



CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY THAT THE FOLLOWING ELECTRONIC RECORDS ARE TRUE AND ACCURATE REPRODUCTIONS OF THE ORIGINAL RECORDS OF JAMES CITY COUNTY GENERAL SERVICES DEPARTMENT- STORMWATER DIVISION; WERE SCANNED IN THE REGULAR COURSE OF BUSINESS PURSUANT TO GUIDELINES ESTABLISHED BY THE LIBRARY OF VIRGINIA AND ARCHIVES; AND HAVE BEEN VERIFIED IN THE CUSTODY OF THE INDIVIDUAL LISTED BELOW.

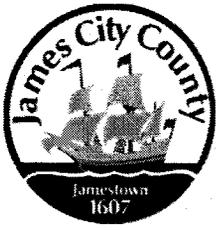
BMP NUMBER: SC007

DATE VERIFIED: May 11, 2012

QUALITY ASSURANCE TECHNICIAN: Leah Hardenbergh

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA



Stormwater Division

MEMORANDUM

DATE: March 10, 2010
TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services
FROM: Jo Anna Ripley, Stormwater
PO: 270712
RE: Files Approved for Scanning

General File ID or BMP ID: SC007

PIN: 5920500005

Subdivision, Tract, Business or Owner

Name (if known):

Skiffes Creek Industrial Park

Property Description:

Lot 5

Site Address:

1584 Manufacture Drive

(For internal use only)

Box 8

Drawer: 5

Agreements: (in file as of scan date)

Y

Book or Doc#:

990016705

Page:

Comments

Seaman, Stephen A & Cynthia F; In error this file was two separate folders they have now been combined.

COPY

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 20TH day of JULY, 1999,
between S. A. AND C. F. SEAMAN,
and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the
following property: 1584 MANUFACTURE DRIVE, JAMES CITY COUNTY,
Deed Book _____, Page No. _____ or Instrument No. MAP 59-2 050-00052,
and James City County, Virginia, hereinafter referred to as the "COUNTY."

WITNESSETH:

We, the COVENANTOR(S), with full authority to execute deeds, mortgages, other covenants, and all rights, titles and interests in the property described above, do hereby covenant with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the drainage system including any runoff control facilities, conveyance systems and associated easements, hereinafter referred to as the "SYSTEM," located on and serving the above-described property to ensure that the SYSTEM is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations. The SYSTEM shall not include any elements located within any Virginia Department of Transportation rights-of-way.
2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the SYSTEM to ensure that the SYSTEM is properly maintained.
3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the SYSTEM for the COUNTY, its agent and its contractor.
4. The COVENANTOR(S) shall grant the COUNTY, its agent and its contractor a right of entry to the SYSTEM for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the SYSTEM.
5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the SYSTEM in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the SYSTEM for the cost of the work and any applicable penalties.
6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the SYSTEM.
7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the SYSTEM. The COVENANTOR(S) shall supply the COUNTY with a copy of any document of transfer, executed by both parties.
8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the SYSTEM.
9. This COVENANT shall be recorded in the County Land Records.

Instrument # 990016705
Recorded on Aug. 5, 1999

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 20 day of July, 1999.

COVENANTOR(S)

[Signature]

Print Name/Title S. A. SEAMAN, OWNER

ATTEST:

[Signature]
My Commission expires August 31, 2000.

COVENANTOR(S)

C. F. Seaman

Print Name/Title C. F. SEAMAN, OWNER

ATTEST:

[Signature]
My Commission expires August 31, 2000.

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF York

I hereby certify that on this 20 day of July, 1999, before the subscribed, a Notary Public of the State of Virginia, and for the City/County of Newport News, aforesaid personally appeared S.A. Seaman & C.F. Seaman and did acknowledge the foregoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 20 day of July, 1999.

[Signature]
Notary Public

My Commission expires: August 31, 2000.

Approved as to form:

[Signature]
Deputy County Attorney

This Declaration of Covenants prepared by:

STEVE SEAMAN
(Print Name)

PRESIDENT
(Title)

2524 C RT 17
(Address)

YORKTOWN VA 23693
(City) (State) (Zip)

drainage.pre
Revised 2/97

**James City County, Virginia
Environmental Division**

**Stormwater Management/BMP Facilities
Record Drawing/Construction Certification
Review Tracking Form**

County Plan No.: SP-66-99
 Project Name: S.A. Seaman Concrete (SKIFFES CREEK/NORFOLK PARK)
 Stormwater Management Facility: Dry Det w/ Infiltration

Phase: I II III
 Information Received. Date: 10/5/01 LANOMARK
 Administrative Check.
 Record Drawing Date: 10-1-01 LANOMARK
 Construction Certification Date: _____
 RD/CC Standard Forms (Required after Feb 1st 2001 Only) YES
 Insp/Maint Agreement Info: INST # 990016705 AVG 5 1999
 Other: PRELIM AB BY BRANSCOME DATED 1-19-00

NO BMP MAINT PLAN

Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review file. ALSO NOTE 3
 Yes No Note/Sheet: NOTE # 19 SHEET C-3; ENV DIV COMM June 16 1999
 Assign County BMP ID Code Code: SC 007

Handwritten checkmarks and initials in the left margin.

Log into Division's "As-Built" Tracking Log
 Add Location to GIS Database Map. Obtain GIS site information (GPIN, Owner, Site Area, Address, etc.)
 Preliminary Log into BMP Database (BMP ID #, Site Plan #, GPIN, Project Name)
 Active Project File Review (correspondence, H&H, etc.)
 Initial As-Built File setup (label, copies of hydraulics, etc.)
 Inspector Check of RD/CC. GEL

Pre-Inspection Drawing Review (Quick look prior to field inspection).
 Final Inspection (FI) Date: _____
 Record Drawing (RD) Review Date: 11/13/01.
 Construction Certification (CC) Review Date: _____

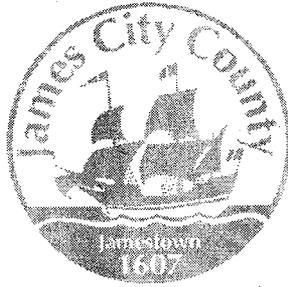
Actions:
 No comments.
 Comments. Letter Forwarded. Date: 11/15/01.
 Record Drawing (RD)
 Construction Certification (CC)
 Construction-Related (CR)
 Site Issues (SI)
 Other :

Second Submission: CC - WAIVED. SEE LETTERS BRANSCOME, JCC ENV DIV.
 Third Submission: _____

Acceptable for stormwater management facility purposes (RD/CC/CR/Other). Proceed with bond release.
 Notify Darryl & Joan of acceptability using email (preferred) or verbal.
 Clean active file of all stormwater management related material and finish/establish "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.
 Digital Photographs obtained. NO
 Add to JCC Hydrology & Hydraulic database (optional). NO

BMP Certification Information Acceptable

Plan Reviewer: [Signature] Date: 11/27/01



James City County, Virginia
Environmental Division

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

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

Section 1 - Site Information:

Project Name: Seaman Concrete
 Structure/BMP Name: Detention/Infiltration Facility
 Project Location: Lot 5 Skiffes Creek Industrial Park 1584 MANUFACTURE DRIVE
 BMP Location: South Side of Site
 County Plan No.: SP - 66 - 99

Project Type: Residential Business Tax Map/Parcel No.: 59 2 5 5
 Commercial Office BMP ID Code (if known): SC 007
 Institutional Industrial Zoning District: M2
 Public Roadway Land Use: Contractor Office/Yard
 Other _____ Site Area (sf or acres): 1.74 acres

Brief Description of Stormwater Management/BMP Facility: Dry detention through infiltration, with overflow connection to discharge @ road side ditch.

Nearest Visible Landmark to SWM/BMP Facility: Building @ 1584 Manufacture Dr.

Nearest Vertical Ground Control (if known):
 JCC Geodetic Ground Control USGS Temporary Arbitrary Other
 Station Number or Name: 350
 Datum or Reference Elevation: 59.90 NGVD 1929
 Control Description: Disc set in concrete
 Control Location from Subject Facility: East side of blow flats road 0.1 mile south of Rt. 60. 15' east of centerline of pavement.

Section 2 - Stormwater Management / BMP Facility Construction Information:

PreConstruction Meeting Held for Construction of SWM/BMP Facility: Yes No Unknown
Approx. Construction Start Date for SWM/BMP Facility: 8-10-99
Facility Monitored by County Representative during Construction: Yes No Unknown
Name of Site Work Contractor Who Constructed Facility: HENRY S. BRANSCOME, INC.
Name of Professional Firm Who Routinely Monitored Construction: _____
Date of Completion for SWM/BMP Facility: JAN. 00
Date of Record Drawing/Construction Certification Submittal: 10-01-01

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

Section 3 - Owner / Designer / Contractor Information:

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

Name: S.A. SEAMAN CONCRETE CONSTRUCTION INC
Mailing Address: 1584 MANUFACTURE DRIVE
WILLIAMSBURG VA 23185
Business Phone: 757 887 3800 Fax: 757 887-3900
Contact Person: STEVE SEAMAN Title: PRESIDENT

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

Firm Name: LandMark Design Group
Mailing Address: 4029 Ironbound Road, Suite 100
Williamsburg, VA 23188
Business Phone: 757-253-2975
Fax: 757-229-0049
Responsible Plan Preparer: Stephen A. Romeo, L.S.
Title: Principal
Plan Name: S. A. Seaman Concrete -Infiltration Pond Record
Firm's Project No. 1990084-000.02 Drawing
Plan Date: Oct. 1, 2001
Sheet No.'s Applicable to SWM/BMP Facility: 1 of 1 / ___ / ___ / ___ / ___

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

Name: HENRY S. BRANSCOME, INC.
Mailing Address: P.O. DRAWER 260
WILLIAMSBURG, VIRGINIA 23187
Business Phone: 757-229-2904
Fax: 757-220-0390
Contact Person: EDWARD R. SMITH, JR.
Site Foreman/Supervisor: AUDIE BRANSCOME
Specialty Subcontractors & 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: _____
Mailing Address: _____

Business Phone: _____
Fax: _____
Name: _____
Title: _____
Signature: _____
Date: _____

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

_____ (Seal)

Virginia Registered Professional Engineer
or Certified Land Surveyor

Construction Certification

Firm Name: _____
Mailing Address: _____

Business Phone: _____
Fax: _____
Name: _____
Title: _____
Signature: _____
Date: _____

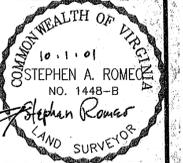
I hereby certify to the best of my knowledge and belief that this Stormwater Management/BMP facility was monitored and constructed in accordance with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.

_____ (Seal)

Virginia Registered
Professional Engineer

| LINE | RADIUS | ARC | CHORD BEARING | CHORD | DELTA | TANGENT |
|------|---------|---------|---------------|---------|-----------|---------|
| C1 | 206.91' | 167.00' | N33°24'35"E | 162.50' | 46°14'39" | 88.35' |

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/BMP FACILITY. THE FACILITY APPEARS TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGN PLAN, SPECIFICATIONS AND STORMWATER MANAGEMENT PLAN, EXCEPT AS SPECIFICALLY NOTED.

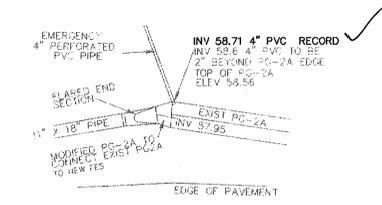


OK for RD CART.
 MPE CC

4029 Ironbound Road
 Suite 100
 VA 23188
 Tel: (757) 235-4375
 Fax: (757) 235-0046
 Email: info@landmarkdesign.com

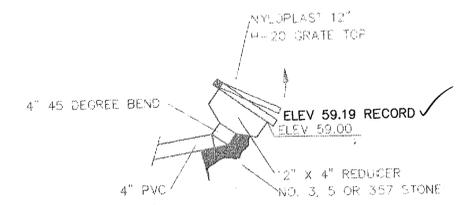
5544 Greenwich Road
 Suite 200
 Virginia Beach, VA 23462
 Tel: (757) 497-3933
 Fax: (757) 497-3933
 Email: info@landmarkdesign.com

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



4" OUTFALL DETAIL
 (NTS)

10-YR 59.24
 100-YR 59.59
 R.O.P.B. 59.24+0.5=59.74
 1. 100-YR 59.59 NOT ACHIEVED.
 2. 10-YR + 0.5' F.B. 59.74 NOT ACHIEVED.
 3. 10-YR 59.24 < 59.0 NOT ACHIEVED.

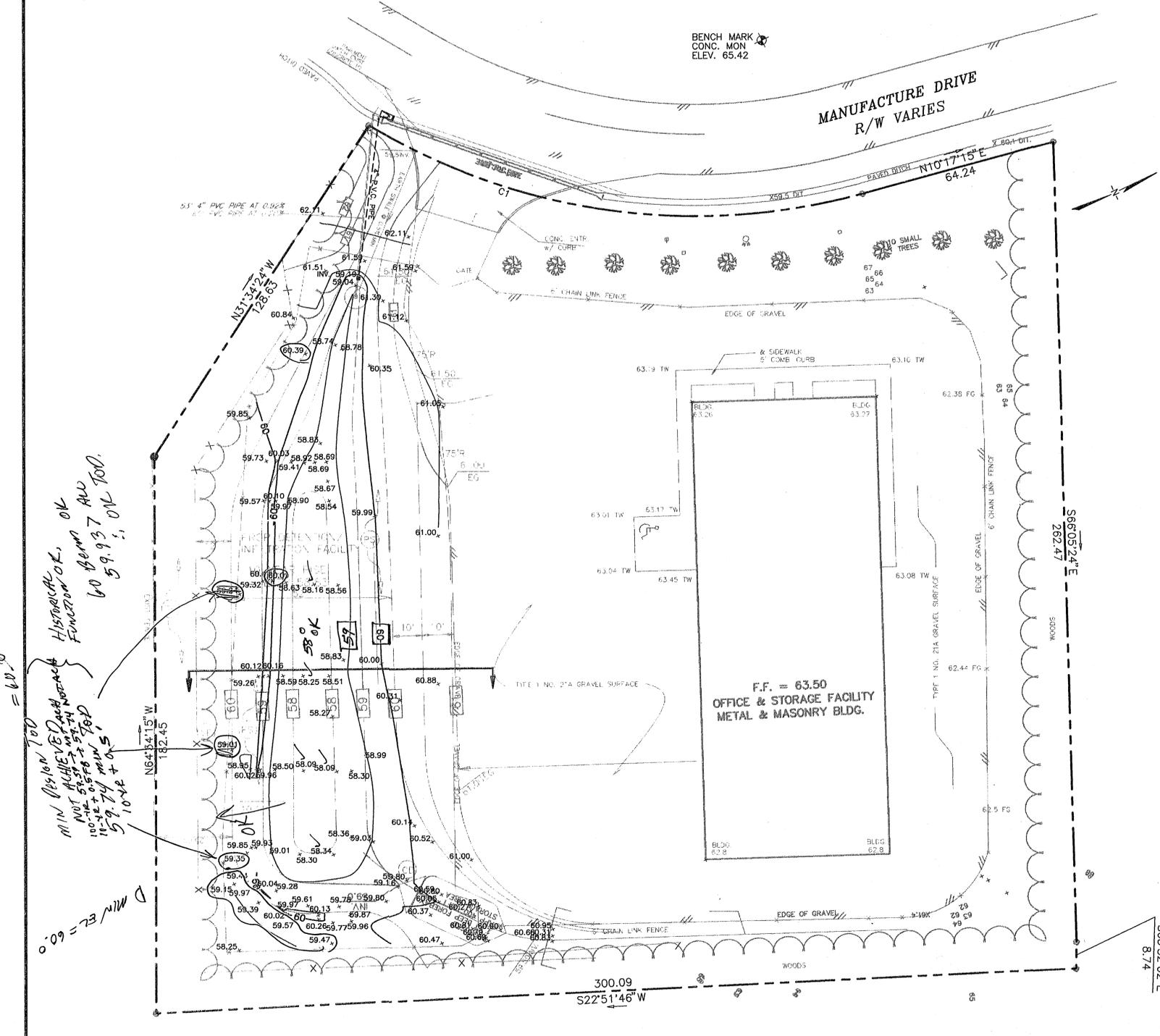


INFILTRATION BASIN CONTROL STRUCTURE
 (NTS)

-NO CC.
 -NO MAINT PLAN.

LEGEND:

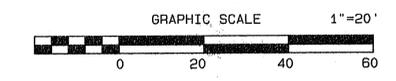
| | |
|------------------------------|--------|
| PROPOSED CONTOURS | |
| RECORD CONTOURS (SEE NOTE 2) | |
| RECORD SPOT GRADES | + 59.9 |



HISTORICAL, OK
 60 BEMD ALL
 59.97, OK TOO.

MIN DESIGN 100
 NOT ACHIEVED DATA
 100-YR + 0.5' F.B. 59.74
 11-YR + 0.5' F.B. 59.74
 5-YR + 0.5' F.B. 59.74
 10-YR + 0.5' F.B. 59.74

MIN/ET = 60.0



- NOTES:
- EXISTING FEATURES SURVEY DATA SUPPLIED BY BRANSCOME, INC. DATED AUGUST, 2001
 - SUPPLEMENTAL TOPOGRAPHY SURVEY 8/14/01 AND AGAIN ON 9/18/01 BY LANDMARK DESIGN GROUP, INC.
 - PROPOSED CONTOURS TAKEN FROM APPROVED SITE PLAN PREPARED BY LANDMARK DESIGN GROUP.
 - BMP ID: SC-COT
 - SITE PLAN JCC CASE # SP-66-99

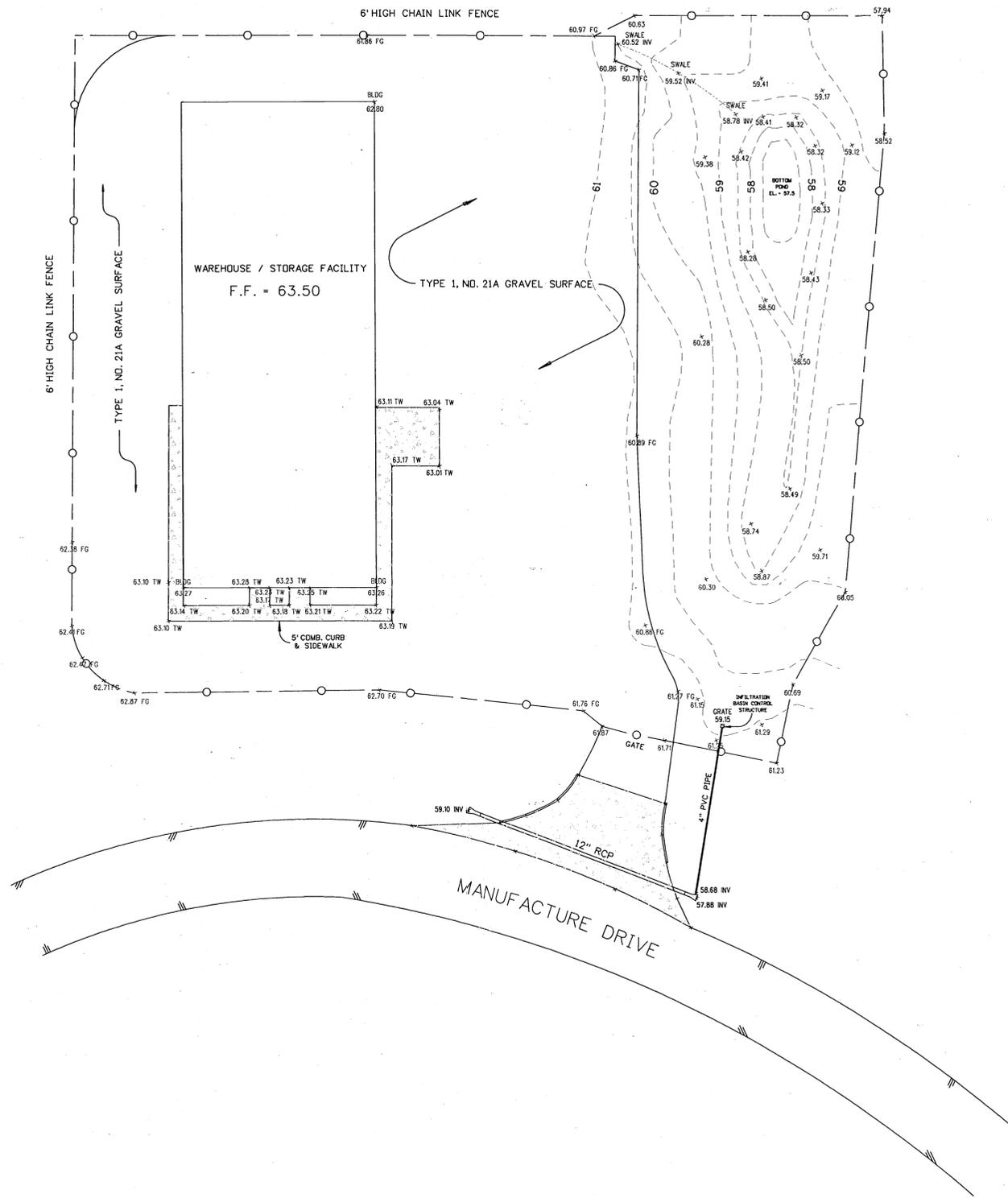
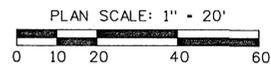
| No. | Date | By | Comment |
|-----|------|----|---------|
| | | | |
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| | | | |

| DRAWING STATUS | INTERIOR REVIEW | CLIENT FOR REVIEW | PRE-APPROVAL BIDDING | COUNTY APPROVAL |
|----------------|-----------------|-------------------|----------------------|-----------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

SWIFFES CREEK INDUSTRIAL PARK
 JAMES CITY COUNTY, VIRGINIA

S.A. SEAMAN CONCRETE CONSTRUCTION CO. INC.
 INFILTRATION POND RECORD DRAWING

| | |
|-----------------|-----------------|
| Designed: | Date: |
| N/A | 10/01/01 |
| Checked: | Scale: |
| S.A.R. | 1" = 20' |
| Drawn: | CADD File name: |
| A.J.R. | 1990084-000.02 |
| Project Number: | Dwg. File No.: |
| 1990084-000.02 | |
| Drawing Number | |
| | |



-VOID-

HENRY S. BRANSCOME, INC.

ASPHALT, CONSTRUCTION MATERIALS, CONTRACTOR
 P.O. DRAWER 260 WILLIAMSBURG, VA 23187
 (757) 229-2504 OFFICE (757) 220-0890 FAX



AS BUILT SITE PLAN FOR

S.A. SEAMAN CONCRETE CONSTRUCTION, INC.

