

SCO PROJECT NUMBER:

020588001

**GOLDSBORO HOUSING
AUTHORITY STREAM
STREAM/BMP PROJECT
NC ECOSYSTEM ENHANCEMENT
PROGRAM**

GOLDSBORO
NORTH CAROLINA

SEAL

ORIGINAL CONSTRUCTION
DRAWINGS SEALED BY
SHEILA S. REEVES
028832, ON MAY 11, 2007

RECORD DRAWING
THE PROFESSIONAL ENGINEER SEALING THESE RECORD DRAWINGS
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MICKEY B. HENSON ENTERPRISE DOING BUSINESS
AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

04-27-09
ENGINEER DATE

NORTH CAROLINA
PROFESSIONAL
SEAL
030624
MICHAEL A. HANSEN
ENGINEER

No.	DATE	BY	Description
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REVISIONS	
DRAWN BY	ACH
DESIGNED BY	SSR
CHECKED BY	MH
DATE	1-29-07

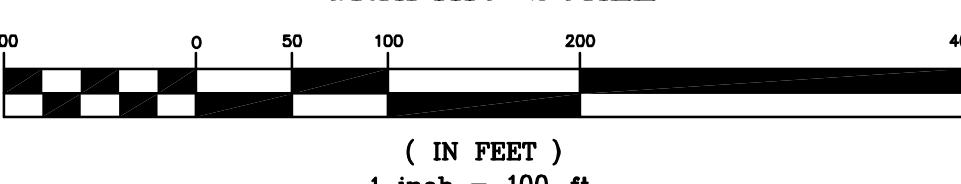
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**SHEET
LAYOUT**

PROJECT NO. 73142900

**RECORD
DOCUMENT**

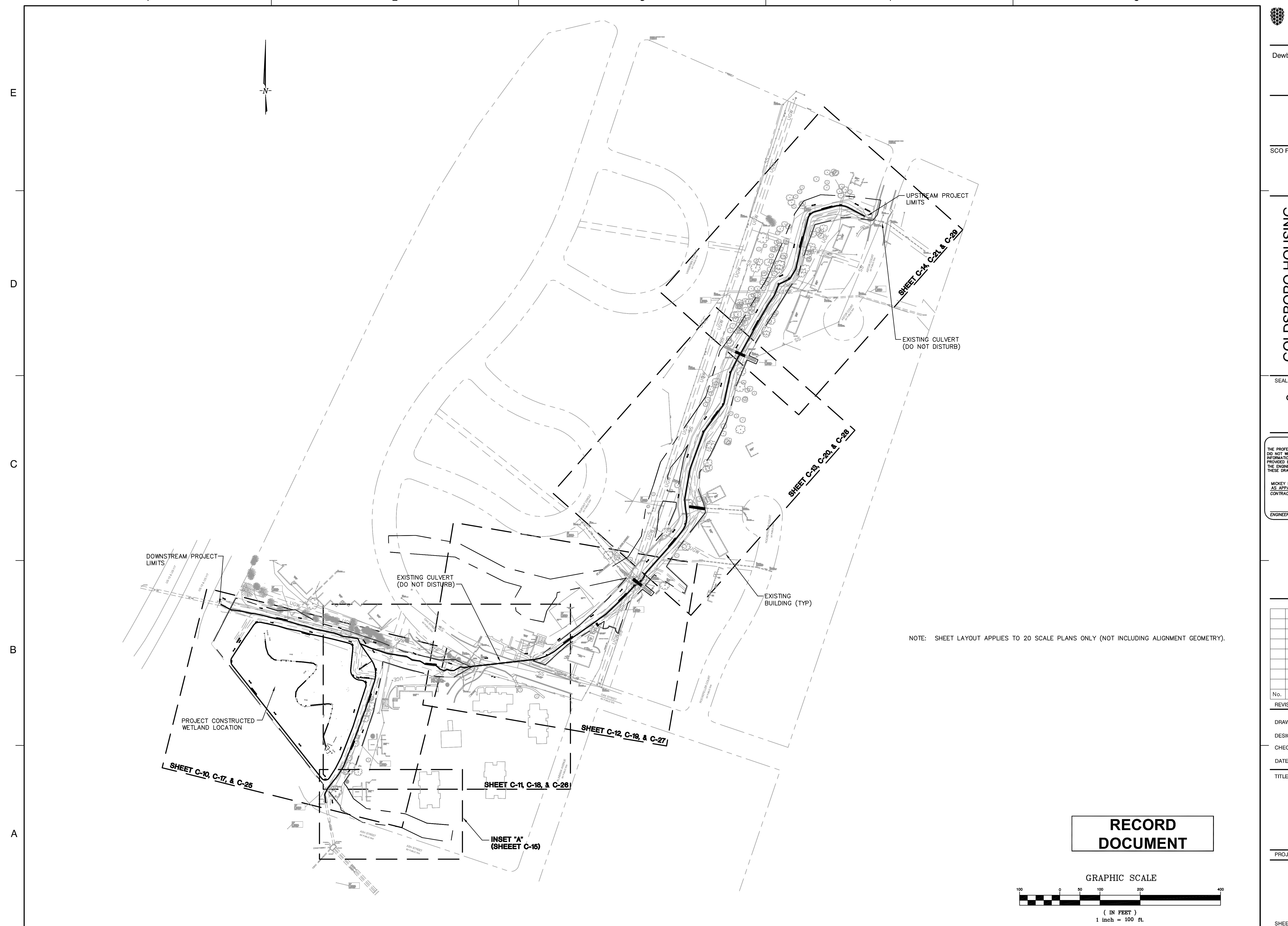
GRAPHIC SCALE



C-02

SHEET NO.

2 OF 37



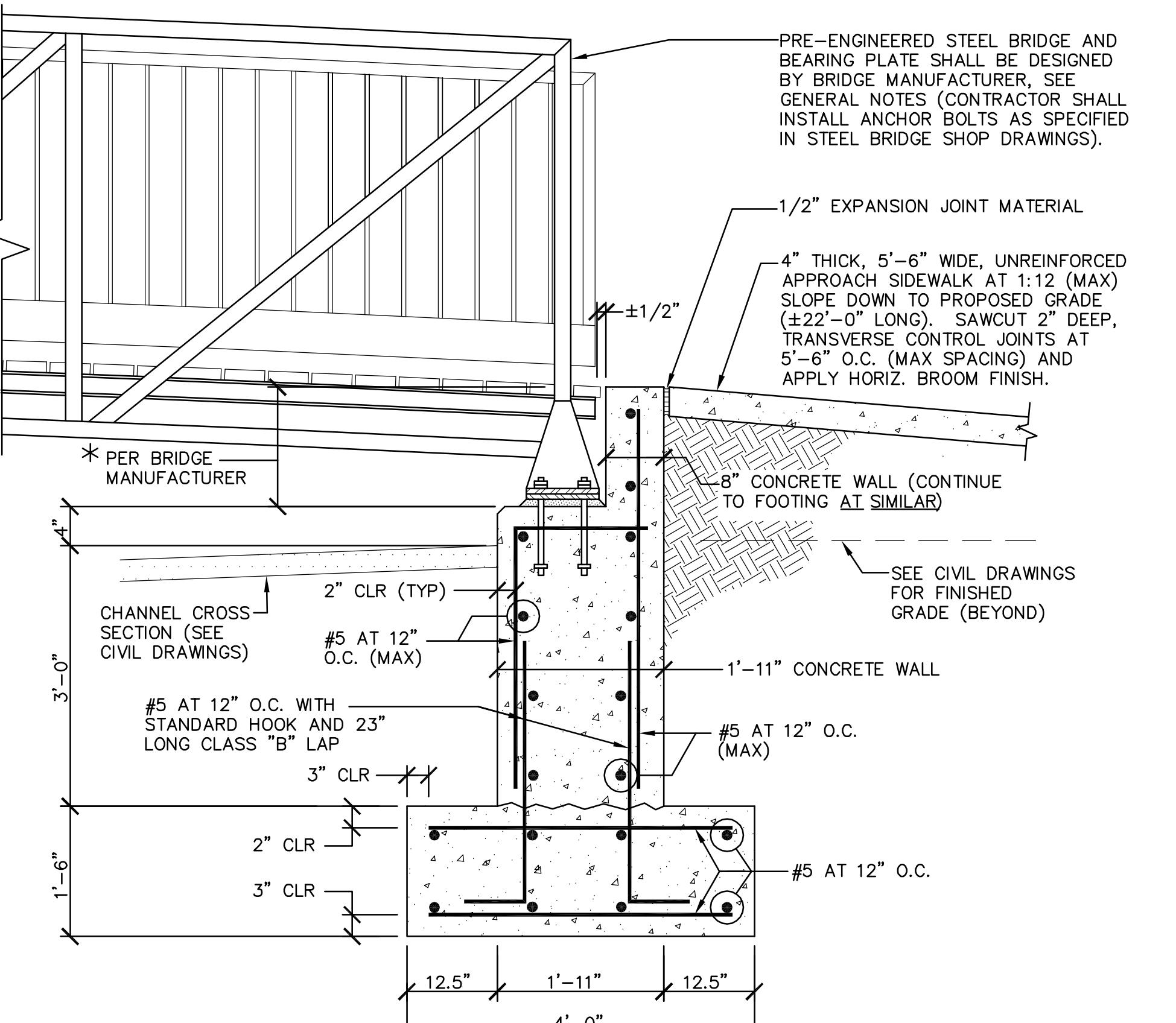
GENERAL STRUCTURAL NOTES

Dewberry & Davis, Inc.
 2301 REDWOODS DRIVE
 SUITE 200
 RALEIGH, NC 27607
 PHONE: 919.881.9939
 FAX: 919.881.9923

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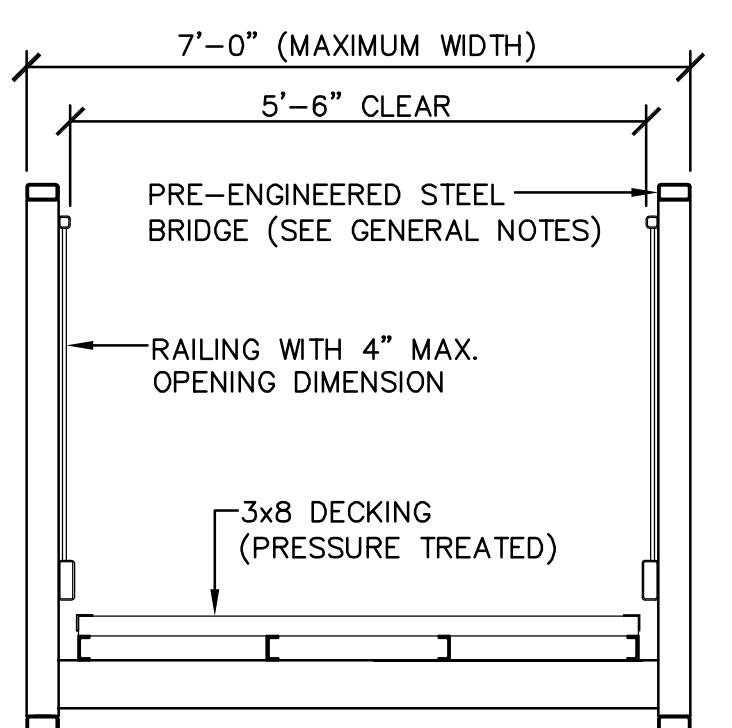
GOLDSBORO HOUSING AUTHORITY STREAM BMP PROJECT NC ECOSYSTEM ENHANCEMENT PROGRAM

GOLDSBORO
NORTH CAROLINA



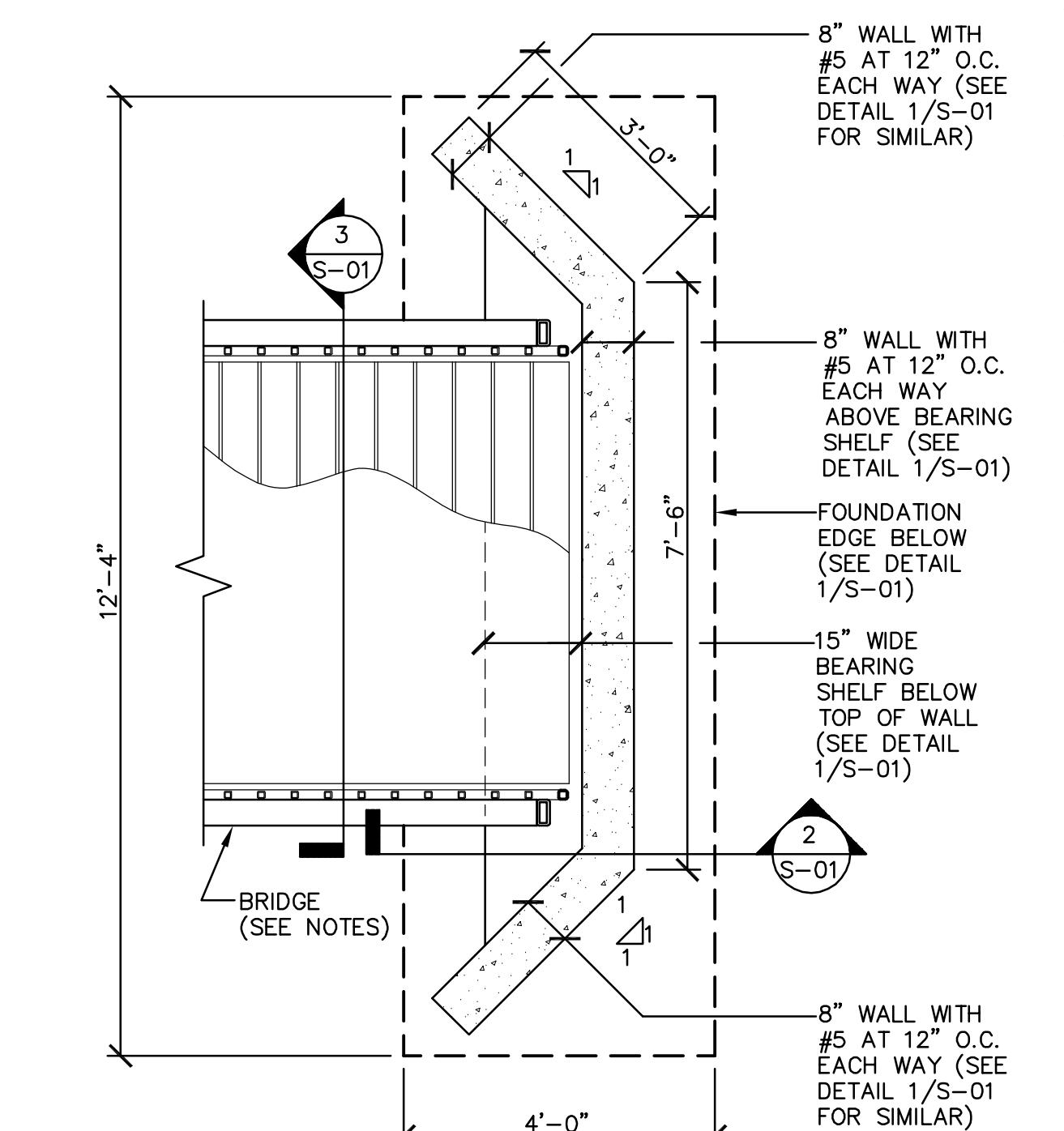
4 ABUTMENT FOUNDATION CROSS SECTION

SCALE: 3/4" = 1'-0"



3 TYPICAL BRIDGE CROSS SECTION

SCALE: NOT TO SCALE



2 PARTIAL PLAN AT ABUTMENT FOUNDATION

SCALE: 1/2" = 1'-0"

DESIGN:

1. THE GENERAL STRUCTURAL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS AND SPECIFICATIONS. SHOULD CONFLICTS EXIST BETWEEN THE DRAWINGS, SPECIFICATIONS, AND GENERAL STRUCTURAL NOTES, THE STRICTEST PROVISION SHALL GOVERN.
2. STRUCTURAL DESIGN OF BRIDGE ABUTMENTS AND FOUNDATION CONFORMS TO THE REQUIREMENTS OF THE 2006 NORTH CAROLINA STATE BUILDING CODE.
3. DESIGN LOADS AND DESIGN DATA FOR NEW CONSTRUCTION ARE AS FOLLOWS:

A. PEDESTRIAN LIVE LOAD:	85 PSF
B. BRIDGE MINIMUM TOTAL LIVE LOAD CAPACITY:	10,000 LBS
C. SNOW LOAD:	

GROUND SNOW LOAD (P_g)	15 PSF
SNOW EXPOSURE FACTOR (C_e)	1.0
SNOW LOAD IMPORTANCE FACTOR (I)	1.0
THERMAL FACTOR (C_t)	1.2
FLAT SNOW LOAD (P_f)	15 PSF

D. WIND LOAD:	
BASIC WIND SPEED (3 SECOND GUST)	95 MPH
BUILDING CATEGORY	1
WIND LOAD IMPORTANCE FACTOR (I)	1.0
WIND EXPOSURE CATEGORY	B

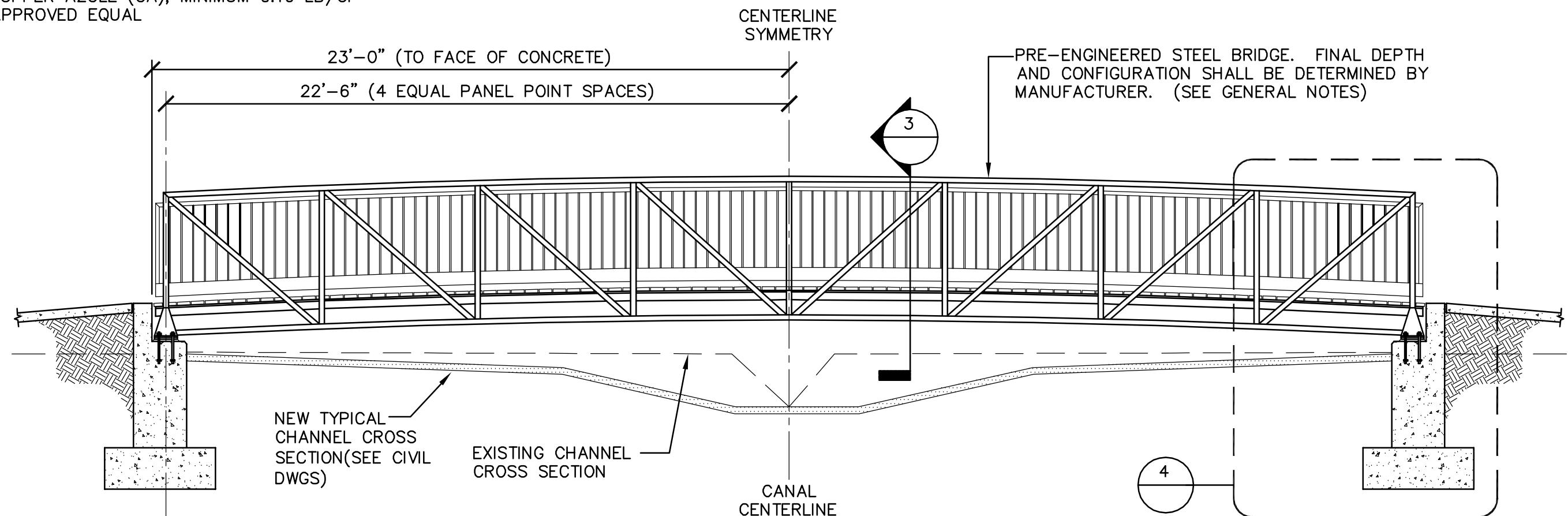
B. SEISMIC DESIGN DATA:

SEISMIC USE GROUP	1
SEISMIC IMPORTANCE FACTOR (I _e)	1.5
SPECTRAL RESPONSE ACCELERATIONS, S _s	0.21
SPECTRAL RESPONSE ACCELERATIONS, S ₁	0.08
SPECTRAL RESPONSE COEFFICIENT, S _{0s}	0.224
SPECTRAL RESPONSE COEFFICIENT, S ₀₁	0.128
SITE CLASS (ASSUMED)	D
SEISMIC DESIGN CATEGORY	B
SEISMIC-FORCE-RESISTING SYSTEM	
RESPONSE MODIFICATION FACTOR, R	3
SEISMIC RESPONSE COEFFICIENT, C _s	0.075
ANALYSIS PROCEDURE	

4. BRIDGE SHALL HAVE A CENTERLINE ARCH OF BETWEEN 4 AND 8 INCHES (PLUS DEAD LOAD CAMBER) AND SHALL BE DESIGNED AS CLEAR SPANNING BETWEEN BEARING LOCATIONS.
5. THE MAXIMUM LIVE LOAD DEFLECTION SHALL BE LIMITED TO 1/360 OF THE SPAN LENGTH.
6. UNLESS NOTED OTHERWISE, ALL DESIGN, DETAILING, FABRICATION AND ERECTION OF THE PRE-ENGINEERED METAL BRIDGE SHALL BE IN ACCORDANCE WITH THE AISC "MANUAL OF STEEL CONSTRUCTION", NINTH EDITION AND THE AISC CODE OF STANDARD PRACTICE.
7. ALL STEEL SHALL CONFORM TO ASTM A 36, OR STRONGER GRADE.
8. ALL WELDING SHALL BE DONE BY WELDERS CURRENTLY CERTIFIED BY THE AMERICAN WELDING SOCIETY (AWS) AS HAVING PASSED AWS QUALIFICATION TEST FOR THE TYPE OF WELDING THEY ARE TO PERFORM. ALL WELDERS SHALL USE E70XX ELECTRODES AND SHALL CONFORM TO AWS STANDARDS.
9. ALL ANCHOR BOLTS SHALL CONFORM TO ASTM F 1554 (GRADE 36) OR STRONGER MATERIAL GRADE.
10. BRIDGE FINISH SHALL BE WEATHERING STEEL.

WOOD FRAMING:

1. ALL DESIGN, DETAILING, FABRICATION, AND ERECTION OF WOOD FRAMING SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE FOLLOWING:
 - A. AMERICAN INSTITUTE OF TIMBER CONSTRUCTION – TIMBER CONSTRUCTION STANDARDS.
 - B. NATIONAL FOREST AND PAPER ASSOCIATION – NATION DESIGN SPECIFICATION FOR WOOD CONSTRUCTION.
2. THE FOLLOWING MATERIALS AND MINIMUM STRESS GRADES (PER NATIONAL DESIGN SPECIFICATIONS FOR WOOD CONSTRUCTION) SHALL APPLY:
 - A. 3x8 DECKING – NO. 1 GRADE SOUTHERN PINE
3. FASTENERS SHALL BE AS FOLLOWS (UNLESS OTHERWISE NOTED ON THE DRAWINGS):
 - A. ALL BOLTS USED FOR WOOD FASTENING SHALL CONFORM TO ASTM A307, LOW-CARBON STEEL EXTERNALLY AND INTERNALLY THREADED STANDARD FASTENERS.
 - B. 2x6 DECKING SHALL BE FASTENED IN PLACE WITH A MINIMUM OF (2) 3" LONG EXTERIOR GRADE DECK SCREWS AT EACH SUPPORT.
 - C. HOT-DIPPED GALVANIZED OR WEATHERING STEEL
4. ALL WOOD SHALL BE PRESSURE TREATED WITH ONE OF THE FOLLOWING:
 - A. ALKALINE COPPER QUAT (ACQ), MINIMUM 0.25 LB/CF
 - B. COPPER AZOLE (CA), MINIMUM 0.10 LB/CF
 - C. APPROVED EQUAL



1 TYPICAL BRIDGE ELEVATION

SCALE: 1/4" = 1'-0"

RECORD DOCUMENT

C-37

Constructed Wetland Planting Notes

Table 2. Planting Schedule. Zone one (1) is the stream bench. Zone two (2) is the slope. Zone three (3) is the floodplain between the top of bank and the easement limits.

