TRANSMITTAL SHEET

ENGINEERING & RESOURCE PROTECTION → STORMWATER

Project: **Dixie Fuel**

County Plan No.: **SP-00075-2009**

Assigned BMP No.: **SC-033**

Information Enclosed:

X Record Drawings (Asbuilts)

X Construction Certification

X Computations

X Other : Declaration of Covenants

Name: Greg Johnson

Date: 10/24/2013

Signature: _____

COPY

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 15th day of October, 2009, between Vista Ventures, LLC, and all successors in interest, ("COVENANTOR(S)"), owner(s) of the following property:
Parcel Identification Number: 5920500004
Legal Description: L-4 Skiffes Creek Industrial Park
Project or Subdivision Name: Dixie Fuel Co. Propane Distribution Facility
Document/Instrument No. 040011935 or Deed Book _____, Page No. _____,
and the County of James City, Virginia ("COUNTY.")

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.

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.

Instrument # 090031410

Recorded on Nov. 30, 2009

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)

Sandra H. Kerlin
Signature

Sandra H. Kerlin, Owner
Print Name and Title

ACKNOWLEDGMENT

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF James City County, to wit:

I hereby certify that on this 15th day of October, 2009, before the subscribed, a Notary Public for the Commonwealth of Virginia, personally appeared Sandra Kerlin and did acknowledge the foregoing instrument to be his/her Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 15th day of October, 2009.

[SEAL]

Betty J. Wallace
Notary Public

Notary Registration Number: 7138762
My Commission expires: 6-30-2012

Approved as to form:

Alan Kusman
County Attorney

This Declaration of Covenants prepared by:

Signature: [signature] Print Name and Title: Sara Sims / Office Mgr

Address: 512 Moller Ln Newport News, VA 23606

Phone Number: 757.249.1264

Drainage1_pre_doc
(Revised 9-5-08)

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

Project Name: Dixie Fuel Company Propane Distribution Facility
County Plan No.: SP-37-11
Stormwater Management Facility: SC-033 Infiltration Trench
BMP Phase #: ☐ I ☐ II ☒ III
☒ Information Package Received. Date/By: 10/18/11
☒ Completeness Check:
- ☒ Record Drawing Date/By: 9/20/2013 Stephen A. Romeo
- ☒ Construction Certification Date/By: 9/19/2012 Piotr Swiatuchowski
- ☒ RD/CC Standard Forms (Required for all BMPs after Feb 1st 2001Only)
- ☒ Insp/Maint Agreement # / Date: #0900031410 NOV 30, 2009
- ☒ BMP Maintenance Plan Location: Record Drawing
- ☐ Other:

☒ Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review
- ☒ Yes ☐ No Location: C-2B

☒ Assign **County BMP ID Code #:** Code: SC-033
☒ Preliminary Input/Log into Division's "As-Built Tracking Log"
☒ Add Location to GIS Map. Obtain basic site information (GPIN, Owner, Address, etc.)
☒ Preliminary Log into Access Database (BMP ID #, Plan No., GPIN, Project Name, etc.)
☒ Active Project File Review (correspondence, H&H, design computations, etc.).
☒ Initial As-Built File setup (File label, folder, copy plan/details/design information, etc.).
☒ Inspector Check of RD/CC (forward to Inspector using transmittal for cursory review).
☒ Pre-Inspection Drawing Review of Approved Plan (Quick look prior to Field Inspection).
☒ Final Inspection (FI) Performed Date: 10/3/2013
☒ Record Drawing (RD) Review Date: 10/3/2013
☒ Construction Certification (CC) Review Date: 10/3/2013
☒ Actions:
- ☒ No comments.
- ☐ Comments. Letter Forwarded. Date:
- ☐ Record Drawing (RD)
- ☐ Construction Certification (CC)
- ☐ Construction-Related (CR)
- ☐ Site Issues (SI)
- ☐ Other :

☒ Second Submission: 9/20/12
☐ Reinspection (if necessary):
☒ Acceptable for SWM Purposes (RD/CC/CR/Other). Ok to proceed with bond release.
☒ Complete "Surety Request Form".
☒ Check/Clean active file of any remaining material and finish "As-Built" file.
☐ ~~Add to County BMP Inventory/Inspection schedule (Phase~~ I, II or III).
☒ Copy Final Inspection Report into County BMP Inspection Program file.
☐ ~~Obtain Digital Photographs of BMP and save~~ into County BMP Inventory.
☐ ~~Request mylar/reproducible from As-Built plan~~ preparer.
☒ Complete "As-built Tracking Log".
☒ Last check of BMP Access Database (County BMP Inventory).
☐ ~~Add BMP to JCC Hydrology & Hydraulic~~ database (optional).
☐ ~~Add BMP to Municipal BMP list (if a County-~~owned facility)
☐ ~~Add BMP to PRIDE BMP ratings database.~~

Final Sign-Off

Inspector: Date: 10/4/2013
Chief Engineer: Date: 10/17/13

*** See separate checklist, if needed.

Environmental Division

SEP 20 2012

RECEIVED

James City County, Virginia
Stormwater Division

Stormwater Facilities - BMP and Conveyance Systems
Record Drawing and Construction Certification Forms

Note: In accordance with the requirements of the Chesapeake Bay Preservation Ordinance, Chapter 23, Section 23-10(4), BMPs shall be designed and constructed in accordance with the manual entitled* James City County Guidelines for Design and Construction of Stormwater Management BMPs. *The Subdivision Ordinance, Chapter 19-62, the Zoning Ordinance, Chapter 24-159, and approved construction 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, written construction certification is required by a Professional Engineer who inspected the structure during its construction. Currently there are over 20 water quality type BMPs accepted by the County.

Section 1 - Site Information:

Project Name: Dixie Fuel Company Propane Distribution Facility

Structure/BMP Name: Infiltration Basin

Project Location: Skiffes Creek Industrial Park

BMP Location: On the South side of property, along installed gravel driveway

County Plan No.: SP - 00075 - 2009 and SP-0037-2011

Project Type:
- ☐ Residential
- ☐ Business
- ☑ Commercial
- ☐ Office
- ☐ Institutional
- ☐ Industrial
- ☐ Public
- ☐ Roadway
- ☐ Other

Tax Map/Parcel No.: 5920500004

BMP ID Code (if known): SC-033

Zoning District: M 2

Land Use: General Industrial

Site Area (sf or acres): 2.04

Brief Description of Stormwater Management/BMP Facility: Infiltration Basin with approximate floor area of 714 sq. ft. serves drainage area of 0.45Ac associated with 2.04 Ac site. Infiltration Basin has been designed to infiltrate runoff from the 2 and 10 year design frequency storm events. The runoff from 25 and 100 year design frequency storm events will be conveyed by downstream slope of the basin.

Nearest Visible Landmark to SWM/BMP Facility:

Nearest Vertical Ground Control (if known):

☑ JCC Geodetic Ground Control ☐ USGS ☐ Temporary ☐ Arbitrary ☐ Other

Station Number or Name: 350

Datum or Reference Elevation: NGVD 1929 ELEV 59.90

Control Description: James City County Geodetic Control Monumentation

Control Location from Subject Facility: 1,800 LF

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: Shouse-Combs Construction

Name of Professional Firm Who Routinely Monitored Construction: VHB, Inc.

Date of Completion for SWM/BMP Facility: February 2012

Date of Record Drawing/Construction Certification Submittal: 9/19/12

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

Section 3 - Owner / Designer / Contractor Information:

Owner/Developer: *(Note: Site Owner or Applicant responsible for development of the project.)*

Name: Michael Kerlin

Mailing Address: P.O. Box 1160, Grafton , VA 23692

Business Phone: 757-249-1264 Fax: _____

Contact Person: Michael Kerlin Title: _____

Design Professional: *(Note: Professional Engineer or Certified Land Surveyor responsible for the design and preparation of plans and specifications for the Stormwater facilities.)*

Firm Name: VHB, Inc

Mailing Address: 351 McLaws Circle, Suite 3, Williamsburg, VA 23185

Business Phone: 757-220-0500 Fax: 757-220-8544

Responsible Plan Preparer: Stephen A. Romeo, L.S.

Title: Principal

Plan Name: Dixie Fuel Company Propane Distribution Facility

Firm's Project No. 2006059, 33429.01 Plan Date: 05/26/2011

Sheet No. Applicable to SWM/BMP Facility: _____ / _____ / _____ / _____ / _____

Stormwater Facility Contractor: *(Note: Site Work Contractor directly responsible for construction of the Stormwater facilities.)*

Name: Shouse-Combs Construction

Mailing Address: P.O. Box 3672

Business Phone: 757-888-3266 Fax: 757-888-3269

Contact Person: Roger Cantrell

Site Foreman/Supervisor: Roger Cantrell

Specialty Subcontractors & Purpose (for BMP Construction Only): _____

Section 4 - Professional Certifications:

Certifying Professionals: *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 stormwater facilities for the project including all BMP and conveyance systems. A Registered Professional Engineer is responsible for the inspection, monitoring and certification of all stormwater facilities – BMP and conveyance systems during their construction.*

Record Drawing and Construction Certifications for Stormwater Facilities - BMP and Conveyance Systems

Record Drawing Certification

Firm Name: Vanasse Hangen Brustlin, Inc.
Mailing Address: 351 McLaws Circle, Suite 3
Williamsburg, VA 23185
Business Phone: 757-220-0500 x 6239
Fax: 757-220-8544

Name: Stephen A. Romeo
Title: Principal

Signature: Stephen Romeo
Date: 9/19/12

I hereby certify to the best of my knowledge and belief that this record drawing represents the actual condition of the Stormwater Facilities. The facilities appear to conform to the provisions of the approved construction plans and specifications except as specifically noted.

COMMONWEALTH OF VIRGINIA
9/19/12
STEPHEN A. ROMEO
Lic. No. 1448-B
Stephen Romeo
LAND SURVEYOR

(Seal)
Virginia Registered Professional Engineer
or Certified Land Surveyor

Construction Certification

Firm Name: Vanasse Hangen Brustlin, Inc.
Mailing Address: 351 McLaws Circle, Suite
Williamsburg, VA 23185
Business Phone: 757-220-0500 x 6246
Fax: 757-220-8544

Name: Piotr Swietuchowski, P.E.
Title: Project Manager

Signature:
Date: 9/19/12

I hereby certify to the best of my knowledge and belief that these Stormwater Facilities were monitored and constructed in accordance with the provisions of the approved construction plans and specifications except as specifically noted.

COMMONWEALTH OF VIRGINIA
PIOTR SWIETUCHOWSKI
Lic. No. 044606
9/19/12
PROFESSIONAL ENGINEER

(Seal)
Virginia Registered
Professional Engineer

Section 5 - Record Drawing and Construction Certification Requirements and Instructions:

☑ Preconstruction Meeting - Provides an opportunity to review stormwater facilities construction, maintenance and operation plans, and address any questions regarding construction and/or monitoring of the structure. The certifying professionals, geotechnical engineer, Owner/Applicant, Contractor and County representative(s) are required to attend the preconstruction meeting. Advance notice to the Stormwater Division is required. Usually, this requirement can be met simultaneously with Erosion and Sediment Control preconstruction meeting held for the project.

☑ A fully completed ***Stormwater Facilities – BMP and Conveyance Systems, RECORD DRAWING and CONSTRUCTION CERTIFICATION FORM*** and ***RECORD DRAWING CHECKLIST***. All applicable sections shall be completed in their entirety and certification statements signed and sealed by the registered professional responsible for individual record drawing and/or construction certification.

☑ The Record Drawing shall be prepared by a Registered Professional Engineer or Certified Land Surveyor for the stormwater facilities including all BMPs and conveyance systems.

☑ Construction Certification. Construction of Stormwater BMP facilities which contain impoundments, embankments and related engineered appurtenances including subgrade preparation, compacted soils, structural fills, liners, geosynthetics, filters, seepage controls, cutoffs, toe drains, hydraulic flow control structures, etc. shall be visually observed and monitored by a Registered Professional Engineer or his/her authorized representative. The Engineer must certify that the structure, embankment and associated appurtenances were built in accordance with the approved construction plans and specifications, and standard accepted construction practice and shall submit a written certification and/or drawings to the Stormwater Division as required. Soil and compaction test reports, concrete test reports, inspection reports, logs and other required construction material or installation documentation shall be required by the Stormwater Division to substantiate the certification. The Engineer shall have the authority and responsibility to make minor changes to the approved plan, in coordination with the assigned County inspector, in order to compensate for unsafe or unusual conditions encountered during construction such as those related to bedrock, soils, groundwater, topography, etc. as long as changes do not adversely affect the integrity of the structure(s). Major changes to the approved design plan or structure must be reviewed and approved by the original design professional and the James City County Environmental Division with notification to the Stormwater Division.

☑ Record Drawing and Construction Certifications are required within **thirty (30) days** of the completion of any Stormwater Facility - BMP or conveyance system. Submittals must be reviewed and accepted by James City County Stormwater Division prior to final inspection, acceptance, surety release or issuance of a Certificate of Occupancy.

Dual Purpose Facilities - Completion of construction also includes any interim stage for Stormwater BMP facilities which serve a dual purpose as temporary sediment basins during construction and as permanent stormwater BMP facilities following completion of development and stabilization. For these dual purpose facilities, construction certification is required once the temporary sediment basin phase of construction is complete. Final record drawing and construction certification of additional permanent components is required once permanent facility construction is complete.

Interim Construction Certification is required for those dual purpose embankment-type facilities that are generally ten (10) feet or greater in dam height (*) and may not be converted, modified or begin function as a permanent SWM / BMP structure for a period generally ranging from six (6) to eighteen (18) months or more from issuance of a Land Disturbance permit for construction.

Interim or final record drawing and construction certifications are not required for temporary sediment basins which are designed and constructed in accordance with current minimum standards and specifications for temporary sediment basins per the Virginia Erosion and Sediment Control Handbook (VESCH); have a temporary service life of less than eighteen (18) months; and will be removed completely once associated disturbed areas are stabilized, unless a distinct hazard to the public's health, safety and welfare is determined by the Stormwater Division due to the size or presence of the structure or due to evidence of improper construction.

(*Note: Dam Height as referenced above is generally defined as the vertical distance from the natural bed of the stream or waterway at the downstream toe of the embankment to the top of the embankment structure in accordance with 4VAC50-20-30, Virginia Impoundment Structure Regulations and the Virginia Dam Safety Program.)

☑ Record Drawings shall provide, at a minimum, all information as shown within these requirements and the attached **RECORD DRAWING CHECKLIST** specific to the type of SWM/BMP facility being constructed. Other additional record data may be formally requested by the James City County Stormwater Division. *(Note: Refer to the current edition of the James City County Guidelines for Design and Construction of Stormwater Management BMP's manual for a complete list of acceptable BMP's. Currently there are over 20 acceptable water quality type BMP's accepted by the County.)*

☑ Record Drawings shall consist of blue/black line prints and a reproducible (mylar, sepia, diazo, etc.) set of the approved stormwater facilities construction plan including applicable plan views, profiles, sections, details, maintenance plans, etc. as related to the subject Stormwater Facility. The set shall indicate **"RECORD DRAWING"** in large text in the lower right hand corner of each sheet with record elevations, dimensions and data drawn in a clearly annotated format and/or boxed beside design values. Approved design plan values, dimensions and data shall not be removed or erased. Drawing sheet revision blocks shall be modified as required to indicate record drawing status. Elevations to the nearest 0.1' are sufficiently accurate except where higher accuracy is needed to show positive drainage. Certification statements as shown in Section 4 of the Record Drawing and Construction Certification Form, ***or similar forms thereof***, and professional signatures and seals, with dates matching that of the record drawing status in the revision or title block, are also required on all associated record drawing plans, prints or reproducibles.

☑ Submission Requirements. Initial and subsequent submissions for review shall consist of a minimum of one (1) blue/black line set for record drawings and one copy of the construction certification documents with appropriate transmittal. Under certain circumstances, it is understood that the record drawing and construction certification submissions may be performed by different professional firms. Therefore, record drawing submission may be in advance of construction certification or vice versa. Upon approval and prior to release of surety or a Certificate of Occupancy, final submission shall include one (1) reproducible set of the record drawings, one (1) blue/black line set of the record drawings and one (1) copy of the construction certification. Also for current and/or future incorporation into the County BMP database and GIS system, it is requested that the record drawings also be submitted to the Stormwater Division on a diskette or CD-ROM in an acceptable electronic file format such as *.dxf, *.dwg, etc. or in a standard scanned and readable format. The electronic file requirement can be discussed and coordinated with Stormwater Division staff at the time of final submission.

STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
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. Include approved County Plan Number and BMP ID Code if known.

XX 4. All plan 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.

N/A 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 Stormwater 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.

N/A 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.

N/A 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.

N/A 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.

N/A 10. Dimensions, locations and elevations of outlet orifices, weirs, slots and drains.

N/A 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.**

N/A 14. Elevation of the principal spillway barrel (outlet pipe) inlet and outlet invert.

N/A 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.

N/A 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 Stormwater Division specific to the constructed Stormwater BMP facility.

STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST

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

N/A **III. Group A - Wet Ponds** *(Includes A-1 Small Wet Ponds; A-2 Wet Ponds; A-3 Wet Ext Det Ponds.)*

_____ A1. All requirements of Section II, Minimum Standards, apply to Group A facilities.

_____ A2. Principal spillway consists of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.

_____ A3. Sediment forebays or pretreatment devices provided at inlets to pond. Generally 4 to 6 ft. deep.

_____ A4. Access for maintenance and equipment is provided to the forebay(s). Access corridors are at least 12 ft. wide, have a maximum slope of 15 percent and are adequately stabilized to withstand heavy equipment or vehicle use.

_____ A5. Adequate fixed vertical sediment depth markers installed in the forebay(s) for future sediment monitoring purposes.

_____ A6. Pond liner (if required) provided. Either clay liners, polyliners, bentonite liners or use of chemical soil additives based on requirements of the approved plan.

_____ A7. Minimum 6 percent slope safety bench extending a minimum of 15 feet outward from normal pool edge and/or an aquatic bench extending a minimum of 10 feet inward from the normal shoreline with a maximum depth of 12 inches below the normal pool elevation, if applicable, per the approved design plans. (Note: Safety benches may be waived if pond side slopes are no steeper than 4H:1V).

_____ A8. No trees are present within a zone 15 feet around the embankment toe and 25 feet from the principal spillway structure.

_____ A9. Wet permanent pool, typically 3 to 6 feet deep, is provided and maintains level within facility.

_____ A10. Low flow orifice has a non-clogging mechanism.

_____ A11. A pond drain pipe with valve was provided.

_____ A12. Pond side slopes are not steeper than 3H:1V, unless approved plan allowed for steeper slope.

_____ A13. End walls above barrels (outlet pipe) greater than 48 inch in diameter are fenced to prevent a fall hazard.

STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST

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

N/A **IV. Group B – Wetlands** *(Includes B-1 Shallow Marsh; B-2 Ext Det Shallow Wetlands; B-3 Pond Wetland System and B-4 Pocket Wetland)*

_____ B1. Same requirements as Group A Wet Ponds.

_____ B2. Minimum 2:1 length to width flow path provided across the facility.

_____ B3. Micropool provided at or around outlet from BMP (generally 3 to 6 ft. deep).

_____ B4. Wetland type landscaping provided in accordance with approved plan. Includes correct pondscaping zones, plant species, planting arrangements, wetland beds, etc. Wetland plants include 5 to 7 emergent wetland species. Individual plants at 18 inches on center in clumps.

_____ B5. Adequate wetland buffer provided (Typically 25 ft. outward from maximum design water surface elevation and 15 ft. setback to structures).

_____ B6. No more than one-half (½) of the wetland surface area is planted.

_____ B7. Topsoil or wetland mulch provided to support vigorous growth of wetland plants.

_____ B8. Planting zones staked or flagged in field and locations subsequently established by appropriate field surveying methods for record drawing presentation.

STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST

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

V. Group C - Infiltration Practices *(Includes C-1 Infiltration Trench; C-2 Infiltration Trench; C-3 Infiltration Basin; and C-4 Infiltration Basin)*

XX C1. All requirements of Section II, Minimum Standards, apply to Group C facilities as applicable.

XX C2. Facility is not located on fill slopes or on natural ground in excess of six (6) percent.

XX C3. Pretreatment devices provided prior to entry into the infiltration facility. Acceptable pretreatment devices include sediment forebays, sediment basins, sediment traps, sump pits or inlets, grass channels, plunge pools or other acceptable measures.

N/A C4. Three (3) or more of the following pretreatment devices provided to protect long term integrity of structure: grass channel; grass filter strip; bottom sand layer; upper filter fabric layer; use of washed bank run gravel aggregate.

N/A C5. Sides of infiltration practice lined with filter fabric.

XX C6. 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 C7. Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility.

XX C8. Minimum one hundred (100) foot separation horizontally from any known water supply well and minimum one hundred (100) foot separation upslope from any building.

XX C9. Minimum twenty-five (25) foot separation down gradient from any structure.

XX C10. Stormwater outfalls provided for overflow associated with larger design storms.

XX C11. No visual signs of erosion or channel degradation immediately downstream of facility.

XX C12. Facility does not currently cause any apparent surface or subsurface water problems to downgrade properties.

N/A C13. Observation well provided.

XX C14. Adequate, direct access provided to the facility for future maintenance, operation and inspection.

STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST

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

N/A **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)*

_____ D1. All requirements of Section II, Minimum Standards, apply to Group D facilities.

_____ D2. Sediment pretreatment devices provided.

_____ 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.

_____ 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.

_____ 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.

_____ D6. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed .

_____ D7. Filtering system is off-line from storm drainage conveyance system.

_____ D8. Overflow outlet has adequate erosion protection.

_____ D9. Deflector, diversion, flow splitter or regulator structure provided to divert the water quality volume to the filtering structure.

_____ D10. Minimum four (4) inch perforated underdrain provided in a clean aggregate envelope layer beneath the facility.

_____ 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.

_____ D12. Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility.

_____ D13. No visual signs of erosion or channel degradation immediately downstream of facility.

_____ D14. Adequate, direct access provided to the pretreatment area and/or filter bed for future maintenance.

STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
AS-BUILT PLAN CHECKLIST

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

N/A **VII. Group E - Open Channel Systems** *(Includes E-1 Wet Swales (Check Dams); E-2 Dry Swales;and E-3 Biofilters)*

_____E1. All requirements of Section II, Minimum Standards, apply to Group E facilities as applicable.

_____E2. Open channel system has constructed longitudinal slope of less than four (4) percent.

_____E3. No visual signs of erosion in the open channel system's soil and/or vegetative cover.

_____E4. Open channel side slopes are no steeper than 2H:1V at any location. Preferred channel sideslope is 3H:1V or flatter.

_____E5. No visual signs of ponding are present at any location in the open channel system, except at rock check dam locations for E-1 systems (Wet Swales).

_____E6. For E-2 BMPs (Dry Swales), an underdrain system was provided.

_____E7. Treated timber or rock check dams provided as pretreatment devices for the open channel system.

_____E8. Gravel diaphragm provided in areas where lateral sheet flow from impervious surfaces are directly connected to the open channel system.

_____E9. Grass cover/stabilization in the open channel system appears adaptable to the specific soils and hydric conditions for the site and along the channel system.

_____E10. Open channel system areas with grass covers higher than four (4) to six (6) inches were properly mowed.

_____E11. 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.

_____E12. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed and no adverse affects to the function of the facility are anticipated.

_____E13. For E-3 BMPs (Biofilters), the bottom width is six (6) feet maximum at any location.

_____E14. For E-3 BMPs (Biofilters), sideslopes are 3H:1V maximum at any location.

_____E15. For E-3 BMPs (Biofilters), the constructed channel slope is less than or equal to three (3) percent at any location.

_____E16. For E-3 BMPs (Biofilters), the constructed grass channel is approximately equivalent to the constructed roadway length.

STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST

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

N/A **VIII. Group F - Extended Dry Detention** *(Includes F-1 Timber Walls; and F-2 Dry Extended Detention with Forebay)*

_____F1. All requirements of Section II, Minimum Standards, apply to Group F facilities.

_____F2. Basin bottom has positive slope and drainage from all basin inflow points to the riser (or outflow) location.

_____F3. Timber wall BMP used in intermittent stream only. (ie. Prohibited in perennial streams.)

_____F4. Forebay provided approximately 20 ft. upstream of the facility. Forebays generally 4 to 6 feet in depth.

_____F5. A reverse slope pipe, vertical stand pipe or mini-barrel and riser was provided to prevent clogging.

_____F6. Principal spillway and outlet barrel provided consisting of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.

_____F7. Mini-barrel and riser, if used, contains a removable trash rack to reduce clogging.

_____F8. Low flow orifice, if used, has a minimum diameter of three (3) inches or two (2) inches if internal orifice control was utilized and a small, cage type external trash rack.

_____F9. Timbers properly reinforced or concrete footing provided if soil conditions were prohibitive.

_____F10. Timber wall cross members extended to a minimum depth of two (2) feet below ground elevation.

_____F11. Protection against erosion and scour from the low flow orifice and weir-flow trajectory provided.

_____F12. Stilling basin or standard outlet protection provided at principal spillway outlet.

_____F13. Adequate, direct access provided to the facility. Access corridor to facility is at least ten (10) feet wide, slope is less than twenty (20) percent and appropriate stabilization provided for equipment and vehicle use. Access extends to forebay, standpipe and timber wall, as applicable.

_____F14. No visual signs of undercutting of timber walls or clogging of the low orifice were present.

_____F15. No visual signs of erosion or channel degradation immediately downstream of facility.

_____F16. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed and no adverse affects to the function of the facility are anticipated.

STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST

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

N/A **IX. Group G - Open Spaces** *(Includes All Open Space Types G-1; G-2; and G-3)*

_____G1. All requirements of Section II, Minimum Standards, apply to Group G facilities as applicable.

_____G2. Constructed impervious areas appear to conform with locations indicated on the approved plan and appear less than sixty (60) percent impervious in accordance with the requirements of the James City County Chesapeake Bay Preservation Ordinance.

_____G3. Dedicated open space areas are in undisturbed common areas, conservation easements or are protected by other enforceable instruments that ensures perpetual protection.

_____G4. Provisions included to clearly specify how the natural vegetated areas utilized as dedicated open space will be managed and field identified (marked).

_____G5. Adequate protection measures were implemented during construction to protect the defined dedicated open space areas.

_____G6. Dedicated open space areas were not disturbed during construction (ie. cleared, grubbed or graded).

STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST

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

X. Storm Drainage Systems, closed and open

(Includes all stormwater drainage conveyance systems such as onsite or offsite storm drains, open channels, inlets, manholes, junctions, outlet protections, deflectors, etc. The intent of this portion of the certification is toensure the drainage conveyance facilities are constructed in accordance with the construction plans and specifications so that they convey the desing flow levels and don not require excessive maintenance.)

XX SD1. All requirements of Section II, Minimum Standards, apply to Storm Conveyance systems.

XX SD2. Horizontal location of all pipes, structures and channels relative to the approved plan.

XX SD3. Type, top elevation and invert elevation of all closed system access structures (inlets, manholes, etc.).

XX SD4. Material type, size or diameter, class, invert elevations, lengths and slopes for all closed pipe segments.

XX SD5. Channel cross-section and invert elevations at 100 foot intervals. Channel liners as specified on the construction plans.

N/A SD6. Class, length, width and depth of riprap and outlet protections or dimensions of special energy dissipation structures.

N/A **XII. Other Systems** *(Includes any non-typical, specialty, manufactured or innovative stormwater management BMP practices or systems generally accepted for use as or in conjunction with other acceptable stormwater management BMP practices. Requires evidence of prior satisfactory industry use and prior Environmental Division approval, waiver or exception.)*

_____O1. All requirements of Section II, Minimum Standards, apply to this section.

_____O2. Certification criteria to be determined on a case-by-case basis by the Stormwater Division specific to the proposed SWM/BMP facility.

STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST

XIII. <u>References</u> *(The James City County Record Drawing and Construction Certification Forms and Checklists for Stormwater Management / BMP facilities were developed using the following sources and references.)*

- ☐ Baltimore County, Maryland Soil Conservation District, As-Built Stormwater Management Pond Checklist.
- ☐ James City County, Virginia, Guidelines for Design and Construction of Stormwater Management BMP's (October 1999).
- ☐ James City County, Virginia, Stormwater Detention/Retention Basin Design Checklist and Erosion and Sediment Control and Stormwater Management Design Plan Checklists.
- ☐ James City County Stormwater Policy Framework, Final Report of the James City County BMP Policy Project, October 1998, The Center for Watershed Protection.
- ☐ Prince Georges County, Maryland, As-Built Requirements Retention or Detention Pond/Basin.
- ☐ Prince William County, Virginia, Stormwater Management Fact Sheet.
- ☐ Stafford County, Virginia, As-Built Plan Checklist.
- ☐ Stormwater Management Design Manual, NRCS Maryland Code No. 378, Pond Standards and Specifications.
- ☐ USEPA/Watershed Management Institute, Stormwater Management Inspection Forms.
- ☐ Virginia Impounding Structure Regulations (Dam Safety), Department of Conservation & Recreation, 1997.
- ☐ Virginia Erosion and Sediment Control Handbook, Third Edition 1992, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation.
- ☐ Virginia Stormwater Management Handbook, 1999 edition, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation.

File: Shared\SWMProg\BMP\Certif\RDCC.wpd

Environmental Division

OCT 18 2011

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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: Dixie Fuel Company Propane Distribution Facility
Structure/BMP Name:
Project Location: 1576 Manufacture Drive
BMP Location: South of entrance
County Plan No.: SP - 0037 - 2011

Project Type:
- ☐ Residential
- ☐ Business
- ☑ Commercial
- ☐ Office
- ☐ Institutional
- ☐ Industrial
- ☐ Public
- ☐ Roadway
- ☐ Other _____

Tax Map/Parcel No.: (5-4)(59-2)
BMP ID Code (if known): SC 033
Zoning District:: M2
Land Use:
Site Area (sf or acres): 2.04 Ac.

Brief Description of Stormwater Management/BMP Facility:

VOID

Nearest Visible Landmark to SWM/BMP Facility: Propane Tank North of Facility

Nearest Vertical Ground Control (if known):
☐ JCC Geodetic Ground Control ☐ USGS ☐ Temporary ☑ Arbitrary ☐ Other
Station Number or Name: Utility Pole JL-83
Datum or Reference Elevation: Elev=66.00
Control Description: Mark set on power pole using topographic survey provided by client
Control Location from Subject Facility: North of facility approximately 70' (feet)

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: April 2011
Facility Monitored by County Representative during Construction: ☐ Yes ☐ No ☑ Unknown
Name of Site Work Contractor Who Constructed Facility: _____
Name of Professional Firm Who Routinely Monitored Construction: _____
Date of Completion for SWM/BMP Facility: August 2011
Date of Record Drawing/Construction Certification Submittal: 10/18/2011

(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: Dixie Fuel Company
Mailing Address: 302 Vista Drive
Seaford, VA 23696
Business Phone: (757) 249-1264 Fax: (757) 249-1875
Contact Person: Bill Kerlin Title: _____

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: Vanasse Hangen Brustlin, Inc.
Mailing Address: 351 McLaws Circle, Suite 3
Williamsburg, VA. 23185
Business Phone: 757-220-0500
Fax: 757-220-8544
Responsible Plan Preparer: Stephen A. Romeo, L.S.
Title: Principal
Plan Name: Dixie Fuel Company Propane Distribution
Firm's Project No. 33429.00 (2006059-000.00)
Plan Date: Rev. May 26, 2011
Sheet No.'s Applicable to SWM/BMP Facility: C-3 / C-4 / C-5 / ____ / ____

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

VOID

Name: _____
Mailing Address: _____
Business Phone: _____
Fax: _____
Contact Person: _____
Site Foreman/Supervisor: _____
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: Vanasse Hangen Bruslin, Inc.
Mailing Address: 351 McLaws Circle, Suite 3
Williamsburg, VA. 23185
Business Phone: 757-220-0500
Fax: 757-220-8544

Name: Stephen A. Romeo, L.S.
Title: Principle

Signature: Stephen Romeo
Date: 10/18/11

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.

COMMONWEALTH OF VIRGINIA
10/18/11
STEPHEN A. ROMEO
Lic. No. 1448-B
Stephen Romeo
LAND SURVEYOR

(Seal)

Virginia Registered Professional Engineer
or Certified Land Surveyor

Construction Certification

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

Name: _____
Title: _____

Signature: _____
Date: _____

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

_____ (Seal)

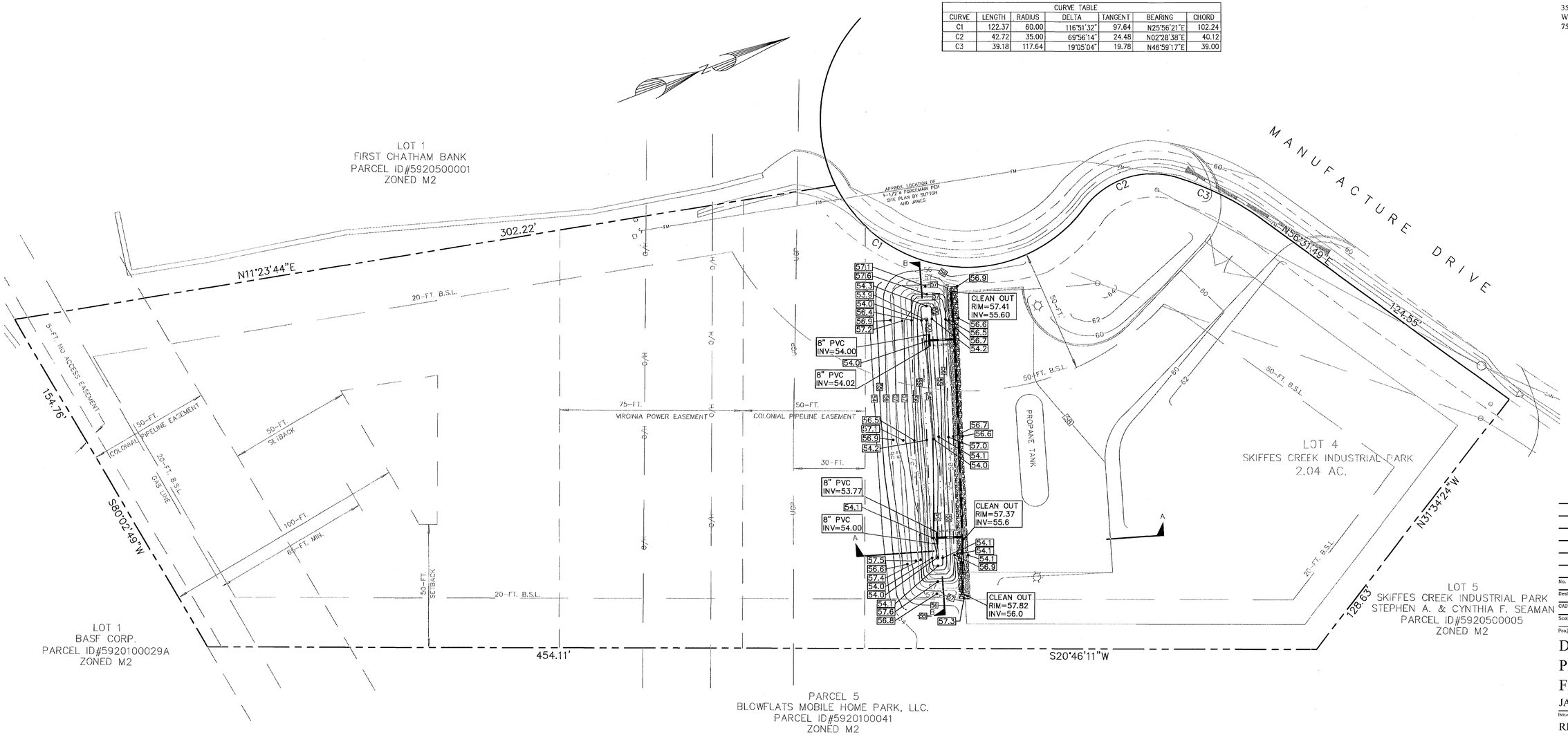
Virginia Registered
Professional Engineer

Vanasse Hangen Brustlin, Inc.

Transportation
Land Development
Environmental Services

351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185-6316
757 220 0500 à FAX 757 220 8544

CURVE TABLE						
CURVE	LENGTH	RADIUS	DELTA	TANGENT	BEARING	CHORD
C1	122.37	60.00	116°51'32"	97.64	N25°56'21"E	102.24
C2	42.72	35.00	69°56'14"	24.48	N02°28'38"E	40.12
C3	39.18	117.64	19°05'04"	19.78	N46°59'17"E	39.00



General Notes

1. ELEVATIONS HEREON ARE IN FEET AND ARE BASED ON TOPOGRAPHIC SURVEY PROVIDED TO VHB BY CLIENT.
2. THIS SURVEY DOES NOT IMPLY IN ANY WAY THAT:
   (1) INSPECTIONS WERE MADE DURING CONSTRUCTION
3. RECORD INFORMATION SHOWN ON THIS PLAN IS BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB IN AUGUST, 2011.
4. HORIZONTAL AND VERTICAL DATUM BASED ON TOPOGRAPHIC SURVEY PROVIDED TO VHB BY CLIENT.

GRAPHIC SCALE

0 20 40 80

(IN FEET)
1 inch = 20 ft.

Environmental Division
SEP 20 2012
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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.

REFERENCE SHEETS C-3 SP-0037-2011

JCC CASE # SP-0037-2011

COMMONWEALTH OF VIRGINIA
9/20/12
STEPHEN A. ROMEO
LIC. No. 1448-B
LAND SURVEYOR

FOR RECORD DRAWING INFORMATION ONLY

No.	Revision	Date	Appvd.

Designed by | Drawn by CRO | Checked by SAR
CAD checked by SAR | Approved by
Scale 1"=20' | Date 10/17/2011

Project Title
DIXIE FUEL COMPANY
PROPANE DISTRIBUTION FACILITY
JAMES CITY COUNTY, VIRGINIA

Issued for
REVIEW AND APPROVAL

Drawing Title
RECORD DRAWING
SITE PLAN
GRADING AND DRAINAGE

Drawing Number
R-1

Sheet 1 of 2

Project Number
2006059-000.00

P:\33429.01\CAD\SR\PLANSET\R-1 LAYOUT.DWG

SP-0075-2009

PLAN OF DEVELOPMENT

OF

DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY
LOT 4
SKIFFES CREEK INDUSTRIAL PARK

ROBERTS MAGISTERIAL DISTRICT
JAMES CITY COUNTY, VIRGINIA

SEPTEMBER 16, 2009

LEGEND

EXISTING		PROPOSED
SAN	SANITARY SEWER	SAN
W	WATER	W
S	STORM SEWER	S
E	ELECTRIC LINE	E
T	TELEPHONE	T
G	GAS LINE	G
TV	CABLE TV LINE	TV
FM	FORCE MAIN	FM
OH	OVERHEAD CABLE	OH
	MANHOLE	
	CURB DROP INLET	
	YARD DROP INLET	
	CLEANOUT	
	FLARED END SECTION	
	VALVE	
	WATER METER	
	FIRE HYDRANT	
	POWER POLE	
	LIGHT POLE	
	TELEPHONE PEDESTAL	
	TELEPHONE POLE	
25	GROUND ELEVATION	25.10 T.C.
	CEMENT CONCRETE	
	BITUMINOUS CONCRETE	
	CONCRETE CURB	
	CG-6 CURB & GUTTER	
	CG-6(MOD) CURB & GUTTER	
	CURB TRANSITION CG-6 TO CG-6(MOD)	
	PROJECT LIMITS	
	CENTERLINE/BASELINE	
	PROPERTY LINE	
	DITCH SWALE LINE	
	DIRECTION OF FLOW	
	TREE LINE	
X	FENCE	X
	BORING	
	BENCH MARK	
	EASEMENT LINE	
	BLOW-OFF VALVE	
	DIVERSION DIKE	DD
	CONSTRUCTION ENTRANCE	CE
	SILT FENCE	SF
	INLET PROTECTION	IP
	CULVERT INLET PROTECTION	CIP
	OUTLET PROTECTION	OP
	TREE PROTECTION	TP
	CHECK DAM	CD
	PERMANENT SEEDING	PS
	SAFETY FENCE	SAF
	DUST CONTROL	DC

NOTE: SOME SYMBOLS SHOWN IN THIS LEGEND MAY NOT NECESSARILY BE USED FOR THIS PROJECT.

Miss Utility of Virginia
1829 BLUE HILL CIRCLE
NE ROANOKE, VIRGINIA 24012

72 HOURS BEFORE YOU DIG CALL MISS UTILITY OF VIRGINIA

BEFORE YOU DIG ANYWHERE IN VIRGINIA! CALL 811 (IN VA) 1-800-552-7001 (OUTSIDE VA)

VA LAW REQUIRES 3 WORKING DAYS NOTICE BEFORE YOU EXCAVATE.

OWNER/DEVELOPER

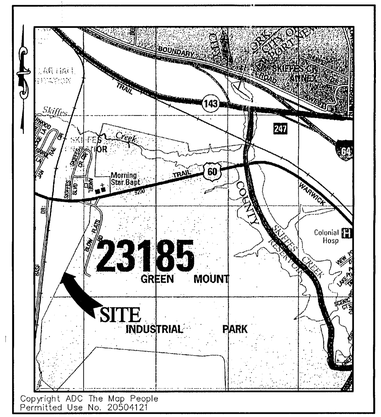
VISTA VENTURES, LLC
CONTACT PERSON:
BILL KERLIN
302 VISTA DRIVE
SEAFORD, VA 23696-2364
PHONE (757) 249-1264
FAX: (757) 249-1875

SITE ENGINEER

LANDMARK DESIGN GROUP
CONTACT PERSON:
STEPHEN A. ROMEO, LS
4029 IRONBOUND ROAD
SUITE 100
WILLIAMSBURG VA, 23188
PHONE: (757) 253-2975
FAX: (757) 229-0049

RESPONSIBLE LAND DISTURBER DURING THE REVIEW PROCESS

STEPHEN A. ROMEO, LS
LANDMARK DESIGN GROUP
4029 IRONBOUND ROAD, SUITE 100
WILLIAMSBURG VA, 23188
PHONE: (757) 253-2975
FAX: (757) 229-0049



VICINITY MAP SCALE : 1"=2000'

LANDMARK DESIGN GROUP
Engineers • Planners • Surveyors
Landscape Architects • Environmental Consultants

RECEIVED SEP 2009 Planning Department

COUNTY OF JAMES CITY FINAL SITE PLAN	
APPROVALS	DATE
Fire Dept.	
Health Dept.	
VDOT	
Planning	
Environ.	
Zoning Adm.	
JCSA	
County Eng.	
RFA	
Other	

SHEET INDEX

SHT. NO.	DESCRIPTION
C-1	COVER SHEET
C-2	ENVIRONMENTAL INVENTORY, EXISTING CONDITIONS AND DEMOLITION PLAN
C-2A	EROSION AND SEDIMENT CONTROL PLAN
C-2B	EROSION AND SEDIMENT CONTROL NOTES & DETAILS
C-3	SITE PLAN
C-4	GENERAL NOTES AND DETAILS
C-5	GENERAL NOTES AND DETAILS
L-1	LANDSCAPE PLAN
L-2	LANDSCAPE DETAILS & NOTES
F-1	LIGHTING PLAN

NOTES:
1. THE PROJECT SITE IS SITUATED IN THE SKIFFES CREEK RESERVOIR WATERSHED. AS THIS IS A DRINKING WATER RESERVOIR FOR THE CITY OF NEWPORT NEWS, ANY SPILL OR EMERGENCY SHOULD BE REPORTED TO WATERWORKS DISPATCH AT 757-234-4800 IN ADDITION TO NORMAL STATE AND LOCAL RESPONSE REQUIREMENTS.
2. THIS PROJECT WAS APPROVED BY NEWPORT NEWS WATERWORKS ON_____.
3. THE NEWPORT NEWS WATERSHED INSPECTOR, MR. ANDREW RICH 757-234-4863, MUST BE CONTACTED FOR PARTICIPATION IN REQUIRED COUNTY PRECONSTRUCTION MEETING FOR THE PROJECT.
4. ANY EXISTING UNUSED WELLS SHALL BE ABANDONED IN ACCORDANCE WITH STATE PRIVATE WELL REGULATIONS AND JAMES CITY COUNTY CODE.
5. THIS PROPERTY APPEARS TO LIE WITHIN ZONE X (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD PLAIN) ACCORDING TO NATIONAL FLOOD INSURANCE PROGRAM, FLOOD INSURANCE RATE MAP, NUMBER 51095C0230C, DATED SEPTEMBER 28, 2007.
6. ALL PROPOSED NEW UTILITIES ARE TO BE PLACED UNDERGROUND.
7. ALL NEW SIGNS SHALL BE IN ACCORDANCE WITH ARTICLE II, DIVISION 3 OF THE JAMES CITY COUNTY ZONING ORDINANCE.
8. ANY COMMERCIAL OR INDUSTRIAL OPERATION OR STORAGE CONDUCTED IN WHOLE OR IN PART OUT-OF-DOORS, SHALL MEET THE REQUIREMENTS OF SECTION 24-41 OF THE JAMES CITY COUNTY ZONING ORDINANCE.
9. THIS PARCEL IS LOCATED INSIDE THE PRIMARY SERVICE AREA (PSA) AND IT IS SERVED BY PUBLIC WATER AND SEWER.
10. ALL OBJECTIONABLE AND DELETERIOUS MATERIAL IS TO BE REMOVED FROM THE SITE AND DISPOSED OF IN A STATE APPROVED FACILITY, MEETING THE REQUIREMENTS OF ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.
11. THE OWNER/CONTRACTOR SHALL OBTAIN A LAND USE PERMIT FROM VDOT PRIOR TO PERFORMING ANY WORK IN THE STATE RIGHT-OF-WAY.
12. THE OWNER WILL PROVIDE A QUALIFIED RLD UPON ISSUANCE OF A LAND DISTURBANCE PERMIT OR SITE APPROVAL, WHICH EVER COMES FIRST.
13. THE OWNER OR CONTRACTOR SHALL OBTAIN A VSMP STORMWATER PERMIT FROM DCR PRIOR TO ISSUANCE OF LAND DISTURBING PERMIT.

STATISTICAL DATA

PARCEL ID	5920500004
PARCEL AREA	2.04 AC.
TAX MAP NO	(5-4)(59-2)
ADDRESS	1576 MANUFACTURE DRIVE
ZONING	M 2
WATERSHED	SKIFFES CREEK SKIFFES CREEK RESERVOIR
PROJECT AREA	0.54 AC.
DISTURBED AREA	0.50 AC.
EXISTING IMPERVIOUS	0.0 AC
PROPOSED IMPERVIOUS	0.20 AC (10% OF SITE)

-THIS PROJECT SHALL MEET THE REQUIREMENTS OF THE NATIONAL FIRE PREVENTION ASSOCIATION STANDARD 24, AND THE INTERNATIONAL FIRE CODE.

COUNTY MONUMENTATION JCC STATION NUMBER 350.
HORIZONTAL AND VERTICAL DATUM IS BASED ON JAMES CITY COUNTY GEODETIC CONTROL MONUMENTATION.
HORIZONTAL: VA STATE PLANE SOUTH ZONE, NAD 83
VERTICAL: NGVD 1929

COMMONWEALTH OF VIRGINIA
9/16/09
STEPHEN A. ROMEO
LIC. No. 1448-B
LAND SURVEYOR

4029 Ironbound Road
Suite 100
Williamsburg, VA 23188
Tel. (757) 253-2975
Fax (757) 229-0049
Email: lmdg@landmarkdg.com

One Columbus Center
Suite 1100
Virginia Beach, VA 23462
Tel. (757) 473-2600
Fax (757) 473-2653
Email: lmdg@landmarkdg.com

LANDMARK DESIGN GROUP
Engineers • Planners • Surveyors
Landscape Architects • Environmental Scientists

REVISIONS:

No.	Date	Comment	By

DRAWING STATUS: Interoffice Review; Client for Review; Pre Approval Bidding

COUNTY APPROVAL: 1st Submittal; 2nd Submittal; 3rd Submittal; Approved

COVER SHEET

PLAN OF DEVELOPMENT
DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY
LOT 4
SKIFFES CREEK INDUSTRIAL PARK
ROBERTS MAGISTERIAL DISTRICT
JAMES CITY COUNTY, VIRGINIA

Designed: SAR	Date: 9/16/09
Checked: SAR	Scale: N/A
File Mgr./Drawn: LFV	CADD File name: C-1.dwg
Project Number: 2006059-000.00	Dwg. File No.: 19150 W
Drawing Number	C-1

JCC CASE # SP0000-00

SOILS

9 – Chickahominy Silt Loam

This soil is poorly drained.

Typically, the surface layer of this oil is dark grayish and grayish brown silt loam. The subsoil is mostly gray silty clay loam, silty clay, and clay loam with yellowish brown mottles.

The permeability of this Chickahominy soil is very slow, and the available water capacity is moderate.

The shrink/swell potential for the Chickahominy soils are low to high. The erosion factor "K" is from 0.24 to 0.37. Chickahominy soils are in Hydraulic Group "D".

11C – Craven–Uchee Complex, 6% TO 10% slopes

The Craven soils are moderately well drained and the Uchee soils are well drained.

Typically, the surface layer or the Craven soils are dark grayish brown fine sandy loam. The subsurface layer is pale olive fine sandy loam. The subsoil is yellowish brown clay in the upper part with yellowish brown sandy clay loam mottled with gray in the middle and lower parts. The substratum is brownish yellow fine sandy loam mottled with gray in the upper part and gray loamy fine sand with yellow mottles in the lower part.

Typically, the surface layer of the Uchee soils is dark grayish brown loamy fine sand. The subsurface layer is light yellowish brown and very pale brown loamy fine sand. The subsoil is strong brown sandy clay loam in the upper part and strong brown sandy clay loam and clay mottled with gray and red in the lower part. The substratum is variegated red, brown and gray stratified sandy loam and sandy clay loam.

In the Craven soils, permeability is slow; and in the Uchee soils, it is moderate in the upper part of the subsoil and moderately slow in the lower part.

The shrink/swell potential for the Craven and Uchee soils are low to moderate. The erosion factor "K" is from 0.32 to 0.37 for the Craven soil and 0.20 to 0.28 for the Uchee soil. Craven soils are in hydrologic soils, Group /C0, Uchee soils are in hydrologic soils Group "A".

SOILS

19B– Kempsville–Emporia Fine Sandy Loams, 2% to 6% slopes

Kempsville–Emporia soils are well drained.

Typically, the surface layer of this soil is dark grayish brown fine sandy loam. The subsurface layer is light yellowish brown fine sandy loam. The subsoil is yellowish brown and strong brown fine sandy loam, sandy clay loam, and mottled fine sandy loam that is somewhat firm and compact over yellowish brown fine sandy clay loam. The substratum is yellowish brown fine sandy loam.

The permeability of Kempsville soil is moderate. In the Emporia soil, permeability is moderate in the upper part of the subsoil and moderately slow to slow in the lower part. The available water capacity is moderate for both soils.

The subsoil of Kempsville soil has a low shrink–swell potential, and that of Emporia soil has moderate shrink–swell potential. The erosion factor K is from 0.24 to 0.32. Kempsville soils are in hydrologic soils, Group "B", and Emporia soils are in hydrologic soils, Group "C".

29B – Slagle Fine Sandy Loam,2% to 6% slopes

The Slagle Fine Sandy Loam soil is moderately well drained.

Typically, the surface layer of this soil is dark grayish brown fine sandy loam. The subsurface layer is light yellowish brown fine sandy loam. The subsoil is mostly mottled yellowish brown clay loam and sandy clay loam. The substratum is mottled sandy clay loam.

The permeability of this Slagle Fine Sandy Loam soil is moderate in the upper part of the subsoil and moderately slow or slow in the lower part. The available water capacity is moderate.

The shrink/swell potential for the Slagle Fine Sandy Loam soil is moderate. The erosion factor "K" is 0.24. Slagle soils are in hydrologic group "C".

FLOOD ZONE:

THIS PROPERTY APPEARS TO LIE WITHIN ZONE X (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD PLAIN) ACCORDING TO NATIONAL FLOOD INSURANCE PROGRAM, FLOOD INSURANCE RATE MAP, NUMBER 51095C0230C, DATED 09/28/07

Project Description:
The scope of this project includes the construction of the proposed propane distribution facility and associated with it access road and drainage system.

The project drains to Skiffes Creek. There are no wetlands, Resource Protection Areas found within limits of this project. Minor impact of 2002 dquare feetis proposed to onsite steep slopes. All disturbed areas will receive permanent seeding applied in accordance with Virginia Erosion and Sediment Control Handbook standards. All slopes 3:1 and steeper will be protected with soil stabilization matting.
The proposed impervious area of 8,240 square feet covers approximately 9.3% of the 2.04 Ac lot.

In accordance with the James City County Code, Chapter 23, Sec. 23–10, 4 the structural BMP is not required for that site because the proposed impervious area cover is less than 10% of the site .

Stormwater runoff from the project site will be managed by the proposed Infiltration Trench.

The total site disturbed area is approximately 0.50 acres.

Steep Slope Impacts:
Area of Steep Slope impact=2002 sq.ft. (0.046 Acres)

ENVIRONMENTAL INVENTORY

	PRESENT	NOT PRESENT
TIDAL SHORES/WETLANDS	☐	■
NON–TIDAL WETLANDS	☐	■
RESOURCE PROTECTION AREA	☐	■
HYDRIC SOILS	☐	■
SLOPES STEEPER THAN 25%	■	☐
FEMA FLOOD HAZARD AREAS	☐	■

LEGEND

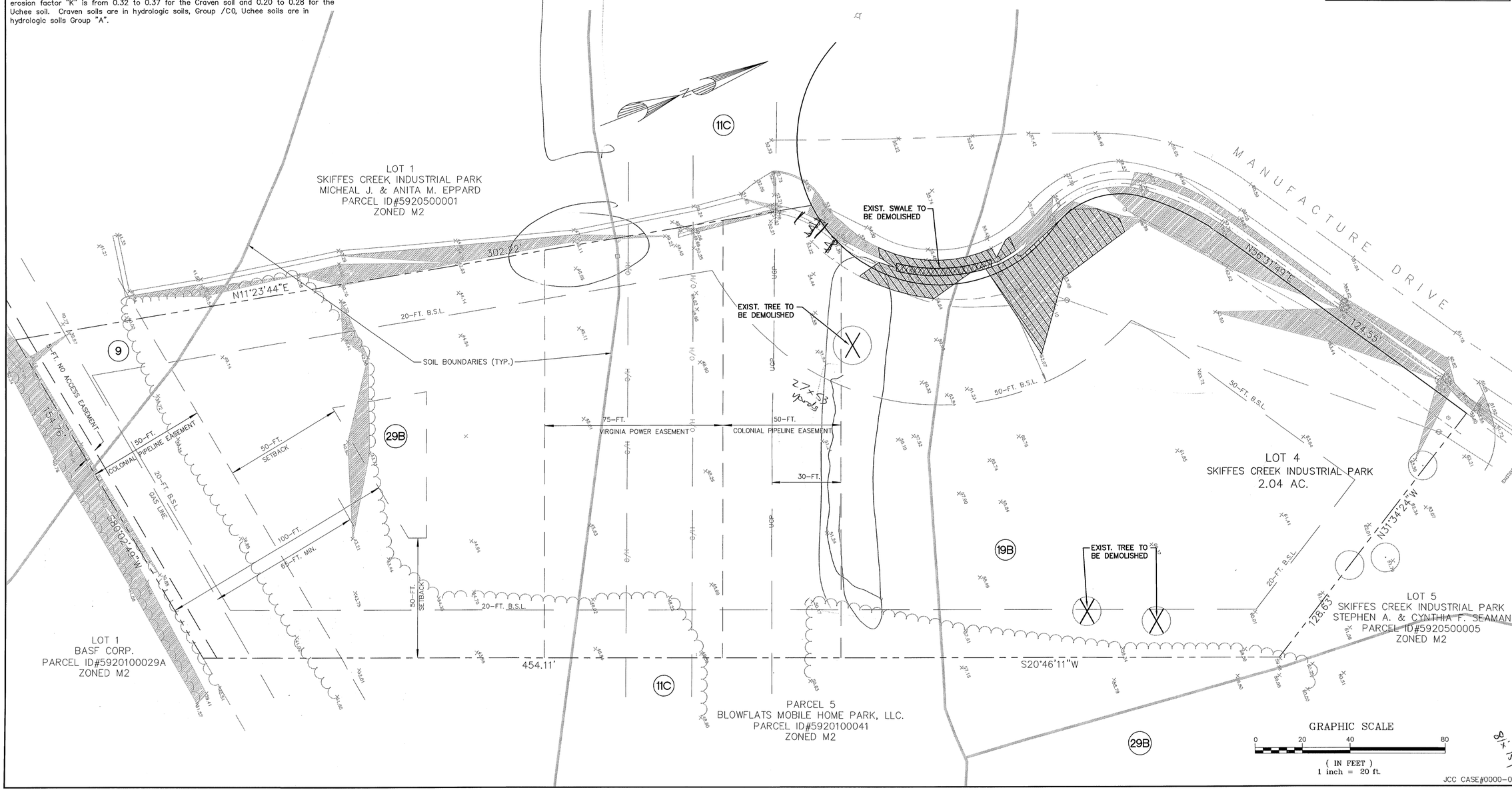
SOIL TYPE DESIGNATION (37)

25% SLOPES OR GREATER

25% SLOPES IMPACTED

EXISTING SITE SLOPES

0–5% SLOPES	1.03 AC. (50.5% OF SITE)
5%–10% SLOPES	0.64 AC. (31.3% OF SITE)
10%–25% SLOPES	0.30 AC. (14.7% OF SITE)
25%–100% SLOPES	0.07 AC. (3.5% OF SITE)



JCC CASE#0000–00

COMMONWEALTH OF VIRGINIA
9/16/09
STEPHEN A. ROMEO
LIC. No. 1448–B
LAND SURVEYOR

4029 Ironbound Road
Suite 100
Williamsburg, VA 23188
Tel. (757) 220–0449
Fax (757) 220–6345
Email: lmdg@landmarkdg.com

One Columbus Center
Suite 1100
Virginia Beach, VA 23462
Tel. (757) 497–2033
Fax (757) 497–2035
Email: lmdg@landmarkdg.com

LANDMARK DESIGN GROUP
Engineers • Planners • Surveyors
Landscape Architects • Environmental Scientists

REVISIONS:

No.	Date	Comment	By

DRAWING STATUS
☐ Interoffice Review
☐ Client for Review
☐ Pre Approval Bidding

COUNTY APPROVAL
☐ 1st Submittal
☐ 2nd Submittal
☐ 3rd Submittal
☐ Approved

ENVIRONMENTAL INVENTORY, EXISTING CONDITIONS AND DEMOLITION PLAN

PLAN OF DEVELOPMENT

DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY
LOT 4

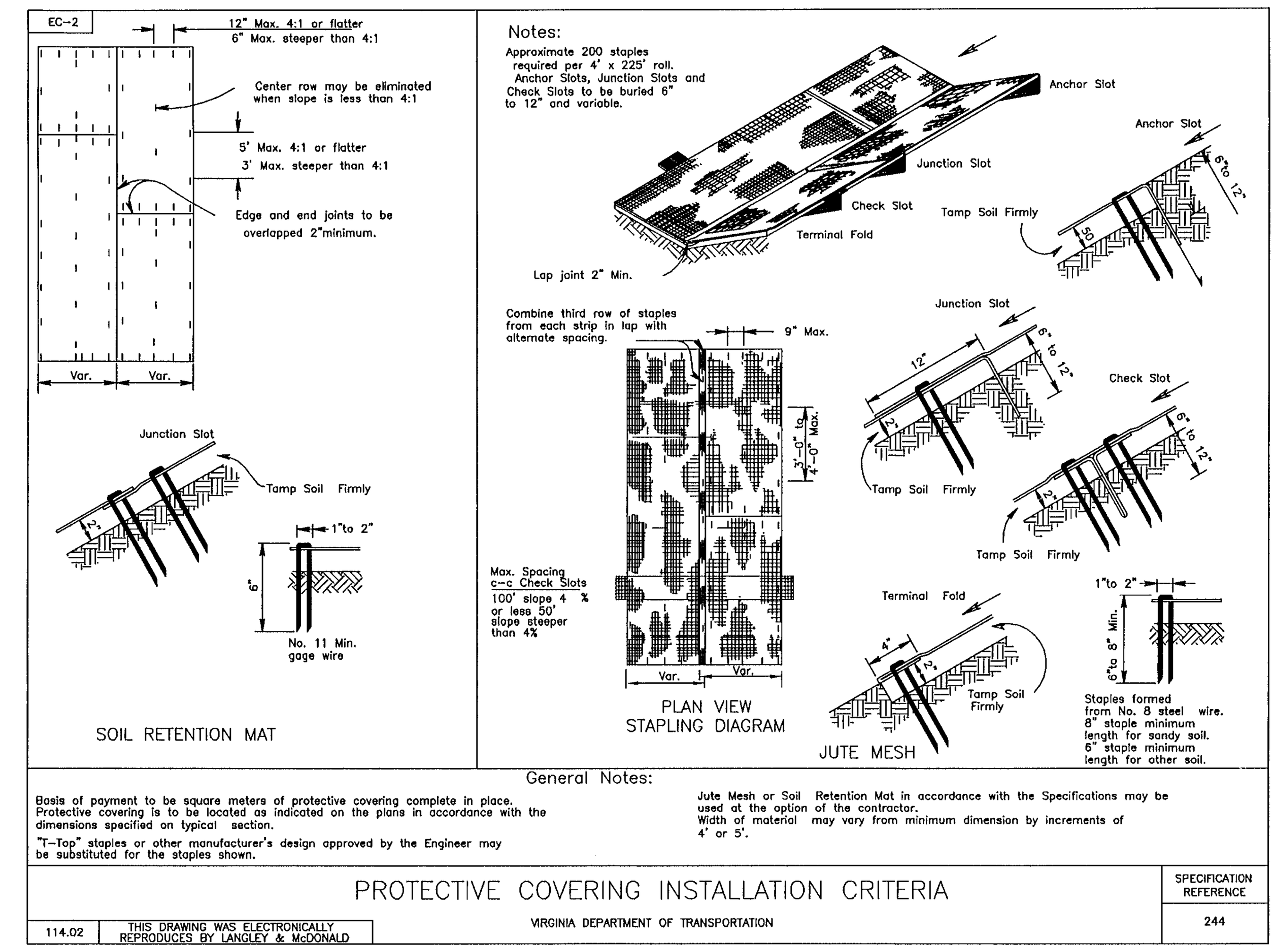
SKIFFES CREEK INDUSTRIAL PARK
ROBERTS MAGISTERIAL DISTRICT
JAMES CITY COUNTY, VIRGINIA

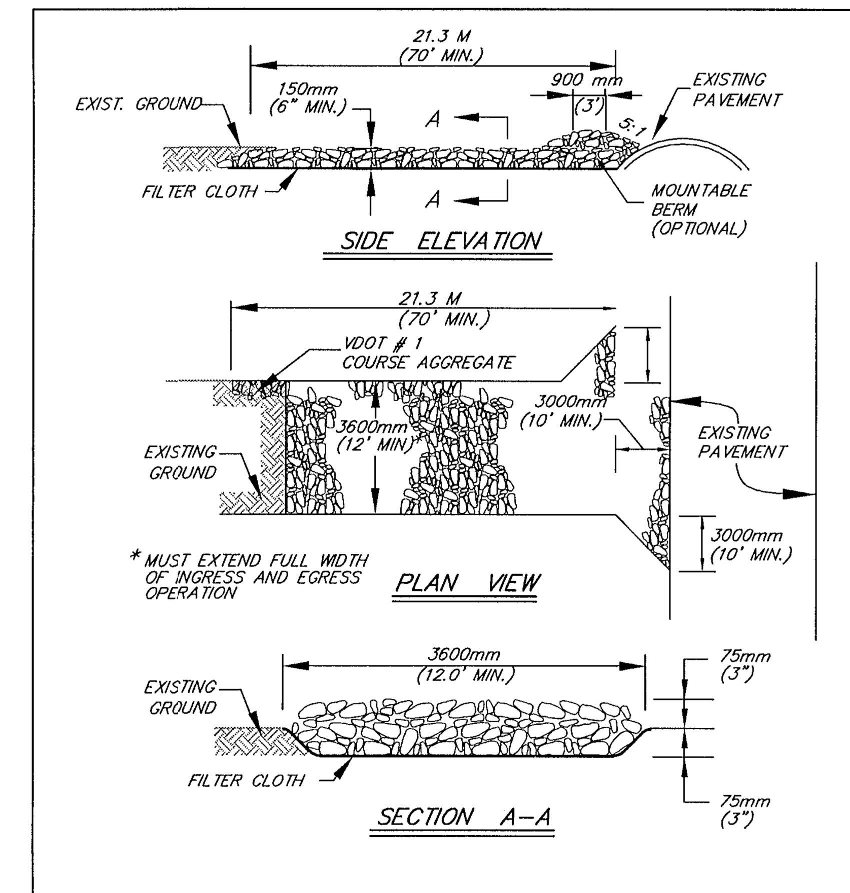
Designed: LFV	Date: 9/16/09
Checked: SAR	Scale: 1"=20'
File Mgr./Drawn: LFV	CADD File name: C-2
Project Number: 2006059-000.00	Dwg. File No.: 19149 W
Drawing Number	C-2

James City County Environmental Division
Erosion and Sediment Control Notes
Revised 7/6/01

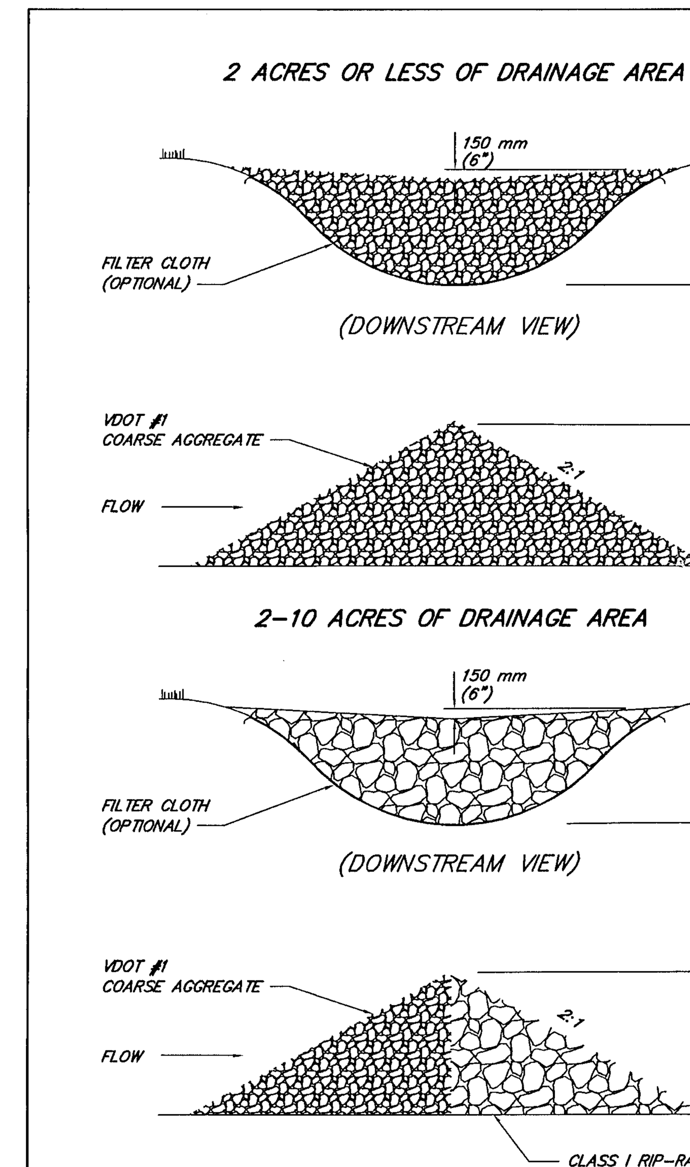
The purpose of the erosion control measures shown on these plans shall be to preclude the transport of all waterborne sediments resulting from construction activities from entering onto adjacent properties or State waters. If field inspection reveals the inadequacy of the plan to confine sediment to the project site, all appropriate modifications will be made to correct any plan deficiencies. In addition to these notes, all provisions of the Virginia Erosion and Sediment Control Regulations shall apply to this project.

1. All erosion and sediment control measures shall be installed and maintained in accordance with the _Virginia Erosion and Sediment Control Handbook, 3rd Edition, 1992._ The contractor shall be thoroughly familiar with all applicable measures contained therein that may be pertinent to this project, including Minimum Standards 1 through 19. If the approved Erosion and Sediment Control plan is found to be inadequate in the field, the Minimum Standards will apply in addition to the provisions of the approved plan.
2. As a prerequisite to approval of an erosion and sediment control plan for land–disturbing activities, the name of a Responsible Land–Disturber shall be provided. The Responsible Land–Disturber shall be an individual who holds a valid certificate of competence issued by the Virginia Department of Conservation and is defined as the person in charge of and responsible for carrying out the land–disturbing activity. Permits or plans without this information are deemed incomplete and will not be approved until proper notification is received. Also, if the person designated as Responsible Land–Disturber changes between the time of plan approval and the scheduled preconstruction meeting, the Environmental Division shall be informed of the change, in writing, 24–hours in advance of the preconstruction meeting.
3. A preconstruction meeting shall be held on–site between the County, the Developer, the Project Engineer, the Responsible Land–Disturber and the Contractor prior to issuance of the Land Disturbing Permit. The Contractor shall submit a Sequence of Construction to the County for approval prior to the preconstruction meeting. The designated Responsible Land–Disturber is required to attend the preconstruction meeting for the project.
4. All points of construction ingress and egress shall be protected by a temporary construction entrance to prevent tracking of mud onto public right–of–ways. An entrance permit from VDOT is required prior to any construction activities within State right–of–ways. Where sediment is transported onto a public road surface, the road shall be thoroughly cleaned at the end of each day (Std. & Spec. 3.02).
5. Sediment basins and traps (Std. & Spec. 3.13 and 3.14), perimeter dikes (Std. & Spec. 3.09 and 3.12), sediment filter barriers (Std. & Spec. 3.05) and other measures intended to trap sediment on–site must be constructed as a first step in grading and must be made functional prior to any upslope land disturbance taking place. Earthen structures such as dams, dikes and diversions must be seeded and mulched immediately after installation. Periodic inspections of the erosion control measures by the owner or owner's representative shall be made to assess their condition. Any necessary maintenance of the measures shall be accomplished immediately and shall include the repair of measures damaged by any subcontractor including those of the public utility companies.
6. Surface flows over cut and fill slopes shall be controlled by either redirecting flows from transversing the slopes or by installing mechanical devices to safely lower water downslope without causing erosion. A temporary fill diversion (Std. & Spec. 3.10) and slope drain (Std. & Spec. 3.15) shall be installed prior to the end of each working day.
7. Sediment control measures may require minor field adjustments at time of construction to insure their intended purpose is accomplished. Environmental Division approval will be required for other deviations from the approved plan.
8. The Contractor shall place soil stockpiles at the locations shown on the plan. Soil stockpiles shall be stabilized or protected with sediment trapping measures. Off–site waste or borrow areas shall be approved by the Environmental Division prior to the import of any borrow or export of any waste to or from the project site.
9. The Contractor shall complete drainage facilities within 30 days following completion of rough grading at any point within the project. The installation of drainage facilities shall take precedence over all underground utilities. Outfall ditches from drainage structures shall be stabilized immediately after construction of the same (Std. & Spec. 3.18). This includes installation of erosion control stone or paved ditches where required. Any drainage outfalls required for a street must be completed before street grading or utility installation begins.
10. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may be at final grade but will remain dormant for longer than 30 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.
11. No more than 300 feet of sanitary sewer, storm drain, water or underground utility lines are to be open at one time. Following installation of any portion of these items, all disturbed areas are to be immediately stabilized (i.e., the same day).
12. If disturbed area stabilization is to be accomplished during the months of December, January or February, stabilization shall consist of mulching (Std. & Spec. 3.35). Seeding will then take place as soon as the season permits.
13. The term Seeding, Final Vegetative Cover or Stabilization on this plan shall mean the successful germination and establishment of a stable grass cover from a properly prepared seedbed containing the specified amounts of seed, lime and fertilizer (Std. & Spec. 3.32). Irrigation shall be required as necessary to ensure establishment of grass cover.
14. All slopes steeper than 3H:1V shall require the use of erosion control blankets and mattings to aid in the establishment of a vegetative cover. Installation shall be in accordance with Std. & Spec. 3.35, Mulching, Std. & Spec. 3.36, Soil Stabilization Blankets and Matting and Manufacturers Instructions. No slopes shall be created steeper than 2H:1V.
15. Inlet protection (Std. & Spec. 3.07 and 3.08) shall be provided for all storm drain and culvert inlets following construction of the same.
16. Temporary liners, such as polyethylene sheets, shall be provided for all paved ditches until the permanent concrete liner is installed.
17. Paved ditches shall be required wherever accelerated erosion is evident. Particular attention shall be paid to those areas where grades exceed 3 percent.
18. Temporary erosion control measures such as silt fence are not to be removed until all disturbed areas are stabilized. Trapped sediment shall be spread, seeded and mulched. After the project and stabilization is complete, all erosion and sediment control measures shall be removed within 30 days.
19. No sediment trap or sediment basin shall be removed until a) at least 75 percent of the lots within the drainage area to the trap or basin have been sold to a third party (unrelated to the developer) for the construction of homes and/or b) 60 percent of the single family lots within the drainage area to the trap or basin have been completed and the soil 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 the express authorization of the James City County Environmental Division.
20. Record Drawings (As–Builts) and Construction Certifications are both required for newly constructed or modified stormwater management/BMP facilities. Certification activities shall be adequately coordinated and performed before, during and following construction in accordance with the current version of the James City County Environmental Division, Stormwater Management/BMP Facilities, Record Drawings and Construction Certification, Standard Forms & Instructions.
21. Design and construction of private–type site drainage systems outside VDOT rights–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.





(CE) TEMPORARY GRAVEL CONSTRUCTION ENTRANCE
NOT TO SCALE



(CD) ROCK CHECK DAM

1992 3.35

TABLE 3.35-A

ORGANIC MULCH MATERIALS AND APPLICATION RATES

MULCHES:	RATES: Per Acre	RATES: Per 1000 sq. ft.	NOTES:
Straw or Hay	1½ - 2 tons (Minimum 2 tons for winter cover)	70 - 90 lbs.	Free from weeds and coarse matter. Must be anchored. Spread with mulch blower or by hand.
Fiber Mulch	Minimum 1500 lbs.	35 lbs.	Do not use as mulch for winter cover or during hot, dry periods.* Apply as slurry.
Corn Stalks	4 - 6 tons	185 - 275 lbs.	Cut or shredded in 4-6" lengths. Air-dried. Do not use in fine turf areas. Apply with mulch blower or by hand.
Wood Chips	4 - 6 tons	185 - 275 lbs.	Free of coarse matter. Air-dried. Treat with 12 lbs nitrogen per ton. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.
Bark Chips or Shredded Bark	50 - 70 cu. yds.	1-2 cu. yds.	Free of coarse matter. Air-dried. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.

* When fiber mulch is the only available mulch during periods when straw should be used, apply at a minimum rate of 2000 lbs./ac. or 45 lbs./1000 sq. ft.

Source: Va. DSWC

TABLE 3.32-E
(Revised June 2003)
PERMANENT SEEDING SPECIFICATIONS FOR COASTAL PLAIN AREA

SEED[1]

LAND USE	SPECIES	APPLICATION RATES
Minimum Care Lawn (Commercial or Residential)	Tall Fescue[1] or Bermudagrass[1]	175 - 200 lbs. / 75 lbs.
High-Maintenance Lawn	Tall Fescue[1] or Bermudagrass[1] (seed) or Bermudagrass[1] (by other vegetative establishment method, see Std. & Spec. 3.34)	200-250 lbs. / 40 lbs. (unhulled) 30 lbs. (hulled)
General Slope (3:1 or less)	Tall Fescue[1]; Red Top Grass or Creeping Red Fescue; Seasonal Nurse Crop[2]	128 lbs.; 2 lbs.; 20 lbs.; TOTAL: 150 lbs.
Low-Maintenance Slope (Steeper than 3:1)	Tall Fescue[1]; Bermudagrass[1]; Red Top Grass or Creeping Red Fescue; Seasonal Nurse Crop[2]; Sericea Lespedeza[3]	93-108 lbs.; 0-15 lbs; 2 lbs; 20 lbs; 20 lbs.; TOTAL: 150 lbs.