JAMES CITY COUNTY, VIRGINIA

LOT 5 SKIFFES CREEK INDUSTRIAL PARK

DRAWN BY: RMK

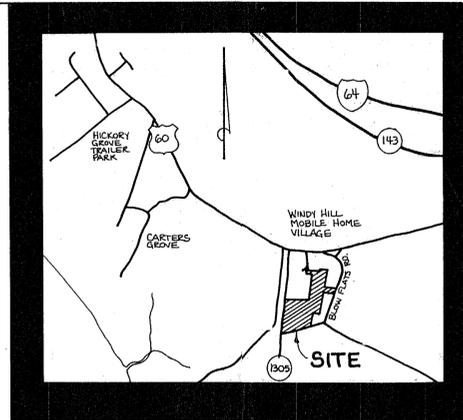
SCALE: 1" = 20'

DATE: 1-19-00

DRAWING NO. 1 OF 1



S-82-97



VICINITY MAP
SCALE: 1" = 2000'

INDEX OF SHEETS

| Sheet No. | Description |
|-----------|------------------------|
| 1 | Cover Sheet |
| 2 | Notes |
| 3 | Road Plan |
| 4 | Road Profile & Details |
| 5 | Road Profile & Details |
| 6 | E & S Control Details |

DEVELOPMENT PLANS

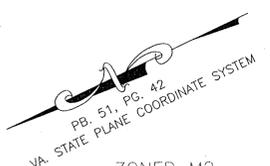
SKIFFES CREEK INDUSTRIAL PARK

Roberts District
James City County, Virginia

SUTTON & JAMES, P.C.
Land Surveying & Civil Engineering

P.O. Box 1596
Gloucester, Va. 23061
PH: (804) 693-4450

SHEET 1 OF 6



ZONED M2
N/F
JOE DALE CUNNINGHAM
&
ELEANOR L. CUNNINGHAM
3,603,195.3738
12,034,438.8186
59-2-1-40

ZONED M2
N/F
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3,603,195.3738
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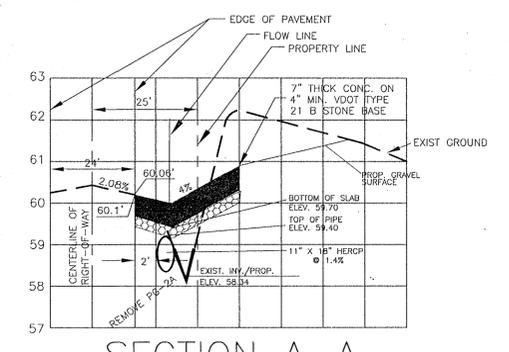
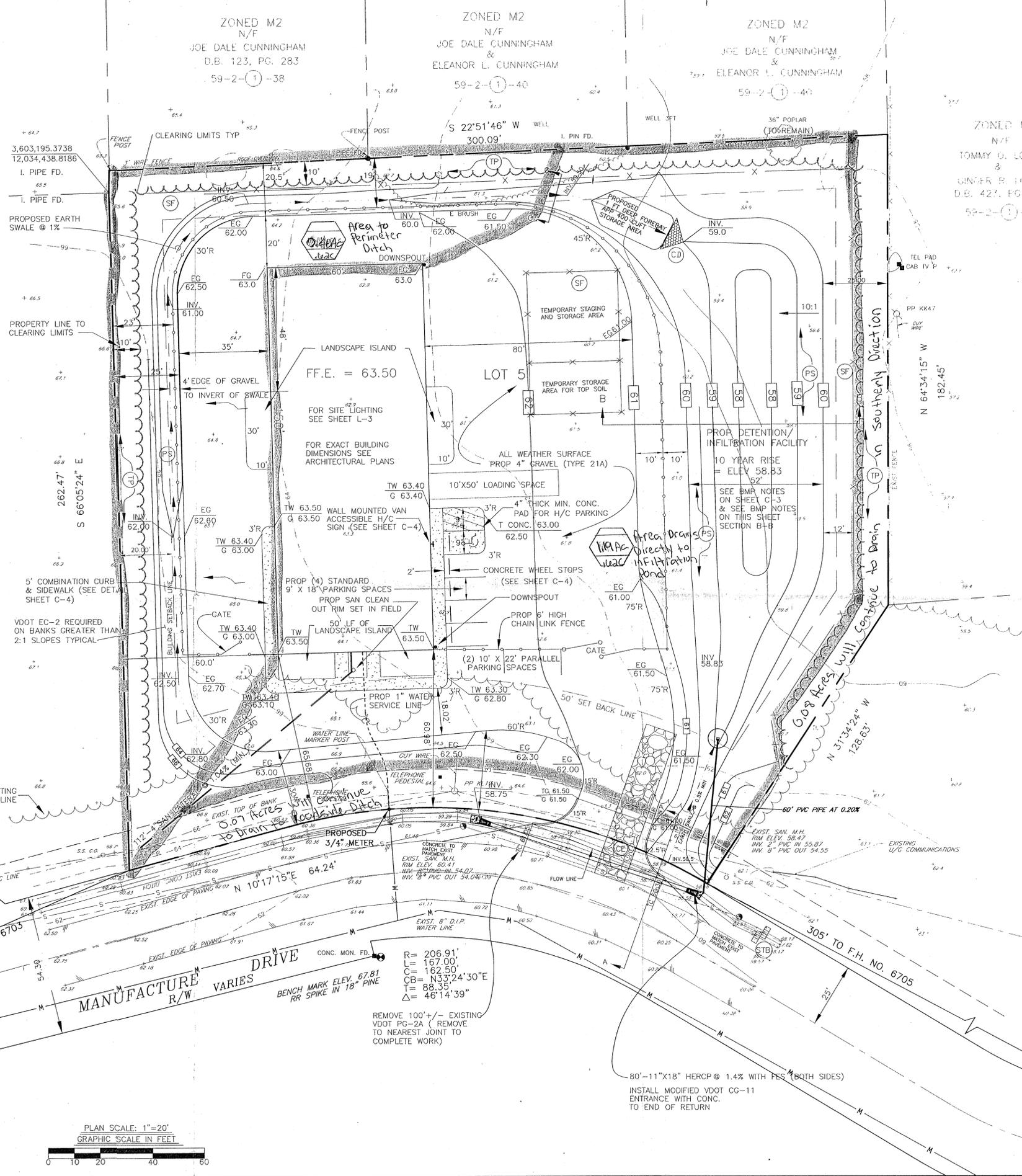
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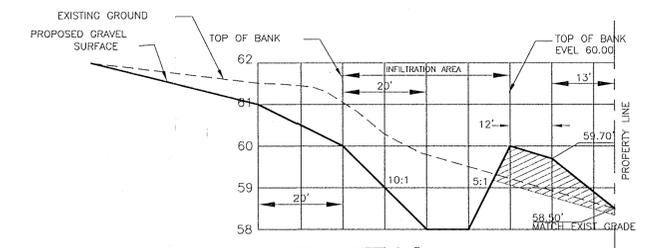
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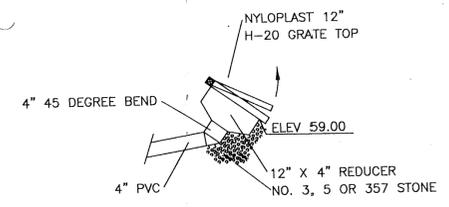


SECTION A-A
(NTS)

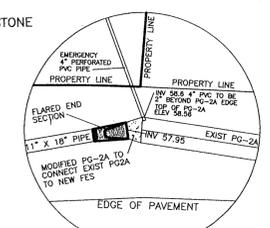


SEE NOTE 19 SHEET C-3
DENUDE AND SCARIFY EXISTING GROUND PRIOR TO INSTALLATION OF
NEW EMBANKMENT. COMPACT EMBANKMENT MATERIAL IN 8" LIFTS
TO OBTAIN AN EMBANKMENT THAT DOES NOT PUMP. INSTALL MATTING
AND SEED TO ACHIEVE A FAST GROWING VEGETATIVE EMBANKMENT

SECTION B-B

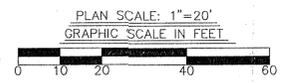


INFILTRATION BASIN
CONTROL STRUCTURE
(NTS)



4\"/>

(NTS)

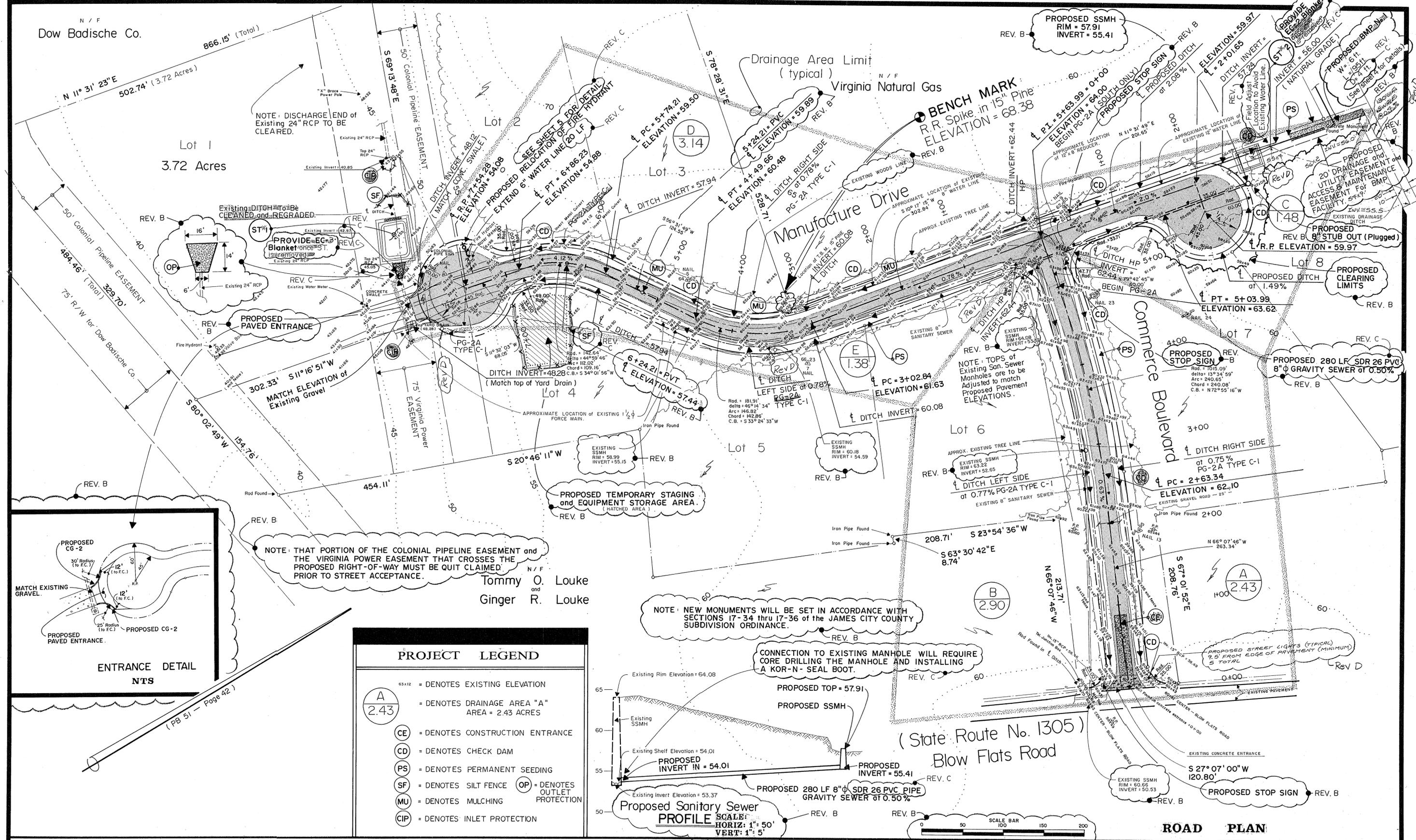


Langley and McDonald, P.C.
Engineers · Surveyors · Planners
Landscape Architects · Environmental Consultants
WILLIAMSBURG
4029 Ironbound Rd., Suite 200
Staff: Greenleaf Road, Suite 100
Williamsburg, VA 23185
Tel: (757) 253-2375
Fax: (757) 229-0049
Email: @langleng.com

| REVISIONS | No. | Date | By | Comment |
|-----------|-----|--------|-----|--------------------------------|
| | 1 | 7/9/99 | MEH | REV PER ACC COMMENTS OF 7/8/99 |

SITE PLAN
LOT 5 SKIFFES CREEK IND PARK
S.A. SEAMAN CONCRETE CONSTRUCTION, INC.
JAMES CITY COUNTY, VIRGINIA

| | |
|------------------------------|------------------------------|
| Designed: MEH | Date: 5/27/99 |
| Checked: SAR | Scale: 1"=20' |
| Drawn: MEH | CADD File name: 19900840001A |
| Project Number: 199008400099 | Dwg. File No.: XXXXX |
| Drawing Number: C-2 | |



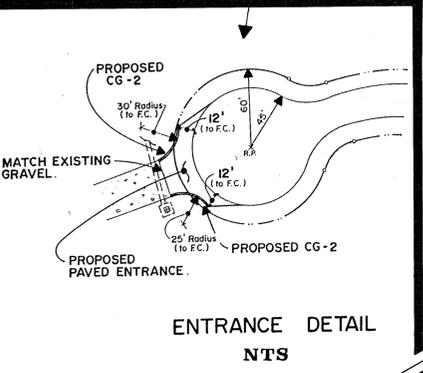
NOTE: DISCHARGE END of Existing 24" RCP TO BE CLEARED.

SEE SHEET 5 FOR DETAIL RELOCATION OF FIRE HYDRANT
EXTEND 6" WATER LINE 20 LF
ELEVATION = 54.88

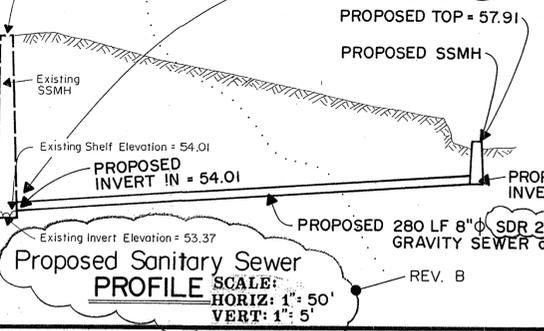
NOTE: THAT PORTION OF THE COLONIAL PIPELINE EASEMENT and THE VIRGINIA POWER EASEMENT THAT CROSSES THE PROPOSED RIGHT-OF-WAY MUST BE QUIT CLAIMED PRIOR TO STREET ACCEPTANCE.

NOTE: NEW MONUMENTS WILL BE SET IN ACCORDANCE WITH SECTIONS 17-34 thru 17-36 of the JAMES CITY COUNTY SUBDIVISION ORDINANCE.

CONNECTION TO EXISTING MANHOLE WILL REQUIRE CORE DRILLING THE MANHOLE AND INSTALLING A KOR-N-SEAL BOOT.



| PROJECT LEGEND | |
|----------------|---|
| 65.12 | = DENOTES EXISTING ELEVATION |
| A 2.43 | = DENOTES DRAINAGE AREA "A" AREA = 2.43 ACRES |
| CE | = DENOTES CONSTRUCTION ENTRANCE |
| CD | = DENOTES CHECK DAM |
| PS | = DENOTES PERMANENT SEEDING |
| SF | = DENOTES SILT FENCE |
| MU | = DENOTES MULCHING |
| CIP | = DENOTES INLET PROTECTION |
| OP | = DENOTES OUTLET PROTECTION |



(State Route No. 1305)
Blow Flats Road



REVISIONS

| NUMBER | DATE | DESCRIPTION |
|--------|----------|---|
| D | 12/22/97 | REVISED TO INCORP ADD'L REVIEW COMMENTS — REISSUED FOR APPROVAL |
| C | 12/8/97 | REVISED TO INCORP ADD'L REVIEW COMMENTS — REISSUED FOR APPROVAL |
| B | 11/14/97 | REVISED TO INCORP COUNTY & VDOT REVIEW COMMENTS — REISSUED FOR APPROVAL |
| A | 9/5/97 | ISSUED FOR APPROVAL |

SUTTON & JAMES, P.C.
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NORMAN L. SUTTON, C.L.S. DONALD G. JAMES, P.E.



| | |
|---------|----------|
| SCALE | 1" = 50' |
| DATE | 9/5/97 |
| JOB NO. | 5523 |

DEVELOPMENT PLANS
Skiffes Creek Industrial Park

Roberts District
James City County, Virginia

CHESAPEAKE BAY PRESERVATION AREA
CALCULATIONS AND NOTES
FOR
ROAD CONSTRUCTION ONLY

SITE STATISTICS: AREA (A) = 11.33 acres
(Area within Drainage Area A thru E)
TOTAL = 11.33 acres

IMPERVIOUS AREA:
Total Imp = 0.78 acre
Total Imp = 1.03 acre
(Note: 0.25 acre of impervious area will be added to Drainage Area C by the construction of the northern end of Manufacture Drive)

PERCENTAGEPRE = 0.78 / 11.33 x 100 = 6.88 %
PERCENTAGEPOST = 1.03 / 11.33 x 100 = 9.09 %

Note: Since percentage of impervious cover is less than 16%, BMP's are not required.

However, since the impervious area is added in Drainage Area C, a calculation for this area should be made:

AREA (A) = 1.48 acres
(Area within Drainage Area C only)
TOTAL = 1.48 acres

IMPERVIOUS AREA:
Total Imp = 0.00 acre
Total Imp = 0.25 acre
(Note: 0.25 acre of impervious area will be added to Drainage Area C by the construction of the northern end of Manufacture Drive)

PERCENTAGEPRE = 0 / 1.48 x 100 = 0 %
PERCENTAGEPOST = 0.25 / 1.48 x 100 = 16.89 %

Note: Since percentage of impervious cover is greater than 16%, BMP's are required.

Calculate the pre-development pollutant load (L_{pre}):
L_{pre} = 0.43 x Acreage of Site (A)
= 0.43 x 1.48 acre (Drainage Area C only)
= 0.64 lbs per year

Calculate the post-development pollutant load (L_{post}):
L_{post} = 2.39 x [(0.05 + (0.009 x f_{imp})] x A
= 2.39 x [(0.05 + (0.009 x 1.7)] x 1.48
= 0.72 lbs per year

Calculate the pollutant removal requirement (RR):
RR = L_{pre} - L_{post}
= 0.64 - 0.54
= 0.08 lbs per year to be removed from site

Overall BMP efficiency required (RR%):
RR% = RR / L_{pre} x 100
= (0.08 / 0.64) x 100
= 11 %

REV. C

No. 1: Drainage Area C:
Type of BMP = Infiltration Trench (1.0 inch of runoff)
65% efficiency
Land draining to the BMP (A) = 1.48 acre
Impervious area of land draining to BMP (I) = 0.25 acre
Percent imperviousness of area =
I/A x 100 = I_{area} = 0.25/1.48 x 100 = 16.89 %
Determine the pollutant load reaching the BMP:
L = 2.39 x [(0.05 + (0.009 x I_{area})] x A
L = 2.39 x [(0.05 + (0.009 x 1.7)] x 1.48
L = 0.72 lbs going to BMP
Determine the pollutant load being removed by the BMP:
L_{removed} = L x BMP efficiency %
L_{removed} = 0.72 x 0.65 = 0.47 lbs

TOTAL POLLUTANTS REMOVED FROM SITE:
BMP NO. 1 = 0.47 lbs
TOTAL_{removed} = 0.47 lbs
TOTAL_{required} = 0.08 lbs

The criteria of the Chesapeake Bay Preservation Act are used and the site as designed is in compliance.

WORKSHEET FOR BMP POINT SYSTEM

STRUCTURAL BMP POINT ALLOCATION:

| BMP | BMP Points | Fraction of Site Served by BMP | Weighted BMP Points |
|-------|------------|--------------------------------|---------------------|
| BMP 1 | 10 | 1.48/1.48 x 100% | 10 |

Calculate the pre-development pollutant load (L_{pre}):
L_{pre} = 0.43 x Acreage of Site (A)
= 0.43 x 1.48 acre (Drainage Area C only)
= 0.64 lbs per year

Calculate the post-development pollutant load (L_{post}):
L_{post} = 2.39 x [(0.05 + (0.009 x f_{imp})] x A
= 2.39 x [(0.05 + (0.009 x 1.7)] x 1.48
= 0.72 lbs per year

Calculate the pollutant removal requirement (RR):
RR = L_{pre} - L_{post}
= 0.64 - 0.54
= 0.08 lbs per year to be removed from site

Overall BMP efficiency required (RR%):
RR% = RR / L_{pre} x 100
= (0.08 / 0.64) x 100
= 11 %

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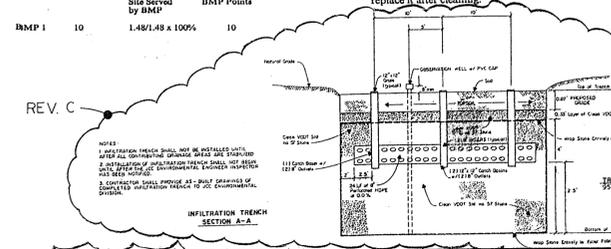
Overall BMP efficiency required (RR%):
RR% = RR / L_{pre} x 100
= (0.08 / 0.64) x 100
= 11 %

REV. C

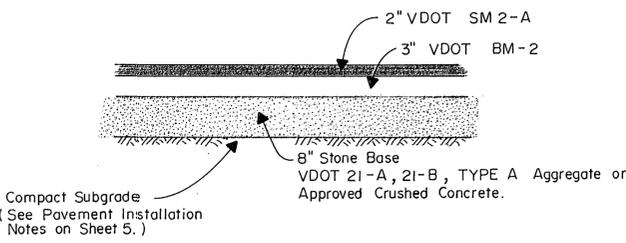
CALCULATE SIZE OF INFILTRATION TRENCHES:
BMP NO. 1:
Impervious Area Draining to BMP = 0.25 acre
Depth of runoff over imp. area = 1.0 inch
Volume of runoff = (0.25 x 43560) x 1.0/12 = 908 cf
Note: Void space in #57 stone is 40 %
Volume of Trench required = Vol of Runoff / 0.40 = 2,270 cf
Configuration of Trench = 6 ft W x 95 ft L x 4 ft D = 2,280 cf

INFILTRATION TRENCH MAINTENANCE SCHEDULE

- The performance of the infiltration trench should be checked after every major storm in the first few months and then annually after that.
- Standing water in the trench after 72 hours may indicate improper functioning of the trench. The cause of the standing water should be investigated. Probable causes are: 1) sediment which may have clogged the trench, 2) clogging of the trench by root mat, or 3) compaction of the stone in the trench.
- Buffer Maintenance: The condition of the grass buffer strip should be inspected annually. Bare spots should be re-seeded to prevent soil erosion from reaching the infiltration trench.
- Tree Pruning: Adjacent trees may need to be trimmed if their drip-line (i.e. the reach of the branches) extends over a surface trench so that tree leaves do not clog the drain.
- If the stone in the trench becomes clogged, it will be necessary to remove the clogged portion of the stone and replace it after cleaning.

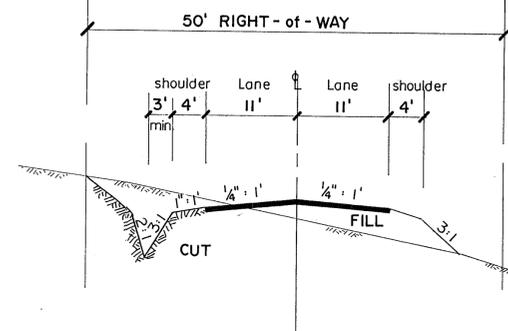


REV. B



PAVEMENT SECTION

NTS



TYPICAL ROADWAY
(Cross Section)

SCALE:
HORIZ: 1" = 10'
VERT: 1" = 2'

ROADWAY PROFILE & DETAILS

REVISIONS

| NUMBER | DATE | DESCRIPTION |
|--------|----------|---|
| D | 12/22/97 | REVISED TO INCORP. ROOT'L. REVIEW COMMENTS — REISSUED FOR APPROVAL. |
| C | 12/8/97 | REVISED TO INCORP. ADD'L. REVIEW COMMENTS — REISSUED FOR APPROVAL. |
| B | 11/14/97 | REVISED TO INCORP. COUNTY & VDOT REVIEW COMMENTS — REISSUED FOR APPROVAL. |
| A | 9/5/97 | ISSUED FOR APPROVAL. |

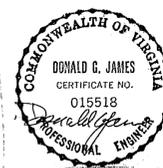
SUTTON & JAMES, P.C.

