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MAR 28 2007



STATE OF NORTH CAROLINA CIVIL CONSULTANTS, INC.
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

March 15, 2007

Chatham County

Subject: Subdivision – Final Plan Review –Manns Crossing off of SR 1532 and SR 1537

Tony M. Whitaker
3708 Lyckan Parkway
Suite 201
Durham, NC 27707

Dear Mr. Whitaker:

The N. C. Department of Transportation, Division of Highways has reviewed the construction plans as submitted to this office and approval is granted subject to the following stipulations and recommendations:

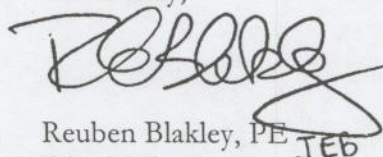
1. All Construction is to be in accordance with the details and changes in red as shown on the plans.
2. A driveway permit has been previously issued with this package.
3. The entire 50' right of way is to be cleared and grubbed throughout the whole phase of the project. Please be aware that the areas within the sight distance quadrants are to be treated as right of way.
4. All soil areas within the proposed right of way and any other soil areas disturbed during construction shall be seeded and mulched immediately upon completion of roadway construction. The seeding shall be done as outlined in the seeding specification attachment.
5. The crossline drainage is approved as proposed on the construction plans. If, however field conditions dictate any changes these shall be made. If any of the property owners desire to pipe their ditches within the proposed NCDOT right of way, please advise them that this work should conform to NCDOT specifications for this type of work (see attached). If any ditches are piped and not satisfactorily completed to NCDOT specifications, this could result in the road not being accepted for addition to the state maintained system of roads. Any ditches piped prior to addition to the state maintained system are subject to an encroachment agreement, as are utility companies, when the road is added.

6. The typicals as shown in the plans, are approved.
7. The Division of Highways will only allow mailboxes, with non-rigid type post, such as 4" x 4" wooden or small diameter metal type on new additions. Brick columns or mailboxes on rigid stands such as block, stone or any other type deemed to be a traffic hazard will not be allowed within the right of way. This policy applies to all roads being considered for addition to the State Maintained System.
8. An erosion control plan shall require approval from Chatham County. The developer should forward this plan to Mr. Jim Willis, Erosion and Sediment Control Officer, 80 East, P.O. Box 130, Pittsboro, N.C. 27312, phone (919) 545-8343 for his review and approval.
9. As this subdivision is proposed to be public and is likely to be requested to be added to the state maintained system of roads, the developer will be responsible for providing a PE Certification, (See Attached) and testing results for base and asphalt density stating that the streets have been built in accordance with the most current "Subdivision Roads: Minimum Construction Standards" manual and with the attached approved plans. Please be advised that this PE Certification does not approve the road for addition to the State Highway System for maintenance. When the proper home density is achieved and roads have been satisfactorily maintained, the developer or property owners must submit Form SR-1, Petition for Road Addition (copy attached to this correspondence), and four (4) copies of the recorded plat to request that the road or roads be added to the State Highway system. Any maintenance problems found when the road is requested to be added must be repaired by the developer prior to the road becoming state maintained. As stated in GS 136-102.6, final acceptance by the Division of Highways of the public streets and placing them on the State highway system for maintenance shall be conclusive proof that the streets have been constructed according to the minimum standards of the Board of Transportation.
10. The developer shall comply with all applicable local, state, and federal environmental regulations, and shall obtain all necessary local, state, and federal environmental permits, including, but not limited to, those related to sediment control, stormwater, wetlands, streams, endangered species, and historical sites.
11. A properly completed Verification of Compliance with the Department of Environment and Natural Resources (DENR)(page 35, attached) must be submitted prior to the road(s) being considered for addition to the NCDOT System.
12. In preparing the final plat for certification by this office and subsequent recording, the following information will be incorporated:
 - A. The sight distance quadrants at the intersections shall be shown either as a public easement or as the property line.
 - B. Public easements for drainage throughout the development.
 - C. All roads shall be shown as public and the right of way width shown.

13. If the plans of this subdivision change in a way that would cause a change in the classification of these roads from Local Residential to Residential Collector the developer will be responsible for upgrading roads to meet Residential Collector standards prior to addition the state maintenance system.
14. This approval does not approve the utilities within this subdivision. Any utilities shall be submitted for approval to this office via a properly executed Encroachment Agreement to be approved at the time the roads within the subdivision are petitioned to be added to the state system for maintenance. Please note that water valves should be located a minimum of 6' from edge of pavement, fire hydrants should be behind the right of way line and all service taps should be installed prior to paving.

If you have any further questions regarding this matter, please do not hesitate to call this office at (336) 629-1423.

Yours truly,



Reuben Blakley, PE JEB
District Engineer

REB/jeb
Attachments

cc: Mr. Tim Johnson, PE, Division Engineer
Mr. B.F. Sloan, County Maintenance Engineer
File



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

PROFESSIONAL ENGINEER CERTIFICATION
SUBDIVISIONS AND COMMERCIAL DRIVEWAYS
DIVISION 8, DISTRICT 1

DATE: _____

COUNTY: _____

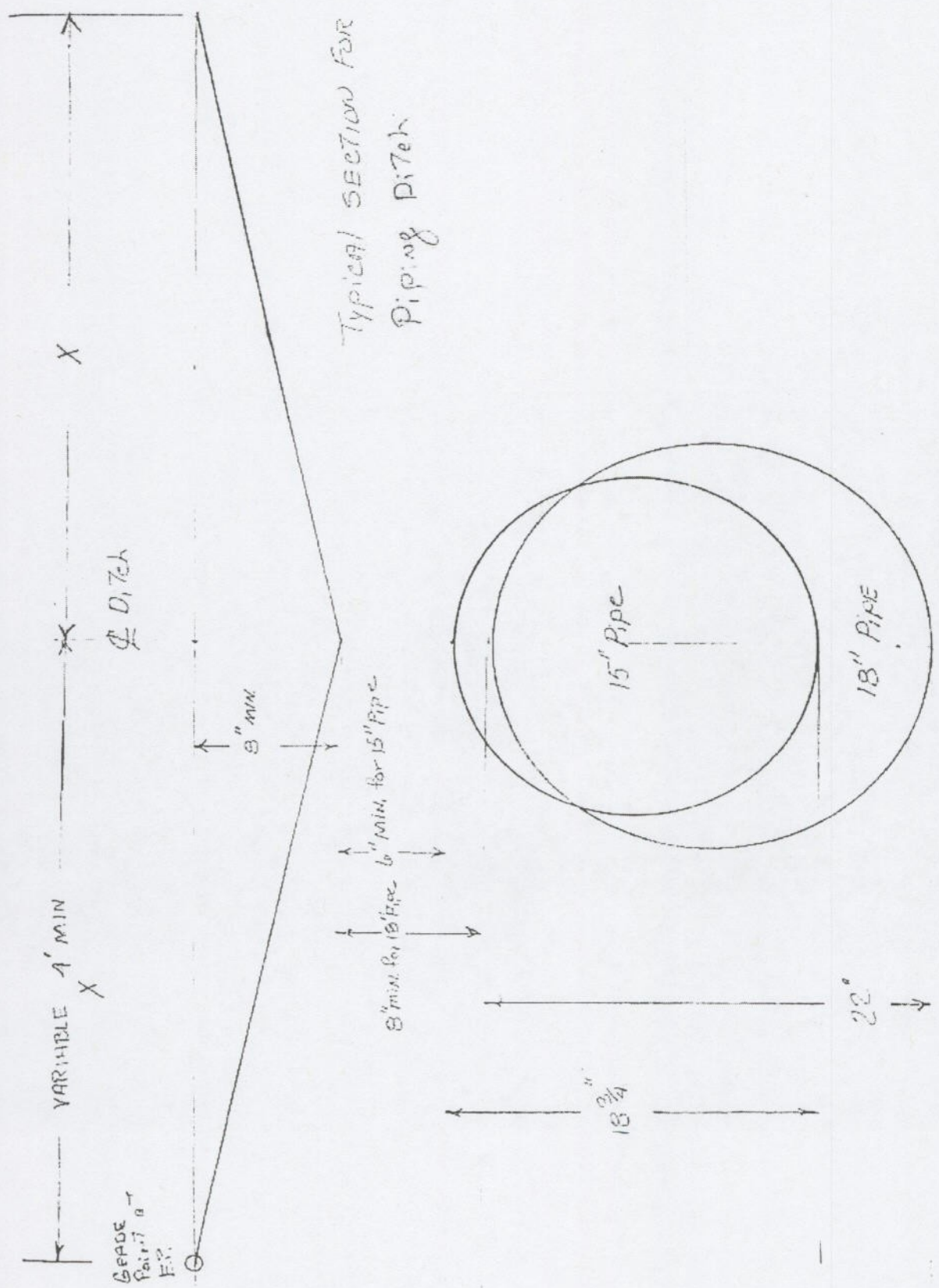
SUBDIVISION NAME: _____

STREET NAMES	From Sta. No.	To Sta. No.
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

This is to certify that the above listed roads have been constructed in accordance with the approved plans and all aspects of the most current Subdivision Roads: Minimum Construction Standards manual.

NAME: _____
SIGNATURE: _____
NC PE LICENSE #: _____

Professional Engineer Seal



Typical SECTION FOR
Piping Pitch

**POSSIBLE SUPPLIERS FOR
GRATES AND FRAMES**

SOUTHERN FOUNDRY
P.O. BOX 186
APEX, N.C. 27502
(919) 362-7744

NORFOLK CAST, INC.
P.O. BOX 328
NORFOLK, VA. 23501

VULCAN FOUNDRY CORP.
P.O. BOX 905
DENHAM SPRINGS, LA.
1(800)626-4653

US FOUNDRY
8351 N. W. 93RD ST
MEDLEY, FLA. 33166
(305)885-0301 FAX (305) 844-3253

SUPER CAST, INC.
1104 US HWY. 117 BYPASS, S.
GOLDSBORO, N.C. 27530
(919)736-9010 FAX (919)736-0290

BUNCH PATTERN WORKS, INC.
P.O. BOX 267 HWY 308 N.
LEWISTON-WOODVILLE, N.C. 27849

CAPITAL FOUNDRY OF VIRGINIA, INC.
P.O. BOX 2212
VIRGINIA BEACH, VIRGINIA 23450

EMPORIA FOUNDRY, INC.
620 REESE STREET
EMPORIA, VIRGINIA 23847

ENNIS ENTERPRISES
P.O. BOX 931
WILMINGTON, N.C. 28402
(910) 371-9323

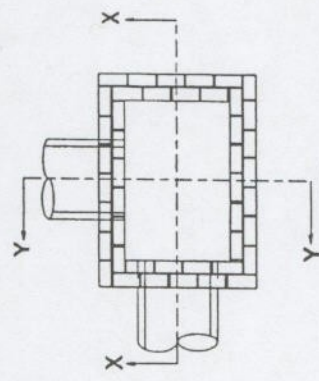
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
BRICK DROP INLET
12" THRU 30" PIPE

SHEET 1 OF 1
840.15

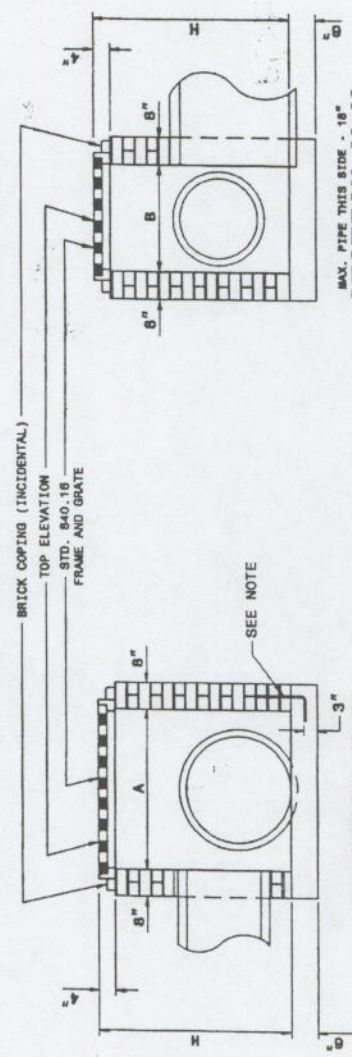
GENERAL NOTES:

MORTAR JOINTS $1\frac{1}{2}$ " +/- $\frac{1}{8}$ " THICK.
USE CLASS "B" CONCRETE THROUGHOUT.
USE FORMS FOR CONSTRUCTION OF THE BOTTOM SLAB.
USE #4 BAR DOWELS AT 12" CENTERS.
DEDUCT FOR PIPE(S) FROM TOTAL CU. YDS. OF BRICK MASONRY.
PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
USE BRICK OR CONCRETE BLOCK WHICH COMPLIES WITH THE REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
FOR 8'-0" IN HEIGHT OR LESS, USE 8" WALL. OVER 8'-0" IN HEIGHT, USE 12" WALL TO 6'-0" FROM TOP OF WALL AND 8" WALL FOR THE REMAINING 8'-0". QUANTITIES TO BE ADJUSTED ACCORDINGLY.
CONSTRUCT WITH PIPE CROWNS MATCHING.
DO NOT USE BRICK MASONRY DROP INLET IN LOCATIONS SUBJECT TO TRAFFIC.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.

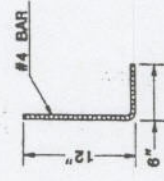


PLAN

WITH COPING REMOVED



SECTION X-X



DOWEL

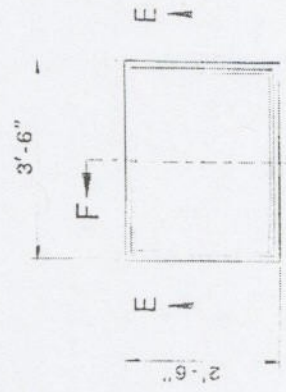
SECTION Y-Y

DIMENSIONS OF BOX & PIPE		CUBIC YARDS CONCRETE		CUBIC YARDS BRICK MASONRY		DEDUCTIONS FOR ONE PIPE		
PIPE	SPAN	WIDTH	MIN. HEIGHT	BOTTOM SLAB	WALL PER FOOT HT.	TOTAL BRICK MASONRY FOR MIN. HEIGHT, H	C.S.	R.C.
12"	3'-0"	2'-0"	2'-0"	0.268	0.313	0.522	0.020	0.032
15"	/	2'-3"	2'-3"	0.268	0.313	0.600	0.031	0.047
18"	/	2'-6"	2'-6"	0.268	0.313	0.678	0.044	0.065
24"	/	3'-0"	3'-0"	0.268	0.313	0.835	0.078	0.113
30"	3'-0"	2'-0"	3'-6"	0.268	0.313	0.991	0.122	0.170

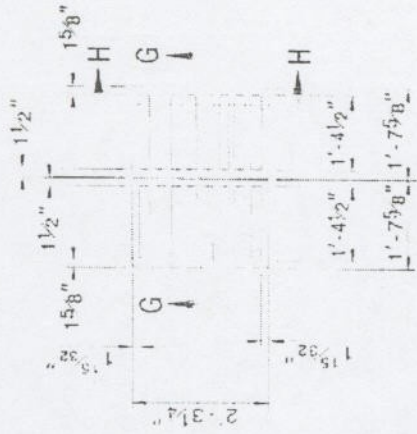
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
BRICK DROP INLET
12" THRU 30" PIPE

SHEET 1 OF 1
840.15



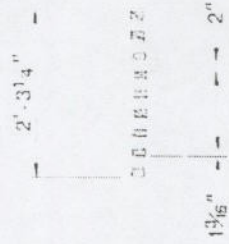
PLAN OF FRAME
 CAST IRON



PLAN OF GRATING
 CAST IRON



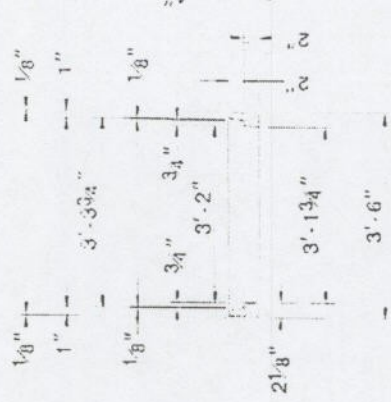
SECTION G-G



SECTION H-H



SECTION F-F



SECTION E-E

**VERIFICATION OF COMPLIANCE WITH
ENVIRONMENTAL REGULATIONS**

(Check Appropriate Box)

- Permits from the N.C. Department of Environment and Natural Resources and the U.S. Army Corp of Engineers are not required for this project. However, all applicable federal and state regulations have been followed.

- The required permits from the N.C. Department of Environment and Natural Resources and the U.S. Army Corp of Engineers have been obtained for this project. Copies of permits and Completion Certificates are attached.

- All applicable NPDES Stormwater Permit requirements have been met for this project. (The applicant should contact the N.C. Division of Water Quality in Raleigh to determine if a stormwater permit is required.)

- The project is in compliance with all applicable sedimentation and erosion control laws and regulations.

Project Name: _____

Township: _____

County: _____

Project Engineer: _____

Phone No.: _____

Project Contact: _____

Applicants Name: _____

P.E. SEAL

Date Submitted: _____

(Reference Page 11, Item 10)

11/07/2003

ATTACHMENT "A"

Seeding and mulching shall be in accordance with Section 800 of the North Carolina Standard Specifications for Roads and Structures, except that Articles 800-2(B) shall not apply. Final determination of soil type shall be made by the Engineer. The following rates in pounds per acre shall apply:

<u>SANDY SOIL</u>	<u>CLAY SOIL</u>
50# - KY 31 Tall Fescue or Alta Tall Fescue	100# - KY 31 Tall Fescue or Alta Tall Fescue
5# - Centipede	15# - Kenblue Bluegrass
50# - Pensacola Bahiagrass	500# - Fertilizer
500# - Fertilizer	4000# - Limestone
4000# - Limestone	

Add 10# Kobe or Korean Lespedeza and 10# Millet to the above mixture from May 1 to August 31.

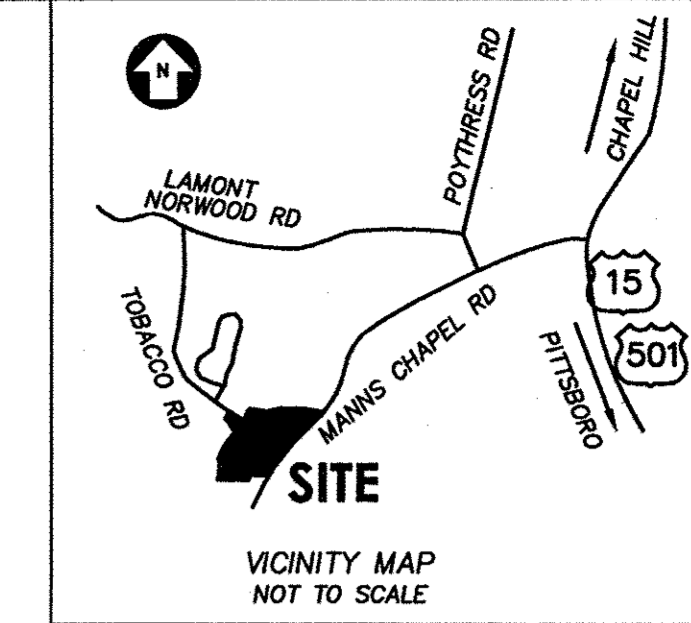
On cut and fill slopes 2:1 or steeper, add 30# Sericea Lespedeza from January 1 to December 31.

Fertilizer shall be 10-20-20 analysis. Upon written approval of the Engineer, a different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis.

DRAWING INDEX:

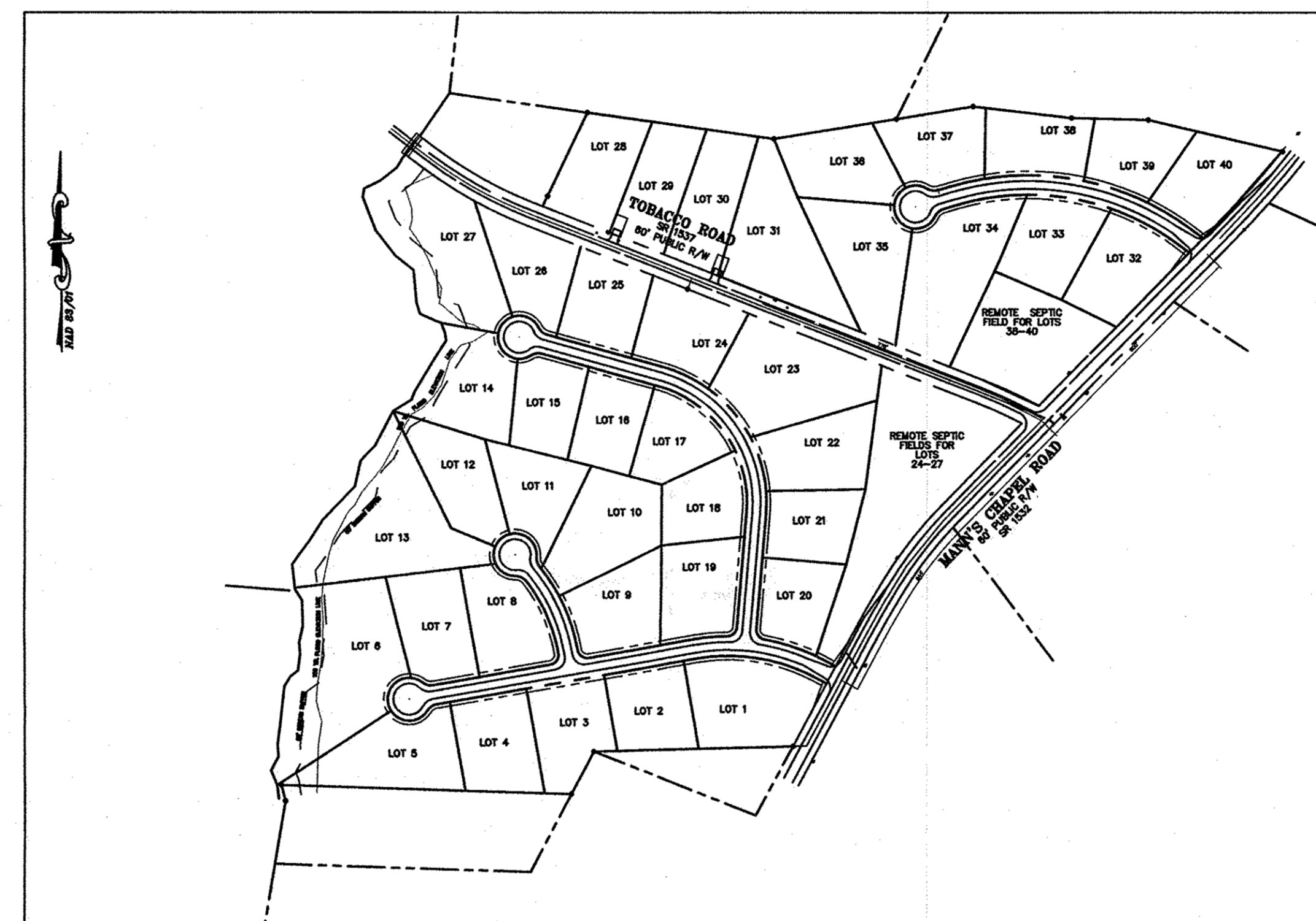
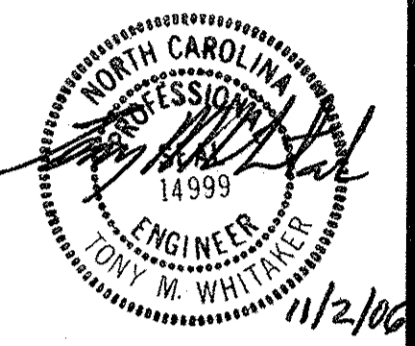
- C0 - COVER SHEET
- C1 - OVERALL PLAN
- C2 - PRELIMINARY SUBDIVISION PLAT
- R1 - MANN'S CROSSING DRIVE PLAN & PROFILE
- R2 - MARGARET MANN WAY PLAN & PROFILE
- R3 - MARGARET MANN WAY & ROMIE COURT PLAN & PROFILE
- R4 - STREET 4 PLAN & PROFILE
- R5 - MANN'S CHAPEL ROAD WIDENING PLAN
- D1 - WATER SYSTEM DETAILS
- D2 - WATER SYSTEM SPECIFICATIONS
- D3 - STORM DRAINAGE DETAILS
- EC1 - EROSION CONTROL DETAILS
- EC2 - EROSION CONTROL DETAILS

MANNS CROSSING CHATHAM COUNTY, NC



REDLINED

CIVIL CONSULTANTS INC.
 Civil Engineers
 Land Development Consultants
 3708 Lyckan Parkway, Suite 201, Durham, NC 27707
 PH: (919) 490-1645 Fax: (919) 403-0336 www.civil-consultants.com



SITE DATA:

PIN/AKPAR: 9755-88-3549/67267
 9755-77-6740/67266
 PROJECT ACREAGE: 60.56±
 ZONING: RA-40
 MINIMUM REQUIRED LOT SIZE: 40,000 SF (NET)
 AVERAGE LOT SIZE: 50,936 SF (NET)
 55,288 SF (GROSS)
 LENGTH OF PUBLIC STREET: 3,451 LF
 TOTAL NUMBER OF LOTS: 40
 OVERLAY ZONING, WATERSHED DISTRICT, WS IV PROTECTED AREA
 RIVER BASIN: CAPE FEAR (VIA HAW RIVER)

LEGEND

	NEW	EXISTING
EASEMENT	---	---
RIGHT-OF-WAY	---	---
CREEK OR DRAINAGEWAY	---	---
CATCH BASIN (VARIOUS TYPES)	■ □	□
FLARED END SECTION	<	
JUNCTION BOX	⊙	
VALVE AND VALVE BOX	⊙	⊙
FIRE HYDRANT	⊙	⊙
UNDERGROUND CABLE TV LINE	TV	XTV
UNDERGROUND ELECTRIC LINE	E	XE
OVERHEAD UTILITY LINE	OH	XOH
UNDERGROUND TELEPHONE LINE	T	XT
STORM DRAIN PIPE	SD	XSD
WATER LINE	W	XW
TELEPHONE LINE	T	XT
GAS LINE	G	XG
FINISHED GRADE CONTOUR	400	100
FINISHED GRADE SPOT ELEVATION	356.44	x 356.44
CLEARING LIMIT/TREE LINE	~	~
DITCH OR SWALE FLOWLINE	→	
TEMPORARY SEDIMENT FENCE	SF	

PREPARED FOR:
 MANN'S CROSSING, LLC
 111 CLOISTER COURT
 SUITE 114
 CHAPEL HILL, N.C. 27514
 CONTACT: BILL SPANG
 PHONE: 919-489-9192
 FAX: 919-490-6993

