



OFFICIAL RECEIPT  
WILLIAMSBURG/JAMES CITY COUNTY CIRCUIT  
DEED RECEIPT

DATE: 01/26/11 TIME: 12:24:58 ACCOUNT: 830CLR110002934 RECEIPT: 11000004030  
CASHIER: CHB REG: WD45 TYPE: DE-PL PAYMENT: FULL PAYMENT  
INSTRUMENT : 110002934 BOOK: PAGE: RECORDED: 01/26/11 AT 12:24  
GRANTOR: LONGHILL GROVE L P EX: N LOC: CO  
GRANTEE: WHITFIELD BACON LLC EX: N PCT: 100%  
AND ADDRESS : , .  
RECEIVED OF : GEDDY HARRIS FRANCK & HICKMAN DATE OF DEED: 10/22/10  
CHECK: \$36.00  
DESCRIPTION 1: PARCELS 12.8519 AC & .6507 AC BERKLEY PAGES: 12 OP 0  
2: DISTRICT NAMES: 0  
CONSIDERATION: .00 A/VAL: .00 MAP:  
PIN:  
301 DEEDS 28.50 145 VSLF 1.50  
106 TECHNOLOGY TRST FND 5.00 035 VOF FEE 1.00  
TENDERED : 36.00  
AMOUNT PAID: 36.00  
CHANGE AMT : .00

CLERK OF COURT: BETSY B. WOOLRIDGE

PAYOR'S COPY  
RECEIPT COPY 1 OF 2



**COPY**

Return to: JCC Attorney's Office  
101-C Mount's Bay Road  
Williamsburg, VA 23185  
(757) 253-6612

COUNTY OF JAMES CITY, VIRGINIA

**DECLARATION OF COVENANTS**  
**INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM**

**Please type or print legibly in black ink. Covenantor(s) should submit this form to the JCC Environmental Division, 101-E Mounts Bay Road, Williamsburg, VA 23185.**

THIS DECLARATION OF COVENANTS, made this 9th day of March, 20 11,  
between Whitfield Bacon, LLC, and all successors in  
interest, ("COVENANTOR(S)"), owner(s) of the following property:

Parcel Identification Number(s): 3130100011  
Legal Description(s): 1.149 developable acreage on Centerville Rd.

Project or Subdivision Name: Freedom Market  
Document/Instrument No(s): 050030995  
or Deed Book \_\_\_\_\_, Page No. \_\_\_\_\_  
and the County of James City, Virginia ("COUNTY.")

This Declaration of Covenants prepared by:

Print Name and Title: Phillip O. Richardson/Owner Phone Number: (757) 565-2806

Address: 196 West Queens Dr., Williamsburg, VA 23185

WITNESSETH:

I (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, monitoring, 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.

*Instrument # 110006524*

*Recorded on March 15, 2011.*

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.

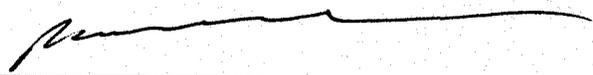
7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S) responsibilities for the SYSTEM. The COVENANTOR(S) shall supply the COUNTY with a copy of any document of transfer, executed by both parties.

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.

IN WITNESS WHEREOF, the COVENANTOR(S) has executed this DECLARATION OF COVENANTS as of the date first above written.

COVENANTOR(S)

  
\_\_\_\_\_  
Signature

Phillip W. Richardson/Owner  
\_\_\_\_\_  
Print Name and Title

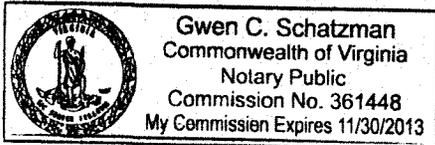
ACKNOWLEDGMENT

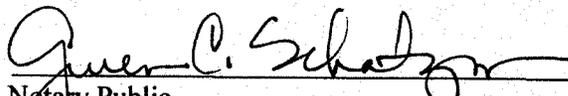
COMMONWEALTH OF VIRGINIA  
~~CITY~~/COUNTY OF JAMES CITY, to wit:

I hereby certify that on this 9<sup>th</sup> day of MARCH, 2011, before the subscribed, a Notary Public for the Commonwealth of Virginia, personally appeared PHILLIP O. RICHARDSON and did acknowledge the foregoing instrument to be his/her Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 9<sup>th</sup> day of MARCH, 2011.

[SEAL]



  
\_\_\_\_\_  
Notary Public

Notary Registration Number: 361448

My Commission expires: 11/30/2013

Approved as to form:

  
\_\_\_\_\_  
Asst. County Attorney

Drainage1\_pre\_doc  
(Revised 3-7-11)

Parcel No.: 3130100011 and a portion of 3130100012

110002934

Prepared by and return to:  
Geddy, Harris, Franck & Hickman, L.L.P.  
1177 Jamestown Road  
Williamsburg, Virginia 23185

**THIS DEED OF EASEMENT AND MAINTENANCE COST-SHARING AGREEMENT** ("Agreement"), made this 22<sup>nd</sup> day of October 2010, by and between **LONGHILL GROVE, L.P.**, a Virginia limited partnership ("Grantor") and **WHITFIELD BACON, LLC**, a Virginia limited liability company ("Grantee"), recites and provides:

WHEREAS, Grantor owns the parcel of land more particularly described on Exhibit A attached hereto (the "Grantor Parcel"),

WHEREAS, Grantee owns the parcel of land more particularly described on Exhibit B attached hereto and located adjacent to the Grantor Parcel (the "Grantee Parcel"), and

WHEREAS, Grantor has agreed to grant to Grantee an easement to install, operate and maintain underground piping on the Grantor Parcel to connect to an existing drop inlet of the existing stormwater drainage system located on the Grantor Parcel in order to discharge stormwater from the Grantee Parcel to an existing stormwater detention basin on the Grantor Parcel ("Basin"), and Grantor and Grantee have agreed to enter into certain agreements concerning maintenance of the Basin and sharing of associated costs.

**WITNESSETH:**

That for and in consideration of the sum of ONE DOLLAR (\$1.00), cash and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor does hereby grant and convey unto Grantee a perpetual, non-exclusive easement to install, operate and maintain underground pipes ("Facilities") to transmit stormwater from the Grantee Parcel to the Basin via a drop inlet in the existing stormwater drainage system located on

Page 1 of 12



**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: FREEDOM MARKET  
 Structure/BMP Name: BIORETENTION FACILITY  
 Project Location: SOUTHEAST CORNER OF THE INTERSECTION OF LONGHILL ROAD WITH  
CENTERVILLE ROAD  
 BMP Location: EXTREME SOUTHEAST CONER OF PROPERTY, BEHIND BUILDING  
 County Plan No.: SP - 0067 - 2010

Project Type:     Residential                       Business                      Tax Map/Parcel No.: (31-3) (1-0-11)  
                           Commercial                       Office                              BMP ID Code (if known): PC271  
                           Institutional                       Industrial                        Zoning District: B1  
                           Public                                       Roadway                        Land Use: COMMERCIAL  
                           Other \_\_\_\_\_                      Site Area (sf or acres): 1.15 ACRES

Brief Description of Stormwater Management/BMP Facility: BIORETENTION FACILITY WITH STORMWATER MANAGEMENT CAPABILITIES

Nearest Visible Landmark to SWM/BMP Facility: INTERSECTION OF LONGHILL RD. WITH CENTERVILLE RD.

Nearest Vertical Ground Control (if known):  
 JCC Geodetic Ground Control     USGS                       Temporary                       Arbitrary                       Other  
 Station Number or Name: 309 (RESET)  
 Datum or Reference Elevation: 101.76  
 Control Description: JAMES CITY COUNTY CONTROL MONUMENT  
AT SOUTHEAST CORNER OF INTERSECTION OF LONGHILL ROAD WITH CENTERVILLE ROAD

**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: MAY 2011  
Facility Monitored by County Representative during Construction:  Yes  No  Unknown  
Name of Site Work Contractor Who Constructed Facility: PHILIP RICHARDSON, GENERAL CONTRACTOR  
Name of Professional Firm Who Routinely Monitored Construction: AES CONSULTING ENGINEER  
Date of Completion for SWM/BMP Facility: DECEMBER 2011, JULY 2012  
Date of Record Drawing/Construction Certification Submittal: AUGUST 16, 2012

***(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: PHILLIP W. RICHARDSON, WHITFILED BACON, LLC  
Mailing Address: 196 WEST QUEENS DRIVE  
WILLIAMSBURG, VIRGINIA 23185  
Business Phone: 757-565-2806 Fax: \_\_\_\_\_  
Contact Person: WHIT RICHARDSON Title: OWNER

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, VIRGINIA 23188  
Business Phone: 757-253-0040  
Fax: 757-220-8994  
Responsible Plan Preparer: V. MARC BENNETT, P.E.  
Title: SENIOR PROJECT MANAGER  
Plan Name: FREEDOM MARKET  
Firm's Project No. 8419-04  
Plan Date: AUGUST 2010  
Sheet No.'s Applicable to SWM/BMP Facility: R-05 / R-07 / \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

BMP Contractor: *(Note: Site Work Contractor directly responsible for construction of the Stormwater Management / BMP facility.)*

Name: PHILIP O. RICHARDSON COMPANY, INC., GENERAL CONTRACTOR  
Mailing Address: 142 ALWOODLEY  
WILLIAMSBURG, VIRGINIA 23188  
Business Phone: 757-258-3200  
Fax: \_\_\_\_\_  
Contact Person: PHILIP RICHARDSON  
Site Foreman/Supervisor: RANDY SAWYER  
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, VIRGINIA 23188  
Business Phone: 757-253-0040  
Fax: 757-220-8994

Name: V. MARC BENNETT, P.E.  
Title: SENIOR PROJECT MANAGER

Signature:   
Date: SEPTEMBER 10, 2012

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: AES CONSULTING ENGINEERS  
Mailing Address: 5248 OLDE TOWNE ROAD,  
SUITE 1  
WILLIAMSBURG, VIRGINIA 23188  
Business Phone: 757-253-0040  
Fax: 757-220-8994

Name: V. MARC BENNETT, P.E.  
Title: SENIOR PROJECT MANAGER

Signature:   
Date: SEPTEMBER 10, 2012

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

## STORMWATER MANAGEMENT / BMP FACILITIES RECORD DRAWING CHECKLIST

(Key for Checklist is as follows: **XX** Acceptable    **N/A** Not Applicable    **Inc** Incomplete)

**I. Methods and Presentation:** (Required for all Stormwater Management / BMP facilities.)

- XX 1. All constructed facilities meet approved design plans, unless otherwise shown. Record information or deviations from approved design plan shown in clearly annotated format and/or boxed beside design values.
- XX 2. Elevations to the nearest 0.1' unless higher accuracy is needed to show positive drainage.
- XX 3. All plan sheets labeled with "RECORD DRAWING" in large text in lower right hand corner (Approved County Plan Number and BMP ID Code can be included if known).
- XX 4. All plans sheet revision blocks modified to indicate date and record drawing status.
- XX 5. All plan sheets have certification statements and certifying professional's signature and seal.

**II. Minimum Standards:** (Required for all Stormwater Management / BMP facilities, as applicable.)

- XX 1. All requirements of Section I (Methods and Presentation) apply to this section.
- XX 2. Plan Views: Show general location, arrangement and dimensions. Location and alignment shall generally match approved design plans.
- XX 3. Profile or elevations along top or berm of the facility. At a minimum, elevations are required at each end, at intervals not to exceed 50 feet and where low spots may be present. Top of embankment or berm elevations must be no less than design elevation plus any settlement allowances.
- XX 4. Top widths, berm widths and embankment side slopes.
- XX 5. Show length, width and depth of facility or grading, contours or spot elevations as required to verify permanent pool and design storage volumes were met or were reasonably close to the approved design. Evaluation of as-built grading, contours, spot elevations, or cross-sections, may be necessary by the professional to ensure approved design configurations, depths and volumes were closely maintained. If grading or elevations are significantly different from the approved plan, the Environmental Division shall be contacted immediately to determine whether the variation is acceptable or whether further evidence will be required. Facilities which do not closely resemble approved plan grades, elevations or configurations may require regrading by the Contractor; check volumetric computations; and/or a check hydraulic routing to ensure approved design water surface elevations, discharges or freeboard were closely maintained.
- XX 6. Cross-section of the embankment through the principal spillway or outlet barrel. Must extend at least 100 ft. downstream of the pipe outlet or to recorded site property line, whichever is closer. Proper correlation is required between principal spillway (control structure) crest, emergency spillway crest, orifice and weirs and the top of the dam or facility. All elevations and dimensions must reasonably match the design plan or be sequentially relative to each other and the facility must reflect the required design storage volume(s) and/or design depth.
- XX 7. Profile or elevations along the entire centerline of the emergency spillway. Emergency spillway may be steeper, but no flatter or narrower than design.
- XX 8. Elevation of the principal spillway crest or outlet crest of the structure.

- XX 9. Primary control structure (riser) diameter or dimensions, height, type of material and base size. Indicate provisions for access that are present such as steps, ladders, etc.
- XX 10. Dimensions, locations and elevations of outlet orifices, weirs, slots and drains.
- XX 11. Type and size of anti-vortex and trash rack device. Height, diameter, dimensions, bar spacings (if applicable) and elevations relative to the principal spillway crest. Indicate if lockable hatch is present or not.
- N/A 12. Type, location, size and number of anti-seep collars or documentation of other methods utilized for seepage control. **May need to obtain this information during construction.**
- N/A 13. Top of impervious core embankment, core trench limits and elevation of cut-off trench bottom. **May need to obtain this information during construction.**
- XX 14. Elevation of the principal spillway barrel (outlet pipe) inlet and outlet invert.
- XX 15. Outlet barrel diameter, length, slope, type and thickness class of material and type of flared end sections, headwall or endwall.
- N/A 16. Outfall protection dimension, type and depth of rock and if underlain filter fabric is present.
- XX 17. BMP interior and periphery landscaping zones conform with arrangements and requirements of the approved design plan.
- XX 18. Maintenance plan taken from approved design plan transposed onto record drawing set.
- N/A 19. Fencing location and type, if applicable to facility.
- XX 20. BMP vicinity properly cleaned of stockpiles and construction debris.
- XX 21. No visual signs of erosion or channel degradation immediately downstream of facility.
- XX 22. Any other information formally requested by the Environmental Division specific to the constructed SWM/BMP facility.

## STORMWATER MANAGEMENT / BMP FACILITIES RECORD DRAWING CHECKLIST

(Key for Checklist is as follows: XX Acceptable    N/A Not Applicable    Inc Incomplete)

- VI.    Group D – Filtering Systems**    *Includes D-1 Bioretention Cells; D-2 Surface Sand Filters; D-3 Underground Sand Filters; D-4 Perimeter Sand Filters; D-5 Organic Filters; and D-6 Pocket Sand Filters)*
- XX    D1.    All requirements of Section II, Minimum Standards, apply to Group D facilities.
- XX    D2.    Sediment pretreatment devices provided.
- XX    D3.    For D-1 BMPs (Bioretention Cells), pretreatment consisting of a grass filter strip below level spreader (deflector); a gravel diaphragm; and mulch and planting soil layers were provided.
- XX    D4.    For D-1 BMPs (Bioretention Cells), plantings consist of native plant species; vegetation provided was based on zones of hydric tolerances; trees and understory of shrubs and herbaceous materials were provided; woody vegetation is absent from inflow locations; and trees are located around facility perimeter.
- N/A    D5.    Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.
- XX    D6.    No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed.
- XX    D7.    Filtering system is off-line from storm drainage conveyance system.
- XX    D8.    Overflow outlet has adequate erosion protection.
- N/A    D9.    Deflector, diversion, flow splitter or regulator structure provided to divert the water quality volume to the filtering structure.
- XX    D10.    Minimum four (4) inch perforated underdrain provided in a clean aggregate envelope layer beneath the facility.
- XX    D11.    Minimum fifty (50) foot separation from any slope fifteen (15) percent or greater. Minimum one hundred (100) foot separation horizontally from any known water supply well. Minimum one hundred (100) foot separation upslope and twenty-five (25) foot separation downslope from any building.
- XX    D12.    Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility.
- XX    D13.    No visual signs of erosion or channel degradation immediately downstream of facility.
- XX    D14.    Adequate, direct access provided to the pretreatment area and/or filter bed for future maintenance.



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

February 7, 2013

Mr. William Cain, P.E.  
Chief Civil Engineer  
Engineering and Resource Protection  
101-A Mounts Bay Road  
Williamsburg, Virginia 23187

**RE: Freedom Market (BMP Record Drawings)  
James City County Case Number SP-0067-2010  
AES Project Number W08419-04**

Dear Mr. Cain:

We are in receipt of comments dated March 20, 2012 for which we have generated the following responses to the concerns expressed in the documentation received. Our responses are provided in **bold print**.

**Record Drawing & Construction Certification:**

1. In accordance with sheet C06, Note #21 of the approved plan, record drawings (as-builts) and construction certifications were required for the onsite stormwater management/BMP. While the checklist forms and record drawings were provided, they were not sealed and signed by the respective professional. This information must be provided with the next submittal. The notes were as follows:

Record Drawings (as-builts) and construction certifications are required for all stormwater facilities including stormwater management/BMP facilities and storm drainage conveyance systems. Record drawings and construction certifications must meet established program requirements of both the county environmental and stormwater divisions.

**Response: Record drawings and construction certification, appropriately endorsed and sealed, for the facilities located at the Freedom Market site are now in the possession of the James City County Engineering and Resource Protection Division.**

**Construction Certification:**

2. In accordance with the Note #21 on Sheet C06 of the approved plan, construction certification for the stormwater management/BMP facility is required. None was provided. This is especially important since the facility has an engineered and compacted earthen embankment. The certification can be in letter format or by use of the certification statements in Section 4 of the

JCC Stormwater Management/BMP Facilities, Record Drawing and Construction Certification, Standard Forms & Instructions.

**Response: Construction certification has been provided to the offices of the James City County Engineering and Resource Protection Division.**

3. A qualified professional engineer's seal and signature is required on construction certifications.

**Response: A registered professional seal and signature has been provided on all appropriate documentation.**

4. If possible, add the following County identifier to the construction certification documents: BMP ID Code PC 271.

**Response: The BMP ID Code has been applied to the certification documents.**

**Record Drawing:**

5. Provide the following additional information on the record drawing:
- a. Swale #1 data
  - b. Culvert #1 data.
  - c. Trench drain survey
  - d. Oil and grease separator information

**Response: The requested additional information has been added to the record documents, less the trench drain survey. From first-hand experience of the design professional, the trench drain, located in the near center of the concrete pad below the re-fueling canopy, is of pre-manufacturer construction with an integral channel slope. The concrete pad is sloped towards the trench drain from all sides of the pad. The trench drain is connected to the pre-manufactured oil/grease separator.**

6. A professional seal and signature is required on the record drawing.

**Response: A registered professionals seal and signature has been provided on all appropriate documentation.**

7. If possible please label the bio retention facility as PC 271, and add County identifiers to the lower right hand corner of the record drawing: County Plan Number SP-67- 10 and BMP ID Code: PC 271.

**Response: The BMP ID Code and County Plan Number have been applied to the documentation in the desired locations.**

**Construction - Related Items:**

8. Culvert #1 appears to be misaligned. Investigate, repair, and remove stone and sediment from pipe.

**Response: A separate inspection of culvert #1 was completed by the design professional, and the culvert was found misaligned. The design professional has coordinated the re-alignment of this culvert.**

9. Two 8" HDPE pipes were installed in dry swale #2. These pipes were not on the approved plan. Provide all necessary information on these pipes to show inverts, slopes and the methods used to tie these HDPE pipes to the roof leader system which they serve.

**Response: The roof drains for the fuel canopy has been added to the record drawings. Although inverts for these pipes are shown, pipe slopes and the method of tie-in from the roof canopy are not known by the design professional. It is reasonable to assume, from the evidence found at the site, that the roof leaders (attached to the support columns of the re-fueling canopy) are connected underground into these roof drains. Inquiries of the site contractor did not result in any substantial additional information on these connections.**

10. Dry swale #2. Reshape all stone outfalls associated with the 8" pipes to promote positive drainage to the swale and prevent scour along the edges.

**Response: The design professional coordinated with the site contractor to reshape the stone outfalls of the 8-inch HDPE pipes. It appears some work was completed to correct the observation.**

11. The stone adjacent to culvert # 1 and dry swale # 1 appears to be a VDOT #1 stone. This is neither consistent with the approved plans nor appropriate for the intended stormwater flows. This must be corrected by removing the stone and replacing it with the required material as contained in the approved plans. Stone should be configured to promote positive drainage.

**Response: The identified stonework has been replaced with concrete lines paved flow transitions.**

12. The stone adjacent to the 2' curb cut as adjacent to dry swale #2 is not consistent with the approved plans and must be replaced.

**Response: The stone adjacent to the curb cut has been replaced with a concrete swale to prevent soil erosion at this location.**

13. Slopes adjacent to dry swale #2 are not consistent with the approved plan as they are too steep. This excessive slope generates several concerns. These slopes can slough under the weight of mowing equipment or simply due to saturation by stormwater, making maintenance problematic at a minimum. These slopes need to be relaxed to be more consistent with what was contained in the approved plan set.

**Response: Upon site inspection, it appears these slopes are secured, as evidence of ground protection can still be found. The design professional has continued to encourage the promotion of denser ground cover to further secure these slopes. However, as of this date, no further action has been performed.**

14. The pretreatment device installed in line with the trench drain is not consistent with that which was contained in the approved plans. The manufactured device as called out in the plans contains third party testing and is known to operate properly under the design conditions of this site. The measure that has been installed on site does not appear to be a manufactured component and contains materials that are not permitted for use due to longevity and performance. Be advised that Corrugated Metal Pipe (CMP) is not permitted for permanent use east of the Interstate 95 corridor due to acidity of soil and the wood used in the device will be prone to rot as it will be

exposed to air. With these being the primary areas of concern, and with no documentation to show that the device will function as intended, this device must be replaced prior to the close out of this project.

**Response: The pre-treatment device has been replaced with the materials as identified in the original site engineering documents.**

15. The outlet pipe for the oil and grease separator appears to be misaligned. This must be corrected as it will affect the function of the upstream measure.

**Response: With the replacement of the pre-treatment device, pipework discharging from the device were aligned.**

16. Install hinge bolts and a lockable hasp on the trash rack atop the outlet structure for the bio-retention.

**Response: Stainless steel hinge bolts were installed on the trash rack. A lockable hasp was not installed. It was determined that the lockable hasp was not needed due to the substantial difficulty to lift the trash rack due to its substantial weight.**

17. The four corners of the structure top allow for premature dewatering or trash accumulation. Fill the voids to allow for proper function and dewatering.

**Response: The voids at the four corners of the structure have been repaired to prevent premature dewatering.**

18. The 15" RCP barrel pipe is misaligned. Sink holes are present around the downstream drop inlet. Site inspection appears to indicate that a complete reconstruction of this section of pipe is necessary to address this issue in full.

**Response: The 15-inch RCP has been re-aligned. Associated sink-holes have been repaired.**

19. Remove the straw bales and silt fence from interior of bio retention and along swale #3. Ensure appropriate feathering of side slopes once these items have been removed and stabilize slopes upon completion.

**Response: Most of the erosion control measure encircling the bioretention facility have been removed. The design professional has suggested the complete removal of all erosion control measures.**

20. Relax the side slopes associated with the emergency spillway of the bio retention facility.

**Response: The side slopes of the emergency spillway have been relaxed, and stabilized.**

21. Dry swale #3. Stormwater flows have resulted in the undermining of the sod recently placed within the channel. This is resulting in standing water within the channel which will have a prolonged effect on the survival of the vegetation. To correct the issue, it may be necessary to remove the sod on the bottom of the channel, re-grade the underlying soil and replace the sod.

**Response: The design professional has directed the contractor on the repair of this area. As of the date of this correspondence, the design professional is unaware of any correction.**

22. Observation wells. The pipe joints need to be glued at the under drain to prevent separation during inspection. (The end cap should not be glued on to allow access).

**Response: The design professional has directed the contractor to cement the joints, except for the cap, of the observation wells.**

**Other Items to Consider:**

- There appears to have been some subsidence in the area where the sidewalk ties to the curbing in proximity to dry swale #2 as the gutter pan, curb, and sidewalk have settled and cracked. As this has the potential to be a hazard to pedestrians, it is strongly recommended that this be rectified as soon as possible.

**Response: The property owner and site contractor have been identified of the problem. The design professional is unaware of any corrective actions or plans to correct this observation.**

I appreciate the time spent by the Staff in the review and guidance for this project. If anyone has any questions in reference to this project please do not hesitate to call me at 757-253-0040.

Sincerely,

AES Consulting Engineers



V. Marc Bennett, P.E.  
Senior Project Manager

VMB:lbb

the Grantor Parcel (the "Easement"), burdening the portion of the Grantor Parcel described as follows, to wit:

That certain area of land lying, situate and being in the County of James City, Virginia, designated and described as: "20' Drainage Easement" as shown and designated on that certain plat entitled "Plat Showing 20' Drainage Easement, From: Longhill Grove, L.P., To: Whitfield Bacon, LLC", dated October 14, 2010, made by AES Consulting Engineers, and attached hereto and made a part hereof (the "Easement Area").

In connection with exercising its rights with respect to the Easement Area pursuant to this Agreement, Grantee shall have the right to reasonable entry onto adjoining portions of the Grantor Parcel.

The Easement is subject to the following conditions and provisions:

A. Prior to commencing work within the Easement Area, Grantee shall provide evidence that it maintains a policy of commercial general liability insurance with a carrier, coverages and deductibles satisfactory to Grantor in its reasonable discretion, accompanied by evidence of payment of the premium therefore.

B. Grantee hereby indemnifies and holds Grantor harmless from and against all claims of any kind or nature whatsoever arising out of or in connection with entry onto the Grantor Parcel pursuant to this Agreement by Grantee, its employees, agents, contractors and/or subcontractors, which indemnification shall extend to Grantor's attorneys fees and costs.

C. Grantee shall not be entitled to commence work within the Easement Area unless and until Grantee has provided evidence to Grantor satisfactory to Grantor in its reasonable discretion that James City County ("County") has approved Grantee's site plan showing the connection to and use of the Basin pursuant to this Agreement. If Grantee has not provided such evidence to Grantor on or before January 1, \_\_\_\_\_, 2013, Grantor may terminate this Agreement by notice to Grantee, in which event the parties shall have no further rights or

obligations hereunder. In such event, if this Agreement has theretofore been recorded in the Clerk's Office of the Circuit Court of the County ("Clerk's Office"), Grantor may record an affidavit making such termination a matter of record.

D. The Facilities constructed by Grantee shall remain the property of Grantee. Grantee may inspect, rebuild, remove, repair, and improve the Facilities from time to time. All construction, maintenance, equipment and Facilities shall comply with all applicable laws, ordinances, codes and regulations.

E. After completion of any activities within the Easement Area or adjoining portions of the Grantor Parcel, Grantee shall restore the affected property to its condition prior to disturbance by Grantee as nearly as practicable. This includes backfilling of trenches, grass, reseeding, landscaping and removal of trash or debris.

F. Grantee may trim, cut and remove trees, shrubbery or other obstructions within the Easement Area which interfere with or threaten the efficient and safe operation, construction and maintenance of the Facilities. All brush, branches, and other debris resulting from any cutting, trimming, or clearing of such Area shall be removed and disposed of by Grantee.

G. Grantor may use the Easement Area for any purpose not inconsistent with the rights hereby granted, provided such use does not interfere with the safe and efficient construction, operation or maintenance of the Facilities. Grantor shall not place any permanent improvements within the Easement Area without Grantee's permission, including, but not limited to, houses, buildings, fences, pools, sheds, or similar structures, which permission shall not be unreasonably withheld, conditioned or delayed and shall be deemed to have been given if not withheld by notice to Grantor given within 15 days after notice is given by Grantor to Grantee seeking such permission.

H. Grantor shall maintain the existing stormwater drainage system on the Grantor Parcel, including the Basin, in good order, condition and repair, ordinary wear and tear excepted. Grantee shall maintain the Facilities in good order, condition and repair, ordinary wear and tear excepted. Actual out-of-pocket expenses incurred by Grantor to maintain the Basin shall be borne 90% by Grantor and 10% by Grantee. Not more frequently than once each calendar quarter, Grantor shall give notice to Grantee setting forth such expenses, accompanied by reasonable documentation thereof. Grantee shall reimburse Grantor for its portion thereof within 10 days after receipt of such notice.

I. The following provisions govern the parties' remedies under to this Agreement:

- a. In the event of a breach or threatened breach by a party or anyone claiming by, through or under a party that is not cured or waived within 30 days following notice thereof (unless such breach cannot reasonably be cured within such period, provided the defaulting party commences such cure within such period and thereafter diligently prosecutes such cure to completion), which notice is accompanied by a statement of the actions necessary to cure such breach, the other party shall be entitled to full and adequate relief by injunction and/or all such other available legal and equitable remedies from the consequences of such breach, including payment of any amounts due and/or specific performance.
- b. Upon the failure of a party to cure a breach within the aforesaid time period, the other party may cure such breach and be reimbursed by the breaching party upon demand for the reasonable costs thereof.
- c. The remedies specified herein shall be cumulative and in addition to all other remedies permitted at law.

- d. If a party institutes any legal action or proceeding for the enforcement of any right or obligation herein contained, the prevailing party shall be entitled to recover its costs and reasonable attorneys' fees incurred in connection with such action or proceeding.
- e. No waiver of any default of any obligation by a party shall be implied from any omission by the other party to take any action with respect to such default.
- f. All amounts due hereunder from any party shall bear interest at the prime rate of Bank of America (its successors or assigns), plus 2% (not to exceed the maximum rate of interest allowed by law, in any) from the due date thereof until payment thereof is made.

J. The liability of a party shall be limited to such party's interest in its Parcel and the buildings and other improvements thereon and the rents, income and profits there from. If at any time a party shall recover a money judgment against the other party, such judgment shall be enforced and satisfied (subject to the rights of any deed of trust holder whose lien predates the entry of such judgment), out of only (i) the proceeds of sale resulting from the execution of such judgment and levy thereon against the defaulting party's interest in its Parcel and the improvements thereon; (ii) rents or other income from such property receivable by the defaulting party; and/or (iii) the consideration received by such defaulting party from the sale of all or any part of such party's interest in its Parcel made after the failure of performance leading to the money judgment. The forgoing provisions are not designed to relieve a party from performance of its obligations under this Agreement, but rather to limit a party's liability in the case of the recovery of a money judgment as above provided. None of the provisions of this paragraph shall be deemed to limit or otherwise affect a party's right to avail itself of any other right or remedy which may be accorded to it by law or by this Agreement as against the other party except as

specifically provided herein.

K. This Agreement contains the complete understanding and agreement of the parties hereto with respect to the subject matter hereof, and all prior representations, negotiations, and understandings are superseded hereby. The parties may amend this Agreement only by a writing signed by them and recorded in the Clerk's Office.

L. Notices or other communication hereunder shall be in writing and shall be sent U.S. first-class, postage paid, certified mail, return receipt requested, or by national overnight courier company, or delivered personally (i) in the event of a party that is a legal entity, at the address of its registered agent and office for service of process as reflected in the records of the State Corporation Commission of the Commonwealth of Virginia; (ii) in the event of a party that is a natural person, at the address to which real estate tax assessment notices and bills are addressed as reflected in the records of the tax assessor's office of the County. Notice shall be deemed given upon receipt, provided failure or refusal to accept delivery shall constitute receipt.

M. The laws of the Commonwealth of Virginia shall govern the interpretation, validity, performance, and enforcement of this Agreement.

N. Upon not less than 20 days' notice from a party, the other party shall execute and deliver a certificate stating that this Agreement is unmodified and in full force and effect or, if modified, that this Agreement is in full force and effect, as modified, stating the modifications, and stating whether or not, based on its actual knowledge, without investigation, either party is in default under this Agreement, and, if any default exists, specifying such default.

O. No rights, privileges or immunities of a party shall inure to the benefit of any third party, nor shall any third party be deemed to be a third party beneficiary of any of the provisions contained herein. This Agreement is not intended and shall not be construed to create any rights

for the benefit of the public with respect to the Grantor Parcel. No implied easements are created by this Agreement.

P. The principle that an agreement should be construed against the party drafting the agreement shall not apply to this Agreement, as all parties hereto have participated equally in the negotiation and drafting of this Agreement.

Q. This Agreement and the Easement granted herein shall run with the land. For purposes of the Easement, the Grantee Parcel will constitute the dominant estate and the Grantor Parcel will constitute the servient estate.

WITNESS the following signatures and seals:

[Signature pages follow.]

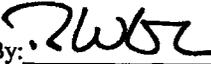
Page 7 of 12

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[Signature page to Deed of Easement and Maintenance  
Cost-Sharing Agreement between Longhill Grove, L.P.  
And Whitfield Bacon, LLC.]

**GRANTOR:**

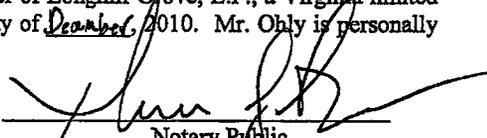
LONGHILL GROVE, L.P., a Virginia  
limited partnership, by Eagle Construction  
of Va., L.L.C., its General Partner

By:  (SEAL)  
Robert W. Ohly, Jr.  
President

COMMONWEALTH OF VIRGINIA

COUNTY OF HENRICO, to wit:

The foregoing Deed of Easement and Maintenance Cost-Sharing Agreement was acknowledged before me by Robert W. Ohly, Jr., President of Eagle Construction of Va., L.L.C., a Virginia limited liability company, General Partner of Longhill Grove, L.P., a Virginia limited partnership, on behalf of the partnership, this 1<sup>st</sup> day of December, 2010. Mr. Ohly is personally known to me.

  
Notary Public

My commission expires: 11/30/11

Notary registration number: 331034



[Signature page to Deed of Easement and Maintenance  
Cost-Sharing Agreement between Longhill Grove, L.P.  
And Whitfield Bacon, LLC.]

**GRANTEE:**

Whitfield Bacon, LLC, a Virginia limited  
liability company

By: [Signature]  
Name:  
Title: Member

COMMONWEALTH OF VIRGINIA

CITY/COUNTY OF James City, to wit:

The foregoing Deed of Easement and Maintenance Cost-Sharing Agreement was  
acknowledged before me by Walt Richardson Member of Whitfield Bacon,  
LLC, a Virginia limited liability company, on behalf of the company, this 22 day of October  
2010. Mr./Ms. Richardson is personally known to me.

[Signature]  
Notary Public

My commission expires: 7/21/2011

Notary registration number: 7123871

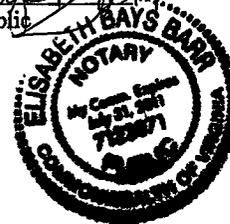


Exhibit A

Grantor Parcel

A parcel of land in Berkley District, James City County, shown as Parcel 2, containing 12.8519 acres and Parcel 3, containing .6507 of an acre, on plat by Deward M. Martin & Associates, Inc., dated June 10, 1975, a copy of which is recorded in the Clerk's Office, Circuit Court, James City County, Virginia in Deed Book 32, page 81, reference to which is made for a more specific description of such parcels of land.

LESS 3.56 acres conveyed from Heritage Builders, Inc. to Second Burton Woods Associates, by deed dated November 1, 1979, recorded November 13, 1979, in Deed Book 199, page 224.

LESS a strip of land conveyed from Heritage Builders, Inc. to Commonwealth of Virginia, by deed dated February 21, 1989, recorded March 6, 1989, in Deed Book 427, page 624.

LESS a strip of land conveyed from Heritage Builders, Inc. to Commonwealth of Virginia, by deed dated May 14, 1993, recorded May 18, 1993, in Deed Book 619, page 406.

LESS those parcels conveyed from Heritage Builders, Inc. to County of James City, Virginia by deed dated March 8, 1995, recorded August 30, 1995, in Deed Book 752, page 224.

LESS a parcel conveyed from Heritage Builders, inc. to County of James City, Virginia, by deed dated September 11, 1995, recorded October 11, 1995, in Deed Book 758, page 406.

Less a parcel conveyed from UCP Limited Partnership, a Virginia limited partnership, to Powhatan Limited Partnership, by Deed of Boundary Line Adjustment dated August 28, 2002, recorded September 25, 2002, as Instrument # 020022073.

Being the same real estate conveyed to UCP, LLC, a Virginia limited liability company, by deed from UCP Limited Partnership, a Virginia limited partnership, dated November 19, 2002 and recorded immediately prior to the recordation of this Deed.

Page 10 of 12

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Exhibit B

Grantee Parcel

Parcel One:

All that certain lot, piece or parcel of land situate, lying and being in James City County, Virginia as shown, designated and set forth as: ANNA LIGURIA, DEED BOOK 382, PG 512, Tax Map (31-3)(1-11), AREA=38,974.832 S.F., 0.895 ACRES ZONED "LB (LIMITED BUSINESS)", on a certain survey entitled "PLAT OF BOUNDARY LINE ADJUSTMENT AND LOT LINE EXTINGUISHMENT BETWEEN THE PROPERTIES OWNED BY: ANNA LIGURIA AND UCP LIMITED PARTNERSHIP, A VIRGINIA LIMITED PARTNERSHIP, POWHATAN DISTRICT, JAMES CITY COUNTY, VIRGINIA", dated September 30, 1998 made by G. T. Wilson, Jr., Certified Land Surveyor, a copy of which is recorded in the Clerk's Office of the Circuit Court of James City County in Plat Book 72, page 26, reference to which is made for a more complete description of the property herein conveyed.

And

Parcel Two:

All that certain lot or parcel of land situate in James City County, Virginia containing 0.253 acres, more or less, which is shown and designated as "AREA 11056.829 S. F. +/-" on a certain plat entitled "PLAT OF BOUNDARY LINE ADJUSTMENT AND LOT LINE EXTINGUISHMENT BETWEEN THE PROPERTIES OWNED BY: ANNA LIGURIA AND UCP LIMITED PARTNERSHIP, A VIRGINIA LIMITED PARTNERSHIP, POWHATAN DISTRICT, JAMES CITY COUNTY, VIRGINIA", dated September 30, 1998 made by AES Consulting Engineers of Williamsburg, Virginia, which plat is recorded in the Clerk's Office of the Circuit Court of James City County in Plat Book 72, at page 26, reference to which is made for a more complete description of the property herein conveyed.

VIRGINIA: CITY OF WILLIAMSBURG & COUNTY OF JAMES CITY  
This document was admitted to record on 26 Jan 2011  
at 12:24 AM/PM. The taxes imposed by Virginia Code  
Section 58.1-801, 58.1-802 & 58.1-814 have been paid.

STATE TAX	LOCAL TAX	ADDITIONAL TAX
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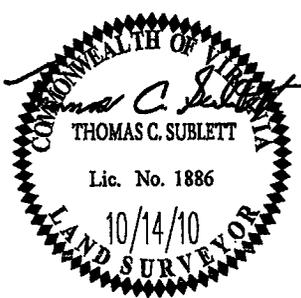
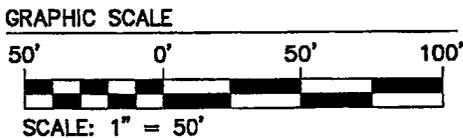
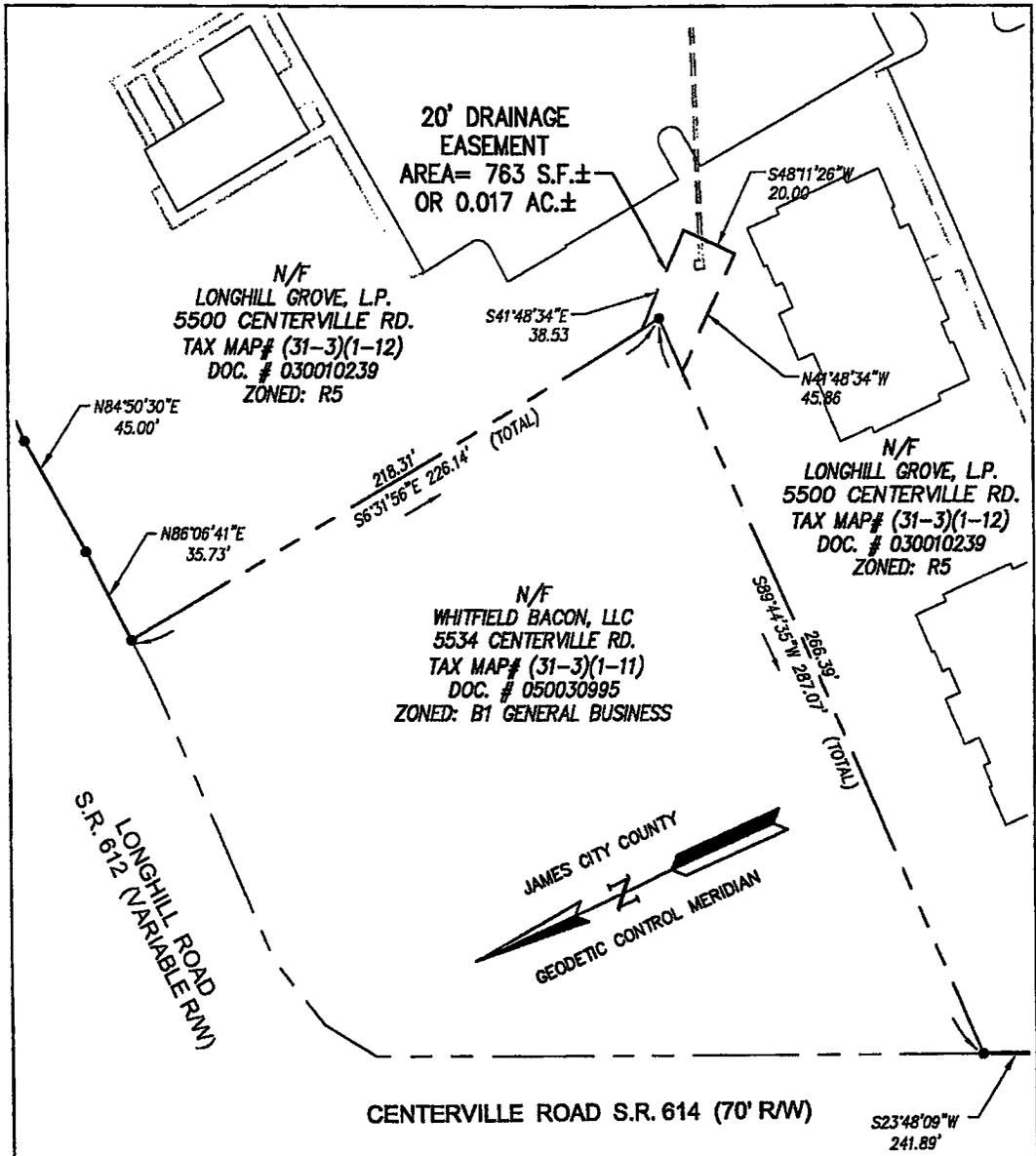
\$ _____	\$ _____	\$ _____
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TESTE: BETSY B. WOOLRIDGE, CLERK

BY: Betsy B. Woolridge Clerk

FLAT ATTACHED

Page 11 of 12



NOTE:  
THIS PROPERTY LIES IN ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER F.I.R.M. # 51095C0110C, DATED 09/28/07.

NOTE:  
THIS PLAT IS INTENDED FOR EASEMENT PURPOSES ONLY. PROPERTY LINES AS SHOWN WERE TAKEN FROM RECORD AND OTHER AVAILABLE INFORMATION AND DOES NOT REPRESENT AN ACTUAL FIELD BOUNDARY SURVEY. THERE MAY BE EASEMENTS AND OTHER COVENANTS OF RECORD OTHER THAN SHOWN WHICH MAY AFFECT THIS PROPERTY. THIS PLAT WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT.

<b>PLAT SHOWING 20' DRAINAGE EASEMENT</b>  <b>FROM: LONGHILL GROVE, L.P.</b>  <b>TO: WHITFIELD BACON, LLC</b>	Project Contacts: TCS/JFS	Scale: 1"=50'
	Project Number: 8419-04	Date: 10/14/10
		814 Moonfield Park Drive Richmond, Virginia 23236-3855 Phone: (804) 330-8040 Fax: (804) 330-8840 <a href="http://www.aesva.com">www.aesva.com</a>
POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA		



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

Project Name: Freedom Market  
 County Plan No. (List any amendments): SP-167-10  
 Stormwater Management Facility Type: Bioretention (1); Grass lined swale (3)  
 BMP Phase #:  I  II  III  
 Information Package Submittal Date: (A) only ~~2/14/12~~ 2/14/12-Incomplete

Completeness Check:  
 Record Drawing Date/By: 2/15/11-Marc Bennett  
 Construction Certification Date/By: \_\_\_\_\_  
 RD/CC Standard Forms (Ensure that all forms for the BMP type are included)  
 Insp/Maint Agreement # / Date: 110006524-3/15/11  
 BMP Maintenance Plan Location: R-07 (in record drawing set)  
 Special Considerations: \_\_\_\_\_

Standard E&SC Notes on Approved Plan Requiring RD/CC or County comment in plan review  
 Location (sheet #): Page C-06

County BMP ID Code #: PC-271

Log into Division's "As-Built Tracking Log"  
 Obtain basic site information (GPIN, Owner, Address, etc.)  
 Log into Access Database (BMP ID #, Plan No., GPIN, Project Name, etc.)  
 Copy from Active Project File (correspondence, H&H, design computations, etc.).  
 Create As-Built File using Project File information (File label, folder, copy plan/details/design information, etc.).

Inspector Review of RD/CC (consult with Chief Engineer prior to completion of comments).  
 Record Drawing Review against Approved Plan prior to Field Inspection.

Final Site Inspection (FI) Performed Date: 11/17/13  
 Record Drawing (RD) Review Date: 2/28/12  
 Construction Certification (CC) Review Date: 11/21/13

Actions:  
 No comments.  
 Comments. Letter Forwarded. Date: 3/20/12  
 Record Drawing (RD)  
 Construction Certification (CC)  
 Construction-Related (CR)  
 Site Issues (SI)  
 Other : \_\_\_\_\_

Resubmittal (# and date): \_\_\_\_\_

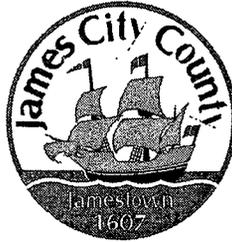
Re-inspection (if necessary): 7/2013

Drainage System Information Acceptable (RD/CC/System Info). Ok for bond release.  
 Complete "Surety Request Form".  
 Final Inspection of active file copying any relevant information to "As-Built" file.  
 On County BMP Inventory (Phase I, II or III).  
 Copy Final Inspection Report into County BMP Inspection Program file.  
 Provide Digital Photographs of BMP and save into County BMP Inventory.  
 Request mylar/reproducible from As-Built plan preparer. CD  
 Complete "As-built Tracking Log".  
 Last check of BMP Access Database (County BMP Inventory).  
 Add BMP to JCC Hydrology & Hydraulic database (optional).  
 Add BMP to Municipal BMP list (if a County-owned facility)  
 Add BMP to PRIDE BMP ratings database.

**Final Sign-Off**

Inspector: Amy Pahr Date: 7/20/13  
 Chief Engineer: [Signature] Date: 11/21/13

\*\*\* See separate checklist, if needed.



Environmental Division

SEP 11 2012

James City County, Virginia  
Environmental Division

RECEIVED

### 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: FREEDOM MARKET  
Structure/BMP Name: BIORETENTION FACILITY  
Project Location: SOUTHEAST CORNER OF THE INTERSECTION OF LONGHILL ROAD WITH CENTERVILLE ROAD  
BMP Location: EXTREME SOUTHEAST CONER OF PROPERTY, BEHIND BUILDING  
County Plan No.: SP - 0067 - 2010

Project Type:  Residential  Business  Office  Tax Map/Parcel No.: (31-3) (1-0-11)  
 Commercial  Office  BMP ID Code (if known): \_\_\_\_\_  
 Institutional  Industrial  Zoning District: B1  
 Public  Roadway  Land Use: COMMERCIAL  
 Other \_\_\_\_\_  Site Area (sf or acres): 1.15 ACRES

Brief Description of Stormwater Management/BMP Facility: BIORETNETION FACILITY WITH STORMWATER MANAGEMENT CAPABILITIES

Nearest Visible Landmark to SWM/BMP Facility: INTERSECTION OF LONGHILL RD. WITH CENTERVILLE RD.

Nearest Vertical Ground Control (if known):  
 JCC Geodetic Ground Control  USGS  Temporary  Arbitrary  Other  
Station Number or Name: 309 (RESET)  
Datum or Reference Elevation: 101.76  
Control Description: JAMES CITY COUNTY CONTROL MONUMENT  
AT SOUTHEAST CORNER OF INTERSECTION OF LONGHILL ROAD WITH CENTERVILLE ROAD

**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: MAY 2011  
Facility Monitored by County Representative during Construction:  Yes  No  Unknown  
Name of Site Work Contractor Who Constructed Facility: PHILIP RICHARDSON, GENERAL CONTRACTOR  
Name of Professional Firm Who Routinely Monitored Construction: AES CONSULTING ENGINEER  
Date of Completion for SWM/BMP Facility: DECEMBER 2011, JULY 2012  
Date of Record Drawing/Construction Certification Submittal: AUGUST 16, 2012

***(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: PHILLIP W. RICHARDSON, WHITFILED BACON, LLC  
Mailing Address: 196 WEST QUEENS DRIVE  
WILLIAMSBURG, VIRGINIA 23185  
Business Phone: 757-565-2806 Fax: \_\_\_\_\_  
Contact Person: WHIT RICHARDSON Title: OWNER

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, VIRGINIA 23188  
Business Phone: 757-253-0040  
Fax: 757-220-8994  
Responsible Plan Preparer: V. MARC BENNETT, P.E.  
Title: SENIOR PROJECT MANAGER  
Plan Name: FREEDOM MARKET  
Firm's Project No. 8419-04  
Plan Date: AUGUST 2010  
Sheet No.'s Applicable to SWM/BMP Facility: R-05 / R-07 / \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

BMP Contractor: *(Note: Site Work Contractor directly responsible for construction of the Stormwater Management / BMP facility.)*  
Name: PHILIP O. RICHARDSON COMPANY, INC., GENERAL CONTRACTOR  
Mailing Address: 142 ALWOODLEY  
WILLIAMSBURG, VIRGINIA 23188  
Business Phone: 757-258-3200  
Fax: \_\_\_\_\_  
Contact Person: PHILIP RICHARDSON  
Site Foreman/Supervisor: RANDY SAWYER  
Specialty Subcontractors & Purpose (for BMP Construction Only):  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Section 4 – Professional Certifications:**

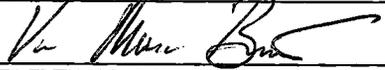
Certifying Professionals: *(Note: A Registered Professional Engineer or Certified Land Surveyor is responsible for preparation of a Record Drawing, sometimes referred to as an As-Built plan, for the drainage system for the project including any Stormwater Management/BMP Facilities. A Registered Professional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

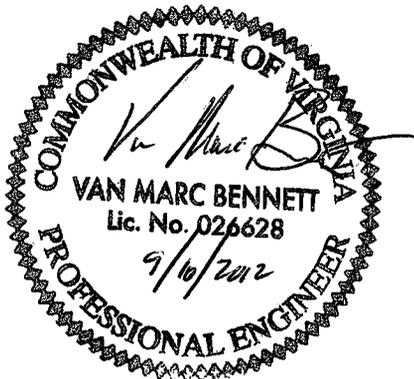
**Record Drawing Certification**

Firm Name: AES CONSULTING ENGINEERS  
Mailing Address: 5248 OLDE TOWNE ROAD  
SUITE 1, WILLIAMSBURG, VIRGINIA 23188  
Business Phone: 757-253-0040  
Fax: 757-220-8994

Name: V. MARC BENNETT, P.E.  
Title: SENIOR PROJECT MANAGER

Signature:   
Date: SEPTEMBER 10, 2012

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.