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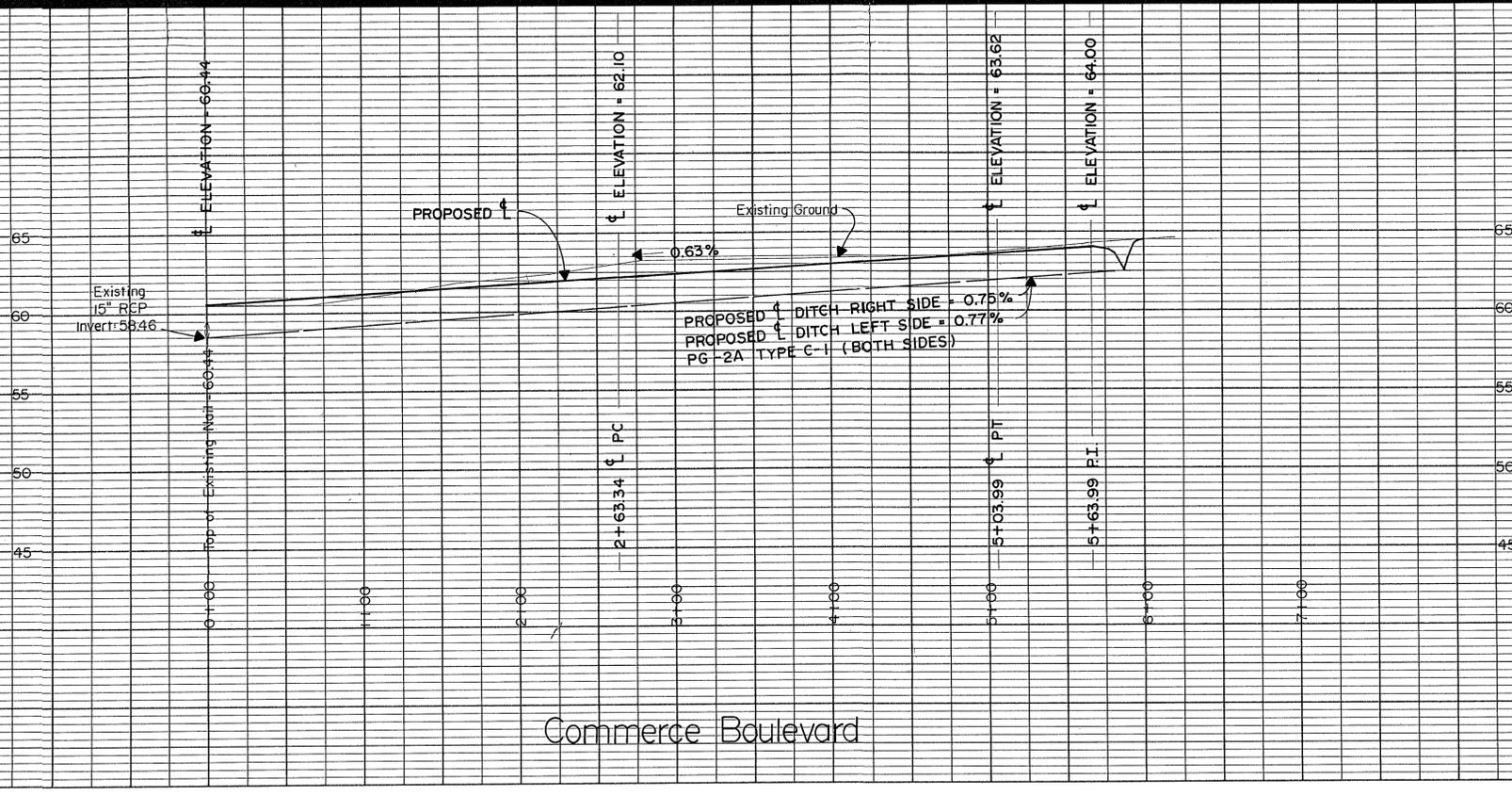


| | |
|---------|------------|
| SCALE | AS NOTED |
| DATE | 9 / 5 / 97 |
| JOB NO. | 5523 |

DEVELOPMENT PLANS
Skiffes Creek Industrial Park

Roberts District
James City County, Virginia

SHEET 4 OF 6



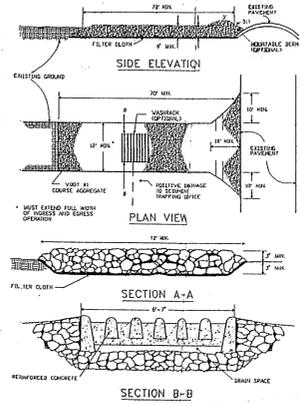
Commerce Boulevard

SCALE:
HORIZ: 1" = 50'
VERT: 1" = 5'

3.02 TEMPORARY STONE CONSTRUCTION ENTRANCE (CE)

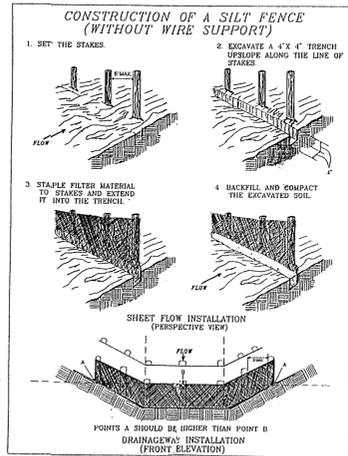
- Temporary construction entrance(s) shall be provided as shown on the drawings. The entrance shall consist of VDOT aggregate No. 1 stone to a depth of 6" and shall be 15' wide x 70' long.
- The area of the entrance must be excavated to a depth of 3 inches and must be cleared of all vegetation, roots, and other objectionable material. The filter fabric underliner will then be placed the full length and width of the entrance.
- Following the installation of the filter fabric, the washrack, if required, will be installed. The filter fabric must conform to the physical properties noted in Table 3.02A.
- The entrance shall be maintained in a condition which will prevent tracking or flow of mud onto public rights-of-way. This may require periodic top dressing with additional stone or the washing and reworking of existing stone as conditions demand. All materials spilled, dropped, washed, or tracked from vehicles onto roadways or into storm drains must be removed immediately. The use of water trucks to remove materials dropped, washed, or tracked onto roadways will not be permitted under any circumstances.

STONE CONSTRUCTION ENTRANCE



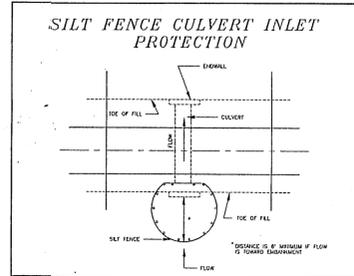
3.05 SILT FENCE (SF)

- Materials shall conform to the requirements of the Virginia Erosion & Control Handbook.
- If wooden stakes are used for silt fence construction, they must have a diameter of 2 inches when oak is used and 4 inches when pine is used. Wooden stakes must have a minimum length of 5 feet.
- If steel posts are used, they must have a minimum weight of 1.33 pounds per linear foot and shall have a minimum length of 5 feet.
- Wire fence reinforcement for silt fences using standard-strength filter cloth shall be a minimum of 14 gauge mesh spacing of 6 inches.
- Installation of the silt fence shall be in accordance with the requirements of the Handbook. The height of a silt fence shall be a minimum of 16 inches above the original ground surface and shall not exceed 34 inches above ground elevation.
- Maintenance**
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.



3.08 CULVERT INLET PROTECTION (CIP)

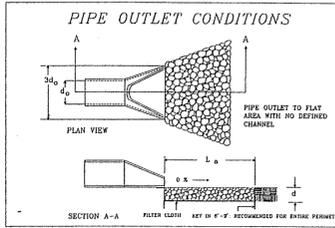
- Silt Fence Culvert Inlet Protection**
The height of the silt fence (in front of the culvert opening) shall be a minimum of 16 inches and shall not exceed 34 inches. Extra strength filter fabric with a maximum spacing of stakes of 3 feet shall be used to construct the measure. The placement of silt fence should be approximately 6 feet from the culvert in the direction of incoming flow, creating a "horseshoe" shape as shown in the detail. If silt fence cannot be installed properly or the flow and/or velocity of flow of the culvert protection is excessive and may breach the structure, the stone combination detailed in the Handbook should be utilized.
- Culvert Inlet Sediment Trap**
Geometry of the design will be a "horseshoe" shape around the culvert inlet as shown in the detail. The toe of the riprap (composing the sediment filter dam) shall be no closer than 24" from the culvert opening in order to provide an acceptable emergency outlet for flows from larger storm events.
- Maintenance**
The structure shall be inspected after each rain and repairs made as needed. Aggregate shall be replaced or cleaned when inspection reveals that clogged voids are causing ponding problems which interfere with on-site construction. Sediment shall be removed and the impoundment restored to its original dimensions when sediment has accumulated to one-half the design depth. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode and cause sedimentation problems. Temporary structures shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.



EROSION & SEDIMENT CONTROL PRACTICES
(Refer to the Virginia Erosion and Sediment Control Handbook, 1992)

3.18 OUTLET PROTECTION (OP)

- To prevent scour at the ends of culverts, riprap outlet protection shall be provided where shown on the drawings. The depth of riprap shall be 1.5 times the maximum stone diameter but not less than 6 inches.



CALCULATIONS FOR OUTLET PROTECTION

OUTFALL AT EXISTING CULVERT

$$d_o = 24" = 2 \text{ ft}$$

$$3d_o = 72" = 6 \text{ ft}$$

$$L_o = 14 \text{ ft (from Plate 3.18)}$$

$$W = d_o + L_o = 16 \text{ ft.}$$

REV. B

3.20 ROCK CHECK DAMS

- The rock check dams are to be constructed in accordance with the requirements of the Virginia Erosion & Sediment Control Handbook. Details are shown on the drawings.
- The rock check dams are to have a maximum height of 3.0 feet. The spacing of the check dams is shown on the drawings.
- The center of the check dam is to be at least 6 inches lower than the outer edges. The base of the check dam should be keyed into the soil approximately 6 inches.
- The maximum spacing between the dams should be such that the toe of the upstream dam is at the same elevation as the top of the downstream dam.
- Maintenance**
Check dams should be checked for sediment accumulation after each run-off producing storm event. Sediment should be removed when it reaches one half of the original height of the measure. Regular inspections should be made to insure that the center of the dam is lower than the edges. Erosion caused by high flows around the edges of the dam should be corrected immediately.

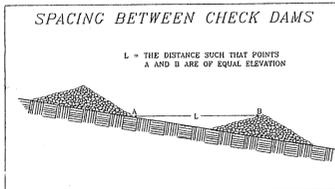
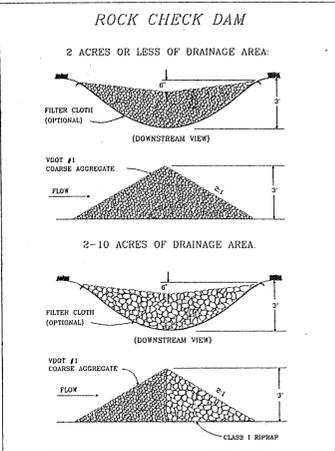


TABLE 3.32-D
SITE SPECIFIC SEEDING MIXTURES FOR COASTAL PLAIN AREA

| Minimum Care Lawn | Total Lbs. Per Acre |
|---|---------------------|
| Commercial or Residential | 175-200 lbs. |
| - Kentucky 31 or Turf-Type Tall Fescue | |
| - Common Bermudagrass ** | 75 lbs. |
| High-Maintenance Lawn | 200-250 lbs. |
| - Kentucky 31 or Turf-Type Tall Fescue | |
| - Hybrid Bermudagrass (secd) ** | 40 lbs. (unhulled) |
| - Hybrid Bermudagrass (by other vegetative establishment method, see Std. & Spec. 3.34) | 20 lbs. (unhulled) |
| General Slope (3:1 or less) | 128 lbs. |
| - Kentucky 31 Fescue | 2 lbs. |
| - Red Top Grass | 20 lbs. |
| - Seasonal Nurse Crop * | 150 lbs. |
| Low Maintenance Slope (Steeper than 3:1) | 93-108 lbs. |
| - Kentucky 31 Tall Fescue | 0-15 lbs. |
| - Common Bermudagrass ** | 2 lbs. |
| - Red Top Grass | 20 lbs. |
| - Seasonal Nurse Crop * | 20 lbs. |
| - Sericea Lespedeza ** | 150 lbs. |

* Use seasonal nurse crop in accordance with seeding dates as stated below:
 February, March through April Annual Rye
 May 1st through August Fallow 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 warmer seeding periods; add 10-20 lbs./acre in mixes.

3.32 PERMANENT SEEDING (PS)

- All slopes, ditches, and other disturbed areas shall be seeded as shown in table 3.32-D.
- The seed bed shall be prepared in accordance with the requirements of the Handbook. A soil test should be performed to determine the requirements for lime and fertilizer. If a soil test is not available, apply according to the following:
 Lime: ground limestone @ 2ton/acre (90lbs/1000sf)
 Fertilizer: 10-20-10 @ 1000 lbs/acre (23 lbs/1000sf)
- Lime and fertilizer shall be incorporated into the upper 4 inches of soil.

3.35 MULCHING (MU)

- Where indicated on the drawings or as directed by the developer, slope protection shall be applied in accordance with the requirements of the VDOT Specification for EC-3.

3.13 TEMPORARY SEDIMENT TRAP (ST)

- The area under the embankment shall be cleared, grubbed, and stripped of any vegetation and root mat.
- Fill material for the embankment shall be free of roots or other woody vegetation, organic material, large stones, and other objectionable material. The embankment should be compacted in 6-inch layers by traversing with construction equipment.
- The earthen embankment shall be seeded with temporary or permanent vegetation immediately after installation.
- Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.
- The structure shall be removed and the area stabilized when the upslope drainage area has been stabilized.
- All cut and fill slopes shall be 2:1 or flatter (except for excavated, wet storage area which may be at a maximum 1:1 grade).
- Maintenance:**
Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to one half the design volume of the wet storage. Sediment removal from the basin shall be deposited in a suitable area and in such a manner that it will not erode and cause sedimentation problems.
Filter stone shall be regularly checked to ensure that filtration performance is maintained. Stone choked with sediment shall be removed and cleaned or replaced.
The structure should be checked regularly to ensure that it is structurally sound and has not been damaged by erosion or construction equipment. The height of the stone outlet should be checked to ensure that its center is at least 1 foot below the of the embankment.

| Sediment Trap No. | Dry Storage | Wet Storage | H | L | W | |
|-------------------|--------------------------|-------------|--------|-----|-------|-----|
| 1 | 1.48 ACRE Drainage Area | 100 CY | 100 CY | 3.0 | 8.6' | 2.5 |
| 2 | 4.52 ACRES Drainage Area | 303 CY | 303 CY | 4.0 | 27.2' | 3.0 |

EROSION & SEDIMENT CONTROL PLAN NARRATIVE

PROJECT DESCRIPTION
The project consists of the construction of the road to serve Skiffes Creek Industrial Park. The site is an existing industrial site with an existing gravel road.

EXISTING SITE CONDITIONS
The existing topography is shown on the drawings. The woods line is shown on the drawing. A limited amount of landing clearing will be required for the project.

ADJACENT AREAS
The site is bounded on the north and east by residential properties and on the south and west by existing industrial sites.

OFF-SITE AREAS
No off-site disposal areas will be required for this project.

SOILS
The existing soils are a fine sandy loam to a clay loam, sandy clay loam. The soils are mapped as unit numbers 1, 19B, 29B and 37 according to the Soil Survey for James City County prepared by the Soil Conservation Service.

CRITICAL AREAS
The critical areas are identified on the E & S Plan. Stormwater conveyance channels consisting of ditches with silt fence barriers or storm sewer pipes with outlet protection will serve as the outfall ditches. The control measures to be employed are detailed on the drawings.

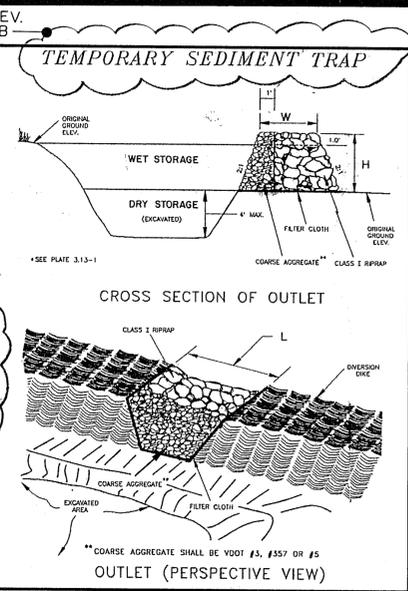
EROSION & SEDIMENT CONTROL MEASURES
The proposed control methods are as shown on the drawings.

PERMANENT STABILIZATION
The permanent measures consist of final grading, seeding, etc. as shown on the plan.

STORM WATER MANAGEMENT CONSIDERATIONS
The storm water management measures will be installed as shown on the drawings.

MAINTENANCE
The maintenance of the erosion control measures is to be carried out by the contractor in accordance with the E & S Control Handbook and as further detailed on the drawings.

CALCULATIONS
The drainage calculations are included in the submittal to the County.



E & S Control DETAILS

REVISIONS

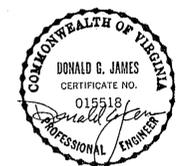
| NUMBER | DATE | DESCRIPTION |
|--------|----------|--|
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| A | 9/5/97 | ISSUED FOR APPROVAL |

SUTTON & JAMES, P.C.
Land Surveying & Civil Engineering

P.O. Box 1596
Gloucester, Va. 23061
PH: (804) 693-4450

NORMAN L. SUTTON, C.L.S.

DONALD G. JAMES, P.E.



| | |
|---------|------------|
| SCALE | AS NOTED |
| DATE | 9 / 5 / 97 |
| JOB NO. | 5523 |

DEVELOPMENT PLANS
Skiffes Creek Industrial Park
Roberts District
James City County, Virginia

SHEET 6 OF 6

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

1. All erosion and sediment control measures shall be installed and maintained in accordance with the "Virginia Erosion and Sediment Control Handbook." The contractor shall be thoroughly familiar with all applicable measures contained therein which may be pertinent to this project.
2. All points of construction ingress and egress shall be protected by a temporary construction entrance to prevent tracking of mud onto public right-of-ways. An entrance permit from VDOT is required prior to any construction activities within State right-of-ways. Where sediment is transported onto a public road surface, the road shall be thoroughly cleaned at the end of each day.
3. A preconstruction meeting shall be held on site between the County, the Developer, the Project Engineer, 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 Contractor will supply the Environmental Division with the name of the individual who will be responsible for ensuring maintenance of installed measures on a daily basis.
4. Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment on-site must be constructed as a first step in grading and be made functional before upslope land disturbance takes place. Earthen structures such as dams, dikes, and diversions must be seeded and mulched immediately after installation. Periodic inspections of the erosion control measures shall be made to assess their condition. Any necessary maintenance of the measures shall be accomplished immediately upon notification by the County and shall include the repair of measures damaged by any subcontractor including those of the public utility companies.
5. Surface flows over cut and fill slopes shall be controlled by either redirecting flows from transversing the slopes or by installing mechanical devices to safely lower water downslope without causing erosion. A temporary fill diversion (Std. & Spec. 3.10) shall be installed prior to the end of each working day.
6. Sediment control measures may require minor field adjustments at time of construction to insure their intended purpose is accomplished. Environmental Division approval will be required for other deviations from the approved plans.
7. The contractor shall place soil stockpiles at the locations shown on this plan or as directed by the engineer. Soil stockpiles shall be stabilized or protected with sediment trapping measures. 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.
8. The contractor shall complete drainage facilities within 30 days following completion of rough grading at any point within the project. The installation of drainage facilities shall take precedence over all underground utilities. Outfall ditches from drainage structures shall be stabilized immediately after construction of same. This includes installation of erosion control stone or paved ditches where required. Any drainage outfalls required for a street must be completed before street grading or utility installation begins.
9. Permanent or temporary soil stabilization must be applied to all denuded areas within 7 days after final grade is reached on any portion of the site. Soil stabilization must also be applied to denuded areas which may not be at final grade but will remain dormant (undisturbed) for longer than 30 days. Soil stabilization measures include vegetative establishment, mulching and the early application of gravel base material on areas to be paved.
10. No more than 300 feet of sanitary sewer, storm sewer, waterlines, or underground utility lines are to be open at one time. Following installation of any portion of these items, all disturbed areas are to be immediately stabilized (i.e., the same day).
11. If disturbed area stabilization is to be accomplished during the months of December, January, or February, stabilization shall consist of mulching in accordance with Specification 3.35. Seeding will then take place as soon as the season permits.
12. The term Seeding, Final Vegetative Cover or Stabilization, on this plan shall mean the successful germination and establishment of a stable grass cover from a properly prepared seedbed containing the specified amounts of seed, lime, and fertilizer in accordance with Specification 3.32, Permanent Seeding. Irrigation shall be required as necessary to ensure establishment of grass cover.
13. All slopes steeper than 3:1 shall require the use of erosion control blankets such as excelsior blankets to aid in the establishment of a vegetative cover. Installation shall be in accordance with Specification 3.35, Mulching and Manufacturer's Instructions. No slopes shall be created steeper than 2:1.
14. Inlet protection in accordance with Specification 3.07 shall be provided for all storm drain inlets as soon as practical following construction of same.
15. Temporary liners, such as polyethylene sheets, shall be provided for all paved ditches until the permanent concrete liner is installed.
16. Paved ditches shall be required wherever erosion is evident. Particular attention shall be paid to those areas where grades exceed 3 percent.
17. Temporary erosion control measures are not to be removed until all disturbed areas are stabilized. After stabilization is complete, all measures shall be removed within 30 days. Trapped sediment shall be spread and seeded.
18. As-built drawings must be provided for all detention/BMP facilities. Also upon completion, the construction of all detention/BMP facilities shall be certified by a professional engineer who inspected the structure during construction. The certification shall state that to the best of his/her judgment, knowledge, and belief, the structure was constructed in accordance with the approval plans and specifications.

2480c.wpf

39. All new utilities shall be placed underground in accordance with Section 17-33 of the James City County Subdivision Ordinance.
40. All roadside ditches shown as paved on plans are to be paved in accordance with the standard typical section as shown on the plans, unless otherwise directed by the resident engineer, in writing. Any additional paving of the ditches other than those shown on the road plans will be determined prior to acceptance of the roads into the VDOT secondary road system.
41. All existing roadway materials must conform to this plan. If these materials are found inadequate or unacceptable to VDOT, they shall be removed and replaced.
42. Curb and gutter shall have 4" aggregate base 21B under the curb and gutter and aggregate shall extend 1' beyond the back of curb.
43. All curb and gutter shall have a standard gutter entrance in accordance with VDOT standards.
44. A streetlight plan will be required in accordance with Section 17-64 of the Subdivision Ordinance. The subdivider shall install streetlights at locations designated by the Division of Code Compliance.
45. Meters to be installed by the individual lot owners as the lots are developed. Existing meters are to remain.

REV. C

1. A Land Disturbing Permit and Siltation Agreement, with surety, are required for this project.
2. Water and sewer inspection fees must be paid prior to issuance of a Land Disturbing Permit.
3. A streetlight plan for commercial road lighting must be submitted and surety for the installation must be completed prior to the recordation of the plat.
4. An Inspection/Maintenance agreement shall be executed with the County for the BMP facilities for this project.
5. The infiltration trenches are not to be constructed until all disturbed drainage areas have been stabilized.
6. BMP's as shown will treat the runoff from the roads only. As the lots are developed, the individual lot owners will be responsible for installing BMP's to meet the county's Chesapeake Bay criteria.

