



See also WC073

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.

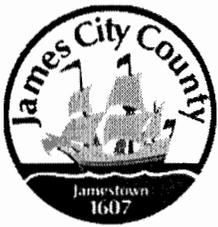
BMP NUMBER: WC074

DATE VERIFIED: October 15, 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: WC074

PIN: 0520700001A

Subdivision, Tract, Business or Owner

Name (if known):

Association at Stonehouse, Inc. (The)

Property Description:

East of 3109 Trailwood Lane

Site Address:

Trailwood Lane in Stonehouse Subdivision

(For internal use only)

Box 13

Drawer: 8

Agreements: (in file as of scan date)

Y

Book or Doc#:

990026872

Page:

010012943

Comments

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

COPY

THIS DECLARATION, made this 13th day of July, 192001,
between STONEHOUSE DEVELOPMENT COMPANY, L.L.C.,
and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the ^{JHB}
following property: DEVELOPMENT AREA ONE, PHASE I, SECT. V-B, BENT TREE - PHASE 2, WALNUT CREEK
Deed Book _____, Page No. _____ or Instrument No. 99-0026872 ^{SECTION},
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 # 010012943
Recorded July 24, 2001

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 13th day of July, 192001

COVENANTOR(S)

L. O. Myers
TREASURER
Print Name/Title LAWRENCE O. MYERS

ATTEST:

James H. Bennett

COVENANTOR(S)

Print Name/Title _____

ATTEST:

COMMONWEALTH OF VIRGINIA

CITY/COUNTY OF James City

I hereby certify that on this 13 day of July, 2001, before the subscribed, a Notary Public of the State of Virginia, and for the City/County of James City, aforesaid personally appeared LAWRENCE O. MYERS and did acknowledge the foregoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 13th day of July, 192001.

Robyn L. Sulanowski
Notary Public
Robyn L. Sulanowski

My Commission expires: 3/31/05

Approved as to form:

Leo P. Pagan
Deputy County Attorney

This Declaration of Covenants prepared by:

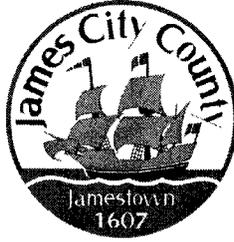
JAMES H. BENNETT
(Print Name)

PROJECT ENGINEER
(Title)

9701 MILL POND RUN
(Address)

TOANO VA 23168
(City) (State) (Zip)

drainage.pre
Revised 2/97



James City County, Virginia
Environmental Division

Stormwater Management / BMP Facilities
Record Drawing and Construction Certification Forms

(Note: In accordance with the requirements of the Chesapeake Bay Preservation Ordinance, Chapter 23, Section 23-10(4), BMP's shall be designed and constructed in accordance with the manual entitled James City County Guidelines for Design and Construction of Stormwater Management BMP's. Erosion and sediment control policy and approved plans generally require that at the completion of the project and prior to release of surety, an "as-built" plan prepared by a registered Professional Engineer or Certified Land Surveyor must be provided for the drainage system for the project, including any Best Management Practice (BMP) facilities. In addition, for BMP facilities involving the construction of an impounding structure or dam embankment, certification is required by a Professional Engineer who has inspected the structure during its construction. Currently there are over 20 water quality type BMP's accepted by the County.)

Section 1 – Site Information:

Project Name: Stonehouse - Section V-B (Bent Tree Phase 2 and Walnut Creek)
Structure/BMP Name: BMP #5.3
Project Location: Stonehouse - Bent Tree
BMP Location: At the end of Trailwood Lane
County Plan No.: JCC Case No. S - 42 - 99

Project Type: Residential Business Tax Map/Parcel No.: (6-4) (1-1)
 Commercial Office BMP ID Code (if known): WC074
 Institutional Industrial Zoning District: PUD-R
 Public Roadway Land Use: Residential
 Other Site Area (sf or acres): 20.86

Brief Description of Stormwater Management/BMP Facility: Dry Pond

Nearest Visible Landmark to SWM/BMP Facility: Cul de Sac at the end of Trailwood Lane

Nearest Vertical Ground Control (if known):
 JCC Geodetic Ground Control USGS Temporary Arbitrary Other
Station Number or Name: 303
Datum or Reference Elevation: NGVD 1929
Control Description: NAD 27
Control Location from Subject Facility: 3.5 miles south

Section 2 – Stormwater Management / BMP Facility Construction Information:

PreConstruction Meeting Held for Construction of SWM/BMP Facility: Yes No Unknown
Approx. Construction Start Date for SWM/BMP Facility: July 2001
Facility Monitored by County Representative during Construction: Yes No Unknown
Name of Site Work Contractor Who Constructed Facility: George Nice & Sons, Inc.
Name of Professional Firm Who Routinely Monitored Construction: _____
Date of Completion for SWM/BMP Facility: October 2002
Date of Record Drawing/Construction Certification Submittal: 11/07/02

(Note: Record Drawing and Construction Certifications are required within thirty (30) days of the completion of Stormwater Management and/or BMP facility construction. Record Drawings and Construction Certifications must be reviewed and approved by the James City County Environmental Division prior to final inspection, acceptance and bond or surety release.)

Section 3 – Owner / Designer / Contractor Information:

Owner/Developer: *(Note: Site Owner or Applicant responsible for development of the project.)*
Name: Stonehouse Development Company
Mailing Address: 9701 Mill Pond Run
Toano, VA 23168
Business Phone: 757-234-5000 Fax: 757-234-5091
Contact Person: Jerry Moore Title: President

Design Professional: *(Note: Professional Engineer or Certified Land Surveyor responsible for the design and preparation of plans and specifications for the Stormwater Management / BMP facility.)*
Firm Name: AES Consulting Engineers
Mailing Address: 5248 Olde Towne Road, Suite 1
Williamsburg, VA 23188
Business Phone: 757-253-0040
Fax: 757-220.8994
Responsible Plan Preparer: Marc Bennett
Title: Senior Project Manager
Stonehouse - Development Area One, Phase 1- Section V-B, "Bent Tree" - Phase2 and
Plan Name: Walnut Creek
Firm's Project No. 8877-00
Plan Date: August 21, 2000
Sheet No.'s Applicable to SWM/BMP Facility: 7 / 9 / 10 / /

BMP Contractor: *(Note: Site Work Contractor directly responsible for construction of the Stormwater Management / BMP facility.)*
Name: George Nice & Sons, Inc.
Mailing Address: 143 Skimino Road
Williamsburg, VA 23188-2229
Business Phone: (757) 565-2885
Fax: (757) 565-1526
Contact Person: Ray Nice P. E.
Site Foreman/Supervisor: _____
Specialty Subcontractors & Purpose (for BMP Construction Only):

Section 4 – Professional Certifications:

Certifying Professionals: *(Note: A Registered Professional Engineer of Certified Land Surveyor is responsible for preparation of a Record Drawing, sometimes referred to as an As-Built plan, for the drainage system for the project including any Stormwater Management/BMP Facilities. A Registered Professional Engineer is responsible for the inspection, monitoring and certification of Stormwater Management / BMP facilities during its construction.)*

Record Drawing and Construction Certifications for Stormwater Management / BMP Facilities

Record Drawing Certification

Firm Name: AES Consulting Engineers
 Mailing Address: 5248 Olde Towne Road, Suite 1
Williamsburg, VA 23188
 Business Phone: 757-253-0040
 Fax: 757-220-8994

Name: Marc Bennett
 Title: Senior Project manager

Signature: 
 Date: 2/13/06

I hereby certify to the best of my knowledge and belief that this record drawing represents the actual condition of the Stormwater Management / BMP facility. The facility appears to conform with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.

Construction Certification

Firm Name: _____
 Mailing Address: _____
 Business Phone: _____
 Fax: _____

Name: _____
 Title: _____

Signature: _____
 Date: _____

I hereby certify to the best of my knowledge and belief that this Stormwater Management / BMP facility was monitored and constructed in accordance with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.



 (Seal)

Virginia Registered Professional Engineer
 Or Certified Land Surveyor

_____ (Seal)

Virginia Registered
 Professional Engineer

Section 4 – Professional Certifications:

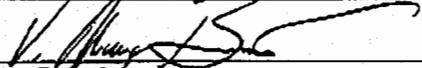
Certifying Professionals: *(Note: A Registered Professional Engineer of Certified Land Surveyor is responsible for preparation of a Record Drawing, sometimes referred to as an As-Built plan, for the drainage system for the project including any Stormwater Management/BMP Facilities. A Registered Professional Engineer is responsible for the inspection, monitoring and certification of Stormwater Management / BMP facilities during its construction.)*

Record Drawing and Construction Certifications for Stormwater Management / BMP Facilities

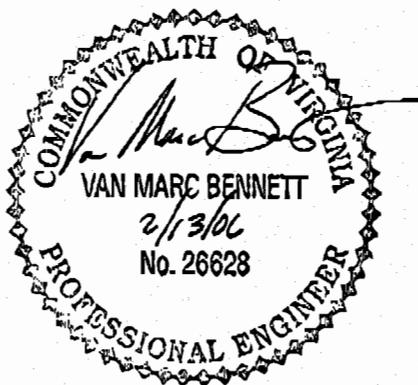
Record Drawing Certification

Firm Name: AES Consulting Engineers
Mailing Address: 5248 Olde Towne Road, Suite 1
Williamsburg, VA 23188
Business Phone: 757-253-0040
Fax: 757-220-8994

Name: Marc Bennett
Title: Senior Project manager

Signature: 
Date: 2/13/06

I hereby certify to the best of my knowledge and belief that this record drawing represents the actual condition of the Stormwater Management / BMP facility. The facility appears to conform with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.



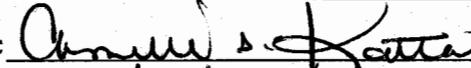
 (Seal)

Virginia Registered Professional Engineer
Or Certified Land Surveyor

Construction Certification

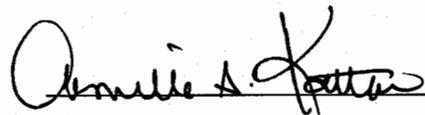
Firm Name: _____
Mailing Address: _____
Business Phone: _____
Fax: _____

Name: _____
Title: _____

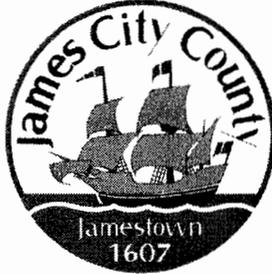
Signature: 
Date: 2/17/06

I hereby certify to the best of my knowledge and belief that this Stormwater Management / BMP facility was monitored and constructed in accordance with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.



 (Seal)

Virginia Registered
Professional Engineer



**James City County, Virginia
Environmental Division**

**Stormwater Management / BMP Facilities
Record Drawing and Construction Certification**

Standard Forms & Instructions

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*Issue Date
February 1, 2001*

05 2030001A
WEST OF 9923 WALNUT CR.
LOT 17 SEC 5B

EAST OF LOT 4
GPIN 0940100024
EAST OF 3109
TRAILWAY DR
LOT 4 SEC 5B
WALNUT
CREEK

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

County Plan No.: 5-42-99; 5-74-00 Amended
Project Name: Stonehouse Dev Area One, PH 1 SEC 5-B Brnt Tree & Walnut Creek
Stormwater Management Facility: BMP # 5.3

BMP Phase #: I II III

Information Package Received. Date/By: 12/14/04 AES

Completeness Check: Record Drawing Date/By: 12/14/04 AES; 2/13/06 CERT

Construction Certification Date/By: 2/17/06 AES

RD/CC Standard Forms (Required for all BMPs after Feb 1st 2001 Only)

Ansp/Maint Agreement # / Date: # 010012943 July 24 '01

BMP Maintenance Plan Location: sheet 9

Other: Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review file.

Yes No Location: Notes #20 sheet 12

Assign County BMP ID Code #: Code: WC074

Preliminary Input/Log into Division's "As-Built Tracking Log"

Add Location to GIS Database 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: 3/17/05 SJT

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) VERBAL

Site Issues (SI)

Other: _____

Second Submission: _____

Reinspection (if necessary): 5/30/06 SJT

Acceptable for SWM Purposes (RD/CC/CR/Other). Ok to proceed with bond release process.

Complete "Surety Request Form". 6/30/06

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. 6/02/06 AES

Complete "As-built Tracking Log".

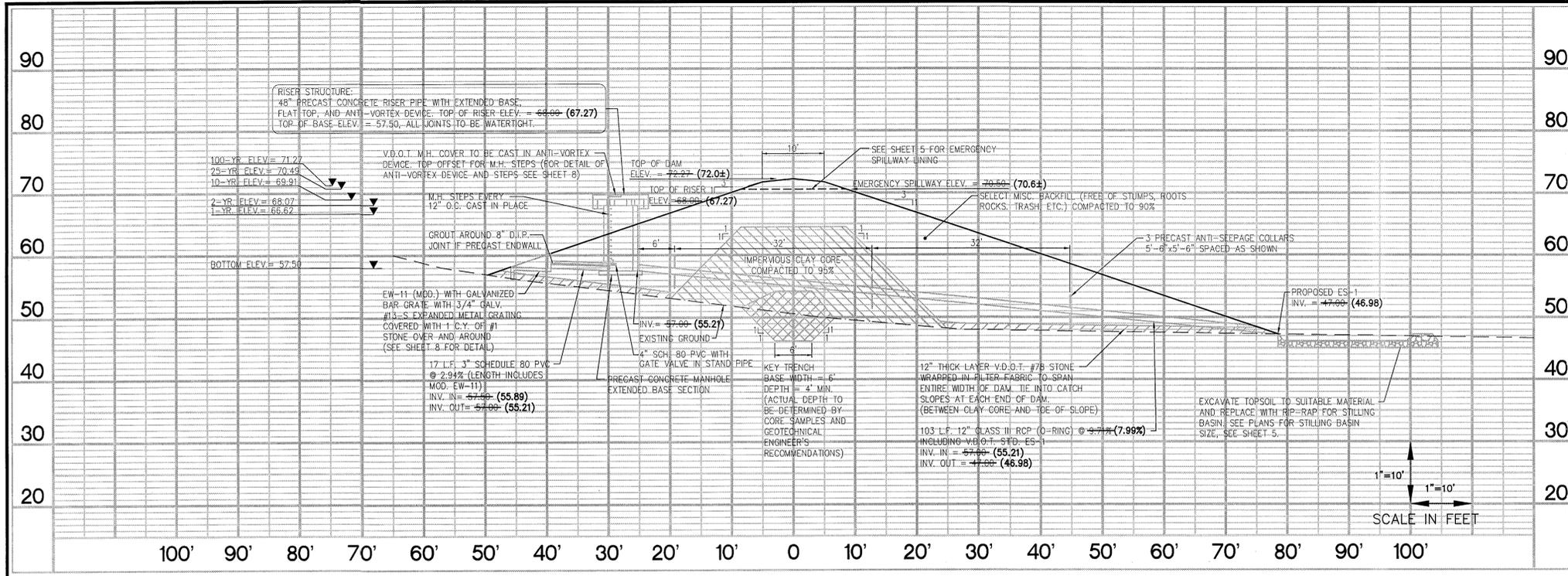
Last check of BMP Access Database (County BMP Inventory).

Add BMP to JCC Hydrology & Hydraulic database (optional).

Add BMP to PRIDE BMP ratings database.

Plan Reviewer: [Signature] Date: 06/02/06

*** See separate checklist, if needed.



SECTION A-A BMP 5.2

BMP 5.2 & 5.3
 1. THE CONSTRUCTION OF THE CLAY CORE IS TO BE IN ACCORDANCE WITH NOTE 6 OF THE GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS. SEE THIS SHEET.
 2. THE CONSTRUCTION OF THE KEY TRENCH IS TO BE IN ACCORDANCE WITH NOTE 5 OF THE GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS. SEE THIS SHEET.

GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS

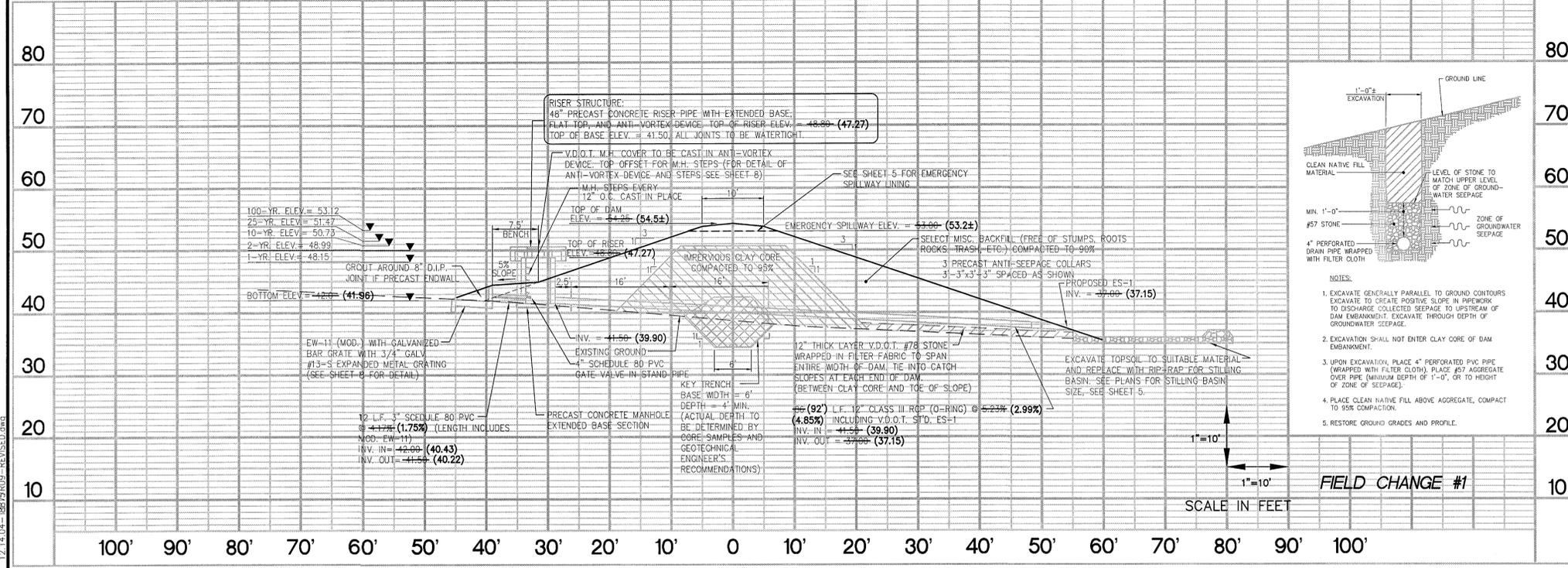
1. THE CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS NEEDED TO CONSTRUCT THE STORMWATER BASIN, STORMWATER MANAGEMENT PONDS, BEST MANAGEMENT PRACTICES, SEDIMENT BASINS AND SEDIMENT TRAPS. THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT AND MATERIALS NEEDED FOR THE COMPLETION OF GRADING AND EARTHWORK ASSOCIATED WITH THE CONSTRUCTION.
2. THE CONTRACTOR SHALL CONSULT AND PROVIDE FOR THE SERVICES OF A GEOTECHNICAL ENGINEER. THE GEOTECHNICAL ENGINEER SHALL PROVIDE TEST RESULTS ON PLACED DAM MATERIALS, IDENTIFYING SOIL CLASSIFICATION, PERMEABILITY, PLASTICITY INDEX, AND COMPACTION. ALL TESTS SHALL BE IN CONFORMANCE WITH ASTM STANDARDS. THE COST OF THE SERVICES OF THE GEOTECHNICAL ENGINEER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SATISFACTORY GEOTECHNICAL RESULTS ARE NEEDED PRIOR TO FINAL APPROVAL.
3. ALL INSPECTIONS REQUIRED FOR THE WORK SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER AT THE EXPENSE OF THE GENERAL CONTRACTOR.
4. ON-SITE EXCAVATED MATERIAL, IF DETERMINED SUITABLE FOR USE IN DAM CONSTRUCTION BY A GEOTECHNICAL ENGINEER, MAY BE USED FOR DAM CONSTRUCTION. SHOULD ADDITIONAL MATERIAL BE REQUIRED, THE CONTRACTOR SHALL IDENTIFY THE NEED FOR MATERIAL TO THE OWNER, AS ADDITIONAL BORROW MATERIAL MAY BE AVAILABLE ON THE STONEHOUSE PROPERTY. ALL EXCAVATED MATERIAL DETERMINED BY THE GEOTECHNICAL ENGINEER TO BE UNSUITABLE SHALL BE DISPOSED OF PROPERLY AT THE CONTRACTOR'S EXPENSE. ALL EXCAVATED MATERIAL NOT REQUIRED FOR BACKFILLING SHALL EITHER BE DEPOSITED ON SITE AND SPREAD BY THE CONTRACTOR, OR SHALL BE DEPOSITED IN AN AREA ON THE STONEHOUSE PROPERTY AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE PROPER STABILIZATION, AND EROSION AND SEDIMENT CONTROL MEASURES NEEDED TO CONTROL AS PER THE VESCH THIRD EDITION.
5. UNDERCUT FOR THE FOUNDATION OF THE DAM EMBANKMENT SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. THE FOUNDATION SHALL BE BACKFILLED WITH SOILS CLASSIFIED AS SM, SC, OR CL UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM. SOILS SHALL HAVE A MINIMUM OF 15% BY WEIGHT FINES, HAVING A PLASTICITY INDEX OF 30% AND A PERMEABILITY OF 0.0004 IN./SEC. OR LESS. FILL SHALL BE COMPACTED IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO A DRY DENSITY OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). EXCAVATION FOR THE DAM KEY SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. HEIGHT, DEPTH, AND WIDTH OF THE KEY SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. THE KEY SHALL BE FORMED USING SOILS CLASSIFIED AS SC OR CL, WITH A PERMEABILITY OF 0.0004 IN./SEC. OR LESS.
6. THE DAM CORE SHALL BE AS CONSTRUCTED WITH NON-EXPANSIVE SC OR CL CLAYEY MATERIAL WITH PERMEABILITY OF 0.0004 IN./SEC. OR LESS. THE FILL OF THE CORE SHALL BE MADE IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). SIZE, SHAPE, WIDTH, DEPTH, AND HEIGHT OF THE DAM CORE SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. TO COVER THE DAM CORE, A SILTY FINE SAND OR CLAYEY SOIL (SM, SC, OR CL) SHALL BE PLACED. A VEGETATIVE COVER USING VDOT EC-2 EROSION CONTROL BLANKETS SHALL BE PLACED ON DAM SLOPES AND CREST TO PREVENT EROSION.
7. THE STORMWATER MANAGEMENT / BMP FACILITIES SHOWN ON THESE PLANS REQUIRE THE SUBMISSION, REVIEW AND APPROVAL OF RECORD DRAWING(S) AND CONSTRUCTION CERTIFICATION PRIOR TO RELEASE OF THE POSTED BOND / SURETY. THE GEOTECHNICAL ENGINEER IS TO ENSURE THAT HIS / HER INSPECTION OF THE SWM / BMP CONSTRUCTION ACTIVITY IS PERFORMED DURING AND FOLLOWING CONSTRUCTION OF THE SWM / BMP IN ACCORDANCE WITH THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION STORMWATER MANAGEMENT / BMP FACILITIES DESIGN GUIDELINES HANDBOOK, DATED AUGUST 30, 2000.
8. THE CONTRACTOR SHALL PROVIDE INTERIM CERTIFICATION OF TEMPORARY SEDIMENT BASIN AT BMP 5.2 IN ACCORDANCE WITH SECTION 5 OF THE JAMES CITY COUNTY BMP, EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT DESIGN GUIDES.

REV	DATE	BY	REVISION / COMMENT / NOTE
6	11/07/02		
5	10/23/01		
4	7/25/01		
3	6/18/01		
2	5/17/01		
1	2/8/01		

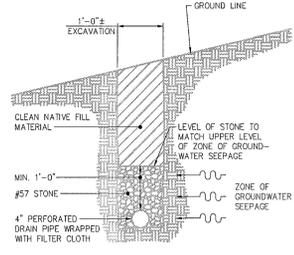
5248 Olde Towne Road, Suite 1
 Williamsburg, Virginia 23188
 (757) 253-0040
 Fax (757) 220-8894



STONEHOUSE DEVELOPMENT COMPANY, L.L.C.
 CONSULTING ENGINEERS
 JAMES CITY COUNTY, VIRGINIA



SECTION A-A BMP 5.3



- NOTES:**
1. EXCAVATE GENERALLY PARALLEL TO GROUND CONTOURS EXCAVATE TO CREATE POSITIVE SLOPE IN PIPEWORK TO DISCHARGE COLLECTED SEWAGE TO UPSTREAM OF DAM EMBANKMENT. EXCAVATE THROUGH DEPTH OF GROUNDWATER SEEPAGE.
 2. EXCAVATION SHALL NOT ENTER CLAY CORE OF DAM EMBANKMENT.
 3. UPON EXCAVATION, PLACE 4" PERFORATED PVC PIPE (WRAPPED WITH FILTER CLOTH), PLACE #57 AGGREGATE OVER PIPE (MINIMUM DEPTH OF 1'-0" OR TO HEIGHT OF ZONE OF SEEPAGE).
 4. PLACE CLEAN NATIVE FILL ABOVE AGGREGATE, COMPACT TO 95% COMPACTION.
 5. RESTORE GROUND GRADES AND PROFILE.