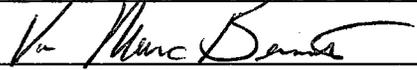
 (Seal)

Virginia Registered Professional Engineer  
Or Certified Land Surveyor

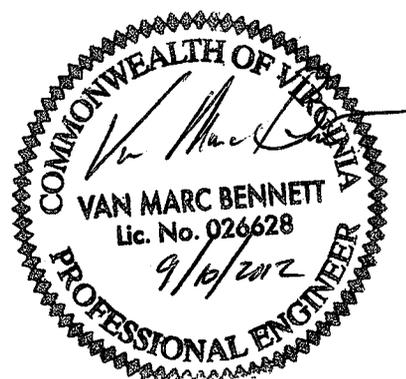
**Construction Certification**

Firm Name: AES CONSULTING ENGINEERS  
Mailing Address: 5248 OLDE TOWNE ROAD,  
SUITE 1  
WILLIAMSBURG, VIRGINIA 23188  
Business Phone: 757-253-0040  
Fax: 757-220-8994

Name: V. MARC BENNETT, P.E.  
Title: SENIOR PROJECT MANAGER

Signature:   
Date: SEPTEMBER 10, 2012

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

## STORMWATER MANAGEMENT / BMP FACILITIES RECORD DRAWING CHECKLIST

(Key for Checklist is as follows: XX Acceptable    N/A Not Applicable    Inc Incomplete)

- I. Methods and Presentation:** *(Required for all Stormwater Management / BMP facilities.)*
- XX 1. All constructed facilities meet approved design plans, unless otherwise shown. Record information or deviations from approved design plan shown in clearly annotated format and/or boxed beside design values.
  - XX 2. Elevations to the nearest 0.1' unless higher accuracy is needed to show positive drainage.
  - XX 3. All plan sheets labeled with "RECORD DRAWING" in large text in lower right hand corner (Approved County Plan Number and BMP ID Code can be included if known).
  - XX 4. All plans sheet revision blocks modified to indicate date and record drawing status.
  - XX 5. All plan sheets have certification statements and certifying professional's signature and seal.
- II. Minimum Standards:** *(Required for all Stormwater Management / BMP facilities, as applicable.)*
- XX 1. All requirements of Section I (Methods and Presentation) apply to this section.
  - XX 2. Plan Views: Show general location, arrangement and dimensions. Location and alignment shall generally match approved design plans.
  - XX 3. Profile or elevations along top or berm of the facility. At a minimum, elevations are required at each end, at intervals not to exceed 50 feet and where low spots may be present. Top of embankment or berm elevations must be no less than design elevation plus any settlement allowances.
  - XX 4. Top widths, berm widths and embankment side slopes.
  - XX 5. Show length, width and depth of facility or grading, contours or spot elevations as required to verify permanent pool and design storage volumes were met or were reasonably close to the approved design. Evaluation of as-built grading, contours, spot elevations, or cross-sections, may be necessary by the professional to ensure approved design configurations, depths and volumes were closely maintained. If grading or elevations are significantly different from the approved plan, the Environmental Division shall be contacted immediately to determine whether the variation is acceptable or whether further evidence will be required. Facilities which do not closely resemble approved plan grades, elevations or configurations may require regrading by the Contractor; check volumetric computations; and/or a check hydraulic routing to ensure approved design water surface elevations, discharges or freeboard were closely maintained.
  - XX 6. Cross-section of the embankment through the principal spillway or outlet barrel. Must extend at least 100 ft. downstream of the pipe outlet or to recorded site property line, whichever is closer. Proper correlation is required between principal spillway (control structure) crest, emergency spillway crest, orifice and weirs and the top of the dam or facility. All elevations and dimensions must reasonably match the design plan or be sequentially relative to each other and the facility must reflect the required design storage volume(s) and/or design depth.
  - XX 7. Profile or elevations along the entire centerline of the emergency spillway. Emergency spillway may be steeper, but no flatter or narrower than design.
  - XX 8. Elevation of the principal spillway crest or outlet crest of the structure.

- XX 9. Primary control structure (riser) diameter or dimensions, height, type of material and base size. Indicate provisions for access that are present such as steps, ladders, etc.
- XX 10. Dimensions, locations and elevations of outlet orifices, weirs, slots and drains.
- XX 11. Type and size of anti-vortex and trash rack device. Height, diameter, dimensions, bar spacings (if applicable) and elevations relative to the principal spillway crest. Indicate if lockable hatch is present or not.
- N/A 12. Type, location, size and number of anti-seep collars or documentation of other methods utilized for seepage control. **May need to obtain this information during construction.**
- N/A 13. Top of impervious core embankment, core trench limits and elevation of cut-off trench bottom. **May need to obtain this information during construction.**
- XX 14. Elevation of the principal spillway barrel (outlet pipe) inlet and outlet invert.
- XX 15. Outlet barrel diameter, length, slope, type and thickness class of material and type of flared end sections, headwall or endwall.
- N/A 16. Outfall protection dimension, type and depth of rock and if underlain filter fabric is present.
- XX 17. BMP interior and periphery landscaping zones conform with arrangements and requirements of the approved design plan.
- XX 18. Maintenance plan taken from approved design plan transposed onto record drawing set.
- N/A 19. Fencing location and type, if applicable to facility.
- XX 20. BMP vicinity properly cleaned of stockpiles and construction debris.
- XX 21. No visual signs of erosion or channel degradation immediately downstream of facility.
- XX 22. Any other information formally requested by the Environmental Division specific to the constructed SWM/BMP facility.

**STORMWATER MANAGEMENT / BMP FACILITIES  
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable    N/A Not Applicable    Inc Incomplete)

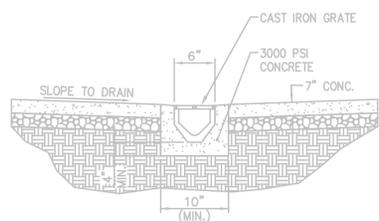
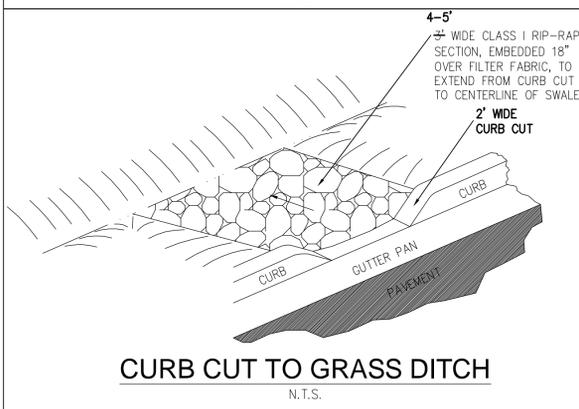
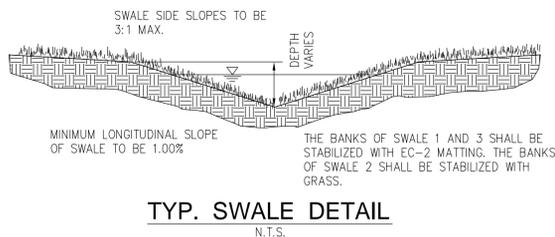
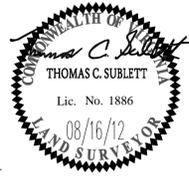
**VI.    Group D – Filtering Systems**    *Includes D-1 Bioretention Cells; D-2 Surface Sand Filters; D-3 Underground Sand Filters; D-4 Perimeter Sand Filters; D-5 Organic Filters; and D-6 Pocket Sand Filters)*

- XX    D1.    All requirements of Section II, Minimum Standards, apply to Group D facilities.
- XX    D2.    Sediment pretreatment devices provided.
- XX    D3.    For D-1 BMPs (Bioretention Cells), pretreatment consisting of a grass filter strip below level spreader (deflector); a gravel diaphragm; and mulch and planting soil layers were provided.
- XX    D4.    For D-1 BMPs (Bioretention Cells), plantings consist of native plant species; vegetation provided was based on zones of hydric tolerances; trees and understory of shrubs and herbaceous materials were provided; woody vegetation is absent from inflow locations; and trees are located around facility perimeter.
- N/A    D5.    Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.
- XX    D6.    No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed.
- XX    D7.    Filtering system is off-line from storm drainage conveyance system.
- XX    D8.    Overflow outlet has adequate erosion protection.
- N/A    D9.    Deflector, diversion, flow splitter or regulator structure provided to divert the water quality volume to the filtering structure.
- XX    D10.    Minimum four (4) inch perforated underdrain provided in a clean aggregate envelope layer beneath the facility.
- XX    D11.    Minimum fifty (50) foot separation from any slope fifteen (15) percent or greater. Minimum one hundred (100) foot separation horizontally from any known water supply well. Minimum one hundred (100) foot separation upslope and twenty-five (25) foot separation downslope from any building.
- XX    D12.    Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility.
- XX    D13.    No visual signs of erosion or channel degradation immediately downstream of facility.
- XX    D14.    Adequate, direct access provided to the pretreatment area and/or filter bed for future maintenance.

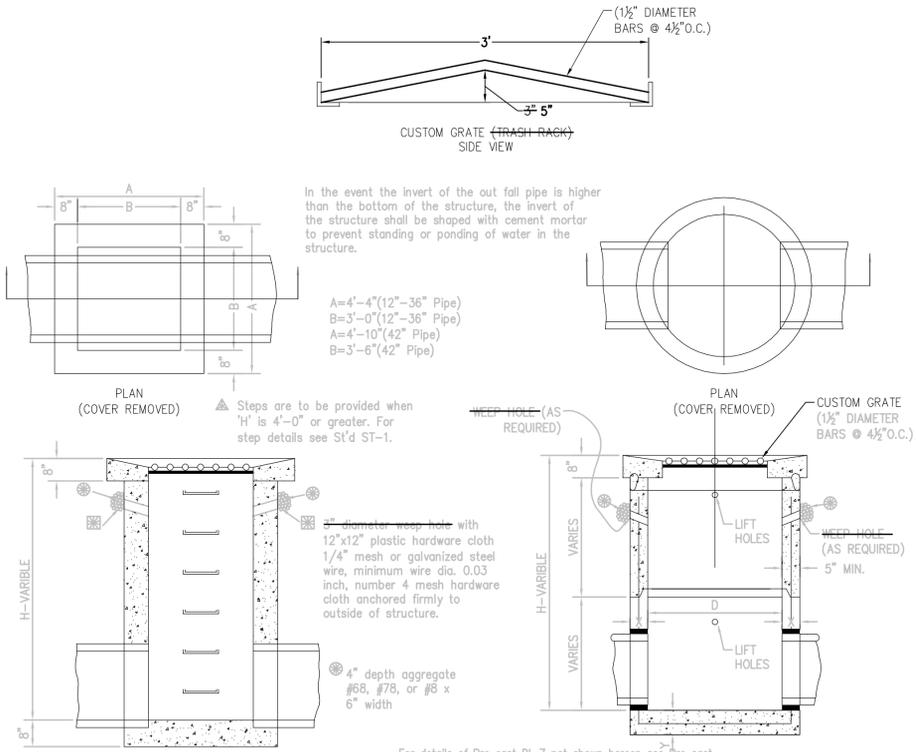
"THE STORM SEWER, DRAINAGE STRUCTURE LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS

THOMAS C. SUBLETT  
DATE

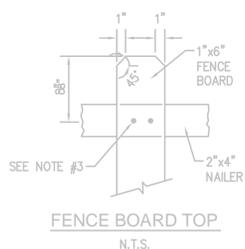
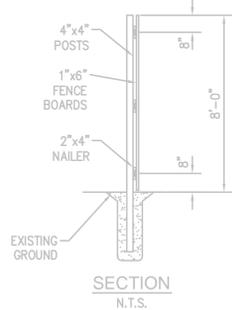
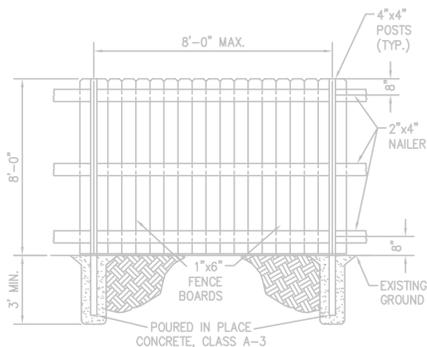
08/16/12  
DATE



NOTE: TRENCH DRAIN SHALL BE 6" WIDE WITH MINIMUM 0.75% INTERNAL SLOPE (ZURN Z-886 OR APPROVED EQUAL)

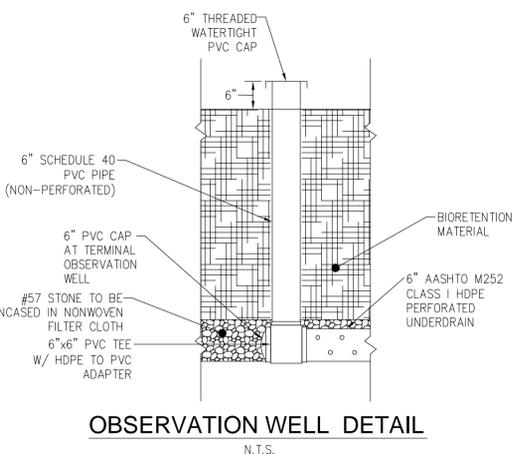


GENERAL NOTES  
When specified on plans the invert is to be shaped in accordance with S'd. IS-1. Increments shown are for inlets without pipes. Pipe displacements must be deducted to obtain true quantities. Paved ditches are to be transitioned to meet inlet gutter as shown in S'd. PG-1. Safety Slabs are to be provided at 8' minimum and 12' maximum vertical intervals and are to be spaced so as not to conflict with openings for pipes as directed by the Engineer.



- NOTES:  
1. ALL WOOD PRODUCTS TO BE PRESSURE TREATED LUMBER, NO. 2 SOUTHERN PINE MEETING AWPA USE CATEGORY UC4C.  
2. USE 16d NAILS TO FASTEN 2"x4" NAILER TO 4"x4" POST. (2 NAILS PER CONTACT POINT, MINIMUM)  
3. USE 6d NAILS TO FASTEN 1"x6" FENCE BOARDS TO NAILER. (2 NAILS PER CONTACT POINT)  
4. ALL FASTENERS SHALL BE HOT DIPPED GALVANIZED OR STAINLESS STEEL.  
5. SCREWS MAY BE SUBSTITUTED FOR NAILS.

**WOOD FENCE DETAIL**  
N.T.S.



**EMBANKMENT CONSTRUCTION NOTES**

- A GEOTECHNICAL SUBSURFACE EXPLORATION AT THE PROPOSED EMBANKMENT SHALL BE PERFORMED TO ENSURE SUITABILITY OF THE SUBGRADE. THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER ARE HEREBY MADE A PART OF THE EMBANKMENT'S CONSTRUCTION SPECIFICATIONS. A REPRESENTATIVE OF THE GEOTECHNICAL CONSULTANT SHALL BE ON SITE DURING CONSTRUCTION TO ENSURE PROPER MATERIALS AND EMBANKMENT CONSTRUCTION METHODS ARE UTILIZED. FOLLOWING EMBANKMENT CONSTRUCTION, THE GEOTECHNICAL CONSULTANT SHALL PROVIDE WRITTEN DOCUMENTATION, SIGNED BY A PROFESSIONAL ENGINEER, THAT THE EMBANKMENT WAS BUILT IN ACCORDANCE WITH THEIR RECOMMENDATIONS, PLANS, AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE EMBANKMENT CONSTRUCTION SCHEDULE WITH THE GEOTECHNICAL CONSULTANT IN ORDER TO ENSURE ON-SITE MONITORING.
- SITE PREPARATION: SUBGRADE PREPARATION SHOULD CONSIST OF REMOVING ALL TOPSOIL AND ANY OTHER SOFT OR UNSUITABLE MATERIAL FROM THE EXPANDED 2-FOOT ENGINEERED FILL LIMITS. A MINIMUM STRIPPING DEPTH OF 6 INCHES CAN BE ASSUMED WITH THE UNDERSTANDING THAT DEEPER STRIPPING MAY BE REQUIRED IN SOME AREAS.
- SUBGRADE INSPECTION AND VERIFICATION: AFTER STRIPPING OF TOPSOIL AND OTHER MATERIALS AND CUTTING/BENCHING TO THE DESIRED GRADE, AND PRIOR TO ENGINEERED FILL PLACEMENT, THE CUT SURFACE SHOULD BE OBSERVED BY AN EXPERIENCED GEOTECHNICAL ENGINEER OR HIS AUTHORIZED REPRESENTATIVE. ANY SOFT OR UNSUITABLE MATERIALS ENCOUNTERED SHOULD BE REMOVED AND REPLACED WITH AN APPROVED BACKFILL COMPACTED TO THE CRITERIA OUTLINED IN THE FOLLOWING PARAGRAPHS. SUITABLE MATERIALS WHICH ARE EXCESSIVELY WET SHOULD BE AERATED, DRIED, AND RE-COMPACTED TO THE SPECIFICATIONS BELOW. THE CONTRACTOR SHOULD BE PREPARED TO MOISTURE CONDITION SOILS WITHIN THE SURFACE LAYER, PARTICULARLY DURING TYPICALLY WET SEASONAL CONDITIONS.
- ENGINEERED FILL COMPACTION: ALL ENGINEERED FILL SHOULD BE MOISTURE CONDITIONED TO WITHIN +/- 3% OF OPTIMUM MOISTURE CONTENT THEN BE COMPACTED TO A DRY DENSITY AT LEAST 80% OF THAT SOIL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D698). LIFTS SHOULD BE A MAXIMUM OF 8 INCHES IN LOOSE THICKNESS. FIELD DENSITY TESTING OF EACH LIFT OF FILL SHOULD BE PERFORMED AT A RATE OF NO LESS THAN ONE TEST PER 2,500 SQUARE FEET, BUT NOT LESS THAN 2 TESTS PER LIFT.
- ENGINEERED FILL MATERIALS: EMBANKMENT FILL: FILL MATERIAL USED FOR EMBANKMENT SHALL BE INORGANIC SOIL MATERIAL CLASSIFIED AS SM, SC, CL, OR CH WHICH CONTAINS AT LEAST 20% BY WEIGHT SILT AND/OR CLAY AND HAS A MAXIMUM LIQUID LIMIT OF 65 AND MAXIMUM PLASTICITY INDEX OF 40. MAXIMUM AGGREGATE SIZE SHOULD BE 4 INCHES. IT IS RECOMMENDED THAT ALL MATERIALS TO BE USED FOR ENGINEERED FILL BE ANALYZED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO THEIR USE ON THE SITE.
- PRINCIPAL SPILLWAY: THE BOTTOM OF THE SPILLWAY RISER FOUNDATION SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER TO ENSURE THAT ALL UNSUITABLE AND LOOSE MATERIALS ARE REMOVED AND THAT ACCEPTABLE BEARING CONDITIONS EXIST IN THE FOUNDATION'S BASE. ALL JOINTS IN THE RISER STRUCTURE SHALL BE WATERIGHT CONSTRUCTION. PERVIOUS MATERIALS SUCH AS SAND, GRAVEL OR CRUSHED STONE SHALL NOT BE USED AS BACKFILL AROUND THE BARREL. FILL MATERIAL SHALL BE PLACED AROUND THE PIPE IN 4 INCH LAYERS AND COMPACTED BY HAND TO THE SAME DENSITY AS THE EMBANKMENT. A MINIMUM OF TWO FEET OF FILL SHALL BE HAND-COMPACTED OVER THE BARREL BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
- VEGETATIVE STABILIZATION: FINALE VEGETATIVE COVER (STABILIZATION) SHALL CONSIST OF TOP SOILS, LIMBS, FERTILIZING, SEEDING, AND MULCHING TO ASSURE A FIRM STAND OF GRASS AS SOON AS PRACTICAL. SEDIMENT BASINS AND OTHER TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED ONLY WHEN STABILIZATION IS COMPLETE. FINAL VEGETAL COVER SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING:  
TOPSOIL: AT LEAST 4" THICKNESS OBTAINED FROM STOCKPILES ON SITE, FREE OF LARGE DEBRIS.  
LIME: 4,000#/ACRE (90#/1,000 S.F.)  
SEED: KENTUCKY 31 TALL FESCUE 250#/ACRE (60#/1,000 S.F.)  
FERTILIZER: 10/10/10 MIX, 1,000#/ACRE FALL (23#/1,000 S.F.)  
MULCH: STRAW OR HAY (LOCALLY OBTAINED), 4,000#/ACRE (90#/1,000 S.F.)

**BIORETENTION FACILITY MAINTENANCE PROGRAM & SCHEDULE**

INSPECT AND REPAIR EROSION	MONTHLY
REMUCLH ANY VOID AREAS	WHENEVER NEEDED
REMOVE PREVIOUS MULCH AND REAPPLY	EVERY 3 YEARS
REMOVAL AND REPLACEMENT OF ALL DISEASED VEGETATION CONSIDERED BEYOND TREATMENT	WHENEVER NEEDED
CHECK FOR ACCUMULATED SEDIMENTS	MONTHLY
INSPECT AND REMOVE ANY DEBRIS THAT MAY COLLECT AT THE DROP INLET AND WITHIN FACILITY	AFTER MAJOR STORM EVENTS/OR SEMI ANNUALLY
ADD FRESH LAYER OF MULCH	EVERY 6 MONTHS (SPRING & FALL)

**SOIL SPECIFICATIONS**

THE BIORETENTION AREAS SHALL CONTAIN A PLANTING SOIL MIXTURE OF 50% SAND, 30% LEAF COMPOST (FULLY COMPOSTED, NOT PARTIALLY ROTTED LEAVES), AND 20% TOPSOIL. TOPSOIL SHALL BE SANDY LOAM OR LOAMY SAND OF UNIFORM COMPOSITION, CONTAINING NO MORE THAN 5% CHLAY, FREE OF STONES, STUMPS, ROOTS, OR SIMILAR OBJECTS GREATER THAN ONE INCH, BRUSH, OR ANY OTHER MATERIAL OR SUBSTANCE WHICH MAY BE HARMFUL TO PLANT GROWTH, OR A HINDRANCE TO PLANT GROWTH OR MAINTENANCE. THE TOPSOIL SHALL BE FREE OF PLANTS OR PLANT PARTS OF BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, MUGWORT, NUTSEDGE, POISON IVY, CANADIAN THISTLE, CATTAIL, OR OTHERS AS SPECIFIED. IT SHALL NOT CONTAIN TOXIC SUBSTANCES HARMFUL TO PLANT GROWTH.

THE TOP SOIL SHALL BE TESTED AND MEET THE MINIMUM CRITERIA SET FORTH IN SECTION 3.11-28 OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK (LATEST EDITION).

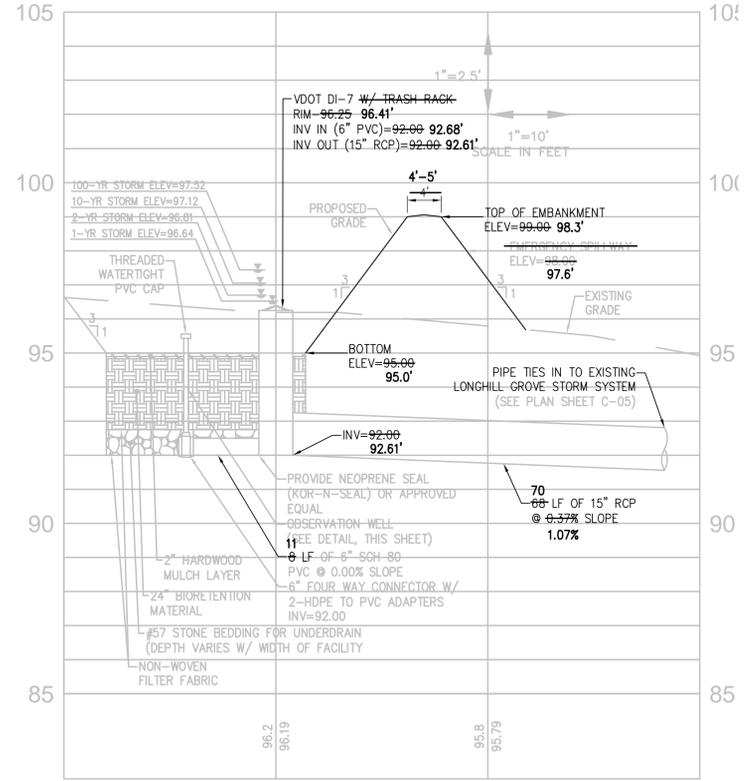
**MULCH**

A SURFACE LAYER OF SHREDDED HARDWOOD BARK SHALL BE PROVIDED ON TOP OF THE PLANTING SOIL. MULCH SHALL BE FREE OF WEED SEEDS, SOIL, ROOTS, OR ANY OTHER SUBSTANCE NOT CONSISTING OF EITHER BOLE OR BRANCH WOOD AND BARK. THE SHREDDED HARDWOOD BARK MULCH SHALL BE UNIFORMLY APPLIED.

STRAW MULCH SHALL NOT BE UTILIZED IN STABILIZATION OF BIORETENTION OR DRY SWALE AREA.

**NOTES**

- WATER PLANT MATERIAL EACH DAY FOR FOURTEEN CONSECUTIVE DAYS AFTER CONSTRUCTION.
- CONTRACTOR SHALL REFER TO COUNTY BMP MANUAL (GROUP D, PGS. 48-50) AND MINIMUM STANDARD 3.11 AND 3.13 OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK FOR METHODS/MATERIAL ASSOCIATED WITH CONSTRUCTION OF THE BIORETENTION CELLS.
- VOOT SHALL BE SAVED HARMLESS FROM THE MAINTENANCE RESPONSIBILITY OR LIABILITY ASSOCIATED WITH ANY FAILURE OF THE STORM WATER MANAGEMENT FACILITY AND ITS STRUCTURES.
- A PROFESSIONAL ENGINEER WHO HAS INSPECTED THE BASIN DURING CONSTRUCTION SHALL CERTIFY THE CONSTRUCTION OF THE BIORETENTION BASIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE BIORETENTION BASIN CONSTRUCTION SCHEDULE WITH THE ENGINEER TO ENSURE ON SITE MONITORING.
- 6" PERFORATED PIPE SHALL BE RIGID SMOOTH WALL PE IN ACCORDANCE WITH ASTM F810 OR 6" SCH40 PVC OR EQUIVALENT APPROVED BY JAMES CITY COUNTY ENVIRONMENTAL DIVISION.
- CORE DRILL AND PROVIDE NEOPRENE SEAL (KOR-N-SEAL) OR EQUAL WHERE PLASTIC PIPE CONNECTS TO STORM STRUCTURE.



**BMP CROSS SECTION**

11/01/12	BMP RECORD DRAWINGS REVISED ALONG LONGHILL ROAD	JFS
4	08/16/12	BMP RECORD DRAWINGS REVISED
3	11/29/11	BMP RECORD DRAWINGS
2	2/29/11	REVISED PER 1007 REVIEW
1	10/20/10	REVISED PER JCC COUNTY COMMENTS BMD
Rev	Date	Description

5248 Old Towne Road, Suite 108  
Phone: (757) 235-0040  
Fax: (757) 235-0884  
www.aesva.com

**AES CONSULTING ENGINEERS**

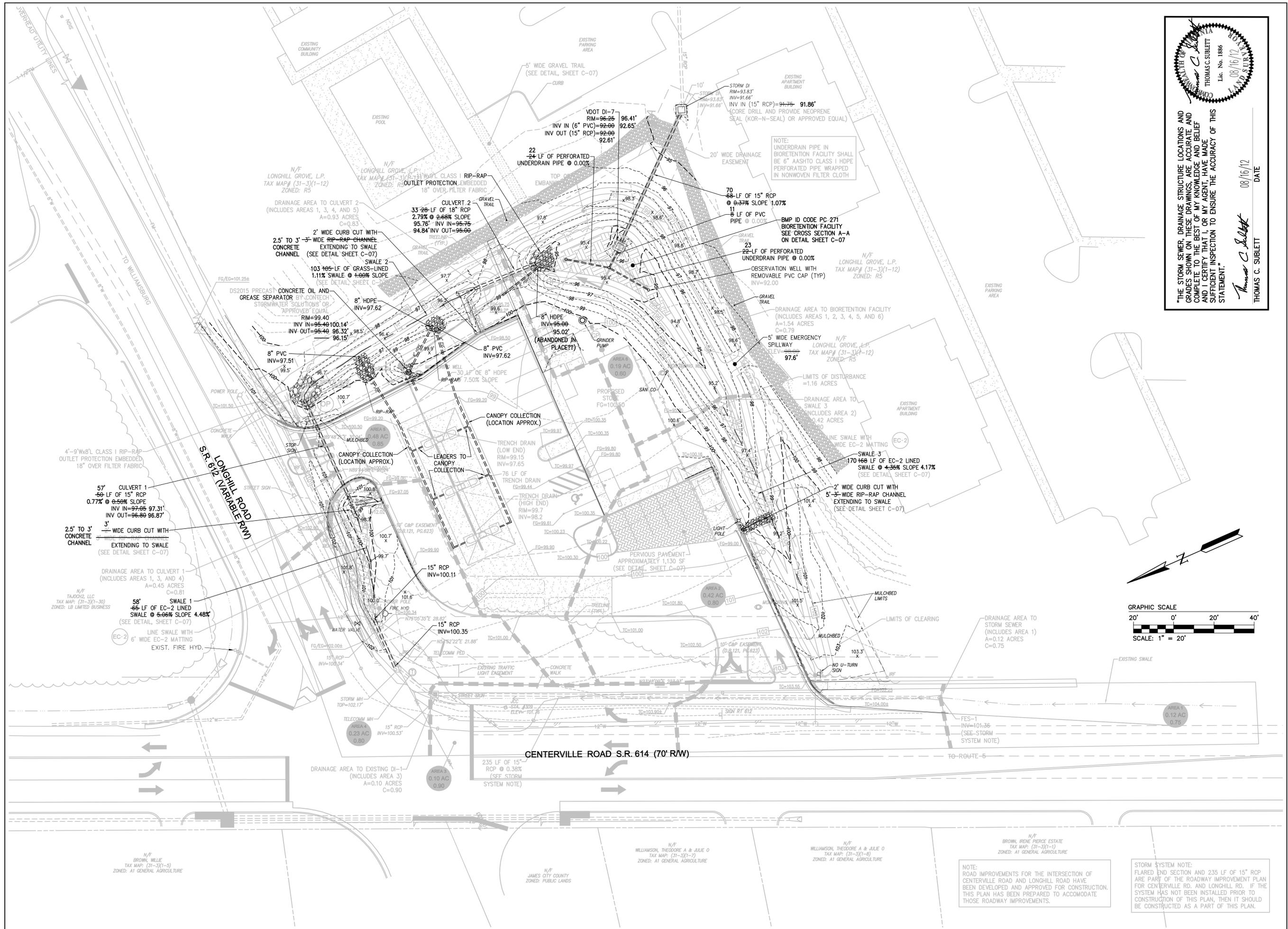
Hempden Roads | Central Virginia | Middle Peninsula

**BMP RECORD DRAWINGS**  
**FREEDOM MARKET**  
5534 CENTERVILLE RD.  
POWhatan District | JAMES CITY COUNTY | VIRGINIA

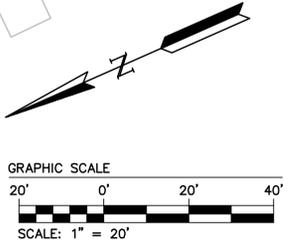
Project Contact: **VMB/TCS**  
Project Number: **8419-04**

Scale: AS NOTED Date: 8/5/10  
Sheet Title: **NOTES & DETAILS**

Sheet Number: **R-07**



THE STORM SEWER, DRAINAGE STRUCTURE LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT.
   
 Thomas C. Sublett
   
 THOMAS C. SUBLETT
   
 DATE 08/16/12



DATE	DESCRIPTION
11/01/12	BMP RECORD DRAWINGS REVISED ALONG LONGHILL ROAD
08/16/12	BMP RECORD DRAWINGS REVISED
11/29/11	BMP RECORD DRAWINGS
2/2/11	REVISED PER LOCAL REVIEW
1/20/11	REVISED PER CO. COUNTY COMMENTS (BMD)
	Drawn by
	Checked by
	Reviewed by

**AES** CONSULTING ENGINEERS  
 5248 Old Town Road, Suite 1108  
 Phone: (757) 253-0040  
 Fax: (757) 253-9884  
 www.aesva.com  
 Hampton Roads | Central Virginia | Middle Peninsula

**BMP RECORD DRAWINGS**  
**FREEDOM MARKET**  
 5534 CENTERVILLE RD.  
 POWHATAN DISTRICT | JAMES CITY COUNTY | VIRGINIA

Project Contacts:	VMB/TCS
Project Number:	8419-04
Scale:	1"=20'
Date:	8/5/10
Sheet Title:	GRADING & DRAINAGE PLAN
Sheet Number:	R-05

NOTE:  
 ROAD IMPROVEMENTS FOR THE INTERSECTION OF CENTERVILLE ROAD AND LONGHILL ROAD HAVE BEEN DEVELOPED AND APPROVED FOR CONSTRUCTION. THIS PLAN HAS BEEN PREPARED TO ACCOMMODATE THOSE ROADWAY IMPROVEMENTS.

STORM SYSTEM NOTE:  
 FLARED END SECTION AND 235 LF OF 15" RCP ARE PART OF THE ROADWAY IMPROVEMENT PLAN FOR CENTERVILLE RD. AND LONGHILL RD. IF THE SYSTEM HAS NOT BEEN INSTALLED PRIOR TO CONSTRUCTION OF THIS PLAN, THEN IT SHOULD BE CONSTRUCTED AS A PART OF THIS PLAN.

SP-0067-2010

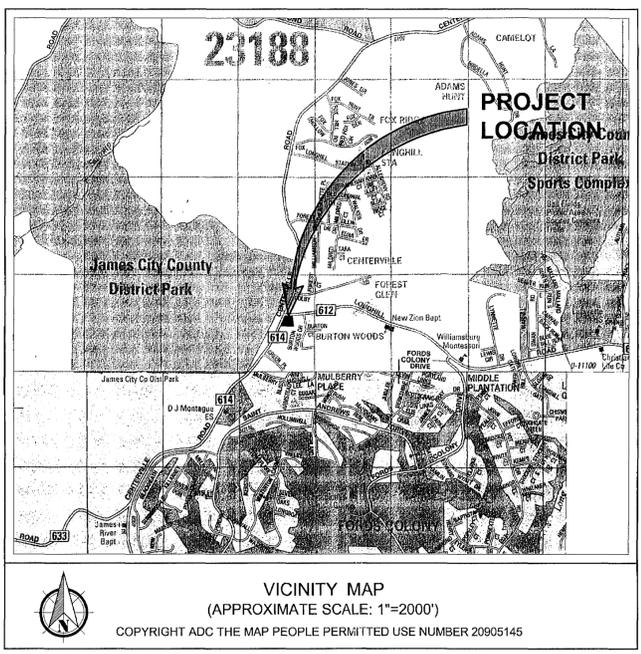
# SITE PLAN FOR FREEDOM MARKET 5534 CENTERVILLE RD.

**GENERAL NOTES:**

DEVELOPER/OWNER: PHILLIP W. RICHARDSON  
WHITFIELD BACON, LLC  
198 WEST QUEENS DRIVE  
WILLIAMSBURG, VA 23185  
PHONE NO.: (757) 565-2806

1. THIS PROJECT IS LOCATED WITHIN SUB-WATERSHED 204, CATCHMENT 204-101-1 OF THE POWHATAN WATERSHED.
2. THIS PROPERTY LIES IN ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 500 YEAR FLOOD PLAIN) PER F.I.R.M. # 51095C01106, DATED 09/28/07.
3. HORIZONTAL DATUM - NAD83 (1986) VIRGINIA STATE PLAIN COORDINATE SYSTEM SOUTH ZONE  
VERTICAL DATUM - NAVD29 VIRGINIA STATE PLAIN COORDINATE SYSTEM SOUTH ZONE.  
JAMES CITY COUNTY MONUMENTS USED - 341, 342
4. CONTOUR INTERVAL IS 1 FOOT.
5. SITE BOUNDARY REPRESENTS A CURRENT BOUNDARY SURVEYED BY AES CONSULTING ENGINEERS.
6. ALL UTILITY AND SURVEY DATA SHOWN ON THE DRAWINGS WITHIN THE PROPERTY LIMITS HAVE BEEN PROVIDED BY AES CONSULTING ENGINEERS. INFORMATION HAS BEEN OBTAINED FROM THE BEST AVAILABLE SOURCES AT THE TIME OF THE SURVEY BUT IS NOT REPRESENTED AS BEING COMPLETE AND ACCURATE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT EXISTING UTILITIES AND UNDERGROUND STRUCTURES. DAMAGE TO EXISTING UTILITIES AND UNDERGROUND STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE DEVELOPER.
7. EXISTING UTILITY LOCATIONS INDICATED ARE APPROXIMATE. FIELD VERIFY PRIOR TO COMMENCING THE WORK.
8. CONTRACTOR SHALL BE REQUIRED TO REGISTER FOR A VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) PERMIT.
9. A LAND DISTURBING PERMIT AND SILTATION AGREEMENT, WITH SURETY ARE REQUIRED FOR THIS PROJECT.
10. CONTACT MISS UTILITY (1-800-552-7001) FOR EXISTING UTILITY LOCATIONS 48 HOURS PRIOR TO COMMENCING THE WORK.
11. ALL PROPOSED UTILITIES SHALL BE PLACED UNDERGROUND AS PER JAMES CITY COUNTY SUBDIVISION ORDINANCE SECTION 24-200.
12. THE CONTRACTOR SHALL SATISFY HIMSELF AS TO ALL SITE CONDITIONS PRIOR TO CONSTRUCTION.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF CONSTRUCTION EFFORTS WITH VIRGINIA NATURAL GAS, DOMINION VIRGINIA POWER, VERIZON TELEPHONE, HAMPTON ROADS SANITATION DISTRICT, APPROPRIATE TELEVISION CABLE COMPANY, AND OTHERS THAT MAY BE REQUIRED.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THE WORK INDICATED.
16. THE CONTRACTOR SHALL REESTABLISH ALL PROPERTY PINS, MONUMENTS, WATER METERS, DRAINAGE CULVERTS, FENCES, UTILITY POLES, DRIVEWAYS, CURBS, GUTTERS, ETC. DISTURBED DURING CONSTRUCTION AT NO ADDITIONAL COST TO THE DEVELOPER/OWNER.
17. THE CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS OF THE VIRGINIA UNDERGROUND UTILITY DAMAGE PREVENTION ACT (SECTION 56-265.14 ET. SEQ. CODE OF VIRGINIA, 1950, AS AMENDED) AND HEREBY AGREES TO HOLD THE DEVELOPER AND THE ENGINEER HARMLESS AGAINST ANY LOSS, DAMAGE, OR CLAIMS OF ANY NATURE WHATSOEVER ARISING OUT OF THE CONTRACTOR'S FAILURE TO COMPLY WITH THE REQUIREMENTS OF SAID ACT.
18. THE CONTRACTOR IS REQUIRED TO COMPLY WITH THE VIRGINIA OVERHEAD HIGH VOLTAGE LINE SAFETY ACT (SECTIONS 59.1-406 THROUGH 59.1-414, CODE OF VIRGINIA, 1950, AS AMENDED). THE CONTRACTOR IS REQUIRED TO VISIT THE SITE AND NOTE THE POSITION OF OVERHEAD CABLES PRIOR TO CONSTRUCTION.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING AND MAINTAINING EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE DRAWINGS AND FOR EXCAVATION STOCKPILES, STAGING AREAS, MOBILIZATION SITES, BEDDING/BACKFILL STOCKPILES AND OTHER LAND DISTURBANCES NOT SPECIFICALLY ADDRESSED IN THE DRAWINGS OR CONTRACT DOCUMENTS. EROSION AND SEDIMENT CONTROL MEASURES SHALL MEET OR EXCEED THE MINIMUM STANDARDS OF THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK" (LATEST PUBLICATION) AND THE REQUIREMENTS OF THE LOCAL GOVERNING AUTHORITY.
20. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS, AND ORDERS OF ANY BODY HAVING JURISDICTION. THE CONTRACTOR SHALL ERECT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR SAFETY AND PROTECTION.
21. THE CONTRACTOR SHALL INSTALL PIPE, FITTINGS, AND VALVES IN DRY TRENCH CONDITIONS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. THE CONTRACTOR SHALL PROVIDE ALL DEWATERING, WELL POINTING, SHEETING, TRENCH BOXES, AND TRENCH STABILIZATION AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.
22. CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO ALL OWNERS AND RESIDENTS OF PROPERTY ADJACENT TO THE PROJECT 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK, UNLESS OTHERWISE DIRECTED BY THE OWNER. CONSTRUCTION WITHIN EASEMENTS OR ON PUBLIC RIGHT-OF-WAY NECESSITATES NOTICE WHETHER ADJACENT TO OR LOCATED ON THE ADJOINING PROPERTY. FAILURE TO PROVIDE THE MINIMUM NOTIFICATION TIME WILL RESULT IN SUSPENSION OF WORK.
23. CULVERT INLET PROTECTION (CIP) MAY BE REMOVED PRIOR TO ACHIEVING STABILIZATION AT THE DISCRETION OF THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION SHOULD PLACEMENT OF THE MEASURE RESULT IN EXCESSIVE FLOODING OR THE REDIRECTION OF DRAINAGE ONTO EXISTING LOTS, DRIVEWAYS, OR PRIMARY ROADWAYS. DECISIONS SHALL BE MADE ON A CASE-BY-CASE BASIS DEPENDING ON THE FIELD SITUATION ENCOUNTERED.
24. ALL DISTURBED AREAS, INCLUDING BUT NOT LIMITED TO PAVEMENT, SHOULDERS, DITCHES, HEADWALLS, ENDWALLS, CULVERT PIPES, CURB AND GUTTER, UTILITIES, DRIVEWAYS, SIGNS, MAILBOXES, ETC., SHALL BE REPAIRED TO A CONDITION EQUAL TO OR BETTER THAN THOSE EXISTING PRIOR TO CONSTRUCTION, OR AS SHOWN ON THE DRAWINGS. SIGNS, MAILBOXES, AND GUARDRAIL THAT ARE DISTURBED SHALL BE RETURNED TO THEIR ORIGINAL LOCATIONS DAILY, AND MAINTAINED THROUGHOUT THE PROJECT.
25. PRIVATELY OWNED UTILITIES SHOWN ON THIS PLAN ARE REGULATED BY THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE AND ENFORCED BY THE CODE COMPLIANCE DIVISION. THESE PRIVATELY OWNED UTILITIES MUST COMPLY FULLY WITH THE INTERNATIONAL PLUMBING CODE, THE NATIONAL FIRE PREVENTION ASSOCIATION STANDARD 24, AND THE INTERNATIONAL FIRE CODE. CONTRACTORS WORKING FROM THIS SITE PLAN ARE CAUTIONED NOT TO INSTALL OR CONCEAL PRIVATELY OWNED SITE UTILITIES WITHOUT OBTAINING PERMITS AND INSPECTIONS.
26. ALL COMPONENTS OF THE WATER DISTRIBUTION AND SANITARY SEWER SYSTEM SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH THE LATEST EDITION OF THE JAMES CITY SERVICE AUTHORITY DESIGN AND ACCEPTANCE CRITERIA FOR WATER DISTRIBUTION AND SANITARY SEWER SYSTEMS, THE HRPDC REGIONAL STANDARDS, AND THE COMMONWEALTH OF VIRGINIA WATERWORKS AND SEWAGE COLLECTION AND TREATMENT REGULATIONS.
27. ALL WATER MAIN PIPE SHALL BE BEDDED IN ACCORDANCE WITH THE FOURTH EDITION OF THE HRPDC REGIONAL CONSTRUCTION STANDARDS DETAIL EW\_01 WITH TYPE III BEDDING OR TYPE IV BEDDING.
28. VERIFY ALL DIMENSIONS AND NOTIFY JAMES CITY SERVICE AUTHORITY PRIOR TO ANY EXCAVATION OR DEMOLITION WITHIN UTILITY CORRIDORS.
29. ALL SANITARY SEWER FACILITIES MUST HAVE A 5 FOOT MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN IT AND ALL OTHER FIXED STRUCTURES, SUCH AS: DROP INLETS, FIRE HYDRANTS, LIGHT POLES, WATERLINE FACILITIES (SHALL BE A MINIMUM OF 10 FEET PER STATE HEALTH DEPARTMENT REGULATIONS). AN ADDITIONAL 5 FEET HORIZONTAL SEPARATION FOR WATER FACILITIES SHALL ALSO BE MAINTAINED FOR CONSISTENCY AMONG THE UTILITIES EXCEPT FOR THE REQUIRED STANDARD HORIZONTAL SEPARATION FROM THE SANITARY SEWER.) AND STORM SEWER PIPES, ETC.
30. ALL NEW SIGNS SHALL BE IN ACCORDANCE WITH ARTICLE II, DIVISION 3 OF THE JAMES CITY COUNTY ZONING ORDINANCE.
31. ANY EXISTING UNUSED WELLS SHALL BE ABANDONED IN ACCORDANCE WITH STATE PRIVATE WELL REGULATIONS AND JAMES CITY COUNTY CODE.
32. THE ABSENCE OF THE DEVELOPER OR THE ENGINEER AT THE JOB SITE DOES NOT, IN ANY WAY, RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO PERFORM THE WORK IN ACCORDANCE WITH THE DRAWINGS, CONTRACT DOCUMENTS, ADDENDA, AND WRITTEN AUTHORIZED PLAN REVISIONS.
33. THE PROFESSIONAL WHOSE SEAL IS AFFIXED HEREON SHALL ACT AS THE "RESPONSIBLE LAND DISTURBER" FOR PURPOSES OF PLAN APPROVAL ONLY. PRIOR TO ISSUANCE OF THE LAND DISTURBING PERMIT, THE CONTRACTOR OR DEVELOPER SHALL PROVIDE THE NAME OF A "RESPONSIBLE LAND DISTURBER" WHO SHALL ASSUME RESPONSIBILITY AS THE "RESPONSIBLE LAND DISTURBER" FOR THE CONSTRUCTION PHASE OF THE PROJECT. THE CONTRACTOR OR DEVELOPER SHALL PROVIDE WRITTEN NOTIFICATION SHOULD THE "RESPONSIBLE LAND DISTURBER" CHANGE DURING CONSTRUCTION.
34. FOR SPECIAL USE PERMIT CONDITIONS REFER TO JCC CASE NO. SUP-0017-2009 APPROVED BY THE BOARD OF SUPERVISORS ON MAY 25, 2010.
35. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING A CERTIFICATE TO CONSTRUCT FROM THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) OFFICE OF WASTEWATER ENGINEERING FOR THIS GRINDER PUMP SYSTEM.
36. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING A CERTIFICATE TO OPERATE FROM THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) OFFICE OF WASTEWATER ENGINEERING FOR THIS GRINDER PUMP SYSTEM.
37. THE STORMWATER MANAGEMENT/BMP FACILITY AS PROPOSED FOR THIS PROJECT WILL REQUIRE SUBMISSION, REVIEW, AND APPROVAL OF A RECORD DRAWING (AS-BUILT) AND CONSTRUCTION CERTIFICATION PRIOR TO RELEASE OF THE POSTED BOND/SURETY. THIS ACTIVITY SHALL BE ADEQUATELY COORDINATED AND PERFORMED BEFORE, DURING AND FOLLOWING CONSTRUCTION IN ACCORDANCE WITH CURRENT COUNTY GUIDELINES.

POWHATAN DISTRICT      JAMES CITY COUNTY      VIRGINIA



COUNTY PROJECT NO.: SP 0067-2010  
ORIGINAL SUBMITTAL DATE: 8/5/10  
APPROVAL DATE:

**INDEX OF SHEETS:**

SHEET NO.	SHEET DESCRIPTION
C-01	COVER SHEET
C-02	ENVIRONMENTAL INVENTORY
C-03	INITIAL EROSION & SEDIMENT CONTROL PLAN
C-04	SITE & UTILITY PLAN
C-05	GRADING & DRAINAGE PLAN
C-06	EROSION & SEDIMENT CONTROL NOTES & DETAILS
C-07	NOTES & DETAILS
C-08	NOTES & DETAILS
C-09	GRINDER PUMP NOTES & DETAILS
C-10	LANDSCAPE PLAN
C-11	LIGHTING PLAN
C-12	LANDSCAPE NOTES & DETAILS
C-13	LIGHTING NOTES & DETAILS

**OWNER/DEVELOPER INFORMATION:**

OWNER: PHILLIP W. RICHARDSON  
WHITFIELD BACON, LLC  
198 WEST QUEENS DRIVE  
WILLIAMSBURG, VA 23185  
PHONE NO.: (757) 565-2806

**CERTIFIED RESPONSIBLE LAND DISTURBER:**

VAN MARC BENNETT, P.E.  
AES CONSULTING ENGINEERS  
5248 OLDE TOWNE ROAD, SUITE 1  
WILLIAMSBURG, VIRGINIA 23188  
TELEPHONE: 757-253-0040

\* FOR SITE PLAN REVIEW PROCESS ONLY. OWNER OR CONTRACTOR SHALL NAME RESPONSIBLE LAND DISTURBER FOR CONSTRUCTION PROCESS.

**SITE DATA:**

SITE ADDRESS:	5534 CENTERVILLE RD. WILLIAMSBURG, VA 23188
TAX MAP PARCEL ID:	(31-3)(1-11)
ZONING:	B1 GENERAL BUSINESS
PROJECT AREA:	1.15 ACRES / 50,032 S.F.
PROPOSED DISTURBED AREA:	1.16 ACRES / 50,466 S.F.
PROPOSED SITE USE:	CONVENIENCE STORE WITH FUEL SALES
PROPOSED BUILDING:	0.06 ACRES / 2,400± S.F. (5.2%)
FLOOR-AREA RATIO:	2,400 S.F./50,032 S.F. = 0.048
PROPOSED BUILDING HEIGHT:	28 FT. (MARKET); 20 FT. (CANOPY)
PROPOSED ASPHALT PAVEMENT:	0.39 ACRES / 16,873 S.F. (33.7%)
PROPOSED CONCRETE:	0.13 ACRES / 6,011 S.F. (11.9%)
PROPOSED PERVIOUS PAVEMENT:	0.02 ACRES / 1,065 S.F. (1.7%)
PROPOSED IMPERVIOUS AREA:	0.60 ACRES / 26,349 S.F. (52.7%)
(BUILDING, CONCRETE, ASPHALT, AND PERVIOUS PAVERS)	
OPEN SPACE AREA:	0.54 ACRES / 23,683 S.F. (47.3%)
WATERSHED INFORMATION:	THIS SITE IS SITUATED WITHIN SUBWATER SHED 204 CATCHMENT 204-101-1 IN POWHATAN WATERSHED.