OWNER:
Virginia Trusses, Inc.
1574 Penniman Road
Williamsburg, VA 23185

Ph: 253-8787

PROPERTY REFERENCES:

DB 731 Page 593
PB 51 Page 42
TAX MAP NUMBER
(59-2) (01-0-0029-C)

1. Bench Mark locations are shown on the drawings. Datum is based on previous Site Plan by AES, P.C.
2. Not all underground and overhead utilities are shown. Contractor is responsible for protection of any encountered. Prior to start of construction, contractor shall notify owners of all utilities (Virginia Power, Bell Atlantic, etc.) of proposed construction so that they may locate and safeguard their facilities. Also, the contractor shall contact Miss Utility (at 1-800-522-7001) 72 hours prior to start of construction. Contractor shall verify the location of all existing utilities prior to commencing excavation. Verification shall consist of exposing the utility by excavation and establishing the exact horizontal and vertical location. Any damage to existing utilities shall be repaired at the contractor's expense. Contractor shall notify owner and engineer of all conditions and conflicts in utility locations, or inconsistencies which are noted so that resolution may be coordinated and recorded.
3. Contractor shall obtain all necessary permits prior to start of construction. Contractor shall be responsible for obtaining all necessary permits from VDOT for work within VDOT right-of-way.
4. All work shall be performed in accordance with current VDOT "Road and Bridge Specifications", and current VDOT "Road and Bridge Standards" and VDOT Aggregate Compaction Manual, unless otherwise noted. Copies of tests and/or letters of certification shall be supplied to VDOT by the contractor.
5. Driveway entrance pipes to be 15" diameter R.C.P., Class III. It is the developer/owner responsibility to insure that all 15" dia., 32' length RCP driveway culverts are installed properly and proper drainage is maintained. One driveway pipe is to be provided for each lot. Final location is to be coordinated with the Owner.
6. Rights-of-ways for road and drainage shall be dedicated for public use.
7. The contractor shall be responsible for any construction stake-out that may be required for this contract.
8. Contractor shall do such overlot grading required to preclude ponding of water next to roadway.
9. Bituminous surface is to be applied between April 1st and November 1st; any changes are to be approved by the Resident Engineer.
10. The State Highway and Transportation Commission and the Commonwealth of Virginia shall at all times be indemnified and saved harmless from responsibility, damage, or liability arising from the exercise of the privileges granted in the approval.
11. It is the responsibility of the contractor to clear the specified right-of-way width and whatever additional width necessary to construct ditches to the specified slope. The drainage and utility easements are provided for this purpose.
12. Prior to any construction, the contractor shall consult the Engineer and verify the approval of the plans by the various agencies.
13. The contractor shall verify the elevations of all points of connection or proposed work to existing curbs, sanitary lines, water lines, etc. prior to construction.
14. When soils occur that are unsuitable for foundations, subgrades, or other roadway purposes, the contractor shall be required to excavate such material below the grade shown on the plans. The areas so excavated shall be backfilled with suitable material and compacted in accordance with VDOT Specifications. The contractor shall immediately inform the Engineer upon discovery of the unsuitable material. Concurrence of the developer shall be obtained before additional on-site work is undertaken.
15. All storm sewer pipe shall be reinforced tongue and groove concrete pipe in accordance with ASTM-C-76 or alternative pipe that has been approved on the plans. Pipe within the right of way shall be a minimum CL-111 or greater in accordance with VDOT Standards 107.05 and Specifications 232 and 302.
16. Temporary drainage during construction is to be provided by the contractor to relieve areas that may cause damage to roadways or adjacent property.

17. All concrete shall be Class A3-AE (air entrained 3,000 psi).
18. All entrances are to be built in accordance with VDOT Standards.
19. The contractor is responsible for furnishing and installing STOP signs at street intersections. Location to be coordinated with VDOT.
20. Design or specified material changes from the approved plans are to be submitted, by letter, to VDOT for approval by the Resident Engineer.
21. The contractor/sub-contractor shall have a current copy of VDOT's "Road and Bridge Specifications" and "Road and Bridge Standards" on the project.
22. VDOT is to receive written notification from the contractor 48 hours prior to the start of any work.
23. All utility pedestals, cabinets, fire hydrants, and street lights shall be located a minimum of 9.5 feet from the edge of pavement adjacent to the right of way on curb and gutter streets and/or located behind the ditch line on open ditch streets. Pedestals and cabinets should be located at the property lines between lots. Where required, fire hydrant crossings shall have a minimum of 15" RCP or larger, as warranted in open roadside ditches and have 8' length.
24. All storm sewer pipes, drop inlets, and curb inlets shall be cleaned of debris and eroded material during last stages of construction.
25. The contractor shall be responsible for replacing, with matching materials, any pavement, driveways, walks, curbs, etc. that must be cut or that are damaged during construction.
26. Any errors, conflicts, or discrepancies in this plan shall be reported to the Engineer for resolution before proceeding with the work.
27. Compaction reports, with proctor, are required for subgrade, subbase, base, surface course, culverts, drainage structures, and utilities within the right of way by a certified materials testing lab in accordance with VDOT Specifications and Standards.
28. Installation of pipe/culverts, storm sewers, and drainage structures shall have bedding material in accordance with VDOT Specifications and Standards. Backfill shall be suitable material free of debris, tree roots, and excess moisture, and shall be compacted.
29. VDOT and County approval of subdivision road plans does not preclude the right to add additional facilities. The owner is to be notified by the contractor prior to start of work on any such added facilities.
30. VDOT approval of these plans will expire three years from the date of approval.
31. Clearing and grubbing shall be complete within the right-of-ways and easements as shown on the plan.
32. The subgrade must be approved by VDOT prior to the placement of base.
33. Base must be approved by VDOT for depth, template, and compaction before surface is applied.
34. All utilities are to be in place prior to laying base material.
35. Paved ditches may be required where field conditions warrant. Generally, all ditches with slopes exceeding 3% or 1% or less shall be paved unless otherwise approved by the engineer, owner, VDOT, and the local governing authority.
36. All vegetation and overburden shall be removed from shoulder to shoulder prior to the condition of the subbase.
37. Certification and source of materials are to be submitted to VDOT of all materials and be in accordance with the "Road and Bridge Specifications" and "Road and Bridge Standards".
38. **EROSION & SEDIMENT CONTROL RESPONSIBILITY:**
The Contractor shall be responsible for the implementation of the Erosion & Sediment Control Plan and for all maintenance of the E & S Control Measures required during construction.

SPECIAL NOTES

1. Lot 8 shall not have access to Pocahontas Trail through the 60' R/W shown on the Subdivision Plat.
2. Lots 6 and 7 shall not have entrances on Blow Flats Road.
3. Lots 1 and 4 shall not have access to the 75' R/W for Dow Badische Co. shown on the Subdivision Plat.

NOTES

REVISIONS

| NUMBER | DATE | DESCRIPTION |
|--------|----------|--|
| D | 12/22/97 | REVISED TO INCORP ADD'L. REVIEW COMMENTS — REISSUED FOR APPROVAL |
| C | 12/18/97 | REVISED TO INCORP ADD'L. REVIEW COMMENTS — REISSUED FOR APPROVAL. |
| B | 11/14/97 | REVISED TO INCORP COUNTY & VDOT REVIEW COMMENTS — REISSUED FOR APPROVAL. |
| A | 9/15/97 | ISSUED FOR APPROVAL |

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NORMAN L. SUTTON, C.L.S.

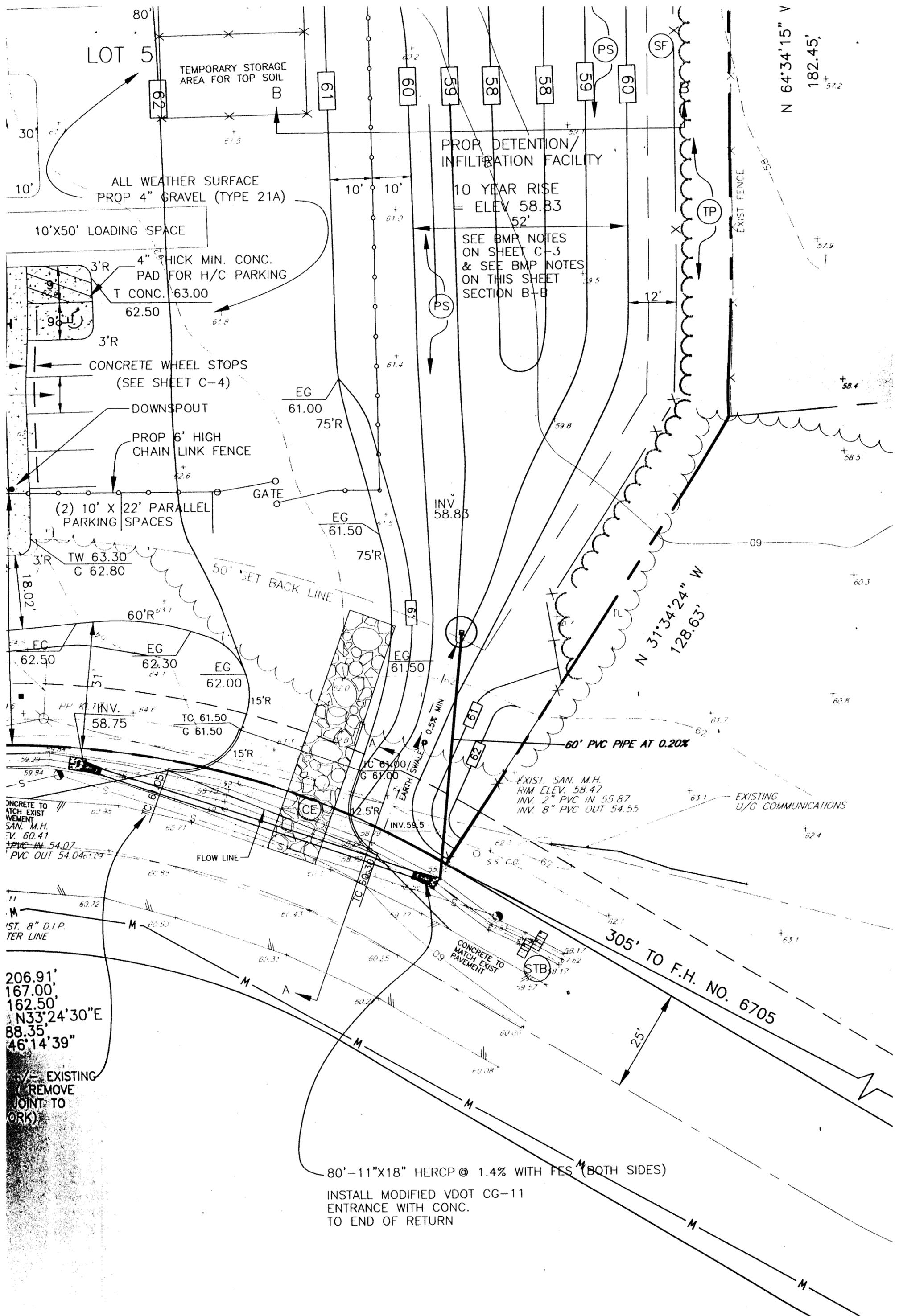
DONALD G. JAMES, P.E.



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| DATE | 9 / 5 / 97 |
| JOB NO. | 5523 |

DEVELOPMENT PLANS
Skiffes Creek Industrial Park
Roberts District
James City County, Virginia

SHEET 2 OF 6



LOT 5

TEMPORARY STORAGE AREA FOR TOP SOIL

PROP DETENTION/INFILTRATION FACILITY

10 YEAR RISE = ELEV 58.83

ALL WEATHER SURFACE PROP 4" GRAVEL (TYPE 21A)

10'X50' LOADING SPACE

4" THICK MIN. CONC. PAD FOR H/C PARKING

SEE BMP NOTES ON SHEET C-3 & SEE BMP NOTES ON THIS SHEET SECTION B-B

CONCRETE WHEEL STOPS (SEE SHEET C-4)

DOWNSPOUT

PROP 6' HIGH CHAIN LINK FENCE

(2) 10' X 22' PARALLEL PARKING SPACES

PS

INV 58.83

EG 61.00

EG 61.50

TW 63.30
G 62.80

50' SET BACK LINE

60'R

EG 62.50

EG 62.30

EG 62.00

15'R

TC 61.50
G 61.50

15'R

PP INV. 58.75

TC 61.00
G 61.00

12.5'R

INV. 59.5

60' PVC PIPE AT 0.20%

EXIST. SAN. M.H. RIM ELEV. 58.47
INV. 2" PVC IN 55.87
INV. 8" PVC OUT 54.55

EXISTING U/G COMMUNICATIONS

CONCRETE TO MATCH EXIST. SAN. M.H. INV. 60.41
PVC IN 54.07
PVC OUT 54.04

FLOW LINE

1" D.I.P. CENTER LINE

305' TO F.H. NO. 6705

206.91'
167.00'
162.50'
N33°24'30"E
88.35'
46°14'39"

EXISTING REMOVE JOINT TO WORK

80'-11"X18" HERCP @ 1.4% WITH FES (BOTH SIDES)

INSTALL MODIFIED VDOT CG-11 ENTRANCE WITH CONC. TO END OF RETURN

N 64°34'15" V
182.45'

59-2-(1)-40

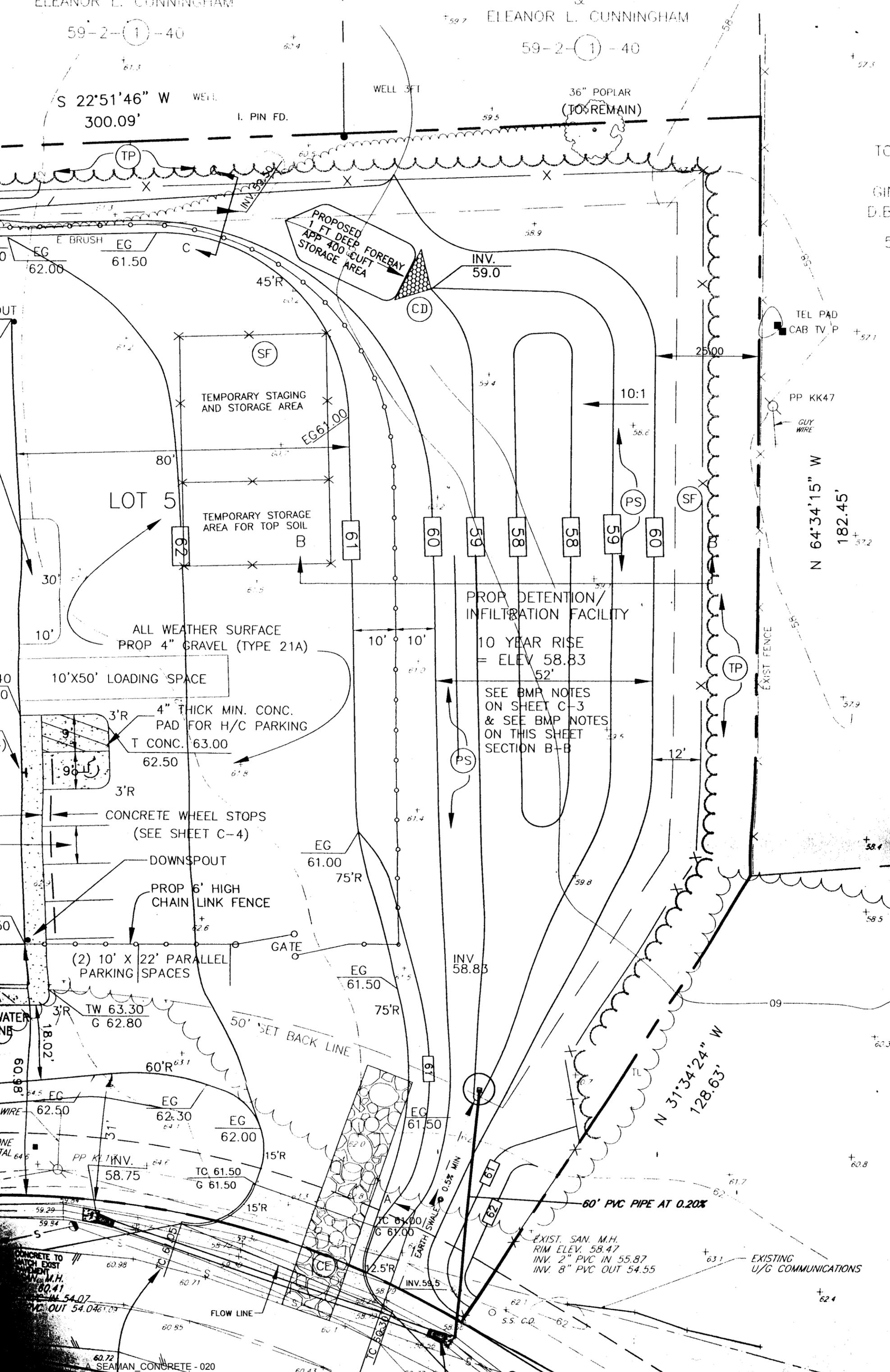
59-2-(1)-40

S 22°51'46" W
300.09'

I. PIN FD.

WELL 3FT

36" POPLAR
(TO REMAIN)



TO
GIN
D.B.
5

TEL PAD
CAB TV P +57.1

PP KK47
GUY WIRE

N 64°34'15" W
182.45'

PROP DETENTION/
INFILTRATION FACILITY

10 YEAR RISE
= ELEV 58.83

SEE BMP NOTES
ON SHEET C-3
& SEE BMP NOTES
ON THIS SHEET
SECTION B-B

ALL WEATHER SURFACE
PROP 4" GRAVEL (TYPE 21A)

10'X50' LOADING SPACE

4" THICK MIN. CONC.
PAD FOR H/C PARKING
T CONC. 63.00

CONCRETE WHEEL STOPS
(SEE SHEET C-4)

PROP 6' HIGH
CHAIN LINK FENCE

(2) 10' X 22' PARALLEL
PARKING SPACES

WATER NE
18.02'

WIRE
62.50

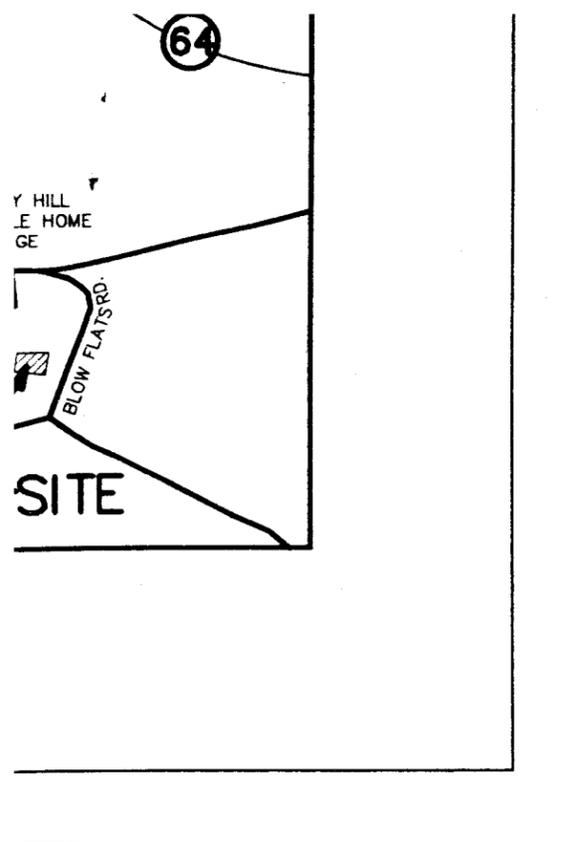
ONE
TAL 64.6

CONCRETE TO
MATCH EXIST
SAN. M.H.
60.41
IN 54.07
OUT 54.04

SEAMAN CONCRETE - 020

EXISTING
U/G COMMUNICATIONS

+62.4



LAND USE SUMMARY TABLE

| | |
|----------------------------|---|
| TAX MAP AND PARCEL | 59-2- 5-5 |
| SITE ADDRESS | 1584 MANUFACTURE DRIVE |
| SITE ZONED | M2 |
| USE CATEGORY | WAREHOUSE/ STORAGE FACILITY |
| TOTAL AREA OF SITE | 1.74 AC. 75,794 SF |
| TOTAL AREA OF DISTURBANCE | 1.34 AC. 58,370 SF |
| HEIGHT OF PROP. BLDG. | 19' (ONE STORY) 40' ALLOWABLE |
| PROPOSED BUILDING AREA | 9000 SF 11.9% |
| OFFICE | 2200 SF |
| RESTROOM | 300 SF |
| WAREHOUSE | 6500 SF |
| IMPERVIOUS AREA (PROPOSED) | .90 AC. 39,204 SF 51.7% |
| OPEN AREA (PROVIDED) | .84 AC. 36,590 SF 48.3% |
| PARKING SPACES REQ'D | 4 (1 SPC/ 2 PERSONS MAX. SHIFT PLUS 1 VAN ACCESSIBLE H/C) |
| NO. PERSON'S IN MAX SHIFT | 6 |
| PARKING SPACES PROVIDED | 6 STANDARD |
| LOADING SPACES REQ'D | 1 |
| LOADING SPACES PROVIDED | 1 (10'X50') |

SP-66-99

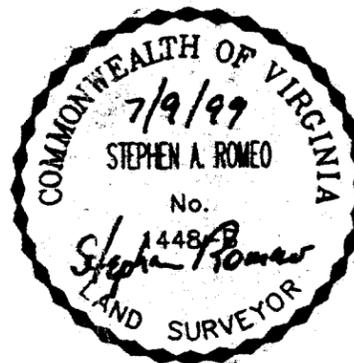
SCALE : 1"=2000'

REFUSE TO BE DISPOSED OF BY OWNER, OFFSITE IN A LAWFUL MANNER
 PROPERTY IS LOCATED WITHIN FLOOD ZONE X AS SHOWN ON FEMA MAP
 PANEL NUMBER 510201 0060B DATED FEB. 6, 1991.
 THIS PROPERTY IS LOCATED IN THE ROBERTS VOTING DISTRICT

McDonald, P.C.