12-14-04-0825PR09-REVISED.dwg

ROADWAY CULVERT SIZES FOR LOT DRAINAGE

LOT No.	CULVERT SIZE
1	15"
2	15"
3	15"
4	15"
5	15"
6	15"
7	15"
8	15"
9	15"
10	15"
11	15"
12	15"
13	15"
14	15"
15	15"
16	15"
17	15"
18	15"
19	15"
20	15"
21	15"
23	15"
54	15"
55	15"
56	15"
57	15"
58	15"

BMP 52
POOL EL.
1 YR = 66.62
2 YR = 68.07
10 YR = 69.91
25 YR = 70.49
100 YR = 71.27

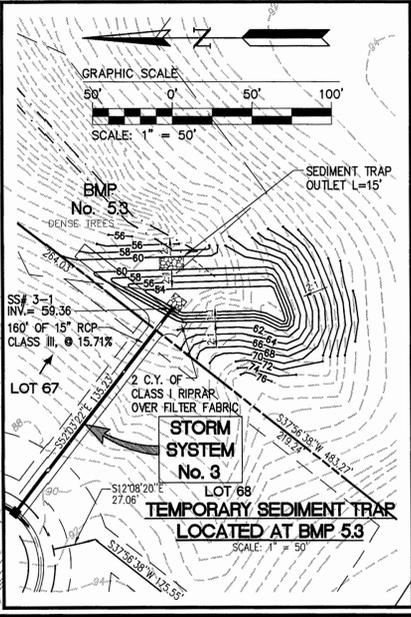
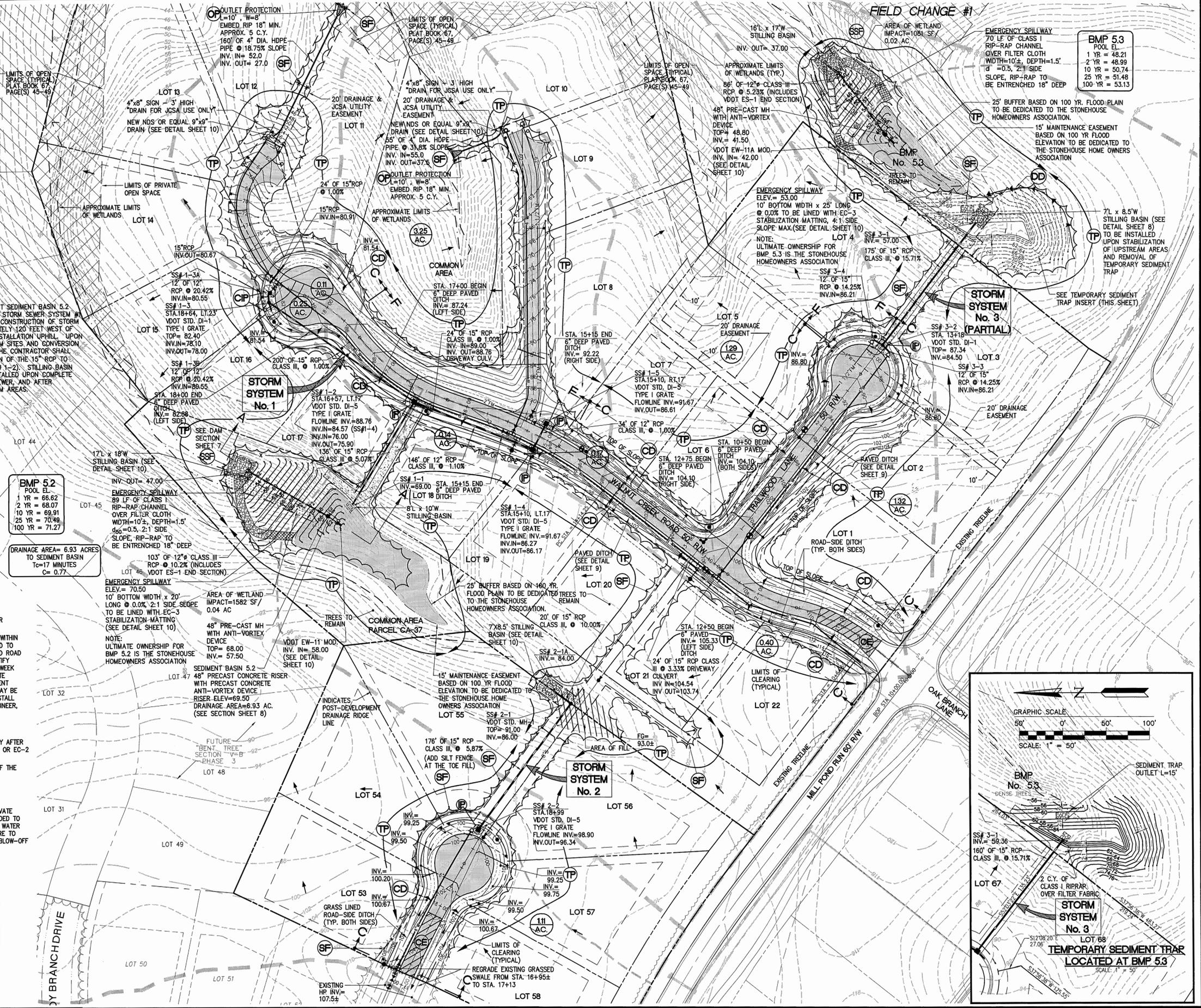
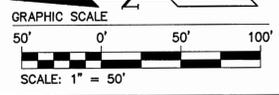
DRAINAGE AREA = 6.93 ACRES
TO SEDIMENT BASIN
Tc=17 MINUTES
C=0.77

- NOTES:**
1. ALL EROSION CONTROL MEASURES SHALL BE REGULARLY MAINTAINED, AND CORRECTED IF FOUND INEFFECTIVE BY THE CONTRACTOR OR THE JAMES CITY COUNTY INSPECTOR DURING CONSTRUCTION.
 2. OFF-SITE LAND DISTURBING ACTIVITIES ARE ANTICIPATED WITHIN THE FERNANDEZ TRACT. THESE ACTIVITIES WILL BE LIMITED TO FILL SECTIONS FOR THE FUTURE EXTENSION OF SPLITWOOD ROAD AND TOP SOIL STOCKPILE. THE CONTRACTOR SHALL IDENTIFY THIS OFF-SITE AREA TO SITE INSPECTOR AT LEAST ONE WEEK PRIOR TO THE PRE-CONSTRUCTION MEETING. THE CONTRACTOR MAY BE REQUIRED TO PERFORM ADDITIONAL PROTECTION TO PREVENT SEDIMENT TRANSPORT AT THIS TIME. THE CONTRACTOR SHALL BE REQUIRED TO PERFORM ADDITIONAL PROTECTION, OR INSTALL ADDITIONAL MEASURES AS DIRECTED BY THE OWNER, ENGINEER, AND/OR THE JAMES CITY COUNTY INSPECTOR.
 3. UNLESS OTHERWISE NOTED ALL CULVERT PIPE TO BE REINFORCED CONCRETE PIPE (RCP) CLASS III.
 4. ALL ROADSIDE DITCHES SHALL BE STABILIZED IMMEDIATELY AFTER CONSTRUCTION WITH EITHER CONCRETE (AS SHOWN), SOD OR EC-2 MATTING WITH SEED.
 5. STILLING BASIN AT BMP 5.2 IS TO BE ADDED AS PART OF THE CONVERSION FROM SEDIMENT TRAP TO BMP/SWM.
 6. TOTAL WETLAND IMPACT AREA = 0.08 ACRES
AREAS LESS THAN 0.10 ACRES OF DISTURBANCE ARE CONSIDERED A NON-REPORTING DISTURBANCE.
 7. 4" HDPE DRAIN PIPES LOCATED AT THE END OF THE PRIVATE DRIVEWAYS ARE FOR THE USE OF JCSA ONLY AND INTENDED TO PROVIDE A DRAIN FOR WATER DISCHARGED FROM THE 4" WATER LINE DURING PURGING OF THE WATER SYSTEM. DRAINS ARE TO BE LOCATED WITHIN 3' OR LESS OF THE 4" WATER LINE BLOW-OFF

NOTE:
THE VIRGINIA DEPARTMENT OF TRANSPORTATION WILL NOT BE RESPONSIBLE FOR MAINTENANCE OF THE PEDESTRIAN PATH WHETHER OR NOT THE PATH IS WITHIN THE VDOT RIGHT-OF-WAY

ALL DRAINAGE EASEMENTS AND ATTENUATION BASINS ARE TO BE DEDICATED TO THE HOMEOWNERS ASSOCIATION

THE TOPOGRAPHIC DATA REPRESENTED ON THIS DRAWING IS SUPPLIED BY OWNER/DEVELOPER.
CONTOUR INTERVAL = 2 FOOT



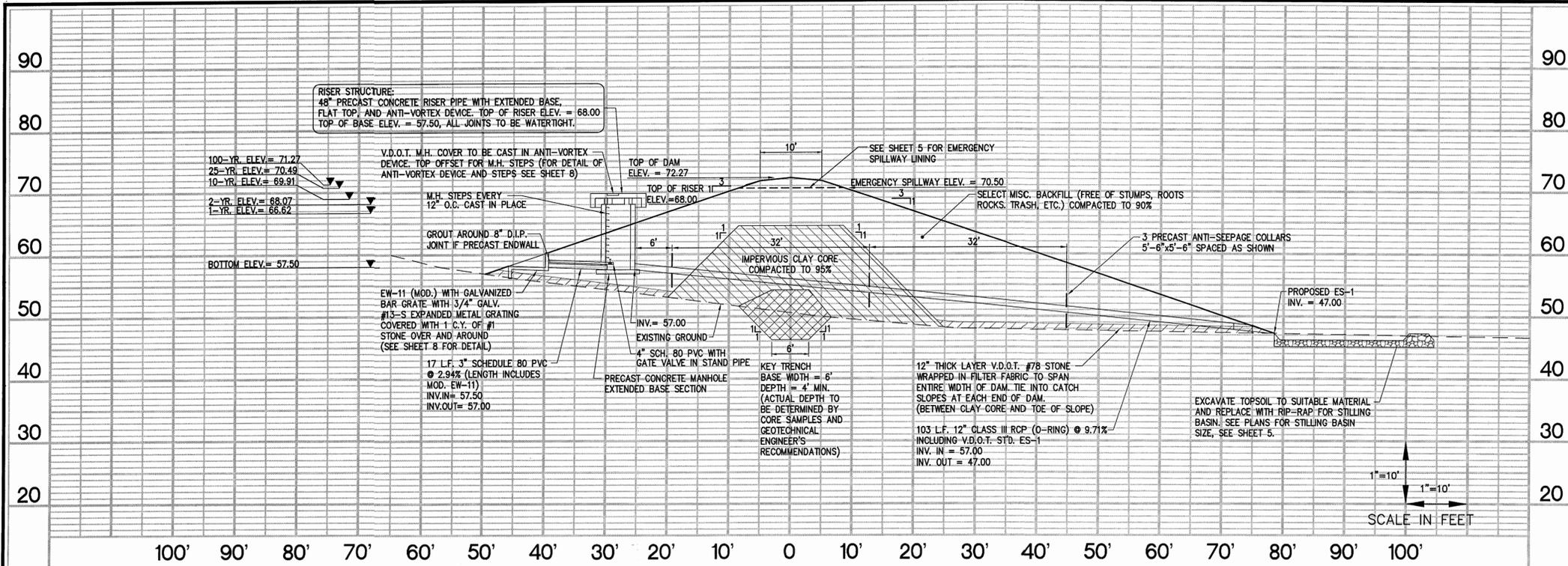
NO.	DATE	REVISION / COMMENT	BY
1	2/27/01	REVISED AS PER J.C.C.O. COMMENT LETTER DATED 9/27/00	WMB
2	6/19/01	REVISED AS PER J.C.C.O. COMMENT LETTER DATED 6/19/01	WMB
3	5/17/01	REVISED AS PER J.C.C.O. COMMENT LETTER DATED 4/26/01 & RFP COMMENT	WMB
4	7/25/01	REVISED AS PER J.C.C.O. COMMENT LETTER DATED 7/25/01	WMB
5	10/23/01	REVISED AS PER J.C.C.O. COMMENT LETTER DATED 7/19/01	WMB



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DRAINAGE, EROSION AND SEDIMENT CONTROL PLAN	
SECTION V-B 'BENT TREE' - PHASE 2	
AND WALNUT CREEK	
AT STONEHOUSE FOR	
STONEHOUSE DEVELOPMENT COMPANY, LLC.	
STONEHOUSE DISTRICT	
Designed	WMB/JAG
Drawn	RDS
Scale	1"=50'
Date	8/21/00
Project No.	8877-00
Drawing No.	7



SECTION A-A BMP 5.2

- BMP 5.2 & 5.3**
1. THE CONSTRUCTION OF THE CLAY CORE IS TO BE IN ACCORDANCE WITH NOTE 6 OF THE GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS. SEE THIS SHEET.
 2. THE CONSTRUCTION OF THE KEY TRENCH IS TO BE IN ACCORDANCE WITH NOTE 5 OF THE GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS. SEE THIS SHEET.

GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS

1. THE CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS NEEDED TO CONSTRUCT THE STORMWATER BASIN. STORMWATER MANAGEMENT PRACTICES, SEDIMENT BASINS AND SEDIMENT TRAPS. THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT AND MATERIALS NEEDED FOR THE COMPLETION OF GRADING AND EARTHWORK ASSOCIATED WITH THE CONSTRUCTION.
2. THE CONTRACTOR SHALL CONSULT AND PROVIDE FOR THE SERVICES OF A GEOTECHNICAL ENGINEER. THE GEOTECHNICAL ENGINEER SHALL PROVIDE TEST RESULTS ON PLACED DAM MATERIALS, IDENTIFYING SOIL CLASSIFICATION, PERMEABILITY, PLASTICITY INDEX, AND COMPACTION. ALL TESTS SHALL BE IN CONFORMANCE WITH ASTM STANDARDS. THE COST OF THE SERVICES OF THE GEOTECHNICAL ENGINEER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SATISFACTORY GEOTECHNICAL RESULTS ARE NEEDED PRIOR TO FINAL APPROVAL.
3. ALL INSPECTIONS REQUIRED FOR THE WORK SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER AT THE EXPENSE OF THE GENERAL CONTRACTOR.
4. ON-SITE EXCAVATED MATERIAL, IF DETERMINED SUITABLE FOR USE IN DAM CONSTRUCTION BY A GEOTECHNICAL ENGINEER, MAY BE USED FOR DAM CONSTRUCTION. SHOULD ADDITIONAL MATERIAL BE REQUIRED, THE CONTRACTOR SHALL IDENTIFY THE NEED FOR MATERIAL TO THE OWNER, AS ADDITIONAL BORROW MATERIAL MAY BE AVAILABLE ON THE STONEHOUSE PROPERTY. ALL EXCAVATED MATERIAL DETERMINED BY THE GEOTECHNICAL ENGINEER TO BE UNSUITABLE SHALL BE DISPOSED OF PROPERLY AT THE CONTRACTOR'S EXPENSE. ALL EXCAVATED MATERIAL NOT REQUIRED FOR BACKFILLING SHALL EITHER BE DEPOSITED ON SITE AND SPREAD BY THE CONTRACTOR, OR SHALL BE DEPOSITED IN AN AREA ON THE STONEHOUSE PROPERTY AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE PROPER STABILIZATION, AND EROSION AND SEDIMENT CONTROL MEASURES NEEDED TO CONTROL AS PER THE VESCH THIRD EDITION.
5. UNDERCUT FOR THE FOUNDATION OF THE DAM EMBANKMENT SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. THE FOUNDATION SHALL BE BACKFILLED WITH SOILS CLASSIFIED AS SM, SC, OR CL UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM. SOILS SHALL HAVE A MINIMUM OF 15% BY WEIGHT FINES, HAVING A PLASTICITY INDEX OF 30% AND A PERMEABILITY OF 0.0004 IN./SEC. OR LESS. FILL SHALL BE COMPACTED IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO A DRY DENSITY OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). EXCAVATION FOR THE DAM KEY SHALL BE IN ACCORDANCE TO THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. HEIGHT, DEPTH, AND WIDTH OF THE KEY SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. THE KEY SHALL BE FORMED USING SOILS CLASSIFIED AS SC OR CL WITH A PERMEABILITY OF 0.0004 IN./SEC. OR LESS.
6. THE DAM CORE SHALL BE AS CONSTRUCTED WITH NON-EXPANSIVE SC OR CL CLAYEY MATERIAL WITH PERMEABILITY OF 0.0004 IN./SEC. OR LESS. THE FILL OF THE CORE SHALL BE MADE IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). SIZE, SHAPE, WIDTH, DEPTH, AND HEIGHT OF THE DAM CORE SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. TO COVER THE DAM CORE, A SILTY FINE SAND OR CLAYEY SOIL (SM, SC, OR CL) SHALL BE PLACED. A VEGETATIVE COVER USING VDOT EC-2 EROSION CONTROL BLANKETS SHALL BE PLACED ON DAM SLOPES AND CREST TO PREVENT EROSION.
7. THE STORMWATER MANAGEMENT / BMP FACILITIES SHOWN ON THESE PLANS REQUIRE THE SUBMISSION, REVIEW AND APPROVAL OF RECORD DRAWING(S) AND CONSTRUCTION CERTIFICATION PRIOR TO RELEASE OF THE POSTED BOND / SURETY. THE GEOTECHNICAL ENGINEER IS TO ENSURE THAT HIS / HER INSPECTION OF THE SWM / BMP CONSTRUCTION ACTIVITY IS PERFORMED DURING AND FOLLOWING CONSTRUCTION OF THE SWM / BMP IN ACCORDANCE WITH THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION STORMWATER MANAGEMENT / BMP FACILITIES DESIGN GUIDELINES HANDBOOK, DATED AUGUST 30, 2000.
8. THE CONTRACTOR SHALL PROVIDE INTERIM CERTIFICATION OF TEMPORARY SEDIMENT BASIN AT BMP 5.2 IN ACCORDANCE WITH SECTION 5 OF THE JAMES CITY COUNTY BMP, EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT DESIGN GUIDES.

NO.	DATE	REVISION / COMMENT / NOTE
5	10/25/01	
4	7/25/01	REVISED AS PER J.C.C.O. COMMENT LETTER DATED 7/18/01
3	6/15/01	REVISED AS PER J.C.C.O. COMMENT LETTER DATED 6/12/01
2	5/17/01	REVISED AS PER J.C.C.O. COMMENT LETTER DATED 4/9/01 & PER CLIENT
1	2/9/01	REVISED AS PER J.C.C.O. COMMENT LETTER DATED 9/27/00 AND PER CLIENT

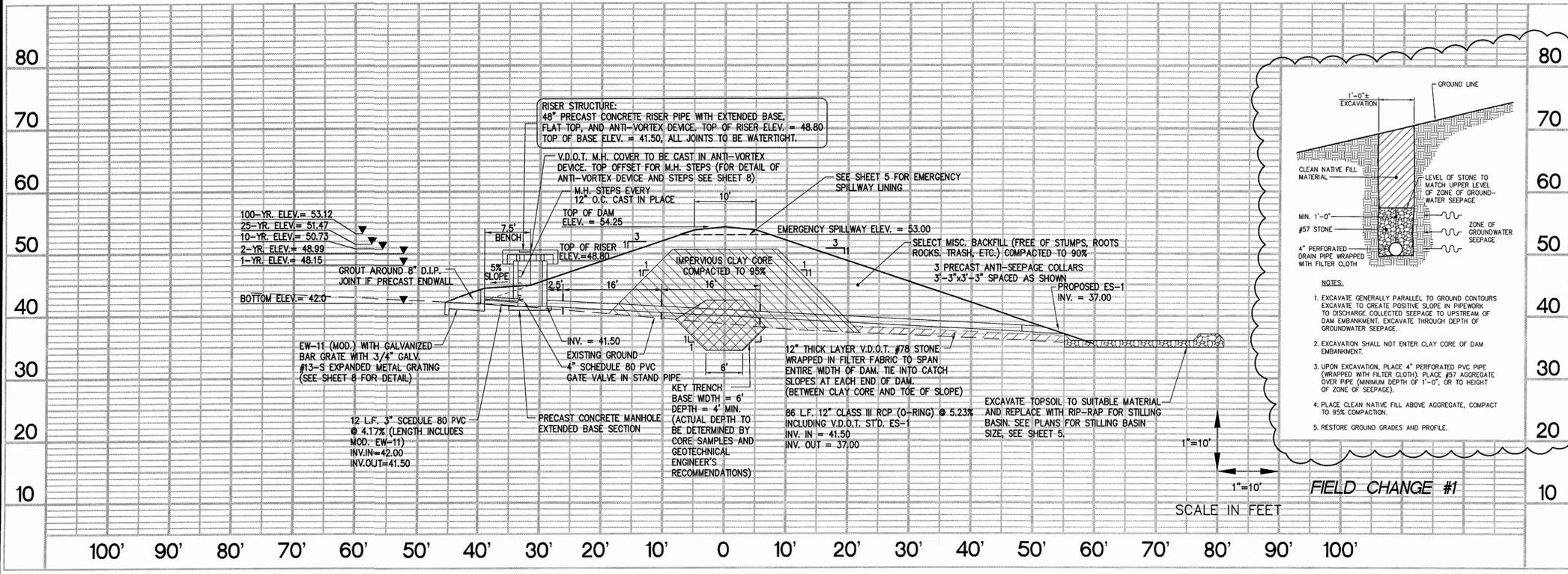


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BMP 5.2 AND BMP 5.3 CROSS-SECTIONS SECTION V-B 'BENT TREE' - PHASE 2 AT WALNUT CREEK AND STONEHOUSE FOR STONEHOUSE DEVELOPMENT COMPANY, L.L.C.

DESIGNED: VMB/RDS
 DRAWN: RDS
 SCALE: AS SHOWN
 DATE: 8/21/00
 PROJECT NO.: 8877-00
 DRAWING NO.: 9



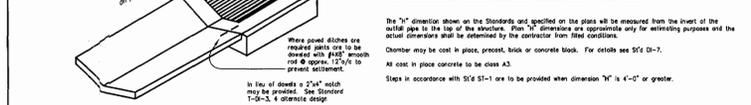
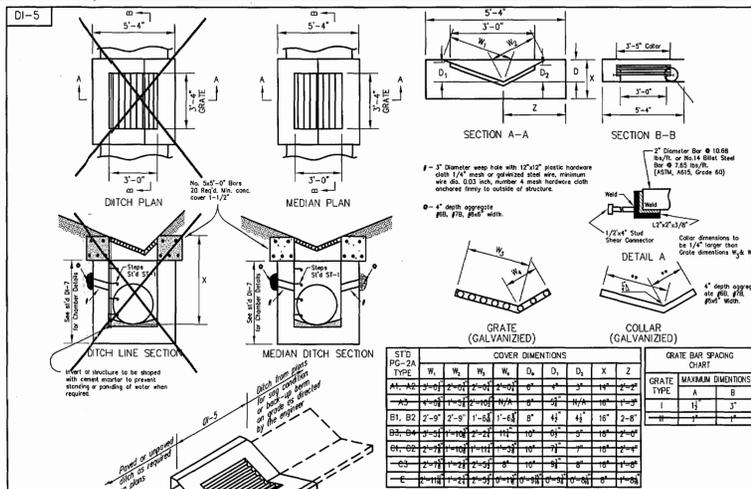
SECTION A-A BMP 5.3

STORMWATER MANAGEMENT / BMP FACILITY MAINTENANCE PLAN

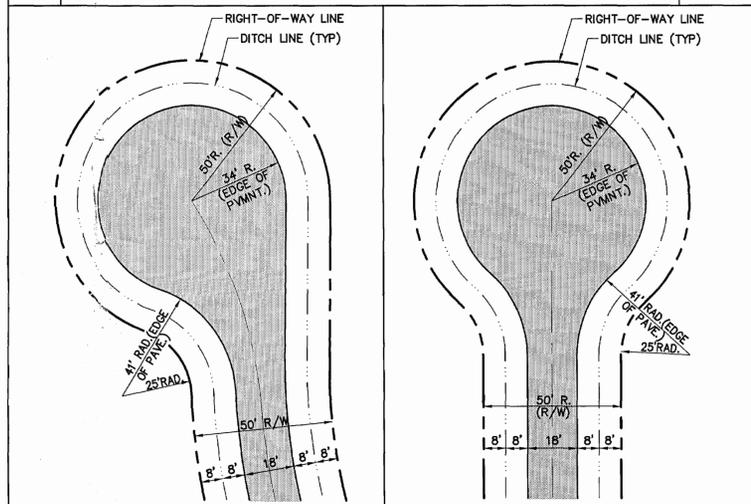
- PROPER MAINTENANCE OF THIS FACILITY IS ENCOURAGED TO PREVENT THE INTRODUCTION OF DEBRIS AND SEDIMENT IN TO THE FACILITY, SPILLWAY(S) AND DOWNSTREAM WATERWAYS. FOLLOWING INSTALLATION OF THE FACILITY AND ESTABLISHMENT OF VEGETATION IN DISTURBED AREAS, INSPECTIONS FOR SEDIMENT BUILDUPS WILL BE REQUIRED AT LEAST QUARTERLY. IF IT IS ANTICIPATED THAT UNDER NORMAL CONDITIONS, SEDIMENT REMOVAL FROM THE FACILITY WILL BE REQUIRED ONCE EVERY 10 YEARS. IF OTHER CONSTRUCTION OR RELATED ACTIVITIES ARE PERFORMED, DAM CONSTRUCTION NOTES: IF VEGETATION COVERS MORE THAN 40% OF GRADED SURFACES, SEDIMENT SHALL BE ALLOWED TO ACCUMULATE IN DEPTHS GREATER THAN 1-FOOT. NO SEDIMENT SHALL BE ALLOWED TO ACCUMULATE TO PREVENT THE PROPER FUNCTION OF ANY PIPE OR CULVERT.
- A DESIGNATED REPRESENTATIVE OF THE OWNER WILL INSPECT THE BMP STRUCTURE AFTER EACH SIGNIFICANT RAINFALL EVENT OR THE FOLLOWING WORKING DAY OF A WEEKEND OR HOLIDAY OCCURS. INSPECTIONS FOR SEDIMENT BUILDUPS FOR THIS STRUCTURE IS ONE (1) INCH OR MORE OF GAUGED RAINFALL WITHIN A 24 HOUR PERIOD. ONCE PER YEAR, A REPRESENTATIVE OF THE COUNTY MAY JOINTLY INSPECT THE STRUCTURE. APPROPRIATE ACTION, PERFORMED AT THE COST OF THE OWNER, WILL BE TAKEN TO ENSURE APPROPRIATE MAINTENANCE KEYS TO LOCKED ACCESS POINTS SHALL BE MADE AVAILABLE TO COUNTY INSPECTION PERSONNEL UPON REQUEST.
- INSPECTION AND MAINTENANCE OF THE FACILITY WILL CONSIST OF THE FOLLOWING ADDITIONAL MEASURES:
1. THE INSPECTION FOR SEDIMENT BUILDUP WILL BE PERFORMED BY VISUAL INSPECTION AND A PHYSICAL DETERMINATION OF SEDIMENT DEPTH WITHIN THE STORAGE AREA. SEDIMENT REMOVAL IS REQUIRED USING A RUBBER-WHEELED BACKHOE. AT THE SAME TIME, OR AT LEAST ONCE PER YEAR, THE RISER BOTTOM AND OUTLET PIPE SHALL BE CLEANED OF ACCUMULATED SEDIMENTS. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY AT AN ACCEPTABLE DISPOSAL AREA.
 2. PERFORM MAINTENANCE MOWING OF GRASSED AREAS AT LEAST TWICE EACH YEAR. GRASSES SUCH AS TALL FESCUE SHOULD BE MOWED IN EARLY SUMMER AFTER EMERGENCE OF THE HEADS ON COOL SEASON GRASSES AND IN LATE FALL TO PREVENT SEEDS OF ANNUAL WEEDS FROM MATURING. MOWING OF LEIGUES CAN BE LESS FREQUENT. TREES AND SHRUBS SHOULD NOT BE PERMITTED TO GROW ON ANY PART OF THE GRADED EMBANKMENT.
 3. PERFORM SOIL SAMPLING ON STABILIZED BMP SOIL AREAS ONCE EVERY FOUR (4) YEARS. SOIL SAMPLING AND TESTING SHOULD BE PERFORMED BY A QUALIFIED INDEPENDENT TESTING LABORATORY. APPLY ADDITIONAL LIME AND FERTILIZER IN ACCORDANCE WITH TEST RECOMMENDATIONS.
 4. IN STABILIZED BMP AREAS, IF VEGETATION COVERS LESS THAN 40% OF SOIL SURFACES, LIME, FERTILIZER AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDINGS, AS LISTED IN DAM CONSTRUCTION NOTES. IF VEGETATION COVERS MORE THAN 40% BUT LESS THAN 70% OF SOIL SURFACES, LIME FERTILIZER AND OVERSEED IN ACCORDANCE WITH CURRENT SEEDING RECOMMENDATIONS.
 5. PERFORM QUARTERLY INSPECTIONS OF THE RELEASE STRUCTURES, RISER SECTION AND CREST OF SPILLWAY FOR THE IMMEDIATE REMOVAL OF COLLECTED DEBRIS. IMMEDIATELY REMOVE ANY DEBRIS TO MAINTAIN THE INTEGRITY OF THE STRUCTURE AND PROVIDE AN ATTRACTIVE APPEARANCE. DURING QUARTERLY INSPECTIONS, THE POND DRAIN VALVE, USUALLY LEFT IN THE VALVE "CLOSED" POSITION, SHALL BE INSPECTED AND OPERATED THROUGH TWO COMPLETE FULL-OPEN TO FULL-CLOSE TO FULL-OPEN CYCLES.
 6. PERFORM YEARLY STRUCTURAL INSPECTIONS OF THE FACILITY FOR DAMAGE. STRUCTURAL INSPECTION SHALL BE PERFORMED ON THE CONCRETE RISER, ANTI-VORTEX DEVICE, TRASH RACK, ORIFICE / WEIR(S), OUTLET BARREL, AND POND EMBANKMENT. IF DAMAGE IS EVIDENT, FURTHER INVESTIGATION BY A PROFESSIONAL ENGINEER MAY BE REQUIRED TO ASSESS THE CONTINUED INTEGRITY OF THE STRUCTURE.
 7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE FACILITY FOR SIGNS OF ANNUAL / RODENT BORROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REPAIRING OR RESEEDING AS APPROPRIATE.
 8. RECORD KEEPING: THE LANDOWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP RESPONSIBLE, ACCURATE WRITTEN RECORDS OR INSPECTIONS PERFORMED FOR THE STRUCTURE. RECORDS SHALL DOCUMENT ROUTINE MAINTENANCE AND / OR REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.
 9. THE FACILITY SHALL NOT BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT / APPROVAL OF THE COUNTY.

VDOT GENERAL NOTES
REVISED 11/99

- AN OVERALL MASTER DEVELOPMENT PLAN IS NEEDED FOR REVIEW. THIS IS REQUIRED FOR ANY SITE OR SUBDIVISION BEING DEVELOPED AND/OR CONSTRUCTED IN STAGES (PHASES, SECTIONS, ETC.).
- A TRAFFIC STUDY IS REQUIRED FOR THIS REVIEW OF THE PLANS WHEN IT IS REQUESTED BY VDOT.
- PLANS FOR SITE/SUBDIVISION SHALL SHOW BOTH SIDES OF THE ROADWAY(S). THEY SHALL INCLUDE ALL ENTRANCES, CROSSOVERS, TURN LANES, SPEED LIMITS, PAVEMENT MARKINGS, AND EXISTING UTILITIES. THEY WILL SHOW THE DISTANCE TO THE NEXT NEAREST STATE ROUTE AND DISTANCE TO THE INTERSECTION, AND THE ACTUAL RIGHT OF WAY WIDTH(S) OF THE EXISTING STATE ROUTE(S). DO NOT JUST STATE "VARIABLE WIDTH".
- A CE-7 LAND USE PERMIT MUST BE OBTAINED FROM VDOT BEFORE ANY CONSTRUCTION IS STARTED WITHIN THE EXISTING STATE RIGHT OF WAY. CONTACT THE VDOT RESIDENCY FOR THE PERMIT FEE AND BOND AMOUNT. ALL CE-7 (A) APPLICATIONS MUST HAVE THREE (3) SETS OF APPROVED PLANS AND A CHECK FOR THE PROCESSING FEE MADE PAYABLE TO VDOT.
- THE DEVELOPER IS RESPONSIBLE FOR THE RELOCATION OF ANY UTILITIES OR PAVEMENT MARKINGS WITHIN THE EXISTING RIGHT OF WAY OR PROPOSED RIGHT OF WAY REQUIRED BY THE DEVELOPMENT OF THE SITE/SUBDIVISION.
- THE DEVELOPER IS RESPONSIBLE FOR THE COST OF A TRAFFIC SIGNAL OR ANY MODIFICATIONS TO AN EXISTING TRAFFIC SIGNAL THAT ARE DETERMINED TO BE NECESSARY. THESE COSTS WILL BE CHARGED UNDER AN OPERATIONAL PROJECT (ACCOUNTS RECEIVABLE) NUMBER. CONTACT THE VDOT RESIDENCY FOR THE PROPER PROCEDURE.
- PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL CONSULT WITH THE DEVELOPER'S ENGINEER TO VERIFY THE FINAL APPROVAL OF THE PLANS, OR ANY REVISED PLANS, BY THE VARIOUS AGENCIES (COUNTY, VDOT, ETC.).
- VDOT APPROVAL OF THESE PLANS WILL EXPIRE IN THREE (3) YEARS FROM THE DATE OF APPROVAL.
- VDOT AND THE COUNTY APPROVAL OF THE SITE/SUBDIVISION PLANS DO NOT PRECLUDE THE RIGHT OF THE OWNER TO ADD OTHER FACILITIES (LANDSCAPING, IRRIGATION SYSTEMS, ETC.) WITHOUT PRIOR APPROVAL BY VDOT AND THE COUNTY.
- VDOT IS TO RECEIVE WRITTEN NOTIFICATION 48 HOURS PRIOR TO THE START OF ANY WORK. A PRE-CONSTRUCTION MEETING WILL BE REQUIRED PRIOR TO ANY LAND DISTURBANCE OF THE SITE. THE DEVELOPER, HIS ENGINEER, GEOTECHNICAL (SOILS) ENGINEER, AND CONTRACTOR SHALL ATTEND THE PRE-CONSTRUCTION MEETING. THE DEVELOPER'S CONTRACTOR SHALL HAVE A PROPOSED PROGRESS SCHEDULE OF WORK.
- ANY ERRORS, CONFLICTS, OR DISCREPANCIES FOUND ON THE APPROVED PLANS SHALL BE REPORTED TO THE DEVELOPER'S ENGINEER AND VDOT FOR RESOLUTION BEFORE PROCEEDING FURTHER WITH THE WORK.
- THE DEVELOPER'S ENGINEER AND CONTRACTOR (SUB-CONTRACTOR) SHALL VERIFY IN THE FIELD THE ELEVATIONS OF ALL POINTS OF CONNECTION OF PROPOSED WORK TO EXISTING CURBS, SANITARY SEWER, STORM SEWER, DRAINAGE STRUCTURES, WATERLINES, ETC., PRIOR TO THE CONSTRUCTION IN THE FIELD.
- AN OPERATIONAL PROJECT (ACCOUNTS RECEIVABLE) NUMBER MAY BE ASSIGNED TO THE SITE/SUBDIVISION. THE DEVELOPER WILL BE RESPONSIBLE FOR THIS BY PROVIDING THE NECESSARY INFORMATION REQUESTED BY VDOT.
- ALL MATERIALS AND CONSTRUCTION WITHIN THE PROPOSED PUBLIC RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE CURRENT VDOT SPECIFICATIONS AND STANDARDS.
- ANY REQUEST FOR A CHANGE OF SPECIFIED MATERIALS OR DESIGN FROM THE APPROVED PLANS WILL NEED TO BE SUBMITTED TO VDOT. A LETTER MUST ACCOMPANY THE PROPOSED CHANGES AND REVISED PLAN SHEETS AND/OR DRAINAGE CALCULATIONS FOR REVIEW AND APPROVAL BY THE VDOT RESIDENT ENGINEER.
- THE DEVELOPER WILL BE RESPONSIBLE FOR PROVIDING THE GEOTECHNICAL (SOILS) ENGINEER. A CERTIFIED PROFESSIONAL ENGINEER WILL SUBMIT A COMPLETE REPORT WITH BORING DATA AND RECOMMENDATIONS TO VDOT FOR APPROVAL OF HIS PROPOSED METHOD OF CONSTRUCTION. THIS REPORT SHALL INCLUDE SOIL SHrink SWELL VALUES OF THE SOILS, MOISTURE SENSITIVE SOILS, SIEVE ANALYSES, DRY AND NET CBR VALUES, STANDARD PROCTOR AND ATTERBERG LIMITS. THE REPORT WILL SHOW THE BORE LOGS, TYPES OF SOILS ENCOUNTERED, AND STABILIZATION RECOMMENDATIONS FOR SOILS WITH POOR SUPPORT VALUES, HIGH MOISTURE, MICA, AND SILT CONTENT. THE REPORT SHALL INCLUDE A PAVEMENT STRUCTURAL DESIGN RECOMMENDATION BASED ON LABORATORY TESTS OF THE ACTUAL SOILS AND APPROVED TRAFFIC VOLUME FOR THE SITE/SUBDIVISION IN ACCORDANCE WITH THE LATEST VDOT PAVEMENT DESIGN GUIDE FOR SUBDIVISION AND SECONDARY ROADS IN VIRGINIA.
- WHEN SOILS OCCUR THAT ARE UNSUITABLE FOR FOUNDATIONS, EMBANKMENT FILL, PIPE BACKFILL, SUBGRADE, OR OTHER ROADWAY PURPOSES, THE DEVELOPER'S CONTRACTOR SHALL EXCAVATE SAID MATERIAL UNDER THE DIRECTION OF THE DEVELOPER'S SOILS ENGINEER, BY UNDERCUTTING SUCH MATERIAL BELOW THE PROPOSED GRADES SHOWN ON THE PLANS. THE CONTRACTOR SHALL NOTIFY THE DEVELOPER'S ENGINEER AND VDOT UPON THE DISCOVERY OF THE UNSUITABLE MATERIAL. CONCURRENCE OF THE ENGINEER SHALL BE OBTAINED BEFORE ADDITIONAL WORK IS UNDERTAKEN.
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ALL EROSION CONTROL MEASURES WILL BE IN PLACE AND REVIEWED BY THE CONTRACTOR DAILY AND AFTER ALL WEATHER TO INSURE COMPLIANCE FOR THE CONTROL OF ANY EROSION AND SILTATION. ANY CORRECTIONS OR REPAIRS WILL BE MADE IMMEDIATELY.
- CLEARING AND GRUBBING SHALL BE COMPLETED WITHIN THE EXISTING AND PROPOSED RIGHT OF WAY IN ACCORDANCE WITH SECTION 301 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS.
- THE CONTRACTOR AND SUBCONTRACTOR(S) SHALL HAVE A COPY OF THE CURRENT VDOT ROAD AND BRIDGE SPECIFICATIONS AND THE VDOT ROAD AND BRIDGE STANDARDS. THE CONTRACTOR SHALL HAVE AT LEAST ONE (1) SET OF APPROVED PLANS WITH ALL APPROVED REVISIONS. THE CE-7 LAND USE PERMIT WILL BE AT THE SITE AT ALL TIMES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL UNDERGROUND AND OVERHEAD UTILITIES, WHETHER OR NOT THEY ARE SHOWN ON THE PLANS. THE CONTRACTOR WILL BE RESPONSIBLE FOR REPAIRS AT HIS OWN EXPENSE OF ANY UTILITIES DAMAGED BY HIS CONSTRUCTION METHODS. MISS UTILITY MUST BE CONTACTED AT 1-800-952-7001 AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
- THE CONTRACTOR WILL BE RESPONSIBLE FOR REPLACING, WITH MATCHING MATERIALS, ANY PAVEMENT, CURB AND GUTTER, DRIVEWAY, PIPE, SIDEWALK, ETC. THAT ARE DAMAGED DURING THE CONSTRUCTION OF THE SITE/SUBDIVISION.
- CERTIFICATION AND SOURCE OF MATERIALS ARE TO BE SUBMITTED TO VDOT. ALL MATERIALS MUST MEET VDOT SPECIFICATIONS AND STANDARDS. THE DEVELOPER'S GEOTECHNICAL ENGINEER WILL TEST ALL MATERIALS (AGGREGATE BASE, BITUMINOUS CONCRETE, CONCRETE, ETC.) FOR CONFORMANCE WITH CURRENT VDOT SPECIFICATIONS AND APPROVED JOB MOVES BY THE MATERIALS SUPPLIERS.
- THE DEVELOPER'S GEOTECHNICAL ENGINEER AND/OR HIS CERTIFIED MATERIALS TECHNICIANS WILL PERFORM COMPACTION (DENSITY) TESTS FOR REVIEW BY VDOT. ALL TESTS WILL BE PERFORMED IN ACCORDANCE WITH THE CURRENT VDOT SPECIFICATIONS AND STANDARDS. BACKFILL MATERIAL FOR PIPE, STRUCTURES, AND UTILITIES LOCATED WITHIN THE PROPOSED RIGHT OF WAY WILL BE COMPACTED AND TESTED AS THE FILL MATERIAL IS PLACED IN UNIFORM LIFTS. A MINIMUM OF 95% DENSITY WITH THE SOILS STANDARD PROCTOR WILL BE OBTAINED WITH THE PROPER MOISTURE CONTENT ON EMBANKMENT AND FILL MATERIAL. FOR THE FINAL 6" OF THE FINISHED SUBGRADE, 100% DENSITY WILL BE OBTAINED. THE TEST RESULTS WILL BE SUBMITTED TO VDOT FOR REVIEW AND COMPLIANCE OF THE MATERIALS, PRIOR TO THE DEVELOPER'S CONTRACTOR REQUESTING AN INSPECTION FOR A PROOF ROLL ON THE SUBGRADE, AGGREGATE STONE, BASE MIX (ASPHALT) OR THE PLACEMENT OF THE SURFACE MIX.
- ALL DRAINAGE EASEMENTS SHALL BE LABELED AS EITHER "DRAINAGE EASEMENTS" OR "COUNTY DRAINAGE EASEMENTS" AND SHALL NOT BE DEDICATED TO VDOT OR BECOME THE RESPONSIBILITY OF VDOT.
- TEMPORARY DRAINAGE MEASURES WILL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION TO RELIEVE AREAS THAT MAY CAUSE DAMAGE TO THE RIGHT OF WAY, ROADWAY, OR ADJACENT PROPERTIES.
- DITCHES WITH GRADES OF 3% OR GREATER OR 1% OR LESS SHALL BE PAVED UNLESS OTHERWISE APPROVED BY VDOT AND THE GOVERNING BODY.
- ALL ROADSIDE DITCHES THAT ARE SHOWN ON THE APPROVED PLANS ARE TO BE PLACED IN ACCORDANCE WITH THE STANDARD TYPICAL SHOWN ON THE PLANS. ADDITIONAL DITCHES, OTHER THAN THOSE SHOWN ON THE PLANS, WILL BE DETERMINED PRIOR TO THE ACCEPTANCE OF THE ROADS INTO THE VDOT SECONDARY ROAD SYSTEM. ANY DITCH THAT HAS NOT DEVELOPED A GOOD SOD BY THE TIME OF THE PROPOSED STREET ACCEPTANCE MUST BE PAVED WHERE THE DRAINAGE FLOW OF WATER HAS ENTERED A CHANNEL OTHER THAN THE ESTABLISHED DITCH SHOWN ON THE PLANS. PAVED DITCHES MAY BE REQUIRED WHERE FIELD CONDITIONS WARRANT.
- DRY GUTTER (RIP RAP) IS NOT ALLOWED IN THE DITCHES ON VDOT RIGHT OF WAY.
- ALL STORM SEWER PIPES SHALL BE REINFORCED CONCRETE PIPE (TONGUE AND GROOVE) IN ACCORDANCE WITH ASTM-C-76 OR AN ALTERNATIVE THAT HAS BEEN APPROVED ON THE PLANS.
- INSTALLATION OF PIPE CULVERTS, STORM SEWERS, AND DRAINAGE STRUCTURES SHALL HAVE BEDDING MATERIAL PLACED UNDER THE PIPES AND STRUCTURES IN ACCORDANCE WITH VDOT SPECIFICATIONS (A MINIMUM OF 4" UNDER PIPES AND A MINIMUM OF 6" UNDER DRAINAGE STRUCTURES). THE BACKFILL SHALL BE SUITABLE MATERIAL FREE OF DEBRIS, SILT, TREE ROOTS (ORGANIC MATERIAL), AND EXCESS MOISTURE. THE FILL MATERIAL WILL BE COMPACTED IN UNIFORM LIFTS AND TESTED FOR DENSITY.

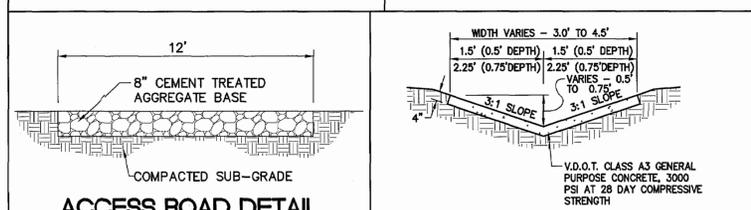


STANDARD DITCH DROP INLET
VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIFICATION REFERENCE: 241 503

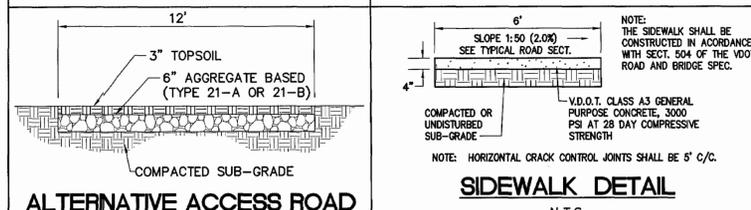


WALNUT CREEK ROAD CUL-DE-SAC DETAIL
CATEGORY 1 - 50' RADIUS
NOT TO SCALE

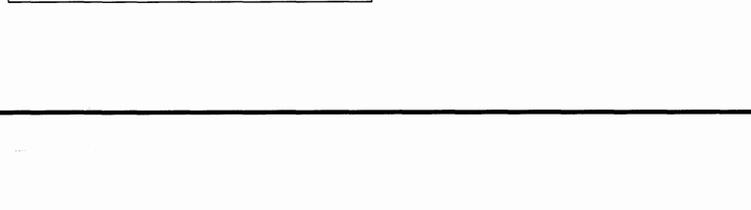
TRAIL WOOD LANE CUL-DE-SAC DETAIL
50' RADIUS
NOT TO SCALE



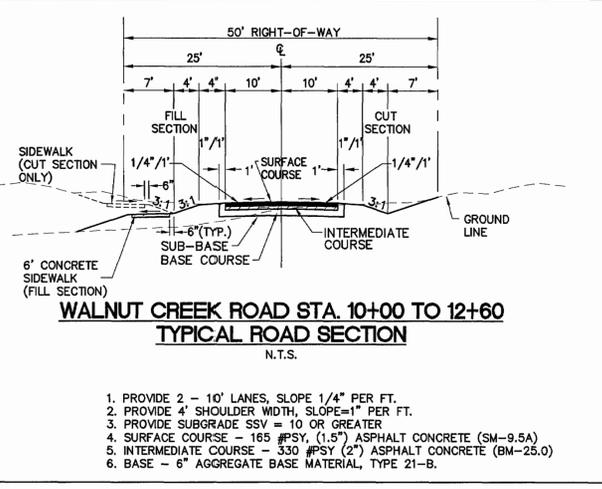
ACCESS ROAD DETAIL TO BMP 5.2 AND 5.3
N.T.S.



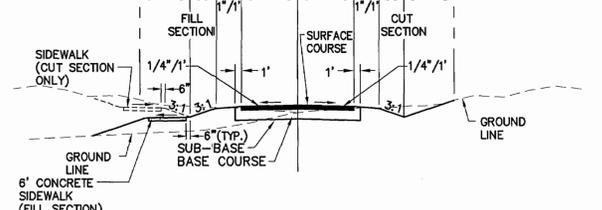
PAVED DITCH DETAIL
N.T.S.



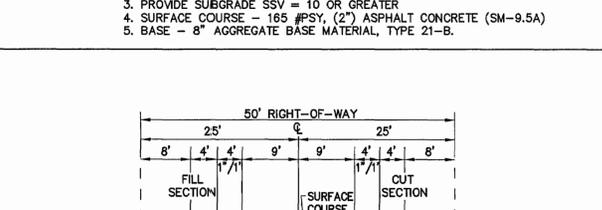
ALTERNATIVE ACCESS ROAD DETAIL TO BMP'S
N.T.S.



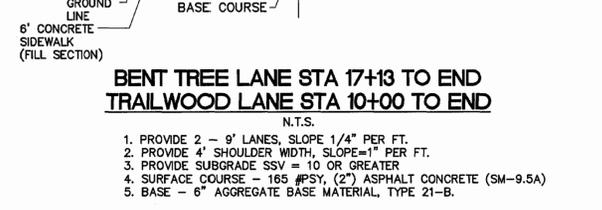
WALNUT CREEK ROAD STA. 10+00 TO 12+60
TYPICAL ROAD SECTION
N.T.S.



WALNUT CREEK ROAD STA. 12+60 TO END
N.T.S.



BENT TREE LANE STA. 17+13 TO END
TRAILWOOD LANE STA. 10+00 TO END
N.T.S.



PRE-CAST CONCRETE ANTI-SEEP COLLAR
N.T.S.

NO.	DATE	REVISION / COMMENT / NOTE
1	10/23/00	FIELD CHANGE #1
2	10/23/00	REVISED AS PER ACCO COMMENT LETTER DATED 7/17/01
3	6/19/00	REVISED AS PER ACCO COMMENT LETTER DATED 6/19/00
4	6/19/00	REVISED AS PER ACCO COMMENT LETTER DATED 6/19/00
5	6/19/00	REVISED AS PER ACCO COMMENT LETTER DATED 6/19/00
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42	6/19/00	REVISED AS PER ACCO COMMENT LETTER DATED 6/19/00
43		

ROADWAY CULVERT SIZES FOR LOT DRAINAGE

LOT No.	CULVERT SIZE
1	15"
2	15"
3	15"
4	15"
5	15"
6	15"
7	15"
8	15"
9	15"
10	15"
11	15"
12	15"
13	15"
14	15"
15	15"
16	15"
17	15"
18	15"
19	15"
20	15"
21	15"
23	15"
53	15"
54	15"
55	15"
56	15"
57	15"
58	15"

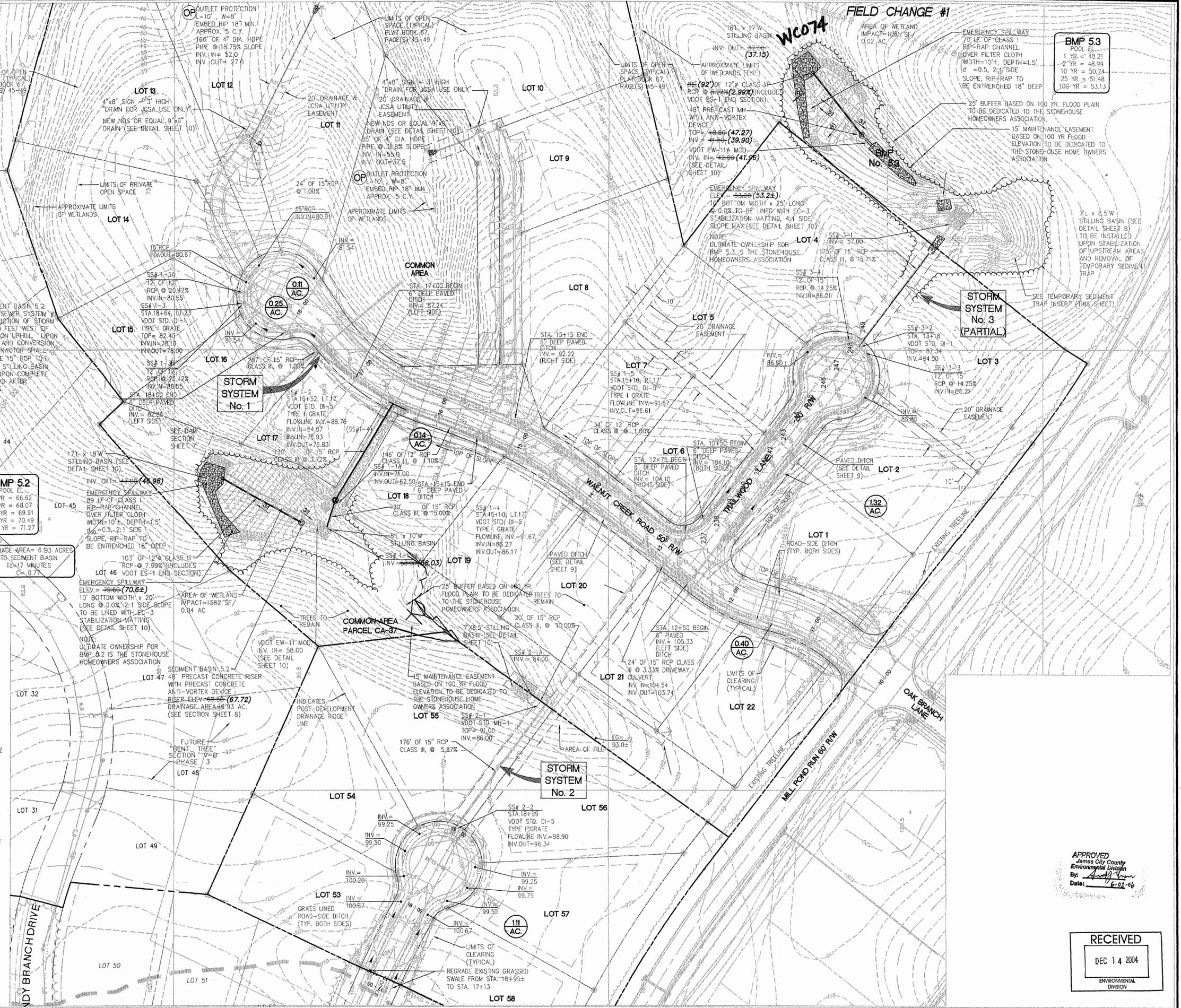
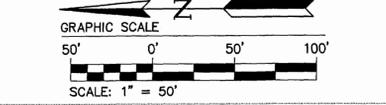
NOTE TO CONTRACTOR:
CONTRACTOR TO CONSTRUCT SEDIMENT BASIN 5.2 PRIOR TO INSTALLATION OF STORM SEWER SYSTEM. CONTRACTOR SHALL BEGIN CONSTRUCTION OF STORM SEWER SYSTEM APPROXIMATELY 120 FEET WEST OF SS #1-2 AND CONTINUE INSTALLATION UPHILL UPON STABILIZATION OF UPSTREAM SITES AND CONVERSION OF THE SEDIMENT BASIN. THE CONTRACTOR SHALL CONTINUE THE INSTALLATION OF THE 15" RCP TO FULL LENGTH TO DITCH 5. (SS#1-2) STILLING BASIN AT SS#1-1 SHALL BE INSTALLED UPON COMPLETE INSTALLATION OF STORM SEWER AND AFTER STABILIZATION OF UPSTREAM AREAS.

- NOTES:
- ALL EROSION CONTROL MEASURES SHALL BE REGULARLY MAINTAINED, AND CORRECTED IF FOUND INEFFECTIVE BY THE CONTRACTOR OR THE JAMES CITY COUNTY INSPECTOR DURING CONSTRUCTION.
 - OFF-SITE LAND DISTURBING ACTIVITIES ARE ANTICIPATED WITHIN THE FERNANDEZ TRACT. THESE ACTIVITIES WILL BE LIMITED TO FILL SECTIONS FOR THE FUTURE EXTENSION OF SPLITWOOD ROAD AND TOP SOIL STOCKPILE. THE CONTRACTOR SHALL IDENTIFY THIS OFF-SITE AREA TO SITE INSPECTOR AT LEAST ONE WEEK PRIOR TO THE PRE-CONSTRUCTION MEETING. THE OFF-SITE AREA SHALL ALSO BE ADEQUATELY PROTECTED TO PREVENT SEDIMENT TRANSPORT AT THIS TIME. THE CONTRACTOR MAY BE REQUIRED TO PERFORM ADDITIONAL MAINTENANCE, OR INSTALL ADDITIONAL MEASURES AS DIRECTED BY THE OWNER, ENGINEER, AND/OR THE JAMES CITY COUNTY INSPECTOR.
 - UNLESS OTHERWISE NOTED ALL CULVERT PIPE TO BE REINFORCED CONCRETE PIPE (RCP) CLASS III.
 - ALL ROADSIDE DITCHES SHALL BE STABILIZED IMMEDIATELY AFTER CONSTRUCTION WITH EITHER CONCRETE (AS SHOWN), SOD OR EC-2 MATTING WITH SEED.
 - STILLING BASIN AT BMP 5.2 IS TO BE ADDED AS PART OF THE CONVERSION FROM SEDIMENT TRAP TO A BMP/SWM.
 - TOTAL WETLAND IMPACT AREA = 0.08 ACRES. AREAS LESS THAN 0.10 ACRES OF DISTURBANCE ARE CONSIDERED A NON-REPORTING DISTURBANCE.
 - 4" HDPE DRAIN PIPES LOCATED AT THE END OF THE PRIVATE DRIVEWAYS ARE FOR THE USE OF JCSA ONLY AND INTENDED TO PROVIDE A DRAIN FOR WATER DISCHARGED FROM THE 4" WATER LINE DURING PURGING OF THE WATER SYSTEM. DRAINS ARE TO BE LOCATED WITHIN 3' OR LESS OF THE 4" WATER LINE BLOW-OFF.

NOTE:
THE VIRGINIA DEPARTMENT OF TRANSPORTATION WILL NOT BE RESPONSIBLE FOR MAINTENANCE OF THE PEDESTRIAN PATH WHETHER OR NOT THE PATH IS WITHIN THE VDOT RIGHT-OF-WAY

ALL DRAINAGE EASEMENTS AND ATTENUATION BASINS ARE TO BE DEDICATED TO THE HOMEOWNERS ASSOCIATION

THE TOPOGRAPHIC DATA REPRESENTED ON THIS DRAWING IS SUPPLIED BY OWNER/DEVELOPER. CONTOUR INTERVAL = 2 FOOT



BMP 5.3
POOL EL.
1 YR = 48.21
2 YR = 48.99
10 YR = 50.74
25 YR = 51.48
100 YR = 53.13

BMP 5.2
POOL EL.
1 YR = 66.52
2 YR = 68.07
10 YR = 69.91
25 YR = 70.49
100 YR = 71.27

APPROVED
James City County
Environmental Division
By: *[Signature]*
Date: 6-02-06

RECEIVED
DEC 14 2004
ENVIRONMENTAL DIVISION

REV	DATE	DESCRIPTION
1	11/07/02	BMP 5.2 & BMP 5.3 RECORD DRAWINGS
2	10/23/01	FIELD CHANGE #1
3	7/25/01	REVISED AS PER J.C.C.O. COMMENT LETTER DATED 7/18/01
4	6/17/01	REVISED AS PER J.C.C.O. COMMENT LETTER DATED 6/12/01
5	5/17/01	REVISED AS PER J.C.C.O. COMMENT LETTER DATED 4/29/01 & PER CLIENT
6	2/07/01	REVISED AS PER J.C.C.O. COMMENT LETTER DATED 9/27/00
7	12/14/04	REVISED PER PERMITS
8		DATE
9		REVISION / COMMENT / NOTE
10		BY

5248 Old Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994



DRAINAGE, EROSION AND SEDIMENT CONTROL PLAN
SECTION V-B 'BENT TREE' - PHASE 2
AND WALNUT CREEK
AT STONEHOUSE FOR
STONEHOUSE DEVELOPMENT COMPANY, L.L.C.
JAMES CITY COUNTY, VIRGINIA

Designed VMB/JAG	Drawn RDS
Scale 1" = 50'	Date 8/21/00
Project No. 8877-00	
Drawing No. 7	



REVISION /

SECTION V - B CREEK

INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
1	COVER SHEET
2	PRELIMINARY PLAT
3	ENVIRONMENTAL INVENTORY AND DRAINAGE AREA PLAN
4	MASTER WATER PLAN
5	MASTER SEWER PLAN
6	ROAD, WATER AND SEWER PLAN
7	DRAINAGE, EROSION & SEDIMENT CONTROL PLAN
8	ROAD PROFILES
8A	ROAD PROFILES (PRIVATE DRIVEWAYS)
9	BMP 5.2 AND BMP 5.3 CROSS-SECTIONS
10	STORMWATER MANAGEMENT BASIN DETAILS
11	ROAD NOTES AND DETAILS
12	E & S NOTES AND DETAILS
13	GRINDER PUMP DETAILS
14	GRINDER PUMP DETAILS

Handwritten notes:
5-42-99
5-14-00
Bmp # 5.3
WC074

OWNER INFORMATION

STONEHOUSE DEVELOPMENT COMPANY, L.L.C.
1 MILL POND RUN
JAMES CITY COUNTY, VIRGINIA 23168
ATTENTION: JAMES H. BENNETT
PHONE: 757-234-5100

CERTIFIED RESPONSIBLE LAND DISTURBER:

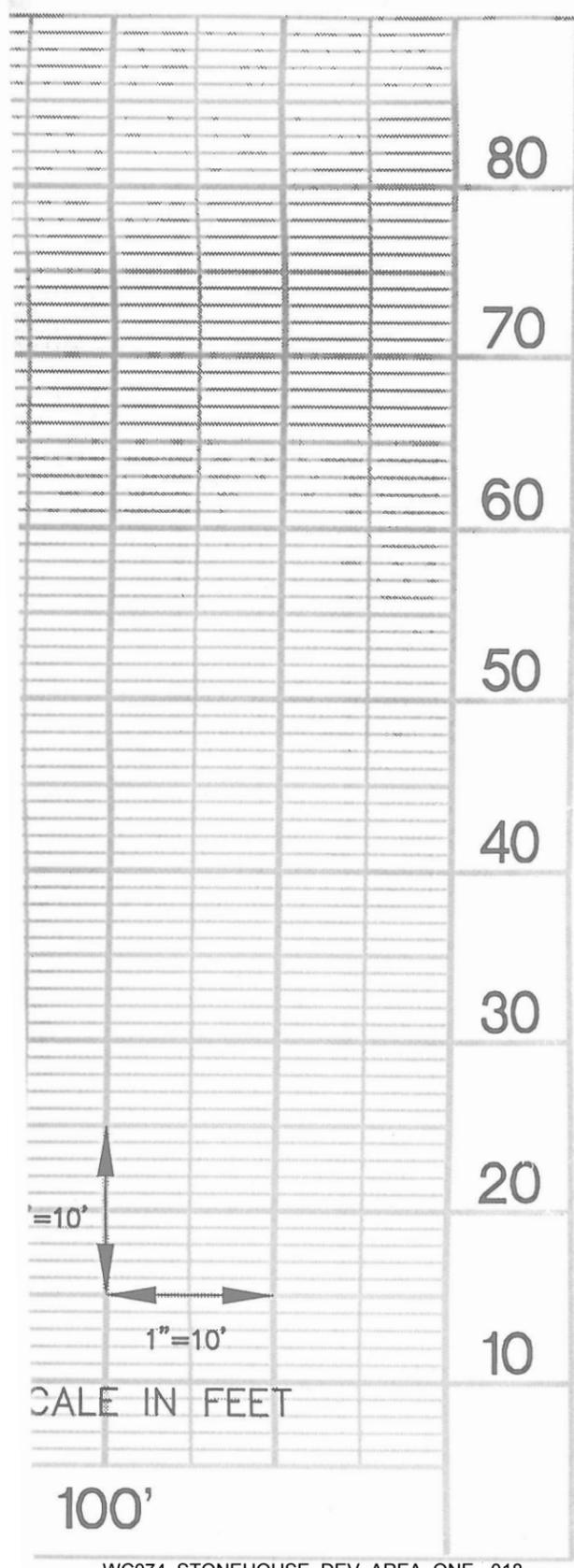
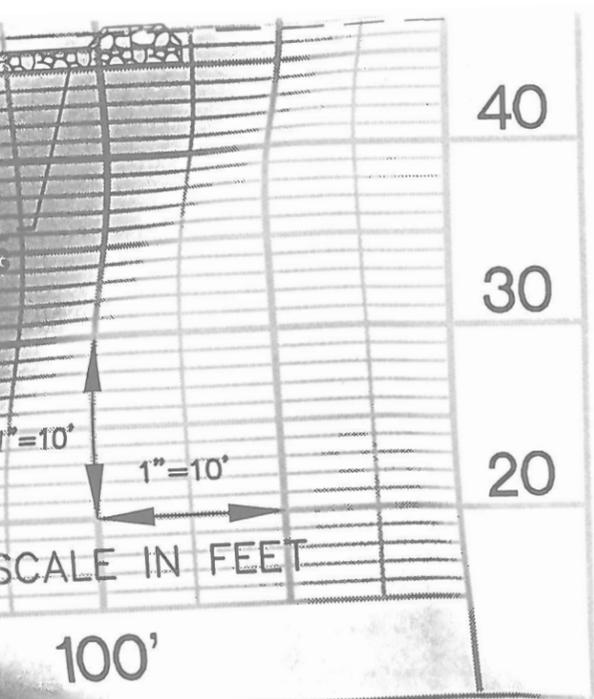
JAMES H. BENNETT, P.E.
STONEHOUSE DEVELOPMENT COMPANY, L.L.C.
1 MILL POND RUN
JAMES CITY COUNTY, VIRGINIA 23168
PHONE: 757-234-5100

GENERAL DATA:

TAX MAP PARCEL No.	(6-4) (1-1)
ZONING:	PUD-R
PROJECT AREA:	20.86 ACRES / 908,617 SF
DISTURBED AREA:	4.5 ACRES / 196,291 SF
WETLAND DISTURBED AREA:	0.06 ACRES / 2,663 SF (LESS THAN 0.1 ACRES - NON-REPORTING DISTURBANCE)
NUMBER OF LOTS (PHASE 2 AND WALNUT CREEK):	28
FLOOD HAZARD MAP:	FEMA PANEL NUMBER 510201 0010 B NOTE: SITE IS LOCATED IN ZONE 'X' (AREAS DETERMINED TO BE OUTSIDE THE 500 YEAR FLOOD PLAIN)

NOTES:

- OWNERS OF LOTS WHICH REQUIRE A GRINDER PUMP FOR SANITARY SEWER SERVICE ARE REQUIRED TO KEEP A CURRENT GRINDER PUMP MAINTENANCE CONTRACT WITH AN APPROPRIATE SERVICE ORGANIZATION
- ALL PROPOSED UTILITIES SHOWN ARE TO BE PLACED UNDERGROUND AS PER THE CURRENT JAMES CITY COUNTY SUBDIVISION ORDINANCE SECTION 19-33.
- THE CONTRACTOR SHALL CONTACT "MISS UTILITY" A MINIMUM OF 48 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON THE SITE. CALL 1-800-552-7001.
- ALL EXISTING WELLS ARE TO BE ABANDONED IN ACCORDANCE WITH THE HEALTH DEPARTMENT STATE WELL REGULATIONS AND THE JAMES CITY COUNTY CODE.
- THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) WILL NOT BE RESPONSIBLE FOR MAINTENANCE OF THE PEDESTRIAN PATH WHETHER OR NOT THE PATH OCCURS WITHIN THE PROPOSED RIGHT-OF-WAY.
- ALL DRAINAGE EASEMENTS AND STORM WATER ATTENUATION BASINS ARE TO BE DEDICATED TO STONEHOUSE COMMUNITY HOMEOWNERS ASSOCIATION.
- THE VIRGINIA DEPARTMENT OF TRANSPORTATION IS NOT RESPONSIBLE FOR, NOR SHALL BE HELD LIABLE FOR MAINTENANCE OF STORM WATER / BMP FACILITY 5.2 AND 5.3, AS SHOWN ON THESE PLANS.
- ALL RESIDENTIAL SUBDIVISION SIGNS SHALL BE IN ACCORDANCE WITH ARTICLE II, DIVISION 3 OF THE JAMES CITY COUNTY ZONING ORDINANCE.
- NEW MONUMENTS WILL BE INSTALLED PER SECTIONS 19-34 THROUGH 19-36 OF THE JAMES CITY COUNTY SUBDIVISION ORDINANCE.
- ALL NEW STREET SIGNS SHALL BE INSTALLED PER SECTION 19-55 OF THE JAMES CITY COUNTY



FOR BACKFILLING SHALL EITHER BE DEPOSITED ON SITE AND SPREAD BY THE CONTRACTOR, OR SHALL BE DEPOSITED IN AN AREA ON THE STONEHOUSE PROPERTY AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE PROPER STABILIZATION, AND EROSION AND SEDIMENT CONTROL MEASURES NEEDED TO CONTROL AS PER THE VESCH THIRD EDITION.

5. UNDERCUT FOR THE FOUNDATION OF THE DAM EMBANKMENT SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. THE FOUNDATION SHALL BE BACKFILLED WITH SOILS CLASSIFIED AS SM, SC, OR CL UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM. SOILS SHALL HAVE A MINIMUM OF 15% BY WEIGHT FINES, HAVING A PLASTICITY INDEX OF 30% AND A PERMEABILITY OF 0.0004 IN./SEC. OR LESS. FILL SHALL BE COMPACTED IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO A DRY DENSITY OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). EXCAVATION FOR THE DAM KEY SHALL BE IN ACCORDANCE TO THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. HEIGHT, DEPTH, AND WIDTH OF THE KEY SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. THE KEY SHALL BE FORMED USING SOILS CLASSIFIED AS SC OR CL, WITH A PERMEABILITY OF 0.0004 IN./SEC. OR LESS.

6. THE DAM CORE SHALL BE AS CONSTRUCTED WITH NON-EXPANSIVE SC OR CL CLAYEY MATERIAL WITH PERMEABILITY OF 0.0004 IN./SEC. OR LESS. THE FILL OF THE CORE SHALL BE MADE IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). SIZE, SHAPE, WIDTH, DEPTH, AND HEIGHT OF THE DAM CORE SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. TO COVER THE DAM CORE, A SILTY FINE SAND OR CLAYEY SOIL (SM, SC, OR CL) SHALL BE PLACED. A VEGETATIVE COVER USING VDOT EC-2 EROSION CONTROL BLANKETS SHALL BE PLACED ON DAM SLOPES AND CREST TO PREVENT EROSION.

7. THE STORMWATER MANAGEMENT / BMP FACILITIES SHOWN ON THESE PLANS REQUIRE THE SUBMISSION, REVIEW AND APPROVAL OF RECORD DRAWING(S) AND CONSTRUCTION CERTIFICATION PRIOR TO RELEASE OF THE POSTED BOND / SURETY. THE GEOTECHNICAL ENGINEER IS TO ENSURE THAT HIS / HER INSPECTION OF THE SWM / BMP CONSTRUCTION ACTIVITY IS PERFORMED DURING AND FOLLOWING CONSTRUCTION OF THE SWM / BMP IN ACCORDANCE WITH THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION STORMWATER MANAGEMENT / BMP FACILITIES DESIGN GUIDELINES HANDBOOK, DATED AUGUST 30, 2000.

8. THE CONTRACTOR SHALL PROVIDE INTERIM CERTIFICATION OF TEMPORARY SEDIMENT BASIN AT BMP 5.2 IN ACCORDANCE WITH SECTION 5 OF THE JAMES CITY COUNTY BMP, EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT DESIGN GUIDES.

STORMWATER MANAGEMENT / BMP FACILITY MAINTENANCE PLAN

PROPER MAINTENANCE OF THIS FACILITY IS ENCOURAGED TO PREVENT THE INTRODUCTION OF DEBRIS AND SEDIMENT IN TO THE FACILITY, SPILLWAY(S) AND DOWNSTREAM WATERWAYS. FOLLOWING INSTALLATION OF THE FACILITY AND ESTABLISHMENT OF VEGETATION IN DISTURBED AREAS, INSPECTIONS FOR SEDIMENT BUILDUPS WILL BE PERFORMED AT LEAST QUARTERLY. IT IS ANTICIPATED THAT UNDER NORMAL CONDITIONS, SEDIMENT REMOVAL FROM THE FACILITY WILL BE REQUIRED ONCE EVERY 10 YEARS. IF OTHER CONSTRUCTION OR RELATED ACTIVITIES ARE PERFORMED ON UPSLOPE PARCELS, ADEQUATE PROTECTION SHOULD BE PROVIDED AND INSPECTIONS PERFORMED AT LEAST ONCE WEEKLY OF THESE NEWLY DISTRIBUTED AREAS AS WELL AS INSPECTIONS FOR ACCUMULATED SEDIMENTS AT TWO BMP FACILITY.

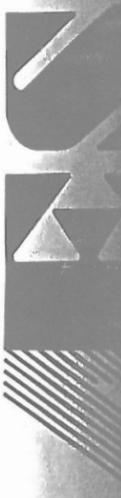
A DESIGNATED REPRESENTATIVE OF THE OWNER WILL INSPECT THE BMP STRUCTURE AFTER EACH SIGNIFICANT RAINFALL EVENT OR THE FOLLOWING WORKING DAY IF A WEEKEND OR HOLIDAY OCCURS. A SIGNIFICANT RAINFALL FOR THIS STRUCTURE IS DEFINED AS ONE (1) INCH OR MORE OF GAUGED RAINFALL WITHIN A 24 HOUR PERIOD. ONCE PER YEAR, A REPRESENTATIVE OF THE COUNTY MAY JOINTLY INSPECT THE STRUCTURE. APPROPRIATE ACTION, PERFORMED AT THE COST OF THE OWNER, WILL BE TAKEN TO ENSURE APPROPRIATE MAINTENANCE. KEYS TO LOCKED ACCESS POINTS SHALL BE MADE AVAILABLE TO COUNTY INSPECTION PERSONNEL UPON REQUEST.

INSPECTION AND MAINTENANCE OF THE FACILITY WILL CONSIST OF THE FOLLOWING ADDITIONAL MEASURES:

1. THE INSPECTION FOR SEDIMENT BUILDUP WILL BE PERFORMED BY VISUAL INSPECTION AND A PHYSICAL DETERMINATION OF SEDIMENT DEPTH WITHIN THE STORAGE AREA. SEDIMENT REMOVAL IS REQUIRED USING A RUBBER-WHEELED BACKHOE. AT THE SAME TIME, OR AT LEAST ONCE PER YEAR, THE RISER BOTTOM AND OUTLET PIPE SHALL BE CLEANED OF ACCUMULATED SEDIMENTS. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY AT AN ACCEPTABLE DISPOSAL AREA. SEDIMENT SHALL NOT BE ALLOWED TO ACCUMULATE IN DEPTHS GREATER THAN 1-FOOT. NO SEDIMENT SHALL BE ALLOWED TO ACCUMULATE TO PREVENT THE PROPER FUNCTION OF ANY PIPE OR CULVERT.
2. PERFORM MAINTENANCE MOWING OF GRASSED AREAS AT LEAST TWICE EACH YEAR. GRASSES SUCH AS TALL FESCUE SHOULD BE MOWED IN EARLY SUMMER AFTER EMERGENCE OF THE HEADS ON COOL SEASON GRASSES AND IN LATE FALL TO PREVENT SEEDS OF ANNUAL WEEDS FROM MATURING. MOWING OF LEGUMES CAN BE LESS FREQUENT TREES AND SHRUBS SHOULD NOT BE PERMITTED TO GROW ON ANY PART OF THE GRADED EMBANKMENT.
3. PERFORM SOIL SAMPLING ON STABILIZED BMP SOIL AREAS ONCE EVERY FOUR (4) YEARS. SOIL SAMPLING AND TESTING SHOULD BE PERFORMED BY A QUALIFIED INDEPENDENT TESTING LABORATORY. APPLY ADDITIONAL LIME AND FERTILIZER IN ACCORDANCE WITH TEST RECOMMENDATIONS.
4. IN STABILIZED BMP AREAS, IF VEGETATION COVERS LESS THAN 40% OF SOIL SURFACES, LIME, FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDLINGS, AS LISTED IN DAM CONSTRUCTION NOTES. IF VEGETATION COVERS MORE THAN 40% BUT LESS THAN 70% OF SOIL SURFACES, LIME FERTILIZE AND OVERSEED IN ACCORDANCE WITH CURRENT SEEDLING RECOMMENDATIONS.
5. PERFORM QUARTERLY INSPECTIONS OF THE RELEASE STRUCTURES, RISER SECTION AND CREST OF SPILLWAY FOR THE OBSERVANCE OF COLLECTED DEBRIS. IMMEDIATELY REMOVE ANY DEBRIS TO MAINTAIN THE INTEGRITY OF THE STRUCTURE AND PROVIDE AN ATTRACTIVE APPEARANCE. DURING QUARTERLY INSPECTIONS, THE POND DRAIN VALVE, USUALLY LEFT IN THE VALVE "CLOSED" POSITION, SHALL BE INSPECTED AND OPERATED THROUGH TWO COMPLETE FULL-OPEN TO FULL-CLOSE TO FULL-OPEN CYCLES.
6. PERFORM YEARLY STRUCTURAL INSPECTIONS OF THE FACILITY FOR DAMAGE. STRUCTURAL INSPECTION SHALL BE PERFORMED ON THE CONCRETE RISER, ANTI-VORTEX DEVICE, TRASH RACK, ORIFICE / WEIR(S), OUTLET BARREL AND POND EMBANKMENT. IF DAMAGE IS EVIDENT, FURTHER INVESTIGATION BY A PROFESSIONAL ENGINEER MAY BE REQUIRED TO ASSESS THE CONTINUED INTEGRITY OF THE STRUCTURE.
7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE FACILITY FOR SIGNS OF ANIMAL / RODENT BORROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING AS APPROPRIATE.
8. RECORD KEEPING. THE LANDOWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OR INSPECTIONS PERFORMED FOR THE STRUCTURE. RECORDS SHALL DOCUMENT ROUTINE MAINTENANCE AND / OR REPAIRS PERFORMED.



5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040



BMP 5.2 AND BMP 5.3 CROSS-SECTIONS
SECTION V-B 'BENT TREE' - PHASE 2
AND WALNUT CREEK
AT STONEHOUSE FOR

Designed	VMB/RDS	Dra	
Scale	AS SHOWN	Da	8
		Project N	

GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS

1. THE CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS NEEDED TO CONSTRUCT THE STORMWATER BASIN, STORMWATER MANAGEMENT PONDS, BEST MANAGEMENT PRACTICES, SEDIMENT BASINS AND SEDIMENT TRAPS. THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT AND MATERIALS NEEDED FOR THE COMPLETION OF GRADING AND EARTHWORK ASSOCIATED WITH THE CONSTRUCTION.
2. THE CONTRACTOR SHALL CONSULT AND PROVIDE FOR THE SERVICES OF A GEOTECHNICAL ENGINEER. THE GEOTECHNICAL ENGINEER SHALL PROVIDE TEST RESULTS ON PLACED DAM MATERIALS, IDENTIFYING SOIL CLASSIFICATION, PERMEABILITY, PLASTICITY INDEX, AND COMPACTION. ALL TESTS SHALL BE IN CONFORMANCE WITH ASTM STANDARDS. THE COST OF THE SERVICES OF THE GEOTECHNICAL ENGINEER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SATISFACTORY GEOTECHNICAL RESULTS ARE NEEDED PRIOR TO FINAL APPROVAL.
3. ALL INSPECTIONS REQUIRED FOR THE WORK SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER AT THE EXPENSE OF THE GENERAL CONTRACTOR.
4. ON-SITE EXCAVATED MATERIAL, IF DETERMINED SUITABLE FOR USE IN DAM CONSTRUCTION BY A GEOTECHNICAL ENGINEER, MAY BE USED FOR DAM CONSTRUCTION. SHOULD ADDITIONAL MATERIAL BE REQUIRED, THE CONTRACTOR SHALL IDENTIFY THE NEED FOR MATERIAL TO THE OWNER, AS ADDITIONAL BORROW MATERIAL MAY BE AVAILABLE ON THE STONEHOUSE PROPERTY. ALL EXCAVATED MATERIAL DETERMINED BY THE GEOTECHNICAL ENGINEER TO BE UNSUITABLE SHALL BE DISPOSED OF PROPERLY AT THE CONTRACTOR'S EXPENSE. ALL EXCAVATED MATERIAL NOT REQUIRED FOR BACKFILLING SHALL EITHER BE DEPOSITED ON SITE AND SPREAD BY THE CONTRACTOR, OR SHALL BE DEPOSITED IN AN AREA ON THE STONEHOUSE PROPERTY AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE PROPER STABILIZATION, AND EROSION AND SEDIMENT CONTROL MEASURES NEEDED TO CONTROL AS PER THE VESCH THIRD EDITION.
5. UNDERCUT FOR THE FOUNDATION OF THE DAM EMBANKMENT SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. THE FOUNDATION SHALL BE BACKFILLED WITH SOILS CLASSIFIED AS SM, SC, OR CL UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM. SOILS SHALL HAVE A MINIMUM OF 15% BY WEIGHT FINES, HAVING A PLASTICITY INDEX OF 30% AND A PERMEABILITY OF 0.0004 IN./SEC. OR LESS. FILL SHALL BE COMPACTED IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO A DRY DENSITY OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). EXCAVATION FOR THE DAM KEY SHALL BE IN ACCORDANCE TO THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. HEIGHT, DEPTH, AND WIDTH OF THE KEY SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. THE KEY SHALL BE FORMED USING SOILS CLASSIFIED AS SC OR CL, WITH A PERMEABILITY OF 0.0004 IN./SEC. OR LESS.
6. THE DAM CORE SHALL BE AS CONSTRUCTED WITH NON-EXPANSIVE SC OR CL CLAYEY MATERIAL WITH PERMEABILITY OF 0.0004 IN./SEC. OR LESS. THE FILL OF THE CORE SHALL BE MADE IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). SIZE, SHAPE, WIDTH, DEPTH, AND HEIGHT OF THE DAM CORE SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. TO COVER THE DAM CORE, A SILTY FINE SAND OR CLAYEY SOIL (SM, SC, OR CL) SHALL BE PLACED. A VEGETATIVE COVER USING VDOT EC-2 EROSION CONTROL BLANKETS SHALL BE PLACED ON DAM SLOPES AND CREST TO PREVENT EROSION.
7. THE STORMWATER MANAGEMENT / BMP FACILITIES SHOWN ON THESE PLANS REQUIRE THE SUBMISSION, REVIEW AND APPROVAL OF RECORD DRAWING(S) AND CONSTRUCTION CERTIFICATION PRIOR TO RELEASE OF THE POSTED BOND / SURETY. THE GEOTECHNICAL ENGINEER IS TO ENSURE THAT HIS / HER INSPECTION OF THE SWM / BMP CONSTRUCTION ACTIVITY IS PERFORMED DURING AND FOLLOWING CONSTRUCTION OF THE SWM / BMP IN ACCORDANCE WITH THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION STORMWATER MANAGEMENT / BMP FACILITIES DESIGN GUIDELINES HANDBOOK, DATED AUGUST 30, 2000.
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INSPECTION AND MAINTENANCE OF THE FACILITY WILL CONSIST OF THE FOLLOWING ADDITIONAL MEASURES:

1. THE INSPECTION FOR SEDIMENT BUILDUP WILL BE PERFORMED BY VISUAL INSPECTION AND A PHYSICAL DETERMINATION OF SEDIMENT DEPTH WITHIN THE STORAGE AREA. SEDIMENT

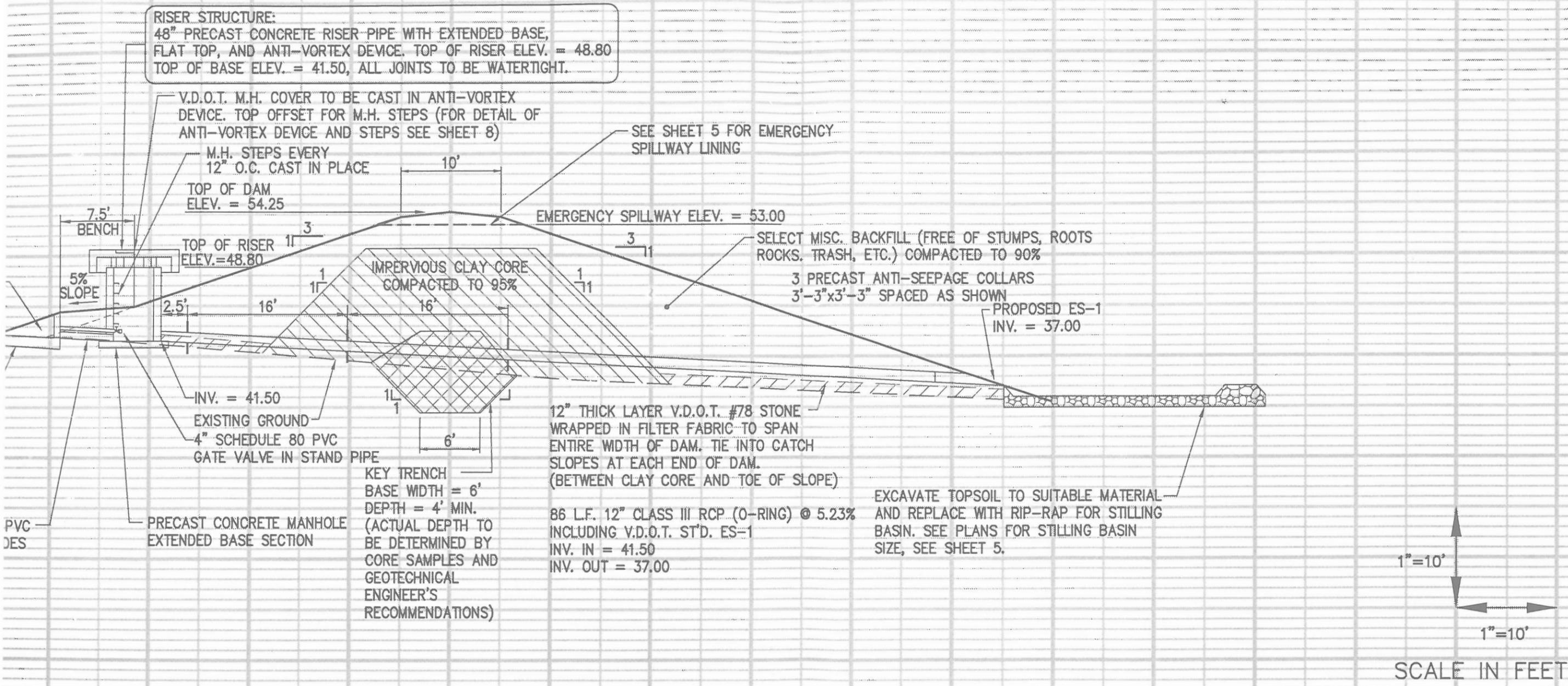
No.	DATE	REVISION / COMMENT / NOTE	BY
4	7/25/01	REVISED AS PER J.C.CO COMMENT LETTER DATED 7/18/01	VME
3	6/18/01	REVISED AS PER J.C.CO COMMENT LETTER DATED 6/12/01	VME
2	5/17/01	REVISED AS PER J.C.CO. COMMENT LETTER DATED 4/9/01 & PER CLIENT	VME
1	2/8/01	REVISED AS PER J.C.CO. COMMENT LETTER DATED 9/27/00 AND PER CLIENT	VME



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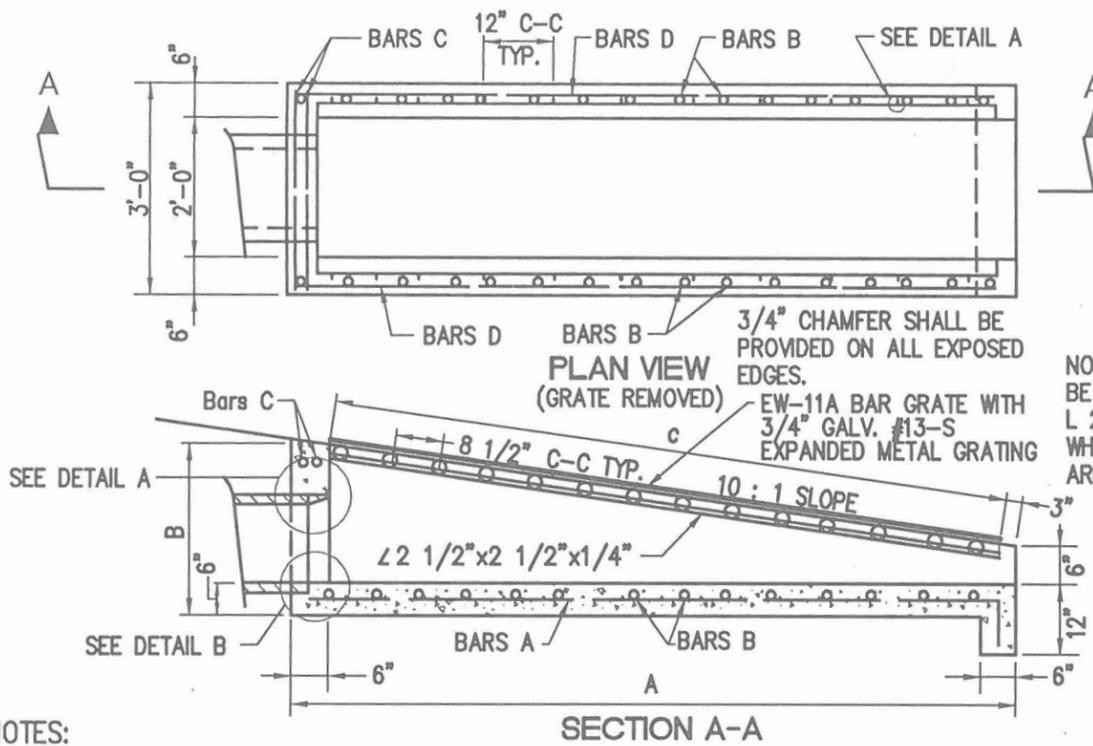


CTIONS
HASE 2
ANY, L.L.C.
 VIRGINIA

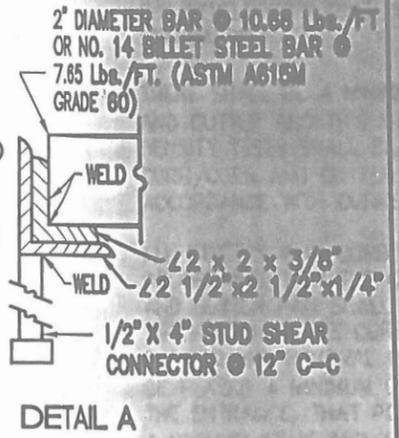


40' 30' 20' 10' 0 10' 20' 30' 40' 50' 60' 70' 80' 90' 100'

SECTION A-A BMP 5.3



DIMENSIONS FOR BEVEL		
ON HEADWALL	a	b
12"	0'-2"	0'-1 1/4"
15"	0'-2"	0'-1 1/4"
18"	0'-2 1/2"	0'-1 1/2"
21" or 24"	0'-3"	0'-2"

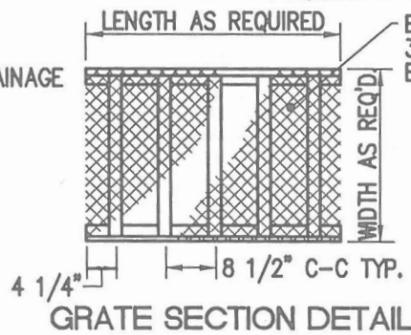


NOTES:

- IN NO CASE SHALL TOP OF END WALL PROJECT ABOVE FILL SLOPE, DITCH SLOPE, OR SHOULDER.
- CLASS A3 CONCRETE TO BE USED IF CAST IN PLACE, 4000 PSI IF PRE-CAST.
- REINFORCING STEEL TO HAVE A MINIMUM 1 1/2" CONCRETE COVER.
- FOR SCHEDULE OF REINFORCING STEEL, DIMENSIONS, AND QUANTITIES SEE SHEET 2 OF 2.
- THIS ITEM MAY BE PRE-CAST OR CAST IN PLACE.
- BOTTOM OF STRUCTURE TO BE ON THE SAME GRADE AS DRAINAGE DITCH.
- HEADWALL TO BE BEVELED IN ALL AREAS EXCEPT WHERE A CONFLICT WITH INVERT OR WINGWALLS OCCUR.
- BEVEL EDGE IS REQUIRED ON HEADWALL AT THE INLET END OF THE CULVERT (WHERE THE FLOW ENTERS THE CULVERT).

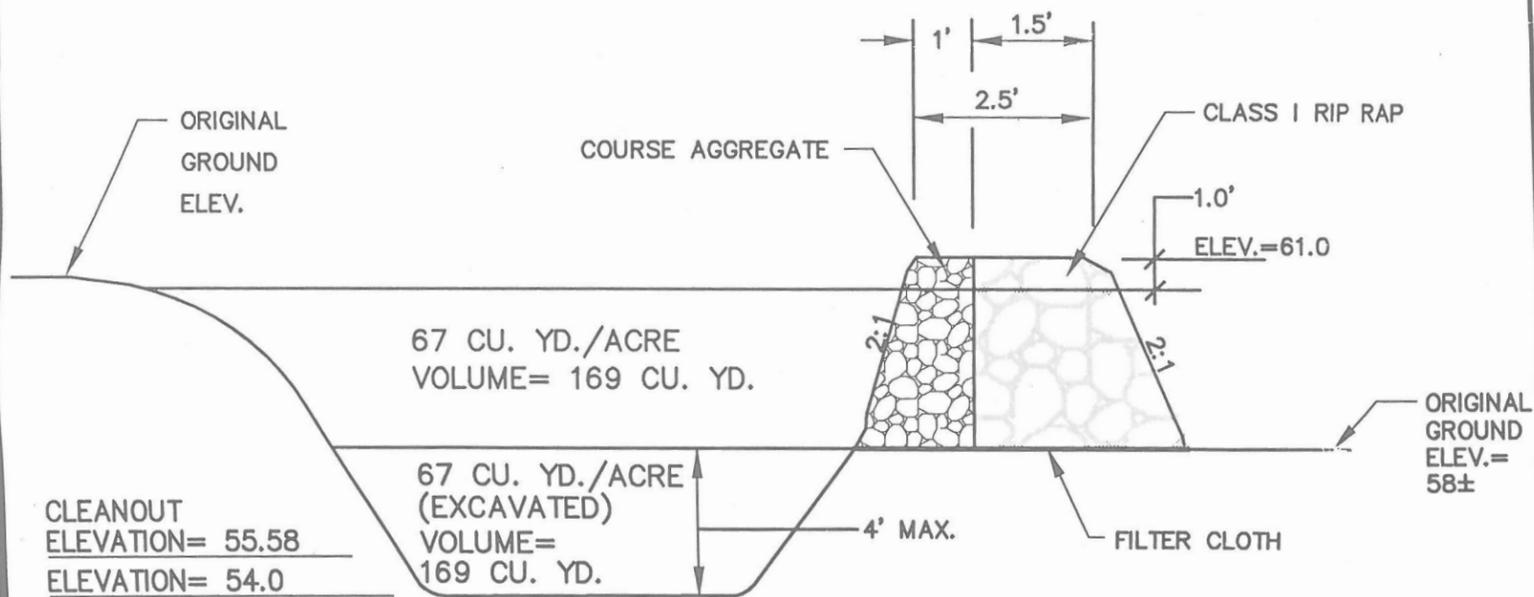
BEVEL EDGE IS REQUIRED ON HEADWALL AT THE INLET END OF THE CULVERT (WHERE THE FLOW ENTERS THE CULVERT).

HEADWALL AT THE OUTLET END OF THE CULVERT MAY BE EITHER SQUARE EDGE OR BEVEL EDGE.

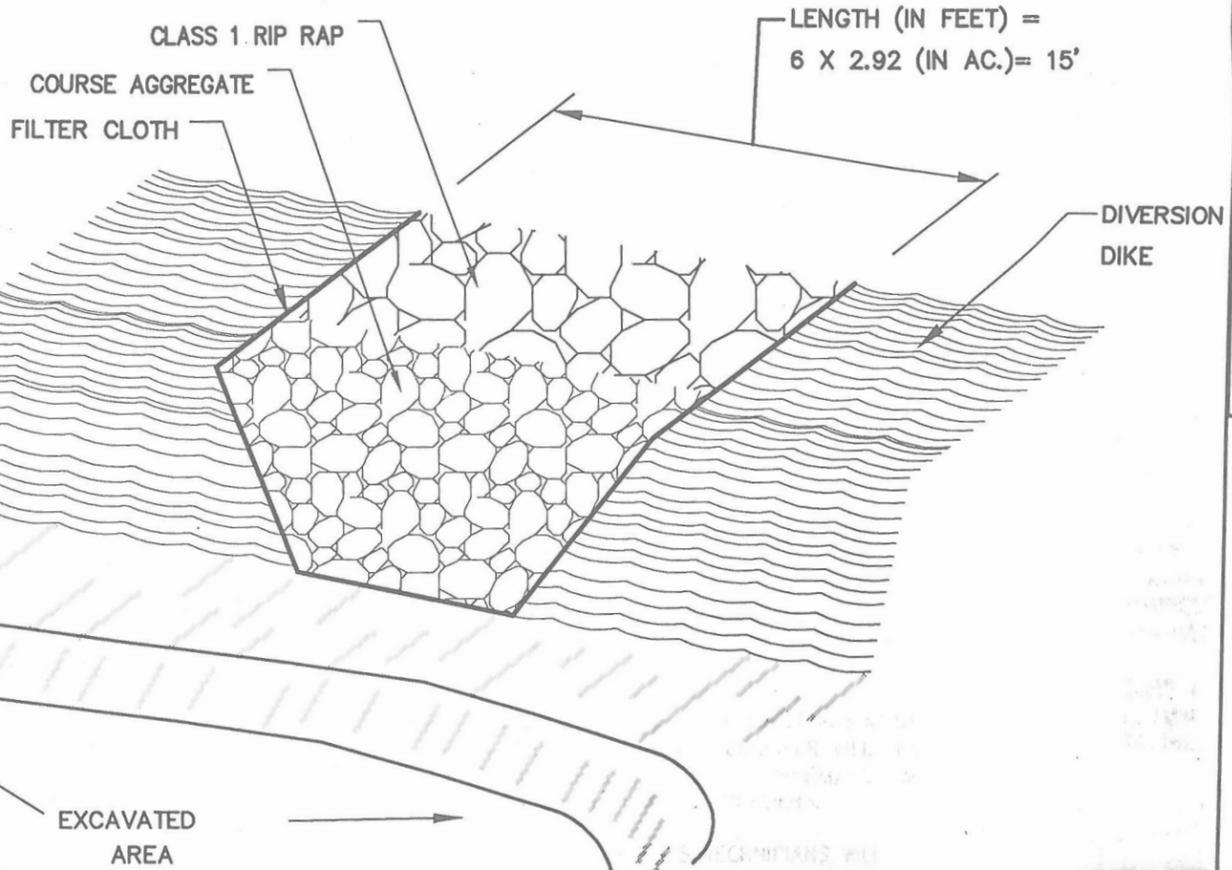


DO NOT BEVEL INVERT

PIPE ENDWALL WITH LOAD - CARRYING GRATE



CROSS SECTION OF OUTLET



PROVIDE AD STRAPPI

SEAL WITH NON-SHRINK GROUT

48" PRECAST RISER

NOTE: W

*DRA

RECO

SED

SOURCE: VA. DSWC

90

80



REVISION

SECTION V - B CREEK

Handwritten notes:
5-42-99-00
4-7-00-5
2.5 # 8
h20cm
Bm
8074

INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
1	COVER SHEET
2	PRELIMINARY PLAT
3	ENVIRONMENTAL INVENTORY AND DRAINAGE AREA PLAN
4	MASTER WATER PLAN
5	MASTER SEWER PLAN
6	ROAD, WATER AND SEWER PLAN
7	DRAINAGE, EROSION & SEDIMENT CONTROL PLAN
8	ROAD PROFILES
8A	ROAD PROFILES (PRIVATE DRIVEWAYS)
9	BMP 5.2 AND BMP 5.3 CROSS-SECTIONS
10	STORMWATER MANAGEMENT BASIN DETAILS
11	ROAD NOTES AND DETAILS
12	E & S NOTES AND DETAILS
13	GRINDER PUMP DETAILS
14	GRINDER PUMP DETAILS

OWNER INFORMATION

STONEHOUSE DEVELOPMENT COMPANY, L.L.C.
 1 MILL POND RUN
 JAMES CITY COUNTY, VIRGINIA. 23168
 ATTENTION: JAMES H. BENNETT
 PHONE: 757-234-5100

CERTIFIED RESPONSIBLE LAND DISTURBER:

JAMES H. BENNETT, P.E.
 STONEHOUSE DEVELOPMENT COMPANY, L.L.C.
 1 MILL POND RUN
 JAMES CITY COUNTY, VIRGINIA. 23168
 PHONE: 757-234-5100

GENERAL DATA:

TAX MAP PARCEL No. (6-4) (1-1)
 ZONING: PUD-R
 PROJECT AREA: 20.86 ACRES / 908,617 SF
 DISTURBED AREA: 4.5 ACRES / 196,291 SF
 WETLAND DISTURBED AREA: 0.06 ACRES / 2,663 SF (LESS THAN 0.1 ACRES - NON-REPORTING DISTURBANCE)
 NUMBER OF LOTS (PHASE 2 AND WALNUT CREEK): 28
 FLOOD HAZARD MAP: FEMA PANEL NUMBER 510201 0010 B
 NOTE: SITE IS LOCATED IN ZONE 'X' (AREAS DETERMINED TO BE OUTSIDE THE 500 YEAR FLOOD PLAIN)

NOTES:

- OWNERS OF LOTS WHICH REQUIRE A GRINDER PUMP FOR SANITARY SEWER SERVICE ARE REQUIRED TO KEEP A CURRENT GRINDER PUMP MAINTENANCE CONTRACT WITH AN APPROPRIATE SERVICE ORGANIZATION
- ALL PROPOSED UTILITIES SHOWN ARE TO BE PLACED UNDERGROUND AS PER THE CURRENT JAMES CITY COUNTY SUBDIVISION ORDINANCE SECTION 19-33.
- THE CONTRACTOR SHALL CONTACT "MISS UTILITY" A MINIMUM OF 48 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON THE SITE. CALL 1-800-552-7001.
- ALL EXISTING WELLS ARE TO BE ABANDONED IN ACCORDANCE WITH THE HEALTH DEPARTMENT STATE WELL REGULATIONS AND THE JAMES CITY COUNTY CODE.
- THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) WILL NOT BE RESPONSIBLE FOR MAINTENANCE OF THE PEDESTRIAN PATH WHETHER OR NOT THE PATH OCCURS WITHIN THE PROPOSED RIGHT-OF-WAY.
- ALL DRAINAGE EASEMENTS AND STORM WATER ATTENUATION BASINS ARE TO BE DEDICATED TO STONEHOUSE COMMUNITY HOMEOWNERS ASSOCIATION.
- THE VIRGINIA DEPARTMENT OF TRANSPORTATION IS NOT RESPONSIBLE FOR, NOR SHALL BE HELD LIABLE FOR MAINTENANCE OF STORM WATER / BMP FACILITY 5.2 AND 5.3, AS SHOWN ON THESE PLANS.
- ALL RESIDENTIAL SUBDIVISION SIGNS SHALL BE IN ACCORDANCE WITH ARTICLE II, DIVISION 3 OF THE JAMES CITY COUNTY ZONING ORDINANCE.
- NEW MONUMENTS WILL BE INSTALLED PER SECTIONS 19-34 THROUGH 19-36 OF THE JAMES CITY COUNTY SUBDIVISION ORDINANCE.
- ALL NEW STREET SIGNS SHALL BE INSTALLED PER SECTION 19-55 OF THE JAMES CITY COUNTY

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2. PERFORM MAINTENANCE MOWING OF GRASSED AREAS AT LEAST TWICE EACH YEAR. GRASSES SUCH AS TALL FESCUE SHOULD BE MOWED IN EARLY SUMMER AFTER EMERGENCE OF THE HEADS ON COOL SEASON GRASSES AND IN LATE FALL TO PREVENT SEEDS OF ANNUAL WEEDS FROM MATURING. MOWING OF LEGUMES CAN BE LESS FREQUENT TREES AND SHRUBS SHOULD NOT BE PERMITTED TO GROW ON ANY PART OF THE GRADED EMBANKMENT.
3. PERFORM SOIL SAMPLING ON STABILIZED BMP SOIL AREAS ONCE EVERY FOUR (4) YEARS. SOIL SAMPLING AND TESTING SHOULD BE PERFORMED BY A QUALIFIED INDEPENDENT TESTING LABORATORY. APPLY ADDITIONAL LIME AND FERTILIZER IN ACCORDANCE WITH TEST RECOMMENDATIONS.
4. IN STABILIZED BMP AREAS, IF VEGETATION COVERS LESS THAN 40% OF SOIL SURFACES, LIME, FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDLINGS, AS LISTED IN DAM CONSTRUCTION NOTES. IF VEGETATION COVERS MORE THAN 40% BUT LESS THAN 70% OF SOIL SURFACES, LIME FERTILIZE AND OVERSEED IN ACCORDANCE WITH CURRENT SEEDLING RECOMMENDATIONS.
5. PERFORM QUARTERLY INSPECTIONS OF THE RELEASE STRUCTURES, RISER SECTION AND CREST OF SPILLWAY FOR THE OBSERVANCE OF COLLECTED DEBRIS. IMMEDIATELY REMOVE ANY DEBRIS TO MAINTAIN THE INTEGRITY OF THE STRUCTURE AND PROVIDE AN ATTRACTIVE APPEARANCE. DURING QUARTERLY INSPECTIONS, THE POND DRAIN VALVE, USUALLY LEFT IN THE VALVE "CLOSED" POSITION, SHALL BE INSPECTED AND OPERATED THROUGH TWO COMPLETE FULL-OPEN TO FULL-CLOSE TO FULL-OPEN CYCLES.
6. PERFORM YEARLY STRUCTURAL INSPECTIONS OF THE FACILITY FOR DAMAGE. STRUCTURAL INSPECTION SHALL BE PERFORMED ON THE CONCRETE RISER, ANTI-VORTEX DEVICE, TRASH RACK, ORIFICE/ WEIR(S), OUTLET BARREL AND POND EMBANKMENT. IF DAMAGE IS EVIDENT, FURTHER INVESTIGATION BY A PROFESSIONAL ENGINEER MAY BE REQUIRED TO ASSESS THE CONTINUED INTEGRITY OF THE STRUCTURE.
7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE FACILITY FOR SIGNS OF ANIMAL/ RODENT BORROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING AS APPROPRIATE.
8. RECORD KEEPING. THE LANDOWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OR INSPECTIONS PERFORMED FOR THE STRUCTURE. RECORDS SHALL DOCUMENT ROUTINE MAINTENANCE AND/ OR REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.
9. THE FACILITY SHALL NOT BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT/ APPROVAL OF THE COUNTY.



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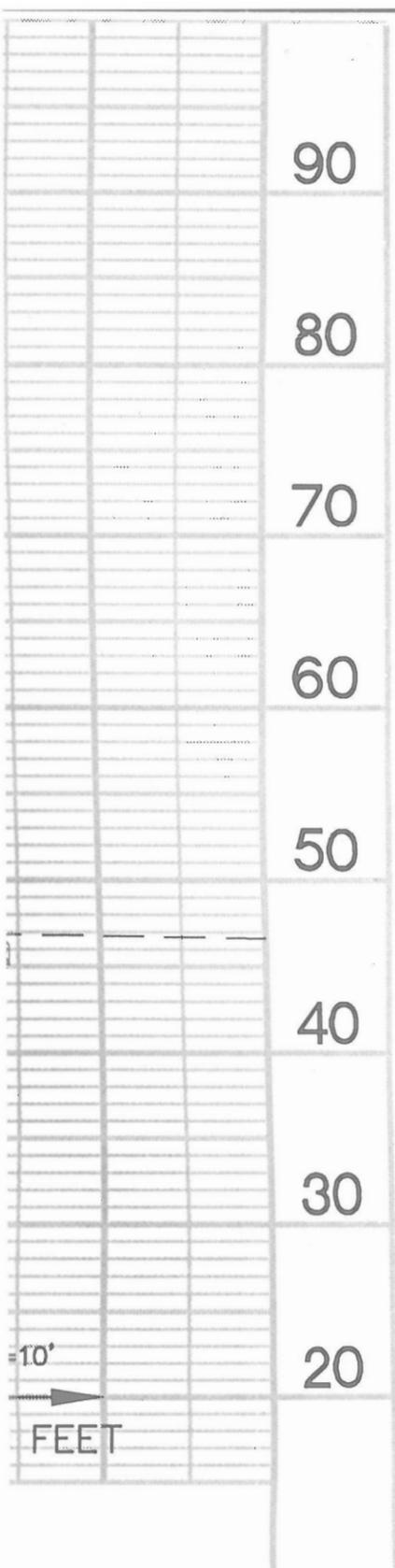
**BMP 5.2 AND BMP 5.3 CROSS-SECTIONS
SECTION V-B 'BENT TREE' - PHASE 2
AND WALNUT CREEK
AT STONEHOUSE FOR
STONEHOUSE DEVELOPMENT COMPANY, L.L.C.**

STONEHOUSE DISTRICT
JAMES CITY COUNTY
VIRGINIA

Designed VMB/RDS	Drawn RDS
Scale AS SHOWN	Date 8/21/00
Project No. 8877-00	
Drawing No. 9	

GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS

1. THE CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS NEEDED TO CONSTRUCT THE STORMWATER BASIN, STORMWATER MANAGEMENT PONDS, BEST MANAGEMENT PRACTICES, SEDIMENT BASINS AND SEDIMENT TRAPS. THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT AND MATERIALS NEEDED FOR THE COMPLETION OF GRADING AND EARTHWORK ASSOCIATED WITH THE CONSTRUCTION.
2. THE CONTRACTOR SHALL CONSULT AND PROVIDE FOR THE SERVICES OF A GEOTECHNICAL ENGINEER. THE GEOTECHNICAL ENGINEER SHALL PROVIDE TEST RESULTS ON PLACED DAM MATERIALS, IDENTIFYING SOIL CLASSIFICATION, PERMEABILITY, PLASTICITY INDEX, AND COMPACTION. ALL TESTS SHALL BE IN CONFORMANCE WITH ASTM STANDARDS. THE COST OF THE SERVICES OF THE GEOTECHNICAL ENGINEER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SATISFACTORY GEOTECHNICAL RESULTS ARE NEEDED PRIOR TO FINAL APPROVAL.
3. ALL INSPECTIONS REQUIRED FOR THE WORK SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER AT THE EXPENSE OF THE GENERAL CONTRACTOR.
4. ON-SITE EXCAVATED MATERIAL, IF DETERMINED SUITABLE FOR USE IN DAM CONSTRUCTION BY A GEOTECHNICAL ENGINEER, MAY BE USED FOR DAM CONSTRUCTION. SHOULD ADDITIONAL MATERIAL BE REQUIRED, THE CONTRACTOR SHALL IDENTIFY THE NEED FOR MATERIAL TO THE OWNER, AS ADDITIONAL BORROW MATERIAL MAY BE AVAILABLE ON THE STONEHOUSE PROPERTY. ALL EXCAVATED MATERIAL DETERMINED BY THE GEOTECHNICAL ENGINEER TO BE UNSUITABLE SHALL BE DISPOSED OF PROPERLY AT THE CONTRACTOR'S EXPENSE. ALL EXCAVATED MATERIAL NOT REQUIRED FOR BACKFILLING SHALL EITHER BE DEPOSITED ON SITE AND SPREAD BY THE CONTRACTOR, OR SHALL BE DEPOSITED IN AN AREA ON THE STONEHOUSE PROPERTY AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE PROPER STABILIZATION, AND EROSION AND SEDIMENT CONTROL MEASURES NEEDED TO CONTROL AS PER THE VESCH THIRD EDITION.
5. UNDERCUT FOR THE FOUNDATION OF THE DAM EMBANKMENT SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. THE FOUNDATION SHALL BE BACKFILLED WITH SOILS CLASSIFIED AS SM, SC, OR CL UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM. SOILS SHALL HAVE A MINIMUM OF 15% BY WEIGHT FINES, HAVING A PLASTICITY INDEX OF 30% AND A PERMEABILITY OF 0.0004 IN./SEC. OR LESS. FILL SHALL BE COMPACTED IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO A DRY DENSITY OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). EXCAVATION FOR THE DAM KEY SHALL BE IN ACCORDANCE TO THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. HEIGHT, DEPTH, AND WIDTH OF THE KEY SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. THE KEY SHALL BE FORMED USING SOILS CLASSIFIED AS SC OR CL, WITH A PERMEABILITY OF 0.0004 IN./SEC. OR LESS.
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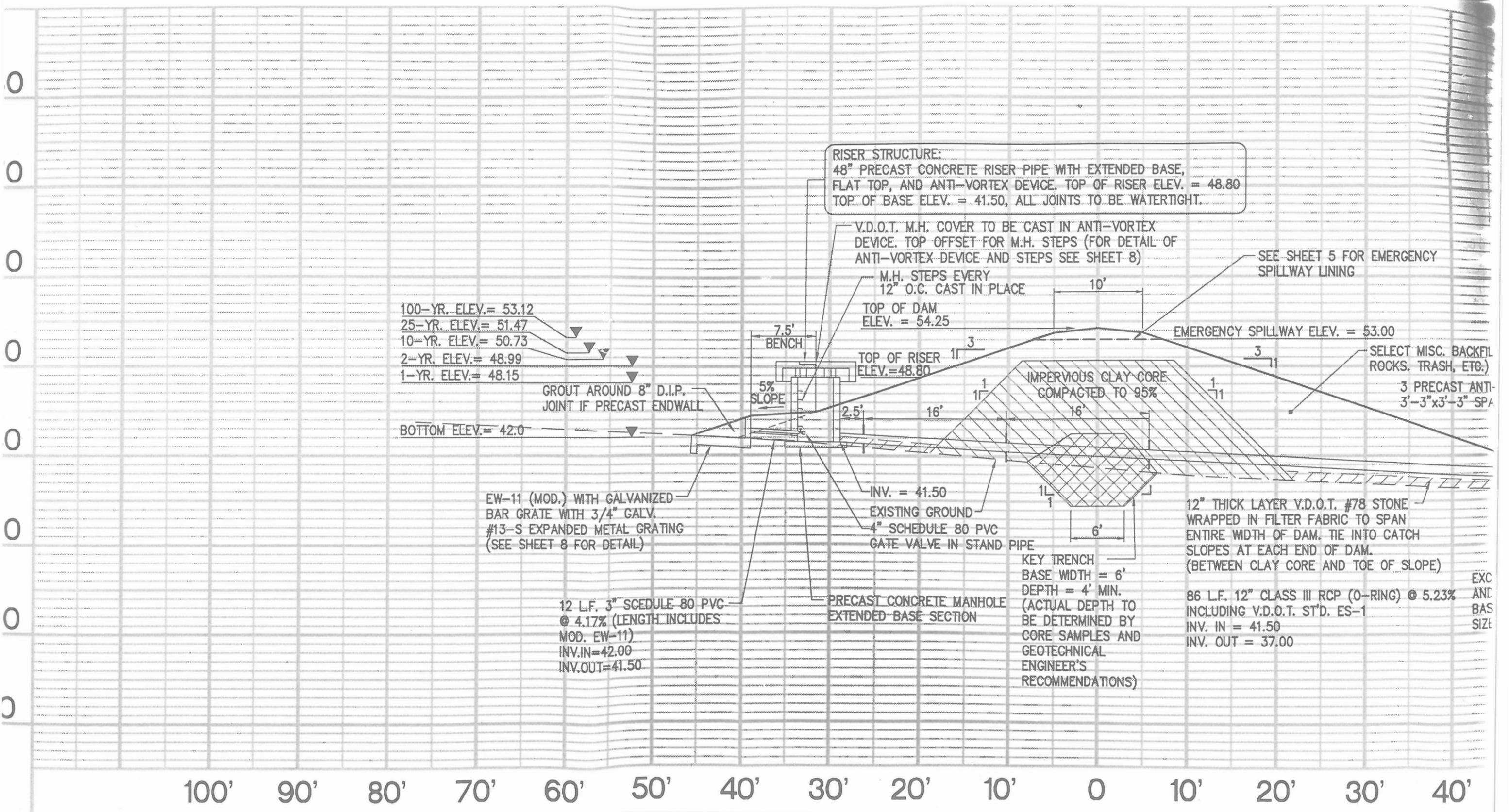
No.	DATE	REVISION / COMMENT / NOTE	BY
4	7/25/01	REVISED AS PER J.C.CO COMMENT LETTER DATED 7/18/01	VMB
3	6/18/01	REVISED AS PER J.C.CO COMMENT LETTER DATED 6/12/01	VMB
2	5/17/01	REVISED AS PER J.C.CO. COMMENT LETTER DATED 4/9/01 & PER CLIENT	VMB
1	2/8/01	REVISED AS PER J.C.CO. COMMENT LETTER DATED 9/27/00 AND PER CLIENT	VMB



5248 Olde Towne Road, Suite 1
 Williamsburg, Virginia 23188
 (757) 253-0040
 Fax (757) 220-8994



CTIONS
HASE 2
 ANY, L.L.C.
 VIRGINIA



RISER STRUCTURE:
 48" PRECAST CONCRETE RISER PIPE WITH EXTENDED BASE,
 FLAT TOP, AND ANTI-VORTEX DEVICE. TOP OF RISER ELEV. = 48.80
 TOP OF BASE ELEV. = 41.50, ALL JOINTS TO BE WATERTIGHT.