**PARKING CALCULATIONS:**

REQUIRED PARKING SPACES (1 SPACE/200 S.F. RETAIL) =	12 SPACES
PROVIDED PARKING SPACES =	14 SPACES
HANDICAP SPACES REQUIRED (4% OF TOTAL SPACES PROVIDED) =	1 SPACE
HANDICAP SPACES PROVIDED =	1 SPACE

COUNTY OF JAMES CITY  
FINAL SITE PLAN

APPROVAL:	DATE
Subdiv	10/10/10
Revised	10/10/10
Site	10/10/10
Plan	10/10/10
Notes	10/10/10
Other	10/10/10

RECEIVED  
FEB 2011  
Planning Department

Environmental Division  
APR 07 2011  
RECEIVED

Rev.	Date	Description
1	10/25/10	REVISION PER JCC COUNTY COMMENTS 8/10
2	2/15/11	REVISION PER FOOT REVIEW



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Williamsburg, Virginia 23188  
Tel: (757) 253-0040  
Fax: (757) 253-8981  
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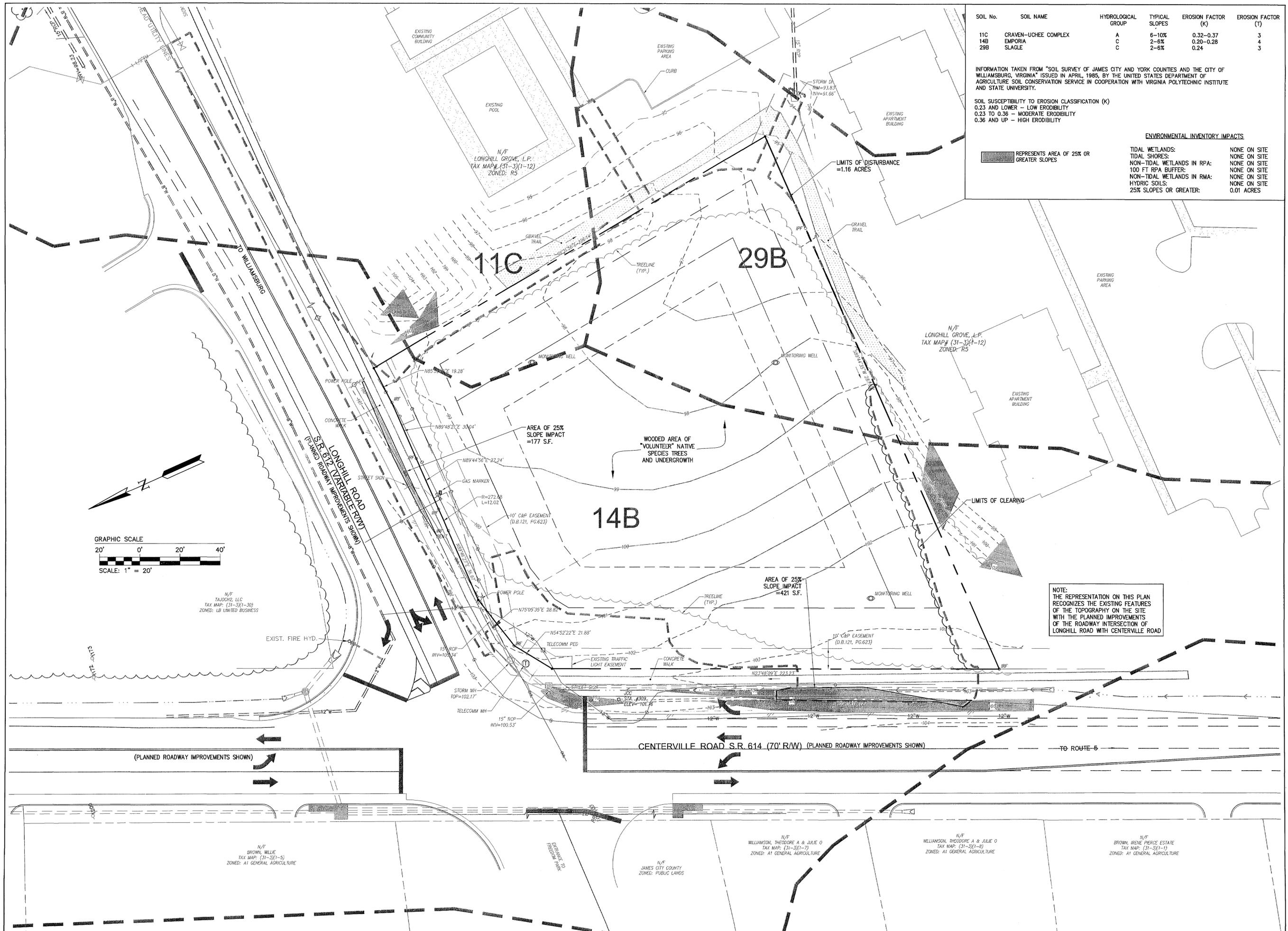
**AES**  
CONSULTING ENGINEERS

Hampton Roads | Central Virginia | Middle Peninsula

**FREEDOM MARKET**  
5534 CENTERVILLE RD.  
POWHATAN DISTRICT - JAMES CITY COUNTY - VIRGINIA

Project Contacts:	VMB
Project Number:	8419-04
Scale:	Date:
AS NOTED	8/5/10
Sheet Title:	
COVER SHEET	
Sheet Number:	
C-01	

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SOIL No.	SOIL NAME	HYDROLOGICAL GROUP	TYPICAL SLOPES	EROSION FACTOR (K)	EROSION FACTOR (T)
11C	GRAVEN-UCHEE COMPLEX	A	6-10%	0.32-0.37	3
14B	EMPORIA	C	2-6%	0.20-0.28	4
29B	SLAGLE	C	2-6%	0.24	3

INFORMATION TAKEN FROM "SOIL SURVEY OF JAMES CITY AND YORK COUNTIES AND THE CITY OF WILLIAMSBURG, VIRGINIA" ISSUED IN APRIL, 1985, BY THE UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE IN COOPERATION WITH VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY.

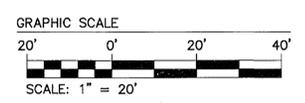
SOIL SUSCEPTIBILITY TO EROSION CLASSIFICATION (K)  
 0.23 AND LOWER - LOW ERODIBILITY  
 0.23 TO 0.36 - MODERATE ERODIBILITY  
 0.36 AND UP - HIGH ERODIBILITY

**ENVIRONMENTAL INVENTORY IMPACTS**

TIDAL WETLANDS:	NONE ON SITE
TIDAL SHORES:	NONE ON SITE
NON-TIDAL WETLANDS IN RPA:	NONE ON SITE
100 FT RPA BUFFER:	NONE ON SITE
NON-TIDAL WETLANDS IN RMA:	NONE ON SITE
HYDRIC SOILS:	NONE ON SITE
25% SLOPES OR GREATER:	0.01 ACRES

REPRESENTS AREA OF 25% OR GREATER SLOPES

Rev	Date	Description
1	1/20/10	REVISED PER FCC COUNTY COMMENTS 8/1/10
2	2/15/11	REVISED PER VDOT REVIEW



NOTE:  
 THE REPRESENTATION ON THIS PLAN  
 RECOGNIZES THE EXISTING FEATURES  
 OF THE TOPOGRAPHY ON THE SITE  
 WITH THE PLANNED IMPROVEMENTS  
 OF THE ROADWAY INTERSECTION OF  
 LONGHILL ROAD WITH CENTERVILLE ROAD

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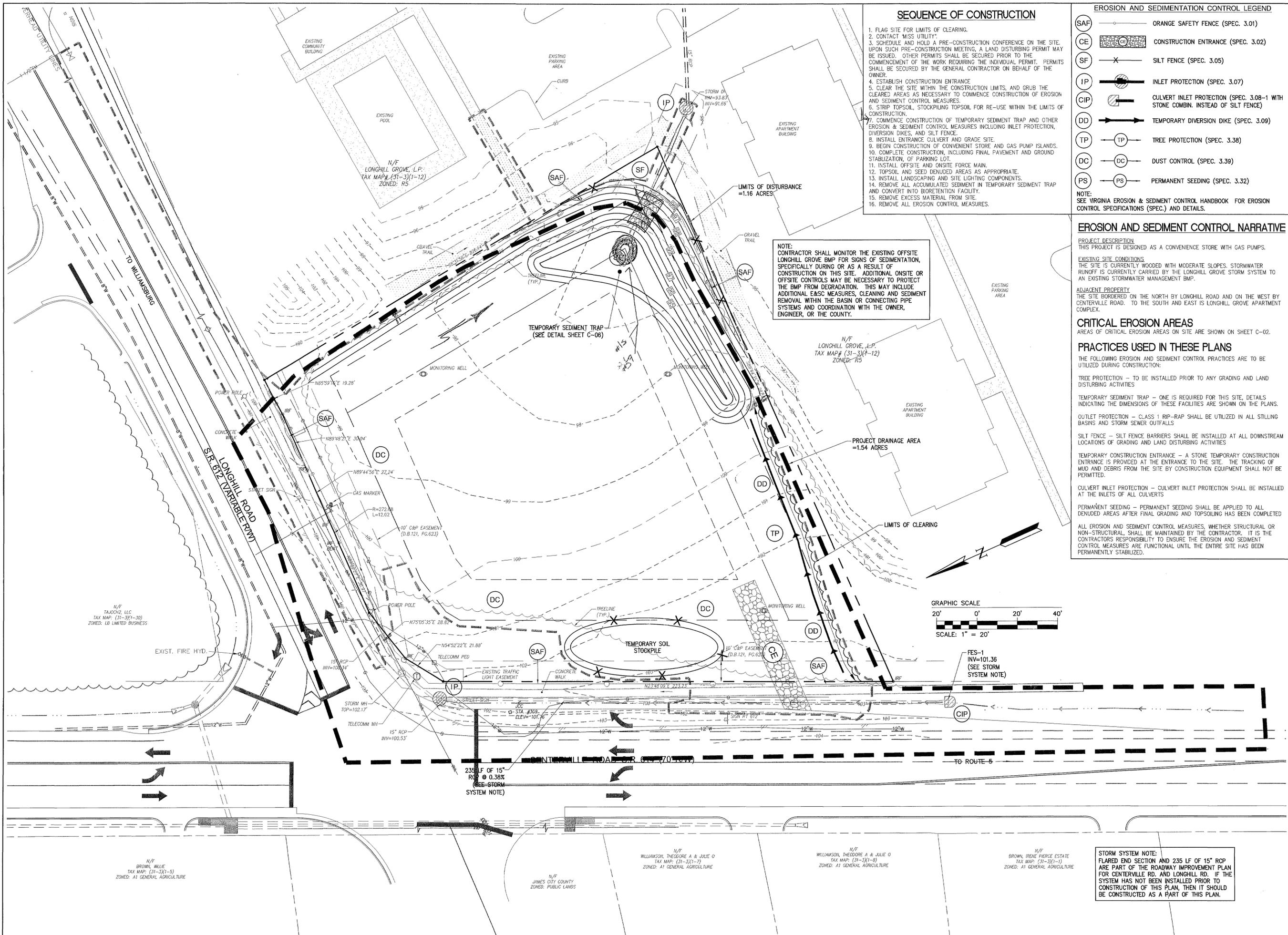
**AVS**  
 CONSULTING ENGINEERS

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**FREEDOM MARKET**  
 5534 CENTERVILLE RD.  
 POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA

Project Contacts: VMB  
 Project Number: 8419-04  
 Scale: 1"=20' Date: 8/5/10  
 Sheet Title: ENVIRONMENTAL INVENTORY  
 Sheet Number: C-02

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**SEQUENCE OF CONSTRUCTION**

1. FLAG SITE FOR LIMITS OF CLEARING.
2. CONTACT "MISS UTILITY".
3. SCHEDULE AND HOLD A PRE-CONSTRUCTION CONFERENCE ON THE SITE. UPON SUCH PRE-CONSTRUCTION MEETING, A LAND DISTURBING PERMIT MAY BE ISSUED. OTHER PERMITS SHALL BE SECURED PRIOR TO THE COMMENCEMENT OF THE WORK REQUIRING THE INDIVIDUAL PERMIT. PERMITS SHALL BE SECURED BY THE GENERAL CONTRACTOR ON BEHALF OF THE OWNER.
4. ESTABLISH CONSTRUCTION ENTRANCE.
5. CLEAR THE SITE WITHIN THE CONSTRUCTION LIMITS, AND GRUB THE CLEARED AREAS AS NECESSARY TO COMMENCE CONSTRUCTION OF EROSION AND SEDIMENT CONTROL MEASURES.
6. STRIP TOPSOIL, STOCKPILING TOPSOIL FOR RE-USE WITHIN THE LIMITS OF CONSTRUCTION.
7. COMMENCE CONSTRUCTION OF TEMPORARY SEDIMENT TRAP AND OTHER EROSION & SEDIMENT CONTROL MEASURES INCLUDING INLET PROTECTION, DIVERSION DIKES, AND SILT FENCE.
8. INSTALL ENTRANCE CULVERT AND GRADE SITE.
9. BEGIN CONSTRUCTION OF CONVENIENT STORE AND GAS PUMP ISLANDS.
10. COMPLETE CONSTRUCTION, INCLUDING FINAL PAVEMENT AND GROUND STABILIZATION, OF PARKING LOT.
11. INSTALL OFFSITE AND ONSITE FORCE MAIN.
12. TOPSOIL AND SEED DENUEDED AREAS AS APPROPRIATE.
13. INSTALL LANDSCAPING AND SITE LIGHTING COMPONENTS.
14. REMOVE ALL ACCUMULATED SEDIMENT IN TEMPORARY SEDIMENT TRAP AND CONVERT INTO BIORETENTION FACILITY.
15. REMOVE EXCESS MATERIAL FROM SITE.
16. REMOVE ALL EROSION CONTROL MEASURES.

**NOTE:**  
CONTRACTOR SHALL MONITOR THE EXISTING OFFSITE LONGHILL GROVE BMP FOR SIGNS OF SEDIMENTATION, SPECIFICALLY DURING OR AS A RESULT OF CONSTRUCTION ON THIS SITE. ADDITIONAL ONSITE OR OFFSITE CONTROLS MAY BE NECESSARY TO PROTECT THE BMP FROM DEGRADATION. THIS MAY INCLUDE ADDITIONAL E&S MEASURES, CLEANING AND SEDIMENT REMOVAL WITHIN THE BASIN OR CONNECTING PIPE SYSTEMS AND COORDINATION WITH THE OWNER, ENGINEER, OR THE COUNTY.

**EROSION AND SEDIMENTATION CONTROL LEGEND**

- (SAF) ——— ORANGE SAFETY FENCE (SPEC. 3.01)
- (CE) [Symbol] CONSTRUCTION ENTRANCE (SPEC. 3.02)
- (SF) — X — SILT FENCE (SPEC. 3.05)
- (IP) [Symbol] INLET PROTECTION (SPEC. 3.07)
- (CIP) [Symbol] CULVERT INLET PROTECTION (SPEC. 3.08-1 WITH STONE COMBIN. INSTEAD OF SILT FENCE)
- (DD) [Symbol] TEMPORARY DIVERSION DIKE (SPEC. 3.09)
- (TP) [Symbol] TREE PROTECTION (SPEC. 3.38)
- (DC) [Symbol] DUST CONTROL (SPEC. 3.39)
- (PS) [Symbol] PERMANENT SEEDING (SPEC. 3.32)

**NOTE:**  
SEE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK FOR EROSION CONTROL SPECIFICATIONS (SPEC.) AND DETAILS.

**EROSION AND SEDIMENT CONTROL NARRATIVE**

**PROJECT DESCRIPTION**  
THIS PROJECT IS DESIGNED AS A CONVENIENCE STORE WITH GAS PUMPS.

**EXISTING SITE CONDITIONS**  
THE SITE IS CURRENTLY WOODED WITH MODERATE SLOPES. STORMWATER RUNOFF IS CURRENTLY CARRIED BY THE LONGHILL GROVE STORM SYSTEM TO AN EXISTING STORMWATER MANAGEMENT BMP.

**ADJACENT PROPERTY**  
THE SITE BORDERED ON THE NORTH BY LONGHILL ROAD AND ON THE WEST BY CENTERVILLE ROAD. TO THE SOUTH AND EAST IS LONGHILL GROVE APARTMENT COMPLEX.

**CRITICAL EROSION AREAS**  
AREAS OF CRITICAL EROSION AREAS ON SITE ARE SHOWN ON SHEET C-02.

**PRACTICES USED IN THESE PLANS**  
THE FOLLOWING EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE UTILIZED DURING CONSTRUCTION:

**TREE PROTECTION** — TO BE INSTALLED PRIOR TO ANY GRADING AND LAND DISTURBING ACTIVITIES

**TEMPORARY SEDIMENT TRAP** — ONE IS REQUIRED FOR THIS SITE, DETAILS INDICATING THE DIMENSIONS OF THESE FACILITIES ARE SHOWN ON THE PLANS.

**OUTLET PROTECTION** — CLASS 1 RIP-RAP SHALL BE UTILIZED IN ALL STILLING BASINS AND STORM SEWER OUTFALLS

**SILT FENCE** — SILT FENCE BARRIERS SHALL BE INSTALLED AT ALL DOWNSTREAM LOCATIONS OF GRADING AND LAND DISTURBING ACTIVITIES

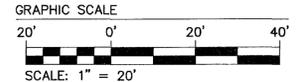
**TEMPORARY CONSTRUCTION ENTRANCE** — A STONE TEMPORARY CONSTRUCTION ENTRANCE IS PROVIDED AT THE ENTRANCE TO THE SITE. THE TRACKING OF MUD AND DEBRIS FROM THE SITE BY CONSTRUCTION EQUIPMENT SHALL NOT BE PERMITTED.

**CULVERT INLET PROTECTION** — CULVERT INLET PROTECTION SHALL BE INSTALLED AT THE INLETS OF ALL CULVERTS

**PERMANENT SEEDING** — PERMANENT SEEDING SHALL BE APPLIED TO ALL DENUEDED AREAS AFTER FINAL GRADING AND TOPSOILING HAS BEEN COMPLETED

ALL EROSION AND SEDIMENT CONTROL MEASURES, WHETHER STRUCTURAL OR NON-STRUCTURAL, SHALL BE MAINTAINED BY THE CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE EROSION AND SEDIMENT CONTROL MEASURES ARE FUNCTIONAL UNTIL THE ENTIRE SITE HAS BEEN PERMANENTLY STABILIZED.

Rev	Date	By	Description
2	2/15/11		REVISED PER ACC COUNTY COMMENTS 8/10
1	10/25/10		



**STORM SYSTEM NOTE:**  
FLARED END SECTION AND 235 LF OF 15\"/>

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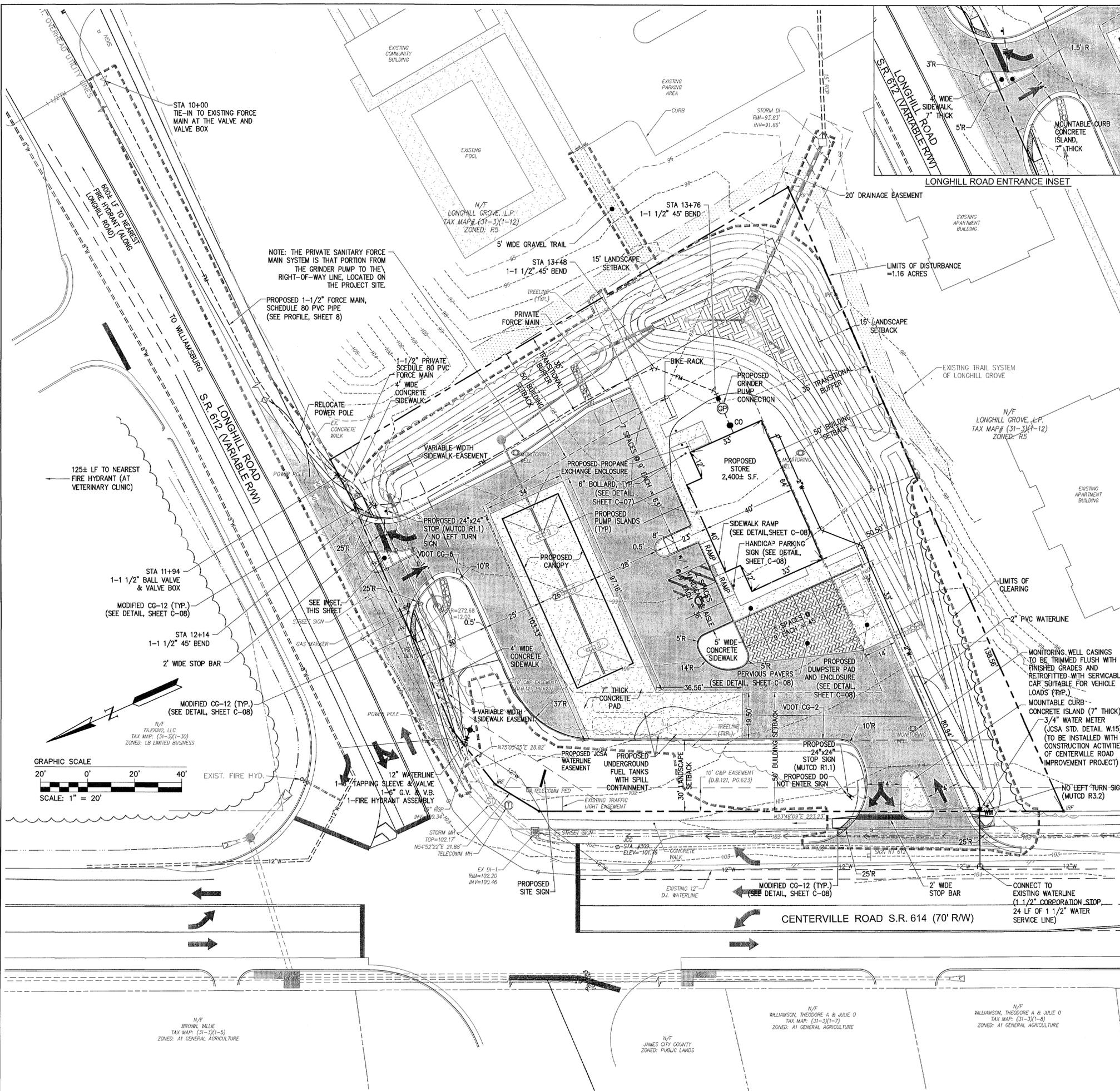
Project Contacts: VMB  
Project Number: 8419-04  
Scale: 1"=20'  
Date: 8/6/10

Sheet Title:  
**INITIAL EROSION & SEDIMENT CONTROL PLAN**

Sheet Number:  
**C-03**

JCSA GENERAL NOTES FOR WATER DISTRIBUTION AND SANITARY SEWER SYSTEMS  
(Revised March 2008)

- A. ALL COMPONENTS OF THE WATER DISTRIBUTION AND SANITARY SEWER SYSTEM SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH THE LATEST EDITION OF THE JCSA DESIGN AND ACCEPTANCE CRITERIA FOR WATER DISTRIBUTION AND SANITARY SEWER SYSTEMS, THE HRPDC REGIONAL CONSTRUCTION STANDARDS (FOURTH EDITION WITH AMENDMENTS DATED OCTOBER 2006), AND THE COMMONWEALTH OF VIRGINIA DEPARTMENT OF HEALTH WATERWORKS AND SANITARY SEWERAGE REGULATIONS. THE CONTRACTOR SHALL USE ONLY NEW MATERIALS, PARTS, AND PRODUCTS ON ALL PROJECTS. ALL MATERIALS SHALL BE STORED SO AS TO ASSURE THE PRESERVATION OF THEIR QUALITY AND FITNESS FOR THE WORK. A COPY OF THE JCSA DESIGN AND ACCEPTANCE CRITERIA AND HRPDC REGIONAL CONSTRUCTION STANDARDS MUST BE KEPT ON-SITE BY THE CONTRACTOR DURING TIME OF INSTALLING, TESTING, AND CONVEYING FACILITIES TO JCSA.
- B. THE CONTRACTOR/DEVELOPER SHALL ACQUIRE A CERTIFICATE TO CONSTRUCT WATER AND SANITARY SEWER FACILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION OF ANY WATER OR SANITARY SEWER FACILITIES.
- C. A PRECONSTRUCTION MEETING SHALL BE HELD BETWEEN JCSA, THE DEVELOPER, THE CONTRACTOR INCLUDING RELEVANT SUBCONTRACTOR(S), AND THE PROJECT ENGINEER PRIOR TO ISSUANCE OF A JCSA CERTIFICATE TO CONSTRUCT. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SCHEDULE THIS MEETING WITH JCSA AND COORDINATE WITH THE OTHER ATTENDEES.
- D. THE DEVELOPER'S REPRESENTATIVE SHALL SUBMIT SHOP DRAWINGS FOR ALL MATERIALS AND RECEIVE JCSA APPROVAL PRIOR TO COMMENCEMENT OF CONSTRUCTION. ALL MATERIALS ORDERED AND INSTALLED PRIOR TO JCSA'S REVIEW AND ACCEPTANCE WILL BE AT THE CONTRACTOR'S/DEVELOPER'S RISK.
- E. PIPE LINES AND SERVICES SHALL BE INSTALLED AFTER GRADING TO WITHIN 6-INCHES OF FINAL GRADE AND PRIOR TO PLACEMENT OF BASE MATERIAL.
- F. ALL WATER MAINS SHALL BE FULLY FLUSHED, PRESSURE TESTED, AND DISINFECTED AND SATISFACTORY BACTERIOLOGICAL SAMPLES OBTAINED, IN ACCORDANCE WITH JCSA DESIGN AND ACCEPTANCE CRITERIA. FLUSHING OF WATER MAINS SHALL BE SCHEDULED WITH THE JCSA INSPECTOR MINIMUM 3 BUSINESS DAYS PRIOR TO THE FLUSHING. CONTRACTOR SHALL PROVIDE THE REQUIRED DURATION AND VOLUME TO THE INSPECTOR. FLUSHING WILL BE SCHEDULED ONLY ON MONDAYS, UNLESS AUTHORIZED OTHERWISE BY JCSA, AND WILL BE ON A FIRST COME-FIRST SERVE BASIS.
- G. ROUTINE PERIODIC INSPECTIONS DURING CONSTRUCTION WILL BE PROVIDED BY JCSA. THESE INSPECTIONS DO NOT RELIEVE THE DEVELOPER/CONTRACTOR/OWNER FROM HIS OBLIGATION AND RESPONSIBILITY FOR CONSTRUCTING A WATER DISTRIBUTION AND SANITARY SEWER SYSTEM IN STRICT ACCORDANCE WITH THE JCSA DESIGN AND ACCEPTANCE CRITERIA.
- H. ANY FIELD MODIFICATIONS OR CHANGES TO THE APPROVED PLANS SHALL BE VERIFIED AND CHECKED BY THE ENGINEER OF RECORD AND APPROVED BY JCSA PRIOR TO ANY FIELD MODIFICATIONS OR CHANGES. ALL APPROVED CHANGES AND FIELD MODIFICATIONS SHALL BE ACCURATELY INDICATED ON THE RECORD DRAWINGS.
- I. ALL LOTS SHALL BE PROVIDED WITH WATER SERVICE AND SANITARY SEWER CONNECTIONS. THE CONNECTIONS SHALL BE EXTENDED FROM THE MAIN TO THE PROPERTY LINE OR EASEMENT LINE, AND SHALL TERMINATE WITH A YOKE IN A METER BOX, OR AT THE CLEAN OUT, SET AT FINAL FINISHED GRADE. METERS FOR ALL LOTS (UNITS) SHALL BE PAID FOR BY THE DEVELOPER OR BUILDER AND INSTALLED BY JCSA.
- J. ANY REQUIRED EASEMENTS, PERMITS AND APPROVALS SHALL BE ACQUIRED BY THE DEVELOPER PRIOR TO COMMENCEMENT OF WATER MAIN AND/OR SANITARY SEWER CONSTRUCTION.
- K. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS AND ORDERS OF ANY PUBLIC BODY HAVING JURISDICTION. THE CONTRACTOR SHALL ERCT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR SAFETY AND PROTECTION. THE CONTRACTOR SHALL ALSO NOTIFY "MISS UTILITY" AT 1-800-552-7001 OR 811 PRIOR TO PERFORMING ANY UNDERGROUND EXCAVATION.
- L. WATER METER BOX INSTALLATION SHALL MAINTAIN A MINIMUM 18-INCH HORIZONTAL EDGE-TO-EDGE CLEARANCE FROM DRIVEWAYS AND/OR DRIVE PATHS, SIDEWALKS, BIKE PATHS, CURBING AND ADJACENT WATER METER BOXES.
- M. ONLY JCSA PERSONNEL ARE AUTHORIZED TO OPERATE VALVES ON EXISTING JCSA WATER MAINS AND SANITARY FORCE MAINS. ONCE A SYSTEM HAS BEEN HYDRAULICALLY ENERGIZED, JCSA WILL BE RESPONSIBLE FOR OPERATING THE VALVES. THE CONTRACTOR SHALL CONTACT JCSA OPERATIONS AT 757-229-7421 IF THERE IS AN EMERGENCY OR NEED TO OPEN/CLOSE A VALVE.
- N. ANY EXISTING UNUSED WELL(S) SHALL BE ABANDONED IN ACCORDANCE WITH STATE PRIVATE WELL REGULATIONS AND JAMES CITY COUNTY CODE.
- O. BEDDING OF JCSA UTILITIES SHALL BE IN ACCORDANCE WITH HRPDC DETAIL EW-01.
- P. NO TREES, SHRUBS, STRUCTURES, FENCES, IRRIGATION MAINS, INVISIBLE PET FENCES OR OTHER OBSTACLES SHALL BE PLACED WITHIN AN EASEMENT WHICH WOULD RENDER THE EASEMENT INACCESSIBLE BY EQUIPMENT. SHRUBS SHALL BE A MINIMUM OF 5 FEET, AND TREES A MINIMUM OF 10 FEET, FROM THE CENTER OF WATER AND SANITARY SEWER PIPELINES.
- Q. JOINT RESTRAINT SHALL BE PROVIDED IN ACCORDANCE WITH MINIMUM REQUIREMENTS OF JCSA DETAIL JR-1, UNLESS SHOWN OTHERWISE ON THE PLANS. ALL PRESSURE PIPELINES SHALL HAVE JOINT RESTRAINT. FIRE HYDRANTS SHALL BE RESTRAINED AT LEAST ONE FULL JOINT OF PIPE IN EACH DIRECTION ON THE MAINLINE.
- R. PROPOSED WATER AND SANITARY SEWER SYSTEMS SHALL MAINTAIN A MINIMUM HORIZONTAL SEPARATION OF 5- FEET FROM OTHER UTILITIES AND STRUCTURES, INCLUDING BUT NOT LIMITED TO STORM SEWERS, STREET LIGHTS, ETC. WATER AND SANITARY SEWER FACILITIES SHALL HAVE A MINIMUM 10-FOOT HORIZONTAL EDGE-TO-EDGE SEPARATION.
- S. ANY PROPOSED BACKFLOW PREVENTION DEVICE AND/OR GREASE TRAP MUST BE INSPECTED BY THE JCSA UTILITY SPECIAL PROJECTS COORDINATOR AT (757) 259-4138.
- T. THE CONTRACTOR/DEVELOPER SHALL ACQUIRE A CERTIFICATE TO CONSTRUCT WATER AND SANITARY SEWER FACILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION OF ANY WATER OR SANITARY SEWER FACILITIES. PLUMBING INSIDE OF PROPOSED BUILDINGS MUST BE INSPECTED BY JCSA'S UTILITY SPECIAL PROJECTS COORDINATOR AT (757) 259-4138, FOR POTENTIAL CROSS CONNECTIONS. ANY CROSS CONNECTIONS MUST BE PROTECTED BY THE APPROPRIATE BACKFLOW PREVENTION DEVICE(S).
- U. EASEMENTS DENOTED AS "JCSA UTILITY EASEMENTS" ARE FOR THE EXCLUSIVE USE OF THE JAMES CITY SERVICE AUTHORITY AND THE PROPERTY OWNER. OTHER UTILITY SERVICE PROVIDERS DESIRING TO USE THESE EASEMENTS WITH THE EXCEPTION OF PERPENDICULAR UTILITY CROSSINGS MUST OBTAIN AUTHORIZATION FOR ACCESS AND USE FROM JCSA AND THE PROPERTY OWNER. ADDITIONALLY, JCSA SHALL NOT BE HELD RESPONSIBLE FOR ANY DAMAGE TO IMPROVEMENTS WITHIN THIS EASEMENT, FROM ANY CAUSE.
- V. JCSA SHALL NOT BE HELD RESPONSIBLE FOR ANY PAVEMENT SETTLEMENT DUE TO PIPE BEDDING, BACKFILLING, BACKFILL MATERIALS OR COMPACTION FOR WATER OR SANITARY SEWER FACILITIES FOR THIS PROJECT.
- W. FIRE HYDRANTS TO BE INSTALLED WITHIN EXISTING OR PROPOSED VDOT RIGHT-OF-WAYS SHALL BE LOCATED IN ACCORDANCE WITH VDOT REQUIREMENTS.
- X. PRIVATELY OWNED UTILITIES, (E.G., WATER AND SEWER LINES AND PRIVATE FIRE SERVICE MAINS), SHOWN ON THIS PLAN ARE REGULATED BY THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE, AND ENFORCED BY THE JAMES CITY COUNTY CODES COMPLIANCE DIVISION. THESE PRIVATELY OWNED UTILITIES MUST COMPLY FULLY WITH THE INTERNATIONAL PLUMBING CODE, THE NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 24, AND THE VIRGINIA STATEWIDE FIRE PREVENTION CODE. CONTRACTORS WORKING FROM THIS SITE PLAN ARE CAUTIONED NOT TO INSTALL OR CONCEAL PRIVATELY OWNED SITE UTILITIES WITHOUT FIRST OBTAINING THE REQUIRED PERMITS AND INSPECTIONS.
- Y. SANITARY SEWER LATERALS SHALL NOT CONNECT TO THE MAINLINE WITHIN 5- FEET OF A MANHOLE. LATERALS UPSTREAM AND WITHIN 5- FEET OF THE MANHOLE SHALL CONNECT DIRECTLY INTO THE MANHOLE WHERE NECESSARY.



Rev.	Date	By	Description
1	02/28/10	Rev.	REVISED PER JCSA COMMENTS 08/10
2	2/15/11	Rev.	REVISED PER VDOT REVIEW



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 5534 CENTERVILLE RD.  
 POWHATAN DISTRICT | JAMES CITY COUNTY | VIRGINIA

Project Contacts: VMB  
 Project Number: 8419-04  
 Scale: 1"=20' Date: 8/5/10  
 Sheet Title: SITE & UTILITY PLAN  
 Sheet Number: C-04

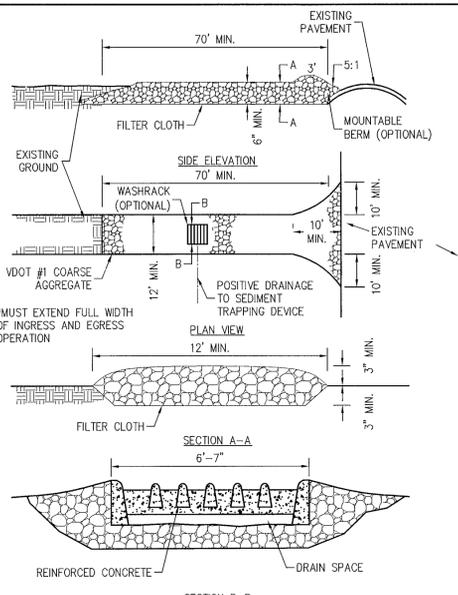
I HEREBY CERTIFY THAT THE DESIGN OF THE SANITARY SEWER SYSTEM, INCLUDING PUMP STATION, COLLECTION SYSTEM, AND FORCE MAIN ADHERE TO THE GENERAL CRITERIA AND MINIMUM DESIGN STANDARDS OF THE SEWAGE COLLECTION AND TREATMENT REGULATIONS (9 VAC-25-790)

*Van Marc Bennett*  
 VAN MARC BENNETT, P.E. VA. LIC. NO. 026628

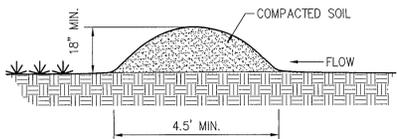
**JAMES CITY COUNTY ENVIRONMENTAL DIVISION  
STANDARD EROSION AND SEDIMENT CONTROL NOTES  
REVISED OCTOBER 1, 2009**

THE FOLLOWING STANDARD EROSION AND SEDIMENT CONTROL (E&SC) NOTES SHALL BECOME PART OF APPROVED EROSION AND SEDIMENT CONTROL PLANS FOR ALL PLAN OF DEVELOPMENT PROJECTS IN JAMES CITY COUNTY, VIRGINIA.

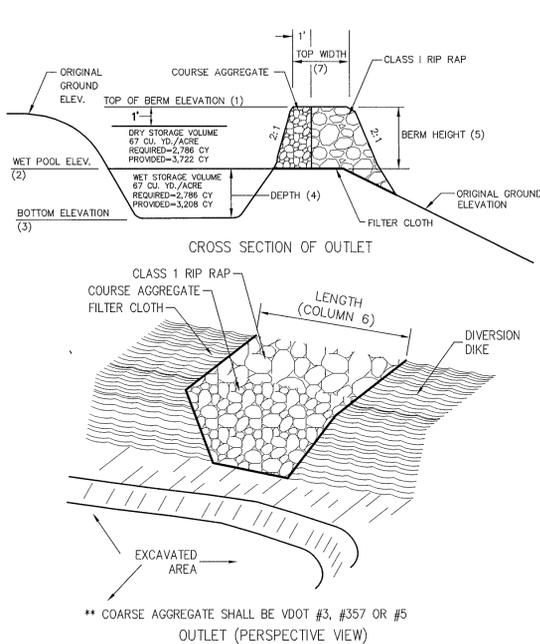
- ALL THE PROVISIONS OF VIRGINIA EROSION AND SEDIMENT CONTROL LAW AND REGULATIONS, MINIMUM STANDARDS, HANDBOOKS, AND TECHNICAL BULLETINS AS PUBLISHED BY THE VIRGINIA SOIL & WATER CONSERVATION BOARD AND/OR THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION, DIVISION OF SOIL & WATER CONSERVATION SHALL APPLY TO THE PROJECT.
- MINIMUM STANDARDS # 1 THROUGH # 19 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS (4VAC50-30-40) SHALL APPLY TO THE PROJECT.
- THE OWNER OR APPLICANT SHALL BE RESPONSIBLE TO REGISTER FOR COVERAGE UNDER THE GENERAL PERMIT FOR DISCHARGE OF STORMWATER FROM CONSTRUCTION ACTIVITIES, IN ACCORDANCE WITH CURRENT REQUIREMENTS OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSWMP) AND THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION.
- THE OWNER OR APPLICANT SHALL PROVIDE THE NAME OF AN INDIVIDUAL HOLDING A VALID RESPONSIBLE LAND DISTURBER (RLD) CERTIFICATE OF COMPETENCY WHO WILL BE RESPONSIBLE FOR THE LAND-DISTURBING ACTIVITY PRIOR TO ENGAGING IN THE LAND-DISTURBING ACTIVITY. THIS WILL BE NECESSARY PRIOR TO ISSUANCE OF A LAND-DISTURBING PERMIT FOR THE PROJECT. THE RLD IS REQUIRED TO ATTEND THE PRECONSTRUCTION CONFERENCE FOR THE PROJECT.
- THE CONTRACTOR IS RESPONSIBLE TO CONTACT MISS UTILITY (DIAL 811 IN VA OR 1-800-552-7001) PRIOR TO ANY UTILITY OR SITE WORK EXCAVATIONS.
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PLANNED, DESIGNED, IMPLEMENTED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE PROVISIONS OF THE LATEST EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH). THE CONTRACTOR SHALL MAINTAIN, INSPECT AND REPAIR ALL EROSION AND SEDIMENT CONTROL MEASURES AS NEEDED THROUGHOUT THE LIFE OF THE PROJECT TO ENSURE CONTINUED ACCEPTABLE PERFORMANCE.
- A PRECONSTRUCTION CONFERENCE (MEETING) SHALL BE HELD ON SITE BETWEEN THE COUNTY ENVIRONMENTAL DIVISION, THE OWNER-APPLICANT, THE RESPONSIBLE LAND-DISTURBER (RLD), THE CONTRACTOR AND OTHER RESPONSIBLE AGENCIES, AS APPLICABLE, PRIOR TO ISSUANCE OF A LAND-DISTURBING PERMIT. THE OWNER OR APPLICANT IS REQUIRED TO COORDINATE SCHEDULING OF THE PRECONSTRUCTION CONFERENCE BETWEEN ALL APPLICABLE PARTIES. THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF CONSTRUCTION TO THE COUNTY ENVIRONMENTAL DIVISION FOR REVIEW AND APPROVAL PRIOR TO THE PRECONSTRUCTION MEETING.
- ALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
- ADDITIONAL SAFETY FENCE OR DUST CONTROL MEASURES, IN ACCORDANCE WITH THE PROVISIONS OF MINIMUM STANDARDS & SPECS. 3.01 AND 3.39 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH), MAY BE REQUIRED TO BE IMPLEMENTED IN ADDITION TO THAT SHOWN ON THE APPROVED PLAN IN ORDER TO ENSURE ADEQUATE PROTECTION OF THE HEALTH, SAFETY AND WELFARE OF THE PUBLIC OR IF SITE CONDITIONS CHANGE, BECOME APPARENT OR ALTER SIGNIFICANTLY FOLLOWING THE DATE OF PLAN APPROVAL.
- EROSION AND SEDIMENT CONTROL MEASURES REQUIRE MINOR FIELD ADJUSTMENTS AT OR FOLLOWING TIME OF CONSTRUCTION TO ENSURE THEIR INTENDED PURPOSE IS ACCOMPLISHED, TO ENSURE ADEQUATE PROTECTION OF THE HEALTH, SAFETY AND WELFARE OF THE PUBLIC, OR IF SITE CONDITIONS CHANGE, BECOME APPARENT OR ALTER SIGNIFICANTLY FOLLOWING THE DATE OF PLAN APPROVAL. COUNTY ENVIRONMENTAL DIVISION APPROVAL SHALL BE REQUIRED FOR ANY DEVIATION OF EROSION AND SEDIMENT CONTROL MEASURES FROM THE APPROVED PLAN.
- OFF-SITE WASTE OR BORROW AREAS SHALL BE APPROVED BY THE COUNTY ENVIRONMENTAL DIVISION PRIOR TO THE IMPORT OF ANY BORROW OR EXPORT OF ANY WASTE TO OR FROM THE PROJECT SITE.
- CULVERT AND STORM DRAIN INLET PROTECTIONS, IN ACCORDANCE WITH THE PROVISIONS OF MINIMUM STANDARDS & SPECS. 3.07 & 3.08 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH), MAY BE REMOVED AT THE DISCRETION OF THE ASSIGNED COUNTY ENVIRONMENTAL DIVISION INSPECTOR SHOULD PLACEMENT OF THE MEASURE RESULT IN EXCESSIVE ROAD FLOODING OR TRAFFIC HAZARD OR RESULT IN THE REDIRECTION OF DRAINAGE ONTO OR TOWARD EXISTING LOTS, DRIVEWAYS OR STRUCTURES. DECISIONS SHALL BE MADE ON A CASE-BY-CASE BASIS BASED ON FIELD SITUATIONS ENCOUNTERED.
- DRAINAGE FACILITIES SHALL BE INSTALLED AND FUNCTIONAL WITHIN 30 DAYS FOLLOWING COMPLETION OF ROUGH GRADING AT ANY POINT WITHIN THE PROJECT.
- NO MORE THAN 300 FEET OF TRENCH MAY BE OPEN AT ONE TIME FOR UNDERGROUND UTILITY LINES, INCLUDING STORM WATER CONVEYANCES. ALL OTHER PROVISIONS OF MINIMUM STANDARD # 16 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS APPLY.
- IF DISTURBED AREA STABILIZATION IS TO BE ACCOMPLISHED DURING THE MONTHS OF DECEMBER, JANUARY OR FEBRUARY, STABILIZATION SHALL CONSIST OF MULCHING IN ACCORDANCE WITH MINIMUM STANDARD & SPEC. 3.35 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH). SEEDING WILL THEN TAKE PLACE AS SOON AS THE SEASON PERMITS.
- THE TERM SEEDING, FINAL VEGETATIVE COVER OR STABILIZATION ON THE APPROVED PLAN SHALL MEAN THE SUCCESSFUL GERMINATION AND ESTABLISHMENT OF A STABLE GRASS COVER FROM A PROPERLY PREPARED SEEDBED, IN ACCORDANCE WITH MINIMUM STANDARDS & SPECS. 3.29 THROUGH 3.37 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH), AS APPLICABLE. IRRIGATION, IF NECESSARY, SHALL COMPLY WITH ALL APPLICABLE OUTDOOR WATER USE RESTRICTIONS OF THE JAMES CITY SERVICE AUTHORITY.
- TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL NOT BE REMOVED UNTIL ALL DISTURBED AREAS ARE STABILIZED. REMOVAL SHALL NOT OCCUR WITHOUT AUTHORIZATION BY THE COUNTY ENVIRONMENTAL DIVISION. DISTURBANCES ASSOCIATED WITH THE REMOVAL OF TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PROPERLY STABILIZED.
- NO SEDIMENT TRAP OR SEDIMENT BASIN SHALL BE REMOVED UNTIL A) AT LEAST 75 PERCENT OF THE SINGLE-FAMILY LOTS WITHIN THE DRAINAGE AREA TO THE TRAP OR BASIN HAVE BEEN SOLD TO A THIRD PARTY FOR THE CONSTRUCTION OF HOMES (UNRELATED TO THE DEVELOPER); AND/OR, B) 60 PERCENT OF THE SINGLE-FAMILY LOTS WITHIN THE DRAINAGE AREA TO THE TRAP OR BASIN ARE COMPLETED AND STABILIZED. A BULK SALE OF THE LOTS TO ANOTHER BUILDER DOES NOT SATISFY THIS PROVISION. SEDIMENT TRAPS AND SEDIMENT BASINS SHALL NOT BE REMOVED WITHOUT AUTHORIZATION OF THE COUNTY ENVIRONMENTAL DIVISION.
- APPLICABLE PROVISIONS OF THE COUNTY BMP MANUAL (JAMES CITY COUNTY GUIDELINES FOR DESIGN AND CONSTRUCTION OF STORMWATER MANAGEMENT (BMP)S) AND THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK (VSMH) APPLY TO THE PROJECT.
- DESIGN AND CONSTRUCTION OF PRIVATE-TYPE STORM DRAINAGE SYSTEMS, OUTSIDE VDOT RIGHT-OF-WAY, SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT VERSION OF THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION, STORMWATER DRAINAGE CONVEYANCE SYSTEMS (NON-BMP RELATED), GENERAL DESIGN AND CONSTRUCTION GUIDELINES.
- RECORD DRAWINGS (ASBUILTS) AND CONSTRUCTION CERTIFICATIONS ARE REQUIRED FOR ALL STORMWATER FACILITIES INCLUDING STORMWATER MANAGEMENT/BMP FACILITIES AND STORM DRAINAGE CONVEYANCE SYSTEMS. RECORD DRAWINGS AND CONSTRUCTION CERTIFICATIONS MUST MEET ESTABLISHED PROGRAM REQUIREMENTS OF BOTH THE COUNTY ENVIRONMENTAL AND STORMWATER DIVISIONS.
- ALL STORMWATER FACILITIES INCLUDING BMPs, STORM DRAINAGE PIPES, STORMWATER CONVEYANCES, INLETS, MANHOLES, OUTFALLS AND ROADSIDE AND OTHER OPEN CHANNELS SHALL BE INSPECTED BY THE COUNTY STORMWATER DIVISION AND GEOTECHNICAL ENGINEER IN ACCORDANCE WITH ESTABLISHED COUNTY STORMWATER DIVISION PROGRAM REQUIREMENTS.



**CE STONE CONSTRUCTION ENTRANCE**  
SOURCE: VA, DSWC PLATE. 3.02-1 N.T.S.

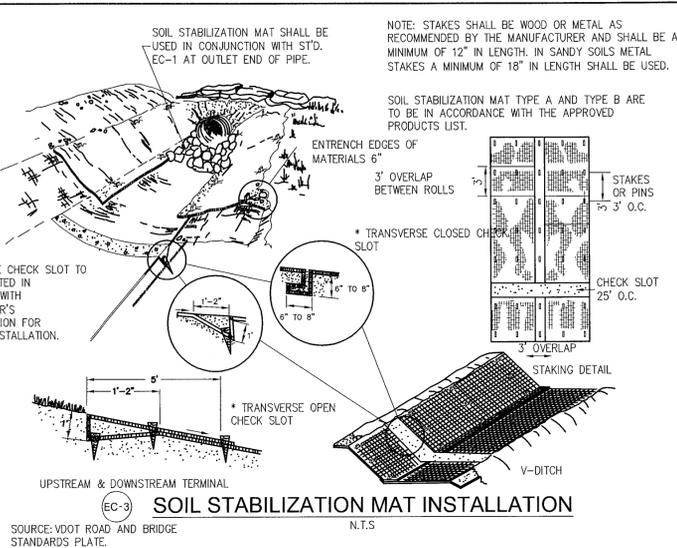


**DD TEMPORARY DIVERSION DIKE**  
SOURCE: VA, DSWC PLATE. 3.09-1 N.T.S.



TOP OF BERM	WET POOL ELEV.	BOTTOM ELEV.	DEPTH	BERM HEIGHT	LENGTH	TOP WIDTH	DRAIN AREA	NET VOLUME	TOTAL VOLUME
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(ACRES)	(CU. FT.)	(CU. FT.)
99.0	96.50	95.0	1.50'	2.50'	10.0'	4.0'	1.54	3,208	10,954

**ST TEMPORARY SEDIMENT TRAP**  
SOURCE: VA, DSWC PLATE. 3.13-2 N.T.S.



MINIMUM CARE LAWN COMMERCIAL OR RESIDENTIAL	TOTAL LBS. PER ACRE
- KENTUCKY 31 OR TURF TYPE TALL FESCUE	175-200 LBS.
- COMMON BERMUDA GRASS **	75 LBS.
- ZOYSIA GRASS	60 LBS.