Low Marsh (LM): 6 to 12 inches below normal pool						
	Scientific Name	Common Name	Layer	Spacing (ft) On-Center	Plant Size	Distribution
E	<i>Schoenoplectus tabernaemontani</i> or <i>Scirpus validus</i>	Softstem Bulrush	Herb	2x2	Plug	Random
	<i>Pontederia cordata</i>	Pickeral Weed	Herb	2x2	Plug	Random
D	△ <i>Schoenoplectus pungens</i>	Common Threestare	Herb	2x2	Plug	Random
	* A random mix of all three (3) species listed are to be planted in the Low Marsh zone.					
	Contractor shall contact the Engineer if a plant species is not available.					
	High Marsh (HM): 0 to 6 inches below normal pool					
	Scientific Name	Common Name	Layer	Spacing (ft) On-Center	Plant Size	Distribution
	<i>Inis virginica</i>	Blue Flag Iris	Herb	2x2	Plug	Random
	<i>Juncus spp.</i>	Rush	Herb	2x2	Plug	Random
	<i>Peltandra virginica</i>	Arrow arum	Herb	2x2	Plug	Random
	<i>Pontederia cordata</i>	Pickeral Weed	Herb	2x2	Plug	Random
	<i>Sagittaria latifolia</i>	Duck Potato	Herb	2x2	Plug	Random
	<i>Saururus cernuus</i>	Lizard's Tail	Herb	2x2	Plug	Random
	<i>Schoenoplectus tabernaemontani</i> or <i>Scirpus validus</i>	Softstem Bulrush	Herb	2x2	Plug	Random
	* A minimum of five (5) species must be planted in the high marsh zone of the constructed wetland. Plant species are to be randomly mixed within the zone.					
	Buffer (Bf): All Areas Above Normal Pool					
	Scientific Name	Common Name	Layer	Plant Size	Distribution	
	Permanent Seeding					
C	<i>Panicum virgatum</i>	Switchgrass	Herb	Seed	Broadcast Mix	
	<i>Juncus effusus</i>	Soft Rush	Herb	Seed	Broadcast Mix	
	<i>Elymus virginicus</i>	Virginia Wild Rye	Herb	Seed	Broadcast Mix	
	Temporary Erosion Seeding					
	<i>Lolium multiflorum</i>	Annual Ryegrass	Herb	Seed	Broadcast Mix	
	<i>Setaria italica</i>	German Millet	Herb	Seed	Broadcast Mix	
	* Each of the species listed for permanent seeding must be included in the mix if a species is not available. The contractor shall contact the Engineer for and alternative species.					
	ESTIMATED PLANTING QUANTITIES REQUIRED— STREAM RESTORATION					
	Estimated Quantity					
	TREES (including the willow stake plantings at 4' OC) 896					
	SHRUBS:					
	HERBACEOUS (plug)					
	SPECIMEN TREES:					
	SOIL AUGMENTATION:					
	LIME (3,500 lbs/acre) - entire conservation easement 7.7 tons					
	9-6-11 FERTILIZER (590 lbs/acre) - entire conservation easement 1.3 tons					
	ESTIMATED PLANTING QUANTITIES— CONSTRUCTED WETLAND					
	Estimated Quantity					
A	LOW MARSH (plug)					
	9-6-11 FERTILIZER (590 lbs/acre) - entire conservation easement 7.49					
	HIGH MARSH (plug)					
	SOIL AUGMENTATION: LIME (3,500 lbs/acre) - entire conservation easement 5.931					
	TYPICAL SECTION FOR PLANTING ZONE REFERENCES					
	Willow Planting Areas					
	Plant willow (<i>Salix nigra</i> and <i>S. caroliniana</i>) stakes 4' OC within the bubble areas (1003 sf total) at bridge abutments per Sheets 27-29.					

GENERAL PLANTING NOTES

INTRODUCTION

- The goals of the planting plan are to restore the riparian buffer and create the Constructed Wetland.
- Temporary seeding of disturbed areas shall be required to provide sediment and erosion control purposes and for the benefit of habitat.
- Permanent seeding shall be established by planting the selected seed mix described in Permanent Seeding Mixture provided herein. If any species, one the Permanent Seeding Mixture has been applied, contact the construction manager for substitute species. The seeding shall be covered with coir matting below bankfull and straw mulch, or approved replacement, above bankfull to the limits of the tossall with poly during blowing, or by discing.
- Tubellings, live stakes or plugs will be planted after the temporary seed mixture has been applied.
- Trees, shrubs, tubelings, live stakes and plugs shall be planted in a manner to ensure their survival. This shall include the planting of intact roots, planting at proper depth, proper backfilling, and watering. See the planting requirements in the contract documents for additional requirements.
- Plant materials shall be stored in a manner to prevent desiccation of the root system. Protect plants at all times from sun and drying winds. Plants that can not be planted immediately shall be kept in the shade and well watered. Plants not planted within two days must be provided with adequate irrigation and on-site protection from the elements. See the contract documents for additional requirements.
- Plants shall not be handled by the stems during transport to planting site or during planting. If an erosion control blanket is present, a circular opening shall be cut in the blanket prior to excavation of the pit.
- Non-biodegradable material surrounding the earthen ball of the plan shall be removed prior to backfilling of the pit.
- To set the plants, prepare alignment of individual tree saplings plumb and straight and provide allowance for settlement.
- Backfill the planting holes with in-situ soil materials removed for planting.
- After backfilling, water to the point of soil saturation and tamp to compact the backfill mixture. Add existing soil to bring the final grade in the planting hole to the surrounding soil surface. Rake the unused soil outside the planting holes, taking care not to mound the soil or to significantly alter the existing grades.
- The contractor shall be responsible for maintaining 80% survivability through the first year after construction. As-built, vegetative monitoring and geomorphological monitoring will be completed within 60 days after construction completion. Monitoring will be carried out in accordance with the most current version of the EEP monitoring reporting template. As-built and monitoring will be conducted prior to May 30. All Year-1 monitoring will occur in the late fall of the same year. If monitoring occurs after May 30, all Year-1 monitoring will occur the following calendar year to allow for one growing season to pass.
- Live stake planting is to occur between November 15 and March 15, during dormancy. Live stakes should only be used in the area where adequate straining and soil saturation will induce adequate root growth. Live stakes shall have a minimum diameter of 1/2 inches and a minimum of length 24 inches. Soak the stake for 24 hours. Cut ends at a 45° angle prior to installation. Drive stake into the ground to 3/4 of its length; at a 45° in the downstream direction.
- The supplier of all seeds and/or vegetation shall certify that the origin of the seeds from which the plants or seeds were produced is from Hardiness Zones 7a and 7b, east of Tennessee, and as directed by the Special Provisions.
- All plants shall be conservation grade, first class representatives of their species, nursery grown according to good horticulture practices and grown in a climate similar to the project area. Plants shall be vigorous, healthy and free of disease, insectivorous pests, decay, injuries and all forms of objectionable disfigurements. Trunks and branches shall be free of cuts and abrasions. Plants shall conform to all aspects of the current edition of the American Standard for Nursery Stock (ANSI Z60.1) for conservation grade plant material.
- The plantings around all structures are live stakes. Place a minimum of five (5) live stakes, spaced on 2' centers, at the point the structure lies into the bankfull bench (Zone 1).
- The Ecosystem Enhancement Program has specific planting requirements which are provided as part of the contract documents.
- ***A minimum of six (6) of the scheduled woody species and six (6) of the scheduled herbaceous species per zone must be planted. Within each zone the plant species are not to be clumped, but randomly mixed.
- *** Assumptions for quantities: 3 species of trees (T), 3 species of shrubs (S), and 6 species of herbaceous results in approximately 500 trees per acre, 500 shrubs per acre, and 2000 herbaceous plants per acre.

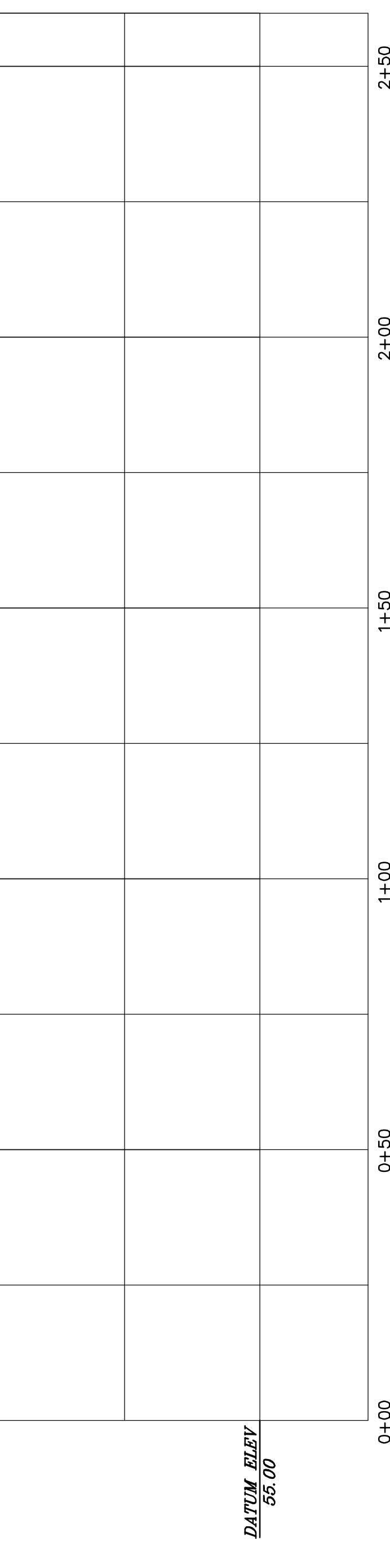
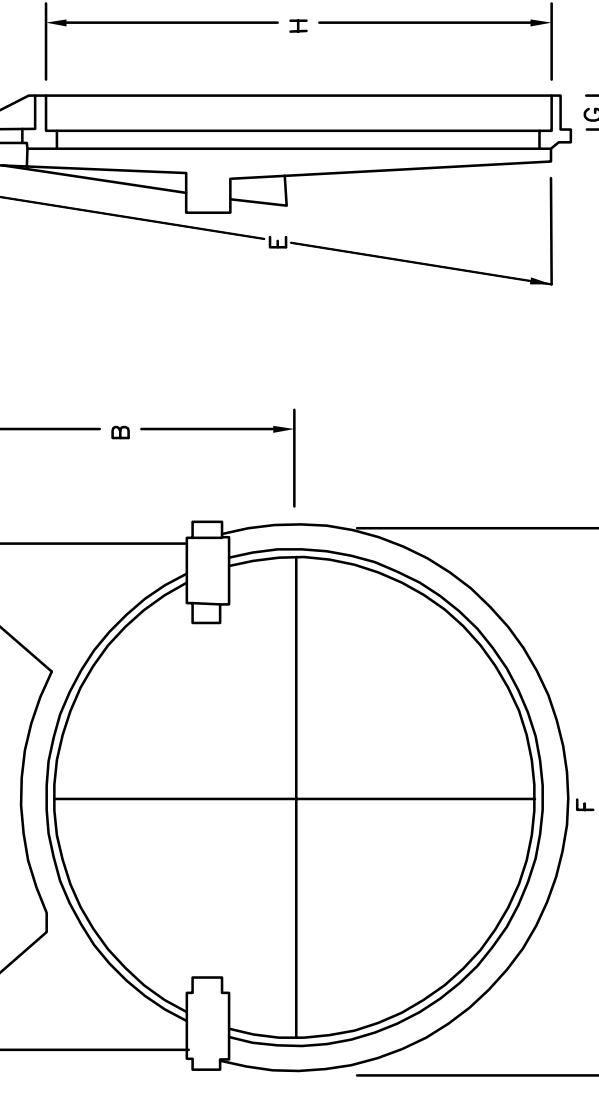
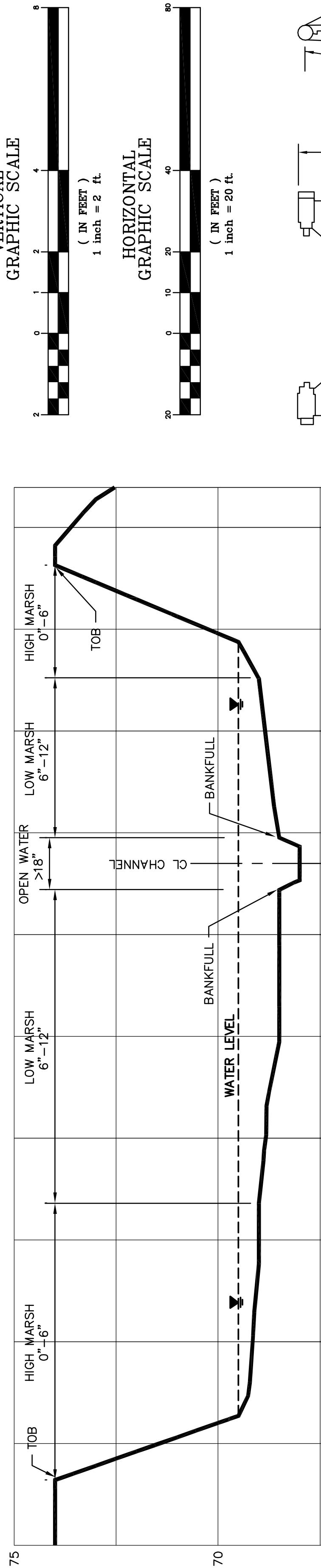
PLANT SCHEDULE: Zone 1 and 2						
Scientific Name *	Common Name	Spacing (ft) On-Center	Plant Size	Minimum Stock	Zone	Distribution
TREES (T) AND SHRUBS (S): Zones 1 and 2						
(S) <i>Sambucus canadensis</i>	Elderberry	9'	Live stake or tubing	1 or 2	Random mix	
(T) <i>Salix nigra</i>	Black Willow	9'	Live stake or tubing	1 or 2	Random mix	
(T) <i>Swamp Willow</i>	Swamp Willow	9'	Live stake or tubing	1 or 2	Random mix	
(S) <i>Coronis aromaticum</i>	Silky Dogwood	9'	Live stake or tubing	1 or 2	Random mix	
(T) <i>Platanus occidentalis</i>	Sycamore	9'	Live stake or tubing	1 or 2	Random mix	
(T) <i>Betula nigra</i>	River Birch	9'	Live stake or tubing	1 or 2	Random mix	
(S) <i>Myrica cerifera</i>	Wax Myrtle	9'	Live stake or tubing	1 or 2	Random mix	
(T) <i>Liquidambar styraciflua</i>	Sweet Gum	9'	Live stake or tubing	1 or 2	Random mix	
(S) <i>Alnus serrulata</i>	Alder	9'	Live stake or tubing	1 or 2	Random mix	
(S) <i>Lindera benzoin</i>	Spicebush	9'	Live stake or tubing	1 or 2	Random mix	
HERBACEOUS: Zones 1 and 2						
(A) <i>Asclepias incarnata</i>	Swamp milkweed	4.5'	Plug	1 or 2	Random mix	
(C) <i>Carex vulpinoidea</i>	Fox Sedge	4.5'	Plug	1 or 2	Random mix	
(C) <i>Iris virginica</i>	Tussock Sedge	4.5'	Plug	1 or 2	Random mix	
(C) <i>Scirpus fluviatilis</i>	Southern Blueflag	4.5'	Plug	1 or 2	Random mix	
(C) <i>Spartanium americanum</i>	River Bulrush	4.5'	Plug	1 or 2	Random mix	
(C) <i>Sparganium americanum</i>	Eastern Burreed	4.5'	Plug	1 or 2	Random mix	
(C) <i>Lobelia cardinalis</i>	Cardinal Flower	4.5'	1 quart pot	2	Random mix	
(C) <i>Mertensia virginica</i>	Bluebells	4.5'	Plug	1 or 2	Random mix	
(C) <i>Saururus cernuus</i>	Lizard's Tail	4.5'	Plug	1 or 2	Random mix	
(C) <i>Zizania aquatica</i>	Wild Rice	4.5'	Plug	1 or 2	Random mix	
(C) <i>Eupatorium perfoliatum</i>	Perforated Boneset	4.5'	Plug	1 or 2	Random mix	
(C) <i>Scirpus atrocivens</i>	Green Bulrush	4.5'	Plug	1 or 2	Random mix	
(C) <i>Vernonia noveboracensis</i>	New York Ironweed	4.5'	Plug	2	Random mix	
(C) <i>Panicum virgatum</i>	Panic grass	4.5'	Plug	2	Random mix	
PLANT SCHEDULE: Zone 3						
Scientific Name	Common Name	Minimum Stock	Zone	Distribution		
SPECIMEN TREES: Zone 3						
(O) <i>Quercus phellos</i>	Willow Oak	B&B	2"	3	Where noted	
(I) <i>Opaca</i>	American Holly	B&B	2"	3	Where noted	
(B) <i>Betula nigra</i>	River Birch	B&B	2"	3	Where noted	
(P) <i>Platanus occidentalis</i>	Sycamore	B&B	2"	3	Where noted	
(J) <i>Juniperus virginiana</i>	Red Cedar	B&B	2"	3	Where noted	
HERBACEOUS: Zone 3						
(M) <i>Mercurialis annua</i>	Blubells	4.5'	Plug	3	Random mix	
(V) <i>Vernonia novae-angliae</i>	New York Ironweed	4.5'	Plug	3	Random mix	
(V) <i>Vernonia gigantea</i>	Giant Ironweed	4.5'	Plug	3	Random mix	
(P) <i>Panicum virgatum</i>	Panic grass	4.5'	Plug	3	Random mix	
(P) <i>Pentstemon laevigatus</i>	Beardtongue	4.5'	Plug	3	Random mix	
(B) <i>Baptisia alba (B. lactea)</i>	Wild White Indigo	4.5'	Plug	3	Random mix	
(P) <i>Phlox carolina</i>	Wild Blue Phlox	4.5'	Plug</			

Dewberry & Davis, Inc.
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NC ECOSYSTEM ENHANCEMENT
STREAM/BMP PROJECT
GOLDSBORO HOUSING AUTHORITY STREAM
PROGRAM

SCO PROJECT NUMBER:

020588001



SECTION START @ ALIGN A STA 5+00

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028832, ON MAY 11, 2007

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04-27-09
ENGINEER DATE



No.	DATE	BY Description

REVISIONS

DRAWN BY RSM

DESIGNED BY SSR

CHECKED BY MH

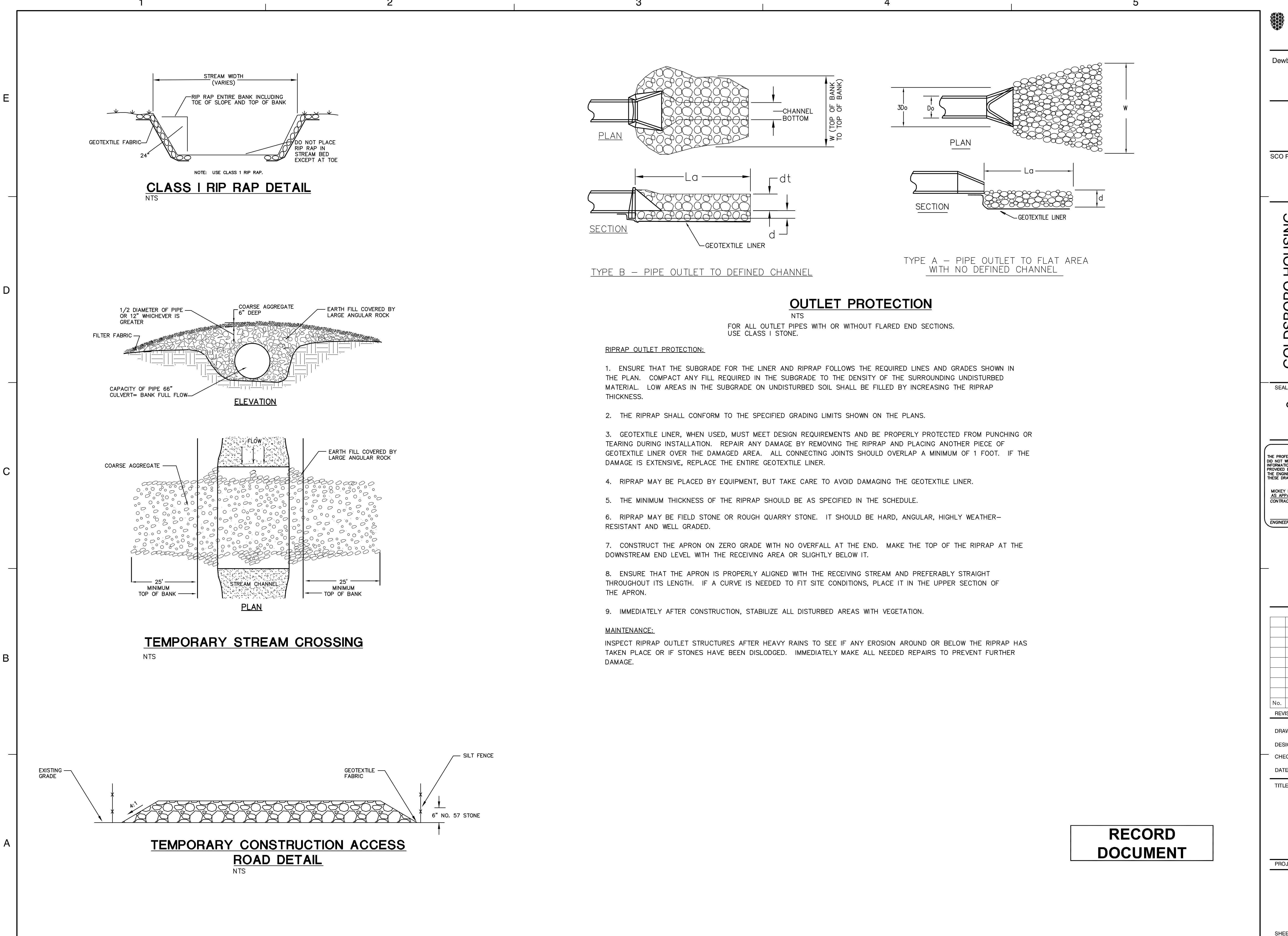
DATE 1-29-07

TITLE

EROSION
CONTROL
DETAILS

PROJECT NO. 73142900

C-33



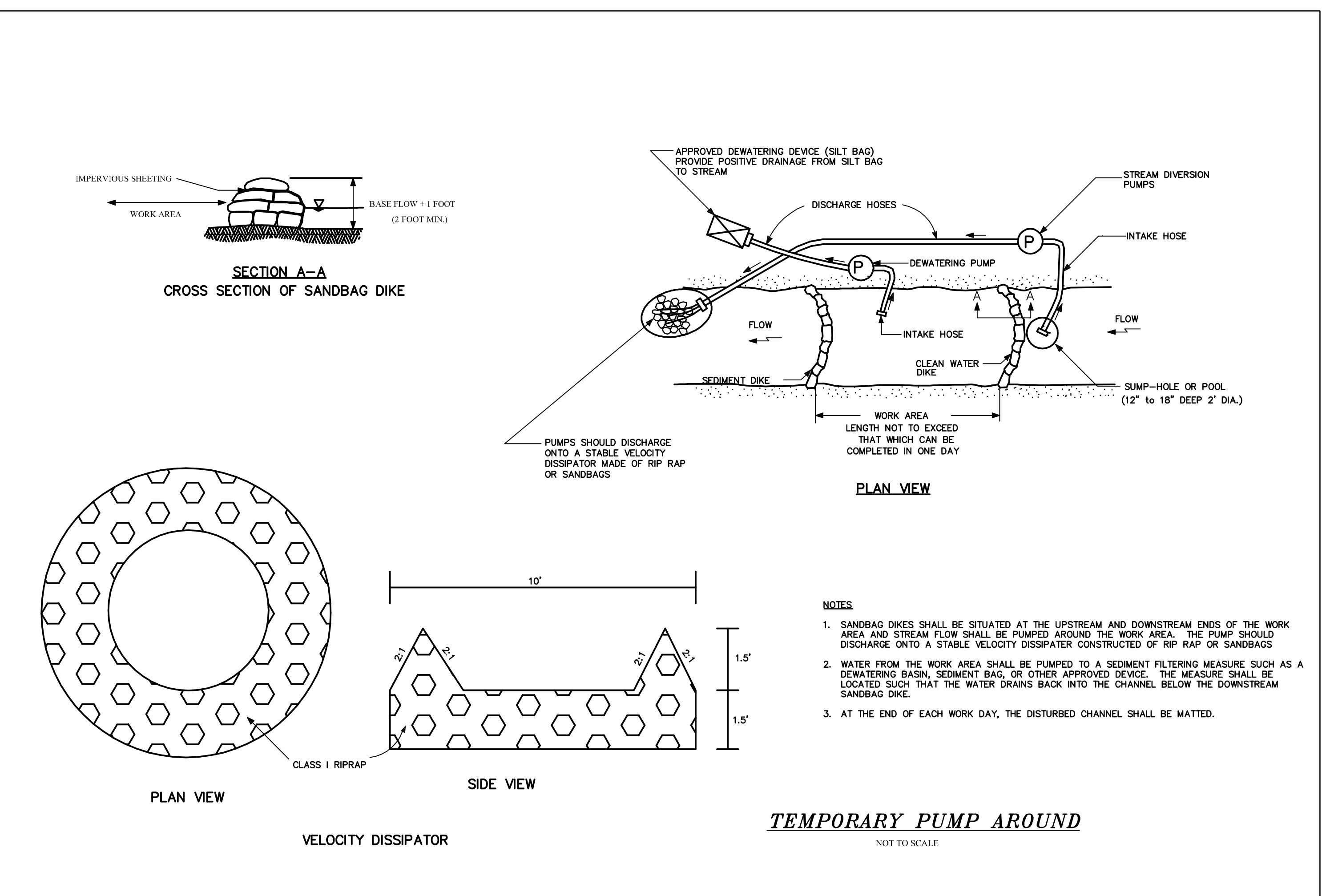
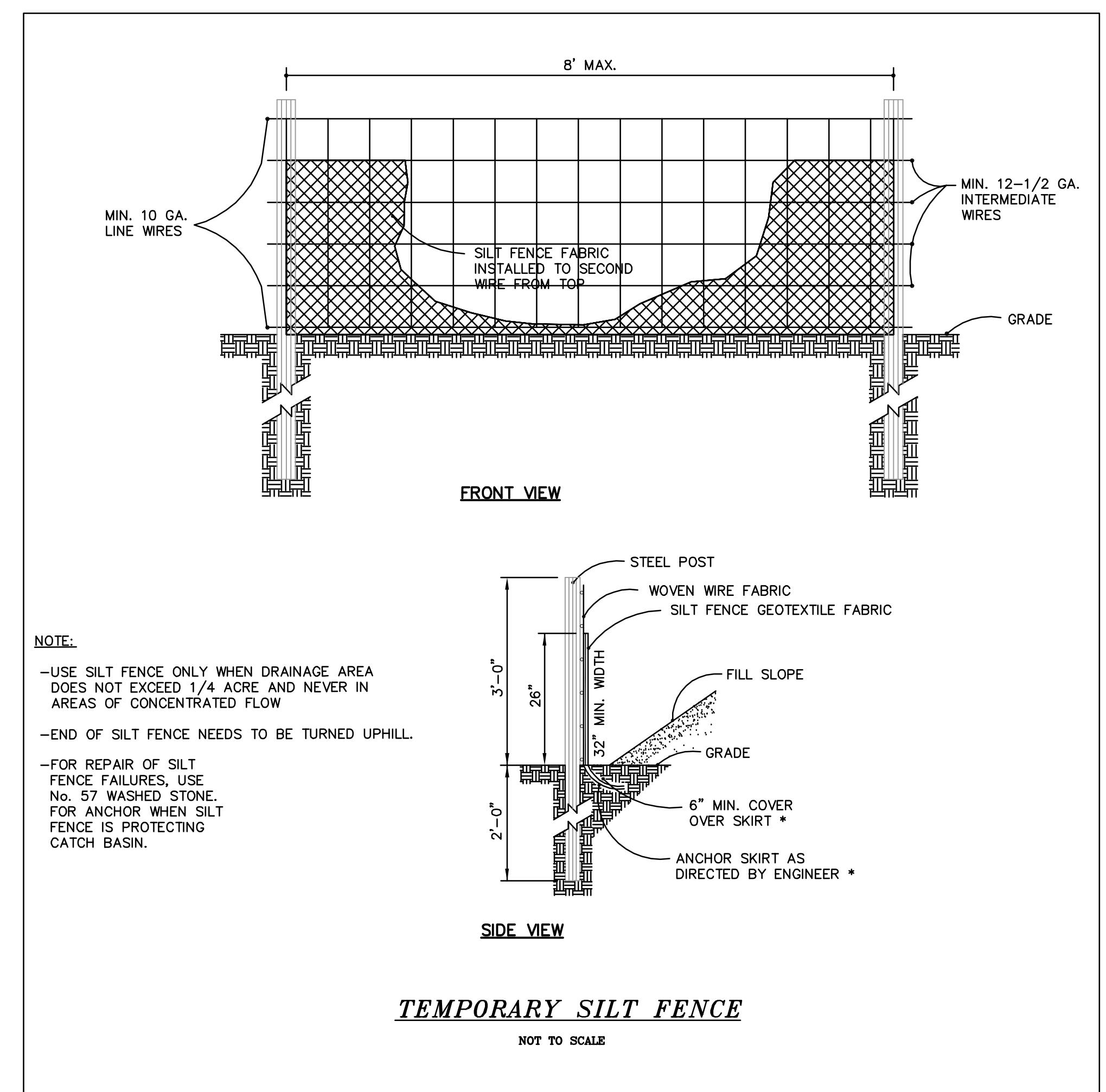
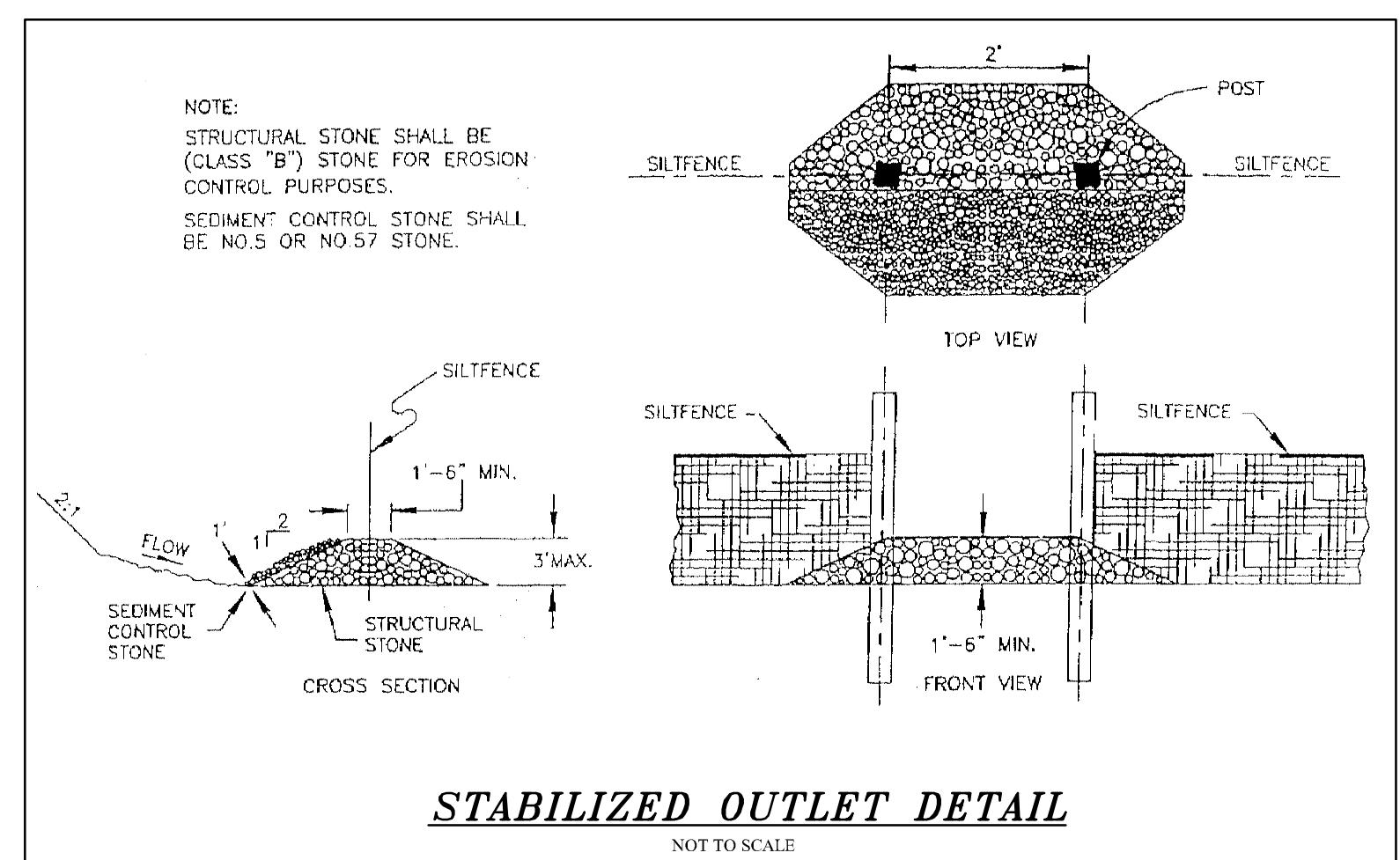
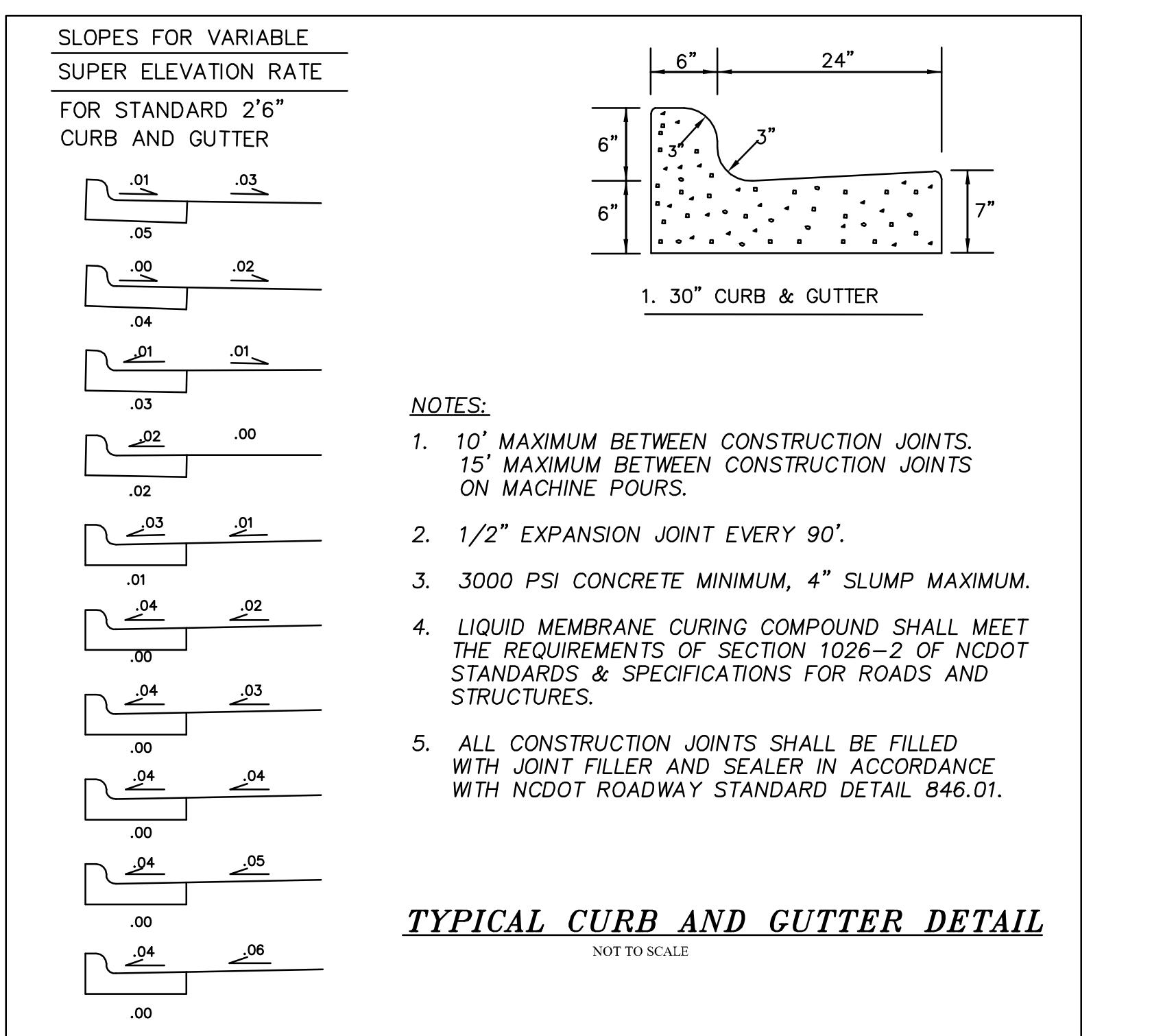
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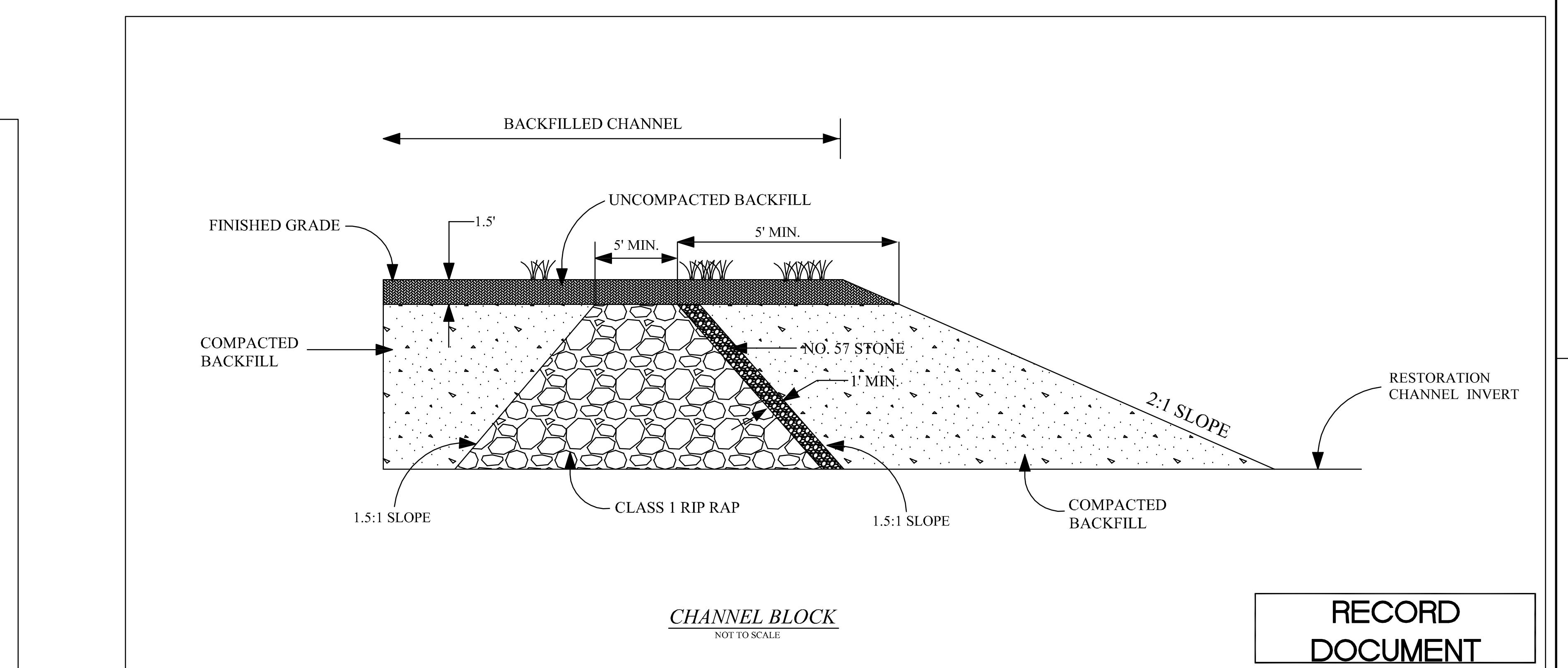
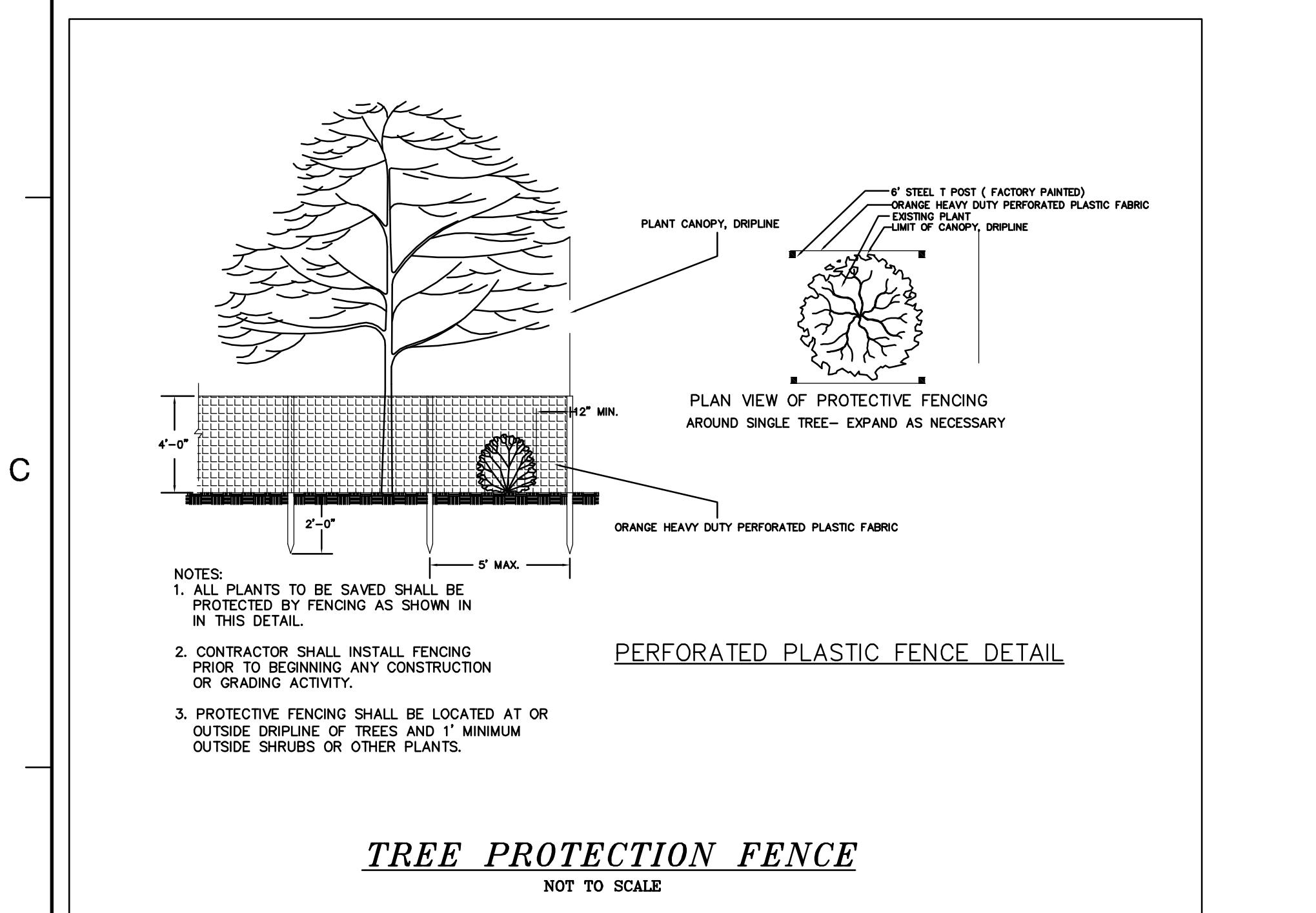
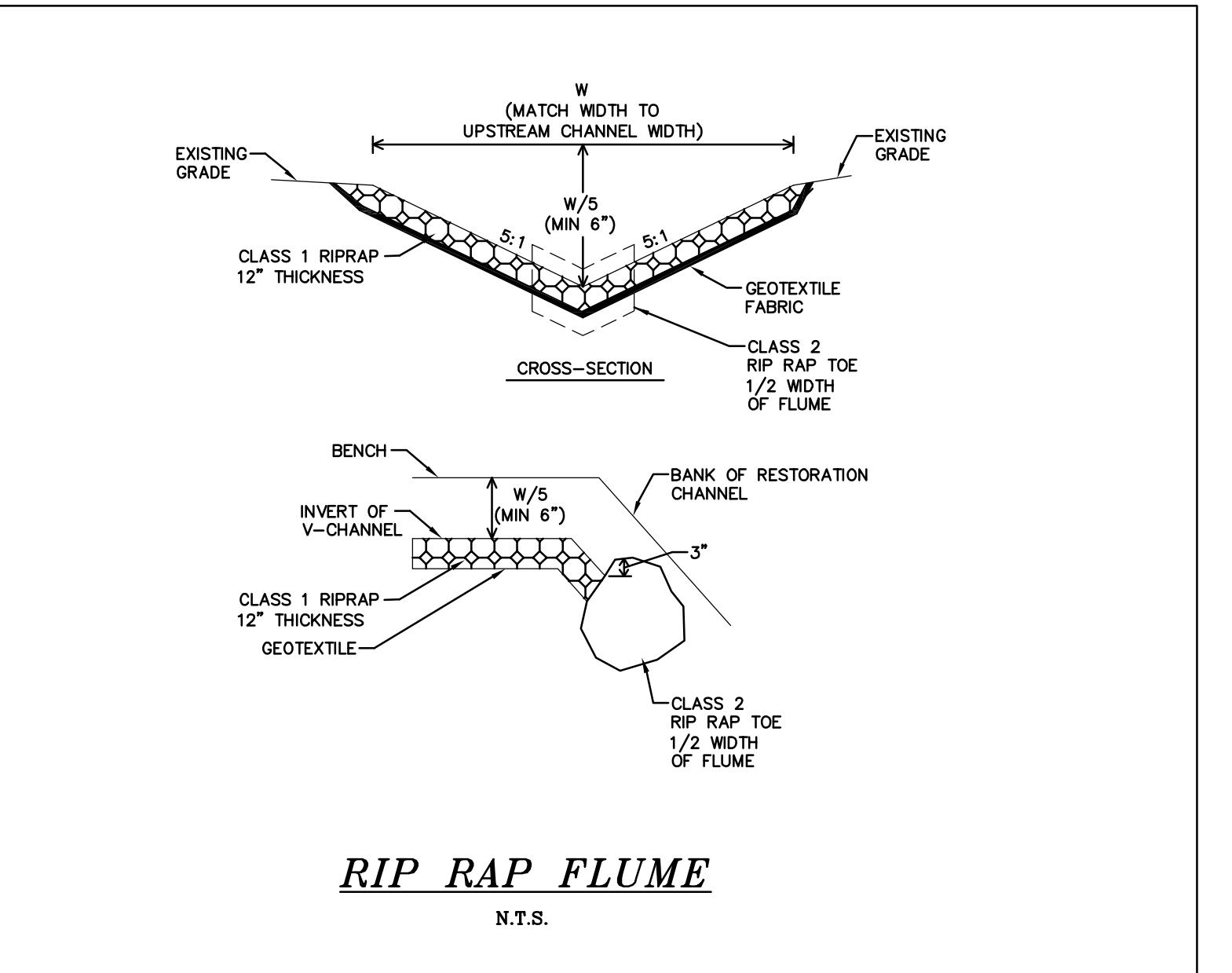
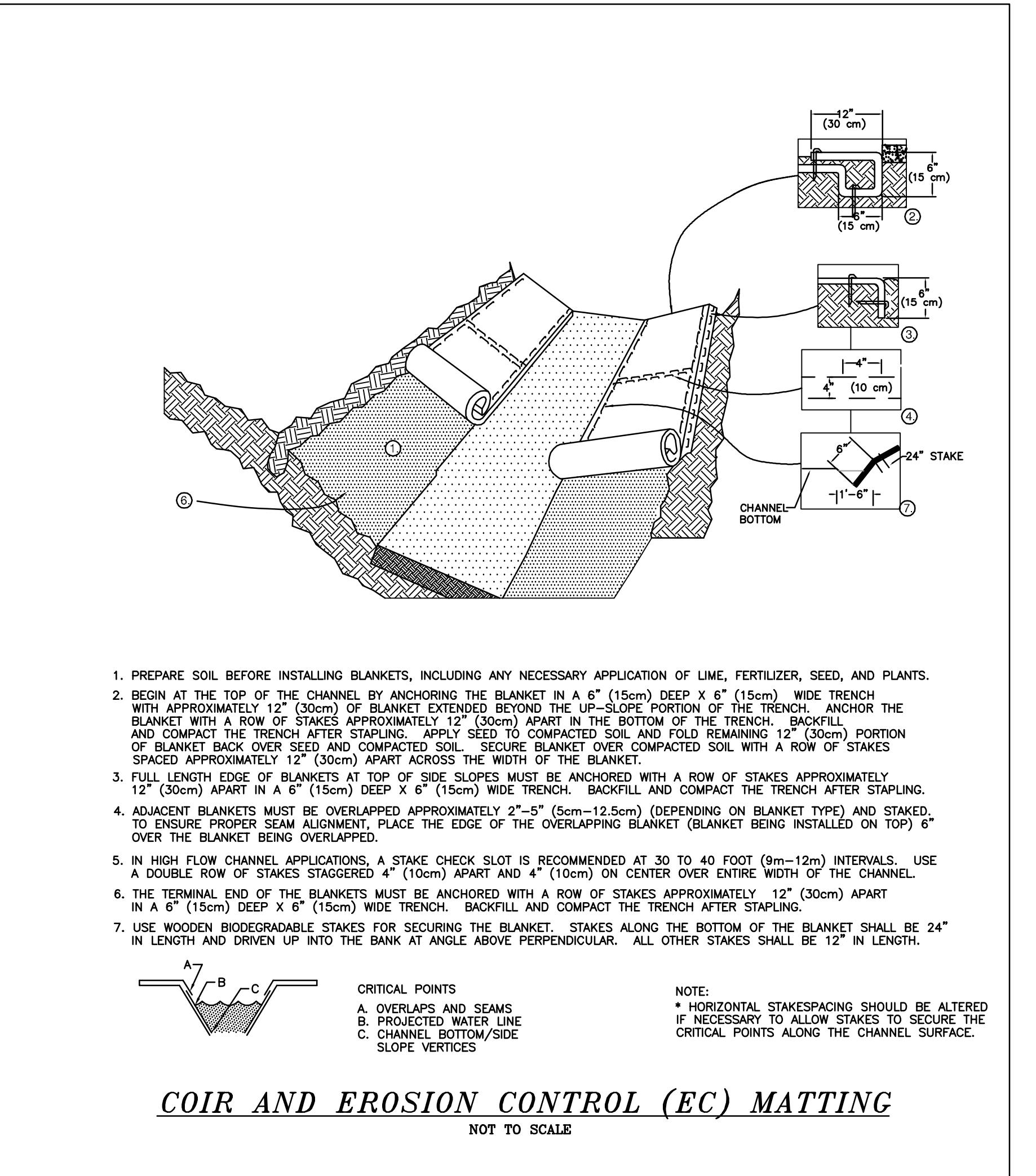
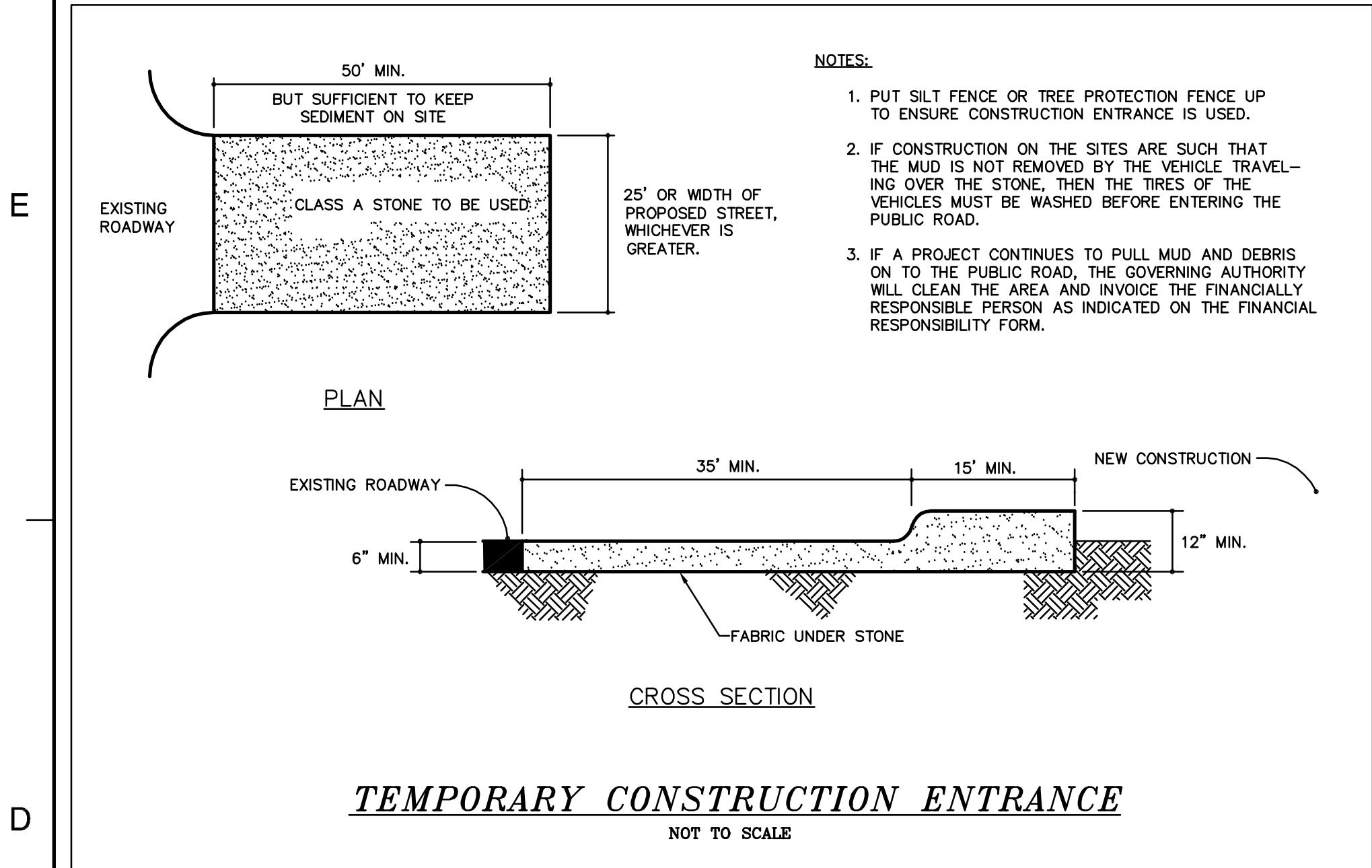
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Dewberry & Davis, Inc.
2301 REXWOODS DRIVE
SUITE 200
RALEIGH, NC 27607
PHONE: 919.881.9939
FAX: 919.881.9923

