



CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY THAT THE FOLLOWING ELECTRONIC RECORDS ARE TRUE AND ACCURATE REPRODUCTIONS OF THE ORIGINAL RECORDS OF JAMES CITY COUNTY GENERAL SERVICES DEPARTMENT- STORMWATER DIVISION; WERE SCANNED IN THE REGULAR COURSE OF BUSINESS PURSUANT TO GUIDELINES ESTABLISHED BY THE LIBRARY OF VIRGINIA AND ARCHIVES; AND HAVE BEEN VERIFIED IN THE CUSTODY OF THE INDIVIDUAL LISTED BELOW.

BMP NUMBER: MC060

DATE VERIFIED: August 17, 2012

QUALITY ASSURANCE TECHNICIAN: Leah Hardenbergh



LOCATION: WILLIAMSBURG, VIRGINIA

COPY

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

DB 7th 16th
 THIS DECLARATION, made this 15 day of AUGUST, 192000
 between ST. MARTIN'S EPISCOPAL CHURCH
 and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the
 following property: 1333 Jamestown Rd. Williamsburg, VA
 Deed Book 94 & 11, Page No. 634 & 153 or Instrument No. respectively
 and James City County, Virginia, hereinafter referred to as the "COUNTY"

WITNESSETH:

We, the COVENANTOR(S), with full authority to execute deeds, mortgages, other covenants, and all rights, titles and interests in the property described above, do hereby covenant with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the drainage system including any runoff control facilities, conveyance systems and associated easements, hereinafter referred to as the "SYSTEM," located on and serving the above-described property to ensure that the SYSTEM is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations. The SYSTEM shall not include any elements located within any Virginia Department of Transportation rights-of-way.
2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the SYSTEM to ensure that the SYSTEM is properly maintained.
3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the SYSTEM for the COUNTY, its agent and its contractor.
4. The COVENANTOR(S) shall grant the COUNTY, its agent and its contractor a right of entry to the SYSTEM for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the SYSTEM.
5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the SYSTEM in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the SYSTEM for the cost of the work and any applicable penalties.
6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the SYSTEM.
7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the SYSTEM. The COVENANTOR(S)' shall supply the COUNTY with a copy of any document of transfer, executed by both parties.
8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the SYSTEM.
9. This COVENANT shall be recorded in the County Land Records.

*instrument # 000015956
 recorded 8/23/00*

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 17th day of August, ~~19~~ 2000

COVENANTOR(S)

David L. Bailey

Print Name/Title DAVID L. BAILEY
SENIOR WARDEN

ATTEST:

COVENANTOR(S)

Print Name/Title _____

ATTEST:

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF Norfolk

I hereby certify that on this 17th day of August, ~~19~~ 2000, before the subscribed, a Notary Public of the State of Virginia, and for the City/County of Norfolk, aforesaid personally appeared David L. Bailey and did acknowledge the foregoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 17th day of August, ~~19~~ 2000.

Vern R. Banks
Notary Public

My Commission expires: October 31, 2001

Approved as to form:

Scott P. Rogers
Deputy County Attorney

This Declaration of Covenants prepared by:

STEVEN K. KAUFFMAN
(Print Name)

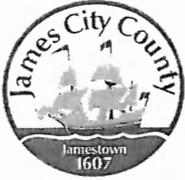
Project Manager
(Title)

137 Jefferson's HUNDRED
(Address)

Williamsburg VA 23185
(City) (State) (Zip)

After consulting with
G. R. Davis Esq. of Kaufman
& CANOLES

drainage.pre
Revised 2/97



**James City County Environmental Division
Stormwater Management/BMP Record Drawing and
Construction Certification Review Tracking Form**

- Project Name: St. Martins Episcopal Church
County Plan No.: SP-039-00
Stormwater Management Facility: Box Culvert; INFIL BMP (COUNTY TYPE C-4)
BMP Phase #: I II III
 Information Package Received. Date/By: _____
 Completeness Check:
 Record Drawing Date/By: _____
 Construction Certification Date/By: _____
 RD/CC Standard Forms (Required for all BMPs after Feb 1st 2001 Only)
 Insp/Maint Agreement # / Date: _____
 BMP Maintenance Plan Location: _____
 Other: _____
 Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review
 Yes No Location: Pg 8.1 Item 19
 Assign County BMP ID Code #: Code: MC 060
 Preliminary Input/Log into Division's "As-Built Tracking Log"
 Add Location to GIS Map. Obtain basic site information (GPIN, Owner, Address, etc.)
 Preliminary Log into Access Database (BMP ID #, Plan No., GPIN, Project Name, etc.)
 Active Project File Review (correspondence, H&H, design computations, etc.)
 Initial As-Built File setup (File label, folder, copy plan/details/design information, etc.)
 Inspector Check of RD/CC (forward to Inspector using transmittal for cursory review).
 Pre-Inspection Drawing Review of Approved Plan (Quick look prior to Field Inspection).
 Final Inspection (FI) Performed Date: _____
 Record Drawing (RD) Review Date: _____
 Construction Certification (CC) Review Date: _____
 Actions:
 No comments.
 Comments. Letter Forwarded. Date: _____
 Record Drawing (RD)
 Construction Certification (CC)
 Construction-Related (CR)
 Site Issues (SI)
 Other : _____
 Second Submission: _____
 Reinspection (if necessary): _____
 Acceptable for SWM Purposes (RD/CC/CR/Other). Ok to proceed with bond release.
 Complete "Surety Request Form".
 Check/Clean active file of any remaining material and finish "As-Built" file.
 Add to County BMP Inventory/Inspection schedule (Phase I, II or III).
 Copy Final Inspection Report into County BMP Inspection Program file.
 Obtain Digital Photographs of BMP and save into County BMP Inventory.
 Request mylar/reproducible from As-Built plan preparer.
 Complete "As-built Tracking Log".
 Last check of BMP Access Database (County BMP Inventory).
 Add BMP to JCC Hydrology & Hydraulic database (optional).
 Add BMP to Municipal BMP list (if a County-owned facility)
 Add BMP to PRIDE BMP ratings database.

Final Sign-Off

Inspector: _____

Date: _____

Chief Engineer: _____

Date: _____

*** See separate checklist, if needed.

BMP MAINTENANCE SCHEDULE

1. INSPECT BMP ONE YEAR AFTER ACCEPTANCE AND EVERY TWO YEARS THEREAFTER
2. REMOVE ALL TRASH AND DEBRIS.

ROUTINE MAINTENANCE:

ROUTINE MAINTENANCE SHOULD INCLUDE GRASS MOWING AND DEBRIS REMOVAL.

NONROUTINE MAINTENANCE:

1. AREAS OF EROSION SHOULD BE FILLED AND COMPACTED AND RESEEDED AS SOON AS POSSIBLE.
2. ERODED AREAS NEAR THE OUTLET SHOULD BE REVEGATED, FILLED, COMPACTED, AND RESEEDED OR LINED WITH RIPRAP IF NECESSARY.
3. REPAIR ANY DAMAGED SIDE SLOPES AND EMBANKMENTS WITH FILL DIRT AS NECESSARY.

NOTE: ADDITIONAL SOILS TESTING SHALL BE PERFORMED ON BMP AFTER CONSTRUCTION OF SAME TO DETERMINE TRUE INFILTRATION CHARACTERISTICS. MATERIAL SHALL BE REMOVED AND REPLACED IF NECESSARY TO ACHIEVE ACCEPTABLE INFILTRATION RATE AS DIRECTED BY ENGINEER AND APPROVED BY JAMES CITY COUNTY.

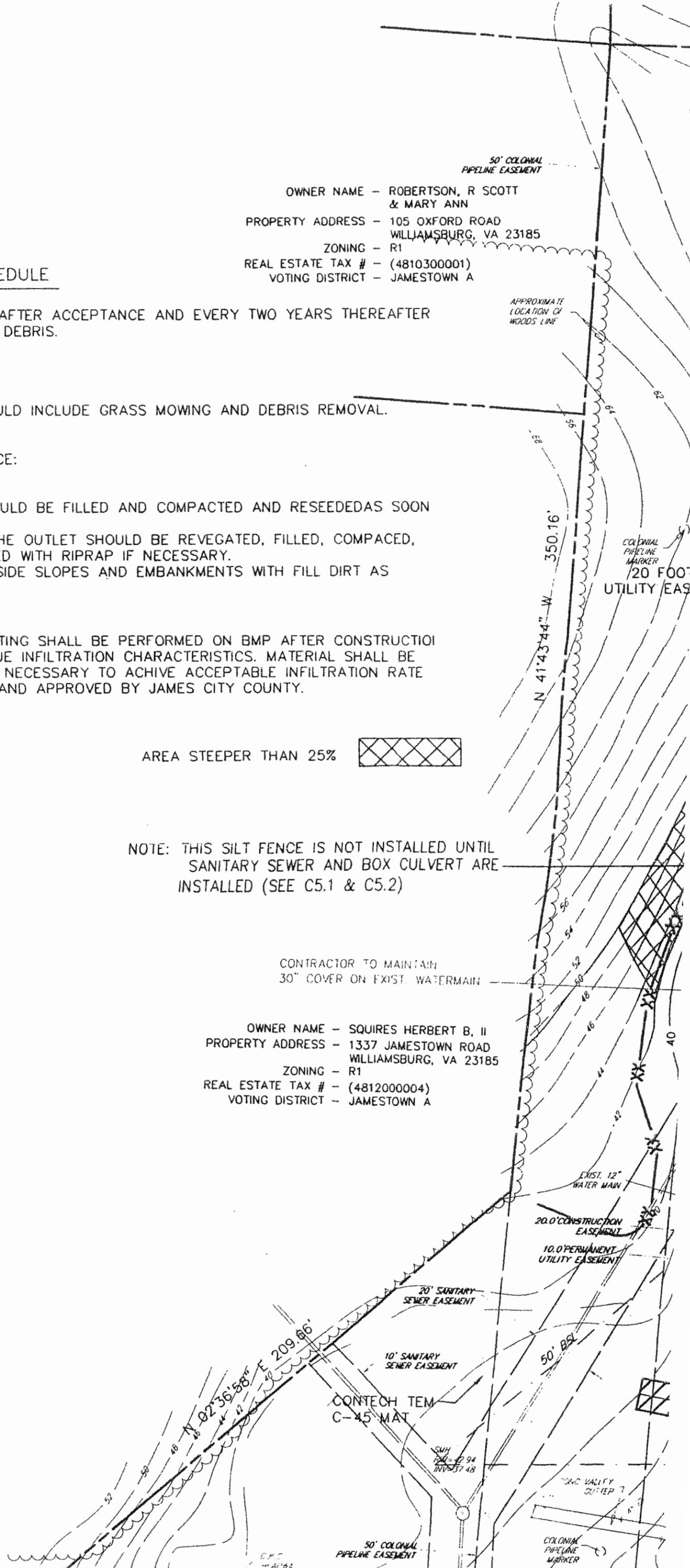
AREA STEEPER THAN 25% 

NOTE: THIS SILT FENCE IS NOT INSTALLED UNTIL SANITARY SEWER AND BOX CULVERT ARE INSTALLED (SEE C5.1 & C5.2)

CONTRACTOR TO MAINTAIN 30" COVER ON EXIST. WATERMAIN

OWNER NAME - SQUIRES HERBERT B. II
 PROPERTY ADDRESS - 1337 JAMESTOWN ROAD
 WILLIAMSBURG, VA 23185
 ZONING - R1
 REAL ESTATE TAX # - (4812000004)
 VOTING DISTRICT - JAMESTOWN A

OWNER NAME - ROBERTSON, R SCOTT & MARY ANN
 PROPERTY ADDRESS - 105 OXFORD ROAD
 WILLIAMSBURG, VA 23185
 ZONING - R1
 REAL ESTATE TAX # - (4810300001)
 VOTING DISTRICT - JAMESTOWN A



JDE GRASS MOWING AND DEBRIS REMOVAL.

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IT SHOULD BE REVEGATED, FILLED, COMPACTED, RIPRAP IF NECESSARY. PES AND EMBANKMENTS WITH FILL DIRT AS

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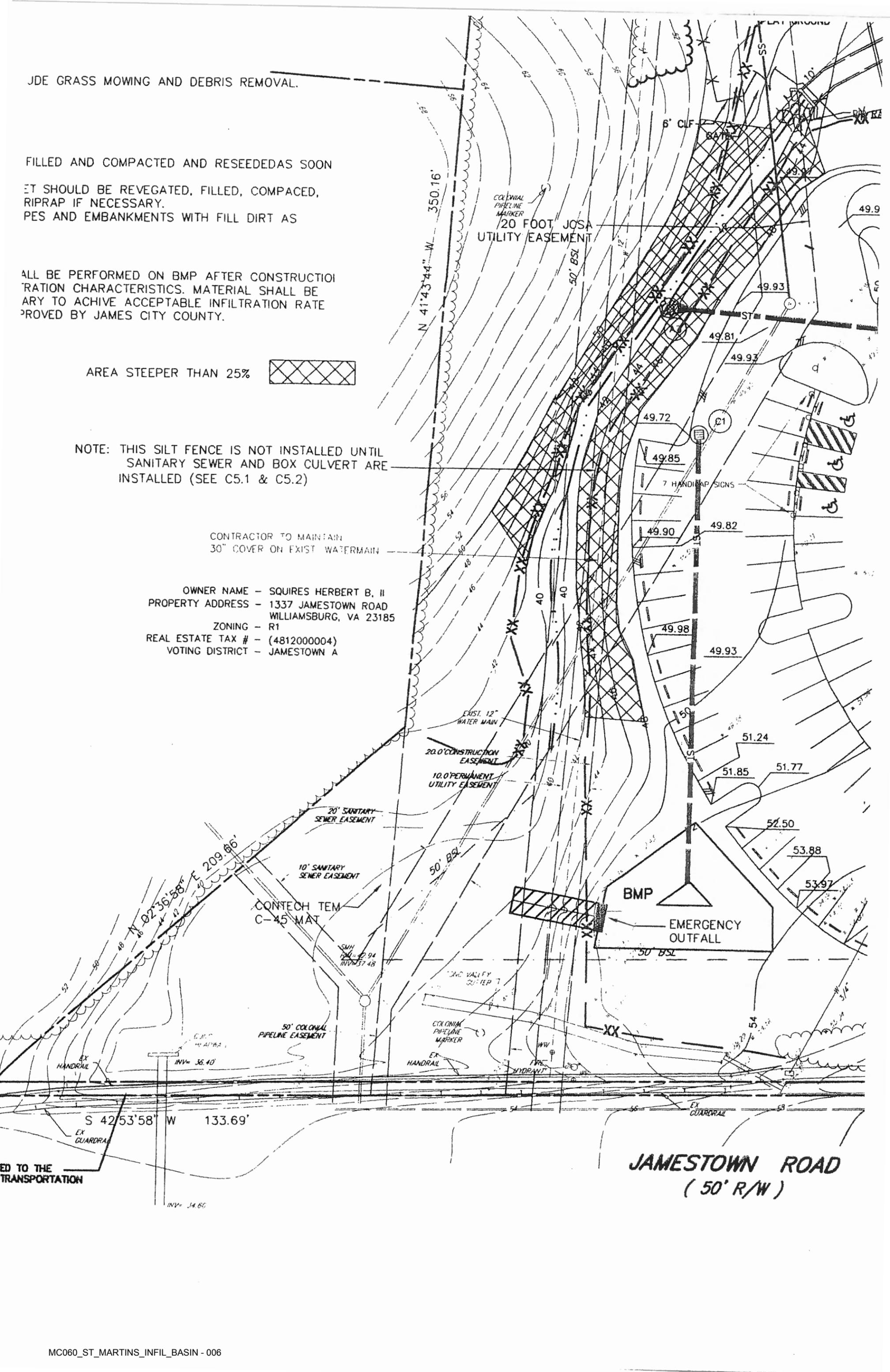
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WILLIAMSBURG, VA 23185
ZONING - R1
REAL ESTATE TAX # - (4812000004)
VOTING DISTRICT - JAMESTOWN A



ADJACENT TO THE TRANSPORTATION

JAMESTOWN ROAD (50' R/W)

BMP MAINTENANCE SCHEDULE

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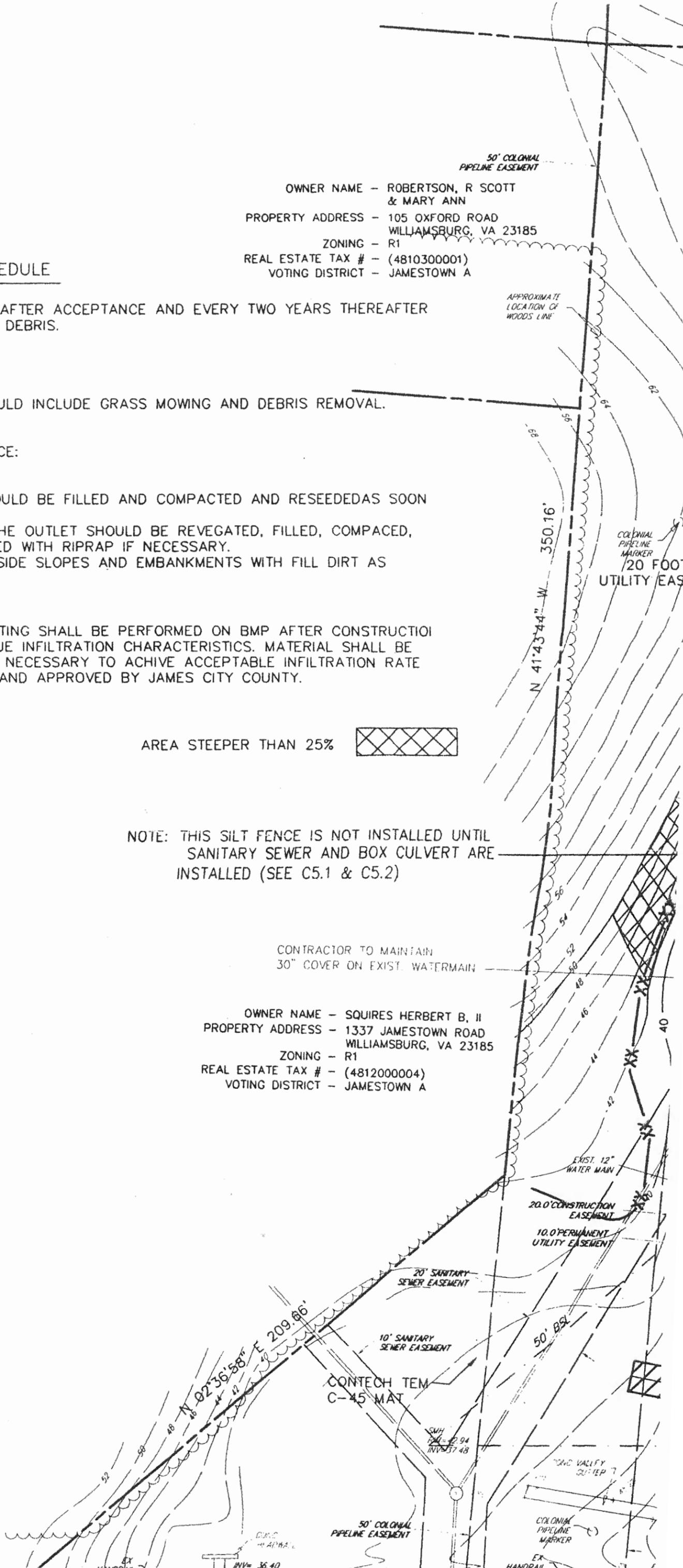
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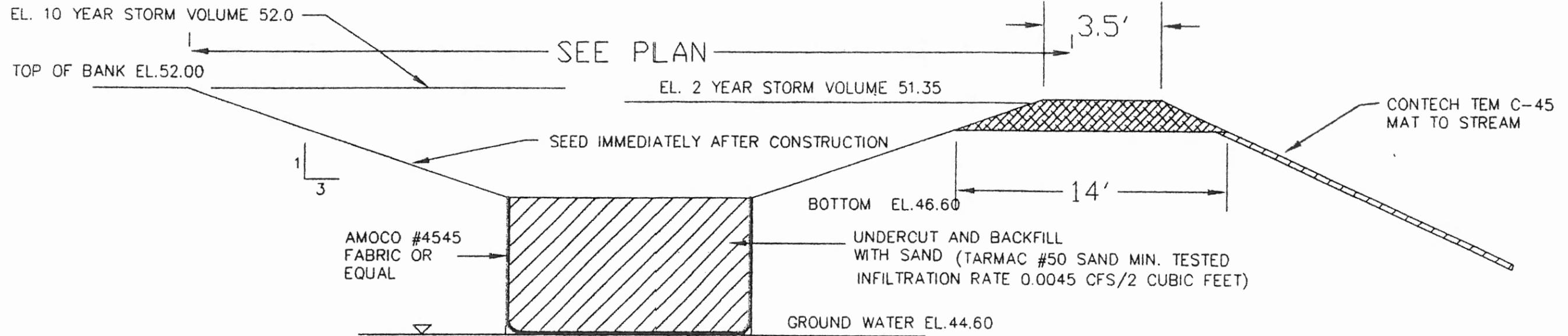


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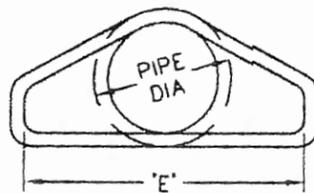
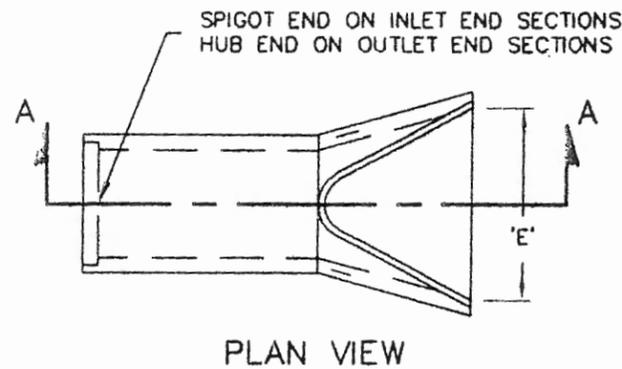
NTS

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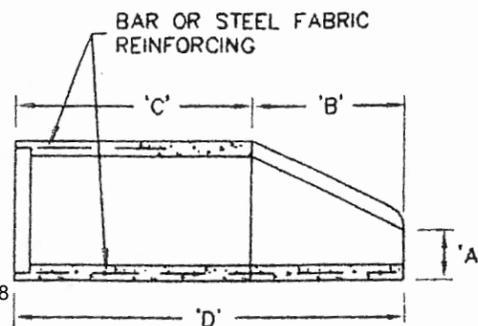
BMP

NTS

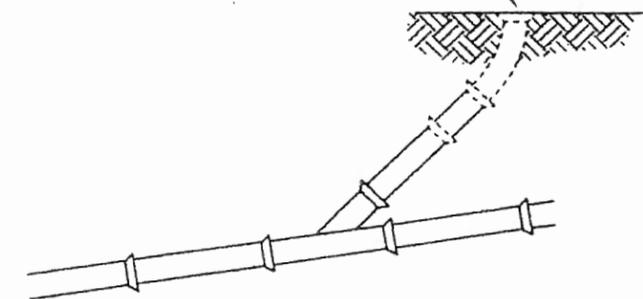


END SECTION DIMENSIONS

DIA	'A'	'B'	'C'	'D'	'E'
12"	4"	2'-0"	2'-0"	4'-0"	2'-0"
15"	6"	2'-3"	1'-9"	4'-0"	2'-6"
18"	9"	2'-3"	1'-9"	4'-0"	3'-0"
24"	9 1/2"	3'-7"	2'-6"	6'-1"	4'-0"
30"	1'-0"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"
36"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	6'-0"
42"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"
48"	2'-0"	6'-0"	2'-11"	8'-2"	6'-6"



STANDARD JCSA CLEANOUT COVER ASSEMBLY



TYPICAL LATERAL LAYOUT

NTS

WITH THE EXISTING DRAINAGE FROM THE PREMISES.

MAY BE INVOLVED WITHIN THE BOUNDARY OF THIS CONTRACTOR MUST COMPLY WITH THE EXACT LIMITS OF

PLACED UNDERGROUND.

NOTES

1. DURING GRADING OR CONSTRUCTION, PROTECTION BARRIERS SHOULD BE INSTALLED AROUND ALL TREES TO BE RETAINED ON THE SITE PLAN TO PREVENT COLLISION OR DAMAGE TO THE TREES. THEY SHOULD BE INSTALLED IN A CIRCULAR PATTERN WITH A DISTANCE EQUAL TO THE LENGTH OF THE LONGEST BRANCH. MATERIALS SHALL NOT BE STOCKPILED IN THE PROTECTED AREA AND VEHICLES AND OTHER EQUIPMENT SHALL BE KEPT OUT OF THE AREA. SOIL COMPACTION. THE ONLY EXCEPTION TO THIS IS FOR THE INSTALLATION OF THOSE SPECIFICALLY ALLOWED BY THESE STANDARDS

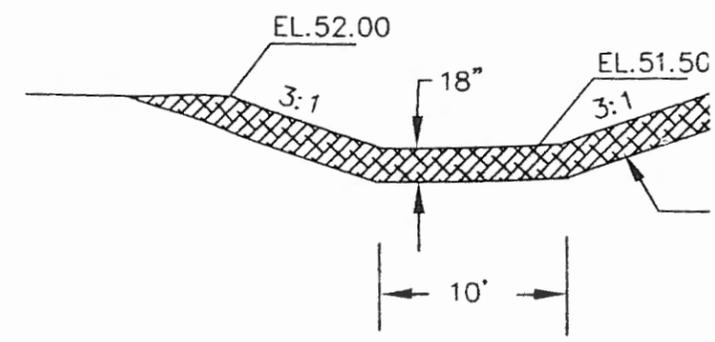
2. A NON-PROTECTIVE NATURE SHALL NOT BE NAILED OR USED DURING CONSTRUCTION.

3. CONTRACTORS ARE BE CAUTIONED TO AVOID DAMAGE TO TREES AND ROOTS DURING LAND LEVELING OPERATIONS. (A) TREES SHALL NOT BE CUT IN AN AREA EQUAL TO TWICE THE TREE CALIPER (MEASURED 4" ABOVE GROUND LINE IN INCHES) EXPRESSED AS A PERCENTAGE OF THE CIRCUMFERENCE OF 10" WOULD HAVE A "NO CUT" ZONE OF 10" FROM THE TREE). THIS SHOULD APPLY TO DITCHING FOR DRAINAGE WHERE FEASIBLE.

4. DAMAGED ROOTS DURING EQUIPMENT OPERATIONS SHALL BE CUT BACK TO THE NEXT LATERAL BRANCH OR COLLAR. CARE FOR SERIOUS INJURY SHOULD BE REFERRED TO COUNTY ARBORIST.

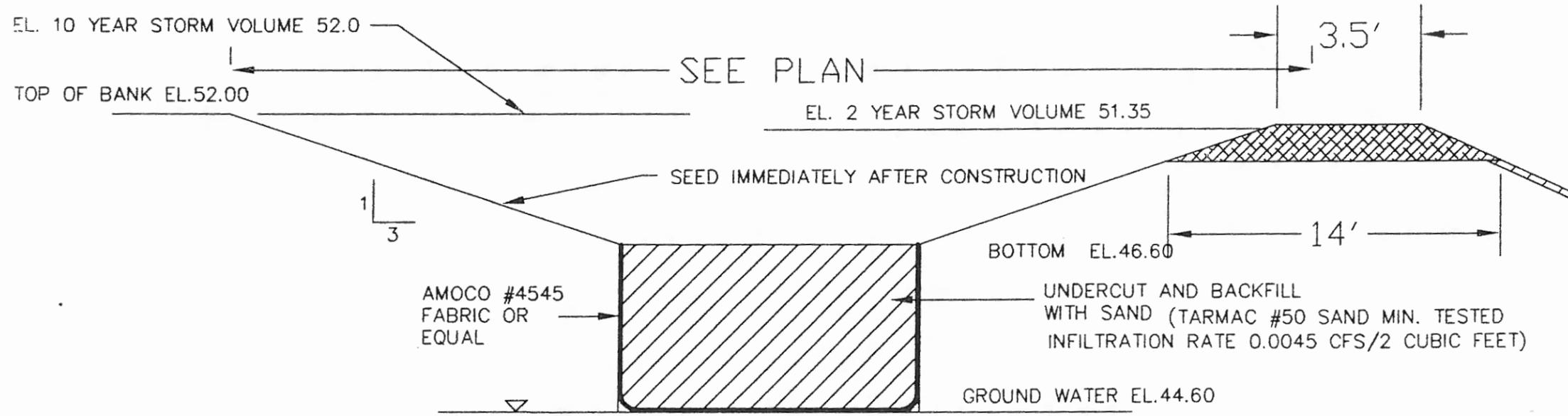
5. TREES KILLED DURING CONSTRUCTION: IF DESIRED, REPLANTING OF THE ABOVE MEANS ARE KILLED DURING CONSTRUCTION, SHALL BE PROVIDED BY TREES OF AT LEAST 2" CALIPER OF THE SAME SPECIES AS SPECIFIED BY THE COUNTY ARBORIST. THE REPLANTING SHALL CONFORM TO THE LATEST EDITION OF THE COUNTY SPECIFICATIONS FOR NURSERY STOCK.

4. CERTIFICATION OF MATERIALS AND TEST RESULTS (E.G., CBR AND PROCTOR, ETC.) FROM EACH AND EVERY SOURCE OF SUPPLY FOR SELECT BORROW AND SELECT MATERIAL SHALL BE SUBMITTED TO HIGHWAY INSPECTIONS BY THE CONTRACTOR BEFORE INSTALLATION.
5. CERTIFICATION OF MATERIALS AND THE TEST RESULTS ON THE FOLLOWING ITEMS SHALL BE SUBMITTED TO HIGHWAY INSPECTIONS BY THE CONTRACTOR BEFORE THE ROAD CONSTRUCTION IS PERFORMED:
 - A. THE PROCTOR TEST ON THE NATIVE SUBGRADE MATERIALS.
 - B. THE OPTIMUM MOISTURE CONTENT OF THE AGGREGATE.
 - C. THE THEORETICAL MAXIMUM DENSITY OF THE AGGREGATE.