GENERAL SLOPE (3:1 OR LESS)	TOTAL LBS. PER ACRE
- KENTUCKY 31 FESCUE	128 LBS.
- RED TOP GRASS	2 LBS.
- SEASONAL NURSE CROP *	20 LBS.
- SEASONAL NURSE CROP *	150 LBS.

**LOW MAINTENANCE SLOPE (STEEPER THAN 3:1)**

- KENTUCKY 31 TALL FESCUE	93-108 LBS.
- COMMON BERMUDA GRASS **	0-15 LBS.
- RED TOP GRASS	2 LBS.
- SEASONAL NURSE CROP *	20 LBS.
- SERICEA LESPEDEZA **	20 LBS.
- SEASONAL NURSE CROP *	150 LBS.

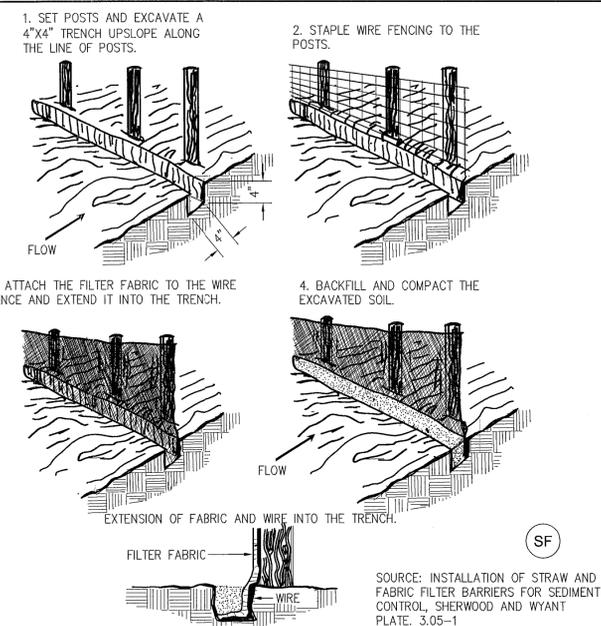
\* USE SEASONAL CROP IN ACCORDANCE WITH SEEDING DATES AS STATED BELOW:  
 FEBRUARY, MARCH THROUGH APRIL..... ANNUAL RYE  
 MAY 1ST THROUGH AUGUST..... FOXTAIL MILLET  
 SEPTEMBER, OCTOBER THROUGH NOVEMBER 15TH..... ANNUAL RYE  
 NOVEMBER 16TH THROUGH JANUARY..... WINTER RYE

**SITE SPECIFIC SEEDING MIXTURES FOR COASTAL PLAIN AREA**

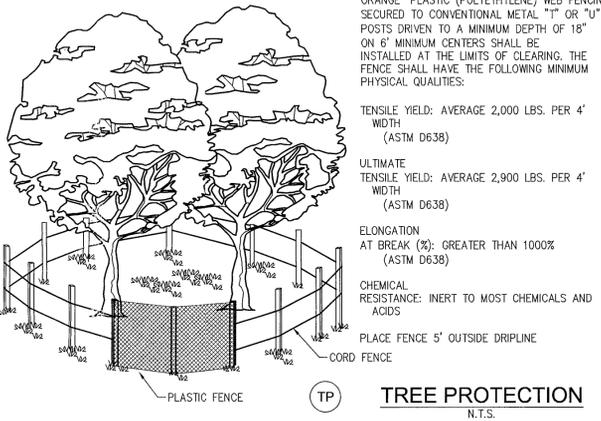
SPECIES	SEEDING RATE	ACRE	1000 FT SQ.	SOUTH (b)			PLANT CHARACTERISTICS
				2/15 TO 4/30	5/1 TO 9/1	9/2 TO 11/15	
OATS (AVENA SATIVA)	3 BU. (UP TO 100 LBS., NOT LESS THAN 50 LBS.)	2 lbs.		X	-	-	Use spring varieties (e.g., Noble).
RYE (SECALE CEREALE)	2 bu. (up to 110 lbs., not less than 50 lbs.)	2.5 lbs.		X	-	X	Use for late fall seedings, winter cover. Tolerates cold and low moisture.
GERMAN MILLET (SETARIA ITALICA)	50 lbs.	approx. 1 lb.		-	X	-	Warm-season annual. Dies at first frost. May be added to summer mixes.
ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM)	60 lbs.	1-1/2 lbs.		X	-	X	May be added in mixes. Will mow out of most stands.
WEeping LOVEGRASS (ERAGROTIS CURVULA)	15 lbs.	5-1/2 ozs.		-	X	-	Warm-season perennial. May bunch. Tolerates hot, dry slopes and acid, infertile soils. May be added to mixes.
KOREAN LESPEDEZA (LESPEDEZA STIPULACEA)	25 lbs.	approx. 1-1/2 lbs.		X	X	-	Warm-season annual legume. Tolerates acid soils. May be added to mixes.

b: SOUTHERN PIEDMONT AND COASTAL PLAIN.  
 c: MAY BE USED AS A COVER CROP WITH SPRING SEEDING.  
 d: MAY BE USED AS A COVER CROP WITH FALL SEEDING.  
 x: MAY BE PLANTED BETWEEN THESE DATES.  
 -: MAY NOT BE PLANTED BETWEEN THESE DATES.

**TS TEMPORARY SEEDING**  
SOURCE: VA, DSWC TABLE 3.31-C N.T.S.



**CONSTRUCTION OF A SILT FENCE (WITH WIRE SUPPORT)**  
SOURCE: INSTALLATION OF STRAW AND FABRIC FILTER BARRIERS FOR SEDIMENT CONTROL, SHERWOOD AND WYANT PLATE. 3.05-1 N.T.S.



**TP TREE PROTECTION**  
N.T.S.

Revised By	Date	Description
2	2/15/11	REVISOR PER VDOT REVIEW
1	10/26/10	REVISOR PER JCC COUNTY COMMENTS 08/10

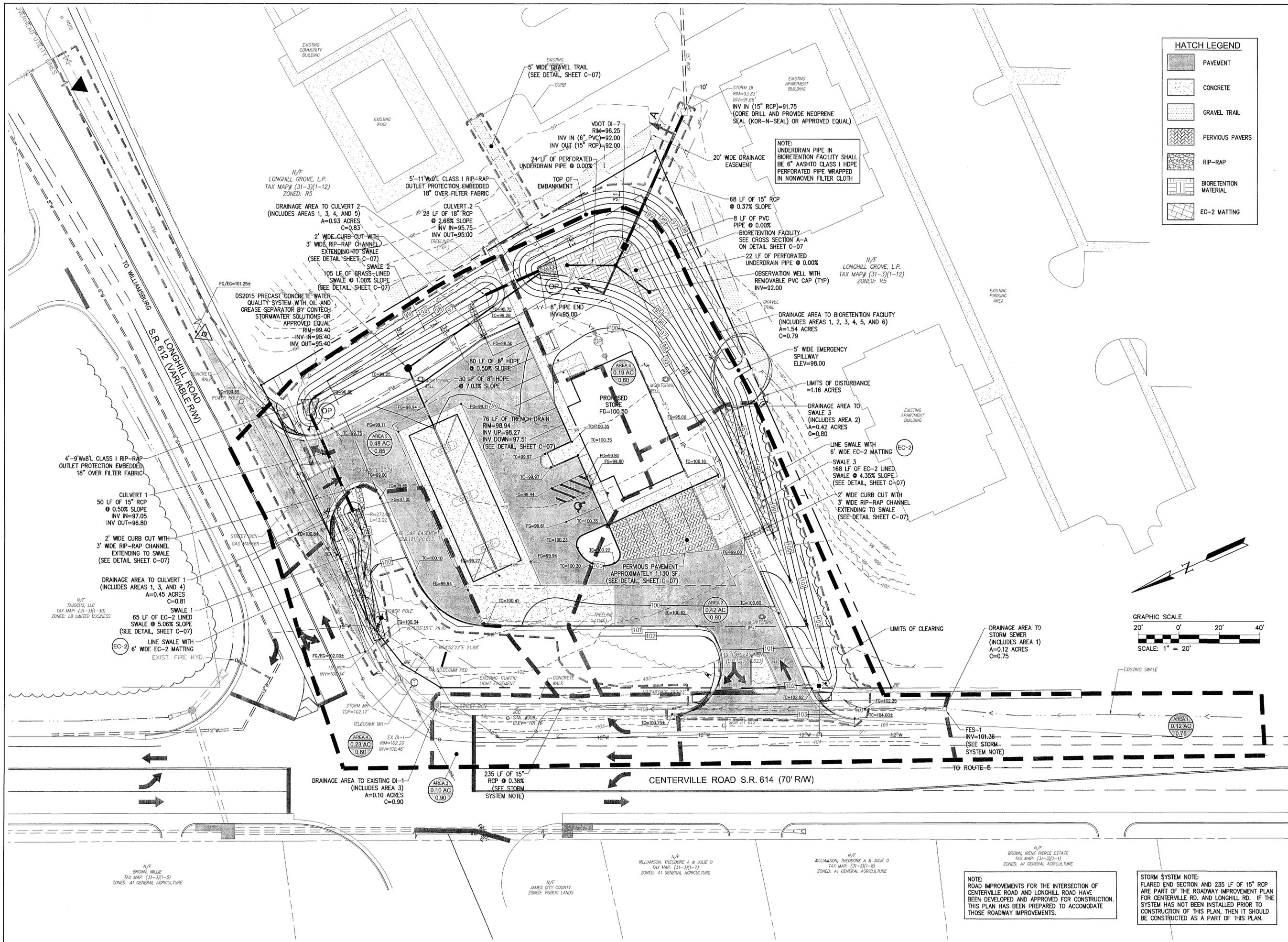


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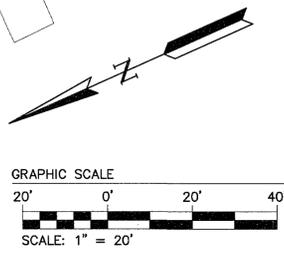
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 Hampton Roads | Central Virginia | Middle Peninsula

**FREEDOM MARKET**  
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 POWHATAN DISTRICT | JAMES CITY COUNTY | VIRGINIA

Project Contacts: VMB  
 Project Number: 8419-04  
 Scale: AS NOTED Date: 8/5/10  
 Sheet Title: NOTES & DETAILS



HATCH LEGEND	
	PAVEMENT
	CONCRETE
	GRAVEL TRAIL
	PERVIOUS PAVERS
	RIP-RAP
	BIORETENTION MATERIAL
	EC-2 MATTING



Rev.	Date	Description
1	10/25/10	REVISED PER ACC COUNTY COMMENTS 08/10
2	2/15/11	REVISED PER VDOT REVIEW



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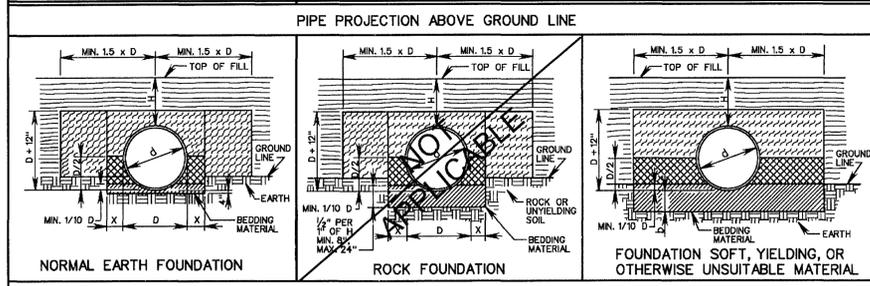
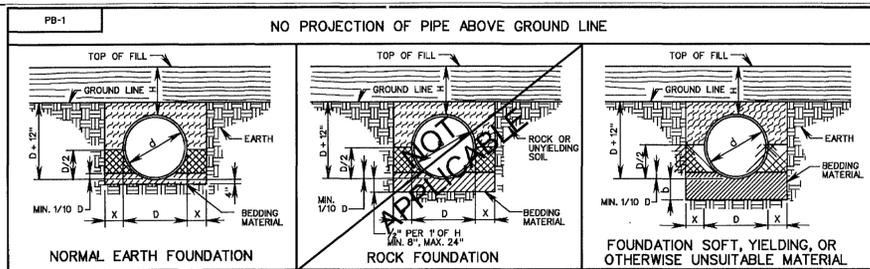
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**FREEDOM MARKET**  
 5534 CENTERVILLE RD.  
 POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA

Project Contacts: VMB  
 Project Number: 8419-04  
 Scale: 1"=20' Date: 8/5/10  
 Sheet Title: GRADING & DRAINAGE PLAN  
 Sheet Number: C-05

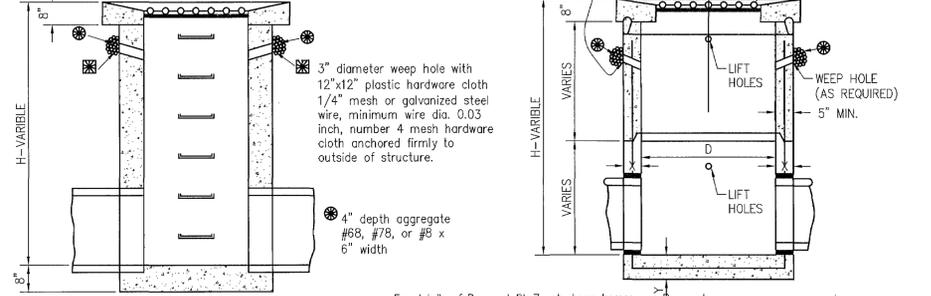
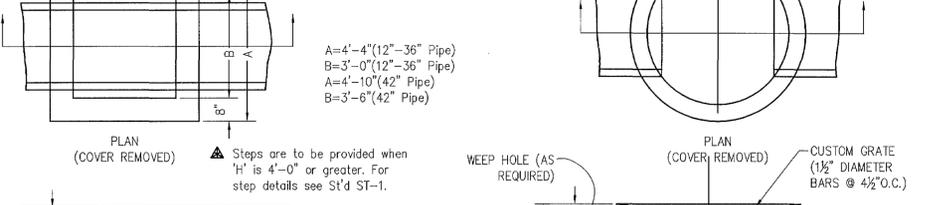
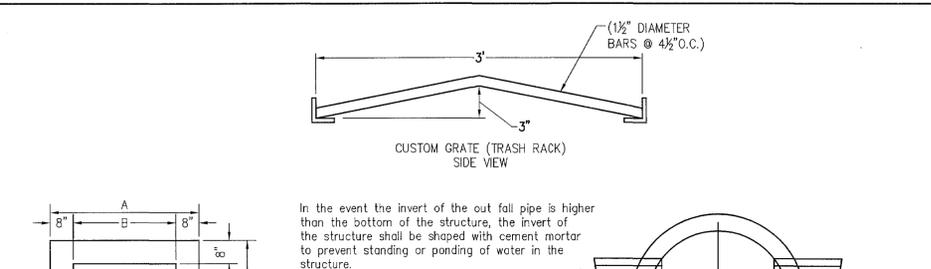
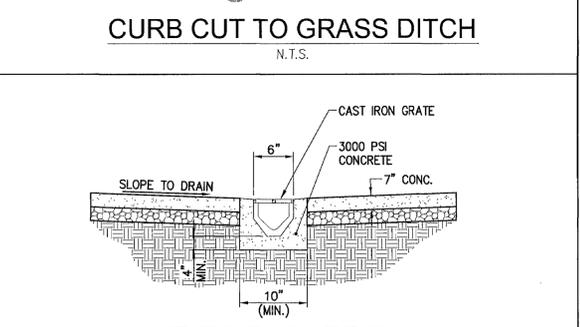
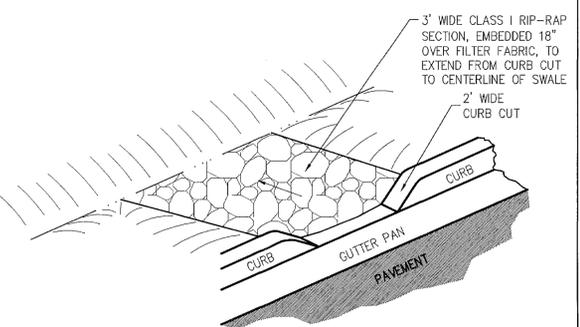
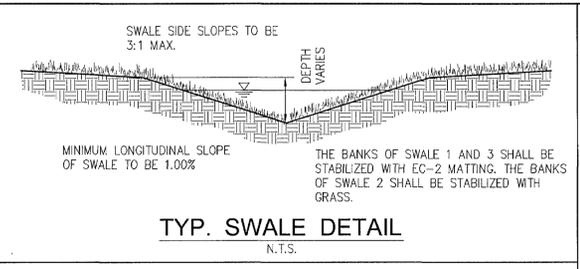
**NOTE:**  
 ROAD IMPROVEMENTS FOR THE INTERSECTION OF CENTERVILLE ROAD AND LONGHILL ROAD HAVE BEEN DEVELOPED AND APPROVED FOR CONSTRUCTION. THIS PLAN HAS BEEN PREPARED TO ACCOMMODATE THOSE ROADWAY IMPROVEMENTS.

**STORM SYSTEM NOTE:**  
 FLARED END SECTION AND 235 LF OF 15" RCP ARE PART OF THE ROADWAY IMPROVEMENT PLAN FOR CENTERVILLE RD. AND LONGHILL RD. IF THE SYSTEM HAS NOT BEEN INSTALLED PRIOR TO CONSTRUCTION OF THIS PLAN, THEN IT SHOULD BE CONSTRUCTED AS A PART OF THIS PLAN.



**NOTES:**  
 FOR PLASTIC PIPE THE LIMITS OF THE CLASS 1 BACKFILL MATERIAL SHALL BE EXTENDED TO 12" ABOVE THE TOP OF THE PIPE.  
 FOR GENERAL NOTES ON PIPE BEDDING, SEE INSTALLATION OF PIPE CULVERTS AND STORM SEWERS GENERAL NOTES ON SHEET 107.00.  
 CRUSHED GLASS CONFORMING TO THE SIZE REQUIREMENTS FOR CRUSHER RUN AGGREGATE SIZE 25 AND 28 MAY BE USED IN PLACE OF CLASS 2 BACKFILL.  
 INSTALLATION OF PIPE CULVERT AS SHOWN IN THIS DETAIL SHALL NOT BE USED FOR BMP OUTFALL PIPE.

<b>VDOT</b> ROAD AND BRIDGE STANDARDS SHEET 1 OF 4 107.01	<b>REVISION DATE</b>	<b>INSTALL. OF PIPE CULVERTS AND STORM SEWERS CIRC. PIPE BEDDING AND BACKFILL - METHOD "A"</b> VIRGINIA DEPARTMENT OF TRANSPORTATION	<b>SPECIFICATION REFERENCE</b> 302 303
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Pipe Size	12"	15"	18"	24"	30"	36"	42"
Minimum Depth (H)	2'-0"	2'-3"	2'-6"	3'-1"	3'-7"	4'-2"	4'-8"
Cu. Yds. Conc.	.947	1.045	1.143	1.339	1.535	1.731	1.927

Increment per foot of  $f = 0.362$  cu. yds. (12"-36" Pipe) = 0.410 cu. additional depth (H) { yds. (42" Pipe)  
 Reinforcing concrete footing may be pre cast or cast in place. Two lifting hooks of fabricators design to be provided in pre cast footing.

**DI-7 STANDARD MEDIAN DROP INLET**  
 N.T.S.  
 VIRGINIA DEPARTMENT OF TRANSPORTATION

**BIORETENTION FACILITY MAINTENANCE PROGRAM & SCHEDULE**

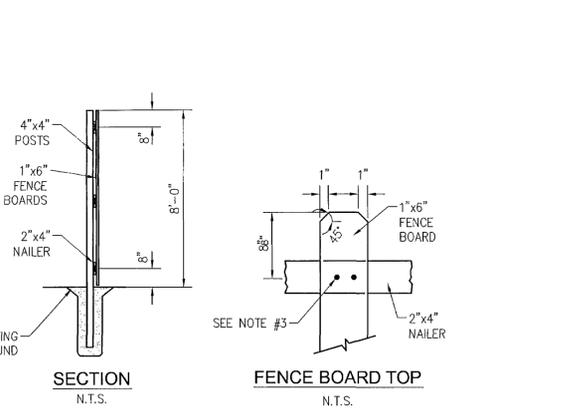
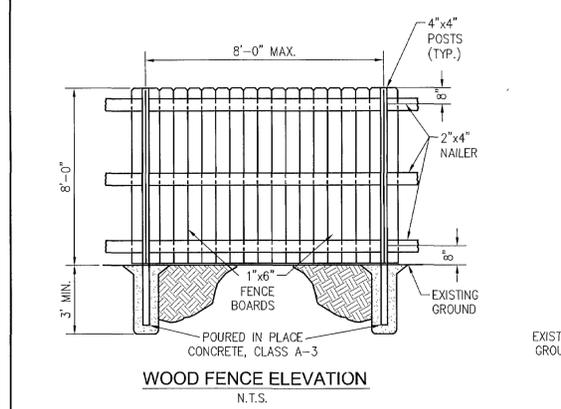
INSPECT AND REPAIR EROSION	MONTHLY
REMUCLH ANY VOID AREAS	WHENEVER NEEDED
REMOVE PREVIOUS MULCH AND REAPPLY	EVERY 3 YEARS
REMOVAL AND REPLACEMENT OF ALL DISEASED VEGETATION CONSIDERED BEYOND TREATMENT	WHENEVER NEEDED
CHECK FOR ACCUMULATED SEDIMENTS	MONTHLY
INSPECT AND REMOVE ANY DEBRIS THAT MAY COLLECT AT THE DROP INLET AND WITHIN FACILITY	AFTER MAJOR STORM EVENTS/OR SEMI ANNUALLY
ADD FRESH LAYER OF MULCH	EVERY 6 MONTHS (SPRING & FALL)

**SOIL SPECIFICATIONS**  
 THE BIORETENTION AREAS SHALL CONTAIN A PLANTING SOIL MIXTURE OF 50% SAND, 30% LEAF COMPOST (FULLY COMPOSTED, NOT PARTIALLY ROTTEN LEAVES), AND 20% TOPSOIL. TOPSOIL SHALL BE SANDY LOAM OR LOAMY SAND OF UNIFORM COMPOSITION, CONTAINING NO MORE THAN 5% CLAY, FREE OF STONES, STUMPS, ROOTS, OR SIMILAR OBJECTS GREATER THAN ONE INCH, BRUSH, OR ANY OTHER MATERIAL OR SUBSTANCE WHICH MAY BE HARMFUL TO PLANT GROWTH, OR A HINDRANCE TO PLANT GROWTH OR MAINTENANCE. THE TOPSOIL SHALL BE FREE OF PLANTS OR PLANT PARTS OF BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, MUGWORT, NUTSEDGE, POISON IVY, CANADIAN THISTLE, CATTAIL, OR OTHERS AS SPECIFIED. IT SHALL NOT CONTAIN TOXIC SUBSTANCES HARMFUL TO PLANT GROWTH.  
 THE TOP SOIL SHALL BE TESTED AND MEET THE MINIMUM CRITERIA SET FORTH IN SECTION 3.11-28 OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK (LATEST EDITION).

**MULCH**  
 A SURFACE LAYER OF SHREDDED HARDWOOD BARK SHALL BE PROVIDED ON TOP OF THE PLANTING SOIL. MULCH SHALL BE FREE OF WEED SEEDS, SOIL, ROOTS, OR ANY OTHER SUBSTANCE NOT CONSISTING OF EITHER BOLE OR BRANCH WOOD AND BARK. THE SHREDDED HARDWOOD BARK MULCH SHALL BE UNIFORMLY APPLIED.  
 STRAW MULCH SHALL NOT BE UTILIZED IN STABILIZATION OF BIORETENTION OR DRY SWALE AREA.

**NOTES**

- WATER PLANT MATERIAL EACH DAY FOR FOURTEEN CONSECUTIVE DAYS AFTER CONSTRUCTION.
- CONTRACTOR SHALL REFER TO COUNTY BMP MANUAL (GROUP D, PGS. 48-50) AND MINIMUM STANDARD 3.11 AND 3.13 OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK FOR METHODS/MATERIAL ASSOCIATED WITH CONSTRUCTION OF THE BIORETENTION CELLS.
- VDOT SHALL BE SAVED HARMLESS FROM THE MAINTENANCE RESPONSIBILITY OR LIABILITY ASSOCIATED WITH ANY FAILURE OF THE STORM WATER MANAGEMENT FACILITY AND ITS STRUCTURES.
- A PROFESSIONAL ENGINEER WHO HAS INSPECTED THE BASIN DURING CONSTRUCTION SHALL CERTIFY THE CONSTRUCTION OF THE BIORETENTION BASIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE BIORETENTION BASIN CONSTRUCTION SCHEDULE WITH THE ENGINEER TO ENSURE ON-SITE MONITORING.
- 6" PERFORATED PIPE SHALL BE RIGID SMOOTH WALL PE IN ACCORDANCE WITH ASTM F810 OR 6" SCH40 PVC OR EQUIVALENT APPROVED BY JAMES CITY COUNTY ENVIRONMENTAL DIVISION.
- CORE DRILL AND PROVIDE NEOPRENE SEAL (KOR-N-SEAL) OR EQUAL WHERE PLASTIC PIPE CONNECTS TO STORM STRUCTURE.

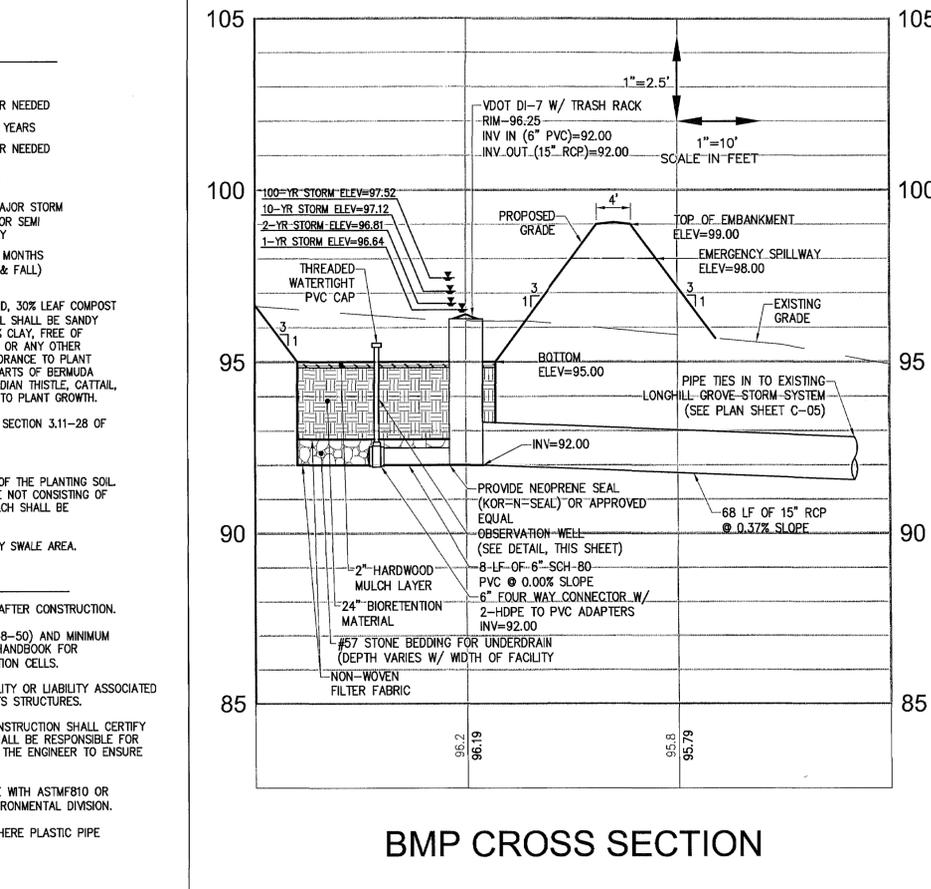
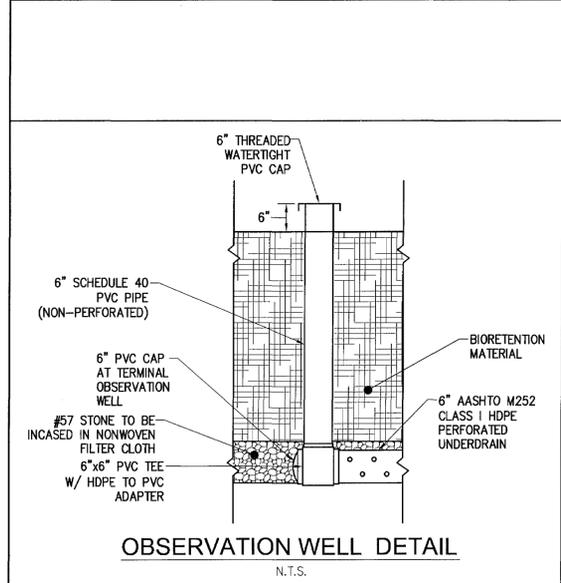


**NOTES:**  
 1. ALL WOOD PRODUCTS TO BE PRESSURE TREATED LUMBER, NO. 2 SOUTHERN PINE MEETING AWPA USE CATEGORY UC4C.  
 2. USE 16d NAILS TO FASTEN 2"x4" NAILER TO 4"x4" POST. (2 NAILS PER CONTACT POINT, MINIMUM)  
 3. USE 6d NAILS TO FASTEN 1"x6" FENCE BOARDS TO NAILER. (2 NAILS PER CONTACT POINT)  
 4. ALL FASTENERS SHALL BE HOT DIPPED GALVANIZED OR STAINLESS STEEL.  
 5. SCREWS MAY BE SUBSTITUTED FOR NAILS.

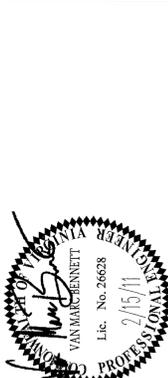
**WOOD FENCE DETAIL**  
 N.T.S.

**EMBANKMENT CONSTRUCTION NOTES**

- A GEOTECHNICAL SUBSURFACE EXPLORATION AT THE PROPOSED EMBANKMENT SHALL BE PERFORMED TO ENSURE SUITABILITY OF THE SUBGRADE. THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER ARE HEREBY MADE A PART OF THE EMBANKMENT'S CONSTRUCTION SPECIFICATIONS. A REPRESENTATIVE OF THE GEOTECHNICAL CONSULTANT SHALL BE ON SITE DURING CONSTRUCTION TO ENSURE PROPER MATERIALS AND EMBANKMENT CONSTRUCTION METHODS ARE UTILIZED. FOLLOWING EMBANKMENT CONSTRUCTION, THE GEOTECHNICAL CONSULTANT SHALL PROVIDE WRITTEN DOCUMENTATION, SIGNED BY A PROFESSIONAL ENGINEER, THAT THE EMBANKMENT WAS BUILT IN ACCORDANCE WITH THEIR RECOMMENDATIONS, PLANS, AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE EMBANKMENT CONSTRUCTION SCHEDULE WITH THE GEOTECHNICAL CONSULTANT IN ORDER TO ENSURE ON-SITE MONITORING.
- SITE PREPARATION:**  
 SUBGRADE PREPARATION SHOULD CONSIST OF REMOVING ALL TOPSOIL AND ANY OTHER SOFT OR UNSUITABLE MATERIAL FROM THE EXPANDED 2-FOOT ENGINEERED FILL LIMITS. A MINIMUM STRIPPING DEPTH OF 6 INCHES CAN BE ASSUMED WITH THE UNDERSTANDING THAT DEEPER STRIPPING MAY BE REQUIRED IN SOME AREAS.
- SUBGRADE INSPECTION AND VERIFICATION:**  
 AFTER STRIPPING OF TOPSOIL AND OTHER MATERIALS AND CUTTING/BENCHING TO THE DESIRED GRADE, AND PRIOR TO ENGINEERED FILL PLACEMENT, THE SURFACE SHOULD BE OBSERVED BY AN EXPERIENCED GEOTECHNICAL ENGINEER OR HIS AUTHORIZED REPRESENTATIVE. ANY SOFT OR UNSUITABLE MATERIALS ENCOUNTERED SHOULD BE REMOVED AND REPLACED WITH AN APPROVED BACKFILL COMPACTED TO THE CRITERIA OUTLINED IN THE FOLLOWING PARAGRAPHS. SUITABLE MATERIALS WHICH ARE EXCESSIVELY WET SHOULD BE AERATED, DRIED, AND RE-COMPACTED TO THE SPECIFICATIONS. BELOW THE CONTRACTOR SHOULD BE PREPARED TO MOISTURE CONDITION SOILS WITHIN THE SURFACE LAYER, PARTICULARLY DURING TYPICALLY WET SEASONAL CONDITIONS.
- ENGINEERED FILL COMPACTION:**  
 ALL EMBANKMENT FILL SHOULD BE MOISTURE CONDITIONED TO WITHIN +/- 3% OF OPTIMUM MOISTURE CONTENT THEN BE COMPACTED TO A DRY DENSITY AT LEAST 95% OF THAT SOIL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D698). LIFTS SHOULD BE A MAXIMUM OF 8 INCHES IN LOOSE THICKNESS. FIELD DENSITY TESTING OF EACH LIFT OF FILL SHOULD BE PERFORMED AT A RATE OF NO LESS THAN ONE TEST PER 2,500 SQUARE FEET, BUT NOT LESS THAN 2 TESTS PER LIFT.
- ENGINEERED FILL MATERIALS:**  
 EMBANKMENT FILL: FILL MATERIAL USED FOR EMBANKMENT SHALL BE INORGANIC SOIL MATERIAL CLASSIFIED AS SM, SC, CL, OR CH WHICH CONTAINS AT LEAST 20% BY WEIGHT SILT AND/OR CLAY AND HAS A MAXIMUM LIQUID LIMIT OF 65 AND MAXIMUM PLASTICITY INDEX OF 40. MAXIMUM AGGREGATE SIZE SHOULD BE 4 INCHES. IT IS RECOMMENDED THAT ALL MATERIALS TO BE USED FOR ENGINEERED FILL BE ANALYZED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO THEIR USE ON THE SITE.
- PRINCIPAL SPILLWAY:**  
 THE BOTTOM OF THE SPILLWAY RISER FOUNDATION BASE EXCAVATION SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER TO ENSURE THAT ALL UNSUITABLE AND LOOSE MATERIALS ARE REMOVED AND THAT ACCEPTABLE BEARING CONDITIONS EXIST IN THE FOUNDATION'S BASE. ALL JOINTS IN THE RISER STRUCTURE SHALL BE WATERPROOF CONSTRUCTION. PERVIOUS MATERIALS SUCH AS SAND, GRAVEL OR CRUSHED STONE SHALL NOT BE USED AS BACKFILL AROUND THE BARREL. FILL MATERIAL SHALL BE PLACED AROUND THE PIPE IN 4 INCH LAYERS AND COMPACTED BY HAND TO THE SAME DENSITY AS THE EMBANKMENT. A MINIMUM OF TWO FEET OF FILL SHALL BE HAND-COMPACTED OVER THE BARREL BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
- VEGETATIVE STABILIZATION:**  
 FINAL VEGETATIVE COVER (STABILIZATION) SHALL CONSIST OF TOP SOILING, LIMING, FERTILIZING, SEEDING, AND MULCHING TO ASSURE A FIRM STAND OF GRASS AS SOON AS PRACTICAL. SEDIMENT BASINS AND OTHER TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED ONLY WHEN STABILIZATION IS COMPLETE. FINAL VEGETATIVE COVER SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING:  
 TOPSOIL: AT LEAST 4" THICKNESS OBTAINED FROM STOCKPILES ON SITE, FREE OF LARGE DEBRIS.  
 LIMING: 4,000#/ACRE (90#/1,000 S.F.)  
 SEED: KENTUCKY 31 TALL FESCUE 250#/ACRE (6#/1,000 S.F.)  
 FERTILIZER: 10/10/10 MIX, 1,000#/ACRE FALL (23#/1,000 S.F.)  
 MULCH: STRAW OR HAY (LOCALLY OBTAINED) 4,000#/ACRE (90#/1,000 S.F.)



Project Number:	8419-04
Scale:	AS NOTED
Date:	8/5/10
Sheet Title:	NOTES & DETAILS



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Project Contacts: VMB  
 Project Number: 8419-04  
 Scale: AS NOTED  
 Date: 8/5/10  
 Sheet Title: NOTES & DETAILS  
 Sheet Number: C-07

## GENERAL NOTES - GRINDER PUMP SYSTEMS

GRINDER PUMPS ACCEPTED: ENVIRONMENT/ONE, MODEL: DH-151-93

THE PUMP IS TO BE A SEMI-POSITIVE DISPLACEMENT TYPE; 15 GPM AT 0 FT.TDH; 11 GPM AT 92 FT.TDH; 9 GPM AT 138 FT.TDH.

THE TANK SHALL BE 60 GALLON; NON-CORROSIVE, HEAVY-DUTY, HIGH DENSITY POLYETHYLENE WITH INTEGRAL FRP LID.

THE GRINDER SHALL CONSIST OF TWO HARDENED STAINLESS STEEL CUTTERS ROTATING AT MOTOR SPEED IN PRECISION RELATIONSHIP TO HARDENED ALLOY SHEDDING RING TO PRODUCE A FINELY DIVIDED SLURRY.

PIPING CONNECTIONS: INLET FOR 6-INCH LATERAL; DISCHARGE IS 1-1/4-INCH NPT.

THE MOTOR SHALL BE 1 HP, 1725 RPM, HIGH-TORQUE, CAPACITOR-START, 240 VOLT, 60 HERTZ, 8 AMP, 1 PHASE; WITH INTEGRAL, AUTOMATIC RESET, THERMAL PROTECTOR.

THE CONTROLS SHALL BE NON-FOULING STATIC SENSOR AND PRESSURE SWITCH SYSTEM WITH NO MOVING PARTS IN CONTACT WITH SEWAGE; SELF-CONTAINED UNIT.

TWO CHECK VALVES SHALL BE PROVIDED: ONE INTEGRAL ON DISCHARGE PIPE INSIDE TANK; ONE FOR SEWER SYSTEM USE BETWEEN PRESSURE MAIN AND GRINDER PUMP. CHECK VALVES SHALL BE FULL-PORTED, NONCLOGGING, CLAPPER TYPE.

AN ANTI-SIPHON VALVE SHALL BE INCLUDED ON THE DISCHARGE PIPE INSIDE THE TANK.

HIGH WATER LEVEL, POWER FAILURE AND PUMP ALARMS SHALL BE PROVIDED. A REMOTE PANEL WITH AN ALARM TEST FUNCTION SHALL ALSO BE PROVIDED; AS SHALL A REMOTE DISPLAY WITH AUDIBLE ALARM. THE ALARM SYSTEM SHALL BE PROVIDED WITH A BACK-UP POWER SUPPLY. THE INDIVIDUAL ALARM SYSTEMS FOR THE GRINDER PUMPS WILL NOT BE CONNECTED TO THE JAMES CITY SERVICE AUTHORITY CENTRAL ALARM SYSTEM.

ELECTRIC TESTING SHALL BE PERFORMED BY THE ELECTRICAL SUBCONTRACTOR (A MASTER ELECTRICIAN) IN THE PRESENCE OF THE JAMES CITY COUNTY ELECTRICAL INSPECTOR. TESTING WILL BE TO ASSURE THAT THE STATION OPERATIONS AS INTENDED AND TO COMPLY WITH ALL POSSIBLE OTHER REQUIREMENTS RELATING TO SUCCESSFUL OPERATION AS OUTLINED IN THE VIRGINIA SEWERAGE REGULATIONS.

THE CONTROL CONSOLE AND ALARM SYSTEM SHALL BE LOCATED ON AN INSIDE WALL OF THE BUILDING IN AN ACCESSIBLE AND VISIBLE LOCATION WITHIN 100 FEET OF GRINDER PUMP. IF THIS IS NOT POSSIBLE, PLEASE LOCATE THE PANEL NEXT TO THE PUMP STATION.

THE WET WELL OF THE GRINDER PUMP SHALL BE VENTED THROUGH THE BUILDING PLUMBING SYSTEM AS REQUIRED BY THE BOCA PLUMBING CODE.

A DISCONNECT SHALL BE PROVIDED ADJACENT TO THE PUMP PER NEC CODE. THE PUMP CONTROLS ARE LOCATED IN THE TOP HOUSING OF THE CORE UNIT INSIDE A WATERPROOF ACCESS COVER. THEY MAY ALSO BE LOCATED ADJACENT TO THE DISCONNECT, IN A NEMA 4 BOX.

ALL ELECTRICAL EQUIPMENT MUST BE UL LISTED.

ALL EQUIPMENT SHALL BE TESTED IN ACCORDANCE WITH THE NEC.

ALL FORCE MAIN PIPING SHALL CONFORM TO THE HRPDC REGIONAL STANDARDS (SECTION 200-5.10).

ALL PIPING SHALL BE TESTED IN ACCORDANCE WITH THE HRPDC REGIONAL STANDARDS (SECTION 803-2.7).

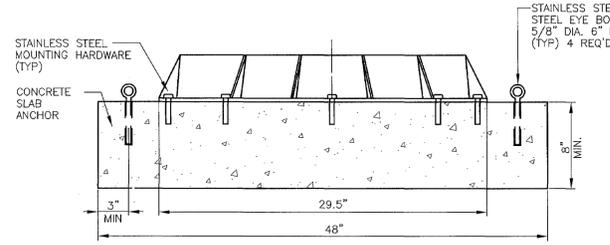
THRUST RESTRAINT SHALL BE PROVIDED FOR GASKETED TYPE PIPING AT ALL BENDS, TEES AND CHANGES OF DIRECTION.

## GRINDER PUMP SYSTEM

MANUFACTURER/MODEL - ENVIRONMENT / ONE, MODEL DH-151-93

PUMP	SEMI-POSITIVE DISPLACEMENT TYPE; 15 GPM @ 0 FT.TDH; 11 GPM @ 92 FT.TDH. 9 GPM @ 138 FT.TDH.
TANK	150 GAL; NON-CORROSIVE, HEAVY-DUTY, HIGH DENSITY POLYETHYLENE; INTEGRAL FRP LID. AVAILABLE IN DEPTHS FROM 59" TO 159".
GRINDER	TWO HARDENED STAINLESS STEEL CUTTERS ROTATING AT MOTOR SPEED IN PRECISION RELATIONSHIP TO HARDENED AND GROUND CHROME SHEDDING RING PRODUCE A FINELY DIVIDED SLURRY.
PIPING CONNECTIONS	INLET FOR 6 INCH DWV PIPE; DISCHARGE IS 1-1/4 INCH NPT.
MOTOR	1 HP, 1725 RPM, HIGH-TORQUE, CAPACITOR-START, 240 VOLT, 60 HERTZ, 8 AMP, 1 PHASE; WITH INTEGRAL, AUTOMATIC RESET, THERMAL PROTECTOR.
CONTROLS	NON-FOULING STATIC SENSOR AND PRESSURE SWITCH SYSTEM HAS NO MOVING PARTS IN CONTACT WITH SEWAGE; COMPLETELY SELF-CONTAINED --- NO EXTERNAL PANELS NEEDED.
CHECK VALVES	TWO PROVIDED: ONE INTEGRAL ON DISCHARGE PIPE INSIDE TANK, ONE IN "JUMBO BOX" BETWEEN FORCE MAIN AND GRINDER PUMP; FULL-PORTED, NON-CLOGGING, CLAPPER TYPE.
ANTI-SIPHON VALVE	INTEGRAL ON DISCHARGE PIPE INSIDE TANK.
ALARM	HIGH LEVEL INDICATOR LIGHT FURNISHED FOR REMOTE DISPLAY. REMOTE DISPLAY WITH AUDIBLE ALARM TO BE PROVIDED. ALARM SYSTEM TO BE PROVIDED WITH BACK-UP POWER SUPPLY.

- ALL COMPONENTS OF THE GRINDER PUMP SYSTEM SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH THE LATEST EDITION OF THE HRPDC, JCSA STANDARDS AND SPECIFICATIONS FOR SANITARY SEWER SYSTEMS AND THE VIRGINIA SEWAGE HANDLING & DISPOSAL REGULATIONS DATED 7/1/00.
- ALL JOINTS IN TANK AND ACCESSWAY ARE MANUFACTURED AND FACTORY TESTED FOR WATERTIGHT INTEGRITY. NO FIELD PENETRATIONS SHALL BE ACCEPTABLE.
- TWO LIFTING HOOKS WITH NYLON LIFT-OUT HARNESS TO BE PROVIDED BY SUPPLIER.
- STATION SHALL BE FASTENED TO SLAB WITH 3/8" DIA. STAINLESS STEEL HARDWARE AT ALL EIGHT (8) MOUNTING POSITIONS.
- ONCE STATION IS FASTENED TO SLAB, UNIT SHALL BE LIFTED INTO PLACE USING THE EYE BOLTS, NOT THE TANK.
- ALL FRP PARTS TO BE AVOCADO GREEN.
- DISCHARGE LINE TO BE BELOW FROST LINE.
- GRINDER PUMPS SHALL BE LOCATED ON EACH LOT / PARCEL AND SHOWN ON THE PLOT PLANS.
- FORCE MAIN TRAP IS REQUIRED WHEN DISCHARGING INTO A GRAVITY SYSTEM.
- GRINDER PUMP ASSEMBLIES SHALL BE "ENVIRONMENT-1" MODEL DH-151-93 AS MANUFACTURED BY ENVIRONMENT ONE CORPORATION.
- SADDLES MAY BE USED FOR CONNECTIONS TO GRAVITY SEWERS.
- SHUT OFF VALVE SHALL BE LOCATED AT PROPERTY LINE.
- SHUT OFF VALVE MAY BE DELETED WHEN JUMBO VALVE BOX CONNECTION IS LOCATED ON / AT THE PROPERTY LINE.
- TRACER WIRE TO BE SUPPLIED AND INSTALLED WITH THE FORCE MAIN.

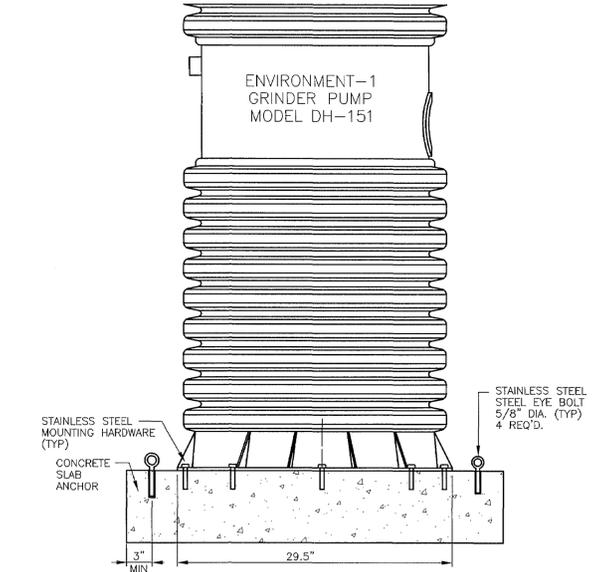


### NOTES:

CONCRETE SLAB ANCHOR OF 370 LBS. (2.5 CU. FT.) PER FOOT OF TOTAL STATION HEIGHT, BASED ON STATION HEIGHT IN 6 INCH INCREMENTS, IS REQUIRED TO PREVENT TANK FROM FLOATING. MINIMUM DIMENSIONS SHOWN ABOVE ARE BASED ON STATION HEIGHT OF 4'-0". ONE INCH OF ADDITIONAL THICKNESS SHALL BE REQUIRED FOR EACH ADDITIONAL 6 INCHES OF TOTAL STATION HEIGHT. SEE EXAMPLES BELOW.

STATION HEIGHT	SLAB LENGTH	SLAB WIDTH	SLAB THICKNESS
4'-0" THRU 4'-6"	4 FT	4 FT	8 INCHES
4'-6" THRU 5'-0"	4 FT	4 FT	9 INCHES
5'-0" THRU 5'-6"	4 FT	4 FT	10 INCHES
5'-6" THRU 6'-0"	4 FT	4 FT	11 INCHES
6'-0" THRU 6'-6"	4 FT	4 FT	12 INCHES
6'-6" THRU 7'-0"	4 FT	4 FT	13 INCHES
7'-0" THRU 7'-6"	4 FT	4 FT	14 INCHES
7'-6" THRU 8'-0"	4 FT	4 FT	15 INCHES
8'-0" THRU 8'-6"	4 FT	4 FT	16 INCHES
8'-6" THRU 9'-0"	4 FT	4 FT	17 INCHES
9'-0" THRU 9'-6"	4 FT	4 FT	18 INCHES
9'-6" THRU 10'-0"	4 FT	4 FT	19 INCHES

FOR STATIONS EXCEEDING 10 FEET IN TOTAL HEIGHT, SLAB THICKNESS SHALL BE INCREASED BY ONE INCH FOR EACH ADDITIONAL 6 INCHES OF STATION HEIGHT, OR FRACTION THEREOF.

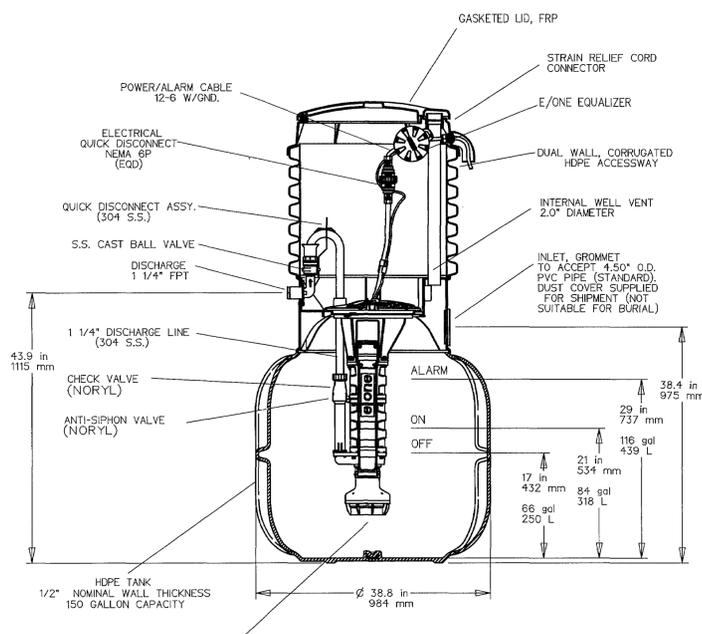


### NOTES:

- CONCRETE SLAB ANCHOR LENGTH, WIDTH AND THICKNESS SHALL BE AS SHOWN IN DETAIL GP-3.1 OR IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS WHICHEVER IS GREATER.
- 5/8" DIA. STAINLESS STEEL EYE BOLTS ARE TO BE SET IN EXPANSION ANCHORS IMBEDDED IN CONCRETE SLAB AT FOUR (4) POINTS OF EQUAL SPACING.
- STATION SHALL BE FASTENED TO SLAB WITH 3/8" DIA. STAINLESS STEEL HARDWARE AT ALL EIGHT (8) MOUNTING POSITIONS.
- ONCE STATION IS FASTENED TO SLAB, UNIT SHALL BE LIFTED INTO PLACE USING THE EYE BOLTS, NOT THE TANK.