SCO PROJECT NUMBER:
020588001

GOLDSBORO HOUSING AUTHORITY STREAM STREAM/BMP PROJECT

NC ECOSYSTEM ENHANCEMENT PROGRAM

GOLDSBORO

GOLDSBORO
NORTH CAROLINA

**ORIGINAL CONSTRUCTION
DRAWINGS SEALED BY
SHEILA S. REEVES
028832, ON MAY 11, 2007**

RECORD DRAWING

A circular seal for a North Carolina professional engineer. The outer ring contains the text "NORTH CAROLINA" at the top and "PROFESSIONAL" at the bottom, both in a serif font. The inner circle contains the word "SEAL" at the top and the registration number "030624" below it. The bottom half of the inner circle features the name "MICHAEL A HANSON" in a large serif font, with "ENGINEER" written above "HANSON". The entire seal is enclosed in a dotted circular border.

REVISIONS

DRAWN BY ACH

DESIGNED BY SSR

CHECKED BY MH

1 20 07

STREAM SECTIONS

PROJECT NO. 73142900

RECORD DOCUMENT

CO PROJECT NUMBER:
020588001

GOLDSBORO HOUSING AUTHORITY STREAM STREAM/BMP PROJECT

NC ECOSYSTEM ENHANCEMENT PROGRAM

GOLDSBORO
NORTH CAROLINA

SEAL

**ORIGINAL CONSTRUCTION
DRAWINGS SEALED BY
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RECORD DRAWING

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ENGINEER'S KNOWLEDGE, THE INFORMATION SHOWN ON
THE DRAWINGS IS ACCURATE AND CORRECT.

A circular professional seal for North Carolina. The outer ring contains the text "NORTH CAROLINA" at the top and "PROFESSIONAL" at the bottom, both in an arc. The inner circle contains the word "SEAL" at the top and the registration number "030624" in the center. The bottom half of the inner circle contains the words "ENGINEER" and "MICHAEL A. HANSON" stacked vertically.

S I O N S

WN BY ACH

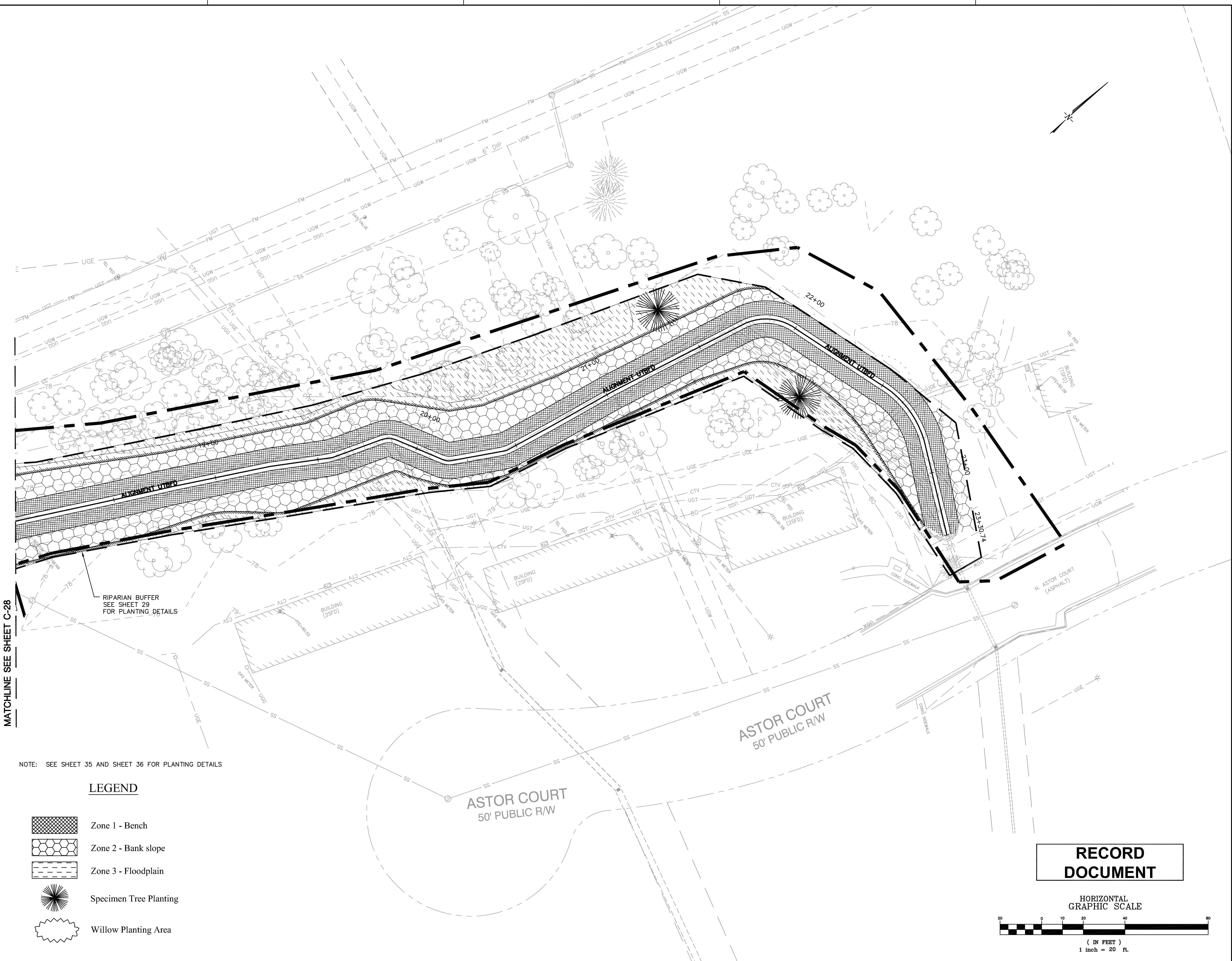
GNED BY SSR

CKED BY MH

- 1-29-07

PLANTING PLAN

PROJECT NO. 73142900



RECORD DOCUMENT

A horizontal graphic scale diagram. It features a black horizontal line with a dashed extension at its right end. Four vertical tick marks are placed along the line, labeled 0, 10, 20, and 40 from left to right. The segments between these labels are divided into smaller, unlabeled increments. A 10-foot gap is indicated by a black rectangle positioned between the 10 and 20 labels. Below the line, the text '(IN FEET)' is centered, and at the far right end of the dashed line, the numbers '10 20 30 40' are written vertically.

Dewberry & Davis, Inc.
2301 REXWOODS DRIVE
SUITE 200
RALEIGH, NC 27607
PHONE: 919.881.9939
FAX: 919.881.9923

SCO PROJECT NUMBER:
020588001

GOLDSBORO HOUSING AUTHORITY STREAM STREAM/BMP PROJECT

NC ECOSYSTEM ENHANCEMENT PROGRAM

GOLDSBORO

SEAL

ORIGINAL CONSTRUCTION
DRAWINGS SEALED BY
SHEILA S. REEVES
028832, ON MAY 11, 2007

RECORD DRAWING

MICKEY B. HENSON ENTERPRISE DOING BUSINESS
AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

No.	DATE	BY	Description

REVISIONS	
DRAWN BY	ACH
DESIGNED BY	SSR
CHECKED BY	MH
DATE	1-29-07

PLANTING PLAN

PROJECT NO. 73142900

RECORD DOCUMENT

**HORIZONTAL
GRAPHIC SCALE**

(IN FEET)

1 inch = 20 ft

SCO PROJECT NUMBER:

GOLDSBORO HOUSING AUTHORITY STREAM STREAM/BMP PROJECT NC ECOSYSTEM ENHANCEMENT PROGRAM

GOLDSBORO
NORTH CAROLINA

SEAL

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A circular professional engineer seal. The outer ring contains the text "NORTH CAROLINA" at the top and "PROFESSIONAL" at the bottom, both in a serif font. The inner circle features the word "SEAL" at the top and the registration number "030624" in the center. Below the number, the words "ENGINEER" and "MICHAEL A. HANSON" are stacked vertically. The entire seal is enclosed in a dotted circular border.