V.D.O.T. M.H. COVER TO BE CAST IN ANTI-VORTEX
 DEVICE. TOP OFFSET FOR M.H. STEPS (FOR DETAIL OF
 ANTI-VORTEX DEVICE AND STEPS SEE SHEET 8)

M.H. STEPS EVERY
 12" O.C. CAST IN PLACE

TOP OF DAM
 ELEV. = 54.25

TOP OF RISER
 ELEV.=48.80

SEE SHEET 5 FOR EMERGENCY
 SPILLWAY LINING

EMERGENCY SPILLWAY ELEV. = 53.00

SELECT MISC. BACKFIL
 ROCKS, TRASH, ETC.)

3 PRECAST ANTI-
 3'-3"x3'-3" SPA

100-YR. ELEV.= 53.12
 25-YR. ELEV.= 51.47
 10-YR. ELEV.= 50.73
 2-YR. ELEV.= 48.99
 1-YR. ELEV.= 48.15

GROUT AROUND 8" D.I.P.
 JOINT IF PRECAST ENDWALL

BOTTOM ELEV.= 42.0

EW-11 (MOD.) WITH GALVANIZED
 BAR GRATE WITH 3/4" GALV.
 #13-S EXPANDED METAL GRATING
 (SEE SHEET 8 FOR DETAIL)

INV. = 41.50
 EXISTING GROUND
 4" SCHEDULE 80 PVC
 GATE VALVE IN STAND PIPE

12" THICK LAYER V.D.O.T. #78 STONE
 WRAPPED IN FILTER FABRIC TO SPAN
 ENTIRE WIDTH OF DAM. TIE INTO CATCH
 SLOPES AT EACH END OF DAM.
 (BETWEEN CLAY CORE AND TOE OF SLOPE)

12 L.F. 3" SCHEDULE 80 PVC
 @ 4.17% (LENGTH INCLUDES
 MOD. EW-11)
 INV. IN=42.00
 INV. OUT=41.50

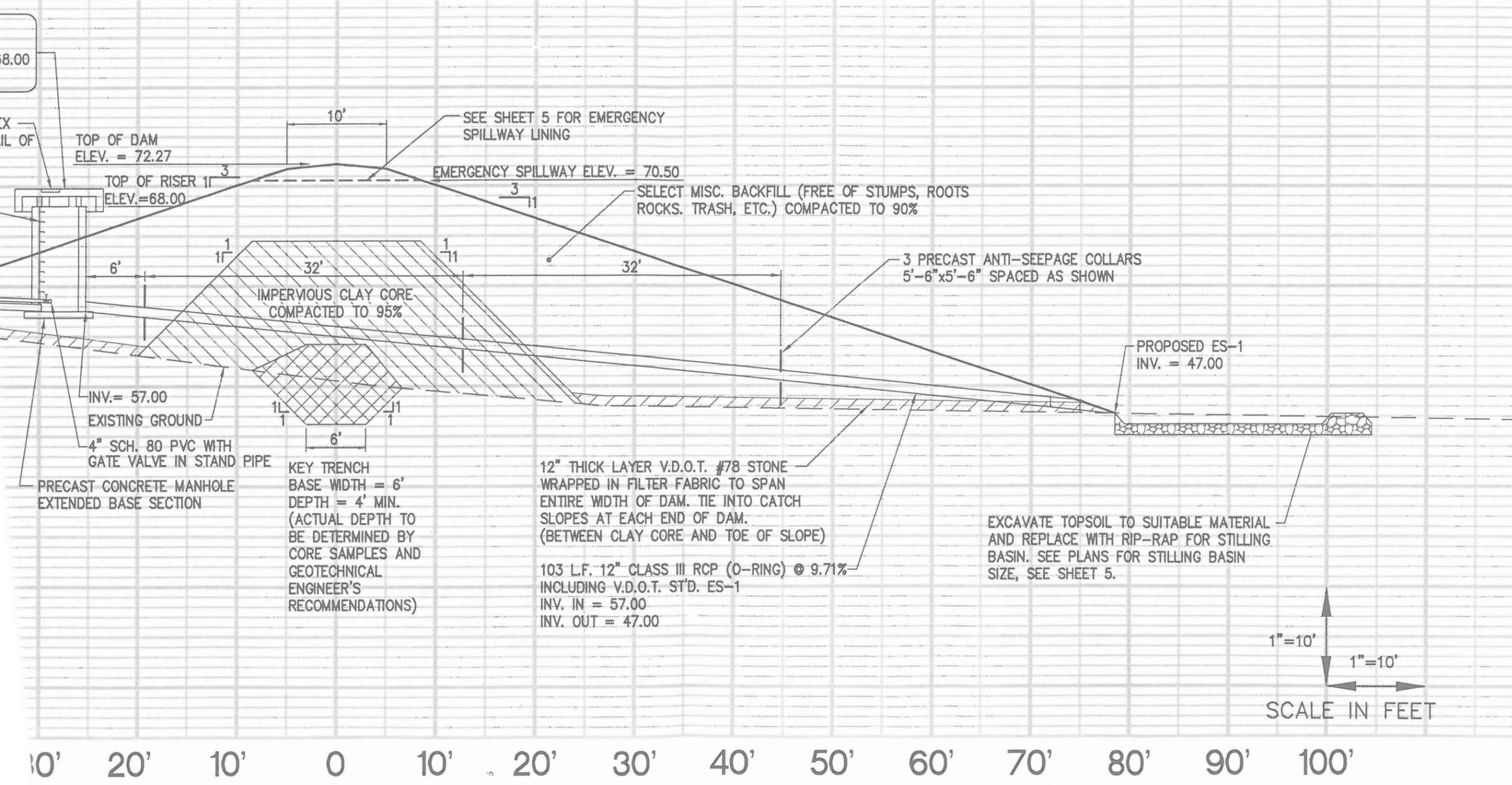
PRECAST CONCRETE MANHOLE
 EXTENDED BASE SECTION

KEY TRENCH
 BASE WIDTH = 6'
 DEPTH = 4' MIN.
 (ACTUAL DEPTH TO
 BE DETERMINED BY
 CORE SAMPLES AND
 GEOTECHNICAL
 ENGINEER'S
 RECOMMENDATIONS)

86 L.F. 12" CLASS III RCP (O-RING) @ 5.23%
 INCLUDING V.D.O.T. STD. ES-1
 INV. IN = 41.50
 INV. OUT = 37.00

EXC
 AND
 BAS
 SIZE

SECTION A-A **BMP 5.3**



90
80
70
60
50
40
30
20

N
E

TS
DESCRIP

ER SHEET
LIMINARY PL
IRONMENTAL
STER WATER
STER SEWER
AD, WATER A
AINAGE, ERO
AD PROFILES
AD PROFILES
MP 5.2 AND
TORMWATER
LOAD NOTES
& S NOTES
RINDER PUM
RINDER PUM

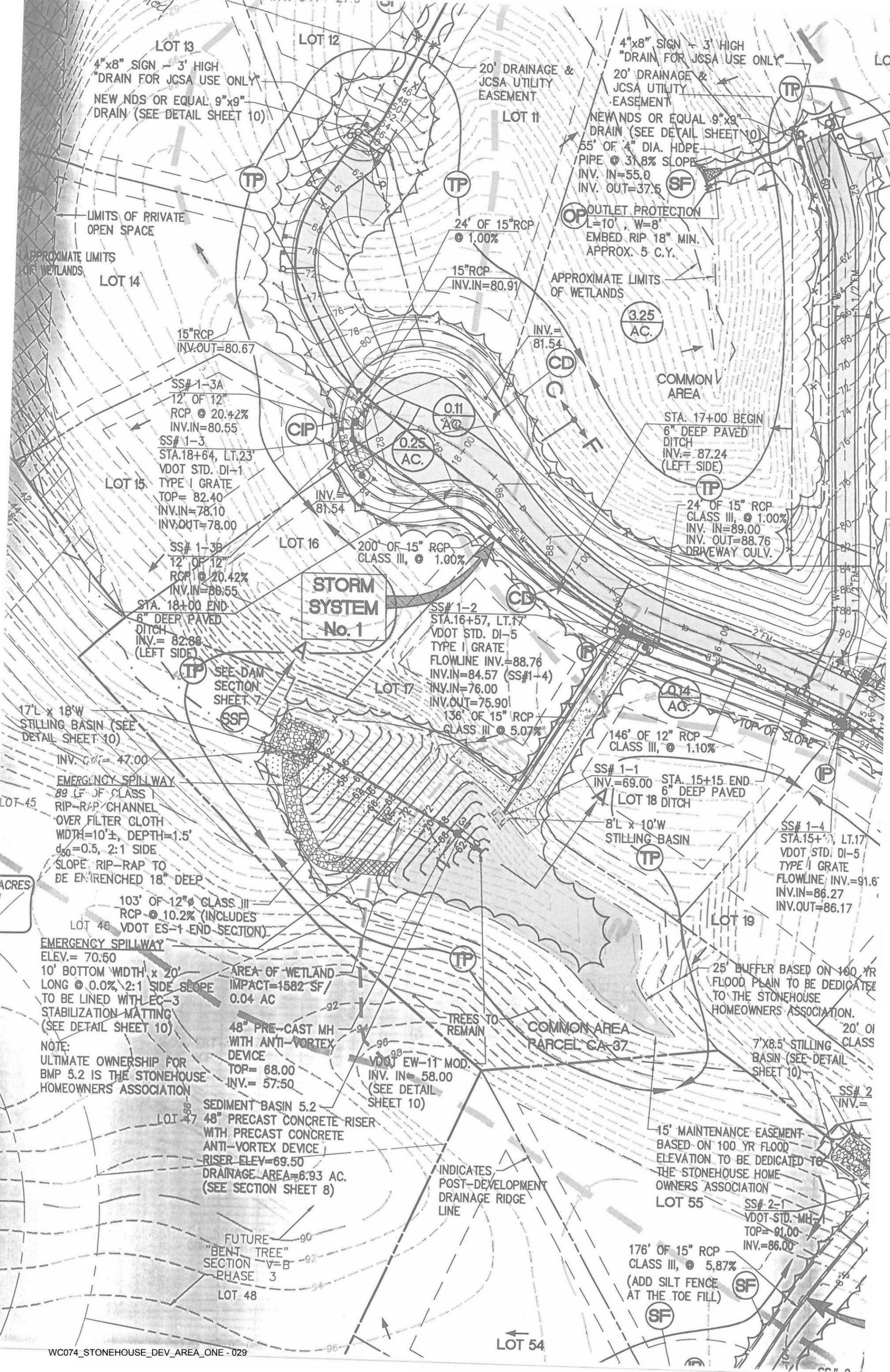
MATION
OPMENT COM

SECTION A-A BMP 5.2

1"=10'
1"=10'
SCALE IN FEET

10' 20' 10' 0 10' 20' 30' 40' 50' 60' 70' 80' 90' 100'

BMP 5.2 & 5.3
1. THE CONSTRUCTION OF THE CLAY CORE IS TO BE IN ACCORDANCE WITH NOTE 6 OF THE GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS. SEE THIS



LOT 13
 4"x8" SIGN - 3' HIGH
 "DRAIN FOR JCSA USE ONLY"
 NEW NDS OR EQUAL 9"x9"
 DRAIN (SEE DETAIL SHEET 10)

4"x8" SIGN - 3' HIGH
 "DRAIN FOR JCSA USE ONLY"
 20' DRAINAGE &
 JCSA UTILITY
 EASEMENT
 NEW NDS OR EQUAL 9"x9"
 DRAIN (SEE DETAIL SHEET 10)
 55' OF 4" DIA. HDPE
 PIPE @ 31.8% SLOPE
 INV. IN=55.0
 INV. OUT=37.5
 (SF)
 (OP) OUTLET PROTECTION
 L=10', W=8'
 EMBED RIP 18" MIN.
 APPROX. 5 C.Y.

LIMITS OF PRIVATE
 OPEN SPACE

APPROXIMATE LIMITS
 OF WETLANDS

15" RCP
 INV. OUT=80.67

24' OF 15" RCP
 @ 1.00%

15" RCP
 INV. IN=80.91

INV.=
 81.54

SS# 1-3A
 12' OF 12"
 RCP @ 20.42%
 INV. IN=80.55
 SS# 1-3
 STA. 18+64, LT. 23
 VDOT STD. DI-1
 TYPE I GRATE
 TOP= 82.40
 INV. IN=78.10
 INV. OUT=78.00

COMMON AREA
 STA. 17+00 BEGIN
 6" DEEP PAVED
 DITCH
 INV.= 87.24
 (LEFT SIDE)
 (TP)

SS# 1-3B
 12' OF 12"
 RCP @ 20.42%
 INV. IN=80.55
 STA. 18+00 END
 6" DEEP PAVED
 DITCH
 INV.= 82.88
 (LEFT SIDE)
 (TP)

**STORM
 SYSTEM
 No. 1**

SS# 1-2
 STA. 16+57, LT. 17
 VDOT STD. DI-5
 TYPE I GRATE
 FLOWLINE INV.=88.76
 INV. IN=84.57 (SS#1-4)
 INV. IN=76.00
 INV. OUT=75.90
 136' OF 15" RCP
 CLASS III @ 5.07%

24' OF 15" RCP
 CLASS III, @ 1.00%
 INV. IN=89.00
 INV. OUT=88.76
 DRIVEWAY CULV.

17'L x 18'W
 STILLING BASIN (SEE
 DETAIL SHEET 10)
 INV. OUT= 47.00

EMERGENCY SPILLWAY
 89 LF OF CLASS I
 RIP-RAP CHANNEL
 OVER FILTER CLOTH
 WIDTH=10'±, DEPTH=1.5'
 d₅₀=0.5, 2:1 SIDE
 SLOPE RIP-RAP TO
 BE ENTRENCHED 18" DEEP

103' OF 12" CLASS III
 RCP @ 10.2% (INCLUDES
 VDOT ES-1 END SECTION)

EMERGENCY SPILLWAY
 ELEV.= 70.50
 10' BOTTOM WIDTH x 20'
 LONG @ 0.0% 2:1 SIDE SLOPE
 TO BE LINED WITH EC-3
 STABILIZATION MATTING
 (SEE DETAIL SHEET 10)

NOTE:
 ULTIMATE OWNERSHIP FOR
 BMP 5.2 IS THE STONEHOUSE
 HOMEOWNERS ASSOCIATION

SEDIMENT BASIN 5.2
 48" PRECAST CONCRETE RISER
 WITH PRECAST CONCRETE
 ANTI-VORTEX DEVICE
 RISER ELEV=69.50
 DRAINAGE AREA=6.93 AC.
 (SEE SECTION SHEET 8)

AREA OF WETLAND
 IMPACT=1582 SF/
 0.04 AC

48" PRE-CAST MH
 WITH ANTI-VORTEX
 DEVICE
 TOP= 68.00
 INV.= 57.50

VDOT EW-11 MOD.
 INV. IN= 58.00
 (SEE DETAIL
 SHEET 10)

146' OF 12" RCP
 CLASS III, @ 1.10%

SS# 1-1
 INV.=69.00
 STA. 15+15 END
 6" DEEP PAVED
 LOT 18 DITCH

8'L x 10'W
 STILLING BASIN
 (TP)

SS# 1-4
 STA. 15+15, LT. 17
 VDOT STD. DI-5
 TYPE I GRATE
 FLOWLINE INV.=91.6
 INV. IN=86.27
 INV. OUT=86.17

25' BUFFER BASED ON 100 YR
 FLOOD PLAIN TO BE DEDICATED
 TO THE STONEHOUSE
 HOMEOWNERS ASSOCIATION.

7'X8.5' STILLING
 BASIN (SEE DETAIL
 SHEET 10)

15' MAINTENANCE EASEMENT
 BASED ON 100 YR FLOOD
 ELEVATION TO BE DEDICATED TO
 THE STONEHOUSE HOME
 OWNERS ASSOCIATION
 LOT 55

SS# 2-1
 VDOT STD. MH-1
 TOP= 91.00
 INV.=86.00

176' OF 15" RCP
 CLASS III, @ 5.87%
 (ADD SILT FENCE
 AT THE TOE FILL)
 (SF)

FUTURE
 "BENT TREE"
 SECTION
 PHASE 3
 LOT 48

INDICATES
 POST-DEVELOPMENT
 DRAINAGE RIDGE
 LINE

LOT 54

DRAINAGE AREAS TO BMP 5.2 LOCATION:
 PRE-DEVELOPMENT AREA= 6.76 ACRES, CN=69, Tc=33 MIN.
 POST-DEVELOPMENT AREA= 6.93 ACRES, CN=77, Tc=17 MIN.

SECTION V-B
 "BENT TREE"
 PHASE 2
 LOT 54

1.11
 AC.

Tc= 5 MIN.
 C= 0.65

STORM SYSTEM No. 2

4.75
 AC.

Tc= 5 MIN.
 C= 0.65

STORM SYSTEM No. 1

0.23
 AC.

Tc= 5 MIN.
 C= 0.70

0.12
 AC.

Tc= 5 MIN. COMMON A
 C= 0.68 PARCEL C

0.13
 AC.

132
 AC.

Tc= 7 MIN.
 C= 0.85

3.27
 AC.

PRE-DEVELOPMENT
 FOR BMP 5.3

POST-DEVELOPMENT
 FOR BMP 5.3

WINDY BRANCH DRIVE
 50' R/W

FUTURE
 SECTION V-B
 "BENT TREE"
 PHASE 3

LIMITS OF WETLANDS (TYPICAL)

BENT TREE LANE
 50' R/W

BENT TREE PHASE 2
 WALNUT CREEK

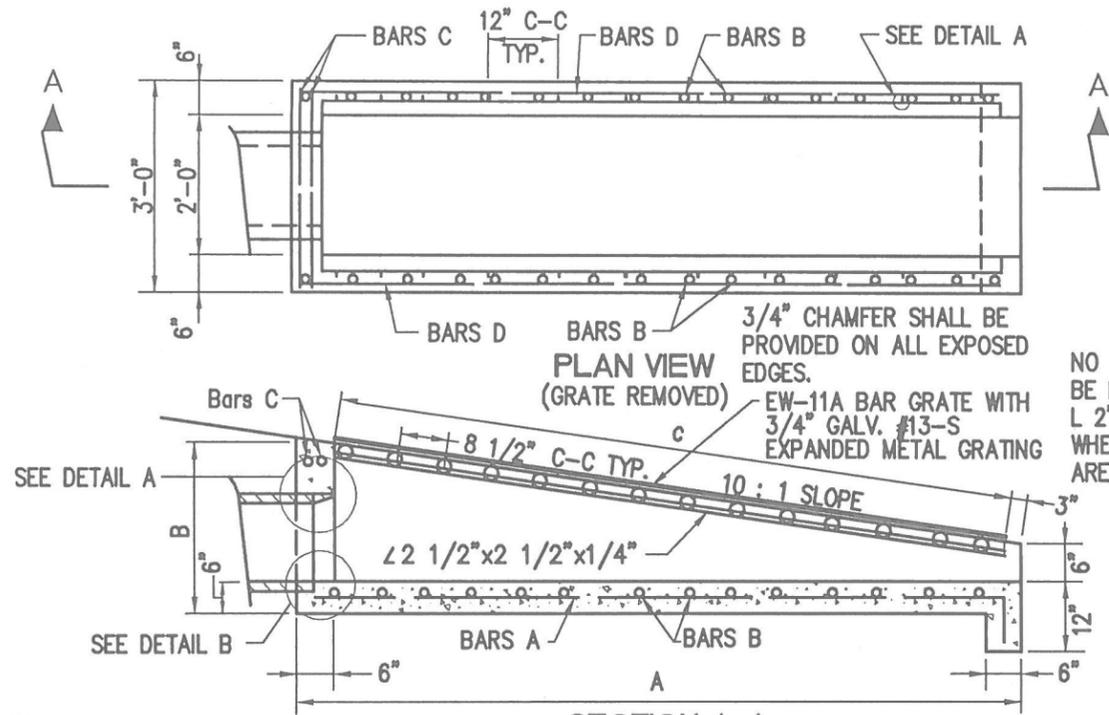
WALNUT CREEK ROAD 50' R/W

TRAILWOOD LA. 50' R/W

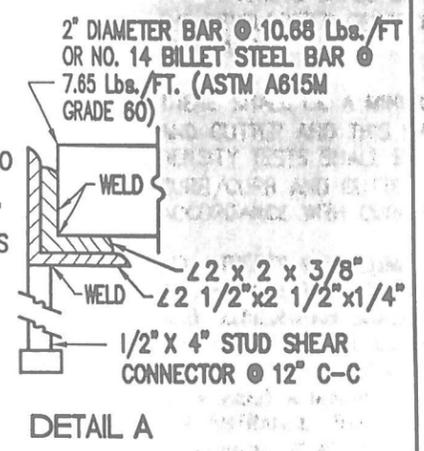
SECTION IV-A
 "HOLLOW OAK"
 PHASE 3

STORM SYSTEM

WALNUT

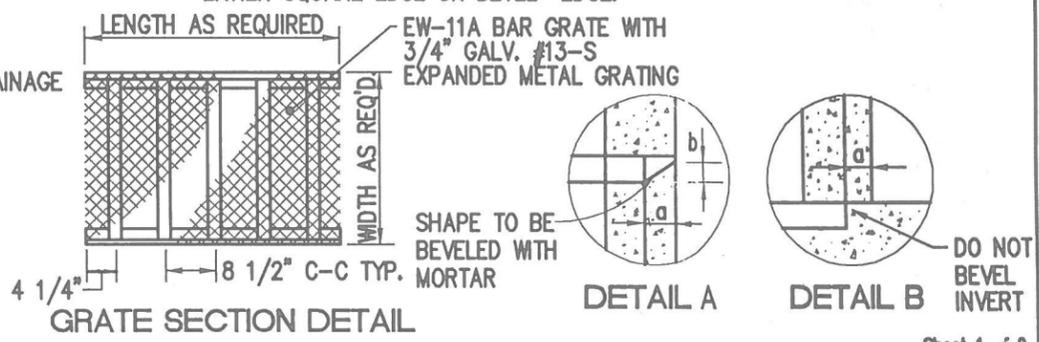


DIMENSIONS FOR BEVEL		
ON HEADWALL PIPE SIZE	a	b
12"	0'-2"	0'-1 1/4"
15"	0'-2"	0'-1 1/4"
18"	0'-2 1/2"	0'-1 1/2"
21" or 24"	0'-3"	0'-2"

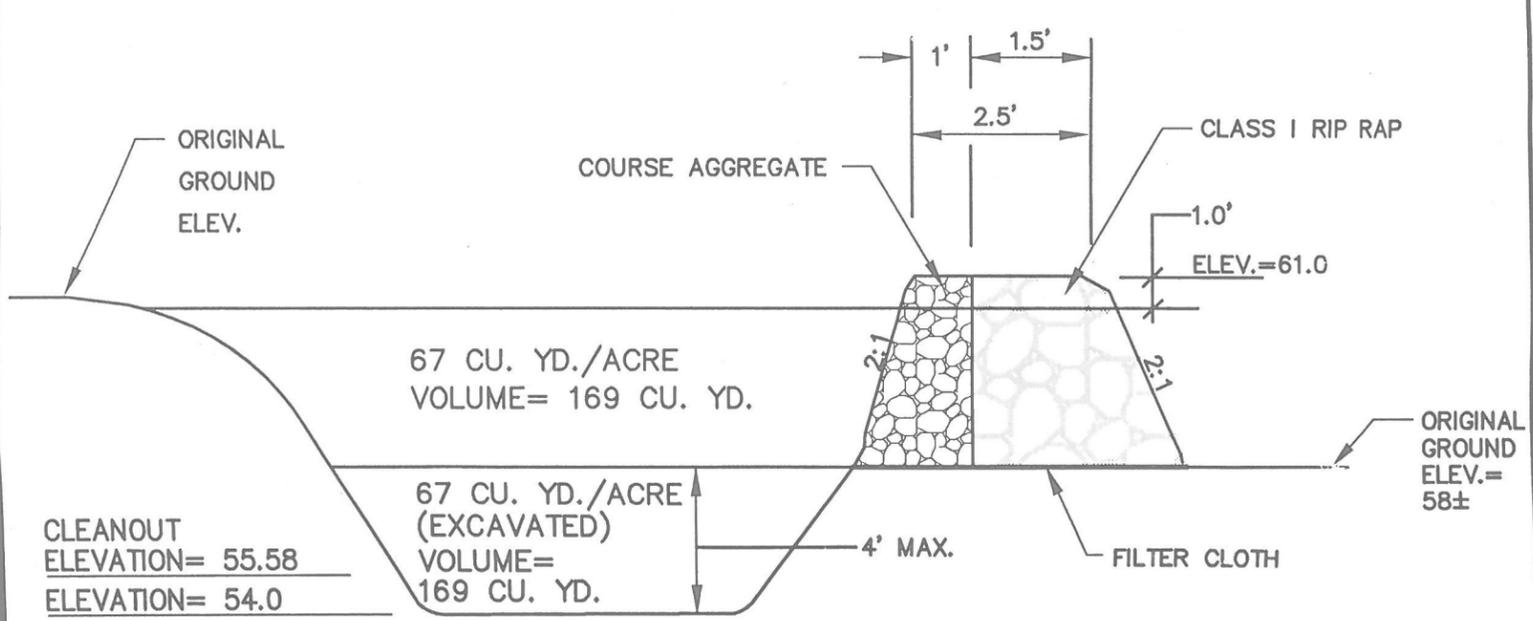


NOTES:
 IN NO CASE SHALL TOP OF END WALL PROJECT ABOVE FILL SLOPE, DITCH SLOPE, OR SHOULDER.
 CLASS A3 CONCRETE TO BE USED IF CAST IN PLACE, 4000 PSI IF PRE-CAST.
 REINFORCING STEEL TO HAVE A MINIMUM 1 1/2" CONCRETE COVER.
 FOR SCHEDULE OF REINFORCING STEEL, DIMENSIONS, AND QUANTITIES SEE SHEET 2 OF 2.
 THIS ITEM MAY BE PRE-CAST OR CAST IN PLACE.
 BOTTOM OF STRUCTURE TO BE ON THE SAME GRADE AS DRAINAGE DITCH.
 HEADWALL TO BE BEVELED IN ALL AREAS EXCEPT WHERE A CONFLICT WITH INVERT OR WINGWALLS OCCUR.
 BEVEL EDGE IS REQUIRED ON HEADWALL AT THE INLET END OF THE CULVERT (WHERE THE FLOW ENTERS THE CULVERT).

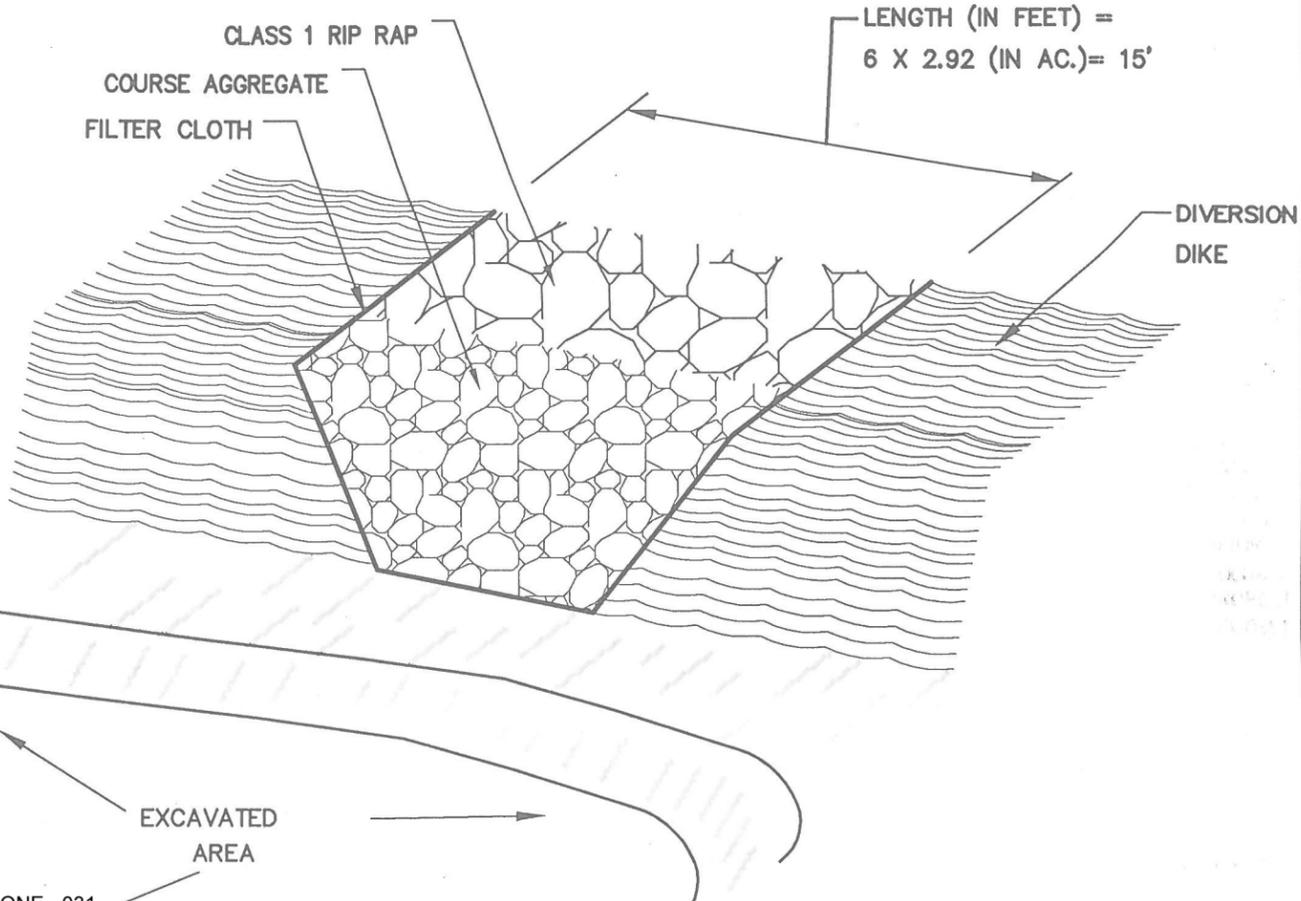
BEVEL EDGE IS REQUIRED ON HEADWALL AT THE INLET END OF THE CULVERT (WHERE THE FLOW ENTERS THE CULVERT).
 HEADWALL AT THE OUTLET END OF THE CULVERT MAY BE EITHER SQUARE EDGE OR BEVEL EDGE.



PIPE ENDWALL WITH LOAD - CARRYING GRATE



CROSS SECTION OF OUTLET



PROVIDE STRA
 SEAL WITH NON-SHRINKING GROUT
 48" PR RISER
 NOT
 RE
 S
 SOURCE: VA. DSWC

7/6/01

Drainage Calculations

for



STONEHOUSE,
VIRGINIA

Live where the future is wide open.

James City County, Virginia

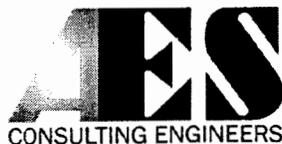
Prepared for

Stonehouse Development Company, L.L.C.

June 2001

Imp 5.3
WC074
5-42-99

Prepared by



AES Consulting Engineers
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Williamsburg, VA 23188
(757) 253-0040 Fax: (757) 220-8994
<http://www.aesva.com>

3.5

**CALCULATION FOR SCS HYDROGRAPH GENERATION AND CHANNEL PROTECTION
FOR BMP / SWM 5.3
STONEHOUSE, SECTION VB, PHASE 2
AES Project No.: 8877-00
August 2, 2000**

I. PRE-DEVELOPMENT CONDITIONS TO POINT OF CONCERN

- A. Pre-Development Drainage Area to Point of Concern = 4.11 Acres
 B. Pre-development Land Use, Soil Classification and Calculation of Composite Curve Number

	<u>Soil Type</u>	<u>Soil Hydrologic Group</u>	<u>Pre-Development Land Use</u>	<u>Area of Land Use (in Acres)</u>	<u>Curve Number for Land Use (CN)</u>	<u>Adjusted (CN)</u>
1)	11-C Craven-Uchee	C	Wooded	1.45	74	107
2)	15-F Emporia Complex	C	Wooded	2.17	74	161
3)	25-B Norfolk Fine Sandy Loam	B	Wooded	0.49	60	29
Totals =				4.11		297
Composite CN =						72

C. Pre-Development Time of Concentration Calculations

- 1) Overland Flow (maximum 300 feet)
 Surface description (table 5-7) mainly wooded
 Manning's roughness coefficient, n (table 5-7) 0.4
 Length of overland flow, L 200 Feet
 2-year 24-hour rainfall, P2 3.6 inches
 Average slope of overland flow, s 0.06 feet per foot
 Travel time, $T_t = (0.007 * (n * L)^{0.8}) / (P2^{0.5} * s^{0.4})$ 0.38 hours

 - 2) Shallow concentrated flow (maximum 300 feet)
 Surface description, paved or unpaved unpaved, wooded
 Length of shallow concentrated flow, L 200 Feet
 Average slope of shallow concentrated flow, s 0.165 feet per foot
 Average velocity, v 0.5 feet per second
 Travel time, $T_t = L / (3600 * v)$ 0.11 hours

 - 3) Channel or Pipe Flow
 Length of channel flow, L 270 Feet
 Average velocity of channel flow, v 2.5 feet per second
 Travel time, $T_t = L / (3600 * v)$ 0.03 hours
- Total Time of Concentration = 0.52 hours
or 31 minutes

II. POST-DEVELOPMENT CONDITIONS TO POINT OF CONCERN (for total site)

- A. Post-Development Drainage Area to Point of Concern = 4.59 Acres
 B. Post-development Land Use, Soil Classification and Calculation of Composite Curve Number

	<u>Soil Type</u>	<u>Soil Hydrologic Group</u>	<u>Post-Development Land Use</u>	<u>Area of Land Use (in Acres)</u>	<u>Curve Number for Land Use (CN)</u>	<u>Adjusted (CN)</u>
1)	11-C Craven-Uchee	C	Residential - 1/2 acre lots	2.01	80	161
2)	11-C Craven-Uchee	C	Open Space/Wooded	0.22	76	17
3)	11-C Craven-Uchee	C	Right-of-Way	0.45	92	41
4)	15-F Emporia Complex	C	Residential - 1/2 acre lots	0.51	80	41
5)	15-F Emporia Complex	C	Open Space/Wooded	0.77	76	59
7)	15-F Emporia Complex	C	BMP Surface	0.10	100	10
8)	25-B Norfolk Fine Sandy Loam	B	Residential - 1/2 acre lots	0.31	60	19
9)	25-B Norfolk Fine Sandy Loam	B	Open Space/Wooded	0.15	60	9
10)	25-B Norfolk Fine Sandy Loam	B	Right-of-Way	0.07	89	6
Total Adjusted CN =				4.59		347
Composite CN =						76

C. Post-Development Time of Concentration Calculations

1) Overland Flow (maximum 300 feet)	
Surface description (table 5-7)	residential
Manning's roughness coefficient, n (table 5-7)	0.2
Length of overland flow, L	200 Feet
25-year 24-hour rainfall, P25	6.5 inches
Average slope of overland flow, s	0.06 feet per foot
Travel time, $Tt = (0.007 * (n * L)^{0.8}) / (P2^{0.5} * s^{0.4})$	0.16 hours
2) Shallow concentrated flow (maximum 300 feet)	
Surface description, paved or unpaved	unpaved
Length of shallow concentrated flow, L	200 Feet
Average slope of shallow concentrated flow, s	0.165 feet per foot
Average velocity, v	0.75 feet per second
Travel time, $Tt = L / (3600 * v)$	0.07 hours
3) Channel or Pipe Flow	
Length of channel flow, L	270 Feet
Average velocity of channel flow, v	3 feet per second
Travel time, $Tt = L / (3600 * v)$	0.03 hours
Total Time of Concentration =	0.26 hours
	or
	16 minutes

III. PROPOSED ESTIMATED POND(S) VOLUME ABOVE NORMAL POOL BY ELEVATION

Elevation	Depth	Area (sq. ft.)	Incremental Volume (cu. ft.)	Inc. Volume (cu. yd.)	Sum Volume (cu. ft.)	Sum Volume (cu. yd.)
60.0		633.333	0			
62.0	2.0	1633.3333	2266.6663	84	2266.666	84
64.0	2.0	2800	4433.3333	164	6700	248
48.0	-16.0	1963	-38104	-1411	-31404	-1163
50.0	2.0	3022	4985	185	-26419	-978
52.0	2.0	4447	7469	277	-18950	-702
54.0	2.0	6365	10812	400	-8138	-301

IV. DETERMINING RELEASE RATE OF 1-YEAR, 24-HOUR DETAINED FOR 24 HOURS FOR STREAM CHANNEL PROTECTION

Volume of 1-Year, 24-Hour Storm (based upon Hydrograph #1) =	14,341 cubic feet
Elevation of water surface associated with 1-Year, 24-Hour Storm Vol	48.1
Elevation of Release Inlet for Channel Protection =	42.0
Average Head, in feet, on Release Inlet =	3.1
Average Release Rate Calculation	$\frac{14,341 \text{ cubic feet}}{(24 \text{ hours} \times 60 \text{ minutes/hour} \times 60 \text{ seconds/minute})} = 0.2 \text{ cfs}$
Calculation of Size of Release Inlet	

Diameter of Release Inlet = $2 * (Q / ((64.32 * (h / 2))^{(1/2)} * 0.6 * 3.14)))^{(1/2)}$
 where, Q equals Average Release Rate, in cfs
 h equals Average Head, in feet

Diameter of Release Inlet = 0.20 feet, or 3 inches

Hydrograph Summary Report

BMP 5.3

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Return period (yrs)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	3.6	2	734	16,932	2	—	—	—	Pre-Development 2-
2	SCS Runoff	9.1	2	734	39,991	10	—	—	—	Pre-Development 10
3	SCS Runoff	11.6	2	734	50,203	25	—	—	—	Pre-Development 25
4	SCS Runoff	14.0	2	732	60,424	50	—	—	—	Pre-Development 50
5	SCS Runoff	16.4	2	732	70,913	100	—	—	—	Pre-Development 100
7	SCS Runoff	4.9	2	724	14,341	1	—	—	—	Post-Development 1
8	SCS Runoff	7.8	2	722	22,180	2	—	—	—	Post-Development 2
9	SCS Runoff	18.6	2	722	52,118	10	—	—	—	Post-Development 10
10	SCS Runoff	21.6	2	722	60,557	25	—	—	—	Post-Development 25
11	SCS Runoff	25.6	2	722	72,061	50	—	—	—	Post-Development 50
12	SCS Runoff	29.7	2	722	83,791	100	—	—	—	Post-Development 100
18	Reservoir	0.5	2	774	14,341	1	7	48.15	5,699	Post-Dev. 1-yr Rou
19	Reservoir	3.7	2	734	22,180	2	8	48.99	7,782	Post-Dev. 2-yr Rou
20	Reservoir	10.7	2	732	52,118	10	9	50.73	13,035	Post-Dev. 10-yr Ro
21	Reservoir	11.0	2	732	60,557	25	10	51.47	15,805	Post-Dev. 25-yr Ro
22	Reservoir	11.4	2	734	72,060	50	11	52.38	19,834	Post-Dev. 50-yr Ro
23	Reservoir	13.3	2	734	83,791	100	12	53.12	23,827	Post-Dev. 100-yr R

Proj. file: 887753.gpw

IDF file: Jcc.IDF

Run date: 08-03-2000

Hydrograph Plot

BMP 5.3

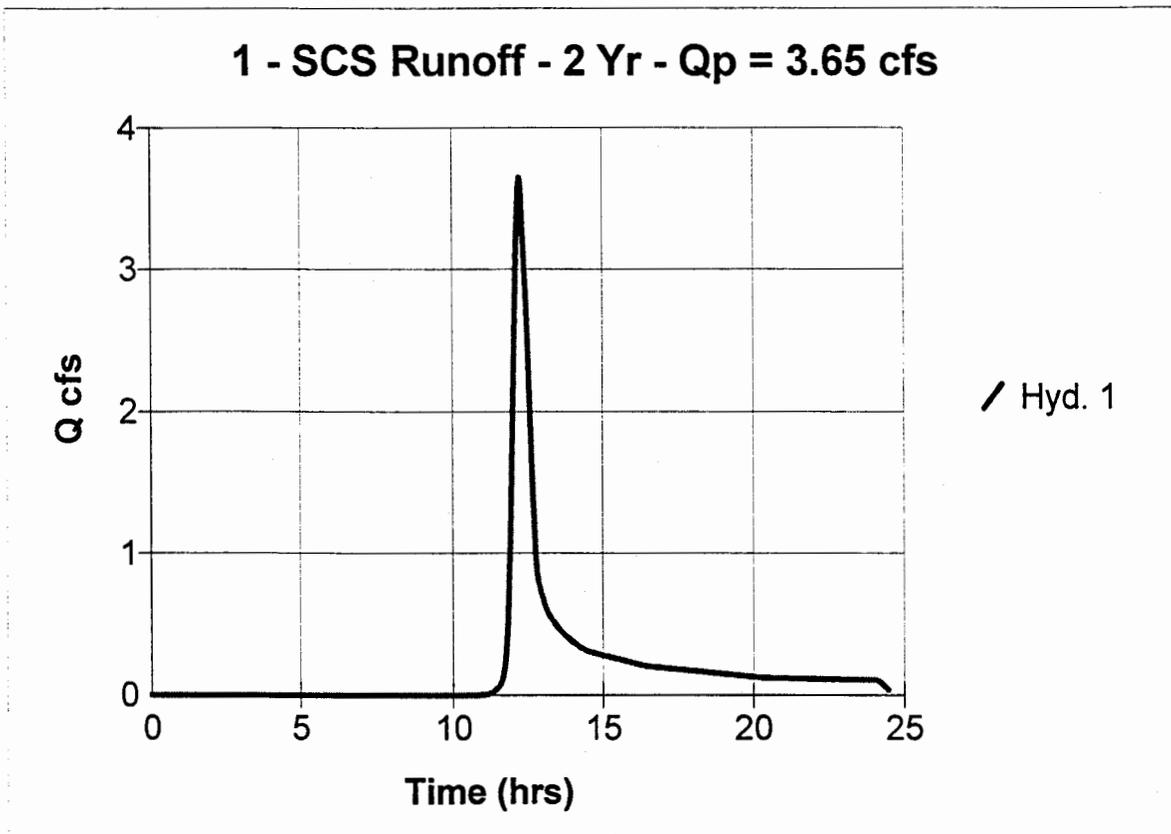
English

Hyd. No. 1

Pre-Development 2-yr Runoff

Hydrograph type	= SCS Runoff	Peak discharge	= 3.65 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 4.11 ac	Curve number	= 72
Basin Slope	= 6.0 %	Hydraulic length	= 670 ft
Tc method	= USER	Time of conc. (Tc)	= 31 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Total Volume = 16,932 cuft



PHASE 2 / CREEK
Hydrograph Plot

BMP 5.3

English

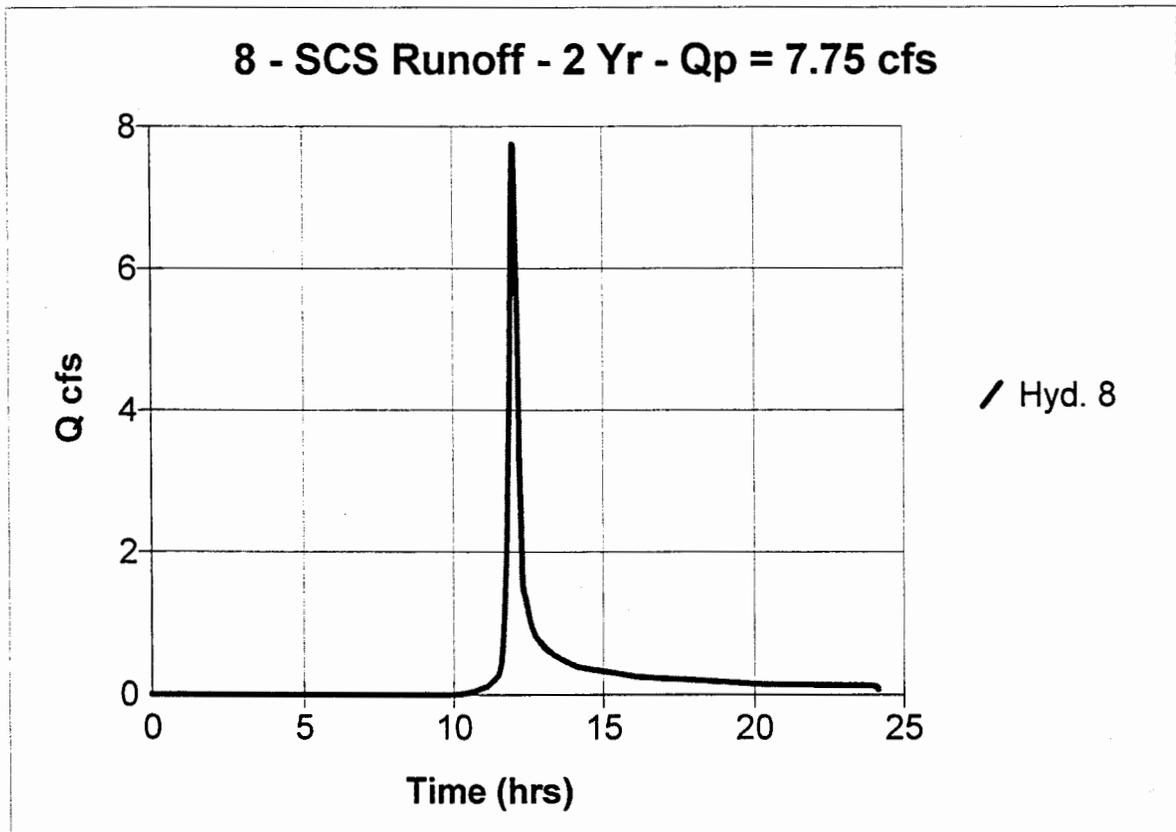
Hyd. No. 8

Post-Development 2-yr Runoff

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 4.59 ac
Basin Slope = 6.0 %
Tc method = USER
Total precip. = 3.50 in
Storm duration = 24 hrs

Peak discharge = 7.75 cfs
Time interval = 2 min
Curve number = 76
Hydraulic length = 670 ft
Time of conc. (Tc) = 16 min
Distribution = Type II
Shape factor = 484

Total Volume = 22,180 cuft



Hydrograph Summary Report - BMP 5.3 REVISED

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Return period (yrs)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description	
1	SCS Runoff	3.6	2	734	16,932	2	---	----	----	Pre-Development 2-	
2	SCS Runoff	9.1	2	734	39,991	10	---	----	----	Pre-Development 10	
3	SCS Runoff	11.6	2	734	50,203	25	---	----	----	Pre-Development 25	
4	SCS Runoff	14.0	2	732	60,424	50	---	----	----	Pre-Development 50	
5	SCS Runoff	16.4	2	732	70,913	100	---	----	----	Pre-Development 100	
7	SCS Runoff	4.9	2	724	14,341	1	---	----	----	Post-Development 1	
8	SCS Runoff	7.8	2	722	22,180	2	---	----	----	Post-Development 2	
9	SCS Runoff	18.6	2	722	52,118	10	---	----	----	Post-Development 10	
10	SCS Runoff	21.6	2	722	60,557	25	---	----	----	Post-Development 25	
11	SCS Runoff	25.6	2	722	72,061	50	---	----	----	Post-Development 50	
12	SCS Runoff	29.7	2	722	83,791	100	---	----	----	Post-Development 100	
18	Reservoir	0.5	2	774	14,341	1	7	48.21	5,663	Post-Dev. 1-yr Rou	
19	Reservoir	<u>3.8</u>	2	734	22,180	2	8	48.99	7,624	Post-Dev. 2-yr Rou	
20	Reservoir	<u>10.7</u>	2	732	52,118	10	9	50.74	12,895	Post-Dev. 10-yr Ro	
21	Reservoir	11.0	2	732	60,557	25	10	51.48	15,663	Post-Dev. 25-yr Ro	
22	Reservoir	11.4	2	734	72,061	50	11	52.39	19,668	Post-Dev. 50-yr Ro	
23	Reservoir	13.5	2	734	83,791	100	12	<u>53.13</u> DHW	23,592	Post-Dev. 100-yr R	
Proj. file: 887753rev.gpw				IDF file: Jcc.IDF				Run date: 10-23-2001			

Hydrograph Plot - BMP 5.3 REVISED

English

Hyd. No. 18

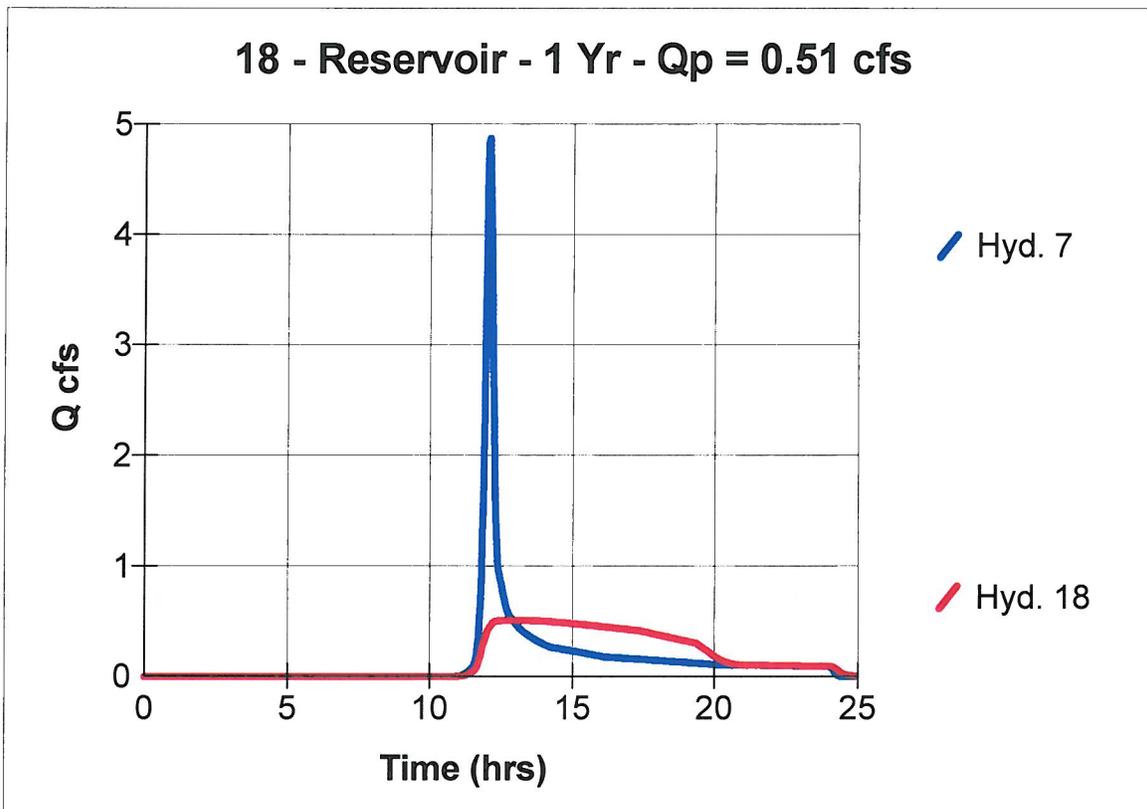
Post-Dev. 1-yr Routed

Hydrograph type = Reservoir
Storm frequency = 1 yrs
Inflow hyd. No. = 7
Max. Elevation = 48.21 ft

Peak discharge = 0.51 cfs
Time interval = 2 min
Reservoir name = BMP 5.3 revised
Max. Storage = 5,663 cuft

Storage Indication method used.

Total Volume = 14,341 cuft



Hydrograph Plot - BMP 5.3 REVISITED

English

Hyd. No. 19

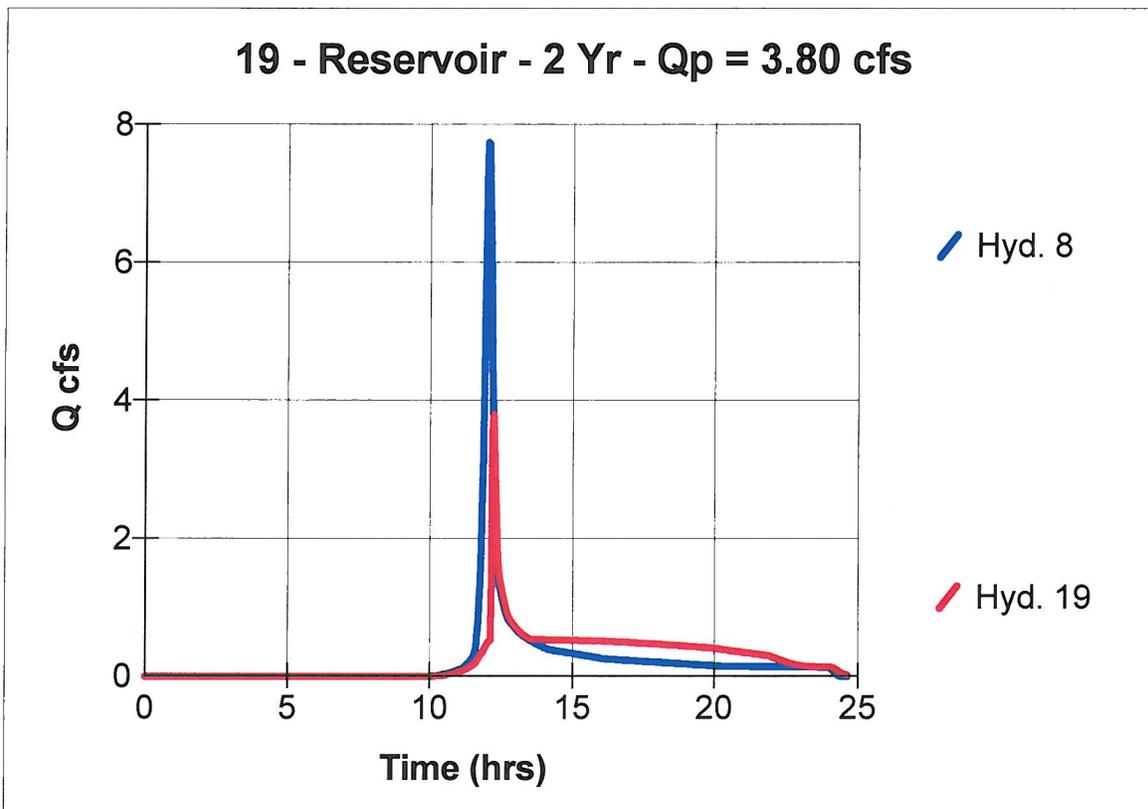
Post-Dev. 2-yr Routed

Hydrograph type = Reservoir
Storm frequency = 2 yrs
Inflow hyd. No. = 8
Max. Elevation = 48.99 ft

Peak discharge = 3.80 cfs
Time interval = 2 min
Reservoir name = BMP 5.3 revised
Max. Storage = 7,624 cuft

Storage Indication method used.

Total Volume = 22,180 cuft



Hydrograph Plot - BMP 5.3 REVISED

English

Hyd. No. 20

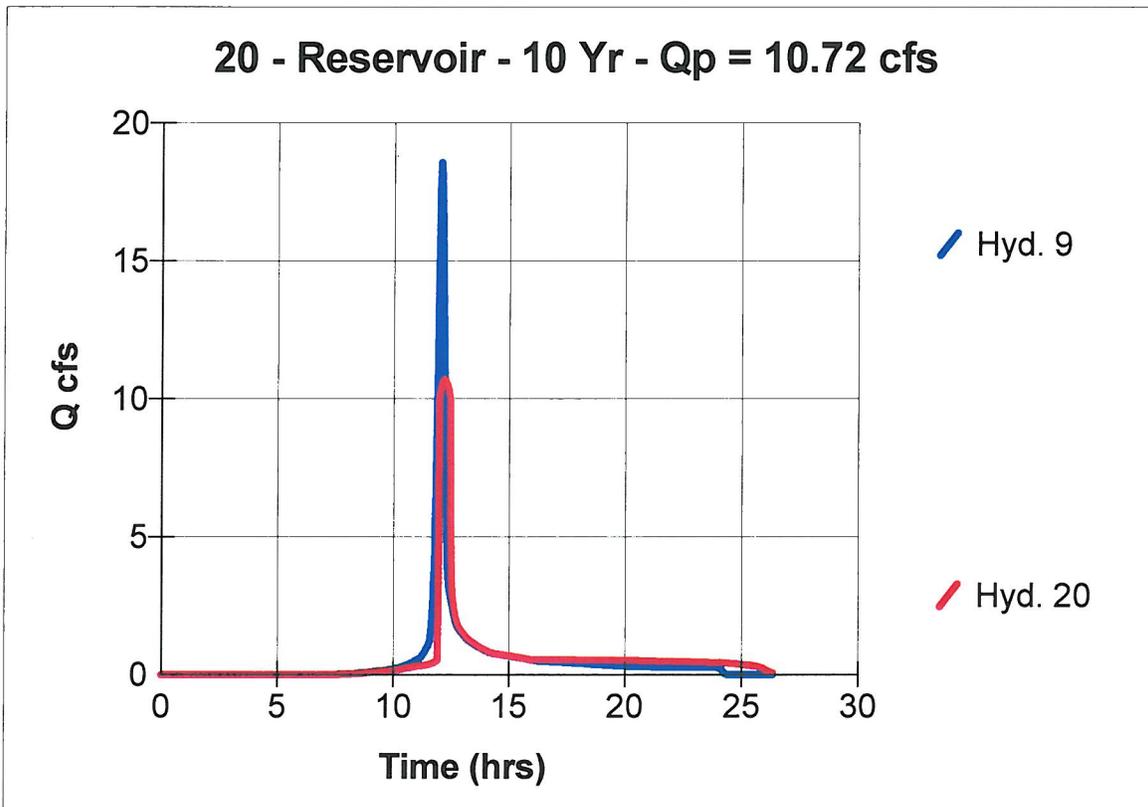
Post-Dev. 10-yr Routed

Hydrograph type = Reservoir
Storm frequency = 10 yrs
Inflow hyd. No. = 9
Max. Elevation = 50.74 ft

Peak discharge = 10.72 cfs
Time interval = 2 min
Reservoir name = BMP 5.3 revised
Max. Storage = 12,895 cuft

Storage Indication method used.

Total Volume = 52,118 cuft



Hydrograph Plot - BMP 5.3 Revised

English

Hyd. No. 21

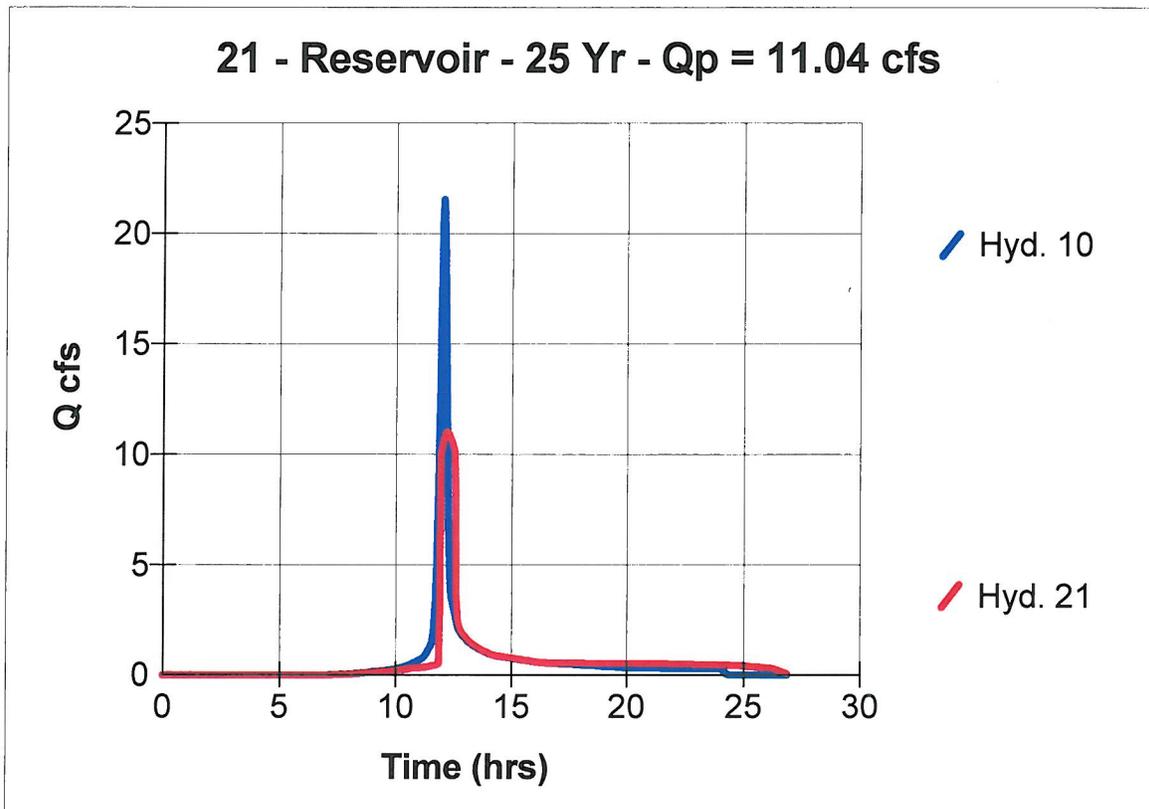
Post-Dev. 25-yr Routed

Hydrograph type = Reservoir
Storm frequency = 25 yrs
Inflow hyd. No. = 10
Max. Elevation = 51.48 ft

Peak discharge = 11.04 cfs
Time interval = 2 min
Reservoir name = BMP 5.3 revised
Max. Storage = 15,663 cuft

Storage Indication method used.

Total Volume = 60,557 cuft



Hydrograph Plot - BMP 5.3 REVISED

English

Hyd. No. 22

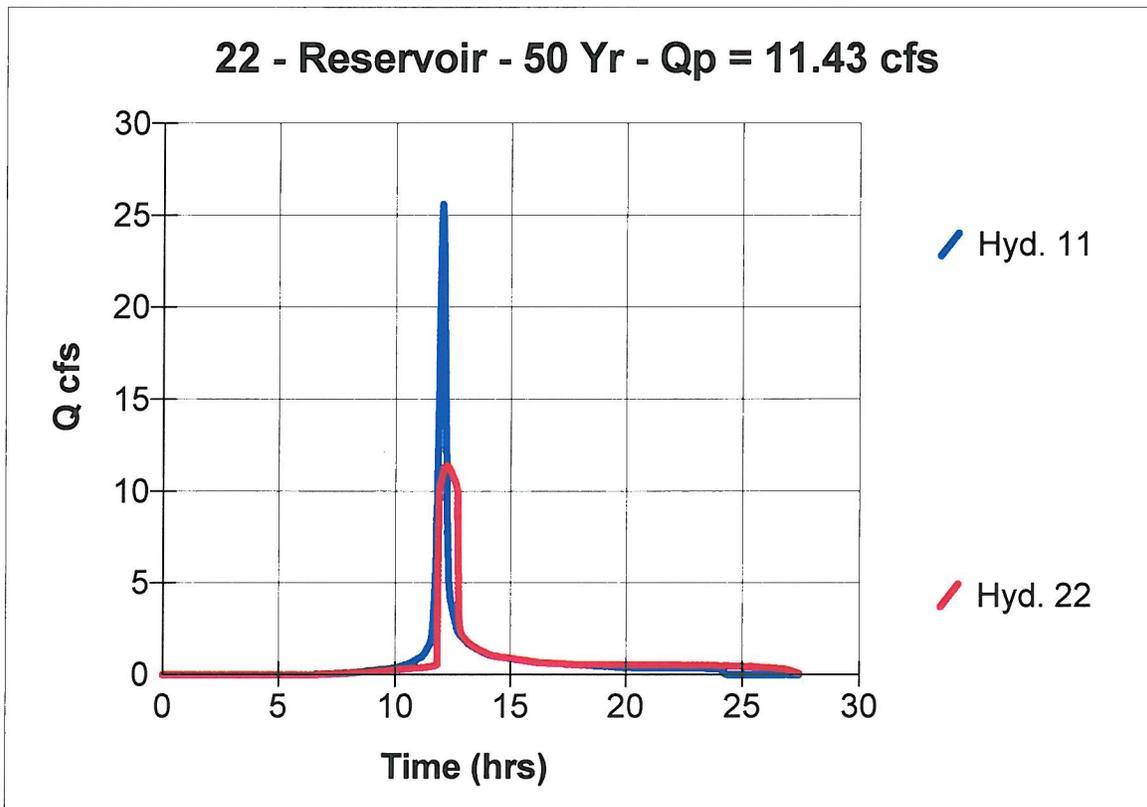
Post-Dev. 50-yr Routed

Hydrograph type = Reservoir
Storm frequency = 50 yrs
Inflow hyd. No. = 11
Max. Elevation = 52.39 ft

Peak discharge = 11.43 cfs
Time interval = 2 min
Reservoir name = BMP 5.3 revised
Max. Storage = 19,668 cuft

Storage Indication method used.

Total Volume = 72,061 cuft



Hydrograph Plot - BMP 5.3 REVISITED

English

Hyd. No. 23

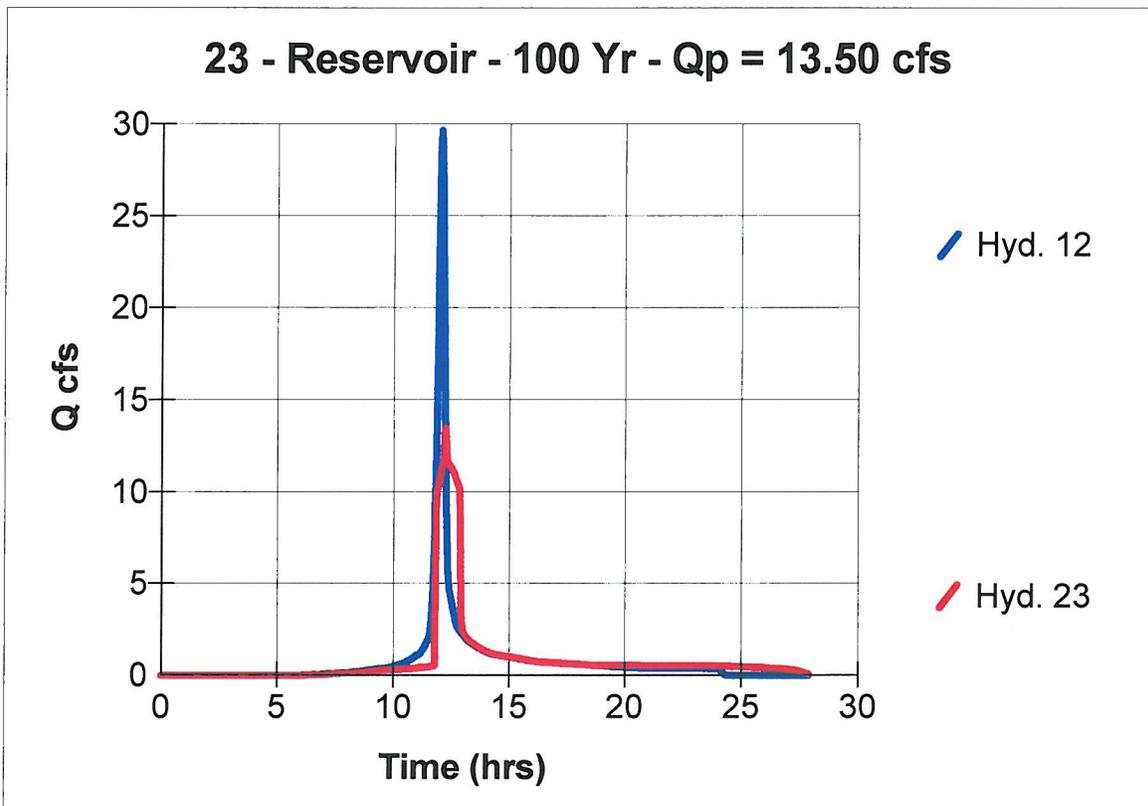
Post-Dev. 100-yr Route

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 12
Max. Elevation = 53.13 ft

Peak discharge = 13.50 cfs
Time interval = 2 min
Reservoir name = BMP 5.3 revised
Max. Storage = 23,592 cuft

Storage Indication method used.

Total Volume = 83,791 cuft



Plan Review Steps & Components:

Y N

First "Look-Thru". Quick look through plan for familiarity.

N/A - Stonehouse

Worksheet for BMP Point System. New plan meets 10 point system or redevelopment method.

FEMA Special Flood Hazard Areas. Check against property, site and development.

Check JCC Tax Parcel Maps for RPA / RMA locations and parcel identification.

Stormwater hotspot, general screening, layout or separation distances (if any) satisfactory.

Environmental Inventory for Chesapeake Bay Ordinance requirements satisfactory.

Highlight and check impact to environmental sensitive areas (wetlands, RPA, steep slope, etc.).

Demolition plan (if any) or offsite borrow, waste areas and onsite stockpiles.

Review existing topography to determine adequacy of E&SC plan (Phase I).

Review grading plan to check for conflicts (offsite grading, cut-fills, slopes,) & Phase II E&SC.

Review layout plan to check for conflicts (buildings, parking, buffers, etc.).

Highlight culverts and storm drains. Check pipe data, thickness and utility, cover conflicts.

Proper culvert and stormdrain specifications, notes, and details or reference to VDOT.

Review Sequence of Construction (for E&SC and SWM/BMP applicability to site work).

Review plan based on Chapter 19 Subdivision ordinance as it relates to SWM/BMP control.

Review plan based on Chapter 24 Zoning as it relates to SWM/BMP control.

Review plan based on Chapter 23 Chesapeake Bay ordinance requirements.

Review plan based on General Knowledge and Experience for Design/Construction.

Review plan based on JCC BMP manual for the BMP type selected for project.

Review plan based on JCC Stormwater Conveyance System D/C Guidelines (*Future*).

Review plan based on Virginia Erosion and Sediment Control Handbook (VESCH).

Review plan based on Virginia Stormwater Management Handbook (VSMH) for BMP type.

Review plan based on Hampton Roads BMP Design Guidance manual (*Optional*).

Review plan based on MWCOG, Controlling Urban Runoff BMP manual (*Optional*).

Review plan based on standard JCC E&SC and SWM Design Plan Checklists.

Review plan based on JCC BMP Construction Specifications (*Future*).

Review Maintenance Plan for SWM / BMP facility. Detailed and specific guidance.

Review BMP Landscaping Plan (deep pool, shallow water, shoreline fringes, etc.).

Review E&SC Plan Design Report and computations (Attached report).

Review SWM Design Report and computations (Attached Report).

Adequate Channels proven downstream of both uncontrolled or SWM/BMP areas.

Adequate function, conversion of Temp Sed Basins (volume, discharge, WSELs) to BMP's.

Geotechnical. Information per App. E JCC BMP manual or to substantiate use of other BMPs.

Provisions on plan requiring proper Record Drawing and Const. Cert of facility.

Drainage and Open Space Easements, if necessary, appear satisfactory.

Inclusion of H&H and SWM / BMP data into any JCC databases.

Other: _____

Prepared Environmental Division comments for the following categories based on above review areas:

General Comments:

Erosion & Sediment Control Plan:

Floodplain:

Chesapeake Bay Preservation:

Stormwater Management / Drainage:

Other:

Additional Notes & Comments: _____

(Note: THIS FORM FOR COUNTY USE ONLY.)

1st Rev

2nd Rev

3rd Rev

Signature _____

Date _____

Memorandum

DATE: October 22, 2001

TO: Ray Nice (George Nice and Sons)
Jim Bennett (Stonehouse Development Company)
Scott Thomas (James City County Environmental Division)

FROM: Marc Bennett

SUBJECT: Field Change #1
Walnut Creek, BMP 5.3
(AES Project Number 8877-00)

WC074
5-42-99



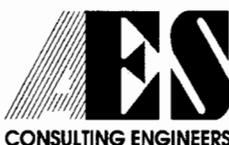
REVIEWED BY
SJT. FOUND TO
BE ACCEPTABLE
10-24-01

Due to difficult existing topography, it has become desirable to alter the location of the emergency spillway for BMP 5.3. Current design has the emergency spillway located on the east side of the dam embankment. The more desirable location of the emergency spillway is the west side of the dam embankment, just to the east of Lot 4 of Walnut Creek.

To accomplish the desire, AES staff has prepared Field Change #1 documents, consisting of a revised grading plan, a revised typical section for BMP 5.3, and an additional detail. Additionally, to ensure the original design has not been compromised, up-to-date hydraulic calculations have been prepared and are presented. (Due to these proposed changes, very slight changes in water surface elevation resulted from the modeling. Maximum change in water surface elevation for the 1-year storm event was an increase of 0.06 feet.)

With this memorandum, please allow us to present some key elements of this field change, and how the design was altered.

1. Access to dam embankment – Located the emergency spillway of this dam does compromise access to the embankment. However, to maintain accessibility to the dam embankment, the approach to, approach over and across the emergency spillway has been revisited. The approach slope to the emergency spillway is eased with a more gradual slope (see grading plan). The emergency spillway “control section” is used as the turning point for maintenance vehicles. The opposite side slope for the emergency spillway is softened to a slope of 6 to 1. With these changes, maintenance vehicles and equipment will continue to have access to the embankment, although the emergency spillway will have to be negotiated. During severe storms events, the dam will not be accessible until water elevation has receded to below the emergency spillway elevation.
2. Small areas of additional clearing, some impacting Lot 4, will be needed to form the access route and the emergency spillway. However, both of these dam features are not on the property of Lot 4.
3. The entire feature of BMP 5.3 is in an area to be conveyed to the homeowners’ association of Stonehouse. This field change will not require any additional



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

easements. A buffer to the current design of BMP 5.3 was described on the plat of subdivision, and it suitable for the field changes of this BMP.

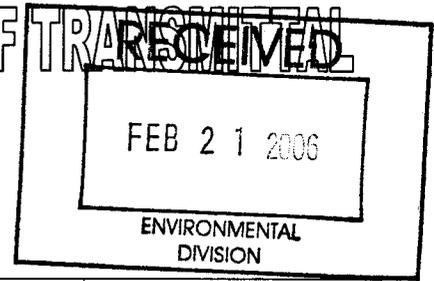
4. Springs/seeps have been exposed as a result of current construction. A design to handle this issue has been incorporated into the Field Change Documents. This design, using 4-inch perforated pipe, intercepts the springs/seeps underground, allowing the groundwater to be discharged to the upstream side of the embankment, maintaining dam integrity.
5. An alternative dam access road design is added to the Field Change documents. This alternative will allow the passage of maintenance vehicles, and provide a more natural ground cover.

S:\Jobs\8877\00\Wordproc\Document\887700112.vmb.doc

AES CONSULTING ENGINEERS
Engineering, Surveying, and Planning
 5248 Olde Towne Road, Suite 1
 WILLIAMSBURG, VIRGINIA 23188

Phone: (757) 253-0040
Fax: (757) 220-8994

LETTER OF TRANSMITTAL RECEIVED



ATTN: **Scott Thomas**

CO.: JCC Environmental

Address:

cc:

file

DATE 2/21/06	JOB NO. 8876-00, 8877-00, & 8878-00
FROM: Victoria Bains	
RE Bent Tree Phase 1, Bent Tree Phase 2 & Walnut Creek, and Bent Tree Phase 3	

WE ARE SENDING YOU THE FOLLOWING ITEMS:

- Attached
 Under separate cover via
 Original(s) Print(s) Plan(s) Specification(s) Change Order
 Copy of letter(s) Other: Record Drawing and Construction Certification

COPIES	DATE	No. of Pages	DESCRIPTION
1		5	Record Drawing and Construction Certifications for BMP #5.1
1		5	Record Drawing and Construction Certifications for BMP #5.2
1		5	Record Drawing and Construction Certifications for BMP #5.3
1		5	Record Drawing and Construction Certifications for BMP #5.4

THESE ARE TRANSMITTED as checked below:

- For your approval For your signature For review and comment
 For your use As you requested As requested by:
 Other:

REMARKS:

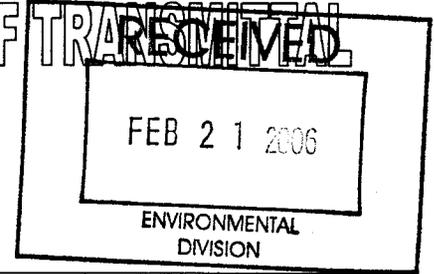
Scott, Please let me know when you have made the final inspection and that the bonds are being released. Thank you.
 Tory

If enclosures are not as noted, kindly notify us at once.

AES CONSULTING ENGINEERS
Engineering, Surveying, and Planning
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 WILLIAMSBURG, VIRGINIA 23188

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 Tory

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

County BMP ID Code (if known): WC074 Bentree PH 2 Reinspect 5/30/06. OK
 Name of Facility: Stonehouse Walnut Creek BMP # 5-3 BMP No.: _____ of _____ Date: 1/13/05
 Location: Trailwood Lane off of Walnut Creek Lot 3
 Name of Owner: Stonehouse DEV LLC
 Name of Inspector: SJ Thomas
 Type of Facility: Dry Pond
 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
Embankments and Side Slopes: <input type="checkbox"/> None <input type="checkbox"/> Constructed Wetland/Shallow Marsh <input type="checkbox"/> Naturally Established Vegetation				
Embankments and Side Slopes:				<u>BMP 100' L x 50' wide in ravine / 10' w, earth; 2.5ft IV; 20' H/ft</u>
Grass Height	✓			<u>Good, cut, clean</u>
Vegetation Condition	✓			
Tree Growth	✓			<u>None</u>
Erosion	✓			<u>No signs.</u>
Trash & Debris	✓			
Seepage	✓			<u>None observed.</u>
Fencing or Benches	✓			
Interior Landscaping/Planted Areas: <input type="checkbox"/> None <input type="checkbox"/> Constructed Wetland/Shallow Marsh <input type="checkbox"/> Naturally Established Vegetation				
Vegetated Conditions	✓			<u>Ravine 1/2 v prep; 1/2 natural.</u>
Trash & Debris	✓			
Floating Material	✓			
Erosion	✓			
Sediment		✓		<u>Sediment in micropond area</u>
Dead Plant	✓			
Aesthetics	✓			
Other	✓			
Notes:	<u>SERVES SF ROADS/LOTS</u>			

Item	O.K.	Routine	Urgent	Comments
Per Pools: <input type="checkbox"/> Permanent Pool (Retention Basin) <input type="checkbox"/> Shallow Marsh (Detention Basin) <input checked="" type="checkbox"/> None, Dry (Detention Basin)				
Shoreline Erosion	✓			
Algae	✓			
Trash & Debris	✓			
Sediment		✓		Sediment 1' deep
Aesthetics	✓			
Other	✓			
Inflows (Describe Types/Locations): Primary 15-18" RCP to 10' W RR channel				
Condition of Structure	✓			
Erosion	✓			Outfall + RR ok.
Trash and Debris	✓			
Sediment	✓			
Outlet Protection	✓			
Other				
Principal Flow Control Structure - Riser, Intake, etc. (Describe Type): 48" RCP w/ CAP; 7' HIGH				
Condition of Structure	✓			LFO w/ mesh grate; no interm. orif.
Corrosion	✓			
Trash and Debris		✓		Remove 1-2' sediment.
Sediment		✓		
Vegetation	✓			
Other	✓			Grate is heavy. Could not open!
Principal Outlet Structure - Barrel, Conduit, etc.: 12" RCP to 30' x 30" STILL BASIN CURSE I				
Condition of Structure	✓			
Settlement	✓			
Trash & Debris	✓			
Erosion/Sediment	✓			Some sed. in still basin 1-2"
Outlet Protection	✓	✓		SF downstream in nat channel.
Other				
Emergency Spillway (Overflow): 15' W GRASS; 0.5' deep @ north end.				
Vegetation	✓			
Lining	✓			
Erosion	✓			
Trash & Debris	✓			
Other				
Notes:				

Item	O.K.	Routine	Urgent	Comments
Disturbance Type Conditions:				
Mosquito Breeding	✓			
Animal Burrows	✓			
Graffiti	✓			
Other	✓			
Surrounding Perimeter Conditions: <i>N, S, E, W - ALL WOODS; Remote location</i>				
Land Uses	✓			
Vegetation	✓			
Trash & Debris	✓			
Aesthetics	✓			
Access /Maintenance Roads or Paths	✓			<i>easy off trail/wood.</i>
Other				

Remarks:

BMP great shape, except for sed @ LFO.

Overall Environmental Division Internal Rating: 3

Signature: *[Signature]*
 Title: *Senior Eng ENV DIV*

Date: *1/13/04* *5/30/06*
ST

WATERSHED	WC	MAINTENANCE PLAN	Yes	CTRL STRUC DESC	RCP Riser
BMP ID NO	074	SITE AREA acre	20.86	CTRL STRUC SIZE inches	48
PLAN NO	S-42-99	LAND USE	Resid Plan Unit De	OTLT BARRL DESC	RCP Barrel
TAX PARCEL	(04-40)(01-24)	old BMP TYP		OTLT BARRL SIZE inch	12
PIN NO	0440100024	JCC BMP CODE	F2 Dry ED with forebay		
CONSTRUCTION DATE	10/1/2002	POINT VALUE	0	EMERG SPILLWAY	No
PROJECT NAME	SH Bent Tree Sec 5B PH 2 & Walnut			DESIGN HW ELEV	53.13
FACILITY LOCATION	East of 3109 Trailwood Lane			PERM POOL ELE	na
CITY-STATE	Toano, VA 23168	SVC DRAIN AREA acres	4.59	2-YR OUTFLOW cfs	3.80
CURRENT OWNER	Stonehouse Dev Company LLC			10-YR OUTFLOW cfs	10.70
OWNER ADDRESS	9701 Mill Pond Run			REC DRAWING	Yes
OWNER ADDRESS 2		SERVICE AREA DESCRI	SF Lots & Roadway		
CITY-STATE-ZIP CODE	Toano, VA 23168	IMPERV AREA acres	0.00	CONSTR CERTI	Yes
OWNER PHONE	234-5000	RECV STREAM			
MAINT AGREEMENT	Yes	EXT DET-WQ-CTRL	No	LAST INSP DATE	5/30/2006
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0	INTERNAL RATING	3
		CHAN PROT CTRL	Yes	MISC/COMMENTS	
		CHAN PROT VOL acre-ft	0.329	BMP # 5.3, amend S-74-00	
		SW/FLOOD CONTROL	Yes		
		GEOTECH REPORT	No		

Get Last BMP No

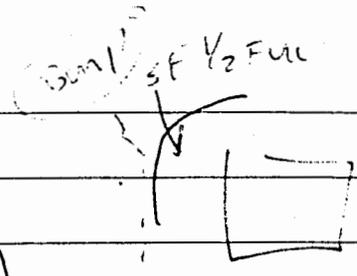
Return to Menu

ALSO SEE BMP # 5.2 WC073.

SEE FILE
FOR BMP # 5.2
FOR ASBUILT
FOR BMP # 5.3
(WC074). THEY
ARE TOGETHER
ON ONE SHEET.

3/17/05

WC 073 - Reinspect ok.



[

 EARL - MIKE WARD

 3112 WINDY BRANCH

 Lot 3. Pin # 04-1595
]

WC 072 - 04 bu² of comp. sediment to SMP.

WC 071 - Looks OK!

WC 069 Big BMP where Coog's Draw to
Looks ok from main.

JLD RV 12" pipe out of totally clogged

 Remove SF

 Fix RUC in sump next to 12"