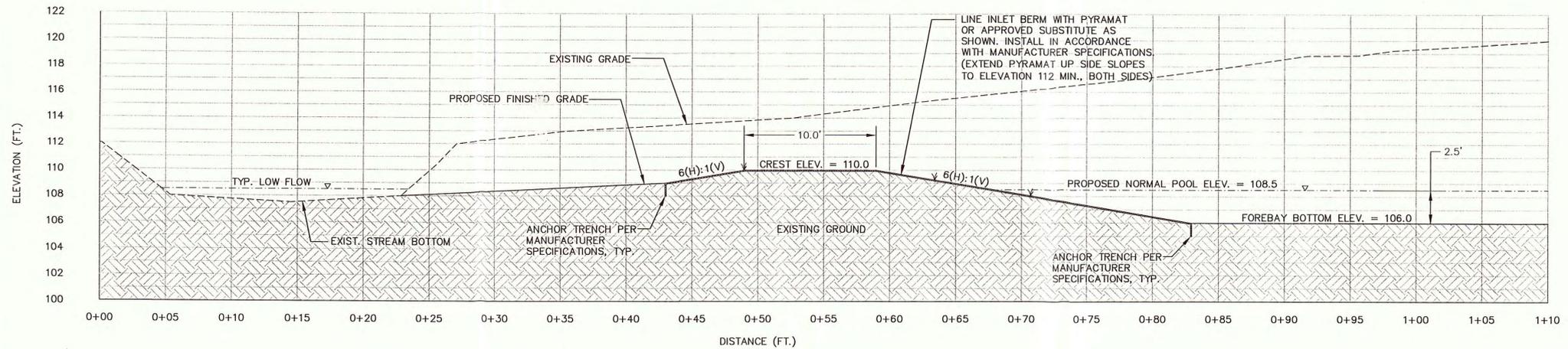
AS SHOWN

**DATE**

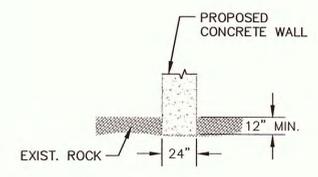
MAY 4, 2005

**SHEET NUMBER**

**C-3**

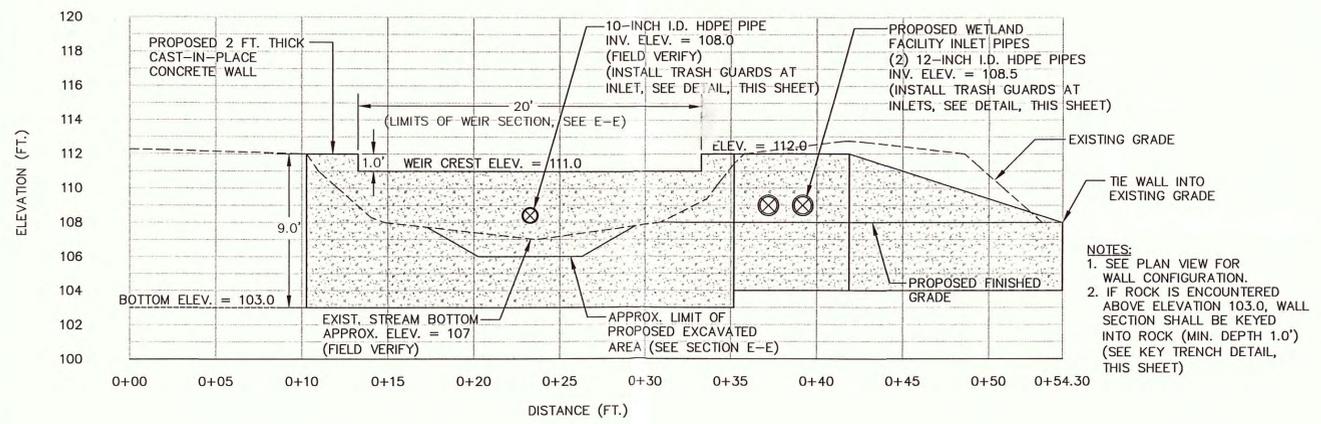


**INLET WEIR SECTION A-A**  
 SCALE: 1" = 5'

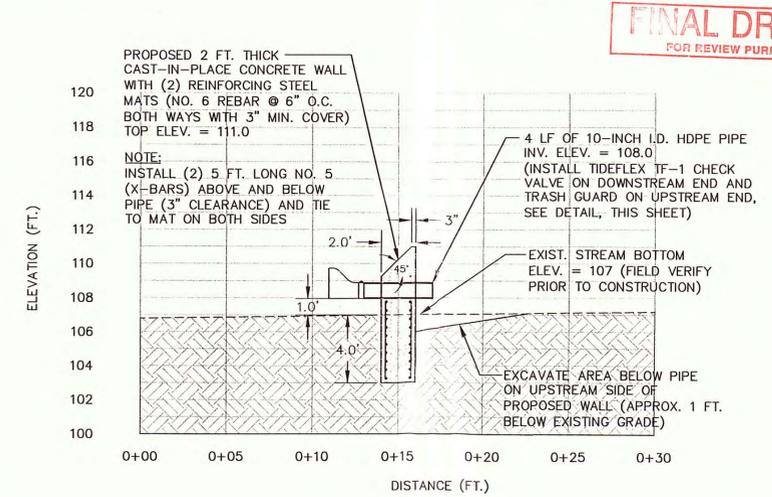


NOTE:

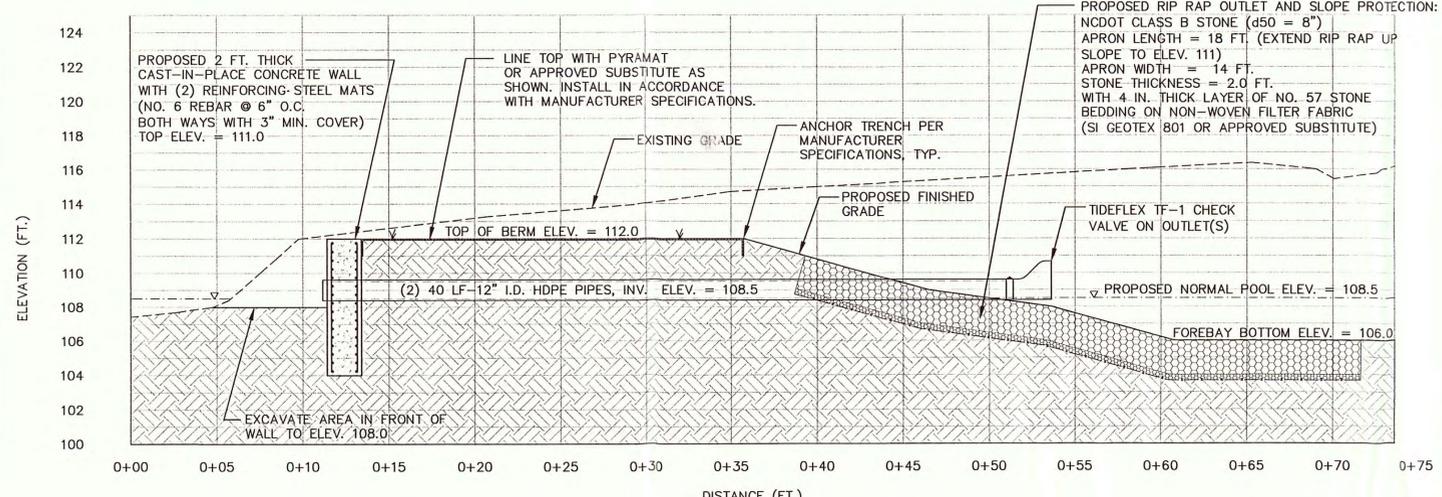
**KEY TRENCH DETAIL**  
 (FOR ROCK SUBSURFACE)  
 N.T.S.



