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: **WC032**

DATE VERIFIED: **September 17, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: March 12, 2010

TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services

FROM: Tina Cantwell, Stormwater

PO: 270712

RE: Files Approved for Scanning

General File ID or BMP ID: WC032

PIN: 1240100010A

Subdivision, Tract, Business or Owner Name (if known): Hickory Neck Episcopal Church

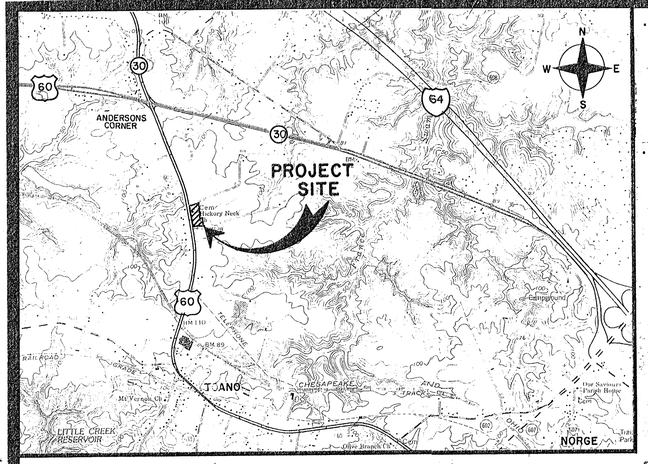
Property Description: Church Site

Site Address: 8320 Richmond Road

(For internal use only) **Box** 15 **Drawer:** 8

Agreements: (in file as of scan date) N **Book or Doc#:** **Page:**

Comments



LOCATION MAP 1" = 2000'

OWNER: Hickory Neck Episcopal Church
8300 Richmond Road
Toano, Virginia 23168
Phone: (804) 566-0276

LOCAL CONTACT: JESSE HODGES (804) 966-2250

LAND USE SUMMARY:

- ZONING OF SITE: (A-1) General Agricultural District (RP) Reservoir Protection Overlay District
- TAX MAP: (12-4)(1-10) & (12-4)(1-10-A)
- TOTAL SITE AREA: 112,945 SF/2.59 AC.
- TOTAL PROJECT AREA: 60,322 SF/1.38 AC.
- BUILDING AREA: Existing Building: 1312 SF/0.03 AC 2.18% Proposed Building: ~~3032 SF/0.03 AC 5.35%~~ 1357 SF/0.03 AC 2.18%
- OPEN SPACE: ~~38,184 SF / 0.88 AC 63.30%~~ 40,659 SF/0.93 AC 67.40%
- IMPERVIOUS AREA: 16,994 SF/ 0.39 AC ~~28.17%~~ 28.26%
(PARKING, ACCESS DRIVES, ENTRANCE)

PARKING:

CATEGORY C - PUBLIC ASSEMBLY ONE (1) PARKING SPACE PER FIVE (5) SEATS

TOTAL NUMBER OF PERSONS USING THE EXISTING CHURCH AND PROPOSED PARISH HOUSE ADDITION SIMULTANEOUSLY: 80 MAX.

TOTAL NUMBER OF PARKING SPACES REQUIRED: 16
- 15 REGULAR SPACES
- 1 VAN ACCESSIBLE SPACE

TOTAL NUMBER OF PARKING SPACES PROVIDED: 33
- 30 REGULAR SPACES
- 2 VAN ACCESSIBLE SPACES

PROPOSED PHASING

PHASE I.- GRAVEL AND ASPHALT ROADS AND PARKING START 1994

PHASE II - PROPOSED PARISH HOUSE ADDITION "A" START ~~1996~~ 1990

PHASE III - PROPOSED PARISH HOUSE ADDITION "B" START 2000 ±

PROPOSED BUILDING ADDITION:

- USE GROUP - ASSEMBLY, A4 PER THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE
- CONSTRUCTION TYPE - TYPE 3 OR 5 (SPECIFIC TYPE TO BE DETERMINED)
- APPROXIMATE ELEVATIONS OF BUILDING AT FINISHED GRADE: (TO BE DETERMINED)
- TOTAL HEIGHT OF BUILDING: 22 TO 28 FEET
- TOTAL NUMBER OF STORIES: TWO (2)
- SOLID WASTE DISPOSAL: RESIDENTIAL PICK-UP
- SANITARY WASTE DISPOSAL FACILITY: PROPOSED SEPTIC SYSTEM AS SHOWN ON SITE PLAN

GENERAL NOTES

1. THIS PLAN DOES NOT REPRESENT AN ACTUAL BOUNDARY SURVEY BY DJG, INC. BOUNDARY INFORMATION IS BASED ON DEEDS AND PLATS OF RECORD.
2. ALL PRIVATE LINES SHOULD BE IDENTIFIED BY THE FACILITY OWNER BEFORE EXCAVATION. NOTIFY MISS UTILITY 48 HOURS PRIOR TO EXCAVATION (1-800-257-7777).
3. CONTRACTOR SHALL ABANDON EXISTING SEPTIC SYSTEM IN ACCORDANCE WITH THE COMMONWEALTH OF VIRGINIA STATE BOARD OF HEALTH REGULATIONS.
4. CONTRACTOR SHALL MODIFY EXISTING FENCING SURROUNDING THE EXISTING PLAYGROUND TO FACILITATE CONSTRUCTION.

COUNTY OF JAMES CITY
FINAL SITE PLAN

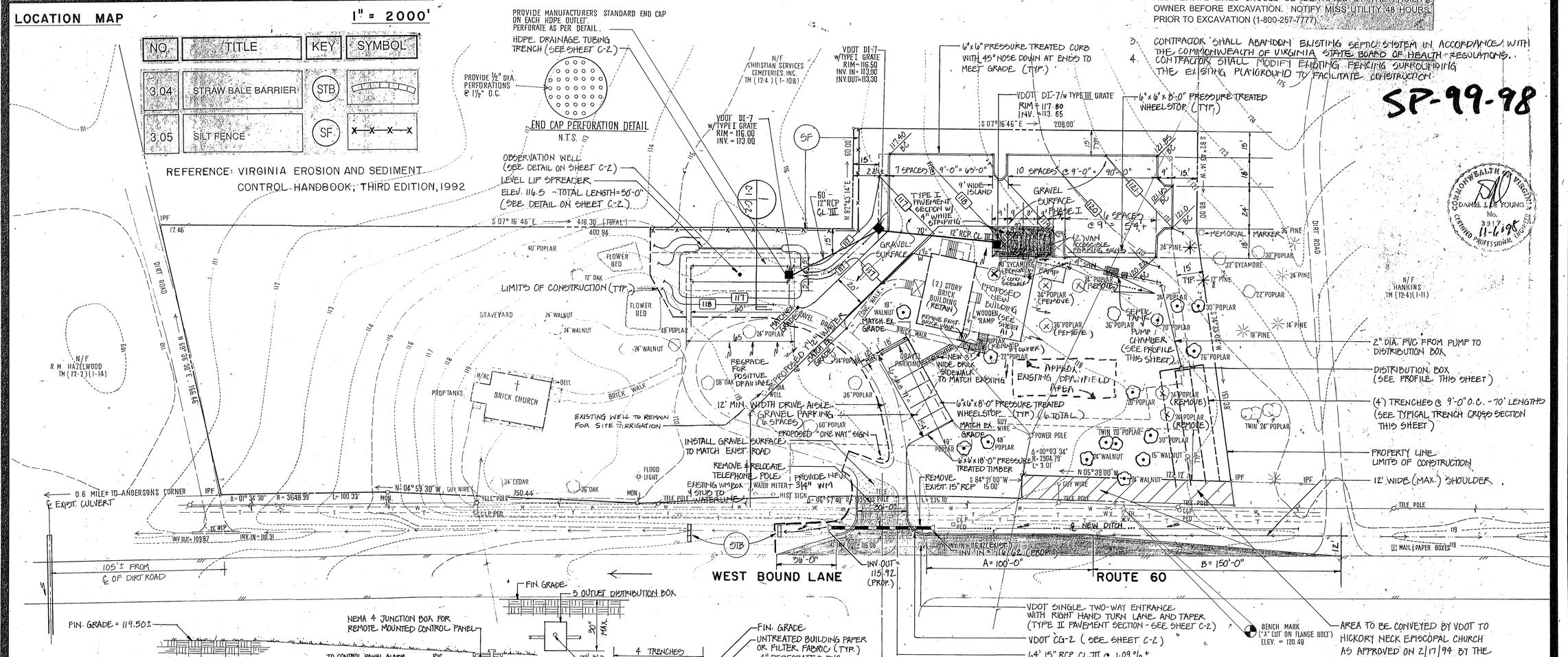
APPROVALS	DATE
Fire Dept. CD/JS	9-14-98
Health Dept. CL/JS	9-8-98
VDOT RCB/JS	9-10-98
[illegible]	[illegible]
E[illegible] DEC/JS	9-23-98
Z[illegible]	[illegible]
JC[illegible] DWP/JS	11-13-98
County Eng. WNB/JS	9-15-98
REA	
Other	

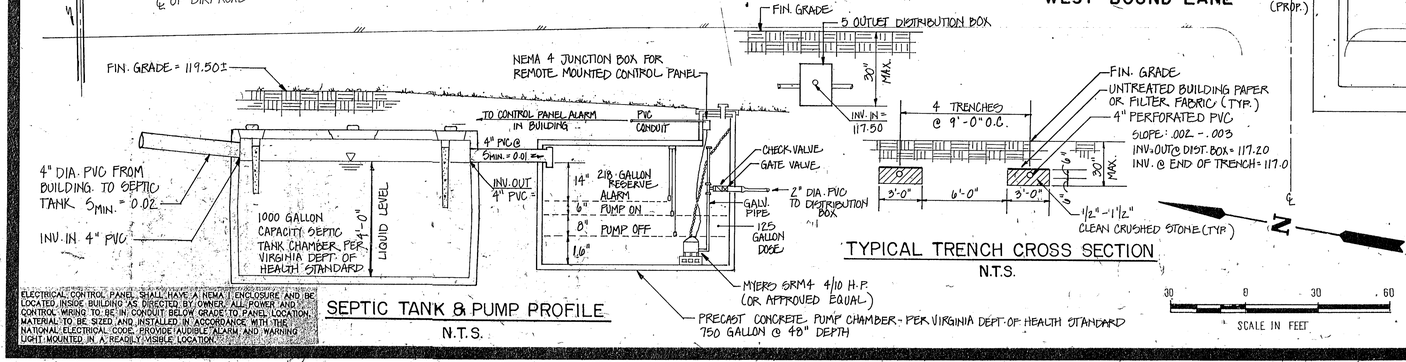
NOV 1998
RECEIVED
PLANNING DEPARTMENT

SP-99-98

NO.	TITLE	KEY	SYMBOL
3.04	STRAW BALE BARRIER	STB	
3.05	SILT FENCE	SF	X X X X

REFERENCE: VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, THIRD EDITION, 1992





SEPTIC TANK & PUMP PROFILE
N.T.S.