REVISION	DATE	COMMENT	REVISION	DATE	COMMENT

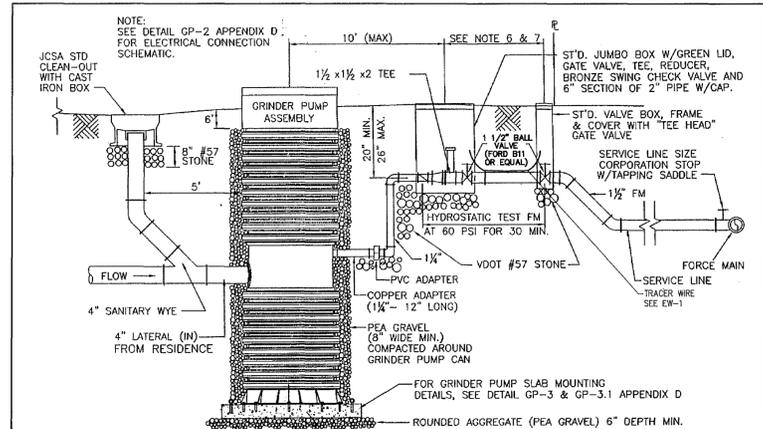
*Van Marc Bennett*  
 I HEREBY CERTIFY THAT THE DESIGN OF THE SANITARY SEWER SYSTEM, INCLUDING PUMP STATION, COLLECTION SYSTEM, AND FORCE MAIN ADHERE TO THE GENERAL CRITERIA AND MINIMUM DESIGN STANDARDS OF THE SEWAGE COLLECTION AND TREATMENT REGULATIONS (9 VAC-25-790).  
 VAN MARC BENNETT, P.E.  
 VA. LIC. NO. 026628



- DO NOT SCALE DRAWING.
- DISCHARGE LINE TO BE BELOW FROST LINE. (MINIMUM 36" COVER)
- ENVIRONMENT ONE MODEL DH-151 AVAILABLE IN DEPTHS FROM 59" TO 160".
- ALL JOINTS IN TANK AND ACCESSWAY ARE MANUFACTURED AND FACTORY TESTED FOR WATERTIGHT INTEGRITY. NO FIELD PENETRATIONS SHALL BE ACCEPTABLE.
- TWO (2) LIFTING HOOKS WITH NYLON LIFT-OUT HARNESS TO BE PROVIDED.
- ALL DIMENSIONS AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
- ALL FRP PARTS TO BE AVOCADO GREEN.

## GRINDER PUMP DETAILS

NOT TO SCALE



- NOTES:
- GRINDER PUMPS SHALL BE LOCATED ON EACH LOT/PARCEL AS SHOWN ON THE APPROVED DEVELOPMENT PLANS.
  - FORCE MAIN TRAP IS REQUIRED WHEN DISCHARGING INTO A GRAVITY SYSTEM.
  - GRINDER PUMP ASSEMBLIES SHALL BE "ENVIRONMENT-1" MODEL DH-151-93 MANUFACTURED BY ENVIRONMENT ONE CORPORATION.
  - SADDLES MAY BE USED FOR CONNECTIONS TO GRAVITY SEWERS.
  - ALL MATERIALS AND INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
  - SHUT OFF VALVE SHALL BE LOCATED AT PROPERTY LINE.
  - SHUT OFF VALVE MAY BE DELETED WHEN JUMBO VALVE BOX CONNECTION IS LOCATED ON/AT THE PROPERTY LINE.
  - TRACER WIRE SHALL BE SUPPLIED FOR THE FULL LENGTH OF THE FORCE MAIN

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Rev	Date	By	Description
2	2/15/11		REVISED PER FOOT REVIEW
1	10/26/10		REVISED PER JCC COUNTY COMMENTS (8/10)



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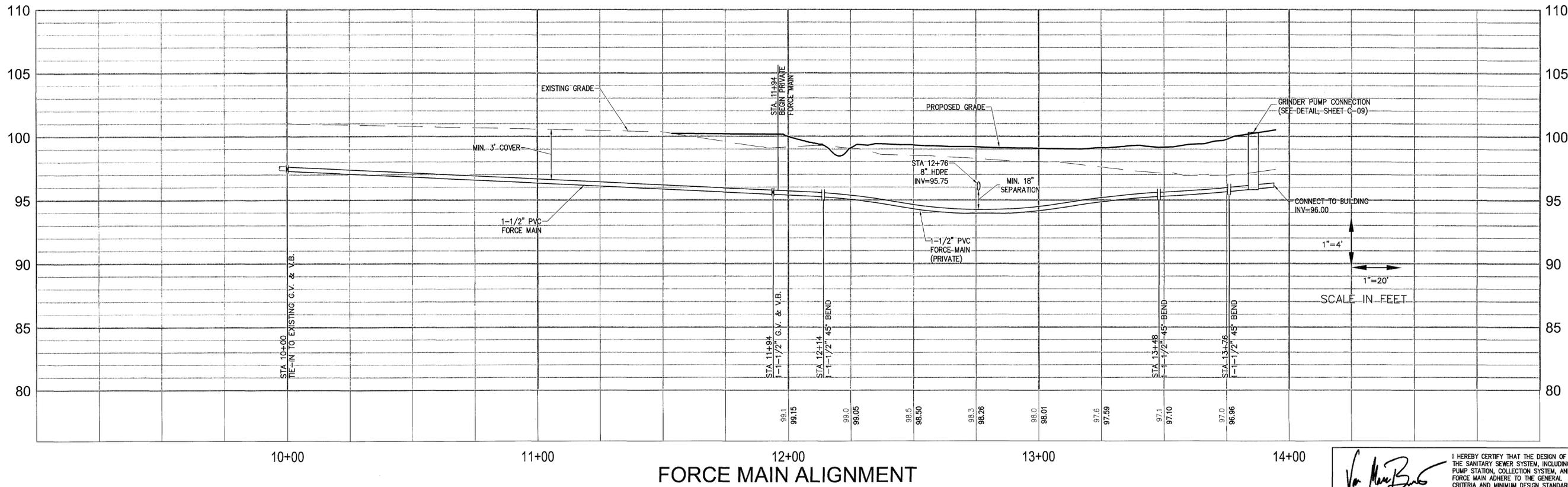
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 POWHATAN DISTRICT | JAMES CITY COUNTY | VIRGINIA

Project Contacts: VMB  
 Project Number: 8419-04  
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 Date: 8/5/10

Sheet Title:  
**NOTES & DETAILS**

Sheet Number:  
**C-09**



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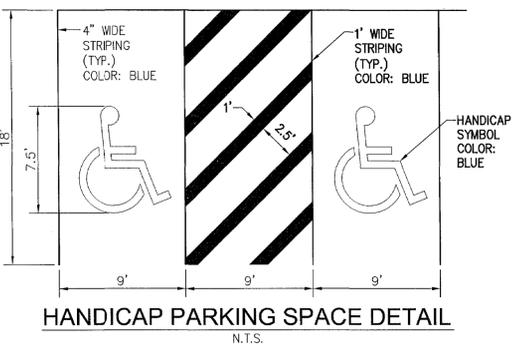
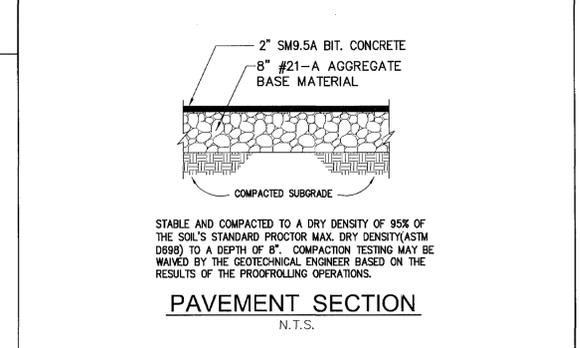
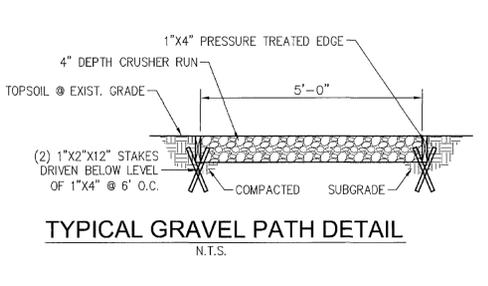
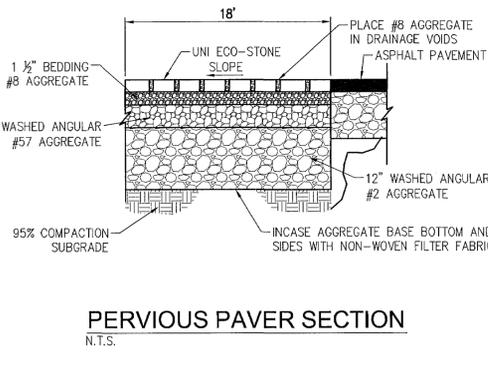
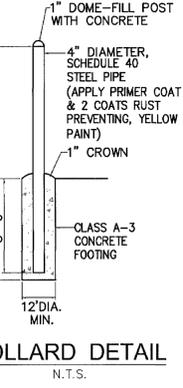
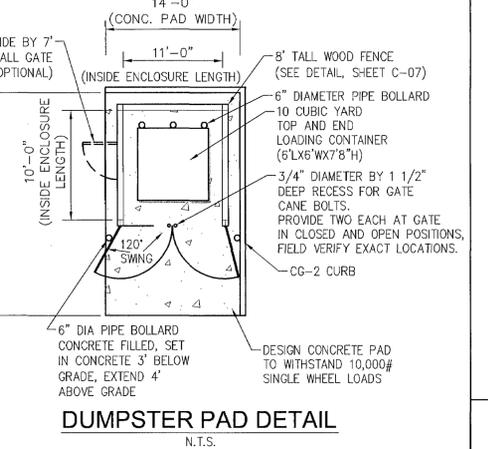
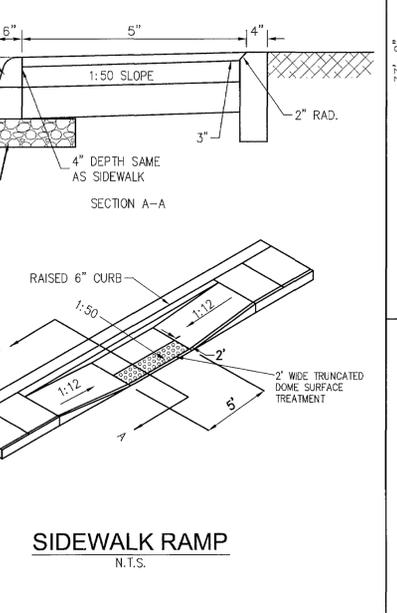
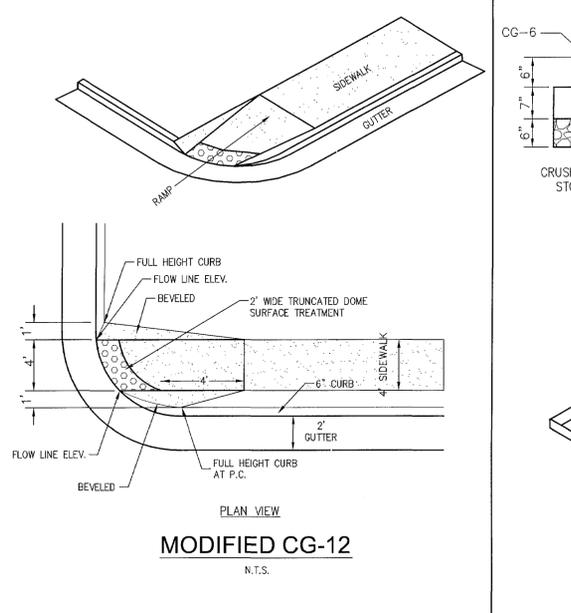
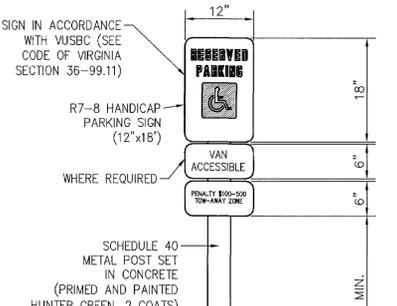
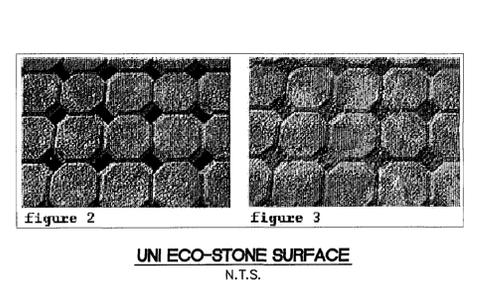
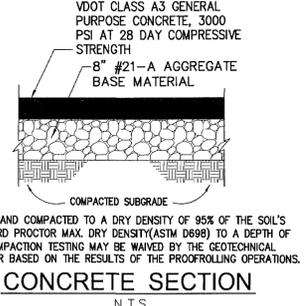
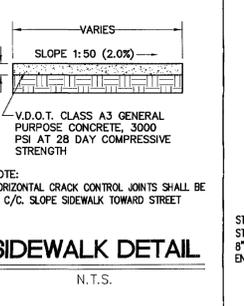
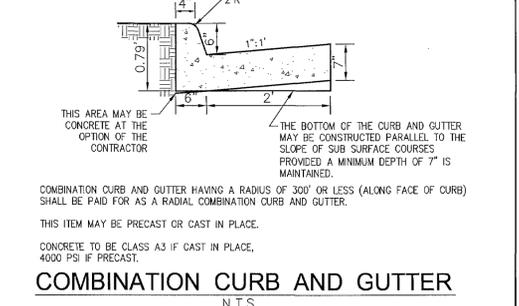
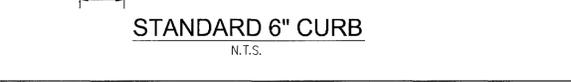
**Van Marc Bennett**  
VAN MARC BENNETT, P.E.  
VA. LIC. NO. 028628

Rev.	Date	Description
2	2/18/11	REVISED PER VDOT REVIEW
1	10/25/10	REVISED PER CCC COUNTY COMMENTS 08/10



**NOTES:**

- THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
- CONCRETE TO BE CLASS A3 IF CAST IN PLACE, 4000 PSI IF PRECAST.
- CURB HAVING A RADIUS OF 300' OR LESS (ALONG FACE OF CURB) WILL BE PAID FOR AS RADIAL CURB.
- THE DEPTH OF CURB MAY BE REDUCED AS MUCH AS 3" (15" DEPTH) OR INCREASED AS MUCH AS 3" (21" DEPTH) IN ORDER THAT THE BOTTOM OF A COURSE OF THE PAVEMENT SUBSTRUCTURE. OTHERWISE, THE DEPTH IS TO BE 18" AS SHOWN. NO ADJUSTMENT IN THE PRICE BID IS TO BE MADE FOR A DECREASE OR AN INCREASE IN DEPTH.
- CG-2 IS TO BE USED ON ROADWAYS MEETING THE REQUIREMENTS FOR CG-6 AS SHOWN IN APPENDIX A OF THE VDOT ROAD DESIGN MANUAL.



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**FREEDOM MARKET**  
5594 CENTERVILLE RD.  
JAMES CITY COUNTY, VIRGINIA

Project Contacts: VMB  
Project Number: 8419-04  
Scale: AS NOTED Date: 8/5/10  
Sheet Title: NOTES & DETAILS  
Sheet Number: C-08

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### ENHANCED (SIZE) PLANT SCHEDULE

(FOR THE REQUIRED PLANT MATERIAL LOCATED WITHIN THE LONGHILL ROAD AND CENTERVILLE ROAD LANDSCAPE YARDS)

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	COMMENT
<b>LARGE DECIDUOUS TREES:</b>						
AR	2	ACER RUBRUM 'RED SUNSET'	'RED SUNSET' RED MAPLE	3-1/4" CAL.	B & B	SINGLE STEM
BN	2	BETULA NIGRA 'DURA HEAT'	'DURA HEAT' RIVER BIRCH	3-1/4" CAL.	B & B	3-5 STEMS
UP	9	ULMUS PARVIFOLIA	LACEBARK ELM	3-1/4" CAL.	B & B	SINGLE STEM
<b>EVERGREEN TREES:</b>						
PT	8	PINUS THUNBERGIANA	JAPANESE BLACK PINE	10' HT.	B & B	SINGLE STEM
<b>ORNAMENTAL TREES:</b>						
PY	8	PRUNUS x YEDOENSIS	YOSHINO CHERRY	2" CAL.	B & B	SINGLE STEM
<b>SHRUBS:</b>						
AG	66	ABELIA x GRANDIFLORA 'EDWARD GOUCHER'	'EDWARD GOUCHER' GLOSSY ABELIA	24"-30" HT./W.	CONT.	DENSE, FULL
JC	29	JUNIPERUS CONFERTA 'BLUE PACIFIC'	'BLUE PACIFIC' SHORE JUNIPER	24"-30" HT./W.	CONT.	DENSE, FULL

### PLANT SCHEDULE

(FOR THE REQUIRED PLANT MATERIAL LOCATED WITHIN ALL OTHER LANDSCAPE AREAS)

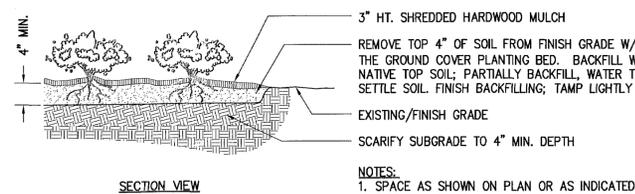
KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	COMMENT
<b>LARGE DECIDUOUS TREES:</b>						
AR	5	ACER RUBRUM 'RED SUNSET'	'RED SUNSET' RED MAPLE	2-1/2" CAL.	B & B	SINGLE STEM
BN	3	BETULA NIGRA 'DURA HEAT'	'DURA HEAT' RIVER BIRCH	2-1/2" CAL.	B & B	3-5 STEMS
<b>EVERGREEN TREES:</b>						
CJ	10	CRYPTOMERIA JAPONICA 'YOSHINO'	'YOSHINO' JAPANESE CRYPTOMERIA	8' HT.	B & B	SINGLE STEM
MG	7	MAGNOLIA GRANDIFLORA	SOUTHERN MAGNOLIA	8' HT.	B & B	SINGLE STEM
PT	21	PINUS THUNBERGIANA	JAPANESE BLACK PINE	8' HT.	B & B	SINGLE STEM
<b>ORNAMENTAL TREES:</b>						
LJ	2	LAGERSTROEMIA INDICA 'NATCHEZ'	'NATCHEZ' CRAPEMYRTLE (WHITE)	8' HT.	B & B	3-5 STEMS
MGL	5	MAGNOLIA GRANDIFLORA 'LITTLE GEM'	'LITTLE GEM' SOUTHERN MAGNOLIA	8' HT.	B & B	SINGLE STEM
<b>SHRUBS:</b>						
CA	13	CALLICARPA AMERICANA	AMERICAN BEAUTYBERRY	22"-30" HT./W.	CONT.	DENSE, FULL
IC	19	ILEX CRENATA 'GREEN LUSTER'	'GREEN LUSTER' JAPANESE HOLLY	18"-24" HT./W.	CONT.	DENSE, FULL
IV	17	ITEA VIRGINICA 'HENRY'S GARNET'	'HENRY'S GARNET' VIRGINIA SWEETSPHIRE	22"-30" HT./W.	CONT.	DENSE, FULL
JC	23	JUNIPERUS CONFERTA 'BLUE PACIFIC'	'BLUE PACIFIC' SHORE JUNIPER	18"-24" HT./W.	CONT.	DENSE, FULL
MC	76	MYRICA CERIFERA	SOUTHERN WAXMYRTLE	18"-24" HT./W.	CONT.	DENSE, FULL
<b>OTHER:</b>						
LM	70	LIRIOPE MUSCARI 'BIG BLUE'	'BIG BLUE' LIRIOPE	1 GAL.	CONT.	18" O.C.

### JAMES CITY COUNTY LANDSCAPE REQUIREMENTS

AREAS	COUNTY REQ	TREES AND SHRUBS RATIO	MIN. NUMBER REQUIRED	NEW PLANTINGS PROVIDED
FRONT YARD (Centerville Rd.)	7,100 SQ.FT.	1 TREE: 400 SQ.FT. AND 3 SHRUBS: 400 SQ.FT.	18 TREES 40% 8" DECIDUOUS SHADE 15-20% 5" ORNAMENTAL 30% 12" EVERGREEN	18 TREES 5 DECIDUOUS SHADE 5 ORNAMENTAL 8 12" EVERGREEN
FRONT YARD (Longhill Rd.)	4,215 SQ.FT.	1 TREE: 400 SQ.FT. AND 3 SHRUBS: 400 SQ.FT.	11 TREES 40% 8" DECIDUOUS SHADE 15-20% 5" ORNAMENTAL 30% 12" EVERGREEN	11 TREES 5 DECIDUOUS SHADE 5 ORNAMENTAL 1 12" EVERGREEN
TRANSITIONAL SCREEN (South)	8,555 SQ.FT.	1 TREE: 400 SQ.FT. AND 3 SHRUBS: 400 SQ.FT.	22 TREES 40% 8" DECIDUOUS SHADE 15-20% 5" ORNAMENTAL 30% 12" EVERGREEN	26 TREES 3 DECIDUOUS SHADE 5 ORNAMENTAL 18 12" EVERGREEN
TRANSITIONAL SCREEN (East)	5,600 SQ.FT.	1 TREE: 400 SQ.FT. AND 3 SHRUBS: 400 SQ.FT.	14 TREES 40% 8" DECIDUOUS SHADE 15-20% 5" ORNAMENTAL 30% 12" EVERGREEN	16 TREES 6 DECIDUOUS SHADE 6 ORNAMENTAL 4 12" EVERGREEN
PARKING LOT	15 SPACES	1 TREE: 5 SPACES AND 2 SHRUBS: 5 SPACES	42 SHRUBS 30% 15" EVERGREEN 30% 12" EVERGREEN 40% 8" EVERGREEN	42 SHRUBS 28 EVERGREEN
BLDG PERIMETER	2,350 SQ.FT.	1 TREE OR 5 SHRUBS: 200 SQ.FT.	3 TREES 30% 15" EVERGREEN 30% 12" EVERGREEN 40% 8" EVERGREEN	3 TREES 1 15" EVERGREEN 2 8" EVERGREEN
			6 SHRUBS 50% 8" EVERGREEN	8 SHRUBS 8 EVERGREEN

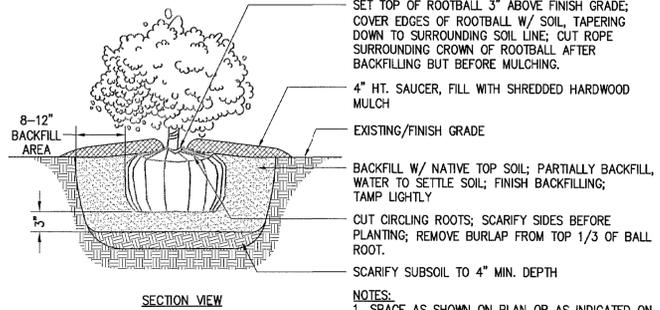
### GENERAL NOTES

- ALL PLANT STOCK SHALL MEET THE MINIMUM STANDARDS & SPECIFICATIONS DESCRIBED IN THE "AMERICAN STANDARD FOR NURSERY STOCK," LATEST EDITION, PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERMEN.
- ALL PLANT MATERIAL SHALL BE INSTALLED AS SPECIFIED IN THE VNA STANDARDIZED LANDSCAPE SPECIFICATIONS, LATEST EDITION.
- THE CONTRACTOR SHALL SUPPLY ALL NEW PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE ALL PLANTING SHOWN ON THE DRAWINGS. WHERE DISCREPANCIES EXIST BETWEEN THE PLANS & THE PLANT LIST, THE PLANS SHALL TAKE PRECEDENCE.
- GROUPINGS OF PLANTS SHALL BE MULCHED IN CONTINUOUS PLANT BEDS.
- AREAS DISTURBED BY CONSTRUCTION, NOT OTHERWISE WITHIN PLANT BEDS OR COVERED IN SITE CONTRACT, ARE TO BE SODED OR SEEDDED WITH A STATE CERTIFIED TURF-TYPE TALL FESCUE VARIETY SELECTED FROM THE FOLLOWING LIST:  
Biltmore, Bingo, Cochise II, Constitution, Coyote II, Crossfire II, Endeavor, Fidelity, Good-en, Grande, Greenkeeper WAF, Inferno, Kikohiki, Mugello, Masterpiece, Oryx, Padre, Picasso, Penn 1901, Quest, Raptor, Rebel Exotic, Rembrandt, Rendition, SR 8250, SR 8300, Torhead, Titanium, Watchdog, Wolfpack, WPEZE.
- TREES SUPPORT STAKING IS OPTIONAL FOR TREES THAT ARE 1" CAL. OR 6' HT. OR LESS. ALL TREE STAKING SHALL BE REMOVED AFTER 1-2 GROWING SEASONS.
- ALL TREES ARE TO BE PLANTED SO TOP OF ROOT BALL IS 3" ABOVE FINISH GRADE.
- TREE SHALL BE INSTALLED PLUMB & STRAIGHT.
- PRUNE ALL SUCKERS, RUBBING OR CROSSED BRANCHES, CODOMINANT LEADERS, NARROW CROTCH ANGLES, WATER SPROUTS, BROKEN BRANCHES.
- DO NOT PRUNE CENTRAL LEADER OR BRANCH TIPS.
- REMOVE TAGS, LABELS & PLASTIC SLEEVING.
- DO NOT WRAP TRUNK.
- IF PLANT MATERIAL IS CONTAINER-GROWN, REMOVE TOP OF WIRE BASKET, OR REMOVE CONTAINER & CUT CIRCLING ROOT; IF FIELD-GROWN, CUT ROPE SURROUNDING BOTTOM OF TREE TRUNK AFTER BACKFILLING BUT BEFORE MULCHING & REMOVE BURLAP FROM TOP 1/3 OF BALL ROOT.
- REMOVE ALL STAKES, STRAPS, WIRES, RUBBER HOSES, ETC. AFTER 1-2 GROWING SEASONS.
- PLANT SUBSTITUTIONS WILL NOT BE MADE WITHOUT THE WRITTEN CONSENT OF THE OWNER OR THE OWNER'S DESIGNATED REPRESENTATIVE PRIOR TO INSTALLATION.
- ALL INSTALLED PLANT MATERIAL SHALL BE SUBJECT TO REGULAR MAINTENANCE, INCLUDING FERTILIZATION, PRUNING, REPLACEMENT, INSECT AND DISEASE CONTROL, WATERING, MULCHING, AND WEED CONTROL.
- CONTRACTORS ARE RESPONSIBLE FOR LOCATING ALL UTILITIES PRIOR TO THE BEGINNING OF WORK AND AVOIDING THEM DURING LANDSCAPING OPERATIONS.



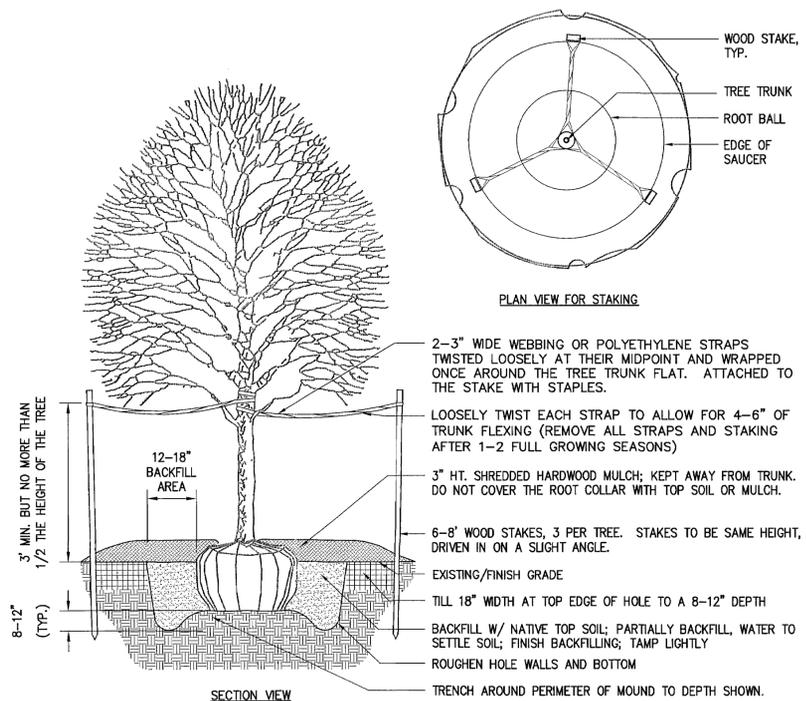
### GROUND COVER PLANTING BED

NOT TO SCALE



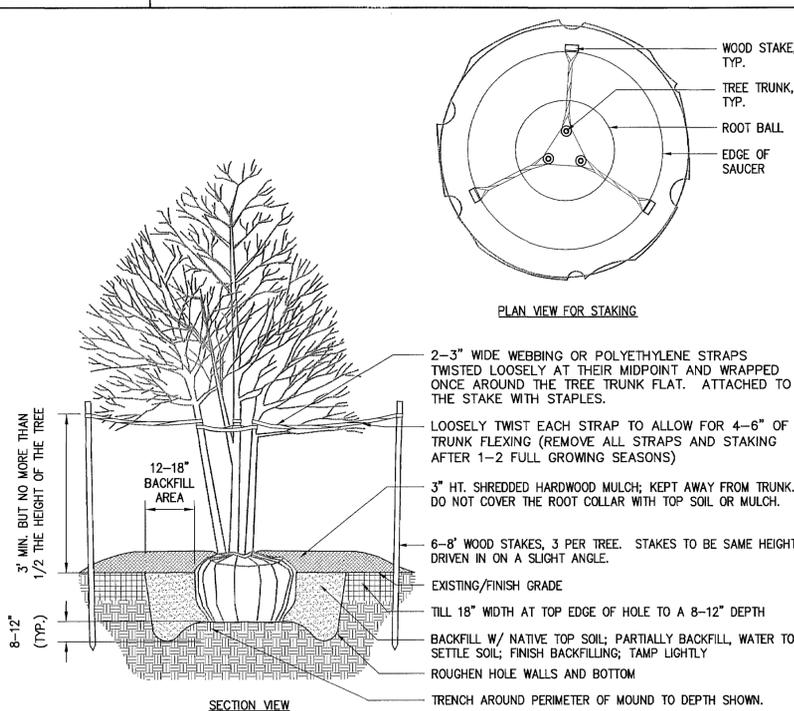
### SHRUB PLANTING

NOT TO SCALE



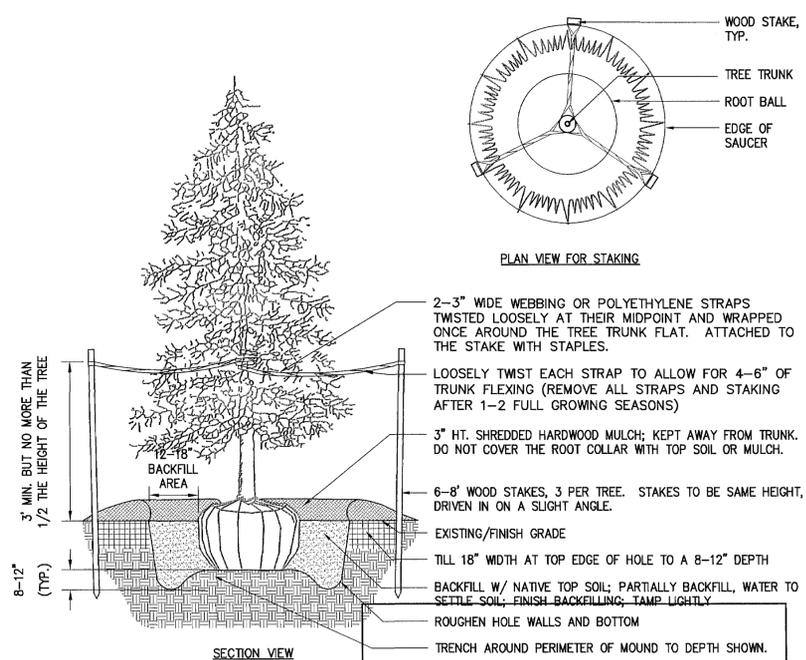
### DECIDUOUS TREE PLANTING

NOT TO SCALE



### MULTI-STEM TREE PLANTING

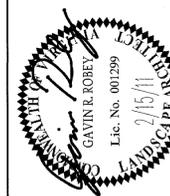
NOT TO SCALE



### EVERGREEN TREE PLANTING

NOT TO SCALE

REV.	DATE	DESCRIPTION
2	2/15/11	REVISED PER VCC COUNTY COMMENTS 08/10
1	10/26/10	REVISED PER VCC COUNTY COMMENTS 08/10



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CONSULTING ENGINEERS

Hampton Roads | Central Virginia | Middle Peninsula

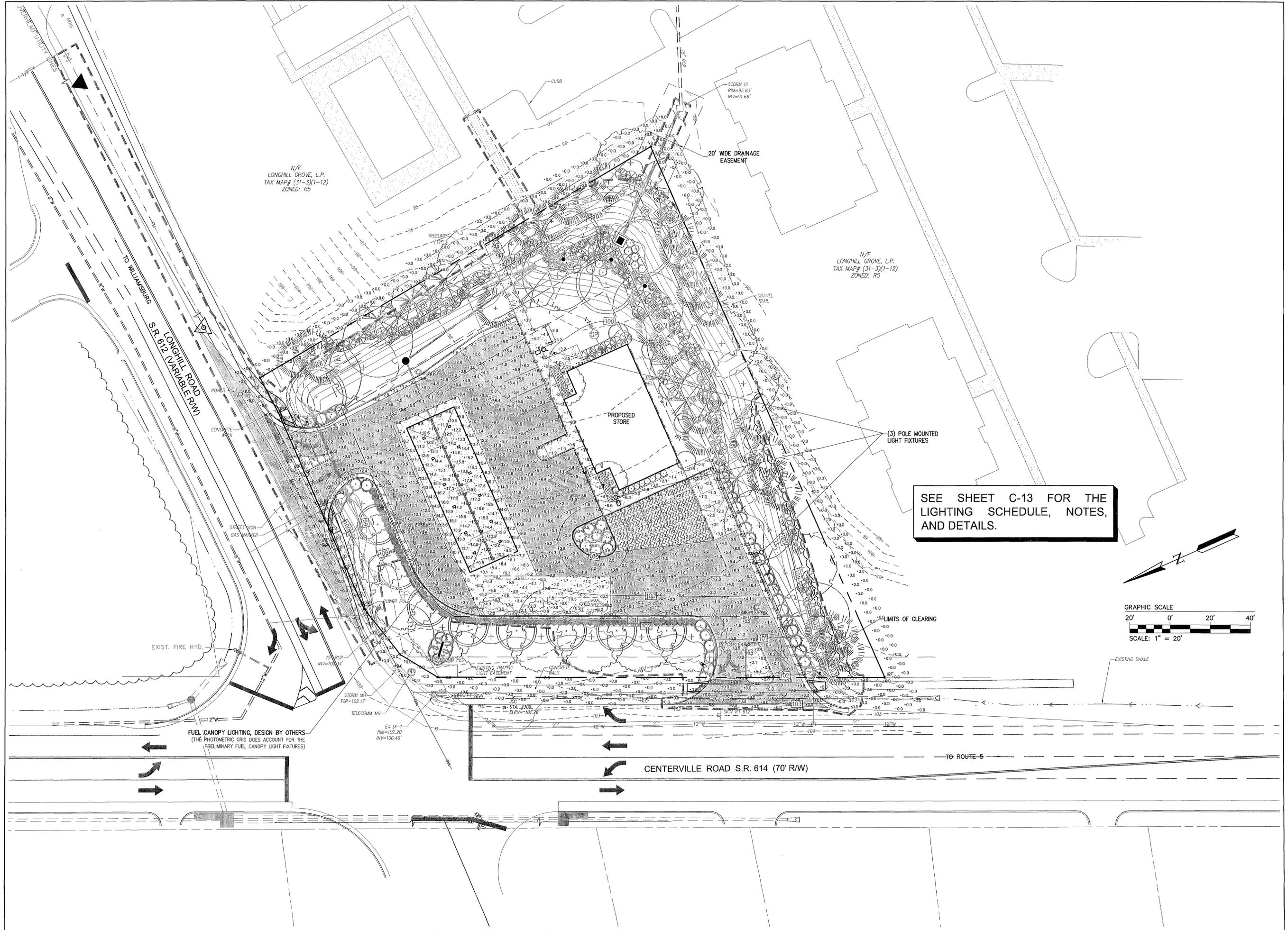
**FREEDOM MARKET**  
5534 CENTERVILLE RD.  
JAMES CITY COUNTY  
VIRGINIA

Project Contacts: VMB  
Project Number: 8419-04  
Scale: 1"=20'  
Date: 8/5/10

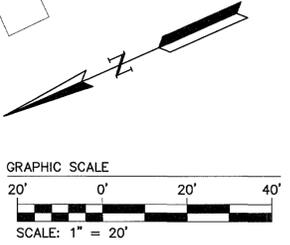
Sheet Title:  
**LANDSCAPE NOTES & DETAILS**

Sheet Number:  
**C-12**

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SEE SHEET C-13 FOR THE LIGHTING SCHEDULE, NOTES, AND DETAILS.



FUEL CANOPY LIGHTING, DESIGN BY OTHERS  
 (THE PHOTOMETRIC GRID DOES ACCOUNT FOR THE PRELIMINARY FUEL CANOPY LIGHT FIXTURES)

N/F LONGHILL GROVE, L.P.  
 TAX MAP# (31-3)(1-12)  
 ZONED: RS

N/F LONGHILL GROVE, L.P.  
 TAX MAP# (31-3)(1-12)  
 ZONED: RS

Rev.	Date	Description
1	10/25/10	REVISED PER VDOT REVIEW
2	2/15/11	REVISED PER VDOT REVIEW



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**AVS**  
 CONSULTING ENGINEERS

Hampton Roads | Central Virginia | Middle Peninsula

**FREEDOM MARKET**  
 5534 CENTERVILLE RD.  
 POMPATAN DISTRICT JAMES CITY COUNTY VIRGINIA

Project Contacts:	VMB
Project Number:	8419-04
Scale:	1"=20'
Date:	8/5/10
Sheet Title:	LIGHTING PLAN
Sheet Number:	C-11





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**DRAINAGE CALCULATIONS**

**FOR**

**FREEDOM MARKET**

Environmental Division

AUG 10 2010

RECEIVED

*SITE:*

James City County

*SUBMITTED TO:*

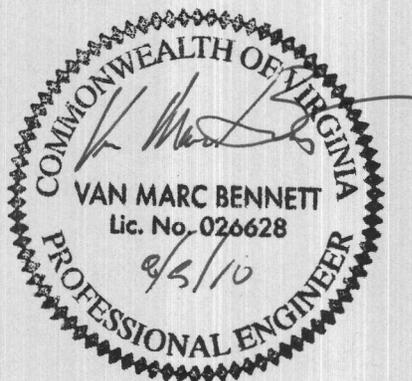
Environmental Division  
James City County

*Prepared By:*

AES Consulting Engineers  
5248 Olde Towne Road, Suite 1  
Williamsburg, Virginia 23188

July 27, 2010

AES Project No. 8419-04



## **TABLE OF CONTENTS**

- Stormwater Narrative**
- Special Stormwater Criteria (SSC)**
- Sediment Trap Design**
- Bioretention Facility Design**
  - Water Quality Volume Calculations**
  - Hydrograph Report**
  - Existing (Receiving) Storm System Calculations**
- Swale Channel Adequacy Calculations**
- Culvert Designs**

# **Freedom Market**

## **STORM WATER NARRATIVE**

### **PROJECT DESCRIPTION**

The scope of this project is the creation of a 2,400 square foot convenience store, with motor vehicle fuels sales, on a 1.1-acre parcel. Included with the scope of the project are supportive site improvements such as a parking lot, a stormwater management facility, and a rubbish enclosure.

### **EXISTING SITE CONDITIONS**

The site of the proposed project is located at the southeast corner formed by the intersection of Longhill Road with Centerville Road. Presently the site is undeveloped and wooded with "volunteer" growth. The site is generally flat, with a gentle slope falling from the northwest corner of the parcel to the southeastern corner.

### **ADJACENT PROPERTIES**

The project is planned for the unoccupied parcel formed by the intersection of Longhill Road with Centerville Road, therefore the roadways form part of the adjacent property uses. On the opposite side of the roadway for the proposed site are: a veterinary clinic (Longhill Road); the entrance to Freedom Park; and a few single-family homes (Centerville Road).

Located generally to the east and south of the project site is the multi-story apartment complex of Longhill Grove.

### **SOILS**

The project area consists of 11C-Craven-Uchee complex, 14B Emporia, and 29B-Slagle Complex with slopes ranging from 0 to 4 percent.

### **CRITICAL EROSION AREAS**

There are small areas of 25% slope to be impacted with the site development. These slope are generally associated with the roadside ditches of the adjacent roadway. Impacts to the slope are necessary for the construction of entrances to the site.

These impacts amount to 0.01 acres, or less than 1.0% of the total site area.

### **STORMWATER MANAGEMENT & WATER QUALITY**

With the original design of the adjacent Longhill Grove multi-story apartment complex, a stormwater management feature (a wet pond) was created which included the capability of providing some water quantity control and water quality improvement for the proposed site of Freedom Market. Upon closer examination of the design documents, the truer capability of this stormwater feature was recognized, that of providing water quality improvement for both the Longhill Grove and the parcel of the proposed Freedom Market. However, the closer examination realized that the stormwater feature of

Longhill Road did not provide full stormwater quantity attenuation. Therefore, the stormwater management design philosophy for the proposed Freedom Market is to provide stormwater attenuation for the site improvements, and incorporate aspects of improved quality of stormwater runoff with a special stormwater criteria feature (bioretention)

For the Freedom Market site design, runoff from the proposed site will be collected by swales, attenuated and treated by a bioretention facility before being discharged into the Longhill Grove storm system and ultimately to the stormwater management facility / best management practice (BMP) design with Longhill Grove. The attenuation goals are achieved from the proposed Freedom Market site to below pre-development runoff rates. (The calculated 10-years storm event runoff from the area of the proposed Freedom Market site to the existing storm system on the Longhill Grove stormsewer system inlet was determined to be 10.1 cubic feet per second (cfs). The stormsewer system of the Longhill Grove was design with this parameter. With the proposal of the Freedom Market site development, a combined discharge from the proposed site with the runoff from the area off-site not being treated by the bioretention facility, an actual total flow of 5.0 cfs is recognized. This demonstrates that the storm system of Longhill Grove will not be overwhelmed by the runoff from the new development.)

The proposed bioretention facility is designed to collect, store and treat the first flush, or 1-inch of runoff, from the impervious acreages of the entire parcel as well as some off-site areas associated with Longhill Road and Centerville Road.

In addition to the bioretention facility, pervious pavers will be utilized in the parking area on the side of the building. This system along with the bioretention facility (both SSC measures) will provide infiltration and groundwater recharge and further reduce the rate and volume of runoff into the existing storm system and BMP of the Longhill Grove.

Runoff from the canopy (over the re-fueling area), as well as the area underneath the canopy, will be collected by a trench drain and piped to an pre-treatment component (Contech DS2015, or similar product) before being piped to the bioretention facility. The pre-treatment will actually allow grits and solids to settle out, while allow runoff to separate for oils and fuels. Solids will settle to the bottom of the separator while any floating grease of oil will be trapped by an oil baffle skirt and prevented from leaving as part of the runoff. The intention is to remove oil or grease spilled in the gas pump area from the runoff before it is treated in the bioretention facility.

The pre-treatment component assists in maintaining higher runoff quality during dispensing of the fuel. In order to prevent spills during times in which the underground tanks are being refilled, the tanks will be equipped with spill prevention overflow containment. These consist of small storage areas above the main storage tank that will provide storage volume for fuel in the accidental occurrence of the tanks being filled beyond capacity. Instead of spilling onto the pavement and being washed away with the stormwater runoff, the gasoline will be contained in these storage vaults where the fuel is safely siphoned out.

### **EROSION AND SEDIMENT CONTROL**

During Construction the area of the bioretention facility will be utilized as a temporary sediment trap. Wet and dry storage volume is provided to store the water and allow a slow release in accordance with the principals of the Virginia Erosion and Sediment Control Handbook. The sediment trap will treat runoff from the majority of the disturbed area of the site.

### **SWALE AND CULVERT ANALYSIS**

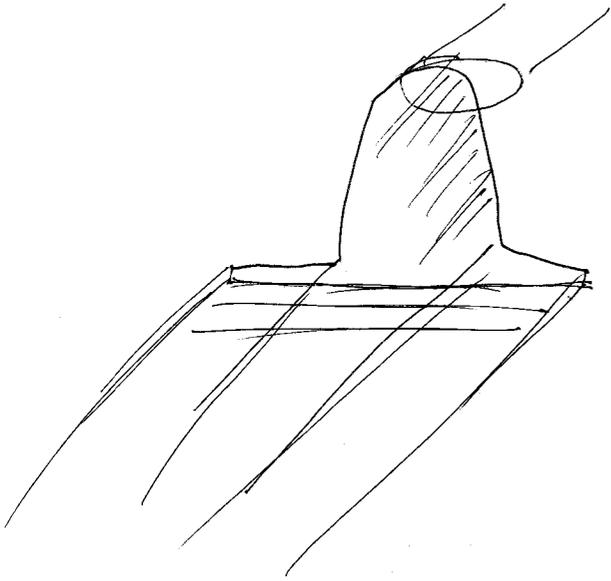
Each swale on site was analyzed to determine velocity and capacity during 1-year and 10-year storm events. These computations can be found in the attached information for each swale.

Each culvert was verified to confirm size. This information is provided in the attached information.

### **RESULTS & CONCLUSIONS**

Despite the existence of an off-site water quality facility in accordance with the 10 point system the site is designed with a bioretention facility which provides both quality and quantity benefits. The stormwater system is designed to provide adequate reduction in peak flow rates to be below the undeveloped condition for the drainage area.

Because the site is within the Powhatan Creek Watershed, and has a disturbed area between 1 and 10 acres, it is designated as a Special Stormwater Criteria (SSC) Class 3 site. This implies that three measures from the SSC menu are required. To meet this objective, the proposed site includes the bioretention facility, the pervious pavers in the parking area, and the use of flatter site grades within the overall site area. A summary of these measures is included in the drainage calculations.



## BIORETENTION FACILITY

### WATER QUALITY CALCULATIONS WATER QUALITY VOLUME CALCULATIONS STORMWATER ROUTING 1, 2, 10 & 100 YEAR STORM

Storm Event	Pre-Development Flow (cfs)	Post-Development Flow (cfs)	Water Surface Elevation	Routed Flow (cfs)
1	2.26	4.46	96.64	2.07
2	2.67	5.27	96.81	2.26
10	3.48	6.87	97.12	2.82
100	4.60	9.08	97.52	3.41

### SPECIAL STORMWATER CRITERIA

The site has a disturbed area between 1 and 10 acres, it is designated as a SSC Class 3. This implies that three measures from the Special Stormwater Criteria menu are required. These are provided by the bioretention facility, the pervious pavers in the parking area, and the use of flatter site grades within the overall site area. See the table below.