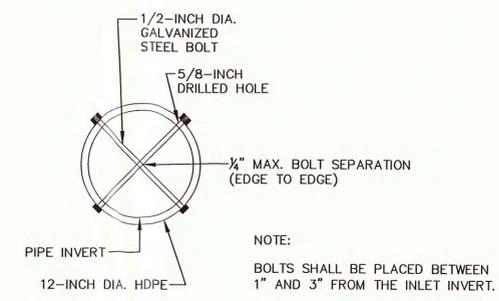
**STREAM DIVERSION WALL SECTION D-D**  
 SCALE: 1" = 5'



**STREAM DIVERSION WALL WEIR SECTION E-E**  
 SCALE: 1" = 5'



**INLET PIPES SECTION F-F**  
 SCALE: 1" = 5'



**TRASH GUARD DETAIL**  
 N.T.S.

**FINAL DRAWING**  
 FOR REVIEW PURPOSES ONLY

**REVISIONS**

**PROJECT NAME**

**SPRING BRANCH STORMWATER WETLAND FACILITY**

**CLIENT**

**TOWN OF SMITHFIELD**

P.O. Box 761  
 230 Hospital Road  
 Smithfield, N.C. 27577  
 Phone: (919) 934-2596  
 Fax: (919) 934-4223

**PROJECT INFORMATION**

PROJECT MANAGER:	EHK
DRAWN BY:	KPG
CHECKED BY:	TLL
PROJECT NUMBER:	00372.02

**SHEET NAME**

**STORMWATER WETLAND FACILITY INLET SECTIONS AND DETAILS**

**DRAWING SCALE**

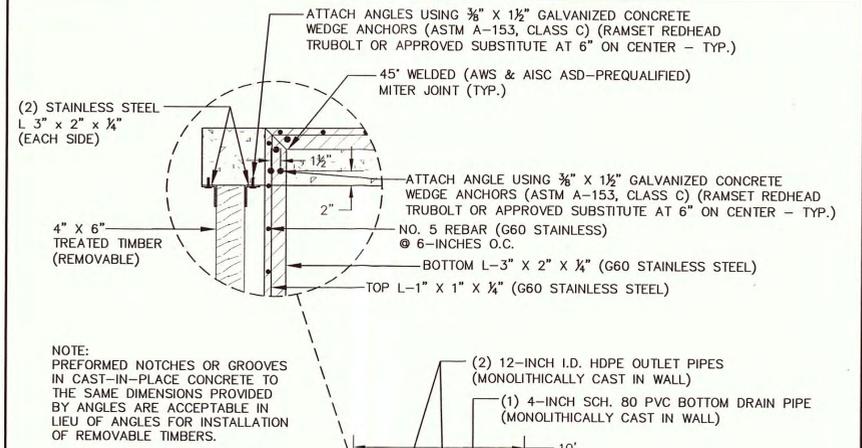
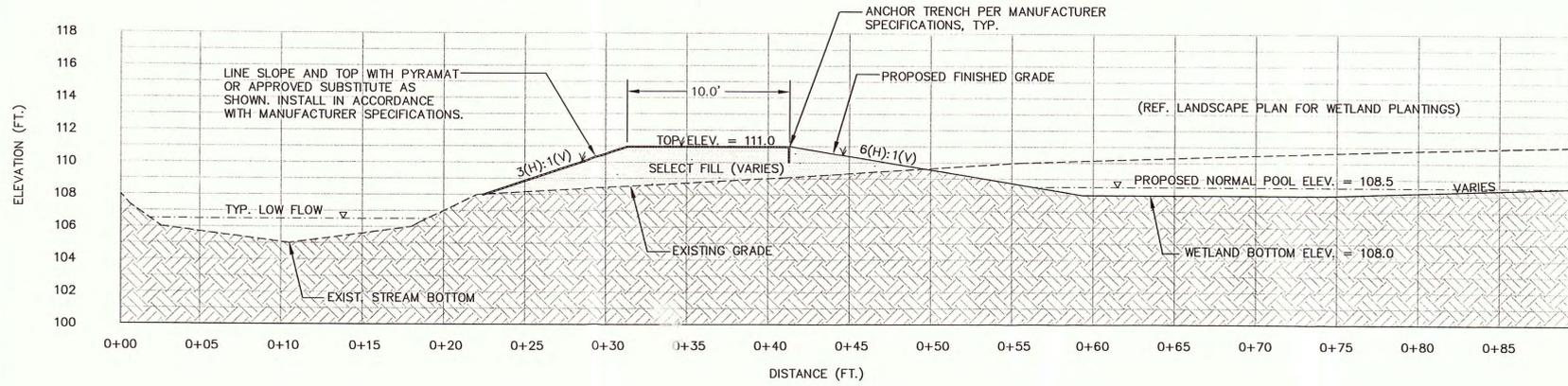
HORIZONTAL: AS SHOWN  
 VERTICAL: AS SHOWN