TYPICAL TRENCH CROSS SECTION
N.T.S.

ELECTRICAL CONTROL PANEL SHALL HAVE A NEMA 1 ENCLOSURE AND BE LOCATED INSIDE BUILDING AS DIRECTED BY OWNER. ALL POWER AND CONTROL WIRING TO BE IN CONDUIT BELOW GRADE TO PANEL LOCATION. MATERIAL TO BE SIZED AND INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. PROVIDE AUDIBLE ALARM AND WARNING LIGHT MOUNTED IN A READILY VISIBLE LOCATION.

NOTE:
THIS SITE PLAN IS AN AMENDMENT TO APPROVED SP-66-93 AND INCLUDES AN ADDITION TO THE EXISTING PARISH HOUSE AND ASSOCIATED PARKING IMPROVEMENTS.

REVISIONS

No.	Date	Description
1	9/29/93	REV. PER JCC COMMENTS
2	3/1/94	REV. PER JCC COMMENTS
3	6/23/94	REV. PER JCC COMMENTS
4	8/21/98	REV. PER CLIENT COMMENTS (SITE PLAN AMENDMENT TO SP-66-93)
5	10/22/98	REV. PER JCC COMMENTS

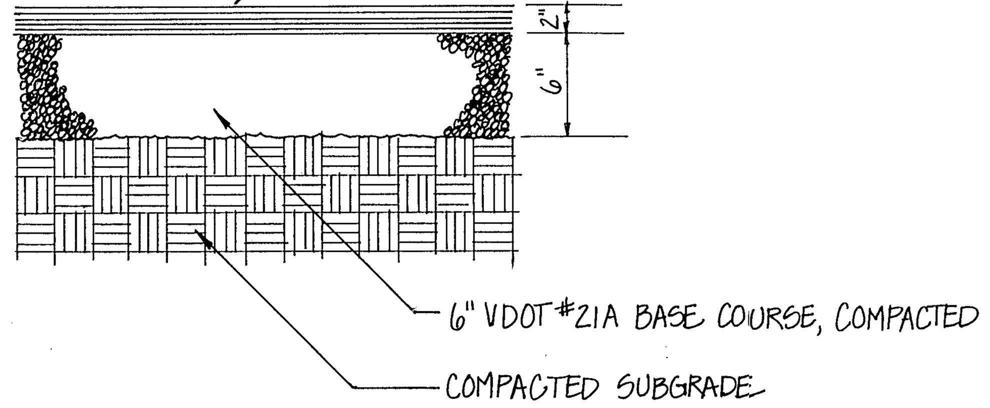
COMMONWEALTH OF VIRGINIA
DANIEL J. DE YOUNG
No. 3317
11-6-98
CERTIFIED PROFESSIONAL ENGINEER

ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187 (804) 253-0673 (804) 874-5015

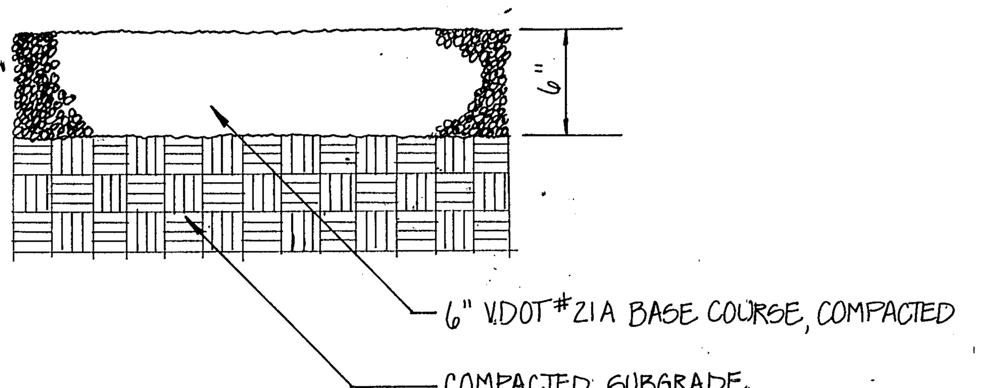
SITE PLAN
HICKORY NECK EPISCOPAL CHURCH
TOANO, VIRGINIA
JAMES CITY COUNTY, VIRGINIA

SCALE 1" = 30'
DESIGNED RSP/MEH
DRAWN MEH
CHECKED RSP
DATE 4/28/93
COMMISSION NO. 1900593
SHEET C-1 OF 2

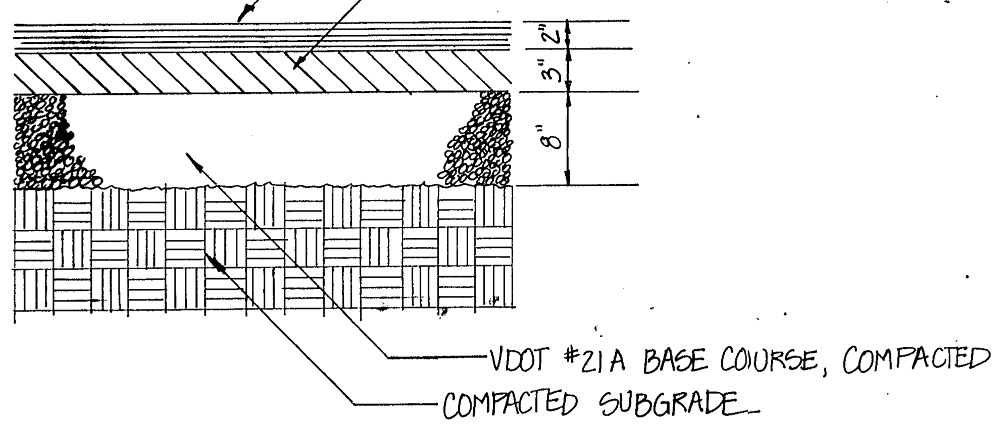
WC032_HICKORY_NECK_EPISCOPAL_CHURCH - 003