SSC Type	Description	Restrictions/ Limitations	How satisfied on-site
#2	Use of pervious pavers	1,000 s.f. minimum size	1,130 s.f. provided
#12	Bioretention Basin	650 s.f. minimum size	1,000 s.f. provided
#26	Use of flatter site grades	Applied site-wide	Flatter grades applied site-wide

Sediment  
Trap



Project: Freedom Market  
 Project No.: 8419-04  
 Subject: Sediment Trap Design  
 Date: 7/22/2010  
 Calculated By: GVC

Drainage Area to Sediment Trap = 1.54 Acres

Required Wet Storage = 67 cy/acre \* (Drainage Area) = 103 cubic yards, or  
 2,786 cubic feet

Required Dry Storage = 67 cy/acre \* (Drainage Area) = 103 cubic yards, or  
 2,786 cubic feet

**Determine Volume of Sediment Trap by Contour:**

<u>Elevation</u>	<u>Depth</u>	<u>Area (sq. ft.)</u>	<u>Volume (cu. ft.)</u>	<u>Volume (cu. yd.)</u>	<u>Sum Volume (cu. ft.)</u>	<u>Sum Volume (cu. yd.)</u>
95	0	1099	0	0	0	0
96	1	2040	1569.5	58	1570	58
97	1	2717	2378.5	88	3948	146
98	1	3578	3147.5	117	7096	263
99	1	4469	4023.5	149	11119	412
99	0		0	0	11119	412
99	0		0	0	11119	412

Length of Aggregate Outlet Weir = 6 ft./acre & (Drainage Area) = 9 feet

Elevation of Wet Storage Volume = 96.5

Elevation of Dry Storage Volume = 97.5

Elevation of accumulated sediment when sediment removed is required (1/2 wet storage volume) = 95.9

Top Width of Embankment (H<sub>0</sub> = 1.0 ft.) = 4 feet



Project: Freedom Market  
Project No.: 8419-04  
Subject: Water Quality Volume  
Bioretention Facility  
Date: 7/22/2010  
Calculated By: GVC

BMP Type = Bioretention Facility

*0.6*

$$\begin{aligned} \text{Water Quality Volume} &= 0.5 \text{ in.} \times \underline{0.6} \text{ acres of impervious coverage} \\ &= (0.5 / 12) \times (43,560 \times 0.6) \\ &= \boxed{1089 \text{ CF}} \end{aligned}$$

$$\begin{aligned} \text{Total Storage Volume Required} &= \underline{2} \times \text{Water Quality Volume} \\ &= 2 \times 1089 \\ &= 2178 \text{ CF} \end{aligned}$$

$$\begin{aligned} \text{Min. Dry Storage Volume Required} &= \underline{2} \times \text{Water Quality Volume} \\ &= 2 \times 1089 \\ &= 2178 \text{ CF} \end{aligned}$$

$$\text{Dry Storage Volume Provided} = \underline{2,190} \text{ CF} \quad \text{Elevation} = \underline{96.25 \text{ (Rim of DI-7)}}$$

# Hydraflow Table of Contents

8419-04\_Bioretention Pond.gpw

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Wednesday, Aug 4, 2010

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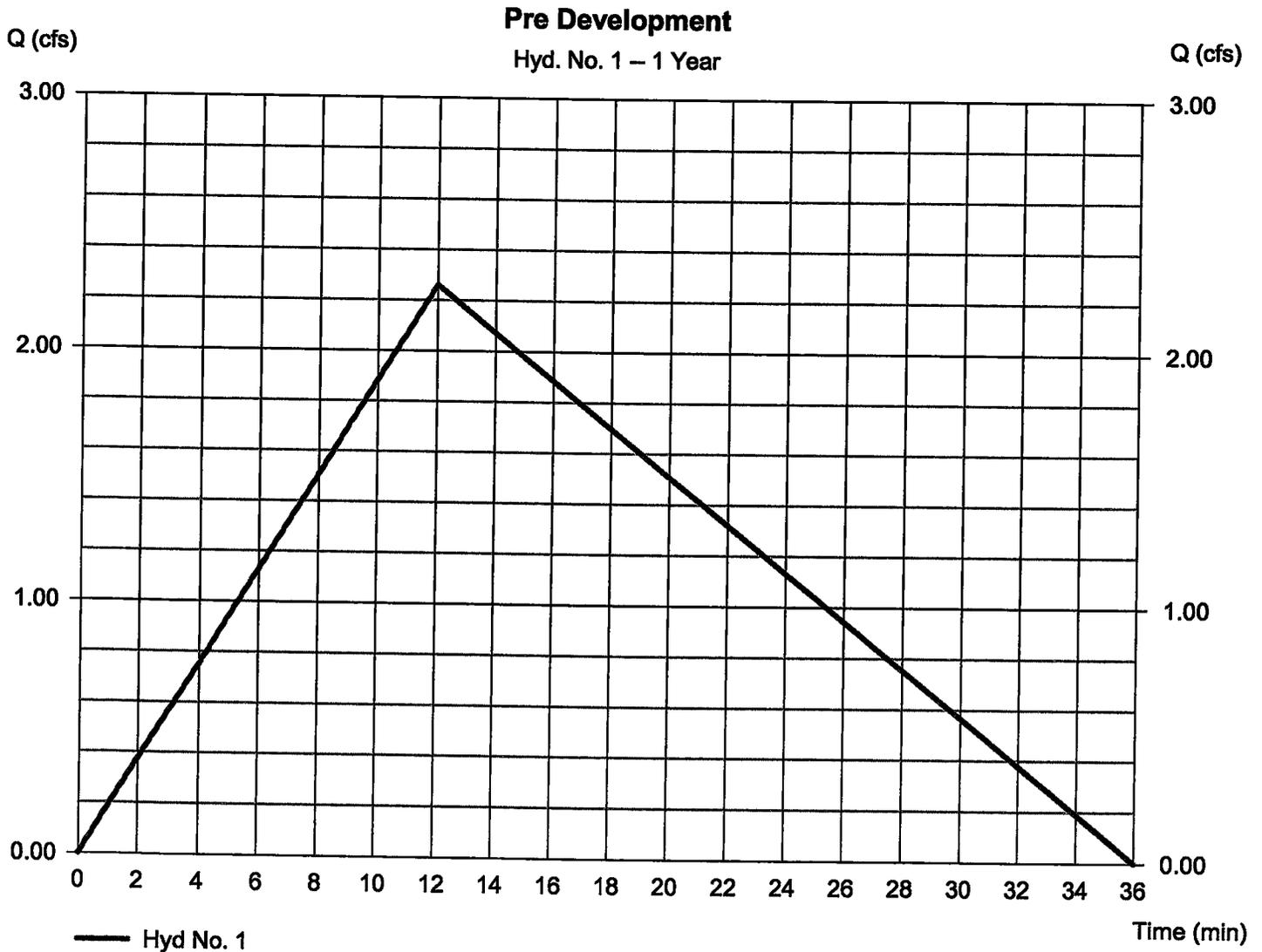
# Hydrograph Report

## Hyd. No. 1

Pre Development

Hydrograph type = Rational  
Storm frequency = 1 yrs  
Time interval = 1 min  
Drainage area = 1.540 ac  
Intensity = 3.669 in/hr  
IDF Curve = JamesCity-NW-14.IDF

Peak discharge = 2.260 cfs  
Time to peak = 12 min  
Hyd. volume = 2,441 cuft  
Runoff coeff. = 0.4  
Tc by User = 12.00 min  
Asc/Rec limb fact = 1/2



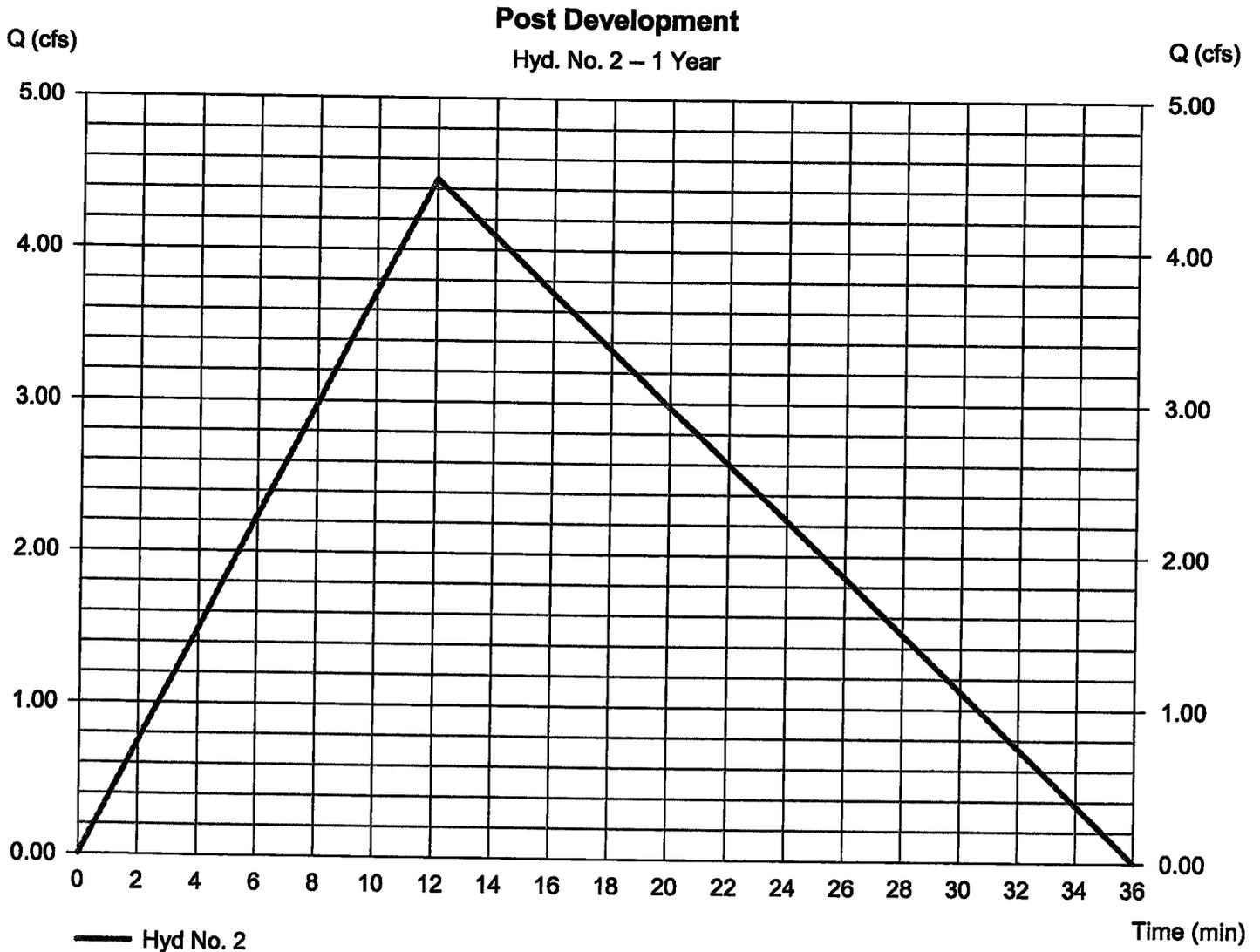
# Hydrograph Report

## Hyd. No. 2

### Post Development

Hydrograph type = Rational  
Storm frequency = 1 yrs  
Time interval = 1 min  
Drainage area = 1.540 ac  
Intensity = 3.669 in/hr  
IDF Curve = JamesCity-NW-14.IDF

Peak discharge = 4.464 cfs  
Time to peak = 12 min  
Hyd. volume = 4,821 cuft  
Runoff coeff. = 0.79  
Tc by User = 12.00 min  
Asc/Rec limb fact = 1/2



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Wednesday, Aug 4, 2010

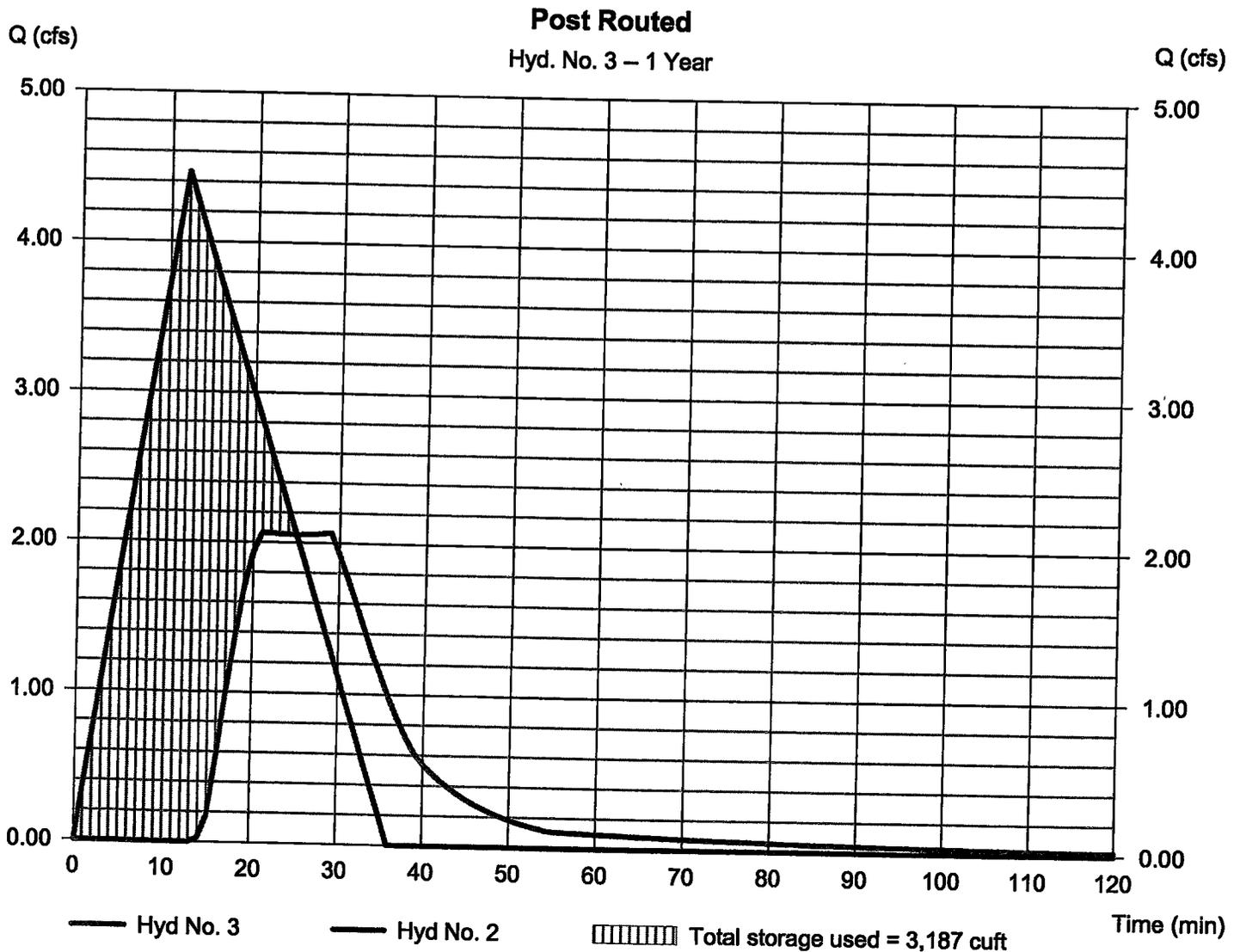
## Hyd. No. 3

Post Routed

Hydrograph type = Reservoir  
Storm frequency = 1 yrs  
Time interval = 1 min  
Inflow hyd. No. = 2 - Post Development  
Reservoir name = Bioretention Facility

Peak discharge = 2.068 cfs  
Time to peak = 29 min  
Hyd. volume = 2,758 cuft  
Max. Elevation = 96.64 ft  
Max. Storage = 3,187 cuft

Storage Indication method used.



# Pond Report

## Pond No. 1 - Bioretention Facility

### Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 95.00 ft

### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	95.00	1,099	0	0
1.00	96.00	2,040	1,545	1,545
2.00	97.00	3,158	2,578	4,124
3.00	98.00	4,257	3,693	7,817
4.00	99.00	5,575	4,901	12,718

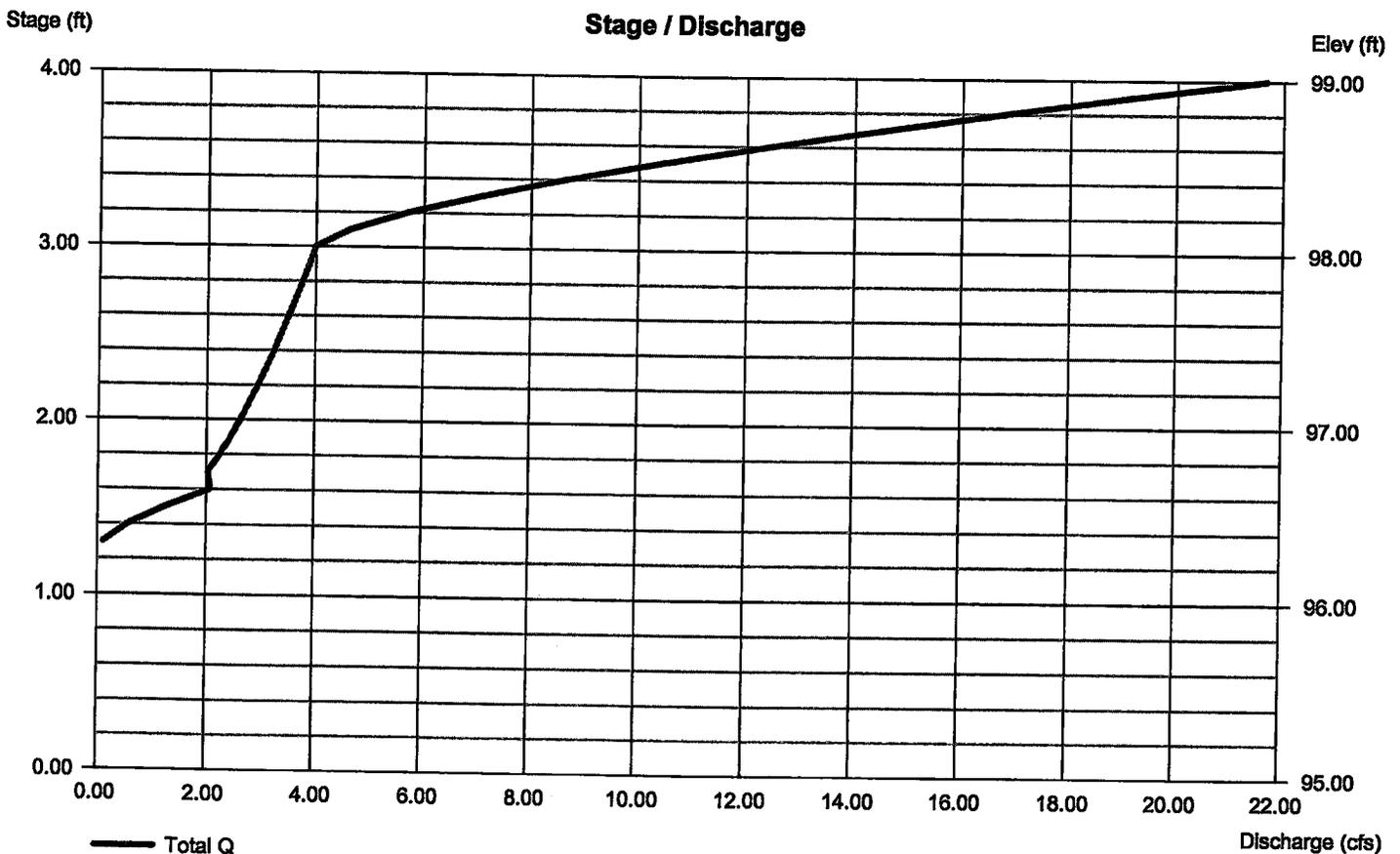
### Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	0.00	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 93.00	0.00	0.00	0.00
Length (ft)	= 68.00	0.00	0.00	0.00
Slope (%)	= 0.37	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

### Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 3.00	5.00	0.00	0.00
Crest El. (ft)	= 96.25	98.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Riser	Rect	—	—
Multi-Stage	= Yes	No	No	No
Exfil. (in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



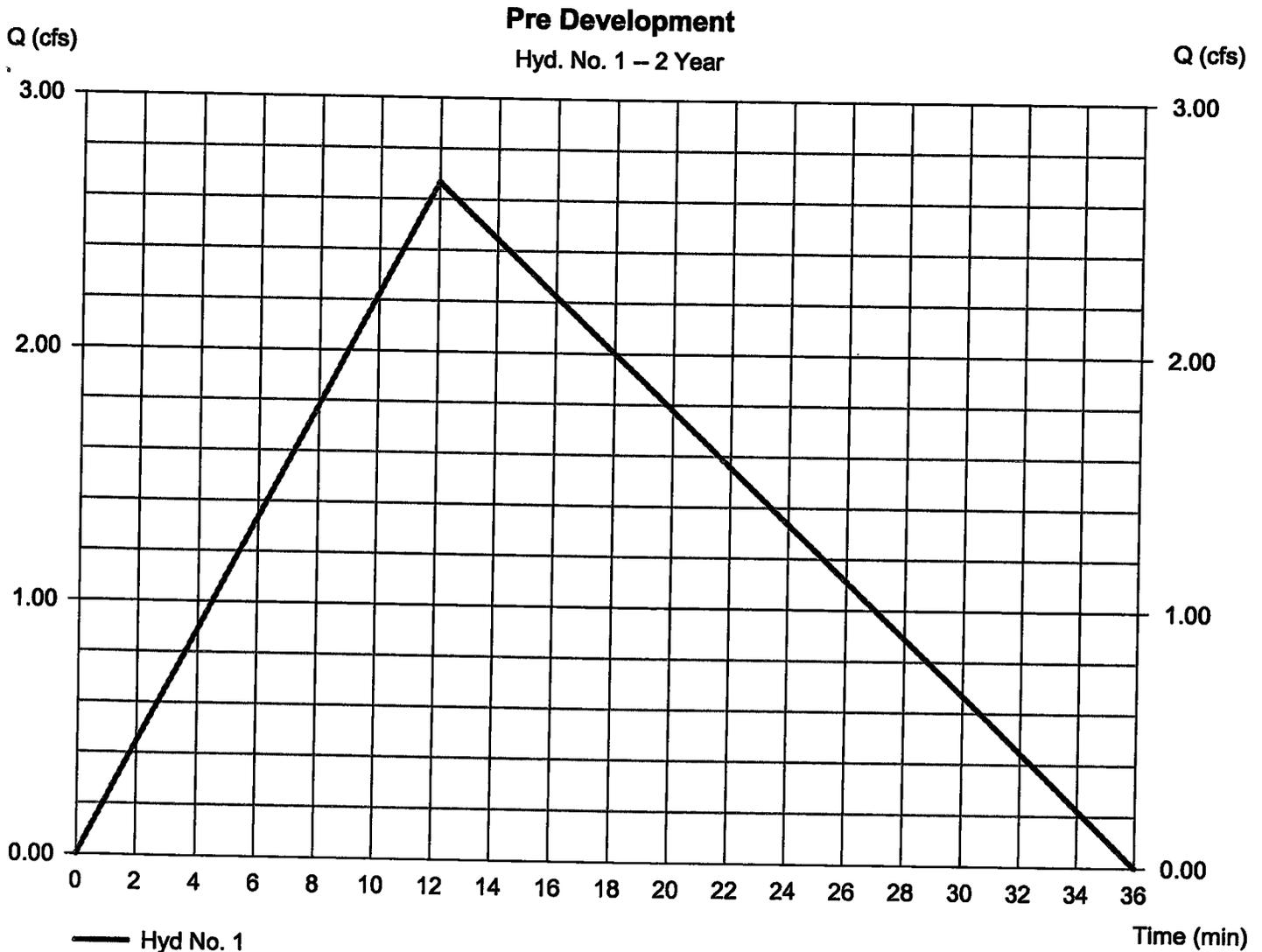
# Hydrograph Report

## Hyd. No. 1

Pre Development

Hydrograph type = Rational  
Storm frequency = 2 yrs  
Time interval = 1 min  
Drainage area = 1.540 ac  
Intensity = 4.331 in/hr  
IDF Curve = JamesCity-NW-14.IDF

Peak discharge = 2.668 cfs  
Time to peak = 12 min  
Hyd. volume = 2,881 cuft  
Runoff coeff. = 0.4  
Tc by User = 12.00 min  
Asc/Rec limb fact = 1/2



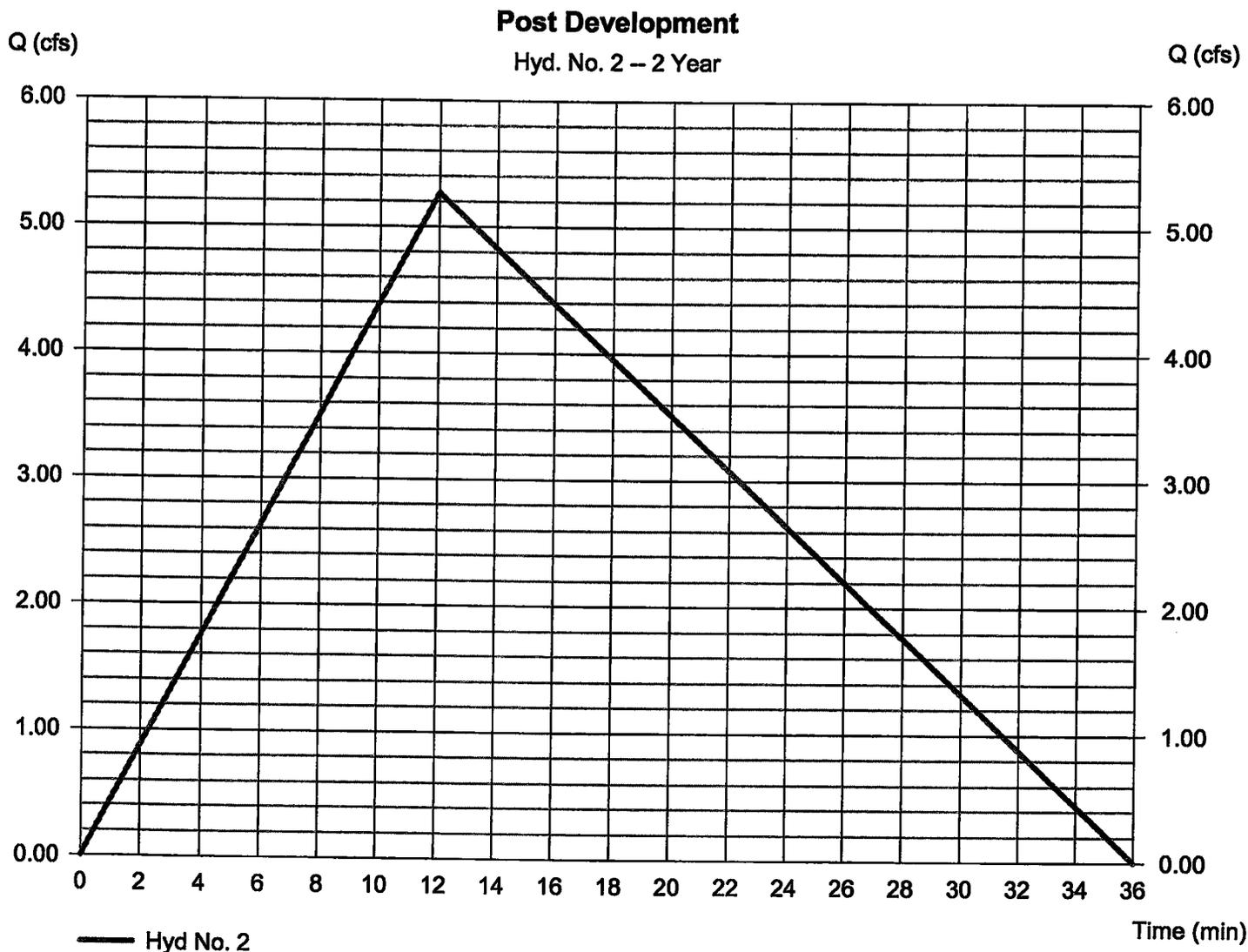
# Hydrograph Report

## Hyd. No. 2

### Post Development

Hydrograph type = Rational  
Storm frequency = 2 yrs  
Time interval = 1 min  
Drainage area = 1.540 ac  
Intensity = 4.331 in/hr  
IDF Curve = JamesCity-NW-14.IDF

Peak discharge = 5.269 cfs  
Time to peak = 12 min  
Hyd. volume = 5,690 cuft  
Runoff coeff. = 0.79  
Tc by User = 12.00 min  
Asc/Rec limb fact = 1/2



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Wednesday, Aug 4, 2010

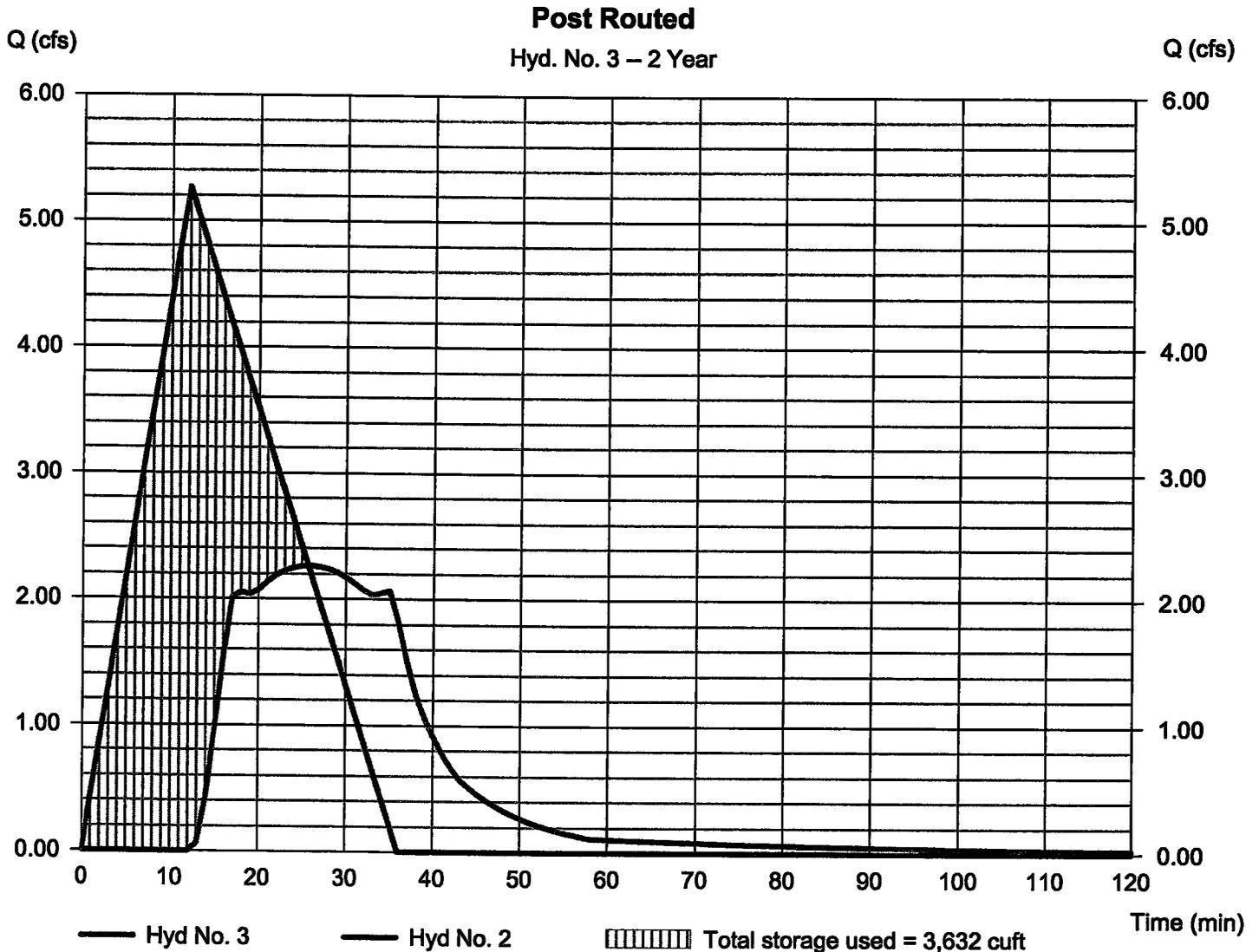
## Hyd. No. 3

Post Routed

Hydrograph type = Reservoir  
Storm frequency = 2 yrs  
Time interval = 1 min  
Inflow hyd. No. = 2 - Post Development  
Reservoir name = Bioretention Facility

Peak discharge = 2.261 cfs  
Time to peak = 26 min  
Hyd. volume = 3,627 cuft  
Max. Elevation = 96.81 ft  
Max. Storage = 3,632 cuft

Storage Indication method used.



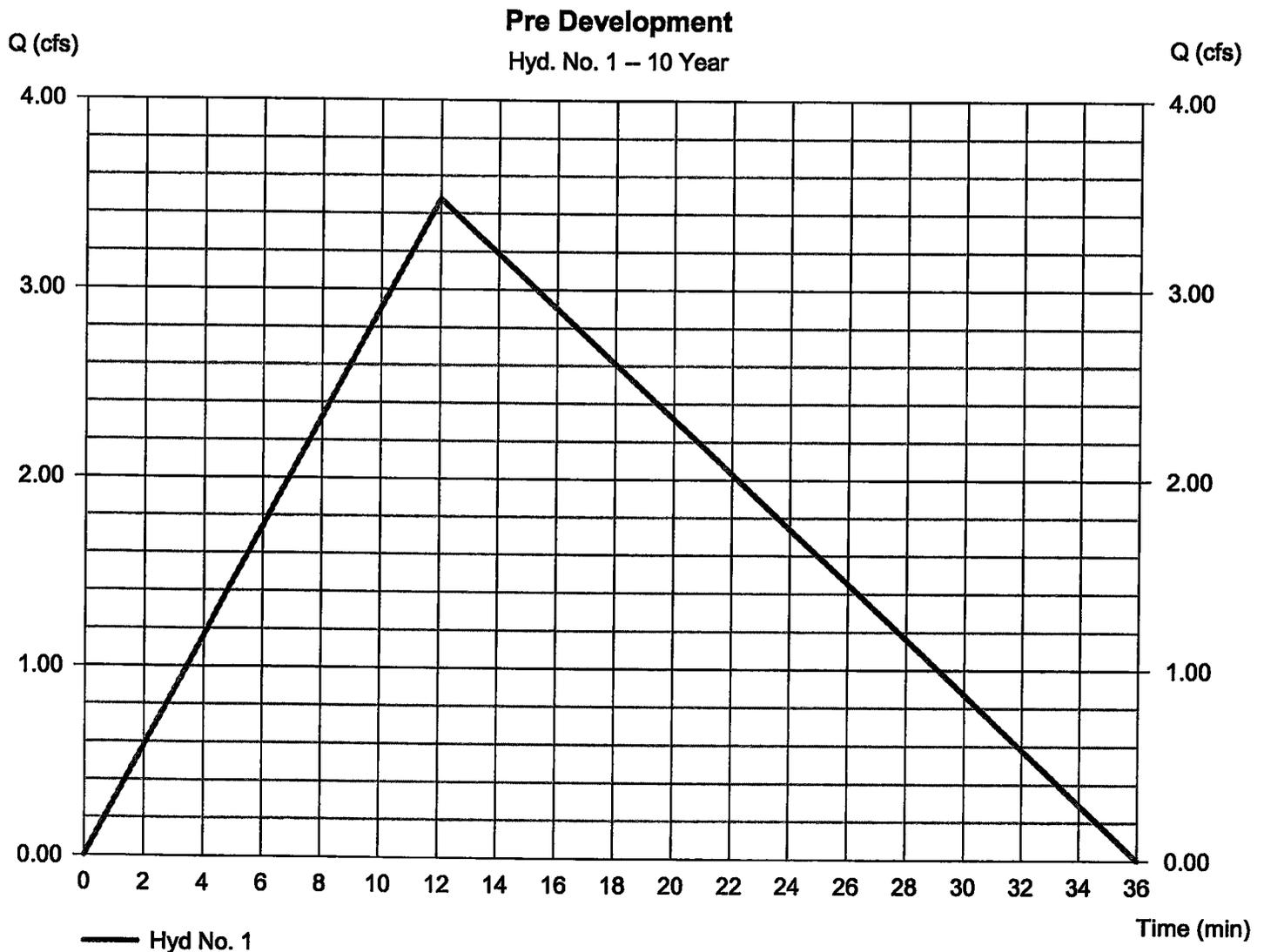
# Hydrograph Report

## Hyd. No. 1

### Pre Development

Hydrograph type = Rational  
Storm frequency = 10 yrs  
Time interval = 1 min  
Drainage area = 1.540 ac  
Intensity = 5.646 in/hr  
IDF Curve = JamesCity-NW-14.IDF

Peak discharge = 3.478 cfs  
Time to peak = 12 min  
Hyd. volume = 3,756 cuft  
Runoff coeff. = 0.4  
Tc by User = 12.00 min  
Asc/Rec limb fact = 1/2



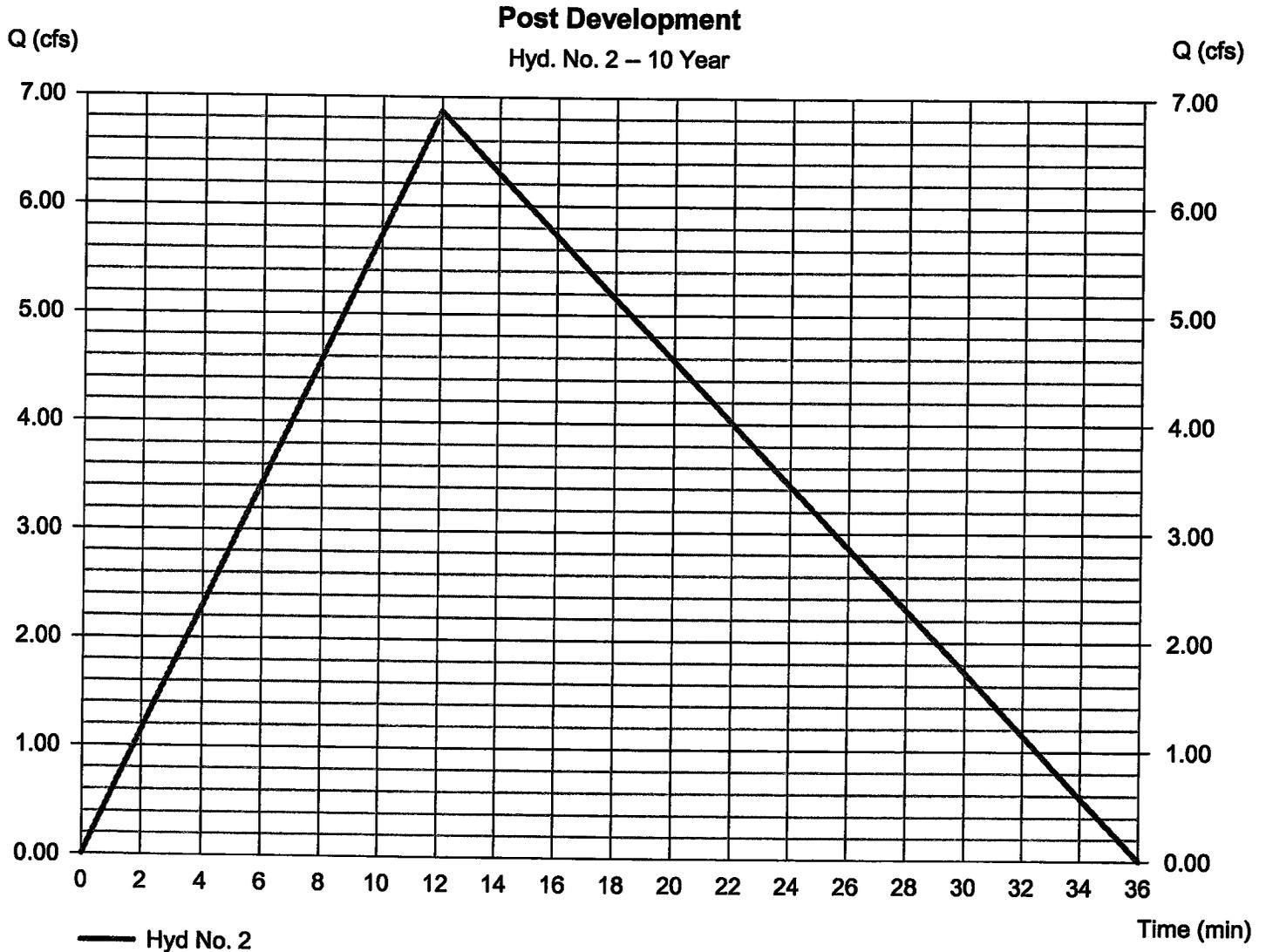
# Hydrograph Report

## Hyd. No. 2

### Post Development

Hydrograph type = Rational  
Storm frequency = 10 yrs  
Time interval = 1 min  
Drainage area = 1.540 ac  
Intensity = 5.646 in/hr  
IDF Curve = JamesCity-NW-14.IDF

Peak discharge = 6.869 cfs  
Time to peak = 12 min  
Hyd. volume = 7,419 cuft  
Runoff coeff. = 0.79  
Tc by User = 12.00 min  
Asc/Rec limb fact = 1/2



# Hydrograph Report

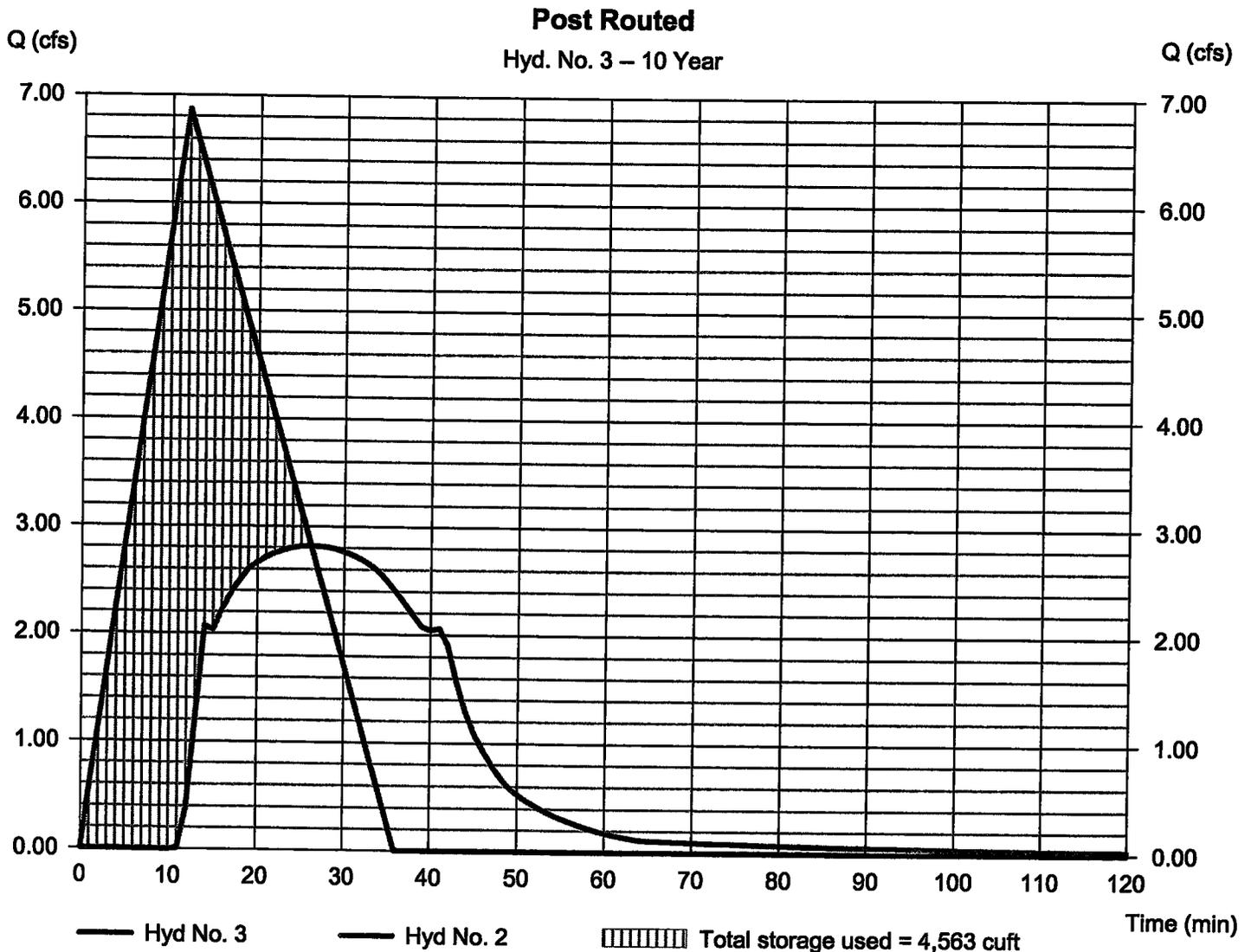
## Hyd. No. 3

Post Routed

Hydrograph type = Reservoir  
Storm frequency = 10 yrs  
Time interval = 1 min  
Inflow hyd. No. = 2 - Post Development  
Reservoir name = Bioretention Facility

Peak discharge = 2.819 cfs  
Time to peak = 26 min  
Hyd. volume = 5,355 cuft  
Max. Elevation = 97.12 ft  
Max. Storage = 4,563 cuft

Storage Indication method used.



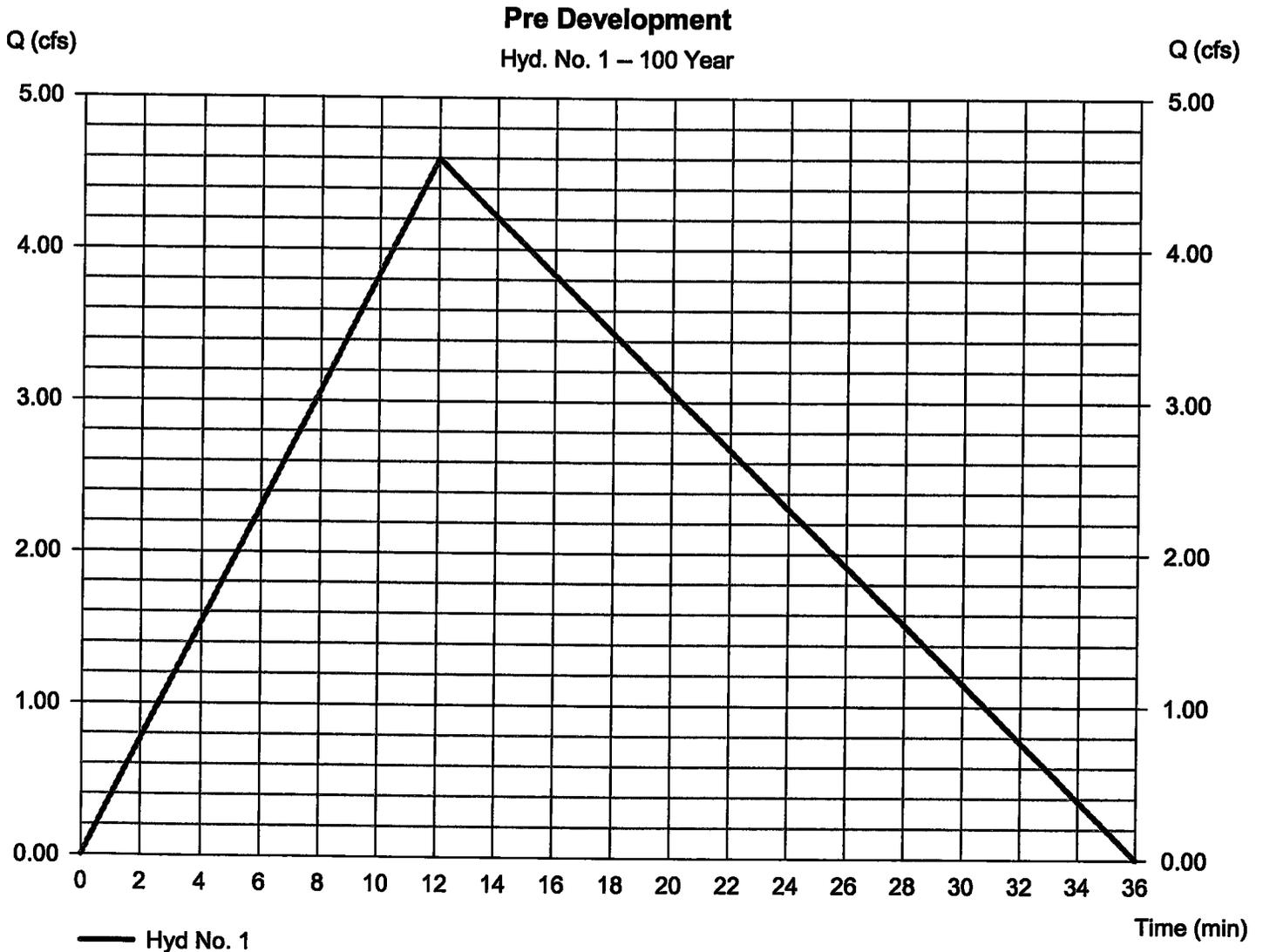
# Hydrograph Report

## Hyd. No. 1

### Pre Development

Hydrograph type = Rational  
Storm frequency = 100 yrs  
Time interval = 1 min  
Drainage area = 1.540 ac  
Intensity = 7.463 in/hr  
IDF Curve = JamesCity-NW-14.IDF

Peak discharge = 4.597 cfs  
Time to peak = 12 min  
Hyd. volume = 4,965 cuft  
Runoff coeff. = 0.4  
Tc by User = 12.00 min  
Asc/Rec limb fact = 1/2



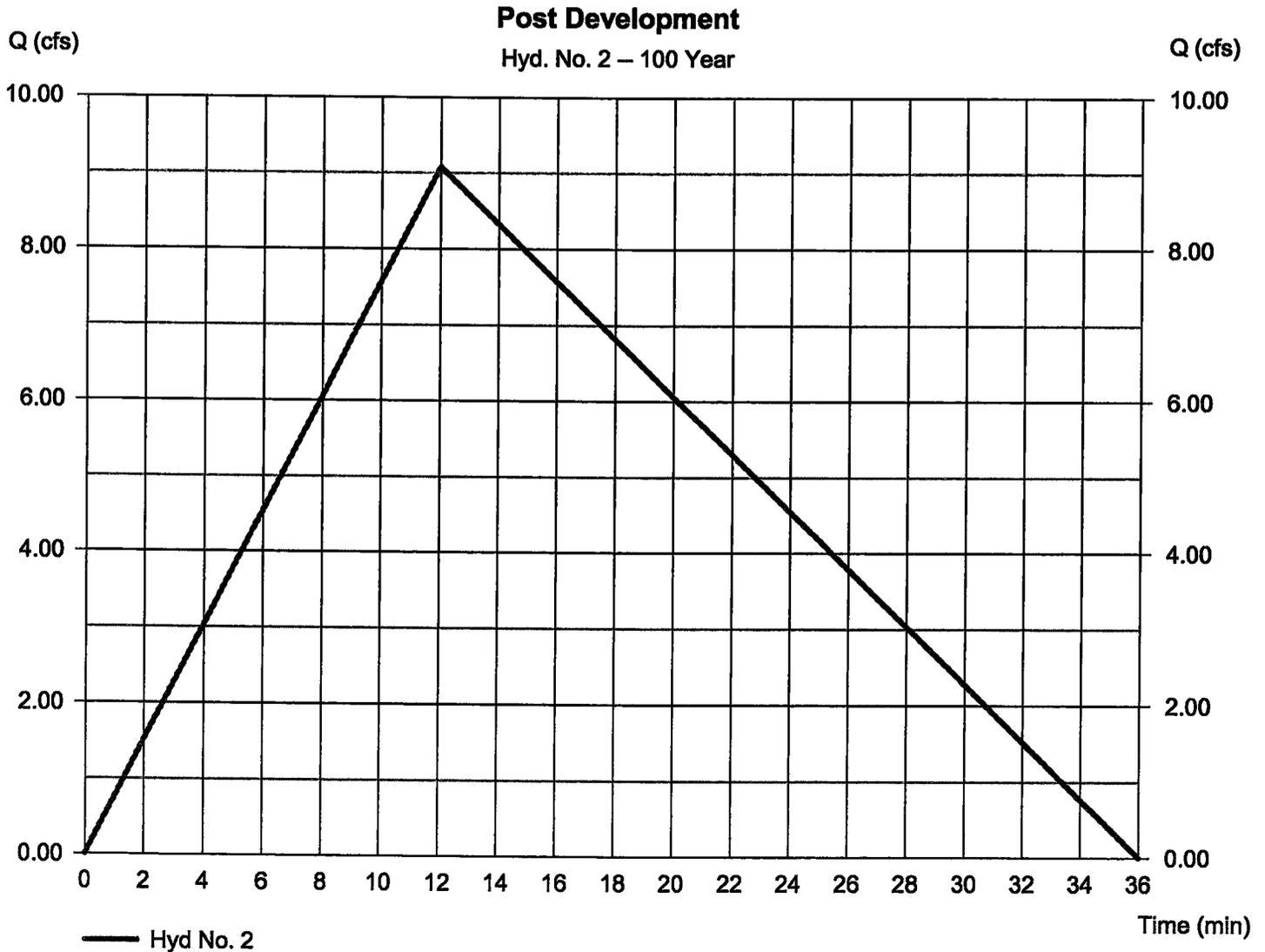
# Hydrograph Report

## Hyd. No. 2

### Post Development

Hydrograph type = Rational  
Storm frequency = 100 yrs  
Time interval = 1 min  
Drainage area = 1.540 ac  
Intensity = 7.463 in/hr  
IDF Curve = JamesCity-NW-14.IDF

Peak discharge = 9.079 cfs  
Time to peak = 12 min  
Hyd. volume = 9,805 cuft  
Runoff coeff. = 0.79  
Tc by User = 12.00 min  
Asc/Rec limb fact = 1/2



# Hydrograph Report

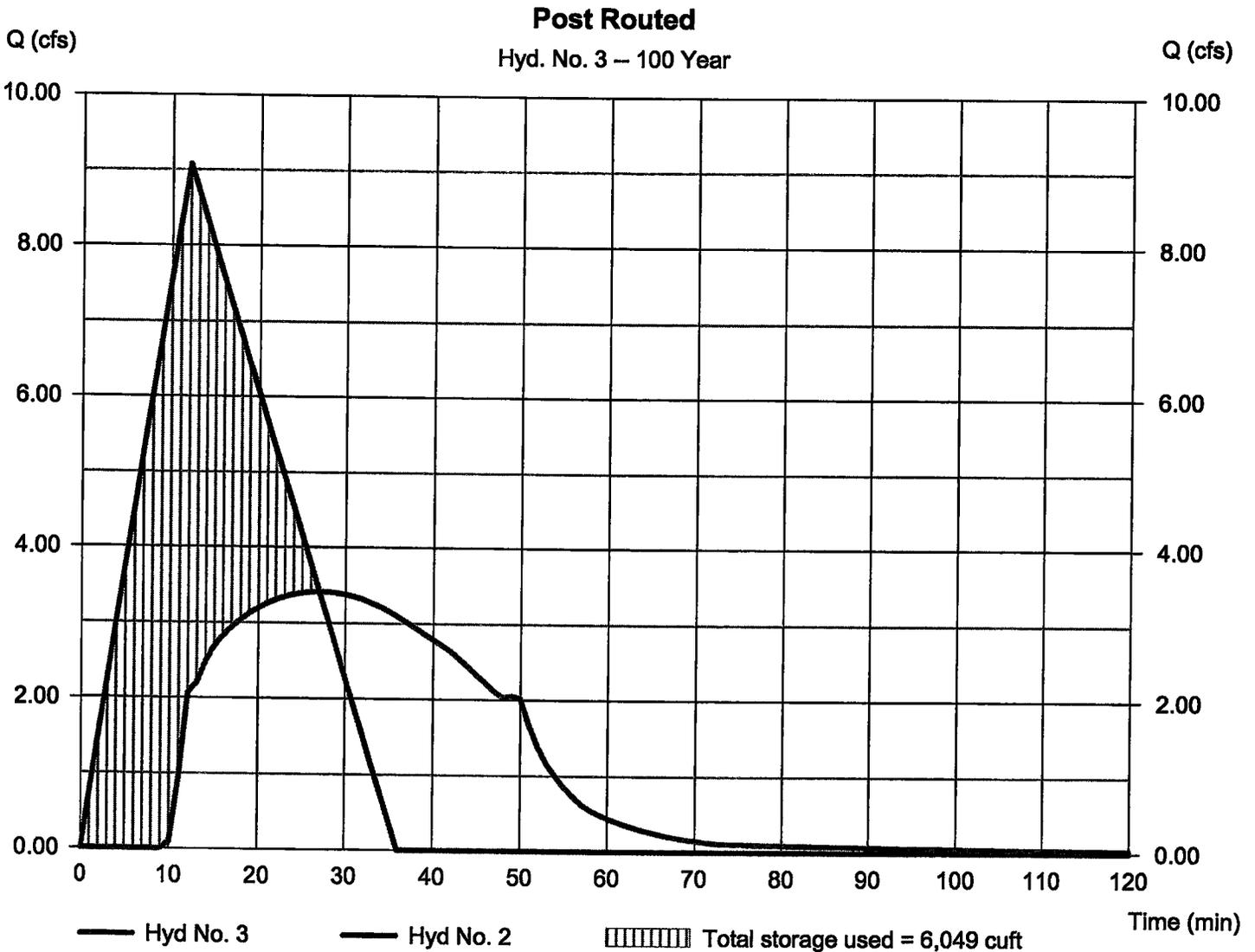
## Hyd. No. 3

Post Routed

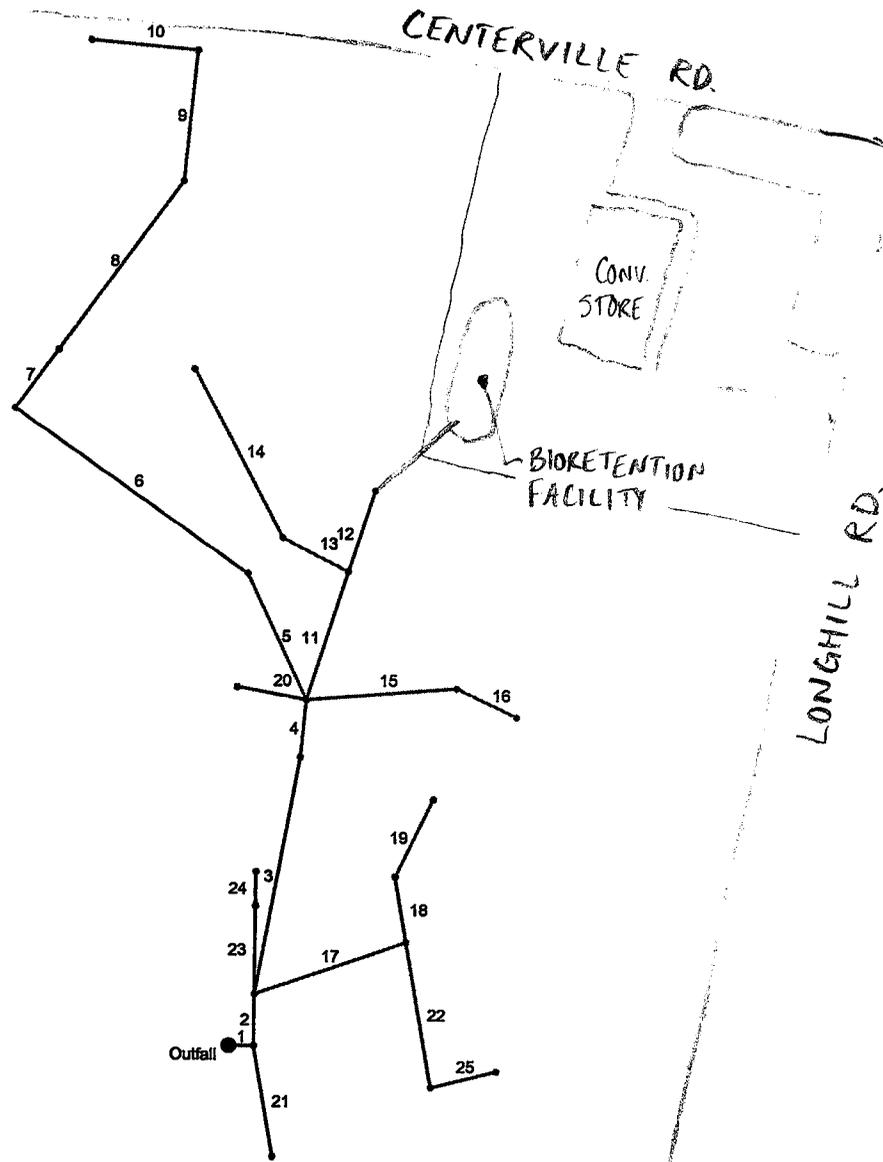
Hydrograph type = Reservoir  
Storm frequency = 100 yrs  
Time interval = 1 min  
Inflow hyd. No. = 2 - Post Development  
Reservoir name = Bioretention Facility

Peak discharge = 3.409 cfs  
Time to peak = 27 min  
Hyd. volume = 7,742 cuft  
Max. Elevation = 97.52 ft  
Max. Storage = 6,049 cuft

Storage Indication method used.