⚠	5/06/09	ACH	ASBUILT
No.	DATE	BY	Description

REVISIONS

DRAWN BY ACH

DESIGNED BY SSR

CHECKED BY MH

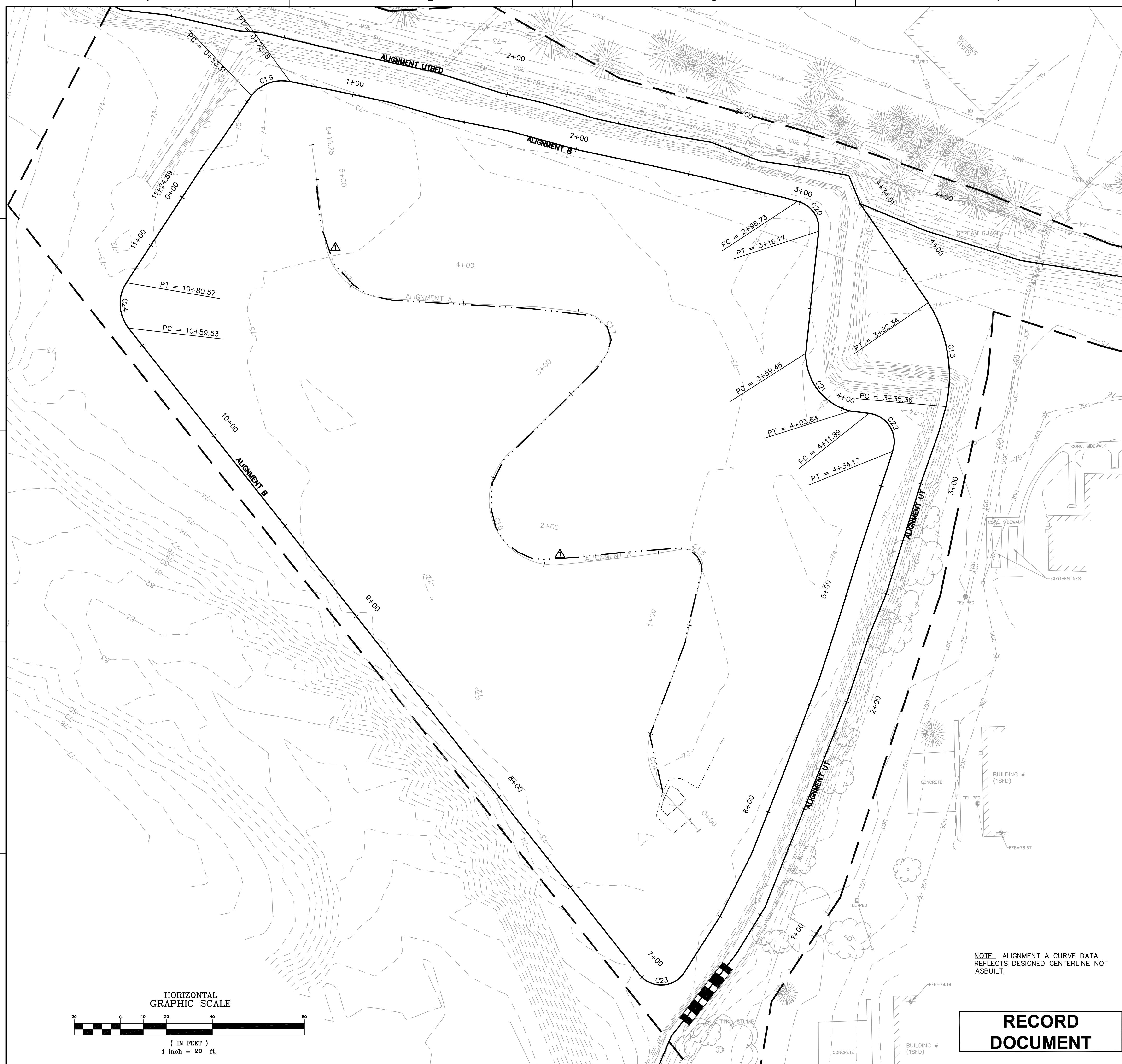
DATE 1-29-07

TITLE

ALIGNMENT GEOMETRY DATA

PROJECT NO. 77140000

C-24A



RECORD DOCUMENT

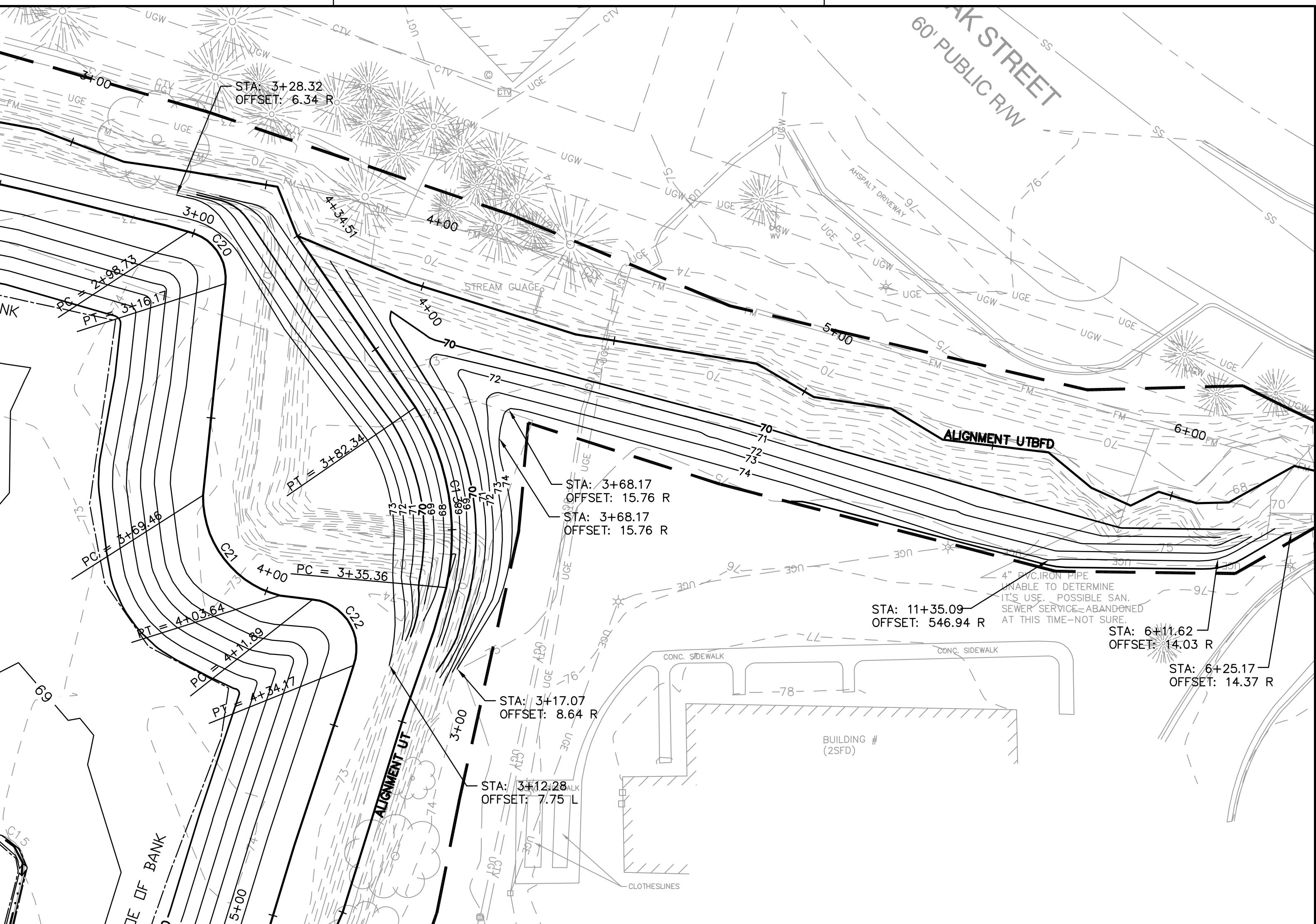
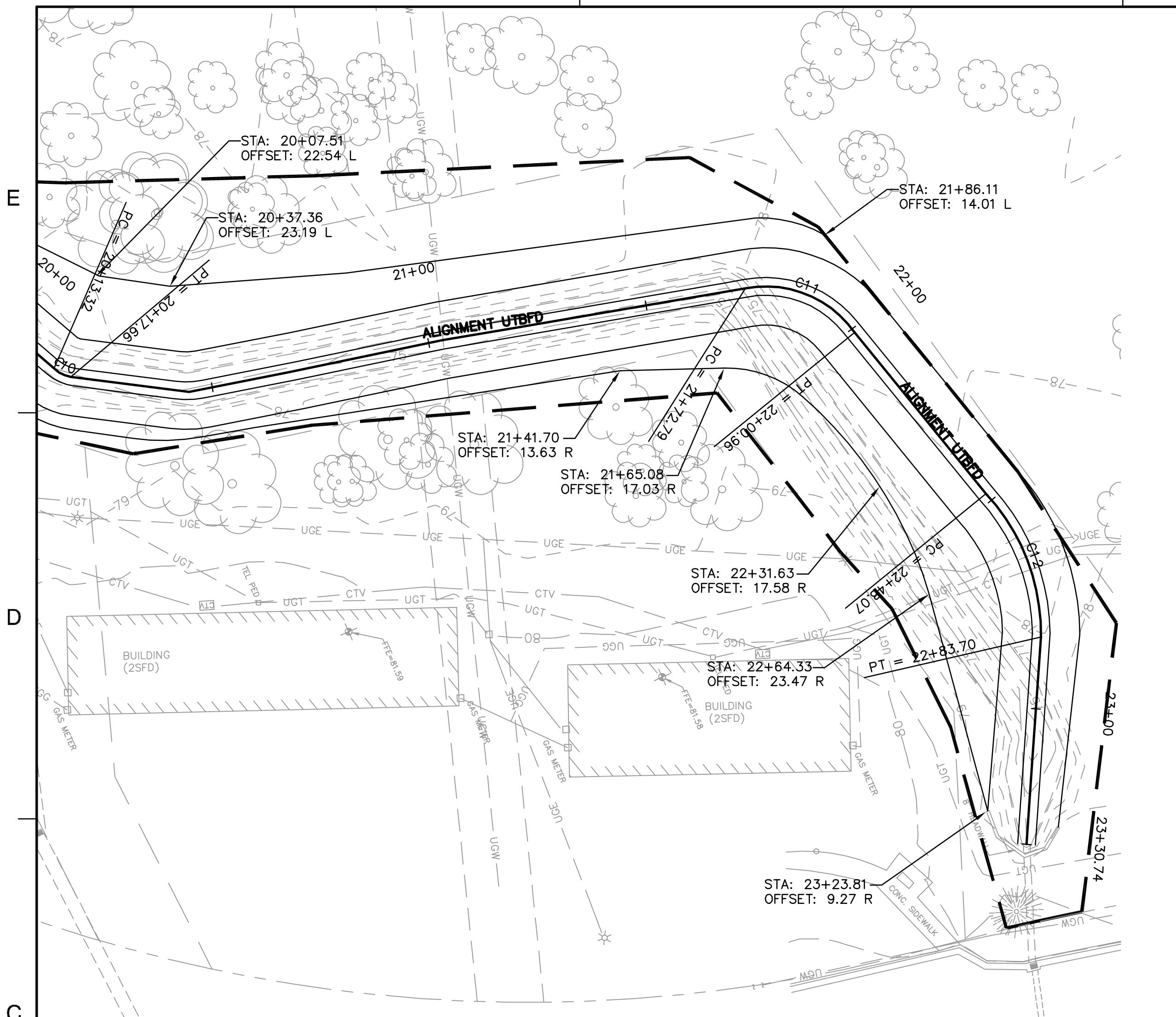
GOLDSBORO HOUSING
AUTHORITY STREAM
STREAM/BMP PROJECT
NC ECOSYSTEM PROGRAM
GOLDSBORO
NORTH CAROLINA

ORIGINAL CONSTRUCTION
DRAWINGS SEALED BY
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028832, ON MAY 11, 2007

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MICKEY B. HENSON ENTERPRISE DOING BUSINESS
AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

04-27-09
ENGINEER DATE



ALIGNMENT UTBF'D CURVE DATA

C10	P.C. STATION	20+13.33	N 599259.82	E 2297158.21
	P.T. STATION	20+17.67	N 599262.54	E 2297161.50
	P.I. STATION	20+15.50	N 599260.90	E 2297160.08
	DELTA ANGLE	38°2'56"		
	TANGENT	2.25		
	LENGTH	4.34		
	RADIUS	6.48		
	CHORD	4.26		
	CHORD DIRECTION	N50°25'15"E		

ALIGNMENT UTBF'D CURVE DATA

C11	P.C. STATION	21+72.79	N 599410.21	E 2297205.32
	P.T. STATION	22+00.97	N 599428.73	E 2297224.49
	P.I. STATION	21+86.88	N 599422.29	E 2297212.18
	DELTA ANGLE	65°34'31"		
	TANGENT	15.86		
	LENGTH	28.17		
	RADIUS	24.62		
	CHORD	26.66		
	CHORD DIRECTION	S45°59'04"W		

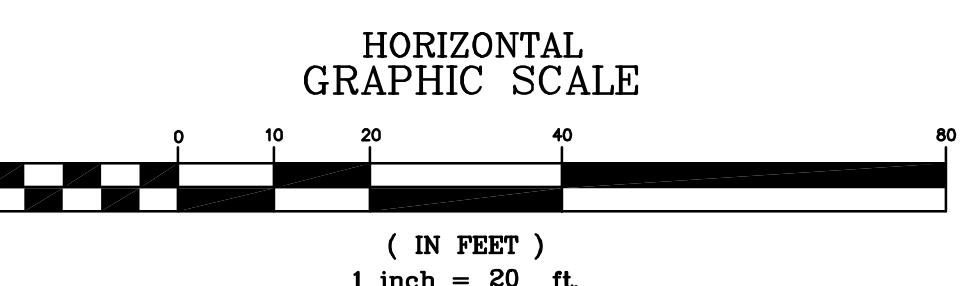
ALIGNMENT UTBF'D CURVE DATA

C12	P.C. STATION	22+48.08	N 599441.06	E 2297269.96
	P.T. STATION	22+83.71	N 599439.21	E 2297304.68
	P.I. STATION	22+65.89	N 599443.49	E 2297287.50
	DELTA ANGLE	43°44'38"		
	TANGENT	18.73		
	LENGTH	35.63		
	RADIUS	46.67		
	CHORD	34.77		
	CHORD DIRECTION	N86°56'16"W		

ALIGNMENT UT CURVE DATA

C13	P.C. STATION	3+35.36	N 598265.66	E 2296129.03
	P.T. STATION	3+82.34	N 598310.79	E 2296121.33
	P.I. STATION	3+58.85	N 598288.99	E 2296129.66
	DELTA ANGLE	44°51'47"		
	TANGENT	24.77		
	LENGTH	46.98		
	RADIUS	60.00		
	CHORD	45.79		
	CHORD DIRECTION	N09°40'54"W		

RECORD
DOCUMENT



C-24

GOLDSBORO HOUSING AUTHORITY STREAM ENHANCEMENT PROGRAM
GOLDSBORO
NORTH CAROLINA

SEAL
ORIGINAL CONSTRUCTION DRAWINGS SEALED BY
SHEILA S. REEVES
028832, ON MAY 11, 2007

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MICKEY B. HENSON ENTERPRISE DOING BUSINESS AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

04-27-09
ENGINEER DATE



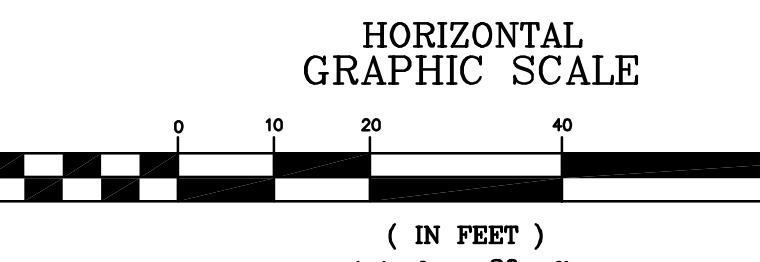
No.	DATE
BY	Description

REVISIONS

DRAWN BY ACH
DESIGNED BY SSR
CHECKED BY MH
DATE 1-29-07

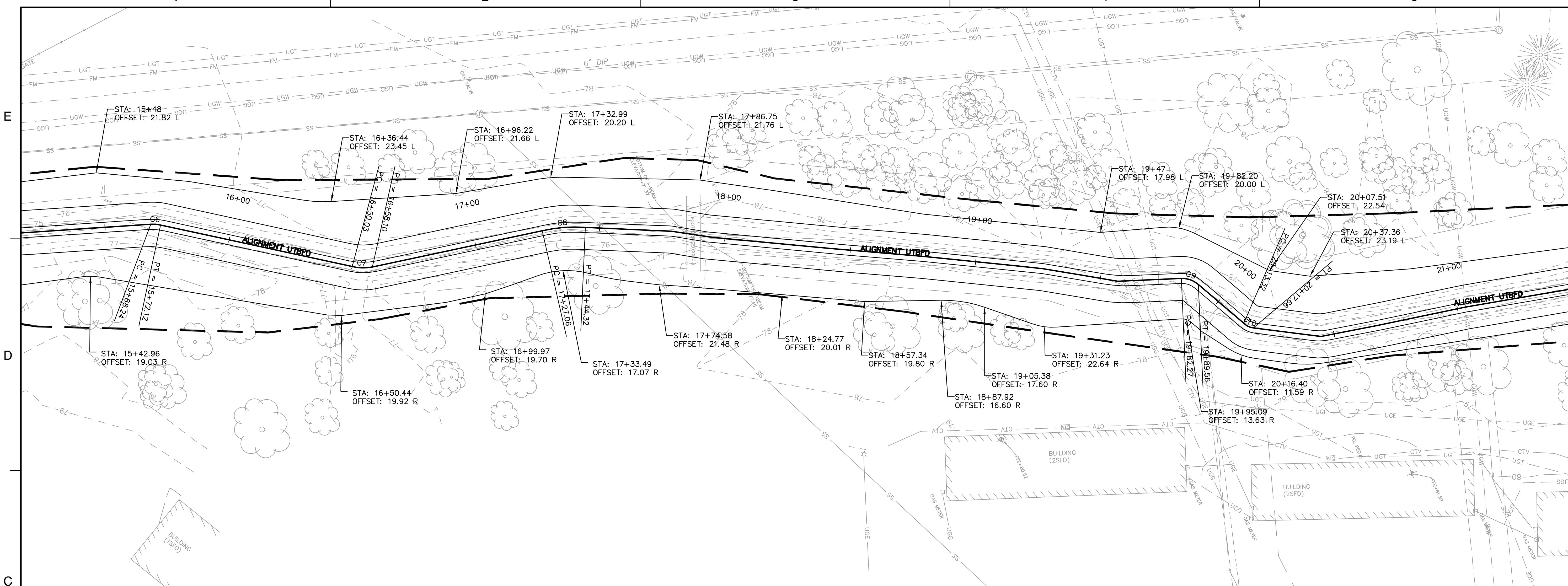
TITLE
ALIGNMENT GEOMETRY DATA

RECORD DOCUMENT



PROJECT NO. 73142900

C-23



ALIGNMENT UTBD CURVE DATA

C6
P.C. STATION 15.68.24 N 598879.23 E 2296945.75
P.T. STATION 15.72.12 N 598882.63 E 2296947.60
P.I. STATION 15+70.18 N 598880.99 E 2296946.56
DELTA ANGLE 15°2'40"
TANGENT 1.95
LENGTH 3.88
RADIUS 14.46
CHORD 3.87
CHORD DIRECTION S28°26'30"W

ALIGNMENT UTBD CURVE DATA

C7
P.C. STATION 16+50.04 N 598945.52 E 2296993.52
P.T. STATION 16+58.11 N 598952.73 E 2296997.05
P.I. STATION 16+54.08 N 598948.91 E 2296995.76
DELTA ANGLE 26°5'21"
TANGENT 4.11
LENGTH 8.07
RADIUS 17.20
CHORD 7.99
CHORD DIRECTION N25°23'40"E

ALIGNMENT UTBD CURVE DATA

C8
P.C. STATION 17+27.07 N 599020.19 E 2297011.33
P.T. STATION 17+44.33 N 599036.40 E 2297017.08
P.I. STATION 17+35.70 N 599028.51 E 2297013.61
DELTA ANGLE 16°4'6"24"
TANGENT 8.69
LENGTH 17.26
RADIUS 58.97
CHORD 17.20
CHORD DIRECTION S19°30'30"W

ALIGNMENT UTBD CURVE DATA

C9
P.C. STATION 19+82.28 N 599244.39 E 2297131.88
P.T. STATION 19+89.56 N 599249.56 E 2297136.77
P.I. STATION 19+85.92 N 599247.43 E 2297133.84
DELTA ANGLE 42°05'22"
TANGENT 3.82
LENGTH 7.29
RADIUS 9.92
CHORD 7.12
CHORD DIRECTION S43°23'05"W

B

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SCO PROJECT NUMBER:
020588001

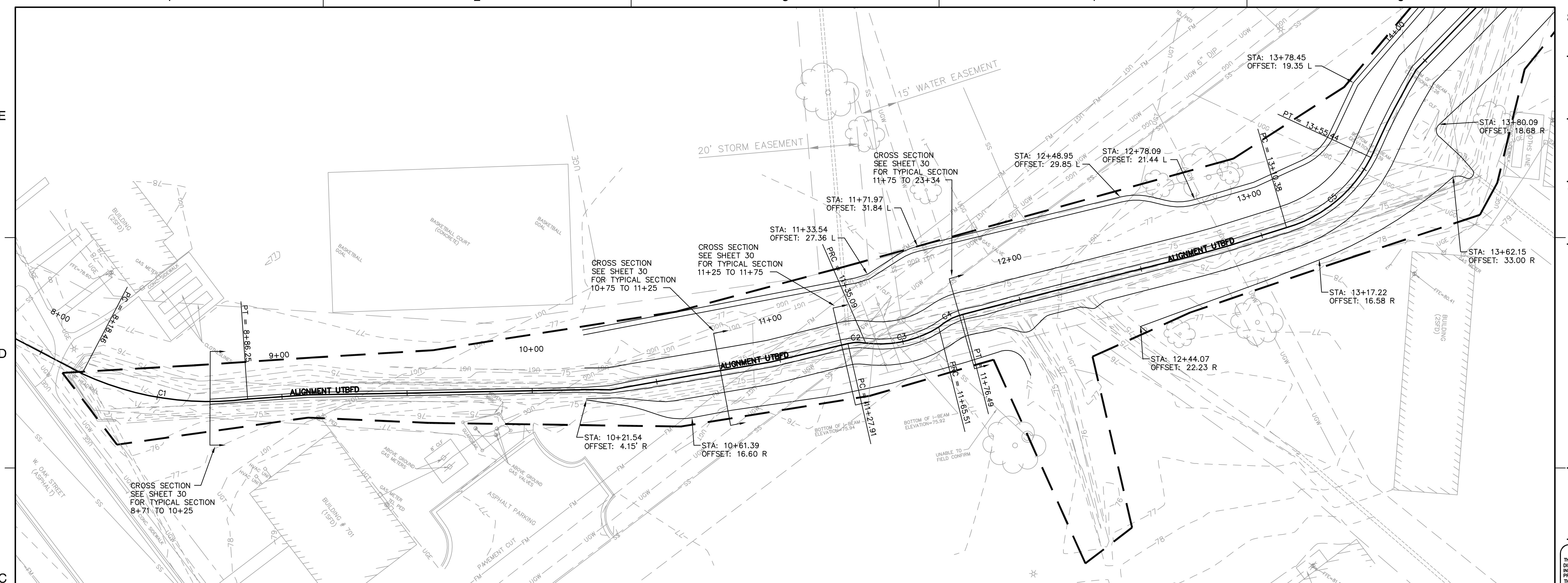
**GOLDSBORO HOUSING AUTHORITY STREAM
STREAM/BMP PROJECT
NC ECOSYSTEM PROGRAM**
GOLDSBORO
NORTH CAROLINA

SEAL
ORIGINAL CONSTRUCTION
DRAWINGS SEALED BY
SHEILA S. REEVES
028832, ON MAY 11, 2007

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MICKEY B. HENSON ENTERPRISE DOING BUSINESS
AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

04-27-09
ENGINEER DATE



ALIGNMENT UTBFD CURVE DATA

C1	P.C. STATION	8+18.46	N 598314.42	E 2296525.06
P.T. STATION	8+86.25	N 598342.98	E 2296585.58	
P.I. STATION	8+52.35	N 598324.43	E 2296557.34	
DELTA ANGLE	32°07'42"			
TANGENT	34.81			
LENGTH	67.79			
RADIUS	120.89			
CHORD	66.90			
CHORD DIRECTION	N64°4'37"E			

ALIGNMENT UTBFD CURVE DATA

C2	P.C. STATION	11+27.91	N 598492.42	E 2296771.97
P.R.C. STATION	11+35.09	N 598499.58	E 2296777.76	
P.I. STATION	11+31.50	N 598497.79	E 2296774.66	
DELTA ANGLE	22°29'52"			
TANGENT	3.63			
LENGTH	7.18			
RADIUS	18.27			
CHORD	7.13			
CHORD DIRECTION	S54°20'43"W			

ALIGNMENT UTBFD CURVE DATA

C3	P.R.C. STATION	11+35.09	N 598499.58	E 2296777.76
P.R.C. STATION	11+65.51	N 598521.16	E 2296798.37	
P.I. STATION	11+71.00	N 598526.26	E 2296800.35	
DELTA ANGLE	27°04'09"			
TANGENT	5.60			
LENGTH	10.98			
RADIUS	23.25			
CHORD	10.88			
CHORD DIRECTION	S28°01'06"E			

ALIGNMENT UTBFD CURVE DATA

C4	P.R.C. STATION	11+65.51	N 598521.16	E 2296798.37
P.T. STATION	11+76.49	N 598530.76	E 2296803.48	
P.I. STATION	11+71.00	N 598526.26	E 2296800.35	
DELTA ANGLE	27°04'09"			
TANGENT	5.60			
LENGTH	10.98			
RADIUS	23.25			
CHORD	10.88			
CHORD DIRECTION	S28°01'06"E			

ALIGNMENT UTBFD CURVE DATA

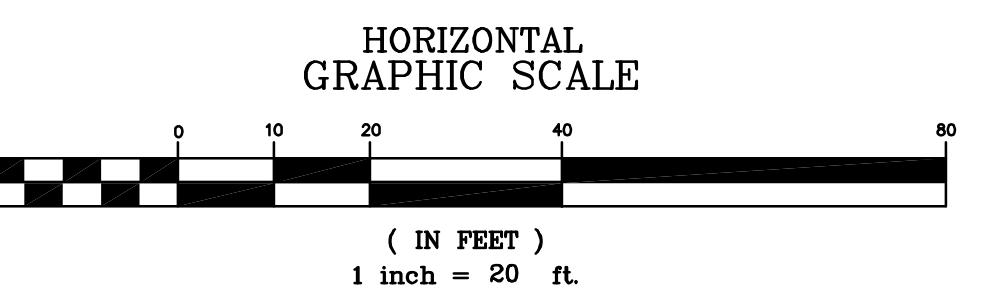
C5	P.C. STATION	13+10.39	N 598631.76	E 2296891.32
P.T. STATION	13+55.44	N 598673.81	E 2296903.62	
P.I. STATION	13+32.92	N 598651.51	E 2296901.84	
DELTA ANGLE	46°56'09"			
TANGENT	23.88			
LENGTH	45.05			
RADIUS	55.00			
CHORD	43.80			
CHORD DIRECTION	N16°18'10"E			

No.	Date	By	Description
REVISIONS			
DRAWN BY	ACH		
DESIGNED BY	SSR		
CHECKED BY	MH		
DATE	1-29-07		

**ALIGNMENT
GEOMETRY
DATA**

**RECORD
DOCUMENT**

PROJECT NO. 73142900



C-22

SCO PROJECT NUMBER:
020588001

**GOLDSBORO HOUSING
AUTHORITY STREAM
STREAM/BMP PROJECT
NC ECOSYSTEM PROGRAM**
GOLDSBORO
NORTH CAROLINA

MATCHLINE SEE SHEET C-19

MENT

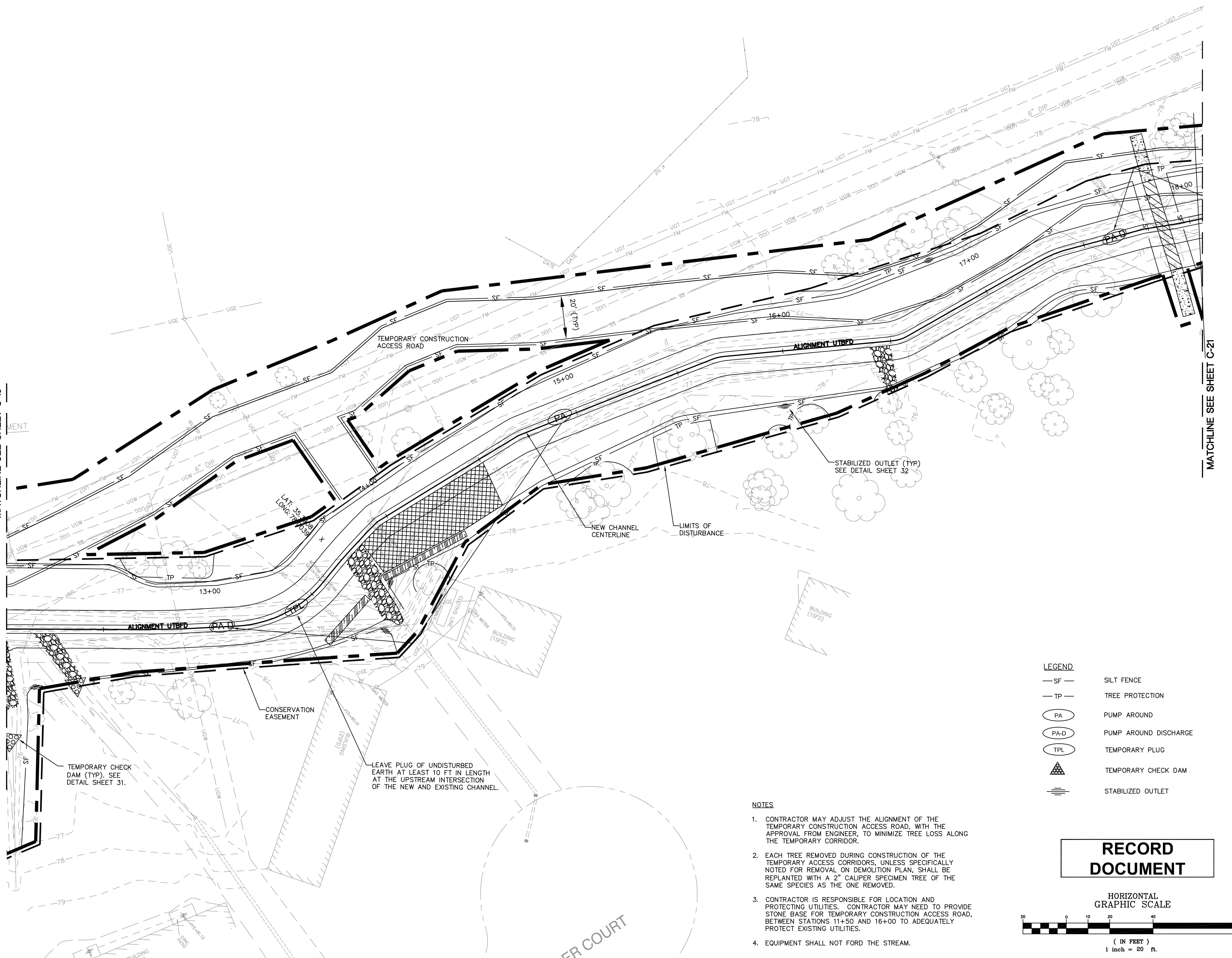
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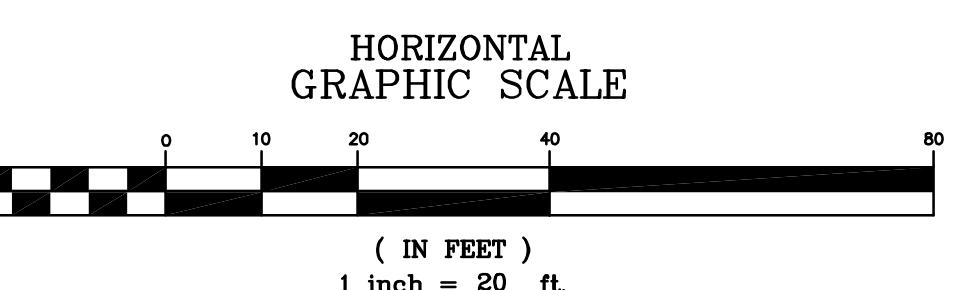


LEGEND			
— SF —	SILT FENCE	— TP —	TREE PROTECTION
○ PA ○	PUMP AROUND	○ PA-D ○	PUMP AROUND DISCHARGE
○ PA-D ○	PUMP AROUND DISCHARGE	○ TPL ○	TEMPORARY PLUG
△	TEMPORARY CHECK DAM		
—	STABILIZED OUTLET		

NOTES

- CONTRACTOR MAY ADJUST THE ALIGNMENT OF THE TEMPORARY CONSTRUCTION ACCESS ROAD, WITH THE APPROVAL FROM ENGINEER, TO MINIMIZE TREE LOSS ALONG THE TEMPORARY CORRIDOR.
- EACH TREE REMOVED DURING CONSTRUCTION OF THE TEMPORARY ACCESS CORRIDORS, UNLESS SPECIFICALLY NOTED FOR REMOVAL ON DEMOLITION PLAN, SHALL BE REPLANTED WITH A 2" CALIPER SPECIMEN TREE OF THE SAME SPECIES AS THE ONE REMOVED.
- CONTRACTOR IS RESPONSIBLE FOR LOCATION AND PROTECTING UTILITIES. CONTRACTOR MAY NEED TO PROVIDE STONE BASE FOR TEMPORARY CONSTRUCTION ACCESS ROAD, BETWEEN STATIONS 11+50 AND 16+00 TO ADEQUATELY PROTECT EXISTING UTILITIES.
- EQUIPMENT SHALL NOT FORD THE STREAM.