TYPE I PAVEMENT SECTION
NOT TO SCALE



TYPICAL GRAVEL SURFACE SECTION
NOT TO SCALE



TYPE II PAVEMENT SECTION
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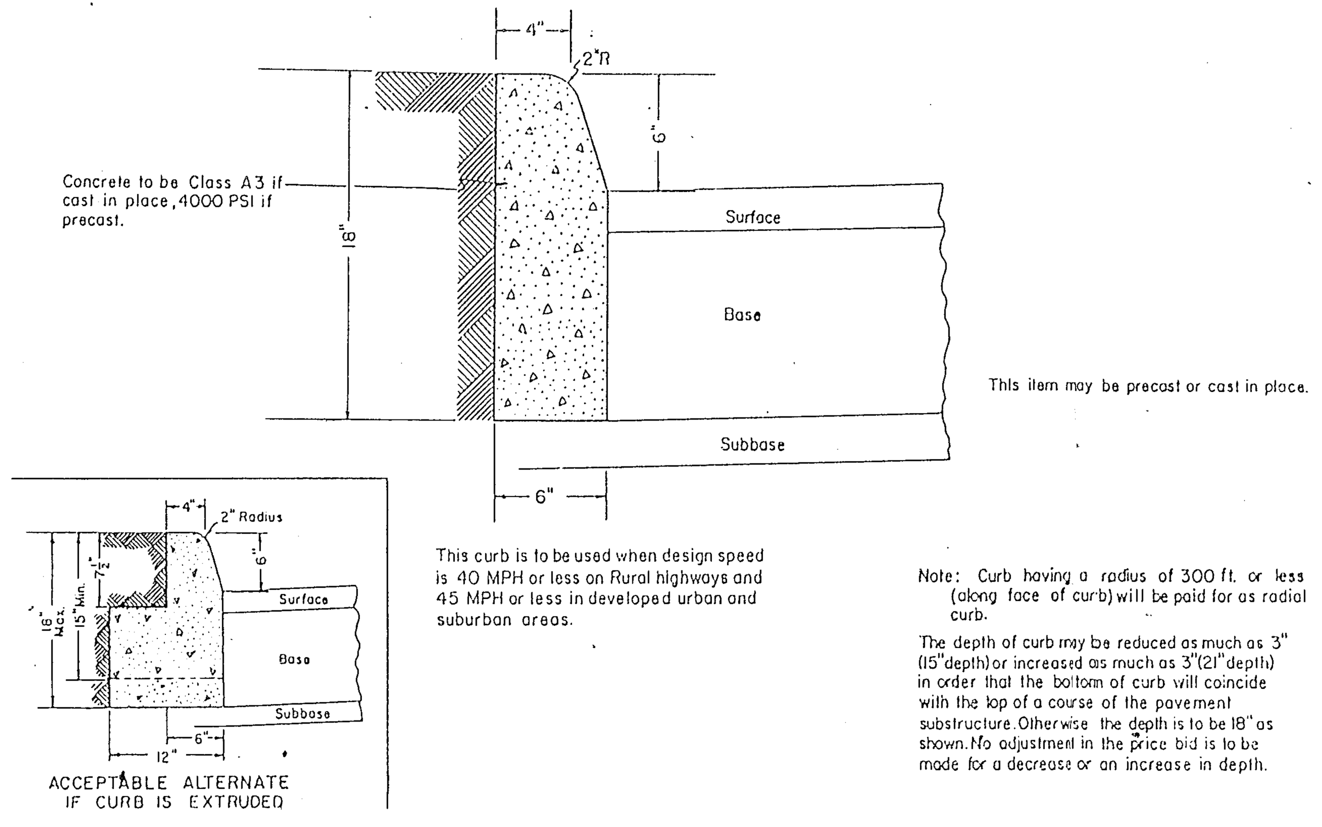
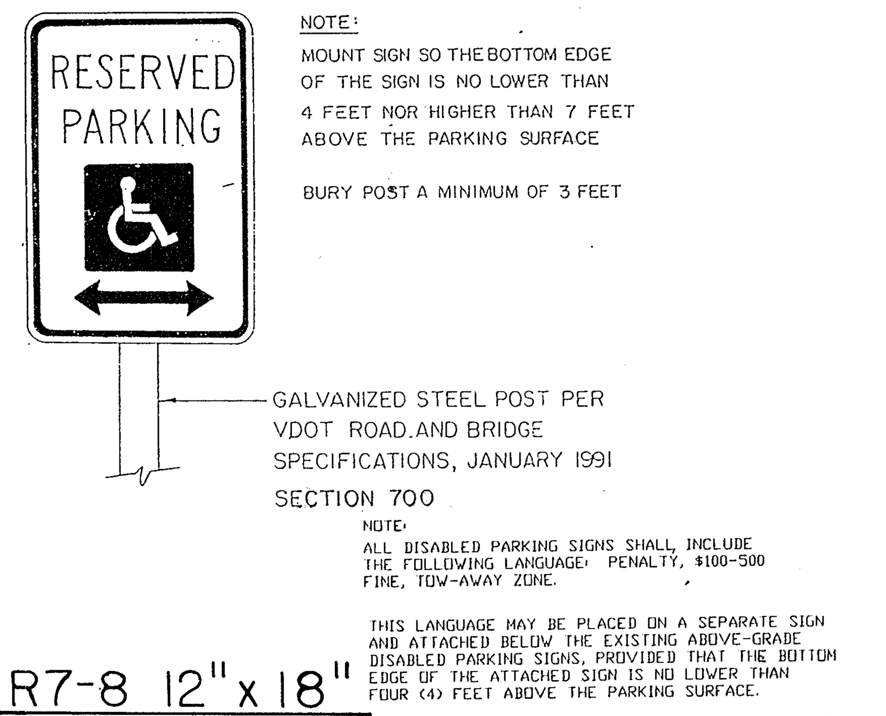
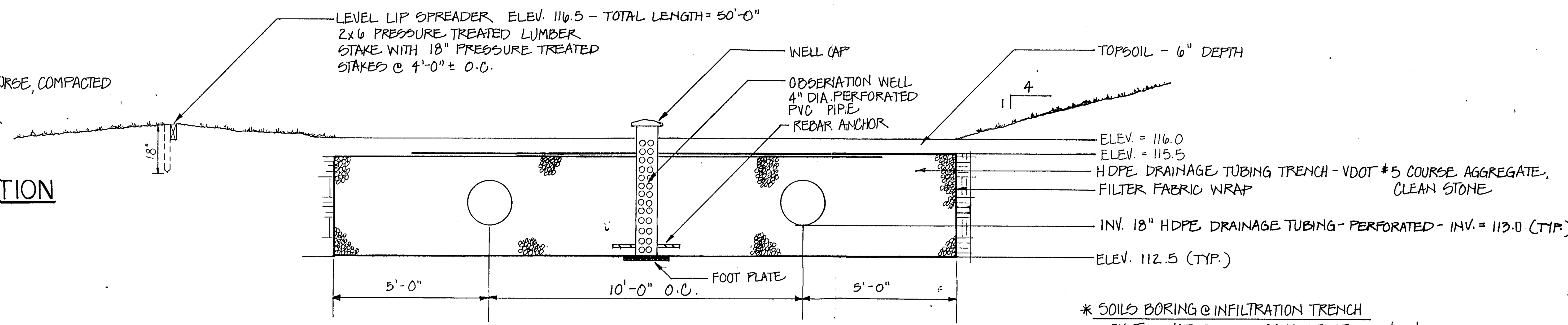


VDOT CG-2
NOT TO SCALE



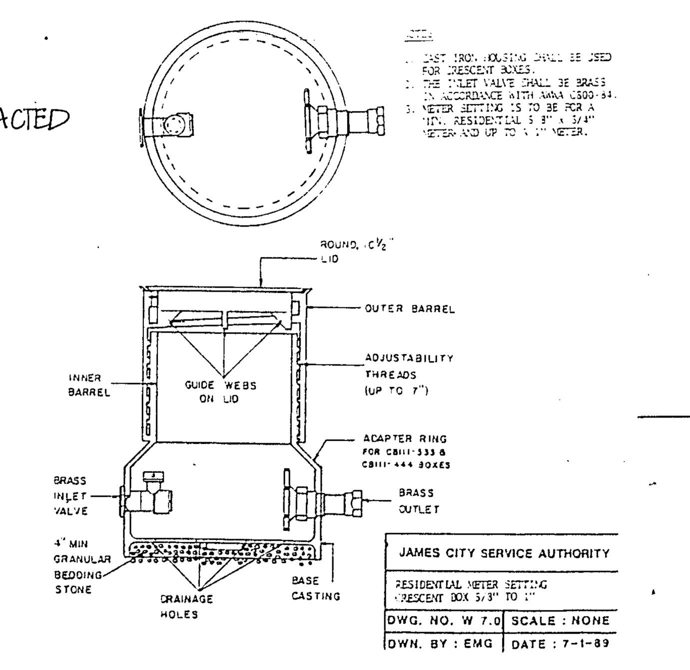
R7-8 12" x 18"
MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
NOT TO SCALE



1 C-1 C-2 HDPE DRAINAGE TUBING SYSTEM TRENCH SECTION
NOT TO SCALE

* SOILS BORING @ INFILTRATION TRENCH
BY TIDEWATER SOILS CONSULTANTS 2/28/94

DEPTH	DESCRIPTION	PERC. RATE
0-34	LIGHT SANDY CLAY LOAM	35-40 MIN./INCH
34-60	SANDY LOAM	25-30 MIN./INCH



LANDSCAPING REQUIREMENTS

BUILDING LANDSCAPING

- TOTAL PLANTING AREA REQUIRED: ~~2720 SF~~ 1284 SF
- TOTAL LANDSCAPING REQUIRED: ~~68 SHRUBS~~ 33 SHRUBS (5 SHRUBS PER 200 SF OF PLANTING AREA PROVIDED)
- TOTAL PLANTING AREA AND LANDSCAPING TRANSFERRED ELSEWHERE ON SITE: ~~1360 SF/34 SHRUBS~~ 445 SF/12 SHRUBS

PARKING LOT LANDSCAPING

- TOTAL NUMBER OF PARKING SPACES: 33 SPACES
- TOTAL LANDSCAPING REQUIRED: 7 TREES AND 14 SHRUBS (1 TREE AND 2 SHRUBS FOR EACH 5 PARKING SPACES)
- 50% OF TREES SHALL BE 2 1/2" MIN. CALIPER = 4
- 25% OF SHRUBS SHALL BE CONIFEROUS = 4

LANDSCAPE AREAS: ALONG RIGHT-OF-WAY, SIDE YARD AND REAR YARD

- TOTAL PLANTING AREA REQUIRED: 16,896 SF
- TOTAL PLANTING AREA TRANSFERRED FROM BUILDING LANDSCAPING AREA: ~~1360 SF~~ 445 SF
- TOTAL PLANTING AREA PROVIDED: ~~18,256 SF~~ 17,341 SF

TREE PRESERVATION

- (4) MATURE TREES (12" MIN. DBH) = 8 PLANTED
- (9) SPECIMEN TREES (24" MIN. DBH) = 27 PLANTED
- TOTAL EQUIVALENT OF PLANTED TREES = 35