**DATE**

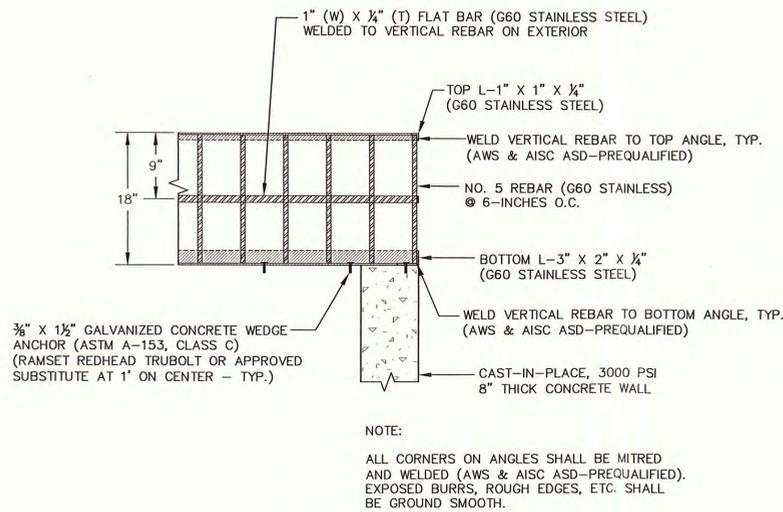
MAY 4, 2005

**SHEET NUMBER**

**C-4**

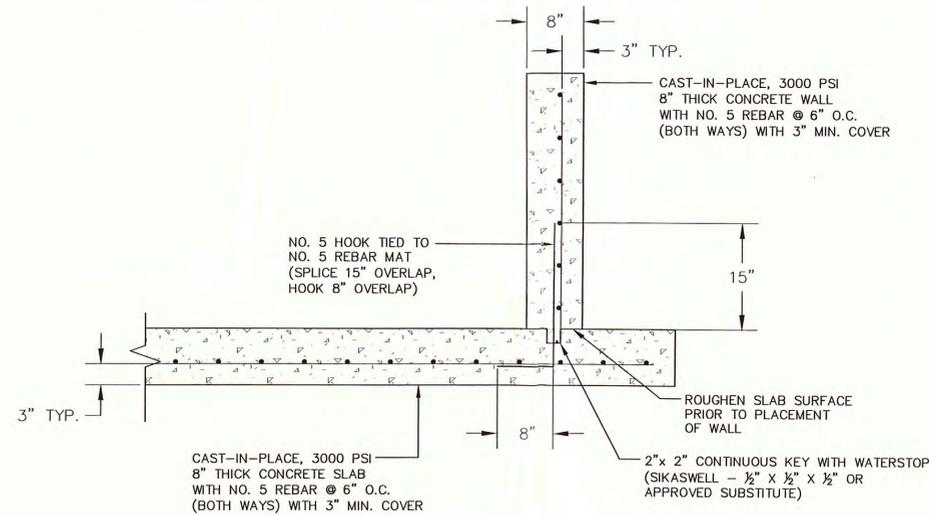


REVISIONS



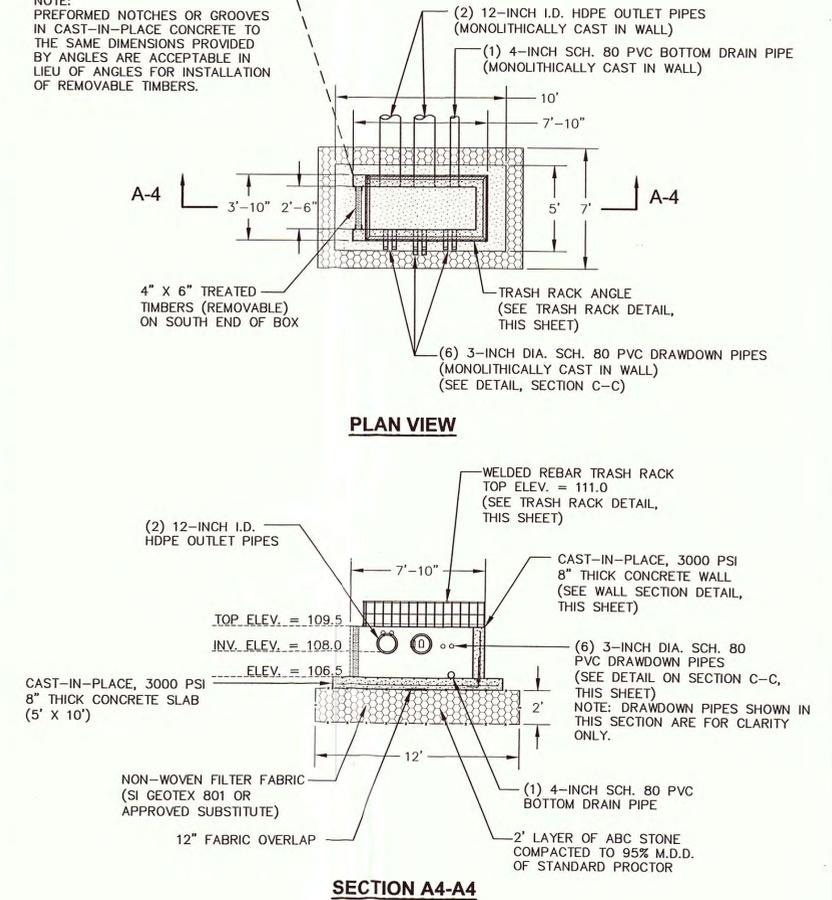
TRASH RACK DETAIL

N.T.S.



WALL SECTION DETAIL

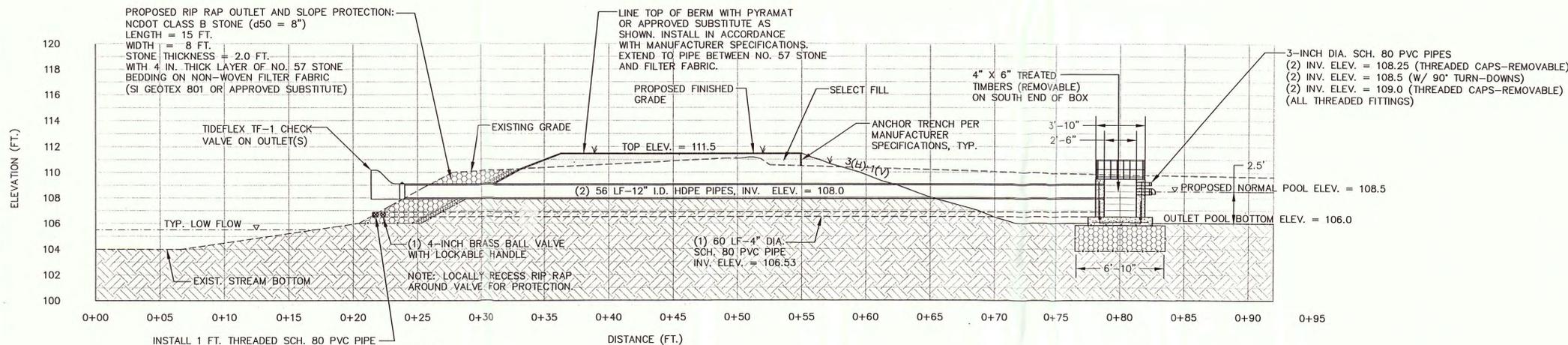
N.T.S.



SECTION A4-A4

OUTLET DEVICE DETAIL

N.T.S.



OUTLET DEVICE SECTION C-C

SCALE: 1" = 5'

**FINAL DRAWING**  
 FOR REVIEW PURPOSES ONLY

PROJECT NAME

**SPRING BRANCH STORMWATER WETLAND FACILITY**

CLIENT

**TOWN OF SMITHFIELD**

P.O. Box 761  
 230 Hospital Road  
 Smithfield, N.C. 27577  
 Phone: (919) 934-2566  
 Fax: (919) 934-4223