**RECORD
DOCUMENT**



C-20

SCO PROJECT NUMBER:

020588001

**GOLDSBORO HOUSING AUTHORITY STREAM
STREAM/BMP PROJECT
NC ECOSYSTEM ENHANCEMENT**

GOLDSBORO
NORTH CAROLINA

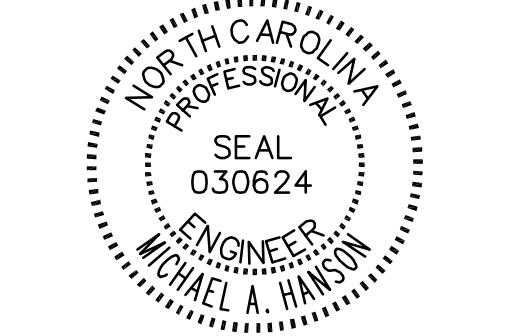
SEAL

ORIGINAL CONSTRUCTION
DRAWINGS SEALED BY
SHEILA S. REEVES
028832, ON MAY 11, 2007

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MICKEY B. HENSON ENTERPRISE DOING BUSINESS
AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

04-27-09
DATE
ENGINEER



No.	DATE	BY	Description
REVISIONS			

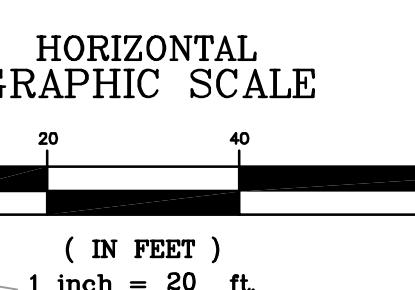
DRAWN BY ACH
DESIGNED BY SSR
CHECKED BY MH
DATE 1-29-07

TITLE
**EROSION
CONTROL
PLAN**

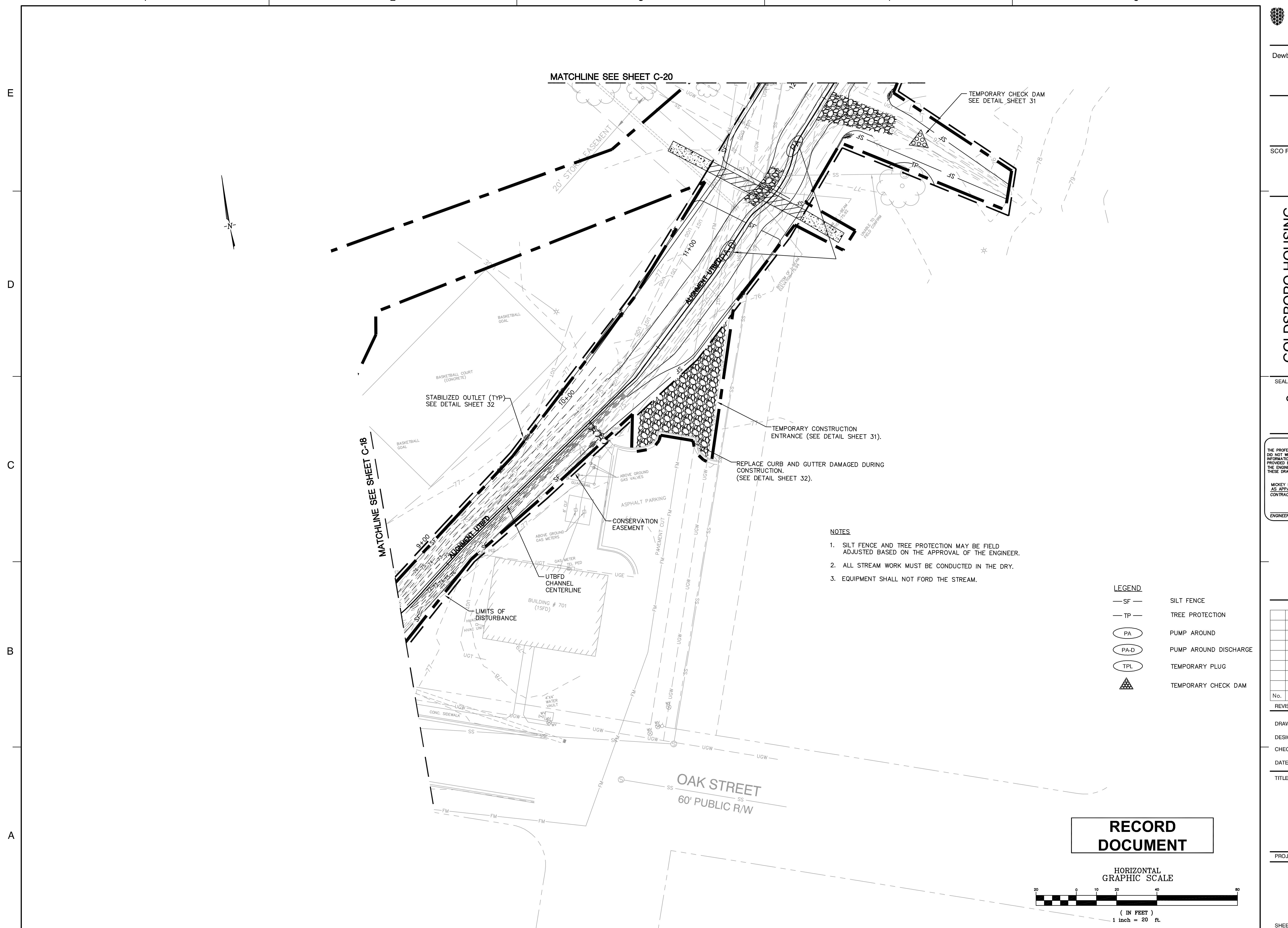
PROJECT NO. 73142900

C-19

**RECORD
DOCUMENT**



SHEET NO. 19 OF 37



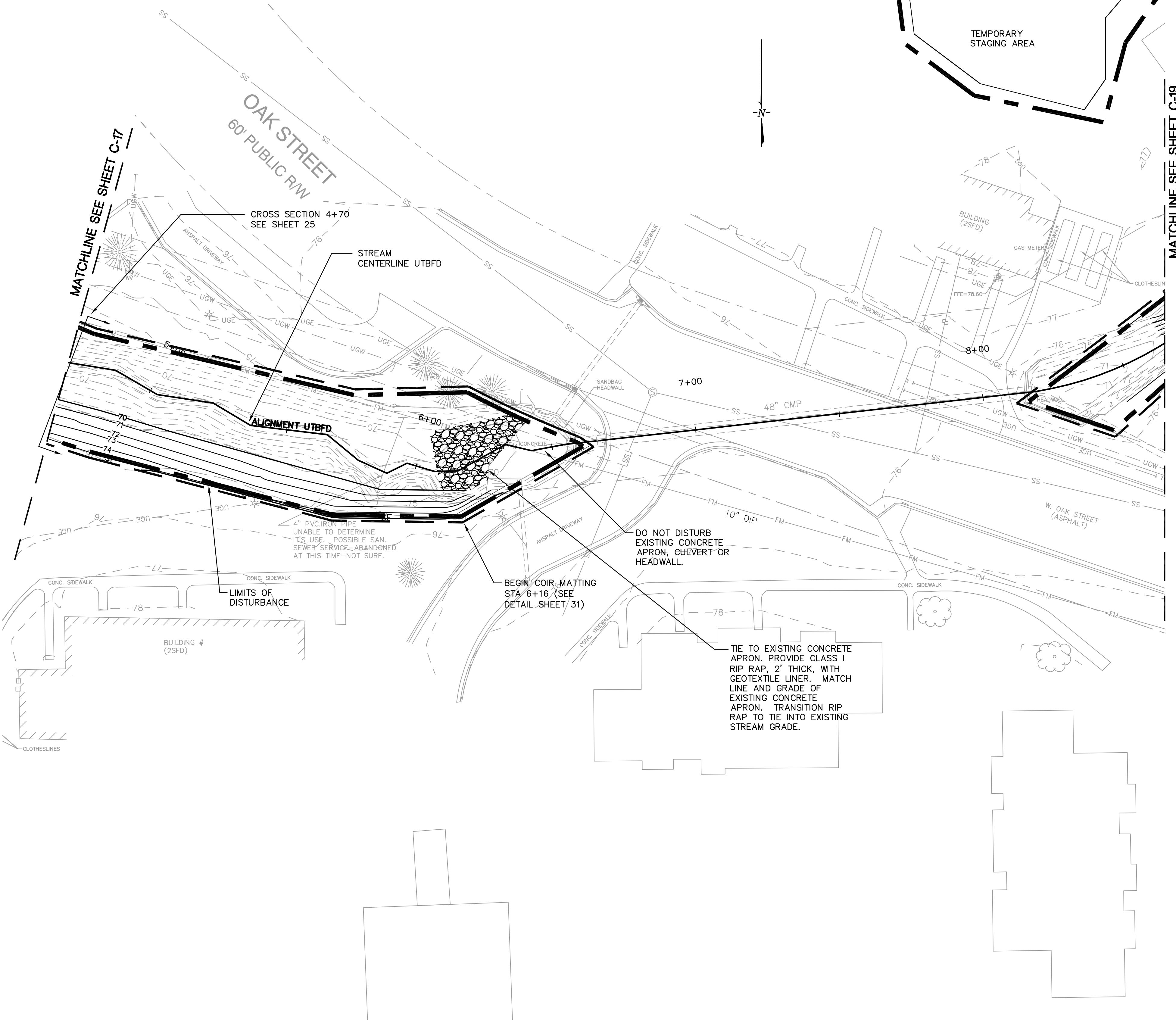
No.	DATE	BY	Description
REVISIONS			

DRAWN BY **ACH**
DESIGNED BY **SSR**
CHECKED BY **MH**
DATE **1-29-07**

TITLE
**EROSION
CONTROL
PLAN**

PROJECT NO. **73142900**

C-18



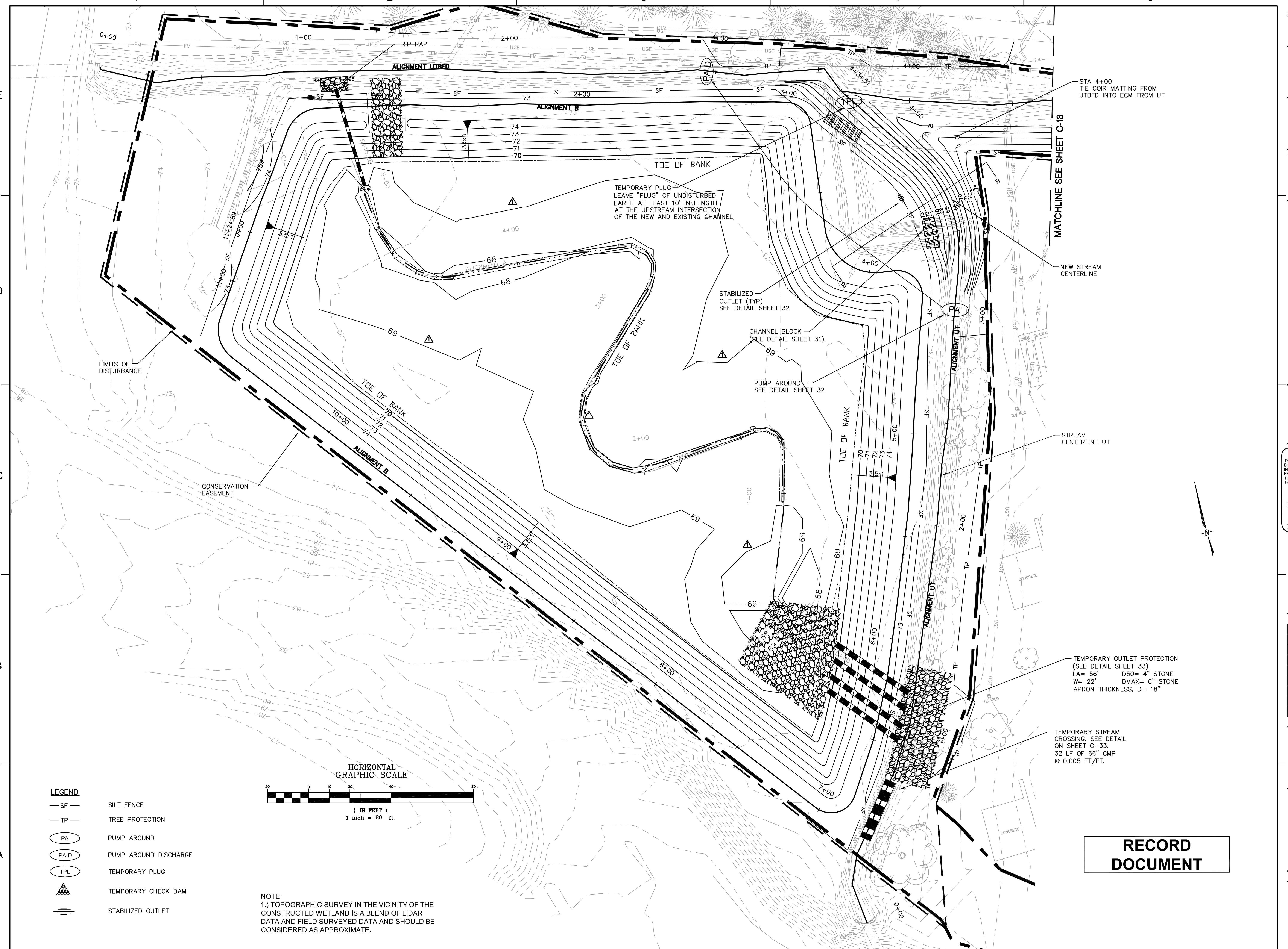
**RECORD
DOCUMENT**

LEGEND

- SF— SILT FENCE
- TP— TREE PROTECTION
- (PA) PUMP AROUND
- (PAD) PUMP AROUND DISCHARGE
- (TPL) TEMPORARY PLUG
- (TCD) TEMPORARY CHECK DAM
- (Stabilized Outlet)

**HORIZONTAL
GRAPHIC SCALE**
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

RECORD
DOCUMENT



SCO PROJECT NUMBER:
020588001

**GOLDSBORO HOUSING
AUTHORITY STREAM
STREAM/BMP PROJECT
NC ECOSYSTEM
PROGRAM**
GOLDSBORO
NORTH CAROLINA

SEAL
ORIGINAL CONSTRUCTION
DRAWINGS SEALED BY
SHEILA S. REEVES
028832, ON MAY 11, 2007

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MICKEY B. HENSON ENTERPRISE DOING BUSINESS
AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

04-27-09
ENGINEER DATE



No.	DATE	BY	Description
REVISIONS			

DRAWN BY ACH
DESIGNED BY SSR
CHECKED BY MH
DATE 1-29-07

TITLE
**TEMPORARY
CONSTRUCTION
ACCESS
PLAN**
PROJECT NO. 73142900

C-16
SHEET NO. 16 OF 37

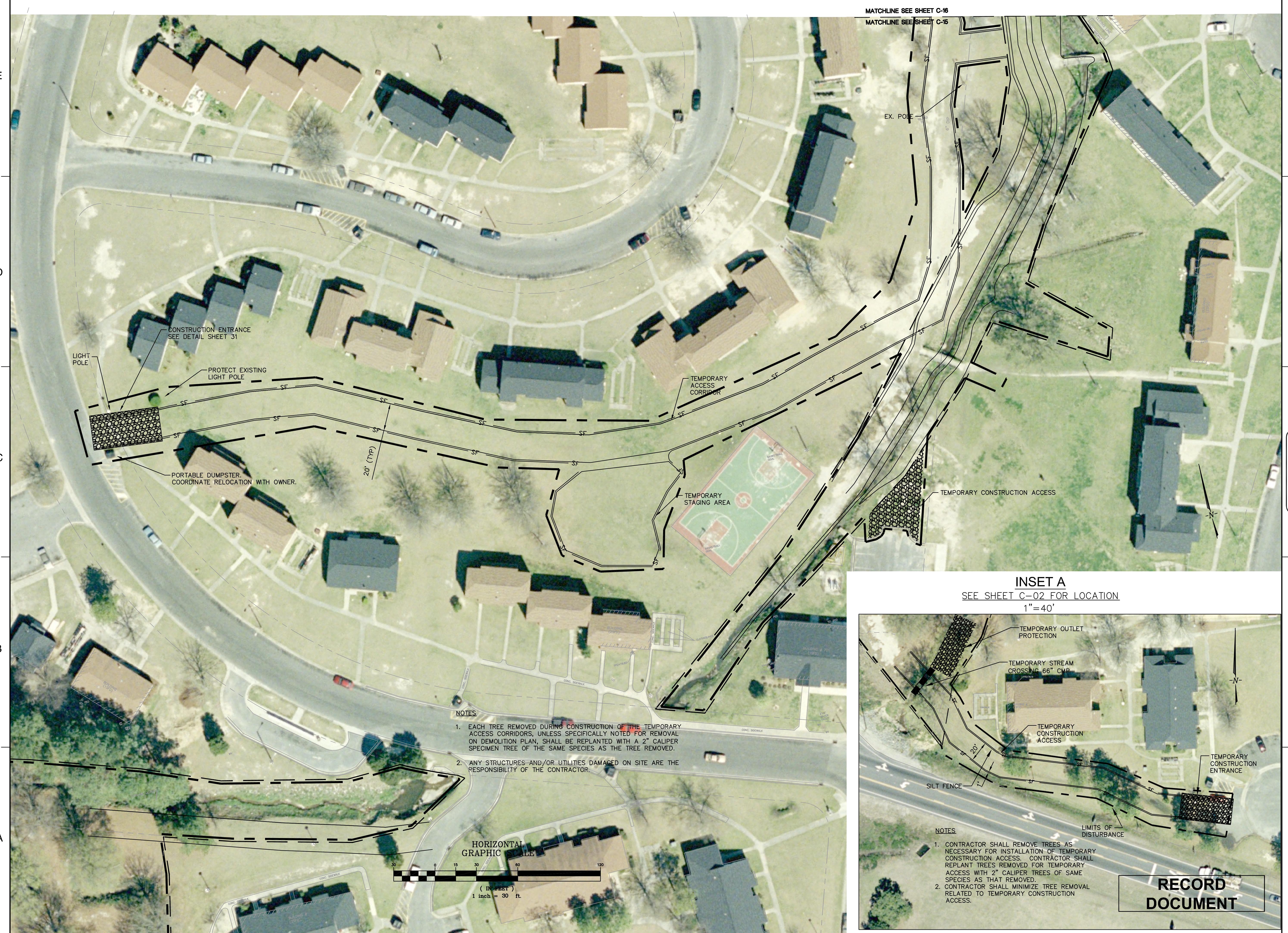


1	8.16.07	SSR CALL OUT REVISION
No.	DATE	BY Description

REVISIONS		
DRAWN BY	ACH	
DESIGNED BY	SSR	
CHECKED BY	MH	
DATE	1-29-07	

TITLE		
TEMPORARY CONSTRUCTION ACCESS PLAN		
PROJECT NO.	73142900	

C-15



SCO PROJECT NUMBER:
020588001

**GOLDSBORO HOUSING AUTHORITY STREAM
STREAM/BMP PROJECT
NC ECOSYSTEM ENHANCEMENT
PROGRAM**

GOLDSBORO
NORTH CAROLINA

ORIGINAL CONSTRUCTION
DRAWINGS SEALED BY
SHEILA S. REEVES
028832, ON MAY 11, 2007

RECORD DRAWING
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MICKEY B. HENSON ENTERPRISE DOING BUSINESS
AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

04-27-09
DATE
ENGINEER

030624
SEAL
MICHAEL A. HANSEN
ENGINEER
NORTH CAROLINA
PROFESSIONAL
ENGINEERING
LICENSURE

5/06/09 ACH ASBUILT
No. DATE BY Description
REVISIONS

DRAWN BY RSM
DESIGNED BY SSR
CHECKED BY MH
DATE 1-29-07

TITLE

**SITE
PLAN**

PROJECT NO. 73142900

C-13

T CIRCLE
BLIC R/W

MATCHLINE SEE SHEET C-12

E

D

C

B

A

CROSS SECTION

DEFLECTION PT
STA: 14+71.19

DEFLECTION PT
STA: 13+95.09

14F-35-35-05-03

13+55.44

<p

SCO PROJECT NUMBER:

020588001

**GOLDSBORO HOUSING AUTHORITY STREAM
STREAM/BMP PROJECT
NC ECOSYSTEM PROGRAM**

GOLDSBORO

NORTH CAROLINA

SEAL
ORIGINAL CONSTRUCTION
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SHEILA S. REEVES
028832, ON MAY 11, 2007

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AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

04-27-09
DATE
ENGINEER



REVISIONS			
DRAWN BY	RSM		
DESIGNED BY	SSR		
CHECKED BY	MH		
DATE	1-29-07		
TITLE	SITE PLAN		

5/06/09 ACH ASBUILT
No. DATE BY Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