1 - When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a label indicating that they are approved by VCIA. A current turfgrass variety list is available at the local County Extension office or through VCIA at 804-746-4884 or at http://sudan.cses.vt.edu/html/Turf/turf/publications/publications2.html

2 - Use seasonal nurse crop in accordance with seeding dates as stated below:

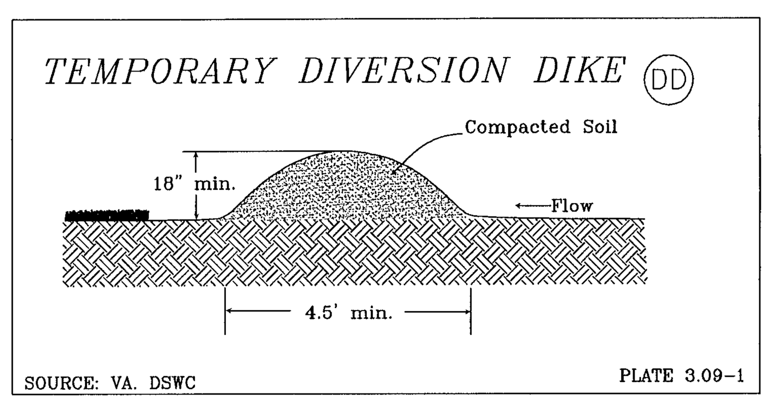
February, March - April	Annual Rye
May 1st - August	Foxtail Millet
September, October - November 15th	Annual Rye
November 16th - January	Winter Rye

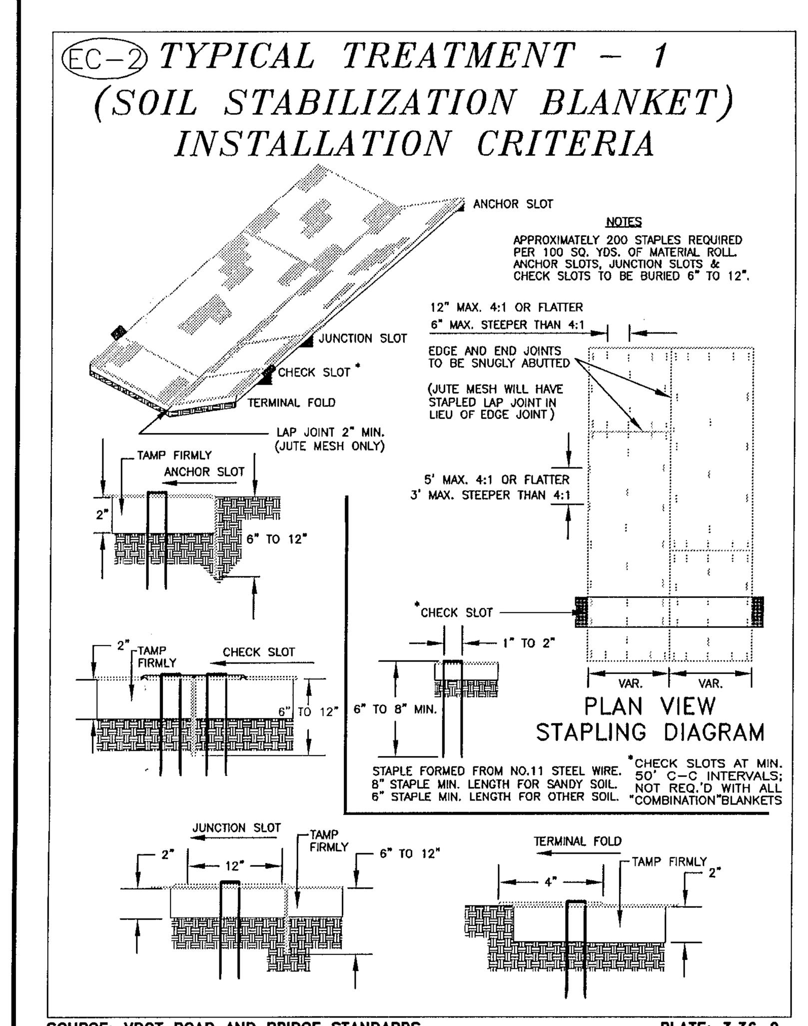
3 - May through October, use hulled seed. All other seeding periods, use unhulled seed. If Weeping Lovegrass is used, include in any slope or low maintenance mixture during warmer seeding periods, increase to 30 -40 lbs/acre.

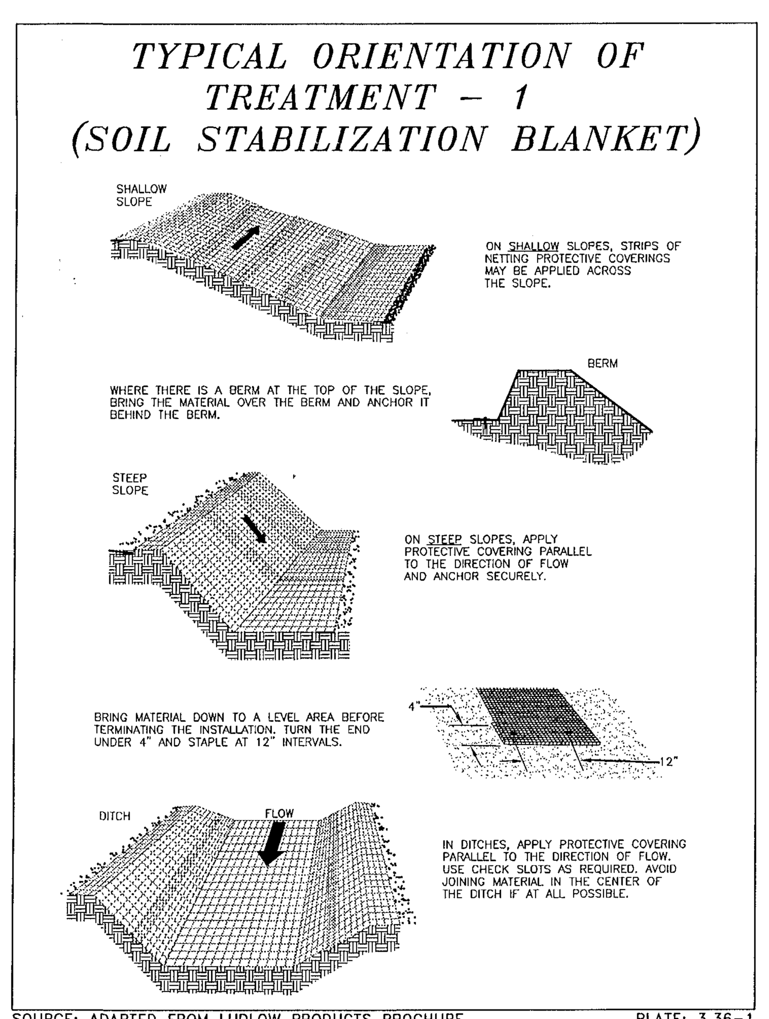
FERTILIZER & LIME

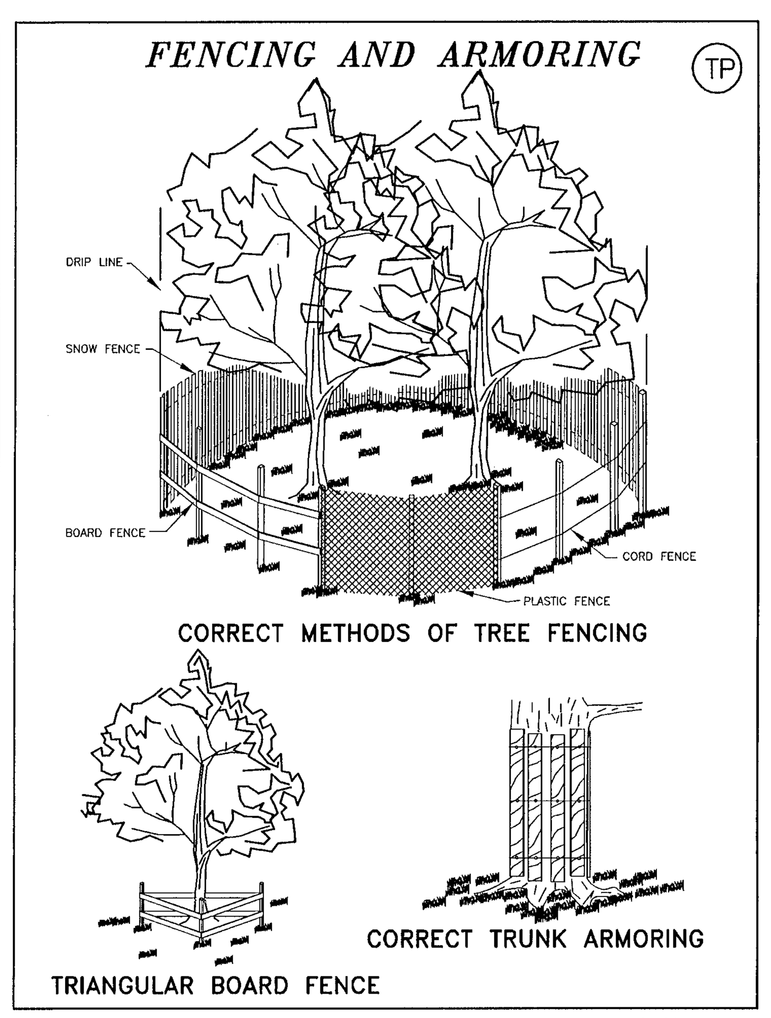
- Apply 10-20-10 **fertilizer** at a rate of 500 lbs. / acre (or 12 lbs. / 1,000 sq. ft.)
- Apply **Pulverized Agricultural Limestone** at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

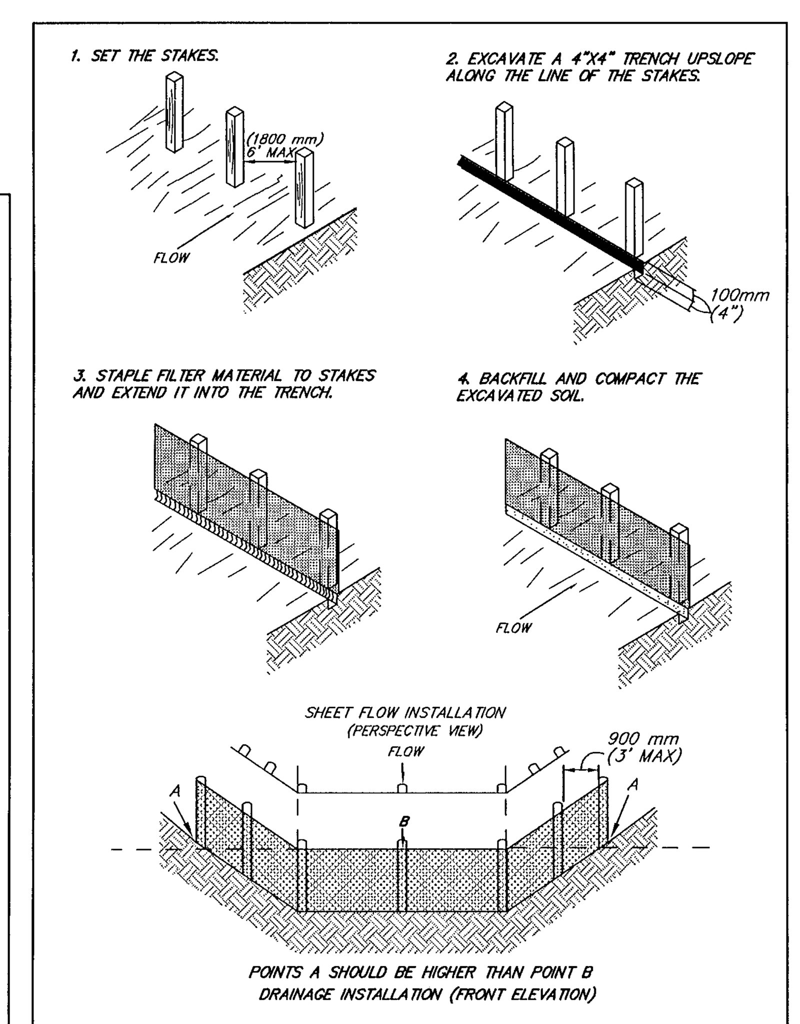
NOTE:
- A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
- Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by disking or by other means.
- When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/e&s.htm#pubs











(SF) CONSTRUCTION OF A FILTER BARRIER (W/OUT WIRE SUPPORT)
NOT TO SCALE

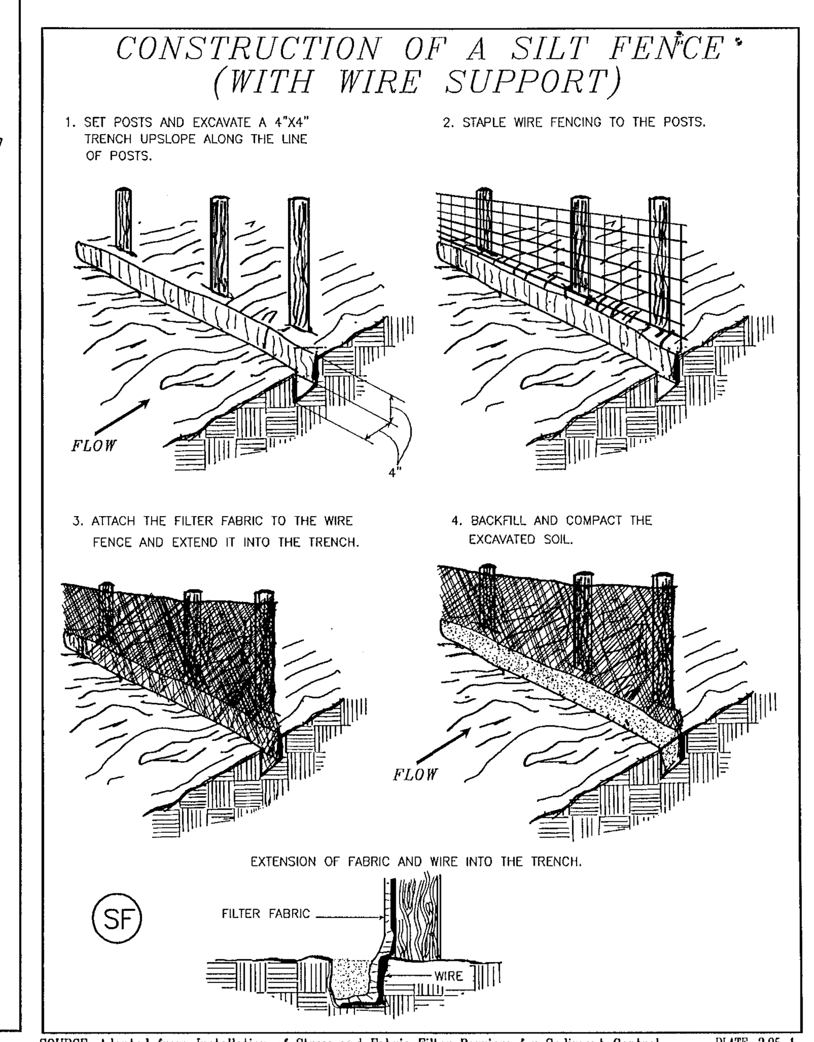


TABLE 3.31-B
(Revised June 2003)
TEMPORARY SEEDING SPECIFICATIONS
QUICK REFERENCE FOR ALL REGIONS

SEED

APPLICATION DATES	SPECIES	APPLICATION RATES
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50 -100 (lbs/acre)
Feb. 16 - Apr. 30	Annual Ryegrass (lolium multi-florum)	60 - 100 (lbs/acre)
May 1 - Aug. 31	German Millet	50 (lbs/acre)

FERTILIZER & LIME

- Apply 10-10-10 **fertilizer** at a rate of 450 lbs. / acre (or 10 lbs. / 1,000 sq. ft.)
- Apply **Pulverized Agricultural Limestone** at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

NOTE:
1 - A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
2 - Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by disking or by other means.
3 - When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/e&s.htm#pubs

JCC CASE #0000–00

COMMONWEALTH OF VIRGINIA
9/16/09
STEPHEN A. ROMEO
LIC. No. 1448–B
LAND SURVEYOR

4029 Ironbound Road
Suite 100
Williamsburg, VA 23188
Tel. (757) 253–2975
Fax (757) 229–0049
Email: lmdg@landmarkdg.com

One Columbus Center
Suite 1100
Virginia Beach, VA 23462
Tel. (757) 473–2000
Fax (757) 497–7933
Email: lmdg@landmarkdg.com

LANDMARK DESIGN GROUP
Engineers • Planners • Surveyors
Landscape Architects • Environmental Scientists

REVISIONS:

No.	Date	Comment	By

DRAWING STATUS: Interoffice Review; Client for Review; Pre Approval Bidding
COUNTY APPROVAL: 1st Submittal; 2nd Submittal; 3rd Submittal; Approved

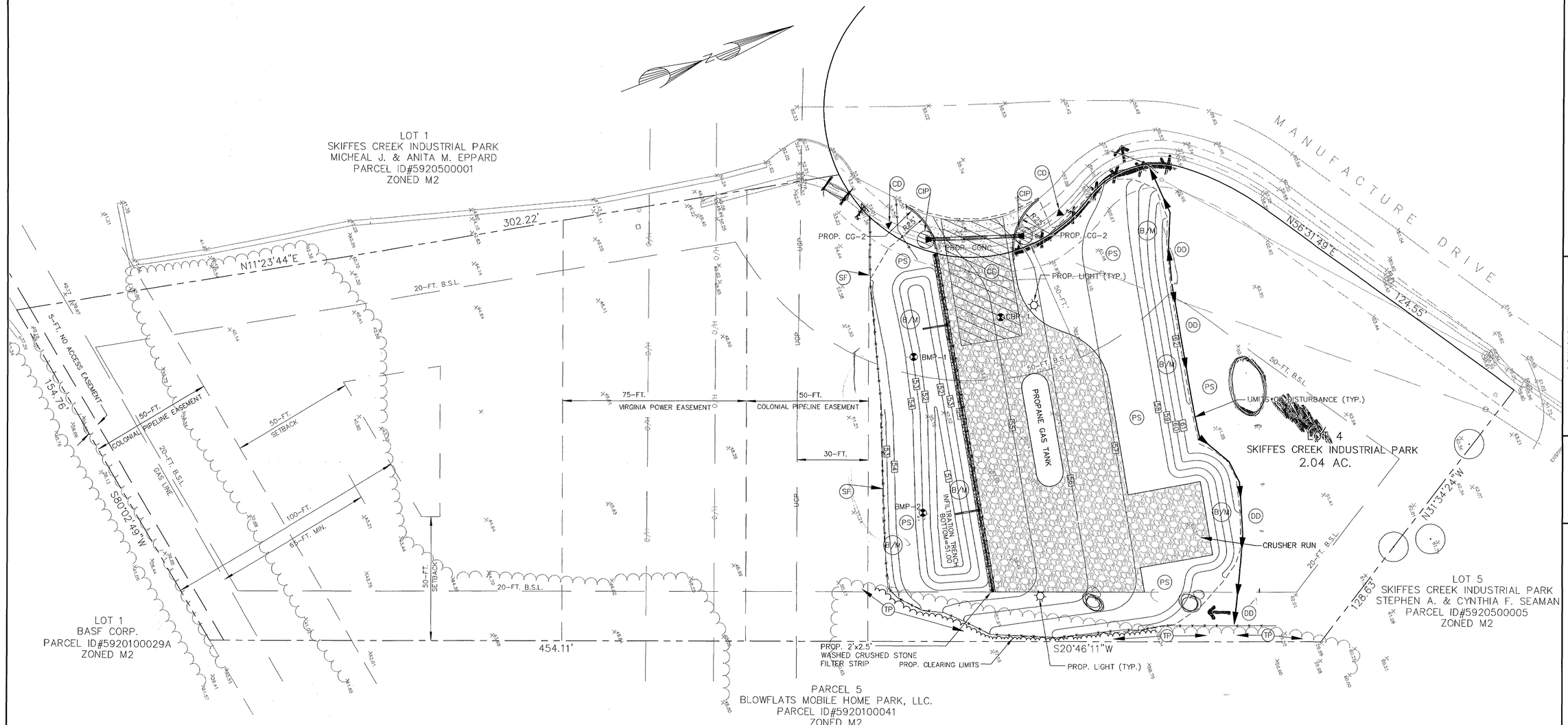
EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

PLAN OF DEVELOPMENT
DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY
LOT 4
SKIFFES CREEK INDUSTRIAL PARK
ROBERTS MAGISTERIAL DISTRICT
JAMES CITY COUNTY, VIRGINIA

Designed: LFV	Date: 9/16/09
Checked: SAR	Scale: N/A
File Mgr./Drawn: LFV	CADD File name: C2B
Project Number: 2006059-000.00	Dwg. File No.: 19147 W
Drawing Number	C-2B

SEQUENCE OF CONSTRUCTION

1) NOTIFY JAMES CITY COUNTY ENVIRONMENTAL DIVISION A MINIMUM OF 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION OPERATIONS.
2) CONDUCT AN ON-SITE PRE-CONSTRUCTION MEETING BETWEEN THE CONTRACTOR, THE OWNER, THE ENGINEER, AND THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION INSPECTOR.
3) INSTALL THE CONSTRUCTION ENTRANCE AND FLAG THE LIMITS OF CONSTRUCTION AS INDICATED ON THE EROSION & SEDIMENT CONTROL PLANS.
4) CLEAR AND GRUB AREA WITHIN THE LIMITS OF CLEARING AND REQUIRED FOR INSTALLATION OF ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON PLANS.
5) COMPLETE INSTALLATION OF ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES INDICATED ON THE PLANS.
6) PROCEED WITH DEMOLITION AND GRADING. ALL SLOPES 3:1 OR STEEPER SHALL BE STABILIZED WITH SOIL STABILIZATION MATS.
7) PROCEED WITH CONSTRUCTION OF THE PROPOSED ACCESS ROAD AND PROPANE GAS TANK SYSTEM.
8) INSTALL CRUSHER RUN PAVEMENT.
9) UPON COMPLETION OF FINAL SITE STABILIZATION AND RECEIVING AUTHORIZATION FROM THE ASSIGNED JAMES CITY COUNTY ENVIRONMENTAL DIVISION INSPECTOR, FINAL GRADING AND INSTALLATION FOR INFILTRATION, TRENCH AND GRAVEL FILTER STRIP MAY COMMENCE. AFTER THE FINAL GRADING IS COMPLETED, THE TRENCH FLOOR SHALL BE DEEP TILLED TO PROVIDE A WELL AERATED, HIGHLY POROUS SURFACE TEXTURE.
10) INSTALL LANDSCAPING AS SHOWN ON LANDSCAPING PLANS.
11) COMPLETE PERMANENT SEEDING, FERTILIZE AND MULCH AS REQUIRED.
12) AFTER AN ACCEPTABLE AND STABLE GROUND COVER HAS BEEN ESTABLISHED, REMOVE SILT FENCE, TREE PROTECTION AND TEMPORARY SEDIMENT CONTROL MEASURES. HOWEVER, NO EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHOUT FIRST AUTHORIZATION FROM THE ASSIGNED JAMES CITY COUNTY ENVIRONMENTAL INSPECTOR.
13) DURING ALL PHASES OF CONSTRUCTION AND IMMEDIATELY FOLLOWING A RAIN EVENT, THE CONTRACTOR SHALL MONITOR AND INSPECT ALL EROSION AND SEDIMENT CONTROL MEASURES INSTALLED ON THE PROJECT. CONTRACTOR SHALL USE ADDITIONAL E&S CONTROL MEASURES IN ACCORDANCE WITH VIRGINIA EROSION AND SEDIMENT CONTROL MANUAL AS NEEDED.



GRAPHIC SCALE
0 20 40 80
(IN FEET)
1 inch = 20 ft.

JCC CASE#0000-00

COMMONWEALTH OF VIRGINIA
9/16/09
STEPHEN A. ROMEO
LIC. No. 1448-B
Stephen Romeo
LAND SURVEYOR

4029 Ironbound Road
Suite 100
Williamsburg, VA 23188
Tel (757) 253-2375
Fax (757) 229-0049
Email: lmdg@landmarkdg.com

One Columbus Center
Suite 1100
Virginia Beach, VA 23462
Tel (757) 473-2020
Fax (757) 497-7933
Email: lmdg@landmarkdg.com

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REVISIONS:		
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DRAWING STATUS
- Interdiscp Review
- Client for Review
- Pre Approval Bidding

COUNTY APPROVAL
- 1st Submittal
- 2nd Submittal
- 3rd Submittal
- Approved

EROSION AND SEDIMENT CONTROL PLAN

PLAN OF DEVELOPMENT
DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY
LOT 4
SKIFFES CREEK INDUSTRIAL PARK

ROBERTS MAGISTERIAL DISTRICT
JAMES CITY COUNTY, VIRGINIA

Designed: LFV	Date: 9/16/09
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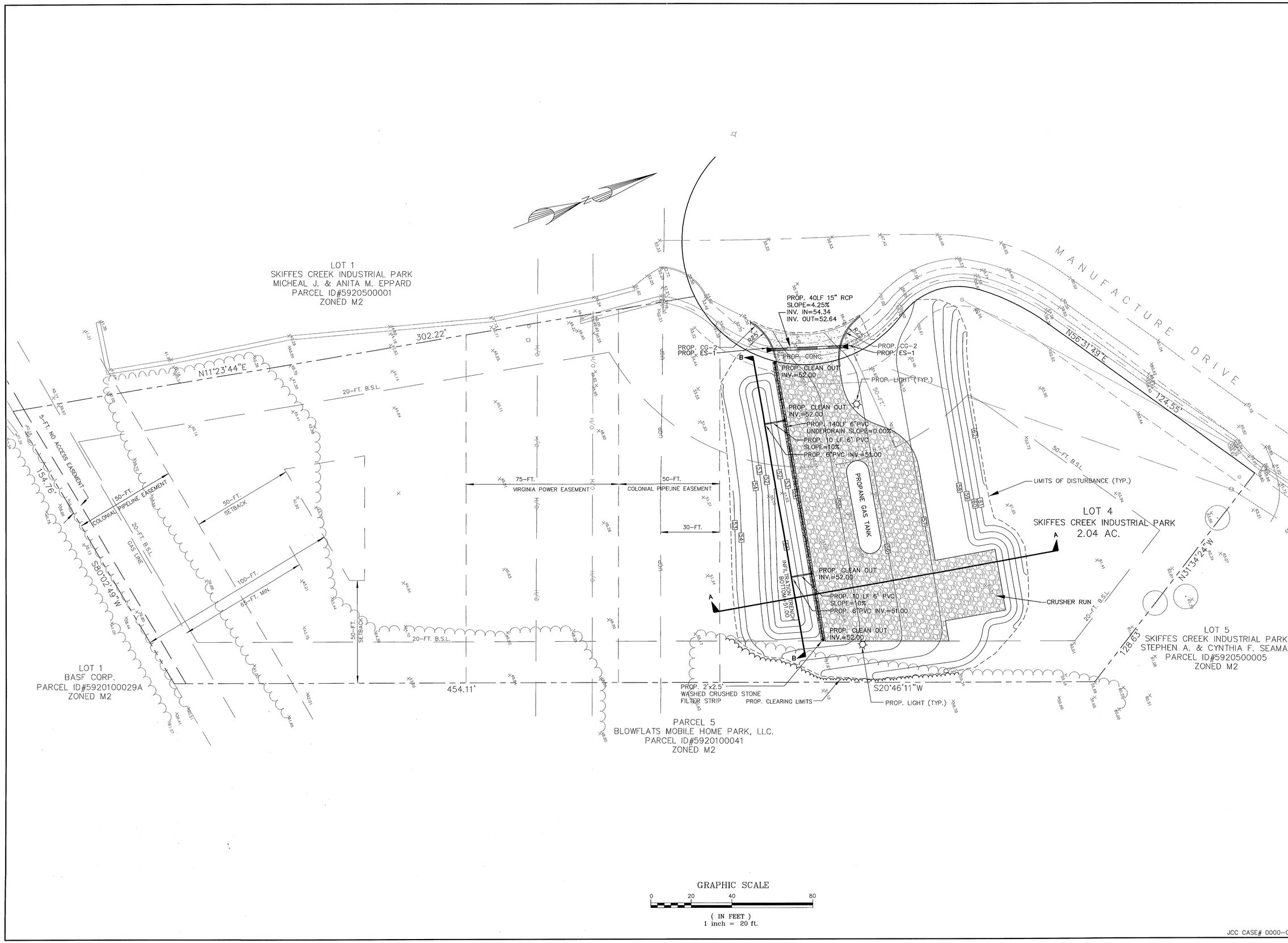
Drawing Number
C-2A



JCC CASE# 0000-00

COMMONWEALTH OF VIRGINIA
9/16/09
STEPHEN A. ROMEO
LIC. No. 1448-B
Stephen Romeo
LAND SURVEYOR

4029 Ironbound Road
Suite 100
Williamsburg, VA 23188
Tel. (757) 565-1677
Fax (757) 229-0049
Email: lmdg@landmarkdg.com

One Columbus Center
Suite 1100
Virginia Beach, VA 23462
Tel. (757) 497-2033
Fax (757) 497-2035
Email: lmdg@landmarkdg.com

LANDMARK DESIGN GROUP
Engineers • Planners • Surveyors
Landscape Architects • Environmental Scientists

REVISIONS:

No.	Date	Comment	By

DRAWING STATUS
- Interoffice Review
- Client for Review
- Pre Approval Bidding

COUNTY APPROVAL
- 1st Submittal
- 2nd Submittal
- 3rd Submittal
- Approved

SITE PLAN

PLAN OF DEVELOPMENT
DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY
LOT 4
SKIFFES CREEK INDUSTRIAL PARK
ROBERTS MAGISTERIAL DISTRICT
JAMES CITY COUNTY, VIRGINIA

Designed: LFV	Date: 9/16/09
Checked: SAR	Scale: 1"=20'
File Mgr./Drawn: LFV	CADD File name: C-3
Project Number: 2006059-000.00	Dwg. File No.: 19146 W
Drawing Number	C-3

MAINTENANCE PLAN FOR INFILTRATION TRENCH
INSPECTIONS FOR SEDIMENT BUILDUP SHALL BE PERFORMED AT LEAST QUARTERLY. IT IS ANTICIPATED THAT UNDER NORMAL CONDITIONS SEDIMENT REMOVAL MAY BE REQUIRED ANUALLY.

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

INSPECTION AND MAINTENANCE MEASURES:

1. CHECK INFILTRATION TRENCH FOR SEDIMENT AND LITTER ACCUMULATION REGULARY (WEEKLY).

2. CHECK OBSERVATION WELLS 2 TO 3 DAYS FOLLOWING A SIGNIFICANT RAINFALL EVENT. IF STORMWATER IS PRESENT IN THE BOTTOM OF THE WELLS, INVESTIGATE POSSIBILITIES FOR SEDIMENT OR TRASH BLOCKAGE OR OUTFALL PIPE CLOGGING. IF THE FACILITY RETAINS MORE THAN 1 FOOT OF WATER FOR LONGER THAN 5 DAYS AFTER A SIGNIFICANT RAINFALL, A DETAILED INVESTIGATION BY A PROPERLY LICENSED PROFESSIONAL MAY BE REQUIRED IN ORDER TO ENSURE PROPER FUNCTIONALITY OF THE FACILITY.

3. IMMEDIATELY REMOVE TRASH, DEBRIS OR SEDIMENT THAT PREVENTS THE MOVEMENT OF WATER, AND TO MAINTAIN THE INTEGRITY OF THE FACILITY AND PROVIDE FOR AN ATTRACTIVE APPEARANCE. PROPERTY MAINTENANCE MEASURES SHALL INCLUDE THE REMOVAL OF TRASH, LITTER AND SEDIMENT FROM SURROUNDING GRASS, PARKING AREAS AND STABILIZED CONTRIBUTING AREAS. MAINTENANCE SHOULD BE PERFORMED WEEKLY TO PREVENT MIGRATION INTO THE EMP. DURING WINTER, KEEP SNOW REMOVAL MATERIALS SUCH AS SAND, SALT OR CINDERS AWAY FROM THE INFILTRATION AREA TO THE EXTENT POSSIBLE. TYPE OF DEBRIS REMOVED SHOULD BE NOTED AND POSSIBLE SOURCES IDENTIFIED AND REDUCED. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY PROPERLY.

4. MANY FACTORS WILL AFFECT THE OPERATION OF AN INFILTRATION SYSTEM. ROUTINE INSPECTIONS AND MAINTENANCE SHOULD BE PERFORMED BY THE SAME ASSIGNED INDIVIDUAL IN ORDER TO ESTABLISH BASELINE KNOWLEDGE OF HOW THE SYSTEM FUNCTIONS UNDER DIFFERENT SITE AND WEATHER CONDITIONS.

5. TRENCH, INCLUDING SIDE SLOPES SHALL BE PLANTED WITH A BASIN BOTTOM SEED MIX AND SHOULD BE MOWED ONLY ONCE PER YEAR BETWEEN MARCH 1 AND MARCH 15, USING A LINE TRIMMER OR MOWER SET TO 8" CUTTING HEIGHT. ALL CLIPPINGS SHALL BE COLLECTED AND DISPOSED OF OFF-SITE. TREES AND SHRUBS ARE NOT PERMITTED TO GROW ON THE EMBANKMENT.

6. IF VEGETATION COVERS LESS THAN 40 % OF SOIL SURFACES, LIME, FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDLINGS. IF VEGETATION COVERS MORE THAN 40 % BUT LESS THAN 70 % OF SOIL SURFACES, LIME, FERTILIZE AND OVER SEED IN ACCORDANCE WITH CURRENT SEEDING RECOMMENDATIONS OR REQUIREMENTS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH).

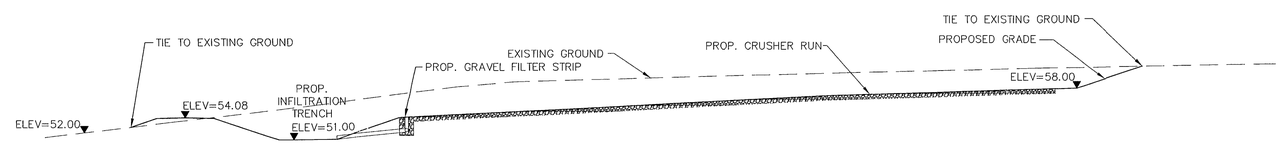
7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE FACILITY FOR SIGNS OF ANIMAL/RODENT BURROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING.

8. RECORD KEEPING. THE OWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OF INSPECTIONS PERFORMED FOR THE FACILITY. RECORDS SHALL DOCUMENT ROUTINE MAINTENANCE AND/OR REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.

9. THE FACILITY SHALL NOT ACCEPT ADDITIONAL DRAINAGE OR BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT OR APPROVAL BY THE ENVIRONMENTAL DIVISION OF JAMES CITY COUNTY.

GENERAL NOTES

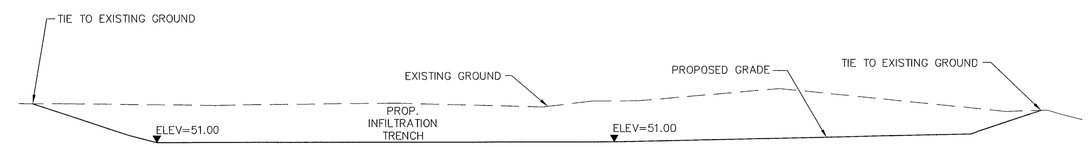
1. ALL WORK TO BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION, "ROAD AND BRIDGE SPECIFICATIONS", THE VIRGINIA DEPARTMENT OF TRANSPORTATION, "ROAD AND BRIDGE STANDARDS", THE VIRGINIA DEPARTMENT OF TRANSPORTATION SUBDIVISION STREET REQUIREMENTS, THE VIRGINIA WORK AREA PROTECTION MANUAL, "THE HAMPTON ROAD PLANNING DISTRICT COMMISSION REGIONAL STANDARDS" AND VDOT SOIL AND AGGREGATE COMPACTION MANUAL.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITTING. OWNER TO OBTAIN EROSION AND SEDIMENT CONTROL BOND.
3. CONTRACTOR MUST OBTAIN BURNING PERMIT OR PERMISSION TO BURN FROM COUNTY.
4. ALL LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. PRIOR TO COMMENCEMENT OF CONSTRUCTION, CONTRACTOR TO NOTIFY OWNERS OF ALL UTILITIES (DOMINION VIRGINIA POWER, VERIZON, ETC.) OF PROPOSED CONSTRUCTION SO THAT THEY MAY LOCATE AND SAFEGUARD THEIR FACILITIES. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING EXCAVATION. VERIFICATION SHALL CONSIST OF EXPOSING THE UTILITY BY EXCAVATION AND ESTABLISHING THE EXACT HORIZONTAL AND VERTICAL LOCATION.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING SURE THAT TRUCKS LEAVING SITE ARE CLEANED SUFFICIENTLY SO AS NOT TO CREATE A ROADWAY NUISANCE OR HAZARD.
7. ALL SITE CONCRETE SHALL BE CLASS A3-AE (AIR ENTRAINED) WITH A MINIMUM LABORATORY COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.
8. ALL SITE CONCRETE, INCLUDING DROP INLET TOPS, ENDWALLS ETC. SHALL HAVE A BROOM FINISH TEXTURE WITH A MIAMI BUFF FINISH.
9. THE CONTRACTOR IS RESPONSIBLE FOR ALL COST ASSOCIATED WITH COMPLETION OF REQUIRED EARTHWORK. IF ADDITIONAL FILL MATERIAL IS REQUIRED, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SUCH AT NO ADDITIONAL EXPENSE TO THE OWNER.
10. SHOULD UNSUITABLE MATERIAL BE ENCOUNTERED DURING CONSTRUCTION, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE THE UNSUITABLE MATERIAL AND REPLACE IT WITH SUITABLE MATERIAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING SELECT MATERIAL IF ON-SITE SUITABLE MATERIAL IS NOT AVAILABLE. THE CONTRACTOR WILL BE PERMITTED AND IS ENCOURAGED TO VISIT THE SITE IN ADVANCE OF THE BID DATE TO SAMPLE AND EVALUATE INSITU MATERIAL AS NECESSARY TO PREPARE HIS/HER BID AND AT HIS/HER EXPENSE.
11. THE DEVELOPER/CONTRACTOR IS TO FURNISH AND INSTALL STOP SIGNS, DIRECTIONAL SIGNS, AND ANY OTHER SIGNAGE AS REQUIRED. ALL ROADWAY SIGNS AND THEIR INSTALLATION WILL BE IN ACCORDANCE WITH THE VIRGINIA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS.
12. ANY SUBSEQUENT REVISIONS, ADDITIONS, AND/OR DELETIONS SHALL REQUIRE SPECIFIC WRITTEN APPROVAL OF THE OWNER.
13. SELECT FILL: FILL AND OR BACKFILL MATERIAL UNDER PAVEMENTS, WALKS, AND STRUCTURES SHALL HAVE LESS THAN 1 % ORGANIC MATERIAL BY WEIGHT AND SHALL BE FREE FROM DELETEROUS SUBSTANCES. FILL SHALL NOT CONTAIN ANY MATERIAL OVER 4 INCHES IN ITS GREATEST DIMENSION. MATERIALS HAVING DIMENSIONS GREATER THAN 2 INCHES SHOULD NOT BE USED FOR FILL OR BACKFILL IN THE UPPER 6 INCHES OF THE FILL. FILL MATERIAL SHALL BE CLASSIFIED SP-SM, SP OR SW BY THE UNIFIED SOILS CLASSIFICATION SYSTEM, WITH NO MORE THAN 12 % PASSING THE NO. 200 SIEVE. ALL MATERIALS USED SHALL BE TESTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT ON THE SITE. ALL FILL MATERIALS SHALL BE OBTAINED FROM THE ON-SITE STOCKPILE LOCATED ADJACENT TO THE OFFICE COMPLEX SITE AS SHOWN ON THE PLANS. FILL MATERIALS SHALL BE PLACED IN LAYERS NOT MORE THAN 6 TO 8 INCHES IN LOOSE DEPTH. BEFORE COMPACTION, MOISTEN OR AIRIATE EACH LAYER AS NECESSARY TO PROVIDE THE PROPER MOISTER CONTENT. COMPACT EACH LAYER TO REQUIRED PERCENTAGE OF MAXIMUM DENSITY FOR EACH AREA CLASSIFICATIONS. DO NOT PLACE FILL OR BACKFILL ON SURFACES THAT ARE MUDDY, FROZEN, OR WHICH CONTAIN FROST OR ICE. PERFORM COMPACTION OF SOIL MATERIALS FOR FILLS USING SUITABLE SOIL COMPACTION EQUIPMENT FOR THE TYPE OF MATERIAL TO BE COMPACTED. SUBGRADE UNDER STRUCTURES, WALKWAYS, PAVEMENTS, SHALL BE PROOF ROLLED PRIOR TO PLACEMENT OF FILL. FILLS IN THESE AREAS SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE STANDARD PROCTOR COMPACTION TEST (ASTM D-698). COMPACTION OF MATERIALS IN NON-PAVED AREAS SHALL BE COMPACTED TO A MAXIMUM DRY DENSITY OF 85%.
18. TOPSOIL IMPORTED OR AMENDED ON SITE SHALL BE FREE OF SUBSOIL, IMPURITIES, PLANTS, WEEDS OR ROOTS. TOPSOIL TO BE SPREAD TO A MINIMUM DEPTH OF 6", RAKED SMOOTH AND GRADED TO ELIMINATE ROUGH, LOW OR SOFT AREAS. SEE PLANTING NOTES AND DETAILS FOR FURTHER SOILS REQUIREMENTS, SODDING AND TEMPORARY PERMANENT SEEDING.



TRENCH DISCHARGE

	ELEV.	DISCHARGED	INFILTRATED
2 YEAR	52.82	0.00 CFS	0.03 CFS
10 YEAR	53.60	0.00 CFS	0.04 CFS

SECTION A-A
N.T.S.



TRENCH DISCHARGE

	ELEV.	DISCHARGED	INFILTRATED
2 YEAR	52.82	0.00 CFS	0.03 CFS
10 YEAR	53.60	0.00 CFS	0.04 CFS

SECTION B-B
N.T.S.

COMMONWEALTH OF VIRGINIA
9/16/09
STEPHEN A. ROMEO
LIC. No. 1448-B
LAND SURVEYOR

4029 Ironbound Road
Suite 100
Williamsburg, VA 23188
Tel. (757) 253-0040
Fax (757) 229-2043
Email: lmdg@landmarkdg.com

One Columbus Center
Suite 1100
Virginia Beach, VA 23462
Tel. (757) 473-3000
Fax (757) 473-3351
Email: lmdg@landmarkvg.com

LANDMARK DESIGN GROUP
Engineers • Planners • Surveyors
Landscape Architects • Environmental Scientists

REVISIONS:

No.	Date	Comment	By

DRAWING STATUS
___ Interoffice Review
___ Client for Review
___ Pre Approval Bidding

COUNTY APPROVAL
___ 1st Submittal
___ 2nd Submittal
___ 3rd Submittal
___ Approved

GENERAL NOTES AND DETAILS

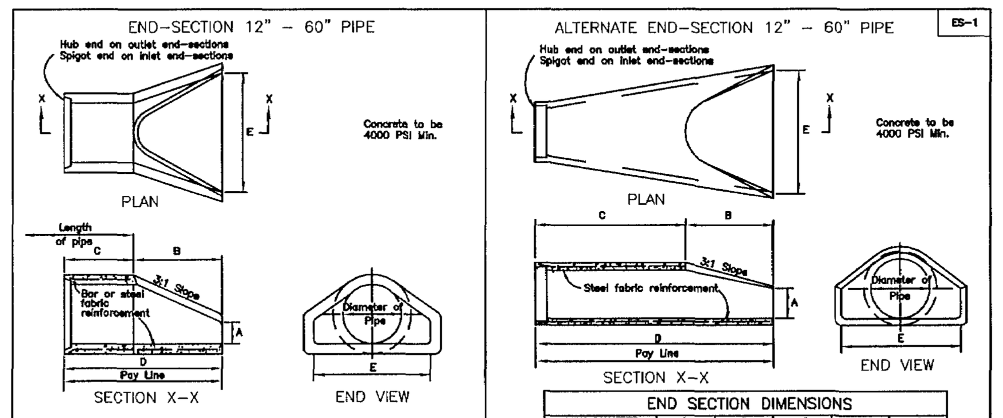
PLAN OF DEVELOPMENT
DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY
LOT 4
SKIFFES CREEK INDUSTRIAL PARK
ROBERTS MAGISTERIAL DISTRICT
JAMES CITY COUNTY, VIRGINIA

Designed: LFV	Date: 9/16/09
Checked: SAR	Scale: N/A
File Mgr./Drawn: LFV	CADD File name: C-5
Project Number: 2006059-000.00	Dwg. File No.: 19144 W
Drawing Number	C-5

JCC CASE#0000-00

FLARED END-SECTION FOR CONCRETE PIPE CULVERTS

ES-1

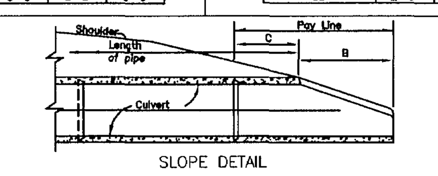


END SECTION DIMENSIONS

PIPE DIAMETER	A	B	C	D	E
12"	4"	2'–0"	2'–0"	4'–0"	2'–0"
15"	6"	2'–3"	1'–9"	4'–0"	2'–6"
18"	9"	2'–3"	1'–9"	4'–0"	3'–0"
24"	9½"	3'–7"	2'–6"	6'–1"	4'–0"
30"	1'–0"	4'–6"	1'–7¾"	6'–1½"	5'–0"
36"	1'–3"	5'–3"	2'–10¾"	6'–1½"	6'–0"
42"	1'–9"	5'–3"	2'–11"	6'–2"	6'–6"
48"	2'–0"	6'–0"	2'–2"	6'–2"	7'–0"
54"	2'–3"	5'–5"	2'–9½"	6'–2½"	7'–6"
60"	2'–11"	5'–0"	3'–3"	6'–3"	8'–0"

END SECTION DIMENSIONS

PIPE DIAMETER	A	B	C	D	E
12"	4"	2'–0"	4'–1"	6'–1"	2'–0"
15"	6"	2'–3"	3'–10"	6'–1"	2'–6"
18"	9"	2'–3"	3'–10"	6'–1"	3'–0"
21"	9"	2'–11"	3'–2"	6'–1"	3'–6"
24"	10"	3'–7"	2'–6"	6'–3"	4'–0"
27"	10½"	4'–0"	2'–1½"	6'–1½"	4'–6"
30"	1'–0"	4'–6"	1'–7¾"	6'–1¾"	5'–0"
33"	1'–1½"	4'–10½"	3'–3½"	6'–1½"	5'–6"
36"	1'–3"	5'–3"	2'–10¾"	6'–1½"	6'–0"
42"	1'–9"	5'–3"	2'–11"	6'–2"	6'–6"
48"	2'–0"	6'–0"	2'–2"	6'–2"	7'–0"
54"	2'–3"	5'–5"	2'–11"	6'–4"	7'–6"
60"	2'–6"	5'–0"	3'–3"	6'–3"	8'–0"



SLOPE DETAIL

Notes:

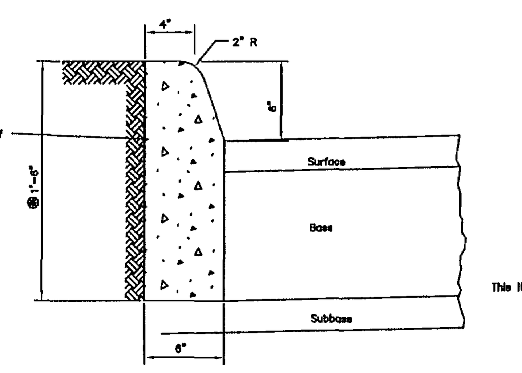
Pipe lengths shown on plans are based on End–Section design shown on the left. If the contractor elects to use the alternate design shown on the right, lengths will be reduced by the difference in dimension "D".

SPECIFICATION REFERENCE	
302	FLARED END–SECTION FOR CONCRETE PIPE CULVERTS VIRGINIA DEPARTMENT OF TRANSPORTATION

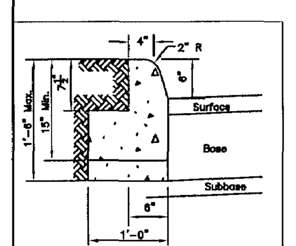
THIS DRAWING FILE WAS ELECTRONICALLY REPRODUCED BY LANDMARK DESIGN GROUP 102.01

STANDARD 6" CURB

CG-2



This item may be precast or cast in place.



ACCEPTABLE ALTERNATE IF CURB IS USED

This curb may be used when design speed is 40 mph or less on Rural highways and 45 mph or less in developed urban and suburban areas. If these design speeds are exceeded Standard CG–7 is required.

Note:

Curb having a radius of 300 ft. 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 curb will coincide with the top 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.

SPECIFICATION REFERENCE	
105 502	STANDARD 6" CURB VIRGINIA DEPARTMENT OF TRANSPORTATION

THIS DRAWING FILE WAS ELECTRONICALLY REPRODUCED BY LANDMARK DESIGN GROUP 201.01

STORMWATER GENERAL PERMIT NOTES

THE CONTRACTOR SHALL ENSURE COMPLIANCE WITH THE REQUIREMENTS OF 4VAC 50–60–380 & 390 – VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION SITES, INCLUDING BUT NOT LIMITED TO THE FOLLOWING ITEMS:

IMPLEMENTATION, DOCUMENTATION, AND INSPECTIONS NECESSARY FOR COMPLIANCE WITH STORM WATER GENERAL PERMIT

1. IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION PLAN AS DEVELOPED FOR THE SITE AND IN ACCORDANCE WITH THE GENERAL PERMIT REQUIREMENTS WITH REGARD TO EROSION AND SEDIMENT CONTROL, POST–CONSTRUCTION STORM WATER MANAGEMENT, AND OTHER CONTROLS REGARDING SOLID MATERIALS, SEDIMENTS AND DUST, AND THE DEMONSTRATED COMPLIANCE WITH APPLICABLE STATE AND/OR LOCAL WASTE DISPOSAL, SANITARY SEWER OR SEPTIC SYSTEM REGULATIONS.
2. RETENTION OF THE STORM WATER POLLUTION PREVENTION PLAN AT THE CONSTRUCTION SITE. THE PLAN AND OTHER RELATED DOCUMENTS SHALL BE MADE AVAILABLE UPON REQUEST TO AUTHORIZED LOCAL, STATE, OR FEDERAL REPRESENTATIVES.
3. AMENDMENT OF THE STORM WATER POLLUTION PREVENTION PLAN WHENEVER THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE, WHICH HAS A SIGNIFICANT EFFECT ON THE POTENTIAL FOR THE DISCHARGE OF POLLUTANTS TO THE SURFACE WATERS OF THE STATE, OR IF THE STORM WATER POLLUTION PREVENTION PLAN PROVES TO BE INEFFECTIVE IN ELIMINATING OR SIGNIFICANTLY MINIMIZING POLLUTANTS FROM THE CONSTRUCTION ACTIVITY.
4. DOCUMENTATION OF THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR, WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE, AND WHEN STABILIZATION MEASURES ARE IMPLEMENTED.
5. INSPECTIONS OF DISTURBED AREAS OF THE CONSTRUCTION SITE AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION THAT HAVE NOT BEEN FINALLY STABILIZED, STRUCTURAL CONTROL MEASURES, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE SHALL BE CONDUCTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT THAT PRODUCES SURFACE RUNOFF AS REQUIRED BY THE GENERAL PERMIT REGULATIONS. REPORTS SUMMARIZING THE INSPECTIONS SHALL BE MADE IN ACCORDANCE TO THE REGULATIONS AND RETAINED AS PART OF THE STORM WATER POLLUTION PREVENTION PLAN.
6. ALL CONTRACTORS AND SUBCONTRACTORS SHALL SIGN A COPY OF THE CERTIFICATION STATEMENT AS DESCRIBED IN THE GENERAL PERMIT BEFORE CONDUCTING ANY PROFESSIONAL SERVICES AT THE SITE IDENTIFIED IN THE POLLUTION PREVENTION PLAN. ALL CERTIFICATIONS SHALL BE INCLUDED IN THE STORM WATER POLLUTION PREVENTION PLAN.
7. ALL DOCUMENTS, RECORDS, REPORTS, AND OTHER INFORMATION RELEVANT TO THE GENERAL PERMIT REGULATIONS SHALL BE GIVEN TO THE OWNER FOLLOWING FINAL STABILIZATION OF THE SITE.
8. WHERE THE SITE HAS BEEN FINALLY STABILIZED AND ALL STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES THAT ARE AUTHORIZED BY THE GENERAL PERMIT ARE ELIMINATED, A NOTICE OF TERMINATION SHALL BE PREPARED FOR THE OWNER TO SIGN AND SUBMIT TO THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY, WATER DIVISION.
9. THE STRUCTURAL STABILITY OF THE PERMITTED FACILITIES SHALL BE ENSURED.

PROHIBITION AND REPORTING OF RELEASES OF SUBSTANCES OTHER THAN STORM WATER

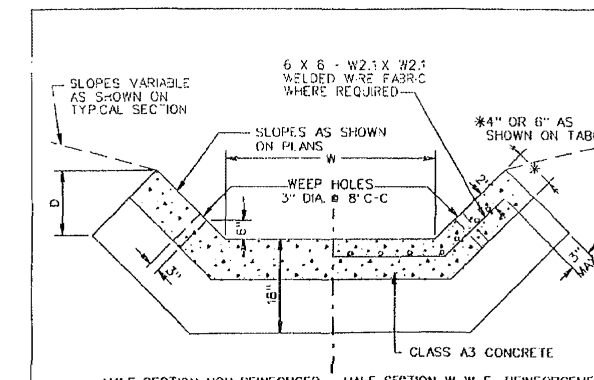
10. EXECUTION OF REPORTING REQUIREMENTS IN THE EVENT OF NONCOMPLIANCE OF THE GENERAL PERMIT OR IF ANY UNPERMITTED, UNUSUAL OR EXTRAORDINARY DISCHARGE ENTERS OR COULD BE EXPECTED TO ENTER SURFACE WATERS OF THE STATE.
11. PROHIBITION OF NON–STORMWATER DISCHARGES EXCEPT AS PROVIDED FOR IN THE GENERAL PERMIT. APPROPRIATE POLLUTION PREVENTION MEASURES FOR NON–STORM WATER COMPONENTS OF DISCHARGE SHALL BE IMPLEMENTED.
12. EXECUTION OF REPORTING REQUIREMENTS OF 40 CFR PART 117 (1992) AND 40 CFR PART 302 (1992). IN ADDITION, THE DISCHARGE OF HAZARDOUS SUBSTANCES OR OIL IN THE STORM WATER DISCHARGE FROM THE CONSTRUCTION SITE SHALL BE PREVENTED OR MINIMIZED IN ACCORDANCE WITH THE STORM WATER POLLUTION PREVENTION PLAN.
13. PROHIBITION OF DISCHARGE OF HAZARDOUS SUBSTANCES, OIL, OR POLLUTANTS RESULTING FROM ON–SITE SPILLS OR RELEASES.

MANAGEMENT MEASURES AND RESPONSE TO UNINTENTIONAL RELEASES

14. ALL WASTE COLLECTING, CONTROL, TREATMENT, MANAGEMENT OF POLLUTANT ACTIVITIES AND DISPOSAL FACILITIES SHALL BE OPERATED IN A MANNER CONSISTENT WITH THE GENERAL PERMIT REGULATIONS.
15. ALL FEASIBLE STEPS TO MINIMIZE ANY ADVERSE IMPACTS TO STATE WATERS RESULTING FROM NONCOMPLIANCE WITH CONDITIONS SPECIFIED IN THE GENERAL PERMIT 16. ALL REASONABLE STEPS TO MINIMIZE, CORRECT OR PREVENT ANY DISCHARGE IN VIOLATION OF THE GENERAL PERMIT WHICH HAS A REASONABLE LIKELIHOOD OF ADVERSELY AFFECTING HUMAN HEALTH OR THE ENVIRONMENT SHALL BE TAKEN.

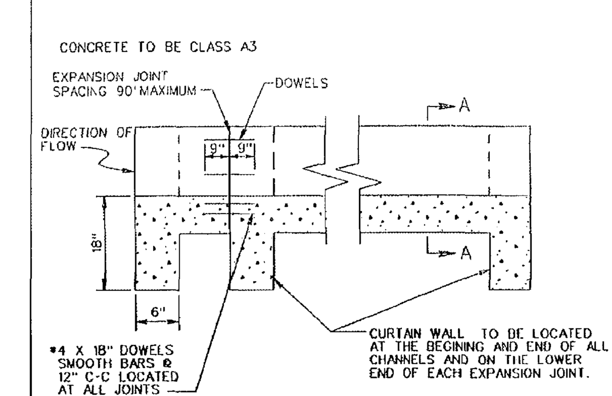
STANDARD PAVED DITCHES

PG-5



SECTION A-A

CONCRETE TO BE CLASS A3



ELEVATION

INDICATES CHANNEL WHERE WIRE MESH REINFORCEMENT IS NOT REQUIRED.

SQUARE YARDS PER LIN. FT. OF PAVED CHANNEL

CONC. THICKNESS	D	W 1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
1:1 SIDE SLOPES											
4"	1'	0.425	0.536	0.648	0.759	0.870	0.981	1.092	1.203	1.314	1.425
	2'	0.740	0.851	0.962	1.073	1.184	1.295	1.406	1.517	1.629	1.740
	3'	1.054	1.165	1.276	1.387	1.498	1.609	1.721	1.832	1.943	2.054
	4'	1.368	1.479	1.590	1.702	1.813	1.924	2.035	2.146	2.257	2.368
6"	5'	1.682	1.794	1.905	2.016	2.127	2.238	2.349	2.460	2.571	2.682
	6'	1.997	2.108	2.219	2.330	2.441	2.552	2.663	2.774	2.886	2.997
	7'	23.11	2.422	2.533	2.644	2.755	2.866	2.977	3.089	3.200	3.311
	8'	2.625	2.736	2.848	2.959	3.070	3.181	3.292	3.403	3.514	3.625
	9'	2.940	3.051	3.162	3.273	3.384	3.495	3.606	3.717	3.828	3.939
	10'	3.254	3.365	3.476	3.587	3.698	3.809	3.920	4.032	4.143	4.254
1.5:1 SIDE SLOPES											
4"	1'	0.512	0.623	0.734	0.845	0.956	1.067	1.178	1.290	1.401	1.512
	2'	0.912	1.023	1.135	1.246	1.357	1.468	1.579	1.690	1.801	1.912
	3'	1.313	1.424	1.535	1.646	1.757	1.869	1.980	2.091	2.202	2.313
	4'	1.714	1.825	1.936	2.047	2.158	2.269	2.380	2.491	2.602	2.714
6"	5'	2.114	2.225	2.336	2.448	2.559	2.670	2.781	2.892	3.003	3.114
	6'	2.515	2.626	2.737	2.848	2.959	3.070	3.181	3.293	3.404	3.515
	7'	2.915	3.027	3.138	3.249	3.360	3.471	3.582	3.693	3.804	3.915
	8'	3.316	3.427	3.538	3.649	3.760	3.872	3.983	4.094	4.205	4.316
	9'	3.717	3.828	3.939	4.050	4.161	4.272	4.383	4.494	4.606	4.717
	10'	4.117	4.228	4.340	4.451	4.562	4.673	4.784	4.895	5.006	5.117
2:1 SIDE SLOPES											
4"	1'	0.608	0.719	0.830	0.941	1.052	1.164	1.275	1.386	1.497	1.608
	2'	1.105	1.216	1.327	1.438	1.549	1.660	1.772	1.883	1.994	2.105
	3'	1.602	1.713	1.824	1.935	2.046	2.157	2.268	2.380	2.491	2.602
	4'	2.099	2.210	2.321	2.432	2.543	2.654	2.765	2.876	2.988	3.099
6"	5'	2.596	2.707	2.818	2.929	3.040	3.151	3.262	3.373	3.483	3.596
	6'	3.093	3.204	3.315	3.426	3.537	3.648	3.759	3.870	3.981	4.093
	7'	3.589	3.701	3.812	3.923	4.034	4.145	4.256	4.367	4.478	4.589
	8'	4.086	4.197	4.309	4.420	4.531	4.642	4.753	4.864	4.975	5.086
	9'	4.583	4.694	4.805	4.917	5.028	5.139	5.250	5.361	5.472	5.583
	10'	5.080	5.191	5.302	5.413	5.525	5.636	5.747	5.858	5.969	6.080

NOTES:
DEPTH (D) AND WIDTH (W) TO BE AS SHOWN ON PLANS.
WEEP HOLES ARE TO BE PROVIDED ON ALL CHANNELS WHERE W IS EQUAL TO OR GREATER THAN 4' AND D IS EQUAL TO OR GREATER THAN 2'.
WEEP HOLE WITH 12" X 12" PLASTIC HARDWARE CLOTH, 1/4" MESH OR GALVANIZED STEEL WIRE DIAMETER 0.03 INCH, NUMBER 4 MESH, HARDWARE CLOTH ANCHORED FIRMLY TO THE BOTTOM OF THE CHANNEL.

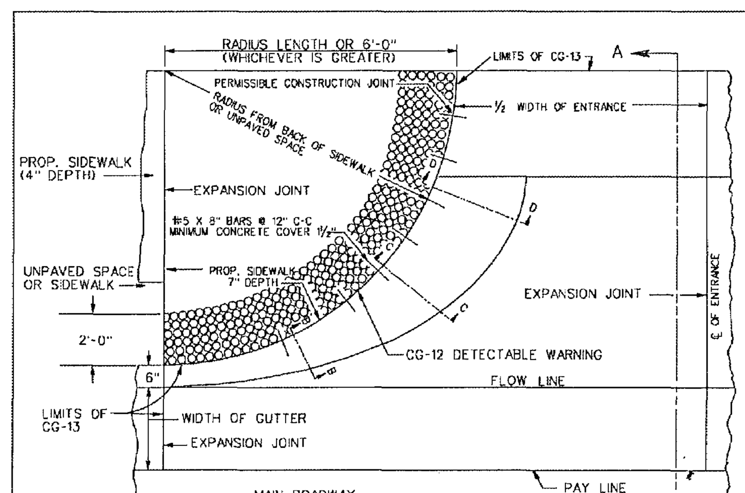
SPECIFICATION REFERENCE	
502	STANDARD PAVED DITCHES VIRGINIA DEPARTMENT OF TRANSPORTATION

109.03

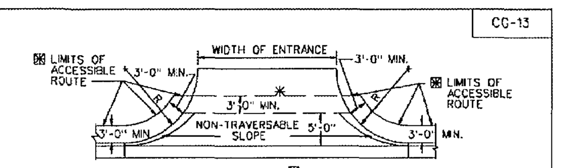
INSERTABLE SHEET A108

COMMERCIAL ENTRANCE (HEAVY TRUCK TRAFFIC ANTICIPATED)

CG-13



HALF PLAN



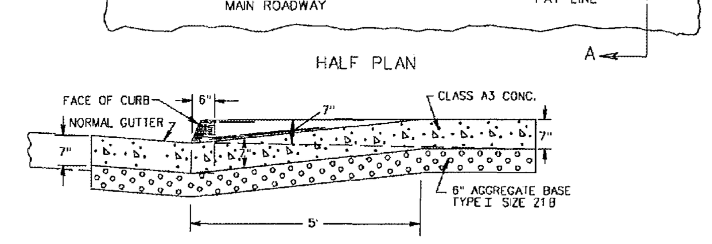
ACCESSIBLE ROUTE DETAIL

ADDITIONAL RIGHT-OF-WAY IS REQUIRED IF THE LIMITS OF ACCESSIBLE ROUTE EXTEND BEYOND EXISTING OR PROPOSED VDOT RIGHT-OF WAY.

DETAIL TO BE USED WHEN THE COMBINED WIDTH OF UNPAVED SPACE AND SIDEWALK SPACE IS LESS THAN 7'.

ACCESSIBLE ROUTES PROVIDE A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS.

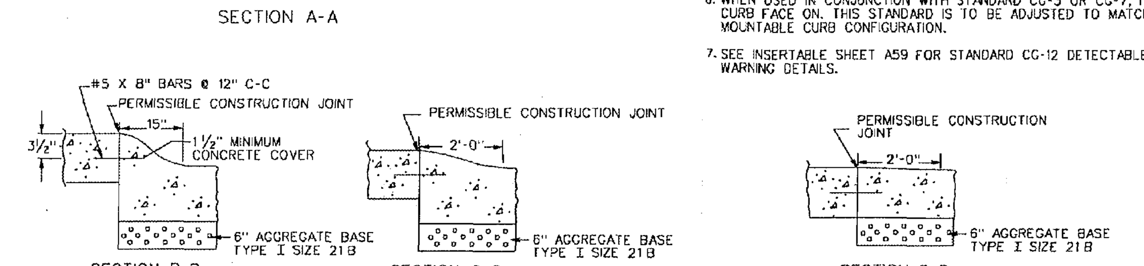
* IF ACCESSIBLE ROUTES ARE BEING PROVIDED, A MINIMUM 3' TRAVERSABLE WIDTH IS REQUIRED WITH MAX. 2% CROSS SLOPE.



SECTION A-A

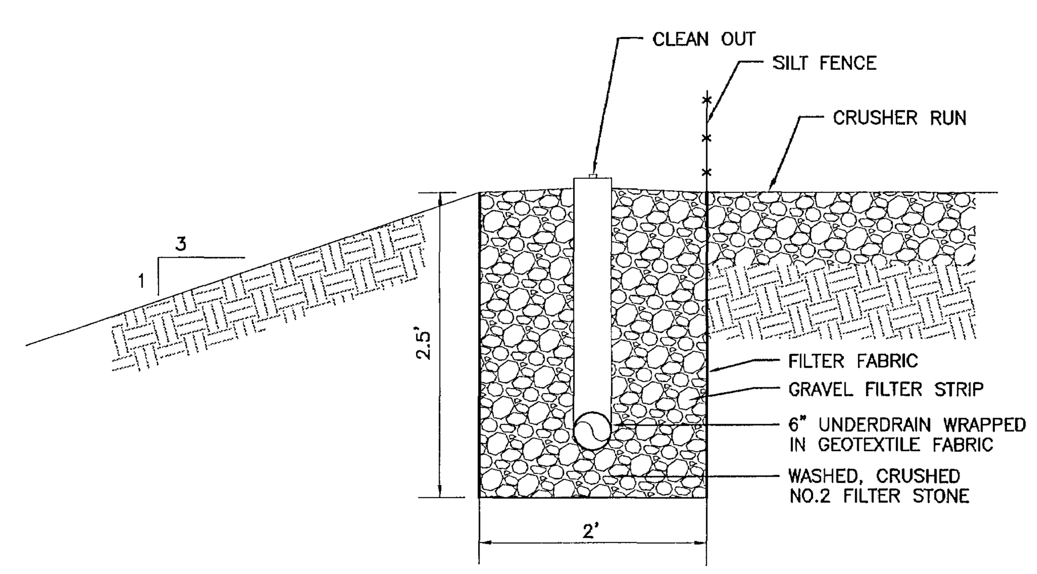
NOTES:

1. PROP. 7" SIDEWALK IS TO BE POURED MONOLITHICALLY WITH ENTRANCE OR BY USING PERMISSIBLE CONSTRUCTION JOINT WITH REQUIRED BARS.
2. PROPOSED 7" SIDEWALK TO BE CLASS A-3 CONCRETE.
3. REQUIRED BARS ARE TO BE NO. 5X8" PLACED 1' CENTER TO CENTER ALONG BACK OF CURB, MID-DEPTH OF SIDEWALK. MINIMUM CONCRETE COVER 1½".
4. ALL DETAILS AND DIMENSIONS NOT SHOWN ARE THE SAME AS STANDARD CG-9D.
5. THIS DESIGN MAY ALSO BE APPLIED TO OTHER ENTRANCE STANDARDS AS THE NEED ARISES.
6. WHEN USED IN CONJUNCTION WITH STANDARD CG-3 OR CG-7, THE CURB FACE ON. THIS STANDARD IS TO BE ADJUSTED TO MATCH THE MOUNTABLE CURB CONFIGURATION.
7. SEE INSERTABLE SHEET A59 FOR STANDARD CG-12 DETECTABLE WARNING DETAILS.



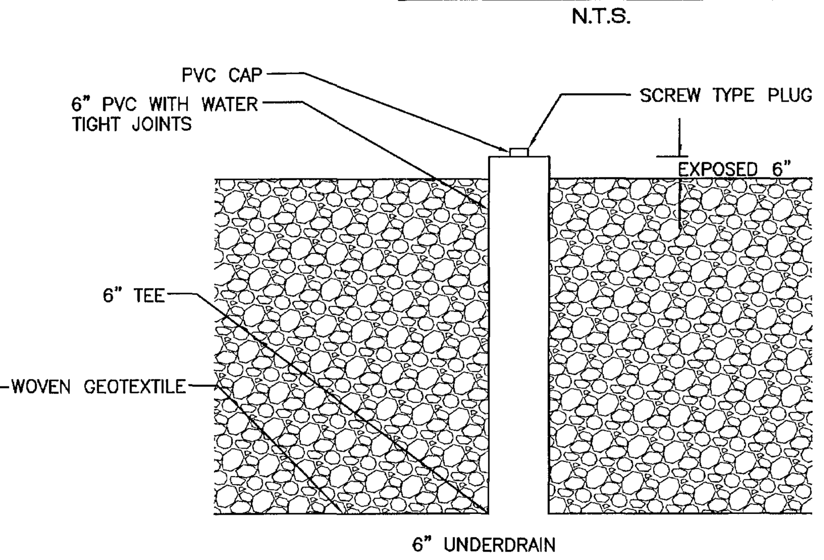
SPECIFICATION REFERENCE	
502	COMMERCIAL ENTRANCE (HEAVY TRUCK TRAFFIC ANTICIPATED) VIRGINIA DEPARTMENT OF TRANSPORTATION

REV. 1/04
203.08



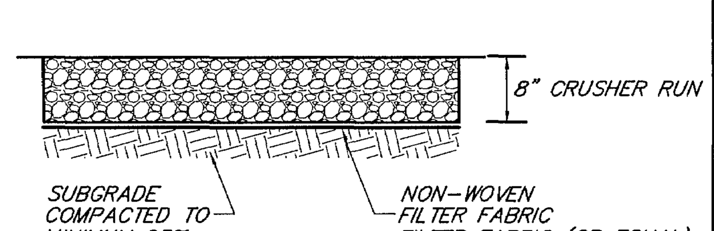
GRAVEL FILTER STRIP

N.T.S.



CLEAN OUT MAINTENANCE

N.T.S.



GRAVEL SECTION

NOT TO SCALE

JCC CASE#0000–00

4029 Ironbound Road
Suite 100
Williamsburg, VA 23188
Tel. (757) 253-2975
Fax (757) 229-0049
Email: lmdg@landmarkdg.com

One Columbus Center
Suite 1100
Virginia Beach, VA 23462
Tel. (757) 473-2000
Fax (757) 497-7933
Email: lmdg@landmarkdg.com

LANDMARK DESIGN GROUP
Engineers · Planners · Surveyors
Landscape Architects · Environmental Scientists

REVISIONS:

No.	Date	Comment	By

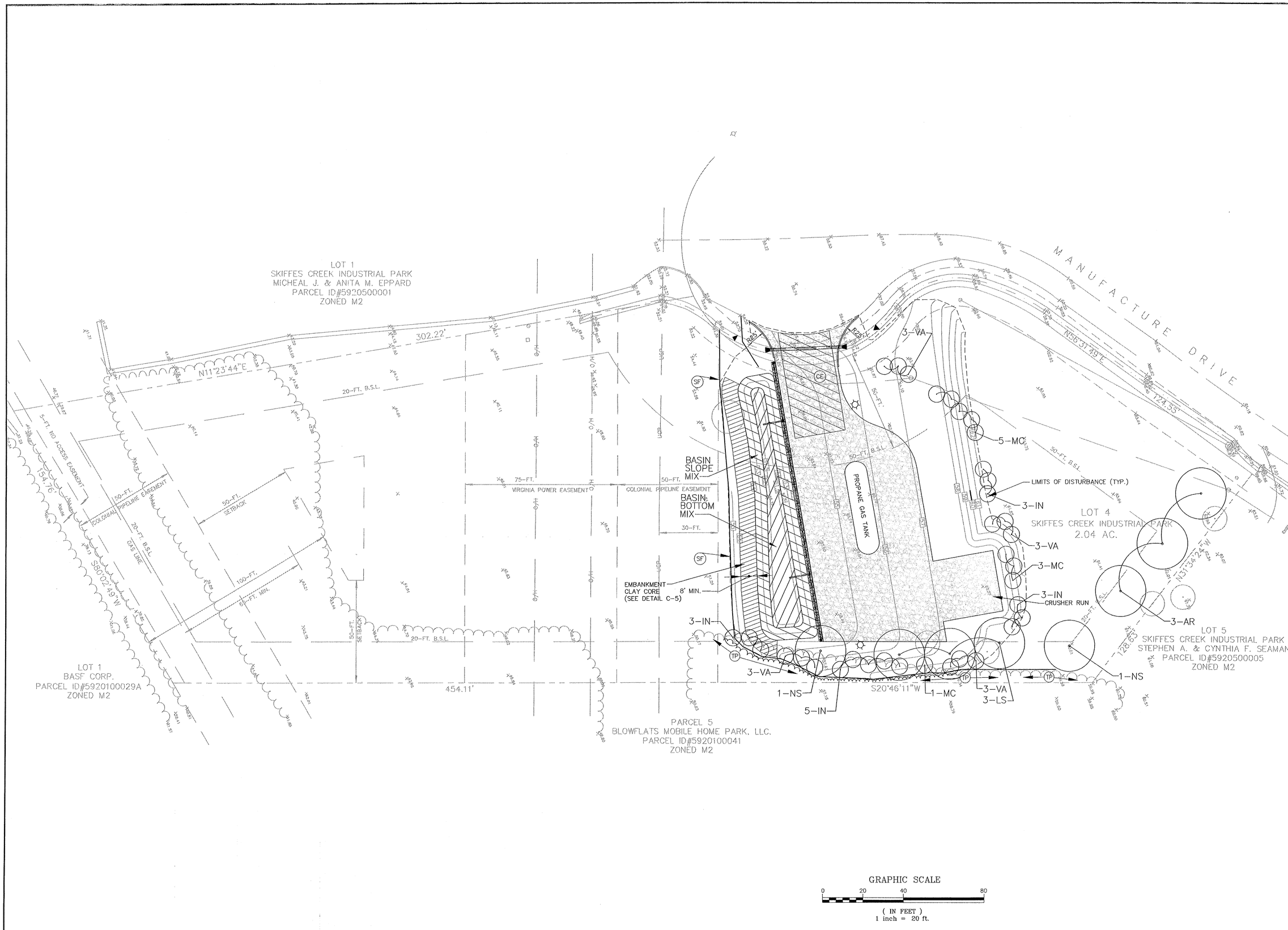
DRAWING STATUS
- Interoffice Review
- Client for Review
- Pre Approval Bidding

COUNTY APPROVAL
- 1st Submittal
- 2nd Submittal
- 3rd Submittal
- Approved

GENERAL NOTES AND DETAILS

PLAN OF DEVELOPMENT
DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY
LOT 4
SKIFFES CREEK INDUSTRIAL PARK
ROBERTS MAGISTERIAL DISTRICT
JAMES CITY COUNTY, VIRGINIA

Designed: LFV	Date: 9/16/09
Checked: SAR	Scale: N/A
File Mgr./Drawn: LFV	CADD File name: C-4
Project Number: 2006059-000.00	Dwg. File No.: 19145 W
Drawing Number	C-4



GRAPHIC SCALE

0 20 40 80

(IN FEET)
1 inch = 20 ft.

COMMONWEALTH OF VIRGINIA
Cert. No. 001039
9-16-09
LANDSCAPE ARCHITECT

4029 Ironbound Road
Suite 100
Williamsburg, VA 23188
Tel. (757) 253-2975
Fax. (757) 220-0049
Email: info@landmarkdg.com

5544 Greenwich Road
Suite 200
Virginia Beach, VA 23462
Tel. (757) 473-2000
Fax. (757) 497-7933
Email: info@landmarkdg.com

LANDMARK DESIGN GROUP
Engineers • Planners • Surveyors
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REVISIONS:			
No.	Date	Comment	By

DRAWING STATUS
- Interoffice Review
- Client for Review
- Pre Approval Bidding

COUNTY APPROVAL
- 1st Submittal
- 2nd Submittal
- 3rd Submittal
- Approved

LANDSCAPE PLAN

PLAN OF DEVELOPMENT
SKIFFES CREEK INDUSTRIAL PARK
LOT 4
DIXIE FUEL COMPANY

ROBERTS MAGISTERIAL DISTRICT
JAMES CITY COUNTY, VIRGINIA

Designed:	Date: 9/10/09
Checked: SAR	Scale: 1"=20'
File Mgr./Drawn: LFV	CADD File name: L-1
Project Number: 2006059-000.00	Dwg. File No.:
Drawing Number	L-1

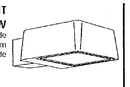
NITE BRITES

JOB NAME

TYPE

SBX400-AREA/SITE LIGHT TYPE IV FORWARD THROW

150-400 watt Metal Halide
150-400 watt High Pressure Sodium
150-400 watt Pulse Start Metal Halide



The SBX400 Area/Site luminaire puts light exactly where you need it, with no spill light. Tough and attractive, this luminaire can light roadways and large areas with control and precision.