LANDSCAPING REQUIREMENTS - LANDSCAPE AREAS

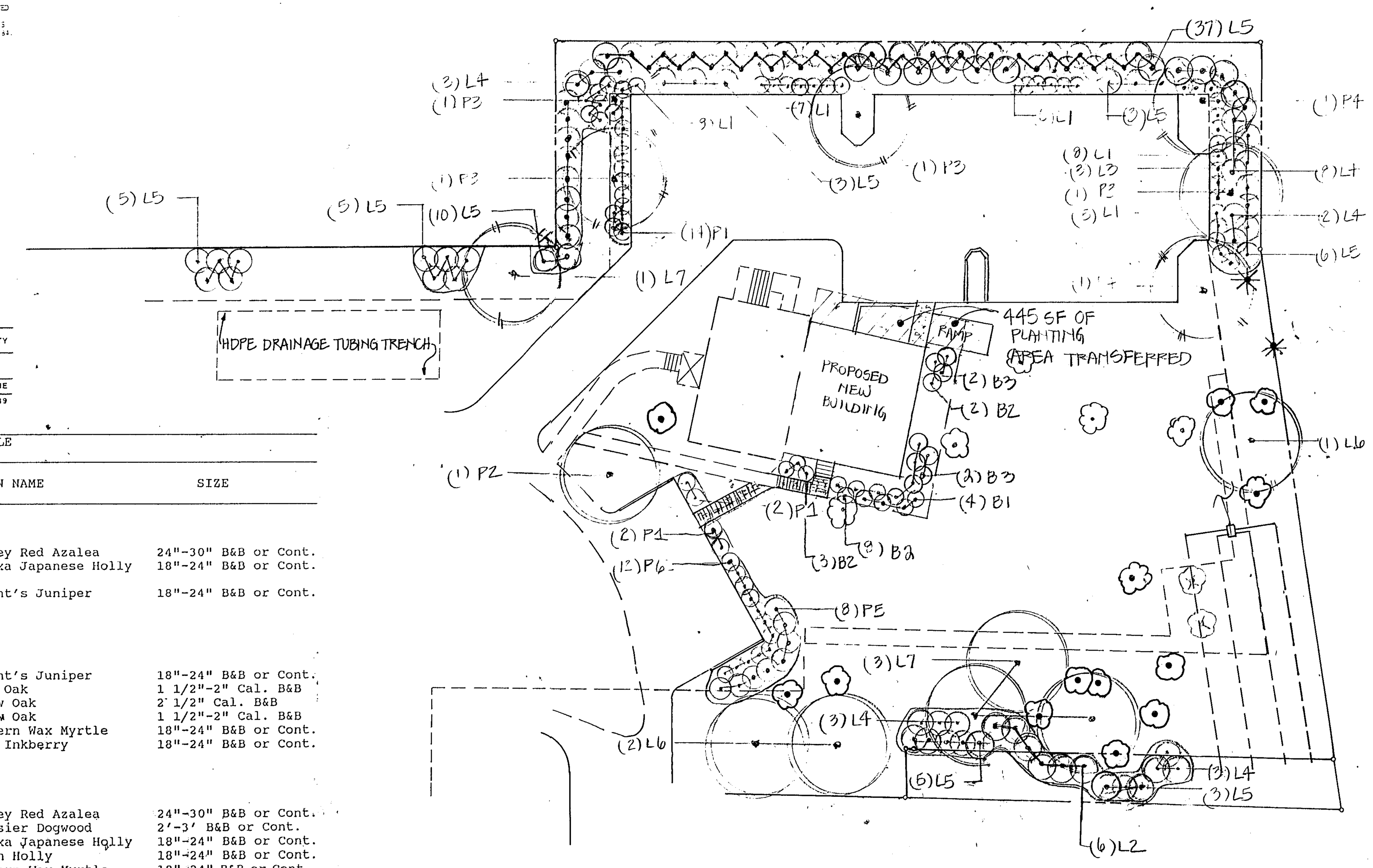
- 42 TREES (1 TREE PER 400 SF)
- 127 SHRUBS (3 SHRUBS PER 400 SF)
- ~~34 SHRUBS~~ 12 SHRUBS (TRANSFERRED FROM BUILDING LANDSCAPING)

TOTAL LANDSCAPING PROVIDED IN LANDSCAPED AREAS

- ~~161 SHRUBS~~ 139 SHRUBS (MINIMUM OF 40 SHRUBS (25%) CONIFEROUS)
- 7 TREES
- (4) MATURE AND (9) SPECIMEN TREES PRESERVED

PLANT SCHEDULE

ABBR.	QTY.	SCIENTIFIC NAME	COMMON NAME	SIZE
BUILDING LANDSCAPING				
B1	~~8~~ 4	Azalea Kureme "Hershey Red"	Hershey Red Azalea	24"-30" B&B or Cont.
B2	~~18~~ 13	Ilex Crenata Convexa	Convexa Japanese Holly	18"-24" B&B or Cont.
B3	~~8~~ 4	Juniperus Chinensis "Sargenti"	Sargent's Juniper	18"-24" B&B or Cont.
PARKING LOT LANDSCAPING				
P1	18	Juniperus Chinensis "Sargenti"	Sargent's Juniper	18"-24" B&B or Cont.
P2	1	Quercus Alba	White Oak	1 1/2"-2" Cal. B&B
P3	4	Quercus Phellos	Willow Oak	2 1/2" Cal. B&B
P4	2	Quercus Phellos	Willow Oak	1 1/2"-2" Cal. B&B
P5	8	Myrica Cerifera	Southern Wax Myrtle	18"-24" B&B or Cont.
P6	12	Ilex Glabra Compacta	Dwarf Inkberry	18"-24" B&B or Cont.
LANDSCAPE AREAS				
L1	34	Azalea Kureme "Hershey Red"	Hershey Red Azalea	24"-30" B&B or Cont.
L2	6	Cornus Stolonifera	Red Osier Dogwood	2'-3' B&B or Cont.
L3	3	Ilex Crenata Convexa	Convexa Japanese Holly	18"-24" B&B or Cont.
L4	19	Ilex Vomitoria	Yaupon Holly	18"-24" B&B or Cont.
L5	~~99~~ 77	Myrica Cerifera	Southern Wax Myrtle	18"-24" B&B or Cont.
L6	3	Quercus Alba	White Oak	1 1/2"-2" Cal. B&B
L7	4	Quercus Phellos	Willow Oak	1 1/2"-2" Cal. B&B



LANDSCAPE PLAN
SCALE: 1" = 30'-0"

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 plan deficiencies. In addition to these notes, all provisions of the Virginia Erosion and Sediment Control Regulations shall apply to this project.

1. 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.
2. 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.
3. 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 upslope land disturbance takes place. Earthen structures such as dams, dikes, and diversions must be seeded and mulched immediately after installation. An on-site preconstruction meeting will be held between the Office of Code Compliance and the contractor to identify those measures to be initially installed.
4. 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 preconstruction 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.
5. Surface flows over cut and fill slopes shall be controlled by either redirecting flows from transversing the slopes or by installing mechanical devices to safely lower water downslope without causing erosion. A temporary fill diversion (Std. & Spec. 3.10) shall be installed prior to the end of each working day.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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).
11. 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 3.35. Seeding will then take place as soon as the season permits.
12. 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 3.32, Permanent Seeding. Irrigation shall be required as necessary to ensure establishment of grass cover.
13. 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 3.35, Mulching and Manufacturer's Instructions.
14. Inlet protection in accordance with Specification 3.07 shall be provided for all storm drain inlets as soon as practical following construction of same.
15. Temporary liners, such as polyethylene sheets, shall be provided for all paved ditches until the permanent concrete liner is installed.
16. Paved ditches shall be required wherever erosion is evident. Particular attention shall be paid to those areas where grades exceed 3 percent.
17. 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.
18. 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.
19. All paved and/or piped outfalls will be constructed before road grading and utility installation begins.

DC/bkh
2480c

NOTE:

THIS SITE PLAN IS AN AMENDMENT TO APPROVED SP-66-93 AND INCLUDES AN ADDITION TO THE EXISTING PARISH HOUSE AND ASSOCIATED PARKING IMPROVEMENTS.

DANIEL E. DE YOUNG 11-6-98

REVISIONS

No.	Date	Description
1	9/29/93	REV. PER JCC COMMENTS
2	3/1/94	REV. PER JCC COMMENTS
3	6/23/94	REV. PER JCC COMMENTS
4	8/21/98	REV. PER CLIENT COMMENTS (SITE PLAN AMENDMENT TO SP-66-93)

5. 10/22/98 REV. PER JCC COMMENTS

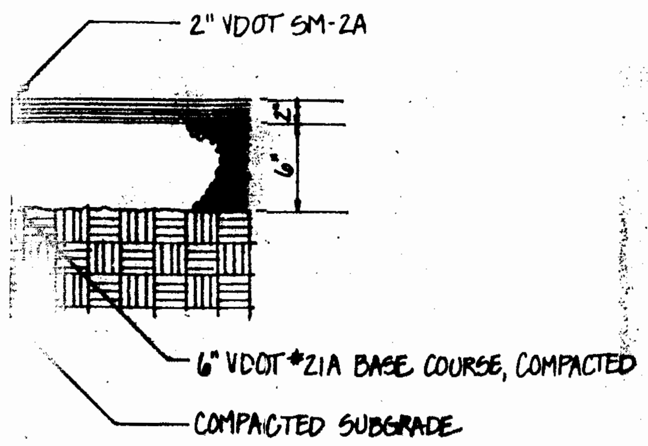
ENGINEERS · ARCHITECTS · SURVEYORS
INTERIOR DESIGNERS · PLANNERS
P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187 (804) 253-0673 (804) 874-5015