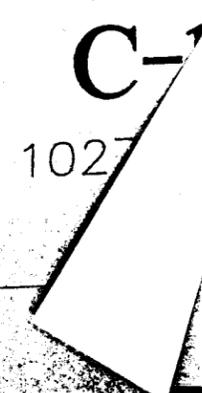
Surveyors – Planners
 – Environmental Consultants

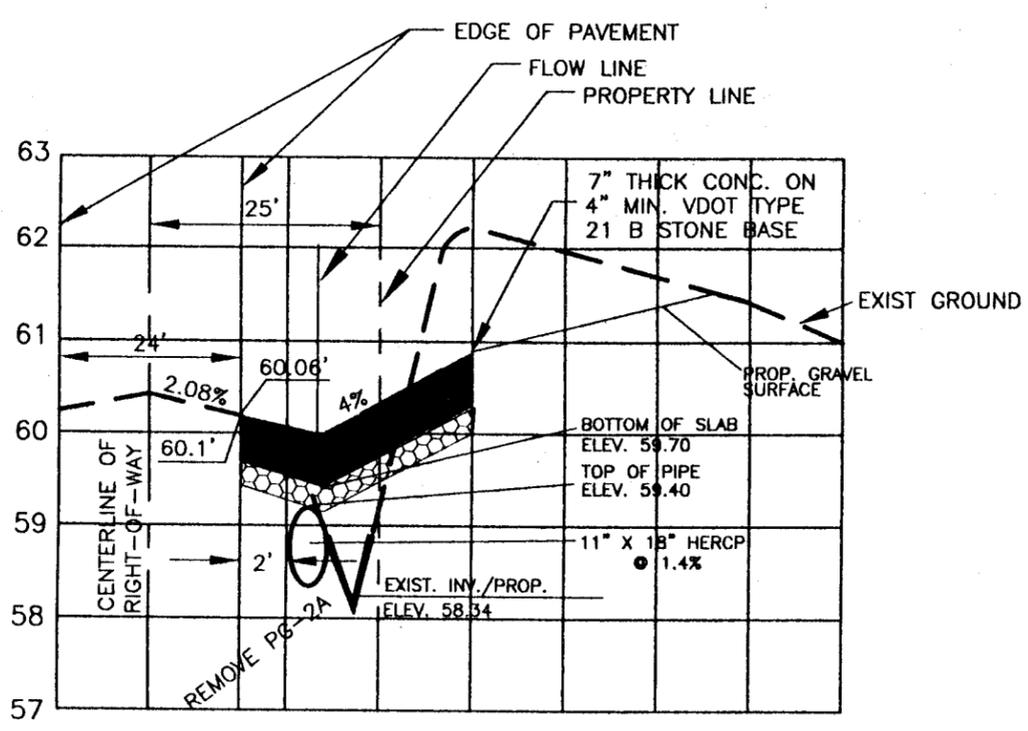
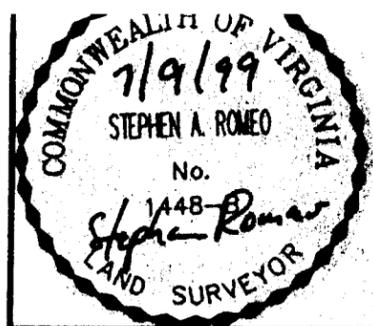
WILLIAMSBURG



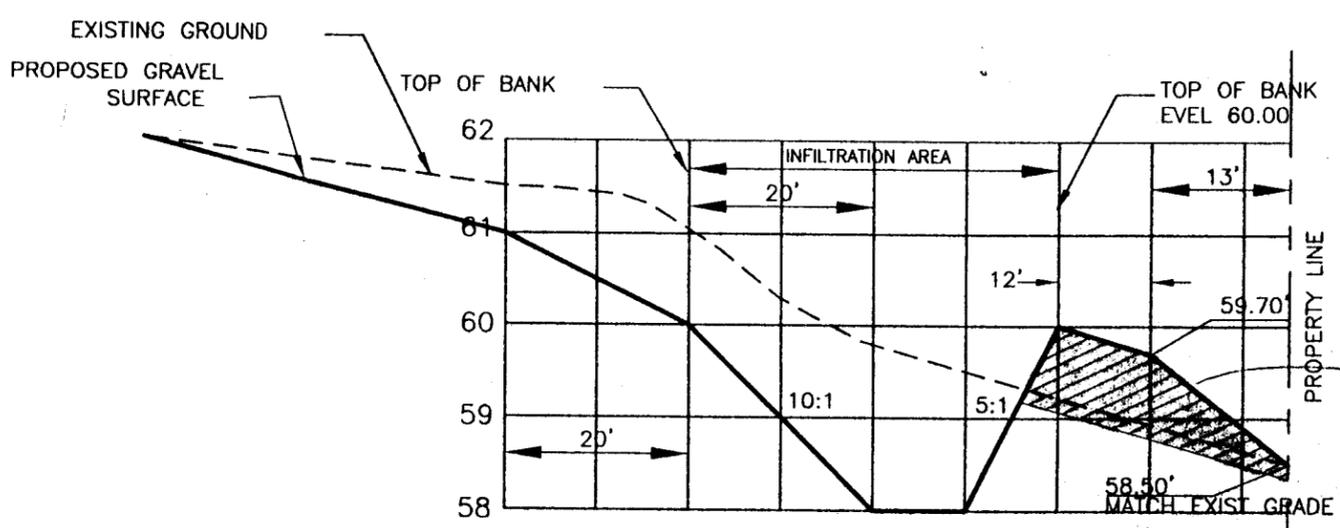
COUNTY OF JAMES CITY
FINAL SITE PLAN

| APPROVALS | DATE |
|---------------------------|----------------|
| Fire Dept. <u>RMKMS</u> | <u>7-21-99</u> |
| Health Dept. _____ | _____ |
| VDOT <u>REB/CMS</u> | <u>6-9-99</u> |
| Planning <u>Am</u> | <u>7/28/99</u> |
| Environ <u>DEC</u> | <u>7/23/99</u> |
| Zoning Adm. <u>Am</u> | <u>7/29/99</u> |
| JCSA <u>DWP/CMS</u> | <u>7-9-99</u> |
| County Eng. <u>WB/CMS</u> | <u>6-10-99</u> |
| REA _____ | _____ |
| Other _____ | _____ |



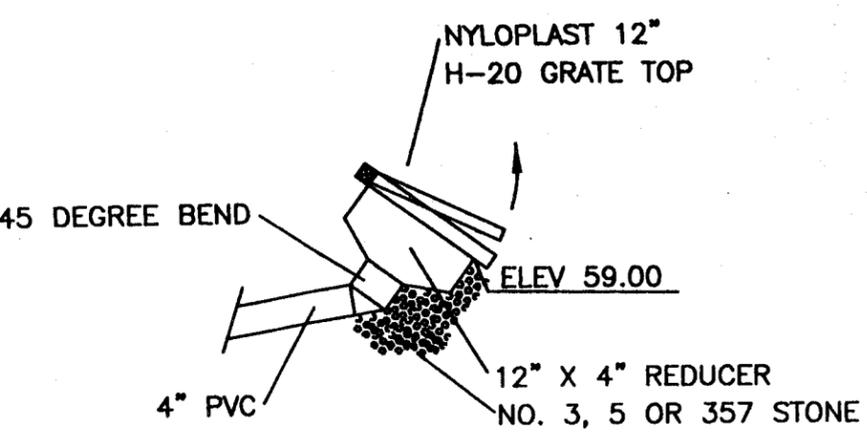


SECTION A-A
(NTS)

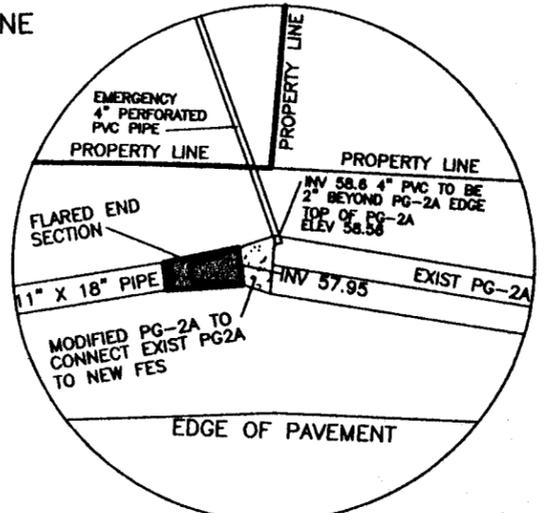


SEE NOTE 19 SHEET C-3
 DENUDE AND SCARIFY EXISTING GROUND PRIOR TO INSTALLATION OF
 NEW EMBANKMENT. COMPACT EMBANKMENT MATERIAL IN 8" LIFTS
 TO OBTAIN AN EMBANKMENT THAT DOES NOT PUMP. INSTALL MATTING
 AND SEED TO ACHIEVE A FAST GROWING VEGETATIVE EMBANKMENT

SECTION B-B



INFILTRATION BASIN
CONTROL STRUCTURE
(NTS)

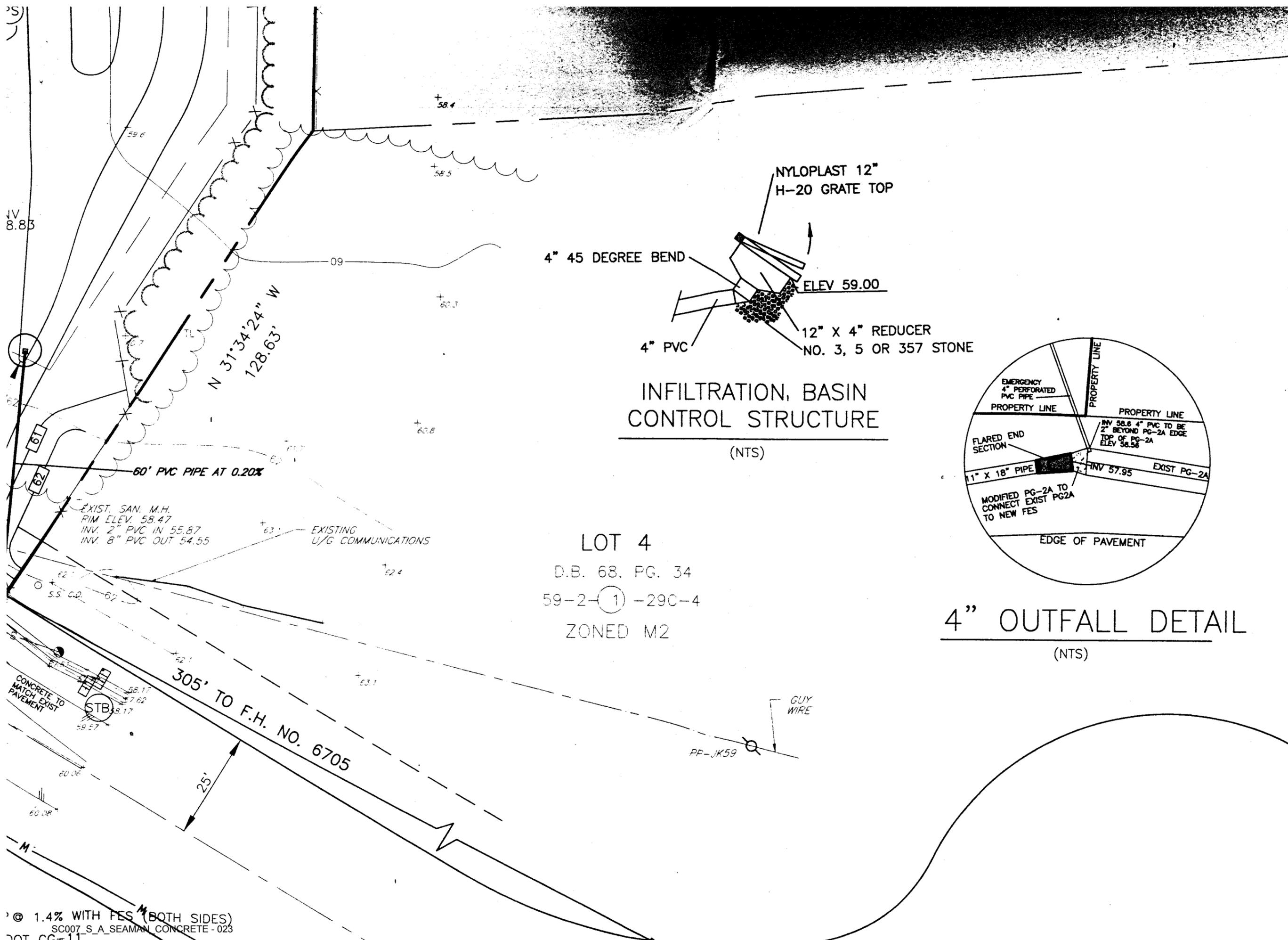


Langley and McDonald, P.C.
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 Landscape Architects · Environmental Consultants
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 Tel. (757) 473-2000
 Fax (757) 497-7933
 Email: langleyng.com

| REVISIONS: | |
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| No. | Date |
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LAN
BEK IND PARK
CONSTRUCTION, INC.
 Y, VIRGINIA



| REVISION | No. | Date | Compl |
|----------|-----|--------|-------------------|
| | | 7/9/99 | REV PER JCC COMME |

| DRAWING STATUS | INTEROFFICE REVIEW | CLIENT FOR REVIEW | PRE APPROVAL BIDDING | NOTE | COUNTY APPROVAL |
|----------------|--------------------|-------------------|----------------------|------|-----------------|
| | | | | | |
| | | | | | 1st Submittal |
| | | | | | 2nd Submittal |
| | | | | | 3rd Submittal |

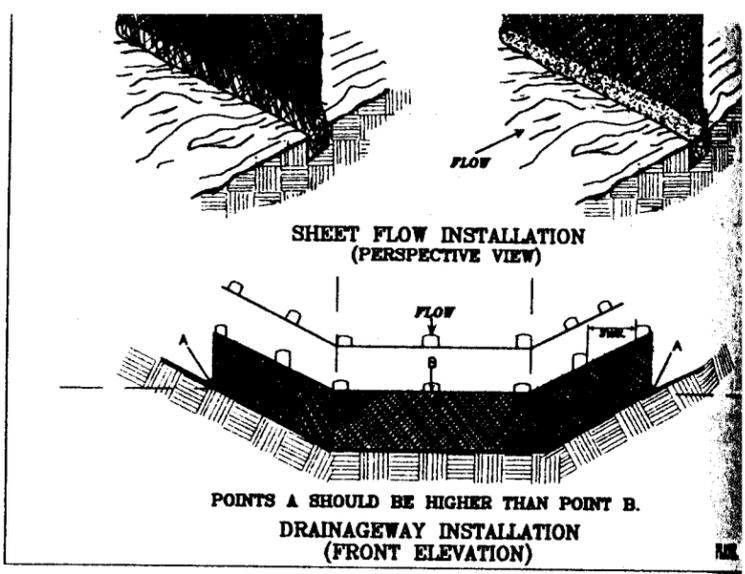
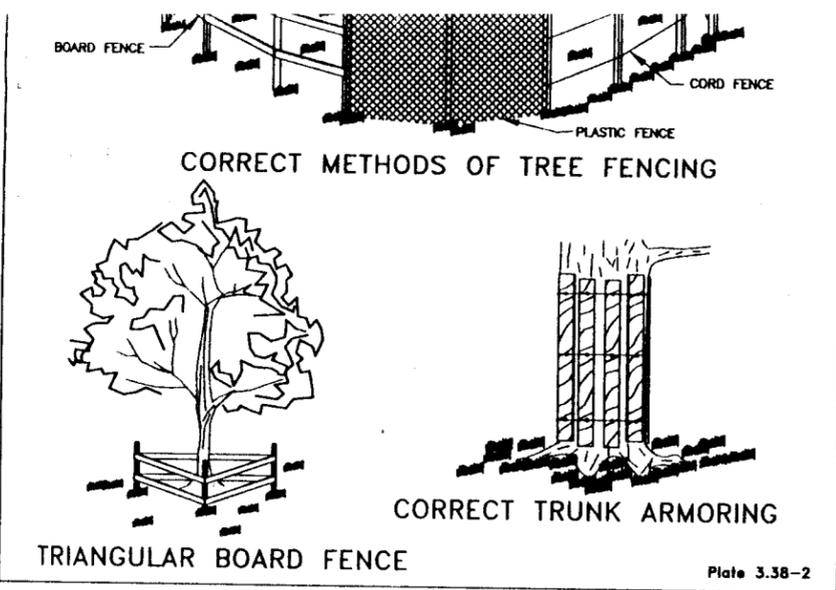
SITE PLAN

LOT 5 SKIFFES CREEK IND PARK

S.A. SEAMAN CONCRETE CONSTRUCTION, INC.

JAMES CITY COUNTY VIRGINIA

| | | | |
|-----------|-----|--------|---------|
| Designed: | MEH | Date: | 5/27/99 |
| Checked: | CAD | Scale: | 1"=20' |



IMPACT THE
RIER

PLATE. 3.04-1

Plate 3.38-2

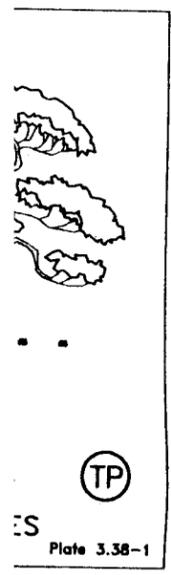


Plate 3.38-1

BMP CONSTRUCTION & MAINTENANCE NOTES

- A. THE INFILTRATION BMP INSTALLATION MUST BE DELAYED UNTIL AFTER THE SITE HAS BEEN STABILIZED AND APPROVAL GIVEN BY THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION.
- B. THE BASIN SHALL BE EXCAVATED USING LIGHT EARTH MOVING EQUIPMENT WITH TRACKS OR OVER SIZED TIRES. THE USE OF BULLDOZERS AND FRONT END LOADERS IS NOT ALLOWED. THE BASIN SHALL BE CONSTRUCTED WITHOUT PUTTING HEAVY EQUIPMENT ON THE FLOOR OF THE BASIN AT THE POINT WHERE TWO FEET REMAIN TO BE EXCAVATED FROM THE BASIN FLOOR.
- C. THE FLOOR OF THE BASIN SHALL BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW. SEVERAL PASSES WITH A LEVELING DRAG SHALL THEN BE MADE TO SMOOTH THE BASIN FLOOR. (REQUIRED IN 2' CUT AREAS)
- D. THE BASIN SHALL BE IMMEDIATELY STABILIZED WITH SEED AND MULCH IMMEDIATELY AFTER CONSTRUCTION. THE USE OF LOW MAINTENANCE, RAPID GERMINATING GRASSES SUCH, AS FESCUES SHALL BE USED.
- E. SIDE-SLOPES, BOTTOM AND SURROUNDING AREA SHALL BE MOWED FREQUENTLY TO DISCOURAGE WOODY GROWTH, CONTROL WEEDS AND MAINTAIN APPEARANCE.
- F. INFILTRATION FACILITY SHALL BE INSPECTED MONTHLY AND/OR AFTER EACH HEAVY RAIN EVENT TO ENSURE THAT IT OPERATES IN THE MANNER INTENDED. INSPECT FOR SILTATION & DEBRIS COLLECTION BUILD-UP.
- G. REMOVAL AND DISPOSAL OF SILTATION AND DEBRIS SHALL BE MANAGED IN A LAWFUL MANNER.

CONSTRUCTION SEQUENCING

1. INSTALL SILT FENCE AND/OR STRAW BALE BARRIERS IN EXISTING DITCH AS REQUIRED BY COUNTY INSPECTORS.
2. INSTALL TEMPORARY CONSTRUCTION ENTRANCE AND SILT FENCE AROUND THE SITE.
3. INSTALL INFILTRATION BASIN EMBANKMENT ON SOUTHERN SIDE OF FACILITY. EMBANKMENT WILL SERVE AS A TEMPORARY DIVERSION DIKE DURING CONSTRUCTION.
4. INSTALL SEDIMENT TRAP (FOREBAY).
5. CLEAR & GRUB SITE (SEE BMP NOTES ABOVE).
6. ROUGH-GRADE THE PARKING LOT. (REMOVE SOILS THAT PUMP EXCESSIVELY AND REPLACE WITH SELECT FILL. SELECT FILL SHOULD HAVE A CBR VALUE OF 20 MINIMUM).
7. INSTALL UNDERGROUND UTILITIES. (SEE FILL NOTES FOR UTILITY TRENCHES THIS SHEET).
8. INSTALL PROPOSED DITCH. SEED, MULCH & INSTALL A SOIL RETENTION MATT ON SLOPES STEEPER THAN 3:1 TO ESTABLISH A VEGETATIVE COVER AS QUICKLY AS POSSIBLE
9. IF TEMPORARY STOCKPILES ARE USED, THE CONTRACTOR SHALL INSTALL SILT FENCE AT THE BASE TO PREVENT SEDIMENT RUNOFF. STOCKPILES SHALL NOT BE PLACED WITHIN ANY EASEMENT, OR BETWEEN THE RIGHT-OF-WAY AND THE BUILDING SETBACK LINE.
10. PLACE BASE STONE. (4" MINIMUM).
11. CONSTRUCT BUILDING AND SIDEWALK.
12. REPAIR ANY INADVERTENT ERODED AREA AND REMOVE ANY INADVERTENT SEDIMENTATION.
13. DRESS AND OVERSEED ALL DISTURBED AREAS AS NECESSARY TO EFFECT PERMANENT VEGETATIVE COVER.
14. ADDITIONAL STONE MAY BE REQUIRED TO ESTABLISH AN ADEQUATE TRAVELWAY. (RECOMMENDED: REMOVE SUBGRADE MATERIALS THAT PUMP EXCESSIVELY AND ADD AN ADDITIONAL 2" TO 4" OF STONE FOR A TOTAL OF 6' TO 8" OF STONE.).
15. CONSTRUCT PERMANENT ENTRANCE AS PROPOSED ON PLAN SHEET.
16. REMOVE REMAINING TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WITHIN THE THIRTY DAYS AFTER FINAL SITE STABILIZATION.

AREAS UNDER PARKING
INCHES, TO THE SAME
ION.
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5).

| #200 SIEVE |
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| 25 |
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MAX PLASTIC LIMIT

| |
|---|
| 9 |
| 9 |

MUST HAVE A VALUE OF
RING RATIO TEST FOR
83.

SCHEDULE RATE PER ACRE

| FERTILIZER | LIME | HAY OR WHEAT STRAW MULCH |
|------------|-------|--------------------------|
| N 10-10-10 | 1 TON | 1 1/2 TON - 2 TON |
| N 10-10-10 | 1 TON | 1 1/2 TON - 2 TON |

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 14. INLET
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 15. TEMPOR
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**SITE PLAN FOR LOT 5
SKIFFES CREEK INDUSTRIAL PARK
DRAINAGE NARRATIVE**

**PREPARED BY
Langley and McDonald, P.C.**

May 21, 1999



SP-66-99; SC 007

Langley and McDonald, P.C.

Engineers
Surveyors
Planners
Landscape Architects
Environmental Consultants

5544 Greenwich Road, Virginia Beach VA 23462
(757) 473-2000 Fax (757) 497-7933
4029 Ironbound Road, Suite 100, Williamsburg, VA 23188
(757) 253-2975 Fax (757) 229-0049

SITE PLAN FOR LOT 5 SKIFFES CREEK INDUSTRIAL PARK DRAINAGE NARRATIVE

Existing Site Conditions

The referenced site is light to moderately wooded. Tree species are about 50 percent pine and 50 percent hardwood and most trees are under 6" caliper. There is some excess fill material at the northwestern corner of the property. This material is spoils from construction of Manufacture Drive. The developer informed me the material is to be removed from the site. The site slopes from elevation 66 at the northwestern corner (front left) to elevation 58 at the southeastern corner (right rear) at a 2% plus grade. There is an existing concrete drainage ditch that runs parallel with the front property line. Please note the flow line of the existing ditch does not allow for an adequate outfall for this site. Elevations in the southeastern corner of the property are approximately the same as the invert of the ditch at the southwestern corner (front left). The invert of the ditch at the southwestern corner is 58.01. A regional BMP is not in place for this site.

NEW INFILTRATION BASIN

Improvements for Permanent Quantity and Quality Measures

The site will be cleared with the exception of approximately a 15' green strip around the perimeter of the site. An infiltration basin will be constructed on the southern side of the site. It will be shaped and sized vertically and horizontally to minimize disturbance to existing wooded areas and substrata soils while taking advantage of the superior infiltration rates of the insitu soils. A newly constructed berm will be the limits of the southern side of the basin. The berm material will be generated from cuts of higher elevations on the northern side of the site. Once in place the soils for the berm will be stabilized with a rapid growth vegetative grass. It is recommended that the developer be prepared to use soil retention matting for slope stabilization if high rates of erosion become apparent. However I do not believe this will be necessary because the proposed bank slopes are 10:1. An outfall pipe is not needed for the proposed infiltration system because soil infiltration rates exceed the stormwater runoff storage rates required. Additionally it is not possible to install an outfall pipe that is adequate, has enough cover and large enough to keep it from becoming a rats nest or inoperable due to debris buildup. Nevertheless we propose to cut in a swale that both inhibits runoff from entering the site to the south of Parcel 5 and functions as an emergency outfall for storms in excess of the 10year storm. While the basin size appears to be rather conservative as far as water quality measures and runoff storage volume it actually is a design that requires minimal construction effort and more important it has the appearance of a natural fit. The basin will draw down within 24 hours due to the infiltration rates of the existing soils. Please refer to perk test data provided by Schnabel Engineering attached herewith. Please note that the basin calculations provided consider an impervious area greater than that currently proposed. This conservative approach considers maximum build out in the event of a future 60 percent impervious area.

Langley & McDonald
4029 Ironbound Rd.
Williamsburg, Va. 23188
phone 757-253-2975

Date: 5/10/99

Design of system is based on James City County BMP Point system where 10 points is required

System C (2): Design 9 = 10 points Infiltration Basin provided
10 points may be attributed to this design as long as 100 % of site drains to system.

| | | | | |
|---|------|----------------|----------------|----------------------------------|
| inches per impervious acre (water quality rain rate) | 1 | 0.083 inches | | |
| impervious acres proposed (design is for 60% impervious) | 1.04 | 45302.40 sq ft | 3775 cf | Required water quality volume |

Infiltration Pond 100% of site drains to pond

Pond storage Calculations

| Elev (ft.) | surface area sq ft | Stage storage in cubic feet | total storage | |
|--------------|-----------------------|--------------------------------|---------------|--|
| 57.75 | 1688 | 0 | 0 | |
| 58.00 | 2513 | 525 | 525 | |
| 58.25 | 3344 | 732 | 1257 | |
| 58.50 | 4204 | 944 | 2201 | |
| 58.75 | 5115 | 1165 | 3366 | |
| 58.83 | 5525 | 410 | 3775 | Storage required for water quality |
| 59.00 | 6457 | 1036 | 4812 | |
| 59.24 | 7400 | 1641 | 6453 | Storage required for the 10 year storm |
| 59.25 | 7535 | 98 | 6551 | |
| 59.50 | 8662 | 2025 | 8576 | |
| 59.59 | 9212 | 803 | 9379 | Storage required for the 100 year storm |
| 59.75 | 9900 | 2320 | 11699 | |
| 60.00 | 11330 | 2654 | 14353 | |
| 60.25 | 20000 | -900738 | -886385 | |

WEIGHTED C COMPUTATION

| | | | |
|-----------------|------|-------|----------|
| TOTAL SITE AREA | 1.74 | ACRES | 75794 SF |
| IMPERVIOUS AREA | 1.04 | ACRES | 45302 SF |
| GREEN AREA | 0.70 | ACRES | 30492 |

C COEFFICIENT

| | |
|------------|------|
| IMPERVIOUS | 0.90 |
| GRASS | 0.20 |

CALCULATED COMPOSITE C **0.62**

Course "C" Method for small detention facilities

Project; SA Seaman Concrete Construction Inc.
 Owner: Steve Seaman
 Date May 20, 1999

JOB No. 1990084-000.01 Project Engineer Mel Hopkins

| | | | | |
|------------|-------|-------------|-------|------|
| AREA | 1.74 | TIME CONC | 12.00 | 4.17 |
| Exist'g C | 0.20 | ALLOW DISCH | 1.45 | |
| Exist'g Tc | 25.00 | RUNOFF COEF | 0.62 | |

| | | | |
|----|--------|------|---------|
| a= | 201.52 | qo= | 1.45 |
| b= | 23.38 | Tcr= | 54.70 |
| | | Icr= | 2.58 |
| | | Qo= | 2.78 |
| | | V= | 6452.79 |

Parameters for a and b

| | | |
|----------------|---------------|--------------|
| Norfolk | a | b |
| 2 year | 142.00 | 20.32 |
| 5 year | 173.80 | 22.70 |
| 10 year | 201.52 | 23.38 |
| 100 year | 300.62 | 26.54 |

Req'd Storage

6453 CU FT.

aller Method

| TD (MIN) | RAIN RATE (IN/HR) | VOLUME IN (CU. FT.) | VOLUME OUT (CU. FT.) | STORAGE (CU. FT.) |
|-------------|----------------------|------------------------|-------------------------|----------------------|
| 10 | 6.04 | 5066.82 | 1217.61 | 3849.21 |
| 11 | 5.86 | 5297.86 | 1261.10 | 4036.76 |
| 12 | 5.70 | 5515.84 | 1304.58 | 4211.26 |
| 13 | 5.54 | 5721.84 | 1348.07 | 4373.77 |
| 14 | 5.39 | 5916.81 | 1391.56 | 4525.26 |
| 15 | 5.25 | 6101.63 | 1435.04 | 4666.59 |
| 16 | 5.12 | 6277.06 | 1478.53 | 4798.53 |
| 17 | 4.99 | 6443.80 | 1522.01 | 4921.79 |
| 18 | 4.87 | 6602.48 | 1565.50 | 5036.98 |
| 19 | 4.76 | 6753.67 | 1608.99 | 5144.69 |
| 20 | 4.65 | 6897.90 | 1652.47 | 5245.42 |
| 21 | 4.54 | 7035.62 | 1695.96 | 5339.66 |
| 22 | 4.44 | 7167.27 | 1739.44 | 5427.83 |
| 23 | 4.34 | 7293.25 | 1782.93 | 5510.32 |
| 24 | 4.25 | 7413.91 | 1826.42 | 5587.49 |
| 25 | 4.17 | 7529.58 | 1869.90 | 5659.67 |
| 26 | 4.08 | 7640.56 | 1913.39 | 5727.17 |
| 27 | 4.00 | 7747.14 | 1956.87 | 5790.27 |
| 28 | 3.92 | 7849.57 | 2000.36 | 5849.21 |

| | | | | |
|----|------|----------|---------|---------|
| 29 | 3.85 | 7948.09 | 2043.85 | 5904.24 |
| 30 | 3.78 | 8042.92 | 2087.33 | 5955.59 |
| 31 | 3.71 | 8134.26 | 2130.82 | 6003.44 |
| 32 | 3.64 | 8222.30 | 2174.31 | 6048.00 |
| 33 | 3.57 | 8307.22 | 2217.79 | 6089.43 |
| 34 | 3.51 | 8389.18 | 2261.28 | 6127.90 |
| 35 | 3.45 | 8468.33 | 2304.76 | 6163.57 |
| 36 | 3.39 | 8544.82 | 2348.25 | 6196.57 |
| 37 | 3.34 | 8618.77 | 2391.74 | 6227.03 |
| 38 | 3.28 | 8690.31 | 2435.22 | 6255.09 |
| 39 | 3.23 | 8759.56 | 2478.71 | 6280.85 |
| 40 | 3.18 | 8826.62 | 2522.19 | 6304.43 |
| 41 | 3.13 | 8891.60 | 2565.68 | 6325.92 |
| 42 | 3.08 | 8954.59 | 2609.17 | 6345.43 |
| 43 | 3.04 | 9015.69 | 2652.65 | 6363.04 |
| 44 | 2.99 | 9074.97 | 2696.14 | 6378.83 |
| 45 | 2.95 | 9132.52 | 2739.62 | 6392.89 |
| 46 | 2.90 | 9188.40 | 2783.11 | 6405.29 |
| 47 | 2.86 | 9242.70 | 2826.60 | 6416.11 |
| 48 | 2.82 | 9295.48 | 2870.08 | 6425.40 |
| 49 | 2.78 | 9346.80 | 2913.57 | 6433.23 |
| 50 | 2.75 | 9396.72 | 2957.06 | 6439.67 |
| 51 | 2.71 | 9445.30 | 3000.54 | 6444.76 |
| 52 | 2.67 | 9492.59 | 3044.03 | 6448.57 |
| 53 | 2.64 | 9538.65 | 3087.51 | 6451.13 |
| 54 | 2.60 | 9583.51 | 3131.00 | 6452.51 |
| 55 | 2.57 | 9627.22 | 3174.49 | 6452.74 |
| 56 | 2.54 | 9669.84 | 3217.97 | 6451.87 |
| 57 | 2.51 | 9711.39 | 3261.46 | 6449.94 |
| 58 | 2.48 | 9751.93 | 3304.94 | 6446.98 |
| 59 | 2.45 | 9791.48 | 3348.43 | 6443.05 |
| 60 | 2.42 | 9830.08 | 3391.92 | 6438.16 |
| 61 | 2.39 | 9867.76 | 3435.40 | 6432.36 |
| 62 | 2.36 | 9904.57 | 3478.89 | 6425.68 |
| 63 | 2.33 | 9940.52 | 3522.37 | 6418.14 |
| 64 | 2.31 | 9975.65 | 3565.86 | 6409.79 |
| 65 | 2.28 | 10009.98 | 3609.35 | 6400.63 |
| 66 | 2.25 | 10043.55 | 3652.83 | 6390.71 |
| 67 | 2.23 | 10076.37 | 3696.32 | 6380.05 |
| 68 | 2.21 | 10108.47 | 3739.80 | 6368.67 |
| 69 | 2.18 | 10139.88 | 3783.29 | 6356.59 |
| 70 | 2.16 | 10170.62 | 3826.78 | 6343.84 |
| 71 | 2.14 | 10200.70 | 3870.26 | 6330.44 |
| 72 | 2.11 | 10230.16 | 3913.75 | 6316.41 |
| 73 | 2.09 | 10259.00 | 3957.24 | 6301.76 |

Course "C" Method for small detention facilities

Project; SA Seaman Concrete Construction Inc.
 Owner: Steve Seaman
 Date May 20, 1999

JOB No. 1990084-000.01 Project Engineer Mel Hopkins

| | | | | |
|------------|-------|-------------|-------|------|
| AREA | 1.74 | TIME CONC | 12.00 | 5.83 |
| Exist'g C | 0.20 | ALLOW DISCH | 2.03 | |
| Exist'g Tc | 25.00 | RUNOFF COEF | 0.62 | |

| | | | |
|----|--------|------|---------|
| a= | 300.62 | qo= | 2.03 |
| b= | 26.54 | Tcr= | 60.08 |
| | | Icr= | 3.47 |
| | | Qo= | 3.73 |
| | | V= | 9378.99 |

Parameters for a and b

| | | |
|----------|--------|-------|
| Norfolk | a | b |
| 2 year | 142.00 | 20.32 |
| 5 year | 173.80 | 22.70 |
| 10 year | 201.52 | 23.38 |
| 100 year | 300.62 | 26.54 |

Req'd Storage

9379 CU FT.

aller Method

| TD (MIN) | RAIN RATE (IN/HR) | VOLUME IN (CU. FT.) | VOLUME OUT (CU. FT.) | STORAGE (CU. FT.) |
|-------------|----------------------|------------------------|-------------------------|----------------------|
| 10 | 8.23 | 6904.83 | 1705.02 | 5199.81 |
| 11 | 8.01 | 7237.89 | 1765.91 | 5471.97 |
| 12 | 7.80 | 7553.66 | 1826.81 | 5726.85 |
| 13 | 7.60 | 7853.47 | 1887.70 | 5965.76 |
| 14 | 7.42 | 8138.48 | 1948.60 | 6189.88 |
| 15 | 7.24 | 8409.77 | 2009.49 | 6400.28 |
| 16 | 7.07 | 8668.30 | 2070.38 | 6597.92 |
| 17 | 6.90 | 8914.96 | 2131.28 | 6783.69 |
| 18 | 6.75 | 9150.55 | 2192.17 | 6958.38 |
| 19 | 6.60 | 9375.79 | 2253.06 | 7122.72 |
| 20 | 6.46 | 9591.35 | 2313.96 | 7277.39 |
| 21 | 6.32 | 9797.83 | 2374.85 | 7422.98 |
| 22 | 6.19 | 9995.82 | 2435.74 | 7560.07 |
| 23 | 6.07 | 10185.81 | 2496.64 | 7689.17 |
| 24 | 5.95 | 10368.28 | 2557.53 | 7810.75 |
| 25 | 5.83 | 10543.67 | 2618.42 | 7925.24 |
| 26 | 5.72 | 10712.38 | 2679.32 | 8033.06 |
| 27 | 5.61 | 10874.79 | 2740.21 | 8134.58 |
| 28 | 5.51 | 11031.25 | 2801.11 | 8230.14 |

| | | | | |
|----|------|----------|---------|---------|
| 29 | 5.41 | 11182.07 | 2862.00 | 8320.07 |
| 30 | 5.32 | 11327.56 | 2922.89 | 8404.66 |
| 31 | 5.22 | 11467.98 | 2983.79 | 8484.20 |
| 32 | 5.14 | 11603.62 | 3044.68 | 8558.94 |
| 33 | 5.05 | 11734.69 | 3105.57 | 8629.12 |
| 34 | 4.97 | 11861.44 | 3166.47 | 8694.97 |
| 35 | 4.88 | 11984.07 | 3227.36 | 8756.70 |
| 36 | 4.81 | 12102.77 | 3288.25 | 8814.52 |
| 37 | 4.73 | 12217.74 | 3349.15 | 8868.59 |
| 38 | 4.66 | 12329.14 | 3410.04 | 8919.10 |
| 39 | 4.59 | 12437.15 | 3470.94 | 8966.22 |
| 40 | 4.52 | 12541.91 | 3531.83 | 9010.08 |
| 41 | 4.45 | 12643.57 | 3592.72 | 9050.85 |
| 42 | 4.39 | 12742.26 | 3653.62 | 9088.64 |
| 43 | 4.32 | 12838.11 | 3714.51 | 9123.60 |
| 44 | 4.26 | 12931.25 | 3775.40 | 9155.85 |
| 45 | 4.20 | 13021.78 | 3836.30 | 9185.48 |
| 46 | 4.14 | 13109.82 | 3897.19 | 9212.63 |
| 47 | 4.09 | 13195.46 | 3958.08 | 9237.37 |
| 48 | 4.03 | 13278.80 | 4018.98 | 9259.82 |
| 49 | 3.98 | 13359.94 | 4079.87 | 9280.07 |
| 50 | 3.93 | 13438.95 | 4140.76 | 9298.19 |
| 51 | 3.88 | 13515.93 | 4201.66 | 9314.27 |
| 52 | 3.83 | 13590.95 | 4262.55 | 9328.40 |
| 53 | 3.78 | 13664.08 | 4323.45 | 9340.64 |
| 54 | 3.73 | 13735.40 | 4384.34 | 9351.06 |
| 55 | 3.69 | 13804.97 | 4445.23 | 9359.73 |
| 56 | 3.64 | 13872.85 | 4506.13 | 9366.72 |
| 57 | 3.60 | 13939.10 | 4567.02 | 9372.08 |
| 58 | 3.56 | 14003.79 | 4627.91 | 9375.88 |
| 59 | 3.51 | 14066.97 | 4688.81 | 9378.16 |
| 60 | 3.47 | 14128.68 | 4749.70 | 9378.98 |
| 61 | 3.43 | 14188.99 | 4810.59 | 9378.40 |
| 62 | 3.40 | 14247.93 | 4871.49 | 9376.45 |
| 63 | 3.36 | 14305.56 | 4932.38 | 9373.18 |
| 64 | 3.32 | 14361.92 | 4993.28 | 9368.64 |
| 65 | 3.28 | 14417.04 | 5054.17 | 9362.87 |
| 66 | 3.25 | 14470.97 | 5115.06 | 9355.91 |
| 67 | 3.21 | 14523.75 | 5175.96 | 9347.79 |
| 68 | 3.18 | 14575.41 | 5236.85 | 9338.56 |
| 69 | 3.15 | 14625.99 | 5297.74 | 9328.25 |
| 70 | 3.11 | 14675.52 | 5358.64 | 9316.89 |
| 71 | 3.08 | 14724.04 | 5419.53 | 9304.51 |
| 72 | 3.05 | 14771.57 | 5480.42 | 9291.15 |
| 73 | 3.02 | 14818.15 | 5541.32 | 9276.83 |

Perimeter Ditch to forebay
Worksheet for Triangular Channel

| Project Description | |
|---------------------|--------------------------|
| Project File | c:\haestad\fmw\pg-2a.fm2 |
| Worksheet | Perimeter Ditch |
| Flow Element | Triangular Channel |
| Method | Manning's Formula |
| Solve For | Channel Depth |

| Input Data | |
|----------------------|----------------|
| Mannings Coefficient | 0.022 |
| Channel Slope | 0.010000 ft/ft |
| Left Side Slope | 2.000000 H : V |
| Right Side Slope | 2.000000 H : V |
| Discharge | 1.65 cfs |

| Results | |
|----------------------|----------------------|
| Depth | 0.56 ft |
| Flow Area | 0.62 ft ² |
| Wetted Perimeter | 2.49 ft |
| Top Width | 2.22 ft |
| Critical Depth | 0.53 ft |
| Critical Slope | 0.012732 ft/ft |
| Velocity | 2.67 ft/s |
| Velocity Head | 0.11 ft |
| Specific Energy | 0.67 ft |
| Froude Number | 0.89 |
| Flow is subcritical. | |

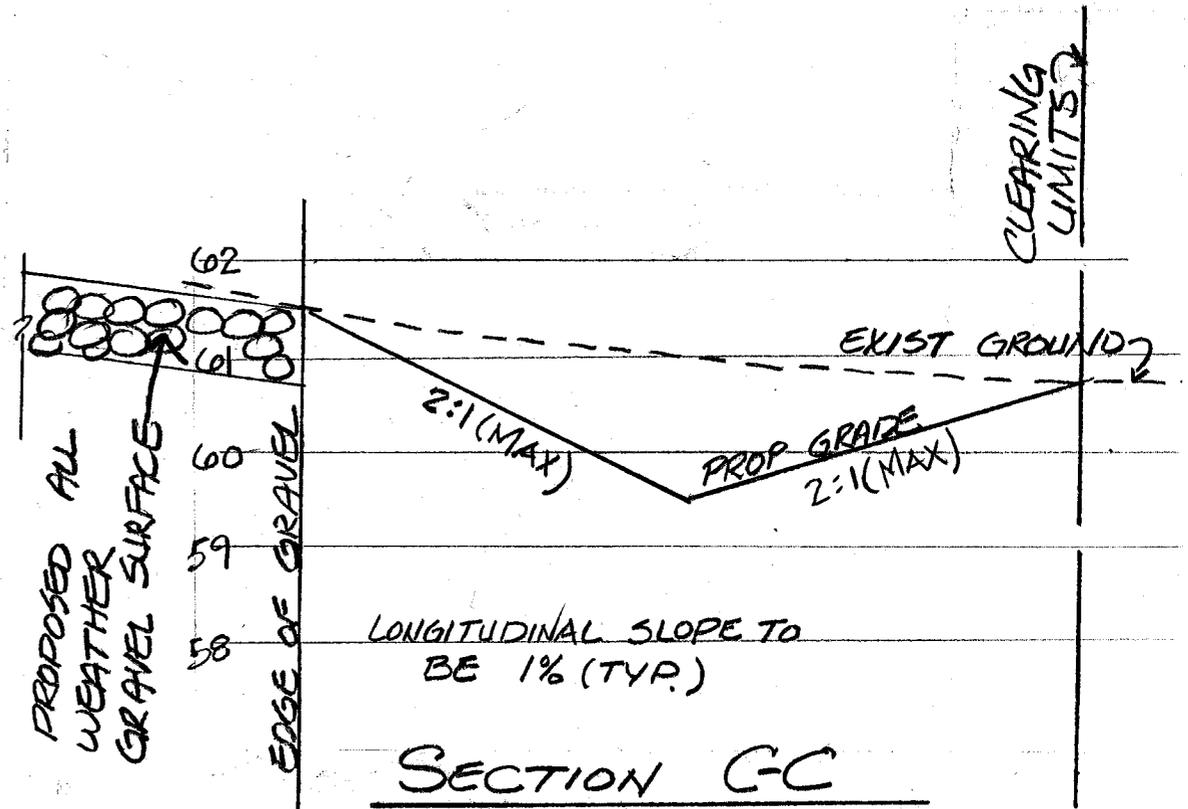
$$T_c = T_i + T_e \quad T_i = 4 \text{ MIN (SEE ATTACHED NOMOGRAPH)}$$

$$T_e = L_D / V = 2.7 \text{ MIN} \quad L_D = 200'$$

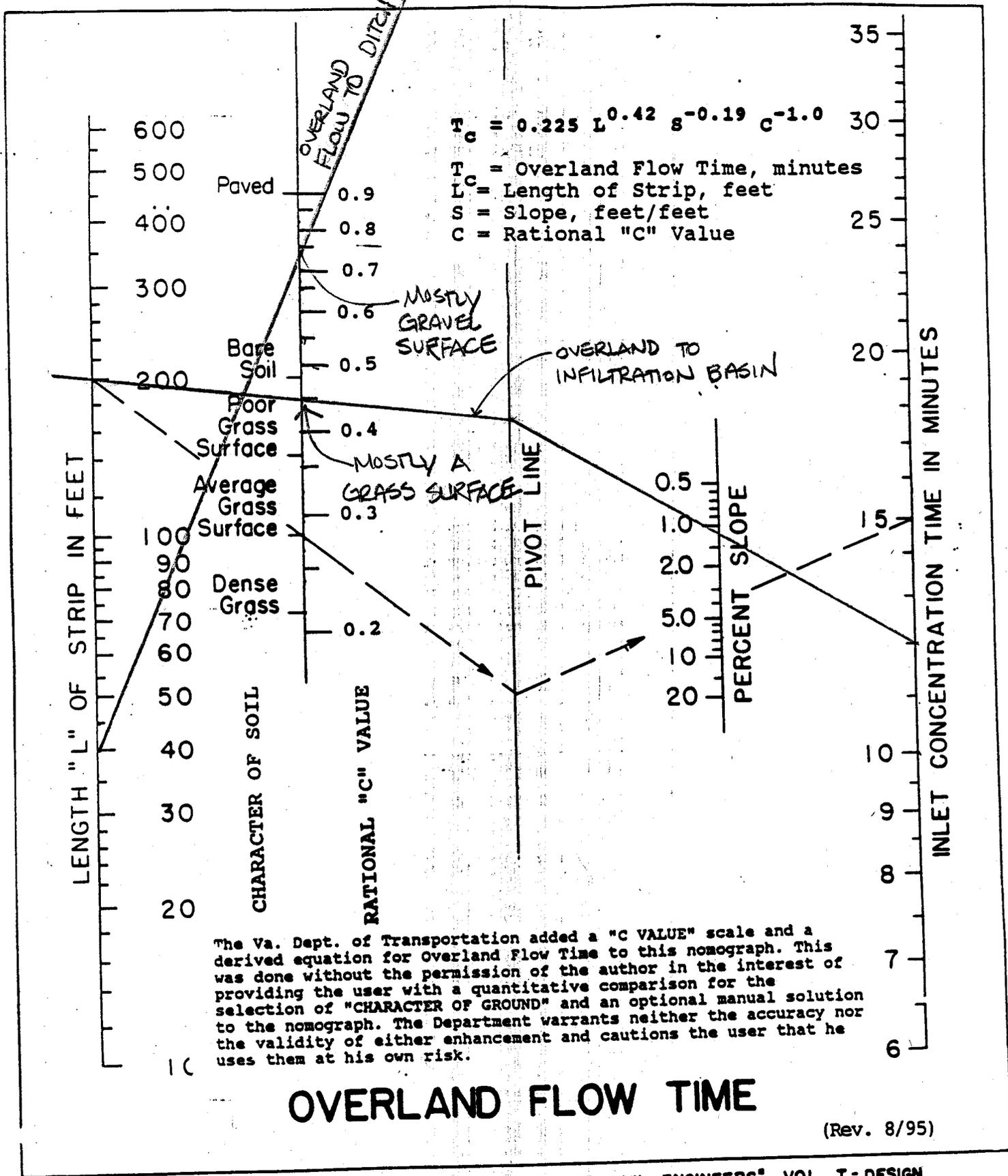
$$T_c = 4 + 2.7 = 6.7 \quad \therefore L = 6.66$$

$$Q = C U A \Rightarrow (0.2)(6.66)(.40) = 1.65 \text{ cfs}$$

SEE DRAINAGE AREA MAP



OFF CHART: SEE CALCULATION BELOW.
 FIG. 1.5.1.1



OVERLAND FLOW TIME

(Rev. 8/95)

REPRINTED WITH PERMISSION FROM "DATA BOOK FOR CIVIL ENGINEERS" VOL. I - DESIGN
 2ND EDITION (1951) BY E. E. SEELYE

$T_c = 0.225 (40)^{0.42} (0.01)^{-0.19} (0.62)^{-1.0} = 4 \text{ minutes}$

5

Culvert Calculator Report
 Culvert in Manufacture Dr.
 @ SEAMAN ENTRANCE

Solve For: Headwater Elevation

| Culvert Summary | | | |
|------------------------------|---------------------------|-------------------------|---------------------|
| Allowable HW Elevation | 61.50 ft | Headwater Depth/ Height | 1.72 |
| Computed Headwater Elevation | 60.91 ft | Discharge | 5.20 cfs |
| Inlet Control HW Elev | 60.20 ft | Tailwater Elevation | 60.00 ft |
| Outlet Control HW Elev | 60.91 ft | Control Type | Outlet Control |
| Grades | | | |
| Upstream Invert | 58.75 ft | Downstream Invert | 57.95 ft |
| Length | 88.00 ft | Constructed Slope | 0.009091 ft/ft |
| Hydraulic Profile | | | |
| Profile | Pressure | Depth, Downstream | 2.05 ft |
| Slope Type | N/A | Normal Depth | 0.88 ft |
| Flow Regime | N/A | Critical Depth | 0.92 ft |
| Velocity Downstream | 4.24 ft/s | Critical Slope | 0.008048 ft/ft |
| Section | | | |
| Section Shape | Circular | Mannings Coefficient | 0.013 |
| Section Material | Concrete | Span | 1.25 ft |
| Section Size | 15 inch | Rise | 1.25 ft |
| Number Sections | 1 | | |
| Outlet Control Properties | | | |
| Outlet Control HW Elev | 60.91 ft | Upstream Velocity Head | 0.28 ft |
| Ke | 0.20 | Entrance Loss | 0.06 ft |
| Inlet Control Properties | | | |
| Inlet Control HW Elev | 60.20 ft | Flow Control | Transition |
| Inlet Type | Beveled ring, 45 ° bevels | Area Full | 1.2 ft ² |
| K | 0.00180 | HDS 5 Chart | 3 |
| M | 2.50000 | HDS 5 Scale | 1 |
| C | 0.03000 | Equation Form | 1 |
| Y | 0.74000 | | |

← THIS NO. IS CONSERVATIVE

ASSUMPTIONS

$C = .62$ (100% IMPERVIOUS UPSTREAM)

$L = 210 / (T_c + 25) = 6$

$T_c = 10 \text{ min}$

AREA = 1.4 AC ±

SCHNABEL
ENGINEERING ASSOCIATES
HAND AUGER LOG
CONTRACT NO: 993721

HAND AUGER NO: HA-1

PROJECT: Lots/warehouse at Skiffes Creek Industrial

Park, James City Co. Virginia

DATE: 5/6/99

LOCATION: See Figure A1

SURFACE ELEVATION: 103.0±

SEA REPRESENTATIVE: D. Shaff/J. Hollowell

GROUND WATER ELEVATION: Not Encountered

| DEPTH (ft) | ELEVATION (ft) | DESCRIPTION OF SOILS & OBSERVATIONS. | STRATUM | REMARKS |
|---------------|-------------------|--|---------|---------|
| 0.4 | 102.8 | Rootmat and topsoil | | |
| 1.0 | 102.0 | Fine to medium calvee sand (SC), contains root fragments moist - brown | | |
| | | do. contains silty sand layers below 4.0 ft | | |
| 4.6 | 98.4 | Fine to medium sandy lean clay (CL), moist - brown and light gray | | |
| 5.0 | 98.0 | Hand auger terminated at 5.0 ft | | |

Comments:

Elevations referenced to road surface assumed elevation 100.0

SCHNABEL
ENGINEERING ASSOCIATES

HAND AUGER LOG

CONTRACT NO: 993721

HAND AUGER NO: HA-2

PROJECT: Lots/warehouse at Skiffes Creek Industrial

Park, James City Co. Virginia

DATE: 5/8/99

LOCATION: See Figure A1

SURFACE ELEVATION: 103.0±

SEA REPRESENTATIVE: D. Shaff/J. Hollowell

GROUND WATER ELEVATION: Not Encountered

| DEPTH (ft) | ELEVATION (ft) | DESCRIPTION OF SOILS & OBSERVATIONS. | STRATUM | REMARKS |
|---------------|-------------------|---|---------|---------|
| 0.7 | 102.3 | Rootmat and topsoil | | |
| | | Fine to medium silty sand (SM), contains root fragments moist - brown | | |
| 2.3 | 100.7 | Fine to medium clayey sand (SC), moist - brown | | |
| 5.0 | 98.0 | Hand auger terminated at 5.0 ft | | |

Comments:
Elevations referenced to road surface assumed elevation 100.0.

Soils Evaluation Percolation Test Data

Commonwealth of Virginia
Department of Health

Property Identification

Tax Map # _____
Subdivision _____
Subdivision File # _____
Other _____
Weather Sunny Temp Warm

Owner Skiffes Creek Industrial Park
Address VA
Phone _____
Lot _____ Section ST Test _____ Time (Hrs.) 4+
Saturation = _____
Shrink Swell = _____
Percolation = _____
Date of Test 5-7-99

Sheet 1 of 1

Health Department _____

Report Results To:

Name _____
Address _____

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | | |
|----------------------|----------------------|-----------|----------|------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|----------------|-----------------|
| HOLE DIAM. IN INCHES | HOLE DEPTH IN INCHES | TYPE TEST | HOLE NO. | TIME BEGUN | TIME DEPTH TO WATER | RATE MIN. PER INCH | REMARKS* | |
| 6" | 43 10/16 | P | P-1 | 12:06 | 12:36 | 12:41 | 12:51 | 1:01 | 1:11 | | | | | | | 7 | 12:36 Hole dry | |
| | | | | 35 11/16 | ** | 35 11/16 | 37 | 38 7/16 | ** | | | | | | | | | 12:41 Add water |
| | | | | | | | | | | | | | | | | | | 1:11 Hole dry |
| 6" | 27 13/16 | P | P-1 | 11:56 | 12:26 | 12:38 | 1:08 | 1:09 | 1:39 | 1:41 | 2:11 | 2:41 | 2:42 | 3:12 | 14 | 12:38 water added | | |
| | | | | 21 15/16 | 24 13/16 | 23 | 24 | 22 3/16 | 23 11/16 | 22 5/16 | 23 15/16 | 25 5/16 | 22 | 23 9/16 | | 1:09 " " | | |
| | | | | 3:42 | 3:45 | 4:03 | | | | | | | | | | | 1:41 " " | |
| | | | | 25 7/16 | 24 9/16 | 25 14/16 | | | | | | | | | | | 2:42 " " | |
| | | | | | | | | | | | | | | | | 3:45 " " | | |

*Specify if water added

Use back of form for proposed layout, lot lines and hole locations

Recommendations _____

Sanitarian _____
Signature of Sanitarian

Statement: These percolation tests were conducted as specified in the Sewage Handling and Disposal Regulation and are accurate.

Signature of tester/overr/agent _____

Drainage Ditch to Infiltration Pond Worksheet for Triangular Channel

| Project Description | |
|---------------------|-------------------------------------|
| Project File | untitled.fm2 |
| Worksheet | Drainage ditch to infiltration pond |
| Flow Element | Triangular Channel |
| Method | Manning's Formula |
| Solve For | Channel Depth |

| Input Data | |
|----------------------|----------------|
| Mannings Coefficient | 0.022 |
| Channel Slope | 0.010000 ft/ft |
| Left Side Slope | 2.000000 H : V |
| Right Side Slope | 2.000000 H : V |
| Discharge | 1.28 cfs |

| Results | |
|----------------------|----------------------|
| Depth | 0.51 ft |
| Flow Area | 0.51 ft ² |
| Wetted Perimeter | 2.26 ft |
| Top Width | 2.02 ft |
| Critical Depth | 0.48 ft |
| Critical Slope | 0.013169 ft/ft |
| Velocity | 2.51 ft/s |
| Velocity Head | 0.10 ft |
| Specific Energy | 0.60 ft |
| Froude Number | 0.88 |
| Flow is subcritical. | |

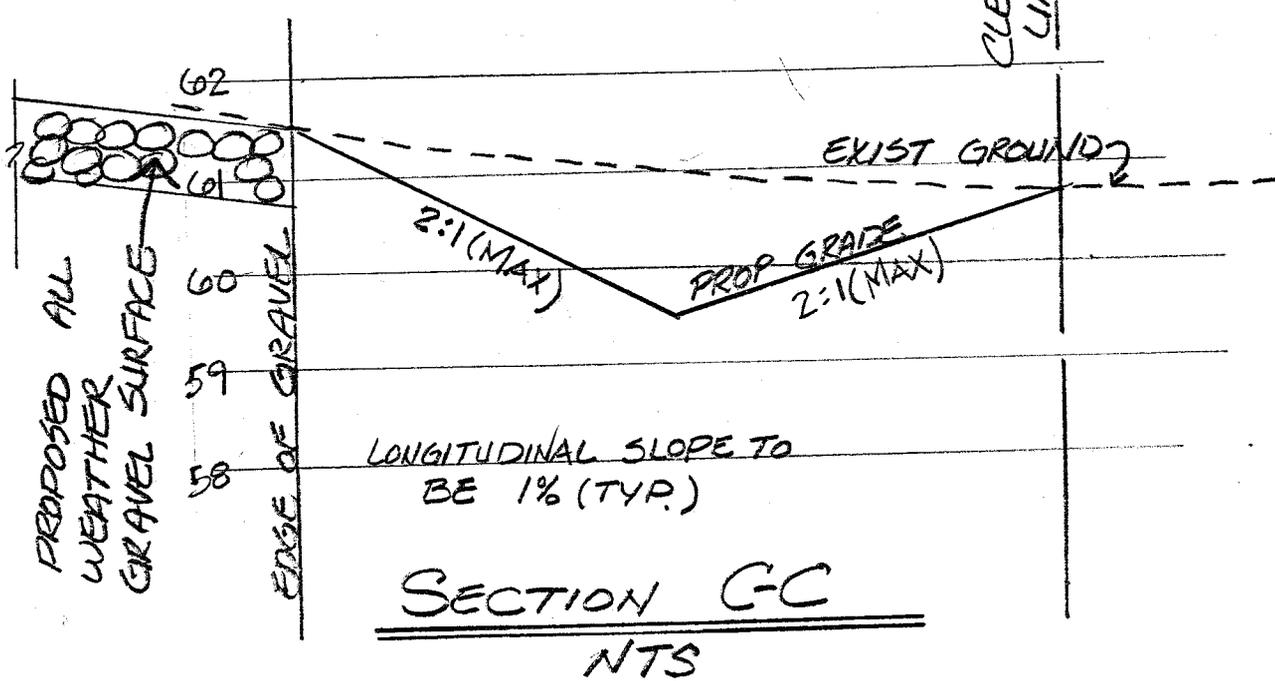
= 4 min (SEE ATTACHED NOMOGRAPH)

$$T_c = T_i + T_t$$

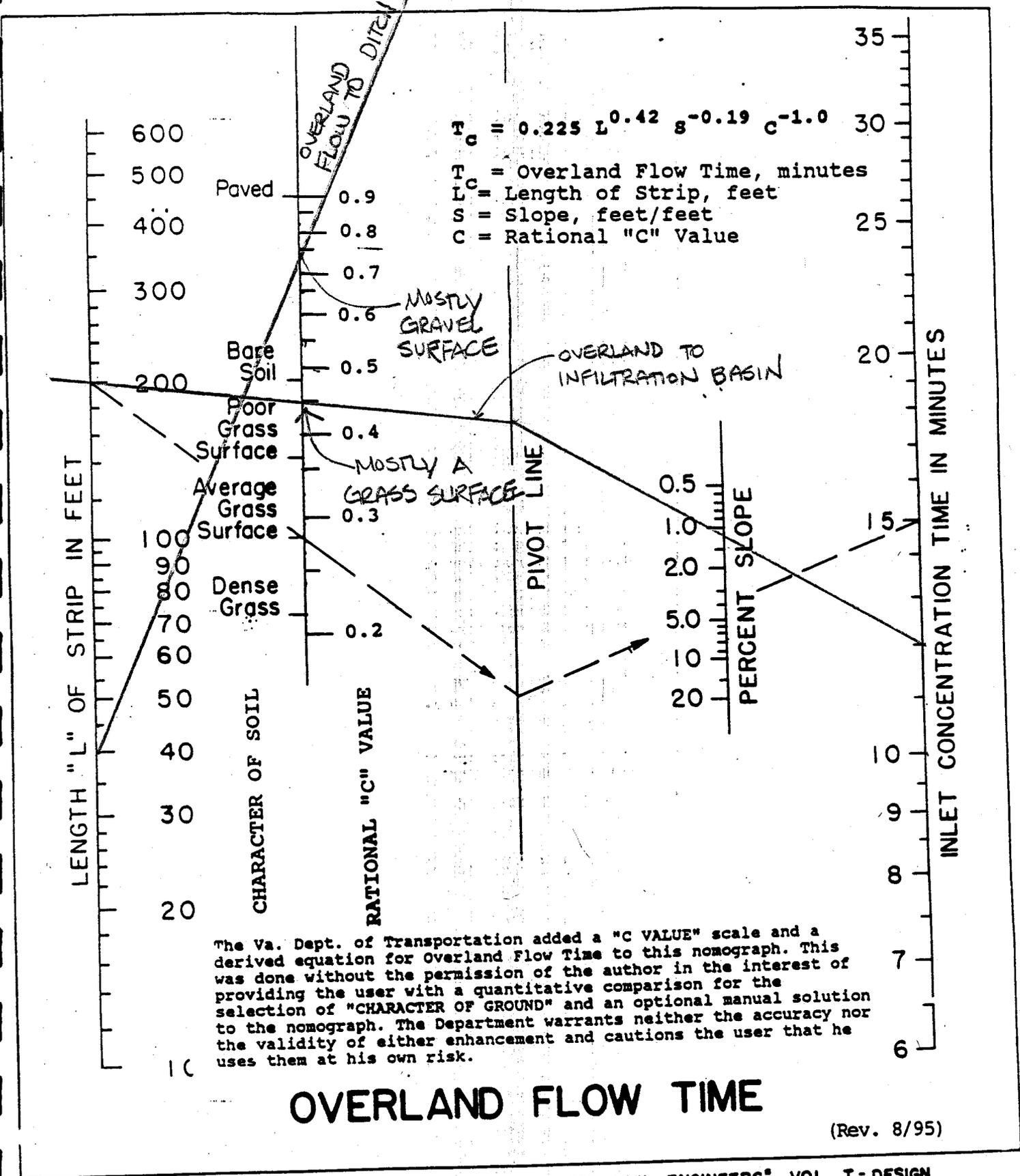
$$T_t = L_0 / V = 2.7 \text{ min}$$

$$T_c = 4 + 2.7 = 6.70 \quad L = 6.66$$

$$Q = C L A = (0.62)(6.66)(0.31) = 1.28 \text{ cfs}$$



1 OFF CHART: SEE CALCULATION BELOW.
 FIG. 1.5.1.1



The Va. Dept. of Transportation added a "C VALUE" scale and a derived equation for Overland Flow Time to this nomograph. This was done without the permission of the author in the interest of providing the user with a quantitative comparison for the selection of "CHARACTER OF GROUND" and an optional manual solution to the nomograph. The Department warrants neither the accuracy nor the validity of either enhancement and cautions the user that he uses them at his own risk.

OVERLAND FLOW TIME

(Rev. 8/95)

REPRINTED WITH PERMISSION FROM "DATA BOOK FOR CIVIL ENGINEERS" VOL. I - DESIGN
 2ND EDITION (1951) BY E. E. SEELYE

$T_c = 0.225 (40)^{0.42} (.01)^{-0.19} (.62)^{-1.0} = 4 \text{ minutes}$

5

Schnabel Engineering

Schnabel Engineering Associates, Inc.
One West Cary Street
Richmond, VA 23220-5809
804-649-7035 • Fax 804-783-8023

May 10, 1999

Mr. Steve Seaman
S. A. Seaman Concrete Construction, Inc.
2524-C George Washington Memorial Highway
Yorktown, Virginia 23693

Subject: Contract 993721, Percolation Testing for BMP
Office/Warehouse on Lot 5 at Skiffes Creek
Industrial Park, Route 60, James City County, Virginia

Dear Mr. Seaman:

This letter provides our soil evaluation data for the storm water management basin at the above referenced site. Our evaluation included hand auger borings and percolation tests in accordance with our agreement dated May 5, 1999.

We understand that percolation testing of the basin soils is required by the James City County Building Department. We further understand that the percolation test data will be used to assist in designing the stormwater pond.

FIELD ACTIVITIES

On May 6, 1999 we excavated two holes designated HA-1 and HA-2 to 60 inches below the ground surface. Figure A1 indicates the hole locations. The soils encountered were visually classified according to ASTM 2488 and generally consisted of silty and clayey sands, and some lean clay layers. A description of the soil profiles is provided on the attached hand auger logs.

After profiling the soils, we excavated a hole for percolation testing about five feet from each hand auger hole. These holes designated P-1 and P-2 were excavated adjacent to HA-1 and HA-2 to about 44 and 28 inches below the ground surface, respectively. These depths were selected by the civil engineer, Mel Hopkins with Langley and McDonald. The holes were prepared and the percolation tests were conducted on May 7, 1999 in general accordance with the VDH "Percolation Test Procedure". The holes were pre-soaked overnight prior to percolation testing. We noted that the soils within the percolation zone (bottom 8 inches in the hole) visually classify as loams based on the United States Department of Agriculture (USDA) Classification System. The USDA System is used to estimate percolation rate with texture group. Loams are considered Texture Group II soils.

The results of the percolation tests indicate measured percolation rates in the range of 7 to 15 minutes per inch. This rate is faster than the estimated rate of 30 minutes per inch correlated with Texture Group II classification. The percolation test data is attached.

Unlike engineering materials such as steel and concrete, the extent and properties of geologic materials (soil) may vary significantly. Therefore, conditions on the site may vary between the discrete locations observed at the time of our subsurface exploration. The nature and extent of variations between borings may not become evident until during construction.

We have prepared this report in accordance with generally accepted geoenvironmental engineering practice. We make no warranties, either express or implied, as to the professional advice provide under the terms of our agreement.

We appreciate the opportunity to provide service on this project. If you have any questions, please call.

Sincerely,
SCHNABEL ENGINEERING ASSOCIATES, INC.



Russell S. Harris, Jr., P.E.
Senior Engineer



Brian Milner, C.P.G.
Senior Associate

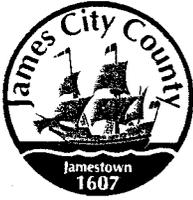
BM:RH:lfb

Copy:

Mel Hopkins - Langley and McDonald

Attachments:

Hand Auger Logs (2 sheets)
Percolation Test Data Sheet
Figure 1 - Location Plan



DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-MAIL: devtman@james-city.va.us

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PLANNING
(757) 253-6685
planning@james-city.va.us

COUNTY ENGINEER
(757) 253-6678
INTEGRATED PEST MANAGEMENT
(757) 259-4116

November 28, 2001

Henry S. Branscome, Inc.
Post Office Drawer 260
Williamsburg, Va. 23187
Atten: Mr. Henry S. Branscome II

Re: S.A. Seaman Concrete (Skiffes Creek Industrial Park)
County Plan No. SP-66-99; BMP ID Code: SC 007

Dear Mr. Branscome:

In response to our discussion last week, the Environmental Division has received your letter dated November 19th 2001. The intent of the letter was to serve as construction certification for the above referenced stormwater management facility. For this specific project, Note # 19 on Sheet C-3 of the approved plan set indicated the following:

"As-built drawings must be provided for all detention/BMP facilities. Also upon completion, the construction of all detention/BMP facilities shall be certified by a professional engineer who inspected the structure during construction. The certification shall state that to the best of his/her judgement, knowledge and belief, the structure was constructed in accordance with the approval plans and specifications".

As this note was present on the approved plans and specifications, it was responsibility of the owner/contractor to ensure a professional engineer was present during the construction process to observe construction and to provide construction certification once the structure was completed.

Although recently, we have strengthened and provided better definition to the record drawing (as-built) and construction certification process for stormwater management facilities, the requirement for construction certification by a registered professional engineer has not changed.

In full consideration of your letter, there was an apparent failure by the owner/contractor to retain the services of a professional engineer while construction was being performed and to provide subsequent construction certification. The basis was that BMP construction was of a minor nature. Although we agree that the earthen berm around the south side of the facility was of relatively small height, proper construction of the infiltration component of the basin is critical for success of the facility as a stormwater management best management practice. This portion of facility construction warranted proper observation and certification by an engineer.

Although we understand your dilemma, a certification letter or statement by a non-licensed professional engineer cannot be accepted by our division as it contradicts our past and current policy for proper certification of BMP facilities.

However, based on a full review of the approved design plan, land uses and post-construction certification information as submitted including the record drawing, standard information forms and the contents of your letter, it has been determined that for *this specific review case only*, the construction certification requirement will be waived for this project. The primary reasons for exception to the requirement are as follows:

- The earthen fill embankment, which would require proper certification, is of relatively small height (less than 2 feet) and design high water for the facility is generally below the majority of the fill.
- Observations of construction, as performed by our assigned inspector, generally support the claim in your letter that the embankment and infiltration area were installed in accordance with approval plans and specifications. *(Please note that inspections by the Environmental Division are for compliance purposes only.)*
- The infiltration portion of the basin has shown no apparent signs of stress, malfunction or failure since it's completion almost two years ago. The basin appears to infiltrate runoff into underlying soils on a consistent basis and dewater in a timely manner.
- There are no obvious signs indicating threatening conditions to the stormwater function or structural integrity of the stormwater management facility.
- The facility appears to have been well-maintained by the owner since completion of construction.

Therefore, we will proceed with the release of the posted surety for the project in accordance with our usual administrative process. However, I stress to you that granting variances of this nature is seldom performed by our division. Lack of knowledge about the process or overlooking items that are clearly delineated on approved plans are not normally justification to grant a variance. For this specific case, many factors and the overall general function of the facility were weighed into the decision.

I highly recommend that you and other individuals within your organization who routinely construct stormwater management and drainage facilities in James City County review and familiarize yourselves with our requirements. This includes Note # 20 of the James City County Environmental Division, Erosion and Sediment Control notes dated July 6th 2001 and our current record drawing/construction certification packet entitled **James City County Environmental Division, Stormwater Management /BMP Facilities, Record Drawing and Construction Certification, Standard Forms & Instructions**. These items are attached for your use.

If you have any additional questions or comments, you can contact me at 253-6673. Thank you for your consideration on this matter.

Sincerely,



Scott J. Thomas, P.E.
Civil Engineer
Environmental Division

cc: Steve Seaman, S. A. Seaman Concrete

SWMProg\AsBuilts\ClarLetters\SC007.0

HENRY S. BRANSCOME, INC.

Post Office Drawer 260
Williamsburg, Virginia 23187

WILLIAMSBURG: 229-2504
NORFOLK: 622-4200
FAX: 220-0390

November 19, 2001

Scott Thomas
James City County
Environmental Division
P.O. Box 8784
Williamsburg, VA. 23187



Re: S.A. Seaman Concrete
S.P. County Plan SP-66-99
BMP ID Code: SC 007

Dear Mr. Thomas:

Please allow this letter to serve as certification that the above referenced Storm water Management/ BMP was monitored and constructed in accordance with the provisions of the approved design plan, specifications and storm water management plan. Due to the minor nature of the BMP, we failed to have a professional engineer onsite while construction was performed. However, we certify that the embankment and infiltration area were installed in accordance with the plans and specifications.

Thank you for your time and consideration in this matter. If I can be of further assistance please do not hesitate to call.

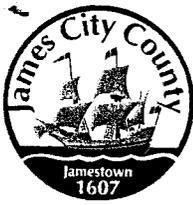
Sincerely,

Henry S. Branscome II

Cc: S.A. Seaman



"WE MOVE, SMOOTH, SELL & ASPHALT THE EARTH"
Registered Virginia Contractor No. 020550A Class A H/H



DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-MAIL: devtman@james-city.va.us

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planning@james-city.va.us

COUNTY ENGINEER
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INTEGRATED PEST MANAGEMENT
(757) 259-4116

November 15, 2001

S. A. Seaman Concrete Construction Inc.
1584 Manufacture Drive
Williamsburg, Va. 23185

Attn: Mr. Steve Seaman, President

Re: S. A. Seaman Concrete (Skiffes Creek Industrial Park)
County Plan SP-66-99; Infiltration Basin
County BMP ID Code: ~~JR 050~~ SC 007

Dear Mr. Seaman:

The Environmental Division has reviewed a record drawing and other certification information as submitted to our office on October 5th 2001 for the above referenced project. The record drawing provides as-built information for an infiltration basin type stormwater management facility located at the south border of the site.

Based on our review of information as submitted and a concurrent field observation as performed on November 15th 2001, the following items must be addressed prior to release of the developer's surety instrument for the stormwater management/BMP facility:

Construction Certification:

1. In accordance with the Note # 19 on Sheet C-3 of the approved plan, construction certification for the stormwater management/BMP facility is required. None was provided. This is especially important since the BMP is an infiltration type facility and it has a small engineered and compacted earthen embankment along the south side. The certification can be in letter format or by use of the certification statement in Section 4 of the JCC, Stormwater Management/BMP Facilities, Record Drawing and Construction Certification, Standard Forms & Instructions. *(Note: The construction certification shall be by a professional engineer who inspected the structure during it's construction.)*

Record Drawing:

3. The record drawing dated October 10th 2001 is **satisfactory**. Please forward one reproducible and one additional blue/black copy of the record drawing to our office.

Construction-Related Items:

4. None.

Please forward the construction certification to our office appropriately. Once received, we can then proceed with final release of the surety on the project.

Please contact me at 757-253-6639 or the assigned Environmental Division inspector, Mike Woolson, at 757-253-6823 if you have any further comments or questions.

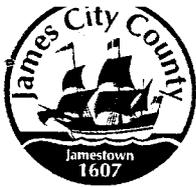
Sincerely,

A handwritten signature in black ink, appearing to read "Scott J. Thomas". The signature is fluid and cursive, with a large initial "S" and "T".

Scott J. Thomas, P.E.
Civil Engineer
Environmental Division

cc: Steve Romeo, LandMark (via fax)
Edward R. Smith, Jr., Branscome (via fax)

G:\SWMProg\AsBuilts\SP6699.sc007



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

SP-66-99
GPIN 5920500005

County BMP ID Code (if known): SC 007

Name of Facility: S.A. SEAMAN CONCRETE BMP No.: 1 of 1 Date: 11/15/01

Location: 1584 MANUFACTURE DRIVE (SKIFFES CREEK INDUSTRIAL PARK)

Name of Owner: SA SEAMAN CONCRETE

Name of Inspector: SJ Thomas; MD WOLSON

Type of Facility: INFILTRATION BASIN

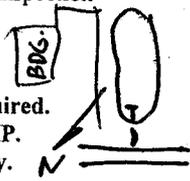
Weather Conditions: Sunny, 70's Type: Final Inspection County BMP Inspection Program Owner Inspection

If an inspection item is not applicable, mark NA, otherwise mark the appropriate column.

- O.K. - The item checked is in adequate condition and the maintenance program is currently satisfactory. No action required.
- Routine - The item checked requires attention, but does not present an immediate threat to the function/integrity of the BMP.
- Urgent - The item checked requires immediate attention to keep the BMP operational and to prevent damage to the facility.

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

| Facility Item | O.K. | Routine | Urgent | Comments |
|--|-------------------------------------|---------|--------|-------------------------------|
| Embankments and Side Slopes: <u>Small Berm 4' H10H South Side</u> | | | | |
| Grass Height | <input checked="" type="checkbox"/> | | | <u>2-4 inches, Adequate.</u> |
| Vegetation Condition | <input checked="" type="checkbox"/> | | | <u>Adequate.</u> |
| Tree Growth | <input checked="" type="checkbox"/> | | | <u>None.</u> |
| Erosion | <input checked="" type="checkbox"/> | | | <u>None.</u> |
| Trash & Debris | <input checked="" type="checkbox"/> | | | <u>Some Leaves.</u> |
| Seepage | <input checked="" type="checkbox"/> | | | <u>None Observed.</u> |
| Fencing or Benches | | | | <u>None</u> |
| Interior Landscaping/Planted Areas: <input checked="" type="checkbox"/> None <input type="checkbox"/> Constructed Wetland/Shallow Marsh <input type="checkbox"/> Naturally Established Vegetation | | | | |
| Vegetated Conditions | <input checked="" type="checkbox"/> | | | <u>Low Grass, Infil Area.</u> |
| Trash & Debris | <input checked="" type="checkbox"/> | | | |
| Floating Material | <input checked="" type="checkbox"/> | | | |
| Erosion | <input checked="" type="checkbox"/> | | | <u>Some Bare Spots 5x5.</u> |
| Sediment | <input checked="" type="checkbox"/> | | | |
| Dead Plant | <input checked="" type="checkbox"/> | | | |
| Aesthetics | <input checked="" type="checkbox"/> | | | |
| Other | | | | |
| <u>Services Building + Yard Area.</u> | | | | |



| Facility Item | O.K. | Routine | Urgent | Comments |
|--|--------------|---------|--------|--|
| Water Pools: <input type="checkbox"/> Permanent Pool (Retention Basin) <input type="checkbox"/> Shallow Marsh (Detention Basin) <input checked="" type="checkbox"/> None, Dry (Detention Basin) | | | | |
| Shoreline Erosion | X | | | <i>Dry @ Time of Inspection</i> |
| Algae | X | | | |
| Trash & Debris | X | | | |
| Sediment | X | | | |
| Aesthetics | X | | | |
| Other | | | | |
| Inflows (Describe Types/Locations): <i>Open Channel @ Back end; surface from parking lot.</i> | | | | |
| Condition of Structure | X | | | |
| Erosion | X | | | |
| Trash and Debris | X | | | |
| Sediment | X | | | |
| Aesthetics | X | | | |
| Other | X | | | |
| Principal Flow Control Structure - Riser, Intake, etc. (Describe Location): <i>Along Road</i> | | | | |
| Condition of Structure | X | | | <i>INFILTRATION POND BOTTOM; 4" PVC YARD DRAIN, CZ Inlet. Some Leaves @ Grate; Minor Some Wood Debris @ Grate; Minor</i> |
| Corrosion | X | | | |
| Trash and Debris | X | | | |
| Sediment | X | | | |
| Aesthetics | X | | | |
| Other | | | | |
| Principal Outlet Structure - Barrel, Conduit, etc.: <i>4" PVC TO ROAD Ditch; NO ENDWALL</i> | | | | |
| Condition of Structure | X | | | <i>End PVC, some cracks. Some sediment in outfall PAVED Channel around along road.</i> |
| Settlement | X | | | |
| Trash & Debris | X | | | |
| Erosion/Sediment | X | | | |
| Outlet Protection | <i>None.</i> | | | |
| Other | | | | |
| Emergency Spillway (Overflow): <i>None.</i> | | | | |
| Vegetation | | | | |
| Lining | | | | |
| Erosion | | | | |
| Trash & Debris | | | | |
| Other | | | | |
| <i>Adjacent lot to south wooded, unoccupied.</i> | | | | |

| Facility Item | O.K. | Routine | Urgent | Comments |
|--|------|---------|--------|--|
| Nuisance Type Conditions: | | | | |
| Mosquito Breeding | X | | | |
| Animal Burrows | X | | | |
| Graffiti | X | | | |
| Other | | | | |
| Surrounding Perimeter Conditions: <i>EAST - GRAVEL YARD/PARKING AREA; WEST (WOODED)</i> | | | | |
| Land Uses | X | | | <i>Concrete Products.</i> |
| Vegetation | X | | | |
| Trash & Debris | X | | | <i>clean site, YARD GRAVEL</i> |
| Aesthetics | X | | | <i>OK for Industrial.</i> |
| Access /Maintenance Roads or Paths | X | | | <i>skiffes Cr Indust Blvd Mfg. Drive to PARKING LOT.</i> |
| Other | | | | |

Remarks:

- No major field concerns.
- Basin Dry - Assume Infil is Adequate; However No significant rainfall in weeks.
- Berman South Side recently raised & seeded. Grass Growing.

(Spoke with Nancy & Steve, Owners while onsite.)

Overall Environmental Division Internal Rating: 4

Signature: *Scott J. Thomas*

Date: 11/15/01 11:00 AM

Title: Civil Engineer ENV DIV

*SEAMAN
FAX
887-3900*

| | | | | | |
|----------------------------|-------------------------|------------------------------|------------------------------|-------------------------------|---|
| WATERSHED | SC | MAINTENANCE PLAN | No | CTRL STRUC DESC | Infiltration |
| BMP ID NO | 007 | SITE AREA acre | 1.74 | CTRL STRUC SIZE inches | |
| PLAN NO | SP-66-99 | LAND USE | Gen Industrial | OTLT BARRL DESC | PVC Drain |
| TAX PARCEL | (59-02)(05-05) | old BMP TYP | | OTLT BARRL SIZE inch | 4 |
| PIN NO | 5920500005 | JCC BMP CODE | C4 Infiltration Basin 1.0 | | |
| CONSTRUCTION DATE | 1/1/2000 | POINT VALUE | 10 | EMERG SPILLWAY | Yes |
| PROJECT NAME | S.A. Seaman Concrete | | | DESIGN HW ELEV | 59.24 |
| FACILITY LOCATION | 1584 Manufacture Drive | | | PERM POOL ELE | na |
| CITY-STATE | Williamsburg, Va. 23185 | SVC DRAIN AREA acres | 1.6 | 2-YR OUTFLOW cfs | 0.00 |
| CURRENT OWNER | Stephen A. Seaman | | | 10-YR OUTFLOW cfs | 0.00 |
| OWNER ADDRESS | 1724 Waverly Lane | | | REC DRAWING | Yes |
| OWNER ADDRESS 2 | | SERVICE AREA DESCR | Building, Parking & Lot Area | | |
| CITY-STATE-ZIP CODE | Lanexa, Va. 23089 | IMPERV AREA acres | 1.04 | CONSTR CERTI | No |
| OWNER PHONE | 887-3800 | RECV STREAM | UT of Skiffes Creek | | |
| MAINT AGREEMENT | Yes | EXT DET-WQ-CTRL | Yes | LAST INSP DATE | |
| EMERG ACTION PLAN | No | WTR QUAL VOL acre-ft | 0.0867 | INTERNAL RATING | |
| | | CHAN PROT CTRL | No | MISC/COMMENTS | Lot 5 Skiffes Creek Indust Park. Fc=7-15 min/inch. 100-yr wsel = 59.59. |
| | | CHAN PROT VOL acre-ft | 0 | | |
| | | SW/FLOOD CONTROL | Yes | | |
| | | GEOTECH REPORT | Yes | | |

[Get Last BMP No](#)

[Return to Menu](#)

Lot 5
SKIFFES CREEK
INDUSTRIAL PARK

TABLE 3
WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

| <u>BMP</u> | <u>BMP Points</u> | | <u>Fraction of Site Served by BMP</u> | | <u>Weighted BMP Points</u> |
|--|-------------------|---|---------------------------------------|---|----------------------------|
| DESIGN 10 | 11 | x | 100 | = | 11 |
| | | x | | = | |
| | | x | | = | |
| | | x | | = | |
| TOTAL WEIGHTED STRUCTURAL BMP POINTS: | | | | | |

B. NATURAL OPEN SPACE CREDIT

| <u>Fraction of Site</u> | <u>Natural Open Space Credit</u> | | <u>Points for Natural Open Space</u> |
|-------------------------|----------------------------------|---|--------------------------------------|
| | (0.1 per 1%) | x | |

C. TOTAL WEIGHTED POINTS

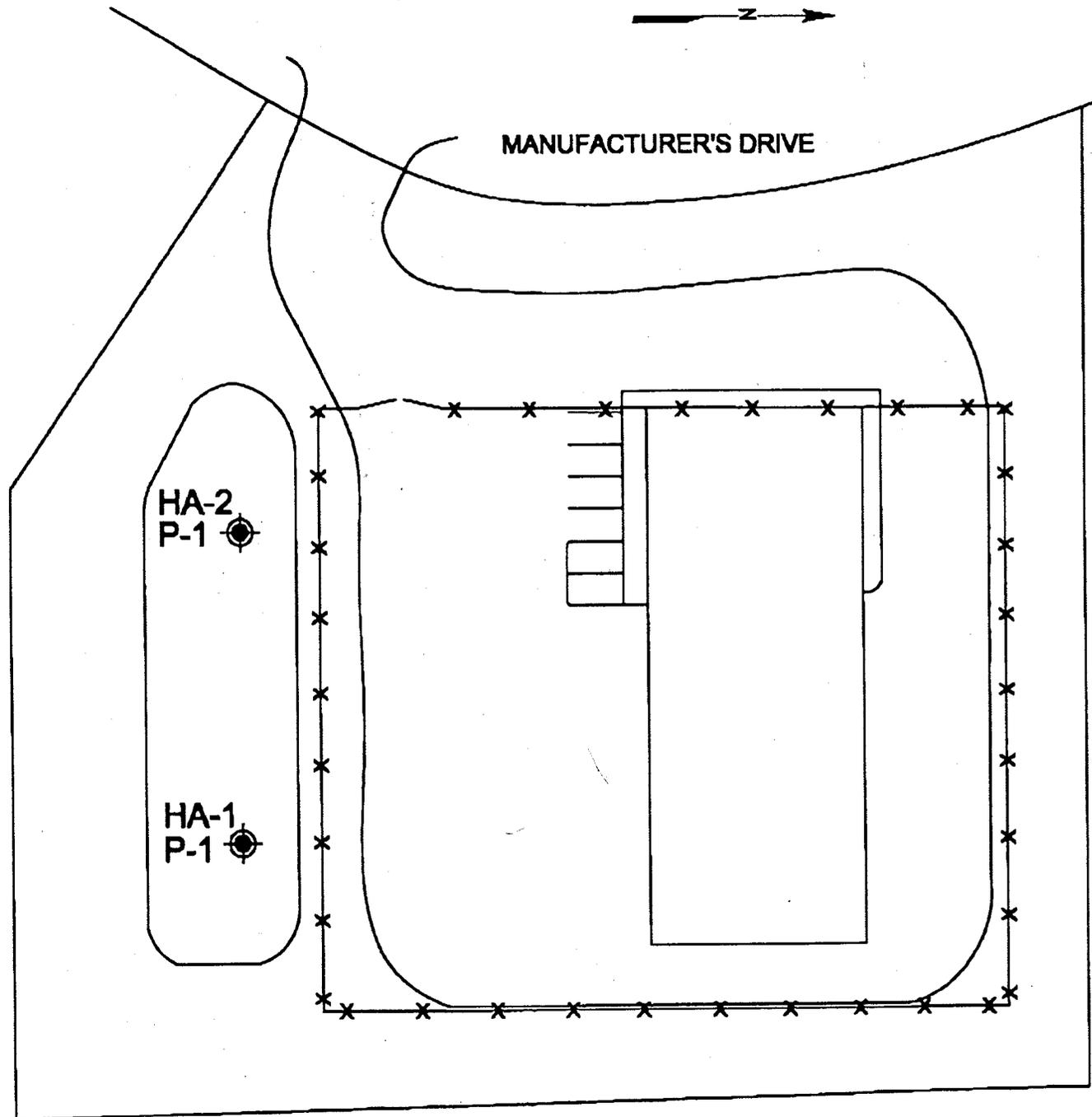
| | | | | |
|------------------------------|---|----------------------------------|---|--------------|
| <u>Structural BMP Points</u> | + | <u>Natural Open Space Points</u> | = | <u>TOTAL</u> |
|------------------------------|---|----------------------------------|---|--------------|

FIGURE 1

LOTS / WAREHOUSE AT
SKIFFES CREEK INDUSTRIAL PARK
JAMES CITY COUNTY, VIRGINIA

LOCATION PLAN

SCALE 1"= 40'



LEGEND

NOTE: BASE PLAN PROVIDED
BY LANGLEY AND
McDONALD



APPROXIMATE HAND AUGER / PERCOLATION
TEST LOCATION

May 17, 1999

Mei Hopkins
Langley and McDonald

FAX # 229-0049

S. A. Seaman Concrete Construction, Inc. is an on-site concrete forming/shaping business presently based in York County. We provide labor to construct concrete products such as concrete pavement, formwork, rebar placement, and concrete placement for various underground and above ground structures. Ready mix concrete is delivered to respective jobsites via delivery trucks from companies such as Branscome and Tarmac. S. A. Seaman has been in operation for 12 years providing service in the tidewater area.

Currently, three employees drive company owned vehicles to a work site, then home at night, each day. The only time any one of the company vehicles might arrive to the proposed storage building site would be for vehicle/equipment repair or an occasional drop-off or pick-up of additional equipment. Otherwise, company owned equipment is left overnight at the contract jobsites. Smaller tools and equipment are kept in each of the three trucks. Currently, employees do not check in at the storage building each morning nor out in the afternoon. Additionally, our business provides no retail sales area nor consultation areas for patronage and does not experience pedestrian traffic during the day. At present we have one office worker and do not anticipate more in the near future.

S. A. Seaman Concrete Construction

In the future, the building we propose to construct will have no more than six individuals in the building at any one time. Having stated this, we expect to provide parking for six vehicles. Two of the standard spaces provided will be for the aforementioned occasional drop-off or pick-up of additional equipment. We expect that no more than four individuals will work daily at this site and assume one vehicle for each individual will drive onto and off of the site twice each day. It is highly unlikely, but even if we assume additional trips onto the site for the "occasional drop-off or pick-up" trips, the total volume of traffic has never been and will never reach as many as 20 trips per day. Additionally, our traffic will be 99% vehicular and the balance will be large equipment (such as a small front-end loader) entering onto the site via trailer when it needs repair or temporary storage. From past experience, we anticipate this need approximately four times per year.

The proposed building for Lot 5, Skiffes Creek Industrial Park, will primarily operate as a maintenance and storage area for large and small equipment and provide one office employee an area to take phone calls and relay messages.

I trust this information will assist your negotiating with the Virginia Department of Transportation (VDOT). I believe we can construct an entrance which will be acceptable to VDOT and one that operates in a manner in which a commercial site should operate while minimizing any financial hardship incurred by S. A. Seaman Concrete Construction, Inc., due to over-design.



ENVIRONMENTAL DIVISION REVIEW COMMENTS
SEAMAN CONCRETE CONSTRUCTION, INC.
WAREHOUSE/STORAGE FACILITY
PLAN NO. SP-66-99
June 16, 1999 MCE/DEC

1. A Land Disturbing Permit and Siltation Agreement, with surety, are required for this project.
2. An Inspection/Maintenance Agreement shall be executed with the county for the BMP facility for this project.
3. As-built drawings must be provided for the detention basin on completion. Also, a note shall be provided on the plan stating that upon completion, the construction of the dam will be certified by a professional engineer who has inspected the structure during construction.
4. There appears to be a 2.5 to 5 foot elevation difference between existing and finished elevations on the northern and eastern edges of the project. It is unclear from the plan how these changes in elevation will be handled. Provide a more detailed grading plan for the northern and eastern sides of the project. It appears that the clearing limits will need to be revised once the grading plan is more completely shown. The 15-foot perimeter strip will need to be cleared in some areas to accommodate the perimeter drainage swale.
5. Provide a drainage area map to show the existing and proposed drainage patterns. Include the size of each drainage area.
6. Show any temporary soil stockpile areas, staging and equipment storage areas.
7. A sediment trap is needed to control the site but the BMP cannot be used for this purpose. A berm can be constructed around the perimeter of the BMP area to serve as a trap with an outlet at the western end of the BMP area, not the adjacent residential properties to the east and south. The BMP itself should not be excavated during construction until the site is stabilized.
8. Identify any off-site land disturbing areas required with proper erosion control measures.
9. Replace the Erosion Control Notes on sheet C-3 with the revised James City County Erosion Control Notes dated 5/5/99. A copy of these new notes are included for your use.
10. Revise the sequence of construction to reflect the addition of a sediment trap as a first step measure in the construction process.

11. Provide calculations based on the 10-year storm to support the design of the entrance culvert and the swale that encircles the site.

12. The following comments refer to the infiltration basin:
 - A. Lower the elevation of the overflow earthen spillway that conveys excess storm flow out of the basin from 60 to 59 to minimize the possibility of overtopping of the berm around the basin.
 - B. The outfall swale needs to tie into the outfall of the proposed entrance culvert rather than terminate at the edge of the right-of-way.
 - C. An underdrain needs to be provided in the bottom of the basin to be able to manually drain the pond in the event the infiltration rate is too slow. See attached BMP schematic for information. In this case the underdrain would need to extend to the roadside ditch as there is no principal spillway.
 - D. The area immediately upstream of the check dam at the end of the swale needs to function as a pretreatment facility for the BMP. Provide a more defined forebay area that will store debris, etc. before discharge into the basin area. The volume provided should be approximately 10% of the water quality volume.

Inspector:

- Pat Menichino
- Gerry Lewis
- Beth Davis
- Mike Woolson
- Other: _____

TO

Project:

S.A. Seaman Concrete, Manufacture Drive

BMP Facility:

Dry Pond / INFIL

Plan No.

SP-66-99

BMP ID Code:

SC 007

Note: New Record Drawing from LANDMARK. Bronsome Drawing now VOID.

I have received a transmittal for a Record Drawing and Construction Certification for the above referenced facility on 10-5-01. Prior to full review of these items and field inspection, I am first forwarding the items to you to cursory review in case any major field changes were performed that I should be aware of and/or to ensure the record drawing accurately portrays what you saw in the field. Please review the drawing and return to me promptly so I can proceed with performing a final engineering inspection for certification purposes.

During my review, I will look at issues related to the BMP and its primary inflow and outflow conveyance systems, and will make comment in the following areas: record drawing (RD), construction certification (CC) and construction-related (CR) punch list items. If you have any other related non-BMP site issues such as erosion, stabilization, removal of erosion & sediment controls, etc. that are not related to the BMP, I can easily add these items to any comment letter that I may forward to the owner/engineer. You can let me know of any outstanding site issues or we can schedule to perform a joint inspection,

If I don't hear from you I will ask you if any other outstanding issues remain before I forward any letters to the owner/engineer.

Scott

See me on this

PTM

AS BUILT'S ^{County BMP 20}
FOR BMP SC 007

887-3800

NANCY

(59-2)(5-5)
1.74 AL.

FAX: 887-3900

~~WETLAND~~

(Dry Pond)
INFILTRATION

592050005
1584 MANUFACTURE DRIVE

STEPHEN A SEAMAN
1727 WAVECREEK LANE
CAMERA VA 23089
M2 GEN INC
L-5 SKIPPER
CRAWLING
PARK