# Freedom Market off-site storm



Project File: w08419-03preliminaryoff-site.stm

Number of lines: 25

Date: 08-04-2010

# Storm Sewer Tabulation

Line	To Line	Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (ln/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
			Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (In)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	24.000	0.14	12.57	0.60	0.08	7.44	10.0	12.2	5.6	44.57	56.13	6.31	36	0.71	79.00	79.17	84.16	84.27	0.00	85.33	SS#17 to SS#15
2	1	52.000	1.08	11.91	0.50	0.54	7.05	10.0	12.0	5.6	42.56	51.50	6.02	36	0.60	79.27	79.58	84.89	85.10	85.33	84.75	SS#15 to SS#13
3	2	239.000	0.18	8.80	0.60	0.11	5.13	10.0	11.1	5.8	32.66	66.69	4.62	36	1.00	79.68	82.07	85.63	86.21	84.75	87.50	SS#13 to SS#11
4	3	57.000	0.73	8.62	0.50	0.37	5.02	10.0	10.9	5.9	32.27	42.37	4.57	36	0.40	82.17	82.40	86.26	86.39	87.50	88.00	SS#11 to SS#9
5	4	138.000	1.19	3.50	0.60	0.71	2.04	9.0	10.4	6.0	12.19	33.63	5.77	21	4.51	83.65	89.87	86.71	91.15	88.00	95.33	SS#9 to SS#7
6	5	279.000	0.28	2.31	0.70	0.20	1.33	9.0	9.4	6.2	8.23	8.78	5.65	18	0.70	90.12	92.07	91.22	93.29	95.33	99.00	SS37 to SS#5
7	6	72.000	0.48	2.03	0.70	0.34	1.13	8.0	9.2	6.3	7.08	7.91	6.05	15	1.50	92.32	93.40	93.74	94.47	99.00	99.50	SS#5 to SS#3
8	7	206.000	0.11	1.55	0.90	0.10	0.80	8.0	8.3	6.5	5.14	7.91	5.01	15	1.50	93.50	96.59	94.56	97.50	99.50	102.33	SS#3 to SS#1
9	8	130.000	0.24	1.44	0.40	0.10	0.70	7.0	7.7	6.6	4.61	3.54	4.44	15	0.30	96.69	97.08	97.55	98.56	102.33	102.50	SS#1 to SS#1A
10	9	104.000	1.20	1.20	0.50	0.60	0.60	7.0	7.0	6.8	4.10	5.73	2.32	18	0.30	92.17	92.48	98.78	98.94	102.50	94.50	SS#5 to SS#5A
11	4	134.000	0.42	2.64	0.50	0.21	1.66	8.0	8.9	6.3	13.29	45.24	5.21	24	4.00	83.40	88.76	86.71	90.05	88.00	94.00	SS#9 to SS#22
12	11	84.000	0.43	0.43	0.75	0.32	0.32	7.0	7.0	6.8	5.02	11.18	4.71	15	3.00	87.11	89.63	90.05	90.53	94.00	95.00	SS#22 to SS#22
13	11	72.000	1.29	1.79	0.60	0.77	1.12	7.0	8.6	6.4	7.18	8.21	5.30	18	0.61	89.26	89.70	90.28	90.84	94.00	95.50	SS#22 to SS#20
14	13	188.000	0.50	0.50	0.70	0.35	0.35	7.0	7.0	6.8	2.39	6.85	3.00	15	1.50	89.95	92.77	91.08	93.39	95.50	99.33	SS#20 to SS#18
15	4	147.000	0.27	0.93	0.80	0.22	0.55	7.0	7.6	6.7	3.64	5.60	2.97	15	1.00	84.15	85.62	86.71	87.34	88.00	92.00	SS#9 to SS#26
16	15	64.000	0.66	0.66	0.50	0.33	0.33	7.0	7.0	6.8	2.25	5.60	1.88	15	1.00	85.72	86.36	87.41	87.50	92.00	90.50	SS#26 to SS#24
17	2	156.000	0.25	1.79	0.80	0.20	1.18	8.0	10.3	6.0	7.06	6.87	5.75	15	1.51	81.33	83.68	85.63	88.11	84.75	90.33	SS#13 to SS#34
18	17	66.000	0.68	1.34	0.70	0.48	0.81	8.0	8.0	6.6	5.28	5.60	4.30	15	1.00	83.78	84.44	88.63	89.22	90.33	88.75	SS#34 to SS#32
19	18	85.000	0.66	0.66	0.50	0.33	0.33	7.0	7.0	6.8	2.25	3.84	1.84	15	0.47	84.54	84.94	89.40	89.54	88.75	90.00	SS#32 to SS#30
20	4	68.000	0.82	0.82	0.50	0.41	0.41	10.0	10.0	6.1	2.48	15.82	3.01	15	6.00	84.15	88.23	86.71	88.86	88.00	88.23	SS#9 to SS#28
21	1	111.000	0.52	0.52	0.60	0.31	0.31	7.0	7.0	6.8	2.13	6.46	1.74	15	1.00	80.92	82.03	84.89	85.01	85.33	87.75	SS#15 to SS#38
22	17	147.000	0.10	0.20	0.80	0.08	0.17	7.0	7.6	6.7	1.13	3.53	0.92	15	0.30	83.78	84.22	88.63	88.67	90.33	92.33	SS#34 to SS#36

Freedom Market off-site storm

Number of lines: 25

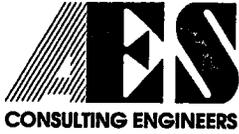
Run Date: 08-04-2010

NOTES: Intensity = 55.61 / (Inlet time + 10.00) ^ 0.74; Return period = 10 Yrs. ; c = cir e = ellip b = box

**5.02**: INCLUDES 10-YR FLOW FROM BIORETENTION FACILITY (2.82 cfs) AND RUNOFF FROM OFF-SITE AREA TO INLET (0.43 ACRES, C=0.75, T<sub>c</sub> = 7 min)

# Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (In)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	2	88.000	0.11	0.24	0.80	0.09	0.21	7.0	7.2	6.8	1.39	0.66	3.97	8	0.30	84.80	85.06	85.63	86.79	84.75	85.06	SS#36 to roofdrai
24	23	34.000	0.13	0.13	0.90	0.12	0.12	7.0	7.0	6.8	0.80	0.85	2.29	8	0.50	81.91	82.08	86.83	86.98	85.06	82.08	SS#13 to roofdrai
25	22	66.000	0.10	0.10	0.90	0.09	0.09	7.0	7.0	6.8	0.61	1.71	1.76	8	2.00	82.61	83.93	88.69	88.86	92.33	83.93	SS#38 to roofdrai
Freedom Market off-site storm																Number of lines: 25				Run Date: 08-04-2010		
NOTES: Intensity = 55.61 / (Inlet time + 10.00) ^ 0.74; Return period = 10 Yrs. ; c = cir e = ellip b = box																						



Williamsburg (757) 253-0040  
 Gloucester (804) 693-4450  
 Richmond (804) 330-8040  
 Fredericksburg (540) 710-6606

Project: Freedom Market  
 Project No.: 8419-04  
 Subject: Channel Design  
 Date: July 16, 2010  
 Calculated By: GVC

**Design Point:**

**Swale 1**

**2 Year Storm - Velocity Check**

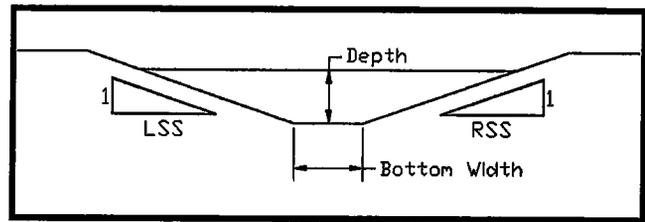
Drainage Area = 0.45 Acres (Area draining to Design Point)  
 C = 0.81 (Runoff Coefficient)  
 I = 5.70 in/hr (Design Rainfall Intensity) **TC = 5 minutes**

$Q = C I A$   
 = 0.81 x 5.70 x 0.45  
 = 2.08 CFS (Peak Flow)

**Channel Characteristics**

Rt. Sideslope = 3.00 :1  
 Lt. Sideslope = 3.00 :1  
 Base Width = 0.00 Ft.  
 Max. Depth = 1.50 Ft.  
 Channel Slope = 5.06 %  
 Mannings (n) = 0.050

Depth of Flow = 0.51 Ft.  
 Area = 0.79 SF  
 Hydraulic Radius = 0.24 Ft.  
 Velocity (V) = 2.61 Ft./sec.  
 Flow (Q) = 2.07 CFS



Fallow (Line with EC-2 Matting)

Wetted Perimeter = 3.25 Ft.

(From Manning's Equation)  
 (From Continuity Equation  $Q=AV$ )

**10 Year Storm - Capacity Check**

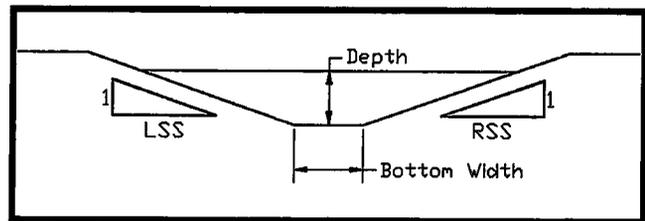
Drainage Area = 0.45 Acres (Area draining to Design Point)  
 C = 0.81 (Runoff Coefficient)  
 I = 7.20 in/hr (Design Rainfall Intensity) **TC = 5 minutes**

$Q = C I A$   
 = 0.81 x 7.20 x 0.45  
 = 2.62 CFS (Peak Flow)

**Channel Characteristics**

Rt. Sideslope = 3.00 :1  
 Lt. Sideslope = 3.00 :1  
 Base Width = 0.00 Ft.  
 Max. Depth = 1.50 Ft.  
 Channel Slope = 5.06 %  
 Mannings (n) = 0.050

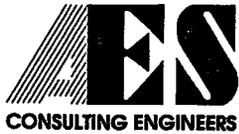
Depth of Flow = 0.56 Ft.  
 Area = 0.94 SF  
 Hydraulic Radius = 0.27 Ft.  
 Velocity (V) = 2.77 Ft./sec.  
 Flow (Q) = 2.61 CFS



Fallow (Line with EC-2 Matting)

Wetted Perimeter = 3.55 Ft.

(From Manning's Equation)  
 (From Continuity Equation  $Q=AV$ )



Williamsburg (757) 253-0040  
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 Richmond (804) 330-8040  
 Fredericksburg (540) 710-6606

Project: Freedom Market  
 Project No.: 8419-04  
 Subject: Channel Design  
 Date: July 16, 2010  
 Calculated By: GVC

**Design Point:**

**Swale 2**

**2 Year Storm - Velocity Check**

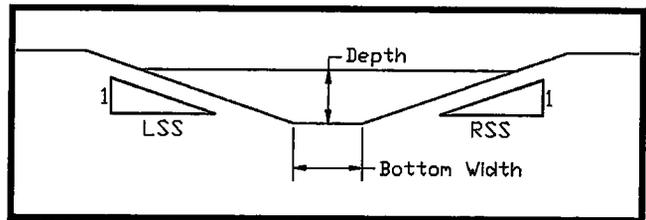
Drainage Area = 0.93 Acres (Area draining to Design Point)  
 C = 0.83 (Runoff Coefficient)  
 I = 5.70 in/hr (Design Rainfall Intensity) **TC = 5 minutes**

Q = C I A (Peak Flow)  
 = 0.83 x 5.70 x 0.93  
 = 4.40 CFS

**Channel Characteristics**

Rt. Sideslope = 3.00 :1  
 Lt. Sideslope = 3.00 :1  
 Base Width = 0.00 Ft.  
 Max. Depth = 1.50 Ft.  
 Channel Slope = 1.00 %  
 Mannings (n) = 0.050

Depth of Flow = 0.92 Ft.  
 Area = 2.56 SF  
 Hydraulic Radius = 0.44 Ft.  
 Velocity (V) = 1.71 Ft./sec.  
 Flow (Q) = 4.39 CFS



**Fallow**

Wetted Perimeter = 5.84 Ft.  
 (From Manning's Equation)  
 (From Continuity Equation Q=AV)

**10 Year Storm - Capacity Check**

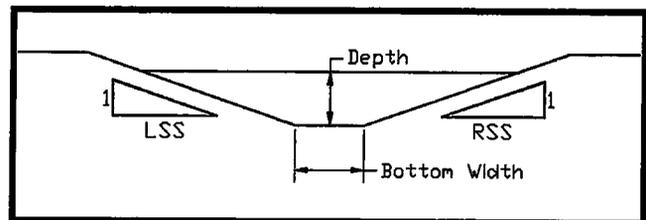
Drainage Area = 0.93 Acres (Area draining to Design Point)  
 C = 0.83 (Runoff Coefficient)  
 I = 7.20 in/hr (Design Rainfall Intensity) **TC = 5 minutes**

Q = C I A (Peak Flow)  
 = 0.83 x 7.20 x 0.93  
 = 5.56 CFS

**Channel Characteristics**

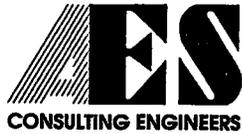
Rt. Sideslope = 3.00 :1  
 Lt. Sideslope = 3.00 :1  
 Base Width = 0.00 Ft.  
 Max. Depth = 1.50 Ft.  
 Channel Slope = 1.00 %  
 Mannings (n) = 0.050

Depth of Flow = 1.01 Ft.  
 Area = 3.05 SF  
 Hydraulic Radius = 0.48 Ft.  
 Velocity (V) = 1.82 Ft./sec.  
 Flow (Q) = 5.54 CFS



**Fallow**

Wetted Perimeter = 6.38 Ft.  
 (From Manning's Equation)  
 (From Continuity Equation Q=AV)



Williamsburg (757) 253-0040  
 Gloucester (804) 693-4450  
 Richmond (804) 330-8040  
 Fredericksburg (540) 710-6606

Project: Freedom Market  
 Project No.: 8419-04  
 Subject: Channel Design  
 Date: July 16, 2010  
 Calculated By: GVC

**Design Point:**

**Swale 3**

**2 Year Storm - Velocity Check**

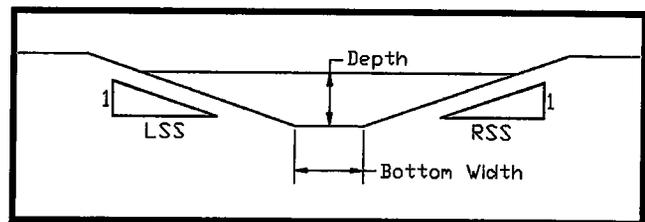
Drainage Area = 0.42 Acres (Area draining to Design Point)  
 C = 0.80 (Runoff Coefficient)  
 I = 5.70 in/hr (Design Rainfall Intensity) **TC = 5 minutes**

Q = C I A  
 = 0.80 x 5.70 x 0.42  
 = 1.92 CFS (Peak Flow)

**Channel Characteristics**

Rt. Sideslope = 3.00 :1  
 Lt. Sideslope = 3.00 :1  
 Base Width = 0.00 Ft.  
 Max. Depth = 1.50 Ft.  
 Channel Slope = 4.35 %  
 Mannings (n) = 0.050

Depth of Flow = 0.51 Ft.  
 Area = 0.79 SF  
 Hydraulic Radius = 0.24 Ft.  
 Velocity (V) = 2.42 Ft./sec.  
 Flow (Q) = 1.91 CFS



**Fallow (Line with EC-2 Matting)**

Wetted Perimeter = **3.24** Ft.

(From Manning's Equation)  
 (From Continuity Equation Q=AV)

**10 Year Storm - Capacity Check**

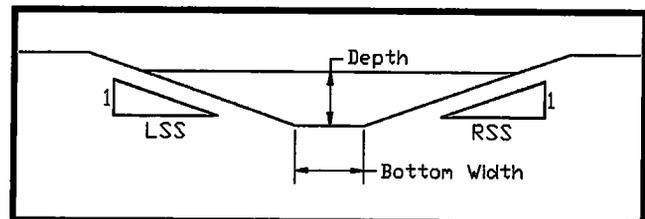
Drainage Area = 0.42 Acres (Area draining to Design Point)  
 C = 0.80 (Runoff Coefficient)  
 I = 7.20 in/hr (Design Rainfall Intensity) **TC = 5 minutes**

Q = C I A  
 = 0.80 x 7.20 x 0.42  
 = 2.42 CFS (Peak Flow)

**Channel Characteristics**

Rt. Sideslope = 3.00 :1  
 Lt. Sideslope = 3.00 :1  
 Base Width = 0.00 Ft.  
 Max. Depth = 1.50 Ft.  
 Channel Slope = 4.35 %  
 Mannings (n) = 0.050

Depth of Flow = 0.56 Ft.  
 Area = 0.94 SF  
 Hydraulic Radius = 0.27 Ft.  
 Velocity (V) = 2.56 Ft./sec.  
 Flow (Q) = 2.40 CFS



**Fallow (Line with EC-2 Matting)**

Wetted Perimeter = **3.54** Ft.

(From Manning's Equation)  
 (From Continuity Equation Q=AV)

# Culvert Report

## Culvert 1

Invert Elev Dn (ft) = 96.80  
 Pipe Length (ft) = 50.00  
 Slope (%) = 0.50  
 Invert Elev Up (ft) = 97.05  
 Rise (in) = 15.0  
 Shape = Cir  
 Span (in) = 15.0  
 No. Barrels = 1  
 n-Value = 0.012  
 Inlet Edge = Projecting  
 Coeff. K,M,c,Y,k = 0.0045, 2, 0.0317, 0.69, 0.5

### Calculations

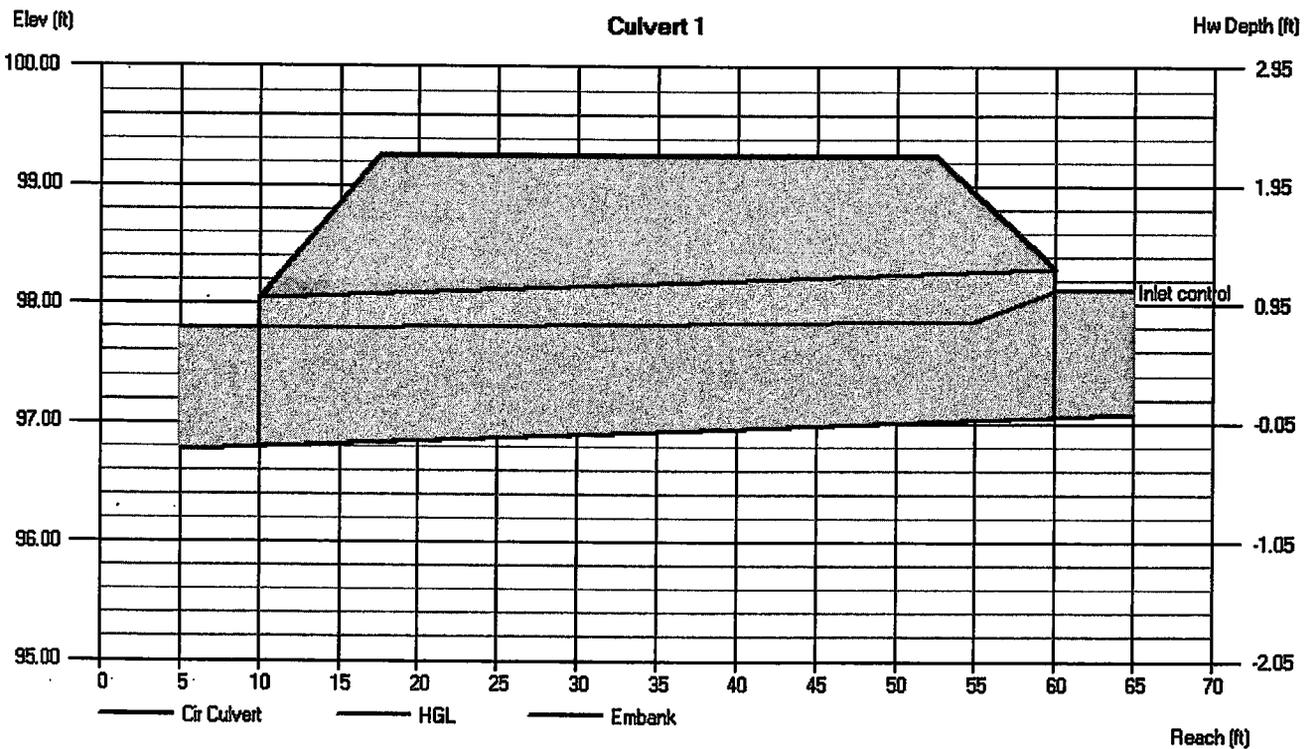
Qmin (cfs) = 3.28  
 Qmax (cfs) = 3.28  
 Tailwater Elev (ft) = (dc+D)/2

### Highlighted

Qtotal (cfs) = 3.28  
 Qpipe (cfs) = 3.28  
 Qovertop (cfs) = 0.00  
 Veloc Dn (ft/s) = 3.14  
 Veloc Up (ft/s) = 3.87  
 HGL Dn (ft) = 97.79  
 HGL Up (ft) = 97.87  
 Hw Elev (ft) = 98.11  
 Hw/D (ft) = 0.85  
 Flow Regime = Inlet Control

### Embankment

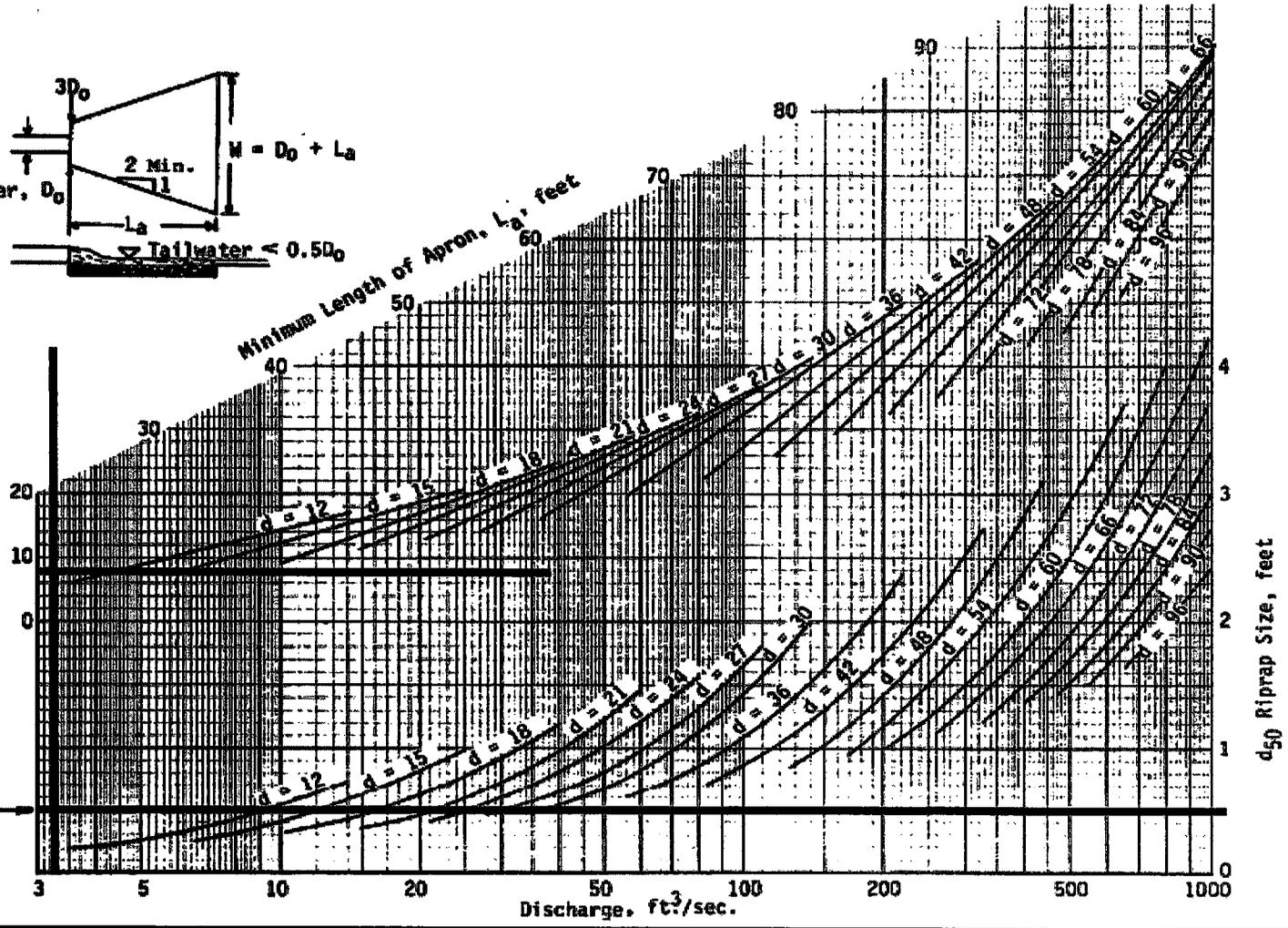
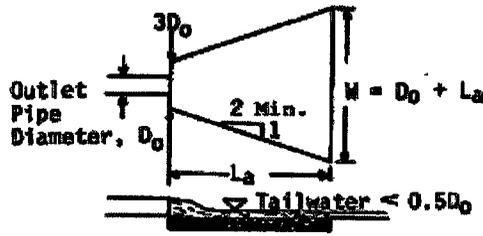
Top Elevation (ft) = 99.25  
 Top Width (ft) = 35.00  
 Crest Width (ft) = 20.00



**Outlet Location: Culvert 1 Outfall**

DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL  
 MINIMUM TAILWATER CONDITION ( $T_w < 0.5$  DIAMETER)

Source: USDA-SCS



III - 164

Plate 3.18-3

1992

3.18

$Q =$	<u>3.28</u> cfs	$3D_0 =$	<u>3.75</u> ft	$W =$	<u>9</u> ft	Depth =	<u>1.5</u> ft
$D_0 =$	<u>15</u> in	$L_a =$	<u>8</u> ft	$d_{50} =$	<u>0.5</u> ft		

# Culvert Report

## Culvert 2

Invert Elev Dn (ft) = 95.00  
Pipe Length (ft) = 28.00  
Slope (%) = 2.68  
Invert Elev Up (ft) = 95.75  
Rise (in) = 18.0  
Shape = Cir  
Span (in) = 18.0  
No. Barrels = 1  
n-Value = 0.012  
Inlet Edge = Projecting  
Coeff. K,M,c,Y,k = 0.0045, 2, 0.0317, 0.69, 0.5

### Calculations

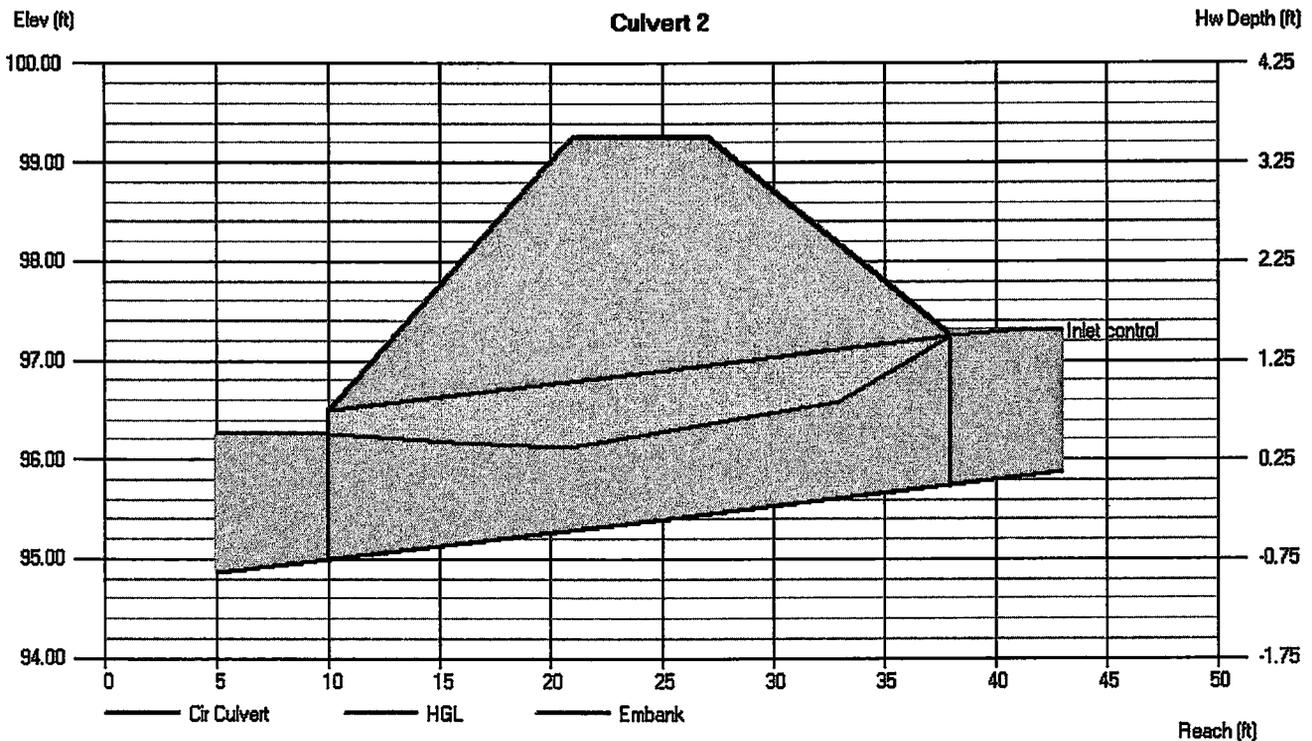
Qmin (cfs) = 6.95  
Qmax (cfs) = 6.95  
Tailwater Elev (ft) = (dc+D)/2

### Highlighted

Qtotal (cfs) = 6.95  
Qpipe (cfs) = 6.95  
Qovertop (cfs) = 0.00  
Veloc Dn (ft/s) = 4.38  
Veloc Up (ft/s) = 5.41  
HGL Dn (ft) = 96.26  
HGL Up (ft) = 96.77  
Hw Elev (ft) = 97.30  
Hw/D (ft) = 1.03  
Flow Regime = Inlet Control

### Embankment

Top Elevation (ft) = 99.25  
Top Width (ft) = 6.00  
Crest Width (ft) = 10.00





**James City County Environmental Division  
Stormwater Management / BMP Inspection Report  
Bioretention Facilities**

County BMP ID Code (if known): PC-271  
 Name of Facility: Freedom Market BMP No: PC271 Date: 9/25/12  
 Location: Corner of Longhill Rd + Centerville Rd.  
 Name of Owner: \_\_\_\_\_  
 Name of Inspector: Amy Parker  
 Type of Facility: Bio-Retention  
 Weather Conditions: Sunny 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 prevent damage to the facility.

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

Facility Item	O.K.	Routine	Urgent	Comments
<b>Accessibility:</b>				
Roads	✓			
Parking Areas	✓			
Gates	N/A			
Locks	N/A			
Safety Fencing	N/A			
<b>Observation Wells/Areas:</b>				
Trap Doors	✓			
Manhole Covers	✓			
Grates	✓			
Steps	N/A			
<b>Pretreatment Devices:</b> <input type="checkbox"/> Inlet <input type="checkbox"/> Sump <input type="checkbox"/> Forebay <input type="checkbox"/> Other				
Sediment				
Trash & Debris				
Structure				
Other				
<b>Inflow Structure (Describe Type/Location):</b> <u>Dry Swales</u>				

Facility Item	O.K.	Routine	Urgent	Comments
Condition	✓			
Erosion	✓			
Trash and Debris	✓			
Sediment	✓			
Aesthetics	✓			
Other		✓		need to overseed
<b>Primary Infiltration (Bioretention Cell) Area:</b>				
Specialty Landscaping	✓			
Mulch Layer	✓			
Planting Soil/Sand	✓			
Subgrade Soil	✓			
Aggregate	✓			
Underdrain	✓			
Sediment	✓			
Aesthetics	✓			
<b>Overflow or Bypass Control Structure (Describe Type/Location):</b>				
Condition	✓			
Erosion	✓			
Trash & Debris	✓			
Sediment	✓			
Other				
<b>Outlet Structure (Describe Type/Location):</b>				
Condition	✓			
Erosion	✓			
Trash & Debris	✓			
Sediment	✓			
Other				
<b>Contributing Drainage Area/Perimeter Conditions:</b>				
Land Use	✓			
Stabilization	✓			
Trash & Debris	✓			
Pollutant Hazard	✓			
Other				

Facility Item	O.K.	Routine	Urgent	Comments
<p>Sketch and/or Remarks:</p> <ul style="list-style-type: none"> <li>- 2 holes in vicinity of o/w separator.</li> <li>- Need to overseed to achieve more sufficient stabilization.</li> </ul>				
<p>Overall Environmental Division Internal Rating: <u>4</u> (Bio Retention)</p> <p>Signature: <u>Amy Paul</u> Date: <u>9/25/12</u></p> <p>Title: <u>Environmental Inspector</u></p>				

SWMProg\BMP\CoInspProg\Bioret.wpd

\* Re-inspect 7/20/13  
 ok to release (Ayp)



700 MB  
4x speed  
80 min



CD-RW  
disc

Environmental Division

APR 17 2013

**SWPPP**

**Storm Water Pollution Prevention Plan**

**RECEIVED**

**For:**

**Freedom Mart**

**AKA**

**Miller Mart #90/ 7-11 Store #39608**

**5534 Centerville Road**

**Williamsburg, VA 23188**

**Owner Contact:**

**Mr. Jeff Miller**

**Miller Oil Company**

**1000 E. City Hall Avenue**

**Norfolk, VA 23502**

**757-623-6600**

**SWPPP Contact:**

**Suzanne Parker Schweikart**

**Regional Gas & Environmental Compliance Specialist**

**7-Eleven, Inc.**

**P.O. Box 744**

**Dallas, TX**

**757-201-0823**

**972-828-1100 fax**

**SWPPP Preparation Date**

**4/15/13**

APPROVED  
James City County  
Env & Resource Protection Div.  
By: *[Signature]* Date: 04-19-13

**C-23-13**  
**SP-67-10**  
**SUP-17-09**

## Facility Description and Contact Information

### Facility Information:

Miller Mart #90 & 7-11 Store #39608  
5534 Centerville Road  
Williamsburg, VA 23188  
James City County  
VSMP Permit # VAR10-11-101203

1.15 acre site with .66 being disturbed

Receiving Waters: UT of Powhatan Creek – (Hydrological Code JL31)

### Contact Information / Responsible Parties:

Suzanne Parker Schweikart  
Region Gas & Environmental Compliance Specialist  
7-Eleven, Inc.  
P. O. Box 711  
Dallas, TX 75221  
(757) 201-0823 cell  
(972) 828-1100 fax

### Facility Owner:

Jeff Miller  
Miller Oil Company  
1000 E. City Hall Avenue  
Norfolk, VA 23502  
757-623-6600

### Storm Water Pollution Prevention Team

Day to day employees with onsite store manager in charge  
(See attached spill prevention plan)

### Activities at the facility:

Gas and convenience store

### General Location Map:

See Attachment A

**Site Map:**

See Attachment B

**Potential Pollutant Sources**

**Industrial Activity:**

Vehicle Fueling

**Spills and Leaks:**

Gas overflow from fuel dispensers at canopy (See attachment C)

Grease Trap (See attachment C) may overflow into bio-pond (See attachment D)

Oil Drips from cars in the parking lot.

**Storm Water Control Measures:**

See Attached Spill Prevention Plan

**Monitoring and Inspections:**

**Parking Lot:** Daily walkthrough of the parking lot looking for oil spots and looking into drop inlets for debris. Drop inlets to be cleaned monthly. Oil spots to be evaluated to determine the size and what action will be taken, most likely absorbent material will be applied.

**BMP:** Weekly visuals of the pond to identify, if any, debris is in pond. The stabilization of the grass on the banks and the outfall is clear of obstructions. Water levels to be monitored after heavy rain fall.

**Bio-Pond:** See attachment E

**Grease Trap:** Weekly inspections to see if area around tank is soft or water seeping at ground level and flowing into bio-pond.

**Summary:**

The site is designed with concrete drop inlets and concrete curb and gutter with the water collected in storm pipes or sheet flow to drop inlets. The storm water is collected into a BMP located to the rear of the site designed for 10 year and 100 year flood. The pond is equipped with a rip rap over flow which would drain in the existing receiving waters. (See attachment D). The canopy/fuel islands are protected with an oil inceptor that is an intricate part of the spill prevention and clean up.



**SPILL PREVENTION PLAN**  
**MILLER OIL COMPANY**  
5534 Centerville Road  
Williamsburg, VA 23188  
SUP# SP-0017-2009

**STAFF PROCEDURES**

1. An assessment of the situation will be made to identify safety concerns.
2. Use emergency shut off switch for dispensers (see attached location)
3. Emergency or other notification as specified for spill or vehicle fire.
  - a. Call 911
  - b. Call local fire department
4. Application of safety gear such as orange safety vest, other protective safety equipment and traffic cones and barriers.
5. Never hose down the area of method of cleanup (spill containment kit to be utilized such as universal socks, and heavy weight pads, gloves, goggles and disposable bags (to be disposed at certified vendor)
6. Fire extinguishers will be place within 75 feet of travel from dispensers
7. A log will be kept on site to verify quantities of gas dispensed verses quantities of tank volume to track any leakage of tanks
8. Staff will be trained on the use of fire extinguishers
9. Spill containment materials will be housed at the canopy column in a container (see attached sketch)
10. Canopy spill containment is protected by an oil inceptor which will confine containment of storm sewer and encroachment of building (see attached operations and maintenance guide, inspection check list and maintenance log)

---

**NOTE:** All employees' will be trained for spill containment procedures and the use of spill kit, fire extinguishers and acknowledge the spill prevention and cleanup with regard to pollution prevention and best management practices with signed documentation kept in office file on site.

**Attachments:**

Building layout  
Canopy layout with fire extinguishers  
Location of spill containment supplies  
Operations and maintenance for CDS (oil separator) .  
Spill Prevention and Cleanup

## IC17. SPILL PREVENTION AND CLEANUP

### Pollution Prevention

Consider pollution prevention measures at all times for improving pollution control. Implementation of pollution prevention measures may reduce or eliminate the need to implement other more costly or complicated procedures.

The following pollution prevention principles apply to most industries:

**Affirmative Procurement-** Use alternative, safer, or recycled products.

**Redirect storm water flows** away from areas of concern.

**Reduce use of water or use dry methods.**

**Reduce storm water flow** across facility site.

**Recycle and reuse waste products and waste flows.**

**Move or cover potential pollution** from storm water contact.

**Provide on-going employee training** in pollution prevention.

1. Develop procedures to prevent/mitigate spills to storm drain systems.
2. Post "No Dumping" signs with a phone number for reporting illegal dumping and disposal.
3. Conduct routine cleaning, inspections, and maintenance.
4. Properly store and handle chemical materials.
5. Utilize secondary containment systems for liquid materials.
6. Protect materials stored outside from storm water run on.
7. Secure drums stored in an area where unauthorized persons may gain access to prevent accidental spillage, Pilferage, or any unauthorized use.
8. Identify key spill response personnel.
9. Adopt the Orange County Hazardous Materials Area Plan or an equivalent plan.
10. Clean up leaks and spills immediately.
11. Report and track spills.
12. Train employees on this BMPs, storm water discharge Prohibitions and wastewater discharge requirements.

### Best Management Practices

#### Spill Prevention

1. Develop procedures to prevent/mitigate spills to storm drain systems. Standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures.
2. Post "No Dumping" signs with a phone number for reporting illegal dumping and disposal. Signs should also indicate fines and penalties applicable for illegal dumping.
3. Conduct routine cleaning, inspections, and maintenance.
  - Sweep and clean storage areas consistently at a designated frequency (e.g. weekly, monthly). DO NOT hose down areas to storm drains.
  - Place drip pans or absorbent materials beneath all mounted taps, and at all potential drip and spill locations during filling and unloading of tanks. Reuse, recycle, or properly dispose of any collected liquids or soiled absorbent materials.
  - Check tanks (and any containment sumps) frequently for leaks and spills. Replace tanks that are leaking, corroded, or otherwise deteriorating with tanks in good condition. Collect all spilled liquids and properly dispose of them.
  - Check for external corrosion of material containers, structural failures, spills and overfills due to operator error, failure of piping system, etc.
  - Inspect tank foundations, connections, coatings, and tank walls and piping system.
4. Properly store and handle chemical materials.
  - Designate a secure material storage area that is paved with Portland cement concrete, free of cracks and gaps, and impervious in order to contain leaks and spills.

- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items in secondary containers.
- Keep chemicals in their original containers, if feasible.
- Keep containers well labeled according to their contents (e.g., solvent, gasoline).
- Label hazardous substances regarding the potential hazard (corrosive, radioactive, flammable, explosive, and poisonous).
- Prominently display required labels on transported hazardous and toxic materials (per US DOT regulations).

**5. Utilize secondary containment systems for liquid materials.**

- Surround storage tanks with a berm or other secondary containment system.
- Slope the area inside the berm to a drain.
- Drain liquids to the sanitary sewer if available.
- Pass accumulated storm water in petroleum storage areas through an oil/water separator.
- Use catch basin filtration inserts.
- **DO NOT** discharge wash water to sanitary sewer until contacting the local sewer authority to find out if pretreatment is required.
- If the liquid is oil, gas, or other material that separates from and floats on water, install a spill control device (such as a tee section) in the catch basins that collect runoff from the storage tank area.

**6. Protect materials stored outside from storm water run on.** Construct a berm around the perimeter of the material storage area to prevent the run on of uncontaminated storm water from adjacent areas as well as runoff of storm water from the material.

**7. Secure drums stored in an area where unauthorized persons may gain access to prevent accidental spillage, pilferage, or any unauthorized use.**

**Spill Control and Cleanup Activities**

**8. Identify key spill response personnel.**

**9. Adopt which includes a set of planned responses to hazardous materials emergencies addressing chain-of-command, public agency participation, and allocation of authority. The plan should include such items as:**

- Description of the facility, owner and address, activities and chemicals present
  - Facility map
  - Notification and evacuation procedures
  - Cleanup instructions
  - Identification of responsible departments

**10. Clean up leaks and spills immediately.**

- Place a stockpile of spill cleanup materials where they will be readily accessible (e.g. near storage and maintenance areas).
- Utilize dry cleaning methods to clean up spills to minimize the use of water. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous

## IC17. SPILL PREVENTION AND CLEANUP

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The following pollution prevention principles apply to most industries:

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Reduce use of water or use dry methods.

Reduce storm water flow across facility site.

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12. Train employees on this BMPs, storm water discharge Prohibitions and wastewater discharge requirements.

### Best Management Practices

#### Spill Prevention

1. Develop procedures to prevent/mitigate spills to storm drain systems.
  - Standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures.
2. Post "No Dumping" signs with a phone number for reporting illegal dumping and disposal. Signs should also indicate fines and penalties applicable for illegal dumping.
3. Conduct routine cleaning, inspections, and maintenance.
  - Sweep and clean storage areas consistently at a designated frequency (e.g. weekly, monthly). DO NOT hose down areas to storm drains.
  - Place drip pans or absorbent materials beneath all mounted taps, and at all potential drip and spill locations during filling and unloading of tanks. Reuse, recycle, or properly dispose of any collected liquids or soiled absorbent materials.
  - Check tanks (and any containment sumps) frequently for leaks and spills. Replace tanks that are leaking, corroded, or otherwise deteriorating with tanks in good condition. Collect all spilled liquids and properly dispose of them.
  - Check for external corrosion of material containers, structural failures, spills and overfills due to operator error, failure of piping system, etc.
  - Inspect tank foundations, connections, coatings, and tank walls and piping system.
4. Properly store and handle chemical materials.
  - Designate a secure material storage area that is paved with Portland cement concrete, free of cracks and gaps, and impervious in order to contain leaks and spills.

- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items in secondary containers.
- Keep chemicals in their original containers, if feasible.
- Keep containers well labeled according to their contents (e.g., solvent, gasoline).
- Label hazardous substances regarding the potential hazard (corrosive, radioactive, flammable, explosive, and poisonous).
- Prominently display required labels on transported hazardous and toxic materials (per US DOT regulations).