ORDERING MATRIX

SAMPLE CATALOG NUMBER: SBX400MMH-FWSF/E

SBX [ ] [ ] – FWT –

FAMILY
SBX

LAMP SOURCE
M - Metal Halide
S - High Pressure Sodium
P - Pulse Start Metal Halide (Ballast option must also be specified)

BS TYPE
FWT - Forward Throw Type IV*

WATTAGE
150 - 150
175 - 175*
200 - 200*
250 - 250
320 - 320*
350 - 350*
400 - 400

VOLTAGE
12 - 120
20 - 208
24 - 240
27 - 277
48 - 480
MT - 120/208
240/277
TT - 120/277
347

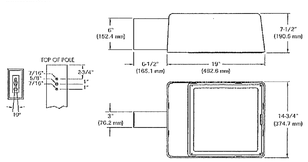
OPTIONS (add as suffix)
A - Adjustable Arm
PCRFC - Photo Control and Twist Lock Receptacle (located remotely specified voltage)
FC - Photo Control (not available in 480 volt)
PSC - Pulse Start CWA
PSR - Pulse Start Reactor Ballast*
WSF - Wheat Double Fuse**
WSF - Wheat Single Fuse**

Footnotes:
*Standard Metal Halide only.
*Requires ED-28 size lamps.
*Pulse Start Metal Halide only.
*Not available in Metal Halide.
*Available in 120, 277 and below, except for 175 watt, 277 volt only.
*Use with 208, 240 and 480 volt.
*Use with 120, 277 and 347 volt.

General Notes:
All options factory installed.
Mogul base lamp only.
All accessories are field installed.

ACCESSORIES (order separately)
MK3VS - Visor Shield
MK3LG - Glare Shield
MK3HS - House Side Shield
MG3BR4 - Round Pole Adapter
MG3BA3B - Tenon Adapter (2-3/8" O.D.) drilled for one/two, MG3BR4 (Round Pole)
MG3BA3BB - Tenon Adapter (2-3/8" O.D.) drilled for two at 180 degrees/set, MG3BR4 (Round Pole)
MG3BA3BR - Tenon Adapter (2-3/8" O.D.) drilled for three/four, MG3BR4 (Round Pole)
MG3BA5B - Tenon Adapter (2-3/8" O.D.) drilled for four/set, MG3BR4 (Round Pole)
MG3BA5S - Tenon Adapter (2-3/8" O.D.) drilled for one (Square Pole)
MG3BA5SS - Tenon Adapter (2-3/8" O.D.) drilled for two (Square Pole)
MG3BA5S - Tenon Adapter (2-3/8" O.D.) drilled for three (Square Pole)
MG3BA5S - Tenon Adapter (2-3/8" O.D.) drilled for four (Square Pole)
RC1G - 5" SQ Wall Mounting Plate
2000WR - 5" SQ Thin Wire Box
MG3TA - 11" Arm
MG3AMBRSSC - 6" arm with Twist Lock Photo Control and Shorting Cap
(For additional descriptions of Area/Site Lighting accessories refer to stock number GA-600201)

DIMENSIONS



ENERGY DATA

HIGH PRESSURE SODIUM

HX BALLAST INPUT WATTS
150 watt-188 watts
CWA BALLAST INPUT WATTS
200 watt-240 watts
250 watt-295 watts
370 watt-366 watts
400 watt-464 watts

METAL HALIDE

HX BALLAST INPUT WATTS
150 watt-195 watts
CWA BALLAST INPUT WATTS
150 watt-195 watts
175 watt-210 watts
200 watt-232 watts
250 watt-295 watts
320 watt-368 watts
350 watt-490 watts
400 watt-418 watts

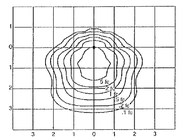
EPA = 1.50 sq. ft.
WEIGHT = 40 lbs. (max.)

AS-42012

Day-Brite Lighting

SBX400-AREA/SITE LIGHT TYPE IV

PHOTOMETRICS



CATALOG NUMBER: SBX400MMH-FWT
TEST NUMBER: SBX400M4
LAMP: METAL HALIDE
WATTAGE: 400
LUMENS: 36,000
TILT ANGLE: 0°
MOUNTING HEIGHT: 25 FEET

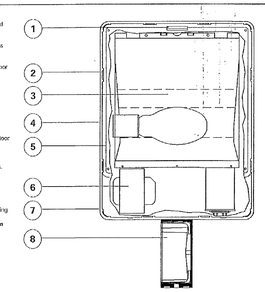
LIGHT LEVEL MULTIPLYING FACTORS

MOUNTING HEIGHT	MULTIPLIER
40'	0.39
30'	0.51
20'	0.68
22'	1.00
20'	1.56
15'	2.77

ADDITIONAL TEST NUMBERS

DESCRIPTION/CATALOG NUMBER	TEST NUMBER
SBX400MMH-FWT	SBX400M4

PRODUCT FEATURES



UL 1598 listed suitable for wet location and 25°C ambient for all wattages listed.

1. Lens frame opens by rotating a stainless steel latch.
2. One-piece hinged, die cast aluminum door with heat and shock resistant tempered glass lens.
3. Durable formed reflector with clear anodized finish.
4. Rugged one piece die cast aluminum housing.
5. One piece silicone rubber gasket seals door to housing.
6. Swing down ballast tray allows for easy maintenance of all electrical components.
7. Dark bronze polyester powder finish for excellent impact, corrosion and UV resistance.
8. Die cast aluminum arm with integral wiring compartment and slide access cover standard. Designed to mount to minimum 4 inch square pole.

Visit our web site at www.daybriteltg.com
775 South Green Street Tupelo, MS 38804 Phone: 662-842-7212 Fax: 662-841-6501
AS-42012 109 Bulock Drive Markham, Ontario Canada L3P 1W4 Phone: 905-294-0570 Fax: 905-294-0311
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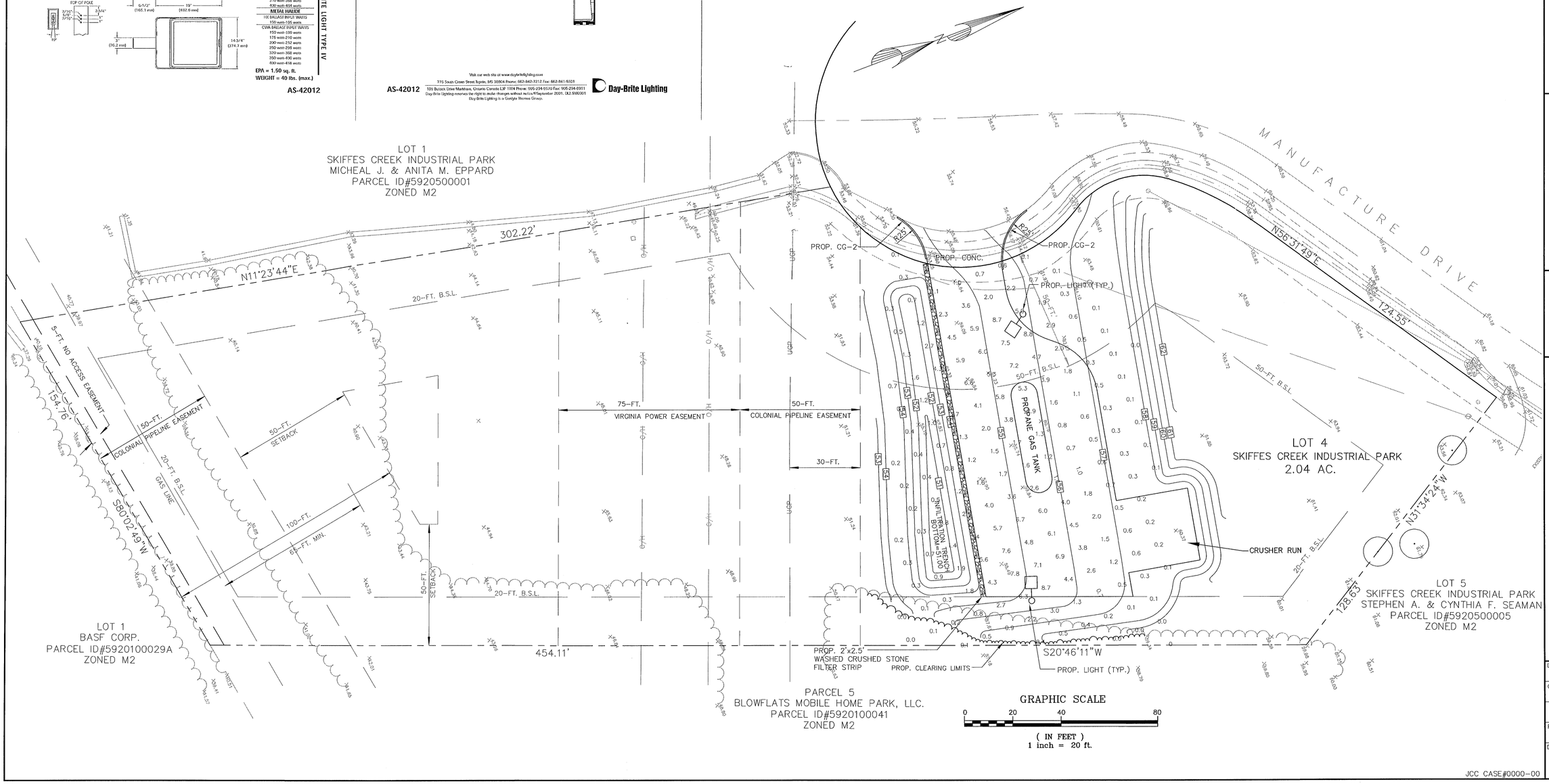
Day-Brite Lighting

GENERAL PHOTOMETRIC SCHEDULE

AVERAGE FOOTCANDLES	1.95
MAXIMUM FOOTCANDLES	8.8
MINIMUM FOOTCANDLES	0.0
MINIMUM TO MAXIMUM FC RATIO	0
MAXIMUM TO MINIMUM FC RATIO	1478.32
AVERAGE TO MINIMUM FC RATIO	329.34

LUMINAIRE SCHEDULE

CALLOUT	SYMBOL	LAMP	DESCRIPTION	BALLAST	MOUNTING	INPUT WATTS	VOLTS	NOTE 1	NOTE 2	QUANTITY
NiteBrite SBX400		(1) 400W Metal Halide	NiteBrites SBX400-Area Site Light Type IV Forward Throw	ELECTRONIC	POLE	64	120V 1P 2W	NiteBrites SBX400-Area Site Light Type IV Forward Throw	Pole Mounted 25'	2



JCC CASE #0000-00

COMMONWEALTH OF VIRGINIA
9/16/09
STEPHEN A. ROMEO
LIC. No. 1448-B
LAND SURVEYOR

4028 Ironbound Road
P.O. Box 1003
Williamsburg, VA 23188
Tel. (757) 253-2975
Fax. (757) 253-2976
Email: lmdg@landmarkdg.com

One Columbus Center
Suite 1000
Virginia Beach, VA 23462
Tel. (757) 473-2000
Fax. (757) 473-2001
Email: lmdg@landmarkdg.com

LANDMARK DESIGN GROUP
Engineers • Planners • Surveyors
Landscape Architects • Environmental Scientists

REVISIONS:

No.	Date	Comment	By

DRAWING STATUS
Interdiffice Review
Client for Review
Pre Approval Bidding

COUNTY APPROVAL
1st Submittal
2nd Submittal
3rd Submittal
Approved

LIGHTING PLAN

PLAN OF DEVELOPMENT
DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY
LOT 4
SKIFFES CREEK INDUSTRIAL PARK
ROBERTS MAGISTERIAL DISTRICT
JAMES CITY COUNTY, VIRGINIA

Designed:	Date: 9/16/09
Checked:	Scale: 1"=20'
File Mgr./Drawn: LFV	CADD File name: F-1
Project Number: 2006059-000.00	Dwg. File No.: 19143 W
Drawing Number	F-1

PLANTING NOTES:

THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, ETC. NECESSARY TO COMPLETE ALL PLANTING AS SHOWN ON THIS DRAWING, AS SPECIFIED HEREIN OR IN SUPPLEMENTAL SPECIFICATIONS, AND/OR AS REQUIRED BY JOB CONDITIONS. THE WORK IN GENERAL INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

(1) SOIL TESTING
(2) TOPSOIL;
(3) PLANTING AREA PREPARATION;
(4) PLANTING PIT EXCAVATION AND SOIL AMENDMENT;
(5) PLANT MATERIAL AND MULCH;
(6) FERTILIZING;
(7) STAKING; (WHEN REQUIRED)
(8) CHEMICAL APPLICATION; (WHEN REQUIRED)
(9) MAINTENANCE AND GUARANTEE;
(10) ALL OTHER ITEMS NECESSARY TO MAKE WORK COMPLETE;
(11) SEEDING.

THE PLANTING CONTRACTOR IS RESPONSIBLE FOR COORDINATING WORK WITH THE IRRIGATION CONTRACTOR AND OTHER CONTRACTORS. THIS PLAN DOES NOT GUARANTEE THE EXISTENCE OR NON-EXISTENCE OF ANY UTILITIES. PRIOR TO ANY CONSTRUCTION, EXCAVATION, OR ROTO-TILLING THE CONTRACTOR SHALL ASSUME THE RESPONSIBILITY OF VERIFYING THE LOCATIONS OF ALL UTILITIES, ABOVE AND/OR BELOW GROUND, PUBLIC AND/OR PRIVATE THAT MAY EXIST AND CROSS THROUGH THE AREAS OF CONSTRUCTION.

(1) SOIL TESTING

(1.1) THE CONTRACTOR IS RESPONSIBLE FOR SOILS TESTING AND ANALYSIS FOR SUITABILITY FOR PLANTING AND LANDSCAPE TREATMENTS REQUIRED IN THIS CONTRACT. EXISTING TOPSOIL SHALL BE UTILIZED TO THE GREATEST EXTENT POSSIBLE THROUGHOUT THE PROJECT. A MINIMUM OF 3 SOIL SAMPLES SHALL BE TAKEN TO REPRESENT THE FULL RANGE OF SITE CONDITIONS. SOIL SAMPLES SHALL BE TAKEN TO A DEPTH OF AT LEAST 6" BELOW THE LARGEST ROOT BALLS SPECIFIED ON THE PROJECT. WHERE HARD PAN EXISTS, DEEPER SAMPLING MAY BE REQUIRED.
(1.2) SOIL ANALYSIS SHALL BE BY CERTIFIED LABORATORY AND SHALL INCLUDE SOIL TEXTURE, COMPOSITION, ORGANIC MATTER CONTENT, PH, SALINITY, AND FERTILITY (AVAILABLE NUTRIENTS). FOR SOILS NOT MEETING TOPSOIL SPECIFICATIONS BELOW, THE REPORT SHALL INCLUDE RECOMMENDATIONS FOR AMENDING THE SOILS TO BRING THEM INTO COMPLIANCE WITH THESE SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR THE COSTS OF SOILS TESTING, AND SHALL SUBMIT 3 COPIES OF THE SOILS REPORT TO THE OWNER.

(2) TOPSOIL

(2.1) NECESSARY QUANTITIES OF TOPSOIL SHALL BE SUPPLIED BY THE CONTRACTOR AND APPROVED BY THE OWNER OR HIS REPRESENTATIVE. THE CONTRACTOR SHALL APPLY TOPSOIL ONLY AFTER SECURING SOIL TEST, AS SPECIFIED ABOVE, APPLYING RECOMMENDED TREATMENT THEREOF, AND SUBMITTING FOR APPROVAL.
(2.2) TOPSOIL REQUIREMENTS MAY BE MET IN ANY OF THE FOLLOWING WAYS:
A. ON-SITE TOPSOIL MEETING SPECIFICATIONS MAY BE STRIPPED AND STOCKPILED ON SITE.
B. ON-SITE TOPSOIL NOT MEETING SPECIFICATIONS MAY BE STRIPPED, STOCKPILED AND AMENDED ON SITE, TO MEET SPECIFICATIONS.
C. OFF-SITE TOPSOIL MEETING SPECIFICATIONS AND FROM AN APPROVED SOURCE MAY BE PROVIDED.
(2.3) TOPSOIL STOCKPILED FOR LATER USE SHALL BE STORED WITHIN THE RIGHT-OF-WAY, AND AT LOCATIONS APPROVED BY THE OWNER, UNLESS THE WORKING AREA IS SUCH THAT THE PRESENCE OF THE MATERIAL WOULD INTERFERE WITH ORDERLY PROSECUTION OF THE WORK. STOCKPILE AREAS OUTSIDE OF THE RIGHT-OF-WAY SHALL BE LOCATED BY THE CONTRACTOR AT HIS EXPENSE.
(2.4) STRIPPING TOPSOIL SHALL BE CONFINED TO THE AREA OVER WHICH THE EXCAVATION IS TO BE ACTIVELY PROSECUTED WITHIN 15 DAYS FOLLOWING THE STRIPPING OPERATION. EXCAVATION AND EMBANKMENT CONSTRUCTION SHALL BE CONFINED TO THE MINIMUM AREA NECESSARY TO ACCOMMODATE THE CONTRACTOR'S EQUIPMENT AND WORK FORCE ENGAGED IN THE EARTH MOVING WORK.
(2.5) TOPSOIL, EITHER ON-SITE OR OFF-SITE, SHALL BE THE ORIGINAL TOP LAYER OF A SOIL PROFILE FORMED UNDER NATURAL CONDITIONS, TECHNICALLY DEFINED AS THE "A" HORIZON BY THE SOIL SOCIETY OF AMERICA. IT SHALL CONSIST OF NATURAL, FRIABLE, LOAMY SOIL WITHOUT ADMIXTURES OF SUBSOIL. OR OTHER FOREIGN MATERIALS, AND SHALL BE REASONABLY FREE FROM STUMPS, ROOTS, HARD LUMPS, STIFF CLAY, STONE, NOXIOUS WEEDS, BRUSH, OR OTHER LITTER. IT SHALL HAVE DEMONSTRATED BY EVIDENCE OF HEALTHY VEGETATION GROWING, OR HAVING GROWN ON IT PRIOR TO STRIPPING, THAT IT IS REASONABLY WELL DRAINED AND DOES NOT CONTAIN SUBSTANCES TOXIC TO PLANTS.
(2.5.1) "A" HORIZON: "A" HORIZONS SHALL BE MINERAL HORIZONS CONSISTING OF (1) HORIZONS OR ORGANIC MATTER ACCUMULATION FORMED OR FORMING AT OR ADJACENT TO THE SURFACE; (2) HORIZONS THAT HAVE LOST CLAY, IRON, OR ALUMINUM, WITH RESULTANT CONCENTRATIONS OF QUARTZ OR OTHER RESISTANT MINERALS OF SAND OR SILT SIZE; OR (3) HORIZONS DOMINATED BY 1 OR 2 ABOVE BUT TRANSITIONAL TO AN UNDERLYING B OR C.
(2.5.2) "A" HORIZON SUBDIVISIONS: A1 HORIZONS SHALL BE MINERAL HORIZONS, FORMED OR FORMING AT OR ADJACENT TO THE SURFACE, IN WHICH THE FEATURE EMPHASIZED IS AN ACCUMULATION OF HUMIDIFIED ORGANIC MATTER INTIMATELY ASSOCIATED WITH THE MINERAL FRACTION. THE SOIL IS A DARK OR DARKER THAN UNDERLYING HORIZONS BECAUSE OF THE PRESENCE OF ORGANIC MATTER. THE ORGANIC MATERIAL IS ASSUMED TO BE DERIVED FROM PLANT AND ANIMAL REMAINS DEPOSITED ON THE SURFACE OF THE SOIL OR DEPOSITED WITHIN THE HORIZON WITHOUT APPRECIABLE TRANSLOCATION. A2 HORIZONS SHALL BE MINERAL HORIZONS IN WHICH THE FEATURE EMPHASIZED IS LOSS OF CLAY, IRON OR ALUMINUM, WITH RESULTANT CONCENTRATION OF QUARTZ OR OTHER RESISTANT MINERALS IN SAND AND SILT SIZES.
(2.5.3) "A" HORIZON TOPSOIL CONTENT: "A" HORIZON TOPSOIL SHALL BE IN ACCORDANCE WITH THE FOLLOWING MATERIALS BY PERCENTAGE OF VOLUME:

SILT	42-58%
SAND	15-20%
CLAY	15-20%
ORGANIC MATERIAL	12-18%

(2.6) TOPSOIL SHALL HAVE A PH IN THE RANGE OF 5.8 TO 7.0 PRIOR TO MIXING WITH AMENDMENTS.

(3) PLANTING AREA PREPARATION

(3.1) PLANTING AREAS. BECAUSE OF SOIL COMPACTION DURING CONSTRUCTION, ALL PLANTING AREAS SHALL BE LOOSENED BY ROTO-TILLING AS SPECIFIED BELOW. AREAS UNDER THE DRIP LINE OF TREES OR SHRUBS TO REMAIN IN PLACE SHALL NOT BE ROTO-TILLED. A PLANTING AREA IS ANY AREA IN WHICH NEW PLANTING OCCURS.
(3.2) PRIOR TO EXCAVATION OF INDIVIDUAL TREE AND SHRUB PITS, A DIAMETER EQUAL TO TEN TIMES THE DIAMETER OF THE ROOT BALL SHALL BE ROTO-TILLED TO A DEPTH EQUAL TO THE DEPTH OF THE ROOT BALL FOR PLANTS HAVING ROOT BALLS NO DEEPER THAN 12". FOR PLANTS HAVING ROOT BALLS OVER 12" DEEP, THE ROTO-TILLED AREA SHALL BE 12". UNDER NO CIRCUMSTANCES SHALL THE ROTO-TILLED DEPTH BE GREATER THAN THE DEPTH OF THE ROOT BALL.
(3.3) IN CONTINUOUS SHRUB AND GROUND COVER BEDS, THE ROTO-TILLED PERIMETER SHOULD EXTEND TO A DISTANCE OF 5 TIMES THE DIAMETER OF A SINGLE ROOTBALL OF THE PERIMETER PLANTS. DEPTH OF TILLAGE FOR SHRUBS SHALL BE AS SPECIFIED ABOVE.

(4) PLANTING PIT EXCAVATION AND SOIL AMENDMENT

(4.1) TREE AND SHRUB PITS SHALL BE 3 TIMES THE WIDTH OF THE ROOTBALL, AND SHALL BE DUG SO THAT THE BOTTOM OF THE ROOT BALL WILL REST ON UNDISTURBED SOIL, AND THE TOP OF THE ROOT BALL WILL BE 2" ABOVE FINISH GRADE.
(4.2) GROUNDCOVER, ANNUAL AND PERENNIAL BEDS SHALL BE TILLED TO A DEPTH OF 12", OR IF SOIL AMENDMENTS ARE REQUIRED, EXCAVATED TO A DEPTH OF 12", UNLESS OTHERWISE NOTED ON THE PLANS. PLANTS SHALL BE EVENLY SPACED WITHIN THE TILLED PLANTING AREA AND SET TO MAINTAIN THE ORIGINAL GROWING DEPTH WHILE ALLOWING FOR A 2" TOP DRESSING OF MULCH.
(4.3) WHENEVER POSSIBLE, THE EXCAVATED SOIL SHOULD BE USED OR AMENDED TO BE USED AS BACKFILL MATERIAL IN ORDER TO ELIMINATE OR MINIMIZE THE OCCURRENCE OF HYDROLOGIC DISCONTINUITIES, AND/OR SOIL INTERFACE PROBLEMS COMMON TO PLANTING BEDS CONTAINING SOILS OF DIFFERENT TEXTURE.
(4.4) WHERE SOILS TESTING OR SUBSEQUENT OBSERVATION INDICATES THAT THE TEXTURE OF THE EXISTING SOIL IS UNDESIRABLE FOR THE PLANT SPECIES BEING PLANTED (I.E. HEAVY CLAY, PURE SAND) THE ON-SITE SOIL SHALL BE AMENDED AS RECOMMENDED WITHIN THE SOILS REPORT TO PROVIDE SUITABLE TEXTURE. WHERE SOILS TESTS DO NOT REVEAL TEXTURAL DEFICIENCIES, YET SUBSEQUENT EXCAVATIONS DO, THE BACKFILL MIXTURE SHALL BE 66% EXISTING SOIL AND 33% TOPSOIL AS DEFINED ABOVE.
(4.5) WHERE SOILS TESTS INDICATE THAT THE PH, SALINITY OR CHEMICAL COMPOSITION IS UNDESIRABLE FOR THE PLANT SPECIES BEING PLANTED, THE SOIL SHALL BE AMENDED AS RECOMMENDED WITHIN THE SOILS REPORT TO ACHIEVE SUITABLE CHEMICAL PROPERTIES. AFTER AMENDING, PLANTING SOIL FOR DECIDUOUS PLANTS SHALL HAVE A PH VALUE BETWEEN 6.0 AND 7.0, AND FOR EVERGREEN OR SEMI-EVERGREEN PLANTS SHALL HAVE A PH VALUE BETWEEN 5.0 AND 6.0. A REPRESENTATIVE SAMPLE FROM THE EXCAVATED SOIL SHALL BE FIELD TESTED FOR PH UTILIZING A RELIABLE SOIL PH METER OR SOIL PH TEST KIT. THE PH VALUE OF THE NATURAL SOIL BACKFILL MIXTURE MAY BE AMENDED BY ADDING LIMESTONE OR ALUMINUM SULFATE AS NEEDED.
(4.6) WHERE SOILS TESTING OR SUBSEQUENT EXCAVATION INDICATE THE EXISTING SOIL IS UNSUITABLE FOR USE AS BACKFILL MATERIAL, BECAUSE OF THE PRESENCE OF DEBRIS OR OTHER DELETERIOUS MATERIAL, THE BACKFILL MATERIAL SHALL BE 66% TOPSOIL, AS DEFINED ABOVE, AND 33% CLEAN SAND.
(4.7) AMENDED BACKFILL SOIL REPLACES ONLY THE SOIL EXCAVATED FROM THE TREE AND SHRUB PIT (3 TIMES THE WIDTH OF THE ROOT BALL), NOT THE ENTIRE ROTO-TILLED AREA.
(4.8) FOR TREES IN POORLY DRAINED SOILS, A VERTICAL PIPE SHALL BE INSTALLED AT THE EDGE OF THE PLANT PIT EXCAVATION, EXTENDING TO A LEVEL EQUAL TO THE TOP OF THE MULCH. THE PIPE END SHALL BE THREADED AND FITTED WITH A THREADED CAP.

(5) PLANT MATERIAL AND MULCH

(5.1) THE NAMES OF PLANTS REQUIRED UNDER THIS CONTRACT CONFORM TO THOSE GIVEN IN L.H. BAILEY'S HORTUS THIRD, 1976 EDITION. NAMES OF VARIETIES NOT INCLUDED THEREIN CONFORM GENERALLY WITH NAMES ACCEPTED IN THE NURSERY TRADE. ALL PLANTS SHALL HAVE A HABIT OF GROWTH THAT IS NORMAL FOR THEIR SPECIES AND THEY SHALL BE SOUND, HEALTHY AND VIGOROUS, WITH WELL DEVELOPED ROOT SYSTEMS. ALL PLANT MATERIAL SHALL BE FREE FROM INSECT PESTS, PLANT DISEASES, AND INJURIES. ALL PLANTS SHALL EQUAL OR EXCEED THE MEASUREMENTS SPECIFIED IN THE PLANT LIST, WHICH ARE MINIMUM ACCEPTABLE SIZES. TREES SHALL HAVE SINGLE TRUNKS EXCEPT AS NOTED. ALL SHRUBS SHALL BE HEALTHY, VIGOROUS, AND OF GOOD COLOR. ONLY DAMAGED OR BROKEN BRANCHES OF PLANT MATERIAL MAY BE PRUNED AND ANY NECESSARY PRUNING SHALL BE DONE AT THE TIME OF PLANTING. HOWEVER, UNDER NO CIRCUMSTANCES SHALL THE CENTRAL LEADER OF A PLANT BE PRUNED. BALLING AND BURLAPPING OF PLANTS SHALL FOLLOW THE CODE OF STANDARDS CURRENTLY RECOMMENDED BY THE AMERICAN STANDARD FOR NURSERY STOCK.

(5.2) ALL TAGS, STRINGS OR ANY OTHER MATERIAL ATTACHED TO THE PLANTS SHALL BE REMOVED AT THE TIME OF THE PLANTING. LABEL AT LEAST ONE TREE, SHRUB AND GROUNDCOVER OF EACH VARIETY WITH A SECURELY ATTACHED WATERPROOF TAG BEARING LEGIBLE DESIGNATION OF BOTANICAL NAME AND THE SIZE AS SPECIFIED IN THE PLANT LIST OF REQUIRED PLANTS. LABELS SHALL BE SECURELY ATTACHED TO PLANTS AND SHALL BE LEGIBLE FOR 60 DAYS AFTER DELIVERY TO THE PLANTING SITE. WIRE IDENTIFICATION TAGS SHALL NOT BE USED.

(5.3) SUBSTITUTIONS WILL BE PERMITTED ONLY UPON SUBMISSION OF PROOF THAT ANY PLANT IS NOT OBTAINABLE. ALL SUBSTITUTIONS MUST BE AUTHORIZED BY THE OWNER OR THE OWNER'S REPRESENTATIVE IN WRITING PROVIDING FOR USE OF THE NEAREST EQUIVALENT OBTAINABLE SIZE OR VARIETY OF PLANT HAVING THE SAME ESSENTIAL CHARACTERISTICS AS THE ORIGINAL VARIETY WITH AN EQUITABLE ADJUSTMENT OF CONTRACT PRICE.

(5.4) BALLED AND BURLAPPED PLANTS (B&B) SHALL BE DUG WITH FIRM, NATURAL BALLS OF EARTH OF SUFFICIENT DIAMETER AND DEPTH TO ENCOMPASS THE FIBROUS AND FEEDING ROOT SYSTEM NECESSARY FOR FULL RECOVERY OF THE PLANT. BALLS SHALL BE FIRMLY WRAPPED WITH BURLAP OR SIMILAR MATERIAL AND BOUND WITH TWINE OR CORD. BURLAP SHALL NOT BE PULLED OUT FROM UNDER BALLS DURING PLANTING OPERATIONS. B&B PLANTS WHICH CANNOT BE PLANTED IMMEDIATELY ON DELIVERY SHALL BE COVERED WITH MOIST SOIL, MULCH, OR OTHER MATERIAL TO PROVIDE PROTECTION FROM DRYING WINDS AND SUN.

(5.5) PLANTS NOTED "CONTAINER" ON THE PLANT LIST MUST BE CONTAINER GROWN WITH WELL ESTABLISHED ROOT SYSTEMS. LOOSE CONTAINERIZED PLANT MATERIAL WILL NOT BE ACCEPTED. ALL PLANTS INJURED AND PLANTS WITH ROOT BALLS BROKEN DURING TRANSPORT OR PLANTING OPERATIONS WILL BE REJECTED. BARE-ROOTED PLANTS (BR) SHALL BE PLANTED OR HEELED-IN IMMEDIATELY UPON DELIVERY. ALL PLANTS SHALL BE WATERED AS NECESSARY UNTIL PLANTED.

(5.6) NEW PLANTINGS SHALL BE LOCATED WHERE SHOWN ON THE PLAN EXCEPT WHERE OBSTRUCTIONS BELOW GROUND ARE ENCOUNTERED OR WHERE CHANGES HAVE BEEN MADE IN THE PROPOSED CONSTRUCTION. NECESSARY ADJUSTMENTS SHALL BE MADE ONLY AFTER APPROVAL BY THE OWNER OR THE OWNER'S REPRESENTATIVE. REASONABLE CARE SHALL BE EXERCISED TO HAVE PLANTING PITS DUG AND SOIL PREPARED PRIOR TO MOVING PLANTS TO THEIR RESPECTIVE LOCATIONS TO ENSURE THAT THEY WILL NOT BE UNNECESSARILY EXPOSED TO DRYING OR PHYSICAL DAMAGE.

(5.7) A LIST OF PLANTS, INCLUDING SIZES, QUANTITIES AND OTHER REQUIREMENTS, IS SHOWN ON THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE QUANTITIES AS SHOWN ON THE DRAWINGS. IF DISCREPANCIES OCCUR IN THE QUANTITIES SHOWN, THE PLANTING PLANS SHALL GOVERN.

(5.8) THE PLANTING CONTRACTOR WILL BE NOTIFIED BY THE GENERAL CONTRACTOR WHEN OTHER DIVISIONS OF THE WORK HAVE PROGRESSED SUFFICIENTLY TO COMMENCE WORK ON THE PLANTING OPERATION. THEREAFTER, PLANTING OPERATIONS SHALL BE CONDUCTED UNDER FAVORABLE WEATHER CONDITIONS DURING THE NEXT SEASON OR SEASONS WHICH ARE NORMAL FOR SUCH WORK. REMOVAL OF ROCK OR OTHER UNDERGROUND OBSTRUCTIONS, RELOCATIONS TO AVOID OBSTRUCTIONS, AND PROVISION OF DRAINAGE FOR PLANTING AREAS SHALL BE DONE ONLY AS APPROVED BY THE OWNER OR THE OWNER'S REPRESENTATIVE.

(5.9) ALL PLANTS SHALL BE PLANTED UPRIGHT AND FACED TO GIVE THE BEST APPEARANCE OR RELATIONSHIP TO ADJACENT STRUCTURES. ROOTS SHALL BE SPREAD IN THEIR NORMAL POSITION. ALL BROKEN OR FRAYED ROOTS SHALL BE CUT OFF CLEANLY. PLANTS WITH CIRCLING ROOTS SHALL NOT BE ACCEPTED. BURLAP TWINE AND OTHER FASTENING MATERIAL SHALL BE CUT AND PUSHED TO THE BOTTOM OF THE PLANT PIT PRIOR TO BACKFILL MATERIAL BEING PLACED. THE PLANT SHALL NOT BE ROCKED BACK AND FOURTH TO ENTIRELY REMOVE THE WRAPPING MATERIAL NOR SHALL ANY OTHER PRACTICE BE PERFORMED WHICH COULD CAUSE THE ROOT BALL TO BREAK APART. WHEN WIRE BASKETS ARE USED ON THE ROOT BALL OF PLANTS THE WIRE SHALL BE REMOVED TO AT LEAST 12" BELOW THE TOP OF THE ROOT BALL.

(5.10) AT THE TIME OF PLANTING, AND AS MANY TIMES LATER AS SEASONAL CONDITIONS REQUIRE, EACH PLANT AND THE SOIL AROUND IT SHALL BE THOROUGHLY WATERED. CARE SHOULD BE EXERCISED WHEN WATERING TO AVOID FLOODING OF PLANTS AND BEDS, DISPLACEMENT OF MULCH MATERIAL AND EROSION OF SOIL. AVOID USE OF HIGH PRESSURE HOSES. THE CONTRACTOR SHALL MAKE, AT HIS EXPENSE, WHATEVER ARRANGEMENTS MAY BE NECESSARY TO ENSURE AN ADEQUATE SUPPLY OF WATER TO MEET THE NEEDS OF THIS CONTRACT DURING INSTALLATION. THE CONTRACTOR SHALL ALSO FURNISH ALL NECESSARY HOSE, EQUIPMENT ATTACHMENTS AND ACCESSORIES FOR THE ADEQUATE WATERING OF PLANTED AREAS AS MAY BE REQUIRED UNTIL ACCEPTANCE BY THE OWNER OR THE OWNER'S REPRESENTATIVE.

(5.11) MULCH SHALL BE CLEAN, GROUND OR SHREDDED BARK OR HARDWOOD MULCH. IN PLANTING AREAS WHERE SLOPES EXCEED 3:1 AND AT DRAINAGE DISPERSION POINTS OR ALONG NATURAL WATER WAYS WHERE CONCENTRATIONS OF SURFACE WATER EMPTY FROM CULVERTS OR PAVED DITCHES, HEAVY JUTE MESH SHALL BE INSTALLED. SHREDDED HARDWOOD OR BARK MULCH SHALL HAVE BEEN COMPOSTED FOR AT LEAST TWO MONTHS PRIOR TO APPLICATION. FRESHLY GROUND MULCH WILL NOT BE ACCEPTED. FINELY GROUND MULCH WHICH INHIBITS DRAINAGE, ENCOURAGES WEED GROWTH OR BECOMES WATERLOGGED WILL NOT BE ACCEPTED. MULCH SHALL BE COMPOSED OF SIMILAR SIZED FRAGMENTS AND SHALL NOT CONTAIN STICKS, CONES, LEAVES, UNSHREDDED PIECES, OR OTHER DELETERIOUS MATTER. ALL AZALEA AND CAMELLIA PLANTING BEDS SHALL HAVE 1" OF PINE STRAW MULCH UNDER 2" OF BARK OR SHREDDED HARDWOOD MULCH.

(5.12) ALL PLANTS SHALL BE MULCHED IMMEDIATELY AFTER PLANTING. GROUND COVERS SHALL BE MULCHED WITH A 3" LAYER OF SHREDDED HARDWOOD OR BARK MULCH. ALL OTHER PLANTING BEDS, SHRUBS AND TREE PLANTINGS SHALL BE MULCHED WITH A 3" MINIMUM LAYER OF MULCH. THIS MULCH SHALL ENTIRELY COVER THE AREA OF THE PLANTING PIT, BED, OR EARTH BERM AROUND EACH PLANT WITH THE EXCEPTION OF THE AREA IMMEDIATELY ADJACENT TO THE PLANT TRUNK OR TRUNKS. THE AREA IMMEDIATELY ADJACENT TO THE PLANT TRUNK OR TRUNKS SHALL BE LEFT FREE OF ANY MULCH.

(6) FERTILIZING

(6.1) THE FERTILIZER SHOULD BE A DRY SLOW RELEASE FORM OF FERTILIZER. IT SHOULD CONTAIN AT LEAST 25-50% WATER INSOLUBLE NITROGEN. THE FERTILIZER SELECTED SHOULD ALSO HAVE A LOW ADJUSTED SALT INDEX TO PREVENT BURNING. THE N-P-K RATIO SHOULD NOT EXCEED 3-1-2 UNLESS THE SOIL TEST REVEALS THAT ADDITIONAL LEVELS OF P AND K ARE NECESSARY.

(6.2) FOR DECIDUOUS TREES, USE OSMOCOTE (18-6-12) AT THE RATE EQUIVALENT TO 4 LBS ACTUAL N/1000 SQ FT OF ROOT ZONE AREA/YEAR. FOR EVERGREEN TREES USE 2 LBS ACTUAL N/1000 SQ FT OF ROOT ZONE AREA/YEAR.

(6.3) MIX THE FERTILIZER INTO THE BACKFILL SOIL OF THE TREE PITS. FOR SHRUB BEDS, MIX THE FERTILIZER INTO THE AREA THAT HAS BEEN ROTO-TILLED FOR THE PLANTS.

(6.4) THE FERTILIZER RATE FOR CONTINUOUS GROUND COVER AND SHRUB BEDS SHOULD BE DERIVED BY CALCULATING THE ENTIRE ROOT ZONE AREA. THE ROOT ZONE AREA IS FOUND BY MEASURING THE AREA CONTAINING THE MULTIPLE PLANT ROOTS. USE OSMOCOTE (18-6-12) AT A RATE EQUIVALENT TO 2 LBS OF N /1000 SQ FT OF ROOT ZONE AREA. THE FERTILIZER SHOULD BE EVENLY DISTRIBUTED WITHIN THE SHRUB BED SOIL.

(6.5) ALWAYS BE SURE THAT ADEQUATE MOISTURE IS AVAILABLE WHEN FERTILIZING SO THAT THE FERTILIZER WILL BE DISSOLVED INTO THE SOIL SOLUTION FOR ROOT UPTAKE AND TO AVOID BURNING THE ROOTS.

(7) STAKING

(7.1) TREES REQUIRING SUPPORT WILL BE INDICATED IN THE COMMENTS SECTION OF THE PLANTING SCHEDULE. ALL TREES REQUIRING SUPPORT SHALL BE STAKED ACCORDING TO THE DETAILS PROVIDED.

(7.2) TWO STAKES SHALL BE REQUIRED PER TREE. THE STAKES SHALL BE DRIVEN VERTICALLY INTO THE GROUND TO A DEPTH OF 2 1/2' TO 3', ON OPPOSITE SIDES OF THE TREE, IN SUCH A MANNER AS NOT TO INJURE THE ROOT BALL OR ROOTS. STAKES FOR SUPPORTING TREES SHALL BE 2" SQUARE OR ROUND, BY 8'. THE STAKES SHOULD BE SOUND WOOD TREATED WITH A SUITABLE WOOD PRESERVATIVE. A SINGLE BURLAP LOOP SHALL BE PLACED AROUND THE TRUNK, ABOVE THE FIRST MAJOR BRANCH, AND TACKED TO ONE OF THE WOODEN STAKES. ANOTHER SINGLE BURLAP LOOP SHALL ALSO BE PLACED AROUND THE TRUNK, ABOVE THE FIRST MAJOR BRANCH, AND TACKED TO THE OTHER WOODEN STAKE. THE BURLAP SHOULD BE TAUT.

(7.3) WOODEN STAKES AND BURLAP TIES SHOULD BE REMOVED AFTER ONE YEAR.

(8) CHEMICAL APPLICATION

(8.1) ALL PESTICIDES SHALL BE PRODUCTS OF RECOGNIZED COMMERCIAL MANUFACTURERS, AND SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE, AND LOCAL PESTICIDE LAWS. PESTICIDES SHALL BE APPLIED WITH CALIBRATED EQUIPMENT ACCORDING TO EPA LABEL RESTRICTIONS AND REGULATIONS BY A CERTIFIED APPLICATOR. ANY DAMAGE INCURRED TO THE SITE, ADJACENT PROPERTIES, OR APPLICATOR DURING PESTICIDE APPLICATIONS WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

(8.2) PESTICIDES SHOULD BE USED ONLY WHEN NECESSARY TO TREAT AN OUTBREAK OF A HARMFUL PEST OR DISEASE PROBLEM. THE OWNER OR THE OWNER'S REPRESENTATIVE SHALL BE NOTIFIED 24 HOURS PRIOR TO THE APPLICATION OF ANY PESTICIDE.

(9) MAINTENANCE AND GUARANTEE

(9.1) THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING HIS WORK FOR THE PERIOD OF ONE YEAR AFTER ACCEPTANCE BY THE OWNER OR THE OWNER'S REPRESENTATIVE. MAINTENANCE SHALL INCLUDE MOWING, WATERING, WEEDING, CULTIVATING, MULCHING, REMOVAL OF DEAD MATERIALS, RESETTING OF PLANTS TO PROPER GRADES OR UPRIGHT POSITIONS, RESTORATION OF EARTH BERMS, AND OTHER NECESSARY OPERATIONS. ADEQUATE PROTECTION FOR LAWN AREAS AGAINST TRESPASSING DURING PLANTING OPERATIONS AND AGAINST DAMAGE OF ANY KIND SHALL BE PROVIDED. NOTHING IN THESE NOTES IS INTENDED TO RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO REPAIR EXISTING LAWN AREAS DAMAGED BY WORKMEN ENGAGED IN THE COMPLETION OF THIS PROJECT.

(9.2) INSPECTION OF THE WORK TO DETERMINE COMPLETION OF THE CONTRACT EXCLUSIVE OF THE POSSIBLE REPLACEMENT OF PLANTINGS, WILL BE MADE BY THE OWNER OR THE OWNER'S REPRESENTATIVE AT THE CONCLUSION OF THE INSTALLATION PERIOD UPON WRITTEN NOTICE REQUESTING SUCH INSPECTION. REQUEST SHALL BE SUBMITTED BY CONTRACTOR AT LEAST TEN DAYS PRIOR TO THE ANTICIPATED DATE FOR INSPECTION. AFTER INSPECTION, THE CONTRACTOR WILL BE NOTIFIED IN WRITING BY THE OWNER OR THE OWNER'S REPRESENTATIVE OF ACCEPTANCE OF THE WORK, EXCLUSIVE OF THE POSSIBLE REPLACEMENT OF PLANTS SUBJECT TO GUARANTEE; OR, IF THERE ARE ANY DEFICIENCIES, THE CONTRACTOR WILL BE NOTIFIED OF THE REQUIREMENTS NECESSARY FOR COMPLETION OF THE WORK. PLANTINGS SHALL NOT BE CONSIDERED ACCEPTED UNTIL ALL DEFICIENCIES HAVE BEEN CORRECTED AND APPROVED IN WRITING.

SEEDING NOTES

THIS SECTION INCLUDES, BUT IS NOT LIMITED TO: TILLAGE, pH BALANCING, FERTILIZING, WATERING, SEEDING, MAINTENANCE MOWING, AND MULCHING OF ALL DISTURBED AREAS WITHIN THE CONTRACT LIMIT LINES NOT OCCUPIED BY STRUCTURES, PAVEMENT, OR PLANTING BEDS.

(1) QUALITY ASSURANCE

(1.1) QUALITY ASSURANCE: SEEDING WORK SHALL BE PERFORMED BY A SINGLE FIRM SPECIALIZING AND EXPERIENCED IN LANDSCAPE WORK.

(2.1) SHIP MATERIALS WITH CERTIFICATES OF INSPECTION REQUIRED BY GOVERNING AUTHORITIES. COMPLY WITH REGULATIONS APPLICABLE TO LANDSCAPE MATERIALS.

(2) SUBMITTALS

(2.1) SEED VENDOR'S CERTIFIED BLUE TAG AND INVOICE SHOWING QUANTITY FOR EACH GRASS SEED MIXTURE REQUIRED, STATING BOTANICAL AND COMMON NAME, PERCENTAGE BY WEIGHT, AND PERCENTAGES OF PURITY, GERMINATION, AND WEED SEED FOR EACH GRASS SEED SPECIES.

(2.2) TOPSOIL ANALYSIS: PROVIDE FOR THE SERVICES OF A TESTING AGENCY TO PERFORM AN ANALYSIS OF TOPSOIL TO BE USED, AND A DETERMINATION OF NUTRITIONAL REQUIREMENTS OF SOIL FOR ESTABLISHMENT OF LAWNS AS SPECIFIED BELOW.

(3) JOB CONDITIONS

(3.1) PRIOR TO BEGINNING THE WORK OF THIS SECTION, VERIFY THAT THE SITE WORK CONTRACTOR HAS COMPLETED THE FINISH GRADING. AT THIS POINT, 4" OF TOPSOIL SHALL BE IN PLACE AND ROUGH GRADE LEVELS SHALL BE AT THE FINISH GRADE LEVEL, IN ALL LANDSCAPE AREAS, INCLUDING AREAS TO BE ESTABLISHED IN TURF.

(3.2) THE LANDSCAPE CONTRACTOR SHALL CAREFULLY CORRELATE HIS WORK WITH THAT OF OTHER SITE DEVELOPERS. THE LANDSCAPE CONTRACTOR IS REQUIRED TO INSTALL AND MAINTAIN HIS FINISHED WORK AT HIS EXPENSE.

(3.3) PRIOR TO TOPSOIL PLACEMENT ALL AREAS TO RECEIVE TOPSOIL SHALL BE CLEARED OF ALL DEBRIS. ANY DEBRIS SHALL BE REMOVED FROM THE SITE. TO CREATE A TRANSITION ZONE BETWEEN UNDERLYING SOIL AND NEW SOIL, TOPSOIL SHALL BE PLACED IN TWO (2) TWO INCH (2") LAYERS. THE FIRST LAYER SHALL BE PLACED AND THOROUGHLY TILLED IN PRIOR TO PLACEMENT OF SECOND LAYER.

(3.4) THE LANDSCAPE CONTRACTOR SHALL PLACE A FOUR INCH (4") COMPACTED LAYER OF TOPSOIL OVER ALL AREAS TO BE ESTABLISHED IN TURF. THE TOPSOIL LAYER SHALL BRING ALL TURF AREAS AND SHRUB BEDS TO FINISH GRADE.

(3.5) DETERMINE LOCATIONS OF ALL UNDERGROUND UTILITIES AND PERFORM WORK IN A MANNER WHICH WILL AVOID DAMAGE. ALL UTILITIES ARE NOT NECESSARILY SHOWN ON DRAWINGS AND CONTRACTOR SHALL ASSUME RESPONSIBILITY OF DETERMINING EXISTENCE OR NON-EXISTENCE OF ALL UTILITIES. MAINTAIN GRADE STAKES SET BY OTHERS UNTIL REMOVAL IS MUTUALLY AGREED UPON BY PARTIES CONCERNED.

(3.6) WHEN CONDITIONS DETRIMENTAL TO LAWN ESTABLISHMENT, GROWTH AND MAINTENANCE ARE ENCOUNTERED, SUCH AS RUBBLE FILL, ADVERSE DRAINAGE CONDITIONS OR OBSTRUCTIONS, NOTIFY THE OWNER'S REPRESENTATIVE BEFORE BEGINNING WORK.

(3.7) DELIVERY, STORAGE, AND HANDLING: FERTILIZER, SOIL AMENDMENTS, AND SEED SHALL BE DELIVERED TO THE SITE IN THE ORIGINAL, UNOPENED CONTAINERS BEARING THE MANUFACTURER'S GUARANTEED ANALYSIS, NAME, TRADEMARK, AND STATEMENT OF CONFORMANCE TO STATE AND FEDERAL LAWS. IN LIEU OF CONTAINERS, FERTILIZER AND SOIL AMENDMENTS MAY BE FURNISHED IN BULK WITH A MANUFACTURER'S CERTIFICATE INDICATING THE ABOVE INFORMATION ACCOMPANYING EACH DELIVERY. DURING DELIVERY, SEED, FERTILIZER AND SOIL AMENDMENTS SHALL BE KEPT IN DRY STORAGE AWAY FROM CONTAMINANTS. PRECAUTIONS SHALL BE TAKEN TO PROTECT CONTAINERS FROM RUPTURE PRIOR TO USE.

(4) SOIL AMENDMENTS

(4.1) LIME: TO pH BALANCE SOIL, NATURAL DOLOMITIC LIMESTONE CONTAINING NOT LESS THAN 95% OF TOTAL CARBONATES WITH A MINIMUM OF 30% MAGNESIUM CARBONATES AND 65% CALCIUM CARBONATE IN A PELLETIZED FORM.

(4.2) ALUMINUM SULFATE: TO pH BALANCE SOIL, COMMERCIAL GRADE IN DRY POWDER FORM.

(4.3) SUPER PHOSPHATE: SOLUBLE MIXTURE OF TREATED MINERALS; 20% PHOSPHORIC ACID.

(4.4) STARTER FERTILIZER: GRANULAR OR PELLETIZED FERTILIZER CONSISTING OF 30% SLOW-RELEASE NITROGEN, PHOSPHORUS, AND POTASSIUM IN THE FOLLOWING COMPOSITION:

(4.4.1) COMPOSITION: 14% NITROGEN, 28% PHOSPHOROUS, AND 14% POTASSIUM BY WEIGHT.

(4.5) SEED: STATE-CERTIFIED SEED OF THE LATEST SEASON'S CROP COMMON TO THE SITE LOCATION. PROVIDE FRESH, CLEAN, NEW CROP SEED COMPLYING WITH ESTABLISHED TOLERANCES FOR GERMINATION AND PURITY IN ACCORDANCE WITH THE U.S. DEPARTMENT OF AGRICULTURE RULES AND REGULATIONS UNDER THE LATEST EDITION OF THE FEDERAL SEED ACT. SEED SHALL BE MIXED BY THE DEALER AND SHALL BE DELIVERED TO THE SITE IN SEALED CONTAINERS WHICH SHALL BEAR THE DEALER'S GUARANTEED ANALYSIS. SEED THAT HAS BECOME WET, MOLDY, OR OTHERWISE DAMAGED WILL NOT BE ACCEPTABLE.

(5) SEED PREPARATION

(5.1) SEEDING SHALL NOT BE DONE WHEN THE GROUND IS FROZEN, SNOW COVERED, SATURATED, OR IN ANY OTHER CONDITION WHICH WOULD MAKE ESTABLISHMENT AND SURVIVAL OF LAWNS UNLIKELY.

(5.2) AT THE TIME OF BEGINNING SEED BED PREPARATION, TOPSOIL SHALL BE IN A LOOSE, FRIABLE CONDITION, FREE FROM STONES IN ANY DIMENSION, STICKS, ROOTS AND OTHER EXTRANEOUS MATTER. IF TOPSOIL HAS BECOME CRUSTY, HARDENED OR ERODED SINCE BEING SPREAD, IT SHALL BE A PART OF THIS WORK TO RESTORE THE SOIL TO THE LOOSE CONDITION DESCRIBED ABOVE.

(5.3) SPREAD FERTILIZER AND pH BALANCING AGENTS AT RATES RECOMMENDED BY THE SOIL TEST REPORT TO ACHIEVE A pH OF 5.5 TO 6.8. BLEND ADDITIVES THOROUGHLY INTO UPPER 4" OF TOPSOIL. REMOVE ANY ROCKS OR OTHER DEBRIS WHICH MAY SURFACE. TILL AREAS UNTIL SOIL IS LOOSE AND FRIABLE, AND ALL SOIL AMENDMENTS ARE UNIFORMLY DISTRIBUTED.

(5.4) WORK ALL AREAS TO A SMOOTH EVEN SURFACE FREE FROM IRREGULARITIES, RIDGES, OR DEPRESSIONS. PREPARED AREAS SHALL MEET REQUIRED FINISH GRADE ELEVATIONS AND SHALL DRAIN ADEQUATELY. REPAIR ALL WASHED AND ERODED PORTIONS.
(5.5) MOISTEN PREPARED AREAS IF SOIL IS DRY. WATER THOROUGHLY, THEN ALLOW SURFACE MOISTURE TO EVAPORATE. DO NOT CREATE MUDDY SOIL CONDITIONS.

(5.6) SOW SEED USING A SPREADER OR SEEDING MACHINE. DO NOT SEED WHEN WIND VELOCITY EXCEEDS 5 MILES PER HOUR. DISTRIBUTE SEED EVENLY OVER ENTIRE AREA BY SOWING EQUAL QUANTITY IN 2 DIRECTIONS AT RIGHT ANGLES TO EACH OTHER.

(5.7) RAKE SEED LIGHTLY INTO TOP 1/4" OF SOIL, FIRM ENTIRE AREA WITH A ROLLER NOT EXCEEDING 90 LBS. PER FOOT OF ROLLER WIDTH, AND WATER WITH A FINE SPRAY.

(5.8) UNLESS INDICATED OTHERWISE ON THE DRAWINGS, PROTECT NEWLY SEEDED AREAS BY SPREADING MULCH TO A UNIFORM AND CONTINUOUS DEPTH OF 1-1/2" LOOSE MEASUREMENT (70-90 LBS/1000 SF.)

(5.8.1) STRAW MULCH: STRAW SHALL BE STALKS FROM OATS, WHEAT, RYE, BARLEY OR RICE THAT ARE FREE FROM NOXIOUS WEEDS, CHEMICALS, MOLD OR OTHER OBJECTIONABLE MATERIALS WITH A NONASPHALTIC MULCH TACKIER. STRAW SHALL BE IN AN AIR-DRY CONDITION SUITABLE FOR PLACING. STRAW SUPPLIED FOR MECHANICAL APPLICATION SHALL BE CHOPPED.

(6) HYDROSEEDING

(6.1) MULCH SUPPLIED FOR USE WITH HYDRAULIC APPLICATION OF GRASS SEED AND FERTILIZER SHALL CONSIST OF FUTERRA F4 NETLESS BY PROFILE PRODUCTS LLC (800-726-6371). INSTALL PER MANUFACTURER'S RECOMMENDATIONS USING MANUFACTURER'S BIODEGRADABLE STAPLES.

(6.2) NONASPHALTIC TACKIFIER: COLLOIDAL TACKIFIER RECOMMENDED BY FIRBER-MULCH MANUFACTURER FOR SLURRY APPLICATION; NONTOXIC AND FREE OF PLANT-GROWTH OR GERMINATION INHIBITORS.

(6.3) HYDROSEEDING: MIX SPECIFIED SEED, STARTER FERTILIZER, AND FIBER MULCH IN WATER, USING EQUIPMENT SPECIFICALLY DESIGNED FOR HYDROSEED APPLICATION. CONTINUE MIXING UNTIL UNIFORMLY BLENDED INTO HOMOGENEOUS SLURRY SUITABLE FOR HYDRAULIC APPLICATION.

(6.3.1) APPLY SLURRY UNIFORMLY TO ALL AREAS TO BE SEEDED IN A TWO-STEP PROCESS. APPLY FIRST SLURRY COAT AT A RATE SO THAT MULCH COMPONENT IS DEPOSITED AT NOT LESS THAN 500 LB/ACRE DRY WEIGHT, AND SEED COMPONENT IS DEPOSITED AT NOT LESS THAN THE SPECIFIED SEED-SOWING RATE. APPLY SLURRY COVER COAT OF FIBER MULCH AT THE RATE RECOMMENDED BY THE MANUFACTURER FOR THE STEEPEST AREA OF SLOPE.

(6.4) THE LANDSCAPE CONTRACTOR SHALL CAREFULLY CORRELATE HIS WORK WITH THAT OF OTHER SITE DEVELOPERS. THE LANDSCAPE CONTRACTOR IS REQUIRED TO INSTALL AND MAINTAIN HIS FINISHED WORK AT HIS EXPENSE.

(7) MAINTENANCE DURING ESTABLISHMENT

(7.1) IT IS THE LANDSCAPE CONTRACTOR'S RESPONSIBILITY TO DETERMINE WATER APPLICATION RATES.

(7.2) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE DURING THE ESTABLISHMENT PERIOD AND UNTIL FINAL ACCEPTANCE. MAINTENANCE SHALL BEGIN IMMEDIATELY AFTER SEEDING AND SHALL INCLUDE WATERING, FERTILIZING, REMOVAL OF STRAW MULCH, WEED ERADICATION, MOWING, TRIMMING, CLIPPING REMOVAL, AND THE RECONSTRUCTION OF ALL AREAS DAMAGED BY EROSION OR OTHER OCCURRENCE.

(7.3) STANDS IN LAWN AREAS SHALL BE MOWED WHENEVER THE AVERAGE HEIGHT REACHES 3-1/2 INCHES. MOWING HEIGHT FOR COOL SEASON GRASSES SHALL BE 3" AND FOR WARM SEASON GRASSES 1-1/2".

(7.4) WASTE MATERIAL SHALL BE REMOVED FROM THE SITE DAILY.

(7.5) WARRANTY: THE ESTABLISHMENT PERIOD FOR LAWN AREAS SHALL BE FROM THE TIME OF INSTALLATION UNTIL THE THIRD CUTTING OF AN ESTABLISHED LAWN. AN ESTABLISHED STAND SHALL BE UNIFORM IN COVERAGE AND OF THE SPECIFIED MIXTURE. NO INDIVIDUAL LAWN AREA SHALL HAVE UNACCEPTABLE PORTIONS IN EXCESS OF ONE PERCENT OF THE INDIVIDUAL LAWN AREA. ALL REPLACEMENTS SHALL BE SUBJECT TO THE WARRANTY REQUIREMENTS AS THE ORIGINAL STOCK. ANY DAMAGE DONE DURING REPLACEMENT OPERATIONS SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR.

(8) CLEAN-UP AND PROTECTION

(8.1) KEEP PAVEMENTS AND WORK AREA IN A CLEAN AND ORDERLY CONDITION.

(8.2) PROTECT SEEDED AREAS AND MATERIALS FROM DAMAGE DUE TO OPERATIONS BY OTHER CONTRACTORS, TRADES, AND TRESPASSERS. MAINTAIN PROTECTION DURING INSTALLATION AND UNTIL FINAL ACCEPTANCE. TREAT REPAIR OR REPLACE DAMAGED SEEDED AREAS AS DIRECTED.

(9) COMPLETION AND ACCEPTANCE

(9.1) THE COMPLETION OF THE CONTRACT WILL BE ACCEPTED AND NOTICE OF COMPLETION RECORDED ONLY WHEN THE ENTIRE CONTRACT IS COMPLETED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.

(9.2) WITHIN TEN (10) DAYS OF THE GENERAL CONTRACTOR'S NOTIFICATION THAT THE INSTALLATION IS COMPLETE, THE OWNER'S REPRESENTATIVE WILL INSPECT THE INSTALLATION AND, IF FINAL ACCEPTANCE IS NOT GIVEN, WILL PREPARE A "PUNCH LIST".

(9.3) FINAL ACCEPTANCE WILL BE GIVEN BY THE OWNER'S REPRESENTATIVE UPON SATISFACTORY COMPLETION OF ALL WORK INCLUDING "PUNCH LIST" ITEMS.

PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	HEIGHT	CALIPER	ROOT	SPACING	COMMENTS
TREES								
AR	*3*	*Acer rubrum*	*Red Maple*		*1 1/2"-2"*	*B&B*	*As Shown*	
LS	*3*	*Liquidamber styraciflua*	*Sweet Gum*		*2"-2 1/2"*	*B&B*	*As Shown*	
NS	*2*	*Nyssa sylvatica*	*Black Tupelo*		*1 1/2"-2"*	*B&B*	*As Shown*	
SHRUBS								
IN	*14*	*Ilex x 'Nellie R. Stevens'*	*Nellie Stevens Holly*	*24"-36"*		*B&B*	*As Shown*	
MC	*9*	*Myrica cerifera*	*Southern Wax Myrtle*	*24"-36"*		*3 Gal.*	*As Shown*	
VA	*12*	*Viburnum awabuki 'Chindo'*	*Chindo Viburnum*	*24"-36"*		*3 Gal.*	*As Shown*	

BASIN BOTTOM (WETLAND) SEED MIX

RATE:15 LBS PER ACRE
PLANTING SEASON: April 1 - May 15

BOTANICAL NAME	COMMON NAME	HYDROLOGY INDICATOR	% OF MIX
Asclepias incarnata	Swamp Milkwood	OBL	2
Carex lurida	Lurid (shallow) Sedge	OBL	10
Carex vulpinoidea	Fox Sedge	OBL	25
Elymus virginicus	Virginia Wild Rye		20
Euthamia graminifolia	Grass Leaved Goldenrod		2
Glyceria striata	fowl Mannagrass	OBL	5
Iris veriscolor	Blue Flag	OBL	5
Juncus effusus	Soft Rush	FACW	10
Scirpus astrovirens	Green Bulrush	OBL	7
Scripus cyperinus	Wool grass	FACW	7
Verbena hastata	Blue Vervain	FACW	5
Vernonia noveboracensis	New York Ironwood	FACW	2

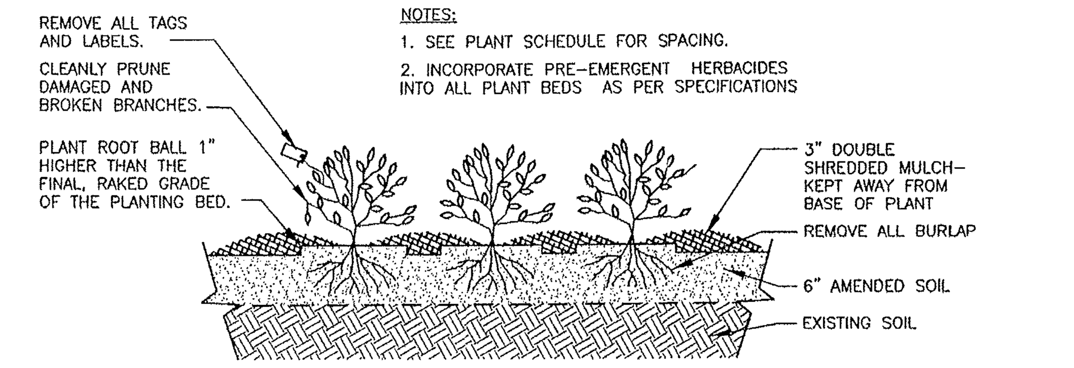
BASIN SLOPE (UPLAND) SEED MIX

RATE:15 LBS PER ACRE
PLANTING SEASON: April 1 - May 15

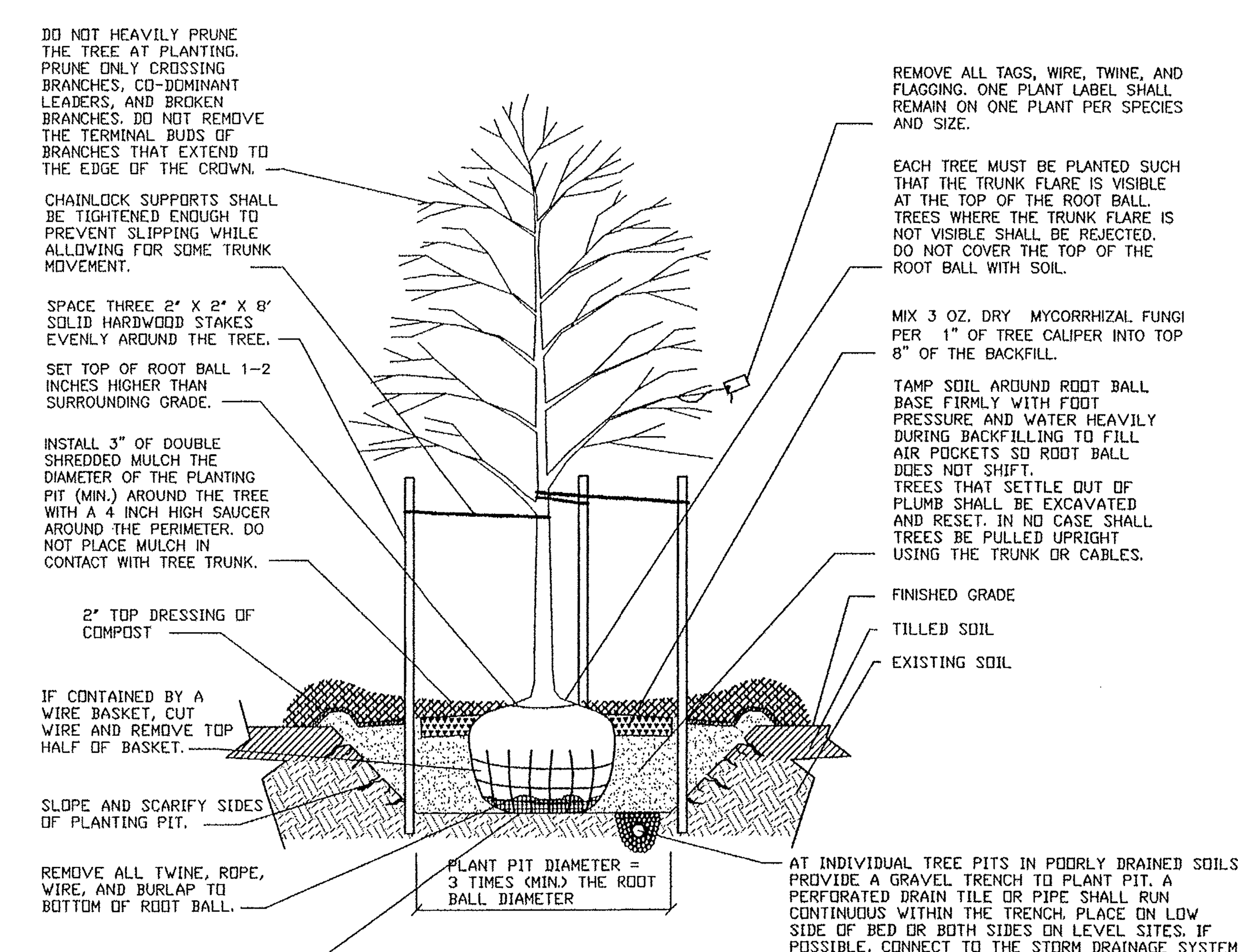
BOTANICAL NAME	COMMON NAME	HYDROLOGY INDICATOR	% OF MIX
Agrostis perennans	Autumn Bentgrass	FACU	15
Asclepias tuberosa	Butterfly Milkweed	UPL	2
Chamaecrista fasciculata	Partridge Pea	FACU	10
Elymus virginicus	Virginia Wild Rye	FACW-	10
Eupatorium purpureum	Purple Node Joe-Pye Weed	FAC	1
Monarda punctata	Spotted Beebalm Monarda	UPL	2
Panicum clandestinum	Deer Tongue, Tioga	FAC+	10
Panicum virgatum	Shelter Switch Grass	FAC	15
Penstemon digitalis	Tall White Beard Tongue	FAC	5
Rudbeckia hirta	Black Eyed Susan	FACU-	5
Schizachyrium scoparium	Little Bluestem	FACU-	15
Sorghastrum nutans	Indian Grass	UPL	5
Tridens flavus	Purple Top	FACU	5

NOTE:
ALL AREAS THAT ARE NOT COVERED BY PLANTING BEDS, SIDEWALKS, PAVEMENT AND STRUCTURES ARE TO BE PERMANENTLY SEEDED.

NOTES:
1. SEE PLANT SCHEDULE FOR SPACING.
2. INCORPORATE PRE-EMERGENT HERBACIDES INTO ALL PLANT BEDS AS PER SPECIFICATIONS



SHRUBS & GROUNDCOVERS IN BEDS
NOT TO SCALE



NOTES:
1. PROTECT TRUNK FROM SCARRING WITH BURLAP DURING TRANSPORT AND PLANTING. REMOVE AFTER PLANTING.
2. TREES WITH CRACKED OR LOOSE ROOT BALLS, POORLY DEVELOPED CROWN-TO-TRUNK RATIOS, CROSSING TRUNKS OR LATERALS, OR UNDERSIZED ROOT BALLS SHALL BE REJECTED.
3. TILL EXISTING SOIL TO A DEPTH OF 6' AND A DISTANCE 10 TIMES THE DIAMETER OF THE ROOT BALL IN ALL DIRECTIONS FROM EACH PLANTING PIT EXCEPT IN AREAS THAT HAVE ROOTS OF EXISTING PLANTS THAT ARE TO BE RETAINED.
4. ALL STAKING MATERIAL SHALL BE REMOVED AS SOON AS THE TREE HAS SUFFICENT ROOTS TO NO LONGER REQUIRE STAKING FOR UP TO ONE YEAR FROM PLANTING. TREES THAT REMAIN UNSTABLE WITHOUT STAKING AFTER ONE YEAR SHALL BE REJECTED AND REPLACED.

TREE PLANTING
NOT TO SCALE

COMMONWEALTH OF VIRGINIA
NANCY E. RODRIGUE
Cert. No. 001052
9-16-09
LANDSCAPE ARCHITECT

4029 Ironbound Road
Suite 100
Williamsburg, VA 23188
Tel. (757) 253-2975
Fax (757) 229-0049
Email: lmdg@landmarkdg.com

5544 Greenwich Road
Suite 200
Virginia Beach, VA 23462
Tel. (757) 473-2000
Fax (757) 497-7933
Email: lmdg@landmarkdg.com

LANDMARK DESIGN GROUP
Engineers · Planners · Surveyors
Landscape Architects · Environmental Scientists

REVISIONS:

No.	Date	Comment	By

DRAWING STATUS: Interoffice Review; Client for Review; Pre Approval Bidding
COUNTY APPROVAL: 1st Submittal; 2nd Submittal; 3rd Submittal; Approved

LANDSCAPE DETAILS AND NOTES

PLAN OF DEVELOPMENT
SKIFFES CREEK INDUSTRIAL PARK
LOT 4
DIXIE FUEL COMPANY
ROBERTS MAGISTERIAL DISTRICT
JAMES CITY COUNTY, VIRGINIA

Designed:	Date: 9/10/09
Checked:	Scale: N/A
File Mgr./Drawn: LFV	CADD File name: L-2 .dwg
Project Number: 2006059-000.00	Dwg. File No.:
Drawing Number	L-2

OF

AMENDMENT TO APPROVED JCC PLAN SP-00075-2009
DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY
LOT 4
SKIFFES CREEK INDUSTRIAL PARK

ROBERTS MAGISTERIAL DISTRICT
JAMES CITY COUNTY, VIRGINIA

MARCH 17, 2011
REVISED MAY 26, 2011
JCC SITE PLAN 0037-2011

COUNTY OF JAMES CITY
FINAL SITE PLAN
APPROVALS — DATE
Fire Dept. — 5/31/11
Health Dept. —
VDOT — 7/18/11
Planning — 7/19/11
Environ. — 5/5/11
Zoning Adm — 7/19/11
JCSA — 7/7/11
County Eng. —
REA —
Other —

SP-0037-2011

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185-6316
757 220 0500 à FAX 757 220 8544

Environmental Division
JUL 21 2011
RECEIVED

RECEIVED
JUN 2011
Planning Department

LEGEND

EXISTING		PROPOSED
SAN	SANITARY SEWER	SAN
W	WATER	W
S	STORM SEWER	S
E	ELECTRIC LINE	E
T	TELEPHONE	T
G	GAS LINE	G
TV	CABLE TV LINE	TV
FM	FORCE MAIN	FM
OH	OVERHEAD CABLE	OH
	MANHOLE	
	CURB DROP INLET	
	YARD DROP INLET	
	CLEANOUT	
	FLARED END SECTION	
	VALVE	
	WATER METER	
	FIRE HYDRANT	
	POWER POLE	
	LIGHT POLE	
	TELEPHONE PEDESTAL	
	TELEPHONE POLE	
25.1	GROUND ELEVATION	25.10 T.C.
	CEMENT CONCRETE	
	BITUMINOUS CONCRETE	
	CONCRETE CURB	
	CG-6 CURB & GUTTER	
	CG-6(MOD) CURB & GUTTER	
	CURB TRANSITION CG-6 TO CG-6(MOD)	
	PROJECT LIMITS	
	CENTERLINE/BASELINE	
	PROPERTY LINE	
	DITCH SWALE LINE	
	DIRECTION OF FLOW	
	TREE LINE	
X	FENCE	X
	BORING	
	BENCH MARK	
	EASEMENT LINE	
	BLOW-OFF VALVE	
	DIVERSION DIKE	DD
	CONSTRUCTION ENTRANCE	CE
	SILT FENCE	SF
	INLET PROTECTION	IP
	CULVERT INLET PROTECTION	CIP
	OUTLET PROTECTION	OP
	TREE PROTECTION	TP
	CHECK DAM	CD
	PERMANENT SEEDING	PS
	SAFETY FENCE	SAF
	DUST CONTROL	DC

NOTE: SOME SYMBOLS SHOWN IN THIS LEGEND MAY NOT NECESSARILY BE USED FOR THIS PROJECT.

Miss Utility of Virginia
1829 BLUE HILL CIRCLE
NE ROANOKE, VIRGINIA 24012

72 HOURS BEFORE YOU DIG CALL MISS UTILITY OF VIRGINIA

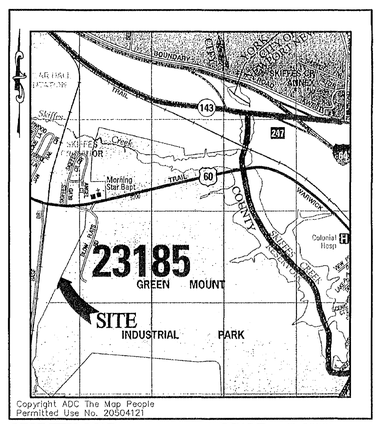
BEFORE YOU DIG ANYWHERE IN VIRGINIA! CALL 811 (IN VA) 1-800-552-7001 (OUTSIDE VA)

VA LAW REQUIRES 3 WORKING DAYS NOTICE BEFORE YOU EXCAVATE.

OWNER/DEVELOPER
DIXIE FUEL COMPANY
CONTACT PERSON:
BILL KERLIN
302 VISTA DRIVE
SEAFORD, VA 23696-2364
PHONE (757) 249-1264
FAX: (757) 249-1875

SITE ENGINEER
VANASSE HANGEN BRUSTLIN, INC.
CONTACT PERSON:
STEPHEN A. ROMEO, LS
351 MCLAWS CIRCLE
SUITE 3
WILLIAMSBURG VA, 23185
PHONE: (757) 220-0500
FAX: (757) 220-8544

RESPONSIBLE LAND DISTURBER DURING THE REVIEW PROCESS
STEPHEN A. ROMEO, LS
VANASSE HANGEN BRUSTLIN, INC.
351 MCLAWS CIRCLE, SUITE 3
WILLIAMSBURG VA, 23185
PHONE: (757) 220-0500
FAX: (757) 220-8544



VICINITY MAP — SCALE : 1"=2000'

SHEET INDEX

SHT. NO.	DESCRIPTION
C-1	COVER SHEET
C-2	ENVIRONMENTAL INVENTORY, EXISTING CONDITIONS AND DEMOLITION PLAN
C-2A	EROSION AND SEDIMENT CONTROL PLAN
C-2B	EROSION AND SEDIMENT CONTROL NOTES & DETAILS
C-3	SITE PLAN, GRADING AND DRAINAGE
C-4	GENERAL NOTES AND DETAILS
C-5	GENERAL NOTES AND DETAILS
L-1	LANDSCAPE PLAN
L-2	LANDSCAPE DETAILS & NOTES
F-1	LIGHTING PLAN

NOTES:
1. THE PROJECT SITE IS SITUATED IN THE SKIFFES CREEK WATERSHED.
2. ANY EXISTING UNUSED WELLS SHALL BE ABANDONED IN ACCORDANCE WITH STATE PRIVATE WELL REGULATIONS AND JAMES CITY COUNTY CODE.
3. THIS PROPERTY APPEARS TO LIE WITHIN ZONE X (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD PLAIN) ACCORDING TO NATIONAL FLOOD INSURANCE PROGRAM, FLOOD INSURANCE RATE MAP, NUMBER 51095C0230C, DATED SEPTEMBER 28, 2007.
4. ALL PROPOSED NEW UTILITIES ARE TO BE PLACED UNDERGROUND.
5. ALL NEW SIGNS SHALL BE IN ACCORDANCE WITH ARTICLE II, DIVISION 3 OF THE JAMES CITY COUNTY ZONING ORDINANCE.
6. ANY COMMERCIAL OR INDUSTRIAL OPERATION OR STORAGE CONDUCTED IN WHOLE OR IN PART OUT-OF-DOORS, SHALL MEET THE REQUIREMENTS OF SECTION 24-41 OF THE JAMES CITY COUNTY ZONING ORDINANCE.
7. THIS PARCEL IS LOCATED INSIDE THE PRIMARY SERVICE AREA (PSA) AND IT IS SERVED BY PUBLIC WATER (NNWW) AND SEWER (JCSA).
8. ALL OBJECTIONABLE AND DELETERIOUS MATERIAL IS TO BE REMOVED FROM THE SITE AND DISPOSED OF IN A STATE APPROVED FACILITY, MEETING THE REQUIREMENTS OF ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.
9. THE OWNER/CONTRACTOR SHALL OBTAIN A LAND USE PERMIT FROM VDOT PRIOR TO PERFORMING ANY WORK IN THE STATE RIGHT-OF-WAY.
10. THE OWNER WILL PROVIDE A QUALIFIED RLD UPON ISSUANCE OF A LAND DISTURBANCE PERMIT OR SITE APPROVAL, WHICH EVER COMES FIRST.
11. THE OWNER OR CONTRACTOR SHALL OBTAIN A VSMP STORMWATER PERMIT FROM DCR PRIOR TO ISSUANCE OF LAND DISTURBING PERMIT.

