



## 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.

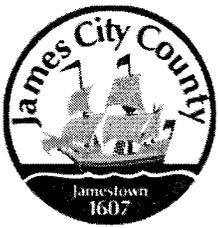
**BMP NUMBER:** PC048

**DATE VERIFIED:** May 24, 2012

**QUALITY ASSURANCE TECHNICIAN:** Leah Hardenbergh

  
\_\_\_\_\_

**LOCATION:** WILLIAMSBURG, VIRGINIA



# Stormwater Division

## MEMORANDUM

**DATE:** March 13, 2010  
**TO:** Michael J. Gillis, Virginia Correctional Enterprises Document Management Services  
**FROM:** Jo Anna Ripley, Stormwater  
**PO:** 270712  
**RE:** Files Approved for Scanning

---

**General File ID or BMP ID:** PC048

**PIN:** 3830100019A

**Subdivision, Tract, Business or Owner**

**Name (if known):**

Greensprings Chapel

**Property Description:**

Church site

**Site Address:**

3687 Ironbound Road

*(For internal use only)*

**Box** 1

**Drawer:** 1

**Agreements:** (in file as of scan date)

N

**Book or Doc#:**

**Page:**

Comments

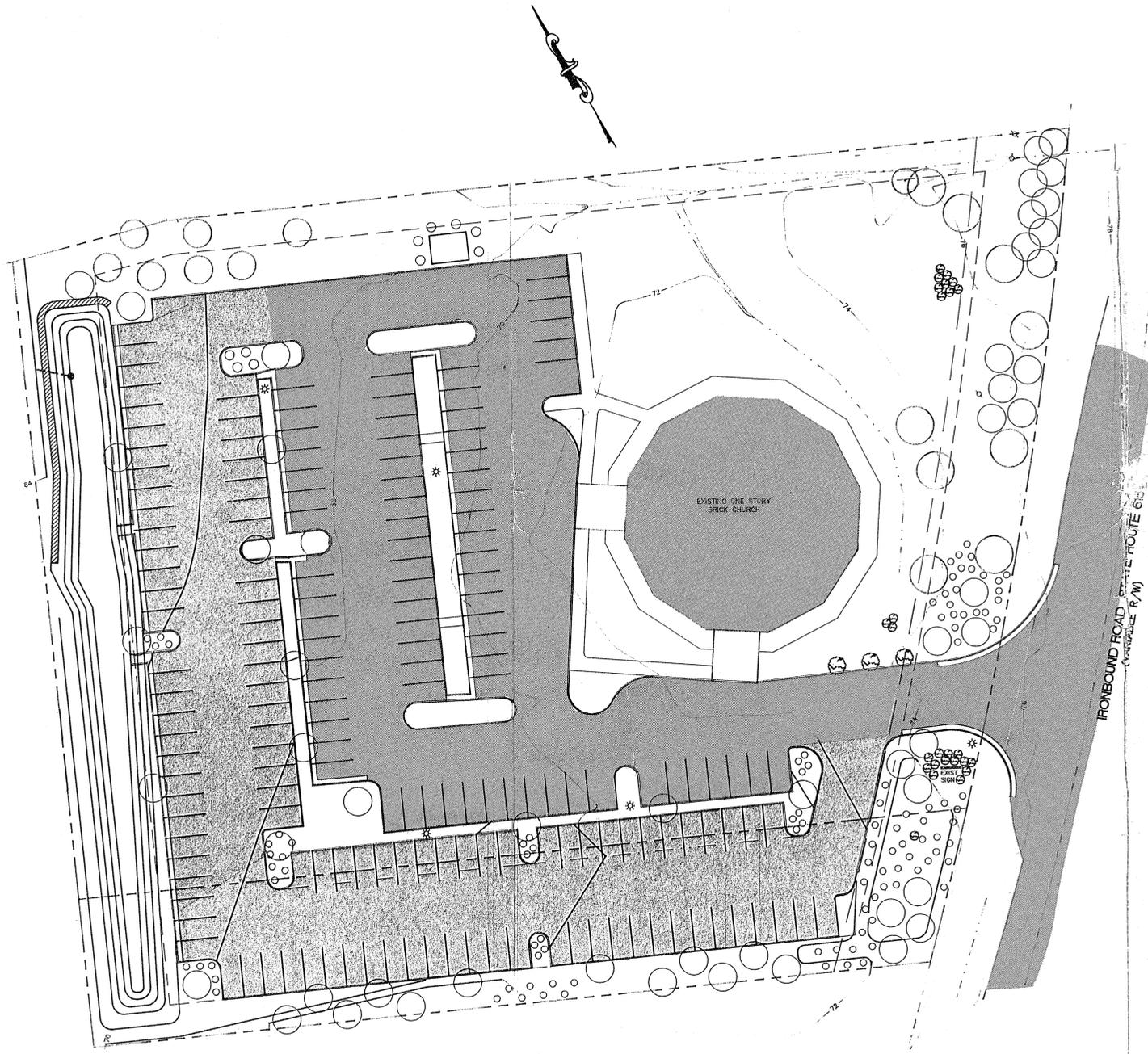
Tommy W/  
Ciston

# PARKING LOT ADDITION GREENSPRINGS CHAPEL

JAMES CITY COUNTY, VIRGINIA



VICINITY MAP  
SCALE: 1"=2000'



SITE PLAN  
SCALE: 1"=30'

### STATISTICAL INFORMATION

ZONED	R-8
SITE AREA	3.43 AC
BUILDING AREA	0.19 AC.
PAVED AREA	1.62 AC.
POND AREA	0.39 AC
GRASS AREA	1.23 AC.
WATER	PUBLIC WATER
SEWER	PUBLIC SEWER
PARKING:	
EXISTING SPACES	77 (3 HC EXISTING)
REG. SPACES PROVIDED	103
TOTAL SPACES	180

TABLE OF CONTENTS	
SHEET 1	COVER SHEET
SHEET 2	GRADING PLAN
SHEET 3	LAYOUT & LANDSCAPING PLAN
SHEET 4	DETAIL SHEET

BEFORE DIGGING CALL "MISS UTILITY" OF VIRGINIA AT 1 - 800 - 552 - 7001

**OWNER/DEVELOPER**  
GREENSPRING CHAPEL  
3687 IRONBOUND ROAD  
WILLIAMSBURG, VA 23188



**Rickmond Engineering, Inc.**  
1643-C Merrimac Trail  
Williamsburg VA 23185  
(804)229-1776 or 875-1785  
Civil Engineering  
Environmental Engineering  
Land Surveying

COUNTY OF JAMES CITY  
FINAL SITE PLAN

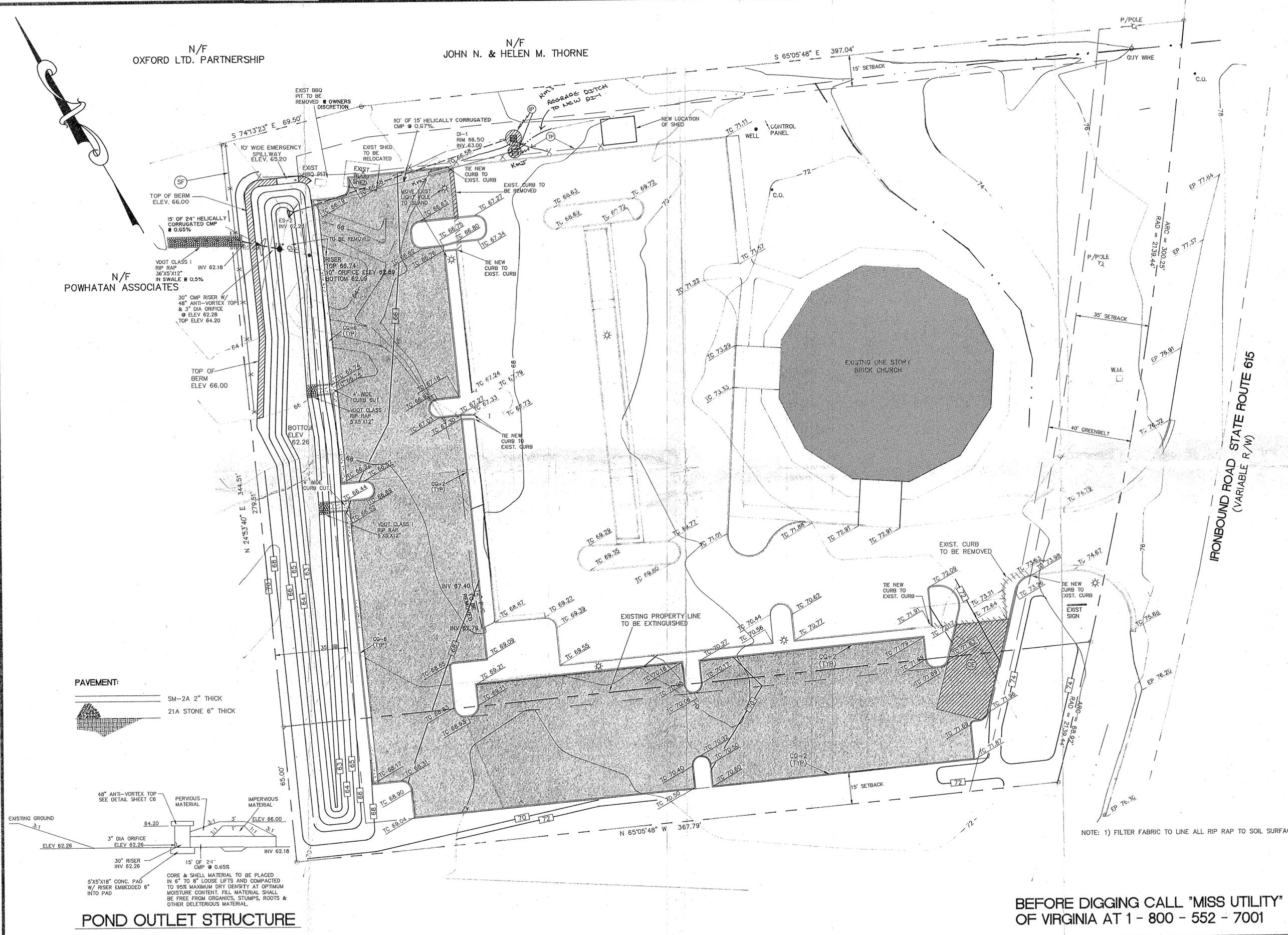
Received	DATE
APPROVALS	
Fire Dept. <i>Paul MAF</i>	6/10/92
Health Dept. <i>N/A</i>	
Highway Dept. <i>N/A</i>	
Plan Comm. <i>ATQ</i>	6/26/92
Pub. Works Dept. <i>Decline</i>	6/26/92
Zoning Adm. <i>ATQ</i>	6/10/92
JCSA <i>ATQ/MAF</i>	6/12/92
Other <i>WB/MAF</i>	6/15/92
Other	

RECEIVED  
JAMES CITY COUNTY  
AUG 1992

2	KMJ	REV PER COUNTY COMMENTS LTR. DTD. 8/7/92	KMJ	8/10/92
1	KMJ	REV PER COUNTY COMMENTS LTR. DTD. 6/12/92	KMJ	7/15/92

Date 6/1/92 Project No. 90278 Sheet 1

SP-56-92



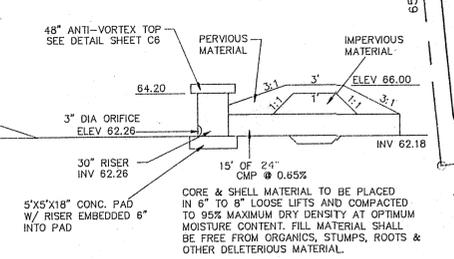
N/F  
POWHATAN ASSOCIATES

N/F  
OXFORD LTD. PARTNERSHIP

N/F  
JOHN N. & HELEN M. THORNE

PAVEMENT:

- SM-2A 2" THICK
- 21A STONE 6" THICK



POND OUTLET STRUCTURE

NOTE: 1) FILTER FABRIC TO LINE ALL RIP RAP TO SOIL SURFACE.

BEFORE DIGGING CALL "MISS UTILITY"  
OF VIRGINIA AT 1-800-552-7001

**Rickmond Engineering, Inc.**  
Civil Engineering  
Environmental Engineering  
Land Surveying  
1643-C Merrimac Trail  
Williamsburg VA 23185  
(804)229-1776 or 858-4149

Job No.: 90278  
Date: 6/1/92  
Scale: 1"=20'  
Approved By: KMJ  
Designed By: KMJ



No.	By	Revision	Date
4	FDC	REV. PER COUNTY COMMENTS LTR. DTD. 8/21/92	8.24.92
3	KMJ	REV. PER ENGINEER	8.14.92
2	KMJ	REV. PER COUNTY COMMENTS LTR. DTD. 8/17/92	8.10.92
1	KMJ	REV. PER COUNTY COMMENTS LTR. DTD. 6/12/92	7.15.92

**PARKING LOT ADDITION  
GREENSPRINGS CHAPEL  
GRADING PLAN**

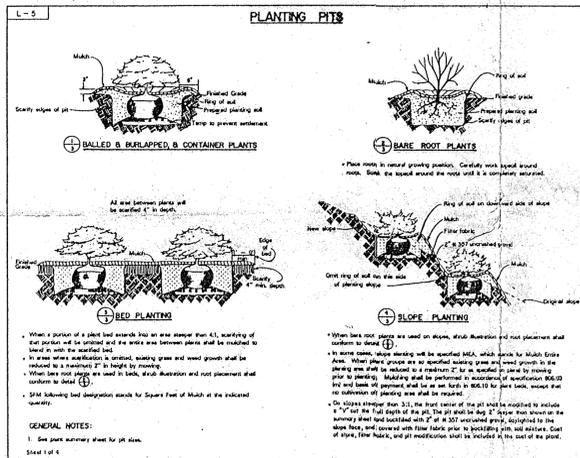
JAMES CITY COUNTY VIRGINIA

Job Number: 90278  
Sheet No.: 2

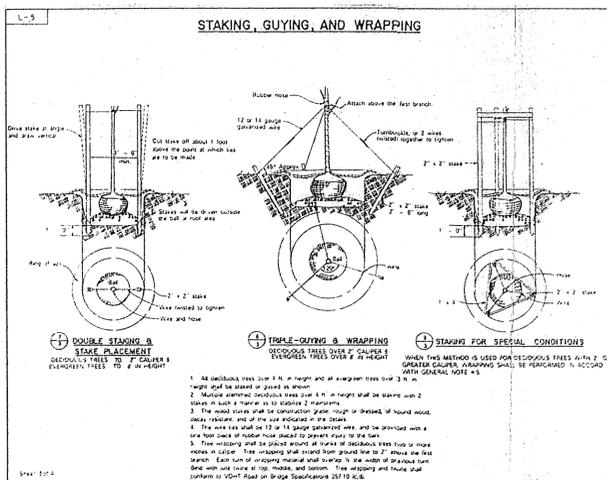
LANDSCAPE PLANTING REQUIREMENTS

	Required	Existing	Provided
<b>30' LANDSCAPING AREA ALONG ROW</b>			
• Total 30' x 369' = 11,070 SF	28 Trees/ 83 Shrubs	9 relocated Cypress 5 Trees/ 13 shrubs	15 Trees/ 70 Shrubs
• 2 1/2" Caliper (35%)	10 Trees	2 Trees	8 Trees
• Ornamental (15% to 25%)	4 to 7 Trees	-----	6 Trees
• Evergreen (25% trees & 25% shrubs)	7 Trees/ 21 Shrubs	3 Trees/ 13 Shrubs 9 relocated Cypress	8 Shrubs
<b>LANDSCAPE AREA FOR PARKING LOT</b>			
• Total Landscape Area (33,840 SF x 10%)	3,384 SF	-----	5,294 SF
• Total Trees (104 parking spaces)	21 Trees/ 42 Shrubs	10 relocated Cypress	11 Trees/ 42 Shrubs
• Deciduous Shade Trees with 2 1/2" Caliper (50%)	11 Trees	-----	11 Trees
• Evergreen Shrubs (25%)	11 Shrubs	-----	21 Shrubs
<b>LANDSCAPE REQUIREMENTS BY ZONING DISTRICT</b>			
• Total Landscape Area	6200 SF	-----	-----
• Total Trees	16 TREES/ 48 SHRUBS	-----	16 TREES/ 48 SHRUBS
• 2 1/2" Caliper (35%)	6 TREES	-----	6 TREES
• Ornamental (15% to 25%)	2 TO 4 TREES	-----	4 TREES
• Evergreen (25% Trees & 25% Shrubs)	4 Trees/ 13 SHRUBS	-----	4 TREES/ 29 SHRUBS

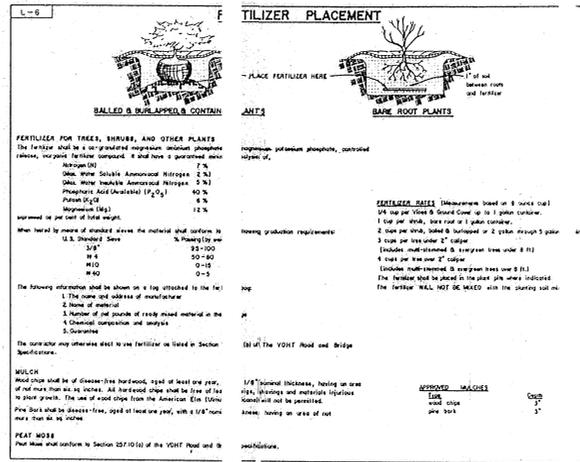
ALL SHRUBS MUST BE AT LEAST 18" IF EVERGREEN  
AND 22" FOR DECIDUOUS.



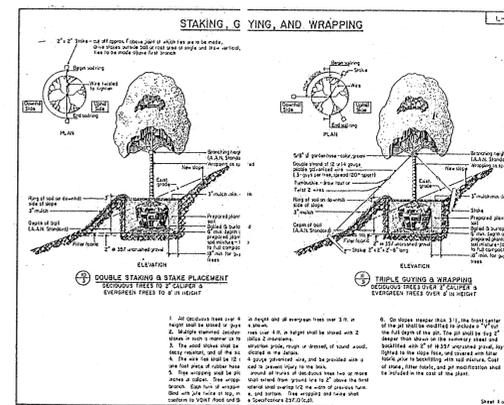
PLANTING DETAILS



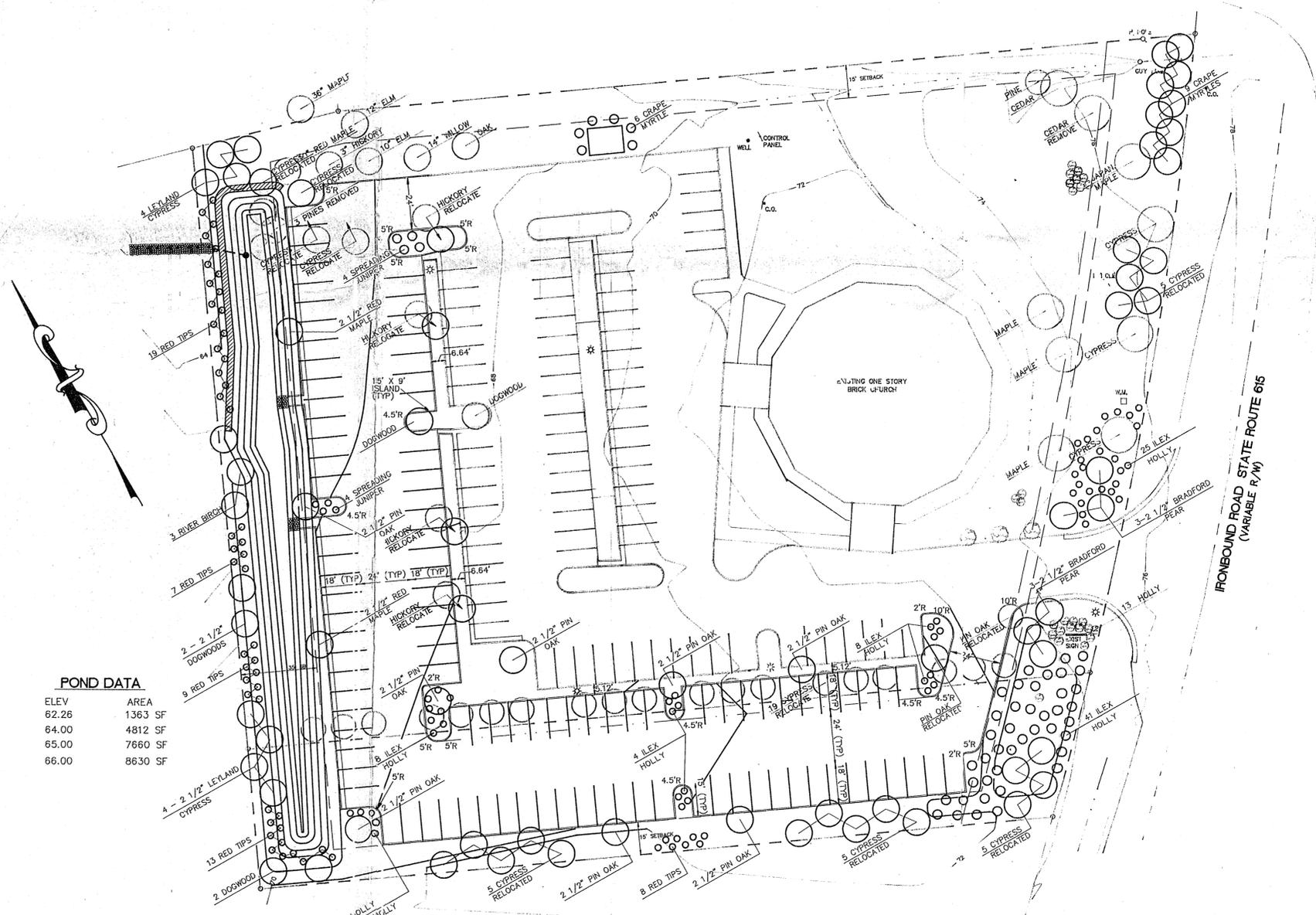
PLANTING DETAILS



FERTILIZER AND MULCH



SLOPE PLANTING DETAILS



**POND DATA**

ELEV	AREA
62.26	1363 SF
64.00	4812 SF
65.00	7660 SF
66.00	8630 SF

BEFORE DIGGING CALL "MISS UTILITY"  
OF VIRGINIA AT 1-800-552-7001

PARKING LOT ADDITION  
GREENSPRINGS CHAPEL  
LAYOUT & LANDSCAPING PLAN

Job Number 90278  
Sheet No. 3

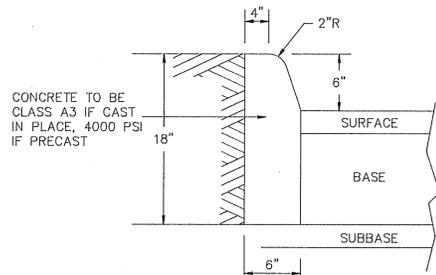
Rickmond Engineering, Inc.  
Civil Engineering  
Environmental Engineering  
Land Surveying  
1643-C Merritts Trail  
Williamsburg, VA 23185  
(804)228-1776 or 888-4149



No.	By	Date	App.	Date
1	KMJ	7/15/92	KMJ	7/15/92
2	KMJ	6/17/92	KMJ	6/17/92
3	FDC	6/12/92	KMJ	6/24/92

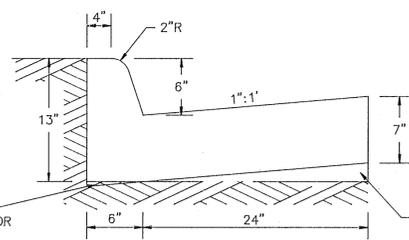
JAMES CITY COUNTY VIRGINIA  
REVISION  
REV. PER COUNTY COMMENTS LTR. DTD. 6/12/92  
REV. PER COUNTY COMMENTS LTR. DTD. 6/12/92  
REV. PER COUNTY COMMENTS LTR. DTD. 6/12/92

Job No.: 90278  
Date: 6/1/92  
Scale: 1"=30'  
Approved By: KMJ  
Designed By: KMJ



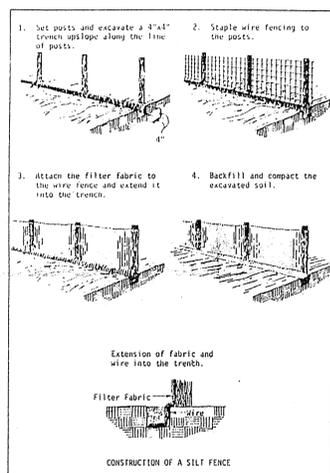
CG-2

THIS AREA MAY BE CONCRETE AT THE OPTION OF THE CONTRACTOR

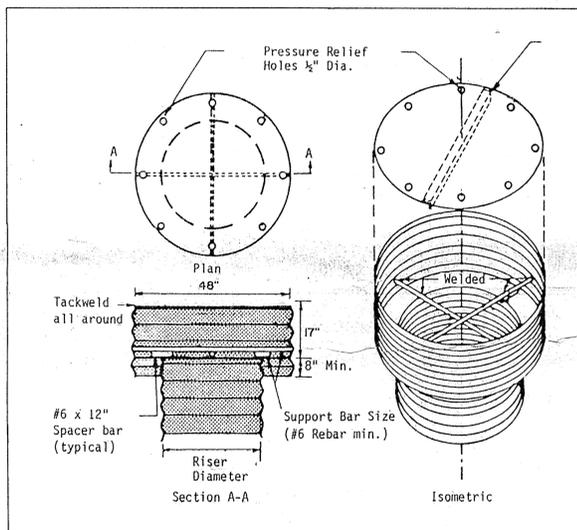


CG-6

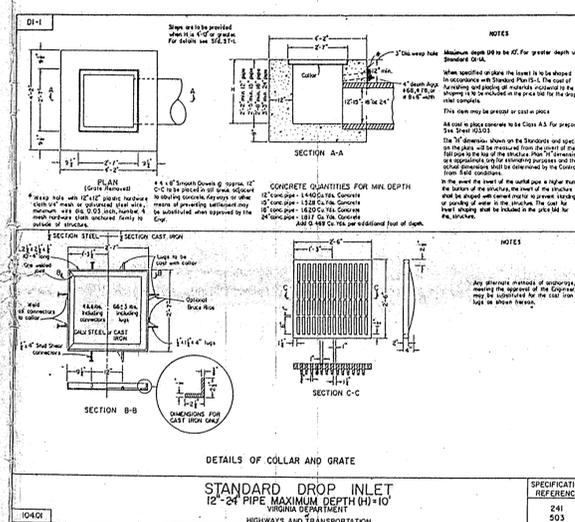
THE BOTTOM OF THE CURB AND GUTTER MAY BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBSURFACE COURSES PROVIDED A MINIMUM DEPTH OF 7" IS MAINTAINED



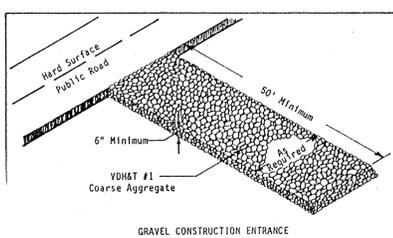
SILT FENCE



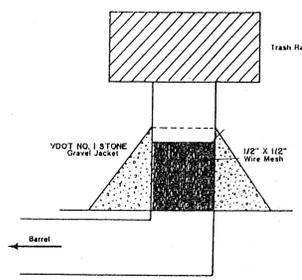
RISER DETAIL



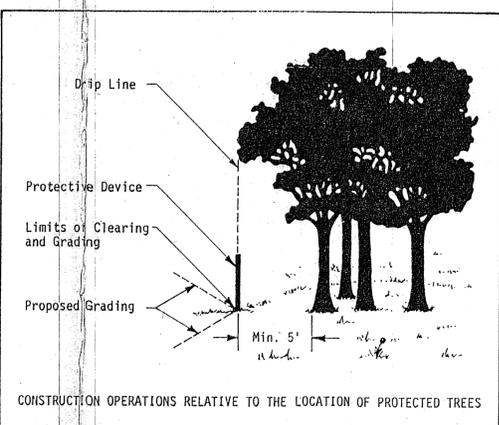
STANDARD DROP INLET 12" DIA PIPE MAXIMUM DEPTH (DI)-10 VIRGINIA DEPARTMENT OF TRANSPORTATION



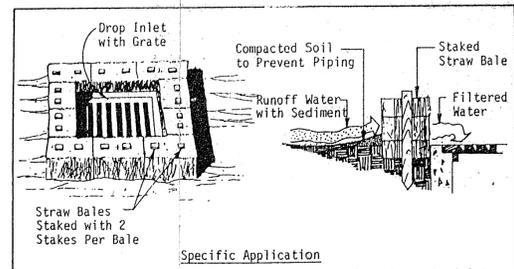
CONSTRUCTION ENTRANCE



ORIFICE PROTECTION DETAIL



TREE PROTECTION



Specific Application This method of inlet protection is applicable where the inlet drains a relatively flat area (slopes no greater than 5 percent) where sheet or overland flows (not exceeding 0.5 cfs) are typical. The method shall not apply to inlets receiving concentrated flows, such as in street or highway medians.

INLET PROTECTION

- GENERAL NOTES
- All construction shall conform to current City/County and/or VDOT standards and specifications unless otherwise specified.
  - Contractor shall secure the latest edition of the Virginia Erosion and Sediment Control Handbook and comply with all County requirements for erosion and sediment control.
  - All cuts, vegetation and deleterious material encountered shall be removed and disposed of off site.
  - Select material required for fill and backfill under parking lot footings and structures. It shall be placed in layers not to exceed eight inches (8") in thickness and compacted to 95% of maximum density as determined by ASTM D-698.
  - All concrete shall be Class A-3 air entrained (3000 P.S.I.).
  - All green area, within limits of construction, to be topsoiled, fertilized and mulched.
  - Contractor shall obtain at his own expense, any permit or bond if required by any government agency.
  - Contractor shall be responsible for location, protecting and resolving any conflicts with existing utilities and shall repair, at his own expense, all utilities to be relocated or damaged by construction.
  - Any errors or discrepancies shall be reported to the architect or the surveyor before proceeding with the work.
  - Maintenance or excavation, if needed, is part of this contract.
  - Before digging call "Miss Utility" of Virginia 1-800-552-7001.
  - Contractor shall obtain permits from the State Highway Department prior to any work on the State's right-of-way. The contractor to restore and clean up the site to the satisfaction of Highway Department.
  - Contractor must obtain all necessary building permits prior to construction.

- Erosion and Sediment Control Notes
- The purpose of the erosion control measures shown on these plans shall be to preclude the transport of all waterborne sediments resulting from construction activities from entering onto adjacent properties or State waters. If field inspection reveals the inadequacy of the plan to confine sediment to the project site, appropriate modifications will be made to correct any site deficiencies. In addition to these notes, all provisions of the Virginia Erosion and Sediment Control Regulations shall apply to this project.
- All erosion and sediment control measures shall be installed and maintained in accordance with the "Virginia Erosion and Sediment Control Handbook." The contractor shall be thoroughly familiar with all applicable measures contained therein which may be pertinent to this project.
  - All points of construction ingress and egress shall be protected by a temporary construction entrance to prevent tracking of mud onto public right-of-ways. An entrance permit from VDOT is required prior to any construction activities within State right-of-ways.
  - Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment on-site must be constructed as a first step in grading and be made functional before slope land disturbance takes place. Earmen structures such as dams, dikes, and diversions must be seeded and mulched immediately after installation. An on-site pre-construction meeting will be held between the Office of Code Compliance and the contractor to identify those measures to be initially installed.
  - Maintenance of erosion and sediment control measures shall include the repair of measures damaged by any subcontractor including those of the public utility companies. At the pre-construction meeting, the contractor will supply Code Compliance with the name of the individual who will be responsible for ensuring maintenance of installed measures on a daily basis.
  - Surface flows over cut and fill slopes shall be controlled by either redirecting flows from traversing the slopes or by installing mechanical devices to safely lower water downslope without causing erosion. A temporary fill diversion (Std. & Spec. 1.16) shall be installed prior to the end of each working day.
  - Sediment control measures may require minor field adjustments at time of construction to insure their intended purpose is accomplished. Office of Code Compliance approval will be required for other deviations from the approved plans.
  - The contractor shall place soil stockpiles at the locations shown on this plan or as directed by the engineer. Soil stockpiles shall be stabilized or protected with sediment trapping measures.
  - The contractor shall complete drainage facilities within 30 days following completion of rough grading at any point within the project. The installation of drainage facilities shall take precedence over all underground utilities. Outfall ditches from drainage structures shall be stabilized immediately after construction of same. This includes installation of erosion control stone where required. Any drainage outfalls required for a street must be completed before street grading begins.
  - Permanent or temporary soil stabilization must be applied to all denuded areas within 7 days after final grade is reached on any portion of the site. Soil stabilization must also be applied to denuded areas which may not be at final grade but will remain dormant (undisturbed) for longer than 30 days. Soil stabilization measures include vegetative establishment, mulching and the early application of gravel base material on areas to be paved.
  - No more than 300 feet of sanitary sewer, storm sewer, waterlines, or underground utility lines are to be open at one time. Following installation of any portion of these items, all disturbed areas are to be immediately stabilized (i.e., the same day).
  - If disturbed area stabilization is to be accomplished during the months of December, January, or February, stabilization shall consist of mulching in accordance with Specification 1.75. Seeding will then take place as soon as the season permits.
  - The term Seeding, Final vegetative Cover or Stabilization, on this plan shall mean the successful germination and establishment of a stable grass cover from a properly prepared seedbed containing the specified amounts of seed, lime, and fertilizer in accordance with Specification 1.66. Permanent Seeding, Irrigation shall be required as necessary to ensure establishment of grass cover.
  - All slopes steeper than 3:1 shall require the use of erosion control blankets such as excelsior blankets to aid in the establishment of a vegetative cover. Installation shall be in accordance with Specification 1.75, Mulching and Manufacturer's Instructions.
  - Inlet protection in accordance with Specification 1.08 shall be provided for all storm drain inlets as soon as practical following construction of same.
  - Temporary liners, such as polyethylene sheets, shall be provided for all paved ditches until the permanent concrete liner is installed.
  - Paved ditches shall be required wherever erosion is evident. Particular attention shall be paid to those areas where grades exceed 3 percent.
  - Temporary erosion control measures are not to be removed until all disturbed areas are stabilized. After stabilization is complete, all measures shall be removed within 30 days. Trapped sediment shall be spread and seeded.
  - Off-site waste or borrow areas shall be approved by the Office of Code Compliance prior to the import of any borrow or export of any waste to or from the project site.
  - All paved and/or piped outfalls will be constructed before road grading and utility installation begins.

BEFORE DIGGING CALL "MISS UTILITY" OF VIRGINIA AT 1 - 800 - 552 - 7001

**Rickmond Engineering, Inc.**  
 Civil Engineering  
 Environmental Engineering  
 Land Surveying  
 1643-C Merrimac Trail  
 Williamsburg VA 23185  
 (804)228-1776 or 898-4149

Job No.: 90278  
 Date: 6/1/92  
 Scale: AS NOTED  
 Approved By: KMJ  
 Drawn By: KMJ  
 Designed By: KMJ

COMMONWEALTH OF VIRGINIA  
 PROFESSIONAL ENGINEER  
 K.M. JENKINS II  
 No. 002872

Rev.	By	Date	App.	Rev.
1	KMJ	REV PER COUNTY COMMENTS LTR. DTD. 8/7/92	NMJ	8/9/92

JAMES CITY COUNTY VIRGINIA

**PARKING LOT ADDITION GREENSPRINGS CHAPEL**  
 DETAIL SHEET

Job Number: 90278  
 Sheet No.: 4

# GREENSPRINGS CHAPEL

## PARKING LOT ADDITION

## DRAINAGE & BMP CALCULATIONS

*3.43 acres  
corresponds to  
to complete  
Chapel  
zone*

**Rickmond Engineering, Inc.**  
1643-C Merrimac Trail  
Williamsburg, Virginia 23185

June 3, 1992

Project No. 90278

## Worksheet 2: Runoff curve number and runoff

Project Greensprings Chapel By KMS Date 6/2/92

Location James City County Checked \_\_\_\_\_ Date \_\_\_\_\_

Circle one: **Present** Developed \_\_\_\_\_

### 1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN <sup>1/</sup>			Area <input checked="" type="checkbox"/> acres <input type="checkbox"/> mi <sup>2</sup> <input type="checkbox"/> %	Product of CN x area
		Table 2-2	Fig. 2-3	Fig. 2-4		
Slagle (C)	Meadow	71			3.43	
Totals =					3.43	

<sup>1/</sup> Use only one CN source per line.

CN (weighted) =  $\frac{\text{total product}}{\text{total area}}$  = \_\_\_\_\_ Use CN = 71

### 2. Runoff

Frequency ..... yr  
 Rainfall, P (24-hour) ..... in  
 Runoff, Q ..... in  
 (Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)

Storm #1	Storm #2	Storm #3
2	10	100
3.5	6.0	8.5
1.1	2.9	

### Worksheet 3: Time of concentration ( $T_c$ ) or travel time ( $T_t$ )

Project Greensprings Chapel By RMS Date 6/13/92

Location James City County Checked \_\_\_\_\_ Date \_\_\_\_\_

Circle one: Present Developed \_\_\_\_\_

Circle one:  $T_c$   $T_c$  through subarea \_\_\_\_\_

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to  $T_c$  only)

- |   |   |
|---|---|
|   | Segment ID  |
| 1. Surface description (table 3-1) .....  | DENSE GRASS   |
| 2. Manning's roughness coeff., n (table 3-1) ..                                 | 0.24  |
| 3. Flow length, L (total L $\leq$ 300 ft) .....                                 | 300   |
| 4. Two-yr 24-hr rainfall, $P_2$ .....   | 3.5   |
| 5. Land slope, s .....  | .0267   |
| 6. $T_c = \frac{0.007 \cdot (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute $T_c$ ..... | .49 + <span style="border: 1px solid black; display: inline-block; width: 40px; height: 15px;"></span> = <span style="border: 1px solid black; display: inline-block; width: 40px; height: 15px;"></span> |

Shallow concentrated flow

- |  |   |
|--|---|
|  | Segment ID  |
| 7. Surface description (paved or unpaved) .....  | UNPAVED   |
| 8. Flow length, L .....                          | 170   |
| 9. Watercourse slope, s .....                    | .0382   |
| 10. Average velocity, V (figure 3-1) .....       | 3.2   |
| 11. $T_c = \frac{L}{3600 V}$ Compute $T_c$ ..... | .01 + <span style="border: 1px solid black; display: inline-block; width: 40px; height: 15px;"></span> = <span style="border: 1px solid black; display: inline-block; width: 40px; height: 15px;"></span> |

Channel flow

- |  |            |
|--|------------|
|  | Segment ID |
| 12. Cross sectional flow area, a .....   |            |
| 13. Wetted perimeter, $p_w$ .....  |            |
| 14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r .....                        |            |
| 15. Channel slope, s .....   |            |
| 16. Manning's roughness coeff., n .....  |            |
| 17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V .....                         |            |
| 18. Flow length, L .....   |            |
| 19. $T_c = \frac{L}{3600 V}$ Compute $T_c$ .....                                 |            |
| 20. Watershed or subarea $T_c$ or $T_t$ (add $T_c$ in steps 6, 11, and 19) ..... | .50        |

Worksheet 5a: Basic watershed data

Project Greensprings Chapel Location James City County By KMS Date 6/3/92

Circle one: Present Developed \_\_\_\_\_ Frequency (yr) \_\_\_\_\_ Checked \_\_\_\_\_ Date \_\_\_\_\_

Subarea name	Drainage area	Time of concentration	Travel time through subarea	Downstream subarea names	Travel time summation to outlet	24-hr Rain-fall	Runoff curve number	Run-off		Initial abstraction	
	$A_m$ (mi <sup>2</sup> )	$T_c$ (hr)	$T_t$ (hr)		$\Sigma T_t$ (hr)	P (in)	CN	Q (in)	$A_m Q$ (mi <sup>2</sup> -in)	$I_a$ (in)	$I_a/P$
2	.0054	.50				3.5	71	1.1	.0059	.817	.23
10	.0054	.50				6.0	71	2.9	.0157	.817	.14

↑↑↑↑↑↑↑↑↑↑  
From worksheet 3

↑↑↑↑↑↑↑↑↑↑  
From worksheet 2

↑↑↑↑  
From table 5-1

(210-VI-TR-55, Second Ed., June 1986)

D-5

Worksheet 5b: Tabular hydrograph discharge summary

Project Greensprings Chapel Location James City County By RMS Date 6/13/92  
 Circle one: Present Developed \_\_\_\_\_ Frequency (yr) \_\_\_\_\_ Checked \_\_\_\_\_ Date \_\_\_\_\_

Subarea name	Basic watershed data used 1/				Select and enter hydrograph times in hours from exhibit 5-II 2/													
	Sub-area T <sub>c</sub> (hr)	IT <sub>t</sub> to outlet (hr)	I <sub>a</sub> /P	A <sub>Q</sub> (mi <sup>2</sup> -in)	12.4	12.5												
Discharges at selected hydrograph times 3/																		
----- (cfs) -----																		
	.50	.23	.0059			2.59												
	.50	.14	.0157			8.31												
Composite hydrograph at outlet																		

1/ Worksheet 5a. Rounded as needed for use with exhibit 5.  
 2/ Enter rainfall distribution type used.  
 3/ Hydrograph discharge for selected times is A<sub>Q</sub> multiplied by tabular discharge from appropriate exhibit 5.

(210-VI-TR-55, Second Ed., June 1986)

**Worksheet 2: Runoff curve number and runoff**

Project Greensprings Chapel By RMS Date 6/3/92  
 Location James City County Checked \_\_\_\_\_ Date \_\_\_\_\_  
 Circle one: Present Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN $\checkmark$			Area <input checked="" type="checkbox"/> acres <input type="checkbox"/> mi <sup>2</sup> <input type="checkbox"/> %	Product of CN x area
		Table 2-2	Fig. 2-3	Fig. 2-4		
slagle (c)	Paved, Rooftop	98			2.24	219.52
slagle (c)	Grass	74			1.19	88.06
Totals =					3.43	307.58

-65%

1/ Use only one CN source per line.

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{307.58}{3.43} = 89.7$$
 Use CN = 90

2. Runoff

Frequency ..... yr  
 Rainfall, P (24-hour) ..... in  
 Runoff, Q ..... in  
 (Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)

Storm #1	Storm #2	Storm #3
2	10	100
3.5	6.0	8.5
2.4	4.8	7.3

### Worksheet 3: Time of concentration ( $T_c$ ) or travel time ( $T_t$ )

Project Greensprings Chapel By RMT Date 6/3/92

Location James City County Checked \_\_\_\_\_ Date \_\_\_\_\_

Circle one: Present Developed

Circle one: ( $T_c$ )  $T_c$  through subarea

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to  $T_c$  only)

- |   |            |
|---|------------|
|   | Segment ID |
| 1. Surface description (table 3-1) .....                                  |            |
| 2. Manning's roughness coeff., n (table 3-1) ..                           |            |
| 3. Flow length, L (total L $\leq$ 300 ft) .....                           | ft         |
| 4. Two-yr 24-hr rainfall, $P_2$ .....                                     | in         |
| 5. Land slope, s .....  | ft/ft      |
| 6. $T_c = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute $T_c$ ..... | hr         |

DENSE GRASS	
0.24	
155	
3.5	
.0452	
.23	+
	=

Shallow concentrated flow

- |  |            |
|--|------------|
|  | Segment ID |
| 7. Surface description (paved or unpaved) .....  |            |
| 8. Flow length, L .....                          | ft         |
| 9. Watercourse slope, s .....                    | ft/ft      |
| 10. Average velocity, V (figure 3-1) .....       | ft/s       |
| 11. $T_c = \frac{L}{3600 V}$ Compute $T_c$ ..... | hr         |

UNPAVED	
270	
.0222	
2.4	
.03	+
	=

Channel flow

- |  |                 |
|--|-----------------|
|  | Segment ID      |
| 12. Cross sectional flow area, a .....   | ft <sup>2</sup> |
| 13. Wetted perimeter, $P_w$ .....  | ft              |
| 14. Hydraulic radius, $r = \frac{a}{P_w}$ Compute r .....                        | ft              |
| 15. Channel slope, s .....   | ft/ft           |
| 16. Manning's roughness coeff., n .....  |                 |
| 17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V .....                         | ft/s            |
| 18. Flow length, L .....   | ft              |
| 19. $T_c = \frac{L}{3600 V}$ Compute $T_c$ .....                                 | hr              |
| 20. Watershed or subarea $T_c$ or $T_t$ (add $T_c$ in steps 6, 11, and 19) ..... | hr              |

1.25	
10.25	
.12	
.010	
.013	
2.77	
200	
.02	+
	=
	.28

### Worksheet 5a: Basic watershed data

Project Greensprings Chapel Location James City County By KMS Date 6/3/92

Circle one: Present Developed Frequency (yr) \_\_\_\_\_ Checked \_\_\_\_\_ Date \_\_\_\_\_

Subarea name	Drainage area $A_m$ (mi <sup>2</sup> )	Time of concentration $T_c$ (hr)	Travel time through subarea $T_t$ (hr)	Downstream subarea names	Travel time summation to outlet $\Sigma T_t$ (hr)	24-hr Rain-fall $P$ (in)	Runoff curve number $CN$	Run-off $Q$ (in)		Initial abstraction $I_a$ (in)	
									$A_m Q$ (mi <sup>2</sup> -in)		$I_a/P$
	.0054	.28				3.5	90	2.4	.0130	.222	.06
	.0054	.28				6.0	90	4.8	.0259	.222	.04
						8.5		7.3	0.039	.222	.026

↑↑↑↑↑ ↑↑↑↑↑  
From worksheet 3

↑↑↑↑↑ ↑↑↑↑↑  
From worksheet 2

↑↑↑↑  
From table 5-1

210-VI-TR-55, Second Ed., June 1986

D-5

### Worksheet 5b: Tabular hydrograph discharge summary

Project Greensprings Chapel Location James City County By KMJ Date 6/3/92  
 Circle one: Present  **Developed**  Frequency (yr) \_\_\_\_\_ Checked \_\_\_\_\_ Date \_\_\_\_\_

Subarea name	Basic watershed data used <sup>1/</sup>				Select and enter hydrograph times in hours from exhibit 5- <sup>2/</sup>														
	Sub-area T <sub>c</sub> (hr)	ET <sub>t</sub> to outlet (hr)	I <sub>a</sub> /P	A <sub>u</sub> Q (mi <sup>2</sup> -in)															
					Discharges at selected hydrograph times <sup>3/</sup> ----- (cfs) -----														
	.28		.06	.0130															
	.28		.04	.0259															
	.28		.026	0.039															
Composite hydrograph at outlet																			

<sup>1/</sup> Worksheet 5a. Rounded as needed for use with exhibit 5.  
<sup>2/</sup> Enter rainfall distribution type used.  
<sup>3/</sup> Hydrograph discharge for selected times is A<sub>u</sub>Q multiplied by tabular discharge from appropriate exhibit 5.

210-VI-TR-55, Second Ed., June 1986

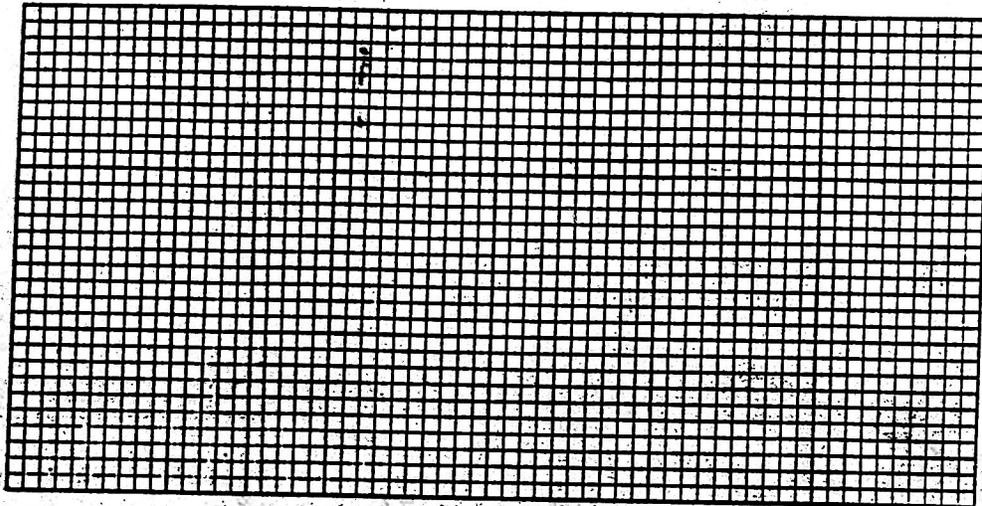
Worksheet 6a: Detention basin storage,  
peak outflow discharge ( $q_0$ ) known

Project Greensprings Chapel By KMS Date 6/3/92

Location James City County Checked \_\_\_\_\_ Date \_\_\_\_\_

Circle one: Present Developed

Elevation or stage



Detention basin storage

- 1. Data:  
Drainage area .....  $A_d = .0054 \text{ mi}^2$   
Rainfall distribution  
type (I, IA, II, III) = II

1st stage	2nd stage
-----------	-----------

- 2. Frequency ..... yr 2

- 3. Peak inflow discharge,  $q_1$  .... cfs 8.79  
(From worksheet 4 or 5b)

- 4. Peak outflow discharge,  $q_0$  .... cfs 2.59<sup>1/</sup>

- 5. Compute  $\frac{q_0}{q_1}$  ..... .29

<sup>1/</sup> 2nd stage  $q_0$  includes 1st stage  $q_0$ .

- 6.  $\frac{v_s}{v_r}$  ..... .39  
(Use  $\frac{q_0}{q_1}$  with figure 6-1)

- 7. Runoff, Q ..... in 2.4  
(From worksheet 2)

- 8. Runoff volume,  $V_r$  ..... ac-ft .69  
( $V_r = QA_{53.33}$ )

- 9. Storage volume,  $V_s$  ..... ac-ft .27 = 11,765 cf  
( $V_s = v_r \left(\frac{v_s}{v_r}\right)$ )

- 10. Maximum stage,  $E_{max}$  .....  
(From plot)

TABLE 2

BMP POINT SYSTEM FOR EVALUATION  
ACCEPTABLE STRUCTURAL BMPs

Acceptable BMP	Average Total P Removal Efficiency	BMP Points
<b>A. EXTENDED DRY DETENTION</b>		
(1) Design 2 (6-12 hrs):	20%	4
(2) Design 3 (24 hrs):	30%	6
(3) Design 4 (shallow marsh):	50%	9
<b>B. WET POND</b>		
(1) Design 5 (0.5 in/imp. ac):	35%	6
(2) Design 6 (2.5 V):	40%-45%	8
(3) Design 7 (4.0 V):	50%	9
<b>C. INFILTRATION (TRENCH, BASIN, POROUS PAVEMENT)</b>		
(1) Design 8 (0.5 in/imp. ac):	50%	9
(2) Design 9 (1.0 in/imp. ac):	65%	10
(3) Design 10 (2-yr storm):	70%	11
<b>D. GRASSED SWALE</b>		
(1) Design 15 (check dams)	10%-20%	2
<b>E. WATER QUALITY INLET</b>		
(1) Design 11 (400 cu ft/imp. ac):	.	2

To be used upstream of detention basin or infiltration system to enhance pollutant removal.

NOTE: A weighted total of 10 points is required for the development plan to achieve BMP compliance.

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP POINTS</u>	<u>Fraction of Site Served by BMP</u>	<u>Weighted BMP Points</u>
Dry Pond Design 2	4	X 4.45	= 17.80
_____	_____	X _____	= _____
_____	_____	X _____	= _____
_____	_____	X _____	= _____

INC. AREAS OF SITE Not Reg'd to be controlled

TOTAL WEIGHTED STRUCTURAL BMP POINTS: 17.80

B. NATURAL OPEN SPACE CREDIT

<u>Fraction of Site</u>	<u>Natural Open Space Credit</u>	<u>Points for Natural Open Space</u>
_____	X _____	= _____

C. TOTAL WEIGHTED POINTS

17.80  
Structural BMP Points + \_\_\_\_\_  
Natural Open Space Points = 17.80  
TOTAL

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9027B

SHEET NO. 12 OF \_\_\_\_\_  
CALCULATED BY KMS DATE 6/8/92  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_  
SCALE \_\_\_\_\_

## Size Pond as Extended Dry Detention Pond Design 2

New Development : 0.77 Ac (Impervious Area)  
Existing Off Site : 2.66 Ac

From Controlling Urban Runoff  
Chapter 3:

Use Sizing Rule 1 - volume equivalent to 1/2" of runoff  
distributed over the contributing  
watershed released over 6 hrs

$$I = 100 = 0.77 \text{ Ac}$$

$$R_v = .05 + .009I$$

$$R_v = .05 + .009(100)$$

$$R_v = .95$$

Volume = .95	.77 Ac	43560 sf	.5 in	.0833 ft = 1330 cf
		1 Ac		1 in

Volume to serve entire site = 1330 cf x 4.45 = 5920 cf  
BMP Dry Pond will serve entire site (3.43 ac) and  
release the runoff (5,920 cf) over 6 hrs.

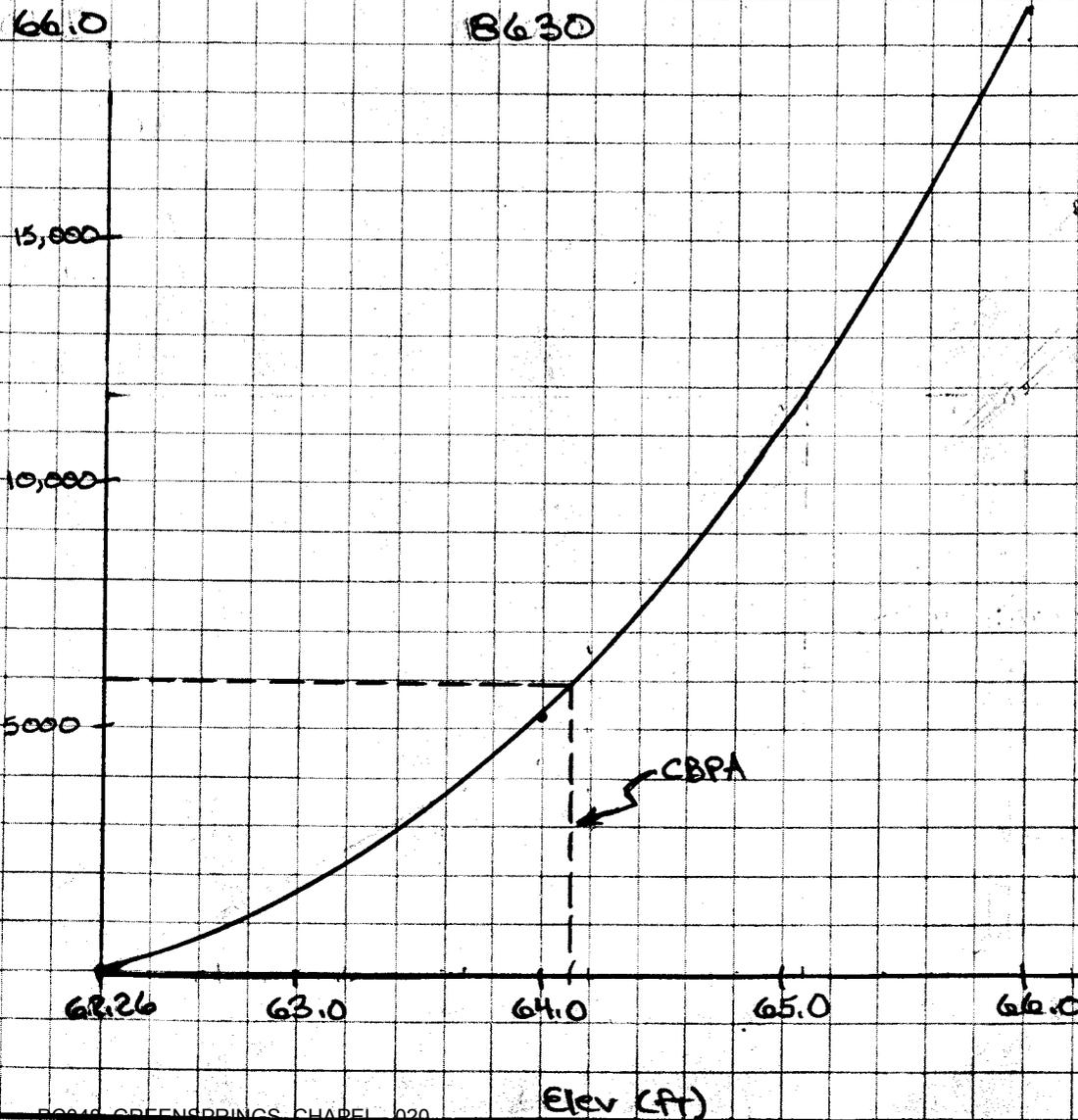
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JOB 90218  
 SHEET NO. 13 OF \_\_\_\_\_  
 CALCULATED BY KMS DATE 6/3/92  
 CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_  
 SCALE \_\_\_\_\_

## Stage - Storage

Elev (ft)	Δ Elev (ft)	Area (ft <sup>2</sup> )	Increm Vol (ft <sup>3</sup> )	Accum Vol (ft <sup>3</sup> )
62.26		1363		0
64.0	1.74	4812	5372	5372
65.0	1.0	7660	6236	11,608
66.0	1.0	18630	8145	19,753



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NO. 90278  
 SHEET NO. 14 OF \_\_\_\_\_  
 CALCULATED BY KMS DATE 6/3/92  
 CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_  
 SCALE \_\_\_\_\_

Design Orifice to release 5920 cf over 6 hrs:

$$V = 11,765 \text{ cf}$$

$$Q_R = 6 \text{ hr release rate} = \frac{5920 \text{ cf}}{6 \text{ hr}} \times \frac{1 \text{ hr}}{3600 \text{ s}} = 0.27 \text{ cfs}$$

$$H \text{ for storage of } 11,765 \text{ cf} = 1.94' \text{ @ Elev } 64.20$$

$$h = \frac{2}{3} H = (\frac{2}{3})(1.94) = 1.29'$$

$$Q = CA \sqrt{2gh}$$

$$.54 = (.6) A \sqrt{2(32.2)(1.29)}$$

$$A = .10 \text{ ft}^2 = \pi r^2$$

$$r = .18' = 2.12'' \Rightarrow \text{USE } 3'' \text{ dia orifice as minimum to prevent clogging}$$

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JOB 6-9027B

SHEET NO. 15 OF \_\_\_\_\_

CALCULATED BY KMS DATE 6/3/92

CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

SCALE \_\_\_\_\_

SIZE RISER TO PASS 10 yr storm:

$$Q_b = 17.51 \text{ cfs}$$

$$H = 1.0'$$

$$Q_w = C L H^{3/2}$$

$$Q_w = (9.739) D_r H^{3/2}$$

$$17.51 = (9.739) D_r (1.0)^{3/2}$$

$$D_r = 1.79'$$

USE 30" dia riser w/ 48" dia anti-vortex  
and install 10' wide emergency spillway  
@ Elev 65.20

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JOB 9027B  
SHEET NO. 16 OF \_\_\_\_\_  
CALCULATED BY KMT DATE 6/13/92  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_  
SCALE \_\_\_\_\_

CULVERT DESIGN

Outlet Barrel

c = \_\_\_\_\_  
A = \_\_\_\_\_ Ac.

OVERLAND FLOW

L = \_\_\_\_\_ ft.  
S = \_\_\_\_\_ %  
Tc = \_\_\_\_\_ min.

CHANNEL FLOW

H = \_\_\_\_\_ ft.  
L = \_\_\_\_\_ ft.  
Tc = \_\_\_\_\_ min.  
  
Tc = \_\_\_\_\_ min

$i_{10} =$  \_\_\_\_\_ in/hr

$Q = CAi = ( \quad ) ( \quad \text{Ac.} ) ( \quad \text{in/hr} )$

$Q = 17.51$  cfs  
 $L = 15$  ft.  
 $S = .0065\%$   
 $HW = 2.45$  ft.  
  
 $Inv_i = 62.26$   
 $Inv_o = 62.16$

INLET CONTROL

D = 24 in. or 2.0 ft.

USE 24" ULTRA-FLO storm  
Sewer Pipe

$HW/D = 1.3$        $HW = (2.0 \text{ ft.}) (1.3) = 2.60 \text{ ft.} < 3.00 \text{ ft.}$

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JOB 9027B  
SHEET NO. 17 OF \_\_\_\_\_  
CALCULATED BY KMTJ DATE 6/8/92  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_  
SCALE \_\_\_\_\_

OUTLET CONTROL

$$d_c = 1.51$$

$$h_o = \frac{d_c + D}{2} = \frac{1.51 + 2.0}{2} = 1.76$$

$$S_o L = (.0065)(15) = .10$$

$$d_n = 1.57$$

$$\frac{d}{D} = .79 \quad \frac{r}{D} = .3040$$

P.E. Manual Pg 3-43

$$R = .61$$

$$v = 6.61$$

$$H = \left(1 + k_e + \frac{2.9n^2 L}{R^{4/3}}\right) \frac{v^2}{2g} = 1.11$$

$$HW = H + h_o - S_o L = 2.77$$

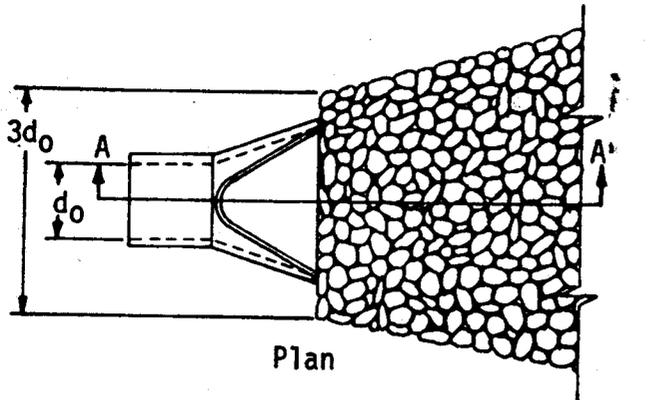
outlet control governs

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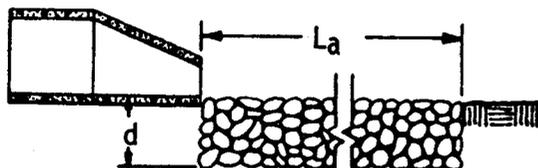
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SHEET NO. 18 OF \_\_\_\_\_  
CALCULATED BY RMJ DATE 6/3/92  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_  
SCALE \_\_\_\_\_

## Design Outlet Protection



Plan



Section A-A

Pipe Outlet To Flat Area  
With No Defined Channel

$$d_0 = 2.0$$

$$Q = 17.51$$

$$3d_0 = 6'$$

$$h_a = 8'$$

$$W = d_0 + h_a = 2' + 8' = 10'$$

$$d_{50} = .3 \Rightarrow \text{USE VDOT CLASS I RIP RAP}$$

$$d = 12''$$

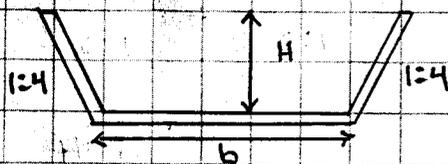
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JOB 90278  
SHEET NO. 19 OF \_\_\_\_\_  
CALCULATED BY RMS DATE 6/4/92  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_  
SCALE \_\_\_\_\_

Size curb breaks to pass 10 yr storm:

$$Q = \frac{8.79 \text{ cfs}}{2} = 4.40 \text{ cfs}$$



$$Q = 3.367 b H^{3/2}$$

$$4.40 = 3.367 b (.5)^{3/2}$$

$$b = 3.69' \Rightarrow \text{USE } b = 4.00'$$

**James City County Stormwater Division  
Stormwater Management / BMP Inspection Report  
Detention and Retention Pond Facilities**

Submit by Email

Print Form

County BMP ID Code

Name of Facility  BMP No:  Date

Location

Owner Name

Inspector Name

Type of Facility

Weather Conditions  Type  Final Inspection  County BMP Inspection Program  Owner Inspection

If an inspection item is not applicable, mark NA, otherwise mark the appropriate column.

O.K - The item checked is in adequate condition and the maintenance program is currently satisfactory. No action required.

Routine - The item checked requires attention, but does not present an immediate threat to the function/integrity of the BMP.

Urgent - The item checked requires immediate attention to keep the BMP operational and to prevent damage to the facility.

Provide an explanation and details in the comment column, if routine or urgent are marked.

Facility Item	O.K.	Routine	Urgent	Comments
<b>Embankments and Side Slopes:</b>				
Grass Height	X			
Vegetation Condition	X			
Tree Growth		X		REMOVE TREES FROM EMBANKMENTS
Erosion		X		EROSION IN DIFFERENT AREAS
Trash & Debris		X		REMOVE TRASH
Seepage	X			
Fencing or Benches	N/A			
Interior Landscaping/ Planted Areas:	<input type="checkbox"/> None	<input type="checkbox"/> Constructed Wetland Shallow Marsh	<input checked="" type="checkbox"/> Naturally Established Vegetation	
Vegetated Conditions	X			
Trash & Debris	X			
Floating Material	X			
Erosion	X			
Sediment		X		SEDIMENT BUILDUP IN BASIN
Dead Plant	X			
Aesthetics		X		
Other				

Notes: Embankment is very low profile but is overgrown with trees. These need to be removed so that grassy vegetation can be established. It is not necessary to remove the trees on the slope from the parking lot into the BMP.

Facility Item	O.K.	Routine	Urgent	Comments
<b>Water Pools:</b>	<input type="checkbox"/> Permanent Pool (Retention Basin)	<input type="checkbox"/> Shallow Marsh (Detention Basin)	<input checked="" type="checkbox"/> None, Dry (Detention Basin)	
Shoreline Erosion	X			
Algae	X			
Trash & Debris		X		REMOVE TRASH
Sediment		X		SEDIMENT BUILDUP IN BASIN
Aesthetics		X		
Other	STANDING WATER		X	HOLDING WATER THROUGHOUT LENGTH OF BMP

**Inflows (Describe Types/Locations): CURB INLETS, UNKNOWN DIAMETER PIPE AND TYPE**

Condition of Structure	X			
Erosion	X			
Trash & Debris	X			
Sediment		X		REMOVE SEDIMENT FROM IN FRONT OF PIPE
Outlet Protection		X		RIP-RAP IS COVERED BY SEDIMENT
Other				

**Principal Flow control Structure - Riser, Intake, etc. (Describe Type): 30" CMP RISER**

Condition of Structure			X	ANTI-VORTEX DEVICE IS OFF
Corrosion			X	CORROSION ON STRUCTURE
Trash & Debris	X			
Sediment			X	SEDIMENT BUILDUP BLOCKING OUTLET ORIFICE
Vegetation		X		REMOVE FROM AROUND RISER
Other				

**Principal Outlet Structure - Barrel, conduit, etc.: 24" CMP**

Condition of Structure			X	CORROSION ON PIPE
Settlement		X		CAVE-IN OVER SPILLWAY PIPE
Trash & Debris	X			
Erosion/Sediment			X	EROSION AROUND PIPE
Outlet Protection		X		RIP-RAP IS COVERED BY SEDIMENT
Other				

**Emergency Spillway (Overflow):**

Vegetation	X			
Lining		X		UNABLE TO DETERMINE
Erosion	X			
Trash & Debris	X			
Other		X		NEEDS TO BE RE-ESTABLISHED

Notes

Facility Item	O.K.	Routine	Urgent	Comments
<b>Nuisance Type conditions:</b>				
Mosquito Breeding			X	STANDING WATER THROUGHOUT BASIN
Animal Burrows	X			
Graffiti	X			
Other				
<b>Surrounding Perimeter Conditions:</b>				
Land Uses	X			
Vegetation	X			
Trash & Debris	X			
Aesthetics	X			
Access/Maintenance Roads or Paths		X		ACCESS IS LIMITED
Other				

Remarks

TRASH AND DEBRIS THROUGHOUT BASIN.  
TRES NEED TO BE CUT DOWN.  
RISER NEEDS TO BE REPAIRED.  
OUTLET NEEDS TO BE REPAIRED/REPALCED AND IS CORRODED.  
EMERGENCY SPILLWAY NEEDS TO BE RE-ESTABLISHED.  
INCOMING PIPE IS COVERED WITH LEAVES AND DEBRIS.

BASIN HAS FAILED - PRINCIPAL SPILLWAY HAS PIPING ALONG ITS ENTIRE LENGTH. WATER IS NO LONGER FLOWING THROUGH THE PIPE SPILLWAY BUT BESIDE IT IN AN UNCONTROLLED MANNER. IN ADDITION, THE ANTI-VORTEX DEVICE HAS BEEN REMOVED. SEDIMENT BUILDUP IS BLOCKING THE LOW RELEASE AND ALSO CAUSING STANDING WATER THROUGHOUT THE BOTTOM OF THE BMP RESULTING IN MOSQUITO PROBLEMS IN THE SUMMER. THE OUTFALL CHANNEL FROM THE BMP NEEDS TO BE CLEANED SO THAT POSITIVE DRAINAGE CAN BE RE-ESTABLISHED TO THE DOWNSTREAM CHANNEL AND ALLOW THE BASIN TO FUNCTION AS DESIGNED. THE EMERGENCY SPILLWAY NEEDS TO BE RE-ESTABLISHED BY LOWERING THE CREST OF THE SPILLWAY BY SEVERAL INCHES.

Overall Stormwater Division Internal Rating: 1

Signature

Date Jan 22, 2009

Title Inspector II

**James City County Stormwater Division  
Stormwater Management / BMP Inspection Report  
Detention and Retention Pond Facilities**

Submit by Email

Print Form

County BMP ID Code

Name of Facility  BMP No:  Date

Location

Owner Name

Inspector Name

Type of Facility

Weather Conditions  Type  Final Inspection  County BMP Inspection Program  Owner Inspection

If an inspection item is not applicable, mark NA, otherwise mark the appropriate column.

- O.K - The item checked is in adequate condition and the maintenance program is currently satisfactory. No action required.
- Routine - The item checked requires attention, but does not present an immediate threat to the function/integrity of the BMP.
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Provide an explanation and details in the comment column, if routine or urgent are marked.

Facility Item	O.K.	Routine	Urgent	Comments
<b>Embankments and Side Slopes:</b>				
Grass Height	X			
Vegetation Condition	X			
Tree Growth		X		REMOVE TREES FROM EMBANKMENTS
Erosion		X		EROSION IN DIFFERENT AREAS
Trash & Debris		X		REMOVE TRASH
Seepage	X			
Fencing or Benches	N/A			
Interior Landscaping/ Planted Areas:	<input type="checkbox"/> None	<input type="checkbox"/> Constructed Wetland Shallow Marsh	<input checked="" type="checkbox"/> Naturally Established Vegetation	
Vegetated Conditions	X			
Trash & Debris	X			
Floating Material	X			
Erosion	X			
Sediment		X		SEDIMENT BUILDUP IN BASIN
Dead Plant	X			
Aesthetics		X		
Other				

Notes: Embankment is very low profile but is overgrown with trees. These need to be removed so that grassy vegetation can be established. It is not necessary to remove the trees on the slope from the parking lot into the BMP.

Facility Item	O.K.	Routine	Urgent	Comments
<b>Water Pools:</b>	<input type="checkbox"/> Permanent Pool (Retention Basin)	<input type="checkbox"/> Shallow Marsh (Detention Basin)	<input checked="" type="checkbox"/> None, Dry (Detention Basin)	
Shoreline Erosion	X			
Algae	X			
Trash & Debris		X		REMOVE TRASH
Sediment		X		SEDIMENT BUILDUP IN BASIN
Aesthetics		X		
Other	STANDING WATER		X	HOLDING WATER THROUGHOUT LENGTH OF BMP
<b>Inflows (Describe Types/Locations): CURB INLETS, UNKNOWN DIAMETER PIPE AND TYPE</b>				
Condition of Structure	X			
Erosion	X			
Trash & Debris	X			
Sediment		X		REMOVE SEDIMENT FROM IN FRONT OF PIPE
Outlet Protection		X		RIP-RAP IS COVERED BY SEDIMENT
Other				
<b>Principal Flow control Structure - Riser, Intake, etc. (Describe Type): 30" CMP RISER</b>				
Condition of Structure			X	ANTI-VORTEX DEVICE IS OFF
Corrosion			X	CORROSION ON STRUCTURE
Trash & Debris	X			
Sediment			X	SEDIMENT BUILDUP BLOCKING OUTLET ORIFICE
Vegetation		X		REMOVE FROM AROUND RISER
Other				
<b>Principal Outlet Structure - Barrel, conduit, etc.: 24" CMP</b>				
Condition of Structure			X	CORROSION ON PIPE
Settlement		X		CAVE-IN OVER SPILLWAY PIPE
Trash & Debris	X			
Erosion/Sediment			X	EROSION AROUND PIPE
Outlet Protection		X		RIP-RAP IS COVERED BY SEDIMENT
Other				
<b>Emergency Spillway (Overflow):</b>				
Vegetation	X			
Lining		X		UNABLE TO DETERMINE
Erosion	X			
Trash & Debris	X			
Other		X		NEEDS TO BE RE-ESTABLISHED

Notes

Facility Item	O.K.	Routine	Urgent	Comments
<b>Nuisance Type conditions:</b>				
Mosquito Breeding			X	STANDING WATER THROUGHOUT BASIN
Animal Burrows	X			
Graffiti	X			
Other				
<b>Surrounding Perimeter Conditions:</b>				
Land Uses	X			
Vegetation	X			
Trash & Debris	X			
Aesthetics	X			
Access/Maintenance Roads or Paths		X		ACCESS IS LIMITED
Other				

Remarks

TRASH AND DEBRIS THROUGHOUT BASIN.  
TRESSES NEED TO BE CUT DOWN.  
RISER NEEDS TO BE REPAIRED.  
OUTLET NEEDS TO BE REPAIRED/REPALED AND IS CORRODED.  
EMERGENCY SPILLWAY NEEDS TO BE RE-ESTABLISHED.  
INCOMING PIPE IS COVERED WITH LEAVES AND DEBRIS.

BASIN HAS FAILED - PRINCIPAL SPILLWAY HAS PIPING ALONG ITS ENTIRE LENGTH. WATER IS NO LONGER FLOWING THROUGH THE PIPE SPILLWAY BUT BESIDE IT IN AN UNCONTROLLED MANNER. IN ADDITION, THE ANTI-VORTEX DEVICE HAS BEEN REMOVED. SEDIMENT BUILDUP IS BLOCKING THE LOW RELEASE AND ALSO CAUSING STANDING WATER THROUGHOUT THE BOTTOM OF THE BMP RESULTING IN MOSQUITO PROBLEMS IN THE SUMMER. THE OUTFALL CHANNEL FROM THE BMP NEEDS TO BE CLEANED SO THAT POSITIVE DRAINAGE CAN BE RE-ESTABLISHED TO THE DOWNSTREAM CHANNEL AND ALLOW THE BASIN TO FUNCTION AS DESIGNED. THE EMERGENCY SPILLWAY NEEDS TO BE RE-ESTABLISHED BY LOWERING THE CREST OF THE SPILLWAY BY SEVERAL INCHES.

Overall Stormwater Division Internal Rating:

1

Signature

Date Jan 22, 2009

Title Inspector II

Date Record Created:

WS\_BMPNO:

Created By:

PC048

Effective Year Declaration of Covenants:

WATERSHED PC

BMP ID NO 048

PLAN NO SP-56-92

TAX PARCEL (38-3)(1-19A)

PIN NO 38301000019A

CONSTRUCTION DATE 1/1/1992

PROJECT NAME Green Springs Chapel

FACILITY LOCATION 3687 Ironbound Road

CITY-STATE Williamsburg, VA

CURRENT OWNER Green Springs Chapel

OWNER ADDRESS 3687 Ironbound Road

OWNER ADDRESS 2

CITY-STATE-ZIP CODE Williamsburg, VA 23188

OWNER PHONE

MAINT AGREEMENT Yes

EMERG ACTION PLAN No

Get Last BMP No

Return to Menu

Other affected parcels:

PIN\_NO2:

PIN\_NO8:

PIN\_NO3:

PIN\_NO9:

PIN\_NO4:

PIN\_NO5:

PIN\_NO6:

PIN\_NO7:

MAINTENANCE PLAN

No

SITE AREA acre

3.4

LAND USE

Church

old BMP TYP

Dry Pond

JCC BMP CODE

POINT VALUE

4

SVC DRAIN AREA acres

4

SERVICE AREA DESCR

Building & Parking Lot

IMPERV AREA acres

2.24

RECV STREAM

UT of Powhatan Creek

EXT DET-WQ-CTRL

Yes

WTR QUAL VOL acre-ft

0.14

CHAN PROT CTRL

No

CHAN PROT VOL acre-ft

0

SW/FLOOD CONTROL

Yes

GEOTECH REPORT

No

CTRL STRUC DESC

CMP Riser

CTRL STRUC SIZE inches

30

OTLT BARRL DESC

CMP Barrel

OTLT BARRL SIZE inch

24

EMERG SPILLWAY

Yes

DESIGN HW ELEV

64.2

PERM POOL ELE

na

2-YR OUTFLOW cfs

8.79

10-YR OUTFLOW cfs

17.51

REC DRAWING

No

CONSTR CERTI

No

LAST INSP DATE

9/21/2000

Inspected by:

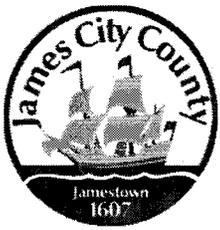
INTERNAL RATING

2

MISC/COMMENTS

Barrel piping failure. Headwater stream.

Additional Comments:



## Stormwater Division

### MEMORANDUM

**DATE:** January 25, 2010  
**TO:** File  
**FROM:** Darryl Cook, County Engineer *DEC*  
**RE:** Greensprings Chapel BMP (PC048) Maintenance Activities

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In response to inspection activities conducted by the Stormwater Division, maintenance work was performed on this BMP in late December, 2009. The work items were first documented in an inspection report dated January 22, 2009. The major deficiencies were failure of the principal spillway, tree growth on the dam embankment, and sediment accumulation in the basin bottom. Failure of the principal spillway appears to be due to clogging of the low release orifice in the riser by excessive levels of sediment which led to standing water in the basin resulting in piping along the spillway.

The work was performed by Reed Enterprises, Wayne Reed president. Contact at the church was Bruce Utne. Maintenance items performed were:

1. Trees were removed from both the dam embankment and the bottom of the basin.
2. The principal spillway originally consisted of a metal pipe and a metal anti-vortex device. The metal principal spillway was replaced with rigid (smooth-walled) HDPE pipe as the metal pipe was showing signs of rust and it was determined by the owner that it was more cost-effective to replace the pipe rather than reinstall it.
3. The original riser and anti-vortex were reinstalled.
4. A 3-foot extension of perforated PVC pipe with a T-section at the end was placed over the low release orifice to reduce the potential for clogging and decrease maintenance.
5. An unknown quantity of sediment and debris was removed from the basin bottom.
6. The basin's outfall channel was pulled and positive drainage was obtained from the principal spillway to the outfall channel.
7. The emergency spillway was reestablished at the design elevation.
8. Disturbed areas were reseeded and the emergency spillway matted with EC-2 matting.

The owner is intending to institute routine maintenance in an attempt to avoid this level of major maintenance in the future.

Scott Dewhurst

234-6776