PROJECT INFORMATION

PROJECT MANAGER:	EHK
DRAWN BY:	KPG
CHECKED BY:	TLL
PROJECT NUMBER:	00372.02

SHEET NAME

**STORMWATER WETLAND FACILITY BERM AND OUTLET SECTIONS AND DETAIL**

DRAWING SCALE

HORIZONTAL: AS SHOWN  
 VERTICAL: AS SHOWN

DATE

MAY 4, 2005

SHEET NUMBER

**C-5**

# GUIDE SPECIFICATIONS

## GENERAL:

- 1) THE PROJECT SITE IS OWNED BY THE TOWN OF SMITHFIELD AND LOCATED OFF OF INTERSTATE 70 ON SECOND STREET IN DOWNTOWN SMITHFIELD, JOHNSTON COUNTY, NORTH CAROLINA.
- 2) THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH AND SHALL COMPLY WITH ALL APPLICABLE SECTIONS OF GOVERNING BUILDING CODES AS WELL AS FEDERAL AND STATE OF NORTH CAROLINA REGULATIONS. IN ADDITION, ALL WORK AND ACTIVITIES SHALL BE CONDUCTED IN COMPLIANCE WITH TOWN OF SMITHFIELD REQUIREMENTS.
- 3) OSHA REQUIREMENTS REGARDING GENERAL CONSTRUCTION, EXCAVATION AND OTHER APPLICABLE SECTIONS SHALL APPLY TO CONSTRUCTION ACTIVITIES.
- 4) VARIANCE FROM DRAWINGS AND GUIDE SPECIFICATIONS SHALL BE PRE-APPROVED BY THE ENGINEER AND/OR THE TOWN OF SMITHFIELD.
- 5) THE FOLLOWING SPECIFICATIONS AND WORK DESCRIPTIONS SHALL BE IMPLEMENTED IN ORDER INDICATED ON PLANS UNLESS OTHERWISE APPROVED BY ENGINEER. WORK MUST BE COMPLETED IN SUBSTANTIAL CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. SPECIFICATIONS CITED REFER TO THE MOST CURRENT EDITION OR VERSION AND ARE INCORPORATED BY REFERENCE IN THEIR ENTIRETY.
- 6) PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT TO ENGINEER AND OWNER, FOR APPROVAL, A COMPLETE CONSTRUCTION SCHEDULE, ANTICIPATED WORK HOURS AND BRIEF DESCRIPTION OF METHODS USED TO CONSTRUCT THE FACILITY. MATERIAL STAGING LOCATIONS SHALL BE COORDINATED WITH THE TOWN OF SMITHFIELD.
- 7) ALL NECESSARY PRECAUTIONS FOR MAINTAINING A SAFE WORK ENVIRONMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 8) LOCATION AND PROTECTION OF EXISTING UTILITIES PRIOR TO AND DURING EXCAVATION OR SUBSURFACE WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 9) CONTRACTOR SHALL NOTIFY ENGINEER AT LEAST 48 HOURS PRIOR TO CONDUCTING QUALITY CONTROL TESTING AND CONSTRUCTION OBSERVATIONS.
- 10) SPECIFIED FACILITY COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 11) CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE PROJECT AREA IN A WORKABLE CONDITION (I.E. DEWATERING, SHORING, DIVERTING, REROUTING, ETC.) NECESSARY TO IMPLEMENT REPAIRS.
- 12) THE CONTRACTOR SHALL TAKE EVERY PRECAUTION THROUGHOUT THE LIFE OF THE PROJECT TO PREVENT THE POLLUTION OF RIVERS, STREAMS, AND WATER IMPOUNDMENTS. POLLUTANTS SUCH AS CHEMICALS, FUELS, LUBRICANTS, BITUMENS, SEWAGE, FRESH CONCRETE, AND OTHER HARMFUL WASTE SHALL NOT BE DISCHARGED INTO OR ALONGSIDE RIVERS, STREAMS, OR IMPOUNDMENTS, OR INTO NATURAL OR MANMADE CHANNELS LEADING THERETO. THE CONTRACTOR SHALL ALSO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL WATER, GROUNDWATER AND AIR POLLUTION LAWS.

**CLIENT:** TOWN OF SMITHFIELD  
P.O. BOX 781  
230 HOSPITAL ROAD  
SMITHFIELD, NC 27577  
P: 919-934-2596  
F: 919-934-1688  
CONTACT: MR. MARTY ANDERSON, P.E.

**ENGINEER:** THE ROSE GROUP  
621-101 HUTTON STREET  
RALEIGH, NC 27606  
P: 919-829-9552  
F: 919-829-9335  
CONTACT: MS. KATHLEEN P. GRAY, P.E.

## EROSION AND SEDIMENT CONTROL:

- 1) INSTALL EROSION CONTROL MEASURES AS INDICATED ON THE DRAWINGS PRIOR TO THE INITIATION OF ANY LAND DISTURBING WORK AND MAINTAIN AS NEEDED UNTIL PROJECT CLOSURE.
- 2) EROSION AND SEDIMENTATION CONTROL MEASURES SHALL CONFORM TO THE REQUIREMENTS OF THE NORTH CAROLINA SEDIMENTATION POLLUTION CONTROL ACT OF 1973 AND LOCAL EROSION AND SEDIMENT CONTROL REQUIREMENTS.
- 3) TEMPORARY AND PERMANENT EROSION CONTROL MEASURES SHALL BE PROVIDED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. TEMPORARY SEDIMENT CONTROL DEVICES MUST BE INSTALLED TO THE EXTENT POSSIBLE PRIOR TO INITIATION OF GRADING AND EXCAVATION. THE DEVICES MUST BE MAINTAINED AT A MINIMUM OF 50% OF THE ORIGINAL SEDIMENT STORAGE CAPACITY AND MAY NOT BE REMOVED UNTIL THE AREAS THEY SERVE HAVE BEEN STABILIZED.
- 4) ALL DISTURBED AREAS SHALL BE SEEDED AND FERTILIZED, MULCHED, AND ANCHORED AS SOON AS POSSIBLE AFTER REACHING SUBGRADE ELEVATIONS. IN NO CASE SHALL AN AREA BE LEFT WITHOUT TEMPORARY OR PERMANENT COVER FOR A PERIOD THAT EXCEEDS 14 DAYS. SOD MAY BE USED IN LIEU OF SEED IN AREAS DIRECTED BY THE TOWN OF SMITHFIELD.
- 5) INSTALL EROSION CONTROL BLANKETS AND TURF REINFORCEMENT MATTING (TYPE INDICATED ON PLANS OR APPROVED SUBSTITUTE) IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AT LOCATIONS SHOWN ON PLANS, SECTIONS, AND DETAILS.

## CHANNEL STABILIZATION AND OUTLET PROTECTION

- 1) UPON COMPLETION OF REACHING FINAL PREPARED SUBGRADE FOR AREAS (SLOPES, CHANNELS AND OUTLET PROTECTION) TO BE PROTECTED AS INDICATED ON DRAWINGS, INSTALL FILTER FABRIC, NCDOT NO. 57 STONE BEDDING LAYER, AND APPROPRIATE RIP RAP. PREPARED SUBGRADE SHALL BE FREE OF DEBRIS, STICKS AND OTHER DELETERIOUS MATERIAL THAT MAY BE INJURIOUS TO THE FABRIC OR PERFORMANCE OF THE SLOPE PROTECTION.
- 2) FILTER FABRIC SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS FOR SLOPE PROTECTION WHICH MAY INCLUDE AN ANCHOR TRENCH, SEAMING, STITCHING AND OVERLAPPING.
- 3) RIP RAP FOR USE AS DESIGNATED ON THE DRAWINGS SHALL CONFORM TO NCDOT REQUIREMENTS FOR THE SPECIFIED CLASS (CLASS II, B, ETC.) AS INDICATED ON THE DRAWINGS.

## SEEDING SPECIFICATIONS

### PERMANENT SEEDING SPECIFICATIONS

#### SEEDING MIXTURE

SPECIES:	RATE:
TALL FESCUE	80 LB/ACRE
PENSACOLA BAHIA GRASS	50 LB/ACRE
KOBE LESPEDEZA	40 LB/ACRE

**NURSE PLANTS**  
BETWEEN APR. 15 AND AUG. 15, ADD 10 LB/ACRE GERMAN MILLET OR 15 LB/ACRE SUDANGRASS.  
PRIOR TO MAY 1 OR AFTER AUG. 15, ADD 25 LB/ACRE RYE (GRAIN).

#### SEEDING DATES

	BEST	POSSIBLE
EARLY SPRING:	FEB. 15 - MAR. 20	FEB. 15 - APR. 30
FALL:	SEPT. 1 - SEPT. 30	SEPT. 1 - OCT. 31

#### SOIL AMENDMENTS

FOLLOW RECOMMENDATIONS OF SOIL TEST OR:

AGRICULTURAL LIMESTONE	3000-5000 LB/ACRE
FERTILIZER 10-10-10	1000 LB/ACRE

#### MULCH

APPLY 4000 LB/ACRE GRAIN STRAW OR EQUIVALENT COVER OF ANOTHER SUITABLE MULCH. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR ROVING OR BY CRIMPING WITH A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

#### SEEDBED PREPARATION

1) ROUGHEN AREAS AND HYDROSEED/MULCH FINISHED SLOPES ACCORDING TO THE SEEDING SPECIFICATIONS ABOVE.

2) INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDING WITHIN THE PLANTING SEASON ABOVE. A PERMANENT VEGETATIVE COVER SUFFICIENT TO RESTRAIN ACCELERATED EROSION WILL BE REQUIRED ON ALL DISTURBED AREAS. TEMPORARY SEEDING WILL BE REQUIRED DURING ALL TIMES OF THE YEAR NOT SUITABLE FOR PERMANENT SEEDING.

#### MAINTENANCE

IF GROWTH IS LESS THAN FULLY ADEQUATE, REFERTILIZE IN THE SECOND YEAR, ACCORDING TO SOIL TESTS OR TOPDRESS WITH 5% 9/ACRE 10-10-10 FERTILIZER. MOW AS NEEDED, RESEED, FERTILIZE, AND MULCH DAMAGED AREAS IMMEDIATELY.

## TEMPORARY SEEDING SPECIFICATIONS

GERMAN MILLET 40 LB/ACRE

DATES: APR. 15 - AUG. 15

### SOIL AMENDMENTS

FOLLOW RECOMMENDATIONS OF SOIL TEST OR:

AGRICULTURAL LIMESTONE	2000 LB/ACRE
FERTILIZER 10-10-10	750 LB/ACRE

## CLEARING AND GRUBBING:

- 1) REMOVE TREES AND VEGETATION AS SHOWN ON DRAWINGS AND IN ACCORDANCE WITH THE REQUIREMENTS STATED ON LANDSCAPE PLAN AND SPECIFICATIONS.
- 2) CONTRACTOR SHALL GRIND STUMPS (TO 8 INCHES MINIMUM BELOW LAND SURFACE) OF EXISTING TREES TO BE REMOVED THAT ARE LOCATED IN AREAS WHERE EXCAVATION IS LESS THAN 2 FEET.

## TEMPORARY STREAM DIVERSION:

- 1) EXCAVATE TEMPORARY DIVERSION CHANNEL TO THE DIMENSIONS AND ELEVATIONS STATED ON PLANS AND INSTALL APPROPRIATE CHANNEL LINING AS INDICATED ON PLANS. NOTE: EXCAVATED MATERIAL NOT BEING USED AT PERMITTED FILL LOCATIONS SHALL BE STOCKPILED IN DESIGNATED AREAS FOR FUTURE USE OR DISPOSAL. STOCKPILE LOCATIONS WILL BE DETERMINED BY ENGINEER PRIOR TO CONSTRUCTION AND SHALL BE MAINTAINED IN ACCORDANCE WITH NCDENR EROSION AND SEDIMENTATION CONTROL REQUIREMENTS. EXCAVATION MATERIALS NOT USED ON SITE SHALL BE PROPERLY DISPOSED OFFSITE.
- 2) INSTALL TEMPORARY STONE DIVERSION BERM AND TEMPORARY STONE FILTER BERM AS SHOWN ON DRAWINGS.
- 3) FILTER FABRIC SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS WHICH MAY INCLUDE AN ANCHOR TRENCH, SEAMING, STITCHING AND OVERLAPPING.
- 4) RIPRAP FOR USE AS DESIGNATED ON THE DRAWINGS SHALL CONFORM TO NCDOT REQUIREMENTS FOR THE SPECIFIED CLASS (CLASS II, B, ETC.) AS INDICATED ON THE DRAWINGS.
- 5) INSTALL EROSION CONTROL BLANKET AND TURF REINFORCEMENT MATTING (TYPE INDICATED ON PLANS OR APPROVED SUBSTITUTE) IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AT LOCATIONS SHOWN ON PLANS, SECTIONS, AND DETAILS.