STATISTICAL DATA
PARCEL ID..... 5920500004
PARCEL AREA..... 2.04 AC.
TAX MAP NO..... (5-4)(59-2)
ADDRESS..... 1576 MANUFACTURE DRIVE
ZONING..... M 2
WATERSHED..... SKIFFES CREEK
SKIFFES CREEK RESERVOIR
PROJECT AREA ..... 0.51 AC.
DISTURBED AREA ..... 0.47 AC.
EXISTING IMPERVIOUS..... 0.0 AC
PROPOSED IMPERVIOUS..... 0.20 AC (9.8% OF SITE)

-THIS PROJECT SHALL MEET THE REQUIREMENTS OF THE NATIONAL FIRE PREVENTION ASSOCIATION STANDARD 24, AND THE INTERNATIONAL FIRE CODE.

TOPOGRAPHIC SURVEY PROVIDED BY OWNER

No.	Revision	Date	Apprvd.
1	REVISED PER COUNTY COMMENTS	05/26/2011	SAR

Designed by — Drawn by CRO — Checked by SAR
CAD checked by SAR — Approved by
Scale — Date 3/17/2011

Project Title
DIXIE FUEL COMPANY
PROPANE DISTRIBUTION
FACILITY
JAMES CITY COUNTY, VIRGINIA

Issued for

Drawing Title
Cover Sheet

COMMONWEALTH OF VIRGINIA
6/14/11
STEPHEN A. ROMEO
LIC. No. 1448-B
LAND SURVEYOR

Drawing Number
C-1

Sheet 1 of 10

Project Number
2006059-000.00

JCC CASE # SP-0037-2011

P:\33429.00\CAD\LD\PLANSET\2006059-000.00 VISTA VENTURES\DWG\SHEETS\C-1 COVER.DWG

SOILS

9 – Chickahominy Silt Loam

This soil is poorly drained.

Typically, the surface layer of this oil is dark grayish and grayish brown silt loam. The subsoil is mostly gray silty clay loam, silty clay, and clay loam with yellowish brown mottles.

The permeability of this Chickahominy soil is very slow, and the available water capacity is moderate.

The shrink/swell potential for the Chickahominy soils are low to high. The erosion factor "K" is from 0.24 to 0.37. Chickahominy soils are in Hydraulic Group "D".

11C – Craven–Uchee Complex, 6% TO 10% slopes

The Craven soils are moderately well drained and the Uchee soils are well drained.

Typically, the surface layer or the Craven soils are dark grayish brown fine sandy loam. The subsurface layer is pale olive fine sandy loam. The subsoil is yellowish brown clay in the upper part with yellowish brown sandy clay loam mottled with gray in the middle and lower parts. The substratum is brownish yellow fine sandy loam mottled with gray in the upper part and gray loamy fine sand with yellow mottles in the lower part.

Typically, the surface layer of the Uchee soils is dark grayish brown loamy fine sand. The subsurface layer is light yellowish brown and very pale brown loamy fine sand. The subsoil is strong brown sandy clay loam in the upper part and strong brown sandy clay loam and clay mottled with gray and red in the lower part. The substratum is variegated red, brown and gray stratified sandy loam and sandy clay loam.

In the Craven soils, permeability is slow; and in the Uchee soils, it is moderate in the upper part of the subsoil and moderately slow in the lower part.

The shrink/swell potential for the Craven and Uchee soils are low to moderate. The erosion factor "K" is from 0.32 to 0.37 for the Craven soil and 0.20 to 0.28 for the Uchee soil. Craven soils are in hydrologic soils, Group /C0, Uchee soils are in hydrologic soils Group "A".

SOILS

19B– Kempsville–Emporia Fine Sandy Loams, 2% to 6% slopes

Kempsville–Emporia soils are well drained.

Typically, the surface layer of this soil is dark grayish brown fine sandy loam. The subsurface layer is light yellowish brown fine sandy loam. The subsoil is yellowish brown and strong brown fine sandy loam, sandy clay loam, and mottled fine sandy loam that is somewhat firm and compact over yellowish brown fine sandy clay loam. The substratum is yellowish brown fine sandy loam.

The permeability of Kempsville soil is moderate. In the Emporia soil, permeability is moderate in the upper part of the subsoil and moderately slow to slow in the lower part. The available water capacity is moderate for both soils.

The subsoil of Kempsville soil has a low shrink–swell potential, and that of Emporia soil has moderate shrink–swell potential. The erosion factor K is from 0.24 to 0.32. Kempsville soils are in hydrologic soils, Group "B", and Emporia soils are in hydrologic soils, Group "C".

29B – Slagle Fine Sandy Loam,2% to 6% slopes

The Slagle Fine Sandy Loam soil is moderately well drained.

Typically, the surface layer of this soil is dark grayish brown fine sandy loam. The subsurface layer is light yellowish brown fine sandy loam. The subsoil is mostly mottled yellowish brown clay loam and sandy clay loam. The substratum is mottled sandy clay loam.

The permeability of this Slagle Fine Sandy Loam soil is moderate in the upper part of the subsoil and moderately slow or slow in the lower part. The available water capacity is moderate.

The shrink/swell potential for the Slagle Fine Sandy Loam soil is moderate. The erosion factor "K" is 0.24. Slagle soils are in hydrologic group "C".

FLOOD ZONE:

THIS PROPERTY APPEARS TO LIE WITHIN ZONE X (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD PLAIN) ACCORDING TO NATIONAL FLOOD INSURANCE PROGRAM, FLOOD INSURANCE RATE MAP, NUMBER 51095C0230C, DATED 09/28/07

Project Description:

The scope of this project includes the construction of the proposed propane distribution facility and associated with it access road and drainage system.

The project drains to Skiffes Creek. There are no wetlands or Resource Protection Areas found within limits of this project. Minor impact of 2002 square feet is proposed to on– site steep slopes. All disturbed areas will receive permanent seeding applied in accordance with Virginia Erosion and Sediment Control Handbook standards. All slopes 3:1 and steeper will be protected with soil stabilization matting.
The proposed impervious area of 8,718 square feet covers approximately 9.8% of the 2.04 Ac lot.

In accordance with the James City County Code, Chapter 23, Sec. 23–10, 4 the structural BMP is not required for that site because the proposed impervious area cover is less than 10% of the site .

Stormwater runoff from the project site will be managed by the proposed Infiltration Basin.

The total site disturbed area is approximately 0.47 acres.

Steep Slope Impacts:
Area of Steep Slope Impact=1,263 sq.ft. (0.029 Acres)

Stormwater Management:

An Infiltration Basin with an approximate floor area of 663 square feet is proposed for controlling the runoff from this site. Infiltration Basin #1 serves drainage area of 0.35 Ac associated with the 2.04 Ac site.

In accordance with the James City County Code, Chapter 23, Sec. 23–10, 4 the structural BMP is not required for that site because the proposed impervious area cover is less than 10% of the site.

The Infiltration Basin has been designed to infiltrate all runoff from the 2–, 10–, 25– and 100–year design frequency storm events.

The proposed Infiltration Basin is designed to infiltrate entire storage volume of 4,197 cf within an approximately 23.2 hours.

A gravel filter strip is proposed as pretreatment device to treat stormwater runoff before it enters the Infiltration Basin. The gravel filter strip has been designed with an under drain system that discharges into the gravel trench on the bottom of the proposed Infiltration Trench.

Stormwater is stored in voids within the filter strip until it seeps into underdrain pipe and discharges to the Infiltration Basin. The runoff collected in the Infiltration Basin naturally exfiltrates into the soils beneath and recharges groundwater.

The total post–development impervious cover treated on–site is approximately 0.200 acre.

The attached geotechnical report indicates that infiltration rates in the area of the proposed Infiltration Trench vary from 0.625 to 2.479 inches per hour. The average infiltration rate of 1.552 inches per hour has been used as the design infiltration rate. The theoretical function of the infiltration trench has also been checked using one–half average infiltration rate of 0.776 inch per hour and determined to be adequate. Using one–half average infiltration rate, the proposed infiltration basin will infiltrate entire storage volume of 4,197 cf within or approximately 46.4 hours with 50% safety factor. Infiltration basin will infiltrate all runoff from the 2–, 10– and 25–year design frequency storm event. The runoff from 100–year design frequency storm events will be safely conveyed by protected with EC–3 matting downstream slope of the basin.

VHB

Vanasse Hangen Brustlin, Inc.

Transportation
Land Development
Environmental Services

351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185-6316
757 220 0500 â FAX 757 220 8544

ENVIRONMENTAL INVENTORY

	PRESENT	NOT PRESENT
TIDAL SHORES/WETLANDS		
NON–TIDAL WETLANDS		
RESOURCE PROTECTION AREA		
HYDRIC SOILS		
SLOPES STEEPER THAN 25%		
FEMA FLOOD HAZARD AREAS		

LEGEND

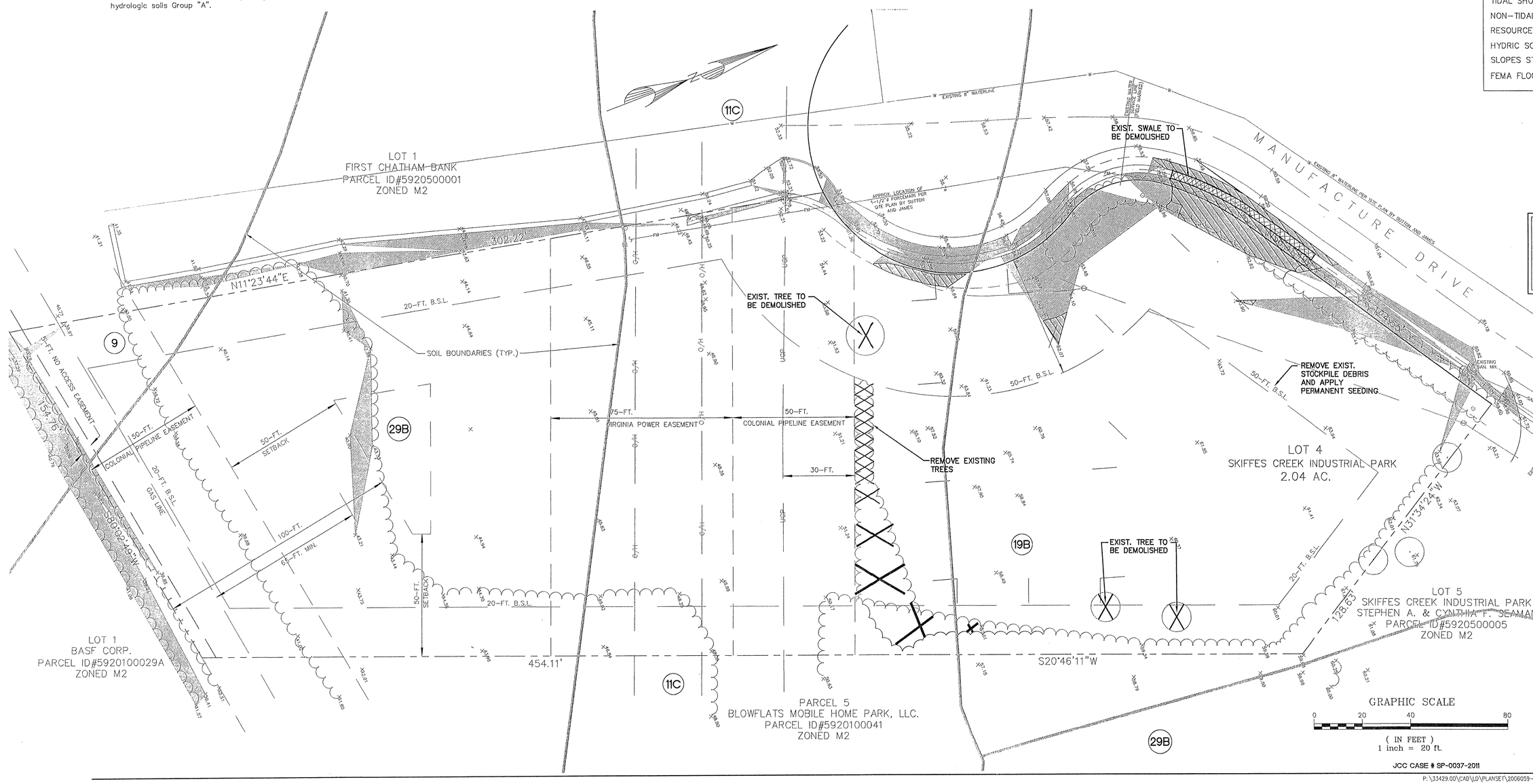
SOIL TYPE DESIGNATION (37)

25% SLOPES OR GREATER

25% SLOPES IMPACTED

EXISTING SITE SLOPES

0–5% SLOPES	1.03 AC. (50.5% OF SITE)
5%–10% SLOPES	0.64 AC. (31.3% OF SITE)
10%–25% SLOPES	0.30 AC. (14.7% OF SITE)
25%–100% SLOPES	0.07 AC. (3.5% OF SITE)



JCC CASE # SP-0037-2011

No.	Revision	Date	Appvd.
1	REVISED PER COUNTY COMMENTS	05/26/2011	SAR

Designed by: Drawn by CRO Checked by SAR
CAD checked by SAR Approved by
Scale Date 3/17/2011

Project Title

DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY

JAMES CITY COUNTY, VIRGINIA

Issued for

Drawing Title

ENVIRONMENTAL INVENTORY, EXISTING CONDITIONS AND DEMOLITIONS PLAN

COMMONWEALTH OF VIRGINIA
6/14/11
STEPHEN A. ROMEO
LIC. No. 1448-B
LAND SURVEYOR

Drawing Number C-2

Sheet 2 of 10

Project Number 2006059-000.00

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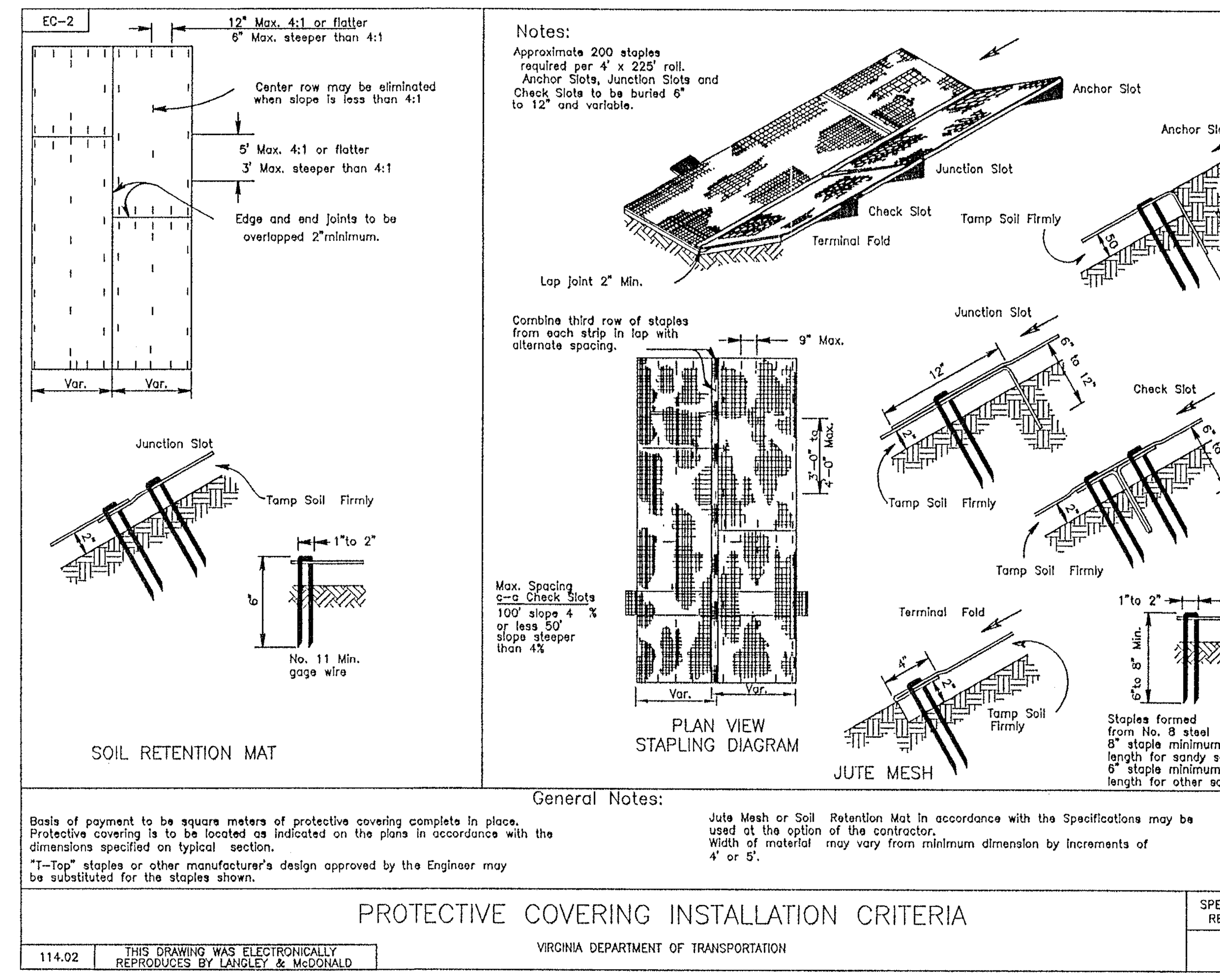
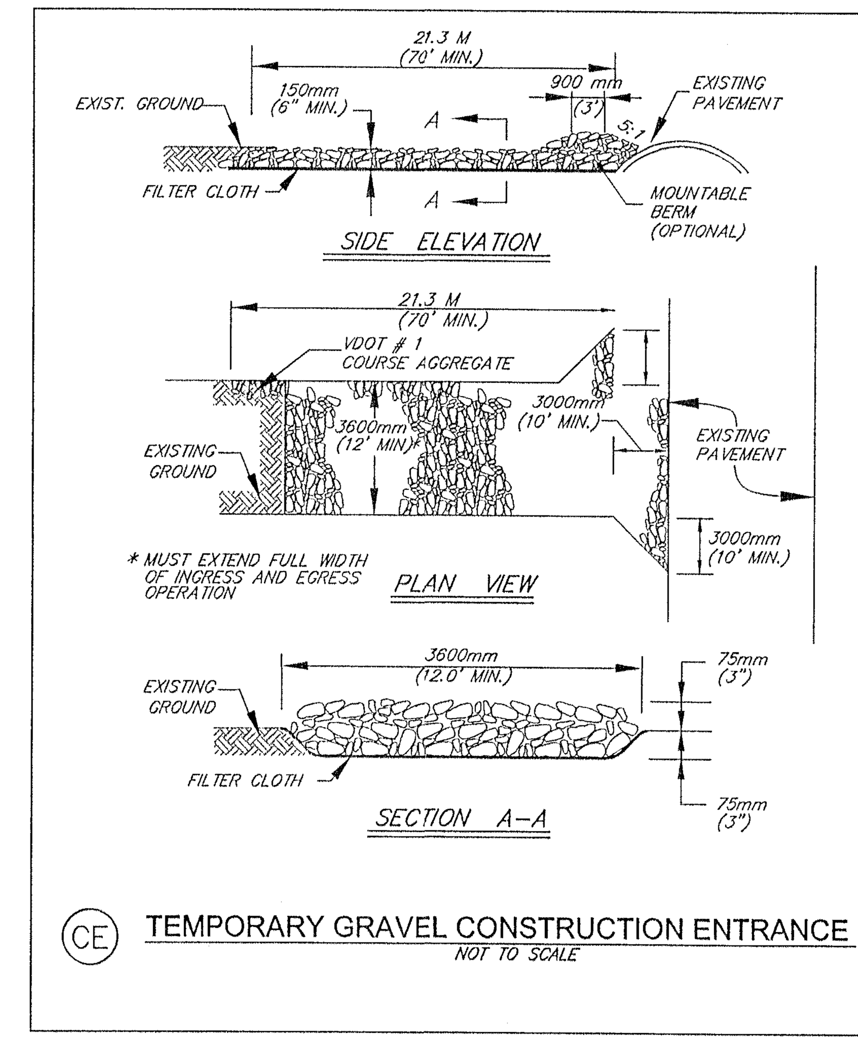
James City County Environmental Division –Standard Erosion and Sediment Control Notes – Revised October 1, 2009

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.

1. 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.
2. Minimum Standards # 1 through # 19 of the Virginia Erosion and Sediment Control Regulations (4VAC50–30–40) shall apply to the project.
3. 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 (VSMP) and the Virginia Department of Conservation and Recreation.
4. The Owner or Applicant shall provide the name of an individual holding a valid Responsible Land Disturber (RLD) certificate of competence 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. Erosion and sediment control measures may 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.
11. 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.
12. 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.
13. Drainage facilities shall be installed and functional within 30 days following completion of rough grading at any point within the project.
14. 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.
15. 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.
16. 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.
17. 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.
18. 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.
19. Applicable provisions of the County BMP Manual (James City County Guidelines for Design and Construction of Stormwater Management BMPs) and the Virginia Stormwater Management Handbook (VSMH) apply to the project.
20. 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.
21. 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.
22. 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.





TEMPORARY GRAVEL CONSTRUCTION ENTRANCE
NOT TO SCALE

Vanasse Hangen Brustlin, Inc.

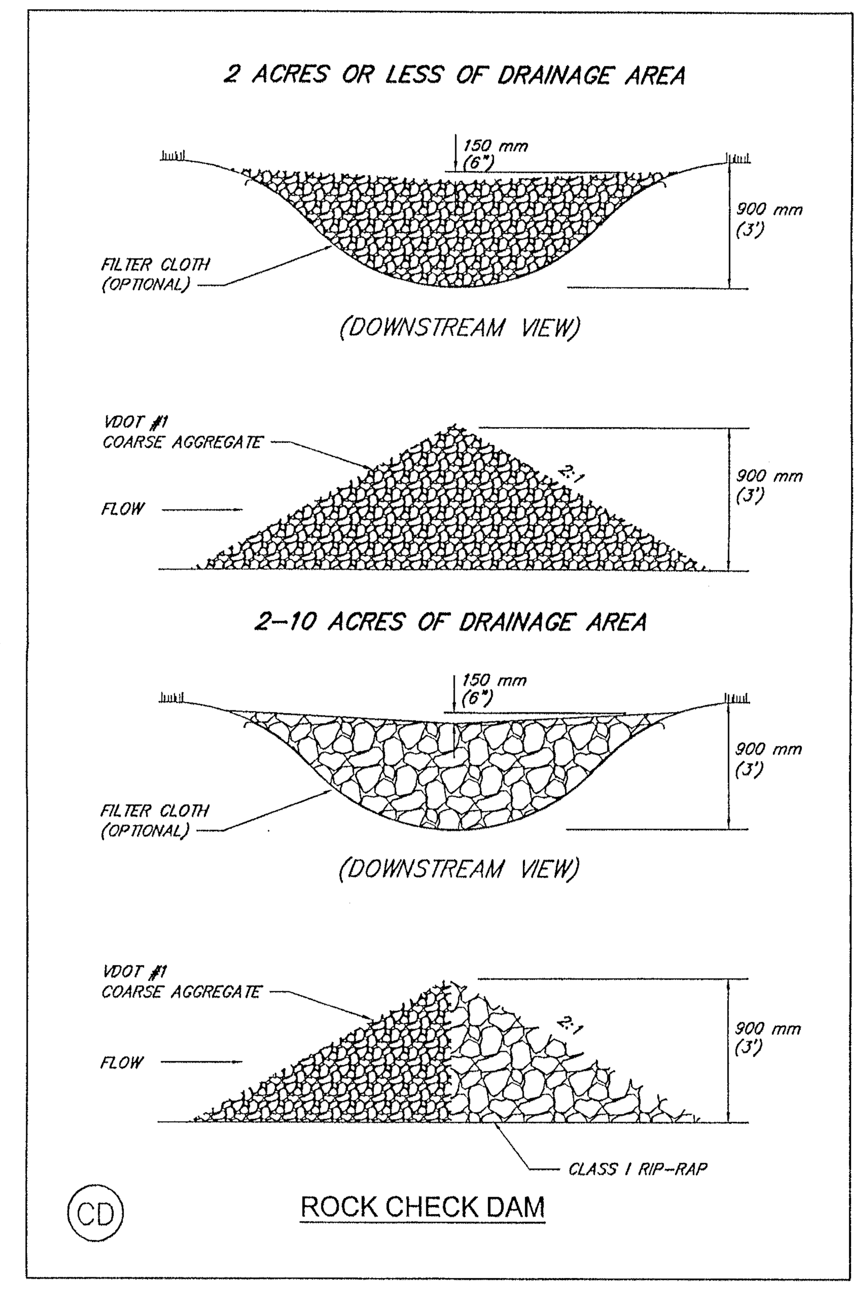
Transportation
Land Development
Environmental Services

351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185-6316
757 220 0500 â FAX 757 220 8544

TABLE 3.39–A (DC)

ADHESIVES USED FOR DUST CONTROL

Adhesive	Water Dilution (Adhesive: Water)	Type of Nozzle	Application Rate Gallons/Acre
Anionic Asphalt Emulsion	7:1	Coarse Spray	1200
Latex Emulsion	12.5:1	Fine Spray	235
Resin in Water	4:1	Fine Spray	300
Acrylic Emulsion (Non–Traffic)	7:1	Coarse Spray	450
Acrylic Emulsion (Traffic)	3.5:1	Coarse Spray	350



ROCK CHECK DAM

1992 3.35

TABLE 3.35-A

ORGANIC MULCH MATERIALS AND APPLICATION RATES

MULCHES:	RATES: Per Acre	Per 1000 sq. ft.	NOTES:
Straw or Hay	1½ - 2 tons (Minimum 2 tons for winter cover)	70 - 90 lbs.	Free from weeds and coarse matter. Must be anchored. Spread with mulch blower or by hand.
Fiber Mulch	Minimum 1500 lbs.	35 lbs.	Do not use as mulch for winter cover or during hot, dry periods.* Apply as slurry.
Corn Stalks	4 - 6 tons	185 - 275 lbs.	Cut or shredded in 4-6" lengths. Air-dried. Do not use in fine turf areas. Apply with mulch blower or by hand.
Wood Chips	4 - 6 tons	185 - 275 lbs.	Free of coarse matter. Air-dried. Treat with 12 lbs nitrogen per ton. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.
Bark Chips or Shredded Bark	50 - 70 cu. yds.	1-2 cu. yds.	Free of coarse matter. Air-dried. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.

* When fiber mulch is the only available mulch during periods when straw should be used, apply at a minimum rate of 2000 lbs./ac. or 45 lbs./1000 sq. ft.

Source: Va. DSWC

TABLE 3.32-E
(Revised June 2003)
PERMANENT SEEDING SPECIFICATIONS FOR COASTAL PLAIN AREA

LAND USE	SEED[1] SPECIES	APPLICATION RATES
Minimum Care Lawn (Commercial or Residential)	Tall Fescue[1] or Bermudagrass[1]	175 - 200 lbs. / 75 lbs.
High-Maintenance Lawn	Tall Fescue[1] or Bermudagrass[1] (seed) or Bermudagrass[1] (by other vegetative establishment method, see Std. & Spec. 3.34)	200-250 lbs. / 40 lbs. (unhulled) 30 lbs. (hulled)
General Slope (3:1 or less)	Tall Fescue[1]; Red Top Grass or Creeping Red Fescue; Seasonal Nurse Crop[2]	128 lbs.; 2 lbs.; 20 lbs.; TOTAL: 150 lbs.
Low-Maintenance Slope (Steeper than 3:1)	Tall Fescue[1]; Bermudagrass[1]; Red Top Grass or Creeping Red Fescue; Seasonal Nurse Crop[2]; Sericea Lespedeza[3]	93-108 lbs.; 0-15 lbs.; 2 lbs.; 20 lbs.; 20 lbs.; TOTAL: 150 lbs.

1 - When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a label indicating that they are approved by VCIA. A current turfgrass variety list is available at the local County Extension office or through VCIA at 804-746-4884 or at http://sudan.cses.vt.edu/html/Turf/turf/publications/publications2.html

2 - Use seasonal nurse crop in accordance with seeding dates as stated below:

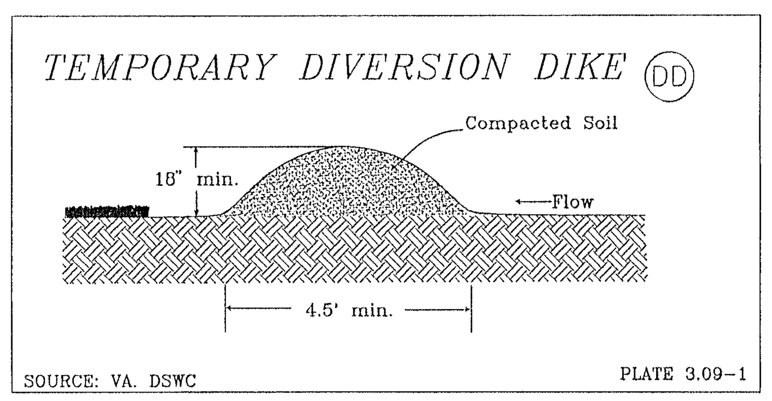
February, March - April	Annual Rye
May 1st - August	Foxtail Millet
September, October - November 15th	Annual Rye
November 16th - January	Winter Rye

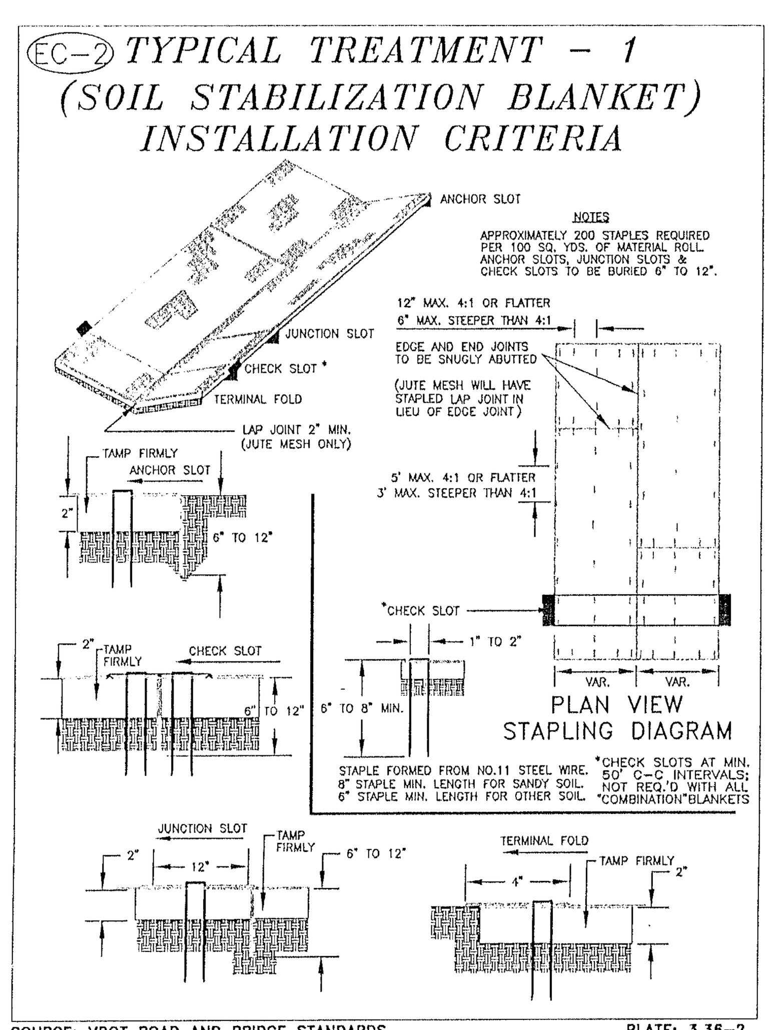
3 - May through October, use hulled seed. All other seeding periods, use unhulled seed. If Weeping Lovegrass is used, include in any slope or low maintenance mixture during warmer seeding periods, increase to 30 -40 lbs/acre.

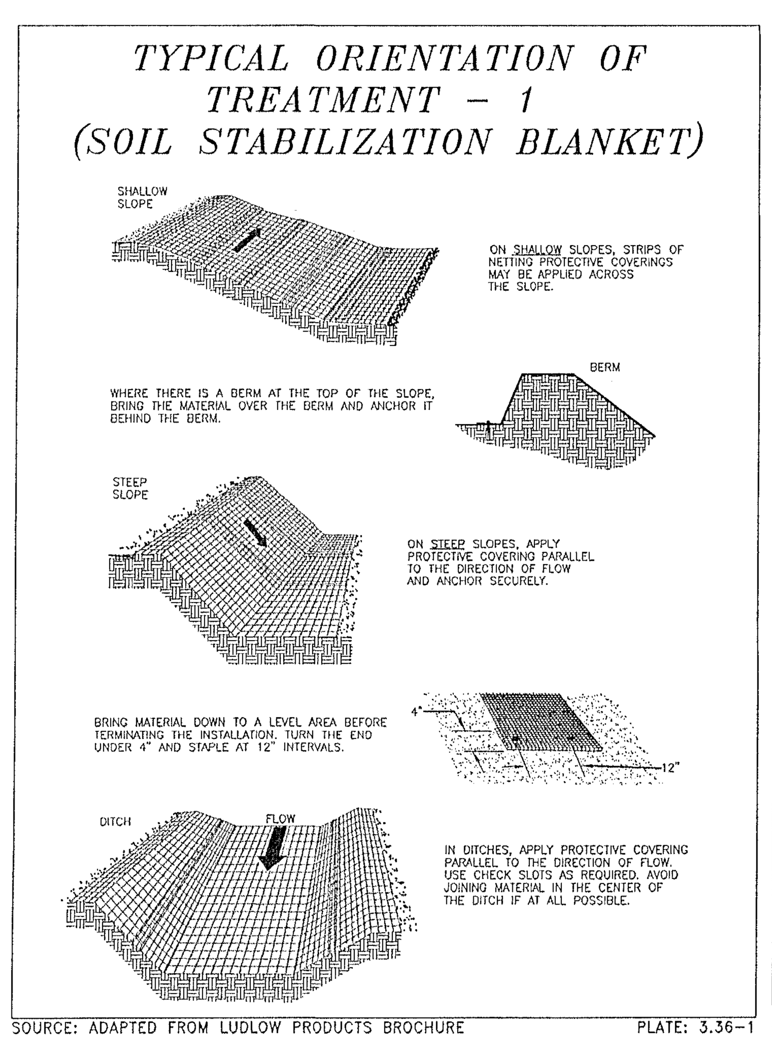
FERTILIZER & LIME

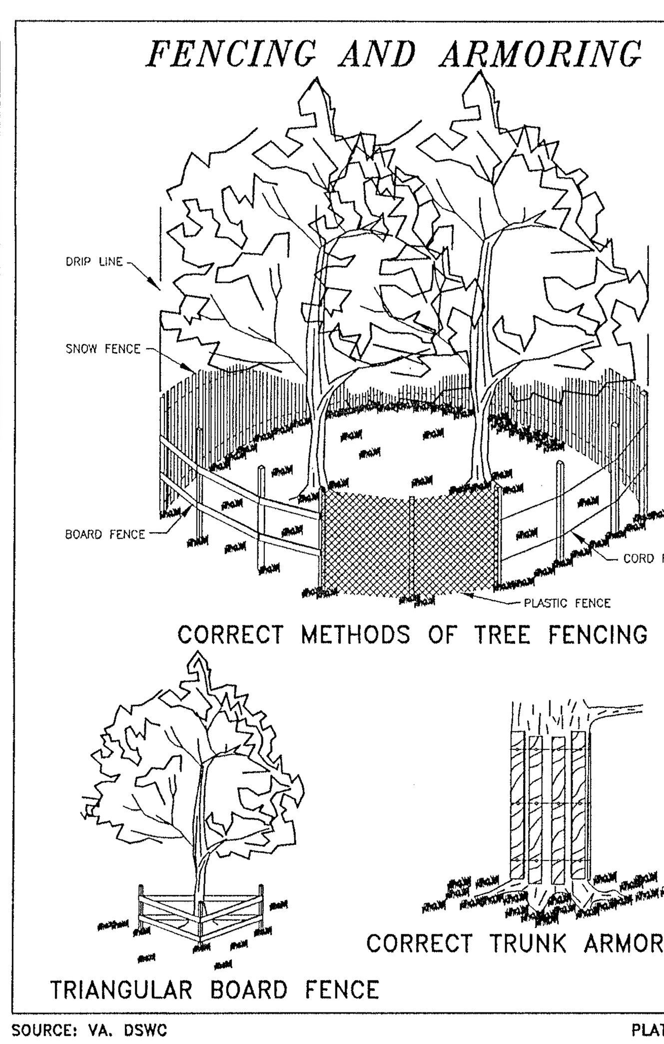
- Apply 10-20-10 fertilizer at a rate of 500 lbs. / acre (or 12 lbs. / 1,000 sq. ft.)
- Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

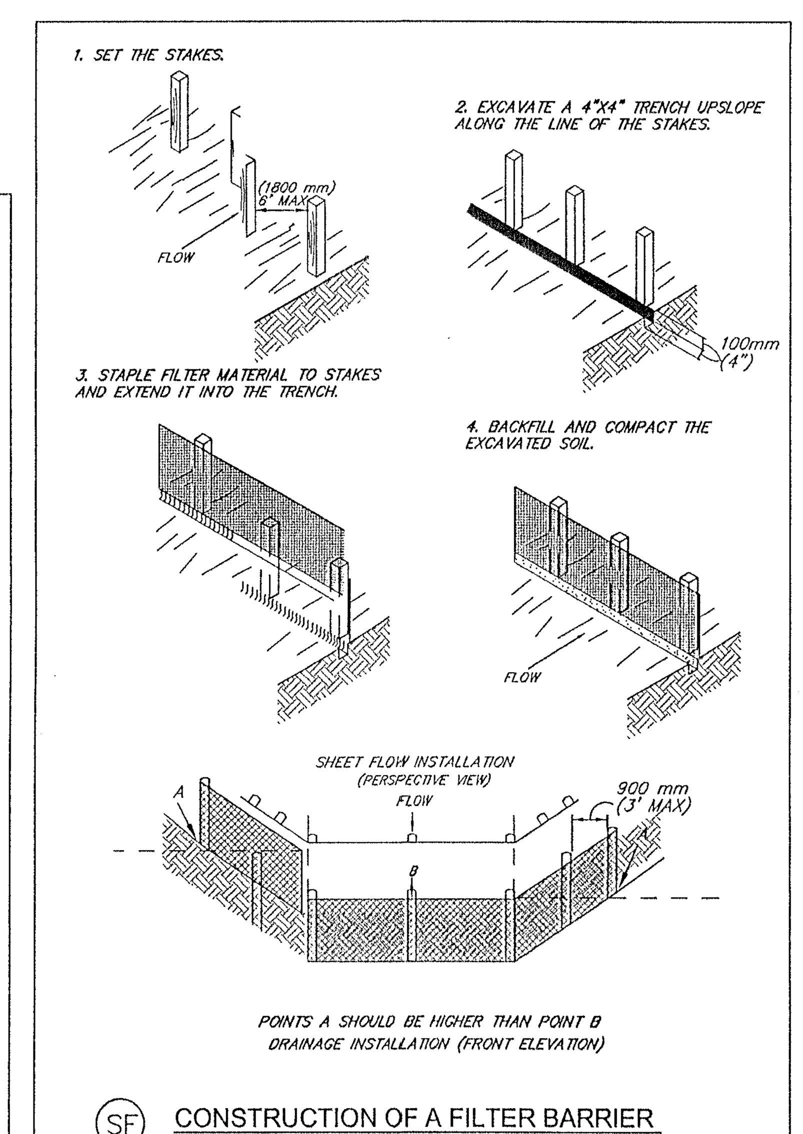
NOTE:
- A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
- Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by disking or by other means.
- When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/e&s.htm#pubs











CONSTRUCTION OF A FILTER BARRIER (W/OUT WIRE SUPPORT)
NOT TO SCALE

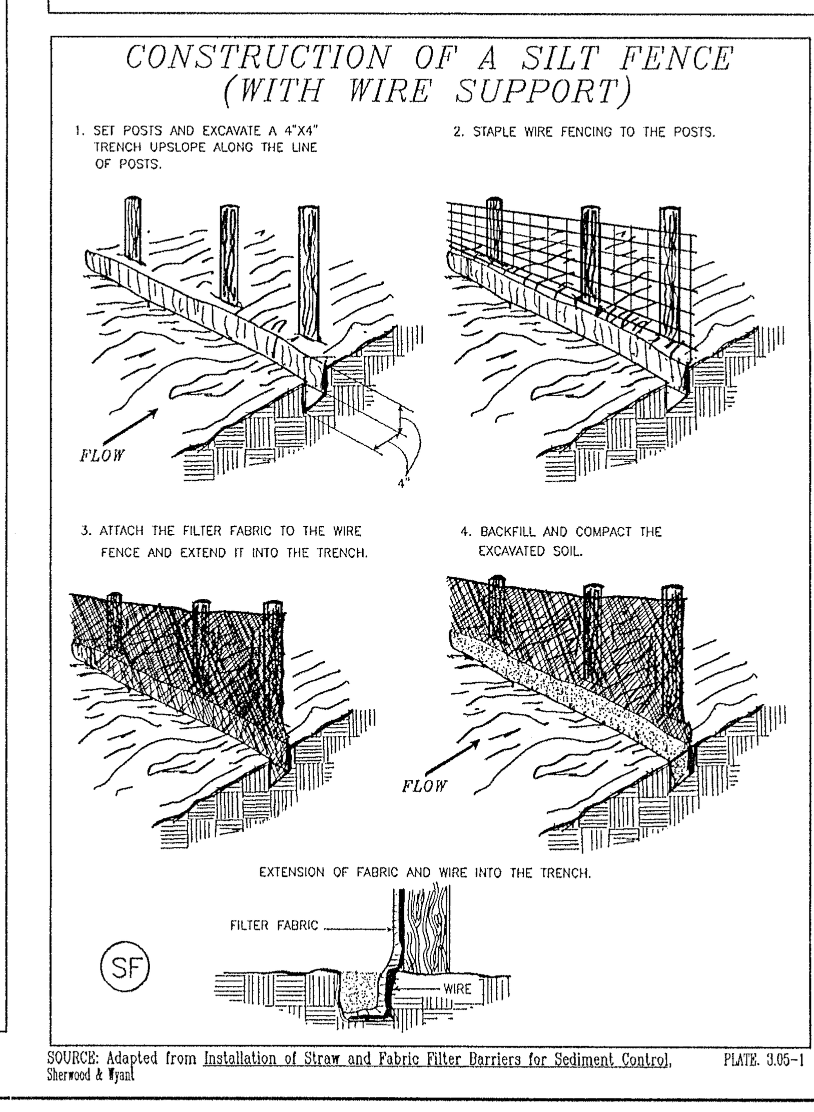


TABLE 3.31-B
(Revised June 2003)
TEMPORARY SEEDING SPECIFICATIONS
QUICK REFERENCE FOR ALL REGIONS

APPLICATION DATES	SEED SPECIES	APPLICATION RATES
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50 -100 (lbs/acre)
Feb. 16 - Apr. 30	Annual Ryegrass (lolium multi-florum)	60 - 100 (lbs/acre)
May 1 - Aug. 31	German Millet	50 (lbs/acre)

FERTILIZER & LIME

- Apply 10-10-10 fertilizer at a rate of 450 lbs. / acre (or 10 lbs. / 1,000 sq. ft.)
- Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

NOTE:
1 - A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
2 - Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by disking or by other means.
3 - When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/e&s.htm#pubs

JCC CASE # SP-0037-2011

No.	Revision	Date	Appvd.
1	REVISED PER COUNTY COMMENTS	05/26/2011	SAR

Designed by | Drawn by CRO | Checked by SAR
CAD checked by SAR | Approved by
Scale 1"=20' | Date 3/17/2011

Project Title
DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY
JAMES CITY COUNTY, VIRGINIA

Issued for

Drawing Title
EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

COMMONWEALTH OF VIRGINIA
6/14/11
STEPHEN A. ROMEO
LIC. No. 1448-B
LAND SURVEYOR

Drawing Number C-2B

Sheet 4 of 10

Project Number 2006059-000.00

SEQUENCE OF CONSTRUCTION

1) NOTIFY JAMES CITY COUNTY ENVIRONMENTAL DIVISION A MINIMUM OF 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION OPERATIONS.
2) CONDUCT AN ON-SITE PRE-CONSTRUCTION MEETING BETWEEN THE CONTRACTOR, THE OWNER, THE ENGINEER, AND THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION INSPECTOR.
3) INSTALL THE CONSTRUCTION ENTRANCE AND FLAG THE LIMITS OF CONSTRUCTION AS INDICATED ON THE EROSION & SEDIMENT CONTROL PLANS.
4) REMOVE EXISTING STOCKPILE DEBRIS AND PROCEED WITH CLEARING AND GRUBING OF THE AREA WITHIN THE LIMITS OF CLEARING AND REQUIRED FOR INSTALLATION OF ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON PLANS. INSTALL SILT FENCE UPSTREAM FROM THE PROPOSED INFILTRATION BASIN.
5) COMPLETE INSTALLATION OF TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES INDICATED ON THE PLANS.
6) PROCEED WITH DEMOLITION AND GRADING. ALL SLOPES 3:1 OR STEEPER SHALL BE STABILIZED WITH SOIL STABILIZATION MATS.
7) PROCEED WITH CONSTRUCTION OF THE PROPOSED ACCESS ROAD AND PROPANE GAS TANK SYSTEM.
8) INSTALL CRUSHER RUN PAVEMENT.
9) UPON COMPLETION OF FINAL SITE STABILIZATION AND RECEIVING AUTHORIZATION FROM THE ASSIGNED JAMES CITY COUNTY ENVIRONMENTAL DIVISION INSPECTOR, RELOCATE SILT FENCE FROM UPSTREAM TO THE DOWNSTREAM SIDE OF THE INFILTRATION BASIN AND PROCEED WITH THE FINAL GRADING AND INSTALLATION FOR INFILTRATION, TRENCH AND GRAVEL FILTER STRIP MAY COMMENCE. AFTER THE FINAL GRADING IS COMPLETED, THE TRENCH FLOOR SHALL BE DEEP TILLED TO PROVIDE A WELL AERATED, HIGHLY POROUS SURFACE TEXTURE.
10) INSTALL LANDSCAPING AS SHOWN ON LANDSCAPING PLANS.
11) COMPLETE PERMANENT SEEDING, FERTILIZE AND MULCH AS REQUIRED.
12) AFTER AN ACCEPTABLE AND STABLE GROUND COVER HAS BEEN ESTABLISHED, REMOVE SILT FENCE, TREE PROTECTION AND TEMPORARY SEDIMENT CONTROL MEASURES. HOWEVER, NO EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHOUT FIRST AUTHORIZATION FROM THE ASSIGNED JAMES CITY COUNTY ENVIRONMENTAL INSPECTOR.
13) DURING ALL PHASES OF CONSTRUCTION AND IMMEDIATELY FOLLOWING A RAIN EVENT, THE CONTRACTOR SHALL MONITOR AND INSPECT ALL EROSION AND SEDIMENT CONTROL MEASURES INSTALLED ON THE PROJECT. CONTRACTOR SHALL USE ADDITIONAL E&S CONTROL MEASURES IN ACCORDANCE WITH VIRGINIA EROSION AND SEDIMENT CONTROL MANUAL AS NEEDED.

VHB

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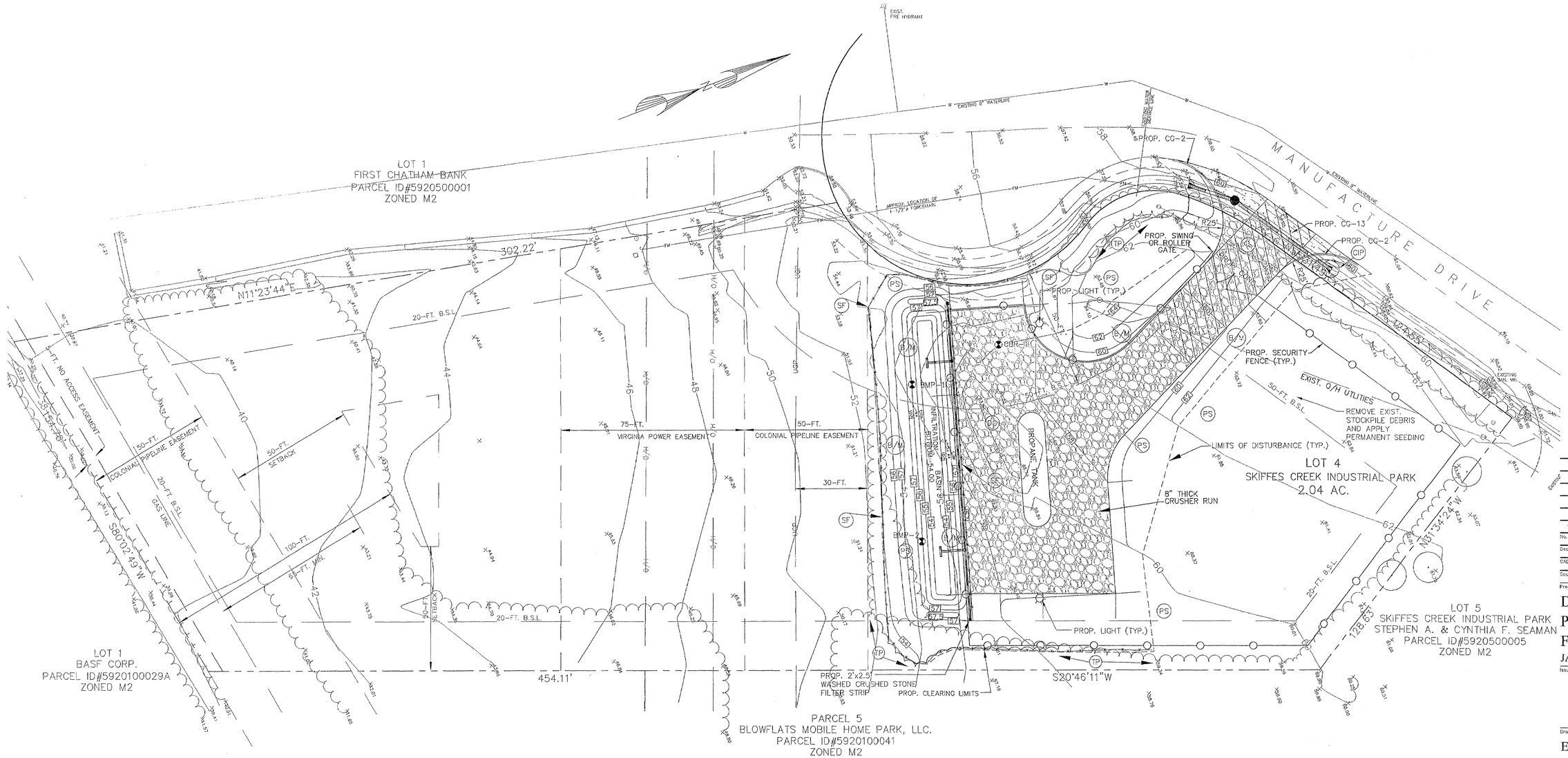
Transportation
Land Development
Environmental Services

351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185-6316
757 220 0500 à FAX 757 220 8544



GRAPHIC SCALE

0 20 40 80

(IN FEET)
1 inch = 20 ft.

No.	Revision	Date	Appvd.
1	REVISED PER COUNTY COMMENTS	05/26/2011	SAR

Designed by | Drawn by CRO | Checked by SAR
CAD checked by SAR | Approved by
Scale | Date 3/17/2011

Project Title

DIXIE FUEL COMPANY
PROPANE DISTRIBUTION FACILITY
JAMES CITY COUNTY, VIRGINIA

Issued for

Drawing Title

EROSION AND SEDIMENT CONTROL PLAN

COMMONWEALTH OF VIRGINIA
6/14/11
STEPHEN A. ROMEO
LIC. No. 1448-B
LAND SURVEYOR

Drawing Number
C-2A

Sheet 3 of 10

Project Number
2006059-000.00

JCC CASE # SP-0037-2011

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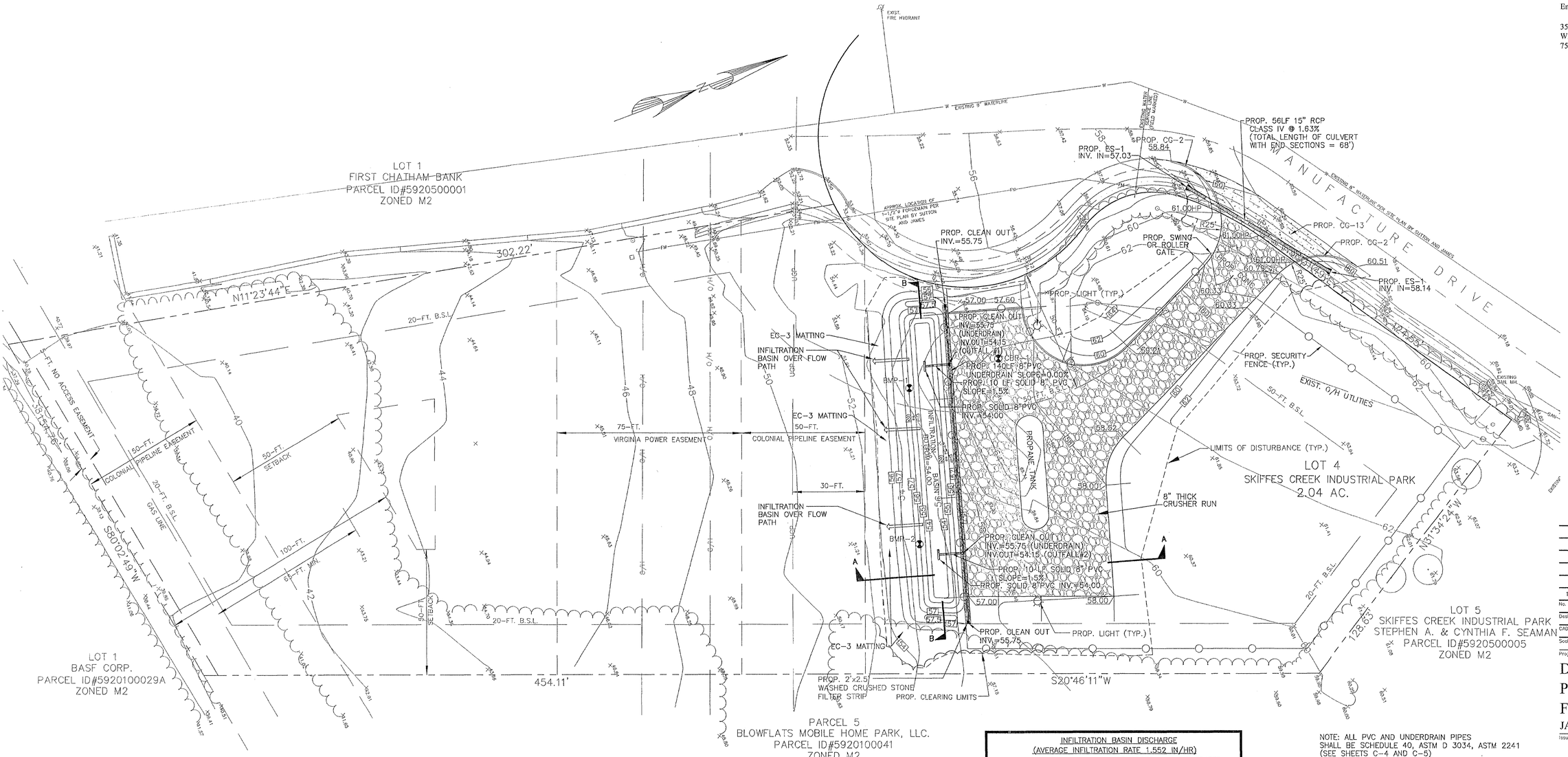
VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185-6316
757 220 0500 & FAX 757 220 8544



INFILTRATION BASIN DISCHARGE (AVERAGE INFILTRATION RATE 1.552 IN/HR)			
	ELEV.	DISCHARGED	INFILTRATED
2 YEAR	55.46	0.00 CFS	0.05 CFS
10 YEAR	56.19	0.00 CFS	0.06 CFS
25 YEAR	56.73	0.00 CFS	0.07 CFS
100 YEAR	57.01	0.41 CFS	0.08 CFS

INFILTRATION BASIN DISCHARGE (HALF OF AVERAGE INFILTRATION RATE 0.776 IN/HR)			
	ELEV.	DISCHARGED	INFILTRATED
2 YEAR	55.62	0.00 CFS	0.03 CFS
10 YEAR	56.45	0.00 CFS	0.03 CFS
25 YEAR	56.99	0.00 CFS	0.04 CFS
100 YEAR	57.01	0.49 CFS	0.04 CFS

NOTE: ALL PVC AND UNDERDRAIN PIPES SHALL BE SCHEDULE 40, ASTM D 3034, ASTM 2241 (SEE SHEETS C-4 AND C-5)

NOTE: SEE SHEETS C-4 AND C-5 FOR INFILTRATION BASIN AND FILTER STRIP DETAILS

GRAPHIC SCALE
0 20 40 80
(IN FEET)
1 inch = 20 ft.

No.	Revision	Date	Apprvd.
1	REVISED PER COUNTY COMMENTS	05/26/2011	SAR

Designed by | Drawn by CRO | Checked by SAR
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Scale 1"=20' | Date 3/17/2011

Project Title
DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY
JAMES CITY COUNTY, VIRGINIA

Issued for

Drawing Title
SITE PLAN
GRADING AND DRAINAGE

COMMONWEALTH OF VIRGINIA
6/14/11
STEPHEN A. ROMEO
LIC. No. 1448 B
LAND SURVEYOR

Drawing Number
C-3

Sheet 5 of 10

Project Number
2006059-000.00

JCC CASE # SP-0037-2011

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MAINTENANCE PLAN FOR INFILTRATION TRENCH

INSPECTIONS FOR SEDIMENT BUILDUP SHALL BE PERFORMED AT LEAST QUARTERLY. IT IS ANTICIPATED THAT UNDER NORMAL CONDITIONS SEDIMENT REMOVAL MAY BE REQUIRED ANNUALLY.

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

INSPECTION AND MAINTENANCE MEASURES:

1. CHECK INFILTRATION TRENCH FOR SEDIMENT AND LITTER ACCUMULATION REGULARLY (WEEKLY).

2. CHECK TRENCH BOTTOM 2 TO 3 DAYS FOLLOWING A SIGNIFICANT RAINFALL EVENT. IF STORMWATER IS PRESENT, INVESTIGATE POSSIBILITIES FOR SEDIMENT OR TRASH BLOCKAGE. IF THE FACILITY RETAINS MORE THAN 1 FOOT OF WATER FOR LONGER THAN 5 DAYS AFTER A SIGNIFICANT RAINFALL, A DETAILED INVESTIGATION BY A PROPERLY LICENSED PROFESSIONAL MAY BE REQUIRED IN ORDER TO ENSURE PROPER FUNCTIONALITY OF THE FACILITY.

3. IMMEDIATELY REMOVE TRASH, DEBRIS OR SEDIMENT THAT PREVENTS THE MOVEMENT OF WATER, AND TO MAINTAIN THE INTEGRITY OF THE FACILITY AND PROVIDE FOR AN ATTRACTIVE APPEARANCE. PROPERTY MAINTENANCE MEASURES SHALL INCLUDE THE REMOVAL OF TRASH, LITTER AND SEDIMENT FROM SURROUNDING GRASS, PARKING AREAS AND STABILIZED CONTRIBUTING AREAS. MAINTENANCE SHOULD BE PERFORMED WEEKLY TO PREVENT MIGRATION INTO THE BMP. DURING WINTER, KEEP SNOW REMOVAL MATERIALS SUCH AS SAND, SALT OR CINDERS AWAY FROM THE INFILTRATION AREA TO THE EXTENT POSSIBLE. TYPE OF DEBRIS REMOVED SHOULD BE NOTED AND POSSIBLE SOURCES IDENTIFIED AND REDUCED. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY PROPERLY.

4. MANY FACTORS WILL AFFECT THE OPERATION OF AN INFILTRATION SYSTEM. ROUTINE INSPECTIONS AND MAINTENANCE SHOULD BE PERFORMED BY THE SAME ASSIGNED INDIVIDUAL IN ORDER TO ESTABLISH BASELINE KNOWLEDGE OF HOW THE SYSTEM FUNCTIONS UNDER DIFFERENT SITE AND WEATHER CONDITIONS.

5. TRENCH, INCLUDING SIDE SLOPES SHALL BE PLANTED IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS INCLUDED ON PLAN SHEET C-2B AND SHOULD BE MOWED ONLY ONCE PER YEAR BETWEEN MARCH 1 AND MARCH 15, USING A LINE TRIMMER OR MOWER SET TO 8" CUTTING HEIGHT. ALL CLIPPINGS SHALL BE COLLECTED AND DISPOSED OF OFF-SITE. TREES AND SHRUBS ARE NOT PERMITTED TO GROW ON THE EMBANKMENT OR IN THE INFILTRATION TRENCH BOTTOM.

6. IF VEGETATION COVERS LESS THAN 40 % OF SOIL SURFACES, LIME, FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDLINGS. IF VEGETATION COVERS MORE THAN 40 % BUT LESS THAN 70 % OF SOIL SURFACES, LIME, FERTILIZE AND OVER SEED IN ACCORDANCE WITH CURRENT SEEDING RECOMMENDATIONS OR REQUIREMENTS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH).

7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE FACILITY FOR SIGNS OF ANIMAL/RODENT BURROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING.

8. RECORD KEEPING. THE OWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OF INSPECTIONS PERFORMED FOR THE FACILITY. RECORDS SHALL DOCUMENT ROUTINE MAINTENANCE AND/OR REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.

9. THE FACILITY SHALL NOT ACCEPT ADDITIONAL DRAINAGE OR BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT OR APPROVAL BY THE ENVIRONMENTAL DIVISION OF JAMES CITY COUNTY.

GENERAL NOTES

1. ALL WORK TO BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION, "ROAD AND BRIDGE SPECIFICATIONS", THE VIRGINIA DEPARTMENT OF TRANSPORTATION, "ROAD AND BRIDGE STANDARDS", THE VIRGINIA DEPARTMENT OF TRANSPORTATION SUBDIVISION STREET REQUIREMENTS, THE VIRGINIA WORK AREA PROTECTION MANUAL, "THE HAMPTON ROAD PLANNING DISTRICT COMMISSION REGIONAL STANDARDS" AND VDOT SOIL AND AGGREGATE COMPACTION MANUAL.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITTING. OWNER TO OBTAIN EROSION AND SEDIMENT CONTROL BOND.
3. CONTRACTOR MUST OBTAIN BURNING PERMIT OR PERMISSION TO BURN FROM COUNTY.
4. ALL LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. PRIOR TO COMMENCEMENT OF CONSTRUCTION, CONTRACTOR TO NOTIFY OWNERS OF ALL UTILITIES (DOMINION VIRGINIA POWER, VERIZON, ETC.) OF PROPOSED CONSTRUCTION SO THAT THEY MAY LOCATE AND SAFEGUARD THEIR FACILITIES. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING EXCAVATION. VERIFICATION SHALL CONSIST OF EXPOSING THE UTILITY BY EXCAVATION AND ESTABLISHING THE EXACT HORIZONTAL AND VERTICAL LOCATION.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING SURE THAT TRUCKS LEAVING SITE ARE CLEANED SUFFICIENTLY SO AS NOT TO CREATE A ROADWAY NUISANCE OR HAZARD.
7. ALL SITE CONCRETE SHALL BE CLASS A3-AE (AIR ENTRAINED) WITH A MINIMUM LABORATORY COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.
8. ALL SITE CONCRETE, INCLUDING DROP INLET TOPS, ENDWALLS ETC. SHALL HAVE A BROOM FINISH TEXTURE.
9. THE CONTRACTOR IS RESPONSIBLE FOR ALL COST ASSOCIATED WITH COMPLETION OF REQUIRED EARTHWORK. IF ADDITIONAL FILL MATERIAL IS REQUIRED, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SUCH AT NO ADDITIONAL EXPENSE TO THE OWNER.
10. SHOULD UNSUITABLE MATERIAL BE ENCOUNTERED DURING CONSTRUCTION, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE THE UNSUITABLE MATERIAL AND REPLACE IT WITH SUITABLE MATERIAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING SELECT MATERIAL IF ON-SITE SUITABLE MATERIAL IS NOT AVAILABLE. THE CONTRACTOR WILL BE PERMITTED AND IS ENCOURAGED TO VISIT THE SITE IN ADVANCE OF THE BID DATE TO SAMPLE AND EVALUATE INSITU MATERIAL AS NECESSARY TO PREPARE HIS/HER BID AND AT HIS/HER EXPENSE.
11. THE CONTRACTOR IS TO FURNISH AND INSTALL STOP SIGNS, DIRECTIONAL SIGNS, AND ANY OTHER SIGNAGE AS REQUIRED. ALL ROADWAY SIGNS AND THEIR INSTALLATION WILL BE IN ACCORDANCE WITH THE VIRGINIA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS.
12. ANY SUBSEQUENT REVISIONS, ADDITIONS, AND/OR DELETIONS SHALL REQUIRE SPECIFIC WRITTEN APPROVAL OF THE OWNER.
13. SELECT FILL: FILL AND OR BACKFILL MATERIAL UNDER PAVEMENTS, WALKS, AND STRUCTURES SHALL HAVE LESS THAN 1 % ORGANIC MATERIAL BY WEIGHT AND SHALL BE FREE FROM DELETERIOUS SUBSTANCES. FILL SHALL NOT CONTAIN ANY MATERIAL OVER 4 INCHES IN ITS GREATEST DIMENSION. MATERIALS HAVING DIMENSIONS GREATER THAN 2 INCHES SHOULD NOT BE USED FOR FILL OR BACKFILL IN THE UPPER 6 INCHES OF THE FILL. FILL MATERIAL SHALL BE CLASSIFIED SP-SM, SP OR SW BY THE UNIFIED SOILS CLASSIFICATION SYSTEM, WITH NO MORE THAN 12 % PASSING THE NO. 200 SIEVE. ALL MATERIALS USED SHALL BE TESTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT ON THE SITE. ALL FILL MATERIALS SHALL BE OBTAINED FROM THE ON-SITE STOCKPILE LOCATED ADJACENT TO THE OFFICE COMPLEX SITE AS SHOWN ON THE PLANS. FILL MATERIALS SHALL BE PLACED IN LAYERS NOT MORE THAN 6 TO 8 INCHES IN LOOSE DEPTH. BEFORE COMPACTION, MOISTEN OR AIRIATE EACH LAYER AS NECESSARY TO PROVIDE THE PROPER MOISTER CONTENT. COMPACT EACH LAYER TO REQUIRED PERCENTAGE OF MAXIMUM DENSITY FOR EACH AREA CLASSIFICATIONS. DO NOT PLACE FILL OR BACKFILL ON SURFACES THAT ARE MUDDY, FROZEN, OR WHICH CONTAIN FROST OR ICE. PERFORM COMPACTION OF SOIL MATERIALS FOR FILLS USING SUITABLE SOIL COMPACTION EQUIPMENT FOR THE TYPE OF MATERIAL TO BE COMPACTED. SUBGRADE UNDER STRUCTURES, WALKWAYS, PAVEMENTS, SHALL BE PROOF ROLLED PRIOR TO PLACEMENT OF FILL. FILLS IN THESE AREAS SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE STANDARD PROCTOR COMPACTION TEST (ASTM D-698). COMPACTION OF MATERIALS IN NON-PAVED AREAS SHALL BE COMPACTED TO A MAXIMUM DRY DENSITY OF 85%.
18. TOPSOIL IMPORTED OR AMENDED ON SITE SHALL BE FREE OF SUBSOIL, IMPURITIES, PLANTS, WEEDS OR ROOTS. TOPSOIL TO BE SPREAD TO A MINIMUM DEPTH OF 6", RAKED SMOOTH AND GRADED TO ELIMINATE ROUGH, LOW OR SOFT AREAS. SEE PLANTING NOTES AND DETAILS FOR FURTHER SOILS REQUIREMENTS, SODDING AND TEMPORARY PERMANENT SEEDING.

VHB

Vanasse Hangen Brustlin, Inc.

Transportation
Land Development
Environmental Services

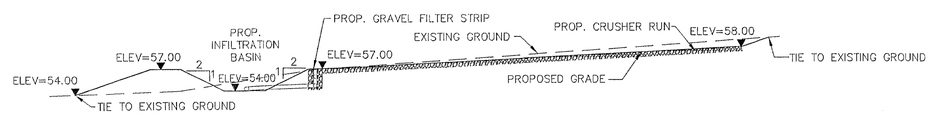
351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185-6316
757 220 0500 à FAX 757 220 8544

INFILTRATION BASIN DISCHARGE
(AVERAGE INFILTRATION RATE 1.552 IN/HR)

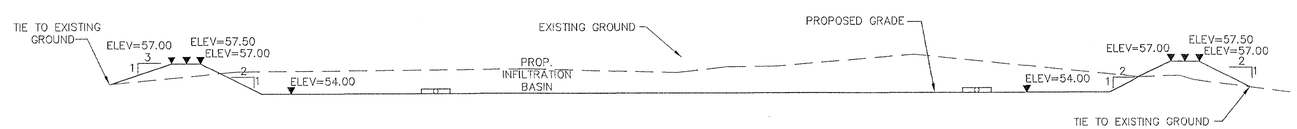
	ELEV.	DISCHARGED	INFILTRATED
2 YEAR	55.46	0.00 CFS	0.05 CFS
10 YEAR	56.19	0.00 CFS	0.06 CFS
25 YEAR	56.73	0.00 CFS	0.07 CFS
100 YEAR	57.01	0.41 CFS	0.08 CFS

INFILTRATION BASIN DISCHARGE
(HALF OF AVERAGE INFILTRATION RATE 0.776 IN/HR)

	ELEV.	DISCHARGED	INFILTRATED
2 YEAR	55.62	0.00 CFS	0.03 CFS
10 YEAR	56.45	0.00 CFS	0.03 CFS
25 YEAR	56.99	0.00 CFS	0.04 CFS
100 YEAR	57.01	0.49 CFS	0.04 CFS



SECTION A-A
N.T.S.



SECTION B-B
N.T.S.

No.	Revision	Date	Appvd.
1	REVISED PER COUNTY COMMENTS	05/26/2011	SAR

Designed by | Drawn by CRO | Checked by SAR
CAD checked by SAR | Approved by
Scale 1"=20' | Date 3/17/2011

Project Title
DIXIE FUEL COMPANY
PROPANE DISTRIBUTION
FACILITY
JAMES CITY COUNTY, VIRGINIA

Issued for

Drawing Title
GENERAL NOTES
AND DETAILS

COMMONWEALTH OF VIRGINIA
6/21/11
STEPHEN A. ROMEO
LIC. No. 1448-B
LAND SURVEYOR

Drawing Number
C-5

Sheet 7 of 10

Project Number
2006059-000.00

JCC CASE # SP-0037-2011

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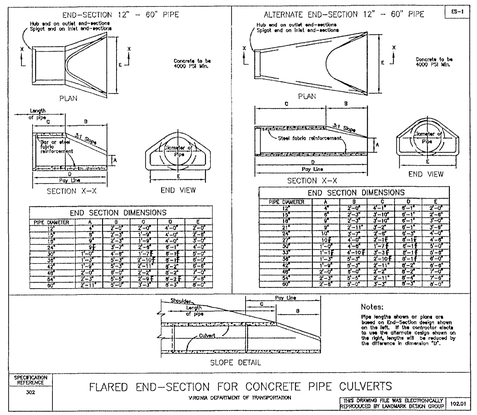
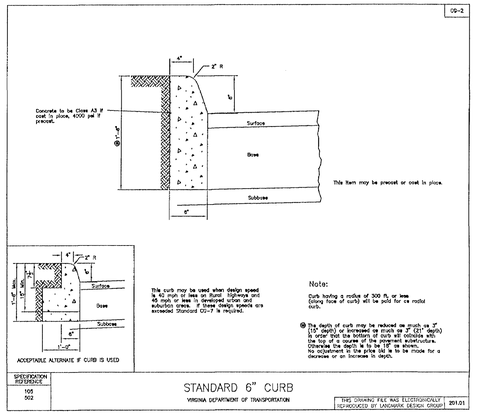




STORMWATER GENERAL PERMIT NOTES

THE CONTRACTOR SHALL ENSURE COMPLIANCE WITH THE REQUIREMENTS OF 4VAC 50–60–380 & 390 – VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION SITES, INCLUDING BUT NOT LIMITED TO THE FOLLOWING ITEMS:

IMPLEMENTATION, DOCUMENTATION, AND INSPECTIONS NECESSARY FOR COMPLIANCE WITH STORM WATER GENERAL PERMIT

1. IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION PLAN AS DEVELOPED FOR THE SITE AND IN ACCORDANCE WITH THE GENERAL PERMIT REQUIREMENTS WITH REGARD TO EROSION AND SEDIMENT CONTROL, POST–CONSTRUCTION STORM WATER MANAGEMENT, AND OTHER CONTROLS REGARDING SOLID MATERIALS, SEDIMENTS AND DUST, AND THE DEMONSTRATED COMPLIANCE WITH APPLICABLE STATE AND/OR LOCAL WASTE DISPOSAL, SANITARY SEWER OR SEPTIC SYSTEM REGULATIONS.

2. RETENTION OF THE STORM WATER POLLUTION PREVENTION PLAN AT THE CONSTRUCTION SITE. THE PLAN AND OTHER RELATED DOCUMENTS SHALL BE MADE AVAILABLE UPON REQUEST TO AUTHORIZED LOCAL, STATE, OR FEDERAL REPRESENTATIVES.

3. AMENDMENT OF THE STORM WATER POLLUTION PREVENTION PLAN WHENEVER THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE, WHICH HAS A SIGNIFICANT EFFECT ON THE POTENTIAL FOR THE DISCHARGE OF POLLUTANTS TO THE SURFACE WATERS OF THE STATE, OR IF THE STORM WATER POLLUTION PREVENTION PLAN PROVES TO BE INEFFECTIVE IN ELIMINATING OR SIGNIFICANTLY MINIMIZING POLLUTANTS FROM THE CONSTRUCTION ACTIVITY.

4. DOCUMENTATION OF THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR, WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE, AND WHEN STABILIZATION MEASURES ARE IMPLEMENTED.

5. INSPECTIONS OF DISTURBED AREAS OF THE CONSTRUCTION SITE AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION THAT HAVE NOT BEEN FINALLY STABILIZED, STRUCTURAL CONTROL MEASURES, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE SHALL BE CONDUCTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT THAT PRODUCES SURFACE RUNOFF AS REQUIRED BY THE GENERAL PERMIT REGULATIONS. REPORTS SUMMARIZING THE INSPECTIONS SHALL BE MADE IN ACCORDANCE TO THE REGULATIONS AND RETAINED AS PART OF THE STORM WATER POLLUTION PREVENTION PLAN.

6. ALL CONTRACTORS AND SUBCONTRACTORS SHALL SIGN A COPY OF THE CERTIFICATION STATEMENT AS DESCRIBED IN THE GENERAL PERMIT BEFORE CONDUCTING ANY PROFESSIONAL SERVICES AT THE SITE IDENTIFIED IN THE POLLUTION PREVENTION PLAN. ALL CERTIFICATIONS SHALL BE INCLUDED IN THE STORM WATER POLLUTION PREVENTION PLAN.

7. ALL DOCUMENTS, RECORDS, REPORTS, AND OTHER INFORMATION RELEVANT TO THE GENERAL PERMIT REGULATIONS SHALL BE GIVEN TO THE OWNER FOLLOWING FINAL STABILIZATION OF THE SITE.

8. WHERE THE SITE HAS BEEN FINALLY STABILIZED AND ALL STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES THAT ARE AUTHORIZED BY THE GENERAL PERMIT ARE ELIMINATED, A NOTICE OF TERMINATION SHALL BE PREPARED FOR THE OWNER TO SIGN AND SUBMIT TO THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY, WATER DIVISION.