FEB 16 2007
 DIVISION OF TRANSPORTATION

MANNS CROSSING
 CHATHAM COUNTY NORTH CAROLINA
COVER SHEET

REV.	DATE	DESCRIPTION
1.	10/21/06	CONSTRUCTION SET

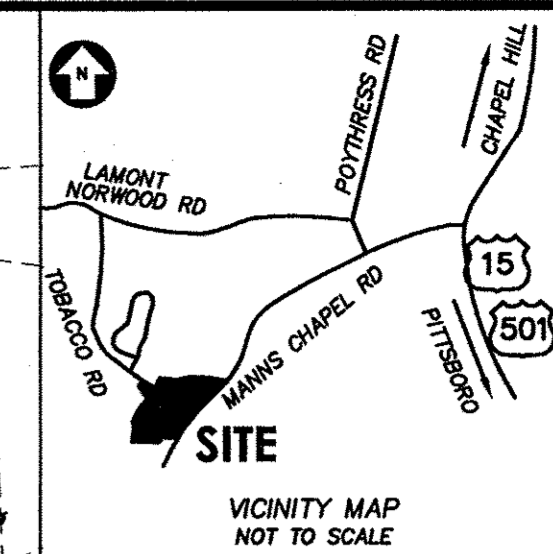
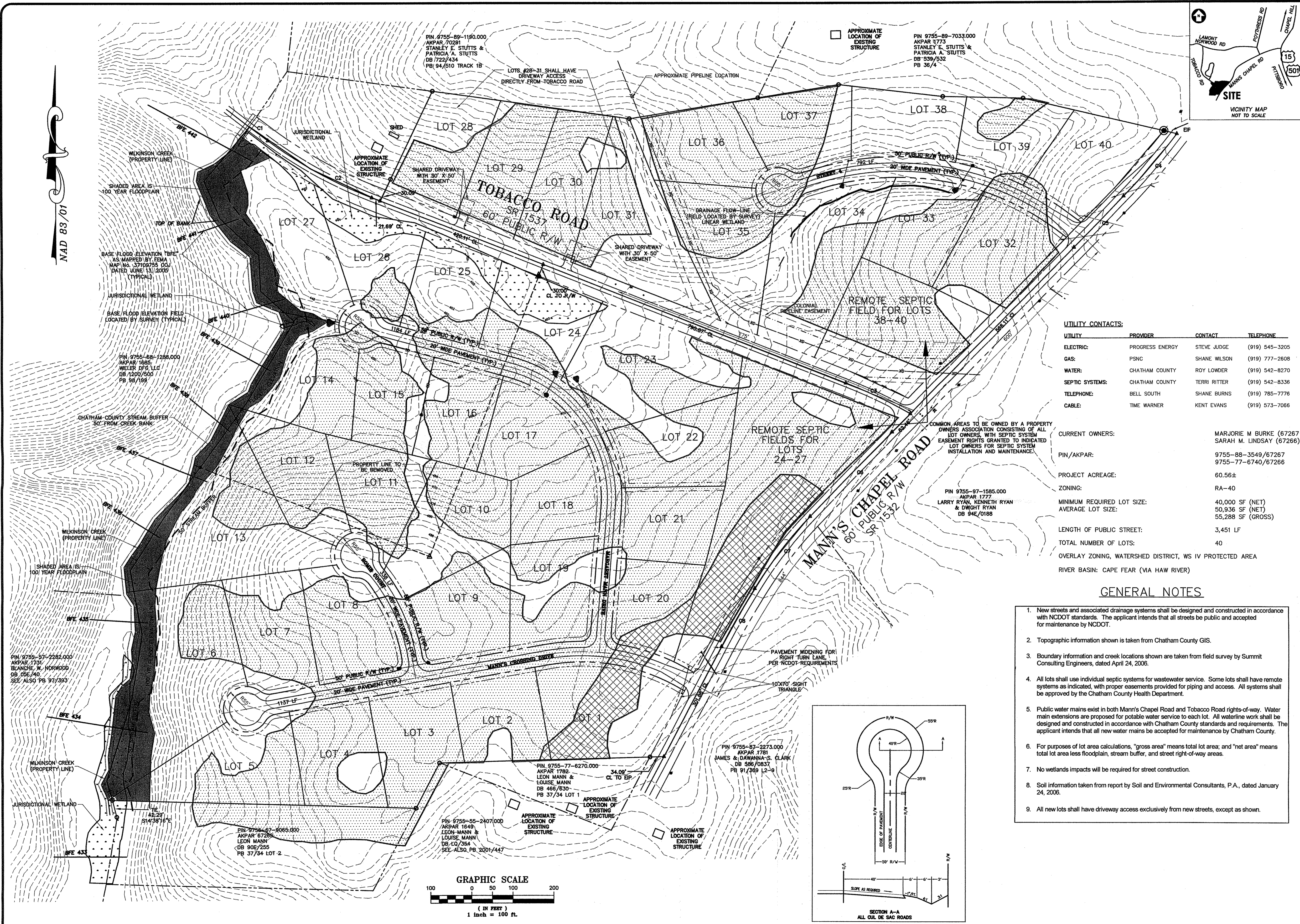
DATE: OCTOBER 31, 2006
 HORIZONTAL SCALE: 1"=300'
 VERTICAL SCALE: NA
 PROJECT MANAGER: TMW
 DRAWN BY: KDF
 PROJECT NO: 13009
 DRAWING NAME: 13009-PRELIM.DWG

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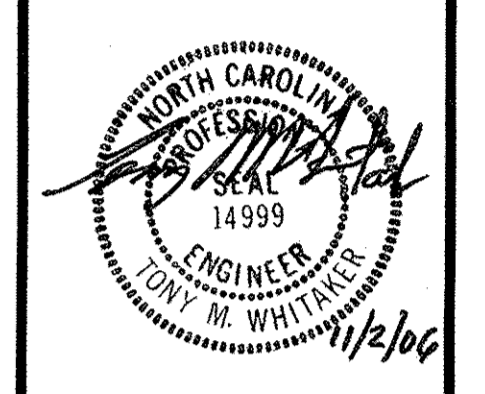
CALL BEFORE YOU DIG... IT'S THE LAW.
 CALL N.C. ONE-CALL(1-800-632-4949)
 FOR LOCATION OF UNDERGROUND UTILITIES AT LEAST
 2 WORKING DAYS PRIOR TO BEGINNING GRADING OR TRENCHING.
 NORTH CAROLINA GENERAL STATUTE 87-102

SHEET NO.
C0
 CONSTRUCTION

NAD 83/01



CIVIL CONSULTANTS INC.
 Civil Engineers
 Land Development Consultants
 3708 Lyckan Parkway Suite 201 Durham, NC 27707
 PH: (919) 490-1645 Fax: (919) 403-0336 www.civil-consultants.com



MANN'S CROSSING
 CHATHAM COUNTY, NORTH CAROLINA
OVERALL PLAN

UTILITY CONTACTS:

UTILITY	PROVIDER	CONTACT	TELEPHONE
ELECTRIC:	PROGRESS ENERGY	STEVE JUDGE	(919) 545-3205
GAS:	PSNC	SHANE WILSON	(919) 777-2608
WATER:	CHATHAM COUNTY	ROY LOWDER	(919) 542-8270
SEPTIC SYSTEMS:	CHATHAM COUNTY	TERRI RITTER	(919) 542-8336
TELEPHONE:	BELL SOUTH	SHANE BURNS	(919) 785-7776
CABLE:	TIME WARNER	KENT EVANS	(919) 573-7066

CURRENT OWNERS: MARJORIE M BURKE (67267)
 SARAH M. LINDSAY (67266)

PIN/AKPAR: 9755-88-3549/67267
 9755-77-6740/67266

PROJECT ACREAGE: 60.56±

ZONING: RA-40

MINIMUM REQUIRED LOT SIZE: 40,000 SF (NET)

AVERAGE LOT SIZE: 50,936 SF (NET)
 55,268 SF (GROSS)

LENGTH OF PUBLIC STREET: 3,451 LF

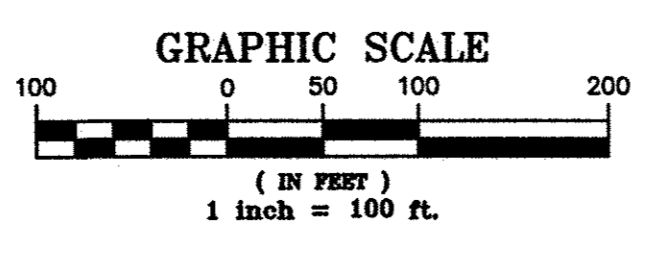
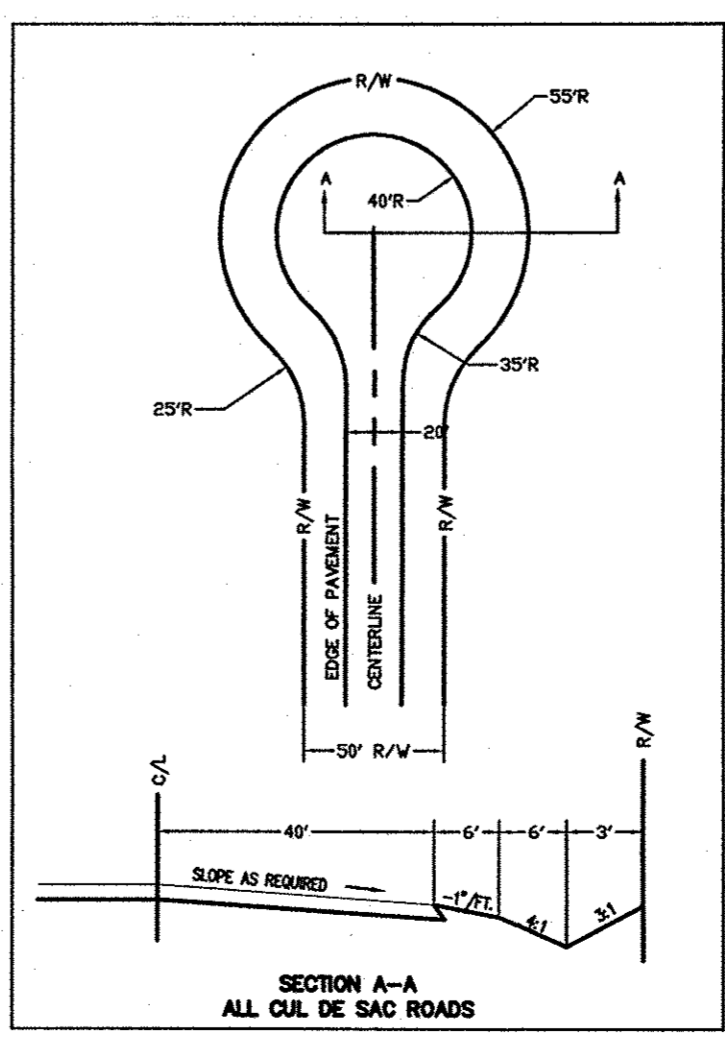
TOTAL NUMBER OF LOTS: 40

OVERLAY ZONING, WATERSHED DISTRICT, WS IV PROTECTED AREA

RIVER BASIN: CAPE FEAR (VIA HAW RIVER)

GENERAL NOTES

- New streets and associated drainage systems shall be designed and constructed in accordance with NCDOT standards. The applicant intends that all streets be public and accepted for maintenance by NCDOT.
- Topographic information shown is taken from Chatham County GIS.
- Boundary information and creek locations shown are taken from field survey by Summit Consulting Engineers, dated April 24, 2006.
- All lots shall use individual septic systems for wastewater service. Some lots shall have remote systems as indicated, with proper easements provided for piping and access. All systems shall be approved by the Chatham County Health Department.
- Public water mains exist in both Mann's Chapel Road and Tobacco Road rights-of-way. Water main extensions are proposed for potable water service to each lot. All waterline work shall be designed and constructed in accordance with Chatham County standards and requirements. The applicant intends that all new water mains be accepted for maintenance by Chatham County.
- For purposes of lot area calculations, "gross area" means total lot area, and "net area" means total lot area less floodplain, stream buffer, and street right-of-way areas.
- No wetlands impacts will be required for street construction.
- Soil information taken from report by Soil and Environmental Consultants, P.A., dated January 24, 2006.
- All new lots shall have driveway access exclusively from new streets, except as shown.



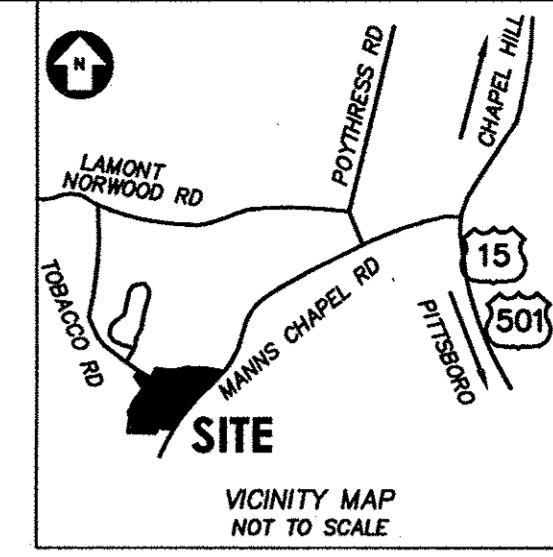
REV.	DATE	DESCRIPTION	BY	JES
1	10/31/06	CONSTRUCTION SET	JES	

DATE: OCTOBER 31, 2006
 HORIZONTAL SCALE: 1"=100'
 VERTICAL SCALE: NA
 PROJECT MANAGER: TMW
 DRAWN BY: KDF
 PROJECT NO.: 13009
 DRAWING NAME: 13009-PRELIM.DWG

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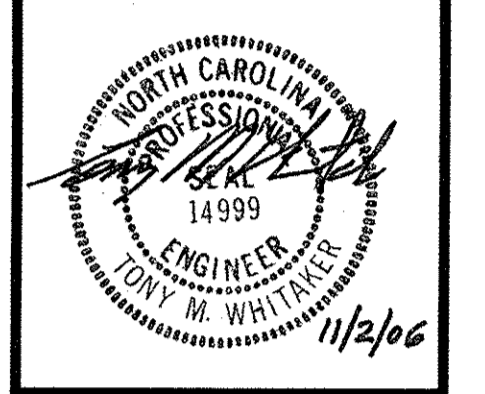
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SHEET NO.
C1
 CONSTRUCTION



CIVIL CONSULTANTS INC.
Civil Engineers
Land Development Consultants

3708 Lyckan Parkway Suite 201 Durham, NC 27707
PH: (919) 490-1645 Fax: (919) 403-0336 www.civil-consultants.com



MANN'S CROSSING
CHATHAM COUNTY, NORTH CAROLINA

PRELIMINARY SUBDIVISION PLAT

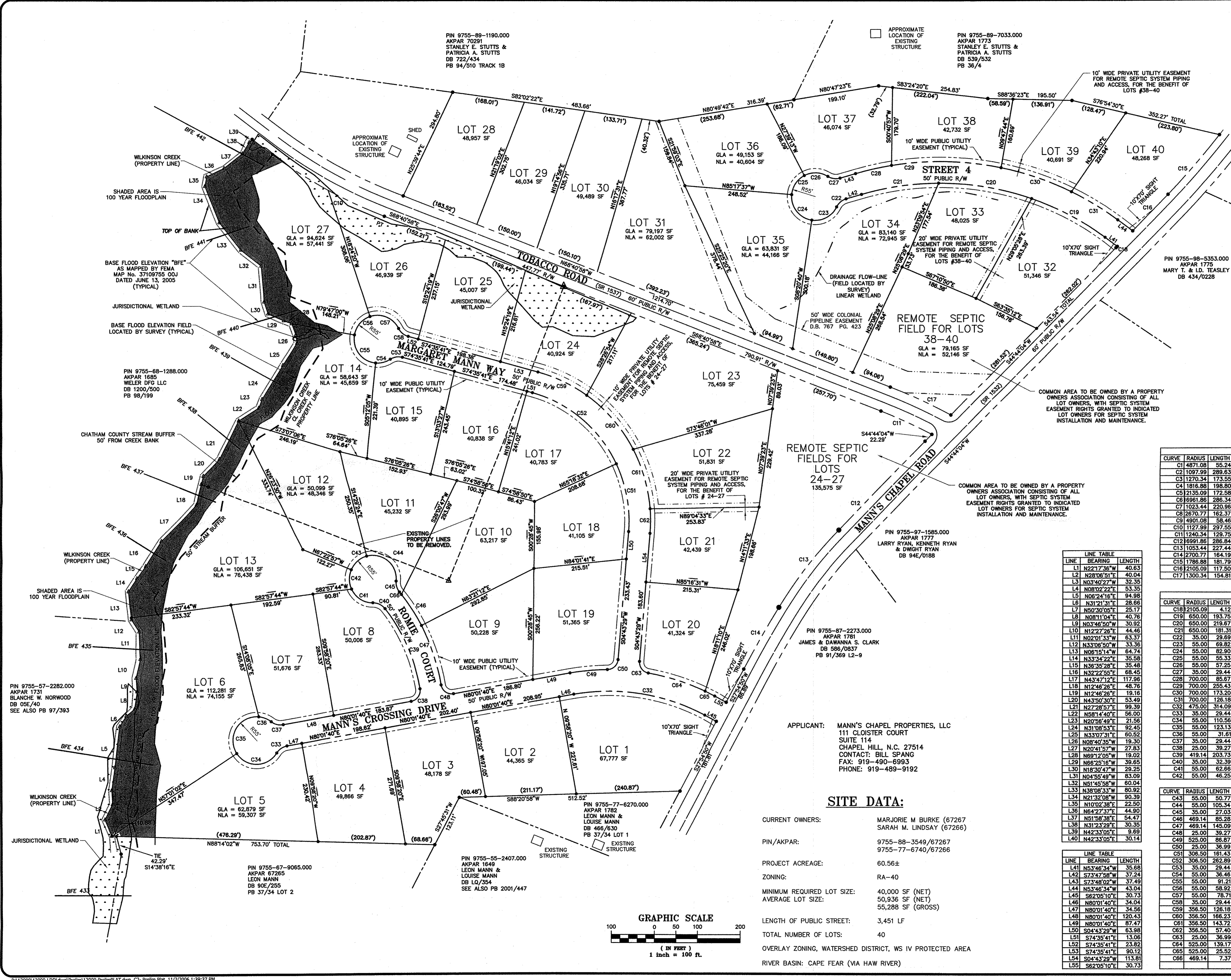
REV. DATE DESCRIPTION

DATE: OCTOBER 31, 2006
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VERTICAL SCALE: NA
PROJECT MANAGER: TMM
DRAWN BY: RAM
PROJECT NO: 13009
DRAWING NAME: 13009-PREMLPLAT.DWG

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SHEET NO. C2



CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHD. BRNG.	CHORD
C1	4871.08	55.24	0°38'59"	27.62	S53°14'39"E	55.24
C2	1097.99	289.83	15°08'49"	145.68	S81°07'54"E	288.79
C3	1270.34	173.55	7°49'39"	86.91	S84°48'09"E	173.41
C4	1816.88	198.80	6°16'09"	99.50	S40°47'06"W	198.70
C5	2135.09	172.58	0°48'53"	86.29	S44°19'37"W	172.58
C6	6861.86	286.34	0°58'02"	143.17	S44°15'03"W	286.33
C7	1023.44	220.96	12°22'13"	110.91	S37°34'58"W	220.53
C8	2670.77	162.37	3°29'00"	81.21	S29°39'20"W	162.34
C9	4901.08	58.46	0°41'00"	29.23	S53°13'59"E	58.46
C10	1127.89	297.55	15°08'49"	149.64	S81°07'54"E	296.68
C11	1240.34	129.75	5°59'37"	64.93	S55°41'10"E	129.69
C12	6991.86	286.84	0°58'02"	143.43	S44°15'03"W	286.84
C13	1053.44	227.44	12°22'13"	114.16	S37°34'58"W	227.00
C14	2700.77	164.19	3°29'00"	82.12	S29°39'20"W	164.17
C15	1786.88	181.79	5°49'44"	93.97	S41°00'19"W	181.71
C16	2105.09	117.50	0°33'22"	58.75	S44°11'52"W	117.50
C17	1300.34	154.81	6°49'17"	77.50	N65°16'20"W	154.72

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	BRNG.	CHORD
C18	2105.09	4.12	0°01'10"	2.06	N44°43'29"E	4.12	
C19	650.00	193.75	17°04'42"	97.60	N82°18'55"W	193.03	
C20	650.00	219.67	19°21'46"	110.89	N80°32'09"W	218.62	
C21	650.00	181.31	15°58'55"	91.25	S81°47'30"W	180.72	
C22	35.00	29.69	48°35'47"	15.80	S49°54'33"W	28.80	
C23	55.00	69.82	72°44'00"	40.50	N61°58'40"E	65.22	
C24	55.00	62.90	86°21'43"	31.61	S38°28'29"W	75.27	
C25	55.00	65.33	57°38'24"	30.26	S33°31'35"W	63.03	
C26	55.00	57.25	59°38'39"	31.53	N87°49'54"W	54.70	
C27	35.00	29.44	48°11'23"	15.65	S82°06'16"E	28.58	
C28	700.00	85.67	7°00'43"	42.89	S77°18'24"W	85.62	
C29	700.00	255.43	20°54'25"	129.15	N88°44'25"E	254.01	
C30	700.00	173.20	14°10'35"	87.04	N71°11'32"W	172.75	
C31	300.00	126.18	10°10'41"	63.28	N58°58'25"W	126.01	
C32	475.00	314.09	37°33'09"	163.03	N81°31'45"W	308.40	
C33	35.00	29.44	48°11'23"	15.65	S55°59'59"W	28.58	
C34	55.00	110.56	115°10'44"	86.63	N89°25'40"E	92.87	
C35	55.00	123.13	128°16'05"	113.44	S31°09'04"W	98.98	
C36	55.00	31.61	32°55'56"	16.28	N68°14'55"W	31.18	
C37	55.00	29.44	48°11'23"	15.65	S75°54'38"E	28.58	
C38	55.00	30.00	90°00'00"	25.00	N35°30'00"E	35.36	
C39	419.14	203.73	27°51'00"	103.92	N23°33'50"W	201.73	
C40	35.00	32.39	53°00'59"	17.46	N64°19'49"W	31.24	
C41	55.00	62.66	65°16'44"	35.23	S58°11'57"E	59.33	
C42	55.00	46.25	48°10'37"	24.59	S01°28'16"E	44.90	

LINE TABLE

LINE	BEARING	LENGTH
L1	N22°17'36"W	40.63
L2	N28°06'51"E	40.04
L3	N03°40'27"W	32.35
L4	N08°02'22"E	53.35
L5	N06°24'16"E	94.98
L6	N31°21'31"E	28.69
L7	N50°30'05"E	25.17
L8	N08°11'04"E	40.76
L9	N03°46'50"W	30.92
L10	N12°27'26"E	44.46
L11	N02°01'33"W	63.37
L12	N33°06'50"W	33.36
L13	N08°15'14"W	64.74
L14	N33°34'22"E	35.58
L15	N36°35'28"E	35.48
L16	N32°22'55"E	68.45
L17	N43°47'12"E	117.96
L18	N12°46'28"E	48.76
L19	N12°46'26"E	19.16
L20	N43°50'30"E	53.49
L21	N27°38'29"E	99.39
L22	N58°14'40"E	56.00
L23	N20°56'49"E	21.56
L24	N31°08'53"E	92.45
L25	N33°07'31"E	60.52
L26	N08°40'35"W	19.30
L27	N20°41'67"W	27.83
L28	N69°12'05"W	19.02
L29	N66°25'16"W	39.65
L30	N18°30'47"W	29.25
L31	N04°55'48"W	83.09
L32	N51°45'58"W	60.04
L33	N38°08'33"W	80.92
L34	N24°32'08"W	99.59
L35	N10°02'38"E	22.50
L36	N64°27'37"E	44.80
L37	N51°58'38"E	54.90
L38	N31°23'29"E	30.35
L39	N42°33'05"E	9.69
L40	N42°33'05"E	30.14

LINE TABLE

LINE	BEARING	LENGTH
L41	N53°46'34"W	35.68
L42	S73°47'58"W	37.24
L43	S73°48'02"W	37.49
L44	N53°46'34"W	43.04
L45	S82°08'10"E	33.93
L46	N80°01'40"E	34.04
L47	N80°01'40"E	34.56
L48	N80°01'40"E	120.43
L49	N80°01'40"E	87.47
L50	S04°43'29"W	63.98
L51	S74°35'41"E	13.06
L52	S74°35'41"E	23.82
L53	S74°35'41"E	90.12
L54	S04°43'29"W	113.81
L55	S82°05'10"E	30.73

APPLICANT: MANN'S CHAPEL PROPERTIES, LLC
1111 CLOISTER COURT
SUITE 114
CHAPEL HILL, N.C. 27514
CONTACT: BILL SPANG
FAX: 919-490-6993
PHONE: 919-489-9192

SITE DATA:

CURRENT OWNERS: MARJORIE M BURKE (67267)
SARAH M. LINDSAY (67266)

PIN/AKPAR: 9755-88-3549/67267
9755-77-6740/67266

PROJECT ACREAGE: 60.56±

ZONING: RA-40

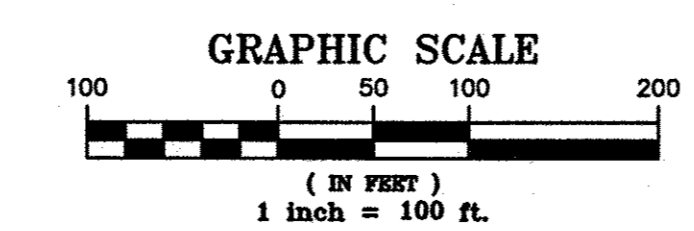
MINIMUM REQUIRED LOT SIZE: 40,000 SF (NET)
50,936 SF (NET)
55,288 SF (GROSS)

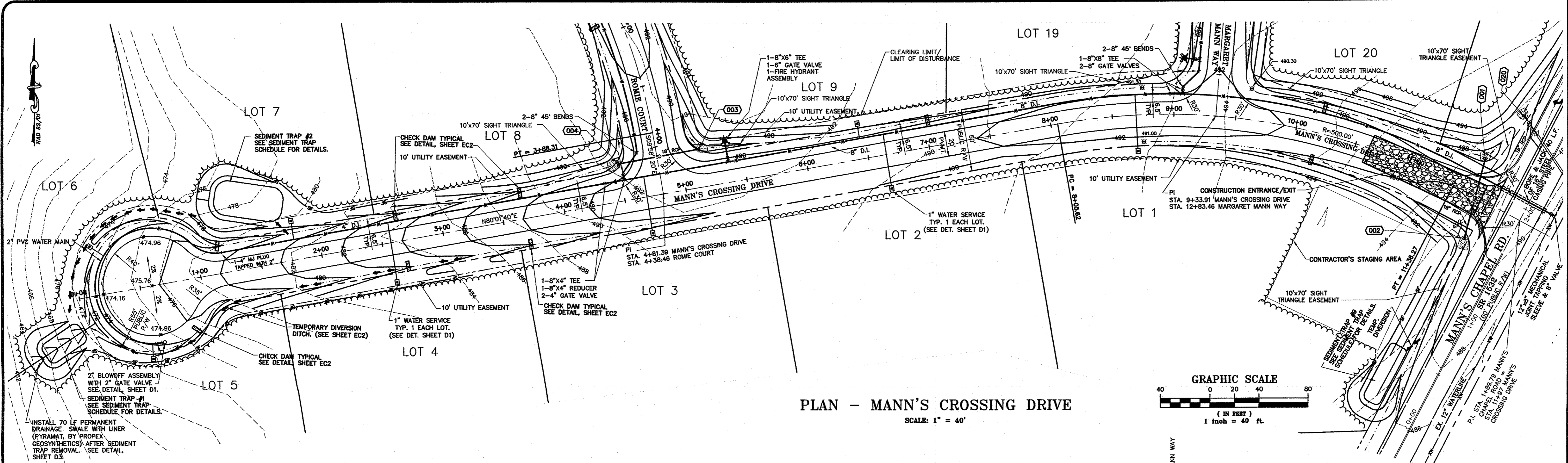
LENGTH OF PUBLIC STREET: 3,451 LF

TOTAL NUMBER OF LOTS: 40

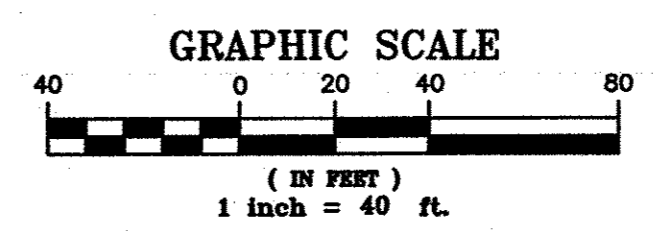
OVERLAY ZONING, WATERSHED DISTRICT, WS IV PROTECTED AREA

RIVER BASIN: CAPE FEAR (VIA HAW RIVER)





PLAN - MANN'S CROSSING DRIVE
SCALE: 1" = 40'



NOTES:

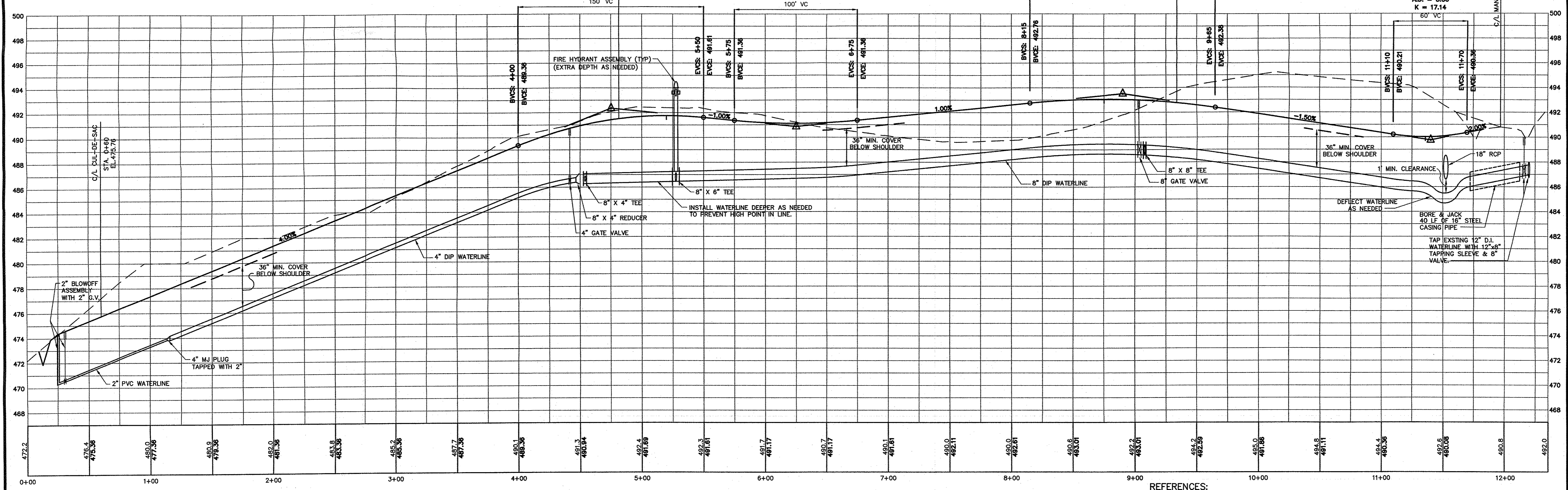
1. MANHOLES, WATER VALVES AND WATERLINE SHALL BE A MINIMUM OF 6' FROM EDGE OF PAVEMENT.
2. HYDRANTS SHALL BE INSTALLED AT OR BEHIND THE RIGHT OF WAY LINE.

HIGH POINT ELEV = 491.76
HIGH POINT STA = 5+20
PVI STA = 4+75
PVI ELEV = 492.36
A.D. = -5.00
K = 30.00

LOW POINT ELEV = 491.11
LOW POINT STA = 6+25
PVI STA = 6+25
PVI ELEV = 490.86
A.D. = 2.00
K = 50.00

HIGH POINT ELEV = 493.06
HIGH POINT STA = 8+75
PVI STA = 8+90
PVI ELEV = 493.51
A.D. = -2.50
K = 60.00
150' VC

LOW POINT ELEV = 490.02
LOW POINT STA = 11+40
PVI STA = 11+40
PVI ELEV = 489.76
A.D. = 3.50
K = 17.14



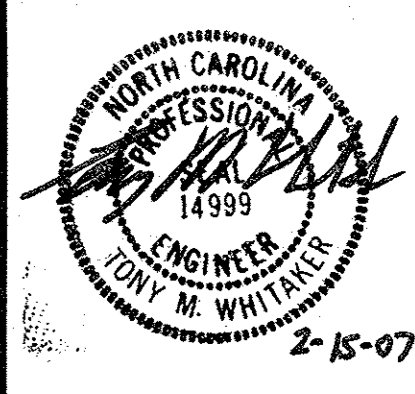
PROFILE - MANN'S CROSSING DRIVE STA. 0.00 - STA. 11+97

HORIZ. SCALE: 1" = 40'
VERT. SCALE: 1" = 4'

REFERENCES:

1. FOR GENERAL NOTES SEE SHEET C1.
2. FOR TYPICAL STREET SECTION SEE SHEET R2.
3. FOR CONSTRUCTION DETAILS SEE SHEETS D1, D2, D3, EC1 & EC2.
4. FOR EROSION CONTROL SEQUENCE, EROSION CONTROL DETAILS, AND SEDIMENT TRAP SCHEDULE, SEE SHEET EC1.
5. FOR STORM DRAINAGE PIPE SIZES, SLOPES AND MATERIAL, SEE 'STORM DRAINAGE STRUCTURE SCHEDULE' ON SHEET R2. FOR RIPRAP APRON SCHEDULE, SEE SHEET R2.

CIVIL CONSULTANTS, INC.
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3708 Lyndon Parkway, Suite 201 Durham, NC 27707
PH: (919) 490-1645 Fax: (919) 493-0336 www.civil-consultants.com

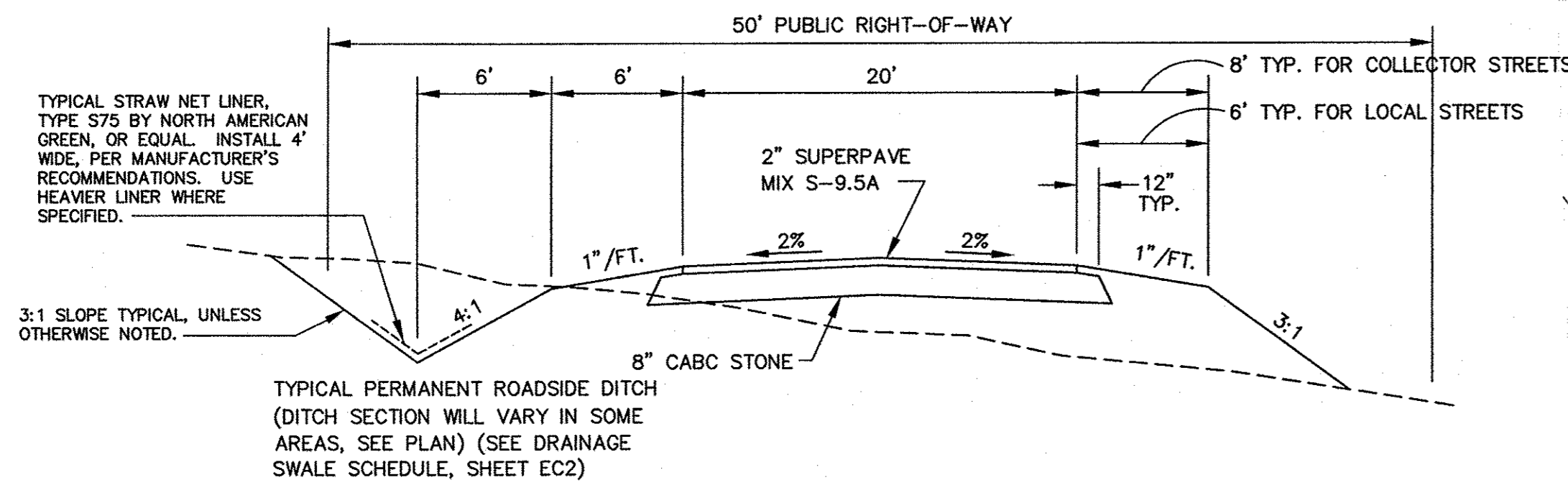


MANN'S CROSSING
CHATHAM COUNTY, NORTH CAROLINA
EROSION CONTROL,
MANN'S CROSSING DRIVE PLAN & PROFILE
STA. 0+00 - STA. 11+97

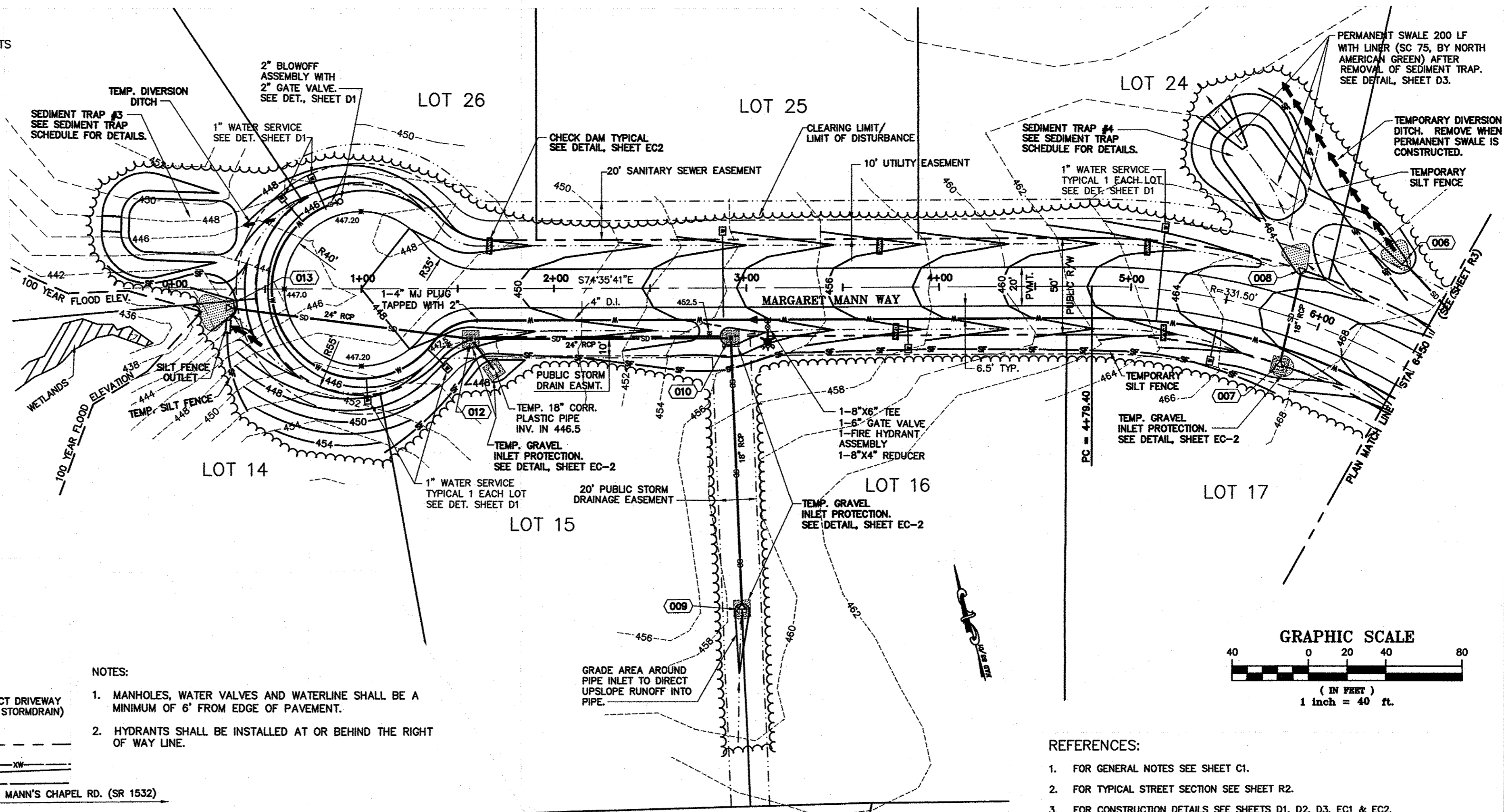
REV.	DATE	DESCRIPTION	BY
1	12-01-06	REV. PER COUNTY COMMENTS	RAM
2	1-11-07	REV. PER NCDOT COMMENTS	RAM
3	1-24-07	EROSION CONTROL COMMENTS	JES
4	2-15-07	REV. PER NCDOT COMMENTS	JES

DATE: OCTOBER 31, 2006
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'
DRAWN BY: TMM
PROJECT MANAGER: TMM
PROJECT NO.: 13009
DRAWING NAME: 13009-PROFILES.DWG

THIS DRAWING AND THE DESIGN HEREON ARE THE PROPERTY OF CIVIL CONSULTANTS, INC. THE INFORMATION ON THIS DRAWING IS NOT TO BE USED ON ANY OTHER SITE OR PROJECT. THE REPRODUCTION OR OTHER USE OF THIS DRAWING IN WHOLE OR IN PART, WITHOUT WRITTEN CONSENT OF CIVIL CONSULTANTS, INC. IS PROHIBITED.
SHEET NO. R1
CONSTRUCTION



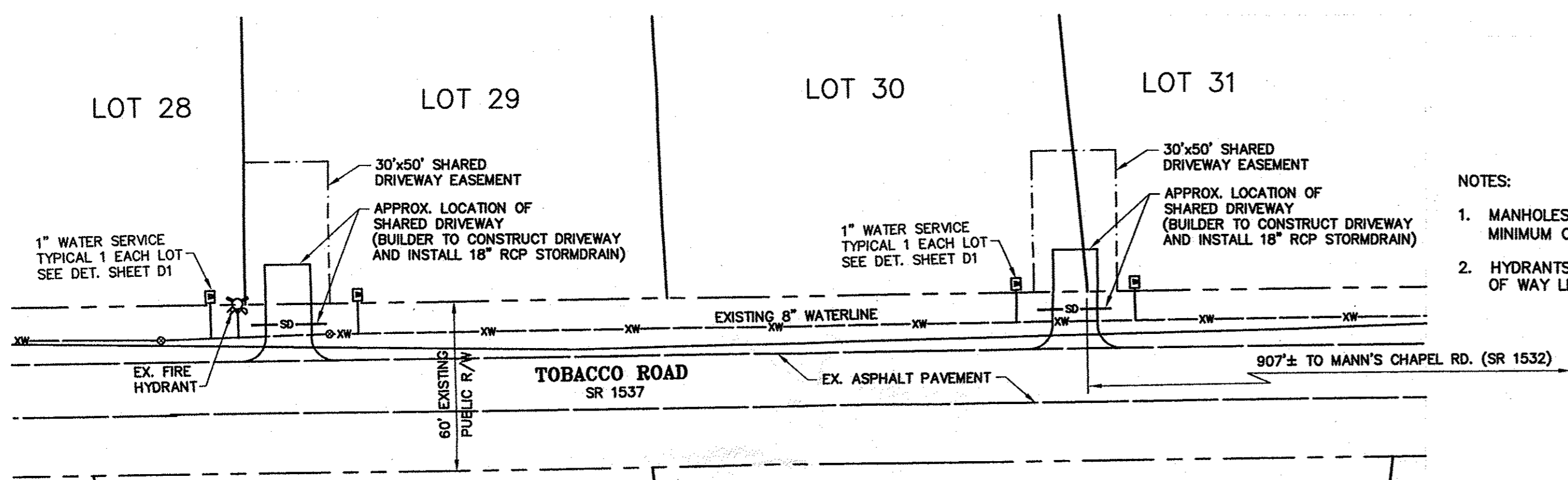
TYPICAL STREET SECTION
N.T.S.



PLAN - MARGARET MANN WAY STA. 0+00 - STA. 6+50
SCALE: 1" = 40'

- NOTES:
- MANHOLES, WATER VALVES AND WATERLINE SHALL BE A MINIMUM OF 6" FROM EDGE OF PAVEMENT.
 - HYDRANTS SHALL BE INSTALLED AT OR BEHIND THE RIGHT OF WAY LINE.

- REFERENCES:
- FOR GENERAL NOTES SEE SHEET C1.
 - FOR TYPICAL STREET SECTION SEE SHEET R2.
 - FOR CONSTRUCTION DETAILS SEE SHEETS D1, D2, D3, EC1 & EC2.
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 - FOR STORM DRAINAGE PIPE SIZES, SLOPES AND MATERIAL SEE 'STORM DRAINAGE STRUCTURE SCHEDULE' ON SHEET R2. FOR RIPRAP APRON SCHEDULE, SEE SHEET R3.

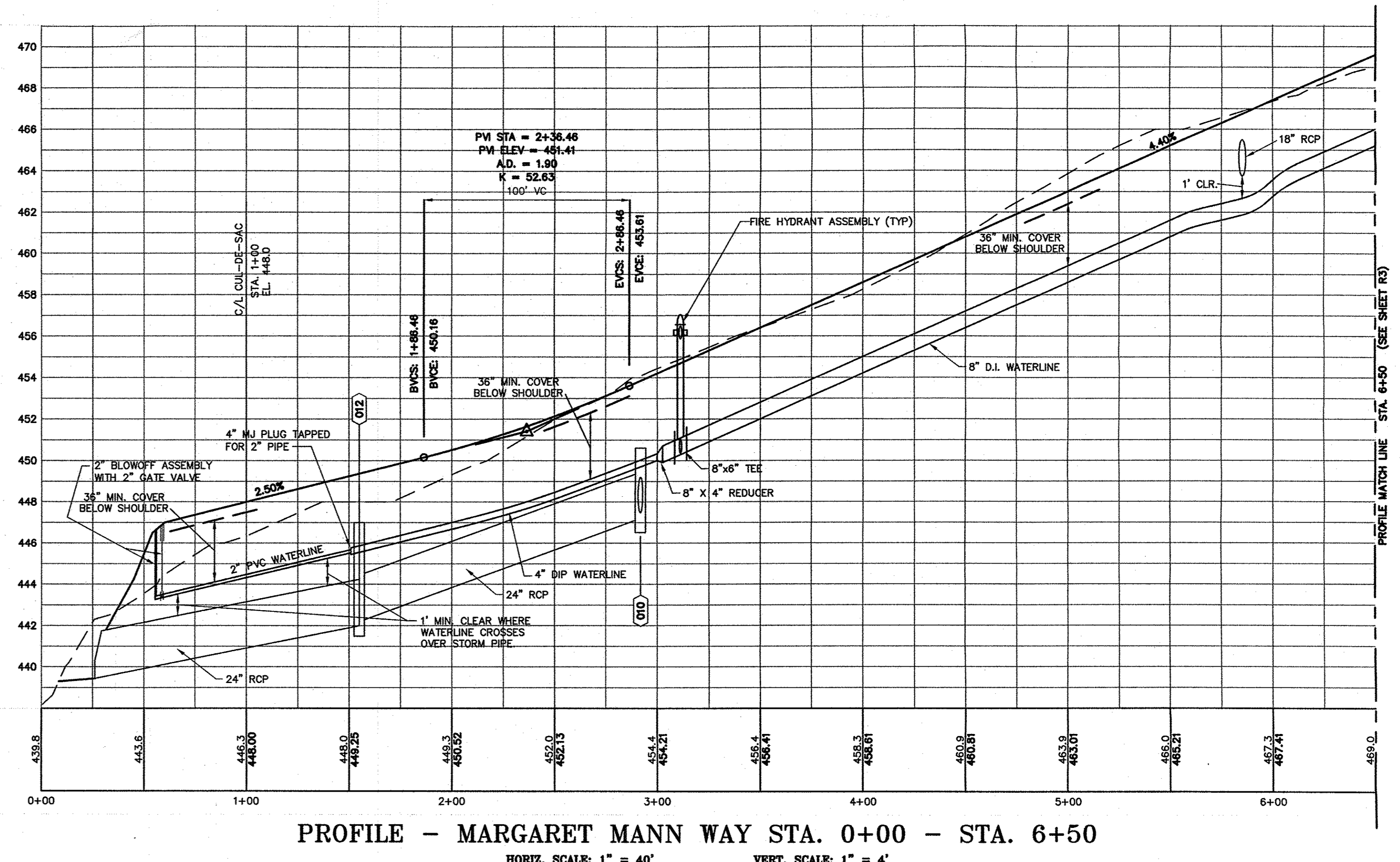


PLAN - TOBACCO ROAD
SCALE: 1" = 40'

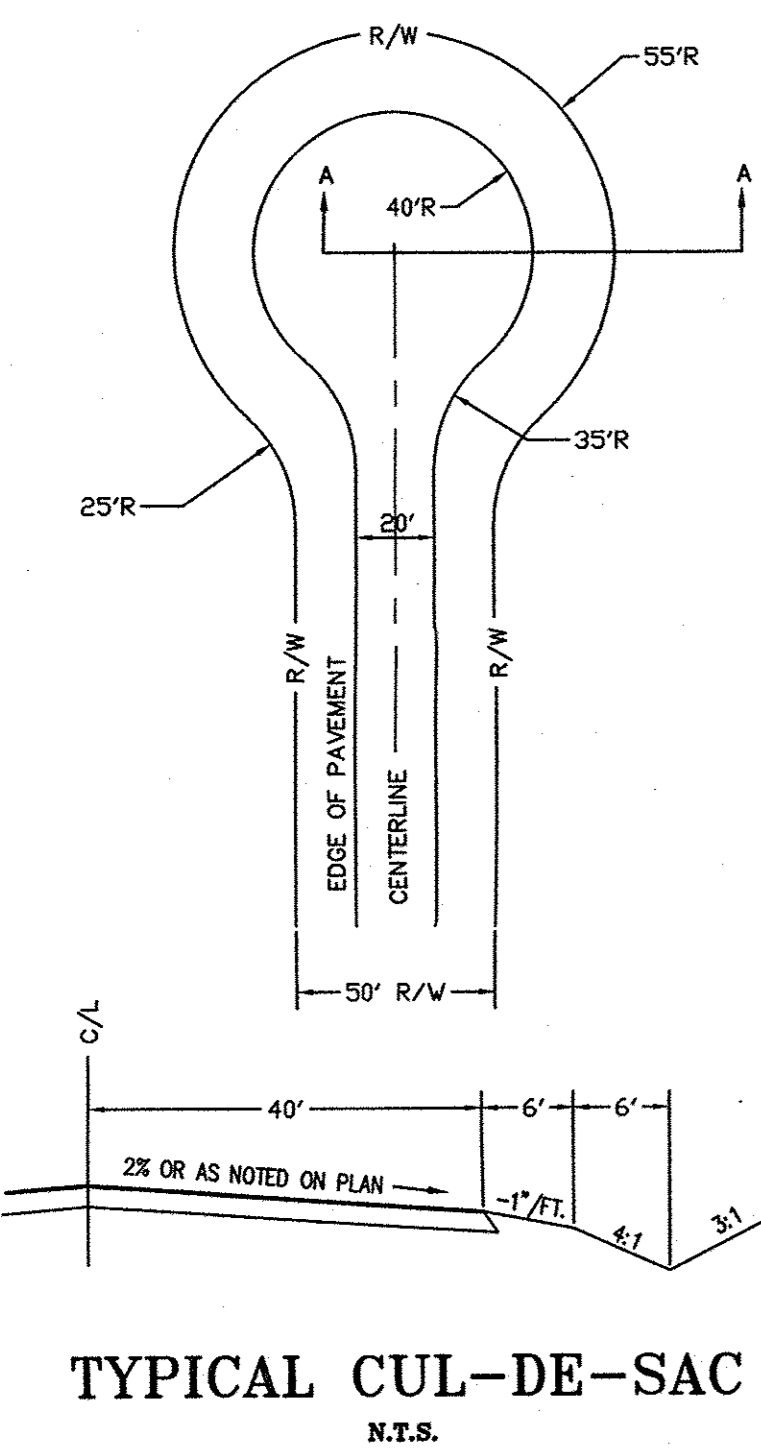
At Structure	Type	Q25 (CFS)	Pipe Dia (in.)	Velocity (fps)	Zone (NYDOT)	Stone Class	Length (ft)	Width (ft)	Thickness (in.)	Comments
002	OUT	0.98	18	3.72	1	1	6	7.5	12	
003	IN	4.01	18	5.54	1	1	4.5	4.5	12	
004	OUT	4.01	18	5.54	1	1	6	7.5	12	
006	OUT	6.96	18	9.49	2	1	9	10.5	18	
007	IN	2.87	18	5.78	1	1	4.5	4.5	12	
008	OUT	2.87	18	5.78	1	1	6	7.5	12	
009	IN	15.72	18	15.76	3	2	6	4.5	24	
013	OUT	5.41	24	7.58	2	1	12	14	18	
014	IN	18.35	24	17.70	3	2	8	6	24	
015	OUT	18.35	24	17.70	3	2	16	18	24	
018	IN	7.53	18	8.43	2	1	4.5	4.5	18	
019	OUT	7.53	18	8.43	2	1	9	10.5	18	
020	IN	2.68	18	7.85	2	1	4.5	4.5	18	

Structure Number	Structure Type	STRUCTURE DATA					PIPE DATA				REMARKS	
		Rim/Top elev	Invert In North elev	Invert In East elev	Invert In South elev	Invert In West elev	To	Pipe Length ft	Slope %	Pipe Diameter in		Pipe Material
001	Flared End Section	N/A	487.00				002	68.00	1.00	18	RCP	
002	Flared End Section	N/A				486.32	004	68.00	1.00	18	RCP	
003	Flared End Section	N/A		487.50			011	60.00	11.00	18	Temp. Pipe	
004	Flared End Section	N/A			480.00		008	52.00	1.44	18	RCP	
005	Plain End	N/A				464.50	010	140.00	6.50	18	RCP	
006	Flared End Section	N/A			456.50		012	135.16	3.70	24	RCP	
007	Flared End Section	N/A	464.25			447.20	021	109.00	4.00	18	RCP	
008	Flared End Section	N/A				442.00	013	128.00	2.90	24	RCP	
009	Flared End Section	N/A			456.50		017	40.00	10.94	24	RCP	
010	NCDOT Std 840.18	452.00			447.40		015	89.45	1.00	18	RCP	3 Sides Open
011	NCDOT Std 840.18	476.40			473.40		019	60.00	2.22	18	RCP	
012	NCDOT Std 840.18	447.00			442.20		Existing Pipe	20.00	2.00	18	RCP	
013	Flared End Section	N/A			439.44							
014	Flared End Section	N/A			497.00							
015	Flared End Section	N/A			489.62							
016	Yard Inlet	497.50			491.00							
017	NCDOT Std 840.31	N/A	492.11		490.12							
018	Flared End Section	N/A			486.20							
019	Flared End Section	N/A			484.87							
020	Flared End Section	N/A			488.70							
021	NCDOT Std 840.31	471.90			468.34							
022	NCDOT Std 840.31	471.90			468.14							

Footnotes:
1. For Yard Inlet, "Top Elevation" = Top of concrete cover, not flowline.
2. Upon removal of temporary pipes, patch openings in structures as needed.

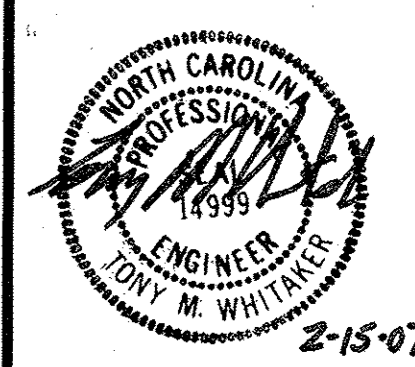


PROFILE - MARGARET MANN WAY STA. 0+00 - STA. 6+50
HORIZ. SCALE: 1" = 40' VERT. SCALE: 1" = 4'



TYPICAL CUL-DE-SAC
N.T.S.

CIVIL CONSULTANTS, INC.
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Land Development Consultants
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PH: (919) 490-0645 Fax: (919) 490-0336 www.civil-consultants.com

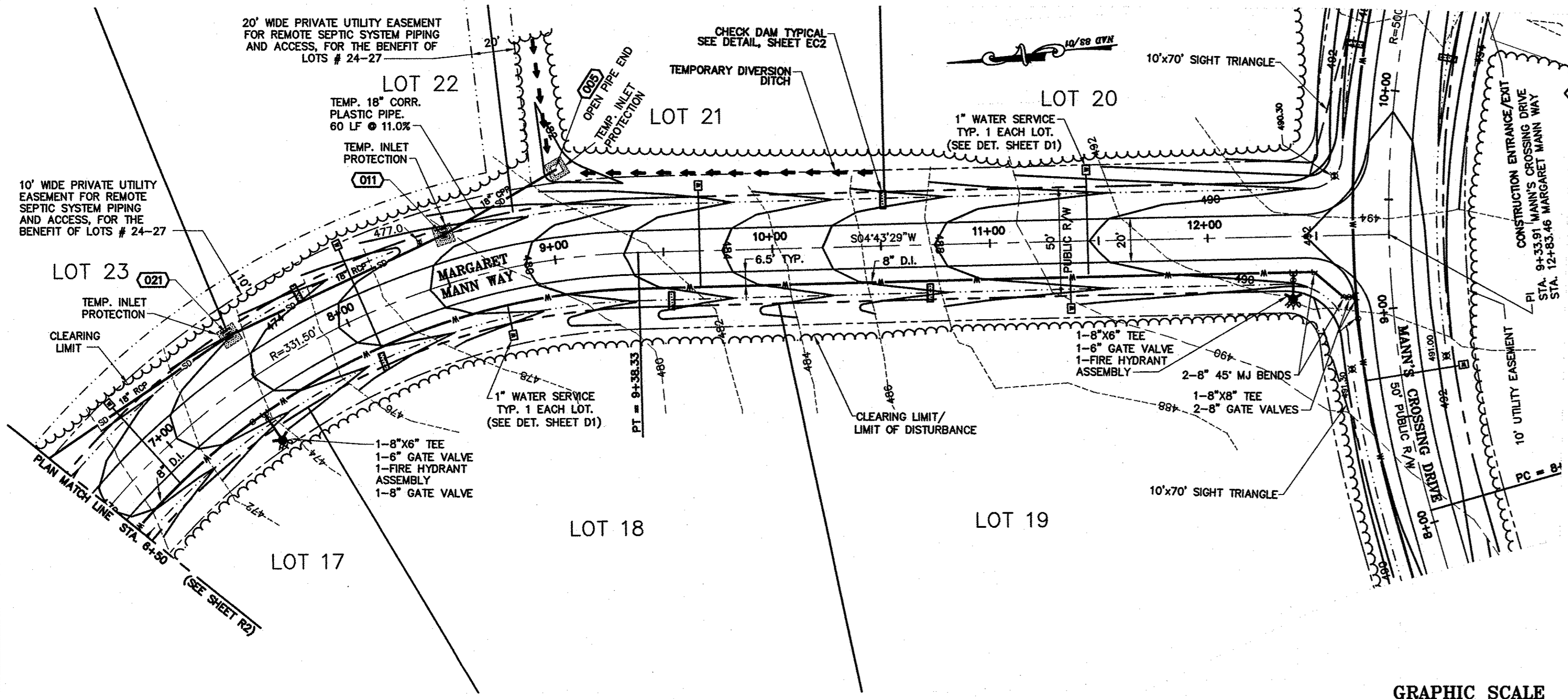


MANN'S CROSSING
CHATHAM COUNTY, NORTH CAROLINA
EROSION CONTROL, TOBACCO ROAD PLAN & PROFILE
& MARGARET MANN WAY PLAN & PROFILE
STA. 0+00 - STA. 6+50

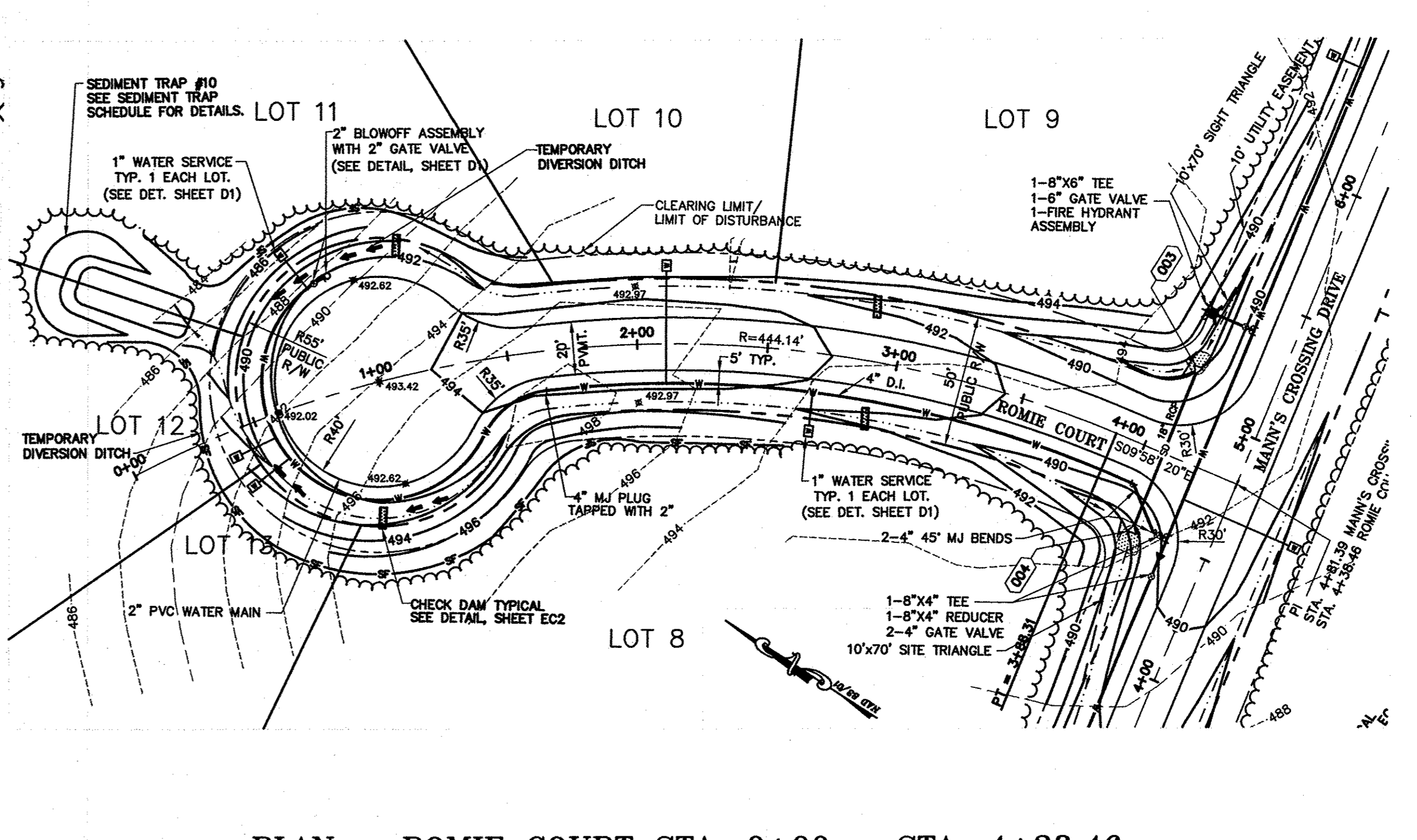
REV.	DATE	DESCRIPTION
1	12-01-06	REV PER COUNTY COMMENTS
2	1-11-07	REV PER NCDOT COMMENTS
3	1-24-07	EROSION CONTROL COMMENTS
4	2-15-07	REV PER NCDOT COMMENTS

DATE: OCTOBER 31, 2006
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'
PROJECT MANAGER: TMW
DRAWN BY: KDF
PROJECT NO: 13009
DRAWING NAME: 13009-PROFILES.DWG

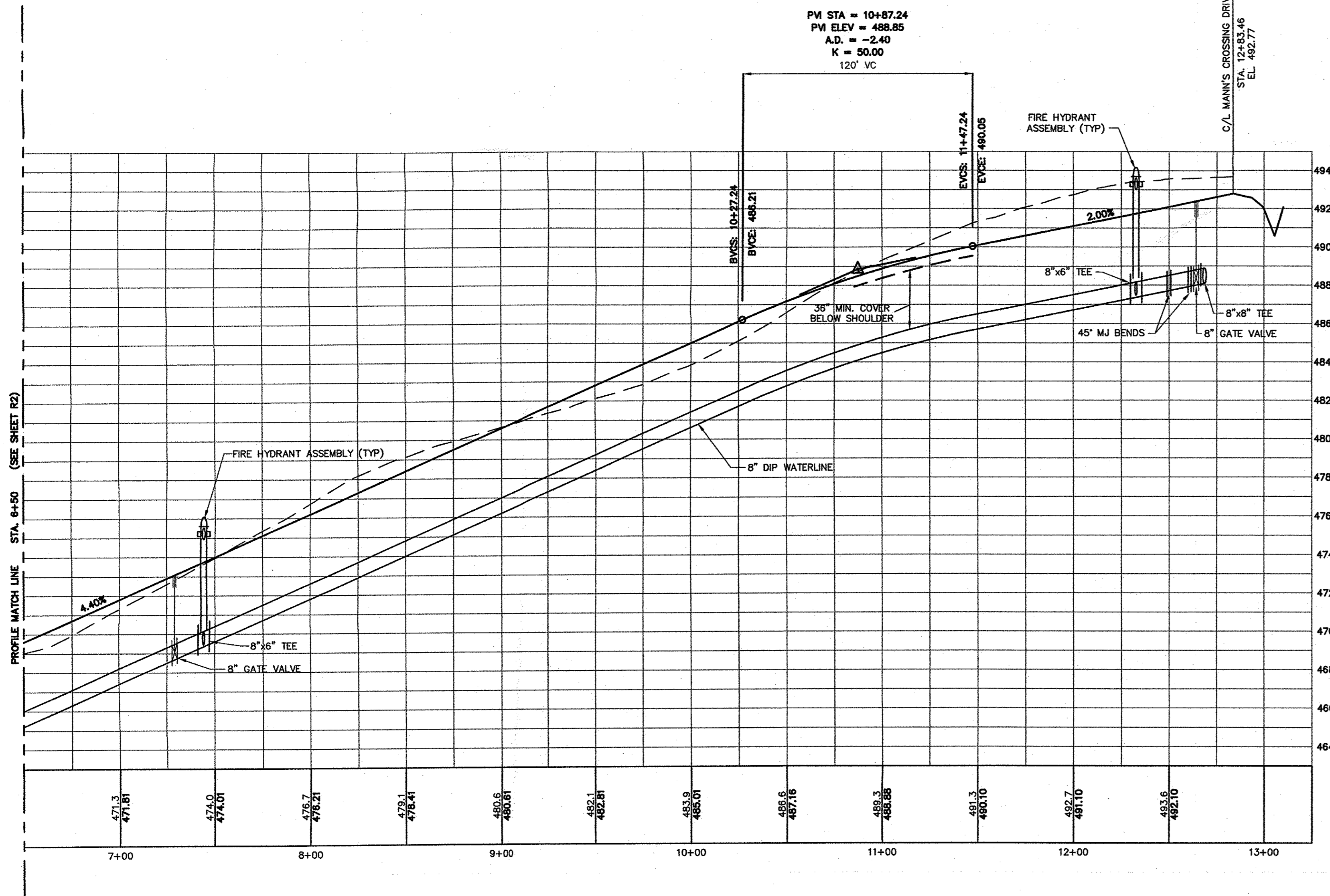
SHEET NO.
R2
CONSTRUCTION



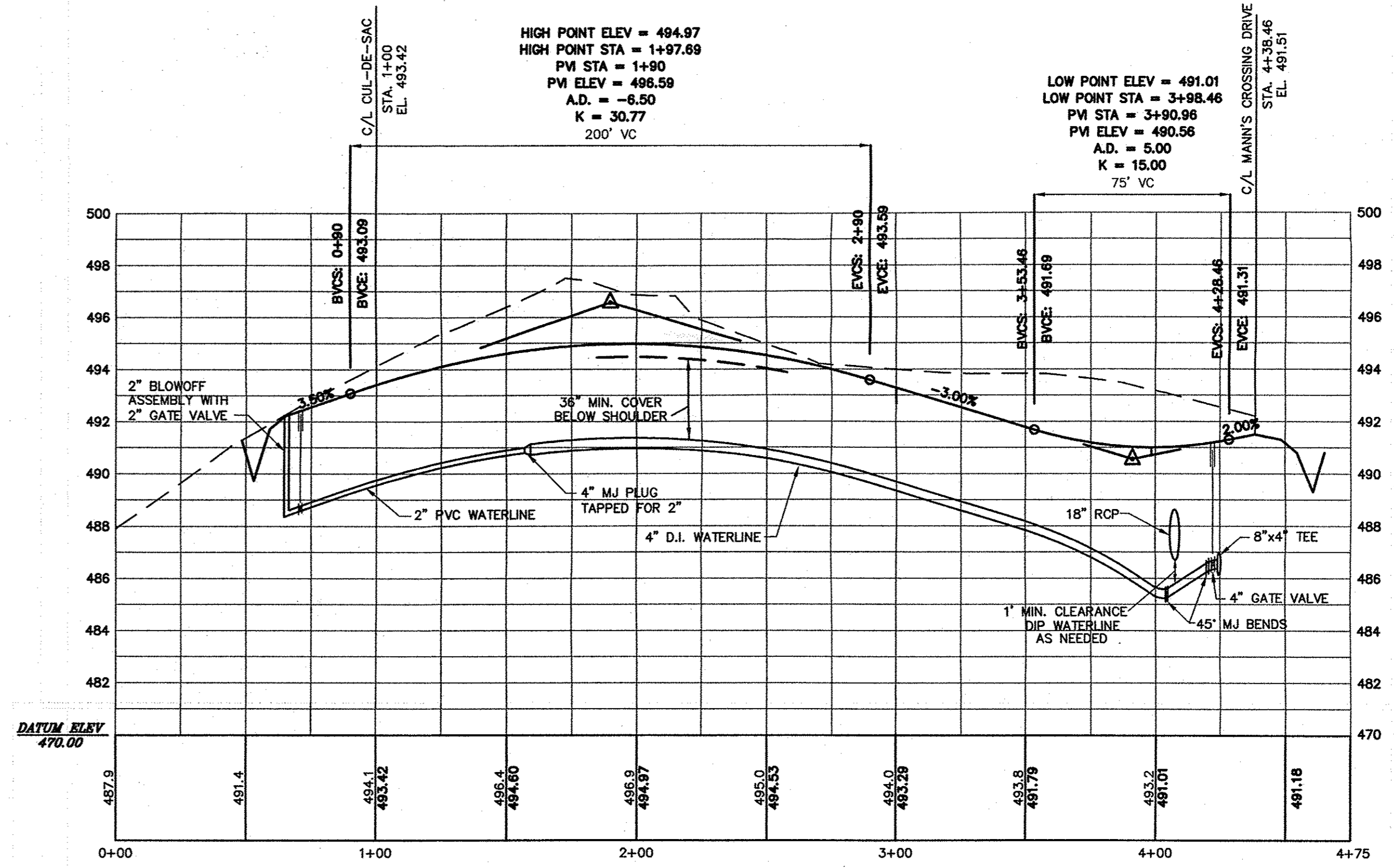
PLAN - MARGARET MANN WAY STA. 6+50 - STA. 12+83.46
SCALE: 1" = 40'



PLAN - ROMIE COURT STA. 0+00 - STA. 4+38.46
SCALE: 1" = 40'



PROFILE - MARGARET MANN WAY STA. 6+50 - STA. 12+83.46
HORIZ. SCALE: 1" = 40' VERT. SCALE: 1" = 4'



PROFILE - ROMIE COURT STA. 0+00 - STA. 4+38.46
HORIZ. SCALE: 1" = 40' VERT. SCALE: 1" = 4'

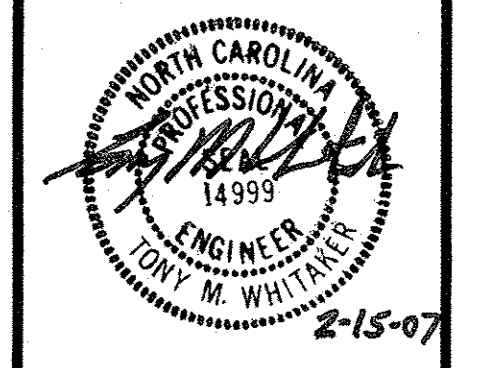
NOTES:

1. MANHOLES, WATER VALVES AND WATERLINE SHALL BE A MINIMUM OF 6' FROM EDGE OF PAVEMENT.
2. HYDRANTS SHALL BE INSTALLED AT OR BEHIND THE RIGHT OF WAY LINE.

REFERENCES:

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CIVIL CONSULTANTS INC.
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Lead Development Consultants
3708 Lyleck Parkway Suite 201 Durham, NC 27707
PH: (919) 490-1645 Fax: (919) 403-0336 www.civil-consultants.com

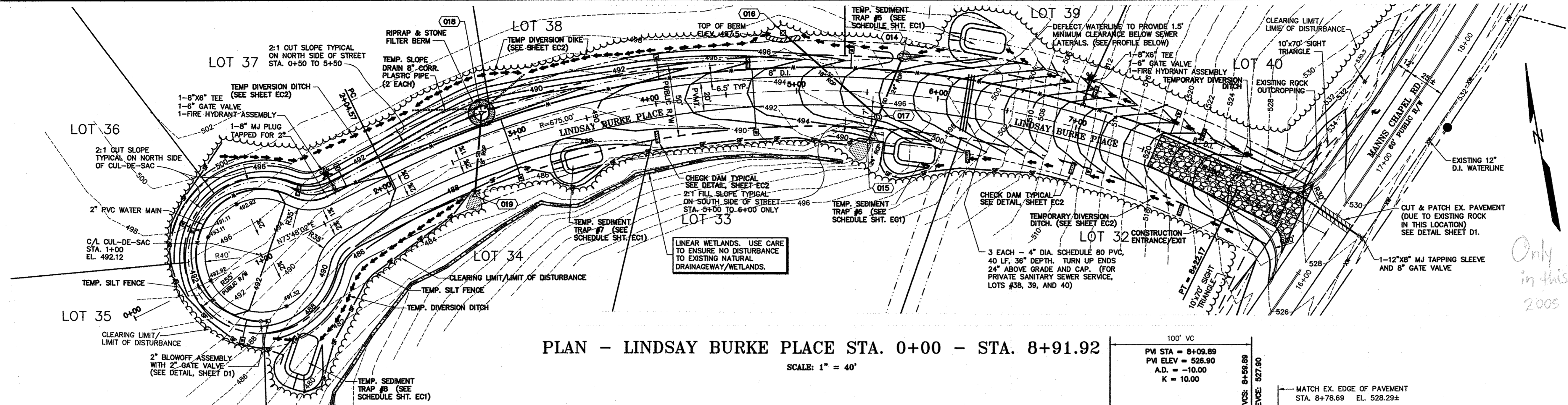


MANN'S CROSSING
CHATHAM COUNTY, NORTH CAROLINA
EROSION CONTROL,
MARGARET MANN WAY & ROMIE COURT
PLAN & PROFILE

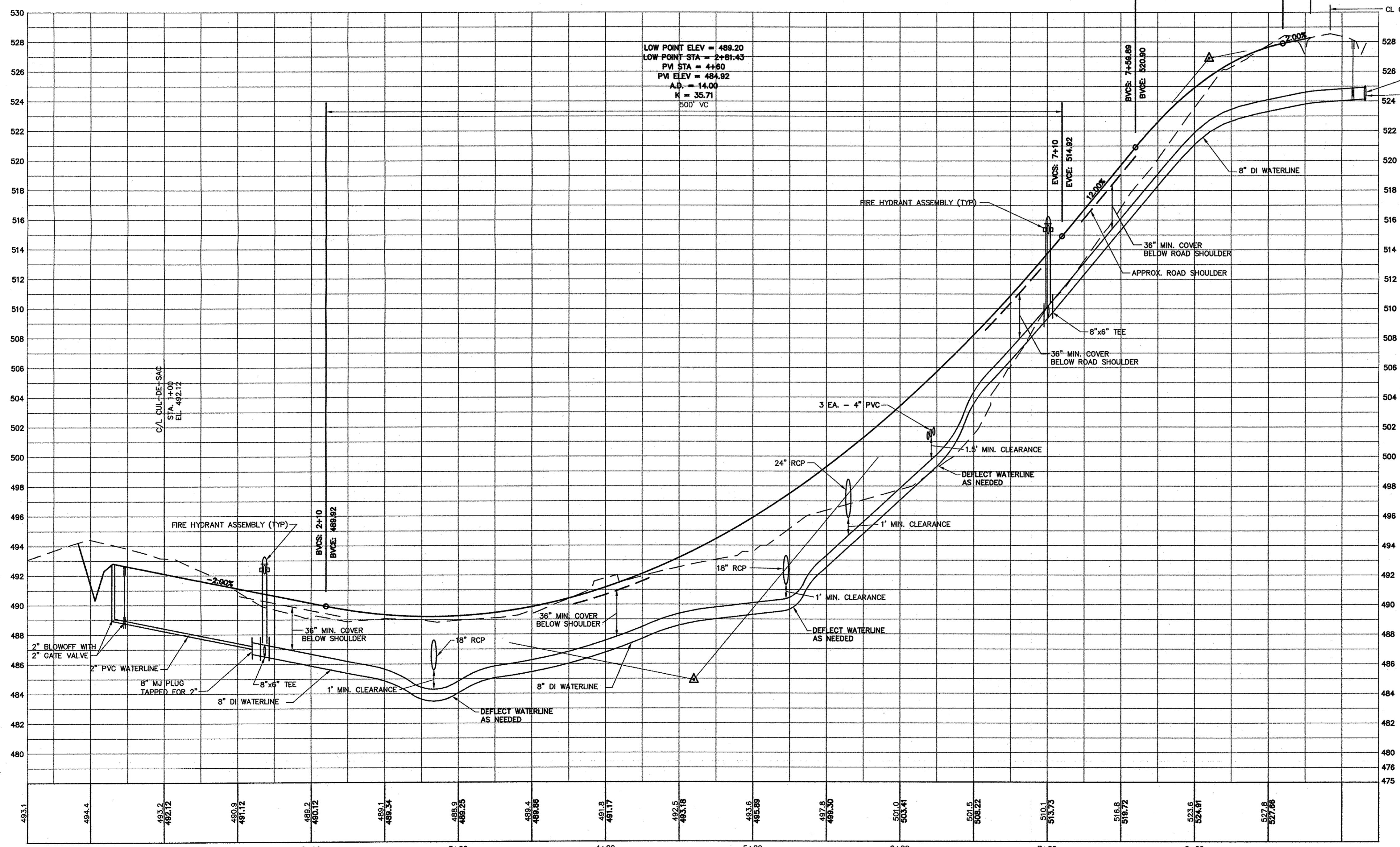
REV.	DATE	DESCRIPTION	BY
1	12-01-06	REV. PER COUNTY COMMENTS - RAIN	RAM
2	1-11-07	REV. PER NCDOT COMMENTS - RAIN	RAM
3	1-24-07	EROSION CONTROL COMMENTS - JES	JES
4	2-15-07	REV. PER NCDOT COMMENTS - JES	JES

DATE: OCTOBER 31, 2006
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'
PROJECT MANAGER: TMW
DRAWN BY: KSF
PROJECT NO.: 13009
DRAWING NAME: 13009-PROFILES.DWG
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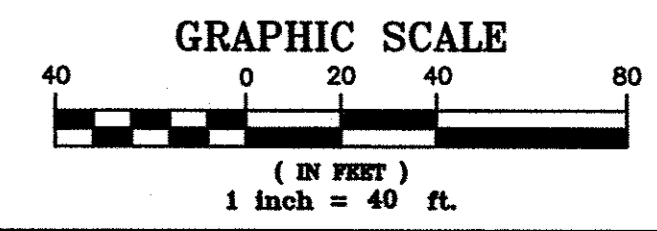
SHEET NO.
R3
CONSTRUCTION



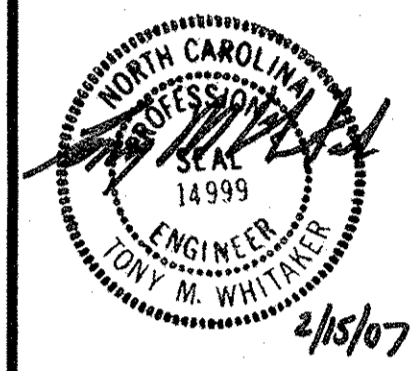
Only Boring is allowed in this location due to 2005 AADT (3400 vpd approx)



- REFERENCES:
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 - FOR TYPICAL STREET SECTION SEE SHEET R2.
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CIVIL CONSULTANTS, INC.
Civil Engineers
Land Development Consultants
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PH: (919) 490-1645 Fax: (919) 403-0336 www.civil-consultants.com



MANN'S CROSSING
CHATHAM COUNTY, NORTH CAROLINA
EROSION CONTROL,
LINDSAY BURKE PLACE PLAN & PROFILE
STA. 0+00 - STA. 8+91.92

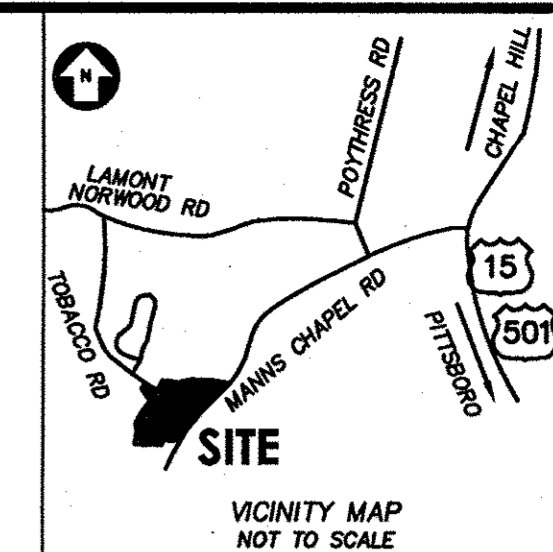
REV.	DATE	DESCRIPTION	BY
1	12-01-06	REV. PER COUNTY COMMENTS	RAM
2	1-11-07	REV. PER NCDOT COMMENTS	RAM
3	1-24-07	EROSION CONTROL COMMENTS	JES
4	2-15-07	REV. PER NCDOT COMMENTS	JES

DATE: OCTOBER 31, 2006
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'
PROJECT MANAGER: TMM
DRAWN BY: KDF
PROJECT NO: 13009
DRAWING NAME: 13009-PROFILES.DWG

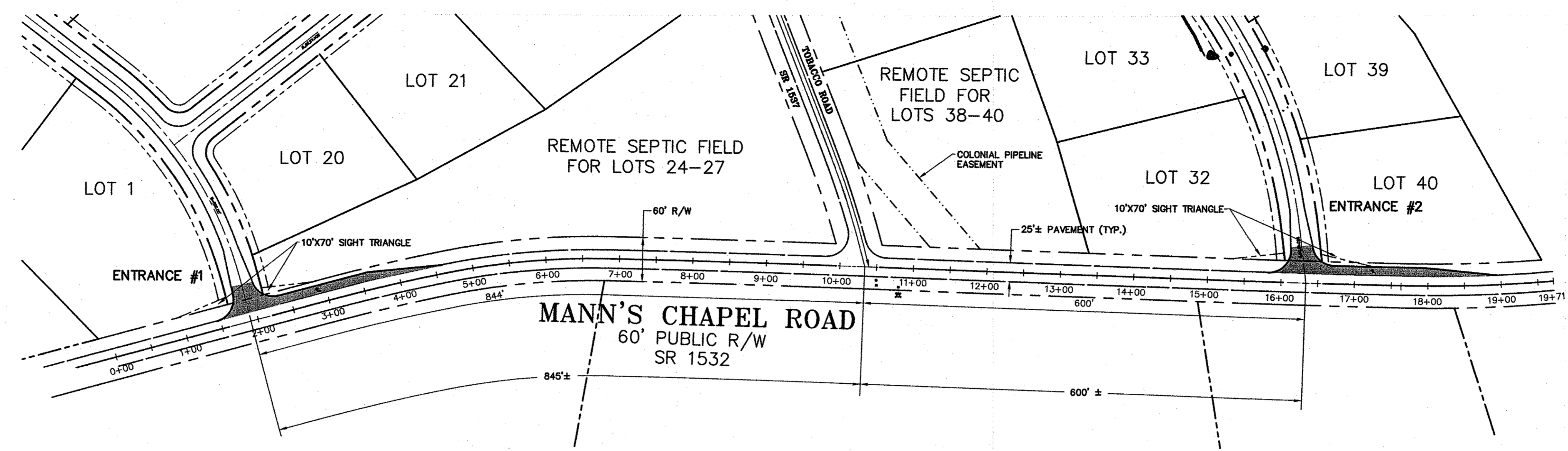
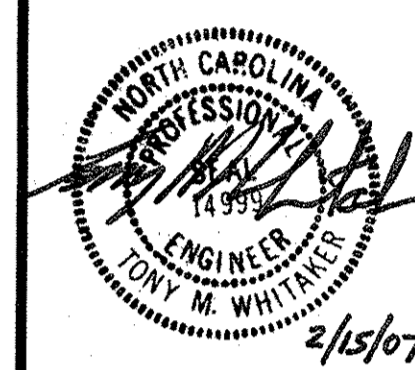
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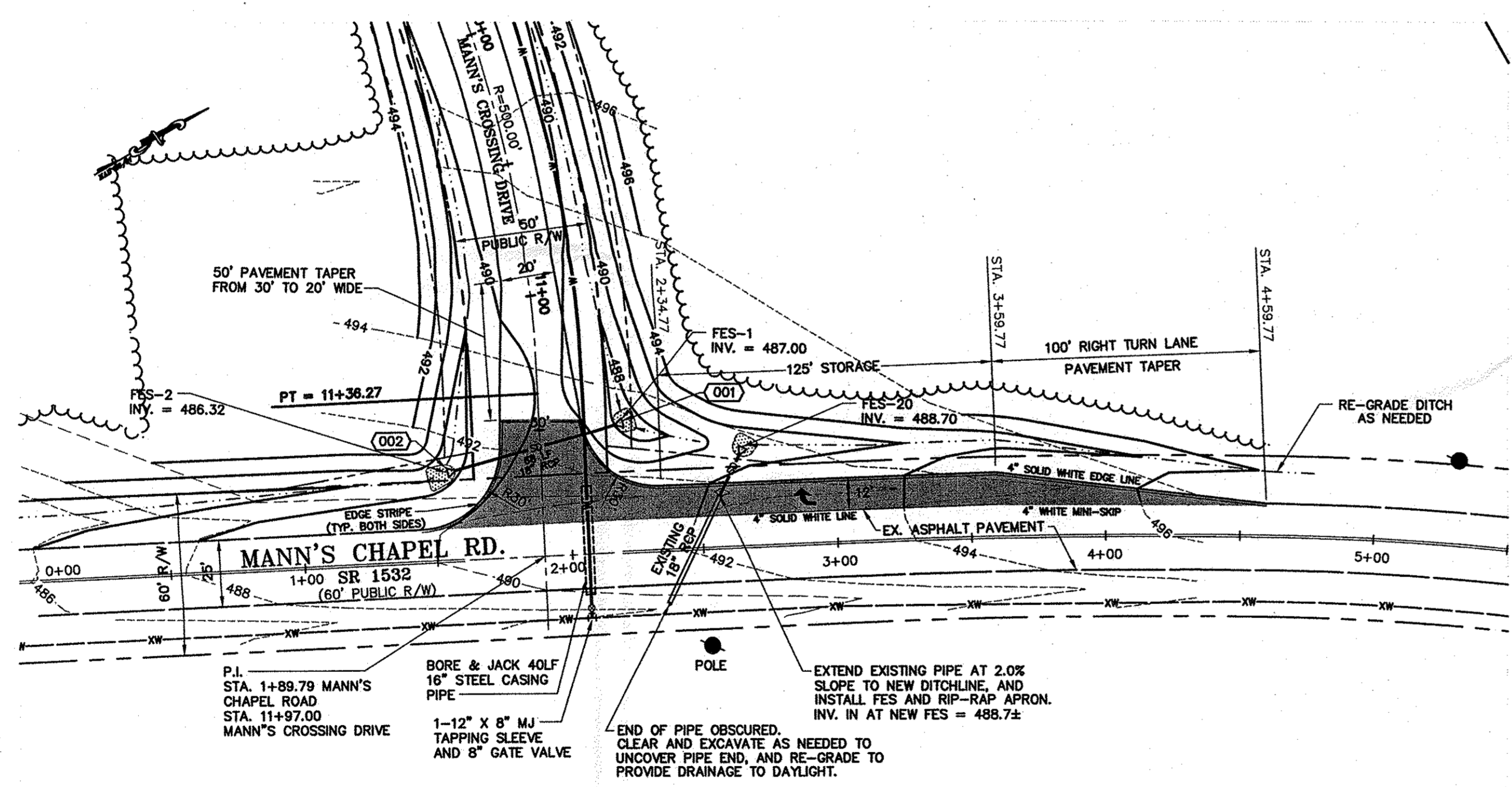
SHEET NO.
R4
CONSTRUCTION



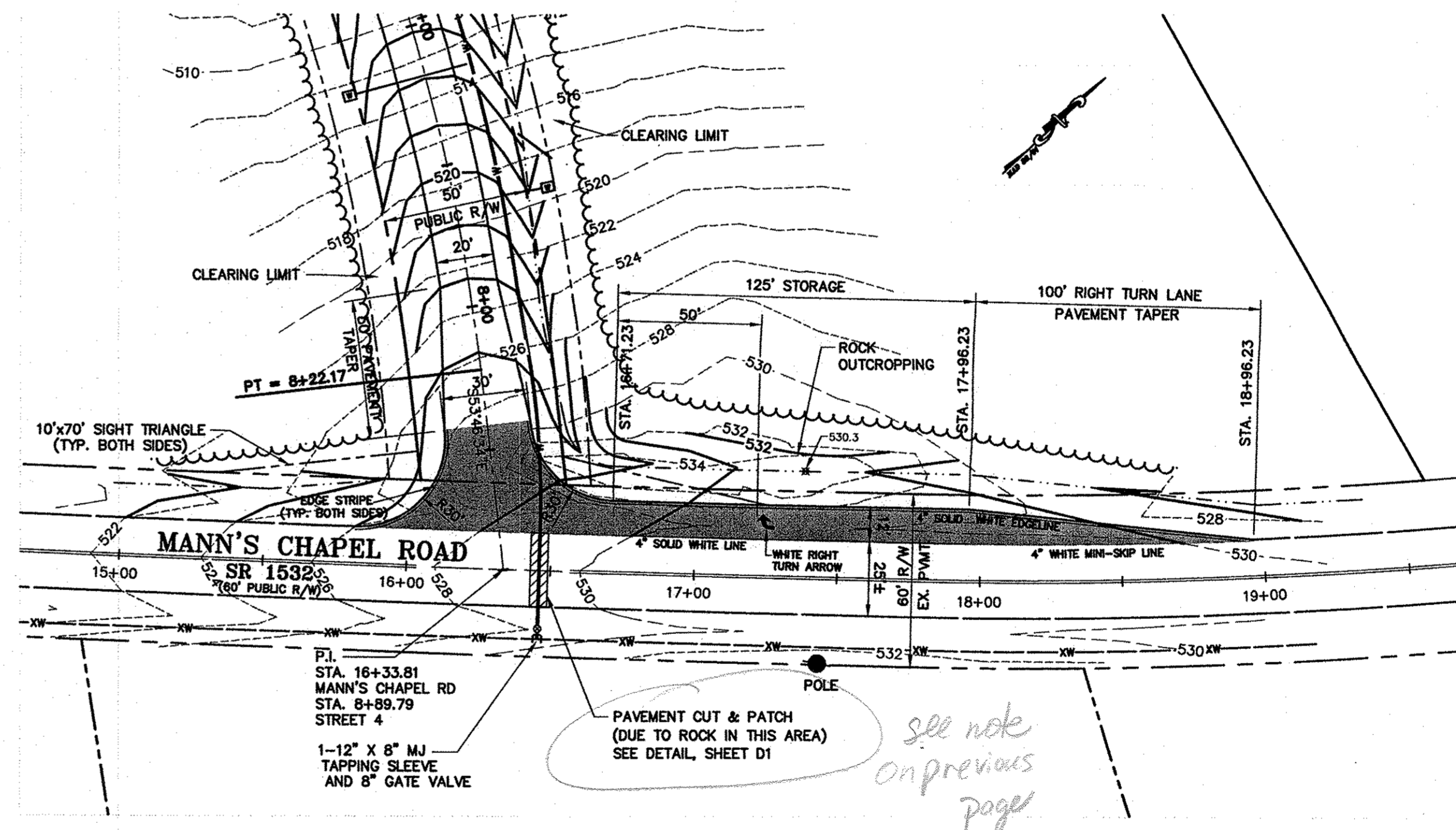
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LOCATION PLAN
 SCALE: 1" = 100'

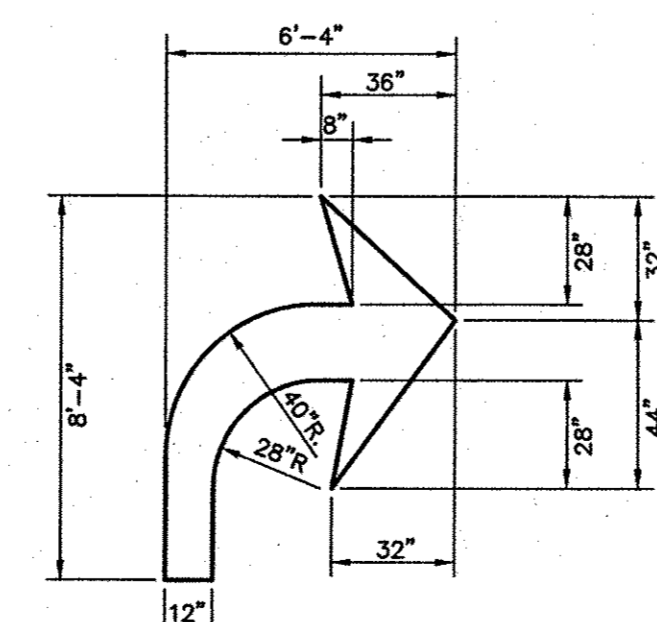


ENTRANCE # 1 (MANN'S CROSSING DRIVE)
MANN'S CHAPEL ROAD WIDENING PLAN
 SCALE 1" = 40'



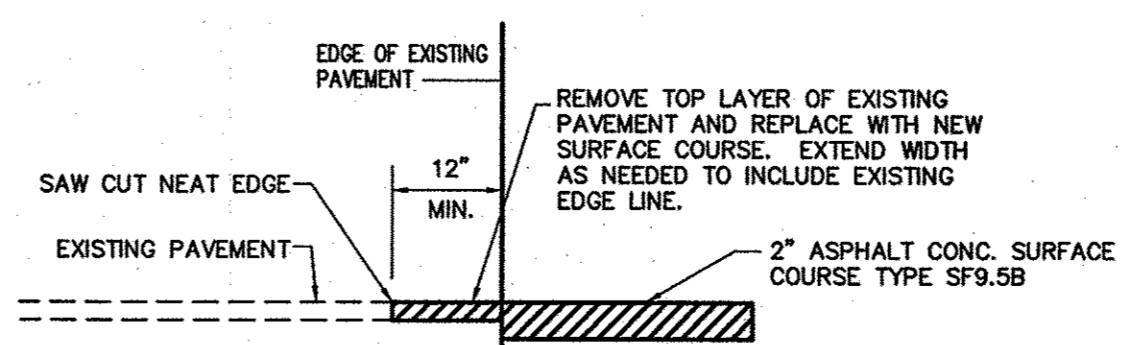
ENTRANCE # 2 (STREET 4)
MANN'S CHAPEL ROAD WIDENING PLAN
 SCALE 1" = 40'

- NOTES:**
- CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF ALL EXISTING UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF ALL EXISTING UTILITIES TO REMAIN DURING ALL CONSTRUCTION ACTIVITIES.
 - EXISTING POSTED SPEED LIMIT IS 45 MPH. A DESIGN SPEED OF 50 MPH HAS BEEN USED TO CALCULATE PAVEMENT TAPERS.
 - ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND PER NCDOT DRIVEWAY PERMIT REQUIREMENTS.
 - ALL PAVEMENT MARKINGS AND STRIPING SHALL BE MADE WITH RETRO-REFLECTIVE PAINT IN ACCORDANCE WITH THE LATEST EDITION OF NCDOT SPECIFICATIONS.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL MEASURES FOR ALL WORK WITHIN STREET RIGHTS-OF-WAY PER THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND THE SUPPLEMENT TO THE MUTCD AND LOCAL INSPECTORS DIRECTION.
 - NCDOT DRIVEWAY PERMITS ARE REQUIRED PRIOR TO ROAD CONSTRUCTION. A COPY OF APPROVED PLANS AND EXECUTED DRIVEWAY PERMITS ARE REQUIRED TO BE ON SITE AT ALL TIMES DURING CONSTRUCTION.
 - INFORMATION ABOUT EXISTING UNDERGROUND FACILITIES AND SUBSURFACE CONDITIONS INDICATED ON THE DRAWINGS IS BASED ON INFORMATION READILY AVAILABLE TO THE ENGINEER. THE ENGINEER HAS NOT CONDUCTED AN EXHAUSTIVE INVESTIGATION OF SUCH FACILITIES OR CONDITIONS, AND THEREFORE MAKES NO WARRANTY TO THE CONTRACTOR OR ANY OTHER PARTY REGARDING THEM. THE CONTRACTOR IS ADVISED THAT IF DIFFERING CONDITIONS EXIST, THEY MAY BE ENCOUNTERED DURING THE COURSE OF THE PROJECT WORK, AND THEY MAY IMPACT THE PROJECT SCOPE AND TIME REQUIREMENTS.
 - CONTRACTOR SHALL REMOVE AND REPLACE SIGNS AND MAILBOXES ALONG ROAD WIDENINGS AS NECESSARY.

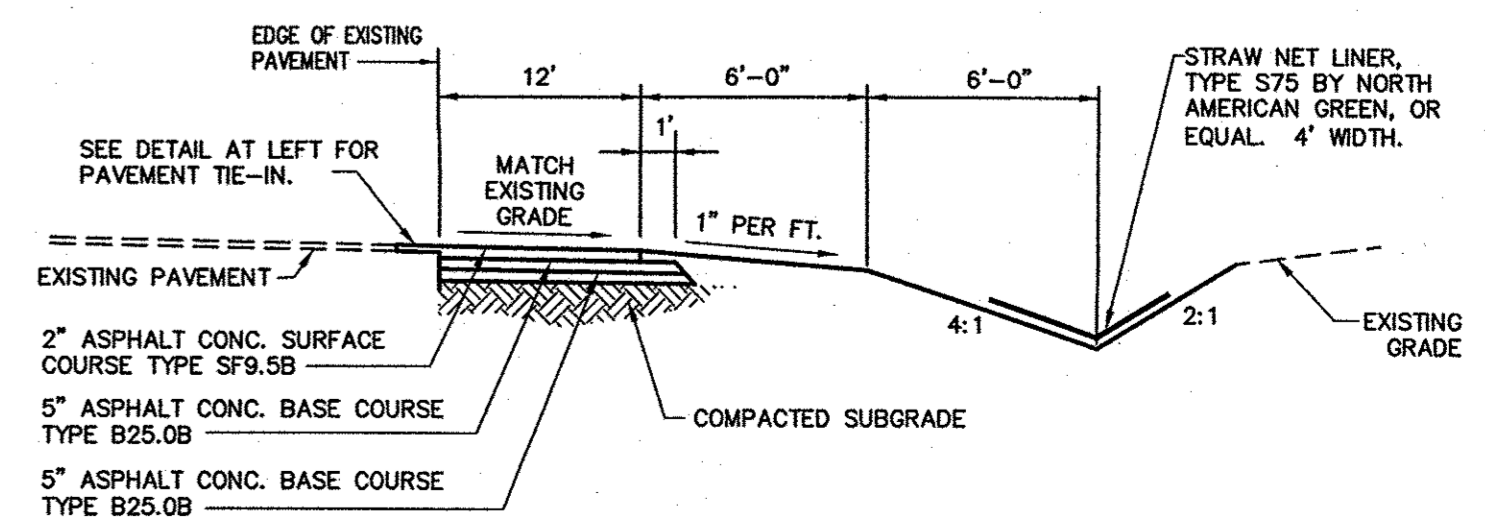


RIGHT TURN ARROW DETAIL
 NOT TO SCALE

CALL BEFORE YOU DIG... IT'S THE LAW.
 CALL N.C. ONE-CALL(1-800-632-4949)
 FOR LOCATION OF UNDERGROUND UTILITIES AT LEAST
 2 WORKING DAYS PRIOR TO BEGINNING GRADING OR TRENCHING.
 NORTH CAROLINA GENERAL STATUTE 87-102



PAVEMENT TIE-IN DETAIL
 NOT TO SCALE



PAVEMENT WIDENING SECTION
 NOT TO SCALE

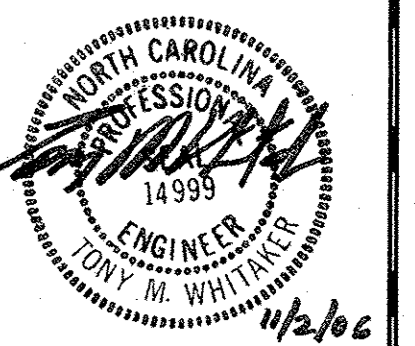
CONTACT THE ENGINEER 24 HRS. PRIOR TO BEGINNING WATER MAIN TAPS. THE ENGINEER MUST OBSERVE THE TAP AND BE PRESENT TO OBSERVE PIPE LAYING AND BACKFILLING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DOCUMENTING SUCCESSFUL TESTING UPON COMPLETION OF THE WATER MAIN AND PRIOR TO OPERATION.

REV.	DATE	DESCRIPTION
1	1-11-07	REV. PER NCDOT COMMENTS - JES
2	2-15-07	REV. PER NCDOT COMMENTS - JES

DATE: OCTOBER 31, 2006
 HORIZONTAL SCALE: AS SHOWN
 VERTICAL SCALE: N/A
 PROJECT MANAGER: TMW
 DRAWN BY: KOF
 PROJECT NO: 13009
 DRAWING NAME: 13009-PRELIM.DWG

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SHEET NO.
R5
 CONSTRUCTION



MANN'S CROSSING
CHATHAM COUNTY, NORTH CAROLINA
STORM DRAINAGE
DETAILS

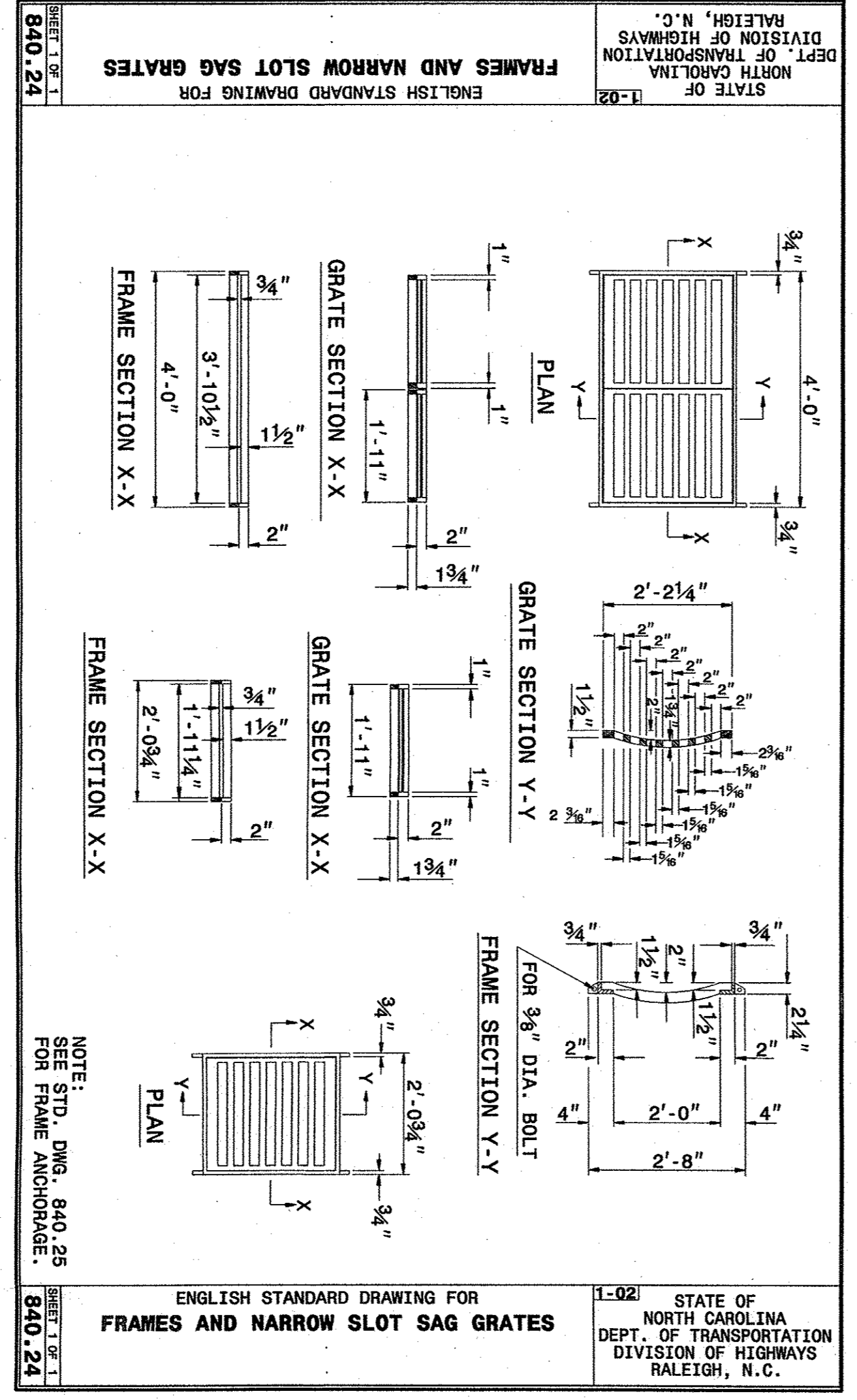
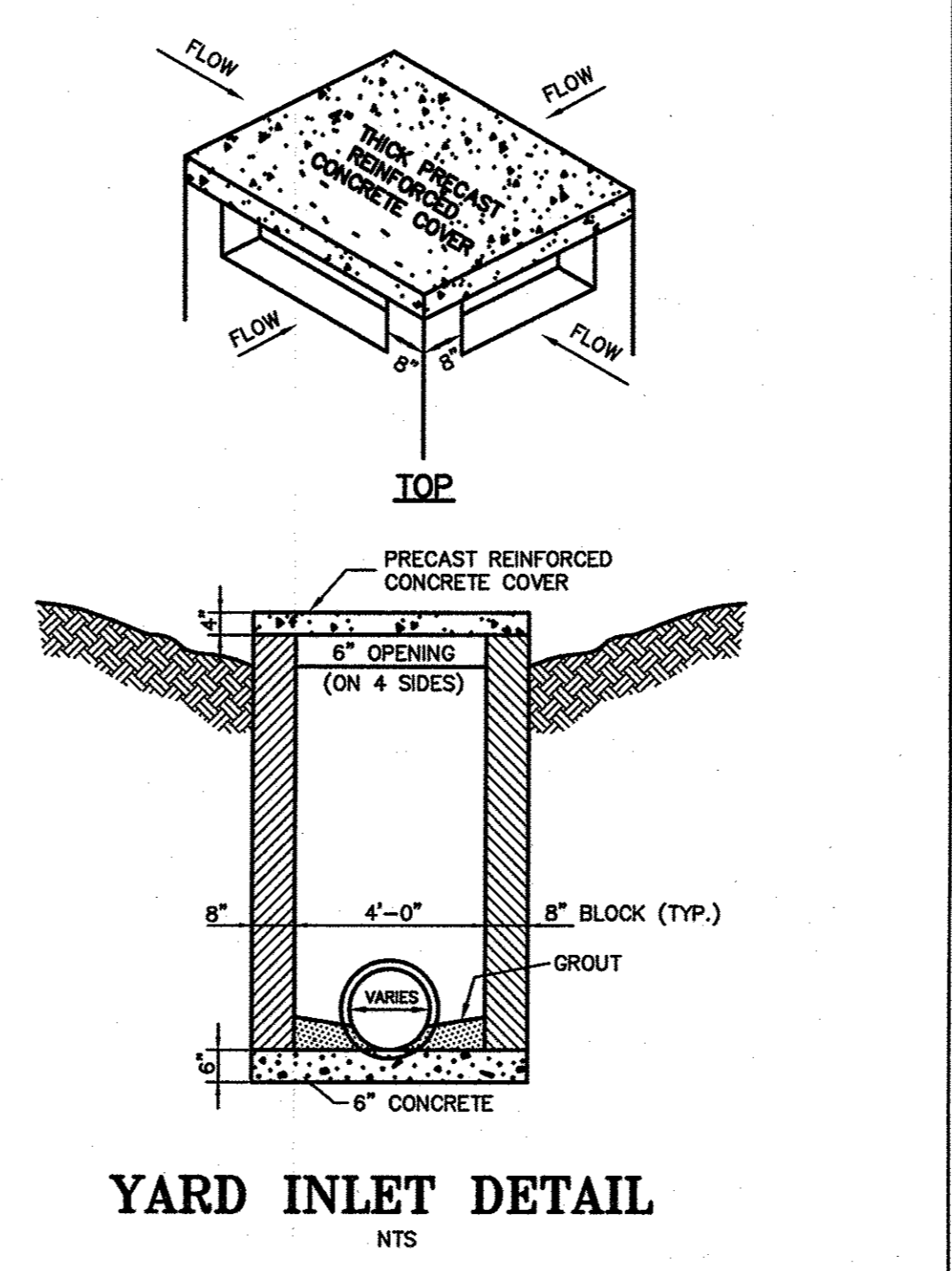
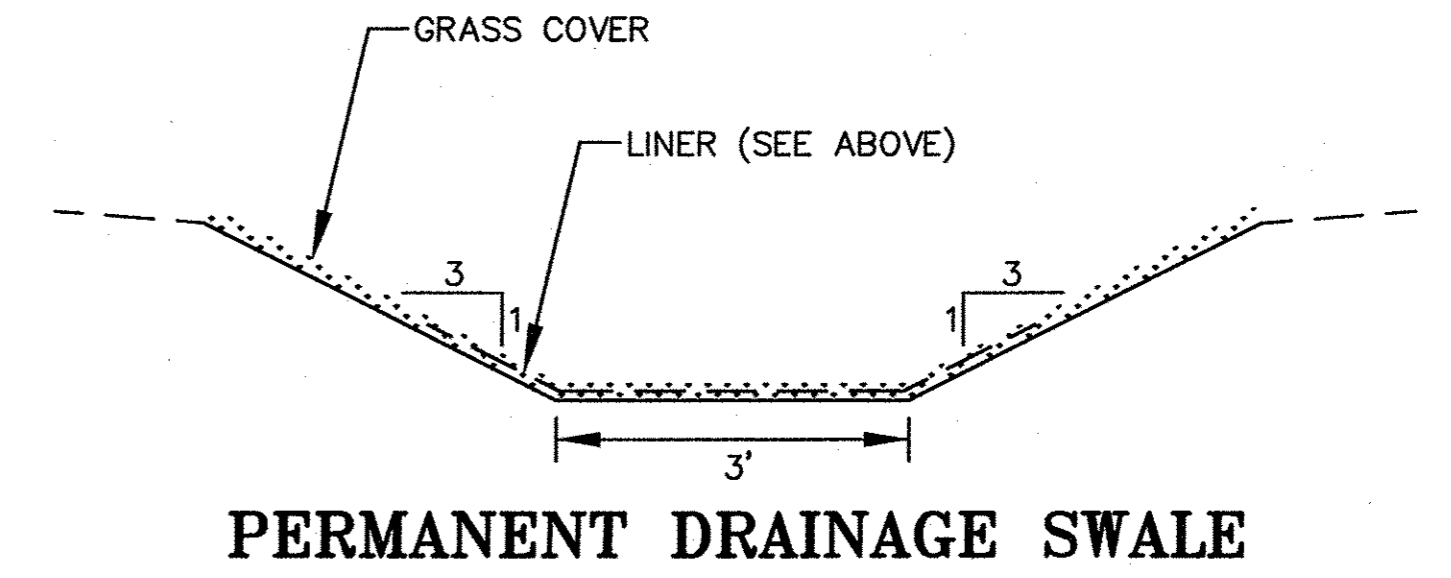
REV.	DATE	DESCRIPTION

DATE: OCTOBER 31, 2006
HORIZONTAL SCALE: NA
VERTICAL SCALE: NA
PROJECT MANAGER: TMW
DRAWN BY: KDF
PROJECT NO: 13009
DRAWING NAME: 13009-DETAILS

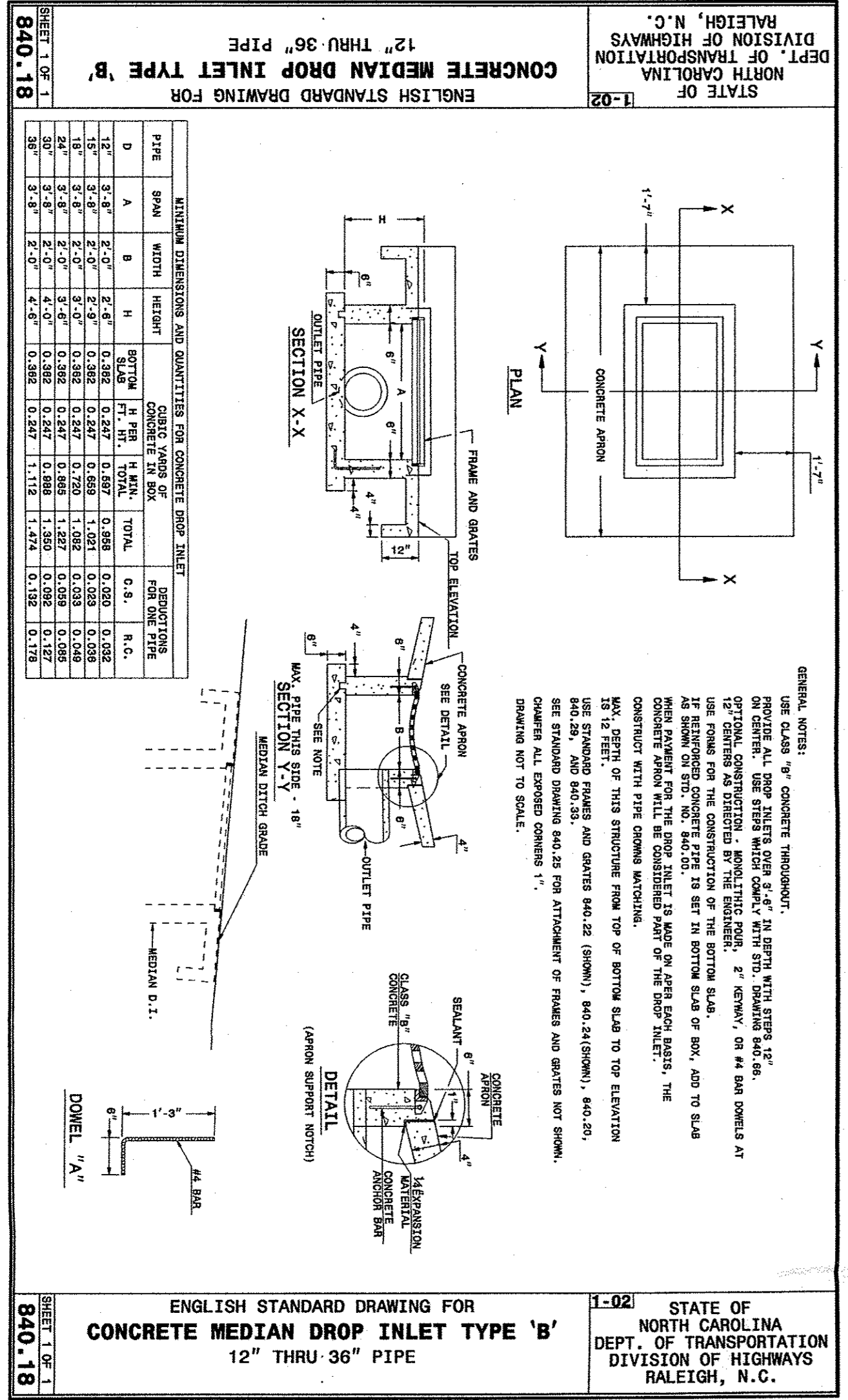
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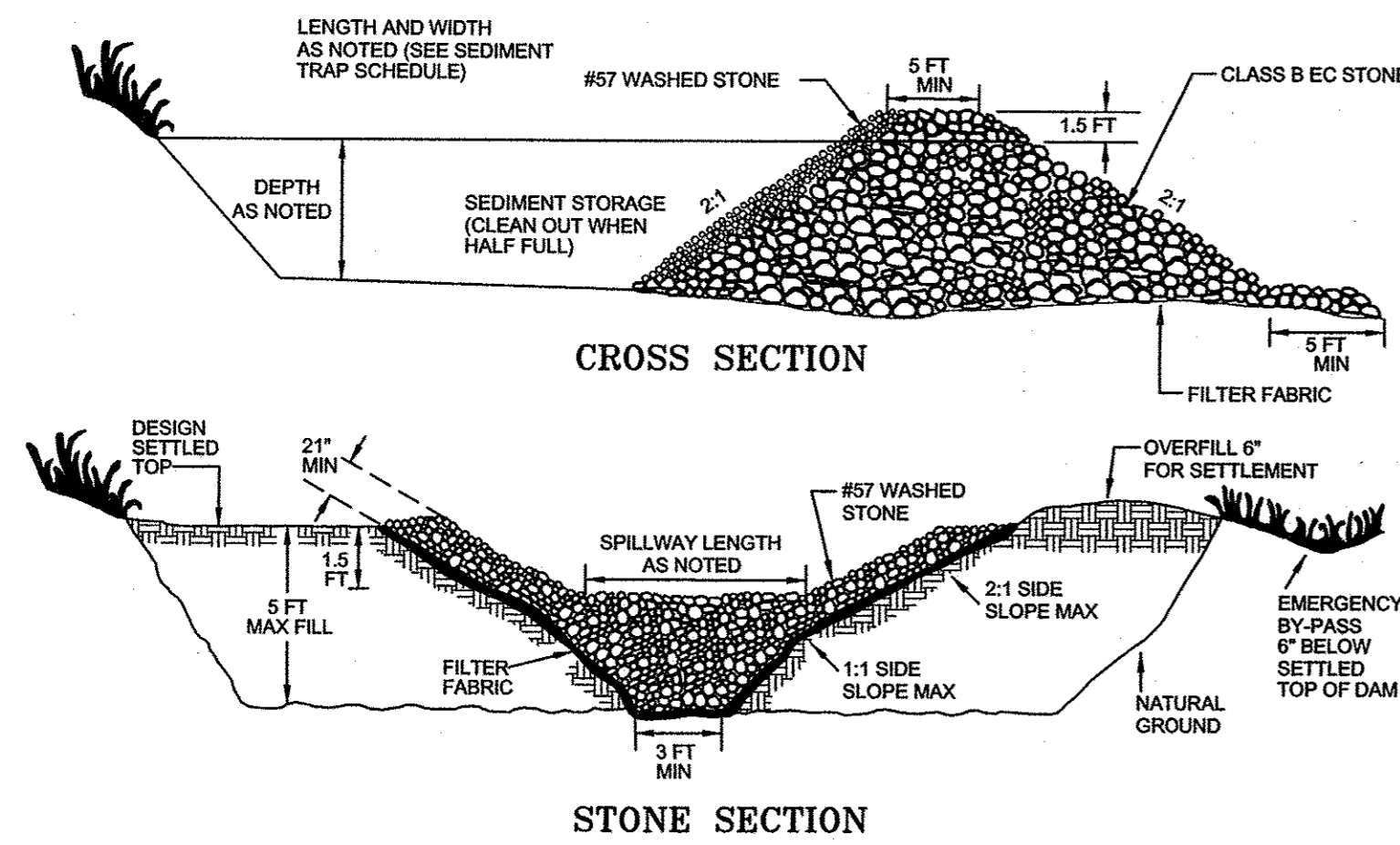
LINER SCHEDULE

TYPE A - SINGLE NET STRAW BLANKET SUCH AS S75 BY NORTH AMERICAN GREEN, OR EQUAL. USE 8" MINIMUM WIDTH.
TYPE B - SYNTHETIC MAT SUCH AS PYRAMAT BY PROPEX GEOSYNTHETICS, OR EQUAL. USE 8" MINIMUM WIDTH.



NOTE:
SEE STD. DWS. 840.28
FOR FRAME ANCHORAGE.





TEMPORARY SEDIMENT TRAP

CONSTRUCTION SPECIFICATIONS

- CLEAR, GRUB, AND STRIP THE AREA UNDER THE EMBANKMENT OF ALL VEGETATION AND ROOT MAT. REMOVE ALL SURFACE SOIL CONTAINING HIGH AMOUNTS OF ORGANIC MATTER AND STOCKPILE OR DISPOSE OF IT PROPERLY. HAUL ALL OBJECTIONABLE MATERIAL TO THE DESIGNATED DISPOSAL AREA.
- ENSURE THAT FILL MATERIAL FOR THE EMBANKMENT IS FREE OF ROOTS, WOODY VEGETATION, ORGANIC MATTER, AND OTHER OBJECTIONABLE MATERIAL. PLACE THE FILL IN LIFTS NOT TO EXCEED 9 INCHES AND MACHINE COMPACT IT. OVER FILL THE EMBANKMENT 6 INCHES TO ALLOW FOR SETTLEMENT.
- CONSTRUCT THE OUTLET SECTION IN THE EMBANKMENT. PROTECT THE CONNECTION BETWEEN THE RIPRAP AND THE SOIL FROM PIPING BY USING FILTER FABRIC OR A KEYWAY CUTOFF TRENCH BETWEEN THE RIPRAP STRUCTURE AND THE SOIL. PLACE THE FILTER FABRIC BETWEEN THE RIPRAP AND SOIL. EXTEND THE FABRIC ACROSS THE SPILLWAY FOUNDATION AND SIDES TO THE TOP OF THE DAM; OR EXCAVATE A KEYWAY TRENCH ALONG THE CENTERLINE OF THE SPILLWAY FOUNDATION EXTENDING UP THE SIDES TO THE HEIGHT OF THE DAM. THE TRENCH SHOULD BE AT LEAST 2 FT DEEP AND 2 FT WIDE WITH 1:1 SIDE SLOPES.
- CLEAR THE POND AREA BELOW THE ELEVATION OF THE CREST OF THE SPILLWAY TO FACILITATE SEDIMENT CLEANOUT.
- ALL CUT AND FILL SLOPES SHOULD BE 2:1 OR FLATTER.
- ENSURE THAT THE STONE (DRAINAGE) SECTION OF THE EMBANKMENT HAS A MINIMUM BOTTOM WIDTH OF 3 FT AND MAXIMUM SIDE SLOPES OF 1:1 THAT EXTEND TO THE BOTTOM OF THE SPILLWAY SECTION.
- CONSTRUCT THE MINIMUM FINISHED STONE SPILLWAY BOTTOM WIDTH, AS SHOWN ON THE PLANS, WITH 2:1 SIDE SLOPES EXTENDING TO THE TOP OF THE OVER FILLED EMBANKMENT. KEEP THE THICKNESS OF THE SIDES OF THE SPILLWAY OUTLET STRUCTURE AT A MINIMUM OF 21 INCHES. THE WEIR MUST BE LEVEL AND CONSTRUCTED TO GRADE TO ASSURE DESIGN CAPACITY.
- MATERIAL USED IN THE STONE SECTION SHOULD BE A WELL-GRADED MIXTURE OF STONE WITH A D₅₀ SIZE OF 9 INCHES (CLASS B EROSION CONTROL STONE IS RECOMMENDED) AND A MAXIMUM STONE SIZE OF 14 INCHES. THE STONE MAY BE MACHINE PLACED AND THE SMALLER STONES WORKED INTO THE VOIDS OF THE LARGER STONES. THE STONE SHOULD BE HARD, ANGULAR, AND HIGHLY WEATHER-RESISTANT.
- ENSURE THAT THE STONE SPILLWAY OUTLET SECTION EXTENDS DOWNSTREAM PAST THE TOE OF THE EMBANKMENT UNTIL STABLE CONDITIONS ARE REACHED AND OUTLET VELOCITY IS ACCEPTABLE FOR THE RECEIVING STREAM. KEEP THE EDGES OF THE STONE OUTLET SECTION FLUSH WITH THE SURROUNDING GROUND AND SHAPE THE CENTER TO CONFINE THE OUTFLOW STREAM.
- DIRECT EMERGENCY BYPASS TO NATURAL, STABLE AREAS. LOCATE BYPASS OUTLETS SO THAT FLOW WILL NOT DAMAGE THE EMBANKMENT.
- STABILIZE THE EMBANKMENT AND ALL DISTURBED AREAS ABOVE THE SEDIMENT POOL AND DOWNSTREAM FROM THE TRAP IMMEDIATELY AFTER CONSTRUCTION.
- SHOW THE DISTANCE FROM THE TOP OF THE SPILLWAY TO THE SEDIMENT CLEANOUT LEVEL (ONE-HALF THE DESIGN DEPTH) ON THE PLANS AND MARK IT IN THE FIELD.

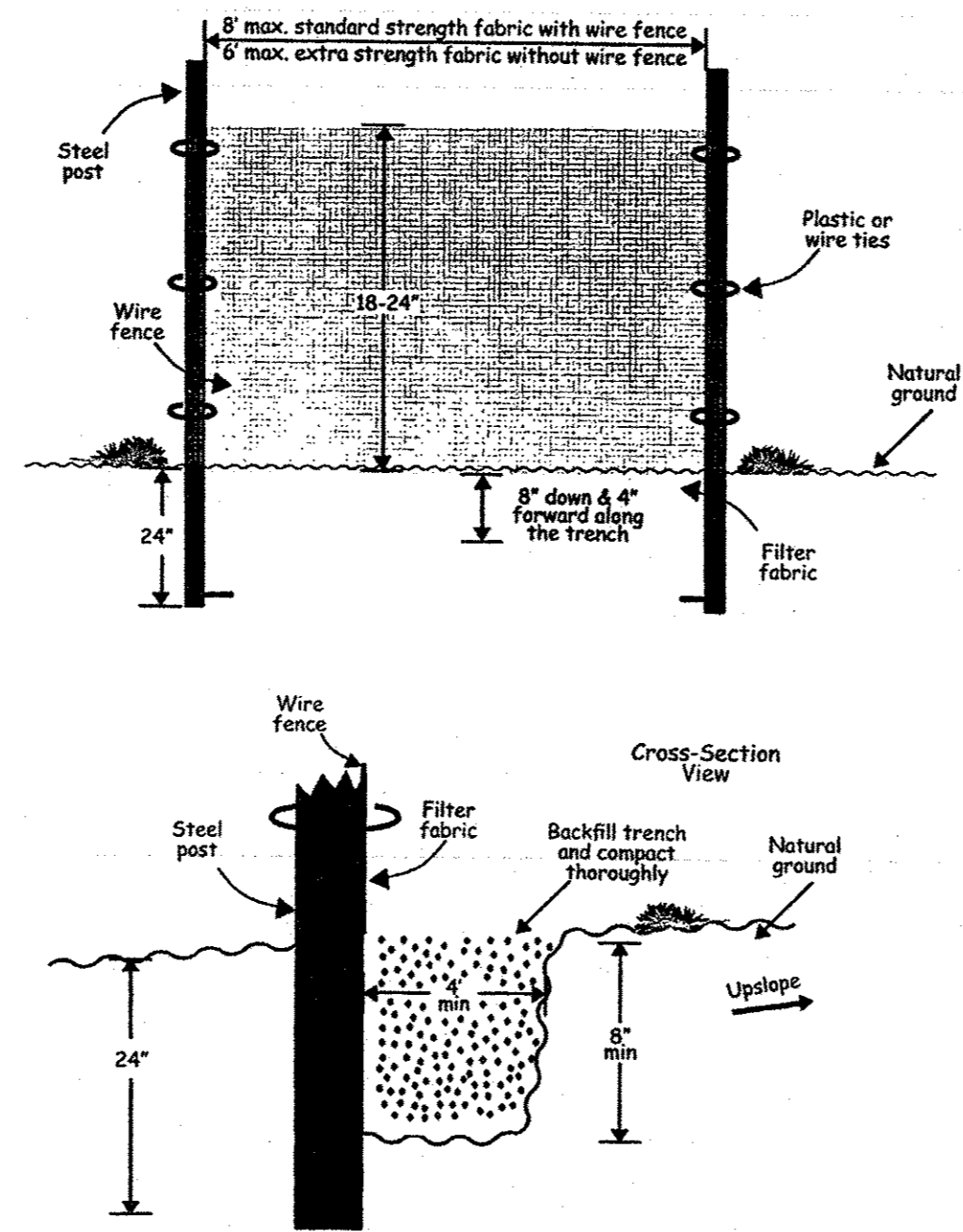
MAINTENANCE

INSPECT TEMPORARY SEDIMENT TRAPS AFTER EACH PERIOD OF SIGNIFICANT RAINFALL. REMOVE SEDIMENT AND RESTORE THE TRAP TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-HALF THE DESIGN DEPTH OF THE TRAP. PLACE THE SEDIMENT THAT IS REMOVED IN THE DESIGNATED DISPOSAL AREA AND REPLACE THE CONTAMINATED PART OF THE GRAVEL FACING.

CHECK THE STRUCTURE FOR DAMAGE FROM EROSION OR PIPING. PERIODICALLY CHECK THE DEPTH OF THE SPILLWAY TO ENSURE IT IS A MINIMUM OF 1.5 FT BELOW THE LOW POINT OF THE EMBANKMENT. IMMEDIATELY FILL ANY SETTLEMENT OF THE EMBANKMENT TO SLIGHTLY ANY RIPRAP DISPLACED FROM THE SPILLWAY MUST BE REPLACED IMMEDIATELY.

ABOVE DESIGN GRADE. AFTER ALL SEDIMENT-PRODUCING AREAS HAVE BEEN PERMANENTLY STABILIZED, REMOVE THE STRUCTURE AND ALL UNSTABLE SEDIMENT. SMOOTH THE AREA TO BLEND WITH THE ADJOINING AREAS AND STABILIZE PROPERLY.

MANN'S CROSSING SEDIMENT TRAP SCHEDULE					
Trap #	Drainage Area (Ac.)	Depth (ft)	Minimum Dimensions at Max. Sediment Elevation	Spillway Length (ft)	Remarks
1	0.50	3.00	18' x 36'	4.00	
2	1.20	3.00	28' x 56'	4.00	
3	1.20	3.00	28' x 56'	4.00	
4	1.05	3.00	26' x 52'	4.00	
5	0.29	3.00	14' x 28'	4.00	
6	0.20	3.00	11' x 23'	4.00	
7	0.20	3.00	11' x 23'	4.00	
8	0.29	3.00	14' x 28'	4.00	
9	0.60	3.00	15' x 31'	4.00	
10	0.48	3.00	15' x 31'	4.00	



SILT FENCE

CONSTRUCTION SPECIFICATIONS

- CONSTRUCT THE SEDIMENT BARRIER OF STANDARD STRENGTH OR EXTRA STRENGTH SYNTHETIC FILTER FABRICS.
- ENSURE THAT THE HEIGHT OF THE SEDIMENT FENCE DOES NOT EXCEED 18 INCHES ABOVE THE GROUND SURFACE.
- CONSTRUCT THE FILTER FABRIC FROM A CONTINUOUS ROLL CUT THE LENGTH OF THE BARRIER TO AVOID JOINTS. WHEN JOINTS ARE NECESSARY, SECURELY FASTEN THE FILTER CLOTH ONLY AT A SUPPORT POST WITH OVERLAP TO THE NEXT POST.
- SUPPORT STANDARD STRENGTH FILTER FABRIC BY WIRE MESH FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING WIRES. EXTEND THE MESH SUPPORT TO THE BOTTOM OF THE TRENCH.
- WHEN A WIRE MESH SUPPORT FENCE IS USED, SPACE POSTS A MAXIMUM OF 8 FEET APART. SUPPORT POSTS SHOULD BE DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 18 INCHES.
- EXTRA STRENGTH FILTER FABRIC WITH 6 FT POST SPACING DOES NOT REQUIRE WIRE MESH SUPPORT FENCE. WIRE THE FILTER FABRIC DIRECTLY TO THE POSTS.
- EXCAVATE A TRENCH APPROXIMATELY 4 INCHES DEEP AND 8 INCHES WIDE ALONG THE PROPOSED LINE OF POSTS AND UPSLOPE FROM THE BARRIER.
- BACKFILL THE TRENCH WITH COMPACTED SOIL OR GRAVEL PLACED OVER THE FILTER FABRIC.
- DO NOT ATTACH FILTER FABRIC TO EXISTING TREES.

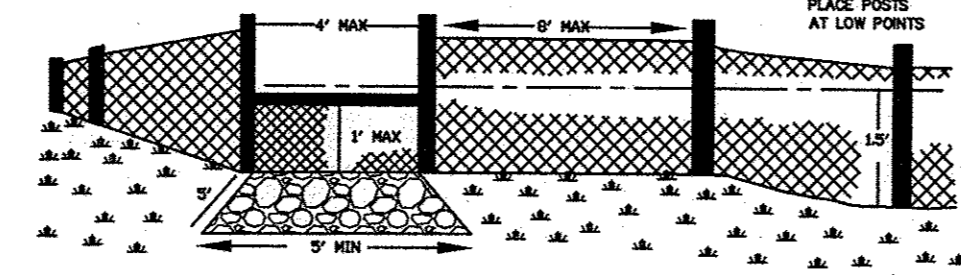
MAINTENANCE

INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.

SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT IMMEDIATELY.

REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.

REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.



CONSTRUCTION

- SET OUTLET ELEVATION SO THAT WATER DEPTH CANNOT EXCEED 1.5 FT AT THE LOWEST POINT ALONG THE FENCELINE (SEE FIGURE).
- SET FABRIC HEIGHT AT 1 FT MAXIMUM BETWEEN SUPPORT POSTS SPACED NO MORE THAN 4 FT APART. INSTALL A HORIZONTAL BRACE BETWEEN THE SUPPORT POSTS TO SERVE AS THE OVERFLOW WEIR AND TO SUPPORT TOP FABRIC.
- EXCAVATE FOUNDATION FOR THE SPLASH PAD A MINIMUM 5 FT WIDE, 1 FT DEEP, AND 5 FT LONG ON LEVEL GRADE. THE FINISHED SURFACE OF THE RIPRAP SHOULD BLEND WITH SURROUNDING AREA, ALLOWING NO OVERFALL. THE AREA AROUND THE PAD MUST BE STABLE.

MAINTENANCE

INSPECT SEDIMENT FENCE OUTLETS PERIODICALLY AND AFTER EACH RAINFALL EVENT.

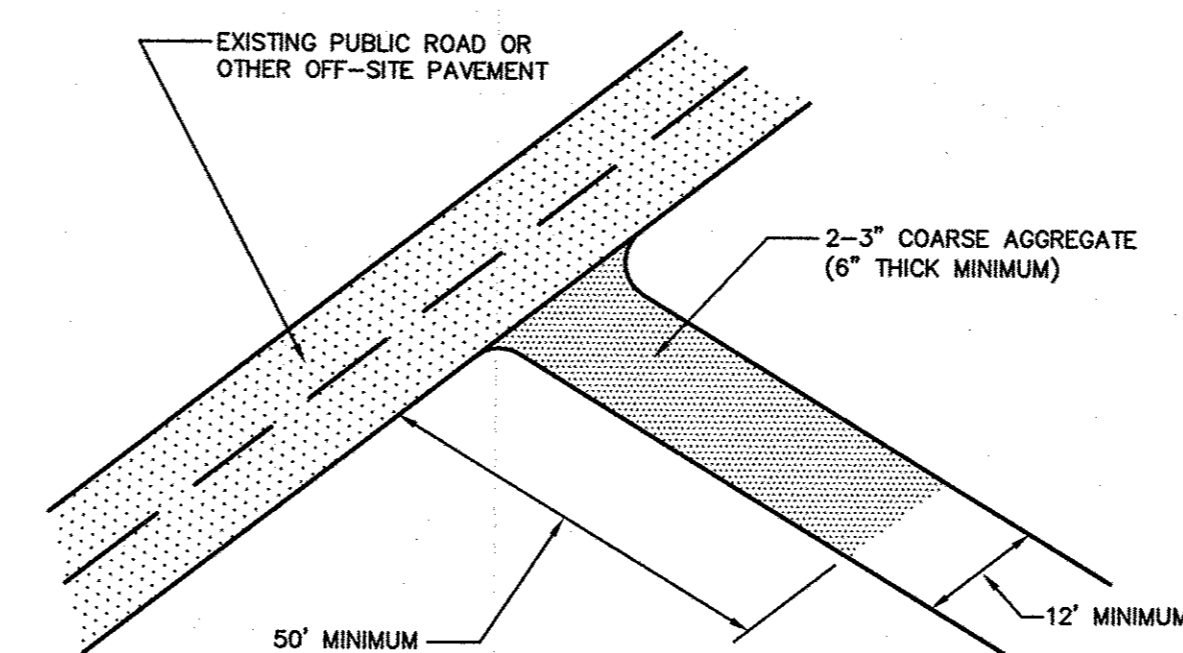
SHOULD FABRIC TEAR, DECOMPOSE, OR IN ANY WAY BECOME INEFFECTIVE, REPLACE IT IMMEDIATELY. REPLACE BURLAP AT LEAST EVERY 60 DAYS.

REMOVE SEDIMENT DEPOSITS PROMPTLY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON FENCE. TAKE CARE TO AVOID UNDERMINING FENCE DURING CLEANOUT.

REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED, INSPECTED, AND APPROVED. BRING THE DISTURBED AREA TO GRADE AND STABILIZE AS SHOWN IN VEGETATION PLAN.

SEDIMENT FENCE OUTLET

NTS



CONSTRUCTION ENTRANCE/EXIT

CONSTRUCTION SPECIFICATIONS

- CLEAR THE ENTRANCE AND EXIT OF ALL VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL AND PROPERLY GRADE IT.
- PLACE THE GRAVEL TO THE SPECIFIC GRADE AND DIMENSIONS SHOWN ON THE PLANS, AND SMOOTH IT.
- PROVIDE DRAINAGE TO CARRY WATER TO A SEDIMENT TRAP OR OTHER SUITABLE OUTLET.
- USE GEOTEXTILE FABRICS BECAUSE THEY IMPROVE THE STABILITY OF THE FOUNDATION IN LOCATIONS SUBJECT TO SEEPAGE OR HIGH WATER TABLE.

MAINTENANCE

MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH 2-INCH STONE. AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS.

SEEDING SCHEDULE:

SEEDING MIXTURE:

SPECIES	RATE (LB/AC)
TALL FESCUE	80
SERICEA LESPEDEZA	20
KOBE LESPEDEZA	10

SEEDING NOTES:

- AFTER AUGUST 15, USE UNSCARIFIED SERICEA SEED.
- WHERE PERIODIC MOWING IS PLANNED OR A NEAT APPEARANCE IS DESIRED, OMIT SERICEA AND INCREASE KOBE LESPEDEZA TO 40 LB/ACRE.
- TO EXTEND SPRING SEEDING DATES INTO JUNE, ADD 15 LB/ACRE HULLED BERMU DAGRASS. HOWEVER, AFTER MID-APRIL IT IS PREFERABLE TO SEED TEMPORARY COVER.

NURSE PLANTS:

- BETWEEN MAY 1 AND AUG. 15, ADD 10 LB/ACRE GERMAN MILLET OF 15 LB/ACRE SUDANGRASS. PRIOR TO MAY 1 OR AFTER AUG. 15 ADD 40 LB/ACRE RYE (GRAN).

SEEDING DATES

	BEST	POSSIBLE
FALL:	AUG. 25 - SEPT. 15	AUG. 20 - OCT. 25
LATE WINTER:	FEB. 15 - MAR. 21	FEB. 1 - APR. 15

FALL IS BEST FOR TALL FESCUE AND LATE WINTER FOR LESPEDEZAS.

SOIL ADJUSTMENTS

APPLY LIME AND FERTILIZER ACCORDING TO SOIL TESTS, OR APPLY 4,000 LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 1,000 LB/ACRE 10-10-10 FERTILIZER, EXCEPT, APPLY NO FERTILIZER TO AREAS WITHIN THE NEUSE RIVER RIPARIAN BUFFERS.

MULCH

APPLY 4,000 LB/ACRE GRAIN STRAW OR EQUIVALENT COVER OF ANOTHER SUITABLE MULCH. ANCHOR STROW BY TACKING WITH ASPHALT, NETTING, OR ROVING OR BY CRIMPING WITH A MULCH ANCHORING TOOL. A DISK WITH BLADES NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

PROJECT INFORMATION

PROJECT DESCRIPTION

THE PURPOSE OF THE PROJECT IS TO CREATE A RESIDENTIAL NEIGHBORHOOD CONSISTING OF 40 LOTS AND ABOUT 3500 LF OF PUBLIC STREET. APPROXIMATELY 8.5 ACRES WILL BE DISTURBED FOR STREET CONSTRUCTION. THE SITE IS LOCATED ON MANN'S CHAPEL ROAD IN RURAL CHATHAM COUNTY.

SITE DESCRIPTION

THE SITE HAS ROLLING TOPOGRAPHY WITH SLOPES GENERALLY 5 TO 15%. THE SITE IS PARTIALLY WOODED WITH SEVERAL NATURAL DRAINAGE FEATURES.

ADJACENT PROPERTY

LAND USE IN THE VICINITY IS SIMILAR: LARGE RESIDENTIAL LOTS, FARMS AND WOODED AREAS.

NARRATIVE

PLANNED EROSION AND SEDIMENTATION CONTROL PRACTICES

- TEMPORARY DIVERSIONS**
TEMPORARY DIVERSIONS, SLOPE DRAINS, AND SILT FENCING WILL BE INSTALLED IN APPROPRIATE LOCATIONS TO DIRECT "CLEAN" WATER TO PIPE INLETS OR UNDISTURBED AREAS.
- SEDIMENT TRAPS**
SEDIMENT-LADEN RUNOFF WILL BE DIRECTED TO SEDIMENT TRAPS FOR FILTRATION.
- ROAD STABILIZATION**
AS SOON AS PRACTICAL, STREET SUBGRADES WILL BE STABILIZED WITH ABC STONE.
- DITCHES**
DITCHES WILL BE STABILIZED USING APPROPRIATE LINERS AND GRASS VEGETATION.

CONSTRUCTION SCHEDULE

- OBTAIN PLAN APPROVAL AND OTHER APPLICABLE PERMITS.
- HOLD PRECONSTRUCTION CONFERENCE WITH EROSION CONTROL OFFICER PRIOR TO STARTING CONSTRUCTION.
- INSTALL CONSTRUCTION ENTRANCE.
- INSTALL SILT FENCE AT LOWER LIMITS AFTER THE CONSTRUCTION ENTRANCE.
- CLEAR ONLY AS NEEDED FOR INSTALLATION OF "CLEAN-WATER" DRAINAGE PIPING (005 TO 011, 011 TO 006, 009 TO 013, 016 TO 017, 014 TO 015, AND 018 TO 019) AND ASSOCIATED SILT FENCE DIVERSIONS. INSTALL THIS PIPING QUICKLY, AND ENSURE THAT INLETS ARE PROTECTED FROM RUNOFF FROM DISTURBED AREAS. INSTALL RIP-RAP APRONS AT PIPE OUTLETS.
- CONTINUE CLEARING FOR SEDIMENT TRAPS AND OTHER DEVICES. INSTALL THE SEDIMENT TRAPS THEN DIVERSIONS AND IMMEDIATELY STABILIZE WITH VEGETATION AND COMPLETE CLEARING AND STRIPPING OPERATIONS.
- INSTALL THE BPASS PIPES AFTER TRAPS ARE IN PLACE.
- BEGIN ROUGH GRADING, MAINTAINING AND/OR ADJUSTING SEDIMENT DEVICES AS NEEDED DURING GRADING WORK. AT LOTS #37 AND #38, INSTALL AND MAINTAIN DIVERSIONS AND SLOPE DRAINS AS SHOWN. RE-SET SLOPE DRAINS AS NEEDED DURING GRADING PROGRESS. MAINTAIN STONE FILTERS AROUND PIPE INLETS AS NEEDED.
- INSTALL REMAINING STORM DRAINAGE AND COMPLETE GRADING WORK.
- INSTALL AND TEST WATERLINE AND SERVICE CONNECTIONS.
- INSTALL ABC STONE AND COMPACT.
- INSTALL DITCH LINERS AND SEED DISTURBED AREAS.
- INSTALL ASPHALT PAVING.
- INSPECT ALL EROSION AND SEDIMENT CONTROL PRACTICES WEEKLY AND AFTER RAINFALL EVENTS. MAKE NEEDED REPAIRS IMMEDIATELY.
- AFTER SITE IS STABILIZED, REMOVE ALL TEMPORARY DRAINAGE PIPING AND EROSION CONTROL MEASURES. INSTALL PERMANENT SWALES AND LINERS, AND STABILIZE ALL DISTURBED AREAS WITH WELL-ESTABLISHED GRASS COVER.
- ESTIMATED TIME BEFORE FINAL STABILIZATION - 5 MONTHS.

MAINTENANCE PLAN

- CHECK ALL EROSION AND SEDIMENT CONTROL PRACTICES FOR STABILITY AND OPERATION FOLLOWING EVERY RAINFALL PRODUCING RUNOFF BUT IN NO CASE LESS THAN ONCE EVERY WEEK. MAKE ANY NEEDED REPAIRS IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED. FOLLOW ALL REQUIREMENTS OF NPDES PHASE II PERMIT.
- REMOVE SEDIMENT FROM TEMPORARY DEVICES WHEN STORAGE CAPACITY HAS BEEN APPROXIMATELY 50% FILLED.
- FERTILIZE ALL SEEDED AREAS, RESEED AS NECESSARY, AND MULCH ACCORDING TO THE SEEDING SCHEDULE TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER.

NPDES PERMIT REQUIREMENTS

This project is subject to the requirements of NPDES Permit for construction activities (Permit No. NCG010000). The items noted are **not** of the obligations associated with the NPDES permit process.

CONTROLS FOR STORMWATER DISCHARGES

- The Permittee shall implement the Soil and Erosion Control plan, which has been approved by the approval authority. The approved plan is considered a requirement or condition of NPDES permit. Deviation from the approved plan, or approved amendment to the plan, shall constitute a violation of the terms and conditions of this general permit except that deviation from the approved plan will be allowed to correct an emergency situation where sediments are being discharged off the site, even though the approved plan is in effect. Such a deviation from the approved plan shall be noted on the approved plan maintained at the job site. A signed copy of the approved plan shall be maintained on the site at all times.
- Equipment utilized during the construction activity on a site must be operated and maintained in such a manner as to prevent the potential or actual pollution of the surface or ground waters of the state. Fuels, lubricants, coolants, and hydraulic fluids, or any other petroleum products, shall not be discharged onto the ground or into surface waters. Spent fluids shall be disposed of in a manner so as not to enter the waters, surface or ground, of the state and in accordance with applicable state and federal disposal regulations. Any spilled fluids shall be cleaned up to the extent practicable and disposed of in a manner so as not to allow their entry into the waters, surface or ground, of the state.
- Herbicide, pesticide, and fertilizer usage during the construction activity shall be restricted to those materials approved by EPA and shall be in accordance with label restrictions.
- All wastes composed of building materials shall be disposed of in accordance with North Carolina General Statutes.
- The permittee shall report to the central office or the appropriate regional office any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances.

The written submission shall contain a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance (See specific permit requirements for reporting information).

MINIMUM MONITORING AND REPORTING REQUIREMENTS

Minimum monitoring and reporting requirements are as follows unless otherwise approved in writing by the Director of the Division of Environmental Management.

- All sedimentation and erosion control facilities shall be inspected by or under the direction of the permittee at least once every seven calendar days and within 24 hours after any storm event of greater than 0.5 inches of rain per 24 hour period.
- Stormwater runoff discharges shall be inspected by observation for stormwater discharge characteristics as defined below at the above frequency to evaluate the effectiveness of the pollution control facilities or practices. If any visible off-site sedimentation is leaving the site, corrective action shall be taken to reduce the discharge of sediments.

Stormwater Discharge Characteristics	Monitoring Type ¹	Monitoring Location ²
Color		SDO
Odor		SDO
Clarity		SDO
Floating Solids		SDO
Suspended Solids		SDO
Foam		SDO
Oil Sheen		SDO
Other obvious indicators of stormwater pollution		SDO

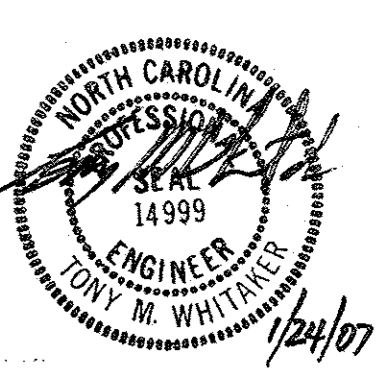
Footnotes:

¹Monitoring Type: The monitoring requires a qualitative observation of each stormwater outfall. No analytical testing or sampling is required.

²Sample Location: Stormwater Discharge Outfall (SDO)

- The operator shall keep a record of inspections. Visible sedimentation found off the site shall be recorded with a brief explanation as to the measures taken to prevent future releases as well as any measures taken to clean up the sediment that has left the site. This record shall be made available to DEM or authorized agent upon request. Reports shall be maintained onsite at all times.
- Permittee shall at all times provide the operation and maintenance necessary to operate the permitted stormwater controls at optimum efficiency.

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MANN'S CROSSING
CHATHAM COUNTY, NORTH CAROLINA
EROSION CONTROL
DETAILS

REV.	DATE	DESCRIPTION
1	1-24-07	EROSION CONTROL COMMENTS JES

DATE:	SEPTEMBER 18, 2006
HORIZONTAL SCALE:	NA
VERTICAL SCALE:	NA
PROJECT MANAGER:	TMW
DRAWN BY:	KDF
PROJECT NO.:	13009
DRAWING NAME:	13009-EC-DETAILS

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SHEET NO.
EC1
CONSTRUCTION

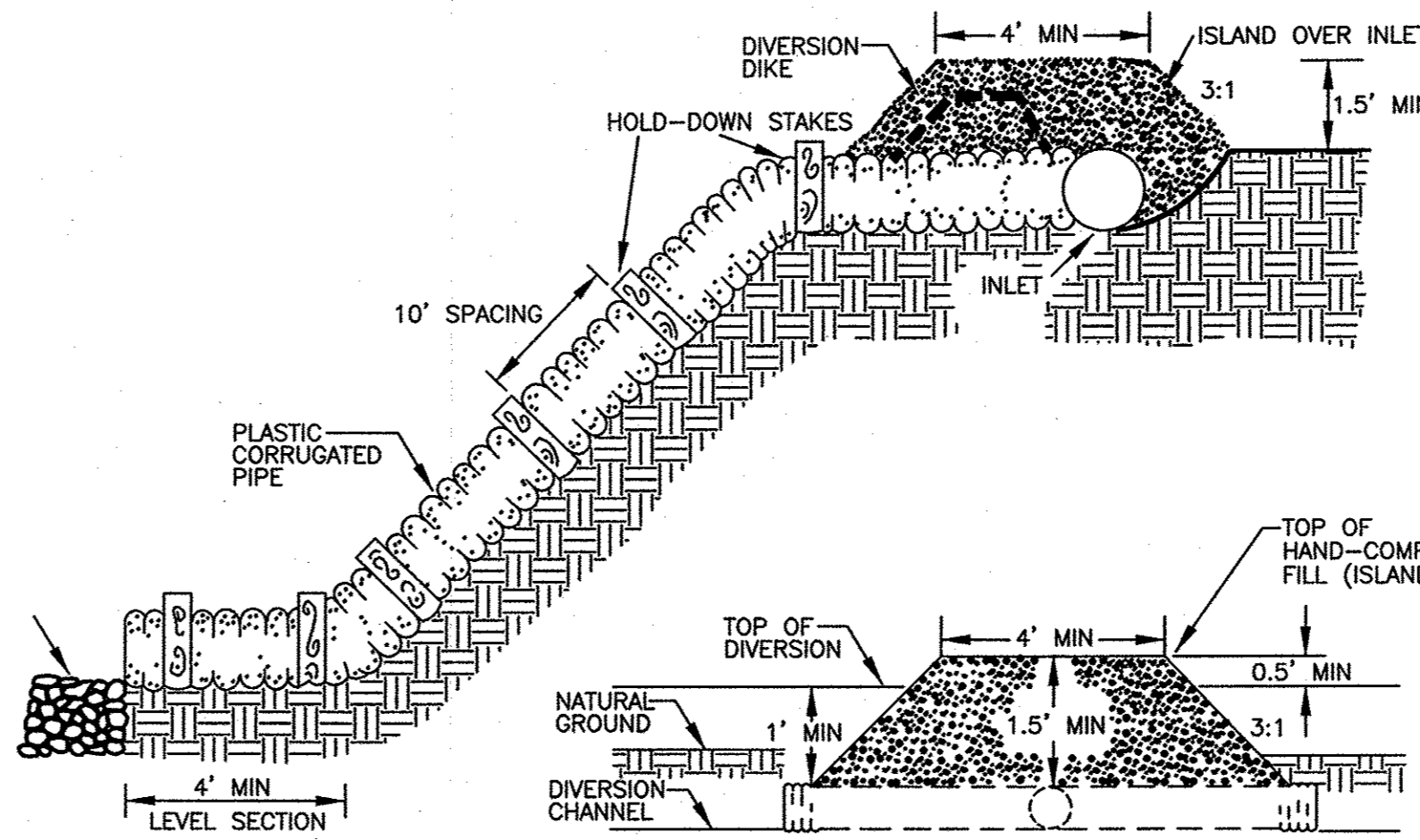
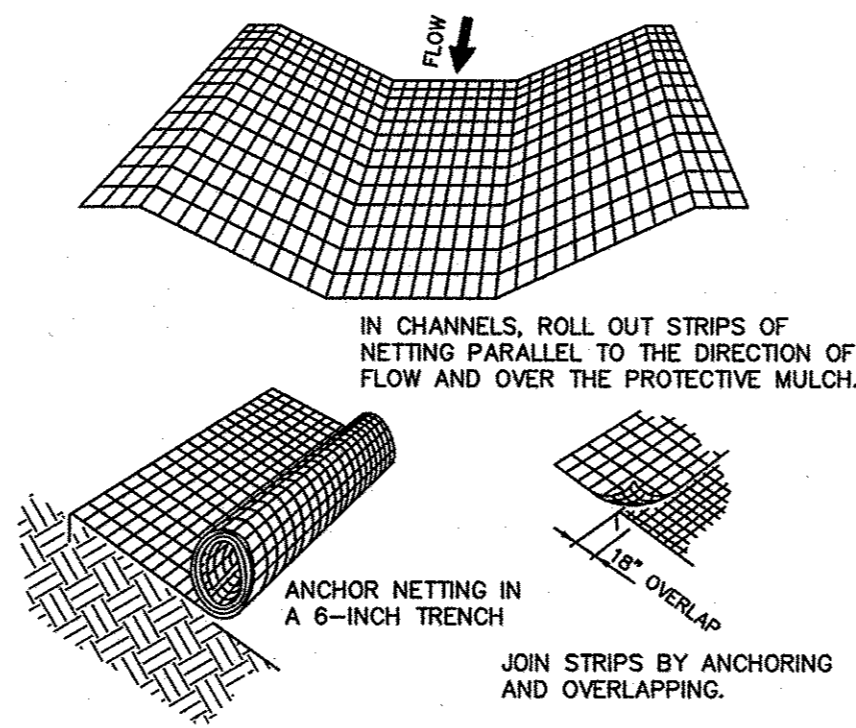
INSTALLATION OF NETTING AND MATTING

PRODUCTS DESIGNED TO CONTROL EROSION SHOULD BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. ANY MAT OR BLANKET-TYPE PRODUCT USED AS A PROTECTIVE MULCH SHOULD PROVIDE COVER OF AT LEAST 30% OF THE SURFACE WHERE IT IS APPLIED.

1. APPLY LIME, FERTILIZER AND SEED BEFORE LAYING THE NET OR MAT.
2. START LAYING THE NET FROM THE TOP OF THE CHANNEL OR SLOPE AND UNROLL IT DOWN THE GRADE. ALLOW NETTING TO LAY LOOSELY ON THE SOIL BUT WITHOUT WRINKLES - DO NOT STRETCH.
3. TO SECURE THE NET, BURY THE UPSLOPE END IN A SLOT OR TRENCH NO LESS THAN 6 INCHES DEEP. COVER WITH SOIL, AND TAMP FIRMLY. STAPLE THE NET EVERY 12 INCHES ACROSS THE TOP END AND EVERY 3 FEET AROUND THE EDGES AND BOTTOM. WHERE 2 STRIPS OF NET ARE LAID SIDE BY SIDE, THE ADJACENT EDGES SHOULD BE OVERLAPPED 3 INCHES AND STAPLED TOGETHER. EACH STRIP OF NETTING SHOULD ALSO BE STAPLED DOWN THE CENTER, EVERY 3 FEET. DO NOT STRETCH THE NET WHEN APPLYING STAPLES.
4. TO JOIN TWO STRIPS, CUT A TRENCH TO ANCHOR THE END OF THE NEW NET. OVERLAP THE END OF THE PREVIOUS ROLL 18 INCHES AND STAPLE EVERY 12 INCHES JUST BELOW THE ANCHOR SLOT.

MAINTENANCE

INSPECT ALL MULCHES PERIODICALLY, AND AFTER RAINSTORMS TO CHECK FOR RILL EROSION, DISLOCATION, OR FAILURE. WHERE EROSION IS OBSERVED, APPLY ADDITIONAL MULCH. IF WASHOUT OCCURS, REPAIR THE SLOPE GRADE, RESEED, AND REINSTALL MULCH. CONTINUE INSPECTIONS UNTIL VEGETATION IS FIRMLY ESTABLISHED.



TEMPORARY SLOPE DRAIN

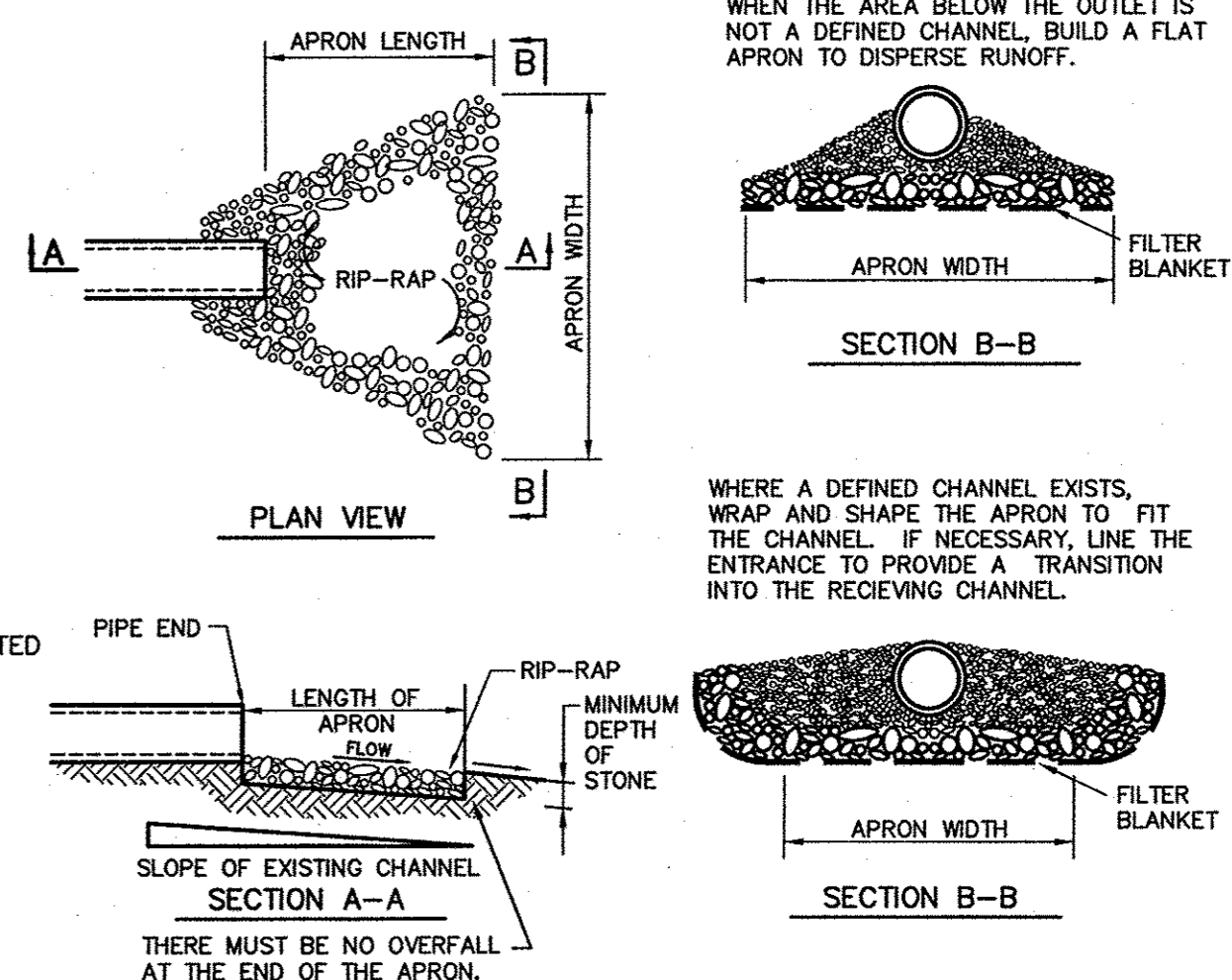
CONSTRUCTION SPECIFICATIONS

A COMMON FAILURE OF SLOPE DRAINS IS CAUSED BY WATER SATURATING THE SOIL AND SEEPING ALONG THE PIPE. THIS CREATES VOIDS FROM CONSOLIDATION AND PIPING AND CAUSES WASHOUTS. PROPER BACKFILLING AROUND AND UNDER THE PIPE "HAUNCHES" WITH STABLE SOIL MATERIAL AND HAND COMPACTING IN 6-INCH LIFTS TO ACHIEVE FIRM CONTACT BETWEEN THE PIPE AND THE SOIL AT ALL POINTS WILL ELIMINATE THIS TYPE OF FAILURE.

1. PLACE SLOPE DRAINS ON UNDISTURBED SOIL OR WELL COMPACTED FILL AT LOCATIONS AND ELEVATIONS SHOWN ON THE PLANS.
2. SLIGHTLY SLOPE THE SECTION OF PIPE UNDER THE DIKE TOWARD ITS OUTLET.
3. HAND TAMP THE SOIL UNDER AND AROUND THE ENTRANCE SECTION IN LIFTS NOT TO EXCEED 6 INCHES.
4. ENSURE THAT FILL OVER THE DRAIN AT THE TOP OF THE SLOPE HAS MINIMUM DIMENSIONS OF 1.5 FT DEPTH, 4 FT TOP WIDTH, AND 3:1 SIDE SLOPES.
5. ENSURE THAT ALL SLOPE DRAIN CONNECTIONS ARE WATERTIGHT.
6. ENSURE THAT ALL FILL MATERIAL IS WELL-COMPACTED, SECURELY FASTEN THE EXPOSED SECTION OF THE DRAIN WITH GROMMETS OR STAKES SPACED NO MORE THAN 10 FT APART.
7. EXTEND THE DRAIN BEYOND THE TOE OF THE SLOPE AND ADEQUATELY PROTECT THE OUTLET FROM EROSION.
8. MAKE THE SETTLED, COMPACTED DIKE RIDGE NO LESS THAN 1 FT ABOVE THE TOP OF THE PIPE AT EVERY POINT.
9. IMMEDIATELY STABILIZE ALL DISTURBED AREAS FOLLOWING CONSTRUCTION.

MAINTENANCE

INSPECT THE SLOPE DRAIN AND SUPPORTING DIVERSION AFTER EVERY RAINFALL AND PROMPTLY MAKE NECESSARY REPAIRS. WHEN THE PROTECTED AREA HAS BEEN PERMANENTLY STABILIZED, TEMPORARY MEASURES MAY BE REMOVED, MATERIALS DISPOSED OF PROPERLY, AND ALL DISTURBED AREAS STABILIZED APPROPRIATELY.



RIP RAP APRON

CONSTRUCTION SPECIFICATIONS

1. ENSURE THAT THE SUBGRADE FOR THE FILTER AND RIPRAP FOLLOWS THE REQUIRED LINES AND GRADES SHOWN IN THE PLAN. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO THE DENSITY OF THE SURROUNDING MATERIAL. LOW AREAS IN THE SUBGRADE ON UNDISTURBED SOIL MAY ALSO BE FILLED BY INCREASING THE RIPRAP THICKNESS.
2. THE RIPRAP AND FILTER MUST CONFORM TO THE SPECIFIED GRADING LIMITS SHOWN ON THE PLANS.
3. FILTER CLOTH SHOULD BE PROPERLY PROTECTED FROM PUNCHING OR TEARING DURING INSTALLATION. REPAIR ANY DAMAGE BY REMOVING RIPRAP AND PLACING ANOTHER PIECE OF FILTER CLOTH OVER THE DAMAGED AREA. ALL CONNECTING JOINTS SHOULD OVERLAP A MINIMUM OF 1 FT. IF THE DAMAGE IS EXTENSIVE, REPLACE THE ENTIRE CLOTH.
4. RIPRAP MAY BE PLACED BY EQUIPMENT, BUT CARE MUST BE TAKEN TO AVOID DAMAGING THE FILTER.
5. THE MINIMUM THICKNESS OF THE RIPRAP SHOULD BE 1.5 TIMES THE MAXIMUM STONE DIAMETER. IN NO CASE SHALL THE DIAMETER BE REDUCED BELOW THE THICKNESS INDICATED IN THE PLANS.
6. RIPRAP MAY BE FIELD STONE OR ROUGH QUARRY STONE. IT SHOULD BE HARD, ANGULAR, HIGHLY WEATHER-RESISTANT AND WELL GRADED.
7. CONSTRUCT THE APRON AT ZERO GRADE WITH NO OVERFALL AT THE END. MAKE THE TOP OF THE RIPRAP AT THE DOWNSTREAM END LEVEL WITH THE RECEIVING AREA OR SLIGHTLY BELOW IT.
8. ENSURE THAT THE APRON IS PROPERLY ALIGNED WITH THE RECEIVING STREAM AND PREFERABLY STRAIGHT THROUGHOUT ITS LENGTH. IF A CURVE IS NEEDED TO FIT SITE CONDITIONS, PLACE IT IN THE UPPER SECTION OF THE APRON.
9. IMMEDIATELY AFTER CONSTRUCTION, STABILIZE ALL DISTURBED AREAS WITH VEGETATION.

MAINTENANCE

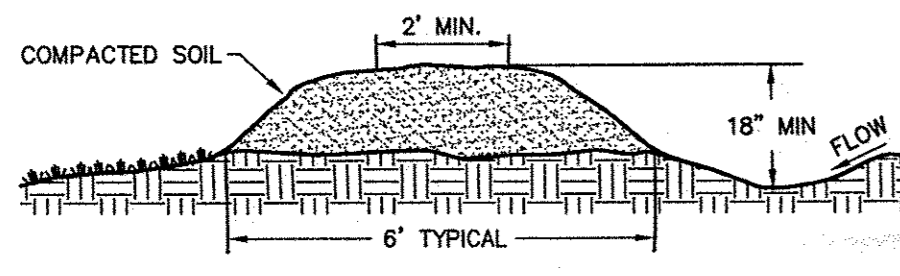
INSPECT RIPRAP OUTLET STRUCTURES AFTER HEAVY RAINS TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS TAKEN PLACE OR IF STONES HAVE BEEN DISLOADED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

CONSTRUCTION SPECIFICATIONS:

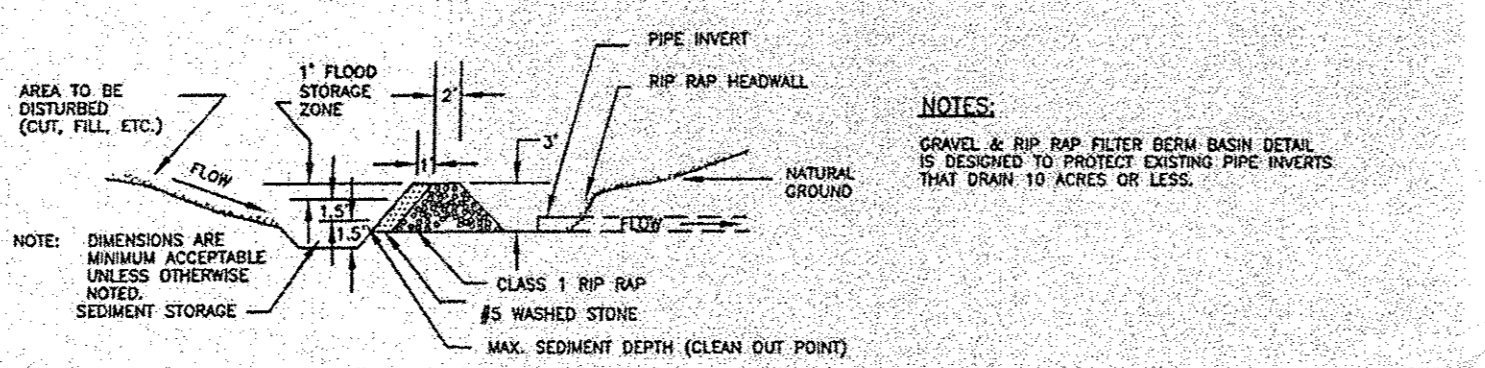
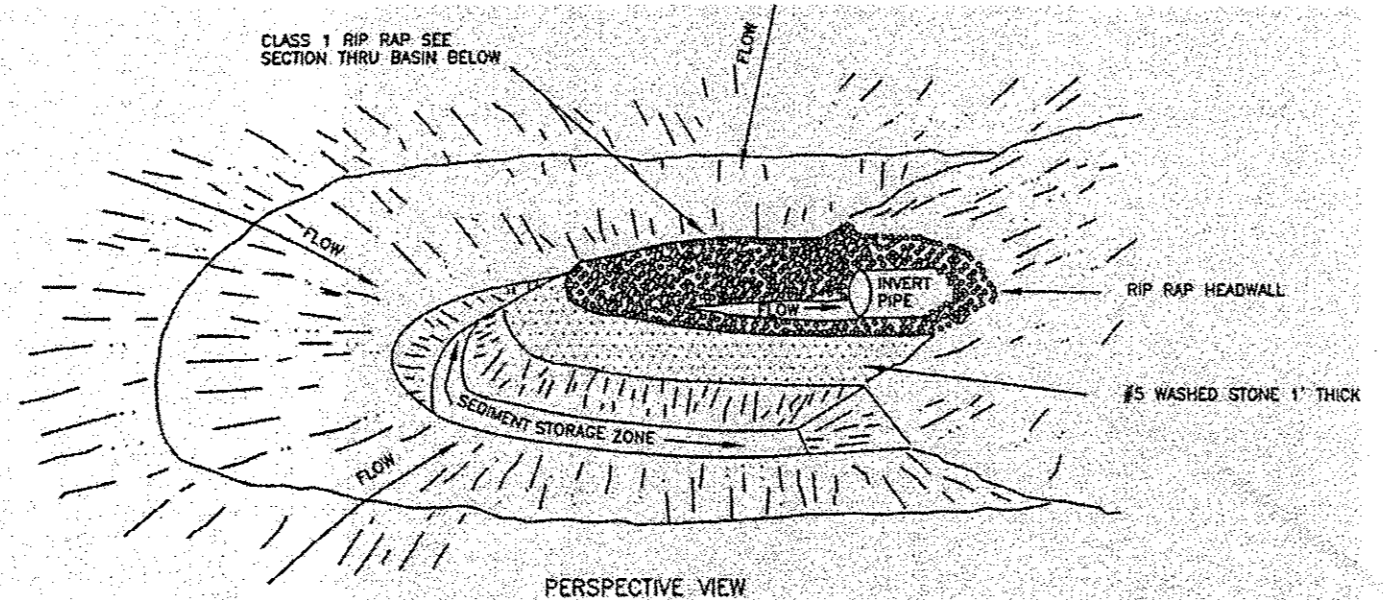
1. REMOVE AND PROPERLY DISPOSE OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL.
2. ENSURE THAT THE MINIMUM CONSTRUCTED CROSS SECTION MEETS ALL DESIGN REQUIREMENTS.
3. ENSURE THAT THE TOP OF THE DIKE IS NOT LOWER AT ANY POINT THAN THE DESIGN ELEVATION PLUS THE SPECIFIED SETTLEMENTS.
4. PROVIDE SUFFICIENT FLOW AROUND DIVERSIONS TO PERMIT MACHINE REGRADING AND CLEANOUT.
5. VEGETATE THE RIDGE IMMEDIATELY AFTER CONSTRUCTION, UNLESS IT WILL REMAIN IN PLACE LESS THAN 30 WORKING DAYS.

MAINTENANCE:

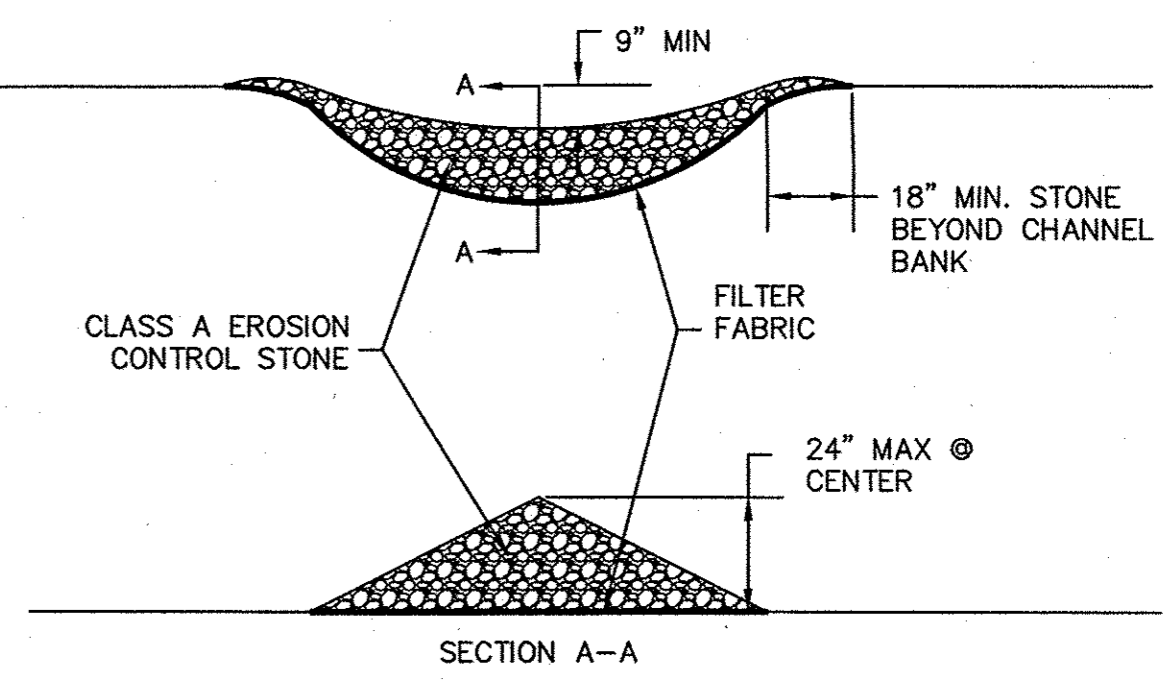
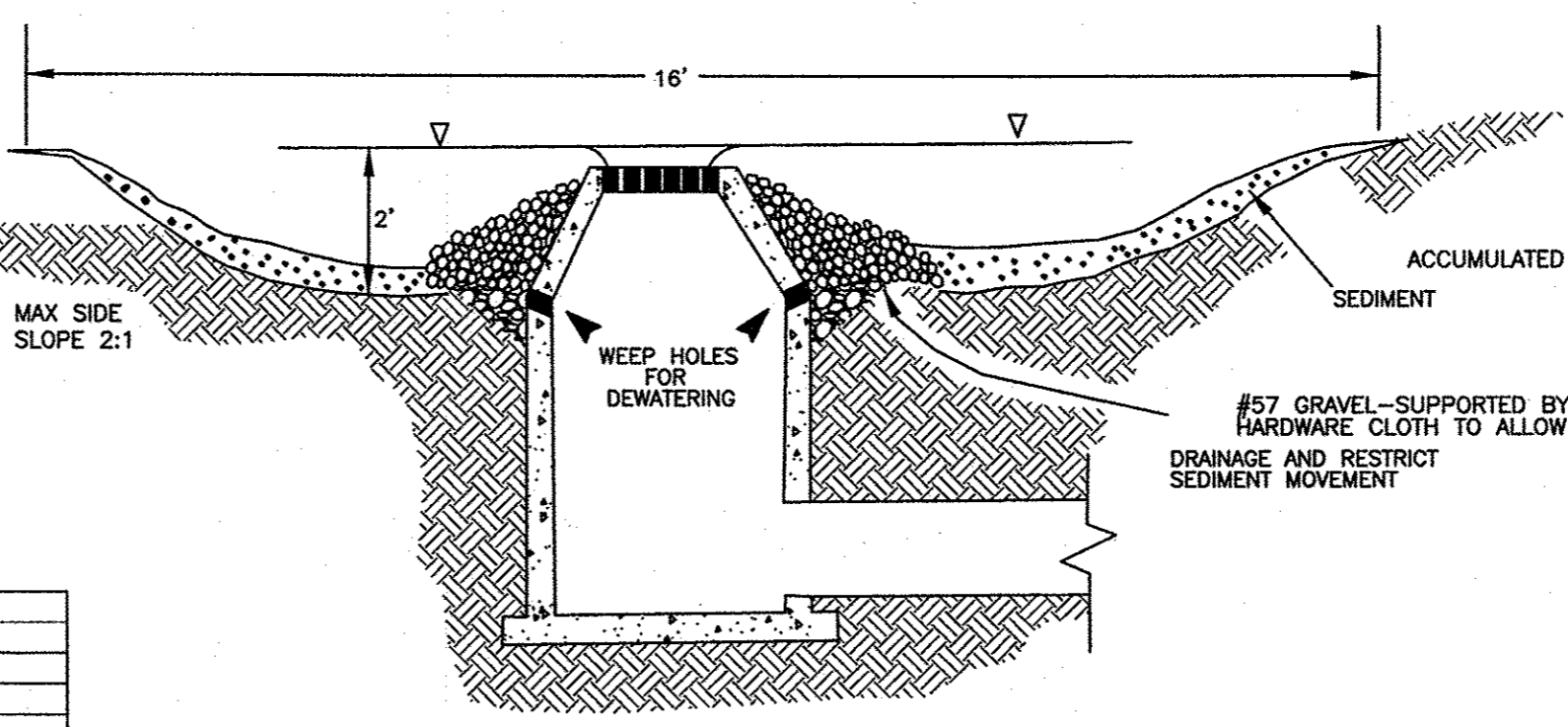
INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED. WHEN THE AREA PROTECTED IS PERMANENTLY STABILIZED, REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH THE NATURAL GROUND LEVEL AND APPROPRIATELY STABILIZE IT.



TEMPORARY DIVERSION DITCH



PIPE INLET PROTECTION



CHECK DAMS:

CONSTRUCTION SPECIFICATIONS:

1. PLACE STONE TO THE LINES AND DIMENSION SHOWN IN THE PLAN ON A FILTER FABRIC FOUNDATION.
2. KEEP THE CENTER STONE SECTION AT LEAST 9" BELOW THE NATURAL GROUND LEVEL WHERE THE DAM ABUTES THE CHANNEL BANKS.
3. EXTEND STONE AT LEAST 15' BEYOND THE DITCH BANKS TO KEEP OVERFLOW WATER FROM UNDERCUTTING THE DAM AS IT REENTERS THE CHANNEL.
4. SET SPACING BETWEEN DAMS TO ASSURE THAT THE ELEVATION AT THE TOP OF THE LOWER DAM IS THE SAME AS THE TOE ELEVATION OF THE UPPER DAM.
5. PROTECT THE CHANNEL DOWNSTREAM FROM THE LOWEST CHECK DAM, CONSIDERING THAT WATER WILL FLOW OVER AND AROUND THE DAM.
6. MAKE SURE THAT THE CHANNEL REACH ABOVE THE UPMOST DAM IS STABLE.
7. ENSURE THAT CHANNEL APPURTENANCES, SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS, ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.

MAINTENANCE:

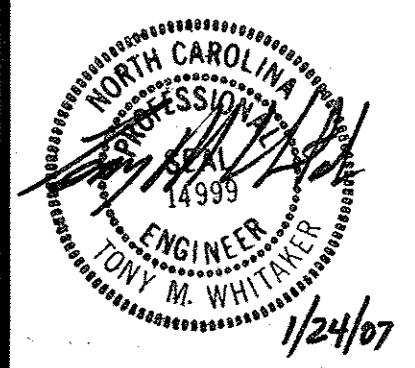
INSPECT CHECK DAMS AND CHANNELS FOR DAMAGE AFTER EACH RAINFALL EVENT. ANTICIPATE SUBMERGENCE AND DEPOSITION ABOVE THE CHECK DAM AND EROSION FROM HIGH FLOWS AROUND THE EDGES OF THE DAM. CORRECT ALL DAMAGE IMMEDIATELY. IF SIGNIFICANT EROSION OCCURS BETWEEN DAMS, INSTALL A PROTECTIVE RIP RAP LINER IN THAT PORTION OF THE CHANNEL. REMOVE SEDIMENT ACCUMULATED BEHIND THE DAMS AS NEEDED TO PREVENT DAMAGE TO CHANNEL VEGETATION, ALLOW THE CHANNEL TO DRAIN THROUGH THE STONE CHECK DAM, AND PREVENT LARGE FLOWS FROM CARRYING SEDIMENT OVER THE DAM. ADD STONES AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION.

TEMPORARY EXCAVATED DROP INLET PROTECTION

MANNS CROSSING DRAINAGE SWALE SCHEDULE																						
Swale Number	Length (ft)	Slope (%)	Temporary Conditions					Permanent Conditions					Ditch Depth (ft)	Flow Depth (ft)	Stability Is Grass Acceptable?	Comments	Street Location	Side of Street	Approximate Station ID			
			C	I	A	Q ₂ (CFS)	Flow Depth (ft)	Shear Stress T ₂	Type	C	I	A								Q ₁₀ (CFS)		
D1	170	4.00	0.40	5.76	0.50	1.15	0.33	0.82	S75	4	0.62	7.22	0.50	2.24	2	0.39	2.76	Yes	Permanent Ditch	Manns Crossing Dr	S	1+50 - 4+50
D2	50	4.00	0.40	5.76	1.20	2.76	0.46	1.14	S75	4	0.65	7.22	1.20	5.63	2	0.54	3.45	Yes	Permanent Ditch	Manns Crossing Dr	N	1+50 - 4+50
D3	200	1.00	0.40	5.76	0.62	1.43	0.47	0.29	S75	4	0.56	7.22	0.62	2.51	2	0.54	1.73	Yes	Permanent Ditch	Manns Crossing Dr	N	5+00 - 8+25
D4	70	2.90	0.40	5.76	0.58	1.34	0.37	0.67	S75	4	0.50	7.22	0.58	2.09	2	0.42	2.50	Yes	Permanent Ditch	Romie Ct	E	2+00 - 4+50
D5	75	2.70	0.40	5.76	0.62	1.43	0.39	0.66	S75	4	0.85	7.22	0.62	3.80	2	0.45	2.52	Yes	Permanent Ditch	Romie Ct	W	2+00 - 4+50
D6	40	5.00	0.40	5.76	0.56	1.29	0.34	1.06	S75	4	0.65	7.22	0.56	2.63	2	0.39	3.09	Yes	Permanent Ditch	Margaret Mann Way	E	6+00 - 12+50
D7	40	5.00	0.40	5.76	0.50	1.15	0.32	1.00	S75	4	0.56	7.22	0.50	2.30	2	0.75	4.79	Yes	Permanent Ditch	Margaret Mann Way	W	6+00 - 12+50
D8	50	4.00	0.40	5.76	1.50	3.69	0.52	1.30	S75	4	0.51	7.22	1.50	5.89	2	0.60	3.70	Yes	Permanent Ditch	Margaret Mann Way	S	2+90 - 6+00
D9	50	4.00	0.40	5.76	0.37	0.85	0.30	0.75	S75	4	0.62	7.22	0.37	1.66	2	0.35	2.56	Yes	Permanent Ditch	Margaret Mann Way	N	2+90 - 6+00
D10	50	4.00	0.40	5.76	0.83	1.91	0.41	1.02	S75	4	0.50	7.22	0.83	3.00	2	0.47	3.14	Yes	Permanent Ditch	Margaret Mann Way	N	0+50 - 2+90
D11	20	10.00	0.40	5.76	0.29	0.67	0.25	1.56	SC150	4	0.62	7.22	0.29	1.30	3	0.28	3.50	Yes	Permanent Ditch	Street 4	N	5+75 - 9+00
D12	NOT USED																					
D13	70	2.00	0.40	5.76	0.20	0.46	0.27	0.49	S75	4	0.65	7.22	0.20	0.94	3	0.33	1.75	Yes	Permanent Ditch	Street 4	S	3+50 - 5+75
D14	55	3.60	0.40	5.76	1.43	3.29	0.5	1.12	S75	4	0.46	7.22	1.43	4.75	3	0.62	3.58	Yes	Permanent Ditch	Margaret Mann Way	S	1+25 - 2+90
D15	65	3.10	0.40	5.76	0.17	0.39	0.25	0.48	S75	4	0.65	7.22	0.17	0.83	3	0.68	3.50	Yes	Permanent Ditch	Street 4	N	3+00 - 4+75
D16	65	3.10	0.40	5.76	0.15	0.35	0.24	0.46	S75	4	0.65	7.22	0.15	0.76	3	0.30	2.01	Yes	Permanent Ditch	Street 4	N	1+00 - 3+00
D17	60	3.33	0.40	5.76	0.60	1.38	0.37	0.77	S75	4	0.55	7.22	0.60	2.38	3	0.48	2.91	Yes	Permanent Ditch	Manns Crossing Dr	S	8+50 - 11+97
D18		1.00	0.40	5.76	2.08	4.79	0.46	0.29	S75	8	0.60	7.22	2.08	9.00	3	0.74	2.34	Yes	Permanent Ditch	Margaret Mann Way	E	Lot 23
D19	12.5	16.00	0.40	5.76	1.70	3.92	0.19	1.90	Pyramat	8	0.60	7.22	1.70	7.36	3	0.29	6.46	Yes	Permanent Ditch	Manns Crossing Dr	N/S	0+00 - 1+50

Notes:
 1 Q = CIA I₀ = 5.76 in/hr, I₀ = 7.22 in/hr
 2 S75 refers to single net straw blanket, as manufactured by North American Green, or approved equal.
 3 SC150 refers to double net straw blanket, and is permanent reinforcement matting, as manufactured by North American Green, or approved equal.
 4 Pyramat refers to high performance turf reinforcement mats, as manufactured by Propex Geosynthetics, or approved equal.

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MANNS CROSSING
 CHATHAM COUNTY, NORTH CAROLINA
EROSION CONTROL DETAILS

REV.	DATE	DESCRIPTION
1	1-24-07	EROSION CONTROL COMMENTS LIES

DATE: OCTOBER 31, 2006
 HORIZONTAL SCALE: NA
 VERTICAL SCALE: NA
 PROJECT MANAGER: TMW
 DRAWN BY: KDF
 PROJECT NO: 13009
 DRAWING NAME: 13009-EC-DETAILS
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