DETAILS AND NOTES
HICKORY NECK EPISCOPAL CHURCH
TOANO, VIRGINIA
JAMES CITY COUNTY VIRGINIA

SCALE NOTED
DESIGNED RSP
DRAWN MEH
CHECKED RSP
DATE 4/28/93
1900593
COMMISSION NO.
SHEET C-2
2 OF 2

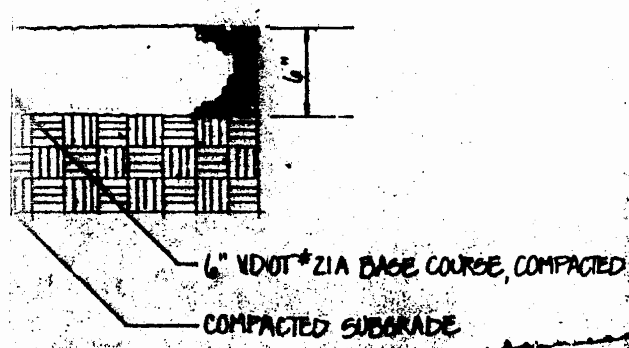
169805

WC032_HICKORY_NECK_EPISCOPAL_CHURCH - 004



PAVEMENT SECTION

ALE



GRAVEL SURFACE SECTION

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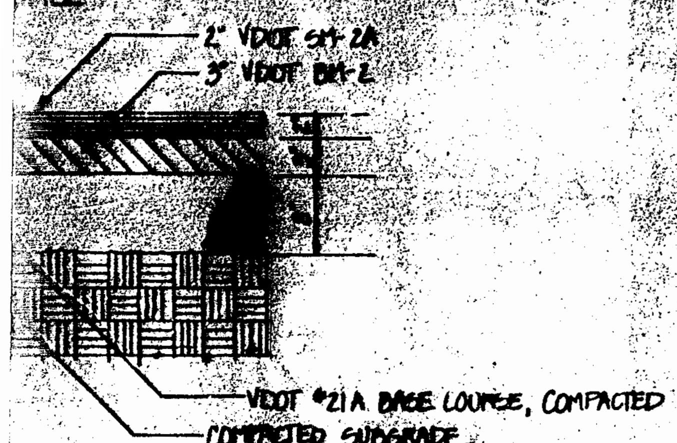

PAVEMENT SECTION

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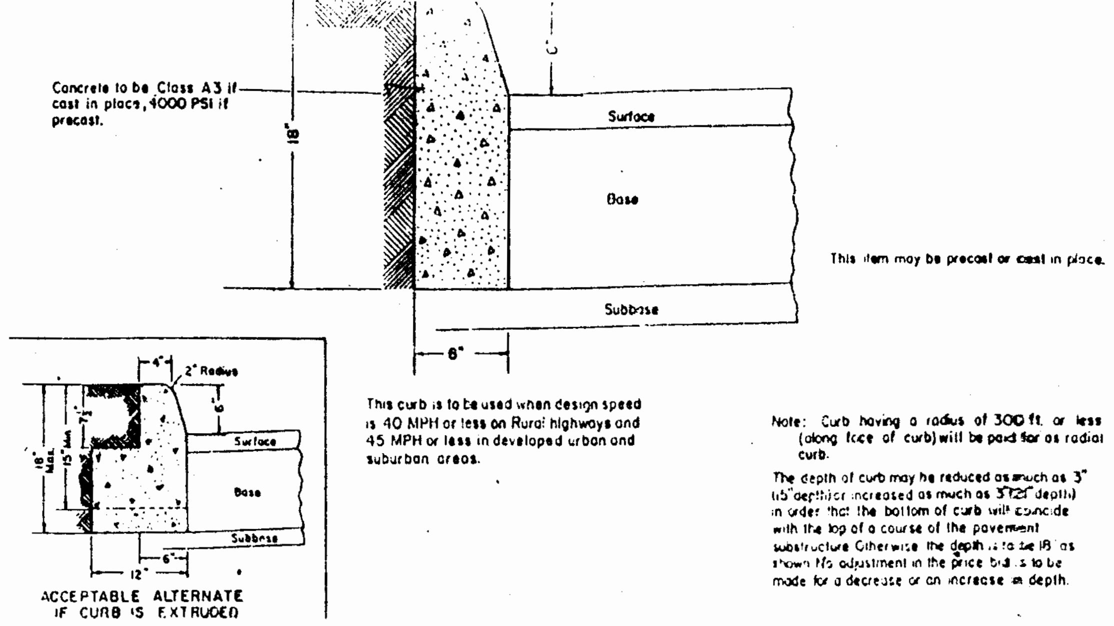
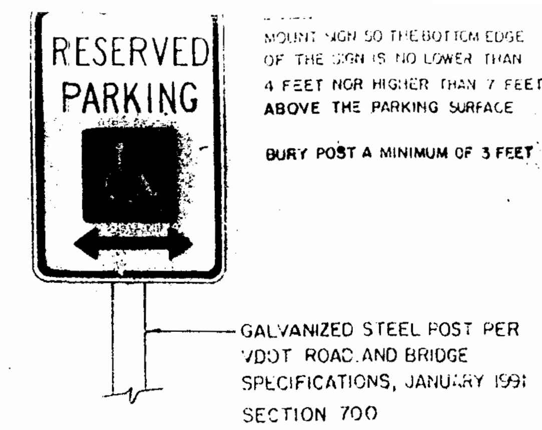


VDOT CG-2

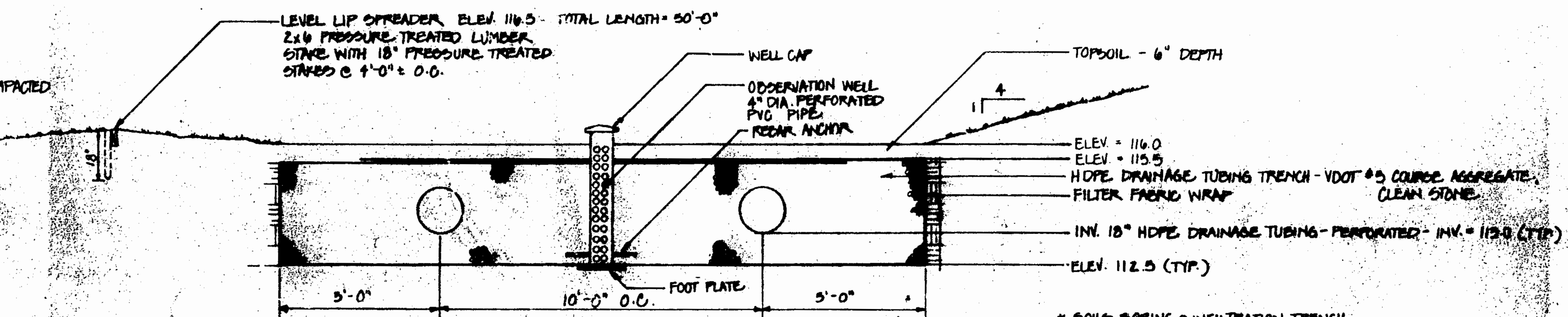
NOT TO SCALE



R7-8 12"x18"

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

NOT TO SCALE

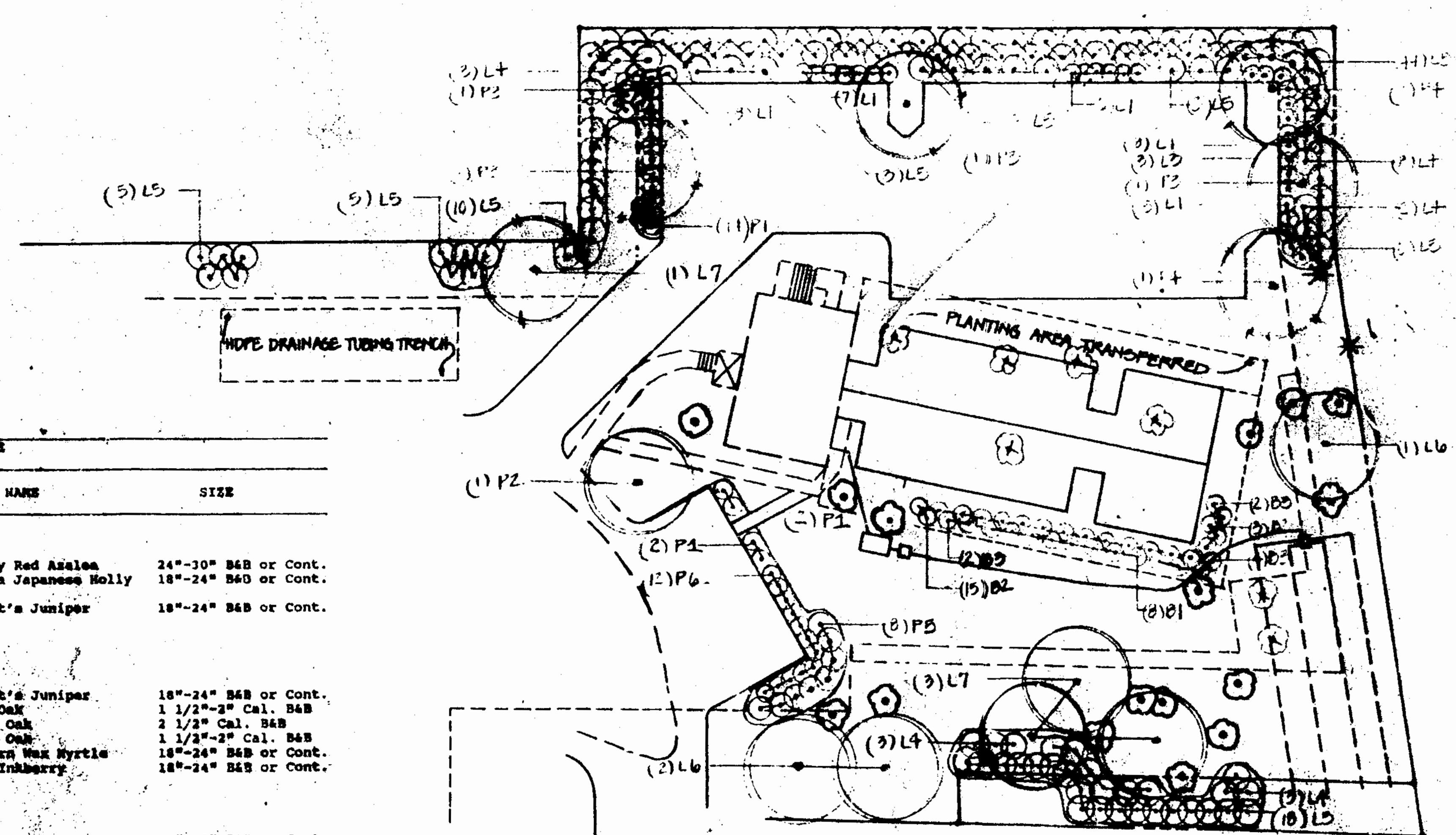


1 / C-1 C2 HDPE DRAINAGE TUBING SYSTEM TRENCH SECTION

NOT TO SCALE

* SOILS BORING @ INFILTRATION TRENCH BY TIDEWATER SOILS CONSULTANTS 2/28/94

DEPTH	DESCRIPTION	PERC. RATE	
0-34	LIGHT SANDY CLAY LOAM	35-40 MIN.	INCH
34-60	SANDY LOAM	25-30 MIN.	INCH



LANDSCAPE PLAN

SCALE: 1" = 30'-0"