9. THE STRUCTURAL STABILITY OF THE PERMITTED FACILITIES SHALL BE ENSURED.

PROHIBITION AND REPORTING OF RELEASES OF SUBSTANCES OTHER THAN STORM WATER

10. EXECUTION OF REPORTING REQUIREMENTS IN THE EVENT OF NONCOMPLIANCE OF THE GENERAL PERMIT OR IF ANY UNPERMITTED, UNUSUAL OR EXTRAORDINARY DISCHARGE ENTERS OR COULD BE EXPECTED TO ENTER SURFACE WATERS OF THE STATE.

11. PROHIBITION OF NON–STORMWATER DISCHARGES EXCEPT AS PROVIDED FOR IN THE GENERAL PERMIT. APPROPRIATE POLLUTION PREVENTION MEASURES FOR NON–STORM WATER COMPONENTS OF DISCHARGE SHALL BE IMPLEMENTED.

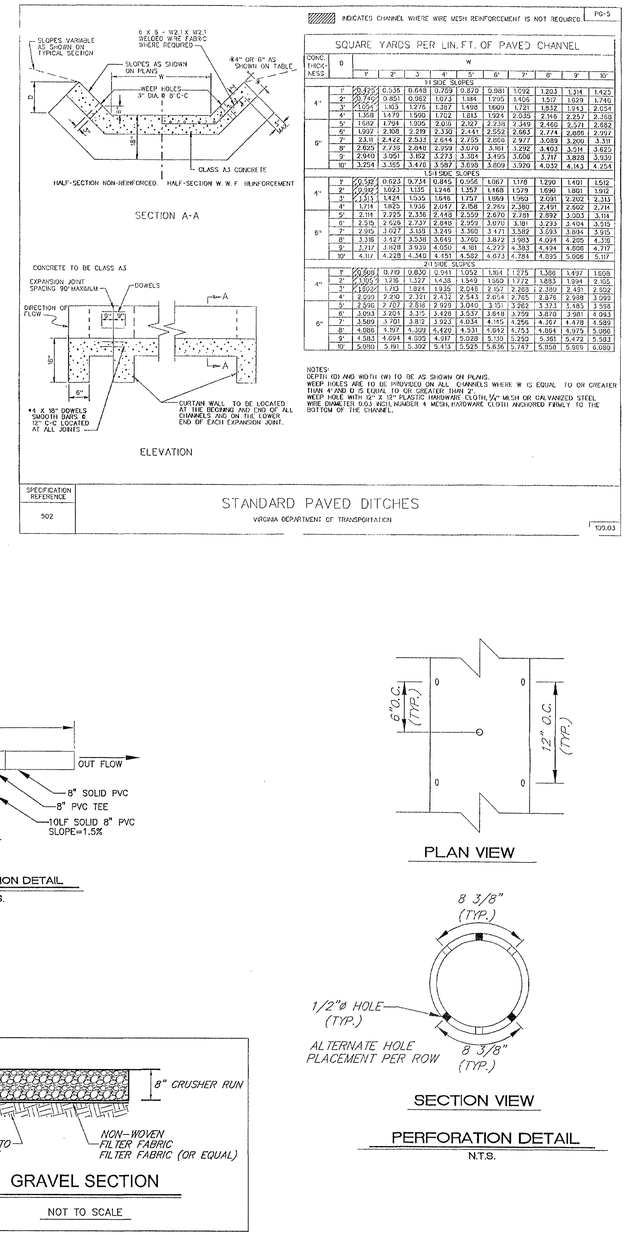
12. EXECUTION OF REPORTING REQUIREMENTS OF 40 CFR PART 117 (1992) AND 40 CFR PART 302 (1992). IN ADDITION, THE DISCHARGE OF HAZARDOUS SUBSTANCES OR OIL IN THE STORM WATER DISCHARGE FROM THE CONSTRUCTION SITE SHALL BE PREVENTED OR MINIMIZED IN ACCORDANCE WITH THE STORM WATER POLLUTION PREVENTION PLAN.

13. PROHIBITION OF DISCHARGE OF HAZARDOUS SUBSTANCES, OIL, OR POLLUTANTS RESULTING FROM ON–SITE SPILLS OR RELEASES.

MANAGEMENT MEASURES AND RESPONSE TO UNINTENTIONAL RELEASES

14. ALL WASTE COLLECTING, CONTROL, TREATMENT, MANAGEMENT OF POLLUTANT ACTIVITIES AND DISPOSAL FACILITIES SHALL BE OPERATED IN A MANNER CONSISTENT WITH THE GENERAL PERMIT REGULATIONS.

15. ALL FEASIBLE STEPS TO MINIMIZE ANY ADVERSE IMPACTS TO STATE WATERS RESULTING FROM NONCOMPLIANCE WITH CONDITIONS SPECIFIED IN THE GENERAL PERMIT 16. ALL REASONABLE STEPS TO MINIMIZE, CORRECT OR PREVENT ANY DISCHARGE IN VIOLATION OF THE GENERAL PERMIT WHICH HAS A REASONABLE LIKELIHOOD OF ADVERSELY AFFECTING HUMAN HEALTH OR THE ENVIRONMENT SHALL BE TAKEN.

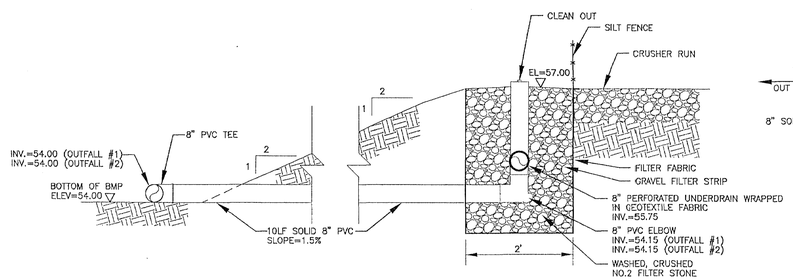


PLAN VIEW

SECTION VIEW

PERFORATION DETAIL

N.T.S.



UNDERDRAIN OUTFALL DETAIL

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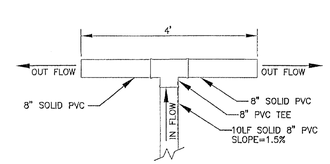

PVC TEE SECTION DETAIL

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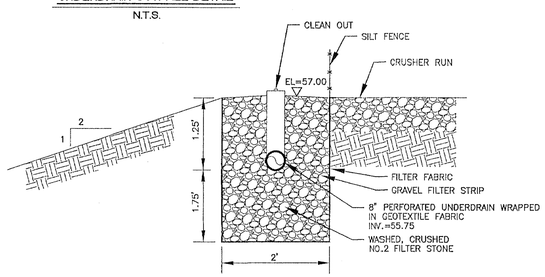

GRAVEL FILTER STRIP DETAIL

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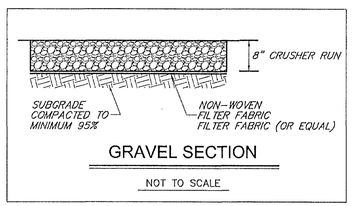
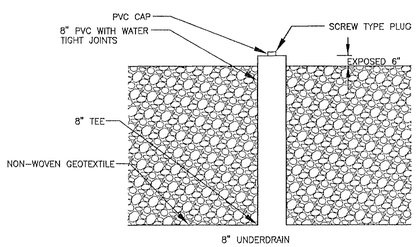


GRAVEL SECTION

NOT TO SCALE



CLEAN OUT DETAIL

N.T.S.

INFILTRATION BASIN DISCHARGE
(AVERAGE INFILTRATION RATE 1.552 IN/HR)

	ELEV.	DISCHARGED	INFILTRATED
2 YEAR	55.46	0.00 CFS	0.05 CFS
10 YEAR	56.19	0.00 CFS	0.06 CFS
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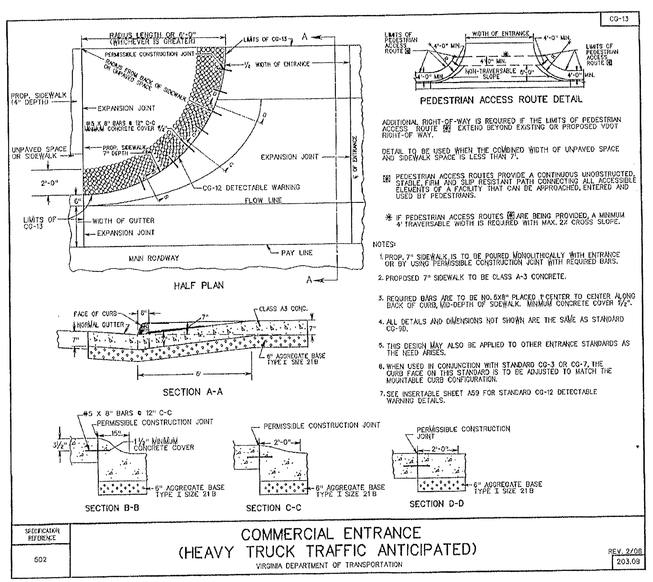
25 YEAR	56.99	0.00 CFS	0.04 CFS
100 YEAR	57.01	0.49 CFS	0.04 CFS

NOTE; ALL PVC AND UNDERDRAIN PIPES SHALL BE SCHEDULE 40, ASTM D 3034, ASTM 2241



VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
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351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185-6316
757 220 0500 à FAX 757 220 8544

No.	Revision	Date	Appvd.
1	REVISED PER COUNTY COMMENTS	05/26/2011	SAR

Designed by | Drawn by CRO | Checked by SAR
CAD checked by SAR | Approved by
Scale 1"=20' | Date 3/17/2011

Project Title
DIXIE FUEL COMPANY
PROPANE DISTRIBUTION FACILITY
JAMES CITY COUNTY, VIRGINIA

Issued for

Drawing Title
GENERAL NOTES AND DETAILS

COMMONWEALTH OF VIRGINIA
6/14/11
STEPHEN A. ROMEO
LIC. No. 1446-B
LAND SURVEYOR

Drawing Number
C-4

Sheet 6 of 10

Project Number
20060059-000.00

JCC CASE # SP-0037-2011

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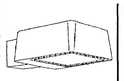
NITE BRITES

JOB NAME

TYPE

SBX400-AREA/SITE LIGHT TYPE IV FORWARD THROW

150-400 watt Metal Halide
150-400 watt High Pressure Sodium
150-400 watt Pulse Start Metal Halide



The SBX400 Area/Site luminaire puts light exactly where you need it, with no spill light. Tough and attractive, this luminaire can light roadways and large areas with control and precision.

ORDERING MATRIX

SAMPLE CATALOG NUMBER: SBX400/M5/FWT/PE

SBX - [ ] - [ ] - FWT - [ ]

FIXTURE: SBX

LAMP SOURCE:
M - Metal Halide
S - High Pressure Sodium
P - Pulse Start Metal Halide (Ballast option must also be specified)

LAMPS/PE:
150 - 150
175 - 175*
200 - 200*
250 - 250
300 - 300*
350 - 350*
400 - 400

VOLTAGE:
32 - 120
20 - 208
21 - 277
24 - 240
34 - 347
45 - 480
BIT - 120/208 240/277
TT - 120/277 347

B.S. TYPE:
FWT - Forward Throw Type IV*

OPTIONS (add as suffix):
R - Adjustable Arm
HS/PC - Photo Control and Relay (Specify voltage) (General purpose unless specified voltage)
PE - Photo Control (not available in 150 watt)
PSC - Pulse Start CWA
PSB - Pulse Start Reactor Ballast*
WCF - Wired Double Fuse*
WSF - Wired Single Fuse*

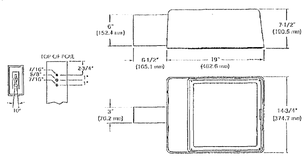
Footnotes:
*Available in Metal Halide only.
*Ignitors (PSB) are extra.
*Pulse Start CWA ballast only.
*Not available in standard Metal Halide.
*Available in 400 watt and below, except for 175 watt, 277 volt only.
*Use with 120, 208 and 480 volt.
*Use with 120, 277 and 347 volt.

General Notes:
All options factory installed.
Wiring fuse lamp only.
All accessories are field installed.

ACCESSORIES (order separately)

MC105 - Visor Shield
MC106 - Clear Shield
MC107 - Wire Guard
MC108/4 - 4" Round Pole Adapter
MC01A/2A - Tenon Adapter (2-3/8" O.D.) (ideal for one/incl. MC1/2/4 (Round Pole)
MC01A/3A - Tenon Adapter (2-3/8" O.D.) (ideal for two at 180 degrees/incl. MC2/3/4 (Round Pole)
MC01A/3A4 - Tenon Adapter (2-3/8" O.D.) (ideal for three/incl.MC1/2/3/4 (Round Pole)
MC01A/4A - Tenon Adapter (2-3/8" O.D.) (ideal for four/incl. MC1/2/3/4 (Round Pole)
MC01A/2S - Tenon Adapter (2-3/8" O.D.) (ideal for two Square Pole)
MC01A/3S - Tenon Adapter (2-3/8" O.D.) (ideal for two at 180 degrees Square Pole)
MC01A/4S - Tenon Adapter (2-3/8" O.D.) (ideal for four Square Pole)
MC01A/5S - Tenon Adapter (2-3/8" O.D.) (ideal for four Square Pole)
MC10 - 5" O.D. Wall Mounting Plate
2/0/0/B - 5" O.D. Tree Mounting Base
MC8316 - 10" Arm
MC/MM/PE/SC - 6" Long with Twist Lock Photo Control and Shorting Cap
(For additional descriptions of Area/Site Lighting accessories refer to data sheet for CA-500W)

DIMENSIONS



ENERGY DATA

HIGH PRESSURE SODIUM

HID BALLAST INPUT WATTS
150 watt-188 watts

CWA BALLAST INPUT WATTS
200 watt-250 watts
250 watt-295 watts
310 watt-365 watts
400 watt-465 watts

METAL HALIDE

HID BALLAST INPUT WATTS
150 watt-185 watts

CWA BALLAST INPUT WATTS
150 watt-180 watts
175 watt-210 watts
200 watt-232 watts
210 watt-250 watts
320 watt-360 watts
350 watt-400 watts
400 watt-455 watts

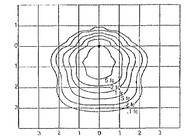
EPA = 1.50 sq. ft.
WEIGHT = 40 lbs. (max.)

AS-42012

Day-Brite Lighting

SBX400-AREA/SITE LIGHT TYPE IV

PHOTOMETRICS



UNITS SHOWN IN TERMS OF MOUNTING HEIGHT
INITIAL FOOTCANDLES SHOWN

CATALOG NUMBER: SBX400/M5/FWT
TEST NUMBER: SBX400M4
LAMP: METAL HALIDE
WATTAGE: 400
LUMENS: 36,000
TILT ANGLE: 0°
MOUNTING HEIGHT: 25 FEET

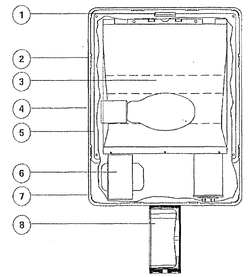
LIGHT LEVEL MULTIPLYING FACTORS

MOUNTING HEIGHT	MULTIPLIER
40	0.39
30'	0.51
30'	0.69
20'	1.00
20'	1.46
15'	2.77

ADDITIONAL TEST NUMBERS

DESCRIPTION/CATALOG NUMBER	TEST NUMBER
SBX400/M/FWT	SBX40014

PRODUCT FEATURES



UL 1598 listed suitable for wet location and 25°C ambient for all wattages listed.

1. Lens frame opens by releasing a stainless steel latch.
2. One-piece hinged, die cast aluminum door with heat and shock resistant tempered glass lens.
3. Durable formed reflector with clear anodized finish.
4. Rugged one piece die cast aluminum housing.
5. One piece silicone rubber gasket seals door to housing.
6. Swing down ballast tray allows for easy maintenance of all electrical components.
7. Dark bronze polyester powder finish for excellent impact, corrosion and UV resistance.
8. Die cast aluminum arm with integral wiring compartment and slide access cover standard. Designed to swivel to mount more 4 inch square pole.

Visit our web site at www.daybritelighting.com
770 South Green Street Tupelo, MS 38804 Phone: 662-842-7212 Fax: 662-841-5301
189 Bullock Drive Markham, Ontario Canada L3P 1W4 Phone: 905-294-9520 Fax: 905-294-8913
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AS-42012 Day-Brite Lighting

GENERAL PHOTOMETRIC SCHEDULE

AVERAGE FOOTCANDLES	1.95
MAXIMUM FOOTCANDLES	8.8
MINIMUM FOOTCANDLES	0.0
MINIMUM TO MAXIMUM FC RATIO	0
MAXIMUM TO MINIMUM FC RATIO	1478.32
AVERAGE TO MINIMUM FC RATIO	329.34

LUMINAIRE SCHEDULE

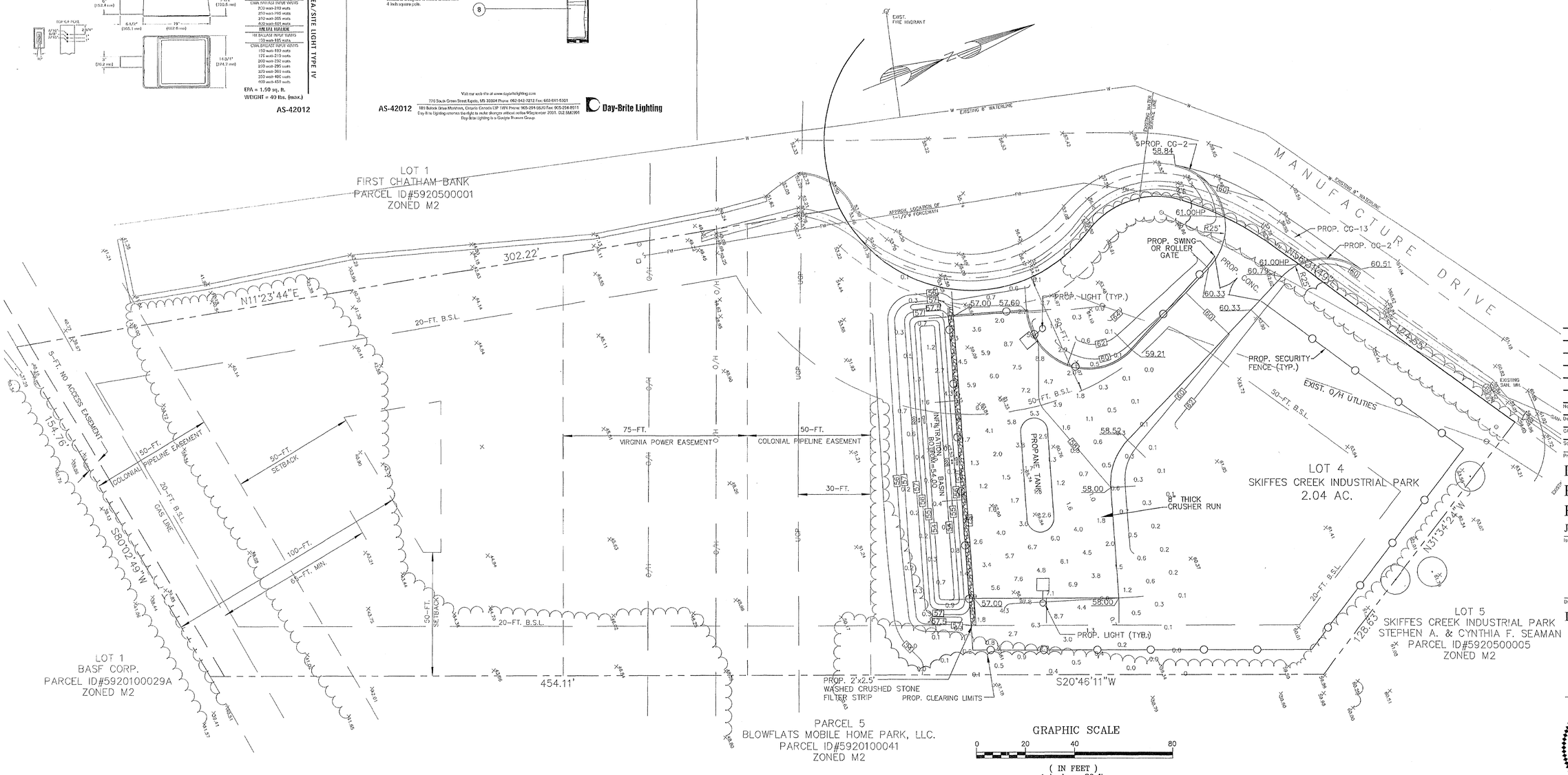
CALLOUT	SYMBOL	LAMP	DESCRIPTION	BALLAST	MOUNTING	INPUT WATTS	VOLTS	NOTE 1	NOTE 2	QUANTITY
NiteBrite SBX400	○-□	(1) 400W Metal Halide	NiteBrites SBX400-Area Site Light Type IV Forward Throw	ELECTRONIC	POLE	64	120V 1P 2W	NiteBrites SBX400-Area Site Light Type IV Forward Throw	Pole Mounted 25'	2

VHB

Vanasse Hangen Brustlin, Inc.

Transportation
Land Development
Environmental Services

351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185-6316
757 220 0500 ⅊ FAX 757 220 8544



JCC CASE # SP-0037-2011

No.	Revision	Date	Apprvd.
1	REVISED PER COUNTY COMMENTS	05/26/2011	SAR

Designed by | Drawn by CRO | Checked by SAR
CAD checked by SAR | Approved by
Scale 1"=20' | Date 3/17/2011

Project Title

DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY

JAMES CITY COUNTY, VIRGINIA

Issued for

Drawing Title

LIGHTING PLAN

COMMONWEALTH OF VIRGINIA
6/14/11
STEPHEN A. ROMEO
LIC. No. 1448-B
LAND SURVEYOR

Drawing Number
F-1

Sheet 10 of 10

Project Number
2006059-000.00

P:\33429.00\CAD\LD\PLANSET\2006059-000.00 VISTA VENTURES\DWG\SHEETS\F-1.DWG

PLANTING NOTES:

THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, ETC. NECESSARY TO COMPLETE ALL PLANTING AS SHOWN ON THIS DRAWING, AS SPECIFIED HEREIN OR IN SUPPLEMENTAL SPECIFICATIONS, AND/OR AS REQUIRED BY JOB CONDITIONS. THE WORK IN GENERAL INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

(1) SOIL TESTING
(2) TOPSOIL;
(3) PLANTING AREA PREPARATION;
(4) PLANTING PIT EXCAVATION AND SOIL AMENDMENT;
(5) PLANT MATERIAL AND MULCH;
(6) FERTILIZING;
(7) STAKING; (WHEN REQUIRED)
(8) CHEMICAL APPLICATION; (WHEN REQUIRED)
(9) MAINTENANCE AND GUARANTEE;
(10) ALL OTHER ITEMS NECESSARY TO MAKE WORK COMPLETE;
(11) SEEDING.

THE PLANTING CONTRACTOR IS RESPONSIBLE FOR COORDINATING WORK WITH THE IRRIGATION CONTRACTOR AND OTHER CONTRACTORS. THIS PLAN DOES NOT GUARANTEE THE EXISTENCE OR NON-EXISTENCE OF ANY UTILITIES. PRIOR TO ANY CONSTRUCTION, EXCAVATION, OR ROTO-TILLING THE CONTRACTOR SHALL ASSUME THE RESPONSIBILITY OF VERIFYING THE LOCATIONS OF ALL UTILITIES, ABOVE AND/OR BELOW GROUND, PUBLIC AND/OR PRIVATE THAT MAY EXIST AND CROSS THROUGH THE AREAS OF CONSTRUCTION.

(1) SOIL TESTING

(1.1) THE CONTRACTOR IS RESPONSIBLE FOR SOILS TESTING AND ANALYSIS FOR SUITABILITY FOR PLANTING AND LANDSCAPE TREATMENTS REQUIRED IN THIS CONTRACT. EXISTING TOPSOIL SHALL BE UTILIZED TO THE GREATEST EXTENT POSSIBLE THROUGHOUT THE PROJECT. A MINIMUM OF 3 SOIL SAMPLES SHALL BE TAKEN TO REPRESENT THE FULL RANGE OF SITE CONDITIONS. SOIL SAMPLES SHALL BE TAKEN TO A DEPTH OF AT LEAST 8" BELOW THE LARGEST ROOT BALLS SPECIFIED ON THE PROJECT. WHERE HARD PAN EXISTS, DEEPER SAMPLING MAY BE REQUIRED.

(1.2) SOIL ANALYSIS SHALL BE BY CERTIFIED LABORATORY AND SHALL INCLUDE SOIL TEXTURE, COMPOSITION, ORGANIC MATTER CONTENT, PH, SALINITY, AND FERTILITY (AVAILABLE NUTRIENTS). FOR SOILS NOT MEETING TOPSOIL SPECIFICATIONS BELOW, THE REPORT SHALL INCLUDE RECOMMENDATIONS FOR AMENDING THE SOILS TO BRING THEM INTO COMPLIANCE WITH THESE SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR THE COSTS OF SOILS TESTING, AND SHALL SUBMIT 3 COPIES OF THE SOILS REPORT TO THE OWNER.

(2) TOPSOIL

(2.1) NECESSARY QUANTITIES OF TOPSOIL SHALL BE SUPPLIED BY THE CONTRACTOR AND APPROVED BY THE OWNER OR HIS REPRESENTATIVE. THE CONTRACTOR SHALL APPLY TOPSOIL ONLY AFTER SECURING SOIL TEST, AS SPECIFIED ABOVE, APPLYING RECOMMENDED TREATMENT THEREOF, AND SUBMITTING FOR APPROVAL.

(2.2) TOPSOIL REQUIREMENTS MAY BE MET IN ANY OF THE FOLLOWING WAYS:
A. ON-SITE TOPSOIL MEETING SPECIFICATIONS MAY BE STRIPPED AND STOCKPILED ON SITE.
B. ON-SITE TOPSOIL NOT MEETING SPECIFICATIONS MAY BE STRIPPED, STOCKPILED AND AMENDED ON SITE, TO MEET SPECIFICATIONS.
C. OFF-SITE TOPSOIL MEETING SPECIFICATIONS AND FROM AN APPROVED SOURCE MAY BE PROVIDED.

(2.3) TOPSOIL STOCKPILED FOR LATER USE SHALL BE STORED WITHIN THE RIGHT-OF-WAY, AND AT LOCATIONS APPROVED BY THE OWNER, UNLESS THE WORKING AREA IS SUCH THAT THE PRESENCE OF THE MATERIAL WOULD INTERFERE WITH ORDERLY PROSECUTION OF THE WORK. STOCKPILE AREAS OUTSIDE OF THE RIGHT-OF-WAY SHALL BE LOCATED BY THE CONTRACTOR AT HIS EXPENSE.

(2.4) STRIPPING TOPSOIL SHALL BE CONFINED TO THE AREA OVER WHICH THE EXCAVATION IS TO BE ACTIVELY PROSECUTED WITHIN 15 DAYS FOLLOWING THE STRIPPING OPERATION. EXCAVATION AND EMBANKMENT CONSTRUCTION SHALL BE CONFINED TO THE MINIMUM AREA NECESSARY TO ACCOMMODATE THE CONTRACTOR'S EQUIPMENT AND WORK FORCE ENGAGED IN THE EARTH MOVING WORK.

(2.5) TOPSOIL, EITHER ON-SITE OR OFF-SITE, SHALL BE THE ORIGINAL TOP LAYER OF A SOIL PROFILE FORMED UNDER NATURAL CONDITIONS, TECHNICALLY DEFINED AS THE "A" HORIZON BY THE SOIL SOCIETY OF AMERICA. IT SHALL CONSIST OF NATURAL, FRIABLE, LOAMY SOIL WITHOUT ADMIXTURES OF SUBSOIL OR OTHER FOREIGN MATERIALS, AND SHALL BE REASONABLY FREE FROM STUMPS, ROOTS, HARD LUMPS, STIFF CLAY, STONE, NOXIOUS WEEDS, BRUSH, OR OTHER LITTER. IT SHALL HAVE DEMONSTRATED BY EVIDENCE OF HEALTHY VEGETATION GROWING, OR HAVING GROWN ON IT PRIOR TO STRIPPING, THAT IT IS REASONABLY WELL DRAINED AND DOES NOT CONTAIN SUBSTANCES TOXIC TO PLANTS.

(2.5.1) "A" HORIZON: "A" HORIZONS SHALL BE MINERAL HORIZONS CONSISTING OF (1) HORIZONS OR ORGANIC MATTER ACCUMULATION FORMED OR FORMING AT OR ADJACENT TO THE SURFACE; (2) HORIZONS THAT HAVE LOST CLAY, IRON, OR ALUMINUM, WITH RESULTANT CONCENTRATIONS OF QUARTZ OR OTHER RESISTANT MINERALS OF SAND OR SILT SIZE; OR (3) HORIZONS DOMINATED BY 1 OR 2 ABOVE BUT TRANSITIONAL TO AN UNDERLYING B OR C.

(2.5.2) "A" HORIZON SUBDIVISIONS: A1 HORIZONS SHALL BE MINERAL HORIZONS, FORMED OR FORMING AT OR ADJACENT TO THE SURFACE, IN WHICH THE FEATURE EMPHASIZED IS AN ACCUMULATION OF HUMIDIFIED ORGANIC MATTER INTIMATELY ASSOCIATED WITH THE MINERAL FRACTION. THE SOIL IS A DARK OR DARKER THAN UNDERLYING HORIZONS BECAUSE OF THE PRESENCE OF ORGANIC MATTER. THE ORGANIC MATERIAL IS ASSUMED TO BE DERIVED FROM PLANT AND ANIMAL REMAINS DEPOSITED ON THE SURFACE OF THE SOIL OR DEPOSITED WITHIN THE HORIZON WITHOUT APPRECIABLE TRANSLOCATION. A2 HORIZONS SHALL BE MINERAL HORIZONS IN WHICH THE FEATURE EMPHASIZED IS LOSS OF CLAY, IRON OR ALUMINUM, WITH RESULTANT CONCENTRATION OF QUARTZ OR OTHER RESISTANT MINERALS IN SAND AND SILT SIZES.

(2.5.3) "A" HORIZON TOPSOIL CONTENT: "A" HORIZON TOPSOIL SHALL BE IN ACCORDANCE WITH THE FOLLOWING MATERIALS BY PERCENTAGE OF VOLUME:

SILT	42-58%
SAND	15-20%
CLAY	15-20%
ORGANIC MATERIAL	12-18%

(2.6) TOPSOIL SHALL HAVE A PH IN THE RANGE OF 5.8 TO 7.0 PRIOR TO MIXING WITH AMENDMENTS.

(3) PLANTING AREA PREPARATION

(3.1) PLANTING AREAS. BECAUSE OF SOIL COMPACTION DURING CONSTRUCTION, ALL PLANTING AREAS SHALL BE LOOSENED BY ROTO-TILLING AS SPECIFIED BELOW. AREAS UNDER THE DRIP LINE OF TREES OR SHRUBS TO REMAIN IN PLACE SHALL NOT BE ROTO-TILLED. A PLANTING AREA IS ANY AREA IN WHICH NEW PLANTING OCCURS.

(3.2) PRIOR TO EXCAVATION OF INDIVIDUAL TREE AND SHRUB PITS, A DIAMETER EQUAL TO TEN TIMES THE DIAMETER OF THE ROOT BALL SHALL BE ROTO-TILLED TO A DEPTH EQUAL TO THE DEPTH OF THE ROOT BALL FOR PLANTS HAVING ROOT BALLS NO DEEPER THAN 12". FOR PLANTS HAVING ROOT BALLS OVER 12" DEEP, THE ROTO-TILLED AREA SHALL BE 12". UNDER NO CIRCUMSTANCES SHALL THE ROTO-TILLED DEPTH BE GREATER THAN THE DEPTH OF THE ROOT BALL.

(3.3) IN CONTINUOUS SHRUB AND GROUND COVER BEDS, THE ROTO-TILLED PERIMETER SHOULD EXTEND TO A DISTANCE OF 5 TIMES THE DIAMETER OF A SINGLE ROOTBALL OF THE PERIMETER PLANTS. DEPTH OF TILLAGE FOR SHRUBS SHALL BE AS SPECIFIED ABOVE.

(4) PLANTING PIT EXCAVATION AND SOIL AMENDMENT

(4.1) TREE AND SHRUB PITS SHALL BE 3 TIMES THE WIDTH OF THE ROOTBALL, AND SHALL BE DUG SO THAT THE BOTTOM OF THE ROOT BALL WILL REST ON UNDISTURBED SOIL, AND THE TOP OF THE ROOT BALL WILL BE 2" ABOVE FINISH GRADE.

(4.2) GROUNDCOVER, ANNUAL AND PERENNIAL BEDS SHALL BE TILLED TO A DEPTH OF 12", OR IF SOIL AMENDMENTS ARE REQUIRED, EXCAVATED TO A DEPTH OF 12", UNLESS OTHERWISE NOTED ON THE PLANS. PLANTS SHALL BE EVENLY SPACED WITHIN THE TILLED PLANTING AREA AND SET TO MAINTAIN THE ORIGINAL GROWING DEPTH WHILE ALLOWING FOR A 2" TOP DRESSING OF MULCH.

(4.3) WHENEVER POSSIBLE, THE EXCAVATED SOIL SHOULD BE USED OR AMENDED TO BE USED AS BACKFILL MATERIAL IN ORDER TO ELIMINATE OR MINIMIZE THE OCCURRENCE OF HYDROLOGIC DISCONTINUITIES, AND/OR SOIL INTERFACE PROBLEMS COMMON TO PLANTING BEDS CONTAINING SOILS OF DIFFERENT TEXTURE.

(4.4) WHERE SOILS TESTING OR SUBSEQUENT OBSERVATION INDICATES THAT THE TEXTURE OF THE EXISTING SOIL IS UNDESIRABLE FOR THE PLANT SPECIES BEING PLANTED (I.E. HEAVY CLAY, PURE SAND) THE ON-SITE SOIL SHALL BE AMENDED AS RECOMMENDED WITHIN THE SOILS REPORT TO PROVIDE SUITABLE TEXTURE. WHERE SOILS TESTS DO NOT REVEAL TEXTURAL DEFICIENCIES, YET SUBSEQUENT EXCAVATIONS DO, THE BACKFILL MIXTURE SHALL BE 66% EXISTING SOIL AND 33% TOPSOIL AS DEFINED ABOVE.

(4.5) WHERE SOILS TESTS INDICATE THAT THE PH, SALINITY OR CHEMICAL COMPOSITION IS UNDESIRABLE FOR THE PLANT SPECIES BEING PLANTED, THE SOIL SHALL BE AMENDED AS RECOMMENDED WITHIN THE SOILS REPORT TO ACHIEVE SUITABLE CHEMICAL PROPERTIES. AFTER AMENDING, PLANTING SOIL FOR DECIDUOUS PLANTS SHALL HAVE A PH VALUE BETWEEN 6.0 AND 7.0, AND FOR EVERGREEN OR SEMI-EVERGREEN PLANTS SHALL HAVE A PH VALUE BETWEEN 5.0 AND 6.0. A REPRESENTATIVE SAMPLE FROM THE EXCAVATED SOIL SHALL BE FIELD TESTED FOR PH UTILIZING A RELIABLE SOIL PH METER OR SOIL PH TEST KIT. THE PH VALUE OF THE NATURAL SOIL BACKFILL MIXTURE MAY BE AMENDED BY ADDING LIMESTONE OR ALUMINUM SULFATE AS NEEDED.

(4.6) WHERE SOILS TESTING OR SUBSEQUENT EXCAVATION INDICATE THE EXISTING SOIL IS UNSUITABLE FOR USE AS BACKFILL MATERIAL, BECAUSE OF THE PRESENCE OF DEBRIS OR OTHER DELETERIOUS MATERIAL, THE BACKFILL MATERIAL SHALL BE 66% TOPSOIL, AS DEFINED ABOVE, AND 33% CLEAN SAND.

(4.7) AMENDED BACKFILL SOIL REPLACES ONLY THE SOIL EXCAVATED FROM THE TREE AND SHRUB PIT (3 TIMES THE WIDTH OF THE ROOT BALL), NOT THE ENTIRE ROTO-TILLED AREA.

(4.8) FOR TREES IN POORLY DRAINED SOILS, A VERTICAL PIPE SHALL BE INSTALLED AT THE EDGE OF THE PLANT PIT EXCAVATION, EXTENDING TO A LEVEL EQUAL TO THE TOP OF THE MULCH. THE PIPE END SHALL BE THREADED AND FITTED WITH A THREADED CAP.

(5) PLANT MATERIAL AND MULCH

(5.1) THE NAMES OF PLANTS REQUIRED UNDER THIS CONTRACT CONFORM TO THOSE GIVEN IN L.H. BAILEY'S HORTUS THIRD, 1976 EDITION. NAMES OF VARIETIES NOT INCLUDED THEREIN CONFORM GENERALLY WITH NAMES ACCEPTED IN THE NURSERY TRADE. ALL PLANTS SHALL HAVE A HABIT OF GROWTH THAT IS NORMAL FOR THEIR SPECIES AND THEY SHALL BE SOUND, HEALTHY AND VIGOROUS, WITH WELL DEVELOPED ROOT SYSTEMS. ALL PLANT MATERIAL SHALL BE FREE FROM INSECT PESTS, PLANT DISEASES, AND INJURIES. ALL PLANTS SHALL EQUAL OR EXCEED THE MEASUREMENTS SPECIFIED IN THE PLANT LIST, WHICH ARE MINIMUM ACCEPTABLE SIZES. TREES SHALL HAVE SINGLE TRUNKS EXCEPT AS NOTED. ALL SHRUBS SHALL BE HEALTHY, VIGOROUS, AND OF GOOD COLOR. ONLY DAMAGED OR BROKEN BRANCHES OF PLANT MATERIAL MAY BE PRUNED AND ANY NECESSARY PRUNING SHALL BE DONE AT THE TIME OF PLANTING. HOWEVER, UNDER NO CIRCUMSTANCES SHALL THE CENTRAL LEADER OF A PLANT BE PRUNED. BALLING AND BURLAPPING OF PLANTS SHALL FOLLOW THE CODE OF STANDARDS CURRENTLY RECOMMENDED BY THE AMERICAN STANDARD FOR NURSERY STOCK.

(5.2) ALL TAGS, STRINGS OR ANY OTHER MATERIAL ATTACHED TO THE PLANTS SHALL BE REMOVED AT THE TIME OF THE PLANTING. LABEL AT LEAST ONE TREE, SHRUB AND GROUNDCOVER OF EACH VARIETY WITH A SECURELY ATTACHED WATERPROOF TAG BEARING LEGIBLE DESIGNATION OF BOTANICAL NAME AND THE SIZE AS SPECIFIED IN THE PLANT LIST OF REQUIRED PLANTS. LABELS SHALL BE SECURELY ATTACHED TO PLANTS AND SHALL BE LEGIBLE FOR 60 DAYS AFTER DELIVERY TO THE PLANTING SITE. WIRE IDENTIFICATION TAGS SHALL NOT BE USED.

(5.3) SUBSTITUTIONS WILL BE PERMITTED ONLY UPON SUBMISSION OF PROOF THAT ANY PLANT IS NOT OBTAINABLE. ALL SUBSTITUTIONS MUST BE AUTHORIZED BY THE OWNER OR THE OWNER'S REPRESENTATIVE IN WRITING PROVIDING FOR USE OF THE NEAREST EQUIVALENT OBTAINABLE SIZE OR VARIETY OF PLANT HAVING THE SAME ESSENTIAL CHARACTERISTICS AS THE ORIGINAL VARIETY WITH AN EQUITABLE ADJUSTMENT OF CONTRACT PRICE.

(5.4) BALLED AND BURLAPPED PLANTS (B&B) SHALL BE DUG WITH FIRM, NATURAL BALLS OF EARTH OF SUFFICIENT DIAMETER AND DEPTH TO ENCOMPASS THE FIBROUS AND FEEDING ROOT SYSTEM NECESSARY FOR FULL RECOVERY OF THE PLANT. BALLS SHALL BE FIRMLY WRAPPED WITH BURLAP OR SIMILAR MATERIAL AND BOUND WITH TWINE OR CORD. BURLAP SHALL NOT BE PULLED OUT FROM UNDER BALLS DURING PLANTING OPERATIONS. B&B PLANTS WHICH CANNOT BE PLANTED IMMEDIATELY ON DELIVERY SHALL BE COVERED WITH MOIST SOIL, MULCH, OR OTHER MATERIAL TO PROVIDE PROTECTION FROM DRYING WINDS AND SUN.

(5.5) PLANTS NOTED "CONTAINER" ON THE PLANT LIST MUST BE CONTAINER GROWN WITH WELL ESTABLISHED ROOT SYSTEMS. LOOSE CONTAINERIZED PLANT MATERIAL WILL NOT BE ACCEPTED. ALL PLANTS INJURED AND PLANTS WITH ROOT BALLS BROKEN DURING TRANSPORT OR PLANTING OPERATIONS WILL BE REJECTED. BARE-ROOTED PLANTS (BR) SHALL BE PLANTED OR HEELED-IN IMMEDIATELY UPON DELIVERY. ALL PLANTS SHALL BE WATERED AS NECESSARY UNTIL PLANTED.

(5.6) NEW PLANTINGS SHALL BE LOCATED WHERE SHOWN ON THE PLAN EXCEPT WHERE OBSTRUCTIONS BELOW GROUND ARE ENCOUNTERED OR WHERE CHANGES HAVE BEEN MADE IN THE PROPOSED CONSTRUCTION. NECESSARY ADJUSTMENTS SHALL BE MADE ONLY AFTER APPROVAL BY THE OWNER OR THE OWNER'S REPRESENTATIVE. REASONABLE CARE SHALL BE EXERCISED TO HAVE PLANTING PITS DUG AND SOIL PREPARED PRIOR TO MOVING PLANTS TO THEIR RESPECTIVE LOCATIONS TO ENSURE THAT THEY WILL NOT BE UNNECESSARILY EXPOSED TO DRYING OR PHYSICAL DAMAGE.

(5.7) A LIST OF PLANTS, INCLUDING SIZES, QUANTITIES AND OTHER REQUIREMENTS, IS SHOWN ON THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE QUANTITIES AS SHOWN ON THE DRAWINGS. IF DISCREPANCIES OCCUR IN THE QUANTITIES SHOWN, THE PLANTING PLANS SHALL GOVERN.

(5.8) THE PLANTING CONTRACTOR WILL BE NOTIFIED BY THE GENERAL CONTRACTOR WHEN OTHER DIVISIONS OF THE WORK HAVE PROGRESSED SUFFICIENTLY TO COMMENCE WORK ON THE PLANTING OPERATION. THEREAFTER, PLANTING OPERATIONS SHALL BE CONDUCTED UNDER FAVORABLE WEATHER CONDITIONS DURING THE NEXT SEASON OR SEASONS WHICH ARE NORMAL FOR SUCH WORK. REMOVAL OF ROCK OR OTHER UNDERGROUND OBSTRUCTIONS, RELOCATIONS TO AVOID OBSTRUCTIONS, AND PROVISION OF DRAINAGE FOR PLANTING AREAS SHALL BE DONE ONLY AS APPROVED BY THE OWNER OR THE OWNER'S REPRESENTATIVE.

(5.9) ALL PLANTS SHALL BE PLANTED UPRIGHT AND FACED TO GIVE THE BEST APPEARANCE OR RELATIONSHIP TO ADJACENT STRUCTURES. ROOTS SHALL BE SPREAD IN THEIR NORMAL POSITION. ALL BROKEN OR FRAYED ROOTS SHALL BE CUT OFF CLEANLY. PLANTS WITH CIRCLING ROOTS SHALL NOT BE ACCEPTED. BURLAP TWINE AND OTHER FASTENING MATERIAL SHALL BE CUT AND PUSHED TO THE BOTTOM OF THE PLANT PIT PRIOR TO BACKFILL MATERIAL BEING PLACED. THE PLANT SHALL NOT BE ROCKED BACK AND FOURTH TO ENTIRELY REMOVE THE WRAPPING MATERIAL NOR SHALL ANY OTHER PRACTICE BE PERFORMED WHICH COULD CAUSE THE ROOT BALL TO BREAK APART. WHEN WIRE BASKETS ARE USED ON THE ROOT BALL OF PLANTS THE WIRE SHALL BE REMOVED TO AT LEAST 12" BELOW THE TOP OF THE ROOT BALL.

(5.10) AT THE TIME OF PLANTING, AND AS MANY TIMES LATER AS SEASONAL CONDITIONS REQUIRE, EACH PLANT AND THE SOIL AROUND IT SHALL BE THOROUGHLY WATERED. CARE SHOULD BE EXERCISED WHEN WATERING TO AVOID FLOODING OF PLANTS AND BEDS, DISPLACEMENT OF MULCH MATERIAL AND EROSION OF SOIL. AVOID USE OF HIGH PRESSURE HOSES. THE CONTRACTOR SHALL MAKE, AT HIS EXPENSE, WHATEVER ARRANGEMENTS MAY BE NECESSARY TO ENSURE AN ADEQUATE SUPPLY OF WATER TO MEET THE NEEDS OF THIS CONTRACT DURING INSTALLATION. THE CONTRACTOR SHALL ALSO FURNISH ALL NECESSARY HOSE, EQUIPMENT ATTACHMENTS AND ACCESSORIES FOR THE ADEQUATE WATERING OF PLANTED AREAS AS MAY BE REQUIRED UNTIL ACCEPTANCE BY THE OWNER OR THE OWNER'S REPRESENTATIVE.

(5.11) MULCH SHALL BE CLEAN, GROUND OR SHREDDED BARK OR HARDWOOD MULCH. IN PLANTING AREAS WHERE SLOPES EXCEED 3:1 AND AT DRAINAGE DISPERSION POINTS OR ALONG NATURAL WATER WAYS WHERE CONCENTRATIONS OF SURFACE WATER EMPTY FROM CULVERTS OR PAVED DITCHES, HEAVY JUTE MESH SHALL BE INSTALLED. SHREDDED HARDWOOD OR BARK MULCH SHALL HAVE BEEN COMPOSTED FOR AT LEAST TWO MONTHS PRIOR TO APPLICATION. FRESHLY GROUND MULCH WILL NOT BE ACCEPTED. FINELY GROUND MULCH WHICH INHIBITS DRAINAGE, ENCOURAGES WEED GROWTH OR BECOMES WATERLOGGED WILL NOT BE ACCEPTED. MULCH SHALL BE COMPOSED OF SIMILAR SIZED FRAGMENTS AND SHALL NOT CONTAIN STICKS, CONES, LEAVES, UNSHREDDED PIECES, OR OTHER DELETERIOUS MATTER. ALL AZALEA AND CAMELLIA PLANTING BEDS SHALL HAVE 1" OF PINE STRAW MULCH UNDER 2" OF BARK OR SHREDDED HARDWOOD MULCH.

(5.12) ALL PLANTS SHALL BE MULCHED IMMEDIATELY AFTER PLANTING. GROUND COVERS SHALL BE MULCHED WITH A 3" LAYER OF SHREDDED HARDWOOD OR BARK MULCH. ALL OTHER PLANTING BEDS, SHRUBS AND TREE PLANTINGS SHALL BE MULCHED WITH A 3" MINIMUM LAYER OF MULCH. THIS MULCH SHALL ENTIRELY COVER THE AREA OF THE PLANTING PIT, BED, OR EARTH BERM AROUND EACH PLANT WITH THE EXCEPTION OF THE AREA IMMEDIATELY ADJACENT TO THE PLANT TRUNK OR TRUNKS. THE AREA IMMEDIATELY ADJACENT TO THE PLANT TRUNK OR TRUNKS SHALL BE LEFT FREE OF ANY MULCH.

(6) FERTILIZING

(6.1) THE FERTILIZER SHOULD BE A DRY SLOW RELEASE FORM OF FERTILIZER. IT SHOULD CONTAIN AT LEAST 25-50% WATER INSOLUBLE NITROGEN. THE FERTILIZER SELECTED SHOULD ALSO HAVE A LOW ADJUSTED SALT INDEX TO PREVENT BURNING. THE N-P-K RATIO SHOULD NOT EXCEED 3-1-2 UNLESS THE SOIL TEST REVEALS THAT ADDITIONAL LEVELS OF P AND K ARE NECESSARY.

(6.2) FOR DECIDUOUS TREES, USE OSMOCOTE (18-6-12) AT THE RATE EQUIVALENT TO 4 LBS ACTUAL N/1000 SQ FT OF ROOT ZONE AREA/YEAR. FOR EVERGREEN TREES USE 2 LBS ACTUAL N/1000 SQ FT OF ROOT ZONE AREA/YEAR.

(6.3) MIX THE FERTILIZER INTO THE BACKFILL SOIL OF THE TREE PITS. FOR SHRUB BEDS, MIX THE FERTILIZER INTO THE AREA THAT HAS BEEN ROTO-TILLED FOR THE PLANTS.

(6.4) THE FERTILIZER RATE FOR CONTINUOUS GROUND COVER AND SHRUB BEDS SHOULD BE DERIVED BY CALCULATING THE ENTIRE ROOT ZONE AREA. THE ROOT ZONE AREA IS FOUND BY MEASURING THE AREA CONTAINING THE MULTIPLE PLANT ROOTS. USE OSMOCOTE (18-6-12) AT A RATE EQUIVALENT TO 2 LBS OF N /1000 SQ FT OF ROOT ZONE AREA. THE FERTILIZER SHOULD BE EVENLY DISTRIBUTED WITHIN THE SHRUB BED SOIL.

(6.5) ALWAYS BE SURE THAT ADEQUATE MOISTURE IS AVAILABLE WHEN FERTILIZING SO THAT THE FERTILIZER WILL BE DISSOLVED INTO THE SOIL SOLUTION FOR ROOT UPTAKE AND TO AVOID BURNING THE ROOTS.

(7) STAKING

(7.1) TREES REQUIRING SUPPORT WILL BE INDICATED IN THE COMMENTS SECTION OF THE PLANTING SCHEDULE. ALL TREES REQUIRING SUPPORT SHALL BE STAKED ACCORDING TO THE DETAILS PROVIDED.

(7.2) TWO STAKES SHALL BE REQUIRED PER TREE. THE STAKES SHALL BE DRIVEN VERTICALLY INTO THE GROUND TO A DEPTH OF 2 1/2' TO 3', ON OPPOSITE SIDES OF THE TREE, IN SUCH A MANNER AS NOT TO INJURE THE ROOT BALL OR ROOTS. STAKES FOR SUPPORTING TREES SHALL BE 2" SQUARE OR ROUND, BY 8'. THE STAKES SHOULD BE SOUND WOOD TREATED WITH A SUITABLE WOOD PRESERVATIVE. A SINGLE BURLAP LOOP SHALL BE PLACED AROUND THE TRUNK, ABOVE THE FIRST MAJOR BRANCH, AND TACKED TO ONE OF THE WOODEN STAKES. ANOTHER SINGLE BURLAP LOOP SHALL ALSO BE PLACED AROUND THE TRUNK, ABOVE THE FIRST MAJOR BRANCH, AND TACKED TO THE OTHER WOODEN STAKE. THE BURLAP SHOULD BE TAUT.

(7.3) WOODEN STAKES AND BURLAP TIES SHOULD BE REMOVED AFTER ONE YEAR.

(8) CHEMICAL APPLICATION

(8.1) ALL PESTICIDES SHALL BE PRODUCTS OF RECOGNIZED COMMERCIAL MANUFACTURERS, AND SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE, AND LOCAL PESTICIDE LAWS. PESTICIDES SHALL BE APPLIED WITH CALIBRATED EQUIPMENT ACCORDING TO EPA LABEL RESTRICTIONS AND REGULATIONS BY A CERTIFIED APPLICATOR. ANY DAMAGE INCURRED TO THE SITE, ADJACENT PROPERTIES, OR APPLICATOR DURING PESTICIDE APPLICATIONS WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

(8.2) PESTICIDES SHOULD BE USED ONLY WHEN NECESSARY TO TREAT AN OUTBREAK OF A HARMFUL PEST OR DISEASE PROBLEM. THE OWNER OR THE OWNER'S REPRESENTATIVE SHALL BE NOTIFIED 24 HOURS PRIOR TO THE APPLICATION OF ANY PESTICIDE.

(9) MAINTENANCE AND GUARANTEE

(9.1) THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING HIS WORK FOR THE PERIOD OF ONE YEAR AFTER ACCEPTANCE BY THE OWNER OR THE OWNER'S REPRESENTATIVE. MAINTENANCE SHALL INCLUDE MOWING, WATERING, WEEDING, CULTIVATING, MULCHING, REMOVAL OF DEAD MATERIALS, RESETTING OF PLANTS TO PROPER GRADES OR UPRIGHT POSITIONS, RESTORATION OF EARTH BERMS, AND OTHER NECESSARY OPERATIONS. ADEQUATE PROTECTION FOR LAWN AREAS AGAINST TRESPASSING DURING PLANTING OPERATIONS AND AGAINST DAMAGE OF ANY KIND SHALL BE PROVIDED. NOTHING IN THESE NOTES IS INTENDED TO RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO REPAIR EXISTING LAWN AREAS DAMAGED BY WORKMEN ENGAGED IN THE COMPLETION OF THIS PROJECT.

(9.2) INSPECTION OF THE WORK TO DETERMINE COMPLETION OF THE CONTRACT EXCLUSIVE OF THE POSSIBLE REPLACEMENT OF PLANTINGS, WILL BE MADE BY THE OWNER OR THE OWNER'S REPRESENTATIVE AT THE CONCLUSION OF THE INSTALLATION PERIOD UPON WRITTEN NOTICE REQUESTING SUCH INSPECTION. REQUEST SHALL BE SUBMITTED BY CONTRACTOR AT LEAST TEN DAYS PRIOR TO THE ANTICIPATED DATE FOR INSPECTION. AFTER INSPECTION, THE CONTRACTOR WILL BE NOTIFIED IN WRITING BY THE OWNER OR THE OWNER'S REPRESENTATIVE OF ACCEPTANCE OF THE WORK, EXCLUSIVE OF THE POSSIBLE REPLACEMENT OF PLANTS SUBJECT TO GUARANTEE; OR, IF THERE ARE ANY DEFICIENCIES, THE CONTRACTOR WILL BE NOTIFIED OF THE REQUIREMENTS NECESSARY FOR COMPLETION OF THE WORK. PLANTINGS SHALL NOT BE CONSIDERED ACCEPTED UNTIL ALL DEFICIENCIES HAVE BEEN CORRECTED AND APPROVED IN WRITING.

SEEDING NOTES

THIS SECTION INCLUDES, BUT IS NOT LIMITED TO: TILLAGE, pH BALANCING, FERTILIZING, WATERING, SEEDING, MAINTENANCE MOWING, AND MULCHING OF ALL DISTURBED AREAS WITHIN THE CONTRACT LIMIT LINES NOT OCCUPIED BY STRUCTURES, PAVEMENT, OR PLANTING BEDS.

(1) QUALITY ASSURANCE

(1.1) QUALITY ASSURANCE: SEEDING WORK SHALL BE PERFORMED BY A SINGLE FIRM SPECIALIZING AND EXPERIENCED IN LANDSCAPE WORK.

(2.1) SHIP MATERIALS WITH CERTIFICATES OF INSPECTION REQUIRED BY GOVERNING AUTHORITIES. COMPLY WITH REGULATIONS APPLICABLE TO LANDSCAPE MATERIALS.

(2) SUBMITTALS

(2.1) SEED VENDOR'S CERTIFIED BLUE TAG AND INVOICE SHOWING QUANTITY FOR EACH GRASS SEED MIXTURE REQUIRED, STATING BOTANICAL AND COMMON NAME, PERCENTAGE BY WEIGHT, AND PERCENTAGES OF PURITY, GERMINATION, AND WEED SEED FOR EACH GRASS SEED SPECIES.

(2.2) TOPSOIL ANALYSIS: PROVIDE FOR THE SERVICES OF A TESTING AGENCY TO PERFORM AN ANALYSIS OF TOPSOIL TO BE USED, AND A DETERMINATION OF NUTRITIONAL REQUIREMENTS OF SOIL FOR ESTABLISHMENT OF LAWNS AS SPECIFIED BELOW.

(3) JOB CONDITIONS

(3.1) PRIOR TO BEGINNING THE WORK OF THIS SECTION, VERIFY THAT THE SITE WORK CONTRACTOR HAS COMPLETED THE FINISH GRADING. AT THIS POINT, 4" OF TOPSOIL SHALL BE IN PLACE AND ROUGH GRADE LEVELS SHALL BE AT THE FINISH GRADE LEVEL, IN ALL LANDSCAPE AREAS, INCLUDING AREAS TO BE ESTABLISHED IN TURF.

(3.2) THE LANDSCAPE CONTRACTOR SHALL CAREFULLY CORRELATE HIS WORK WITH THAT OF OTHER SITE DEVELOPERS. THE LANDSCAPE CONTRACTOR IS REQUIRED TO INSTALL AND MAINTAIN HIS FINISHED WORK AT HIS EXPENSE.

(3.3) PRIOR TO TOPSOIL PLACEMENT ALL AREAS TO RECEIVE TOPSOIL SHALL BE CLEARED OF ALL DEBRIS. ANY DEBRIS SHALL BE REMOVED FROM THE SITE. TO CREATE A TRANSITION ZONE BETWEEN UNDERLYING SOIL AND NEW SOIL, TOPSOIL SHALL BE PLACED IN TWO (2) TWO INCH (2") LAYERS. THE FIRST LAYER SHALL BE PLACED AND THOROUGHLY TILLED IN PRIOR TO PLACEMENT OF SECOND LAYER.

(3.4) THE LANDSCAPE CONTRACTOR SHALL PLACE A FOUR INCH (4") COMPACTED LAYER OF TOPSOIL OVER ALL AREAS TO BE ESTABLISHED IN TURF. THE TOPSOIL LAYER SHALL BRING ALL TURF AREAS AND SHRUB BEDS TO FINISH GRADE.

(3.5) DETERMINE LOCATIONS OF ALL UNDERGROUND UTILITIES AND PERFORM WORK IN A MANNER WHICH WILL AVOID DAMAGE. ALL UTILITIES ARE NOT NECESSARILY SHOWN ON DRAWINGS AND CONTRACTOR SHALL ASSUME RESPONSIBILITY OF DETERMINING EXISTENCE OR NON-EXISTENCE OF ALL UTILITIES. MAINTAIN GRADE STAKES SET BY OTHERS UNTIL REMOVAL IS MUTUALLY AGREED UPON BY PARTIES CONCERNED.

(3.6) WHEN CONDITIONS DETRIMENTAL TO LAWN ESTABLISHMENT, GROWTH AND MAINTENANCE ARE ENCOUNTERED, SUCH AS RUBBLE FILL, ADVERSE DRAINAGE CONDITIONS OR OBSTRUCTIONS, NOTIFY THE OWNER'S REPRESENTATIVE BEFORE BEGINNING WORK.

(3.7) DELIVERY, STORAGE, AND HANDLING: FERTILIZER, SOIL AMENDMENTS, AND SEED SHALL BE DELIVERED TO THE SITE IN THE ORIGINAL, UNOPENED CONTAINERS BEARING THE MANUFACTURER'S GUARANTEED ANALYSIS, NAME, TRADEMARK, AND STATEMENT OF CONFORMANCE TO STATE AND FEDERAL LAWS. IN LIEU OF CONTAINERS, FERTILIZER AND SOIL AMENDMENTS MAY BE FURNISHED IN BULK WITH A MANUFACTURER'S CERTIFICATE INDICATING THE ABOVE INFORMATION ACCOMPANYING EACH DELIVERY. DURING DELIVERY, SEED, FERTILIZER AND SOIL AMENDMENTS SHALL BE KEPT IN DRY STORAGE AWAY FROM CONTAMINANTS. PRECAUTIONS SHALL BE TAKEN TO PROTECT CONTAINERS FROM RUPTURE PRIOR TO USE.

(4) SOIL AMENDMENTS

(4.1) LIME: TO pH BALANCE SOIL, NATURAL DOLOMITIC LIMESTONE CONTAINING NOT LESS THAN 95% OF TOTAL CARBONATES WITH A MINIMUM OF 30% MAGNESIUM CARBONATES AND 65% CALCIUM CARBONATE IN A PELLETIZED FORM.

(4.2) ALUMINUM SULFATE: TO pH BALANCE SOIL, COMMERCIAL GRADE IN DRY POWDER FORM.

(4.3) SUPER PHOSPHATE: SOLUBLE MIXTURE OF TREATED MINERALS; 20% PHOSPHORIC ACID.

(4.4) STARTER FERTILIZER: GRANULAR OR PELLETIZED FERTILIZER CONSISTING OF 30% SLOW-RELEASE NITROGEN, PHOSPHORUS, AND POTASSIUM IN THE FOLLOWING COMPOSITION:

(4.4.1) COMPOSITION: 14% NITROGEN, 28% PHOSPHOROUS, AND 14% POTASSIUM BY WEIGHT.

(4.5) SEED: STATE-CERTIFIED SEED OF THE LATEST SEASON'S CROP COMMON TO THE SITE LOCATION. PROVIDE FRESH, CLEAN, NEW CROP SEED COMPLYING WITH ESTABLISHED TOLERANCES FOR GERMINATION AND PURITY IN ACCORDANCE WITH THE U.S. DEPARTMENT OF AGRICULTURE RULES AND REGULATIONS UNDER THE LATEST EDITION OF THE FEDERAL SEED ACT. SEED SHALL BE MIXED BY THE DEALER AND SHALL BE DELIVERED TO THE SITE IN SEALED CONTAINERS WHICH SHALL BEAR THE DEALER'S GUARANTEED ANALYSIS. SEED THAT HAS BECOME WET, MOLDY, OR OTHERWISE DAMAGED WILL NOT BE ACCEPTABLE.

(5) SEED PREPARATION

(5.1) SEEDING SHALL NOT BE DONE WHEN THE GROUND IS FROZEN, SNOW COVERED, SATURATED, OR IN ANY OTHER CONDITION WHICH WOULD MAKE ESTABLISHMENT AND SURVIVAL OF LAWNS UNLIKELY.

(5.2) AT THE TIME OF BEGINNING SEED BED PREPARATION, TOPSOIL SHALL BE IN A LOOSE, FRIABLE CONDITION, FREE FROM STONES IN ANY DIMENSION, STICKS, ROOTS AND OTHER EXTRANEOUS MATTER. IF TOPSOIL HAS BECOME CRUSTY, HARDENED OR ERODED SINCE BEING SPREAD, IT SHALL BE A PART OF THIS WORK TO RESTORE THE SOIL TO THE LOOSE CONDITION DESCRIBED ABOVE.

(5.3) SPREAD FERTILIZER AND pH BALANCING AGENTS AT RATES RECOMMENDED BY THE SOIL TEST REPORT TO ACHIEVE A pH OF 5.5 TO 6.8. BLEND ADDITIVES THOROUGHLY INTO UPPER 4" OF TOPSOIL. REMOVE ANY ROCKS OR OTHER DEBRIS WHICH MAY SURFACE. TILL AREAS UNTIL SOIL IS LOOSE AND FRIABLE, AND ALL SOIL AMENDMENTS ARE UNIFORMLY DISTRIBUTED.

(5.4) WORK ALL AREAS TO A SMOOTH EVEN SURFACE FREE FROM IRREGULARITIES, RIDGES, OR DEPRESSIONS. PREPARED AREAS SHALL MEET REQUIRED FINISH GRADE ELEVATIONS AND SHALL DRAIN ADEQUATELY. REPAIR ALL WASHED AND ERODED PORTIONS.

(5.5) MOISTEN PREPARED AREAS IF SOIL IS DRY. WATER THOROUGHLY, THEN ALLOW SURFACE MOISTURE TO EVAPORATE. DO NOT CREATE MUDDY SOIL CONDITIONS.

(5.6) SOW SEED USING A SPREADER OR SEEDING MACHINE. DO NOT SEED WHEN WIND VELOCITY EXCEEDS 5 MILES PER HOUR. DISTRIBUTE SEED EVENLY OVER ENTIRE AREA BY SOWING EQUAL QUANTITY IN 2 DIRECTIONS AT RIGHT ANGLES TO EACH OTHER.

(5.7) RAKE SEED LIGHTLY INTO TOP 1/4" OF SOIL, FIRM ENTIRE AREA WITH A ROLLER NOT EXCEEDING 90 LBS. PER FOOT OF ROLLER WIDTH, AND WATER WITH A FINE SPRAY.

(5.8) UNLESS INDICATED OTHERWISE ON THE DRAWINGS, PROTECT NEWLY SEEDED AREAS BY SPREADING MULCH TO A UNIFORM AND CONTINUOUS DEPTH OF 1-1/2" LOOSE MEASUREMENT (70-90 LBS/1000 SF.)

(5.8.1) STRAW MULCH: STRAW SHALL BE STALKS FROM OATS, WHEAT, RYE, BARLEY OR RICE THAT ARE FREE FROM NOXIOUS WEEDS, CHEMICALS, MOLD OR OTHER OBJECTIONABLE MATERIALS WITH A NONASPHALTIC MULCH TACKIER. STRAW SHALL BE IN AN AIR-DRY CONDITION SUITABLE FOR PLACING. STRAW SUPPLIED FOR MECHANICAL APPLICATION SHALL BE CHOPPED.

(6) HYDROSEEDING

(6.1) MULCH SUPPLIED FOR USE WITH HYDRAULIC APPLICATION OF GRASS SEED AND FERTILIZER SHALL CONSIST OF FUTERRA F4 NETLESS BY PROFILE PRODUCTS LLC (800-726-8371). INSTALL PER MANUFACTURER'S RECOMMENDATIONS USING MANUFACTURER'S BIODEGRADABLE STAPLES.

(6.2) NONASPHALTIC TACKIFIER: COLLOIDAL TACKIFIER RECOMMENDED BY FIRBER-MULCH MANUFACTURER FOR SLURRY APPLICATION; NONTOXIC AND FREE OF PLANT-GROWTH OR GERMINATION INHIBITORS.

(6.3) HYDROSEEDING: MIX SPECIFIED SEED, STARTER FERTILIZER, AND FIBER MULCH IN WATER, USING EQUIPMENT SPECIFICALLY DESIGNED FOR HYDROSEED APPLICATION. CONTINUE MIXING UNTIL UNIFORMLY BLENDED INTO HOMOGENEOUS SLURRY SUITABLE FOR HYDRAULIC APPLICATION.

(6.3.1) APPLY SLURRY UNIFORMLY TO ALL AREAS TO BE SEEDED IN A TWO-STEP PROCESS. APPLY FIRST SLURRY COAT AT A RATE SO THAT MULCH COMPONENT IS DEPOSITED AT NOT LESS THAN 500 LB/ACRE DRY WEIGHT, AND SEED COMPONENT IS DEPOSITED AT NOT LESS THAN THE SPECIFIED SEED-SOWING RATE. APPLY SLURRY COVER COAT OF FIBER MULCH AT THE RATE RECOMMENDED BY THE MANUFACTURER FOR THE STEEPEST AREA OF SLOPE.

(6.4) THE LANDSCAPE CONTRACTOR SHALL CAREFULLY CORRELATE HIS WORK WITH THAT OF OTHER SITE DEVELOPERS. THE LANDSCAPE CONTRACTOR IS REQUIRED TO INSTALL AND MAINTAIN HIS FINISHED WORK AT HIS EXPENSE.

(7) MAINTENANCE DURING ESTABLISHMENT

(7.1) IT IS THE LANDSCAPE CONTRACTOR'S RESPONSIBILITY TO DETERMINE WATER APPLICATION RATES.

(7.2) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE DURING THE ESTABLISHMENT PERIOD AND UNTIL FINAL ACCEPTANCE. MAINTENANCE SHALL BEGIN IMMEDIATELY AFTER SEEDING AND SHALL INCLUDE WATERING, FERTILIZING, REMOVAL OF STRAW MULCH, WEED ERADICATION, MOWING, TRIMMING, CLIPPING REMOVAL, AND THE RECONSTRUCTION OF ALL AREAS DAMAGED BY EROSION OR OTHER OCCURRENCE.

(7.3) STANDS IN LAWN AREAS SHALL BE MOWED WHENEVER THE AVERAGE HEIGHT REACHES 3-1/2 INCHES. MOWING HEIGHT FOR COOL SEASON GRASSES SHALL BE 3" AND FOR WARM SEASON GRASSES 1-1/2".

(7.4) WASTE MATERIAL SHALL BE REMOVED FROM THE SITE DAILY.

(7.5) WARRANTY: THE ESTABLISHMENT PERIOD FOR LAWN AREAS SHALL BE FROM THE TIME OF INSTALLATION UNTIL THE THIRD CUTTING OF AN ESTABLISHED LAWN. AN ESTABLISHED STAND SHALL BE UNIFORM IN COVERAGE AND OF THE SPECIFIED MIXTURE. NO INDIVIDUAL LAWN AREA SHALL HAVE UNACCEPTABLE PORTIONS IN EXCESS OF ONE PERCENT OF THE INDIVIDUAL LAWN AREA. ALL REPLACEMENTS SHALL BE SUBJECT TO THE WARRANTY REQUIREMENTS AS THE ORIGINAL STOCK. ANY DAMAGE DONE DURING REPLACEMENT OPERATIONS SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR.

(8) CLEAN-UP AND PROTECTION

(8.1) KEEP PAVEMENTS AND WORK AREA IN A CLEAN AND ORDERLY CONDITION.

(8.2) PROTECT SEEDED AREAS AND MATERIALS FROM DAMAGE DUE TO OPERATIONS BY OTHER CONTRACTORS, TRADES, AND TRESPASSERS. MAINTAIN PROTECTION DURING INSTALLATION AND UNTIL FINAL ACCEPTANCE. TREAT REPAIR OR REPLACE DAMAGED SEEDED AREAS AS DIRECTED.

(9) COMPLETION AND ACCEPTANCE

(9.1) THE COMPLETION OF THE CONTRACT WILL BE ACCEPTED AND NOTICE OF COMPLETION RECORDED ONLY WHEN THE ENTIRE CONTRACT IS COMPLETED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.

(9.2) WITHIN TEN (10) DAYS OF THE GENERAL CONTRACTOR'S NOTIFICATION THAT THE INSTALLATION IS COMPLETE, THE OWNER'S REPRESENTATIVE WILL INSPECT THE INSTALLATION AND, IF FINAL ACCEPTANCE IS NOT GIVEN, WILL PREPARE A "PUNCH LIST".

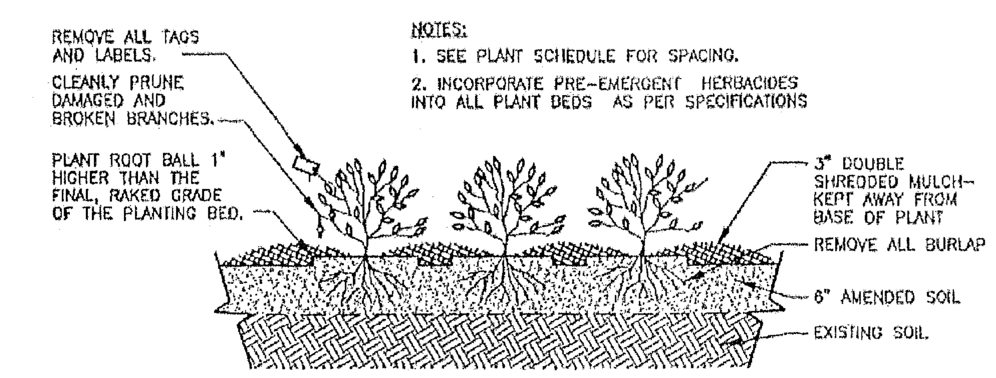
(9.3) FINAL ACCEPTANCE WILL BE GIVEN BY THE OWNER'S REPRESENTATIVE UPON SATISFACTORY COMPLETION OF ALL WORK INCLUDING "PUNCH LIST" ITEMS.

NOTE:
ALL AREAS THAT ARE NOT COVERED BY PLANTING BEDS, SIDEWALKS, PAVEMENT AND STRUCTURES ARE TO BE PERMANENTLY SEEDED.

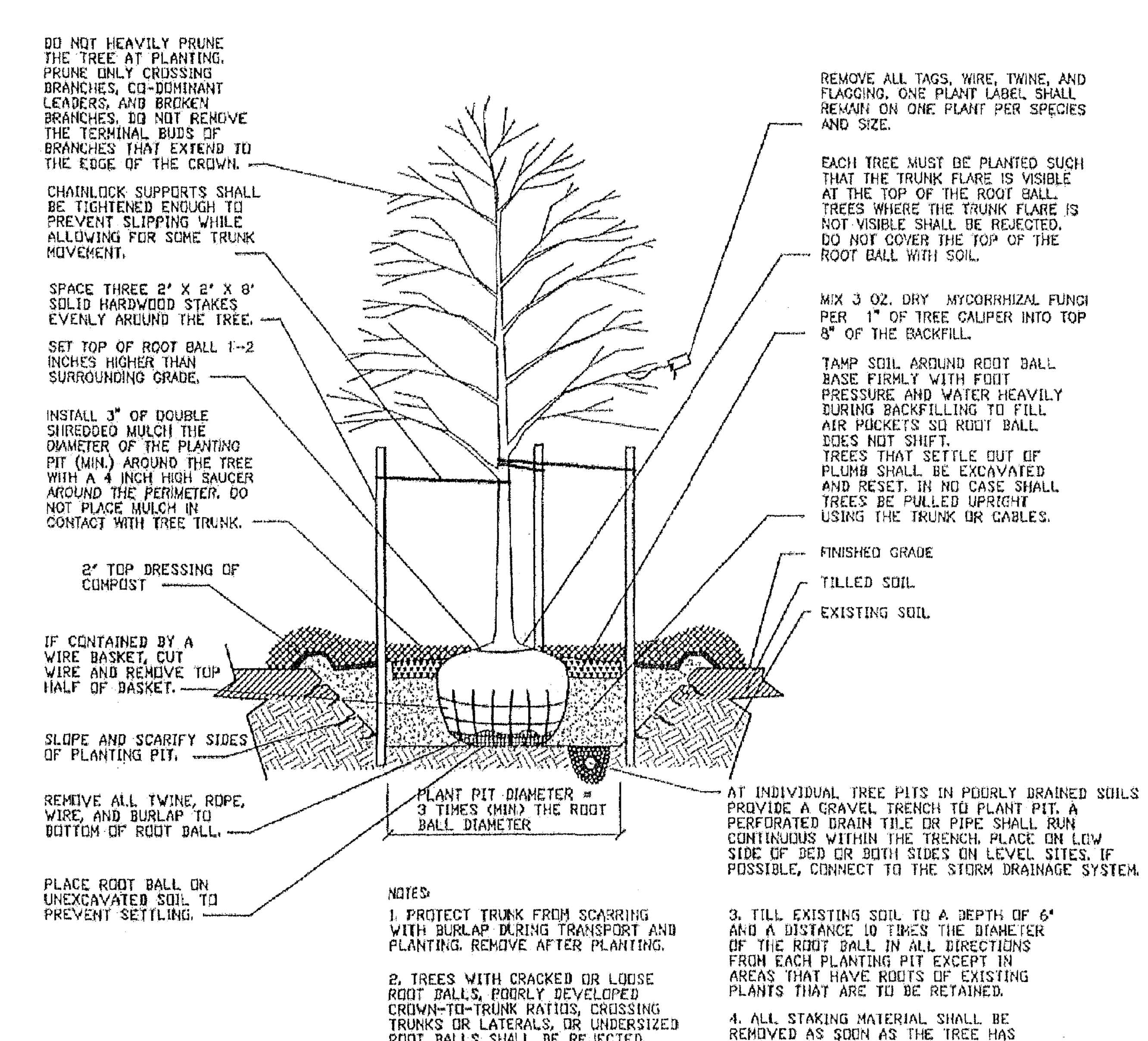
PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	HEIGHT	CALIPER	ROOT	SPACING	COMMENTS
TREES								
AR	3	*Acer rubrum*	Red Maple		1 1/2"-2"	B&B	As Shown	
LS	3	*Liquidamber styraciflua*	Sweet Gum		1 1/2"-2"	B&B	As Shown	
NS	4	*Nyssa sylvatica*	Black Tupelo		1 1/2"-2"	B&B	As Shown	
QN	3	*Quercus nuttalli*	Nuttall Oak		1 1/2"-2"	B&B	As Shown	
IN	24	*Ilex x 'Nellie R. Stevens'*	Nellie Stevens Holly	24"-36"		B&B	As Shown	
MC	13	*Myrica cerifera*	Southern Wax Myrtle	24"-36"		3 Gal.	As Shown	
VA	29	*Viburnum awabuki 'Chindo'*	Chindo Viburnum	24"-36"		3 Gal.	As Shown	

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185-6316
757 220 0500 • FAX 757 220 8544



SHRUBS & GROUNDCOVERS IN BEDS
NOT TO SCALE



NOTES:
1. PROTECT TRUNK FROM SCARRING WITH BURLAP DURING TRANSPORT AND PLANTING. REMOVE AFTER PLANTING.
2. TREES WITH CRACKED OR LOOSE ROOT BALLS, POORLY DEVELOPED CROWN-TO-TRUNK RATIOS, CROSSING TRUNKS OR LATERALS, OR UNDERSIZED ROOT BALLS SHALL BE REJECTED.
3. TILL EXISTING SOIL TO A DEPTH OF 6" AND A DISTANCE 10 TIMES THE DIAMETER OF THE ROOT BALL IN ALL DIRECTIONS FROM EACH PLANTING PIT EXCEPT IN AREAS THAT HAVE ROOTS OF EXISTING PLANTS THAT ARE TO BE RETAINED.
4. ALL STAKING MATERIAL SHALL BE REMOVED AS SOON AS THE TREE HAS SUFFICENT ROOTS TO NO LONGER REQUIRE STAKING FOR UP TO ONE YEAR FROM PLANTING. TREES THAT REMAIN UNSTABLE WITHOUT STAKING AFTER ONE YEAR SHALL BE REJECTED AND REPLACED.