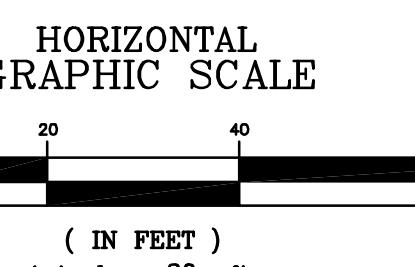
TITLE

PROJECT NO. 73142900

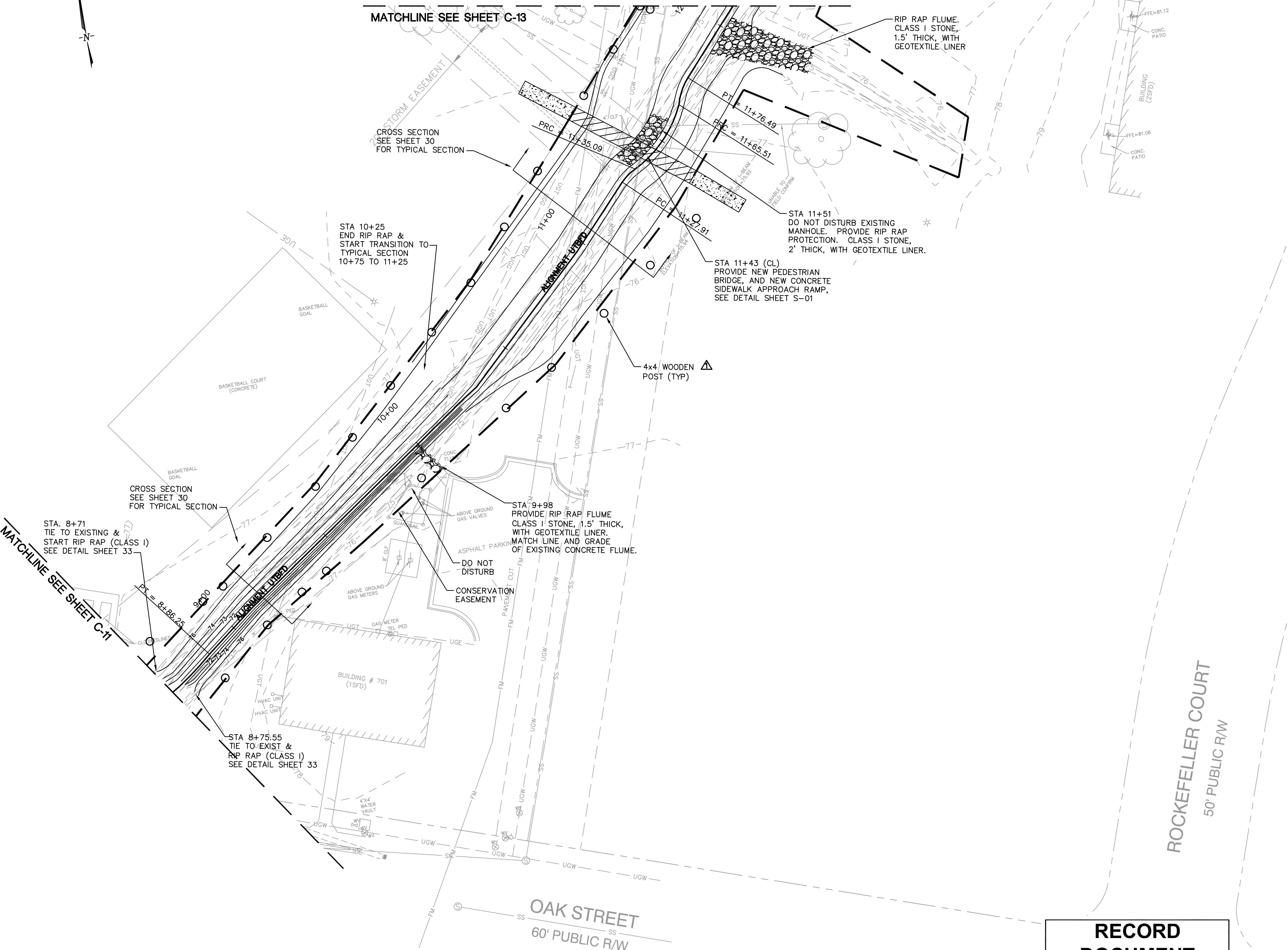
SHEET NO. 12 OF 37

C-12

**RECORD
DOCUMENT**



HORIZONTAL
GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.



SCO PROJECT NUMBER:
020588001

GOLDSBORO HOUSING AUTHORITY STREAM STREAM/BMP PROJECT NC ECOSYSTEM ENHANCEMENT PROGRAM

GOLDSBORO

SEAL

**ORIGINAL CONSTRUCTION
DRAWINGS SEALED BY
SHEILA S. REEVES
028832, ON MAY 11, 2007**

RECORD DRAWING

A circular seal for a professional engineer. The outer ring contains the text "NORTH CAROLINA" at the top and "PROFESSIONAL" at the bottom, both in an arc. The inner circle contains the word "SEAL" at the top and the number "030624" in the center. At the bottom, there is another arc containing the words "ENGINEER" on the left and "MICHAEL A. HANSON" on the right.

	5/06/09	ACH	ASBUILT
No.	DATE	BY	Description

DRAWN BY	RSM
DESIGNED BY	SSR
CHECKED BY	MH
DATE	1-29-07

TITLE

SITE PLAN

PROJECT NO. 73142900

RECORD DOCUMENT

A horizontal graphic scale diagram. At the top center, the words "HORIZONTAL GRAPHIC SCALE" are written in a bold, sans-serif font. Below this, a horizontal line represents a scale. On the left side, there are tick marks labeled "20", "0", "10", "20", "40", and "80". The first "20" is at the far left, followed by a black square. The next "0" is at the center of the black square. The "10" is to its right, followed by a white square. The second "20" is to the right of the white square, followed by another black square. The "40" is to the right of the second black square, followed by a white square. The "80" is at the far right. Below the line, there are two rows of squares: a top row of black squares and a bottom row of white squares. A dashed diagonal line starts from the center of the first black square and extends towards the right. Below the line, the text "(IN FEET)" is centered, and below that, "1 inch = 20 ft." is also centered.

SCO PROJECT NUMBER:

020588001

**GOLDSBORO HOUSING AUTHORITY STREAM
STREAM/BMP PROJECT
NC ECOSYSTEM ENHANCEMENT
PROGRAM**

GOLDSBORO
NORTH CAROLINA

MATCHLINE SEE SHEET C-11

SEAL
ORIGINAL CONSTRUCTION
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028832, ON MAY 11, 2007

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MICKEY B. HENSON ENTERPRISE DOING BUSINESS
AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

04-27-09
DATE
ENGINEER



5/06/09	ACH	ASBUILT
No.	DATE	BY

REVISIONS

DRAWN BY ACH

DESIGNED BY SSR

CHECKED BY MH

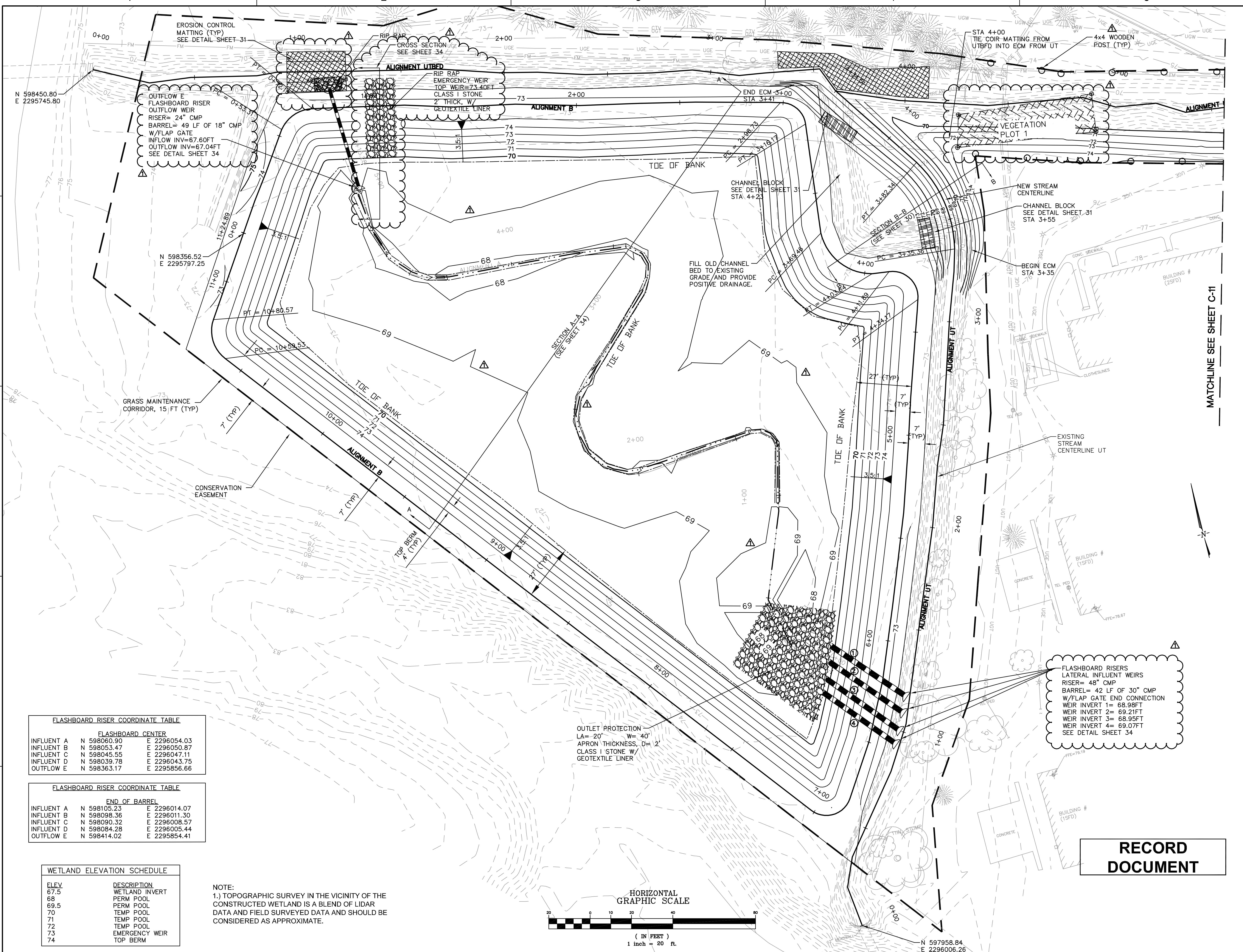
DATE 1-29-07

TITLE SITE PLAN

PROJECT NO. 73142900

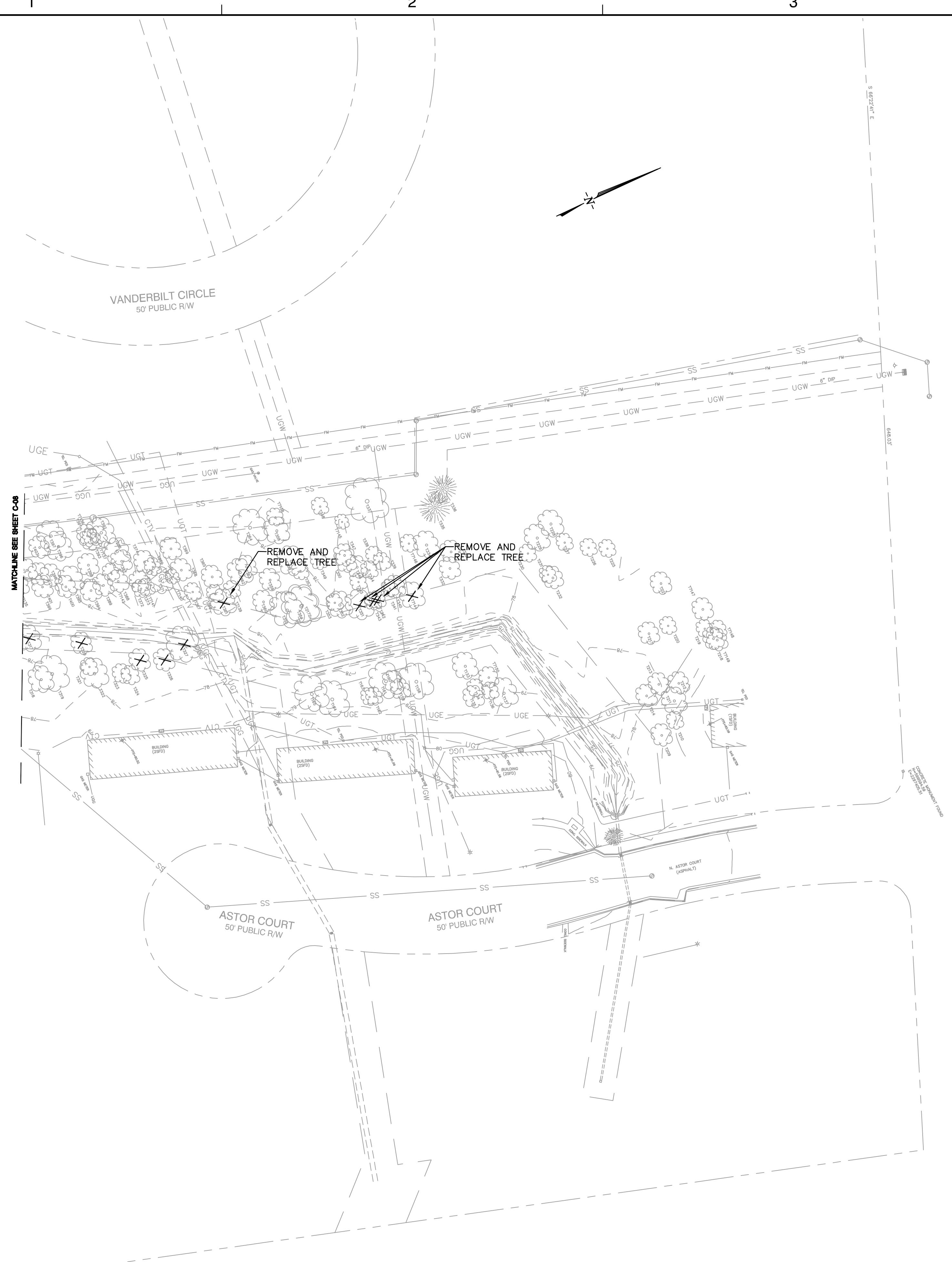
C-10

**RECORD
DOCUMENT**

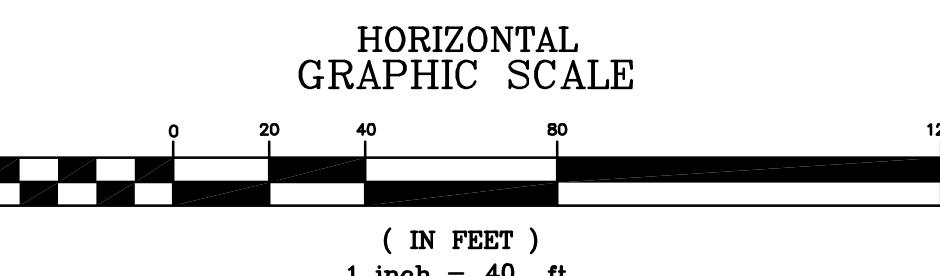


SCO PROJECT NUMBER:
020588001

GOLDSBORO HOUSING AUTHORITY STREAM NC ECOSYSTEM ENHANCEMENT PROGRAM
GOLDSBORO
NORTH CAROLINA



RECORD DOCUMENT



C-09

ORIGINAL CONSTRUCTION DRAWINGS SEALED BY
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028832, ON MAY 11, 2007

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MICKEY B. HENSON ENTERPRISE DOING BUSINESS AS APPALACHIAN ENVIRONMENTAL DBA CONTRACTOR

04-27-09
DATE
ENGINEER

NORTH CAROLINA
PROFESSIONAL
SEAL
030624
MICHAEL A. HANSEN
ENGINEER

No.	DATE	BY	Description
REVISIONS			
DRAWN BY	ACH		
DESIGNED BY	SSR		
CHECKED BY	MH		
DATE	1-29-07		
TITLE			
DEMOLITION PLAN			
PROJECT NO. 73142900			

SCO PROJECT NUMBER:

020588001

GOLDSBORO HOUSING AUTHORITY STREAM BMP PROJECT NC ECOSYSTEM PROGRAM

GOLDSBORO
NORTH CAROLINA

SEAL
ORIGINAL CONSTRUCTION DRAWINGS SEALED BY SHEILA S. REEVES 028832, ON MAY 11, 2007

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MICKEY B. HENSON ENTERPRISE DOING BUSINESS AS APPALACHIAN ENVIRONMENTAL DBA CONTRACTOR

04-27-09
ENGINEER DATE



No.	DATE	BY	Description
REVISIONS			

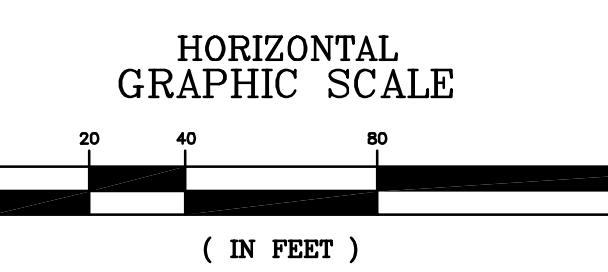
DRAWN BY ACH
DESIGNED BY SSR
CHECKED BY MH
DATE 1-29-07

TITLE
DEMOLITION PLAN

PROJECT NO. 73142900

C-08
SHEET NO. 8 OF 37

RECORD DOCUMENT



NOTE

ONLY THOSE TREES SPECIFICALLY NOTED TO BE REPLACED SHALL BE REPLACED BY CONTRACTOR. THE REPLACEMENT TREES SHALL BE PLANTED IN THE LOCATION OF THE TREE REMOVED AND BE OF THE SAME SPECIES AS REMOVED TREE WITH MINIMUM CALIPER OF 2" IN DIAMETER.

SCO PROJECT NUMBER:

020588001

**GOLDSBORO HOUSING AUTHORITY STREAM
STREAM/BMP PROJECT
NC ECOSYSTEM ENHANCEMENT
PROGRAM**

GOLDSBORO
NORTH CAROLINA

ORIGINAL CONSTRUCTION
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028832, ON MAY 11, 2007

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MICKEY B. HENSON ENTERPRISE DOING BUSINESS
AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

04-27-09
DATE
ENGINEER

NORTH CAROLINA
PROFESSIONAL
SEAL
030624
MICHAEL A. HANSEN
ENGINEER

No.	DATE	BY	Description
REVISIONS			
DRAWN BY	ACH		
DESIGNED BY	SSR		
CHECKED BY	MH		
DATE	1-29-07		

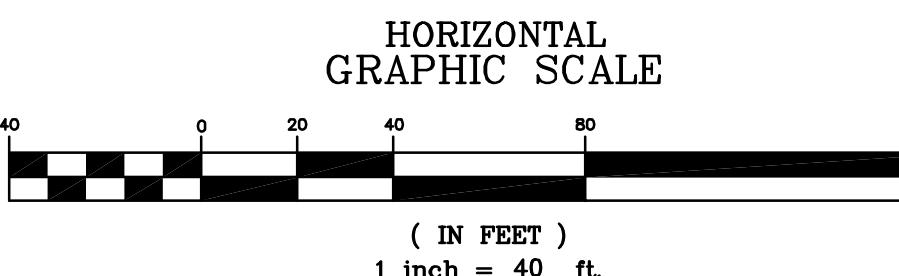
TITLE	
DEMOLITION PLAN	

ALABAMA AVENUE
60' PUBLIC R/W



**RECORD
DOCUMENT**

NOTE: NOT ALL TREES WITHIN THE CONSTRUCTED
WETLAND AREA ARE SPECIFICALLY SHOWN. THERE
MAY BE MORE TREES TO BE REMOVED THAN
SHOWN.



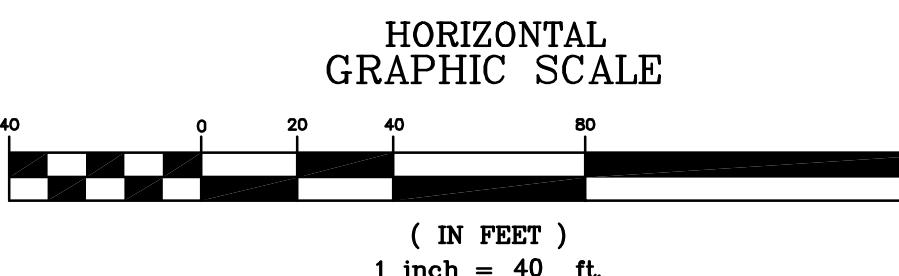
C-07

SHEET NO. 7 OF 37

TREE TABLE

T87 12" CEDAR	T346 15" GUM	T466 18" GUM	T0511 18" PINE
T133 18" GUM	T347 15" GUM	T467 18" GUM	T0512 20" PINE
T134 12" GUM	T348 12" GUM	T468 12" OAK	T0513 12" PINE
T135 15" GUM	T349 15" GUM	T469 15" GUM	T0514 15" PINE
T136 12" GUM	T350 15" GUM	T470 12" GUM	T0515 20" PINE
T137 20" TWIN GUM	T351 20" GUM	T471 24" GUM	T0516 12" OAK
T158 24" GUM	T352 18" GUM	T497 24" GUM	T0517 18" PINE
T159 14" GUM	T353 12" GUM	T498 12" OAK	T0518 20" PINE
T160 14" GUM	T354 15" GUM	T499 15" OAK	T0519 10" PINE
T161 24" GUM	T355 24" GUM	T500 18" HACKBERRY	T0520 15" PINE
T162 12" GUM	T356 20" GUM	T501 22" HACKBERRY	T0521 15" PINE
T163 12" GUM	T357 12" GUM	T502 24" GUM	T0522 12" PINE
T164 25" POPLAR	T358 18" GUM	T503 24" HACKBERRY	T0523 12" PINE
T165 14" GUM	T359 15" GUM	T504 15" GUM	T0524 15" PINE
T209 15" GUM	T360 15" GUM	T505 15" GUM	T0525 12" PINE
T210 12" GUM	T361 18" GUM	T506 18" TWIN GUM	T0526 20" PINE
T211 18" GUM	T362 18" GUM	T507 12" GUM	T0527 15" PINE
T212 15" GUM	T363 15" GUM	T508 24" HACKBERRY	T0528 15" PINE
T213 15" GUM	T364 15" GUM	T509 14" HACKBERRY	T0529 10" PINE
T214 15" GUM	T365 15" GUM	T510 15" GUM	T0530 10" PINE
T217 15" GUM	T366 12" GUM	T511 15" GUM	T0531 15" PINE
T218 15" GUM	T367 12" GUM	T512 24" GUM	T0532 15" PINE
T219 15" GUM	T368 15" GUM	T513 15" HACKBERRY	T0533 18" PINE
T220 12" GUM	T369 14" GUM	T514 15" HACKBERRY	T0534 15" PINE
T221 15" GUM	T370 12" GUM	T515 12" HACKBERRY	T0535 24" PINE
T225 12" GUM	T371 18" GUM	T516 15" HACKBERRY	T0536 24" PINE
T226 12" GUM	T372 12" GUM	T517 15" HACKBERRY	T0537 22" PINE
T227 15" GUM	T373 15" GUM	T518 15" GUM	T0538 10" PINE
T228 18" GUM	T374 15" GUM	T519 15" GUM	T0539 15" PINE
T229 18" GUM	T376 18" GUM	T520 15" HACKBERRY	T0540 12" PINE
T230 15" GUM	T377 15" GUM	T521 28" GUM	T0541 18" PINE
T231 12" GUM	T378 15" GUM	T522 12" CHERRY	T0542 18" PINE
T232 15" GUM	T379 15" GUM	T523 24" POPLAR	T0543 15" PINE
T233 15" GUM	T380 15" GUM	T524 15" GUM	T0544 15" PINE
T317 18" TWIN GUM	T391 15" GUM	T525 15" GUM	T0545 18" PINE
T318 18" OAK	T392 20" GUM	T526 12" GUM	T0546 15" PINE
T319 24" GUM	T393 15" GUM	T527 12" GUM	T0547 15" PINE
T320 15" GUM	T394 15" GUM	T528 12" GUM	T0548 15" PINE
T321 12" GUM	T395 15" GUM	T529 10" HACKBERRY	T0549 15" PINE
T322 20" GUM	T396 20" GUM	T589 12" HACKBERRY	T0550 12" PINE
T323 13" GUM	T397 20" GUM	T590 12" TRIPLE GUM	T0551 18" PINE
T324 13" GUM	T398 15" GUM	T591 12" TWIN GUM	T0552 22" PINE
T325 15" GUM	T399 15" GUM	T592 15" CHERRY	T0553 15" PINE
T327 24" GUM	T400 15" GUM	T595 15" TWIN GUM	T0554 15" PINE
T328 15" GUM	T401 15" GUM	T596 12" CHERRY	T0555 15" PINE
T329 15" GUM	T402 15" GUM	T597 24" OAK	T0556 15" PINE
T333 15" GUM	T403 15" GUM	T598 10" GUM	T0557 12" PINE
T335 20" PINE	T405 15" GUM	T599 10" GUM	T0558 10" PINE
T336 18" GUM	T406 12" GUM	T600 10" BIRCH	T0559 10" PINE
T337 12" GUM	T407 15" GUM	T745 24" OAK	T0560 10" PINE
T338 12" GUM	T408 20" GUM	T775 15" OAK	T0561 10" PINE
T339 12" GUM	T409 15" GUM	T776 12" BIRCH	T0562 12" PINE
T340 15" GUM	T410 15" GUM	T832 15" GUM	T0563 15" PINE
T341 12" GUM	T411 18" GUM	T841 24" OAK	T0564 10" PINE
T342 12" GUM	T412 12" GUM	T841 12" BIRCH	T0565 10" PINE
T343 12" GUM	T413 15" GUM	T841 12" CEDAR	T0566 12" PINE
T344 12" GUM	T414 15" GUM	T841 12" CEDAR	T0567 12" PINE
T345 12" GUM	T465 20" TWIN GUM	T841 12" CEDAR	T0568 12" PINE

NOTE: NOT ALL TREES WITHIN THE CONSTRUCTED
WETLAND AREA ARE SPECIFICALLY SHOWN. THERE
MAY BE MORE TREES TO BE REMOVED THAN
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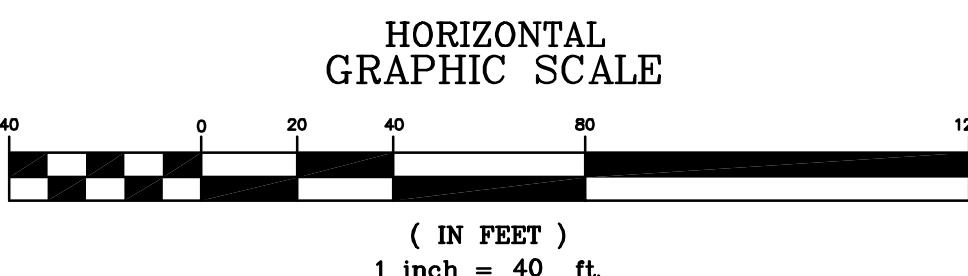
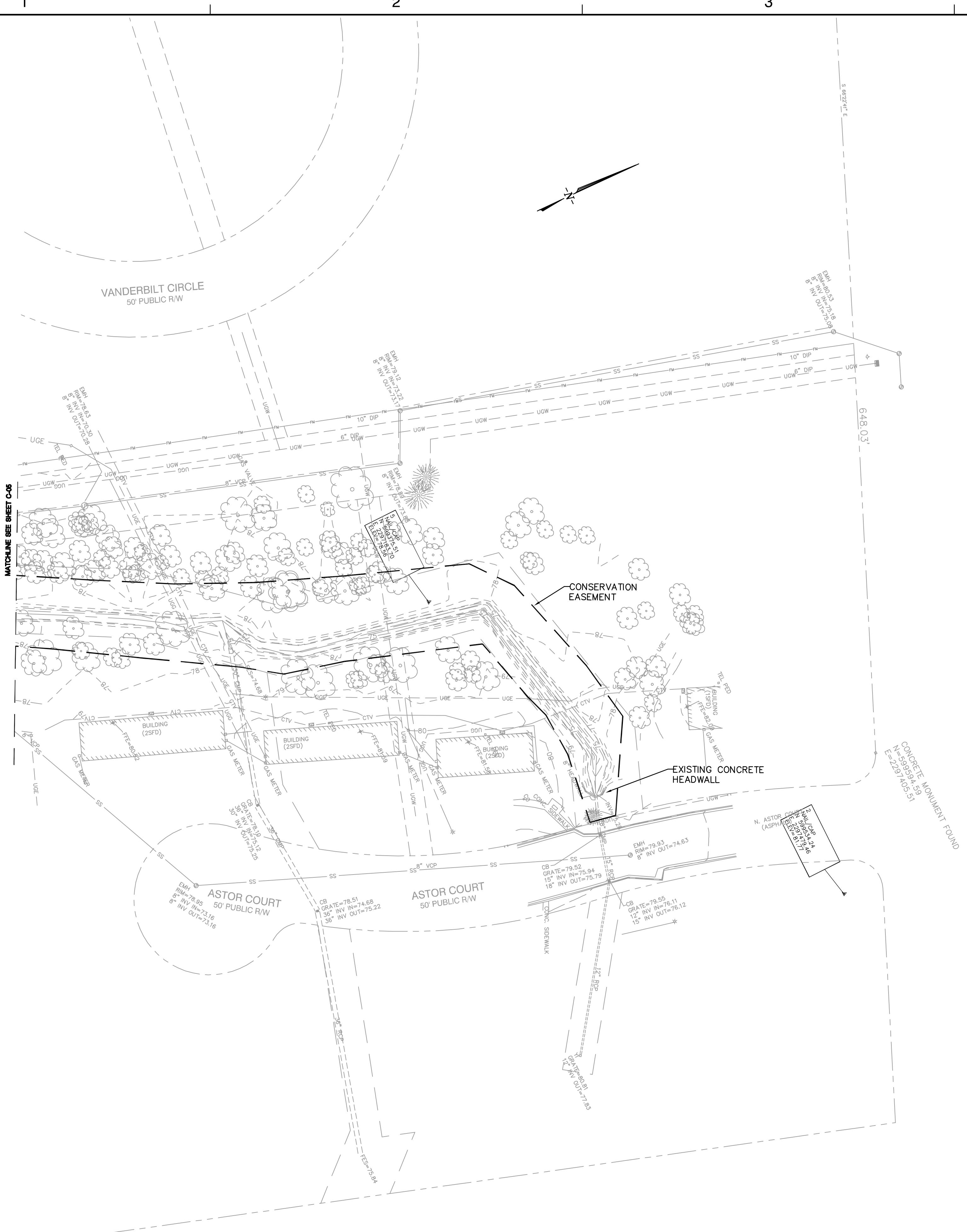


SCO PROJECT NUMBER:

020588001

GOLDSBORO HOUSING AUTHORITY STREAM BMP PROJECT NC ECOSYSTEM ENHANCEMENT PROGRAM

GOLDSBORO
NORTH CAROLINA



C-06

SCO PROJECT NUMBER:

020588001

**GOLDSBORO HOUSING
AUTHORITY STREAM
STREAM/BMP PROJECT
NC ECOSYSTEM PROGRAM**

GOLDSBORO
NORTH CAROLINA



**EXISTING
CONDITIONS**

PROJECT NO. 73142900

C-05

SHEET NO. 5 OF 37

ORIGINAL CONSTRUCTION
DRAWINGS SEALED BY
SHEILA S. REEVES
028832, ON MAY 11, 2007

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MICKEY B. HENSON ENTERPRISE DOING BUSINESS
AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

04-27-09
DATE

ENGINEER
MICHAEL A. HANSON
NORTH CAROLINA
PROFESSIONAL
SEAL 030624
ENGINEER MICHAEL A. HANSON

No.	DATE	BY	Description
REVISIONS			

DRAWN BY ACH
DESIGNED BY SSR
CHECKED BY MH
DATE 1-29-07

TITLE

SCO PROJECT NUMBER:

020588001

GOLDSBORO HOUSING AUTHORITY STREAM ENHANCEMENT PROGRAM

GOLDSBORO
NORTH CAROLINA

SEAL
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MICKEY B. HENSON ENTERPRISE DOING BUSINESS AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

04-27-09
DATE
ENGINEER



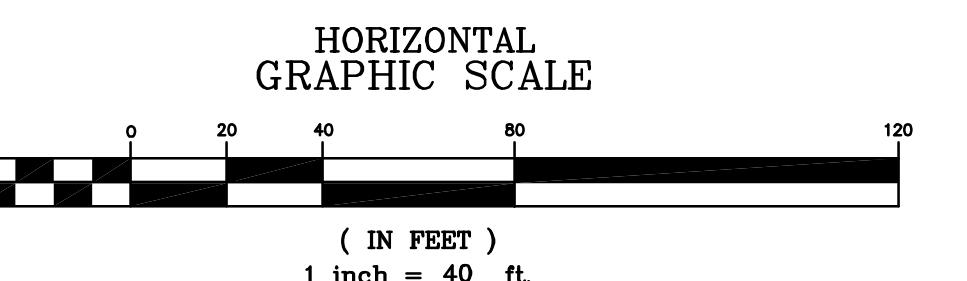
No.	DATE	BY	Description
REVISIONS			

DRAWN BY ACH
DESIGNED BY SSR
CHECKED BY MH
DATE 1-29-07

TITLE EXISTING CONDITIONS

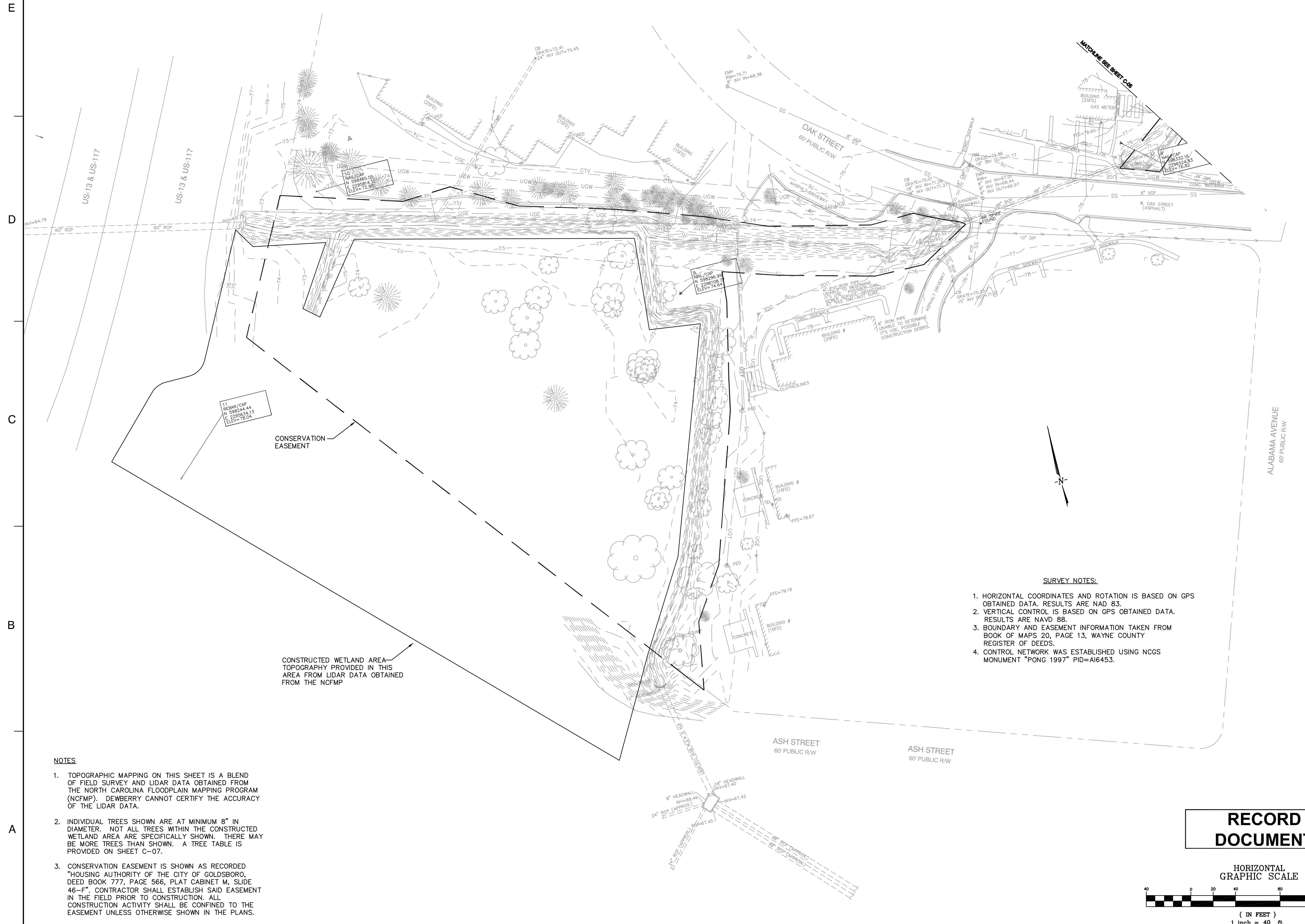
RECORD DOCUMENT

PROJECT NO. 73142900

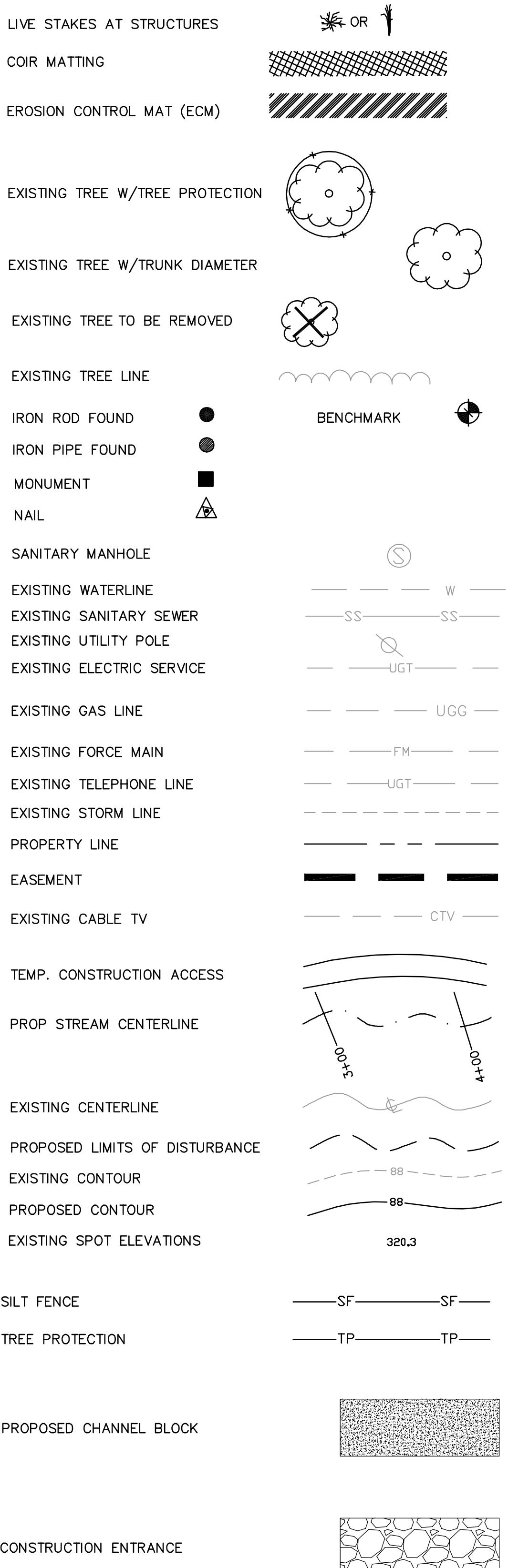


C-04

SHEET NO. 4 OF 37



E



NOTE: THESE SYMBOLS ARE NOT TO SCALE. THEY MERELY REPRESENT THE QUANTITY AND LOCATION OF THE STRUCTURES/FEATURES. SEE TYPICAL DETAILS SPECIFICATIONS.

A

PROJECT DESCRIPTION

INTRODUCTION

These construction plans were prepared for the restoration of approximately 2,000 feet of an unnamed tributary to the Borden Field Ditch (herein the stream is referred to as UTBFD) and the construction of a stormwater constructed wetland Best Management Practice (BMP). The stream restoration reach is located mostly on property owned by Goldsboro Housing Authority & Urban Development (HUD). The constructed wetland is located on property owned by NCDOT. The construction site is located near the intersection of US 117/ US 13 and W. Ash Street, in Goldsboro, NC.

PROJECT NEED AND DESIGN

The NC Ecosystem Enhancement Program has identified the UTBFD, located on Goldsboro Housing Authority property, as a stream restoration site. This site is located in the Neuse River Basin and the stream's 8-digit identifier is 03020201. More specifically it is located in the 14-digit basin: 03020201200020.

The stream banks and stream are being actively impacted by erosion. The site lacks a consistent or full riparian buffer and has a number of physical constraints within the channel or immediately adjacent.

The existing stream, UTBFD, is classified as a Rosgen F5 above existing Station 3+75. The proposed improvements will be Priority 2 and 3 restoration and the work will reclassify the reach as an C5/E5 stream. The restoration will also improve the stability of the stream.

This project also incorporates the construction of a Constructed Wetland BMP. The Constructed Wetland BMP is a retrofit location immediately adjacent to two (2) jurisdictional streams. The purpose of the Constructed Wetland is to provide water quality benefits for the contributing watershed.

PROJECT GENERAL NOTES

1. The Contractor shall attend a pre-construction meeting prior to beginning construction.
2. The Contractor shall have a complete set of contract documents, as well as permits and approvals, on the job site at all times.
3. The Contractor shall have a complete and approved soil and erosion control plan on the job site at all times.
4. Construction and materials specifications shall conform to the North Carolina Department of Transportation (NCDOT) standards.
5. When during the course of construction, any object of unusual nature is encountered, the Contractor shall cease work in that area and immediately notify the Engineer and the NCEEP Project Manager (Tracy Morris 919-715-1658).
6. The Contractor shall contact "NC ONE CALL" prior to construction. All existing utilities within the construction limits shall be located by the Contractor prior to construction. The Contractor shall notify the utility company that maintains the utility lines in the area of proposed excavation a minimum of 48 hours, but not more than 10 working days, prior to commencement of excavation or demolition.
7. The Contractor shall be responsible for the reconnection of disturbed utility service encountered within 8 hours of interrupted service. Contractor shall notify users 24 hours prior to possible interruptions of service, except for water service, which shall require 7 days notice.
8. Land survey immediately adjacent to UTBFD was provided by Dewberry. Topography provided in the area of the constructed wetland is created from LiDAR data obtained from the North Carolina Floodplain Mapping Program, (NCFMP). Dewberry cannot certify the accuracy of the information obtained from the NCFMP. This data has been provided for informational purposes only. Contractor shall verify topographic information in this area prior to construction.
9. The mapped utility locations provided in these plans shall be considered approximate. The Contractor shall be responsible for verifying locations of any utilities found on-site. No utilities were noted in the location of the project constructed wetland. Any utilities found in the area of the constructed wetland shall be reported to the Engineer immediately.
10. The Contractor shall make every effort to save property irons, monuments, other permanent points and lines of reference. Property irons, monuments, and other permanent points of reference destroyed by the Contractor shall be replaced by a professional land surveyor licensed in NC at the Contractor's expense.
11. The Contractor shall install measures as necessary, or directed by the Engineer, in addition to the measures shown in these plans, during construction for sediment and erosion control.
12. The Contractor shall restore any disturbed areas to existing grade and provide positive drainage, unless shown otherwise in the plan set.
13. No construction, excavation, or demolition shall begin until erosion control measures are installed. Erosion control measures are to be inspected daily by the Contractor. Repairs are to be made the same day that damaged or missing erosion control measures are discovered.
14. Excavation and construction shall proceed according to the latest OSHA regulations.
15. The Contractor shall provide fencing and/or signage as necessary to inform the public about and to protect the public from access to construction activities.
16. Construction activities shall be coordinated between Contractor and Engineer.
17. The Contractor shall coordinate with the landowner and NCEEP to establish appropriate temporary stock pile sites, staging areas, and access to easements. Temporary access corridors and staging area shown are approximate and may change when coordinated with the landowner.
18. All sections, references and stationing to stream banks and structures are oriented when viewed looking downstream, unless otherwise noted.
19. The Contractor shall be responsible for any damage to existing streets, landscaping, trees, and any other appurtenances which occur as a result of performing the construction described within these plans.
20. The disturbed area is approximately: 6.19 acres
21. As-built plans shall be submitted to the Engineer, soft and hard copy, within 30 days after completion of construction.
22. The Contractor shall furnish all labor, materials, tools, equipment, and perform all work and services for all site clearing, site excavation, filling and back filling for structures, such as drainage structures, sidewalks, driveways pavements, including borrow, hauling, wetting, rolling and other operations pertaining thereto within the clearing limits, complete all as shown on the contract drawings, contract documents and as stated by Engineer.
23. All work shall be performed in accordance with requirements of local and state codes, with requirements of OSHA, and in accordance with federal requirements.
24. Mud and/or construction debris shall not accumulate on any paved street which is maintained or is proposed to be maintained by the County, City or North Carolina Department Transportation.
25. The Contractor shall coordinate with the property owner to establish appropriate access points to the easement. Equipment shall not ford the stream.

PROJECT SPECIFIC NOTES

1. All trees and vegetative debris shall be disposed of off-site. Contractor shall be responsible for the proper disposal of trees and debris.
2. Any excess soil shall be disposed of off-site.
3. All stream restoration work shall be in a "dry" channel at all times. Stream channels and banks shall be completely stabilized prior to diverting flow through newly relocated channels.
4. A Phase I Commercial Site Assessment has been performed in the site location of the project constructed wetland. The assessment revealed no evidence of "Recognized Environmental Conditions" (REC's) in connection with the site. A copy of the report is available upon request.
5. A Seasonal High Water Level investigation was performed in the site location of the project constructed wetland by S&ME. A copy of this report is provided in the specifications.

ABBREVIATIONS

TOC	TOP OF CHANNEL
TOB	TOP OF BANK
TYP	TYPICAL
MIN	MINIMUM
ECM	EROSION CONTROL MATTING
CL	CENTERLINE

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020588001

GOLDSBORO HOUSING
AUTHORITY STREAM
STREAM/BMP PROJECT
GOLDSBORO
NORTH CAROLINA

SEAL
ORIGINAL CONSTRUCTION
DRAWINGS SEALED BY
SHEILA S. REEVES
028832, ON MAY 11, 2007

RECORD DRAWING
THE PROFESSIONAL ENGINEER SEALING THESE RECORD DRAWINGS
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THESE DRAWINGS IS ACCURATE AND CORRECT.

MIKEY B. HENSON ENTERPRISE DOING BUSINESS
AS APPALACHIAN ENVIRONMENTAL DBA
CONTRACTOR

04-27-09
ENGINEER DATE

NORTH CAROLINA
PROFESSIONAL
SEAL
030624
MICHAEL A. HANSON
ENGINEER

△	5/6/09 ACH ASBUILT
No.	DATE BY Description

REVISIONS

DRAWN BY	ACH
DESIGNED BY	SSR
CHECKED BY	MH
DATE	1-29-07

TITLE
**GENERAL
NOTES &
LEGEND KEY**

PROJECT NO. 73142900

**RECORD
DOCUMENT**

C-03