LANDSCAPING REQUIREMENTS [illegible]

PLANTING AREA TRANSFERRED [illegible]

OF PARKING SPACES: 33 SPACES [illegible] 7 TREES AND 14 SHRUBS (FOR EACH 5 PARKING SPACES) [illegible] SHALL BE CONIFEROUS = 4

[illegible] YARD AND REAR YARD [illegible] TRANSFERRED FROM BUILDING [illegible] AREA PROVIDED: 18,208 SF

[illegible] LANDSCAPE AREAS [illegible] FROM BUILDING LANDSCAPING [illegible] PROVIDED IN LANDSCAPED AREAS [illegible] CONIFEROUS [illegible] SPECIMEN TREES PRESERVED

PLANT SCHEDULE

ABBR.	QTY.	SCIENTIFIC NAME	COMMON NAME	SIZE
BUILDING LANDSCAPING				
B1	8	Azalea Kurume "Hershey Red"	Hershey Red Azalea	24"-30" B&B or Cont.
B2	18	Ilex Crenata Convexa	Convexa Japanese Holly	18"-24" B&B or Cont.
B3	8	Juniperus Chinensis "Sargenti"	Sargent's Juniper	18"-24" B&B or Cont.
PARKING LOT LANDSCAPING				
P1	18	Juniperus Chinensis "Sargenti"	Sargent's Juniper	18"-24" B&B or Cont.
P2	1	Quercus Alba	White Oak	1 1/2"-2" Cal. B&B
P3	4	Quercus Phellos	Willow Oak	2 1/2" Cal. B&B
P4	2	Quercus Phellos	Willow Oak	1 1/2"-2" Cal. B&B
P5	8	Myrica Cerifera	Southern Wax Myrtle	18"-24" B&B or Cont.
P6	12	Ilex Glabra Compacta	Dwarf Inkberry	18"-24" B&B or Cont.
LANDSCAPE AREAS				
L1	34	Azalea Kurume "Hershey Red"	Hershey Red Azalea	24"-30" B&B or Cont.
L2	6	Cornus Stolonifera	Red Osier Dogwood	2'-3' B&B or Cont.
L3	3	Ilex Crenata Convexa	Convexa Japanese Holly	18"-24" B&B or Cont.
L4	19	Ilex Vomitoria	Yaupon Holly	18"-24" B&B or Cont.
L5	98	Myrica Cerifera	Southern Wax Myrtle	18"-24" B&B or Cont.
L6	3	Quercus Alba	White Oak	1 1/2"-2" Cal. B&B
L7	4	Quercus Phellos	Willow Oak	1 1/2"-2" Cal. B&B

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 plan deficiencies. In addition to these notes, all provisions of the Virginia Erosion and Sediment Control Regulations shall apply to this project.

1. 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.
2. 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.
3. 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 upslope land disturbance takes place. Earthen 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.
4. 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 preconstruction 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.
5. Surface flows over cut and fill slopes shall be controlled by either redirecting flows from transversing the slopes or by installing mechanical devices to safely lower water downslope without causing erosion. A temporary fill diversion (Std. & Spec. 3.10) shall be installed prior to the end of each working day.
6. 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.
7. 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.
8. The contractor shall complete drainage facilities within [illegible] days following completion of rough grading at any point within the project. The installation of drainage facilities shall take precedence over all underground utilities. [illegible] ditches from drainage structures shall be stabilized immediately after construction of same. This [illegible] installation of erosion control [illegible] where required [illegible] drainage outfalls required for a [illegible] before any [illegible] grading begins.
9. Permanent or temporary soil stabilization [illegible] all denuded areas within 7 days after final grade [illegible] on any portion of the site. Soil st[illegible] applied to denuded areas which may not [illegible] will remain dormant (undisturbed) [illegible] Soil stabilization measures include [illegible] mulching and the early application [illegible] areas to be paved.
10. No more than 300 feet of sanitary [illegible] waterlines, or underground utility lines [illegible] time. Following installation of any portion of [illegible] all disturbed areas are to be immediately stabilized [illegible] the same day).
11. If disturbed area stabilization is to be accomplished [illegible] the months of December, January, or February, [illegible] shall consist of mulching in accordance with [illegible] 3.35. Seeding will then take place as soon as [illegible] permits.
12. The term Seeding, Final Vegetative Cover or Stabilization [illegible] this plan shall mean the successful [illegible] establishment of a stable grass cover from a [illegible] seedbed containing the specified amounts of [illegible] fertilizer in accordance with Specification [illegible] Seeding. Irrigation shall be required as necessary to [illegible] establishment of grass cover.
13. 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 3.35, Mulching, and Manufacturer's Instructions.
14. Inlet protection in accordance with Specification 3.07 shall be provided for all storm drain inlets as soon as practical following construction of same.
15. Temporary liners, such as polyethylene sheets, shall be provided for all paved ditches until the permanent concrete liner is installed.
16. Paved ditches shall be required wherever erosion is evident. Particular attention shall be paid to those areas where grades exceed 3 percent.
17. 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 [illegible] Trapped sediment shall be spread and seeded.
18. 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.
19. All paved and/or piped outfalls will be constructed before road grading and utility installation begins.

DC/bkh
2480c

ENGINEERS ARCHITECTS SURVE[illegible]

INTERIOR DESIGNERS PLANNE[illegible]

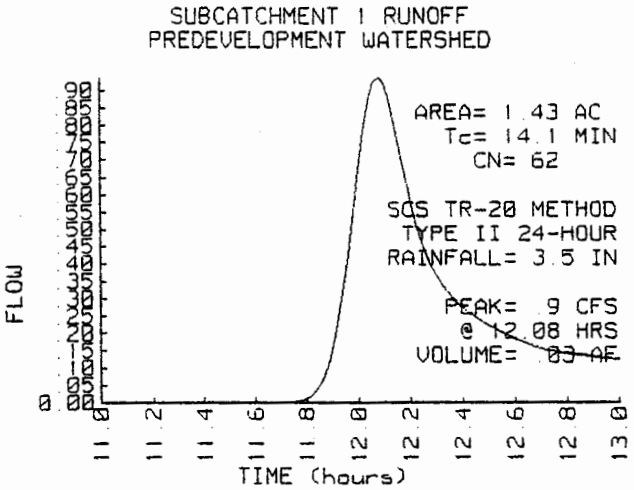
UBCATCHMENT 1 PREDEVELOPMENT WATERSHED

ACRES	CN	
.03	98	ROOF
.03	85	GRAVEL DRIVEWAY
1.37	61	GRASSED AREA
1.43	62	

SCS TR-20 METHOD
TYPE II 24-HOUR
RAINFALL= 3.5 IN
PEAK= .9 CFS @ 12.08 HRS
VOLUME= .03 AF

ethod	Comment	Tc (min)
URVE NUMBER (LAG) METHOD	EXISTING WATERSHED	14.1

=300´ s=.02 ´/´

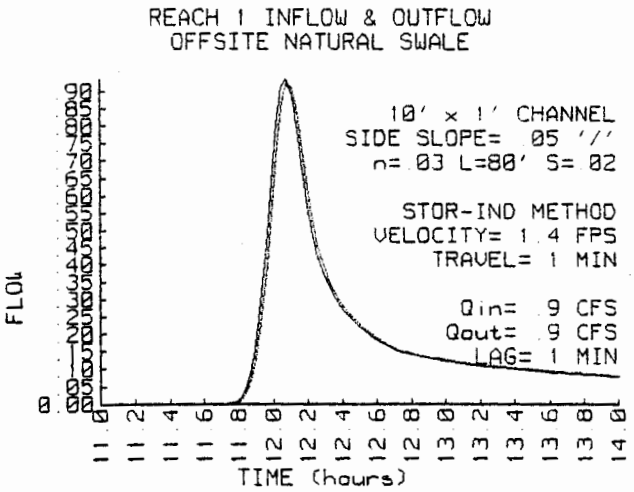


EACH 1 OFFSITE NATURAL SWALE

EPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.0
.1	1.2	1.6
.2	2.8	5.7
.3	4.8	12.2
.4	8.0	24.8
.6	13.2	49.2
.8	20.8	91.1
1.0	30.0	149.4

10´ x 1´ CHANNEL
SIDE SLOPE= .05 ´/´
n= .03
LENGTH= 80 FT
SLOPE= .02 FT/FT

STOR-IND METHOD
MAX. DEPTH= .06 FT
PEAK VELOCITY= 1.4 FPS
TRAVEL TIME = 1.0 MIN
Qin = .9 CFS @ 12.07 HRS
Qout= .9 CFS @ 12.09 HRS
ATTEN= 1 % LAG= 1.0 MIN
IN/OUT= .04 / .04 AF