TREE PLANTING
NOT TO SCALE

No.	Revision	Date	Appvd.

Designed by	Drawn by CRO	Checked by SAR
CAD checked by SAR	Approved by	
Scale 1"=20'	Date 3/17/2011	

Project Title
DIXIE FUEL COMPANY
PROPANE DISTRIBUTIO[N]
FACILITY
JAMES CITY COUNTY, VIRGINIA
Issued for

Drawing Title
LANDSCAPE
DETAILS AND NOTES

COMMONWEALTH OF VIRGINIA
VAUGHN B. RINNER
Lic. No. 000335
03/21/2011
LANDSCAPE ARCHITECT

Drawing Number
L-2
Sheet 9 of 10
Project Number
2006059-000.00

JCC CASE # SP-0037-2011

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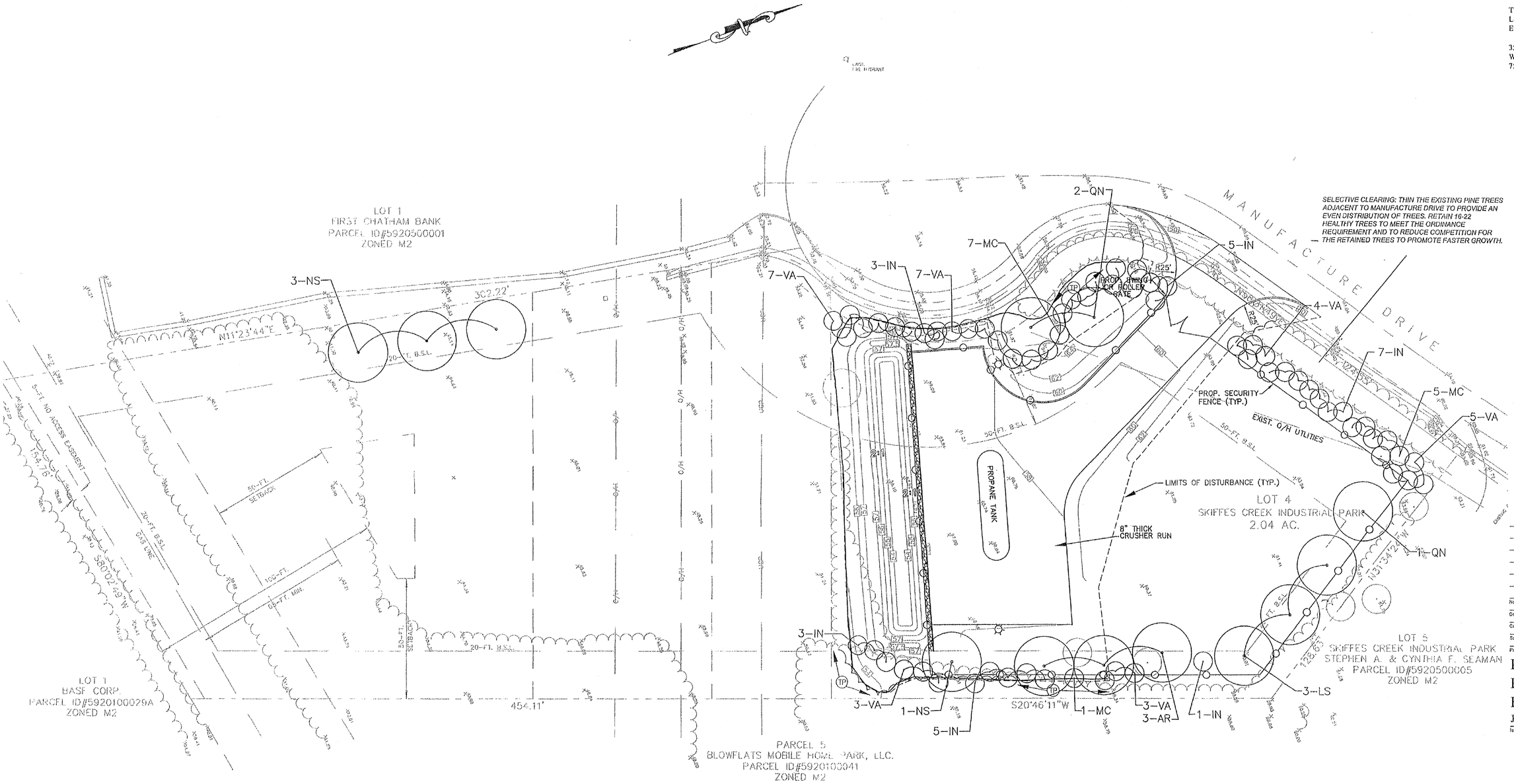
Vanasse Hangen Brustlin, Inc.

Transportation
Land Development
Environmental Services

351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185-6316
757 220 0500 à FAX 757 220 8544



GRAPHIC SCALE

0 20 40 80

(IN FEET)
1 inch = 20 ft.

No.	Revision	Date	Appvd.

Designed by	Drawn by CRO	Checked by SAR	
CAD checked by SAR	Approved by		
Scale 1"=20'	Date 3/15/2011		

Project Title

DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY

JAMES CITY COUNTY, VIRGINIA

Issued for

Drawing Title

LANDSCAPE PLAN

COMMONWEALTH OF VIRGINIA
VAUGHN B. RINNER
Lic. No. 000335
03/21/2011
LANDSCAPE ARCHITECT

Drawing Number
L-1

Sheet 8 of 10

Project Number
2006059-000.00

JCC CASE # SP-0037-2011

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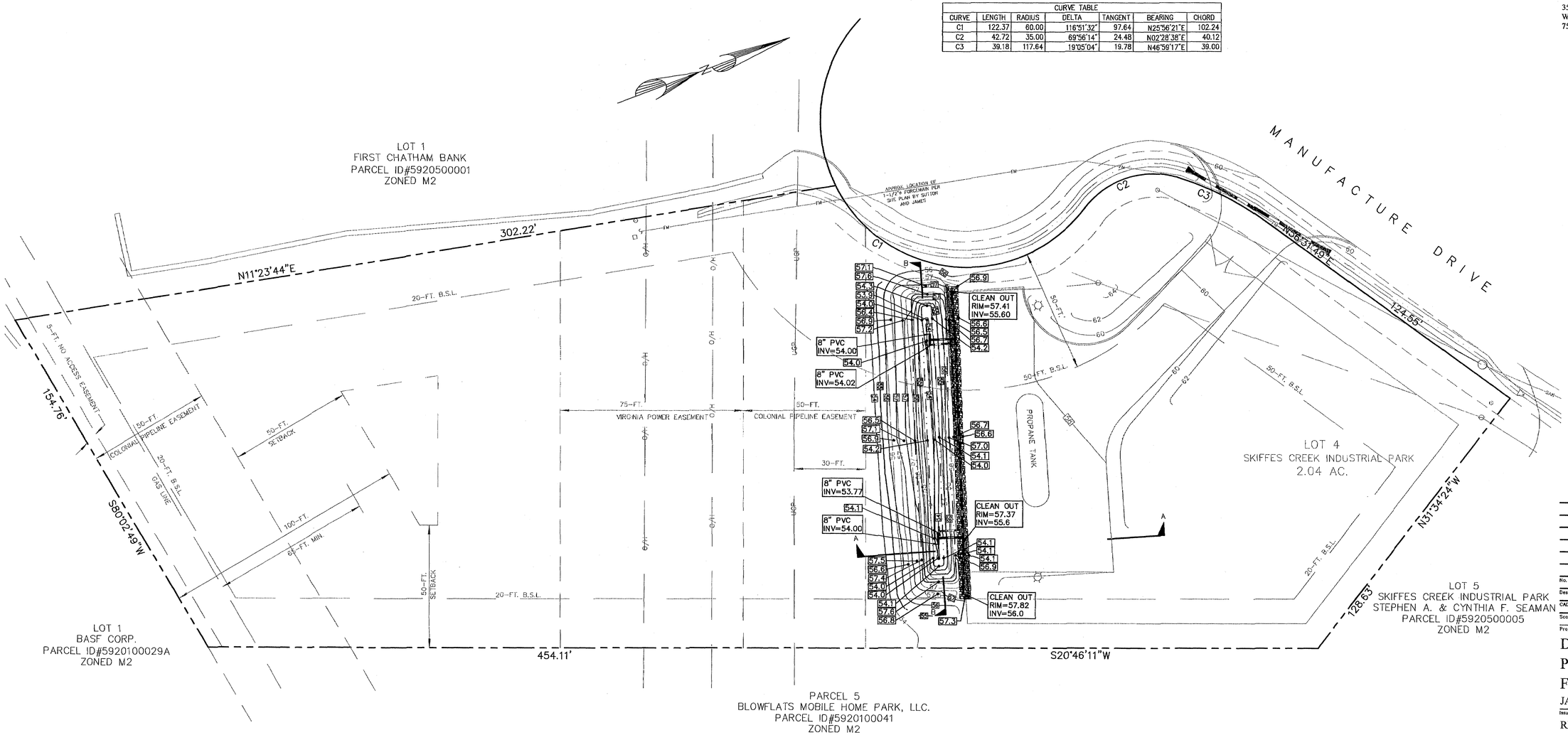
Vanasse Hangen Brustlin, Inc.

Transportation
Land Development
Environmental Services

351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185-6316
757 220 0500 à FAX 757 220 8544

CURVE TABLE						
CURVE	LENGTH	RADIUS	DELTA	TANGENT	BEARING	CHORD
C1	122.37	60.00	116°51'32"	97.64	N25°56'21"E	102.24
C2	42.72	35.00	69°56'14"	24.48	N02°28'38"E	40.12
C3	39.18	117.64	19°05'04"	19.78	N46°59'17"E	39.00



No.	Revision	Date	Apprvd.

Designed by | Drawn by CRO | Checked by SAR
CAD checked by SAR | Approved by
Scale 1"=20' | Date 10/17/2011

Project Title

DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY

JAMES CITY COUNTY, VIRGINIA

Issued for

REVIEW AND APPROVAL

Drawing Title

RECORD DRAWING
SITE PLAN
GRADING AND DRAINAGE

General Notes

1. ELEVATIONS HEREON ARE IN FEET AND ARE BASED ON TOPOGRAPHIC SURVEY PROVIDED TO VHB BY CLIENT.
2. THIS SURVEY DOES NOT IMPLY IN ANY WAY THAT:
   (1) INSPECTIONS WERE MADE DURING CONSTRUCTION
3. RECORD INFORMATION SHOWN ON THIS PLAN IS BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB IN AUGUST, 2011.
4. HORIZONTAL AND VERTICAL DATUM BASED ON TOPOGRAPHIC SURVEY PROVIDED TO VHB BY CLIENT.

GRAPHIC SCALE
0 20 40 80
(IN FEET)
1 inch = 20 ft.

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.

REFERENCE SHEETS C-3 SP-0037-2011

JCC CASE # SP-0037-2011

COMMONWEALTH OF VIRGINIA
9/20/12
STEPHEN A. ROMEO
LIC. No. 1448-B
LAND SURVEYOR

FOR RECORD DRAWING INFORMATION ONLY

Drawing Number
R-1

Sheet 1 of 2

Project Number
2006059-000.00

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STORMWATER GENERAL PERMIT NOTES

THE CONTRACTOR SHALL ENSURE COMPLIANCE WITH THE REQUIREMENTS OF 4VAC 50-60-380 & 390 – VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION SITES, INCLUDING BUT NOT LIMITED TO THE FOLLOWING ITEMS:

IMPLEMENTATION, DOCUMENTATION, AND INSPECTIONS NECESSARY FOR COMPLIANCE WITH STORM WATER GENERAL PERMIT

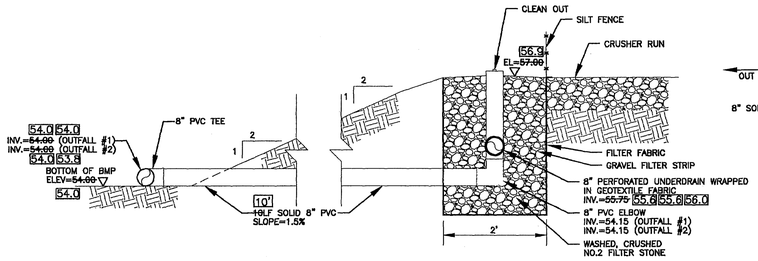
1. IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION PLAN AS DEVELOPED FOR THE SITE AND IN ACCORDANCE WITH THE GENERAL PERMIT REQUIREMENTS WITH REGARD TO EROSION AND SEDIMENT CONTROL, POST-CONSTRUCTION STORM WATER MANAGEMENT, AND OTHER CONTROLS REGARDING SOLID MATERIALS, SEDIMENTS AND DUST, AND THE DEMONSTRATED COMPLIANCE WITH APPLICABLE STATE AND/OR LOCAL WASTE DISPOSAL, SANITARY SEWER OR SEPTIC SYSTEM REGULATIONS.
2. RETENTION OF THE STORM WATER POLLUTION PREVENTION PLAN AT THE CONSTRUCTION SITE. THE PLAN AND OTHER RELATED DOCUMENTS SHALL BE MADE AVAILABLE UPON REQUEST TO AUTHORIZED LOCAL, STATE, OR FEDERAL REPRESENTATIVES.
3. AMENDMENT OF THE STORM WATER POLLUTION PREVENTION PLAN WHENEVER THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE, WHICH HAS A SIGNIFICANT EFFECT ON THE POTENTIAL FOR THE DISCHARGE OF POLLUTANTS TO THE SURFACE WATERS OF THE STATE, OR IF THE STORM WATER POLLUTION PREVENTION PLAN PROVES TO BE INEFFECTIVE IN ELIMINATING OR SIGNIFICANTLY MINIMIZING POLLUTANTS FROM THE CONSTRUCTION ACTIVITY.
4. DOCUMENTATION OF THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR, WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE, AND WHEN STABILIZATION MEASURES ARE IMPLEMENTED.
5. INSPECTIONS OF DISTURBED AREAS OF THE CONSTRUCTION SITE AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION THAT HAVE NOT BEEN FINALLY STABILIZED, STRUCTURAL CONTROL MEASURES, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE SHALL BE CONDUCTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT THAT PRODUCES SURFACE RUNOFF AS REQUIRED BY THE GENERAL PERMIT REGULATIONS. REPORTS SUMMARIZING THE INSPECTIONS SHALL BE MADE IN ACCORDANCE TO THE REGULATIONS AND RETAINED AS PART OF THE STORM WATER POLLUTION PREVENTION PLAN.
6. ALL CONTRACTORS AND SUBCONTRACTORS SHALL SIGN A COPY OF THE CERTIFICATION STATEMENT AS DESCRIBED IN THE GENERAL PERMIT BEFORE CONDUCTING ANY PROFESSIONAL SERVICES AT THE SITE IDENTIFIED IN THE POLLUTION PREVENTION PLAN. ALL CERTIFICATIONS SHALL BE INCLUDED IN THE STORM WATER POLLUTION PREVENTION PLAN.
7. ALL DOCUMENTS, RECORDS, REPORTS, AND OTHER INFORMATION RELEVANT TO THE GENERAL PERMIT REGULATIONS SHALL BE GIVEN TO THE OWNER FOLLOWING FINAL STABILIZATION OF THE SITE.
8. WHERE THE SITE HAS BEEN FINALLY STABILIZED AND ALL STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES THAT ARE AUTHORIZED BY THE GENERAL PERMIT ARE ELIMINATED, A NOTICE OF TERMINATION SHALL BE PREPARED FOR THE OWNER TO SIGN AND SUBMIT TO THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY, WATER DIVISION.
9. THE STRUCTURAL STABILITY OF THE PERMITTED FACILITIES SHALL BE ENSURED.

PROHIBITION AND REPORTING OF RELEASES OF SUBSTANCES OTHER THAN STORM WATER

10. EXECUTION OF REPORTING REQUIREMENTS IN THE EVENT OF NONCOMPLIANCE OF THE GENERAL PERMIT OR IF ANY UNPERMITTED, UNUSUAL OR EXTRAORDINARY DISCHARGE ENTERS OR COULD BE EXPECTED TO ENTER SURFACE WATERS OF THE STATE.
11. PROHIBITION OF NON-STORMWATER DISCHARGES EXCEPT AS PROVIDED FOR IN THE GENERAL PERMIT. APPROPRIATE POLLUTION PREVENTION MEASURES FOR NON-STORM WATER COMPONENTS OF DISCHARGE SHALL BE IMPLEMENTED.
12. EXECUTION OF REPORTING REQUIREMENTS OF 40 CFR PART 117 (1992) AND 40 CFR PART 302 (1992). IN ADDITION, THE DISCHARGE OF HAZARDOUS SUBSTANCES OR OIL IN THE STORM WATER DISCHARGE FROM THE CONSTRUCTION SITE SHALL BE PREVENTED OR MINIMIZED IN ACCORDANCE WITH THE STORM WATER POLLUTION PREVENTION PLAN.
13. PROHIBITION OF DISCHARGE OF HAZARDOUS SUBSTANCES, OIL, OR POLLUTANTS RESULTING FROM ON-SITE SPILLS OR RELEASES.

MANAGEMENT MEASURES AND RESPONSE TO UNINTENTIONAL RELEASES

14. ALL WASTE COLLECTING, CONTROL, TREATMENT, MANAGEMENT OF POLLUTANT ACTIVITIES AND DISPOSAL FACILITIES SHALL BE OPERATED IN A MANNER CONSISTENT WITH THE GENERAL PERMIT REGULATIONS.
15. ALL FEASIBLE STEPS TO MINIMIZE ANY ADVERSE IMPACTS TO STATE WATERS RESULTING FROM NONCOMPLIANCE WITH CONDITIONS SPECIFIED IN THE GENERAL PERMIT 16. ALL REASONABLE STEPS TO MINIMIZE, CORRECT OR PREVENT ANY DISCHARGE IN VIOLATION OF THE GENERAL PERMIT WHICH HAS A REASONABLE LIKELIHOOD OF ADVERSELY AFFECTING HUMAN HEALTH OR THE ENVIRONMENT SHALL BE TAKEN.



UNDERDRAIN OUTFALL DETAIL

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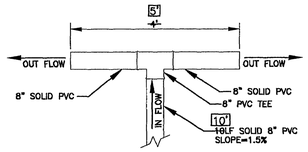

PVC TEE SECTION DETAIL

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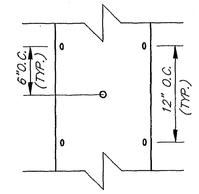
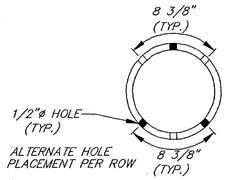


PLAN VIEW



SECTION VIEW

PERFORATION DETAIL

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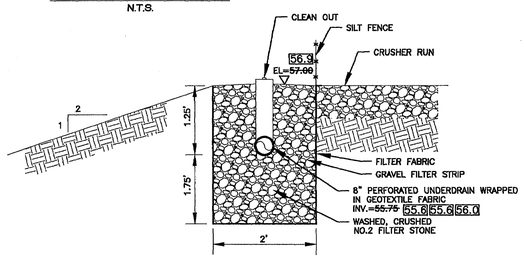

GRAVEL FILTER STRIP DETAIL

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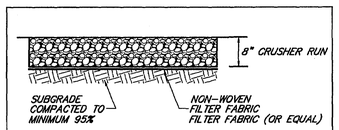
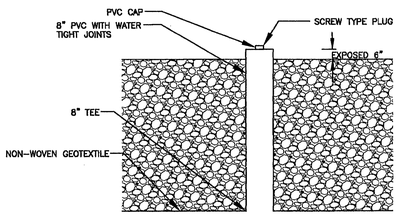


GRAVEL SECTION

NOT TO SCALE



CLEAN OUT DETAIL

N.T.S.

INFILTRATION BASIN DISCHARGE (AVERAGE INFILTRATION RATE 1.552 IN/HR)			
	ELEV.	DISCHARGED	INFILTRATED
2 YEAR	55.46	0.00 CFS	0.05 CFS
10 YEAR	56.19	0.00 CFS	0.06 CFS
25 YEAR	56.73	0.00 CFS	0.07 CFS
100 YEAR	57.01	0.41 CFS	0.08 CFS

INFILTRATION BASIN DISCHARGE (HALF OF AVERAGE INFILTRATION RATE 0.776 IN/HR)			
	ELEV.	DISCHARGED	INFILTRATED
2 YEAR	55.62	0.00 CFS	0.03 CFS
10 YEAR	56.45	0.00 CFS	0.03 CFS
25 YEAR	56.99	0.00 CFS	0.04 CFS
100 YEAR	57.01	0.49 CFS	0.04 CFS

NOTE; ALL PVC AND UNDERDRAIN PIPES SHALL BE SCHEDULE 40, ASTM D 3034, ASTM 2241

MAINTENANCE PLAN FOR INFILTRATION TRENCH

INSPECTIONS FOR SEDIMENT BUILDUP SHALL BE PERFORMED AT LEAST QUARTERLY. IT IS ANTICIPATED THAT UNDER NORMAL CONDITIONS SEDIMENT REMOVAL MAY BE REQUIRED ANNUALLY.

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

INSPECTION AND MAINTENANCE MEASURES:

1. CHECK INFILTRATION TRENCH FOR SEDIMENT AND LITTER ACCUMULATION REGULARLY (WEEKLY).

2. CHECK TRENCH BOTTOM 2 TO 3 DAYS FOLLOWING A SIGNIFICANT RAINFALL EVENT. IF STORMWATER IS PRESENT, INVESTIGATE POSSIBILITIES FOR SEDIMENT OR TRASH BLOCKAGE. IF THE FACILITY RETAINS MORE THAN 1 FOOT OF WATER FOR LONGER THAN 5 DAYS AFTER A SIGNIFICANT RAINFALL, A DETAILED INVESTIGATION BY A PROPERLY LICENSED PROFESSIONAL MAY BE REQUIRED IN ORDER TO ENSURE PROPER FUNCTIONALITY OF THE FACILITY.

3. IMMEDIATELY REMOVE TRASH, DEBRIS OR SEDIMENT THAT PREVENTS THE MOVEMENT OF WATER, AND TO MAINTAIN THE INTEGRITY OF THE FACILITY AND PROVIDE FOR AN ATTRACTIVE APPEARANCE. PROPERTY MAINTENANCE MEASURES SHALL INCLUDE THE REMOVAL OF TRASH, LITTER AND SEDIMENT FROM SURROUNDING GRASS, PARKING AREAS AND STABILIZED CONTRIBUTING AREAS. MAINTENANCE SHOULD BE PERFORMED WEEKLY TO PREVENT MIGRATION INTO THE BMP. DURING WINTER, KEEP SNOW REMOVAL MATERIALS SUCH AS SAND, SALT OR CINDERS AWAY FROM THE INFILTRATION AREA TO THE EXTENT POSSIBLE. TYPE OF DEBRIS REMOVED SHOULD BE NOTED AND POSSIBLE SOURCES IDENTIFIED AND REDUCED. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY PROPERLY.

4. MANY FACTORS WILL AFFECT THE OPERATION OF AN INFILTRATION SYSTEM. ROUTINE INSPECTIONS AND MAINTENANCE SHOULD BE PERFORMED BY THE SAME ASSIGNED INDIVIDUAL IN ORDER TO ESTABLISH BASELINE KNOWLEDGE OF HOW THE SYSTEM FUNCTIONS UNDER DIFFERENT SITE AND WEATHER CONDITIONS.

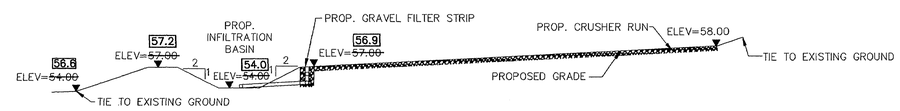
5. TRENCH, INCLUDING SIDE SLOPES SHALL BE PLANTED IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS INCLUDED ON PLAN SHEET C-2B AND SHOULD BE MOWED ONLY ONCE PER YEAR BETWEEN MARCH 1 AND MARCH 15, USING A LINE TRIMMER OR MOWER SET TO 8" CUTTING HEIGHT. ALL CLIPPINGS SHALL BE COLLECTED AND DISPOSED OF OFF-SITE. TREES AND SHRUBS ARE NOT PERMITTED TO GROW ON THE EMBANKMENT OR IN THE INFILTRATION TRENCH BOTTOM.

6. IF VEGETATION COVERS LESS THAN 40 % OF SOIL SURFACES, LIME, FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDLINGS. IF VEGETATION COVERS MORE THAN 40 % BUT LESS THAN 70 % OF SOIL SURFACES, LIME, FERTILIZE AND OVER SEED IN ACCORDANCE WITH CURRENT SEEDING RECOMMENDATIONS OR REQUIREMENTS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH).

7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE FACILITY FOR SIGNS OF ANIMAL/RODENT BURROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING.

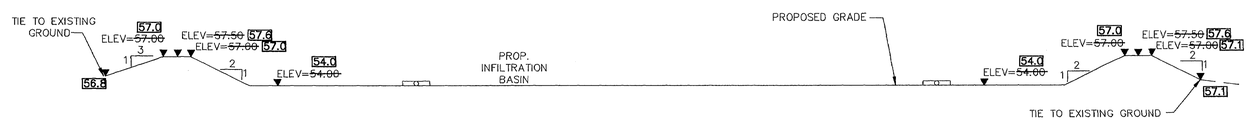
8. RECORD KEEPING. THE OWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OF INSPECTIONS PERFORMED FOR THE FACILITY. RECORDS SHALL DOCUMENT ROUTINE MAINTENANCE AND/OR REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.

9. THE FACILITY SHALL NOT ACCEPT ADDITIONAL DRAINAGE OR BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT OR APPROVAL BY THE ENVIRONMENTAL DIVISION OF JAMES CITY COUNTY.



SECTION A-A

N.T.S.



SECTION B-B

N.T.S.

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.

REFERENCE SHEETS C-4 AND C-5 SP-0037-2011

JCC CASE # SP-0037-2011

COMMONWEALTH OF VIRGINIA
9/20/12
STEPHEN A. ROMEO
LIC. No. 1448-B
LAND SURVEYOR

FOR RECORD DRAWING INFORMATION ONLY

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185-6316
757 220 0500 à FAX 757 220 8544

No.	Revision	Date	Apprvd.
1	REVISED PER COUNTY COMMENTS	05/28/2012	SAR

Designed by | Drawn by CRO | Checked by SAR
CAD checked by SAR | Approved by
Scale 1"=20' | Date 10/17/2011

Project Title
DIXIE FUEL COMPANY
PROPANE DISTRIBUTION FACILITY
JAMES CITY COUNTY, VIRGINIA

Issued for
REVIEW AND APPROVAL

Drawing Title
RECORD DRAWING
GENERAL NOTES
AND DETAILS

Drawing Number
R-2

Sheet 2 of 2

Project Number
2006059-000.00

P:\33429.01\CAD\SR\PLANSET\R-2 DETAILS.DWG

Vanasse Hangen Brustlin, Inc. TRANSMITTAL

Transportation
Land Development
Environmental Services

351 McLaws Circle, Suite 3
Williamsburg, VA 23185-6316
757 220 0500
FAX 757 220 8544

Date: 09/20/2012	**VHB Project No.:** 33429.01
Re: Dixie Fuel Company Propane Distribution Facility	

To: Bill Cain, Chief Engineer
Engineering and Resource Protection Division
101-E Mounts Bay Road
Williamsburg, VA 23185

Environmental Division
SEP 20 2012
RECEIVED

We are sending you: ☐ Attached ☐ Under Separate cover via Regular Mail the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Diskettes ☐ Specifications ☐ Copy of Letter ☐ Change Order
☒ Other

Copies	Date	No.	Description
1	9/19/2012		Record Drawing
1	9/19/2012		Record Drawing and Construction Certification Forms
1	9/20/2012		Cover Letter to Mr. Bill Cain
1			Site Photos

These are transmitted as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit ____ Copies for approval
☐ For your use ☐ Approved as noted ☐ Submit ____ Copies for distribution
☒ As requested ☐ Return for corrections ☐ Return ____ Corrected prints
☐ For review and comment ☐ For bids due
☐ Returned prints on loan to VHB

REMARKS:

If VHB provides materials to the Client that are stored electronically, the Client recognizes that data, plans, specifications, reports, documents, or other information recorded on or transmitted as electronic media ("CADD Documents") are subject to undetectable alteration, either intentional or unintentional, due to, among other causes, transmission, conversion, media degradation, software error, or human alteration. Accordingly, the CADD Documents are provided to the Client for informational purposes only and not as an end product. VHB makes no warranties, either express or implied, regarding the fitness or suitability of the CADD Documents.

The CADD Documents are instruments of professional service, and shall not be used, in whole or in part, for any project other than that for which they were created, without the express written consent of VHB and without suitable compensation to VHB. Accordingly, the Client agrees to waive any and all claims against VHB resulting in any way from the unauthorized alternation, misuse or reuse of the CADD documents and to defend, indemnify, and hold VHB harmless for any claims, losses, damages, or costs, including attorneys fees, arising out of the alteration, misuse or reuse of any CADD Documents.

Copy to: 33429.01

By: Piotr Swietuchowski, PE
VHB, Inc.

Transportation
Land Development
Environmental
Services

VHB imagination | innovation | energy Creating results for our clients and benefits for our communities

VHB+LandMark • Legacy • Leadership • Results

September 20, 2012

Environmental Division

SEP 20 2012

RECEIVED

Ref: 33429.01
Mr. Bill Cain, Chief Engineer
Engineering and Resource Protection Division
101-E Mounts Bay Road
Williamsburg, VA 23185

Re: Dixie Fuel Company Propane Distribution Facility Record Drawings and Construction Certification Forms

Dear Mr. Cain,

On behalf of our client and landowner, Vanasse Hangen Brustlin, Inc. (VHB) is pleased to submit, for your review, Record Drawings and Construction Certification for the above project. VHB staff visited the site several times in the last couple weeks to observe performance of the installed Infiltration Basin. Site observation revealed that, to the best of our knowledge and understanding, the Infiltration Basins performs as designed. Photographs taken during the August 31st and September 4th visits are included with this submittal for your convenience.

We would like to request timely review and approval of the attached documentation due to the approaching expiration date (11/16/12) of surety held for the above project.

Should you have any questions or need additional information, please contact me at 757-220-0500.

Sincerely,

VANASSE HANGEN BRUSTLIN, INC.

Piotr Swietuchowski, P. E.
Project Manager

Vanasse Hangen Brustlin, Inc.
351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185
757.220.0500 | FAX 757.220.8544
email: info@vhb.com
www.vhb.com

Transportation
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Environmental Division

OCT 18 2011

RECEIVED

Vanasse Hangen Brustlin, Inc.

To: Engineering and Resource Protection Division
101-E Mounts Bay Road
Williamburg, VA 23185
757-253-6670

Date: 10/18/2011

Project No.: 33429.00

From: Steve Romeo

Re: Dixie Fuel Company Propane Distribution Facility

Please find attached a copy of the Dixie Fuel Company Propane Distribution Facility BMP Record Drawings. JCC Case # SP-0037-2011 also attached Record Drawing and Construction Certification Forms.

C:\transmittal to ERPD-Dixie.doc

Environmental Division
APR 27 2011
RECEIVED

Supporting Engineering Documents

DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY

Williamsburg, Virginia

Prepared for **Dixie Fuel Company**
Represented by: Bill Kerlin
302 Vista Drive
Seaford, VA 23696-2364
Phone # 757-249-1264

Prepared by **Vanasse Hangen Brustlin, Inc.**
Transportation, Land Development, Environmental Services
351 McLaws Circle, Suite 3
Williamsburg, VA 23185-6316
Phone # 757.220.0500

SP-37-11
AMENDS SP-75-09
SC-033

COMMONWEALTH OF VIRGINIA
3/18/11
STEPHEN A. ROMEO
LIC. No. 1448-B
Stephen Romeo
LAND SURVEYOR

03/17/11

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PROJECT NARRATIVE

DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY

PROJECT NARRATIVE

Project Description:

The scope of this project includes the construction of the proposed propane distribution facility and associated access road and drainage system.

The project is situated in the Skiffes Creek watershed. There are no wetlands or Resource Protection Areas within limits of this project. A minor impact of 2002 square feet is proposed to on- site steep slopes. All disturbed areas will receive permanent seeding applied in accordance with Virginia Erosion and Sediment Control Handbook standards. All slopes 3:1 and steeper will be protected with soil stabilization matting.
The proposed impervious area of 8,719 square feet covers approximately 9.8% of the 2.04 Ac lot.

In accordance with the James City County Code, Chapter 23, Sec. 23-10, 4 a structural BMP is not required for the site because the proposed impervious area cover is less than 10% of the site .

Stormwater runoff from the project site will be managed by a proposed Infiltration Basin.

The total site disturbed area is approximately 0.47 acres.

Existing Site Conditions:

This site is approximately 2.04 acres and is mostly grass with strip of woods along the south and east property line. Site elevations range from approximately 40.0 to 64.0 with moderate slopes.

Offsite Disturbed Area:

No offsite land disturbance is proposed with this site plan.

Soils:

9 - Chickahominy Silt Loam

This soil is poorly drained.

Typically, the surface layer of this oil is dark grayish and grayish brown silt loam. The subsoil is mostly gray silty clay loam, silty clay, and clay loam with yellowish brown mottles.

The permeability of this Chickahominy soil is very slow, and the available water capacity is moderate.

The shrink/swell potential for the Chickahominy soils is low to high. The erosion factor "K" is from 0.24 to 0.37. Chickahominy soils are in Hydraulic Group "D".

11C - Craven-Uchee Complex, 6% TO 10% slopes

The Craven soils are moderately well drained and the Uchee soils are well drained.

Typically, the surface layer or the Craven soils are dark grayish brown fine sandy loam. The subsurface layer is pale olive fine sandy loam. The subsoil is yellowish brown clay in the upper part with yellowish brown sandy clay loam mottled with gray in the middle and lower parts. The substratum is brownish yellow fine sandy loam mottled with gray in the upper part and gray loamy fine sand with yellow mottles in the lower part.

Typically, the surface layer of the Uchee soils is dark grayish brown loamy fine sand. The subsurface layer is light yellowish brown and very pale brown loamy fine sand. The subsoil is strong brown sandy clay loam in the upper part and strong brown sandy clay loam and clay mottled with gray and red in the lower part. The substratum is variegated red, brown and gray stratified sandy loam and sandy clay loam.

In the Craven soils, permeability is slow; and in the Uchee soils, it is moderate in the upper part of the subsoil and moderately slow in the lower part.

The shrink/swell potential for the Craven and Uchee soils are low to moderate. The erosion factor "K" is from 0.32 to 0.37 for the Craven soil and 0.20 to 0.28 for the Uchee soil. Craven soils are in hydrologic soils, Group "C", Uchee soils are in hydrologic soils Group "A".

19B- Kempsville-Emporia Fine Sandy Loams, 2% to 6% slopes

Kempsville-Emporia soils are well drained.

Typically, the surface layer of this soil is dark grayish brown fine sandy loam. The subsurface layer is light yellowish brown fine sandy loam. The subsoil is yellowish brown and strong brown fine sandy loam, sandy clay loam, and mottled fine sandy loam that is somewhat firm and compact over yellowish brown fine sandy clay loam. The substratum is yellowish brown fine sandy loam.

The permeability of Kempsville soil is moderate. In the Emporia soil, permeability is moderate in the upper part of the subsoil and moderately slow to slow in the lower part. The available water capacity is moderate for both soils.

The subsoil of Kempsville soil has a low shrink-swell potential, and that of Emporia soil has moderate shrink-swell potential. The erosion factor K is from 0.24 to 0.32. Kempsville soils are in hydrologic soils, Group "B", and Emporia soils are in hydrologic soils, Group "C".

29B - Slagle Fine Sandy Loam,2% to 6% slopes

The Slagle Fine Sandy Loam soil is moderately well drained.

Typically, the surface layer of this soil is dark grayish brown fine sandy loam. The subsurface layer is light yellowish brown fine sandy loam. The subsoil is mostly mottled yellowish brown clay loam and sandy clay loam. The substratum is mottled sandy clay loam.

The permeability of this Slagle Fine Sandy Loam soil is moderate in the upper part of the subsoil and moderately slow or slow in the lower part. The available water capacity is moderate.

The shrink/swell potential for the Slagle Fine Sandy Loam soil is moderate. The erosion factor "K" is 0.24. Slagle soils are in hydrologic grou

Critical Erosion Areas:

Areas with Craven-Uchee soils and Kempsville-Emporia soils shall be monitored due to the high erodability factor.

Erosion and Sediment Control Measures

All vegetative and structural erosion and sediment control practices will be constructed and maintained in accordance with the minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook, Third edition dated 1992.

Structural Practices:

1. Temporary Construction Entrance (3.02): Construction entrance will be installed to prevent tracking onto the existing roadway.

2. Silt Fence (3.05): Silt fence shall be installed along the toe of all slopes and all other areas that may carry silt beyond the right of way. Silt fence shall also be installed on the downhill side of the utility extensions.

3. Culvert Inlet Protection (3.08): All culverts inlets shall be protected within limits of disturbance.

4. Permanent Seeding (3.32): Permanent seeding shall be applied to all disturbed areas on the site once final grades have been established.

5. Slope Stabilization Blankets & Matting (3.36): All ditches shall be lined with treatment 1 matting (VDOT EC-2). All slopes steeper than 3:1 shall be treated with treatment 1 matting.

6. Tree Preservation and Protection (3.38): Tree protection shall be installed prior to clearing operations.

Permanent Stabilization

Once final grade has been established, all disturbed areas shall be stabilized to prevent erosion. Permanent seeding shall be applied to all disturbed areas on the site. All disturbed areas will be fertilized, seeded and mulched per state minimum standards and specifications section 3.32 of the Virginia Erosion and Sediment Control Handbook, 1992.

Management Strategies and sequence of construction:

1. Notify James City County Environmental Division a minimum of 48 hours prior to the commencement of any construction operations.

2. Conduct an on-site pre-construction meeting between the contractor, the owner, the engineer, and the James City County Environmental Division inspector.

3. Install the construction entrance and flag the limits of construction as indicated on the erosion & sediment control plans.

4. Clear and grub area within the limits of clearing and required for installation of all temporary erosion and sediment control measures as indicated on plans.

5. Complete installation of all temporary erosion and sediment control measures indicated on the plans.

6. Proceed with demolition and grading. All slopes 3:1 or steeper shall be stabilized with soil stabilization mats.

7. Proceed with construction of the proposed propane storage tank system.

8. Proceed with installation of the site entrance pavement and gravel access road.

9. Upon completion of final site stabilization and receiving authorization from the assigned James City County environmental division inspector, final grading and installation for infiltration trench and filter strip may commence. After the final grading is completed, the basin floor shall be deep tilled to provide a well aerated, highly porous surface texture.

10. Install landscaping as shown on landscaping plans.

11. Complete permanent seeding, fertilize and mulch as required.

12. After an acceptable and stable ground cover has been established, remove silt fence, tree protection and temporary sediment control measures. However, no erosion and sediment control measures shall be removed without first authorization from the assigned James City County environmental inspector.

13. During all phases of construction and immediately following a rain event, the contractor shall monitor and inspect all erosion and sediment control measures installed on the project. Contractor shall use additional E&S control measures in accordance with Virginia Erosion and Sediment Control Manual as needed.

Stormwater Management:

An Infiltration Basin with an approximate floor area of 663 square feet is proposed for controlling the runoff from this site. Infiltration Basin #1 serves drainage area of 0.35 Ac associated with the 2.04 Ac site.

In accordance with the James City County Code, Chapter 23, Sec. 23-10, a structural BMP is not required for that site because the proposed impervious area cover is less than 10% of the site.

The Infiltration Basin has been designed to infiltrate all runoff from the 2-, 10-, 25- and 100-year design frequency storm events.

The proposed Infiltration Basin is designed to infiltrate entire storage volume of 4,197 cf within an approximately 23.2 hours.

A gravel filter strip is proposed as pretreatment device to treat stormwater runoff before it enters the Infiltration Basin. The gravel filter strip has been designed with an under drain system that discharges into the gravel trench on the bottom of the proposed Infiltration Trench.

Stormwater is stored in voids within the filter strip until it seeps into underdrain pipe and discharges to the Infiltration Basin. The runoff collected in the Infiltration Basin naturally exfiltrates into the soils beneath and recharges groundwater.

The total post-development impervious cover treated on-site is approximately 0.200 acre.

The attached geotechnical report indicates that infiltration rates in the area of the proposed Infiltration Trench vary from 0.625 to 2.479 inches per hour. The average infiltration rate of 1.552 inches per hour has been used as the design infiltration rate. The theoretical function of the infiltration trench has also been checked using one-half average infiltration rate of 0.776 inch per hour and determined to be adequate. Using one-half average infiltration rate, the proposed infiltration basin will infiltrate the entire storage volume of 4,197 cf within approximately 46.4 hours with 50% safety factor. The Infiltration basin will infiltrate all runoff from the 2-, 10- and 25-year design frequency storm event. Excess runoff from 100-year design frequency storm events will be safely conveyed by protected with EC-3 matting downstream slope of the basin.

The attached hydrologic computations show that proposed stormwater management facilities detain the 2-year, 10-year, 25-year and 100-year post development runoff for release at less than pre-development rates.

Pre-Developed Storm	Pre-Developed (cfs)	Post-Developed Storm	Post-Developed (cfs)	Difference (cfs)
2-year	0.41	2-Year	0.00	-0.41
10-year	0.54	10-Year	0.00	-0.54
25-year	0.61	25-Year	0.00	-0.61
100-year	0.71	100-Year	0.41	-0.30

STEEP SLOPE WAIVER REQUEST

Transportation
Land Development
Environmental
Services

VHB imagination | innovation | energy Creating results for our clients and benefits for our communities

VHB+LandMark • Legacy • Leadership • Results

March 17, 2011

Mr. Scott Thomas, P.E.

Director

Environmental Division

P.O. Box 8784

Williamsburg, VA 23187-8784

RE: **Steep Slope Waiver Request,**

Dixie Fuel Company Propane Distribution Facility

1576 Manufacture Drive, Williamsburg, VA

Dear Mr. Thomas:

On behalf of our Client, owner of the above referenced property/project, VHB, Inc., requests a waiver of part of Section 23-5 of the James City County Chesapeake Bay Preservation Ordinance as the referenced project requires impacting 0.029 acres (1263 s.f.) of slopes in excess of 25%. The impact areas are associated with the proposed site development and are shown on the Environmental Inventory sheet, C-2.

We trust that this request is satisfactory for your approval. Please advise us if you need any additional information or would like to discuss this further.

Sincerely,

VHB, Inc.

Stephen Romeo

Stephen A. Romeo, L.S.

Vanasse Hangen Brustlin, Inc.
351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185
757.220.0500 | FAX 757.220.8544
email: info@vhb.com
www.vhb.com

EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT DESIGN PLAN CHECKLIST

James City County, Virginia
Environmental Division

Erosion and Sediment Control and Stormwater Management Design Plan Checklists

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GENERAL INFORMATION

Project Name: DIXIE FUEL COMPANY PROPANE DISTRIBUTION FACILITY
Owner / Applicant: STEPHEN A. ROMEO
Plan Preparer: VHB, Inc. Email: sromeo@vhb.com
Project Location: 1576 MANUFACTURE DRIVE
Tax Map / Parcel: (54)(59-2) / 5920500004
County Plan No. (if known):
County BMP Type: INFILTRATION TRENCH FOR QUANTITY CONTROL
Other information submitted in addition to this checklist (Check all that apply):

- ☑ Design or Construction Drawings (Plans, Profiles, Details, etc.).
- ☑ Erosion & Sediment Control Plan (Plans, Details, etc.).
- ☑ Erosion & Sediment Control Plan Design Report.
- ☑ Stormwater Management Design Plan (Plans, Profiles, Details, etc.).
- ☑ Stormwater Management Design Report.
- ☑ Other, List: GEOTECHNICAL REPORT

Issue Date
March 1, 2001

JAMES CITY COUNTY, VIRGINIA
ENVIRONMENTAL DIVISION

EROSION AND SEDIMENT CONTROL PLAN CHECKLIST

I. *GENERAL:*

Yes	No	N/A	
☑	☐	☐	*FAMILIARITY* with current versions of Chapter 8, Erosion and Sedimentation Control and Chapter 23, Chesapeake Bay Preservation ordinances of the Code of James City County, Virginia and the Virginia Erosion and Sediment Control Handbook (VESCH).
☑	☐	☐	*LAND DISTURBING PERMIT AND SILTATION AGREEMENT* with surety are required for the project.
☐	☐	☑	*VARIANCE* if necessary, requested in writing, for the plan approving authority to waive or modify any of the minimum standards and specifications of the VESCH deemed inappropriate based on site conditions specific to this review case only. Variances which are approved shall be properly documented in the plan and become part of the approved erosion and sediment control plan for the site.

II. *SITE PLAN:*

Yes	No	N/A	
☑	☐	☐	*VICINITY MAP* locating the site in relation to the surrounding area. Include any major landmarks which might assist in physically locating the site.
☑	☐	☐	*INDICATE NORTH* direction in relation to the site.
☑	☐	☐	*LIMITS OF CLEARING AND GRADING* for the site including that required for implementation of erosion and sediment controls, stockpile areas and utilities.
☑	☐	☐	*DISTURBED AREA ESTIMATES* in acres or square feet for the project.
☑	☐	☐	*EXISTING TOPOGRAPHY* or contours for the site at no more than 5 foot contour interval.
☑	☐	☐	*FINAL TOPOGRAPHY*, contours or proposed site grading in accordance with the design plan which indicates changes to existing topography and drainage patterns at no more than 2 foot contour interval (or 1 foot contours where required).
☑	☐	☐	*EXISTING AND PROPOSED SPOT ELEVATIONS* to supplement existing and proposed contours, topography or site grading information. Spot elevations may replace final contours in some instances, especially if terrain is in a low lying area or relatively flat.
☑	☐	☐	*EXISTING VEGETATION* including existing tree lines, grassed or unique vegetation areas,

Yes	No	N/A	
☑	☐	☐	*EXISTING SITE FEATURES* including roads, buildings, homes, utilities, streams, fences, structures and other important surface features of the site.
☑	☐	☐	*SOILS MAP* with soil symbols, boundaries and legend in accordance with the current Soil Survey of James City and York Counties and the City of Williamsburg, Virginia.
☑	☐	☐	*ENVIRONMENTAL INVENTORY* in accordance with Section 23-10(2) of the Chesapeake Bay Preservation Ordinance of James City County. Inventory generally includes: tidal shores and wetlands, non-tidal wetlands, resource protection area, hydric soils and slopes steeper than 25 percent. For wetlands, provide a copy of issued permits or satisfactory evidence that appropriate permits are being pursued for the entire project.
☑	☐	☐	*100-YEAR FLOODPLAIN LIMITS* or any special flood hazard areas or flood zones based on appropriate Federal Management Agency Flood Insurance Rate Maps (FIRMs) or Flood Hazard Boundary Maps (FHBMs) of James City County, Virginia.
☑	☐	☐	*DRAINAGE AREAS* for offsite and onsite areas, existing or proposed as applicable. Include drainage divides and directional labels for all subareas at points of interest and size (in acres), weighted runoff coefficient or curve number and times of concentration for each subarea.
☑	☐	☐	*CRITICAL EROSION AREAS* which require special consideration or unique erosion and sediment control measures. Refer to the VESCH, Chapter 6 for criteria.
☑	☐	☐	*DEVELOPMENT PLAN* for the site showing all improvements such as buildings, structures, parking areas, access roadways, above and below ground utilities, stormwater management and drainage facilities; trails or sidewalks, proposed vegetation and landscaping, amenities, etc.
☑	☐	☐	*LOCATION OF PRACTICES* proposed for erosion and sediment control, tree protection and temporary stormwater management due to land disturbance activities at the site. Use standard abbreviations, labels and symbols consistent for plan views based on minimum standards and specifications in Chapter 3 of the VESCH.
☑	☐	☑	*TEMPORARY STOCKPILE AREAS* or staging and equipment storage areas as required for onsite or offsite construction activities or indicate that none are anticipated for this project.
☑	☐	☐	*OFFSITE LAND DISTURBING AREAS* including borrow sites, waste areas, utility extensions, etc. and required erosion and sediment controls. If none are anticipated for the project, then indicate on the plans by general or erosion and sediment control notes.
☑	☐	☐	*DETAILS* or alternately, appropriate reference to current minimum standards and specifications of the VESCH for each measure proposed for the project. Non-modified, standard duplicated details (silt fence, diversion dikes, etc.) may be referenced to the current version of the VESCH. Specific dimensional or modified standards (basins, traps, outlet protections, check dams, etc.) require presentation on detail sheets. Schedules or tables may be used for multiple site measures such as sediment traps, basins, channels, slope drains, etc. Any modification to standard details should be clearly defined, explained and illustrated.

Yes	No	N/A	
☑	☐	☐	*MAINTENANCE PLAN* or alternately, appropriate reference to current minimum standards and specifications of the VESCH, outlining the inspection frequency and maintenance requirements for all erosion and sediment control measures proposed for the project.
☑	☐	☐	*TRENCH DEWATERING* methods and erosion and sediment controls, if anticipated for the project.
☑	☐	☐	*CONSTRUCTION SEQUENCE* outlining the anticipated sequence for installation of erosion and sediment controls and site, grading and utility work to be performed for the project by the site contractor.
☐	☐	☑	*PHASING PLAN* if required for larger project sites that are to be developed in stages or phases.
☑	☐	☐	*STANDARD COUNTY NOTES* are required to be placed on the erosion and sediment control plan. Refer to the standard James City County Erosion and Sediment Control Notes, latest version.
☑	☐	☐	*PROFESSIONAL SEAL AND SIGNATURE* required on final and complete approved plans, drawings, technical reports and specifications.

III., <u>*NARRATIVE:*</u>

Yes	No	N/A	
☑	☐	☐	*PROJECT DESCRIPTION* briefly describing the nature and purpose of the land disturbing activity and the acreage to be disturbed.
☑	☐	☐	*EXISTING SITE CONDITIONS* description of existing topography, land use, cover and drainage patterns at the site.
☑	☐	☐	*ADJACENT AREA* descriptions of neighboring onsite or offsite areas such as streams, lakes, property, roads, etc. and potential impacts due to concentrated flow or runoff from the land disturbing activity.
☑	☐	☐	*OFFSITE DISTURBED AREA* descriptions of proposed borrow sites, waste or surplus areas, utility extensions and erosion and sediment controls to be implemented.
☑	☐	☐	*SOILS DESCRIPTION* briefly summarizing site, disturbed area and drainage basin soils including name, unit, hydrologic soil group (HSG) classification, surface runoff potential, erodibility, permeability, depth, texture, structure, erosion hazards, shrink-swell potential, limitations for use and anticipated depths to bedrock and the seasonal water table, as applicable.
☑	☐	☐	*CRITICAL AREAS* on the site which many have potentially serious erosion and sediment control problems and special considerations required (ie. steep slopes, hydric soils, channels, springs, sinkholes, water supply reservoirs, groundwater recharge areas, etc.)

Yes No N/A

☑ ☐ ☐ *PROPOSED EROSION & SEDIMENT CONTROL MEASURES* inclusive to the specific erosion and sediment control plan as proposed for the land disturbing activity. Measures should be consistent with those proposed on the site drawings. Address general use, installation, limitations, sequencing and maintenance requirements for each control measure.

☑ ☐ ☐ *STABILIZATION MEASURES* required for the site, either temporary or permanent, and during and following construction including temporary and permanent seeding and mulching, paving, stone, soil stabilization blankets and matting, sodding, landscaping or special stabilization techniques to be utilized at the site.

☑ ☐ ☐ *STORMWATER MANAGEMENT CONSIDERATIONS* for the site, either of temporary or permanent nature, and strategies, sequences and measures required for control. May reference the stormwater management plan for the site, if prepared, for permanent stormwater management facilities and control of drainage once the site is stabilized.

IV. *CALCULATIONS:*

Yes No N/A

☑ ☐ ☐ *CALCULATIONS AND COMPUTATIONS* associated with hydrology, hydraulics and design of proposed temporary and permanent erosion and sediment control measures including: sediment traps and basins, diversions, stormwater conveyance channels, culverts, slope drains, outlet protections, etc. Computations are not required on the construction plan and may be attached in a supplemental erosion and sediment control plan design report, if presented in a clear and organized format.

☐ ☐ ☑ *TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET* submitted for each basin along with schematic or sketch cross-section showing applicable design and construction data, storage volumes (wet-dry), dimensions and elevations. Peak design runoff to be based on the 2- or 25-year design storm event based on maximum disturbed site conditions (existing, interim or proposed conditions) in accordance with Minimum Standard 3.14 of the VESCH.

JAMES CITY COUNTY, VIRGINIA
ENVIRONMENTAL DIVISION

STORMWATER MANAGEMENT DESIGN PLAN CHECKLIST

I. *GENERAL:*

Yes	No	N/A	
☑	☐	☐	*FAMILIARITY* with current versions of the James City County Guidelines for Design and Construction of Stormwater Management BMPs manual; Chapter 8, Erosion and Sediment Control and Chapter 23, Chesapeake Bay Preservation ordinances of the Code of James City County, Virginia; the Virginia Erosion and Sediment Control Handbook (VESCH); and the Virginia Stormwater Management Handbook (VSMH).
☐	☐	☑	*WAIVER OR EXCEPTION* if necessary, requested in writing, for the plan approving authority to waive or except the requirements of Chapter 23, Chesapeake Bay Preservation ordinance in accordance with procedure established in Sections 23-14 through 23-17 of the ordinance. Applies to this review case only.
☐	☐	☑	*VARIANCE REQUEST* if necessary, requested in writing for the plan approving authority to waive or modify any of the minimum standards and specifications of the VESCH deemed inappropriate based on site conditions specific to this review case only. Variances which are approved shall be properly documented in the plan and become part of the approved erosion and sediment control plan for the site.
☑	☐	☐	*PROFESSIONAL SEAL AND SIGNATURE* required on final and complete approved stormwater management plans, drawings, technical reports and specifications.
☑	☐	☐	*WORKSHEET FOR BMP POINT SYSTEM* to ensure the stormwater management plan for the project attains at least 10 BMP points (New Development) or traditional pollutant load reduction computations per the Chesapeake Bay Local Assistance Manual (Redevelopment Only).
☐	☐	☑	*PROPOSED CONSERVATION EASEMENT AREAS* for any natural open space points claimed in the BMP worksheet.
☑	☐	☐	*INSPECTION/MAINTENANCE AGREEMENT* is required to be prepared and executed with the County for the project.
☑	☐	☐	*FEMA FIRM PANEL* reference with designated special flood hazard areas or zone designations associated with the site, as applicable.
☑	☐	☐	*DRAINAGE AREA MAP* at a maximum scale of 1"=200' scale showing drainage area boundaries for pre- and postdevelopment conditions and associated time of concentration flow paths. Labels to include drainage area size, runoff coefficient or curve number and time of concentration for each subarea shown on the map.

Yes	No	N/A	
☑	☐	☐	*SOILS MAP* with soil symbols, boundaries and legend in accordance with the current Soil Survey of James City and York Counties and the City of Williamsburg, Virginia with approximate locations of the project site, BMPs and applicable drainage basins.
☑	☐	☐	*STORMWATER MANAGEMENT NARRATIVE* in a brief and simple format which describes the project; location; site and drainage basin soil characteristics; receiving water or drainage facility; existing site and drainage basin conditions (topography, land use, cover, slopes, etc.); proposed site development; proposed stormwater management and drainage plan including County BMP type selected; summary of hydrology and hydraulics; maintenance program; and any special assumptions utilized for development of the stormwater management and drainage design plan or computations.
☐	☐	☑	*TEMPORARY STORMWATER MANAGEMENT* (if applicable) for control of stormwater runoff encountered during construction activities in addition to measures provided in the erosion and sediment control plan or stormwater management/drainage plan for the site. Adequate protection measures or sequencing provided.
☐	☐	☑	*MODIFICATION PLAN* clearly defined for temporary sediment control structures which will be converted to permanent SWM/BMP structures. Includes appropriate hydrologic and hydraulic computations, conversions, sequencing and cleanout information or details. Normally related to primary control structures associated with dry detention or wet retention ponds. Normally not permitted for Group C or D categories such as bioretention, infiltration and filtering system facilities.
☑	☐	☐	*STORMWATER MANAGEMENT and DRAINAGE DESIGN REPORT* in a bound 8-1/2 x 11 inch size format. Report shall generally include a title sheet, date, project identification, owner and preparer information, table of contents, narrative, summaries and computations as required. Computations may include: backwater, closed conduit, headwater, hydraulic, hydraulic grade line, hydrology, inlet, open channel, storm sewer, water quality, extended detention or stream channel protection and multi-stage storm routing calculations, as applicable, for the project. Computation data may include hand or computer generated computations, maps or schematics. All information should be presented in a clear, easy to follow format and should closely match construction plan information.
☑	☐	☐	*PLAN VIEW* at 1 inch = 50 ft. scale or less (1" = 40', 1" = 30', etc.)
☑	☐	☐	North arrow and plan legend.
☑	☐	☐	Property lines.
☑	☐	☐	Adjacent property information.
☑	☐	☐	Existing site features and existing impervious cover areas.
☑	☐	☐	Impervious cover tabulations.
☑	☐	☐	Existing drainage facilities (natural or manmade).
☑	☐	☐	Existing environmentally sensitive areas (RPA, wetlands, floodplain, steep slopes, critical soils, buffers, etc.).
☑	☐	☐	Existing and proposed contours (1' or 2' contour interval) and spot elevations as necessary to define high and low topography.
☑	☐	☐	Existing and proposed easement locations.

Yes	No	N/A	
☑	☐	☐	Proposed site improvements and proposed impervious cover areas.
☑	☐	☐	Proposed stormwater conveyance, drainage and management facilities with appropriate labeled construction data and information.
☑	☐	☐	Proposed landscaping and seeding plans (disturbed areas, pond interior, etc.).
☑	☐	☐	Proposed slope stabilization areas (riprap, blankets, mattings, walls, etc.).
☑	☐	☐	Delineation of permanent pools and the 1-, 2-, 10- and 100-year Design Water Surface Elevations.
☑	☐	☐	Delineation of ponding, headwater, surcharge or backwater areas which may affect adjacent existing or proposed buildings, structures or upstream adjacent properties.
☑	☐	☐	Test boring locations with reference surface elevations (if known).
☑	☐	☐	Risers, barrels, underdrains, overflows and outlet protections.
☑	☐	☐	Emergency spillway level section and outlet channel.
☑	☐	☐	Existing and proposed site utilities and protection measures.
☑	☐	☐	Erosion and sediment control measures (for site or BMP).
☑	☐	☐	Maintenance or access corridors to permanent stormwater management, BMP or drainage facilities.

II. ***STORMWATER CONVEYANCE SYSTEMS:***

Yes	No	N/A	
☑	☐	☐	*PLAN VIEWS*
☑	☐	☐	Storm drain lengths, sizes, types, classes and slopes for all segments. Label directly on plan or use structure/pipe schedule.
☑	☐	☐	Access structure (inlets, manholes, junctions, etc.) rim elevations, inverts, type and required grate or top unit and lengths labeled.
☑	☐	☐	All structure numbers labeled.
☑	☐	☐	Adequate horizontal clearance from other site utilities or structures.
☑	☐	☐	*PROFILES* generally are not required but are encouraged to expedite review. If not provided, ensure all pipe segments have adequate minimum cover, do not exceed maximum depths of cover for the type/class of pipe specified and do not conflict with other site utilities or excavation areas.
☑	☐	☐	*DETAILS*
☑	☐	☐	Typical storm drain bedding details or reference note.
☑	☐	☐	Standard details or reference note for all proposed access structure types (inlets, manholes, junctions, etc.).
☐	☐	☑	Inlet shaping detail or applicable reference note.
☐	☐	☑	Step detail or applicable reference note (if depth 4 ft. or more).
☑	☐	☐	Typical open channel details with designation, location, shape, type, bottom width, top width, lining, slope, length, side slope, and installation depth required for construction. Channel design data as necessary may also be included.
☐	☐	☑	Outlet protections at all pipe outfalls.

Yes No N/A

☑ ☐ ☐ *STORMWATER CONVEYANCE SYSTEM COMPUTATIONS*

- ☐ ☐ ☑ Storm Sewer Design computations based on 10-year design event.
- ☐ ☐ ☑ Hydraulic Grade Line computations based on 10-year design event.
- ☐ ☐ ☑ Inlet computations based on current VDOT procedure for spread, ponding depth and grate size required.
- ☑ ☐ ☐ Culvert Headwater computations. Design based on 10-year design storm event and check only for 100-year storm event.
- ☐ ☐ ☑ Open Channel computations based on 2-year design event for velocity and 10-year design event for capacity.
- ☐ ☐ ☑ Standard outlet protection or special energy dissipators.
- ☐ ☐ ☑ Pipe thickness design computations, as required, for selected pipe type (live load, minimum cover, maximum height of cover, etc.).
- ☐ ☐ ☑ Adequate channel computations for receiving channels (based on field measured channel section data).

III. *STORMWATER MANAGEMENT / BMP FACILITIES:*

Yes No N/A

☑ ☐ ☐ *HYDROLOGY* - An SCS based methodology is required for the design of stormwater management/BMP facilities with watersheds exceeding 20 acres. Under 20 acres, other generally accepted methodologies such as the modified rational, critical storm are allowable. Refer to Chapter 5 of the VESCH or Chapter 5 of the VSMH.

- ☑ ☐ ☐ Runoff Curve Number or Coefficient determinations: predeveloped and ultimate development land use scenarios.
- ☑ ☐ ☐ Time of concentration: predeveloped and ultimate development indicating overland, shallow concentrated, and channel flow components (200 ft. maximum length for overland flow).
- ☑ ☐ ☐ Hydrograph generation (tabular or graphical): pre- and postdevelopment conditions for the 1-, 2-, 10-, and 100-year design storm events.

☑ ☐ ☐ *FACILITY CONFIGURATION and MINIMUM SEPARATIONS*

- ☑ ☐ ☐ Screening and layout consistent with Section 24-98(d) of the Chapter 24 Zoning ordinance (landscaping, screening, visibility, etc.).
- ☑ ☐ ☐ Basic considerations for safety and unauthorized entry.
- ☑ ☐ ☐ Proper length to width ratio (Typically 2H:1V).
- ☐ ☐ ☑ Facilities with deep pools (4 feet or more in depth) provided with two benches. Fifteen (15) ft. safety bench outward from normal pool at maximum 6 percent slope and aquatic bench inward from normal shoreline below normal pool. Narrower widths may be considered on a case-by-case basis.
- ☑ ☐ ☐ Pond buffer minimum 25 feet outward from maximum design WSEL. Additional setbacks may be required to permanent structures.
- ☑ ☐ ☐ No trees, shrubs or woody plants within 15 feet of embankment toe or 25 feet from principal spillway structure.

Yes	No	N/A	
☑	☐	☐	Infiltration and filtering system facilities generally located at least 100 feet horizontally from any water supply well; 100 feet from any downslope building; and 25 feet from any upslope buildings, unless site specific investigation allows for reduced separation.

Yes	No	N/A	
☑	☐	☐	*HYDRAULIC COMPUTATIONS*
☑	☐	☑	Elevation- or Stage- Storage curve and/or tabular data.
☑	☐	☑	Weir / Orifice Control - Extended Detention.
☐	☐	☑	Weir / Orifice Control - riser 1-year control for channel protection.
☐	☐	☑	Weir / Orifice Control - riser 2-year control for quantity (if required).
☐	☐	☑	Weir / Orifice Control - riser 10-year control for quantity (if required).
☐	☐	☑	Inlet / Outlet (barrel) control - (All Storms).
☐	☐	☑	Check for barrel control prior to riser orifice flow to prevent slug flow-water hammer conditions.
☐	☐	☑	Emergency spillway capacity and depth of flow.
☐	☐	☐	Elevation - Discharge (Outlet Rating) curve and/or table. Provide all supporting calculations and/or design assumptions.
☐	☐	☑	Adequate channel computations for receiving channel. May be waived if facility is designed based on current Stream Channel Protection criteria.
☑	☐	☐	*POND or RESERVOIR ROUTING*
☑	☐	☐	Storage-Indication Routing of postdeveloped inflow hydrographs for the 1-, 2-, 10-, and 100-year design storms. Preference is for structure to discharge up to the 10-year storm through the principal spillway and pass the 100-year storm with a minimum 1 foot of freeboard through a combination principal and emergency spillways. If no emergency spillway is provided, riser must be large enough to pass the design high water flow and trash without overtopping the facility, have 3 square feet or more of cross-sectional area, contain a hood type inlet and have a minimum freeboard of 2 feet. Token spillways with minimum 8 ft. width are also recommended at or above the design 100-year storm elevation.
☑	☐	☐	Downstream hydrographs at established study points, if conditions warrant (ie. facility discharge combined with uncontrolled bypass).
☑	☐	☐	*MISCELLANEOUS COMPUTATIONS*
☑	☐	☐	Water quality volume for permanent pool based on selected BMP treatment volume (WQv).
☑	☐	☐	Water quality volume for extended detention based on selected BMP treatment volume (WQv) with drawdown computations.
☑	☐	☐	Drawdown computations for the 1-year, 24 hour detention for stream channel protection criteria.
☑	☐	☐	Pond drain computations (within 24 hours).
☐	☐	☑	Anti-seep collar design (concrete preferred) or match material type.
☐	☐	☑	Filter diaphragm design (or alternative method of controlling seepage).

Yes	No	N/A	
☐	☐	☑	Riser / base structure flotation analyses. FS = 1.25 minimum.
☐	☐	☑	Downstream danger reach study and/or emergency action plan (if conditions warrant).
☐	☐	☑	Upstream backwater analyses onto offsite adjacent property (if conditions warrant).
☐	☐	☑	100 year floodplain impacts (if conditions warrant).

Yes	No	N/A	
☑	☐	☐	*GEOTECHNICAL REQUIREMENTS*
☑	☐	☐	Geotechnical Report with recommendations specific to BMP facility type selected. Report prepared by a registered professional engineer. Requires submission, review and approval prior to issuance of Land Disturbance Permit.
☑	☐	☐	Initial Feasibility Testing requirements satisfied as per Appendix E of the James City County Guidelines for Design and Construction of Stormwater Management BMPs manual. (Infiltration, Bioretention and Filtering System BMP types only).
☑	☐	☐	Concept Design Testing requirements satisfied as per Appendix E of the James City County Guidelines for Design and Construction of Stormwater Management BMPs manual. (Infiltration, Bioretention and Filtering System BMP types only).
☑	☐	☐	Minimum Boring locations: borrow area, pool area, principal control structure, top of facility near one abutment and emergency spillway if provided.
☑	☐	☐	Boring logs with Unified Soil Classification (ASTM D2487), soils descriptions and depths to bedrock and the seasonal water table indicated.
☑	☐	☐	Standard County Record Drawing/Construction Certification note provided on plan. *Note: It is understood that preparation of record drawings and construction certifications as required for project facilities may not necessarily be performed by the plan preparer. These components may be performed by others.*
☐	☐	☑	*PRINCIPAL SPILLWAY PROFILE AND ASSOCIATED DETAILS*
☐	☐	☐	*EXISTING GROUND AND PROPOSED GRADE*
☐	☐	☐	Embankment or excavation side slopes labeled (3H:1V maximum).
☐	☐	☐	Minimum top width labeled (per VESCH or VSMH requirements).
☐	☐	☐	Removal of unsuitable material under proposed facility (per Geotechnical Report requirements).

Yes No N/A

☐ ☐ ☑ *CORE TRENCH*

- ☐ ☐ ☐ Material (per plan or Geotechnical Report).
- ☐ ☐ ☐ Bottom width (4' minimum or greater as dictated by Geotechnical Report recommendations).
- ☐ ☐ ☐ Side slopes (1:1 maximum steepness)
- ☐ ☐ ☐ Depth (4' minimum or greater as dictated by Geotechnical Report).

☐ ☐ ☑ *PRINCIPAL CONTROL STRUCTURE. RISER OR SIMILAR STRUCTURE (DETAILS REQUIRED FOR ALL ITEMS)*

- ☐ ☐ ☐ Durable, watertight, resistant material (concrete preferred).
- ☐ ☐ ☐ Riser diameter is at least 1.25 times larger than barrel diameter.
- ☐ ☐ ☐ All pertinent dimensions and elevations shown.
- ☐ ☐ ☐ Control orifice or weir dimensions and elevations shown.
- ☐ ☐ ☐ Trash rack - removable - for each release.
- ☐ ☐ ☐ Anti-vortex device, baffle or plate.
- ☐ ☐ ☐ Riser base structure with dimensions and embedment specifications (concrete preferred).
- ☐ ☐ ☐ Interior access (steps, ladders, etc.) for maintenance for structures over 4 feet in height. Excessively high risers may need some form of exterior access on top portion.
- ☐ ☐ ☐ Low flow orifice with trash rack device.

☐ ☐ ☑ *PRINCIPAL CONTROL STRUCTURE OUTLET BARREL*

- ☐ ☐ ☐ Material (ASTM C-361 reinforced concrete pipe) with watertight joints. Prior approval required for all other pipe material (other RCP types, CMP, CPP, PVC, etc.).
- ☐ ☐ ☐ Support and bedding requirements for barrel - concrete cradles, etc. or as recommended by the Geotechnical Report.
- ☐ ☐ ☐ Pipe inverts, length, size, class and slope shown.
- ☐ ☐ ☐ Flared end section or endwall provided on barrel outlet.

☐ ☐ ☑ *SEEPAGE CONTROL*

- ☐ ☐ ☐ Phreatic line shown (4:1 slope measured from the intersection of the embankment and the principal spillway design high water).
- ☐ ☐ ☐ *ANTI-SEEP COLLARS*
  - ☐ ☐ ☐ Anti-seep collar, concrete preferred.
  - ☐ ☐ ☐ Size - 15 percent increase in length of saturation using outside pipe diameter.
  - ☐ ☐ ☐ Spacing and location on barrel (located at least 2 feet from a pipe joint).
  - ☐ ☐ ☐ *FILTER DIAPHRAGMS*
  - ☐ ☐ ☐ Design based on latest NRCS design methods and certified by a professional engineer.

Yes	No	N/A	
☑	☐	☐	*ELEVATION AND DIMENSIONAL DESIGN DATA*
☑	☐	☐	Top of facility - construction height and settled height (10 percent settlement).
☐	☐	☑	Crest of principal control structure spillway at least one (1) foot below crest of emergency spillway, if provided.
☑	☐	☐	Minimum freeboard of one (1) foot above the 100-year design high water elevation for facilities <u>with</u> an emergency spillway.
☐	☐	☑	Minimum freeboard of two (2) feet above the 100-year design high water elevation for facilities <u>without</u> an emergency spillway or in accordance with the SCS National Engineering Handbook (prior approval required).
☐	☐	☑	Basin Sediment Clean-Out elevation (permanent mode). Typically 10 to 25 percent of water quality volume.
☑	☐	☐	*CROSS SECTION THROUGH FACILITY*
☑	☐	☐	Existing Ground.
☑	☐	☐	Proposed grade.
☑	☐	☐	Top of facility - constructed and settled.
☑	☐	☐	Location of emergency spillway with side slopes labeled (emergency spillway in cut).
☑	☐	☐	Bottom of core trench (4' minimum).
☑	☐	☐	Location of each soil boring.
☐	☐	☑	Barrel location.
☑	☐	☐	Existing and proposed utility location/protection.
☑	☐	☐	*EMERGENCY SPILLWAY PROFILE*
☑	☐	☐	Existing ground.
☑	☐	☐	Inlet, level (control) and outlet sections per SCS.
☑	☐	☐	Spillway and crest elevations.
☑	☐	☐	*PRETREATMENT DEVICES* of adequate depth and properly designed using required pretreatment volumes for the selected County BMP facility type. Including, but not limited to: sediment forebays, sediment basins, sumps, grass channels, gravel diaphragms, plunge pools, chamber separators, manufactured systems or other acceptable methods.

Yes No N/A

☑ ☐ ☐ *CONSTRUCTION SPECIFICATIONS and NOTES*

- ☑ ☐ ☐ Anticipated sequence of construction for BMP (consistent with erosion and sediment control plan).
- ☑ ☐ ☐ Provisions to control base stream or storm flow conditions encountered during construction.
- ☑ ☐ ☐ Site and subgrade preparation requirements.
- ☑ ☐ ☐ Embankment, fill and backfill material soil and placement (lift) thickness requirements.
- ☑ ☐ ☐ Compaction and soil moisture content requirements.
- ☑ ☐ ☐ Geosynthetics for drainage, filtration, moisture barrier, separation, and reinforcement purposes.
- ☐ ☐ ☑ Clay or synthetic (PVC or HDPE) pond liners.
- ☑ ☐ ☐ Storm drain, underdrain and pipe conduit requirements.
- ☑ ☐ ☐ Minimum depth of pipe cover for temporary (construction) and final cover conditions.
- ☐ ☐ ☑ Permanent shutoff valve and pond drain.
- ☑ ☐ ☐ Concrete requirements for structural components.
- ☑ ☐ ☐ Riprap and slope protection.
- ☑ ☐ ☐ Access or maintenance road surface, base, subbase.
- ☑ ☐ ☐ Temporary and permanent stabilization measures.
- ☑ ☐ ☐ Temporary or permanent safety fencing.
- ☑ ☐ ☐ BMP Landscaping (deep, shallow, fringe, perimeter,etc.)
- ☑ ☐ ☐ Dust and traffic control (if warranted).
- ☑ ☐ ☐ Construction monitoring and certification by professional.
- ☐ ☐ ☐ Other: _____
- ☐ ☐ ☐ Other: _____

☑ ☐ ☐ *MAINTENANCE PROVISIONS*

- ☑ ☐ ☐ Entity responsible for maintenance identified..
- ☑ ☐ ☐ Maintenance Plan which outlines the long-term schedule for inspection/maintenance of the facility and forebays
- ☑ ☐ ☐ Maintenance access from public right-of-way or publicly traveled road.
- ☑ ☐ ☐ Maintenance easement provided encompassing high water pool and buffer, principal and emergency spillways, outlet structures, . forebays, embankment area and possible sediment-removal stockpile areas.
- ☑ ☐ ☐ Minimum 6 foot wide public safety shelf (landing) or alternative fencing.

IV. *OUTLET PROTECTIONS:*

Yes	No	N/A	
☑	☐	☑	Sized for maximum design release (generally 10-year storm).
☑	☐	☑	Flared end section or endwall.
☑	☐	☑	Dimensions.
☐	☐	☑	Rock or riprap size, quantity and placement thickness.
☐	☐	☑	Slope at 0 percent (Level Grade).
☐	☐	☑	Geotextiles (nonwoven).
☐	☐	☑	Special energy dissipators are required for design discharge velocities that exceed eighteen (18) feet per second; or if use of standard outlet protection would result in velocities exceeding permissible channel velocities; or if space restricts or limits their use.

V. *ADDITIONAL COMMENTS OR INFORMATION SPECIFIC TO THE PLAN:*

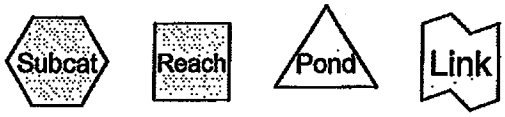
Plan Preparer: Stephen Romas VaLS 1448B

Date: 03/17/11

SWMProg/BMP/Checklist/ChkList

PRE-DEVELOPMENT CALCULATIONS

Pre-Development



2-YEAR STORM

Summary for Subcatchment DA-1 PRE: Pre-Development

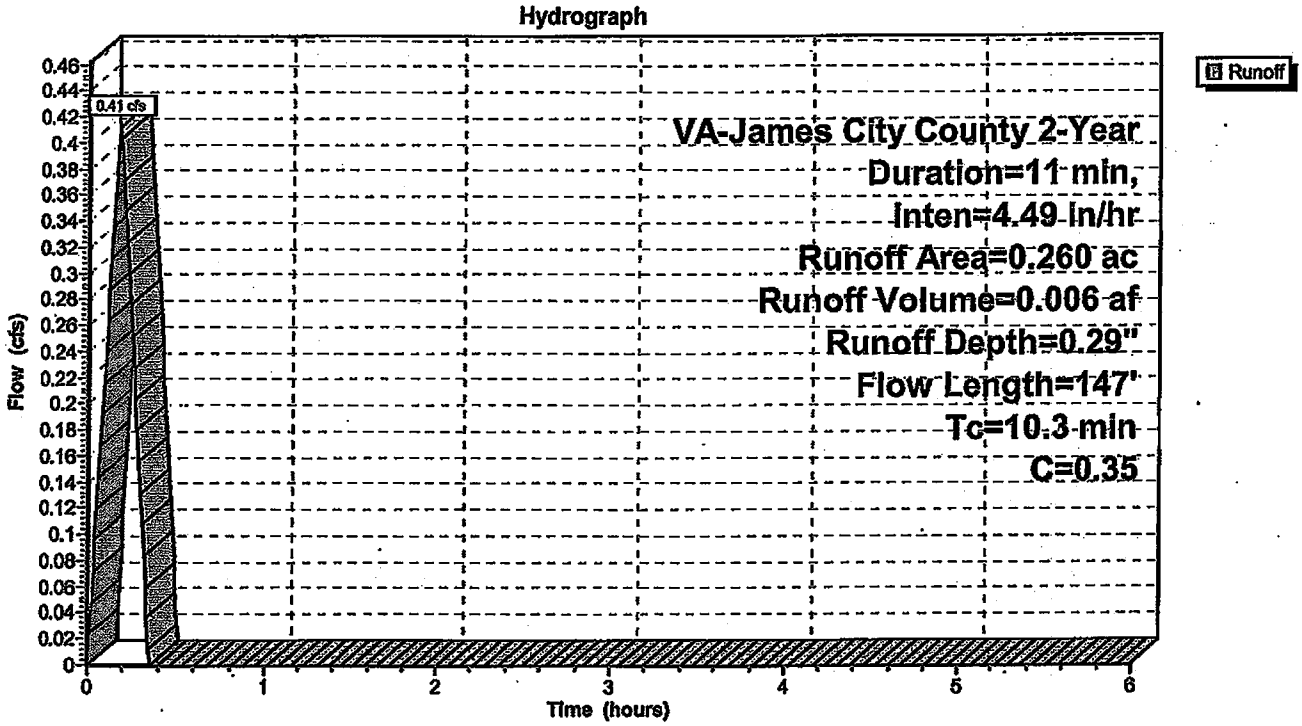
Runoff = 0.41 cfs @ 0.18 hrs, Volume= 0.006 af, Depth= 0.29"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 2-Year Duration=11 min, Inten=4.49 in/hr

Area (ac)	C	Description
0.250	0.35	Existing Grass Area
0.010	0.30	Existing Woods
0.260	0.35	Weighted Average
0.260		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0450	0.17		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.50"
0.4	47	0.0960	2.17		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
10.3	147	Total			

Subcatchment DA-1 PRE: Pre-Development



10-YEAR STORM

Summary for Subcatchment DA-1 PRE: Pre-Development

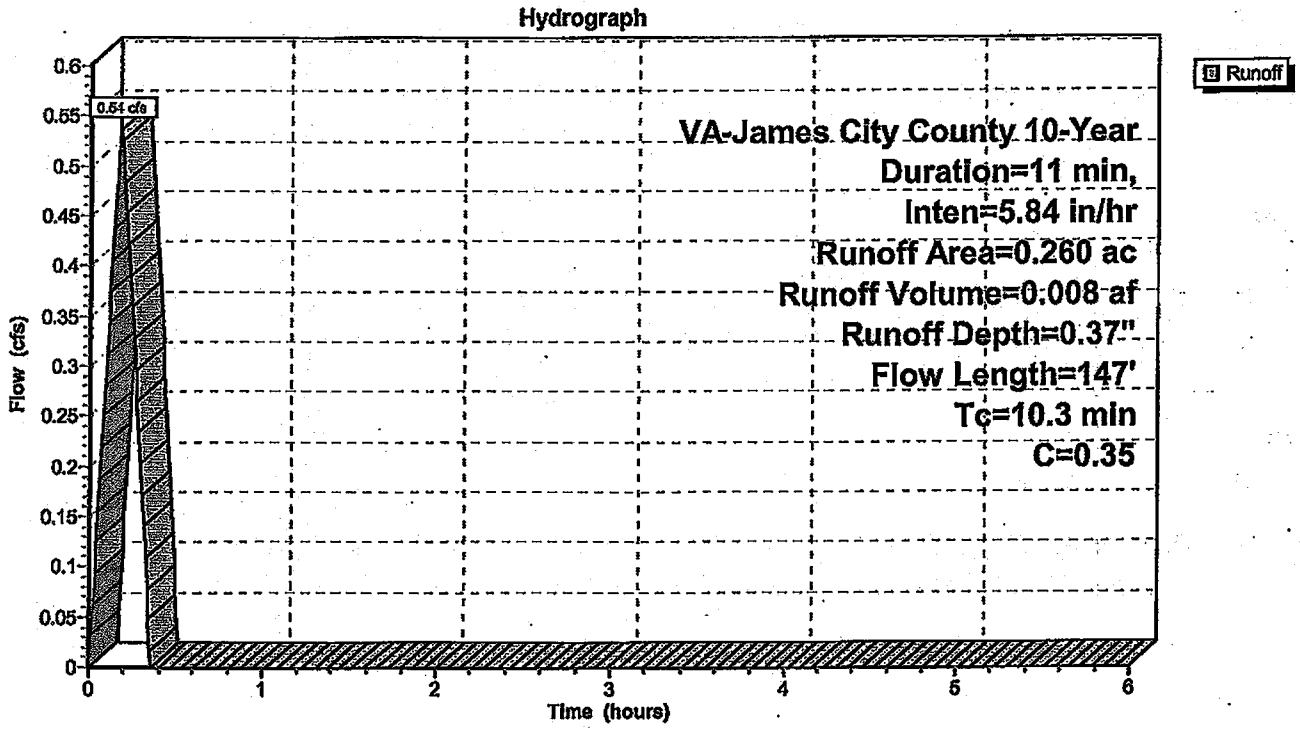
Runoff = 0.54 cfs @ 0.18 hrs, Volume= 0.008 af, Depth= 0.37"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 10-Year Duration=11 min, Inten=5.84 in/hr

Area (ac)	C	Description
0.250	0.35	Existing Grass Area
0.010	0.30	Existing Woods
0.260	0.35	Weighted Average
0.260		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0450	0.17		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.50"
0.4	47	0.0960	2.17		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
10.3	147	Total			

Subcatchment DA-1 PRE: Pre-Development



25-YEAR STORM

Summary for Subcatchment DA-1 PRE: Pre-Development

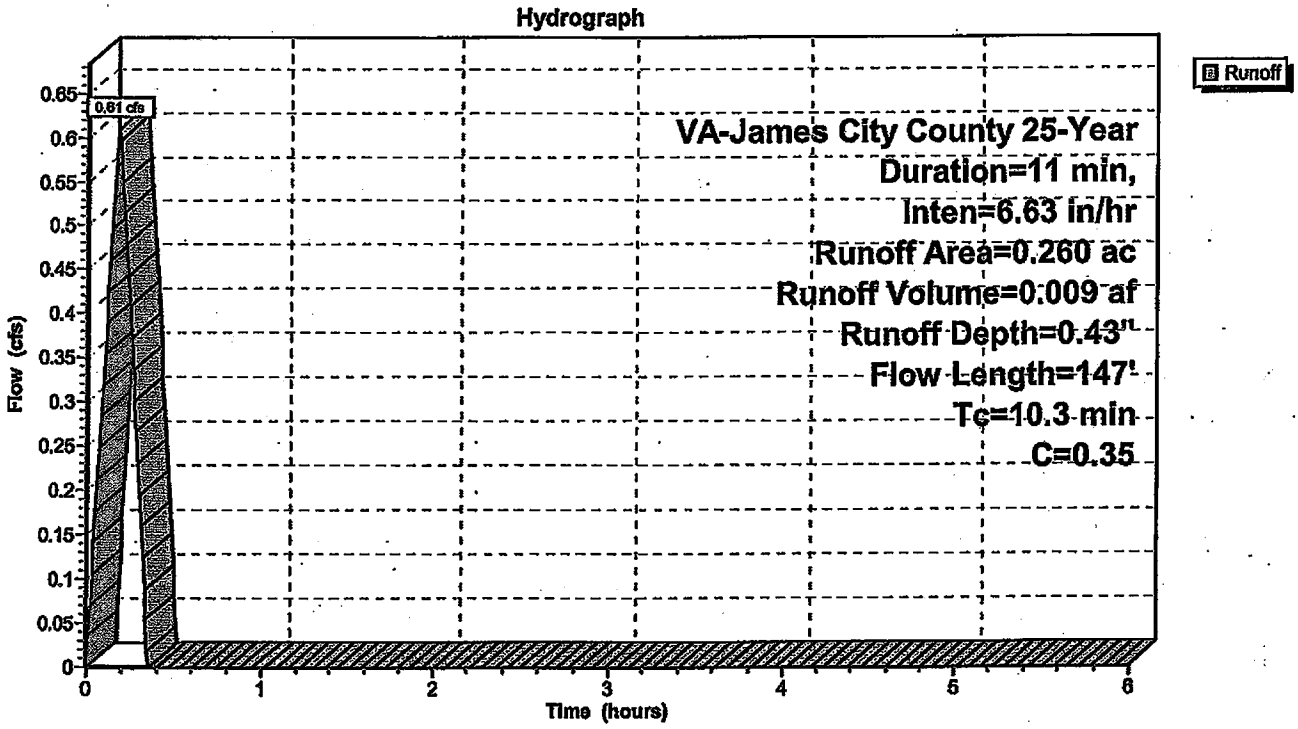
Runoff = 0.61 cfs @ 0.18 hrs, Volume= 0.009 af, Depth= 0.43"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 25-Year Duration=11 min, Inten=6.63 in/hr

Area (ac)	C	Description
0.250	0.35	Existing Grass Area
0.010	0.30	Existing Woods
0.260	0.35	Weighted Average
0.260		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0450	0.17		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.50"
0.4	47	0.0960	2.17		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
10.3	147	Total			

Subcatchment DA-1 PRE: Pre-Development



100-YEAR STORM

Summary for Subcatchment DA-1 PRE: Pre-Development

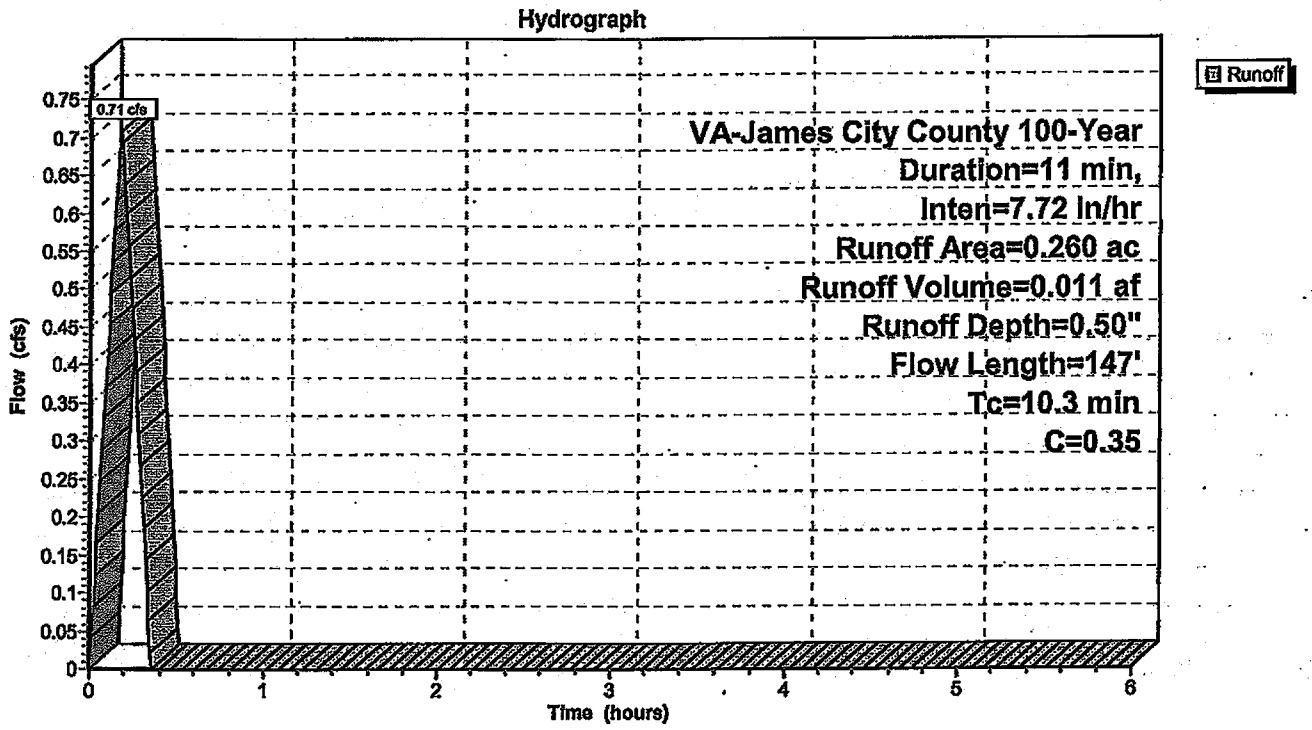
Runoff = 0.71 cfs @ 0.18 hrs, Volume= 0.011 af, Depth= 0.50"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 100-Year Duration=11 min, Inten=7.72 in/hr

Area (ac)	C	Description
0.250	0.35	Existing Grass Area
0.010	0.30	Existing Woods
0.260	0.35	Weighted Average
0.260		100.00% Pervious Area

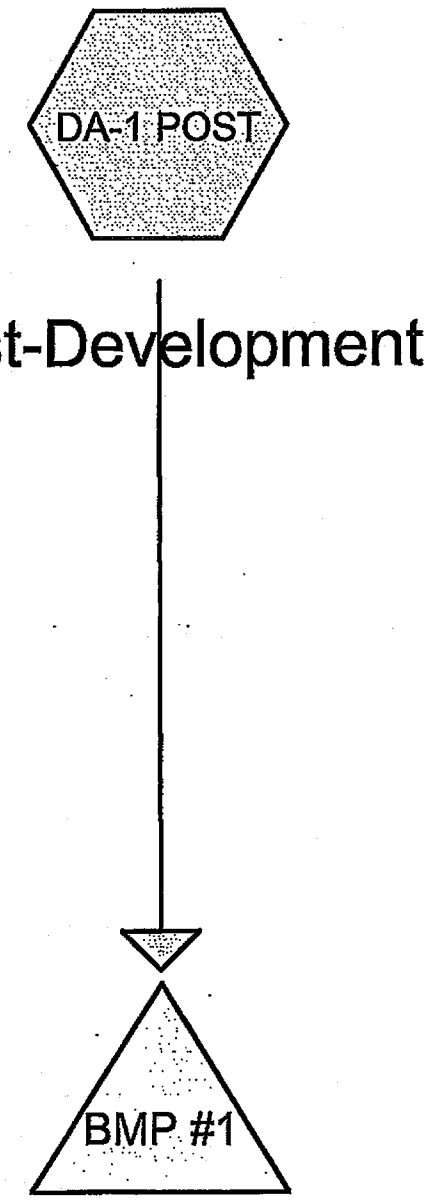
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0450	0.17		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.50"
0.4	47	0.0960	2.17		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
10.3	147	Total			

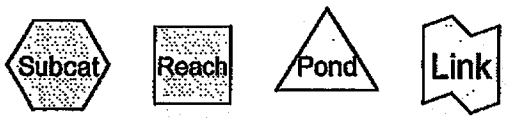
Subcatchment DA-1 PRE: Pre-Development



POST-DEVELOPMENT CALCULATIONS AVERAGE

INFILTRATION RATE





Drainage Diagram for BMP-Full-Infiltration
Prepared by Vanasse Hangen Brustlin, Inc., Printed 3/18/2011
HydroCAD® 9.00 s/n 01238 © 2009 HydroCAD Software Solutions LLC

2-YEAR STORM

Summary for Pond BMP #1: Infiltration Basin

Inflow Area =	0.350 ac,	0.00% Impervious,	Inflow Depth = 1.44"	for 2-Year event
Inflow =	0.20 cfs @	0.09 hrs, Volume=	0.042 af	
Outflow =	0.05 cfs @	2.66 hrs, Volume=	0.021 af, Atten= 75%, Lag= 154.3 min	
Primary =	0.05 cfs @	2.66 hrs, Volume=	0.021 af	
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 55.46' @ 2.66 hrs Surf.Area= 1,365 sf Storage= 1,467 cf

Plug-Flow detention time= 148.7 min calculated for 0.021 af (49% of inflow)
Center-of-Mass det. time= 109.5 min (190.0 - 80.5)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	5,363 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

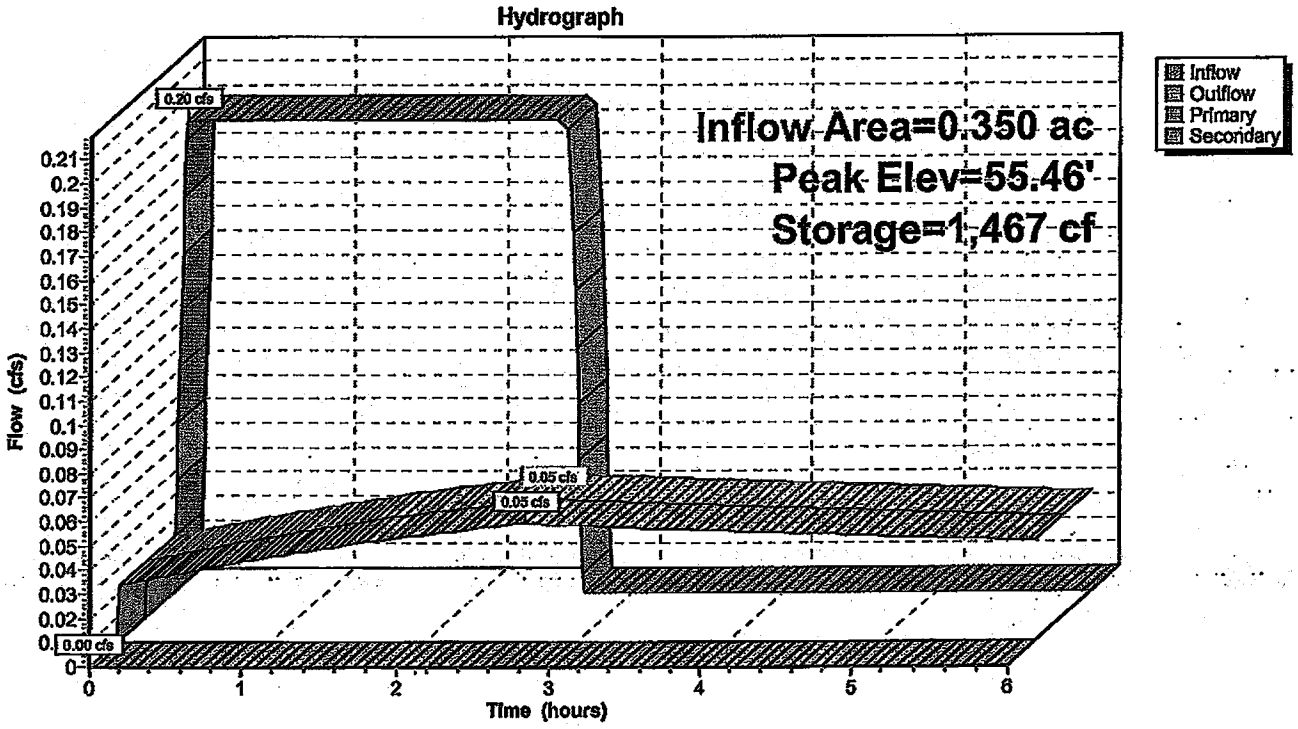
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
54.00	663	231.0	0	0	663
55.00	1,142	245.0	892	892	1,244
56.00	1,652	260.0	1,389	2,281	1,898
57.00	2,194	275.0	1,917	4,197	2,590
57.50	2,471	281.0	1,166	5,363	2,890

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**1.552 in/hr Exfiltration - Full Infiltration Rate over Surface area**
#2	Secondary	57.00'	**120.0' long x 4.2' breadth Infiltration Basin Broad-Crested Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.53 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.67 2.71 2.72 2.74 2.77 2.85 3.01 3.23

Primary OutFlow Max=0.05 cfs @ 2.66 hrs HW=55.46' (Free Discharge)
└─**1=Exfiltration - Full Infiltration Rate** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' (Free Discharge)
└─**2=Infiltration Basin Broad-Crested Weir** (Controls 0.00 cfs)

Pond BMP #1: Infiltration Basin



Summary for Subcatchment DA-1 POST: Post-Development

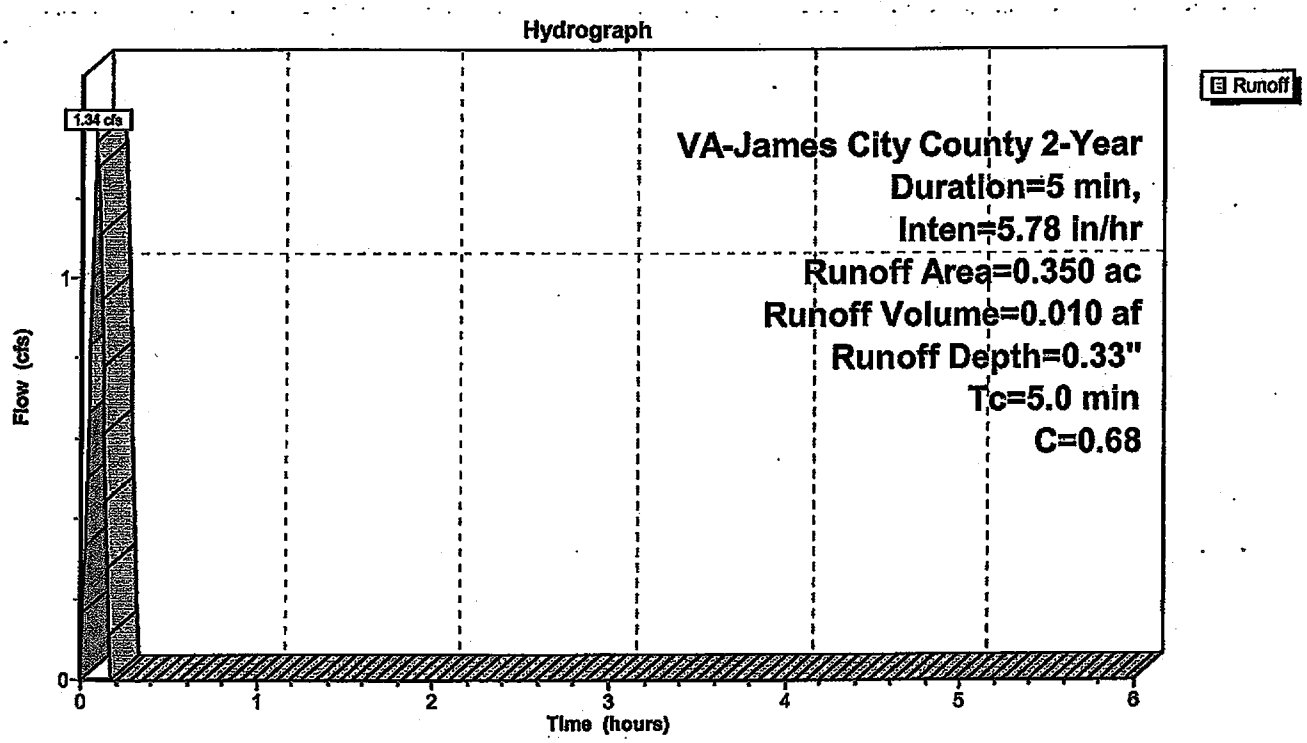
Runoff = 1.34 cfs @ 0.08 hrs, Volume= 0.010 af, Depth= 0.33"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 2-Year Duration=5 min, Inten=5.78 in/hr

Area (ac)	C	Description
0.210	0.90	Proposed Impervious Area
0.140	0.35	Proposed Pervious Area
0.350	0.68	Weighted Average
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Input

Subcatchment DA-1 POST: Post-Development



10-YEAR STORM

Summary for Pond BMP #1: Infiltration Basin

Inflow Area =	0.350 ac,	0.00% Impervious,	Inflow Depth > 2.84"	for 10-Year event
Inflow =	0.17 cfs @	0.09 hrs, Volume=	0.083 af	
Outflow =	0.06 cfs @	5.95 hrs, Volume=	0.023 af, Atten= 63%, Lag= 351.7 min	
Primary =	0.06 cfs @	5.95 hrs, Volume=	0.023 af	
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 56.19' @ 5.95 hrs Surf.Area= 1,750 sf Storage= 2,606 cf

Plug-Flow detention time= 152.6 min calculated for 0.023 af (28% of inflow)
Center-of-Mass det. time= 25.3 min (204.8 - 179.5)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	5,363 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

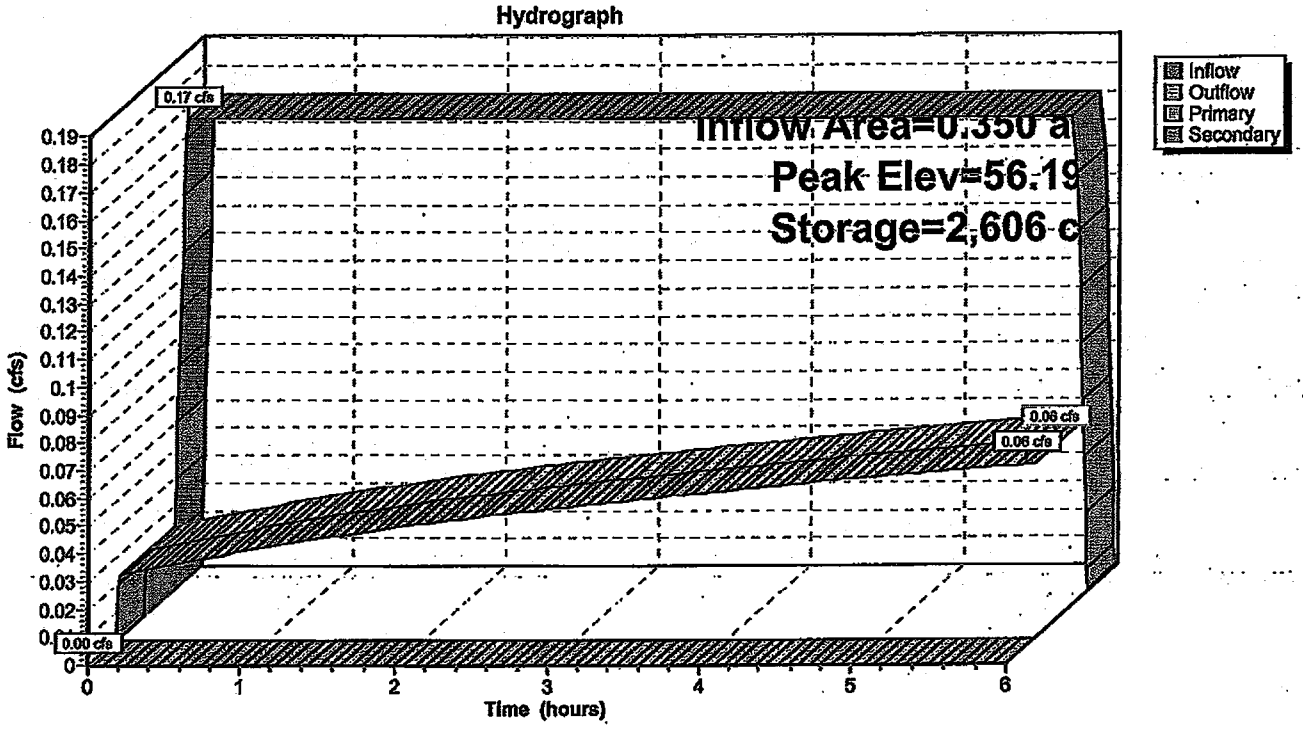
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
54.00	663	231.0	0	0	663
55.00	1,142	245.0	892	892	1,244
56.00	1,652	260.0	1,389	2,281	1,898
57.00	2,194	275.0	1,917	4,197	2,590
57.50	2,471	281.0	1,166	5,363	2,890

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**1.552 in/hr Exfiltration - Full Infiltration Rate over Surface area**
#2	Secondary	57.00'	**120.0' long x 4.2' breadth Infiltration Basin Broad-Crested Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.53 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.67 2.71 2.72 2.74 2.77 2.85 3.01 3.23

Primary OutFlow Max=0.06 cfs @ 5.95 hrs HW=56.19' (Free Discharge)
└─**1=Exfiltration - Full Infiltration Rate** (Exfiltration Controls 0.06 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' (Free Discharge)
└─**2=Infiltration Basin Broad-Crested Weir** (Controls 0.00 cfs)

Pond BMP #1: Infiltration Basin



Summary for Subcatchment DA-1 POST: Post-Development

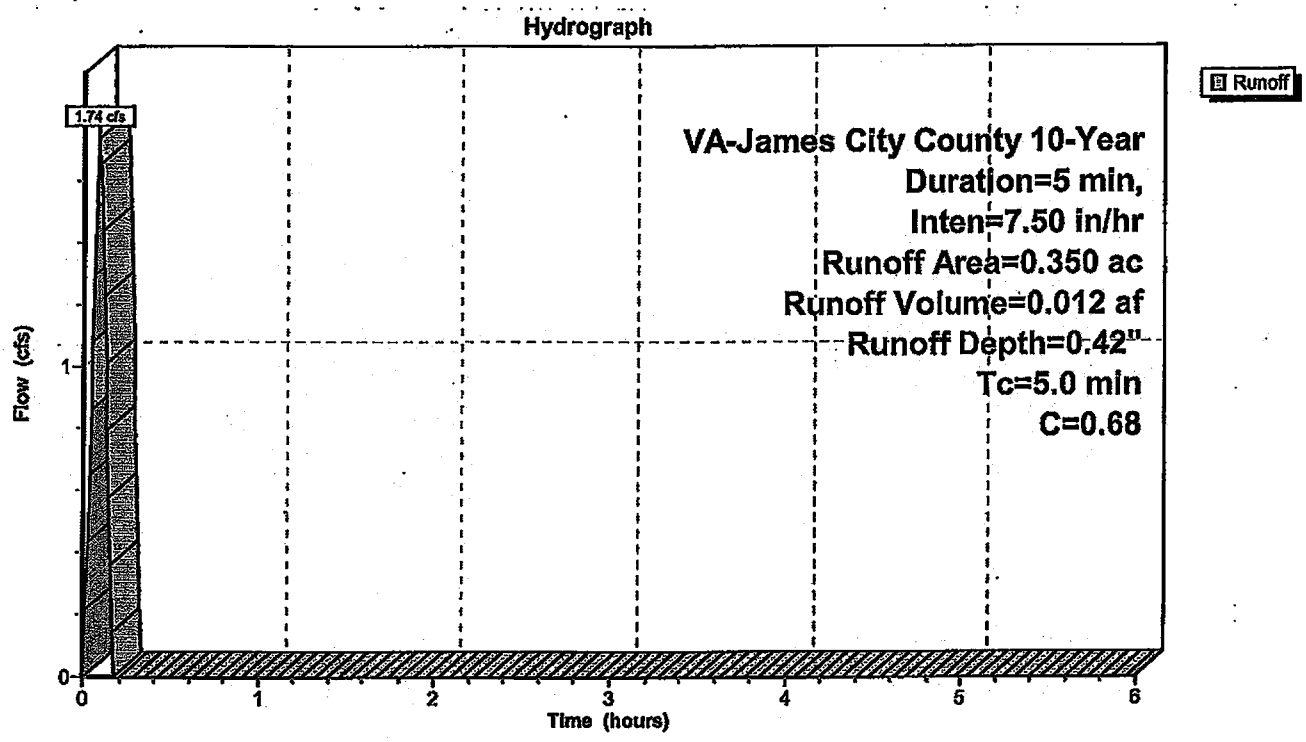
Runoff = 1.74 cfs @ 0.08 hrs, Volume= 0.012 af, Depth= 0.42"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 10-Year Duration=5 min, Inten=7.50 in/hr

Area (ac)	C	Description
0.210	0.90	Proposed Impervious Area
0.140	0.35	Proposed Pervious Area
0.350	0.68	Weighted Average
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Input

Subcatchment DA-1 POST: Post-Development



25-YEAR STORM

Summary for Pond BMP #1: Infiltration Basin

Inflow Area =	0.350 ac,	0.00% Impervious,	Inflow Depth > 3.76"	for 25-Year event
Inflow =	0.22 cfs @	0.09 hrs, Volume=	0.110 af	
Outflow =	0.07 cfs @	6.00 hrs, Volume=	0.026 af, Atten= 67%, Lag= 354.6 min	
Primary =	0.07 cfs @	6.00 hrs, Volume=	0.026 af	
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 56.73' @ 6.00 hrs Surf.Area= 2,043 sf Storage= 3,635 cf

Plug-Flow detention time= 161.9 min calculated for 0.026 af (24% of inflow)
Center-of-Mass det. time= 26.3 min (207.2 - 180.9)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	5,363 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

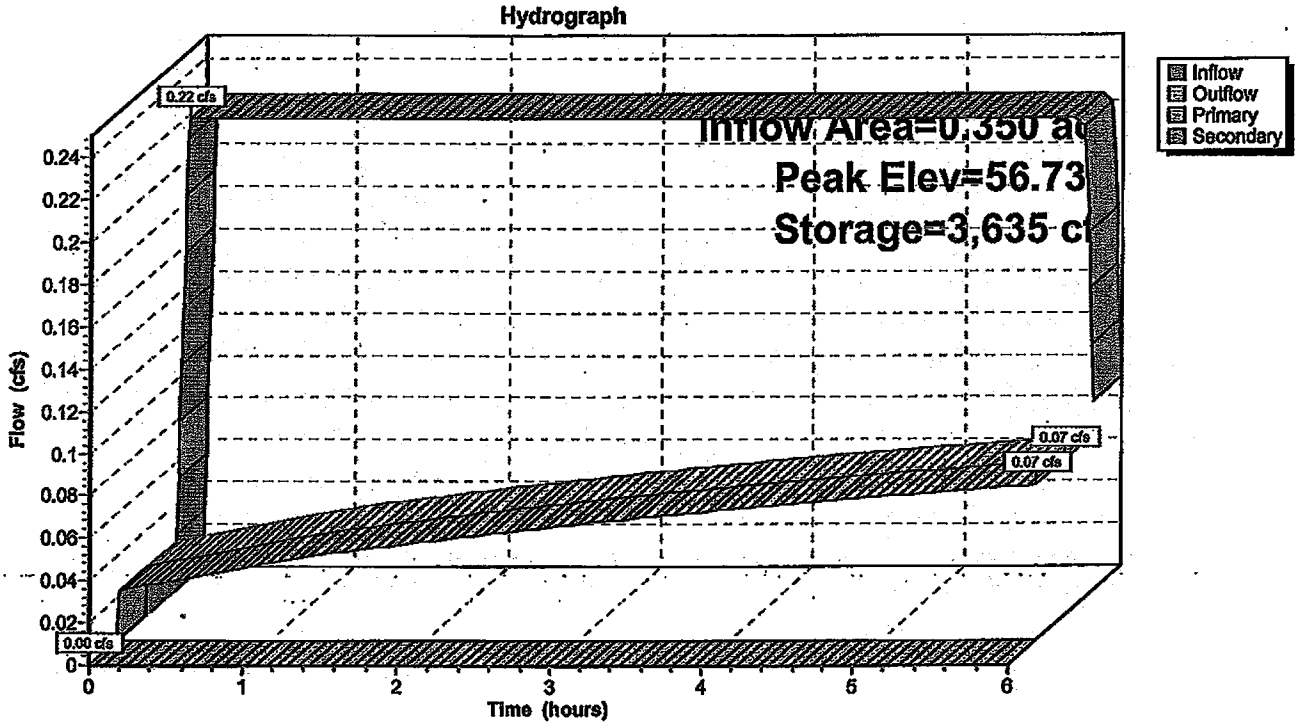
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
54.00	663	231.0	0	0	663
55.00	1,142	245.0	892	892	1,244
56.00	1,652	260.0	1,389	2,281	1,898
57.00	2,194	275.0	1,917	4,197	2,590
57.50	2,471	281.0	1,166	5,363	2,890

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**1.552 in/hr Exfiltration - Full Infiltration Rate over Surface area**
#2	Secondary	57.00'	**120.0' long x 4.2' breadth Infiltration Basin Broad-Crested Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.53 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.67 2.71 2.72 2.74 2.77 2.85 3.01 3.23

Primary OutFlow Max=0.07 cfs @ 6.00 hrs HW=56.73' (Free Discharge)
└─**1=Exfiltration - Full Infiltration Rate** (Exfiltration Controls 0.07 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' (Free Discharge)
└─**2=Infiltration Basin Broad-Crested Weir** (Controls 0.00 cfs)

Pond BMP #1: Infiltration Basin



Summary for Subcatchment DA-1 POST: Post-Development

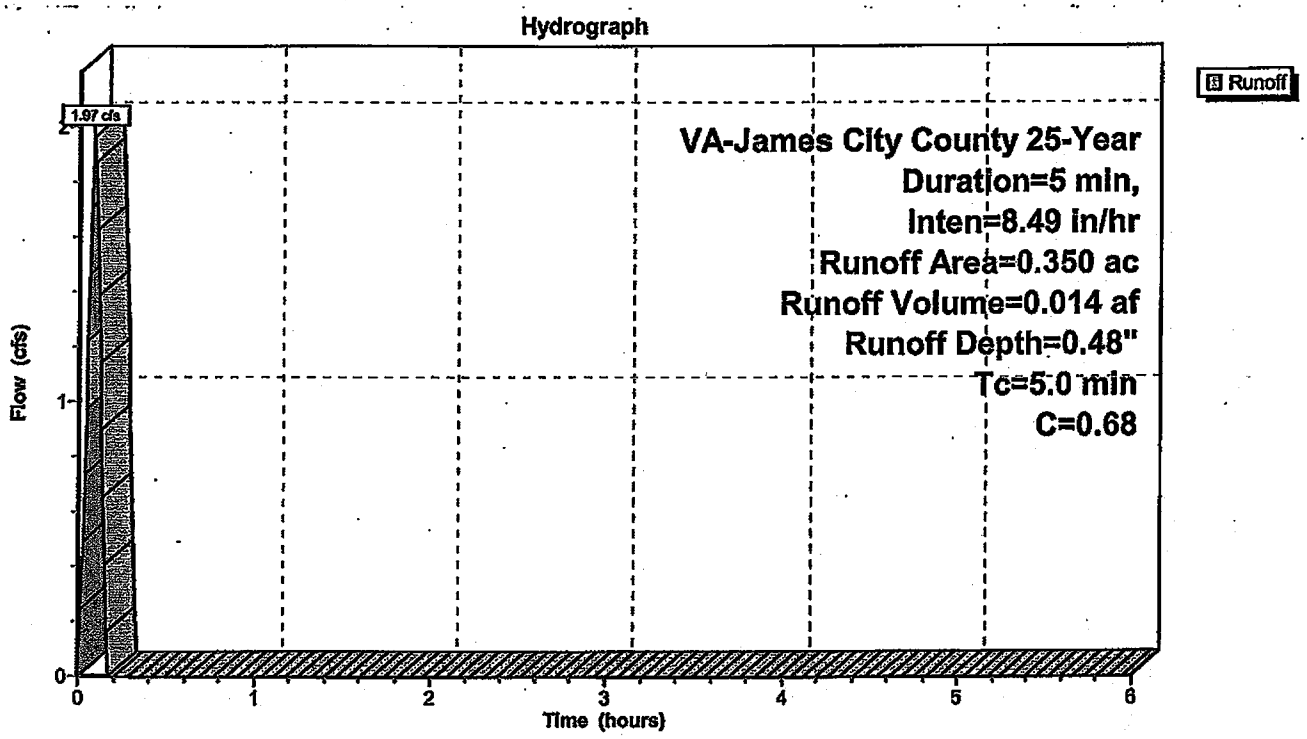
Runoff = 1.97 cfs @ 0.08 hrs, Volume= 0.014 af, Depth= 0.48"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 25-Year Duration=5 min, Inten=8.49 in/hr

Area (ac)	C	Description
0.210	0.90	Proposed Impervious Area
0.140	0.35	Proposed Pervious Area
0.350	0.68	Weighted Average
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct Input**

Subcatchment DA-1 POST: Post-Development



100-YEAR STORM

Summary for Pond BMP #1: Infiltration Basin

Inflow Area =	0.350 ac,	0.00% Impervious,	Inflow Depth = 3.90"	for 100-Year event
Inflow =	0.49 cfs @	0.09 hrs, Volume=	0.114 af	
Outflow =	0.49 cfs @	2.80 hrs, Volume=	0.037 af, Atten= 0%, Lag= 162.3 min	
Primary =	0.08 cfs @	2.80 hrs, Volume=	0.033 af	
Secondary =	0.41 cfs @	2.80 hrs, Volume=	0.004 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 57.01' @ 2.80 hrs Surf.Area= 2,201 sf Storage= 4,226 cf

Plug-Flow detention time= 164.6 min calculated for 0.037 af (32% of inflow)
Center-of-Mass det. time= 107.6 min (194.1 - 86.5)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	5,363 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

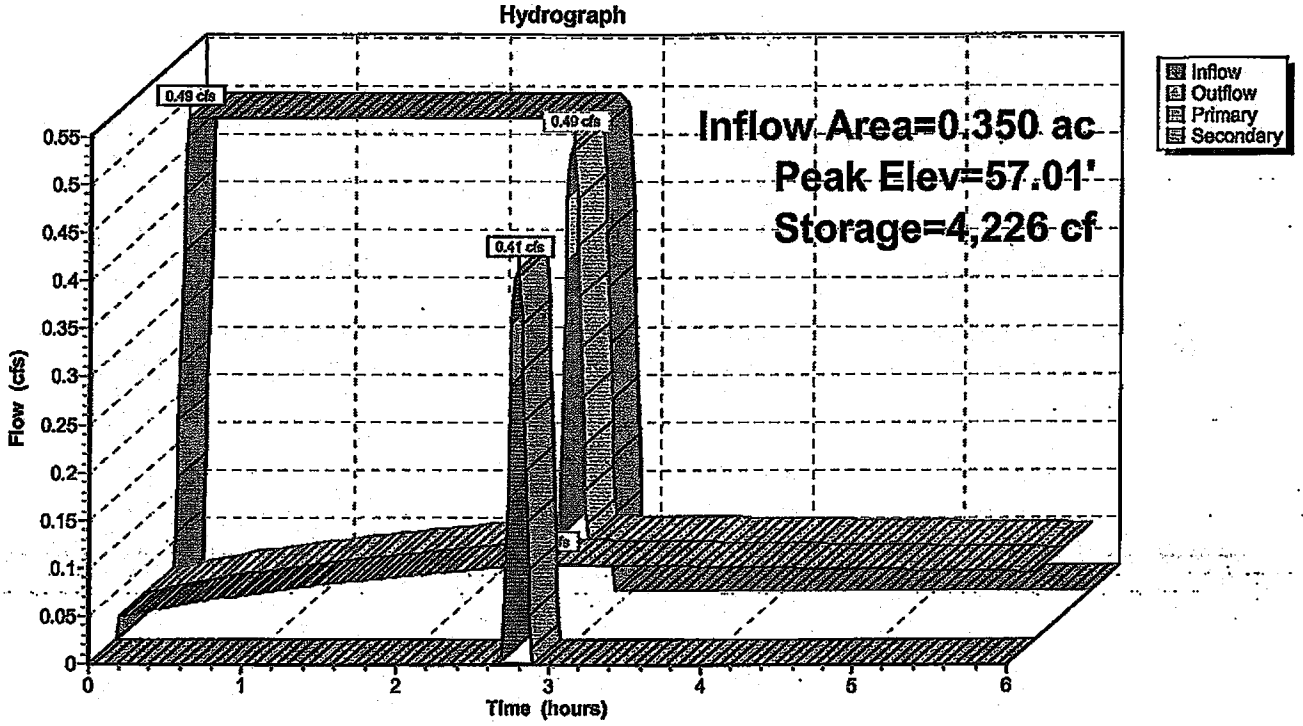
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
54.00	663	231.0	0	0	663
55.00	1,142	245.0	892	892	1,244
56.00	1,652	260.0	1,389	2,281	1,898
57.00	2,194	275.0	1,917	4,197	2,590
57.50	2,471	281.0	1,166	5,363	2,890

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**1.552 in/hr Exfiltration - Full Infiltration Rate over Surface area**
#2	Secondary	57.00'	**120.0' long x 4.2' breadth Infiltration Basin Broad-Crested Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.53 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.67 2.71 2.72 2.74 2.77 2.85 3.01 3.23

Primary OutFlow Max=0.08 cfs @ 2.80 hrs HW=57.01' (Free Discharge)
└─**1=Exfiltration - Full Infiltration Rate** (Exfiltration Controls 0.08 cfs)

Secondary OutFlow Max=0.41 cfs @ 2.80 hrs HW=57.01' (Free Discharge)
└─**2=Infiltration Basin Broad-Crested Weir** (Weir Controls 0.41 cfs @ 0.27 fps)

Pond BMP #1: Infiltration Basin



Summary for Subcatchment DA-1 POST: Post-Development

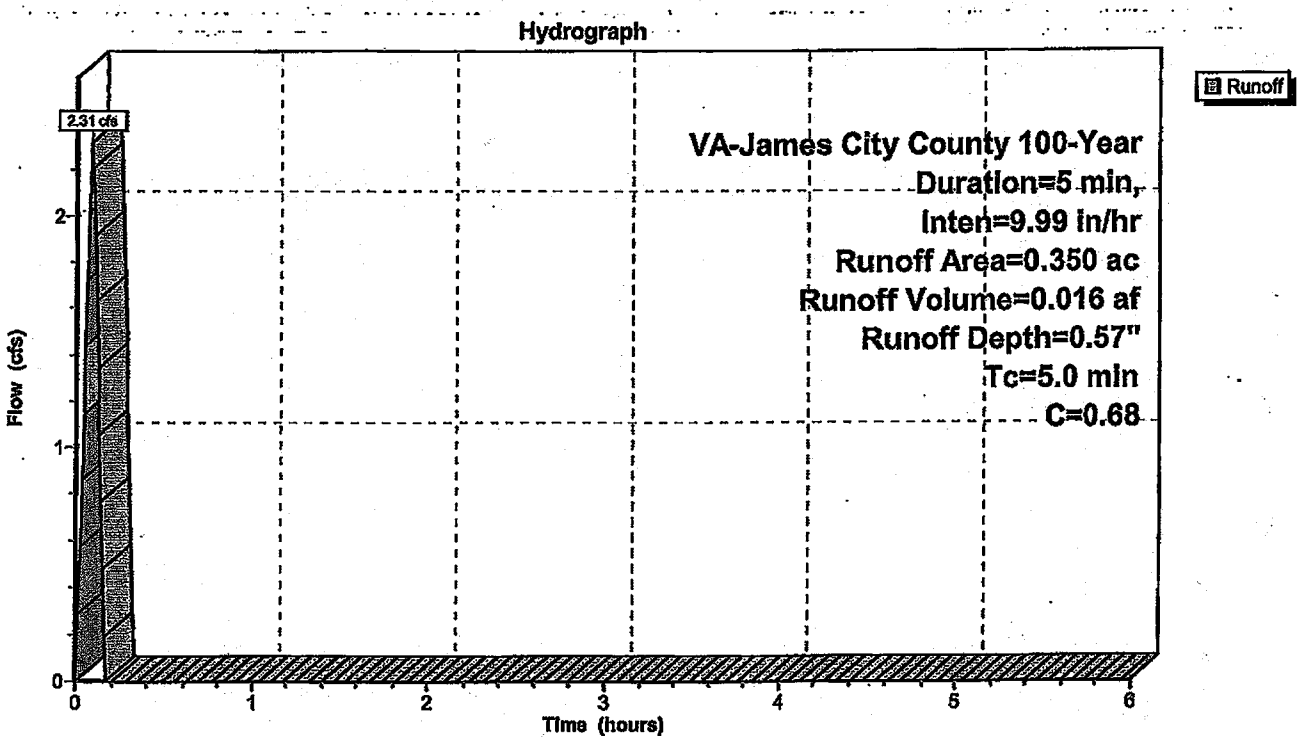
Runoff = 2.31 cfs @ 0.08 hrs, Volume= 0.016 af, Depth= 0.57"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 100-Year Duration=5 min, Inten=9.99 in/hr

Area (ac)	C	Description
0.210	0.90	Proposed Impervious Area
0.140	0.35	Proposed Pervious Area
0.350	0.68	Weighted Average
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Input

Subcatchment DA-1 POST: Post-Development



INFILTRATION BASIN DRAWDOWN CALCULATIONS

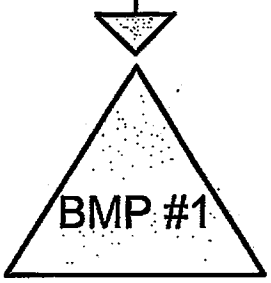
AVERAGE INFILTRATION RATE

Hydrograph for Pond BMP #1: Infiltration Basin

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	**0.00**	**4,197**	**57.00**	**0.08**	**0.08**	**0.00**
1.00	0.00	3,919	56.87	0.08	0.08	0.00
2.00	0.00	3,649	56.74	0.07	0.07	0.00
3.00	0.00	3,389	56.61	0.07	0.07	0.00
4.00	0.00	3,138	56.48	0.07	0.07	0.00
5.00	0.00	2,897	56.35	0.07	0.07	0.00
6.00	0.00	2,664	56.22	0.06	0.06	0.00
7.00	0.00	2,440	56.09	0.06	0.06	0.00
8.00	0.00	2,224	55.97	0.06	0.06	0.00
9.00	0.00	2,017	55.84	0.06	0.06	0.00
10.00	0.00	1,820	55.71	0.05	0.05	0.00
11.00	0.00	1,631	55.58	0.05	0.05	0.00
12.00	0.00	1,451	55.45	0.05	0.05	0.00
13.00	0.00	1,280	55.32	0.05	0.05	0.00
14.00	0.00	1,116	55.19	0.04	0.04	0.00
15.00	0.00	961	55.06	0.04	0.04	0.00
16.00	0.00	814	54.93	0.04	0.04	0.00
17.00	0.00	675	54.80	0.04	0.04	0.00
18.00	0.00	546	54.67	0.03	0.03	0.00
19.00	0.00	424	54.54	0.03	0.03	0.00
20.00	0.00	311	54.41	0.03	0.03	0.00
21.00	0.00	205	54.28	0.03	0.03	0.00
22.00	0.00	108	54.15	0.03	0.03	0.00
23.00	0.00	17	54.03	0.02	0.02	0.00
24.00	0.00	0	54.00	0.00	0.00	0.00
25.00	0.00	0	54.00	0.00	0.00	0.00
26.00	0.00	0	54.00	0.00	0.00	0.00
27.00	0.00	0	54.00	0.00	0.00	0.00
28.00	0.00	0	54.00	0.00	0.00	0.00
29.00	0.00	0	54.00	0.00	0.00	0.00
30.00	0.00	0	54.00	0.00	0.00	0.00
31.00	0.00	0	54.00	0.00	0.00	0.00
32.00	0.00	0	54.00	0.00	0.00	0.00
33.00	0.00	0	54.00	0.00	0.00	0.00
34.00	0.00	0	54.00	0.00	0.00	0.00
35.00	0.00	0	54.00	0.00	0.00	0.00
36.00	0.00	0	54.00	0.00	0.00	0.00
37.00	0.00	0	54.00	0.00	0.00	0.00
38.00	0.00	0	54.00	0.00	0.00	0.00
39.00	0.00	0	54.00	0.00	0.00	0.00
40.00	0.00	0	54.00	0.00	0.00	0.00
41.00	0.00	0	54.00	0.00	0.00	0.00
42.00	0.00	0	54.00	0.00	0.00	0.00
43.00	0.00	0	54.00	0.00	0.00	0.00
44.00	0.00	0	54.00	0.00	0.00	0.00
45.00	0.00	0	54.00	0.00	0.00	0.00
46.00	0.00	0	54.00	0.00	0.00	0.00
47.00	0.00	0	54.00	0.00	0.00	0.00
48.00	0.00	0	54.00	0.00	0.00	0.00

POST-DEVELOPMENT CALCULATIONS ONE HALF OF AVERAGE INFILTRATION RATE

Post-Development



Infiltration Basin

Drainage Diagram for BMP-Half-Infiltration
Prepared by Vanasse Hangen Brustlin, Inc., Printed 3/18/2011
HydroCAD® 9.00 s/n 01238 © 2009 HydroCAD Software Solutions LLC

2-YEAR STORM

Summary for Pond BMP #1: Infiltration Basin

Inflow Area =	0.350 ac,	0.00% Impervious,	Inflow Depth =	1.61"	for 2-Year event
Inflow =	0.12 cfs @	0.09 hrs,	Volume=	0.047 af	
Outflow =	0.03 cfs @	4.82 hrs,	Volume=	0.010 af,	Atten= 78%, Lag= 283.5 min
Primary =	0.03 cfs @	4.82 hrs,	Volume=	0.010 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 55.62' @ 4.82 hrs Surf.Area= 1,449 sf Storage= 1,697 cf

Plug-Flow detention time= 166.8 min calculated for 0.010 af (22% of inflow)
Center-of-Mass det. time= 56.2 min (201.2 - 145.0)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	5,363 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

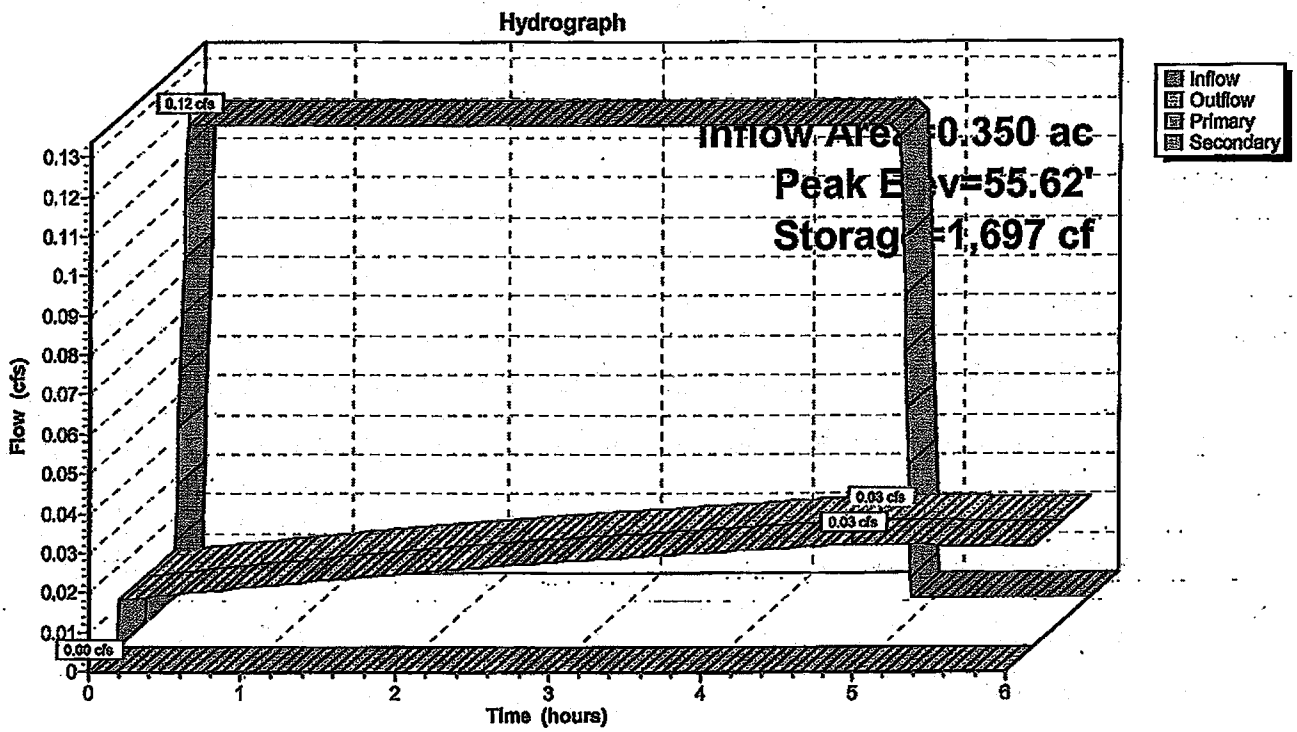
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
54.00	663	231.0	0	0	663
55.00	1,142	245.0	892	892	1,244
56.00	1,652	260.0	1,389	2,281	1,898
57.00	2,194	275.0	1,917	4,197	2,590
57.50	2,471	281.0	1,166	5,363	2,890

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**0.776 in/hr Exfiltration - Half Infiltration Rate (Safety Factor) over Surface are**
#2	Secondary	57.00'	**120.0' long x 4.2' breadth Infiltration Basin Broad-Crested Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.53 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.67 2.71 2.72 2.74 2.77 2.85 3.01 3.23

Primary OutFlow Max=0.03 cfs @ 4.82 hrs HW=55.62' (Free Discharge)
└─**1=Exfiltration - Half Infiltration Rate (Safety Factor)** (Exfiltration Controls 0.03 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' (Free Discharge)
└─**2=Infiltration Basin Broad-Crested Weir** (Controls 0.00 cfs)

Pond BMP #1: Infiltration Basin



Summary for Subcatchment DA-1 POST: Post-Development

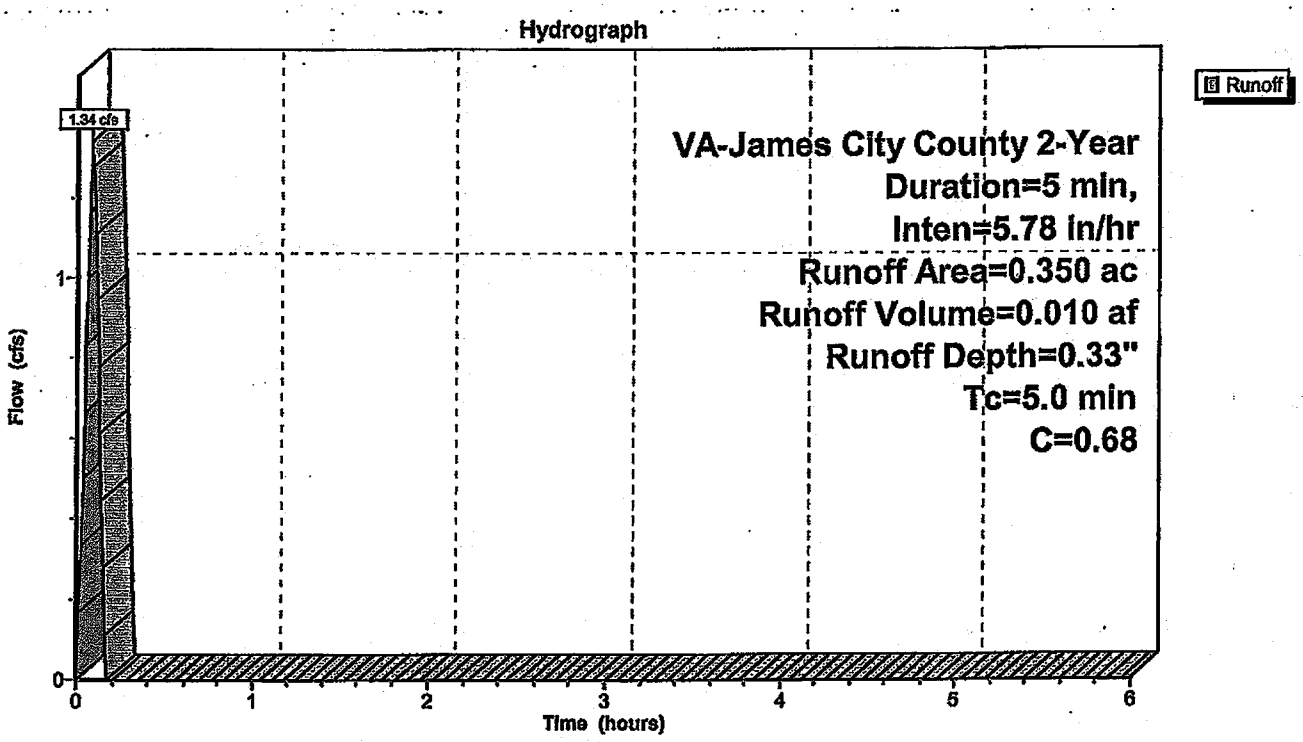
Runoff = 1.34 cfs @ 0.08 hrs, Volume= 0.010 af, Depth= 0.33"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 2-Year Duration=5 min, Inten=5.78 in/hr

Area (ac)	C	Description
0.210	0.90	Proposed Impervious Area
0.140	0.35	Proposed Pervious Area
0.350	0.68	Weighted Average
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Input

Subcatchment DA-1 POST: Post-Development



10-YEAR STORM

Summary for Pond BMP #1: Infiltration Basin

Inflow Area =	0.350 ac,	0.00% Impervious,	Inflow Depth > 2.84"	for 10-Year event
Inflow =	0.17 cfs @	0.09 hrs, Volume=	0.083 af	
Outflow =	0.03 cfs @	6.00 hrs, Volume=	0.012 af, Atten= 80%, Lag= 354.6 min	
Primary =	0.03 cfs @	6.00 hrs, Volume=	0.012 af	
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 56.45' @ 6.00 hrs Surf.Area= 1,888 sf Storage= 3,082 cf

Plug-Flow detention time= 177.7 min calculated for 0.012 af (15% of inflow)
Center-of-Mass det. time= 25.6 min (206.5 - 180.9)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	5,363 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
54.00	663	231.0	0	0	663
55.00	1,142	245.0	892	892	1,244
56.00	1,652	260.0	1,389	2,281	1,898
57.00	2,194	275.0	1,917	4,197	2,590
57.50	2,471	281.0	1,166	5,363	2,890

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**0.776 in/hr Exfiltration - Half Infiltration Rate (Safety Factor) over Surface are**
#2	Secondary	57.00'	**120.0' long x 4.2' breadth Infiltration Basin Broad-Crested Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.53 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.67 2.71 2.72 2.74 2.77 2.85 3.01 3.23

Primary OutFlow Max=0.03 cfs @ 6.00 hrs HW=56.45' (Free Discharge)
└─**1=Exfiltration - Half Infiltration Rate (Safety Factor)** (Exfiltration Controls 0.03 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' (Free Discharge)
└─**2=Infiltration Basin Broad-Crested Weir** (Controls 0.00 cfs)

Summary for Subcatchment DA-1 POST: Post-Development

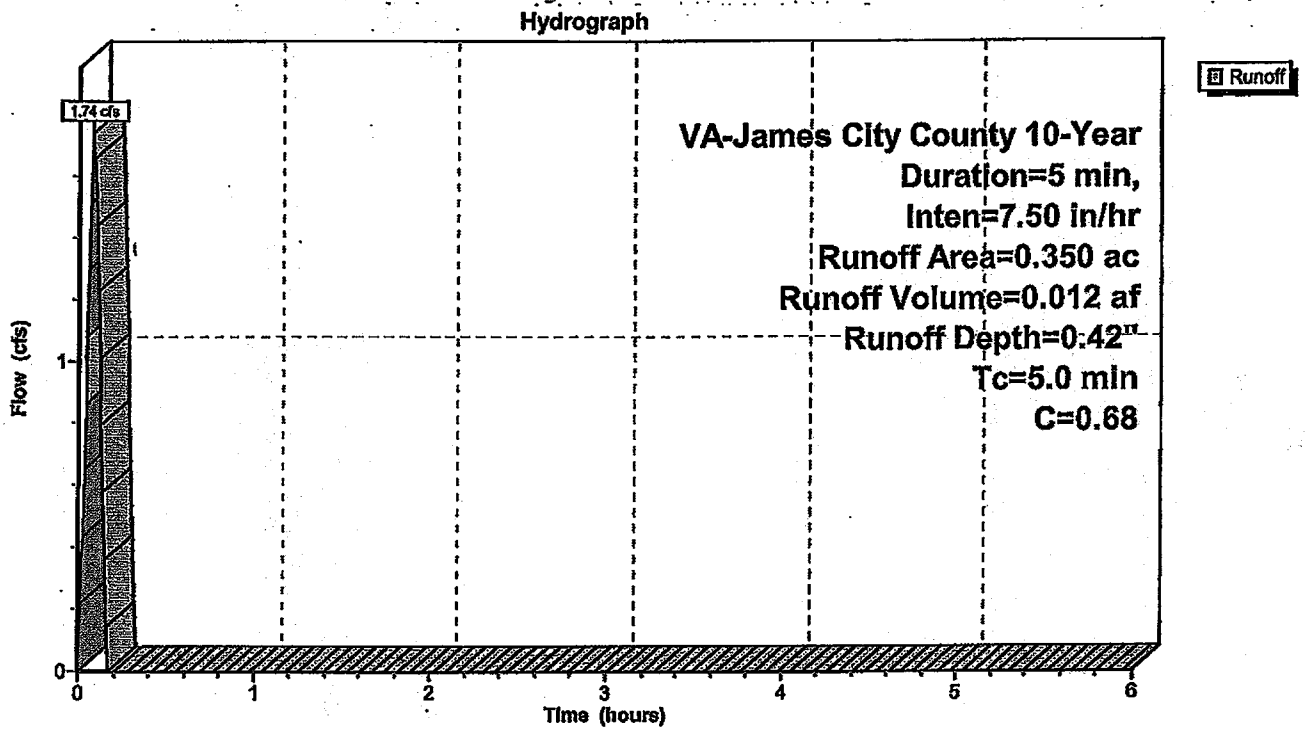
Runoff = 1.74 cfs @ 0.08 hrs, Volume= 0.012 af, Depth= 0.42"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 10-Year Duration=5 min, Inten=7.50 in/hr

Area (ac)	C	Description
0.210	0.90	Proposed Impervious Area
0.140	0.35	Proposed Pervious Area
0.350	0.68	Weighted Average
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Input

Subcatchment DA-1 POST: Post-Development



25-YEAR STORM

Summary for Pond BMP #1: Infiltration Basin

Inflow Area =	0.350 ac,	0.00% Impervious,	Inflow Depth > 3.76"	for 25-Year event
Inflow =	0.22 cfs @	0.09 hrs, Volume=	0.110 af	
Outflow =	0.04 cfs @	6.00 hrs, Volume=	0.014 af, Atten= 82%, Lag= 354.6 min	
Primary =	0.04 cfs @	6.00 hrs, Volume=	0.014 af	
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 56.99' @ 6.00 hrs Surf.Area= 2,189 sf Storage= 4,180 cf

Plug-Flow detention time= 183.8 min calculated for 0.014 af (13% of inflow)
Center-of-Mass det. time= 27.8 min (208.7 - 180.9)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	5,363 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

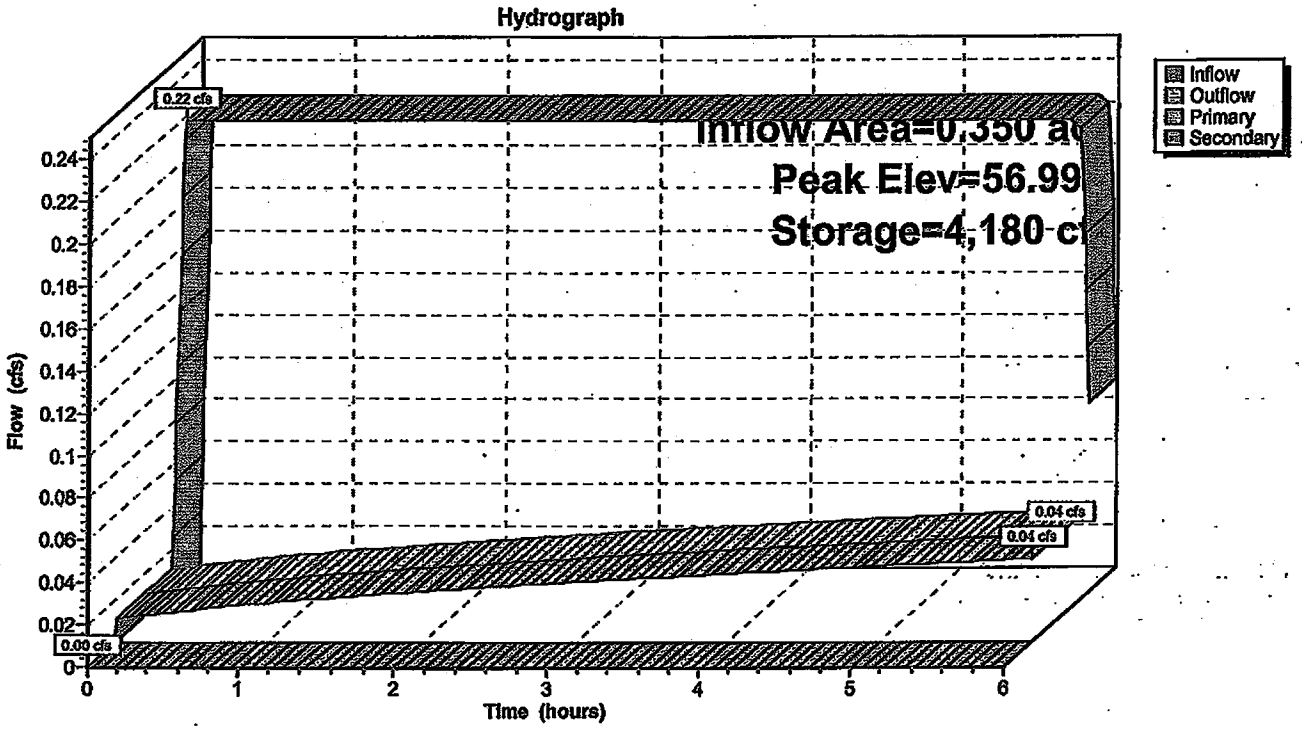
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
54.00	663	231.0	0	0	663
55.00	1,142	245.0	892	892	1,244
56.00	1,652	260.0	1,389	2,281	1,898
57.00	2,194	275.0	1,917	4,197	2,590
57.50	2,471	281.0	1,166	5,363	2,890

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**0.776 in/hr Exfiltration - Half Infiltration Rate (Safety Factor) over Surface are**
#2	Secondary	57.00'	**120.0' long x 4.2' breadth Infiltration Basin Broad-Crested Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.53 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.67 2.71 2.72 2.74 2.77 2.85 3.01 3.23

Primary OutFlow Max=0.04 cfs @ 6.00 hrs HW=56.99' (Free Discharge)
└─**1=Exfiltration - Half Infiltration Rate (Safety Factor)** (Exfiltration Controls 0.04 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' (Free Discharge)
└─**2=Infiltration Basin Broad-Crested Weir** (Controls 0.00 cfs)

Pond BMP #1: Infiltration Basin



Summary for Subcatchment DA-1 POST: Post-Development

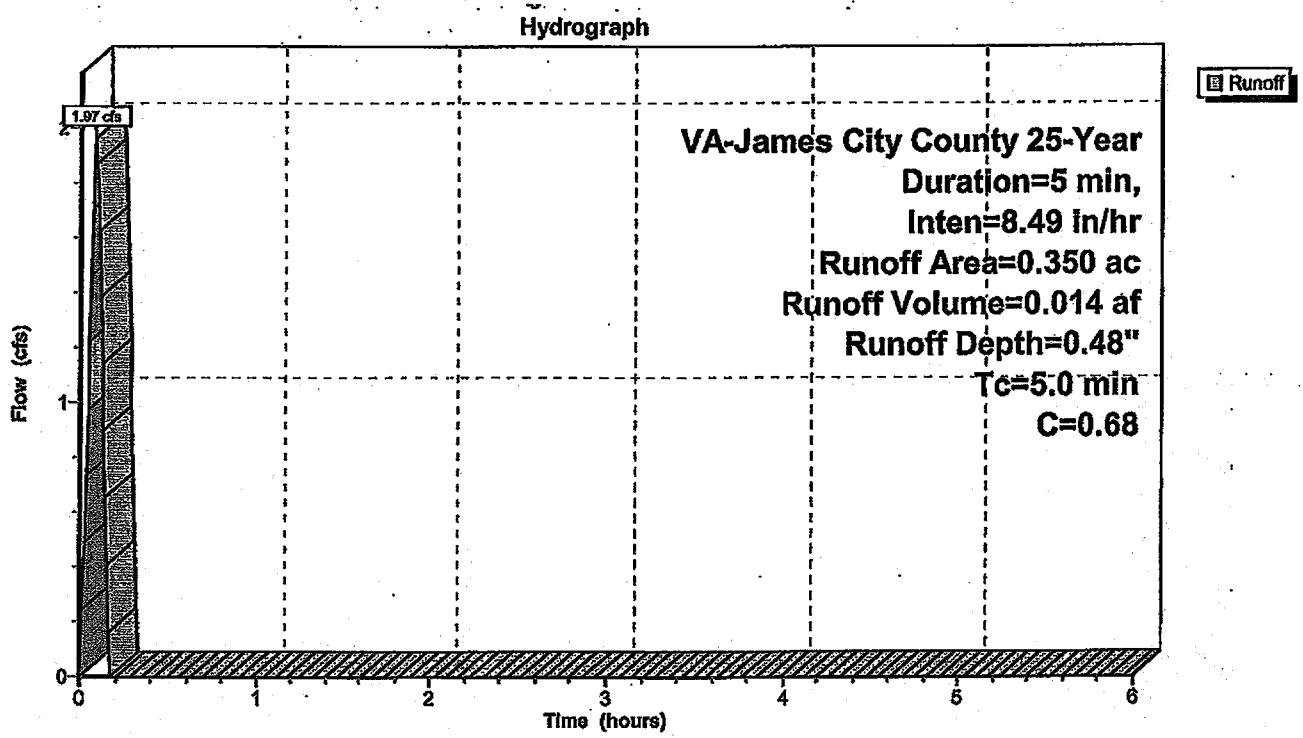
Runoff = 1.97 cfs @ 0.08 hrs, Volume= 0.014 af, Depth= 0.48"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 25-Year Duration=5 min, Inten=8.49 in/hr

Area (ac)	C	Description
0.210	0.90	Proposed Impervious Area
0.140	0.35	Proposed Pervious Area
0.350	0.68	Weighted Average
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct Input**

Subcatchment DA-1 POST: Post-Development



100-YEAR STORM

Summary for Pond BMP #1: Infiltration Basin

Inflow Area =	0.350 ac,	0.00% Impervious,	Inflow Depth =	3.67"	for 100-Year event
Inflow =	0.53 cfs @	0.09 hrs,	Volume=	0.107 af	
Outflow =	0.53 cfs @	2.45 hrs,	Volume=	0.022 af,	Atten= 0%, Lag= 141.3 min
Primary =	0.04 cfs @	2.45 hrs,	Volume=	0.017 af	
Secondary =	0.49 cfs @	2.45 hrs,	Volume=	0.005 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 57.01' @ 2.45 hrs Surf.Area= 2,202 sf Storage= 4,229 cf

Plug-Flow detention time= 168.4 min calculated for 0.022 af (20% of inflow)
Center-of-Mass det. time= 109.9 min (185.9 - 76.0)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	5,363 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

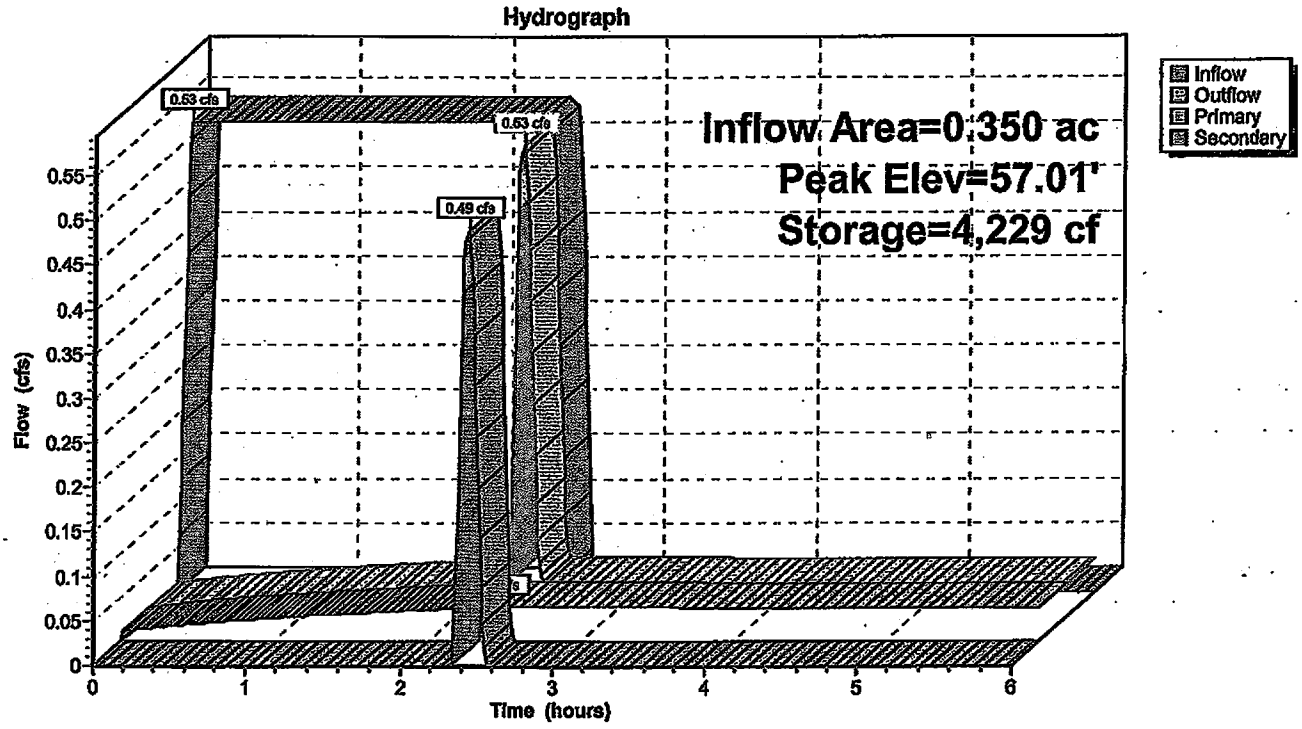
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
54.00	663	231.0	0	0	663
55.00	1,142	245.0	892	892	1,244
56.00	1,652	260.0	1,389	2,281	1,898
57.00	2,194	275.0	1,917	4,197	2,590
57.50	2,471	281.0	1,166	5,363	2,890

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**0.776 in/hr Exfiltration - Half Infiltration Rate (Safety Factor) over Surface are**
#2	Secondary	57.00'	**120.0' long x 4.2' breadth Infiltration Basin Broad-Crested Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.53 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.67 2.71 2.72 2.74 2.77 2.85 3.01 3.23

Primary OutFlow Max=0.04 cfs @ 2.45 hrs HW=57.01' (Free Discharge)
└─**1=Exfiltration - Half Infiltration Rate (Safety Factor)** (Exfiltration Controls 0.04 cfs)

Secondary OutFlow Max=0.49 cfs @ 2.45 hrs HW=57.01' (Free Discharge)
└─**2=Infiltration Basin Broad-Crested Weir** (Weir Controls 0.49 cfs @ 0.28 fps)

Pond BMP #1: Infiltration Basin



Summary for Subcatchment DA-1 POST: Post-Development

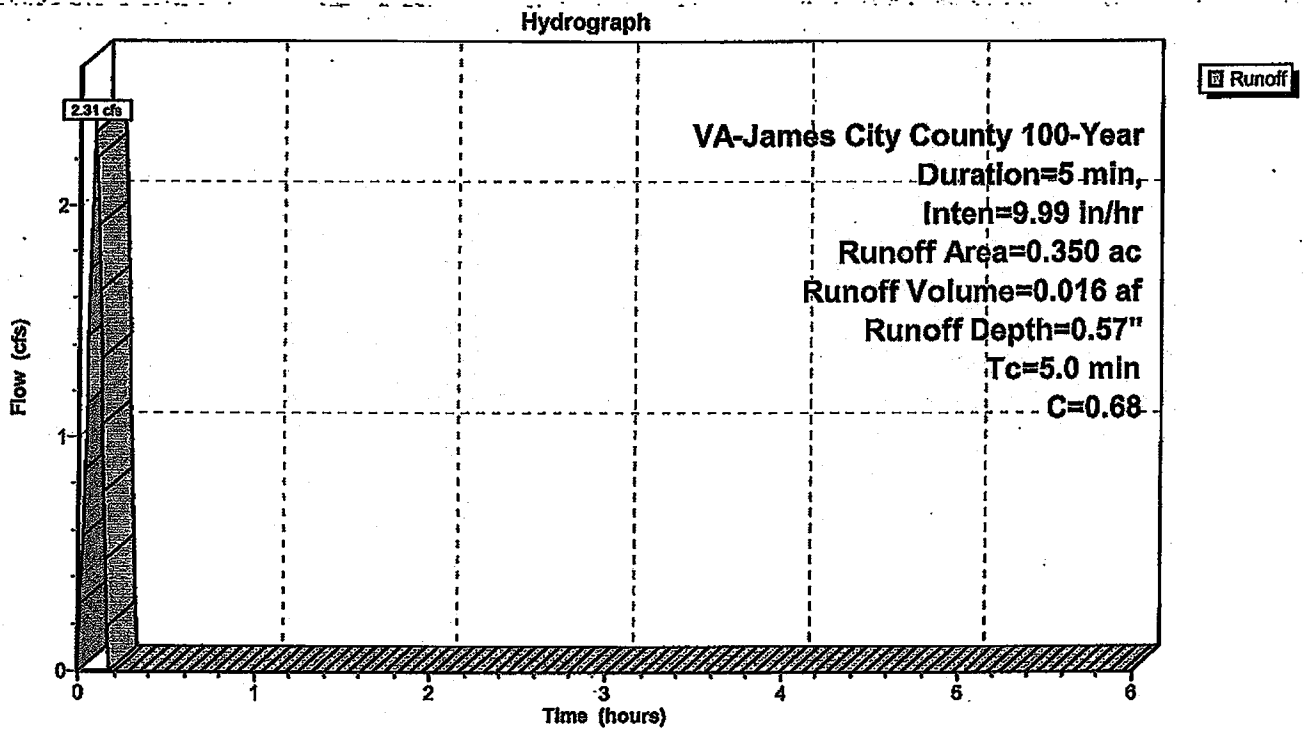
Runoff = 2.31 cfs @ 0.08 hrs, Volume= 0.016 af, Depth= 0.57"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 100-Year Duration=5 min, Inten=9.99 in/hr

Area (ac)	C	Description
0.210	0.90	Proposed Impervious Area
0.140	0.35	Proposed Pervious Area
0.350	0.68	Weighted Average
0.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Input

Subcatchment DA-1 POST: Post-Development



INFILTRATION BASIN DRAWDOWN CALCULATIONS ONE

HALF OF AVERAGE INFILTRATION RATE

Hydrograph for Pond BMP #1: Infiltration Basin

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	4,197	57.00	0.04	0.04	0.00
1.00	0.00	4,057	56.94	0.04	0.04	0.00
2.00	0.00	3,919	56.87	0.04	0.04	0.00
3.00	0.00	3,783	56.81	0.04	0.04	0.00
4.00	0.00	3,649	56.74	0.04	0.04	0.00
5.00	0.00	3,518	56.68	0.04	0.04	0.00
6.00	0.00	3,389	56.61	0.04	0.04	0.00
7.00	0.00	3,263	56.55	0.03	0.03	0.00
8.00	0.00	3,138	56.48	0.03	0.03	0.00
9.00	0.00	3,016	56.42	0.03	0.03	0.00
10.00	0.00	2,897	56.35	0.03	0.03	0.00
11.00	0.00	2,779	56.29	0.03	0.03	0.00
12.00	0.00	2,664	56.22	0.03	0.03	0.00
13.00	0.00	2,551	56.16	0.03	0.03	0.00
14.00	0.00	2,440	56.09	0.03	0.03	0.00
15.00	0.00	2,331	56.03	0.03	0.03	0.00
16.00	0.00	2,224	55.97	0.03	0.03	0.00
17.00	0.00	2,120	55.90	0.03	0.03	0.00
18.00	0.00	2,017	55.84	0.03	0.03	0.00
19.00	0.00	1,918	55.77	0.03	0.03	0.00
20.00	0.00	1,820	55.71	0.03	0.03	0.00
21.00	0.00	1,724	55.64	0.03	0.03	0.00
22.00	0.00	1,631	55.58	0.03	0.03	0.00
23.00	0.00	1,540	55.51	0.02	0.02	0.00
24.00	0.00	1,451	55.45	0.02	0.02	0.00
25.00	0.00	1,364	55.38	0.02	0.02	0.00
26.00	0.00	1,280	55.32	0.02	0.02	0.00
27.00	0.00	1,197	55.25	0.02	0.02	0.00
28.00	0.00	1,116	55.19	0.02	0.02	0.00
29.00	0.00	1,038	55.12	0.02	0.02	0.00
30.00	0.00	961	55.06	0.02	0.02	0.00
31.00	0.00	886	55.00	0.02	0.02	0.00
32.00	0.00	814	54.93	0.02	0.02	0.00
33.00	0.00	744	54.87	0.02	0.02	0.00
34.00	0.00	675	54.80	0.02	0.02	0.00
35.00	0.00	609	54.74	0.02	0.02	0.00
36.00	0.00	546	54.67	0.02	0.02	0.00
37.00	0.00	484	54.61	0.02	0.02	0.00
38.00	0.00	424	54.54	0.02	0.02	0.00
39.00	0.00	367	54.48	0.02	0.02	0.00
40.00	0.00	311	54.41	0.02	0.02	0.00
41.00	0.00	257	54.35	0.01	0.01	0.00
42.00	0.00	205	54.28	0.01	0.01	0.00
43.00	0.00	156	54.22	0.01	0.01	0.00
44.00	0.00	108	54.15	0.01	0.01	0.00
45.00	0.00	61	54.09	0.01	0.01	0.00
46.00	0.00	17	54.03	0.01	0.01	0.00
47.00	0.00	0	54.00	0.00	0.00	0.00
48.00	0.00	0	54.00	0.00	0.00	0.00

INFILTRATION BASIN BROAD-CRESTED WEIR

CALCULATIONS

Worksheet for BMP Broad-Crested Overflow

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.050	
Channel Slope	0.10000	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	120.00	ft
Discharge	0.49	ft^3/s

Results

Normal Depth	0.01	ft
Flow Area	1.14	ft^2
Wetted Perimeter	120.06	ft
Hydraulic Radius	0.01	ft
Top Width	120.06	ft
Critical Depth	0.01	ft
Critical Slope	0.18131	ft/ft
Velocity	0.43	ft/s
Velocity Head	0.00	ft
Specific Energy	0.01	ft
Froude Number	0.78	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.01	ft
Critical Depth	0.01	ft
Channel Slope	0.10000	ft/ft

Worksheet for BMP Broad-Crested Overflow

GVF Output Data

Critical Slope	0.18131	ft/ft

GRAVEL FILTER STRIP CALCULATIONS

VHB *Computations*

Project: PIXIE FUEL
Location: YCC
Calculated by: P.S.
Checked by:
Title

Project # 2006059-02000
Sheet of
Date: 03/17/11
Date:

IMPERVIOUS AREA TO FILTER STRIP = 0.20Ac

STORAGE VOLUME REQUIRED FOR FILTER STRIP

$$10\% \times 2 \times \frac{0.5}{12}\frac{\text{inch}}{\text{inch}} \times 0.20\,Ac \times 43560\,ft^2 = 73\,ft^3$$

PROVIDED STORAGE VOLUME FOR WATER QUALITY IN PRETREATMENT CELL $308\,ft^3$

$$308\,ft^3 > 73\,ft^3$$

ok

Stage-Area-Storage for Pond GS: Gravel Filter Strip

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
54.00	257	0
54.05	257	5
54.10	257	10
54.15	257	15
54.20	257	21
54.25	257	26
54.30	257	31
54.35	257	36
54.40	257	41
54.45	257	46
54.50	257	51
54.55	257	57
54.60	257	62
54.65	257	67
54.70	257	72
54.75	257	77
54.80	257	82
54.85	257	87
54.90	257	93
54.95	257	98
55.00	257	103
55.05	257	108
55.10	257	113
55.15	257	118
55.20	257	123
55.25	257	129
55.30	257	134
55.35	257	139
55.40	257	144
55.45	257	149
55.50	257	154
55.55	257	159
55.60	257	164
55.65	257	170
55.70	257	175
55.75	257	180
55.80	257	185
55.85	257	190
55.90	257	195
55.95	257	200
56.00	257	206
56.05	257	211
56.10	257	216
56.15	257	221
56.20	257	226
56.25	257	231
56.30	257	236
56.35	257	242
56.40	257	247
56.45	257	252
56.50	257	257
56.55	257	262
56.60	257	267
56.65	257	272
56.70	257	278
56.75	257	283
56.80	257	288
56.85	257	293
56.90	257	298
56.95	257	303
57.00	257	308

GRAVEL FILTER STRIP UNDERDRAIN CALCULATIONS

TOTAL RUNOFF TO FILTER STRIP 2.31 cfs (100year storm from HYDROCAD CALCULATIONS)
TWO OUTFALLS FROM FILTER STRIP 2.31/2 = 1.16 cfs

Worksheet for Underdrain Outflow

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.011	
Channel Slope	0.01500	ft/ft
Diameter	0.67	ft
Discharge	1.16	ft³/s

Results

Normal Depth	0.40	ft
Flow Area	0.22	ft²
Wetted Perimeter	1.17	ft
Hydraulic Radius	0.18	ft
Top Width	0.65	ft
Critical Depth	0.51	ft
Percent Full	59.3	%
Critical Slope	0.00753	ft/ft
Velocity	5.35	ft/s
Velocity Head	0.45	ft
Specific Energy	0.84	ft
Froude Number	1.64	
Maximum Discharge	1.88	ft³/s
Discharge Full	1.75	ft³/s
Slope Full	0.00654	ft/ft
Flow Type	SuperCritical	

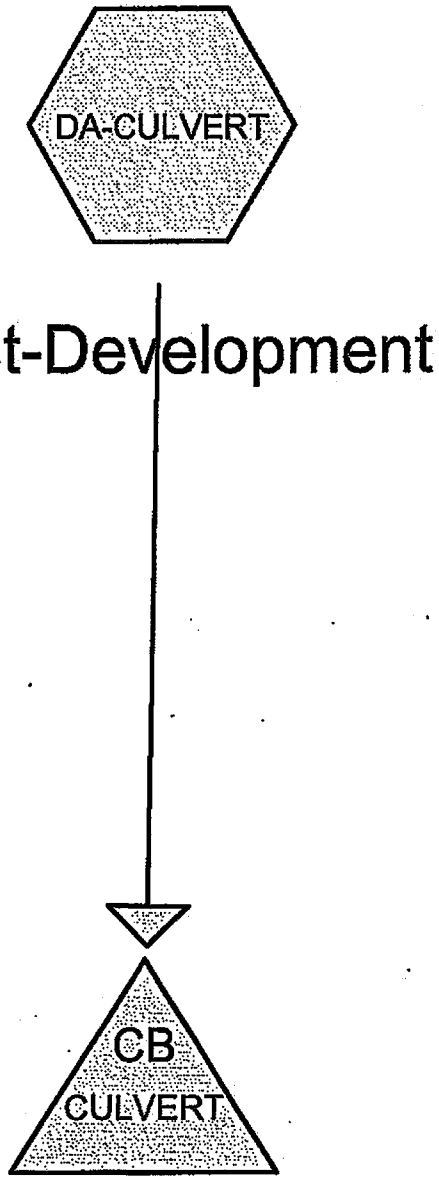
GVF Input Data

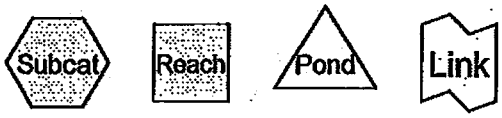
Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	59.34	%
Downstream Velocity	Infinity	ft/s

ENTRANCE CULVERT CALCULATIONS





Drainage Diagram for BMP-Half-Infiltration
Prepared by Vanasse Hangen Brustlin, Inc., Printed 3/18/2011
HydroCAD® 9.00 s/n 01238 © 2009 HydroCAD Software Solutions LLC

2-YEAR STORM

Summary for Pond CULVERT #2: CULVERT #2

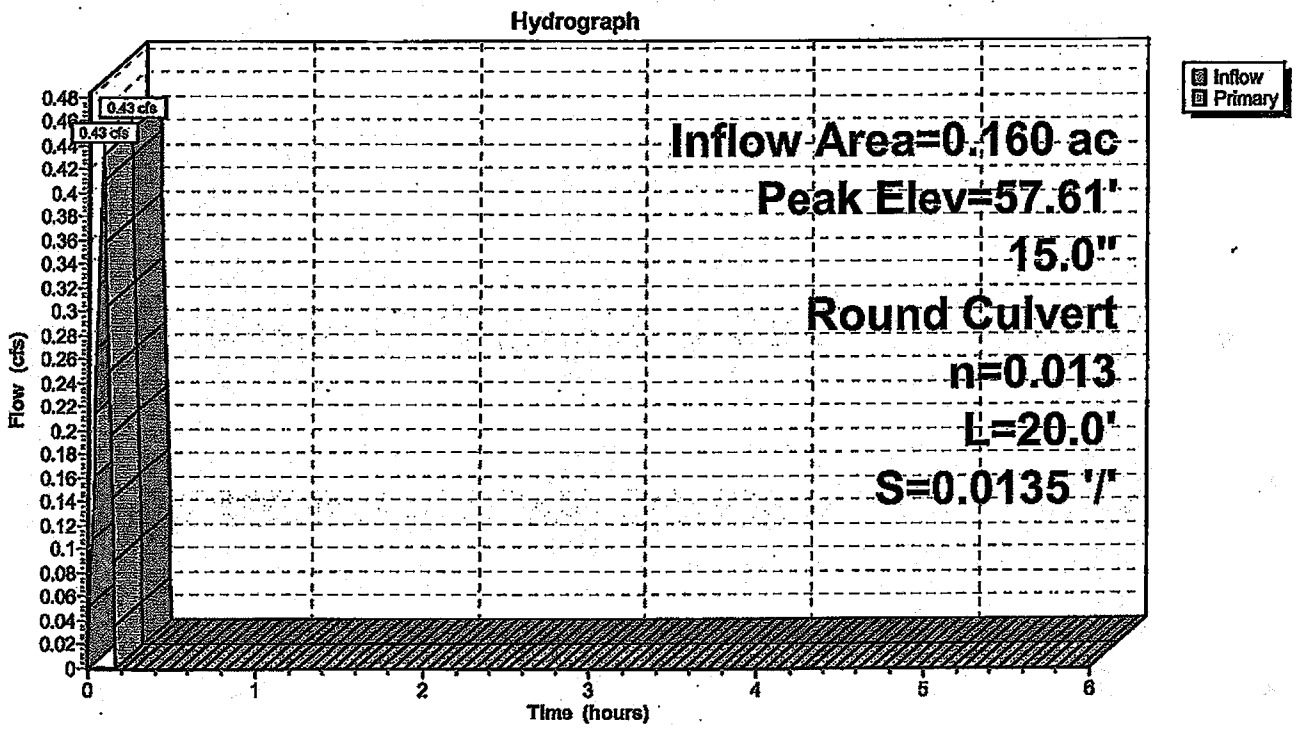
Inflow Area = 0.160 ac, 0.00% Impervious, Inflow Depth = 0.23" for 2-Year event
Inflow = 0.43 cfs @ 0.08 hrs, Volume= 0.003 af
Outflow = 0.43 cfs @ 0.08 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.43 cfs @ 0.08 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 57.61' @ 0.08 hrs
Flood Elev= 60.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.30'	**15.0" Round Culvert** L= 20.0' Ke= 0.500 Outlet Invert= 57.03' S= 0.0135 '/' Cc= 0.900 n= 0.013

Primary OutFlow Max=0.43 cfs @ 0.08 hrs HW=57.60' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.43 cfs @ 2.78 fps)

Pond CULVERT #2: CULVERT #2



Summary for Pond CULVERT #1: CULVERT #1

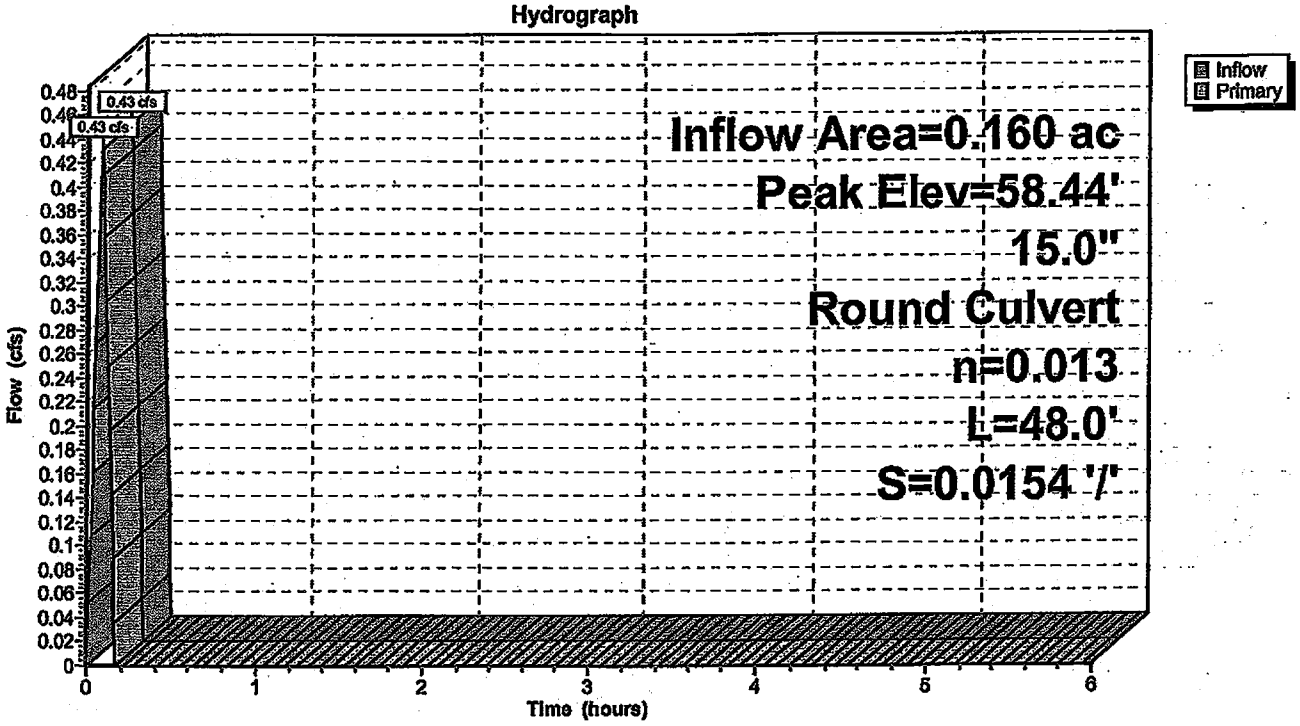
Inflow Area =	0.160 ac,	0.00% Impervious,	Inflow Depth =	0.23"	for 2-Year event
Inflow =	0.43 cfs @	0.08 hrs, Volume=	0.003 af		
Outflow =	0.43 cfs @	0.08 hrs, Volume=	0.003 af,	Atten= 0%,	Lag= 0.0 min
Primary =	0.43 cfs @	0.08 hrs, Volume=	0.003 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 58.44' @ 0.08 hrs
Flood Elev= 60.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	58.14'	**15.0" Round Culvert** L= 48.0' Ke= 0.500 Outlet Invert= 57.40' S= 0.0154 '/' Cc= 0.900 n= 0.013

Primary OutFlow Max=0.43 cfs @ 0.08 hrs HW=58.44' TW=57.60' (Dynamic Tailwater)
└─1=**Culvert** (Inlet Controls 0.43 cfs @ 1.87 fps)

Pond CULVERT #1: CULVERT #1



Summary for Subcatchment DA-CULVERT: Post-Development

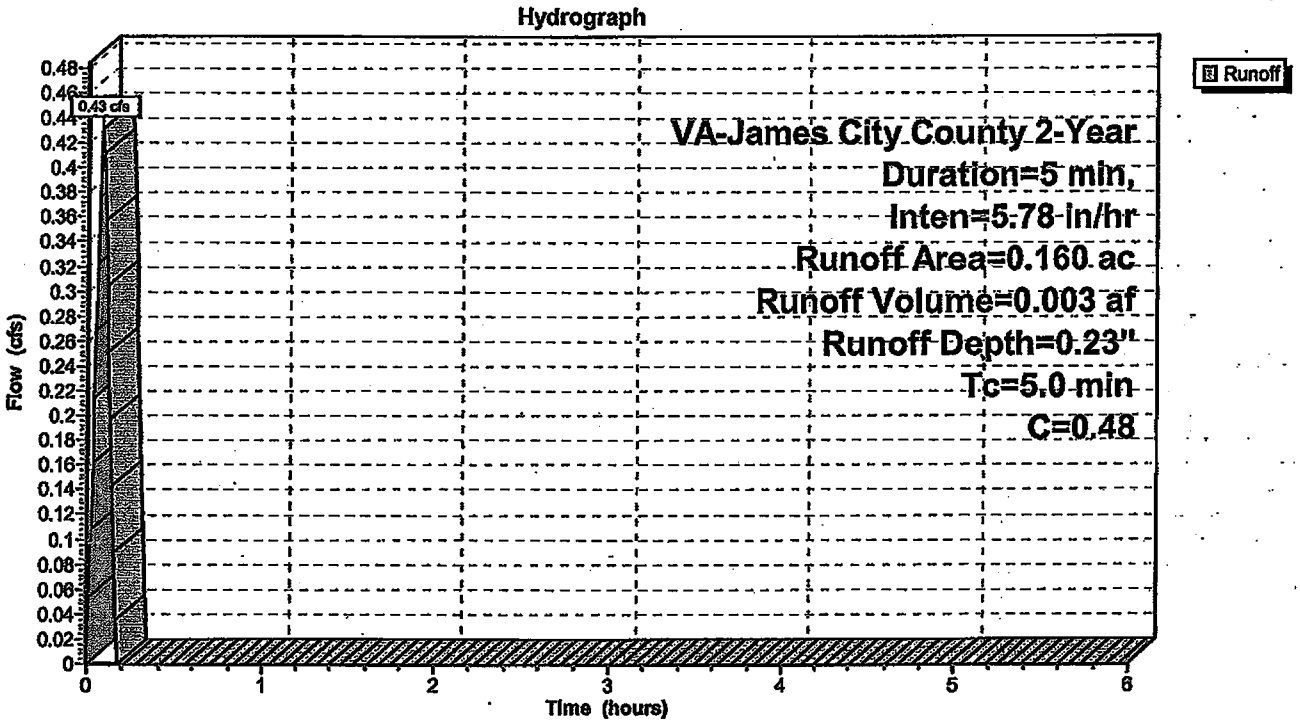
Runoff = 0.43 cfs @ 0.08 hrs, Volume= 0.003 af, Depth= 0.23"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 2-Year Duration=5 min, Inten=5.78 in/hr

Area (ac)	C	Description
0.040	0.90	Proposed Impervious Area
0.100	0.35	Proposed Pervious Area
0.020	0.30	Existing Woods
0.160	0.48	Weighted Average
0.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct Input**

Subcatchment DA-CULVERT: Post-Development



10-YEAR STORM

Summary for Pond CULVERT #2: CULVERT #2

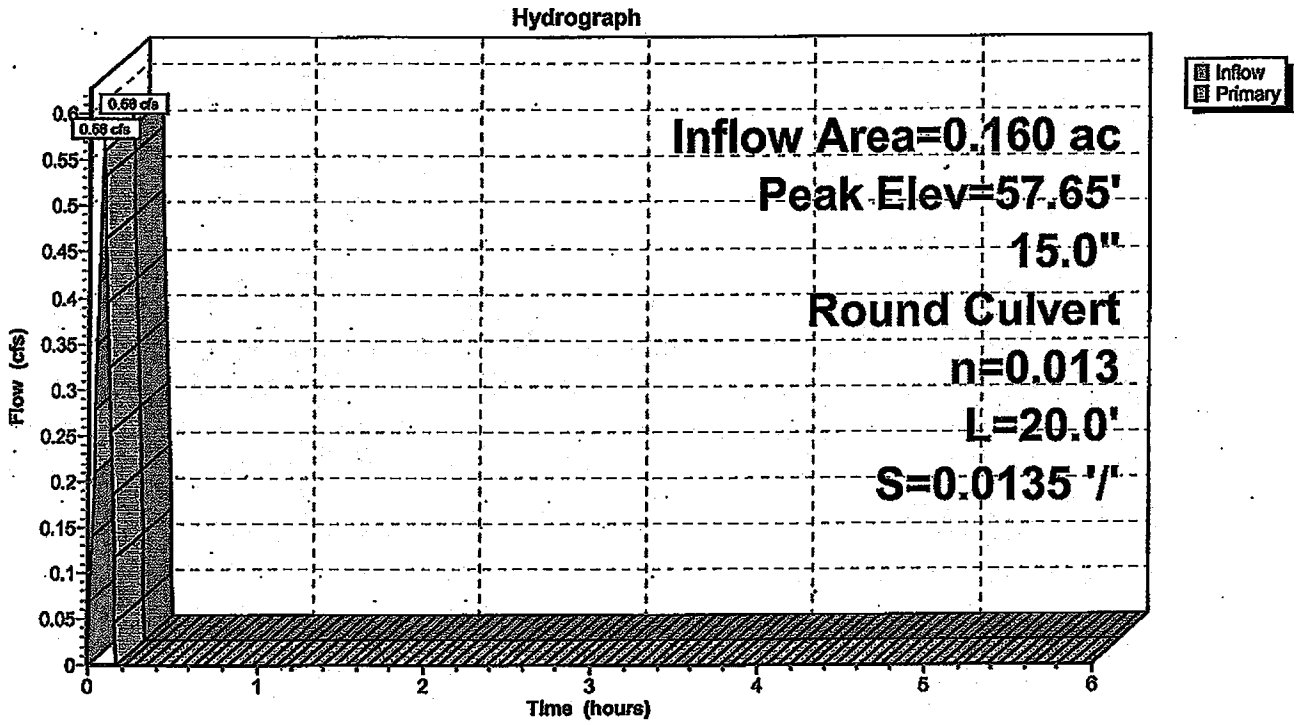
Inflow Area =	0.160 ac,	0.00% Impervious,	Inflow Depth =	0.30"	for 10-Year event
Inflow =	0.56 cfs @	0.08 hrs,	Volume=	0.004 af	
Outflow =	0.56 cfs @	0.08 hrs,	Volume=	0.004 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.56 cfs @	0.08 hrs,	Volume=	0.004 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 57.65' @ 0.08 hrs
Flood Elev= 60.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.30'	**15.0" Round Culvert** L= 20.0' Ke= 0.500 Outlet Invert= 57.03' S= 0.0135 '/' Cc= 0.900 n= 0.013

Primary OutFlow Max=0.55 cfs @ 0.08 hrs HW=57.65' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.55 cfs @ 2.94 fps)

Pond CULVERT #2: CULVERT #2



Summary for Pond CULVERT #1: CULVERT #1

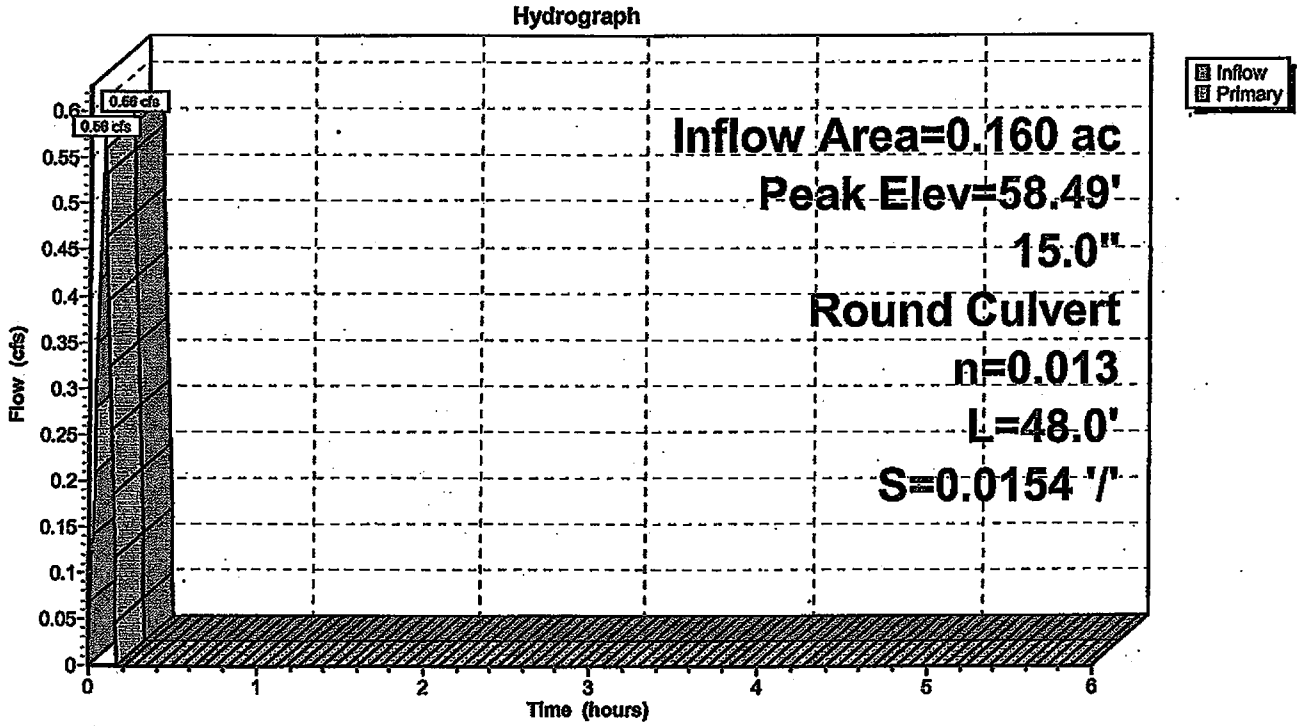
Inflow Area =	0.160 ac,	0.00% Impervious,	Inflow Depth =	0.30"	for 10-Year event
Inflow =	0.56 cfs @	0.08 hrs,	Volume=	0.004 af	
Outflow =	0.56 cfs @	0.08 hrs,	Volume=	0.004 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.56 cfs @	0.08 hrs,	Volume=	0.004 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 58.49' @ 0.08 hrs
Flood Elev= 60.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	58.14'	**15.0" Round Culvert** L= 48.0' Ke= 0.500 Outlet Invert= 57.40' S= 0.0154 '/' Cc= 0.900 n= 0.013

Primary OutFlow Max=0.55 cfs @ 0.08 hrs HW=58.49' TW=57.65' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.55 cfs @ 2.00 fps)

Pond CULVERT #1: CULVERT #1



Summary for Subcatchment DA-CULVERT: Post-Development

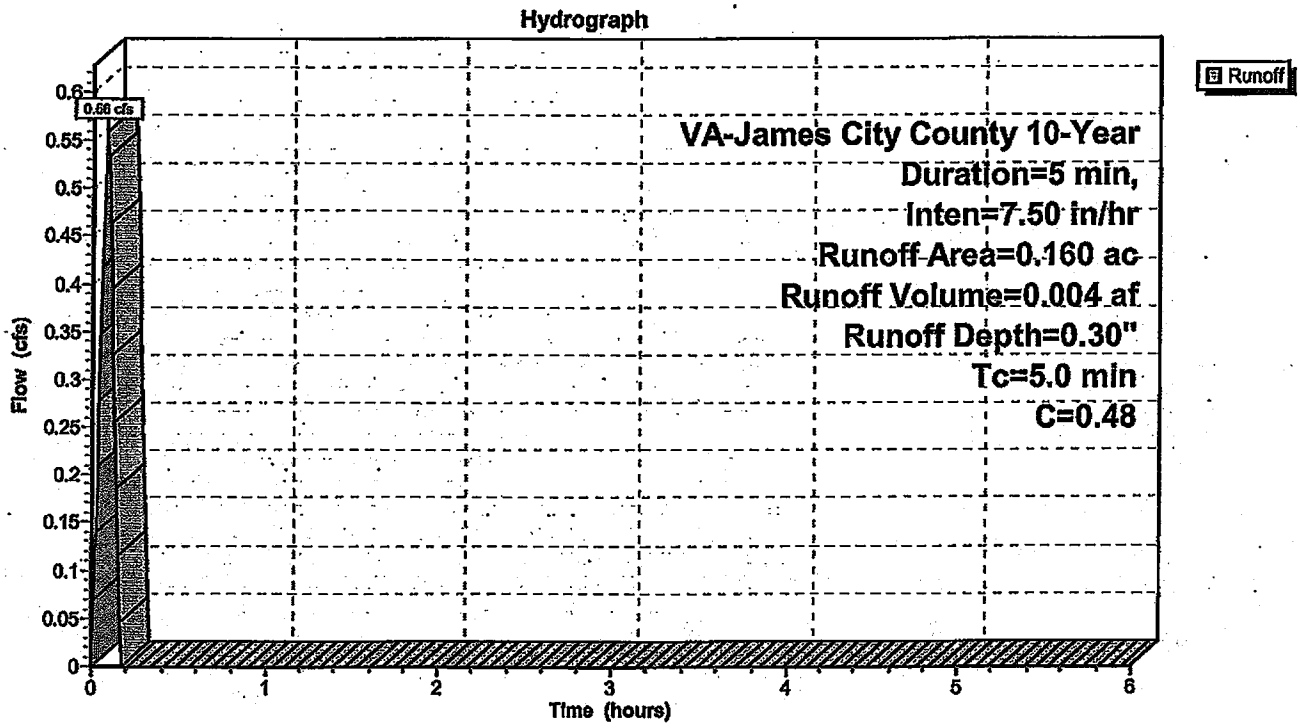
Runoff = 0.56 cfs @ 0.08 hrs, Volume= 0.004 af, Depth= 0.30"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 10-Year Duration=5 min, Inten=7.50 in/hr

Area (ac)	C	Description
0.040	0.90	Proposed Impervious Area
0.100	0.35	Proposed Pervious Area
0.020	0.30	Existing Woods
0.160	0.48	Weighted Average
0.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Input

Subcatchment DA-CULVERT: Post-Development



25-YEAR STORM

Summary for Pond CULVERT #2: CULVERT #2

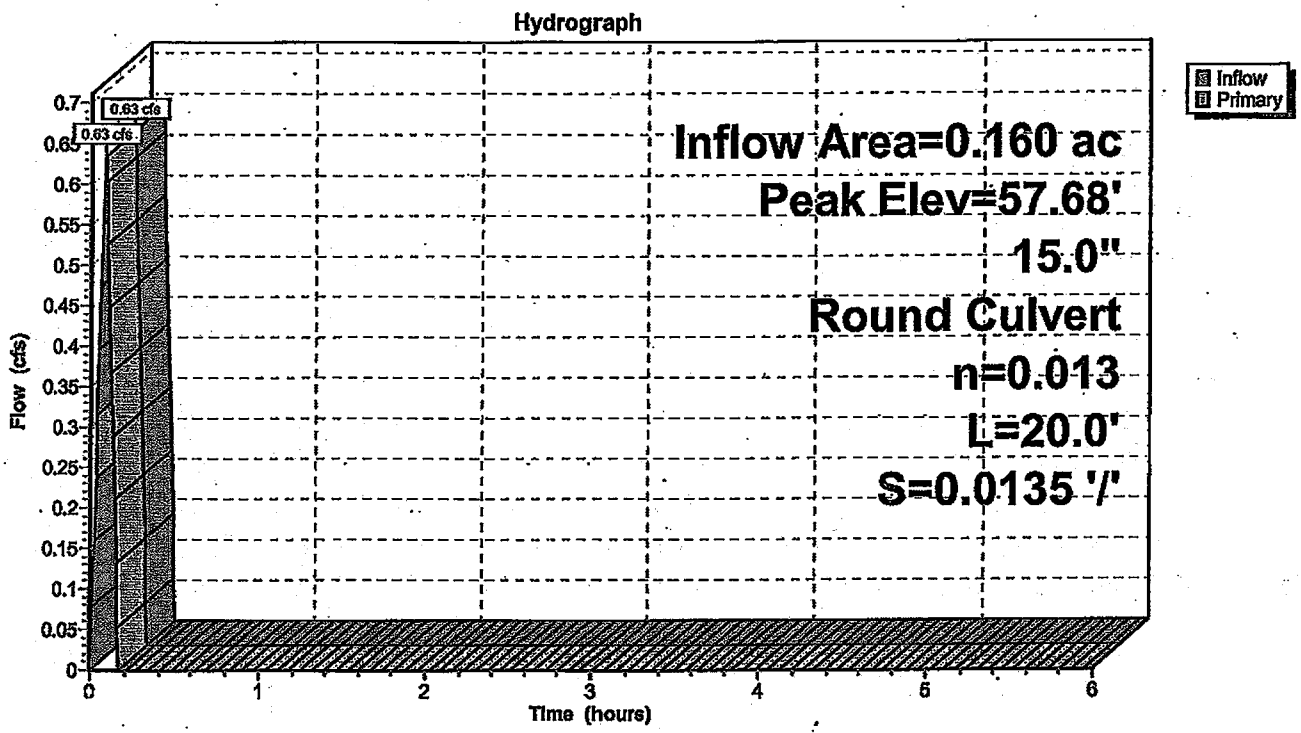
Inflow Area =	0.160 ac,	0.00% Impervious,	Inflow Depth =	0.34"	for 25-Year event
Inflow =	0.63 cfs @	0.08 hrs,	Volume=	0.005 af	
Outflow =	0.63 cfs @	0.08 hrs,	Volume=	0.005 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.63 cfs @	0.08 hrs,	Volume=	0.005 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 57.68' @ 0.08 hrs
Flood Elev= 60.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.30'	**15.0" Round Culvert** L= 20.0' Ke= 0.500 Outlet Invert= 57.03' S= 0.0135 '/' Cc= 0.900 n= 0.013

Primary OutFlow Max=0.62 cfs @ 0.08 hrs HW=57.68' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.62 cfs @ 3.02 fps)

Pond CULVERT #2: CULVERT #2



Summary for Pond CULVERT #1: CULVERT #1

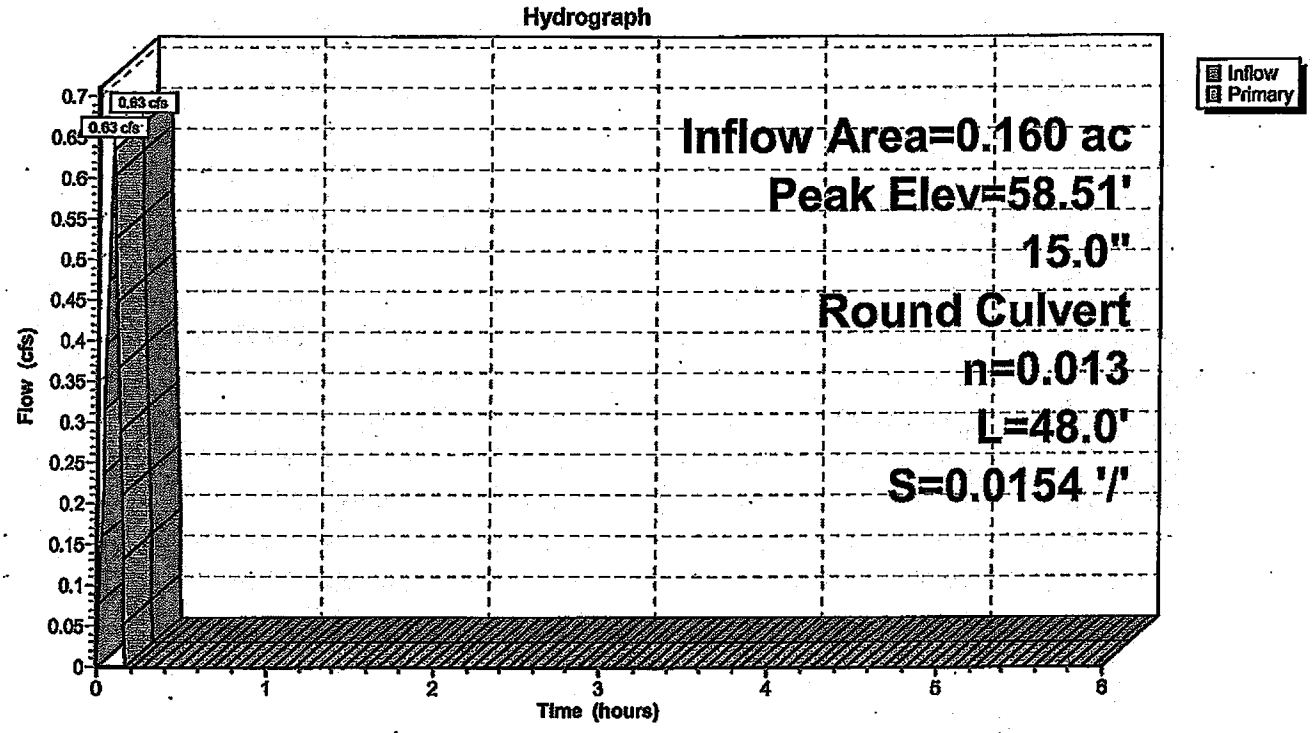
Inflow Area =	0.160 ac,	0.00% Impervious,	Inflow Depth =	0.34"	for 25-Year event
Inflow =	0.63 cfs @	0.08 hrs,	Volume=	0.005 af	
Outflow =	0.63 cfs @	0.08 hrs,	Volume=	0.005 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.63 cfs @	0.08 hrs,	Volume=	0.005 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 58.51' @ 0.08 hrs
Flood Elev= 60.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	58.14'	**15.0" Round Culvert** L= 48.0' Ke= 0.500 Outlet Invert= 57.40' S= 0.0154 '/' Cc= 0.900 n= 0.013

Primary OutFlow Max=0.62 cfs @ 0.08 hrs HW=58.51' TW=57.68' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.62 cfs @ 2.07 fps)

Pond CULVERT #1: CULVERT #1



Summary for Subcatchment DA-CULVERT: Post-Development

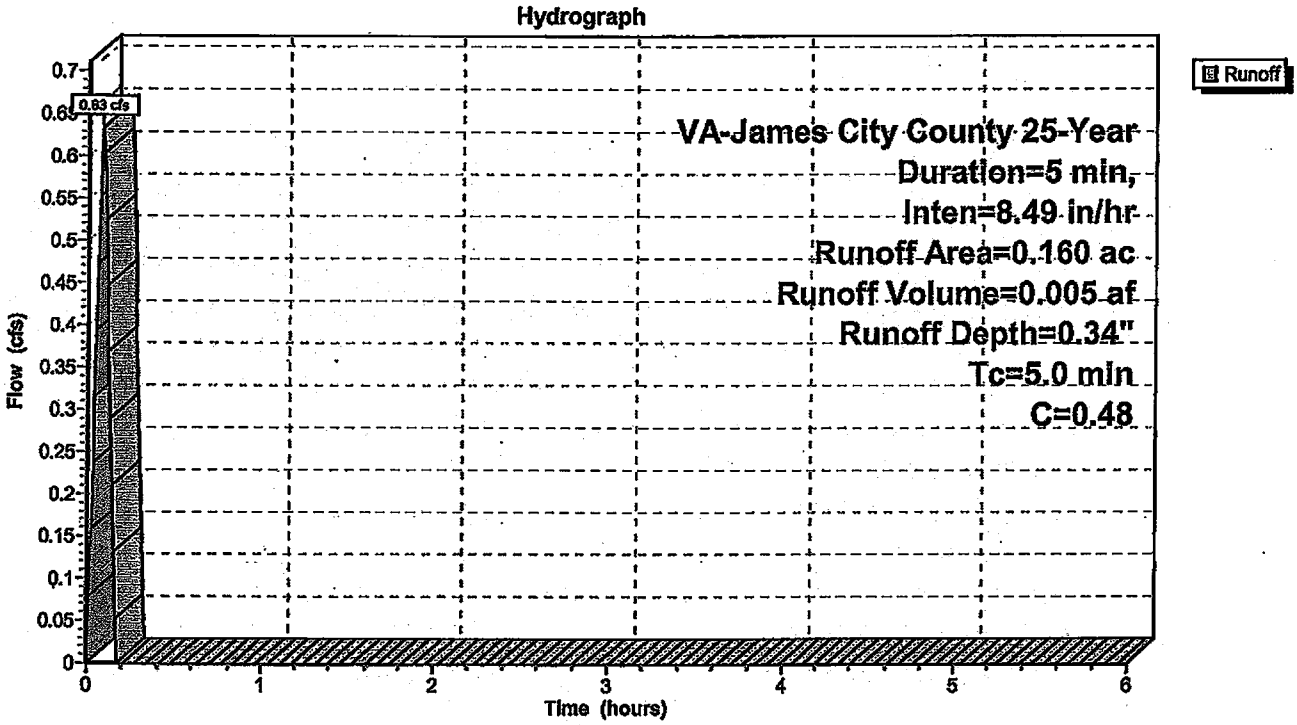
Runoff = 0.63 cfs @ 0.08 hrs, Volume= 0.005 af, Depth= 0.34"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
VA-James City County 25-Year Duration=5 min, Inten=8.49 in/hr

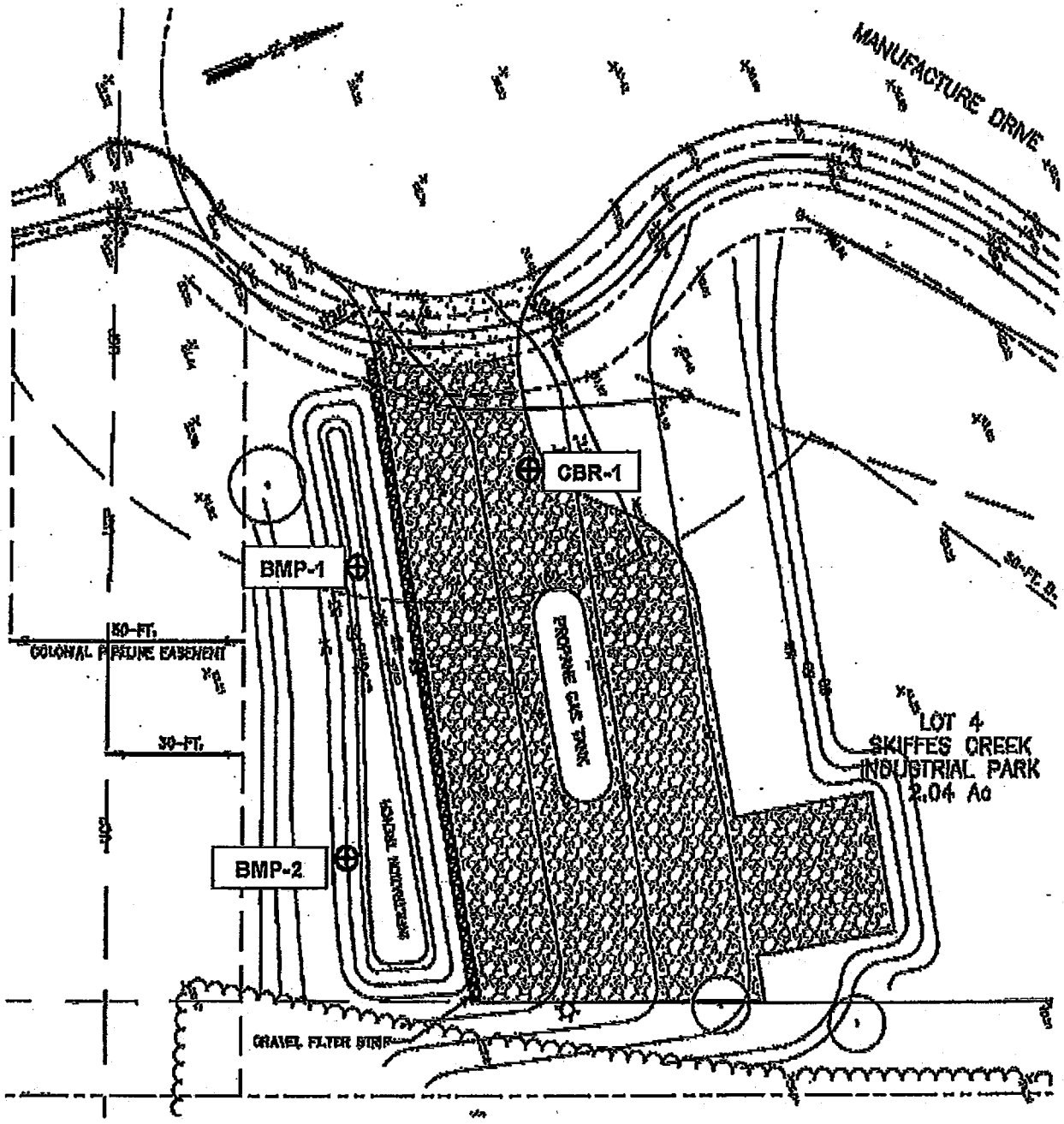
Area (ac)	C	Description
0.040	0.90	Proposed Impervious Area
0.100	0.35	Proposed Pervious Area
0.020	0.30	Existing Woods
0.160	0.48	Weighted Average
0.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct Input**

Subcatchment DA-CULVERT: Post-Development



GEOTECHNICAL REPORT



Locations are approximate

BORING LOCATION PLAN

PROJECT: Dixie Fuel Company Propane Distribution Facility
James City County, Virginia

PROJECT NO: WM09-161G

CLIENT: LandMark Design Group

SCALE: NTS

DATE: 09/14/09

PLOT BY: SP

GET Solutions, Inc.

LOG OF BORING No. CBR-1

PROJECT: Dixie Fuel Company Propane Distribution Facility
CLIENT: LandMark Design Group
PROJECT LOCATION: James City County, Virginia
PROJECT NO.: WM09-161G
BORING LOCATION: See Attached Boring Location Plan
SURFACE ELEVATION:
DRILLER: GET Solutions, Inc.
LOGGED BY: SP
DRILLING METHOD: Hand Auger
DATE: 9/3/2009
DEPTH TO WATER - INITIAL*: ∇ NE AFTER 24 HOURS: ∇ NT CAVING C

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows Per 6"	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Moisture Content ●; Penetration ▨; 10 20 30 40 50 60 70)
	0	0	Orangish brown, moist, Clayey, fine to medium SAND (SC) with trace organics, FILL							
			Dark brown, moist, Sandy, Lean CLAY (CL) with some organics, FILL							
		2	Dark brown, moist, Silty, fine SAND (SM) with organics (former topsoil layer)							
	1		Orangish brown, moist, Clayey, fine to medium SAND (SC)							
		4	Brown, moist, Silty, fine to medium SAND (SM) with trace Clay							
		6								
	2		Slightly mottled, orangish brown-gray, moist, Sandy, Lean CLAY (CL)							
		8								
			Orangish brown, moist, Silty, fine to medium SAND (SM) with trace Clay							
	3	10								
			Boring terminated at 10 ft.							
		12								
	4									
		14								

Notes:

SS = Split Spoon Sample
ST = Shelby Tube Sample
HA = Hand Auger Sample
BS = Bulk Sample
WOH = Weight of Hammer

* The initial groundwater reading may not be indicative of the static groundwater level

Standard Penetration Tests were performed in the field in general accordance with ASTM D 1586.

GET Solutions, Inc.

LOG OF BORING No. BMP-1

PROJECT: Dixie Fuel Company Propane Distribution Facility
CLIENT: LandMark Design Group
PROJECT LOCATION: James City County, Virginia — PROJECT NO.: WM09-161G
BORING LOCATION: See Attached Boring Location Plan — SURFACE ELEVATION:
DRILLER: GET Solutions, Inc. — LOGGED BY: SP
DRILLING METHOD: Hand Auger — DATE: 9/3/2009
DEPTH TO WATER - INITIAL*: NE — AFTER 24 HOURS: NT — CAVING: C

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows Per 6"	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Moisture Content ●; Penetration ▨; 10 20 30 40 50 60 70)
	0	0	Orangish brown, moist, Clayey, fine to medium SAND (SC) with trace Gravel and organics, FILL							
		2								
	1		Dark brown, moist, Silty, fine SAND (SM) with trace organics (2.6)							
		4	Brown, moist, Silty, fine to medium SAND (SM) (0)						21	●
	2	6	Orangish brown to brown, moist, Clayey, fine to medium SAND (SC) (4)							
	3	8	Orangish brown, moist, Silty, fine to medium SAND (SM) with trace Gravel and Clay (6.75)							
		10	Boring terminated at 10 ft.							
	4	12								
		14								

Notes:

SS = Split Spoon Sample
ST = Shelby Tube Sample
HA = Hand Auger Sample
BS = Bulk Sample
WOH = Weight of Hammer

* The initial groundwater reading may not be indicative of the static groundwater level.

Standard Penetration Tests were performed in the field in general accordance with ASTM D 1586.

GET Solutions, Inc.

LOG OF BORING No. BMP-2

PROJECT: Dixie Fuel Company Propane Distribution Facility
CLIENT: LandMark Design Group
PROJECT LOCATION: James City County, Virginia — PROJECT NO.: WM09-161G
BORING LOCATION: See Attached Boring Location Plan — SURFACE ELEVATION:
DRILLER: GET Solutions, Inc. — LOGGED BY: SP
DRILLING METHOD: Hand Auger — DATE: 9/4/2009
DEPTH TO WATER - INITIAL*: NE — AFTER 24 HOURS: NT — CAVING C

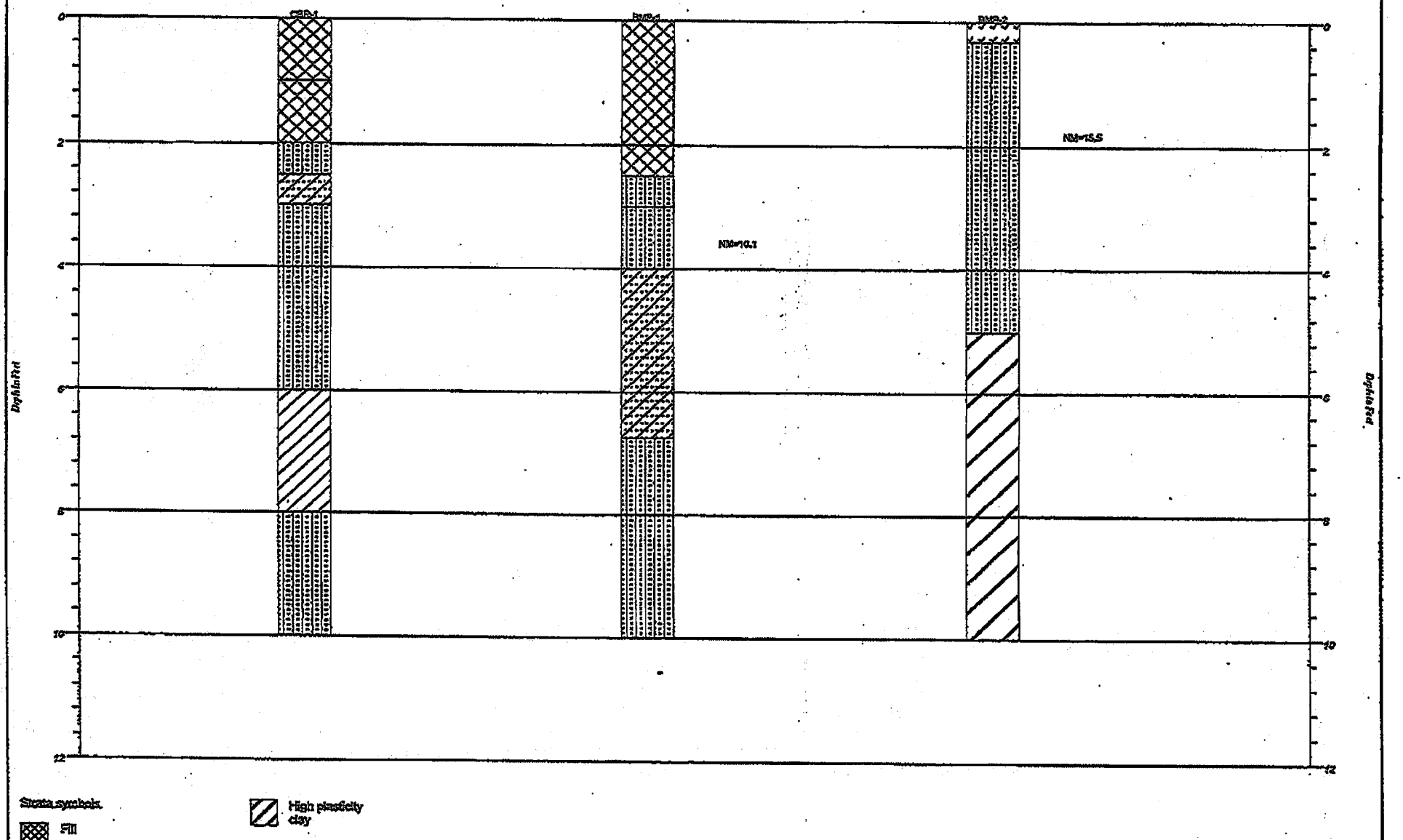
Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows Per 6"	% <#200	TEST RESULTS (Plastic Limit ⊢——⊣ Liquid Limit; Moisture Content ●; Penetration ▨; 10 20 30 40 50 60 70)
	0	0	4 inches of Topsoil (0.33)							
			Brown, moist, Silty, fine SAND (SM) with trace organics (2)						33	●
	1	2	Brown to orangish brown, moist, Silty, fine to medium SAND (SM) with trace Gravel and Clay (5)							
		4								
	2	6	Mottled, orangish brown to gray, moist, Fat CLAY (CH) with Silt							
		8								
	3	10	Boring terminated at 10 ft.							
	4	12								
		14								

Notes:

SS = Split Spoon Sample
ST = Shelby Tube Sample
HA = Hand Auger Sample
BS = Bulk Sample
WOH = Weight of Hammer

* The initial groundwater reading may not be indicative of the stable groundwater level

Standard Penetration Tests were performed in the field in general accordance with ASTM D 1586.



GET Solutions, Inc.

GENERALIZED SOIL PROFILE

HORIZONTAL SCALE	DRAWN BY/APPROVED BY	DATE DRAWN
VERTICAL SCALE 1"=2'	SP	9/16/2009

Dixie Fuel Company Propane Distribution Facility

James City County, Virginia

PROJECT NO. WM09-161G	FIGURE NUMBER

SUMMARY OF CBR TEST RESULTS

Sample Number	CBR-1
Sample Depth (ft.)	3-4
Unified Soil Classification Symbol	SM
Natural Moisture Content (%)	14.4
Atterberg Limits (LL/PL/PI)	Non-Plastic
% Passing #200 Sieve	41.1
Maximum Dry Density, pcf	120.8
Optimum Moisture %	11.1
Soaked CBR Value	14.4
Unsoaked CBR Value	22.9
Swell %	0.1

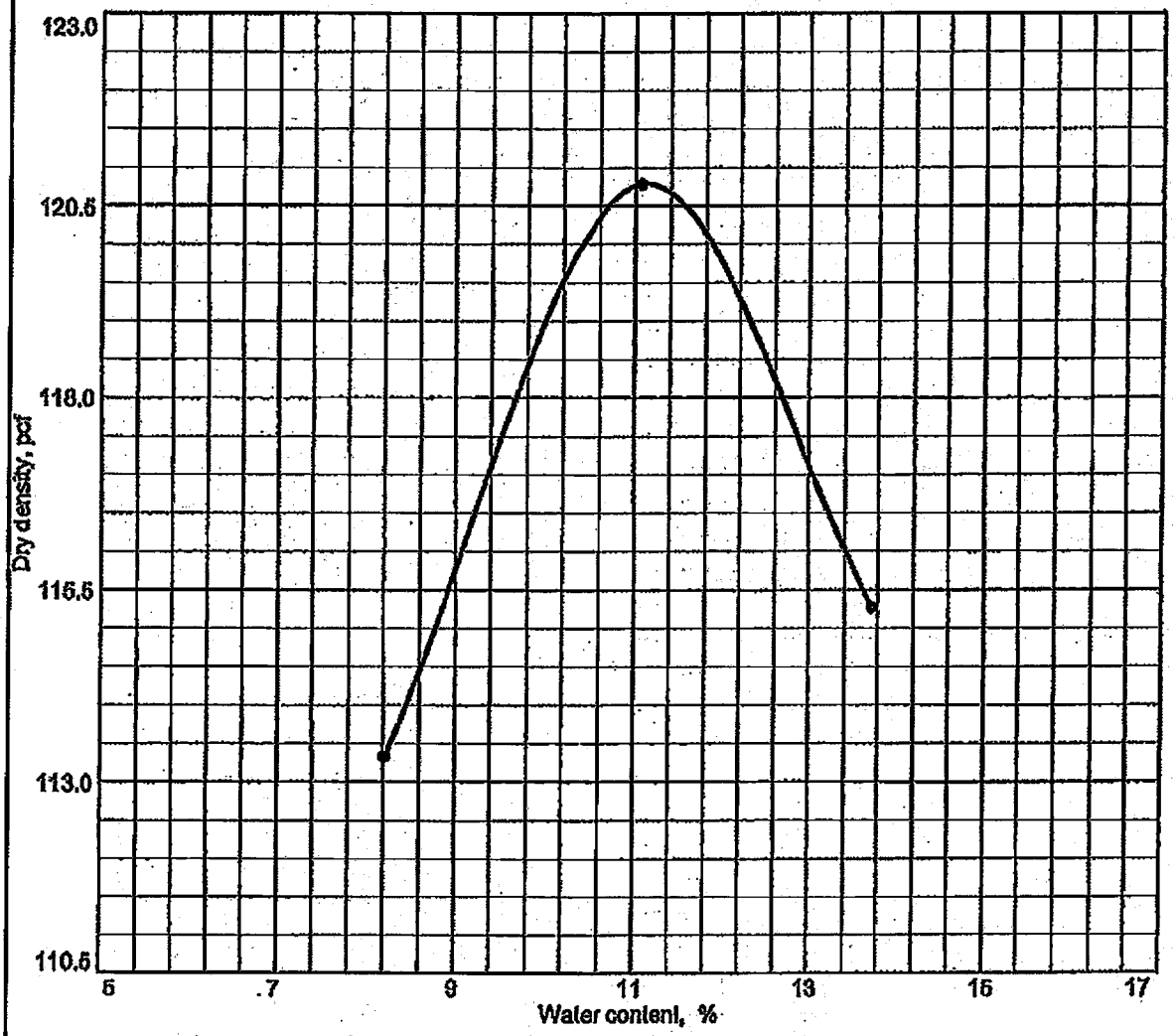
Project: Dixie Fuel Company Propane Distribution Facility

Project No: WM09-161G

Client: LandMark Design Group

Date: 9/14/2009

MOISTURE DENSITY TEST REPORT (PROCTOR CURVE)



Test specification: ASTM D 698-91 Procedure A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
3-4 Ft Below G.	SM	A-4(0)	14.4	Estimated	NP	NP	0.0	41.1

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 120.8 pcf Optimum moisture = 11.1 %	Brown, Silty, fine to medium SAND (SM) with trace Clay

Project No. WM09-161G Client: LandMark Design Group
Project: Dixie Fuel Company Propane Distribution Facility

• Location: CBR #1 - See Attached Boring Location Plan

Remarks:
CBR #1
Sample Obtained: 9/3/09
Sample Tested: 9/4/09
Unsoaked Value = 22.9
Soaked Value = 14.4
Swell% = 0.1

MOISTURE DENSITY TEST REPORT (PROCTOR CURVE)

GET SOLUTIONS, INC.

Figure 1

G E T Solutions, Inc.	SATURATED HYDRAULIC CONDUCTIVITY WORKSHEET	Sheet No.: 1
Project Name.: Propane Tank Storage Facility	Location.....: BMP Facility	Terminology and Solution
Boring No.....: BMP-1	Date.....: 9/2/2009	Ksat : Saturated hydraulic conductivity
Investigators.: R. Tweedy/D. Mitchell	File Name.....: WM09-161G	Q: Steady-state rate of water flow into the soil
Boring Depth.: 42 in	WCU Base. Ht. h: 15.0 cm	H: Constant height of water in borehole
Boring Dia.....: 8.3 cm	WCU Susp. Ht. S: 15.2 cm	r: Radius of cylindrical borehole
Boring Rad. (r): 4.15 cm	Const. Wtr. Ht. H: 30.2 cm	Ksat = Q[sinh-1(H/r) - (r2/H2+1).5 + r/H] / (2pH2) [Glover Solution]

VOLUME (ml)	Volume Out (ml) [a]	TIME (hr:min:sec a/p)	Elapsed Time (hr:min:sec)	Elapsed Time (min) [b]	Flow Rate Q (ml/min) [a/b]	Ksat Equivalent Values (cm/min)	(cm/sec)	(cm/day)	(in/hr)	(ft/day)
2000		2:30:00 PM								
1900	100	2:30:16 PM	0:00:16	0.27	375.00	0.118	1.97E-03	170.6	2.799	5.60
1800	100	2:30:33 PM	0:00:17	0.28	352.94	0.112	1.86E-03	160.6	2.634	5.27
1700	100	2:30:50 PM	0:00:17	0.28	352.94	0.112	1.86E-03	160.6	2.634	5.27
1600	100	2:31:06 PM	0:00:16	0.27	375.00	0.118	1.97E-03	170.6	2.799	5.60
1500	100	2:31:25 PM	0:00:19	0.32	315.79	0.100	1.66E-03	143.7	2.357	4.71
1400	100	2:31:44 PM	0:00:19	0.32	315.79	0.100	1.66E-03	143.7	2.357	4.71
1300	100	2:32:03 PM	0:00:19	0.32	315.79	0.100	1.66E-03	143.7	2.357	4.71
1200	100	2:32:21 PM	0:00:18	0.30	333.33	0.105	1.76E-03	151.7	2.488	4.98
1100	100	2:32:39 PM	0:00:18	0.30	333.33	0.105	1.76E-03	151.7	2.488	4.98
1000	100	2:32:58 PM	0:00:19	0.32	315.79	0.100	1.66E-03	143.7	2.357	4.71
900	100	2:33:17 PM	0:00:19	0.32	315.79	0.100	1.66E-03	143.7	2.357	4.71
800	100	2:33:37 PM	0:00:20	0.33	300.00	0.095	1.58E-03	136.5	2.239	4.48
700	100	2:33:56 PM	0:00:19	0.32	315.79	0.100	1.66E-03	143.7	2.357	4.71
				ESTIMATED FIELD KSAT:		0.105	1.75E-03	151.1	2.479	4.96

Natural Moisture:	Moist	Init. Satur.Time:	2:10:00 PM		
Texture/Classif:	Silty SAND (SM)	Consistency:	N/A	Depth to an Impermeable Layer:	N/A
Structure/Fabric:	N/A	Slope/Landsc:	Slope	Depth to Bedrock.....:	N/A

Ksat Class = High

ksatReport1.xls

Precision Permeameter™

Rev. 4/5/2002

G E T Solutions, Inc.	SATURATED HYDRAULIC CONDUCTIVITY WORKSHEET	Sheet No.: 1
Project Name.: Propane Tank Storage Facility	Location.....: BMP Facility	Terminology and Solution
Boring No.....: BMP-2A	Date.....: 9/3/2009	Ksat: Saturated hydraulic conductivity
Investigators.: R. Tweedy/J. Wheeler	File Name.....: WM09-161G	Q: Steady-state rate of water flow into the soil
Boring Depth.: 24 in	WCU Base. Ht. h: 15.0 cm	H: Constant height of water in borehole
Boring Dia.....: 8.3 cm	WCU Susp. Ht. S: 15.2 cm	r: Radius of cylindrical borehole
Boring Rad. (r): 4.15 cm	Const. Wtr. Ht. H: 30.2 cm	Ksat = Q[sinh-1(H/r) - (r2/H2+1).5 + r/H] / (2pH2) [Glover Solution]

VOLUME (ml)	Volume Out (ml) [a]	TIME (hr:min:sec a/p)	Elapsed Time (hr:min:sec)	Elapsed Time (min) [b]	Flow Rate Q (ml/min) [a/b]	Ksat Equivalent Values (cm/min)	(cm/sec)	(cm/day)	(in/hr)	(ft/day)
2000		4:30:00 PM								
1950	50	4:30:33 PM	0:00:33	0.55	90.91	0.029	4.79E-04	41.4	0.678	1.36
1900	50	4:31:13 PM	0:00:40	0.67	75.00	0.024	3.95E-04	34.1	0.560	1.12
1850	50	4:31:45 PM	0:00:32	0.53	93.75	0.030	4.94E-04	42.7	0.700	1.40
1800	50	4:32:21 PM	0:00:36	0.60	83.33	0.026	4.39E-04	37.9	0.622	1.24
1750	50	4:32:56 PM	0:00:35	0.58	85.71	0.027	4.51E-04	39.0	0.640	1.28
1700	50	4:33:33 PM	0:00:37	0.62	81.08	0.026	4.27E-04	36.9	0.605	1.21
1650	50	4:34:07 PM	0:00:34	0.57	88.24	0.028	4.65E-04	40.1	0.659	1.32
1600	50	4:34:42 PM	0:00:35	0.58	85.71	0.027	4.51E-04	39.0	0.640	1.28
1550	50	4:35:22 PM	0:00:40	0.67	75.00	0.024	3.95E-04	34.1	0.560	1.12
1500	50	4:36:00 PM	0:00:38	0.63	78.95	0.025	4.16E-04	35.9	0.589	1.18
				ESTIMATED FIELD KSAT:		0.026	4.41E-04	38.1	0.625	1.25

Natural Moisture:	Moist	Init. Satur.Time:	4:15:00 PM		
Texture/Classif:	Silty SAND (SM)	Consistency:	N/A	Depth to an Impermeable Layer:	N/A
Structure/Fabric:	N/A	Slope/Landsc:	Slope	Depth to Bedrock.....:	N/A

Ksat Class = Moderately High

KsatReport1.xls

Precision Permeameter™

Rev. 4/5/2002

DRAINAGE AREA MAPS

09.04.2012

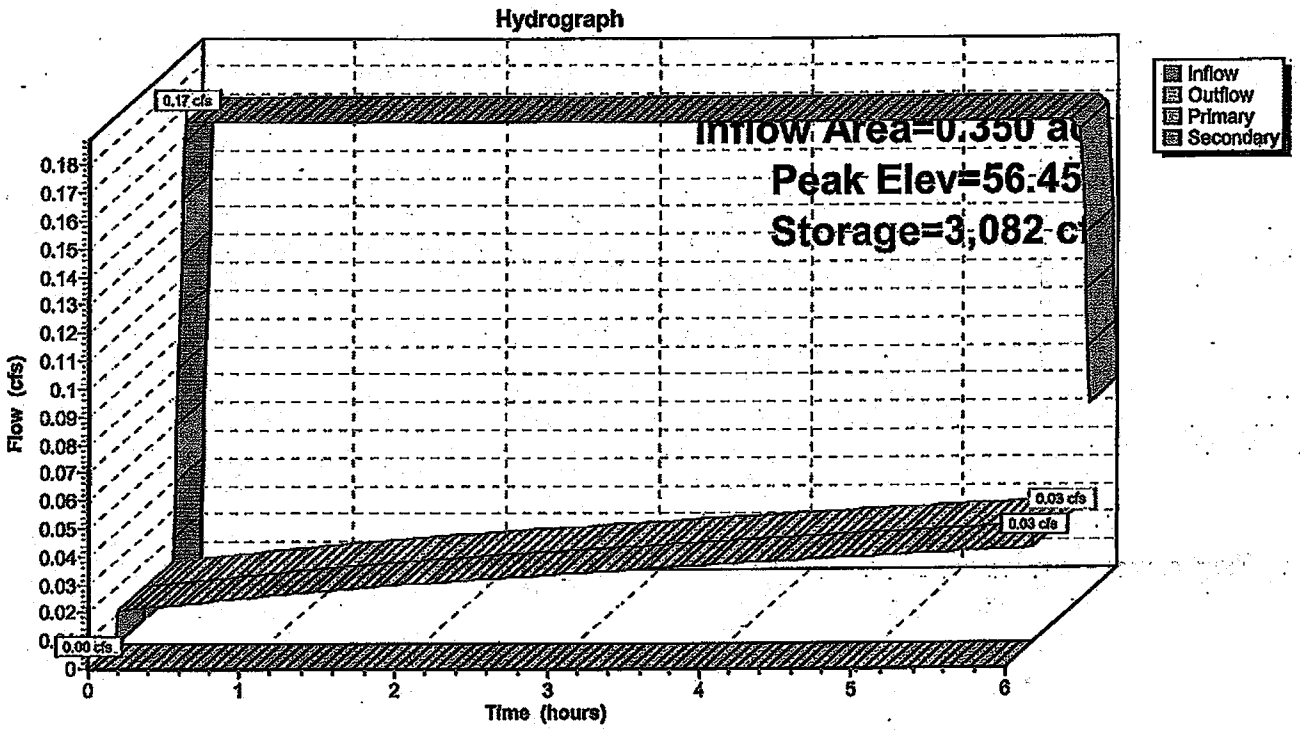
08 31 2012

Worksheet for Underdrain Outflow

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.40	ft
Critical Depth	0.51	ft
Channel Slope	0.01500	ft/ft
Critical Slope	0.00753	ft/ft

Pond BMP #1: Infiltration Basin



Stormwater Management/BMP Inspection Report
Infiltration Basin and Trench Facilities

County BMP ID Code (if known): SC-033

Name of Facility: Dixie Fuel Company BMP No.: 1 of 1 Date:

Location: middle of parcel, edge of drive aisle.

Name of Owner: Mike + Bill Kerlin

Name of Inspector: [illegible]

Type of Facility: Infiltration Trench

Weather Conditions: Sunny / Warm Type: [X] Final Inspection [ ] County BMP Inspection Program [ ] Owner Inspection

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

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

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

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

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

Facility Item	O.K.	Routine	Urgent	Comments
Accessibility:				
Roads	✓			
Parking Areas	✓			
Gates	✓			
Locks	✓			
Safety Fencing	✓			
Observation Wells/Areas:				
Trap Doors				
Manhole Covers				
Grates				
Steps				
Pretreatment Devices: [ ] Inlet [X] Sump [ ] Forebay [ ] Other				
Sediment	✓			
Trash and Debris	✓			
Structure	✓			
Other				
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	✓			
Animals, Rodents	✓			
Graffiti	✓			
Other	✓			
Perimeter (Contributing Drainage Area) Conditions:				
Stabilization		✓		
Vegetation Condition		✓		
Trash and Debris	✓			
Aesthetics	✓			
Other	✓			

Remarks:

Overall Engineering and Resource Protection Division Internal Rating:_____ _____

Signature:_____ **Date:**_____

Title:_____

Facility Item	O.K.	Routine	Urgent	Comments
Primary Storage/Infiltration Area:				
Trash and Debris	✓			
Sediment		✓		
Ponding/Drawdown	✓			
Surface Aggregates	✓			
Aesthetics	✓			
Other				
Inlet Structure #1 (Describe Location):				
Condition of Structure	✓			
Erosion	✓			
Trash and Debris	✓			
Sediment	✓			
Aesthetics	✓			
Other	✓			
Inlet Structure #2 (Describe Location):				
Condition of Structure	✓			
Erosion			✓	
Trash and Debris	✓			
Sediment	✓		✓	
Aesthetics	✓			
Other	✓			
Inlet Structure #3 (Describe Location):				
Condition of Structure				
Erosion				
Trash and Debris				
Sediment				
Aesthetics				
Other				
Outlets – Overflow or Bypass Control Structures (Describe Location):				
Condition of Structure				
Erosion				
Trash and Debris				
Sediment				
Other				
Notes:				