## SUBSURFACE DRAINAGE:

### REINFORCED CONCRETE PIPE:

- 1) REINFORCED CONCRETE PIPE USED FOR THE STORM DRAINAGE SYSTEM SHALL BE CLASS III, WALL B PIPE AND CONFORM TO AASHTO SPECIFICATION M-170-81-1 AND ASTM C75 (LATEST EDITION). PIPE SHALL HAVE CIRCULAR REINFORCEMENT. JOINTS SHALL BE TONGUE AND GROOVE WITH PREFORMED PLASTIC GASKET SEALANT OR BELL AND SPIGOT WITH RUBBER O-RING IN ACCORDANCE WITH ASTM C-443. PIPE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
- 2) TRENCHES FOR PIPE SHALL BE EXCAVATED TRUE TO LINE AND GRADE. WHERE PAVING IS TO BE CUT, IT SHALL BE CUT IN ADVANCE OF TRENCHING 1" WIDER THAN THE SPECIFIED WIDTH OF THE TRENCH. THE PIPE SHALL BE LAID SO AS TO PRODUCE A STRAIGHT LINE OF PIPE ON A UNIFORM GRADE, EACH PIPE LAID TO FORM A CLOSE JOINT WITH THE PRECEDING PIPE AND SO AS TO FORM A SMOOTH INSIDE FLOW LINE. PIPE JOINTING SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. CONCRETE PIPE SHALL BE LAID WITH PREFORMED PLASTIC GASKET JOINTS, OR GASKETS.
- 3) TRENCH BOTTOMS SHALL BE GRADED TO PROVIDE UNIFORM AND CONTINUOUS BEARING FOR THE PIPE ALONG ITS ENTIRE LENGTH, FREE OF MATERIALS OR CONDITIONS INJURIOUS TO PIPE (DELETERIOUS MATERIALS, IRREGULAR TRENCH BOTTOM SURFACE, ETC.). BELL HOLES SHALL BE PROVIDED AS APPLICABLE.
- 4) IF APPROVED BY THE ENGINEER AND SUBJECT TO SUITABLE SOIL CONDITIONS, THE TRENCH MAY BE EXCAVATED A FEW INCHES BELOW THE ESTABLISHED SUBGRADE AND BACKFILLED WITH SELECTED MATERIAL (FROM THE EXCAVATION, IF AVAILABLE) WELL COMPACTED AND SHAPED SO AS TO PROVIDE THE PIPES UNIFORM BEARING THROUGHOUT THEIR LENGTHS AT THE ESTABLISHED GRADE. BELL HOLES SHALL BE PROVIDED FOR COMPLETING THE JOINTS.
- 5) WHERE THE MATERIAL AT GRADE IS UNSTABLE, SOFT, AND INCAPABLE OF SUPPORTING THE PIPE, THE TRENCH SHALL BE EXCAVATED BELOW GRADE, AS DIRECTED BY THE ENGINEER, AND FILLED TO GRADE WITH STONE OR GRAVEL WITH FILTER FABRIC UNDERLAYMENT TO PROVIDE A FIRM FOUNDATION FOR THE PIPE. STONE SHALL BE COMPACTED AND GRADED TO 95% M.D.D. OF THE STANDARD PROCTOR SO AS TO PROVIDE STABLE FOUNDATION AND UNIFORM BEARING FOR THE PIPE. BELL HOLES SHALL BE PROVIDED AS IN OTHER TYPES OF FOUNDATIONS. A MINIMUM STONE DEPTH OF 4" IS REQUIRED.
- 6) WHERE THE MATERIAL EXCAVATED FROM THE TRENCH IS UNSUITABLE FOR BACKFILL MATERIAL, IT SHALL BE PROPERLY DISPOSED OF OFFSITE AND SELECT MATERIAL, PRE-APPROVED BY ENGINEER, SHALL BE USED FOR BACKFILLING THE TRENCH.
- 7) SHOULD GROUND WATER BE ENCOUNTERED IN THE BOTTOM OF THE TRENCH, CAUSING THE TRENCH BOTTOM TO BE UNSTABLE, THE MATERIAL, AS DIRECTED BY THE ENGINEER, SHALL BE EXCAVATED BELOW GRADE SUFFICIENTLY TO ALLOW A BED OF CRUSHED ROCK OR GRAVEL TO BE PLACED IN WHICH TO BED THE PIPE. THE DEPTH OF CUT BELOW GRADE SHALL BE ONLY THE MINIMUM AMOUNT TO ACCOMPLISH THE PURPOSE, AND SHALL BE AS DIRECTED BY THE ENGINEER.
- 8) THE CONTRACTOR SHALL FURNISH ALL MACHINERY FOR PUMPING, BAILING, AND/OR WELL POINTING AND SHALL PUMP, BAIL, OR OTHERWISE REMOVE ANY WATER WHICH MAY BE FOUND OR SHALL ACCUMULATE IN THE TRENCHES, AND SHALL PERFORM ALL WORK NECESSARY TO KEEP THEM CLEAR OF WATER WHILE THE PIPE IS BEING LAID. THE DISPOSAL OF WATER AFTER REMOVAL SHALL BE SATISFACTORY TO THE ENGINEER.
- 9) IN ROCK OR OTHER UNYIELDING MATERIAL, THE EXCAVATION SHALL BE MADE AT LEAST 6" BELOW SUBGRADE ELEVATION UNLESS OTHERWISE APPROVED BY ENGINEER. THE TRENCH SHALL BE REFILLED WITH SELECT MATERIAL COMPACTED IN PLACE AS SPECIFIED FOR ORDINARY EXCAVATION. SUITABLE MATERIAL FROM EXCAVATION MAY BE USED, IF AVAILABLE. IF NOT, IMPORTED FILL, APPROVED BY ENGINEER, SHALL BE USED.
- 10) IF SOLID ROCK IS ENCOUNTERED, IT SHALL BE PAID FOR AT THE UNIT PRICE SET FORTH IN THE BID. REMOVAL PROCEDURES MUST BE PRE-APPROVED BY ENGINEER AND TOWN OF SMITHFIELD IN WRITING. BLASTING IS PROHIBITED UNLESS SPECIAL APPROVAL IS GRANTED BY THE TOWN OF SMITHFIELD.
- 11) ALL EXISTING WATER AND SEWER LINES, BURIED ELECTRICAL AND TELEPHONE CABLE, AND OTHER KNOWN UTILITIES INTERSECTING THE LINES OF CONSTRUCTION, IF REQUESTED BY THE ENGINEER, SHALL BE UNCOVERED BY THE CONTRACTOR AT HIS EXPENSE AND EXPOSED TO THE ENGINEER AT LEAST 200' AHEAD OF PIPE LAYING OPERATIONS TO INSURE THE CORRECTNESS OF GRADES. EXISTING UTILITIES SHOWN ON THE PLANS ARE BASED ON EXISTING RECORDS AND FIELD SURVEYS; HOWEVER, THE CONTRACTOR SHALL VERIFY WITH THE VARIOUS UTILITY COMPANIES BEFORE EXCAVATING AND SHALL SAVE HARMLESS THE OWNER FROM ANY CLAIMS FOR DAMAGES AS A RESULT OF HIS WORK ASSOCIATED WITH UTILITIES.
- 12) THE CONTRACTOR SHALL AT ALL TIMES TAKE NECESSARY PRECAUTIONS IN PREVENTING CATCH BASINS, DITCHES AND OTHER DRAINAGE FACILITIES FROM BEING CLOGGED THAT MIGHT CAUSE FLOODING CONDITIONS AND DAMAGE TO PUBLIC OR PRIVATE PROPERTIES.
- 13) DURING THE COURSE OF PIPELINE CONSTRUCTION, BENCHING, EARLY SEEDING OF GRASS COVER, AND WHATEVER MEANS NECESSARY SHALL BE CARRIED OUT TO PREVENT SILTATION AND BANK EROSION.

### STORM DRAINAGE MODIFICATION:

- 1) FOR INSTALLATION OF NEW RCP IN EXISTING STORM DRAIN MANHOLE, GROUT PIPE PENETRATION ANNULUS WITH SIKAGROUT 212 (OR APPROVED SUBSTITUTE). ANNULUS DIMENSION SHALL BE 2" MINIMUM TO 4" MAXIMUM.

### HDPE PIPE

**STAB 1)** HDPE PIPE SHALL BE ADVANCED DRAINAGE SYSTEM (ADS) N-12 PIPE OR APPROVED SUBSTITUTE WITH WATER-TIGHT JOINTS, SMOOTH INTERIOR AND CORRUGATED EXTERIOR AND SHALL BE INSTALLED AS INDICATED ON PLANS AND IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

### PVC PIPE

1) PIPE SHALL BE POLYVINYL CHLORIDE (PVC) SCHEDULE 80 PIPE (ASTM D 1785, D 2464, D 2467, D 2564, D 2855) INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

### VALVES

1) BRASS BALL VALVE SHALL BE MATCO NORCA MODEL 758 OR APPROVED SUBSTITUTE AND SHALL HAVE LOCKABLE HANDLE.

## CONCRETE:

- 1) ALL CONCRETE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH ACI 301, 302, 308 AND ASTM C171, C308 AND D2103, AS APPLICABLE.
- 2) REINFORCING BARS SHALL CONFORM TO ASTM DESIGNATION A615-GRADE 60. REFER TO DRAWINGS FOR LOCATIONS, FINISH, AND SIZES.
- 3) WELDED WIRE FABRIC MESH REINFORCING SHALL CONFORM TO ASTM DESIGNATION A-185. REFER TO DRAWINGS FOR LOCATIONS AND SIZES.
- 4) METAL ACCESSORIES SUCH AS SPACERS, CHAIRS, BOLSTERS, TIES AND OTHER DEVICES NECESSARY FOR THE PROPER ASSEMBLING, PLACING, SPACING, AND SUPPORTING ALL REINFORCEMENT IN PLACE SHALL BE PROVIDED. ACCESSORIES SHALL CONFORM TO THE REQUIREMENTS OF THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI) "MANUAL OF STANDARD PRACTICE FOR REINFORCED CONCRETE CONSTRUCTION". CHAIRS AND OTHER ACCESSORIES FABRICATED FROM CONCRETE, CERAMIC, OR PLASTIC SHALL BE USED IN PLACE OF METAL ACCESSORIES FOR CONCRETE EXPOSED TO THE EXTERIOR.
- 5) READY-MIXED CONCRETE IS DEFINED IN THIS SPECIFICATION AS CONCRETE PRODUCED REGULARLY BY A COMMERCIAL ESTABLISHMENT AND DELIVERED TO THE PURCHASER IN THE PLASTIC STATE. CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI. SLUMP SHALL BE BETWEEN 3 AND 5 INCHES WHEN TESTED IN ACCORDANCE WITH ASTM C 143. PROVIDE 4 TO 6 PERCENT AIR ENTRAINMENT. THE METHOD OF PROPORTIONING AND DESIGN MIX SHALL BE SUBMITTED IN TRIPLICATE TO THE ENGINEER FOR APPROVAL BEFORE CONCRETE IS TO BE MIXED OR PLACED.
- 6) UNLESS SPECIFIED OTHERWISE, CONCRETE SHALL BE FORMED, PLACED AND CURED IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OUTLINED IN AMERICAN CONCRETE INSTITUTE (ACI) AND AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS INCLUDING ACI 301, 302, 308 AND ASTM C171, C308 AND D2103.
- 7) PROVIDE BATCH TICKET INFORMATION FOR EACH LOAD OF READY MIX CONCRETE. DO NOT PLACE CONCRETE WHEN WEATHER CONDITIONS PREVENT PROPER PLACEMENT AND CONSOLIDATION; IN UNCOVERED AREAS DURING PERIODS OF PRECIPITATION; OR IN DEBRIS, AND WATER FROM WITHIN THE FORMS.
- 8) PROVIDE AND MAINTAIN 50 DEGREES F MINIMUM CONCRETE TEMPERATURE. DO NOT PLACE CONCRETE WHEN THE AMBIENT TEMPERATURE IS BELOW 40 DEGREES F. COVER CONCRETE AND PROVIDE WITH A SOURCE OF HEAT SUFFICIENT TO MAINTAIN 50 DEGREES F MINIMUM WHILE CURING.
- 9) CONCRETE TEMPERATURE FROM INITIAL MIXING THROUGH FINAL CURE SHALL NOT EXCEED 90 DEGREES F. SHADE THE FRESH CONCRETE AND START FINISHING AS SOON AS THE SURFACE OF THE FRESH CONCRETE IS SUFFICIENTLY HARD TO PERMIT CURING WITHOUT DAMAGE.
- 10) REPAIR FORMED SURFACES BY REMOVING MINOR HONEYCOMBS, PITS GREATER THAN 1 SQUARE INCH SURFACE AREA OR 0.25 INCH MAXIMUM DEPTH, OR OTHERWISE DEFECTIVE AREAS. PATCH WITH SIKASET MORTAR OR APPROVED SUBSTITUTE IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS. PATCH DEFECTS WHEN THE FORMS ARE REMOVED. CONCRETE WITH EXTENSIVE HONEYCOMB (INCLUDING COLD JOINTS, ENTRAPPED DEBRIS, SEGREGATED AGGREGATE, OR OTHER DEFECTS) WILL BE REJECTED AT THE ENGINEER'S DISCRETION. OBTAIN APPROVAL OF CORRECTIVE ACTION PRIOR TO REPAIR. THE SURFACE OF THE CONCRETE SHALL NOT VARY MORE THAN THE ALLOWABLE TOLERANCES OF ACI 301. EXPOSED SURFACES SHALL BE UNIFORM IN APPEARANCE.
- 11) PROTECT CONCRETE FROM INJURIOUS ACTION BY SUN, RAIN, WIND, FLOWING WATER, FROST, MECHANICAL INJURY, TIRE MARKS, AND OIL STAINS. DO NOT ALLOW CONCRETE TO DRY OUT FROM TIME OF PLACEMENT UNTIL THE EXPIRATION OF THE CURING PERIOD. FORMS MAY BE REMOVED 72 HOURS AFTER CONCRETE PLACEMENT.
- 12) COORDINATE WITH OWNER'S TESTING AGENCY FOR COLLECTION OF SAMPLES OF FRESH CONCRETE AT COMMENCEMENT OF EACH CONCRETE PLACEMENT AND FOR EACH BATCH (MINIMUM OR EVERY 10 CUBIC YARDS (MAXIMUM) OF CONCRETE FOR TESTS OF AIR ENTRAINMENT OR SLUMP. FRESH CONCRETE THAT DOES NOT MEET THE REQUIREMENTS MENTIONED PREVIOUSLY SHALL BE REPLACED WITH CONCRETE THAT MEETS THE REQUIREMENTS AT NO COST TO OWNER.
- 13) TESTING AGENCY WILL PREPARE FOUR 6-INCH DIAMETER, 12-INCH LONG CYLINDERS OF FRESH CONCRETE FOR EVERY 25 CUBIC YARDS AND FOR EACH SEPARATE PLACEMENT EVENT THAT IS LESS THAN 25 CUBIC YARDS. THE TEST CYLINDERS WILL BE TESTED IN UNCONFINED COMPRESSION AS FOLLOWS: ONE CYLINDER AFTER 7 DAYS AND TWO CYLINDERS AFTER 28 DAYS. THE FOURTH CYLINDER SHALL BE HELD IN RESERVE PENDING THE OUTCOME OF THE 28-DAY TESTS.

## EARTHWORK SPECIFICATIONS:

- 1) GRADE TO ELEVATIONS AND DIMENSIONS SHOWN ON DRAWINGS.
- 2) SOIL BACKFILL FILL SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE STANDARD PROCTOR (ASTM D698) MAXIMUM DRY DENSITY THAT ACCURATELY REPRESENTS THE SOIL. SOIL FILL USED IN THE STRUCTURAL PORTION OF EMBANKMENTS (EXCLUDING TOPSOIL) SHALL CONSIST OF LOW PERMEABILITY (< 0.0001 CM/S) SOIL WITH MORE THAN 50 PERCENT FINES (PASSING NO. 200 SIEVE), WITH A PLASTICITY INDEX (PI) AND LIQUID LIMIT (LL) LESS THAN 20 AND 50 PERCENT, RESPECTIVELY.
- 3) SOIL FILL SHALL BE PLACED IN LIFTS WITH A MAXIMUM THICKNESS OF 8 INCHES PRIOR TO COMPACTION.
- 4) COMPACTION TESTING OF SOIL FILL SHALL BE CONDUCTED BY OWNER'S TESTING AGENCY AT A RATE OF ONE TEST PER LIFT UNLESS OTHERWISE APPROVED BY ENGINEER.
- 5) SOIL FILL MATERIAL SHALL BE APPROVED BY ENGINEER PRIOR TO USE BASED ON SOIL PROPERTY TEST SUBMITTALS THAT INCLUDE STANDARD PROCTOR (ASTM D698), ATTERBURG LIMITS (ASTM D4318), SOIL CLASSIFICATION (WASH NO. 200), AND MOISTURE CONTENT (ASTM D2216) AS APPLICABLE.
- 6) ADDITIONAL FILL MATERIAL, IF NEEDED, SHALL BE APPROVED BY ENGINEER PRIOR TO USE AND MAY REQUIRE SOIL PROPERTY TEST SUBMITTALS.
- 7) INSTALL FINAL COVER IN ACCORDANCE WITH PERMANENT SEEDING AND LANDSCAPING SPECIFICATIONS. SOD MAY BE USED IN LIEU OF SEED IN AREAS DIRECTED BY THE TOWN OF SMITHFIELD.
- 8) IF SOLID ROCK IS ENCOUNTERED, REMOVAL PROCEDURES MUST BE PRE-APPROVED BY ENGINEER AND TOWN OF SMITHFIELD IN WRITING. BLASTING IS PROHIBITED UNLESS SPECIAL APPROVAL IS GRANTED BY THE TOWN OF SMITHFIELD.

## PROJECT CLOSURE:

- 1) CONTRACTOR SHALL REMOVE FROM THE SITE AND PROPERLY DISPOSE ALL CONSTRUCTION DEBRIS, STOCKPILED SOIL AND OTHER MATERIALS ASSOCIATED WITH CONSTRUCTION ACTIVITIES UPON COMPLETION OF THE PROPOSED SCOPE OF WORK.
- 2) CONTRACTOR SHALL MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES AT THE SITE UNTIL THE SITE IS STABILIZED AS DETERMINED BY THE ENGINEER. FOLLOWING STABILIZATION OF THE SITE, ALL EROSION AND SEDIMENT CONTROL MEASURES UTILIZED AT THE SITE SHALL BE DISMANTLED AND PROPERLY DISPOSED BY THE CONTRACTOR.
- 3) FOLLOWING COMPLETION OF THE REMOVAL OF EROSION AND SEDIMENT CONTROL MEASURES, CONTRACTOR SHALL NOTIFY OWNER AND ENGINEER THAT ALL SITE WORK HAS BEEN COMPLETED AND SCHEDULE A FINAL WALKOVER OF THE SITE.

FINAL DRAWING  
FOR REVIEW PURPOSES ONLY



## REVISIONS

## PROJECT NAME

# SPRING BRANCH STORMWATER WETLAND FACILITY

## CLIENT

## TOWN OF SMITHFIELD

P.O. Box 761  
230 Hospital Road  
Smithfield, N.C. 27577  
Phone: (919) 934-2596  
Fax: (919) 934-4223

## PROJECT INFORMATION

PROJECT MANAGER:	EHK
DRAWN BY:	KPG
CHECKED BY:	TLL
PROJECT NUMBER:	00372.02

## SHEET NAME

# GUIDE SPECIFICATIONS

## DRAWING SCALE

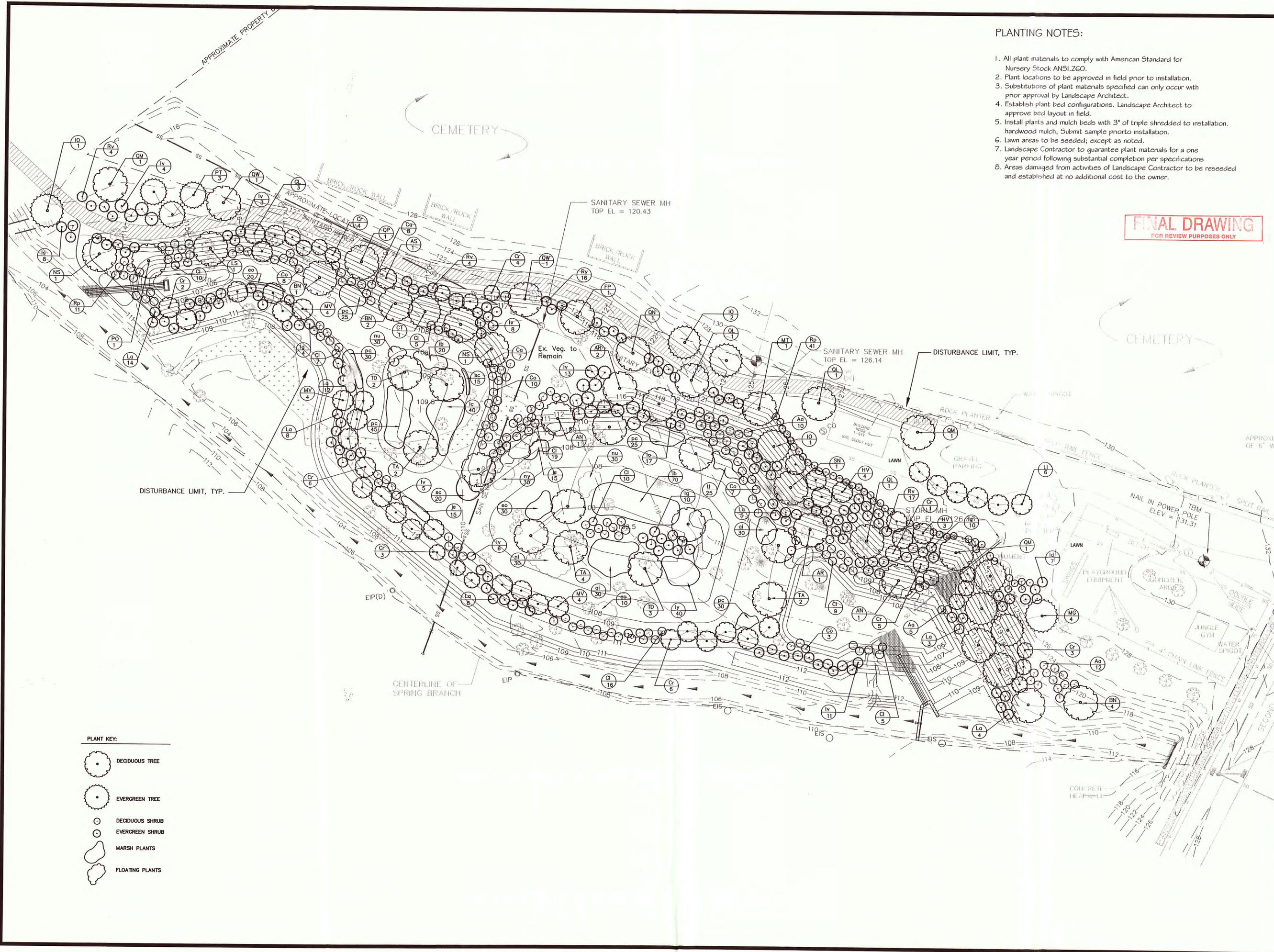
N/A

## DATE

MAY 4, 2005

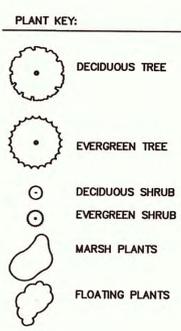
## SHEET NUMBER

C-6



- PLANTING NOTES:
1. All plant materials to comply with American Standard for Nursery Stock ANSI Z60.
  2. Plant locations to be approved in field prior to installation.
  3. Substitutions of plant materials specified can only occur with prior approval by Landscape Architect.
  4. Establish plant bed configurations. Landscape Architect to approve bed layout in field.
  5. Install plants and mulch beds with 3" of triple shredded to installation hardwood mulch. Submit sample prior to installation.
  6. Lawn areas to be seeded; except as noted.
  7. Landscape Contractor to guarantee plant materials for a one year period following substantial completion per specifications.
  8. Areas damaged from activities of Landscape Contractor to be reseeded and established at no additional cost to the owner.

**FINAL DRAWING**  
FOR REVIEW PURPOSES ONLY



**THE ROSE GROUP**  
621-101 Hutton Street Raleigh, N.C. 27607  
Phone: (919) 829-0555 Fax: (919) 829-8750  
Web Address: www.rosegrp.com

CYNTHIA R.  
LANDSCAPE ARCHITECTURE  
& PLANNING, PLLC  
2900 GLEN BURNIE DRIVE  
RALEIGH, NORTH CAROLINA  
27607 919-571-7100

REVISIONS

PROJECT NAME  
**SPRING BRANCH STORMWATER WETLAND FACILITY**

CLIENT  
**TOWN OF SMITHFIELD**  
P.O. Box 761  
230 Hospital Road  
Smithfield, N.C. 27577  
Phone: (919) 934-2596  
Fax: (919) 934-4223

PROJECT INFORMATION

PROJECT MANAGER:	EHK
DRAWN BY:	JTS
CHECKED BY:	CSR
PROJECT NUMBER:	00372.102

SHEET NAME  
**LANDSCAPE PLAN**

DRAWING SCALE  
1" = 30'

DATE  
MAY 6, 2005

SHEET NUMBER  
**L-1**

