



Stormwater Division

MEMORANDUM

DATE: July 23, 2014
TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services
FROM: Jacob Smith, Stormwater Intern
PO: 110426
RE: Files Approved for Scanning

NAME PDF/SCANNED FILE:		STRAWBERRY PLAINS CENTER PIPE ONLY	
BMP ID OR GEN		OWNER NAME:	RONALD T. CURTIS
FILE NUMBER:	99169	SITE ADDRESS:	N/A
PIN:	3842500002	LEGAL DESCRIPTION:	U-2 STRAWBERRY PLAINS CENTER

MAINTENANCE AGREEMENT IN FILE:	YES	BOOK/PAGE OR DOCUMENT NO.:	050002821 N/A	OTHER DESCRIPTION:	N/A
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BOX NO.:	1	COMMENTS:	DECLARATION INSPECTION/MAINTENANCE
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**James City County Environmental Division
Stormwater Management/BMP Record Drawing and
Construction Certification Review Tracking Form**

Project Name: Strawberry Plains Center Unit 2
 County Plan No.: SP-0119-2010
 Stormwater Management Facility: Pipe/Swale
 BMP Phase #: I II III
 Information Package Received. Date/By: _____
 Completeness Check:
 Record Drawing Date/By: 11/24/2013 William Felts
 Construction Certification Date/By: 11/24/2013 Matthew Connolly
 RD/CC Standard Forms (Required for all BMPs after Feb 1st 2001 Only)
 Insp/Maint Agreement # / Date: # 130012368 5/1/2013
 BMP Maintenance Plan Location: _____
 Other: _____
 Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review
 Yes No Location: _____
 Assign County BMP ID Code #: Code: NA Pipe
 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: 1/8/2014
 Record Drawing (RD) Review Date: 1/8/2014
 Construction Certification (CC) Review Date: 1/8/2014
 Actions:
 No comments.
 Comments. Letter Forwarded. Date: _____
 Record Drawing (RD)
 Construction Certification (CC)
 Construction-Related (CR)
 Site Issues (SI)
 Other : _____
 Second Submission: _____
 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: 
 Chief Engineer: _____

Date: 2/11/2014
 Date: _____

*** See separate checklist, if needed.

30012568



COUNTY OF JAMES CITY, VIRGINIA

Engineering and Resource Protection Division
101-E Mounts Bay Road
Williamsburg, VA 23185
757-253-6670
jamescitycountyva.gov

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 Engineering and Resource Protection Division, 101-E Mounts Bay Road, Williamsburg, VA 23185.

THIS DECLARATION OF COVENANTS, made this 1st day of May, 2013, between Strawberry LLC, and all successors in interest, ("COVENANTOR(S)"), owner(s) of the following property:

Parcel Identification Number(s): 3842500002
Legal Description(s): U-2 Strawberry Plains Center

Project or Subdivision Name: Strawberry Plains Center Unit 2
Document/Instrument No(s): 050002821
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.

Prepared by (Name, Address & Phone):
Gordon Berryman Builders, Inc
100 Stanley DR
Williamsburg, VA 23188-2538
757-532-7742

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

6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the SYSTEM.

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

8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the SYSTEM.

9. This COVENANT shall be recorded in the County Land Records.

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

COVENANTOR(S)

Gordon Berryman LLC
Gordon Berryman member

Signature

Gordon Berryman, Member
Print Name and Title

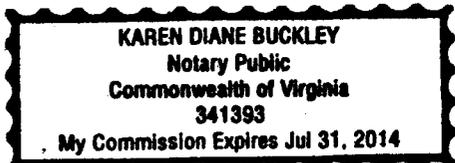
ACKNOWLEDGMENT

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

I hereby certify that on this 1st day of May, 2013, before the subscribed, a Notary Public for the Commonwealth of Virginia, personally appeared Gordon Berryman and did acknowledge the foregoing instrument to be his/her Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 1st day of May, 2013.

[SEAL]



Karen Diane Buckley
Notary Public

Notary Registration Number: 341393

My Commission expires: July 31, 2014

Approved as to form:

Adam Kusman
County Attorney



Stormwater Management/BMP Facilities Record Drawing and Construction Certification Forms

NOV 26 2013

(Note: In accordance with the requirements of the Chesapeake Bay Preservation Ordinance, Chapter 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: DRAINAGE AS-BUILTS - STRAWBERRY PLAINS CENTER - UNIT 2 BUILDING
Structure/BMP Name: N/A
Project Location: 3715 STRAWBERRY PLAINS ROAD, WILLIAMSBURG, VA 23188
BMP Location: N/A
County Plan No.: JCC-SP-0119-2010

Project Type: Residential Business Tax Map/Parcel No.: 3842500002
 Commercial Office BMP ID Code (if known): N/A DRAINS TO EXISTING BMP MC013
 Institutional Industrial Zoning District: B-1 GENERAL BUSINESS
 Public Roadway Land Use: _____
 Other _____ Site Area (sf or acres): 12,000 SF / 0.28 AC.

Brief Description of Stormwater Management/BMP Facility: DEVELOPMENT OF 0.28 +/- AC. FOR A 8,000 SF OFFICE BUILDING. STORMWATER WILL DISCHARGE TO EXISTING STRAWBERRY PLAINS CENTER STORM DRAINAGE SYSTEM WHICH LEADS TO THE EXISTING ON-SITE WET POND BMP MC103. DRAINAGE SYSTEM ON SITE CONSISTS OF SWALES, CATCH BASINS, AND NYOPLAST DRAIN INLETS.

Nearest Visible Landmark to SWM/BMP Facility: "THE COVE TAVERN" BUILDING

Nearest Vertical Ground Control (if known):

- JCC Geodetic Ground Control USGS Temporary Arbitrary Other

Station Number or Name: _____
Datum or Reference Elevation: NAVD 1988 DATUM
Control Description: _____
Control Location from Subject Facility: _____

Section 2 - Stormwater Management/BMP Facility Construction Information:

Pre-Construction Meeting Held for Construction of SWM/BMP Facility: Yes No Unknown
Approx. Construction Start Date for SWM/BMP Facility: _____
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: _____
Date of Record Drawing/Construction Certification Submittal: 11/26/2013

(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 Engineering and Resource Protection 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: RONALD T. CURTIS
Mailing Address: 22 WHITAKERS MILL
WILLIAMSBURG, VA 23185
Business Phone: 757-532-7742 Fax: N/A
Contact Person: GORDAN BERRYMAN Title: DEVELOPER / PROJECT MANAGER

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: LANDTECH RESOURCES, INC.
Mailing Address: 205-E BULLFANTS BLVD.
WILLIAMSBURG, VA 23188
Business Phone: 757-565-1167
Fax: 757-565-0782
Responsible Plan Preparer: KENNETH M. JENKINS, PE
Title: ENGINEER
Plan Name: SITE PLAN OF STRAWBERRY PLAINS CENTER - UNIT 2 BUILDING
Firm's Project No. # 10-243
Plan Date: 12/17/2010
Sheet No.'s Applicable to SWM/BMP Facility: C3 of 7 / _____ / _____ / _____

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

Firm Name: GORDON BERRYMAN BUILDER, INC.
Mailing Address: 100 STANLEY DRIVE
WILLIAMSBURG, VA 23188
Business Phone: 757-532-7742

Fax: N/A
Contact Person: GORDON BERRYMAN - PROJECT MANAGER
Site Foreman/Supervisor: GORDON BERRYMAN
Specialty Subcontractors and Purpose (for BMP Construction Only): N/A

Section 4 - Professional Certifications:

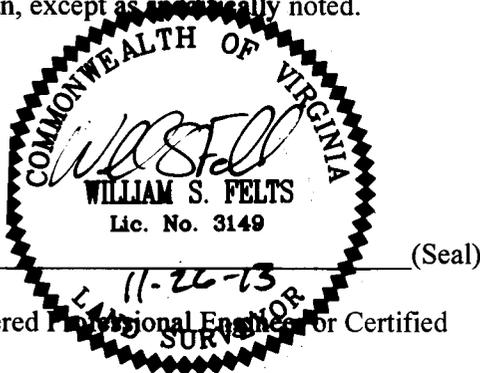
Certifying Professionals: *(Note: A Registered Professional Engineer or Certified Land Surveyor is responsible for preparation of a Record Drawing, sometimes referred to as an As-Built plan, for the drainage system for the project including any Stormwater Management/BMP Facilities. A Registered Professional 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: LANDTECH RESOURCES, INC.
Mailing Address: 205-E BULLFANTS BLVD.
WILLIAMSBURG, VA 23188
Business Phone: 757-565-1677
Fax: 757-565-0782
Name: WILLIAM S. FELTS
Title: VICE PRESIDENT
Signature: [Signature]
Date: 11-26-13

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 to the provisions of the approved design plan, specifications design, and stormwater management plan, except as specifically noted.

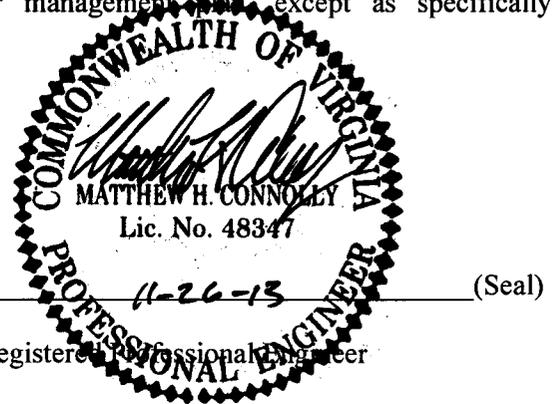


Virginia Registered Professional Engineer or Certified Land Surveyor

Construction Certification

Firm Name: LANDTECH RESOURCES, INC.
Mailing Address: 205-E BULLFANTS BLVD.
WILLIAMSBURG, VA 23188
Business Phone: 757-565-1676
Fax: 757-565-0782
Name: MATTHEW H. CONNOLLY
Title: PRESIDENT
Signature: [Signature]
Date: 11-26-13

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 plan, specifications, and stormwater management plan, except as specifically noted.



Virginia Registered Professional Engineer

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

- Pre-Construction Meeting - Provides an opportunity to review SWM/BMP facility construction, maintenance and operation plans and addresses any questions regarding construction and/or monitoring of the structure. The design engineer, certifying professionals (if different), Owner/Applicant, Contractor and County representative(s) are encouraged to attend the preconstruction meeting. Advanced notice to the Engineering and Resource Protection Division is requested. Usually, this requirement can be met simultaneously with Erosion and Sediment Control preconstruction meetings held for the project.
- A fully completed ***STORMWATER MANAGEMENT / BMP FACILITIES, 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 drainage system of the project including any Best Management Practices.
- Construction Certification - Construction of Stormwater Management / 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 design plan, specifications and stormwater management plan and standard accepted construction practice and shall submit a written certification and/or drawings to the Engineering and Resource Protection Division as required. Soil and compaction test reports, concrete test reports, inspection reports, logs and other required construction material or installation documentation may be required by the Engineering and Resource Protection Division to substantiate the certification, if specifically requested. 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.
- Record Drawing and Construction Certifications are required within **thirty (30) days** of the completion of Stormwater Management / BMP facility construction. Submittals must be reviewed and accepted by James City County Engineering and Resource Protection Division prior to final inspection, acceptance and bond/surety release.

Dual Purpose Facilities - Completion of construction also includes an interim stage for Stormwater Management / BMP facilities which serve dual purpose as temporary sediment basins during construction and as permanent stormwater management / BMP facilities following construction, once development and stabilization are substantially complete. 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 Engineering and Resource Protection 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 Engineering and Resource Protection 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 management plan including applicable plan views, profiles, sections, details, maintenance plans, etc. as related to the subject SWM / BMP 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 bond/surety, 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 Engineering and Resource Protection 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 Engineering and Resource Protection Division staff at the time of final submission.

STORMWATER MANAGEMENT/BMP FACILITIES
RECORD DRAWING CHECKLIST

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

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

- XX 1. All constructed facilities meet approved design plans, unless otherwise shown. Record information or deviations from approved design plan shown in clearly annotated format and/or boxed beside design values.
- XX 2. Elevations to the nearest 0.1' unless higher accuracy is needed to show positive drainage.
- XX 3. All plan sheets labeled with "RECORD DRAWING" in large text in lower right hand corner. (Approved County Plan Number and BMP ID Code can be included if known).
- XX 4. All 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.
- XX 4. Top widths, berm widths, and embankment side slopes.
- XX 5. Show length, width and depth of facility or grading, contours or spot elevations as required to verify permanent pool and design storage volumes were met or were reasonably close to the approved design. Evaluation of as-built grading, contours, spot elevations, or cross-sections, may be necessary by the professional to ensure approved design configurations, depths and volumes were closely maintained. If grading or elevations are significantly different from the approved plan, the Engineering and Resource Protection 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.
- ~~N/A~~ 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.
- ~~XX~~ 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.**
- ~~XX~~ 14. Elevation of the principal spillway barrel (outlet pipe) inlet and outlet invert.
- ~~XX~~ 15. Outlet barrel diameter, length, slope, type, and thickness class of material and type of flared end sections, headwall or endwall.
- ~~N/A~~ 16. Outfall protection dimension, type and depth of rock and if underlain filter fabric is present.
- ~~XX~~ 17. BMP interior and periphery landscaping zones conform with arrangements and requirements of the approved design plan.
- ~~N/A~~ 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.
- ~~N/A~~ 22. Any other information formally requested by the Environmental Division specific to the constructed SWM/BMP facility.

STORMWATER MANAGEMENT/BMP FACILITIES
RECORD DRAWING CHECKLIST

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

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

- N/A 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.
- 3. 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 MANAGEMENT/BMP FACILITIES
RECORD DRAWING CHECKLIST

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

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)

- N/A 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 MANAGEMENT/BMP FACILITIES
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.
- ~~XX~~ 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.
- ~~XX~~ 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.
- ~~NA~~ 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.
- ~~NA~~ C9. Minimum twenty-five (25) foot separation down gradient from any structure.
- ~~NA~~ 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.
- ~~XX~~ C13. Observation well provided.
- ~~XX~~ C14. Adequate, direct access provided to the facility for future maintenance, operation and inspection.

STORMWATER MANAGEMENT/BMP FACILITIES
RECORD DRAWING CHECKLIST

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

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

- N/A 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 MANAGEMENT/BMP FACILITIES
AS-BUILT PLAN CHECKLIST

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

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

- XX E1. All requirements of Section II, Minimum Standards, apply to Group E facilities as applicable.
- XX E2. Open channel system has constructed longitudinal slope of less than four (4) percent.
- XX E3. No visual signs of erosion in the open channel system's soil and/or vegetative cover.
- XX E4. Open channel side slopes are no steeper than 2H:1V at any location. Preferred channel sideslope is 3H:1V or flatter.
- XX 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).
- N/A E6. For E-2 BMPs (Dry Swales), an underdrain system was provided.
- N/A E7. Treated timber or rock check dams provided as pretreatment devices for the open channel system.
- N/A E8. Gravel diaphragm provided in areas where lateral sheet flow from impervious surfaces are directly connected to the open channel system.
- XX 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.
- N/A E10. Open channel system areas with grass covers higher than four (4) to six (6) inches were properly mowed.
- XX 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.
- XX 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.
- N/A E13. For E-3 BMPs (Biofilters), the bottom width is six (6) feet maximum at any location.
- f E14. For E-3 BMPs (Biofilters), sideslopes are 3H:1V maximum at any location.
- f 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 MANAGEMENT/BMP FACILITIES
RECORD DRAWING CHECKLIST

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

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

- N/A 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 MANAGEMENT/BMP FACILITIES
RECORD DRAWING CHECKLIST

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

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

- N/A 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 ensure 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 MANAGEMENT/BMP FACILITIES
RECORD DRAWING CHECKLIST

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

X. Storm Drainage Systems (Associated with BMP's Only)

(Includes all incidental stormwater drainage conveyance systems associated with SWM/BMP facilities such as onsite or offsite storm drains, open channels, inlets, manholes, junctions, outlet protections, deflectors, etc. These facilities are external to the treatment function of, but are directly associated with drainage to and/or from a constructed SWM/BMP facility. The intent of this portion of the certification is to accurately identify the type and quantity of inflow or outflow points associated with the facility for future reference. The Professional may use his/her own discretion to determine inclusive facilities to meet the intent of this section. As a general rule, storm drainage systems would include incidental facilities to the nearest access structure upslope or downslope from the normal physical limits of the facility or 800 feet of storm drainage conveyance system length, whichever is less.)

- SD1. All requirements of Section II, Minimum Standards, apply to Storm Drainage Systems.
- N/A SD2. Horizontal location of all pipe and structures relative to the SWM/BMP facility.
- XX SD3. Type, top elevation and invert elevation of all access type structures (inlets, manholes, etc.).
- XX SD4. Material type, size or diameter, class, invert elevations, lengths and slopes for all pipe segments.
- N/A SD5. Class, length, width and depth of riprap and outlet protections or dimensions of special energy dissipation structures.

XI. 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.)*

- N/A 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 Engineering and Resource Protection Division specific to the proposed SWM/BMP facility.

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

XII. References *(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.

NOTES

1. ALL UTILITIES SHALL BE PLACED UNDERGROUND IN ACCORDANCE WITH SECTION 19-33 OF THE SUBDIVISION ORDINANCE.
2. 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.
3. SANITARY SEWER & WATERLINE FACILITIES PIPE BEDDING SHALL BE IN ACCORDANCE WITH HRPDC DETAIL EW_01.
4. THE SITE DOES NOT APPEAR TO HAVE A SEPTIC TANK OR DRAINFIELD ON-SITE. IF ONE IS FOUND DURING CONSTRUCTION PLANS WILL BE SUBMITTED TO THE LOCAL VIRGINIA DEPARTMENT OF HEALTH (MS. VALERIE JORDAN AT (757) 253-4813) FOR REVIEW & APPROVAL OF THE SEPTIC TANK REMOVAL/ABANDONMENT.
5. WATER METER BOX INSTALLATION SHALL MAINTAIN A MINIMUM 18-INCHES HORIZONTAL EDGE-TO-EDGE CLEARANCE FROM DRIVEWAYS AND/OR DRIVE PATHS, SIDEWALKS OR BIKE PATHS.
6. HDPE PIPE TO MEET VDOT MATERIAL AND INSTALLATION SPECIFICATIONS AND STANDARDS.
7. PER SITE INSPECTION ON 12/21/10 THE EXISTING BMP APPEARS TO BE IN GOOD CONDITION AND OPERATING AT THE DESIGN LEVEL OF SERVICE.

PROPOSED SEQUENCE OF CONSTRUCTION

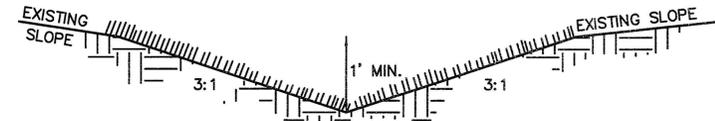
- 1) CONTACT JCC ENVIRONMENTAL DIVISION INSPECTOR 48 HOURS PRIOR TO ARRANGE A PRE-CONSTRUCTION MEETING.
- 2) INSTALL SAFETY FENCE, SILT FENCE, TREE PROTECTION AND INLET PROTECTION AS DEPICTED ON SHEET C3 PRIOR TO CLEARING AND GRADING.
- 3) CLEAR DESIGNATED AREA.
- 4) ROUGH GRADE BUILDING PAD. APPLY TOPSOIL AND FINAL STABILIZATION TO ALL DISTURBED AREAS EXCLUDING BUILDING PAD.
- 5) INSTALL SANITARY SEWER SERVICE.
- 6) INSTALL WATER SERVICE.
- 7) CONSTRUCT BUILDING AND SIDEWALKS.
- 8) REMOVE ALL TEMPORARY E & S MEASURES ONCE ALL DISTURBED AREAS ASSOCIATED WITH THE PROJECT ARE STABILIZED AND AFTER RECEIVING APPROVAL TO DO SO BY THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION.

ENVIRONMENTAL INVENTORY IN ACCORDANCE WITH SECTION 23-10(2) OF THE CHESAPEAKE BAY PRESERVATION ORDINANCE:

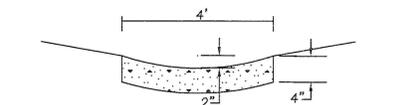
PER SITE TOPOGRAPHY AND JAMES CITY COUNTY TAX MAP ATLAS THE FOLLOWING COMPONENTS DO NOT APPEAR TO BE PRESENT ON-SITE:

1. TIDAL WETLANDS;
2. TIDAL SHORES;
3. NONTIDAL WETLANDS CONNECTED BY SURFACE FLOW AND CONTIGUOUS TO TIDAL WETLANDS OR WATER BODIES WITH PERENNIAL FLOW (i.e. RPA WETLANDS);
4. A 100-FOOT BUFFER AREA LOCATED ADJACENT TO AND LANDWARD OF THE COMPONENTS LISTED IN ITEMS 1. THROUGH 3. ABOVE, AND ALONG BOTH SIDES OF ANY WATER BODY WITH PERENNIAL FLOW;
5. NONTIDAL WETLANDS NOT INCLUDED IN ITEM 3 (i.e. RMA WETLANDS);
6. 100-YEAR FLOODPLAINS AS DESIGNATED BY CHAPTER 24 OF THE COUNTY CODE; AND
7. SLOPES 25 PERCENT OR GREATER.

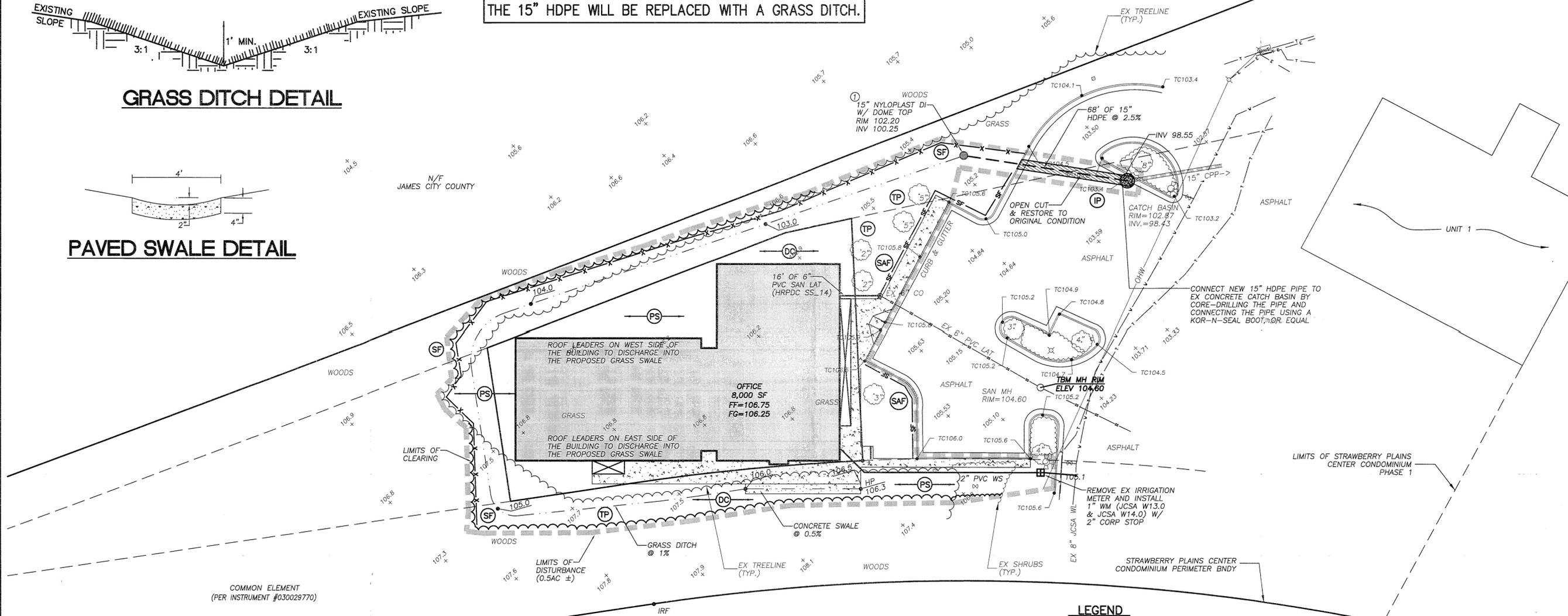
THIS DRAINAGE REVISION IS TO JCC SP-0119-2010. THE REVISION IS TO ELIMINATE DI #1 AND 215' OF 15" HDPE ALONG THE WESTERN SIDE OF THE BUILDING. THE 15" HDPE WILL BE REPLACED WITH A GRASS DITCH.



GRASS DITCH DETAIL



PAVED SWALE DETAIL



STRAWBERRY PLAINS ROAD
ROUTE 616

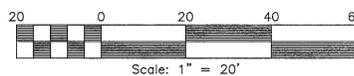
LEGEND

TITLE	SYMBOL	KEY	NO.
ORANGE SAFETY FENCE	—SF—	(SAF)	3.01
SILT FENCE	—X—	(SF)	3.05
INLET PROTECTION	(IP)	(IP)	3.07
PERMANENT SEEDING	(PS)	(PS)	3.32
TREE PRESERVATION AND PROTECTION	(TP)	(TP)	3.38
DUST CONTROL	(DC)	(DC)	3.39

PERMANENT STABILIZATION
ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING. SEEDING SHALL BE DONE WITH KENTUCKY 31 TALL FESCUE ACCORDING TO STD. & SPEC. 3.32 "PERMANENT SEEDING", OF THE VESCH. EROSION BLANKETS WILL BE INSTALLED OVER FILL SLOPES WHICH HAVE BEEN BROUGHT TO FINAL GRADE AND HAVE BEEN SEED TO PROTECT THE SLOPES FROM RILL AND GULLY EROSION TO ALLOW THE SEED TO GERMINATE PROPERLY. MULCH (STRAW OR FIBER) WILL BE USED ON RELATIVELY FLAT AREAS. IN ALL SEEDING OPERATIONS, SEED, FERTILIZER, AND LIME WILL BE APPLIED PRIOR TO MULCHING. SOIL STABILIZATION MATTING TO BE VESCH TYPICAL TREATMENT-1 (JUTE MESH).

MAINTENANCE
IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER SIGNIFICANT RAINFALL. THE FOLLOWING ITEMS WILL BE CHECKED IN PARTICULAR:

1. THE SILT FENCE WILL BE CHECKED REGULARLY FOR SEDIMENT CLEANOUT.
2. THE SEEDED AREAS WILL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDED AS NEEDED.



Scale: 1" = 20'

NOTES

1. ELEVATIONS SHOWN HEREON ARE IN FEET AND ARE RELATED TO THE NAVD 1988 DATUM.
2. INFORMATION SHOWN IS BASED ON A CURRENT FIELD SURVEY COMPLETED OCTOBER 19, 2010.

Approved
James City County
Eng & Resource Protection Div.
By *[Signature]* Date *12/17/10*

- LEGEND**
- (CBM) COMMUNICATIONS BOX
 - (P) POWER POLE
 - (S) SIGN
 - (V) WATER VALVE
 - (FH) FIRE HYDRANT
 - (WM) WATER METER
 - (TPED) TELEPHONE PEDESTAL
 - (SMH) SANITARY MH
 - (SSC) SANITARY SEWER CLEANOUT
 - (CP) COVERED PORCH
 - (ET) EXISTING TREE
 - (GE) EXISTING GROUND ELEVATION

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

SITE PLAN OF STRAWBERRY PLAINS CENTER UNIT 2 BUILDING
 3715 STRAWBERRY PLAINS ROAD
 GRADING & UTILITY PLAN

Virginia State Plane Coordinate System
 Virginia South Zone (NAD 83)

James City County
 REV PER OWNER 10/3/13
 REV PER JCC LTR DTD 3/11/11

COMMONWEALTH OF VIRGINIA
 J. M. JANKINS II
 Lic. No. 022812
 10/9/13
 PROFESSIONAL ENGINEER

LandTech Resources, Inc.
 Surveying • GPS • Engineering
 205 Bullfants Blvd., Ste. C, Williamsburg, VA 23188
 Phone: (757) 565-1677 Fax: (757) 565-0782
 web: landtechresources.com

SCALE: 1" = 20'
 DATE: 12/17/10
 JOB: 10-243
 DRAWN BY: KJM
 SHEET: C3 OF 7

Environmental Division

OCT 03 2013

RECEIVED

**Erosion and Sediment
Control Narrative**

for

**Strawberry Plains Center
Unit 2 Building**

**December 21, 2010
Revised March 11, 2011
Revised October 3, 2013**

Project Number 10-243

LandTech Resources, Inc.
205 Bulifants Blvd., Ste E, Williamsburg, VA
Phone 757-565-1677 Fax 757-565-0782

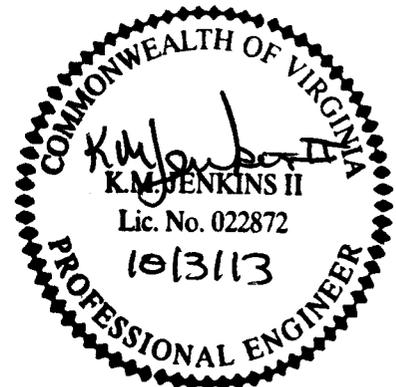
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PROJECT DESCRIPTION

The project consists of the development of 0.28+/- acres for a 8,000 sf office building at 3715 Strawberry Plains Road in James City County, Virginia. After construction is complete the site will contain an additional 0.22 acres of impervious surfaces. The total disturbed area is approximately 0.3 acres.

EXISTING CONDITIONS

Currently the site is open and is the last remaining undeveloped outparcel of the Strawberry Plains Center.

ADJACENT AREAS

The site is bounded on the north and south by the Strawberry Plains Center, on the east by Strawberry Plains Road and on the west by Route 199.

OFF-SITE AREA

There are no off-site areas proposed to be disturbed in association with this project. However, if it becomes necessary to disturb off-site areas, a revised erosion and sediment control plan will be prepared and submitted to the county for review and approval.

SOILS

Kempsville-Emporia fine sandy loam (19B)

This complex is deep, gently sloping, well drained soils that are so intermingled that it is not practical to separate them at a scale used in mapping.

Typically, the surface layer of this Kempsville soil is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is light yellowish brown fine sandy loam 10 inches thick. The subsoil extends to a depth of 55 inches thick. It is yellowish brown and strong brown fine sandy loam and sandy clay loam to a depth of 32 inches. Below this, the subsoil is mottled fine sandy loam that is somewhat firm and compacted over yellowish brown sandy clay loam. The substratum is yellowish brown fine sandy loam to a depth of at least 68 inches.

Typically, the surface layer of this Emporia soil is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is pale brown loam 9 inches thick. The subsoil extends to a depth of 58 inches. It is yellowish brown loam with mostly strong brown mottles in the upper part, yellowish brown, firm sandy clay loam with strong brown and gray mottles in the middle part, and mottled gray and brown firm sandy clay loam in the lower part. The substratum is variegated gray, brown, and red firm sandy clay loam to a depth of at least 75 inches.

The permeability of the 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

erosion hazard is moderate. The subsoil of the Kempsville soil has low shrink-swell potential, and that of the Emporia soil has moderate shrink-swell potential.

CRITICAL EROSION AREAS

The critical erosion areas associated with this site are the existing onsite drainage system and BMP on the property. To prevent sediment from leaving the site to this area, it is imperative that the contractor install all erosion and sediment control measures shown on these plans before any land disturbing activities commence. Regular inspection and maintenance is also required for all erosion and sediment control measures to keep them functioning as designed.

EROSION AND SEDIMENT CONTROL MEASURES

Unless otherwise indicated, all structural and vegetative erosion and sediment control practices shall be constructed and maintained according to minimum standards and specifications of the latest edition of Virginia Erosion and Sediment Control Handbook (VESCH). The minimum standards shall be adhered to unless otherwise waived or approved by variance.

STRUCTURAL PRACTICES

Safety Fence – 3.01

Safety fence shall be placed around the limits of the existing site to discourage public access during construction operations.

Silt Fence – 3.05

Silt fence shall be placed around the limits of clearing to intercept and detain small amounts of sediment from disturbed areas during construction operations.

Storm Drain Inlet Protection – 3.07

Storm drain protection is installed at all drainage inlets to prevent sediment from entering the storm drainage systems prior to permanent stabilization for the disturbed areas.

Tree Preservation & Protection – 3.38

Tree protection shall be provided to protect desirable trees from mechanical and other injury during land disturbing and construction activity.

VEGETATIVE PRACTICES

Permanent Seeding – 3.32

All denuded areas, which will be left dormant for extended periods of time, shall be seeded with permanent vegetation immediately following grading. Selection of the seed mixture will depend on the time of year it is applied.

MANAGEMENT STRATEGIES

- Sediment trapping measures will be installed as the first step in grading and will be seeded and mulched immediately following installation.
- Temporary seeding or other stabilization will follow immediately after grading.
- The contractor shall be responsible for the installation and maintenance of all erosion and sediment control practices depicted on the Plans.
- After achieving adequate stabilization, the temporary controls will be cleaned and removed. Any areas disturbed in the removal process shall be graded, top soiled, and seeded accordingly.

PERMANENT STABILIZATION

All areas disturbed by construction shall be stabilized with permanent seeding immediately following finish grading. Seeding shall be accomplished with Kentucky 31 Tall Fescue according to Standards and Specifications 3.32, Permanent Seeding of the VESCH. Soil stabilization blankets will be installed over slopes, which have been brought to final grade and have been seeded to protect the slopes from rill and gully erosion and to allow seed to germinate properly. Mulch (straw or fiber) will be used on relatively flat areas. In all seeding operations, seed, fertilizer and lime will be applied prior to mulching.

STORMWATER MANAGEMENT

This project is for the development of 0.28+/- acres for a 8,000 sf office building in James City County, Virginia. To meet the stormwater quality requirements of the James City County BMP Point System and the stormwater quantity requirements of Minimum Standard 19 of the Virginia Stormwater Management Handbook the site will discharge to the existing Strawberry Plains Center storm drainage system which leads to the existing onsite wet pond BMP MC013. The proposed impervious area for the developed site is the same as what was accounted for in the masterplan design of the storm sewer system and BMP, therefore no additional stormwater management is required.

The HGL of the existing storm sewer design was analyzed using the design calculations from the approved plans for the Strawberry Plains Center. The proposed site development match the design criteria for the proposed drainage area and the system is operating under a free flow condition, therefore the existing storm sewer system is adequate to handle the proposed development on the site.

CALCULATIONS

Appendix A contains design calculations for the onsite storm sewer system.

Appendix B contains design calculations for the existing storm sewer system HGL.

MAINTENANCE

In general, all erosion and sediment control measures will be checked daily and after each significant rainfall. The following items will be checked in particular:

Safety Fence – 3.01

Safety fence shall be checked regularly for weather-related or other damage. Any necessary repairs must be made immediately.

Silt Fence – 3.05

Silt fences shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.

Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting.

Should the fabric on a silt fence decompose or become ineffective prior to the end of the expected usable life and the barrier still be necessary, the fabric shall be replaced promptly.

Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one-half the height of the barrier.

Any sediment deposits remaining in place after the silt fence is no longer required shall be dressed to conform with the existing grade, prepared and seeded.

Storm Drain Inlet Protection – 3.07

The structure shall be inspected after each rain and repairs made as needed.

Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to one half the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.

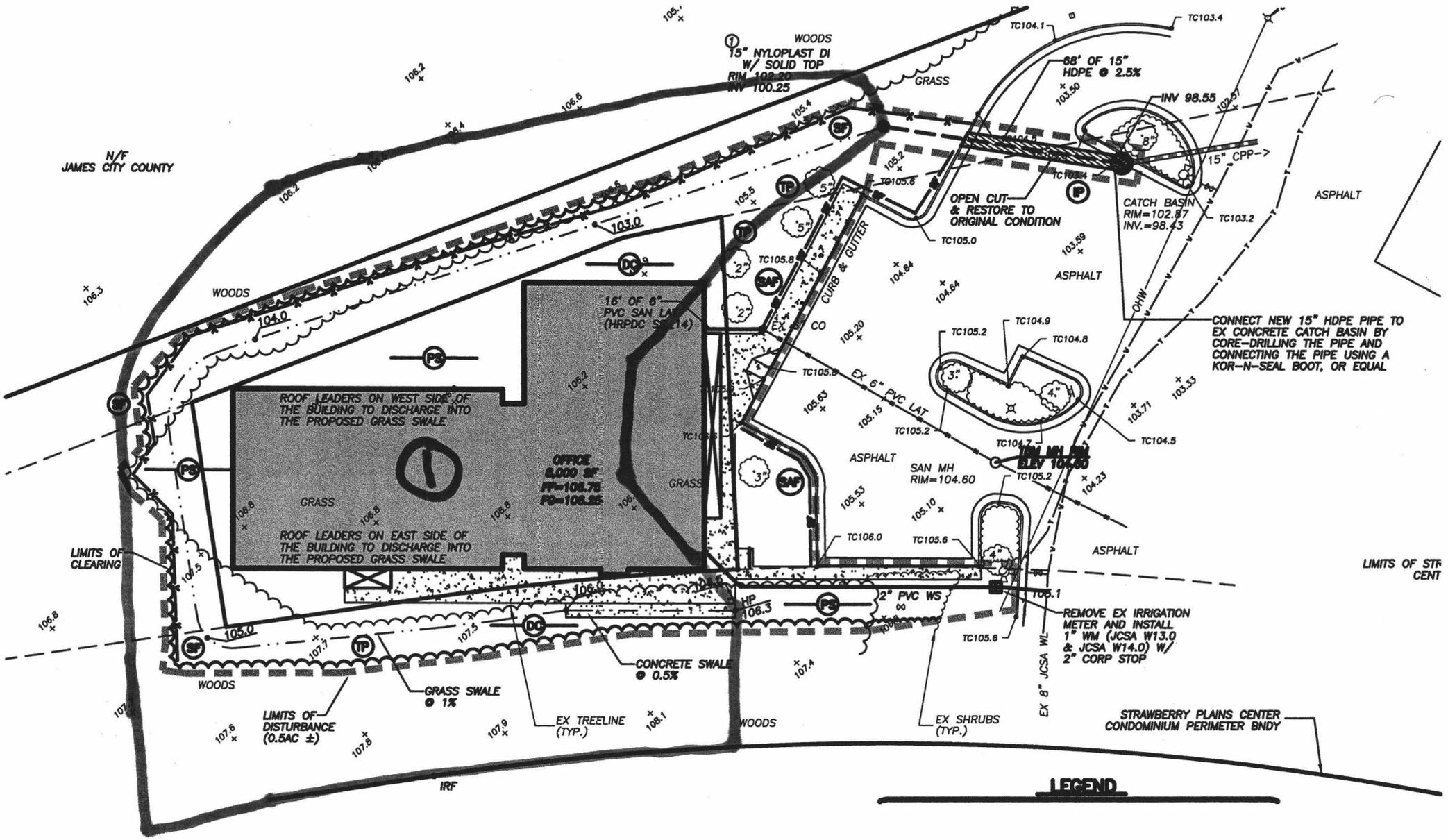
Structures shall be removed and the area stabilized when the remaining drainage area has been properly stabilized.

Permanent Seeding – 3.32

The seeded/mulched areas should be checked regularly to ensure that a good stand is established and maintained. Areas should be fertilized, mulched and re-seeded as needed. When it is clear that plants have not germinated on an area or have died, these areas must be re-seeded immediately to prevent erosion damage. However, it is extremely important to determine for what reason germination did not take place and make any corrective action necessary prior to re-seeding the area.

- Fertilizer shall be applied using approved fertilization methods and equipment.
- Formulations and application rates shall conform to the guidelines given in VESCH.
- Maintain a ground cover or organic mulch around trees that is adequate to prevent erosion, protect roots, and hold water.

APPENDIX A



CONNECT NEW 15" HDPE PIPE TO EX CONCRETE CATCH BASIN BY CORE-DRILLING THE PIPE AND CONNECTING THE PIPE USING A KOR-N-SEAL BOOT, OR EQUAL

REMOVE EX IRRIGATION METER AND INSTALL 1" WM (JCSA W13.0 & JCSA W14.0) W/ 2" CORP STOP

LEGEND

DRAINAGE AREA MAP

JOB 10-243

SHEET NO. _____ OF _____

CALCULATED BY KWJ DATE 10/3/13

CHECKED BY _____ DATE _____

SCALE _____

DA- 1

c= .47
A= .68 Ac.

Roof
Grass

C	A	CA
<u>.90</u>	<u>.20</u>	<u>.18</u>
<u>.30</u>	<u>.48</u>	<u>.14</u>
	<u>.68</u>	<u>.32</u>

OVERLAND FLOW

L= _____ ft.
S= _____ %
Tc= _____ min.

CHANNEL FLOW

H= _____ ft.
L= _____ ft.
Tc= _____ min.

Tc= 5 min.

$i_{10} =$ 7.2 in/hr

$Q = CAi = (.47)(.68 \text{ Ac.})(7.2 \text{ in/hr})(C_f 1.0)$

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 2.30 cfs

JOB 10-243

SHEET NO. _____

OF _____

CALCULATED BY KMSDATE 10/3/13

CHECKED BY _____

DATE _____

SCALE _____

V-DITCH DESIGN

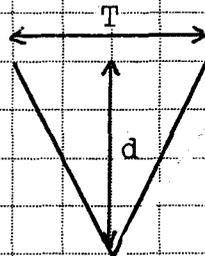
$Q = \underline{2.30} \text{ cfs}$

$S = \underline{1.0} \%$

$L = \underline{380} \text{ ft.}$

$T = \underline{6} \text{ ft.}$

$d = \underline{1} \text{ ft.}$



$$R = \frac{zd}{2(z^2+1)^{3/2}} = \frac{(3)(1 \text{ ft.})}{2(10)^{3/2}} = \underline{.47} \text{ ft.}$$

$n = \underline{.030}$

$$A = zd^2 = (3)(1 \text{ ft.})^2 = \underline{3} \text{ ft.}^2$$

$$Q = 2.30 \text{ cfs} \quad d = 0.60' \quad V = 2.13 \text{ fps}$$

USE GRASS DITCH

LandTech Resources, Inc.

Surveying • Engineering • GPS

205-E Bulifants Blvd. • Williamsburg, VA 23188
Phone: (757) 565-1677 • Fax: (757) 565-0782
web: landtechresources.com

PROJECT NAME Strawberry Plains
PROJECT NO. 10-243
SHEET NO. _____ OF _____
CALCULATED BY KMJ DATE 10/3/13
SCALE _____

DESIGN NYLOPLAST GRATE INLET

$$Q = 2.30 \text{ cfs}$$

Per Nyloplast Inline Drain Grate Inlet
Capacity Chart:

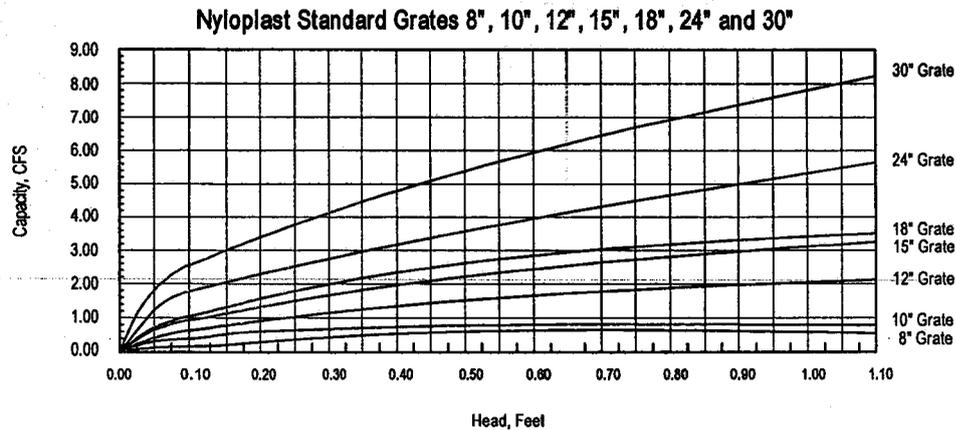
USE 15" GRATE

Nyloplast Standard Grate Inlet Capacity Chart

This chart is based on equations from the FAA Airport Drainage AC 150/5320-5B, 1970, Page 35. Certain assumptions have been made and no two installations will necessarily perform the same way. Safety factors should change with site conditions such that a safety factor of 1.25 should be used for an inlet in pavement, and a safety factor of 2.0 should be used in turf areas.

Basin Outlet Pipe Size	Flow Rate CFS *
4"	0.229
6"	0.662
8"	1.441
10"	2.612
12"	4.152
15"	7.126
18"	12.163
24"	25.821
30"	52.173

* Maximum flow capacity before drain basin begins to backfill.
Calculation based on an average pipe slope of 1%.



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DRAWN BY AWA

DATE 07MAR00

APPD BY CJA

DATE 07MAR00

DWG SIZE A

MATERIAL

PROJECT NO./NAME

GRATE / COVER

SCALE 1:2 SHEET 1 OF 1



3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com

TITLE

8" - 30" STANDARD INLET CAPACITY

DWG NO. 7001-110-001

REV B

LandTech Resources, Inc.

Hydraulic Grade Line (HGL) Calculations

Project Number: 10-243

Project: Strawberry Plains Center Unit 2 Bldg

Date: 10.3.13

From Structure	STRUCTURE LOSSES												HGL @ FROM	Performance Checks & Intermediate Computations								
	HGL		Velocity Head V ² /2g (ft)	Invert Shaped?	Surface Flow?	Bend Losses			ENTRANCE		EXIT (ft)	TOTAL (ft)		HGL @ FROM	Rim/Flowline (Max. Allow. Elevation)	"Freeboard" (ft)	Elev. top of pipe @ From	Structure #s: FROM-TO	TC plus Pipe Flow Time	Elevation at 80% Full Flow	Too Shallow?	Computed Pipe Dia.
	Slope (%)	Fall (ft)				Angle (deg)	@ To (ft)	@ From (ft)	@ To (ft)	@ From (ft)												
	HGLSlope	HGLFall				BendAngle	BendTo	BendFrom	EntrTo	EntrFrom												
1	0.119%	0.081	0.05	Y	Y	0	0.000	0.000	0.013	0.000	0.018	0.012	101.25	102.20	0.95	101.69	1-EX	5.14	101.25	80% D	8.5	

Tailwater Elevation at Outfall point # EX):

99.55

APPENDIX B

Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (I) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1	End	76.0	0.08	2.73	0.90	0.07	2.05	5.0	6.9	6.5	13.36	20.13	7.56	18	2.63	87.00	85.00	88.97	88.09	93.00	87.00	1-1 to 1-2
2	1	96.0	0.14	1.16	0.90	0.13	0.84	5.0	6.6	6.6	5.54	19.08	5.05	15	6.25	93.00	87.00	93.94	89.95	97.50	93.00	1-2 to 1-3
3	2	106.0	0.12	1.02	0.70	0.08	0.71	5.0	6.1	6.7	4.79	15.72	4.56	15	4.25	97.50	93.00	98.38	94.48	101.50	97.50	1-3 to 1-4
4	3	91.0	0.47	0.90	0.70	0.33	0.63	5.0	5.7	6.8	4.29	5.66	4.18	15	0.55	98.00	97.50	98.86	98.67	102.00	101.50	1-4 to 1-5
5	4	74.0	0.43	0.43	0.70	0.30	0.30	5.0	5.0	7.0	2.11	8.87	2.80	15	1.35	99.00	98.00	99.58	99.11	104.00	102.00	1-5 to 1-6
6	1	44.0	0.55	1.49	0.70	0.39	1.14	5.0	6.8	6.6	7.45	11.50	6.07	15	2.27	88.00	87.00	90.37	89.95	93.00	93.00	1-2 to 1-7
7	6	62.0	0.26	0.94	0.80	0.21	0.75	5.0	6.5	6.6	4.97	19.38	4.68	15	6.45	92.00	88.00	92.89	90.77	97.30	93.00	1-7 to 1-8
8	7	91.0	0.34	0.68	0.90	0.31	0.54	5.0	6.0	6.7	3.66	11.31	3.84	15	2.20	94.00	92.00	94.77	93.20	98.00	97.30	1-8 to 1-9
9	8	85.0	0.34	0.34	0.70	0.24	0.24	5.0	5.0	7.0	1.66	15.49	2.45	15	4.12	97.50	94.00	98.02	95.13	101.50	98.00	1-9 to 1-10

TRY 12.18 FT/SEC
SEE ATTACHED SPREADSHEET

Project File: siteammend87200-1.stm

Number of lines: 9

Run Date: 12-01-2003

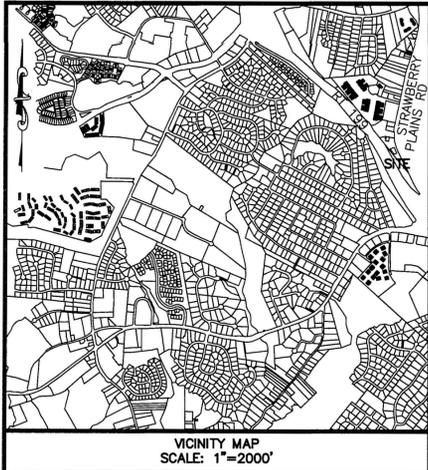
NOTES: Intensity = 140.36 / (Inlet time + 19.80) ^ 0.93; Return period = 10 Yrs.

**POOR
QUALITY**

ORIGINAL(S) FOLLOW

**THIS IS THE BEST COPY
AVAILABLE**

VCE DOCUMENT CONVERSION CENTER



SITE PLAN OF STRAWBERRY PLAINS CENTER UNIT 2 BUILDING

JAMES CITY COUNTY VIRGINIA
JCC SP-0119-2010

COUNTY OF JAMES CITY
FINAL SITE PLAN

APPROVALS	DATE
Fire Dept. <i>ED/ler</i>	3/21/11
Health Dept.	
VDOT	
Planning <i>CM</i>	9/21/11
Environ. <i>SJT/ler</i>	3/28/11
Zoning Adm. <i>DDB</i>	9/21/11
JCSA <i>DAN/ler</i>	8/19/11
County Eng. <i>DEC/ler</i>	1/7/11
REA	
Other	

TABLE OF CONTENTS

SHEET NO.	SHEET NO.
C1	COVER SHEET
C2	LAYOUT PLAN
C3	GRADING & UTILITY PLAN
C4	DETAIL SHEET
C5	DETAIL SHEET
L1	LANDSCAPE PLAN
L2	LANDSCAPE NOTES

UNIT 2 STATISTICAL INFORMATION

ZONE	B-1 GENERAL BUSINESS
DISTRICT	JAMESTOWN
TAX MAP NO.	3842500002
ADDRESS	3715 STRAWBERRY PLAINS ROAD
PROPOSED USE	8,000 SF OFFICE
WATER	PUBLIC-JCSA
SEWER	PUBLIC-JCSA
SITE AREA	12,000 SF
DISTURBED AREA	0.3± ACRES
BUILDING AREA	8,000 SF
IMPERVIOUS AREA	1,640 SF (SIDEWALK)
BUILDING HEIGHT	27'
PARKING SPACES	
REQUIRED	32
PROVIDED	32
ITE CODE	710
AM PEAK HOUR TRIPS	13
PM PEAK HOUR TRIPS	12
PEAK DAY TRIPS	89

OVERALL CENTER STATISTICAL INFORMATION

TOTAL CENTER AREA	5.628 AC
EX BUILDING AREA	22,686 SF (9%)
EX IMPERVIOUS AREA	100,726 SF (41%)
EX OPEN AREA	144,440 SF (59%)
TOTAL BUILDING AREA	30,686 SF (13%)
TOTAL IMPERVIOUS AREA	110,366 SF (45%)
TOTAL OPEN SPACE	134,800 SF (55%)
FLOOR AREA RATIO	13%

USE	AREA	PARKING SPACES REQUIRED
EX OFFICE	14,250 SF	57
EX COMMERCIAL	3,250 SF	17
EX RESTAURANT	3,696 SF	25
PROPOSED OFFICE	8,000 SF	32
		131

136 PARKING SPACES PROVIDED, 8 OF WHICH ARE ALLOCATED TO HANDICAP USE

- NOTES:
- 1) PER FEMA COMMUNITY PANEL NUMBER 51095C0140C DATED 9/28/07 THE SITE APPEARS TO BE IN FLOOD ZONE "X".
 - 2) TOPOGRAPHIC SURVEY SHOWN HEREON IS BASED ON FIELD SURVEY BY LANDTECH RESOURCES INC. - NOVEMBER 2010.
 - 3) THE EXISTENCE AND LOCATION (HORIZONTAL AND VERTICAL) OF EXISTING UTILITIES ARE NOT GUARANTEED AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
 - 4) A LAND DISTURBING PERMIT AND SILTATION AGREEMENT WITH SURETY ARE REQUIRED FOR THIS PROJECT.
 - 5) THIS PROJECT IS LOCATED IN THE MILL CREEK WATERSHED.
 - 6) THE PROFESSIONAL ENGINEER WHOSE SEAL IS AFFIXED HEREON SHALL ACT AS THE "RESPONSIBLE LAND DISTURBER" FOR THE PLAN REVIEW PHASE OF THIS PROJECT. ONCE THE PLANS ARE APPROVED BY THE COUNTY THE OWNER/DEVELOPER SHALL PROVIDE THE COUNTY WITH THE NAME OF THE "RESPONSIBLE LAND DISTURBER" FOR THE CONSTRUCTION PHASE OF THE PROJECT.
 - 7) PER "SOIL SURVEY OF JAMES CITY AND YORK COUNTIES AND THE CITY OF WILLIAMSBURG VIRGINIA" THE ON-SITE SOIL CONSISTS OF KEMPSVILLE-EMPORIA (19B).
 - 8) THE OWNER WILL BE REQUIRED TO OBTAIN A VSMP PERMIT FROM THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION IF THE DISTURBED AREA IS GREATER THAN 2,500 SF. THIS PERMIT WILL REQUIRE A STORMWATER POLLUTION PREVENTION PLAN.
 - 9) ALL NEW UTILITIES SHALL BE PLACED UNDERGROUND.
 - 10) THERE IS NO ANTICIPATED SOIL STOCKPILE AREA ASSOCIATED WITH THIS PROJECT.
 - 11) THIS SITE PLAN WAS SUBMITTED UNDER CONCEPTUAL PLAN C-0039-2010.
 - 12) BUILDINGS APPROVED AS PART OF THIS SITE PLAN HAVE TO BE CONSTRUCTED WITHIN 5 YEARS OF THE APPROVAL DATE.
 - 13) A STANDARD INSPECTION/MAINTENANCE AGREEMENT IS REQUIRED TO BE EXECUTED WITH THE COUNTY DUE TO THE PROPOSED STORMWATER CONVEYANCE SYSTEM ASSOCIATED WITH THIS PROJECT.
 - 14) RECORD DRAWING AND CONSTRUCTION CERTIFICATION. THE STORMWATER CONVEYANCE SYSTEM PROPOSED FOR THIS PROJECT WILL REQUIRE SUBMISSION, REVIEW, AND APPROVAL OF A RECORD DRAWING AND CONSTRUCTION CERTIFICATION PRIOR TO RELEASE OF THE POSTED BOND/SURETY. THE SITE CONTRACTOR SHALL ENSURE THIS ACTIVITY IS ADEQUATELY COORDINATED AND PERFORMED BEFORE, DURING, AND FOLLOWING CONSTRUCTION IN ACCORDANCE WITH CURRENT COUNTY GUIDELINES.
 - 15) 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.
 - 16) ALL DRAINAGE EASEMENTS DESIGNATED ON THE PLAN SHALL REMAIN PRIVATE.
 - 17) THE INSTALLATION OF HDPE PIPE SHALL BE IN ACCORDANCE WITH ASTM D-2321.

NO.	DATE	REVISION / COMMENT / NOTE
2	8/11/11	REV PER JCC LTR DTD 3/25/11
1	3/11/11	REV PER JCC LTR DTD 1/7/11

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

OWNER/DEVELOPER
RONALD T. CURTIS, TRUSTEE
22 WHITAKERS MILL
WILLIAMSBURG, VA. 23185
(757) 532-7742
CONTACT: GORDAN BERRYMAN

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Resources, Inc.

Surveying - Engineering - GPS

205 Bullfants Blvd., Ste E, Williamsburg, VA 23188
Phone: (757) 565-1677 Fax: (757) 565-0782
web: landtechresources.com

COMMONWEALTH OF VIRGINIA

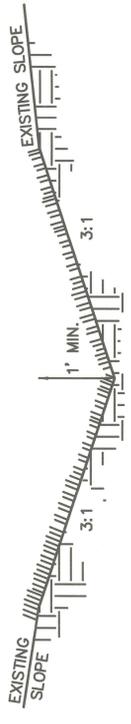
K.M. JENKINS II
Lic. No. 022872
9/11/11
PROFESSIONAL ENGINEER

JOB: 10-243
DWG NO: 10-243CS
DATE: 12/17/10
DRAWN BY: KMJ
SHEET: C1 OF 7

- NOTES:**
1. ALL UTILITIES SHALL BE PLACED UNDERGROUND IN ACCORDANCE WITH SECTION 19-33 OF THE SUBDIVISION ORDINANCE. 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.
 2. SANITARY SEWER & WATERLINE FACILITIES PIPE BEDDING SHALL BE IN ACCORDANCE WITH THE LOCAL VIRGINIA DEPARTMENT OF HEALTH (MS. VALERIE JORDAN AT (757) 253-4813) FOR REVIEW & APPROVAL OF THE SEPTIC WATER METER BOX INSTALLATION SHALL MAINTAIN A MINIMUM 18-INCHES HORIZONTAL EDGE-TO-EDGE CLEARANCE FROM DRIVEWAYS AND/OR DRIVE PATHS, SIDEWALKS OR BIKE PATHS.
 3. HDPE PIPE TO MEET VDOT MATERIAL AND INSTALLATION SPECIFICATIONS PER SITE INSPECTION ON 12/21/10 THE EXISTING BMP APPEARS TO BE IN GOOD CONDITION AND OPERATING AT THE DESIGN LEVEL OF SERVICE.

- PROPOSED SEQUENCE OF CONSTRUCTION**
- 1) CONTACT JCC ENVIRONMENTAL DIVISION INSPECTOR 48 HOURS PRIOR TO ARRANGE A PRE-CONSTRUCTION MEETING.
 - 2) INSTALL SAFETY FENCE, SILT FENCE, TREE PROTECTION AND INLET PROTECTION AS DEPICTED ON SHEET C3 PRIOR TO CLEARING AND GRADING.
 - 3) CLEAR DESIGNATED AREA.
 - 4) ROUGH GRADE BUILDING PAD, APPLY TOPSOIL AND FINAL STABILIZATION TO ALL DISTURBED AREAS EXCLUDING BUILDING PAD.
 - 5) CONTACT JCC ENVIRONMENTAL DIVISION INSPECTOR 48 HOURS PRIOR TO ARRANGE A PRE-CONSTRUCTION MEETING.
 - 6) INSTALL WATER SERVICE.
 - 7) CONSTRUCT BUILDING AND SIDEWALKS.
 - 8) REMOVE ALL TEMPORARY E & S MEASURES, ONCE ALL DISTURBED AREAS ASSOCIATED WITH THE PROJECT ARE STABILIZED AND AFTER RECEIVING APPROVAL TO DO SO BY THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION.

DOWNSTREAM BMP PROTECTION. THE SITE CONTRACTOR SHALL MONITOR THE EXISTING OFFSITE BMP FOR SIGNS OF SEDIMENTATION, SPECIFICALLY DURING OR AS A RESULT OF CONSTRUCTION ON THIS SITE. AS THIS FACILITY IS NOT TO BE USED FOR SEDIMENT CONTROL, THE CONTRACTOR SHALL BE AWARE THAT ADDITIONAL ONSITE OR OFFSITE CONTROLS MAY BE NECESSARY TO PROTECT THE BMP FROM DEGRADATION. THIS MAY INCLUDE ADDITIONAL E&S MEASURES, CLEANING AND SEDIMENT REMOVAL WITHIN THE BASIN OR CONNECTING PIPE SYSTEMS AND COORDINATION WITH THE OWNER, ENGINEER, OR THE COUNTY.



- ENVIRONMENTAL INVENTORY IN ACCORDANCE WITH SECTION 23-10(2) OF THE CRESPIKE BAY PRESERVATION ORDINANCE.**
- PER SITE TOPOGRAPHY AND JAMES CITY COUNTY TAX MAP ATLAS THE FOLLOWING COMPONENTS DO NOT APPEAR TO BE PRESENT ONSITE:
1. TIDAL WETLANDS;
 2. TIDAL SHORES;
 3. NONTIDAL WETLANDS CONNECTED BY SURFACE FLOW AND CONTIGUOUS TO TIDAL WETLANDS OR WATER BODIES (LAKES, RIVERS, CREEKS, CANALS, ETC.);
 4. 100-YEAR FLOODPLAIN (L&L);
 5. 100-YEAR FLOODPLAIN (L&L) WITHIN 100 FEET OF ANY WATER BODY WITH PERENNIAL FLOW;
 6. 100-YEAR FLOODPLAIN AS DESIGNATED BY CHAPTER 24 OF THE COUNTY CODE; AND
 7. SLOPES 25 PERCENT OR GREATER.

SITE PLAN OF STRAWBERRY PLANS CENTER UNIT 2 BUILDING
3715 STRAWBERRY PLAINS ROAD
GRADING & UTILITY PLAN

James City County
Virginia

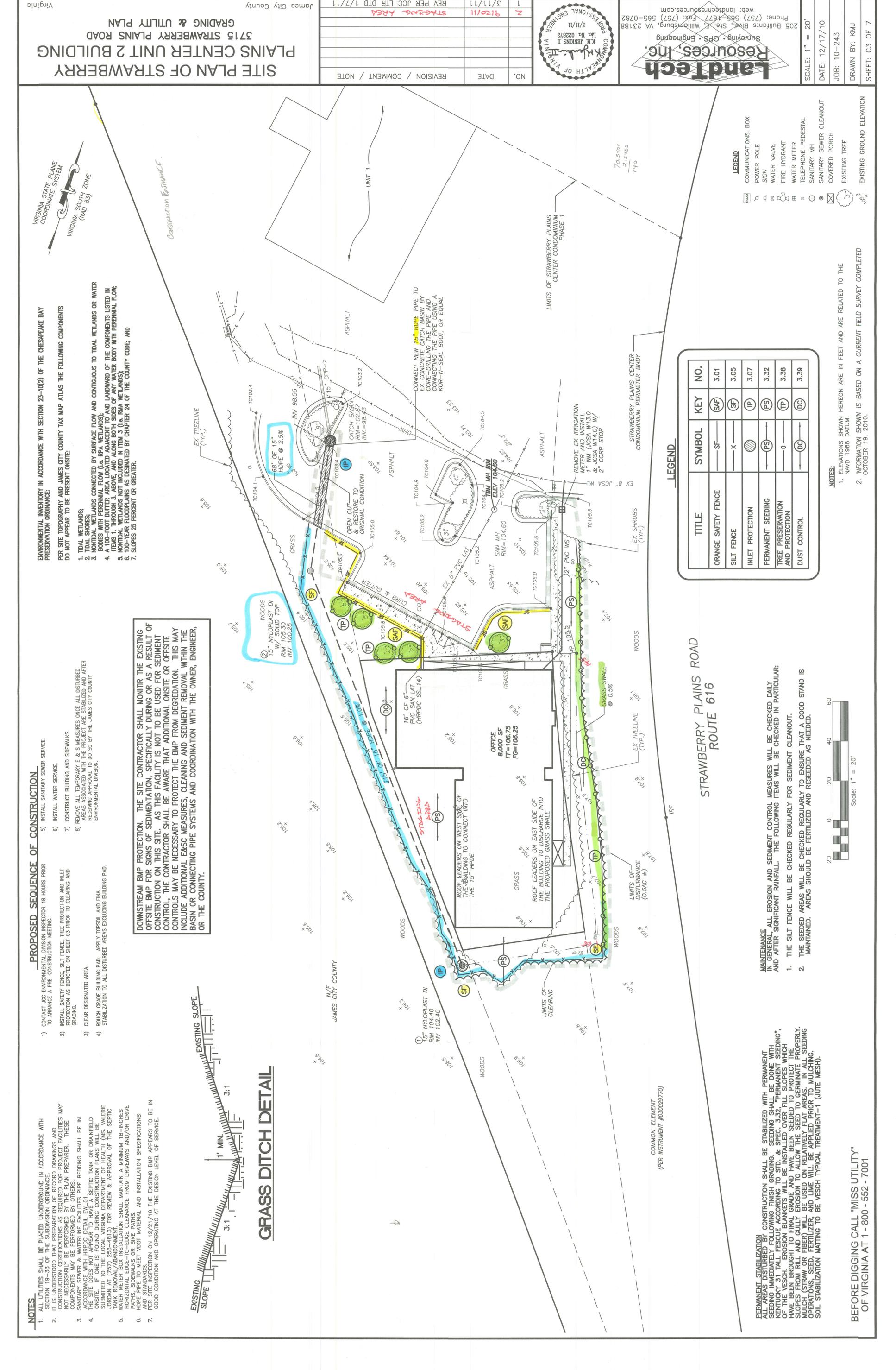
NO.	DATE	REVISION / COMMENT / NOTE
1	3/11/11	
2	9/20/11	STAKE-OUT AREA



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205 Buifronts Blvd., Sta. Williamsburg, VA 23188
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Web: landtechresources.com

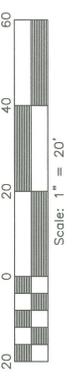
SCALE: 1" = 20'
DATE: 12/17/10
JOB: 10-243
DRAWN BY: KMJ
SHEET: C3 OF 7



LEGEND

TITLE	SYMBOL	KEY	NO.
ORANGE SAFETY FENCE	SF	SAF	3.01
SILT FENCE	X	SF	3.05
INLET PROTECTION	IP	IP	3.07
PERMANENT SEEDING	PS	PS	3.32
TREE PRESERVATION AND PROTECTION	0	TP	3.38
DUST CONTROL	DC	DC	3.39

- LEGEND**
- COMMUNICATIONS BOX
 - POWER POLE
 - SIGN
 - WATER VALVE
 - FIRE HYDRANT
 - WATER METER
 - TELEPHONE PEDESTAL
 - SANITARY MH
 - SANITARY SEWER CLEANOUT
 - COVERED PORCH
 - EXISTING TREE
 - EXISTING GROUND ELEVATION



- NOTES:**
1. ELEVATIONS SHOWN HEREON ARE IN FEET AND ARE RELATED TO THE NAVD 1988 DATUM.
 2. INFORMATION SHOWN IS BASED ON A CURRENT FIELD SURVEY COMPLETED OCTOBER 19, 2010.

- MAINTENANCE** IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER SIGNIFICANT RAINFALL. THE FOLLOWING ITEMS WILL BE CHECKED IN PARTICULAR:
1. THE SILT FENCE WILL BE CHECKED REGULARLY FOR SEDIMENT CLEANOUT.
 2. THE SEEDED AREAS WILL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEED AS NEEDED.

PERMANENT STABILIZATION BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING. SEEDING SHALL BE DONE WITH KENTUCKY 31 TALL FESCUE ACCORDING TO STD. & SPEC. 3.32, "PERMANENT SEEDING" OF THE VESCH. EROSION BLANKETS WILL BE INSTALLED OVER FILL SLOPES WHICH HAVE BEEN BROUGHT TO FINAL GRADE AND HAVE BEEN SEED TO PROTECT THE SLOPES FROM RILL AND GULLY EROSION TO ALLOW THE SEED TO GERMINATE PROPERLY. SLOPES FROM RILL AND GULLY EROSION TO BE REPAIRED USING PERMANENT SEEDING OPERATIONS, SEED, FERTILIZER AND MULCH. MULCHING SHALL BE APPLIED PRIOR TO SOIL STABILIZATION MATTING TO BE VESCH TYPICAL TREATMENT-1 (DUPE MESH).

STRAWBERRY PLAINS ROAD
ROUTE 616

COMMON ELEMENT
(PER INSTRUMENT #030029770)

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

GENERAL
EROSION AND SEDIMENT CONTROL NOTES

JAMES CITY COUNTY ENVIRONMENTAL DIVISION

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 INTO ADJACENT PROPERTIES OR STATE WATERS. IF FIELD INSPECTION REVEALS THE INADEQUACY OF THE PLAN TO CONFINE SEDIMENTS 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 WILL 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 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 RECONSTRUCTION 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 RECONSTRUCTION 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-WAY. 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 CONDITIONS. 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 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 ENSURE 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 OF ANY PORTION OF 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 STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT 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 ARE 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 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.

CONSTRUCTION OF A SILT FENCE
(WITH WIRE SUPPORT)

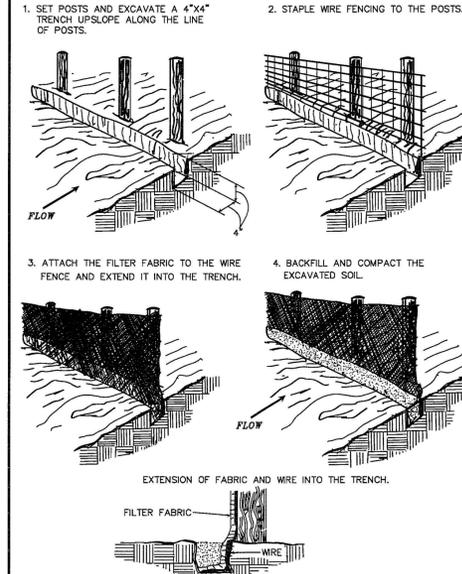


PLATE 3.06-1 SOURCE: CONVED PLASTICS VDOT ROAD AND BRIDGE STANDARDS VA, DSWC

SAFETY FENCE

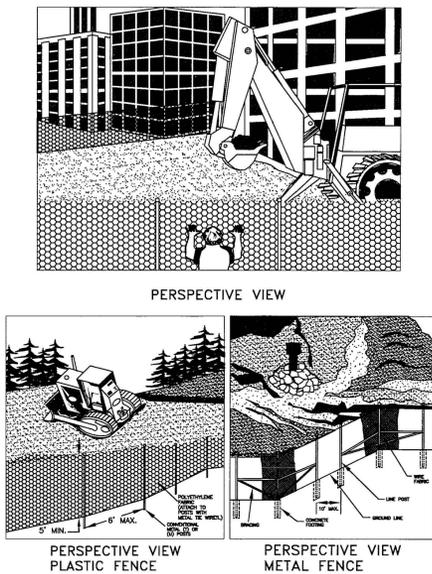


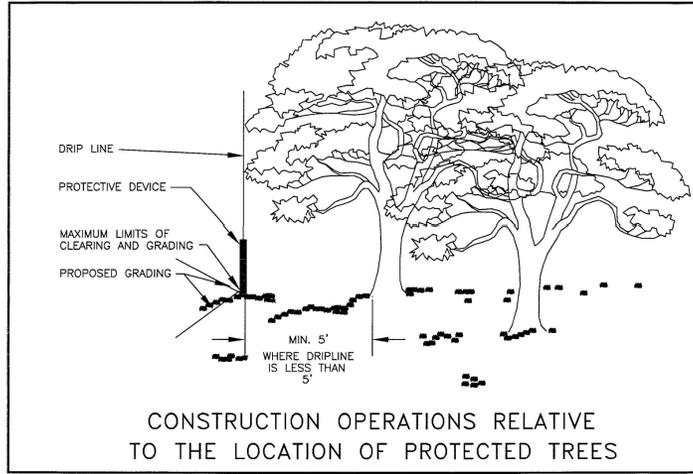
PLATE 3.1-1 SOURCE: CONVED PLASTICS VDOT ROAD AND BRIDGE STANDARDS VA, DSWC

TABLE 3.32-D
SITE SPECIFIC SEEDING MIXTURES FOR COASTAL PLAIN AREA

	TOTAL LBS. PER ACRE
MINIMUM CARE LAWN - COMMERCIAL OR RESIDENTIAL - KENTUCKY 31 OR TURF-TYPE TALL FESCUE	125-200 LBS.
- COMMON BERMUDDAGRASS **	75 LBS.
HIGH-MAINTENANCE LAWN - KENTUCKY 31 OR TURF-TYPE TALL FESCUE OR - HYBRID BERMUDDAGRASS (SEED) **	40 LBS. (UNHULLED) 30 LBS. (HALLED)
OR - HYBRID BERMUDDAGRASS (BY OTHER VEGETATIVE ESTABLISHMENT METHOD, SEE STD. & SPEC. 3.34)	
GENERAL SLOPE (3:1 OR LESS) - KENTUCKY 31 FESCUE - RED TOP GRASS - SEASONAL NURSE CROP *	128 LBS. 2 LBS. 20 LBS. 150 LBS.
LOW MAINTENANCE SLOPE (STEEPER THAN 3:1) - KENTUCKY 31 TALL FESCUE - COMMON BERMUDDAGRASS ** - RED TOP GRASS - SEASONAL NURSE CROP * - SERICIA LESPEDEZA **	93-108 LBS. 15 LBS. 2 LBS. 20 LBS. 2 LBS. 150 LBS.

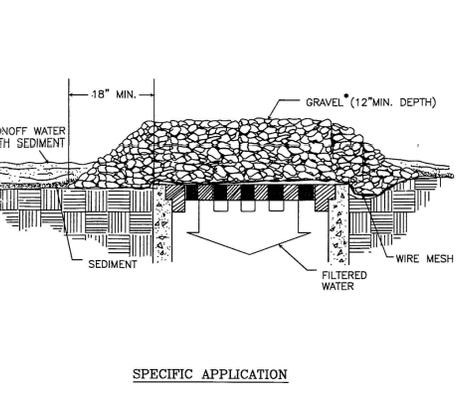
* USE SEASONAL NURSE CROP IN ACCORDANCE WITH SEEDING DATES AS STATED BELOW:
FEBRUARY, MARCH THROUGH APRIL ANNUAL RYE
MAY 1ST THROUGH AUGUST FOXTAIL MILLET
SEPTEMBER, OCTOBER THROUGH NOVEMBER 15TH ANNUAL RYE
NOVEMBER 16TH THROUGH JANUARY WINTER RYE

** MAY THROUGH OCTOBER, USE HULLED SEED. ALL OTHER SEEDING PERIODS, USE UNHULLED SEED. WEEPING LOVEGRASS MAY BE ADDED TO ANY SLOPE OR LOW-MAINTENANCE MIX DURING WARM SEEDING PERIODS; ADD 10-20 LBS./ACRE IN MIXES.



CONSTRUCTION OPERATIONS RELATIVE TO THE LOCATION OF PROTECTED TREES
Source: Public Facilities Manual, Vol. III, Fairfax Co., Va., 1976 Plate 3.38-1

GRAVEL AND WIRE MESH
DROP INLET SEDIMENT
FILTER



SPECIFIC APPLICATION
* GRAVEL SHALL BE VDOT #3, #357 OR #5 COARSE AGGREGATE.
SOURCE: VA, DSWC Plate 3.07-2

SITE PLAN OF STRAWBERRY
PLAINS CENTER UNIT 2 BUILDING
3715 STRAWBERRY PLAINS ROAD
DETAIL SHEET

NO.	DATE	REVISION / COMMENT / NOTE



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SCALE: 1" = 20'
DATE: 12/17/10
JOB: 10-243
DRAWN BY: KMJ
SHEET: C4 OF 7

Virginia
James City County

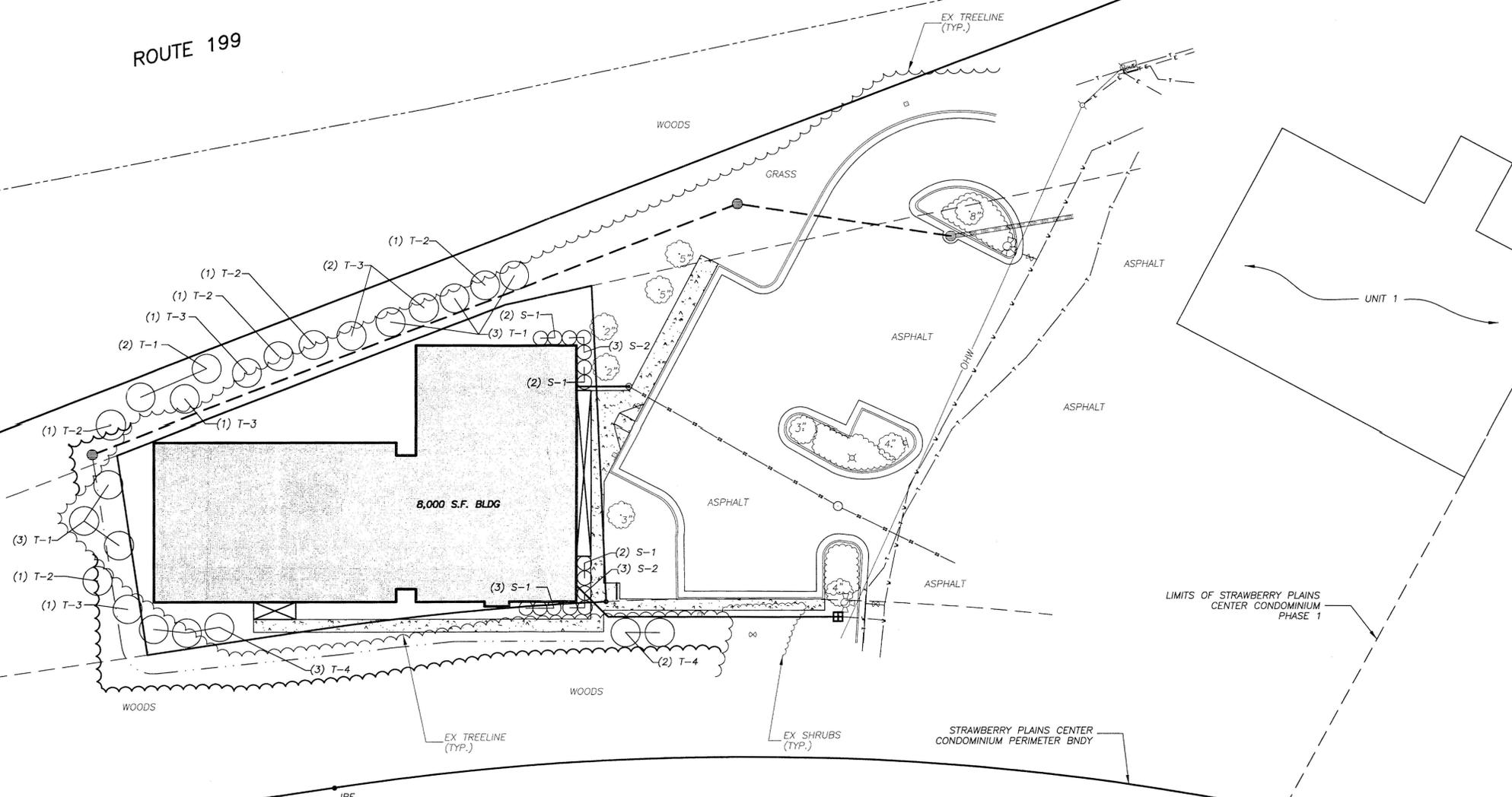
VIRGINIA STATE PLANE
COORDINATE SYSTEM
VIRGINIA SOUTH ZONE
(NAD 83)

**SITE PLAN OF STRAWBERRY
PLAINS CENTER UNIT 2 BUILDING
3715 STRAWBERRY PLAINS ROAD
LANDSCAPE PLAN**

Virginia
James City County

ROUTE 199

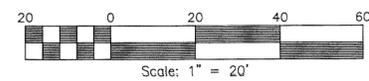
N/F
JAMES CITY COUNTY



COMMON ELEMENT
(PER INSTRUMENT #030029770)

STRAWBERRY PLAINS ROAD
ROUTE 616

- LEGEND**
- ☐ COMMUNICATIONS BOX
 - ⊕ POWER POLE
 - ⊙ SIGN
 - ⊗ WATER VALVE
 - ⊕ FIRE HYDRANT
 - ⊕ WATER METER
 - ⊕ TELEPHONE PEDESTAL
 - SANITARY MH
 - ⊙ SANITARY SEWER CLEANOUT
 - ⊕ COVERED PORCH
 - ⊙ EXISTING TREE



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

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1	3/11/11	REV PER JCC LTR DTD 1/7/11



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SHEET: L1 OF 7

BUILDING LANDSCAPING REQUIRED (1 ORNAMENTAL TREE OR 5 SHRUBS PER 200 S.F. OF PLANTING AREA)		BUILDING LANDSCAPING PROVIDED	
ORNAMENTAL TREES	SHRUBS	ORNAMENTAL TREES	SHRUBS
BUILDING LANDSCAPING* 4,660 S.F. PLANTING AREA	24 OR 120	23*	AND 15

*BUILDING LANDSCAPING - 23 TREES
TRANSFERRED TO THE "COMMON ELEMENT"
LANDSCAPE MODIFICATION REQUEST
SHALL BE SUBMITTED FOR REVIEW AND
APPROVAL BY THE PLANNING DIRECTOR

ABBREVIATION	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
BUILDING LANDSCAPING				
ORNAMENTAL TREES				
T-1	8	Chionanthus virginicus	White Fringetree	1 1/4" CALIPER AND 8' HEIGHT B & B
T-2	5	Cercis canadensis	Eastern Redbud	1 1/4" CALIPER AND 8' HEIGHT B & B
T-3	5	Cornus kousa	Kousa Dogwood	1 1/4" CALIPER AND 8' HEIGHT B & B
T-4	5	Lagerstroemia indica 'Sioux'	Sioux Crape Myrtle	MULTI-STEM -8' HEIGHT B & B
SHRUBS				
S-1	9	Ilex crenata 'Helleri'	Helleri Holly	18"-24" CONTAINER OR B & B
S-2	6	Juniperus chinensis 'Sargentii'	Sargent Juniper	18"-24" CONTAINER OR B & B

GENERAL PLANTING NOTES

1. THE LANDSCAPE CONTRACTOR AND OWNER ARE RESPONSIBLE FOR ADHERENCE TO ALL REQUIREMENTS OF THE JAMES CITY COUNTY ZONING ORDINANCE.
2. THE LANDSCAPE CONTRACTOR AND OWNER ARE RESPONSIBLE FOR COORDINATING THE ACCURATE LOCATION AND MARKING OF ALL PRIVATE AND PUBLIC UNDERGROUND UTILITIES PRIOR TO THE COMMENCEMENT OF ANY LAND DISTURBANCE WITHIN THE PROJECT LIMITS.
3. SEE PLANT SCHEDULES FOR SPECIFIC PROPOSED PLANT SPECIES. IF THERE IS A DISCREPANCY BETWEEN THE LANDSCAPE PLAN VIEW AND THE PLANT SCHEDULE, THE PLANT SCHEDULE INFORMATION GOVERNS.
4. LANDSCAPE CONTRACTOR SHALL REFER TO THE STANDARDIZED LANDSCAPE SPECIFICATIONS FOR THE STATE OF VIRGINIA, LATEST EDITION. FOR ADDITIONAL SPECIFICATIONS PERTAINING TO PLANTING, SPECIFICATIONS SHOWN ON THESE PLANS SHALL SUPERSEDE THOSE DETAILED WITH THE ABOVE-REFERENCED SPECIFICATIONS MANUAL. (COPIES OF THESE SPECIFICATIONS ARE AVAILABLE FOR A FEE FROM THE VIRGINIA CHAPTER OF THE AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS, VIRGINIA NURSERYMEN'S ASSOCIATION, INC., OR THE VIRGINIA SOCIETY OF LANDSCAPE DESIGNERS.
5. LANDSCAPE CONTRACTOR SHALL PROVIDE COPIES OF THE LANDSCAPE BID(S) TO THE ENGINEER AND THE LANDSCAPE ARCHITECT PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
6. REFER TO CIVIL DRAWINGS FOR ALL DETAILED SITE INFORMATION.
7. LANDSCAPE CONTRACTOR SHALL COORDINATE LANDSCAPE WORK WITH ALL OTHER TRADES.
8. ROUGH GRADING SHALL BE COMPLETED BY THE GENERAL SITE CONTRACTOR. THE LANDSCAPE CONTRACTOR SHALL COMPLETE THE FINE GRADING AND SITE STABILIZATION.
9. LANDSCAPE CONTRACTOR SHALL COORDINATE WITH THE OWNER IN ORDER TO CONFIRM THE TYPE OF SEED OR SOD TO BE PROVIDED AND INSTALLED WITHIN ALL DISTURBED AREAS WITHIN THE PROJECT LIMITS.
10. MINOR FIELD ADJUSTMENTS MAY BE NECESSARY DUE TO EXISTING SITE CONDITIONS AND/OR PROPOSED SITE IMPROVEMENTS. LANDSCAPE CONTRACTOR SHALL NOTIFY JAMES CITY COUNTY, THE ENGINEER AND THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO COMPLETING MINOR FIELD ADJUSTMENTS.
11. OWNER RESERVES THE RIGHT TO SUBSTITUTE PLANT MATERIAL TYPE, SIZE AND/OR QUANTITY. ALL PROPOSED SUBSTITUTIONS SHALL MEET ALL APPLICABLE JAMES CITY COUNTY ZONING ORDINANCE REQUIREMENTS. ALL PROPOSED SUBSTITUTIONS SHALL BE REVIEWED AND APPROVED BY THE ENGINEER, LANDSCAPE ARCHITECT, AND JAMES CITY COUNTY PRIOR TO INSTALLATION. SUBSEQUENTLY, THE ENGINEER OR LANDSCAPE ARCHITECT WILL NOTIFY JAMES CITY COUNTY REGARDING THE PROPOSED PLANT MATERIAL SUBSTITUTIONS.
12. PROPOSED PLANT MATERIAL MAY BE PLANTED AS LONG AS THE SOIL IS NOT FROZEN.
13. ALL PLANT MATERIAL SHALL BE FREE OF DISEASE OR INSECT INFESTATION.
14. PLANT MATERIAL SHALL BE KEPT MOIST AT ALL TIMES, COVERED DURING TRANSPORT TO THE SITE, AND STORED ON-SITE IN A PROTECTED, SHADED AREA UNTIL PLANTING IS COMPLETED.
15. PLANT MATERIAL SHALL BE INSTALLED WITHIN AN EXCAVATED PLANTING PIT, WITH A WIDTH APPROXIMATELY TWO (2) TO THREE (3) TIMES THE PLANT MATERIAL BALL DIAMETER. BACKFILL SHALL BE NATIVE PLANTING SOIL, FREE OF DEBRIS, WEEDS, ROCKS, ETC. A 6 INCH EARTH SAUCER (COMPACTED) SHALL BE INSTALLED ENCIRCLING THE COMPLETED PLANTING. MULCH SHRUBS AND TREES WITH A 4 INCH DEPTH OF SHREDDED HARDWOOD BARK MULCH COMPLETELY ENCIRCLING THE PLANTING PIT WITHIN THE EARTH SAUCER. TREES SHALL BE STAKED WITH A MINIMUM OF TWO (2) WOODEN STAKES (2" X 2" X 8') INSTALLED WITH A DEPTH OF 3 FEET BELOW FINISHED GRADE. GUY WIRE SHALL BE EITHER HIGH QUALITY BRAIDED RUBBER GUY WIRES OR GALVANIZED WIRE ATTACHED TO THE WOODEN STAKES WITH TWO (2) BLACK NYLON STRAPS ENCIRCLING THE TREE TRUNK.
16. LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WATERING AND MAINTENANCE OF INSTALLED PLANT MATERIAL UNTIL THE FINAL REVIEW AND ACCEPTANCE OF THE INSTALLED PLANT MATERIAL BY THE OWNER.
17. LANDSCAPE CONTRACTOR SHALL PROVIDE THE OWNER WITH A ONE (1) YEAR SURVIVAL WARRANTY FOR ALL PROPOSED PLANT MATERIAL INSTALLED. THE ONE (1) YEAR SURVIVAL WARRANTY SHALL COMMENCE AFTER THE FINAL REVIEW AND ACCEPTANCE OF THE INSTALLED PLANT MATERIAL BY THE OWNER. THE OWNER IS RESPONSIBLE FOR THE PERPETUAL MAINTENANCE OF ALL LANDSCAPING FEATURES.
18. LANDSCAPE CONTRACTOR SHALL NOT BE RESPONSIBLE FOR THE LOSS OF PLANT MATERIAL THAT HAS BEEN DAMAGED BY VANDALISM, FIRE, OR OTHER ACTIVITIES BEYOND THE LANDSCAPE CONTRACTOR'S CONTROL.
19. THE OWNER IS RESPONSIBLE FOR THE PERPETUAL MAINTENANCE OF ALL LANDSCAPING WITHIN THE PROJECT LIMITS IN ACCORDANCE WITH THE REQUIREMENTS OF THE JAMES CITY COUNTY ZONING ORDINANCE.

**SITE PLAN OF STRAWBERRY
PLAINS CENTER UNIT 2 BUILDING
3715 STRAWBERRY PLAINS ROAD
LANDSCAPE NOTES**

Virginia

James City County

NO.	DATE	REVISION / COMMENT / NOTE
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Environmental Division

DEC 29 2010

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**Erosion and Sediment
Control Narrative**

for

**Strawberry Plains Center
Unit 2 Building**

December 21, 2010

Project Number 10-243

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Phone 757-565-1677 Fax 757-565-0782

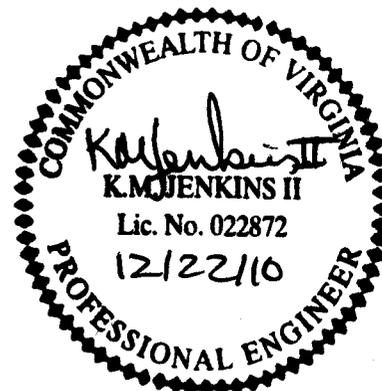
**Erosion and Sediment
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205 Bulifants Blvd., Ste. E, Williamsburg, VA
Phone 757-565-1677 Fax 757-565-0782

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PROJECT DESCRIPTION

The project consists of the development of 0.28+/- acres for a 8,000 sf office/daycare building at 3715 Strawberry Plains Road in James City County, Virginia. After construction is complete the site will contain an additional 0.22 acres of impervious surfaces. The total disturbed area is approximately 0.5 acres.

EXISTING CONDITIONS

Currently the site is open and is the last remaining undeveloped outparcel of the Strawberry Plains Center.

ADJACENT AREAS

The site is bounded on the north and south by the Strawberry Plains Center, on the east by Strawberry Plains Road and on the west by Route 199.

OFF-SITE AREA

There are no off-site areas proposed to be disturbed in association with this project. However, if it becomes necessary to disturb off-site areas, a revised erosion and sediment control plan will be prepared and submitted to the county for review and approval.

SOILS

Kempsville-Emporia fine sandy loam (19B)

This complex is deep, gently sloping, well drained soils that are so intermingled that it is not practical to separate them at a scale used in mapping.

Typically, the surface layer of this Kempsville soil is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is light yellowish brown fine sandy loam 10 inches thick. The subsoil extends to a depth of 55 inches thick. It is yellowish brown and strong brown fine sandy loam and sandy clay loam to a depth of 32 inches. Below this, the subsoil is mottled fine sandy loam that is somewhat firm and compacted over yellowish brown sandy clay loam. The substratum is yellowish brown fine sandy loam to a depth of at least 68 inches.

Typically, the surface layer of this Emporia soil is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is pale brown loam 9 inches thick. The subsoil extends to a depth of 58 inches. It is yellowish brown loam with mostly strong brown mottles in the upper part, yellowish brown, firm sandy clay loam with strong brown and gray mottles in the middle part, and mottled gray and brown firm sandy clay loam in the lower part. The substratum is variegated gray, brown, and red firm sandy clay loam to a depth of at least 75 inches.

The permeability of the 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

erosion hazard is moderate. The subsoil of the Kempsville soil has low shrink-swell potential, and that of the Emporia soil has moderate shrink-swell potential.

CRITICAL EROSION AREAS

The critical erosion areas associated with this site are the existing onsite drainage system and BMP on the property. To prevent sediment from leaving the site to this area, it is imperative that the contractor install all erosion and sediment control measures shown on these plans before any land disturbing activities commence. Regular inspection and maintenance is also required for all erosion and sediment control measures to keep them functioning as designed.

EROSION AND SEDIMENT CONTROL MEASURES

Unless otherwise indicated, all structural and vegetative erosion and sediment control practices shall be constructed and maintained according to minimum standards and specifications of the latest edition of Virginia Erosion and Sediment Control Handbook (VESCH). The minimum standards shall be adhered to unless otherwise waived or approved by variance.

STRUCTURAL PRACTICES

Safety Fence – 3.01

Safety fence shall be placed around the limits of the existing site to discourage public access during construction operations.

Silt Fence – 3.05

Silt fence shall be placed around the limits of clearing to intercept and detain small amounts of sediment from disturbed areas during construction operations.

Storm Drain Inlet Protection – 3.07

Storm drain protection is installed at all drainage inlets to prevent sediment from entering the storm drainage systems prior to permanent stabilization for the disturbed areas.

Tree Preservation & Protection – 3.38

Tree protection shall be provided to protect desirable trees from mechanical and other injury during land disturbing and construction activity.

Drainage
3.14 ac.

SP 139-99

384 01000281

VEGETATIVE PRACTICES

Permanent Seeding – 3.32

All denuded areas, which will be left dormant for extended periods of time, shall be seeded with permanent vegetation immediately following grading. Selection of the seed mixture will depend on the time of year it is applied.

MANAGEMENT STRATEGIES

- Sediment trapping measures will be installed as the first step in grading and will be seeded and mulched immediately following installation.
- Temporary seeding or other stabilization will follow immediately after grading.
- The contractor shall be responsible for the installation and maintenance of all erosion and sediment control practices depicted on the Plans.
- After achieving adequate stabilization, the temporary controls will be cleaned and removed. Any areas disturbed in the removal process shall be graded, top soiled, and seeded accordingly.

PERMANENT STABILIZATION

All areas disturbed by construction shall be stabilized with permanent seeding immediately following finish grading. Seeding shall be accomplished with Kentucky 31 Tall Fescue according to Standards and Specifications 3.32, Permanent Seeding of the VESCH. Soil stabilization blankets will be installed over slopes, which have been brought to final grade and have been seeded to protect the slopes from rill and gully erosion and to allow seed to germinate properly. Mulch (straw or fiber) will be used on relatively flat areas. In all seeding operations, seed, fertilizer and lime will be applied prior to mulching.

STORMWATER MANAGEMENT

This project is for the development of 0.28+/- acres for a 8,000 sf office/daycare building in James City County, Virginia. To meet the stormwater quality requirements of the James City County BMP Point System and the stormwater quantity requirements of Minimum Standard 19 of the Virginia Stormwater Management Handbook the site will discharge to the existing Strawberry Plains Center storm drainage system which leads to the existing onsite wet pond BMP MC013. The proposed impervious area for the developed site is the same as what was accounted for in the masterplan design of the storm sewer system and BMP, therefore no additional stormwater management is required.

The HGL of the existing storm sewer design was analyzed using the design calculations from the approved plans for the Strawberry Plains Center. The proposed site development match the design criteria for the proposed drainage area and the system is operating under a free flow condition, therefore the existing storm sewer system is adequate to handle the proposed development on the site.

CALCULATIONS

Appendix A contains design calculations for the onsite storm sewer system.

Appendix B contains design calculations for the existing storm sewer system HGL.

MAINTENANCE

In general, all erosion and sediment control measures will be checked daily and after each significant rainfall. The following items will be checked in particular:

Safety Fence – 3.01

Safety fence shall be checked regularly for weather-related or other damage. Any necessary repairs must be made immediately.

Silt Fence – 3.05

Silt fences shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.

Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting.

Should the fabric on a silt fence decompose or become ineffective prior to the end of the expected usable life and the barrier still be necessary, the fabric shall be replaced promptly.

Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one-half the height of the barrier.

Any sediment deposits remaining in place after the silt fence is no longer required shall be dressed to conform with the existing grade, prepared and seeded.

Storm Drain Inlet Protection – 3.07

The structure shall be inspected after each rain and repairs made as needed.

Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to one half the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.

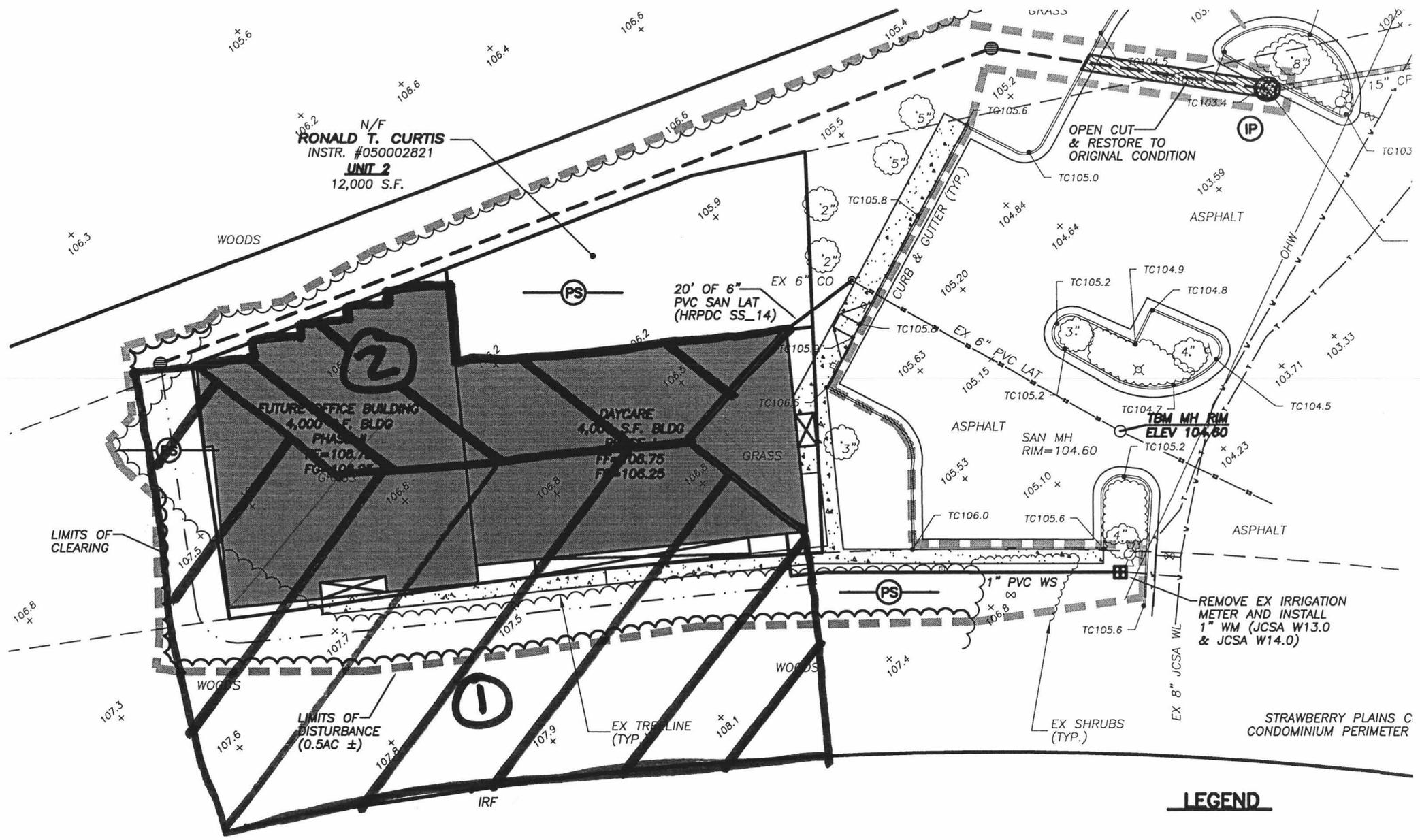
Structures shall be removed and the area stabilized when the remaining drainage area has been properly stabilized.

Permanent Seeding – 3.32

The seeded/mulched areas should be checked regularly to ensure that a good stand is established and maintained. Areas should be fertilized, mulched and re-seeded as needed. When it is clear that plants have not germinated on an area or have died, these areas must be re-seeded immediately to prevent erosion damage. However, it is extremely important to determine for what reason germination did not take place and make any corrective action necessary prior to re-seeding the area.

- Fertilizer shall be applied using approved fertilization methods and equipment.
- Formulations and application rates shall conform to the guidelines given in VESCH.
- Maintain a ground cover or organic mulch around trees that is adequate to prevent erosion, protect roots, and hold water.

APPENDIX A



N/F
RONALD T. CURTIS
 INSTR. #050002821
UNIT 2
 12,000 S.F.

2
 FUTURE OFFICE BUILDING
 4,000 S.F. BLDG
 PHASE 1
 FF=106.75
 FG=106.95

1
 DAYCARE
 4,000 S.F. BLDG
 FF=106.75
 FG=106.25

TM MH RIM
ELEV 104.60

REMOVE EX IRRIGATION
 METER AND INSTALL
 1" WM (JCSA W13.0
 & JCSA W14.0)

LEGEND

DRAINAGE AREA MAP

JOB 10-243

SHEET NO. _____ OF _____

CALCULATED BY KMJ DATE 12/21/10

CHECKED BY _____ DATE _____

SCALE _____

DA- 1

c = .53
A = .30 Ac.

Root
Grass

C
.90
.30

A
.11
.19
.30

CA
.10
.06
.16

OVERLAND FLOW

L = _____ ft.

S = _____ %

Tc = _____ min.

CHANNEL FLOW

H = _____ ft.

L = _____ ft.

Tc = _____ min.

Tc = 5 min.

$i_{10} =$ 7.2 in/hr

$Q = CAi = (.53)(.30 \text{ Ac.})(7.2 \text{ in/hr})(C_f 1.0)$

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q = 1.14 cfs

V-DITCH DESIGN

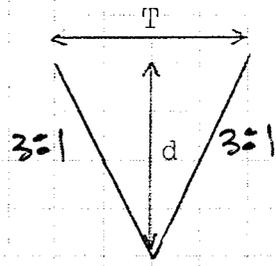
$Q = \underline{1.14}$ cfs

$S = \underline{0.5\%}$

$L = \underline{220}$ ft.

$T = \underline{6}$ ft.

$d = \underline{1}$ ft.



$R = \frac{zd}{2(z^2+1)^{3/2}} = \frac{(3)(1 \text{ ft.})}{2(10)^{3/2}} = \underline{.47}$ ft.

$n = \underline{.030}$

$A = zd^2 = (3)(1 \text{ ft.})^2 = \underline{3}$ ft.²

$Q = 1.14$ cfs $d = 0.52$ $V = 1.38$ ft/s

USE GRASS V-DITCH

LandTech Resources, Inc.

Surveying • Engineering • GPS

201 Bulifants Blvd., Suite A, Williamsburg, VA 23188
Phone: (757) 565-1677 Fax: (757) 565-0782
web: landtechresources.com

PROJECT NAME Strawberry Plains
PROJECT NO. 10-202
SHEET NO. _____ OF _____
CALCULATED BY LMS DATE 2/21/10
SCALE _____

DESIGN NYLOPLAST GRATE INLET

$$Q = 1.14 \text{ cfs}$$

Per Nyloplast Inline Drain Grate Inlet
Capacity Chart:

USE 15" GRATE

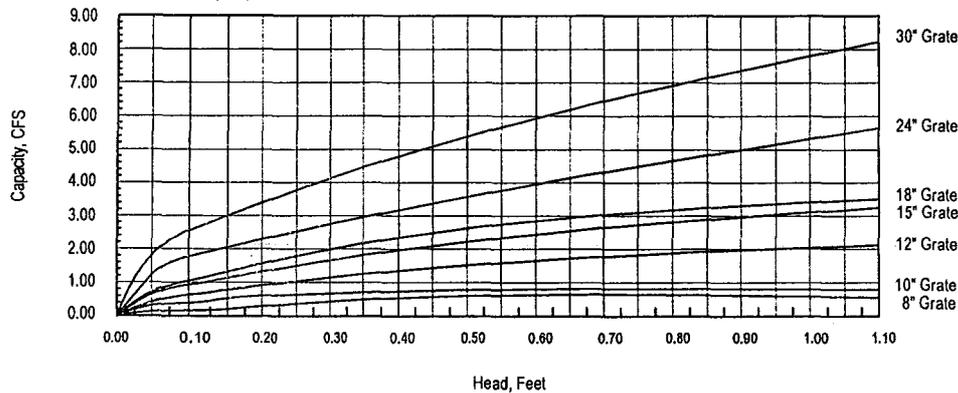
Nyloplast Standard Grate Inlet Capacity Chart

This chart is based on equations from the FAA Airport Drainage AC 150/5320-5B, 1970, Page 35. Certain assumptions have been made and no two installations will necessarily perform the same way. Safety factors should change with site conditions such that a safety factor 1.25 should be used for an inlet in pavement, and a safety factor of 2.0 should be used in turf areas.

Basin Outlet Pipe Size	Flow Rate CFS *
4"	0.229
6"	0.662
8"	1.441
10"	2.612
12"	4.152
15"	7.126
18"	12.163
24"	25.821
30"	52.173

* Maximum flow capacity before drain basin begins to backfill. Calculation based on an average pipe slope of 1%.

Nyloplast Standard Grates 8", 10", 12", 15", 18", 24" and 30"



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	DATE 07MAR00	PROJECT NO./NAME	
	APPD BY CJA	GRATE / COVER	TITLE
DATE 07MAR00	SCALE 1:2 SHEET 1 OF 1	8" - 30" STANDARD INLET CAPACITY	
DWG SIZE A	DWG NO. 7001-110-001	REV B	

DA- Z

$c = \underline{.90}$
 $A = \underline{.09} \text{ Ac.}$

OVERLAND FLOW

$L = \underline{\quad} \text{ ft.}$

$S = \underline{\quad} \%$

$T_c = \underline{\quad} \text{ min.}$

CHANNEL FLOW

$H = \underline{\quad} \text{ ft.}$

$L = \underline{\quad} \text{ ft.}$

$T_c = \underline{\quad} \text{ min.}$

$T_c = \underline{5} \text{ min.}$

$i_{10} = \underline{7.2} \text{ in/hr}$

$Q = CAi = (\underline{.90})(\underline{.09} \text{ Ac.})(\underline{7.2} \text{ in/hr})(C_f \underline{1.0})$

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

$Q = \underline{0.58} \text{ cfs}$

Land Iech Resources, Inc.

Storm Drainage Design

Phone: (757) 565-1677 Fax: (757) 565-0782

Project Manager: Kenny Jenkins

Project Engineer: Kenny Jenkins

For Tc Accumulation, Use VELOCITY (1) from Pipe Slope or (2) V=Q/A : 1

Project Number: 10-243

Project: Strawberry Plains Center Unit 2 Bldg

Year Storm: 10

Structure		Rational Formula: $Q = CiA$									Pipe Data					Mannings Formula				
From	To	Area "A" (ac)	Coefficient "C"	CA		Inlet Time		Rain (in/hr)	Runoff, Q		INVERTS		Length (ft)	Slope (%)	Diameter (in)	Velocity		Capacity (cfs)	Flow Time (min)	Manning's N
				Incremental	Cumulative	Incremental	Cumulative		Incremental	Cumulative	UPstream	DOWN-stream				Based on Q/A	Based on pipe slope			
From	To	Area	C	CAinc	CAcum	Tcinc	Tccum	Rain	Qinc	Qcum	InvertUp	InvertDown	Length	Slope	Diameter	Velocity _{Q/A}	Velocity _{slope}	Capacity	Flow Time	Manning's
1	2	0.30	0.5	0.16	0.16	5	5.00	6.96	1.11	1.11	102.40	100.25	215	1.00%	15	0.90	5.26	6.46	0.68	0.013
2	EX	0.09	0.9	0.08	0.24	5	5.68	6.79	0.55	1.63	100.25	98.55	68	2.50%	15	1.33	9.84	12.07	0.12	0.011

EX

LandTech Resources, Inc.

Hydraulic Grade Line (HGL) Calculations

Project Number: 10-243

Project: Strawberry Plains Center Unit 2 Bldg

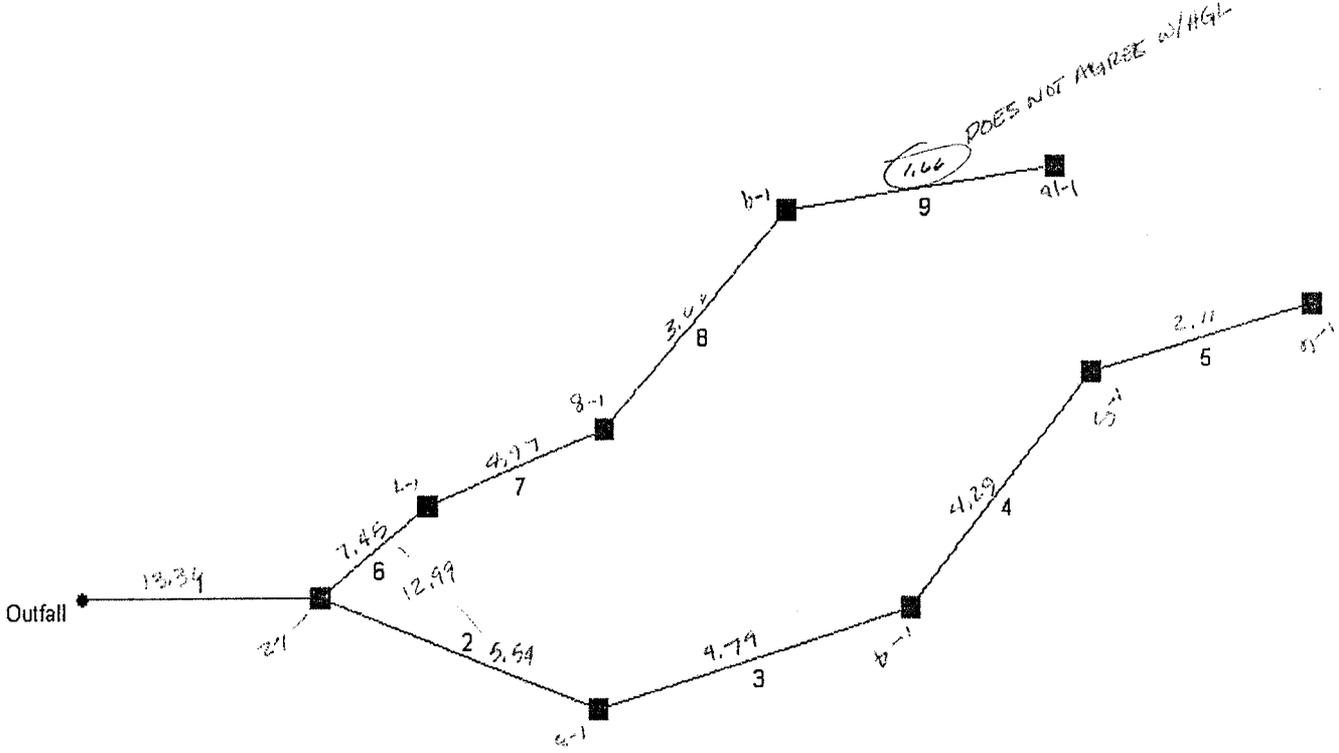
Date: 12.21.10

From Structure	HGL												HGL @ FROM	Performance Checks & Intermediate Computations							
	~~~~~ STRUCTURE LOSSES ~~~~~													Rim, Flowline (Max. Allow. Elevation)	Freeboard (ft)	Elev., top of pipe @ From	Structure #: FROM-TO	TC plus Pipe Flow Time	Elevation at 80% Full Flow	Too Shallow?	Computed Pipe Dia.
	Slope (%)		Fall (ft)	Velocity Head V ² /2g (ft)	Invert Shaped?	Surface Flow?	Bend Losses		ENTRANCE		EXIT (ft)	TOTAL (ft)									
	HGL Slope	HGL Fall	Velocity Head	Shaped	Surface	Bend Angle	Bend @ To (ft)	Bend @ From (ft)	Entr @ To (ft)	Entr @ From (ft)	Exit	Total Structure									
1	0.029%	0.063	0.01	Y	Y	0	0.000	0.000	0.003	0.000	0.004	0.003	103.40	104.40	1.00	103.84	1-2	5.68	103.40	80% D	7.7
2	0.046%	0.031	0.03	Y	Y	30	0.007	0.000	0.007	0.003	0.010	0.008	101.25	105.30	4.05	101.69	2-EX	5.80	101.25	80% D	7.1
Tailwater Elevation at Outfall point # EX):												99.55									

**APPENDIX B**

# Hydraflow Plan View

SYSTEM # 1



# Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1	End	76.0	0.08	2.73	0.90	0.07	2.05	5.0	6.9	6.5	13.36	20.13	7.56	18	2.63	87.00	85.00	88.97	88.09	93.00	87.00	1-1 to 1-2
2	1	96.0	0.14	1.16	0.90	0.13	0.84	5.0	6.6	6.6	5.54	19.08	5.05	15	6.25	93.00	87.00	93.94	89.95	97.50	93.00	1-2 to 1-3
3	2	106.0	0.12	1.02	0.70	0.08	0.71	5.0	6.1	6.7	4.79	15.72	4.56	15	4.25	97.50	93.00	98.38	94.48	101.50	97.50	1-3 to 1-4
4	3	91.0	0.47	0.90	0.70	0.33	0.63	5.0	5.7	6.8	4.29	5.66	4.18	15	0.55	98.00	97.50	98.86	98.67	102.00	101.50	1-4 to 1-5
5	4	74.0	0.43	0.43	0.70	0.30	0.30	5.0	5.0	7.0	2.11	8.87	2.80	15	1.35	99.00	98.00	99.58	99.11	104.00	102.00	1-5 to 1-6
6	1	44.0	0.55	1.49	0.70	0.39	1.14	5.0	6.8	6.6	7.45	11.50	6.07	15	2.27	88.00	87.00	90.37	89.95	93.00	93.00	1-2 to 1-7
7	6	62.0	0.26	0.94	0.80	0.21	0.75	5.0	6.5	6.6	4.97	19.38	4.68	15	6.45	92.00	88.00	92.89	90.77	97.30	93.00	1-7 to 1-8
8	7	91.0	0.34	0.68	0.90	0.31	0.54	5.0	6.0	6.7	3.66	11.31	3.84	15	2.20	94.00	92.00	94.77	93.20	98.00	97.30	1-8 to 1-9
9	8	85.0	0.34	0.34	0.70	0.24	0.24	5.0	5.0	7.0	1.66	15.49	2.45	15	4.12	97.50	94.00	98.02	95.13	101.50	98.00	1-9 to 1-10

TRY 12.18 FT/SEC  
SEE ATTACHED SPREADSHEET

Pond design for  
3.14 ac

Project File: siteammend87200-1.stm

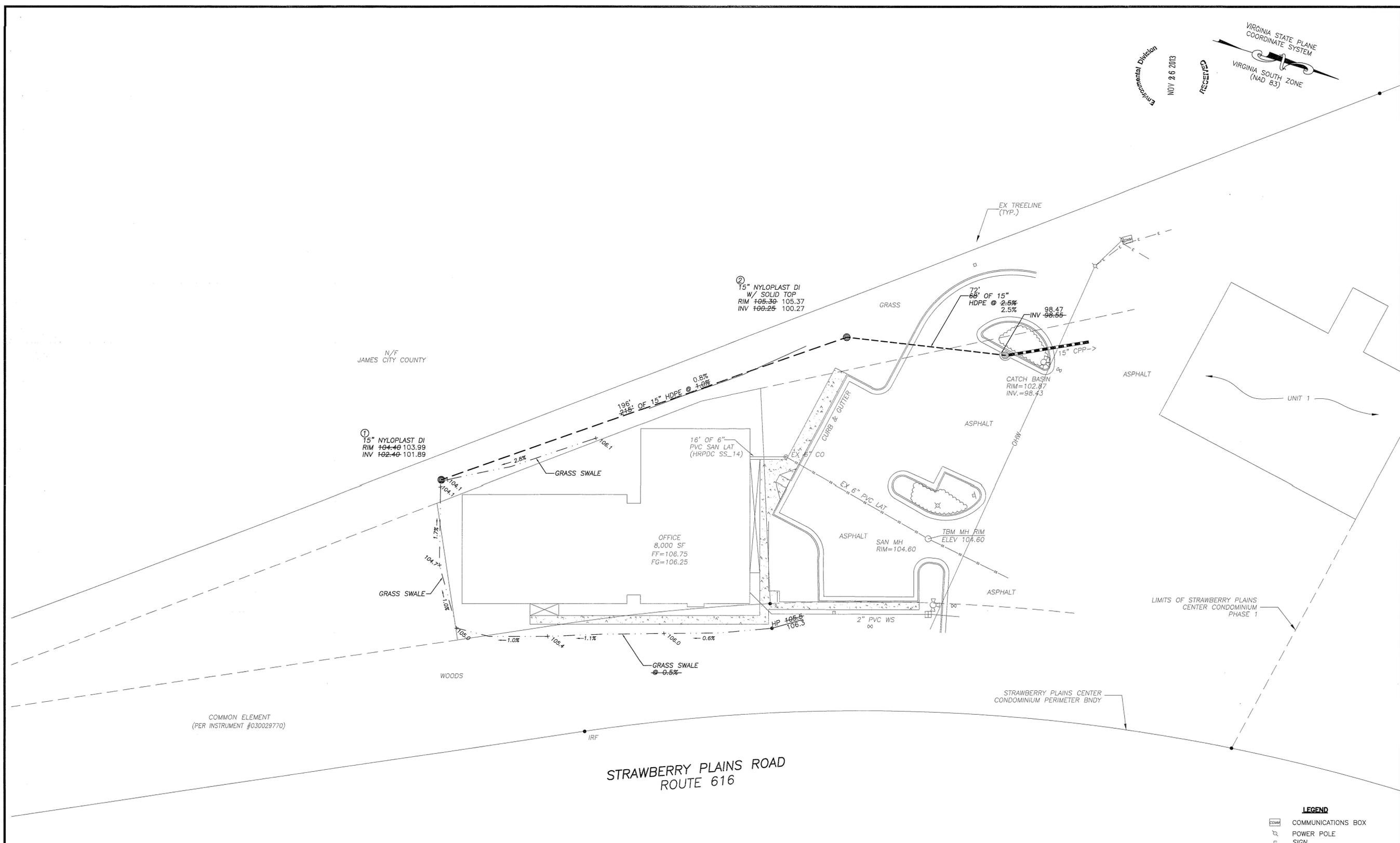
Number of lines: 9

Run Date: 12-01-2003

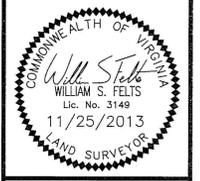
NOTES: Intensity = 140.36 / (Inlet time + 19.80) ^ 0.93; Return period = 10 Yrs.

Environmental Division  
NOV 26 2013  
RECEIVED  
VIRGINIA STATE PLANE  
COORDINATE SYSTEM  
VIRGINIA SOUTH ZONE  
(NAD 83)

**DRAINAGE AS BUILTS**  
**SITE PLAN OF STRAWBERRY**  
**PLAINS CENTER UNIT 2 BUILDING**  
3715 STRAWBERRY PLAINS ROAD  
James City County  
Virginia



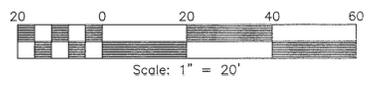
NO.	DATE	REVISION / COMMENT / NOTE



**LandTech Resources, Inc.**  
Surveying • GPS • Engineering  
205 Bullfants Blvd., Ste. E, Williamsburg, VA 23188  
Phone: (757) 565-1677 Fax: (757) 565-0782  
web: landtechresources.com

**RECORD DRAWING CERTIFICATION:**  
I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS RECORD DRAWING REPRESENTS THE ACTUAL CONDITION OF THE STORMWATER MANAGEMENT STRUCTURES. THE STRUCTURES APPEAR TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGN PLAN, SPECIFICATIONS AND STORMWATER MANAGEMENT PLAN, EXCEPT AS SPECIFICALLY NOTED.

*William S. Felts*  
WILLIAM S. FELTS, LIC NO. 3149  
11/25/2013  
DATE



- NOTES:**
- ELEVATIONS SHOWN HEREON ARE IN FEET AND ARE RELATED TO THE NAVD 1988 DATUM.
  - INFORMATION SHOWN IS BASED ON A CURRENT FIELD SURVEY COMPLETED OCTOBER 19, 2010.

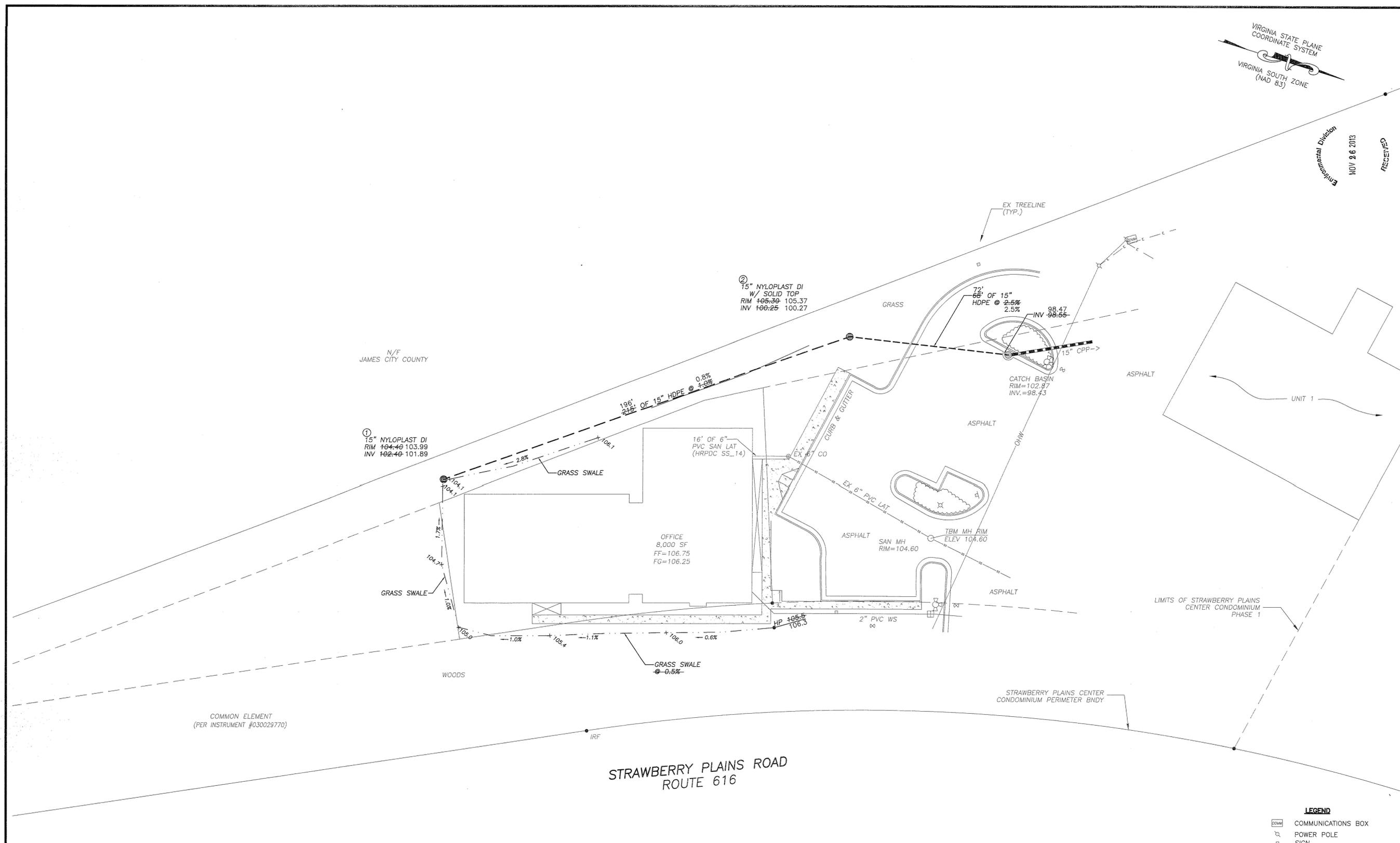
- LEGEND**
- COMMUNICATIONS BOX
  - POWER POLE
  - SIGN
  - WATER VALVE
  - FIRE HYDRANT
  - WATER METER
  - TELEPHONE PEDESTAL
  - SANITARY MH
  - SANITARY SEWER CLEANOUT
  - COVERED PORCH
  - EXISTING TREE
  - EXISTING GROUND ELEVATION

SCALE: 1" = 20'  
DATE: 11/25/13  
JOB: 10-243  
DRAWN BY: PF  
SHEET: 1 OF 1

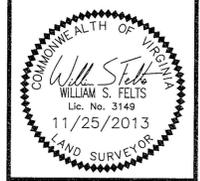
VIRGINIA STATE PLANE  
COORDINATE SYSTEM  
VIRGINIA SOUTH  
(NAD 83)

Environmental  
Direction  
NOV 26 2013  
RECEIVED

**DRAINAGE AS BUILTS**  
**SITE PLAN OF STRAWBERRY**  
**PLAINS CENTER UNIT 2 BUILDING**  
3715 STRAWBERRY PLAINS ROAD  
James City County Virginia



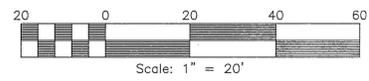
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- LEGEND**
- ☐ COMMUNICATIONS BOX
  - ⊕ POWER POLE
  - ⊙ SIGN
  - ⊕ WATER VALVE
  - ⊕ FIRE HYDRANT
  - ⊕ WATER METER
  - ⊕ TELEPHONE PEDESTAL
  - ⊕ SANITARY MH
  - ⊕ SANITARY SEWER CLEANOUT
  - ⊕ COVERED PORCH
  - ⊕ EXISTING TREE
  - ⊕ EXISTING GROUND ELEVATION

SCALE: 1" = 20'  
DATE: 11/25/13  
JOB: 10-243  
DRAWN BY: PF  
SHEET: 1 OF 1

**POOR  
QUALITY**

**ORIGINAL(S) FOLLOW**

**THIS IS THE BEST COPY  
AVAILABLE**

**VCE DOCUMENT CONVERSION CENTER**

COPY

**PARKING CALCULATIONS**

TYPE	TOTAL SPACES REQUIRED	TOTAL SPACES PROVIDED
RETAIL	1/200 SF = 29	47
OFFICE	1/250 SF = 14	20
RESTAURANT	1/4 SEATS = 38	47
TOTAL	81	114
HANDICAP SPACES	4	6

**LAND USE SUMMARY TABLE**

	S.F.	AC.	%
EXISTING TOTAL SITE AREA	246,832	5.666	100
RIGHT OF WAY DEDICATION	1715	0.039	0.69
PROPOSED TOTAL SITE AREA	245,117	5.627	98.31
TOTAL AREA DISTURBED	167,975	3.856	
PROPOSED CONDITIONS			
IMPERVIOUS AREA			
PARKING, ROADS	67,953	1.560	27.5%
OPEN SPACE	178,079	4.106	72.5%

**NOTE:**  
CONTRACTOR TO NOTIFY JCSA 48 HOURS PRIOR TO CONNECTING INTO WATER MAIN.

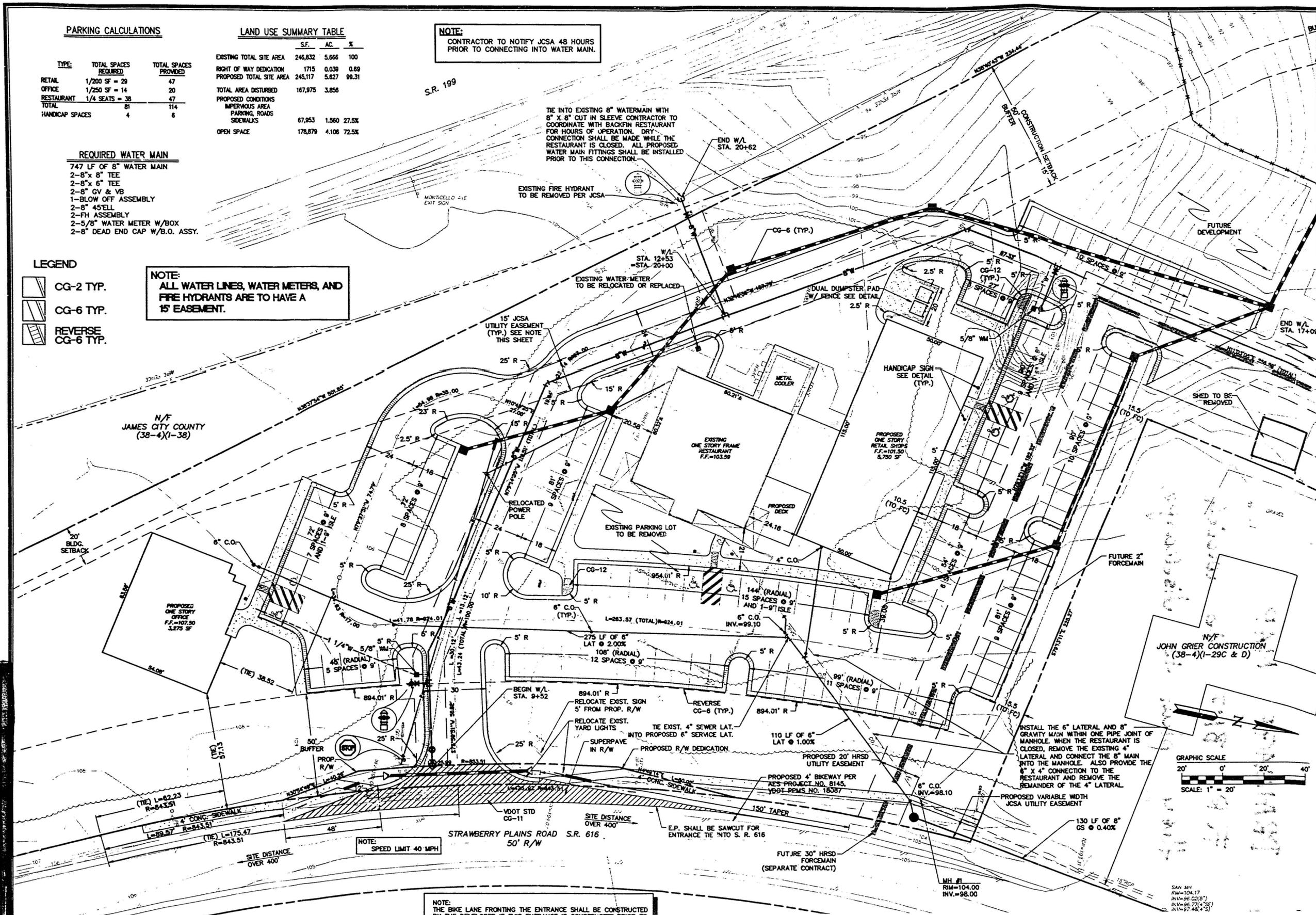
**REQUIRED WATER MAIN**

- 747 LF OF 8" WATER MAIN
- 2-8" x 8" TEE
- 2-8" x 6" TEE
- 2-8" GV & VB
- 1-BLOW OFF ASSEMBLY
- 2-8" 45° ELL
- 2-FH ASSEMBLY
- 2-5/8" WATER METER W/BOX
- 2-8" DEAD END CAP W/B.O. ASSY.

**LEGEND**

- CG-2 TYP.
- CG-6 TYP.
- REVERSE CG-6 TYP.

**NOTE:**  
ALL WATER LINES, WATER METERS, AND FIRE HYDRANTS ARE TO HAVE A 15' EASEMENT.



REVISED PER JCC COMMENTS	DATE	BY
3	5/22/00	HW
2	5/22/00	HW
1	3/15/00	HW



6248 Old Towne Road, Suite 1  
 Williamsburg, Virginia 23188  
 (757) 253-0040  
 Fax (757) 220-8984



**SITE AND UTILITY PLAN**  
**STRAWBERRY PLAINS CENTER**  
 OWNER/DEVELOPER: STRAWBERRY DEVELOPMENT, L.L.C.

Designed	Drawn
CWG/HWP	CWG
Scale	Date
1" = 20'	12/29/99

Project No.

DRAINAGE MAP  
FOR BMP to which  
they plan to discharge.

No.	DATE	REVISION / COMMENT / NOTE
1	1/15/00	REVISED PER JCC COMMENTS
2	5/3/00	REVISED PER JCC COMMENTS
3	5/22/00	REVISED PER JCC COMMENTS
4	2/27/04	REVISED PER JCC COMMENTS
5	4/30/04	REVISED PER JCC COMMENTS

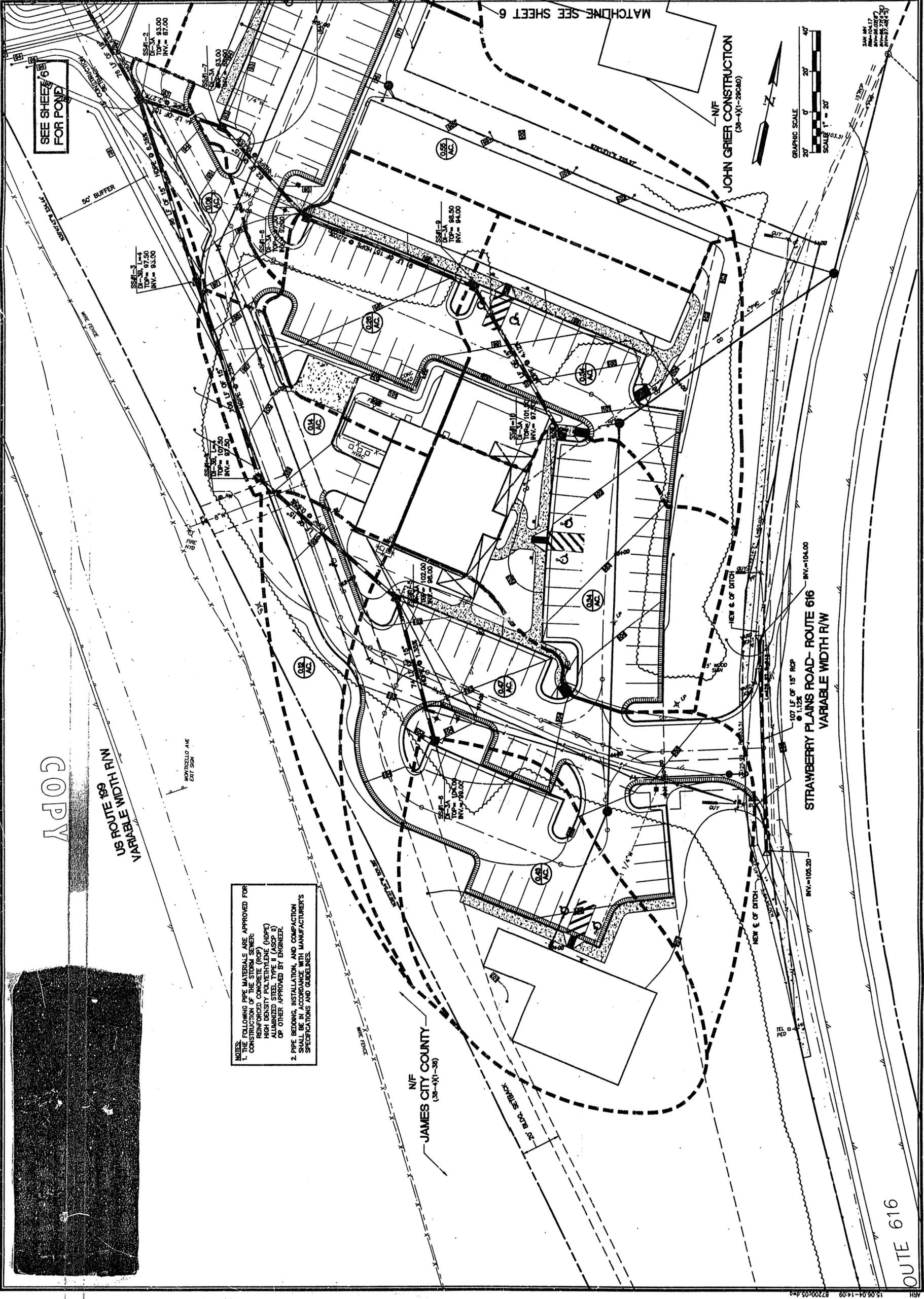


5248 Cide Towne Road, Suite 1  
 Williamsburg, Virginia 23188  
 (757) 253-0040  
 Fax (757) 220-8984



OWNER/DEVELOPER: W & L LAND, LLC  
 JAMES CITY COUNTY  
 BERKELEY DISTRICT  
**STRAWBERRY PLAINS CENTER**  
 DRAINAGE PLAN  
 Project No. 8720-1  
 Drawing No. 5

5/15



COPY

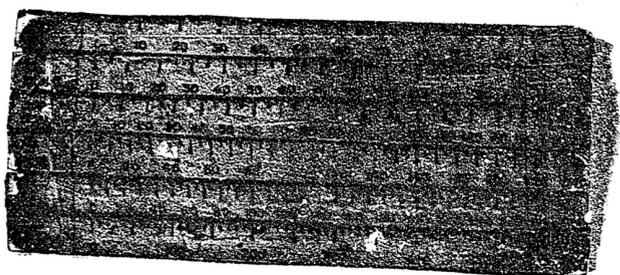
US ROUTE 66  
 VARIABLE WIDTH R/W

NOTES:  
 1. THE FOLLOWING PIPE MATERIALS ARE APPROVED FOR CONSTRUCTION OF THE STORM SEWER:  
 REINFORCED CONCRETE (RCP)  
 HIGH DENSITY POLYETHYLENE (HDPE)  
 ALUMINIZED STEEL TYPE II (ASCP II)  
 OF OTHER APPROVED BY ENGINEER.  
 2. PIPE BEDDING, INSTALLATION, AND COMPACTION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND GUIDELINES.



STRAWBERRY PLAINS ROAD - ROUTE 616  
 VARIABLE WIDTH R/W

ROUTE 616



COPY

US ROUTE 199  
VARIABLE WIDTH R/W

SEE SHEET 6  
FOR POND

NOTES:

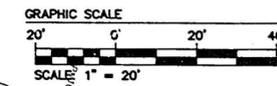
- THE FOLLOWING PIPE MATERIALS ARE APPROVED FOR CONSTRUCTION OF THE STORM SEWER:  
REINFORCED CONCRETE (RCP)  
HIGH DENSITY POLYETHYLENE (HDPE)  
ALUMINIZED STEEL TYPE II (ASCP II)  
OR OTHER APPROVED BY ENGINEER.
- PIPE BEDDING, INSTALLATION, AND COMPACTION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND GUIDELINES.

N/F  
JAMES CITY COUNTY  
(38-4)(1-38)

20' BLDG. SETBACK

107 LF OF 15" RCP  
@ 1.12%  
STRAWBERRY PLAINS ROAD- ROUTE 616  
VARIABLE WIDTH R/W

N/F  
JOHN GRIER CONSTRUCTION  
(38-4)(1-29C&D)



No.	DATE	REVISION / COMMENT / NOTE
1	2/14/05	REVISED PER COUNTY COMMENTS
2	12/20/04	AMENDED SITE PLAN



S248 Old Towne Road, Suite 1  
Williamsburg, Virginia 23188  
(757) 253-0040  
Fax (757) 220-8894



DRAINAGE PLAN  
**STRAWBERRY PLAINS CENTER**  
OWNER/DEVELOPER: W & L LAND, LLC

Designed CWS/HWP	Drawn CWS
Scale 1" = 20'	Date 1/7/04
Project No. 8720-1	
Drawing No. 5	

07.11.05-17.18 8720-05.dwg

ROUTE 616

MATCHLINE SEE SHEET 6



**TRANSMITTAL SHEET**  
**ENGINEERING & RESOURCE PROTECTION → STORMWATER**

Project: **Strawberry Plains Center**

County Plan No.: **SP-0119-2010**

Assigned BMP No:

BMP Type: **None Pipe Only**

Information Enclosed:

X Computations

X Other:

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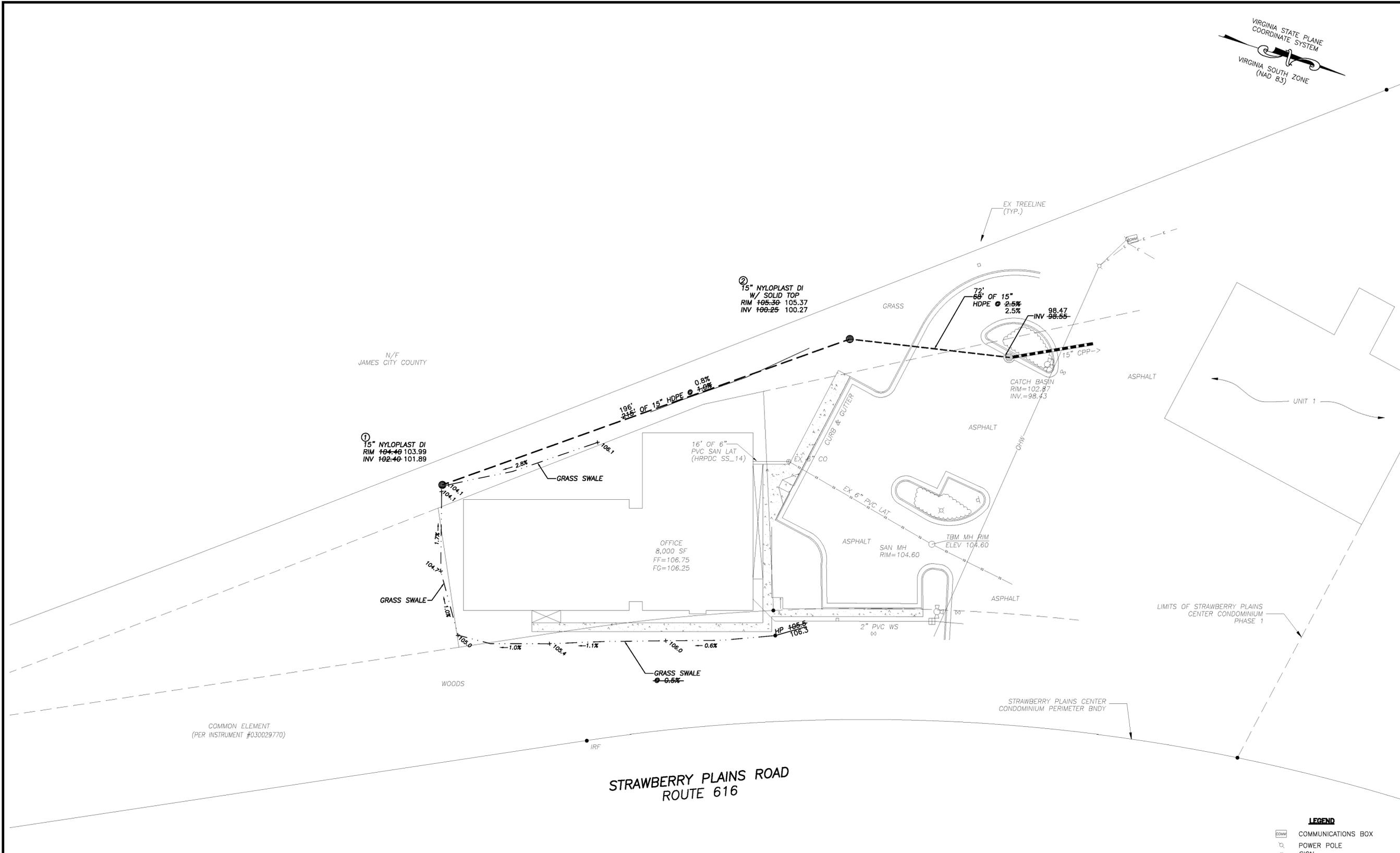
Name: **Greg Johnson**

Date: **03/19/2014**

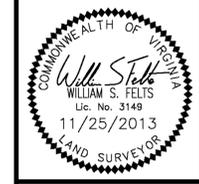
Signature: _____

VIRGINIA STATE PLANE  
COORDINATE SYSTEM  
VIRGINIA SOUTH ZONE  
(NAD 83)

**DRAINAGE AS BUILTS**  
**SITE PLAN OF STRAWBERRY**  
**PLAINS CENTER UNIT 2 BUILDING**  
3715 STRAWBERRY PLAINS ROAD  
James City County Virginia



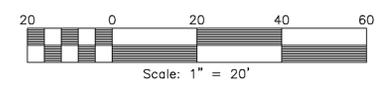
NO.	DATE	REVISION / COMMENT / NOTE



**LandTech Resources, Inc.**  
Surveying • GPS • Engineering  
205 Bullfants Blvd., Ste. E, Williamsburg, VA 23188  
Phone: (757) 565-1677 Fax: (757) 565-0782  
web: landtechresources.com

- LEGEND**
- COMMUNICATIONS BOX
  - POWER POLE
  - SIGN
  - WATER VALVE
  - FIRE HYDRANT
  - WATER METER
  - TELEPHONE PEDESTAL
  - SANITARY MH
  - SANITARY SEWER CLEANOUT
  - COVERED PORCH
  - EXISTING TREE
  - EXISTING GROUND ELEVATION

**NOTES:**  
1. ELEVATIONS SHOWN HEREON ARE IN FEET AND ARE RELATED TO THE NAVD 1988 DATUM.  
2. INFORMATION SHOWN IS BASED ON A CURRENT FIELD SURVEY COMPLETED OCTOBER 19, 2010.



**RECORD DRAWING CERTIFICATION:**  
I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS RECORD DRAWING REPRESENTS THE ACTUAL CONDITION OF THE STORMWATER MANAGEMENT STRUCTURES. THE STRUCTURES APPEAR TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGN PLAN, SPECIFICATIONS AND STORMWATER MANAGEMENT PLAN, EXCEPT AS SPECIFICALLY NOTED.

*William S. Felts*  
WILLIAM S. FELTS, LIC NO. 3148  
11/25/2013  
DATE

SCALE: 1" = 20'  
DATE: 11/25/13  
JOB: 10-243  
DRAWN BY: PF  
SHEET: 1 OF 1