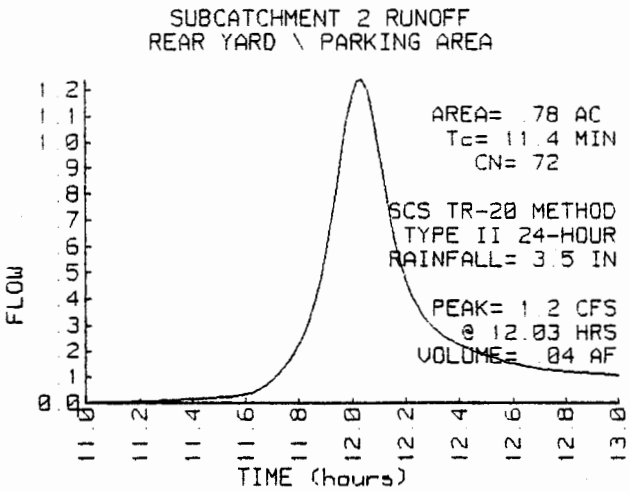
UBCATCHMENT 2 REAR YARD \ PARKING AREA

ACRES	CN	
.06	98	ROOF
.47	61	GRASSED
.25	85	GRAVEL DRIVE
.78	72	

SCS TR-20 METHOD
TYPE II 24-HOUR
RAINFALL= 3.5 IN
PEAK= 1.2 CFS @ 12.03 HRS
VOLUME= .04 AF

ethod	Comment	Tc (min)
URVE NUMBER (LAG) METHOD	REAR YARD & PARKING	11.4

=320´ s=.02 ´/´



UBCATCHMENT 3 FRONT YARD

ACRES	CN	
.17	98	ROOF / PAVING
.03	85	GRAVEL DRIVE
.44	61	GRASS
.64	72	

SCS TR-20 METHOD
TYPE II 24-HOUR
RAINFALL= 3.5 IN
PEAK= 1.1 CFS @ 12.00 HRS
VOLUME= .03 AF

ethod	Comment	Tc (min)
URVE NUMBER (LAG) METHOD	FRONT YARD	8.8

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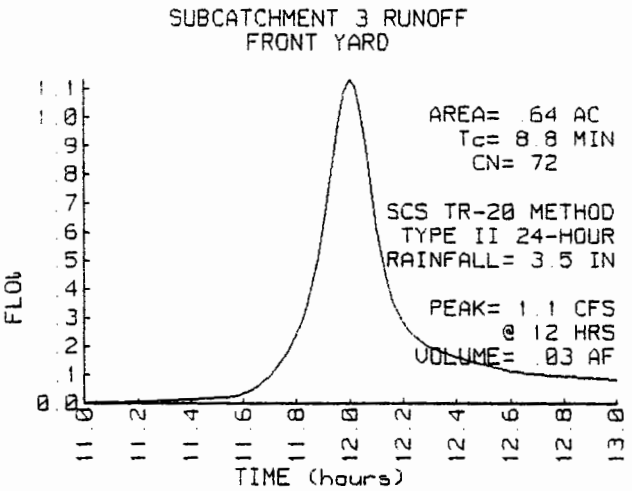


ND 2 INFILTRATION / LEVEL LIP OVERFLOW

TARTING ELEV= 112.5 FT
FLOOD ELEV= 117.0 FT 3 x FINER ROUTING

ELEVATION (FT)	CUM.STOR (CF)
112.5	0
113.0	726
113.5	1016
114.0	1287
114.5	1514
115.0	1742
115.5	1969
116.0	2197
116.5	2912
117.0	3757

1 in/Imp. Acre
.51 × 3630 = 1851 c.f.
Design #9

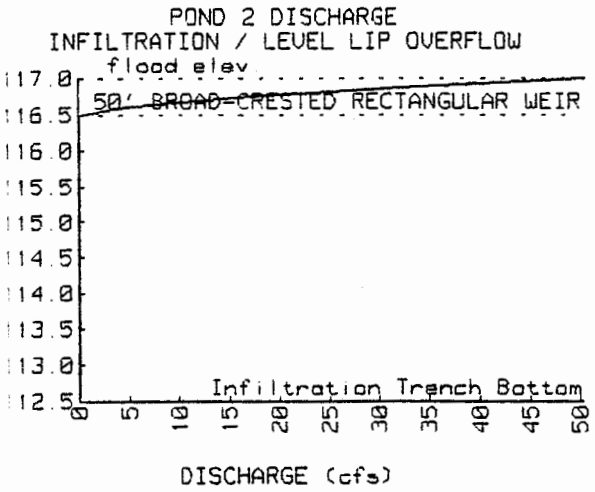
STOR-IND METHOD
PEAK ELEVATION= 116.5 FT
PEAK STORAGE = 2916 CF
Qin = 2.3 CFS @ 12.01 HRS
Qout= .2 CFS @ 13.10 HRS
ATTEN= 92 % LAG= 65.1 MIN
IN/OUT= .09 / .02 AF

NVERT (FT)	OUTLET DEVICES
116.5	50' BROAD-CRESTED RECTANGULAR WEIR Q=C L H^1.5 C=2.84, 3.13, 3.26, 3.29, 3.31, 0, 0, 0
112.5	Infiltration Trench Bottom

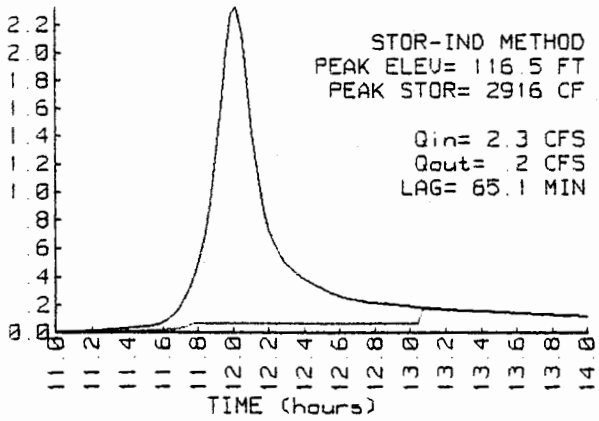
HEAD(FT)	DISCH(CFS)
0.0	0.00
.1	.06
4.5	.06

TOTAL DISCHARGE (CFS) vs ELEVATION

FEET	0.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
112.5	0.00	.06	.06	.06	.06	.06	.06	.06	.06	.06
113.5	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
114.5	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
115.5	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
116.5	.06	4.55	12.76	23.39	35.98	50.26				



POND 2 INFLOW & OUTFLOW
INFILTRATION / LEVEL LIP OVERFLOW

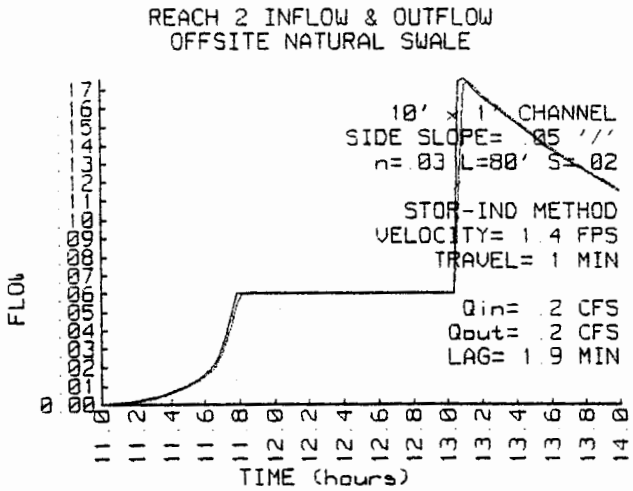


EACH 2 OFFSITE NATURAL SWALE

EPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.0
.1	1.2	1.6
.2	2.8	5.7
.3	4.8	12.2
.4	8.0	24.8
.6	13.2	49.2
.8	20.8	91.1
1.0	30.0	149.4

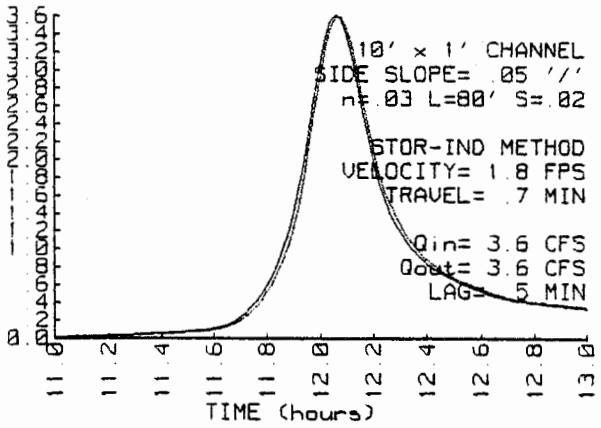
10´ x 1´ CHANNEL
SIDE SLOPE= .05 ´/´
n= .03
LENGTH= 80 FT
SLOPE= .02 FT/FT

STOR-IND METHOD
MAX. DEPTH= .01 FT
PEAK VELOCITY= 1.4 FPS
TRAVEL TIME = 1.0 MIN
Qin = .2 CFS @ 13.10 HRS
Qout= .2 CFS @ 13.13 HRS
ATTEN= 1 % LAG= 1.9 MIN
IN/OUT= .02 / .02 AF



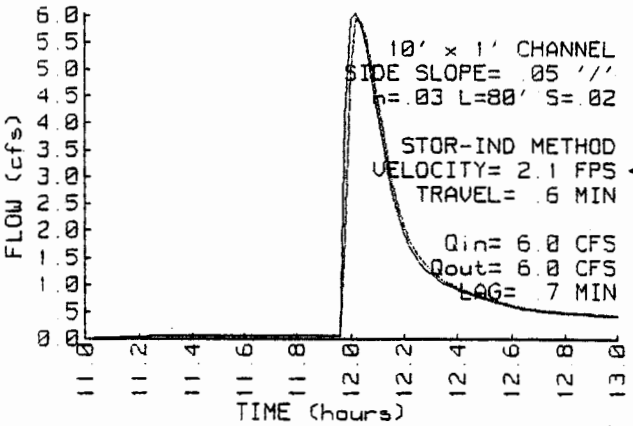
REACH 1 INFLOW & OUTFLOW
OFFSITE NATURAL SWALE

10yr Storm Event



REACH 2 INFLOW & OUTFLOW
OFFSITE NATURAL SWALE

10yr Storm Event



← o.k.