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- Surround storage tanks with a berm or other secondary containment system.
- Slope the area inside the berm to a drain.
- Drain liquids to the sanitary sewer if available.
- Pass accumulated storm water in petroleum storage areas through an oil/water separator.
- Use catch basin filtration inserts.
- **DO NOT** discharge wash water to sanitary sewer until contacting the local sewer authority to find out if pretreatment is required.
- If the liquid is oil, gas, or other material that separates from and floats on water, install a spill control device (such as a tee section) in the catch basins that collect runoff from the storage tank area.

**6. Protect materials stored outside from storm water run on. Construct a berm around the perimeter of the material storage area to prevent the run on of uncontaminated storm water from adjacent areas as well as runoff of storm water from the material.**

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**Spill Control and Cleanup Activities**

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- Notification and evacuation procedures
- Cleanup instructions
- Identification of responsible departments

**10. Clean up leaks and spills immediately.**

- Place a stockpile of spill cleanup materials where they will be readily accessible (e.g. near storage and maintenance areas).
- Utilize dry cleaning methods to clean up spills to minimize the use of water. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous

waste. Physical methods for the cleanup of dry chemicals include the use brooms, shovels, sweepers, or plows.

- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Clean up chemical materials with absorbents, gels, and foams. Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.

## **11. Reporting**

- 1. Report spills that pose an immediate threat to human health or the environment to local agencies, such as the fire department, and the Regional Water Quality Control Board.**
- 2. Establish a system for tracking incidents. The system should be designed to identify the following:**
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties
- 3. Federal regulations require that any oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hour).**

## **12. Training**

- 1. Educate employees about spill prevention and cleanup.**
  - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
  - Educate employees on aboveground storage tank requirements.
  - Train all employees upon hiring and conduct annual refresher training.
- 2. Train employees responsible for aboveground storage tanks and liquid transfers on the Spill Prevention Control and Countermeasure Plan.**

## **References**

California Storm Water Best Management Practice Handbooks. Industrial/Commercial Best Management Practice Handbook. Prepared by Camp Dresser & McKee, Larry Walker Associates, Uribe and Associates, Resources Planning Associates for Storm water Quality Task Force. March 1993.

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Storm water Management Manual for Western Washington. Volume IV Source Control BMPs. Prepared by Washington State Department of Ecology Water Quality Program. Publication No. 99-14. August 2001.



## **OPERATIONS AND MAINTENANCE GUIDELINES FOR CDS UNITS (Continuous Deflective Separation Unit)**

### **INTRODUCTION**

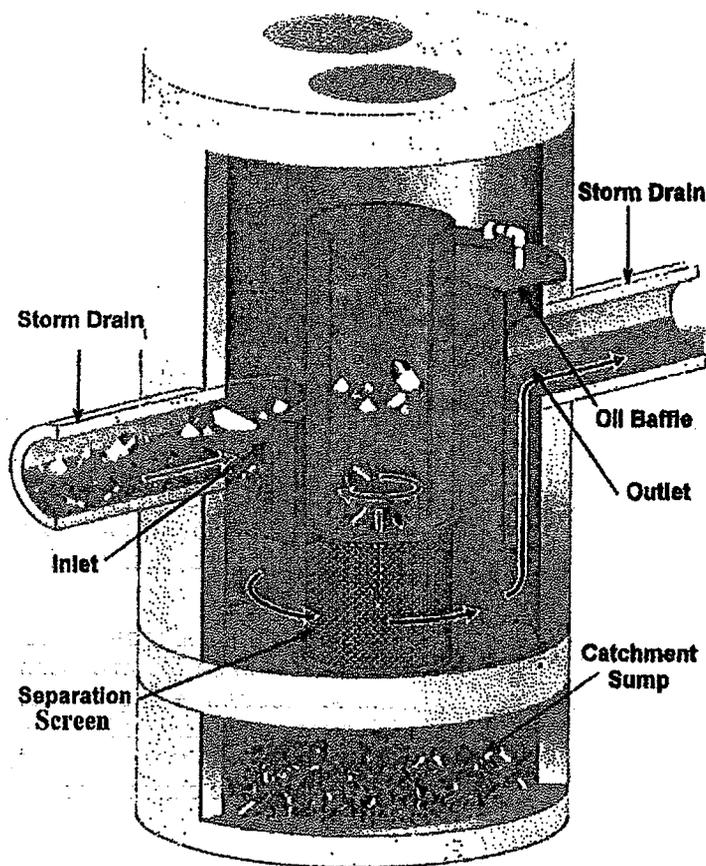
The CDS unit is an important and effective component of your storm water management program and proper operation and maintenance of the unit are essential to demonstrate your compliance with local, state and federal water pollution control requirements.

The CDS technology features a patented non-blocking, indirect screening technique developed in Australia to treat water runoff. The unit is highly effective in the capture of suspended solids, fine sands and larger particles. Because of its non-blocking screening capacity, the CDS unit is un-matched in its ability to capture and retain gross pollutants such as trash and debris. In short, CDS units capture a very wide range of organic and in-organic solids and pollutants that typically result in tons of captured solids each year such as: Total suspended solids (TSS) and other sedimentary materials, oil and greases, trash, and other debris (including floatables, neutrally buoyant, and negatively buoyant debris). These pollutants will be captured even under very high flow rate conditions.

CDS units are equipped with conventional oil baffles to capture and retain oil and grease. Laboratory evaluations show that the CDS units are capable of capturing up to 70% of the free oil and grease from storm water. CDS units can also accommodate the addition of oil sorbents within their separation chambers. The addition of the oil sorbents can ensure the permanent removal of 80% to 90% of the free oil and grease from the storm water runoff.

### **INSPECTION AND CLEANOUT OVERVIEW**

Once pollutants are captured in CDS units, they will be retained until clean out. Floatable and neutrally buoyant contaminants are held within the separation chamber while negatively buoyant debris is stored in the sump. Frequency of cleanout depends on the nature of the drainage basin. Because of the high efficiency of pollutant removal, drainage basins discharging large amounts of pollutants will require more frequent cleanouts. Maintenance personnel may expect that floatable materials will require removal at least one to two times per year. Settled solids should be cleaned out at least one time per year.



The visual inspection should ascertain that the unit is functioning properly, and that there are no blockages or damage to the inlet, separation chamber or separation screen. The quantities of captured pollutants within the separation chamber and solids storage sump should be assessed.

The amount of solids in the sump may be estimated using a calibrated measuring rod or tape. If floatables accumulate more rapidly than the settleable solids, the floatables should be removed with a vacuum or skimming net.

During the rainfall season, the unit should be inspected at least once every 30 days. Floatable materials should be removed before the layer exceeds 12-inches thick. Settled solids should be removed when the sump is 85% full.

CDS cleanout procedures entail opening the access to the screening chamber / sump and removing the trapped pollutants. Visual verification that the cleanout is complete by the equipment operator is easily done due to the open nature of the CDS unit.

## OPERATIONS

The CDS unit is a non-mechanical self-operating system and will function any time there is flow in the storm drainage system. The unit will continue to effectively capture pollutants in flows up to the design capacity even during extreme rainfall events when the design capacity may be exceeded. Pollutants captured in the CDS unit's separation chamber and sump will be retained even when the units design capacity is exceeded.

## CDS UNIT CLEANOUT

The frequency of cleaning the CDS unit will depend upon the generation of trash and debris and sediments in your application. Cleanout and preventive maintenance schedules will be determined based on operating experience unless precise pollutant loadings have been determined. The unit should be periodically inspected to determine the amount of accumulated pollutants and to ensure that the cleanout frequency is adequate to handle the predicted pollutant load being processed by the CDS unit. The recommended cleanout of solids within the CDS unit's sump should occur at 75% of the sump capacity. However, the sump may be completely full with no impact to the CDS unit's performance.

Access to the CDS unit is typically achieved through two manhole access covers – one allows inspection and cleanout of the separation chamber (screen/cylinder) & sump and another

allows inspection and cleanout of sediment captured and retained behind the screen. The PSW & PSWC off-line models have an additional access cover over the weir of the diversion vault. For units possessing a sizable depth below grade (depth to pipe), a single manhole access point would allow both sump cleanout and access behind the screen.

#### CDS Technologies Recommends The Following:

**NEW INSTALLATIONS** – Check the condition of the unit after every runoff event for the first 30 days. The visual inspection should ascertain that the unit is functioning properly (no blockages or obstructions to inlet and/or separation screen), measuring the amount of solid materials that have accumulated in the sump, the amount of fine sediment accumulated behind the screen, and determining the amount of floating trash and debris in the separation chamber. This can be done with a calibrated "dip stick" so that the depth of deposition can be tracked. Refer to the "Cleanout Schematic" (Appendix B) for allowable deposition depths and critical distances. Schedules for inspections and cleanout should be based on storm events and pollutant accumulation.

**ONGOING OPERATION**- During the rainfall season, the unit should be inspected at least once every 30 days. The floatables should be removed and the sump cleaned when the sump is 75-85% full. If floatables accumulate more rapidly than the settleable solids, the floatables should be removed using a vacuum truck or dip net before the layer thickness exceeds one to two feet.

Cleanout of the CDS unit at the end of a rainfall season is recommended because of the nature of pollutants collected and the potential for odor generation from the decomposition of material collected and retained. This end of season cleanout will assist in preventing the discharge of pore water from the CDS® unit during summer months.

**USE OF SORBENTS** – It should be emphasized that the addition of sorbents is not a requirement for CDS units to effectively capture oil and grease from storm water runoff. The CDS unit separation chamber effectively captures free oil and grease and CDS units are also equipped with a conventional oil baffle for the capture of gross quantities. However, the addition of sorbents is a unique capability of CDS units that enables enhanced oil and grease capture efficiencies beyond that obtainable by conventional oil baffle systems as well as permanent retention of captured oil and grease in solid form that prevents emulsification and conveyance.

Under normal operations, CDS units will provide effluent concentrations of oil and grease that are less than 15 parts per million (ppm) for all dry weather spills where the volume is less than or equal to the spill capture volume of the CDS unit. During wet weather flows, the oil baffle system can be expected to remove between 40 and 70% of the free oil and grease from the storm water runoff.

CDS Technologies only recommends the addition of sorbents to the separation chamber if there are specific land use activities in the catchment watershed that could produce exceptionally large concentrations of oil and grease in the runoff, or for large amounts that may be subjected to extended periods of inattention. If site evaluations merit an increased control of free oil and grease then oil sorbents can be added to the CDS unit to thoroughly address these particular pollutants of concern.

#### **Recommended Oil Sorbents**

Rubberizer® Particulate 8-4 mesh or OARSTM Particulate for Filtration, HPT4100 or equal. Rubberizer® is supplied by Haz-Mat Response Technologies, Inc. 4626 Santa Fe Street, San Diego, CA 92109 (800) 542-3036. OARSTM is supplied by AbTech Industries, 4110 N. Scottsdale Road, Suite 235, Scottsdale, AZ 85251 (800) 545-8999.

The amount of sorbent to be added to the CDS separation chamber can be determined if sufficient information is known about the concentration of oil and grease in the runoff.

Frequently the actual concentrations of oil and grease are too variable and the amount to be added and frequency of cleaning will be determined by periodic observation of the sorbent. As an initial application, CDS recommends that approximately 4 to 8 pounds of sorbent material be added to the separation chamber of the CDS units per acre of parking lot or road surface per year. Typically this amount of sorbent results in a 1/2 inch to one (1") inch depth of sorbent material on the liquid surface of the separation chamber. The oil and grease loading of the sorbent material should be observed after major storm events. Oil Sorbent material may also be furnished in pillow or boom configurations.

The sorbent material should be replaced when it is fully discolored by skimming the sorbent from the surface. The sorbent may require disposal as a special or hazardous waste, but will depend on local and state regulatory requirements.

#### CLEANOUT AND DISPOSAL

A vacuum truck is recommended for cleanout of the CDS unit and can be easily accomplished in less than 30-40 minutes for most installations. Standard vacuum operations should be employed in the cleanout of the CDS unit. Disposal of material from the CDS unit should be in accordance with the local municipality's requirements. Disposal of the decant material to a POTW is recommended. Field decanting to the storm drainage system is not recommended. Solids can be disposed of in a similar fashion as those materials collected from street sweeping operations and catch-basin cleanouts.

#### **MAINTENANCE**

The CDS unit should be pumped down at least once a year and a thorough inspection of the separation chamber (inlet/cylinder and separation screen) and oil baffle performed. The unit's internal components should not show any signs of damage or any loosening of the bolts used to fasten the various components to the manhole structure and to each other. Ideally, the screen should be power washed for the inspection. If any of the internal components is damaged or if any fasteners appear to be damaged or missing, please contact CDS Technologies to make arrangements to have the damaged items repaired or replaced:

CONTECH Construction Products  
11835 NE Glenn Widing Dr.  
Portland, OR 97220

Phone: (800) 548-4667  
Fax: (800) 561-1271

The screen assembly is fabricated from Type 316 stainless steel and fastened with Type 316 stainless steel fasteners that are easily removed and/or replaced with conventional hand tools. The damaged screen assembly should be replaced with the new screen assembly placed in the same orientation as the one that was removed.

#### **CONFINED SPACE**

The CDS unit is a confined space environment and only properly trained personnel possessing the necessary safety equipment should enter the unit to perform particular maintenance and/or inspection activities beyond normal procedure. Inspections of the internal components can, in most cases, be accomplished by observations from the ground surface.

#### **VECTOR CONTROL**

Most CDS units do not readily facilitate vector infestation. However, for CDS units that may experience extended periods of non-operation (stagnant flow conditions for more than approximately one week) there may be the potential for vector infestation. In the event that

these conditions exist, the CDS unit may be designed to minimize potential vector habitation through the use of physical barriers (such as seals, plugs and/or netting) to seal out potential vectors. The CDS unit may also be configured to allow drain-down under favorable soil conditions where infiltration of storm water runoff is permissible. For standard CDS units that show evidence of mosquito infestation, the application of larvicide is one control strategy that is recommended. Typical larvicide applications are as follows:

SOLID B.t.i. LARVICIDE: 1/2 to 1 briquet (typically treats 50-100 sq. ft.) one time per month (30-days) or as directed by manufacturer.

SOLID METHOPRENE LARVICIDE (not recommended for some locations): 1/2 to 1 briquet (typically treats 50-100 sq. ft.) one time per month (30-days) to once every 4-12 to 5-months (150-days) or as directed by manufacturer.

#### **RECORDS OF OPERATION AND MAINTENANCE**

CDS Technologies recommends that the owner maintain annual records of the operation and maintenance of the CDS unit to document the effective maintenance of this important component of your storm water management program. The attached **Annual Record of Operations and Maintenance** form (see **Appendix A**) is suggested and should be retained for a minimum period of three years.

## CDS UNIT RECORD OF OPERATION & MAINTENANCE

OWNER \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 OWNER REPRESENTATIVE \_\_\_\_\_ PHONE \_\_\_\_\_

CDS INSTALLATION:  
 MODEL DESIGNATION \_\_\_\_\_  
 SITE LOCATION \_\_\_\_\_  
 DEPTH FROM COVER TO BOTTOM OF SUMP (SUMP INVERT) -----  
 VOLUME OF SUMP \_\_\_\_\_ CU YD VOLUME/INCH DEPTH \_\_\_\_\_ CU FT  
 VOLUME/FOOT DEPTH \_\_\_\_\_ CU YD

**INSPECTIONS:**

DATE/INSPECTOR	SCREEN/INLET INTEGRITY	FLDATABLES DEPTH	DEPTH TO SEDIMENT (Inches)	SEDIMENT VOLUME* (CUYDS)	SORBENT DISCOLORATION

\*Calculate Sediment Volume= (Depth to Sump Invert-Depth to Sediment)\*(Volume/inch)

OBSERVATIONS OF FUNCTION: -----  
 \_\_\_\_\_  
 \_\_\_\_\_

**CLEANOUT:**

DATE	VOLUME FLOATABLES	VOLUME SEDIMENTS	METHOD OF DISPOSAL OF FLOATABLES, SEDIMENTS, DECANT AND SORBENTS

OBSERVATIONS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SCREEN MAINTENANCE:  
 DATE OF POWER WASHING, INSPECTION AND OBSERVATIONS:

CERTIFICATION: \_\_\_\_\_ TITLE: \_\_\_\_\_ DATE: \_\_\_\_\_

---

## **INSPECTION CHECKLIST**

**COMPLETED**

1. During the initial rainfall season, inspect and check condition of unit once every 30 days (as needed, thereafter)
2. Ascertain that the unit is functioning properly (no blockages or obstructions to inlet and/or separation screen)
3. Measure amount of solid materials that have accumulated in the sump (Unit should be cleaned when the sump is 75-85% full)
4. Measure amount of fine sediment accumulated behind the screen
5. Measure amount of floating trash and debris in the separation chamber

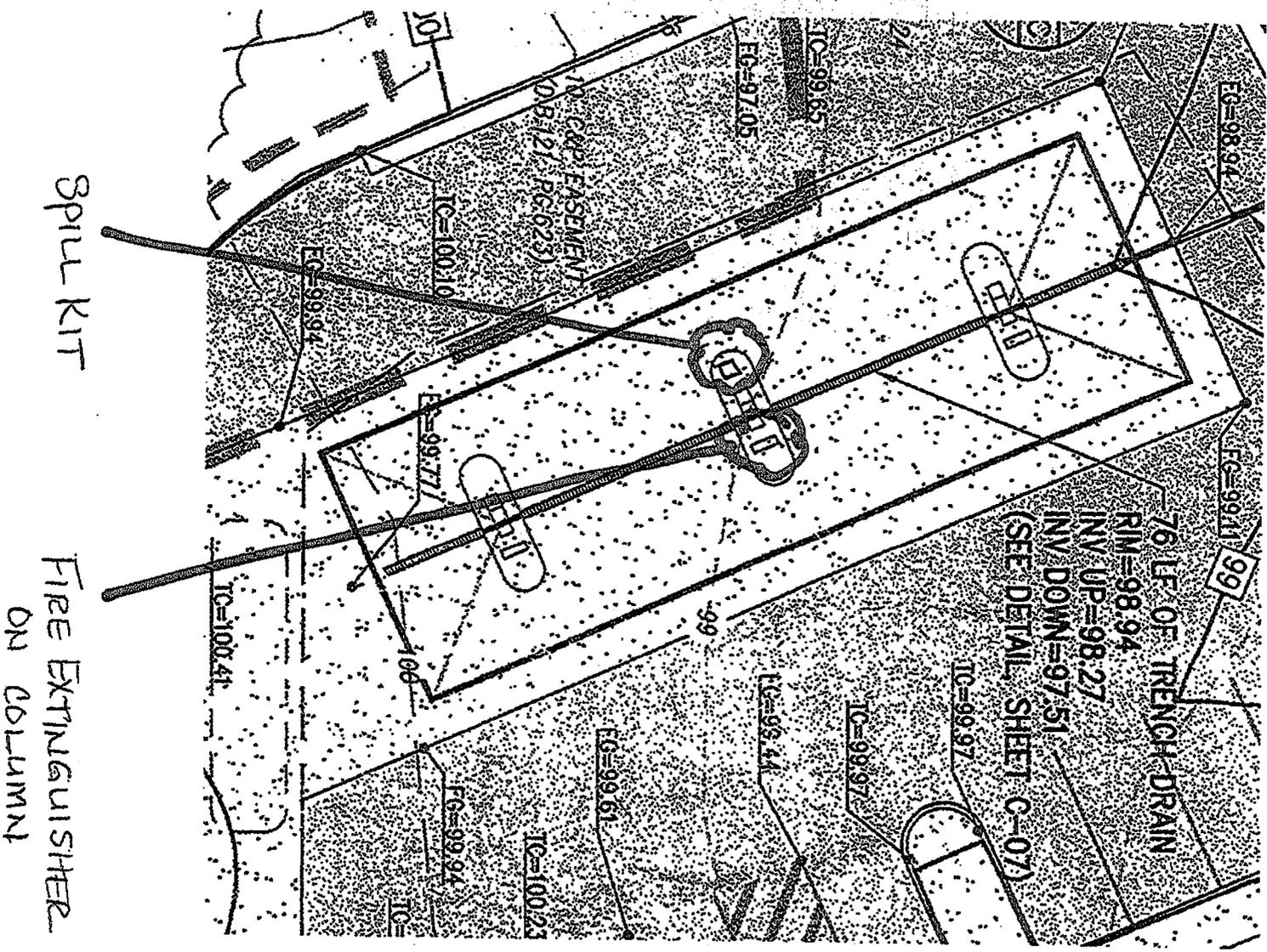
## **MAINTENANCE CHECKLIST**

1. Cleanout unit at the beginning and end of the rainfall season
2. Pump down unit (at least once a year) and thoroughly inspect separation chamber, separation screen and oil baffle
3. No visible signs of damage or loosening of bolts to internal components observed\*

\*If there is any damage to the internal components or if any fasteners are damaged or missing please contact CDS Technologies.

---





SPILL KIT

FIRE EXTINGUISHER  
ON COLUMN

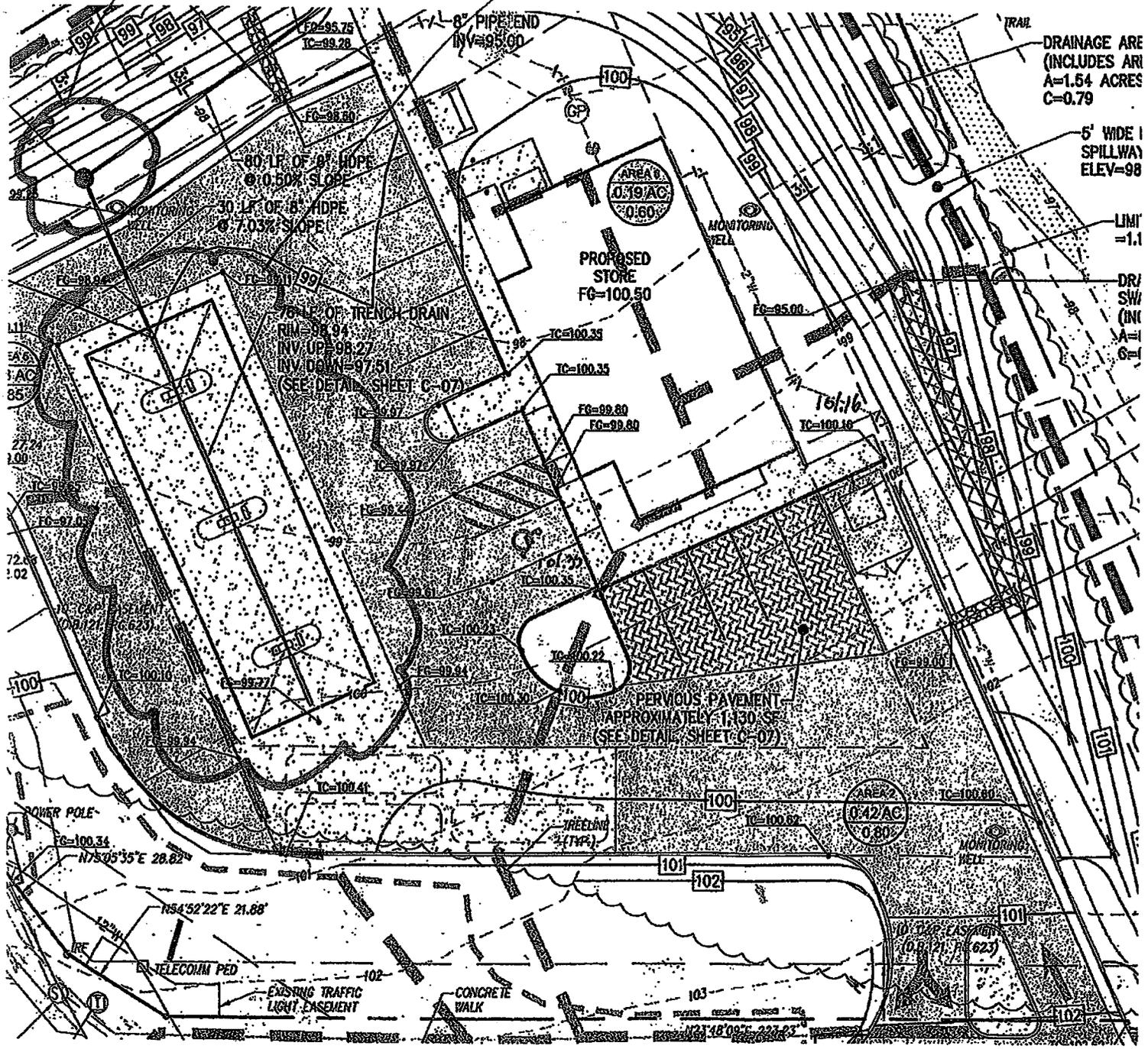




# ATTACHMENT "C"

GREASE/OIL INCEPTOR

FUEL DISPENSERS @ CANOPY



DRAINAGE AREA  
(INCLUDES AREA)  
A=1.54 ACRES  
C=0.79

5' WIDE SPILLWAY  
ELEV=98

LIMIT = 1.1

DR/SW (IN)  
A=1  
C=1

PROPOSED STORE  
FG=100.50

PERVIOUS PAVEMENT  
APPROXIMATELY 1,130 SF  
(SEE DETAIL SHEET C-07)

AREA 2  
0.42 AC  
0.80

AREA 1  
0.19 AC  
0.60

MONITORING WELL

MONITORING WELL (623)

POWER POLE  
FG=100.34  
N75°05'35"E 28.82'

N54°52'22"E 21.88'

TELECOMM PED

EXISTING TRAFFIC LIGHT EASEMENT

CONCRETE WALK

TREELAND (TRP)

MONITORING WELL

MONITORING WELL (623)



ATTACHMENT "E"

MAINTENANCE SCHEDULE FOR BIOPRETENTION FACILITY			
Description	Method	Frequency	Time of Year
Soils Inspect and Repair Erosion	Visual	Monthly	Monthly
Organic Layer Inspect for Voids	Visual	Monthly	Monthly
Remulch Any Void Areas Remove Existing Mulch Layer Prior to Applying New Mulch Layer (Optional)	By Hand	As Needed	As Needed
Replenish Mulch Layer (Optional)	By Hand	Annually	Spring
Plants Inspect Trees and Shrubs	Visual	Bi-Annually	Spring/Fall
Treat all Diseased Trees and Shrubs <small>Inspect for Insect or Disease</small>	Mechanical or By Hand		Varies, Depends Insect Infestation or Disease
Remove Dead and Diseased Vegetation Considered to be Beyond Treatment	See Planting Specs.	Bi-Annually	3-15 to 4-30 and 10-1 to 11-30
Initial Watering-After Completion of Planting	By Hand	Daily* 14 Days	*
Maintenance Watering-Until Established After Initial Period	By Hand	Weekly* 2 Months	*
Replace Stakes After One Year	By Hand	Annually	Spring
Remove and Replace Any Deficient Stakes or Wires	By Hand	N/A	As Needed

\* Watering Dependant on Time of Year, Rainfall Rate and Daily Temperatures

C-23-13  
SP-67-10  
SUP-17-09

**Tim Banks**  
Mid Atlantic Petroleum Services

(757) 424-9726 Work  
tbanks@gaspump.net

814 Professional Place West  
Chesapeake, Virginia 23320  
www.gaspump.net



Tim Banks *Freedom Market*  
TBANKS @  
GASPUMP.NET  
757-943-4041  
MID ATLANTIC  
PETROLEUM *SP-67-20*  
*2-3-09 SP*  
*SUP-18-06*

**While You Were Out** *Super* PRINTING  
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4399 Ironbound Road • Williamsburg, VA 23188  
Phone 757-220-3299 • Fax 757-220-0366

To: Scott Thomas

M: Tim Banks

of: Mid Atlantic Petroleum

Phone: (757) 943 4041

Telephoned  Wants you to call back  Will call back

Came by to see you  Returned your call  RUSH

Message: Spill prevention plan  
Centerville gas station  
C-35-09, SP-67-10, 2-3-09,  
SUP-18-06 (SP-21-09 stickers)

Date: 4/12 Time: 1102 Initials: TC

## Scott Thomas

---

**From:** Luke Vinciguerra  
**Sent:** Tuesday, April 16, 2013 3:31 PM  
**To:** Scott Thomas; Christy Parrish  
**Cc:** Bill Cain; Tom Coghill  
**Subject:** RE: Freedom Market SPCP/SWPPP's

I will set this up as a conceptual plan and transmit the documents.  
You're right, The Spill Prevention and control plan needs to be reviewed by ERP and Fire

---

**From:** Scott Thomas  
**Sent:** Tuesday, April 16, 2013 3:12 PM  
**To:** Luke Vinciguerra; Christy Parrish  
**Cc:** Bill Cain; Tom Coghill  
**Subject:** Freedom Market SPCP/SWPPP's

Luke – I copied you on correspondence I forwarded the other day from Tim Banks, the representative from MidAtlantic Petroleum. In return, he emailed the SPCP/SWPPP plans for the Freedom Market gas station directly to me. I don't mind advance reviewing them, but I'm thinking that we don't want to make the same mistake twice and would want to ensure they come in through Planning transmittal so that they end up getting put into electronic records. We had to wait a week to get the example from Stuckeys/Star Express because we could not find them electronically. For Stuckeys/Star, we assigned it a plan # and got signatures. I believe the proffer reads it has to go to Fire too. What do you think?

Scott J. Thomas, P.E.  
Director of Engineering and Resource Protection



101-E Mounts Bay Road  
Williamsburg, VA 23185  
P: 757-253-6639  
F: 757-259-4032  
[jamescitycountyva.gov](http://jamescitycountyva.gov)

## Scott Thomas

---

**From:** Scott Thomas  
**Sent:** Tuesday, April 16, 2013 3:12 PM  
**To:** Luke Vinciguerra; Christy Parrish  
**Cc:** Bill Cain; Tom Coghil  
**Subject:** Freedom Market SPCP/SWPPP's  
**Attachments:** 5534 Centerville Road; 5534 Centerville Road Storm Water Pollution Plan

Luke – I copied you on correspondence I forwarded the other day from Tim Banks, the representative from MidAtlantic Petroleum. In return, he emailed the SPCP/SWPPP plans for the Freedom Market gas station directly to me. I don't mind advance reviewing them, but I'm thinking that we don't want to make the same mistake twice and would want to ensure they come in through Planning transmittal so that they end up getting put into electronic records. We had to wait a week to get the example from Stuckeys/Star Express because we could not find them electronically. For Stuckeys/Star, we assigned it a plan # and got signatures. I believe the proffer reads it has to go to Fire too. What do you think?

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jamescitycountyva.gov

## Scott Thomas

---

**From:** Tim Banks <[tbanks@gaspump.net](mailto:tbanks@gaspump.net)>  
**Sent:** Tuesday, April 16, 2013 12:31 PM  
**To:** Scott Thomas  
**Cc:** Whit Richardson; Whit Richardson; [jim@gaspump.net](mailto:jim@gaspump.net); Jeff G. Miller; [kerri@gaspump.net](mailto:kerri@gaspump.net)  
**Subject:** 5534 Centerville Road Storm Water Pollution Plan  
**Attachments:** 20130416112052184.pdf; Tim Banks.vcf

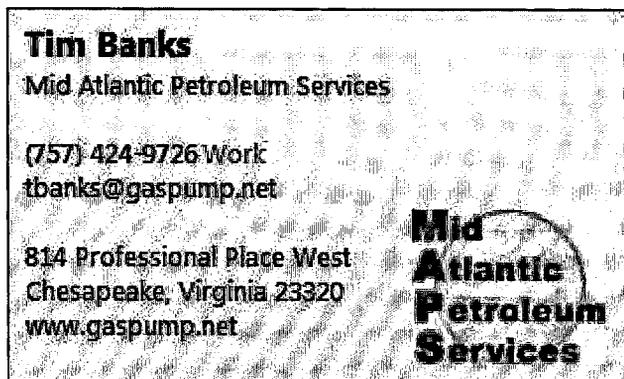
Scott,

Please find the Storm Water pollution Plan

Let me know if this is OK or if you need something Else

Thanks

Tim Banks



**Tim Banks**  
Mid Atlantic Petroleum Services

(757) 424-9726 Work  
[tbanks@gaspump.net](mailto:tbanks@gaspump.net)

814 Professional Place West  
Chesapeake, Virginia 23320  
[www.gaspump.net](http://www.gaspump.net)

**Mid  
Atlantic  
Petroleum  
Services**

## Scott Thomas

---

**From:** Scott Thomas  
**Sent:** Friday, April 12, 2013 2:32 PM  
**To:** Joe Buchite; Amy Parker  
**Subject:** FW: Freedom Market SP-67-10; 5534 Centerville road  
**Attachments:** SUP1709\_conditions.pdf; SP2109\_1.pdf; SP2109\_2.pdf; SP2109\_3.pdf; RE: 5534 Centerville Road, permit nos. B11-0983, B11-0984, B12-2589, B13-0049

FYI – they need to do these for the Freedom Park site to get CO.

---

**From:** Scott Thomas  
**Sent:** Friday, April 12, 2013 2:30 PM  
**To:** Tim Banks ([tbanks@gaspump.net](mailto:tbanks@gaspump.net))  
**Cc:** Christy Parrish; Luke Vinciguerra; Tom Coghill  
**Subject:** RE: Freedom Market SP-67-10; 5534 Centerville road

Tim – Attached is the SWPPP and SPCP used for the Stuckeys/Star Express site to use as a template-example for the same needed for the Freedom Market site at the intersection of Longhill and Centerville Roads. You can modify as desired. The Freedom Market plan references are SP-67-10, C-35-09, Z-03-09 and SUP-17-09. Condition # 13 was for the stormwater pollution prevention plan and # 14 was for the spill pollution control plan. I attached the SUP conditions if needed.

The Stuckeys/Star Express references were SP-63-10 amend, SP-21-09 amend, SP-25-07 and SUP-18-06. The SWPPP and SPCP for Stuckeys/Star Express was approved under the SP-21-09 amendment.

I apologize for the delay in getting you these materials. As you know they were not available electronically and we had to pull the hard file from Richmond. I sent them as soon as I got them. Thanks.

Scott J. Thomas, P.E.  
Director of Engineering and Resource Protection



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F: 757-259-4032  
[jamescitycountyva.gov](http://jamescitycountyva.gov)

---

**From:** Scott Thomas  
**Sent:** Friday, April 12, 2013 12:27 PM  
**To:** 'Tim Banks'  
**Cc:** TC Cantwell; Melanie Davis; Christy Parrish  
**Subject:** RE: 5534 Centerville road

Tim – we were expecting the file to come in today. As of now, it had not come in yet. As soon as it does, I'll look for the information and if it is in there will .pdf and send.

## Scott Thomas

---

**From:** Tim Banks <[tbanks@gaspump.net](mailto:tbanks@gaspump.net)>  
**Sent:** Tuesday, April 16, 2013 12:29 PM  
**To:** Scott Thomas  
**Cc:** Whit Richardson; Jeff G. Miller; [jim@gaspump.net](mailto:jim@gaspump.net); [kerri@gaspump.net](mailto:kerri@gaspump.net); Whit Richardson  
**Subject:** 5534 Centerville Road  
**Attachments:** 20130416112202497.pdf; Tim Banks.vcf

Spill Prevention Plan

Scott,

Let me know if this is OK or if you need something else

Thanks

Tim Banks

<p><b>Tim Banks</b> Mid Atlantic Petroleum Services  (757) 424-9726 Work <a href="mailto:tbanks@gaspump.net">tbanks@gaspump.net</a>  814 Professional Place West Chesapeake, Virginia 23320 <a href="http://www.gaspump.net">www.gaspump.net</a></p>	
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Scott J. Thomas, P.E.  
Director of Engineering and Resource Protection



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F: 757-259-4032  
jamescitycountyva.gov

---

**From:** Tim Banks [<mailto:tbanks@gaspump.net>]  
**Sent:** Friday, April 12, 2013 11:04 AM  
**To:** Scott Thomas  
**Subject:** 5534 Centerville road

Scott,

Following up to see if you received the SPCC plans from the Star Express

Trying to get the new store finalized

Thanks

Tim

<p><b>Tim Banks</b> Mid Atlantic Petroleum Services  (757) 424-9726 Work tbanks@gaspump.net  814 Professional Place West Chesapeake, Virginia 23320 www.gaspump.net</p>	
---	--

## Scott Thomas

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**From:** Scott Thomas  
**Sent:** Friday, April 12, 2013 2:30 PM  
**To:** Tim Banks (tbanks@gaspump.net)  
**Cc:** Christy Parrish; Luke Vinciguerra; Tom Coghill  
**Subject:** RE: Freedom Market SP-67-10; 5534 Centerville road  
**Attachments:** SUP1709\_conditions.pdf; SP2109\_1.pdf; SP2109\_2.pdf; SP2109\_3.pdf; RE: 5534 Centerville Road, permit nos. B11-0983, B11-0984, B12-2589, B13-0049

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The Stuckeys/Star Express references were SP-63-10 amend, SP-21-09 amend, SP-25-07 and SUP-18-06. The SWPPP and SPCP for Stuckeys/Star Express was approved under the SP-21-09 amendment.

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**From:** Scott Thomas  
**Sent:** Friday, April 12, 2013 12:27 PM  
**To:** 'Tim Banks'  
**Cc:** TC Cantwell; Melanie Davis; Christy Parrish  
**Subject:** RE: 5534 Centerville road

Tim – we were expecting the file to come in today. As of now, it had not come in yet. As soon as it does, I'll look for the information and if it is in there will .pdf and send.

Scott J. Thomas, P.E.  
Director of Engineering and Resource Protection



101-E Mounts Bay Road  
Williamsburg, VA 23185  
P: 757-253-6639  
F: 757-259-4032  
jamescitycountyva.gov

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**From:** Tim Banks [mailto:[tbanks@gaspump.net](mailto:tbanks@gaspump.net)]  
**Sent:** Friday, April 12, 2013 11:04 AM  
**To:** Scott Thomas  
**Subject:** 5534 Centerville road

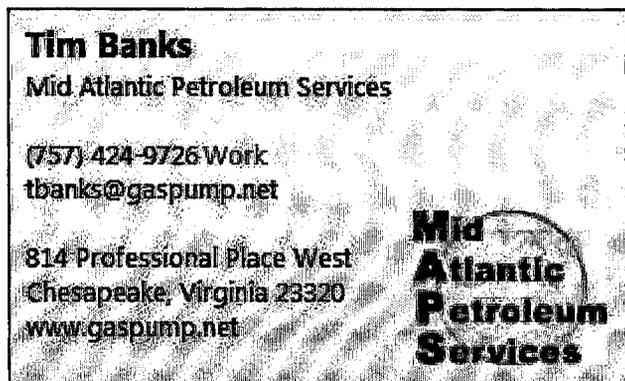
Scott,

Following up to see if you received the SPCC plans from the Star Express

Trying to get the new store finalized

Thanks

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<p><b>Tim Banks</b> Mid Atlantic Petroleum Services</p> <p>(757) 424-9726 Work tbanks@gaspump.net</p> <p>814 Professional Place West Chesapeake, Virginia 23320 www.gaspump.net</p>	
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## Scott Thomas

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**Attachments:** Tim Banks.vcf

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## Scott Thomas

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**From:** Tom Coghill  
**Sent:** Thursday, April 04, 2013 1:34 PM  
**To:** 'Tim Banks'  
**Cc:** Wayne Ricker; Scott Thomas; John Black  
**Subject:** RE: 5534 Centerville Road, permit nos. B11-0983, B11-0984, B12-2589, B13-0049

Tim,

Thanks for applying for your certificate of occupancy today. We will distribute this shortly. Here are the issues, as noted in our permit files, that must be resolved prior to C.O. issuance:

**SPILL CONTAINMENT PLAN ADDRESSING CHEMICAL HANDLING AND STORAGE AREAS SHALL BE APPROVED BY SCOTT THOMAS AND JOHN BLACK PRIOR TO ISSUANCE OF C.O.**

**STORMWATER POLLUTION PREVENTION PLAN MUST BE APPROVED BY SCOTT THOMAS PRIOR TO C.O. ISSUANCE.**

Regards,

Tom Coghill, CBO  
Building Safety & Permits Director



101 Mounts Bay Road, Bldg. E  
Williamsburg, VA 23185  
P: 757-253-6628  
Front Desk: 757-253-6626  
[jamescitycountyva.gov](http://jamescitycountyva.gov)

Environmental Division

APR 17 2013

RECEIVED

RESOLUTION

CASE NO. SUP-0017-2009. FREEDOM MARKET

WHEREAS, the Board of Supervisors of James City County has adopted by ordinance specific land uses that shall be subjected to a Special Use Permit (the "SUP") process; and

WHEREAS, Mr. Philip Richardson has applied for an SUP to allow the operation of a convenience store with fuel sales on the property located at 5534 Centerville Road, further identified as James City County Real Estate Tax Map No. 3130100011 (the "Property"); and

WHEREAS, in accordance with § 15.2-2204 of the Code of Virginia, and Section 24-15 of the James City County Zoning Ordinance, a public hearing was advertised and adjoining property owners were notified; and

WHEREAS, the Planning Commission of James City County, following its public hearing on April 7, 2010, recommended approval of the application by a vote of 7 to 0.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, does hereby approve the issuance of SUP-0017-2009 as described herein with the following conditions:

1. **Master Plan and Use:** This SUP shall be valid for a convenience store with fuel sales at 5534 Centerville Road (the "Property") as shown on the plan titled "Conceptual Plan For Freedom Market" prepared by AES Consulting Engineers, dated June 29, 2009, and revised March 4, 2010 (the "Master Plan"), with minor changes thereto as determined by the Planning Director. The Property shall not contain any vehicle-wash facilities.
2. **Hours of Operation:** The daily hours of operation for both the convenience store and gas pumps shall be limited to the hours of 5 a.m. to 11 p.m. The daily hours for deliveries and solid waste pickup shall be limited to the hours between 7 a.m. and 8 p.m.
3. **Intercoms:** Any intercom systems designed to allow communication between employees and customers shall operate in such a manner that they will not be audible by adjacent property owners.
4. **Architectural Review:** The architecture of the convenience store and the fuel island canopy shall be substantially in accordance with the submitted rendering prepared by Paul White referenced on page 2 of the Community Impact Statement. No stucco or *Exterior Insulation & Finish System* (EIFS) material shall be used on the building or canopy. The canopy roof shall have a roof constructed of materials identical to the store's roof. The canopy shall contain architectural features and materials that complement the store. The rear and sides of the convenience store shall have windows and other treatments consistent with the front of the structure. The architectural design and materials for both the building and canopy shall be approved by the Planning Director prior to final site plan approval.

5. **Fueling Stations:** There shall be no more than three fueling islands (six vehicle fueling positions) permitted on the Property. The pumps shall be arranged in a manner generally consistent with the Master Plan. No high pressure diesel pumps for tractor trailer fueling are permitted. The maximum height of the pump island canopy shall not exceed 20 feet from current grade.
6. **Lighting:** Any exterior site or building lighting, including canopy lighting, shall have recessed fixtures with no bulb, lens, or globe extending below the casing. The casing shall be opaque and shall completely surround the entire light fixture in such a manner that all light will be directed downward and the light source is not visible from the side. Fixtures which are horizontally mounted on poles shall not exceed 15 feet in height unless otherwise approved by the Planning Director. No glare defined as 0.1 foot-candle or higher shall extend outside the Property lines.
7. **Signage:** The freestanding sign shall be ground-mounted and shall not exceed a height of six feet. The sign's supporting structure shall be constructed to match the building and its design shall be approved by the Planning Director prior to the issuance of a sign permit. The building face sign(s) shall not exceed a cumulative size of 16 square feet and the location, design, materials, and lighting of such sign(s) shall be approved by the Planning Director. No signs shall be allowed on the canopy.
8. **Landscaping:** An enhanced landscaping plan shall be provided in the buffers along Centerville Road and Longhill Road. Enhanced landscaping shall be defined as 125 percent of the minimum ordinance size requirements of planting materials. The 35-foot transitional buffer between the Property and Longhill Grove shall substantially screen the Property using evergreen vegetation and fencing. The transitional buffer shall be designed such that when mature, the vegetation shall substantially obscure the view of the convenience store and gas pumps from all stories of the Longhill Grove apartments. The proposed effect must be demonstrated to the Planning Director prior to final site plan approval.
9. **Dumpster screening:** The dumpster shall be completely screened on three sides with brick or an alternative material approved by the Planning Director. The front gate shall be a dark color and shall screen the view of the dumpster.
10. **Trash Removal:** Rubbish bins shall be available for use by customers during all operating hours and shall be emptied on a daily basis.
11. **Outside Merchandise:** No outside display, sale, or storage of merchandise shall be permitted except for the outside storage of propane. Merchandise shall include, but not be limited to, ice, soda, candy, newspaper, or snack machine(s). Outside propane storage shall be screened from view. Public telephones, Automated Teller Machines (ATMs) for cash, and public restrooms shall be located inside the store.
12. **Water Conservation:** The Owner shall be responsible for developing and enforcing water conservation standards to be submitted to and approved by the James City Service Authority prior to final site plan approval. The standards may include, but shall not be limited to, such water conservation measures as limitations on the installation and use of irrigation systems and irrigation wells, the use of approved landscaping materials including the use of drought-tolerant plants, warm-season

grasses, and the use of water-conserving fixtures and appliances to promote water conservation and minimize the use of public water resources.

13. **Stormwater Pollution Prevention Plan:** Prior to issuance of any Certificate of Occupancy ("CO"), a stormwater pollution prevention plan shall be submitted to the Environmental Director for review and approval.

14. **Spill Prevention and Control Plan:** Prior to issuance of any CO, a spill containment plan that addresses the chemical handling and storage areas shall be submitted to the Environmental Director and to the Fire Chief for their review and approval.

15. **Commencement of Construction:** If construction has not commenced on this project within 36 months from the issuance of this SUP, this SUP shall become void. Construction shall be defined as obtaining an approved site plan, permits for building construction, and footings and/or foundation has passed required inspections.

16. **Severance Clause:** This SUP is not severable. Invalidation of any word, phrase, clause, sentence, or paragraph shall invalidate the remainder.

James G. Kennedy  
Chairman, Board of Supervisors

<u>SUPERVISOR</u>	<u>VOTE</u>
MCGLENNON	AYE
GOODSON	AYE
ICENHOUR	AYE
JONES	AYE
KENNEDY	AYE

ATTEST:

*Doug Powell*

\_\_\_\_\_  
Doug Powell  
Deputy Clerk to the Board

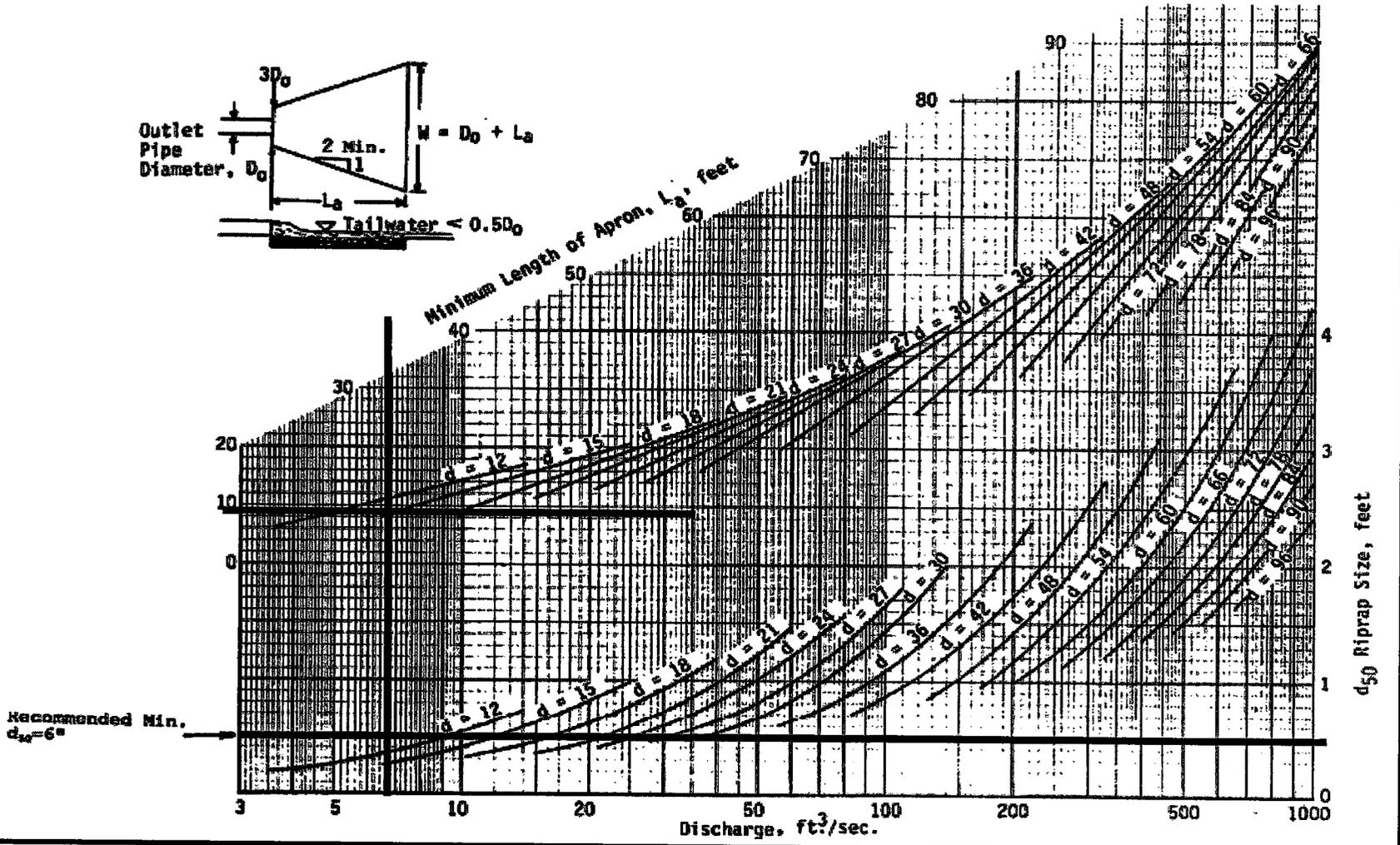
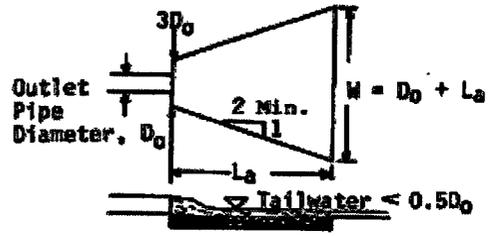
Adopted by the Board of Supervisors of James City County, Virginia, this 25th day of May, 2010.

Sup17-09FreedomMkt2\_res

**Outlet Location: Culvert 2 Outfall**

DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL  
 MINIMUM TAILWATER CONDITION ( $T_w < 0.5$  DIAMETER)

Source: USDA-SCS



III - 164

Plate 3.18-3

1992

3.18

$Q =$	<u>6.95</u> cfs	$3D_0 =$	<u>4.5</u> ft	$W =$	<u>11</u> ft	Depth =	<u>1.5</u> ft
$D_0 =$	<u>18</u> in	$L_a =$	<u>9</u> ft	$d_{50} =$	<u>0.5</u> ft		