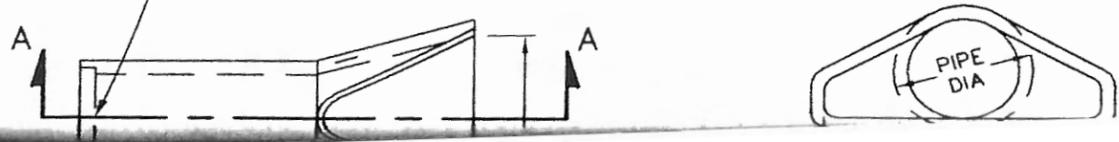
EMERGENCY OUTFLOW
NTS

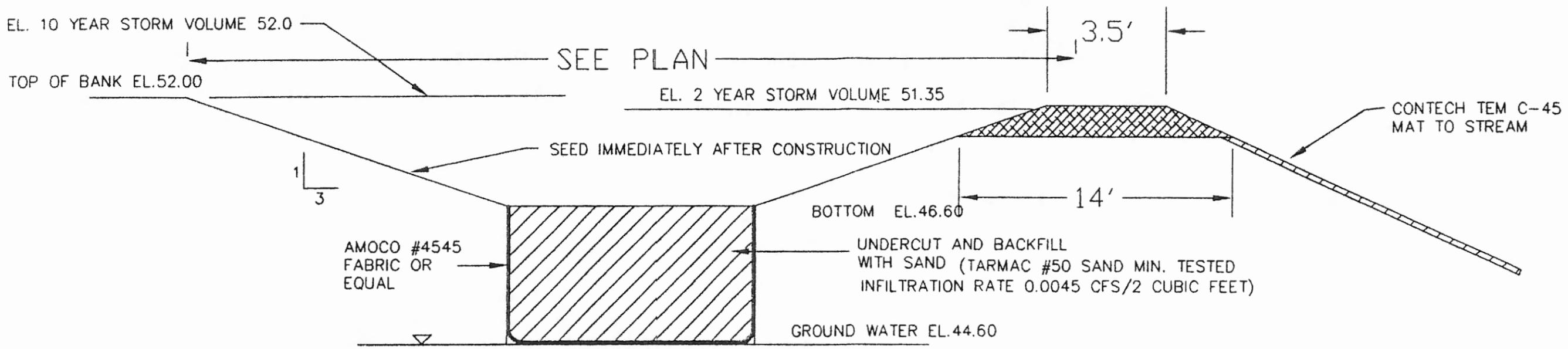
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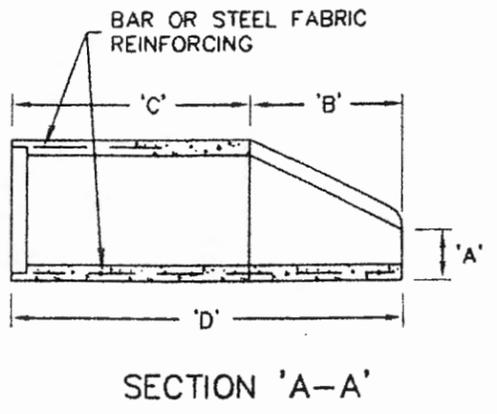
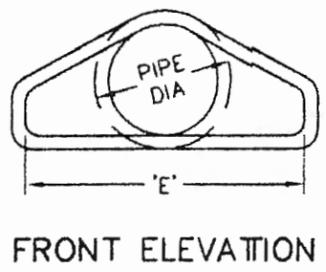
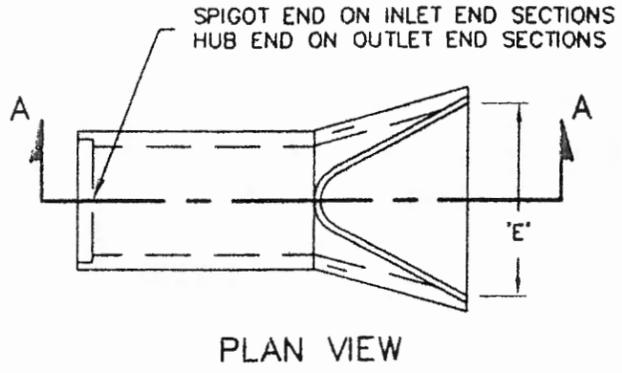
BMP
NTS

SPIGOT END ON INLET END SECTIONS
HUB END ON OUTLET END SECTIONS



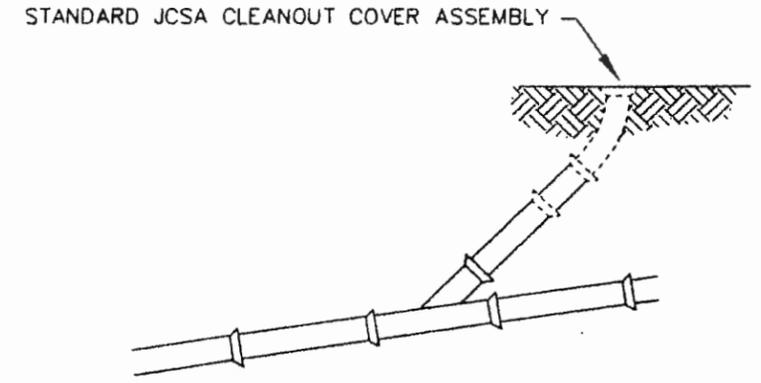


BMP
NTS



END SECTION DIMENSIONS

DIA	'A'	'B'	'C'	'D'	'E'
12"	4"	2'-0"	2'-0"	4'-0"	2'-0"
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54"	2'-3"	5'-5"	2'-9 1/4"	8'-2 1/4"	7'-6"
60"	2'-11"	5'-0"	3'-3"	8'-3"	8'-0"



TYPICAL LATERAL LAYOUT
NTS

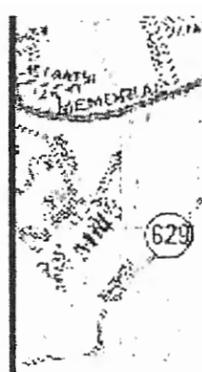
**FLARED END SECTION
12"-60" CONCRETE PIPE**

LANDSCAPE NOTES & DETAILS
 GENERAL NOTES & DETAILS
 GENERAL NOTES & DETAILS
 GENERAL NOTES & DETAILS

ABBREVIATIONS

NING	MON	MONITORING
	N	NORTH
	NE	NORTHEAST
	NTS	NOT TO SCALE
	NW	NORTHWEST
	OH	OVERHEAD
	OH	PEDESTAL
VISION	PED	POST INDICATOR VALVE
IN ENTRANCE	PIV	POWER POLE
IPE	PP	POLYVINYL CHLORIDE
	PVC	RADIUS
FENCE	R	REINFORCED CONCRETE PIPE
METAL PIPE	RCP	REQUIRED
	REQ'D	RAILROAD
	R/R	RIGHT-OF-WAY
	R/W	SOUTH
	S	SANITARY
	SAN	SATELLITE
	SAT	SANITARY CLEANOUT
	SCO	SOUTHEAST
	SE	SILT FENCE
	SF	STATION
XOR	STA	STORY
IT	STY	SOUTHWEST
	SW	TEMPORARY BENCHMARK
	TBM	TOP OF CURB
	TC	TOTAL DYNAMIC HEAD
	TDH	TELEPHONE
	TEL	TEMPORARY
R MINUTE	TEMP	TRANSFORMER
	TRANS	TYPICAL
	TYP	UNDERGROUND
	UG	UNLESS NOTED OTHERWISE
	UNO	VERTICAL
	VERT	WEST
	W	WITH
	w/	WATER VALVE
	WV	WATER METER
	WM	

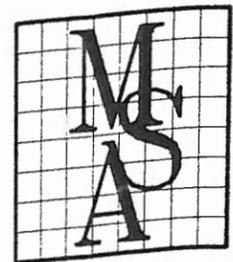
TOTAL SITE AREA :	±4.17 AC
DISTURBED AREA:	±2.52 AC
EXISTING BUILDING AREA :	±4,348 SF
EXISTING BUILDING COVERAGE :	2.4 %
NEW BUILDING AREA:	±6,604 SF
TOTAL BUILDING AREA :	±10,952 SF
(EXISTING & PROPOSED)	
BUILDING COVERAGE :	
(EXISTING & PROPOSED)	6.0%
OPEN SPACE :	±117,095 SF
	64 %
BUILDING USE :	CHURCH SANCTUARY AND RELATED OFFICE & CLASSROOM SPACE
BUILDING HEIGHT :	35 FT
ADDRESS:	1333 JAMESTOWN ROAD WILLIAMSBURG, VA. 23185



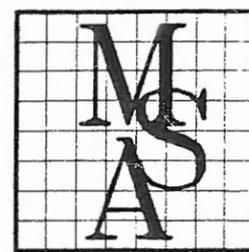
LOCAL SCALE

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 Permitted Use

SP-03



MSA, P.C.
 Landscape Design • Planning
 Surveying • Engineering
 Environmental Sciences



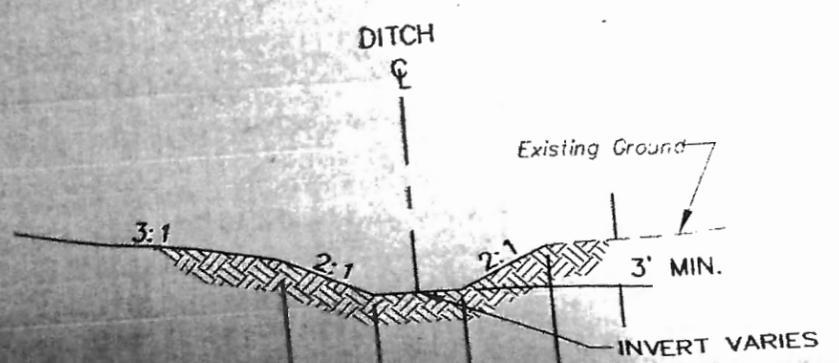
5033 ROUSE DRIVE, VIRGINIA BEACH, VA 23462-3708
 PHONE (757) 490-9264 • FAX (757) 490-0634

DATE	INITIAL
3/8/00	CAM
6/15/00	CAM
8/15/00	CAM
9/26/00	CAM

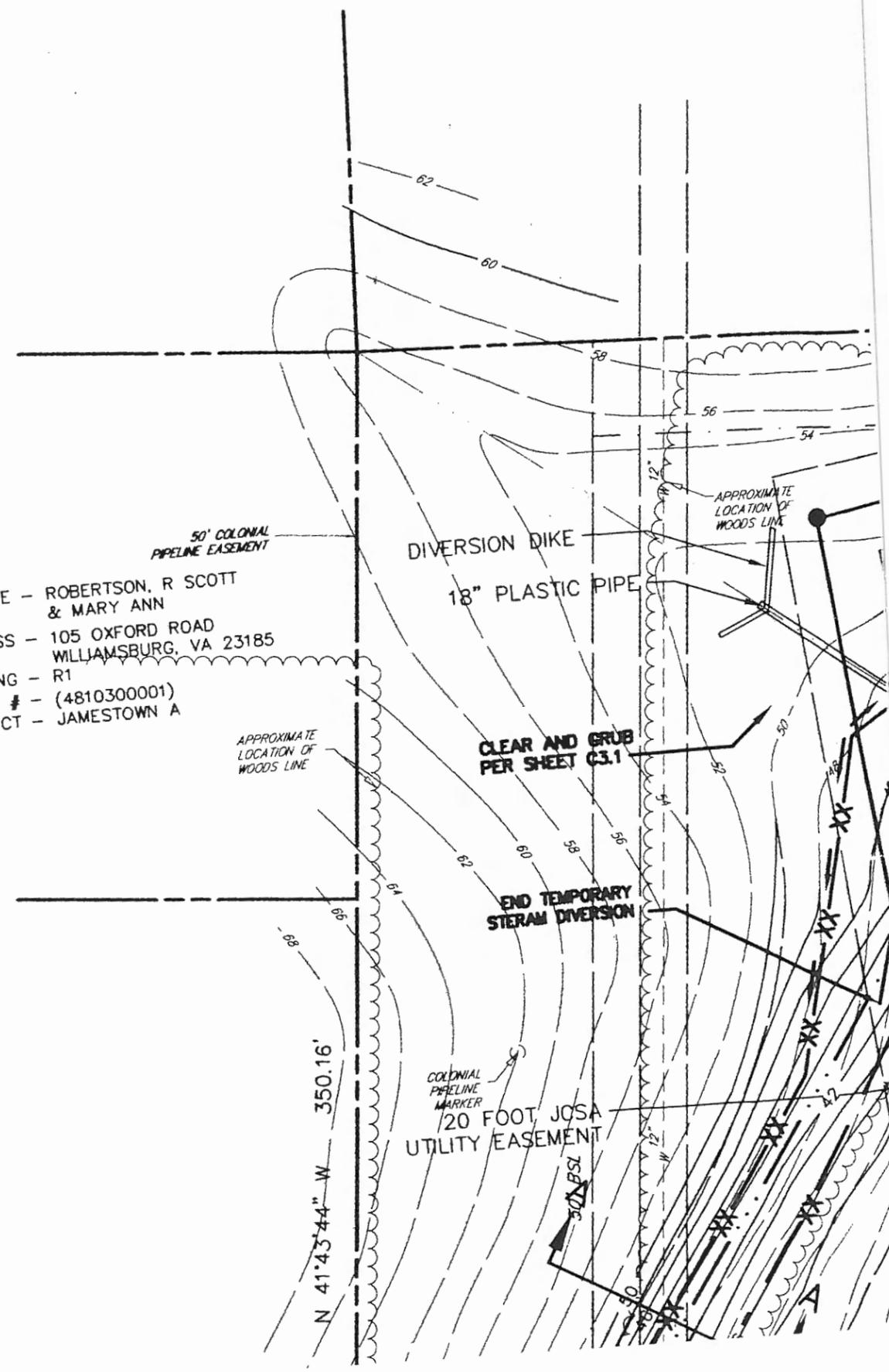
THIS DOCUMENT IS THE SOLE PROPERTY OF MSA, P.C. VIRGINIA BEACH, VIRGINIA. THE REPRODUCTION IN WHOLE OR PART, THE MODIFICATION OF ANY DETAIL OR DESIGN, OR USE FOR ANY PURPOSE OTHER THAN THAT INTENDED BY MSA, P.C. MAY NOT BE MADE WITHOUT THE EXPRESSED WRITTEN CONSENT OF MSA, P.C.

SEQUENCE OF CONSTRUCTION BOX CULVERT

1. OBTAIN NECESSARY PERMITS
2. INSTALL EROSION AND SEDIMENTATION DEVICES AS SHOWN ON THIS SHEET FOR SLOPE PROTECTION ON WEST OF EXISTING STREAM.
3. CLEAR AREAS AS SHOWN ON THIS SHEET
4. GRADE AREA SOUTH OF BOX CULVERT TO CONTOURS SHOWN BEING CAREFUL NOT TO DISTURB EXISTING STREAM.
5. INSTALL A HIGH PERFORMANCE TURF REINFORCEMENT MATTING (PYRAMATE) SEEDED AND MULCHED MATERIAL APPROVED BY THE ENGINEER ALONG TEMPORARY AND PERMANENTLY REDIRECTED STREAM BANK. MATERIAL SHALL COVER INVERT AND STREAM BANK TO AN ELEVATION OF 3 FEET ABOVE INVERT SHOWN ON PLANS. HIGH PERFORMANCE MATTING SHALL BE CAPABLE OF WITHSTANDING LONG TERM WATER VELOCITIES OF 10 FT/SEC IN AN UNVEGETATED STATE WITHOUT LOSING SHEAR STRENGTH OR CAUSING DEFORMATION.
6. TEMPORARILY REDIRECT STREAM AS SHOWN ON PLAN.
7. INSTALL BOX CULVERT INCLUDING WINGWALL ON SOUTH END OF CULVERT AND HEADWALL AT NORTH END OF CULVERT.
8. COMPLETE GRADING SOUTH OF CULVERT AND INSTALL RIP RAP ANCHOR GEOSYNTHIC EROSION CONTROL BLANKET (SEE DETAIL THIS SHEET).
9. REDIRECT EXISTING STREAM INTO NORTH END OF BOX CULVERT.
10. FINE GRADE AND SEED DISTURBED AREAS.
11. INSTALL SILT FENCE ALONG WEST SIDE OF NEW STREAM BANK PRIOR TO DEMOLITION OR DISTURBANCE OF BUILDINGS, PARKING AREA, BMP AND AFTER STREAM IS REALIGNED (SEE SHEET C3.1).
12. REMOVE EROSION AND SEDIMENTATION DEVICES WHEN SOIL IS STABILIZED AND VEGETATION IS ESTABLISHED.



OWNER NAME - ROBERTSON, R SCOTT & MARY ANN
 PROPERTY ADDRESS - 105 OXFORD ROAD WILLIAMSBURG, VA 23185
 ZONING - R1
 REAL ESTATE TAX # - (4810300001)
 VOTING DISTRICT - JAMESTOWN A



OWNER NAME - NATIONAL BANK C

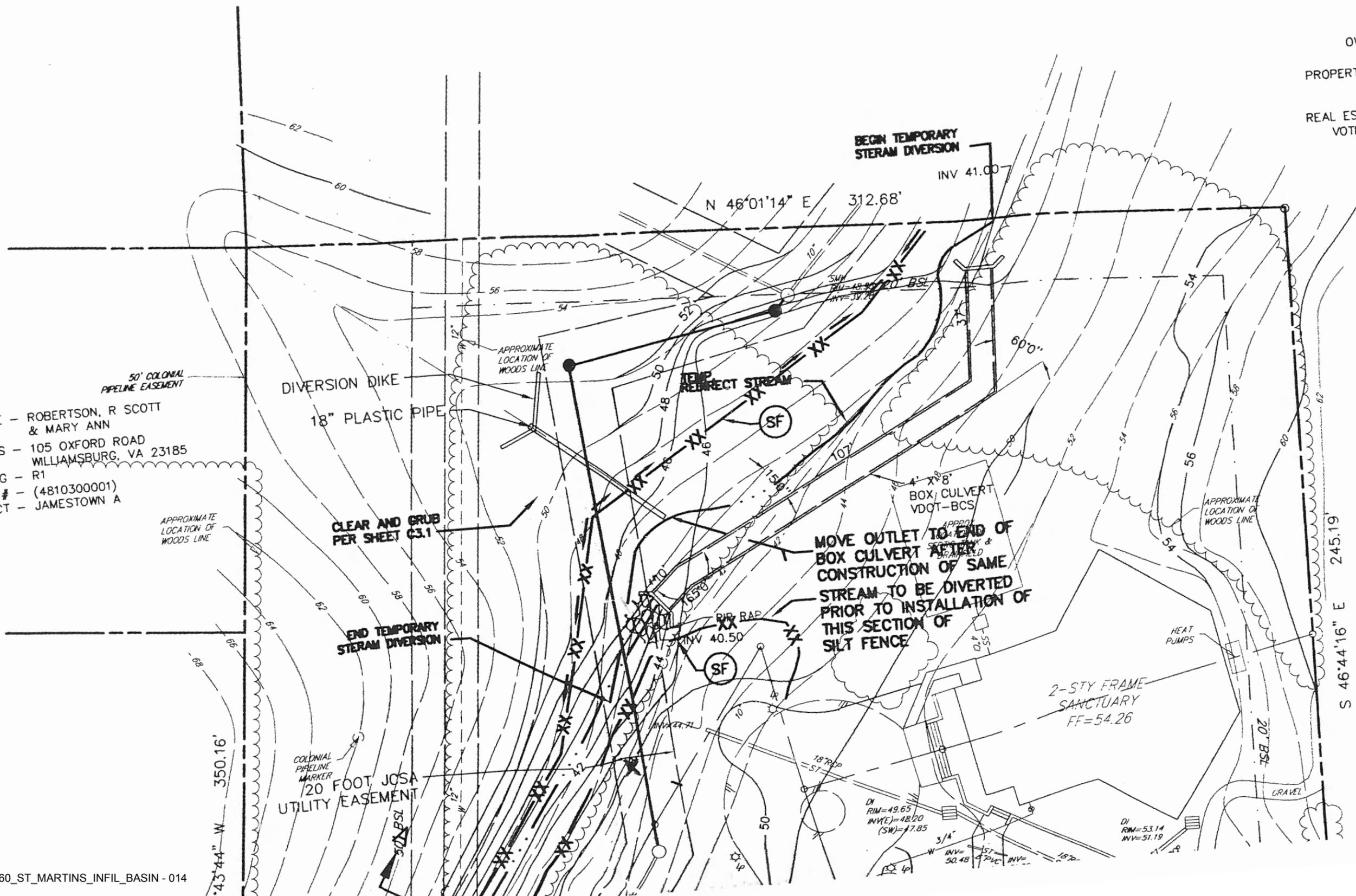
PROPERTY ADDRESS - 1307 - 1323 JAM
WILLIAMSBURG, VA

ZONING - B1

REAL ESTATE TAX # - (4811200001)

VOTING DISTRICT - JAMESTOWN A

OWNER NAME - ROBERTSON, R SCOTT
& MARY ANN
PROPERTY ADDRESS - 105 OXFORD ROAD
WILLIAMSBURG, VA 23185
ZONING - R1
STATE TAX # - (4810300001)
VOTING DISTRICT - JAMESTOWN A

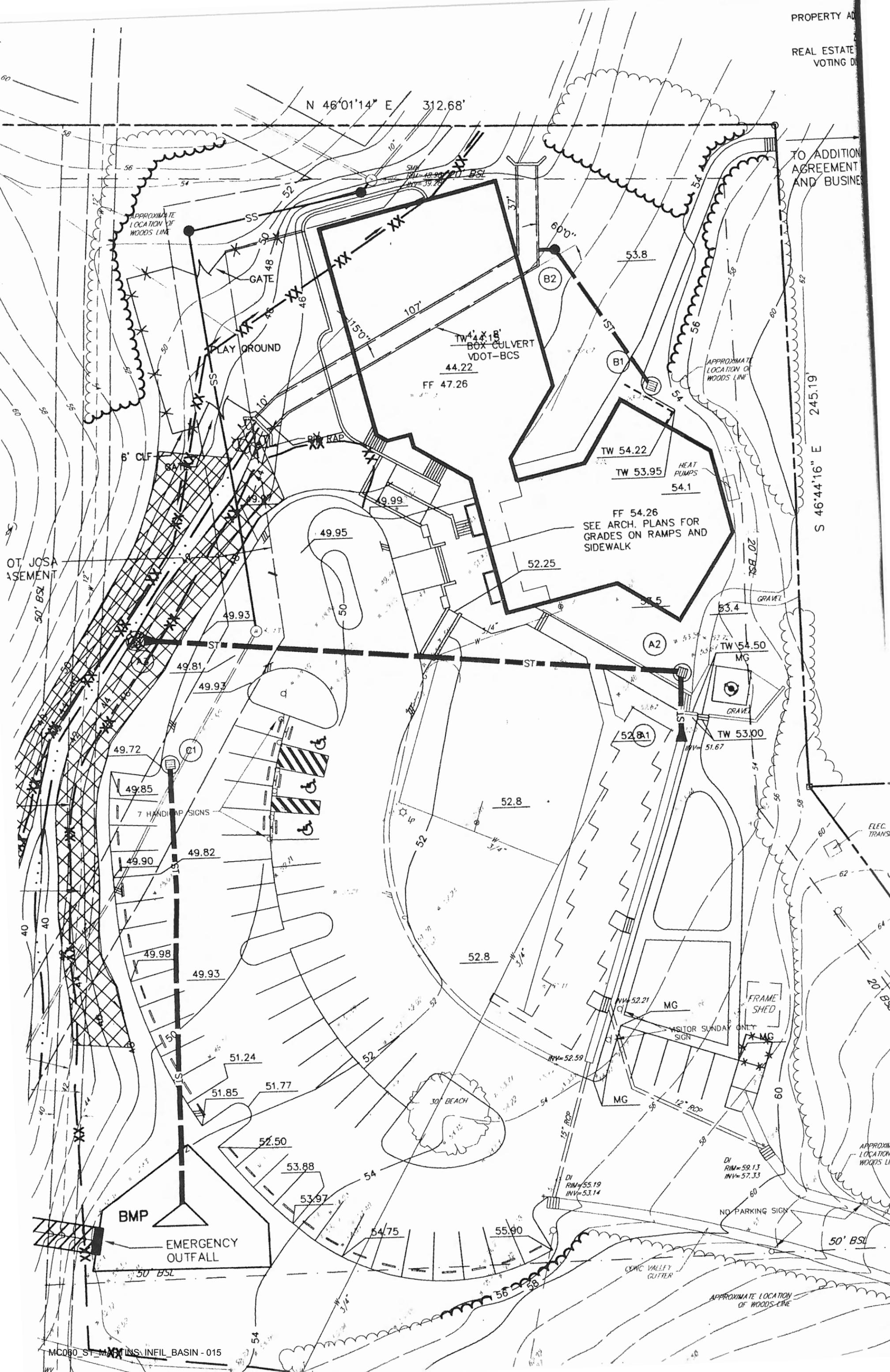


**MOVE OUTLET TO END OF
BOX CULVERT AFTER
CONSTRUCTION OF SAME
STREAM TO BE DIVERTED
PRIOR TO INSTALLATION OF
SILT FENCE**

20 FOOT JCSA
UTILITY EASEMENT

2-STY FRAME
SANCTUARY
FF=54.26

TO ADDITION
AGREEMENT
AND BUSINE



OT, JOSE
ASEMENT

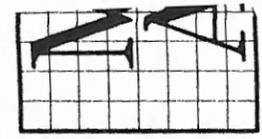
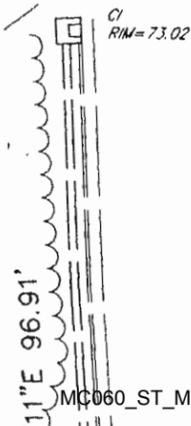
BANK OF VIRGINIA
 23 JAMESTOWN ROAD
 WILMINGTON, VA 23185



- (A1) 12" FES (VDOT STE ES-1)
INV= 51.40
- (A1) TO (A2) 24LF 12" RCP @ 5.0%
- (A2) VDOT STD DI-1
RIM=52.65
INV=50.20
INV=45.20
- (A2) TO (A3) 199LF 12" RCP @ 2.0%
- (A3) 12" FES (VDOT STD ES-1)
INV=41.22
3 SY RIP-RAP
- (B1) VDOT STD DI-1
RIM=53.85
INV=43.40
- (B1) TO (B2) 61LF 12" RCP @ 0.33%
- (B2) VDOT STD MH-1
RIM=48.60
43.20
- (B2) TO BOX CULVERT 8LF 12" RCP @ 2.78%
- (C1) VDOT STD DI-1
RIM=49.70
INV=47.33
- (C1) TO BMP 165 LF 15" RCP @ 0.45%
INV. AT BMP=46.60

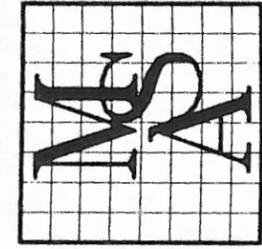
OWNER NAME - KARRIN'S INC.
 PROPERTY ADDRESS - 1325 JAMESTOWN ROAD
 WILLIAMSBURG, VA 23185
 ZONING - B1
 REAL ESTATE TAX # - (4810100008A)
 VOTING DISTRICT - JAMESTOWN A

OWNER NAME - CALEDONIAN PROPERTIES
 PROPERTY ADDRESS - 1329 JAMESTOWN ROAD
 WILLIAMSBURG, VA 23185
 ZONING - B1
 REAL ESTATE TAX # - (4810100008A)
 VOTING DISTRICT - JAMESTOWN A



MSA, P.C.
 Landscape Design • Planning
 Surveying • Engineering
 Environmental Sciences

5033 ROUSE DRIVE, VIRGINIA BEACH, VA 23462-3708
 PHONE (757) 490-9264 • FAX (757) 490-0634



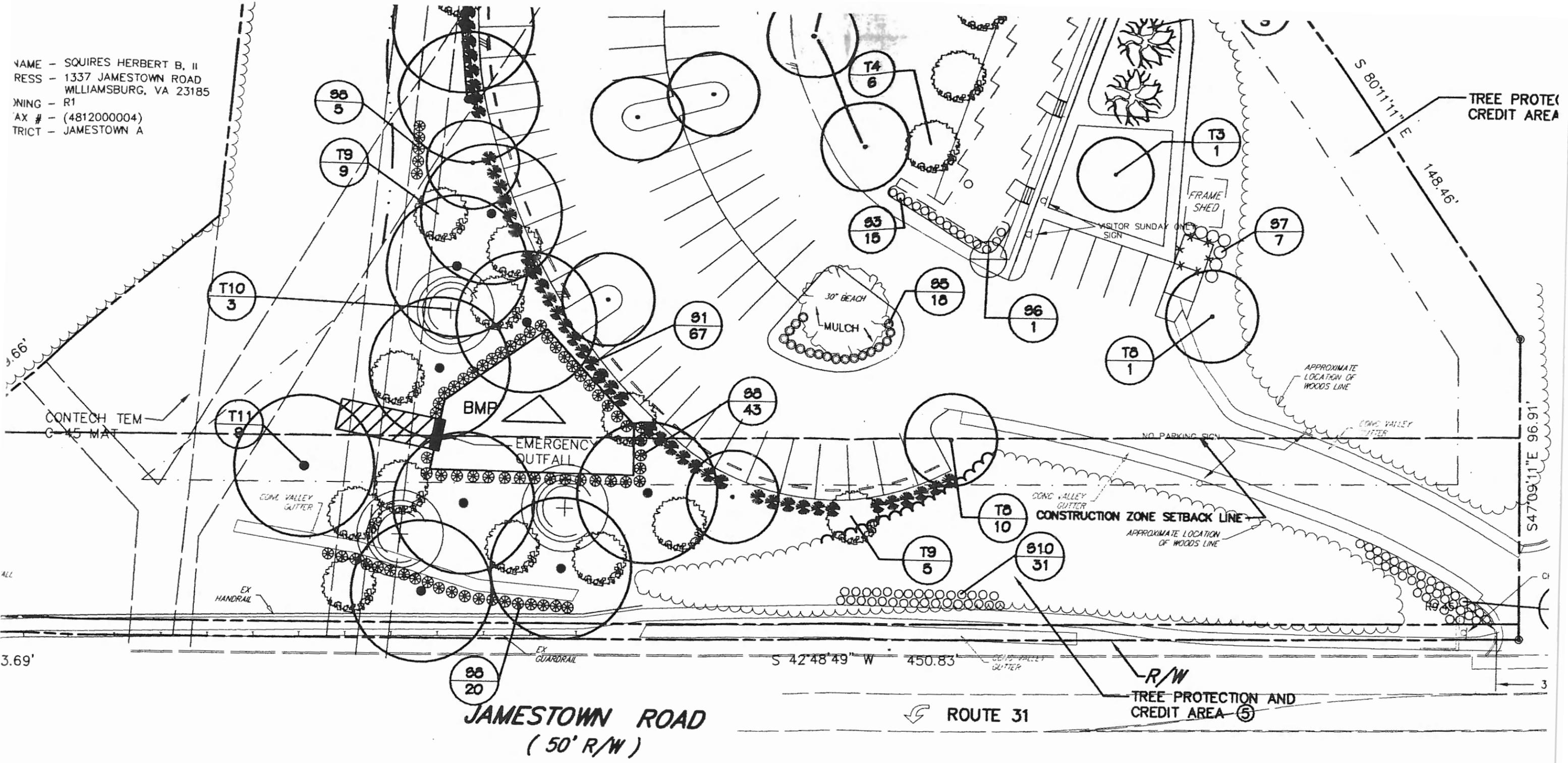
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 BEACH, VA. THE
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 USE FOR ANY PURPOSE
 OTHER THAN THAT
 INTENDED BY MSA, P.C.
 MAY NOT BE MADE
 WITHOUT THE EXPRESS
 WRITTEN CONSENT OF
 MSA, P.C.

DESIGNED	CAM
DRAWN	NEL/CRM
CHECKED	DMW
APPROVED	DMW
DATE	6/01/00



GE PLAN
 IPAL CHURCH
 VIRGINIA

NAME - SQUIRES HERBERT B, II
 ADDRESS - 1337 JAMESTOWN ROAD
 WILLIAMSBURG, VA 23185
 ZONING - R1
 TAX # - (4812000004)
 TRACT - JAMESTOWN A



JAMESTOWN ROAD
 (50' R/W)

ROUTE 31

-R/W
 TREE PROTECTION AND
 CREDIT AREA ⑤

*** CAUTION ***
 THE UTILITIES SHOWN ARE FOR THE CONTRACTOR'S CONVENIENCE. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE CONTRACTOR ASSUMES NOT RESPONSIBILITY FOR THE LOCATIONS SHOWN AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATIONS OF ALL UTILITIES WITHIN THE LIMITS OF THE WORK. ALL DAMAGE MADE TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
 CALL MISS UTILITY : 1 (800) 552-7001.

PT UNDER
S WILL BE
TY ENGINEER'S

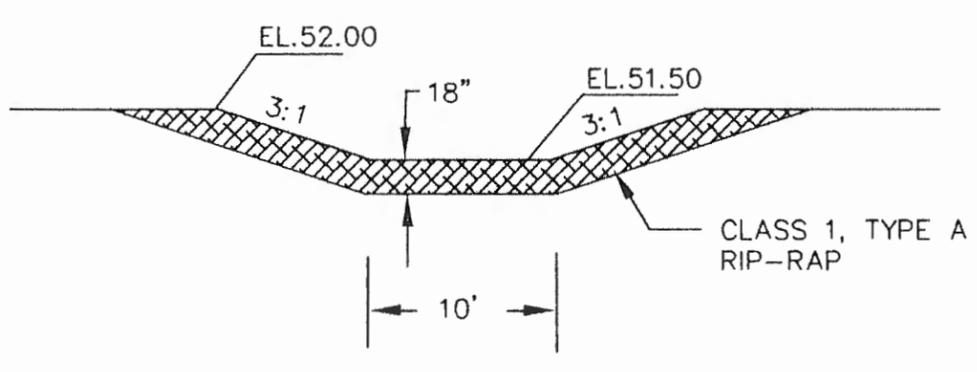
ALL WATER AND SEWER IMPROVEMENTS
MUST BE CONSTRUCTED IN ACCORDANCE
WITH THE LATEST EDITION OF THE JCSA
STANDARDS AND DETAILS.

THE EXISTING
ATED AGGREGATE

DES, OR
N, SHALL BE
THE GRADE
ACKILLED WITH
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DRAINAGE.

PROCTOR,
BORROW AND
S BY THE

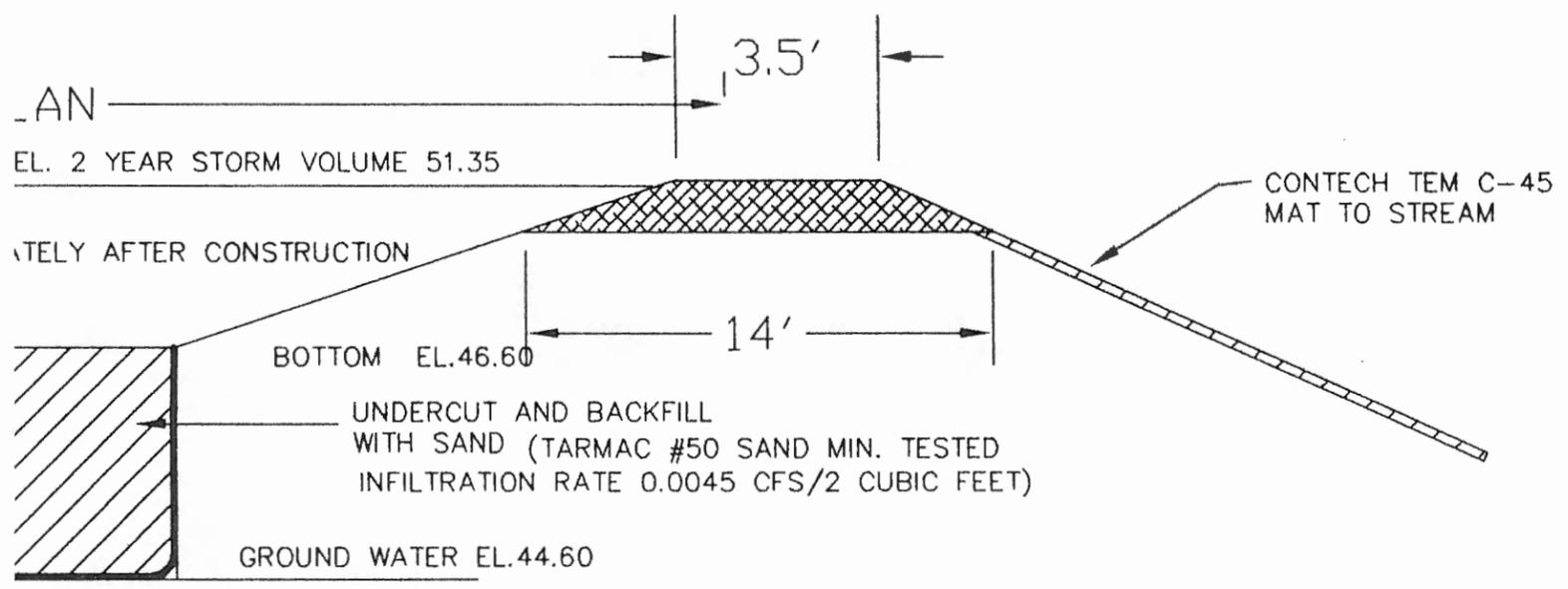
OLLOWING
ONTRACTOR



EMERGENCY OUTFLOW

NTS

IED ON BMP AFTER CONSTRUCTION
ERISTICS. MATERIAL SHALL BE
CEPTABLE INFILTRATION RATE
; CITY COUNTY.

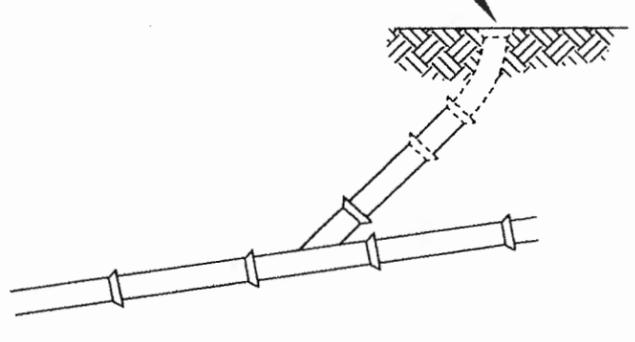


AN
TELY AFTER CONSTRUCTION
TION

DIMENSIONS

'D'	'E'
4'-0"	2'-0"
4'-0"	2'-6"
4'-0"	3'-0"
6'-1"	4'-0"
6'-1 3/4"	5'-0"
8'-1 3/4"	6'-0"
8'-2"	6'-6"

STANDARD JCSA CLEANOUT COVER ASSEMBLY



TYPICAL LATERAL LAYOUT

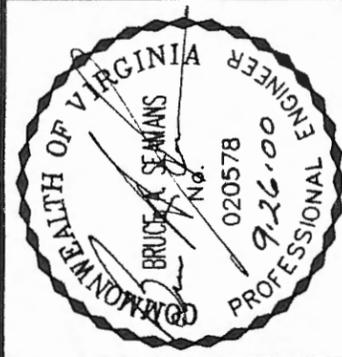
NTS

MSA
Landscape
Surveying
Environment
5033 ROUSE DRIVE, V
PHONE (757) 49



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USE FOR ANY PURPOSE
OTHER THAN THAT
INTENDED BY MSA, P.C.
MAY NOT BE MADE
WITHOUT THE EXPRESS
WRITTEN CONSENT OF
MSA, P.C.

DESIGNED	CAM
DRAWN	NEL/CRM
CHECKED	DMW
APPROVED	DMW
DATE	5/22/00



GENERAL NOTES & DETAILS
OF

ST. MARTIN'S EPISCOPAL CHURCH

VIRGINIA

GENERAL NOTE

Capacity: HS20-44 Loading and Alternate Military Loading.

Specifications:

Construction - Va. Department of Transportation Road and Bridge Specifications, 1991.
 Design - AASHTO Standard Specifications for Highway Bridges, 1983, including Interim Specifications, 1984, 1985 and VDOT Modifications, using Load Factor Design.

All concrete shall be Class A4.

Deformed reinforcing bars shall conform to ASTM A615, Grade 60. All reinforcing bar dimensions on the detailed drawings are to centers of bars except where otherwise noted and are subject to fabrication and construction tolerances.

Construction joints shall be constructed and bonded in accordance with the current Road and Bridge Specifications.

Barrels more than 35' in length shall be poured in sections by providing vertical construction joints, not exceeding 25' between joints nor more than 30' from ends of barrels.

** Bars BH1 & BH3 shall have a pin diameter of 24 bar diameters.

Dimensions on bar diagrams are out-to-out of bars. Bars are straight and #4 in size unless otherwise shown. BL2 shall be #3 in size.

The number of BL1 & BL2 bars shown in the table is the number of longitudinal bars shown in the Typical Section and may not equal the total number of bars required. BL1 & BL2 shall have a lap of 30 bar diameters at splices. At construction joints, first placed bars shall project 30 bar diameters beyond the joint. Estimated QUAN./LF shown for reinforcing steel does not include quantity for laps of BL1 & BL2 bars. The additional weight per longitudinal lap is shown in the table.

The centers of main reinforcing bars shall be 2" from the face of the concrete.

When concrete protective coating is required, all steel shall be epoxy-coated. All reinforcing steel for culverts under 0 to 2 foot fills shall be epoxy-coated.

At the Contractor's option, BVI bars may be spliced at the permissible construction joint in order to facilitate construction. No additional compensation shall be provided for the increase in reinforcing steel quantity due to the splices.

Headwall quantiles shown assume wingwalls are to be built at a 45° angle to the headwall.

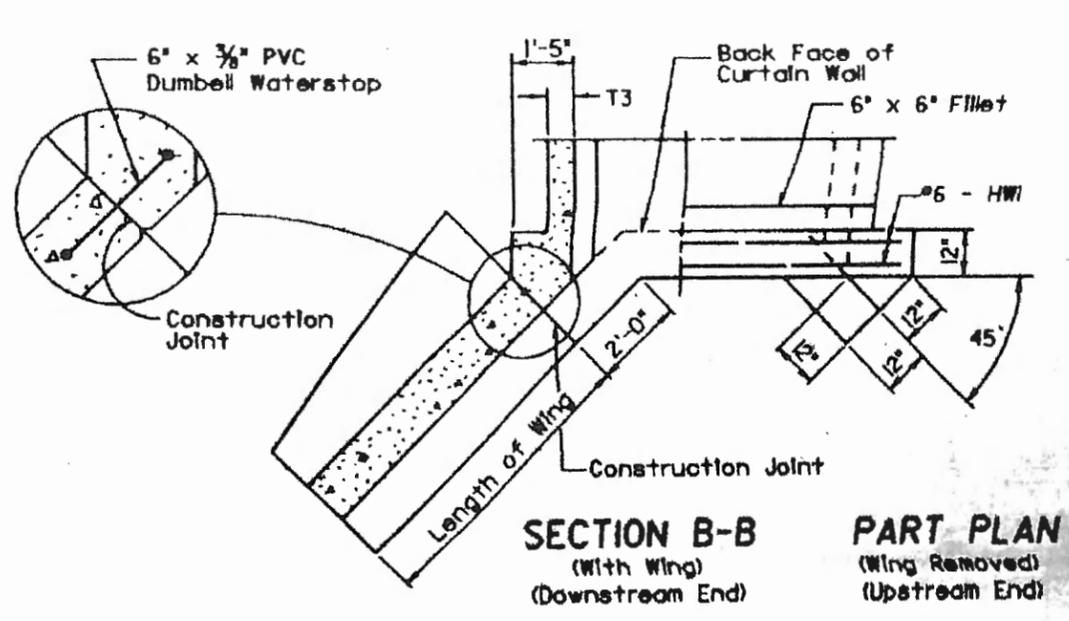
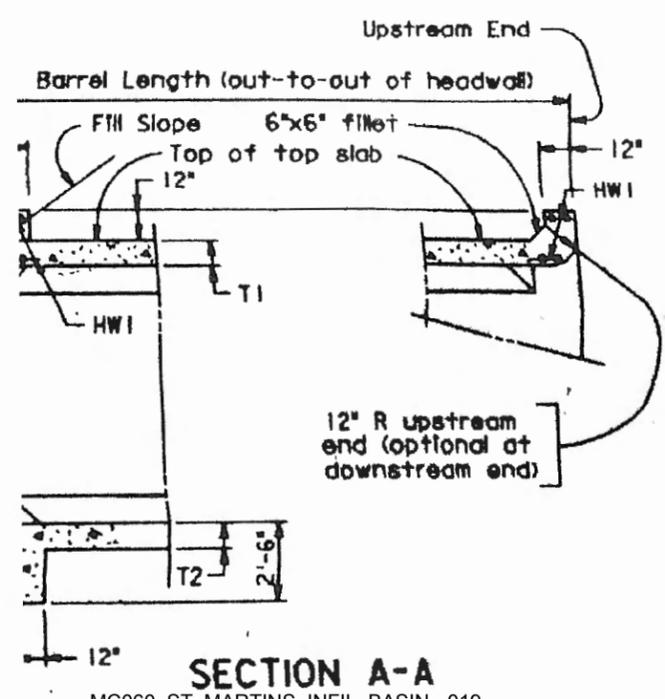
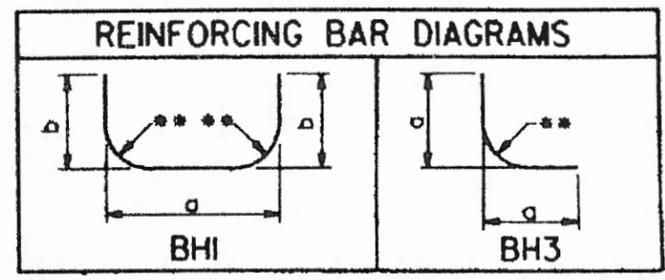
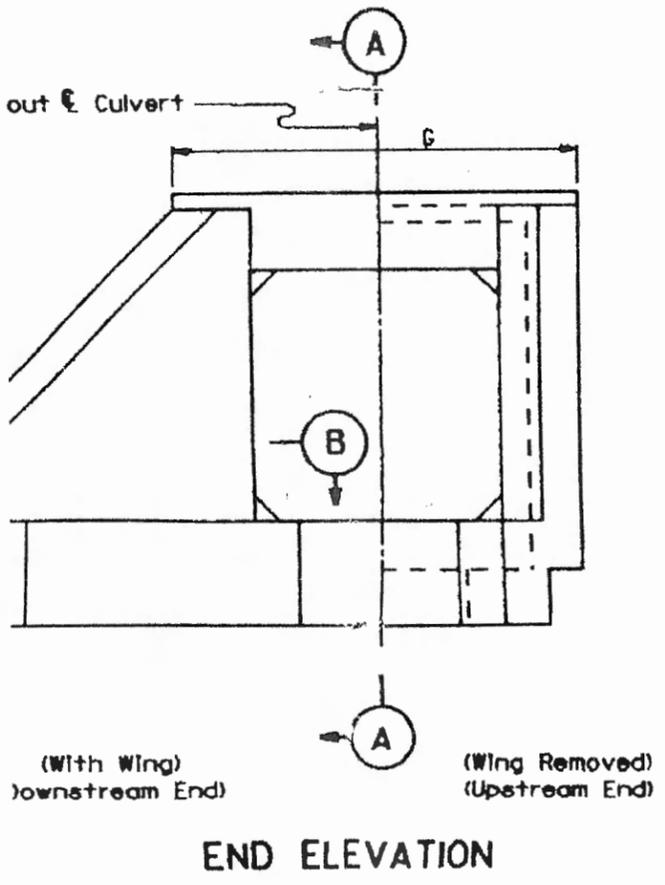
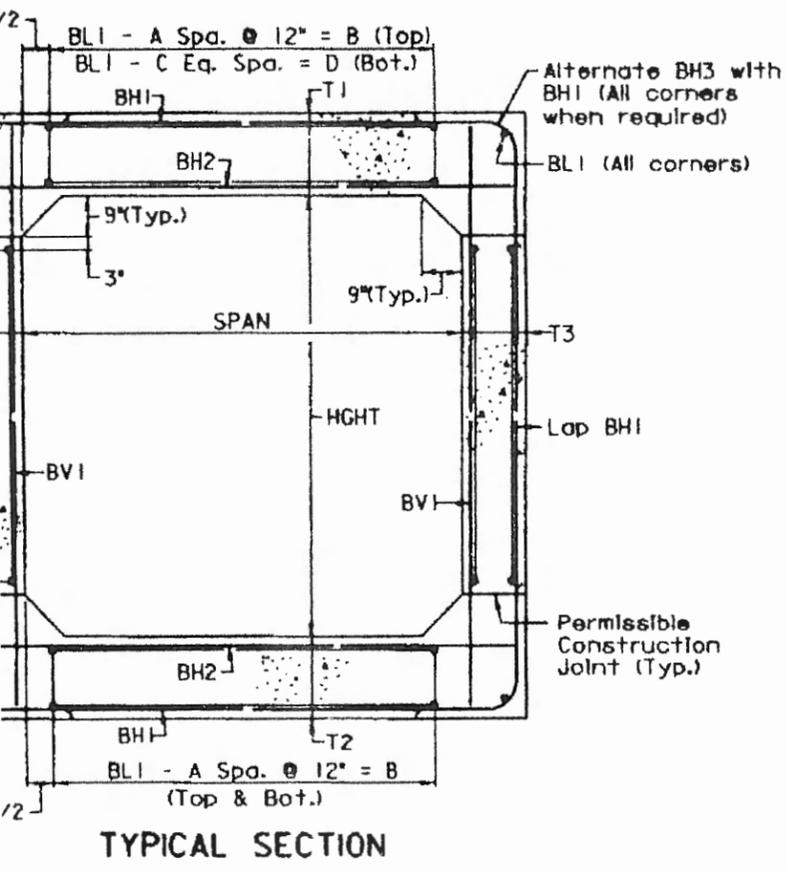
The designs are applicable to the fill height and other conditions indicated. Any change in the conditions invalidates these designs.

Wingwalls referenced by letter apply when the acceptable foundation level is the same for both box and wings. If foundation levels are different, the height of the wingwall shall be adjusted by selection of another lettered wingwall of appropriate height. For wingwall details, refer to standard series BCW for the appropriate fill slope.

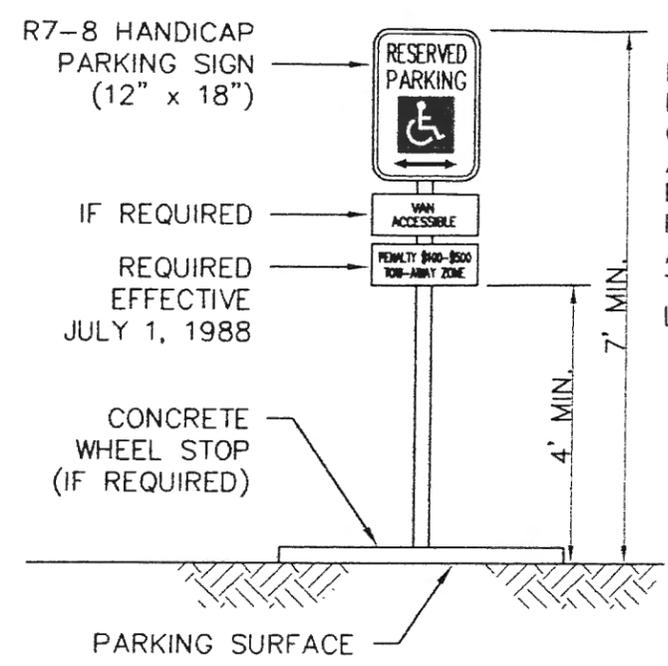
For details of extending existing boxes, refer to Standard BCE-01.

For modification of details for skewed culverts, see the Skewed Box Details included in the road plans.

This standard shall be used with the the BCS standard series.



6" - 21A AGGREGATE
 GEOTEXTILE FABRIC
 10% EXCESS THEORETICAL MOISTURE CONTENT. *

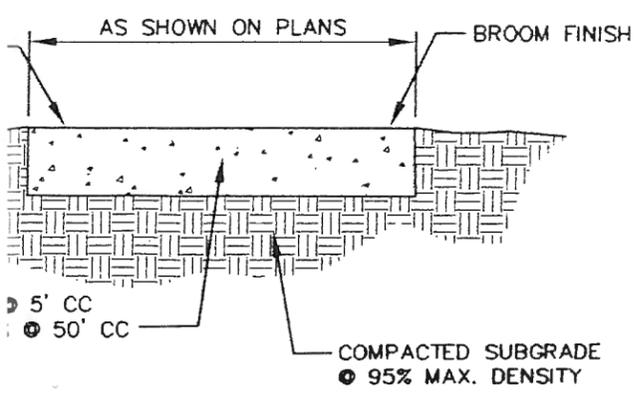


MAY BE REPLACED ON ONE BLANK. ADJUSTING THE REQUIRED HEIGHT TO ACCOMMODATE THE ADDITIONAL LINES.

HANDICAP PARKING SIGN

NTS

ON

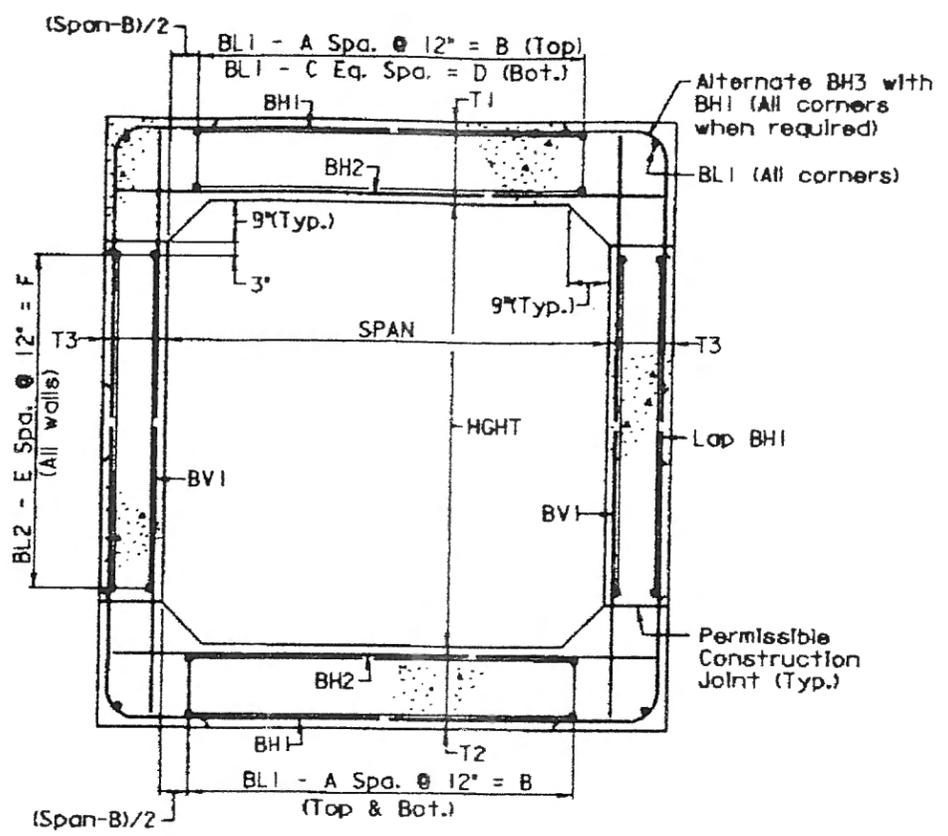


ACTED TO 95% MAX. THEORETICAL MOISTURE CONTENT. *

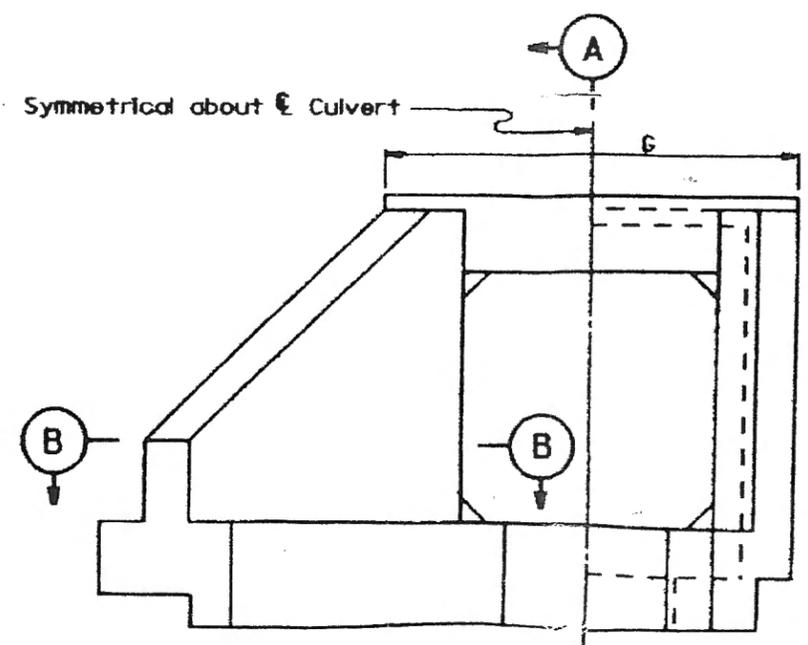
OULD BECOME EXCESSIVELY WET IMMEDIATELY PRIOR CONSTRUCTION, THEN IT SHOULD BE EITHER SCARIFIED, COMPACTED OR UNDERCUT AND REPLACED WITH A SAND

SIDEWALK

MC060_ST_MARTINS_INFIL_BASIN - 020



TYPICAL SECTION



GENERAL NOTE

Capacity: HS20-44 Loading and Alternate Military Loading.
 Specifications:

Construction - Va. Department of Transportation Road and Specifications, 1991.
 Design - AASHTO Standard Specifications for Highway Bridge Including Interim Specifications, 1984, 1985 and VDO Modifications, using Load Factor Design.

All concrete shall be Class A4.

Deformed reinforcing bars shall conform to ASTM A615, Grade 60. All bar dimensions on the detailed drawings are to centers of bars unless otherwise noted and are subject to fabrication and construction.

Construction joints shall be constructed and bonded in accordance current Road and Bridge Specifications.

Barrels more than 35' in length shall be poured in sections by provisions construction joints, not exceeding 25' between joints nor more than ends of barrels.

** Bars BH1 & BH3 shall have a pin diameter of 24 bar diameters.

Dimensions on bar diagrams are out-to-out of bars. Bars are standard size unless otherwise shown. BL2 shall be #3 in size.

The number of BL1 & BL2 bars shown in the table is the number of bars shown in the Typical Section and may not equal the total number required. BL1 & BL2 shall have a lap of 30 bar diameters at splice construction joints, first placed bars shall project 30 bar diameters beyond Estimated QUAN./LF shown for reinforcing steel does not include quantities of BL1 & BL2 bars. The additional weight per longitudinal lap is table.

The centers of main reinforcing bars shall be 2" from the face of

When concrete protective coating is required, all steel shall be epoxy. All reinforcing steel for culverts under 0 to 2 foot fills shall be epoxy.

At the Contractor's option, BV1 bars may be spliced at the permissible construction joint in order to facilitate construction. No additional compensation be provided for the increase in reinforcing steel quantity due to

Headwall quantities shown assume wingwalls are to be built at a 45° headwall.

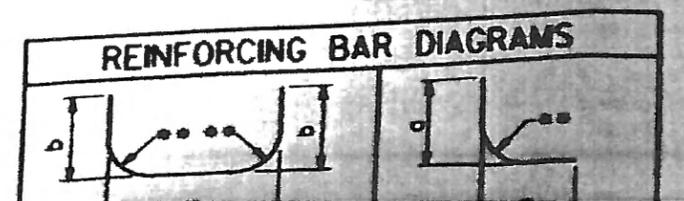
The designs are applicable to the fill height and other conditions in change in the conditions invalidates these designs.

Wingwalls referenced by letter apply when the acceptable foundation same for both box and wings. If foundation levels are different, the wingwall shall be adjusted by selection of another lettered wingwall plate height. For wingwall details, refer to standard series BCS for wingwall plate fill slope.

For details of extending existing boxes, refer to Standard BCE-D1.

For modification of details for skewed culverts, see the Skewed Boxes Included in the road plans.

This standard shall be used with the the BCS standard series.

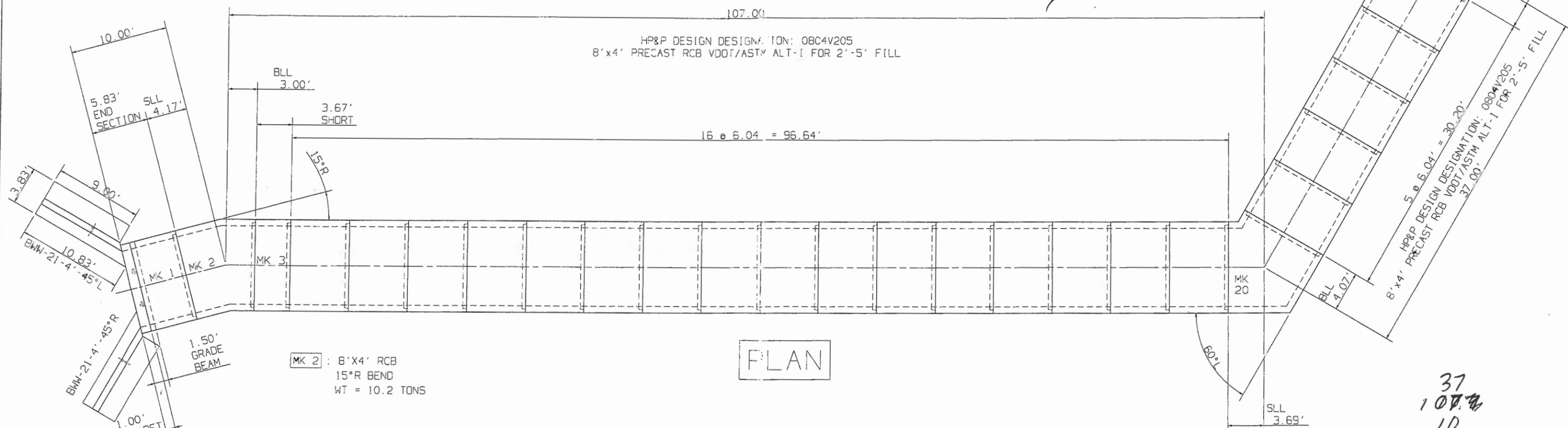


NORTH
DIRECTION
UNKNOWN

APPROVED APPROVED AS CORRECTED
 NOT APPROVED REVISE AND RESUBMIT

Approval Does Not Release The Contractor Of The
Responsibility Of Conformance To Contract Docu-
ments. All Dimensions Shall Be Verified At Site.

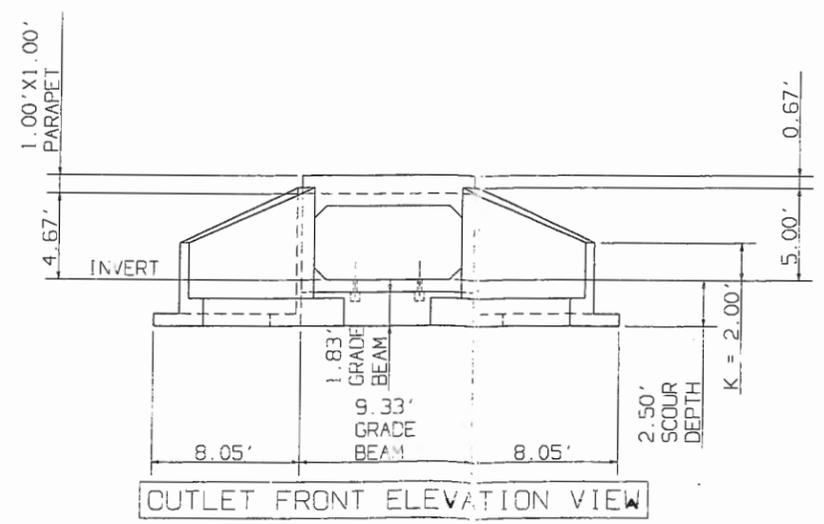
DATE 8-28-00 BY Cal Miller



PLAN

MK 2 : 8'x4' RCB
15°R BEND
WT = 10.2 TONS

37
107.00
10
154'±



JUN - 5 2009

MK 20 : 8'x4' RCB
60°L BEND
WT = 11.0 TONS

E. T. GRESHAM COMPANY, INC.
Action indicated does not relieve
subcontractor / vendor from their
responsibility to satisfy contract
requirements.

Reviewed
 Reviewed as noted
 Resubmit

SHOP DRAWING FOR
CONSTRUCTION - NOT AS BUILT.

By Cal Miller
Date 7/19/00

P-1858-STILLEY COMPANY
ST MARTINS EPISCOPAL CHURCH
WILLIAMSBURG, VA

THESE BOXES MEET OR EXCEED
VDOT, AASHTO AND ASTM
SPECIFICATIONS.

General Notes:
1) Joints between Box Sections to be sealed in accordance with project plans and state specifications.
2) Joints between Precast Box Headwalls and wings to be sealed with state approved sealant.
3) Installation criteria to be in accordance with AASHTO Division II Section 27 and state specifications.
4) Adjoining cast in place concrete (by others), if any, to be in accordance with project plans and state specs.
5) This drawing was prepared only as a guide for distributing and installing pipe and fittings.
6) Adjustments to meet field conditions must be made as needed.
7) Unless noted, stations, north arrow and deflections are scaled from project plans; verify with coordinate data if available.

LAYOUT: 8'x4' PRECAST BOX CULVERT	DATE: 07-12-00	DLG
154' 0804V205 WITH OUTLET PRECAST BHW FINISH AND	LAST REVISION	
BHW TYPE I FOR 2:1 SLOPE AND INLET EXP STL	SCALE: 1" = 10'-0"	
HANSON PIPE AND PRODUCTS, INC.	TITLE: PROJECT - DRAWING	
2900 Terminal Ave. Richmond, Virginia 23234 804-233-5471	BC-1858-00	

Area 1

Upstream Box Culvert Inlet

Inv. 41

Area 2

Box Culvert

Inv. 40.5

Area 3

Downstream Box Culvert Outlet

Area 4

Stormwater Conveyance Channel

Limit of Wetlands
Do not Disturb

Area 5

BMP Area

Inv. 36.4

JAMESTOWN ROAD

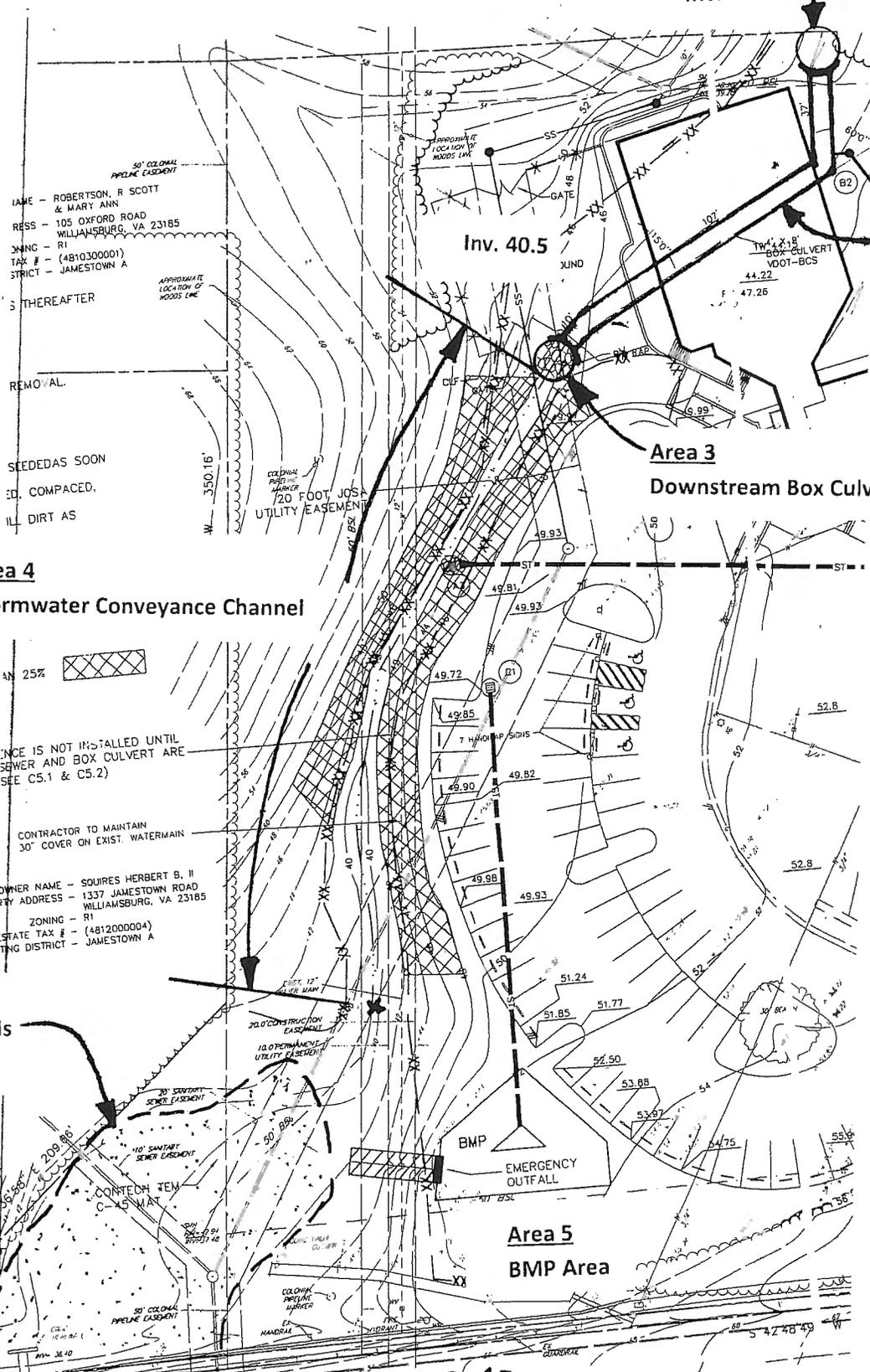
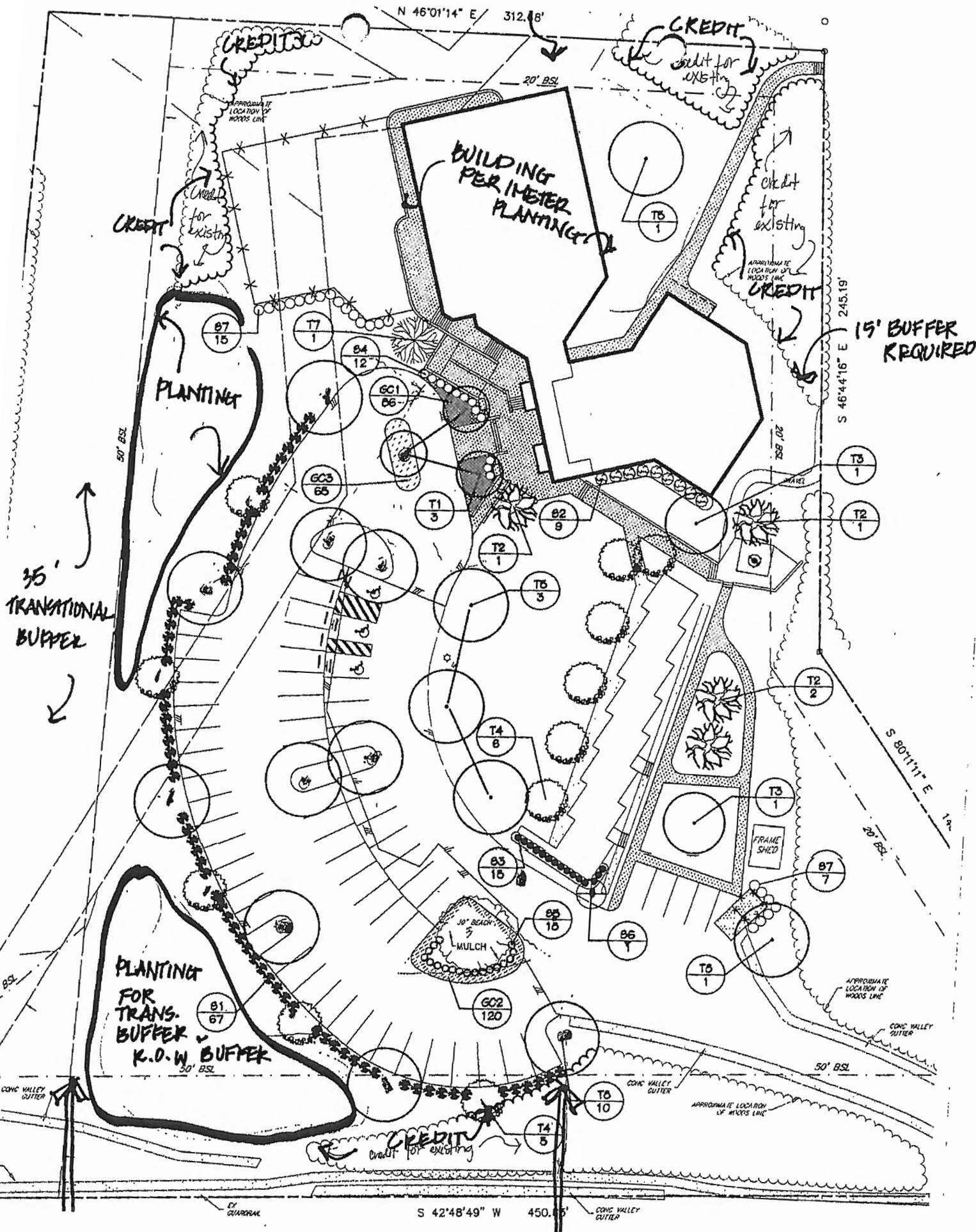
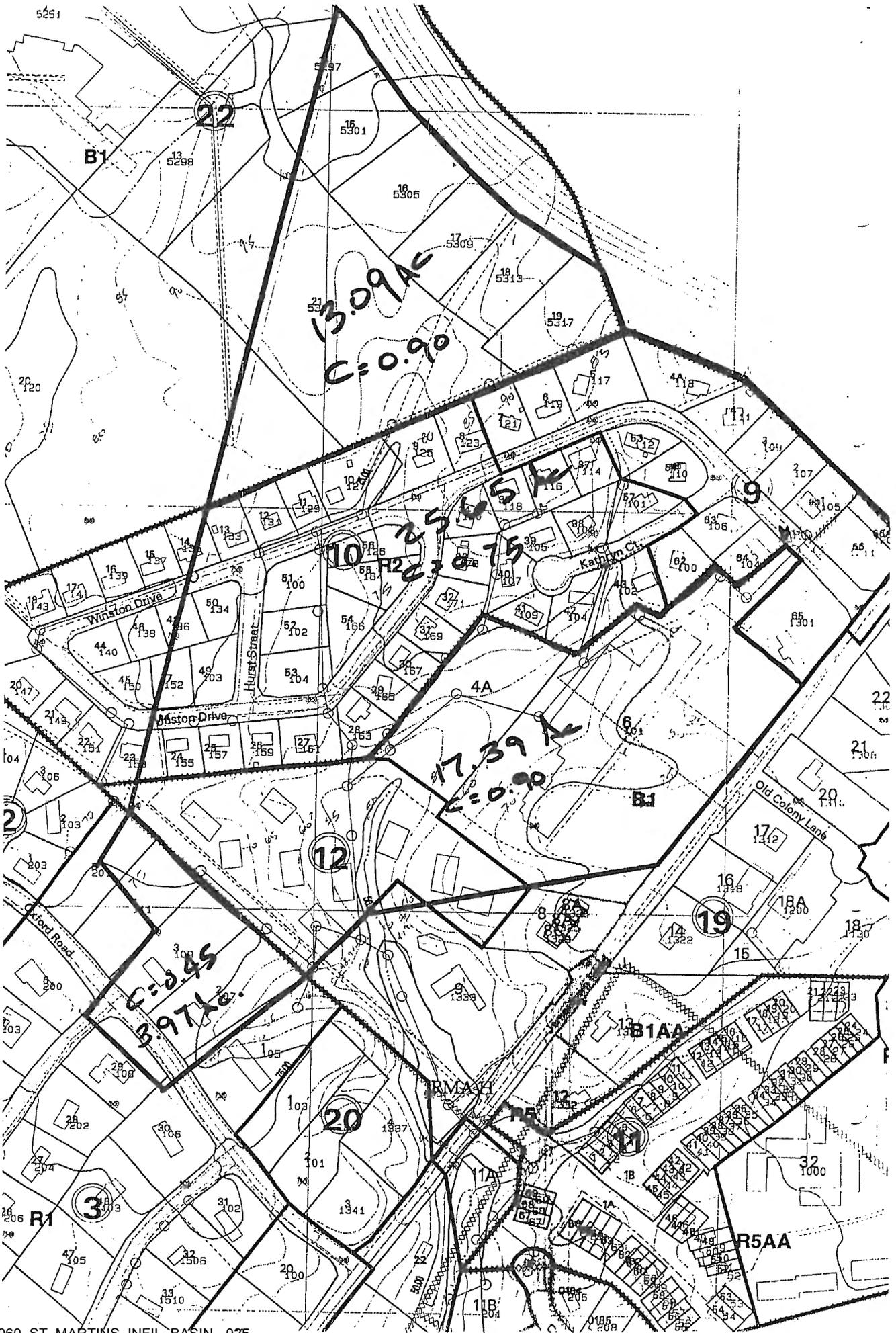
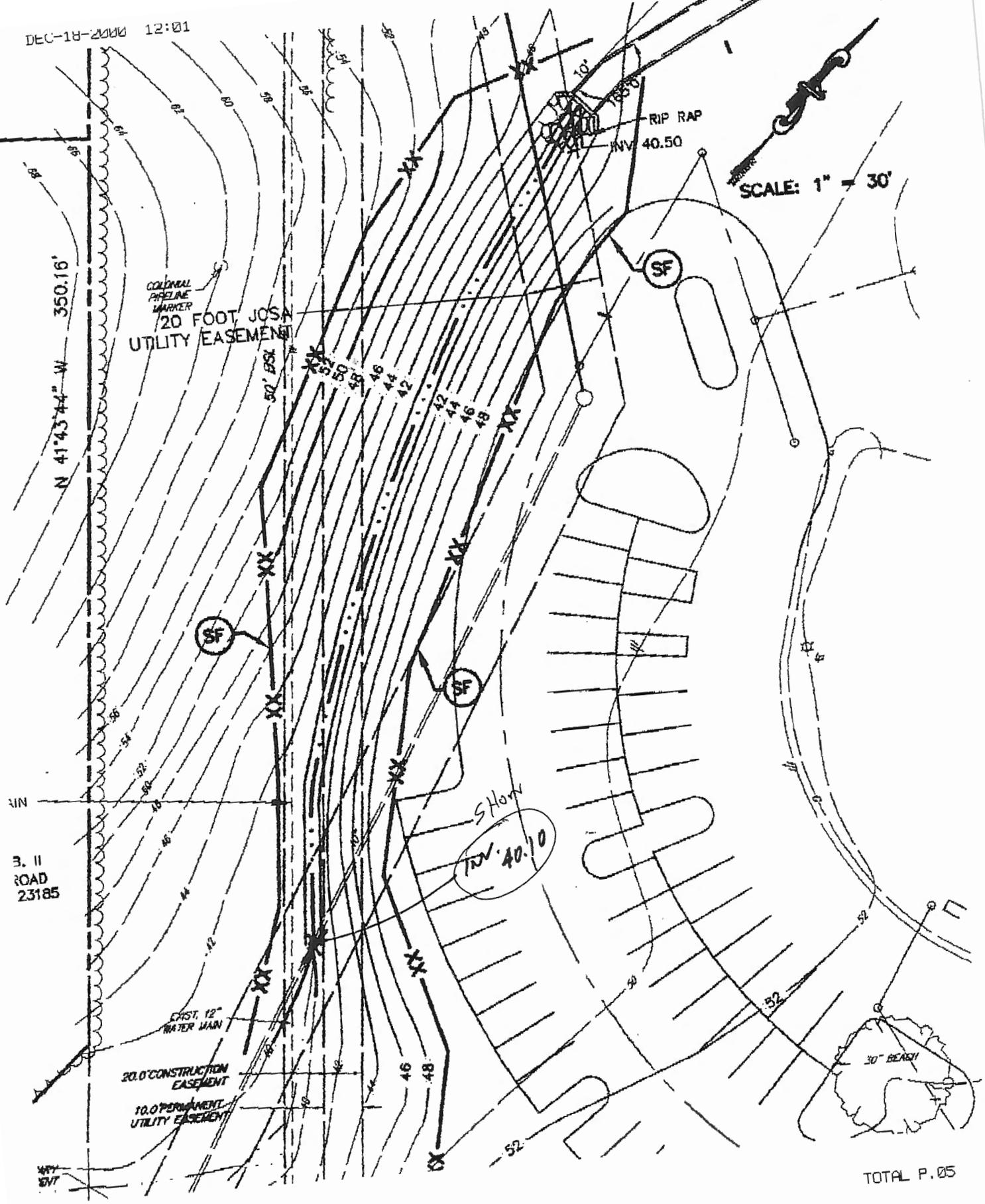


Exhibit Map

Scale: 1 inch = 60 ft. approx.

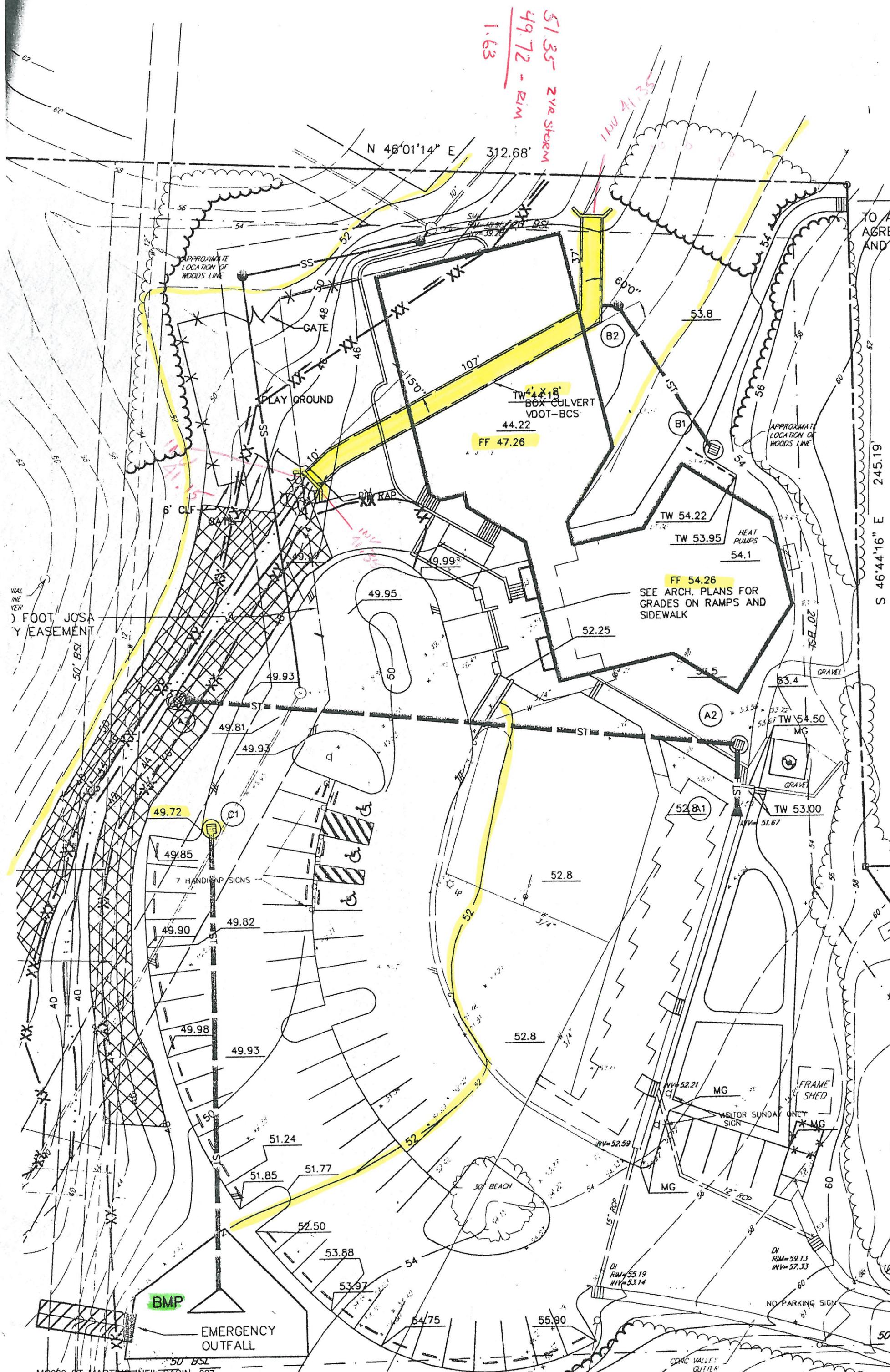






SCALE: 1" = 30'

51.35 - 2 1/2" stream
49.72 - RIM
1.63



Area 1

Upstream Box Culvert Inlet

Inv. 41

Area 2

Box Culvert

Inv. 40.5

Area 3

Downstream Box Culvert Outlet

Area 4

Stormwater Conveyance Channel

25%

INCE IS NOT INSTALLED UNTIL
SEWER AND BOX CULVERT ARE
SEE C5.1 & C5.2)

CONTRACTOR TO MAINTAIN
30" COVER ON EXIST. WATERMAIN

OWNER NAME - SOJRES HERBERT B. II
RTY ADDRESS - 1337 JAMESTOWN ROAD
WILLIAMSBURG, VA 23185
ZONING - R1
ESTATE TAX # - (4812000004)
TING DISTRICT - JAMESTOWN A

Limit of Wetlands
Do not Disturb

Area 5

BMP Area

Inv. 36.4

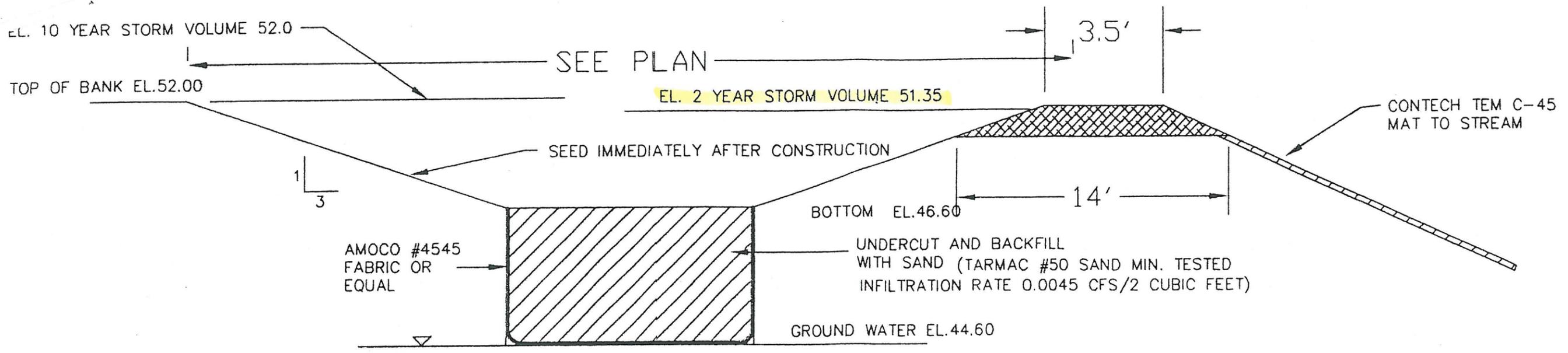
JAMESTOWN ROAD

Exhibit Map

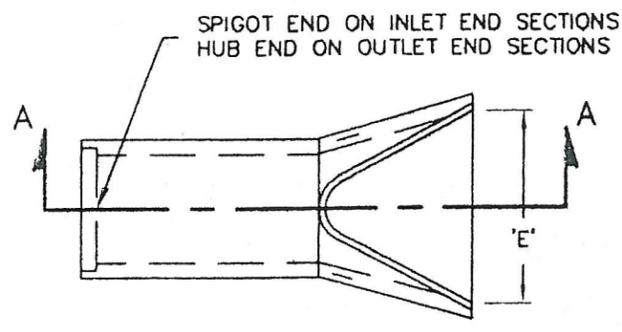
Scale: 1 inch = 60 ft. approx.

Information taken from Sheets C2.1 and

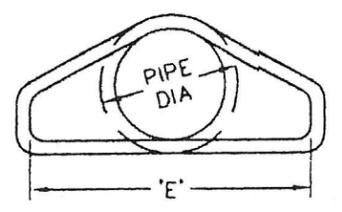
C5.2 of Approved County Plan No. SP-39-00
MC060_ST_MARTINS_INFIL_BASIN - 028



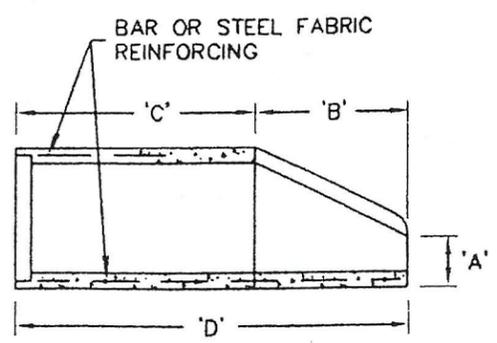
BMP
NTS



PLAN VIEW



FRONT ELEVATION

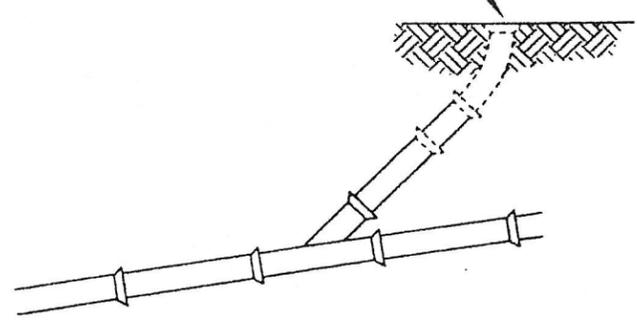


SECTION 'A-A'

END SECTION DIMENSIONS

DIA	'A'	'B'	'C'	'D'	'E'
12"	4"	2'-0"	2'-0"	4'-0"	2'-0"
15"	6"	2'-3"	1'-9"	4'-0"	2'-6"
18"	9"	2'-3"	1'-9"	4'-0"	3'-0"
24"	9 1/2"	3'-7"	2'-6"	6'-1"	4'-0"
30"	1'-0"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"
36"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	6'-0"
42"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"
48"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"
54"	2'-3"	5'-5"	2'-9 1/4"	8'-2 1/4"	7'-6"
60"	2'-11"	5'-0"	3'-3"	8'-3"	8'-0"

STANDARD JCSA CLEANOUT COVER ASSEMBLY



TYPICAL LATERAL LAYOUT
NTS

**FLARED END SECTION
12"-60" CONCRETE PIPE**

ST. MARTINS CHURCH -
Elevation determination for BMP + Drainage System

POINT	BS	HI	FS	Elev	Comments
DI C-1	8.76	58.48		49.72	$\begin{array}{r} 49.72 \\ 8.76 \\ \hline 58.48 \end{array}$
DI @ RR		"	9.00	49.48	
EMER SPWY		"	8.40	50.08	
FUTURE ELEV				49.0	Lower by 1.08 feet

ST. MARTINS CHURCH
BMP STORAGE 10YR. STORM

98185

TO MIN	i IN/HR	RUNOFF VOLUME (1) <small>CA 0.56</small> $(T_0 + 0.25T_c)(Q_{IN})$ (60sec/MIN) <small>5.25</small> FT ³		DISCHARGE VOL(2) $(1/2)(T_0 + 1.5T_c)(Q_{OUT})$ (60) <small>6.5</small> <small>0.007</small> FT ³		REQ STORAGE (1)+(2) FT ³
5	7.10	2,445.24		2.41		2442.83
10	5.93	3,038.93		3.46		3,035.07
15	5.17	3,517.67		4.51		3,513.16
20	4.58	3,885.67		5.56		3,880.11
25	4.11	4,177.40		6.62		4,170.78
30	3.73	4,417.81		7.67		4,410.14
35	3.41	4,611.68		8.72		4,602.96
40	3.15	4,789.26		9.77		4,779.49
45	2.92	4,930.13		10.82		4,919.31
50	2.72	5,049.41		11.87		5,037.54
55	2.55	5,162.22		12.92		5,149.38
60	2.40	5,261.76		13.97		5,247.73
65	2.26	5,334.50		15.02		5,319.48
70	2.14	5,410.77		16.07		5,394.70
75	2.03	5,473.69		17.12		5,456.51
80	1.93	5,528.29		18.17		5,510.12
85	1.85	5,609.94		19.22		5,590.72
90	1.76	5,632.70		20.27		5,612.43
		INFLOW 0.63 AC @ 0.90 = CA 0.56				
		INFILTRATION RATE SAND BOTTOM = 10 FT./DAY				
		TC = 5 MIN.				
		BOTTOM AREA = 62.22 SF				
95	1.69	5,692.60		21.32		5,671.28
100	1.62	5,728.97		22.37		5,706.60
105	1.56	5,778.86		23.42		5,755.44

2 1/2 Storm

STORM - SEWER DESIGN
COMPUTATIONS

ROUTE _____ PROJ. ST. MARTINS
COUNTY _____ DISTRICT _____
DESCRIPTION OFFICE PARK

L & D 229

SHEET _____ OF _____

FROM POINT	TO POINT	AREA DRAIN. "A"	RUN-OFF COEF.	CA		INLET TIME MINUTES	RAIN FALL IN./IN.	RUNOFF Q C.F.S.	INVERT ELEVATIONS MIN		LENGTH FT.	SLOPE FT./FT.	DIA. IN.	CAPACITY C.F.S.	VEL. F.P.S.	FLOW TIME MIN. SEC.	REMARK
		ACRES	C	INCREMENT	ACCUMULATED				UPPER END	LOWER END							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
I	2 (A)	3.93	0.75	2.95	2.95	35	2.41	7.1	35	1762	800	.0025	AVG	GRASS			
A	B	15.11	0.45	6.80	9.75	70	1.45	14.1	35	A768	1120	.025	DENSE	GRASS			
B	C	11.02	0.75	8.26	18.01	91	1.18	21.3	21	B76C	800	.025	AVG To Poor	GRASS			
C	D	-	-	-	18.01	102	1.08	19.5	11	C76D	140	.0375	AVG To Poor	GRASS			
F	G	18.24	0.75	13.68	13.68	22	3.21	43.9	22	F76G	700	.0214	AVG To Poor	GRASS			
H	G	9.73	0.90	8.76	8.76	17	3.68	32.2	17	H76G	500	.040	AVG To Poor	GRASS			
G	D	-	-	-	22.44	42	2.13	47.8	20	G76D	600	.0333	AVG To Poor	GRASS			
D	E	12.42	0.90	11.18	51.63	120	0.92	47.5	18	D76E	350	.0214	BARE	SOIL			

10 YR.
STORM SEWER DESIGN
COMPUTATIONS

ROUTE _____ PROJ. ST. MARTINS
COUNTY _____ DISTRICT _____
DESCRIPTION OFFICE PARK

L & D 229

SHEET _____ OF _____

FROM POINT	TO POINT	AREA DRAIN. "A" ACRES	RUN-OFF COEF. C	CA		INLET TIME MINUTES	RAIN FALL IN./HR.	RUNOFF Q C.F.S.	INVERT ELEVATIONS MIN		LENGTH FT.	SLOPE FT./FT.	DIA. IN.	CAPACITY C.F.S.	VEL.		FLOW TIME MIN. SEC.	REMARK
				INCREMENT	ACCUMULATED				F.P.S.	F.P.S.								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
I	2 (A)	3.93	0.75	2.95	2.95	35	3.40	10.03	35	1762	800	.0025	AVG	GRASS				
A	B	15.11	0.45	6.80	9.75	70	2.25	21.94	35	A to B	1120	.025	DENSE	GRASS				
B	C	11.02	0.75	8.26	18.01	91	1.90	34.22	21	B to C	800	.025	AVG TO POOR	GRASS				
C	D	-	-	-	18.01	102	1.78	32.00	11	C to D	140	.0375	AVG TO POOR	GRASS				
F	G	18.24	0.75	13.68	13.68	22	4.25	58.14	22	F to G	700	.0214	AVG TO POOR	GRASS				
H	G	9.73	0.90	8.76	8.76	17	5.00	43.80	17	H to G	500	.040	AVG TO POOR	GRASS				
G	D	-	-	-	22.44	42	3.00	67.32	20	G to D	600	.0333	AVG TO POOR	GRASS				
D	E	12.42	0.90	11.18	57.63	120	1.55	80.03	18	D to E	350	.0214	BARE	SOIL				

25 YR STORM

STORM SEWER DESIGN
COMPUTATIONS

L & D 229

ROUTE _____ PROJ. ST. MARTINS
COUNTY _____ DISTRICT _____
DESCRIPTION OFFICE PARK

SHEET _____ OF _____

FROM POINT	TO POINT	AREA DRAIN. "A" ACRES	RUN-OFF COEF. C	CA		INLET TIME MINUTES	RAIN FALL IN./IN.	RUNOFF Q C.F.S.	INVERT ELEVATIONS MIN		LENGTH FT.	SLOPE FT./FT.	DIA. IN.	CAPACITY C.F.S.	VEL. F.P.S.	FLOW TIME MIN. SEC.	REMARK	
				INCREMENT	ACCUMULATED				UPPER END	LOWER END								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
I	Z (A)	3.93	0.75	2.95	2.95	35	4.06	12.0	35	176.2	800	.0025						
A	B	15.11	0.45	6.80	9.75	70	2.58	25.2	35	A to B	1120	.025						
B	C	11.02	0.75	8.26	18.01	91	2.13	38.4	21	B to C	800	.025						
C	D	-	-	-	18.01	102	1.96	35.3	11	C to D	140	.0375						
F	G	18.24	0.75	13.68	13.68	22	5.17	70.7	22	F to G	700	.0214						
H	G	9.73	0.90	8.76	8.76	17	5.78	50.6	17	H to G	500	.040						
G	D	-	-	-	22.44	42	3.64	81.7	20	G to D	600	.0333						
D	E	12.42	0.90	11.18	51.63	120	1.69	87.3	18	D to E	350	.0214						

50 YR Storm

STORM SEWER DESIGN
COMPUTATIONS

L & D 229

ROUTE _____ PROJ. ST. MARTINS
COUNTY _____ DISTRICT _____
DESCRIPTION OFFICE PARK

SHEET _____ OF _____

FROM POINT	TO POINT	AREA DRAIN "A" ACRES	RUN-OFF COEF. C	CA		INLET TIME MINUTES	RAIN FALL IN./HR.	RUNOFF Q C.F.S.	INVERT ELEVATIONS MIN		LENGTH FT.	SLOPE FT./FT.	DIA. IN.	CAPACITY C.F.S.	VEL. F.P.S.	FLOW TIME MIN. SEC.	REMARK
				INCRE-MENT	ACCUM-ULATED				UPPER END	LOWER END							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
I	Z (A)	3.93	0.75	2.95	2.95	35	4.44	13.1	35	1762	800	.0025	AVG	GRASS			
A	B	15.11	0.49	6.80	9.75	70	2.82	24.9	35	A to B	1120	.025	DENSE	GRASS			
B	C	11.02	0.75	8.26	18.01	91	2.34	42.1	21	B to C	800	.025	AVG TO POOR	GRASS			
C	D	-	-	-	18.01	102	2.15	38.9	11	C to D	140	.0375	AVG TO POOR	GRASS			
F	G	18.24	0.75	13.68	13.68	22	5.64	77.2	22	F to G	700	.0214	AVG TO POOR	GRASS			
H	G	9.73	0.90	8.76	8.76	17	6.30	55.2	17	H to G	500	.040	AVG TO POOR	GRASS			
G	D	-	-	-	22.44	42	3.99	89.5	20	G to D	600	.0333	AVG TO POOR	GRASS			
D	E	12.42	0.90	11.18	57.63	120	1.86	96.0	18	D to E	350	.0214	BARE	SOIL			

100 YR STORM
STORM SEWER DESIGN
COMPUTATIONS

ROUTE _____ PROJ. ST. MARTINS
COUNTY _____ DISTRICT _____
DESCRIPTION OFFICE PARK

L & D 229

SHEET _____ OF _____

FROM POINT	TO POINT	AREA DRAIN "A"	RUN-OFF COEF.	CA		INLET TIME MINUTES	RAIN FALL IN./IN.	RUNOFF Q C.F.S.	INVERT ELEVATIONS MW		LENGTH FT.	SLOPE FT./FT.	DIA. IN.	CAPACITY C.F.S.	VEL. F.P.S.	FLOW TIME Min. SEC.	REMARK
		ACRES	C	INCREMENT	ACCUMULATED				UPPER END	LOWER END							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
I	2 (A)	3.93	0.75	2.95	2.95	35	4.86	14.3	35	17.2	800	.0025	AVG	GRASS			
A	B	15.11	0.49	6.80	9.75	70	3.09	30.1	35	A to B	1120	.025	DENSE	GRASS			
B	C	11.02	0.75	8.26	18.01	91	2.56	46.1	21	B to C	800	.025	AVG TO POOR	GRASS			
C	D	-	-	-	18.01	102	2.36	42.5	11	C to D	140	.0375	AVG TO POOR	GRASS			
F	G	18.24	0.75	13.68	13.68	22	6.10	84.3	22	F to G	700	.0214	AVG TO POOR	GRASS			
H	G	9.73	0.90	8.76	8.76	17	6.87	60.2	17	H to G	500	.040	AVG TO POOR	GRASS			
G	D	-	-	-	22.44	42	4.36	97.8	20	G to D	600	.0333	AVG TO POOR	GRASS			
D	E	12.42	0.90	11.18	57.63	120	2.04	105.3	18	D to E	350	.0214	BARE	SOIL			

BEGINNING WATER SURFACE
 LD-347 3/4 D + INV. PIPE
 HYDRAL C GRADE LINE

98165
 PROJECT ST. MARTINS

INLET STATION	Outlet Water Surface Elev.	D _o	Q _o	L _o	S _f %	H _f	JUNCTION LOSS												Final H	Inlet Water Surface Elev.	Rim Elev.
							V _o	H _o	Q _i	V _i	Q _i V _i	$\frac{V_i^2}{2g}$	H _i	Angle	H _Δ	H _t	$\frac{1.3}{H_t}$	$\frac{0.5}{H_t}$			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	
A2	41.97	12"	2.5	199	0.45	0.59	3.1	0.04	2.2	2.0	5.72	0.10	0.04	-	0	0.08	0.10	-	0.09	42.96	52.65
A1	42.96	12"	2.2	24	0.35	0.08	2.6	0.03	2.2	-	0	-	0	90°	0	0.03	0.04	-	0.12	43.08	51.40
B2	^{MAX} 46.0	12"	0.3	8	0.01	0.01	0.2	0.01	0.3	0.2	0.06	0.01	0.01	20°	0.01	0.03	-	0.02	0.03	46.03	48.60
B1	46.03	12"	0.3	61	0.01	0.01	0.2	0.01	-	-	0	-	0	-	0	0.01	0.01	-	0.02	46.05	53.85
C1	47.53	15"	3.91	165	0.35	0.58	3.0	0.03	-	-	0	-	0	-	0	0.03	0.04	-	0.62	48.15	49.70

4-73

$H_i = 0.35 \frac{V_i^2}{2g}$
 $H_o = 0.25 \frac{V_o^2}{2g}$
 $H_{\Delta} = K \frac{V_i^2}{2g}$
 FINAL H = H_f + H_t
 90° K = 0.70
 50° K = 0.47
 20° K = 0.16
 $H_t = H_o + H_i + H_{\Delta}$
 80° K = 0.66
 40° K = 0.38
 15° K = 0.10
 70° K = 0.61
 30° K = 0.28
 1.0° K = 0.55
 25° K = 0.22
 SEE LD-72(D)67

ST. MARTIN'S EPISCOPAL CHURCH

MSA# 98165

GUIDANCE CALCULATION PROCEDURE

WORKSHEET B : REDEVELOPMENT

1 Compile site-specific data.

	PRE-DEVELOPMENT	POST-DEVELOPMENT
A*	= <u>4.17</u> acres	= <u>4.17</u> acres
I _s : structures	= <u>0.211</u> acres	= <u>0.310</u> acres
parking lot	= <u>0.405</u> acres	= <u>0.471</u> acres
roadway	= <u>0.242</u> acres	= <u>0.257</u> acres
other	= <u>0.059</u> acres	= <u>0.115</u> acres
	= _____ acres	= _____ acres
	= _____ acres	= _____ acres
total I _s	= <u>0.917</u> acres	= <u>1.147</u> acres
I = (total I _s /A) × 100	= <u>22%</u> percent expressed	= <u>27.5%</u> percent expressed
R _v = 0.05 + (0.009 × I)	= _____ in whole numbers	= _____ in whole numbers
	= <u>0.248</u> unitless	= <u>0.298</u> unitless
C:		
I ≥ 20 = 1.08 mg/l		
I < 20 = 0.26 mg/l	= <u>1.08</u> mg/l	= <u>1.08</u> mg/l

* Although the area subject to regulations may be only the area actually in a CBPA, some localities may require all of the site to comply with criteria.

2 Set constants.

P_i = unitless rainfall correction factor
= 0.9 for all of Tidewater Virginia

P = annual rainfall depth in inches
= 40 inches for Northern Virginia area
= 43 inches for Richmond Metropolitan area
= 45 inches for Hampton Roads area

12 and 2.72 are used in the equation as unit conversion factors.

3 Calculate the pre-development load (L_{pre}).

$$L_{pre} = P \times P_i \times R_{v(pre)} \times C_{pre} \times A \times 2.72 / 12$$

$$= 45 \times 0.9 \times 0.248 \times 1.08 \times 4.17 \times 2.72 / 12$$

$$= 10.25 \text{ pounds per year}$$

4 Calculate the post-development load (L_{post}).

$$L_{post} = P \times P_i \times R_{v(post)} \times C_{post} \times A \times 2.72 / 12$$

$$= 45 \times 0.9 \times 0.298 \times 1.08 \times 4.17 \times 2.72 / 12$$

$$= 12.32 \text{ pounds per year}$$

5 Calculate the pollutant removal requirement (RR).

$$RR = L_{post} - (0.9 \times L_{pre})$$

$$= 12.32 - (0.9 \times 10.25)$$

$$= 3.09 \text{ pounds per year}$$

$$\%RR = (RR / L_{post}) \times 100$$

$$= (3.09 / 12.32) \times 100$$

$$= 25.09 \%$$

GUIDANCE CALCULATION PROCEDURE

WORKSHEET C: COMPLIANCE

Select BMP options using screening tools and list them below. Then calculate the load removed for each option. DO NOT LIST BMPs IN SERIES HERE.

1	Selected Option	Removal Efficiency (%/100)	×	Fraction of CBPA Drainage Area Served (expressed in decimal form)	×	L _{post} (lbs/yr)	=	Load Removed (lbs/yr)
	Infiltration	.50		0.93		12.32	=	5.73
	_____	_____		_____		_____	=	_____
	_____	_____		_____		_____	=	_____

2a Estimate parameters for non-CBPA drainage areas on the project site (if the locality does not require complete compliance for the whole site). If the locality requires compliance for the whole site, omit this step.

N/A

- A (on site, non-CBPA) = _____ acres
- I_s: structures = _____ acres
- parking lot = _____ acres
- roadway = _____ acres
- other = _____ acres
- = _____ acres
- total I_s = _____ acres
- I = (total I_s / A) × 100 = _____ %
- R_v = 0.05 + (0.009 × I) = _____
- C: I ≥ 20 = 1.08 mg/l = _____ mg/l
- I < 20 = 0.26 mg/l

2b Calculate post-development load for on-site non-CBPAs.

N/A

$$\begin{aligned}
 L_{\text{post(on-site)}} &= P \times P_1 \times R_v \times C \times A \times 2.72 / 12 \\
 &= ___ \times 0.9 \times ___ \times ___ \times ___ \times 2.72 / 12 \\
 &= ______ \text{ pounds per year}
 \end{aligned}$$

GUIDANCE CALCULATION PROCEDURE

3 Determine loadings for off-site areas if the locality allows this option.

N/A

$I_{\text{watershed}} = \text{from locality OR } I_{\text{watershed}} = I_{VA} = 16$

If $I_{\text{watershed}} < 20$, use $C_{\text{offsite}} = 0.26 \text{ mg/l}$.

If $I_{\text{watershed}} \geq 20$, use $C_{\text{offsite}} = 1.08 \text{ mg/l}$.

If $I_{\text{watershed}} = I_{VA}$ use $C_{\text{offsite}} = 0.26 \text{ mg/l}$.

$$L_{\text{offsite}} = P \times P \times [0.05 + (0.009 \times I_{\text{watershed}})] \times C_{\text{offsite}} \times A_{\text{offsite}} \times 2.72 / 12$$

$$= \underline{\hspace{2cm}} \times 0.9 \times [0.05 + (0.009 \times \underline{\hspace{2cm}})] \times \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \times 2.72 / 12$$

$$= \underline{\hspace{2cm}} \text{ pounds per year}$$

4 Total non-CBPA pollutant loading.

N/A

Step 3 + Step 4 = total non-CBPA loading

$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ pounds per year}$

5 Calculate credits if the locality allows this option.

N/A

Selected Option	Removal Efficiency (%/100)	×	Fraction of CBPA Drainage Area Served (expressed in decimal form)	×	L _{post} (lbs/yr)	= Load Removed (lbs/yr)
_____	_____		_____		_____	_____
_____	_____		_____		_____	_____
_____	_____		_____		_____	_____

6 Calculate overall compliance.

Step 1 + Step 5 = total load removed

$\underline{5.73} + \underline{N/A} = \underline{5.73} \text{ pounds per year}$

If total load removed > removal requirement, criteria are satisfied.

$\underline{5.73} > \underline{3.09} \text{ OK}$

Job Name: ST. MARTIN'S EPISCOPAL CHURCH

MSA#:

98179

Desc: Survey to determine ground floor elevation of lowest adjacent building

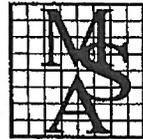
Date:

9.15.00

By: Bruce A. Seaman

Va. P.E.

Phone: (757) 490-9264 • Fax: (757) 490-0634



MSA, P.C.

Weather: Sunny
79°
1:15 P.M.

* USED SAN. M.H. #3 ELEV. 48.98 as B.M.

<u>STA.</u>	<u>(+)</u> <u>B.S.</u>	<u>H.I.</u>	<u>(-)</u> <u>F.S.</u>	<u>ELEV.</u>	<u>REMARKS</u>
<u>B.M.</u>	<u>7.72</u>	<u>56.70</u>		<u>48.98</u>	<u>Exist. San. M.H. #3</u>
<u>Bldg. FF.</u>			<u>6.89</u>	<u>49.81</u>	<u>FF. of adj. building</u>
<u>B.M. check</u>			<u>7.72</u>	<u>48.98</u>	<u>Back check M.H. #3</u>

Sheet of

28165

STORM SEWER DESIGN
COMPUTATIONS

L & D 229

ROUTE _____ PROJ. ST. MARTIN'S EPISCOPAL CHURCH
COUNTY _____ DISTRICT _____
DESCRIPTION 6-20-00

SHEET 1 OF 1

FROM POINT	TO POINT	AREA DRAIN. "A"	RUN-OFF COEF.	CA		INLET TIME MINUTES	RAIN FALL IN./HR.	RUNOFF Q C.F.S.	INVERT ELEVATIONS		LENGTH FT.	SLOPE FT./FT.	DIA. IN.	CAPA-CITY	VEL.	FLOW TIME	REMARK
		ACRES	C	INCRE-MENT	ACCUM-ULATED				UPPER END	LOWER END				C.F.S.	F.P.S.	MIN. SEC.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
A1	A2	0.79	0.45	0.36	0.36	10	6	216	51.40	50.20	24	0.05	12	8.0	100	0.04	
A2	A3	0.13	0.45	0.06	0.42	10	6	252	45.20	46.22	199	0.02	12	5.2	60	0.5	
B1	B2	0.09	0.45	0.04	0.04	5	7.1	0.28	51.00	50.81	61	.003	12	2	2.5	0.4	
B2	Box Cul.	-	-	-	0.04	5.4	7.1	0.28	50.81	49.78	8	.1278	12	12.0	12	0.1	
C1	BMP	0.93	0.60	0.55	0.55	5	7.1	391	47.33	46.60	165	.0045	15	4.4	35	0.8	

4-72

GUIDANCE CALCULATION PROCEDURE

WORKSHEET A : NEW DEVELOPMENT *OPTION TWO: VA. CHESAPEAKE BAY DEFAULT*

1 Compile site-specific data and determine site imperviousness (I_{site}).

	POST-DEVELOPMENT
A*	= <u>4.167</u> acres
I_{site}^{**} structures	= _____ acres
parking lot	= _____ acres
roadway	= _____ acres
other	= _____ acres
	= _____ acres
	= _____ acres
total I_s	= <u>1.359</u> acres

$I_{site} = (total I_s / A) \times 100 = \underline{32.6}$ (percent expressed in whole numbers)

- * Although the area subject to regulations may be only the area actually in a CBPA, some localities may require all of the site to comply with criteria.
- ** I_s represents the actual amount of impervious area.

2 Determine the average land cover conditions ($I_{watershed}$).

Use $I_{watershed} = I_{VA} = 16$ because $F_{average} = 0.45$ lbs/ac/yr for Virginia's Chesapeake Bay Watershed. Use $C_{PTE} = 0.26$ mg/l.

3 Determine need to continue.

$I_{site} = \underline{32.6}$ % (from Step 1)
 $I_{watershed} = 16$ % (from Step 2)

If $I_{site} \leq I_{watershed}$, STOP and submit analysis to this point.
 If $I_{site} > I_{watershed}$, CONTINUE.

4 Set constants.

- | | | | |
|-------|--|-----------|--|
| P_i | = unitless rainfall correction factor | P | = annual rainfall depth in inches |
| | = 0.9 for all of Tidewater Virginia | | = 40 inches for Northern Virginia area |
| C | = flow weighted mean concentration of total phosphorus | 44 | = 43 inches for Richmond Metropolitan area |
| | = 0.26 mg/l for all I_{site} | | = 45 inches for Hampton Roads area |

12 and 2.72 are used in the equation as unit conversion factors.

GUIDANCE CALCULATION PROCEDURE

WORKSHEET A : NEW DEVELOPMENT

OPTION TWO: VA. CHESAPEAKE BAY DEFAULT

5 Calculate the pre-development load (L_{pre}).

$$\begin{aligned}
 L_{pre} &= P \times P_1 \times [0.05 + (0.009 \times I_{watershed})] \times C_{pre} \times A \times 2.72 / 12 \\
 &= \underline{44} \times 0.9 \times [0.05 + (0.009 \times \underline{16})] \times 0.26 \times \underline{4.167} \times 2.72 / 12 \\
 &= \underline{1.889} \text{ pounds per year}
 \end{aligned}$$

6 Calculate the post-development load (L_{post}).

$$\begin{aligned}
 L_{post} &= P \times P_1 \times [0.05 + (0.009 \times I_{post})] \times C \times A \times 2.72 / 12 \\
 &= \underline{44} \times 0.9 \times [0.05 + (0.009 \times \underline{32.6})] \times 0.26 \times \underline{4.167} \times 2.72 / 12 \\
 &= \underline{3.344} \text{ pounds per year}
 \end{aligned}$$

7 Calculate the pollutant removal requirement (RR).

$$\begin{aligned}
 RR &= L_{post} - L_{pre} \\
 &= \underline{3.344} - \underline{1.889} \\
 &= \underline{1.455} \text{ pounds per year}
 \end{aligned}$$

To determine the overall BMP efficiency required (%RR) when selecting BMP options:

$$\begin{aligned}
 \%RR &= RR / L_{post} \times 100 \\
 &= \underline{1.455} / \underline{3.344} \times 100 \\
 &= \underline{43.5} \%
 \end{aligned}$$

USE INFILTRATION BASIN 1.0 IN./IMP. ACRE
 REMOVAL EFFICIENCY = 60%
 POINTS = 10

ST. MARTIN'S EPISCOPAL CHURCH
INFILTRATION BMP DESIGN
1" RUNOFF PER IMPERVIOUS ACRE

98185

$$V_e = 1.0 \times A_i \times 3630$$

V_e = VOLUME OF RUNOFF TO EXFILTRATE (CU. FT.)

A_i = INCREASED IMPERVIOUS AREA IN THE
CONTRIBUTING ONSITE WATERSHED (ACRES)

3630 = CONVERSION FACTOR (CU. FT. / ACRE-IN.)

$$V_e = 1.0 \times 0.622 \times 3630 \approx 2258 \text{ CU. FT.}$$

**St. Martin's Episcopal Church
Flow to Box Culvert Summary
MSA Project # 98165**

Water flowing to Jamestown Road box culvert is restricted in the Williamsburg Office Park north of St. Martin's Episcopal Church. Water coming through Winston Terrace is restricted in two locations in the Williamsburg Office Park, utilizing twin 24" storm pipes in both locations (See Restrictions A&B). Water proceeds down stream to a bulkhead/bridge with three storm pipes through the bulkhead (See Restriction C). These three pipes restrict flow in the stream to a maximum of 72 cfs. Our proposed box culvert is sized to carry 219 cfs.



Job Name: ST. MARTINS

Date: 5-31-00

Job Number: 00018

Location: WILLIAMSBURG, VA.

QUANTITY	FIXTURE	SFU/FIX	TOTAL SFU	DFU/FIX	TOTAL DFU
13	Flush Tank Water Closet	5	65	6	78
6	Urinal	5	30	4	24
8	Lavatory	2	16	1	8
1	Sink	4	4	2	2
2	Shower/Tub	4	8	2	4
0	Wash Fountain	4	0	2	0
1	Service Sink	3	3	2	2
1	Electric Water Cooler	1	1	1	1
0	Bath Group Tank Type	3.6	0	6	0
0	Laundry Sink	1.4	0	2	0
1	Washer	4	4	3	3
3	Commercial Kitchen	4	12	2	6
2	Miscellaneous Kitchen	2	4	2	4
9	Floor Drain/Sink	2	18	2	18
			0		0
			0		0
			0		0
			0		0
			0		0
TOTAL			165		150

165 FU = 60 GPM. To this, add 5 GPM for each of 2 wall hydrants for a total of 70 GPM.

Pressure In Main: 60 PSI

Developed Length Loss: 200' = 6.6 PSI

Pressure at Fixture Loss: 25 PSI

Static Head Loss: 22' X .433 = 9.53 PSI

Loss through Water Meter: 1-1/2" = 5 PSI

Loss through Backflow Preventer: 10 PSI

TOTAL PRESSURE LOSS: 56.13

**BOX CULVERT CALCULATIONS
FOR ST. MARTINS EPISCOPAL CHURCH
MSA# 98165**

- **Existing Flows**

30.48 at 0.9 coef.

25.65 at 0.75 coef.

3.97 at 0.45 coef.

$$\text{Flow coef.} = \frac{(30.48)(0.90) + (25.65)(0.75) + (3.97)(0.45)}{60.10} = 0.81$$

$T_c = 30$ min.

$I_{50} = 4.5$ in./hr.

$Q = CIA$

$$= (0.81)(4.5)(60.10)$$

$Q_{50} = 219$ cfs

- **Box Culvert Design**

Use 8' wide x 4' high culvert

Slope = 0.30%

$$Q = 1.49/n R^{2/3} X S^{1/2} A$$

Where: $N = 0.013$ $wp = 24'$
 $S = 0.30\%$ $\therefore R = \Delta/wp = 1.3$
 $A = 32$ s.f.

$$Q = (1.49/0.013)(1.3)^{2/3} (0.003)^{1/2}(32)$$

$Q = 218.2$ cfs



ENGINEERING CONSULTING SERVICES, LTD.
Geotechnical • Construction Materials • Environmental

March 5, 2001

Ms. Catherine Palmer
St Martins Episcopal Church
1333 Jamestown Road
Williamsburg, Va. 23185



ECS Project No. N4524

Dear Ms. Palmer

As requested by Randy Watkins at Gresham Construction, the undersigned engineer arrived on site February 9, 2001 and sampled the soils below the BMP at Saint Martins Episcopal Church. By means of a hand auger, soils were sampled at the base elevation of a proposed infiltration zone, and at depths of 2 foot increments up to 6 feet. Based on lab results from these soils (from particle size analysis ASTM D-422), and correlation to permeability data for similar soils, it appears that the soils at the base of the infiltration BMP meet minimum project specifications of 0.52 inches/hr.

Respectfully,
ENGINEERING CONSULTING SERVICES, LTD.


Mark S Schwindt, E.I.T.
Staff Engineer


Mark L Jenkins, P. E.
Project Engineer



cc: MSA, (Bruce Seimans)
5033 Rouse Drive, Virginia Beach, Va. 23462-3708

James City County, (Scott J Thomas)
101 Mounts Bay Road, P.O. Box 8784
Williamsburg, Va. 23187-8784

108 Ingram Road, Unit 1, Williamsburg, Virginia 23185 • (757) 229-6677 • Fax (757) 229-9978

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General Services Stormwater

5320 Palmer Lane, Suite 2A
Williamsburg, Virginia 23188
P: 757-259-1460
F: 757-259-5833
stormwater@james-city.va.us



jccEgov.com

November 15, 2010

Mrs. Jean Dickey
Junior Warden
St. Martin's Episcopal Church
1333 Jamestown Road
Williamsburg, VA 23185

RE: Elevations for Stormwater Management System

Dear Mrs. Dickey:

As a follow-up to our field meeting of November 10, 2010, I am providing you the results of the survey work that Pat Menichino and I performed that morning. The reason for the survey work relates to the periodic overflowing of two storm drain inlets in your parking lot. It was determined that the elevation of the emergency spillway overflow (riprap lined channel) in the stormwater management facility (also called a BMP) is at a higher elevation than two of the parking lot storm drain inlets causing them not to function properly.

Based on our survey information, the emergency spillway is 0.6 feet or 7.2 inches higher than the lowest storm drain inlet. Our recommendation is to lower the emergency spillway to a point where it is 0.5 feet or 6 inches lower than the lowest storm drain inlet. We set two stakes in the field with the top of the stake set at the same elevation as the inlet and then placed a line on each stake 6 inches below the top of the stake. That is the elevation to which a contractor would need to lower the spillway, which is 1.1 feet lower than the current elevation.

You also had a question about the width of the spillway. Given that it will be lowered by 1.1 feet, the width of the spillway can be reduced to 6 feet from its current width of roughly 10 feet. We would also recommend that the riprap that is removed from the top of the spillway be placed on the back slope (outside face) of the spillway and that the existing black matting (Pyramat) be placed on the top, flat portion of the spillway and seeded with grass seed. All areas disturbed by the construction will need to be seeded and mulched to prevent erosion. You can contact me at 757-259-1442 if you have any questions or need additional information.

Sincerely,

A handwritten signature in cursive script that reads "Darryl E. Cook".

Darryl E. Cook, P.E.
County Engineer



ST. MARTIN'S EPISCOPAL CHURCH

1333 Jamestown Road
Williamsburg, Virginia 23185
Telephone: 757 229-1111

September 28, 2010

Patrick T. Menichino
James City County Stormwater Division
5320 Palmer Lane
Williamsburg, VA 23188-2674

Dear Pat,

Last Saturday, September 25, 2010, my husband Cliff and I used an auger to bore three holes in the floor of the BMP at St. Martin's Episcopal Church, 1333 Jamestown Road, Williamsburg.

Attached is a sketch of the floor of the BMP showing the location of the holes with a report of the results of our borings and several photographs.

We also took samples of the cores, which we will bring to you along with this report.

Thank you for your patience, help, and consideration.

Very truly yours,

Jean Dickey
Junior Warden

Pat Menichino

From: Pat Menichino
Sent: Monday, August 16, 2010 12:30 PM
To: 'djean34026@aol.com'
Cc: Frances Geissler
Subject: St. Martins BMP

Jean,

Fran and I discussed your requests for assistance regarding your Stormwater Management Facility and we are prepared to offer the following:

Stormwater staff will establish and record the existing (relative) elevations of the BMP inlet pipe, the crest elevation of the principal spillway, the elevation of the BMP floor, and the elevations of the DI rim and pipe invert, located in the paved parking area.

Base on those elevations, we will authorize the modification of the BMP principal spillway (if required), to prevent the flooding of the paved parking area.

The above will be conditioned on St. Martins investigating the infiltration soils installed within the BMP (infiltration rate, contamination, etc.), and then submit a report to the Stormwater Division with the results. If the soils do not meet the original design criterion, St. Martins agrees to replace the BMP infiltration soils within 3 years following the report.

Thanks,

Pat

Patrick T. Menichino
Stormwater Specialist
James City County Stormwater Division
757-259-1443
pmenichi@james-city.va.us

Scott Thomas

From: Scott Thomas
Sent: Tuesday, March 23, 2010 2:46 PM
To: Greg Johnson
Cc: Joe Buchite
Subject: FW: Box Culvert Measurements

Make sure a copy of this goes into the ab/cc file created for MC060. Check the drop, min. 0.70' to max 0.90' to what the approved plan showed. It is good it shows positive grade differential. Not sure if plan called for 0.5' or 1' of drop across the box culvert run.

We want to make sure there is a file for the box culvert and the "frog pond" BMP for this site. I think I created a file, perhaps in Joe's office. This file needs to contain all regular information plus correspondences back and forth during this culvert cleaning phase. Given their efforts to coordinate with us (ie. watershed education) and clean the box culvert, I believe that the small BMP is a pretty minor issue, a situation that they are quite aware of. We will waive the ab/cc requirement for the small BMP.

We must still create a file with all information like copy of plan, BMP comps, maintenance plans, etc.

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

From: Scott Thomas
Sent: Tuesday, March 23, 2010 2:41 PM
To: 'djean34026@aol.com'
Cc: Joe Buchite; Greg Johnson
Subject: RE: Box Culvert Measurements

Jean - The information in this form is acceptable.

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

From: djean34026@aol.com [mailto:djean34026@aol.com]
Sent: Tuesday, March 23, 2010 9:41 AM
To: Scott Thomas

Cc: rector@stmartinswmbg.org; p.foote@cox.net; Mejulalw@aol.com

Subject: Fwd: Box Culvert Measurements

Mr. Thomas,

Mr. Rinaldi has sent to me the measurements made by his surveyor of the box culvert at St. Martin's. I am forwarding them to you. Please let me know if you need them in some more formal form, and I will arrange to provide it.

Thank you for your patience

Jean Dickey

-----Original Message-----

From: Mark Rinaldi <mrinaldi@bushcos.com>

To: djean34026@aol.com

Cc: Mejulalw@aol.com; Linwood Burton <lburton@bushcos.com>

Sent: Tue, Mar 23, 2010 9:09 am

Subject: RE: Invoicing for St. Martin's Church Work

Ms. Dickey,

As you requested, we surveyed the box culvert invert in and invert out elevations on January 28, 2010. I understand you or someone from the church was present. We assumed a reference elevation to be the finished floor of the lower level building (situated above the box culvert); the elevation of the finished floor was assumed to be '54.26'. This elevation was shown on plans (not as-built drawings) provided by the church when we surveyed the box culvert.

Using 54.26' as a reference, we found the invert in elevation to be 41.35' (explained further below) and the invert out elevation to be 40.45. Both elevations are generally consistent with the site plan drawing we were provided when we began the box culvert clearing operation. With respect to the invert in, we actually found that there was a slight cross slope across the entrance to the box culvert, with the side facing the church measuring 41.35' and the side facing away from the church measuring 41.15'.

You also requested a quote for removal of the cemented rip-rap where the stream enters the Church property. I spoke with Linwood about this today and he asked me to inform you that he will provide you with a quote at a later time; he has not forgotten about your request.

Please respond if you have any further questions or requests for information or service.

Regards,

Mark Rinaldi

Vice President – Development

The Bush Companies

4029 Ironbound Road, Suite 300

Williamsburg, VA 23188

(757) 220-2874 Front Desk

(757) 220-7806 Direct Dial

(757) 564-8960 Fax

(757) 784-6175 Mobile

From: djean34026@aol.com [mailto:djean34026@aol.com]

Sent: Monday, March 15, 2010 1:39 PM

To: Mark Rinaldi
Cc: Mejulalw@aol.com
Subject: Re: Invoicing for St. Martin's Church Work

Mr. Rinaldi,

I have received both invoices, and will turn them in to the treasurer's office at St. Martin's tomorrow morning.

Mr. Burton promised us some measurements on the inverts of inlet and outlet of the box culvert. He also said he would give us a bid to remove some of the cemented riprap where the stream enters church property. Could you remind him of these? Thank you.

Jean Dickey

-----Original Message-----

From: Mark Rinaldi <mrinaldi@bushcos.com>
To: djean34026@aol.com
Cc: Mejulalw@aol.com
Sent: Mon, Mar 15, 2010 10:50 am
Subject: Invoicing for St. Martin's Church Work

Ms. Dickey and Mr. Williams,

Please find attached two (2) invoices for the work completed at the Church by Bush Construction.

While presently addressed to Ms. Dickey, Invoice #628-2010001 is for the culvert cleaning contract executed under Mr. Williams' authority as Junior Warden (totaling \$10,950.00). Invoice #628-2010002 is for the stream clearing effort downstream of the box culvert, executed under Ms. Dickey's authority as Junior Warden (totaling \$2,250.00) and also addressed to her attention.

Please contact me directly at 220-7806 if there are any questions with the attached invoices or with the work effort which was the subject of these invoices.

Thank you for the opportunity to have been of service to St. Martin's Episcopal Church.

Regards,

Mark Rinaldi
Vice President – Development
The Bush Companies
4029 Ironbound Road, Suite 300
Williamsburg, VA 23188
(757) 220-2874 Front Desk
(757) 220-7806 Direct Dial
(757) 564-8960 Fax
(757) 784-6175 Mobile

Greg Johnson

From: Keith Letchworth
Sent: Tuesday, October 28, 2008 7:17 AM
To: Greg Johnson
Subject: RE: SP-039-00

Completed.

Thanks
Keith

From: Greg Johnson
Sent: Monday, October 27, 2008 8:31 AM
To: Keith Letchworth
Subject: SP-039-00

Keith;
Another blast from the past. St. Martin's Episcopal Church Parish Hall sewer line relocation. Was this finished or started?

Thanks-

Gregory B. Johnson
Environmental Inspector I
James City County Environmental Division
gregi@james-city.va.us
757-253-6683 Office
757-592-6020 Cell
757-259-4032 Fax

*"We work in partnership with all citizens to achieve a quality community."
JCC Mission Statement*

ST. MARTIN'S EPISCOPAL CHURCH
MSA# 98165

The following are responses to the Environmental Division's review comments dated September 6, 2000.

1. Enclosed is a copy of the U.S. Army Corps of Engineers Permit for subject project.
2. The silt fence, which you have referred to in your comments as crossing the main stream channel at two locations, is not to be installed until the sanitary sewer, box culvert and stream channel relocation has taken place. Therefore, we will not allow demolition to the existing building or parking lot in this area until these items have been addressed.

In order to clarify this, we have added construction sequencing notes to Sheets C3.1, C5.1 and C5.2. Hopefully this will better clarify the construction sequencing.

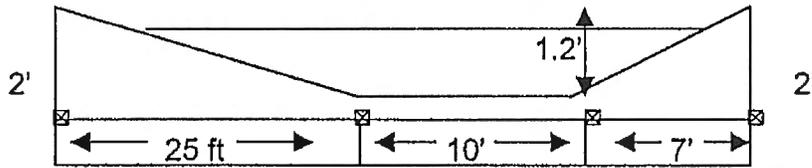
3. We have made a revision to our temporary diversion dike, (see Sheets C5.1 and C5.2) as follows:
 - We have moved the temporary diversion dike (TDD) to the top of the gradient just below the clearing line.
 - We have channeled the TDD to release collected runoff into a temporary slope drain (TSD) across the cleared area.
 - This reduces the amount of direct sheet-flow runoff to the base of the slope which allows us to use a silt fence for protection at the base of the slope.

We feel this is a better design because the silt fence will be easier to maintain and manipulate as the dynamic erosion and sedimentation control plan evolves through the different phases of construction. It will also reduce the chance of slope erosion and increase the ability for vegetative regrowth.

4. We have added notes and reference about VESCH minimum standard and specification on diversion channel crossings to Sheet C5.1 sequence of construction notes.
5. In order to assure channel adequacy, we are providing "Pyramat" geosynthetic erosion control material along the invert and side slopes (3 feet above invert) of the relocated and existing stream channel from the box culvert to a point approximately 265 feet downstream of the box culvert outlet.

Furthermore, we have evaluated the channel for erosion resistance at the end of the geosynthetic erosion control material placement as follows:

Channel Section (265 feet downstream of box culvert)



$Q_{2yr} = 47.5$ cfs (see attached calculations)

Given: slope = 0.29% $N = 0.03$ depth of flow = 1.2 ft.

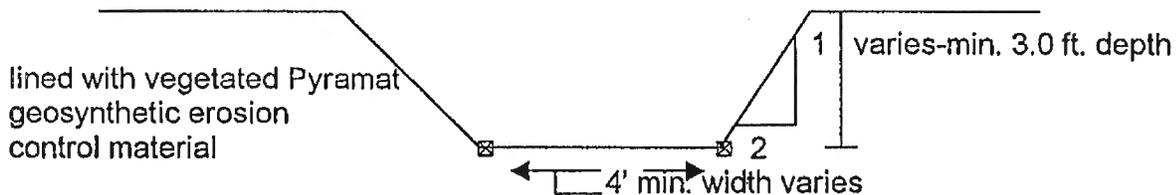
$\therefore Q_{2yr} = 1.49/N (A) (R^{2/3})(S^{2/3}) = 47.5$ cfs

$= 1.49/0.03 (21.38) (0.81)(0.054) = 46.45 = 47.5$

$V_{2yr} = Q/A = 47.5/21.38 = 2.22$ ft./sec. < 2.5 ft./sec. OK

In addition, we have revised the relocated channel section as follows:

Channel Section (new, realigned channel improvement section)



We checked this new section for adequacy with the 10-year storm for both volume and erosion resistance (using a 4.0 ft. bottom width):

$Q_{10yr} = 80.03$ (see attached calculations)

Given: $N = 0.03$ $S = 0.29\% \implies S^{1/2} = 0.054$

Depth of flow = 2.6 ft. $\implies A = 23.92$ ft² $WP = 15.63$

$R = A/WP = 23.92/15.63 = 1.53$ $R^{2/3} = 1.33$

$\therefore Q_{10} = 1.49/0.03 (23.92) (1.33) (0.054) = 85.22 > 80.03$ OK

$V_{10} = Q/A = 80.03/23.92 = 3.5$ ft./sec < 10 ft./sec. provided by Pyramat lining

6. Outlet protection: as we have previously determined, from the discussion on channel adequacy, we expect our tail water depth will be approximately 2.6 feet. Since this is greater than half the box culvert height, we shall classify this as a maximum tail water condition. We have determined the stone size as Class I with a weight range of 50 – 150 lbs, 60% > 100 lbs. The rip-rap will be placed as shown on the detail section found on Sheet C5.2 The rip-rap will serve mainly to anchor the Pyramat geosynthetic material since this

material can handle the velocities expected and will extend well beyond the required rip-rap apron length.

7. We have revised CBPA computations using redevelopment calculation procedures. Please note that the BMP provided will provide a pollutant removal of 5.73 lbs/yr. Whereas the required removal is calculated at 3.09 lbs/yr.
8. Enclosed are copies of the hydrologic computations for the Q_2 , Q_{10} , Q_{25} , Q_{50} and Q_{100} storm events which relate to the revised drainage map which you acknowledged previously receiving. These should have been in that same package and were thought to have been sent.
9. On September 14, 2000, I personally surveyed the ground floor elevation of Williamsburg Office Park Building which we jointly witnessed as the lowest elevated building in the park and closest vertically to the box culvert invert elevation. I recorded an elevation of 49.81. This will give us a factor of safety of almost 5 feet above the computed headwater elevation of 43.85.
10. Channel improvements: As we have previously discussed, we have revised our channel section to show a 4-foot bottom width and 2(h):1(v) side slopes. The minimum depth of 3 feet will be provided.

Please review our calculations provided under our response to your question number 5 which calculates the Q_{10} storm event will be contained within the channel with a 2.6-foot depth of water. In addition, since we will be using a geosynthetic erosion material to line the channel (see attachment) it will be able to handle both the 2-year and 10-year storm velocity.

11. SWM/BMP facility: We understand the JCC BMP Group C (infiltration) guidelines require at least a 4-foot vertical separation between the bottom of the facility to the seasonal high water table. Unfortunately, because of our location in a natural valley of sorts, it is difficult without major land disturbance to meet this guideline. Use of any infiltration device or system within the construction area will limit the said separation to 2 feet vertical. Areas on-site which may have greater separation are long, steeper gradients and would require great elevation changes and potentially create more natural harm than good.

Also, we have investigated the Chesapeake Bay Preservation Act as written by the State and found they will allow a minimum 2-foot vertical separation to satisfy their ordinance.

Soil samples taken in the area for building construction show red brown clays, sand, and light brown poorly graded sand in the proximity of our proposed BMP.

Therefore, we propose to install a sand lens and filter fabric in the invert of our BMP to ensure we penetrate any clay layers. Furthermore, we propose to conduct further testing during construction to identify soil textures and ensure the filtration rates are contained within 0.52 inches per hour and 8.27 inches per hour.

In consideration of the above-mentioned site constraints and contingent on meeting the stated design conditions, we hereby request a 2-foot variance from the 4-foot vertical separation requirement to 2 feet vertical separation.

Development Management

101-A Mounts Bay Road
P.O. Box 8784
Williamsburg, VA 23187-8784
P: 757-253-6671
F: 757-253-6822
devman@james-city.va.us



jccEgov.com

Code Compliance

757-253-6620
codecomp@james-city.va.us

Environmental Division

757-253-6670
environ@james-city.va.us

Planning and Zoning

757-253-6685
planning@james-city.va.us

August 26, 2009

Ms. Jean Dickey
St. Martin's Episcopal Church
1333 Jamestown Road
Williamsburg, VA 23185

Re: St. Martin's Episcopal Church
1333 Jamestown Road, County GPIN 4810100009
County Plan No.: SP-39-00

Dear Ms. Dickey:

It was a pleasure to meet with you, Carolyn, Larry and Cliff on Friday August 14, 2007 to discuss various maintenance issues associated with the constructed drainage and stormwater management plan system at the St. Martin's Episcopal Church on Jamestown Road. The purpose of the meeting was to review, by mutual site visit, field-related items pertaining to function of the system in accordance with the approved design plan and to ensure adequate protection of the church building and occupants. This letter is follow-up to some of the specific topics that were discussed and to address specific questions from church representatives.

Overview/Background

The site plan for the church expansion project came in to the County in March 2000. Preliminary approval for County Plan No. SP-39-00 was obtained through the County's Planning Division on August 22, 2000. Final approval was obtained on October 3, 2000. Prior to final site plan approval by all agencies, the Environmental Division approved the site erosion, drainage and stormwater management plan on September 28, 2000. A Land-Disturbing Permit (# 01-16) was issued for the project and a preconstruction meeting was held on October 2, 2000. The County currently holds a siltation bond for the project in the amount of \$30,000. In addition, prior to issuance of a Land-Disturbing Permit, a Declaration of Covenants, Inspection/Maintenance agreement was executed and recorded in County Land Records on August 23, 2000, Instrument # 000015956 (copy attached).

A 154 ft. long, 8' wide x 4 ft. high box culvert, situated under the church building, is used to bypass upslope drainage from approximately 70 acres through the church site. Design flow for the 100-year design storm event (Q100) is 105.3 cubic feet per second (cfs). USACOE authorization for stream impacts associated with the box culvert construction were issued on July 11, 2000 under Nationwide Permit # 39 (00-R1411). Components of the approved drainage and stormwater management plan site design included the box culvert, relocation of a portion of an existing onsite stream; reconstruction of manmade stormwater conveyance system open channel (265 feet long; 4 ft. bottom width; 2H:1V side slopes; 3 ft. deep), an infiltration type stormwater management BMP facility, and two interior onsite storm drainage systems – one situated in the parking lot and one at the back of the church. Some existing stormwater drainage conveyance systems were also utilized in the final site design.

Normal maintenance associated with these items, as outlined on approved plan SP-39-00, would not require additional wetland permits or would be covered under previously obtained general permits.

Inspection/Maintenance Agreement

The Declaration of Covenants - Inspection/Maintenance agreement, as described above, is recorded in the County's land records. It is an agreement made between the owner and the County. It runs with the title of the land. It binds the owner to perform maintenance on the drainage system including runoff control facilities, conveyance systems and easements to ensure these systems remain in proper working condition in accordance with the approved design standards and regulations. It does not include any elements situated within VDOT right-of-way. The agreement also ensures the County has a right of entry to perform inspections of the system. If the owner fails to maintain the systems in accordance with approved design standards and regulations, the County may perform the maintenance and/or repairs and assess the owners the cost of work and applicable penalties. Refer to the agreement for specific terms.

Resource Protection Area

There were questions and discussions about clearing and maintenance activities associated with Resource Protection Area (RPA). Currently, the County general Chesapeake Bay Preservation Area (CBPA) map shows RPA on the parcel. The CBPA map is used as a guide to show general location of RPAs. In 2004, Chesapeake Bay Act and subsequent County Chesapeake Bay Preservation ordinance changes now require localities, as part of their environmental inventory, plan of development review and water quality impact assessment (WQIA) processes, a site specific evaluation to be conducted to determine whether water bodies on or adjacent to the development site have perennial flow, and that RPA boundaries adjusted, as necessary, on the site based on the results of the evaluation. Although the 2004 Chesapeake Bay Program changes resulted in the general CBPA map showing RPA on the site, there is no current proposal or plan of development which would trigger the need to do the evaluation or confirm RPA on the site (ie. perform an new environmental inventory).

Approval of the site plan (and associated drainage and stormwater management systems) was in October 2000. This is prior to 2004 regulation changes; therefore, these features are grandfathered and are allowed to be constructed and maintained in accordance with approved County Plan No. SP-39-00. The environmental inventory, as prepared at the time of site plan submittal and approval, is located on Sheet C2.1. The inventory table on the left side of the plan sheet shows that the RPA buffer was not applicable on the site. However, it should be noted that any new development concepts for expansion and accessory structures would need to be examined for consistency with the 2004 ordinance changes.

Therefore, in summary, features shown on the approved plan (ie. grading, utilities, etc.) and associated maintenance of those facilities are grandfathered from 2004 ordinance changes.

Definition of Maintenance

Another general question was to further define maintenance activities, especially with regard to the clearing and removal of vegetation, trash and debris and sediments. The following definitions were developed by the County for the Stormwater Management/BMP inventory and inspection program. Although developed for stormwater management/BMP facilities, for the most part, they would also apply to constructed stormwater conveyance systems (inlets, pipes, culvert, etc.) at the church.

Routine Maintenance is generally defined as: landscaping, cosmetic and aesthetic maintenance such as tree and shrub care; wetland plant care; reseeding and mulching; slope stabilization; grass mowing; pruning; filling and repair of slope gully erosion; animal control due to nuisance rodents; removal of invasive vegetation; minor sediment cleaning and general care taking in accordance with any approved maintenance and operation plans for the facility. Also includes removal of debris and other matter to the best of the Owner's ability where such debris or matter has slightly impeded or threatens to impede proper functioning or free flow of base or storm flow.

Non-Routine or Emergency Activities are generally defined as: the repair or replacement of necessary components that have partially or completely failed *and* directly impair the SWM/BMP facility from performing its proper control or treatment function; impose an immediate or potential safety hazard; impede base or storm flows; create flooding or erosion dangers to surrounding or downstream properties; or threaten the public's health, safety or welfare. Generally applies to essential (vital) interior structural and stormwater management components including embankments; risers and outlet barrels; trash racks and anti-vortex devices; emergency spillways; pretreatment forebays; seepage controls; drains; water quality or quantity control devices including orifices and weirs; outlet protections or energy dissipators; bank stabilization; major sediment removal (dredging); and any other special operational structures. Applicable components are usually interior to the physical functional boundary and essential to the proper control or treatment function of the SWM/BMP facility.

Clarification of Maintenance Areas

It was discussed that the County Environmental would provide an exhibit map to better define the maintenance areas. This would aid the church to clearly understand the locations and definitions of the maintenance areas and if a phased approach was necessary due to finances. A 1 inch = 60 ft. scale exhibit map is attached. Please refer to the map along with the descriptions outlined below. The map was prepared using information from the approved site plan.

Area 1 - Upstream Box Culvert Inlet

Clearing and removal of existing vegetation, trash and debris and sediments in the area just immediately upstream of the box culvert inlet headwall. Generally, this an area 15 ft. in radius from the center of the headwall structure. Activities on offsite property are not permitted.

Area 2 - Box Culvert

Removal of vegetation, trash and debris, sediment and any obstructions within the flow area of the 154 ft. long, 8 x 4 reinforced concrete box culvert.

Area 3 - Downstream Box Culvert Outlet

Clearing and removal of existing vegetation, trash and debris, and sediments in the area just immediately downstream of the box culvert outlet headwall (downstream side). Generally, this is an area 15 ft. in radius from the center of the headwall structure. Includes cleaning of any concrete or riprap stone pads.

Area 4 - Stormwater Conveyance Channel

Clearing and removal of vegetation, trash and debris, sediment and any obstruction within the design flow area of the relocated stream, which is a manmade stormwater conveyance open channel section 4 ft. wide on the bottom, 3 ft. deep and 2H:1V side slopes. Therefore, the total width is 16 feet, resulting in 8 feet either side from center of the channel. No authorization is given for clearing of vegetation outside this zone.

Area 5 - Infiltration BMP Basin

Clearing and removal of vegetation, trash and debris and sediment from within the BMP area to ensure structural integrity and maintain proper stormwater function. Usually trees, shrubs and woody vegetation are not permitted to grow on any part of pond embankments constructed using engineered (compacted) fills. Saturated roots mats combined with high wind can cause trees to overtop and accelerate soil erosion and embankment failure conditions. For older facilities which may have established tree growth, we recommend that trees be cut flush to or below ground level and be maintained in that fashion as to not disturb root systems that may already be extensive. Efforts should then be made to reduce reestablishment and replace the tree growth with an established low-maintenance grass covering. Removal of vegetation within "interior" BMP area is not required, only the dam embankment and the vicinity around the storm pipe outfall (ie. pipe from the parking lot system).

Previously Outlined Items

Consistent with our previous June 25th 2009 meeting and subsequent July 8th 2009 email, the requirements necessary to obtain reduction/release of the siltation surety being held for the project are listed below.

Construction certification for the small pond BMP in the southeast corner of the site. Certification can be with the template form I provided to you in the packet. The certification can be by the engineer who monitored construction. If not possible to do this, we can allow a postconstruction certification whereas an engineer performs and inspection of the facility and provides the certification.

Asbuilts (Record Drawings) for the small pond BMP in the southeast corner of the site. An asbuilt drawing is a drawing that shows dimensions and elevations and features of the constructed pond in order to demonstrate that it was constructed in accordance with the plan. The asbuilt needs to be certified by an engineer. The certification form is also in the packet I gave to you.

Box Culvert elevations at the inlet and outlet ends of the culvert as constructed to ensure it was built in accordance with the plan. As you know the box culvert runs underneath the building expansion. This information can be shown on the asbuilt plan.

Field-Related action items such as removal of existing vegetation, sediments, trash and debris within approved plan stormwater drainage and stormwater management features. This was further described at our onsite meeting held on August 14th 2009. This items were not known at the time of our June 25th meeting.

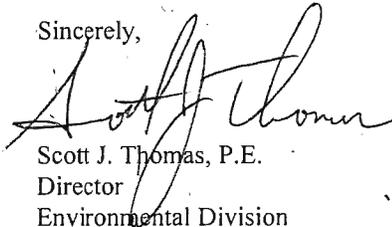
County's PRIDE Program

As mentioned at our meeting, it was felt that there are several opportunities at property for the church to team up with the County's PRIDE (Protecting Resources in Delicate Environments) team to either perform a demonstration project or apply for a mini-grant. Please visit the County's PRIDE water quality education website at www.protectedwithpride.org

Visit the "News and Projects" section of the website to see where we have teamed with various Homeowner Associations and other church civic groups in the past to perform demonstration projects. Demonstration projects, costs which normal are covered entirely by the PRIDE program, are an excellent opportunity to teach about watershed and water quality education. Demonstration projects are usually performed by the County with help from church and/or other community volunteers and they are usually held in May or October of the year. Also visit the "Mini-Grant Program" section of the website to see how \$500 mini-grants are available for eligible water quality projects. Projects under the mini-grant program are usually performed by the church, with assistance from the County PRIDE team, and are not demonstration projects. Some examples of grant awards include: rain gardens, BMP plantings, and erosion control projects.

Again, thanks for meeting with me. If you need to contact me further, my email is scottt@james-city.va.us and my phone number is 757-253-6639.

Sincerely,



Scott J. Thomas, P.E.
Director
Environmental Division

SJT/sjt

cc: Greg Johnson (via email)

Asbuilt/Reviews/SP3900.mc060

Mr. Scott J. Thomas
 December 18, 2000
 Page 2

2. We have discussed the parking situation with Mr. Horne of the Planning Department. Since we have 12 spaces more than required by code, the loss of five spaces is acceptable.
3. Since the box culvert outfall invert is lower than the existing silted ditch invert, regrading this, in the new location, gives a reduced slope. The invert at the box culvert is 40.50. The invert at the wetland boundary is 40.10. The distance between these points is 260 feet. From previous culvert calculations, we have an outlet control tailwater elevation of 43.85 ✓ and a 100-year storm event flow of 105.3 cfs.

$\frac{40.5 - 40.10}{260}$
 = 0.00151/ft
 NEW PREV
 0.15% (0.29%)

Check hydraulics of ditch to accept the flow at the reduced slope without exceeding the tailwater elevation:

From the plan ditch section, we have a 4-foot-wide bottom with 2:1 sideslopes. The allowable depth to maintain a 43.85 tailwater depth = 43.85 - 40.50 = 3.35 feet.



$Q_{100} = 105.3 \text{ ft}^3/\text{sec.} \quad \checkmark$

$Q_{\text{actual}} = 1.49/n (A) (R^{2/3}) (S^{1/2})$

where A = area = 35.85 ft.²

$R = A/WP \quad WP = 18.98 \text{ ft.} \quad \therefore R = 1.89$

$S = 0.4/260 = .0015 \text{ ft./ft.}$

$n = 0.03$

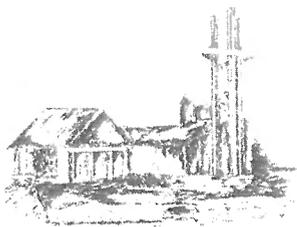
$Q_{\text{actual}} = 1.49/0.03 (35.85) (1.89)^{2/3} ((.0015)^{1/2}) = 105.6 \text{ ft}^3/\text{sec.}$

$n = 0.05$ FOR
 EC-02 &
 EC-03
 V ↑
 CAP ↑

Since 105.6 > 105.3, the hydraulic grade line will not be exceeded.

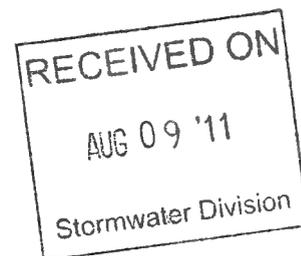
4. Also, as a result of the ditch silting, the entrance to the box culvert is in a depressed condition. This actually helps the hydraulics of the inflow. However, it can also cause erosion at the drop. Therefore, we propose a 4-foot concrete apron at the entrance to the box, which will transition the ditch invert to the box culvert invert.

Δ NEED DETAIL FOR BOX CULVERT INLET (IMPROVED INLET)
 Δ NEED CHANNEL (SIC) COMPS TO ENSURE THE 3' DEEP TRIM-LINED CHANNEL PER DETAIL IS OF ADEQUATE CAPACITY FOR 10-YEAR DESIGN DUE TO CHANNEL SLOPE NOW AT 0.15% (INSTEAD OF 0.29% PER ORIG. DESIGN).
MIN LINING DEPTH



ST. MARTIN'S EPISCOPAL CHURCH

1333 Jamestown Road
Williamsburg, Virginia 23185
Telephone: 757 229-1111



August 4, 2011

Mr. Darryl E. Cook, P.E.
County Engineer
5320 Palmer Lane, Suite 2A
Williamsburg, VA 23188

RE : Elevations for Stormwater Management System

Dear Mr. Cook :

Pursuant to your letter of advice on subject to Saint Martin's Episcopal Church dated November 15, 2010, be advised that the spillway has been lowered.

Enclosed are several photos of the work in progress in mid-July. Your recommendations were much appreciated and have been followed.

We anxiously await the next major rain to enjoy our parking lot not flooding.

Sincerely,

Richard E. Mericle
Junior Warden

Cc : Frances C. Geissler
Director
General Services/Stormwater
James City County

Email: office@stmartinswmbg.org • www.stmartinswmbg.org • Fax: (757) 229-1797

Pat Menichino

From: Scott Thomas
Sent: Friday, July 30, 2010 3:51 PM
To: Pat Menichino
Subject: FW: Information for You

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

From: djean34026@aol.com [mailto:djean34026@aol.com]
Sent: Friday, April 23, 2010 9:16 AM
To: Scott Thomas
Subject: Re: Information for You

Thanks, Scott!

Yes, I've known about the meeting since the request came to the church office for use of the facility. I won't miss that meeting unless I'm in the hospital! We even rescheduled a conflicting meeting so more of our people can attend.

Jean Dickey

-----Original Message-----

From: Scott Thomas <SCOTTT@james-city.va.us>
To: 'djean34026@aol.com' <djean34026@aol.com>
Sent: Fri, Apr 23, 2010 8:51 am
Subject: Information for You

Jean

Hi. I recently received an email with some updates on stormwater program activities. One part of that was a reminder that the Mill Creek Watershed Baseline Report Stakeholder Meeting will be on May 20, 7:00 PM, at St. Martins Church, Jamestown Rd. A stakeholder meeting is an important component as property owners, civic groups, etc. have a chance to learn about what work has been done so far and it solicits input from what stakeholders think and what their goals are.

This meeting will review the draft baseline report of conditions within the watershed and will solicit input from stakeholders on the collected data. Once the baseline report is reviewed by stakeholders, work will continue on the full watershed management plan.

You may already know this, as of course it appears it's being held at the church, but I promised to keep you in the loop as I got information as you all have become pretty active in understanding the relationship of the watershed to your facility.

I am not sure how public this announcement is yet; but I did see it and wanted to give you a heads up on what I saw.

Talk to you later...

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

Pat Menichino

From: Scott Thomas
Sent: Friday, July 30, 2010 3:50 PM
To: Pat Menichino
Subject: FW: Box Culvert Measurements

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccgov.com
www.protectedwithpride.org

From: djean34026@aol.com [mailto:djean34026@aol.com]
Sent: Tuesday, March 23, 2010 7:20 PM
To: Scott Thomas
Subject: Re: Box Culvert Measurements

Scott,

Thank you so much!

Jean

-----Original Message-----

From: Scott Thomas <SCOTTT@james-city.va.us>
To: 'djean34026@aol.com' <djean34026@aol.com>
Cc: Joe Buchite <JBUCHITE@james-city.va.us>; Greg Johnson <GREGJ@james-city.va.us>
Sent: Tue, Mar 23, 2010 2:40 pm
Subject: RE: Box Culvert Measurements

Jean - The information in this form is acceptable.

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccgov.com
www.protectedwithpride.org

From: djean34026@aol.com [mailto:djean34026@aol.com]
Sent: Tuesday, March 23, 2010 9:41 AM
To: Scott Thomas

Cc: rector@stmartinswmbg.org; p.foote@cox.net; Mejulalw@aol.com

Subject: Fwd: Box Culvert Measurements

Mr. Thomas,

Mr. Rinaldi has sent to me the measurements made by his surveyor of the box culvert at St. Martin's. I am forwarding them to you. Please let me know if you need them in some more formal form, and I will arrange to provide it.

Thank you for your patience

Jean Dickey

-----Original Message-----

From: Mark Rinaldi <mrinaldi@bushcos.com>

To: djean34026@aol.com

Cc: Mejulalw@aol.com; Linwood Burton <lburton@bushcos.com>

Sent: Tue, Mar 23, 2010 9:09 am

Subject: RE: Invoicing for St. Martin's Church Work

Ms. Dickey,

As you requested, we surveyed the box culvert invert in and invert out elevations on January 28, 2010. I understand you or someone from the church was present. We assumed a reference elevation to be the finished floor of the lower level building (situated above the box culvert); the elevation of the finished floor was assumed to be 54.26'. This elevation was shown on plans (not as-built drawings) provided by the church when we surveyed the box culvert.

Using 54.26' as a reference, we found the invert in elevation to be 41.35' (explained further below) and the invert out elevation to be 40.45. Both elevations are generally consistent with the site plan drawing we were provided when we began the box culvert clearing operation. With respect to the invert in, we actually found that there was a slight cross slope across the entrance to the box culvert, with the side facing the church measuring 41.35' and the side facing away from the church measuring 41.15'.

You also requested a quote for removal of the cemented rip-rap where the stream enters the Church property. I spoke with Linwood about this today and he asked me to inform you that he will provide you with a quote at a later time; he has not forgotten about your request.

Please respond if you have any further questions or requests for information or service.

Regards,

Mark Rinaldi

Vice President – Development

The Bush Companies

4029 Ironbound Road, Suite 300

Williamsburg, VA 23188

(757) 220-2874 Front Desk

(757) 220-7806 Direct Dial

(757) 564-8960 Fax

(757) 784-6175 Mobile

From: djean34026@aol.com [<mailto:djean34026@aol.com>]

Sent: Monday, March 15, 2010 1:39 PM

To: Mark Rinaldi
Cc: Mejulalw@aol.com
Subject: Re: Invoicing for St. Martin's Church Work

Mr. Rinaldi,

I have received both invoices, and will turn them in to the treasurer's office at St. Martin's tomorrow morning.

Mr. Burton promised us some measurements on the inverts of inlet and outlet of the box culvert. He also said he would give us a bid to remove some of the cemented riprap where the stream enters church property. Could you remind him of these? Thank you.

Jean Dickey

-----Original Message-----

From: Mark Rinaldi <mrinaldi@bushcos.com>
To: djean34026@aol.com
Cc: Mejulalw@aol.com
Sent: Mon, Mar 15, 2010 10:50 am
Subject: Invoicing for St. Martin's Church Work

Ms. Dickey and Mr. Williams,

Please find attached two (2) invoices for the work completed at the Church by Bush Construction.

While presently addressed to Ms. Dickey, Invoice #628-2010001 is for the culvert cleaning contract executed under Mr. Williams' authority as Junior Warden (totaling \$10,950.00). Invoice #628-2010002 is for the stream clearing effort downstream of the box culvert, executed under Ms. Dickey's authority as Junior Warden (totaling \$2,250.00) and also addressed to her attention.

Please contact me directly at 220-7806 if there are any questions with the attached invoices or with the work effort which was the subject of these invoices.

Thank you for the opportunity to have been of service to St. Martin's Episcopal Church.

Regards,

Mark Rinaldi
Vice President – Development
The Bush Companies
4029 Ironbound Road, Suite 300
Williamsburg, VA 23188
(757) 220-2874 Front Desk
(757) 220-7806 Direct Dial
(757) 564-8960 Fax
(757) 784-6175 Mobile

Pat Menichino

From: Scott Thomas
Sent: Friday, July 30, 2010 3:49 PM
To: Pat Menichino
Cc: Greg Johnson; Joe Buchite
Subject: St. Martins
Attachments: DOC001.PDF

Pat - here is one letter with my involvement with St. Martins. After this letter there was a lot of activity-correspondence between ENV and the church on what was needed to be done for bond release, education on the box culvert, education on the BMP or "frog pond" as they called it. Our focus during all of this was the box culvert function as it directly affected the building structure, rather than function of the BMP. Although this letter mentions the need for asbuilts/const cert for the BMP, the church put a great amount of expenditure into the box culvert cleaning and we backed off the BMP requirements a bit. It is documented in the AB file. I struggled with this a bit along the way, but do not think I did a formal waiver letter to AB/CC requirements, only through emails that we would not require the AB/CC. The BMP was built with a built soil lense, which during plan review we questioned the functionality based on geotechnical information. It has never worked being in a tailwater state due to elevations of pipe and elevations of water in pond. And the church understood that. After box culvert cleaning bond released 7/10. Greg should have forwarded the BMP (and box culvert) file with info over to SWD.

There is important information in that file, ie. correspondence from ENV & church relative to the BMP.

I stressed importance along the way to make sure those correspondences made it into the AB files.

Unfortunately Greg is not here now, so I can't ask him. Call him to see where that file is . It should have been forwarded to you all.

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

-----Original Message-----

From: Bld_E@james-city.va.us [mailto:Bld_E@james-city.va.us]
Sent: Friday, July 30, 2010 11:13 AM
To: Scott Thomas
Subject: Scan from a Xerox WorkCentre

Please open the attached document. It was scanned and sent to you using a Xerox WorkCentre.

Attachment File Type: PDF

WorkCentre Location: machine location not set
Device Name: XEROXJCC5665

Development Management

101-A Mounts Bay Road
P.O. Box 8784
Williamsburg, VA 23187-8784
P: 757-253-6671
F: 757-253-6822
devman@james-city.va.us



jccEgov.com

Code Compliance

757-253-6620
codecomp@james-city.va.us

Environmental Division

757-253-6670
environ@james-city.va.us

Planning and Zoning

757-253-6685
planning@james-city.va.us

August 26, 2009

Ms. Jean Dickey
St. Martin's Episcopal Church
1333 Jamestown Road
Williamsburg, VA 23185

Re: St. Martin's Episcopal Church
1333 Jamestown Road, County GPIN 4810100009
County Plan No.: SP-39-00

Dear Ms. Dickey:

It was a pleasure to meet with you, Carolyn, Larry and Cliff on Friday August 14, 2007 to discuss various maintenance issues associated with the constructed drainage and stormwater management plan system at the St. Martin's Episcopal Church on Jamestown Road. The purpose of the meeting was to review, by mutual site visit, field-related items pertaining to function of the system in accordance with the approved design plan and to ensure adequate protection of the church building and occupants. This letter is follow-up to some of the specific topics that were discussed and to address specific questions from church representatives.

Overview/Background

The site plan for the church expansion project came in to the County in March 2000. Preliminary approval for County Plan No. SP-39-00 was obtained through the County's Planning Division on August 22, 2000. Final approval was obtained on October 3, 2000. Prior to final site plan approval by all agencies, the Environmental Division approved the site erosion, drainage and stormwater management plan on September 28, 2000. A Land-Disturbing Permit (# 01-16) was issued for the project and a preconstruction meeting was held on October 2, 2000. The County currently holds a siltation bond for the project in the amount of \$30,000. In addition, prior to issuance of a Land-Disturbing Permit, a Declaration of Covenants, Inspection/Maintenance agreement was executed and recorded in County Land Records on August 23, 2000, Instrument # 000015956 (copy attached).

A 154 ft. long, 8' wide x 4 ft. high box culvert, situated under the church building, is used to bypass upslope drainage from approximately 70 acres through the church site. Design flow for the 100-year design storm event (Q100) is 105.3 cubic feet per second (cfs). USACOE authorization for stream impacts associated with the box culvert construction were issued on July 11, 2000 under Nationwide Permit # 39 (00-R1411). Components of the approved drainage and stormwater management plan site design included the box culvert, relocation of a portion of an existing onsite stream; reconstruction of manmade stormwater conveyance system open channel (265 feet long; 4 ft. bottom width; 2H:1V side slopes; 3 ft. deep), an infiltration type stormwater management BMP facility, and two interior onsite storm drainage systems – one situated in the parking lot and one at the back of the church. Some existing stormwater drainage conveyance systems were also utilized in the final site design.

Normal maintenance associated with these items, as outlined on approved plan SP-39-00, would not require additional wetland permits or would be covered under previously obtained general permits.

Inspection/Maintenance Agreement

The Declaration of Covenants - Inspection/Maintenance agreement, as described above, is recorded in the County's land records. It is an agreement made between the owner and the County. It runs with the title of the land. It binds the owner to perform maintenance on the drainage system including runoff control facilities, conveyance systems and easements to ensure these systems remain in proper working condition in accordance with the approved design standards and regulations. It does not include any elements situated within VDOT right-of-way. The agreement also ensures the County has a right of entry to perform inspections of the system. If the owner fails to maintain the systems in accordance with approved design standards and regulations, the County may perform the maintenance and/or repairs and assess the owners the cost of work and applicable penalties. Refer to the agreement for specific terms.

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Therefore, in summary, features shown on the approved plan (ie. grading, utilities, etc.) and associated maintenance of those facilities are grandfathered from 2004 ordinance changes.

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Routine Maintenance is generally defined as: landscaping, cosmetic and aesthetic maintenance such as tree and shrub care; wetland plant care; reseeding and mulching; slope stabilization; grass mowing; pruning; filling and repair of slope gully erosion; animal control due to nuisance rodents; removal of invasive vegetation; minor sediment cleaning and general care taking in accordance with any approved maintenance and operation plans for the facility. Also includes removal of debris and other matter to the best of the Owner's ability where such debris or matter has slightly impeded or threatens to impede proper functioning or free flow of base or storm flow.

Non-Routine or Emergency Activities are generally defined as: the repair or replacement of necessary components that have partially or completely failed *and* directly impair the SWM/BMP facility from performing its proper control or treatment function; impose an immediate or potential safety hazard; impede base or storm flows; create flooding or erosion dangers to surrounding or downstream properties; or threaten the public's health, safety or welfare. Generally applies to essential (vital) interior structural and stormwater management components including embankments; risers and outlet barrels; trash racks and anti-vortex devices; emergency spillways; pretreatment forebays; seepage controls; drains; water quality or quantity control devices including orifices and weirs; outlet protections or energy dissipators; bank stabilization; major sediment removal (dredging); and any other special operational structures. Applicable components are usually interior to the physical functional boundary and essential to the proper control or treatment function of the SWM/BMP facility.

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It was discussed that the County Environmental would provide an exhibit map to better define the maintenance areas. This would aid the church to clearly understand the locations and definitions of the maintenance areas and if a phased approach was necessary due to finances. A 1 inch = 60 ft. scale exhibit map is attached. Please refer to the map along with the descriptions outlined below. The map was prepared using information from the approved site plan.

Area 1 - Upstream Box Culvert Inlet

Clearing and removal of existing vegetation, trash and debris and sediments in the area just immediately upstream of the box culvert inlet headwall. Generally, this is an area 15 ft. in radius from the center of the headwall structure. Activities on offsite property are not permitted.

Area 2 - Box Culvert

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Area 3 - Downstream Box Culvert Outlet

Clearing and removal of existing vegetation, trash and debris, and sediments in the area just immediately downstream of the box culvert outlet headwall (downstream side). Generally, this is an area 15 ft. in radius from the center of the headwall structure. Includes cleaning of any concrete or riprap stone-pads.

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Clearing and removal of vegetation, trash and debris and sediment from within the BMP area to ensure structural integrity and maintain proper stormwater function. Usually trees, shrubs and woody vegetation are not permitted to grow on any part of pond embankments constructed using engineered (compacted) fills. Saturated roots mats combined with high wind can cause trees to overtop and accelerate soil erosion and embankment failure conditions. For older facilities which may have established tree growth, we recommend that trees be cut flush to or below ground level and be maintained in that fashion as to not disturb root systems that may already be extensive. Efforts should then be made to reduce reestablishment and replace the tree growth with an established low-maintenance grass covering. Removal of vegetation within "interior" BMP area is not required, only the dam embankment and the vicinity around the storm pipe outfall (ie. pipe from the parking lot system).

Previously Outlined Items

Consistent with our previous June 25th 2009 meeting and subsequent July 8th 2009 email, the requirements necessary to obtain reduction/release of the siltation surety being held for the project are listed below.

Construction certification for the small pond BMP in the southeast corner of the site. Certification can be with the template form I provided to you in the packet. The certification can be by the engineer who monitored construction. If not possible to do this, we can allow a postconstruction certification whereas an engineer performs an inspection of the facility and provides the certification.

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Box Culvert elevations at the inlet and outlet ends of the culvert as constructed to ensure it was built in accordance with the plan. As you know the box culvert runs underneath the building expansion. This information can be shown on the asbuilt plan.

Field-Related action items such as removal of existing vegetation, sediments, trash and debris within approved plan stormwater drainage and stormwater management features. This was further described at our onsite meeting held on August 14th 2009. These items were not known at the time of our June 25th meeting.

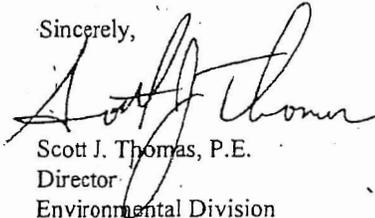
County's PRIDE Program

As mentioned at our meeting, it was felt that there are several opportunities at property for the church to team up with the County's PRIDE (Protecting Resources in Delicate Environments) team to either perform a demonstration project or apply for a mini-grant. Please visit the County's PRIDE water quality education website at www.protectedwithpride.org

Visit the "News and Projects" section of the website to see where we have teamed with various Homeowner Associations and other church civic groups in the past to perform demonstration projects. Demonstration projects, costs which normal are covered entirely by the PRIDE program, are an excellent opportunity to teach about watershed and water quality education. Demonstration projects are usually performed by the County with help from church and/or other community volunteers and they are usually held in May or October of the year. Also visit the "Mini-Grant Program" section of the website to see how \$500 mini-grants are available for eligible water quality projects. Projects under the mini-grant program are usually performed by the church, with assistance from the County PRIDE team, and are not demonstration projects. Some examples of grant awards include: rain gardens, BMP plantings, and erosion control projects.

Again, thanks for meeting with me. If you need to contact me further, my email is scottt@james-city.va.us and my phone number is 757-253-6639.

Sincerely,



Scott J. Thomas, P.E.
Director
Environmental Division

SJT/sjt

cc: Greg Johnson (via email)

Asbuilt/Reviews/SP3900.mc060

Scott Thomas

From: Scott Thomas
Sent: Tuesday, March 23, 2010 2:46 PM
To: Greg Johnson
Cc: Joe Buchite
Subject: FW: Box Culvert Measurements

Make sure a copy of this goes into the ab/cc file created for MC060. Check the drop, min. 0.70' to max 0.90' to what the approved plan showed. It is good it shows positive grade differential. Not sure if plan called for 0.5' or 1' of drop across the box culvert run.

We want to make sure there is a file for the box culvert and the "frog pond" BMP for this site. I think I created a file, perhaps in Joe's office. This file needs to contain all regular information plus correspondences back and forth during this culvert cleaning phase. Given their efforts to coordinate with us (ie. watershed education) and clean the box culvert, I believe that the small BMP is a pretty minor issue, a situation that they are quite aware of. We will waive the ab/cc requirement for the small BMP.

We must still create a file with all information like copy of plan, BMP comps, maintenance plans, etc.

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

From: Scott Thomas
Sent: Tuesday, March 23, 2010 2:41 PM
To: 'djean34026@aol.com'
Cc: Joe Buchite; Greg Johnson
Subject: RE: Box Culvert Measurements

Jean - The information in this form is acceptable.

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

From: djean34026@aol.com [mailto:djean34026@aol.com]
Sent: Tuesday, March 23, 2010 9:41 AM
To: Scott Thomas

Pat Menichino

From: Scott Thomas
Sent: Friday, July 30, 2010 3:51 PM
To: Pat Menichino
Subject: FW: Information for You

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

From: djean34026@aol.com [mailto:djean34026@aol.com]
Sent: Friday, April 23, 2010 9:16 AM
To: Scott Thomas
Subject: Re: Information for You

Thanks, Scott!

Yes, I've known about the meeting since the request came to the church office for use of the facility. I won't miss that meeting unless I'm in the hospital! We even rescheduled a conflicting meeting so more of our people can attend.

Jean Dickey

-----Original Message-----

From: Scott Thomas <SCOTTT@james-city.va.us>
To: 'djean34026@aol.com' <djean34026@aol.com>
Sent: Fri, Apr 23, 2010 8:51 am
Subject: Information for You

Jean

Hi. I recently received an email with some updates on stormwater program activities. One part of that was a reminder that the Mill Creek Watershed Baseline Report Stakeholder Meeting will be on May 20, 7:00 PM, at St. Martins Church, Jamestown Rd. A stakeholder meeting is an important component as property owners, civic groups, etc. have a chance to learn about what work has been done so far and it solicits input from what stakeholders think and what their goals are.

This meeting will review the draft baseline report of conditions within the watershed and will solicit input from stakeholders on the collected data. Once the baseline report is reviewed by stakeholders, work will continue on the full watershed management plan.

You may already know this, as of course it appears it's being held at the church, but I promised to keep you in the loop as I got information as you all have become pretty active in understanding the relationship of the watershed to your facility.

I am not sure how public this announcement is yet; but I did see it and wanted to give you a heads up on what I saw.

Talk to you later...

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

Pat Menichino

From: Scott Thomas
Sent: Friday, July 30, 2010 3:50 PM
To: Pat Menichino
Subject: FW: Box Culvert Measurements

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccgov.com
www.protectedwithpride.org

From: djean34026@aol.com [mailto:djean34026@aol.com]
Sent: Tuesday, March 23, 2010 7:20 PM
To: Scott Thomas
Subject: Re: Box Culvert Measurements

Scott,

Thank you so much!

Jean

-----Original Message-----

From: Scott Thomas <SCOTT@james-city.va.us>
To: 'djean34026@aol.com' <djean34026@aol.com>
Cc: Joe Buchite <JBUCHITE@james-city.va.us>; Greg Johnson <GREGJ@james-city.va.us>
Sent: Tue, Mar 23, 2010 2:40 pm
Subject: RE: Box Culvert Measurements

Jean - The information in this form is acceptable.

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccgov.com
www.protectedwithpride.org

From: djean34026@aol.com [mailto:djean34026@aol.com]
Sent: Tuesday, March 23, 2010 9:41 AM
To: Scott Thomas

Cc: rector@stmartinswmbg.org; p.foote@cox.net; Mejulalw@aol.com

Subject: Fwd: Box Culvert Measurements

Mr. Thomas,

Mr. Rinaldi has sent to me the measurements made by his surveyor of the box culvert at St. Martin's. I am forwarding them to you. Please let me know if you need them in some more formal form, and I will arrange to provide it.

Thank you for your patience

Jean Dickey

-----Original Message-----

From: Mark Rinaldi <mrinaldi@bushcos.com>

To: djean34026@aol.com

Cc: Mejulalw@aol.com; Linwood Burton <lbarton@bushcos.com>

Sent: Tue, Mar 23, 2010 9:09 am

Subject: RE: Invoicing for St. Martin's Church Work

Ms. Dickey,

As you requested, we surveyed the box culvert invert in and invert out elevations on January 28, 2010. I understand you or someone from the church was present. We assumed a reference elevation to be the finished floor of the lower level building (situated above the box culvert); the elevation of the finished floor was assumed to be 54.26'. This elevation was shown on plans (not as-built drawings) provided by the church when we surveyed the box culvert.

Using 54.26' as a reference, we found the invert in elevation to be 41.35' (explained further below) and the invert out elevation to be 40.45. Both elevations are generally consistent with the site plan drawing we were provided when we began the box culvert clearing operation. With respect to the invert in, we actually found that there was a slight cross slope across the entrance to the box culvert, with the side facing the church measuring 41.35' and the side facing away from the church measuring 41.15'.

You also requested a quote for removal of the cemented rip-rap where the stream enters the Church property. I spoke with Linwood about this today and he asked me to inform you that he will provide you with a quote at a later time; he has not forgotten about your request.

Please respond if you have any further questions or requests for information or service.

Regards,

Mark Rinaldi

Vice President – Development

The Bush Companies

4029 Ironbound Road, Suite 300

Williamsburg, VA 23188

(757) 220-2874 Front Desk

(757) 220-7806 Direct Dial

(757) 564-8960 Fax

(757) 784-6175 Mobile

From: djean34026@aol.com [<mailto:djean34026@aol.com>]

Sent: Monday, March 15, 2010 1:39 PM

To: Mark Rinaldi
Cc: Mejulalw@aol.com
Subject: Re: Invoicing for St. Martin's Church Work

Mr. Rinaldi,

I have received both invoices, and will turn them in to the treasurer's office at St. Martin's tomorrow morning.

Mr. Burton promised us some measurements on the inverts of inlet and outlet of the box culvert. He also said he would give us a bid to remove some of the cemented riprap where the stream enters church property. Could you remind him of these? Thank you.

Jean Dickey

-----Original Message-----

From: Mark Rinaldi <mrinaldi@bushcos.com>
To: djean34026@aol.com
Cc: Mejulalw@aol.com
Sent: Mon, Mar 15, 2010 10:50 am
Subject: Invoicing for St. Martin's Church Work

Ms. Dickey and Mr. Williams,

Please find attached two (2) invoices for the work completed at the Church by Bush Construction.

While presently addressed to Ms. Dickey, Invoice #628-2010001 is for the culvert cleaning contract executed under Mr. Williams' authority as Junior Warden (totaling \$10,950.00). Invoice #628-2010002 is for the stream clearing effort downstream of the box culvert, executed under Ms. Dickey's authority as Junior Warden (totaling \$2,250.00) and also addressed to her attention.

Please contact me directly at 220-7806 if there are any questions with the attached invoices or with the work effort which was the subject of these invoices.

Thank you for the opportunity to have been of service to St. Martin's Episcopal Church.

Regards,

Mark Rinaldi
Vice President – Development
The Bush Companies
4029 Ironbound Road, Suite 300
Williamsburg, VA 23188
(757) 220-2874 Front Desk
(757) 220-7806 Direct Dial
(757) 564-8960 Fax
(757) 784-6175 Mobile

Pat Menichino

From: Scott Thomas
Sent: Friday, July 30, 2010 3:49 PM
To: Pat Menichino
Cc: Greg Johnson; Joe Buchite
Subject: St. Martins
Attachments: DOC001.PDF

Pat - here is one letter with my involvement with St. Martins. After this letter there was a lot of activity-correspondence between ENV and the church on what was needed to be done for bond release, education on the box culvert, education on the BMP or "frog pond" as they called it. Our focus during all of this was the box culvert function as it directly affected the building structure, rather than function of the BMP. Although this letter mentions the need for asbuilts/const cert for the BMP, the church put a great amount of expenditure into the box culvert cleaning and we backed off the BMP requirements a bit. It is documented in the AB file. I struggled with this a bit along the way, but do not think I did a formal waiver letter to AB/CC requirements, only through emails that we would not require the AB/CC. The BMP was built with a built soil lense, which during plan review we questioned the functionality based on geotechnical information. It has never worked being in a tailwater state due to elevations of pipe and elevations of water in pond. And the church understood that. After box culvert cleaning bond released 7/10. Greg should have forwarded the BMP (and box culvert) file with info over to SWD.

There is important information in that file, ie. correspondence from ENV & church relative to the BMP.

I stressed importance along the way to make sure those correspondences made it into the AB files.

Unfortunately Greg is not here now, so I can't ask him. Call him to see where that file is . It should have been forwarded to you all.

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

-----Original Message-----

From: Bld_E@james-city.va.us [mailto:Bld_E@james-city.va.us]
Sent: Friday, July 30, 2010 11:13 AM
To: Scott Thomas
Subject: Scan from a Xerox WorkCentre

Please open the attached document. It was scanned and sent to you using a Xerox WorkCentre.

Attachment File Type: PDF

WorkCentre Location: machine location not set
Device Name: XEROXJCC5665

Development Management

101-A Mounts Bay Road
P.O. Box 8784
Williamsburg, VA 23187-8784
P: 757-253-6671
F: 757-253-6822
devman@james-city.va.us



jccEgov.com

Code Compliance

757-253-6620
codecomp@james-city.va.us

Environmental Division

757-253-6670
environ@james-city.va.us

Planning and Zoning

757-253-6685
planning@james-city.va.us

August 26, 2009

Ms. Jean Dickey
St. Martin's Episcopal Church
1333 Jamestown Road
Williamsburg, VA 23185

Re: St. Martin's Episcopal Church
1333 Jamestown Road, County GPIN 4810100009
County Plan No.: SP-39-00

Dear Ms. Dickey:

It was a pleasure to meet with you, Carolyn, Larry and Cliff on Friday August 14, 2007 to discuss various maintenance issues associated with the constructed drainage and stormwater management plan system at the St. Martin's Episcopal Church on Jamestown Road. The purpose of the meeting was to review, by mutual site visit, field-related items pertaining to function of the system in accordance with the approved design plan and to ensure adequate protection of the church building and occupants. This letter is follow-up to some of the specific topics that were discussed and to address specific questions from church representatives.

Overview/Background

The site plan for the church expansion project came in to the County in March 2000. Preliminary approval for County Plan No. SP-39-00 was obtained through the County's Planning Division on August 22, 2000. Final approval was obtained on October 3, 2000. Prior to final site plan approval by all agencies, the Environmental Division approved the site erosion, drainage and stormwater management plan on September 28, 2000. A Land-Disturbing Permit (# 01-16) was issued for the project and a preconstruction meeting was held on October 2, 2000. The County currently holds a siltation bond for the project in the amount of \$30,000. In addition, prior to issuance of a Land-Disturbing Permit, a Declaration of Covenants, Inspection/Maintenance agreement was executed and recorded in County Land Records on August 23, 2000, Instrument # 000015956 (copy attached).

A 154 ft. long, 8' wide x 4 ft. high box culvert, situated under the church building, is used to bypass upslope drainage from approximately 70 acres through the church site. Design flow for the 100-year design storm event (Q100) is 105.3 cubic feet per second (cfs). USACOE authorization for stream impacts associated with the box culvert construction were issued on July 11, 2000 under Nationwide Permit # 39 (00-R1411). Components of the approved drainage and stormwater management plan site design included the box culvert, relocation of a portion of an existing onsite stream; reconstruction of manmade stormwater conveyance system open channel (265 feet long; 4 ft. bottom width; 2H:1V side slopes; 3 ft. deep), an infiltration type stormwater management BMP facility, and two interior onsite storm drainage systems – one situated in the parking lot and one at the back of the church. Some existing stormwater drainage conveyance systems were also utilized in the final site design.

Normal maintenance associated with these items, as outlined on approved plan SP-39-00, would not require additional wetland permits or would be covered under previously obtained general permits.

Inspection/Maintenance Agreement

The Declaration of Covenants - Inspection/Maintenance agreement, as described above, is recorded in the County's land records. It is an agreement made between the owner and the County. It runs with the title of the land. It binds the owner to perform maintenance on the drainage system including runoff control facilities, conveyance systems and easements to ensure these systems remain in proper working condition in accordance with the approved design standards and regulations. It does not include any elements situated within VDOT right-of-way. The agreement also ensures the County has a right of entry to perform inspections of the system. If the owner fails to maintain the systems in accordance with approved design standards standards and regulations, the County may perform the maintenance and/or repairs and assess the owners the cost of work and applicable penalties. Refer to the agreement for specific terms.

Resource Protection Area

There were questions and discussions about clearing and maintenance activities associated with Resource Protection Area.(RPA). Currently, the County general Chesapeake Bay Preservation Area (CBPA) map shows RPA on the parcel. The CBPA map is used as a guide to show general location of RPAs. In 2004, Chesapeake Bay Act and subsequent County Chesapeake Bay Preservation ordinance changes now require localities, as part of their environmental inventory, plan of development review and water quality impact assessment (WQIA) processes, a site specific evaluation to be conducted to determine whether water bodies on or adjacent to the development site have perennial flow, and that RPA boundaries adjusted, as necessary, on the site based on the results of the evaluation. Although the 2004 Chesapeake Bay Program changes resulted in the general CBPA map showing RPA on the site, there is no current proposal or plan of development which would trigger the need to do the evaluation or confirm RPA on the site (ie. perform an new environmental inventory).

Approval of the site plan (and associated drainage and stormwater management systems) was in October 2000. This is prior to 2004 regulation changes; therefore, these features are grandfathered and are allowed to be constructed and maintained in accordance with approved County Plan No. SP-39-00. The environmental inventory, as prepared at the time of site plan submittal and approval, is located on Sheet C2.1. The inventory table on the left side of the plan sheet shows that the RPA buffer was not applicable on the site. However, it should be noted that any new development concepts for expansion and accessory structures would need to be examined for consistency with the 2004 ordinance changes.

Therefore, in summary, features shown on the approved plan (ie. grading, utilities, etc.) and associated maintenance of those facilities are grandfathered from 2004 ordinance changes.

Definition of Maintenance

Another general question was to further define maintenance activities, especially with regard to the clearing and removal of vegetation, trash and debris and sediments. The following definitions were developed by the County for the Stormwater Management/BMP inventory and inspection program. Although developed for stormwater management/BMP facilities, for the most part, they would also apply to constructed stormwater conveyance systems (inlets, pipes, culvert, etc.) at the church.

Routine Maintenance is generally defined as: landscaping, cosmetic and aesthetic maintenance such as tree and shrub care; wetland plant care; reseeding and mulching; slope stabilization; grass mowing; pruning; filling and repair of slope gully erosion; animal control due to nuisance rodents; removal of invasive vegetation; minor sediment cleaning and general care taking in accordance with any approved maintenance and operation plans for the facility. Also includes removal of debris and other matter to the best of the Owner's ability where such debris or matter has slightly impeded or threatens to impede proper functioning or free flow of base or storm flow.

Non-Routine or Emergency Activities are generally defined as: the repair or replacement of necessary components that have partially or completely failed *and* directly impair the SWM/BMP facility from performing its proper control or treatment function; impose an immediate or potential safety hazard; impede base or storm flows; create flooding or erosion dangers to surrounding or downstream properties; or threaten the public's health, safety or welfare. Generally applies to essential (vital) interior structural and stormwater management components including embankments; risers and outlet barrels; trash racks and anti-vortex devices; emergency spillways; pretreatment forebays; seepage controls; drains; water quality or quantity control devices including orifices and weirs; outlet protections or energy dissipators; bank stabilization; major sediment removal (dredging); and any other special operational structures. Applicable components are usually interior to the physical functional boundary and essential to the proper control or treatment function of the SWM/BMP facility.

Clarification of Maintenance Areas

It was discussed that the County Environmental would provide an exhibit map to better define the maintenance areas. This would aid the church to clearly understand the locations and definitions of the maintenance areas and if a phased approach was necessary due to finances. A 1 inch = 60 ft. scale exhibit map is attached. Please refer to the map along with the descriptions outlined below. The map was prepared using information from the approved site plan.

Area 1 - Upstream Box Culvert Inlet

Clearing and removal of existing vegetation, trash and debris and sediments in the area just immediately upstream of the box culvert inlet headwall. Generally, this is an area 15 ft. in radius from the center of the headwall structure. Activities on offsite property are not permitted.

Area 2 - Box Culvert

Removal of vegetation, trash and debris, sediment and any obstructions within the flow area of the 154 ft. long, 8 x 4 reinforced concrete box culvert.

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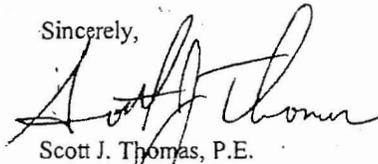
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Again, thanks for meeting with me. If you need to contact me further, my email is scottt@james-city.va.us and my phone number is 757-253-6639.

Sincerely,



Scott J. Thomas, P.E.
Director
Environmental Division

SJT/sjt

cc: Grég Johnson (via email)

Asbuilt/Reviews/SP3900.mc060

Pat Menichino

From: Scott Thomas
Sent: Friday, July 30, 2010 3:50 PM
To: Pat Menichino
Subject: FW: Box Culvert Measurements

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
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From: djean34026@aol.com [mailto:djean34026@aol.com]
Sent: Tuesday, March 23, 2010 7:20 PM
To: Scott Thomas
Subject: Re: Box Culvert Measurements

Scott,

Thank you so much!

Jean

-----Original Message-----

From: Scott Thomas <SCOTTT@james-city.va.us>
To: 'djean34026@aol.com' <djean34026@aol.com>
Cc: Joe Buchite <JBUCHITE@james-city.va.us>; Greg Johnson <GREGJ@james-city.va.us>
Sent: Tue, Mar 23, 2010 2:40 pm
Subject: RE: Box Culvert Measurements

Jean - The information in this form is acceptable.

Scott J. Thomas, P.E.
Director
James City County Environmental Division

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From: djean34026@aol.com [mailto:djean34026@aol.com]
Sent: Tuesday, March 23, 2010 9:41 AM
To: Scott Thomas

Cc: rector@stmartinswmbg.org; p.foote@cox.net; Mejulalw@aol.com

Subject: Fwd: Box Culvert Measurements

Mr. Thomas,

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Thank you for your patience

Jean Dickey

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From: Mark Rinaldi <mrinaldi@bushcos.com>

To: djean34026@aol.com

Cc: Mejulalw@aol.com; Linwood Burton <lburton@bushcos.com>

Sent: Tue, Mar 23, 2010 9:09 am

Subject: RE: Invoicing for St. Martin's Church Work

Ms. Dickey,

As you requested, we surveyed the box culvert invert in and invert out elevations on January 28, 2010. I understand you or someone from the church was present. We assumed a reference elevation to be the finished floor of the lower level building (situated above the box culvert); the elevation of the finished floor was assumed to be 54.26'. This elevation was shown on plans (not as-built drawings) provided by the church when we surveyed the box culvert.

Using 54.26' as a reference, we found the invert in elevation to be 41.35' (explained further below) and the invert out elevation to be 40.45. Both elevations are generally consistent with the site plan drawing we were provided when we began the box culvert clearing operation. With respect to the invert in, we actually found that there was a slight cross slope across the entrance to the box culvert, with the side facing the church measuring 41.35' and the side facing away from the church measuring 41.15'.

You also requested a quote for removal of the cemented rip-rap where the stream enters the Church property. I spoke with Linwood about this today and he asked me to inform you that he will provide you with a quote at a later time; he has not forgotten about your request.

Please respond if you have any further questions or requests for information or service.

Regards,

Mark Rinaldi

Vice President – Development

The Bush Companies

4029 Ironbound Road, Suite 300

Williamsburg, VA 23188

(757) 220-2874 Front Desk

(757) 220-7806 Direct Dial

(757) 564-8960 Fax

(757) 784-6175 Mobile

From: djean34026@aol.com [<mailto:djean34026@aol.com>]

Sent: Monday, March 15, 2010 1:39 PM

To: Mark Rinaldi
Cc: Mejulalw@aol.com
Subject: Re: Invoicing for St. Martin's Church Work

Mr. Rinaldi,

I have received both invoices, and will turn them in to the treasurer's office at St. Martin's tomorrow morning.

Mr. Burton promised us some measurements on the inverts of inlet and outlet of the box culvert. He also said he would give us a bid to remove some of the cemented riprap where the stream enters church property. Could you remind him of these? Thank you.

Jean Dickey

-----Original Message-----

From: Mark Rinaldi <mrinaldi@bushcos.com>
To: djean34026@aol.com
Cc: Mejulalw@aol.com
Sent: Mon, Mar 15, 2010 10:50 am
Subject: Invoicing for St. Martin's Church Work

Ms. Dickey and Mr. Williams,

Please find attached two (2) invoices for the work completed at the Church by Bush Construction.

While presently addressed to Ms. Dickey, Invoice #628-2010001 is for the culvert cleaning contract executed under Mr. Williams' authority as Junior Warden (totaling \$10,950.00). Invoice #628-2010002 is for the stream clearing effort downstream of the box culvert, executed under Ms. Dickey's authority as Junior Warden (totaling \$2,250.00) and also addressed to her attention.

Please contact me directly at 220-7806 if there are any questions with the attached invoices or with the work effort which was the subject of these invoices.

Thank you for the opportunity to have been of service to St. Martin's Episcopal Church.

Regards,

Mark Rinaldi
Vice President – Development
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(757) 564-8960 Fax
(757) 784-6175 Mobile

Pat Menichino

From: Scott Thomas
Sent: Friday, July 30, 2010 3:51 PM
To: Pat Menichino
Subject: FW: Information for You

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccgov.com
www.protectedwithpride.org

From: djean34026@aol.com [mailto:djean34026@aol.com]
Sent: Friday, April 23, 2010 9:16 AM
To: Scott Thomas
Subject: Re: Information for You

Thanks, Scott!

Yes, I've known about the meeting since the request came to the church office for use of the facility. I won't miss that meeting unless I'm in the hospital! We even rescheduled a conflicting meeting so more of our people can attend.

Jean Dickey

-----Original Message-----

From: Scott Thomas <SCOTTT@james-city.va.us>
To: 'djean34026@aol.com' <djean34026@aol.com>
Sent: Fri, Apr 23, 2010 8:51 am
Subject: Information for You

Jean

Hi. I recently received an email with some updates on stormwater program activities. One part of that was a reminder that the Mill Creek Watershed Baseline Report Stakeholder Meeting will be on May 20, 7:00 PM, at St. Martins Church, Jamestown Rd. A stakeholder meeting is an important component as property owners, civic groups, etc. have a chance to learn about what work has been done so far and it solicits input from what stakeholders think and what their goals are.

This meeting will review the draft baseline report of conditions within the watershed and will solicit input from stakeholders on the collected data. Once the baseline report is reviewed by stakeholders, work will continue on the full watershed management plan.

You may already know this, as of course it appears it's being held at the church, but I promised to keep you in the loop as I got information as you all have become pretty active in understanding the relationship of the watershed to your facility.

I am not sure how public this announcement is yet; but I did see it and wanted to give you a heads up on what I saw.

Talk to you later...

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

Pat Menichino

From: Scott Thomas
Sent: Friday, July 30, 2010 3:50 PM
To: Pat Menichino
Subject: FW: Box Culvert Measurements

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

From: djean34026@aol.com [mailto:djean34026@aol.com]
Sent: Tuesday, March 23, 2010 7:20 PM
To: Scott Thomas
Subject: Re: Box Culvert Measurements

Scott,

Thank you so much!

Jean

-----Original Message-----

From: Scott Thomas <SCOTTT@james-city.va.us>
To: 'djean34026@aol.com' <djean34026@aol.com>
Cc: Joe Buchite <JBUCHITE@james-city.va.us>; Greg Johnson <GREGJ@james-city.va.us>
Sent: Tue, Mar 23, 2010 2:40 pm
Subject: RE: Box Culvert Measurements

Jean - The information in this form is acceptable.

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

From: djean34026@aol.com [mailto:djean34026@aol.com]
Sent: Tuesday, March 23, 2010 9:41 AM
To: Scott Thomas

Cc: rector@stmartinswmbg.org; p.foote@cox.net; Mejulalw@aol.com

Subject: Fwd: Box Culvert Measurements

Mr. Thomas,

Mr. Rinaldi has sent to me the measurements made by his surveyor of the box culvert at St. Martin's. I am forwarding them to you. Please let me know if you need them in some more formal form, and I will arrange to provide it.

Thank you for your patience

Jean Dickey

-----Original Message-----

From: Mark Rinaldi <mrinaldi@bushcos.com>

To: djean34026@aol.com

Cc: Mejulalw@aol.com; Linwood Burton <lburton@bushcos.com>

Sent: Tue, Mar 23, 2010 9:09 am

Subject: RE: Invoicing for St. Martin's Church Work

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Cc: Mejulalw@aol.com
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Thank you for the opportunity to have been of service to St. Martin's Episcopal Church.

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(757) 564-8960 Fax
(757) 784-6175 Mobile

Pat Menichino

From: Scott Thomas
Sent: Friday, July 30, 2010 3:49 PM
To: Pat Menichino
Cc: Greg Johnson; Joe Buchite
Subject: St. Martins
Attachments: DOC001.PDF

Pat - here is one letter with my involvement with St. Martins. After this letter there was a lot of activity-correspondence between ENV and the church on what was needed to be done for bond release, education on the box culvert, education on the BMP or "frog pond" as they called it. Our focus during all of this was the box culvert function as it directly affected the building structure, rather than function of the BMP. Although this letter mentions the need for asbuilts/const cert for the BMP, the church put a great amount of expenditure into the box culvert cleaning and we backed off the BMP requirements a bit. It is documented in the AB file. I struggled with this a bit along the way, but do not think I did a formal waiver letter to AB/CC requirements, only through emails that we would not require the AB/CC. The BMP was built with a built soil lense, which during plan review we questioned the functionality based on geotechnical information. It has never worked being in a tailwater state due to elevations of pipe and elevations of water in pond. And the church understood that. After box culvert cleaning bond released 7/10. Greg should have forwarded the BMP (and box culvert) file with info over to SWD.

There is important information in that file, ie. correspondence from ENV & church relative to the BMP.

I stressed importance along the way to make sure those correspondences made it into the AB files.

Unfortunately Greg is not here now, so I can't ask him. Call him to see where that file is . It should have been forwarded to you all.

Scott J. Thomas, P.E.
Director
James City County Environmental Division

Visit:
www.jccegov.com
www.protectedwithpride.org

-----Original Message-----

From: Bld_E@james-city.va.us [mailto:Bld_E@james-city.va.us]
Sent: Friday, July 30, 2010 11:13 AM
To: Scott Thomas
Subject: Scan from a Xerox WorkCentre

Please open the attached document. It was scanned and sent to you using a Xerox WorkCentre.

Attachment File Type: PDF

WorkCentre Location: machine location not set
Device Name: XEROXJCC5665

Development Management

101-A Mounts Bay Road
P.O. Box 8784
Williamsburg, VA 23187-8784
P: 757-253-6671
F: 757-253-6822
devman@james-city.va.us



jccEgov.com

Code Compliance

757-253-6620
codecomp@james-city.va.us

Environmental Division

757-253-6670
environ@james-city.va.us

Planning and Zoning

757-253-6685
planning@james-city.va.us

August 26, 2009

Ms. Jean Dickey
St. Martin's Episcopal Church
1333 Jamestown Road
Williamsburg, VA 23185

Re: St. Martin's Episcopal Church
1333 Jamestown Road, County GPIN 4810100009
County Plan No.: SP-39-00

Dear Ms. Dickey:

It was a pleasure to meet with you, Carolyn, Larry and Cliff on Friday August 14, 2007 to discuss various maintenance issues associated with the constructed drainage and stormwater management plan system at the St. Martin's Episcopal Church on Jamestown Road. The purpose of the meeting was to review, by mutual site visit, field-related items pertaining to function of the system in accordance with the approved design plan and to ensure adequate protection of the church building and occupants. This letter is follow-up to some of the specific topics that were discussed and to address specific questions from church representatives.

Overview/Background

The site plan for the church expansion project came in to the County in March 2000. Preliminary approval for County Plan No. SP-39-00 was obtained through the County's Planning Division on August 22, 2000. Final approval was obtained on October 3, 2000. Prior to final site plan approval by all agencies, the Environmental Division approved the site erosion, drainage and stormwater management plan on September 28, 2000. A Land-Disturbing Permit (# 01-16) was issued for the project and a preconstruction meeting was held on October 2, 2000. The County currently holds a siltation bond for the project in the amount of \$30,000. In addition, prior to issuance of a Land-Disturbing Permit, a Declaration of Covenants, Inspection/Maintenance agreement was executed and recorded in County Land Records on August 23, 2000, Instrument # 000015956 (copy attached).

A 154 ft. long, 8' wide x 4 ft. high box culvert, situated under the church building, is used to bypass upslope drainage from approximately 70 acres through the church site. Design flow for the 100-year design storm event (Q100) is 105.3 cubic feet per second (cfs). USACOE authorization for stream impacts associated with the box culvert construction were issued on July 11, 2000 under Nationwide Permit # 39 (00-R1411). Components of the approved drainage and stormwater management plan site design included the box culvert, relocation of a portion of an existing onsite stream; reconstruction of manmade stormwater conveyance system open channel (265 feet long; 4 ft. bottom width; 2H:1V side slopes; 3 ft. deep), an infiltration type stormwater management BMP facility, and two interior onsite storm drainage systems – one situated in the parking lot and one at the back of the church. Some existing stormwater drainage conveyance systems were also utilized in the final site design.

Normal maintenance associated with these items, as outlined on approved plan SP-39-00, would not require additional wetland permits or would be covered under previously obtained general permits.

Inspection/Maintenance Agreement

The Declaration of Covenants - Inspection/Maintenance agreement, as described above, is recorded in the County's land records. It is an agreement made between the owner and the County. It runs with the title of the land. It binds the owner to perform maintenance on the drainage system including runoff control facilities, conveyance systems and easements to ensure these systems remain in proper working condition in accordance with the approved design standards and regulations. It does not include any elements situated within VDOT right-of-way. The agreement also ensures the County has a right of entry to perform inspections of the system. If the owner fails to maintain the systems in accordance with approved design standards and regulations, the County may perform the maintenance and/or repairs and assess the owners the cost of work and applicable penalties. Refer to the agreement for specific terms.

Resource Protection Area

There were questions and discussions about clearing and maintenance activities associated with Resource Protection Area (RPA). Currently, the County general Chesapeake Bay Preservation Area (CBPA) map shows RPA on the parcel. The CBPA map is used as a guide to show general location of RPAs. In 2004, Chesapeake Bay Act and subsequent County Chesapeake Bay Preservation ordinance changes now require localities, as part of their environmental inventory, plan of development review and water quality impact assessment (WQIA) processes, a site specific evaluation to be conducted to determine whether water bodies on or adjacent to the development site have perennial flow, and that RPA boundaries adjusted, as necessary, on the site based on the results of the evaluation. Although the 2004 Chesapeake Bay Program changes resulted in the general CBPA map showing RPA on the site, there is no current proposal or plan of development which would trigger the need to do the evaluation or confirm RPA on the site (ie. perform an new environmental inventory).

Approval of the site plan (and associated drainage and stormwater management systems) was in October 2000. This is prior to 2004 regulation changes; therefore, these features are grandfathered and are allowed to be constructed and maintained in accordance with approved County Plan No. SP-39-00. The environmental inventory, as prepared at the time of site plan submittal and approval, is located on Sheet C2.1. The inventory table on the left side of the plan sheet shows that the RPA buffer was not applicable on the site. However, it should be noted that any new development concepts for expansion and accessory structures would need to be examined for consistency with the 2004 ordinance changes.

Therefore, in summary, features shown on the approved plan (ie. grading, utilities, etc.) and associated maintenance of those facilities are grandfathered from 2004 ordinance changes.

Definition of Maintenance

Another general question was to further define maintenance activities, especially with regard to the clearing and removal of vegetation, trash and debris and sediments. The following definitions were developed by the County for the Stormwater Management/BMP inventory and inspection program. Although developed for stormwater management/BMP facilities, for the most part, they would also apply to constructed stormwater conveyance systems (inlets, pipes, culvert, etc.) at the church.

Routine Maintenance is generally defined as: landscaping, cosmetic and aesthetic maintenance such as tree and shrub care; wetland plant care; reseeding and mulching; slope stabilization; grass mowing; pruning; filling and repair of slope gully erosion; animal control due to nuisance rodents; removal of invasive vegetation; minor sediment cleaning and general care taking in accordance with any approved maintenance and operation plans for the facility. Also includes removal of debris and other matter to the best of the Owner's ability where such debris or matter has slightly impeded or threatens to impede proper functioning or free flow of base or storm flow.

Non-Routine or Emergency Activities are generally defined as: the repair or replacement of necessary components that have partially or completely failed *and* directly impair the SWM/BMP facility from performing its proper control or treatment function; impose an immediate or potential safety hazard; impede base or storm flows; create flooding or erosion dangers to surrounding or downstream properties; or threaten the public's health, safety or welfare. Generally applies to essential (vital) interior structural and stormwater management components including embankments; risers and outlet barrels; trash racks and anti-vortex devices; emergency spillways; pretreatment forebays; seepage controls; drains; water quality or quantity control devices including orifices and weirs; outlet protections or energy dissipators; bank stabilization; major sediment removal (dredging); and any other special operational structures. Applicable components are usually interior to the physical functional boundary and essential to the proper control or treatment function of the SWM/BMP facility.

Clarification of Maintenance Areas

It was discussed that the County Environmental would provide an exhibit map to better define the maintenance areas. This would aid the church to clearly understand the locations and definitions of the maintenance areas and if a phased approach was necessary due to finances. A 1 inch = 60 ft. scale exhibit map is attached. Please refer to the map along with the descriptions outlined below. The map was prepared using information from the approved site plan.

Area 1 - Upstream Box Culvert Inlet

Clearing and removal of existing vegetation, trash and debris and sediments in the area just immediately upstream of the box culvert inlet headwall. Generally, this is an area 15 ft. in radius from the center of the headwall structure. Activities on offsite property are not permitted.

Area 2 - Box Culvert

Removal of vegetation, trash and debris, sediment and any obstructions within the flow area of the 154 ft. long, 8 x 4 reinforced concrete box culvert.

Area 3 - Downstream Box Culvert Outlet

Clearing and removal of existing vegetation, trash and debris, and sediments in the area just immediately downstream of the box culvert outlet headwall (downstream side). Generally, this is an area 15 ft. in radius from the center of the headwall structure. Includes cleaning of any concrete or riprap stone pads.

Area 4 - Stormwater Conveyance Channel

Clearing and removal of vegetation, trash and debris, sediment and any obstruction within the design flow area of the relocated stream, which is a manmade stormwater conveyance open channel section 4 ft. wide on the bottom, 3 ft. deep and 2H:1V side slopes. Therefore, the total width is 16 feet, resulting in 8 feet either side from center of the channel. No authorization is given for clearing of vegetation outside this zone.

Area 5 - Infiltration BMP Basin

Clearing and removal of vegetation, trash and debris and sediment from within the BMP area to ensure structural integrity and maintain proper stormwater function. Usually trees, shrubs and woody vegetation are not permitted to grow on any part of pond embankments constructed using engineered (compacted) fills. Saturated roots mats combined with high wind can cause trees to overtop and accelerate soil erosion and embankment failure conditions. For older facilities which may have established tree growth, we recommend that trees be cut flush to or below ground level and be maintained in that fashion as to not disturb root systems that may already be extensive. Efforts should then be made to reduce reestablishment and replace the tree growth with an established low-maintenance grass covering. Removal of vegetation within "interior" BMP area is not required, only the dam embankment and the vicinity around the storm pipe outfall (ie. pipe from the parking lot system).

Previously Outlined Items

Consistent with our previous June 25th 2009 meeting and subsequent July 8th 2009 email, the requirements necessary to obtain reduction/release of the siltation surety being held for the project are listed below.

Construction certification for the small pond BMP in the southeast corner of the site. Certification can be with the template form I provided to you in the packet. The certification can be by the engineer who monitored construction. If not possible to do this, we can allow a postconstruction certification whereas an engineer performs and inspection of the facility and provides the certification.

Asbuilts (Record Drawings) for the small pond BMP in the southeast corner of the site. An asbuilt drawing is a drawing that shows dimensions and elevations and features of the constructed pond in order to demonstrate that it was constructed in accordance with the plan. The asbuilt needs to be certified by an engineer. The certification form is also in the packet I gave to you.

Box Culvert elevations at the inlet and outlet ends of the culvert as constructed to ensure it was built in accordance with the plan. As you know the box culvert runs underneath the building expansion. This information can be shown on the asbuilt plan.

Field-Related action items such as removal of existing vegetation, sediments, trash and debris within approved plan stormwater drainage and stormwater management features. This was further described at our onsite meeting held on August 14th 2009. This items were not known at the time of our June 25th meeting.

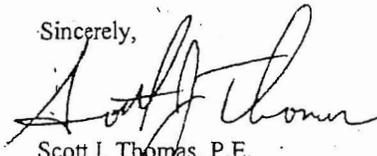
County's PRIDE Program

As mentioned at our meeting, it was felt that there are several opportunities at property for the church to team up with the County's PRIDE (Protecting Resources in Delicate Environments) team to either perform a demonstration project or apply for a mini-grant. Please visit the County's PRIDE water quality education website at www.protectedwithpride.org

Visit the "News and Projects" section of the website to see where we have teamed with various Homeowner Associations and other church civic groups in the past to perform demonstration projects. Demonstration projects, costs which normal are covered entirely by the PRIDE program, are an excellent opportunity to teach about watershed and water quality education. Demonstration projects are usually performed by the County with help from church and/or other community volunteers and they are usually held in May or October of the year. Also visit the "Mini-Grant Program" section of the website to see how \$500 mini-grants are available for eligible water quality projects. Projects under the mini-grant program are usually performed by the church, with assistance from the County PRIDE team, and are not demonstration projects. Some examples of grant awards include: rain gardens, BMP plantings, and erosion control projects.

Again, thanks for meeting with me. If you need to contact me further, my email is scottt@james-city.va.us and my phone number is 757-253-6639.

Sincerely,



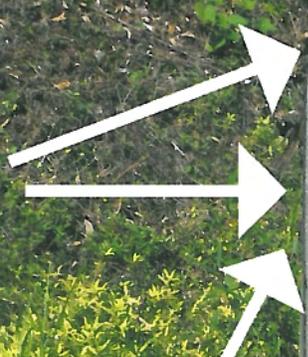
Scott J. Thomas, P.E.
Director
Environmental Division

SJT/sjt

cc: Grég Johnson (via email)

Asbuilt/Reviews/SP3900.mc060

SAND

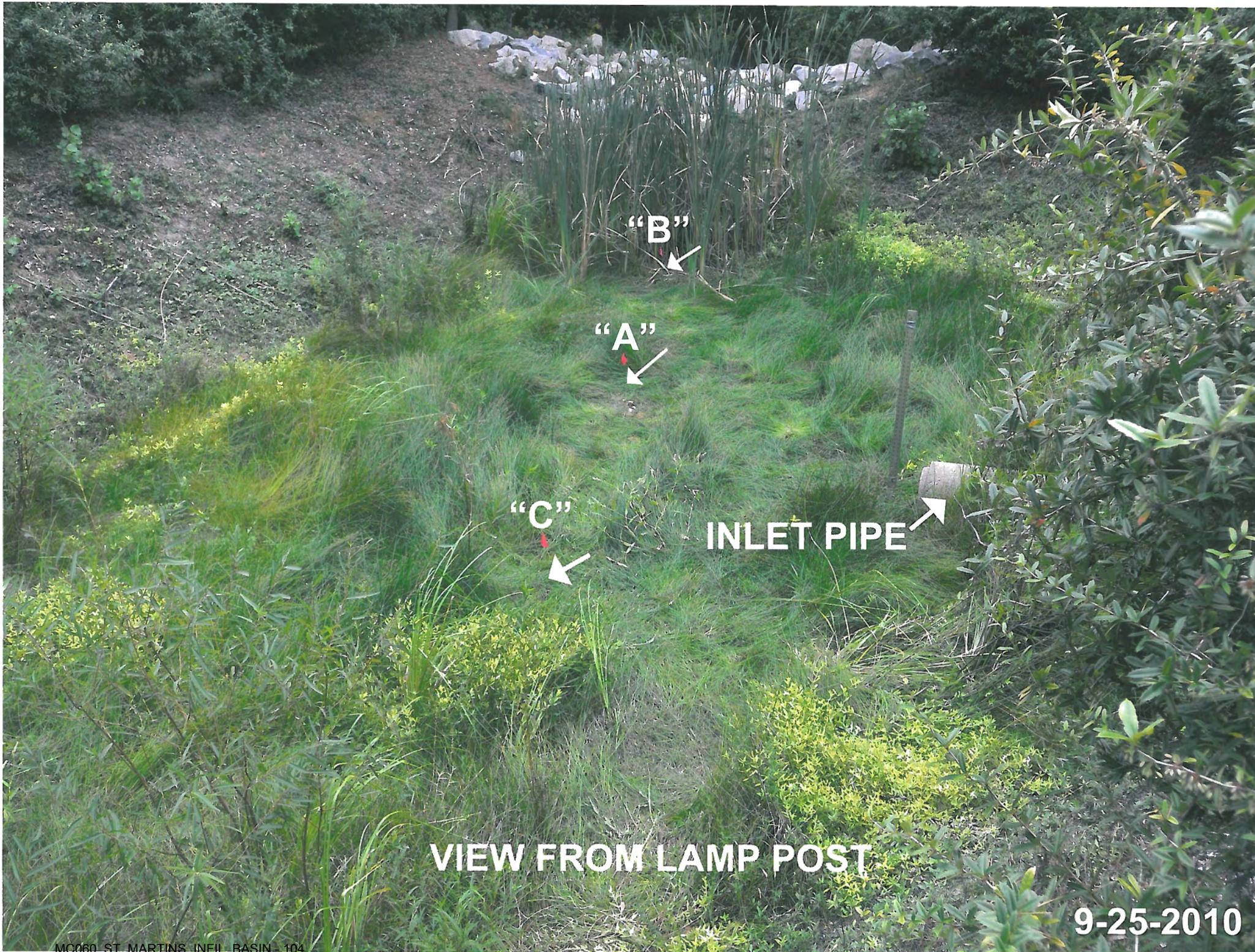


**BOTTOM OF
HOLE "A"**

CLAY



9-25-2010



"B"

"A"

"C"

INLET PIPE

VIEW FROM LAMP POST

9-25-2010

2011-07-12

LOWERING THE
BMP DAM

START

2011-07-12

LOWERING THE
BMP DAM



2011-07-12

LOWERING THE
BMP DAM



2011-07-12

LOWERING THE
BMP DAM

SPILLWAY

2011-07-12

LOWERING THE
BMP DAM

DOWN STREAM

2011-07-12

LOWERING THE
BMP DAM

POND SIDE

2011-07-12

LOWERING THE
BMP DAM

FINISH

SURFACE



WATER LEVEL



BOTTOM OF HOLE



HOLE "A"

9-25-2010



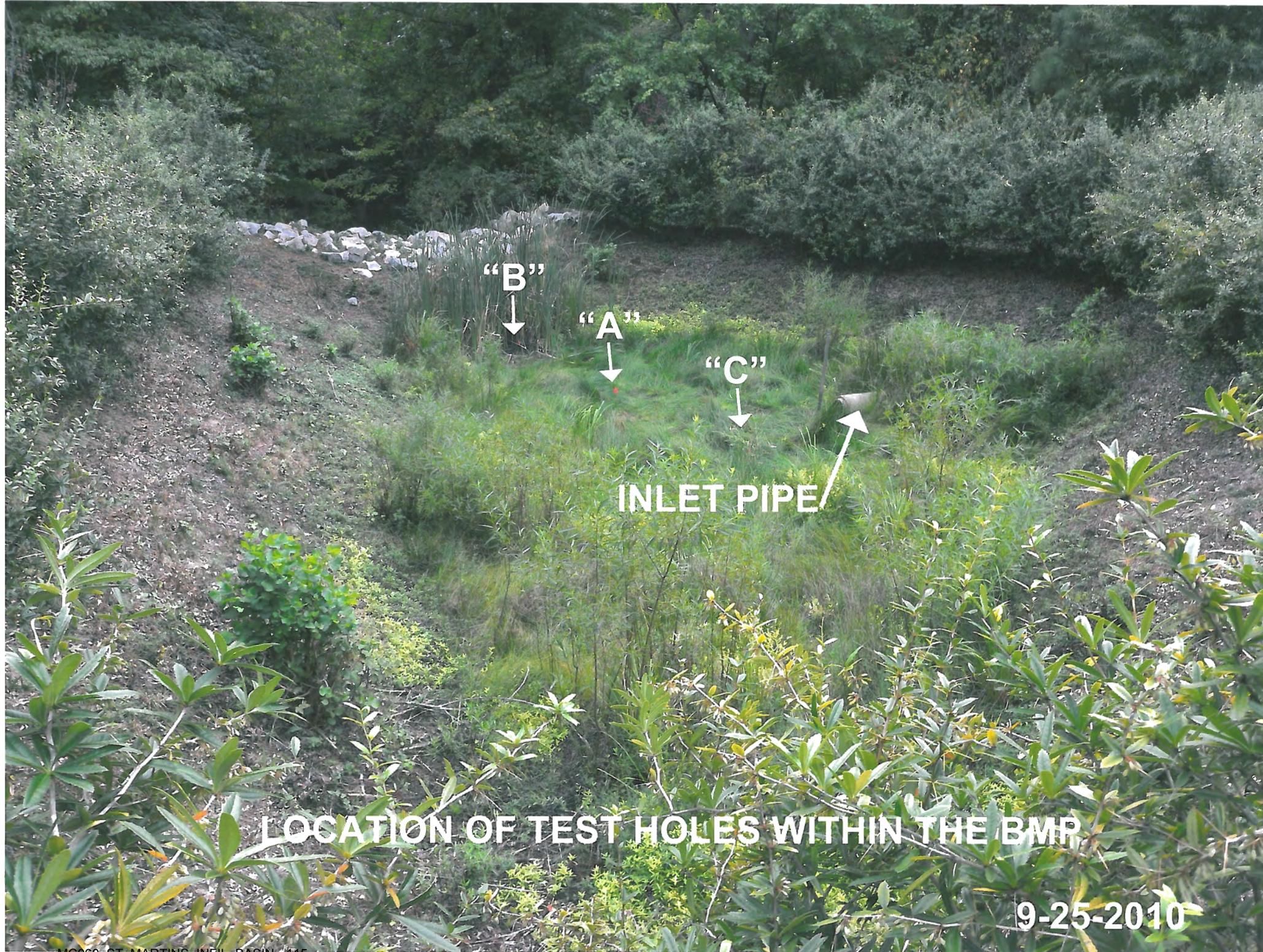
**SURFACE SHOWING VEGETATION
AND SILT BEFORE DIGGING HOLE "A"**

9-25-2010



DEPTH OF SILT AT HOLE "A"

9-25-2010



"B"

"A"

"C"

INLET PIPE

LOCATION OF TEST HOLES WITHIN THE BMP

9-25-2010

Date Record Created: [REDACTED]

Created By: Scott Thomas [REDACTED]

WS_BMPNO:
MC060

WATERSHED MC
BMP ID NO 060
PLAN NO SP-39-00
TAX PARCEL (48-01)(01-09)
PIN NO 4810100009
CONSTRUCTION DATE
PROJECT NAME St. Martins Episcopal Church
FACILITY LOCATION 1333 Jamestown Road
CITY-STATE Williamsburg, VA
CURRENT OWNER St. Martins Episcopal Church
OWNER ADDRESS 133 Jamestown Road
OWNER ADDRESS 2
CITY-STATE-ZIP CODE Williamsburg, VA 23185
OWNER PHONE 229-1111
MAINT AGREEMENT Yes
EMERG ACTION PLAN No

MAINTENANCE PLAN Yes
SITE AREA acre 4.17
LAND USE B-1 Church
old BMP TYP Infiltration Basin
JCC BMP CODE C4 Infiltration Basin 1.0
POINT VALUE

SVC DRAIN AREA acres 0.93

SERVICE AREA DESCRI Parking lots and site
IMPERV AREA acres 0.00
RECV STREAM
EXT DET-WQ-CTRL Yes
WTR QUAL VOL acre-ft 0.052
CHAN PROT CTRL Yes
CHAN PROT VOL acre-ft 0.1345
SW/FLOOD CONTROL No
GEOTECH REPORT No

CTRL STRUC DESC
CTRL STRUC SIZE inches
OTLT BARRL DESC
OTLT BARRL SIZE inch

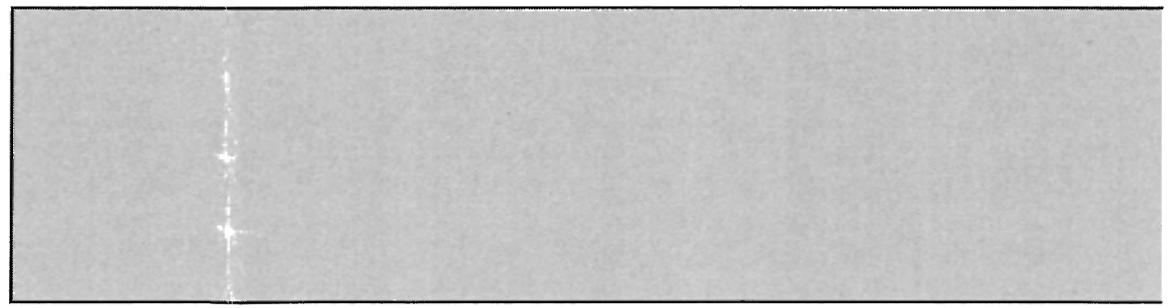
EMERG SPILLWAY No
DESIGN HW ELEV
PERM POOL ELE
2-YR OUTFLOW cfs 0.00
10-YR OUTFLOW cfs 0.00
REC DRAWING No
CONSTR CERTI No

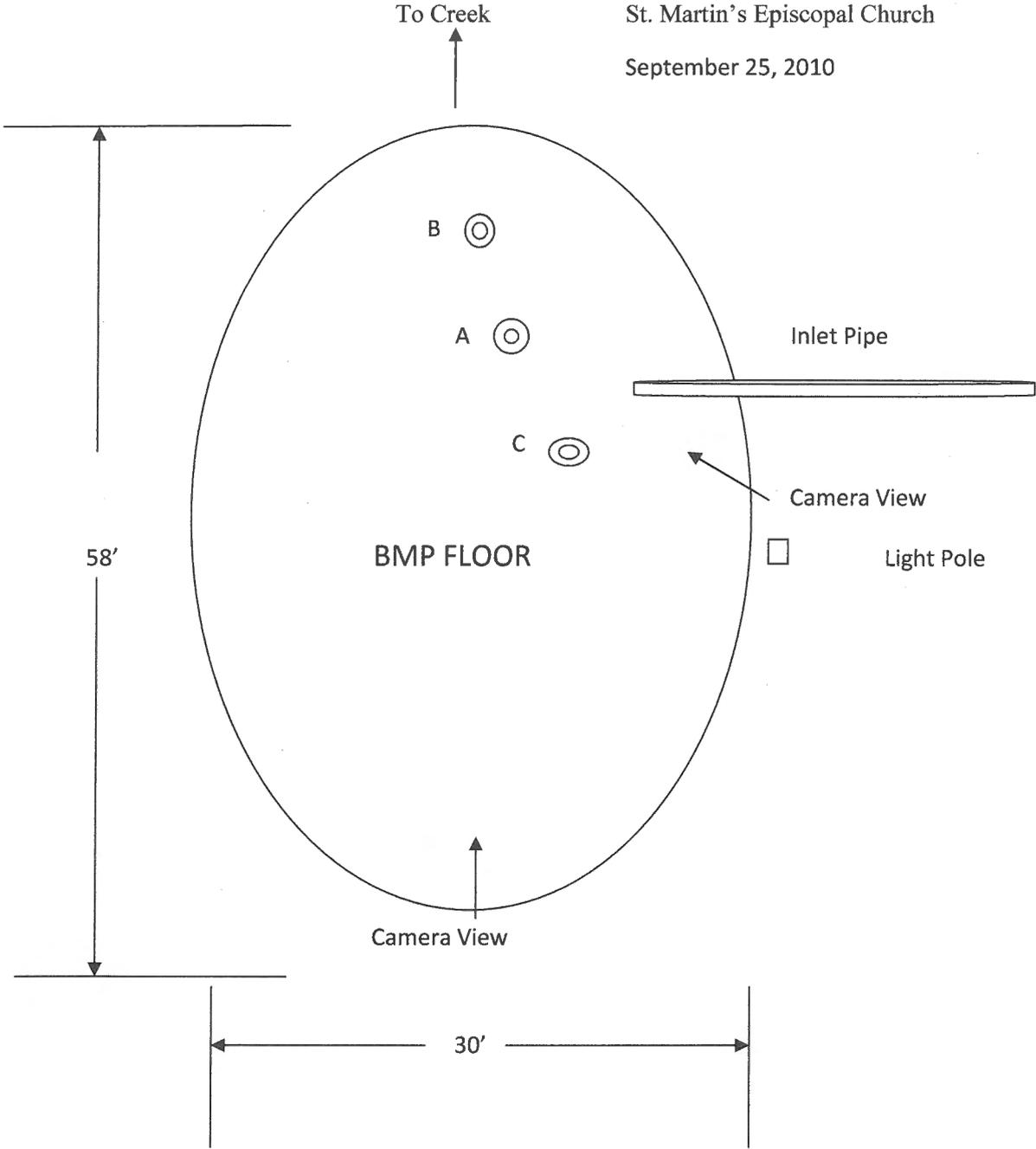
LAST INSP DATE
INTERNAL RATING
MISC/COMMENTS
 BMP using redev methods. 3.09 lbs per year req; 5.73 lbs achieved. BMP 50% removal. Onsite 8 x 4 box culv under building.

Inspected by: [REDACTED]

[Get Last BMP No](#) | [Return to Menu](#)

Additional Comments:





SKETCH OF FLOOR OF POND, NOT TO SCALE

We defined the floor of the pond by the demarcation line of the dominant vegetation as we approached the rise of the bank.

"A" was the first hole dug. It was about 35' from the light pole and 10' from the center of the end of the inlet pipe. We found 2-3" of black silt, then about 24" of coarse sand, then tan clay. We reached water at 21" below the surface.

"B" was the second hole, about 45' from the light pole, into the beginning of the cattails. After finding a trace of silt, we dug through 20" of solid clay. We abandoned the hole at that point.

"C", the third hole, was 25' from the light pole. After a trace of silt, we found coarse sand. We reached water at 22" below the surface, and clay about 26".

ENVIRONMENTAL DIVISION REVIEW COMMENTS
ST. MARTINS EPISCOPAL CHURCH
PLAN NO. SP - 39 - 00
September 7, 2000

General Comments:

1. Wetlands Permit. Correspondence dated July 6th 2000 and meetings with the US Army Corp. of Engineers indicated the intent to pursue a Nationwide Permit 39. Evidence of a Pre-Construction Notification (PCN) was filed with the USACOE Norfolk District via letter dated July 6th to Mr. Robert Hume. This letter indicating that the Owner/Applicant is awaiting receipt of the NWP 39. A Land Disturbance Permit cannot be issued for remaining site work activities, especially associated with the stream (culvert) enclosure until adequate evidence is presented that this permit has been obtained or is not necessary for project activities.

Erosion & Sediment Control Plan:

2. E&SC Plan. Silt fence is still shown across the main stream channel at two locations on Sheet C3.1. Silt fence is not recommended in concentrated flow areas greater than 1 cfs. It is still unclear whether the silt fence as shown on sheet C3.1 is for initial demolition operations or if it is required as a control during site grading operations.
3. E&SC Plan. Temporary diversion dikes added to the plan upslope and west of the main stream and stream diversion area must positively drain and direct upslope runoff around the work area. Show directional flow arrows or provide a note on the box culvert E&SC plan to ensure the temporary diversion dikes are placed, constructed and maintained as intended.
4. Temporary Stream Channel Diversion. No bottom width dimension was specified for the Type B diversion as shown on Sheet C5.1. Add a note on Sheet C5.1 referring to VESCH Minimum Standard & Spec. 3.25 (Utility Stream Crossings) to ensure the temporary stream channel diversion is properly maintained during its use.
5. Channel Adequacy. Previous comment # 11 was not fully addressed. Although the computations as provided reflect adequate channel capacity, the computations do not reflect whether the natural channel has adequate erosion resistance for the 2-year design storm event. Minimum Standard #19 of the VESCH requires natural channels to be analyzed by the use of the 2-year storm to verify stormwater will not cause erosion of channel bed or banks. (Note: This is for adequacy of the existing natural downstream channel below the box culvert and new, realigned channel improvement section.)
6. Outlet Protection. Provide necessary computations and details for the outlet protection (OP) which was added to the outlet end of the box culvert. Include dimensions and class of riprap required. Refer to Minimum Standard & Spec. 3.18 and 3.19 of the VESCH.

Stormwater Management / Drainage Plan:

7. CBPA Computations. Previous comment # 14 was not addressed. Pollutant load computations need to be performed using REDEVELOPMENT calculation procedure in accordance with the Chesapeake Bay Local Assistance manual. The revised pollutant load computations as submitted were again based on new development computation procedure.
8. Revised Hydrology. No hydrologic computations (or summaries) were provided to support the revised Q100 value of 105 cfs (previously Q100 of 198 cfs). This information is critical to properly review final design of the stream enclosure. (Note: a revised drainage map showing subarea locations, sizes and time of concentration flow paths was provided).

9. Box Culvert Design. At a minimum, please confirm if the controlling 100-year headwater elevation as computed at the upstream side of the box culvert (Elevation of 43.85) is at an elevation below the basement floor elevation of the existing "subject" building within the Williamsburg Office Park. The "subject" building was the building complex as discussed and observed during our site visit on August 4th 2000. This building was closest horizontally to the existing stream channel and closest vertically to the box culvert invert elevation. Backwater effects due to installation of the new box culvert cannot impact existing buildings or structures. *(Note: The assumption that the upstream channel itself is of sufficient depth to handle backwater effects from the new box culvert is not valid. Although the channel is 2.7 to 3.67 feet deep at the office park, basic Mannings open-channel flow computations do not properly consider the effects of backwater due to obstructions such as culverts and bridges as compared to water surface profile models such as HEC-2, HEC-RAS, WSPRO, etc.)*
10. Channel Improvements. No computations were provided for design of the channel improvement section (Section A-A) as shown on Sheet C5.2. The proposed new section is of trapezoidal shape with a bottom width of 1 foot and 2H:1V sideslopes. A minimum depth is needed for the 2H:1V sideslope portion of the channel section. In accordance with VESCH 3.17 (stormwater conveyance channels) and MS # 19 of the VESCH, if channel modifications are performed, the capacity of the channel must be sufficient to convey the 10-year storm without overtopping the banks and velocity must be acceptable for the 2-year storm. Channel bed and bank for this section is the 2H:1V sloped portion of the channel, not the entire floodway or overbank section.
11. SWM/BMP Facility. As discussed at our meeting of August 4th, JCC BMP Group C (Infiltration) guidelines require at least 4 feet of vertical separation between the bottom of the facility to the seasonal high water table. It was our understanding that a request to vary from the minimum standard could be provided for this BMP, if proper supporting information was provided. Response to previous comment # 21k only requests to vary from the standard. Supporting information would generally include a simple assessment of boring information obtained for the project (from a soil and groundwater perspective) and what effect a higher groundwater table would have on the designed BMP facility. Also, provisions were to be included on the design plan to perform a test boring at the BMP location, once sitework was commenced, to confirm soil/groundwater conditions and design assumptions.

ENVIRONMENTAL DIVISION REVIEW COMMENTS
ST. MARTINS EPISCOPAL CHURCH
PLAN NO. SP - 39 - 00
July 21, 2000

MDW / SJT

General Comments:

1. Existing Septic Drainfields. A parking area and a building pad site are proposed at the two existing septic tank and drainfield locations. For construction purposes, provide information on the plan concerning any special overexcavation, backfill and compaction required for areas above or around these locations.

Chesapeake Bay Preservation:

2. Environmental Inventory. Previous comment # 7 was not fully addressed. It appears only steep slope areas were identified on the plan. Components that are not present should be so identified in the inventory. Refer to Section 23-10(2) of the Chesapeake Bay Preservation ordinance for all inventory components.

Erosion & Sediment Control Plan:

3. E&SC Plan. Previous comment # 14 was not addressed fully. In general, the erosion and sediment control plan and sequences of construction, as revised, are still somewhat unclear and conflicting. Although site development may be simplistic in nature, drainage and erosion control components for the site are more complex. The E&SC plan needs to be clear and specific and address disturbance and measures associated with each distinct work phase including: initial clearing; demolition; utility relocations; temporary stream diversion; box culvert installation; channel improvements (downstream of the box culvert) and general site work. For example, Sheet C3.1 shows erosion & sediment control measures on the site demolition plan. The plan shows placement of silt fence across the original stream. This silt fence would not be placed during the site demolition phase. It is a control which would be installed once the box culvert and its downstream channel improvement are complete and remaining site grading operations are being performed. Also, grading impacts associated with the temporary stream diversion were not shown. As previously stated, a phased erosion and sediment control plan (with associated sequences of construction) may be necessary for this project.
4. Temporary Stockpile Areas. The west portion of the laydown area shown on Sheet C2.1 will conflict with the location of the proposed BMP.
5. Limits of Work. The limits of work were shown on Sheet C3.1. The limit surrounds the site, which could result in clear cutting and removal of all existing vegetation within the work area. Any individual trees or groups of trees that are planned to be saved or left in place should be identified with tree protection measures. This is especially applicable along the west perimeter of the site where it appears some existing vegetation could be saved outside the site's cut/fill areas, the proposed sanitary sewer and the stream diversion/relocation area.
6. Clearing Plan. A label on the bottom of Plan Sheet C3.1 calls out the limits of clearing as the new treeline. The proposed treeline and associated tree protection are inside of this line. Adjust either the limits of clearing or the new treeline.
7. Soils Data. No site soils data was found in the plans or attachments. Provide a map and descriptions based on the James City and York Counties and the City of Williamsburg Soil Survey (issued 1985).

8. Temporary Stream Channel Diversion (prior to installation of the box culvert).
 - 8a) On Plan Sheet C3.1, two stream relocation notes are provided. One refers to new ditch section A-A. The second refers to the relocated existing ditch. Both notes refer to details on Sheet C4.1. It appears stream diversion channel details are on Sheet C5.1.
 - 8b) Clearly and consistently show the temporary stream channel diversion start and end points on the box culvert construction and grading/drainage plan.
 - 8c) The alignment of the temporary stream diversion as shown on Sheet C5.1 is in a uphill direction between contour El. 42 and El. 44. There may be considerable amount of grading required to establish a positive draining alignment as shown. Temporary grading may extend the limits of clearing outward and impact the proposed sanitary sewer location. Impacts must be assessed and identified.
 - 8d) Include an erosion and sediment control plan and/or sequence of construction specific to temporary stream channel diversion activities.
 - 8e) Specify which type of diversion channel lining is to be used per Minimum Standard 3.25 of the VESCH. A Type A, B or C diversion channel lining should be selected based on expected velocities for bank full conditions. The diversion type shall be clearly specified on the construction plan. Channel computations shall be submitted to support the selected temporary lining.
9. Diversion Dikes. Add diversion dikes as necessary to prevent upstream drainage from entering disturbed work areas for the temporary stream channel diversion, box culvert or building pad site. Drainage should be directed to the existing stream or box culvert entrance. Avoid additional clearing to install temporary diversion dikes.
10. Sequence of Construction. Plan sheet numbers are missing from the box culvert sequence of construction shown on Sheet C5.2.
11. Channel Adequacy. Previous comment # 17 was not addressed. An adequacy analyses for velocity and capacity is necessary for the man-made channel segment downstream of the box culvert and for the receiving natural stream channel segment between the man-made segment and the cross-culvert at Jamestown Road.
12. Outlet Protection. There are no provisions for outlet protection or energy dissipation at the box culvert outlet.
13. Miscellaneous. Remove miscellaneous SF labels at the top of Plan Sheet C3.1 and C5.2. Use different line types to differentiate between existing and proposed contours on all applicable plan sheets. Provide existing topography on Plan Sheet C6.1. Show the box culvert on utility plan Sheet C6.2.

Stormwater Management / Drainage Plan:

14. CBPA Computations. Since site improvements are considered redevelopment, traditional pollutant load computations are necessary, rather than conformance with the County 10 point system for new development. Based on computations submitted, a required removal efficiency of 43.5 percent was determined for the BMP. A JCC Type C-4 BMP (infiltration basin), which has an assigned 60 percent removal efficiency value, was selected. However, efficiency computations (43.5 % required) were based on new development calculation procedures. Please confirm if the BMP type selected meets pollutant removal requirements based on redevelopment calculation procedure. Refer to the Chesapeake Bay Local Assistance Manual for redevelopment calculation procedure worksheets.

15. Drainage Basin. Previous comment # 22 was not fully addressed. The total drainage area for design of the box culvert and the channel improvement segment downstream of the box culvert is still not defined. A previous value of 60.10 acres did not include area north of US 199 in the City of Williamsburg (Berkeley Hills Professional Park). Also, computations for the time of concentration of 30 minutes to the analyses point were not submitted as previously requested.
16. Box Culvert Design. Previous comment # 23 was not fully addressed. Headwater computations were not provided and tailwater depth was not considered for box culvert design. Without headwater depths, backwater effects on upstream property/structures cannot be assessed. Backwater effects should be based on either the maximum peak flow (no attenuation) or the actual (attenuated) flow for the design 50-year event and 100-year check storm. If the latter is selected, it requires confirmation by a network model or storage-indication routings, which fully consider inlet or outlet control and roadway overtopping, rather than just pipe-carrying capacity for each of the three offsite, upslope culverts at Points A, B and C. In either case, use the discharge to determine headwater depth (or elevation) and examine upstream impacts. *(Note: The question is not the design concept. The question is validity of the computed attenuated value of 72 cfs shown at the box culvert inlet and the subsequent lack of backwater examination. Flow restriction determinations were made solely on pipe-carrying capacity, without regard to culvert inlet or outlet control or roadway overtopping. Also, there is no indication as to what design storm the assumptions apply to. It would not appear that upstream culverts at points A, B or C could handle (pass) the design 50-year or check 100-year events, without overtopping the smaller roadways which service the office park. Roadway overtopping would result in higher downstream discharges than that shown.)*
17. Box Culvert. On Sheet C5.2, add a deflection angle for the downstream box culvert turn similar to the upstream turn. Also, further specification is needed for the box culvert VDOT - BCS designation based on the cover configuration (BCS-02, BCS-05, BCS-10, ..., etc.).
18. Channel Improvements. Provide a typical channel section and computations to support the lining required for the permanent (relocated) channel segment to be graded and constructed between the box culvert outfall and the original stream bed.
19. Inlet/Storm Drain Computations. Previous comment # 28 was not addressed. No inlet or hydraulic grade line computations were found in the revised plans or attachments.
20. Storm Drain Computations. Submit revised storm drain computations for storm drain systems A and B. Drainage areas changed for System A compared to the previously submission. For System B, the entire layout and configuration changed, thus previous computations are void.
21. SWM/BMP Facility. Since the last submission, the stormwater management plan for the site was reconfigured. The manufactured BMP units were eliminated and an infiltration basin was added to the plan. The following comments are specific to the new SWM/BMP facility:
 - 21a) Clearly address when the BMP is to be installed in all applicable construction sequences.
 - 21b) Provide erosion and sediment controls to protect the facility during land-disturbing activities and prior to stabilization of contributing areas.
 - 21c) The computations show inflow into the facility based on 0.63 acres at C factor of 0.90. The drainage subarea map shows 0.93 acres contributing to the basin.
 - 21d) Provide information for outflows (releases) over the emergency overflow and show design water surface elevations within the basin for the 1-, 2-, 10- and 100-year storm events.
 - 21e) Address pretreatment as part of the new BMP design. Pretreatment shall be provided for storm drain pipes discharging directly to infiltration systems.

- 21f) Clearly show surface dimensions (length and width) required for the sand layer below the graded bottom of the infiltration facility. Computations show a bottom area requirement of 62.22 square feet.
 - 21g) Provide computations to show the infiltration basin fully dewater the entire water quality volume (Wqv) within 24 hours.
 - 21h) Provide specifications for the type of sand required in the basin.
 - 21i) Show and provide specifications for geotextile lining around the sand envelope.
 - 21j) Provide additional information for the type and dimensions of the gravel emergency overflow and whether outlet protection is needed on the downstream side to dissipate energy and prevent erosion along the existing downstream natural slope .
 - 21k) JCC BMP Group C (Infiltration) guidelines require at least 4 feet of vertical separation between the bottom of the facility to the seasonal high water table. The detail on Sheet C8.1 shows a vertical difference of only 2 feet.
 - 21l) Provide a maintenance plan for the infiltration basin.
 - 21m) Geotechnical. No data was submitted to show Initial Feasibility Testing and/or Concept Design Testing requirements were met for the infiltration basin or to substantiate the design infiltration-percolation rate at 10 feet per day. Reference page 45 and Appendix E of the JCC BMP manual and submit a geotechnical report, data, logs and/or testing results as necessary.
22. Quantity Control. Previous comment # 26 was not fully addressed. A response of "new BMP installed" does not provide enough information to substantiate that County stream channel protection criteria or Minimum Standard # 19 of the VESCH have been satisfied. Since the new BMP as proposed is a BMP infiltration basin, at a minimum, combined release from the BMP and "uncontrolled" bypass area via storm drain systems A and B, should result in adequate capacity and erosion resistance in the natural downstream channel for the 2-year storm event.
23. Due to the extent of these erosion and sediment control, drainage and stormwater management comments, a meeting or additional contact may be warranted with the Environmental Division. If clarifications are necessary, contact our office at 757-253-6639 or 757-253-6673..

JAMES CITY COUNTY ENVIRONMENTAL DIVISION

Surety Tracking Sheet

Date: 12/1/08

Due Date: _____

Project Name: ST Martins Episcopal Church

Requested By: _____ Phone #: _____

Date Notified: _____ Case Number: SP-039-00

Siltation Surety: Original \$ _____ Current \$ 30,000 Needed \$ 0

*maximum reduction of 80% of original bond amount unless project is to be released

- Calculate Evaluate/Reduce Release

Work to be completed for SILTATION Surety

- Stabilization of all disturbed areas
Removal of temporary erosion control measures
Submission of as-built drawings for stormwater management facility
Submission of construction certification for the stormwater management facility
Completion of field-related BMP items
Other -
Comments-

Subdivision Surety: Original \$ _____ Current \$ _____ Needed \$ _____

*maximum reduction of 80% of original bond amount unless project is to be released

- Calculate Evaluate/Reduce Release

Work to be completed for SUBDIVISION Surety

- Paving of streets
Dedication of streets to Virginia Dept of Transportation (VDOT) Amount Needed \$
Completion of water and sewer systems (JCSA) Amount Needed \$
Completion of water and sewer punchlist items
Submission of as-built drawings for water and sewer systems
Installation of street lights and street signs
Other -
Comments-

INDICATE YOUR APPROVAL BY INITIALING THE APPROPRIATE BLANK:

Project: ST MARTIN'S EPISCOPAL CHURCH - PARISH HALL	
Site Plan No: SP-039-00	Geo No: <input type="text"/>
LD Permit No: 01-16	Fiscal Year: 2001
Fee Paid? <input checked="" type="checkbox"/>	Fee Due: \$756
Acres Disturbed: 2.52	Declaration Covenant
Date Paid: 3/15/2000	LD Issue Date: 8/24/2000
Released? <input type="checkbox"/>	Release Date: <input type="text"/>
LD Expire Date: <input type="text"/>	Required: Yes
LD Comment: RELEASED 7/10/03	Received: <input checked="" type="checkbox"/>
Comments: <input type="text"/>	Notations: <input type="text"/>
10/24/08 - No folder in file	
Subdivisions	
Cert Const? Yes	CC Iss Date: 8/24/2000
CC Expiration Date: <input type="text"/>	CC Comment: SEWER LINE RELOCATION
Siltation	
Issue Date: <input type="text"/>	Agreement? No
Surety: <input type="text"/>	Agreement? Yes
Surety Type: <input type="text"/>	Surety: <input type="text"/>
Amount: \$0	Surety Type: Bond
Notation: <input type="text"/>	Amount: \$30,000
Surety Released? <input type="checkbox"/>	Notation: <input type="text"/>
Expiration Date: <input type="text"/>	Surety Released: <input type="checkbox"/>
Comment: <input type="text"/>	Expiration Date: <input type="text"/>
Surety Number: <input type="text"/>	Comments: <input type="text"/>
Surety Company: <input type="text"/>	Surety Number: CSB8357767
	Surety Company: FIDELITY & DEPOSIT
Delete Record	Undo
Last Permit No	Add
Find	Save
Print	Menu

ST Martins Parish House

12/1/09

① ET Gresham - Cindi Taylor Hudson
Notified Chester Kramer (Project Manager)

② Chester Kramer called and said he
would have to go to archives to see
what was in the file. I advised him
I would check with Storm Water to
see if they had file.

③ Bonding Company - Terry Strawhand
Hampson Roads Bonding 491-3184

Meeting w/ Jean Dickey
6-25-09 FAX: 229-1797

Meeting onsite 8-14-09, SJT &
Four church reps

JEAN Dickey
(Jr warden St. Martins)

262-7173

Flash Flood

Sept 23, 2011

About 4 pm