CALCULATE THE STORAGE VOLUME OF A SUBSURFACE PIPE / STONE RETENTION / INFILTRATION BED:

INPUT VARIABLES:

$D := 18$ Diameter, inches

$L := 65$ Length, feet

$s := 10$ Spacing of Pipes, feet

$n := 2$ Number of Pipes

$f := .35$ Fillable Porosity of Stone

$c := 1.5$ Stone cover, feet

$b := .5$ Stone bedding, feet

$Btm := 112.5$ Trench bottom elevation, feet

$p := 1$ Depth pond, feet

$z_1 := 4$ $z_2 := 4$ Pond side slope, z:1

$i := 6$ Tabulation increment, inches

$Perc := 30$ Percolation Rate, minutes per inch

COMPUTED VARIABLES:

$y_d :=$ ¤ Depth above trench bottom, inches

$WS_d :=$ ¤ Water surface elevation, feet

$Ab_d :=$ ¤ Filled area of stone bed, sq.in.

$A_d :=$ ¤ Filled area of pipe, sq.in.

$At_d :=$ ¤ Filled area of trench, sq.in.

$Ap_d :=$ ¤ Filled area of pond, sq.in.

$V_d :=$ ¤ Total Ponded volume, cubic feet

$I_r :=$ ¤ Trench Infiltration Rate, cubic feet per second.

$$d := 0 .. \frac{D + 12 \cdot (b + c + p)}{i}$$

$$y_d := i \cdot d$$ Filled depth, inches

$$WS_d := Btm + d \cdot \frac{i}{12} \qquad h := b + \frac{D}{12} + c$$ Depth of stone, feet

$$A_d := \text{if}\left[y_d < D, \left[\text{acos}\left[1 - 2 \cdot \frac{y_d}{D}\right] \cdot \left[\frac{D}{2}\right]^2 + \left[y_d - \frac{D}{2}\right] \cdot \sqrt{y_d \cdot \left[D - y_d\right]}\right], \frac{\pi}{4} \cdot D^2\right]$$

$$Ab_d := \text{if}\left[y_d < 12 \cdot b, 12 \cdot n \cdot s \cdot y_d, n \cdot s \cdot b \cdot 144\right]$$

$$At_d := \text{if}\left[y_d \le 12 \cdot h, s \cdot y_d \cdot 12 - A_d, 144 \cdot s \cdot h - A_d\right]$$

$$Ap_d := \text{if}\left[y_d > 12 \cdot h, \frac{\left[z_1 + z_2\right] \cdot \left[y_d - 12 \cdot h\right] + n \cdot s \cdot 24}{2} \cdot \left[y_d - 12 \cdot h\right], 0\right]$$

$$V_d := \left[n \cdot \left[At_d \cdot f + A_d + Ab_d \cdot f\right] + Ap_d\right] \cdot \frac{L}{144}$$

$$I_r := L \cdot n \cdot \frac{s}{Perc \cdot 720}$$

INPUT VALUES:

$D = 18$ $L = 65$ $s = 10$ $n = 2$ $f = 0.35$ $b = 0.5$ $c = 1.5$

$z_1 = 4$ $z_2 = 4$ $p = 1$

TABUALTED RESULTS:

y_d	A_d	Ab_d	At_d	Ap_d
0	0	0	0	0
6	74	1440	646	0
12	180	1440	1260	0
18	254	1440	1906	0
24	254	1440	2626	0
30	254	1440	3346	0
36	254	1440	4066	0
42	254	1440	4786	0
48	254	1440	4786	1584
54	254	1440	4786	3456

Elevation / Volume

WS_d	V_d
112.5	0
113	726
113.5	1016
114	1287
114.5	1514
115	1742
115.5	1969
116	2197
116.5	2912
117	3757

TRENCH INFILTRAION RATE: $I_r = 0.06$ Cubic feet per second

MATERIAL QUANTITIES ESTIMATE:

FILTER FABRIC, square yards: $2 \cdot (n \cdot s + h) \cdot \frac{L}{9} = 339$

TOTAL PIPE, feet: $n \cdot L = 130$

STONE, cubic yards: $n \cdot \frac{L}{27} \cdot \left[s \cdot h - \frac{\max(A)}{144} \right] = 160$

TABLE 3

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

BMP	BMP Points		Fraction of Site Served by BMP		Weighted BMP Points
#9 Infiltration Trench @ 1"/imp. area	10	x	100%	=	10
		x		=	
		x		=	
		x		=	

TOTAL WEIGHTED STRUCTURAL BMP POINTS: 10

B. NATURAL OPEN SPACE CREDIT

Fraction of Site		Natural Open Space Credit		Points for Natural Open Space
63.3%	x	.1 (0.1 per 1%)	=	6.3

C. TOTAL WEIGHTED POINTS

10	+	6.3	=	16.3
Structural BMP Points		Natural Open Space Points		TOTAL

P.E.

DJG, Chief Civil Engineer

CONSULTING ENGINEERS

5248 Olde Towne Road • Suite 1 • Williamsburg, Virginia 23188
(757) 253-0040 • Fax (757) 220-8994 • E-mail aes@aesva.com

October 5, 1999

Patrick T. Menichino
Engineering Inspector
101-E Mounts Bay Road
P.O. Box 8784
Williamsburg, Virginia 23187-8784

Re: Hickory Neck Episcopal Church
Verification of Improvements
DJG Commission No: 1900593 (Design)
AES Project No: 8611

Dear Mr. Menichino:

I have performed the as-built survey, which you requested, on the above referenced project. There appear to be no significant differences between the actual construction of the above ground portion of the HDPE Drainage Tubing System and the original design. I have verified that the level lip spreader elevation is level with an elevation of 116.5 as designed. The ground elevation of the bottom of the structure is 116.0 and the top elevations vary from 117.0 to 118.0 with basically the same configuration as shown on the plans.

The DI-7 located in the structure has a rim elevation of 116.0 and an invert of 113.0; the first DI-7 out of the structure has a rim elevation of 116.2 and an invert of 113.3. These are either at or reasonably close to the design grades. The structures are connected by 12" RCP, as designated on the plans. I am unable to determine the pipe sizes or elevations within the actual underground trench.

In summary, the overall system appears to have been built as shown on the design plans. If I can be of further assistance, please call.

Yours truly,
AES Consulting Engineers

Arthur D. Sebert

Arthur D. Sebert, L.S.
Senior Surveyor

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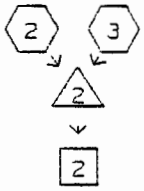
ITE WATERSHED SCHEMATIC DIAGRAMS:

RE DEVELOPMENT: POST DEVELOPMENT:



PREDEVELOPMENT MODEL:

Subcatchment #1 which represents the watershed affected by the project drains to a broad natural swale (Reach #1) at the rear of the property.

POST DEVELOPMENT:

Subcatchments #2 and #3 represent the developed condition of the original watershed and drain to an infiltration trench (Pond #2) with a level spreader. This discharges to the same natural swale (Reach #2).

The infiltration trench retains a volume in excess of the 1 inch of Impervious area (re. page 6). The instantaneous peak discharge for the 10 year storm is greater but does not produce an errosive velocity (re. page 9).

Page 12 is the James City County BMP point system calculation worksheet.

Date Record Created:

Created By:

WS_BMPNO: WC032

Print Form

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Friday, March 12, 2010
3:20:43 PM

WATERSHED	WC
BMP ID NO	032
PLAN NO	SP-99-98
TAX PARCEL	(12-4)(1-10 and 10A)
PIN NO	1240100010
CONSTRUCTION DATE	1/1/1993
PROJECT NAME	Hickory Neck Episcopal Church
FACILITY LOCATION	8300 Richmond Road
CITY-STATE	Toano, VA
CURRENT OWNER	Hickory Neck Episcopal Church
OWNER ADDRESS	8300 RICHMOND ROAD
OWNER ADDRESS 2	
CITY-STATE-ZIP CODE	Toano, VA 23168
OWNER PHONE	
MAINT AGREEMENT	Yes
EMERG ACTION PLAN	No

Get Last BMP No | Return to Menu

MAINTENANCE PLAN	No	CTRL STRUC DESC	HDPE
SITE AREA acre	4.63	CTRL STRUC SIZE inches	18
LAND USE	INSTIT	OTLT BARRL DESC	LEVL SPR
old BMP TYP	Infiltration	OTLT BARRL SIZE inch	0
JCC BMP CODE	C3 Infiltration Basin .5		
POINT VALUE	10	EMERG SPILLWAY	No
		DESIGN HW ELEV	
		PERM POOL ELEV	
SVC DRAIN AREA acres	3	2-YR OUTFLOW cfs	
		10-YR OUTFLOW cfs	
		REC DRAWING	No
SERVICE AREA DESCRI	OVERFLOWS W 10 YR STORM		
IMPERV AREA acres		CONSTR CERTIF	No
RECV STREAM	WARE CK TRIB		
EXT DET-WQ-CTRL	No	LAST INSP DATE 12/3/2001	Inspected by:
WTR QUAL VOL acre-ft	0.07	INTERNAL RATING 4	
CHAN PROT CTRL	No		
CHAN PROT VOL acre-ft	0	MISC/COMMENTS	
SW/FLOOD CONTROL	No		
GEOTECH REPORT	No		

Additional Comments: